Village Walk Misc.

Keri Pajon

From: Vicki Parker
Sent: Thursday, September 13, 2018 5:01 PM
To: bgarrison@synergygroup.net
Cc: Keri Pajon; Craig Scott
Subject: FW: 13 homes Village Walk

Brian – I think the best way to get this moving is to batch the repair permits/inspections so that the three inspectors can go out together. I will leave it to Fire as to whether they want to see the underground utilities but we will be sending both Engineering and Building so the inspections have to be batched. Do not call Al Martinoni to schedule those; his Director is Craig Scott (copied on this email) and Craig will direct the inspectors. Keri will, as she said, coordinate everyone with the single phone call.

I want to be clear that the project has essentially a STOP WORK notice on the repairs; you should not move forward on any of them until you pull permits. That includes, uncovering the ones that have already been completed.

So, I think moving forward, you need to: 1) Pull the repair permits; 2) batch the work and plan on joint inspections to occur either Monday/Wednesday mornings or Thursday afternoons.

We are closed tomorrow but we can make ourselves available in the morning for you to pull permits if necessary but I'm assuming that won't be practical since there will not be inspections available until Monday or after. However, if that helps you, let us know. We will work with you as best we can to expedite the inspections but they will be joint.

As for new construction, call Keri when you are ready to set the meters and she will coordinate an Engineering inspector as directed by Craig Scott. I doubt Craig would want that to happen at the end since they need to see the uncovered trench. However, I will let Craig respond.

I hope all of that is clear and helpful, but let us know if you have additional questions.

Vicki Parker
Community Development Director
City of Cotati
707-665-3637
www.ci.cotati.ca.us

From: Keri Pajon
Sent: Thursday, September 13, 2018 3:40 PM
To: Vicki Parker; Craig Scott
Subject: FW: 13 homes Village Walk

Please see below email from Brian Garrison, Village Walk.

City Hall hours are: Mon – Thurs 7:30-5:30 (closed 12-1 for lunch)

Keri L. Pajon

Administrative Assistant/
Building Permt Tech
201 W. Sierra Avenue
Cotati, CA 94931
(707) 665-3636

CITY OF COTATI

From: Brian Garrison [mailto:bgarrison@synergygroup.net]
Sent: Thursday, September 13, 2018 3:33 PM
To: Keri Pajon
Cc: Lee Yang
Subject: RE: 13 homes Village Walk

Keri,

A couple of questions:

Typically fire inspections of the water lines is at final not during the tie in to home so I would suggest that we call for an inspection from fire at the end of the process and not during so he can see several as we cannot leave ditches open while waiting for inspections from 3 departments and Fire has repeatedly stated they will not come out for one lone house.

I would recommend building inspect at the time the ditches are open as they normally would during course of construction.

Al has said he will come by as needed but if building inspects for leaks and correct tie in, and normally water department only inspects at placing of meters would it be feasible for Al to inspect at the end as well?

I am trying to ease some of inspections as we are completing 1 service per day to help alleviate the impact on the occupied homes we are working on. Let me know if this is acceptable. Kim Buchanan is out for the end of this week and all of next. If you let me know the cost per house and the inspection process we will take care of your requests.

Thank you,

SYNERGY GROUP
by Christopherson
DEVELOPMENT • REAL ESTATE

Brian Garrison
Director of Outside Operations

(707) 695-4579
bgarrison@SynergyGroup.net
www.synergygroup.net

From: Keri Pajon <KPajon@cotaticity.org>
Date: September 13, 2018 at 2:53:07 PM PDT
To: Lee Yang <lyang@synergygroup.net>
Subject: 13 homes

<image001.gif>
Lee,

I met with Vicki, Craig and Eric. We will need to have you pull a permit on each of the 13 units as a "repair" to the unit. For inspections, we will need bldg., fire and PW to inspect at the same time. I will coordinate for you once you call me for an inspection. The units that had repairs done already will need to be uncovered so that the inspection can be done. Please discontinue any repairs until the permits are issued.

Please contact me with any questions.

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Keri L. Pajon
Administrative Assistant/
Building Permt Tech
201 W. Sierra Avenue
Cotati, CA 94931
(707) 665-3636

<image003.jpg>

Under the Public Records Act (California Government Code §6250-6270), e-mail messages of local agencies are public records which are subject to disclosure to the public or may be subpoenaed.

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Keri Pajon

From: Lee Yang <lyang@synergygroup.net>
Sent: Wednesday, September 12, 2018 8:30 PM
To: Keri Pajon
Subject: Re: The 14 units you spoke with Craig about

10 4!! thx keri for helping out in this and guiding the situation in the right path. thank you for your patience with me in all this.

Sent from my iPhone

On Sep 12, 2018, at 4:59 PM, Keri Pajon <KPajon@cotaticity.org> wrote:

> <image001.gif>
> Hi Lee,
>
> Craig and I spoke about the 14 homes being retrofitted. It is important that each job have a plumbing permit and that Al and Eric are able to inspect the work. After you meet tomorrow, please contact me if you have any questions.
>
> *City Hall hours are: Mon – Thurs 7:30-5:30 (closed 12-1 for lunch)*
>
> ***Keri L. Pajon***
> *Administrative Assistant/*
> *Building Permt Tech*
> *201 W. Sierra Avenue*
> *Cotati, CA 94931*
> *(707) 665-3636*
>
> <image004.jpg>

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Keri Pajon

From: Lee Yang <lyang@synergygroup.net>
Sent: Thursday, September 13, 2018 1:21 PM
To: Keri Pajon
Subject: Re: the 14 homes we have discussed

1,2,3,4,5,35,37,38,22,23,24,25,26. i wasnt counting rite. its 13 lots

Sent from my iPhone

On Sep 13, 2018, at 1:17 PM, Keri Pajon <KPajon@cotaticity.org> wrote:

> <image001.gif>
> Lee,
>
> Could you email me the addresses of the 14 homes we are talking about for the issue? I want to pull their files and review the permits.
>
> *City Hall hours are: Mon – Thurs 7:30-5:30 (closed 12-1 for lunch)*
>
> ***Keri L. Pajon***
> *Administrative Assistant/*
> *Building Permt Tech*
> *201 W. Sierra Avenue*
> *Cotati, CA 94931*
> *(707) 665-3636*
>
> <image004.jpg>

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Keri Pajon

From: Lee Yang <lyang@synergygroup.net>
Sent: Thursday, September 13, 2018 3:13 PM
To: Keri Pajon
Subject: Re: 13 homes

10 4!

Sent from my iPhone

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> <image001.gif>
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>
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>
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Keri Pajon

From: Brian Garrison <bgarrison@synergygroup.net>
Sent: Thursday, September 13, 2018 3:33 PM
To: Keri Pajon
Cc: Lee Yang
Subject: RE: 13 homes Village Walk

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Thank you,

SYNERGY GROUP
by Christopherson
DEVELOPMENT • REAL ESTATE

Brian Garrison
Director of Outside Operations
(707) 695-4579
bgarrison@SynergyGroup.net
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Keri Pajon

From: Brian Garrison <bgarrison@synergygroup.net>
Sent: Thursday, September 13, 2018 3:55 PM
To: Keri Pajon
Cc: Lee Yang
Subject: RE: 13 homes Village Walk

Keri,

Please send me the city standard for the water meter installation when you have a moment.

Thank you,

SYNERGY GROUP
by Christopherson
DEVELOPMENT • REAL ESTATE

Brian Garrison
Director of Outside Operations
(707) 695-4579
bgarrison@SynergyGroup.net
www.synergygroup.net

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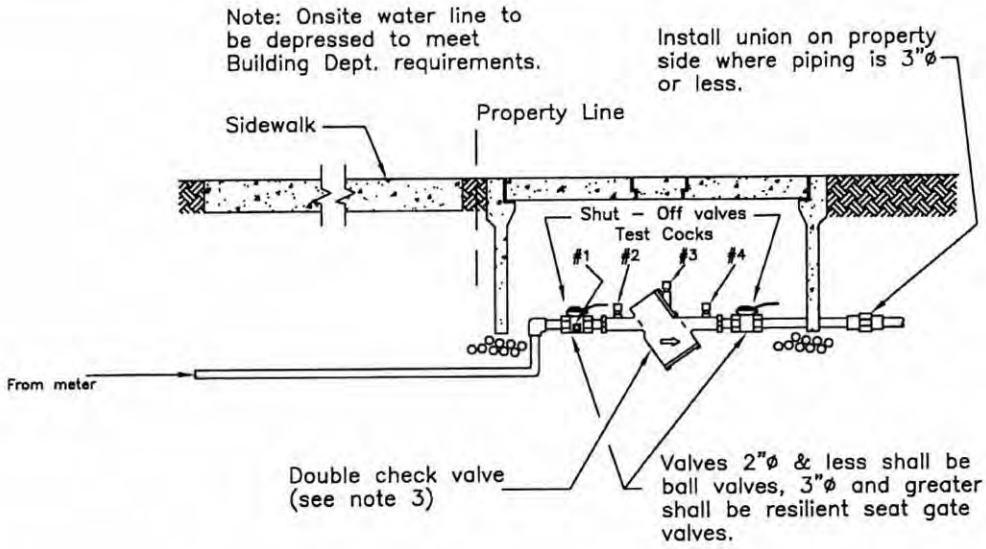
Keri Pajon

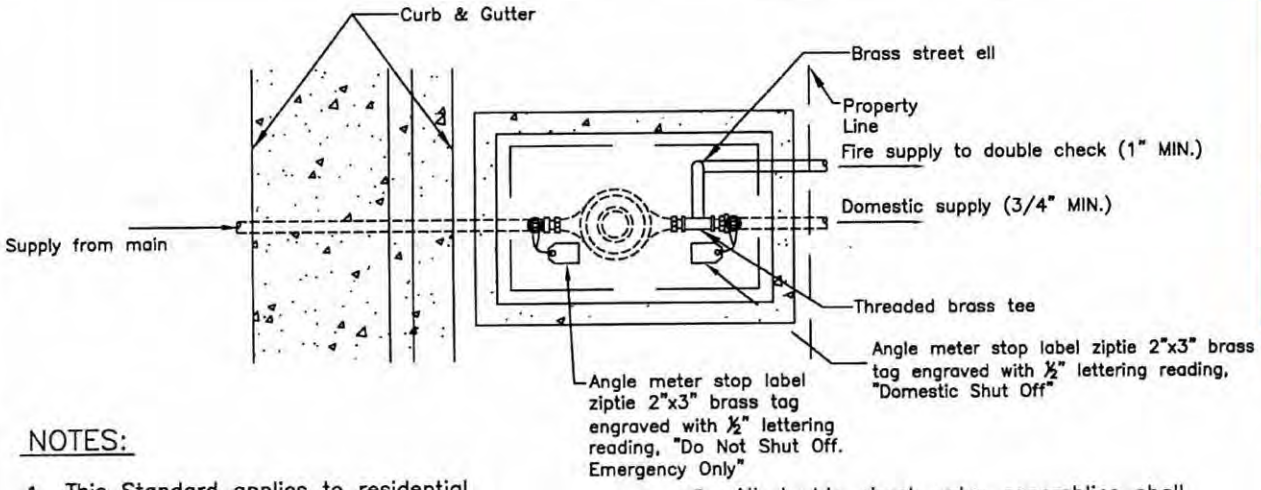
From: Craig Scott
Sent: Thursday, September 13, 2018 4:12 PM
To: Brian Garrison (bgarrison@synergygroup.net)
Cc: Keri Pajon
Subject: City Water Meter Standard
Attachments: doc00240520180913161226.pdf; doc00240620180913161255.pdf

Brian –
Attached are the water meter standards.
Craig

Craig A. Scott
Public Works Director/City Engineer
City of Cotati
707 665-3620

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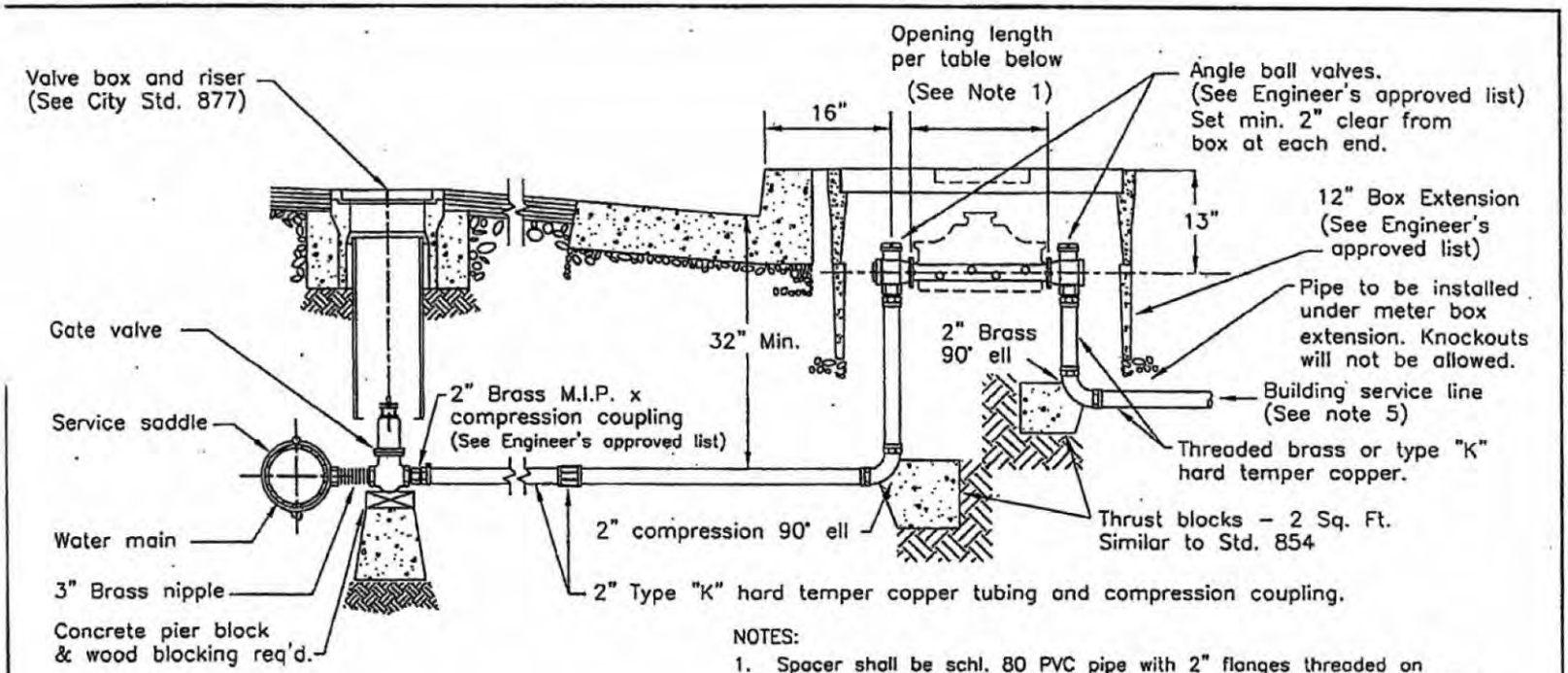




NOTES:

1. This Standard applies to residential connections with auxiliary water supplies onsite or where residential fire sprinkler systems are installed. Where residential fire sprinkler systems are designed to circulate water with the domestic systems, no backflow device is required.
2. Double check valve assemblies shall be installed adjacent to and on the property side of sidewalk where applicable. Where no sidewalk exists, the double check valve assemblies shall be installed as close as possible to the water meter location. Any conflicts shall be resolved by the Public Works Dept.
3. Approved double check valves shall be as shown on "List Of Approved Back–flow Prevention Devices" (latest revision) by the University of Southern California Foundation For Cross–Connection Control & Hydraulic Research.
4. Piping, valves, nipples, etc. shall be threaded brass or type "K" hard–temper copper for 2"ø or less, & shall be flanged ductile iron for 3"ø or greater. PVC pipe is not acceptable.
5. All double check valve assemblies shall be provided with a minimum of four (4) test cocks.
6. See Engineer's Approved List for approved vaults and covers. The vaults must be centered with min. 3" clear on all sides of meter and backflow assemblies.
7. The piping from the meter to the double check valve assembly and the double check valve assembly itself must be the same size as the meter unless otherwise approved by the Public Works Dept.
8. See STD 863 for installation at service and meter.
9. Backflow assemblies will be tested and certified after installation.

CITY OF COTATI		
BELOW GROUND DOUBLE–CHECK VALVE BACKFLOW DEVICE		
SCALE:	DATE: 6/1/13	
DWN: CHK:	APPROVED	FILE NO. STD.– 875



SPACER BAR ASSEMBLY TABLE

METER SIZE	Opening length	SPACER BAR (See note 1)
1 1/2"	13 1/4"	1 1/2"ø x 13" w/reducing adapter
2"	17 1/4"	2"ø x 17"

APPROVED METER BOXES AND COVERS

(See Engineer's approved list)

APPROVED TAPPING SERVICE SADDLES

(See Engineer's approved list)

NOTES:

1. Spacer shall be schl. 80 PVC pipe with 2" flanges threaded on both ends. Drill 1/2"ø holes @ 2" O.C. through spacer after testing. Spacer bar assembly length is to outside of flanges. Opening between valve flanges shall be 1/4" longer than spacer bar assembly to accommodate gaskets. City forces will remove spacer bar assembly and install meter.
2. Meter box must be set so that cover is flush with finished surface.
3. If more than one length of tubing is required, compression coupling shall be used. No compression fittings allowed under curb and gutter. (See Engineer's approved list for parts)
4. Prior to meter set, address shall be clearly marked on top of meter box with permanent marker.
5. At a minimum, extend building service line to 12" beyond back of meter box and cap. Where sidewalk is being installed by the public improvements contractor, extend building service line to 12" beyond back of sidewalk and cap. If permanent meter set is requested prior to completion of property side plumbing, a minimum of 10' of the building service line must be installed with a hose bib on a riser above finished grade.

CITY OF COTATI

2" WATER SERVICE
FOR 2" OR 1-1/2" METER

SCALE:	APPROVED
NONE	Tom Butler
DATE: 9/12/07	
FILE NO. STD.-865	

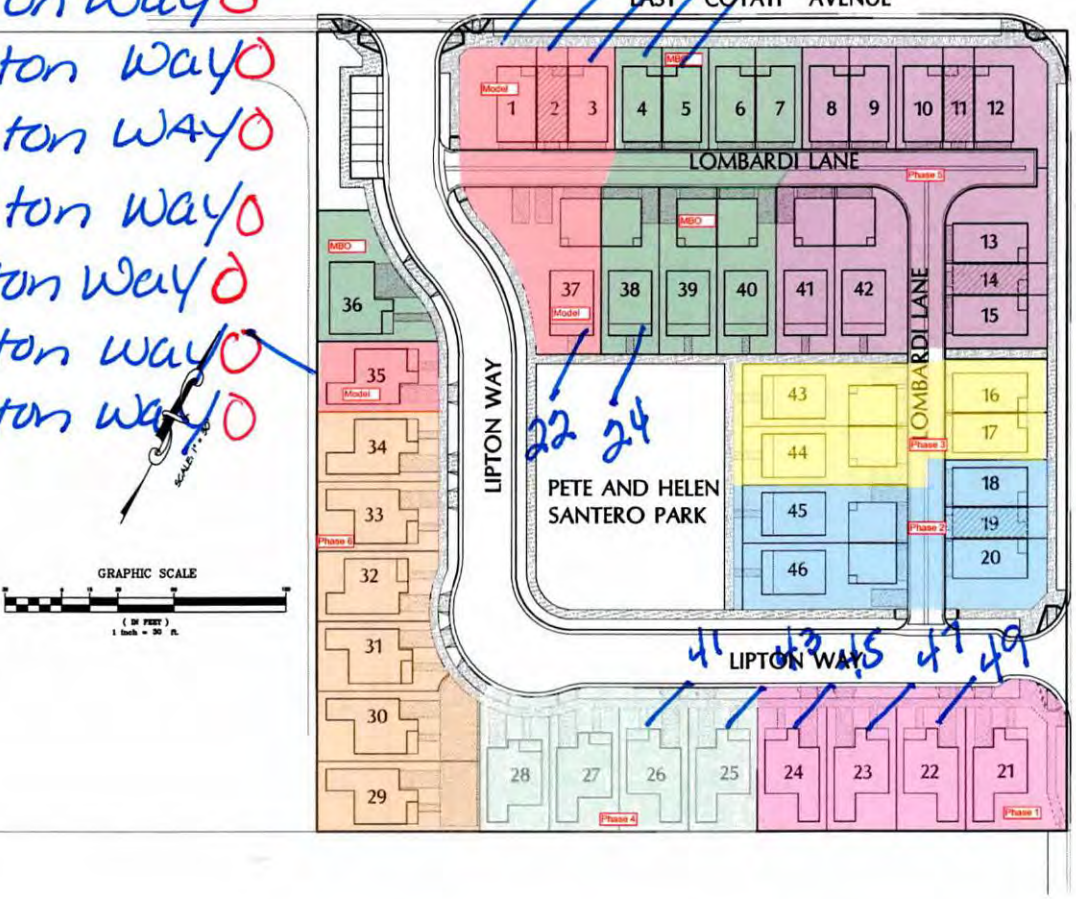
Fire Approval on permit

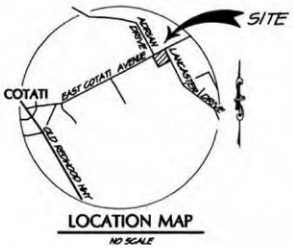
#160029
160301 682 E. COTATI AVE ✓
160311 684 E. COTATI AVE. ✓
160321 686 E. COTATI AVE. ✓
160331 688 E. COTATI AVE ✓
160341 690 E. COTATI AVE ✓
160401 22 LIPTON WAY ✓
160811 24 LIPTON WAY ✓
150231 41 LIPTON WAY ✓
160371 43 LIPTON WAY ✓
160451 45 LIPTON WAY ✓
160331 47 LIPTON WAY ✓
160341 49 LIPTON WAY ✓

VILLAGE WALK SUBDIVISION

690 EAST COTATI AVENUE
COTATI CALIFORNIA

Construction Phasing





Sales Office = Lot 38
Models = Lot 1-3, 35, & 37
Phase 1 = Lots 21-24
Phase 2 = Lots 18-20 & 45-46
Phase 3 = Lots 16-17 & 43-44
Phase 4 = Lots 25-28
Phase 5 = Lots 8-12, 13-15, & 41-42
Phase 6 = Lots 29-34
MBO = Lots 4-7, 38-40, & 36

UNITS DESIGNATED FOR VERY LOW INCOME HOUSEHOLDS

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.

RIECHERS SPENCE
ASSOCIATES
1341 Third Street
Napa, California 94559
T 707.252.3351
F 707.252.4466

VILLAGE WALK SUBDIVISION PA 08/04
SITE PLAN
COTATI CALIFORNIA

DATE: DEC 2005
SCALE: 1" = 30'
DESIGN: JCP
CADFILE: sitepln
JOB NO. 2050035.0
SHEET NO. 1
OF 1 SHEETS

Rancho Adobe Fire Protection District

11000 Main Street
P. O. Box 1029
Penngrove, California 94951

Telephone: (707) 795-6011
Fax: (707) 795-5177
www.rancho-adobe-fire.org

July 27, 2016

To: Ron Scoggins
Re: Village Walk

Sprinkler Plan Comments

Ron, Automatic Fire Sprinkler Plan sets 4 and 5 are considered "Approved" with the following changes that we discussed,

- 1.5" Double check valve with handles is field verified by Fire District Personnel and is located at the Street/Sidewalk after the meter.
- Installation of a City approved 1.5" water meter

Automatic Fire Sprinkler plan set 3 is to be considered "Approved" with the following changes that we discussed,

- 1.5" Double check valve with handles is field verified by Fire District Personnel and is located at the Street/Sidewalk after the meter.
- Installation of a City approved 1.5" water meter
- Resubmittal of the flow calculations using .75" as shown on the plans. (Calculations were received, waiting on verification)

Automatic Fire Sprinkler Plan sets 1 and 2 are to be considered "Approved" with the following changes that we discussed,

- 1.5" Double check valve with handles is field verified by Fire District Personnel and is located at the Street/Sidewalk after the meter.
- Installation of a City approved 1.5" water meter
- Resubmittal of the flow calculations using the friction loss of the actual 1.5" meter. (Calculations were received, waiting on verification).

Once I receive verification of the resubmitted flow calculations. I will make contact with you and Synergy to arrange for pick-up and payment of the plan check fees.



Thanks,

Andy Taylor
Fire Marshal

C: City of Cotati, Synergy Construction



PO BOX 984
CASTLE ROCK, CO 80104
TEL: (707) 484-5711

1

SUBMITTAL DATA

VILLAGE WALK SUBDIVSION
PLANS 1 AND 1 REVERSE
COTATI, CA

City

APPROVED
WITH CHANGES
DATE 7/27/16 BY
RANCHO ADOBE FIRE PROTECTION DISTRICT

TABLE OF CONTENTS

1. **Sprinkler Heads Cut Sheet**
2. **Backflow Preventer Cut Sheet**
3. **Flow Switch and Bell Cut Sheet**
4. **Water Flow Data**
5. **Hydraulic Calculations**

1

SPRINKLER HEAD CUT SHEETS

RAPID RESPONSE Series LFII Residential 4.9 K-factor Concealed Pendent Sprinkler Flat Plate, Wet Pipe and Dry Pipe Systems

General Description

TYCO RAPID RESPONSE Series LFII Residential 4.9K Concealed Pendent Sprinklers (TY3596) are decorative, fast response, fusible solder sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels.

The cover plate assembly conceals the sprinkler operating components above the ceiling. The flat profile of the cover plate provides the optimum aesthetically appealing sprinkler design. In addition, the concealed design of the Series LFII Residential Concealed Pendent Sprinklers (TY3596) provides 1/2 inch (12,7 mm) vertical adjustment. This adjustment provides a measure of flexibility when cutting fixed sprinkler drops.

The Series LFII Residential Concealed Sprinklers are intended for use in the following scenarios:

- wet and dry pipe residential sprinkler systems for one- and two-family dwellings and mobile homes per NFPA 13D
- wet and dry pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R
- wet and dry pipe sprinkler systems for the residential portions of any occupancy per NFPA 13

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) has been designed with heat sensitivity and water distribution characteristics proven to help in the control of residential fires and to improve the chance for occupants to escape or be evacuated.

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) are shipped with a Disposable Protective Cap. The Protective Cap is temporarily removed for installation, and then it can be replaced to help protect the sprinkler while the ceiling is being installed or finished. The tip of the Protective Cap can also be used to mark the center of the ceiling hole into plaster board, ceiling tiles, etc. by gently pushing the ceiling product against the Protective Cap. When the ceiling installation is complete the Protective Cap is removed and the Cover Plate Assembly installed.

Dry Pipe System Application

The Series LFII Residential Concealed Pendent Sprinklers offers a laboratory approved option for designing dry pipe residential sprinkler systems, whereas, most residential sprinklers are laboratory approved for wet systems only.

Through extensive testing, it has been determined that the number of design sprinklers (hydraulic design area) for the Series LFII Residential Concealed Pendent Sprinklers (TY3596) need not be increased over the number of design sprinklers (hydraulic design area) as specified for wet pipe sprinkler systems, as is accustomed for density/area sprinkler systems designed per NFPA 13.

Consequently, the Series LFII Residential Concealed Pendent Sprinklers offer the features of non-water filled pipe in addition to not having to increase the number of design sprinklers (hydraulic design area) for systems designed to NFPA 13, 13D, or 13R.



NOTICE

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association (NFPA), in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Sprinkler Identification Number (SIN)

TY3596

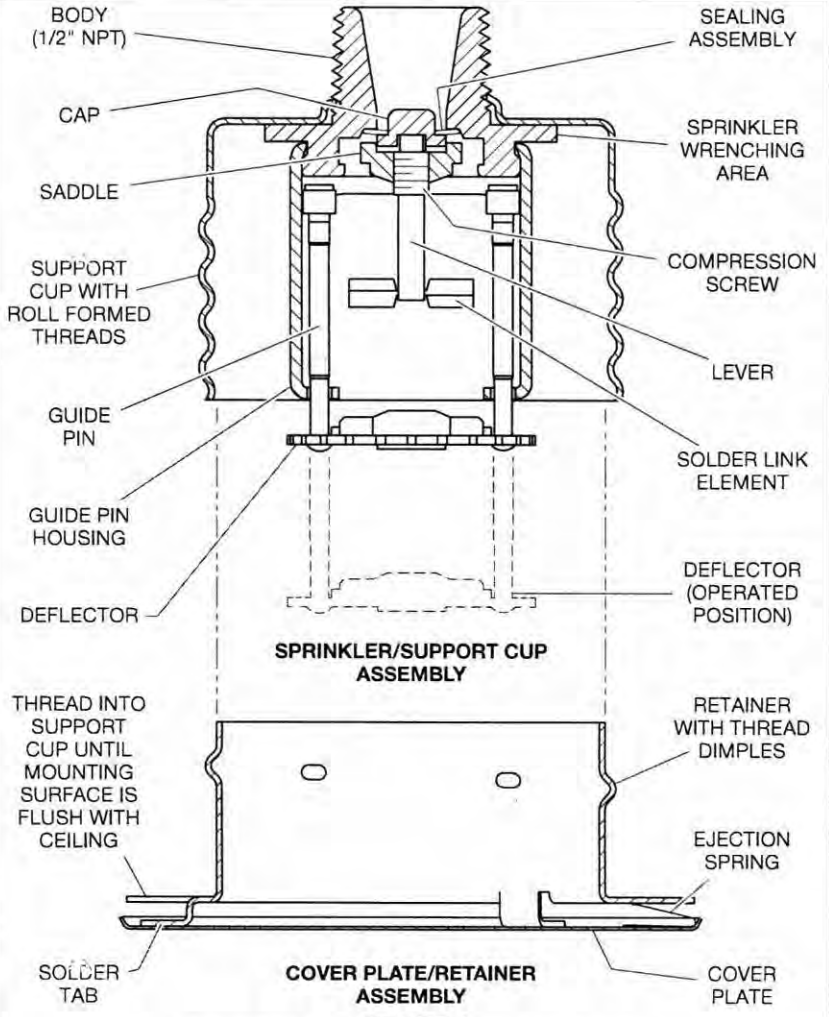


FIGURE 1
RAPID RESPONSE SERIES LFII RESIDENTIAL CONCEALED PENDENT SPRINKLER (TY3596)

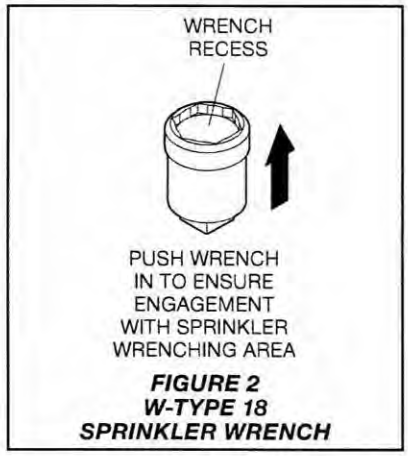


FIGURE 2
W-TYPE 18 SPRINKLER WRENCH

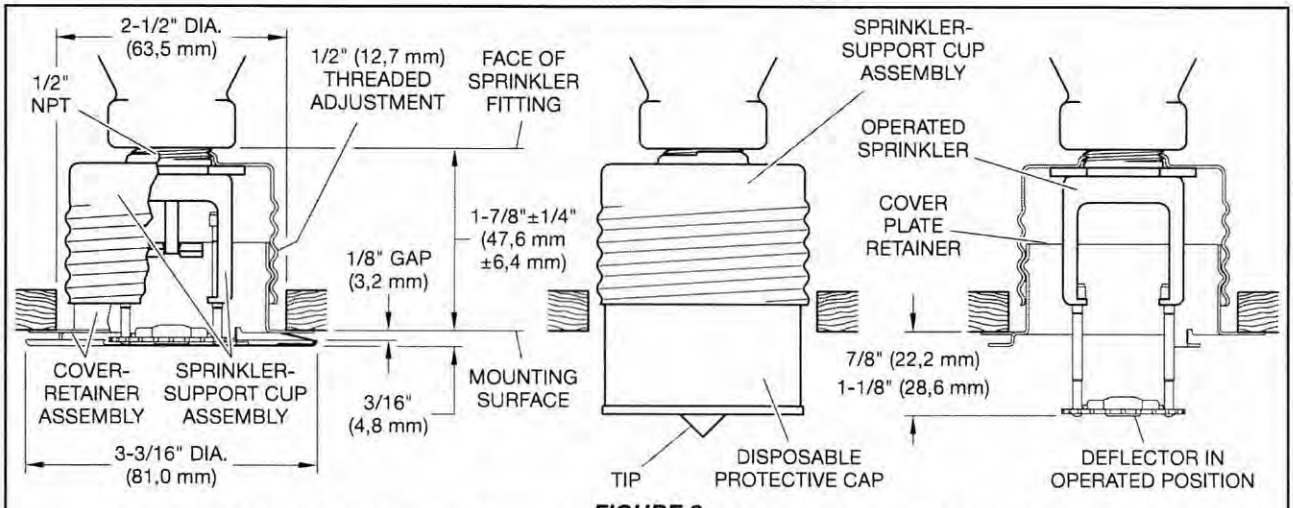


FIGURE 3
RAPID RESPONSE SERIES LFII RESIDENTIAL CONCEALED PENDENT SPRINKLER (TY3596)
INSTALLATION DIMENSIONS/PROTECTIVE CAP/ACTIVATED DEFLECTOR

Technical Data

Approvals
UL and C-UL Listed
NYC Approved under MEA 44-03-E-2NSF
Certified to NSF/ANSI 61

The TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers are only Listed with the Series LFII Concealed Cover Plates having a factory-applied finish.

Cover Plates can be ordered by following the instructions in the Ordering Procedure section.

Maximum Working Pressure
175 psi (12,1 bar)

Discharge Coefficient
K=4.9 gpm/psi$^{1/2}$ (70,6 lpm/bar$^{1/2}$)

Temperature Rating
160°F (71°C) Sprinkler with
139°F (59°C) Cover Plate

Vertical Adjustment
1/2 inch (12,7 mm)

Finishes
Refer to Ordering Procedure section.

Physical Characteristics

Body	Brass
Cap	Bronze
Saddle	Brass
Sealing Assembly	Beryllium Nickel w/TEFLON
Soldered Link Halves	Nickel
Lever	Bronze
Compression Screw	Brass
Deflector	Copper or Brass
Guide Pin Housing	Bronze
Guide Pins	Stainless Steel or Bronze
Support Cup	Steel
Cover Plate	Copper
Retainer	Brass
Cover Plate Ejection Spring	Stainless Steel

Operation

When exposed to heat from a fire, the Cover Plate, which is normally soldered to the Support Cup at three points, falls away to expose the sprinkler assembly. At this point the Deflector supported by the Arms drops down to its operated position. The fusible link of the sprinkler assembly is comprised of two link halves that are soldered together with a thin layer of solder. When the rated temperature is reached, the solder melts and the two link halves separate allowing the sprinkler to activate and flow water.

Design Criteria

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) are UL and C-UL Listed for installation in accordance with this section.

Note: *When conditions exist that are outside the scope of the provided criteria, refer to the Residential Sprinkler Design Guide TFP490 for the manufacturer's recommendations that may be acceptable to the authority having jurisdiction.*

System Types
Per the UL Listing, wet pipe and dry pipe systems may be utilized. Per the C-UL Listing, only wet pipe systems may be utilized.

Refer to Technical Data Sheet TFP485 about the use of residential sprinklers in residential dry pipe systems.

Ceiling Types
Smooth flat horizontal, or beamed, or sloped, in accordance with the 2013 Edition of NFPA 13D, 13R, or 13 as applicable.

Hydraulic Design (NFPA 13D and 13R)
For systems designed to NFPA 13D or NFPA 13R, the minimum required sprinkler flow rates are given in Tables A and B as a function of temperature rating and the maximum allowable coverage areas. The sprinkler flow rate is the minimum required discharge from each of the total number of "design sprinklers" as specified in NFPA 13D or NFPA 13R. The number of "design sprinklers" specified in NFPA 13D and 13R for wet pipe systems is to be applied when designing dry pipe systems.

Hydraulic Design (NFPA 13)
For systems designed to NFPA 13, the number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- the flow rates given in Tables A and B as a function of temperature rating and the maximum allowable coverage area
- a minimum discharge of 0.1 gpm/ft.^{2} over the design area comprised of the four (4) most hydraulically demanding sprinklers for actual coverage areas protected by the four (4) sprinklers

The number of design sprinklers specified in NFPA 13 for wet pipe systems is to be applied when designing dry pipe systems.

Dry Pipe System Water Delivery
When using the Series LFII Residential Concealed Pendent Sprinklers (TY3596) in dry pipe sprinkler systems, the time for water delivery must not exceed 15 seconds for the most remote operating sprinkler.

Obstruction to Water Distribution
Sprinklers are to be located in accordance with the obstruction rules of NFPA 13D, 13R, and 13 as applicable for residential sprinklers as well as with the obstruction criteria described within the Technical Data Sheet TFP490.

Operational Sensitivity
The sprinklers are to be installed relative to the ceiling mounting surface as shown in Figure 3.

Sprinkler Spacing
The minimum spacing between sprinklers is 8 feet (2,4 m). The maximum spacing between sprinklers cannot exceed the length of the coverage area (Ref. Table A or B) being hydraulically calculated (e.g., maximum 12 feet for a 12 ft. x 12 ft. coverage area, or 20 feet for a 20 ft. x 20 ft. coverage area).

The Series LFII must not be used in applications where the air pressure above the ceiling is greater than that below. Down drafts through the Support Cup could delay sprinkler operation in a fire situation.

Maximum Coverage Area [1] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	WET PIPE SYSTEM Minimum Flow and Residual Pressure [2,3]				
		Ordinary Temp. Rating 160°F (71°C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow gpm (lpm)	Pressure psi (bar)			
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings 7/8 to 1-1/8 inches Beamed Ceilings per NFPA 13D or 13R, or 13. Installed in beam 7/8 to 1-1/8 inches below bottom of beam	Concealed	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	13 (49,2)	7.0 (0,48)			
16 x 16 (4,9 x 4,9)	16 (4,9)	13 (49,2)	7.0 (0,48)			
18 x 18 (5,5 x 5,5)	18 (5,5)	17 (64,3)	12.0 (0,83)			
20 x 20 (6,1 x 6,1)	20 (6,1)	20 (75,7)	16.7 (1,15)			

Notes:
1. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
2. Requirement is based on minimum flow in gpm (lpm) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.
3. For NFPA 13 residential applications, the greater of 0.1 gpm/ft.^{2} over the design area or the flow in accordance with the criteria in this table must be used.

TABLE A
WET PIPE SYSTEM
SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT PLATE CONCEALED PENDENT SPRINKLER (TY3596)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Maximum Coverage Area [1] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	DRY PIPE SYSTEM Minimum Flow and Residual Pressure [2,3]				
		Ordinary Temp. Rating 160°F (71°C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow gpm (lpm)	Pressure psi (bar)			
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings 7/8 to 1-1/8 inches Beamed Ceilings per NFPA 13D or 13R, or 13. Installed in beam 7/8 to 1-1/8 inches below bottom of beam	Concealed	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	14 (53,0)	8.2 (0,57)			
16 x 16 (4,9 x 4,9)	16 (4,9)	15 (56,8)	9.4 (0,65)			
18 x 18 (5,5 x 5,5)	18 (5,5)	18 (68,1)	13.5 (0,93)			
20 x 20 (6,1 x 6,1)	20 (6,1)	21 (79,5)	18.4 (1,27)			

Notes:
1. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
2. Requirement is based on minimum flow in gpm (lpm) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.
3. For NFPA 13 residential applications, the greater of 0.1 gpm/ft.^{2} over the design area or the flow in accordance with the criteria in this table must be used.

TABLE B
DRY PIPE SYSTEM
RAPID RESPONSE SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT PLATE CONCEALED PENDENT (TY3596)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Installation

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be installed in accordance with this section.

General Instructions
Damage to the fusible Link Assembly during installation can be avoided by handling the sprinkler by the support cup only (i.e., do not apply pressure to the fusible Link Assembly).

A 1/2 inch NPT sprinkler joint should be obtained with a minimum to maximum torque of 7 to 14 lbs.-ft. (9,5 to 19,0 Nm). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Cover Plate / Retainer Assembly by under- or over-tightening the Sprinkler. Readjust the position of the sprinkler fitting to suit.

Step 1. The sprinkler must only be installed in the pendent position and with the centerline of the sprinkler perpendicular to the mounting surface.

Step 2. Remove the Protective Cap.

Step 3. With pipe thread sealant applied to the pipe threads, and using the W-Type 18 Wrench shown in Figure 2, install and tighten the Sprinkler / Support Cup Assembly into the fitting. The W-Type 18 Wrench will accept a 1/2 inch ratchet drive.

Step 4. Replace the Protective Cap by pushing it upwards until it bottoms out against the Support Cup. The Protective Cap helps prevent damage to the Deflector and Guide Pins during ceiling installation and/or during application of the finish coating of the ceiling. It may also be used to locate the center of the clearance hole by gently pushing the ceiling material against the center point of the Cap.

Note: *As long as the protective Cap remains in place, the system is considered to be "Out Of Service."*

Step 5. After the ceiling has been completed with the 2-1/2 inch (63 mm) diameter clearance hole and in preparation for installing the Cover Plate Assembly, remove and discard the Protective Cap, and verify that the Deflector moves up and down freely.

If the sprinkler has been damaged and the Deflector does not move up and down freely, replace the entire sprinkler assembly. Do not attempt to modify or repair a damaged sprinkler.

Step 6. Screw on the Cover Plate Assembly until its flange comes in contact with the ceiling.

Do not continue to screw on the Cover Plate Assembly such that it lifts a ceiling panel out of its normal position.

If the Cover Plate Assembly cannot be engaged with the Mounting Cup or the Cover Plate Assembly cannot be engaged sufficiently to contact the ceiling, the Sprinkler Fitting must be repositioned.

Care and Maintenance

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system which it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

Absence of a Cover Plate may delay the sprinkler operation in a fire situation.

When properly installed, there is a nominal 1/8 inch (3,2 mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 3. This air gap is necessary for proper operation of the sprinkler by allowing heat flow from a fire to pass below and above the Cover Plate to help assure appropriate release of the Cover Plate in a fire situation. If the ceiling is to be repainted after the installation of the Sprinkler, care must be exercised to ensure that the new paint does not seal off any of the air gap.

Factory painted Cover Plates must not be repainted. They should be replaced, if necessary, by factory painted units. Non-factory applied paint may adversely delay or prevent sprinkler operation in the event of a fire.

Do not pull the Cover Plate relative to the Enclosure. Separation may result.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified or over heated sprinklers must be replaced.

Care must be exercised to avoid damage before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, non-operation in the event of a fire or inadvertent operation may result.

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and part number (P/N).

Sprinkler Assemblies
Specify: Series LFII (TY3596) 4.9K Residential Concealed Pendent Sprinkler without Cover Plate Assembly, P/N 51-112-1-160

Cover Plate Assemblies
Specify: Cover Plate Assembly with (specify) finish for the Series LFII (TY3596) 4.9K Residential Concealed Pendent Sprinkler, P/N (specify):

Ivory (RAL1015)	P/N 56-202-0-135
Beige (RAL1001)	P/N 56-202-2-135
Pure White * (RAL9010)	P/N 56-202-3-135
Signal White ** (RAL9003)	P/N 56-202-4-135
Grey White (RAL9002)	P/N 56-202-5-135
Brown (RAL8028)	P/N 56-202-6-135
Black (RAL9005)	P/N 56-202-7-135
Brushed Brass	P/N 56-202-8-135
Brushed Chrome	P/N 56-202-9-135
Custom Paint	P/N 56-202-X-135

* Eastern Hemisphere sales only
** Previously known as Bright White

Note: *All Custom Cover Plates are painted using Sherwin Williams Interior Latex Paint. Contact Tyco Customer Service with any questions related to custom orders.*

Sprinkler Wrench
Specify: W-Type 18 Sprinkler Wrench, P/N 56-000-1-265

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tyco Fire Protection Products

Series TY-FRB — 2.8, 4.2, 5.6, and 8.0 K-Factor Upright, Pendent, and Recessed Pendent Sprinklers Quick Response, Standard Coverage

General Description

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described in this data sheet are quick response, standard coverage, decorative 3 mm glass bulb-type spray sprinklers designed for use in light or ordinary hazard, commercial occupancies such as banks, hotels, and shopping malls.

The recessed version of the Series TY-FRB Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. This recessed pendent sprinkler uses one of the following:

- A two-piece Style 10 (1/2 inch NPT) or Style 40 (3/4 inch NPT) Recessed Escutcheon with 1/2 inch (12,7 mm) of recessed adjustment or up to 3/4 inch (19,1 mm) of total adjustment from the flush pendent position, or a
- A two-piece Style 20 (1/2 inch NPT) or Style 30 (3/4 inch NPT) Recessed Escutcheon with 1/4 inch (6,4 mm) of recessed adjustment or up to 1/2 inch (12,7 mm) of total adjustment from the flush pendent position.

The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the fixed pipe drops to the sprinklers must be cut.

Corrosion-resistant coatings, where applicable, are utilized to extend the life of copper alloy sprinklers beyond that which would otherwise be obtained when exposed to corrosive atmospheres. Although corrosion-resistant coated sprinklers have passed the standard corrosion tests of the applicable approval agencies, the testing is not representative of all possible corrosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of these coatings for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, as a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

An intermediate level of the Series TY-FRB Pendent Sprinklers is detailed in Technical Data Sheet TFP356, and Sprinkler Guards are detailed in Technical Data Sheet TFP780.

NOTICE

The Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.





Sprinkler Identification Number (SIN)

TY1131 - Upright 2.8K, 1/2" NPT
TY1231 - Pendent 2.8K, 1/2" NPT
TY2131 - Upright 4.2K, 1/2" NPT
TY2231 - Pendent 4.2K, 1/2" NPT
TY3131 - Upright 5.6K, 1/2" NPT
TY3231 - Pendent 5.6K, 1/2" NPT
TY4131 - Upright 8.0K, 3/4" NPT
TY4231 - Pendent 8.0K, 3/4" NPT
TY4831 - Upright 8.0K, 1/2" NPT
TY4931 - Pendent 8.0K, 1/2" NPT

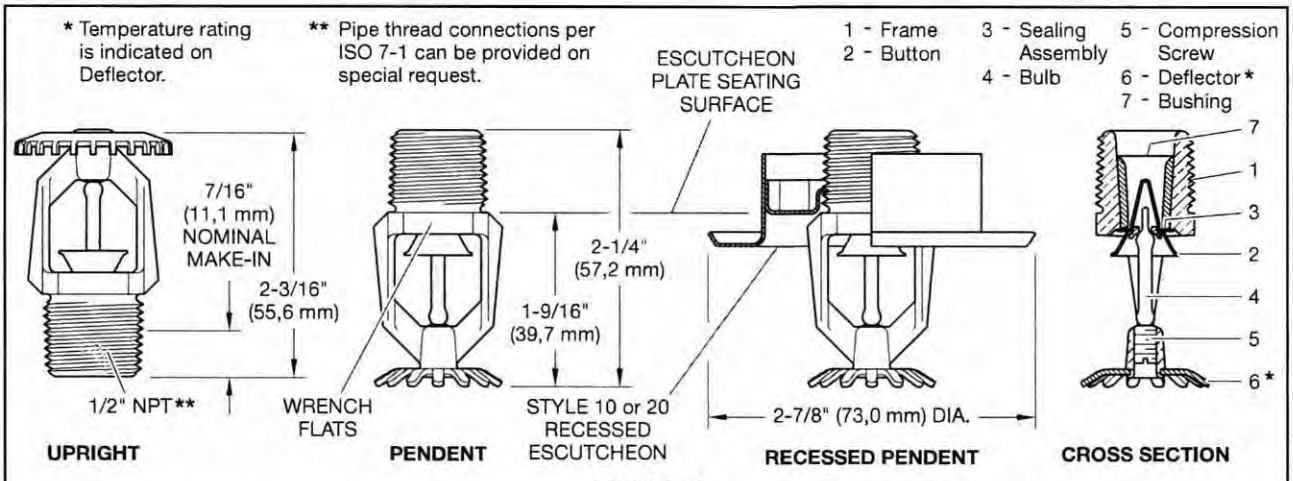


FIGURE 1
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY1131) AND PENDENT (TY1231) SPRINKLERS
2.8 K-FACTOR, 1/2 INCH NPT

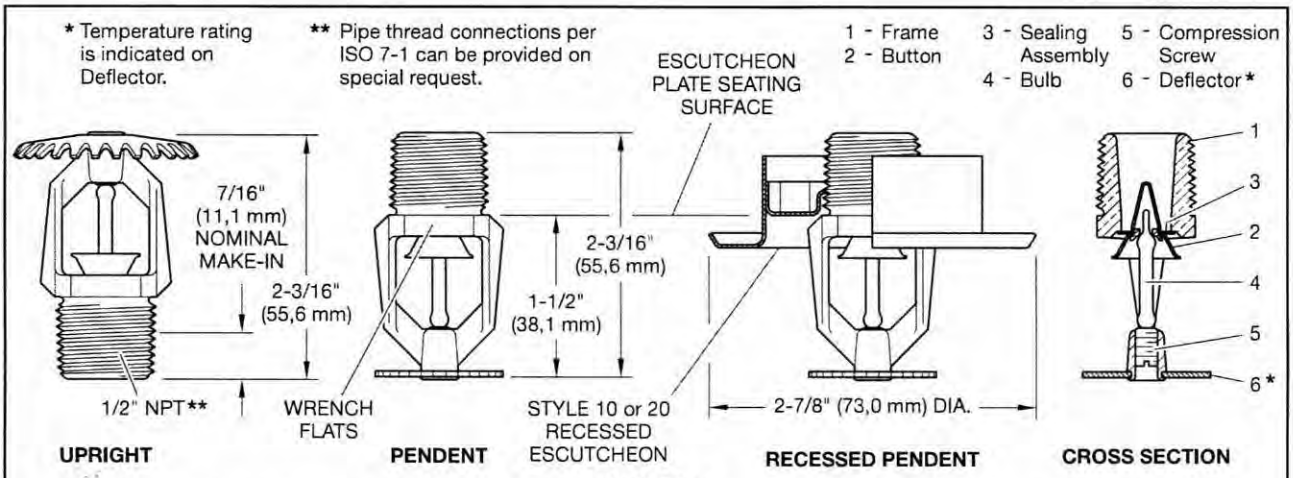


FIGURE 2
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY2131) AND PENDENT (TY2231) SPRINKLERS
4.2 K-FACTOR, 1/2 INCH NPT

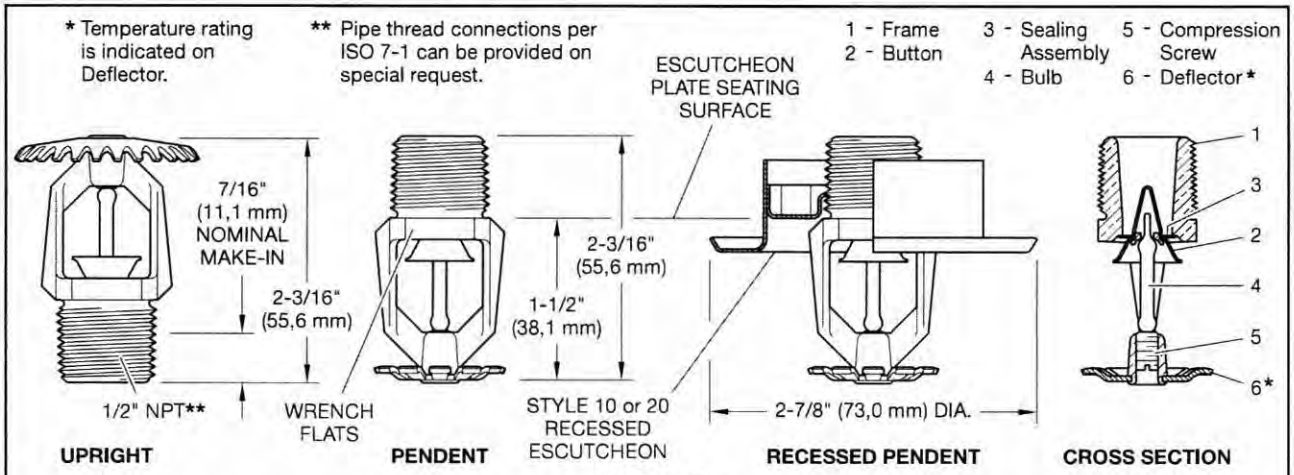


FIGURE 3
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY3131) AND PENDENT (TY3231) SPRINKLERS
5.6 K-FACTOR, 1/2 INCH NPT

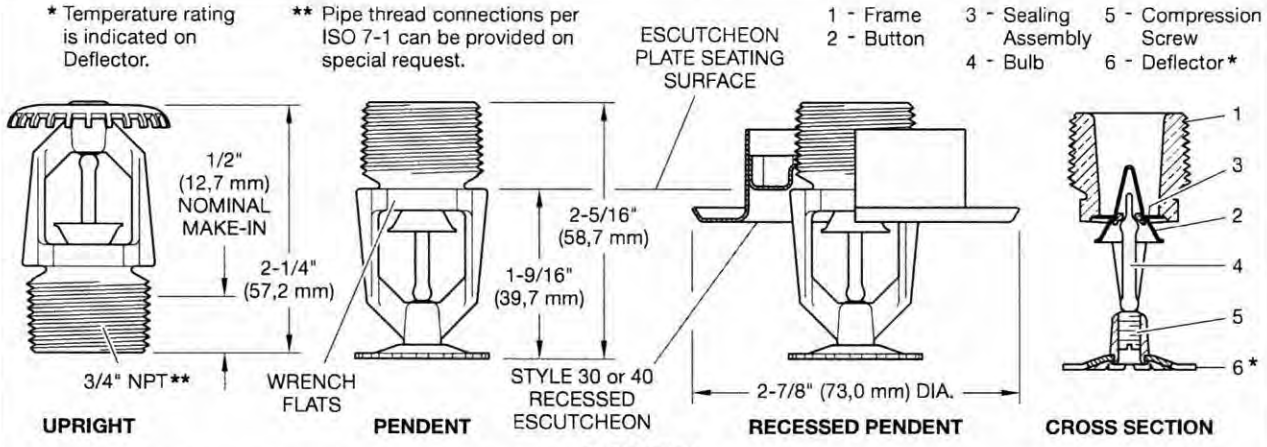


FIGURE 4
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4131) AND PENDENT (TY4231) SPRINKLERS
8.0 K-FACTOR, 3/4 INCH NPT

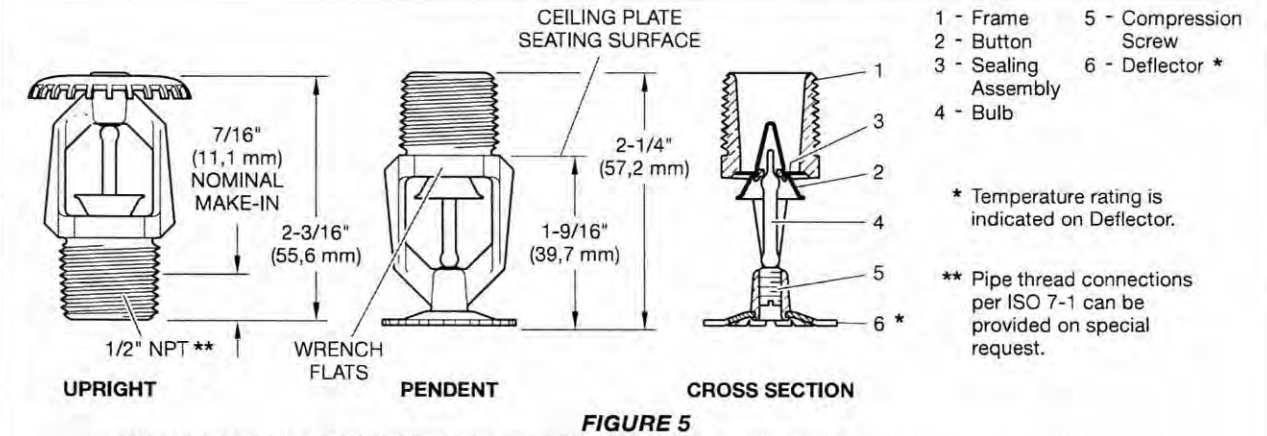


FIGURE 5
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4831) AND PENDENT (TY4931) SPRINKLERS
8.0 K-FACTOR, 1/2 INCH NPT

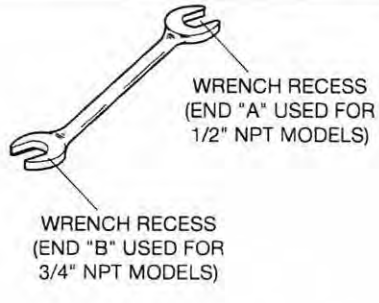


FIGURE 6
W-TYPE 6 SPRINKLER WRENCH



FIGURE 7
W-TYPE 7 RECESSED SPRINKLER WRENCH

Technical Data

Approvals
UL and C-UL Listed
FM, LPCB, and NYC Approved
Refer to Table A and B for complete approval information including corrosion-resistant status.

Maximum Working Pressure
Refer to Table C.

Discharge Coefficient
K=2.8 gpm/psi$^{1/2}$ (40,3 lpm/bar$^{1/2}$)
K=4.2 gpm/psi$^{1/2}$ (60,5 lpm/bar$^{1/2}$)
K=5.6 gpm/psi$^{1/2}$ (80,6 lpm/bar$^{1/2}$)
K=8.0 gpm/psi$^{1/2}$ (115,2 lpm/bar$^{1/2}$)

Temperature Rating
Refer to Table A and B.

Finishes
Sprinkler: Refer to Table D.

Recessed Escutcheon: Signal or Pure White, Jet Black, Chrome Plated, or Natural Brass

Physical Characteristics

Frame	Bronze
Button	Brass/Copper
Sealing Assembly	Beryllium Nickel w/TEFLON
Bulb	Glass
Compression Screw	Bronze
Deflector	Copper/Bronze
Bushing (K=2.8)	Bronze

Operation

The glass bulb contains a fluid that expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

Design Criteria

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (such as, UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of FM's Loss Prevention Data Sheets). Only the Style 10, 20, 30, or 40 Recessed Escutcheon, as applicable, is to be used for recessed pendent installations.

Installation

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers must be installed in accordance with this section.

General Instructions
Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F (57°C) and 3/32 inch (2,4 mm) for the 286°F (141°C) temperature ratings.

A leak-tight 1/2 inch NPT sprinkler joint should be obtained by applying a minimum to maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). A leak tight 3/4 inch NPT sprinkler joint should be obtained with a torque of 10 to 20 ft.-lbs. (13,4 to 26,8 Nm). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Escutcheon Plate by under- or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Series TY-FRB Upright and Pendent Sprinklers
The Series TY-FRB Pendent and Upright Sprinklers must be installed in accordance with the following instructions.

Step 1. Install Pendent sprinklers in the pendent position. Install upright sprinklers in the upright position.

Step 2. With pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Figure 6). With reference to Figures 1 through 5, apply the W-Type 6 Sprinkler Wrench to the sprinkler wrench flats.

Series TY-FRB Recessed Pendent Sprinklers
The Series TY-FRB Recessed Pendent Sprinklers must be installed in accordance with the following instructions.

Step A. After installing the Style 10, 20, 30, or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step B. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure 7). With reference to Figures 1 to 4, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step C. After ceiling installation and finishing, slide on the Style 10, 20, 30, or 40 Closure over the Series TY-FRB Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 5)			
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	POLYESTER***
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	135°F (57°C)	Orange	1, 2, 3, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY1231)* Figure 8	135°F (57°C)	Orange	1, 2, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY1231)** Figure 9	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	135°F (57°C)	Orange	1, 2		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY2231)* Figure 10	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY2231)** Figure 11	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the City of New York under MEA 354-01-E.
5. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
*** Frame and Deflector only.
N/A: Not Available

TABLE A
LABORATORY LISTINGS AND APPROVALS FOR
2.8 AND 4.2 K-FACTOR SPRINKLERS

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 8)				
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	POLYESTER***	LEAD COATED
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 3, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)* Figure 12	135°F (57°C)	Orange	1, 2, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)** Figure 13	135°F (57°C)	Orange	1, 2, 3, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)* Figure 14	135°F (57°C)	Orange	1, 2, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)** Figure 15	135°F (57°C)	Orange	1, 2, 3, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	135°F (57°C)	Orange	1, 2, 4, 5, 6			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007k/04) as Quick Response Sprinklers. However, LPCB does not rate the thermal sensitivity of recessed sprinklers.
5. Approved by the City of New York under MEA 354-01-E.
6. VdS Approved (For details, contact Tyco Fire Suppression & Building Products, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-53-428-3377.)
7. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) as Quick Response Sprinklers.
8. Where Polyester Coated and Lead-Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers. Where Lead-Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as a Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
*** Frame and Deflector only.
N/A: Not Available

TABLE B
LABORATORY LISTINGS AND APPROVALS FOR
5.6 AND 8.0 K-FACTOR SPRINKLERS

K FACTOR	TYPE	SPRINKLER FINISH			
		NATURAL BRASS	CHROME PLATED	POLYESTER	LEAD COATED
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY1231)				
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY2231)				
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	250 PSI (17,2 BAR) OR 175 PSI (12,1 BAR) (SEE NOTE 1)			
	RECESSED PENDENT (TY3231)				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)
	RECESSED PENDENT (TY4231)				N/A
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)

NOTES:
1. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories Inc. (UL); the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL); and, the Approval by the City of New York.

TABLE C
MAXIMUM WORKING PRESSURE

Care and Maintenance

The TYCO Series TY-FRB must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection systems from the proper authorities and notify all personnel who may be affected by this action.

Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, can delay sprinkler operation in a fire situation.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section.)

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Care must be exercised to avoid damage to the sprinklers -before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section).

Initial and frequent visual inspections of random samples are recommended for corrosion-resistant sprinklers to verify the integrity of the corrosion-resistant material of construction. Thereafter, annual inspections per NFPA 25 should suffice.

Inspections of corrosion-resistant sprinklers are recommended at close range, instead of from the floor level per NFPA. Inspection at close range can better determine the exact sprinkler condition and the long-term integrity of the corrosion-resistant material, which can be affected by the corrosive conditions present.

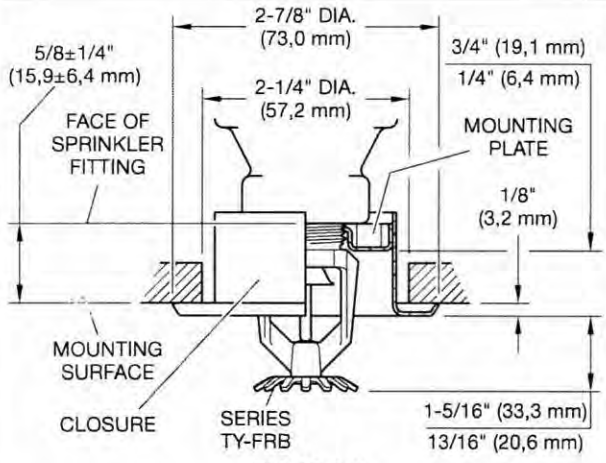


FIGURE 8
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

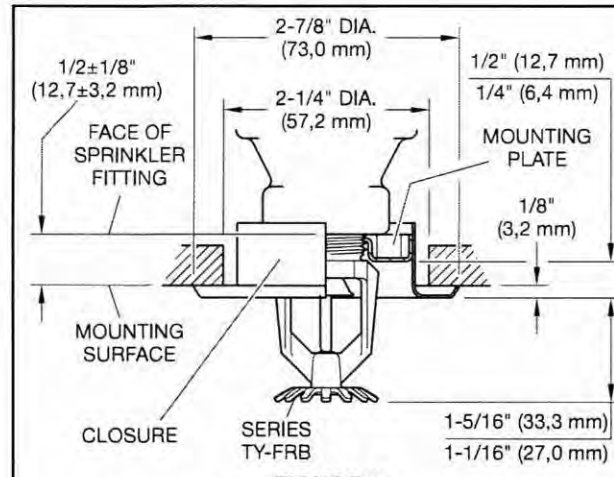


FIGURE 9
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

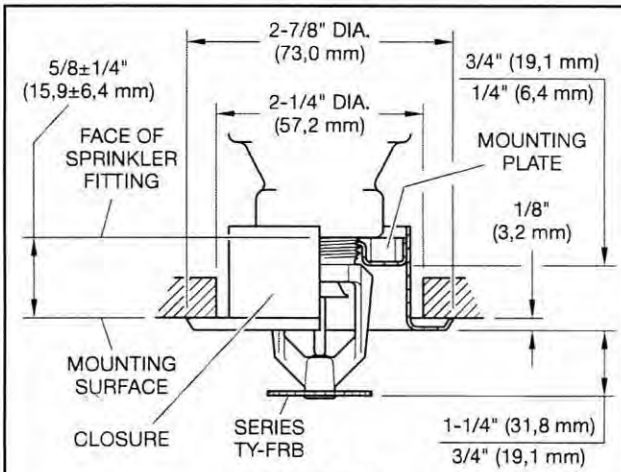


FIGURE 10
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

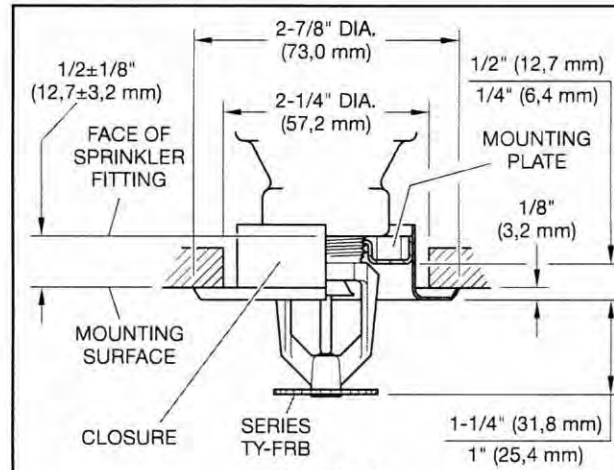


FIGURE 11
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

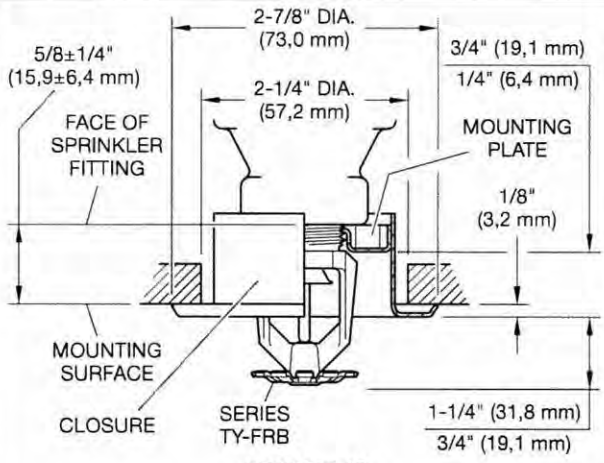


FIGURE 12
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

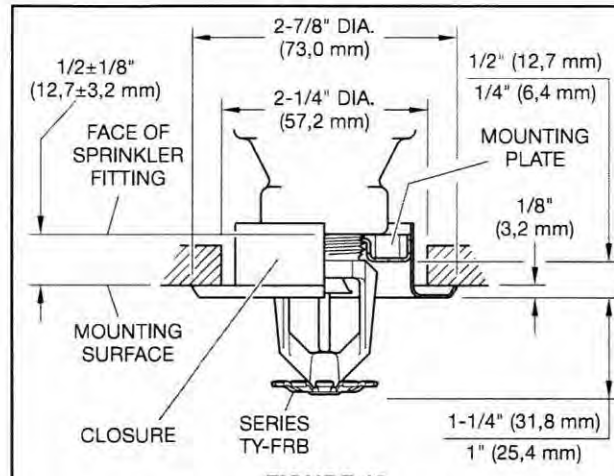


FIGURE 13
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

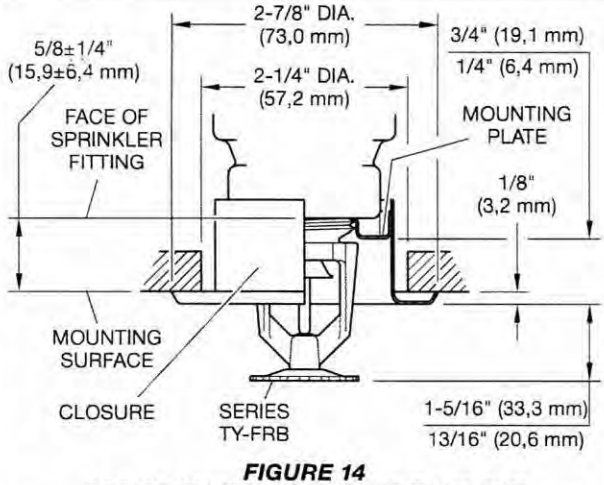


FIGURE 14
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

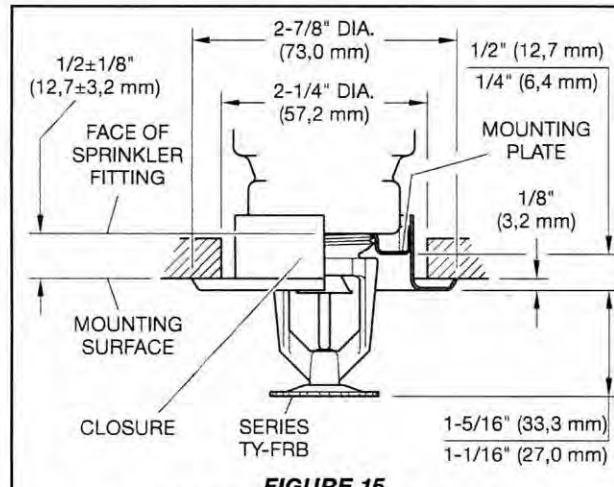


FIGURE 15
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 30 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

P/N 57 – XXX – X – XXX

		SIN
330	2.8K UPRIGHT (1/2"NPT)	TY1131
331	2.8K PENDENT (1/2"NPT)	TY1231
340	4.2K UPRIGHT (1/2"NPT)	TY2131
341	4.2K PENDENT (1/2"NPT)	TY2231
370	5.6K UPRIGHT (1/2"NPT)	TY3131
371	5.6K PENDENT (1/2"NPT)	TY3231
390	8.0K UPRIGHT (3/4"NPT)	TY4131
391	8.0K PENDENT (3/4"NPT)	TY4231
360	8.0K UPRIGHT (1/2"NPT)	TY4831*
361	8.0K PENDENT (1/2"NPT)	TY4931*

	SPRINKLER FINISH
1	NATURAL BRASS
3	PURE WHITE POLYESTER (RAL9010)[1]
4	SIGNAL WHITE POLYESTER (RAL9003)
5	JET BLACK POLYESTER (RAL9005)[2]
7	LEAD COATED
9	CHROME PLATED

	TEMPERATURE RATINGS
135	135°F (57°C)
155	155°F (68°C)
175	175°F (79°C)
200	200°F (93°C)
286	286°F (141°C)

NOTES:
1. Eastern Hemisphere sales only.
2. Available in only 2.8K, 4.2K, and 8.0K, 155°F (68°C) and 200°F (93°C); requires lead time to manufacture.

TABLE D
SERIES TY-FRB PENDENT AND UPRIGHT SPRINKLERS
PART NUMBER SELECTION

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler Assemblies with NPT Thread Connections
Specify: Series TY-FRB (Specify SIN), (specify K-factor), (specify Pendent or Upright) Sprinkler (specify) temperature rating, (specify) finish or coating, P/N (specify from Table D)

Recessed Escutcheon
Specify: Style (10, 20, 30, or 40) Recessed Escutcheon with (specify*) finish, P/N (specify*)

Sprinkler Wrench
Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001

* Refer to Technical Data Sheet TFP770

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tyco Fire Protection Products

2

2

BACKFLOW PREVENTER

CUT SHEETS

Model 950XLT

Top Access Double Check Valve Assembly

Application

Designed for installation on water lines to protect against both backsiphonage and backpressure of polluted water into the potable water supply. A test cock plug is provided to protect against fouling caused by insects, dirt and debris. Assembly shall provide protection where a potential non-health hazard exists.



Standards Compliance

(Unless otherwise noted, applies to 3/4" thru 2" Horizontal)

- ASSE® Listed 1015 (Vertical flow-up:1 1/4" thru 2")
- IAPMO® Listed
- AWWA Compliant C510
- CSA® Certified (Vertical flow-up:1 1/2" & 2")
- NYC MEA 426-89-M VOL 3
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California (950XLTU: 3/4" & 1" Horizontal)

Options

(Suffixes can be combined)

- ☐ L - less ball valves
- ☐ FT - with "Fast Test" test cocks
- ☐ U - with union ball valves
- ☐ S - with bronze "Y" type strainer

Materials

Main valve body	Cast Bronze ASTM B 584
Access covers	Cast Bronze ASTM B 584
Fasteners	Stainless Steel, 300 Series
Elastomers	Silicone (FDA approved) Buna Nitrile (FDA approved)
Polymers	Noryl™, NSF Listed
Springs	Stainless steel, 300 series
Test cock cover	Plastic
Ball valve handles	Stainless steel

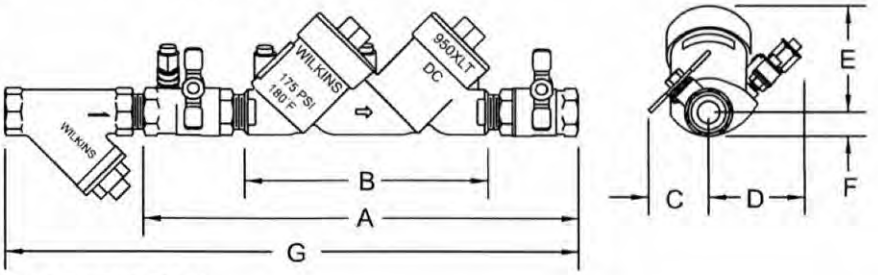
Accessories

- ☐ Repair kit (rubber only)
- ☐ Thermal expansion tank (Model XT)
- ☐ Bronze wye strainer
- ☐ QT-SET Quick Test Fitting Set

Features

Sizes: 3/4", 1", 1 1/4", 1 1/2", 2"

Maximum working water pressure	175 PSI
Maximum working water temperature	180°F
Hydrostatic test pressure	350 PSI
End connections Threaded	ANSI B1.20.1



Dimensions & Weights (do not include pkg.)

MODEL SIZE		DIMENSIONS (approximate)																WEIGHT			
		A		A UNION BALL VALVES		B LESS BALL VALVES		C		D		E		F		G		LESS BALL VALVES		WITH BALL VALVES	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg	lbs.	kg
3/4	20	13	330	14 5/16	364	8 3/4	222	2 3/8	60	2 5/16	59	3 5/16	84	3/4	19	17 5/8	448	4	1.8	6	2.7
1	25	14	356	15 3/4	400	8 3/4	222	2 1/2	64	2 5/16	59	3 5/16	84	3/4	19	19 3/4	502	8	3.6	12	5.4
1 1/4	32	19 5/8	499	21 5/8	549	13 3/4	349	4	102	3 5/8	92	4 3/8	111	1 5/16	33	24 3/4	629	16	7.3	22	10
1 1/2	40	20 5/16	516	22 5/16	567	13 3/4	349	5 3/8	137	3 5/8	92	4 3/8	111	1 5/16	33	25 15/16	659	16	7.3	22	10
2	50	21 3/8	543	23 1/4	591	13 3/4	349	5 13/16	148	3 5/8	92	4 3/8	111	1 5/16	33	28 5/16	719	17	7.7	29	13.2

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | **Zurn Industries Limited**
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 Ph. 905-405-8272, Fax 905-405-1292
www.zurn.com

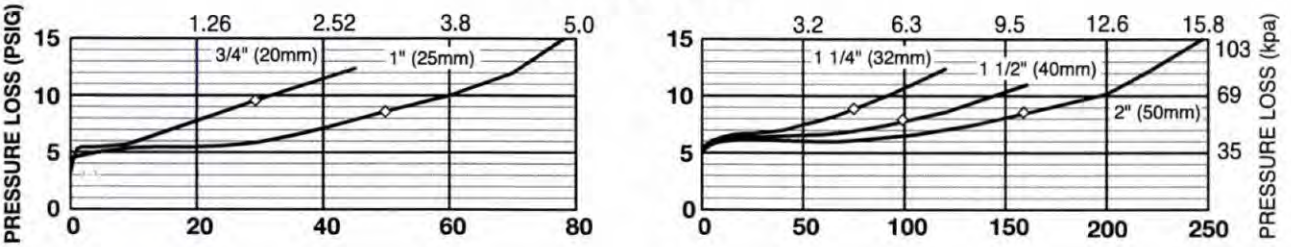
Rev. D
Date: 1/15
Document No. BF-950XLT
Product No. Model 950XLT

Flow Characteristics

◇ Rated Flow (established by approval agencies)

MODEL 950XLT 3/4", 1", 1 1/4", 1 1/2" & 2" (STANDARD & METRIC)

FLOW RATES (l/s)

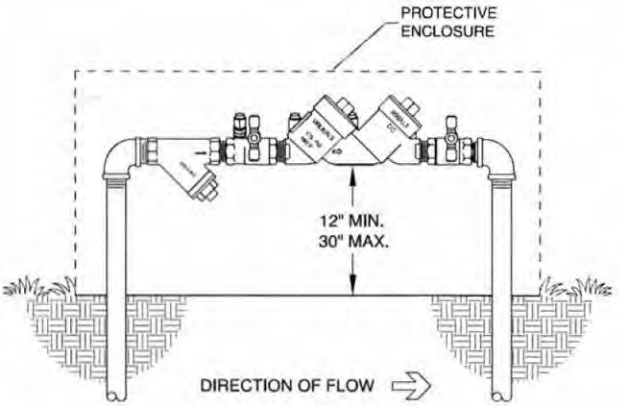


FLOW RATES (GPM)

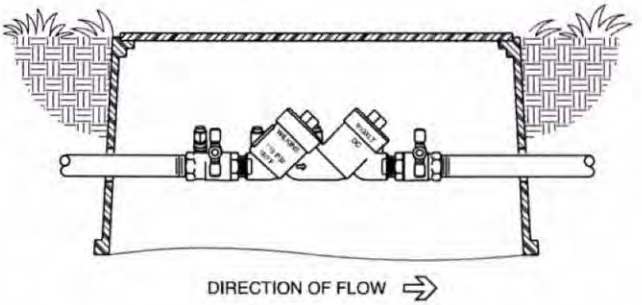
TYPICAL INSTALLATION

Local codes shall govern installation requirements. To be installed in accordance with the manufacturer's instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. If installed below grade, be certain adequate drainage is provided to prevent the device from being submerged.

Capacity thru Schedule 40 Pipe				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
1/8"	1	1	2	3
1/4"	2	2	3	5
3/8"	3	4	6	9
1/2	5	7	9	14
3/4"	8	12	17	25
1"	13	20	27	40
1 1/4"	23	35	47	70
1 1/2"	32	48	63	95
2"	52	78	105	167



OUTDOOR INSTALLATION



PIT INSTALLATION

SPECIFICATIONS

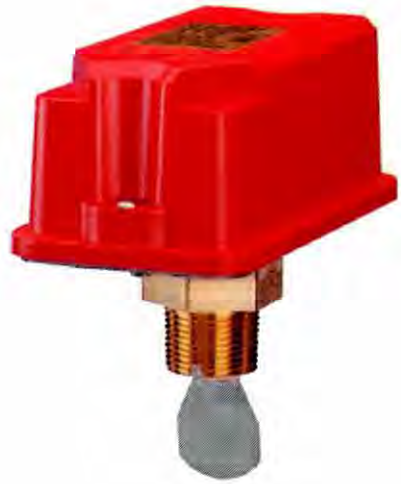
The Double Check Type Backflow Preventer shall be ASSE Listed 1015, rated to 180°F and supplied with full port ball valves. The main body and access covers shall be bronze (ASTM B 584), the seat ring and all internal polymers shall be NSF® Listed Noryl™ and the seat disc elastomers shall be SILICONE. The first and second check shall be located at a 45° angle and accessible for maintenance from the top of the device, without removing the device from the line. Each check shall have separate access covers and test cocks shall be accessible from the top of the device. Test cocks shall be protected from debris by a plug. The Double Check Type Backflow Preventer shall be a ZURN WILKINS Model 950XLT.

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
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3544 Nashua Drive, Mississauga, Ontario L4V 1L2 Ph. 905-405-8272, Fax 905-405-1292
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3

FLOW SWITCH & BELL CUT SHEETS

WFDTN Series Waterflow Detector



System Sensor WFDTN T-Tap Waterflow detectors are designed for primary signaling in residential systems and branch line signaling.

Features

- New directional cover allows installers and inspectors to easily see the direction of flow
- UL-listed models are NEMA 4 rated
- New cover provides a better seal, is lighter weight, not painted and corrosion resistant
- Sealed retard mechanism immune to dust and other contaminants
- Less exposed metal reduces shock hazard, plastic cover acts as insulator and is resistant to arcing
- Visual switch activation
- Audible switch activation (73 dBA)
- Field-replaceable timer/switch assembly
- Accommodates up to 12 AWG wire
- Switch Synchronization activates both alarm panel and local bell or horn strobe
- Tamper-resistant cover screws
- Improved water sealing
- Reduced product weight
- Wire-ready terminals
- Improved wiring with new terminal block layout
- Snap-in optional cover tamper switch

Agency Listings

c UL us LISTED
S739

FM APPROVED
30512266

The new **WFDTN Series** waterflow detectors from **System Sensor** consists of a rugged, NEMA 4-rated enclosure that is more damage resistant than previous metal designs. The waterflow detector is designed for both indoor and outdoor use, with the widest available temperature range, from 32°F to 150°F.

Both the WFDTN with incorporated timer and WFDTNRN with immediate activation fit any tee that has a 1 in. NPT branch, including: 1in., 1¼in., 1½ in. and 2in. NPT threaded ferrous and brass tees; 1in., 1¼in., 1½in. and 2in. copper sweat tees; Tyco, Spears, NIBBCO brand 1 in. CPVC tees. Twelve different clearly marked plastic paddles are available to fit different installation configurations.

UL-listed models are equipped with tamper-resistant cover screws to prevent unauthorized entry. Inside, two sets of SPDT (Form C) synchronized switches are enclosed in a durable terminal block with new layout designed to make wiring easy with wire ready terminals, COM terminals are on a different elevation, large barrier between switches and easy to read raised textured lettering all make wiring easy. An optional cover tamper switch is available, securely snaps into place, no tools required.

The WFDTN incorporates a mechanical time delay feature, which minimizes the risk of false alarm due to pressure surges or air trapped in the fire sprinkler system. The larger and easy to turn timer dial makes setting the waterflow detector easy with high contrast pad printed markings. The dial offers three tabs to help with turning, with one larger tab located on the dial position for approximately 60 seconds, a notch is also indicated on the dial to locate approximately 30 seconds making setting the detector in dimmly lit locations easy.

The WFDTN series is designed for accuracy and repeatability. The detector also offers improved performance during vibration in riser applications where detectors are exposed to a large in rush of water.

Waterflow Detector Specifications

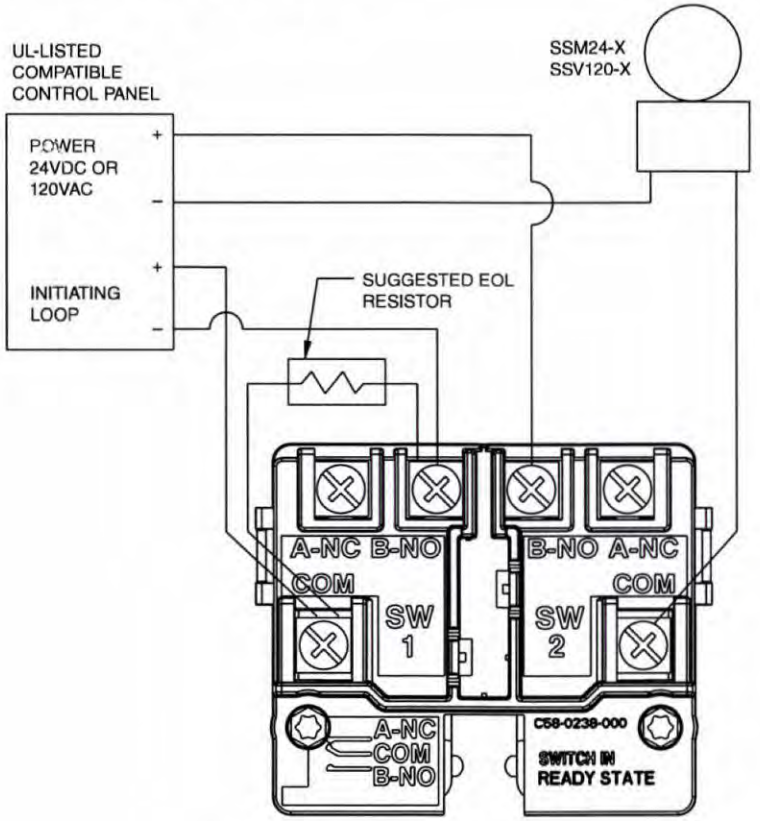
Engineering Specifications

Model shall be WFDTN or WFDTNRN as manufactured by System Sensor. T-Tap waterflow detectors shall be installed on a tee that has a 1in. NPT branch including: 1in., 1¼in., 1½in. and 2in. NPT threaded ferrous and brass tee; 1in., 1¼in., 1½in. and 2in. copper sweat tees; Tyco, Spears, NIBBCO brand 1in. CPVC tees as designed on the drawing and /or as specified herein. Detectors shall mount on any clear pipe span of the appropriate nominal size, either a vertical upflow or horizontal run at least 6" from any fittings or valves that may change water direction, flow rate, or pipe diameter or no closer than 24in. from a valve or drain. Detectors shall have a sensitivity in the range of 4 to 10 gallons per minute and a static pressure rating of 375 psi. The WFDTN detector with incorporated time delay mechanism shall respond to waterflow in the specified direction after a preset time delay that is field adjustable. The delay mechanism shall be a sealed mechanical pneumatic unit with visual and audible indication of actuation. The actuation mechanism shall include a ethylene vinyl acetate vane inserted through a hole in the pipe and connected by a mechanical linkage to the delay mechanism. Outputs shall consist of dual SPDT switches (Form C contacts). Two conduit entrances for standard fittings of commonly used electrical conduit shall be provided on the detectors. A grounding provision is provided. Unless noted, enclosures shall be NEMA 4 listed by Underwriters Laboratories Inc. All detectors shall be listed by Underwriters Laboratories Inc. for indoor or outdoor use.

Standard Specifications

Static Pressure Rating	375 PSI	**Operating Temperature Range**	32°F to 150°F (0°C to 60°C)
Maximum Surge	18 Feet Per Second (FPS)	**Enclosure Rating***	NEMA 4 – suitable for indoor/outdoor use
Triggering Threshold Bandwidth (Flow Rate)	4–10 GPM	**Cover Tamper Switch**	Standard with ULC models, optional for UL models, part no. CTS
Conduit Entrances	Two openings for ½in. conduit. NEMA 4 rated plugs	**Service Use**	Automatic Sprinkler: NFPA-13 One or Two Family Dwelling: NFPA 13D Residential Occupancies up to 4 Stories: NFPA 13R National Fire Alarm Code: NFPA-72
Contact Ratings	Two sets of SPDT (Form C) 10.0 A, ½ HP @ 125/250 VAC 2.5 A @ 6/12/24 VDC	**U.S. Patent Numbers**	5,213,205
Compatible Tee Fittings	Threaded ferrous and brass tees, copper sweat tees, CPVC tees.	**Warranty**	3 Years

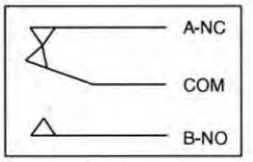
WFDTN Field Wiring Diagram



NOTE: COMMON AND B-NO CONNECTIONS WILL CLOSE WHEN VANE IS DEFLECTED, I.E., WHEN WATER IS FLOWING. DUAL SWITCHES PERMIT APPLICATIONS TO BE COMBINED ON A SINGLE DETECTOR.

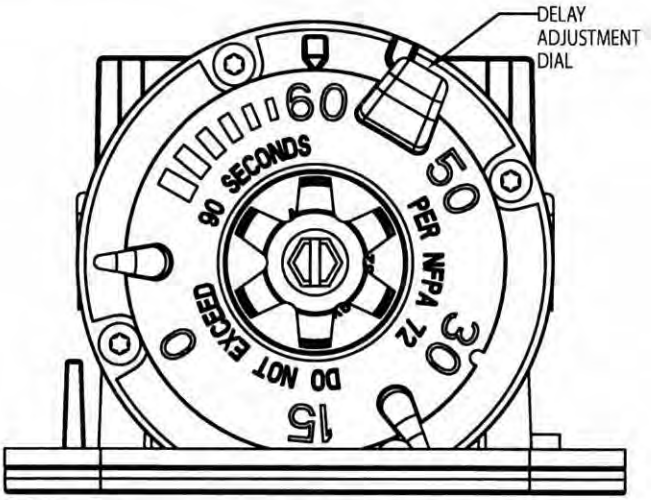
CONTACT RATINGS	
125/250 VAC	10 AMPS
24 VDC	2.5 AMPS

SCHEMATIC OF INDIVIDUAL SWITCH IN "NO WATERFLOW" CONDITION



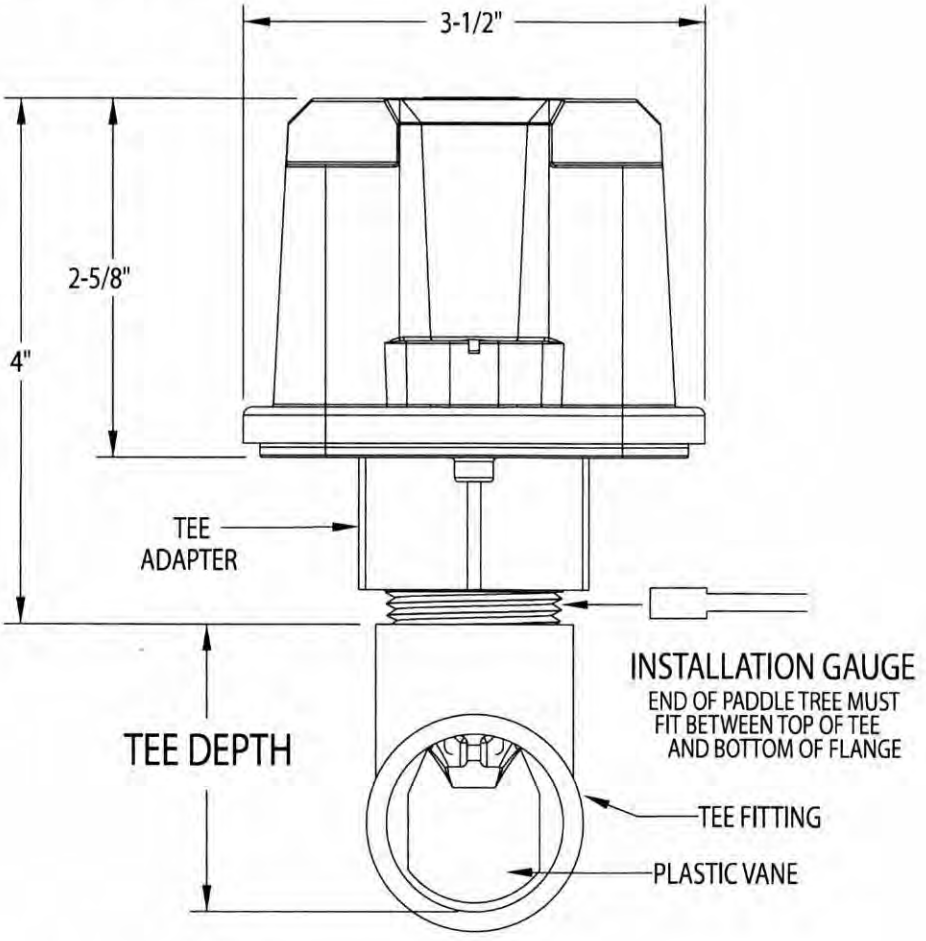
BREAK WIRE AS SHOWN FOR SUPERVISION OF CONNECTION. DO NOT ALLOW STRIPPED WIRE LEADS TO EXTEND BEYOND SWITCH HOUSING. DO NOT LOOP WIRES.

Delay Adjustment Dial



NOTE: RETARD TIME MAY EXCEED 90 SECONDS. ADJUST AND VERIFY THAT TIME DOES NOT EXCEED 90 SECONDS. NUMBER ON DIAL IS APPROXIMATE TIME DELAY IN SECONDS

Overall Dimensions, Installed



DESIGNED TO FIT WITHIN 2 X 4 STUD WALL CONSTRUCTION

Ordering Information		
UL Model	**ULC Model**	**Description**
WFDTN	WFDTNA	Waterflow Detector, Fits 1in., 1¼in., 1½in., 2in. ferrous and brass threaded tees; 1in., 1¼in., 1½in., 2in. copper sweat tees; 1in. CPVC tees.
WFDTNRN	—	Waterflow Detector without incorporated time delay mechanism, fits same tees as WFDTN
Accessories		
FS-RT	Delay mechanism and switch assembly	
CTS	Tamper-proof switch kit	
WFDW	Tamper-proof wrench for cover	

SYSTEM SENSOR

3825 Ohio Avenue • St. Charles, IL 60174
Phone: 800-SENSOR2 • Fax: 630-377-6495
www.systemsensor.com

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Product specifications subject to change without notice. Visit systemsensor.com for current product information, including the latest version of this data sheet.
WFDS43702 • 2/16

SSM/SSV Series Alarm Bells



System Sensor's SSM and SSV series alarm bells are low current, high decibel notification appliances for use in fire and burglary systems or other signaling applications.

Features

- Approved for indoor and outdoor use
- Low current draw
- High dB output
- Available in six-inch, eight-inch, and ten-inch sizes
- AC and DC models
- DC models polarized for use with supervision circuitry
- Mount directly to standard four-inch square electrical box indoors
- SSM and SSV series come pre-wired

Reliable Performance. The SSM and SSV series provide loud resonant tones. The SSM series operates on 24VDC and are motor driven, while the SSV series operates on 120VAC utilizing a vibrating mechanism.

Simplified Installation. For indoor use, the SSM and SSV series mount to a standard four-inch square electrical box. For outdoor applications, weatherproof back box, model number WBB, is used.

The SSM and SSV series come pre-wired, to reduce installation time. The SSM series incorporates a polarized electrical design for use with supervision circuitry.

Agency Listings

UL LISTED S4011 | ULC CS549 | FM APPROVED 3005255 | 7135-1653 0217 | MEA approved 331-01-E

SSM/SSV Specifications

Architectural/Engineering Specifications

Model shall be a SSM or SSV Series alarm bell. Bells shall have underdome strikers and operating mechanisms. Gongs on said bells shall be no smaller than nominal 6"/8"/10" (specify size) with an operating voltage of 24VDC or 120VAC (specify by part number). Bells shall be suitable for surface or semi-flush mounting. Outdoor surface mounted installations shall be weatherproof (using optional WBB weatherproof electrical box). Otherwise bells shall mount to a standard 4" square electrical box having a maximum projection of 2½". Bells shall be located as shown on the drawings or as determined by the Authority Having Jurisdiction. Bells shall be listed for indoor/outdoor use by Underwriters Laboratories and the California State Fire Marshal, and approved by Factory Mutual and MEA.

Physical/Operating Specifications

Operating Temperature Range	–31°F to 140°F
Operating Voltage	SSM series: 24 VDC SSV series: 120 VAC
Termination	Provided with 2 sets of leads for in/out wiring
Service Use	Fire Alarm, General Signaling, Burglar Alarm
Warranty	3 years

Electrical Specifications

Model	Gong Diameter (inches)	Nominal Voltage	Operating Voltage Limit	Maximum Current	Sound Output (dBA)
SSM24-6	6	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	82
SSM24-8	8	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	80
SSM24-10	10	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	81
SSV120-6	6	Regulated 120VAC	96 to 132VAC	53mA	85
SSV120-8	8	Regulated 120VAC	96 to 132VAC	53mA	82
SSV120-10	10	Regulated 120VAC	96 to 132VAC	53mA	82

* Sound output measured at Underwriter Laboratories, as specified in UL464

Ordering Information

UL/FM Model No.	ULC/Canadian Model No.	Description
SSM24-6	SSM24-6A	Bell, 6", 24VDC, Polarized, 82dBA
SSM24-8	SSM24-8A	Bell, 8", 24VDC, Polarized, 80dBA
SSM24-10	SSM24-10A	Bell, 10", 24VDC, Polarized, 81dBA
SSV120-6	SSV120-6A	Bell, 6", 120VAC, 85dBA
SSV120-8	SSV120-8A	Bell, 8", 120VAC, 82dBA
SSV120-10	SSV120-10A	Bell, 10", 120VAC, 82dBA
WBB		Weatherproof back box for SSM and SSV series, when installed outdoors

SYSTEM SENSOR

3825 Ohio Avenue • St. Charles, IL 60174
Phone: 800-SENSOR2 • Fax: 630-377-6495

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Product specifications subject to change without notice. Visit systemsensor.com for current product information, including the latest version of this data sheet.
A05-0260-010 • 08/11 • #2870

4

WATERFLOW DATA

Fire Hydrant Flow Calculator

© 2006, Willis Lamm

- Use the tab key to navigate.
- Tab between each box to update the calculation.
- Be sure to tab past your final entry for a correct calculation.

Village Walk COT-395

Static:	68	psi before flowing
Residual:	54	psi while flowing
Pitot:	45	pitot gage reading
Diameter:	2.5	size of opening tested
This hydrant is flowing:	1126	GPM from the test outlet
Projected available hydrant flow:	2189	GPM Note 1
2nd Static:	66	secondary psi before flowing
2nd Residual:	58	secondary psi while flowing
The main can be expected to flow about:	2895	GPM

Notes:

1. Projected available flows calculated at 20 psi residual, or ½ the static pressure for low pressure hydrants having static pressures of less than 40 psi.

2. This calculator is based on established Hazen-Williams formulas and is provided for convenience and estimation purposes only. The author and FireHydrant.org express no warranty for its suitability for any particular purpose.

Click for Legal Disclaimer

HYDRUALIC CALCULATIONS

RLS FIRE PROTECTION SYSTEMS
P.O. BOX 984
CASTLE ROCK COLORADO 80104

HYDRAULIC CALCULATIONS

FOR

VILLAGE WALK
PLAN 1 AND PLAN. 1 REVERSE
COTATI, CA.

FILE NUMBER: 160201
DATE: JUL 27, 2016

-DESIGN DATA-

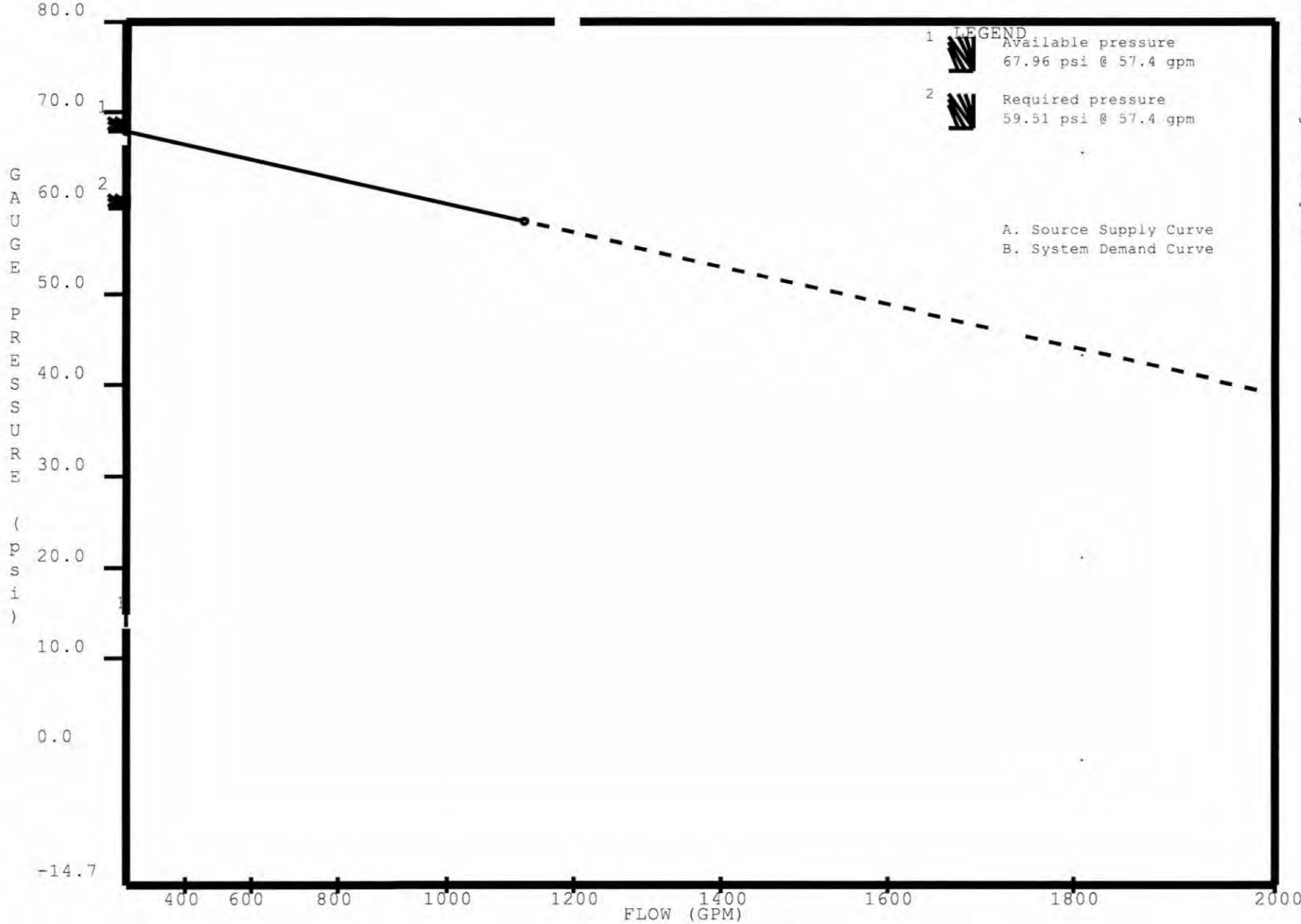
NUMBER OF SPRINKLERS CALCULATED:	4	
FLOW AND PRESSURE AT BASE OF RISER	52.4 gpm @	**31.1** psi
NAME OF CONTRACTOR:	SYNERGY	
DESIGN / LAYOUT BY:	RON SCOGGINS	

NOTE:
4 HEAD REMOTE AREA CALC AT 16 FT. X 16 FT. CALCS

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 50122087)
HRS SYSTEMS, INC.
PETERSBURG, TN

WATER SUPPLY ANALYSIS

Static: 68.00 psi Resid: 58.00 psi Flow: 1126.0 gpm



Note: (1) Dashed Lines indicate extrapolated values from Test Results

(2) On Site pressures are based on hose stream deduction at the source

DATE: 7/27/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 1.SDF
JOB TITLE: Village walk plan 1

"FPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. @ (PSI)	FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
1	68.0	58.0	1126.0	68.0	57.4	59.5

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	57.4 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	5.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	52.4 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	0.0	SOURCE	59.5	57.4	
1A	0.0	- - - -	51.0	- - -	
1B	0.0	- - - -	47.2	- - -	
2	0.0	HOSE STREAM	47.1	5.0	
3	0.0	- - - -	40.6	- - -	
	2.0	- - - -	39.1	- - -	
	2.0	- - - -	32.1	- - -	
6	3.0	- - - -	31.1	- - -	
7	3.0	- - - -	28.1	- - -	
8	4.0	- - - -	27.0	- - -	
10	11.0	- - - -	23.1	- - -	
11	21.0	- - - -	15.0	- - -	
20	21.0	- - - -	17.6	- - -	
21	21.0	- - - -	12.9	- - -	
30	31.0	- - - -	9.1	- - -	
31	31.0	- - - -	7.4	- - -	
32	31.0	- - - -	7.4	- - -	
33	31.0	- - - -	7.5	- - -	
34	31.0	- - - -	7.3	- - -	
301	31.0	K= 4.90	7.1	13.1	
302	31.0	K= 4.90	7.2	13.1	
303	31.0	K= 4.90	7.3	13.2	
304	31.0	K= 4.90	7.0	13.0	

NFPA PIPE DATA

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(Pt) / (Pe) / (Pf)	Notes
Pipe: 1		Source	0.0				35.00	150	8.5	
1	0.0	59.5	57.4	1B	1.250	T: 7.4	8.68		0.0	
1A	0.0	51.0	57.4		1.325	G: 1.2	43.68	0.194	8.5	
Pipe: 1A			0.0	Fixed Pressure Loss Device						
1A	0.0	51.0	57.4	2	3.8 psi,	57.4 gpm				
1B	0.0	47.2	57.4							
Pipe: 1B		H.S.	5.0	Disch			1.00	150	0.1	
1B	0.0	47.2	52.4	3	P1.500	----	0.00		0.0	
2	0.0	47.1	57.4		1.590		1.00	0.080	0.1	
Pipe: 2		0.0	0.0				76.00	150	6.5	
2	0.0	47.1	52.4	4	P1.500	3E:12.0	20.40		0.0	
3	0.0	40.6	52.4		1.590	T: 8.4	96.40	0.067	6.5	
Pipe: 3		0.0	0.0				3.00	150	1.5	
3	0.0	40.6	52.4	5	K1.500	E: 4.0	4.00		-0.9	
4	2.0	39.1	52.4		1.481		7.00	0.095	0.7	
Pipe: 4			0.0	Fixed Pressure Loss Device						
4	2.0	39.1	52.4	6	7.0 psi,	52.4 gpm				
	2.0	32.1	52.4							
Pipe: 5		0.0	0.0				2.00	150	1.0	
5	2.0	32.1	52.4	7	M1.500	E: 5.0	5.00		-0.4	
6	3.0	31.1	52.4		1.527		7.00	0.082	0.6	
Pipe: 6			0.0	Fixed Pressure Loss Device						
6	3.0	31.1	52.4	8	3.0 psi,	52.4 gpm				
7	3.0	28.1	52.4							
Pipe: 7		0.0	0.0				3.00	150	1.1	
7	3.0	28.1	52.4	10	M1.500	E: 5.0	5.00		-0.4	
8	4.0	27.0	52.4		1.527		8.00	0.082	0.7	
Pipe: 8		0.0	35.1	20			7.00	150	4.0	
8	4.0	27.0	17.3	11	1.500	E: 7.0	7.00		-3.0	
10	11.0	23.1	52.4		1.598		14.00	0.066	0.9	
Pipe: 9		0.0	0.0			E: 5.0	46.25	150	8.0	
10	11.0	23.1	17.3	21	1.000	3T:15.0	25.00		-4.3	
11	21.0	15.0	17.3		1.101	5R: 5.0	71.25	0.052	3.7	
Pipe: 10		0.0	0.0				20.50	150	5.5	
10	11.0	23.1	35.1	30	1.500	2E:14.0	16.00		-4.3	
20	21.0	17.6	35.1		1.598	2R: 2.0	36.50	0.031	1.1	

Pipe Tag / From Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(Pt) / (Pe) / (Pf)	Notes
Pipe: 11		0.0	0.0				20.50	150	2.1	
11	21.0	15.0	17.3	33	1.000	2E:10.0	20.00		0.0	
21	21.0	12.9	17.3		1.101	2T:10.0	40.50	0.052	2.1	
Pipe: 12		0.0	16.6	34			11.75	150	8.5	
20	21.0	17.6	18.5	31	1.000	E: 5.0	10.00		-4.3	
30	31.0	9.1	35.1		1.101	T: 5.0	21.75	0.192	4.2	
Pipe: 13		0.0	9.6	303			10.75	150	5.4	
21	21.0	12.9	7.7	32	1.000	E: 5.0	10.00		-4.3	
33	31.0	7.5	17.3		1.101	T: 5.0	20.75	0.052	1.1	
Pipe: 14		0.0	13.1	301			15.25	150	1.7	
30	31.0	9.1	5.4	32	1.000	2T:10.0	13.00		0.0	
31	31.0	7.4	18.5		1.101	3R: 3.0	28.25	0.059	1.7	
Pipe: 15		0.0	13.1	302			6.34	150	0.0	
31	31.0	7.4	-7.7	33	1.000	R: 1.0	1.00		0.0	
32	31.0	7.4	5.4		1.101		7.34	0.006	0.0	
Pipe: 16		0.0	13.1	302			5.50	150	0.1	
33	31.0	7.5	-5.4	31	1.000	T: 5.0	6.00		0.0	
32	31.0	7.4	7.7		1.101	R: 1.0	11.50	0.012	0.1	
Pipe: 17		4.90	13.2	Disch			6.50	150	0.2	
33	31.0	7.5	-3.6	34	1.000	T: 5.0	5.00		0.0	
303	31.0	7.3	9.6		1.101		11.50	0.018	0.2	
Pipe: 18		4.90	13.2	Disch			9.00	150	0.0	
34	31.0	7.3	-9.6	33	1.000	T: 5.0	6.00		0.0	
303	31.0	7.3	3.6		1.101	R: 1.0	15.00	0.003	0.0	
Pipe: 19		0.0	13.0	304			24.00	150	1.7	
30	31.0	9.1	3.6	303	1.000	2T:10.0	12.00		0.0	
34	31.0	7.3	16.6		1.101	2R: 2.0	36.00	0.048	1.7	
Pipe: 20		4.90	13.1	Disch			4.50	150	0.3	
31	31.0	7.4	0.0		1.000	T: 5.0	5.00		0.0	
301	31.0	7.1	13.1		1.101		9.50	0.031	0.3	
Pipe: 21		4.90	13.1	Disch			1.50	150	0.2	
32	31.0	7.4	0.0		1.000	T: 5.0	5.00		0.0	
302	31.0	7.2	13.1		1.101		6.50	0.031	0.2	
Pipe: 22		4.90	13.0	Disch			4.50	150	0.3	
34	31.0	7.3	0.0		1.000	T: 5.0	5.00		0.0	
304	31.0	7.0	13.0		1.101		9.50	0.031	0.3	

DATE: 7/27/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 1.SDF
JOB TITLE: Village walk plan 1

NOTES (HASS):

(1) Calculations were performed by the HASS 8.5 computer program
under license no. 50122087 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760

(2) The system has been calculated to provide an average
imbalance at each node of 0.005 gpm and a maximum
imbalance at any node of 0.106 gpm.

(3) Total pressure at each node is used in balancing the system.
Maximum water velocity is 13.4 ft/sec at pipe 1.

(4) Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.

(5) Available pressure at source node 1 under full flow conditions is
67.95 psi compared to the minimum required pressure of 0.00 psi.

(6) PIPE FITTINGS TABLE

Pipe Table Name: RLS3.PIP

PAGE: * MATERIAL: S40 HWC: 120

Diameter (in)	Equivalent Fitting Lengths in Feet								
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	A AlmChk	D DPVlv	N NPTee
1.325	2.46	4.92	1.64	5.74	4.92	0.82	8.20	8.20	4.92

PAGE: F MATERIAL: CPVC HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet						
	F F45	E El	T Tee	R RunT	K Kplg	C ChkVlv	G Gate
1.101	1.00	5.00	5.00	1.00	1.00	8.00	2.00
1.598	2.00	7.00	8.00	1.00	1.00	14.00	3.00

PAGE: K MATERIAL: CT-K HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet							
	E Ell	T Tee	F 45-Ell	R TeeRun	K Kouplg	C ChkVlv	G GatVlv	N NPTee
1.481	4.00	8.00	2.00	3.00	0.50	9.00	0.00	8.00

RLS FIRE PROTECTION SYSTEMS
P.O. BOX 984
CASTLE ROCK COLORADO 80104

HYDRAULIC CALCULATIONS

FOR

VILLAGE WALK
PLAN 1 AND PLAN 1 REVERSE
COTATI, CA.

FILE NUMBER: 160201
DATE: JUL 19, 2016

-DESIGN DATA-

NUMBER OF SPRINKLERS CALCULATED:	4	
FLOW AND PRESSURE AT BASE OF RISER	52.4 gpm @	**31.1** psi
NAME OF CONTRACTOR:	SYNERGY	
DESIGN / LAYOUT BY:	RON SCOGGINS	

NOTE:
4 HEAD REMOTE AREA CALC AT 16 FT. X 16 FT. CALCS

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 50122087)
HRS SYSTEMS, INC.
PETERSBURG, TN





PO BOX 984
CASTLE ROCK, CO 80104
TEL: (707) 484-5711

2

SUBMITTAL DATA

VILLAGE WALK SUBDIVSION
PLANS 2 AND 2 REVERSE
COTATI, CA

City

APPROVED
WITH CHANGES
DATE 7/27/16 BY
RANCHO ADOBE FIRE PROTECTION DISTRICT

TABLE OF CONTENTS

1. **Sprinkler Heads Cut Sheet**
2. **Backflow Preventer Cut Sheet**
3. **Flow Switch and Bell Cut Sheet**
4. **Water Flow Data**
5. **Hydraulic Calculations**

1

SPRINKLER HEAD CUT SHEETS

RAPID RESPONSE Series LFII Residential 4.9 K-factor Concealed Pendent Sprinkler Flat Plate, Wet Pipe and Dry Pipe Systems

General Description

TYCO RAPID RESPONSE Series LFII Residential 4.9K Concealed Pendent Sprinklers (TY3596) are decorative, fast response, fusible solder sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels.

The cover plate assembly conceals the sprinkler operating components above the ceiling. The flat profile of the cover plate provides the optimum aesthetically appealing sprinkler design. In addition, the concealed design of the Series LFII Residential Concealed Pendent Sprinklers (TY3596) provides 1/2 inch (12,7 mm) vertical adjustment. This adjustment provides a measure of flexibility when cutting fixed sprinkler drops.

The Series LFII Residential Concealed Sprinklers are intended for use in the following scenarios:

- wet and dry pipe residential sprinkler systems for one- and two-family dwellings and mobile homes per NFPA 13D
- wet and dry pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R
- wet and dry pipe sprinkler systems for the residential portions of any occupancy per NFPA 13

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) has been designed with heat sensitivity and water distribution characteristics proven to help in the control of residential fires and to improve the chance for occupants to escape or be evacuated.

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) are shipped with a Disposable Protective Cap. The Protective Cap is temporarily removed for installation, and then it can be replaced to help protect the sprinkler while the ceiling is being installed or finished. The tip of the Protective Cap can also be used to mark the center of the ceiling hole into plaster board, ceiling tiles, etc. by gently pushing the ceiling product against the Protective Cap. When the ceiling installation is complete the Protective Cap is removed and the Cover Plate Assembly installed.

Dry Pipe System Application

The Series LFII Residential Concealed Pendent Sprinklers offers a laboratory approved option for designing dry pipe residential sprinkler systems, whereas, most residential sprinklers are laboratory approved for wet systems only.

Through extensive testing, it has been determined that the number of design sprinklers (hydraulic design area) for the Series LFII Residential Concealed Pendent Sprinklers (TY3596) need not be increased over the number of design sprinklers (hydraulic design area) as specified for wet pipe sprinkler systems, as is accustomed for density/area sprinkler systems designed per NFPA 13.

Consequently, the Series LFII Residential Concealed Pendent Sprinklers offer the features of non-water filled pipe in addition to not having to increase the number of design sprinklers (hydraulic design area) for systems designed to NFPA 13, 13D, or 13R.



NOTICE

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association (NFPA), in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Sprinkler Identification Number (SIN)

TY3596

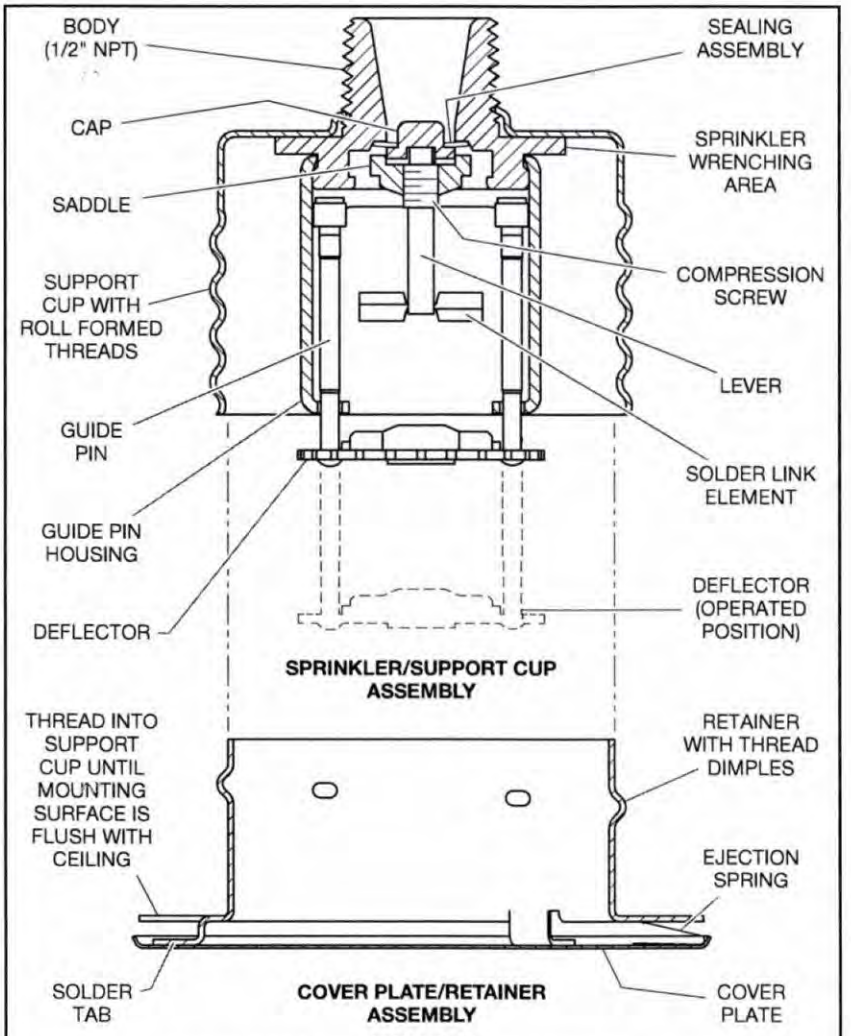


FIGURE 1
RAPID RESPONSE SERIES LFII RESIDENTIAL CONCEALED PENDENT SPRINKLER (TY3596)

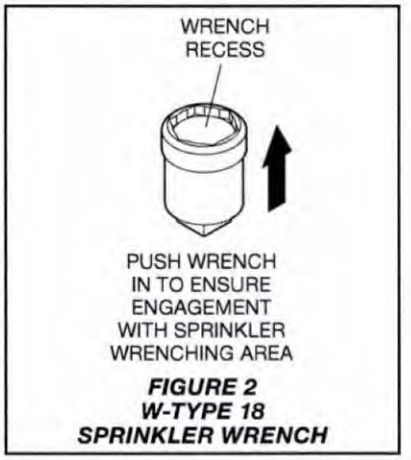


FIGURE 2
W-TYPE 18 SPRINKLER WRENCH

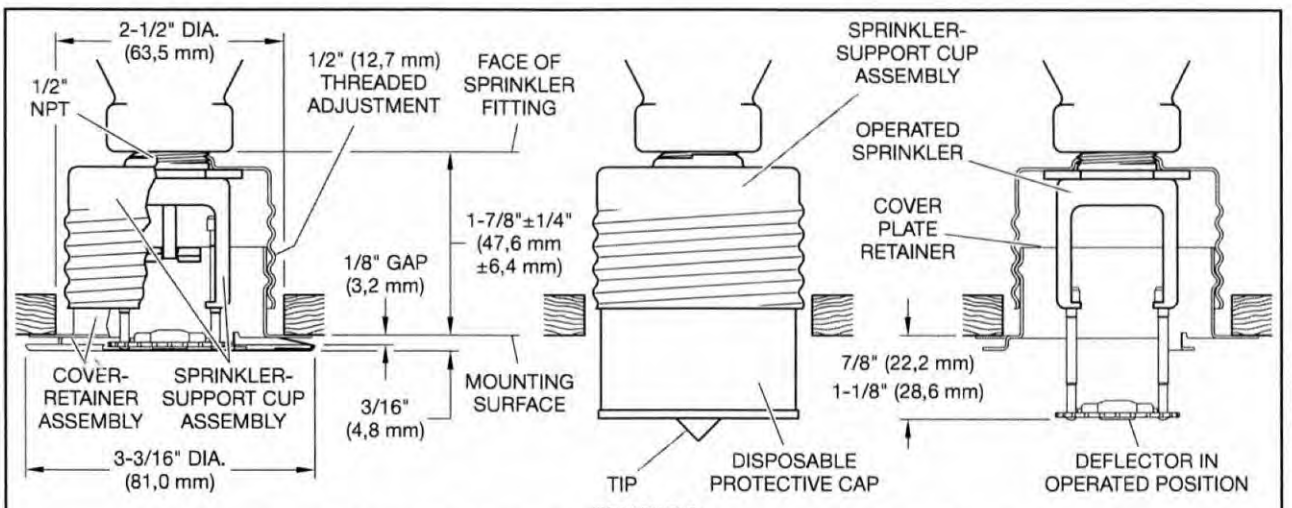


FIGURE 3
RAPID RESPONSE SERIES LFII RESIDENTIAL CONCEALED PENDENT SPRINKLER (TY3596)
INSTALLATION DIMENSIONS/PROTECTIVE CAP/ACTIVATED DEFLECTOR

Technical Data

Approvals
UL and C-UL Listed
NYC Approved under MEA 44-03-E-2NSF
Certified to NSF/ANSI 61

The TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers are only Listed with the Series LFII Concealed Cover Plates having a factory-applied finish.

Cover Plates can be ordered by following the instructions in the Ordering Procedure section.

Maximum Working Pressure
175 psi (12,1 bar)

Discharge Coefficient
K=4.9 gpm/psi$^{1/2}$ (70,6 lpm/bar$^{1/2}$)

Temperature Rating
160°F (71°C) Sprinkler with
139°F (59°C) Cover Plate

Vertical Adjustment
1/2 inch (12,7 mm)

Finishes
Refer to Ordering Procedure section.

Physical Characteristics

Body	Brass
Cap	Bronze
Saddle	Brass
Sealing Assembly	Beryllium Nickel w/TEFLON
Soldered Link Halves	Nickel
Lever	Bronze
Compression Screw	Brass
Deflector	Copper or Brass
Guide Pin Housing	Bronze
Guide Pins	Stainless Steel or Bronze
Support Cup	Steel
Cover Plate	Copper
Retainer	Brass
Cover Plate Ejection Spring	Stainless Steel

Operation

When exposed to heat from a fire, the Cover Plate, which is normally soldered to the Support Cup at three points, falls away to expose the sprinkler assembly. At this point the Deflector supported by the Arms drops down to its operated position. The fusible link of the sprinkler assembly is comprised of two link halves that are soldered together with a thin layer of solder. When the rated temperature is reached, the solder melts and the two link halves separate allowing the sprinkler to activate and flow water.

Design Criteria

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) are UL and C-UL Listed for installation in accordance with this section.

Note: *When conditions exist that are outside the scope of the provided criteria, refer to the Residential Sprinkler Design Guide TFP490 for the manufacturer's recommendations that may be acceptable to the authority having jurisdiction.*

System Types
Per the UL Listing, wet pipe and dry pipe systems may be utilized. Per the C-UL Listing, only wet pipe systems may be utilized.

Refer to Technical Data Sheet TFP485 about the use of residential sprinklers in residential dry pipe systems.

Ceiling Types
Smooth flat horizontal, or beamed, or sloped, in accordance with the 2013 Edition of NFPA 13D, 13R, or 13 as applicable.

Hydraulic Design (NFPA 13D and 13R)
For systems designed to NFPA 13D or NFPA 13R, the minimum required sprinkler flow rates are given in Tables A and B as a function of temperature rating and the maximum allowable coverage areas. The sprinkler flow rate is the minimum required discharge from each of the total number of "design sprinklers" as specified in NFPA 13D or NFPA 13R. The number of "design sprinklers" specified in NFPA 13D and 13R for wet pipe systems is to be applied when designing dry pipe systems.

Hydraulic Design (NFPA 13)
For systems designed to NFPA 13, the number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- the flow rates given in Tables A and B as a function of temperature rating and the maximum allowable coverage area
- a minimum discharge of 0.1 gpm/ft.^{2} over the design area comprised of the four (4) most hydraulically demanding sprinklers for actual coverage areas protected by the four (4) sprinklers

The number of design sprinklers specified in NFPA 13 for wet pipe systems is to be applied when designing dry pipe systems.

Dry Pipe System Water Delivery
When using the Series LFII Residential Concealed Pendent Sprinklers (TY3596) in dry pipe sprinkler systems, the time for water delivery must not exceed 15 seconds for the most remote operating sprinkler.

Obstruction to Water Distribution
Sprinklers are to be located in accordance with the obstruction rules of NFPA 13D, 13R, and 13 as applicable for residential sprinklers as well as with the obstruction criteria described within the Technical Data Sheet TFP490.

Operational Sensitivity
The sprinklers are to be installed relative to the ceiling mounting surface as shown in Figure 3.

Sprinkler Spacing
The minimum spacing between sprinklers is 8 feet (2,4 m). The maximum spacing between sprinklers cannot exceed the length of the coverage area (Ref. Table A or B) being hydraulically calculated (e.g., maximum 12 feet for a 12 ft. x 12 ft. coverage area, or 20 feet for a 20 ft. x 20 ft. coverage area).

The Series LFII must not be used in applications where the air pressure above the ceiling is greater than that below. Down drafts through the Support Cup could delay sprinkler operation in a fire situation.

Maximum Coverage Area [1] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	WET PIPE SYSTEM Minimum Flow and Residual Pressure [2,3]				
		Ordinary Temp. Rating 160°F (71°C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow gpm (lpm)	Pressure psi (bar)			
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings 7/8 to 1-1/8 inches Beamed Ceilings per NFPA 13D or 13R, or 13. Installed in beam 7/8 to 1-1/8 inches below bottom of beam	Concealed	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	13 (49,2)	7.0 (0,48)			
16 x 16 (4,9 x 4,9)	16 (4,9)	13 (49,2)	7.0 (0,48)			
18 x 18 (5,5 x 5,5)	18 (5,5)	17 (64,3)	12.0 (0,83)			
20 x 20 (6,1 x 6,1)	20 (6,1)	20 (75,7)	16.7 (1,15)			

Notes:
1. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
2. Requirement is based on minimum flow in gpm (lpm) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.
3. For NFPA 13 residential applications, the greater of 0.1 gpm/ft.^{2} over the design area or the flow in accordance with the criteria in this table must be used.

TABLE A
WET PIPE SYSTEM
SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT PLATE CONCEALED PENDENT SPRINKLER (TY3596)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Maximum Coverage Area [1] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	DRY PIPE SYSTEM Minimum Flow and Residual Pressure [2,3]				
		Ordinary Temp. Rating 160°F (71°C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow gpm (lpm)	Pressure psi (bar)			
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings 7/8 to 1-1/8 inches Beamed Ceilings per NFPA 13D or 13R, or 13. Installed in beam 7/8 to 1-1/8 inches below bottom of beam	Concealed	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	14 (53,0)	8.2 (0,57)			
16 x 16 (4,9 x 4,9)	16 (4,9)	15 (56,8)	9.4 (0,65)			
18 x 18 (5,5 x 5,5)	18 (5,5)	18 (68,1)	13.5 (0,93)			
20 x 20 (6,1 x 6,1)	20 (6,1)	21 (79,5)	18.4 (1,27)			

Notes:
1. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
2. Requirement is based on minimum flow in gpm (lpm) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.
3. For NFPA 13 residential applications, the greater of 0.1 gpm/ft.^{2} over the design area or the flow in accordance with the criteria in this table must be used.

TABLE B
DRY PIPE SYSTEM
RAPID RESPONSE SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT PLATE CONCEALED PENDENT (TY3596)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Installation

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be installed in accordance with this section.

General Instructions
Damage to the fusible Link Assembly during installation can be avoided by handling the sprinkler by the support cup only (i.e., do not apply pressure to the fusible Link Assembly).

A 1/2 inch NPT sprinkler joint should be obtained with a minimum to maximum torque of 7 to 14 lbs.-ft. (9,5 to 19,0 Nm). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Cover Plate / Retainer Assembly by under- or over-tightening the Sprinkler. Readjust the position of the sprinkler fitting to suit.

Step 1. The sprinkler must only be installed in the pendent position and with the centerline of the sprinkler perpendicular to the mounting surface.

Step 2. Remove the Protective Cap.

Step 3. With pipe thread sealant applied to the pipe threads, and using the W-Type 18 Wrench shown in Figure 2, install and tighten the Sprinkler / Support Cup Assembly into the fitting. The W-Type 18 Wrench will accept a 1/2 inch ratchet drive.

Step 4. Replace the Protective Cap by pushing it upwards until it bottoms out against the Support Cup. The Protective Cap helps prevent damage to the Deflector and Guide Pins during ceiling installation and/or during application of the finish coating of the ceiling. It may also be used to locate the center of the clearance hole by gently pushing the ceiling material against the center point of the Cap.

Note: *As long as the protective Cap remains in place, the system is considered to be "Out Of Service."*

Step 5. After the ceiling has been completed with the 2-1/2 inch (63 mm) diameter clearance hole and in preparation for installing the Cover Plate Assembly, remove and discard the Protective Cap, and verify that the Deflector moves up and down freely.

If the sprinkler has been damaged and the Deflector does not move up and down freely, replace the entire sprinkler assembly. Do not attempt to modify or repair a damaged sprinkler.

Step 6. Screw on the Cover Plate Assembly until its flange comes in contact with the ceiling.

Do not continue to screw on the Cover Plate Assembly such that it lifts a ceiling panel out of its normal position.

If the Cover Plate Assembly cannot be engaged with the Mounting Cup or the Cover Plate Assembly cannot be engaged sufficiently to contact the ceiling, the Sprinkler Fitting must be repositioned.

Care and Maintenance

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system which it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

Absence of a Cover Plate may delay the sprinkler operation in a fire situation.

When properly installed, there is a nominal 1/8 inch (3,2 mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 3. This air gap is necessary for proper operation of the sprinkler by allowing heat flow from a fire to pass below and above the Cover Plate to help assure appropriate release of the Cover Plate in a fire situation. If the ceiling is to be repainted after the installation of the Sprinkler, care must be exercised to ensure that the new paint does not seal off any of the air gap.

Factory painted Cover Plates must not be repainted. They should be replaced, if necessary, by factory painted units. Non-factory applied paint may adversely delay or prevent sprinkler operation in the event of a fire.

Do not pull the Cover Plate relative to the Enclosure. Separation may result.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified or over heated sprinklers must be replaced.

Care must be exercised to avoid damage before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, non-operation in the event of a fire or inadvertent operation may result.

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and part number (P/N).

Sprinkler Assemblies
Specify: Series LFII (TY3596) 4.9K Residential Concealed Pendent Sprinkler without Cover Plate Assembly, P/N 51-112-1-160

Cover Plate Assemblies
Specify: Cover Plate Assembly with (specify) finish for the Series LFII (TY3596) 4.9K Residential Concealed Pendent Sprinkler, P/N (specify):

Ivory (RAL1015)	P/N 56-202-0-135
Beige (RAL1001)	P/N 56-202-2-135
Pure White * (RAL9010)	P/N 56-202-3-135
Signal White ** (RAL9003)	P/N 56-202-4-135
Grey White (RAL9002)	P/N 56-202-5-135
Brown (RAL8028)	P/N 56-202-6-135
Black (RAL9005)	P/N 56-202-7-135
Brushed Brass	P/N 56-202-8-135
Brushed Chrome	P/N 56-202-9-135
Custom Paint	P/N 56-202-X-135

* Eastern Hemisphere sales only
** Previously known as Bright White

Note: *All Custom Cover Plates are painted using Sherwin Williams Interior Latex Paint. Contact Tyco Customer Service with any questions related to custom orders.*

Sprinkler Wrench
Specify: W-Type 18 Sprinkler Wrench, P/N 56-000-1-265

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tyco Fire Protection Products

Series TY-FRB — 2.8, 4.2, 5.6, and 8.0 K-Factor Upright, Pendent, and Recessed Pendent Sprinklers Quick Response, Standard Coverage

General Description

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described in this data sheet are quick response, standard coverage, decorative 3 mm glass bulb-type spray sprinklers designed for use in light or ordinary hazard, commercial occupancies such as banks, hotels, and shopping malls.

The recessed version of the Series TY-FRB Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. This recessed pendent sprinkler uses one of the following:

- A two-piece Style 10 (1/2 inch NPT) or Style 40 (3/4 inch NPT) Recessed Escutcheon with 1/2 inch (12,7 mm) of recessed adjustment or up to 3/4 inch (19,1 mm) of total adjustment from the flush pendent position, or a
- A two-piece Style 20 (1/2 inch NPT) or Style 30 (3/4 inch NPT) Recessed Escutcheon with 1/4 inch (6,4 mm) of recessed adjustment or up to 1/2 inch (12,7 mm) of total adjustment from the flush pendent position.

The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the fixed pipe drops to the sprinklers must be cut.

Corrosion-resistant coatings, where applicable, are utilized to extend the life of copper alloy sprinklers beyond that which would otherwise be obtained when exposed to corrosive atmospheres. Although corrosion-resistant coated sprinklers have passed the standard corrosion tests of the applicable approval agencies, the testing is not representative of all possible corrosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of these coatings for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, as a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

An intermediate level of the Series TY-FRB Pendent Sprinklers is detailed in Technical Data Sheet TFP356, and Sprinkler Guards are detailed in Technical Data Sheet TFP780.

NOTICE

The Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.





Sprinkler Identification Number (SIN)

TY1131 - Upright 2.8K, 1/2" NPT
TY1231 - Pendent 2.8K, 1/2" NPT
TY2131 - Upright 4.2K, 1/2" NPT
TY2231 - Pendent 4.2K, 1/2" NPT
TY3131 - Upright 5.6K, 1/2" NPT
TY3231 - Pendent 5.6K, 1/2" NPT
TY4131 - Upright 8.0K, 3/4" NPT
TY4231 - Pendent 8.0K, 3/4" NPT
TY4831 - Upright 8.0K, 1/2" NPT
TY4931 - Pendent 8.0K, 1/2" NPT

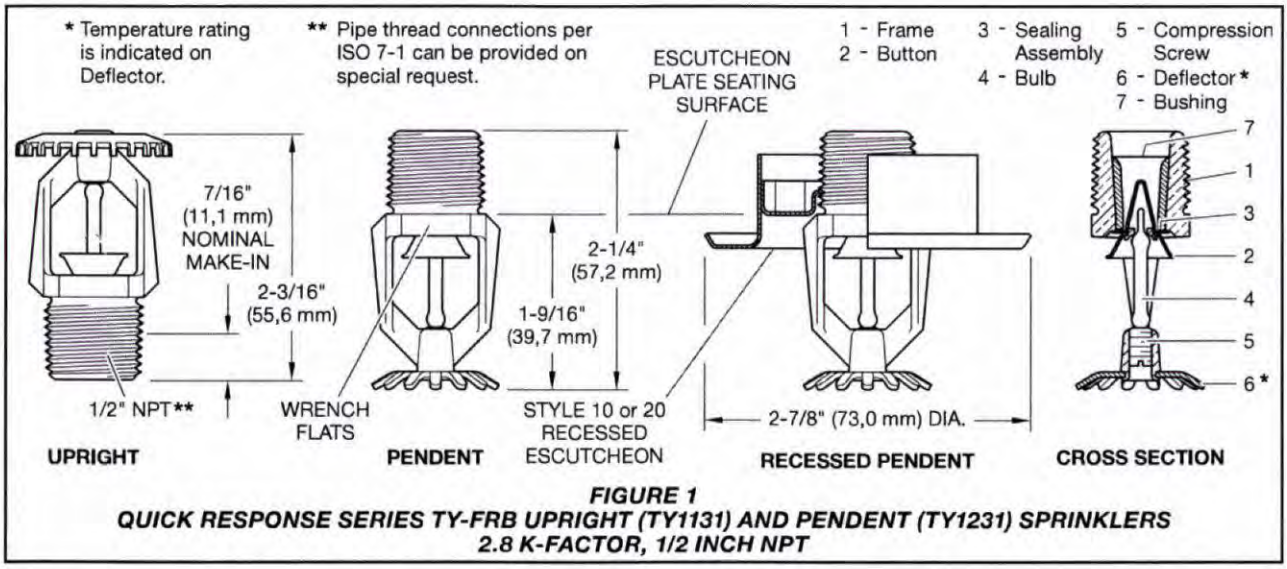


FIGURE 1
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY1131) AND PENDENT (TY1231) SPRINKLERS
2.8 K-FACTOR, 1/2 INCH NPT

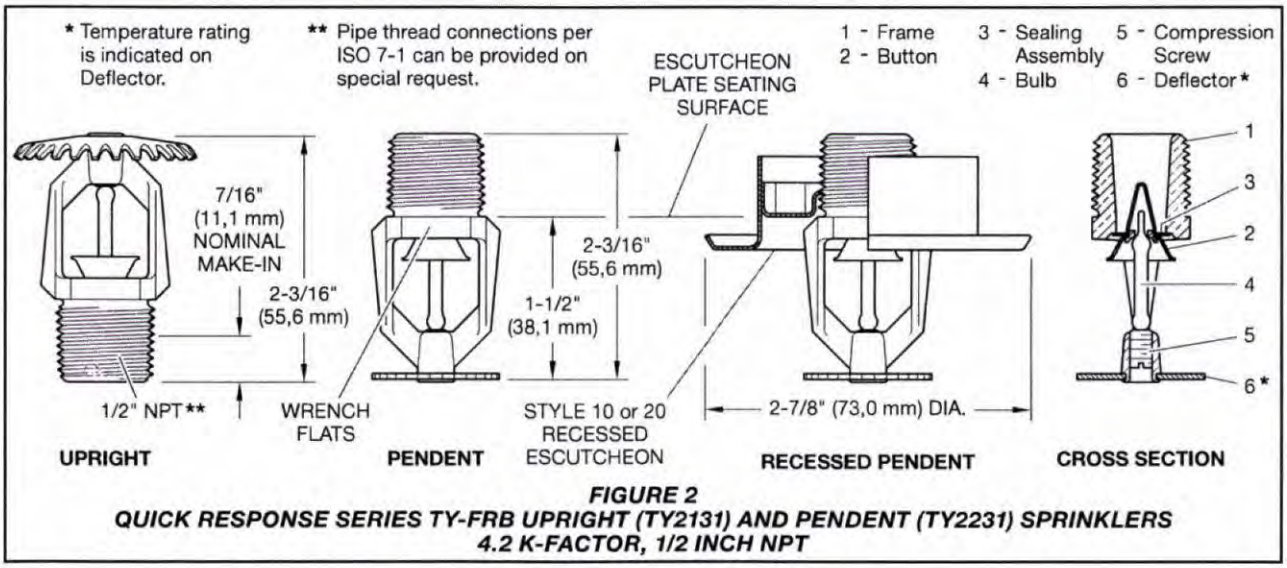


FIGURE 2
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY2131) AND PENDENT (TY2231) SPRINKLERS
4.2 K-FACTOR, 1/2 INCH NPT

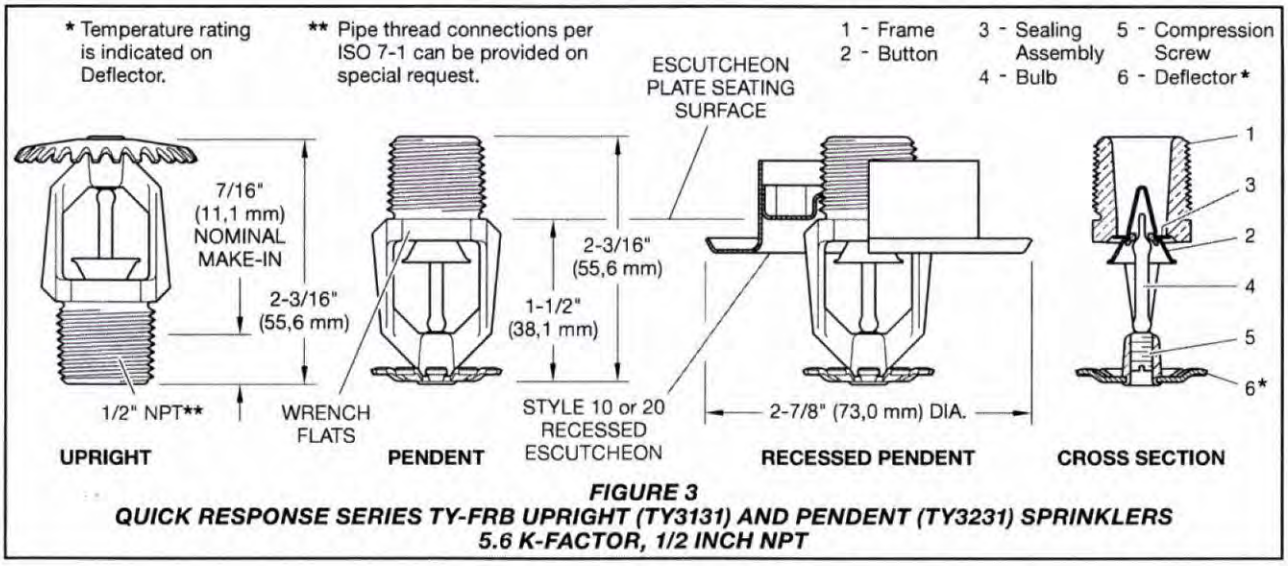


FIGURE 3
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY3131) AND PENDENT (TY3231) SPRINKLERS
5.6 K-FACTOR, 1/2 INCH NPT

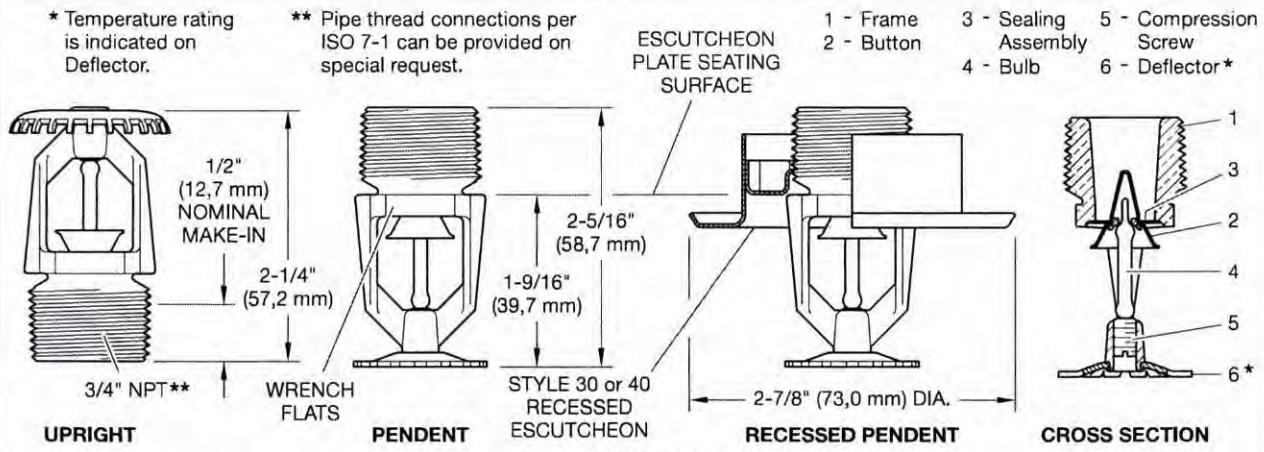


FIGURE 4
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4131) AND PENDENT (TY4231) SPRINKLERS
8.0 K-FACTOR, 3/4 INCH NPT

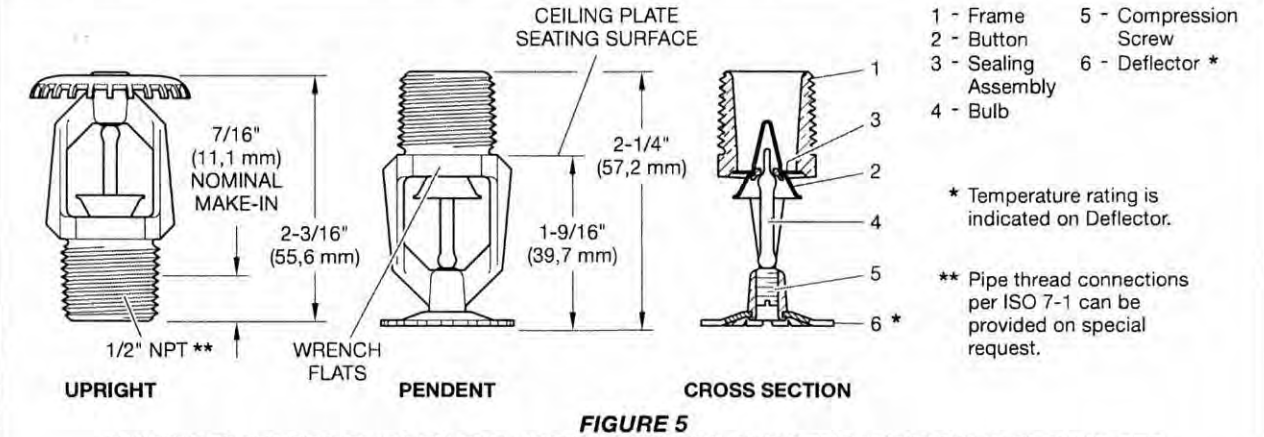


FIGURE 5
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4831) AND PENDENT (TY4931) SPRINKLERS
8.0 K-FACTOR, 1/2 INCH NPT

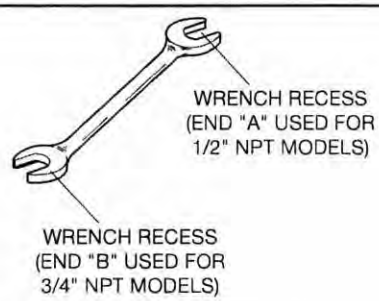


FIGURE 6
W-TYPE 6 SPRINKLER WRENCH



FIGURE 7
W-TYPE 7 RECESSED SPRINKLER WRENCH

Technical Data

Approvals
UL and C-UL Listed
FM, LPCB, and NYC Approved
Refer to Table A and B for complete approval information including corrosion-resistant status.

Maximum Working Pressure
Refer to Table C.

Discharge Coefficient
K=2.8 gpm/psi$^{1/2}$ (40,3 lpm/bar$^{1/2}$)
K=4.2 gpm/psi$^{1/2}$ (60,5 lpm/bar$^{1/2}$)
K=5.6 gpm/psi$^{1/2}$ (80,6 lpm/bar$^{1/2}$)
K=8.0 gpm/psi$^{1/2}$ (115,2 lpm/bar$^{1/2}$)

Temperature Rating
Refer to Table A and B.

Finishes
Sprinkler: Refer to Table D.

Recessed Escutcheon: Signal or Pure White, Jet Black, Chrome Plated, or Natural Brass

Physical Characteristics

Frame	Bronze
Button	Brass/Copper
Sealing Assembly	Beryllium Nickel w/TEFLON
Bulb	Glass
Compression Screw	Bronze
Deflector	Copper/Bronze
Bushing (K=2.8)	Bronze

Operation

The glass bulb contains a fluid that expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

Design Criteria

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (such as, UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of FM's Loss Prevention Data Sheets). Only the Style 10, 20, 30, or 40 Recessed Escutcheon, as applicable, is to be used for recessed pendent installations.

Installation

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers must be installed in accordance with this section.

General Instructions
Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F (57°C) and 3/32 inch (2,4 mm) for the 286°F (141°C) temperature ratings.

A leak-tight 1/2 inch NPT sprinkler joint should be obtained by applying a minimum to maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). A leak tight 3/4 inch NPT sprinkler joint should be obtained with a torque of 10 to 20 ft.-lbs. (13,4 to 26,8 Nm). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Escutcheon Plate by under- or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Series TY-FRB Upright and Pendent Sprinklers
The Series TY-FRB Pendent and Upright Sprinklers must be installed in accordance with the following instructions.

Step 1. Install Pendent sprinklers in the pendent position. Install upright sprinklers in the upright position.

Step 2. With pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Figure 6). With reference to Figures 1 through 5, apply the W-Type 6 Sprinkler Wrench to the sprinkler wrench flats.

Series TY-FRB Recessed Pendent Sprinklers
The Series TY-FRB Recessed Pendent Sprinklers must be installed in accordance with the following instructions.

Step A. After installing the Style 10, 20, 30, or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step B. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure 7). With reference to Figures 1 to 4, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step C. After ceiling installation and finishing, slide on the Style 10, 20, 30, or 40 Closure over the Series TY-FRB Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 5)			
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	POLYESTER***
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	135°F (57°C)	Orange	1, 2, 3, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY1231)* Figure 8	135°F (57°C)	Orange	1, 2, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY1231)** Figure 9	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	135°F (57°C)	Orange	1, 2		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY2231)* Figure 10	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY2231)** Figure 11	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the City of New York under MEA 354-01-E.
5. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
*** Frame and Deflector only.
N/A: Not Available

TABLE A
LABORATORY LISTINGS AND APPROVALS FOR
2.8 AND 4.2 K-FACTOR SPRINKLERS

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 8)				
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	POLYESTER***	LEAD COATED
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 3, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)* Figure 12	135°F (57°C)	Orange	1, 2, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)** Figure 13	135°F (57°C)	Orange	1, 2, 3, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)* Figure 14	135°F (57°C)	Orange	1, 2, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)** Figure 15	135°F (57°C)	Orange	1, 2, 3, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	135°F (57°C)	Orange	1, 2, 4, 5, 6			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007k/04) as Quick Response Sprinklers. However, LPCB does not rate the thermal sensitivity of recessed sprinklers.
5. Approved by the City of New York under MEA 354-01-E.
6. VdS Approved (For details, contact Tyco Fire Suppression & Building Products, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-53-428-3377.)
7. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) as Quick Response Sprinklers.
8. Where Polyester Coated and Lead-Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers. Where Lead-Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as a Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
*** Frame and Deflector only.
N/A: Not Available

TABLE B
LABORATORY LISTINGS AND APPROVALS FOR
5.6 AND 8.0 K-FACTOR SPRINKLERS

K FACTOR	TYPE	SPRINKLER FINISH			
		NATURAL BRASS	CHROME PLATED	POLYESTER	LEAD COATED
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY1231)				
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY2231)				
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	250 PSI (17,2 BAR) OR 175 PSI (12,1 BAR) (SEE NOTE 1)			
	RECESSED PENDENT (TY3231)				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)
	RECESSED PENDENT (TY4231)				N/A
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)

NOTES:
1. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories Inc. (UL); the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL); and, the Approval by the City of New York.

TABLE C
MAXIMUM WORKING PRESSURE

Care and Maintenance

The TYCO Series TY-FRB must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection systems from the proper authorities and notify all personnel who may be affected by this action.

Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, can delay sprinkler operation in a fire situation.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section.)

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Care must be exercised to avoid damage to the sprinklers -before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section).

Initial and frequent visual inspections of random samples are recommended for corrosion-resistant sprinklers to verify the integrity of the corrosion-resistant material of construction. Thereafter, annual inspections per NFPA 25 should suffice.

Inspections of corrosion-resistant sprinklers are recommended at close range, instead of from the floor level per NFPA. Inspection at close range can better determine the exact sprinkler condition and the long-term integrity of the corrosion-resistant material, which can be affected by the corrosive conditions present.

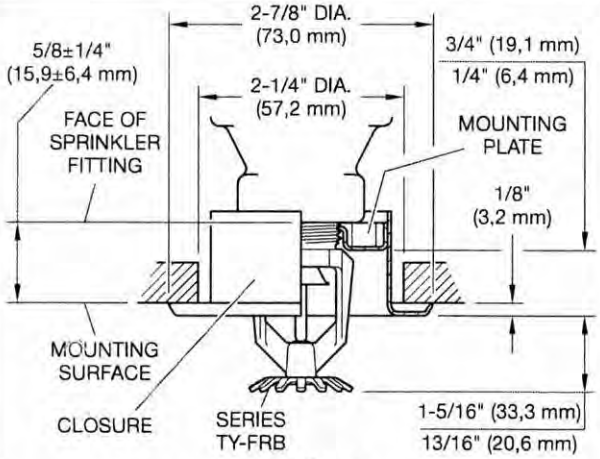


FIGURE 8
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

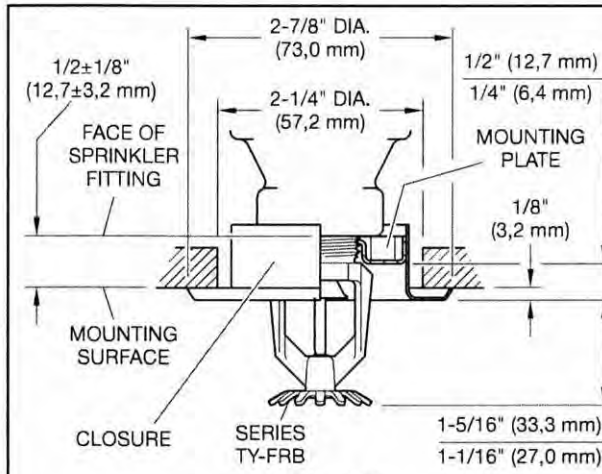


FIGURE 9
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

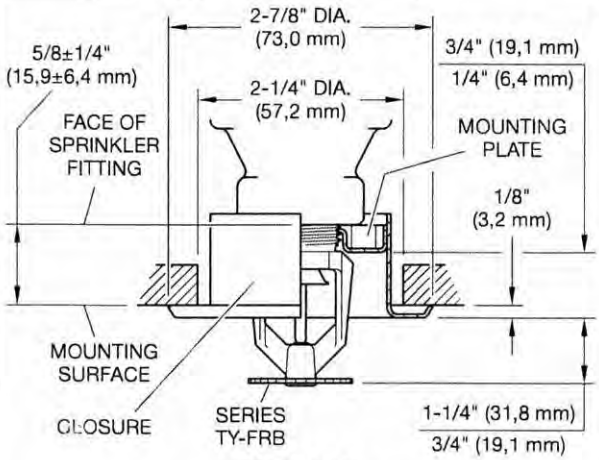


FIGURE 10
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

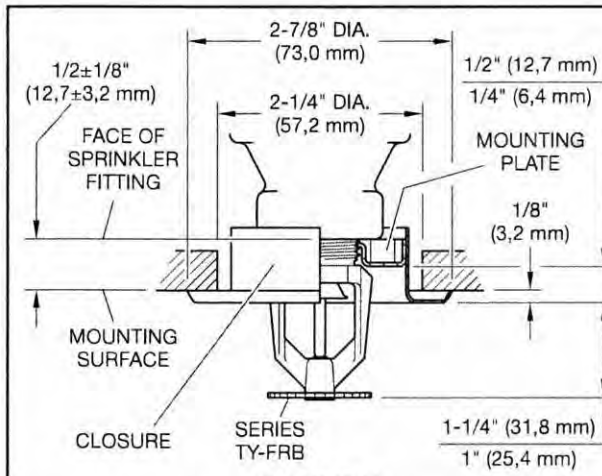


FIGURE 11
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

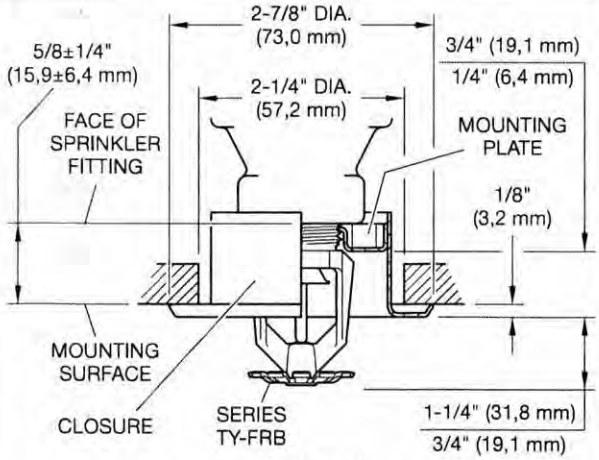


FIGURE 12
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

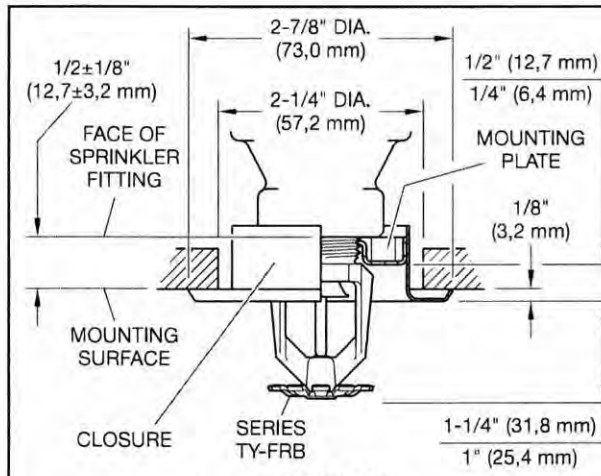


FIGURE 13
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

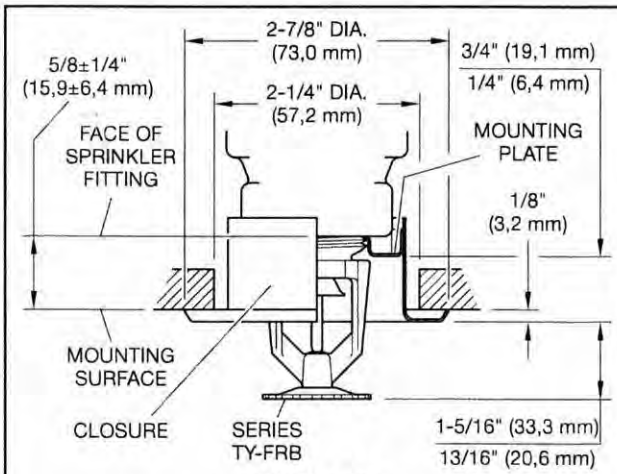


FIGURE 14
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

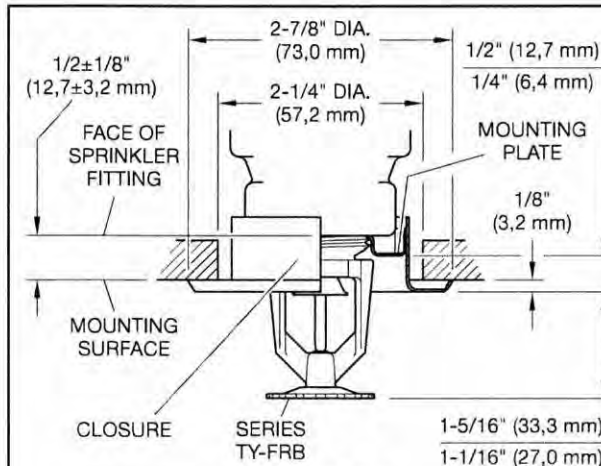


FIGURE 15
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 30 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

P/N 57 – XXX – X – XXX

		SIN
330	2.8K UPRIGHT (1/2"NPT)	TY1131
331	2.8K PENDENT (1/2"NPT)	TY1231
340	4.2K UPRIGHT (1/2"NPT)	TY2131
341	4.2K PENDENT (1/2"NPT)	TY2231
370	5.6K UPRIGHT (1/2"NPT)	TY3131
371	5.6K PENDENT (1/2"NPT)	TY3231
390	8.0K UPRIGHT (3/4"NPT)	TY4131
391	8.0K PENDENT (3/4"NPT)	TY4231
360	8.0K UPRIGHT (1/2"NPT)	TY4831*
361	8.0K PENDENT (1/2"NPT)	TY4931*

	SPRINKLER FINISH
1	NATURAL BRASS
3	PURE WHITE POLYESTER (RAL9010)[1]
4	SIGNAL WHITE POLYESTER (RAL9003)
5	JET BLACK POLYESTER (RAL9005)[2]
7	LEAD COATED
9	CHROME PLATED

	TEMPERATURE RATINGS
135	135°F (57°C)
155	155°F (68°C)
175	175°F (79°C)
200	200°F (93°C)
286	286°F (141°C)

NOTES:
1. Eastern Hemisphere sales only.
2. Available in only 2.8K, 4.2K, and 8.0K, 155°F (68°C) and 200°F (93°C); requires lead time to manufacture.

TABLE D
SERIES TY-FRB PENDENT AND UPRIGHT SPRINKLERS
PART NUMBER SELECTION

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler Assemblies with NPT Thread Connections
Specify: Series TY-FRB (Specify SIN), (specify K-factor), (specify Pendent or Upright) Sprinkler (specify) temperature rating, (specify) finish or coating, P/N (specify from Table D)

Recessed Escutcheon
Specify: Style (10, 20, 30, or 40) Recessed Escutcheon with (specify*) finish, P/N (specify*)

Sprinkler Wrench
Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001

* Refer to Technical Data Sheet TFP770

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tyco Fire Protection Products

2

BACKFLOW PREVENTER

CUT SHEETS

Model 950XLT

Top Access Double Check Valve Assembly

Application

Designed for installation on water lines to protect against both backsiphonage and backpressure of polluted water into the potable water supply. A test cock plug is provided to protect against fouling caused by insects, dirt and debris. Assembly shall provide protection where a potential non-health hazard exists.



Standards Compliance

(Unless otherwise noted, applies to 3/4" thru 2" Horizontal)

- ASSE® Listed 1015 (Vertical flow-up:1 1/4" thru 2")
- IAPMO® Listed
- AWWA Compliant C510
- CSA® Certified (Vertical flow-up:1 1/2" & 2")
- NYC MEA 426-89-M VOL 3
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California (950XLTU: 3/4" & 1" Horizontal)

Options

(Suffixes can be combined)

- ☐ L - less ball valves
- ☐ FT - with "Fast Test" test cocks
- ☐ U - with union ball valves
- ☐ S - with bronze "Y" type strainer

Materials

Main valve body	Cast Bronze ASTM B 584
Access covers	Cast Bronze ASTM B 584
Fasteners	Stainless Steel, 300 Series
Elastomers	Silicone (FDA approved) Buna Nitrile (FDA approved)
Polymers	Noryl™, NSF Listed
Springs	Stainless steel, 300 series
Test cock cover	Plastic
Ball valve handles	Stainless steel

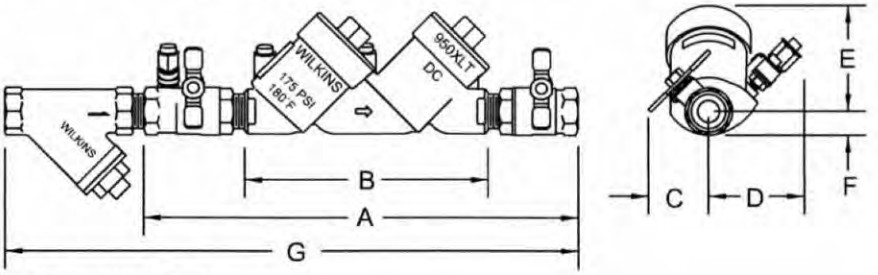
Accessories

- ☐ Repair kit (rubber only)
- ☐ Thermal expansion tank (Model XT)
- ☐ Bronze wye strainer
- ☐ QT-SET Quick Test Fitting Set

Features

Sizes: 3/4", 1", 1 1/4", 1 1/2", 2"

Maximum working water pressure	175 PSI
Maximum working water temperature	180°F
Hydrostatic test pressure	350 PSI
End connections Threaded	ANSI B1.20.1



Dimensions & Weights (do not include pkg.)

MODEL SIZE		DIMENSIONS (approximate)																WEIGHT			
		A		A UNION BALL VALVES		B LESS BALL VALVES		C		D		E		F		G		LESS BALL VALVES		WITH BALL VALVES	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg	lbs.	kg
3/4	20	13	330	14 5/16	364	8 3/4	222	2 3/8	60	2 5/16	59	3 5/16	84	3/4	19	17 5/8	448	4	1.8	6	2.7
1	25	14	356	15 3/4	400	8 3/4	222	2 1/2	64	2 5/16	59	3 5/16	84	3/4	19	19 3/4	502	8	3.6	12	5.4
1 1/4	32	19 5/8	499	21 5/8	549	13 3/4	349	4	102	3 5/8	92	4 3/8	111	1 5/16	33	24 3/4	629	16	7.3	22	10
1 1/2	40	20 5/16	516	22 5/16	567	13 3/4	349	5 3/8	137	3 5/8	92	4 3/8	111	1 5/16	33	25 15/16	659	16	7.3	22	10
2	50	21 3/8	543	23 1/4	591	13 3/4	349	5 13/16	148	3 5/8	92	4 3/8	111	1 5/16	33	28 5/16	719	17	7.7	29	13.2

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | **Zurn Industries Limited**
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 Ph. 905-405-8272, Fax 905-405-1292
www.zurn.com

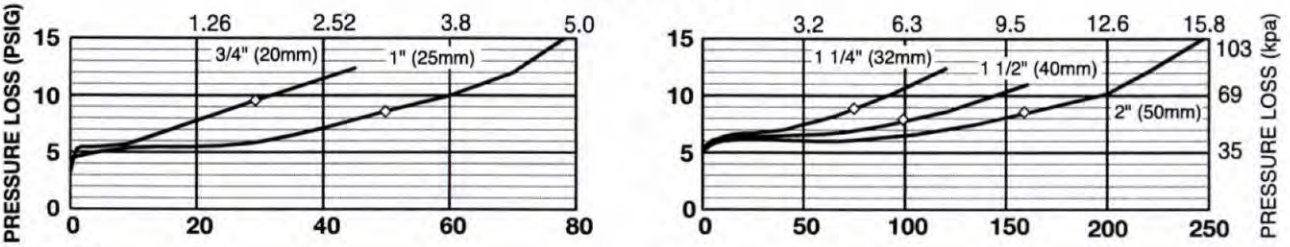
Rev. D
Date: 1/15
Document No. BF-950XLT
Product No. Model 950XLT

Flow Characteristics

◇ Rated Flow (established by approval agencies)

MODEL 950XLT 3/4", 1", 1 1/4", 1 1/2" & 2" (STANDARD & METRIC)

FLOW RATES (l/s)

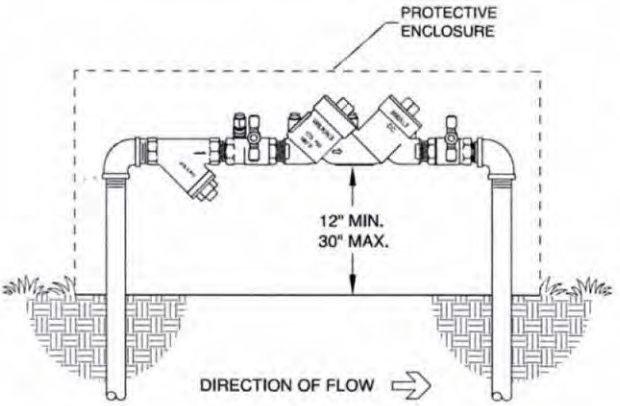


FLOW RATES (GPM)

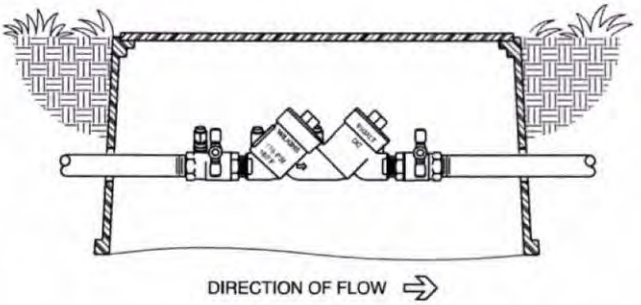
TYPICAL INSTALLATION

Local codes shall govern installation requirements. To be installed in accordance with the manufacturer's instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. If installed below grade, be certain adequate drainage is provided to prevent the device from being submerged.

Capacity thru Schedule 40 Pipe				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
1/8"	1	1	2	3
1/4"	2	2	3	5
3/8"	3	4	6	9
1/2	5	7	9	14
3/4"	8	12	17	25
1"	13	20	27	40
1 1/4"	23	35	47	70
1 1/2"	32	48	63	95
2"	52	78	105	167



OUTDOOR INSTALLATION



PIT INSTALLATION

SPECIFICATIONS

The Double Check Type Backflow Preventer shall be ASSE Listed 1015, rated to 180°F and supplied with full port ball valves. The main body and access covers shall be bronze (ASTM B 584), the seat ring and all internal polymers shall be NSF® Listed Noryl™ and the seat disc elastomers shall be SILICONE. The first and second check shall be located at a 45° angle and accessible for maintenance from the top of the device, without removing the device from the line. Each check shall have separate access covers and test cocks shall be accessible from the top of the device. Test cocks shall be protected from debris by a plug. The Double Check Type Backflow Preventer shall be a ZURN WILKINS Model 950XLT.

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | **Zurn Industries Limited**
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 Ph. 905-405-8272, Fax 905-405-1292
www.zurn.com

3

FLOW SWITCH & BELL CUT SHEETS

WFDTN Series Waterflow Detector



System Sensor WFDTN T-Tap Waterflow detectors are designed for primary signaling in residential systems and branch line signaling.

Features

- New directional cover allows installers and inspectors to easily see the direction of flow
- UL-listed models are NEMA 4 rated
- New cover provides a better seal, is lighter weight, not painted and corrosion resistant
- Sealed retard mechanism immune to dust and other contaminants
- Less exposed metal reduces shock hazard, plastic cover acts as insulator and is resistant to arcing
- Visual switch activation
- Audible switch activation (73 dBA)
- Field-replaceable timer/switch assembly
- Accommodates up to 12 AWG wire
- Switch Synchronization activates both alarm panel and local bell or horn strobe
- Tamper-resistant cover screws
- Improved water sealing
- Reduced product weight
- Wire-ready terminals
- Improved wiring with new terminal block layout
- Snap-in optional cover tamper switch

Agency Listings

c UL us LISTED
S739

FM APPROVED
30512266

The new **WFDTN Series** waterflow detectors from **System Sensor** consists of a rugged, NEMA 4-rated enclosure that is more damage resistant than previous metal designs. The waterflow detector is designed for both indoor and outdoor use, with the widest available temperature range, from 32°F to 150°F.

Both the WFDTN with incorporated timer and WFDTNRN with immediate activation fit any tee that has a 1 in. NPT branch, including: 1in., 1¼in., 1½ in. and 2in. NPT threaded ferrous and brass tees; 1in., 1¼in., 1½in. and 2in. copper sweat tees; Tyco, Spears, NIBBCO brand 1 in. CPVC tees. Twelve different clearly marked plastic paddles are available to fit different installation configurations.

UL-listed models are equipped with tamper-resistant cover screws to prevent unauthorized entry. Inside, two sets of SPDT (Form C) synchronized switches are enclosed in a durable terminal block with new layout designed to make wiring easy with wire ready terminals, COM terminals are on a different elevation, large barrier between switches and easy to read raised textured lettering all make wiring easy. An optional cover tamper switch is available, securely snaps into place, no tools required.

The WFDTN incorporates a mechanical time delay feature, which minimizes the risk of false alarm due to pressure surges or air trapped in the fire sprinkler system. The larger and easy to turn timer dial makes setting the waterflow detector easy with high contrast pad printed markings. The dial offers three tabs to help with turning, with one larger tab located on the dial position for approximately 60 seconds, a notch is also indicated on the dial to locate approximately 30 seconds making setting the detector in dimmly lit locations easy.

The WFDTN series is designed for accuracy and repeatability. The detector also offers improved performance during vibration in riser applications where detectors are exposed to a large in rush of water.

Waterflow Detector Specifications

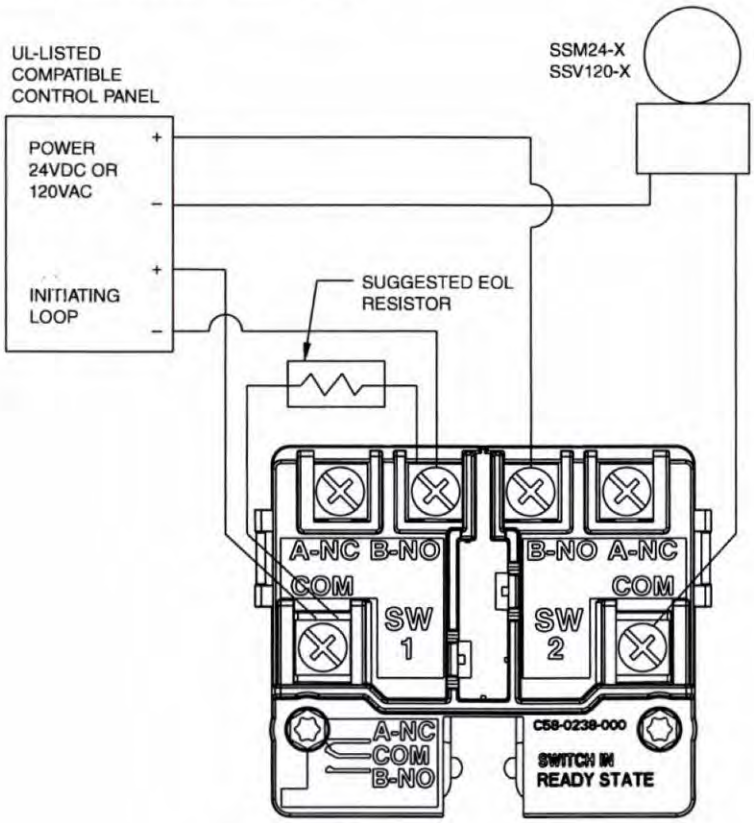
Engineering Specifications

Model shall be WFDTN or WFDTNRN as manufactured by System Sensor. T-Tap waterflow detectors shall be installed on a tee that has a 1in. NPT branch including: 1in., 1¼in., 1½in. and 2in. NPT threaded ferrous and brass tee; 1in., 1¼in., 1½in. and 2in. copper sweat tees; Tyco, Spears, NIBBCO brand 1in. CPVC tees as designed on the drawing and /or as specified herein. Detectors shall mount on any clear pipe span of the appropriate nominal size, either a vertical upflow or horizontal run at least 6˝ from any fittings or valves that may change water direction, flow rate, or pipe diameter or no closer than 24in. from a valve or drain. Detectors shall have a sensitivity in the range of 4 to 10 gallons per minute and a static pressure rating of 375 psi. The WFDTN detector with incorporated time delay mechanism shall respond to waterflow in the specified direction after a preset time delay that is field adjustable. The delay mechanism shall be a sealed mechanical pneumatic unit with visual and audible indication of actuation. The actuation mechanism shall include a ethylene vinyl acetate vane inserted through a hole in the pipe and connected by a mechanical linkage to the delay mechanism. Outputs shall consist of dual SPDT switches (Form C contacts). Two conduit entrances for standard fittings of commonly used electrical conduit shall be provided on the detectors. A grounding provision is provided. Unless noted, enclosures shall be NEMA 4 listed by Underwriters Laboratories Inc. All detectors shall be listed by Underwriters Laboratories Inc. for indoor or outdoor use.

Standard Specifications

Static Pressure Rating	375 PSI	**Operating Temperature Range**	32°F to 150°F (0°C to 60°C)
Maximum Surge	18 Feet Per Second (FPS)	**Enclosure Rating***	NEMA 4 – suitable for indoor/outdoor use
Triggering Threshold Bandwidth (Flow Rate)	4–10 GPM	**Cover Tamper Switch**	Standard with ULC models, optional for UL models, part no. CTS
Conduit Entrances	Two openings for ½in. conduit. NEMA 4 rated plugs	**Service Use**	Automatic Sprinkler: NFPA-13 One or Two Family Dwelling: NFPA 13D Residential Occupancies up to 4 Stories: NFPA 13R National Fire Alarm Code: NFPA-72
Contact Ratings	Two sets of SPDT (Form C) 10.0 A, ½ HP @ 125/250 VAC 2.5 A @ 6/12/24 VDC	**U.S. Patent Numbers**	5,213,205
Compatible Tee Fittings	Threaded ferrous and brass tees, copper sweat tees, CPVC tees.	**Warranty**	3 Years

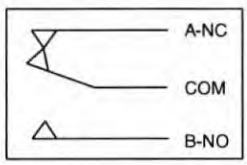
WFDTN Field Wiring Diagram



NOTE: COMMON AND B-NO CONNECTIONS WILL CLOSE WHEN VANE IS DEFLECTED, I.E., WHEN WATER IS FLOWING. DUAL SWITCHES PERMIT APPLICATIONS TO BE COMBINED ON A SINGLE DETECTOR.

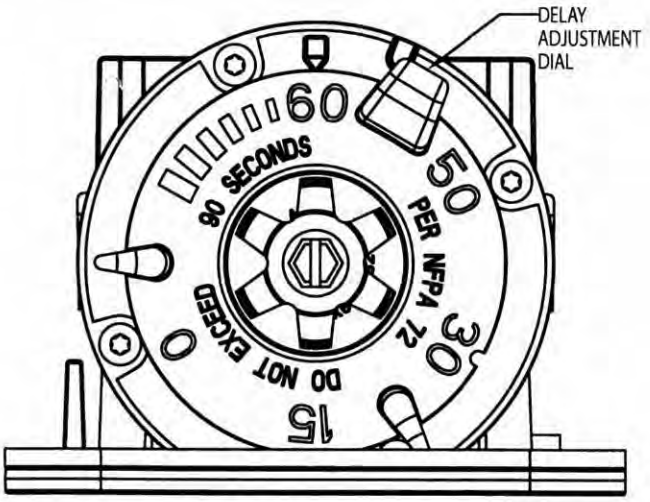
CONTACT RATINGS	
125/250 VAC	10 AMPS
24 VDC	2.5 AMPS

SCHEMATIC OF INDIVIDUAL SWITCH IN "NO WATERFLOW" CONDITION



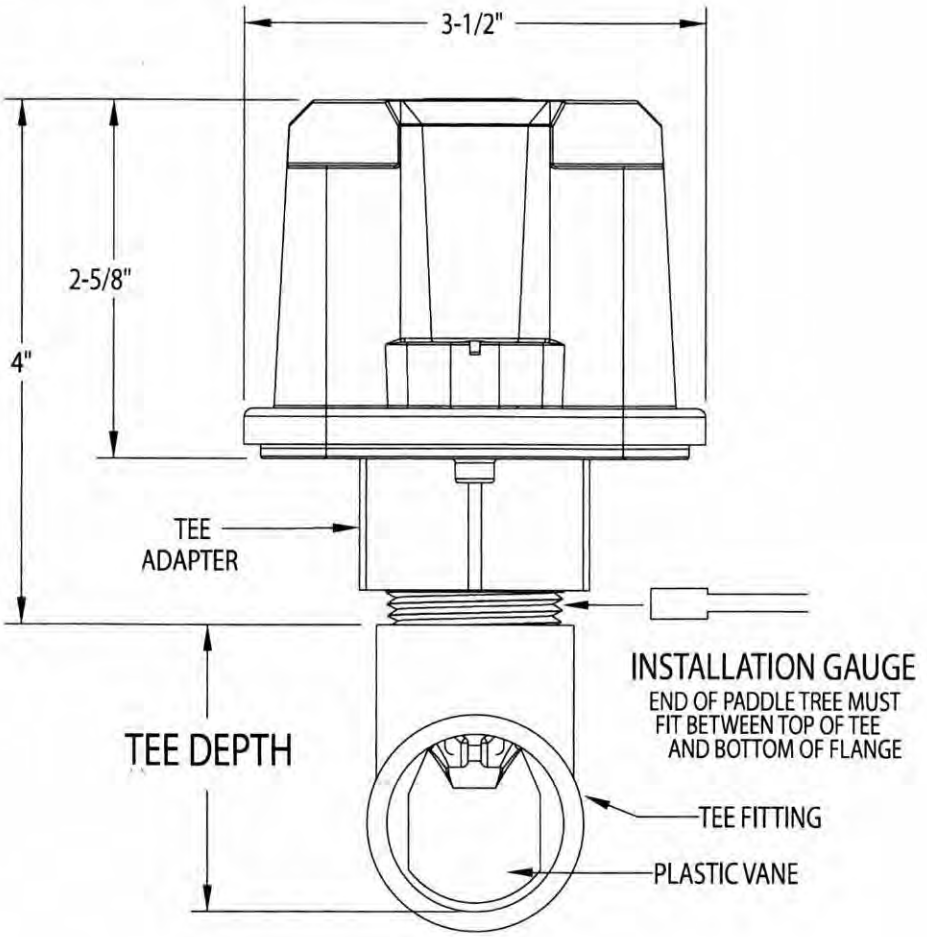
BREAK WIRE AS SHOWN FOR SUPERVISION OF CONNECTION. DO NOT ALLOW STRIPPED WIRE LEADS TO EXTEND BEYOND SWITCH HOUSING. DO NOT LOOP WIRES.

Delay Adjustment Dial



NOTE: RETARD TIME MAY EXCEED 90 SECONDS. ADJUST AND VERIFY THAT TIME DOES NOT EXCEED 90 SECONDS. NUMBER ON DIAL IS APPROXIMATE TIME DELAY IN SECONDS

Overall Dimensions, Installed



DESIGNED TO FIT WITHIN 2 X 4 STUD WALL CONSTRUCTION

Ordering Information		
UL Model	**ULC Model**	**Description**
WFDTN	WFDTNA	Waterflow Detector, Fits 1in., 1¼in., 1½in., 2in. ferrous and brass threaded tees; 1in., 1¼in., 1½in., 2in. copper sweat tees; 1in. CPVC tees.
WFDTNRN	—	Waterflow Detector without incorporated time delay mechanism, fits same tees as WFDTN
Accessories		
FS-RT	Delay mechanism and switch assembly	
CTS	Tamper-proof switch kit	
WFDW	Tamper-proof wrench for cover	

SYSTEM SENSOR®

3825 Ohio Avenue • St. Charles, IL 60174
Phone: 800-SENSOR2 • Fax: 630-377-6495
www.systemsensor.com

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WFDS43702 • 2/16

SSM/SSV Series Alarm Bells



System Sensor's SSM and SSV series alarm bells are low current, high decibel notification appliances for use in fire and burglary systems or other signaling applications.

Features

- Approved for indoor and outdoor use
- Low current draw
- High dB output
- Available in six-inch, eight-inch, and ten-inch sizes
- AC and DC models
- DC models polarized for use with supervision circuitry
- Mount directly to standard four-inch square electrical box indoors
- SSM and SSV series come pre-wired

Reliable Performance. The SSM and SSV series provide loud resonant tones. The SSM series operates on 24VDC and are motor driven, while the SSV series operates on 120VAC utilizing a vibrating mechanism.

Simplified Installation. For indoor use, the SSM and SSV series mount to a standard four-inch square electrical box. For outdoor applications, weatherproof back box, model number WBB, is used.

The SSM and SSV series come pre-wired, to reduce installation time. The SSM series incorporates a polarized electrical design for use with supervision circuitry.

Agency Listings

UL LISTED S4011 | ULC CS549 | FM APPROVED 3005255 | 7135-1653.0217 | MEA approved 331-01-E

SSM/SSV Specifications

Architectural/Engineering Specifications

Model shall be a SSM or SSV Series alarm bell. Bells shall have underdome strikers and operating mechanisms. Gongs on said bells shall be no smaller than nominal 6"/8"/10" (specify size) with an operating voltage of 24VDC or 120VAC (specify by part number). Bells shall be suitable for surface or semi-flush mounting. Outdoor surface mounted installations shall be weatherproof (using optional WBB weatherproof electrical box). Otherwise bells shall mount to a standard 4" square electrical box having a maximum projection of 2½". Bells shall be located as shown on the drawings or as determined by the Authority Having Jurisdiction. Bells shall be listed for indoor/outdoor use by Underwriters Laboratories and the California State Fire Marshal, and approved by Factory Mutual and MEA.

Physical/Operating Specifications

Operating Temperature Range	–31°F to 140°F
Operating Voltage	SSM series: 24 VDC SSV series: 120 VAC
Termination	Provided with 2 sets of leads for in/out wiring
Service Use	Fire Alarm, General Signaling, Burglar Alarm
Warranty	3 years

Electrical Specifications

Model	Gong Diameter (inches)	Nominal Voltage	Operating Voltage Limit	Maximum Current	Sound Output (dBA)
SSM24-6	6	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	82
SSM24-8	8	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	80
SSM24-10	10	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	81
SSV120-6	6	Regulated 120VAC	96 to 132VAC	53mA	85
SSV120-8	8	Regulated 120VAC	96 to 132VAC	53mA	82
SSV120-10	10	Regulated 120VAC	96 to 132VAC	53mA	82

* Sound output measured at Underwriter Laboratories, as specified in UL464

Ordering Information

UL/FM Model No.	ULC/Canadian Model No.	Description
SSM24-6	SSM24-6A	Bell, 6", 24VDC, Polarized, 82dBA
SSM24-8	SSM24-8A	Bell, 8", 24VDC, Polarized, 80dBA
SSM24-10	SSM24-10A	Bell, 10", 24VDC, Polarized, 81dBA
SSV120-6	SSV120-6A	Bell, 6", 120VAC, 85dBA
SSV120-8	SSV120-8A	Bell, 8", 120VAC, 82dBA
SSV120-10	SSV120-10A	Bell, 10", 120VAC, 82dBA
WBB		Weatherproof back box for SSM and SSV series, when installed outdoors

SYSTEM SENSOR®

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A05-0260-010 • 08/11 • #2870

WATERFLOW DATA

Fire Hydrant Flow Calculator

© 2006, Willis Lamm

- Use the tab key to navigate.
- Tab between each box to update the calculation.
- Be sure to tab past your final entry for a correct calculation.

Village Walk
COT-395

Static:	68	psi before flowing
Residual:	54	psi while flowing
Pitot:	45	pitot gage reading
Diameter:	2.5	size of opening tested
This hydrant is flowing:	1126	GPM from the test outlet
Projected available hydrant flow:	2189	GPM **Note 1**
2nd Static:	66	secondary psi before flowing
2nd Residual:	58	secondary psi while flowing
The main can be expected to flow about:	2895	GPM

Notes:

1. Projected available flows calculated at 20 psi residual, or ½ the static pressure for low pressure hydrants having static pressures of less than 40 psi.

2. This calculator is based on established Hazen-Williams formulas and is provided for convenience and estimation purposes only. The author and FireHydrant.org express no warranty for its suitability for any particular purpose.

Click for Legal Disclaimer

HYDRUALIC CALCULATIONS

RLS FIRE PROTECTION SYSTEMS
P.O. BOX 984
CASTLE ROCK COLORADO 80104

HYDRAULIC CALCULATIONS

FOR

VILLAGE WALK
PLAN 2 AND PLAN 2 REVERSE
COTATI, CA.

FILE NUMBER: 160201
DATE: JUL 27, 2016

-DESIGN DATA-

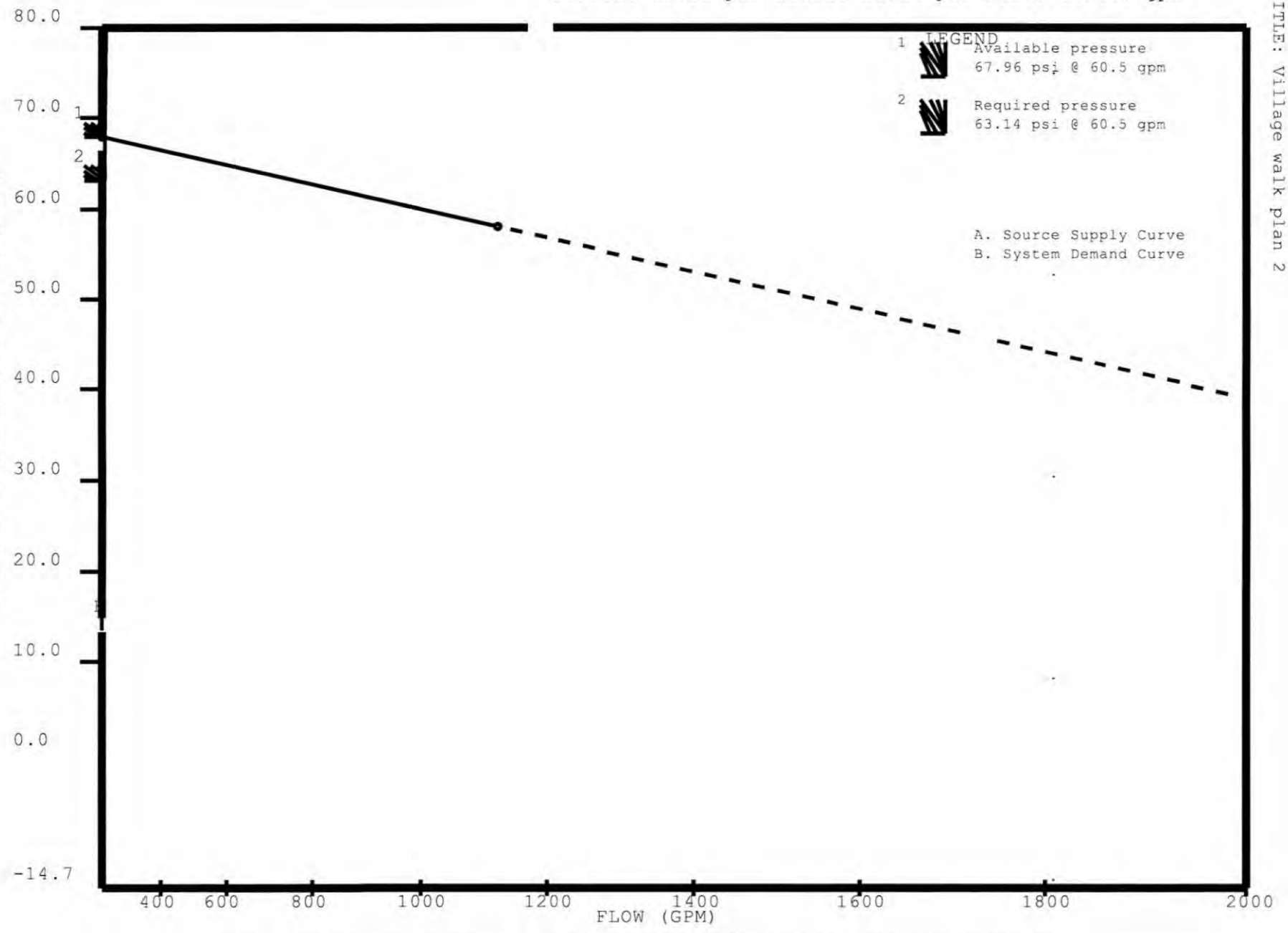
NUMBER OF SPRINKLERS CALCULATED:	4	
FLOW AND PRESSURE AT BASE OF RISER	55.6 gpm @	**33.6** psi
NAME OF CONTRACTOR:	SYNERGY	
DESIGN / LAYOUT BY:	RON SCOGGINS	

NOTE:
4 HEAD REMOTE AREA CALC AT 16 FT. X 16 FT. CALCS

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 50122087)
HRS SYSTEMS, INC.
PETERSBURG, TN

WATER SUPPL. .NALYSIS

Static: 68.00 psi Resid: 58.00 psi Flow: 1126.0 gpm



Note: (1) Dashed Lines indicate extrapolated values from Test Results

(2) On Site pressures are based on hose stream deduction at the source

DATE: 7/27/2016RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN CHECK\PLAN 2.SDF
JOB TITLE: Village walk plan 2

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. @ (PSI)	FLOW @ (GPM)	AVAIL. PRESS. @ (PSI)	TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
1	68.0	58.0	1126.0	68.0	60.5	63.1

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	60.5 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	5.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	55.5 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	0.0	SOURCE	63.1	60.5	
1A	0.0	- - - -	53.8	- - -	
1B	0.0	- - - -	50.0	- - -	
2	0.0	HOSE STREAM	49.9	5.0	
3	0.0	- - - -	43.3	- - -	
	2.0	- - - -	41.7	- - -	
	2.0	- - - -	34.7	- - -	
6	3.0	- - - -	33.6	- - -	
7	3.0	- - - -	30.6	- - -	
8	4.0	- - - -	29.4	- - -	
10	11.0	- - - -	25.1	- - -	
11	11.0	- - - -	22.2	- - -	
20	21.0	- - - -	18.7	- - -	
21	21.0	- - - -	17.4	- - -	
30	31.0	- - - -	12.3	- - -	
31	31.0	- - - -	11.8	- - -	
32	31.0	- - - -	8.5	- - -	
301	31.0	K= 4.90	9.0	14.7	
302	31.0	K= 4.90	7.5	13.4	
303	31.0	K= 4.90	7.0	13.0	
304	31.0	K= 4.90	8.7	14.5	

DATE: 7/27/2016RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN CHECK\PLAN 2.SDF
JOB TITLE: Village walk plan 2

NFPA PIPE DATA

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(Pt) / (Pe) / (Pf)	Notes
Pipe: 1		Source	0.0				35.00	150	9.4	
1	0.0	63.1	60.5	1B	1.250	T: 7.4	8.68		0.0	
1A	0.0	53.8	60.5		1.325	G: 1.2	43.68	0.214	9.4	
Pipe: 1A			0.0	Fixed Pressure Loss Device						
1A	0.0	53.8	60.6	2		3.8 psi,	60.6 gpm			
1B	0.0	50.0	60.6							
Pipe: 1B		H.S.	5.0	Disch			1.00	150	0.1	
1B	0.0	50.0	55.6	3	P1.500	----	0.00		0.0	
2	0.0	49.9	60.6		1.590		1.00	0.088	0.1	
Pipe: 2		0.0	0.0				76.00	150	6.6	
2	0.0	49.9	55.6	4	P1.500	3E:12.0	12.00		0.0	
3	0.0	43.3	55.6		1.590		88.00	0.075	6.6	
Pipe: 3		0.0	0.0				3.00	150	1.6	
3	0.0	43.3	55.6	5	K1.500	E: 4.0	4.00		-0.9	
4	2.0	41.7	55.6		1.481		7.00	0.106	0.7	
Pipe: 4			0.0	Fixed Pressure Loss Device						
	2.0	41.7	55.6	6		7.0 psi,	55.6 gpm			
	2.0	34.7	55.6							
Pipe: 5		0.0	0.0				2.00	150	1.1	
5	2.0	34.7	55.6	7	M1.500	E: 5.0	5.00		-0.4	
6	3.0	33.6	55.6		1.527		7.00	0.092	0.6	
Pipe: 6			0.0	Fixed Pressure Loss Device						
6	3.0	33.6	55.6	8		3.0 psi,	55.6 gpm			
7	3.0	30.6	55.6							
Pipe: 7		0.0	0.0				3.00	150	1.2	
7	3.0	30.6	55.6	10	M1.500	E: 5.0	5.00		-0.4	
8	4.0	29.4	55.6		1.527		8.00	0.092	0.7	
Pipe: 8		0.0	41.6	20			7.00	120	4.3	
8	4.0	29.4	14.0	11	1.500	E: 4.6	4.63		-3.0	
10	11.0	25.1	55.6		1.598		11.63	0.111	1.3	
Pipe: 9		0.0	0.0			E: 3.3	42.50	120	2.9	
10	11.0	25.1	14.0	21	1.000	2T: 6.6	11.91		0.0	
11	11.0	22.2	14.0		1.101	3R: 2.0	54.41	0.053	2.9	
Pipe: 10		0.0	29.6	30			17.25	120	6.4	
10	11.0	25.1	11.9	21	1.500	2E: 9.3	14.56		-4.3	
20	21.0	18.7	41.6		1.598	T: 5.3	31.81	0.065	2.1	

DATE: 7/27/2016RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN CHECK\PLAN 2.SDF
JOB TITLE: Village walk plan 2

Type Tag / Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: / Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(Pt) / (Pe) / (Pf)	Notes
Pipe: 11		0.0	25.9	31			10.00	150	4.9	
11	11.0	22.2	-11.9	20	1.000	T: 5.0	5.00		-4.3	
21	21.0	17.4	14.0		1.101		15.00	0.035	0.5	
Pipe: 12		0.0	25.9	31		E: 5.0	37.25	150	1.4	
20	21.0	18.7	-14.0	11	1.000	T: 5.0	15.00		0.0	
21	21.0	17.4	11.9		1.101	5R: 5.0	52.25	0.026	1.4	
Pipe: 13		0.0	0.0				10.00	150	6.4	
20	21.0	18.7	29.6	304	1.000	T: 5.0	5.00		-4.3	
30	31.0	12.3	29.6		1.101		15.00	0.141	2.1	
Pipe: 14		0.0	0.0				10.00	150	5.5	
21	21.0	17.4	25.9	301	1.000	R: 1.0	1.00		-4.3	
31	31.0	11.8	25.9		1.101		11.00	0.110	1.2	
Pipe: 15		4.90	14.5	Disch			13.25	150	3.6	
30	31.0	12.3	15.2	32	1.000	2T:10.0	12.00		0.0	
304	31.0	8.7	29.6		1.101	2R: 2.0	25.25	0.141	3.6	
Pipe: 16		0.0	26.4	302			5.00	150	0.2	
304	31.0	8.7	-11.2	301	1.000	R: 1.0	1.00		0.0	
32	31.0	8.5	15.2		1.101		6.00	0.041	0.2	
Pipe: 17		4.90	13.4	Disch			3.75	150	1.0	
32	31.0	8.5	13.0	303	1.000	T: 5.0	5.00		0.0	
302	31.0	7.5	26.4		1.101		8.75	0.114	1.0	
Pipe: 18		4.90	13.0	Disch			7.25	150	0.4	
302	31.0	7.5	0.0		1.000	E: 5.0	7.00		0.0	
303	31.0	7.0	13.0		1.101	2R: 2.0	14.25	0.031	0.4	
Pipe: 19		0.0	26.4	302			17.00	150	0.5	
301	31.0	9.0	-15.2	304	1.000	T: 5.0	6.00		0.0	
32	31.0	8.5	11.2		1.101	R: 1.0	23.00	0.023	0.5	
Pipe: 20		4.90	14.7	Disch			10.50	150	2.8	
31	31.0	11.8	11.2	32	1.000	2E:10.0	15.00		0.0	
301	31.0	9.0	25.9		1.101	T: 5.0	25.50	0.110	2.8	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.5 computer program
under license no. 50122087 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760

(2) The system has been calculated to provide an average imbalance at each node of 0.005 gpm and a maximum imbalance at any node of 0.107 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 14.1 ft/sec at pipe 1.

(4) Items listed in bold print on the cover sheet .

are automatically transferred from the calculation report.

(5) Available pressure at source node 1 under full flow conditions is 67.95 psi compared to the minimum required pressure of 0.00 psi.

(6) PIPE FITTINGS TABLE

Pipe Table Name: RLSNEW.PIP

PAGE: * MATERIAL: S40 HWC: 120

Diameter (in)	Equivalent Fitting Lengths in Feet								
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	A AlmChk	D DPVlv	N NPTee
1.325	2.46	4.92	1.64	5.74	4.92	0.82	8.20	8.20	4.92

PAGE: C MATERIAL: CPVC HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet						
	F Gate	E Tee	T	R	K	C	G
1.101	1.00	5.00	5.00	1.00	1.00	8.00	2.00
1.598	2.00	7.00	8.00	1.00	1.00	14.00	3.00

PAGE: K MATERIAL: CT-K HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet							
	E NPTee	T Tee	F	R	K	C	G	N
1.481	4.00	8.00	2.00	3.00	0.50	9.00	0.00	8.00

PAGE: M MATERIAL: CT-M HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet							
	E NPTee	T Tee	F	R	K	C	G	N
1.527	5.00	9.00	2.00	3.00	0.50	11.00	0.00	9.00

RLS FIRE PROTECTION SYSTEMS
P.O. BOX 984
CASTLE ROCK COLORADO 80104

HYDRAULIC CALCULATIONS

FOR

VILLAGE WALK
PLAN 2 AND PLAN 2 REVERSE
COTATI, CA.

FILE NUMBER: 160201
DATE: JUL 19, 2016

-DESIGN DATA-

NUMBER OF SPRINKLERS CALCULATED:	4	
FLOW AND PRESSURE AT BASE OF RISER	53.3 gpm @	**29.7** psi
NAME OF CONTRACTOR:	SYNERGY	
DESIGN / LAYOUT BY:	RON SCOGGINS	

NOTE:
4 HEAD REMOTE AREA CALC AT 16 FT. X 16 FT. CALCS

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 50122087)
HRS SYSTEMS, INC.
PETERSBURG, TN





PO BOX 984
CASTLE ROCK, CO 80104
TEL: (707) 484-5711

3

SUBMITTAL DATA

VILLAGE WALK SUBDIVSION
PLANS 3 AND 3 REVERSE
COTATI, CA

APPROVED
WITH CHANGES
DATE 7/27/16 BY
RANCHO ADOBE FIRE PROTECTION DISTRICT

City

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1. **Sprinkler Heads Cut Sheet**
2. **Backflow Preventer Cut Sheet**
3. **Flow Switch and Bell Cut Sheet**
4. **Water Flow Data**
5. **Hydraulic Calculations**

1

SPRINKLER HEAD CUT SHEETS

tyco Fire Protection Products

Worldwide Contacts | www.tyco-fire.com

RAPID RESPONSE Series LFII Residential 4.9 K-factor Concealed Pendent Sprinkler Flat Plate, Wet Pipe and Dry Pipe Systems

General Description

TYCO RAPID RESPONSE Series LFII Residential 4.9K Concealed Pendent Sprinklers (TY3596) are decorative, fast response, fusible solder sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels.

The cover plate assembly conceals the sprinkler operating components above the ceiling. The flat profile of the cover plate provides the optimum aesthetically appealing sprinkler design. In addition, the concealed design of the Series LFII Residential Concealed Pendent Sprinklers (TY3596) provides 1/2 inch (12,7 mm) vertical adjustment. This adjustment provides a measure of flexibility when cutting fixed sprinkler drops.

The Series LFII Residential Concealed Sprinklers are intended for use in the following scenarios:

- wet and dry pipe residential sprinkler systems for one- and two-family dwellings and mobile homes per NFPA 13D
- wet and dry pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R
- wet and dry pipe sprinkler systems for the residential portions of any occupancy per NFPA 13

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) has been designed with heat sensitivity and water distribution characteristics proven to help in the control of residential fires and to improve the chance for occupants to escape or be evacuated.

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) are shipped with a Disposable Protective Cap. The Protective Cap is temporarily removed for installation, and then it can be replaced to help protect the sprinkler while the ceiling is being installed or finished. The tip of the Protective Cap can also be used to mark the center of the ceiling hole into plaster board, ceiling tiles, etc. by gently pushing the ceiling product against the Protective Cap. When the ceiling installation is complete the Protective Cap is removed and the Cover Plate Assembly installed.

Dry Pipe System Application

The Series LFII Residential Concealed Pendent Sprinklers offers a laboratory approved option for designing dry pipe residential sprinkler systems, whereas, most residential sprinklers are laboratory approved for wet systems only.

Through extensive testing, it has been determined that the number of design sprinklers (hydraulic design area) for the Series LFII Residential Concealed Pendent Sprinklers (TY3596) need not be increased over the number of design sprinklers (hydraulic design area) as specified for wet pipe sprinkler systems, as is accustomed for density/area sprinkler systems designed per NFPA 13.

Consequently, the Series LFII Residential Concealed Pendent Sprinklers offer the features of non-water filled pipe in addition to not having to increase the number of design sprinklers (hydraulic design area) for systems designed to NFPA 13, 13D, or 13R.



NOTICE

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association (NFPA), in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Sprinkler Identification Number (SIN)

TY3596

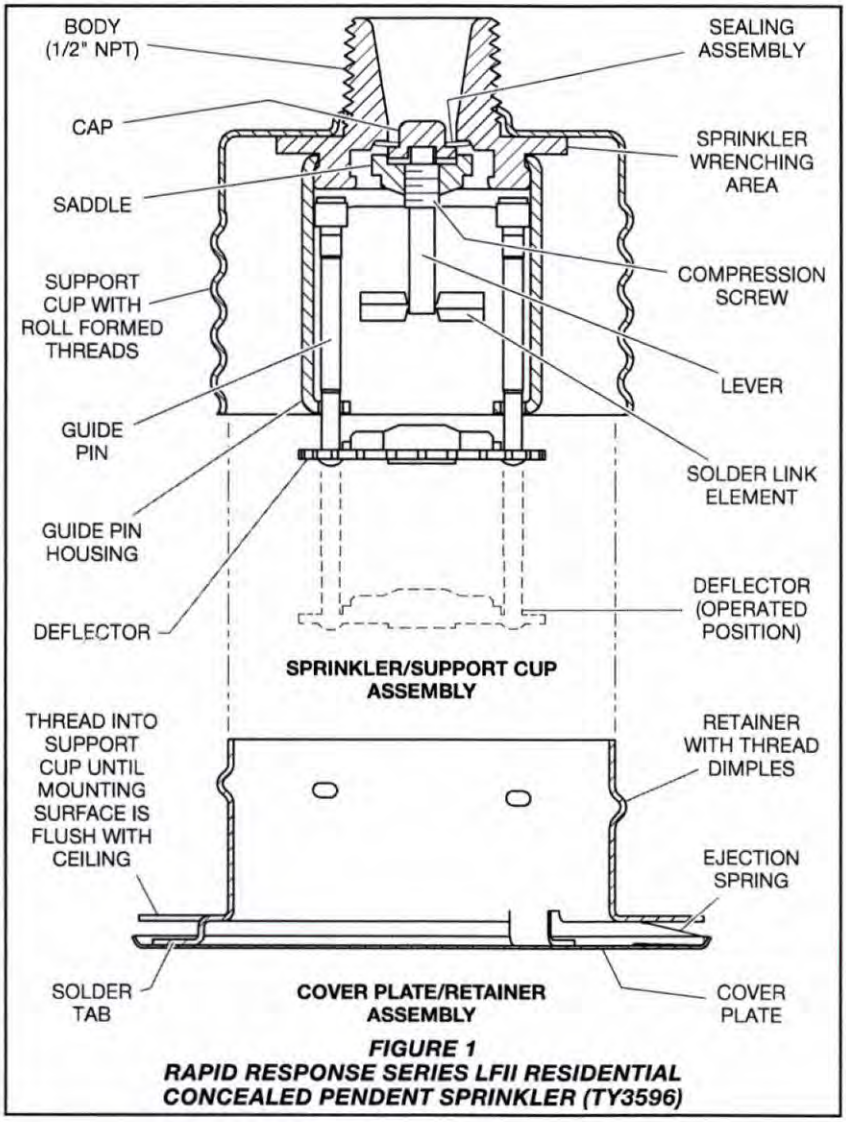


FIGURE 1
RAPID RESPONSE SERIES LFII RESIDENTIAL CONCEALED PENDENT SPRINKLER (TY3596)

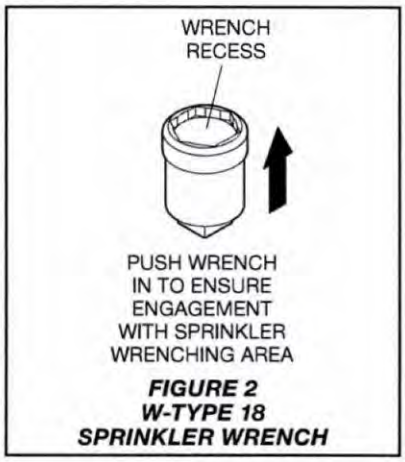


FIGURE 2
W-TYPE 18
SPRINKLER WRENCH

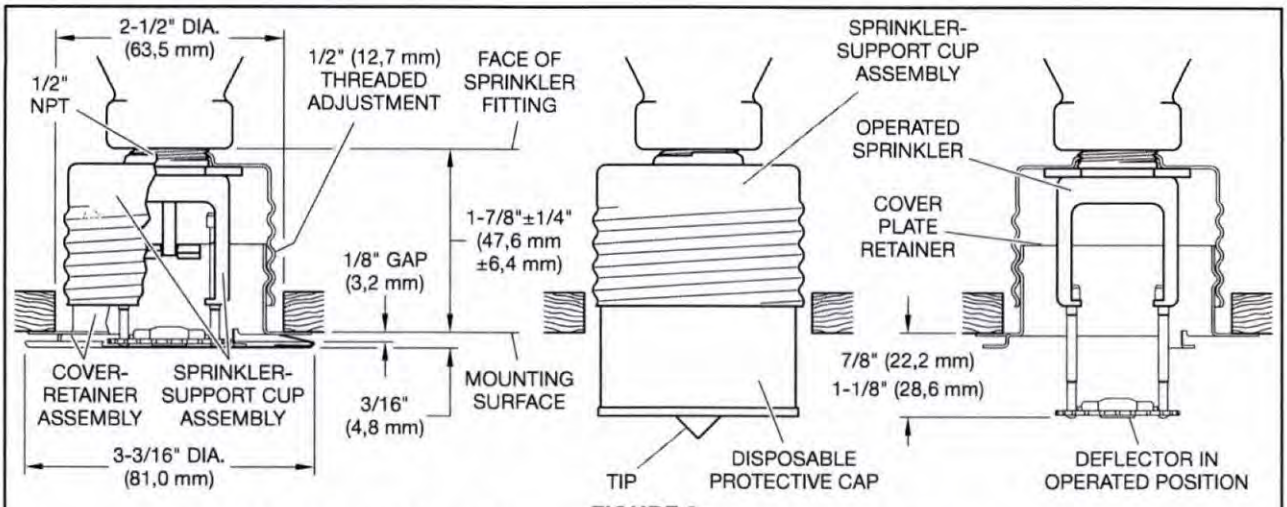


FIGURE 3
RAPID RESPONSE SERIES LFII RESIDENTIAL CONCEALED PENDENT SPRINKLER (TY3596)
INSTALLATION DIMENSIONS/PROTECTIVE CAP/ACTIVATED DEFLECTOR

Technical Data

Approvals
UL and C-UL Listed
NYC Approved under MEA 44-03-E-2NSF
Certified to NSF/ANSI 61

The TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers are only Listed with the Series LFII Concealed Cover Plates having a factory-applied finish.

Cover Plates can be ordered by following the instructions in the Ordering Procedure section.

Maximum Working Pressure
175 psi (12,1 bar)

Discharge Coefficient
K=4.9 gpm/psi$^{1/2}$ (70,6 lpm/bar$^{1/2}$)

Temperature Rating
160°F (71°C) Sprinkler with
139°F (59°C) Cover Plate

Vertical Adjustment
1/2 inch (12,7 mm)

Finishes
Refer to Ordering Procedure section.

Physical Characteristics

Body	Brass
Cap	Bronze
Saddle	Brass
Sealing Assembly	Beryllium Nickel w/TEFLON
Soldered Link Halves	Nickel
Lever	Bronze
Compression Screw	Brass
Deflector	Copper or Brass
Guide Pin Housing	Bronze
Guide Pins	Stainless Steel or Bronze
Support Cup	Steel
Cover Plate	Copper
Retainer	Brass
Cover Plate Ejection Spring	Stainless Steel

Operation

When exposed to heat from a fire, the Cover Plate, which is normally soldered to the Support Cup at three points, falls away to expose the sprinkler assembly. At this point the Deflector supported by the Arms drops down to its operated position. The fusible link of the sprinkler assembly is comprised of two link halves that are soldered together with a thin layer of solder. When the rated temperature is reached, the solder melts and the two link halves separate allowing the sprinkler to activate and flow water.

Design Criteria

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) are UL and C-UL Listed for installation in accordance with this section.

Note: *When conditions exist that are outside the scope of the provided criteria, refer to the Residential Sprinkler Design Guide TFP490 for the manufacturer's recommendations that may be acceptable to the authority having jurisdiction.*

System Types
Per the UL Listing, wet pipe and dry pipe systems may be utilized. Per the C-UL Listing, only wet pipe systems may be utilized.

Refer to Technical Data Sheet TFP485 about the use of residential sprinklers in residential dry pipe systems.

Ceiling Types
Smooth flat horizontal, or beamed, or sloped, in accordance with the 2013 Edition of NFPA 13D, 13R, or 13 as applicable.

Hydraulic Design (NFPA 13D and 13R)
For systems designed to NFPA 13D or NFPA 13R, the minimum required sprinkler flow rates are given in Tables A and B as a function of temperature rating and the maximum allowable coverage areas. The sprinkler flow rate is the minimum required discharge from each of the total number of "design sprinklers" as specified in NFPA 13D or NFPA 13R. The number of "design sprinklers" specified in NFPA 13D and 13R for wet pipe systems is to be applied when designing dry pipe systems.

Hydraulic Design (NFPA 13)
For systems designed to NFPA 13, the number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- the flow rates given in Tables A and B as a function of temperature rating and the maximum allowable coverage area
- a minimum discharge of 0.1 gpm/ft.^{2} over the design area comprised of the four (4) most hydraulically demanding sprinklers for actual coverage areas protected by the four (4) sprinklers

The number of design sprinklers specified in NFPA 13 for wet pipe systems is to be applied when designing dry pipe systems.

Dry Pipe System Water Delivery
When using the Series LFII Residential Concealed Pendent Sprinklers (TY3596) in dry pipe sprinkler systems, the time for water delivery must not exceed 15 seconds for the most remote operating sprinkler.

Obstruction to Water Distribution
Sprinklers are to be located in accordance with the obstruction rules of NFPA 13D, 13R, and 13 as applicable for residential sprinklers as well as with the obstruction criteria described within the Technical Data Sheet TFP490.

Operational Sensitivity
The sprinklers are to be installed relative to the ceiling mounting surface as shown in Figure 3.

Sprinkler Spacing
The minimum spacing between sprinklers is 8 feet (2,4 m). The maximum spacing between sprinklers cannot exceed the length of the coverage area (Ref. Table A or B) being hydraulically calculated (e.g., maximum 12 feet for a 12 ft. x 12 ft. coverage area, or 20 feet for a 20 ft. x 20 ft. coverage area).

The Series LFII must not be used in applications where the air pressure above the ceiling is greater than that below. Down drafts through the Support Cup could delay sprinkler operation in a fire situation.

Maximum Coverage Area [1] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	WET PIPE SYSTEM Minimum Flow and Residual Pressure [2,3]				
		Ordinary Temp. Rating 160°F (71°C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow gpm (lpm)	Pressure psi (bar)			
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings 7/8 to 1-1/8 inches Beamed Ceilings per NFPA 13D or 13R, or 13. Installed in beam 7/8 to 1-1/8 inches below bottom of beam	Concealed	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	13 (49,2)	7.0 (0,48)			
16 x 16 (4,9 x 4,9)	16 (4,9)	13 (49,2)	7.0 (0,48)			
18 x 18 (5,5 x 5,5)	18 (5,5)	17 (64,3)	12.0 (0,83)			
20 x 20 (6,1 x 6,1)	20 (6,1)	20 (75,7)	16.7 (1,15)			

Notes:
1. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
2. Requirement is based on minimum flow in gpm (lpm) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.
3. For NFPA 13 residential applications, the greater of 0.1 gpm/ft.^{2} over the design area or the flow in accordance with the criteria in this table must be used.

TABLE A
WET PIPE SYSTEM
SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT PLATE CONCEALED PENDENT SPRINKLER (TY3596)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Maximum Coverage Area [1] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	DRY PIPE SYSTEM Minimum Flow and Residual Pressure [2,3]				
		Ordinary Temp. Rating 160°F (71°C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow gpm (lpm)	Pressure psi (bar)			
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings 7/8 to 1-1/8 inches Beamed Ceilings per NFPA 13D or 13R, or 13. Installed in beam 7/8 to 1-1/8 inches below bottom of beam	Concealed	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	14 (53,0)	8.2 (0,57)			
16 x 16 (4,9 x 4,9)	16 (4,9)	15 (56,8)	9.4 (0,65)			
18 x 18 (5,5 x 5,5)	18 (5,5)	18 (68,1)	13.5 (0,93)			
20 x 20 (6,1 x 6,1)	20 (6,1)	21 (79,5)	18.4 (1,27)			

Notes:
1. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
2. Requirement is based on minimum flow in gpm (lpm) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.
3. For NFPA 13 residential applications, the greater of 0.1 gpm/ft.^{2} over the design area or the flow in accordance with the criteria in this table must be used.

TABLE B
DRY PIPE SYSTEM
RAPID RESPONSE SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT PLATE CONCEALED PENDENT (TY3596)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Installation

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be installed in accordance with this section.

General Instructions
Damage to the fusible Link Assembly during installation can be avoided by handling the sprinkler by the support cup only (i.e., do not apply pressure to the fusible Link Assembly).

A 1/2 inch NPT sprinkler joint should be obtained with a minimum to maximum torque of 7 to 14 lbs.-ft. (9,5 to 19,0 Nm). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Cover Plate / Retainer Assembly by under- or over-tightening the Sprinkler. Readjust the position of the sprinkler fitting to suit.

Step 1. The sprinkler must only be installed in the pendent position and with the centerline of the sprinkler perpendicular to the mounting surface.

Step 2. Remove the Protective Cap.

Step 3. With pipe thread sealant applied to the pipe threads, and using the W-Type 18 Wrench shown in Figure 2, install and tighten the Sprinkler / Support Cup Assembly into the fitting. The W-Type 18 Wrench will accept a 1/2 inch ratchet drive.

Step 4. Replace the Protective Cap by pushing it upwards until it bottoms out against the Support Cup. The Protective Cap helps prevent damage to the Deflector and Guide Pins during ceiling installation and/or during application of the finish coating of the ceiling. It may also be used to locate the center of the clearance hole by gently pushing the ceiling material against the center point of the Cap.

Note: *As long as the protective Cap remains in place, the system is considered to be "Out Of Service."*

Step 5. After the ceiling has been completed with the 2-1/2 inch (63 mm) diameter clearance hole and in preparation for installing the Cover Plate Assembly, remove and discard the Protective Cap, and verify that the Deflector moves up and down freely.

If the sprinkler has been damaged and the Deflector does not move up and down freely, replace the entire sprinkler assembly. Do not attempt to modify or repair a damaged sprinkler.

Step 6. Screw on the Cover Plate Assembly until its flange comes in contact with the ceiling.

Do not continue to screw on the Cover Plate Assembly such that it lifts a ceiling panel out of its normal position.

If the Cover Plate Assembly cannot be engaged with the Mounting Cup or the Cover Plate Assembly cannot be engaged sufficiently to contact the ceiling, the Sprinkler Fitting must be repositioned.

Care and Maintenance

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system which it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

Absence of a Cover Plate may delay the sprinkler operation in a fire situation.

When properly installed, there is a nominal 1/8 inch (3,2 mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 3. This air gap is necessary for proper operation of the sprinkler by allowing heat flow from a fire to pass below and above the Cover Plate to help assure appropriate release of the Cover Plate in a fire situation. If the ceiling is to be repainted after the installation of the Sprinkler, care must be exercised to ensure that the new paint does not seal off any of the air gap.

Factory painted Cover Plates must not be repainted. They should be replaced, if necessary, by factory painted units. Non-factory applied paint may adversely delay or prevent sprinkler operation in the event of a fire.

Do not pull the Cover Plate relative to the Enclosure. Separation may result.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified or over heated sprinklers must be replaced.

Care must be exercised to avoid damage before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, non-operation in the event of a fire or inadvertent operation may result.

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and part number (P/N).

Sprinkler Assemblies
Specify: Series LFII (TY3596) 4.9K Residential Concealed Pendent Sprinkler without Cover Plate Assembly, P/N 51-112-1-160

Cover Plate Assemblies
Specify: Cover Plate Assembly with (specify) finish for the Series LFII (TY3596) 4.9K Residential Concealed Pendent Sprinkler, P/N (specify):

Ivory (RAL1015) . . . . . P/N 56-202-0-135
Beige (RAL1001). . . . . P/N 56-202-2-135
Pure White * (RAL9010) . . . . . P/N 56-202-3-135
Signal White ** (RAL9003) . . . P/N 56-202-4-135
Grey White (RAL9002) . . . . . P/N 56-202-5-135
Brown (RAL8028). . . . . P/N 56-202-6-135
Black (RAL9005) . . . . . P/N 56-202-7-135
Brushed Brass . . . . . P/N 56-202-8-135
Brushed Chrome . . . . . P/N 56-202-9-135
Custom Paint . . . . . P/N 56-202-X-135

* Eastern Hemisphere sales only
** Previously known as Bright White

Note: *All Custom Cover Plates are painted using Sherwin Williams Interior Latex Paint. Contact Tyco Customer Service with any questions related to custom orders.*

Sprinkler Wrench
Specify: W-Type 18 Sprinkler Wrench, P/N 56-000-1-265

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Series TY-FRB — 2.8, 4.2, 5.6, and 8.0 K-Factor Upright, Pendent, and Recessed Pendent Sprinklers Quick Response, Standard Coverage

General Description

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described in this data sheet are quick response, standard coverage, decorative 3 mm glass bulb-type spray sprinklers designed for use in light or ordinary hazard, commercial occupancies such as banks, hotels, and shopping malls.

The recessed version of the Series TY-FRB Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. This recessed pendent sprinkler uses one of the following:

- A two-piece Style 10 (1/2 inch NPT) or Style 40 (3/4 inch NPT) Recessed Escutcheon with 1/2 inch (12,7 mm) of recessed adjustment or up to 3/4 inch (19,1 mm) of total adjustment from the flush pendent position, or a
- A two-piece Style 20 (1/2 inch NPT) or Style 30 (3/4 inch NPT) Recessed Escutcheon with 1/4 inch (6,4 mm) of recessed adjustment or up to 1/2 inch (12,7 mm) of total adjustment from the flush pendent position.

The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the fixed pipe drops to the sprinklers must be cut.

Corrosion-resistant coatings, where applicable, are utilized to extend the life of copper alloy sprinklers beyond that which would otherwise be obtained when exposed to corrosive atmospheres. Although corrosion-resistant coated sprinklers have passed the standard corrosion tests of the applicable approval agencies, the testing is not representative of all possible corrosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of these coatings for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, as a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

An intermediate level of the Series TY-FRB Pendent Sprinklers is detailed in Technical Data Sheet TFP356, and Sprinkler Guards are detailed in Technical Data Sheet TFP780.

NOTICE

The Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.





Sprinkler Identification Number (SIN)

TY1131 - Upright 2.8K, 1/2" NPT
TY1231 - Pendent 2.8K, 1/2" NPT
TY2131 - Upright 4.2K, 1/2" NPT
TY2231 - Pendent 4.2K, 1/2" NPT
TY3131 - Upright 5.6K, 1/2" NPT
TY3231 - Pendent 5.6K, 1/2" NPT
TY4131 - Upright 8.0K, 3/4" NPT
TY4231 - Pendent 8.0K, 3/4" NPT
TY4831 - Upright 8.0K, 1/2" NPT
TY4931 - Pendent 8.0K, 1/2" NPT

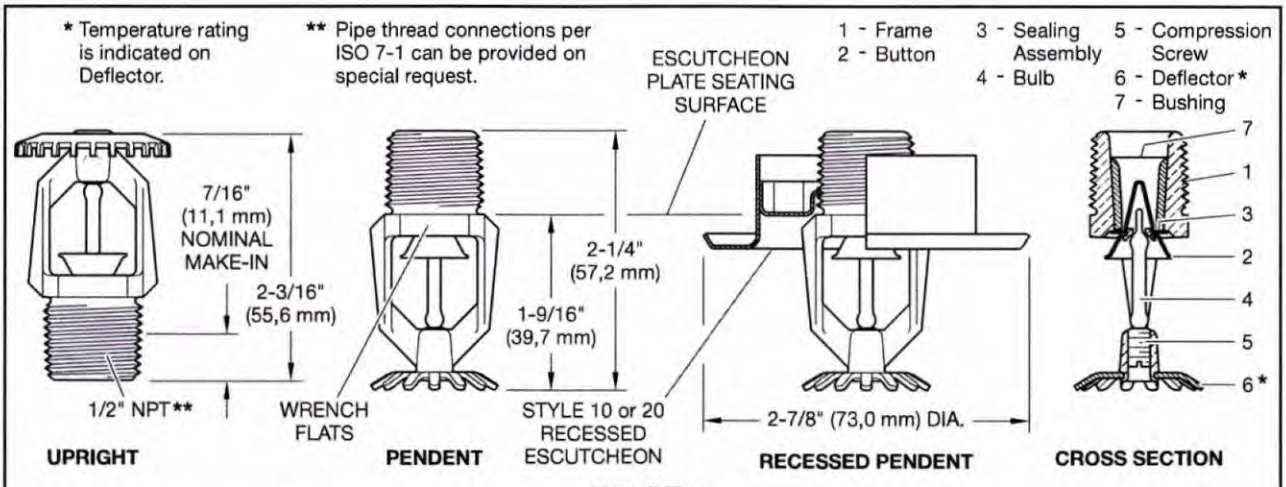


FIGURE 1
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY1131) AND PENDENT (TY1231) SPRINKLERS
2.8 K-FACTOR, 1/2 INCH NPT

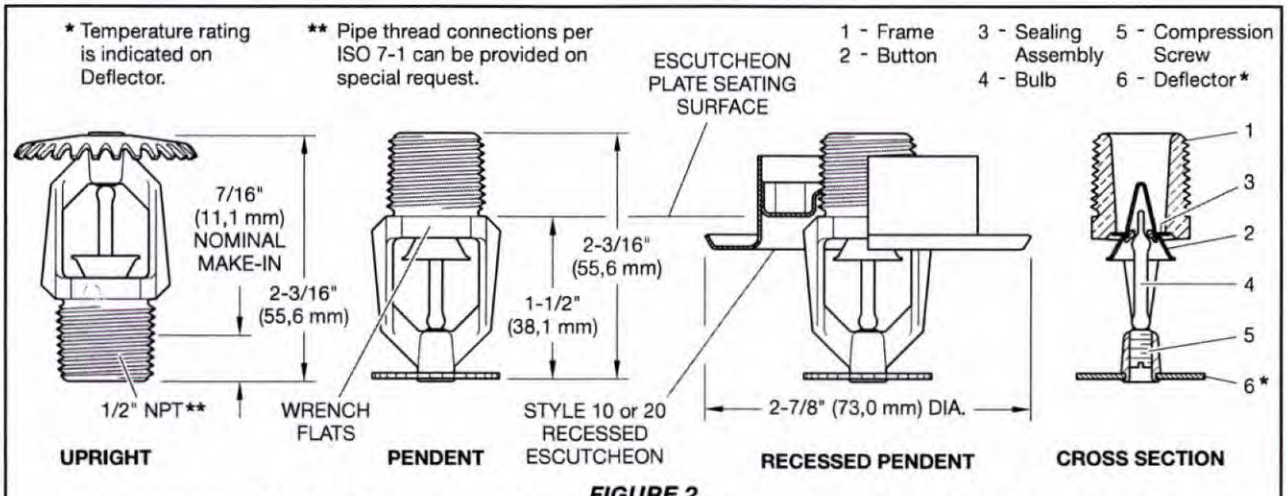


FIGURE 2
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY2131) AND PENDENT (TY2231) SPRINKLERS
4.2 K-FACTOR, 1/2 INCH NPT

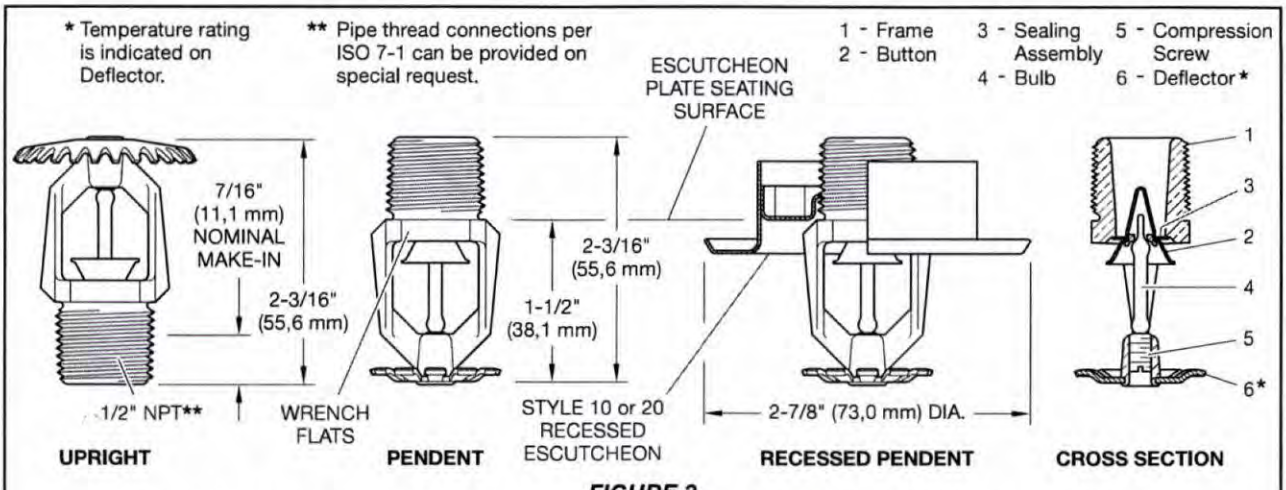


FIGURE 3
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY3131) AND PENDENT (TY3231) SPRINKLERS
5.6 K-FACTOR, 1/2 INCH NPT

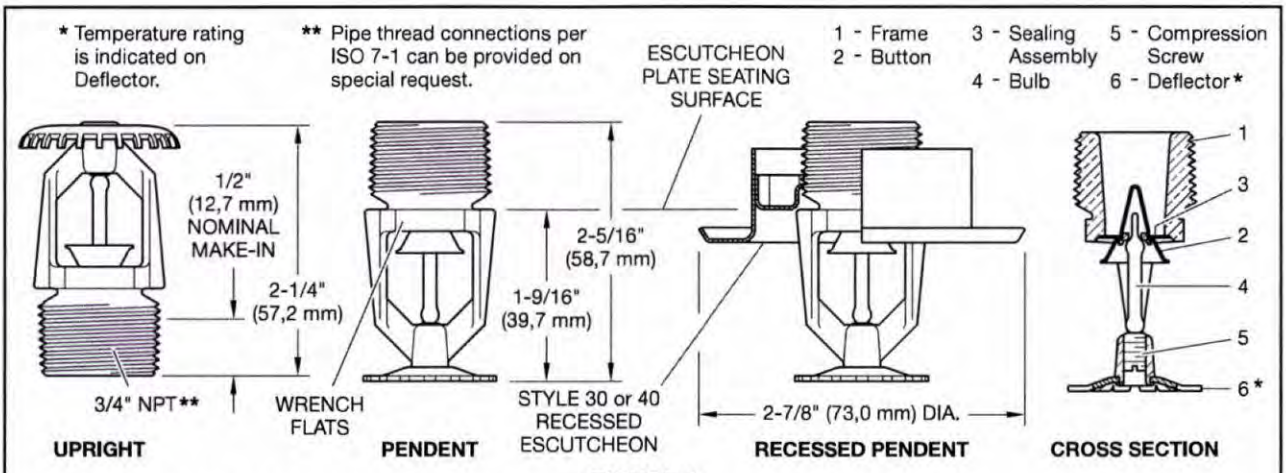


FIGURE 4
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4131) AND PENDENT (TY4231) SPRINKLERS
8.0 K-FACTOR, 3/4 INCH NPT

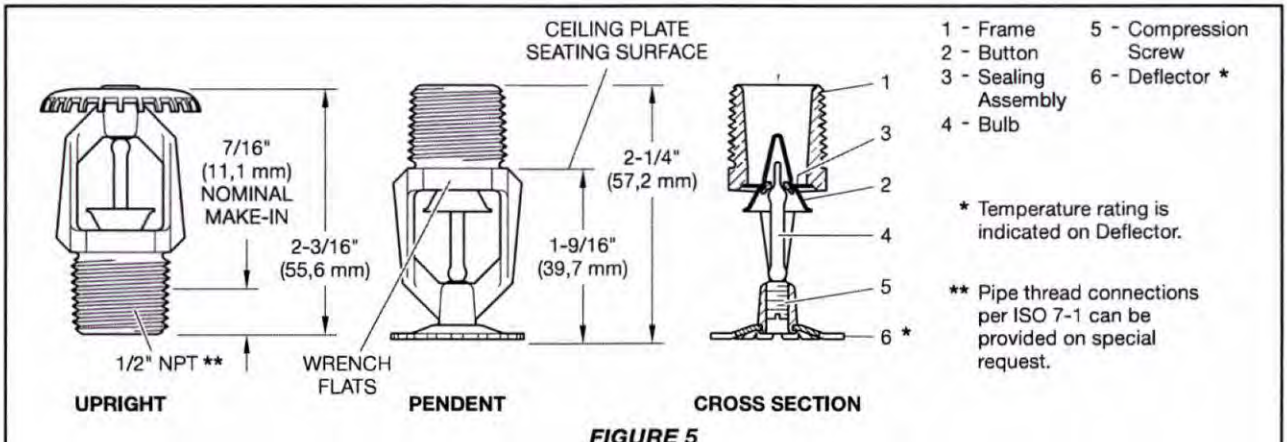


FIGURE 5
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4831) AND PENDENT (TY4931) SPRINKLERS
8.0 K-FACTOR, 1/2 INCH NPT

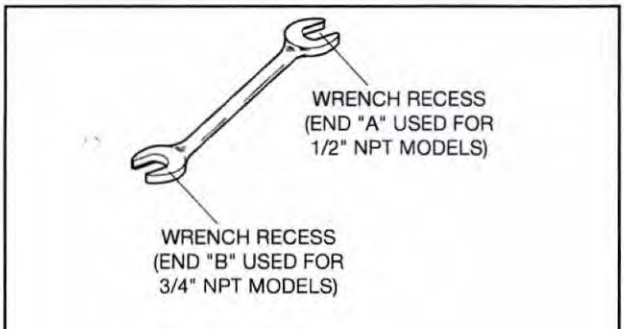


FIGURE 6
W-TYPE 6 SPRINKLER WRENCH

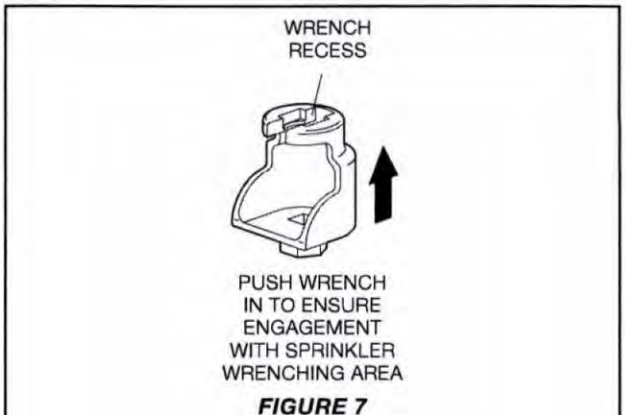


FIGURE 7
W-TYPE 7 RECESSED SPRINKLER WRENCH

Technical Data

Approvals
UL and C-UL Listed
FM, LPCB, and NYC Approved
Refer to Table A and B for complete approval information including corrosion-resistant status.

Maximum Working Pressure
Refer to Table C.

Discharge Coefficient
K=2.8 gpm/psi$^{1/2}$ (40,3 lpm/bar$^{1/2}$)
K=4.2 gpm/psi$^{1/2}$ (60,5 lpm/bar$^{1/2}$)
K=5.6 gpm/psi$^{1/2}$ (80,6 lpm/bar$^{1/2}$)
K=8.0 gpm/psi$^{1/2}$ (115,2 lpm/bar$^{1/2}$)

Temperature Rating
Refer to Table A and B.

Finishes
Sprinkler: Refer to Table D.

Recessed Escutcheon: Signal or Pure White, Jet Black, Chrome Plated, or Natural Brass

Physical Characteristics

Frame	Bronze
Button	Brass/Copper
Sealing Assembly	Beryllium Nickel w/TEFLON
Bulb	Glass
Compression Screw	Bronze
Deflector	Copper/Bronze
Bushing (K=2.8)	Bronze

Operation

The glass bulb contains a fluid that expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

Design Criteria

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (such as, UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of FM's Loss Prevention Data Sheets). Only the Style 10, 20, 30, or 40 Recessed Escutcheon, as applicable, is to be used for recessed pendent installations.

Installation

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers must be installed in accordance with this section.

General Instructions
Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F (57°C) and 3/32 inch (2,4 mm) for the 286°F (141°C) temperature ratings.

A leak-tight 1/2 inch NPT sprinkler joint should be obtained by applying a minimum to maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). A leak tight 3/4 inch NPT sprinkler joint should be obtained with a torque of 10 to 20 ft.-lbs. (13,4 to 26,8 Nm). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Escutcheon Plate by under- or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Series TY-FRB Upright and Pendent Sprinklers
The Series TY-FRB Pendent and Upright Sprinklers must be installed in accordance with the following instructions.

Step 1. Install Pendent sprinklers in the pendent position. Install upright sprinklers in the upright position.

Step 2. With pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Figure 6). With reference to Figures 1 through 5, apply the W-Type 6 Sprinkler Wrench to the sprinkler wrench flats.

Series TY-FRB Recessed Pendent Sprinklers
The Series TY-FRB Recessed Pendent Sprinklers must be installed in accordance with the following instructions.

Step A. After installing the Style 10, 20, 30, or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step B. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure 7). With reference to Figures 1 to 4, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step C. After ceiling installation and finishing, slide on the Style 10, 20, 30, or 40 Closure over the Series TY-FRB Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 5)			
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	POLYESTER***
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	135°F (57°C)	Orange	1, 2, 3, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY1231)* Figure 8	135°F (57°C)	Orange	1, 2, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY1231)** Figure 9	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	135°F (57°C)	Orange	1, 2		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY2231)* Figure 10	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY2231)** Figure 11	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the City of New York under MEA 354-01-E.
5. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
*** Frame and Deflector only.
N/A: Not Available

TABLE A
LABORATORY LISTINGS AND APPROVALS FOR
2.8 AND 4.2 K-FACTOR SPRINKLERS

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 8)				
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	POLYESTER***	LEAD COATED
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 3, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)* Figure 12	135°F (57°C)	Orange	1, 2, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)** Figure 13	135°F (57°C)	Orange	1, 2, 3, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)* Figure 14	135°F (57°C)	Orange	1, 2, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)** Figure 15	135°F (57°C)	Orange	1, 2, 3, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	135°F (57°C)	Orange	1, 2, 4, 5, 6			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007k/04) as Quick Response Sprinklers. However, LPCB does not rate the thermal sensitivity of recessed sprinklers.
5. Approved by the City of New York under MEA 354-01-E.
6. VdS Approved (For details, contact Tyco Fire Suppression & Building Products, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-53-428-3377.)
7. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) as Quick Response Sprinklers.
8. Where Polyester Coated and Lead-Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers. Where Lead-Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as a Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
*** Frame and Deflector only.
N/A: Not Available

TABLE B
LABORATORY LISTINGS AND APPROVALS FOR
5.6 AND 8.0 K-FACTOR SPRINKLERS

K FACTOR	TYPE	SPRINKLER FINISH			
		NATURAL BRASS	CHROME PLATED	POLYESTER	LEAD COATED
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY1231)				
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY2231)				
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	250 PSI (17,2 BAR) OR 175 PSI (12,1 BAR) (SEE NOTE 1)			
	RECESSED PENDENT (TY3231)				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)
	RECESSED PENDENT (TY4231)				N/A
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)

NOTES:
1. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories Inc. (UL); the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL); and, the Approval by the City of New York.

TABLE C
MAXIMUM WORKING PRESSURE

Care and Maintenance

The TYCO Series TY-FRB must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection systems from the proper authorities and notify all personnel who may be affected by this action.

Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, can delay sprinkler operation in a fire situation.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section.)

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Care must be exercised to avoid damage to the sprinklers -before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section).

Initial and frequent visual inspections of random samples are recommended for corrosion-resistant sprinklers to verify the integrity of the corrosion-resistant material of construction. Thereafter, annual inspections per NFPA 25 should suffice.

Inspections of corrosion-resistant sprinklers are recommended at close range, instead of from the floor level per NFPA. Inspection at close range can better determine the exact sprinkler condition and the long-term integrity of the corrosion-resistant material, which can be affected by the corrosive conditions present.

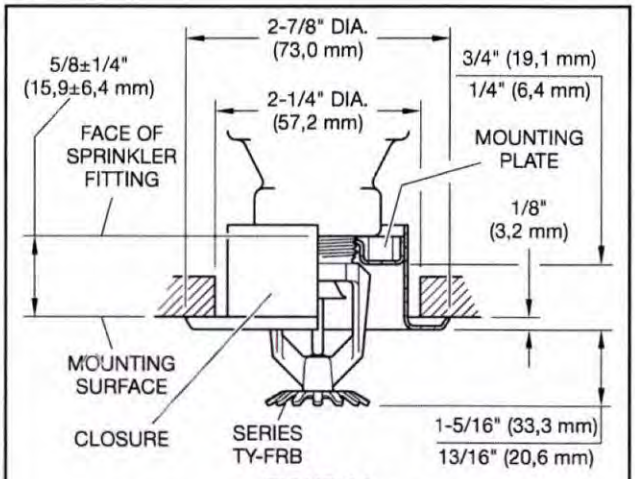


FIGURE 8
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

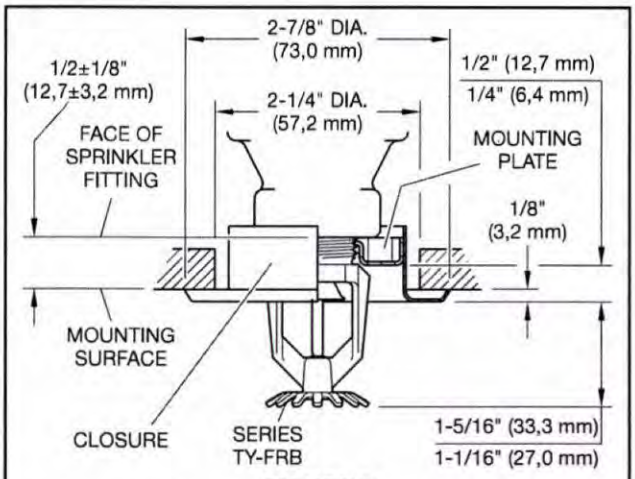


FIGURE 9
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

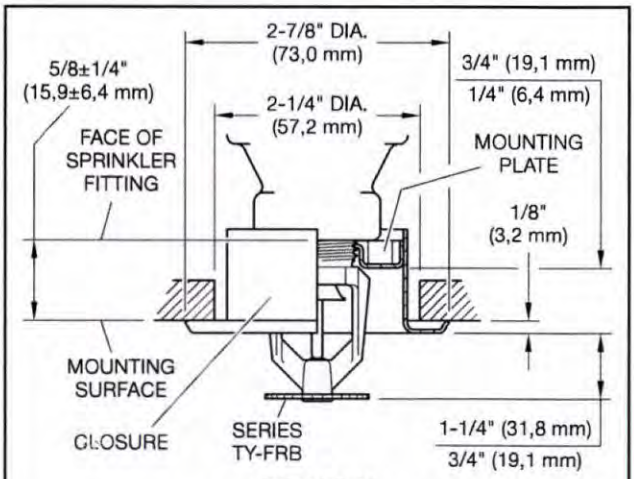


FIGURE 10
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

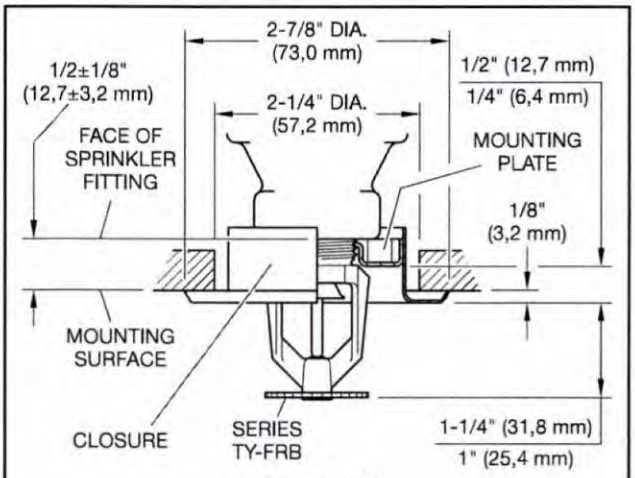


FIGURE 11
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

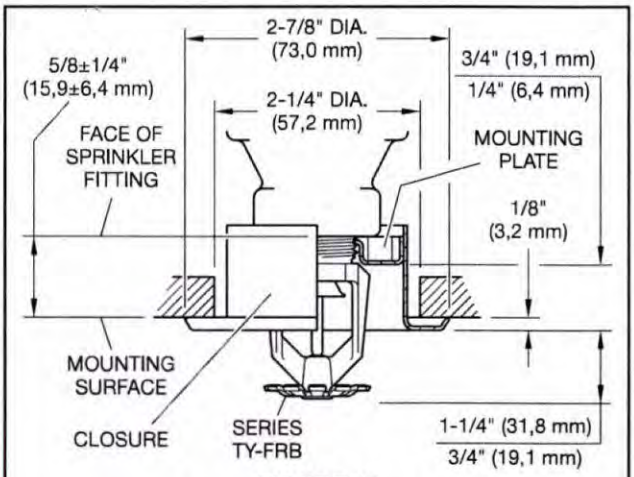


FIGURE 12
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

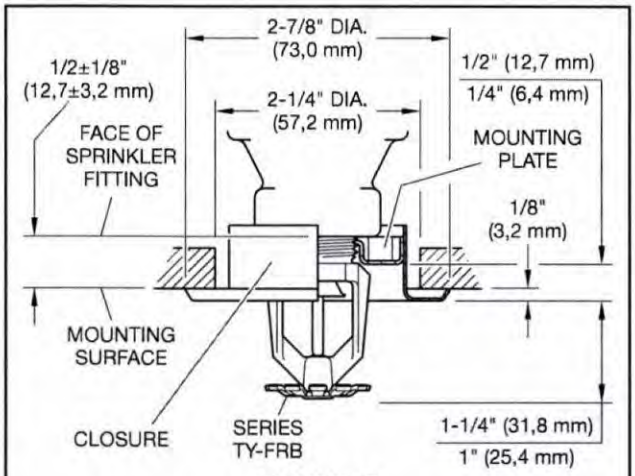


FIGURE 13
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

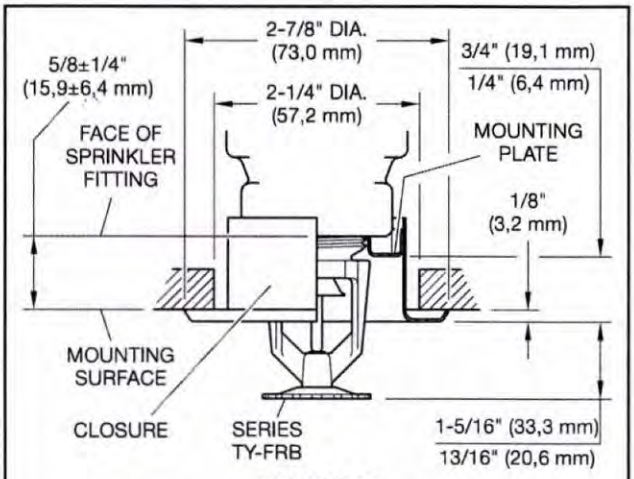


FIGURE 14
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

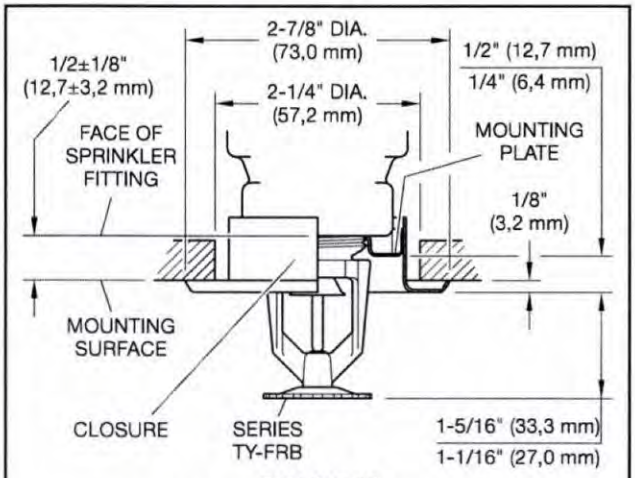


FIGURE 15
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 30 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

P/N 57 – XXX – X – XXX

		SIN
330	2.8K UPRIGHT (1/2"NPT)	TY1131
331	2.8K PENDENT (1/2"NPT)	TY1231
340	4.2K UPRIGHT (1/2"NPT)	TY2131
341	4.2K PENDENT (1/2"NPT)	TY2231
370	5.6K UPRIGHT (1/2"NPT)	TY3131
371	5.6K PENDENT (1/2"NPT)	TY3231
390	8.0K UPRIGHT (3/4"NPT)	TY4131
391	8.0K PENDENT (3/4"NPT)	TY4231
360	8.0K UPRIGHT (1/2"NPT)	TY4831*
361	8.0K PENDENT (1/2"NPT)	TY4931*

	SPRINKLER FINISH
1	NATURAL BRASS
3	PURE WHITE POLYESTER (RAL9010)[1]
4	SIGNAL WHITE POLYESTER (RAL9003)
5	JET BLACK POLYESTER (RAL9005)[2]
7	LEAD COATED
9	CHROME PLATED

	TEMPERATURE RATINGS
135	135°F (57°C)
155	155°F (68°C)
175	175°F (79°C)
200	200°F (93°C)
286	286°F (141°C)

NOTES:
1. Eastern Hemisphere sales only.
2. Available in only 2.8K, 4.2K, and 8.0K, 155°F (68°C) and 200°F (93°C); requires lead time to manufacture.

TABLE D
SERIES TY-FRB PENDENT AND UPRIGHT SPRINKLERS
PART NUMBER SELECTION

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler Assemblies with NPT Thread Connections
Specify: Series TY-FRB (Specify SIN), (specify K-factor), (specify Pendent or Upright) Sprinkler (specify) temperature rating, (specify) finish or coating, P/N (specify from Table D)

Recessed Escutcheon
Specify: Style (10, 20, 30, or 40) Recessed Escutcheon with (specify*) finish, P/N (specify*)

Sprinkler Wrench
Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001

* Refer to Technical Data Sheet TFP770

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tyco Fire Protection Products

2

2

BACKFLOW PREVENTER

CUT SHEETS

Model 950XLT

Top Access Double Check Valve Assembly

Application

Designed for installation on water lines to protect against both backsiphonage and backpressure of polluted water into the potable water supply. A test cock plug is provided to protect against fouling caused by insects, dirt and debris. Assembly shall provide protection where a potential non-health hazard exists.



Standards Compliance

(Unless otherwise noted, applies to 3/4" thru 2" Horizontal)

- ASSE® Listed 1015 (Vertical flow-up:1 1/4" thru 2")
- IAPMO® Listed
- AWWA Compliant C510
- CSA® Certified (Vertical flow-up:1 1/2" & 2")
- NYC MEA 426-89-M VOL 3
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California (950XLTU: 3/4" & 1" Horizontal)

Options

(Suffixes can be combined)

- ☐ L - less ball valves
- ☐ FT - with "Fast Test" test cocks
- ☐ U - with union ball valves
- ☐ S - with bronze "Y" type strainer

Materials

Main valve body	Cast Bronze ASTM B 584
Access covers	Cast Bronze ASTM B 584
Fasteners	Stainless Steel, 300 Series
Elastomers	Silicone (FDA approved) Buna Nitrile (FDA approved)
Polymers	Noryl™, NSF Listed
Springs	Stainless steel, 300 series
Test cock cover	Plastic
Ball valve handles	Stainless steel

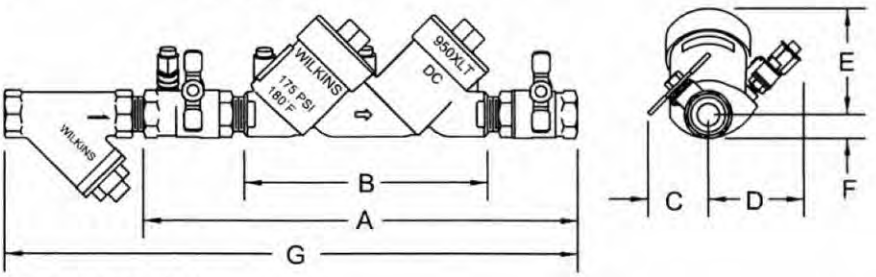
Accessories

- ☐ Repair kit (rubber only)
- ☐ Thermal expansion tank (Model XT)
- ☐ Bronze wye strainer
- ☐ QT-SET Quick Test Fitting Set

Features

Sizes: 3/4", 1", 1 1/4", 1 1/2", 2"

Maximum working water pressure	175 PSI
Maximum working water temperature	180°F
Hydrostatic test pressure	350 PSI
End connections Threaded	ANSI B1.20.1



Dimensions & Weights (do not include pkg.)

MODEL SIZE		DIMENSIONS (approximate)																WEIGHT			
		A		A UNION BALL VALVES		B LESS BALL VALVES		C		D		E		F		G		LESS BALL VALVES		WITH BALL VALVES	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg	lbs.	kg
3/4	20	13	330	14 5/16	364	8 3/4	222	2 3/8	60	2 5/16	59	3 5/16	84	3/4	19	17 5/8	448	4	1.8	6	2.7
1	25	14	356	15 3/4	400	8 3/4	222	2 1/2	64	2 5/16	59	3 5/16	84	3/4	19	19 3/4	502	8	3.6	12	5.4
1 1/4	32	19 5/8	499	21 5/8	549	13 3/4	349	4	102	3 5/8	92	4 3/8	111	1 5/16	33	24 3/4	629	16	7.3	22	10
1 1/2	40	20 5/16	516	22 5/16	567	13 3/4	349	5 3/8	137	3 5/8	92	4 3/8	111	1 5/16	33	25 15/16	659	16	7.3	22	10
2	50	21 3/8	543	23 1/4	591	13 3/4	349	5 13/16	148	3 5/8	92	4 3/8	111	1 5/16	33	28 5/16	719	17	7.7	29	13.2

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | **Zurn Industries Limited**
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 Ph. 905-405-8272, Fax 905-405-1292
www.zurn.com

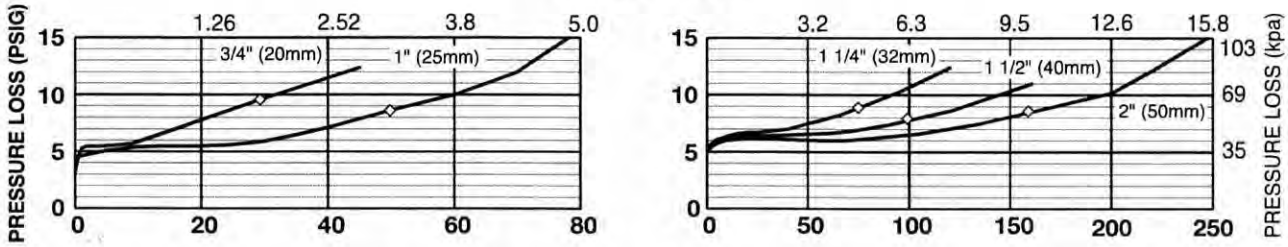
Rev. D
Date: 1/15
Document No. BF-950XLT
Product No. Model 950XLT

Flow Characteristics

◇ Rated Flow (established by approval agencies)

MODEL 950XLT 3/4", 1", 1 1/4", 1 1/2" & 2" (STANDARD & METRIC)

FLOW RATES (l/s)

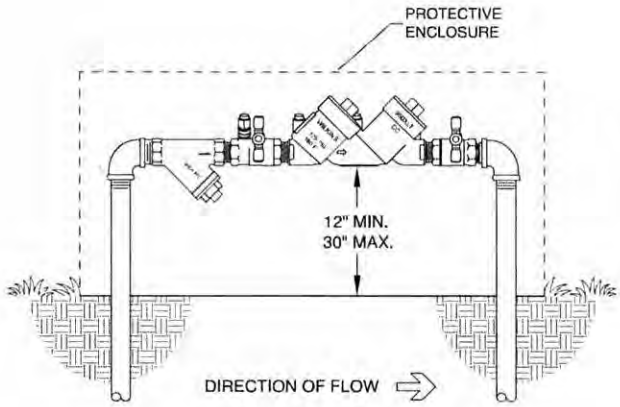


FLOW RATES (GPM)

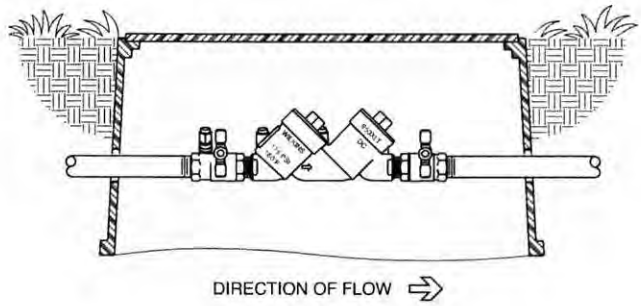
TYPICAL INSTALLATION

Local codes shall govern installation requirements. To be installed in accordance with the manufacturer's instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. If installed below grade, be certain adequate drainage is provided to prevent the device from being submerged.

Capacity thru Schedule 40 Pipe				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
1/8"	1	1	2	3
1/4"	2	2	3	5
3/8"	3	4	6	9
1/2	5	7	9	14
3/4"	8	12	17	25
1"	13	20	27	40
1 1/4"	23	35	47	70
1 1/2"	32	48	63	95
2"	52	78	105	167



OUTDOOR INSTALLATION



PIT INSTALLATION

SPECIFICATIONS

The Double Check Type Backflow Preventer shall be ASSE Listed 1015, rated to 180°F and supplied with full port ball valves. The main body and access covers shall be bronze (ASTM B 584), the seat ring and all internal polymers shall be NSF® Listed Noryl™ and the seat disc elastomers shall be SILICONE. The first and second check shall be located at a 45° angle and accessible for maintenance from the top of the device, without removing the device from the line. Each check shall have separate access covers and test cocks shall be accessible from the top of the device. Test cocks shall be protected from debris by a plug. The Double Check Type Backflow Preventer shall be a ZURN WILKINS Model 950XLT.

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www.zurn.com

3

FLOW SWITCH & BELL CUT SHEETS

WFDTN Series Waterflow Detector



System Sensor WFDTN T-Tap Waterflow detectors are designed for primary signaling in residential systems and branch line signaling.

Features

- New directional cover allows installers and inspectors to easily see the direction of flow
- UL-listed models are NEMA 4 rated
- New cover provides a better seal, is lighter weight, not painted and corrosion resistant
- Sealed retard mechanism immune to dust and other contaminants
- Less exposed metal reduces shock hazard, plastic cover acts as insulator and is resistant to arcing
- Visual switch activation
- Audible switch activation (73 dBA)
- Field-replaceable timer/switch assembly
- Accommodates up to 12 AWG wire
- Switch Synchronization activates both alarm panel and local bell or horn strobe
- Tamper-resistant cover screws
- Improved water sealing
- Reduced product weight
- Wire-ready terminals
- Improved wiring with new terminal block layout
- Snap-in optional cover tamper switch

Agency Listings

c UL us LISTED
S739

FM APPROVED
30512266

The new **WFDTN Series** waterflow detectors from **System Sensor** consists of a rugged, NEMA 4-rated enclosure that is more damage resistant than previous metal designs. The waterflow detector is designed for both indoor and outdoor use, with the widest available temperature range, from 32°F to 150°F.

Both the WFDTN with incorporated timer and WFDTNRN with immediate activation fit any tee that has a 1 in. NPT branch, including: 1in., 1¼in., 1½ in. and 2in. NPT threaded ferrous and brass tees; 1in., 1¼in., 1½in. and 2in. copper sweat tees; Tyco, Spears, NIBBCO brand 1 in. CPVC tees. Twelve different clearly marked plastic paddles are available to fit different installation configurations.

UL-listed models are equipped with tamper-resistant cover screws to prevent unauthorized entry. Inside, two sets of SPDT (Form C) synchronized switches are enclosed in a durable terminal block with new layout designed to make wiring easy with wire ready terminals, COM terminals are on a different elevation, large barrier between switches and easy to read raised textured lettering all make wiring easy. An optional cover tamper switch is available, securely snaps into place, no tools required.

The WFDTN incorporates a mechanical time delay feature, which minimizes the risk of false alarm due to pressure surges or air trapped in the fire sprinkler system. The larger and easy to turn timer dial makes setting the waterflow detector easy with high contrast pad printed markings. The dial offers three tabs to help with turning, with one larger tab located on the dial position for approximately 60 seconds, a notch is also indicated on the dial to locate approximately 30 seconds making setting the detector in dimmly lit locations easy.

The WFDTN series is designed for accuracy and repeatability. The detector also offers improved performance during vibration in riser applications where detectors are exposed to a large in rush of water.

Waterflow Detector Specifications

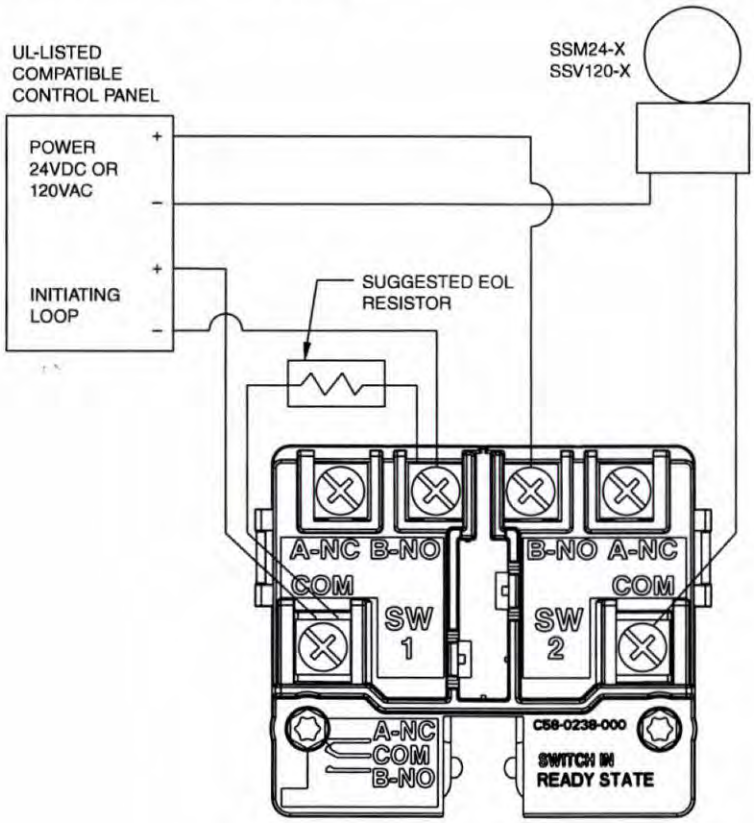
Engineering Specifications

Model shall be WFDTN or WFDTNRN as manufactured by System Sensor. T-Tap waterflow detectors shall be installed on a tee that has a 1in. NPT branch including: 1in., 1¼in., 1½in. and 2in. NPT threaded ferrous and brass tee; 1in., 1¼in., 1½in. and 2in. copper sweat tees; Tyco, Spears, NIBBCO brand 1in. CPVC tees as designed on the drawing and /or as specified herein. Detectors shall mount on any clear pipe span of the appropriate nominal size, either a vertical upflow or horizontal run at least 6˝ from any fittings or valves that may change water direction, flow rate, or pipe diameter or no closer than 24in. from a valve or drain. Detectors shall have a sensitivity in the range of 4 to 10 gallons per minute and a static pressure rating of 375 psi. The WFDTN detector with incorporated time delay mechanism shall respond to waterflow in the specified direction after a preset time delay that is field adjustable. The delay mechanism shall be a sealed mechanical pneumatic unit with visual and audible indication of actuation. The actuation mechanism shall include a ethylene vinyl acetate vane inserted through a hole in the pipe and connected by a mechanical linkage to the delay mechanism. Outputs shall consist of dual SPDT switches (Form C contacts). Two conduit entrances for standard fittings of commonly used electrical conduit shall be provided on the detectors. A grounding provision is provided. Unless noted, enclosures shall be NEMA 4 listed by Underwriters Laboratories Inc. All detectors shall be listed by Underwriters Laboratories Inc. for indoor or outdoor use.

Standard Specifications

Static Pressure Rating	375 PSI	**Operating Temperature Range**	32°F to 150°F (0°C to 60°C)
Maximum Surge	18 Feet Per Second (FPS)	**Enclosure Rating***	NEMA 4 – suitable for indoor/outdoor use
Triggering Threshold Bandwidth (Flow Rate)	4–10 GPM	**Cover Tamper Switch**	Standard with ULC models, optional for UL models, part no. CTS
Conduit Entrances	Two openings for ½in. conduit. NEMA 4 rated plugs	**Service Use**	Automatic Sprinkler: NFPA-13 One or Two Family Dwelling: NFPA 13D Residential Occupancies up to 4 Stories: NFPA 13R National Fire Alarm Code: NFPA-72
Contact Ratings	Two sets of SPDT (Form C) 10.0 A, ½ HP @ 125/250 VAC 2.5 A @ 6/12/24 VDC	**U.S. Patent Numbers**	5,213,205
Compatible Tee Fittings	Threaded ferrous and brass tees, copper sweat tees, CPVC tees.	**Warranty**	3 Years

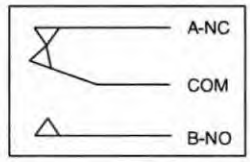
WFDTN Field Wiring Diagram



NOTE: COMMON AND B-NO CONNECTIONS WILL CLOSE WHEN VANE IS DEFLECTED, I.E., WHEN WATER IS FLOWING. DUAL SWITCHES PERMIT APPLICATIONS TO BE COMBINED ON A SINGLE DETECTOR.

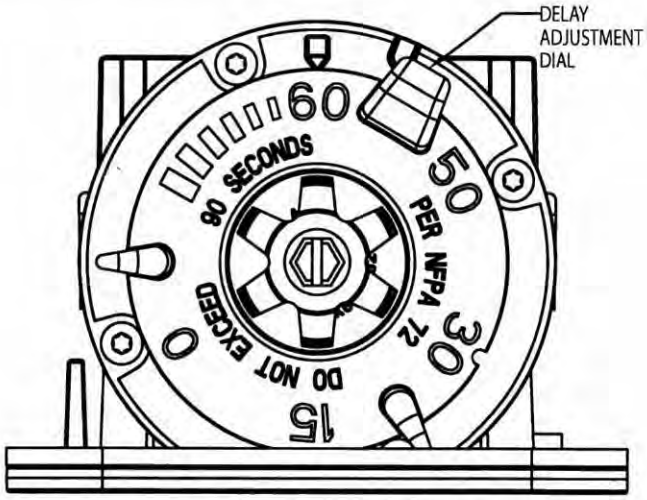
CONTACT RATINGS	
125/250 VAC	10 AMPS
24 VDC	2.5 AMPS

SCHEMATIC OF INDIVIDUAL SWITCH IN "NO WATERFLOW" CONDITION



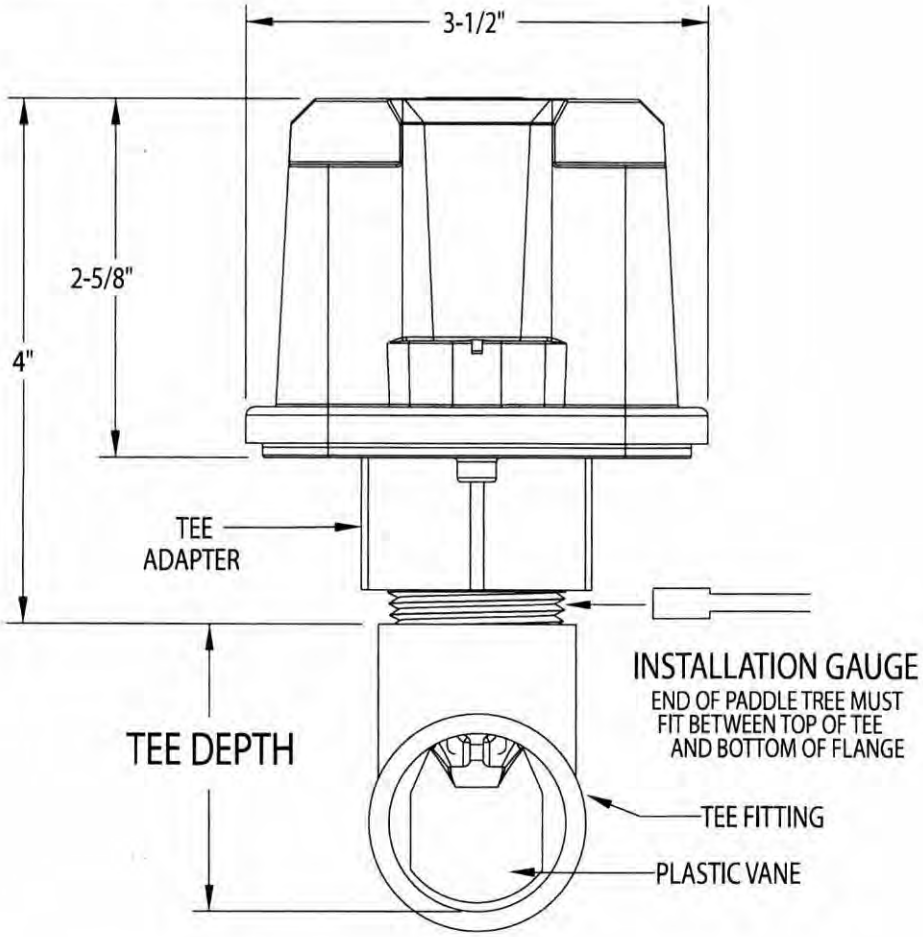
BREAK WIRE AS SHOWN FOR SUPERVISION OF CONNECTION. DO NOT ALLOW STRIPPED WIRE LEADS TO EXTEND BEYOND SWITCH HOUSING. DO NOT LOOP WIRES.

Delay Adjustment Dial



NOTE: RETARD TIME MAY EXCEED 90 SECONDS. ADJUST AND VERIFY THAT TIME DOES NOT EXCEED 90 SECONDS. NUMBER ON DIAL IS APPROXIMATE TIME DELAY IN SECONDS

Overall Dimensions, Installed



DESIGNED TO FIT WITHIN 2 X 4 STUD WALL CONSTRUCTION

Ordering Information		
UL Model	**ULC Model**	**Description**
WFDTN	WFDTNA	Waterflow Detector, Fits 1in., 1¼in., 1½in., 2in. ferrous and brass threaded tees; 1in., 1¼in., 1½in., 2in. copper sweat tees; 1in. CPVC tees.
WFDTNRN	—	Waterflow Detector without incorporated time delay mechanism, fits same tees as WFDTN
Accessories		
FS-RT	Delay mechanism and switch assembly	
CTS	Tamper-proof switch kit	
WFDW	Tamper-proof wrench for cover	

SYSTEM SENSOR®

3825 Ohio Avenue • St. Charles, IL 60174
Phone: 800-SENSOR2 • Fax: 630-377-6495
www.systemsensor.com

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WFDS43702 • 2/16

SSM/SSV Series Alarm Bells



System Sensor's SSM and SSV series alarm bells are low current, high decibel notification appliances for use in fire and burglary systems or other signaling applications.

Features

- Approved for indoor and outdoor use
- Low current draw
- High dB output
- Available in six-inch, eight-inch, and ten-inch sizes
- AC and DC models
- DC models polarized for use with supervision circuitry
- Mount directly to standard four-inch square electrical box indoors
- SSM and SSV series come pre-wired

Reliable Performance. The SSM and SSV series provide loud resonant tones. The SSM series operates on 24VDC and are motor driven, while the SSV series operates on 120VAC utilizing a vibrating mechanism.

Simplified Installation. For indoor use, the SSM and SSV series mount to a standard four-inch square electrical box. For outdoor applications, weatherproof back box, model number WBB, is used.

The SSM and SSV series come pre-wired, to reduce installation time. The SSM series incorporates a polarized electrical design for use with supervision circuitry.

Agency Listings

UL LISTED S4011

ULC CS549

FM APPROVED 3005255

7135-1653.0217

MEA approved 331-01-E

SSM/SSV Specifications

Architectural/Engineering Specifications

Model shall be a SSM or SSV Series alarm bell. Bells shall have underdome strikers and operating mechanisms. Gongs on said bells shall be no smaller than nominal 6"/8"/10" (specify size) with an operating voltage of 24VDC or 120VAC (specify by part number). Bells shall be suitable for surface or semi-flush mounting. Outdoor surface mounted installations shall be weatherproof (using optional WBB weatherproof electrical box). Otherwise bells shall mount to a standard 4" square electrical box having a maximum projection of 2½". Bells shall be located as shown on the drawings or as determined by the Authority Having Jurisdiction. Bells shall be listed for indoor/outdoor use by Underwriters Laboratories and the California State Fire Marshal, and approved by Factory Mutual and MEA.

Physical/Operating Specifications

Operating Temperature Range	–31°F to 140°F
Operating Voltage	SSM series: 24 VDC SSV series: 120 VAC
Termination	Provided with 2 sets of leads for in/out wiring
Service Use	Fire Alarm, General Signaling, Burglar Alarm
Warranty	3 years

Electrical Specifications

Model	Gong Diameter (inches)	Nominal Voltage	Operating Voltage Limit	Maximum Current	Sound Output (dBA)
SSM24-6	6	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	82
SSM24-8	8	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	80
SSM24-10	10	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	81
SSV120-6	6	Regulated 120VAC	96 to 132VAC	53mA	85
SSV120-8	8	Regulated 120VAC	96 to 132VAC	53mA	82
SSV120-10	10	Regulated 120VAC	96 to 132VAC	53mA	82

* Sound output measured at Underwriter Laboratories, as specified in UL464

Ordering Information

UL/FM Model No.	ULC/Canadian Model No.	Description
SSM24-6	SSM24-6A	Bell, 6", 24VDC, Polarized, 82dBA
SSM24-8	SSM24-8A	Bell, 8", 24VDC, Polarized, 80dBA
SSM24-10	SSM24-10A	Bell, 10", 24VDC, Polarized, 81dBA
SSV120-6	SSV120-6A	Bell, 6", 120VAC, 85dBA
SSV120-8	SSV120-8A	Bell, 8", 120VAC, 82dBA
SSV120-10	SSV120-10A	Bell, 10", 120VAC, 82dBA
WBB		Weatherproof back box for SSM and SSV series, when installed outdoors

SYSTEM SENSOR

3825 Ohio Avenue • St. Charles, IL 60174
Phone: 800-SENSOR2 • Fax: 630-377-6495

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Product specifications subject to change without notice. Visit systemsensor.com for current product information, including the latest version of this data sheet.
A05-0260-010 • 08/11 • #2870

WATERFLOW DATA

Fire Hydrant Flow Calculator

© 2006, Willis Lamm

- Use the tab key to navigate.
- Tab between each box to update the calculation.
- Be sure to tab past your final entry for a correct calculation.

Village Walk COT-395

Static:	68	psi before flowing
Residual:	54	psi while flowing
Pitot:	45	pitot gage reading
Diameter:	2.5	size of opening tested
This hydrant is flowing:	1126	GPM from the test outlet
Projected available hydrant flow:	2189	GPM Note 1
2nd Static:	66	secondary psi before flowing
2nd Residual:	58	secondary psi while flowing
The main can be expected to flow about:	2895	GPM

Notes:

1. Projected available flows calculated at 20 psi residual, or ½ the static pressure for low pressure hydrants having static pressures of less than 40 psi.

2. This calculator is based on established Hazen-Williams formulas and is provided for convenience and estimation purposes only. The author and FireHydrant.org express no warranty for its suitability for any particular purpose.

Click for Legal Disclaimer

HYDRUALIC CALCULATIONS

RLS FIRE PROTECTION SYSTEMS
P.O. BOX 984
CASTLE ROCK COLORADO 80104

HYDRAULIC CALCULATIONS

FOR

VILLAGE WALK
PLAN 3 AND PLAN 3 REVERSE
COTATI, CA.

FILE NUMBER: 160201
DATE: JUL 27, 2016

-DESIGN DATA-

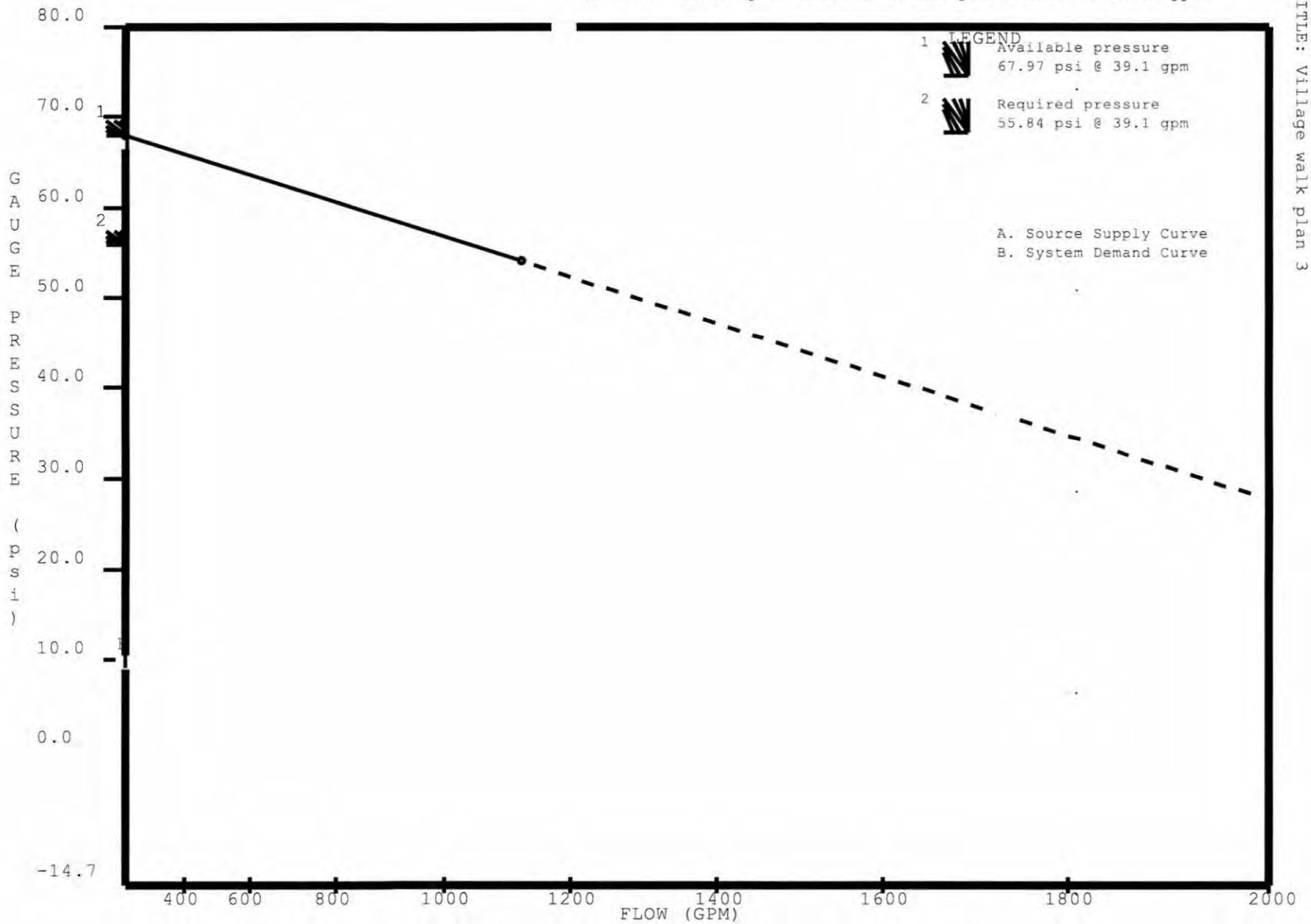
NUMBER OF SPRINKLERS CALCULATED:	2	
FLOW AND PRESSURE AT BASE OF RISER	34.1 gpm @	**33.8** psi
NAME OF CONTRACTOR:	SYNERGY	
DESIGN / LAYOUT BY:	RON SCOGGINS	

NOTE:
2 HEAD REMOTE AREA CALC AT 18 FT. X 18 FT. CALCS

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 50122087)
HRS SYSTEMS, INC.
PETERSBURG, TN

WATER SUPPLY ANALYSIS

Static: 68.00 psi Resid: 54.00 psi Flow: 1126.0 gpm



Note: (1) Dashed Lines indicate extrapolated values from Test Results

(2) On Site pressures are based on hose stream deduction at the source

DATE: 7/27/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 3.SDF
JOB TITLE: Village walk plan 3

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
1	68.0	54.0	1126.0	68.0	39.1	55.8

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	39.1 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	5.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	34.1 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	0.0	SOURCE	55.8	39.1	
1A	0.0	- - - -	51.7	- - -	
1B	0.0	- - - -	47.7	- - -	
2	0.0	HOSE STREAM	47.6	5.0	
3	0.0	- - - -	44.7	- - -	
	2.0	- - - -	42.3	- - -	
	2.0	- - - -	35.3	- - -	
6	3.0	- - - -	33.8	- - -	
7	3.0	- - - -	30.8	- - -	
8	4.0	- - - -	29.0	- - -	
10	11.0	- - - -	23.8	- - -	
11	21.0	- - - -	16.5	- - -	
20	21.0	- - - -	14.4	- - -	
21	21.0	- - - -	13.2	- - -	
22	24.0	- - - -	11.9	- - -	
23	24.0	- - - -	12.7	- - -	
24	24.0	- - - -	12.4	- - -	
201	21.0	K= 4.90	12.0	17.0	
202	21.0	K= 4.90	12.2	17.1	

NFPA PIPE DATA

Pipe Tag Frm Node El (ft) To Node El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Notes
Pipe: 1	Source	0.0				35.00	150	4.2	
1 0.0	55.8	39.1	1B	1.250	T: 7.4	8.68		0.0	
1A 0.0	51.7	39.1		1.325	G: 1.2	43.68	0.096	4.2	
Pipe: 2		0.0	Fixed Pressure Loss Device						
1A 0.0	51.7	39.1	2		4.0 psi,	39.1 gpm			
1B 0.0	47.7	39.1							
Pipe: 3	H.S.	5.0	Disch			1.00	150	0.0	
1B 0.0	47.7	34.1	3	P1.500	----	0.00		0.0	
2 0.0	47.6	39.1		1.590		1.00	0.039	0.0	
Pipe: 4	0.0	0.0				76.00	150	2.9	
2 0.0	47.6	34.1	4	P1.500	3E:12.0	20.40		0.0	
3 0.0	44.7	34.1		1.590	T: 8.4	96.40	0.031	2.9	
Pipe: 5	0.0	0.0				3.00	150	2.4	
3 0.0	44.7	34.1	5	K1.000	E: 2.0	2.00		-0.9	
4 2.0	42.3	34.1		0.995		5.00	0.299	1.5	
Pipe: 6		0.0	Fixed Pressure Loss Device						
2.0	42.3	34.1	6		7.0 psi,	34.1 gpm			
2.0	35.3	34.1							
Pipe: 7	0.0	0.0				2.00	150	1.6	
5 2.0	35.3	34.1	7	M1.000	E: 3.0	3.00		-0.4	
6 3.0	33.8	34.1		1.055		5.00	0.225	1.1	
Pipe: 8		0.0	Fixed Pressure Loss Device						
6 3.0	33.8	34.1	8		3.0 psi,	34.1 gpm			
7 3.0	30.8	34.1							
Pipe: 9	0.0	0.0				3.00	150	1.8	
7 3.0	30.8	34.1	10	M1.000	E: 3.0	3.00		-0.4	
8 4.0	29.0	34.1		1.055		6.00	0.225	1.3	
Pipe: 10	0.0	23.0	20			7.00	150	5.2	
8 4.0	29.0	11.1	11	F1.000	E: 5.0	5.00		-3.0	
10 11.0	23.8	34.1		1.101		12.00	0.183	2.2	
Pipe: 11	0.0	0.0			2E: 8.0	28.25	150	7.2	
10 11.0	23.8	11.1	23	F0.750	T: 3.0	13.00		-4.3	
11 21.0	16.5	11.1		0.874	2R: 2.0	41.25	0.070	2.9	
Pipe: 12	0.0	6.0	24			13.50	150	9.4	
10 11.0	23.8	17.0	21	F0.750	E: 4.0	5.00		-4.3	
20 21.0	14.4	23.0		0.874	R: 1.0	18.50	0.272	5.0	

RLS FIRE PROTECTION SYSTEMS
P.O. BOX 984
CASTLE ROCK COLORADO 80104

HYDRAULIC CALCULATIONS

FOR

VILLAGE WALK
PLAN 3 AND PLAN 3 REVERSE
COTATI, CA.

FILE NUMBER: 160201
DATE: JUL 19, 2016

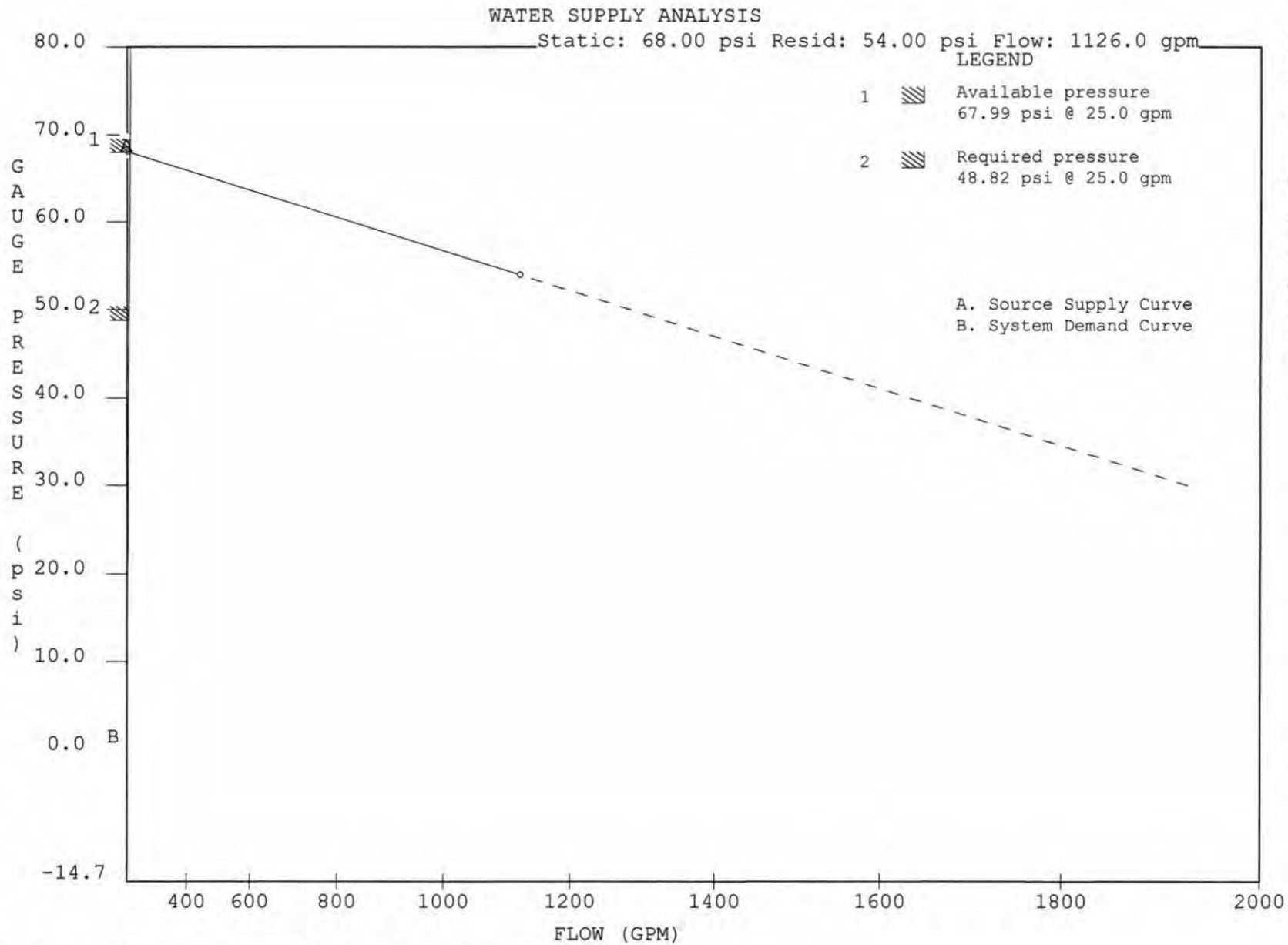
-DESIGN DATA-

NUMBER OF SPRINKLERS CALCULATED:	1	
FLOW AND PRESSURE AT BASE OF RISER	20.0 gpm @	**34.1** psi
NAME OF CONTRACTOR:	SYNERGY	
DESIGN / LAYOUT BY:	RON SCOGGINS	

NOTE:
1 HEAD REMOTE AREA CALC AT 20 FT. X 20 FT. CALCS

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 50122087)
HRS SYSTEMS, INC.
PETERSBURG, TN





hed Lines indicate extrapolated values from Test Results
e pressures are based on hose stream deduction at the source

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 3 1 HEAD.SDF
JOB TITLE: Village walk plan 3

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. @ (PSI)	FLOW @ (GPM)	AVAIL. PRESS. @ (PSI)	TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
1	68.0	54.0	1126.0	68.0	25.0	48.8

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	25.0 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	5.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	20.0 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	0.0	SOURCE	48.8	25.0	
1A	0.0	- - - -	47.0	- - -	
1B	0.0	- - - -	44.5	- - -	
2	0.0	HOSE STREAM	44.5	5.0	
3	0.0	- - - -	43.4	- - -	
4	2.0	- - - -	42.0	- - -	
5	2.0	- - - -	35.0	- - -	
6	3.0	- - - -	34.1	- - -	
7	3.0	- - - -	31.1	- - -	
8	4.0	- - - -	30.2	- - -	
10	11.0	- - - -	26.3	- - -	
11	21.0	- - - -	21.2	- - -	
20	21.0	- - - -	19.9	- - -	
21	21.0	- - - -	18.2	- - -	
22	24.0	- - - -	16.9	- - -	
23	24.0	- - - -	19.2	- - -	
24	24.0	- - - -	19.1	- - -	
201	21.0	K= 4.90	16.7	20.0	

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 3 1 HEAD.SDF
JOB TITLE: Village walk plan 3

NFPA PIPE DATA

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: / Eq.Ln. (ft.)	L / F / T	C / Pf/ft.
Pipe: 1		Source	0.0				35.00	150
1	0.0	48.8	25.0	1B	1.250	T: 7.4	8.68	
1A	0.0	47.0	25.0		1.325	G: 1.2	43.68	0.042
Pipe: 1A			0.0	Fixed Pressure Loss Device				
1A	0.0	47.0	25.0	2		2.5 psi,	25.0 gpm	
1B	0.0	44.5	25.0					
Pipe: 1B		H.S.	5.0	Disch			1.00	150
1B	0.0	44.5	20.0	3	P1.500	----	0.00	
2	0.0	44.5	25.0		1.590		1.00	0.017
Pipe: 2		0.0	0.0				76.00	150
2	0.0	44.5	20.0	4	P1.500	3E:12.0	20.40	
3	0.0	43.4	20.0		1.590	T: 8.4	96.40	0.011
Pipe: 3		0.0	0.0				3.00	150
3	0.0	43.4	20.0	5	K1.000	E: 2.0	2.00	
4	2.0	42.0	20.0		0.995		5.00	0.111
Pipe: 4			0.0	Fixed Pressure Loss Device				
4	2.0	42.0	20.0	6		7.0 psi,	20.0 gpm	
5	2.0	35.0	20.0					
Pipe: 5		0.0	0.0				2.00	150
5	2.0	35.0	20.0	7	M1.000	E: 3.0	3.00	
6	3.0	34.1	20.0		1.055		5.00	0.084
Pipe: 6			0.0	Fixed Pressure Loss Device				
6	3.0	34.1	20.0	8		3.0 psi,	20.0 gpm	
7	3.0	31.1	20.0					
Pipe: 7		0.0	0.0				3.00	150
7	3.0	31.1	20.0	10	M1.000	E: 3.0	3.00	
8	4.0	30.2	20.0		1.055		6.00	0.084
Pipe: 8		0.0	14.5	20			7.00	150
8	4.0	30.2	5.5	11	F1.000	E: 5.0	5.00	
10	11.0	26.3	20.0		1.101		12.00	0.068
Pipe: 9		0.0	0.0			2E: 8.0	28.25	150
10	11.0	26.3	5.5	23	F0.750	T: 3.0	13.00	
11	21.0	21.2	5.5		0.874	2R: 2.0	41.25	0.019

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 3 1 HEAD.SDF
JOB TITLE: Village walk plan 3

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(F (F (F
Pipe: 10		0.0	20.0	21			13.50	150	
10	11.0	26.3	-5.5	24	F0.750	E: 4.0	5.00		-
20	21.0	19.9	14.5		0.874	R: 1.0	18.50	0.116	
Pipe: 11		0.0	0.0			E: 4.0	25.00	150	
11	21.0	21.2	5.5	24	F0.750	2T: 6.0	11.00		-
23	24.0	19.2	5.5		0.874	R: 1.0	36.00	0.019	
Pipe: 12		0.0	0.0				7.00	150	
20	21.0	19.9	20.0	201	F0.750	R: 1.0	1.00		
21	21.0	18.2	20.0		0.874		8.00	0.209	
Pipe: 13		0.0	0.0				21.75	150	
22	24.0	16.9	0.0		F0.750	T: 3.0	6.00		
21	21.0	18.2	0.0		0.874	3R: 3.0	27.75	0.000	
Pipe: 14		0.0	0.0				1.10	150	
23	24.0	19.2	5.5	20	F0.750	T: 3.0	3.00		
24	24.0	19.1	5.5		0.874		4.10	0.019	
Pipe: 15		0.0	20.0	21		E: 4.0	22.25	150	
24	24.0	19.1	-14.5	10	F0.750	T: 3.0	9.00		
20	21.0	19.9	5.5		0.874	2R: 2.0	31.25	0.019	
Pipe: 16		4.90	20.0	Disch			4.25	150	
21	21.0	18.2	0.0		F0.750	T: 3.0	3.00		
201	21.0	16.7	20.0		0.874		7.25	0.209	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.5 computer program under license no. 50122087 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760

(2) The system has been calculated to provide an average imbalance at each node of 0.003 gpm and a maximum imbalance at any node of 0.052 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 10.7 ft/sec at pipe 16.

(4) Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.

(5) Available pressure at source node 1 under full flow conditions is 67.98 psi compared to the minimum required pressure of 20.00 psi.

(6) PIPE FITTINGS TABLE

Pipe Table Name: RLS3.PIP

PAGE: * MATERIAL: S40 HWC: 120

Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	L	C	B	G	A	D	N
	Ell	Tee	LngEll	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	NPTee
1.325	2.46	4.92	1.64	5.74	4.92	0.82	8.20	8.20	4.92

PAGE: F MATERIAL: CPVC HWC: 150

Diameter	Equivalent Fitting Lengths in Feet						
(in)	F	E	T	R	K	C	G
	F45	El	Tee	RunT	Kplg	ChkVlv	Gate
0.874	1.00	4.00	3.00	1.00	1.00	5.00	2.00
1.101	1.00	5.00	5.00	1.00	1.00	8.00	2.00

PAGE: K MATERIAL: CT-K HWC: 150

Diameter	Equivalent Fitting Lengths in Feet							
(in)	E	T	F	R	K	C	G	N
	Ell	Tee	45-Ell	TeeRun	Kouplg	ChkVlv	GatVlv	NPTee
0.995	2.00	6.00	1.00	2.00	0.00	6.00	0.00	6.00

PAGE: M MATERIAL: CT-M HWC: 150

Diameter	Equivalent Fitting Lengths in Feet							
(in)	E	T	F	R	K	C	G	N
	Ell	Tee	45-Ell	TeeRun	Kouplg	ChkVlv	GatVlv	NPTee
1.055	3.00	8.00	2.00	3.00	0.00	8.00	0.00	8.00

PAGE: P MATERIAL: PVC HWC: 150

Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	L	R	C	G	A	D	N
	Ell	Tee	45	RUN	ChkVlv	Gate			
1.590	4.00	8.40	2.10	2.70	14.00	3.00	0.00	0.00	0.00

RLS FIRE PROTECTION SYSTEMS
P.O. BOX 984
CASTLE ROCK COLORADO 80104

HYDRAULIC CALCULATIONS

FOR

VILLAGE WALK
PLAN 3 AND PLAN 3 REVERSE
COTATI, CA.

FILE NUMBER: 160201
DATE: JUL 19, 2016

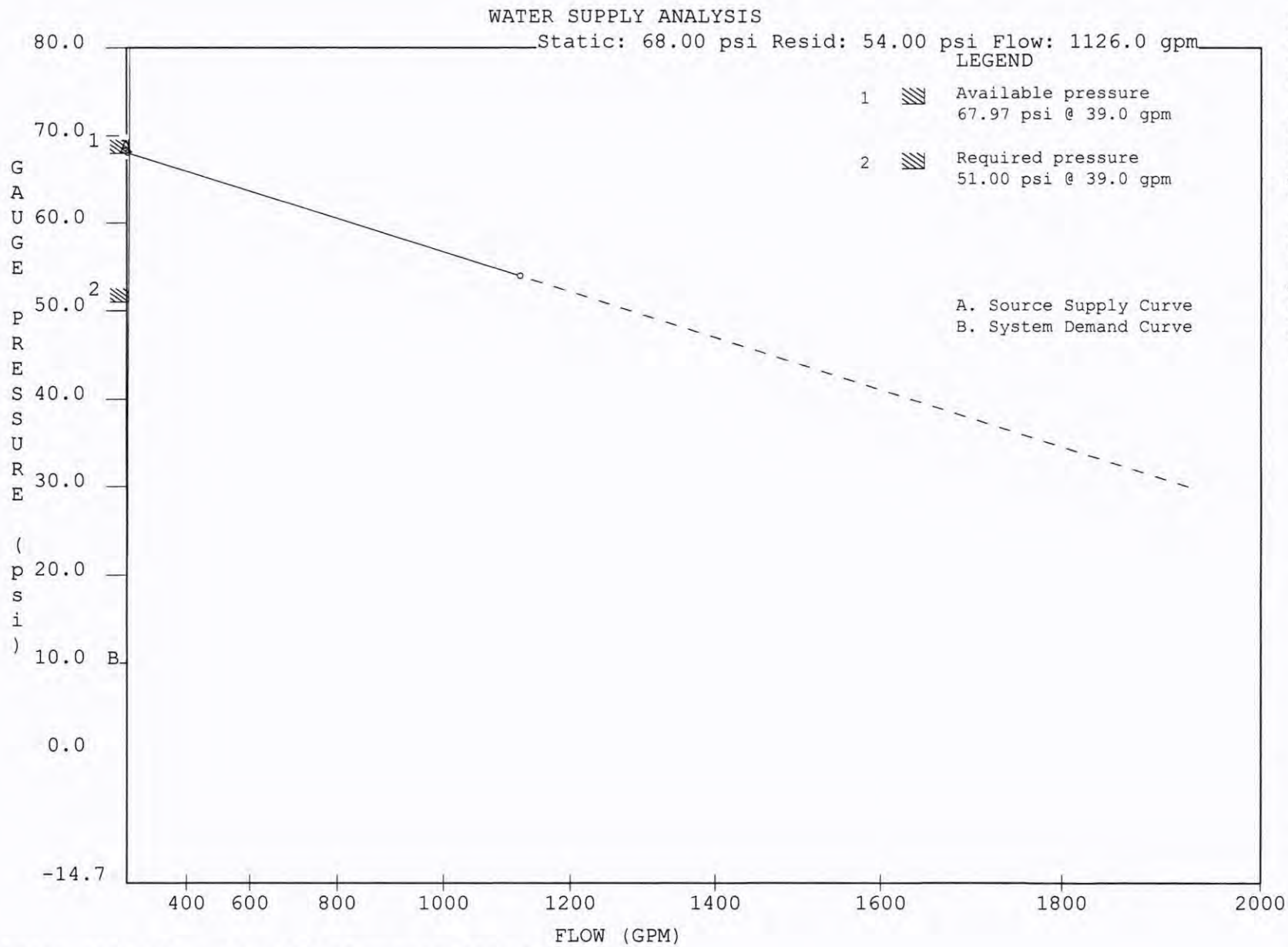
-DESIGN DATA-

NUMBER OF SPRINKLERS CALCULATED:	2	
FLOW AND PRESSURE AT BASE OF RISER	34.0 gpm @	**29.0** psi
NAME OF CONTRACTOR:	SYNERGY	
DESIGN / LAYOUT BY:	RON SCOGGINS	

NOTE:
2 HEAD REMOTE AREA CALC AT 18 FT. X 18 FT. CALCS

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 50122087)
HRS SYSTEMS, INC.
PETERSBURG, TN





hed Lines indicate extrapolated values from Test Results
e pressures are based on hose stream deduction at the source

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 3.SDF
JOB TITLE: Village walk plan 3

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
1	68.0	54.0	1126.0	68.0	39.0	51.0

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	39.0 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	5.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	34.0 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	0.0	SOURCE	51.0	39.0	
1A	0.0	- - - -	46.8	- - -	
1B	0.0	- - - -	42.8	- - -	
2	0.0	HOSE STREAM	42.8	5.0	
3	0.0	- - - -	39.9	- - -	
4	2.0	- - - -	37.5	- - -	
5	2.0	- - - -	30.5	- - -	
6	3.0	- - - -	29.0	- - -	
7	3.0	- - - -	26.0	- - -	
8	4.0	- - - -	24.2	- - -	
10	11.0	- - - -	19.0	- - -	
11	21.0	- - - -	13.7	- - -	
20	21.0	- - - -	12.9	- - -	
21	21.0	- - - -	12.5	- - -	
22	24.0	- - - -	11.2	- - -	
23	24.0	- - - -	11.5	- - -	
24	24.0	- - - -	11.3	- - -	
201	21.0	K= 4.90	12.0	17.0	
202	21.0	K= 4.90	12.1	17.0	

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 3.SDF
JOB TITLE: Village walk plan 3

NFPA PIPE DATA

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(F (F (F
Pipe: 1		Source	0.0				35.00	150	
1	0.0	51.0	39.0	1B	1.250	T: 7.4	8.68		
1A	0.0	46.8	39.0		1.325	G: 1.2	43.68	0.095	
Pipe: 2			0.0	Fixed Pressure Loss Device					
1A	0.0	46.8	39.0	2	4.0 psi,		39.0 gpm		
1B	0.0	42.8	39.0						
Pipe: 3		H.S.	5.0	Disch			1.00	150	
1B	0.0	42.8	34.0	3	P1.500	----	0.00		
2	0.0	42.8	39.0		1.590		1.00	0.039	
Pipe: 4		0.0	0.0				76.00	150	
2	0.0	42.8	34.0	4	P1.500	3E:12.0	20.40		
3	0.0	39.9	34.0		1.590	T: 8.4	96.40	0.030	
Pipe: 5		0.0	0.0				3.00	150	
3	0.0	39.9	34.0	5	K1.000	E: 2.0	2.00		-
4	2.0	37.5	34.0		0.995		5.00	0.297	
Pipe: 6			0.0	Fixed Pressure Loss Device					
4	2.0	37.5	34.0	6	7.0 psi,		34.0 gpm		
5	2.0	30.5	34.0						
Pipe: 7		0.0	0.0				2.00	150	
5	2.0	30.5	34.0	7	M1.000	E: 3.0	3.00		-
6	3.0	29.0	34.0		1.055		5.00	0.224	
Pipe: 8			0.0	Fixed Pressure Loss Device					
6	3.0	29.0	34.0	8	3.0 psi,		34.0 gpm		
7	3.0	26.0	34.0						
Pipe: 9		0.0	0.0				3.00	150	
7	3.0	26.0	34.0	10	M1.000	E: 3.0	3.00		-
8	4.0	24.2	34.0		1.055		6.00	0.224	
Pipe: 10		0.0	23.2	20			7.00	150	
8	4.0	24.2	10.8	11	F1.000	E: 5.0	5.00		-
10	11.0	19.0	34.0		1.101		12.00	0.182	
Pipe: 11		0.0	0.0			2E:10.0	28.25	150	
10	11.0	19.0	10.8	23	F1.000	T: 5.0	17.00		-
11	21.0	13.7	10.8		1.101	2R: 2.0	45.25	0.022	

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 3.SDF
JOB TITLE: Village walk plan 3

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(F (F (F
Pipe: 12		0.0	6.2	24			13.50	150	
10	11.0	19.0	17.0	21	F1.000	E: 5.0	6.00		-
20	21.0	12.9	23.2		1.101	R: 1.0	19.50	0.090	
Pipe: 13		0.0	0.0			E: 5.0	25.00	150	
11	21.0	13.7	10.8	24	F1.000	2T:10.0	16.00		-
23	24.0	11.5	10.8		1.101	R: 1.0	41.00	0.022	
Pipe: 14		0.0	0.0				7.00	150	
20	21.0	12.9	17.0	201	F1.000	R: 1.0	1.00		
21	21.0	12.5	17.0		1.101		8.00	0.050	
Pipe: 15		0.0	0.0				21.75	150	
22	24.0	11.2	0.0		F1.000	T: 5.0	8.00		
21	21.0	12.5	0.0		1.101	3R: 3.0	29.75	0.000	
Pipe: 16		0.0	17.0	202			1.10	150	
23	24.0	11.5	-6.2	20	F1.000	T: 5.0	5.00		
24	24.0	11.3	10.8		1.101		6.10	0.022	
Pipe: 17		0.0	17.0	202		E: 5.0	22.25	150	
20	21.0	12.9	-10.8	23	F1.000	T: 5.0	12.00		-
24	24.0	11.3	6.2		1.101	2R: 2.0	34.25	0.008	
Pipe: 18		4.90	17.0	Disch			6.50	150	
24	24.0	11.3	0.0		F1.000	T: 5.0	5.00		
202	21.0	12.1	17.0		1.101		11.50	0.050	
Pipe: 19		4.90	17.0	Disch			4.25	150	
21	21.0	12.5	0.0		F1.000	T: 5.0	5.00		
201	21.0	12.0	17.0		1.101		9.25	0.050	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.5 computer program under license no. 50122087 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760

(2) The system has been calculated to provide an average imbalance at each node of 0.008 gpm and a maximum imbalance at any node of 0.138 gpm.

(3) Total pressure at each node is used in balancing the system.
Maximum water velocity is 14.0 ft/sec at pipe 5.

(4) Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.

(5) Available pressure at source node 1 under full flow conditions is 67.96 psi compared to the minimum required pressure of 20.00 psi.

(6) PIPE FITTINGS TABLE

Pipe Table Name: RLS3.PIP

PAGE: * MATERIAL: S40 HWC: 120

Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	L	C	B	G	A	D	N
	Ell	Tee	LngEll	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	NPTee
1.325	2.46	4.92	1.64	5.74	4.92	0.82	8.20	8.20	4.92

PAGE: F MATERIAL: CPVC HWC: 150

Diameter	Equivalent Fitting Lengths in Feet						
(in)	F	E	T	R	K	C	G
	F45	El	Tee	RunT	Kplg	ChkVlv	Gate
1.101	1.00	5.00	5.00	1.00	1.00	8.00	2.00

PAGE: K MATERIAL: CT-K HWC: 150

Diameter	Equivalent Fitting Lengths in Feet							
(in)	E	T	F	R	K	C	G	N
	Ell	Tee	45-Ell	TeeRun	Kouplg	ChkVlv	GatVlv	NPTee
0.995	2.00	6.00	1.00	2.00	0.00	6.00	0.00	6.00

PAGE: M MATERIAL: CT-M HWC: 150

Diameter	Equivalent Fitting Lengths in Feet							
(in)	E	T	F	R	K	C	G	N
	Ell	Tee	45-Ell	TeeRun	Kouplg	ChkVlv	GatVlv	NPTee
1.055	3.00	8.00	2.00	3.00	0.00	8.00	0.00	8.00

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 3.SDF
JOB TITLE: Village walk plan 3

PAGE: P MATERIAL: PVC HWC: 150

Diameter	Equivalent Fitting Lengths in Feet								
(in)	E Ell	T Tee	L 45	R RUN	C ChkVlv	G Gate	A	D	N
1.590	4.00	8.40	2.10	2.70	14.00	3.00	0.00	0.00	0.00



PO BOX 984
CASTLE ROCK, CO 80104
TEL: (707) 484-5711

4

SUBMITTAL DATA

VILLAGE WALK SUBDIVSION
PLANS 4 AND 4 REVERSE
COTATI, CA

APPROVED
WITH CHANGES
DATE 7/27/16 BY
RANCHO ADOBE FIRE PROTECTION DISTRICT

City

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1. **Sprinkler Heads Cut Sheet**
2. **Backflow Preventer Cut Sheet**
3. **Flow Switch and Bell Cut Sheet**
4. **Water Flow Data**
5. **Hydraulic Calculations**

1

1

SPRINKLER HEAD CUT SHEETS

RAPID RESPONSE Series LFII Residential 4.9 K-factor Concealed Pendent Sprinkler Flat Plate, Wet Pipe and Dry Pipe Systems

General Description

TYCO RAPID RESPONSE Series LFII Residential 4.9K Concealed Pendent Sprinklers (TY3596) are decorative, fast response, fusible solder sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels.

The cover plate assembly conceals the sprinkler operating components above the ceiling. The flat profile of the cover plate provides the optimum aesthetically appealing sprinkler design. In addition, the concealed design of the Series LFII Residential Concealed Pendent Sprinklers (TY3596) provides 1/2 inch (12,7 mm) vertical adjustment. This adjustment provides a measure of flexibility when cutting fixed sprinkler drops.

The Series LFII Residential Concealed Sprinklers are intended for use in the following scenarios:

- wet and dry pipe residential sprinkler systems for one- and two-family dwellings and mobile homes per NFPA 13D
- wet and dry pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R
- wet and dry pipe sprinkler systems for the residential portions of any occupancy per NFPA 13

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) has been designed with heat sensitivity and water distribution characteristics proven to help in the control of residential fires and to improve the chance for occupants to escape or be evacuated.

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) are shipped with a Disposable Protective Cap. The Protective Cap is temporarily removed for installation, and then it can be replaced to help protect the sprinkler while the ceiling is being installed or finished. The tip of the Protective Cap can also be used to mark the center of the ceiling hole into plaster board, ceiling tiles, etc. by gently pushing the ceiling product against the Protective Cap. When the ceiling installation is complete the Protective Cap is removed and the Cover Plate Assembly installed.

Dry Pipe System Application

The Series LFII Residential Concealed Pendent Sprinklers offers a laboratory approved option for designing dry pipe residential sprinkler systems, whereas, most residential sprinklers are laboratory approved for wet systems only.

Through extensive testing, it has been determined that the number of design sprinklers (hydraulic design area) for the Series LFII Residential Concealed Pendent Sprinklers (TY3596) need not be increased over the number of design sprinklers (hydraulic design area) as specified for wet pipe sprinkler systems, as is accustomed for density/area sprinkler systems designed per NFPA 13.

Consequently, the Series LFII Residential Concealed Pendent Sprinklers offer the features of non-water filled pipe in addition to not having to increase the number of design sprinklers (hydraulic design area) for systems designed to NFPA 13, 13D, or 13R.



NOTICE

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association (NFPA), in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Sprinkler Identification Number (SIN)

TY3596

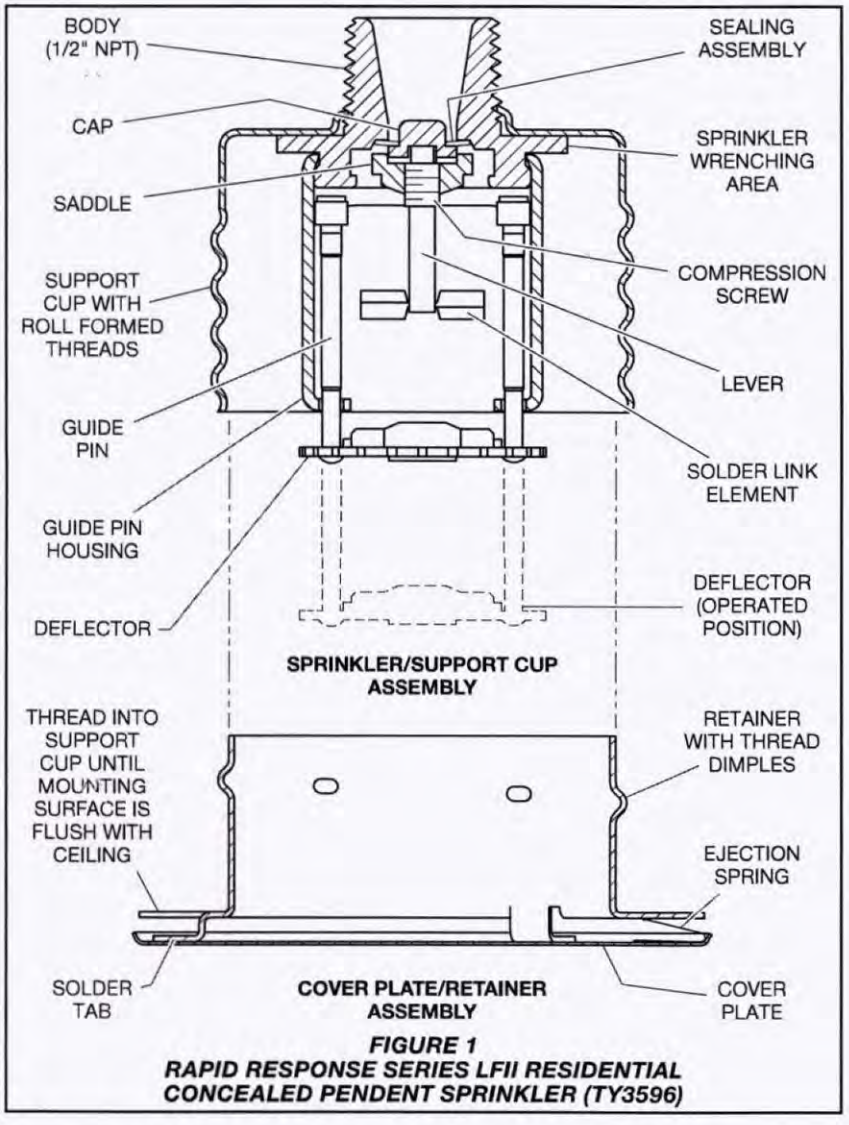


FIGURE 1
RAPID RESPONSE SERIES LFII RESIDENTIAL CONCEALED PENDENT SPRINKLER (TY3596)

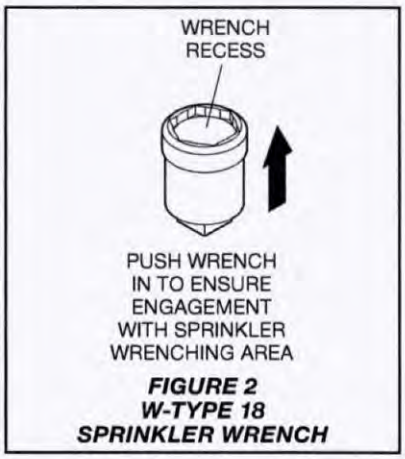


FIGURE 2
W-TYPE 18
SPRINKLER WRENCH

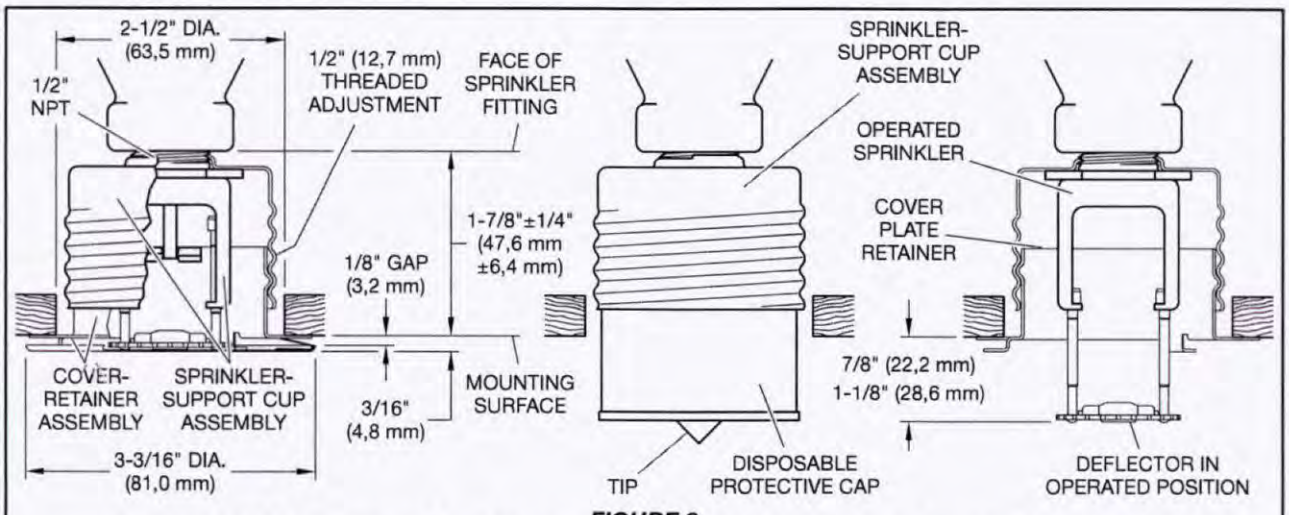


FIGURE 3
RAPID RESPONSE SERIES LFII RESIDENTIAL CONCEALED PENDENT SPRINKLER (TY3596)
INSTALLATION DIMENSIONS/PROTECTIVE CAP/ACTIVATED DEFLECTOR

Technical Data

Approvals
UL and C-UL Listed
NYC Approved under MEA 44-03-E-2NSF
Certified to NSF/ANSI 61

The TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers are only Listed with the Series LFII Concealed Cover Plates having a factory-applied finish.

Cover Plates can be ordered by following the instructions in the Ordering Procedure section.

Maximum Working Pressure
175 psi (12,1 bar)

Discharge Coefficient
K=4.9 gpm/psi$^{1/2}$ (70,6 lpm/bar$^{1/2}$)

Temperature Rating
160°F (71°C) Sprinkler with
139°F (59°C) Cover Plate

Vertical Adjustment
1/2 inch (12,7 mm)

Finishes
Refer to Ordering Procedure section.

Physical Characteristics

Body	Brass
Cap	Bronze
Saddle	Brass
Sealing Assembly	Beryllium Nickel w/TEFLON
Soldered Link Halves	Nickel
Lever	Bronze
Compression Screw	Brass
Deflector	Copper or Brass
Guide Pin Housing	Bronze
Guide Pins	Stainless Steel or Bronze
Support Cup	Steel
Cover Plate	Copper
Retainer	Brass
Cover Plate Ejection Spring	Stainless Steel

Operation

When exposed to heat from a fire, the Cover Plate, which is normally soldered to the Support Cup at three points, falls away to expose the sprinkler assembly. At this point the Deflector supported by the Arms drops down to its operated position. The fusible link of the sprinkler assembly is comprised of two link halves that are soldered together with a thin layer of solder. When the rated temperature is reached, the solder melts and the two link halves separate allowing the sprinkler to activate and flow water.

Design Criteria

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) are UL and C-UL Listed for installation in accordance with this section.

Note: *When conditions exist that are outside the scope of the provided criteria, refer to the Residential Sprinkler Design Guide TFP490 for the manufacturer's recommendations that may be acceptable to the authority having jurisdiction.*

System Types
Per the UL Listing, wet pipe and dry pipe systems may be utilized. Per the C-UL Listing, only wet pipe systems may be utilized.

Refer to Technical Data Sheet TFP485 about the use of residential sprinklers in residential dry pipe systems.

Ceiling Types
Smooth flat horizontal, or beamed, or sloped, in accordance with the 2013 Edition of NFPA 13D, 13R, or 13 as applicable.

Hydraulic Design (NFPA 13D and 13R)
For systems designed to NFPA 13D or NFPA 13R, the minimum required sprinkler flow rates are given in Tables A and B as a function of temperature rating and the maximum allowable coverage areas. The sprinkler flow rate is the minimum required discharge from each of the total number of "design sprinklers" as specified in NFPA 13D or NFPA 13R. The number of "design sprinklers" specified in NFPA 13D and 13R for wet pipe systems is to be applied when designing dry pipe systems.

Hydraulic Design (NFPA 13)
For systems designed to NFPA 13, the number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- the flow rates given in Tables A and B as a function of temperature rating and the maximum allowable coverage area
- a minimum discharge of 0.1 gpm/ft.^{2} over the design area comprised of the four (4) most hydraulically demanding sprinklers for actual coverage areas protected by the four (4) sprinklers

The number of design sprinklers specified in NFPA 13 for wet pipe systems is to be applied when designing dry pipe systems.

Dry Pipe System Water Delivery
When using the Series LFII Residential Concealed Pendent Sprinklers (TY3596) in dry pipe sprinkler systems, the time for water delivery must not exceed 15 seconds for the most remote operating sprinkler.

Obstruction to Water Distribution
Sprinklers are to be located in accordance with the obstruction rules of NFPA 13D, 13R, and 13 as applicable for residential sprinklers as well as with the obstruction criteria described within the Technical Data Sheet TFP490.

Operational Sensitivity
The sprinklers are to be installed relative to the ceiling mounting surface as shown in Figure 3.

Sprinkler Spacing
The minimum spacing between sprinklers is 8 feet (2,4 m). The maximum spacing between sprinklers cannot exceed the length of the coverage area (Ref. Table A or B) being hydraulically calculated (e.g., maximum 12 feet for a 12 ft. x 12 ft. coverage area, or 20 feet for a 20 ft. x 20 ft. coverage area).

The Series LFII must not be used in applications where the air pressure above the ceiling is greater than that below. Down drafts through the Support Cup could delay sprinkler operation in a fire situation.

Maximum Coverage Area [1] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	WET PIPE SYSTEM Minimum Flow and Residual Pressure [2,3]				
		Ordinary Temp. Rating 160°F (71°C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow gpm (lpm)	Pressure psi (bar)			
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings 7/8 to 1-1/8 inches Beamed Ceilings per NFPA 13D or 13R, or 13. Installed in beam 7/8 to 1-1/8 inches below bottom of beam	Concealed	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	13 (49,2)	7.0 (0,48)			
16 x 16 (4,9 x 4,9)	16 (4,9)	13 (49,2)	7.0 (0,48)			
18 x 18 (5,5 x 5,5)	18 (5,5)	17 (64,3)	12.0 (0,83)			
20 x 20 (6,1 x 6,1)	20 (6,1)	20 (75,7)	16.7 (1,15)			

Notes:
1. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
2. Requirement is based on minimum flow in gpm (lpm) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.
3. For NFPA 13 residential applications, the greater of 0.1 gpm/ft.^{2} over the design area or the flow in accordance with the criteria in this table must be used.

TABLE A
WET PIPE SYSTEM
SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT PLATE CONCEALED PENDENT SPRINKLER (TY3596)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Maximum Coverage Area [1] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	DRY PIPE SYSTEM Minimum Flow and Residual Pressure [2,3]				
		Ordinary Temp. Rating 160°F (71°C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow gpm (lpm)	Pressure psi (bar)			
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings 7/8 to 1-1/8 inches Beamed Ceilings per NFPA 13D or 13R, or 13. Installed in beam 7/8 to 1-1/8 inches below bottom of beam	Concealed	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	14 (53,0)	8.2 (0,57)			
16 x 16 (4,9 x 4,9)	16 (4,9)	15 (56,8)	9.4 (0,65)			
18 x 18 (5,5 x 5,5)	18 (5,5)	18 (68,1)	13.5 (0,93)			
20 x 20 (6,1 x 6,1)	20 (6,1)	21 (79,5)	18.4 (1,27)			

Notes:
1. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
2. Requirement is based on minimum flow in gpm (lpm) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.
3. For NFPA 13 residential applications, the greater of 0.1 gpm/ft.^{2} over the design area or the flow in accordance with the criteria in this table must be used.

TABLE B
DRY PIPE SYSTEM
RAPID RESPONSE SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT PLATE CONCEALED PENDENT (TY3596)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Installation

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be installed in accordance with this section.

General Instructions
Damage to the fusible Link Assembly during installation can be avoided by handling the sprinkler by the support cup only (i.e., do not apply pressure to the fusible Link Assembly).

A 1/2 inch NPT sprinkler joint should be obtained with a minimum to maximum torque of 7 to 14 lbs.-ft. (9,5 to 19,0 Nm). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Cover Plate / Retainer Assembly by under- or over-tightening the Sprinkler. Readjust the position of the sprinkler fitting to suit.

Step 1. The sprinkler must only be installed in the pendent position and with the centerline of the sprinkler perpendicular to the mounting surface.

Step 2. Remove the Protective Cap.

Step 3. With pipe thread sealant applied to the pipe threads, and using the W-Type 18 Wrench shown in Figure 2, install and tighten the Sprinkler / Support Cup Assembly into the fitting. The W-Type 18 Wrench will accept a 1/2 inch ratchet drive.

Step 4. Replace the Protective Cap by pushing it upwards until it bottoms out against the Support Cup. The Protective Cap helps prevent damage to the Deflector and Guide Pins during ceiling installation and/or during application of the finish coating of the ceiling. It may also be used to locate the center of the clearance hole by gently pushing the ceiling material against the center point of the Cap.

Note: *As long as the protective Cap remains in place, the system is considered to be "Out Of Service."*

Step 5. After the ceiling has been completed with the 2-1/2 inch (63 mm) diameter clearance hole and in preparation for installing the Cover Plate Assembly, remove and discard the Protective Cap, and verify that the Deflector moves up and down freely.

If the sprinkler has been damaged and the Deflector does not move up and down freely, replace the entire sprinkler assembly. Do not attempt to modify or repair a damaged sprinkler.

Step 6. Screw on the Cover Plate Assembly until its flange comes in contact with the ceiling.

Do not continue to screw on the Cover Plate Assembly such that it lifts a ceiling panel out of its normal position.

If the Cover Plate Assembly cannot be engaged with the Mounting Cup or the Cover Plate Assembly cannot be engaged sufficiently to contact the ceiling, the Sprinkler Fitting must be repositioned.

Care and Maintenance

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system which it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

Absence of a Cover Plate may delay the sprinkler operation in a fire situation.

When properly installed, there is a nominal 1/8 inch (3,2 mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 3. This air gap is necessary for proper operation of the sprinkler by allowing heat flow from a fire to pass below and above the Cover Plate to help assure appropriate release of the Cover Plate in a fire situation. If the ceiling is to be repainted after the installation of the Sprinkler, care must be exercised to ensure that the new paint does not seal off any of the air gap.

Factory painted Cover Plates must not be repainted. They should be replaced, if necessary, by factory painted units. Non-factory applied paint may adversely delay or prevent sprinkler operation in the event of a fire.

Do not pull the Cover Plate relative to the Enclosure. Separation may result.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified or over heated sprinklers must be replaced.

Care must be exercised to avoid damage before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, non-operation in the event of a fire or inadvertent operation may result.

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and part number (P/N).

Sprinkler Assemblies
Specify: Series LFII (TY3596) 4.9K Residential Concealed Pendent Sprinkler without Cover Plate Assembly, P/N 51-112-1-160

Cover Plate Assemblies
Specify: Cover Plate Assembly with (specify) finish for the Series LFII (TY3596) 4.9K Residential Concealed Pendent Sprinkler, P/N (specify):

Ivory (RAL1015)	P/N 56-202-0-135
Beige (RAL1001)	P/N 56-202-2-135
Pure White * (RAL9010)	P/N 56-202-3-135
Signal White ** (RAL9003)	P/N 56-202-4-135
Grey White (RAL9002)	P/N 56-202-5-135
Brown (RAL8028)	P/N 56-202-6-135
Black (RAL9005)	P/N 56-202-7-135
Brushed Brass	P/N 56-202-8-135
Brushed Chrome	P/N 56-202-9-135
Custom Paint	P/N 56-202-X-135

* Eastern Hemisphere sales only
** Previously known as Bright White

Note: *All Custom Cover Plates are painted using Sherwin Williams Interior Latex Paint. Contact Tyco Customer Service with any questions related to custom orders.*

Sprinkler Wrench
Specify: W-Type 18 Sprinkler Wrench, P/N 56-000-1-265

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tyco Fire Protection Products

Series TY-FRB — 2.8, 4.2, 5.6, and 8.0 K-Factor Upright, Pendent, and Recessed Pendent Sprinklers Quick Response, Standard Coverage

General Description

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described in this data sheet are quick response, standard coverage, decorative 3 mm glass bulb-type spray sprinklers designed for use in light or ordinary hazard, commercial occupancies such as banks, hotels, and shopping malls.

The recessed version of the Series TY-FRB Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. This recessed pendent sprinkler uses one of the following:

- A two-piece Style 10 (1/2 inch NPT) or Style 40 (3/4 inch NPT) Recessed Escutcheon with 1/2 inch (12,7 mm) of recessed adjustment or up to 3/4 inch (19,1 mm) of total adjustment from the flush pendent position, or a
- A two-piece Style 20 (1/2 inch NPT) or Style 30 (3/4 inch NPT) Recessed Escutcheon with 1/4 inch (6,4 mm) of recessed adjustment or up to 1/2 inch (12,7 mm) of total adjustment from the flush pendent position.

The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the fixed pipe drops to the sprinklers must be cut.

Corrosion-resistant coatings, where applicable, are utilized to extend the life of copper alloy sprinklers beyond that which would otherwise be obtained when exposed to corrosive atmospheres. Although corrosion-resistant coated sprinklers have passed the standard corrosion tests of the applicable approval agencies, the testing is not representative of all possible corrosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of these coatings for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, as a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

An intermediate level of the Series TY-FRB Pendent Sprinklers is detailed in Technical Data Sheet TFP356, and Sprinkler Guards are detailed in Technical Data Sheet TFP780.

NOTICE

The Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.





Sprinkler Identification Number (SIN)

TY1131 - Upright 2.8K, 1/2" NPT
TY1231 - Pendent 2.8K, 1/2" NPT
TY2131 - Upright 4.2K, 1/2" NPT
TY2231 - Pendent 4.2K, 1/2" NPT
TY3131 - Upright 5.6K, 1/2" NPT
TY3231 - Pendent 5.6K, 1/2" NPT
TY4131 - Upright 8.0K, 3/4" NPT
TY4231 - Pendent 8.0K, 3/4" NPT
TY4831 - Upright 8.0K, 1/2" NPT
TY4931 - Pendent 8.0K, 1/2" NPT

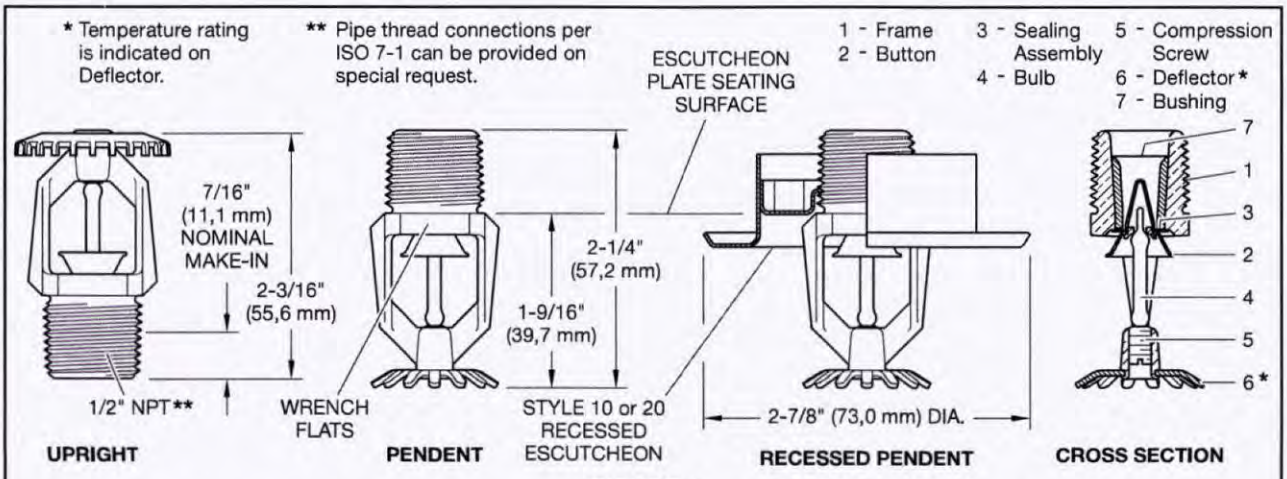


FIGURE 1
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY1131) AND PENDENT (TY1231) SPRINKLERS
2.8 K-FACTOR, 1/2 INCH NPT

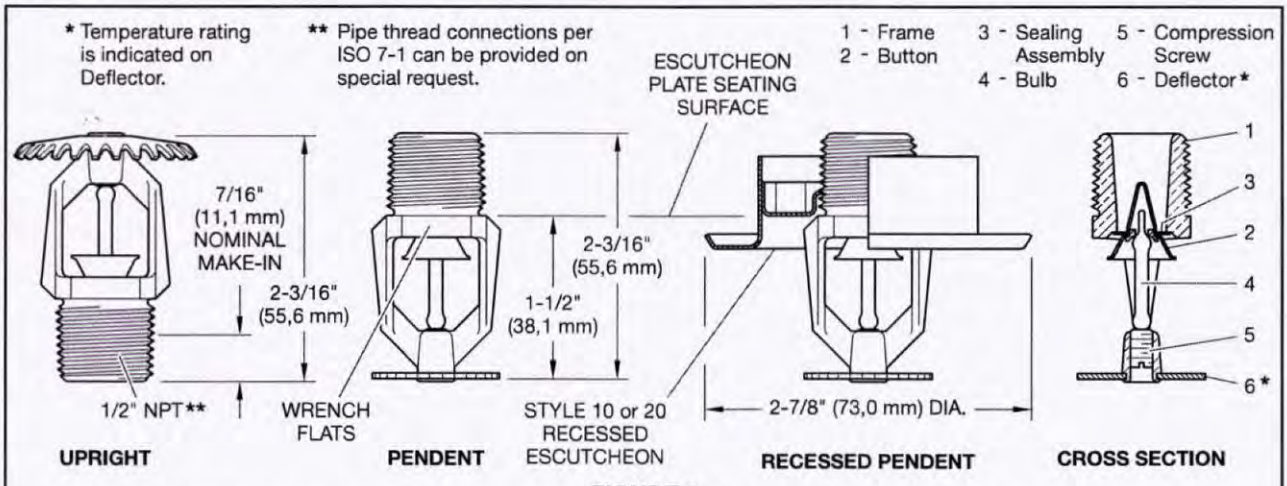


FIGURE 2
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY2131) AND PENDENT (TY2231) SPRINKLERS
4.2 K-FACTOR, 1/2 INCH NPT

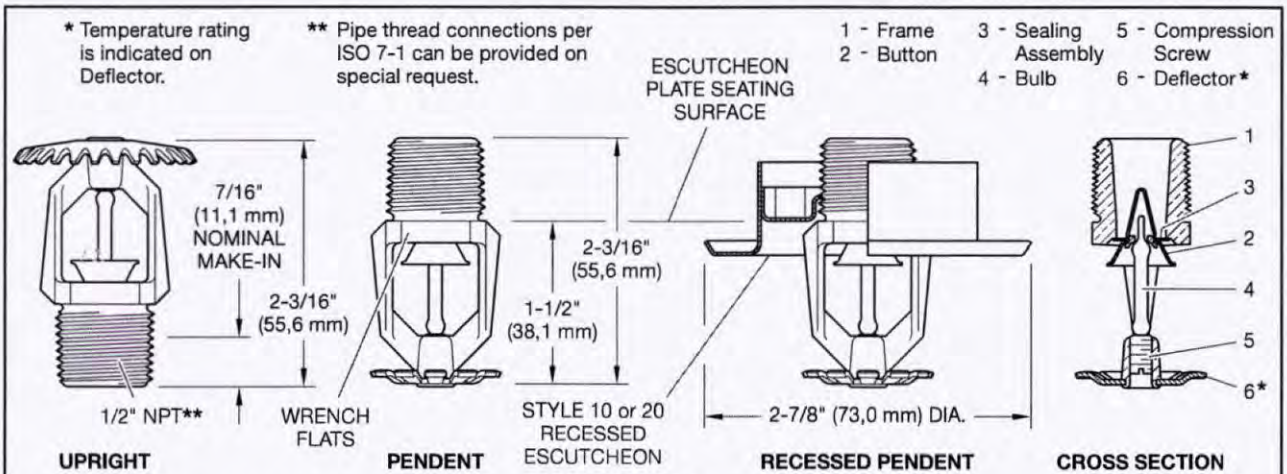


FIGURE 3
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY3131) AND PENDENT (TY3231) SPRINKLERS
5.6 K-FACTOR, 1/2 INCH NPT

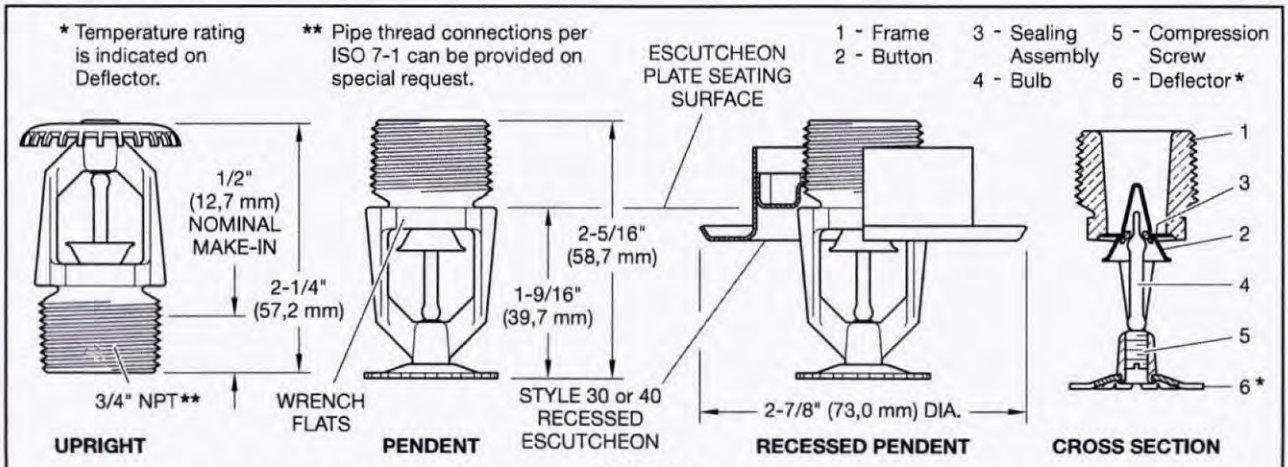


FIGURE 4
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4131) AND PENDENT (TY4231) SPRINKLERS
8.0 K-FACTOR, 3/4 INCH NPT

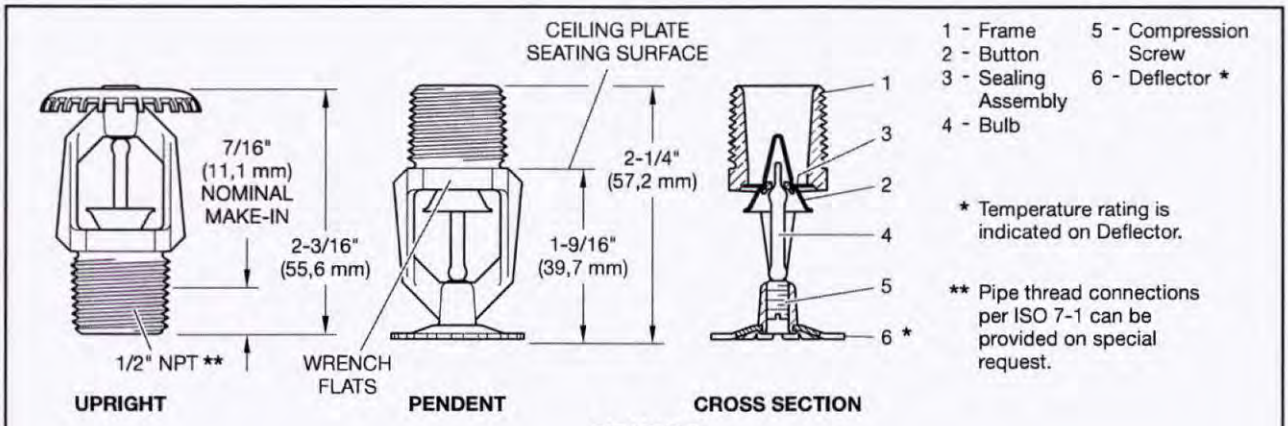


FIGURE 5
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4831) AND PENDENT (TY4931) SPRINKLERS
8.0 K-FACTOR, 1/2 INCH NPT

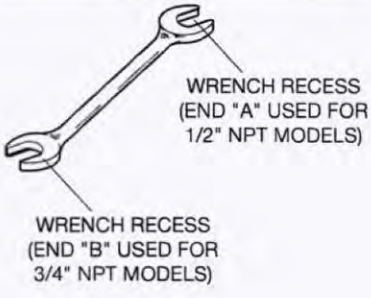


FIGURE 6
W-TYPE 6 SPRINKLER WRENCH



FIGURE 7
W-TYPE 7 RECESSED SPRINKLER WRENCH

Technical Data

Approvals
UL and C-UL Listed
FM, LPCB, and NYC Approved
Refer to Table A and B for complete approval information including corrosion-resistant status.

Maximum Working Pressure
Refer to Table C.

Discharge Coefficient
K=2.8 gpm/psi$^{1/2}$ (40,3 lpm/bar$^{1/2}$)
K=4.2 gpm/psi$^{1/2}$ (60,5 lpm/bar$^{1/2}$)
K=5.6 gpm/psi$^{1/2}$ (80,6 lpm/bar$^{1/2}$)
K=8.0 gpm/psi$^{1/2}$ (115,2 lpm/bar$^{1/2}$)

Temperature Rating
Refer to Table A and B.

Finishes
Sprinkler: Refer to Table D.

Recessed Escutcheon: Signal or Pure White, Jet Black, Chrome Plated, or Natural Brass

Physical Characteristics

Frame	Bronze
Button	Brass/Copper
Sealing Assembly	Beryllium Nickel w/TEFLON
Bulb	Glass
Compression Screw	Bronze
Deflector	Copper/Bronze
Bushing (K=2.8)	Bronze

Operation

The glass bulb contains a fluid that expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

Design Criteria

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (such as, UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of FM's Loss Prevention Data Sheets). Only the Style 10, 20, 30, or 40 Recessed Escutcheon, as applicable, is to be used for recessed pendent installations.

Installation

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers must be installed in accordance with this section.

General Instructions
Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F (57°C) and 3/32 inch (2,4 mm) for the 286°F (141°C) temperature ratings.

A leak-tight 1/2 inch NPT sprinkler joint should be obtained by applying a minimum to maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). A leak tight 3/4 inch NPT sprinkler joint should be obtained with a torque of 10 to 20 ft.-lbs. (13,4 to 26,8 Nm). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Escutcheon Plate by under- or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Series TY-FRB Upright and Pendent Sprinklers
The Series TY-FRB Pendent and Upright Sprinklers must be installed in accordance with the following instructions.

Step 1. Install Pendent sprinklers in the pendent position. Install upright sprinklers in the upright position.

Step 2. With pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Figure 6). With reference to Figures 1 through 5, apply the W-Type 6 Sprinkler Wrench to the sprinkler wrench flats.

Series TY-FRB Recessed Pendent Sprinklers
The Series TY-FRB Recessed Pendent Sprinklers must be installed in accordance with the following instructions.

Step A. After installing the Style 10, 20, 30, or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step B. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure 7). With reference to Figures 1 to 4, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step C. After ceiling installation and finishing, slide on the Style 10, 20, 30, or 40 Closure over the Series TY-FRB Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 5)			
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	POLYESTER***
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	135°F (57°C)	Orange	1, 2, 3, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY1231)* Figure 8	135°F (57°C)	Orange	1, 2, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY1231)** Figure 9	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	135°F (57°C)	Orange	1, 2		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY2231)* Figure 10	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY2231)** Figure 11	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the City of New York under MEA 354-01-E.
5. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
*** Frame and Deflector only.
N/A: Not Available

TABLE A
LABORATORY LISTINGS AND APPROVALS FOR
2.8 AND 4.2 K-FACTOR SPRINKLERS

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 8)				
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	POLYESTER***	LEAD COATED
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 3, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)* Figure 12	135°F (57°C)	Orange	1, 2, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)** Figure 13	135°F (57°C)	Orange	1, 2, 3, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)* Figure 14	135°F (57°C)	Orange	1, 2, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)** Figure 15	135°F (57°C)	Orange	1, 2, 3, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	135°F (57°C)	Orange	1, 2, 4, 5, 6			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007k/04) as Quick Response Sprinklers. However, LPCB does not rate the thermal sensitivity of recessed sprinklers.
5. Approved by the City of New York under MEA 354-01-E.
6. VdS Approved (For details, contact Tyco Fire Suppression & Building Products, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-53-428-3377.)
7. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) as Quick Response Sprinklers.
8. Where Polyester Coated and Lead-Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers. Where Lead-Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as a Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
*** Frame and Deflector only.
N/A: Not Available

TABLE B
LABORATORY LISTINGS AND APPROVALS FOR
5.6 AND 8.0 K-FACTOR SPRINKLERS

K FACTOR	TYPE	SPRINKLER FINISH			
		NATURAL BRASS	CHROME PLATED	POLYESTER	LEAD COATED
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY1231)				
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY2231)				
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	250 PSI (17,2 BAR) OR 175 PSI (12,1 BAR) (SEE NOTE 1)			
	RECESSED PENDENT (TY3231)				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)
	RECESSED PENDENT (TY4231)				N/A
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)

NOTES:
1. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories Inc. (UL); the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL); and, the Approval by the City of New York.

TABLE C
MAXIMUM WORKING PRESSURE

Care and Maintenance

The TYCO Series TY-FRB must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection systems from the proper authorities and notify all personnel who may be affected by this action.

Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, can delay sprinkler operation in a fire situation.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section.)

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Care must be exercised to avoid damage to the sprinklers -before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section).

Initial and frequent visual inspections of random samples are recommended for corrosion-resistant sprinklers to verify the integrity of the corrosion-resistant material of construction. Thereafter, annual inspections per NFPA 25 should suffice.

Inspections of corrosion-resistant sprinklers are recommended at close range, instead of from the floor level per NFPA. Inspection at close range can better determine the exact sprinkler condition and the long-term integrity of the corrosion-resistant material, which can be affected by the corrosive conditions present.

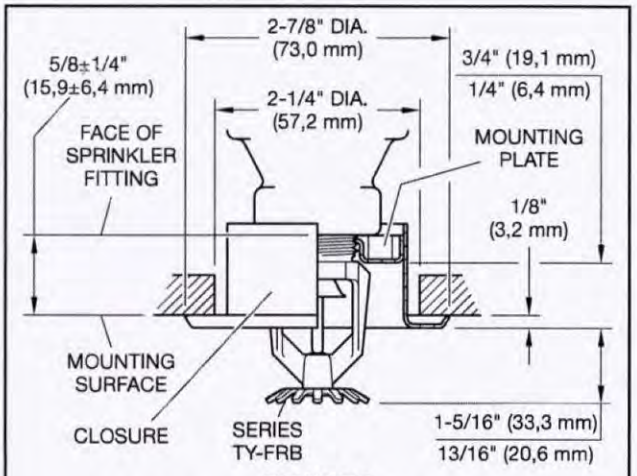


FIGURE 8
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

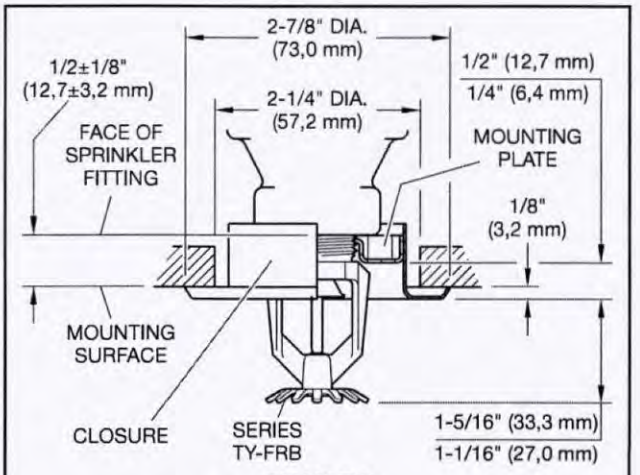


FIGURE 9
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

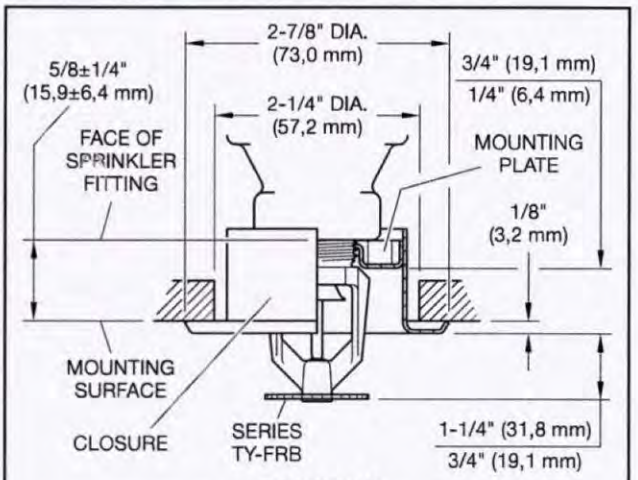


FIGURE 10
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

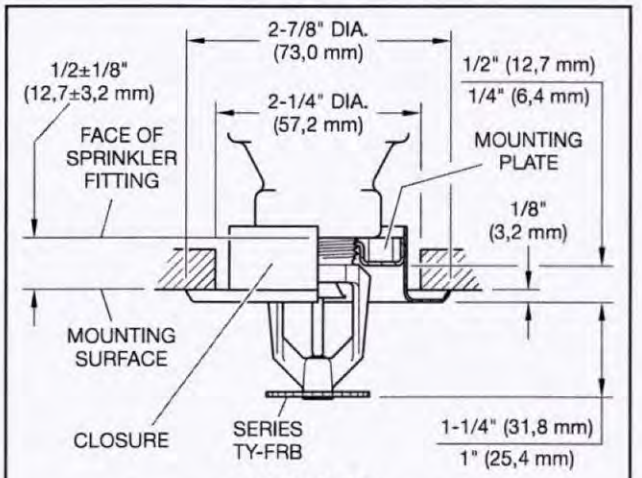


FIGURE 11
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

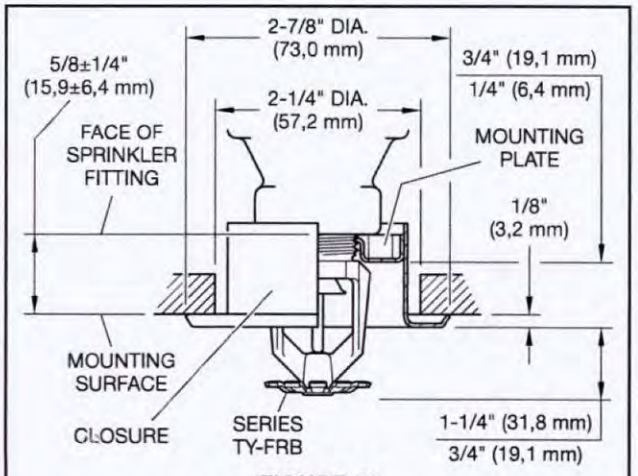


FIGURE 12
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

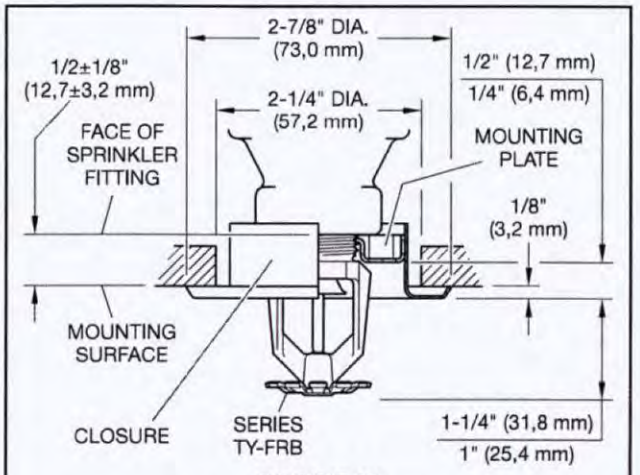


FIGURE 13
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

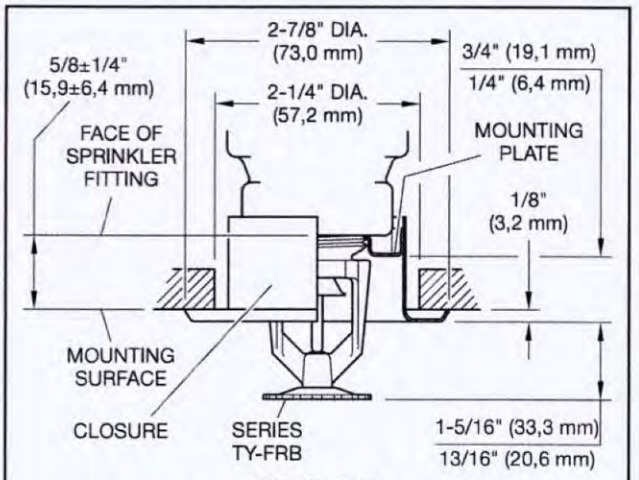


FIGURE 14
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

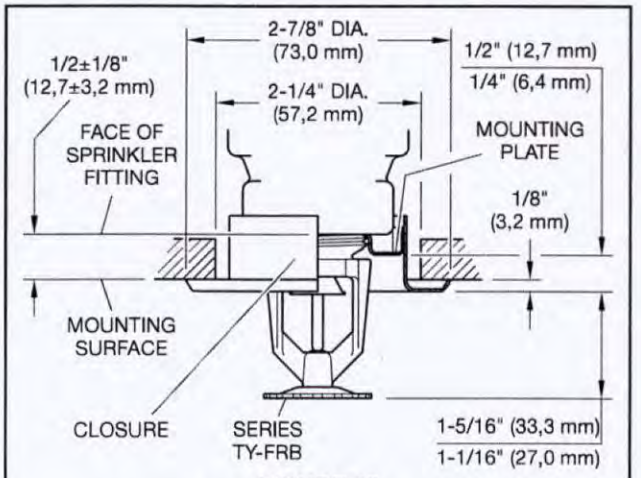


FIGURE 15
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 30 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

P/N 57 – XXX – X – XXX

		SIN
330	2.8K UPRIGHT (1/2"NPT)	TY1131
331	2.8K PENDENT (1/2"NPT)	TY1231
340	4.2K UPRIGHT (1/2"NPT)	TY2131
341	4.2K PENDENT (1/2"NPT)	TY2231
370	5.6K UPRIGHT (1/2"NPT)	TY3131
371	5.6K PENDENT (1/2"NPT)	TY3231
390	8.0K UPRIGHT (3/4"NPT)	TY4131
391	8.0K PENDENT (3/4"NPT)	TY4231
360	8.0K UPRIGHT (1/2"NPT)	TY4831*
361	8.0K PENDENT (1/2"NPT)	TY4931*

	SPRINKLER FINISH
1	NATURAL BRASS
3	PURE WHITE POLYESTER (RAL9010)[1]
4	SIGNAL WHITE POLYESTER (RAL9003)
5	JET BLACK POLYESTER (RAL9005)[2]
7	LEAD COATED
9	CHROME PLATED

	TEMPERATURE RATINGS
135	135°F (57°C)
155	155°F (68°C)
175	175°F (79°C)
200	200°F (93°C)
286	286°F (141°C)

NOTES:
1. Eastern Hemisphere sales only.
2. Available in only 2.8K, 4.2K, and 8.0K, 155°F (68°C) and 200°F (93°C); requires lead time to manufacture.

TABLE D
SERIES TY-FRB PENDENT AND UPRIGHT SPRINKLERS
PART NUMBER SELECTION

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler Assemblies with NPT Thread Connections
Specify: Series TY-FRB (Specify SIN), (specify K-factor), (specify Pendent or Upright) Sprinkler (specify) temperature rating, (specify) finish or coating, P/N (specify from Table D)

Recessed Escutcheon
Specify: Style (10, 20, 30, or 40) Recessed Escutcheon with (specify*) finish, P/N (specify*)

Sprinkler Wrench
Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001

* Refer to Technical Data Sheet TFP770

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tyco Fire Protection Products

2

2

BACKFLOW PREVENTER

CUT SHEETS

Model 950XLT

Top Access Double Check Valve Assembly

Application

Designed for installation on water lines to protect against both backsiphonage and backpressure of polluted water into the potable water supply. A test cock plug is provided to protect against fouling caused by insects, dirt and debris. Assembly shall provide protection where a potential non-health hazard exists.



Standards Compliance

(Unless otherwise noted, applies to 3/4" thru 2" Horizontal)

- ASSE® Listed 1015 (Vertical flow-up:1 1/4" thru 2")
- IAPMO® Listed
- AWWA Compliant C510
- CSA® Certified (Vertical flow-up:1 1/2" & 2")
- NYC MEA 426-89-M VOL 3
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California (950XLTU: 3/4" & 1" Horizontal)

Options

(Suffixes can be combined)

- ☐ L - less ball valves
- ☐ FT - with "Fast Test" test cocks
- ☐ U - with union ball valves
- ☐ S - with bronze "Y" type strainer

Materials

Main valve body	Cast Bronze ASTM B 584
Access covers	Cast Bronze ASTM B 584
Fasteners	Stainless Steel, 300 Series
Elastomers	Silicone (FDA approved)
	Buna Nitrile (FDA approved)
Polymers	Noryl™, NSF Listed
Springs	Stainless steel, 300 series
Test cock cover	Plastic
Ball valve handles	Stainless steel

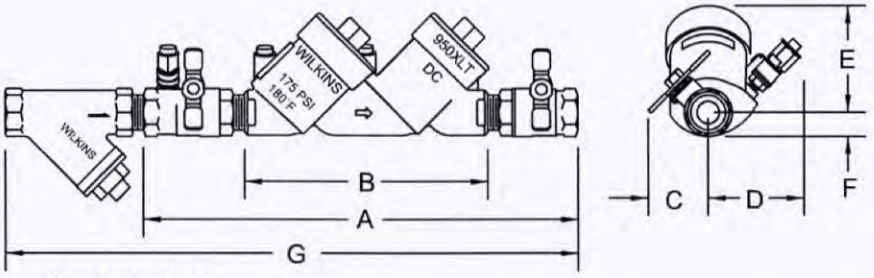
Accessories

- ☐ Repair kit (rubber only)
- ☐ Thermal expansion tank (Model XT)
- ☐ Bronze wye strainer
- ☐ QT-SET Quick Test Fitting Set

Features

Sizes: 3/4", 1", 1 1/4", 1 1/2", 2"

Maximum working water pressure	175 PSI
Maximum working water temperature	180°F
Hydrostatic test pressure	350 PSI
End connections Threaded	ANSI B1.20.1



Dimensions & Weights (do not include pkg.)

MODEL SIZE		DIMENSIONS (approximate)																WEIGHT			
		A		A UNION BALL VALVES		B LESS BALL VALVES		C		D		E		F		G		LESS BALL VALVES		WITH BALL VALVES	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg	lbs.	kg
3/4	20	13	330	14 5/16	364	8 3/4	222	2 3/8	60	2 5/16	59	3 5/16	84	3/4	19	17 5/8	448	4	1.8	6	2.7
1	25	14	356	15 3/4	400	8 3/4	222	2 1/2	64	2 5/16	59	3 5/16	84	3/4	19	19 3/4	502	8	3.6	12	5.4
1 1/4	32	19 5/8	499	21 5/8	549	13 3/4	349	4	102	3 5/8	92	4 3/8	111	1 5/16	33	24 3/4	629	16	7.3	22	10
1 1/2	40	20 5/16	516	22 5/16	567	13 3/4	349	5 3/8	137	3 5/8	92	4 3/8	111	1 5/16	33	25 15/16	659	16	7.3	22	10
2	50	21 3/8	543	23 1/4	591	13 3/4	349	5 13/16	148	3 5/8	92	4 3/8	111	1 5/16	33	28 5/16	719	17	7.7	29	13.2

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | **Zurn Industries Limited**
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 Ph. 905-405-8272, Fax 905-405-1292
www.zurn.com

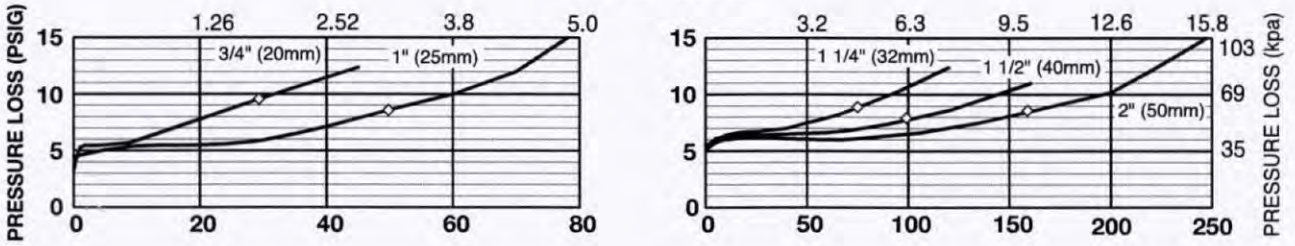
Rev. D
Date: 1/15
Document No. BF-950XLT
Product No. Model 950XLT

Flow Characteristics

◇ Rated Flow (established by approval agencies)

MODEL 950XLT 3/4", 1", 1 1/4", 1 1/2" & 2" (STANDARD & METRIC)

FLOW RATES (l/s)

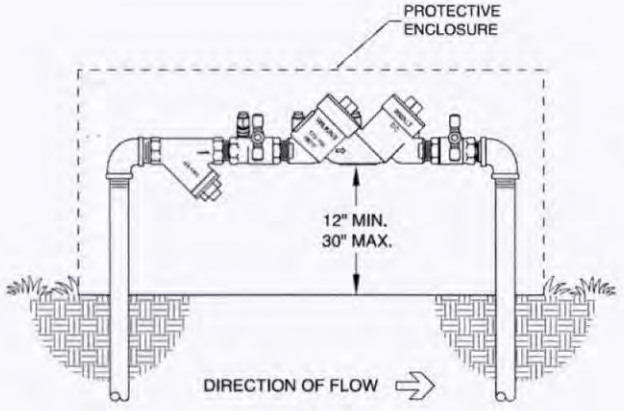


FLOW RATES (GPM)

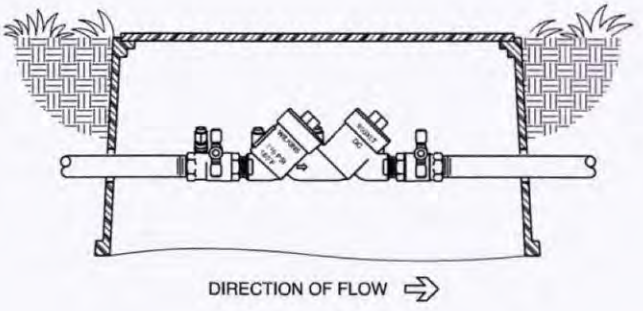
TYPICAL INSTALLATION

Local codes shall govern installation requirements. To be installed in accordance with the manufacturer's instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. If installed below grade, be certain adequate drainage is provided to prevent the device from being submerged.

Capacity thru Schedule 40 Pipe				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
1/8"	1	1	2	3
1/4"	2	2	3	5
3/8"	3	4	6	9
1/2	5	7	9	14
3/4"	8	12	17	25
1"	13	20	27	40
1 1/4"	23	35	47	70
1 1/2"	32	48	63	95
2"	52	78	105	167



OUTDOOR INSTALLATION



PIT INSTALLATION

SPECIFICATIONS

The Double Check Type Backflow Preventer shall be ASSE Listed 1015, rated to 180°F and supplied with full port ball valves. The main body and access covers shall be bronze (ASTM B 584), the seat ring and all internal polymers shall be NSF® Listed Noryl™ and the seat disc elastomers shall be SILICONE. The first and second check shall be located at a 45° angle and accessible for maintenance from the top of the device, without removing the device from the line. Each check shall have separate access covers and test cocks shall be accessible from the top of the device. Test cocks shall be protected from debris by a plug. The Double Check Type Backflow Preventer shall be a ZURN WILKINS Model 950XLT.

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | **Zurn Industries Limited**
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 Ph. 905-405-8272, Fax 905-405-1292
www.zurn.com

3



FLOW SWITCH & BELL CUT SHEETS

WFDTN Series Waterflow Detector



System Sensor WFDTN T-Tap Waterflow detectors are designed for primary signaling in residential systems and branch line signaling.

Features

- New directional cover allows installers and inspectors to easily see the direction of flow
- UL-listed models are NEMA 4 rated
- New cover provides a better seal, is lighter weight, not painted and corrosion resistant
- Sealed retard mechanism immune to dust and other contaminants
- Less exposed metal reduces shock hazard, plastic cover acts as insulator and is resistant to arcing
- Visual switch activation
- Audible switch activation (73 dBA)
- Field-replaceable timer/switch assembly
- Accommodates up to 12 AWG wire
- Switch Synchronization activates both alarm panel and local bell or horn strobe
- Tamper-resistant cover screws
- Improved water sealing
- Reduced product weight
- Wire-ready terminals
- Improved wiring with new terminal block layout
- Snap-in optional cover tamper switch

Agency Listings

c UL us LISTED
S739

FM APPROVED
30512266

The new **WFDTN Series** waterflow detectors from **System Sensor** consists of a rugged, NEMA 4-rated enclosure that is more damage resistant than previous metal designs. The waterflow detector is designed for both indoor and outdoor use, with the widest available temperature range, from 32°F to 150°F.

Both the WFDTN with incorporated timer and WFDTNRN with immediate activation fit any tee that has a 1 in. NPT branch, including: 1in., 1¼in., 1½ in. and 2in. NPT threaded ferrous and brass tees; 1in., 1¼in., 1½in. and 2in. copper sweat tees; Tyco, Spears, NIBBCO brand 1 in. CPVC tees. Twelve different clearly marked plastic paddles are available to fit different installation configurations.

UL-listed models are equipped with tamper-resistant cover screws to prevent unauthorized entry. Inside, two sets of SPDT (Form C) synchronized switches are enclosed in a durable terminal block with new layout designed to make wiring easy with wire ready terminals, COM terminals are on a different elevation, large barrier between switches and easy to read raised textured lettering all make wiring easy. An optional cover tamper switch is available, securely snaps into place, no tools required.

The WFDTN incorporates a mechanical time delay feature, which minimizes the risk of false alarm due to pressure surges or air trapped in the fire sprinkler system. The larger and easy to turn timer dial makes setting the waterflow detector easy with high contrast pad printed markings. The dial offers three tabs to help with turning, with one larger tab located on the dial position for approximately 60 seconds, a notch is also indicated on the dial to locate approximately 30 seconds making setting the detector in dimmly lit locations easy.

The WFDTN series is designed for accuracy and repeatability. The detector also offers improved performance during vibration in riser applications where detectors are exposed to a large in rush of water.

Waterflow Detector Specifications

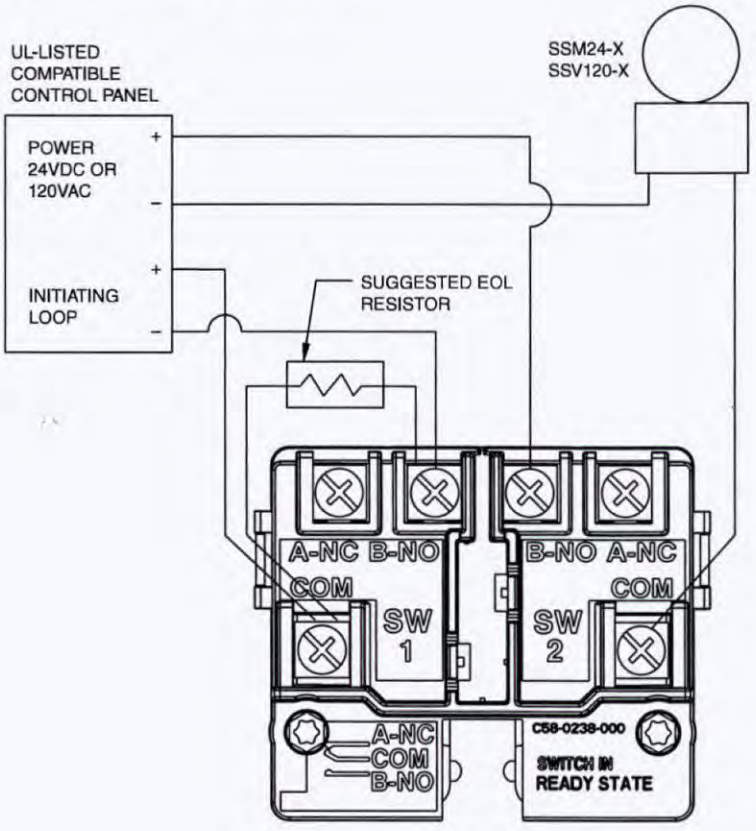
Engineering Specifications

Model shall be WFDTN or WFDTNRN as manufactured by System Sensor. T-Tap waterflow detectors shall be installed on a tee that has a 1in. NPT branch including: 1in., 1¼in., 1½in. and 2in. NPT threaded ferrous and brass tee; 1in., 1¼in., 1½in. and 2in. copper sweat tees; Tyco, Spears, NIBBCO brand 1in. CPVC tees as designed on the drawing and /or as specified herein. Detectors shall mount on any clear pipe span of the appropriate nominal size, either a vertical upflow or horizontal run at least 6˝ from any fittings or valves that may change water direction, flow rate, or pipe diameter or no closer than 24in. from a valve or drain. Detectors shall have a sensitivity in the range of 4 to 10 gallons per minute and a static pressure rating of 375 psi. The WFDTN detector with incorporated time delay mechanism shall respond to waterflow in the specified direction after a preset time delay that is field adjustable. The delay mechanism shall be a sealed mechanical pneumatic unit with visual and audible indication of actuation. The actuation mechanism shall include a ethylene vinyl acetate vane inserted through a hole in the pipe and connected by a mechanical linkage to the delay mechanism. Outputs shall consist of dual SPDT switches (Form C contacts). Two conduit entrances for standard fittings of commonly used electrical conduit shall be provided on the detectors. A grounding provision is provided. Unless noted, enclosures shall be NEMA 4 listed by Underwriters Laboratories Inc. All detectors shall be listed by Underwriters Laboratories Inc. for indoor or outdoor use.

Standard Specifications

Static Pressure Rating	375 PSI	**Operating Temperature Range**	32°F to 150°F (0°C to 60°C)
Maximum Surge	18 Feet Per Second (FPS)	**Enclosure Rating***	NEMA 4 – suitable for indoor/outdoor use
Triggering Threshold Bandwidth (Flow Rate)	4–10 GPM	**Cover Tamper Switch**	Standard with ULC models, optional for UL models, part no. CTS
Conduit Entrances	Two openings for ½in. conduit. NEMA 4 rated plugs	**Service Use**	Automatic Sprinkler: NFPA-13 One or Two Family Dwelling: NFPA 13D Residential Occupancies up to 4 Stories: NFPA 13R National Fire Alarm Code: NFPA-72
Contact Ratings	Two sets of SPDT (Form C) 10.0 A, ½ HP @ 125/250 VAC 2.5 A @ 6/12/24 VDC	**U.S. Patent Numbers**	5,213,205
Compatible Tee Fittings	Threaded ferrous and brass tees, copper sweat tees, CPVC tees.	**Warranty**	3 Years

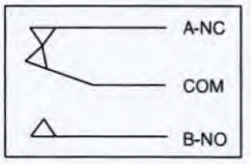
WFDTN Field Wiring Diagram



NOTE: COMMON AND B-NO CONNECTIONS WILL CLOSE WHEN VANE IS DEFLECTED, I.E., WHEN WATER IS FLOWING. DUAL SWITCHES PERMIT APPLICATIONS TO BE COMBINED ON A SINGLE DETECTOR.

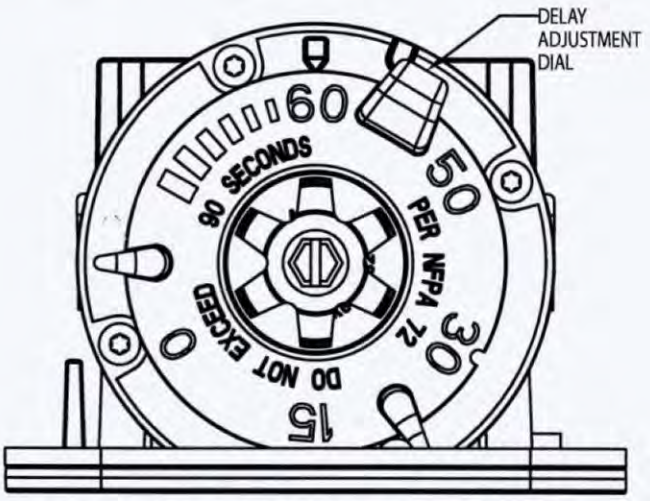
CONTACT RATINGS	
125/250 VAC	10 AMPS
24 VDC	2.5 AMPS

SCHEMATIC OF INDIVIDUAL SWITCH IN "NO WATERFLOW" CONDITION



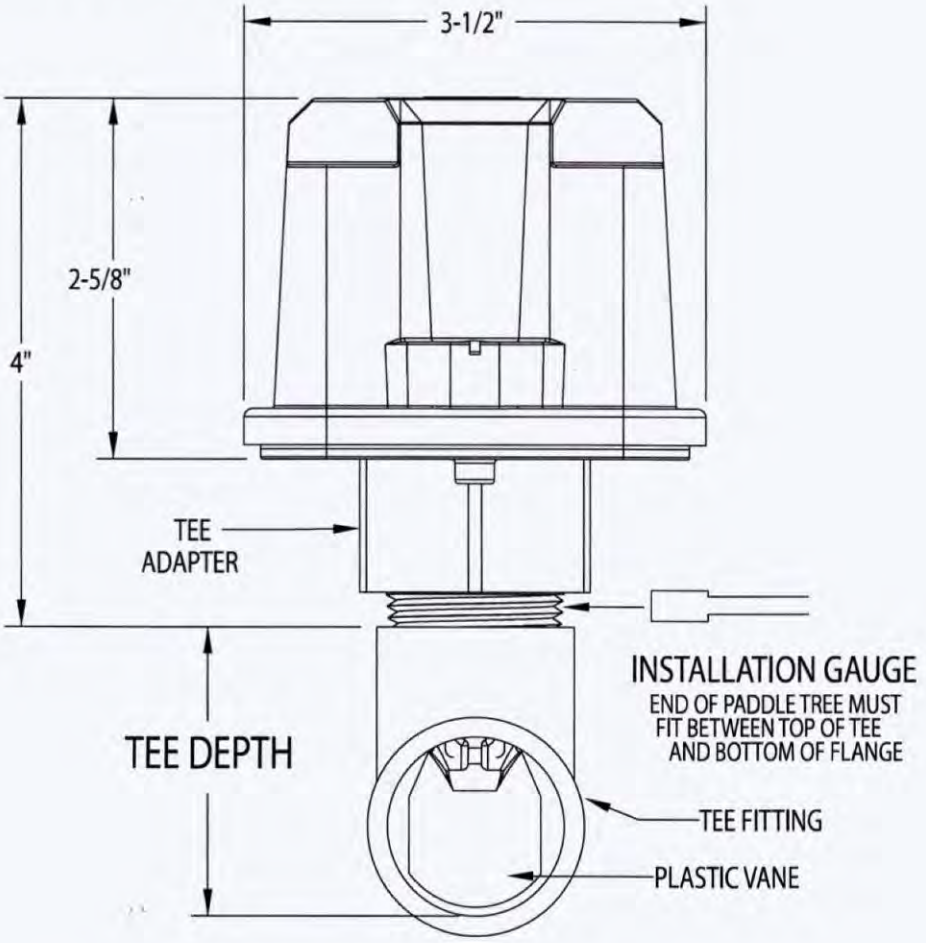
BREAK WIRE AS SHOWN FOR SUPERVISION OF CONNECTION. DO NOT ALLOW STRIPPED WIRE LEADS TO EXTEND BEYOND SWITCH HOUSING. DO NOT LOOP WIRES.

Delay Adjustment Dial



NOTE: RETARD TIME MAY EXCEED 90 SECONDS. ADJUST AND VERIFY THAT TIME DOES NOT EXCEED 90 SECONDS. NUMBER ON DIAL IS APPROXIMATE TIME DELAY IN SECONDS

Overall Dimensions, Installed



DESIGNED TO FIT WITHIN 2 X 4 STUD WALL CONSTRUCTION

Ordering Information		
UL Model	**ULC Model**	**Description**
WFDTN	WFDTNA	Waterflow Detector, Fits 1in., 1¼in., 1½in., 2in. ferrous and brass threaded tees; 1in., 1¼in., 1½in., 2in. copper sweat tees; 1in. CPVC tees.
WFDTNRN	—	Waterflow Detector without incorporated time delay mechanism, fits same tees as WFDTN
Accessories		
FS-RT	Delay mechanism and switch assembly	
CTS	Tamper-proof switch kit	
WFDW	Tamper-proof wrench for cover	

SYSTEM SENSOR®

3825 Ohio Avenue • St. Charles, IL 60174
Phone: 800-SENSOR2 • Fax: 630-377-6495
www.systemsensor.com

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WFDS43702 • 2/16

SSM/SSV Series Alarm Bells



System Sensor's SSM and SSV series alarm bells are low current, high decibel notification appliances for use in fire and burglary systems or other signaling applications.

Features

- Approved for indoor and outdoor use
- Low current draw
- High dB output
- Available in six-inch, eight-inch, and ten-inch sizes
- AC and DC models
- DC models polarized for use with supervision circuitry
- Mount directly to standard four-inch square electrical box indoors
- SSM and SSV series come pre-wired

Reliable Performance. The SSM and SSV series provide loud resonant tones. The SSM series operates on 24VDC and are motor driven, while the SSV series operates on 120VAC utilizing a vibrating mechanism.

Simplified Installation. For indoor use, the SSM and SSV series mount to a standard four-inch square electrical box. For outdoor applications, weatherproof back box, model number WBB, is used.

The SSM and SSV series come pre-wired, to reduce installation time. The SSM series incorporates a polarized electrical design for use with supervision circuitry.

Agency Listings

UL LISTED S4011

ULC CS549

FM APPROVED 3005255

7135-1653:0217

MEA approved 331-01-E

SSM/SSV Specifications

Architectural/Engineering Specifications

Model shall be a SSM or SSV Series alarm bell. Bells shall have underdome strikers and operating mechanisms. Gongs on said bells shall be no smaller than nominal 6"/8"/10" (specify size) with an operating voltage of 24VDC or 120VAC (specify by part number). Bells shall be suitable for surface or semi-flush mounting. Outdoor surface mounted installations shall be weatherproof (using optional WBB weatherproof electrical box). Otherwise bells shall mount to a standard 4" square electrical box having a maximum projection of 2½". Bells shall be located as shown on the drawings or as determined by the Authority Having Jurisdiction. Bells shall be listed for indoor/outdoor use by Underwriters Laboratories and the California State Fire Marshal, and approved by Factory Mutual and MEA.

Physical/Operating Specifications

Operating Temperature Range	–31°F to 140°F
Operating Voltage	SSM series: 24 VDC SSV series: 120 VAC
Termination	Provided with 2 sets of leads for in/out wiring
Service Use	Fire Alarm, General Signaling, Burglar Alarm
Warranty	3 years

Electrical Specifications

Model	Gong Diameter (inches)	Nominal Voltage	Operating Voltage Limit	Maximum Current	Sound Output (dBA)
SSM24-6	6	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	82
SSM24-8	8	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	80
SSM24-10	10	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	81
SSV120-6	6	Regulated 120VAC	96 to 132VAC	53mA	85
SSV120-8	8	Regulated 120VAC	96 to 132VAC	53mA	82
SSV120-10	10	Regulated 120VAC	96 to 132VAC	53mA	82

* Sound output measured at Underwriter Laboratories, as specified in UL464

Ordering Information

UL/FM Model No.	ULC/Canadian Model No.	Description
SSM24-6	SSM24-6A	Bell, 6", 24VDC, Polarized, 82dBA
SSM24-8	SSM24-8A	Bell, 8", 24VDC, Polarized, 80dBA
SSM24-10	SSM24-10A	Bell, 10", 24VDC, Polarized, 81dBA
SSV120-6	SSV120-6A	Bell, 6", 120VAC, 85dBA
SSV120-8	SSV120-8A	Bell, 8", 120VAC, 82dBA
SSV120-10	SSV120-10A	Bell, 10", 120VAC, 82dBA
WBB		Weatherproof back box for SSM and SSV series, when installed outdoors

SYSTEM SENSOR®

3825 Ohio Avenue • St. Charles, IL 60174
Phone: 800-SENSOR2 • Fax: 630-377-6495

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Product specifications subject to change without notice. Visit systemsensor.com for current product information, including the latest version of this data sheet.
A05-0260-010 • 08/11 • #2870

WATERFLOW DATA

Fire Hydrant Flow Calculator

© 2006, Willis Lamm

- Use the tab key to navigate.
- Tab between each box to update the calculation.
- Be sure to tab past your final entry for a correct calculation.

Village Walk
COT-395

Static:	68	psi before flowing
Residual:	54	psi while flowing
Pitot:	45	pitot gage reading
Diameter:	2.5	size of opening tested
This hydrant is flowing:	1126	GPM from the test outlet
Projected available hydrant flow:	2189	GPM Note 1
2nd Static:	66	secondary psi before flowing
2nd Residual:	58	secondary psi while flowing
The main can be expected to flow about:	2895	GPM

Notes:

1. Projected available flows calculated at 20 psi residual, or ½ the static pressure for low pressure hydrants having static pressures of less than 40 psi.

2. This calculator is based on established Hazen-Williams formulas and is provided for convenience and estimation purposes only. The author and FireHydrant.org express no warranty for its suitability for any particular purpose.

Click for Legal Disclaimer

HYDRUALIC CALCULATIONS

RLS FIRE PROTECTION SYSTEMS
P.O. BOX 984
CASTLE ROCK COLORADO 80104

HYDRAULIC CALCULATIONS

FOR

VILLAGE WALK
PLAN 4 AND PLAN 4 REVERSE
COTATI, CA.

FILE NUMBER: 160201
DATE: JUL 19, 2016

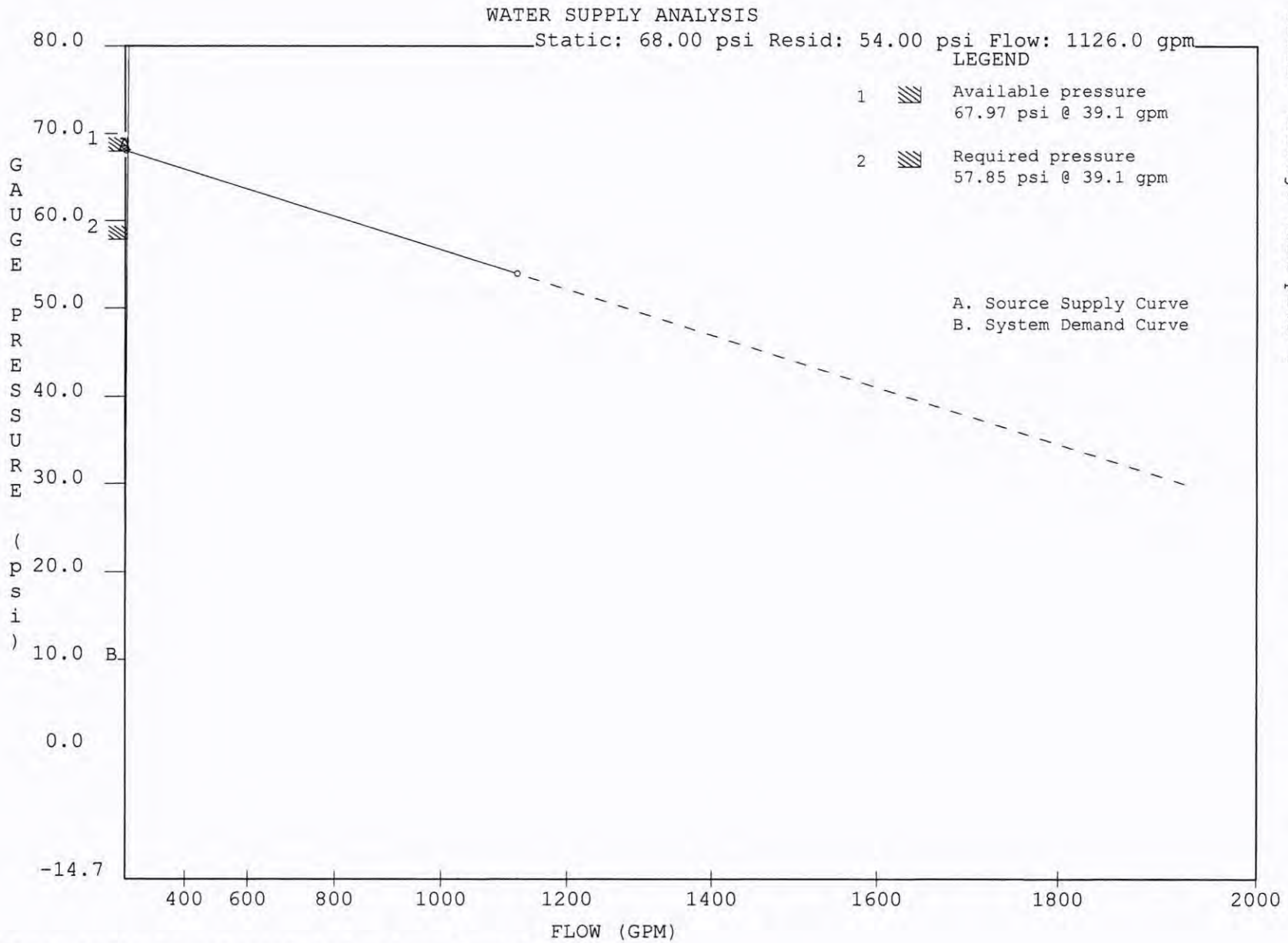
-DESIGN DATA-

NUMBER OF SPRINKLERS CALCULATED:	2	
FLOW AND PRESSURE AT BASE OF RISER	34.0 gpm @	**35.8** psi
NAME OF CONTRACTOR:	SYNERGY	
DESIGN / LAYOUT BY:	RON SCOGGINS	

NOTE:
2 HEAD REMOTE AREA CALC AT 18 FT. X 18 FT. CALCS

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 50122087)
HRS SYSTEMS, INC.
PETERSBURG, TN





hed Lines indicate extrapolated values from Test Results
e pressures are based on hose stream deduction at the source

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 4.SDF
JOB TITLE: Village walk plan 4

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
1	68.0	54.0	1126.0	68.0	39.1	57.9

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	39.1 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	5.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	34.1 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	0.0	SOURCE	57.9	39.1	
1A	0.0	- - - -	53.7	- - -	
1B	0.0	- - - -	49.7	- - -	
2	0.0	HOSE STREAM	49.7	5.0	
3	0.0	- - - -	46.7	- - -	
4	2.0	- - - -	44.4	- - -	
5	2.0	- - - -	37.4	- - -	
6	3.0	- - - -	35.8	- - -	
7	3.0	- - - -	32.8	- - -	
8	4.0	- - - -	31.0	- - -	
10	11.0	- - - -	23.2	- - -	
11	21.0	- - - -	14.2	- - -	
20	21.0	- - - -	14.6	- - -	
21	21.0	- - - -	12.6	- - -	
201	21.0	K= 4.90	12.1	17.0	
202	21.0	K= 4.90	12.0	17.0	

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 4.SDF
JOB TITLE: Village walk plan 4

NFPA PIPE DATA

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: / Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(F (F (F
Pipe: 1		Source	0.0				35.00	150	
1	0.0	57.9	39.1	1B	1.250	T: 7.4	8.68		
1A	0.0	53.7	39.1		1.325	G: 1.2	43.68	0.095	
Pipe: 2			0.0	Fixed Pressure Loss Device					
1A	0.0	53.7	39.0	2	4.0 psi,	39.0 gpm			
1B	0.0	49.7	39.0						
Pipe: 3		H.S.	5.0	Disch			1.00	150	
1B	0.0	49.7	34.0	3	P1.500	----	0.00		
2	0.0	49.7	39.0		1.590		1.00	0.039	
Pipe: 4		0.0	0.0				76.00	150	
2	0.0	49.7	34.0	4	P1.500	3E:12.0	20.40		
3	0.0	46.7	34.0		1.590	T: 8.4	96.40	0.030	
Pipe: 5		0.0	0.0				3.00	150	
3	0.0	46.7	34.0	5	K1.000	E: 2.0	2.00		-
4	2.0	44.4	34.0		0.995		5.00	0.298	
Pipe: 6			0.0	Fixed Pressure Loss Device					
4	2.0	44.4	34.0	6	7.0 psi,	34.0 gpm			
5	2.0	37.4	34.0						
Pipe: 7		0.0	0.0				2.00	150	
5	2.0	37.4	34.0	7	M1.000	E: 3.0	3.00		-
6	3.0	35.8	34.0		1.055		5.00	0.224	
Pipe: 8			0.0	Fixed Pressure Loss Device					
6	3.0	35.8	34.0	8	3.0 psi,	34.0 gpm			
7	3.0	32.8	34.0						
Pipe: 9		0.0	0.0				3.00	150	
7	3.0	32.8	34.0	10	M1.000	E: 3.0	3.00		-
8	4.0	31.0	34.0		1.055		6.00	0.224	
Pipe: 10		0.0	19.7	20			16.50	150	
8	4.0	31.0	14.3	11	F1.000	E: 5.0	10.00		-
10	11.0	23.2	34.0		1.101	T: 5.0	26.50	0.182	
Pipe: 11		0.0	0.0			E: 4.0	29.50	150	
10	11.0	23.2	14.3	21	F0.750	2T: 6.0	12.00		-
11	21.0	14.2	14.3		0.874	2R: 2.0	41.50	0.113	

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(I (I (I
Pipe: 12		0.0	0.0				14.00	150	
10	11.0	23.2	19.7	201	F0.750	E: 4.0	7.00		
20	21.0	14.6	19.7		0.874	T: 3.0	21.00	0.205	
Pipe: 13		0.0	0.0				10.00	150	
11	21.0	14.2	14.3	202	F0.750	E: 4.0	4.00		
21	21.0	12.6	14.3		0.874		14.00	0.113	
Pipe: 14		4.90	17.0	Disch			8.00	150	
20	21.0	14.6	2.7	202	F0.750	T: 3.0	4.00		
201	21.0	12.1	19.7		0.874	R: 1.0	12.00	0.205	
Pipe: 15		4.90	17.0	Disch			9.50	150	
201	21.0	12.1	-14.3	21	F0.750	2R: 2.0	2.00		
202	21.0	12.0	2.7		0.874		11.50	0.005	
Pipe: 16		4.90	17.0	Disch			2.00	150	
21	21.0	12.6	-2.7	201	F0.750	T: 3.0	3.00		
202	21.0	12.0	14.3		0.874		5.00	0.113	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.5 computer program under license no. 50122087 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760

(2) The system has been calculated to provide an average imbalance at each node of 0.008 gpm and a maximum imbalance at any node of 0.124 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 14.0 ft/sec at pipe 5.

(4) Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.

(5) Available pressure at source node 1 under full flow conditions is 67.97 psi compared to the minimum required pressure of 20.00 psi.

(6) PIPE FITTINGS TABLE

Pipe Table Name: RLS3.PIP

PAGE: * MATERIAL: S40 HWC: 120

Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	L	C	B	G	A	D	N
	Ell	Tee	LngEll	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	NPTee
1.325	2.46	4.92	1.64	5.74	4.92	0.82	8.20	8.20	4.92

PAGE: F MATERIAL: CPVC HWC: 150

Diameter	Equivalent Fitting Lengths in Feet						
(in)	F	E	T	R	K	C	G
	F45	El	Tee	RunT	Kplg	ChkVlv	Gate
0.874	1.00	4.00	3.00	1.00	1.00	5.00	2.00
1.101	1.00	5.00	5.00	1.00	1.00	8.00	2.00

PAGE: K MATERIAL: CT-K HWC: 150

Diameter	Equivalent Fitting Lengths in Feet							
(in)	E	T	F	R	K	C	G	N
	Ell	Tee	45-Ell	TeeRun	Kouplg	ChkVlv	GatVlv	NPTee
0.995	2.00	6.00	1.00	2.00	0.00	6.00	0.00	6.00

PAGE: M MATERIAL: CT-M HWC: 150

Diameter	Equivalent Fitting Lengths in Feet							
(in)	E	T	F	R	K	C	G	N
	Ell	Tee	45-Ell	TeeRun	Kouplg	ChkVlv	GatVlv	NPTee
1.055	3.00	8.00	2.00	3.00	0.00	8.00	0.00	8.00

PAGE: P MATERIAL: PVC HWC: 150

Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	L	R	C	G	A	D	N
	Ell	Tee	45	RUN	ChkVlv	Gate			
1.590	4.00	8.40	2.10	2.70	14.00	3.00	0.00	0.00	0.00

RLS FIRE PROTECTION SYSTEMS
P.O. BOX 984
CASTLE ROCK COLORADO 80104

HYDRAULIC CALCULATIONS

FOR

VILLAGE WALK
PLAN 4 AND PLAN 4 REVERSE
COTATI, CA.

FILE NUMBER: 160201
DATE: JUL 19, 2016

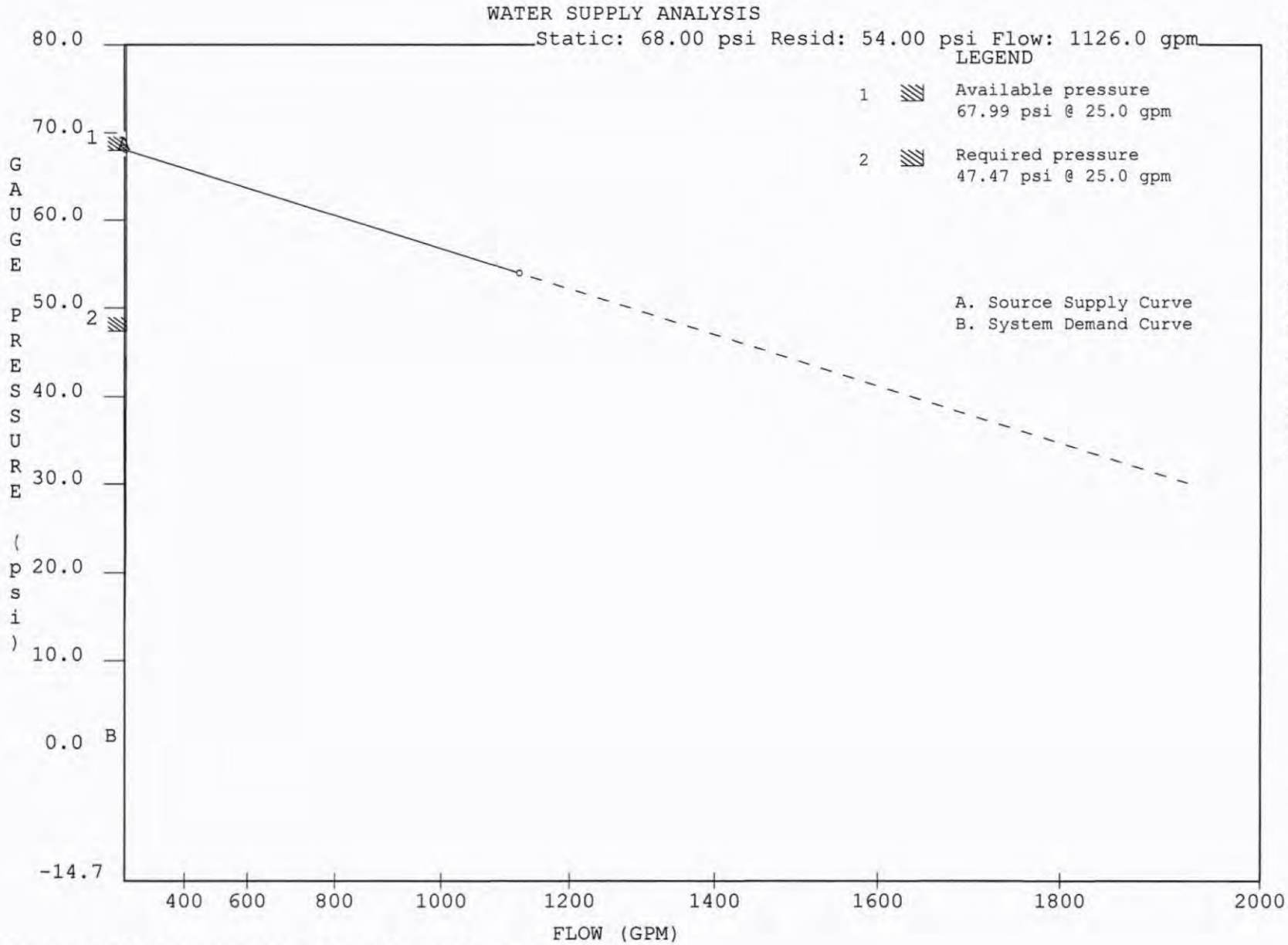
-DESIGN DATA-

NUMBER OF SPRINKLERS CALCULATED:	1	
FLOW AND PRESSURE AT BASE OF RISER	20.0 gpm @	**32.8** psi
NAME OF CONTRACTOR:	SYNERGY	
DESIGN / LAYOUT BY:	RON SCOGGINS	

NOTE:
1 HEAD REMOTE AREA CALC AT 20 FT. X 20 FT. CALCS

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 50122087)
HRS SYSTEMS, INC.
PETERSBURG, TN





hed Lines indicate extrapolated values from Test Results
e pressures are based on hose stream deduction at the source

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 4 1 HEAD.SDF
JOB TITLE: Village walk plan 4 1 head

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
1	68.0	54.0	1126.0	68.0	25.0	47.5

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	25.0 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	5.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	20.0 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	0.0	SOURCE	47.5	25.0	
1A	0.0	- - - -	45.6	- - -	
1B	0.0	- - - -	43.1	- - -	
2	0.0	HOSE STREAM	43.1	5.0	
3	0.0	- - - -	42.0	- - -	
4	2.0	- - - -	40.6	- - -	
5	2.0	- - - -	33.6	- - -	
6	3.0	- - - -	32.8	- - -	
7	3.0	- - - -	29.8	- - -	
8	4.0	- - - -	28.8	- - -	
10	11.0	- - - -	24.0	- - -	
11	21.0	- - - -	17.6	- - -	
20	21.0	- - - -	18.2	- - -	
21	21.0	- - - -	16.9	- - -	
201	21.0	- - - -	17.4	- - -	
202	21.0	K= 4.90	16.7	20.0	

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 4 1 HEAD.SDF
JOB TITLE: Village walk plan 4 1 head

NFPA PIPE DATA

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(I (I (I
Pipe: 1		Source	0.0				35.00	150	
1	0.0	47.5	25.0	1B	1.250	T: 7.4	8.68		
1A	0.0	45.6	25.0		1.325	G: 1.2	43.68	0.042	
Pipe: 2			0.0	Fixed Pressure Loss Device					
1A	0.0	45.6	25.0	2	2.5 psi,	25.0 gpm			
1B	0.0	43.1	25.0						
Pipe: 3		H.S.	5.0	Disch			1.00	150	
1B	0.0	43.1	20.0	3	P1.500	----	0.00		
2	0.0	43.1	25.0		1.590		1.00	0.017	
Pipe: 4		0.0	0.0				76.00	150	
2	0.0	43.1	20.0	4	P1.500	3E:12.0	20.40		
3	0.0	42.0	20.0		1.590	T: 8.4	96.40	0.011	
Pipe: 5		0.0	0.0				3.00	150	
3	0.0	42.0	20.0	5	K1.000	E: 2.0	2.00		-
4	2.0	40.6	20.0		0.995		5.00	0.111	
Pipe: 6			0.0	Fixed Pressure Loss Device					
4	2.0	40.6	20.0	6	7.0 psi,	20.0 gpm			
5	2.0	33.6	20.0						
Pipe: 7		0.0	0.0				2.00	150	
5	2.0	33.6	20.0	7	M1.000	E: 3.0	3.00		-
6	3.0	32.8	20.0		1.055		5.00	0.084	
Pipe: 8			0.0	Fixed Pressure Loss Device					
6	3.0	32.8	20.0	8	3.0 psi,	20.0 gpm			
7	3.0	29.8	20.0						
Pipe: 9		0.0	0.0				3.00	150	
7	3.0	29.8	20.0	10	M1.000	E: 3.0	3.00		-
8	4.0	28.8	20.0		1.055		6.00	0.084	
Pipe: 10		0.0	10.8	20			16.50	150	
8	4.0	28.8	9.2	11	1.000	E: 5.0	10.00		-
10	11.0	24.0	20.0		1.101	T: 5.0	26.50	0.068	
Pipe: 11		0.0	0.0			E: 4.0	29.50	150	
10	11.0	24.0	9.2	21	0.750	2T: 6.0	12.00		-
11	21.0	17.6	9.2		0.874	2R: 2.0	41.50	0.050	

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 4 1 HEAD.SDF
JOB TITLE: Village walk plan 4 1 head

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(I (I (I
Pipe: 12		0.0	0.0				14.00	150	
10	11.0	24.0	10.8	201	0.750	E: 4.0	7.00		
20	21.0	18.2	10.8		0.874	T: 3.0	21.00	0.067	
Pipe: 13		0.0	0.0				10.00	150	
11	21.0	17.6	9.2	202	0.750	E: 4.0	4.00		
21	21.0	16.9	9.2		0.874		14.00	0.050	
Pipe: 14		0.0	0.0				8.00	150	
20	21.0	18.2	10.8	202	0.750	T: 3.0	4.00		
201	21.0	17.4	10.8		0.874	R: 1.0	12.00	0.067	
Pipe: 15		4.90	20.0	Disch			9.50	150	
201	21.0	17.4	-9.2	21	0.750	2R: 2.0	2.00		
202	21.0	16.7	10.8		0.874		11.50	0.067	
Pipe: 16		4.90	20.0	Disch			2.00	150	
21	21.0	16.9	-10.8	201	0.750	T: 3.0	3.00		
202	21.0	16.7	9.2		0.874		5.00	0.050	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.5 computer program under license no. 50122087 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760

(2) The system has been calculated to provide an average imbalance at each node of 0.001 gpm and a maximum imbalance at any node of 0.011 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 8.3 ft/sec at pipe 5.

(4) Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.

(5) Available pressure at source node 1 under full flow conditions is 67.98 psi compared to the minimum required pressure of 20.00 psi.

(6) PIPE FITTINGS TABLE

Pipe Table Name: RLS3.PIP

PAGE: * MATERIAL: S40 HWC: 120

Diameter (in)	Equivalent Fitting Lengths in Feet								
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	A AlmChk	D DPVlv	N NPTee
1.325	2.46	4.92	1.64	5.74	4.92	0.82	8.20	8.20	4.92

PAGE: F MATERIAL: CPVC HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet						
	F F45	E El	T Tee	R RunT	K Kplg	C ChkVlv	G Gate
0.874	1.00	4.00	3.00	1.00	1.00	5.00	2.00
1.101	1.00	5.00	5.00	1.00	1.00	8.00	2.00

PAGE: K MATERIAL: CT-K HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet							
	E Ell	T Tee	F 45-Ell	R TeeRun	K Kouplg	C ChkVlv	G GatVlv	N NPTee
0.995	2.00	6.00	1.00	2.00	0.00	6.00	0.00	6.00

PAGE: M MATERIAL: CT-M HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet							
	E Ell	T Tee	F 45-Ell	R TeeRun	K Kouplg	C ChkVlv	G GatVlv	N NPTee
1.055	3.00	8.00	2.00	3.00	0.00	8.00	0.00	8.00

PAGE: P MATERIAL: PVC HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet								
	E Ell	T Tee	L 45	R RUN	C ChkVlv	G Gate	A	D	N
1.590	4.00	8.40	2.10	2.70	14.00	3.00	0.00	0.00	0.00



PO BOX 984
CASTLE ROCK, CO 80104
TEL: (707) 484-5711

SUBMITTAL DATA

5

VILLAGE WALK SUBDIVSION
PLANS 5 AND 5 REVERSE
COTATI, CA

APPROVED
WITH CHANGES
DATE 7/27/16 BY
RANCHO ADOBE FIRE PROTECTION DISTRICT

TABLE OF CONTENTS

1. Sprinkler Heads Cut Sheet
2. Backflow Preventer Cut Sheet
3. Flow Switch and Bell Cut Sheet
4. Water Flow Data
5. Hydraulic Calculations

SPRINKLER HEAD CUT SHEETS

tyco Fire Protection Products

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RAPID RESPONSE Series LFII Residential 4.9 K-factor Concealed Pendent Sprinkler Flat Plate, Wet Pipe and Dry Pipe Systems

General Description

TYCO RAPID RESPONSE Series LFII Residential 4.9K Concealed Pendent Sprinklers (TY3596) are decorative, fast response, fusible solder sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels.

The cover plate assembly conceals the sprinkler operating components above the ceiling. The flat profile of the cover plate provides the optimum aesthetically appealing sprinkler design. In addition, the concealed design of the Series LFII Residential Concealed Pendent Sprinklers (TY3596) provides 1/2 inch (12,7 mm) vertical adjustment. This adjustment provides a measure of flexibility when cutting fixed sprinkler drops.

The Series LFII Residential Concealed Sprinklers are intended for use in the following scenarios:

- wet and dry pipe residential sprinkler systems for one- and two-family dwellings and mobile homes per NFPA 13D
- wet and dry pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R
- wet and dry pipe sprinkler systems for the residential portions of any occupancy per NFPA 13

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) has been designed with heat sensitivity and water distribution characteristics proven to help in the control of residential fires and to improve the chance for occupants to escape or be evacuated.

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) are shipped with a Disposable Protective Cap. The Protective Cap is temporarily removed for installation, and then it can be replaced to help protect the sprinkler while the ceiling is being installed or finished. The tip of the Protective Cap can also be used to mark the center of the ceiling hole into plaster board, ceiling tiles, etc. by gently pushing the ceiling product against the Protective Cap. When the ceiling installation is complete the Protective Cap is removed and the Cover Plate Assembly installed.

Dry Pipe System Application

The Series LFII Residential Concealed Pendent Sprinklers offers a laboratory approved option for designing dry pipe residential sprinkler systems, whereas, most residential sprinklers are laboratory approved for wet systems only.

Through extensive testing, it has been determined that the number of design sprinklers (hydraulic design area) for the Series LFII Residential Concealed Pendent Sprinklers (TY3596) need not be increased over the number of design sprinklers (hydraulic design area) as specified for wet pipe sprinkler systems, as is accustomed for density/area sprinkler systems designed per NFPA 13.

Consequently, the Series LFII Residential Concealed Pendent Sprinklers offer the features of non-water filled pipe in addition to not having to increase the number of design sprinklers (hydraulic design area) for systems designed to NFPA 13, 13D, or 13R.



NOTICE

The Series LFII Residential Concealed Pendent Sprinklers (TY3596) described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association (NFPA), in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Sprinkler Identification Number (SIN)

TY3596

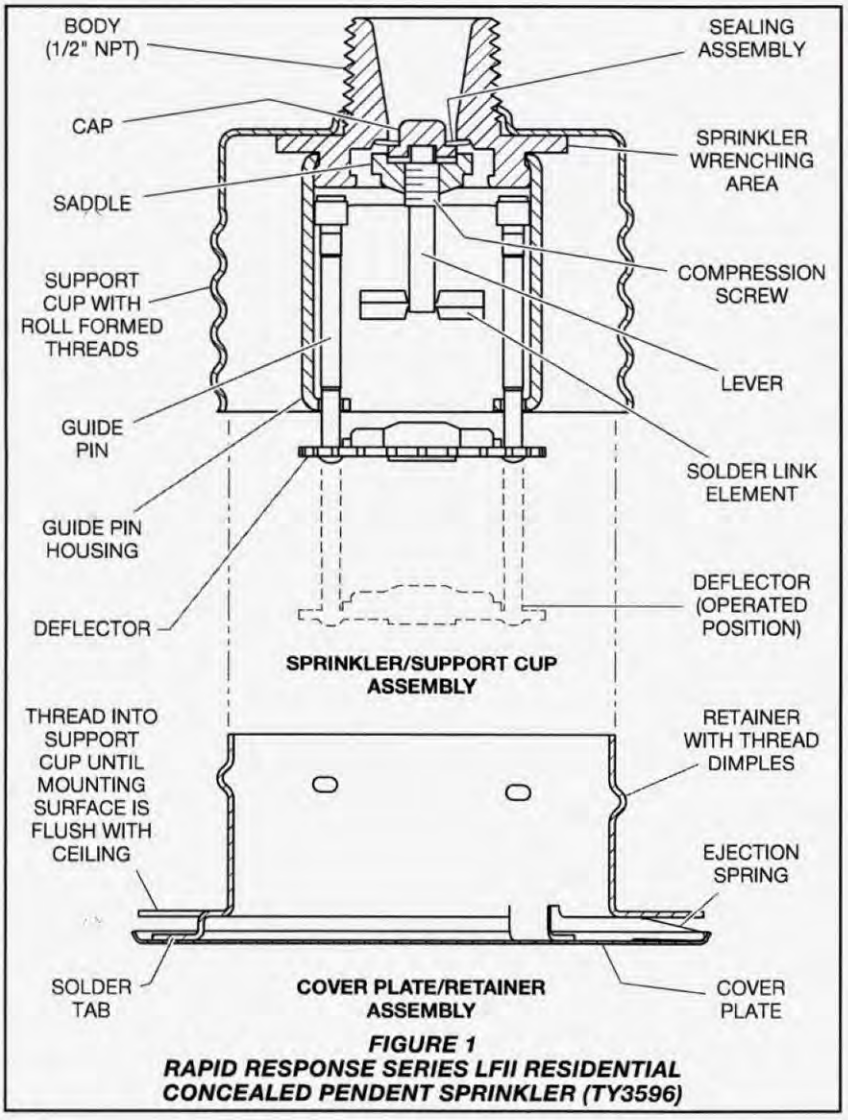


FIGURE 1
RAPID RESPONSE SERIES LFII RESIDENTIAL CONCEALED PENDENT SPRINKLER (TY3596)

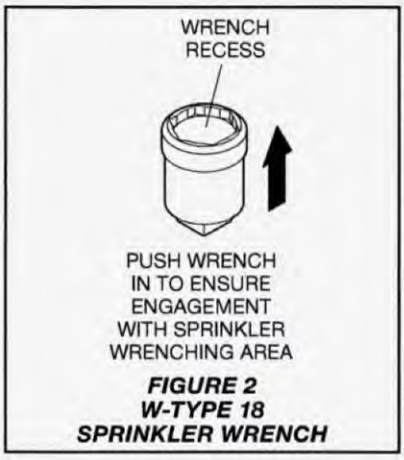


FIGURE 2
W-TYPE 18
SPRINKLER WRENCH

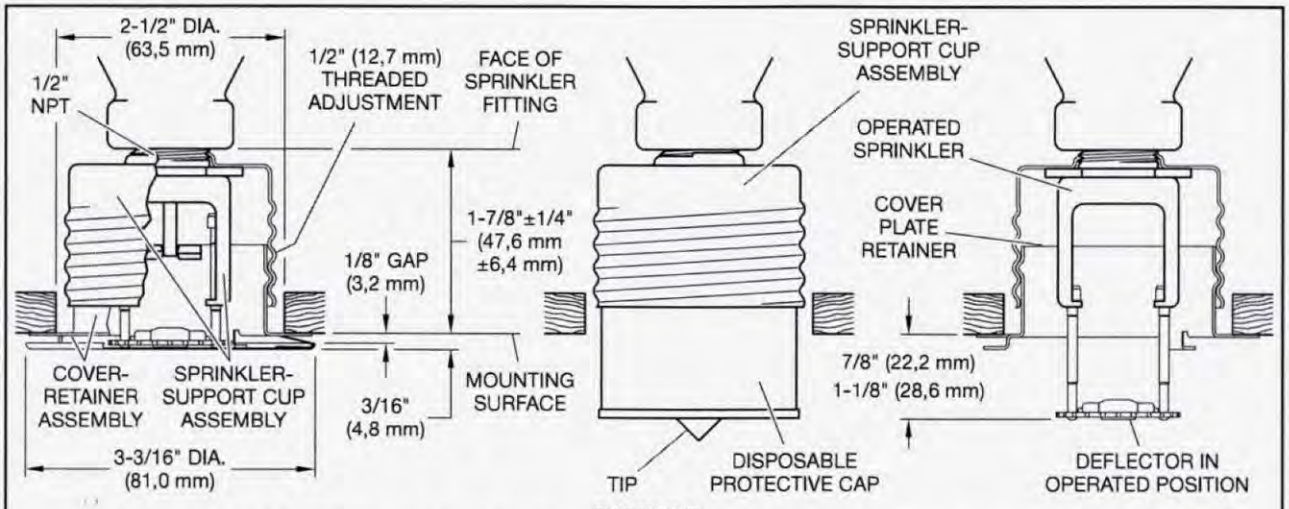


FIGURE 3
RAPID RESPONSE SERIES LFII RESIDENTIAL CONCEALED PENDENT SPRINKLER (TY3596)
INSTALLATION DIMENSIONS/PROTECTIVE CAP/ACTIVATED DEFLECTOR

Technical Data

Approvals
UL and C-UL Listed
NYC Approved under MEA 44-03-E-2NSF
Certified to NSF/ANSI 61

The TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers are only Listed with the Series LFII Concealed Cover Plates having a factory-applied finish.

Cover Plates can be ordered by following the instructions in the Ordering Procedure section.

Maximum Working Pressure
175 psi (12,1 bar)

Discharge Coefficient
K=4.9 gpm/psi$^{1/2}$ (70,6 lpm/bar$^{1/2}$)

Temperature Rating
160°F (71°C) Sprinkler with
139°F (59°C) Cover Plate

Vertical Adjustment
1/2 inch (12,7 mm)

Finishes
Refer to Ordering Procedure section.

Physical Characteristics

Body	Brass
Cap	Bronze
Saddle	Brass
Sealing Assembly	Beryllium Nickel w/TEFLON
Soldered Link Halves	Nickel
Lever	Bronze
Compression Screw	Brass
Deflector	Copper or Brass
Guide Pin Housing	Bronze
Guide Pins	Stainless Steel or Bronze
Support Cup	Steel
Cover Plate	Copper
Retainer	Brass
Cover Plate Ejection Spring	Stainless Steel

Operation

When exposed to heat from a fire, the Cover Plate, which is normally soldered to the Support Cup at three points, falls away to expose the sprinkler assembly. At this point the Deflector supported by the Arms drops down to its operated position. The fusible link of the sprinkler assembly is comprised of two link halves that are soldered together with a thin layer of solder. When the rated temperature is reached, the solder melts and the two link halves separate allowing the sprinkler to activate and flow water.

Design Criteria

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) are UL and C-UL Listed for installation in accordance with this section.

Note: *When conditions exist that are outside the scope of the provided criteria, refer to the Residential Sprinkler Design Guide TFP490 for the manufacturer's recommendations that may be acceptable to the authority having jurisdiction.*

System Types
Per the UL Listing, wet pipe and dry pipe systems may be utilized. Per the C-UL Listing, only wet pipe systems may be utilized.

Refer to Technical Data Sheet TFP485 about the use of residential sprinklers in residential dry pipe systems.

Ceiling Types
Smooth flat horizontal, or beamed, or sloped, in accordance with the 2013 Edition of NFPA 13D, 13R, or 13 as applicable.

Hydraulic Design (NFPA 13D and 13R)
For systems designed to NFPA 13D or NFPA 13R, the minimum required sprinkler flow rates are given in Tables A and B as a function of temperature rating and the maximum allowable coverage areas. The sprinkler flow rate is the minimum required discharge from each of the total number of "design sprinklers" as specified in NFPA 13D or NFPA 13R. The number of "design sprinklers" specified in NFPA 13D and 13R for wet pipe systems is to be applied when designing dry pipe systems.

Hydraulic Design (NFPA 13)
For systems designed to NFPA 13, the number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- the flow rates given in Tables A and B as a function of temperature rating and the maximum allowable coverage area
- a minimum discharge of 0.1 gpm/ft.^{2} over the design area comprised of the four (4) most hydraulically demanding sprinklers for actual coverage areas protected by the four (4) sprinklers

The number of design sprinklers specified in NFPA 13 for wet pipe systems is to be applied when designing dry pipe systems.

Dry Pipe System Water Delivery
When using the Series LFII Residential Concealed Pendent Sprinklers (TY3596) in dry pipe sprinkler systems, the time for water delivery must not exceed 15 seconds for the most remote operating sprinkler.

Obstruction to Water Distribution
Sprinklers are to be located in accordance with the obstruction rules of NFPA 13D, 13R, and 13 as applicable for residential sprinklers as well as with the obstruction criteria described within the Technical Data Sheet TFP490.

Operational Sensitivity
The sprinklers are to be installed relative to the ceiling mounting surface as shown in Figure 3.

Sprinkler Spacing
The minimum spacing between sprinklers is 8 feet (2,4 m). The maximum spacing between sprinklers cannot exceed the length of the coverage area (Ref. Table A or B) being hydraulically calculated (e.g., maximum 12 feet for a 12 ft. x 12 ft. coverage area, or 20 feet for a 20 ft. x 20 ft. coverage area).

The Series LFII must not be used in applications where the air pressure above the ceiling is greater than that below. Down drafts through the Support Cup could delay sprinkler operation in a fire situation.

Maximum Coverage Area [1] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	WET PIPE SYSTEM Minimum Flow and Residual Pressure [2,3]				
		Ordinary Temp. Rating 160°F (71°C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow gpm (lpm)	Pressure psi (bar)			
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings 7/8 to 1-1/8 inches Beamed Ceilings per NFPA 13D or 13R, or 13. Installed in beam 7/8 to 1-1/8 inches below bottom of beam	Concealed	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	13 (49,2)	7.0 (0,48)			
16 x 16 (4,9 x 4,9)	16 (4,9)	13 (49,2)	7.0 (0,48)			
18 x 18 (5,5 x 5,5)	18 (5,5)	17 (64,3)	12.0 (0,83)			
20 x 20 (6,1 x 6,1)	20 (6,1)	20 (75,7)	16.7 (1,15)			

Notes:
1. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
2. Requirement is based on minimum flow in gpm (lpm) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.
3. For NFPA 13 residential applications, the greater of 0.1 gpm/ft.^{2} over the design area or the flow in accordance with the criteria in this table must be used.

TABLE A
WET PIPE SYSTEM
SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT PLATE CONCEALED PENDENT SPRINKLER (TY3596)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Maximum Coverage Area [1] Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	DRY PIPE SYSTEM Minimum Flow and Residual Pressure [2,3]				
		Ordinary Temp. Rating 160°F (71°C)		Deflector to Ceiling	Installation Type	Minimum Spacing Ft. (m)
		Flow gpm (lpm)	Pressure psi (bar)			
12 x 12 (3,7 x 3,7)	12 (3,7)	13 (49,2)	7.0 (0,48)	Smooth Ceilings 7/8 to 1-1/8 inches Beamed Ceilings per NFPA 13D or 13R, or 13. Installed in beam 7/8 to 1-1/8 inches below bottom of beam	Concealed	8 (2,4)
14 x 14 (4,3 x 4,3)	14 (4,3)	14 (53,0)	8.2 (0,57)			
16 x 16 (4,9 x 4,9)	16 (4,9)	15 (56,8)	9.4 (0,65)			
18 x 18 (5,5 x 5,5)	18 (5,5)	18 (68,1)	13.5 (0,93)			
20 x 20 (6,1 x 6,1)	20 (6,1)	21 (79,5)	18.4 (1,27)			

Notes:
1. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
2. Requirement is based on minimum flow in gpm (lpm) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design under the Design Criteria section.
3. For NFPA 13 residential applications, the greater of 0.1 gpm/ft.^{2} over the design area or the flow in accordance with the criteria in this table must be used.

TABLE B
DRY PIPE SYSTEM
RAPID RESPONSE SERIES LFII RESIDENTIAL 4.9 K-FACTOR FLAT PLATE CONCEALED PENDENT (TY3596)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

Installation

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be installed in accordance with this section.

General Instructions
Damage to the fusible Link Assembly during installation can be avoided by handling the sprinkler by the support cup only (i.e., do not apply pressure to the fusible Link Assembly).

A 1/2 inch NPT sprinkler joint should be obtained with a minimum to maximum torque of 7 to 14 lbs.-ft. (9,5 to 19,0 Nm). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Cover Plate / Retainer Assembly by under- or over-tightening the Sprinkler. Readjust the position of the sprinkler fitting to suit.

Step 1. The sprinkler must only be installed in the pendent position and with the centerline of the sprinkler perpendicular to the mounting surface.

Step 2. Remove the Protective Cap.

Step 3. With pipe thread sealant applied to the pipe threads, and using the W-Type 18 Wrench shown in Figure 2, install and tighten the Sprinkler / Support Cup Assembly into the fitting. The W-Type 18 Wrench will accept a 1/2 inch ratchet drive.

Step 4. Replace the Protective Cap by pushing it upwards until it bottoms out against the Support Cup. The Protective Cap helps prevent damage to the Deflector and Guide Pins during ceiling installation and/or during application of the finish coating of the ceiling. It may also be used to locate the center of the clearance hole by gently pushing the ceiling material against the center point of the Cap.

Note: *As long as the protective Cap remains in place, the system is considered to be "Out Of Service."*

Step 5. After the ceiling has been completed with the 2-1/2 inch (63 mm) diameter clearance hole and in preparation for installing the Cover Plate Assembly, remove and discard the Protective Cap, and verify that the Deflector moves up and down freely.

If the sprinkler has been damaged and the Deflector does not move up and down freely, replace the entire sprinkler assembly. Do not attempt to modify or repair a damaged sprinkler.

Step 6. Screw on the Cover Plate Assembly until its flange comes in contact with the ceiling.

Do not continue to screw on the Cover Plate Assembly such that it lifts a ceiling panel out of its normal position.

If the Cover Plate Assembly cannot be engaged with the Mounting Cup or the Cover Plate Assembly cannot be engaged sufficiently to contact the ceiling, the Sprinkler Fitting must be repositioned.

Care and Maintenance

TYCO RAPID RESPONSE Series LFII Residential Concealed Pendent Sprinklers (TY3596) must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system which it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

Absence of a Cover Plate may delay the sprinkler operation in a fire situation.

When properly installed, there is a nominal 1/8 inch (3,2 mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 3. This air gap is necessary for proper operation of the sprinkler by allowing heat flow from a fire to pass below and above the Cover Plate to help assure appropriate release of the Cover Plate in a fire situation. If the ceiling is to be repainted after the installation of the Sprinkler, care must be exercised to ensure that the new paint does not seal off any of the air gap.

Factory painted Cover Plates must not be repainted. They should be replaced, if necessary, by factory painted units. Non-factory applied paint may adversely delay or prevent sprinkler operation in the event of a fire.

Do not pull the Cover Plate relative to the Enclosure. Separation may result.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified or over heated sprinklers must be replaced.

Care must be exercised to avoid damage before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, non-operation in the event of a fire or inadvertent operation may result.

Automatic sprinkler systems should be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and part number (P/N).

Sprinkler Assemblies
Specify: Series LFII (TY3596) 4.9K Residential Concealed Pendent Sprinkler without Cover Plate Assembly, P/N 51-112-1-160

Cover Plate Assemblies
Specify: Cover Plate Assembly with (specify) finish for the Series LFII (TY3596) 4.9K Residential Concealed Pendent Sprinkler, P/N (specify):

Ivory (RAL1015)	P/N 56-202-0-135
Beige (RAL1001)	P/N 56-202-2-135
Pure White * (RAL9010)	P/N 56-202-3-135
Signal White ** (RAL9003)	P/N 56-202-4-135
Grey White (RAL9002)	P/N 56-202-5-135
Brown (RAL8028)	P/N 56-202-6-135
Black (RAL9005)	P/N 56-202-7-135
Brushed Brass	P/N 56-202-8-135
Brushed Chrome	P/N 56-202-9-135
Custom Paint	P/N 56-202-X-135

* Eastern Hemisphere sales only
** Previously known as Bright White

Note: *All Custom Cover Plates are painted using Sherwin Williams Interior Latex Paint. Contact Tyco Customer Service with any questions related to custom orders.*

Sprinkler Wrench
Specify: W-Type 18 Sprinkler Wrench, P/N 56-000-1-265

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tyco Fire Protection Products

Series TY-FRB — 2.8, 4.2, 5.6, and 8.0 K-Factor Upright, Pendent, and Recessed Pendent Sprinklers Quick Response, Standard Coverage

General Description

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described in this data sheet are quick response, standard coverage, decorative 3 mm glass bulb-type spray sprinklers designed for use in light or ordinary hazard, commercial occupancies such as banks, hotels, and shopping malls.

The recessed version of the Series TY-FRB Pendent Sprinkler, where applicable, is intended for use in areas with a finished ceiling. This recessed pendent sprinkler uses one of the following:

- A two-piece Style 10 (1/2 inch NPT) or Style 40 (3/4 inch NPT) Recessed Escutcheon with 1/2 inch (12,7 mm) of recessed adjustment or up to 3/4 inch (19,1 mm) of total adjustment from the flush pendent position, or a
- A two-piece Style 20 (1/2 inch NPT) or Style 30 (3/4 inch NPT) Recessed Escutcheon with 1/4 inch (6,4 mm) of recessed adjustment or up to 1/2 inch (12,7 mm) of total adjustment from the flush pendent position.

The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the fixed pipe drops to the sprinklers must be cut.

Corrosion-resistant coatings, where applicable, are utilized to extend the life of copper alloy sprinklers beyond that which would otherwise be obtained when exposed to corrosive atmospheres. Although corrosion-resistant coated sprinklers have passed the standard corrosion tests of the applicable approval agencies, the testing is not representative of all possible corrosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of these coatings for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, as a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

An intermediate level of the Series TY-FRB Pendent Sprinklers is detailed in Technical Data Sheet TFP356, and Sprinkler Guards are detailed in Technical Data Sheet TFP780.

NOTICE

The Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. Failure to do so may impair the performance of these devices.

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.





Sprinkler Identification Number (SIN)

TY1131 - Upright 2.8K, 1/2" NPT
TY1231 - Pendent 2.8K, 1/2" NPT
TY2131 - Upright 4.2K, 1/2" NPT
TY2231 - Pendent 4.2K, 1/2" NPT
TY3131 - Upright 5.6K, 1/2" NPT
TY3231 - Pendent 5.6K, 1/2" NPT
TY4131 - Upright 8.0K, 3/4" NPT
TY4231 - Pendent 8.0K, 3/4" NPT
TY4831 - Upright 8.0K, 1/2" NPT
TY4931 - Pendent 8.0K, 1/2" NPT

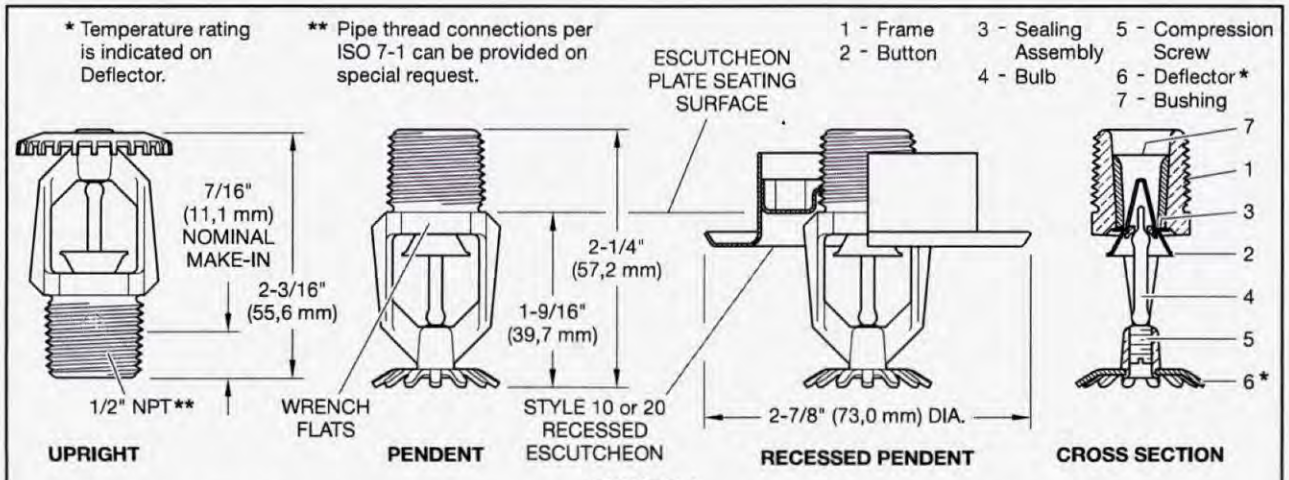


FIGURE 1
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY1131) AND PENDENT (TY1231) SPRINKLERS
2.8 K-FACTOR, 1/2 INCH NPT

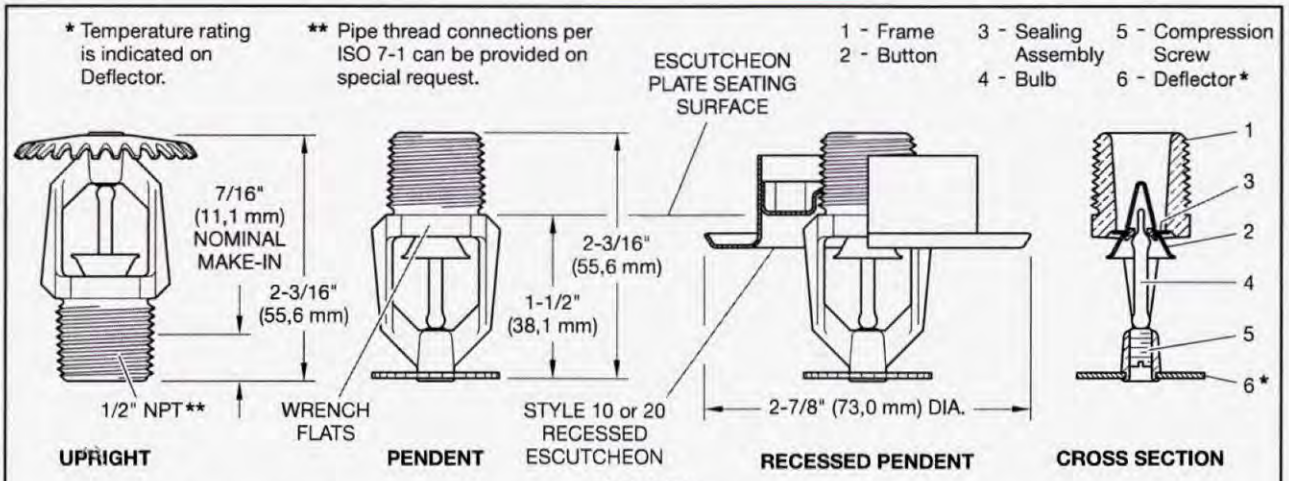


FIGURE 2
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY2131) AND PENDENT (TY2231) SPRINKLERS
4.2 K-FACTOR, 1/2 INCH NPT

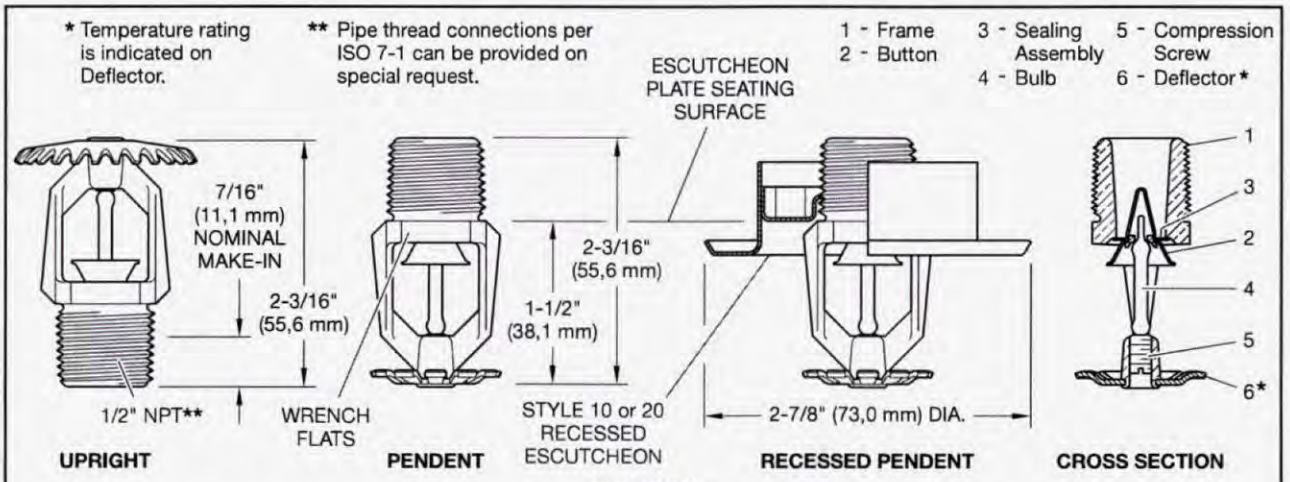


FIGURE 3
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY3131) AND PENDENT (TY3231) SPRINKLERS
5.6 K-FACTOR, 1/2 INCH NPT

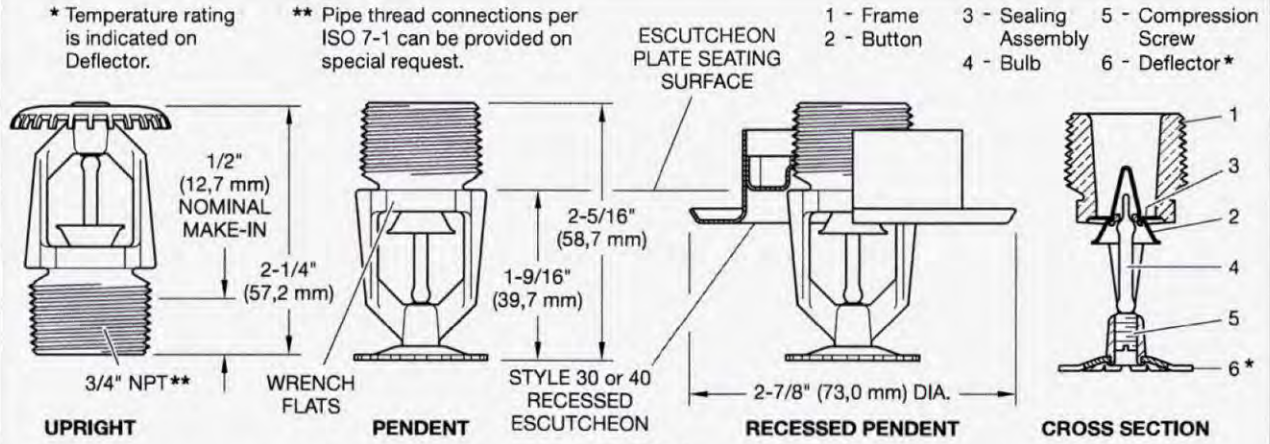


FIGURE 4
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4131) AND PENDENT (TY4231) SPRINKLERS
8.0 K-FACTOR, 3/4 INCH NPT

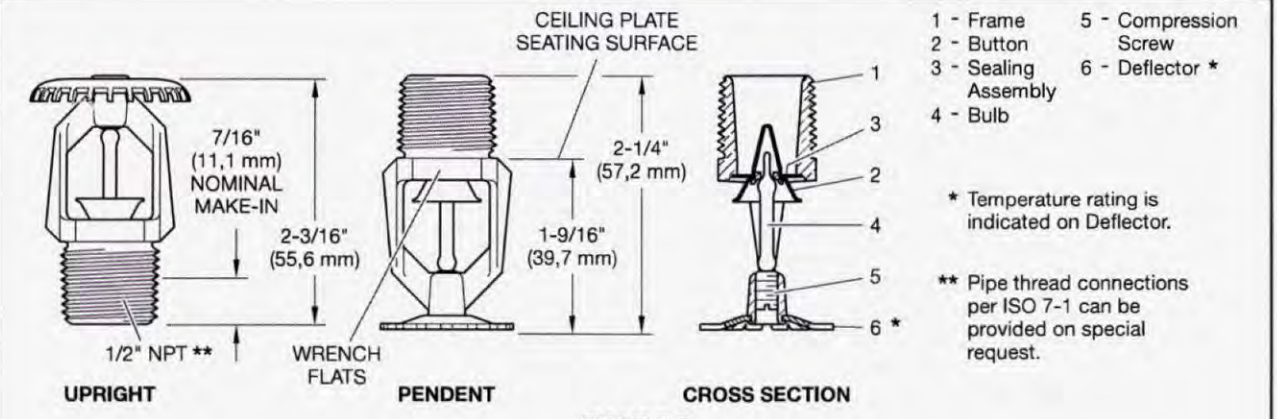


FIGURE 5
QUICK RESPONSE SERIES TY-FRB UPRIGHT (TY4831) AND PENDENT (TY4931) SPRINKLERS
8.0 K-FACTOR, 1/2 INCH NPT

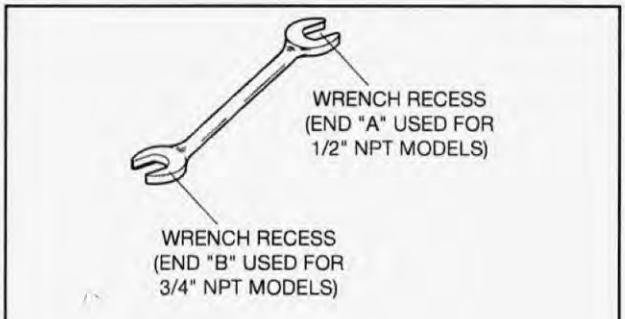


FIGURE 6
W-TYPE 6 SPRINKLER WRENCH

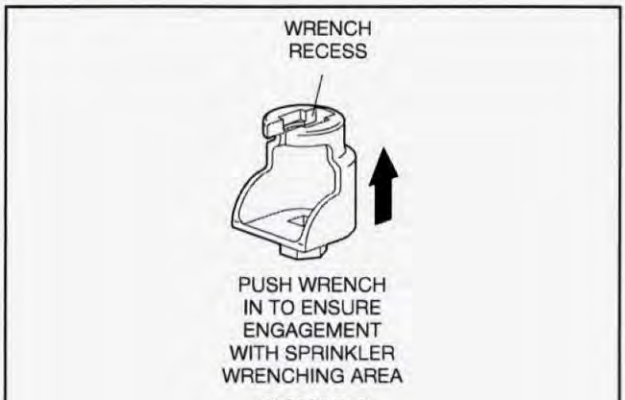


FIGURE 7
W-TYPE 7 RECESSED SPRINKLER WRENCH

Technical Data

Approvals
UL and C-UL Listed
FM, LPCB, and NYC Approved
Refer to Table A and B for complete approval information including corrosion-resistant status.

Maximum Working Pressure
Refer to Table C.

Discharge Coefficient
K=2.8 gpm/psi$^{1/2}$ (40,3 lpm/bar$^{1/2}$)
K=4.2 gpm/psi$^{1/2}$ (60,5 lpm/bar$^{1/2}$)
K=5.6 gpm/psi$^{1/2}$ (80,6 lpm/bar$^{1/2}$)
K=8.0 gpm/psi$^{1/2}$ (115,2 lpm/bar$^{1/2}$)

Temperature Rating
Refer to Table A and B.

Finishes
Sprinkler: Refer to Table D.

Recessed Escutcheon: Signal or Pure White, Jet Black, Chrome Plated, or Natural Brass

Physical Characteristics

Frame	Bronze
Button	Brass/Copper
Sealing Assembly	Beryllium Nickel w/TEFLON
Bulb	Glass
Compression Screw	Bronze
Deflector	Copper/Bronze
Bushing (K=2.8)	Bronze

Operation

The glass bulb contains a fluid that expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.

Design Criteria

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (such as, UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of FM's Loss Prevention Data Sheets). Only the Style 10, 20, 30, or 40 Recessed Escutcheon, as applicable, is to be used for recessed pendent installations.

Installation

The TYCO Series TY-FRB, 2.8, 4.2, 5.6, and 8.0 K-factor, Upright, Pendent, and Recessed Pendent Sprinklers must be installed in accordance with this section.

General Instructions
Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm) for the 135°F (57°C) and 3/32 inch (2,4 mm) for the 286°F (141°C) temperature ratings.

A leak-tight 1/2 inch NPT sprinkler joint should be obtained by applying a minimum to maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). A leak tight 3/4 inch NPT sprinkler joint should be obtained with a torque of 10 to 20 ft.-lbs. (13,4 to 26,8 Nm). Higher levels of torque can distort the sprinkler Inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in the Escutcheon Plate by under- or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.

Series TY-FRB Upright and Pendent Sprinklers
The Series TY-FRB Pendent and Upright Sprinklers must be installed in accordance with the following instructions.

Step 1. Install Pendent sprinklers in the pendent position. Install upright sprinklers in the upright position.

Step 2. With pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Figure 6). With reference to Figures 1 through 5, apply the W-Type 6 Sprinkler Wrench to the sprinkler wrench flats.

Series TY-FRB Recessed Pendent Sprinklers
The Series TY-FRB Recessed Pendent Sprinklers must be installed in accordance with the following instructions.

Step A. After installing the Style 10, 20, 30, or 40 Mounting Plate, as applicable, over the sprinkler threads and with pipe-thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step B. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure 7). With reference to Figures 1 to 4, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step C. After ceiling installation and finishing, slide on the Style 10, 20, 30, or 40 Closure over the Series TY-FRB Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 5)			
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	POLYESTER***
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	135°F (57°C)	Orange	1, 2, 3, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY1231)* Figure 8	135°F (57°C)	Orange	1, 2, 4		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY1231)** Figure 9	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	135°F (57°C)	Orange	1, 2		
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
	RECESSED PENDENT (TY2231)* Figure 10	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
	RECESSED PENDENT (TY2231)** Figure 11	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the City of New York under MEA 354-01-E.
5. Where Polyester Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
*** Frame and Deflector only.
N/A: Not Available

TABLE A
LABORATORY LISTINGS AND APPROVALS FOR
2.8 AND 4.2 K-FACTOR SPRINKLERS

K FACTOR	TYPE	TEMPERATURE	SPRINKLER FINISH (See Note 8)				
			BULB LIQUID COLOR	NATURAL BRASS	CHROME PLATED	POLYESTER***	LEAD COATED
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 3, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)* Figure 12	135°F (57°C)	Orange	1, 2, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY3231)** Figure 13	135°F (57°C)	Orange	1, 2, 3, 4, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	135°F (57°C)	Orange	1, 2, 3, 4, 5, 6, 7			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)* Figure 14	135°F (57°C)	Orange	1, 2, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	RECESSED PENDENT (TY4231)** Figure 15	135°F (57°C)	Orange	1, 2, 3, 5			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	135°F (57°C)	Orange	1, 2, 4, 5, 6			1, 2, 5
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				

NOTES:
1. Listed by Underwriters Laboratories, Inc., (UL) as Quick Response Sprinklers.
2. Listed by Underwriters Laboratories, Inc., for use in Canada (C-UL) as Quick Response Sprinklers.
3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
4. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007k/04) as Quick Response Sprinklers. However, LPCB does not rate the thermal sensitivity of recessed sprinklers.
5. Approved by the City of New York under MEA 354-01-E.
6. VdS Approved (For details, contact Tyco Fire Suppression & Building Products, Enschede, Netherlands, Tel. 31-53-428-4444/Fax 31-53-428-3377.)
7. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) as Quick Response Sprinklers.
8. Where Polyester Coated and Lead-Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion-Resistant Sprinklers. Where Lead-Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as a Corrosion-Resistant Sprinklers.

* Installed with Style 10 (1/2" NPT) or Style 40 (3/4" NPT) 3/4" Total Adjustment Recessed Escutcheon, as applicable.
** Installed with Style 20 (1/2" NPT) or Style 30 (3/4" NPT) 1/2" Total Adjustment Recessed Escutcheon, as applicable.
*** Frame and Deflector only.
N/A: Not Available

TABLE B
LABORATORY LISTINGS AND APPROVALS FOR
5.6 AND 8.0 K-FACTOR SPRINKLERS

K FACTOR	TYPE	SPRINKLER FINISH			
		NATURAL BRASS	CHROME PLATED	POLYESTER	LEAD COATED
2.8 1/2" NPT	PENDENT (TY1231) and UPRIGHT (TY1131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY1231)				
4.2 1/2" NPT	PENDENT (TY2231) and UPRIGHT (TY2131)	175 PSI (12,1 BAR)			N/A
	RECESSED PENDENT (TY2231)				
5.6 1/2" NPT	PENDENT (TY3231) and UPRIGHT (TY3131)	250 PSI (17,2 BAR) OR 175 PSI (12,1 BAR) (SEE NOTE 1)			
	RECESSED PENDENT (TY3231)				
8.0 3/4" NPT	PENDENT (TY4231) and UPRIGHT (TY4131)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)
	RECESSED PENDENT (TY4231)				N/A
8.0 1/2" NPT	PENDENT (TY4931) and UPRIGHT (TY4831)	175 PSI (12,1 BAR)			175 PSI (12,1 BAR)

NOTES:
1. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories Inc. (UL); the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL); and, the Approval by the City of New York.

TABLE C
MAXIMUM WORKING PRESSURE

Care and Maintenance

The TYCO Series TY-FRB must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection systems from the proper authorities and notify all personnel who may be affected by this action.

Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, can delay sprinkler operation in a fire situation.

Sprinklers which are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

Care must be exercised to avoid damage to the sprinklers before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section.)

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or sprinkler manufacturer regarding any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Care must be exercised to avoid damage to the sprinklers -before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. (Ref. Installation Section).

Initial and frequent visual inspections of random samples are recommended for corrosion-resistant sprinklers to verify the integrity of the corrosion-resistant material of construction. Thereafter, annual inspections per NFPA 25 should suffice.

Inspections of corrosion-resistant sprinklers are recommended at close range, instead of from the floor level per NFPA. Inspection at close range can better determine the exact sprinkler condition and the long-term integrity of the corrosion-resistant material, which can be affected by the corrosive conditions present.

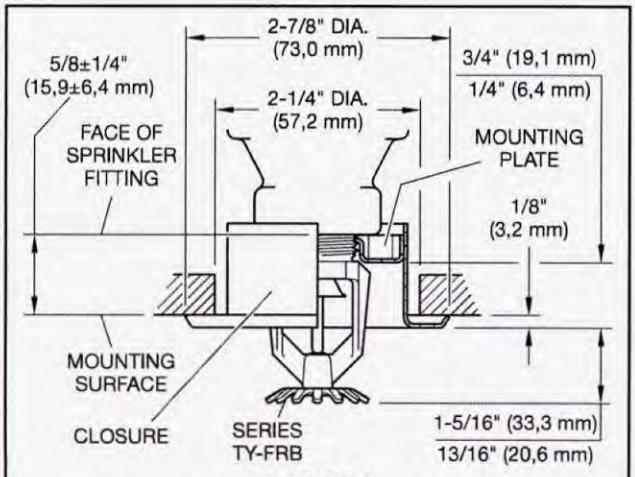


FIGURE 8
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

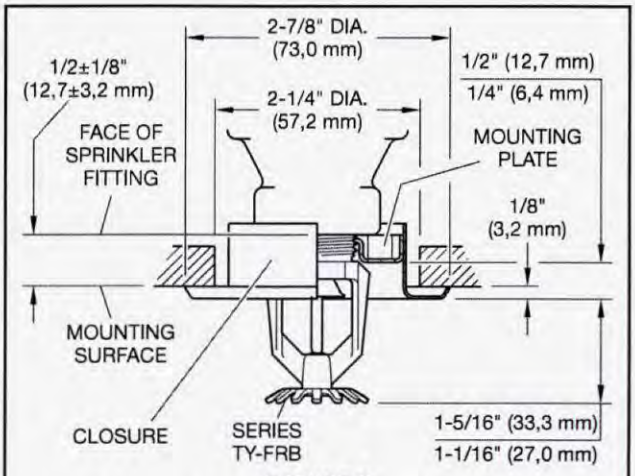


FIGURE 9
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
2.8 K-FACTOR, 1/2 INCH NPT

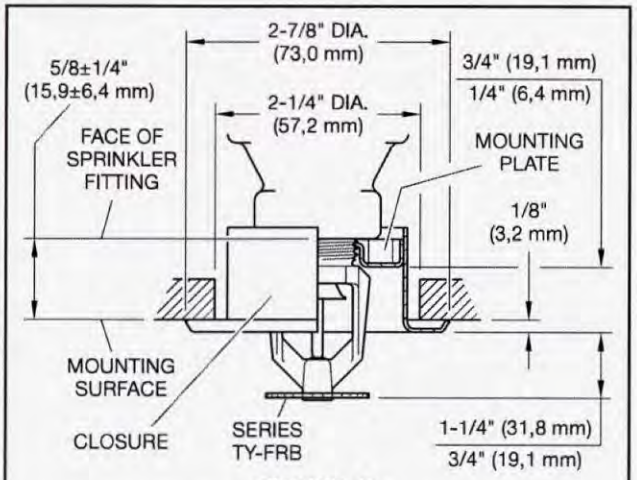


FIGURE 10
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

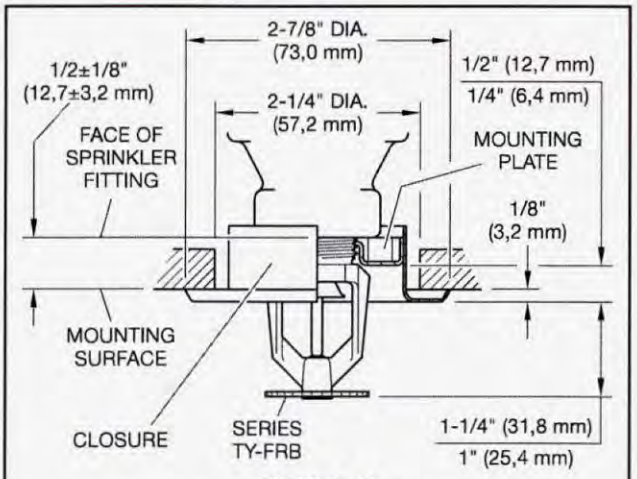


FIGURE 11
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
4.2 K-FACTOR, 1/2 INCH NPT

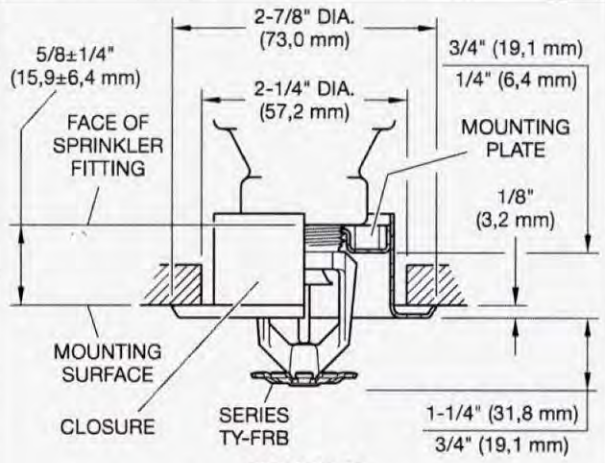


FIGURE 12
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 10 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

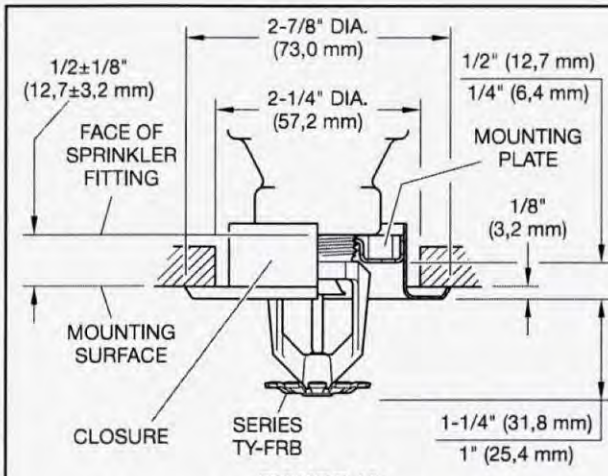


FIGURE 13
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 20 RECESSED ESCUTCHEON
5.6 K-FACTOR, 1/2 INCH NPT

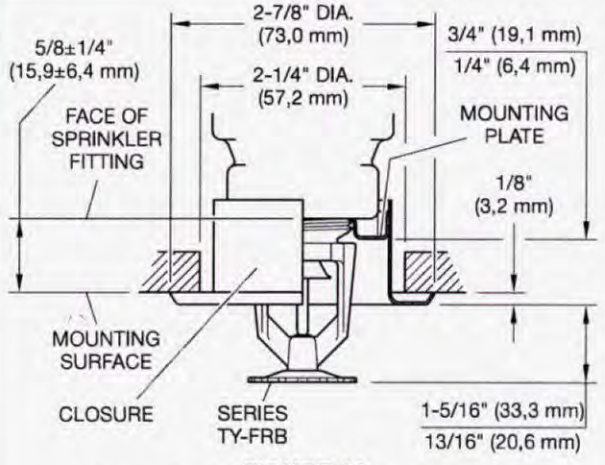


FIGURE 14
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 3/4 INCH TOTAL ADJUSTMENT
STYLE 40 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

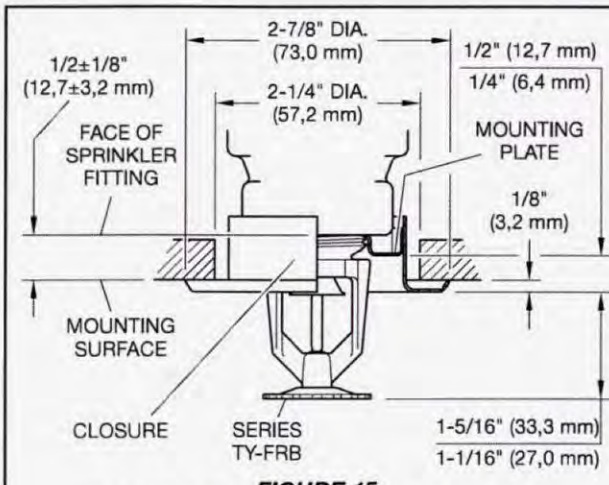


FIGURE 15
SERIES TY-FRB RECESSED PENDENT
WITH TWO-PIECE 1/2 INCH TOTAL ADJUSTMENT
STYLE 30 RECESSED ESCUTCHEON
8.0 K-FACTOR, 3/4 INCH NPT

P/N 57 – XXX – X – XXX

		SIN
330	2.8K UPRIGHT (1/2"NPT)	TY1131
331	2.8K PENDENT (1/2"NPT)	TY1231
340	4.2K UPRIGHT (1/2"NPT)	TY2131
341	4.2K PENDENT (1/2"NPT)	TY2231
370	5.6K UPRIGHT (1/2"NPT)	TY3131
371	5.6K PENDENT (1/2"NPT)	TY3231
390	8.0K UPRIGHT (3/4"NPT)	TY4131
391	8.0K PENDENT (3/4"NPT)	TY4231
360	8.0K UPRIGHT (1/2"NPT)	TY4831*
361	8.0K PENDENT (1/2"NPT)	TY4931*

	SPRINKLER FINISH
1	NATURAL BRASS
3	PURE WHITE POLYESTER (RAL9010)[1]
4	SIGNAL WHITE POLYESTER (RAL9003)
5	JET BLACK POLYESTER (RAL9005)[2]
7	LEAD COATED
9	CHROME PLATED

	TEMPERATURE RATINGS
135	135°F (57°C)
155	155°F (68°C)
175	175°F (79°C)
200	200°F (93°C)
286	286°F (141°C)

NOTES:
1. Eastern Hemisphere sales only.
2. Available in only 2.8K, 4.2K, and 8.0K, 155°F (68°C) and 200°F (93°C); requires lead time to manufacture.

TABLE D
SERIES TY-FRB PENDENT AND UPRIGHT SPRINKLERS
PART NUMBER SELECTION

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and Part Number (P/N).

Sprinkler Assemblies with NPT Thread Connections
Specify: Series TY-FRB (Specify SIN), (specify K-factor), (specify Pendent or Upright) Sprinkler (specify) temperature rating, (specify) finish or coating, P/N (specify from Table D)

Recessed Escutcheon
Specify: Style (10, 20, 30, or 40) Recessed Escutcheon with (specify*) finish, P/N (specify*)

Sprinkler Wrench
Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001

* Refer to Technical Data Sheet TFP770

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tyco Fire Protection Products

2

2

BACKFLOW PREVENTER

CUT SHEETS

Model 950XLT

Top Access Double Check Valve Assembly

Application

Designed for installation on water lines to protect against both backsiphonage and backpressure of polluted water into the potable water supply. A test cock plug is provided to protect against fouling caused by insects, dirt and debris. Assembly shall provide protection where a potential non-health hazard exists.



Standards Compliance

(Unless otherwise noted, applies to 3/4" thru 2" Horizontal)

- ASSE® Listed 1015 (Vertical flow-up:1 1/4" thru 2")
- IAPMO® Listed
- AWWA Compliant C510
- CSA® Certified (Vertical flow-up:1 1/2" & 2")
- NYC MEA 426-89-M VOL 3
- Approved by the Foundation for Cross Connection Control and Hydraulic Research at the University of Southern California (950XLTU: 3/4" & 1" Horizontal)

Options

(Suffixes can be combined)

- ☐ L - less ball valves
- ☐ FT - with "Fast Test" test cocks
- ☐ U - with union ball valves
- ☐ S - with bronze "Y" type strainer

Materials

Main valve body	Cast Bronze ASTM B 584
Access covers	Cast Bronze ASTM B 584
Fasteners	Stainless Steel, 300 Series
Elastomers	Silicone (FDA approved)
	Buna Nitrile (FDA approved)
Polymers	Noryl™, NSF Listed
Springs	Stainless steel, 300 series
Test cock cover	Plastic
Ball valve handles	Stainless steel

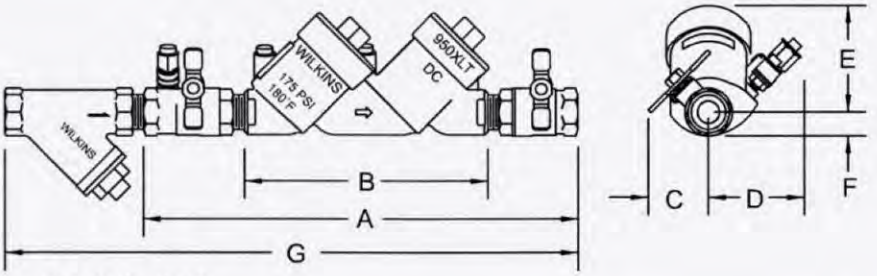
Accessories

- ☐ Repair kit (rubber only)
- ☐ Thermal expansion tank (Model XT)
- ☐ Bronze wye strainer
- ☐ QT-SET Quick Test Fitting Set

Features

Sizes: 3/4", 1", 1 1/4", 1 1/2", 2"

Maximum working water pressure	175 PSI
Maximum working water temperature	180°F
Hydrostatic test pressure	350 PSI
End connections Threaded	ANSI B1.20.1



Dimensions & Weights (do not include pkg.)

MODEL SIZE		DIMENSIONS (approximate)																WEIGHT			
		A		A UNION BALL VALVES		B LESS BALL VALVES		C		D		E		F		G		LESS BALL VALVES		WITH BALL VALVES	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg	lbs.	kg
3/4	20	13	330	14 5/16	364	8 3/4	222	2 3/8	60	2 5/16	59	3 5/16	84	3/4	19	17 5/8	448	4	1.8	6	2.7
1	25	14	356	15 3/4	400	8 3/4	222	2 1/2	64	2 5/16	59	3 5/16	84	3/4	19	19 3/4	502	8	3.6	12	5.4
1 1/4	32	19 5/8	499	21 5/8	549	13 3/4	349	4	102	3 5/8	92	4 3/8	111	1 5/16	33	24 3/4	629	16	7.3	22	10
1 1/2	40	20 5/16	516	22 5/16	567	13 3/4	349	5 3/8	137	3 5/8	92	4 3/8	111	1 5/16	33	25 15/16	659	16	7.3	22	10
2	50	21 3/8	543	23 1/4	591	13 3/4	349	5 13/16	148	3 5/8	92	4 3/8	111	1 5/16	33	28 5/16	719	17	7.7	29	13.2

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | **Zurn Industries Limited**
3544 Nashua Drive, Mississauga, Ontario L4V 1L2 Ph. 905-405-8272, Fax 905-405-1292
www.zurn.com

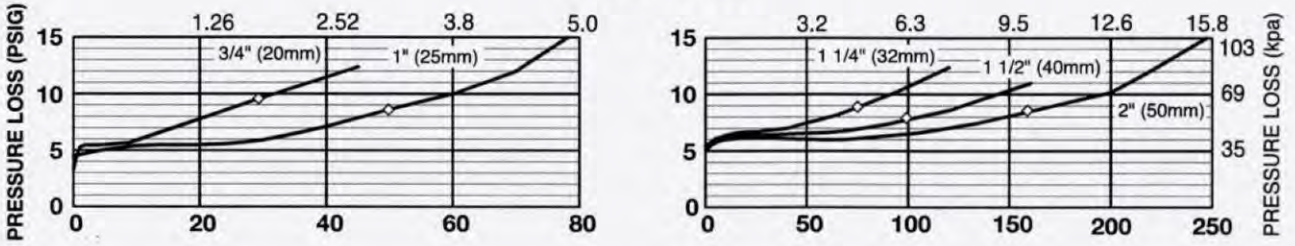
Rev. D
Date: 1/15
Document No. BF-950XLT
Product No. Model 950XLT

Flow Characteristics

◇ Rated Flow (established by approval agencies)

MODEL 950XLT 3/4", 1", 1 1/4", 1 1/2" & 2" (STANDARD & METRIC)

FLOW RATES (l/s)

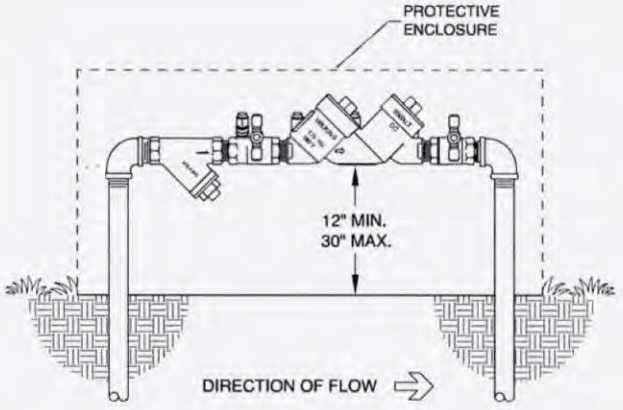


FLOW RATES (GPM)

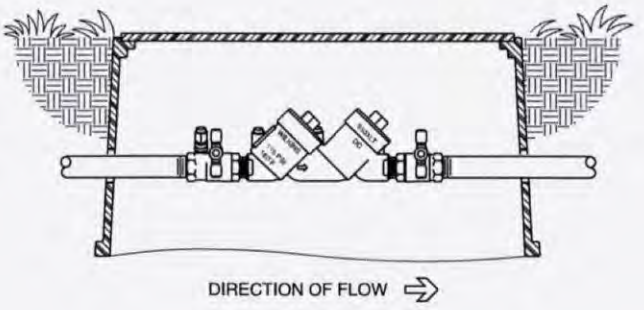
TYPICAL INSTALLATION

Local codes shall govern installation requirements. To be installed in accordance with the manufacturer's instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. If installed below grade, be certain adequate drainage is provided to prevent the device from being submerged.

Capacity thru Schedule 40 Pipe				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
1/8"	1	1	2	3
1/4"	2	2	3	5
3/8"	3	4	6	9
1/2	5	7	9	14
3/4"	8	12	17	25
1"	13	20	27	40
1 1/4"	23	35	47	70
1 1/2"	32	48	63	95
2"	52	78	105	167



OUTDOOR INSTALLATION



PIT INSTALLATION

SPECIFICATIONS

The Double Check Type Backflow Preventer shall be ASSE Listed 1015, rated to 180°F and supplied with full port ball valves. The main body and access covers shall be bronze (ASTM B 584), the seat ring and all internal polymers shall be NSF® Listed Noryl™ and the seat disc elastomers shall be SILICONE. The first and second check shall be located at a 45° angle and accessible for maintenance from the top of the device, without removing the device from the line. Each check shall have separate access covers and test cocks shall be accessible from the top of the device. Test cocks shall be protected from debris by a plug. The Double Check Type Backflow Preventer shall be a ZURN WILKINS Model 950XLT.

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | **Zurn Industries Limited**
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www.zurn.com

3

FLOW SWITCH & BELL CUT SHEETS

WFDTN Series Waterflow Detector



System Sensor WFDTN T-Tap Waterflow detectors are designed for primary signaling in residential systems and branch line signaling.

Features

- New directional cover allows installers and inspectors to easily see the direction of flow
- UL-listed models are NEMA 4 rated
- New cover provides a better seal, is lighter weight, not painted and corrosion resistant
- Sealed retard mechanism immune to dust and other contaminants
- Less exposed metal reduces shock hazard, plastic cover acts as insulator and is resistant to arcing
- Visual switch activation
- Audible switch activation (73 dBA)
- Field-replaceable timer/switch assembly
- Accommodates up to 12 AWG wire
- Switch Synchronization activates both alarm panel and local bell or horn strobe
- Tamper-resistant cover screws
- Improved water sealing
- Reduced product weight
- Wire-ready terminals
- Improved wiring with new terminal block layout
- Snap-in optional cover tamper switch

Agency Listings

c UL us LISTED
S739

FM APPROVED
30512266

The new **WFDTN Series** waterflow detectors from **System Sensor** consists of a rugged, NEMA 4-rated enclosure that is more damage resistant than previous metal designs. The waterflow detector is designed for both indoor and outdoor use, with the widest available temperature range, from 32°F to 150°F.

Both the WFDTN with incorporated timer and WFDTNRN with immediate activation fit any tee that has a 1 in. NPT branch, including: 1in., 1¼in., 1½ in. and 2in. NPT threaded ferrous and brass tees; 1in., 1¼in., 1½in. and 2in. copper sweat tees; Tyco, Spears, NIBBCO brand 1 in. CPVC tees. Twelve different clearly marked plastic paddles are available to fit different installation configurations.

UL-listed models are equipped with tamper-resistant cover screws to prevent unauthorized entry. Inside, two sets of SPDT (Form C) synchronized switches are enclosed in a durable terminal block with new layout designed to make wiring easy with wire ready terminals, COM terminals are on a different elevation, large barrier between switches and easy to read raised textured lettering all make wiring easy. An optional cover tamper switch is available, securely snaps into place, no tools required.

The WFDTN incorporates a mechanical time delay feature, which minimizes the risk of false alarm due to pressure surges or air trapped in the fire sprinkler system. The larger and easy to turn timer dial makes setting the waterflow detector easy with high contrast pad printed markings. The dial offers three tabs to help with turning, with one larger tab located on the dial position for approximately 60 seconds, a notch is also indicated on the dial to locate approximately 30 seconds making setting the detector in dimmly lit locations easy.

The WFDTN series is designed for accuracy and repeatability. The detector also offers improved performance during vibration in riser applications where detectors are exposed to a large in rush of water.

Waterflow Detector Specifications

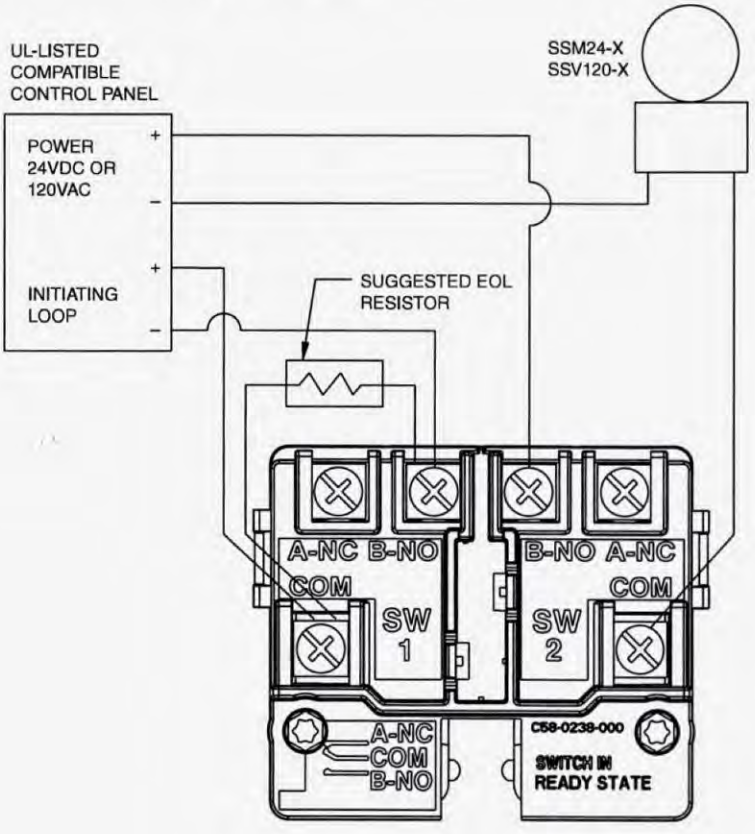
Engineering Specifications

Model shall be WFDTN or WFDTNRN as manufactured by System Sensor. T-Tap waterflow detectors shall be installed on a tee that has a 1in. NPT branch including: 1in., 1¼in., 1½in. and 2in. NPT threaded ferrous and brass tee; 1in., 1¼in., 1½in. and 2in. copper sweat tees; Tyco, Spears, NIBBCO brand 1in. CPVC tees as designed on the drawing and /or as specified herein. Detectors shall mount on any clear pipe span of the appropriate nominal size, either a vertical upflow or horizontal run at least 6˝ from any fittings or valves that may change water direction, flow rate, or pipe diameter or no closer than 24in. from a valve or drain. Detectors shall have a sensitivity in the range of 4 to 10 gallons per minute and a static pressure rating of 375 psi. The WFDTN detector with incorporated time delay mechanism shall respond to waterflow in the specified direction after a preset time delay that is field adjustable. The delay mechanism shall be a sealed mechanical pneumatic unit with visual and audible indication of actuation. The actuation mechanism shall include a ethylene vinyl acetate vane inserted through a hole in the pipe and connected by a mechanical linkage to the delay mechanism. Outputs shall consist of dual SPDT switches (Form C contacts). Two conduit entrances for standard fittings of commonly used electrical conduit shall be provided on the detectors. A grounding provision is provided. Unless noted, enclosures shall be NEMA 4 listed by Underwriters Laboratories Inc. All detectors shall be listed by Underwriters Laboratories Inc. for indoor or outdoor use.

Standard Specifications

Static Pressure Rating	375 PSI	**Operating Temperature Range**	32°F to 150°F (0°C to 60°C)
Maximum Surge	18 Feet Per Second (FPS)	**Enclosure Rating***	NEMA 4 – suitable for indoor/outdoor use
Triggering Threshold Bandwidth (Flow Rate)	4–10 GPM	**Cover Tamper Switch**	Standard with ULC models, optional for UL models, part no. CTS
Conduit Entrances	Two openings for ½in. conduit. NEMA 4 rated plugs	**Service Use**	Automatic Sprinkler: NFPA-13 One or Two Family Dwelling: NFPA 13D Residential Occupancies up to 4 Stories: NFPA 13R National Fire Alarm Code: NFPA-72
Contact Ratings	Two sets of SPDT (Form C) 10.0 A, ½ HP @ 125/250 VAC 2.5 A @ 6/12/24 VDC	**U.S. Patent Numbers**	5,213,205
Compatible Tee Fittings	Threaded ferrous and brass tees, copper sweat tees, CPVC tees.	**Warranty**	3 Years

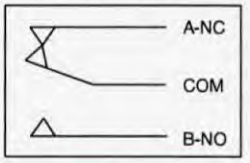
WFDTN Field Wiring Diagram



NOTE: COMMON AND B-NO CONNECTIONS WILL CLOSE WHEN VANE IS DEFLECTED, I.E., WHEN WATER IS FLOWING. DUAL SWITCHES PERMIT APPLICATIONS TO BE COMBINED ON A SINGLE DETECTOR.

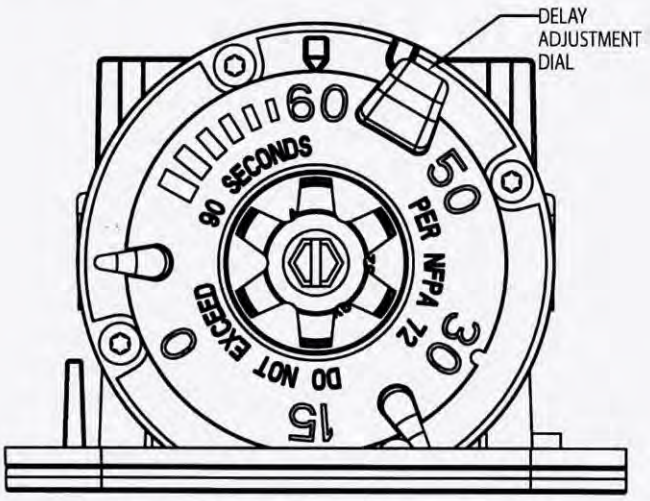
CONTACT RATINGS	
125/250 VAC	10 AMPS
24 VDC	2.5 AMPS

SCHEMATIC OF INDIVIDUAL SWITCH IN "NO WATERFLOW" CONDITION



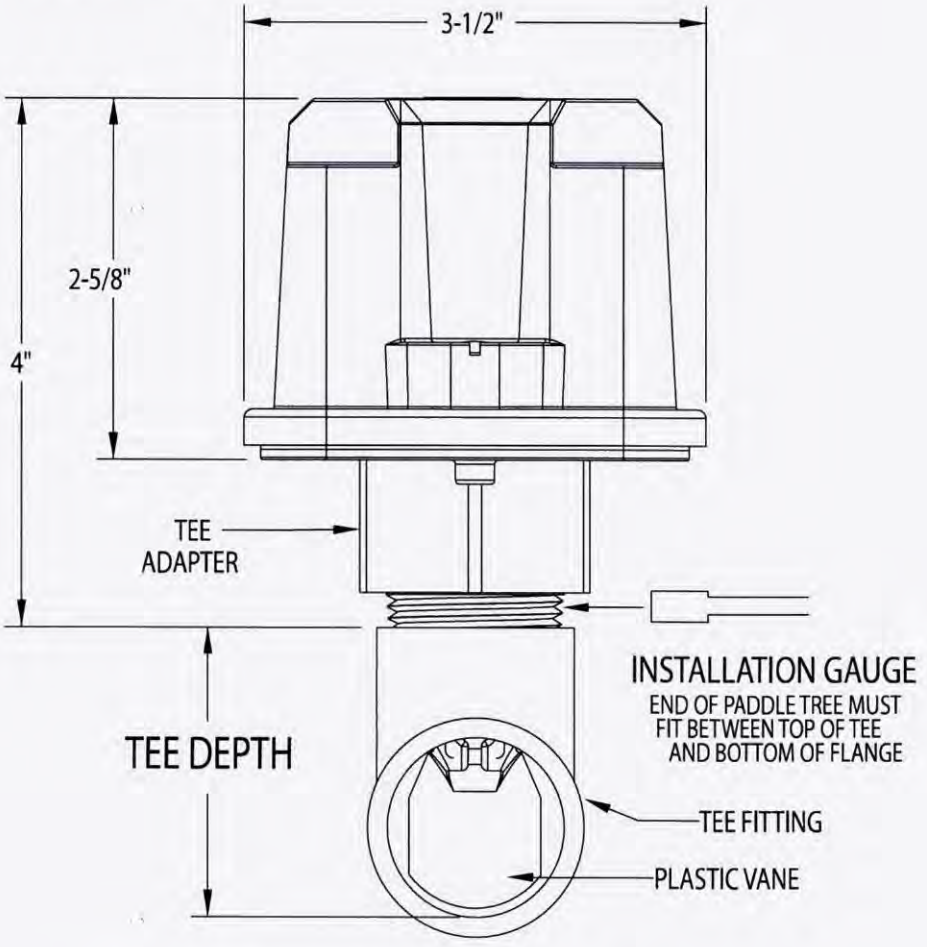
BREAK WIRE AS SHOWN FOR SUPERVISION OF CONNECTION. DO NOT ALLOW STRIPPED WIRE LEADS TO EXTEND BEYOND SWITCH HOUSING. DO NOT LOOP WIRES.

Delay Adjustment Dial



NOTE: RETARD TIME MAY EXCEED 90 SECONDS. ADJUST AND VERIFY THAT TIME DOES NOT EXCEED 90 SECONDS. NUMBER ON DIAL IS APPROXIMATE TIME DELAY IN SECONDS

Overall Dimensions, Installed



DESIGNED TO FIT WITHIN 2 X 4 STUD WALL CONSTRUCTION

Ordering Information		
UL Model	**ULC Model**	**Description**
WFDTN	WFDTNA	Waterflow Detector, Fits 1in., 1¼in., 1½in., 2in. ferrous and brass threaded tees; 1in., 1¼in., 1½in., 2in. copper sweat tees; 1in. CPVC tees.
WFDTNRN	—	Waterflow Detector without incorporated time delay mechanism, fits same tees as WFDTN
Accessories		
FS-RT	Delay mechanism and switch assembly	
CTS	Tamper-proof switch kit	
WFDW	Tamper-proof wrench for cover	

SYSTEM SENSOR®

3825 Ohio Avenue • St. Charles, IL 60174
Phone: 800-SENSOR2 • Fax: 630-377-6495
www.systemsensor.com

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Product specifications subject to change without notice. Visit systemsensor.com for current product information, including the latest version of this data sheet.
WFDS43702 • 2/16

SSM/SSV Series Alarm Bells



System Sensor's SSM and SSV series alarm bells are low current, high decibel notification appliances for use in fire and burglary systems or other signaling applications.

Features

- Approved for indoor and outdoor use
- Low current draw
- High dB output
- Available in six-inch, eight-inch, and ten-inch sizes
- AC and DC models
- DC models polarized for use with supervision circuitry
- Mount directly to standard four-inch square electrical box indoors
- SSM and SSV series come pre-wired

Reliable Performance. The SSM and SSV series provide loud resonant tones. The SSM series operates on 24VDC and are motor driven, while the SSV series operates on 120VAC utilizing a vibrating mechanism.

Simplified Installation. For indoor use, the SSM and SSV series mount to a standard four-inch square electrical box. For outdoor applications, weatherproof back box, model number WBB, is used.

The SSM and SSV series come pre-wired, to reduce installation time. The SSM series incorporates a polarized electrical design for use with supervision circuitry.

Agency Listings

UL LISTED S4011 | ULC C5549 | FM APPROVED 3005255 | 7135-1653 0217 | MEA approved 331-01-E

SSM/SSV Specifications

Architectural/Engineering Specifications

Model shall be a SSM or SSV Series alarm bell. Bells shall have underdome strikers and operating mechanisms. Gongs on said bells shall be no smaller than nominal 6˝/8˝/10˝ (specify size) with an operating voltage of 24VDC or 120VAC (specify by part number). Bells shall be suitable for surface or semi-flush mounting. Outdoor surface mounted installations shall be weatherproof (using optional WBB weatherproof electrical box). Otherwise bells shall mount to a standard 4˝ square electrical box having a maximum projection of 2½˝. Bells shall be located as shown on the drawings or as determined by the Authority Having Jurisdiction. Bells shall be listed for indoor/outdoor use by Underwriters Laboratories and the California State Fire Marshal, and approved by Factory Mutual and MEA.

Physical/Operating Specifications

Operating Temperature Range	–31°F to 140°F
Operating Voltage	SSM series: 24 VDC SSV series: 120 VAC
Termination	Provided with 2 sets of leads for in/out wiring
Service Use	Fire Alarm, General Signaling, Burglar Alarm
Warranty	3 years

Electrical Specifications

Model	Gong Diameter (inches)	Nominal Voltage	Operating Voltage Limit	Maximum Current	Sound Output (dBA)
SSM24-6	6	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	82
SSM24-8	8	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	80
SSM24-10	10	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	81
SSV120-6	6	Regulated 120VAC	96 to 132VAC	53mA	85
SSV120-8	8	Regulated 120VAC	96 to 132VAC	53mA	82
SSV120-10	10	Regulated 120VAC	96 to 132VAC	53mA	82

* Sound output measured at Underwriter Laboratories, as specified in UL464

Ordering Information

UL/FM Model No.	ULC/Canadian Model No.	Description
SSM24-6	SSM24-6A	Bell, 6˝, 24VDC, Polarized, 82dBA
SSM24-8	SSM24-8A	Bell, 8˝, 24VDC, Polarized, 80dBA
SSM24-10	SSM24-10A	Bell, 10˝, 24VDC, Polarized, 81dBA
SSV120-6	SSV120-6A	Bell, 6˝, 120VAC, 85dBA
SSV120-8	SSV120-8A	Bell, 8˝, 120VAC, 82dBA
SSV120-10	SSV120-10A	Bell, 10˝, 120VAC, 82dBA
WBB		Weatherproof back box for SSM and SSV series, when installed outdoors

SYSTEM SENSOR

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Product specifications subject to change without notice. Visit systemsensor.com for current product information, including the latest version of this data sheet.
A05-0260-010 • 08/11 • #2870

WATERFLOW DATA

Fire Hydrant Flow Calculator

© 2006, Willis Lamm

- Use the tab key to navigate.
- Tab between each box to update the calculation.
- Be sure to tab past your final entry for a correct calculation.

Village Walk
COT-395

Static:	68	psi before flowing
Residual:	54	psi while flowing
Pitot:	45	pitot gage reading
Diameter:	2.5	size of opening tested
This hydrant is flowing:	1126	GPM from the test outlet
Projected available hydrant flow:	2189	GPM Note 1
2nd Static:	66	secondary psi before flowing
2nd Residual:	58	secondary psi while flowing
The main can be expected to flow about:	2895	GPM

Notes:

1. Projected available flows calculated at 20 psi residual, or ½ the static pressure for low pressure hydrants having static pressures of less than 40 psi.

2. This calculator is based on established Hazen-Williams formulas and is provided for convenience and estimation purposes only. The author and FireHydrant.org express no warranty for its suitability for any particular purpose.

Click for Legal Disclaimer

HYDRUALIC CALCULATIONS

RLS FIRE PROTECTION SYSTEMS
P.O. BOX 984
CASTLE ROCK COLORADO 80104

HYDRAULIC CALCULATIONS

FOR

VILLAGE WALK
PLAN 5 AND PLAN 5 REVERSE
COTATI, CA.

FILE NUMBER: 160201
DATE: JUL 19, 2016

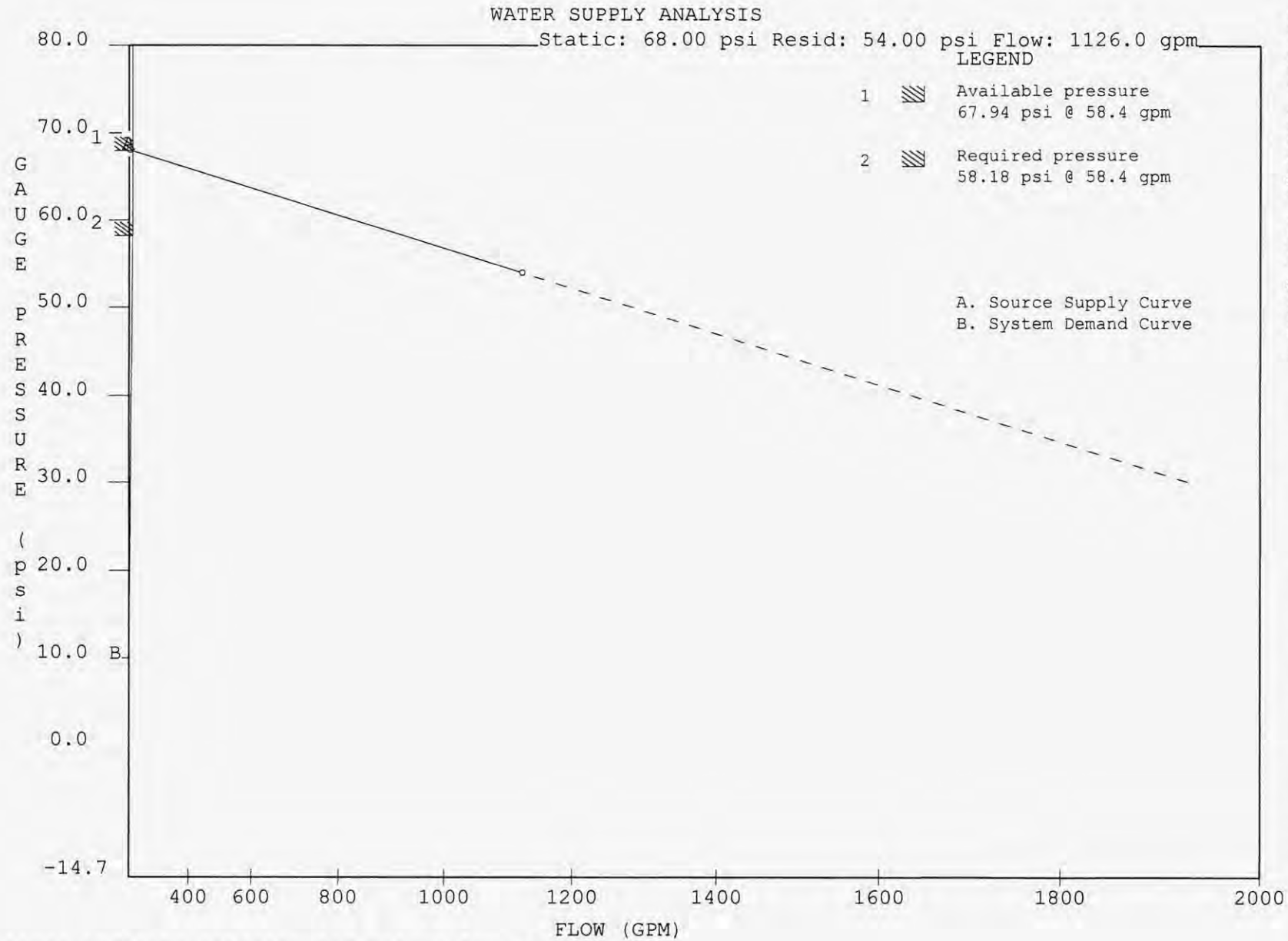
-DESIGN DATA-

NUMBER OF SPRINKLERS CALCULATED:	4	
FLOW AND PRESSURE AT BASE OF RISER	53.4 gpm @	**25.0** psi
NAME OF CONTRACTOR:	SYNERGY	
DESIGN / LAYOUT BY:	RON SCOGGINS	

NOTE:
4 HEAD REMOTE AREA CALC AT 16 FT. X 16 FT. CALCS

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 50122087)
HRS SYSTEMS, INC.
PETERSBURG, TN





hed Lines indicate extrapolated values from Test Results
e pressures are based on hose stream deduction at the source

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 5.SDF
JOB TITLE: Village walk plan 5

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
1	68.0	54.0	1126.0	67.9	58.4	58.2

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	58.4 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	5.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	53.4 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	0.0	SOURCE	58.2	58.4	
1A	0.0	- - - -	49.4	- - -	
1B	0.0	- - - -	41.4	- - -	
2	0.0	HOSE STREAM	41.3	5.0	
3	0.0	- - - -	34.6	- - -	
4	2.0	- - - -	33.0	- - -	
5	2.0	- - - -	26.0	- - -	
6	3.0	- - - -	25.0	- - -	
7	3.0	- - - -	22.0	- - -	
8	4.0	- - - -	20.9	- - -	
10	11.0	- - - -	17.4	- - -	
11	21.0	- - - -	9.3	- - -	
20	21.0	- - - -	8.2	- - -	
21	21.0	- - - -	7.6	- - -	
22	21.0	- - - -	7.4	- - -	
23	21.0	- - - -	7.2	- - -	
201	21.0	K= 4.90	8.3	14.1	
202	21.0	K= 4.90	7.0	13.0	
203	21.0	K= 4.90	7.3	13.3	
204	21.0	K= 4.90	7.1	13.1	

NFPA PIPE DATA

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / Pf/ft.
Pipe: 1		Source	0.0				35.00	150
1	0.0	58.2	58.4	1B	1.250	T: 7.4	8.68	
1A	0.0	49.4	58.4		1.325	G: 1.2	43.68	0.201
Pipe: 2			0.0	Fixed Pressure Loss Device				
1A	0.0	49.4	58.4	2	8.0 psi,	58.4 gpm		
1B	0.0	41.4	58.4					
Pipe: 3		H.S.	5.0	Disch			1.00	150
1B	0.0	41.4	53.4	3	P1.500	----	0.00	
2	0.0	41.3	58.4		1.590		1.00	0.082
Pipe: 4		0.0	0.0				76.00	150
2	0.0	41.3	53.4	4	P1.500	3E:12.0	20.40	
3	0.0	34.6	53.4		1.590	T: 8.4	96.40	0.070
Pipe: 5		0.0	0.0				3.00	150
3	0.0	34.6	53.4	5	K1.500	E: 4.0	4.00	
4	2.0	33.0	53.4		1.481		7.00	0.099
Pipe: 6			0.0	Fixed Pressure Loss Device				
4	2.0	33.0	53.4	6	7.0 psi,	53.4 gpm		
5	2.0	26.0	53.4					
Pipe: 7		0.0	0.0				2.00	150
5	2.0	26.0	53.4	7	M1.500	E: 5.0	5.00	
6	3.0	25.0	53.4		1.527		7.00	0.085
Pipe: 8			0.0	Fixed Pressure Loss Device				
6	3.0	25.0	53.4	8	3.0 psi,	53.4 gpm		
7	3.0	22.0	53.4					
Pipe: 9		0.0	0.0				3.00	150
7	3.0	22.0	53.4	10	M1.500	E: 5.0	5.00	
8	4.0	20.9	53.4		1.527		8.00	0.085
Pipe: 10		0.0	31.7	201			7.00	150
8	4.0	20.9	21.7	11	F1.500	----	0.00	
10	11.0	17.4	53.4		1.598		7.00	0.068
Pipe: 11		0.0	0.0			E: 5.0	28.25	150
10	11.0	17.4	21.7	20	1.000	2T:10.0	19.00	
11	21.0	9.3	21.7		1.101	4R: 4.0	47.25	0.079

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 5.SDF
JOB TITLE: Village walk plan 5

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(F (F (F
Pipe: 12		4.90	14.1	Disch			19.00	150	
10	11.0	17.4	17.7	20	1.000	2E:10.0	11.00		-
201	21.0	8.3	31.7		1.101	R: 1.0	30.00	0.160	
Pipe: 13		0.0	18.4	23			1.00	150	
201	21.0	8.3	20.9	21	1.000	R: 1.0	1.00		
20	21.0	8.2	17.7		1.101		2.00	0.054	
Pipe: 14		0.0	13.3	203			6.50	150	
20	21.0	8.2	7.7	22	1.000	R: 1.0	1.00		
21	21.0	7.6	20.9		1.101		7.50	0.074	
Pipe: 15		0.0	0.0				12.50	150	
21	21.0	7.6	7.7	204	1.000	T: 5.0	7.00		
22	21.0	7.4	7.7		1.101	2R: 2.0	19.50	0.012	
Pipe: 16		4.90	13.1	Disch		E: 5.0	11.25	150	
22	21.0	7.4	-5.4	23	1.000	T: 5.0	12.00		
204	21.0	7.1	7.7		1.101	2R: 2.0	23.25	0.012	
Pipe: 17		4.90	13.1	Disch			13.00	150	
23	21.0	7.2	-7.7	22	1.000	E: 5.0	7.00		
204	21.0	7.1	5.4		1.101	2R: 2.0	20.00	0.006	
Pipe: 18		4.90	13.0	Disch			1.00	150	
23	21.0	7.2	0.0		1.000	T: 5.0	5.00		
202	21.0	7.0	13.0		1.101		6.00	0.031	
Pipe: 19		0.0	13.0	202			11.00	150	
20	21.0	8.2	5.4	204	1.000	T: 5.0	5.00		
23	21.0	7.2	18.4		1.101		16.00	0.058	
Pipe: 20		0.0	18.4	23			10.00	150	
11	21.0	9.3	20.9	21	1.000	T: 5.0	5.00		
20	21.0	8.2	21.7		1.101		15.00	0.079	
Pipe: 21		4.90	13.3	Disch			4.00	150	
21	21.0	7.6	0.0		1.000	T: 5.0	5.00		
203	21.0	7.3	13.3		1.101		9.00	0.032	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.5 computer program under license no. 50122087 granted by

HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760

(2) The system has been calculated to provide an average imbalance at each node of 0.008 gpm and a maximum imbalance at any node of 0.151 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 13.6 ft/sec at pipe 1.

(4) Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.

(5) Available pressure at source node 1 under full flow conditions is 67.92 psi compared to the minimum required pressure of 20.00 psi.

(6) PIPE FITTINGS TABLE

Pipe Table Name: RLS3.PIP

PAGE: * MATERIAL: S40 HWC: 120

Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	L	C	B	G	A	D	N
	Ell	Tee	LngEll	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	NPTee
1.325	2.46	4.92	1.64	5.74	4.92	0.82	8.20	8.20	4.92

PAGE: F MATERIAL: CPVC HWC: 150

Diameter	Equivalent Fitting Lengths in Feet						
(in)	F	E	T	R	K	C	G
	F45	El	Tee	RunT	Kplg	ChkVlv	Gate
1.101	1.00	5.00	5.00	1.00	1.00	8.00	2.00
1.598	2.00	7.00	8.00	1.00	1.00	14.00	3.00

PAGE: K MATERIAL: CT-K HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet							
	E Ell	T Tee	F 45-Ell	R TeeRun	K Kouplg	C ChkVlv	G GatVlv	N NPTee
1.481	4.00	8.00	2.00	3.00	0.50	9.00	0.00	8.00

PAGE: M MATERIAL: CT-M HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet							
	E Ell	T Tee	F 45-Ell	R TeeRun	K Kouplg	C ChkVlv	G GatVlv	N NPTee
1.527	5.00	9.00	2.00	3.00	0.50	11.00	0.00	9.00

PAGE: P MATERIAL: PVC HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet								
	E Ell	T Tee	L 45	R RUN	C ChkVlv	G Gate	A	D	N
1.590	4.00	8.40	2.10	2.70	14.00	3.00	0.00	0.00	0.00

RLS FIRE PROTECTION SYSTEMS
P.O. BOX 984
CASTLE ROCK COLORADO 80104

HYDRAULIC CALCULATIONS

FOR

VILLAGE WALK
PLAN 5 AND PLAN 5 REVERSE
COTATI, CA.

FILE NUMBER: 160201
DATE: JUL 19, 2016

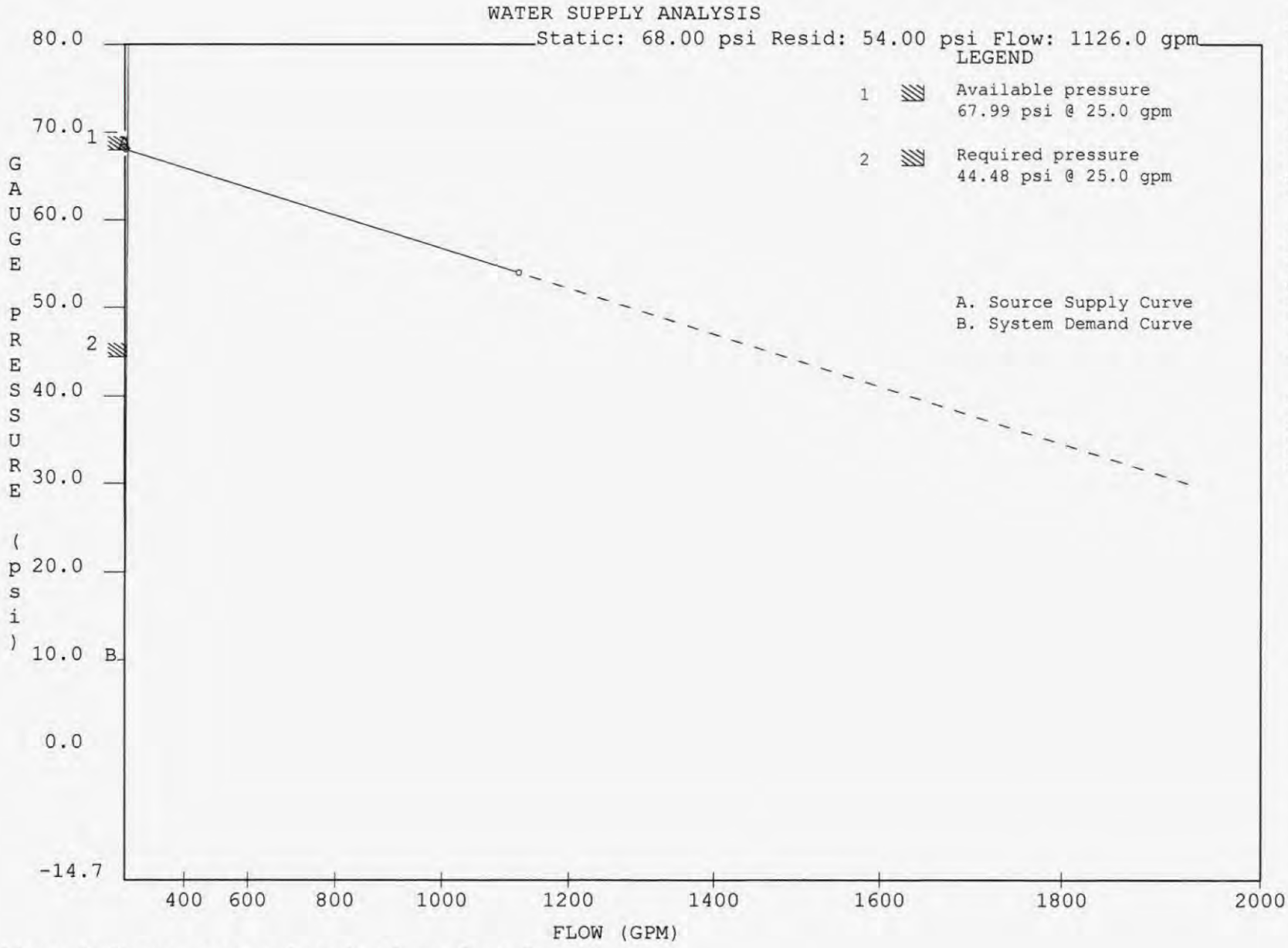
-DESIGN DATA-

NUMBER OF SPRINKLERS CALCULATED:	1	
FLOW AND PRESSURE AT BASE OF RISER	20.0 gpm @	**30.2** psi
NAME OF CONTRACTOR:	SYNERGY	
DESIGN / LAYOUT BY:	RON SCOGGINS	

NOTE:
1 HEAD REMOTE AREA CALC AT 20 FT. X 20 FT. CALCS

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 50122087)
HRS SYSTEMS, INC.
PETERSBURG, TN





hed Lines indicate extrapolated values from Test Results
e pressures are based on hose stream deduction at the source

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 5 1 HEAD.SDF
JOB TITLE: Village walk plan 5 1 head

NFPA WATER SUPPLY DATA

SOURCE NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
1	68.0	54.0	1126.0	68.0	25.0	44.5

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	25.0 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	0.0 GPM
OTHER HOSE STREAM ALLOWANCES	5.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	20.0 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	NOTES
1	0.0	SOURCE	44.5	25.0	
1A	0.0	- - - -	42.7	- - -	
1B	0.0	- - - -	40.2	- - -	
2	0.0	HOSE STREAM	40.1	5.0	
3	0.0	- - - -	39.0	- - -	
4	2.0	- - - -	38.1	- - -	
5	2.0	- - - -	31.1	- - -	
6	3.0	- - - -	30.2	- - -	
7	3.0	- - - -	27.2	- - -	
8	4.0	- - - -	26.3	- - -	
10	11.0	- - - -	22.8	- - -	
11	21.0	- - - -	17.8	- - -	
20	21.0	- - - -	17.6	- - -	
21	21.0	- - - -	17.6	- - -	
22	21.0	- - - -	17.4	- - -	
23	21.0	- - - -	17.1	- - -	
201	21.0	- - - -	17.7	- - -	
202	21.0	K= 4.90	16.7	20.0	
204	21.0	- - - -	17.2	- - -	

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 5 1 HEAD.SDF
JOB TITLE: Village walk plan 5 1 head

NFPA PIPE DATA

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(I (I (I
Pipe: 1		Source	0.0				35.00	150	
1	0.0	44.5	25.0	1B	1.250	T: 7.4	8.68		
1A	0.0	42.7	25.0		1.325	G: 1.2	43.68	0.042	
Pipe: 2			0.0	Fixed Pressure Loss Device					
1A	0.0	42.7	25.0	2	2.5 psi,	25.0 gpm			
1B	0.0	40.2	25.0						
Pipe: 3		H.S.	5.0	Disch			1.00	150	
1B	0.0	40.2	20.0	3	P1.500	----	0.00		
2	0.0	40.1	25.0		1.590		1.00	0.017	
Pipe: 4		0.0	0.0				76.00	150	
2	0.0	40.1	20.0	4	P1.500	3E:12.0	20.40		
3	0.0	39.0	20.0		1.590	T: 8.4	96.40	0.011	
Pipe: 5		0.0	0.0				3.00	150	
3	0.0	39.0	20.0	5	K1.500	E: 4.0	4.00		-
4	2.0	38.1	20.0		1.481		7.00	0.016	
Pipe: 6			0.0	Fixed Pressure Loss Device					
4	2.0	38.1	20.0	6	7.0 psi,	20.0 gpm			
5	2.0	31.1	20.0						
Pipe: 7		0.0	0.0				2.00	150	
5	2.0	31.1	20.0	7	M1.000	E: 3.0	3.00		-
6	3.0	30.2	20.0		1.055		5.00	0.084	
Pipe: 8			0.0	Fixed Pressure Loss Device					
6	3.0	30.2	20.0	8	3.0 psi,	20.0 gpm			
7	3.0	27.2	20.0						
Pipe: 9		0.0	0.0				3.00	150	
7	3.0	27.2	20.0	10	M1.000	E: 3.0	3.00		-
8	4.0	26.3	20.0		1.055		6.00	0.084	
Pipe: 10		0.0	11.8	201			7.00	150	
8	4.0	26.3	8.2	11	1.000	----	0.00		-
10	11.0	22.8	20.0		1.101		7.00	0.068	
Pipe: 11		0.0	0.0			E: 5.0	28.25	150	
10	11.0	22.8	8.2	20	1.000	2T:10.0	19.00		-
11	21.0	17.8	8.2		1.101	4R: 4.0	47.25	0.013	

DATE: 7/19/2016 F:\RLS\ACTIVE JOBS\160201 VILLIAGE WALK\PLAN 5 1 HEAD.SDF
JOB TITLE: Village walk plan 5 1 head

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(I (I (I
Pipe: 12		0.0	0.0				19.00	150	
10	11.0	22.8	11.8	20	1.000	2E:10.0	11.00		-
201	21.0	17.7	11.8		1.101	R: 1.0	30.00	0.026	
Pipe: 13		0.0	13.8	23			1.00	150	
201	21.0	17.7	6.2	21	1.000	R: 1.0	1.00		
20	21.0	17.6	11.8		1.101		2.00	0.026	
Pipe: 14		0.0	0.0				6.50	150	
20	21.0	17.6	6.2	22	1.000	R: 1.0	1.00		
21	21.0	17.6	6.2		1.101		7.50	0.008	
Pipe: 15		0.0	0.0				12.50	150	
21	21.0	17.6	6.2	204	1.000	T: 5.0	7.00		
22	21.0	17.4	6.2		1.101	2R: 2.0	19.50	0.008	
Pipe: 16		0.0	0.0			E: 5.0	11.25	150	
22	21.0	17.4	6.2	23	1.000	T: 5.0	12.00		
204	21.0	17.2	6.2		1.101	2R: 2.0	23.25	0.008	
Pipe: 17		0.0	20.0	202			13.00	150	
204	21.0	17.2	-13.8	20	1.000	E: 5.0	7.00		
23	21.0	17.1	6.2		1.101	2R: 2.0	20.00	0.008	
Pipe: 18		4.90	20.0	Disch			1.00	150	
23	21.0	17.1	0.0		1.000	T: 5.0	5.00		
202	21.0	16.7	20.0		1.101		6.00	0.068	
Pipe: 19		0.0	20.0	202			11.00	150	
20	21.0	17.6	-6.2	204	1.000	T: 5.0	5.00		
23	21.0	17.1	13.8		1.101		16.00	0.034	
Pipe: 20		0.0	13.8	23			10.00	150	
11	21.0	17.8	6.2	21	1.000	T: 5.0	5.00		
20	21.0	17.6	8.2		1.101		15.00	0.013	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.5 computer program
under license no. 50122087 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760

(2) The system has been calculated to provide an average imbalance at each node of 0.004 gpm and a maximum imbalance at any node of 0.071 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 7.3 ft/sec at pipe 9.

(4) Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.

(5) Available pressure at source node 1 under full flow conditions is 67.98 psi compared to the minimum required pressure of 20.00 psi.

(6) PIPE FITTINGS TABLE

Pipe Table Name: RLS3.PIP

PAGE: * MATERIAL: S40 HWC: 120

Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	L	C	B	G	A	D	N
	Ell	Tee	LngEll	ChkVlv	BfyVlv	GatVlv	AlmChk	DPVlv	NPTee
1.325	2.46	4.92	1.64	5.74	4.92	0.82	8.20	8.20	4.92

PAGE: F MATERIAL: CPVC HWC: 150

Diameter	Equivalent Fitting Lengths in Feet						
(in)	F	E	T	R	K	C	G
	F45	El	Tee	RunT	Kplg	ChkVlv	Gate
1.101	1.00	5.00	5.00	1.00	1.00	8.00	2.00

PAGE: K MATERIAL: CT-K HWC: 150

Diameter	Equivalent Fitting Lengths in Feet							
(in)	E	T	F	R	K	C	G	N
	Ell	Tee	45-Ell	TeeRun	Kouplg	ChkVlv	GatVlv	NPTee
1.481	4.00	8.00	2.00	3.00	0.50	9.00	0.00	8.00

PAGE: M MATERIAL: CT-M HWC: 150

Diameter	Equivalent Fitting Lengths in Feet							
(in)	E	T	F	R	K	C	G	N
	Ell	Tee	45-Ell	TeeRun	Kouplg	ChkVlv	GatVlv	NPTee
1.055	3.00	8.00	2.00	3.00	0.00	8.00	0.00	8.00

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JOB TITLE: Village walk plan 5 1 head

PAGE: P MATERIAL: PVC HWC: 150

Diameter	Equivalent Fitting Lengths in Feet								
(in)	E	T	L	R	C	G	A	D	N
	Ell	Tee	45	RUN	ChkVlv	Gate			
1.590	4.00	8.40	2.10	2.70	14.00	3.00	0.00	0.00	0.00

ENGEO
INCORPORATED
GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

SUPPLEMENTAL
GEOTECHNICAL EXPLORATION

VILLAGE WALK (SANTERO COURT)

COTATI, CALIFORNIA

SUBMITTED

TO

STANDARD PACIFIC HOMES

PLEASANTON, CALIFORNIA

PREPARED

BY

ENGEO INCORPORATED

PROJECT NO. 6858.2.001.01

SEPTEMBER 27, 2005

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ENGEO INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
WATER RESOURCES
CONSTRUCTION SERVICES

Project No.
6858.2.001.01

September 27, 2005

Mr. Ken Baki
Standard Pacific Homes
3825 Hopyard Road, Suite 195
Pleasanton, CA 94588

Subject: Village Walk (Santero Court)
690 East Cotati Avenue
Cotati, California

SUPPLEMENTAL GEOTECHNICAL EXPLORATION

Dear Mr. Baki:

With your authorization, ENGEO Incorporated conducted a supplemental geotechnical exploration at Village Walk (Santero Court), located at 690 East Cotati Avenue in Cotati, California. From a geotechnical standpoint, the subject property is suitable for the planned future residential construction provided that the recommendations contained herein are incorporated in design and implemented in construction. The accompanying report contains the findings of our study and geotechnical recommendations for grading and development of the project.

We are pleased to have been of service to you on this project, and we will be glad to consult further with you and your design team.

Very truly yours,

ENGEO INCORPORATED

for Craig S. Wright
csw/jf:gex

Reviewed by:

Theodore P. Bayham, GE

REGISTERED PROFESSIONAL ENGINEER
DONALD E. BRUGGERS
GE 2094
Exp. 12/31/05
GEOTECHNICAL
STATE OF CALIFORNIA

2010 Crow Canyon Place • Suite 250 • San Ramon, CA 94583-4634 • (925) 866-9000 • Fax (925) 866-0199
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INTRODUCTION

Purpose and Scope

The purpose of this report is to provide you and your design team with our supplemental findings, as well as geotechnical conclusions and recommendations for the proposed Village Walk (Santero Court) residential development at 690 East Cotati Avenue located in Cotati, California. The scope of our work as described in our proposal dated May 18, 2005, has included field exploration, laboratory testing on selected samples, geologic review and engineering analyses, and preparation of this report summarizing our conclusions and recommendations for site development.

This report was prepared for the exclusive use of Standard Pacific Homes and their design team consultants. In the event that any changes are made in the character, design or layout of the development, the conclusions and recommendations contained in this report should be reviewed by ENGEO Incorporated to determine if modifications to the report are necessary. This report may not be reproduced in whole or in part by any means whatsoever, nor may it be quoted or excerpted without the expressed written consent of ENGEO Incorporated.

Site Location and Description

The nearly square-shaped parcel is bordered by Lancaster Drive to the east, East Cotati Avenue to the north, and existing residential developments to the south and west, as shown on Figure 1. The site is nearly level, containing isolated near-surface deposits of existing undocumented "man-made" fill. In general, the site is covered with seasonal grasses, shrubs and weeds.

Proposed Development

Specific details regarding site development and grading have not been developed at this time; however, according to the tentative grading plan, the proposed development will consist of approximately 46 single-family attached and detached residential lots. The site grading is anticipated to consist of minor cuts and fills necessary in order to provide appropriate gradients and drainage to establish pads, streets, and to remove and replace existing undocumented fill. In addition, structural designs have not been completed; however, it is anticipated that houses will consist of single- to multi-level structures of wood-frame construction, and structural loads will be relatively light. Additional site improvements are anticipated to include streets, underground utilities and landscaping.

Previous Exploration

Kleinfelder Inc. previously explored the site and documented their findings in a report dated December 22, 2003 (Reference 8). The exploration included eight soil borings ranging in depth from 9.5 to 15.5 feet below existing grades. Within the geotechnical report, Kleinfelder reported some geotechnical concerns that include expansive near-surface soils, potentially liquefiable lenses of relatively loose sands, and the presence of existing, undocumented fills. In the Kleinfelder report, it is indicated that lenses of medium dense sand with silt were encountered in Borings K-3 and K-4 (Figure 2). These one- to two-foot-thick lenses of sands were encountered between 7½ and 10 feet below surface elevation and were determined to be potentially liquefiable by Kleinfelder. The previous Kleinfelder report was reviewed in conjunction with our current study and pertinent data incorporated as deemed appropriate. The recommendations presented in this current study are intended to supersede previous reports by others.

GEOLOGY AND SEISMICITY

Geology

The site is located in the Cotati Valley within the Coast Ranges province of Northern California, consisting of a series of northwest-trending ridges and valleys. Bedrock in the Coast Ranges has been folded and faulted during regional uplift beginning in the Pliocene period, about 4 million years before present. The site location with respect to regional geologic mapping by Clahan, et al., (2003) is depicted on Figure 3. The mapping shows the site to be underlain by Holocene alluvial sedimentary deposits and is comprised predominantly of clay with interbedded lenses of coarser alluvium.

Regional Faulting and Seismicity

The project is located in a region that contains active[1] earthquake faults; however, no active faults are known to cross the property and the site is not located within an Alquist-Priolo Earthquake Fault Zone. Large (>Mw7) earthquakes have historically occurred in the Bay Area and many earthquakes of low magnitude occur every year. The known active surface faults closest to the site thought to be capable of producing significant ground shaking are the Rodgers Creek fault, located approximately 3.8 miles to the east; the San Andreas fault, located approximately 15.8 miles to the west; and the Maacama fault, located approximately 16.9 miles to the north.

Figure 4 shows the approximate location of active and potentially-active faults and significant historic earthquakes mapped within the San Francisco Bay Region. The United States Geologic

[1]Active faults are defined by the State Geologist as having had surface displacement during the last 11,000 years (Hart, 1994). Potentially active or Quaternary faults are defined as those faults that have had surface displacement during the last 1.6 million years. Inactive faults show no history of Quaternary movement.

Survey has evaluated the Bay Area seismicity through a study by the Working Group on California Earthquake Probabilities (WGCEP, 2003). In their study, the WGCEP evaluated the 30-year probability of M6.7 or greater earthquakes in the Bay Area. According to their conclusions, the Bay Area has a 30-year probability of 62 percent for such an event. The active Rodgers Creek fault system is estimated to have a 30-year probability of 27 percent for a M6.7 or greater earthquake. The San Andreas Fault system was assigned a 30-year probability of 21 percent. It should therefore be expected that the site will experience one or more episodes of strong ground shaking during the design life of the proposed improvements.

FIELD EXPLORATION

Our supplemental field exploration consisted of drilling three exploratory borings shown on Figure 2. The borings were drilled on August 12, 2005, using a truck-mounted drill rig equipped with 4-inch-diameter, solid flight and mud rotary augers. The boring ranged from depths of 21½ to 41½ feet below the existing ground surface (bgs). An ENGEO geologist logged the borings in the field and collected soil samples using a 3-inch O.D. California-type split-spoon sampler fitted with three 6-inch-long brass liners. The California-type sampler was advanced with a 140-pound hammer with a 30-inch drop, employing a cat-head and pulley-hammer system. The penetration of the sampler into the native materials was field recorded as the number of blows needed to drive the sampler 18 inches in 6-inch increments. Blow count results on the boring logs are recorded as the number of blows required for the last one foot of penetration. The field logs were used to develop the report boring logs (Appendix A).

The approximate exploration locations of the exploratory borings are shown on Figure 2. The borings were roughly located by pacing from existing features and should be considered accurate only to the degree implied by the method used. The logs depict subsurface conditions within the borings at the time the exploration was conducted. Subsurface conditions at other locations may differ from conditions noted at these boring locations. The passage of time may result in altered subsurface conditions. In addition, stratification lines represent the approximate boundaries between soil types and the transitions may be gradual.

Laboratory Testing

Samples recovered during ENGEO's field exploration were tested to determine the following soil characteristics:

Characteristic	Test Method	Location of Results Within this Report
Atterberg Limits	ASTM D-4318	Appendix B
Hydro	ASTM D-422	Appendix B
Percent Passing No. 200 Sieve	ASTM D-422	Appendix B
Unconfined Compression Strength	ASTM D-2166	Appendix B
Sulfate Testing in Soils	Caltrans 417	Appendix B

The laboratory test results are shown on the boring logs (Appendix A) and are presented in Appendix B.

Subsurface Conditions

The site is generally covered with approximately 2 to 4 feet of dark gray clay. The Plasticity Indices (PI) of the near-surface clayey soils ranged from approximately 21 to 66, indicating that the clayey soils have a moderate to critically high expansion potential. Underlying the near-surface clay deposits, we encountered alluvial soil deposits of silty to sandy clays. These clays range from medium stiff to very stiff and were encountered at variable depths in all three borings. Undocumented man-made fill is apparent at the northeastern corner of the site; the existing fill is estimated to be approximately 1 to 3 feet in depth, covering an area of roughly ½ acre.

As previously discussed, the Kleinfelder report reported lenses of medium dense sand with silt were encountered in Borings K-3 and K-4. A sample of similar sand was encountered at Boring B-2 between approximately 7½ and 9 feet deep. The sand had both silt and clay constituents, as well as some subrounded gravel. The alluvial deposits continued to the bottom of all three borings; bedrock was not encountered in any of the borings.

Groundwater

During our field explorations, we encountered groundwater in all three borings at variable depths. At Boring B-3, the groundwater reached a maximum depth of 18 feet and stabilized at a depth of 12 feet. At Boring B-1, the groundwater was at a depth of 9 feet and stabilized at a depth of approximately 7½ feet. Based on the difference in groundwater elevation across the site, it is possible that the groundwater is generally sloping from south to north. It should be emphasized that fluctuations in groundwater levels are expected to occur seasonally in response to changes in precipitation, irrigation, and other factors.

DISCUSSIONS AND CONCLUSION

Seismic Hazards

Potential seismic hazards resulting from a nearby moderate to major earthquake can generally be classified as primary and secondary. The primary effect is ground rupture, also called surface faulting. The common secondary seismic hazards include ground shaking, ground lurching, soil liquefaction, and lateral spreading, as discussed below. Based on topographic and lithologic data, the risk of regional subsidence or uplift, landslides, tsunamis or seiches is considered negligible at the site.

Ground Rupture. The site is not located within an Alquist-Priolo Special Study Zone and no active faults are known to cross it. On this basis, the risk of fault-related ground rupture is considered unlikely at the site.

Ground Shaking. An earthquake of moderate to high magnitude generated within the San Francisco Bay Region, similar to those that have occurred in the past, could cause considerable ground shaking at the site. To mitigate the ground shaking effects, all structures should be designed using sound engineering judgment and the latest Uniform Building Code (UBC) requirements as a minimum. In accordance with the 1997 Uniform Building Code (UBC), the site is located within Seismic Zone 4, with a seismic zone factor Z of 0.4, as given in Figure 16-2 and Table 16-I in the UBC. Based on site conditions, the soil profile at the site can be classified as S_D, a stiff soil profile as defined in UBC Table 16-J. According to UBC Tables 16-S and 16-T, near-source factors, N_a of 1.156 and N_v of 1.512, are based on the Rodgers Creek fault being a seismic source type A, approximately 3.8 miles (6.1 km) away.

TABLE 1
1997 UNIFORM BUILDING CODE - Chapter 16

ITEM	DESIGN VALUE	SOURCE
Seismic Zone	4	Figure 16-2
Seismic Zone Factor	0.40	Table 16-I
Soil Profile Type	S_D	Table 16-J
Seismic Source Type	A	Table 16-U
Near Source Factor, N_a	1.156	Table 16-S
Near Source Factor, N_v	1.512	Table 16-T
Seismic Coefficient, C_a	$(0.44N_a)$	Table 16-Q
Seismic Coefficient, C_v	$(0.64N_v)$	Table 16-R

Seismic design provisions of current building codes generally prescribe minimum lateral forces, applied statically to the structure, combined with the gravity forces of dead-and-live loads. The code-prescribed lateral forces are generally substantially smaller than the expected peak forces that would be associated with a major earthquake. Therefore, structures should be able to (1) resist minor earthquakes without damage; (2) resist moderate earthquakes without structural damage but with some nonstructural damage; and (3) resist major earthquakes without collapse but with some structural, as well as nonstructural damage. Conformance to the current building code recommendations does not constitute any kind of guarantee that significant structural damage would not occur in the event of a maximum magnitude earthquake; however, it is reasonable to expect that a well-designed and well-constructed structure will not collapse or cause loss of life in a major earthquake (SEAOC, 1996).

Lurching. Ground lurching is a result of the rolling motion imparted to the ground surface during energy released by an earthquake. Such rolling motion can cause ground cracks to form. The potential for the formation of these cracks is considered greater at contacts between deep alluvium and bedrock. Such an occurrence is possible at the site as in other locations in the North Bay, but the offset or strain is expected to be minor.

Liquefaction. Soil liquefaction is a phenomenon under which saturated, cohesionless, loose soils experience a temporary, but essentially total, loss of shear strength when subjected to the reversing cyclic shear stresses caused by earthquake ground shaking. As shown on Figure 5, the Association of Bay Area Governments (ABAG) maps the entire site as potential for high susceptibility to liquefaction (Knudsen 2000).

The results of our current study and previous work at the site show that, in general, the risk of liquefaction is considered low due to abundance of fines and blow counts of strata; however, a local area at Boring B2 at 7½ to 9 feet is considered potentially liquefiable if the layer is saturated and subject to strong earthquake ground shaking. In the event that these deposits were to liquefy during strong earthquake shaking, we estimate seismic related settlements would be less than 1 inch. Due to the possibility of ground deformation, the following special measures should be incorporated into construction and design:

- Perform as necessary remedial grading and our ground improvement measures to reduce potential for liquefaction to impact site improvements.
- Allow for increased gravity utility gradients in the areas considered susceptible to seismic settlement, as well as increased surface design gradients.
- Incorporate the use of stiff interconnected foundations such as structurally reinforced concrete mats, or stiff post-tensioned slabs systems.

Lateral Spreading. Lateral spreading is a failure within a nearly horizontal soil zone (possibly due to liquefaction) that causes the overlying soil mass to move toward a free face or down a gentle slope. Since the potentially liquefiable soils are localized and there are no free faces or slopes within the southeast portions of the project site, it is our opinion that the potential for lateral spreading is low.

Expansive Soils

The clayey surficial soils encountered across the site are considered highly expansive. Expansive soils shrink and swell as a result of moisture changes. This can cause heaving and cracking of foundations, slabs-on-grade, pavements, and related site improvements. Building damage due to such conditions may be effectively reduced by using foundations designed to resist movements of highly expansive soils, such as stiff post-tensioned slabs or structural mat foundations. Design criteria for this foundation type are presented under the "Foundations" section of this report. Successful construction on expansive soils requires special attention during construction. It is imperative to keep exposed soils moist. It is extremely difficult to remoisturize dry soil (because of the clayey nature) without excavation, moisture conditioning, and recompaction.

Corrosion Potential

An evaluation of possible corrosion impacts to site concrete improvements has been conducted on the subgrade soils. A representative sample of the near-surface soil was evaluated for concentration of water-soluble sulfate (SO_4) in accordance with Caltrans Test Method 417. As reported in the attached analytical results, the samples tested contained water-soluble sulfate (SO_4) concentration of 10 mg/kg. The 1997 UBC (Table 19-A-4) provides the following guidelines to characterize the potential exposure for sulfate attack and associated recommendations for concrete in contact with soil based upon the exposure risk.

Sulfate Exposure	Sulfate In Soil		Cement Type	Maximum Water - Cement Ratio	Minimum F'_c (psi)
	mg/kg	(%)			
Negligible	0 – 1,000	0.0 – 0.1	---	---	---
Moderate	1,000 – 2,000	0.1 – 0.2	II, IP(MS), IS(MS)	0.50	4,000
Severe	2,000 – 20,000	0.2 – 2.0	V	0.45	4,500
Very Severe	over 20,000	over 2.0	V plus pozzolan	0.45	4,500

In accordance with the criteria presented in Table 19-A-4 of the 1997 Uniform Building Code (UBC), the test results are classified in the "negligible" sulfate exposure range. Cement type, water-cement ratio and concrete strength are not specified by the UBC for this range. We recommend that Type II cement be used in foundation concrete for structures within the project site. We also recommend that the concrete incorporate a maximum water cement ratio of 0.5 and a minimum compressive strength of 3,000 psi. It should be noted, however, that the structural engineering design requirements for concrete might result in more stringent concrete specifications.

Flooding

According to the Flood Insurance Rate Map dated December 1996, the subject site is not located within the mapped 500-year flood hazard zone.

Conclusions

Based on the exploration and laboratory test results, it is our opinion that the site is suitable for the planned development from a geotechnical standpoint. The main geotechnical considerations for the planned development include: (1) local areas of potentially liquefiable soils in the central and southeastern portion of the site considered susceptible to potential seismic settlements; (2) the presence of highly expansive near-surface soils that could adversely impact overlying structures and site improvements; and (3) the presence of undocumented fills observed to be 1 to 3 feet in thickness. The recommendations included in this report, along with other sound engineering practices, should be incorporated in the design and construction of the project. ENGEO should review the development plan prior to construction to determine if further explorations are warranted and to confirm that the conclusions contained herein are still appropriate and valid for the design-specific details.

RECOMMENDATIONS

Grading

Although final design plans have not been completed at the time of this report, based on a review of the surrounding developments and current site elevations, we anticipate that cuts and fill up to 10 feet or less may be necessary to provide drainable grades for the site and building pads. In general, grading operations should meet the requirements of the Guide Contract Specifications included in Appendix C and must be observed and tested by ENGEO's field representative. ENGEO must be notified a minimum 48 hours prior to grading in order to coordinate its schedule with the grading contractor.

Ponding of stormwater should not be permitted at the site, particularly during work stoppage for rainy weather. Before the grading is halted by rain, positive slopes should be provided to carry the surface runoff to storm drainage structures in a controlled manner to prevent erosion damage.

Demolition and Stripping

Grading should begin with the removal of existing stock piles, any buried pipes, septic tanks, leach fields, irrigation lines, water well system, designated fences, trees and associated root systems, and any other deleterious materials. Underground structures that will be abandoned or are expected to extend below proposed finished grades should be removed from the project site.

Tree roots should be removed to a depth of at least 3 feet below original grades. The organically contaminated materials should not be used in proposed building pads or pavement areas. The organics should be stripped and stockpiled and may be used in landscape areas or may be off hauled. Any debris found within any areas to be graded should be removed. The actual depth of removal should be determined in the field by a representative of ENGEO based on actual conditions

encountered during the site grading. Excavations resulting from demolition and stripping below design grades should be cleaned to a firm, undisturbed, non-yielding soil surface as determined by the Geotechnical Engineer.

All existing fills and other unsuitable soils, such as undocumented existing fills, should be removed within the limits of grading unless mitigated or determined suitable on a case-by-case basis by an ENGEO representative. In general, all existing fills containing deleterious material should be completely removed and replaced with suitable materials approved by the Geotechnical Engineer prior to placement of fill. An ENGEO field representative should be present at the time of excavation and placement of fill to observe the excavation.

No loose or uncontrolled backfilling of depressions resulting from demolition, stripping, or removal of tree root bulb excavations, should be permitted. ENGEO should be notified prior to the backfill of any depression to observe the backfill operations. Tree removal should be monitored by ENGEO on a part-time basis, with full-time observation of the backfill operations.

Subgrade Preparation

After the site has been properly cleared and stripped, and necessary excavations have been made, a minimum of the upper 12 inches should be scarified, moisture conditioned, and compacted in accordance with the recommendations presented below in the "Fill Placement" section prior to replacing and recompacting any overlying soils as engineered fill. Except for landscaping areas, the site should be underlain by a minimum depth of 12 inches of moisture conditioned and compacted engineered fill. The compaction requirements for the preparation of existing soil to prepare for fill placement are the same as those for engineered fill, as described in a subsequent section of this report.

Selection of Materials

With the exception of any organically contaminated materials (soil that contains more than 3 percent organic material by weight), the site soils are suitable for use as engineered fill. Subject to approval by the Landscape Architect, the organically contaminated materials may be stockpiled in approved areas located outside of the grading limits, for future placement within landscape areas. All other materials and debris should be removed from the project site. The Geotechnical Engineer should be informed when import materials are planned for the site. Import materials should be submitted and approved by the Geotechnical Engineer prior to delivery at the site, and should be free of organic material, debris, and fragments larger than 6 inches in greatest dimension and should have a low Plasticity Index.

Fill Placement

The exposed surface to be filled over should be scarified to a minimum depth of 12 inches, moisture conditioned, and recompacted as engineered fill to provide adequate bonding with the initial lift of fill. All fills should be placed in uncompacted lifts not exceeding 8 inches or the depth of penetration of the compaction equipment used, whichever is less. In the cut portions of the site, a 12-inch scarification, moisture conditioning and recompaction of the exposed subgrade will be necessary below the finished subgrade elevation. The following compaction recommendations should be used for the placement and compaction of fills:

1. Moderate to highly expansive on-site soils to be used as fill should be moisture conditioned to at least 4 percentage points above optimum moisture content and compacted to between 87 and 92 percent relative compaction.

2. Non-expansive to low-expansive import materials should be moisture conditioned to above optimum moisture content and compacted to not less than 90 percent relative compaction.

It is important that all site preparation, including demolition and stripping, be done under the observation of the Geotechnical Engineer or qualified field representative, and should be carried out according to the requirements contained herein.

Cut/Fill Transitions or Cut Lots

Building pads that contain both expansive clays and sandy soils at the pad subgrade level, as a result of cut/fill operations or simply different in-place exposures, may be subject to damaging differential soil movements. Such building pads should be reconstructed to create uniform subgrade conditions.

It is recommended that the swell potential of the subgrade materials in building areas that are entirely in cut or located over cut-and-fill transitions be made more uniform. Subexcavating the natural soil cover and replacing the subexcavated material by engineered fill can accomplish this. The subexcavation depth should be about one foot for cut/fill transition lots. Prior to the replacement of the fill, the base of the subexcavation should be scarified, moisture conditioned and recompacted to a depth of about 12 inches. The subexcavated material can be used to backfill the excavation.

The Geotechnical Engineer should delineate which lots are located in a cut/fill transition upon review of grading plans. The project Geotechnical Engineer should evaluate the soil conditions on each lot to determine if the one-foot subexcavation requirement should be deepened if highly expansive or variable soil conditions are exposed at the final pad grade. In this case, two to three feet of materials may be recommended for removal and recompaction as a uniform fill beneath the planned building pad areas.

Graded Slopes

For typical graded cut or fill slopes, we recommend a maximum gradient of 2:1 (horizontal:vertical) for slopes up to 10 feet in vertical height. For slopes exceeding 10 feet in height, a maximum slope gradient of 3:1 should be maintained.

Monitoring and Testing

It is important that all site preparations for mass grading be done under the observation of a Geotechnical Engineer or his qualified field representative. We recommend the Geotechnical Engineer or his qualified representative is present full time during all phases of the mass grading operations to observe grading procedures and test for compaction of the soil.

Foundation Design

It is recommended to support the proposed structures on stiff structural mats or post-tensioned slabs. The structural mats and/or post-tensioned slabs should be designed by a Structural Engineer. Structural mats and/or post-tensioned slabs should be at least 12 inches in thickness and designed to be compatible with the superstructure and architectural finishes. Final foundation plans should be submitted for review to the Geotechnical Engineer prior to submittal to the appropriate agency.

Structurally Reinforced Mat Foundations. Structural mats and post-tensioned slabs should be designed assuming a 6-foot edge cantilever distance and a 20-foot interior unsupported span. Also, these foundations should be designed to be sufficiently rigid to withstand 1 inch of differential movement over a 20-foot distance without experiencing distress to the structure. These should be designed for a uniform allowable bearing pressure of 1,000 pounds per square foot (psf). This value may be increased by one-third to accommodate stress concentrations due to seismic and wind loading. Resistance to lateral loads may be provided by frictional resistance between the

foundation concrete and the subgrade soils, and by passive earth pressure acting against the side of the foundation. A coefficient of friction of 0.35 can be used between concrete and the subgrade. Passive pressures can be taken as equivalent to the pressure developed by a fluid having a weight of 250 pounds per cubic foot (pcf).

Post-Tensioned Slabs. Post-tensioned slabs should be designed according to methods recommended in the Post Tensioning Institute "Design and Construction of Post-Tensioned Slab-on-ground, Second Edition," dated 2001. Post-tensioned slabs should meet the above criteria for Structural Mats and also conform to criteria provided below:

Center Lift Condition:
Edge Moisture Variation Distance, e_m = 5.0 feet
Differential Soil Movement, y_m = 2.3 inches

Edge Lift Condition:
Edge Moisture Variation Distance, e_m = 4.0 feet
Differential Soil Movement, y_m = 1.4 inches

The final foundation plans should be reviewed by the Geotechnical Engineer when they become available to check for conformance with these recommendations.

Subgrade Treatment for Foundations. The subgrade material under mats or slabs should be made uniform in regard to moisture content. The top 12 inches of pad subgrade should be soaked to achieve a moisture content of at least 4 percentage points above optimum prior to placing the concrete in order to reduce the swell potential of the subgrade soils. The subgrade should not be allowed to dry prior to concrete placement.

Slab Moisture Vapor Reduction. When buildings are constructed with concrete slabs-on-grade, such as post-tensioned mats, water vapor from beneath the slab will migrate through the slab and into the building. This water vapor can be reduced but not stopped. Vapor transmission can negatively affect floor coverings and lead to increased moisture within a building. When water

vapor migrating through the slab would be undesirable, we recommend the following to reduce, but not stop, water vapor transmission upward through the slab on grade.

1. Install a vapor retarder membrane directly beneath the slab. Seal the vapor retarder at all seams and pipe penetrations. Vapor retarders (20-mil visqueen or approved equivalent) shall conform to Class A vapor retarder in accordance with ASTM E 1745-97 "Standard Specification for Plastic Water Vapor Retarders used in Contact with Soil or Granular Fill under Concrete Slabs."

2. Concrete shall have a concrete water-cement ratio of no more than 0.5.

3. Provide inspection and testing during concrete placement to check that the proper concrete and water cement ratio are used.

4. Consider adequate moist cure of slabs.

The Structural Engineer should be consulted as to the use of a layer of clean sand (less than 5 percent passing the U.S. Standard No. 200 Sieve) placed on top of the vapor retarder membrane to assist in concrete curing. Protect foundation subgrade soils from seepage by providing impermeable plugs within utility trenches as described in the "Utilities" section.

Secondary Slab-on-Grade Construction. This section provides guidelines for secondary slabs such as porch slabs, exterior patio slabs, walkways, driveways, and steps. Secondary slabs-on-grade should be constructed structurally independent of the foundation system. This allows slab movement to occur with a minimum of foundation distress. Where slab-on-grade construction is anticipated, care must be exercised in attaining a near-saturation condition of the subgrade soil before concrete placement.

Slabs-on-grade should be designed specifically for their intended use and loading requirements. Some of the site soils have a moderate expansion potential; therefore, cracking of conventional slabs should be expected. As a minimum requirement, slabs-on-grade should be reinforced for control of cracking. Slab reinforcement should be designed by the Structural Engineer. In our experience,

welded wire mesh is generally not sufficient to control slab cracking. Therefore, we recommend the Structural Engineer consider using a minimum of No. 3 bars for design of the slab reinforcement.

Slabs-on-grade should have a minimum thickness of 4 inches with a thickened edge extending at least 6 inches into compacted soil to minimize water infiltration. A 4-inch-thick layer of clean crushed rock or gravel should be placed under sidewalk and driveway slabs. As an alternative to providing a 6-inch-thick edge, a minimum 5½-inch-thick slab could be placed over 4 inches of clean crushed rock or gravel.

Retaining Walls

Unrestrained drained retaining walls constructed on level ground may be designed for active lateral equivalent fluid pressures determined as follows:

Backfill Slope Condition (horizontal:vertical)	Active Pressure (pounds per cubic foot)
Level	45
4:1	50
3:1	55
2:1	65

Passive pressures acting on foundations may be assumed as 250 pounds per cubic foot (pcf) provided that the area in front of the retaining wall is level for a distance of at least 10 feet or three times the depth of foundation and keyway, whichever is greater. The upper one foot of soil should be excluded from passive pressure computations unless it is confined by pavement or concrete slab.

The friction factor for sliding resistance may be assumed as 0.35. It is recommended that retaining wall footings be designed using an allowable bearing pressure of 2,000 pounds per square foot (psf) in native firm materials or fill with a minimum of 18 inches embedment. Appropriate safety factors against overturning and sliding should be incorporated into the design calculations.

All retaining walls should be provided with drainage facilities to prevent the build-up of hydrostatic pressures behind the walls. Wall drainage may be provided using a 4-inch-diameter perforated pipe embedded in Class 2 permeable material (Part I of Guide Contract Specifications, Section 2.05B), or free-draining gravel surrounded by synthetic filter fabric. The width of the drain blanket should be at least 12 inches. The drain blanket should extend to about one foot below the finished grades. As an alternative, prefabricated synthetic wall drain panels can be used. The upper one foot of wall backfill should consist of on-site clayey soils. Drainage should be collected by perforated pipes and directed to an outlet approved by the Civil Engineer. Synthetic filter fabric should meet the minimum requirement listed in the Guide Contract Specifications. All backfill should be placed in accordance with recommendations provided above for engineered fill. Light equipment should be used during backfill compaction to minimize possible overstressing of the walls.

Preliminary Pavement Design

Based on field explorations, we assume that site soils will have a resistance ("R") value of 5. The following preliminary pavement sections have been determined based on an assumed R-value of 5 according to the method contained in Topic 608 of Highway Design Manual by CALTRANS (revised August 5, 1988).

Traffic Index	Preliminary Pavement Design Sections	
	Asphaltic Concrete (AC) (in.)	Class 2 Aggregate Base (AB) (in.)
4.5	3	8
5.0	3	10
6.0	3½	13
7.0	4	16

Notes: AC is asphalt concrete
AB is aggregate base Class 2 Material with minimum R = 78

The Traffic Index should be determined by the Civil Engineer or appropriate public agency. These sections are for estimating purposes only. Actual sections to be used should be based on R-value tests performed on samples of actual subgrade materials recovered at the time of grading. Pavement construction and all materials should comply with the requirements of the Standard Specifications of the State of California Division of Highways, City requirements, and the following minimum requirements.

- All pavement subgrades should be scarified to a depth of 12 inches below finished subgrade elevation, moisture conditioned and compacted to the fill specifications provided above in the Placement of Fill section.
- Subgrade soils should be in a stable, non-pumping condition at the time aggregate base materials are placed and compacted.
- Adequate provisions must be made such that the subgrade soils and aggregate base materials are not allowed to become saturated.
- Aggregate base materials should meet current Caltrans specifications for Class 2 aggregate base, and should be compacted to at least 95 percent of maximum dry density at a minimum moisture content of optimum.
- Asphalt paving materials should meet current Caltrans specifications for asphalt concrete.
- All concrete curbs separating pavement and irrigated landscaped areas should extend into the subgrade and below the bottom of adjacent aggregate base materials.

Site Surface Drainage

The project site should be positively graded at all times to provide for rapid removal of surface water runoff away from foundation systems and to prevent ponding of water under floors or seepage toward foundation systems at any time during or after construction. Ponding of water may result in undesirable weakening of the subgrade materials, loss of compaction, slab movements and foundation movements.

No ponding of stormwater should be permitted on the building pads during prolonged periods of inclement weather. All lots should be graded to drain individually. As a minimum requirement, finished grades should provide a slope of at least 3 to 5 percent within 5 feet from the exterior walls at right angles to them to allow surface water to drain positively away from the structures. Care should be exercised to provide that landscape mounds will not interfere with the above requirements.

No concentrated discharge of roof stormwaters should be allowed within 3 feet from foundation systems or slabs. Stormwater from roof downspouts should be carried away in closed conduits to the curb or an approved outlet structure.

Requirements for Landscaping Irrigation

Planted areas should be avoided immediately adjacent to the residences. If planting adjacent to the residences is desired, the use of plants that require very little moisture is recommended. Sprinkler systems should not be installed where they may cause ponding or saturation of foundation soils within 3 feet from walls or under the structures. Irrigation of landscape areas should be limited strictly to that necessary for plant growth. Excessive irrigation could result in progressive saturation, weakening and possible swelling of the foundation soils. The Landscape Architect should be aware of these requirements. Water that is allowed to saturate foundation soils will have

adverse effects on the structures. The project Landscape Architect and prospective owners and their landscape maintenance personnel should be informed of the grading and surface drainage requirements included in this report.

Utilities

It is recommended that all utility trench backfill be done under the observation of the Geotechnical Engineer or qualified representative. Utility trenches in areas to be paved should also be constructed in accordance with the City of Cotati requirements. Where trenches are located outside of city pavement and sidewalk areas, the pipe zone backfill (i.e. material beneath and immediately surrounding the pipe) may consist of a well-graded import or native material less than ¾ inch in maximum dimension. Trench backfill compaction and moisture conditioning should be in accordance with general fill compaction recommendations. In general, uniformly-graded gravel should not be used for pipe or trench zone backfill because of the potential for migration of: (1) soil into the relatively large void spaces found in this type of material; and (2) water along trenches backfilled with this type of material. It is the responsibility of the contractor to provide safe and stable trench side walls during utility trench construction. The trench side wall should either be sloped back to a safe or stable angle or be supported by shoring in accordance with the CAL-OSHA and/or the City of Cotati, and Sonoma County requirements.

Utility trenches should not be located adjacent to any foundation areas unless the placement, depth and backfill materials to be used are reviewed by the Geotechnical Engineer. Utility trenches constructed parallel to foundations should be located entirely above a plane extending down from the lower edge of the footing at an angle of 45 degrees. Utility companies and Landscape Architects should be made aware of this requirement. Compaction of native trench backfill by jetting should not be allowed at this site.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

This report is issued with the understanding that it is the responsibility of the owner to transmit the information and recommendations of this report to developers, contractors, buyers, architects, engineers, and designers for the project so that the necessary steps can be taken by the contractors and subcontractors to carry out such recommendations in the field. The conclusions and recommendations contained in this report are solely professional opinions.

The professional staff of ENGEO Incorporated strives to perform its services in a proper and professional manner with reasonable care and competence, but is not infallible. There are risks of earth movement and property damages inherent in land development. We are unable to eliminate all risks or provide insurance; therefore, we are unable to guarantee or warrant the results of our work.

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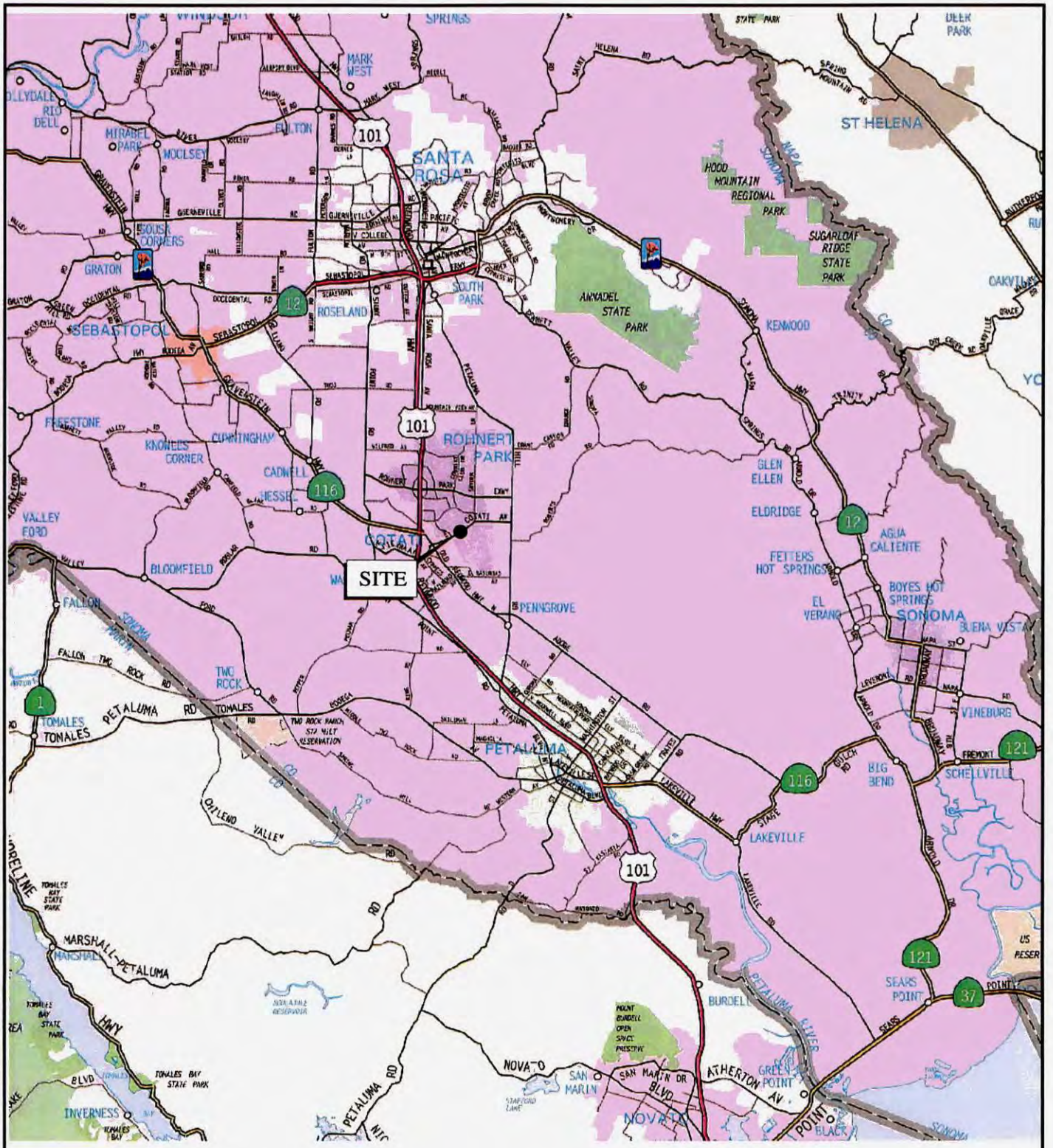
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BASE MAP SOURCE: THOMAS BROTHERS

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SITE VICINITY MAP

690 EAST COTATI AVENUE

COTATI, CALIFORNIA

PROJECT NO.: 6858.2.001.01	FIGURE NO. 1
DATE: SEPTEMBER 2005	
DRAWN BY: LC	CHECKED BY: TB

ORIGINAL FIGURE PRINTED IN COLOR

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EXPLANATION

B-3 — APPROXIMATE LOCATION OF BORING (ENGEO, 2005)

K-8 — APPROXIMATE LOCATION OF BORING (KLEINFELDER, 2003)

N

0 FEET 40

0 METERS 20

BASE MAP SOURCE: KLEINFELDER, 2003

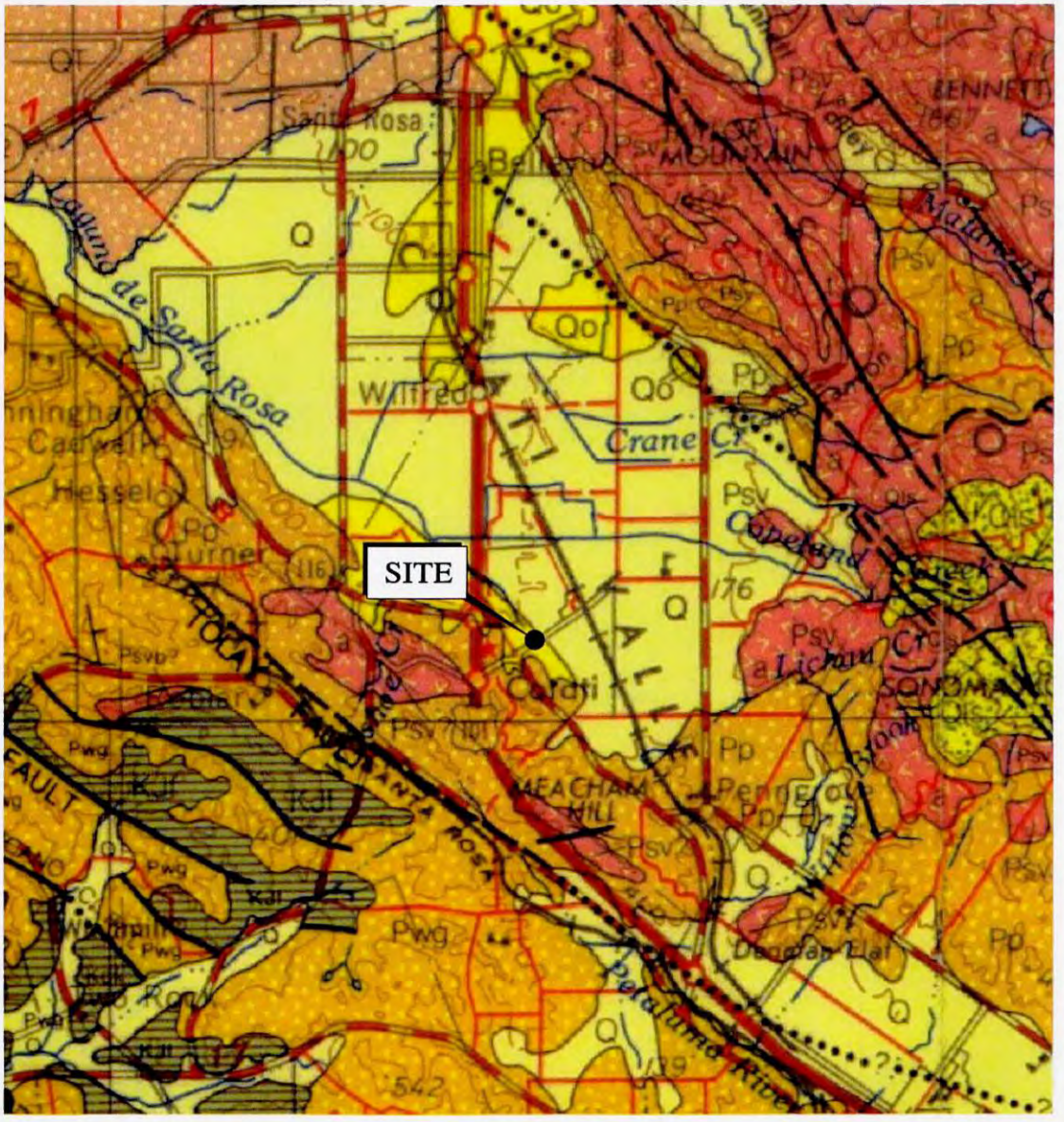
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SITE PLAN
690 EAST COTATI AVENUE
COTATI, CALIFORNIA

PROJECT NO.: 6858.2.001.01		FIGURE NO. 2
DATE: SEPTEMBER 2005		
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EXPLANATION

- Q — ALLUVIUM
- Qls — LANDSLIDE DEPOSITS
- Qo — OLD ALLUVIUM
- QT — HUICHICA AND GLEN ELLEN FORMATION INCLUDES UNDIFFERENTIATED CONTINENT DEPOSIT
- Pwg — WILSON GROVE FORMATION
- Pp — PETALUMA FORMATION
- KJf — FRANCISCAN COMPLEX
- Psv — SONOMA VOLCANICS

N

0 MILES 2
0 KILOMETERS 4

BASE MAP SOURCE: WAGNER AND BORTUGNO, 1982

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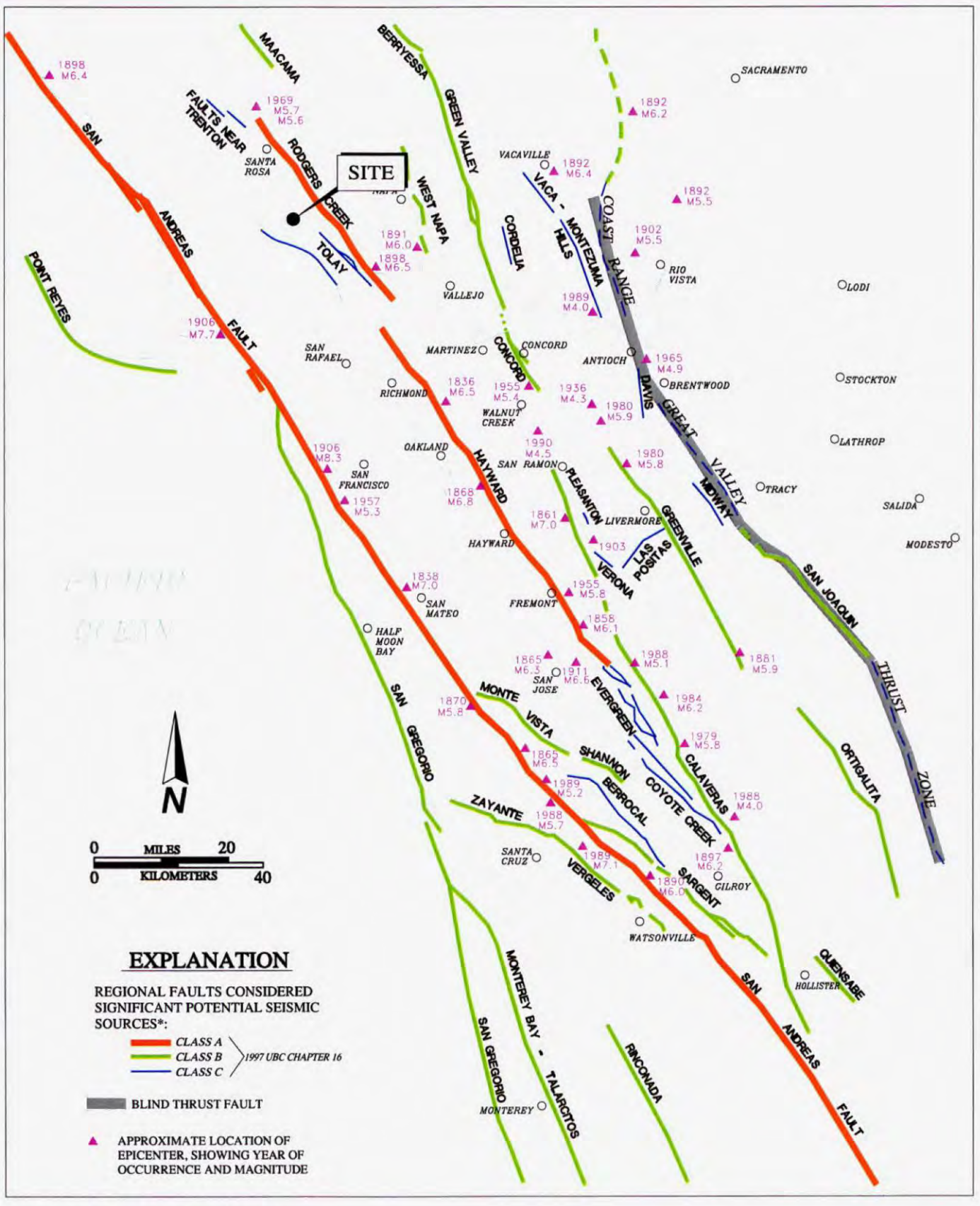
GEOLOGICAL MAP
690 EAST COTATI AVENUE
COTATI, CALIFORNIA

PROJECT NO.: 6858.2.001.01		FIGURE NO. 3
DATE: SEPTEMBER 2005		
DRAWN BY: LC	CHECKED BY: TB	

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*BASED ON USGS OPEN FILE 96-706

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REGIONAL FAULTING AND SEISMICITY

690 EAST COTATI AVENUE

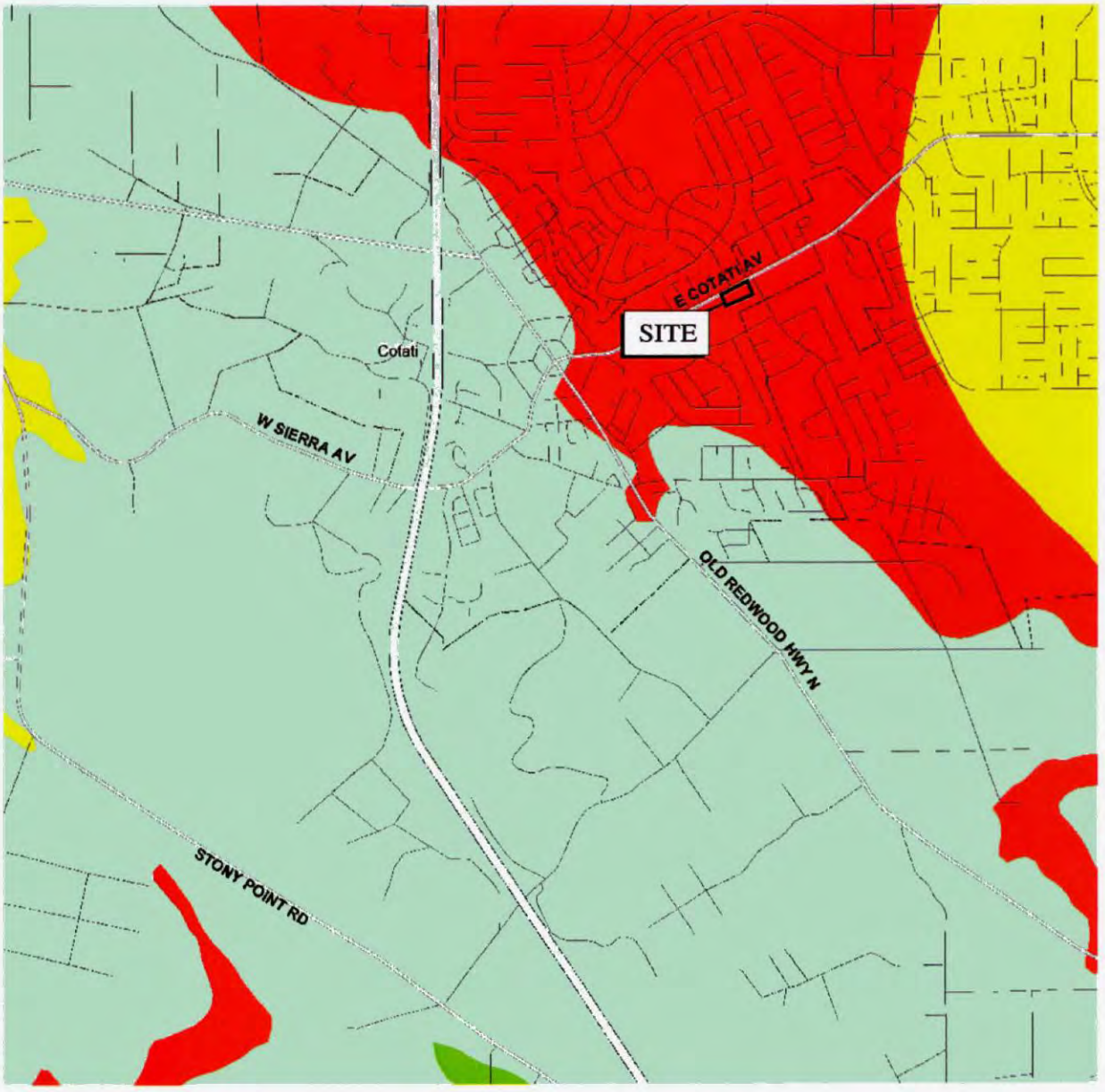
COTATI, CALIFORNIA

PROJECT NO.: 6858.2.001.01	FIGURE NO. 4
DATE: SEPTEMBER 2005	
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EXPLANATION

- VERY HIGH SUSCEPTIBILTY TO LIQUEFACTION
- HIGH SUSCEPTIBILITY TO LIQUEFACTION
- MODERATE SUSCEPTIBILITY TO LIQUEFACTION
- LOW SUSCEPTIBILITY TO LIQUEFACTION
- VERY LOW SUSCEPTIBILITY TO LIQUEFACTION
- MAJOR ROAD
- LOCAL ROAD

N

0 FEET 40
0 METERS 20

BASE MAP SOURCE: ABAG, 2004

NO SCALE

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LIQUEFACTION SUSCEPTIBILITY

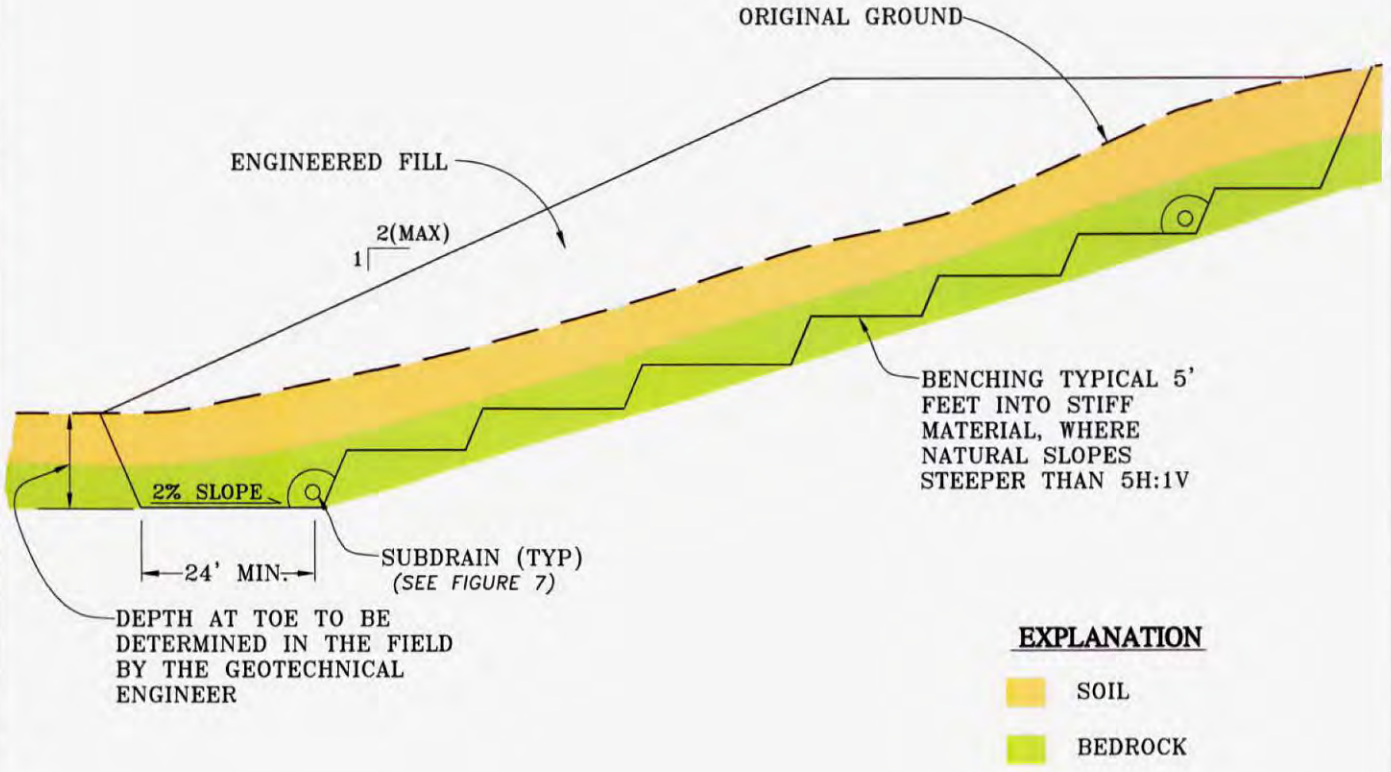
690 EAST COTATI AVENUE
COTATI, CALIFORNIA

PROJECT NO.: 6858.2.001.01		FIGURE NO. 5
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FOR SLOPE HEIGHT AND MAXIMUM SLOPE GRADIENT, REFER TO GRADED SLOPES SECTION OF THE TEXT

NO SCALE

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TYPICAL KEYWAY SECTION

690 EAST COTATI AVENUE

COTATI, CALIFORNIA

PROJECT NO.: **6858.2.001.01**		FIGURE NO. **6**
DATE: **SEPTEMBER 2005**		
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APPENDIX A

Boring Logs

KEY TO BORING LOGS

MAJOR TYPES			DESCRIPTION
COARSE-GRAINED SOILS MORE THAN HALF OF MAT'L LARGER THAN #200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW - Well graded gravels or gravel-sand mixtures GP - Poorly graded gravels or gravel-sand mixtures
		GRAVELS WITH OVER 12 % FINES	GM - Silty gravels, gravel-sand and silt mixtures GC - Clayey gravels, gravel-sand and clay mixtures
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW - Well graded sands, or gravelly sand mixtures SP - Poorly graded sands or gravelly sand mixtures
		SANDS WITH OVER 12 % FINES	SM - Silty sand, sand-silt mixtures SC - Clayey sand, sand-clay mixtures
FINE-GRAINED SOILS MORE THAN HALF OF MAT'L SMALLER THAN #200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50 % OR LESS		ML - Inorganic silt with low to medium plasticity CL - Inorganic clay with low to medium plasticity OL - Low plasticity organic silts and clays
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50 %		MH - Inorganic silt with high plasticity CH - Inorganic clay with high plasticity OH - Highly plastic organic silts and clays
	HIGHLY ORGANIC SOILS		PT - Peat and other highly organic soils

GRAIN SIZES

U.S. STANDARD SERIES SIEVE SIZE: 200 | 40 | 10 | 4

CLEAR SQUARE SIEVE OPENINGS: 3/4 " | 3" | 12"

SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

RELATIVE DENSITY

SANDS AND GRAVELS	BLOWS/FOOT (S.P.T.)
VERY LOOSE	0-4
LOOSE	4-10
MEDIUM DENSE	10-30
DENSE	30-50
VERY DENSE	OVER 50

CONSISTENCY

SILTS AND CLAYS	STRENGTH*	BLOWS/FOOT (S.P.T.)
VERY SOFT	0-1/4	0-2
SOFT	1/4-1/2	2-4
MEDIUM STIFF	1/2-1	4-8
STIFF	1-2	8-15
VERY STIFF	2-4	15-30
HARD	OVER 4	OVER 30

MOISTURE CONDITION

DRY	Absence of moisture, dusty, dry to touch
MOIST	Damp but no visible water
WET	Visible freewater
SATURATED	Below the water table

MINOR CONSTITUENT QUANTITIES (BY WEIGHT)

TRACE	Particles are present, but estimated to the less than 5%
SOME	5 to 15%
WITH	15 to 30%
.....Y	30 to 50%

SAMPLER SYMBOLS

- Modified California (3" O.D.) sampler
- California (2.5" O.D.) sampler
- S.P.T. - Split spoon sampler
- Shelby Tube
- Continuous Core
- Bag Samples
- Grab Samples
- NR No Recovery

LINE TYPES

- _____ Solid - Layer Break
- _ _ _ _ _ _ Dashed - Gradational or approximate layer break

GROUND-WATER SYMBOLS

- Groundwater level during drilling
- Stabilized groundwater level

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(S.P.T.) Number of blows of 140 lb. hammer falling 30" to drive a 2-inch O.D. (1-3/8 inch I.D.) sampler

* Unconfined compressive strength in tons/sq. ft., asterisk on log means determined by pocket penetrometer

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LOG OF BORING 01-B01

SANTERO COURT
690 E. Cotati Avenue
COTATI, CALIFORNIA
6858.2.001.01

DATE DRILLED: August 12, 2005
HOLE DEPTH (FT): 21.5 ft.
HOLE DIAMETER: 4.0in.
SURF ELEV (FT-MSL): 111 ft.

LOGGED / REVIEWED BY: L. Garman
DRILLING CONTRACTOR: Taber
DRILLING METHOD: Solid Flight
HAMMER TYPE: Manual rope and pulley

Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0								
	1		Silty CLAY (CL), dark gray, very stiff, moist.			36			*3.0
			Silty CLAY (CL), brown, very stiff, moist, trace fine sand. Sulfate testing in soil = 10 mg/kg						
5			Clayey SILT (ML), yellow-brown, very stiff, moist to dry, some fine to medium grained sand, trace, fine, subrounded gravel. 87.2% finer than #200 sieve, 59.0% silt, 28.2% clay. PL = 17, LL = 44, PI = 27		▼	27			*4.5
	2				▽				
10	3		Silty CLAY with sand (CL), yellow-brown, stiff, moist, trace fine, subrounded gravel, fine to medium grained sand. Lab tests include unconfined compressive strength.			21	40.7	75.8	
	4								
15			Sandy CLAY with silt (CL), yellow-brown, medium stiff, moist, trace fine, subrounded gravel.			11			
	5								
20	6		Silty CLAY (CL), yellow-brown, stiff, moist, trace coarse grained sand, trace fine, subrounded gravel.			13			
	7								
25	8		Bottom of boring at approximately 21 1/2 feet. Groundwater encountered at approximately 9 feet during drilliing. Groundwater stabalized at approximately 7 1/2 feet at the end of drilling.						
	9								
30									

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LOG OF BORING 01-B02

SANTERO COURT
690 E. Cotati Avenue
COTATI, CALIFORNIA
6858.2.001.01

DATE DRILLED: August 12, 2005
HOLE DEPTH (FT): 41.5 ft.
HOLE DIAMETER: 4.0in.
SURF ELEV (FT-MSL): 111.5 ft.

LOGGED / REVIEWED BY: C. Wright
DRILLING CONTRACTOR: Taber
DRILLING METHOD: Mud Rotery
HAMMER TYPE: Manual rope and pulley

Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0		Dark gray to black, highly expansive clay, trace fine to medium grained sand, trace fine, subrounded gravel.						
5	1								
	2		Clayey SAND to sandy CLAY (SC-CL), yellow-brown, loose to medium dense, moist, trace fine, subrounded gravel.			15			
			SAND with silt (SM), yellow-brown, stiff, moist, some fine to coarse, subrounded gravel, some clay. 31.9% finer than #200 sieve, 17.9% silt, 14.0% clay. PL = 15, LL = 36, and PI = 21			21			
10	3		Silty CLAY (CL), light-brown, medium stiff to stiff, moist, some fine to medium grained sand, trace fine, subrounded gravel. Lab tests include unconfined compressive strength.			12	33	85.4	
	4				▽				
15	5		Silty CLAY (CL), brown, very stiff, wet, trace fine grained sand, trace fine, subrounded gravel.			25			
20	6		Gravely SAND (SW), yellow-brown, medium dense, wet, some clay, fine to coarse sand, fine to coarse, subrounded gravel.			29			
			Silty CLAY (CL), light brown, very stiff, moist, trace fine grained sand.						
25	7								
	8		Gravely SAND to sandy GRAVEL (SW-GW), brown, dense, saturated, trace clay, fine to coarse sand, fine to coarse gravel.			58			
30	9		Sandy CLAY with silty (CL), yellow-brown, hard, moist to wet, fine grained sand.						

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LOG OF BORING 01-B02

SANTERO COURT
690 E. Cotati Avenue
COTATI, CALIFORNIA
6858.2.001.01

DATE DRILLED: August 12, 2005
HOLE DEPTH (FT): 41.5 ft.
HOLE DIAMETER: 4.0in.
SURF ELEV (FT-MSL): 111.5 ft.

LOGGED / REVIEWED BY: C. Wright
DRILLING CONTRACTOR: Taber
DRILLING METHOD: Mud Rotery
HAMMER TYPE: Manual rope and pulley

Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
30									
			Gravely SAND (SW), brown, very dense, wet, some clay, fine to coarse grained sand, fine to coarse gravel.			50/3"			
	10								
35			Silty CLAY (CL), brown, stiff, wet, some fine grained sand, trace fine, subrounded gravel.			16			
	11								
	12								
40			No Recovery.			54			
	13		Bottom of boring at approximately 41 1/2 feet. Groundwater encountered at approximately 13 1/2 feet during drilliing.						
45									
	14								
	15								
50									
	16								
55									
	17								
	18								
60									

ENGEO INCORPORATED

LOG OF BORING 01-B03

SANTERO COURT
690 E. Cotati Avenue
COTATI, CALIFORNIA
6858.2.001.01

DATE DRILLED: August 12, 2005
HOLE DEPTH (FT): 21.5 ft.
HOLE DIAMETER: 4.0in.
SURF ELEV (FT-MSL): 112 ft.

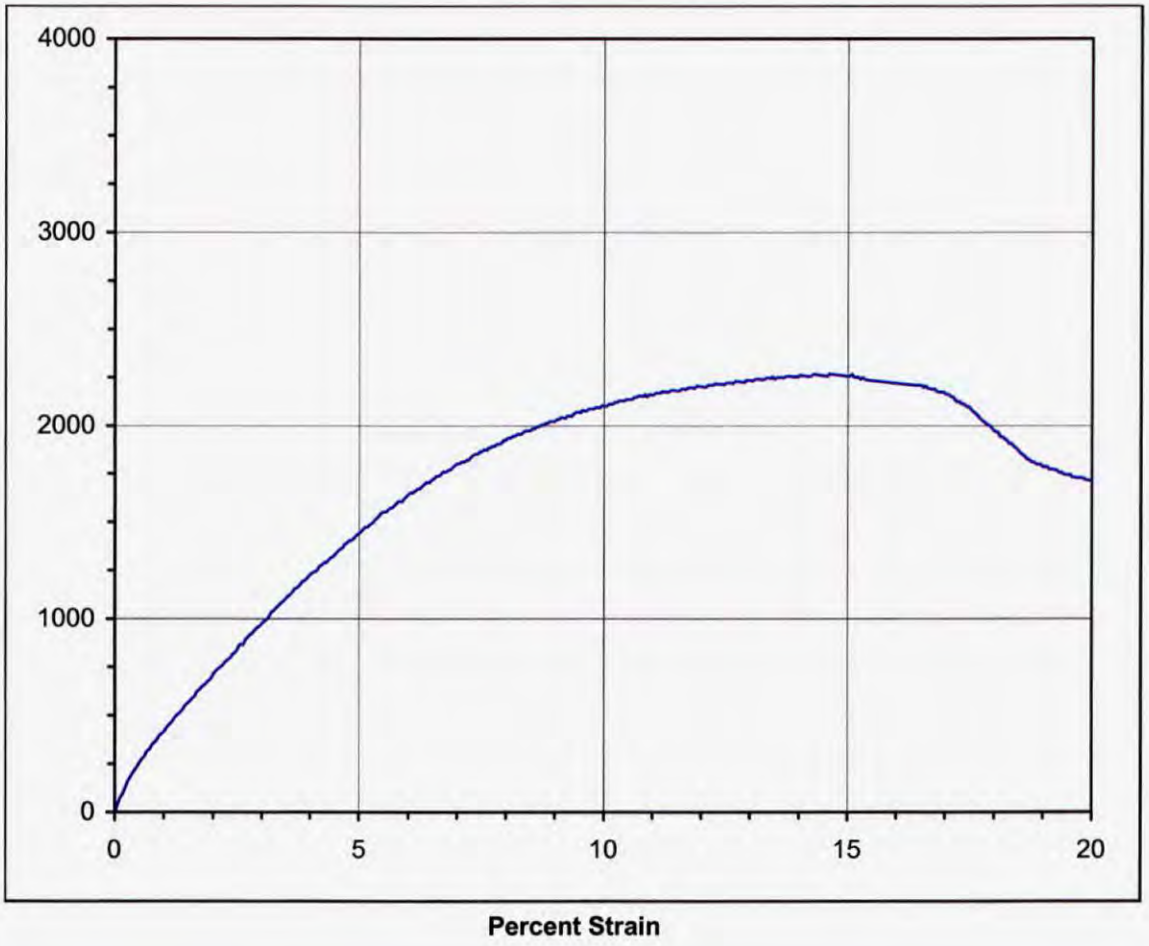
LOGGED / REVIEWED BY: L. Garman
DRILLING CONTRACTOR: Taber
DRILLING METHOD: Solid Flight
HAMMER TYPE: Manual rope and pulley

Depth in Feet	Depth in Meters	Sample Type	DESCRIPTION	Log Symbol	Water Level	Blow Count / Foot	Moisture Content (% dry weight)	Dry Unit Weight (pcf)	Unconfined Strength (tsf) *field approx
0	0		Dark-gray to black, highly expansive CLAY, trace fine to medium grained sand, trace fine, subrounded gravel. 99.6% finer than #200 sieve, 23.5% silt, 76.1% clay. PL = 24, LL = 90, PI = 66						*1.5
	1		Silty CLAY (CL), dark gray, stiff, moist, trace organics.			20			
			Becomes brown.						
5									
	2		Sandy CLAY with silt (CL), yellow-brown, very stiff, moist, trace fine, subrounded gravel, fine grained sand.			26			
10	3								
			Silty CLAY (CL), yellow-brown, stiff, moist, trace fine grained sand, trace fine, subrounded gravel.		▼	14			
	4								
15			Silty CLAY (CL), yellow-brown, very stiff, moist, some fine grained sand, trace fine, subrounded gravel.			24			
	5				▽				
20	6		CLAY with gravel with sand (CL), yellom-brown, medium stiff to stiff, moist, some silt.			12			
	7		Bottom of boring at approximately 21 1/2 feet. Groundwater encountered at approximately 18 feet during drilling. Groundwater stableized at approximately 12 feet at the end of drilling.						
25	8								
	9								
30									

APPENDIX B

Laboratory Test Results

Unconfined Compression Test
ASTM Test Method D2166



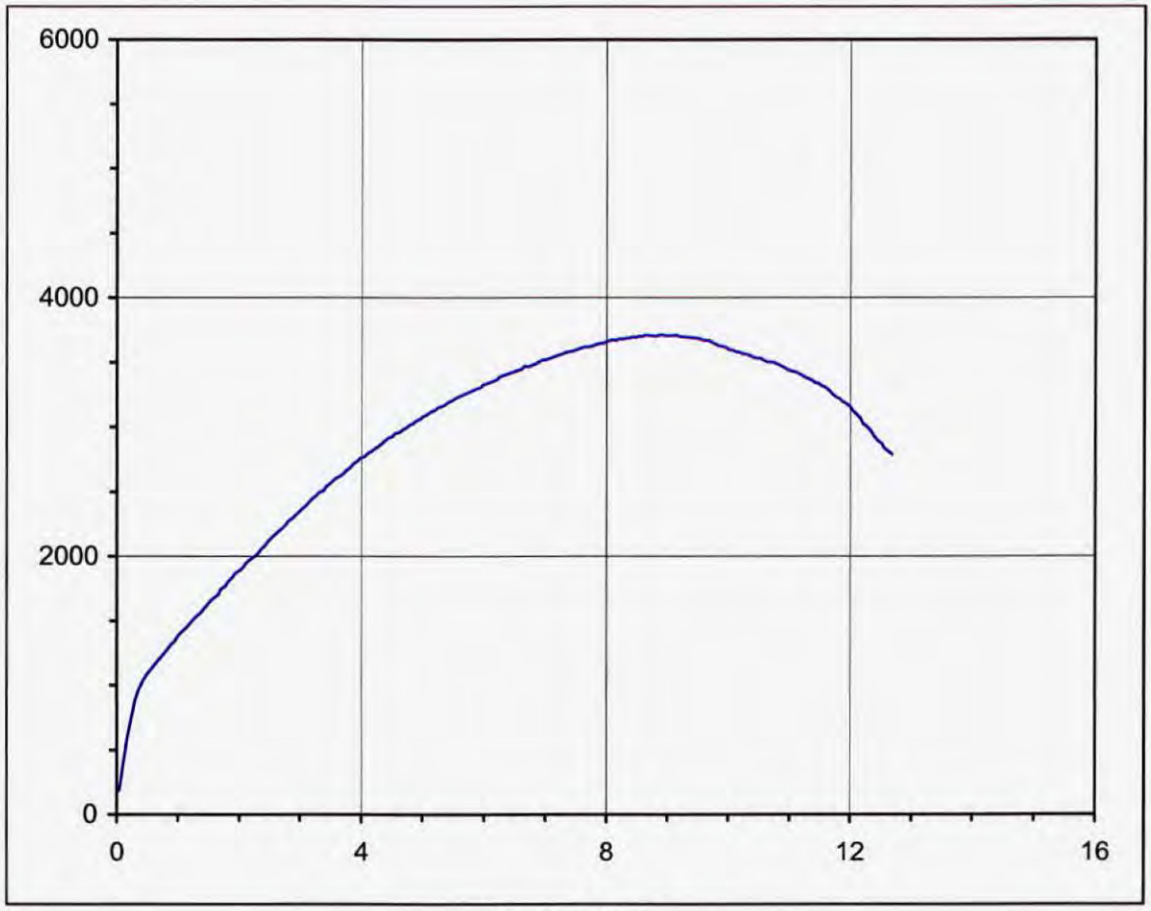
Unconfined Compressive Strength: 2260 psf 1.1 tsf

Sample Description: Yellow brown silty Clay

Initial Diameter:	2.375	in.	**Sample Number:**	301@11.5	
Initial Height:	5.04	in.	**Dry Unit Weight:**	75.8	pcf
Strain Rate:	1.409	%/min	**Moisture Content:**	40.7	%
Total Strain:	20.01	%	**Depth of Sample:**	11.5	ft.

ENGEO INCORPORATED	SANTERO COURT Cotati, California	Job No.: 6858.2.001.01 Sample Number: B01@11.5 Date: 8/18/2005	Figure No.

Unconfined Compression Test
ASTM Test Method D2166



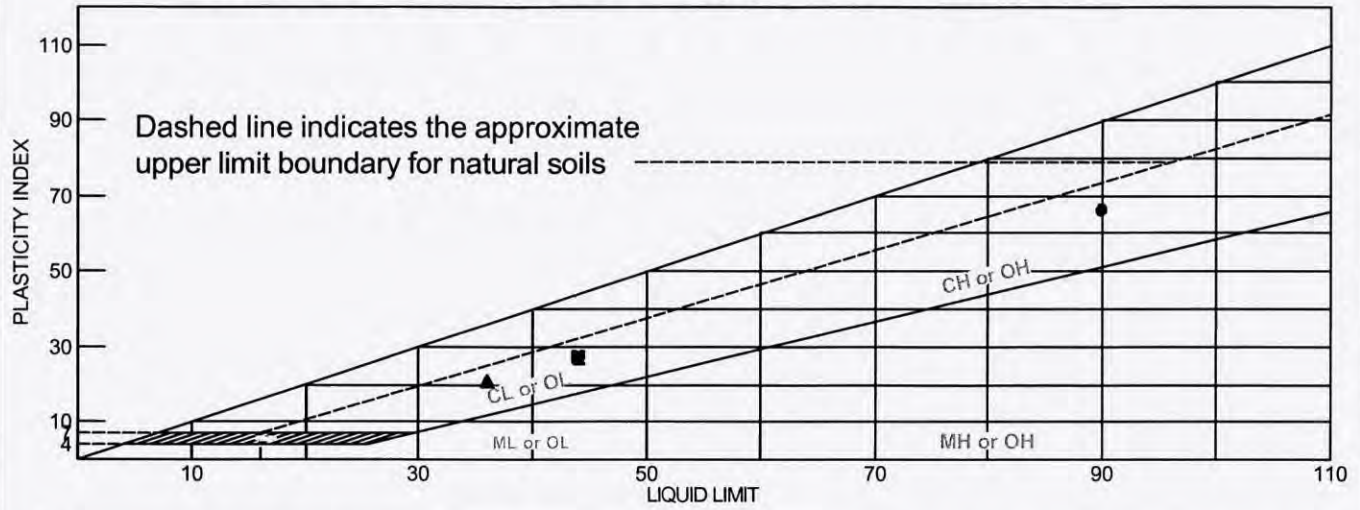
Unconfined Compressive Strength: 3710 psf 1.9 tsf

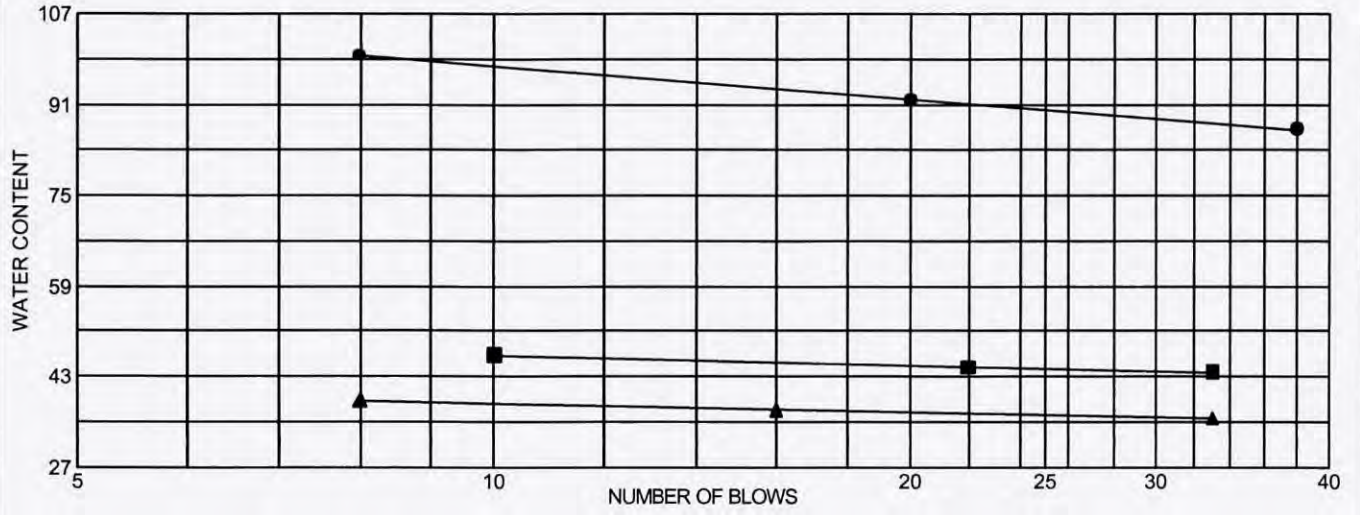
Sample Description: Light brown silty Clay

Initial Diameter:	2.375	in.	**Sample Number:**	302@11.5	
Initial Height:	4.82	in.	**Dry Unit Weight:**	85.4	pcf
Strain Rate:	1.707	%/min	**Moisture Content:**	33.0	%
Total Strain:	12.68	%	**Depth of Sample:**	11.5	ft.

EN GEO INCORPORATED	**SANTERO COURT**	**Job No.:** 6858.2.001.01	**Figure No.**
		Sample Number: B02@11.5	
	Cotati, California	**Date:** 8/18/2005	

LIQUID AND PLASTIC LIMITS TEST REPORT





	MATERIAL DESCRIPTION	LL	PL	PI	%<#40	%<#200	USCS
●	Very dark gray Clay	90	24	66		99.6	CH
■	Light olive brown silty Clay with some sand	44	17	27	98.2	87.2	CL
▲	Dark yellow brown sandy Clay	36	15	21	47.2	31.9	SC

Project No. 6858.2.001.01 **Client:**

Project: Santero Court - Cotati, CA

● **Source:** **Sample No.:** B03 @ 1'

■ **Source:** **Sample No.:** B01 @ 6.5'

▲ **Source:** **Sample No.:** B02 @ 9'

Remarks:

● B03 @ 1'

■ B01 @ 6.5'

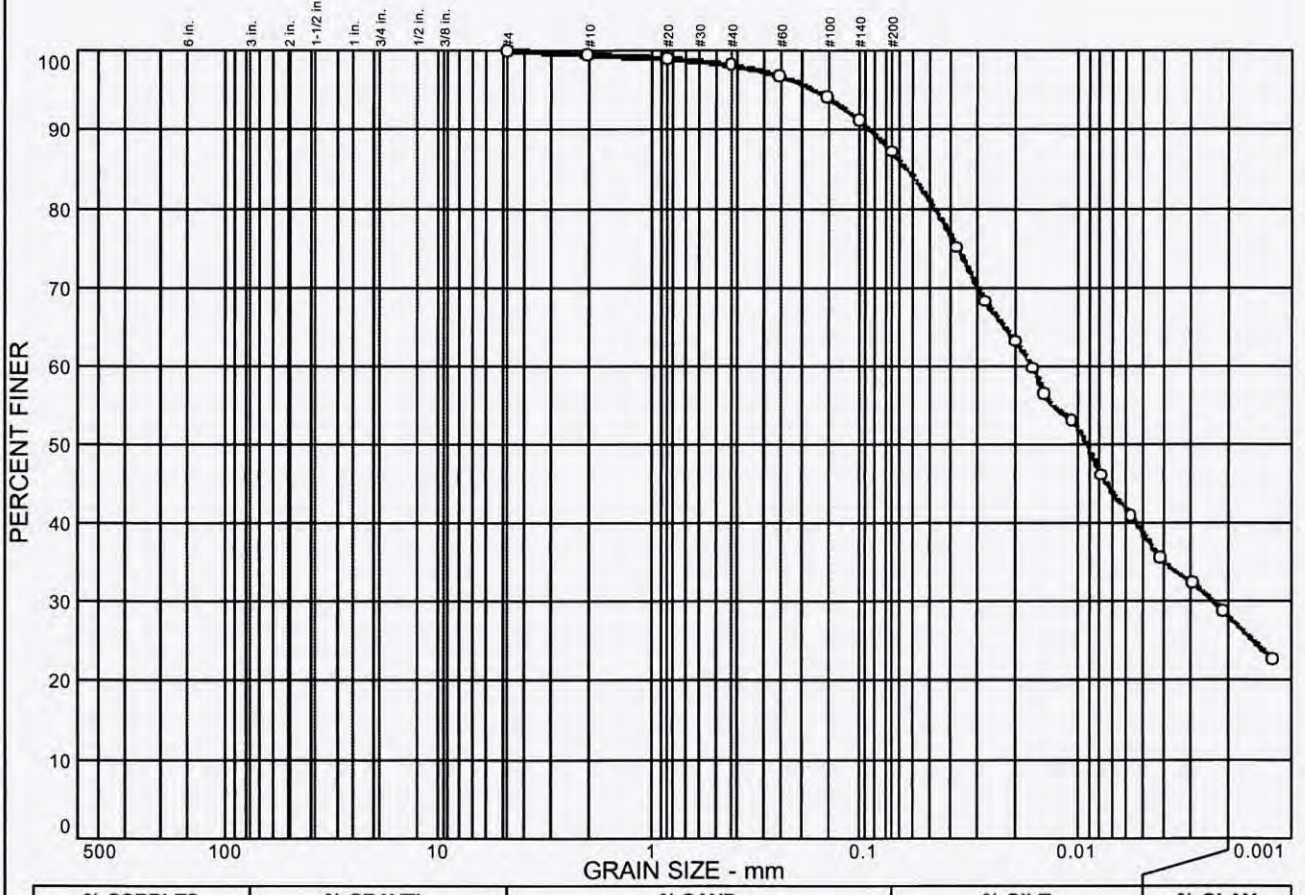
▲ B02 @ 9'

ENGEO INCORPORATED

GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
MATERIALS TESTING

Plate

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	0.0	12.8	59.0	28.2

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.5		
#20	99.0		
#40	98.2		
#60	96.8		
#100	94.1		
#140	91.1		
#200	87.2		

* (no specification provided)

Soil Description

Light yellow brown clayey Silt, some sand

Atterberg Limits

PL= 17 LL= 44 PI= 27

Coefficients

D_{85}= 0.0640 D_{60}= 0.0166 D_{50}= 0.0092
D_{30}= 0.0023 D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CL AASHTO=

Remarks

Sample No.: B01 @ 6.5' **Source of Sample:** **Date:** 08/25/05
Location: **Elev./Depth:** 6.5 feet

ENGEO INCORPORATED
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS MATERIALS TESTING

Client:
Project: Santero Court - Cotati, CA
Project No: 6858.2.001.01 **Plate**

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
0.0	13.5	54.6	17.9	14.0

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8 in.	100.0		
#4	86.5		
#10	66.4		
#20	53.3		
#40	47.2		
#60	41.4		
#100	36.2		
#140	33.7		
#200	31.9		

* (no specification provided)

Soil Description

Gray brown Sand with silt, some clay, some gravel

Atterberg Limits

PL= 15 LL= 36 PI= 21

Coefficients

D_{85}= 4.44 D_{60}= 1.41 D_{50}= 0.587
D_{30}= 0.0407 D_{15}= 0.0026 D_{10}=
C_u= C_c=

Classification

USCS= SC AASHTO=

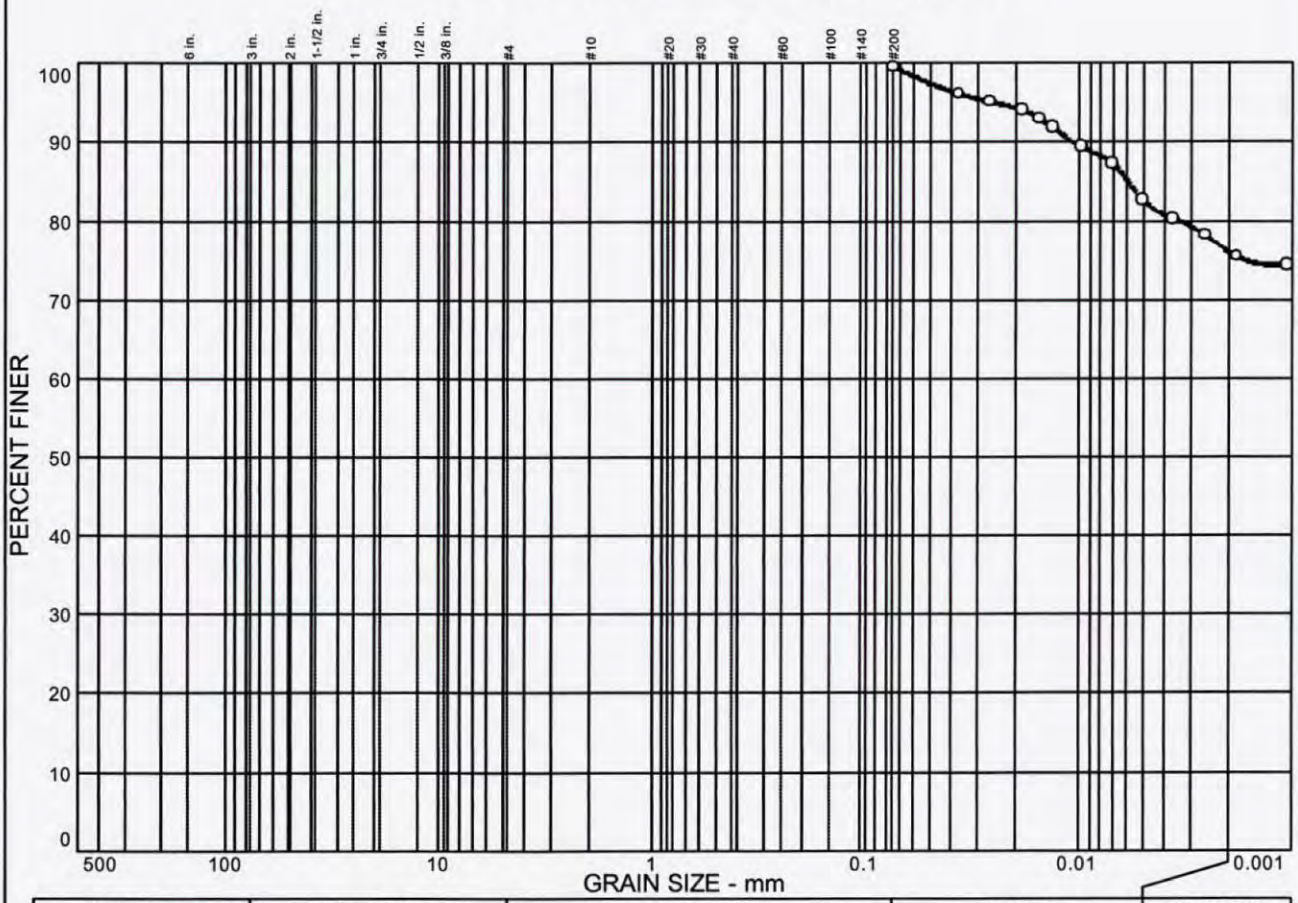
Remarks

Sample No.: B02 @ 9' **Source of Sample:** **Date:** 08/25/05
Location: **Elev./Depth:** 9.0 feet

ENGEO INCORPORATED
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
MATERIALS TESTING

Client:
Project: Santero Court - Cotati, CA
Project No: 6858.2.001.01 **Plate**

Particle Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY
			23.5	76.1

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#200	99.6		

* (no specification provided)

Soil Description

Very dark gray Clay

Atterberg Limits

PL= 24 LL= 90 PI= 66

Coefficients

D_{85}= 0.0059 D_{60}= D_{50}=
D_{30}= D_{15}= D_{10}=
C_u= C_c=

Classification

USCS= CH AASHTO=

Remarks

Sample No.: B03 @ 1' **Source of Sample:** **Date:** 08/25/05
Location: **Elev./Depth:** 1.0 foot

ENGEO INCORPORATED
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS MATERIALS TESTING

Client:
Project: Santero Court - Cotati, CA
Project No: 6858.2.001.01 **Plate**

EN GEO Incorporated

SULFATE TEST RESULTS

CALTRANS Test Method 417

Project Name: Santero Court Project Number: 6858.2.001.01

Tested By: DS Date: August 24, 2005

Measurements less than 15 mg/kg are reported as Not Detectable (ND)

Sample Number	Sample Location	Matrix	Water Soluble Sulfate (SO_4) in Soil	
			mg/kg	% by Weight
B01 @ 4'		soil	10	0.001

APPENDIX C

Guide Contract Specifications

GUIDE CONTRACT SPECIFICATIONS

PART I - EARTHWORK

PREFACE

These specifications are intended as a guide for the earthwork performed at the subject development project. If there is a conflict between these specifications (including the recommendations of the geotechnical report) and agency or code requirements, it should be brought to the attention of ENGEO and Owner prior to contract bidding.

PART 1 - GENERAL

1.01 WORK COVERED

A. Grading, excavating, filling and backfilling, including trenching and backfilling for utilities as necessary to complete the Project as indicated on the Drawings.

B. Subsurface drainage as indicated on the Drawings.

1.02 CODES AND STANDARDS

A. Excavating, trenching, filling, backfilling, and grading work shall meet the applicable requirements of the Uniform Building Code and the standards and ordinances of state and local governing authorities.

1.03 SUBSURFACE SOIL CONDITIONS

A. The Owners' Geotechnical Exploration report is available for inspection by bidder or Contractor. The Contractor shall refer to the findings and recommendations of the Geotechnical Exploration report in planning and executing his work.

1.04 DEFINITIONS

A. Fill: All soil, rock, or soil-rock materials placed to raise the grades of the site or to backfill excavations.

B. Backfill: All soil, rock or soil-rock material used to fill excavations and trenches.

C. On-Site Material: Soil and/or rock material which is obtained from the site.

D. Imported Material: Soil and/or rock material which is brought to the site from off-site areas.

E. Select Material: On-site and/or imported material which is approved by ENGEO as a specific-purpose fill.

F. Engineered Fill: Fill upon which ENGEO has made sufficient observations and tests to confirm that the fill has been placed and compacted in accordance with specifications and requirements.

G. Degree of Compaction or Relative Compaction: The ratio, expressed as a percentage, of the in-place dry density of the fill and backfill material as compacted in the field to the maximum dry density of the same material as determined by ASTM D-1557 or California 216 compaction test method.

H. Optimum Moisture: Water content, percentage by dry weight, corresponding to the maximum dry density as determined by ASTM D-1557.

I. ENGEO: The project geotechnical engineering consulting firm, its employees or its designated representatives.

J. Drawings: All documents, approved for construction, which describe the Work.

1.05 OBSERVATION AND TESTING

A. All site preparation, cutting and shaping, excavating, filling, and backfilling shall be carried out under the observation of ENGEO, employed and paid for by the Owners. ENGEO will perform appropriate field and laboratory tests to evaluate the suitability of fill material, the proper moisture content for compaction, and the degree of compaction achieved. Any fill that does not meet the specification requirements shall be removed and/or reworked until the requirements are satisfied.

B. Cutting and shaping, excavating, conditioning, filling, and compacting procedures require approval of ENGEO as they are performed. Any work found unsatisfactory or any work disturbed by subsequent operations before approval is granted shall be corrected in an approved manner as recommended by ENGEO.

C. Tests for compaction will be made in accordance with test procedures outlined in ASTM D-1557, as applicable. Field testing of soils or compacted fill shall conform with the applicable requirements of ASTM D-2922.

D. All authorized observation and testing will be paid for by the Owners.

1.06 SITE CONDITIONS

A. Excavating, filling, backfilling, and grading work shall not be performed during unfavorable weather conditions. When the work is interrupted by rain, excavating, filling, backfilling, and grading work shall not be resumed until the site and soil conditions are suitable.

B. Contractor shall take the necessary measures to prevent erosion of freshly filled, backfilled, and graded areas until such time as permanent drainage and erosion control measures have been installed.

PART 2 - PRODUCTS

2.01 GENERAL

A. Contractor shall furnish all materials, tools, equipment, facilities, and services as required for performing the required excavating, filling, backfilling, and grading work, and trenching and backfilling for utilities.

2.02 SOIL MATERIALS

A. Fill

1. Material to be used for engineered fill and backfill shall be free from organic matter and other deleterious substances, and of such quality that it will compact thoroughly without excessive voids when watered and rolled. Excavated on-site material will be considered suitable for engineered fill and backfill if it contains no more than 3 percent organic matter, is free of debris and other deleterious substances and conforms to the requirements specified above. Rocks of maximum dimension in excess of two-thirds of the lift thickness shall be removed from any fill material to the satisfaction of ENGEO.

2. Excavated earth material which is suitable for engineered fill or backfill, as determined by ENGEO, shall be conditioned for reuse and properly stockpiled as required for later filling and backfilling operations. Conditioning shall consist of spreading material in layers not to exceed 8 inches and raking free of debris and rubble. Rocks and aggregate exceeding the allowed largest dimension, and deleterious material shall be removed from the site and disposed off site in a legal manner.

3. ENGEO shall be immediately notified if potential hazardous materials or suspect soils exhibiting staining or odor are encountered. Work activities shall be discontinued within the area of potentially hazardous materials. ENGEO

environmental personnel will conduct an assessment of the suspect hazardous material to determine the appropriate response and mitigation. Regulatory agencies may also be contacted to request concurrence and oversight. *ENGEO will rely on the Owner, or a designated Owner's representative, to make necessary notices to the appropriate regulatory agencies. The Owner may request ENGEO's assistance in notifying regulatory agencies, provided ENGEO receives Owner's written authorization to expand its scope of services.*

4. ENGEO shall be notified at least 48 hours prior to the start of filling and backfilling operations so that it may evaluate samples of the material intended for use as fill and backfill. All materials to be used for filling and backfilling require the approval of ENGEO.

B. Import Material: Where conditions require the importation of fill material, the material shall be an inert, nonexpansive soil or soil-rock material free of organic matter and meeting the following requirements unless otherwise approved by ENGEO.

Gradation (ASTM D-421):	Sieve Size	Percent Passing
	2-inch	100
	#200	15 - 70
Plasticity (ASTM D-4318):	Liquid Limit	Plasticity Index
	< 30	< 12
Swell Potential (ASTM D-4546B): (at optimum moisture)	Percent Heave	Swell Pressure
	< 2 percent	< 300 psf
Resistance Value (ASTM D-2844):	Minimum 25	
Organic Content (ASTM D-2974):	Less than 2 percent	

A sample of the proposed import material should be submitted to ENGEO for evaluation prior to delivery at the site.

2.03 SAND

A. Sand for sand cushion under slabs and for bedding of pipe in utility trenches shall be a clean and graded, washed sand, free from clay or organic material, suitable for the intended purpose with 90 to 100 percent passing a No. 4 U.S. Standard Sieve, not more

than 5 percent passing a No. 200 U.S. Standard Sieve, and generally conforming to ASTM C33 for fine aggregate.

2.04 AGGREGATE DRAINAGE FILL

A. Aggregate drainage fill under concrete slabs and paving shall consist of broken stone, crushed or uncrushed gravel, clean quarry waste, or a combination thereof. The aggregate shall be free from fines, vegetable matter, loam, volcanic tuff, and other deleterious substances. It shall be of such quality that the absorption of water in a saturated surface dry condition does not exceed 3 percent of the oven dry weight of the samples.

B. Aggregate drainage fill shall be of such size that the percentage composition by dry weight as determined by laboratory sieves (U. S. Series) will conform to the following grading:

Sieve Size	Percentage Passing Sieve
1½-inches	100
1-inch	90 - 100
#4	0 - 5

2.05 SUBDRAINS

A. Perforated subdrain pipe of the required diameter shall be installed as shown on the drawings. The pipe(s) shall also conform to these specifications unless otherwise specified by ENGEO in the field.

Subdrain pipe shall be manufactured in accordance with one of the following requirements:

Design depths less than 30 feet

- Perforated ABS Solid Wall SDR 35 (ASTM D-2751)
- Perforated PVC Solid Wall SDR 35 (ASTM D-3034)
- Perforated PVC A-2000 (ASTM F949)
- Perforated Corrugated HDPE double-wall (AASHTO M-252 or M-294, Caltrans Type S, 50 psi minimum stiffness)

Design depths less than 50 feet

- Perforated PVC SDR 23.5 Solid Wall (ASTM D-3034)
- Perforated Sch. 40 PVC Solid Wall (ASTM-1785)

- Perforated ABS SDR 23.5 Solid Wall (ASTM D-2751)
- Perforated ABS DWV/Sch. 40 (ASTM D-2661 and D-1527)
- Perforated Corrugated HDPE double-wall (AASHTO M-252 or M-294, Caltrans Type S, 70 psi minimum stiffness)

Design depths less than 70 feet

- Perforated ABS Solid Wall SDR 15.3 (ASTM D-2751)
- Perforated Sch. 80 PVC (ASTM D-1785)
- Perforated Corrugated Aluminum (ASTM B-745)

B. Permeable Material (Class 2): Class 2 permeable material for filling trenches under, around, and over subdrains, behind building and retaining walls, and for pervious blankets shall consist of clean, coarse sand and gravel or crushed stone, conforming to the following grading requirements:

Sieve Size	Percentage Passing Sieve
1-inch	100
¾-inch	90 - 100
3/8-inch	40 - 100
#4	25 - 40
#8	18 - 33
#30	5 - 15
#50	0 - 7
#200	0 - 3

C. Filter Fabric: All filter fabric shall meet the following Minimum Average Roll Values unless otherwise specified by ENGEO.

Grab Strength (ASTM D-4632).....180 lbs
Mass Per Unit Area (ASTM D-4751).....6 oz/yd^2
Apparent Opening Size (ASTM D-4751).....70-100 U.S. Std. Sieve
Flow Rate (ASTM D-4491).....80 gal/min/ft^2
Puncture Strength (ASTM D-4833).....80 lbs

D. Vapor Retarder: Vapor Retarders shall consist of PVC, LDPE or HDPE impermeable sheeting at least 10 mils thick.

2.06 PERMEABLE MATERIAL (Class 1; Type A)

A. Class 1 permeable material to be used in conjunction with filter fabric for backfilling of subdrain excavations shall conform to the following grading requirements:

Sieve Size	Percentage Passing Sieve
¾-inch	100
½-inch	95 - 100
3/8-inch	70 - 100
#4	0 - 55
#8	0 - 10
#200	0 - 3

PART 3 - EXECUTION

3.01 STAKING AND GRADES

A. Contractor shall lay out all his work, establish all necessary markers, bench marks, grading stakes, and other stakes as required to achieve design grades.

3.02 EXISTING UTILITIES

A. Contractor shall verify the location and depth (elevation) of all existing utilities and services before performing any excavation work.

3.03 EXCAVATION

A. Contractor shall perform excavating as indicated and required for concrete footings, drilled piers, foundations, floor slabs, concrete walks, and site leveling and grading, and provide shoring, bracing, underpinning, cribbing, pumping, and planking as required. The bottoms of excavations shall be firm undisturbed earth, clean and free from loose material, debris, and foreign matter.

B. Excavations shall be kept free from water at all times. Adequate dewatering equipment shall be maintained at the site to handle emergency situations until concrete or backfill is placed.

C. Unauthorized excavations for footings shall be filled with concrete to required elevations, unless other methods of filling are authorized by ENGEO.

D. Excavated earth material which is suitable for engineered fill or backfill, as determined by ENGEO, shall be conditioned for reuse and properly stockpiled for later filling and backfilling operations as specified under Section 2.02, "Soil Materials."

E. Abandoned sewers, piping, and other utilities encountered during excavating shall be removed and the resulting excavations shall be backfilled with engineered fill as required by ENGEO.

F. Any active utility lines encountered shall be reported immediately to the Owner's Representative and authorities involved. The Owner and proper authorities shall be permitted free access to take the measures deemed necessary to repair, relocate, or remove the obstruction as determined by the responsible authority or Owner's Representative.

3.04 SUBGRADE PREPARATION

A. All brush and other rubbish, as well as trees and root systems not marked for saving, shall be removed from the site and legally disposed of.

B. Any existing structures, foundations, underground storage tanks, or debris must be removed from the site prior to any building, grading, or fill operations. Septic tanks, including all drain fields and other lines, if encountered, must be totally removed. The resulting depressions shall be properly prepared and filled to the satisfaction of ENGEO.

C. Vegetation and organic topsoil shall be removed from the surface upon which the fill is to be placed and either removed and legally disposed of or stockpiled for later use in approved landscape areas. The surface shall then be scarified to a depth of at least eight inches until the surface is free from ruts, hummocks, or other uneven features which would tend to prevent uniform compaction by the equipment to be used.

D. After the foundation for the fill has been cleared and scarified, it shall be made uniform and free from large clods. The proper moisture content must be obtained by adding water or aerating. The foundation for the fill shall be compacted at the proper moisture content to a relative compaction as specified herein.

3.05 ENGINEERED FILL

A. Select Material: Fill material shall be "Select" or "Imported Material" as previously specified.

B. Placing and Compacting: Engineered fill shall be constructed by approved and accepted methods. Fill material shall be spread in uniform lifts not exceeding 8 inches in uncompacted thickness. Each layer shall be spread evenly, and thoroughly blade-mixed to obtain uniformity of material. Fill material which does not contain sufficient moisture as specified by ENGEO shall be sprinkled with water; if it contains excess moisture it shall be aerated or blended with drier material to achieve the proper

water content. Select material and water shall then be thoroughly mixed before being compacted.

C. Unless otherwise specified in the Geotechnical Exploration report, each layer of spread select material shall be compacted to at least 90 percent relative compaction at a moisture content of at least three percent above the optimum moisture content. Minimum compaction in all keyways shall be a minimum of 95 percent with a minimum moisture content of at least 1 percentage point above optimum.

D. Unless otherwise specified in the Geotechnical Exploration report or otherwise required by the local authorities, the upper 6 inches of engineered fill in areas to receive pavement shall be compacted to at least 95 percent relative compaction with a minimum moisture content of at least 3 percentage points above optimum.

E. Testing and Observation of Fill: The work shall consist of field observation and testing to determine that each layer has been compacted to the required density and that the required moisture is being obtained. Any layer or portion of a layer that does not attain the compaction required shall be reworked until the required density is obtained.

F. Compaction: Compaction shall be by sheepsfoot rollers, multiple-wheel steel or pneumatic-tired rollers or other types of acceptable compaction equipment. Rollers shall be of such design that they will be able to compact the fill to the specified compaction. Rolling shall be accomplished while the fill material is within the specified moisture content range. Rolling of each layer must be continuous so that the required compaction may be obtained uniformly throughout each layer.

G. Fill slopes shall be constructed by overfilling the design slopes and later cutting back the slopes to the design grades. No loose soil will be permitted on the faces of the finished slopes.

H. Strippings and topsoil shall be stockpiled as approved by Owner, then placed in accordance with ENGEO's recommendations to a minimum thickness of 6 inches and a maximum thickness of 12 inches over exposed open space cut slopes which are 3:1 or flatter, and track walked to the satisfaction of ENGEO.

I. Final Prepared Subgrade: Finish blading and smoothing shall be performed as necessary to produce the required density, with a uniform surface, smooth and true to grade.

3.06 BACKFILLING

A. Backfill shall not be placed against footings, building walls, or other structures until approved by ENGEO.

B. Backfill material shall be Select Material as specified for engineered fill.

C. Backfill shall be placed in 6-inch layers, leveled, rammed, and tamped in place. Each layer shall be compacted with suitable compaction equipment to 90 percent relative compaction at a moisture content of at least 3 percent above optimum.

3.07 TRENCHING AND BACKFILLING FOR UTILITIES

A. Trenching:

1. Trenching shall include the removal of material and obstructions, the installation and removal of sheeting and bracing and the control of water as necessary to provide the required utilities and services.

2. Trenches shall be excavated to the lines, grades, and dimensions indicated on the Drawings. Maximum allowable trench width shall be the outside diameter of the pipe plus 24 inches, inclusive of any trench bracing.

3. When the trench bottom is a soft or unstable material as determined by ENGEO, it shall be made firm and solid by removing said unstable material to a sufficient depth and replacing it with on-site material compacted to 90 percent minimum relative compaction.

4. Where water is encountered in the trench, the contractor must provide materials necessary to drain the water and stabilize the bed.

B. Backfilling:

1. Trenches must be backfilled within 2 days of excavation to minimize desiccation.

2. Bedding material shall be sand and shall not extend more than 6 inches above any utility lines.

3. Backfill material shall be select material.

4. Trenches shall be backfilled as indicated or required and compacted with suitable equipment to 90 percent minimum relative compaction at the required moisture content.

3.08 SUBDRAINS

A. Trenches for subdrain pipe shall be excavated to a minimum width equal to the outside diameter of the pipe plus at least 12 inches and to a depth of approximately 2 inches below the grade established for the invert of the pipe, or as indicated on the Drawings.

B. The space below the pipe invert shall be filled with a layer of Class 2 permeable material, upon which the pipe shall be laid with perforations down. Sections shall be joined as recommended by the pipe manufacturer.

C. Rocks, bricks, broken concrete, or other hard material shall not be used to give intermediate support to pipes. Large stones or other hard objects shall not be left in contact with the pipes.

D. Excavations for subdrains shall be filled as required to fill voids and prevent settlement without damaging the subdrain pipe. Alternatively, excavations for subdrains may be filled with Class 1 permeable material (as defined in Section 2.06) wrapped in Filter Fabric (as defined in Section 2.05).

3.09 AGGREGATE DRAINAGE FILL

A. ENGEO shall approve finished subgrades before aggregate drainage fill is installed.

B. Pipes, drains, conduits, and any other mechanical or electrical installations shall be in place before any aggregate drainage fill is placed. Backfill at walls to elevation of drainage fill shall be in place and compacted.

C. Aggregate drainage fill under slabs and concrete paving shall be the minimum uniform thickness after compaction of dimensions indicated on Drawings. Where not indicated, minimum thickness after compaction shall be 4 inches.

D. Aggregate drainage fill shall be rolled to form a well-compacted bed.

E. The finished aggregate drainage fill must be observed and approved by ENGEO before proceeding with any subsequent construction over the compacted base or fill.

3.10 SAND CUSHION

A. A sand cushion shall be placed over the vapor retarder membrane under concrete slabs on grade. Sand cushion shall be placed in uniform thickness as indicated on the Drawings. Where not indicated, the thickness shall be 2 inches.

3.11 FINISH GRADING

A. All areas must be finish graded to elevations and grades indicated on the Drawings. In areas to receive topsoil and landscape planting, finish grading shall be performed to a uniform 6 inches below the grades and elevations indicated on the Drawings, and brought to final grade with topsoil.

3.12 DISPOSAL OF WASTE MATERIALS

A. Excess earth materials and debris shall be removed from the site and disposed of in a legal manner. Location of dump site and length of haul are the Contractor's responsibility.

PART II - GEOGRID SOIL REINFORCEMENT

1. DESCRIPTION:

Work shall consist of furnishing geogrid soil reinforcement for use in construction of reinforced soil slopes and retention systems.

2. GEOGRID MATERIAL:

2.1 The specific geogrid material shall be preapproved by ENGEO.

2.2 The geogrid shall be a regular network of integrally connected polymer tensile elements with aperture geometry sufficient to permit significant mechanical interlock with the surrounding soil or rock. The geogrid structure shall be dimensionally stable and able to retain its geometry under construction stresses and shall have high resistance to damage during construction, to ultraviolet degradation, and to all forms of chemical and biological degradation encountered in the soil being reinforced.

2.3 The geogrids shall have an Allowable Strength (T_a) and Pullout Resistance, for the soil type(s) indicated, as listed in Table I.

2.4 Certifications: The Contractor shall submit a manufacturer's certification that the geogrids supplied meet the respective index criteria set when geogrid was approved by ENGEO, measured in full accordance with all test methods and standards specified. In case of dispute over validity of values, the Contractor will supply test data from an ENGEO-approved laboratory to support the certified values submitted.

3. CONSTRUCTION:

3.1 Delivery, Storage, and Handling: Contractor shall check the geogrid upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geogrid shall be protected from temperatures greater than 140 °F, mud, dirt, dust, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the geogrid will be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be repaired by placing a patch over the damaged area. Any geogrid damaged during storage or installation shall be replaced by the Contractor at no additional cost to the owner.

3.2 On-Site Representative: Geogrid material suppliers shall provide a qualified and experienced representative on site at the initiation of the project, for a minimum of three days, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criterion will apply to construction of the initial slope only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).

3.3 Geogrid reinforcement may be joined with mechanical connections or overlaps as recommended and approved by the Manufacturer. Joints shall not be placed within 6 feet of the slope face, within 4 feet below top of slope, nor horizontally or vertically adjacent to another joint.

3.4 Geogrid Placement: The geogrid reinforcement shall be installed in accordance with the manufacturer's recommendations. The geogrid reinforcement shall be placed within the layers of the compacted soil as shown on the plans or as directed.

The geogrid reinforcement shall be placed in continuous longitudinal strips in the direction of main reinforcement. However, if the Contractor is unable to complete a required length with a single continuous length of geogrid, a joint may be made with the Manufacturer's approval. Only one joint per length of geogrid shall be allowed. This joint shall be made for the full width of the strip by using a similar material with similar strength. Joints in geogrid reinforcement shall be pulled and held taut during fill placement.

Adjacent strips, in the case of 100 percent coverage in plan view, need not be overlapped. The minimum horizontal coverage is 50 percent, with horizontal spacings between reinforcement no greater than 40 inches. Horizontal coverage of less than 100 percent shall not be allowed unless specifically detailed in the construction drawings.

Adjacent rolls of geogrid reinforcement shall be overlapped or mechanically connected where exposed in a wrap around face system, as applicable.

The Contractor may place only that amount of geogrid reinforcement required for immediately pending work to prevent undue damage. After a layer of geogrid reinforcement has been placed, the next succeeding layer of soil shall be placed and compacted as appropriate. After the specified soil layer has been placed, the next geogrid reinforcement layer shall be installed. The process shall be repeated for each subsequent layer of geogrid reinforcement and soil.

Geogrid reinforcement shall be placed to lay flat and pulled tight prior to backfilling. After a layer of geogrid reinforcement has been placed, suitable means, such as pins or small piles of soil, shall be used to hold the geogrid reinforcement in position until the subsequent soil layer can be placed.

Under no circumstances shall a track-type vehicle be allowed on the geogrid reinforcement before at least six inches of soil have been placed. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and the geogrid reinforcement. If approved by the Manufacturer, rubber-tired equipment may pass over the geosynthetic reinforcement at slow speeds, less than 10 mph. Sudden braking and sharp turning shall be avoided.

During construction, the surface of the fill should be kept approximately horizontal. Geogrid reinforcement shall be placed directly on the compacted horizontal fill surface. Geogrid reinforcements are to be placed within three inches of the design elevations and extend the length as shown on the elevation view unless otherwise directed by ENGEO. Correct orientation of the geogrid reinforcement shall be verified by ENGEO.

Table I
Allowable Geogrid Strength
With Various Soil Types
For Geosynthetic Reinforcement In
Mechanically Stabilized Earth Slopes

(Geogrid Pullout Resistance and Allowable Strengths vary with reinforced backfill used due to soil anchorage and site damage factors. Guidelines are provided below.)

SOIL TYPE	MINIMUM ALLOWABLE STRENGTH, T_a (lb/ft)*		
	GEOGRID Type I	GEOGRID Type II	GEOGRID Type III
A. Gravels, sandy gravels, and gravel-sand-silt mixtures (GW, GP, GC, GM & SP)**	2400	4800	7200
B. Well graded sands, gravelly sands, and sand-silt mixtures (SW & SM)**	2000	4000	6000
C. Silts, very fine sands, clayey sands and clayey silts (SC & ML)**	1000	2000	3000
D. Gravelly clays, sandy clays, silty clays, and lean clays (CL)**	1600	3200	4800

* All partial Factors of Safety for reduction of design strength are included in listed values. Additional factors of safety may be required to further reduce these design strengths based on site conditions.

** Unified Soil Classifications.

PART III - GEOTEXTILE SOIL REINFORCEMENT

1. DESCRIPTION:

   Work shall consist of furnishing geotextile soil reinforcement for use in construction of reinforced soil slopes.

2. GEOTEXTILE MATERIAL:

   2.1 The specific geotextile material and supplier shall be preapproved by ENGEO.

   2.2 The geotextile shall have a high tensile modulus and shall have high resistance to damage during construction, to ultraviolet degradation, and to all forms of chemical and biological degradation encountered in the soil being reinforced.

   2.3 The geotextiles shall have an Allowable Strength (T_a) and Pullout Resistance, for the soil type(s) indicated as listed in Table II.

   2.4 Certification: The Contractor shall submit a manufacturer's certification that the geotextiles supplied meet the respective index criteria set when geotextile was approved by ENGEO, measured in full accordance with all test methods and standards specified. In case of dispute over validity of values, the Contractor will supply the data from an ENGEO-approved laboratory to support the certified values submitted.

3. CONSTRUCTION:

   3.1 Delivery, Storage and Handling: Contractor shall check the geotextile upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geotextile shall be protected from temperatures greater than 140 °F, mud, dirt, dust, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the geotextile will be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be repaired by placing a patch over the damaged area. Any geotextile damaged during storage or installation shall be replaced by the Contractor at no additional cost to the owner.

3.2 On-Site Representative: Geotextile material suppliers shall provide a qualified and experienced representative on site at the initiation of the project, for a minimum of three days, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criterion will apply to construction of the initial slope only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).

3.3 Geotextile Placement: The geotextile reinforcement shall be installed in accordance with the manufacturer's recommendations. The geotextile reinforcement shall be placed within the layers of the compacted soil as shown on the plans or as directed.

The geotextile reinforcement shall be placed in continuous longitudinal strips in the direction of main reinforcement. Joints shall not be used with geotextiles.

Adjacent strips, in the case of 100 percent coverage in plan view, need not be overlapped. The minimum horizontal coverage is 50 percent, with horizontal spacings between reinforcement no greater than 40 inches. Horizontal coverage of less than 100 percent shall not be allowed unless specifically detailed in the construction drawings.

Adjacent rolls of geotextile reinforcement shall be overlapped or mechanically connected where exposed in a wrap around face system, as applicable.

The Contractor may place only that amount of geotextile reinforcement required for immediately pending work to prevent undue damage. After a layer of geotextile reinforcement has been placed, the succeeding layer of soil shall be placed and compacted as appropriate. After the specified soil layer has been placed, the next geotextile reinforcement layer shall be installed. The process shall be repeated for each subsequent layer of geotextile reinforcement and soil.

Geosynthetic reinforcement shall be placed to lay flat and be pulled tight prior to backfilling. After a layer of geotextile reinforcement has been placed, suitable means, such as pins or small piles of soil, shall be used to hold the geotextile reinforcement in position until the subsequent soil layer can be placed.

Under no circumstances shall a track-type vehicle be allowed on the geotextile reinforcement before at least six inches of soil has been placed. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and the geotextile reinforcement. If approved by the Manufacturer, rubber-tired equipment may pass over the geotextile reinforcement as slow speeds, less than 10 mph. Sudden braking and sharp turning shall be avoided.

During construction, the surface of the fill should be kept approximately horizontal. Geotextile reinforcement shall be placed directly on the compacted horizontal fill surface.

Geotextile reinforcements are to be placed within three inches of the design elevations and extend the length as shown on the elevation view unless otherwise directed by ENGEO. Correct orientation of the geotextile reinforcement shall be verified by ENGEO.

Table II
Allowable Geotextile Strength
With Various Soil Types
For Geosynthetic Reinforcement In
Mechanically Stabilized Earth Slopes

(Geotextile Pullout Resistance and Allowable Strengths vary with reinforced backfill used due to soil anchorage and site damage factors. Guidelines are provided below.)

SOIL TYPE	MINIMUM ALLOWABLE STRENGTH, T_a (lb/ft)*		
	GEOTEXTILE Type I	GEOTEXTILE Type II	GEOTEXTILE Type III
A. Gravels, sandy gravels, and gravel-sand-silt mixtures (GW, GP, GC, GM & SP)**	2400	4800	7200
B. Well graded sands, gravelly sands, and sand-silt mixtures (SW & SM)**	2000	4000	6000
C. Silts, very fine sands, clayey sands and clayey silts (SC & ML)**	1000	2000	3000
D. Gravelly clays, sandy clays, silty clays, and lean clays (CL)**	1600	3200	4800

* All partial Factors of Safety for reduction of design strength are included in listed values. Additional factors of safety may be required to further reduce these design strengths based on site conditions.

** Unified Soil Classifications.

PART IV - EROSION CONTROL MAT OR BLANKET

1. DESCRIPTION:

   Work shall consist of furnishing and placing a synthetic erosion control mat and/or degradable erosion control blanket for slope face protection and lining of runoff channels.

2. EROSION CONTROL MATERIALS:

   2.1 The specific erosion control material and supplier shall be pre-approved by ENGEO.

   2.2 Certification: The Contractor shall submit a manufacturer's certification that the erosion mat/blanket supplied meets the criteria specified when the material was approved by ENGEO. The manufacturer's certification shall include a submittal package of documented test results that confirm the property values. In case of a dispute over validity of values, the Contractor will supply property test data from an ENGEO-approved laboratory, to support the certified values submitted. Minimum average roll values, per ASTM D 4759, shall be used for conformance determinations.

3. CONSTRUCTION:

   3.1 Delivery, Storage, and Handling: Contractor shall check the erosion control material upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the erosion mat shall be protected from temperatures greater than 140 °F, mud, dirt, and debris. Manufacturer's recommendations in regard to protection from direct sunlight must also be followed. At the time of installation, the erosion mat/blanket shall be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be removed by cutting OUT a section of the mat. The remaining ends should be overlapped and secured with ground anchors. Any erosion mat/blanket damaged during storage or installation shall be replaced by the Contractor at no additional cost to the Owner.

   3.2 On-Site Representative: Erosion control material suppliers shall provide a qualified and experienced representative on site, for a minimum of one day, to assist the Contractor and ENGEO personnel at the start of construction. If there is more than one slope on a project, this criteria will apply to construction of the initial slope only. The representative shall be available on an as-needed basis, as requested by ENGEO, during construction of the remaining slope(s).

3.3 Placement: The erosion control material shall be placed and anchored on a smooth graded, firm surface approved by the Engineer. Anchoring terminal ends of the erosion control material shall be accomplished through use of key trenches. The material in the trenches shall be anchored to the soil on maximum 1½ foot centers. Topsoil, if required by construction drawings, placed over final grade prior to installation of the erosion control material shall be limited to a depth not exceeding 3 inches.

3.4 Erosion control material shall be anchored, overlapped, and otherwise constructed to ensure performance until vegetation is well established. Anchors shall be as designated on the construction drawings, with a minimum of 12 inches length, and shall be spaced as designated on the construction drawings, with a maximum spacing of 4 feet.

3.5 Soil Filling: If noted on the construction drawings, the erosion control mat shall be filled with a fine grained topsoil, as recommended by the manufacturer. Soil shall be lightly raked or brushed on/into the mat to fill the mat voids or to a maximum depth of 1 inch.

PART V - GEOSYNTHETIC DRAINAGE COMPOSITE

1. DESCRIPTION:

Work shall consist of furnishing and placing a geosynthetic drainage system as a subsurface drainage medium for reinforced soil slopes.

2. DRAINAGE COMPOSITE MATERIALS:

2.1 The specific drainage composite material and supplier shall be preapproved by ENGEO.

2.2 The drain shall be of composite construction consisting of a supporting structure or drainage core material surrounded by a geotextile. The geotextile shall encapsulate the drainage core and prevent random soil intrusion into the drainage structure. The drainage core material shall consist of a three dimensional polymeric material with a structure that permits flow along the core laterally. The core structure shall also be constructed to permit flow regardless of the water inlet surface. The drainage core shall provide support to the geotextile. The fabric shall meet the minimum property requirements for filter fabric listed in Section 2.05C of the Guide Earthwork Specifications.

2.3 A geotextile flap shall be provided along all drainage core edges. This flap shall be of sufficient width for sealing the geotextile to the adjacent drainage structure edge to prevent soil intrusion into the structure during and after installation. The geotextile shall cover the full length of the core.

2.4 The geocomposite core shall be furnished with an approved method of constructing and connecting with outlet pipes or weepholes as shown on the plans. Any fittings shall allow entry of water from the core but prevent intrusion of backfill material into the core material.

2.5 Certification and Acceptance: The Contractor shall submit a manufacturer's certification that the geosynthetic drainage composite meets the design properties and respective index criteria measured in full accordance with all test methods and standards specified. The manufacturer's certification shall include a submittal package of documented test results that confirm the design values. In case of dispute over validity of design values, the Contractor will supply design property test data from an ENGEO-approved laboratory, to support the certified values submitted. Minimum average roll values, per ASTM D 4759, shall be used for determining conformance.

3. CONSTRUCTION:

3.1 Delivery, Storage, and Handling: Contractor shall check the geosynthetic drainage composite upon delivery to ensure that the proper material has been received. During all periods of shipment and storage, the geosynthetic drainage composite shall be protected from temperatures greater than 140 °F, mud, dirt, and debris. Manufacturer's recommendations in regards to protection from direct sunlight must also be followed. At the time of installation, the geosynthetic drainage composite shall be rejected if it has defects, tears, punctures, flaws, deterioration, or damage incurred during manufacture, transportation, or storage. If approved by ENGEO, torn or punctured sections may be removed or repaired. Any geosynthetic drainage composite damaged during storage or installation shall be replaced by the Contractor at no additional cost to the Owner.

3.2 On-Site Representative: Geosynthetic drainage composite material suppliers shall provide a qualified and experienced representative on site, for a minimum of one half day, to assist the Contractor and ENGEO personnel at the start of construction with directions on the use of drainage composite. If there is more than one application on a project, this criterion will apply to construction of the initial application only. The representative shall also be available on an as-needed basis, as requested by ENGEO, during construction of the remaining applications.

3.3 Placement: The soil surface against which the geosynthetic drainage composite is to be placed shall be free of debris and inordinate irregularities that will prevent intimate contact between the soil surface and the drain.

3.4 Seams: Edge seams shall be formed by utilizing the flap of the geotextile extending from the geocomposite's edge and lapping over the top of the fabric of the adjacent course. The fabric flap shall be securely fastened to the adjacent fabric by means of plastic tape or non-water-soluble construction adhesive, as recommended by the supplier. Where vertical splices are necessary at the end of a geocomposite roll or panel, an 8-inch-wide continuous strip of geotextile may be placed, centering over the seam and continuously fastened on both sides with plastic tape or non-water-soluble construction adhesive. As an alternative, rolls of geocomposite drain material may be joined together by turning back the fabric at the roll edges and interlocking the cuspidations approximately 2 inches. For overlapping in this manner, the fabric shall be lapped and tightly taped beyond the seam with tape or adhesive. Interlocking of the core shall always be made with the upstream edge on top in the direction of water flow. To prevent soil intrusion, all exposed edges of the geocomposite drainage core edge must be covered. Alternatively, a 12-inch-wide strip of fabric may be utilized in the same manner, fastening it to the exposed fabric 8 inches in from the edge and folding the remaining flap over the core edge.

3.5 Soil Fill Placement: Structural backfill shall be placed immediately over the geocomposite drain. Care shall be taken during the backfill operation not to damage the

geotextile surface of the drain. Care shall also be taken to avoid excessive settlement of the backfill material. The geocomposite drain, once installed, shall not be exposed for more than seven days prior to backfilling.

NOISE STUDY

EDWARD L. PACK ASSOCIATES, INC.

1975 HAMILTON AVENUE
SUITE 26
SAN JOSE, CA 95125

Acoustical Consultants

TEL: 408-371-1195
FAX: 408-371-1196
www.packassociates.com

May 2, 2013
Project No. 45-013

Ms. Mandi Kaercher
Standard Pacific Corporation
3825 Hopyard Road
Suite 195
Pleasanton, CA 94588

Subject: Noise Assessment Study for the Planned "Village Walk" Single-Family Development, East Cotati Avenue, Cotati

Dear Ms. Kaercher:

This report presents the results of a noise assessment study for the planned "Village Walk" single-family development along East Cotati Avenue in Cotati, as shown on the Grading Plan, Ref. (a). The noise exposures at the site were evaluated against the standards of the City of Cotati Noise Element, Ref. (b). The analysis of the on-site sound level measurements indicates that the existing noise environment is due primarily to vehicular traffic sources on East Cotati Avenue. Traffic sources on Lancaster Drive do not significantly impact the site. Noise from the adjacent Energy Fitness does not impact the site. The results of the study indicate that noise exposure excesses occur and mitigation measures will be required.

Sections I and II of this report contain a summary of our findings and recommendations, respectively. Subsequent sections contain the site, traffic and project descriptions, analyses and evaluations. Attached hereto are Appendices A, B and C, which include the list of references, descriptions of the applicable standards, definitions of the terminology, general building shell controls and the on-site noise measurement data and calculation tables.

I. Summary of Findings

The noise assessment results presented in the findings were evaluated against the standards of the City of Cotati Noise Element, which utilizes the Day-Night Level (DNL) descriptor. The Noise Element standards specify an exterior limit of 60 decibels (dB) DNL for residential exterior areas such as rear yards, patios and decks. The residential interior noise exposures in livings spaces are limited to 45 dB DNL. The noise standards of the Draft Noise Element currently under consideration by the City remain the same for single-family housing.

Note that the State of California Code of Regulations, Title 24, California Residential Code (CRC) is applicable to this project. The CRC defines the townhouses as single-family residential and the CRC does not contain noise standards for the interior environment is single-family housing.

The noise exposures shown in this section are without the application of mitigation measures and represent the noise environment for existing and future site conditions.

A. Exterior Noise Exposures

- The existing exterior noise exposure at the most impacted townhouse lots along East Cotati Avenue, 53 ft. from the centerline of the road, is 68 dB DNL. Under future traffic conditions, the noise exposure is expected to increase to 69 dB DNL.

- The existing exterior noise exposure in the most impacted second floor decks of the townhouse units closest to east Cotati Avenue (Lots 1 and 12), 100 ft. from the centerline of the road and facing away from the street, will be 61 dB DNL. Under future traffic conditions, the noise exposure will increase to 62 dB DNL. Thus, the noise exposures will be up to 2 dB in excess of the 60 dB DNL limit of the City of Cotati Noise Element standards.

Important Note: The sections of the decks on these two lots that are in excess of 60 dB DNL is a portion where a seated person has a view past the edge of the home to the road and the line-of-sight is within 200 ft. of the centerline. This area is slightly less than half of the area of the deck.

- The existing noise exposure in the most impacted exterior living area of the single-family lots (Lot 36) 140 ft. from the centerline of the road, is 61 dB DNL. Under future traffic conditions, the noise exposure will increase to 62 dB DNL. Thus, the noise exposures will be up to 2 dB in excess of the 60 dB DNL limit of the City of Cotati Noise Element standards.

- The existing noise exposure in the most impacted area of the park, 220 ft. from the centerline of the road, is 54 dB DNL. Under future traffic conditions, the noise exposure will increase to 65 dB DNL. Thus, the noise exposures will be within the 60 dB DNL limit of the City of Cotati Noise Element standards.

All other exterior living areas of the project will be adequately shielded or at an acceptable distance from the road.

B. <u>Interior Noise Exposures</u>

- The interior noise exposures in the most impacted living spaces of the townhouse units along East Cotati Avenue will 43 and 44 dB DNL, under existing and future traffic conditions, respectively. Thus, the noise exposures will be within the 45 dB DNL limit of the City of Cotati Noise Element standards.

- The interior noise exposures in the most impacted living spaces of the single-family homes 35 and 36 dB DNL, under existing and future traffic conditions, respectively. Thus, the noise exposures will be within the 45 dB DNL limit of the City of Cotati Noise Element standards.

As shown above, exterior noise exposure excesses will occur at one single-family home of the project. Mitigation measures will be required.

The partially noise impacted decks of Lots 1 and 12 would require solid deck railings at the west and east sides of the decks for Lot 1 and Lot 12, respectively.

The interior noise exposures of the project will be within the limits of the City of Cotati Noise Element standards. Mitigation measures for the interior spaces will not be required.

II. Recommendations

A. Exterior Noise Control

To achieve compliance with the 60 dB DNL standard of the City of Cotati Noise Element for units impacted by traffic noise sources, the following noise control barriers will be required.

- Construct 6 ft. high acoustically-effective barrier at the exterior living area of the single-family home on Lots 36. The barrier shall extend from the north side of the house to the north lot line, turn the barrier to the west property line and continue the barrier to terminate at the south property line. The barrier height is in reference to the nearest building pad elevation.

Please see Figure 1 for the locations of the recommended noise control barrier.

Lot 1 and Lot 12

Applying solid deck railing materials to the sides of the decks of Lots 1 and 12, would be required to achieve 60 dB DNL at all areas of the decks. However, the architecture of the railing may require modifications to support an acoustically-effective panel. We recommend that the City waive the 60 dB DNL requirement for these two decks as the noise excess is minor, the most of the deck area is compliant, the park is available as exterior living area and the noise exposures are within the "Conditionally Acceptable" range of the Noise Element standards.

To achieve an acoustically-effective barrier, it must be constructed air-tight, i.e., without cracks, gaps or other openings, and must provide for long-term durability. Barriers and fences can be constructed of masonry, wood, stucco, metal or a combination thereof and must have a minimum surface weight of 2.5 lbs. per sq. ft. If wood construction is used, homogeneous sheet materials are preferable to conventional wood fencing, as the latter has a tendency to warp and form openings with age. However, high quality air-tight tongue-and-groove, board and batten or shiplap construction can be used. A gate may be incorporated into the east facing section of the Lot 36 barrier. The gate must meet the minimum surface weight requirement, must be on the minimum height requirement and must fit tight to the barrier when closed. Stops or astragals shall be fitted over the hinge jamb and closure jamb gaps. The gap under the gate shall be no more than 1". All connections with posts, pilasters and the building shells must be sealed air-tight. No openings are permitted between the upper barrier components and the ground.

The implementation of the above recommended measures will reduce the exterior noise exposures in the exterior living area of Lot 36 to 60 dB DNL or lower.

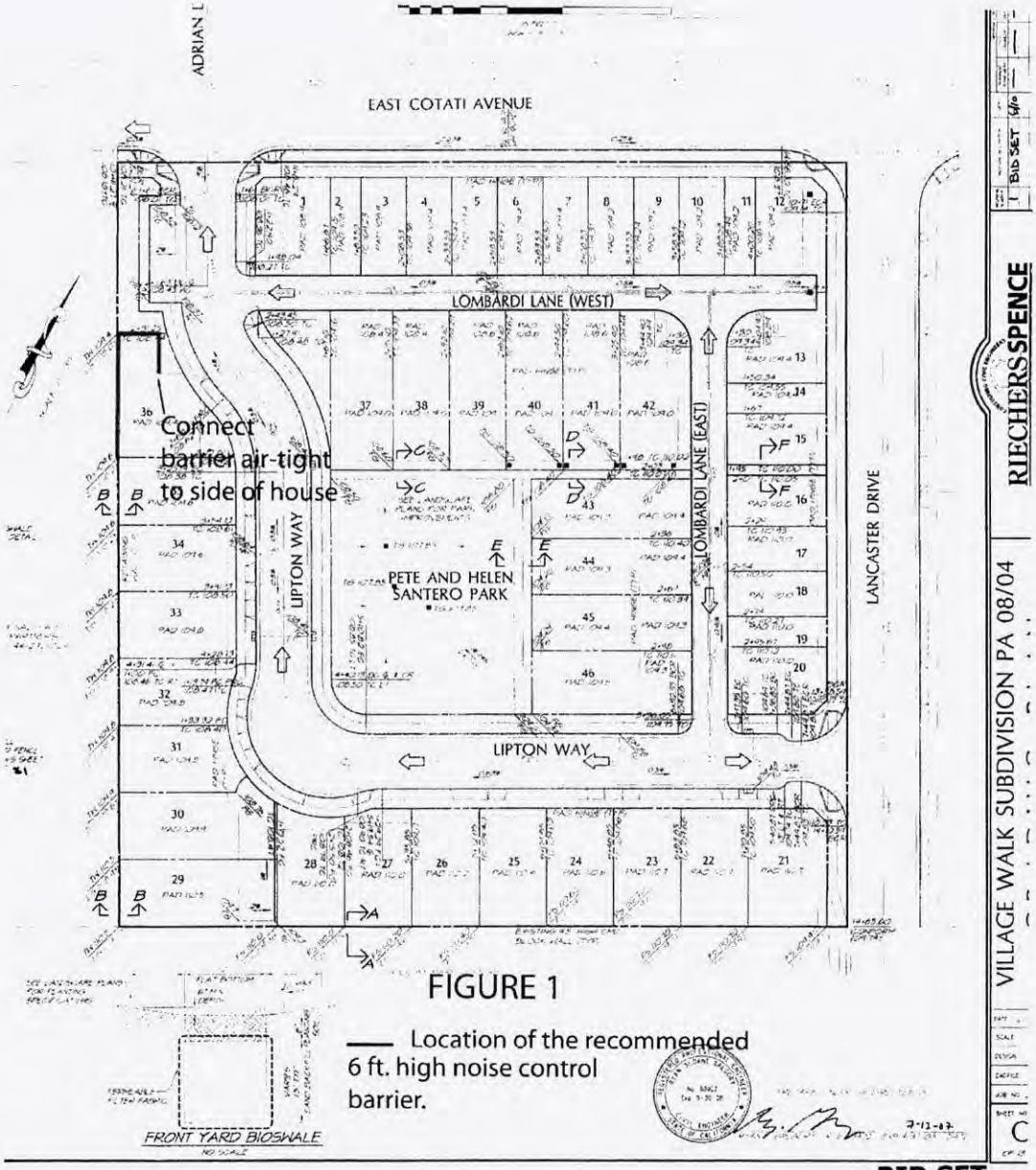


FIGURE 1

—— Location of the recommended 6 ft. high noise control barrier.

BID SET

III. Site, Traffic and Project Descriptions

The proposed development site is located along East Cotati Avenue at Lancaster Drive in Cotati. The site is a vacant, relatively flat site and is at-grade with the surrounding roadways. Surrounding land uses include the Energy Fitness center adjacent to the west, a single0family home and multi-family residential are across East Cotati Avenue to the north, a Chevron service station and multi-family residential across Lancaster Drive to the east and multi-family residential adjacent to the south.

The primary source of noise at the site is traffic on East Cotati Avenue, which carries an Average Daily Traffic (ADT) volume of approximately 17,200 vehicles, as reported by the City of Cotati, Ref., (c).

The proposed development includes the construction of 20 two and three story townhomes, 26 single-family homes and a community park. Ingress and egress to the development will be by way of project streets off of East Cotati Avenue and Lancaster Drive.

IV. Analysis of the Noise Levels

A. Existing Noise Levels

To determine the existing noise environment at the site, continuous recordings of the sound levels were made at a location 93 ft. from the centerline of East Cotati Avenue. This location was chosen for security of the sound measuring instrument. The measurements were made on April 22-23, 2013 for continuous period of 24 hours. The measurement location is shown on Figure 2 on the following page.



FIGURE 2

The noise level data were acquired using a Larson-Davis Model 812 Precision Integrating Sound Level Meter, which yields by direct readout, a series of descriptors of the sound levels versus time, including the L_1, L_{10}, L_{50}, and L_{90}, i.e., those levels exceeded 1%, 10%, 50% and 90% of the time. Also measured were the maximum and minimum levels and the equivalent-energy levels (L_{eq}), which are used to calculate the DNL. The results of the measurements are shown in the data tables in Appendix C.

The results of the field survey reveal that the L_{eq}'s at the measurement location, 93 ft. from the centerline of East Cotati Avenue, ranged from 58.3 to 65.3 dBA during the daytime and from 48.3 to 61.0 dBA at night.

Traffic noise dissipates at the rate of 3 to 6 dB for each doubling of the distance from the source (centerline of the roadway). Thus, locations on the site at greater distances from roadways will have lower noise levels. Additional acoustical shielding will be provided by interposed buildings of the project.

Vehicular traffic noise contains wide spectrum of frequency components (from 100 to 10,000 Hertz), which are associated with engine, tire, drive-train, exhaust and other sources. The frequency components are centered primarily in the 250 and 500 Hz octave bands and were used in determining the noise control measures recommended for this project.

B. Future Noise Levels

Future traffic volume data for East Cotati Avenue were provided by the City of Cotati, Ref. (c). The traffic volume for East Cotati Avenue is predicted to increase from the existing 17,200 vehicles ADT to up to 22,000 vehicles ADT for future year 2040. This increase in traffic volume yields a 1 dB increase in the traffic noise levels.

V. Evaluation of the Noise Exposures

A. Exterior Noise Exposure

To evaluate the on-site noise exposures against the City of Cotati standards, the DNL for the survey location was calculated by decibel averaging of the L_{eq}'s as they apply to the daily time periods of the DNL index. The DNL is a 24-hour noise descriptor that uses the measured L_{eq} values to calculate a 24-hour time-weighted average noise exposure. The formula used to calculate the DNL is described in Appendix B. Adjustments were made to the measured noise levels to account for decreased distance setbacks from the measurement location using methods established by the Highway Research Board, Ref. (d).

The exterior noise exposure at the measurement location 93 ft. from the centerline of East Cotati Avenue was calculated to be 64 dB DNL.

At the planned building setback of the townhouse units along East Cotati Avenue, 53 ft. from the centerline of the road, the noise exposure was calculated to be 68 dB DNL. Under future traffic conditions, the noise exposure is expected to increase to 69 dB DNL.

The exterior noise exposure in the most impacted decks of the townhouses unit at Lots 1 and 12, were calculated to be 61 and 62 dB DNL under existing and future traffic conditions, respectively. These noise exposures include a 4 dB reduction factor for the increased distance from the roadway and a 3 dB reduction for partial acoustical shielding of the decks from the road.

The exterior noise exposures in the most exterior living area of Lot 36, 140 ft. from the centerline of the road, were calculated to be 61 and 62 dB DNL under existing and future traffic conditions, respectively. These noise exposures include a 7 dB reduction factor for the increased distance from the roadway.

As the noise exposures in the exterior living area of Lot 36 will exceed the 60 dB DNL limit of the City of Cotati Noise Element standards, noise mitigation measures will be required. The recommended measures are described in Section II of this report.

Noise control for the decks of Lots 1 and 12 is not recommended.

B. Interior Noise Exposures

To evaluate the interior noise exposures in project living spaces, a 25 dB reduction was applied to the exterior noise exposures at the building setback to represent the attenuation provided by the building shell under a closed window condition. This condition assumes that windows and glass doors have standard dual-pane thermal insulating glass that are kept closed at all times for noise control. The windows and glass doors to living spaces may be kept closed at all times as adequate mechanical ventilation will be required by the Mechanical Code. Note that although the windows and doors may be kept closed for noise control, this condition does not imply that the windows and doors are inoperable.

The interior noise exposures in the most impacted living spaces of the townhouse units facing East Cotati Avenue will be up to 43 and 44 dB DNL under existing and future traffic conditions, respectively.

The interior noise exposures in the most impacted living spaces of the single-family homes closest to East Cotati Avenue will be up to 36 and 37 dB DNL under existing and future traffic conditions, respectively.

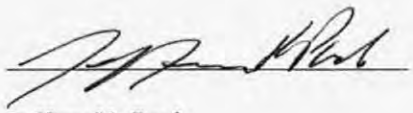
The interior noise exposures will be within the limits of the City of Cotati Noise Element standards. Noise mitigation measures for the interior living spaces will not be required.

This report presents the results of a noise assessment study for the planned "Village Walk" single-family and multi-family development along East Cotati Avenue in Cotati. The study findings and recommendations for present conditions are based on field measurements and other data and are correct to the best of our knowledge. Future noise level predictions were based upon information provided by the City of Cotati. However, significant changes in the predicted traffic volumes, changes in speed limits, motor vehicle technology, noise regulations, or other changes beyond our control may produce long-range noise results different from our estimates.

If you have any questions or would like an elaboration on this report, please call me.

Sincerely,

EDWARD L. PACK ASSOC., INC.



Jeffrey K. Pack
President

Attachments: Appendices A, B, and C

APPENDIX A

References

(a) Grading Plan, "Village Walk", by Riechers Spence Associates, July 12, 2007

(b) 1998 General Plan Update, City of Cotati, 1998-2015, Adopted October 14, 1998

(c) Information on Existing and Future Traffic Volumes Provided by Mr. Damien O'Bid, City of Cotati Public Works Department, by email to Edward L. Pack Associates, Inc., April 24, 2013

(d) Highway Research Board, "Highway Noise - A Design Guide for Highway Engineers", Report 117, 1971

APPENDIX B

Noise Standards, Terminology, Instrumentation

1. Noise Standards

A. City of Cotati Noise Element Standards

The City of Cotati General Plan, adopted October 14, 1998, Chapter V "Community Development" contains a Noise Element, which includes goals, policies and standards. The acceptable exterior noise level objective is 60 decibels (dB) Day-Night Level (DNL) or lower for residential and most institutional land uses. The acceptable exterior noise level objective is established for the City, except in the environs of the Cotati International Airport and the Downtown.

Noise and Land Use Compatibility Standards

	EXTERIOR NOISE EXPOSURE (dB DNL)					
Land Use Category	55	60	65	70	75	80
Residential, Hotels and Motels						
Outdoor Sports and Recreation, Neighborhood Parks, Playgrounds						
Schools, Libraries, Museums, Meeting Halls, Churches						
Office Buildings, Business, Commercial and Professional						
Industrial, Manufacturing, Utilities and Agriculture						

	Normally Acceptable
	Conditionally Acceptable
	Unacceptable

- The City's standard for interior noise levels in all new residences, hotels and motels is 45 dB DNL.

City of Cotati Noise Element (cont'd)

The following table provides the City of Cotati noise limits for non-transportation noise sources.

	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.
Hourly L_{eq}, dBA	50	45
Maximum Level, dBA	70	65
Maximum Level, dBA (Impulsive Noise)	65	60

2. Terminology

A. Statistical Noise Levels

Due to the fluctuating character of urban traffic noise, statistical procedures are needed to provide an adequate description of the environment. A series of statistical descriptors have been developed which represent the noise levels exceeded a given percentage of the time. These descriptors are obtained by direct readout of the Sound Level Meters. Some of the statistical levels used to describe community noise are defined as follows:

L_1 - A noise level exceeded for 1% of the time.

L_{10} - A noise level exceeded for 10% of the time, considered to be an "intrusive" level.

L_{50} - The noise level exceeded 50% of the time representing an "average" sound level.

L_{90} - The noise level exceeded 90 % of the time, designated as a "background" noise level.

L_{eq} - The continuous equivalent-energy level is that level of a steady-state noise having the same sound energy as a given time-varying noise. The L_{eq} represents the decibel level of the time-averaged value of sound energy or sound pressure squared and is used to calculate the DNL and CNEL.

B. Day-Night Level (DNL)

Noise levels utilized in the standards are described in terms of the Day-Night Level (DNL). The DNL rating is determined by the cumulative noise exposures occurring over a 24-hour day in terms of A-Weighted sound energy. The 24-hour day is divided into two subperiods for the DNL index, i.e., the daytime period from 7:00 a.m. to 10:00 p.m., and the nighttime period from 10:00 p.m. to 7:00 a.m. A 10 dB weighting factor is applied (added) to the noise levels occurring during the nighttime period to account for the greater sensitivity of people to noise during these hours. The DNL is calculated from the measured L_{eq} in accordance with the following mathematical formula:

$$DNL = [(L_d+10\log_{10}15) \,\&\, (L_n+10+10\log_{10}9)] - 10\log_{10}24$$

Where:

L_d = L_{eq} for the daytime (7:00 a.m. to 10:00 p.m.)
L_n = L_{eq} for the nighttime (10:00 p.m. to 7:00 a.m.)
24 - indicates the 24-hour period
& - denotes decibel addition.

C. A-Weighted Sound Level

The decibel measure of the sound level utilizing the "A" weighted network of a sound level meter is referred to as "dBA". The "A" weighting is the accepted standard weighting system used when noise is measured and recorded for the purpose of determining total noise levels and conducting statistical analyses of the environment so that the output correlates well with the response of the human ear.

3. Instrumentation

The on-site field measurement data were acquired by the use of one or more of the precision acoustical instruments shown below. The acoustical instrumentation provides a direct readout of the L exceedance statistical levels including the equivalent-energy level (L_{eq}). Input to the meters was provided by a microphone extended to a height of 5 ft. above the ground. The meter conforms to ANSI S1.4 for Type 1 instruments. The "A" weighting network and the "Fast" response setting of the meter were used in conformance with the applicable ISO and IEC standards. All instrumentation was acoustically calibrated before and after field tests to assure accuracy.

Bruel & Kjaer 2231 Precision Integrating Sound Level Meter
Larson Davis LDL 812 Precision Integrating Sound Level Meter
Larson Davis 2900 Real Time Analyzer

APPENDIX C

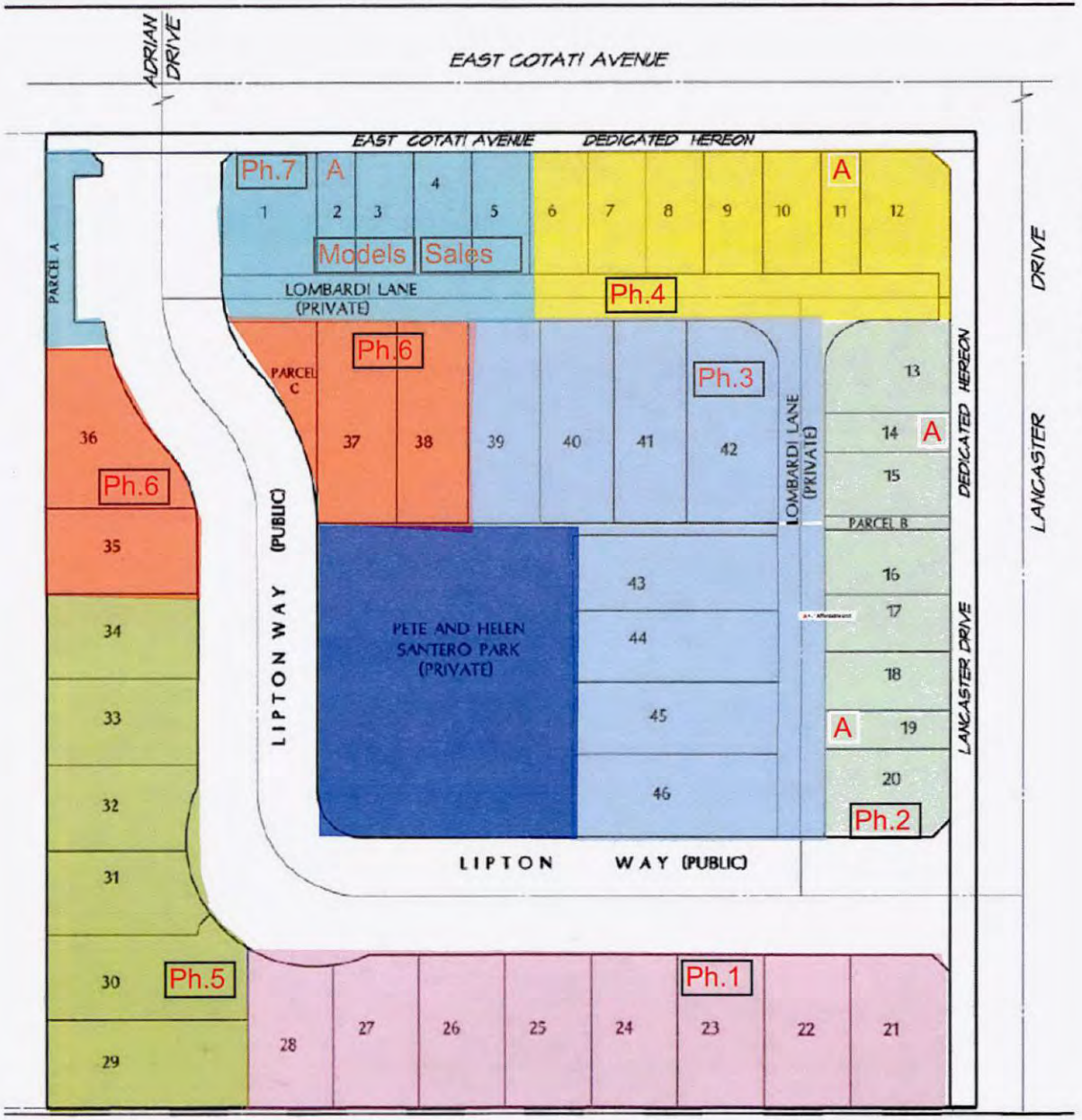
Noise Measurement Data and Calculation Tables

DNL CALCULATIONS

CLIENT: STANDARD PACIFIC HOMES
FILE: 45-013
PROJECT: VILLAGE WALK
DATE: 4/22-23/2013
SOURCE: E. COTATI AVE.

LOCATION 1 E. Cotati Ave.
Dist. To Source 93 ft.

TIME	Leq	10^Leq/10		
7:00 AM	65.3	3388441.6		
8:00 AM	60.6	1148153.6		
9:00 AM	59.0	794328.2		
10:00 AM	58.9	776247.1		
11:00 AM	58.8	758577.6		
12:00 PM	59.4	870963.6		
1:00 PM	59.6	912010.8		
2:00 PM	59.8	954992.6		
3:00 PM	60.7	1174897.6		
4:00 PM	60.6	1148153.6		
5:00 PM	61.6	1445439.8		
6:00 PM	60.6	1148153.6		
7:00 PM	59.9	977237.2		
8:00 PM	62.0	1584893.2		
9:00 PM	58.3	676083.0	SUM=	17758573
10:00 PM	61.0	1258925.4	Ld=	60.7
11:00 PM	55.0	316227.8		
12:00 AM	55.7	371535.2		
1:00 AM	49.7	93325.4		
2:00 AM	48.6	72443.6		
3:00 AM	48.3	67608.3		
4:00 AM	52.3	169824.4		
5:00 AM	56.4	436515.8		
6:00 AM	59.7	933254.3	SUM=	3719660
			Ln=	56.2
		72.5		
	Nighttime Level=	75.7		
	DNL=	**64**		
	24-Hour Leq=	59.5		



Village Walk

Cotati, CA

DRE Phasing

Rough Draft

(NOT FINAL)

DRE Phase	Lots	Product Type	
1	21-28	Detached	
2	13-20	Attached	Includes Parcel B
3	39-46	Detached	Lombardi Ln East
4	6-12	Attached	Portion of Lombardi Ln. West
5	29-34	Detached	
6	35-38	Detached	Includes Parcel C
7	1-5	Attached	Portion of Lombardi Ln. West & Parcel A
7	Pete and Helen Santero Park		

Plan Mix	
Plan	# of Units
1	16
2	4
3	12
4	10
3Y	3
3X	1

A = **Affordable Unit**


E Cotati Ave
Beverly Dr
Breen Way
Lombard Ln
Lancaster Dr
Lipton Way
Lombard Way
Liberty Ave
Liberty Ct
Livery Ct
Lincoln Ave
Lakew
See Sheet 13
See
905
906
902
924
828
790
850
768
766
764
760
770
816
8270
8276
777
8372
8380
8385
8390
8393
8396
1 inch = 2,000 inches

15043
+3107

ENGEO
Expect Excellence

GEOTECHNICAL
ENVIRONMENTAL
WATER RESOURCES
CONSTRUCTION SERVICES

Project No.
6858.200.102

April 1, 2015

Ms. Mandi Kaercher
Standard Pacific Homes
3825 Hopyard Road, Suite 275
Pleasanton, CA 94588

Subject: Village Walk Subdivision
690 East Cotati Avenue
Cotati, California

FOUNDATION PLAN REVIEW

Reference:

1. ENGEO; Supplemental Geotechnical Exploration, Village Walk (Santero Court), Cotati, California; September 27, 2005; Project No. 6858.200.101.
2. ENGEO; Foundation Plan Review, Village Walk Subdivision, 690 East Cotati Avenue, Cotati, California; July 24, 2013; Project No. 6858.200.102.
3. ENGEO; Updated 2013 CBC Seismic Design Parameters, Village Walk Subdivision, Cotati, California; February 27, 2015; Project No. 6858.200.102.

Dear Ms. Kaercher:

At your request and with your authorization, ENGEO is providing a review of the foundation plans for both attached and detached home styles in your Village Walk Subdivision in Cotati, California. The purpose of our review is to confirm that the foundation plans were prepared in general conformance with the recommendations as contained in the referenced reports and to provide any supplemental recommendations as necessary.

We were provided with the foundation plans prepared by Harris & Sloan Consulting Group Inc. revised March 16, 2015, Job Number: HS13068. They are listed as follows:

TABLE 1
Attached Plan Set

Plan Number	Sheet No.
Standard Notes and Details	SN.1, SN.2
Foundation Plan BLDGS 201-203	S1.1
Foundation Plan 301	S2.1
Foundation Plan 302	S2.5
Structural Details	SD.1 through SD.4

RECEIVED
APR 13 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

TABLE 2
Detached Plan Set

Plan Number	Sheet No.
Standard Notes and Details	SN.1, SN.2
Foundation Plan 3	S3.1, S3.2, S3.1R, S3.2R
Foundation Plan 4	S4.1, S4.1R
Garage/Suite	S5.1
Structural Details	SD.1 through SD.3

The foundations plans indicate that the proposed single-family residences will be supported on foundations consisting of post-tensioned concrete mats with thickened edges. The foundation plans also indicate that the mat foundations will have a minimum thickness of 12 inches, thickened to 14 inches at the perimeter, and a minimum concrete compressive strength of 3,000 psi at 28 days, and a water cement ratio not to exceed 0.50.

Based on our review, it is our opinion that the foundation plans were prepared in general conformance with the recommendations provided in Reference 1. Because of highly expansive soils at this site, it is important that building pad preparation, pad moisture conditioning, and steel and tendon placement should be observed for conformance with the approved foundation plans by ENGEO prior to concrete placement. Any updated plans and corresponding structural calculations should be submitted to ENGEO for review prior to construction.

We make no representations as to the accuracy of dimensions, measurements, calculations or any portion of the design. If you have any questions regarding the content of this letter, please do not hesitate to contact us.

Sincerely,

ENGEO Incorporated





Craig S. Wright, CEG

Daniel S. Haynosch, GE

csw/dsh/jf

CITY OF COTATI

January 12, 2016

Ms. Mandi Misasi
Standard Pacific Homes
4750 Willow Rd. Suite 150
Pleasanton, CA 94588

Re: Village Walk Subdivision, 690 E. Cotati Avenue, Plan Review Approval Extension

Dear Ms. Misasi:

This letter is to inform you that the City of Cotati has granted a one year extension of the reviewed and approved plans associated with the Village Walk subdivision. The current plan approval will expire on **December 30, 2016**. There were no substantive changes to applicable building codes that would cause the extension to be imprudent. However, please be advised that we cannot necessarily make the same finding for the upcoming Code updates. In accordance with the requirements for extending approvals, please note that permits must be pulled and construction work must be initiated prior to the end of the extension period. If this does not occur, the plans will need to be updated to reflect all code requirements in place at the time and resubmitted for a new plan review process. All applicable fees associated with the new review will be levied.

If you have any questions, please do not hesitate to contact me at 707-665-3221.

Sincerely,

Allen Martin
Building Official

Cc: Vicki Parker, Community Development Director
Craig Scott, City Engineer
Damien O'Bid, City Manager

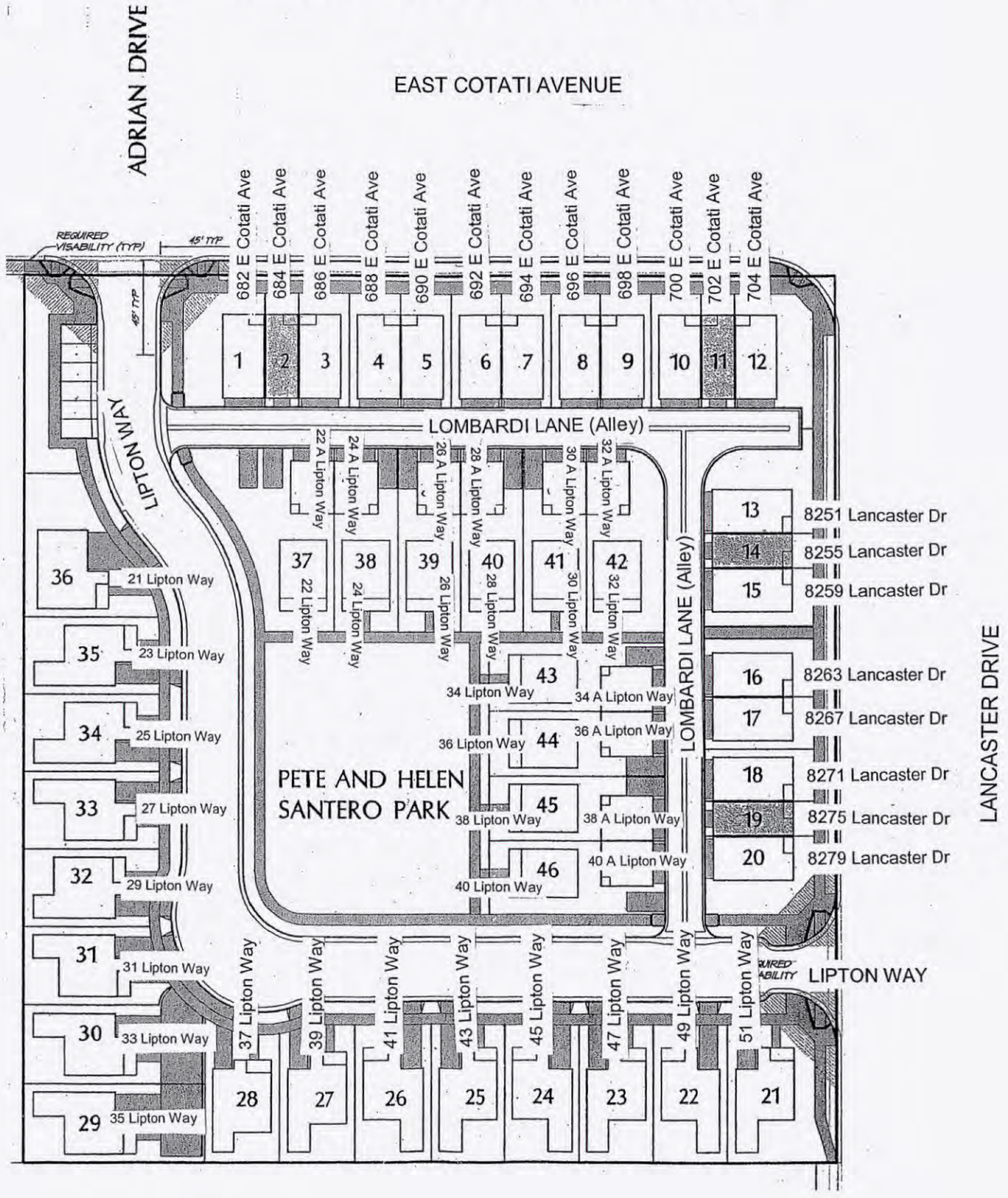
VILLAGE WALK SUBDIVISION

PLAN # 26026

(56 Dwelling Units - 26 Single Family Dwellings, 20 Attached Single Family Dwellings and 10 Second Units)

Lot #	Address	Dwelling Type
1	682 East Cotati Avenue	ASF
2	684 East Cotati Avenue	ASF
3	686 East Cotati Avenue	ASF
4	688 East Cotati Avenue	ASF
5	690 East Cotati Avenue	ASF
6	692 East Cotati Avenue	ASF
7	694 East Cotati Avenue	ASF
8	696 East Cotati Avenue	ASF
9	698 East Cotati Avenue	ASF
10	700 East Cotati Avenue	ASF
11	702 East Cotati Avenue	ASF
12	704 East Cotati Avenue	ASF
13	8251 Lancaster Drive	ASF
14	8255 Lancaster Drive	ASF
15	8259 Lancaster Drive	ASF
16	8263 Lancaster Drive	ASF
17	8267 Lancaster Drive	ASF
18	8271 Lancaster Drive	ASF
19	8275 Lancaster Drive	ASF
20	8279 Lancaster Drive	ASF
21	51 Lipton Way	SFD
22	49 Lipton Way	SFD
23	47 Lipton Way	SFD
24	45 Lipton Way	SFD
25	43 Lipton Way	SFD
26	41 Lipton Way	SFD
27	39 Lipton Way	SFD
28	37 Lipton Way	SFD
29	35 Lipton Way	SFD
30	33 Lipton Way	SFD
31	31 Lipton Way	SFD
32	29 Lipton Way	SFD
33	27 Lipton Way	SFD
34	25 Lipton Way	SFD
35	23 Lipton Way	SFD
36	21 Lipton Way	SFD
37	22 Lipton Way	SFD
37	22 A Lipton Way	2nd Unit
38	24 Lipton Way	SFD
38	24 A Lipton Way	2nd Unit
39	26 Lipton Way	SFD
39	26 A Lipton Way	2nd Unit
40	28 Lipton Way	SFD
40	28 A Lipton Way	2nd Unit
41	30 Lipton Way	SFD
41	30 A Lipton Way	2nd Unit
42	32 Lipton Way	SFD
42	32 A Lipton Way	2nd Unit
43	34 Lipton Way	SFD
43	34 A Lipton Way	2nd Unit
44	36 Lipton Way	SFD
44	36 A Lipton Way	2nd Unit
45	38 Lipton Way	SFD
45	38 A Lipton Way	2nd Unit
46	40 Lipton Way	SFD
46	40 A Lipton Way	2nd Unit

VILLAGE WALK SUBDIVISION



Note:

Lots 1 ~ 20: Attached Single Family Dwelling
Lots 21 ~ 36: Single Family Dwellings
Lots 37 ~ 46 (Front Lots): Single Family Dwellings
Lots 37 ~ 46 (Back Lots): 2nd Units

PLAN 1 (3bed)

1664 X 137.67 = 229,082.88
433 X 73.21 = 31,699.93
150 X 15.00 = 2,250
2247
= 263,032.81

COPY

PROJECT FEE BREAKDOWN

PROJECT ADDRESS: _____ PROJECT VALUATION: 263,032.81

DATE: AUG 2013 PERMIT NO.: _____

SCHOOL FEES: ☐ YES ☐ NO PLANNING FEES: ☐ YES ☐ NO

Building	(001-0100-41270)	$ 2,969.63	
Electrical *75+224.70	(001-0100-41270)	$ 299.70	
Mechanical *75+112.35	(001-0100-41270)	$ 187.35	
Plumbing *75+112.35	(001-0100-41270)	$ 187.35	
	(001-0100-41270)	***SUBTOTAL:***	$ 3,644.03
In-house Plan Check	(001-0100-41593)		$ 1,930.25
Outside Plan Check	(001-0100-41607)		$ —
Incremental Fee	(001-0100-41606)		$ 210.43
SMIP (Strong Motion)	(001-0100-41530)		$ ~~26.31~~ 34.20
Energy 15% of bldg	(001-0100-41512)		$ 445.44
Demolition	(001-0100-20062)		$ —
SB1473 – Green	(001-0100-41608)		$ 11.00
WATER			5102.00
Fire Dept. Connection	(013-0100-42090)		$ ~~5510.00~~
Capital (connection)	(013-0100-42060)		$ 6556.00
Meter	(013-0100-42070)		$ 120.00
Water Conservation	(019-0100-42040)		$ 1750.00
Meter Installation	(013-0100-42062)		$ 125.00
Meter Turn-On	(013-0100-42080)		$ 35.00
SEWER			
Application	(019-0100-42030)		$ 54.00
Connection	(019-0100-42010)		$ 14,529.00
PLANNING			
Inclusionary Housing Fee	(026-0100-41569)		$ ~~0~~
Park-in-Lieu	(024-0100-41572)	6322.62 up (3)	$ ~~13,500.00~~
Traffic Impact	(028-0100-41542)	traffic fee update 6146.00 up (2)	$ ~~250.00~~
Growth Management Fee	(001-0100-41570)		$ 175.00
Linkage Fee	(001-0100-41568)		$ ~~0~~
MISCELLANEOUS			
Bed Tax (Tax 3.32) (Park & Rec. Dev)	(023-0100-41571)	3 bedroom	$ 400.00
Technology Fee	(001-0100-41431)		$ 210.43
		PERMIT FEES	$
Design Review (Pre & Final) Fee	(001-0100-41480)	PLANNING FEES	$
		LESS PRE PAID FEES	$ ( )
		TOTAL FEES	$

Merged as of 7/1/13

16 SF Dorr 2" Brick

SIA ☐ Yes ☐ No
Reimbursement Deferred Agreement ☐ Yes ☐ No
Y:\PLANNING\BLDG\FORMS\fee form 08-24-11 estimate only.doc

*smif increase 7/14
(2) traffic fee increase, Fall 2015
(3) park fees reduced to credit onsite park facilities

Plan 2 (2 Bed)

1248 X 137.67 = 171,812.16
586 X 73.21 = 42,901.00
95 X 15.00 = 1,425
1929

= 216,138.16

PROJECT FEE BREAKDOWN

PROJECT ADDRESS: _____ **PROJECT VALUATION:** 216,138.16

DATE: AUG 2013 **PERMIT NO.:** _____

SCHOOL FEES: ☐ YES ☐ NO **PLANNING FEES:** ☐ YES ☐ NO

Building	(001-0100-41270)	$ 2,565.24	
Electrical $75 + 192.90	(001-0100-41270)	$ 267.90	
Mechanical $75 + 96.45	(001-0100-41270)	$ 171.45	
Plumbing $75 + 96.45	(001-0100-41270)	$ 171.45	
	(001-0100-41270)	***SUBTOTAL:***	$ 3,176.04
In-house Plan Check	(001-0100-41593)		$ 1,667.40
Outside Plan Check	(001-0100-41607)		$ —
Incremental Fee	(001-0100-41606)		$ 172.91
SMIP (Strong Motion)	(001-0100-41530)		$ ~~21.62~~ 28.08
Energy 15% of Bldg	(001-0100-41512)		$ 384.79
Demolition	(001-0100-20062)		$ —
SB1473 – Green	(001-0100-41608)		$ 9.00
WATER			5102.00
Fire Dept. Connection	(013-0100-42090)		$ ~~5,510.00~~
Capital (connection)	(013-0100-42060)		$ 6,556.00
Meter	(013-0100-42070)		$ 120.00
Water Conservation	(019-0100-42040)		$ 1,750.00
Meter Installation	(013-0100-42062)		$ 125.00
Meter Turn-On	(013-0100-42080)		$ 35.00
SEWER			
Application	(019-0100-42030)		$ 54.00
Connection	(019-0100-42010)		$ 14,529.00
PLANNING			
Inclusionary Housing Fee	(026-0100-41569)		$ ~~0~~
Park-in-Lieu	(024-0100-41572)	6322.62 6146.00 ~~0~~	$ ~~13,500.00~~
Traffic Impact	(028-0100-41542)		$ ~~250.00~~
Growth Management Fee	(001-0100-41570)		$ 175.00
Linkage Fee	(001-0100-41568)		$ ~~0~~
MISCELLANEOUS			
Bed Tax (Tax 3.32) (Park & Rec. Dev)	(023-0100-41571) 2 bedroom		$ 350.00
Technology Fee	(001-0100-41431)		$ 172.91
		PERMIT FEES	$
Design Review (Pre & Final) Fee	(001-0100-41480)	PLANNING FEES	$
		LESS PRE PAID FEES	$ ( )
		TOTAL FEES	$

(Changed as of 7/1/13)

SIA ☐ Yes ☐ No
Reimbursement Deferred Agreement ☐ Yes ☐ No
Y:\PLANNING\BLDG\FORMS\fee form 08-24-11 estimate only.doc

*SMIF increase 7/2014
* see Page 1

PLAN 3 (3bed)
1300 X 137.67 = 178,971.00
434 X 73.21 = 31,773.14
71 X 15.00 = 1,065.00
= 211,809.14

T805

PROJECT FEE BREAKDOWN

PROJECT ADDRESS: _____ PROJECT VALUATION: 211,809.14

DATE: AUG 2013 PERMIT NO.: _____

SCHOOL FEES: ☐ YES ☐ NO PLANNING FEES: ☐ YES ☐ NO

Building	(001-0100-41270)	$ 2522.19	
Electrical $75 + 180.50	(001-0100-41270)	$ 255.50	
Mechanical 75 + 90.25	(001-0100-41270)	$ 165.25	
Plumbing 75 + 90.25	(001-0100-41270)	$ 165.25	
	(001-0100-41270)	***SUBTOTAL:***	$ 3108.19
In-house Plan Check	(001-0100-41593)		$ 1,639.42
Outside Plan Check	(001-0100-41607)		$ —
Incremental Fee	(001-0100-41606)		$ 169.45
SMIP (Strong Motion)	(001-0100-41530)		$ ~~21.19~~ 27.55
Energy 15% of bldg	(001-0100-41512)		$ 378.33
Demolition	(001-0100-20062)		$ —
SB1473 – Green	(001-0100-41608)		$ 9.00
WATER			5102.00
Fire Dept. Connection	(013-0100-42090)		$ ~~5510.00~~
Capital (connection)	(013-0100-42060)		$ 6556.00
Meter	(013-0100-42070)		$ 120.00
Water Conservation	(019-0100-42040)		$ 1,750.00
Meter Installation	(013-0100-42062)		$ 125.00
Meter Turn-On	(013-0100-42080)		$ 35.00
SEWER			
Application	(019-0100-42030)		$ 54.00
Connection	(019-0100-42010)		$ 14,529.00
PLANNING			
Inclusionary Housing Fee	(026-0100-41569)	62	$ ~~0~~
Park-in-Lieu	(024-0100-41572)	6322.00 **	$ ~~13,568.00~~
Traffic Impact	(028-0100-41542)	6146.	$ ~~250.00~~
Growth Management Fee	(001-0100-41570)		$ 175.00
Linkage Fee	(001-0100-41568)		$ ~~0~~
MISCELLANEOUS			
Bed Tax (Tax 3.32) (Park & Rec. Dev)	(023-0100-41571) 3 bedroom		$ 400.00
Technology Fee	(001-0100-41431)		$ 169.45
		PERMIT FEES	$
Design Review (Pre & Final) Fee	(001-0100-41480)	PLANNING FEES	$
		LESS PRE PAID FEES	$ ( )
		TOTAL FEES	$

Charged as

SIA ☐ Yes ☐ No
Reimbursement Deferred Agreement ☐ Yes ☐ No
Y:\PLANNING\BLDG\FORMS\fee form 08-24-11 estimate only.doc

* SMIP increase 7/2014
** See Page 1

PLAN 3X (3 bed)

1300 X 137.67 = 178,971.00
436 X 73.21 = 31,916.56
71 X 15.00 = 1065.00
1,807
} = 211,955.56

PROJECT FEE BREAKDOWN

PROJECT ADDRESS: _____ PROJECT VALUATION: 211,955.56

DATE: AUG 2013 PERMIT NO.: _____

SCHOOL FEES: ☐ YES ☐ NO PLANNING FEES: ☐ YES ☐ NO

Building	(001-0100-41270)	$ 2522.19	
Electrical $75 + 180.70	(001-0100-41270)	$ 255.70	
Mechanical 75 + 90.35	(001-0100-41270)	$ 165.35	
Plumbing $75 + 90.35	(001-0100-41270)	$ 165.35	
	(001-0100-41270)	***SUBTOTAL:***	$ 3,108.59
In-house Plan Check	(001-0100-41593)		$ 1,639.42
Outside Plan Check	(001-0100-41607)		$ —
Incremental Fee	(001-0100-41606)		$ 169.56
SMIP (Strong Motion)	(001-0100-41530)	2755	$ ~~21.10~~
Energy 15% of 12106	(001-0100-41512)		$ 378.33
Demolition	(001-0100-20062)		$ —
SB1473 – Green	(001-0100-41608)		$ 9.00
WATER			510200
Fire Dept. Connection	(013-0100-42090)		$ ~~5,510.00~~
Capital (connection)	(013-0100-42060)		$ 6,556.00
Meter	(013-0100-42070)		$ 120.00
Water Conservation	(019-0100-42040)		$ 1,750.00
Meter Installation	(013-0100-42062)		$ 125.00
Meter Turn-On	(013-0100-42080)		$ 35.00
SEWER			
Application	(019-0100-42030)		$ 54.00
Connection	(019-0100-42010)		$ 14,529.00
PLANNING			
Inclusionary Housing Fee	(026-0100-41569)	6322.62	$ 0
Park-in-Lieu	(024-0100-41572)	6146.00 **	$ ~~13,500.00~~
Traffic Impact	(028-0100-41542)		$ ~~250.00~~
Growth Management Fee	(001-0100-41570)		$ 175.00
Linkage Fee	(001-0100-41568)		$ 0
MISCELLANEOUS			
Bed Tax (Tax 3.32) (Park & Rec. Dev)	(023-0100-41571) 3 bedroom		$ 400.00
Technology Fee	(001-0100-41431)		$ 169.56
		PERMIT FEES	$
Design Review (Pre & Final) Fee	(001-0100-41480)	PLANNING FEES	$
		LESS PRE PAID FEES	$ ( )
		TOTAL FEES	$

changed 7/1/13

SIA ☐ Yes ☐ No
Reimbursement Deferred Agreement ☐ Yes ☐ No
Y:\PLANNING\BLDG\FORMS\fee form 08-24-11 estimate only.doc

* SMIP fees changed 7/2014
** see Page 1

PLAN 3Y (3 Bed)

300 X 137.67 = 178,971.00
366 X 73.21 = 26,794.86
71 X 15.00 = 1,065.00
1,737
} = 206,830.86

PROJECT FEE BREAKDOWN

PROJECT ADDRESS: _____ PROJECT VALUATION: 206,830.86

DATE: AUG 2013 PERMIT NO.: _____

SCHOOL FEES: ☐ YES ☐ NO PLANNING FEES: ☐ YES ☐ NO

Building	(001-0100-41270)	$ 2479.14	
Electrical $75+173.70	(001-0100-41270)	$ 248.70	
Mechanical $75+86.85	(001-0100-41270)	$ 161.85	
Plumbing $75+86.85	(001-0100-41270)	$ 161.85	
	(001-0100-41270)	***SUBTOTAL:***	$ 3,051.54
In-house Plan Check	(001-0100-41593)		$ 1,611.44
Outside Plan Check	(001-0100-41607)		$ —
Incremental Fee	(001-0100-41606)		$ 165.46
SMIP (Strong Motion)	(001-0100-41530)		~~$ 20.09~~ 20.90
Energy 15% of bldg	(001-0100-41512)		$ 371.87
Demolition	(001-0100-20062)		$ —
SB1473 – Green	(001-0100-41608)		$ 9.00
WATER			5102.00
Fire Dept. Connection	(013-0100-42090)		$ ~~5510.00~~
Capital (connection)	(013-0100-42060)		$ 6556.00
Meter	(013-0100-42070)		$ 120.00
Water Conservation	(019-0100-42040)		$ 1750.00
Meter Installation	(013-0100-42062)		$ 125.00
Meter Turn-On	(013-0100-42080)		$ 35.00
SEWER			
Application	(019-0100-42030)		$ 54.00
Connection	(019-0100-42010)		$ 14,529.00
PLANNING			
Inclusionary Housing Fee	(026-0100-41569)		$ ~~0~~
Park-in-Lieu	(024-0100-41572)	~~6322.62~~ 6146 **	$ ~~13,566.60~~
Traffic Impact	(028-0100-41542)		$ ~~256.00~~
Growth Management Fee	(001-0100-41570)		$ 175.00
Linkage Fee	(001-0100-41568)		$ ~~0~~
MISCELLANEOUS			
Bed Tax (Tax 3.32) (Park & Rec. Dev)	(023-0100-41571)	3 bedroom	$ 400.00
Technology Fee	(001-0100-41431)		$ 163.46
		PERMIT FEES	$
Design Review (Pre & Final) Fee	(001-0100-41480)	PLANNING FEES	$
		LESS PRE PAID FEES	$ ( )
		TOTAL FEES	$

Changed 7/1/13

SIA ☐ Yes ☐ No
Reimbursement Deferred Agreement ☐ Yes ☐ No
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* SMIF fees changed 7/2014
** see 1st page

PLAN 4 (3 bedroom)

1379 X 137.67 = 189,846.93

138 X 15.00 = 2070.00

1517

PROJECT FEE BREAKDOWN

PROJECT ADDRESS: _____ **PROJECT VALUATION:** 191,916.93

DATE: _____ **PERMIT NO.:** _____

SCHOOL FEES: ☐ YES ☐ NO **PLANNING FEES:** ☐ YES ☐ NO

Building (.10)	(001-0100-41270)	$ 2,349.99	
Electrical 75+151.70 (.05)	(001-0100-41270)	$ 226.70	
Mechanical 75+75.85 (.05)	(001-0100-41270)	$ 150.85	
Plumbing 75+75.85 (.05)	(001-0100-41270)	$ 150.85	
	(001-0100-41270)	***SUBTOTAL:***	$ 2878.39
In-house Plan Check	(001-0100-41593)		$ 1527.49
Outside Plan Check	(001-0100-41607)		$ —
Incremental Fee (.0008)	(001-0100-41606)		$ 153.53
SMIP (Strong Motion)	(001-0100-41530)		$ ~~19.20~~ 24.96
Energy 15% of bldg	(001-0100-41512)		$ 352.50
Demolition	(001-0100-20062)		$ —
SB1473 – Green	(001-0100-41608)		$ 9.00
WATER			5102.00
Fire Dept. Connection	(013-0100-42090)		$ ~~5510.00~~
Capital (connection)	(013-0100-42060)		$ 7613.00
Meter	(013-0100-42070)		$ 120.00
Water Conservation	(019-0100-42040)		$ 1750.00
Meter Installation	(013-0100-42062)		$ 150.00
Meter Turn-On	(013-0100-42080)		$
SEWER			
Application	(019-0100-42030)		$ 54.00
Connection	(019-0100-42010)		$ 14,968.00
PLANNING			
Inclusionary Housing Fee	(026-0100-41569)		$ ~~0~~
Park-in-Lieu	(024-0100-41572)	~~6322.46~~ 6146.00 **	$ ~~13,566.00~~
Traffic Impact	(028-0100-41542)		$ 250.00
Growth Management Fee	(001-0100-41570)		$ 175.00
Linkage Fee	(001-0100-41568)		$ ~~0~~
MISCELLANEOUS			
Bed Tax (Tax 3.32) (Park & Rec. Dev)	(023-0100-41571)		$ 400.00
Technology Fee (.0008)	(001-0100-41431)		$ 153.53
		PERMIT FEES	$
Design Review (Pre & Final) Fee	(001-0100-41480)	PLANNING FEES	$
		LESS PRE PAID FEES	$ ( )
		TOTAL FEES	$

Changed 7/1/13

SIA ☐ Yes ☐ No

Reimbursement Deferred Agreement ☐ Yes ☐ No

Y:\PLANNING\BLDG\FORMS\fee form 08-24-11 estimate only.doc

* SMIP fees Changed 7/2014

** see Page 1

PLAN 5 (1 bedroom)

511 X 137.67 = 70,349.37
477 X 73.21 = 34,921.17
20 X 15.00 = 300.00
008

Second Units

PROJECT FEE BREAKDOWN

PROJECT ADDRESS: _____ **PROJECT VALUATION:** 105,570.54

DATE: _____ **PERMIT NO.:** _____

SCHOOL FEES: ☐ YES ☐ NO **PLANNING FEES:** ☐ YES ☐ NO

Building (.110)	(001-0100-41270)	$ 1,609.13	
Electrical 75+100.80	(001-0100-41270)	$ 175.80	
Mechanical 15+80.64 (.08)	(001-0100-41270)	$ 155.64	
Plumbing 75+50.40 (.05)	(001-0100-41270)	$ 125.40	
	(001-0100-41270)	***SUBTOTAL:***	$ 2,065.97
In-house Plan Check	(001-0100-41593)		$ 1045.93
Outside Plan Check	(001-0100-41607)		$ —
Incremental Fee (.0008)	(001-0100-41606)		$ 84.46
SMIP (Strong Motion)	(001-0100-41530)	13.73	$ ~~10.56~~
Energy 15% of Bldg	(001-0100-41512)		$ 241.37
Demolition	(001-0100-20062)		$ —
SB1473 – Green	(001-0100-41608)		$ 5.00
WATER			
Fire Dept. Connection	(013-0100-42090)		$
Capital (connection)	(013-0100-42060)		$
Meter	(013-0100-42070)		$
Water Conservation	(019-0100-42040)		$
Meter Installation	(013-0100-42062)		$
Meter Turn-On	(013-0100-42080)		$
SEWER			
Application	(019-0100-42030)		$
Connection	(019-0100-42010)		$
PLANNING			
Inclusionary Housing Fee	(026-0100-41569)		$ ~~0~~
Park-in-Lieu	(024-0100-41572)		$ 0
Traffic Impact	(028-0100-41542)		$ ~~125.00~~ IP
Growth Management Fee	(001-0100-41570)		$ 175.00
Linkage Fee	(001-0100-41568)		$ ~~0~~
MISCELLANEOUS			
Bed Tax (Tax 3.32) (Park & Rec. Dev)	(023-0100-41571)		$ ~~0~~
Technology Fee (.0008)	(001-0100-41431)		$ 84.46
		PERMIT FEES	$
Design Review (Pre & Final) Fee	(001-0100-41480)	PLANNING FEES	$
		LESS PRE PAID FEES	$ ( )
		TOTAL FEES	$

SIA ☐ Yes ☐ No
Reimbursement Deferred Agreement ☐ Yes ☐ No
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*SMIF Fees changed 7/2014

VILLAGE
WALK

15043

DAHLIN group

RECEIVED
MAR 18 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

March 16, 2015

Keri Pajon, PE
City of Cotati Building Division
201 West Sierra Avenue
Cotati, CA 94931-4217
PROJECT ADDRESS: 690 E. Cotati Avenue – Village Walk
PERMIT #: 13104

We have been directed by Standard Pacific Homes to complete a 2013 Building Code Update for the Village Walk project. We have highlighted these items under Delta 3. The following describes the nature of those changes:

LIST OF ARCHITECTURAL REVISIONS			
JOB NUMBER 360.033		PROJECT TITLE Village Walk	2013 Code Update
DELTA NUMBER	ISSUE DATE	AFFECTED SHEET(S)	Description
3	3/16/2015	T1.1	Building code references updated to 2013 building code
		GN.1 & GN.2	Building code references updated to 2013 building code
		CGR.1 - CGR.4	Updated to City of Cotati current version of Cal Green Tier 1 Checklist
		A5.1 & A6.1	Plan 1, Plan 2 - All water heaters are now tankless
		A3.1 & A3.2	Plan 3 - All water heaters are now tankless
		AD.1	Detail 18 Omitted
		Roof Plans	Roof plan notes updated to refelec the requirements of the 12013 CRC
			Roofing material reference of "40-year Elk/GAF"- product has been discontinued - deferring to builder's specifications
		Elevations	Roofing material reference of "40-year Elk/GAF" - product has been discontinued - deferring to builder's specifications
		Floor Plan Keynotes	Building code references updated to 2013 building code
		Interior Elevations	Mounting heights detail has been updated and vanity mirrors revised
			Bathroom mirrors and cabinet heights revised to match builder's current standards
		Electrical Plans	Mounting heights detail has been updated to builder's current standards
			Electrical plans have been revised to comply with 2013 building code
		All Detail Sheets	Details updated to meet builder standards & Building code references updated to 2013 building code

5865 Owens Drive
Pleasanton, California 94588 USA
+1-925-251-7200
+1-925-251-7201 fax
WWW.DAHLINGROUP.COM

All above items are noted as Delta 3, Dated March 16, 2015.

Sincerely,

Donald J. Ruthroff, Senior Architect
C24946 Exp. 10/31/15
cc Dahlin Group, Inc. – File

MEMORANDUM

September 24, 2013

TO: Mandi Kaercher, Standard Pacific Homes

FROM: Keri Pajon, Permit Technician

SUBJECT: Plan Check Comments (1st Submittal) 690 E. Cotati Avenue - Village Walk / Permit # 13104

Attached please find plan review comments from the Planning, Building and Rancho Adobe Fire Protection District for your project at 690 E. Cotati Avenue - Village Walk. Please make the necessary corrections and re-submit three (3) sets of plans to the Building Department, City of Cotati.

If you have any questions, please contact me at 707-665-3636.

Rancho Adobe Fire Protection District

11000 Main Street
P. O. Box 1029
Penngrove, California 94951

Telephone: (707) 795-6011
Fax: (707) 795-5177
www.rancho-adobe-fire.org

9/19/ 2013

To: Village Walk Developers

Cc: City of Cotati, Building Department

Re: Plan Check Comments for Village Walk Subdivision

Plan Check Comments

1. Residential fire sprinkler system is required for all structures.
2. Sprinkler systems shall meet the requirements of NFPA 13D for Plan Models 3,4, & 5.
3. Per agreements made during design phase the Sprinkler systems shall meet the requirements of a straight NFPA 13 system for Building sets 201,202,203,301 and 302 and the systems will need to be monitored by a central station monitoring system.
4. 3 sets of plans must be submitted to Rancho Adobe Fire District for the above 8 different building designs, which must include engineered plans and fire sprinkler system calculations. There is no need for separate plan sets for the various reverse models, etc.
5. All plans submitted and approved, permits obtained and fee's paid prior to construction.
6. The permits and fees on this project that are currently due is the permit for the subdivision, which the fee is $1760.00. Permit applications can be obtained at the Cotati Building Department.
7. There will be Fire Sprinkler Plan check fees for the 8 different sets of building plan sets. The 5 straight NFPA 13 systems will be sent out to our plan check contractor for review and sign off. The cost for these plan checks will be a pass through.
8. The fire sprinkler system requires on-site inspections and final approval by our Fire Inspector upon completion and prior to building occupancy of each single family dwelling and of the multi family units.
9. FYI- Rancho Adobe Board of Directors has adopted a new ordinance that represents an increase of 10% of all categories of the District's fee schedule effective Oct. 19th 2013.

Any questions or concerns feel free to call me on my cell at 707-591-4201

Thanks,

Steven Davidson
Battalion Chief / Fire Marshall
Rancho Adobe Fire District

Memorandum

Date: **September 4, 2013**

To: **Building Division**

From: **Alicia Giudice**

Re: **Village Walk – Permit No. 13104**

The Planning Division has reviewed the Building Plans for the Village Walk Duet and Triplex Units and Plans 3, 4, and 5. The following changes need to be made to the submitted plans before the permits can be issued:

1. Provide cut sheet for the exterior light fixtures in compliance with Condition of Approval 4.
2. Plans shall be revised to show where all plumbing/waste and other roof vents will be located in compliance with Condition of Approval 5 which requires that all vents be located to the rear of building where feasible and that eyebrow or similar low-profile vents be used.
3. Sheet A0.1 and any other site plan sheet needs to be revised to identify which units will have a no step design in compliance with Condition of Approval 17.

Duet and Triplex Units

4. Plans shall include programmable fans that vent to the outside as required by Condition of Approval 19.
5. Units 1 and 12 shall be revised to demonstrate a solid deck rail to reduce noise impacts identified in the Noise Assessment Study, prepared by Edward L. Pack Associates, dated May 2, 2013.
6. As required by Condition of Approval 10, Elevations and Notes shall clearly state that front doors will include small upper windows on all front doors shown.

Plan 3, 4, and 5

7. Sheet A0.1 and any other site plan sheet needs to be revised to identify which units will have a no step design in compliance with Condition of Approval 17.
8. For Plan 3, Elevation C -Explain what building paper is.

MEMORANDUM

September 18, 2013

TO: Keri Pajon, Permit Technician

FROM: Glenn Schainblatt, Building Official

SUBJECT: Plan Check Comments (1st Submittal)
Village Walk Plans 201, 202, 203, 301 & 302 and Plans 3, 4, & 5

Structural Plans – TYPICAL
Amend structural plans to include items noted in ENGEO Foundation Plan Review Letter dated 7/24/13
Party wall connection to slab not detailed.

ARCHITECTURAL PLANS – TYPICAL
CGR.1-4 Revise note 14 to 65% construction waste
Pg AO.1 – Revise to show building setbacks
Note: provide individual plot plan showing setbacks for each lot for permit issuance
Stair design without 3' landing – use winder stair configuration

Pg FPD.1 – specify fire caulk product

Plans 3, 4, & 4 pg T1.1 – missing Plumbing Drawing Index
plumbing plans not submitted
missing Electrical Drawing Index
electrical load calc. not submitted

City of Cotati

Sonoma County, California

MEMORANDUM

July 9, 2007

To:
Standard Pacific Homes, Attn: Ken Baki, 3825 Hopyard Road, Suite 195, Pleasanton, CA 94588
Standard Pacific Homes, Attn: Michael Coakley, 3825 Hopyard Road, Suite 195, Pleasanton, CA 94588
Pacific Bell, Street Verification Dept., 12722 S. Birch Ave., Room 200, Hawthorne, CA 90250
Postmaster, US Post Office, Attn: Christine, 150 Raley's Town Center, Rohnert Park, CA 94928
Rancho Adobe Fire Protection District, William Pattten, Captain, P O Box 1029, Penngrove, CA 94951
Cotati-Rohnert Park Unified School District, J.Wade Roach, 5860 Labath Avenue, Rohnert Park, CA 94928
Cotati-Rohnert Park School District, Personnel Department, 5860 Labath Avenue, Rohnert Park, CA 94928
PG&E, Service Planning, Attention: John Conley 210 Corona Road, Petaluma, CA 94952
County of Sonoma, Permit & Resource Management, Dilys Ranger, 2550 Ventura Ave., Santa Rosa, CA 95403
Waste Management, P O Box 697, Santa Rosa, CA 95402
AT&T Cable Services, 595 Martin Ave., Rohnert Park, CA 94928
Pacific Bell, Subdivision Engineering, 2125 Occidental Road, Santa Rosa, CA 95401
Sonoma County Assessor, 585 Fiscal Drive, Room 104F, Santa Rosa, CA 95403
County of Sonoma, Attn: Renee Bergeron-Bhatti, 2615 Paulin Dr., Santa Rosa, CA 95403
United States Postal Service, Attn: Walter S. Tom, P O Box 882708, San Francisco, CA 94188-2708
Comcast, Attn: Jeff Jividen, 1179 N McDowell Blvd., Suite D, Petaluma, CA 94954
Sonoma County Law Enforcement Consortium, Attn: Catalena Cabrere, 2615 Paulin Dr., Santa Rosa, CA 95403
SBC GIS West Landbase Group, Attn: Laura Mawhinney, 9390 Gateway Drive, Suite 250, Reno, NV 89521
P.G. & E., Attn: Paula Morgan, P O Box 167, Guerneville, CA 95446
Chief Stewart, Cotati Police Department
Cotati Police Department, Dispatch
Angela Hudson, Finance Department
Dana Martin, Finance Department

FROM: Janet Leali, Permit Technician

SUBJECT: New Address Assignment – Village Walk Subdivision

Attached please find an address assignment list and site map of the locations for the lots at Village Walk Subdivision (assessor parcel numbers 144-292-021 and 144-292-026).

If you have any questions, please feel free to contact me at 707-665-3636.

Attachments (2)

- Address List
- Site Map

201 West Sierra Avenue, Cotati, CA 94931-4217 • TELEPHONE 707•792•4600 • FAX 707•795•7067

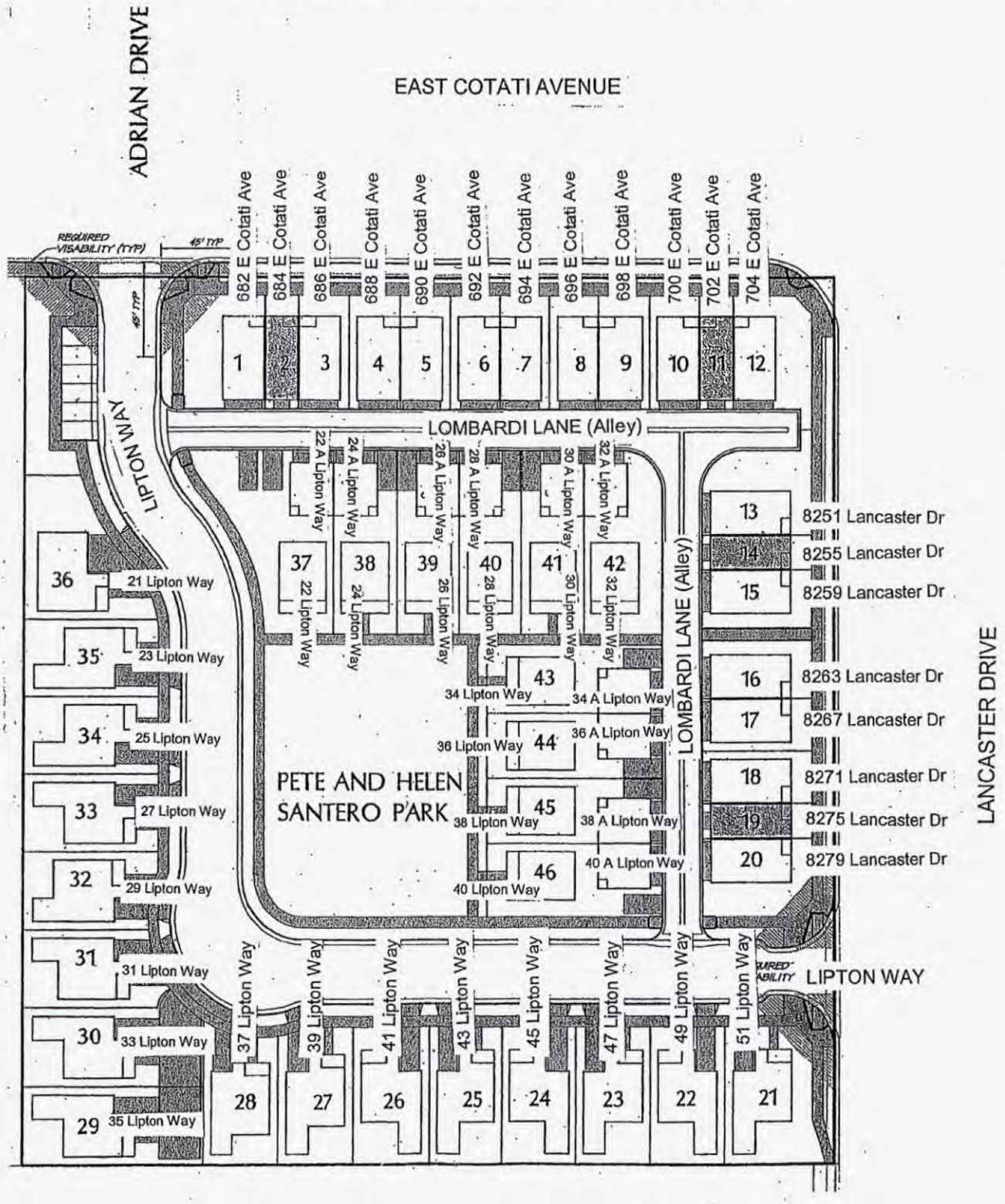
VILLAGE WALK SUBDIVISION

PLAN # 16026

(56 Dwelling Units - 26 Single Family Dwellings, 20 Attached Single Family Dwellings and 10 Second Units)

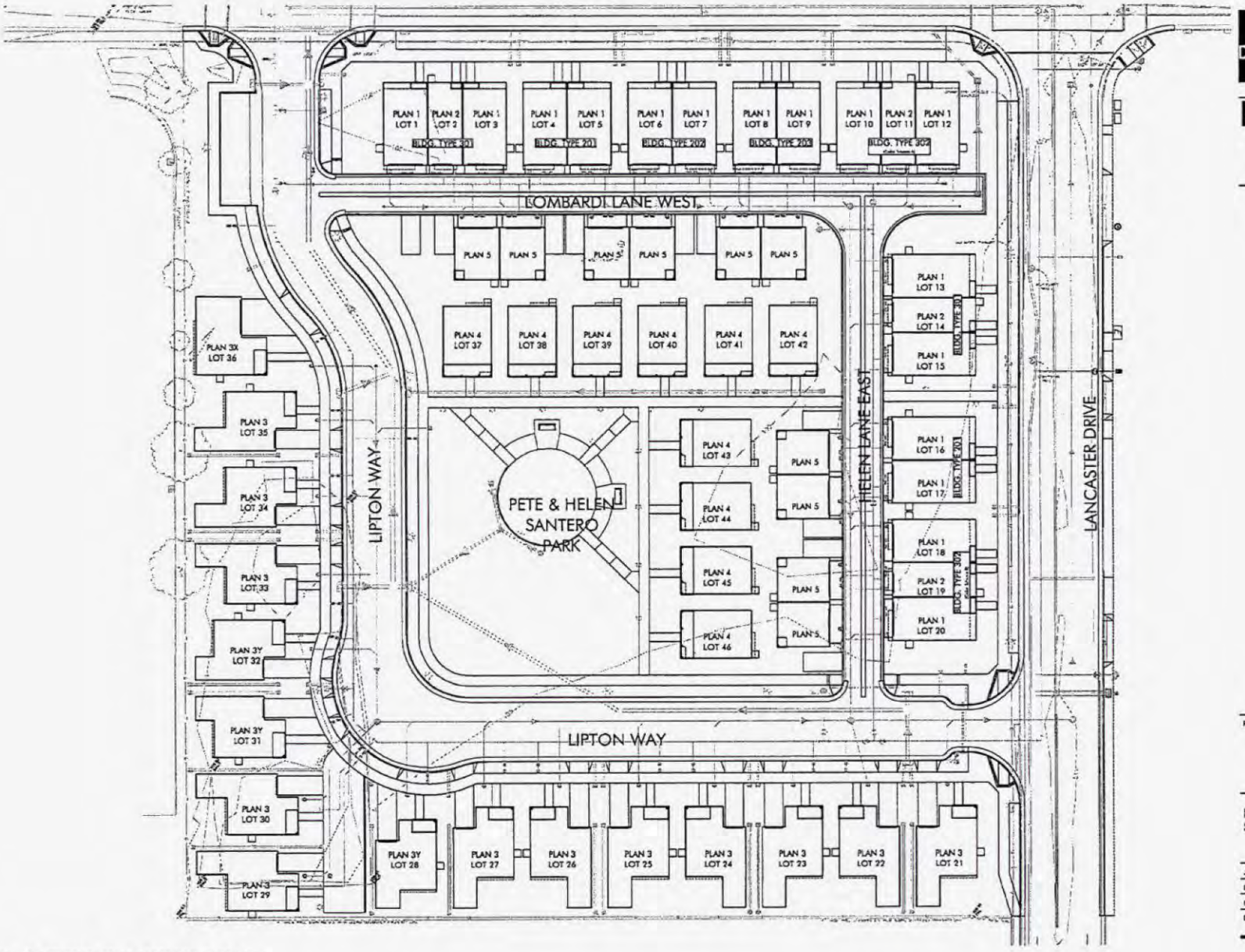
Lot #	Address	Dwelling Type
1	682 East Cotati Avenue	ASF
2	684 East Cotati Avenue	ASF
3	686 East Cotati Avenue	ASF
4	688 East Cotati Avenue	ASF
5	690 East Cotati Avenue	ASF
6	692 East Cotati Avenue	ASF
7	694 East Cotati Avenue	ASF
8	696 East Cotati Avenue	ASF
9	698 East Cotati Avenue	ASF
10	700 East Cotati Avenue	ASF
11	702 East Cotati Avenue	ASF
12	704 East Cotati Avenue	ASF
13	8251 Lancaster Drive	ASF
14	8255 Lancaster Drive	ASF
15	8259 Lancaster Drive	ASF
16	8263 Lancaster Drive	ASF
17	8267 Lancaster Drive	ASF
18	8271 Lancaster Drive	ASF
19	8275 Lancaster Drive	ASF
20	8279 Lancaster Drive	ASF
21	51 Lipton Way	SFD
22	49 Lipton Way	SFD
23	47 Lipton Way	SFD
24	45 Lipton Way	SFD
25	43 Lipton Way	SFD
26	41 Lipton Way	SFD
27	39 Lipton Way	SFD
28	37 Lipton Way	SFD
29	35 Lipton Way	SFD
30	33 Lipton Way	SFD
31	31 Lipton Way	SFD
32	29 Lipton Way	SFD
33	27 Lipton Way	SFD
34	25 Lipton Way	SFD
35	23 Lipton Way	SFD
36	21 Lipton Way	SFD
37	22 Lipton Way	SFD
37	22 A Lipton Way	2nd Unit
38	24 Lipton Way	SFD
38	24 A Lipton Way	2nd Unit
39	26 Lipton Way	SFD
39	26 A Lipton Way	2nd Unit
40	28 Lipton Way	SFD
40	28 A Lipton Way	2nd Unit
41	30 Lipton Way	SFD
41	30 A Lipton Way	2nd Unit
42	32 Lipton Way	SFD
42	32 A Lipton Way	2nd Unit
43	34 Lipton Way	SFD
43	34 A Lipton Way	2nd Unit
44	36 Lipton Way	SFD
44	36 A Lipton Way	2nd Unit
45	38 Lipton Way	SFD
45	38 A Lipton Way	2nd Unit
46	40 Lipton Way	SFD
46	40 A Lipton Way	2nd Unit

VILLAGE WALK SUBDIVISION



Note:

Lots 1 ~ 20: Attached Single Family Dwelling
Lots 21 ~ 36: Single Family Dwellings
Lots 37 ~ 46 (Front Lots): Single Family Dwellings
Lots 37 ~ 46 (Back Lots): 2nd Units



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Pleasanton, CA 94588
925-251-7200

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VILLAGE WALK

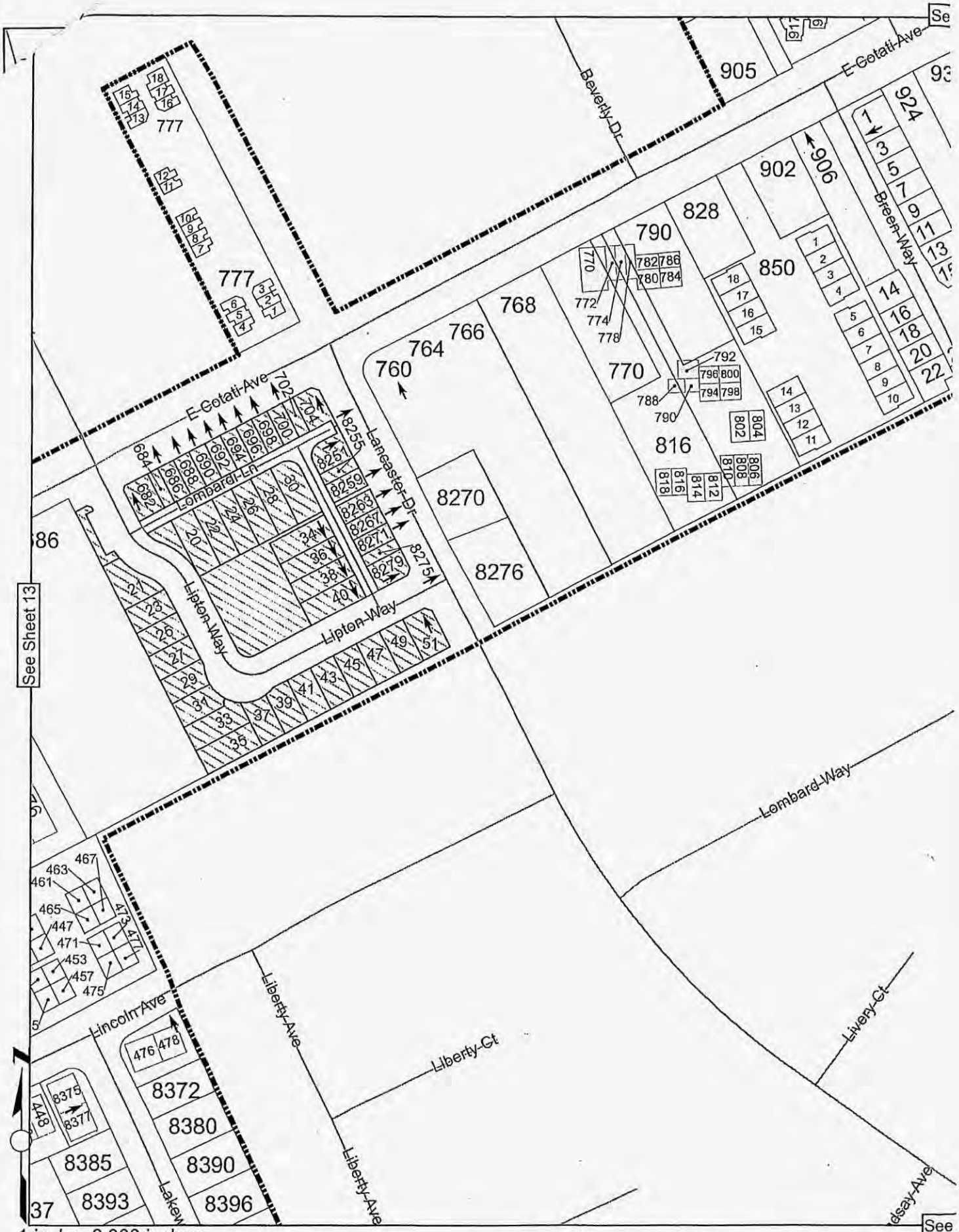
Cotati, California

REVISIONS

Reference Site Plan

JOB NO. 360.033	SHEET
DRAWN	
CHECK xx	A0.1
DATE	

J:\360\033\Arch\Plot\CD\360033_a001.dwg, 5/3/2013 8:34:04 AM, kmiles


E-Gotati-Ave
Beverly-Dr
Breen-Way
Lombard-Ln
Lancaster-Dr
Lipton-Way
Lombard-Way
Liberty-Ave
Liberty-Ct
Livery-Ct
Lincoln-Ave
See Sheet 13
905
906
902
924
828
790
850
768
766
764
760
770
816
8270
8276
777
8372
8380
8390
8396
8385
8393
1 inch = 2,000 inches

15043

harris & sloan
CONSULTING GROUP, INC.

2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
www.hscgi.com

Structural
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RECEIVED
MAR 18 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

February 27, 2015

Mandi Misasi
Standard Pacific Homes
4750 Willow Road, Suite 150
Pleasanton, CA 94588

RE: Village Walk (HS13068)
2013 Code Update

We have updated the structural construction documents to conform to the 2013 California Building Codes. Enclosed, please find the following:

- An analysis of the design loads demonstrating equivalency between the seismic and wind requirements of the 2010 and 2013 codes.
- Standard calculations for exterior studs which do not conform to conventional framing requirements including balloon framed wall studs not braced by a low roof diaphragm (these studs are affected by the new code's more stringent deflection requirements for stud walls supporting stucco).
- Shearwall anchorage calculations based on NDS and updated manufacturer-specified capacities.
- Plan, note, and detail sheets with revisions clouded as delta 2 (dated 02-27-2015), "2013 CBC"

In general, the updated plans vary little from those designed under the 2010 CBC. To aid in review of these documents, a summary of the changes is provided below:

Sheet SN.1

1. Special Inspection references updated based on the 2013 CBC. Note that the required inspections have not changed.
2. Code references updated to 2013 CBC, ICC, ACI, ASTM, etc..
3. Retrofit Specifications have been updated based on new ACI requirements.
4. King Stud table revised based on L/360 deflection requirements for stucco walls.
5. Additional specifications added for interior non-bearing headers.
6. Specifications revised for interior stud walls supporting continuous 3-point bearing trusses.

Structural Sheets

1. Shearwall schedules revised based on updated anchorage calculations (see typical calc enclosed).
2. Keynote 30 at balloon-framed walls updated based on revised deflection requirements (see typical calcs enclosed).
3. Keynote 1 revised to clarify construction requirements.

FILE COPY

harris & sloan
CONSULTING GROUP, INC.

2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
www.hscgi.com

Structural
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In addition to the code update, revisions have been made to the unit 2 Simpson Strong Walls adjacent to the garage door. The two SSW 18X7 panels have been replaced by a single SSW 24X7 panel. See sheet S2.1 to S2.2 and pages 12 to 13 of the attached supplemental analysis and calculations.

If there are further questions, please contact Evan Hamilton at (916) 921-2800.

Respectfully,

Harris & Sloan Consulting Group, Inc.



Katie Lilliedoll, S.E.

KL:eh

15043

harris & sloan
CONSULTING GROUP, INC.

2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
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Supplemental Analysis and Calculations for 2013 Code Update

Wind Design

The design wind speed for residential construction (Risk Category II) was revised from 85 mph under ASCE 7-05 to 110mph under ASCE 7-10. However, the load combination factor for wind was changed from 1.0 to 0.6 resulting in design wind pressures generally equivalent to the wind pressures used for design under the 2010 CBC. See pages 2 & 3 for typical wind pressure calculations from the 2010 codes and 4 &5 for wind pressure calculations under the 2013 codes.

Seismic Design

The table below provides a summary of the seismic design values from the approved 2010 CBC project calculations and the new 2013 CBC (ASCE 7-10). A printout of the USGS report with ASCE-10 seismic values is included as page 6.

Mapped Spectral Accelerations	Design Values from the Approved 2010 Plans		2013 Code Values
	Code Values	HSCGI Design Minima	
Ss	1.615	Not Applicable	1.615
S_1	0.634	Not Applicable	0.634

The design values for the 2013 code are equal to the 2010 code values. Therefore, seismic loads have not increased and lateral redesign is not required.

Shearwall Anchorage

Shearwall anchorage calculations in the approved 2010 CBC calculation packages were based on ACI 318, NDS 2008, and ICC reports for proprietary anchors. Revised calculations provided on page 7 are based on NDS 2012 and current ICC reports.

Stud Calculations

The deflection criteria for walls supporting stucco or plaster was revised from L/240 under the 2010 CBC to L/360 under the 2013 CBC. See pages 8-11 for calculations supporting the balloon-framed stud table provided in revised Keynote #30 on the floor framing plans (where occurs).



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Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (*V*)	85 mph (3-second gust)	
Importance Factor (*I*)	1.00 ASCE 7 - Table 6-1	
Exposure Category	C ASCE 7 - Section 6.5.6.3;	
Directionality Factor (K_d)	0.85 ASCE 7 - Table 6-4	
Gust Factor (*G*)	0.85 ASCE 7 - Section 6.5.8.1	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects

Hill Type None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	23.20 ft	Velocity Pressure (q_h) for MWFRS	14.55 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.67
min L/B (Front to Back)	1.50
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.40

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C 14.55 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
9.0 ft	-1.02	17.52	-1.25	20.78
15.0 ft	-0.95	16.38	-1.09	18.50
19.2 ft	-0.91	15.83	-1.02	17.39
22.0 ft	-0.89	15.52	-0.97	16.79

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Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-0.97	
Int. Pressure Coeff. (*Cpi*)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-9 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	3 psf	Available to offset overturning from wind

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Wind Design Per IBC/ASCE 7 Chapter 27 Directional Procedure

Basic Wind Speed (V)	110	mph (3-second gust)
Risk Category	II	ASCE Table 1.5-1
Exposure Category	C	ASCE 7 - Section 26.7.3;
Directionality Factor (K_d)	0.85	ASCE 7 - Table 26.6-1
Gust Factor (G)	0.85	ASCE 7 - Section 26.9.1

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Eqn 27.4-1

Velocity Pressures by Height

$$q_z = 0.00256\, K_z\, K_{zt}\, K_d\, V^2$$

ASCE 7 - Eqn 27.3-1
K_z Per ASCE 7 - Table 27.3-1
K_{zt} Per ASCE 7 - Table 26.8-1

Topographic Effects Hill Type None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.43	0.850	13.43
20	1.000	1.000	0.900	14.22	0.900	14.22
25	1.000	1.000	0.940	14.85	0.940	14.85
30	1.000	1.000	0.980	15.48	0.980	15.48
40	1.000	1.000	1.040	16.43	1.040	16.43

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	23.20 ft	Velocity Pressure (q_h) for MWFRS	14.62 psf

14.62 psf ↑ compare to 14.55 psf in 2010 CBC: 0.5% increase is negligible

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 27.4-1
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.67
min L/B (Front to Back)	1.50
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.40

Components and Cladding, Walls (Chapter 30)

Velocity Pressure (q_h) for C&C 14.62 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
9.0 ft	-1.02	17.60	-1.25	20.88
15.0 ft	-0.95	16.46	-1.09	18.58
19.2 ft	-0.91	15.90	-1.02	17.48
22.0 ft	-0.89	15.60	-0.97	16.87

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Wind Design Per IBC/ASCE 7 Chapter 27 Directional Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 27.4-1
Area Reduction Factor	0.9	ASCE 7 - Figure 27.4-1
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 27.4-1
Avg. Pressure Coeff. (C_p)	-0.97	
Int. Pressure Coeff. (*Cpi*)	0.18	ASCE 7 - Figure 26.11-1
Wind Uplift Pressure (p)	-9 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Eqn 27.4-1

Controlling Load Combo	0.6D+0.6W	ASCE 7 - Section 2.4.1
Net pressure from Roof	3 psf	Available to offset overturning from wind

USGS Design Maps Summary Report

User–Specified Input

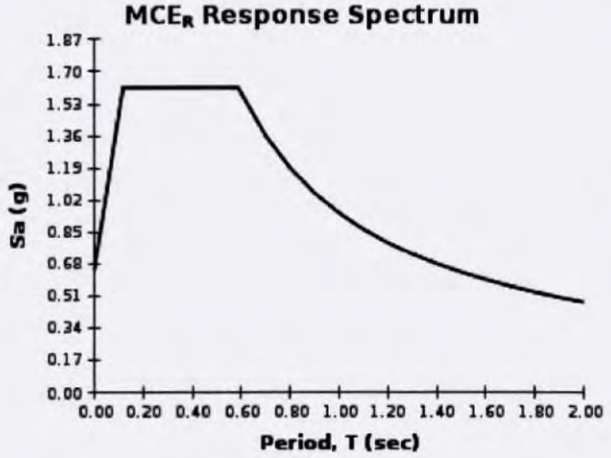
Report Title	Village Walk (HS13068) 2013 Seismic Criteria Mon February 23, 2015 23:22:23 UTC
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	38.32932°N, 122.69591°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

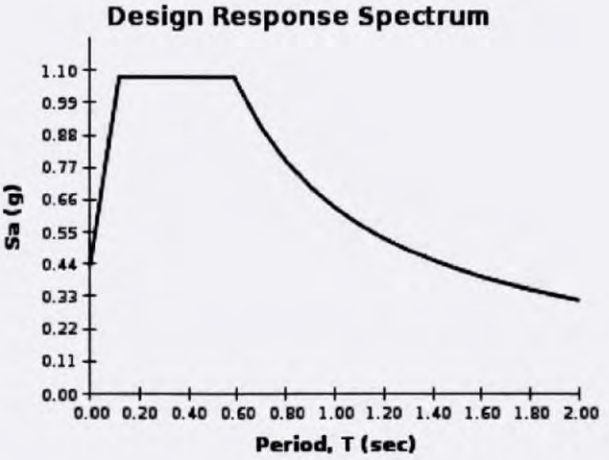


USGS–Provided Output

S_S =	1.615 g	S_{MS} =	1.615 g	S_{DS} =	1.077 g
S_1 =	0.634 g	S_{M1} =	0.951 g	S_{D1} =	0.634 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.





For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

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CALCULATIONS FOR ANCHOR BOLTS & MUDSILL ANCHORS AT SHEARWALLS

Allowable loads per NDS/hardware values (1.6 load duration factor)

Load Source	Sill Plate Size	1/2" ϕ A.B.	5/8" ϕ A.B.	Simpson MASA			USP FA3
				standard	one leg up	(1) of (3) up	
Wind	2x	650#	930#	1515#	1005#	1345#	780#
	3x	770#	1180#	1215#	815#	1082#	N/A
Seismic	2x	650#	930#	1235#	845#	1105#	625#
	3x	770#	1180#	1020#	685#	908#	N/A

Mudsill Anchor Spacing for All Shearwall Types

Shearwall Type	Sill Plate Size	Wind Capacity	Seismic Capacity	Anchor Spacing[1,2]			
				1/2" ϕ A.B.	5/8" ϕ A.B.	MASA	FA3
SW 1	2x	310plf (W)	260plf (E)	40.3" oc	57.6" oc	51.0" oc	28.8" oc
				40.0" oc	48.0" oc	40.0" oc	28.0" oc
SW 2	2x	350plf (W)	350plf (E)	35.7" oc	51.0" oc	37.9" oc	21.4" oc
				34.0" oc	48.0" oc	34.0" oc	20.0" oc
SW 3	2x	600plf (W)	490plf (E)	20.8" oc	29.8" oc	26.9" oc	15.3" oc
				20.0" oc	28.0" oc	20.0" oc	14.0" oc
SW 4	2x	750plf (W)	640plf (E)	16.6" oc	23.8" oc	20.7" oc	11.7" oc
				16.0" oc	22.0" oc	16.0" oc	10.0" oc
SW 5	2x	750plf (W)	640plf (E)	16.6" oc	23.8" oc	20.7" oc	11.7" oc
				16.0" oc	22.0" oc	16.0" oc	10.0" oc
SW 6	3x	830plf (W)	760plf (E)	17.8" oc	27.3" oc	14.3" oc	N/A
				16.0" oc	26.0" oc	14.0" oc	N/A
SW 7	3x	1240plf (W)	980plf (E)	11.9" oc	18.3" oc	10.5" oc	N/A
				10.0" oc	18.0" oc	10.0" oc	N/A
SW 8	3x	1530plf (W)	1280plf (E)	9.7" oc	14.8" oc	8.5" oc	N/A
				8.0" oc	14.0" oc	8.0" oc	N/A
SW 9	2x	350plf (W)	310plf (E)	35.7" oc	51.0" oc	42.8" oc	24.2" oc
				34.0" oc	48.0" oc	34.0" oc	24.0" oc
SW 10	2x	600plf (W)	460plf (E)	20.8" oc	29.8" oc	26.9" oc	15.6" oc
				20.0" oc	28.0" oc	20.0" oc	14.0" oc
SW 11	3x	970plf (W)	770plf (E)	15.2" oc	23.4" oc	13.4" oc	N/A
				14.0" oc	22.0" oc	12.0" oc	N/A
SW 12	3x	970plf (W)	770plf (E)	15.2" oc	23.4" oc	13.4" oc	N/A
				14.0" oc	22.0" oc	12.0" oc	N/A
SW 13	3x	1285plf (W)	920plf (E)	11.5" oc	17.6" oc	10.1" oc	N/A
				10.0" oc	16.0" oc	10.0" oc	N/A
SW 14	3x	1500plf (W)	1200plf (E)	9.9" oc	15.1" oc	8.7" oc	N/A
				8.0" oc	14.0" oc	8.0" oc	N/A
SW 15	3x	1540plf (W)	1540plf (E)	9.6" oc	14.7" oc	7.1" oc	N/A
				8.0" oc	14.0" oc	N/A	N/A
SW 16	2x	350plf (W)	340plf (E)	35.7" oc	51.0" oc	39.0" oc	22.1" oc
				34.0" oc	48.0" oc	34.0" oc	22.0" oc
SW 17	2x	600plf (W)	510plf (E)	20.8" oc	29.8" oc	26.0" oc	14.7" oc
				20.0" oc	28.0" oc	20.0" oc	14.0" oc
SW 18	3x	930plf (W)	665plf (E)	15.9" oc	24.4" oc	14.0" oc	N/A
				14.0" oc	24.0" oc	12.0" oc	N/A
SW 19	3x	1215plf (W)	870plf (E)	12.2" oc	18.6" oc	10.7" oc	N/A
				12.0" oc	18.0" oc	10.0" oc	N/A
SW 20	3x	1425plf (W)	1020plf (E)	10.4" oc	15.9" oc	9.1" oc	N/A
				10.0" oc	14.0" oc	8.0" oc	N/A
SW 21	3x	1860plf (W)	1330plf (E)	7.9" oc	12.2" oc	7.0" oc	N/A
				6.0" oc	12.0" oc	N/A	N/A

1. Shading indicates spacing used in shearwall schedule

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Stud Calculations Per 2012 NDS

Stud/Post Properties		14' Stud - 2x6 Wall	14' Stud - 2x6 Wall
Height	ft	14.00	14.00
Depth/Width (d)	in	5.50	5.50
Thickness	in	1.50	1.50
Grade		DF #2 (2"-4" thick)	DF Stud
O.C. Spacing	in	16.00	16.00
Repetitive Factor		NDS Repetitive Factor	IBC System Factor
			8d's @ 6 in o.c. shtg to stud
Location		exterior - zone 5	exterior - zone 5

Load Combinations:		1. DL+LL	2. DL+(0.6W or 0.7E)		3. DL+0.75[LL+(0.6W or 0.7E)]		
Loads & Load Factors		LC #1	LC #2	LC #3	LC #1	LC #2	LC #3
Axial Dead Load - DL	plf	420.00	420.00	420.00	420.00	420.00	420.00
Axial Live Load - LL	plf	200.00	0.00	150.00	200.00	0.00	150.00
0.6* Wind Load (C&C)	psf	5.00	17.48	13.11	5.00	17.48	13.11
0.7* Seismic Load	psf	0.00	2.64	1.98	0.00	2.64	1.98
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.35	1.35	1.35
Material Properties							
E (Adjusted)	ksi	1600.0	1600.0	1600.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	580.0	580.0	580.0	510.0	510.0	510.0
Fb (Adjusted)	psi	1345.5	1345.5	1345.5	945.0	945.0	945.0
Fcll (Adjusted)	psi	1485.0	1485.0	1485.0	850.0	850.0	850.0
Compression Calcs							
E_{min}'	psi	5.8E+05	5.8E+05	5.8E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		30.5			30.5		
F_{cE}		511	511	511	449	449	449
F*c	psi	1708	2376	2376	978	1360	1360
F_{cE}/Fc^*		0.30	0.22	0.22	0.46	0.33	0.33
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.28	0.20	0.20	0.40	0.30	0.30
Fc'	psi	474	486	486	396	413	413
fc	psi	100	68	92	100	68	92
Stress Ratio		**0.2112**	**0.1397**	**0.1896**	**0.2533**	**0.1643**	**0.2229**
Bending Calcs							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	1960	6852	5139	1960	6852	5139
Fb'	psi	1547	2153	2153	1087	1512	1512
fb	psi	259	906	680	259	906	680
Stress Ratio		**0.1675**	**0.4209**	**0.3157**	**0.2385**	**0.5993**	**0.4494**
Combined Stresses							
(fc/F'c)^2		0.0446	0.0195	0.0359	0.0642	0.0270	0.0497
fb/Fb'(1-(fc/Fce)		0.2084	0.4854	0.3851	0.3069	0.7059	0.5654
Combined Stress Ratio		**0.2530**	**0.5049**	**0.4210**	**0.3711**	**0.7329**	**0.6150**
Deflection Check							
Deflection	in	0.173	0.605	0.454	0.140	0.490	0.368
0.7 Deflection	in	0.121	0.424	0.318	0.098	0.343	0.257
Deflection Limit (L/360)	in	0.467	0.467	0.467	0.467	0.467	0.467
Deflection Ratio		**0.3711**	**0.9081**	**0.6811**	**0.3005**	**0.7353**	**0.5515**
Results			**OK**			**OK**	

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Stud Calculations Per 2012 NDS

Stud/Post Properties		16' Stud - 2x6 Wall	16' Stud - 2x6 Wall
Height	ft	16.00	16.00
Depth/Width (d)	in	5.50	5.50
Thickness	in	3.00	1.50
Grade		DF Stud	DF #2 (2"-4" thick)
O.C. Spacing	in	16.00	16.00
Repetitive Factor		NDS Repetitive Factor	IBC System Factor
			8d's @ 6 in o.c. shtg to stud
Location		exterior - zone 5	exterior - zone 5

Load Combinations:		1. DL+LL	2. DL+(0.6W or 0.7E)		3. DL+0.75[LL+(0.6W or 0.7E)]		
Loads & Load Factors		LC #1	LC #2	LC #3	LC #1	LC #2	LC #3
Axial Dead Load - DL	plf	450.00	450.00	450.00	450.00	450.00	450.00
Axial Live Load - LL	plf	200.00	0.00	150.00	200.00	0.00	150.00
0.6* Wind Load (C&C)	psf	5.00	17.48	13.11	5.00	17.48	13.11
0.7* Seismic Load	psf	0.00	2.64	1.98	0.00	2.64	1.98
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.35	1.35	1.35
Material Properties							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1600.0	1600.0	1600.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	580.0	580.0	580.0
Fb (Adjusted)	psi	805.0	805.0	805.0	1579.5	1579.5	1579.5
Fcll (Adjusted)	psi	850.0	850.0	850.0	1485.0	1485.0	1485.0
Compression Calcs							
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.8E+05	5.8E+05	5.8E+05
Le/d		34.9			34.9		
F_{cE}		344	344	344	391	391	391
F*c	psi	978	1360	1360	1708	2376	2376
F_{cE}/Fc^*		0.35	0.25	0.25	0.23	0.16	0.16
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.32	0.24	0.24	0.22	0.16	0.16
Fc'	psi	314	324	324	371	377	377
fc	psi	53	36	48	105	73	97
Stress Ratio		**0.1672**	**0.1123**	**0.1497**	**0.2834**	**0.1929**	**0.2572**
Bending Calcs							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	2560	8950	6712	2560	8950	6712
Fb'	psi	926	1288	1288	1816	2527	2527
fb	psi	169	592	444	339	1183	888
Stress Ratio		**0.1828**	**0.4594**	**0.3446**	**0.1864**	**0.4683**	**0.3512**
Combined Stresses							
(fc/F'c)^2		0.0279	0.0126	0.0224	0.0803	0.0372	0.0662
fb/Fb'(1-(fc/Fce)		0.2158	0.5137	0.4011	0.2548	0.5752	0.4670
Combined Stress Ratio		**0.2437**	**0.5263**	**0.4235**	**0.3351**	**0.6124**	**0.5331**
Deflection Check							
Deflection	in	0.169	0.590	0.443	0.209	0.732	0.549
0.7 Deflection	in	0.118	0.413	0.310	0.147	0.512	0.384
Deflection Limit (L/360)	in	0.533	0.533	0.533	0.533	0.533	0.533
Deflection Ratio		**0.3165**	**0.7746**	**0.5810**	**0.3925**	**0.9604**	**0.7203**
Results			**OK**			**OK**	

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Stud Calculations Per 2012 NDS

Stud/Post Properties		19' Stud - 2x6 Wall	19' Stud - 2x6 Wall
Height	ft	19.00	19.00
Depth/Width (d)	in	5.50	5.50
Thickness	in	4.50	3.00
Grade		DF Stud	DF Stud
O.C. Spacing	in	16.00	16.00
Repetitive Factor		NDS Repetitive Factor	IBC System Factor
			8d's @ 6 in o.c. shtg to stud
Location		exterior - zone 5	exterior - zone 5

Load Combinations:		1. DL+LL	2. DL+(0.6W or 0.7E)		3. DL+0.75[LL+(0.6W or 0.7E)]		
Loads & Load Factors		LC #1	LC #2	LC #3	LC #1	LC #2	LC #3
Axial Dead Load - DL	plf	495.00	495.00	495.00	495.00	495.00	495.00
Axial Live Load - LL	plf	200.00	0.00	150.00	200.00	0.00	150.00
0.6* Wind Load (C&C)	psf	5.00	17.48	13.11	5.00	17.48	13.11
0.7* Seismic Load	psf	0.00	2.64	1.98	0.00	2.64	1.98
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.00	1.00	1.00
Material Properties							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	510.0	510.0	510.0
Fb (Adjusted)	psi	805.0	805.0	805.0	700.0	700.0	700.0
Fcll (Adjusted)	psi	850.0	850.0	850.0	850.0	850.0	850.0
Compression Calcs							
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		41.5			41.5		
F_{cE}		244	244	244	244	244	244
F*c	psi	978	1360	1360	978	1360	1360
F_{cE}/Fc^*		0.25	0.18	0.18	0.25	0.18	0.18
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.24	0.17	0.17	0.24	0.17	0.17
Fc'	psi	230	234	234	230	234	234
fc	psi	37	27	35	56	40	52
Stress Ratio		**0.1629**	**0.1139**	**0.1484**	**0.2444**	**0.1708**	**0.2225**
Bending Calcs							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	3610	12621	9465	3610	12621	9465
Fb'	psi	926	1288	1288	805	1120	1120
fb	psi	159	556	417	239	834	626
Stress Ratio		**0.1719**	**0.4319**	**0.3239**	**0.2965**	**0.7450**	**0.5588**
Combined Stresses							
(fc/F'c)^2		0.0265	0.0130	0.0220	0.0597	0.0292	0.0495
fb/Fb'(1-(fc/Fce)		0.2030	0.4849	0.3777	0.3852	0.8911	0.7106
Combined Stress Ratio		**0.2296**	**0.4979**	**0.3997**	**0.4449**	**0.9203**	**0.7601**
Deflection Check							
Deflection	in	0.224	0.782	0.587	0.258	0.904	0.678
0.7 Deflection	in	0.157	0.548	0.411	0.181	0.633	0.474
Deflection Limit (L/360)	in	0.633	0.633	0.633	0.633	0.633	0.633
Deflection Ratio		**0.3534**	**0.8648**	**0.6486**	**0.4081**	**0.9988**	**0.7491**
Results			**OK**			**OK**	

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Stud Calculations Per 2012 NDS

Stud/Post Properties		9/10 Plates - 2x6 Wall	9/10 Plates - 2x8 Wall
Height	ft	20.00	20.00
Depth/Width (d)	in	5.50	5.50
Thickness	in	4.50	4.50
Grade		DF #2 (2"-4" thick)	DF Stud
O.C. Spacing	in	16.00	16.00
Repetitive Factor		NDS Repetitive Factor	IBC System Factor
			8d's @ 6 in o.c. shtg to stud
Location		exterior - zone 5	exterior - zone 5

Load Combinations:		1. DL+LL	2. DL+(0.6W or 0.7E)		3. DL+0.75[LL+(0.6W or 0.7E)]		
Loads & Load Factors		LC #1	LC #2	LC #3	LC #1	LC #2	LC #3
Axial Dead Load - DL	plf	510.00	510.00	510.00	510.00	510.00	510.00
Axial Live Load - LL	plf	200.00	0.00	150.00	200.00	0.00	150.00
0.6* Wind Load (C&C)	psf	5.00	17.48	13.11	5.00	17.48	13.11
0.7* Seismic Load	psf	0.00	2.64	1.98	0.00	2.64	1.98
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.00	1.00	1.00
Material Properties							
E (Adjusted)	ksi	1600.0	1600.0	1600.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	580.0	580.0	580.0	510.0	510.0	510.0
Fb (Adjusted)	psi	1345.5	1345.5	1345.5	700.0	700.0	700.0
Fcll (Adjusted)	psi	1485.0	1485.0	1485.0	850.0	850.0	850.0
Compression Calcs							
E_{min}'	psi	5.8E+05	5.8E+05	5.8E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		43.6			43.6		
F_{cE}		250	250	250	220	220	220
F*c	psi	1708	2376	2376	978	1360	1360
F_{cE}/Fc^*		0.15	0.11	0.11	0.23	0.16	0.16
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.14	0.10	0.10	0.21	0.16	0.16
Fc'	psi	242	245	245	209	212	212
fc	psi	38	27	36	38	27	36
Stress Ratio		**0.1578**	**0.1123**	**0.1453**	**0.1832**	**0.1294**	**0.1675**
Bending Calcs							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	4000	13984	10488	4000	13984	10488
Fb'	psi	1547	2153	2153	805	1120	1120
fb	psi	176	616	462	176	616	462
Stress Ratio		**0.1139**	**0.2863**	**0.2147**	**0.2190**	**0.5503**	**0.4128**
Combined Stresses							
(fc/F'c)^2		0.0249	0.0126	0.0211	0.0336	0.0167	0.0280
fb/Fb'(1-(fc/Fce)		0.1345	0.3216	0.2503	0.2651	0.6288	0.4922
Combined Stress Ratio		**0.1594**	**0.3342**	**0.2714**	**0.2986**	**0.6456**	**0.5203**
Deflection Check							
Deflection	in	0.240	0.841	0.630	0.214	0.747	0.560
0.7 Deflection	in	0.168	0.588	0.441	0.150	0.523	0.392
Deflection Limit (L/360)	in	0.667	0.667	0.667	0.667	0.667	0.667
Deflection Ratio		**0.3606**	**0.8825**	**0.6619**	**0.3206**	**0.7845**	**0.5884**
Results			**OK**			**OK**	

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	3/12/15		

Lateral Analysis Calculations

P9 **1st Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Above Plate:			
Wall Area Above Plate	46	0	ft^2
Average Elevation	13.7	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Wall Load	888	0	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	5.34	9.18	psf
Roof Load	0	0	#
Add'l Load (From P5)	=	4117	#
Total Wind Load	=	**5005**	**#**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	22.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0524	W
Rho	=	1.00	
Diaphragm Load	244	0	#
Add'l Load (From P5)	=	2897	#
Total Seismic Load	=	**3141**	**#**
1.25 Total Load*	=	**3927**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	4117#	0#	
Total Load in Diaphragm	5005#	0#	
Diaphgram Shear	300 plf (W)	0 plf (E)	
Total Diaphragm Length	=	17	ft
Total Diaphragm Shear	=	300 plf (W)	
Shear for drag & collectors*	=	300 plf (W)	

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

Shear Wall Summary

See manufactured shearwalls on next page(s)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	3/12/15		

Lateral Analysis Calculations For Simpson Steel Strong-Wall

9 1st Floor; Rear; Left to Right

See load calculations on previous page

Total Wind Load = 5005 # **Total Seismic Load = 3141 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
1	SSW24x7	1000	5730	5495	0.31	0.29

Total Load Capacity	=	5730	5495	
Pecent of Capacity Used	=	87%	57%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
1	SSW24x7	18484	18948	5005	3141	LOAD OK

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2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
www.hscgi.com

Structural
Engineering
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Structural Calculation Package

for

Standard Pacific Homes - Bay

Village Walk

Cotati, California

Plan # 1

Job # HS13068

2010 CBC

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Date 7/8/2013

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Structural Calculation Package

Client Information

Standard Pacific Homes - Bay
3825 Hopyard Road, Suite 195
Pleasanton, CA 94588

Project Information

Village Walk
Cotati, California
Plan No. 1

Loading Information

Roof Loads

Roofing (Tile)	=	10.0 psf
Sheathing	=	1.7 psf
Framing	=	2.3 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	1.5 psf
Wall (Seismic only)	=	9.0 psf
Total DL	=	21.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	20.0 psf

Floor Loads

Flooring	=	1.5 psf
Sheathing	=	2.5 psf
Framing	=	2.5 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	3.0 psf
Wall (Seismic only)	=	15.0 psf
Total DL	=	15.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	40.0 psf

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Seismic Design Per IBC Section 1613

Building Information

R	=	6.50	ASCE Table 12.2-1
Occupancy Cat.	=	II	IBC Sect. 1604.5
Number of Stories	=	3	
Importance Factor	=	1.0	
Max Level Height	=	27.4 ft	
Design Approach		Normal/Equivalent	

Site Information

S_s	=	1.615	IBC Sect. 1613.5.1
S_1	=	0.634	IBC Sect. 1613.5.1
Site Class	=	D	
S_s	=	1.615	Used For Design
S_1	=	0.634	Used For Design

Seismic Loads: ASCE 7 Section 12.8 Equivalent Lateral Force Procedure

Short Period Response

F_a	=	1.000	IBC 1613.5.3
$S_{MS} = F_a S_s$	=	1.615	IBC Eqn. 16-36
$S_{DS} = (^2/_3) S_{MS}$	=	1.077	IBC Eqn. 16-38
SDC per S_{DS}	=	D	IBC Table 1613.5.6(1)

1-Second Period Response

F_v	=	1.500	IBC 1613.5.3
$S_{M1} = F_v S_1$	=	0.951	IBC Eqn. 16-37
$S_{D1} = (^2/_3) S_{M1}$	=	0.634	IBC Eqn. 16-39
SDC per S_{D1}	=	D	IBC Table 1613.5.6(2)

Seismic Design Category

Period, T	=	0.24 s,	ASCE 7 12.8.2.1
0.8 Ts	=	0.47 s,	ASCE 7 11.4.5
SDC Required	=	D	IBC Sect. 1613.5.6
SDC Used	=	**D**	

Seismic Design Factors

Overstrength Factor	=	2.5	Table 12.2-1, Footnote g
Dead Load Reduction:			
(0.6 - 0.14 Sds)D	=	0.449 D	ASCE Sect 12.4.3.2
Rho, left to right	=	1.3	ASCE Sect 12.3.4
Rho, front to back	=	1.0	

ASD Seismic Response Coefficient

$$C_s = \frac{I(S_{DS})}{R}$$

C_s per ASCE Eqn. 12.8-2

C_s	=	0.1656	ASCE Eqn. 12.8-2
C_s (upper limit)	=	0.4072	ASCE Eqn. 12.8-3
C_s (lower limit)	=	0.0100	ASCE Eqn. 12.8-5
C_s (alt low limit)	=	0.0488	ASCE Eqn. 12.8-6
C_s	=	0.1656	

Base Shear, V = 0.1159 W

(Includes 0.7 factor from ASD Basic LC)

Vertical Shear Distribution

Story	h (ft)	Area (sq ft)	DL (psf)	w_x (lb)	w_x x h	C_{vx}	C_{sx}*
1	8	920	30	27600	220800	0.1750	0.0543
2	18.2	822	30	24660	448812	0.3558	0.1236
3	27.4	720	30	21600	591840	0.4692	0.1860
	Sum:	2462		73860	1261452		

*Derived equivalent shear ratio per story: $F_x = C_{sx} w_x$

where: $C_{sx} = C_{vx} C_s (W/w_x)$

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (*V*)	85 mph (3-second gust)	
Importance Factor (*I*)	1.00 ASCE 7 - Table 6-1	
Exposure Category	C ASCE 7 - Section 6.5.6.3;	
Directionality Factor (K_d)	0.85 ASCE 7 - Table 6-4	
Gust Factor (*G*)	0.85 ASCE 7 - Section 6.5.8.1	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\, K_z\, K_{zt}\, K_d\, V^2\, I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects — Hill Type: None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	29.90 ft	Velocity Pressure (q_h) for MWFRS	15.39 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.18
min L/B (Front to Back)	1.59
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.38

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C: 15.39 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
8.0 ft	-1.04	18.81	-1.28	22.53
15.0 ft	-0.95	17.33	-1.09	19.57
18.2 ft	-0.92	16.87	-1.03	18.65
22.0 ft	-0.89	16.42	-0.97	17.76

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-1.17	
Int. Pressure Coeff. (*Cpi*)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-13 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	psf	Available to offset overturning from wind

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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Beam Specifications

BEAM #	SIZE	GRADE	LOCATION
Beam #1	3 1/2"x 9 1/2"	1.5E SCL	Beam over stair @ Roof
Beam #2	5 1/4"x14"	1.5E SCL	Beam over Living @ third floor
Beam #3	3 1/2"x 9 1/2"	1.5E SCL	Beam over living / dining @ third floor
Beam #4	5 1/4"x14"	1.9E SCL	Beam over Deck
Beam #5	3 1/2"x11 7/8"	1.5E SCL	Deck beam under beam #4
Beam #6	4x10	#2 D.F.	Deck beam
Beam #7	3 1/2"x14"	1.5E SCL	Beam over Tech
Beam #8	3 1/2"x14"	1.5E SCL	Beam over hall @ second floor
Beam #9	7"x14"	1.5E SCL	Beam over bedroom #3 @ second floor
Beam #10	3 1/2"x14"	1.5E SCL	Beam over garage
Beam #11	6 3/4"x 24"	GLB	Beam over garage
Beam #12	5 1/4"x16"	1.9E SCL	Garage Header

Header Specifications

First & Second Floor Walls

Length	Size	Grade
4'-0"	4x8	#2 D.F.
6'-0"	4x10	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Third Floor Walls

Length	Size	Grade
4'-0"	4x6	#2 D.F.
6'-0"	4x8	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Description : Headers Unit 1

Wood Beam Design : Headers Unit 1

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade :	No.2		
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

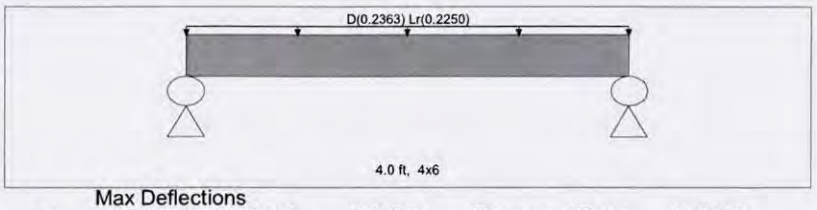
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 11.250 ft

Design Summary

Max fb/Fb Ratio = **0.536** : 1
fb : Actual : 627.34 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.309** : 1
fv : Actual : 55.59 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.47		0.45				
Right Support	0.47		0.45				



Max Deflections

Downward L+Lr+S	0.017 in	Downward Total	0.034 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2860 >360	Total Defl Ratio	1395 >240

Wood Beam Design : 6 ft Headers Upper Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade :	No.2		
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

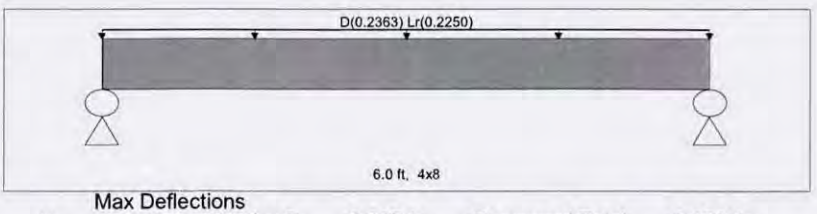
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 11.250 ft

Design Summary

Max fb/Fb Ratio = **0.694** : 1
fb : Actual : 812.34 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.364** : 1
fv : Actual : 65.44 psi at 5.400 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.71		0.68				
Right Support	0.71		0.68				



Max Deflections

Downward L+Lr+S	0.037 in	Downward Total	0.076 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1941 >360	Total Defl Ratio	946 >240

Wood Beam Design : 4 ft Headers Third Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade :	No.2		
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

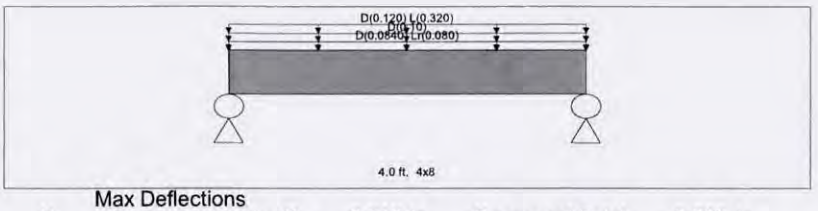
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 4.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft

Design Summary

Max fb/Fb Ratio = **0.417** : 1
fb : Actual : 488.43 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.287** : 1
fv : Actual : 51.64 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.61	0.64	0.16				
Right Support	0.61	0.64	0.16				



Max Deflections

Downward L+Lr+S	0.013 in	Downward Total	0.023 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3685 >360	Total Defl Ratio	2093 >240

Wood Beam Design : 6 ft Headers Third Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

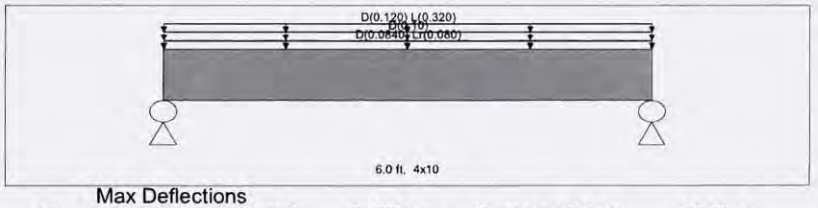
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Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft

Design Summary

Max fb/Fb Ratio = **0.625** : 1
fb : Actual : 675.12 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.360** : 1
fv : Actual : 64.76 psi at 5.240 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.91	0.96	0.24				
Right Support	0.91	0.96	0.24				



Max Deflections

Downward L+Lr+S	0.032 in	Downward Total	0.056 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2267 >360	Total Defl Ratio	1288 >240

Wood Beam Design : 4 ft Headers second floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

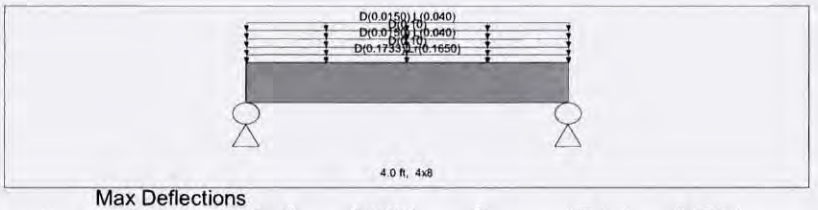
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 8.250 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 0.0 to 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.393** : 1
fb : Actual : 459.47 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.270** : 1
fv : Actual : 48.58 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.81	0.16	0.33				
Right Support	0.81	0.16	0.33				



Max Deflections

Downward L+Lr+S	0.008 in	Downward Total	0.021 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	6016 >360	Total Defl Ratio	2273 >240

Wood Beam Design : 4 ft Headers second floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

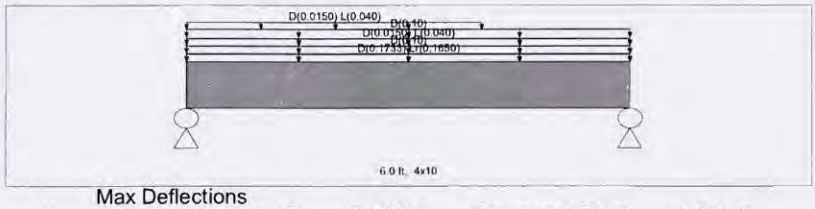
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 8.250 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 0.0 to 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.578** : 1
fb : Actual : 624.31 psi at 2.980 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.335** : 1
fv : Actual : 60.23 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.20	0.23	0.50				
Right Support	1.18	0.17	0.50				



Max Deflections

Downward L+Lr+S	0.019 in	Downward Total	0.050 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3857 >360	Total Defl Ratio	1429 >240

Wood Beam Design : Header at rear wall at Roof under GT

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

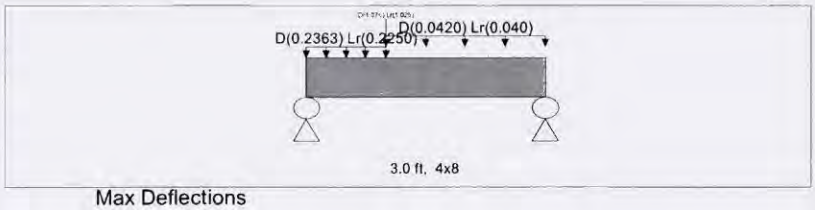
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Unif Load: D = 0.0210, Lr = 0.020 k/ft, 1.0 to 3.0 ft, Trib= 2.0 ft
Point: D = 1.076, Lr = 1.025 k @ 1.0 ft

Design Summary

Max fb/Fb Ratio = **0.538** : 1
fb : Actual : 629.75 psi at 1.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.513** : 1
fv : Actual : 92.39 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.94		0.90				
Right Support	0.45		0.43				



Max Deflections

Downward L+Lr+S	0.006 in	Downward Total	0.012 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	6278 >360	Total Defl Ratio	3063 >240

Wood Beam Design : Porch Headers

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

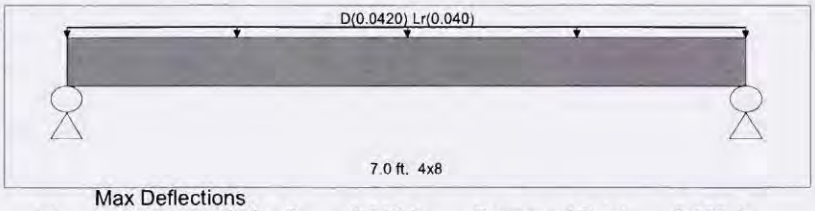
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft

Design Summary

Max fb/Fb Ratio = **0.168** : 1
fb : Actual : 196.57 psi at 3.500 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.079** : 1
fv : Actual : 14.14 psi at 6.417 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.15		0.14				
Right Support	0.15		0.14				



Max Deflections

Downward L+Lr+S	0.012 in	Downward Total	0.025 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	6876 >360	Total Defl Ratio	3354 >240

Description : Beams Unit 1 (Beam #1 to Beam #7)

Wood Beam Design : Beam #1 at Roof

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x9.5, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade :	1.5E SCL		
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

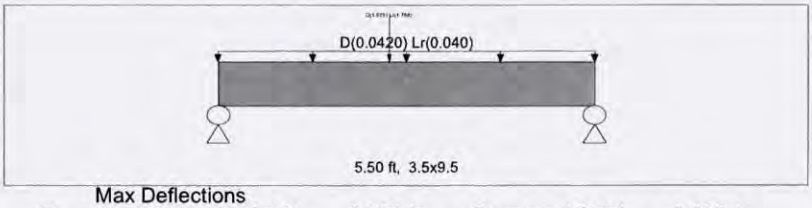
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Point: D = 1.878, Lr = 1.788 k @ 2.50 ft

Design Summary

Max fb/Fb Ratio = **0.561** : 1
fb : Actual : 1,206.50 psi at 2.493 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.342** : 1
fv : Actual : 97.47 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.14		1.09				
Right Support	0.97		0.92				



Max Deflections

Downward L+Lr+S	0.031 in	Downward Total	0.063 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2157 >360	Total Defl Ratio	1052 >240

Wood Beam Design : Beam #2

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade :	1.5E SCL		
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

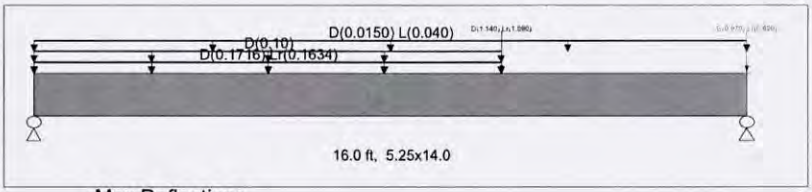
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 10.50 ft, Trib= 8.170 ft
Unif Load: D = 0.10 k/ft, 0.0 to 10.50 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Point: D = 1.140, Lr = 1.090 k @ 10.50 ft
Point: D = 0.970, Lr = 0.920 k @ 16.0 ft

Design Summary

Max fb/Fb Ratio = **0.566** : 1
fb : Actual : 1,216.27 psi at 8.800 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.247** : 1
fv : Actual : 70.43 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	2.43	0.32	1.53				
Right Support	2.77	0.32	2.20				



Max Deflections

Downward L+Lr+S	0.210 in	Downward Total	0.469 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	913 >480	Total Defl Ratio	409 >360

Wood Beam Design : Beam #3

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

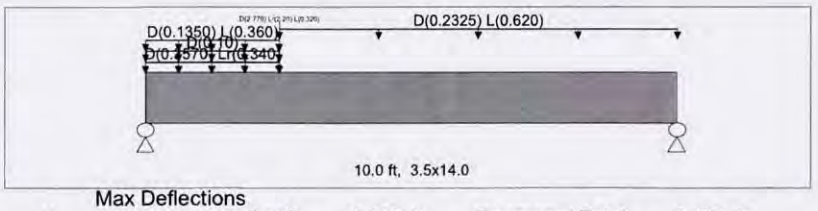
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Unif Load: D = 0.10 k/ft, 0.0 to 2.50 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 0.0 to 2.50 ft, Trib= 9.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 2.50 to 10.0 ft, Trib= 15.50 ft
Point: D = 2.770, Lr = 2.20, L = 0.320 k @ 2.50 ft

Design Summary

Max fb/Fb Ratio = **0.801** : 1
fb : Actual : 1,721.64 psi at 3.133 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.709** : 1
fv : Actual : 201.95 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	4.03	2.77	2.39				
Right Support	1.97	3.10	0.66				



Max Deflections

Downward L+Lr+S	0.172 in	Downward Total	0.283 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	699 >480	Total Defl Ratio	423 >360

Wood Beam Design : Beam #4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.9E SCL			
Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

Applied Loads

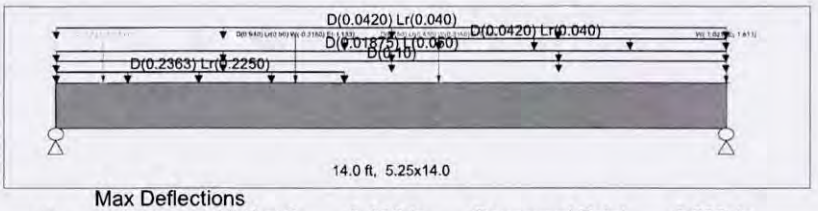
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 6.0 ft, Trib= 11.250 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.250 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 6.0 to 14.0 ft, Trib= 2.0 ft
Point: D = 0.940, Lr = 0.90, W = -0.3160, E = -1.133 k @ 5.0 ft
Point: D = 0.450, Lr = 0.430, W = 0.3160, E = 1.133 k @ 8.0 ft
Point: W = 1.021, E = 1.811 k @ 1.0 ft
Point: W = -1.021, E = -1.811 k @ 14.0 ft
Unif Load: D = 0.0420, Lr = 0.040 k/ft, 0.0 to 14.0 ft

Design Summary

Max fb/Fb Ratio = **0.520** : 1
fb : Actual : 1,286.37 psi at 5.273 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.326** : 1
fv : Actual : 92.96 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	3.13	0.35	2.20		0.88	1.44	
Right Support	2.26	0.35	1.37		-0.88	-1.44	



Max Deflections

Downward L+Lr+S	0.130 in	Downward Total	0.293 in
Upward L+Lr+S	0.000 in	Upward Total	-0.021 in
Live Load Defl Ratio	1291 >480	Total Defl Ratio	573 >360

Wood Beam Design : Beam #5 with uplift reaction from Beam #4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Point: D = -6.785 k @ 2.0 ft

Multiple Simple Beam

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ENERCALC, INC. 1983-2013, Build:6.13.2.27, Ver:6.13.2.27

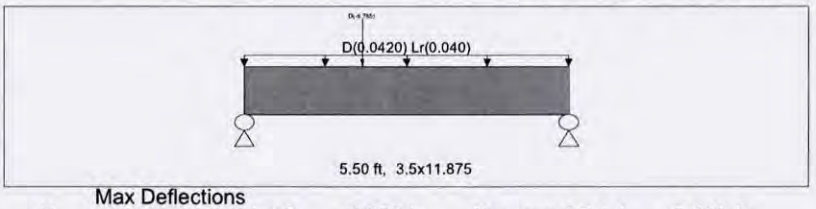
Lic. # : KW-06004839 — Licensee : HARRIS & SLOAN CONSULTING

Design Summary

Max fb/Fb Ratio = **0.575** : 1
fb : Actual : 1,237.26 psi at 1.998 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : D Only

Max fv/FvRatio = **0.543** : 1
fv : Actual : 154.69 psi at 1.998 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : D Only

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	-4.20		0.11				
Right Support	-2.35		0.11				



Max Deflections

Downward L+Lr+S	0.001 in	Downward Total	0.001 in
Upward L+Lr+S	0.000 in	Upward Total	-0.049 in
Live Load Defl Ratio	58400 >480	Total Defl Ratio	1338 >360

Wood Beam Design : Beam #5 with downward reaction from Beam #4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.5E SCL

Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

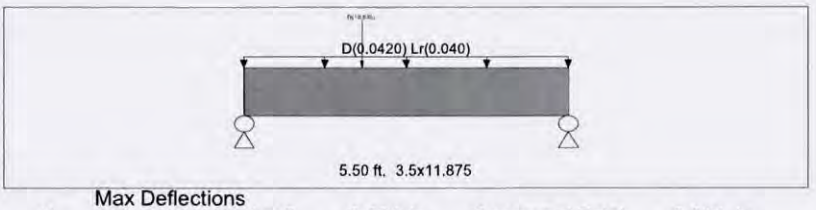
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Point: D = 10.535 k @ 2.0 ft

Design Summary

Max fb/Fb Ratio = **0.928** : 1
fb : Actual : 1,996.21 psi at 1.998 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.867** : 1
fv : Actual : 247.21 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	6.82		0.11				
Right Support	3.95		0.11				



Max Deflections

Downward L+Lr+S	0.001 in	Downward Total	0.081 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	58400 >480	Total Defl Ratio	817 >360

Wood Beam Design : Beam #6

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch — Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

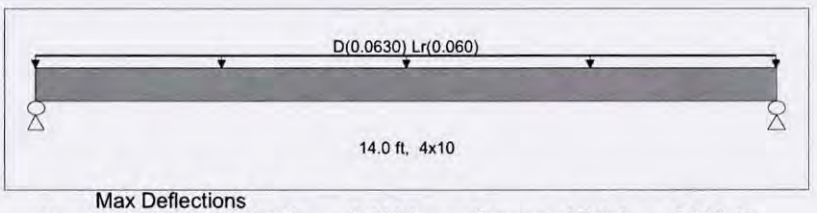
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.671** : 1
fb : Actual : 724.52 psi at 7.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.198** : 1
fv : Actual : 35.64 psi at 13.253 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.44		0.42				
Right Support	0.44		0.42				



Max Deflections

Downward L+Lr+S	0.141 in	Downward Total	0.289 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1190 >360	Total Defl Ratio	580 >240

Wood Beam Design : Beam #7

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.5E SCL

Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 11.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 9.0 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 1.50 ft

Multiple Simple Beam

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ENERCALC, INC. 1983-2013, Build:6.13.2.27, Ver:6.13.2.27

Lic. # : KW-06004839 — Licensee : HARRIS & SLOAN CONSULTING

Design Summary

Max fb/Fb Ratio = **0.246** : 1
fb : Actual : 529.36 psi at 3.250 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.216** : 1
fv : Actual : 61.44 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.62	1.17	0.81				
Right Support	1.62	1.17	0.81				



Max Deflections

Downward L+Lr+S	0.021 in	Downward Total	0.037 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3801 >480	Total Defl Ratio	2093 >360

Wood Beam Design : Header under beam #4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **6x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

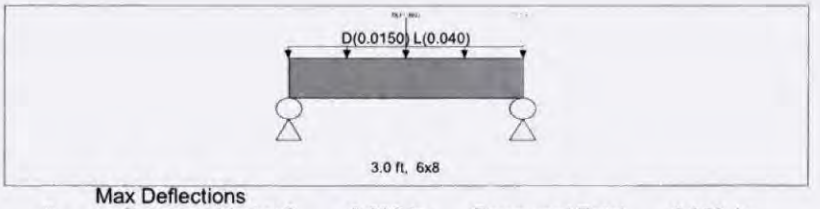
Applied Loads

Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Point: D = 11.360 k @ 1.50 ft
Point: D = 3.60 k @ 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.929** : 1
fb : Actual : 1,997.27 psi at 1.500 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.731** : 1
fv : Actual : 208.31 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	5.70	0.06					
Right Support	9.30	0.06					

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.039 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	999999 >480	Total Defl Ratio	932 >360

Description : Beams Unit 1 (Beam #8 to Beam #12)

Wood Beam Design : Beam #8

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

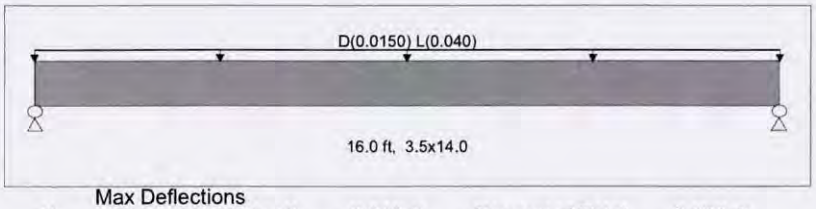
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft

Design Summary

Max fb/Fb Ratio = **0.086** : 1
fb : Actual : 184.72 psi at 8.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.041** : 1
fv : Actual : 11.58 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.12	0.32					
Right Support	0.12	0.32					



Max Deflections

Downward L+Lr+S	0.049 in	Downward Total	0.068 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3887 >480	Total Defl Ratio	2827 >360

Wood Beam Design : Header under Beam #8 & PL from Beam #2 above

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

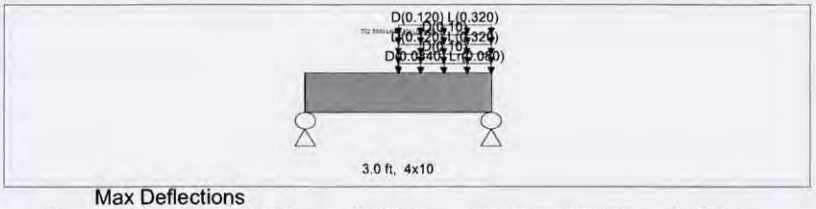
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Unif Load: D = 0.10 k/ft, 1.50 to 3.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 1.50 to 3.0 ft, Trib= 8.0 ft
Unif Load: D = 0.10 k/ft, 1.50 to 3.0 ft, Trib= 1.0 ft
Point: D = 2.550, Lr = 1.530, L = 0.640 k @ 1.50 ft
Unif Load: D = 0.120, L = 0.320 k/ft, 1.50 to 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.831** : 1
fb : Actual : 897.18 psi at 1.500 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.640** : 1
fv : Actual : 115.26 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.47	0.56	0.80				
Right Support	1.86	1.04	0.86				



Max Deflections

Downward L+Lr+S	0.008 in	Downward Total	0.016 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	4782 >480	Total Defl Ratio	2311 >360

Wood Beam Design : Beam #9 under shear wall in bldg 201, 203 & 301

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **7x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

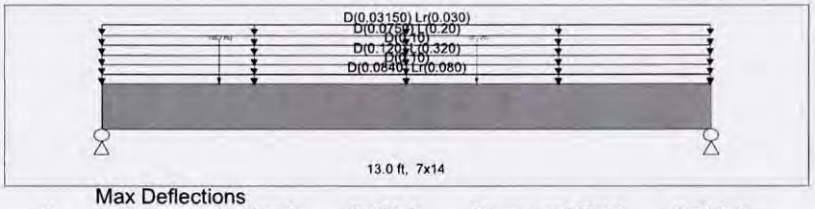
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 4.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Point: E = 0.730 k @ 2.50 ft
Point: E = 0.730 k @ 8.0 ft
Unif Load: D = 0.0750, L = 0.20 k/ft, 0.0 to 13.0 ft
Unif Load: D = 0.03150, Lr = 0.030 k/ft, 0.0 to 13.0 ft

Design Summary

Max fb/Fb Ratio = **0.531** : 1
fb : Actual : 1,142.41 psi at 6.500 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.297** : 1
fv : Actual : 84.75 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	3.32	3.38	0.72			0.87	
Right Support	3.32	3.38	0.72			0.59	

Max Deflections

Downward L+Lr+S	0.170 in	Downward Total	0.313 in
Upward L+Lr+S	0.000 in	Upward Total	-0.036 in
Live Load Defl Ratio	920 >480	Total Defl Ratio	498 >360

Wood Beam Design : Beam #9 under shear wall in bldg 202

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **7x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 4.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Point: W = 4.170, E = 4.014 k @ 7.0 ft
Unif Load: D = 0.0750, L = 0.20 k/ft, 0.0 to 13.0 ft
Unif Load: D = 0.03150, Lr = 0.030 k/ft, 0.0 to 13.0 ft

Design Summary

Max fb/Fb Ratio = **0.577** : 1
fb : Actual : 1,985.45 psi at 6.977 ft in Span # 1
Fb : Allowable : 3,440.00 psi
Load Comb : +1.210D+1.923E+H

Max fv/FvRatio = **0.297** : 1
fv : Actual : 84.75 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	3.32	3.38	0.72		1.92	1.85	
Right Support	3.32	3.38	0.72		2.25	2.16	

Max Deflections

Downward L+Lr+S	0.170 in	Downward Total	0.414 in
Upward L+Lr+S	0.000 in	Upward Total	-0.137 in
Live Load Defl Ratio	920 >480	Total Defl Ratio	376 >360

Wood Beam Design : Beam #10

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

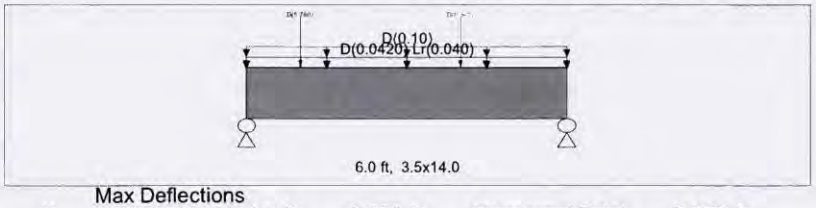
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Point: D = 5.760 k @ 1.0 ft
Point: D = 9.360 k @ 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.739** : 1
fb : Actual : 1,587.78 psi at 4.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.809** : 1
fv : Actual : 230.66 psi at 4.840 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	8.35		0.12				
Right Support	7.63		0.12				



Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.075 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	999999 >480	Total Defl Ratio	966 >360

Wood Beam Design : Beam #11

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **6.75x24, GLB, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : DF/DF
Wood Grade : 24F - V8

Fb - Tension	2,400.0 psi	Fc - Prll	1,650.0 psi	Fv	265.0 psi	Ebend- xx	1,800.0 ksi	Density	32.210 pcf
Fb - Compr	2,400.0 psi	Fc - Perp	650.0 psi	Ft	1,100.0 psi	Eminbend - xx	930.0 ksi		

Applied Loads

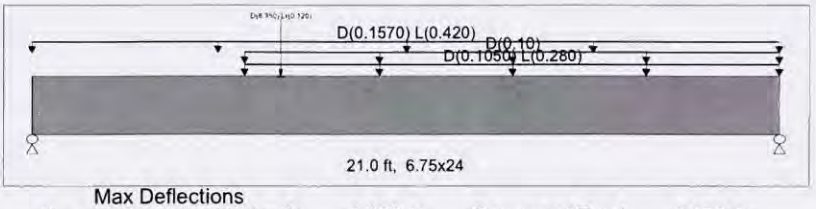
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Unif Load: D = 0.10 k/ft, 6.0 to 21.0 ft, Trib= 1.0 ft
Point: D = 8.350, Lr = 0.120 k @ 7.0 ft
Unif Load: D = 0.1570, L = 0.420 k/ft, 0.0 to 21.0 ft

Design Summary

Max fb/Fb Ratio = **0.731** : 1
fb : Actual : 1,593.37 psi at 8.260 ft in Span # 1
Fb : Allowable : 2,178.45 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.457** : 1
fv : Actual : 121.23 psi at 0.000 ft in Span # 1
Fv : Allowable : 265.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	8.31	5.91	0.08				
Right Support	6.41	7.11	0.04				



Max Deflections

Downward L+Lr+S	0.206 in	Downward Total	0.479 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1222 >480	Total Defl Ratio	526 >360

Wood Beam Design : Beam #12

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x16.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber
Wood Grade : 1.9E SCL

Fb - Tension	2475 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1900 ksi	Density	35 pcf
Fb - Compr	2475 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	875 ksi		

Applied Loads

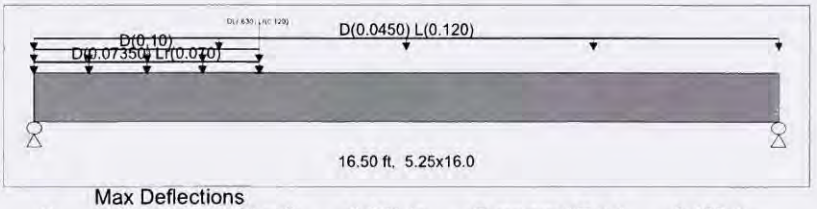
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 5.0 ft, Trib= 3.50 ft
Unif Load: D = 0.10 k/ft, 0.0 to 5.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 3.0 ft
Point: D = 7.630, Lr = 0.120 k @ 5.0 ft

Design Summary

Max fb/Fb Ratio = **0.711** : 1
fb : Actual : 1,759.03 psi at 5.005 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.437** : 1
fv : Actual : 124.58 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	6.43	0.99	0.38				
Right Support	2.81	0.99	0.09				



Max Deflections

Downward L+Lr+S	0.071 in	Downward Total	0.405 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2795 >480	Total Defl Ratio	489 >360

Description : Overstrength rims

Wood Beam Design : Rim along P2

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.250 X 14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade :	1.3E SCL		
Fb - Tension	1650 psi	Fc - Prll	1400 psi	Fv	285 psi	Ebend- xx	1300 ksi	Density	35 pcf
Fb - Compr	1650 psi	Fc - Perp	680 psi	Ft	1000 psi	Eminbend - xx	600 ksi		

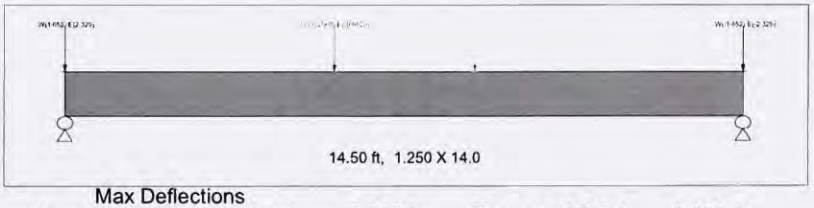
Applied Loads

Point: W = 1.652, E = 2.329 k @ 0.0 ft
Point: W = -0.2060, E = -0.9520 k @ 5.750 ft
Point: W = 0.2060, E = 0.9520 k @ 8.750 ft
Point: W = -1.652, E = -2.329 k @ 14.50 ft

Design Summary

Max fb/Fb Ratio = **0.315** : 1
fb : Actual : 831.12 psi at 5.752 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.355** : 1
fv : Actual : 161.79 psi at 5.752 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support					1.61	2.13	
Right Support					-1.61	-2.13	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.021 in
Upward L+Lr+S	0.000 in	Upward Total	-0.021 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	8226 >240

Studs up to and Including 10' - 0" in Height

Table 2308.9.1 of the 2009 IBC lists the maximum height and spacing for wood studs which conform to the limitations of the conventional framing provisions (Section 2308.2). While the design loads and roof spans used in this project do not explicitly meet the conventional framing limitations, it is HSCGI's interpretation that Table 2308.9.1 is applicable for any stud wall with applied loads less than or equal to the worst case loading allowed by the conventional framing provisions (i.e. the loads resulting from roofs, floors, and/or walls spanning the maximum distance and carrying the maximum loads allowed by the limitations listed below).

Limitations (Summary of Section 2308.2):

1. Structure is not more than 3 stories.
2. Plate heights are not greater than 10' - 0".
3.1. Average dead load of combined roof and ceiling, exterior walls, floors and partitions does not exceed 15 psf .
3.2. Live load does not exceed 40 psf.
3.3. Ground snow load does not exceed 50 psf.
4. Wind speed does not exceed 100 mph.
5. Roof truss and rafter spans (between points of vertical supports) are not greater than 40 feet.
6. Structure does not belong to Occupancy Category IV.
7. Irregularity limitation. Limits for irregularities apply to wall bracing, not to Table 2308.9.1.
8. Structure does not fall under DSA-SS or OSHPD 1, 2 or 4.

Determination of Maximum Loads and Spans:

The conventional framing limitations, together with the maximum floor span listed in Table 2308.8(2), have been used to determine the equivalent maximum allowable loads that may be applied to wood wall studs. Below is a list of maximum loads and corresponding maximum spans allowed by section 2308.

Parameter	Roof	Floor	Wall
Dead Load	15 psf	15 psf	15 psf
Span/Height	40 feet	21 feet	10 feet

Table 2308.9.1 allows 10' - 0" tall 2x4 wall studs spaced at 16" o.c. to support one floor, roof and ceiling. Based on the spans and loads listed above, the maximum allowable dead load (DL) on a standard stud wall is as follows:

Exterior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)/2	= 300 plf
Floor	(15psf DL) x (21 foot floor span)/2	= 158 plf
Wall	(15psf DL) x (10 foot wall height)	= 150 plf
		= 608 plf

Interior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)	= 600 plf
Floor	(15psf DL) x (21 foot floor span)	= 315 plf
		= 915 plf

Wood studs exceeding the height and/or loading criteria listed above are calculated using the design criteria of IBC Chapters 16 and 23.

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Project	Village Walk		
Client	Standard Pacific Home	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Stud Calculations Per 2005 NDS

STUD/POST		**Stud/Post Description**			**Stud/Post Description**		
Height	ft		**19.20**			**9.00**	
Depth/Width (d)	in		5.50			5.50	
Thickness	in		3.00			3.00	
Grade			DF Stud			DF Stud	
O.C. Spacing	in		16.00			16.00	
Repetitive Factor			NDS Repetitive Factor			NDS Repetitive Factor	
Location			exterior - zone 5			interior	
LOADS							
AXIAL LOAD - DL	plf	0.00	0.00	0.00	0.00	0.00	0.00
AXIAL LOAD - LL	plf	0.00	0.00	0.00	0.00	0.00	0.00
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
WIND LOAD (C&C)	psf	5.00	18.65	13.99	5.00	5.00	3.75
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.15	1.15	1.15
PROPERTIES							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	510.0	510.0	510.0
Fb (Adjusted)	psi	805.0	805.0	805.0	805.0	805.0	805.0
Fcll (Adjusted)	psi	850.0	850.0	850.0	850.0	850.0	850.0
COMPRESSION		DL+LL	DL+W	DL+0.75(LL+W)	DL+LL	DL+W	DL+0.75(LL+W)
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		41.9			19.6		
F_{cE}		239	239	239	1087	1087	1087
F*c	psi	978	1360	1360	978	1360	1360
F_{cE}/Fc^*		0.24	0.18	0.18	1.11	0.80	0.80
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.23	0.17	0.17	0.73	0.61	0.61
Fc'	psi	225	230	230	710	829	829
fc	psi	0	0	0	0	0	0
Stress Ratio		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
BENDING							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	3686.4	13752	10314	810	810	608
Fb'	psi	926	1288	1288	926	1288	1288
fb	psi	244	909	682	54	54	40
Stress Ratio		**0.2633**	**0.7059**	**0.5295**	**0.0578**	**0.0416**	**0.0312**
COMBINED STRESSES							
(fc/F'c)^2		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
fb/Fb'(1-(fc/Fce)		0.2633	0.7059	0.5295	0.0578	0.0416	0.0312
Combined Stress Ratio		**0.2633**	**0.7059**	**0.5295**	**0.0578**	**0.0416**	**0.0312**
DEFLECTION							
Deflection	in	0.350	1.306	0.979	0.017	0.017	0.013
0.7 Deflection	in		0.914	0.686		0.012	0.009
Deflection Limit (L/240)	in	0.960	0.960	0.960	0.450	0.450	0.450
Deflection Ratio		**0.3646**	**0.9522**	**0.7142**	**0.0376**	**0.0263**	**0.0197**

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Project	Village Walk		
Client	Standard Pacific Hc	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Footing Calculations

Soils Engineer

ENGEO, Inc. (San Ramon)
2010 Crow Canyon Pl., Ste. 250
San Ramon, CA 94583

Report #: 6858.200.102
Date: 04/16/2013

Foundation Design Information

Allowable Soil Pressure	=	1000 psf
Retaining Wall Design:		
Friction Factor	=	N/A
Active Pressure	=	N/A pcf
Passive Pressure	=	N/A pcf

Post-Tension Foundation Calculations (expansive soil)

Average Soil Pressure = 1,000 psf

		Center Lift	Edge Lift
Edge Moisture Variation (e_m)	=	5.10 ft	2.70 ft
Differential Soil Movement (y_m)	=	1.50 in	2.00 in

Design Rectangles
R1 = 0.00 ft x 0.00 ft

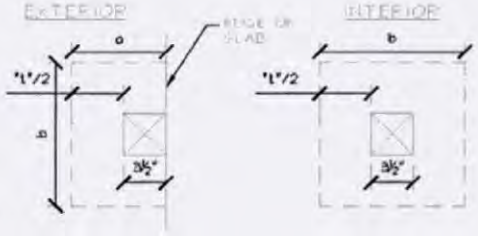
Maximum Point Load Capacity of Slab
Slab Thickness (t) = 12 in
Concrete Compressive Strength (f'c) = 4000 psi

Punching Shear Calculation

$$V_u = \phi V_n$$
$$\phi = 0.85$$
$$V_c = 4\sqrt{f_c}\, b_o t$$
$$V_{allowable} = V_u / 1.7$$

Exterior Condidtion $b_o = 2a+b$ = 34.5 in
Maximum allowable point load = 52 kips

Interior Condidtion $b_o = 4b$ = 62 in
Maximum allowable point load = 94 kips



hscgi limit 10,000# at interior
8000# at exterior

Pad Footing Calculations

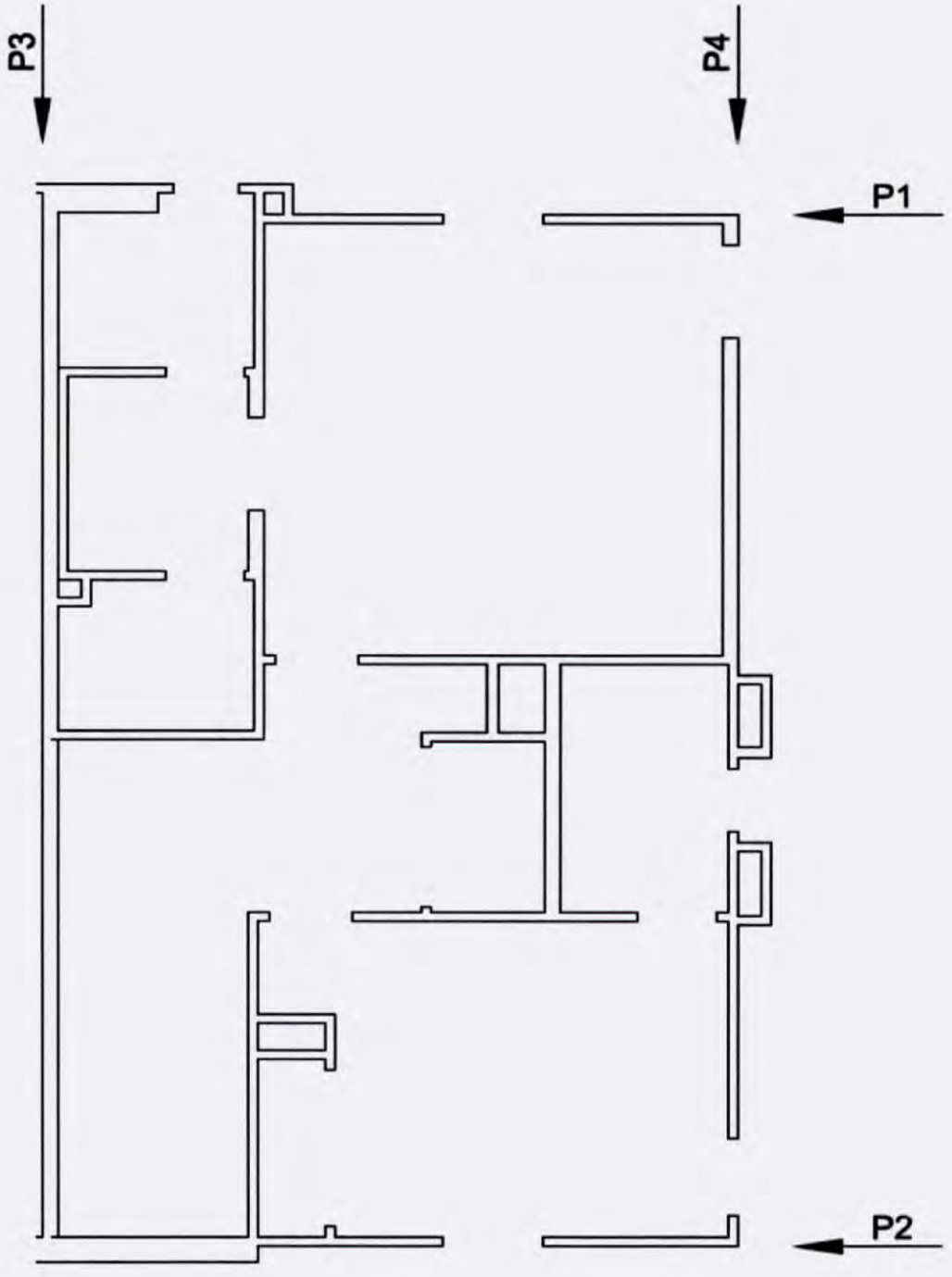
Maximum Localized Bearing Pressure = 1,000 psf
Minimum Pad Footing Depth = 12 in

Footing #	Load	Minimum Size	Reinforcing
FTG#3	9000#	36" SQUARE X 12" DEEP	#4 BARS AT 8" OC
FTG#5	16000#	48" SQUARE X 18" DEEP	#5 BARS AT 8" OC

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
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3rd Floor P-Line Layout



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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P1 **3rd Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	33.34	0	ft
Additional Width	0	1	ft
Avg. Roof Ht abv Plate	3.5	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	16.80	16.80	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	17.01	17.01	psf
Wall Load	1120	67	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	58	1	ft^2
Pressure @ Elevation	8.67	8.67	psf
Roof Load	506	9	#
Additional Load	=		#

Total Wind Load = **1702 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	13.34 ft
Net Length of Walls	=	10.34 ft
Maximum H:W Ratio	=	1.22
Seismic H:W Adjustment	=	1.00

			Shear @ T&B of wall
Wind Wall Shear	=	**165 plf**	**128 plf**
Seismic Wall Shear	=	**251 plf**	**195 plf**
1.25 Seismic Shear*	=	**314 plf**	

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	33.34	0	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area	7.67	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1860	W
Rho	=	1.30	
Diaphragm Load	2595	0	#
Additional Load	=		#

Total Seismic Load = **2595 #**

1.25 Total Load* = **3244 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2595#	76#	
Diaphgram Shear	124 plf (E)	4 plf (W)	

Total Diaphragm Length	=	21 ft
Total Diaphragm Shear	=	124 plf (E)
Shear for drag & collectors*	=	154 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN

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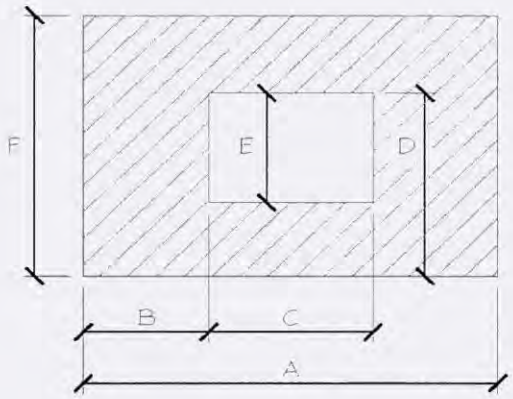
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P1 **3rd Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 13.34 ft.
Dist from left end of wall to 1st opening	B	= 4.50 ft.
Opening Width	C	= 3.00 ft.
Net Length		= 10.34 ft.
Opening Header Height	D	= 6.67 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 8.00 ft.



LOADS

Wind Load (W)	1702#
Seismic Load (E)	2595#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	128 plf	195 plf
Piers	165 plf	251 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 330 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-295#	-264#
Left Pier	905#	1380#
Right Pier	905#	1380#
Bottom	213#	325#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown KN
Left End	1386# (E)	1
L King	1133# (E)	1
R King	1133# (E)	1
Right End	1386# (E)	1

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P2 **3rd Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	33.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	4	0	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	16.80	16.80	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	17.01	17.01	psf
Wall Load	1120	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	67	0	ft^2
Pressure @ Elevation	8.67	8.67	psf
Roof Load	578	0	#
Additional Load	=		#

Total Wind Load = **1698 #**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	33.34	0	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area	4.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1860	W
Rho	=	1.30	
Diaphragm Load	2569	0	#
Additional Load	=		#

Total Seismic Load = **2569 #**

1.25 Total Load* = **3211 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2569#	0#	
Diaphgram Shear	122 plf (E)	0 plf (E)	

Total Diaphragm Length	=	21 ft
Total Diaphragm Shear	=	122 plf (E)
Shear for drag & collectors*	=	153 plf (E)

Shear Wall Summary

			Shear @ T&B of wall
# of Shear Walls	=	1	
Total Length of Walls	=	14.50 ft	
Net Length of Walls	=	11.50 ft	
Maximum H:W Ratio	=	0.96	
Seismic H:W Adjustment	=	1.00	
Wind Wall Shear	=	**148 plf**	**117 plf**
Seismic Wall Shear	=	**223 plf**	**177 plf**
1.25 Seismic Shear*	=	**279 plf**	

USE SHEAR WALL TYPE **3**

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN

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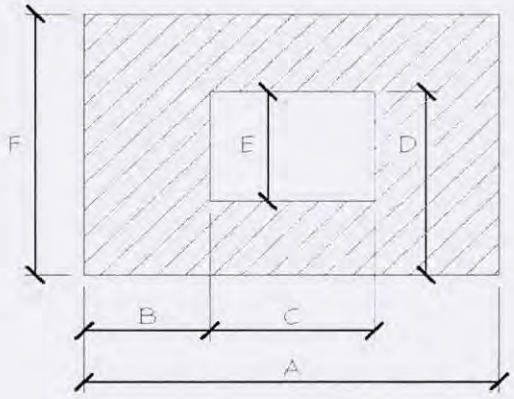
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P2 **3rd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 14.50 ft.
Dist from left end of wall to 1st opening	B	= 5.75 ft.
Opening Width	C	= 3.00 ft.
Net Length		= 11.50 ft.
Opening Header Height	D	= 6.67 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 8.00 ft.



LOADS

Wind Load (W)	1698#
Seismic Load (E)	2569#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	117 plf	177 plf
Piers	148 plf	223 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 266 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-339#	-315#
Left Pier	812#	1228#
Right Pier	812#	1228#
Bottom	196#	296#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location
715 #	0.00 ft.
715 #	14.50 ft.

	Total Uplift	Holdown KN
Left End	1866# (E)	2
L King	952# (E)	1
R King	952# (E)	1
Right End	1866# (E)	2

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P3 **3rd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	15.26	15.26	psf
Above Plate:			
Wall Area Above Plate	7	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	15.47	15.47	psf
Wall Load	749	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	46	0	ft^2
Pressure @ Elevation	9.68	9.68	psf
Roof Load	440	0	#
Additional Load	=		#

Total Wind Load = **1189 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**74 plf**
Seismic Wall Shear	=	**128 plf**
1.25 Seismic Shear*	=	**159 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Length of Diaphragm	34.8	34.8	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1860	W
Rho	=	1.00	
Diaphragm Load	2041	0	#
Additional Load	=		#

Total Seismic Load = **2041 #**

1.25 Total Load* = **2551 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	34.8	34.8	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2041#	0#	
Diaphgram Shear	59 plf	(E) 0 plf	(E)

Total Diaphragm Length	=	35 ft
Total Diaphragm Shear	=	59 plf (E)
Shear for drag & collectors*	=	73 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
16.00 ft.	2.0 ft.						510# (E)	510# (E)	1		1	

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P4 **3rd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	1	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	15.26	15.26	psf
Above Plate:			
Wall Area Above Plate	29	1	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	15.47	15.47	psf
Wall Load	1082	77	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	3	0	ft^2
Pressure @ Elevation	9.68	9.68	psf
Roof Load	29	0	#
Additional Load	=		#

Total Wind Load = **1187 #**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	20.00 ft
Maximum H:W Ratio	=	1.00
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**59 plf**
Seismic Wall Shear	=	**102 plf**
1.25 Seismic Shear*	=	**128 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Length of Diaphragm	34.8	34.8	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1860	W
Rho	=	1.00	
Diaphragm Load	2041	0	#
Additional Load	=		#

Total Seismic Load = **2041 #**
1.25 Total Load* = **2551 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	34.8	34.8	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2041#	77#	
Diaphgram Shear	59 plf (E)	2 plf (W)	

Total Diaphragm Length	=	35 ft
Total Diaphragm Shear	=	59 plf (E)
Shear for drag & collectors*	=	73 plf (E)

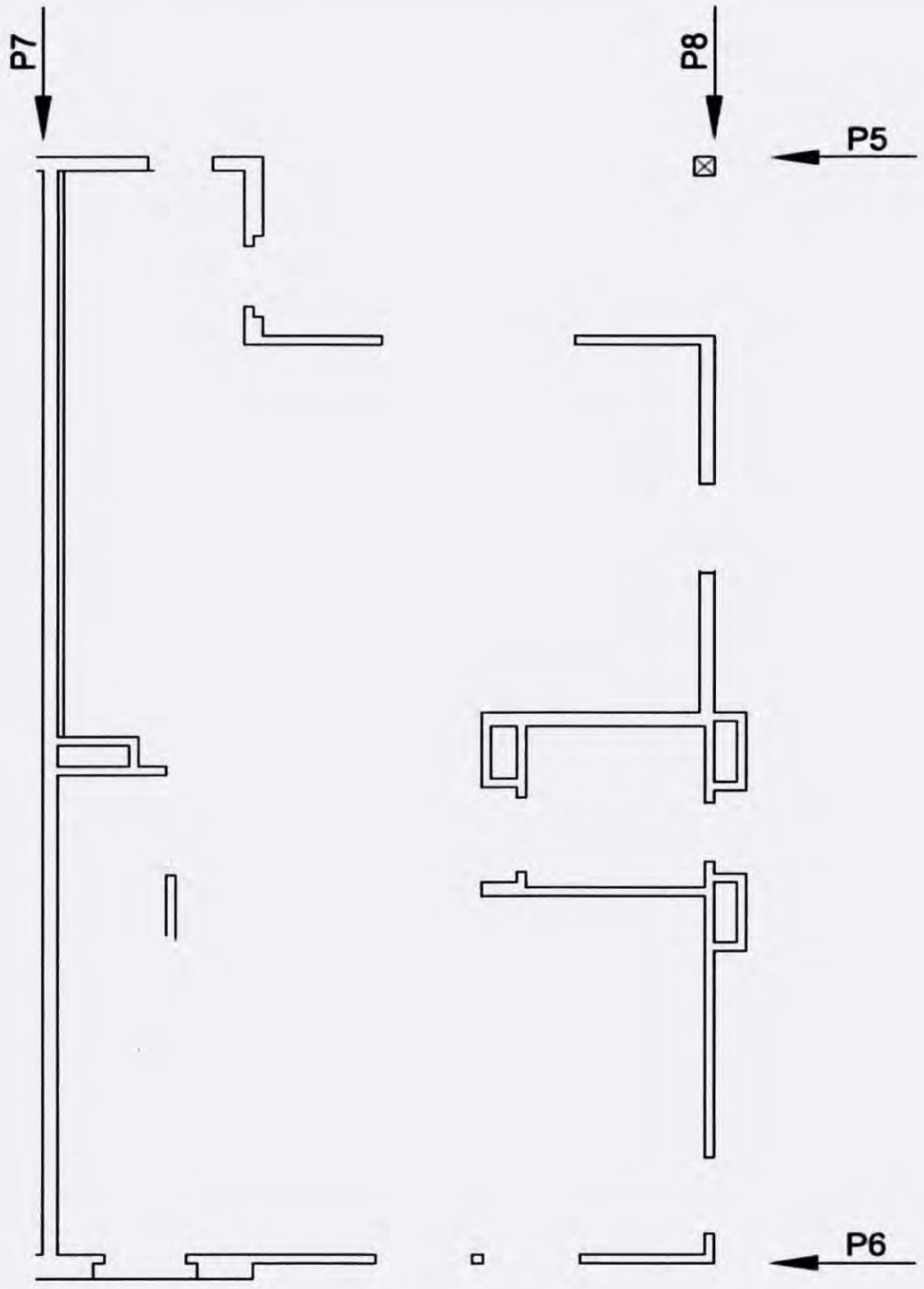
Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left KN	Holdown Right KN
8.00 ft.	4.0 ft.						486# (E)	486# (E)	NONE	NONE
12.00 ft.	4.0 ft.						320# (E)	320# (E)	NONE	NONE

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2nd Floor P-Line Layout



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Lateral Analysis Calculations

P5 **2nd Floor; Rear; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	15.39	15.39	psf
Above Plate:			
Wall Area Above Plate	96	0	ft^2
Average Elevation	23.4	19.2	ft
Pressure @ Elevation	15.87	15.50	psf
Wall Load	2808	0	#
Mean Roof Height (h)	19.2	19.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	8.18	8.18	psf
Roof Load	0	0	#
Add'l Load (From P1)	=	1702	#

Total Wind Load = **4510 #**

Shear Wall Summary

# of Shear Walls	=	3
Total Length of Walls	=	10.75 ft
Maximum H:W Ratio	=	2.31
Seismic H:W Adjustment	=	0.87
Wind Wall Shear	=	**420 plf**
Seismic Wall Shear	=	**416 plf**
1.25 Seismic Shear*	=	**519 plf**

USE SHEAR WALL TYPE **12**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area		0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1236	W
Rho	=	1.30	
Diaphragm Load	1872	0	#
Add'l Load (From P1)	=	2595	#
Total Seismic Load	=	**4467**	#
1.25 Total Load*	=	**5584**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	2595#	0#	
Total Load in Diaphragm	4510#	0#	
Diaphgram Shear	215 plf (W)	0 plf (E)	
Total Diaphragm Length	=	21 ft	
Total Diaphragm Shear	=	215 plf (W)	
Shear for drag & collectors*	=	266 plf (E)	

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown		Holdown	
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	KN	Right	KN
3.25 ft.	2.0 ft.						3049# (W)	3049# (W)	3		3	
3.50 ft.		6.0 ft.					3175# (E)	3175# (E)	3		3	
4.00 ft.		6.0 ft.					3154# (E)	3154# (E)	3		3	

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Lateral Analysis Calculations

P6 **2nd Floor; Front; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Additional Width	0	0.5	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	15.39	15.39	psf
Above Plate:			
Wall Area Above Plate	96	3	ft^2
Average Elevation	23.4	23.4	ft
Pressure @ Elevation	15.87	15.87	psf
Wall Load	2808	76	#
Mean Roof Height (h)	19.2	19.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	8.18	8.18	psf
Roof Load	0	0	#
Add'l Load (From P2)	=	1698	#
Total Wind Load	=	**4582**	**#**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	10.00 ft
Maximum H:W Ratio	=	0.90
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**458 plf**
Seismic Wall Shear	=	**446 plf**
1.25 Seismic Shear*	=	**558 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area		4.	ft^2
Building Dead Load	30	30	psf
V	=	0.1236	W
Rho	=	1.30	
Diaphragm Load	1872	19	#
Add'l Load (From P2)	=	2569	#
Total Seismic Load	=	**4460**	**#**
1.25 Total Load*	=	**5575**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2808#	76#	
Diaphgram Shear	134 plf (W)	4 plf (W)	
Total Diaphragm Length	=	21 ft	
Total Diaphragm Shear	=	137 plf (W)	
Shear for drag & collectors*	=	137 plf (W)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
10.00 ft.		6.0 ft.			1866#	10.00	3587# (E)	5454# (E)	**3**		**6**	

NOTE: SHEARWALL IS FOR BUILIDNGS 202 & 302 ONLY.
SEE FOLLOWING PAGES FOR CALCULATIONS OF
BUILDINGS 201, 203, AND 301

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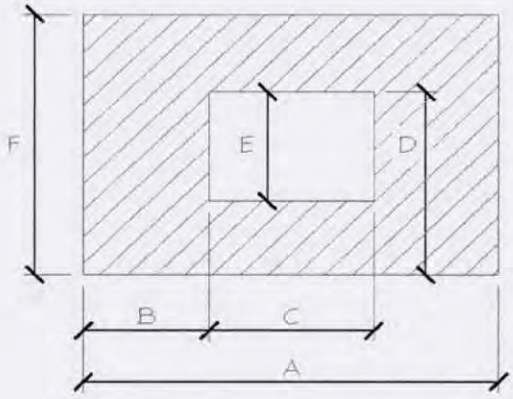
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Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P6 **2nd Floor; Front; Left to Right**
Bldgs 201 & 301

SHEARWALL GEOMETRY

Total Length	A	= 16.00 ft.
Dist from left end of wall to 1st opening	B	= 5.50 ft.
Opening Width	C	= 6.50 ft.
Net Length		= 9.50 ft.
Opening Header Height	D	= 7.50 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	4582#
Seismic Load (E)	4460#
DL Trib Length Roof	0 ft
DL Trib Length Floor	6 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	286 plf	279 plf
Piers	482 plf	469 plf

Use Shear Wall Type **12**

STRAP CALCULATIONS

Max. Load @ Opening = 1078 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-590#	-377#
Left Pier	2653#	2582#
Right Pier	2653#	2582#
Bottom	716#	697#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location
952 #	5.50 ft.
952 #	12.00 ft.
1866 #	16.00 ft.

	Total Uplift	Holdown KN
Left End	2275# (E)	2A
L King	1991# (E)	2
R King	1991# (E)	2
Right End	4141# (E)	3

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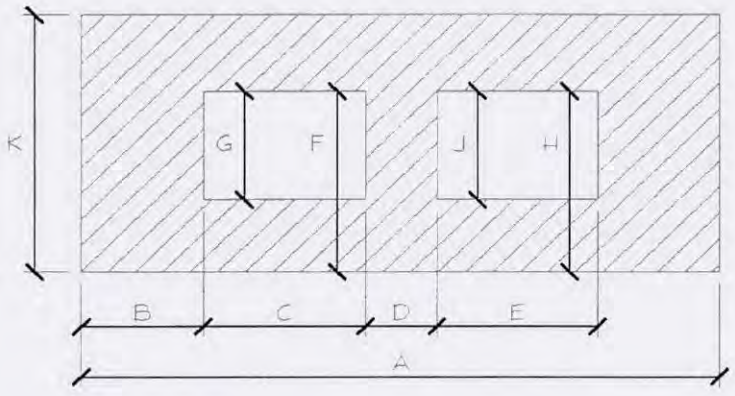
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Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at (2) Openings Calculation

P6 **2nd Floor; Front; Left to Right**
Bldg 203

SHEARWALL GEOMETRY

Total Length	A	= 16.00 ft.
Dist from left end of wall to 1st opening	B	= 4.92 ft.
1st Opening Width	C	= 2.50 ft.
Distance b/t Openings	D	= 2.92 ft.
2nd Opening Width	E	= 2.50 ft.
Net Length		= 11.00 ft.
1st Opening Header Height	F	= 8.00 ft.
1st Opening Height	G	= 5.00 ft.
2nd Opening Header Height	H	= 8.00 ft.
2nd Opening Height	J	= 5.00 ft.
Plate Height	K	= 9.00 ft.



LOADS

Wind Load (W)	4582#
Seismic Load (E)	4460#
DL Trib Length Roof	0 ft
DL Trib Length Floor	6 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	286 plf	279 plf
Piers	417 plf	405 plf

Use Shear Wall Type **12**

STRAP CALCULATIONS

Max. Load @ Opening = 640 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-733#	-517#
Left Pier	2291#	2230#
Middle Pier	2291#	2230#
Right Pier	2291#	2230#
Bottom	859#	836#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location
952 #	7.42 ft.
952 #	10.34 ft.
1866 #	16.00 ft.

		Total Uplift	Holdown KN
	Left End	1853# (E)	2
Left Opening	L King	378# (E)	NONE
	R King	1330# (E)	1
Right Opening	L King (2)	1330# (E)	1
	R King (2)	378# (E)	NONE
	Right End	3719# (E)	2B

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Lateral Analysis Calculations

P7 **2nd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	1	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	13.99	13.99	psf
Above Plate:			
Wall Area Above Plate	55	0	ft^2
Average Elevation	23.4	19.2	ft
Pressure @ Elevation	14.47	14.10	psf
Wall Load	1451	0	#
Mean Roof Height (h)	19.2	19.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.71	9.71	psf
Roof Load	0	0	#
Add'l Load (From P3)	=	1189	#

Total Wind Load = **2641 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.56
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**165 plf**
Seismic Wall Shear	=	**224 plf**
1.25 Seismic Shear*	=	**280 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Length of Diaphragm	39.5	39.5	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1236	W
Rho	=	1.00	
Diaphragm Load	1537	0	#
Add'l Load (From P3)	=	2041	#
Total Seismic Load	=	**3578**	#
1.25 Total Load*	=	**4473**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	39.5	39.5	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1537#	0#	
Diaphgram Shear	39 plf (E)	0 plf (E)	
Total Diaphragm Length	=	40	ft
Total Diaphragm Shear	=	39 plf (E)	
Shear for drag & collectors*	=	49 plf (E)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
16.00 ft.		1.0 ft.	510#	0.00	510#	16.00	2110# (E)	2110# (E)	2		2	

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Lateral Analysis Calculations

P8 **2nd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	13.99	13.99	psf
Above Plate:			
Wall Area Above Plate	55	0	ft^2
Average Elevation	23.4	19.2	ft
Pressure @ Elevation	14.47	14.10	psf
Wall Load	1451	0	#
Mean Roof Height (h)	19.2	19.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.71	9.71	psf
Roof Load	0	0	#
Add'l Load (From P4)	=	1187	#

Total Wind Load = **2639 #**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	12.00 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**220 plf**
Seismic Wall Shear	=	**297 plf**
1.25 Seismic Shear*	=	**371 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	21		0	ft
Length of Diaphragm	39.0		39.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.1236	W
Rho	=		1.00	
Diaphragm Load	1518		0	#
Add'l Load (From P4)	=		2041	#
Total Seismic Load	=		**3559**	**#**
1.25 Total Load*	=		**4449**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	39.0		39.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1518#		0#	
Diaphgram Shear	39 plf	(E)	0 plf	(E)
Total Diaphragm Length	=		39	ft
Total Diaphragm Shear	=		39 plf	(E)
Shear for drag & collectors*	=		49 plf	(E)

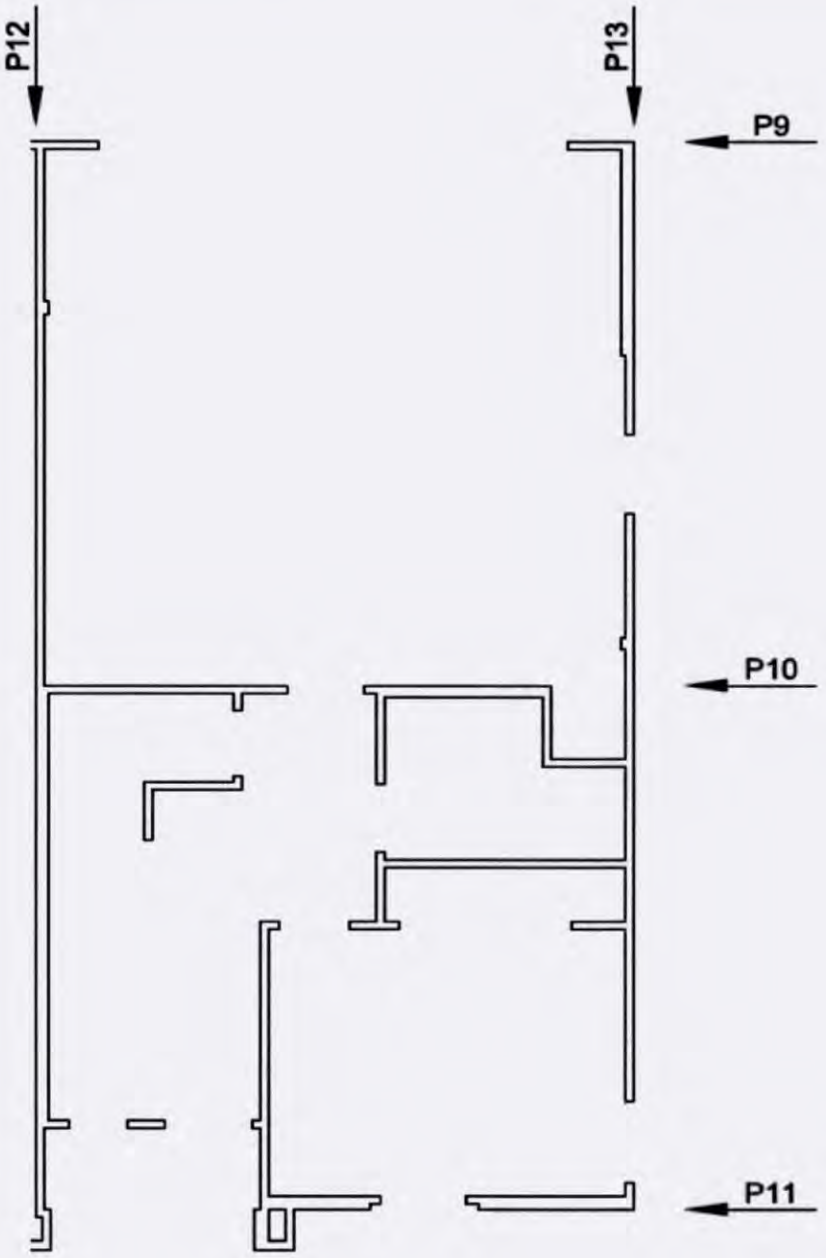
Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
6.00 ft.		1.0 ft.					2514# (E)	2514# (E)	2		2	
6.00 ft.							2534# (E)	2534# (E)	2		2	

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1st Floor P-Line Layout



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Lateral Analysis Calculations

P9 **1st Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20.42	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	58	0	ft^2
Average Elevation	13.7	10.5	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1462	0	#
Mean Roof Height (h)	10.5	10.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.09	9.09	psf
Roof Load	0	0	#
Add'l Load (70% of P5)	=	3157	#
Total Wind Load	=	**4619**	**#**

Shear Wall Summary

See manufactured shearwalls on next page(s)

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20.42	0	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0543	W
Rho	=	1.30	
Diaphragm Load	454	0	#
Add'l Load (70% of P5)	=	3127	#
Total Seismic Load	=	**3581**	**#**
1.25 Total Load*	=	**4477**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	3157#	0#	
Total Load in Diaphragm	4619#	0#	
Diaphgram Shear	220 plf (W)	0 plf (E)	
Total Diaphragm Length	=	21	ft
Total Diaphragm Shear	=	220 plf (W)	
Shear for drag & collectors*	=	220 plf (W)	

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN

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Lateral Analysis Calculations For Simpson Steel Strong-Wall

P9 **1st Floor; Rear; Left to Right**

See load calculations on previous page

Total Wind Load = **4619 #** **Total Seismic Load** = **3581 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
2	SSW18x8	1000	5970	4960	0.50	0.41

Total Load Capacity	=	5970	4960	
Pecent of Capacity Used	=	77%	72%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
2	SSW18x8	11940	12098	4619	3581	LOAD OK

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Lateral Analysis Calculations

P10 **1st Floor; Interior; Left to Right**
Garage wall

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20.42	19.5	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	58	56	ft^2
Average Elevation	13.7	13.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1462	1397	#
Mean Roof Height (h)	10.5	10.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.09	9.09	psf
Roof Load	0	0	#
Add'l Load (30% of P5)	=	1353	#
Total Wind Load	=	**4212**	**#**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.00
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**526 plf**
Seismic Wall Shear	=	**279 plf**
1.25 Seismic Shear*	=	**348 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20.42	19.5	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0543	W
Rho	=	1.30	
Diaphragm Load	454	434	#
Add'l Load (30% of P5)	=	1340	#
Total Seismic Load	=	**2228**	**#**
1.25 Total Load*	=	**2785**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	1353#	0#	
Total Load in Diaphragm	2815#	1397#	
Diaphgram Shear	134 plf (W)	67 plf (W)	
Total Diaphragm Length	=	21	ft
Total Diaphragm Shear	=	201 plf (W)	
Shear for drag & collectors*	=	201 plf (W)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
8.00 ft.							4237# (W)	4237# (W)	9		9	

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P11 **1st Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	19.5	0	ft
Additional Width	0	1.5	ft
Avg. Roof Ht abv Plate	3	5	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	56	0	ft^2
Average Elevation	13.7	10.5	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1397	89	#
Mean Roof Height (h)	10.5	10.5	
Roof Area	0	8	ft^2
Pressure @ Elevation	9.09	9.09	psf
Roof Load	0	68	#
Add'l Load (From P6)	=	4582	#

Total Wind Load = **6135 #**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	19.5	0	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area	0.	14.	ft^2
Building Dead Load	30	30	psf
V	=	0.0543	W
Rho	=	1.30	
Diaphragm Load	434	30	#
Add'l Load (From P6)	=	4460	#

Total Seismic Load = **4923 #**

1.25 Total Load* = **6154 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	13.00 ft
Net Length of Walls	=	9.25 ft
Maximum H:W Ratio	=	1.47
Seismic H:W Adjustment	=	1.00

		Shear @ T&B of wall	
Wind Wall Shear	=	**663 plf**	**472 plf**
Seismic Wall Shear	=	**532 plf**	**379 plf**
1.25 Seismic Shear*	=	**665 plf**	

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

USE SHEAR WALL TYPE **12**

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	4582#	0#	
Total Load in Diaphragm	5979#	157#	
Diaphgram Shear	285 plf (W)	7 plf (W)	

Total Diaphragm Length	=	21 ft
Total Diaphragm Shear	=	292 plf (W)
Shear for drag & collectors*	=	293 plf (E)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown		Holdown	
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	KN	Right	KN

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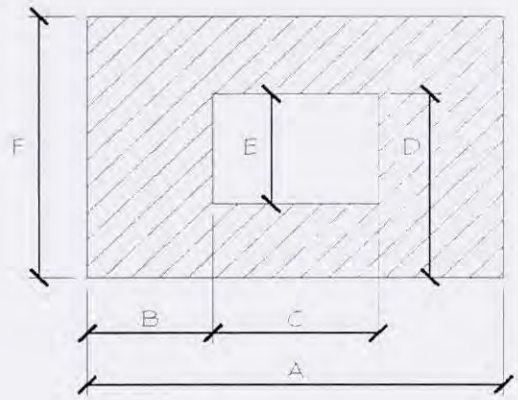
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P11 **1st Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 13.00 ft.
Dist from left end of wall to 1st opening	B	= 3.75 ft.
Opening Width	C	= 3.75 ft.
Net Length		= 9.25 ft.
Opening Header Height	D	= 6.58 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 8.00 ft.



LOADS

Wind Load (W)	6135#
Seismic Load (E)	4923#
DL Trib Length Roof	2 ft
DL Trib Length Floor	5 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	472 plf	379 plf
Piers	663 plf	532 plf

Use Shear Wall Type **12**

STRAP CALCULATIONS

Max. Load @ Opening = 1052 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-641#	-579#
Left Pier	3648#	2927#
Right Pier	3648#	2927#
Bottom	747#	600#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown KN
Left End	3397# (W)	19 corner
L King	2409# (W)	17
R King	2409# (W)	17
Right End	3397# (W)	19 corner

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Lateral Analysis Calculations

P12 **1st Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	13.43	13.43	psf
Above Plate:			
Wall Area Above Plate	60	0	ft^2
Average Elevation	13.7	10.5	ft
Pressure @ Elevation	13.43	13.43	psf
Wall Load	1368	0	#
Mean Roof Height (h)	10.5	10.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.21	10.21	psf
Roof Load	0	0	#
Add'l Load (From P7)	=	2641	#

Total Wind Load = **4009 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**251 plf**
Seismic Wall Shear	=	**268 plf**
1.25 Seismic Shear*	=	**335 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	21		0	ft
Length of Diaphragm	41.5		41.5	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0543	W
Rho	=		1.00	
Diaphragm Load	710		0	#
Add'l Load (From P7)	=		3578	#
Total Seismic Load	=		**4288**	#
1.25 Total Load*	=		**5360**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	41.5		41.5	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1368#		0#	
Diaphgram Shear	33 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		42	ft
Total Diaphragm Shear	=		33	plf (W)
Shear for drag & collectors*	=		33	plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
16.00 ft.		1.0 ft.	2110#	0.00	2110#	16.00	3896# (E)	3896# (E)	**19 interior**		**19 interior**	

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Client	Standard Pacific Homes	**Plan #**	1
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Lateral Analysis Calculations

P13 **1st Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	13.43	13.43	psf
Above Plate:			
Wall Area Above Plate	60	0	ft^2
Average Elevation	13.7	10.5	ft
Pressure @ Elevation	13.43	13.43	psf
Wall Load	1368	0	#
Mean Roof Height (h)	10.5	10.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.21	10.21	psf
Roof Load	0	0	#
Add'l Load (From P8)	=	2639	#

Total Wind Load = **4007 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	12.00 ft
Maximum H:W Ratio	=	0.67
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**334 plf**
Seismic Wall Shear	=	**356 plf**
1.25 Seismic Shear*	=	**446 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	21		0	ft
Length of Diaphragm	42.0		42.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0543	W
Rho	=		1.00	
Diaphragm Load	719		0	#
Add'l Load (From P8)	=		3559	#
Total Seismic Load	=		**4277**	#
1.25 Total Load*	=		**5347**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	42.0		42.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1368#		0#	
Diaphgram Shear	33 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		42	ft
Total Diaphragm Shear	=		33 plf	(W)
Shear for drag & collectors*	=		33 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left		Right		Holdown Left	KN	Holdown Right	KN
12.00 ft.		1.0 ft.	2514#	0.00	#REF!	12.00	#REF!	###	#REF!	##	**#REF!**		**#REF!**	

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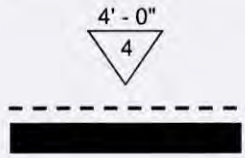
Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall Table

Type	*Wind*	*Seismic*	*Description*
1	254.8	182	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
2	350	266	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 4" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
3	480.2	343	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X OR (2) 2X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
4	600	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. MAX. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
5	627.2	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
12	754.6	539	15/32" APA RATED SHEATHING ONE FACE WITH 10d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
7	960.4	686	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
8	1254.4	896	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.

NOTES:

1. Shearwalls are designated on the plans by a triangle symbol surrounding the shearwall type.
2. Shearwall length is indicated above the shearwall callout and is shown graphically with shading & a dashed line.
3. See anchor bolt calculations for required anchor spacing.



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Client	Standard Pacific Homes -	**Plan #**	1
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Simpson Holdown Table

	Wind		*Seismic*		
Type	*Typ*	*End*	*Typ*	*End*	***Description***
NONE	500	500	500	500	Below limit
1	1705	1705	1705	1705	CS16 STRAP, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2	3410	3410	3410	3410	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
3	4585	4585	4585	4585	CMSTC16 STRAP, 23" MINIMUM END SPAN, CLEAR SPAN VARIES.
6	6490	6490	6490	6490	CMST14 STRAP, 30" MINIMUM END SPAN, CLEAR SPAN VARIES.
1A	942	942	942	942	CS16 STRAP, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
1B	1884	1884	1884	1884	(2) CS16 STRAPS, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
2A	3300	3300	3300	3300	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2B	4950	4950	4950	4950	(3) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
9	4755	0	3400	0	STHD10 HOLDOWN TO MINIMUM 4X POST.
17	4565	4470	3740	3325	HDU4 HOLDOWN TO MINIMUM 4X POST W/ SSTB24/24
19	6970	6970	6970	6970	HDU8 HOLDOWN TO MINIMUM 4X POST W/ SSTB28/34 ANCHOR.
19A	7870	7870	7870	7315	HDU8 HOLDOWN TO MINIMUM 4X6 POST W/ SSTB28/34 ANCHOR.
20	9535	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X6 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
20A	10470	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X8 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
21	14390	14390	14390	14390	HDU14 HOLDOWN TO MINIMUM 4X8 POST W/ 1" ANCHOR ROD.
16	19070	19070	19070	19070	HD19 HOLDOWN TO MINIMUM 4X10 OR 6X6 POST W/ 1 1/4" ANCHOR ROD.

NOTE: Holdowns are designated on the plans by a diamond symbol surrounding the holdown type, e.g.: 

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Client	Standard Pacific Homes - E	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

CALCULATIONS FOR ANCHOR BOLTS & MASA* ANCHORS AT SHEARWALLS

*MASA anchor values per ESR-2555, Issued November 2010

Allowable loads per NDS/hardware values (1.6 load duration factor):

Condition	1/2" ϕ A.B.	MASA
2X sill plate; sw capacity ≤ 350 plf	650#	1515#
2X sill plate; sw capacity b/t 350 & 600 plf	325#	758#
3X sill plate	770#	1215#

Allowable Shear Loads per ACI 318-08 Appendix D (assuming uncracked concrete at service loads):

		1/2" ϕ A.B.		MASA	
Wind:	$(F*V_{nx}) / 1.6 =$	1064#	Wind:	2X sill = 1388#	
				3X sill = 1109#	
Seismic:	$(F*V_{nx}) * 0.7 =$	1192#	Seismic:	2X sill = 1138#	
				3X sill = 931#	

Seismic (in SDC C, D, E and F):
$(0.75*F*_{Vnx}) * 0.7 =$ 894#

		1/2" AB	MASA
SW 1 (2x sill)	NDS	49.0" oc	71.4" oc
255plf (W)	ACI (W)	50.1" oc	65.3" oc
182plf (E)	ACI (E)	58.9" oc	75.0" oc
	per plan	**48" oc**	**48" oc**

		1/2" AB	MASA
SW 2 (2x sill)	NDS	35.7" oc	51.9" oc
350plf (W)	ACI (W)	36.5" oc	47.6" oc
266plf (E)	ACI (E)	40.3" oc	51.3" oc
	per plan	**35" oc**	**35" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW3	NDS	13.0" oc	18.9" oc	30.8" oc	30.4" oc
480plf (W)	ACI (W)	26.6" oc	34.7" oc	26.6" oc	27.7" oc
343plf (E)	ACI (E)	31.3" oc	39.8" oc	31.3" oc	32.6" oc
	per plan	**12" oc**	**12" oc**	**20" oc**	**20" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW4	NDS	10.4" oc	15.2" oc	24.6" oc	24.3" oc
600plf (W)	ACI (W)	21.3" oc	27.8" oc	21.3" oc	22.2" oc
448plf (E)	ACI (E)	23.9" oc	30.5" oc	23.9" oc	24.9" oc
	per plan	**10" oc**	**10" oc**	**16" oc**	**16" oc**

		1/2" AB	MASA
SW 5 (3x sill)	NDS	23.6" oc	23.2" oc
627plf (W)	ACI (W)	20.4" oc	21.2" oc
448plf (E)	ACI (E)	23.9" oc	24.9" oc
	per plan	**20" oc**	**20" oc**

		1/2" AB	MASA
SW 7 (3x sill)	NDS	15.4" oc	15.2" oc
960plf (W)	ACI (W)	13.3" oc	13.9" oc
686plf (E)	ACI (E)	15.6" oc	16.3" oc
	per plan	**13" oc**	**13" oc**

		1/2" AB	MASA
SW 8 (3x sill)	NDS	11.8" oc	11.6" oc
1254plf (W)	ACI (W)	10.2" oc	10.6" oc
896plf (E)	ACI (E)	12.0" oc	12.5" oc
	per plan	**10" oc**	**10" oc**

		1/2" AB	MASA
SW 12 (3x sill	NDS	19.6" oc	19.3" oc
755plf (W)	ACI (W)	16.9" oc	17.6" oc
539plf (E)	ACI (E)	19.9" oc	20.7" oc
	per plan	**12" oc**	**12" oc**

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Structural
Engineering
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Structural Calculation Package

for

Standard Pacific Homes - Bay

Village Walk

Cotati, California

Plan # 2

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Job # HS13068

2010 CBC



Date 7/8/2013

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Structural Calculation Package

Client Information

Standard Pacific Homes - Bay
3825 Hopyard Road, Suite 195
Pleasanton, CA 94588

Project Information

Village Walk
Cotati, California
Plan No. 2

Loading Information

Roof Loads

Roofing (Tile)	=	10.0 psf
Sheathing	=	1.7 psf
Framing	=	2.3 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	1.5 psf
Wall (Seismic only)	=	9.0 psf
Total DL	=	21.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	20.0 psf

Floor Loads

Flooring	=	1.5 psf
Sheathing	=	2.5 psf
Framing	=	2.5 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	3.0 psf
Wall (Seismic only)	=	15.0 psf
Total DL	=	15.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	40.0 psf

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Seismic Design Per IBC Section 1613

Building Information

R	=	6.50	ASCE Table 12.2-1
Occupancy Cat.	=	II	IBC Sect. 1604.5
Number of Stories	=	3	
Importance Factor	=	1.0	
Max Level Height	=	27.4	ft
Design Approach		Normal/Equivalent	

Site Information

S_s	=	1.615	IBC Sect. 1613.5.1
S_1	=	0.634	IBC Sect. 1613.5.1
Site Class	=	D	
S_s	=	1.615	Used For Design
S_1	=	0.634	Used For Design

Seismic Loads: ASCE 7 Section 12.8 Equivalent Lateral Force Procedure

Short Period Response

F_a	=	1.000	IBC 1613.5.3
$S_{MS} = F_a S_s$	=	1.615	IBC Eqn. 16-36
$S_{DS} = (^2/_3) S_{MS}$	=	1.077	IBC Eqn. 16-38
SDC per S_{DS}	=	D	IBC Table 1613.5.6(1)

1-Second Period Response

F_v	=	1.500	IBC 1613.5.3
$S_{M1} = F_v S_1$	=	0.951	IBC Eqn. 16-37
$S_{D1} = (^2/_3) S_{M1}$	=	0.634	IBC Eqn. 16-39
SDC per S_{D1}	=	D	IBC Table 1613.5.6(2)

Seismic Design Category

Period, T	=	0.24	s, ASCE 7 12.8.2.1
0.8 Ts	=	0.47	s, ASCE 7 11.4.5
SDC Required	=	D	IBC Sect. 1613.5.6
SDC Used	=	**D**	

Seismic Design Factors

Overstrength Factor	=	2.5	Table 12.2-1, Footnote g
Dead Load Reduction:			
(0.6 - 0.14 Sds)D	=	0.449 D	ASCE Sect 12.4.3.2
Rho, left to right	=	1.0	ASCE Sect 12.3.4
Rho, front to back	=	1.0	

ASD Seismic Response Coefficient

$$C_s = \frac{I(S_{DS})}{R}$$

C_s per ASCE Eqn. 12.8-2

C_s	=	0.1656	ASCE Eqn. 12.8-2
C_s (upper limit)	=	0.4072	ASCE Eqn. 12.8-3
C_s (lower limit)	=	0.0100	ASCE Eqn. 12.8-5
C_s (alt low limit)	=	0.0488	ASCE Eqn. 12.8-6
C_s	=	0.1656	

Base Shear, V = 0.1159 W
(Includes 0.7 factor from ASD Basic LC)

Vertical Shear Distribution

Story	h (ft)	Area (sq ft)	DL (psf)	w_x (lb)	w_x x h	C_{vx}	C_{sx}*
1	8	700	30	21000	168000	0.1555	0.0524
2	18.2	667	30	20010	364182	0.3371	0.1192
3	27.4	667	30	20010	548274	0.5074	0.1794
	Sum:	2034		61020	1080456		

*Derived equivalent shear ratio per story: $F_x = C_{sx} w_x$
where: $C_{sx} = C_{vx} C_s (W/w_x)$

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (V)	85 mph	(3-second gust)
Importance Factor (I)	1.00	ASCE 7 - Table 6-1
Exposure Category	C	ASCE 7 - Section 6.5.6.3;
Directionality Factor (K_d)	0.85	ASCE 7 - Table 6-4
Gust Factor (G)	0.85	ASCE 7 - Section 6.5.8.1

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\, K_z\, K_{zt}\, K_d\, V^2\, I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects

Hill Type None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	29.90 ft	Velocity Pressure (q_h) for MWFRS	15.39 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.42
min L/B (Front to Back)	2.40
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.28

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C 15.39 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
8.0 ft	-1.04	18.81	-1.28	22.53
15.0 ft	-0.95	17.33	-1.09	19.57
18.2 ft	-0.92	16.87	-1.03	18.65
22.0 ft	-0.89	16.42	-0.97	17.76

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-1.17	
Int. Pressure Coeff. (*Cpi*)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-13 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	psf	Available to offset overturning from wind

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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Beam Specifications

BEAM #	SIZE	GRADE	LOCATION
Beam #15	5 1/4"x14"	1.9E SCL	Beam over kitchen / dining
Beam #16	5 1/4"x14"	1.9E SCL	Beam over dining
Beam #17	5 1/4"x14"	1.9E SCL	Beam over deck
Beam #18	3 1/2"x11 7/8"	1.5E SCL	Beam over garage
Beam #19	3 1/2"x14"	1.5E SCL	Beam over garage
Beam #20	7"x14"	1.9E SCL	Beam over garage
Beam #21	4x12	#2 D.F.	Garage Header

Header Specifications

First Floor Walls

Length	Size	Grade
4'-0"	4x8	#2 D.F.
6'-0"	4x10	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Second Floor Walls

Length	Size	Grade
4'-0"	4x6	#2 D.F.
6'-0"	4x8	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Description : Headers Unit 2

Wood Beam Design : 4ft Headers, Upper floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

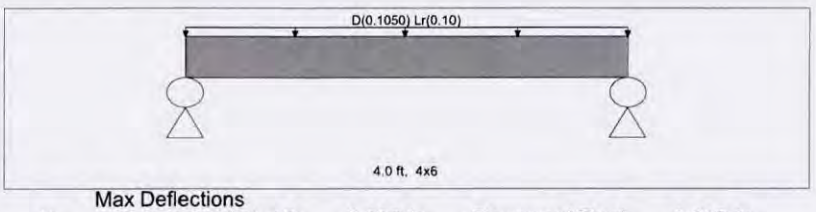
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft

Design Summary

Max fb/Fb Ratio = **0.238** : 1
fb : Actual : 278.82 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.137** : 1
fv : Actual : 24.71 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.21		0.20				
Right Support	0.21		0.20				

Max Deflections

Downward L+Lr+S	0.007 in	Downward Total	0.015 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	6435 >360	Total Defl Ratio	3139 >240

Wood Beam Design : 6ft Headers, Upper floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

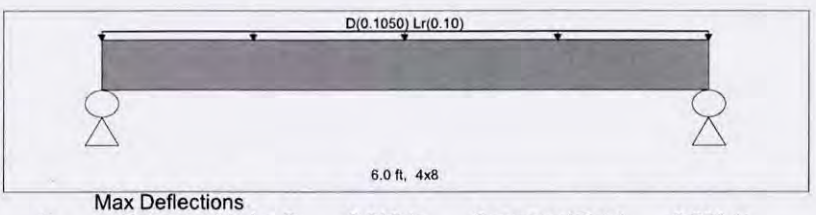
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft

Design Summary

Max fb/Fb Ratio = **0.309** : 1
fb : Actual : 361.04 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.162** : 1
fv : Actual : 29.08 psi at 5.400 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.32		0.30				
Right Support	0.32		0.30				

Max Deflections

Downward L+Lr+S	0.016 in	Downward Total	0.034 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	4367 >360	Total Defl Ratio	2130 >240

Wood Beam Design : 4ft Headers, Third floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

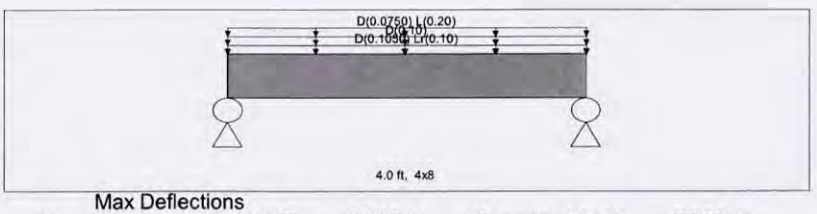
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 5.0 ft

Design Summary

Max fb/Fb Ratio = **0.338** : 1
fb : Actual : 395.28 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.232** : 1
fv : Actual : 41.79 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.56	0.40	0.20				
Right Support	0.56	0.40	0.20				

Max Deflections

Downward L+Lr+S	0.010 in	Downward Total	0.019 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	4913 >360	Total Defl Ratio	2541 >240

Wood Beam Design : 6ft Headers, Third floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

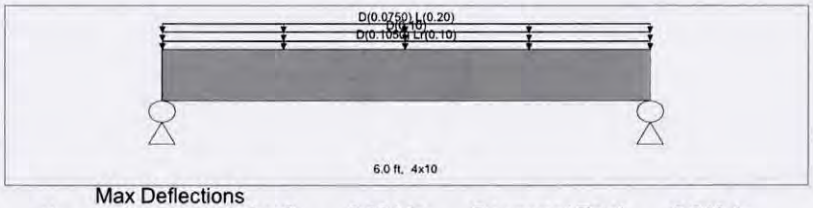
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 5.0 ft

Design Summary

Max fb/Fb Ratio = **0.506** : 1
fb : Actual : 546.37 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.291** : 1
fv : Actual : 52.41 psi at 5.240 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.84	0.60	0.30				
Right Support	0.84	0.60	0.30				

Max Deflections

Downward L+Lr+S	0.024 in	Downward Total	0.046 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3023 >360	Total Defl Ratio	1564 >240

Wood Beam Design : 4ft Headers, Second floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

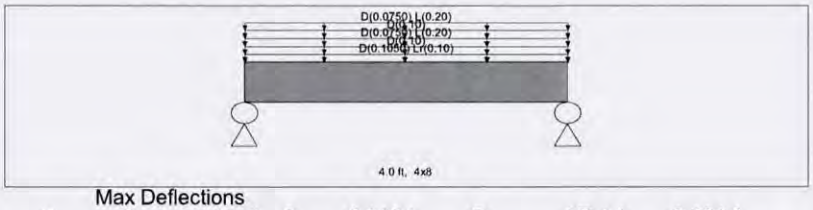
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0750, L = 0.20 k/ft, 0.0 to 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.572** : 1
fb : Actual : 669.24 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.393** : 1
fv : Actual : 70.76 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.91	0.80	0.20				
Right Support	0.91	0.80	0.20				

Max Deflections

Downward L+Lr+S	0.016 in	Downward Total	0.031 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2948 >360	Total Defl Ratio	1543 >240

Wood Beam Design : 6ft Headers, Second floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

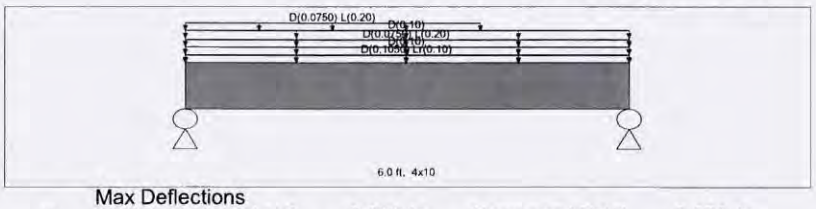
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0750, L = 0.20 k/ft, 0.0 to 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.796** : 1
fb : Actual : 860.10 psi at 2.900 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.469** : 1
fv : Actual : 84.49 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.34	1.13	0.30				
Right Support	1.24	0.87	0.30				



Max Deflections

Downward L+Lr+S	0.036 in	Downward Total	0.070 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2012 >360	Total Defl Ratio	1022 >240

Wood Beam Design : 8ft Header @ rear wall of family, Third floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x9.5, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber
Wood Grade : 1.5E SCL

Fb - Tension	2150 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1500 ksi	Density	35 pcf
Fb - Compr	2150 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	700 ksi		

Applied Loads

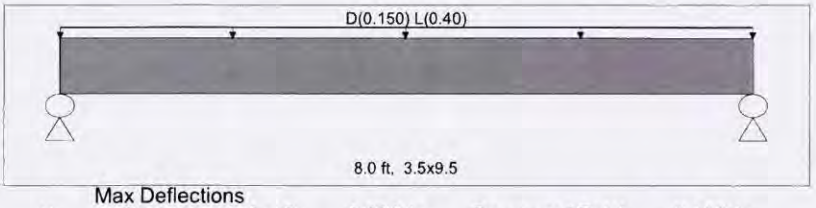
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 10.0 ft

Design Summary

Max fb/Fb Ratio = **0.466** : 1
fb : Actual : 1,002.93 psi at 4.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.281** : 1
fv : Actual : 80.06 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.60	1.60					
Right Support	0.60	1.60					



Max Deflections

Downward L+Lr+S	0.099 in	Downward Total	0.136 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	971 >360	Total Defl Ratio	706 >240

Description : Beams Unit 2 (Beam #15 to Beam #20)

Wood Beam Design : Beam #15

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.9E SCL			
Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

Applied Loads

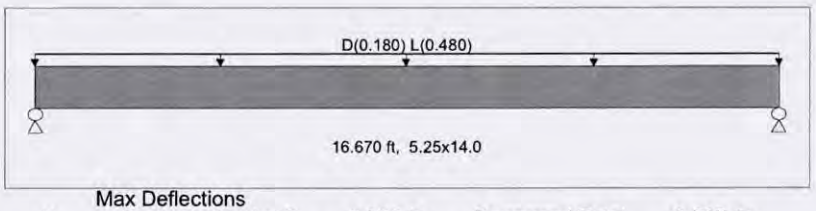
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 12.0 ft

Design Summary

Max fb/Fb Ratio = **0.648** : 1
fb : Actual : 1,604.14 psi at 8.335 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.341** : 1
fv : Actual : 97.30 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.50	4.00					
Right Support	1.50	4.00					



Max Deflections

Downward L+Lr+S	0.368 in	Downward Total	0.505 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	544 >480	Total Defl Ratio	395 >360

Wood Beam Design : Beam #16

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.9E SCL			
Fb - Tension	2475 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1900 ksi	Density	35 pcf
Fb - Compr	2475 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	875 ksi		

Applied Loads

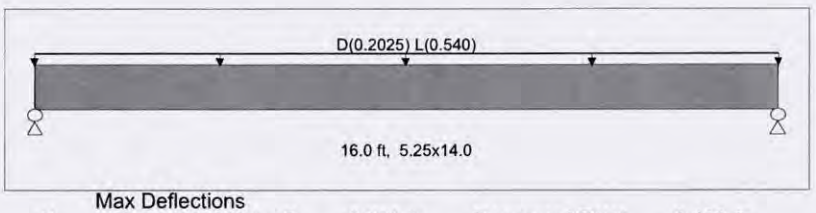
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 13.50 ft

Design Summary

Max fb/Fb Ratio = **0.672** : 1
fb : Actual : 1,662.51 psi at 8.000 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.366** : 1
fv : Actual : 104.25 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.62	4.32					
Right Support	1.62	4.32					



Max Deflections

Downward L+Lr+S	0.351 in	Downward Total	0.483 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	547 >480	Total Defl Ratio	397 >360

Wood Beam Design : Beam #17

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.9E SCL			
Fb - Tension	2475 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1900 ksi	Density	35 pcf
Fb - Compr	2475 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	875 ksi		

Applied Loads

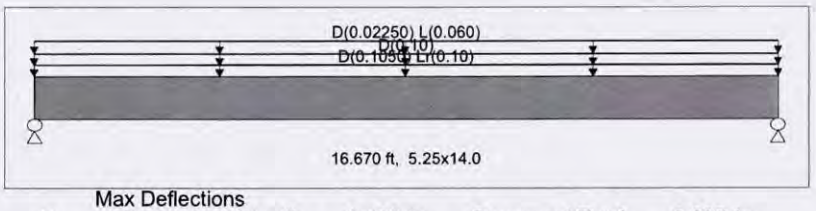
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.50 ft

Design Summary

Max fb/Fb Ratio = **0.341** : 1
fb : Actual : 844.60 psi at 8.335 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.180** : 1
fv : Actual : 51.23 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.90	0.50	0.83				
Right Support	1.90	0.50	0.83				



Max Deflections

Downward L+Lr+S	0.123 in	Downward Total	0.297 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1632 >480	Total Defl Ratio	674 >360

Wood Beam Design : Beam #18

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

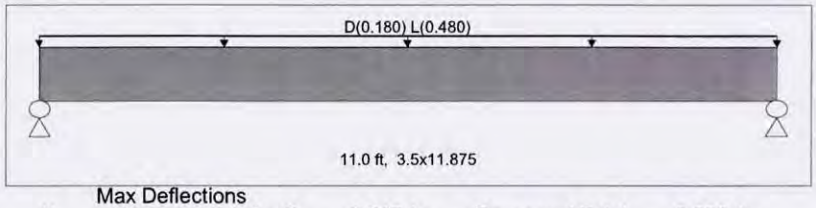
Applied Loads

Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 12.0 ft

Design Summary

Max fb/Fb Ratio = **0.677** : 1
fb : Actual : 1,456.25 psi at 5.500 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.380** : 1
fv : Actual : 108.30 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.99	2.64					
Right Support	0.99	2.64					

Max Deflections

Downward L+Lr+S	0.217 in	Downward Total	0.298 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	608 >480	Total Defl Ratio	442 >360

Wood Beam Design : Beam #19

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

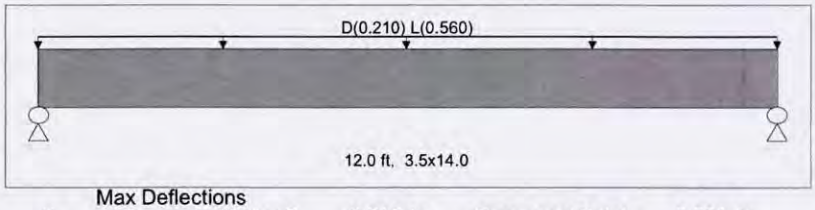
Applied Loads

Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 14.0 ft

Design Summary

Max fb/Fb Ratio = **0.677** : 1
fb : Actual : 1,454.69 psi at 6.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.400** : 1
fv : Actual : 114.09 psi at 10.840 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.26	3.36					
Right Support	1.26	3.36					

Max Deflections

Downward L+Lr+S	0.219 in	Downward Total	0.301 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	658 >480	Total Defl Ratio	478 >360

Wood Beam Design : Beam #20

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **7x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.9E SCL			
Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

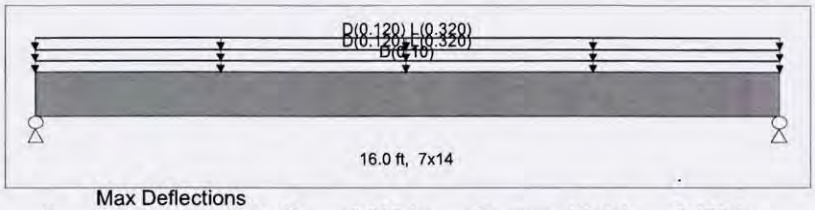
Applied Loads

Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft

Design Summary

Max fb/Fb Ratio = **0.665** : 1
fb : Actual : 1,645.71 psi at 8.000 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.362** : 1
fv : Actual : 103.20 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	2.72	5.12					
Right Support	2.72	5.12					

Max Deflections

Downward L+Lr+S	0.312 in	Downward Total	0.478 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	615 >480	Total Defl Ratio	401 >360

Wood Beam Design : Beam #21

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x12, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

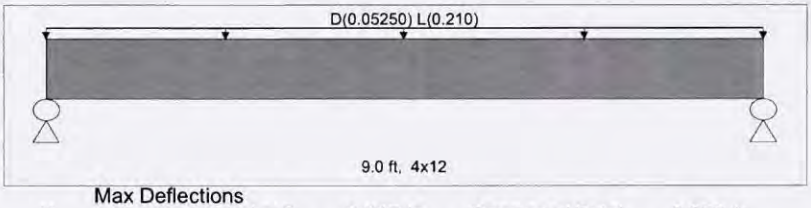
Unif Load: D = 0.0150, L = 0.060 k/ft, Trib= 3.50 ft

Design Summary

Max fb/Fb Ratio = **0.436** : 1
fb : Actual : 432.00 psi at 4.500 ft in Span # 1
Fb : Allowable : 990.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.198** : 1
fv : Actual : 35.70 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.24	0.95					
Right Support	0.24	0.95					



Max Deflections

Downward L+Lr+S	0.047 in	Downward Total	0.059 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2302 >480	Total Defl Ratio	1842 >360

Studs up to and Including 10' - 0" in Height

Table 2308.9.1 of the 2009 IBC lists the maximum height and spacing for wood studs which conform to the limitations of the conventional framing provisions (Section 2308.2). While the design loads and roof spans used in this project do not explicitly meet the conventional framing limitations, it is HSCGI's interpretation that Table 2308.9.1 is applicable for any stud wall with applied loads less than or equal to the worst case loading allowed by the conventional framing provisions (i.e. the loads resulting from roofs, floors, and/or walls spanning the maximum distance and carrying the maximum loads allowed by the limitations listed below).

Limitations (Summary of Section 2308.2):

1. Structure is not more than 3 stories.
2. Plate heights are not greater than 10' - 0".
3.1. Average dead load of combined roof and ceiling, exterior walls, floors and partitions does not exceed 15 psf .
3.2. Live load does not exceed 40 psf.
3.3. Ground snow load does not exceed 50 psf.
4. Wind speed does not exceed 100 mph.
5. Roof truss and rafter spans (between points of vertical supports) are not greater than 40 feet.
6. Structure does not belong to Occupancy Category IV.
7. Irregularity limitation. Limits for irregularities apply to wall bracing, not to Table 2308.9.1.
8. Structure does not fall under DSA-SS or OSHPD 1, 2 or 4.

Determination of Maximum Loads and Spans:

The conventional framing limitations, together with the maximum floor span listed in Table 2308.8(2), have been used to determine the equivalent maximum allowable loads that may be applied to wood wall studs. Below is a list of maximum loads and corresponding maximum spans allowed by section 2308.

Parameter	Roof	Floor	Wall
Dead Load	15 psf	15 psf	15 psf
Span/Height	40 feet	21 feet	10 feet

Table 2308.9.1 allows 10' - 0" tall 2x4 wall studs spaced at 16" o.c. to support one floor, roof and ceiling. Based on the spans and loads listed above, the maximum allowable dead load (DL) on a standard stud wall is as follows:

Exterior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)/2	= 300 plf
Floor	(15psf DL) x (21 foot floor span)/2	= 158 plf
Wall	(15psf DL) x (10 foot wall height)	= 150 plf
		= 608 plf

Interior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)	= 600 plf
Floor	(15psf DL) x (21 foot floor span)	= 315 plf
		= 915 plf

Wood studs exceeding the height and/or loading criteria listed above are calculated using the design criteria of IBC Chapters 16 and 23.

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Project	Village Walk		
Client	Standard Pacific Home	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Stud Calculations Per 2005 NDS

STUD/POST		**Stud/Post Description**			**Stud/Post Description**		
Height	ft	**19.20**			**9.00**		
Depth/Width (d)	in	5.50			5.50		
Thickness	in	3.00			3.00		
Grade		DF Stud			DF Stud		
O.C. Spacing	in	16.00			16.00		
Repetitive Factor		NDS Repetitive Factor			NDS Repetitive Factor		
Location		exterior - zone 5			interior		
LOADS							
AXIAL LOAD - DL	plf	0.00	0.00	0.00	0.00	0.00	0.00
AXIAL LOAD - LL	plf	0.00	0.00	0.00	0.00	0.00	0.00
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
WIND LOAD (C&C)	psf	5.00	18.65	13.99	5.00	5.00	3.75
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.15	1.15	1.15
PROPERTIES							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	510.0	510.0	510.0
Fb (Adjusted)	psi	805.0	805.0	805.0	805.0	805.0	805.0
Fcll (Adjusted)	psi	850.0	850.0	850.0	850.0	850.0	850.0
COMPRESSION		DL+LL	DL+W	DL+0.75(LL+W)	DL+LL	DL+W	DL+0.75(LL+W)
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		41.9			19.6		
F_{cE}		239	239	239	1087	1087	1087
F*c	psi	978	1360	1360	978	1360	1360
F_{cE}/Fc^*		0.24	0.18	0.18	1.11	0.80	0.80
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.23	0.17	0.17	0.73	0.61	0.61
Fc'	psi	225	230	230	710	829	829
fc	psi	0	0	0	0	0	0
Stress Ratio		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
BENDING							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	3686.4	13752	10314	810	810	608
Fb'	psi	926	1288	1288	926	1288	1288
fb	psi	244	909	682	54	54	40
Stress Ratio		**0.2633**	**0.7059**	**0.5295**	**0.0578**	**0.0416**	**0.0312**
COMBINED STRESSES							
(fc/F'c)^2		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
fb/Fb'(1-(fc/Fce)		0.2633	0.7059	0.5295	0.0578	0.0416	0.0312
Combined Stress Ratio		**0.2633**	**0.7059**	**0.5295**	**0.0578**	**0.0416**	**0.0312**
DEFLECTION							
Deflection	in	0.350	1.306	0.979	0.017	0.017	0.013
0.7 Deflection	in		0.914	0.686		0.012	0.009
Deflection Limit (L/240)	in	0.960	0.960	0.960	0.450	0.450	0.450
Deflection Ratio		**0.3646**	**0.9522**	**0.7142**	**0.0376**	**0.0263**	**0.0197**

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Project	Village Walk		
Client	Standard Pacific Hc	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Footing Calculations

Soils Engineer

ENGEO, Inc. (San Ramon)
2010 Crow Canyon Pl., Ste. 250
San Ramon, CA 94583

Report #: 6858.200.102
Date: 04/16/2013

Foundation Design Information

Allowable Soil Pressure	=	1000 psf
Retaining Wall Design:		
Friction Factor	=	N/A
Active Pressure	=	N/A pcf
Passive Pressure	=	N/A pcf

Post-Tension Foundation Calculations (expansive soil)

Average Soil Pressure = 1,000 psf

		Center Lift	Edge Lift
Edge Moisture Variation (e_m)	=	5.10 ft	2.70 ft
Differential Soil Movement (y_m)	=	1.50 in	2.00 in

Design Rectangles
R1 = 0.00 ft x 0.00 ft

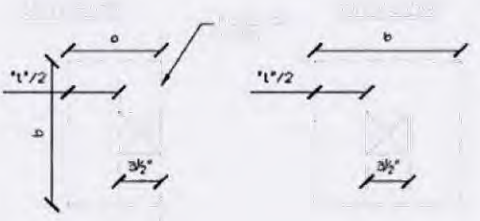
Maximum Point Load Capacity of Slab
Slab Thickness (t) = 12 in
Concrete Compressive Strength (f'c) = 4000 psi

Punching Shear Calculation

$$V_u = \phi V_n$$
$$\phi = 0.85$$
$$V_c = 4\sqrt{f_c}\, b_o\, t$$
$$V_{allowable} = V_u / 1.7$$

Exterior Condidtion $b_o = 2a+b$ = 34.5 in
Maximum allowable point load = 52 kips

Interior Condidtion $b_o = 4b$ = 62 in
Maximum allowable point load = 94 kips



hscgi limit 10,000# at interior
8000# at exterior

Pad Footing Calculations

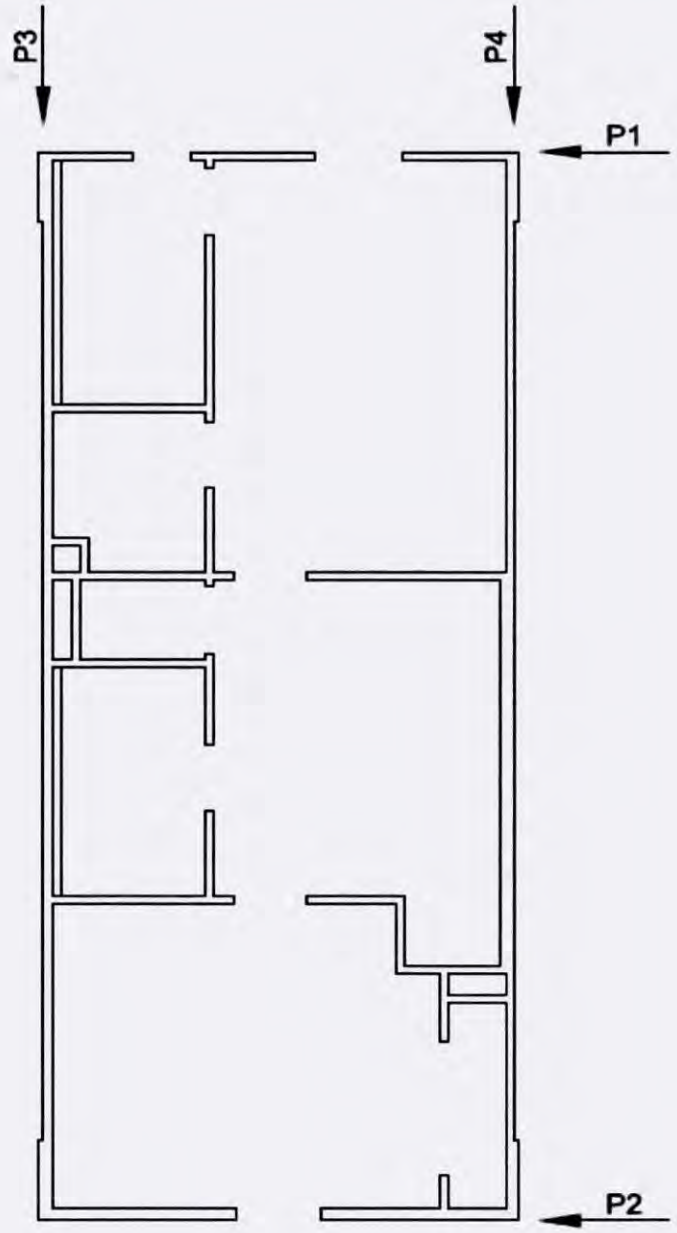
Maximum Localized Bearing Pressure = 1,000 psf
Minimum Pad Footing Depth = 12 in

Footing #	Load	Minimum Size	Reinforcing
FTG#4	12250#	42" SQUARE X 18" DEEP	#5 BARS AT 8" OC

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
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3rd Floor P-Line Layout



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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P1 **3rd Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	40	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	4	0	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	12.61	16.80	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	12.82	17.01	psf
Wall Load	1009	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	80	0	ft^2
Pressure @ Elevation	8.08	8.67	psf
Roof Load	646	0	#
Additional Load	=		#

Total Wind Load = **1655 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.34 ft
Net Length of Walls	=	11.34 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00

			Shear @ T&B of wall
Wind Wall Shear	=	**146 plf**	**101 plf**
Seismic Wall Shear	=	**158 plf**	**110 plf**
1.25 Seismic Shear*	=	**198 plf**	

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	40	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1794	W
Rho	=	1.00	
Diaphragm Load	1795	0	#
Additional Load	=		#

Total Seismic Load = **1795 #**

1.25 Total Load* = **2243 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1795#	0#	
Diaphgram Shear	108 plf (E)	0 plf (E)	

Total Diaphragm Length	=	17 ft
Total Diaphragm Shear	=	108 plf (E)
Shear for drag & collectors*	=	135 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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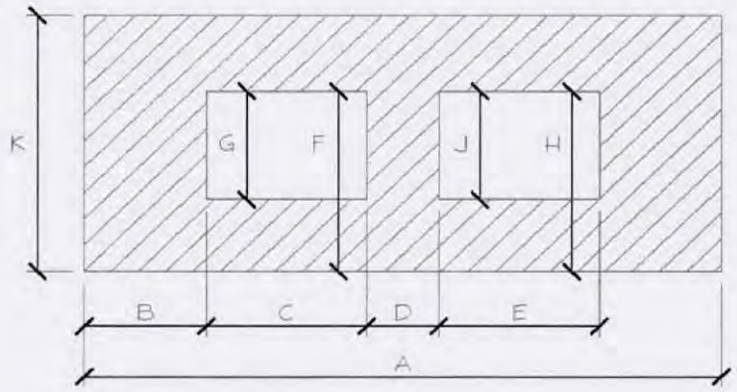
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at (2) Openings Calculation

P1 **3rd Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 16.34 ft.
Dist from left end of wall to 1st opening	B	= 3.00 ft.
1st Opening Width	C	= 2.00 ft.
Distance b/t Openings	D	= 4.50 ft.
2nd Opening Width	E	= 3.00 ft.
Net Length		= 11.34 ft.
1st Opening Header Height	F	= 6.67 ft.
1st Opening Height	G	= 4.00 ft.
2nd Opening Header Height	H	= 6.67 ft.
2nd Opening Height	J	= 5.00 ft.
Plate Height	K	= 8.00 ft.



LOADS

Wind Load (W)	1655#
Seismic Load (E)	1795#
DL Trib Length Roof	4 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	101 plf	110 plf
Piers	146 plf	158 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 186 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-408#	-584#
Left Pier	803#	870#
Middle Pier	803#	870#
Right Pier	803#	870#
Bottom	270#	293#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

		Total Uplift	Holdown
	Left End	318# (W)	NONE
Left Opening	L King	248# (E)	NONE
	R King	248# (E)	NONE
Right Opening	L King (2)	481# (E)	NONE
	R King (2)	481# (E)	NONE
	Right End	318# (W)	NONE

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Lateral Analysis Calculations

P2 **3rd Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	40	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	0	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	12.61	16.80	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	12.82	17.01	psf
Wall Load	1009	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	100	0	ft^2
Pressure @ Elevation	8.08	8.67	psf
Roof Load	808	0	#
Additional Load	=		#

Total Wind Load = **1817 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.34 ft
Net Length of Walls	=	13.34 ft
Maximum H:W Ratio	=	0.84
Seismic H:W Adjustment	=	1.00

			Shear @ T&B of wall
Wind Wall Shear	=	**136 plf**	**111 plf**
Seismic Wall Shear	=	**135 plf**	**110 plf**
1.25 Seismic Shear*	=	**168 plf**	

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	40		0	ft
Length of Diaphragm	16.7		16.7	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.1794	W
Rho	=		1.00	
Diaphragm Load	1795		0	#
Additional Load	=			#

Total Seismic Load = **1795 #**

1.25 Total Load* = **2243 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	16.7		16.7	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1817#		0#	
Diaphgram Shear	109 plf	(W)	0 plf	(E)

Total Diaphragm Length	=	17 ft
Total Diaphragm Shear	=	109 plf (W)
Shear for drag & collectors*	=	135 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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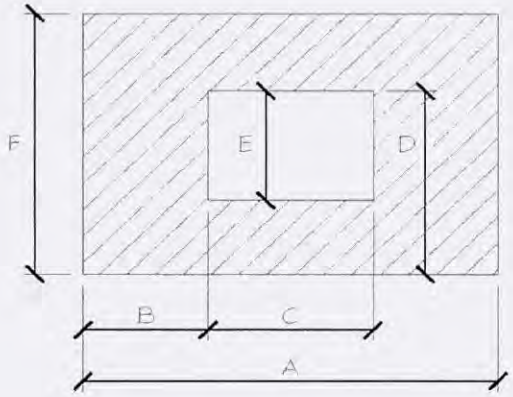
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Shear Wall w/ Force Transfer at Opening Calculation

P2 **3rd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 16.34 ft.
Dist from left end of wall to 1st opening	B	= 6.83 ft.
Opening Width	C	= 3.00 ft.
Net Length		= 13.34 ft.
Opening Header Height	D	= 6.67 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 8.00 ft.



LOADS

Wind Load (W)	1817#
Seismic Load (E)	1795#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	111 plf	110 plf
Piers	136 plf	135 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 171 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-399#	-430#
Left Pier	749#	740#
Right Pier	749#	740#
Bottom	186#	183#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	398# (W)	NONE
L King	351# (E)	NONE
R King	351# (E)	NONE
Right End	398# (W)	NONE

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Lateral Analysis Calculations

P3 **3rd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	13.92	13.92	psf
Above Plate:			
Wall Area Above Plate	38	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	14.13	14.13	psf
Wall Load	1001	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	4	0	ft^2
Pressure @ Elevation	9.58	9.58	psf
Roof Load	35	0	#
Additional Load	=		#

Total Wind Load = **1036 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**65 plf**
Seismic Wall Shear	=	**112 plf**
1.25 Seismic Shear*	=	**140 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Length of Diaphragm	40.0	40.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1794	W
Rho	=	1.00	
Diaphragm Load	1795	0	#
Additional Load	=		#

Total Seismic Load = **1795 #**
1.25 Total Load* = **2243 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	40.0	40.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1795#	0#	
Diaphgram Shear	45 plf (E)	0 plf (E)	

Total Diaphragm Length	=	40 ft
Total Diaphragm Shear	=	45 plf (E)
Shear for drag & collectors*	=	56 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
16.00 ft.	2.0 ft.						387# (E)	387# (E)	NONE	NONE

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Lateral Analysis Calculations

P4 **3rd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	13.92	13.92	psf
Above Plate:			
Wall Area Above Plate	38	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	14.13	14.13	psf
Wall Load	1001	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	4	0	ft^2
Pressure @ Elevation	9.58	9.58	psf
Roof Load	35	0	#
Additional Load	=		#

Total Wind Load = **1036 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	14.00 ft
Maximum H:W Ratio	=	0.57
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**74 plf**
Seismic Wall Shear	=	**128 plf**
1.25 Seismic Shear*	=	**160 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Length of Diaphragm	40.0	40.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1794	W
Rho	=	1.00	
Diaphragm Load	1795	0	#
Additional Load	=		#

Total Seismic Load = **1795 #**
1.25 Total Load* = **2243 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	40.0	40.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1795#	0#	
Diaphgram Shear	45 plf (E)	0 plf (E)	

Total Diaphragm Length	=	40 ft
Total Diaphragm Shear	=	45 plf (E)
Shear for drag & collectors*	=	56 plf (E)

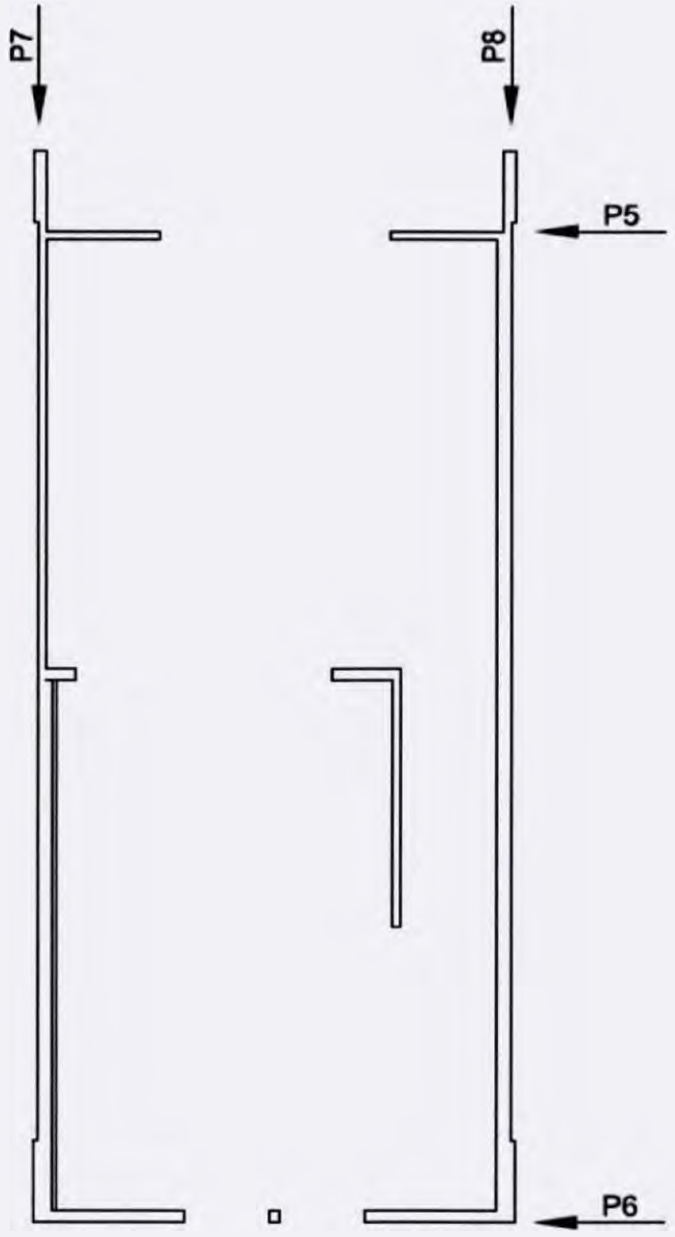
Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
14.00 ft.	2.0 ft.						579# (E)	579# (E)	1	1

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2nd Floor P-Line Layout



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Lateral Analysis Calculations

P5 **2nd Floor; Rear; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Additional Width	0	3	ft
Avg. Roof Ht abv Plate	0	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	11.78	15.32	psf
Above Plate:			
Wall Area Above Plate	96	0	ft^2
Average Elevation	23.4	18.2	ft
Pressure @ Elevation	12.27	15.32	psf
Wall Load	2161	207	#
Mean Roof Height (h)	18.2	18.2	
Roof Area	0	12	ft^2
Pressure @ Elevation	7.51	7.81	psf
Roof Load	0	94	#
Add'l Load (From P1)	=	1655	#
Total Wind Load	=	**4117**	**#**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	7.00 ft
Maximum H:W Ratio	=	2.57
Seismic H:W Adjustment	=	0.78
Wind Wall Shear	=	**588 plf**
Seismic Wall Shear	=	**414 plf**
1.25 Seismic Shear*	=	**517 plf**

USE SHEAR WALL TYPE **12**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1192	W
Rho	=	1.00	
Diaphragm Load	1103	0	#
Add'l Load (From P1)	=	1795	#
Total Seismic Load	=	**2897**	**#**
1.25 Total Load*	=	**3622**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	1795#	0#	
Total Load in Diaphragm	3816#	301#	
Diaphgram Shear	229 plf (W)	18 plf (W)	
Total Diaphragm Length	=	17 ft	
Total Diaphragm Shear	=	247 plf (W)	
Shear for drag & collectors*	=	247 plf (W)	

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
3.50 ft.							5188# (W)	5188# (W)	4	4
3.50 ft.							5188# (W)	5188# (W)	4	4

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Lateral Analysis Calculations

P6 **2nd Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Additional Width	0	3	ft
Avg. Roof Ht abv Plate	4	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	11.78	15.32	psf
Above Plate:			
Wall Area Above Plate	96	0	ft^2
Average Elevation	23.4	18.2	ft
Pressure @ Elevation	12.27	15.32	psf
Wall Load	2161	207	#
Mean Roof Height (h)	18.2	18.2	
Roof Area	0	24	ft^2
Pressure @ Elevation	7.51	7.81	psf
Roof Load	0	187	#
Add'l Load (From P2)	=	1817	#
Total Wind Load	=	**4372**	**#**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1192	W
Rho	=	1.00	
Diaphragm Load	1103	0	#
Add'l Load (From P2)	=	1795	#
Total Seismic Load	=	**2897**	**#**
1.25 Total Load*	=	**3622**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	16.34	ft
Net Length of Walls	=	9.92	ft
Maximum H:W Ratio	=	0.91	
Seismic H:W Adjustment	=	1.00	
		Shear @ T&B of wall	
Wind Wall Shear	=	**441**	**plf** **268 plf**
Seismic Wall Shear	=	**292**	**plf** **177 plf**
1.25 Seismic Shear*	=	**365**	**plf**

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2161#	394#	
Diaphgram Shear	130 plf (W)	24 plf (W)	
Total Diaphragm Length	=	17	ft
Total Diaphragm Shear	=	153 plf (W)	
Shear for drag & collectors*	=	153 plf (W)	

USE SHEAR WALL TYPE **3**

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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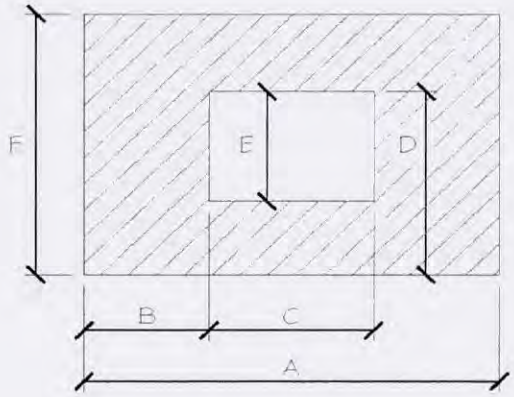
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Client	Standard Pacific Homes	**Plan #**	2
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Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P6 **2nd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 16.34 ft.
Dist from left end of wall to 1st opening	B	= 5.00 ft.
Opening Width	C	= 6.42 ft.
Net Length		= 9.92 ft.
Opening Header Height	D	= 8.00 ft.
Opening Height	E	= 4.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	4372#
Seismic Load (E)	2897#
DL Trib Length Roof	0 ft
DL Trib Length Floor	5 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	268 plf	177 plf
Piers	441 plf	292 plf

Use Shear Wall Type 3

STRAP CALCULATIONS

Max. Load @ Opening = 866 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-724#	-554#
Left Pier	1983#	1314#
Right Pier	1983#	1314#
Bottom	1070#	709#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location
398 #	0.00 ft.
351 #	6.83 ft.
351 #	9.83 ft.
398 #	16.34 ft.

	Total Uplift	Holdown
Left End	2394# (W)	2 corner
L King	1470# (W)	1
R King	1496# (W)	1
Right End	2394# (W)	2 corner

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Lateral Analysis Calculations

P7 **2nd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	12.73	12.73	psf
Above Plate:			
Wall Area Above Plate	43	0	ft^2
Average Elevation	23.4	18.2	ft
Pressure @ Elevation	13.21	12.73	psf
Wall Load	1050	0	#
Mean Roof Height (h)	18.2	18.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.64	9.64	psf
Roof Load	0	0	#
Add'l Load (From P3)	=	1036	#
Total Wind Load	=	**2086**	**#**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.56
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**130 plf**
Seismic Wall Shear	=	**187 plf**
1.25 Seismic Shear*	=	**233 plf**

USE SHEAR WALL TYPE **2**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	16.67		0	ft
Length of Diaphragm	40.0		40.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.1192	W
Rho	=		1.00	
Diaphragm Load	1192		0	#
Add'l Load (From P3)	=		1795	#
Total Seismic Load	=		**2987**	**#**
1.25 Total Load*	=		**3733**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	40.0		40.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1192#		0#	
Diaphgram Shear	30 plf	(E)	0 plf	(E)
Total Diaphragm Length	=		40	ft
Total Diaphragm Shear	=		30 plf	(E)
Shear for drag & collectors*	=		37 plf	(E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
16.00 ft.		1.0 ft.					1267# (E)	1267# (E)	1	1

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Date	7/8/13		

Lateral Analysis Calculations

P8 **2nd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	12.73	12.73	psf
Above Plate:			
Wall Area Above Plate	43	0	ft^2
Average Elevation	23.4	18.2	ft
Pressure @ Elevation	13.21	12.73	psf
Wall Load	1050	0	#
Mean Roof Height (h)	18.2	18.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.64	9.64	psf
Roof Load	0	0	#
Add'l Load (From P4)	=	1036	#

Total Wind Load = **2086 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	14.00 ft
Maximum H:W Ratio	=	0.64
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**149 plf**
Seismic Wall Shear	=	**213 plf**
1.25 Seismic Shear*	=	**267 plf**

USE SHEAR WALL TYPE **2**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	16.67		0	ft
Length of Diaphragm	40.0		40.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.1192	W
Rho	=		1.00	
Diaphragm Load	1192		0	#
Add'l Load (From P4)	=		1795	#
Total Seismic Load	=		**2987**	#
1.25 Total Load*	=		**3733**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	40.0		40.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1192#		0#	
Diaphgram Shear	30 plf	(E)	0 plf	(E)
Total Diaphragm Length	=		40	ft
Total Diaphragm Shear	=		30 plf	(E)
Shear for drag & collectors*	=		37 plf	(E)

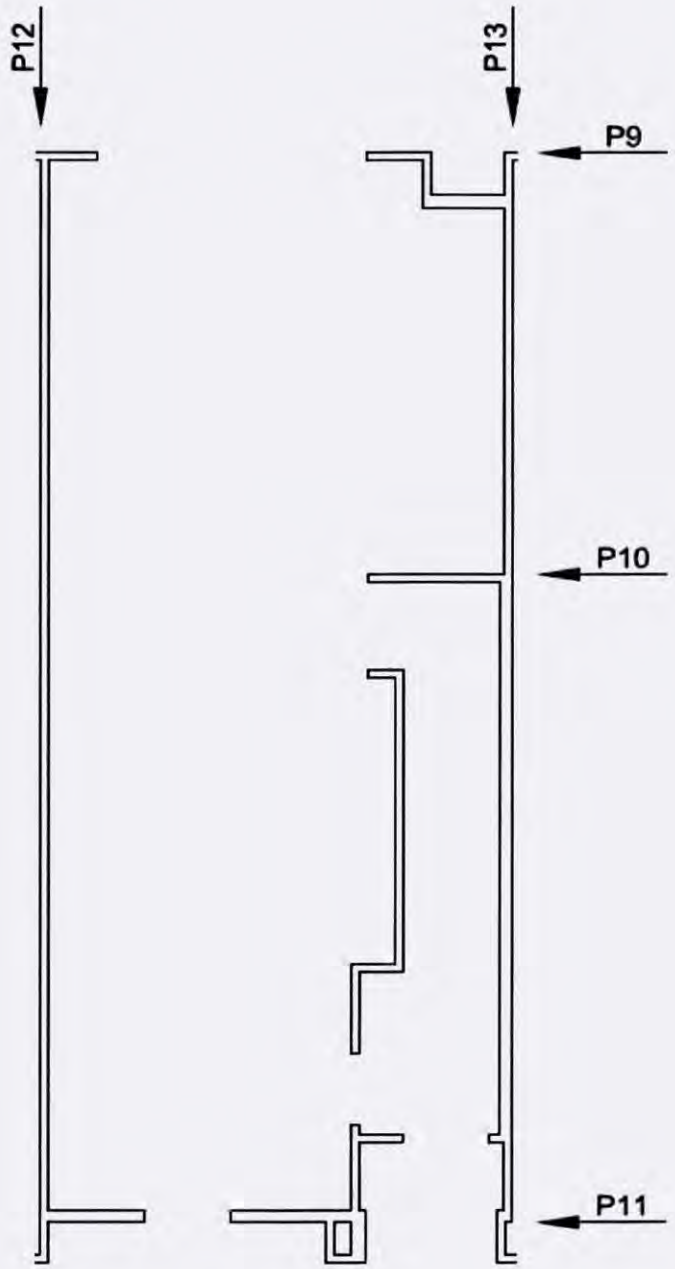
Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
14.00 ft.	2.0 ft.		579#	0.00	579#	14.00	2052# (E)	2052# (E)	2	2

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Project	Village Walk		
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1st Floor P-Line Layout



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Lateral Analysis Calculations

P9 **1st Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Above Plate:			
Wall Area Above Plate	46	0	ft^2
Average Elevation	13.7	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Wall Load	888	0	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	5.34	9.18	psf
Roof Load	0	0	#
Add'l Load (From P5)	=	4117	#
Total Wind Load	=	**5005**	**#**

Shear Wall Summary

See manufactured shearwalls on next page(s)

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	22.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0524	W
Rho	=	1.00	
Diaphragm Load	244	0	#
Add'l Load (From P5)	=	2897	#
Total Seismic Load	=	**3141**	**#**
1.25 Total Load*	=	**3927**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	4117#	0#	
Total Load in Diaphragm	5005#	0#	
Diaphgram Shear	300 plf (W)	0 plf (E)	
Total Diaphragm Length	=	17	ft
Total Diaphragm Shear	=	300 plf (W)	
Shear for drag & collectors*	=	300 plf (W)	

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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Lateral Analysis Calculations For Simpson Steel Strong-Wall

9 1st Floor; Rear; Left to Right

See load calculations on previous page

Total Wind Load = 5005 # **Total Seismic Load = 3141 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
2	SSW18x7	1000	6960	5810	0.41	0.34

Total Load Capacity	=	6960	5810	
Pecent of Capacity Used	=	72%	54%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
2	SSW18x7	16976	17088	5005	3141	LOAD OK

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Lateral Analysis Calculations

P10 **1st Floor; Interior; Left to Right**
Interior wall of garage

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	24	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Above Plate:			
Wall Area Above Plate	46	68	ft^2
Average Elevation	13.7	13.7	ft
Pressure @ Elevation	11.44	14.77	psf
Wall Load	888	1719	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	5.34	9.18	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **2607 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	4.00 ft
Maximum H:W Ratio	=	2.00
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**652 plf**
Seismic Wall Shear	=	**131 plf**
1.25 Seismic Shear*	=	**164 plf**

USE SHEAR WALL TYPE **12**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	16		24	ft
Length of Diaphragm	16.7		16.7	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0524	W
Rho	=		1.00	
Diaphragm Load	210		314	#
Additional Load	=			#

Total Seismic Load = **524 #**
1.25 Total Load* = **655 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:
Length of Diaphragm	16.7	16.7 ft
Sheathing Thickness	23/32	23/32 in
Diaphragm Case (1 or 3)	3	3
Additional Load in Diaphragm	0#	0#
Total Load in Diaphragm	888#	1719#
Diaphgram Shear	53 plf (W)	103 plf (W)

Total Diaphragm Length	=	17 ft
Total Diaphragm Shear	=	156 plf (W)
Shear for drag & collectors*	=	156 plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
4.00 ft.		6.0 ft.					5698# (W)	5698# (W)	**19**	**19**

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Client	Standard Pacific Homes	**Plan #**	2
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Lateral Analysis Calculations

P11 **1st Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	24	0	ft
Additional Width	0	1.5	ft
Avg. Roof Ht abv Plate	5	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Above Plate:			
Wall Area Above Plate	68	2	ft^2
Average Elevation	13.7	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Wall Load	1332	111	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	5.34	9.18	psf
Roof Load	0	0	#
Add'l Load (From P6)	=	4372	#
Total Wind Load	=	**5815**	**#**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	24	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	0.	10.	ft^2
Building Dead Load	30	30	psf
V	=	0.0524	W
Rho	=	1.00	
Diaphragm Load	314	16	#
Add'l Load (From P6)	=	2897	#
Total Seismic Load	=	**3227**	**#**
1.25 Total Load*	=	**4034**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1332#	111#	
Diaphgram Shear	80 plf (W)	7 plf (W)	
Total Diaphragm Length	=	17	ft
Total Diaphragm Shear	=	87 plf (W)	
Shear for drag & collectors*	=	87 plf (W)	

Shear Wall Summary

See manufactured shearwalls on next page(s)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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Client	Standard Pacific Homes - E	**Plan #**	2
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Lateral Analysis Calculations For Simpson Steel Strong-Wall

P11 **1st Floor; Front; Left to Right**

See load calculations on previous page

Total Wind Load = **5815 #** **Total Seismic Load** = **3227 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
1	SSW24x8	1000	5105	4785	0.39	0.36
1	SSW15x8	1000	1530	1505	0.43	0.42

Total Load Capacity	=	6635	6290	
Pecent of Capacity Used	=	88%	51%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
1	SSW24x8	13090	13292	4572	2542	LOAD OK
1	SSW15x8	3558	3583	1243	685	LOAD OK

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Lateral Analysis Calculations

P12 **1st Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	12.27	12.27	psf
Above Plate:			
Wall Area Above Plate	48	0	ft^2
Average Elevation	13.7	8.0	ft
Pressure @ Elevation	12.27	12.27	psf
Wall Load	992	0	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (From P7)	=	2086	#

Total Wind Load = **3078 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**192 plf**
Seismic Wall Shear	=	**222 plf**
1.25 Seismic Shear*	=	**277 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	16.67		0	ft
Length of Diaphragm	41.5		41.5	ft
Additional Diaphragm Area	11.		0.	ft^2
Building Dead Load	30		30	psf
V		=	0.0524	W
Rho		=	1.00	
Diaphragm Load	561		0	#
Add'l Load (From P7)		=	2987	#
Total Seismic Load		=	**3548**	**#**
1.25 Total Load*		=	**4434**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	41.5		41.5	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	992#		0#	
Diaphgram Shear	24 plf	(W)	0 plf	(E)
Total Diaphragm Length		=	42	ft
Total Diaphragm Shear		=	24 plf	(W)
Shear for drag & collectors*		=	24 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
16.00 ft.		1.0 ft.	1267#	0.00	1267#	16.00	2671# (E)	2671# (E)	**17 interior**	**17 interior**

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Client	Standard Pacific Homes	**Plan #**	2
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Lateral Analysis Calculations

P13 **1st Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	12.27	12.27	psf
Above Plate:			
Wall Area Above Plate	48	0	ft^2
Average Elevation	13.7	8.0	ft
Pressure @ Elevation	12.27	12.27	psf
Wall Load	992	0	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (From P8)	=	2086	#
Total Wind Load	=	**3078**	**#**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	14.00 ft
Maximum H:W Ratio	=	0.57
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**220 plf**
Seismic Wall Shear	=	**253 plf**
1.25 Seismic Shear*	=	**317 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	16.67		0	ft
Length of Diaphragm	41.5		41.5	ft
Additional Diaphragm Area	11.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0524	W
Rho	=		1.00	
Diaphragm Load	561		0	#
Add'l Load (From P8)	=		2987	#
Total Seismic Load	=		**3548**	**#**
1.25 Total Load*	=		**4434**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	41.5		41.5	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	992#		0#	
Diaphgram Shear	24 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		42	ft
Total Diaphragm Shear	=		24 plf	(W)
Shear for drag & collectors*	=		24 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left		Right		Holdown Left	Holdown Right
14.00 ft.		1.0 ft.	2052#	0.00	2052#	14.00	3780#	(E)	3780#	(E)	**19 interior**	**19 interior**

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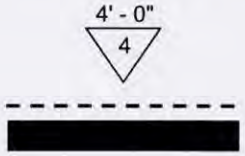
Project	Village Walk		
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Shear Wall Table

Type	*Wind*	*Seismic*	*Description*
1	254.8	182	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
2	350	266	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 4" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
3	480.2	343	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X OR (2) 2X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
4	600	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. MAX. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
5	627.2	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
12	754.6	539	15/32" APA RATED SHEATHING ONE FACE WITH 10d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
7	960.4	686	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
8	1254.4	896	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.

NOTES:

1. Shearwalls are designated on the plans by a triangle symbol surrounding the shearwall type.
2. Shearwall length is indicated above the shearwall callout and is shown graphically with shading & a dashed line.
3. See anchor bolt calculations for required anchor spacing.



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Simpson Holdown Table

	Wind		Seismic		
Type	Typ	End	Typ	End	**Description**
NONE	500	500	500	500	Below limit
1	1705	1705	1705	1705	CS16 STRAP, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2	3410	3410	3410	3410	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
3	4585	4585	4585	4585	CMSTC16 STRAP, 23" MINIMUM END SPAN, CLEAR SPAN VARIES.
4	5860	5860	5860	5860	MSTC66 STRAP, 18" MAXIMUM CLEAR SPAN.
1A	942	942	942	942	CS16 STRAP, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
1B	1884	1884	1884	1884	(2) CS16 STRAPS, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
2A	3300	3300	3300	3300	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2B	4950	4950	4950	4950	(3) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
9	4755	0	3400	0	STHD10 HOLDOWN TO MINIMUM 4X POST.
17	4565	4470	3740	3325	HDU4 HOLDOWN TO MINIMUM 4X POST W/ SSTB24/24
19	6970	6970	6970	6970	HDU8 HOLDOWN TO MINIMUM 4X POST W/ SSTB28/34 ANCHOR.
19A	7870	7870	7870	7315	HDU8 HOLDOWN TO MINIMUM 4X6 POST W/ SSTB28/34 ANCHOR.
20	9535	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X6 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
20A	10470	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X8 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
21	14390	14390	14390	14390	HDU14 HOLDOWN TO MINIMUM 4X8 POST W/ 1" ANCHOR ROD.
16	19070	19070	19070	19070	HD19 HOLDOWN TO MINIMUM 4X10 OR 6X6 POST W/ 1 1/4" ANCHOR ROD.

NOTE: Holdowns are designated on the plans by a diamond symbol surrounding the holdown type, e.g.:



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Project	Village Walk		
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CALCULATIONS FOR ANCHOR BOLTS & MASA* ANCHORS AT SHEARWALLS

*MASA anchor values per ESR-2555, Issued November 2010

Allowable loads per NDS/hardware values (1.6 load duration factor):

Condition	1/2" ϕ A.B.	MASA
2X sill plate; sw capacity ≤ 350 plf	650#	1515#
2X sill plate; sw capacity b/t 350 & 600 plf	325#	758#
3X sill plate	770#	1215#

Allowable Shear Loads per ACI 318-08 Appendix D (assuming uncracked concrete at service loads):

		1/2" ϕ A.B.		MASA	
Wind:	$(F^*V_{nx}) / 1.6 =$	1064#	Wind:	2X sill = 1388#	
				3X sill = 1109#	
Seismic:	$(F^*V_{nx}) * 0.7 =$	1192#	Seismic:	2X sill = 1138#	
				3X sill = 931#	

Seismic (in SDC C, D, E and F):
$(0.75^*F^*_{Vnx}) * 0.7 =$ 894#

		1/2" AB	MASA
SW 1 (2x sill)	NDS	49.0" oc	71.4" oc
255plf (W)	ACI (W)	50.1" oc	65.3" oc
182plf (E)	ACI (E)	58.9" oc	75.0" oc
	per plan	**48" oc**	**48" oc**

		1/2" AB	MASA
SW 2 (2x sill)	NDS	35.7" oc	51.9" oc
350plf (W)	ACI (W)	36.5" oc	47.6" oc
266plf (E)	ACI (E)	40.3" oc	51.3" oc
	per plan	**35" oc**	**35" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW3	NDS	13.0" oc	18.9" oc	30.8" oc	30.4" oc
480plf (W)	ACI (W)	26.6" oc	34.7" oc	26.6" oc	27.7" oc
343plf (E)	ACI (E)	31.3" oc	39.8" oc	31.3" oc	32.6" oc
	per plan	**12" oc**	**12" oc**	**20" oc**	**20" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW4	NDS	10.4" oc	15.2" oc	24.6" oc	24.3" oc
600plf (W)	ACI (W)	21.3" oc	27.8" oc	21.3" oc	22.2" oc
448plf (E)	ACI (E)	23.9" oc	30.5" oc	23.9" oc	24.9" oc
	per plan	**10" oc**	**10" oc**	**16" oc**	**16" oc**

		1/2" AB	MASA
SW 5 (3x sill)	NDS	23.6" oc	23.2" oc
627plf (W)	ACI (W)	20.4" oc	21.2" oc
448plf (E)	ACI (E)	23.9" oc	24.9" oc
	per plan	**20" oc**	**20" oc**

		1/2" AB	MASA
SW 7 (3x sill)	NDS	15.4" oc	15.2" oc
960plf (W)	ACI (W)	13.3" oc	13.9" oc
686plf (E)	ACI (E)	15.6" oc	16.3" oc
	per plan	**13" oc**	**13" oc**

		1/2" AB	MASA
SW 8 (3x sill)	NDS	11.8" oc	11.6" oc
1254plf (W)	ACI (W)	10.2" oc	10.6" oc
896plf (E)	ACI (E)	12.0" oc	12.5" oc
	per plan	**10" oc**	**10" oc**

		1/2" AB	MASA
SW 12 (3x sill	NDS	19.6" oc	19.3" oc
755plf (W)	ACI (W)	16.9" oc	17.6" oc
539plf (E)	ACI (E)	19.9" oc	20.7" oc
	per plan	**12" oc**	**12" oc**

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2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
www.hscgi.com

Structural
Engineering
Consultants

Structural Calculation Package

for

Standard Pacific Homes - Bay

Village Walk

Cotati, California

Plan # 3

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PLANNING AND BUILDING DEPT.

Job # HS13068

2010 CBC



Date 7/8/2013

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Structural Calculation Package

Client Information

Standard Pacific Homes - Bay
3825 Hopyard Road, Suite 195
Pleasanton, CA 94588

Project Information

Village Walk
Cotati, California
Plan No. 3

Loading Information

Roof Loads

Roofing (Tile)	=	10.0 psf
Sheathing	=	1.7 psf
Framing	=	2.3 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	1.5 psf
Wall (Seismic only)	=	9.0 psf
Total DL	=	21.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	20.0 psf

Floor Loads

Flooring	=	1.5 psf
Sheathing	=	2.5 psf
Framing	=	2.5 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	3.0 psf
Wall (Seismic only)	=	15.0 psf
Total DL	=	15.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	40.0 psf

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Seismic Design Per IBC Section 1613

Building Information

R	=	6.50	ASCE Table 12.2-1
Occupancy Cat.	=	II	IBC Sect. 1604.5
Number of Stories	=	2	
Importance Factor	=	1.0	
Max Level Height	=	19.2 ft	
Design Approach		Normal/Equivalent	

Site Information

S_s	=	1.615	IBC Sect. 1613.5.1
S_1	=	0.634	IBC Sect. 1613.5.1
Site Class	=	D	
S_s	=	1.615	Used For Design
S_1	=	0.634	Used For Design

Seismic Loads: ASCE 7 Section 12.8 Equivalent Lateral Force Procedure

Short Period Response

F_a	=	1.000	IBC 1613.5.3
$S_{MS} = F_a S_s$	=	1.615	IBC Eqn. 16-36
$S_{DS} = (^2/_3) S_{MS}$	=	1.077	IBC Eqn. 16-38
SDC per S_{DS}	=	D	IBC Table 1613.5.6(1)

1-Second Period Response

F_v	=	1.500	IBC 1613.5.3
$S_{M1} = F_v S_1$	=	0.951	IBC Eqn. 16-37
$S_{D1} = (^2/_3) S_{M1}$	=	0.634	IBC Eqn. 16-39
SDC per S_{D1}	=	D	IBC Table 1613.5.6(2)

Seismic Design Category

Period, T	=	0.18 s, ASCE 7 12.8.2.1
0.8 Ts	=	0.47 s, ASCE 7 11.4.5
SDC Required	=	D IBC Sect. 1613.5.6
SDC Used	=	**D**

Seismic Design Factors

Overstrength Factor	=	2.5	Table 12.2-1, Footnote g
Dead Load Reduction:			
(0.6 - 0.14 Sds)D	=	0.449 D	ASCE Sect 12.4.3.2
Rho, left to right	=	1.0	ASCE Sect 12.3.4
Rho, front to back	=	1.0	

ASD Seismic Response Coefficient

$$C_s = \frac{I\left(S_{DS}\right)}{R}$$

C_s per ASCE Eqn. 12.8-2

C_s	=	0.1656	ASCE Eqn. 12.8-2
C_s (upper limit)	=	0.5317	ASCE Eqn. 12.8-3
C_s (lower limit)	=	0.0100	ASCE Eqn. 12.8-5
C_s (alt low limit)	=	0.0488	ASCE Eqn. 12.8-6
C_s	=	0.1656	

Base Shear, V = 0.1159 W
(Includes 0.7 factor from ASD Basic LC)

Vertical Shear Distribution

Story	h (ft)	Area (sq ft)	DL (psf)	w_x (lb)	w_x x h	C_{vx}	C_{sx}*
1	9	1086	30	32580	293220	0.3816	0.0779
2	19.2	825	30	24750	475200	0.6184	0.1661
Sum:		1911		57330	768420		

*Derived equivalent shear ratio per story: $F_x = C_{sx} w_x$
where: $C_{sx} = C_{vx} C_s (W/w_x)$

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (V)	85 mph	(3-second gust)
Importance Factor (I)	1.00	ASCE 7 - Table 6-1
Exposure Category	C	ASCE 7 - Section 6.5.6.3;
Directionality Factor (K_d)	0.85	ASCE 7 - Table 6-4
Gust Factor (G)	0.85	ASCE 7 - Section 6.5.8.1

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\, K_z\, K_{zt}\, K_d\, V^2\, I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects — Hill Type: None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	22.45 ft	Velocity Pressure (q_h) for MWFRS	14.46 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.23
min L/B (Front to Back)	0.58
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.50

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C: 14.46 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
9.0 ft	-1.02	17.40	-1.25	20.64
15.0 ft	-0.95	16.27	-1.09	18.38
19.2 ft	-0.91	15.72	-1.02	17.28
22.0 ft	-0.89	15.42	-0.97	16.68

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-1.13	
Int. Pressure Coeff. (*Cpi*)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-11 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	1 psf	Available to offset overturning from wind

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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Beam Specifications

BEAM #	SIZE	GRADE	LOCATION
Beam #1	1 3/4"x14"	1.5E SCL	Beam over 2-car tandem garage
Beam #2	1 3/4"x14"	1.5E SCL	Beam over 2-car tandem garage
Beam #3	5 1/4"x11 7/8"	1.9E SCL	Beam over 2-car tandem garage
Beam #4	4x12	#1 D.F.	2- car garage header
Beam #5	5 1/4"x11 7/8"	1.9E SCL	Beam over 2-car tandem garage
Beam #6	5 1/4"x11 7/8"	1.9E SCL	Beam over 2-car tandem garage
Beam #7	3 1/2"x14"	1.5E SCL	Beam over dining / great room
Beam #8	5 1/4"x16"	1.9E SCL	Beam over garage, plan 3X
Beam #9	5 1/4"x16"	1.9E SCL	Garage header, plan 3X
Beam #10	3 1/2"x11 7/8"	1.5E SCL	Porch beam under shear wall

Header Specifications

First Floor Walls

Length	Size	Grade
4'-0"	4x8	#2 D.F.
6'-0"	4x10	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Second Floor Walls

Length	Size	Grade
4'-0"	4x6	#2 D.F.
6'-0"	4x8	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Description : Headers Plan 3

Wood Beam Design : Headers Plan 3

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

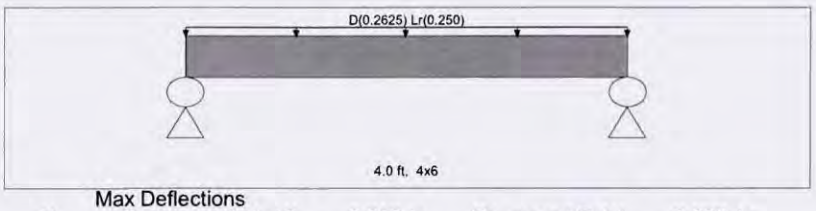
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft

Design Summary

Max fb/Fb Ratio = **0.596** : 1
fb : Actual : 697.05 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.343** : 1
fv : Actual : 61.77 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.53		0.50				
Right Support	0.53		0.50				



Max Deflections

Downward L+Lr+S	0.019 in	Downward Total	0.038 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2574 >360	Total Defl Ratio	1255 >240

Wood Beam Design : 6ft Header Upper floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

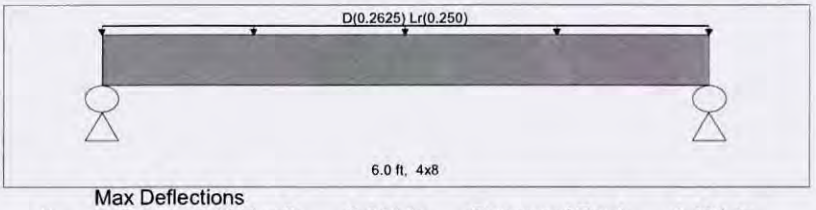
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft

Design Summary

Max fb/Fb Ratio = **0.771** : 1
fb : Actual : 902.60 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.404** : 1
fv : Actual : 72.71 psi at 5.400 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.79		0.75				
Right Support	0.79		0.75				



Max Deflections

Downward L+Lr+S	0.041 in	Downward Total	0.084 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1747 >360	Total Defl Ratio	852 >240

Wood Beam Design : 4ft Header Lower floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

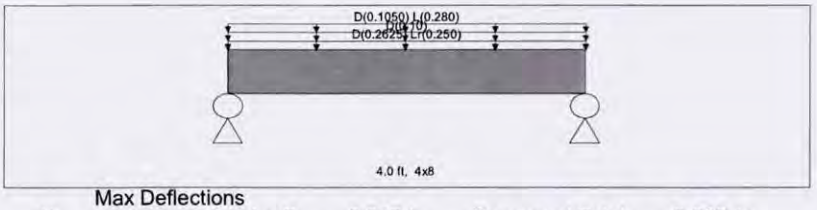
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 7.0 ft

Design Summary

Max fb/Fb Ratio = **0.579** : 1
fb : Actual : 677.07 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.398** : 1
fv : Actual : 71.59 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.94	0.56	0.50				
Right Support	0.94	0.56	0.50				



Max Deflections

Downward L+Lr+S	0.017 in	Downward Total	0.032 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2781 >360	Total Defl Ratio	1477 >240

Wood Beam Design : 6ft Header Lower floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

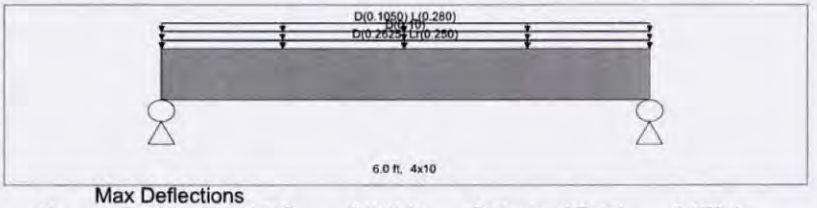
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 7.0 ft

Design Summary

Max fb/Fb Ratio = **0.867** : 1
fb : Actual : 935.86 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.499** : 1
fv : Actual : 89.77 psi at 5.240 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.40	0.84	0.75				
Right Support	1.40	0.84	0.75				



Max Deflections

Downward L+Lr+S	0.042 in	Downward Total	0.079 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1711 >360	Total Defl Ratio	909 >240

Description : Beams Plan 3

Wood Beam Design : Beams Plan 3

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

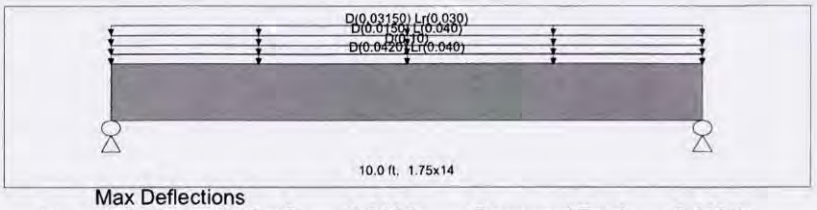
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Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 1.50 ft

Design Summary

Max fb/Fb Ratio = **0.331** : 1
fb : Actual : 711.08 psi at 5.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.225** : 1
fv : Actual : 64.16 psi at 8.867 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.94	0.20	0.35				
Right Support	0.94	0.20	0.35				



Max Deflections

Downward L+Lr+S	0.041 in	Downward Total	0.112 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2894 >480	Total Defl Ratio	1066 >360

Wood Beam Design : Beam #3

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.9E SCL			
Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

Applied Loads

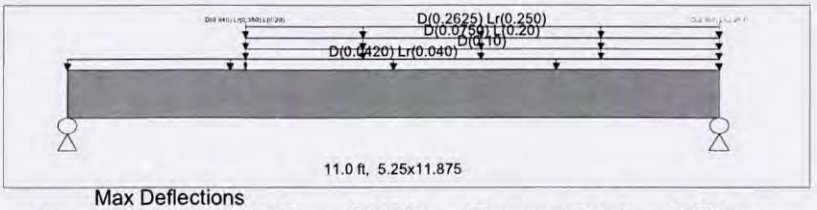
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 3.0 to 11.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 3.0 to 11.0 ft, Trib= 5.0 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 3.0 to 11.0 ft, Trib= 12.50 ft
Point: D = 0.940, Lr = 0.350, L = 0.20 k @ 3.0 ft
Point: D = 2.363, Lr = 2.250 k @ 11.0 ft

Design Summary

Max fb/Fb Ratio = **0.515** : 1
fb : Actual : 1,273.79 psi at 5.427 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.329** : 1
fv : Actual : 93.90 psi at 10.047 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	2.19	0.73	1.20				
Right Support	5.08	1.07	3.84				



Max Deflections

Downward L+Lr+S	0.112 in	Downward Total	0.233 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1174 >480	Total Defl Ratio	566 >360

Wood Beam Design : Beam #4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x12, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

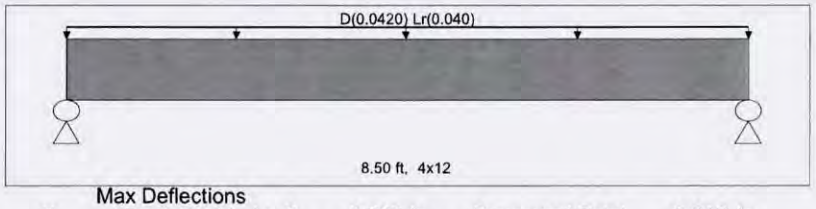
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft

Design Summary

Max fb/Fb Ratio = **0.122** : 1
fb : Actual : 120.37 psi at 4.250 ft in Span # 1
Fb : Allowable : 990.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.058** : 1
fv : Actual : 10.36 psi at 7.565 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.18		0.17				
Right Support	0.18		0.17				



Max Deflections

Downward L+Lr+S	0.007 in	Downward Total	0.015 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	14349 >480	Total Defl Ratio	6999 >360

Wood Beam Design : Beam #5

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber				Wood Grade : 1.9E SCL				
Fb - Tension	2475 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1900 ksi	Density	35 pcf
Fb - Compr	2475 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	875 ksi		

Applied Loads

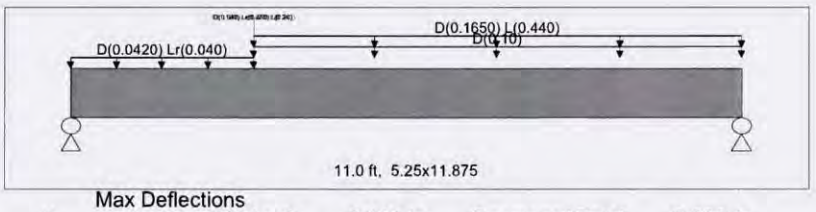
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 3.0 ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 3.0 to 11.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 3.0 to 11.0 ft, Trib= 11.0 ft
Point: D = 0.940, Lr = 0.350, L = 0.20 k @ 3.0 ft
Point: D = 1.120, Lr = 0.420, L = 0.240 k @ 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.512** : 1
fb : Actual : 1,268.28 psi at 4.913 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.338** : 1
fv : Actual : 96.41 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	2.38	1.60	0.66				
Right Support	1.93	2.36	0.23				



Max Deflections

Downward L+Lr+S	0.119 in	Downward Total	0.226 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1105 >480	Total Defl Ratio	583 >360

Wood Beam Design : Beam #6

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber				Wood Grade : 1.9E SCL				
Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

Applied Loads

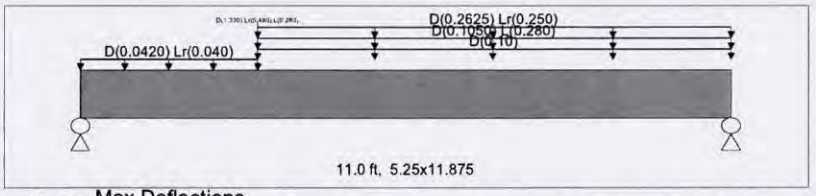
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 3.0 ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 3.0 to 11.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 3.0 to 11.0 ft, Trib= 7.0 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 3.0 to 11.0 ft, Trib= 12.50 ft
Point: D = 1.330, Lr = 0.490, L = 0.280 k @ 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.557** : 1
fb : Actual : 1,379.28 psi at 5.280 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.349** : 1
fv : Actual : 99.34 psi at 10.047 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H



Max Deflections

Downward L+Lr+S	0.126 in	Downward Total	0.254 in

Wood Beam Design : Beam #7

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade :	1.5E SCL		
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

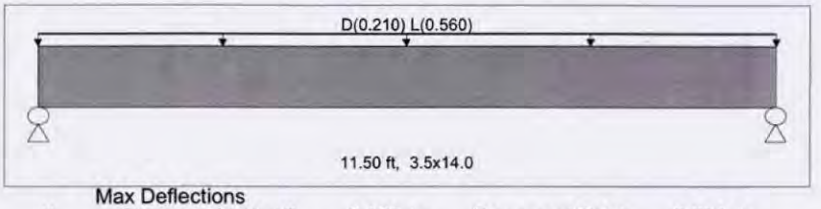
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 14.0 ft

Design Summary

Max fb/Fb Ratio = **0.621** : 1
fb : Actual : 1,335.99 psi at 5.750 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.380** : 1
fv : Actual : 108.43 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.21	3.22					
Right Support	1.21	3.22					



Max Deflections

Downward L+Lr+S	0.185 in	Downward Total	0.254 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	747 >480	Total Defl Ratio	543 >360

Wood Beam Design : Beam #9

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x16.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade :	1.9E SCL		
Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

Applied Loads

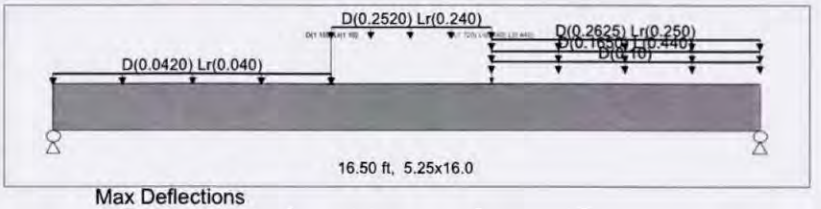
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 6.50 ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 10.250 to 16.50 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 10.250 to 16.50 ft, Trib= 11.0 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 10.250 to 16.50 ft, Trib= 12.50 ft
Point: D = 1.155, Lr = 1.10 k @ 6.50 ft
Point: D = 1.720, Lr = 0.440, L = 0.440 k @ 10.250 ft
Unif Load: D = 0.2520, Lr = 0.240 k/ft, 6.50 to 10.250 ft

Design Summary

Max fb/Fb Ratio = **0.703** : 1
fb : Actual : 1,741.12 psi at 10.230 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.444** : 1
fv : Actual : 126.57 psi at 15.180 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	2.66	0.69	1.78				
Right Support	4.73	2.50	2.48				



Max Deflections

Downward L+Lr+S	0.243 in	Downward Total	0.502 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	816 >360	Total Defl Ratio	394 >240

Wood Beam Design : Beam #10

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade :	1.5E SCL		
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 3.0 ft
Point: W = 2.467, E = 1.727 k @ 5.0 ft

Multiple Simple Beam

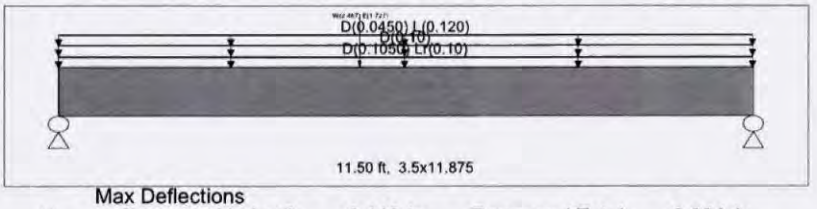
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ENERCALC, INC. 1983-2013, Build:6.13.2.27, Ver:6.13.2.27
Lic. # : KW-06004839 — Licensee : HARRIS & SLOAN CONSULTING

Design Summary

Max fb/Fb Ratio = **0.605** : 1
fb : Actual : 2,082.40 psi at 5.022 ft in Span # 1
Fb : Allowable : 3,440.00 psi
Load Comb : +1.210D+1.923E+H

Max fv/FvRatio = **0.263** : 1
fv : Actual : 120.06 psi at 0.000 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+1.923E+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.44	0.69	0.58		1.39	0.98	
Right Support	1.44	0.69	0.58		1.07	0.75	



Max Deflections

Downward L+Lr+S	0.119 in	Downward Total	0.381 in
Upward L+Lr+S	0.000 in	Upward Total	-0.181 in
Live Load Defl Ratio	1161 >480	Total Defl Ratio	362 >360

Wood Beam Design : Porch Headers

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch — Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

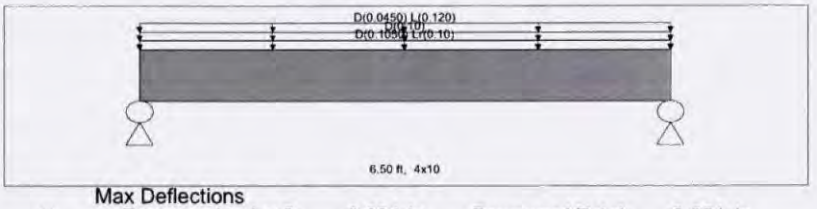
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.488** : 1
fb : Actual : 526.95 psi at 3.250 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.266** : 1
fv : Actual : 47.91 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.81	0.39	0.33				
Right Support	0.81	0.39	0.33				



Max Deflections

Downward L+Lr+S	0.024 in	Downward Total	0.051 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3243 >360	Total Defl Ratio	1518 >240

Description : Beam #2

CODE REFERENCES

Calculations per NDS 2005, IBC 2006, CBC 2007, ASCE 7-05
Load Combination Set : 2006IBC&ASCE7-05(HSCGI)

Material Properties

Analysis Method : Allowable Stress Design
Load Combination 2006IBC&ASCE7-05(HSCGI)

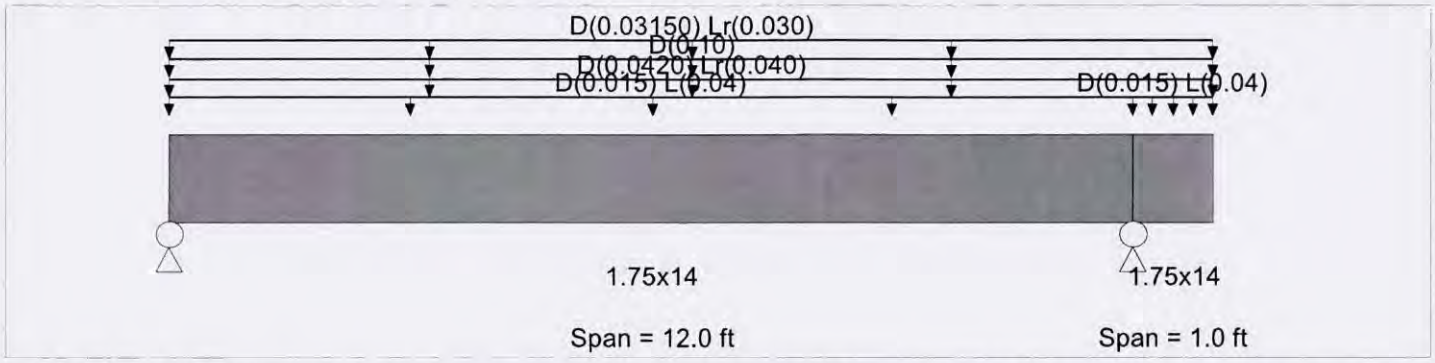
Wood Species : Structural Composite Lumber
Wood Grade : 1.5E SCL

Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	2,150.0 psi
Fb - Compr	2,150.0 psi
Fc - Prll	1,600.0 psi
Fc - Perp	750.0 psi
Fv	285.0 psi
Ft	1,000.0 psi

E : Modulus of Elasticity

Ebend- xx	1,500.0 ksi
Eminbend - xx	700.0 ksi
Density	35.0 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Loads on all spans...
Uniform Load on ALL spans : D = 0.0210, Lr = 0.020 ksf, Tributary Width = 2.0 ft
Partial Length Uniform Load : D = 0.10 k/ft, Extent = 0.0 -->> 13.0 ft
Partial Length Uniform Load : D = 0.03150, Lr = 0.030 k/ft, Extent = 0.0 -->> 13.0 ft
Load for Span Number 1
Uniform Load : D = 0.0150, L = 0.040 , Tributary Width = 1.0 ft, (Floor Load)
Load for Span Number 2
Uniform Load : D = 0.0150, L = 0.040 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	**0.470** : 1	Maximum Shear Stress Ratio	=	**0.285** : 1
Section used for this span		**1.75x14**	Section used for this span		**1.75x14**
fb : Actual	=	1,009.78 psi	fv : Actual	=	81.33 psi
FB : Allowable	=	2,150.00 psi	Fv : Allowable	=	285.00 psi
Load Combination		+D+0.750Lr+0.750L+H	Load Combination		+D+0.750Lr+0.750L+H
Location of maximum on span	=	5.966 ft	Location of maximum on span	=	10.860 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.085 in	Ratio =	1697
Max Upward L+Lr+S Deflection	-0.022 in	Ratio =	1084
Max Downward Total Deflection	0.230 in	Ratio =	625
Max Upward Total Deflection	-0.060 in	Ratio =	398

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
D Only													0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.327	0.199	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.35	702.37	2150.00	0.92	56.57	285.00
Length = 1.0 ft	2	0.009	0.199	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.09	19.78	2150.00	0.19	56.57	285.00
+D+L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00

Description : Beam #2

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
Length = 12.0 ft	1	0.396	0.241	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.06	851.42	2150.00	1.12	68.58	285.00
Length = 1.0 ft	2	0.011	0.241	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.11	23.98	2150.00	0.23	68.58	285.00
+D+Lr+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.448	0.272	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.59	963.20	2150.00	1.27	77.58	285.00
Length = 1.0 ft	2	0.013	0.272	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.13	27.13	2150.00	0.26	77.58	285.00
+D+S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.327	0.199	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.35	702.37	2150.00	0.92	56.57	285.00
Length = 1.0 ft	2	0.009	0.199	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.09	19.78	2150.00	0.19	56.57	285.00
+D+0.750Lr+0.750L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.470	0.285	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.81	1,009.78	2150.00	1.33	81.33	285.00
Length = 1.0 ft	2	0.013	0.285	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.14	28.44	2150.00	0.27	81.33	285.00
+D+0.750L+0.750S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.379	0.230	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.88	814.16	2150.00	1.07	65.58	285.00
Length = 1.0 ft	2	0.011	0.230	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.11	22.93	2150.00	0.22	65.58	285.00
+D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.204	0.124	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.35	702.37	3440.00	0.92	56.57	456.00
Length = 1.0 ft	2	0.006	0.124	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	19.78	3440.00	0.19	56.57	456.00
+D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.204	0.124	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.35	702.37	3440.00	0.92	56.57	456.00
Length = 1.0 ft	2	0.006	0.124	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	19.78	3440.00	0.19	56.57	456.00
+D+0.750Lr+0.750L+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.294	0.178	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.81	1,009.78	3440.00	1.33	81.33	456.00
Length = 1.0 ft	2	0.008	0.178	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.14	28.44	3440.00	0.27	81.33	456.00
+D+0.750Lr+0.750L-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.294	0.178	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.81	1,009.78	3440.00	1.33	81.33	456.00
Length = 1.0 ft	2	0.008	0.178	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.14	28.44	3440.00	0.27	81.33	456.00
+D+0.750L+0.750S+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.237	0.144	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.88	814.16	3440.00	1.07	65.58	456.00
Length = 1.0 ft	2	0.007	0.144	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	22.93	3440.00	0.22	65.58	456.00
+D+0.750L+0.750S-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.237	0.144	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.88	814.16	3440.00	1.07	65.58	456.00
Length = 1.0 ft	2	0.007	0.144	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	22.93	3440.00	0.22	65.58	456.00
+0.60D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.123	0.074	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.01	421.42	3440.00	0.55	33.94	456.00
Length = 1.0 ft	2	0.003	0.074	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.06	11.87	3440.00	0.11	33.94	456.00
+0.60D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.123	0.074	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.01	421.42	3440.00	0.55	33.94	456.00
Length = 1.0 ft	2	0.003	0.074	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.06	11.87	3440.00	0.11	33.94	456.00
+1.210D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.247	0.150	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.05	849.87	3440.00	1.12	68.45	456.00
Length = 1.0 ft	2	0.007	0.150	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	23.94	3440.00	0.23	68.45	456.00
+1.210D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.247	0.150	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.05	849.87	3440.00	1.12	68.45	456.00
Length = 1.0 ft	2	0.007	0.150	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	23.94	3440.00	0.23	68.45	456.00
+0.390D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.080	0.048	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.30	273.93	3440.00	0.36	22.06	456.00
Length = 1.0 ft	2	0.002	0.048	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.04	7.72	3440.00	0.07	22.06	456.00
+0.390D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.080	0.048	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.30	273.93	3440.00	0.36	22.06	456.00
Length = 1.0 ft	2	0.002	0.048	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.04	7.72	3440.00	0.07	22.06	456.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L+Lr	1	0.2302	6.034		0.0000	0.000
	2	0.0000	6.034	D+L+Lr	-0.0600	1.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	1.779	2.102	
D Only	1.123	1.327	

Description : Beam #2

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
L Only	0.238	0.282	
Lr Only	0.417	0.493	
L+Lr	0.655	0.775	
D+Lr	1.540	1.820	
D+L	1.361	1.609	
D+L+Lr	1.779	2.102	

CODE REFERENCES

Calculations per NDS 2005, IBC 2006, CBC 2007, ASCE 7-05
Load Combination Set : 2006IBC&ASCE7-05(HSCGI)

Material Properties

Analysis Method : Allowable Stress Design
Load Combination 2006IBC&ASCE7-05(HSCGI)

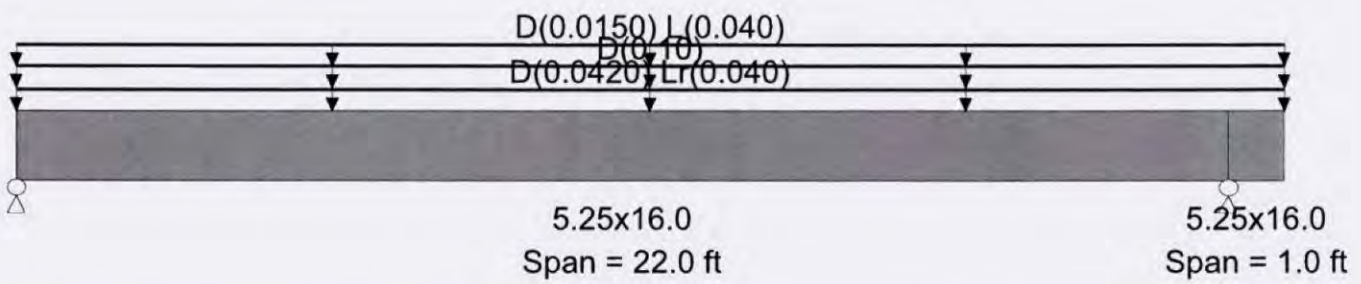
Wood Species : Structural Composite Lumber
Wood Grade : 1.9E SCL

Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	2,475.0 psi
Fb - Compr	2,475.0 psi
Fc - Prll	1,600.0 psi
Fc - Perp	750.0 psi
Fv	285.0 psi
Ft	1,000.0 psi

E : Modulus of Elasticity

Ebend- xx	1,900.0 ksi
Eminbend - xx	875.0 ksi
Density	35.0 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Loads on all spans...
Uniform Load on ALL spans : D = 0.0210, Lr = 0.020 ksf, Tributary Width = 2.0 ft
Partial Length Uniform Load : D = 0.10 k/ft, Extent = 0.0 -->> 23.0 ft
Partial Length Uniform Load : D = 0.0150, L = 0.040 k/ft, Extent = 0.0 -->> 23.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	**0.283** : 1	Maximum Shear Stress Ratio	=	**0.133** : 1
Section used for this span		**5.25x16.0**	Section used for this span		**5.25x16.0**
fb : Actual	=	700.40 psi	fv : Actual	=	37.95 psi
FB : Allowable	=	2,475.00 psi	Fv : Allowable	=	285.00 psi
Load Combination		+D+0.750Lr+0.750L+H	Load Combination		+D+0.750Lr+0.750L+H
Location of maximum on span	=	10.939 ft	Location of maximum on span	=	20.771 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.124 in	Ratio =	2123
Max Upward L+Lr+S Deflection	-0.018 in	Ratio =	1342
Max Downward Total Deflection	0.368 in	Ratio =	716
Max Upward Total Deflection	-0.053 in	Ratio =	452

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios									Moment Values			Shear Values		
Segment Length	Span #	M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	M	fb	F'b	V	fv	F'v
D Only													0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.205	0.096	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.46	506.74	2475.00	1.54	27.46	285.00
Length = 1.0 ft	2	0.002	0.096	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.08	4.21	2475.00	0.16	27.46	285.00
+D+L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.257	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	11.87	635.85	2475.00	1.93	34.45	285.00
Length = 1.0 ft	2	0.002	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.10	5.28	2475.00	0.20	34.45	285.00
+D+Lr+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.257	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	11.87	635.85	2475.00	1.93	34.45	285.00
Length = 1.0 ft	2	0.002	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.10	5.28	2475.00	0.20	34.45	285.00

Description : Beam #8

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.205	0.096	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.46	506.74	2475.00	1.54	27.46	285.00
Length = 1.0 ft	2	0.002	0.096	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.08	4.21	2475.00	0.16	27.46	285.00
+D+0.750Lr+0.750L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.283	0.133	1.00	1.00	1.00	1.00	1.00	1.00	1.00	13.07	700.40	2475.00	2.13	37.95	285.00
Length = 1.0 ft	2	0.002	0.133	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.11	5.81	2475.00	0.22	37.95	285.00
+D+0.750L+0.750S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.244	0.115	1.00	1.00	1.00	1.00	1.00	1.00	1.00	11.27	603.57	2475.00	1.83	32.70	285.00
Length = 1.0 ft	2	0.002	0.115	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.09	5.01	2475.00	0.19	32.70	285.00
+D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.128	0.060	1.60	1.00	1.00	1.00	1.00	1.00	1.00	9.46	506.74	3960.00	1.54	27.46	456.00
Length = 1.0 ft	2	0.001	0.060	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.08	4.21	3960.00	0.16	27.46	456.00
+D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.128	0.060	1.60	1.00	1.00	1.00	1.00	1.00	1.00	9.46	506.74	3960.00	1.54	27.46	456.00
Length = 1.0 ft	2	0.001	0.060	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.08	4.21	3960.00	0.16	27.46	456.00
+D+0.750Lr+0.750L+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.177	0.083	1.60	1.00	1.00	1.00	1.00	1.00	1.00	13.07	700.40	3960.00	2.13	37.95	456.00
Length = 1.0 ft	2	0.001	0.083	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	5.81	3960.00	0.22	37.95	456.00
+D+0.750Lr+0.750L-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.177	0.083	1.60	1.00	1.00	1.00	1.00	1.00	1.00	13.07	700.40	3960.00	2.13	37.95	456.00
Length = 1.0 ft	2	0.001	0.083	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	5.81	3960.00	0.22	37.95	456.00
+D+0.750L+0.750S+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.152	0.072	1.60	1.00	1.00	1.00	1.00	1.00	1.00	11.27	603.57	3960.00	1.83	32.70	456.00
Length = 1.0 ft	2	0.001	0.072	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	5.01	3960.00	0.19	32.70	456.00
+D+0.750L+0.750S-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.152	0.072	1.60	1.00	1.00	1.00	1.00	1.00	1.00	11.27	603.57	3960.00	1.83	32.70	456.00
Length = 1.0 ft	2	0.001	0.072	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	5.01	3960.00	0.19	32.70	456.00
+0.60D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.077	0.036	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.68	304.04	3960.00	0.92	16.47	456.00
Length = 1.0 ft	2	0.001	0.036	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.05	2.52	3960.00	0.09	16.47	456.00
+0.60D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.077	0.036	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.68	304.04	3960.00	0.92	16.47	456.00
Length = 1.0 ft	2	0.001	0.036	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.05	2.52	3960.00	0.09	16.47	456.00
+1.210D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.155	0.073	1.60	1.00	1.00	1.00	1.00	1.00	1.00	11.45	613.16	3960.00	1.86	33.22	456.00
Length = 1.0 ft	2	0.001	0.073	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	5.09	3960.00	0.19	33.22	456.00
+1.210D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.155	0.073	1.60	1.00	1.00	1.00	1.00	1.00	1.00	11.45	613.16	3960.00	1.86	33.22	456.00
Length = 1.0 ft	2	0.001	0.073	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	5.09	3960.00	0.19	33.22	456.00
+0.390D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.050	0.023	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.69	197.63	3960.00	0.60	10.71	456.00
Length = 1.0 ft	2	0.000	0.023	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.03	1.64	3960.00	0.06	10.71	456.00
+0.390D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.050	0.023	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.69	197.63	3960.00	0.60	10.71	456.00
Length = 1.0 ft	2	0.000	0.023	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.03	1.64	3960.00	0.06	10.71	456.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L+Lr	1	0.3683	11.061		0.0000	0.000
	2	0.0000	11.061	D+L+Lr	-0.0529	1.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	2.602	2.849	
D Only	1.723	1.888	
L Only	0.439	0.481	
Lr Only	0.439	0.481	
L+Lr	0.878	0.962	
D+Lr	2.163	2.368	
D+L	2.163	2.368	

Description : Beam #8

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
D+L+Lr	2.602	2.849	

Description : Overstrength rims/beams

Wood Beam Design : Rim along P2 holdowns

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.3E SCL

Fb - Tension	1,650.0 psi	Fc - Prll	1,400.0 psi	Fv	285.0 psi	Ebend- xx	1,300.0 ksi	Density	35.0 pcf
Fb - Compr	1,650.0 psi	Fc - Perp	680.0 psi	Ft	1,000.0 psi	Eminbend - xx	600.0 ksi		

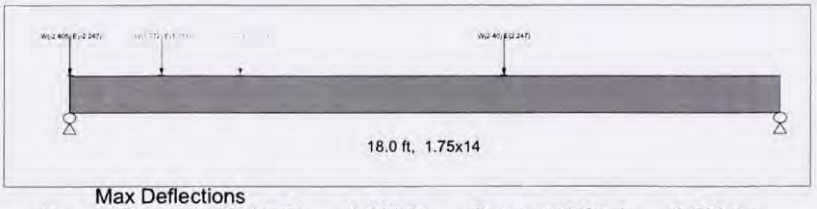
Applied Loads

Point: W = -2.405, E = -2.247 k @ 0.0 ft
Point: W = 1.072, E = 1.331 k @ 2.330 ft
Point: W = -1.072, E = -1.331 k @ 4.330 ft
Point: W = 2.40, E = 2.247 k @ 11.0 ft

Design Summary

Max fb/Fb Ratio = **1.701** : 1
fb : Actual : 4,490.26 psi at 10.980 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.411** : 1
fv : Actual : 187.54 psi at 11.040 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)

	D	L	Lr	S	W	E	H
Left Support					-1.35	-1.23	
Right Support					1.35	1.23	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.790 in
Upward L+Lr+S	0.000 in	Upward Total	-0.790 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	273 >240

Wood Beam Design : Rim along P2 holdowns

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.3E SCL

Fb - Tension	1,650.0 psi	Fc - Prll	1,400.0 psi	Fv	285.0 psi	Ebend- xx	1,300.0 ksi	Density	35.0 pcf
Fb - Compr	1,650.0 psi	Fc - Perp	680.0 psi	Ft	1,000.0 psi	Eminbend - xx	600.0 ksi		

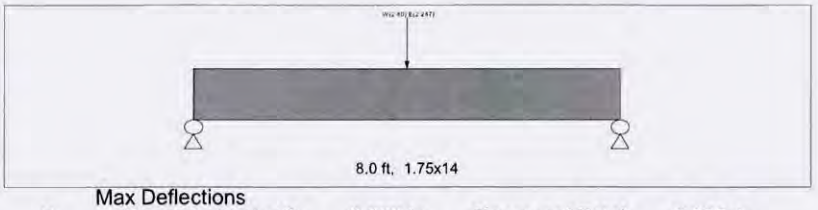
Applied Loads

Point: W = 2.40, E = 2.247 k @ 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.893** : 1
fb : Actual : 2,358.37 psi at 4.000 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.377** : 1
fv : Actual : 171.96 psi at 0.000 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)

	D	L	Lr	S	W	E	H
Left Support					1.20	1.12	
Right Support					1.20	1.12	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.085 in
Upward L+Lr+S	0.000 in	Upward Total	-0.085 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	1123 >240

Studs up to and Including 10' - 0" in Height

Table 2308.9.1 of the 2009 IBC lists the maximum height and spacing for wood studs which conform to the limitations of the conventional framing provisions (Section 2308.2). While the design loads and roof spans used in this project do not explicitly meet the conventional framing limitations, it is HSCGI's interpretation that Table 2308.9.1 is applicable for any stud wall with applied loads less than or equal to the worst case loading allowed by the conventional framing provisions (i.e. the loads resulting from roofs, floors, and/or walls spanning the maximum distance and carrying the maximum loads allowed by the limitations listed below).

Limitations (Summary of Section 2308.2):

1. Structure is not more than 3 stories.
2. Plate heights are not greater than 10' - 0".
3.1. Average dead load of combined roof and ceiling, exterior walls, floors and partitions does not exceed 15 psf .
3.2. Live load does not exceed 40 psf.
3.3. Ground snow load does not exceed 50 psf.
4. Wind speed does not exceed 100 mph.
5. Roof truss and rafter spans (between points of vertical supports) are not greater than 40 feet.
6. Structure does not belong to Occupancy Category IV.
7. Irregularity limitation. Limits for irregularities apply to wall bracing, not to Table 2308.9.1.
8. Structure does not fall under DSA-SS or OSHPD 1, 2 or 4.

Determination of Maximum Loads and Spans:

The conventional framing limitations, together with the maximum floor span listed in Table 2308.8(2), have been used to determine the equivalent maximum allowable loads that may be applied to wood wall studs. Below is a list of maximum loads and corresponding maximum spans allowed by section 2308.

Parameter	Roof	Floor	Wall
Dead Load	15 psf	15 psf	15 psf
Span/Height	40 feet	21 feet	10 feet

Table 2308.9.1 allows 10' - 0" tall 2x4 wall studs spaced at 16" o.c. to support one floor, roof and ceiling. Based on the spans and loads listed above, the maximum allowable dead load (DL) on a standard stud wall is as follows:

Exterior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)/2	= 300 plf
Floor	(15psf DL) x (21 foot floor span)/2	= 158 plf
Wall	(15psf DL) x (10 foot wall height)	= 150 plf
		= 608 plf

Interior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)	= 600 plf
Floor	(15psf DL) x (21 foot floor span)	= 315 plf
		= 915 plf

Wood studs exceeding the height and/or loading criteria listed above are calculated using the design criteria of IBC Chapters 16 and 23.

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Project	Village Walk		
Client	Standard Pacific Home	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Stud Calculations Per 2005 NDS

STUD/POST		**Stud/Post Description**			**Stud/Post Description**		
Height	ft		**19.20**			**9.00**	
Depth/Width (d)	in		5.50			5.50	
Thickness	in		3.00			3.00	
Grade			DF Stud			DF Stud	
O.C. Spacing	in		16.00			16.00	
Repetitive Factor			NDS Repetitive Factor			NDS Repetitive Factor	
Location			exterior - zone 5			interior	
LOADS							
AXIAL LOAD - DL	plf	0.00	0.00	0.00	0.00	0.00	0.00
AXIAL LOAD - LL	plf	0.00	0.00	0.00	0.00	0.00	0.00
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
WIND LOAD (C&C)	psf	5.00	17.28	12.96	5.00	5.00	3.75
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.15	1.15	1.15
PROPERTIES							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	510.0	510.0	510.0
Fb (Adjusted)	psi	805.0	805.0	805.0	805.0	805.0	805.0
Fcll (Adjusted)	psi	850.0	850.0	850.0	850.0	850.0	850.0
COMPRESSION		DL+LL	DL+W	DL+0.75(LL+W)	DL+LL	DL+W	DL+0.75(LL+W)
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		41.9			19.6		
F_{cE}		239	239	239	1087	1087	1087
F*c	psi	978	1360	1360	978	1360	1360
F_{cE}/Fc^*		0.24	0.18	0.18	1.11	0.80	0.80
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.23	0.17	0.17	0.73	0.61	0.61
Fc'	psi	225	230	230	710	829	829
fc	psi	0	0	0	0	0	0
Stress Ratio		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
BENDING							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	3686.4	12740	9555	810	810	608
Fb'	psi	926	1288	1288	926	1288	1288
fb	psi	244	842	632	54	54	40
Stress Ratio		**0.2633**	**0.6540**	**0.4905**	**0.0578**	**0.0416**	**0.0312**
COMBINED STRESSES							
(fc/F'c)^2		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
fb/Fb'(1-(fc/Fce)		0.2633	0.6540	0.4905	0.0578	0.0416	0.0312
Combined Stress Ratio		**0.2633**	**0.6540**	**0.4905**	**0.0578**	**0.0416**	**0.0312**
DEFLECTION							
Deflection	in	0.350	1.210	0.907	0.017	0.017	0.013
0.7 Deflection	in		0.847	0.635		0.012	0.009
Deflection Limit (L/240)	in	0.960	0.960	0.960	0.450	0.450	0.450
Deflection Ratio		**0.3646**	**0.8822**	**0.6616**	**0.0376**	**0.0263**	**0.0197**

harris & sloan
CONSULTING GROUP, INC.

Project	Village Walk		
Client	Standard Pacific H(	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Footing Calculations

Soils Engineer

ENGEO, Inc. (San Ramon)
2010 Crow Canyon Pl., Ste. 250
San Ramon, CA 94583

Report #: 6858.200.102
Date: 04/16/2013

Foundation Design Information

Allowable Soil Pressure	=	1000 psf
Retaining Wall Design:		
Friction Factor	=	N/A
Active Pressure	=	N/A pcf
Passive Pressure	=	N/A pcf

Post-Tension Foundation Calculations (expansive soil)

Average Soil Pressure = 1,000 psf

		Center Lift	Edge Lift
Edge Moisture Variation (e_m)	=	5.10 ft	2.70 ft
Differential Soil Movement (y_m)	=	1.50 in	2.00 in

Design Rectangles

R1 = 11.00 ft x 39.00 ft
R2 = 24.00 ft x 29.00 ft

Maximum Point Load Capacity of Slab

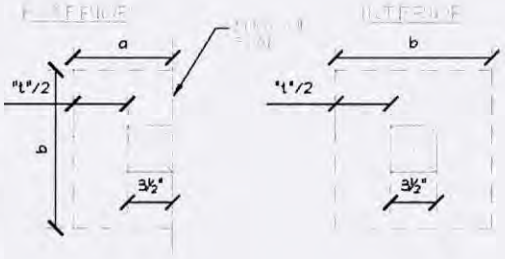
Slab Thickness (t) = 12 in
Concrete Compressive Strength (f'c) = 4500 psi

Punching Shear Calculation

$$V_u = \phi V_n$$
$$\phi = 0.85$$
$$V_c = 4\sqrt{f_c}\, b_o t$$
$$V_{allowable} = V_u / 1.7$$

Exterior Condidtion $b_o = 2a+b$ = 34.5 in
Maximum allowable point load = 56 kips

Interior Condidtion $b_o = 4b$ = 62 in
Maximum allowable point load = 100 kips



hscgi limit 10,000# at interior
8000# at exterior

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	11.00 FT x 39.00 FT x 12.00	Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	12.00 (11.89)	Inches

Material Properties

Concrete Strength, f'_c :	4,500	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	15.9	Cubic Yards
Prestressing Tendon :	426.0	Linear Feet
Number of End Anchorages :	44	

In the LONG direction ...

Number of Slab Tendons :	5	
Slab Tendon Spacing :	2.25	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	17	
Slab Tendon Spacing :	2.31	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	5,616	1,584
Moment of Inertia ($Inch^4$) :	67,392	19,008
Section Modulus, Top and Bottom ($Inch^3$) :	11,232	3,168
Beta Distance (Feet) :	5.50	6.09
Jacking Force :	33.05 KIPS	

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.89) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	17	5
Spacing of Tendons (FT)	2.31	2.25
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	429.2	109.8
Beta Distance Effective Prestress Force (K)	429.2	125.8
Minimum Effective Prestress (PSI)	76	69
Beta Distance Effective Prestress (PSI)	76	79

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction 7.60 FT-K/FT
Maximum Moment, Long Direction 6.91 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.240	-0.208	Actual Stress	0.393	0.367

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	67,392	19,008
Required Moment of Inertia ($Inch^4$)	12,518	10,661
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 1.58 K/FT
Maximum Shear, Long Direction 1.37 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	177
Actual Shear Stress (PSI)	11	10

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Geotechnical Report : Engeo
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	221.5	65.1
0.5 Moment (FT-K)	148.2	38.0

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.024	-0.022	Actual Stress	0.177	0.181

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	67,392	19,008
Required Moment of Inertia ($Inch^4$)	7,963	7,523
Required Moment of Inertia controlled by	Width	6*Beta

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.27 K/FT
Maximum Shear, Long Direction	1.39 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	177
Actual Shear Stress (PSI)	9	10

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	221.5	65.1
0.5 Moment (FT-K)	47.1	13.4

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	4,500.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R1 (11x39)

Rectangle Geometry : 11.00 FT x 39.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	70.00 PSI	60.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	37	0	8	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load :	40.00 PSF
Total Perimeter Load :	1,250.00 PLF
Smallest Load Intensity :	500.00 PLF

Stiffness Coefficients

Center Lift :	480
Edge Lift :	960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

PTISlab 3.5

Geostructural Tool Kit, Inc.

Registered To : Harris and Sloan Consulting Group

Serial Number : 100-350-005

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	24.00 FT x 29.00 FT x 12.00	Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	12.00 (11.93)	Inches

Material Properties

Concrete Strength, f'_c :	4,500	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	25.8	Cubic Yards
Prestressing Tendon :	679.0	Linear Feet
Number of End Anchorages :	48	

In the LONG direction ...

Number of Slab Tendons :	11	
Slab Tendon Spacing :	2.20	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	13	
Slab Tendon Spacing :	2.25	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	4,176	3,456
Moment of Inertia ($Inch^4$) :	50,112	41,472
Section Modulus, Top and Bottom ($Inch^3$) :	8,352	6,912
Beta Distance (Feet) :	7.76	7.40

Jacking Force : 33.05 KIPS

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.93) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	13	11
Spacing of Tendons (FT)	2.25	2.20
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	308.2	255.0
Beta Distance Effective Prestress Force (K)	321.6	273.5
Minimum Effective Prestress (PSI)	74	74
Beta Distance Effective Prestress (PSI)	77	79

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction 7.57 FT-K/FT
Maximum Moment, Long Direction 6.88 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.238	-0.208	Actual Stress	0.392	0.366

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	50,112	41,472
Required Moment of Inertia ($Inch^4$)	20,231	18,392
Required Moment of Inertia controlled by	Width	Length

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 1.83 K/FT
Maximum Shear, Long Direction 1.34 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	177
Actual Shear Stress (PSI)	13	9

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Geotechnical Report : Engeo
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	169.3	143.2
0.5 Moment (FT-K)	109.8	82.6

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.024	-0.023	Actual Stress	0.178	0.181

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	50,112	41,472
Required Moment of Inertia ($Inch^4$)	12,944	13,053
Required Moment of Inertia controlled by	Width	Length

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.34 K/FT
Maximum Shear, Long Direction	1.36 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	177
Actual Shear Stress (PSI)	9	9

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	169.3	143.2
0.5 Moment (FT-K)	35.1	29.3

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	4,500.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R2 (24x29)

Rectangle Geometry : 24.00 FT x 29.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	65.00 PSI	65.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	28	0	23	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load :	40.00 PSF
Total Perimeter Load :	1,250.00 PLF
Smallest Load Intensity :	500.00 PLF

Stiffness Coefficients

Center Lift :	480
Edge Lift :	960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	18.00 FT x 34.00 FT x 12.00	Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	12.00 (11.94)	Inches

Material Properties

Concrete Strength, f'_c :	4,500	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	22.7	Cubic Yards
Prestressing Tendon :	588.0	Linear Feet
Number of End Anchorages :	46	

In the LONG direction ...

Number of Slab Tendons :	8	
Slab Tendon Spacing :	2.29	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	15	
Slab Tendon Spacing :	2.29	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	4,896	2,592
Moment of Inertia ($Inch^4$) :	58,752	31,104
Section Modulus, Top and Bottom ($Inch^3$) :	9,792	5,184
Beta Distance (Feet) :	8.07	6.89

Jacking Force : 33.05 KIPS

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.94) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	15	8
Spacing of Tendons (FT)	2.29	2.29
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	366.1	179.7
Beta Distance Effective Prestress Force (K)	369.5	199.5
Minimum Effective Prestress (PSI)	75	69
Beta Distance Effective Prestress (PSI)	75	77

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction	8.21 FT-K/FT
Maximum Moment, Long Direction	7.46 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.267	-0.234	Actual Stress	0.418	0.388

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	58,752	31,104
Required Moment of Inertia ($Inch^4$)	19,293	17,539
Required Moment of Inertia controlled by	Width	Length

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction	2.23 K/FT
Maximum Shear, Long Direction	1.67 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	15	12

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	195.4	104.2
0.5 Moment (FT-K)	139.6	67.2

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.025	-0.025	Actual Stress	0.176	0.179

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	58,752	31,104
Required Moment of Inertia ($Inch^4$)	11,370	11,466
Required Moment of Inertia controlled by	Width	Length

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.32 K/FT
Maximum Shear, Long Direction	1.38 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	9	10

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	195.4	104.2
0.5 Moment (FT-K)	41.1	22.0

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	4,500.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R3 (18x34)

Rectangle Geometry : 18.00 FT x 34.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	70.00 PSI	60.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	33	0	17	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load : 40.00 PSF
Total Perimeter Load : 2,000.00 PLF
Smallest Load Intensity : 500.00 PLF

Stiffness Coefficients

Center Lift : 480
Edge Lift : 960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	22.00 FT x 38.00 FT x 12.00	Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	12.00 (11.94)	Inches

Material Properties

Concrete Strength, f'_c :	3,000	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	31.0	Cubic Yards
Prestressing Tendon :	808.0	Linear Feet
Number of End Anchorages :	54	

In the LONG direction ...

Number of Slab Tendons :	10	
Slab Tendon Spacing :	2.22	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	17	
Slab Tendon Spacing :	2.25	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	5,472	3,168
Moment of Inertia ($Inch^4$) :	65,664	38,016
Section Modulus, Top and Bottom ($Inch^3$) :	10,944	6,336
Beta Distance (Feet) :	8.30	7.24

Jacking Force : 33.05 KIPS

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.94) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	17	10
Spacing of Tendons (FT)	2.25	2.22
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	407.1	220.8
Beta Distance Effective Prestress Force (K)	418.3	248.9
Minimum Effective Prestress (PSI)	74	70
Beta Distance Effective Prestress (PSI)	76	79

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction 7.60 FT-K/FT
Maximum Moment, Long Direction 6.91 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.240	-0.209	Actual Stress	0.393	0.366

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	65,664	38,016
Required Moment of Inertia ($Inch^4$)	24,386	22,169
Required Moment of Inertia controlled by	Width	Length

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 1.80 K/FT
Maximum Shear, Long Direction 1.37 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	147
Actual Shear Stress (PSI)	12	10

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	218.9	128.7
0.5 Moment (FT-K)	144.3	76.0

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.024	-0.023	Actual Stress	0.177	0.180

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	65,664	38,016
Required Moment of Inertia ($Inch^4$)	15,521	15,651
Required Moment of Inertia controlled by	Width	Length

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.34 K/FT
Maximum Shear, Long Direction	1.39 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	147
Actual Shear Stress (PSI)	9	10

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	218.9	128.7
0.5 Moment (FT-K)	45.9	26.8

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	3,000.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R4 (22x38)

Rectangle Geometry : 22.00 FT x 38.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	70.00 PSI	60.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	37	0	21	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load :	40.00 PSF
Total Perimeter Load :	1,250.00 PLF
Smallest Load Intensity :	500.00 PLF

Stiffness Coefficients

Center Lift :	480
Edge Lift :	960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

harris & sloan
CONSULTING GROUP, INC.

Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P1 **2nd Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	4	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.68	15.68	psf
Above Plate:			
Wall Area Above Plate	40	0	ft^2
Average Elevation	22.5	22.5	ft
Pressure @ Elevation	15.98	15.98	psf
Wall Load	1874	0	#
Mean Roof Height (h)	22.5	22.5	
Roof Area	30	0	ft^2
Pressure @ Elevation	9.52	9.52	psf
Roof Load	286	0	#
Additional Load	=		#

Total Wind Load = **2160 #**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Length of Diaphragm	24.0	24.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1661	W
Rho	=	1.00	
Diaphragm Load	2093	0	#
Additional Load	=		#

Total Seismic Load = **2093 #**

1.25 Total Load* = **2616 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	24.0	24.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2160#	0#	
Diaphgram Shear	90 plf (W)	0 plf (E)	

Total Diaphragm Length	=	24 ft
Total Diaphragm Shear	=	90 plf (W)
Shear for drag & collectors*	=	109 plf (E)

Shear Wall Summary

			Shear @ T&B of wall
# of Shear Walls	=	1	
Total Length of Walls	=	18.00 ft	
Net Length of Walls	=	15.00 ft	
Maximum H:W Ratio	=	1.22	
Seismic H:W Adjustment	=	1.00	
Wind Wall Shear	=	**144 plf**	**120 plf**
Seismic Wall Shear	=	**140 plf**	**116 plf**
1.25 Seismic Shear*	=	**174 plf**	

USE SHEAR WALL TYPE **3**

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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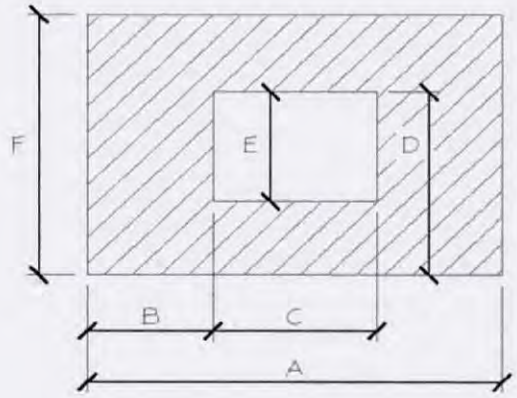
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P1 **2nd Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 18.00 ft.
Dist from left end of wall to 1st opening	B	= 10.50 ft.
Opening Width	C	= 3.00 ft.
Net Length		= 15.00 ft.
Opening Header Height	D	= 8.00 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	2160#
Seismic Load (E)	2093#
DL Trib Length Roof	12 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	120 plf	116 plf
Piers	144 plf	140 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 252 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-625#	-1365#
Left Pier	792#	767#
Right Pier	792#	767#
Bottom	360#	349#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	395# (W)	NONE
L King	87# (E)	NONE
R King	87# (E)	NONE
Right End	395# (W)	NONE

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P2 **2nd Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.68	15.68	psf
Above Plate:			
Wall Area Above Plate	11	0	ft^2
Average Elevation	22.5	22.5	ft
Pressure @ Elevation	15.98	15.98	psf
Wall Load	1403	0	#
Mean Roof Height (h)	22.5	22.5	
Roof Area	77	0	ft^2
Pressure @ Elevation	9.52	9.52	psf
Roof Load	733	0	#
Add'l Load (Balloon frm)	=	431	#

Total Wind Load	=	**2567 #**
Load w/o balloon wall	=	**2136 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	10.50 ft
Net Length of Walls	=	8.50 ft
Maximum H:W Ratio	=	2.36
Seismic H:W Adjustment	=	0.85

			Shear @ T&B of wall
Wind Wall Shear	=	**302 plf**	**244 plf**
Seismic Wall Shear	=	**210 plf**	**170 plf**
1.25 Seismic Shear*	=	**263 plf**	

USE SHEAR WALL TYPE **2**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Length of Diaphragm	18.0	18.0	ft
Additional Diaphragm Area	44.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1661	W
Rho	=	1.00	
Diaphragm Load	1789	0	#
Add'l Load (Balloon frm)	=		#

Total Seismic Load	=	**1789 #**
1.25 Total Load*	=	**2236 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	18.0	18.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2136#	0#	
Diaphgram Shear	119 plf (W)	0 plf (E)	

Total Diaphragm Length	=	18 ft
Total Diaphragm Shear	=	119 plf (W)
Shear for drag & collectors*	=	124 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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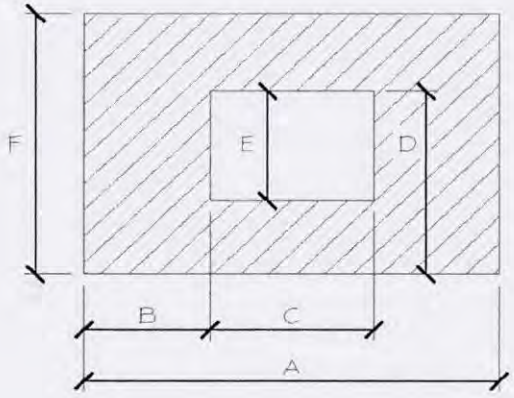
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
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Shear Wall w/ Force Transfer at Opening Calculation

P2 **2nd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 10.50 ft.
Dist from left end of wall to 1st opening	B	= 2.33 ft.
Opening Width	C	= 2.00 ft.
Net Length		= 8.50 ft.
Opening Header Height	D	= 7.50 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	2567#
Seismic Load (E)	1789#
DL Trib Length Roof	5 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	244 plf	170 plf
Piers	302 plf	210 plf

Use Shear Wall Type **2**

STRAP CALCULATIONS

Max. Load @ Opening = 355 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-106#	-313#
Left Pier	1661#	1157#
Right Pier	1661#	1157#
Bottom	611#	426#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	2116# (W)	2 corner
L King	1397# (W)	1
R King	1397# (W)	1
Right End	2116# (W)	2

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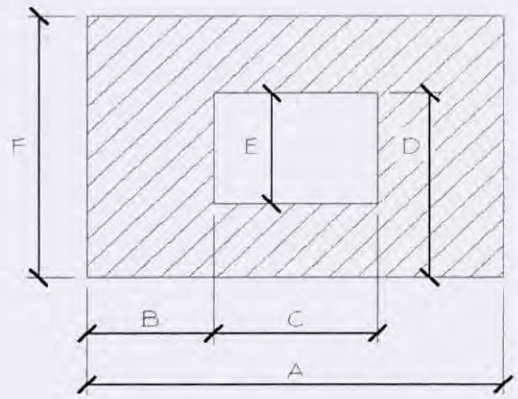
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Shear Wall w/ Force Transfer at Opening Calculation

P2 **2nd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 18.00 ft.
Dist from left end of wall to 1st opening	B	= 5.83 ft.
Opening Width	C	= 5.50 ft.
Net Length		= 12.50 ft.
Opening Header Height	D	= 8.00 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	2567#
Seismic Load (E)	1789#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	143 plf	99 plf
Piers	205 plf	143 plf

Use Shear Wall Type 3

STRAP CALCULATIONS

Max. Load @ Opening = 419 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-493#	-524#
Left Pier	1130#	787#
Right Pier	1130#	787#
Bottom	428#	298#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location
442 #	0.00 ft.
442 #	18.00 ft.

	Total Uplift	Holdown
Left End	1161# (W)	1
L King	117# (W)	NONE
R King	117# (W)	NONE
Right End	1161# (W)	1

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Lateral Analysis Calculations

P3 **2nd Floor; Left; Front to Back**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	26	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	6.5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.68	15.68	psf
Above Plate:			
Wall Area Above Plate	9	0	ft^2
Average Elevation	22.5	22.5	ft
Pressure @ Elevation	15.98	15.98	psf
Wall Load	1061	0	#
Mean Roof Height (h)	22.5	22.5	
Roof Area	76	0	ft^2
Pressure @ Elevation	10.04	10.04	psf
Roof Load	758	0	#
Additional Load	=		#

Total Wind Load = **1819 #**

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	18.00	ft
Net Length of Walls	=	16.00	ft
Maximum H:W Ratio	=	0.64	
Seismic H:W Adjustment	=	1.00	
		Shear @ T&B of wall	
Wind Wall Shear	=	**114 plf**	**101 plf**
Seismic Wall Shear	=	**130 plf**	**115 plf**
1.25 Seismic Shear*	=	**162 plf**	

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	26	0	ft
Length of Diaphragm	32.0	32.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1661	W
Rho	=	1.00	
Diaphragm Load	2073	0	#
Additional Load	=		#

Total Seismic Load = **2073 #**

1.25 Total Load* = **2591 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	32.0	32.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2073#	0#	
Diaphgram Shear	65 plf (E)	0 plf (E)	

Total Diaphragm Length	=	32 ft
Total Diaphragm Shear	=	65 plf (E)
Shear for drag & collectors*	=	81 plf (E)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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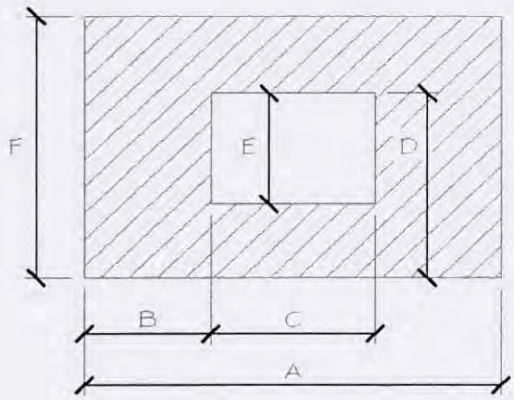
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Shear Wall w/ Force Transfer at Opening Calculation

P3 **2nd Floor; Left; Front to Back**

SHEARWALL GEOMETRY

Total Length	A	= 18.00 ft.
Dist from left end of wall to 1st opening	B	= 7.00 ft.
Opening Width	C	= 2.00 ft.
Net Length		= 16.00 ft.
Opening Header Height	D	= 8.00 ft.
Opening Height	E	= 4.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	1819#
Seismic Load (E)	2073#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	101 plf	115 plf
Piers	114 plf	130 plf

Use Shear Wall Type **1**

STRAP CALCULATIONS

Max. Load @ Opening = 130 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-514#	-517#
Left Pier	512#	583#
Right Pier	512#	583#
Bottom	404#	461#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	462# (E)	NONE
L King	316# (E)	NONE
R King	316# (E)	NONE
Right End	462# (E)	NONE

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Lateral Analysis Calculations

P4 **2nd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	26	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	6.5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.68	15.68	psf
Above Plate:			
Wall Area Above Plate	42	0	ft^2
Average Elevation	22.5	22.5	ft
Pressure @ Elevation	15.98	15.98	psf
Wall Load	1588	0	#
Mean Roof Height (h)	22.5	22.5	
Roof Area	43	0	ft^2
Pressure @ Elevation	10.04	10.04	psf
Roof Load	427	0	#
Additional Load	=		#

Total Wind Load = **2015 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	12.00 ft
Maximum H:W Ratio	=	0.75
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**168 plf**
Seismic Wall Shear	=	**173 plf**
1.25 Seismic Shear*	=	**216 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	26	0	ft
Length of Diaphragm	32.0	32.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1661	W
Rho	=	1.00	
Diaphragm Load	2073	0	#
Additional Load	=		#

Total Seismic Load = **2073 #**
1.25 Total Load* = **2591 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	32.0	32.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2073#	0#	
Diaphgram Shear	65 plf (E)	0 plf (E)	

Total Diaphragm Length	=	32 ft
Total Diaphragm Shear	=	65 plf (E)
Shear for drag & collectors*	=	81 plf (E)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
12.00 ft.	2.0 ft.						1172# (E)	1172# (E)	1	1

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Lateral Analysis Calculations

P5 **1st Floor; Rear; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	15.25	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	10.8	10.8	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	507	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	27	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	269	0	#
Additional Load	=		#

Total Wind Load = **776 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	4.00 ft
Maximum H:W Ratio	=	2.25
Seismic H:W Adjustment	=	0.89
Wind Wall Shear	=	**194 plf**
Seismic Wall Shear	=	**50 plf**
1.25 Seismic Shear*	=	**63 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	15.25	0	ft
Length of Diaphragm	11.3	11.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	202	0	#
Additional Load	=		#

Total Seismic Load = **202 #**

1.25 Total Load* = **252 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	11.3	11.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	776#	0#	
Diaphgram Shear	68 plf (W)	0 plf (E)	

Total Diaphragm Length	=	11 ft
Total Diaphragm Shear	=	68 plf (W)
Shear for drag & collectors*	=	68 plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
4.00 ft.							1857# (W)	1857# (W)	9	17 corner

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Lateral Analysis Calculations

P6 **1st Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	15.25	12	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	0	34	ft^2
Average Elevation	10.8	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	507	904	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	27	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	269	0	#
Add'l Load (From P1)	=	2160	#
Total Wind Load	=	**3839**	**#**

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	9.75	ft
Net Length of Walls	=	6.75	ft
Maximum H:W Ratio	=	1.82	
Seismic H:W Adjustment	=	1.00	
		Shear @ T&B of wall	
Wind Wall Shear	=	**569**	**plf** **394 plf**
Seismic Wall Shear	=	**400**	**plf** **277 plf**
1.25 Seismic Shear*	=	**500**	**plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	15.25	12	ft
Length of Diaphragm	11.3	29.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	202	406	#
Add'l Load (From P1)	=	2093	#
Total Seismic Load	=	**2701**	**#**
1.25 Total Load*	=	**3376**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	11.3	29.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	2160#	
Total Load in Diaphragm	776#	3063#	
Diaphgram Shear	68 plf (W)	106 plf (W)	

Total Diaphragm Length	=	29 ft
Total Diaphragm Shear	=	132 plf (W)
Shear for drag & collectors*	=	132 plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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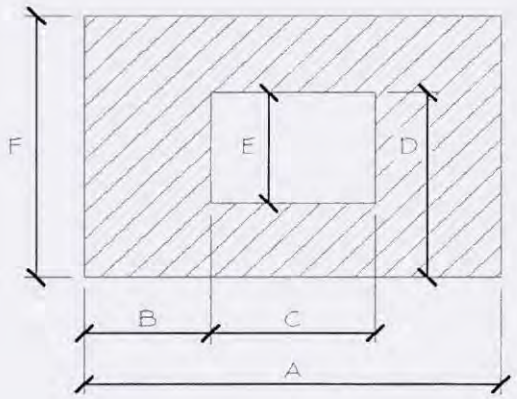
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Client	Standard Pacific Homes	**Plan #**	3
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Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P6 **1st Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 9.75 ft.
Dist from left end of wall to 1st opening	B	= 2.75 ft.
Opening Width	C	= 3.00 ft.
Net Length		= 6.75 ft.
Opening Header Height	D	= 7.50 ft.
Opening Height	E	= 4.50 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	3839#
Seismic Load (E)	2701#
DL Trib Length Roof	0 ft
DL Trib Length Floor	6 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	394 plf	277 plf
Piers	569 plf	400 plf

Use Shear Wall Type 4

STRAP CALCULATIONS

Max. Load @ Opening = 700 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-162#	-139#
Left Pier	2844#	2001#
Right Pier	2844#	2001#
Bottom	1181#	831#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	3647# (W)	9
L King	2143# (W)	9
R King	2143# (W)	9
Right End	3647# (W)	9

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Lateral Analysis Calculations

P6 **1st Floor; Rear; Left to Right**
Plan 3X - Lot 36

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	0	ft
Additional Width	1	0	ft
Avg. Roof Ht abv Plate	0	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	40	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1054	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	0	0	#
Add'l Load (From P1)	=	2160	#
Total Wind Load	=	**3214**	**#**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	0	ft
Length of Diaphragm	38.0	29.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	533	0	#
Add'l Load (From P1)	=	2093	#
Total Seismic Load	=	**2625**	**#**
1.25 Total Load*	=	**3282**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	10.00 ft
Maximum H:W Ratio	=	0.90
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**321 plf**
Seismic Wall Shear	=	**263 plf**
1.25 Seismic Shear*	=	**328 plf**

USE SHEAR WALL TYPE **3**

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	38.0	29.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	2160#	0#	
Total Load in Diaphragm	3214#	0#	
Diaphgram Shear	85 plf (W)	0 plf (E)	
Total Diaphragm Length	=	38	ft
Total Diaphragm Shear	=	85 plf (W)	
Shear for drag & collectors*	=	86 plf (E)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
10.00 ft.							2729# (W)	2729# (W)	9	9

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Lateral Analysis Calculations

P7 **1st Floor; Interior; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	16	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	34	46	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	904	1205	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **2109 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	6.00 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**351 plf**
Seismic Wall Shear	=	**145 plf**
1.25 Seismic Shear*	=	**181 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	16	ft
Length of Diaphragm	38.0	18.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	533	336	#
Additional Load	=		#

Total Seismic Load = **869 #**

1.25 Total Load* = **1086 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	38.0	18.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	904#	1205#	
Diaphgram Shear	24 plf (W)	67 plf (W)	

Total Diaphragm Length	=	38 ft
Total Diaphragm Shear	=	55 plf (W)
Shear for drag & collectors*	=	55 plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
6.00 ft.		6.0 ft.					3077# (W)	3077# (W)	**17 interior**	**17 interior**

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P8 **1st Floor; Front; Left to Right**
Front wall of entry (Elev A & C)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	6	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	46	17	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1205	452	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **1657 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	3.25 ft
Maximum H:W Ratio	=	2.77
Seismic H:W Adjustment	=	0.72
Wind Wall Shear	=	**510 plf**
Seismic Wall Shear	=	**194 plf**
1.25 Seismic Shear*	=	**243 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	6	ft
Length of Diaphragm	27.0	18.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	505	126	#
Additional Load	=		#

Total Seismic Load = **631 #**
1.25 Total Load* = **788 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	27.0	18.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1205#	452#	
Diaphgram Shear	45 plf (W)	25 plf (W)	

Total Diaphragm Length	=	27 ft
Total Diaphragm Shear	=	61 plf (W)
Shear for drag & collectors*	=	61 plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
3.25 ft.							5307# (W)	5307# (W)	**19 interior**	**19 interior**

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Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
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Lateral Analysis Calculations

P9 **1st Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	6	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	17	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	452	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	0	0	#
Add'l Load (From P2)	=	2567	#
Total Wind Load	=	**3019**	**#**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	6	0	ft
Length of Diaphragm	18.0	38.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	126	0	#
Add'l Load (From P2)	=	1789	#
Total Seismic Load	=	**1915**	**#**
1.25 Total Load*	=	**2394**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	18.0	38.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	452#	0#	
Diaphgram Shear	25 plf (W)	0 plf (E)	

Total Diaphragm Length	=	18 ft
Total Diaphragm Shear	=	25 plf (W)
Shear for drag & collectors*	=	25 plf (W)

Shear Wall Summary

See manufactured shearwalls on next page(s)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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Client	Standard Pacific Homes - E	**Plan #**	3
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Date	7/8/13		

Lateral Analysis Calculations For Simpson Steel Strong-Wall

P10 **1st Floor; Front; Left to Right**

See load calculations on previous page

Total Wind Load = **3019 #** **Total Seismic Load** = **1915 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
1	SSW21x9	1000	3475	3100	0.50	0.45

Total Load Capacity	=	3475	3100	
Pecent of Capacity Used	=	87%	62%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
1	SSW21x9	6950	6889	3019	1915	LOAD OK

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Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P10 **1st Floor; Front; Left to Right**
Garage Wall

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	34	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	904	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **904 #**

Shear Wall Summary

See manufactured shearwalls on next page(s)

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	0	ft
Length of Diaphragm	20.0	38.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	280	0	#
Additional Load	=		#

Total Seismic Load = **280 #**
1.25 Total Load* = **350 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	20.0	38.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	904#	0#	
Diaphgram Shear	45 plf (W)	0 plf (E)	

Total Diaphragm Length	=	20 ft
Total Diaphragm Shear	=	45 plf (W)
Shear for drag & collectors*	=	45 plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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Client	Standard Pacific Homes - E	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
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Lateral Analysis Calculations For Simpson Steel Strong-Wall

P10 **1st Floor; Front; Left to Right**

See load calculations on previous page

Total Wind Load = **904 #** **Total Seismic Load** = **280 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
1	SSW15x7	7500	1445	1445	0.28	0.28

Total Load Capacity	=	1445	1445	
Pecent of Capacity Used	=	63%	19%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
1	SSW15x7	5161	5161	904	280	LOAD OK

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Client	Standard Pacific Homes	**Plan #**	3
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Lateral Analysis Calculations

P11 **1st Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	11	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	31	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	828	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (70% of P3)	=	1273	#

Total Wind Load = **2102 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**263 plf**
Seismic Wall Shear	=	**244 plf**
1.25 Seismic Shear*	=	**305 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	11	0	ft
Length of Diaphragm	39.0	38.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	501	0	#
Add'l Load (70% of P3)	=	1451	#
Total Seismic Load	=	**1952**	#
1.25 Total Load*	=	**2440**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	39.0	38.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	1451#	0#	
Total Load in Diaphragm	2102#	0#	
Diaphgram Shear	54 plf (W)	0 plf (E)	
Total Diaphragm Length	=	39	ft
Total Diaphragm Shear	=	54 plf (W)	
Shear for drag & collectors*	=	63 plf (E)	

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
8.00 ft.		1.0 ft.					2228# (W)	2228# (W)	**9**	**9**

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Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P12 **1st Floor; Interior; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20	18	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	57	51	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1506	1356	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (60% of P3)	=	1091	#

Total Wind Load = **3953 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	12.00 ft
Maximum H:W Ratio	=	0.75
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**329 plf**
Seismic Wall Shear	=	**210 plf**
1.25 Seismic Shear*	=	**262 plf**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20	18	ft
Length of Diaphragm	23.0	35.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	537	736	#
Add'l Load (60% of P3)	=	1244	#
Total Seismic Load	=	**2517**	#
1.25 Total Load*	=	**3146**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	35.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	1244#	0#	
Total Load in Diaphragm	2598#	1356#	
Diaphgram Shear	113 plf (W)	39 plf (W)	
Total Diaphragm Length	=	35 ft	
Total Diaphragm Shear	=	113 plf (W)	
Shear for drag & collectors*	=	113 plf (W)	

#REF!
#REF!
#REF!

USE SHEAR WALL TYPE **#N/A**

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
12.00 ft.		1.0 ft.					2662# (W)	2662# (W)	9	9

#REF!

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P13 **1st Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	18	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	51	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1356	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (From P4)	=	2015	#

Total Wind Load = **3370 #**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	9.00 ft
Maximum H:W Ratio	=	2.25
Seismic H:W Adjustment	=	0.89
Wind Wall Shear	=	**374 plf**
Seismic Wall Shear	=	**312 plf**
1.25 Seismic Shear*	=	**390 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	18	0	ft
Length of Diaphragm	35.0	35.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	736	0	#
Add'l Load (From P4)	=	2073	#

Total Seismic Load = **2809 #**

1.25 Total Load* = **3511 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	35.0	35.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	2073#	0#	
Total Load in Diaphragm	3370#	0#	
Diaphgram Shear	96 plf	(W) 0 plf	(E)

Total Diaphragm Length	=	35 ft
Total Diaphragm Shear	=	96 plf (W)
Shear for drag & collectors*	=	100 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
4.00 ft.			1172#	0.00			4887# (W)	3715# (W)	**19**	**9**
5.00 ft.					1172#	5.00	3578# (W)	4750# (W)	**9**	**19 corner**

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P14 **1st Floor; Left; Front to Back**
Plan 3X - Lot 36

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	57	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1506	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (40 % of P3)	=	728	#

Total Wind Load = **2234 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	5.50 ft
Maximum H:W Ratio	=	1.64
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**406 plf**
Seismic Wall Shear	=	**244 plf**
1.25 Seismic Shear*	=	**305 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	20		0	ft
Length of Diaphragm	22.0		35.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0779	W
Rho	=		1.00	
Diaphragm Load	514		0	#
Add'l Load (40 % of P3)	=		829	#
Total Seismic Load	=		**1343**	#
1.25 Total Load*	=		**1679**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	22.0		35.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	829#		0#	
Total Load in Diaphragm	2234#		0#	
Diaphgram Shear	102 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		22	ft
Total Diaphragm Shear	=		102 plf	(W)
Shear for drag & collectors*	=		102 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
5.50 ft.	5.0 ft.						3819# (W)	3819# (W)	**9**	**9**

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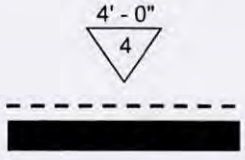
Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall Table

Type	*Wind*	*Seismic*	*Description*
1	254.8	182	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
2	350	266	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 4" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
3	480.2	343	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X OR (2) 2X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
4	600	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. MAX. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
5	627.2	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
12	754.6	539	15/32" APA RATED SHEATHING ONE FACE WITH 10d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
7	960.4	686	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
8	1254.4	896	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.

NOTES:

1. Shearwalls are designated on the plans by a triangle symbol surrounding the shearwall type.
2. Shearwall length is indicated above the shearwall callout and is shown graphically with shading & a dashed line.
3. See anchor bolt calculations for required anchor spacing.



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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Simpson Holdown Table

	Wind		*Seismic*		
Type	*Typ*	*End*	*Typ*	*End*	***Description***
NONE	500	500	500	500	Below limit
1	1705	1705	1705	1705	CS16 STRAP, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2	3410	3410	3410	3410	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
3	4585	4585	4585	4585	CMSTC16 STRAP, 23" MINIMUM END SPAN, CLEAR SPAN VARIES.
4	5860	5860	5860	5860	MSTC66 STRAP, 18" MAXIMUM CLEAR SPAN.
1A	942	942	942	942	CS16 STRAP, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
1B	1884	1884	1884	1884	(2) CS16 STRAPS, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
2A	3300	3300	3300	3300	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2B	4950	4950	4950	4950	(3) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
9	4755	0	3400	0	STHD10 HOLDOWN TO MINIMUM 4X POST.
17	4565	4470	3740	3325	HDU4 HOLDOWN TO MINIMUM 4X POST W/ SSTB24/24
19	6970	6970	6970	6970	HDU8 HOLDOWN TO MINIMUM 4X POST W/ SSTB28/34 ANCHOR.
19A	7870	7870	7870	7315	HDU8 HOLDOWN TO MINIMUM 4X6 POST W/ SSTB28/34 ANCHOR.
20	9535	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X6 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
20A	10470	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X8 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
21	14390	14390	14390	14390	HDU14 HOLDOWN TO MINIMUM 4X8 POST W/ 1" ANCHOR ROD.
16	19070	19070	19070	19070	HD19 HOLDOWN TO MINIMUM 4X10 OR 6X6 POST W/ 1 1/4" ANCHOR ROD.

NOTE: Holdowns are designated on the plans by a diamond symbol surrounding the holdown type, e.g.: 

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

CALCULATIONS FOR ANCHOR BOLTS & MASA* ANCHORS AT SHEARWALLS

*MASA anchor values per ESR-2555, Issued November 2010

Allowable loads per NDS/hardware values (1.6 load duration factor):

Condition	1/2" ϕ A.B.	MASA
2X sill plate; sw capacity ≤ 350 plf	650#	1515#
2X sill plate; sw capacity b/t 350 & 600 plf	325#	758#
3X sill plate	770#	1215#

Allowable Shear Loads per ACI 318-08 Appendix D (assuming uncracked concrete at service loads):

		1/2" ϕ A.B.		MASA	
Wind:	$(F^*V_{nx}) / 1.6 =$	1064#	Wind:	2X sill = 1388#	
				3X sill = 1109#	
Seismic:	$(F^*V_{nx}) * 0.7 =$	1192#	Seismic:	2X sill = 1138#	
				3X sill = 931#	

Seismic (in SDC C, D, E and F):
$(0.75^*F^*_{Vnx}) * 0.7 =$ 894#

		1/2" AB	MASA
SW 1 (2x sill)	NDS	49.0" oc	71.4" oc
255plf (W)	ACI (W)	50.1" oc	65.3" oc
182plf (E)	ACI (E)	58.9" oc	75.0" oc
	per plan	**48" oc**	**48" oc**

		1/2" AB	MASA
SW 2 (2x sill)	NDS	35.7" oc	51.9" oc
350plf (W)	ACI (W)	36.5" oc	47.6" oc
266plf (E)	ACI (E)	40.3" oc	51.3" oc
	per plan	**35" oc**	**35" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW3	NDS	13.0" oc	18.9" oc	30.8" oc	30.4" oc
480plf (W)	ACI (W)	26.6" oc	34.7" oc	26.6" oc	27.7" oc
343plf (E)	ACI (E)	31.3" oc	39.8" oc	31.3" oc	32.6" oc
	per plan	**12" oc**	**12" oc**	**20" oc**	**20" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW4	NDS	10.4" oc	15.2" oc	24.6" oc	24.3" oc
600plf (W)	ACI (W)	21.3" oc	27.8" oc	21.3" oc	22.2" oc
448plf (E)	ACI (E)	23.9" oc	30.5" oc	23.9" oc	24.9" oc
	per plan	**10" oc**	**10" oc**	**16" oc**	**16" oc**

		1/2" AB	MASA
SW 5 (3x sill)	NDS	23.6" oc	23.2" oc
627plf (W)	ACI (W)	20.4" oc	21.2" oc
448plf (E)	ACI (E)	23.9" oc	24.9" oc
	per plan	**20" oc**	**20" oc**

		1/2" AB	MASA
SW 7 (3x sill)	NDS	15.4" oc	15.2" oc
960plf (W)	ACI (W)	13.3" oc	13.9" oc
686plf (E)	ACI (E)	15.6" oc	16.3" oc
	per plan	**13" oc**	**13" oc**

		1/2" AB	MASA
SW 8 (3x sill)	NDS	11.8" oc	11.6" oc
1254plf (W)	ACI (W)	10.2" oc	10.6" oc
896plf (E)	ACI (E)	12.0" oc	12.5" oc
	per plan	**10" oc**	**10" oc**

		1/2" AB	MASA
SW 12 (3x sill	NDS	19.6" oc	19.3" oc
755plf (W)	ACI (W)	16.9" oc	17.6" oc
539plf (E)	ACI (E)	19.9" oc	20.7" oc
	per plan	**12" oc**	**12" oc**

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2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
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Structural
Engineering
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Structural Calculation Package

for

Standard Pacific Homes - Bay

Village Walk

Cotati, California

Plan # 4

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Job # HS13068

2010 CBC



Date 7/8/2013

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Structural Calculation Package

Client Information

Standard Pacific Homes - Bay
3825 Hopyard Road, Suite 195
Pleasanton, CA 94588

Project Information

Village Walk
Cotati, California
Plan No. 4

Loading Information

Roof Loads

Roofing (Tile)	=	10.0 psf
Sheathing	=	1.7 psf
Framing	=	2.3 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	1.5 psf
Wall (Seismic only)	=	9.0 psf
Total DL	=	21.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	20.0 psf

Floor Loads

Flooring	=	1.5 psf
Sheathing	=	2.5 psf
Framing	=	2.5 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	3.0 psf
Wall (Seismic only)	=	15.0 psf
Total DL	=	15.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	40.0 psf

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Seismic Design Per IBC Section 1613

Building Information

R	=	6.50	ASCE Table 12.2-1
Occupancy Cat.	=	II	IBC Sect. 1604.5
Number of Stories	=	2	
Importance Factor	=	1.0	
Max Level Height	=	19.2	ft
Design Approach		Normal/Equivalent	

Site Information

S_s	=	1.615	IBC Sect. 1613.5.1
S_1	=	0.634	IBC Sect. 1613.5.1
Site Class	=	D	
S_s	=	1.615	Used For Design
S_1	=	0.634	Used For Design

Seismic Loads: ASCE 7 Section 12.8 Equivalent Lateral Force Procedure

Short Period Response

F_a	=	1.000	IBC 1613.5.3
$S_{MS} = F_a S_s$	=	1.615	IBC Eqn. 16-36
$S_{DS} = (^2/_3) S_{MS}$	=	1.077	IBC Eqn. 16-38
SDC per S_{DS}	=	D	IBC Table 1613.5.6(1)

1-Second Period Response

F_v	=	1.500	IBC 1613.5.3
$S_{M1} = F_v S_1$	=	0.951	IBC Eqn. 16-37
$S_{D1} = (^2/_3) S_{M1}$	=	0.634	IBC Eqn. 16-39
SDC per S_{D1}	=	D	IBC Table 1613.5.6(2)

Seismic Design Category

Period, T	=	0.18	s, ASCE 7 12.8.2.1
0.8 Ts	=	0.47	s, ASCE 7 11.4.5
SDC Required	=	D	IBC Sect. 1613.5.6
SDC Used	=	**D**	

Seismic Design Factors

Overstrength Factor	=	2.5	Table 12.2-1, Footnote g
Dead Load Reduction:			
(0.6 - 0.14 Sds)D	=	0.449 D	ASCE Sect 12.4.3.2
Rho, left to right	=	1.3	ASCE Sect 12.3.4
Rho, front to back	=	1.0	

ASD Seismic Response Coefficient

$$C_s = \frac{I(S_{DS})}{R}$$

C_s per ASCE Eqn. 12.8-2

C_s	=	0.1656	ASCE Eqn. 12.8-2
C_s (upper limit)	=	0.5317	ASCE Eqn. 12.8-3
C_s (lower limit)	=	0.0100	ASCE Eqn. 12.8-5
C_s (alt low limit)	=	0.0488	ASCE Eqn. 12.8-6
C_s	=	0.1656	

Base Shear, V = 0.1159 W
(Includes 0.7 factor from ASD Basic LC)

Vertical Shear Distribution

Story	h (ft)	Area (sq ft)	DL (psf)	w_x (lb)	w_x x h	C_{vx}	C_{sx}*
1	9	820	30	24600	221400	0.3218	0.0742
2	19.2	810	30	24300	466560	0.6782	0.1582
Sum:		1630		48900	687960		

*Derived equivalent shear ratio per story: $F_x = C_{sx} w_x$
where: $C_{sx} = C_{vx} C_s (W/w_x)$

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	4
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Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (V)	85 mph	(3-second gust)
Importance Factor (I)	1.00	ASCE 7 - Table 6-1
Exposure Category	C	ASCE 7 - Section 6.5.6.3;
Directionality Factor (K_d)	0.85	ASCE 7 - Table 6-4
Gust Factor (G)	0.85	ASCE 7 - Section 6.5.8.1

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects — Hill Type: None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	21.50 ft	Velocity Pressure (q_h) for MWFRS	14.34 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.34
min L/B (Front to Back)	1.43
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.41

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C: 14.34 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
9.0 ft	-1.02	17.26	-1.25	20.47
15.0 ft	-0.95	16.14	-1.09	18.22
19.2 ft	-0.91	15.59	-1.02	17.14
22.0 ft	-0.89	15.30	-0.97	16.54

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-1.17	
Int. Pressure Coeff. (Cpi)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-12 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	1 psf	Available to offset overturning from wind

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Project	Village Walk		
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Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Beam Specifications

BEAM #	SIZE	GRADE	LOCATION
Beam #1	3 1/2"x14"	1.5E SCL	Beam over dining / great room
Beam #2	3 1/2"x14"	1.5E SCL	Beam over porch

Header Specifications

First Floor Walls

Length	Size	Grade
4'-0"	4x8	#2 D.F.
6'-0"	4x10	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Second Floor Walls

Length	Size	Grade
4'-0"	4x6	#2 D.F.
6'-0"	4x8	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Description : Headers Plan 4

Wood Beam Design : Headers Plan 4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

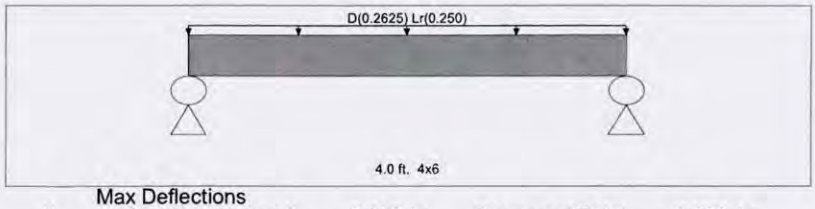
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft

Design Summary

Max fb/Fb Ratio = **0.596** : 1
fb : Actual : 697.05 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.343** : 1
fv : Actual : 61.77 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.53		0.50				
Right Support	0.53		0.50				



Max Deflections

Downward L+Lr+S	0.019 in	Downward Total	0.038 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2574 >360	Total Defl Ratio	1255 >240

Wood Beam Design : 6ft Header, Upper floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

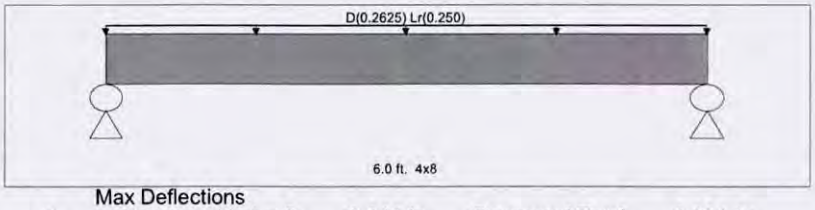
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft

Design Summary

Max fb/Fb Ratio = **0.771** : 1
fb : Actual : 902.60 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.404** : 1
fv : Actual : 72.71 psi at 5.400 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.79		0.75				
Right Support	0.79		0.75				



Max Deflections

Downward L+Lr+S	0.041 in	Downward Total	0.084 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1747 >360	Total Defl Ratio	852 >240

Wood Beam Design : 4ft Header, Lower floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

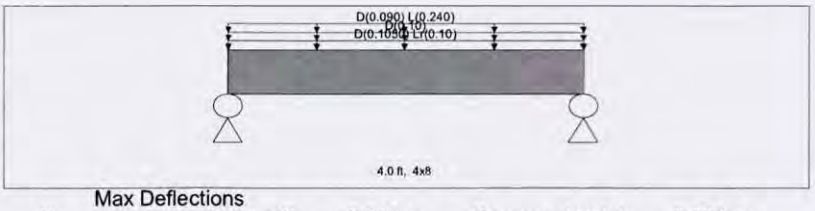
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 6.0 ft

Design Summary

Max fb/Fb Ratio = **0.368** : 1
fb : Actual : 430.51 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.253** : 1
fv : Actual : 45.52 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.59	0.48	0.20				
Right Support	0.59	0.48	0.20				



Max Deflections

Downward L+Lr+S	0.011 in	Downward Total	0.021 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	4335 >480	Total Defl Ratio	2321 >360

Wood Beam Design : 4ft Header, Lower floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade :	No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

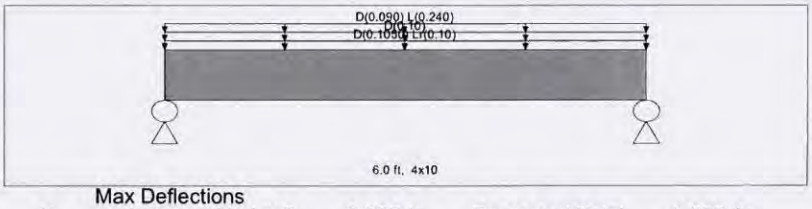
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 6.0 ft

Design Summary

Max fb/Fb Ratio = **0.551** : 1
fb : Actual : 595.05 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.317** : 1
fv : Actual : 57.08 psi at 5.240 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.89	0.72	0.30				
Right Support	0.89	0.72	0.30				

Max Deflections

Downward L+Lr+S	0.027 in	Downward Total	0.050 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2668 >360	Total Defl Ratio	1428 >240

Multiple Simple Beam

Description : Headers Plan 4

Wood Beam Design : Headers Plan 4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

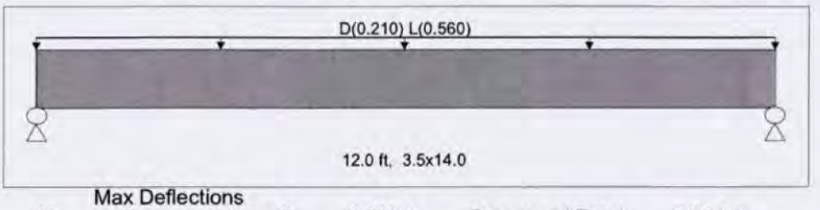
Applied Loads

Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 14.0 ft

Design Summary

Max fb/Fb Ratio = **0.677** : 1
fb : Actual : 1,454.69 psi at 6.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.400** : 1
fv : Actual : 114.09 psi at 10.840 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.26	3.36					
Right Support	1.26	3.36					

Max Deflections

Downward L+Lr+S	0.219 in	Downward Total	0.301 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	658 >480	Total Defl Ratio	478 >360

Wood Beam Design : Header under Beam #1

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

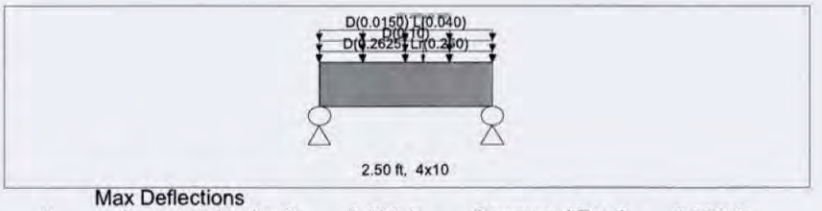
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Point: D = 1.260, L = 3.360 k @ 1.50 ft

Design Summary

Max fb/Fb Ratio = **0.687** : 1
fb : Actual : 741.74 psi at 1.500 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.765** : 1
fv : Actual : 137.78 psi at 1.733 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.98	1.39	0.31				
Right Support	1.23	2.07	0.31				

Max Deflections

Downward L+Lr+S	0.006 in	Downward Total	0.008 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	5389 >480	Total Defl Ratio	3616 >360

Wood Beam Design : Porch beam under point load

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

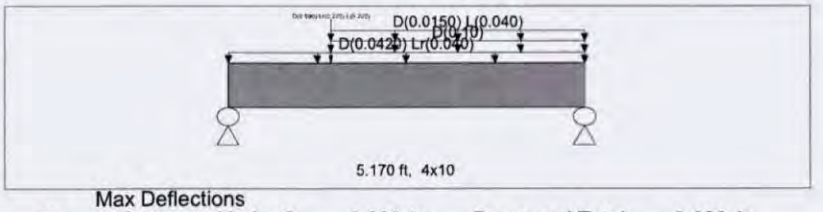
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 1.50 to 5.170 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 1.50 to 5.170 ft, Trib= 1.0 ft
Point: D = 0.590, Lr = 0.220, L = 0.220 k @ 1.50 ft

Design Summary

Max fb/Fb Ratio = **0.325** : 1
fb : Actual : 351.28 psi at 1.517 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.251** : 1
fv : Actual : 45.10 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.68	0.21	0.26				

Max Deflections

Downward L+Lr+S	0.008 in	Downward Total	0.020 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in

Wood Beam Design : Porch beam

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x9.5, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber
Wood Grade : 1.5E SCL

Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

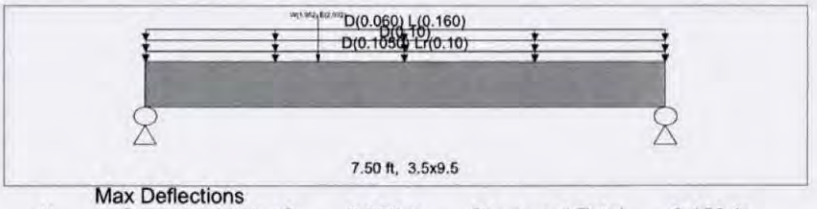
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 4.0 ft
Point: W = 1.952, E = 2.032 k @ 2.50 ft

Design Summary

Max fb/Fb Ratio = **0.564** : 1
fb : Actual : 1,941.26 psi at 2.500 ft in Span # 1
Fb : Allowable : 3,440.00 psi
Load Comb : +1.210D+1.923E+H

Max fv/FvRatio = **0.352** : 1
fv : Actual : 160.55 psi at 0.000 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+1.923E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.99	0.60	0.38		1.30	1.35	
Right Support	0.99	0.60	0.38		0.65	0.68	

Max Deflections

Downward L+Lr+S	0.050 in	Downward Total	0.152 in
Upward L+Lr+S	0.000 in	Upward Total	-0.071 in
Live Load Defl Ratio	1814 >360	Total Defl Ratio	592 >240

CODE REFERENCES

Calculations per NDS 2005, IBC 2006, CBC 2007, ASCE 7-05
Load Combination Set : 2006IBC&ASCE7-05(HSCGI)

Material Properties

Analysis Method : Allowable Stress Design
Load Combination 2006IBC&ASCE7-05(HSCGI)

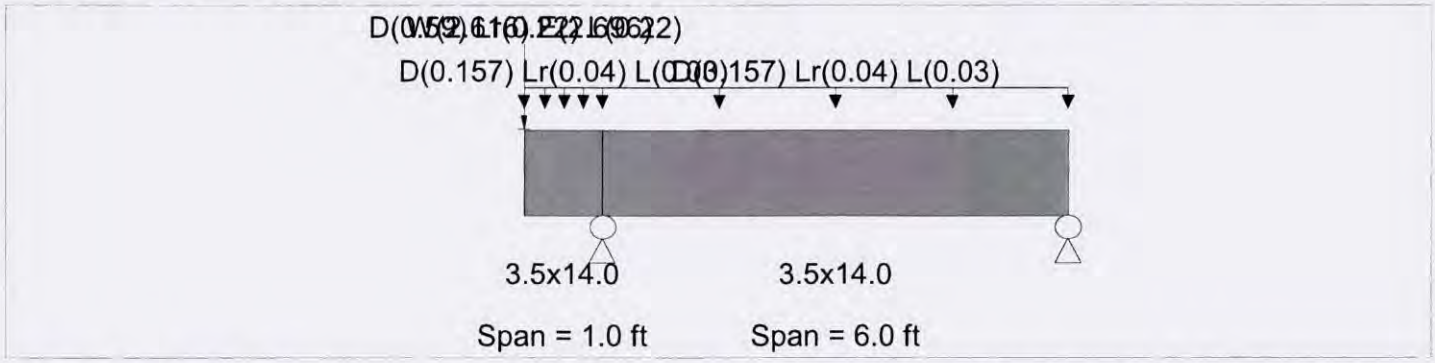
Wood Species : Structural Composite Lumber
Wood Grade : 1.5E SCL

Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	2,150.0 psi
Fb - Compr	2,150.0 psi
Fc - Prll	1,600.0 psi
Fc - Perp	750.0 psi
Fv	285.0 psi
Ft	1,000.0 psi

E : Modulus of Elasticity

Ebend- xx	1,500.0 ksi
Eminbend - xx	700.0 ksi
Density	35.0 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Load for Span Number 1
Uniform Load : D = 0.1570, Lr = 0.040, L = 0.030 , Tributary Width = 1.0 ft, (Roof Load + Wall load + Floor Lo)
Point Load : D = 0.590, Lr = 0.220, L = 0.220 k @ 0.0 ft
Point Load : W = 2.616, E = 2.696 k @ 0.0 ft, (Holdown)
Load for Span Number 2
Uniform Load : D = 0.1570, Lr = 0.040, L = 0.030 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	**0.183** : 1	Maximum Shear Stress Ratio	=	**0.409** : 1
Section used for this span		**3.5x14.0**	Section used for this span		**3.5x14.0**
fb : Actual	=	629.03 psi	fv : Actual	=	186.38 psi
FB : Allowable	=	3,440.00 psi	Fv : Allowable	=	456.00 psi
Load Combination		+1.210D+1.923E+H	Load Combination		+1.210D+1.923E+H
Location of maximum on span	=	1.000 ft	Location of maximum on span	=	1.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.010 in	Ratio =	2482
Max Upward Total Deflection	-0.009 in	Ratio =	2648

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
D Only													0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.033	0.080	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	70.16	2150.00	0.75	22.87	285.00
Length = 6.0 ft	2	0.033	0.080	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	70.16	2150.00	0.40	22.87	285.00
+D+L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.044	0.107	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	94.83	2150.00	1.00	30.52	285.00
Length = 6.0 ft	2	0.044	0.107	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	94.83	2150.00	0.50	30.52	285.00
+D+Lr+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00

Description : Beam #2

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
Length = 1.0 ft	1	0.044	0.108	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	95.35	2150.00	1.01	30.83	285.00
Length = 6.0 ft	2	0.044	0.108	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	95.35	2150.00	0.52	30.83	285.00
+D+S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.033	0.080	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	70.16	2150.00	0.75	22.87	285.00
Length = 6.0 ft	2	0.033	0.080	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	70.16	2150.00	0.40	22.87	285.00
+D+0.750Lr+0.750L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.050	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	107.55	2150.00	1.13	34.58	285.00
Length = 6.0 ft	2	0.050	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	107.55	2150.00	0.56	34.58	285.00
+D+0.750L+0.750S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.041	0.100	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.84	88.66	2150.00	0.93	28.61	285.00
Length = 6.0 ft	2	0.041	0.100	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.84	88.66	2150.00	0.47	28.61	285.00
+D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.100	0.226	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.28	344.73	3440.00	3.36	102.95	456.00
Length = 6.0 ft	2	0.100	0.226	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.28	344.73	3440.00	0.84	102.95	456.00
+D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.059	0.136	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.95	204.40	3440.00	2.03	62.02	456.00
Length = 6.0 ft	2	0.062	0.136	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.02	211.57	3440.00	0.62	62.02	456.00
+D+0.750Lr+0.750L+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.091	0.208	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.99	313.48	3440.00	3.09	94.64	456.00
Length = 6.0 ft	2	0.091	0.208	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.99	313.48	3440.00	0.89	94.64	456.00
+D+0.750Lr+0.750L-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.029	0.070	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.94	98.37	3440.00	1.04	31.90	456.00
Length = 6.0 ft	2	0.045	0.070	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.47	154.24	3440.00	0.55	31.90	456.00
+D+0.750L+0.750S+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.086	0.194	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.81	294.59	3440.00	2.90	88.67	456.00
Length = 6.0 ft	2	0.086	0.194	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.81	294.59	3440.00	0.80	88.67	456.00
+D+0.750L+0.750S-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.034	0.081	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.12	117.26	3440.00	1.21	36.95	456.00
Length = 6.0 ft	2	0.045	0.081	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.46	153.54	3440.00	0.52	36.95	456.00
+0.60D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.092	0.206	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.02	316.66	3440.00	3.06	93.80	456.00
Length = 6.0 ft	2	0.092	0.206	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.02	316.66	3440.00	0.68	93.80	456.00
+0.60D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.068	0.152	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.21	232.47	3440.00	2.26	69.24	456.00
Length = 6.0 ft	2	0.068	0.152	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.21	232.47	3440.00	0.54	69.24	456.00
+1.210D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.183	0.409	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.99	629.03	3440.00	6.09	186.38	456.00
Length = 6.0 ft	2	0.183	0.409	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.99	629.03	3440.00	1.35	186.38	456.00
+1.210D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.133	0.300	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.38	459.24	3440.00	4.47	136.85	456.00
Length = 6.0 ft	2	0.133	0.300	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.38	459.24	3440.00	1.08	136.85	456.00
+0.390D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.166	0.368	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.45	571.50	3440.00	5.48	167.62	456.00
Length = 6.0 ft	2	0.166	0.368	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.45	571.50	3440.00	1.02	167.62	456.00
+0.390D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.150	0.333	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.92	516.77	3440.00	4.95	151.66	456.00
Length = 6.0 ft	2	0.150	0.333	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.92	516.77	3440.00	0.93	151.66	456.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L+E	1	0.0097	0.000		0.0000	0.000
D+Lr-E	2	0.0108	2.782	D+L+E	-0.0005	0.067

Vertical Reactions - Unfactored

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum		4.895	0.889
D Only		1.329	0.360
L Only		0.379	0.051
Lr Only		0.420	0.080
L+Lr		0.799	0.131

Description : Beam #2

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
W Only		3.052	-0.436
-W Only		-3.052	0.436
E Only		3.145	-0.449
-E Only		-3.145	0.449
D+Lr		1.749	0.440
D+L		1.709	0.410
D+L+Lr		2.129	0.490
D+W		4.381	-0.076
D+L+W		4.761	-0.026
D+Lr+W		4.801	0.004
D+E		4.475	-0.090
D-E		-1.816	0.809
D+L+E		4.854	-0.039
D+L-E		-1.437	0.860
D+Lr+E		4.895	-0.010
D+Lr-E		-1.396	0.889

Description : Overstrength Beams

Wood Beam Design : Rim along P1

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.250 X 14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.3E SCL			
Fb - Tension	1650 psi	Fc - Prll	1400 psi	Fv	285 psi	Ebend- xx	1300 ksi	Density	35 pcf
Fb - Compr	1650 psi	Fc - Perp	680 psi	Ft	1000 psi	Eminbend - xx	600 ksi		

Applied Loads

Point: W = 2.144, E = 2.373 k @ 0.0 ft
Point: W = -0.3510, E = -0.9530 k @ 3.330 ft
Point: W = 0.3510, E = 0.9530 k @ 5.330 ft
Point: W = -2.144, E = -2.373 k @ 11.0 ft

Design Summary

Max fb/Fb Ratio = **0.272** : 1
fb : Actual : 718.84 psi at 5.353 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.366** : 1
fv : Actual : 167.08 psi at 3.337 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support					2.08	2.20	
Right Support					-2.08	-2.20	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.026 in
Upward L+Lr+S	0.000 in	Upward Total	-0.026 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	5010 >240

Wood Beam Design : Rim along P2

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.3E SCL			
Fb - Tension	1,650.0 psi	Fc - Prll	1,400.0 psi	Fv	285.0 psi	Ebend- xx	1,300.0 ksi	Density	35.0 pcf
Fb - Compr	1,650.0 psi	Fc - Perp	680.0 psi	Ft	1,000.0 psi	Eminbend - xx	600.0 ksi		

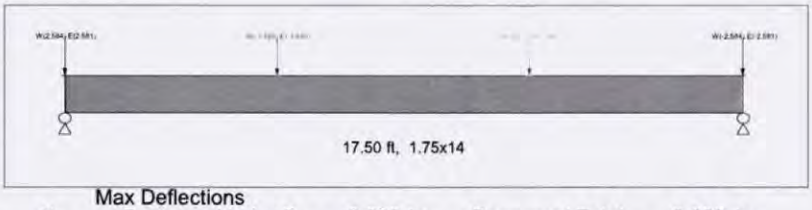
Applied Loads

Point: W = 2.584, E = 2.581 k @ 0.0 ft
Point: W = -1.925, E = -1.949 k @ 5.50 ft
Point: W = 1.925, E = 1.949 k @ 12.0 ft
Point: W = -2.584, E = -2.581 k @ 17.50 ft

Design Summary

Max fb/Fb Ratio = **0.789** : 1
fb : Actual : 2,083.06 psi at 5.483 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.411** : 1
fv : Actual : 187.51 psi at 5.542 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support					1.87	1.86	
Right Support					-1.87	-1.86	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.083 in
Upward L+Lr+S	0.000 in	Upward Total	-0.083 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	2515 >240

Wood Beam Design : Rim along P2

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade :	1.3E SCL		
Fb - Tension	1,650.0 psi	Fc - Prll	1,400.0 psi	Fv	285.0 psi	Ebend- xx	1,300.0 ksi	Density	35.0 pcf
Fb - Compr	1,650.0 psi	Fc - Perp	680.0 psi	Ft	1,000.0 psi	Eminbend - xx	600.0 ksi		

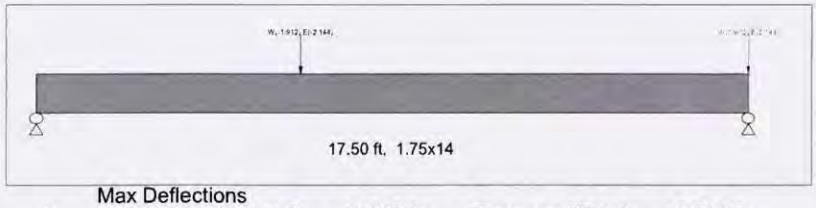
Applied Loads

Point: W = -1.912, E = -2.144 k @ 6.50 ft
Point: W = 1.912, E = 2.144 k @ 17.50 ft

Design Summary

Max fb/Fb Ratio = **1.736** : 1
fb : Actual : 4,583.00 psi at 6.533 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.452** : 1
fv : Actual : 206.27 psi at 0.000 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support					-1.20	-1.35	
Right Support					1.20	1.35	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.732 in
Upward L+Lr+S	0.000 in	Upward Total	-0.732 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	286 >240

Studs up to and Including 10' - 0" in Height

Table 2308.9.1 of the 2009 IBC lists the maximum height and spacing for wood studs which conform to the limitations of the conventional framing provisions (Section 2308.2). While the design loads and roof spans used in this project do not explicitly meet the conventional framing limitations, it is HSCGI's interpretation that Table 2308.9.1 is applicable for any stud wall with applied loads less than or equal to the worst case loading allowed by the conventional framing provisions (i.e. the loads resulting from roofs, floors, and/or walls spanning the maximum distance and carrying the maximum loads allowed by the limitations listed below).

Limitations (Summary of Section 2308.2):

1. Structure is not more than 3 stories.
2. Plate heights are not greater than 10' - 0".
3.1. Average dead load of combined roof and ceiling, exterior walls, floors and partitions does not exceed 15 psf .
3.2. Live load does not exceed 40 psf.
3.3. Ground snow load does not exceed 50 psf.
4. Wind speed does not exceed 100 mph.
5. Roof truss and rafter spans (between points of vertical supports) are not greater than 40 feet.
6. Structure does not belong to Occupancy Category IV.
7. Irregularity limitation. Limits for irregularities apply to wall bracing, not to Table 2308.9.1.
8. Structure does not fall under DSA-SS or OSHPD 1, 2 or 4.

Determination of Maximum Loads and Spans:

The conventional framing limitations, together with the maximum floor span listed in Table 2308.8(2), have been used to determine the equivalent maximum allowable loads that may be applied to wood wall studs. Below is a list of maximum loads and corresponding maximum spans allowed by section 2308.

Parameter	Roof	Floor	Wall
Dead Load	15 psf	15 psf	15 psf
Span/Height	40 feet	21 feet	10 feet

Table 2308.9.1 allows 10' - 0" tall 2x4 wall studs spaced at 16" o.c. to support one floor, roof and ceiling. Based on the spans and loads listed above, the maximum allowable dead load (DL) on a standard stud wall is as follows:

Exterior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)/2	= 300 plf
Floor	(15psf DL) x (21 foot floor span)/2	= 158 plf
Wall	(15psf DL) x (10 foot wall height)	= 150 plf
		= 608 plf

Interior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)	= 600 plf
Floor	(15psf DL) x (21 foot floor span)	= 315 plf
		= 915 plf

Wood studs exceeding the height and/or loading criteria listed above are calculated using the design criteria of IBC Chapters 16 and 23.

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Project	Village Walk		
Client	Standard Pacific Hc	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Footing Calculations

Soils Engineer

ENGEO, Inc. (San Ramon)
2010 Crow Canyon Pl., Ste. 250
San Ramon, CA 94583

Report #: 6858.200.102
Date: 04/16/2013

Foundation Design Information

Allowable Soil Pressure	=	1000 psf
Retaining Wall Design:		
Friction Factor	=	N/A
Active Pressure	=	N/A pcf
Passive Pressure	=	N/A pcf

Post-Tension Foundation Calculations (expansive soil)

Average Soil Pressure = 1,000 psf

		Center Lift	Edge Lift
Edge Moisture Variation (e_m)	=	5.10 ft	2.70 ft
Differential Soil Movement (y_m)	=	1.50 in	2.00 in

Design Rectangles
R1 = 23.00 ft x 34.00 ft

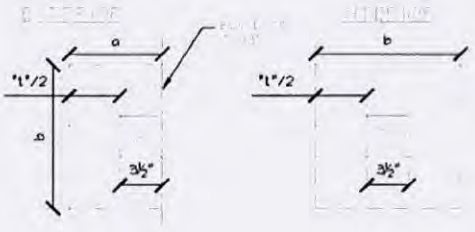
Maximum Point Load Capacity of Slab
Slab Thickness (t) = 12 in
Concrete Compressive Strength (f'c) = 4500 psi

Punching Shear Calculation

$$V_u = \phi V_n$$
$$\phi = 0.85$$
$$V_c = 4\sqrt{f_c}\, b_o t$$
$$V_{allowable} = V_u / 1.7$$

Exterior Condidtion $b_o = 2a+b$ = 34.5 in
Maximum allowable point load = 56 kips

Interior Condidtion $b_o = 4b$ = 62 in
Maximum allowable point load = 100 kips



hscgi limit 10,000# at interior
8000# at exterior

Pad Footing Calculations

Maximum Localized Bearing Pressure = 1,000 psf
Minimum Pad Footing Depth = 12 in

Footing #	Load	Minimum Size	Reinforcing
FTG#3	9000#	36" SQUARE X 12" DEEP	#4 BARS AT 8" OC
FTG#4	12250#	42" SQUARE X 18" DEEP	#5 BARS AT 8" OC

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	23.00 FT x 34.00 FT x 12.00	Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	12.00 (11.94)	Inches

Material Properties

Concrete Strength, f'_c :	4,500	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	29.0	Cubic Yards
Prestressing Tendon :	735.0	Linear Feet
Number of End Anchorages :	50	

In the LONG direction ...

Number of Slab Tendons :	10	
Slab Tendon Spacing :	2.33	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	15	
Slab Tendon Spacing :	2.29	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	4,896	3,312
Moment of Inertia ($Inch^4$) :	58,752	39,744
Section Modulus, Top and Bottom ($Inch^3$) :	9,792	6,624
Beta Distance (Feet) :	8.07	7.32

Jacking Force : 33.05 KIPS

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.94) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	15	10
Spacing of Tendons (FT)	2.29	2.33
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	356.8	223.7
Beta Distance Effective Prestress Force (K)	369.5	247.9
Minimum Effective Prestress (PSI)	73	68
Beta Distance Effective Prestress (PSI)	75	75

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction 7.59 FT-K/FT
Maximum Moment, Long Direction 6.90 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.241	-0.212	Actual Stress	0.392	0.362

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	58,752	39,744
Required Moment of Inertia ($Inch^4$)	22,778	20,707
Required Moment of Inertia controlled by	Width	Length

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 1.81 K/FT
Maximum Shear, Long Direction 1.36 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	13	9

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Geotechnical Report : Engeo
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	195.4	130.3
0.5 Moment (FT-K)	128.9	79.3

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Long Direction		Compression in Top Fiber (KSI) Short Direction	Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.025	-0.027	Actual Stress	0.176	0.176

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	58,752	39,744
Required Moment of Inertia ($Inch^4$)	14,529	14,651
Required Moment of Inertia controlled by	Width	Length

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.34 K/FT
Maximum Shear, Long Direction	1.38 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	9	10

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	195.4	130.3
0.5 Moment (FT-K)	41.1	28.1

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	4,500.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R3 (23x34)

Rectangle Geometry : 23.00 FT x 34.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	65.00 PSI	60.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	33	0	22	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load : 40.00 PSF
Total Perimeter Load : 1,250.00 PLF
Smallest Load Intensity : 500.00 PLF

Stiffness Coefficients

Center Lift : 480
Edge Lift : 960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P1 **2nd Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Additional Width	0	1.5	ft
Avg. Roof Ht abv Plate	5	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.63	15.63	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	21.5	21.5	ft
Pressure @ Elevation	15.84	15.84	psf
Wall Load	1231	106	#
Mean Roof Height (h)	21.5	21.5	
Roof Area	88	6	ft^2
Pressure @ Elevation	8.29	8.29	psf
Roof Load	726	50	#
Add'l Load (Balloon frm)	=	430	#
Total Wind Load	=	**2542**	**#**
Wind Load w/o Balloon	=	**2112**	

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	19.	ft^2
Building Dead Load	30	30	psf
V	=	0.1582	W
Rho	=	1.30	
Diaphragm Load	2484	117	#
Add'l Load (Balloon frm)	=		#
Total Seismic Load	=	**2601**	**#**
1.25 Total Load*	=	**3252**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	10.67	ft
Net Length of Walls	=	8.67	ft
Maximum H:W Ratio	=	1.29	
Seismic H:W Adjustment	=	1.00	
		Shear @ T&B of wall	
Wind Wall Shear	=	**293**	**plf** **238 plf**
Seismic Wall Shear	=	**300**	**plf** **244 plf**
1.25 Seismic Shear*	=	**375**	**plf**

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2484#	155#	
Diaphgram Shear	108 plf (E)	7 plf (W)	
Total Diaphragm Length	=	23	ft
Total Diaphragm Shear	=	113 plf (E)	
Shear for drag & collectors*	=	141 plf (E)	

USE SHEAR WALL TYPE **3**

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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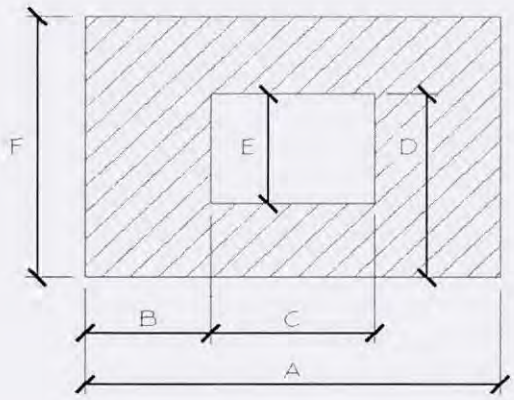
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P1 **2nd Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 10.67 ft.
Dist from left end of wall to 1st opening	B	= 3.50 ft.
Opening Width	C	= 2.00 ft.
Net Length		= 8.67 ft.
Opening Header Height	D	= 8.00 ft.
Opening Height	E	= 4.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	2542#
Seismic Load (E)	2601#
DL Trib Length Roof	5 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	238 plf	244 plf
Piers	293 plf	300 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 291 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-226#	-369#
Left Pier	1319#	1350#
Right Pier	1319#	1350#
Bottom	953#	975#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	1881# (E)	2 corner
L King	953# (E)	1
R King	953# (E)	1
Right End	1881# (E)	2

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P2 **2nd Floor; Front; Left to Right**
Elev A

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	4	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.63	15.63	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	21.5	21.5	ft
Pressure @ Elevation	15.84	15.84	psf
Wall Load	1231	0	#
Mean Roof Height (h)	21.5	21.5	
Roof Area	70	0	ft^2
Pressure @ Elevation	8.29	8.29	psf
Roof Load	581	0	#
Add'l Load (Balloon frm)	=	313	#

Total Wind Load	=	**2124 #**
Wind Load w/o Balloon l	=	**1811**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	10.00 ft
Maximum H:W Ratio	=	0.90
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**212 plf**
Seismic Wall Shear	=	**248 plf**
1.25 Seismic Shear*	=	**310 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1582	W
Rho	=	1.30	
Diaphragm Load	2484	0	#
Add'l Load (Balloon frm)	=		#

Total Seismic Load	=	**2484 #**
1.25 Total Load*	=	**3105 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2484#	0#	
Diaphgram Shear	108 plf (E)	0 plf (E)	

Total Diaphragm Length	=	23 ft
Total Diaphragm Shear	=	108 plf (E)
Shear for drag & collectors*	=	135 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
10.00 ft.							2011# (E)	2011# (E)	2	2

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Lateral Analysis Calculations

P2 **2nd Floor; Front; Left to Right**
Elev B&C

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.63	15.63	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	21.5	21.5	ft
Pressure @ Elevation	15.84	15.84	psf
Wall Load	1231	0	#
Mean Roof Height (h)	21.5	21.5	
Roof Area	88	0	ft^2
Pressure @ Elevation	8.29	8.29	psf
Roof Load	726	0	#
Add'l Load (Balloon frm)	=	430	#

Total Wind Load	=	**2386 #**
Wind Load w/o Balloon 1	=	**1957**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	11.00 ft
Maximum H:W Ratio	=	1.64
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**217 plf**
Seismic Wall Shear	=	**226 plf**
1.25 Seismic Shear*	=	**282 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1582	W
Rho	=	1.30	
Diaphragm Load	2484	0	#
Add'l Load (Balloon frm)	=		#

Total Seismic Load	=	**2484 #**
1.25 Total Load*	=	**3105 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2484#	0#	
Diaphgram Shear	108 plf (E)	0 plf (E)	

Total Diaphragm Length	=	23 ft
Total Diaphragm Shear	=	108 plf (E)
Shear for drag & collectors*	=	135 plf (E)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
5.50 ft.	2.0 ft.		663#	0.00			2520# (E)	1857# (E)	2	2
5.50 ft.	2.0 ft.				663#	5.50	1857# (E)	2520# (E)	2	2

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Lateral Analysis Calculations

P3 **2nd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.25	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	14.57	14.57	psf
Above Plate:			
Wall Area Above Plate	59	0	ft^2
Average Elevation	21.5	21.5	ft
Pressure @ Elevation	14.78	14.78	psf
Wall Load	1626	0	#
Mean Roof Height (h)	21.5	21.5	
Roof Area	-22	0	ft^2
Pressure @ Elevation	9.45	9.45	psf
Roof Load	-204	0	#
Additional Load	=		#

Total Wind Load = **1422 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**178 plf**
Seismic Wall Shear	=	**239 plf**
1.25 Seismic Shear*	=	**299 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Length of Diaphragm	35.0	35.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1582	W
Rho	=	1.00	
Diaphragm Load	1911	0	#
Additional Load	=		#

Total Seismic Load = **1911 #**
1.25 Total Load* = **2388 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	35.0	35.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1911#	0#	
Diaphgram Shear	55 plf (E)	0 plf (E)	

Total Diaphragm Length	=	35 ft
Total Diaphragm Shear	=	55 plf (E)
Shear for drag & collectors*	=	68 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
8.00 ft.	12.0 ft.						1517# (E)	1517# (E)	1	1

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Lateral Analysis Calculations

P4 **2nd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.25	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	14.57	14.57	psf
Above Plate:			
Wall Area Above Plate	59	0	ft^2
Average Elevation	21.5	21.5	ft
Pressure @ Elevation	14.78	14.78	psf
Wall Load	1626	0	#
Mean Roof Height (h)	21.5	21.5	
Roof Area	-22	0	ft^2
Pressure @ Elevation	9.45	9.45	psf
Roof Load	-204	0	#
Additional Load	=		#

Total Wind Load = **1422 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	7.00 ft
Maximum H:W Ratio	=	1.29
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**203 plf**
Seismic Wall Shear	=	**273 plf**
1.25 Seismic Shear*	=	**341 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Length of Diaphragm	35.0	35.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1582	W
Rho	=	1.00	
Diaphragm Load	1911	0	#
Additional Load	=		#

Total Seismic Load = **1911 #**
1.25 Total Load* = **2388 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	35.0	35.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1911#	0#	
Diaphgram Shear	55 plf (E)	0 plf (E)	

Total Diaphragm Length	=	35 ft
Total Diaphragm Shear	=	55 plf (E)
Shear for drag & collectors*	=	68 plf (E)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
7.00 ft.	2.0 ft.						2233# (E)	2233# (E)	2	2

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Lateral Analysis Calculations

P5 **1st Floor; Rear; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	0	ft
Additional Width	0	1.5	ft
Avg. Roof Ht abv Plate	5	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	34	9	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	904	226	#
Mean Roof Height (h)	9.5	9.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.48	9.48	psf
Roof Load	0	0	#
Add'l Load (From P1)	=	2112	#

Total Wind Load = **3241 #**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	10.75 ft
Maximum H:W Ratio	=	2.25
Seismic H:W Adjustment	=	0.89
Wind Wall Shear	=	**302 plf**
Seismic Wall Shear	=	**284 plf**
1.25 Seismic Shear*	=	**355 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	0	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	19.	ft^2
Building Dead Load	30	30	psf
V	=	0.0742	W
Rho	=	1.30	
Diaphragm Load	399	55	#
Add'l Load (From P1)	=	2601	#

Total Seismic Load = **3055 #**

1.25 Total Load* = **3819 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	904#	226#	
Diaphgram Shear	39 plf (W)	10 plf (W)	

Total Diaphragm Length	=	23 ft
Total Diaphragm Shear	=	49 plf (W)
Shear for drag & collectors*	=	49 plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
6.75 ft.		6.0 ft.					2515# (W)	2515# (W)	9	9
4.00 ft.							2964# (W)	2964# (W)	9	17 corner

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Lateral Analysis Calculations

P6 **1st Floor; Interior; Left to Right**
Stair wall

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	16	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	34	46	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	904	1205	#
Mean Roof Height (h)	9.5	9.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.48	9.48	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **2109 #**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	16	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0742	W
Rho	=	1.30	
Diaphragm Load	399	532	#
Additional Load	=		#

Total Seismic Load = **931 #**
1.25 Total Load* = **1164 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	6.00 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**351 plf**
Seismic Wall Shear	=	**155 plf**
1.25 Seismic Shear*	=	**194 plf**

USE SHEAR WALL TYPE **3**

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	904#	1205#	
Diaphgram Shear	39 plf (W)	52 plf (W)	

Total Diaphragm Length	=	23 ft
Total Diaphragm Shear	=	92 plf (W)
Shear for drag & collectors*	=	92 plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
6.00 ft.		6.0 ft.					3077# (W)	3077# (W)	**17 interior**	**17 interior**

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Lateral Analysis Calculations

P7 **1st Floor; Front; Left to Right**
Front wall of PWDR

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Additional Width	0	7	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	46	40	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1205	1054	#
Mean Roof Height (h)	9.5	9.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.48	9.48	psf
Roof Load	0	0	#
Add'l Load (From P2)	=	1957	#

Total Wind Load = **4216 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**527 plf**
Seismic Wall Shear	=	**521 plf**
1.25 Seismic Shear*	=	**651 plf**

USE SHEAR WALL TYPE **12**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	397.	ft^2
Building Dead Load	30	30	psf
V	=	0.0742	W
Rho	=	1.30	
Diaphragm Load	532	1148	#
Add'l Load (From P2)	=	2484	#
Total Seismic Load	=	**4165**	#
1.25 Total Load*	=	**5206**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	2484#	
Total Load in Diaphragm	1205#	3632#	
Diaphgram Shear	52 plf	(W) 158 plf	(E)
Total Diaphragm Length	=	23	ft
Total Diaphragm Shear	=	183 plf	(W)
Shear for drag & collectors*	=	226 plf	(E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
8.00 ft.		6.0 ft.					4633# (E)	4633# (E)	**19**	**19 corner**

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Lateral Analysis Calculations

P8 **1st Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	13.78	13.78	psf
Above Plate:			
Wall Area Above Plate	66	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	13.78	13.78	psf
Wall Load	1616	0	#
Mean Roof Height (h)	9.5	9.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.17	10.17	psf
Roof Load	0	0	#
Add'l Load (From P3)	=	1422	#

Total Wind Load = **3038 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**380 plf**
Seismic Wall Shear	=	**351 plf**
1.25 Seismic Shear*	=	**438 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	23		0	ft
Length of Diaphragm	35.0		35.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0742	W
Rho	=		1.00	
Diaphragm Load	896		0	#
Add'l Load (From P3)	=		1911	#

Total Seismic Load = **2806 #**

1.25 Total Load* = **3508 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	35.0		35.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1616#		0#	
Diaphgram Shear	46 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		35	ft
Total Diaphragm Shear	=		46 plf	(W)
Shear for drag & collectors*	=		46 plf	(W)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
8.00 ft.		1.0 ft.	1517#	0.00	1517#	8.00	4868# (W)	4868# (W)	**19**	**19**

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Lateral Analysis Calculations

P9 **1st Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	13.78	13.78	psf
Above Plate:			
Wall Area Above Plate	66	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	13.78	13.78	psf
Wall Load	1616	0	#
Mean Roof Height (h)	9.5	9.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.17	10.17	psf
Roof Load	0	0	#
Add'l Load (From P4)	=	1422	#

Total Wind Load = **3038 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	7.00 ft
Maximum H:W Ratio	=	1.29
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**434 plf**
Seismic Wall Shear	=	**377 plf**
1.25 Seismic Shear*	=	**472 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	23		0	ft
Length of Diaphragm	35.5		35.5	ft
Additional Diaphragm Area	-80.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0742	W
Rho	=		1.00	
Diaphragm Load	730		0	#
Add'l Load (From P4)	=		1911	#
Total Seismic Load	=		**2641**	#
1.25 Total Load*	=		**3301**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	35.5		35.5	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1616#		0#	
Diaphgram Shear	46 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		36	ft
Total Diaphragm Shear	=		46 plf	(W)
Shear for drag & collectors*	=		46 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
7.00 ft.		1.0 ft.	2233#	0.00	2233#	7.00	6180# (W)	6180# (W)	**19**	**19**

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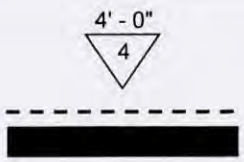
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Shear Wall Table

Type	*Wind*	*Seismic*	*Description*
1	254.8	182	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
2	350	266	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 4" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
3	480.2	343	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X OR (2) 2X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
4	600	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. MAX. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
5	627.2	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
12	754.6	539	15/32" APA RATED SHEATHING ONE FACE WITH 10d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
7	960.4	686	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
8	1254.4	896	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.

NOTES:

1. Shearwalls are designated on the plans by a triangle symbol surrounding the shearwall type.
2. Shearwall length is indicated above the shearwall callout and is shown graphically with shading & a dashed line.
3. See anchor bolt calculations for required anchor spacing.



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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Simpson Holdown Table

	Wind		Seismic		
Type	Typ	End	Typ	End	**Description**
NONE	500	500	500	500	Below limit
1	1705	1705	1705	1705	CS16 STRAP, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2	3410	3410	3410	3410	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
3	4585	4585	4585	4585	CMSTC16 STRAP, 23" MINIMUM END SPAN, CLEAR SPAN VARIES.
4	5860	5860	5860	5860	MSTC66 STRAP, 18" MAXIMUM CLEAR SPAN.
1A	942	942	942	942	CS16 STRAP, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
1B	1884	1884	1884	1884	(2) CS16 STRAPS, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
2A	3300	3300	3300	3300	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2B	4950	4950	4950	4950	(3) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
9	4755	0	3400	0	STHD10 HOLDOWN TO MINIMUM 4X POST.
17	4565	4470	3740	3325	HDU4 HOLDOWN TO MINIMUM 4X POST W/ SSTB24/24
19	6970	6970	6970	6970	HDU8 HOLDOWN TO MINIMUM 4X POST W/ SSTB28/34 ANCHOR.
19A	7870	7870	7870	7315	HDU8 HOLDOWN TO MINIMUM 4X6 POST W/ SSTB28/34 ANCHOR.
20	9535	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X6 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
20A	10470	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X8 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
21	14390	14390	14390	14390	HDU14 HOLDOWN TO MINIMUM 4X8 POST W/ 1" ANCHOR ROD.
16	19070	19070	19070	19070	HD19 HOLDOWN TO MINIMUM 4X10 OR 6X6 POST W/ 1 1/4" ANCHOR ROD.

NOTE: Holdowns are designated on the plans by a diamond symbol surrounding the holdown type, e.g.: 

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

CALCULATIONS FOR ANCHOR BOLTS & MASA* ANCHORS AT SHEARWALLS

*MASA anchor values per ESR-2555, Issued November 2010

Allowable loads per NDS/hardware values (1.6 load duration factor):

Condition	1/2" ϕ A.B.	MASA
2X sill plate; sw capacity ≤ 350 plf	650#	1515#
2X sill plate; sw capacity b/t 350 & 600 plf	325#	758#
3X sill plate	770#	1215#

Allowable Shear Loads per ACI 318-08 Appendix D (assuming uncracked concrete at service loads):

		1/2" ϕ A.B.		MASA	
Wind:	$(F^*V_{nx}) / 1.6 =$	1064#	Wind:	2X sill = 1388#	
				3X sill = 1109#	
Seismic:	$(F^*V_{nx}) * 0.7 =$	1192#	Seismic:	2X sill = 1138#	
				3X sill = 931#	

Seismic (in SDC C, D, E and F):

$(0.75^*F^*_{Vnx}) * 0.7 =$ 894#

		1/2" AB	MASA
SW 1 (2x sill)	NDS	49.0" oc	71.4" oc
255plf (W)	ACI (W)	50.1" oc	65.3" oc
182plf (E)	ACI (E)	58.9" oc	75.0" oc
	per plan	**48" oc**	**48" oc**

		1/2" AB	MASA
SW 2 (2x sill)	NDS	35.7" oc	51.9" oc
350plf (W)	ACI (W)	36.5" oc	47.6" oc
266plf (E)	ACI (E)	40.3" oc	51.3" oc
	per plan	**35" oc**	**35" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW3	NDS	13.0" oc	18.9" oc	30.8" oc	30.4" oc
480plf (W)	ACI (W)	26.6" oc	34.7" oc	26.6" oc	27.7" oc
343plf (E)	ACI (E)	31.3" oc	39.8" oc	31.3" oc	32.6" oc
	per plan	**12" oc**	**12" oc**	**20" oc**	**20" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW4	NDS	10.4" oc	15.2" oc	24.6" oc	24.3" oc
600plf (W)	ACI (W)	21.3" oc	27.8" oc	21.3" oc	22.2" oc
448plf (E)	ACI (E)	23.9" oc	30.5" oc	23.9" oc	24.9" oc
	per plan	**10" oc**	**10" oc**	**16" oc**	**16" oc**

		1/2" AB	MASA
SW 5 (3x sill)	NDS	23.6" oc	23.2" oc
627plf (W)	ACI (W)	20.4" oc	21.2" oc
448plf (E)	ACI (E)	23.9" oc	24.9" oc
	per plan	**20" oc**	**20" oc**

		1/2" AB	MASA
SW 7 (3x sill)	NDS	15.4" oc	15.2" oc
960plf (W)	ACI (W)	13.3" oc	13.9" oc
686plf (E)	ACI (E)	15.6" oc	16.3" oc
	per plan	**13" oc**	**13" oc**

		1/2" AB	MASA
SW 8 (3x sill)	NDS	11.8" oc	11.6" oc
1254plf (W)	ACI (W)	10.2" oc	10.6" oc
896plf (E)	ACI (E)	12.0" oc	12.5" oc
	per plan	**10" oc**	**10" oc**

		1/2" AB	MASA
SW 12 (3x sill)	NDS	19.6" oc	19.3" oc
755plf (W)	ACI (W)	16.9" oc	17.6" oc
539plf (E)	ACI (E)	19.9" oc	20.7" oc
	per plan	**12" oc**	**12" oc**

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CONSULTING GROUP, INC.

2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
www.hscgi.com

Structural
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Structural Calculation Package

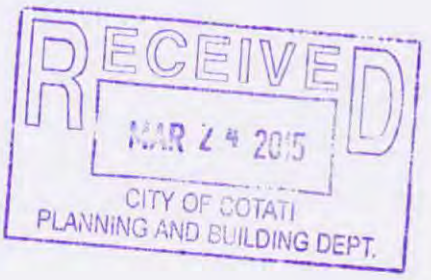
for

Standard Pacific Homes - Bay

Village Walk

Cotati, California

Plan # 5



Job # HS13068

2010 CBC



Date 7/8/2013

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Project	Village Walk		
Client	Standard Pacific Homes - B:	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Structural Calculation Package

Client Information

Standard Pacific Homes - Bay
3825 Hopyard Road, Suite 195
Pleasanton, CA 94588

Project Information

Village Walk
Cotati, California
Plan No. 5

Loading Information

Roof Loads

Roofing (Tile)	=	10.0 psf
Sheathing	=	1.7 psf
Framing	=	2.3 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	1.5 psf
Wall (Seismic only)	=	9.0 psf
Total DL	=	21.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	20.0 psf

Floor Loads

Flooring	=	1.5 psf
Sheathing	=	2.5 psf
Framing	=	2.5 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	3.0 psf
Wall (Seismic only)	=	15.0 psf
Total DL	=	15.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	40.0 psf

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Seismic Design Per IBC Section 1613

Building Information

R	=	6.50	ASCE Table 12.2-1
Occupancy Cat.	=	II	IBC Sect. 1604.5
Number of Stories	=	2	
Importance Factor	=	1.0	
Max Level Height	=	19.2 ft	
Design Approach		Normal/Equivalent	

Site Information

S_s	=	1.615	IBC Sect. 1613.5.1
S_1	=	0.634	IBC Sect. 1613.5.1
Site Class	=	D	
S_s	=	1.615	Used For Design
S_1	=	0.634	Used For Design

Seismic Loads: ASCE 7 Section 12.8 Equivalent Lateral Force Procedure

Short Period Response

F_a	=	1.000	IBC 1613.5.3
$S_{MS} = F_a S_s$	=	1.615	IBC Eqn. 16-36
$S_{DS} = (^2/_3) S_{MS}$	=	1.077	IBC Eqn. 16-38
SDC per S_{DS}	=	D	IBC Table 1613.5.6(1)

1-Second Period Response

F_v	=	1.500	IBC 1613.5.3
$S_{M1} = F_v S_1$	=	0.951	IBC Eqn. 16-37
$S_{D1} = (^2/_3) S_{M1}$	=	0.634	IBC Eqn. 16-39
SDC per S_{D1}	=	D	IBC Table 1613.5.6(2)

Seismic Design Category

Period, T	=	0.18 s, ASCE 7 12.8.2.1
0.8 Ts	=	0.47 s, ASCE 7 11.4.5
SDC Required	=	D IBC Sect. 1613.5.6
SDC Used	=	**D**

ASD Seismic Response Coefficient

$$C_s = \frac{I(S_{DS})}{R}$$

Seismic Design Factors

Overstrength Factor	=	2.5	Table 12.2-1, Footnote g
Dead Load Reduction:			
(0.6 - 0.14 Sds)D	=	0.449 D	ASCE Sect 12.4.3.2
Rho, left to right	=	1.0	ASCE Sect 12.3.4
Rho, front to back	=	1.0	

C_s per ASCE Eqn. 12.8-2

C_s	=	0.1656	ASCE Eqn. 12.8-2
C_s (upper limit)	=	0.5317	ASCE Eqn. 12.8-3
C_s (lower limit)	=	0.0100	ASCE Eqn. 12.8-5
C_s (alt low limit)	=	0.0488	ASCE Eqn. 12.8-6
C_s	=	0.1656	

Base Shear, V = 0.1159 W
(Includes 0.7 factor from ASD Basic LC)

Vertical Shear Distribution

Story	h (ft)	Area (sq ft)	DL (psf)	w_x (lb)	w_x x h	C_{vx}	C_{sx}*
1	9	541	30	16230	146070	0.3191	0.0740
2	19.2	541	30	16230	311616	0.6809	0.1579
Sum:		1082		32460	457686		

*Derived equivalent shear ratio per story: $F_x = C_{sx} w_x$
where: $C_{sx} = C_{vx} C_s (W/w_x)$

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (V)	85 mph	(3-second gust)
Importance Factor (I)	1.00	ASCE 7 - Table 6-1
Exposure Category	C	ASCE 7 - Section 6.5.6.3;
Directionality Factor (K_d)	0.85	ASCE 7 - Table 6-4
Gust Factor (G)	0.85	ASCE 7 - Section 6.5.8.1

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\, K_z\, K_{zt}\, K_d\, V^2\, I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects — Hill Type: None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	22.20 ft	Velocity Pressure (q_h) for MWFRS	14.43 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.84
min L/B (Front to Back)	1.19
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.46

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C: 14.43 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
9.0 ft	-1.02	17.37	-1.25	20.60
15.0 ft	-0.95	16.24	-1.09	18.34
19.2 ft	-0.91	15.69	-1.02	17.24
22.0 ft	-0.89	15.39	-0.97	16.64

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-1.17	
Int. Pressure Coeff. (Cpi)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-12 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	1 psf	Available to offset overturning from wind

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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Beam Specifications

BEAM #	SIZE	GRADE	LOCATION
Beam #1	3 1/2"x14"	1.5E SCL	Beam over garage
Beam #2	5 1/4"x18"	2.0E SCL	Garage Header

Header Specifications

First Floor Walls

Length	Size	Grade
4'-0"	4x8	#2 D.F.
6'-0"	4x10	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Second Floor Walls

Length	Size	Grade
4'-0"	4x6	#2 D.F.
6'-0"	4x8	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Description : Headers Unit 5

Wood Beam Design : 4 ft Header Upper Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

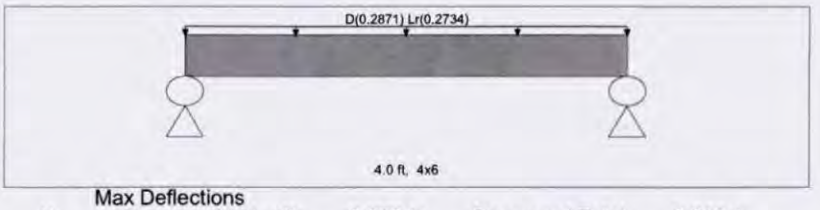
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 13.670 ft

Design Summary

Max fb/Fb Ratio = **0.652** : 1
fb : Actual : 762.29 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.375** : 1
fv : Actual : 67.55 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.57		0.55				
Right Support	0.57		0.55				



Max Deflections

Downward L+Lr+S	0.020 in	Downward Total	0.042 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2353 >360	Total Defl Ratio	1148 >240

Wood Beam Design : 6 ft Header Upper Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

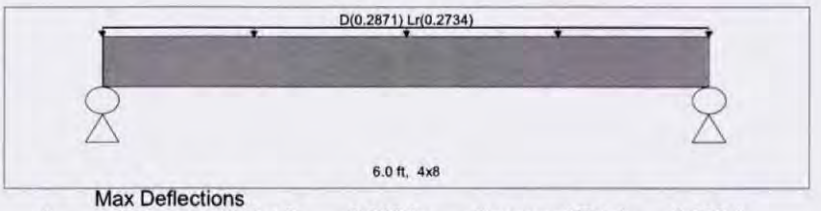
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 13.670 ft

Design Summary

Max fb/Fb Ratio = **0.844** : 1
fb : Actual : 987.08 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.442** : 1
fv : Actual : 79.51 psi at 5.400 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.86		0.82				
Right Support	0.86		0.82				



Max Deflections

Downward L+Lr+S	0.045 in	Downward Total	0.092 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1597 >360	Total Defl Ratio	779 >240

Wood Beam Design : 4 ft Header lower Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

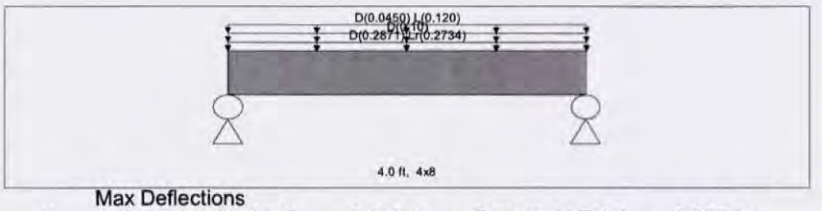
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 13.670 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.486** : 1
fb : Actual : 569.15 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.334** : 1
fv : Actual : 60.18 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.86	0.24	0.55				
Right Support	0.86	0.24	0.55				



Max Deflections

Downward L+Lr+S	0.013 in	Downward Total	0.027 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3747 >480	Total Defl Ratio	1785 >360

Wood Beam Design : 6ft Header lower Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

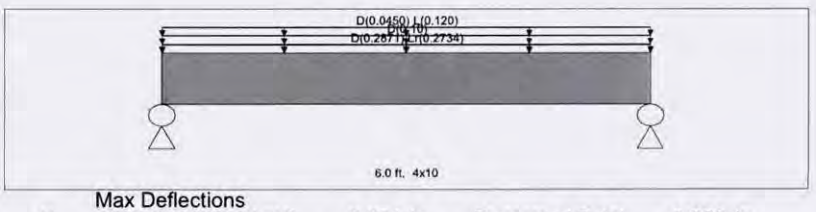
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 13.670 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.728** : 1
fb : Actual : 786.68 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.419** : 1
fv : Actual : 75.46 psi at 5.240 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.30	0.36	0.82				
Right Support	1.30	0.36	0.82				



Max Deflections

Downward L+Lr+S	0.031 in	Downward Total	0.066 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2305 >480	Total Defl Ratio	1098 >360

Wood Beam Design : Porch Header

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber				Wood Grade : 1.5E SCL				
Fb - Tension	2150 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1500 ksi	Density	35 pcf
Fb - Compr	2150 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	700 ksi		

Applied Loads

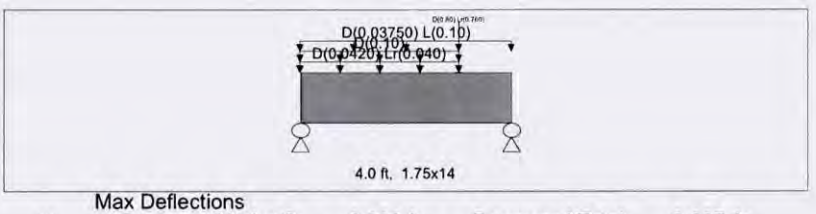
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 3.0 ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 0.0 to 3.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 2.50 ft
Point: D = 0.80, Lr = 0.760 k @ 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.140** : 1
fb : Actual : 300.38 psi at 3.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.120** : 1
fv : Actual : 34.28 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.54	0.20	0.27				
Right Support	0.83	0.20	0.62				



Max Deflections

Downward L+Lr+S	0.003 in	Downward Total	0.007 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	14421 >480	Total Defl Ratio	6857 >360

Wood Beam Design : Header @ rear wall under GT @ upper floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

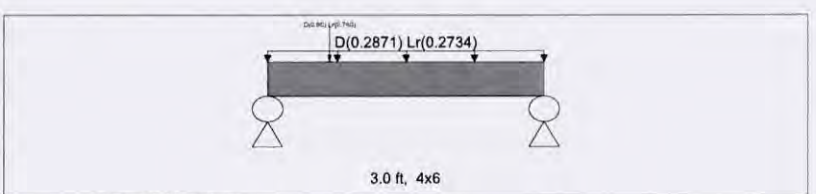
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 13.670 ft
Point: D = 0.80, Lr = 0.760 k @ 0.670 ft

Design Summary

Max fb/Fb Ratio = **0.733** : 1
fb : Actual : 857.82 psi at 0.880 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.779** : 1
fv : Actual : 140.27 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.05		1.00				
Right Support	0.61		0.58				



Max Deflections

Downward L+Lr+S	0.012 in	Downward Total	0.026 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2881 >480	Total Defl Ratio	1404 >360

Description : Beams Unit 5 (BEam #1 & 2)

Wood Beam Design : Beams Unit 5 (BEam #1 & 2)

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

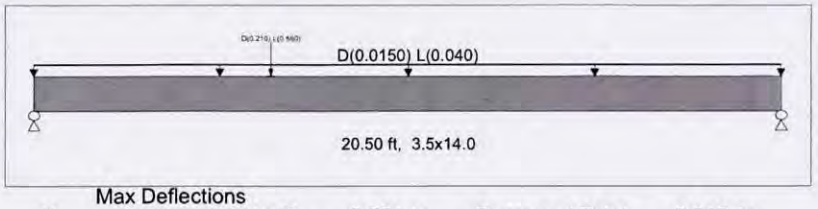
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Point: D = 0.210, L = 0.560 k @ 6.50 ft

Design Summary

Max fb/Fb Ratio = **0.289** : 1
fb : Actual : 621.15 psi at 6.560 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.110** : 1
fv : Actual : 31.40 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.30	0.79					
Right Support	0.22	0.59					



Max Deflections

Downward L+Lr+S	0.254 in	Downward Total	0.349 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	969 >480	Total Defl Ratio	705 >360

Wood Beam Design : Beam #2

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x18.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 2.0E SCL			
Fb - Tension	2,775.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	2,000.0 ksi	Density	35.0 pcf
Fb - Compr	2,775.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	925.0 ksi		

Applied Loads

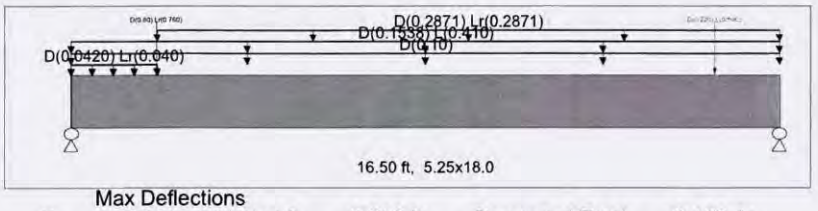
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 2.0 ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 10.250 ft
Unif Load: D = 0.0210, Lr = 0.0210 k/ft, 2.0 to 16.50 ft, Trib= 13.670 ft
Point: D = 0.80, Lr = 0.760 k @ 2.0 ft
Point: D = 0.220, L = 0.590 k @ 15.0 ft

Design Summary

Max fb/Fb Ratio = **0.574** : 1
fb : Actual : 1,592.98 psi at 8.195 ft in Span # 1
Fb : Allowable : 2,775.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.462** : 1
fv : Actual : 131.59 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	4.72	3.44	2.57				
Right Support	4.73	3.92	2.43				



Max Deflections

Downward L+Lr+S	0.240 in	Downward Total	0.426 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	825 >480	Total Defl Ratio	465 >360

Studs up to and Including 10' - 0" in Height

Table 2308.9.1 of the 2009 IBC lists the maximum height and spacing for wood studs which conform to the limitations of the conventional framing provisions (Section 2308.2). While the design loads and roof spans used in this project do not explicitly meet the conventional framing limitations, it is HSCGI's interpretation that Table 2308.9.1 is applicable for any stud wall with applied loads less than or equal to the worst case loading allowed by the conventional framing provisions (i.e. the loads resulting from roofs, floors, and/or walls spanning the maximum distance and carrying the maximum loads allowed by the limitations listed below).

Limitations (Summary of Section 2308.2):

1. Structure is not more than 3 stories.
2. Plate heights are not greater than 10' - 0".
3.1. Average dead load of combined roof and ceiling, exterior walls, floors and partitions does not exceed 15 psf .
3.2. Live load does not exceed 40 psf.
3.3. Ground snow load does not exceed 50 psf.
4. Wind speed does not exceed 100 mph.
5. Roof truss and rafter spans (between points of vertical supports) are not greater than 40 feet.
6. Structure does not belong to Occupancy Category IV.
7. Irregularity limitation. Limits for irregularities apply to wall bracing, not to Table 2308.9.1.
8. Structure does not fall under DSA-SS or OSHPD 1, 2 or 4.

Determination of Maximum Loads and Spans:

The conventional framing limitations, together with the maximum floor span listed in Table 2308.8(2), have been used to determine the equivalent maximum allowable loads that may be applied to wood wall studs. Below is a list of maximum loads and corresponding maximum spans allowed by section 2308.

Parameter	Roof	Floor	Wall
Dead Load	15 psf	15 psf	15 psf
Span/Height	40 feet	21 feet	10 feet

Table 2308.9.1 allows 10' - 0" tall 2x4 wall studs spaced at 16" o.c. to support one floor, roof and ceiling. Based on the spans and loads listed above, the maximum allowable dead load (DL) on a standard stud wall is as follows:

Exterior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)/2	= 300 plf
Floor	(15psf DL) x (21 foot floor span)/2	= 158 plf
Wall	(15psf DL) x (10 foot wall height)	= 150 plf
		= 608 plf

Interior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)	= 600 plf
Floor	(15psf DL) x (21 foot floor span)	= 315 plf
		= 915 plf

Wood studs exceeding the height and/or loading criteria listed above are calculated using the design criteria of IBC Chapters 16 and 23.

harris & sloan
CONSULTING GROUP, INC.

Project	Village Walk		
Client	Standard Pacific Home	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Stud Calculations Per 2005 NDS

STUD/POST		**Stud/Post Description**			**Stud/Post Description**		
Height	ft		**19.20**			**9.00**	
Depth/Width (d)	in		5.50			5.50	
Thickness	in		3.00			3.00	
Grade			DF Stud			DF Stud	
O.C. Spacing	in		16.00			16.00	
Repetitive Factor			NDS Repetitive Factor			NDS Repetitive Factor	
Location			exterior - zone 5			interior	
LOADS							
AXIAL LOAD - DL	plf	0.00	0.00	0.00	0.00	0.00	0.00
AXIAL LOAD - LL	plf	0.00	0.00	0.00	0.00	0.00	0.00
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
WIND LOAD (C&C)	psf	5.00	17.24	12.93	5.00	5.00	3.75
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.15	1.15	1.15
PROPERTIES							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	510.0	510.0	510.0
Fb (Adjusted)	psi	805.0	805.0	805.0	805.0	805.0	805.0
Fcll (Adjusted)	psi	850.0	850.0	850.0	850.0	850.0	850.0
COMPRESSION		DL+LL	DL+W	DL+0.75(LL+W)	DL+LL	DL+W	DL+0.75(LL+W)
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		41.9			19.6		
F_{cE}		239	239	239	1087	1087	1087
F*c	psi	978	1360	1360	978	1360	1360
F_{cE}/Fc^*		0.24	0.18	0.18	1.11	0.80	0.80
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.23	0.17	0.17	0.73	0.61	0.61
Fc'	psi	225	230	230	710	829	829
fc	psi	0	0	0	0	0	0
Stress Ratio		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
BENDING							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	3686.4	12713	9535	810	810	608
Fb'	psi	926	1288	1288	926	1288	1288
fb	psi	244	841	630	54	54	40
Stress Ratio		**0.2633**	**0.6526**	**0.4894**	**0.0578**	**0.0416**	**0.0312**
COMBINED STRESSES							
(fc/F'c)^2		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
fb/Fb'(1-(fc/Fce)		0.2633	0.6526	0.4894	0.0578	0.0416	0.0312
Combined Stress Ratio		**0.2633**	**0.6526**	**0.4894**	**0.0578**	**0.0416**	**0.0312**
DEFLECTION							
Deflection	in	0.350	1.207	0.905	0.017	0.017	0.013
0.7 Deflection	in		0.845	0.634		0.012	0.009
Deflection Limit (L/240)	in	0.960	0.960	0.960	0.450	0.450	0.450
Deflection Ratio		**0.3646**	**0.8802**	**0.6602**	**0.0376**	**0.0263**	**0.0197**

harris & sloan
CONSULTING GROUP, INC.

Project	Village Walk		
Client	Standard Pacific Hc	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Footing Calculations

Soils Engineer

ENGEO, Inc. (San Ramon)
2010 Crow Canyon Pl., Ste. 250
San Ramon, CA 94583

Report #: 6858.200.102
Date: 04/16/2013

Foundation Design Information

Allowable Soil Pressure	=	1000 psf
Retaining Wall Design:		
Friction Factor	=	N/A
Active Pressure	=	N/A pcf
Passive Pressure	=	N/A pcf

Post-Tension Foundation Calculations (expansive soil)

Average Soil Pressure = 1,000 psf

		Center Lift	Edge Lift
Edge Moisture Variation (e_m)	=	5.10 ft	2.70 ft
Differential Soil Movement (y_m)	=	1.50 in	2.00 in

Design Rectangles
R1 = 25.00 ft x 43.00 ft

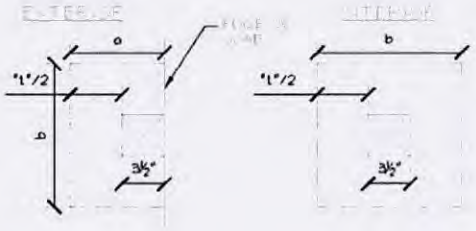
Maximum Point Load Capacity of Slab
Slab Thickness (t) = 12 in
Concrete Compressive Strength (f'c) = 4500 psi

Punching Shear Calculation

$$V_u = \phi V_n$$
$$\phi = 0.85$$
$$V_c = 4\sqrt{f_c}\, b_o t$$
$$V_{allowable} = V_u / 1.7$$

Exterior Condidtion $b_o = 2a+b$ = 34.5 in
Maximum allowable point load = 56 kips

Interior Condidtion $b_o = 4b$ = 62 in
Maximum allowable point load = 100 kips



hscgi limit 10,000# at interior
8000# at exterior

Pad Footing Calculations

Maximum Localized Bearing Pressure = 1,000 psf
Minimum Pad Footing Depth = 12 in

Footing #	Load	Minimum Size	Reinforcing
FTG#4	12250#	42" SQUARE X 18" DEEP	#5 BARS AT 8" OC

PTISlab 3.5

Geostructural Tool Kit, Inc.

Registered To : Harris and Sloan Consulting Group

Serial Number : 100-350-005

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	25.00 FT x 43.00 FT x 12.00	Inches
Uniform Thickness Slab :	12.00 (11.95)	Inches
(rounded to the nearest 0.25 inch)		

Material Properties

Concrete Strength, f'_c :	4,500	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	39.8	Cubic Yards
Prestressing Tendon :	1,008.0	Linear Feet
Number of End Anchorages :	60	

In the LONG direction ...

Number of Slab Tendons :	11	
Slab Tendon Spacing :	2.30	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	19	
Slab Tendon Spacing :	2.28	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	6,192	3,600
Moment of Inertia ($Inch^4$) :	74,304	43,200
Section Modulus, Top and Bottom ($Inch^3$) :	12,384	7,200
Beta Distance (Feet) :	8.56	7.48

Jacking Force : 33.05 KIPS

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Geotechnical Report : Engeo
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.95) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	19	11
Spacing of Tendons (FT)	2.28	2.30
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	447.4	234.4
Beta Distance Effective Prestress Force (K)	465.8	272.5
Minimum Effective Prestress (PSI)	72	65
Beta Distance Effective Prestress (PSI)	75	76

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction 7.61 FT-K/FT
Maximum Moment, Long Direction 6.92 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.242	-0.213	Actual Stress	0.392	0.364

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	74,304	43,200
Required Moment of Inertia ($Inch^4$)	31,408	28,552
Required Moment of Inertia controlled by	Width	Length

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 1.84 K/FT
Maximum Shear, Long Direction 1.39 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	13	10

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Geotechnical Report : Engeo
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	247.5	143.3
0.5 Moment (FT-K)	163.6	86.5

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.025	-0.026	Actual Stress	0.176	0.177

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	74,304	43,200
Required Moment of Inertia ($Inch^4$)	19,942	20,109
Required Moment of Inertia controlled by	Width	Length

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.35 K/FT
Maximum Shear, Long Direction	1.40 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	9	10

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	247.5	143.3
0.5 Moment (FT-K)	51.9	30.4

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	4,500.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R1 (25x43)

Rectangle Geometry : 25.00 FT x 43.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	65.00 PSI	55.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	42	0	24	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load :	40.00 PSF
Total Perimeter Load :	1,250.00 PLF
Smallest Load Intensity :	500.00 PLF

Stiffness Coefficients

Center Lift :	480
Edge Lift :	960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P1 **2nd Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.67	15.67	psf
Above Plate:			
Wall Area Above Plate	44	0	ft^2
Average Elevation	22.2	22.2	ft
Pressure @ Elevation	15.94	15.94	psf
Wall Load	1600	0	#
Mean Roof Height (h)	22.2	22.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	8.12	8.12	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **1600 #**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Length of Diaphragm	21.3	21.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1579	W
Rho	=	1.00	
Diaphragm Load	1281	0	#
Additional Load	=	#	

Total Seismic Load = **1281 #**

1.25 Total Load* = **1601 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.3	21.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1600#	0#	
Diaphgram Shear	75 plf (W)	0 plf (E)	

Total Diaphragm Length	=	21 ft
Total Diaphragm Shear	=	75 plf (W)
Shear for drag & collectors*	=	75 plf (E)

Shear Wall Summary

			Shear @ T&B of wall
# of Shear Walls	=	1	
Total Length of Walls	=	14.50 ft	
Net Length of Walls	=	8.17 ft	
Maximum H:W Ratio	=	1.50	
Seismic H:W Adjustment	=	1.00	
Wind Wall Shear	=	**196 plf**	**110 plf**
Seismic Wall Shear	=	**157 plf**	**88 plf**
1.25 Seismic Shear*	=	**196 plf**	

USE SHEAR WALL TYPE **3**

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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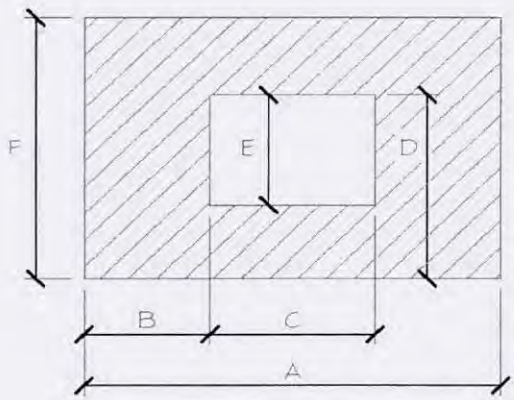
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P1 **2nd Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 14.50 ft.
Dist from left end of wall to 1st opening	B	= 4.50 ft.
Opening Width	C	= 6.33 ft.
Net Length		= 8.17 ft.
Opening Header Height	D	= 7.50 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	1600#
Seismic Load (E)	1281#
DL Trib Length Roof	12 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	110 plf	88 plf
Piers	196 plf	157 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 385 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-399#	-1058#
Left Pier	1077#	862#
Right Pier	1077#	862#
Bottom	276#	221#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	484# (W)	NONE
L King	225# (E)	NONE
R King	225# (E)	NONE
Right End	484# (W)	NONE

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P2 **2nd Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.67	15.67	psf
Above Plate:			
Wall Area Above Plate	44	0	ft^2
Average Elevation	22.2	22.2	ft
Pressure @ Elevation	15.94	15.94	psf
Wall Load	1600	0	#
Mean Roof Height (h)	22.2	22.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	8.12	8.12	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **1600 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	18.00 ft
Net Length of Walls	=	13.00 ft
Maximum H:W Ratio	=	1.94
Seismic H:W Adjustment	=	1.00

			Shear @ T&B of wall
Wind Wall Shear	=	**123 plf**	**89 plf**
Seismic Wall Shear	=	**99 plf**	**71 plf**
1.25 Seismic Shear*	=	**123 plf**	

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Length of Diaphragm	21.3	21.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1579	W
Rho	=	1.00	
Diaphragm Load	1281	0	#
Additional Load	=		#

Total Seismic Load = **1281 #**

1.25 Total Load* = **1601 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.3	21.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1600#	0#	
Diaphgram Shear	75 plf (W)	0 plf (E)	

Total Diaphragm Length	=	21 ft
Total Diaphragm Shear	=	75 plf (W)
Shear for drag & collectors*	=	75 plf (E)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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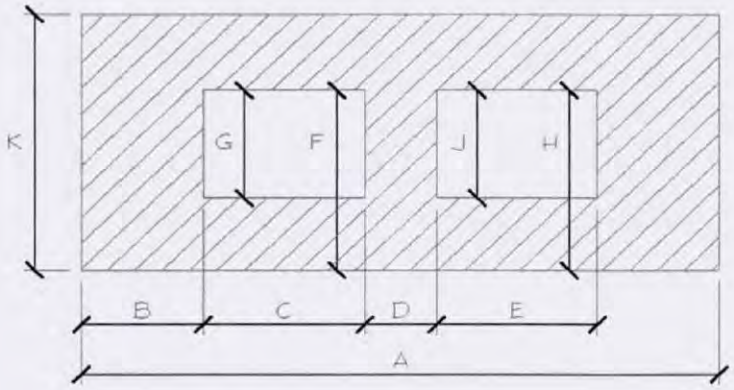
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at (2) Openings Calculation

P2 **2nd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 18.00 ft.
Dist from left end of wall to 1st opening	B	= 4.17 ft.
1st Opening Width	C	= 3.00 ft.
Distance b/t Openings	D	= 6.00 ft.
2nd Opening Width	E	= 2.00 ft.
Net Length		= 13.00 ft.
1st Opening Header Height	F	= 8.00 ft.
1st Opening Height	G	= 5.00 ft.
2nd Opening Header Height	H	= 8.00 ft.
2nd Opening Height	J	= 5.00 ft.
Plate Height	K	= 9.00 ft.



LOADS

Wind Load (W)	1600#
Seismic Load (E)	1281#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	89 plf	71 plf
Piers	123 plf	99 plf

Use Shear Wall Type **1**

STRAP CALCULATIONS

Max. Load @ Opening = 143 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-511#	-539#
Left Pier	677#	542#
Middle Pier	677#	542#
Right Pier	677#	542#
Bottom	267#	213#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

		Total Uplift	Holdown
	Left End	245# (W)	NONE
Left Opening	L King	209# (E)	NONE
	R King	209# (E)	NONE
Right Opening	L King (2)	209# (E)	NONE
	R King (2)	209# (E)	NONE
	Right End	245# (W)	NONE

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P3 **2nd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	7	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.21	15.21	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	22.2	22.2	ft
Pressure @ Elevation	15.48	15.48	psf
Wall Load	730	0	#
Mean Roof Height (h)	22.2	22.2	
Roof Area	75	0	ft^2
Pressure @ Elevation	8.54	8.54	psf
Roof Load	638	0	#
Additional Load	=		#

Total Wind Load = **1368 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	6.00 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**228 plf**
Seismic Wall Shear	=	**213 plf**
1.25 Seismic Shear*	=	**267 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	21.34		0	ft
Length of Diaphragm	25.3		25.3	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.1579	W
Rho	=		1.00	
Diaphragm Load	1281		0	#
Additional Load	=			#
Total Seismic Load	=		**1281**	**#**
1.25 Total Load*	=		**1601**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	25.3		25.3	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1368#		0#	
Diaphgram Shear	54 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		25	ft
Total Diaphragm Shear	=		54 plf	(W)
Shear for drag & collectors*	=		63 plf	(E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
6.00 ft.	2.0 ft.						1867# (W)	1867# (W)	2	2

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P4 **2nd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	7	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.21	15.21	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	22.2	22.2	ft
Pressure @ Elevation	15.48	15.48	psf
Wall Load	730	0	#
Mean Roof Height (h)	22.2	22.2	
Roof Area	75	0	ft^2
Pressure @ Elevation	8.54	8.54	psf
Roof Load	638	0	#
Additional Load	=		#

Total Wind Load = **1368 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**171 plf**
Seismic Wall Shear	=	**160 plf**
1.25 Seismic Shear*	=	**200 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Length of Diaphragm	25.3	25.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1579	W
Rho	=	1.00	
Diaphragm Load	1281	0	#
Additional Load	=		#

Total Seismic Load = **1281 #**

1.25 Total Load* = **1601 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	25.3	25.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1368#	0#	
Diaphgram Shear	54 plf (W)	0 plf (E)	

Total Diaphragm Length	=	25 ft
Total Diaphragm Shear	=	54 plf (W)
Shear for drag & collectors*	=	63 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
8.00 ft.	2.0 ft.						1292# (W)	1292# (W)	1	1

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P5 **1st Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	72	0	ft^2
Average Elevation	14.7	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1908	0	#
Mean Roof Height (h)	9.0	9.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.44	9.44	psf
Roof Load	0	0	#
Add'l Load (From P1)	=	1600	#
Total Wind Load	=	**3508**	**#**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Length of Diaphragm	21.3	21.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0740	W
Rho	=	1.00	
Diaphragm Load	600	0	#
Add'l Load (From P1)	=	1281	#
Total Seismic Load	=	**1881**	**#**
1.25 Total Load*	=	**2351**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.3	21.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1908#	0#	
Diaphgram Shear	89 plf (W)	0 plf (E)	
Total Diaphragm Length	=	21	ft
Total Diaphragm Shear	=	89 plf (W)	
Shear for drag & collectors*	=	89 plf (W)	

Shear Wall Summary

See manufactured shearwalls on next page(s)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations For Simpson Steel Strong-Wall

P5 **1st Floor; Rear; Left to Right**

See load calculations on previous page

Total Wind Load = **3508 #** **Total Seismic Load** = **1881 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
1	SSW24x7	7500	5730	5495	0.31	0.29

Total Load Capacity	=	5730	5495	
Pecent of Capacity Used	=	61%	34%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
1	SSW24x7	18484	18948	3508	1881	LOAD OK

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P6 **1st Floor; Front; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	72	0	ft^2
Average Elevation	14.7	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1908	0	#
Mean Roof Height (h)	9.0	9.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.44	9.44	psf
Roof Load	0	0	#
Add'l Load (From P2)	=	1600	#

Total Wind Load = **3508 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	10.00 ft
Maximum H:W Ratio	=	0.90
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**351 plf**
Seismic Wall Shear	=	**188 plf**
1.25 Seismic Shear*	=	**235 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	25.34		0	ft
Length of Diaphragm	21.3		21.3	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0740	W
Rho	=		1.00	
Diaphragm Load	600		0	#
Add'l Load (From P2)	=		1281	#
Total Seismic Load	=		**1881**	**#**
1.25 Total Load*	=		**2351**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	21.3		21.3	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1908#		0#	
Diaphgram Shear	89 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		21	ft
Total Diaphragm Shear	=		89 plf	(W)
Shear for drag & collectors*	=		89 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
10.00 ft.		2.0 ft.					2913# (W)	2913# (W)	**19**	**19 corner**

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P7 **1st Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.34	14.34	psf
Above Plate:			
Wall Area Above Plate	61	0	ft^2
Average Elevation	14.7	9.0	ft
Pressure @ Elevation	14.34	14.34	psf
Wall Load	1561	0	#
Mean Roof Height (h)	9.0	9.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.75	9.75	psf
Roof Load	0	0	#
Add'l Load (From P3)	=	1368	#

Total Wind Load = **2929 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	6.00 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**488 plf**
Seismic Wall Shear	=	**313 plf**
1.25 Seismic Shear*	=	**392 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Length of Diaphragm	25.3	25.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0740	W
Rho	=	1.00	
Diaphragm Load	600	0	#
Add'l Load (From P3)	=	1281	#

Total Seismic Load = **1881 #**

1.25 Total Load* = **2351 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	25.3	25.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1561#	0#	
Diaphgram Shear	62 plf (W)	0 plf (E)	

Total Diaphragm Length	=	25 ft
Total Diaphragm Shear	=	62 plf (W)
Shear for drag & collectors*	=	62 plf (W)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
6.00 ft.		1.0 ft.	1867#	0.00	1867#	6.00	6434# (W)	6434# (W)	**19**	**19**

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P8 **1st Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	7	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.34	14.34	psf
Above Plate:			
Wall Area Above Plate	61	0	ft^2
Average Elevation	14.7	9.0	ft
Pressure @ Elevation	14.34	14.34	psf
Wall Load	1561	0	#
Mean Roof Height (h)	9.0	9.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.75	9.75	psf
Roof Load	0	0	#
Add'l Load (From P4)	=	1368	#

Total Wind Load = **2929 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**366 plf**
Seismic Wall Shear	=	**235 plf**
1.25 Seismic Shear*	=	**294 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	21.34		0	ft
Length of Diaphragm	25.3		25.3	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0740	W
Rho	=		1.00	
Diaphragm Load	600		0	#
Add'l Load (From P4)	=		1281	#
Total Seismic Load	=		**1881**	**#**
1.25 Total Load*	=		**2351**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	25.3		25.3	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1561#		0#	
Diaphgram Shear	62 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		25	ft
Total Diaphragm Shear	=		62 plf	(W)
Shear for drag & collectors*	=		62 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
8.00 ft.		1.0 ft.	1292#	0.00	1292#	8.00	4513# (W)	4513# (W)	**17 interior**	**17 interior**

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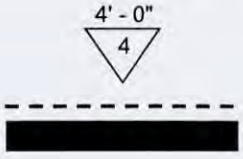
Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall Table

Type	*Wind*	*Seismic*	*Description*
1	254.8	182	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
2	350	266	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 4" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
3	480.2	343	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X OR (2) 2X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
4	600	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. MAX. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
5	627.2	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
12	754.6	539	15/32" APA RATED SHEATHING ONE FACE WITH 10d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
7	960.4	686	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
8	1254.4	896	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.

NOTES:

1. Shearwalls are designated on the plans by a triangle symbol surrounding the shearwall type.
2. Shearwall length is indicated above the shearwall callout and is shown graphically with shading & a dashed line.
3. See anchor bolt calculations for required anchor spacing.



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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Simpson Holdown Table

	Wind		*Seismic*		
Type	*Typ*	*End*	*Typ*	*End*	***Description***
NONE	500	500	500	500	Below limit
1	1705	1705	1705	1705	CS16 STRAP, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2	3410	3410	3410	3410	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
3	4585	4585	4585	4585	CMSTC16 STRAP, 23" MINIMUM END SPAN, CLEAR SPAN VARIES.
4	5860	5860	5860	5860	MSTC66 STRAP, 18" MAXIMUM CLEAR SPAN.
1A	942	942	942	942	CS16 STRAP, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
1B	1884	1884	1884	1884	(2) CS16 STRAPS, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
2A	3300	3300	3300	3300	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2B	4950	4950	4950	4950	(3) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
9	4755	0	3400	0	STHD10 HOLDOWN TO MINIMUM 4X POST.
17	4565	4470	3740	3325	HDU4 HOLDOWN TO MINIMUM 4X POST W/ SSTB24/24
19	6970	6970	6970	6970	HDU8 HOLDOWN TO MINIMUM 4X POST W/ SSTB28/34 ANCHOR.
19A	7870	7870	7870	7315	HDU8 HOLDOWN TO MINIMUM 4X6 POST W/ SSTB28/34 ANCHOR.
20	9535	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X6 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
20A	10470	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X8 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
21	14390	14390	14390	14390	HDU14 HOLDOWN TO MINIMUM 4X8 POST W/ 1" ANCHOR ROD.
16	19070	19070	19070	19070	HD19 HOLDOWN TO MINIMUM 4X10 OR 6X6 POST W/ 1 1/4" ANCHOR ROD.

NOTE: Holdowns are designated on the plans by a diamond symbol surrounding the holdown type, e.g.:



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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

CALCULATIONS FOR ANCHOR BOLTS & MASA* ANCHORS AT SHEARWALLS

*MASA anchor values per ESR-2555, Issued November 2010

Allowable loads per NDS/hardware values (1.6 load duration factor):

Condition	1/2" ϕ A.B.	MASA
2X sill plate; sw capacity ≤ 350 plf	650#	1515#
2X sill plate; sw capacity b/t 350 & 600 plf	325#	758#
3X sill plate	770#	1215#

Allowable Shear Loads per ACI 318-08 Appendix D (assuming uncracked concrete at service loads):

		1/2" ϕ A.B.		MASA	
Wind:	$(F^*V_{nx}) / 1.6 =$	1064#	Wind:	2X sill = 1388#	
				3X sill = 1109#	
Seismic:	$(F^*V_{nx}) * 0.7 =$	1192#	Seismic:	2X sill = 1138#	
				3X sill = 931#	

Seismic (in SDC C, D, E and F):
$(0.75^*F^*_{Vnx}) * 0.7 =$ 894#

		1/2" AB	MASA
SW 1 (2x sill)	NDS	49.0" oc	71.4" oc
255plf (W)	ACI (W)	50.1" oc	65.3" oc
182plf (E)	ACI (E)	58.9" oc	75.0" oc
	per plan	**48" oc**	**48" oc**

		1/2" AB	MASA
SW 2 (2x sill)	NDS	35.7" oc	51.9" oc
350plf (W)	ACI (W)	36.5" oc	47.6" oc
266plf (E)	ACI (E)	40.3" oc	51.3" oc
	per plan	**35" oc**	**35" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW3	NDS	13.0" oc	18.9" oc	30.8" oc	30.4" oc
480plf (W)	ACI (W)	26.6" oc	34.7" oc	26.6" oc	27.7" oc
343plf (E)	ACI (E)	31.3" oc	39.8" oc	31.3" oc	32.6" oc
	per plan	**12" oc**	**12" oc**	**20" oc**	**20" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW4	NDS	10.4" oc	15.2" oc	24.6" oc	24.3" oc
600plf (W)	ACI (W)	21.3" oc	27.8" oc	21.3" oc	22.2" oc
448plf (E)	ACI (E)	23.9" oc	30.5" oc	23.9" oc	24.9" oc
	per plan	**10" oc**	**10" oc**	**16" oc**	**16" oc**

		1/2" AB	MASA
SW 5 (3x sill)	NDS	23.6" oc	23.2" oc
627plf (W)	ACI (W)	20.4" oc	21.2" oc
448plf (E)	ACI (E)	23.9" oc	24.9" oc
	per plan	**20" oc**	**20" oc**

		1/2" AB	MASA
SW 7 (3x sill)	NDS	15.4" oc	15.2" oc
960plf (W)	ACI (W)	13.3" oc	13.9" oc
686plf (E)	ACI (E)	15.6" oc	16.3" oc
	per plan	**13" oc**	**13" oc**

		1/2" AB	MASA
SW 8 (3x sill)	NDS	11.8" oc	11.6" oc
1254plf (W)	ACI (W)	10.2" oc	10.6" oc
896plf (E)	ACI (E)	12.0" oc	12.5" oc
	per plan	**10" oc**	**10" oc**

		1/2" AB	MASA
SW 12 (3x sill	NDS	19.6" oc	19.3" oc
755plf (W)	ACI (W)	16.9" oc	17.6" oc
539plf (E)	ACI (E)	19.9" oc	20.7" oc
	per plan	**12" oc**	**12" oc**

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CITY OF COTATI
PLANNING AND BUILDING DEPT.

DAHLIN group

March 16, 2015

Keri Pajon, PE
City of Cotati Building Division
201 West Sierra Avenue
Cotati, CA 94931-4217
PROJECT ADDRESS: 690 E. Cotati Avenue – Village Walk
PERMIT #: 13104

We have been directed by Standard Pacific Homes to complete a 2013 Building Code Update for the Village Walk project. We have highlighted these items under Delta 3. The following describes the nature of those changes:

LIST OF ARCHITECTURAL REVISIONS			
JOB NUMBER 360.033		PROJECT TITLE Village Walk	2013 Code Update
DELTA NUMBER	ISSUE DATE	AFFECTED SHEET(S)	Description
3	3/16/2015	T1.1	Building code references updated to 2013 building code
		GN.1 & GN.2	Building code references updated to 2013 building code
		CGR.1 - CGR.4	Updated to City of Cotati current version of Cal Green Tier 1 Checklist
		A5.1 & A6.1	Plan 1, Plan 2 - All water heaters are now tankless
		A3.1 & A3.2	Plan 3 - All water heaters are now tankless
		AD.1	Detail 18 Omitted
		Roof Plans	Roof plan notes updated to refelec the requirements of the 12013 CRC
			Roofing material reference of "40-year Elk/GAF"- product has been discontinued - deferring to builder's specifications
		Elevations	Roofing material reference of "40-year Elk/GAF" - product has been discontinued - deferring to builder's specifications
		Floor Plan Keynotes	Building code references updated to 2013 building code
		Interior Elevations	Mounting heights detail has been updated and vanity mirrors revised
			Bathroom mirrors and cabinet heights revised to match builder's current standards
		Electrical Plans	Mounting heights detail has been updated to builder's current standards
			Electrical plans have been revised to comply with 2013 building code
		All Detail Sheets	Details updated to meet builder standards & Building code references updated to 2013 building code

5865 Owens Drive
Pleasanton, California 94588 USA
+1-925-251-7200
+1-925-251-7201 fax
WWW.DAHLINGROUP.COM

All above items are noted as Delta 3, Dated March 16, 2015.

Sincerely,

Donald J. Ruthroff, Senior Architect
C24946 Exp. 10/31/15
cc Dahlin Group, Inc. – File

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CONSULTING GROUP, INC.

2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
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Structural Engineering Consultants

February 27, 2015

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MAR 18 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

Mandi Misasi
Standard Pacific Homes
4750 Willow Road, Suite 150
Pleasanton, CA 94588

RE: Village Walk (HS13068)
2013 Code Update

We have updated the structural construction documents to conform to the 2013 California Building Codes. Enclosed, please find the following:

- An analysis of the design loads demonstrating equivalency between the seismic and wind requirements of the 2010 and 2013 codes.
- Standard calculations for exterior studs which do not conform to conventional framing requirements including balloon framed wall studs not braced by a low roof diaphragm (these studs are affected by the new code's more stringent deflection requirements for stud walls supporting stucco).
- Shearwall anchorage calculations based on NDS and updated manufacturer-specified capacities.
- Plan, note, and detail sheets with revisions clouded as delta 2 (dated 02-27-2015), "2013 CBC"

In general, the updated plans vary little from those designed under the 2010 CBC. To aid in review of these documents, a summary of the changes is provided below:

Sheet SN.1

1. Special Inspection references updated based on the 2013 CBC. Note that the required inspections have not changed.
2. Code references updated to 2013 CBC, ICC, ACI, ASTM, etc..
3. Retrofit Specifications have been updated based on new ACI requirements.
4. King Stud table revised based on L/360 deflection requirements for stucco walls.
5. Additional specifications added for interior non-bearing headers.
6. Specifications revised for interior stud walls supporting continuous 3-point bearing trusses.

Structural Sheets

1. Shearwall schedules revised based on updated anchorage calculations (see typical calc enclosed).
2. Keynote 30 at balloon-framed walls updated based on revised deflection requirements (see typical calcs enclosed).
3. Keynote 1 revised to clarify construction requirements.

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2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
www.hscgi.com

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In addition to the code update, revisions have been made to the unit 2 Simpson Strong Walls adjacent to the garage door. The two SSW 18X7 panels have been replaced by a single SSW 24X7 panel. See sheet S2.1 to S2.2 and pages 12 to 13 of the attached supplemental analysis and calculations.

If there are further questions, please contact Evan Hamilton at (916) 921-2800.

Respectfully,

Harris & Sloan Consulting Group, Inc.



Katie Lilliedoll, S.E.

KL:eh

15043

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tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
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Supplemental Analysis and Calculations for 2013 Code Update

Wind Design

The design wind speed for residential construction (Risk Category II) was revised from 85 mph under ASCE 7-05 to 110mph under ASCE 7-10. However, the load combination factor for wind was changed from 1.0 to 0.6 resulting in design wind pressures generally equivalent to the wind pressures used for design under the 2010 CBC. See pages 2 & 3 for typical wind pressure calculations from the 2010 codes and 4 &5 for wind pressure calculations under the 2013 codes.

Seismic Design

The table below provides a summary of the seismic design values from the approved 2010 CBC project calculations and the new 2013 CBC (ASCE 7-10). A printout of the USGS report with ASCE-10 seismic values is included as page 6.

Mapped Spectral Accelerations	Design Values from the Approved 2010 Plans		2013 Code Values
	Code Values	HSCGI Design Minima	
Ss	1.615	Not Applicable	1.615
S_1	0.634	Not Applicable	0.634

The design values for the 2013 code are equal to the 2010 code values. Therefore, seismic loads have not increased and lateral redesign is not required.

Shearwall Anchorage

Shearwall anchorage calculations in the approved 2010 CBC calculation packages were based on ACI 318, NDS 2008, and ICC reports for proprietary anchors. Revised calculations provided on page 7 are based on NDS 2012 and current ICC reports.

Stud Calculations

The deflection criteria for walls supporting stucco or plaster was revised from L/240 under the 2010 CBC to L/360 under the 2013 CBC. See pages 8-11 for calculations supporting the balloon-framed stud table provided in revised Keynote #30 on the floor framing plans (where occurs).



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Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (*V*)	85 mph (3-second gust)	
Importance Factor (*I*)	1.00 ASCE 7 - Table 6-1	
Exposure Category	C ASCE 7 - Section 6.5.6.3;	
Directionality Factor (K_d)	0.85 ASCE 7 - Table 6-4	
Gust Factor (*G*)	0.85 ASCE 7 - Section 6.5.8.1	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ V^2\ I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects Hill Type None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	23.20 ft	Velocity Pressure (q_h) for MWFRS	14.55 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.67
min L/B (Front to Back)	1.50
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.40

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C 14.55 psf

Wall	Zone 4		Zone 5	
Height	GCp	p (psf)	GCp	p (psf)
9.0 ft	-1.02	17.52	-1.25	20.78
15.0 ft	-0.95	16.38	-1.09	18.50
19.2 ft	-0.91	15.83	-1.02	17.39
22.0 ft	-0.89	15.52	-0.97	16.79

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Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-0.97	
Int. Pressure Coeff. (Cpi)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-9 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	3 psf	Available to offset overturning from wind

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Wind Design Per IBC/ASCE 7 Chapter 27 Directional Procedure

Basic Wind Speed (V)	110 mph	(3-second gust)
Risk Category	II	ASCE Table 1.5-1
Exposure Category	C	ASCE 7 - Section 26.7.3;
Directionality Factor (K_d)	0.85	ASCE 7 - Table 26.6-1
Gust Factor (G)	0.85	ASCE 7 - Section 26.9.1

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Eqn 27.4-1

Velocity Pressures by Height

$$q_z = 0.00256\, K_z\, K_{zt}\, K_d\, V^2$$

ASCE 7 - Eqn 27.3-1
K_z Per ASCE 7 - Table 27.3-1
K_{zt} Per ASCE 7 - Table 26.8-1

Topographic Effects Hill Type None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.43	0.850	13.43
20	1.000	1.000	0.900	14.22	0.900	14.22
25	1.000	1.000	0.940	14.85	0.940	14.85
30	1.000	1.000	0.980	15.48	0.980	15.48
40	1.000	1.000	1.040	16.43	1.040	16.43

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	23.20 ft	Velocity Pressure (q_h) for MWFRS	14.62 psf

14.62 psf ↑ compare to 14.55 psf in 2010 CBC: 0.5% increase is negligible

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	Cp per ASCE 7 - Figure 27.4-1
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.67
min L/B (Front to Back)	1.50
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.40

Components and Cladding, Walls (Chapter 30)

Velocity Pressure (q_h) for C&C 14.62 psf

Wall	Zone 4		Zone 5	
Height	GCp	p (psf)	GCp	p (psf)
9.0 ft	-1.02	17.60	-1.25	20.88
15.0 ft	-0.95	16.46	-1.09	18.58
19.2 ft	-0.91	15.90	-1.02	17.48
22.0 ft	-0.89	15.60	-0.97	16.87

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Wind Design Per IBC/ASCE 7 Chapter 27 Directional Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 27.4-1
Area Reduction Factor	0.9	ASCE 7 - Figure 27.4-1
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 27.4-1
Avg. Pressure Coeff. (C_p)	-0.97	
Int. Pressure Coeff. (*Cpi*)	0.18	ASCE 7 - Figure 26.11-1
Wind Uplift Pressure (p)	-9 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Eqn 27.4-1

Controlling Load Combo	0.6D+0.6W	ASCE 7 - Section 2.4.1
Net pressure from Roof	3 psf	Available to offset overturning from wind

USGS Design Maps Summary Report

User–Specified Input

Report Title	Village Walk (HS13068) 2013 Seismic Criteria Mon February 23, 2015 23:22:23 UTC
Building Code Reference Document	ASCE 7-10 Standard (which utilizes USGS hazard data available in 2008)
Site Coordinates	38.32932°N, 122.69591°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

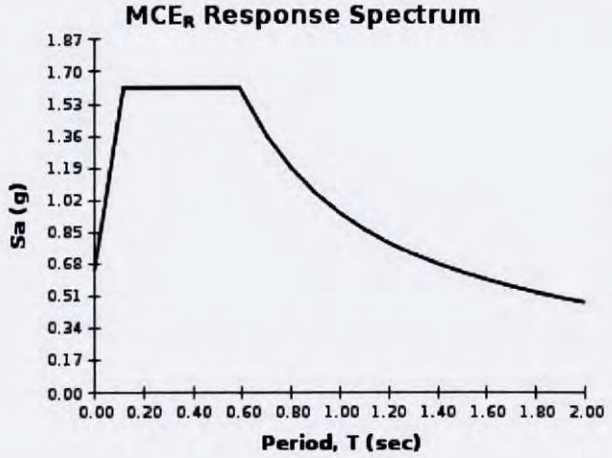


USGS–Provided Output

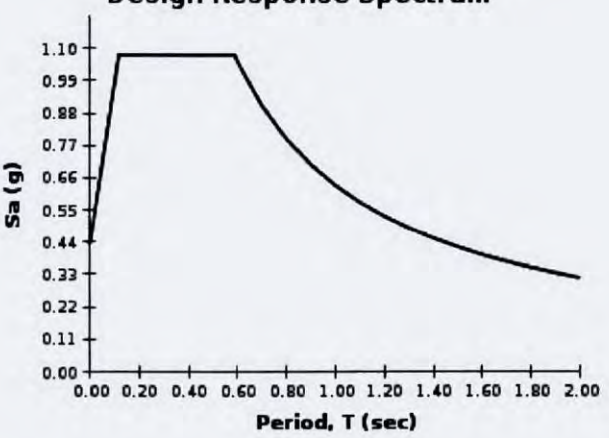
S_S =	1.615 g	S_{MS} =	1.615 g	S_{DS} =	1.077 g
S_1 =	0.634 g	S_{M1} =	0.951 g	S_{D1} =	0.634 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.

MCE_R Response Spectrum



Design Response Spectrum



For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

CALCULATIONS FOR ANCHOR BOLTS & MUDSILL ANCHORS AT SHEARWALLS

Allowable loads per NDS/hardware values (1.6 load duration factor)

Load Source	Sill Plate Size	1/2" ϕ A.B.	5/8" ϕ A.B.	Simpson MASA			USP FA3
				standard	one leg up	(1) of (3) up	
Wind	2x	650#	930#	1515#	1005#	1345#	780#
	3x	770#	1180#	1215#	815#	1082#	N/A
Seismic	2x	650#	930#	1235#	845#	1105#	625#
	3x	770#	1180#	1020#	685#	908#	N/A

Mudsill Anchor Spacing for All Shearwall Types

Shearwall Type	Sill Plate Size	Wind Capacity	Seismic Capacity	Anchor Spacing[1,2]			
				1/2" ϕ A.B.	5/8" ϕ A.B.	MASA	FA3
SW 1	2x	310plf (W)	260plf (E)	40.3" oc	57.6" oc	51.0" oc	28.8" oc
				40.0" oc	48.0" oc	40.0" oc	28.0" oc
SW 2	2x	350plf (W)	350plf (E)	35.7" oc	51.0" oc	37.9" oc	21.4" oc
				34.0" oc	48.0" oc	34.0" oc	20.0" oc
SW 3	2x	600plf (W)	490plf (E)	20.8" oc	29.8" oc	26.9" oc	15.3" oc
				20.0" oc	28.0" oc	20.0" oc	14.0" oc
SW 4	2x	750plf (W)	640plf (E)	16.6" oc	23.8" oc	20.7" oc	11.7" oc
				16.0" oc	22.0" oc	16.0" oc	10.0" oc
SW 5	2x	750plf (W)	640plf (E)	16.6" oc	23.8" oc	20.7" oc	11.7" oc
				16.0" oc	22.0" oc	16.0" oc	10.0" oc
SW 6	3x	830plf (W)	760plf (E)	17.8" oc	27.3" oc	14.3" oc	N/A
				16.0" oc	26.0" oc	14.0" oc	N/A
SW 7	3x	1240plf (W)	980plf (E)	11.9" oc	18.3" oc	10.5" oc	N/A
				10.0" oc	18.0" oc	10.0" oc	N/A
SW 8	3x	1530plf (W)	1280plf (E)	9.7" oc	14.8" oc	8.5" oc	N/A
				8.0" oc	14.0" oc	8.0" oc	N/A
SW 9	2x	350plf (W)	310plf (E)	35.7" oc	51.0" oc	42.8" oc	24.2" oc
				34.0" oc	48.0" oc	34.0" oc	24.0" oc
SW 10	2x	600plf (W)	460plf (E)	20.8" oc	29.8" oc	26.9" oc	15.6" oc
				20.0" oc	28.0" oc	20.0" oc	14.0" oc
SW 11	3x	970plf (W)	770plf (E)	15.2" oc	23.4" oc	13.4" oc	N/A
				14.0" oc	22.0" oc	12.0" oc	N/A
SW 12	3x	970plf (W)	770plf (E)	15.2" oc	23.4" oc	13.4" oc	N/A
				14.0" oc	22.0" oc	12.0" oc	N/A
SW 13	3x	1285plf (W)	920plf (E)	11.5" oc	17.6" oc	10.1" oc	N/A
				10.0" oc	16.0" oc	10.0" oc	N/A
SW 14	3x	1500plf (W)	1200plf (E)	9.9" oc	15.1" oc	8.7" oc	N/A
				8.0" oc	14.0" oc	8.0" oc	N/A
SW 15	3x	1540plf (W)	1540plf (E)	9.6" oc	14.7" oc	7.1" oc	N/A
				8.0" oc	14.0" oc	N/A	N/A
SW 16	2x	350plf (W)	340plf (E)	35.7" oc	51.0" oc	39.0" oc	22.1" oc
				34.0" oc	48.0" oc	34.0" oc	22.0" oc
SW 17	2x	600plf (W)	510plf (E)	20.8" oc	29.8" oc	26.0" oc	14.7" oc
				20.0" oc	28.0" oc	20.0" oc	14.0" oc
SW 18	3x	930plf (W)	665plf (E)	15.9" oc	24.4" oc	14.0" oc	N/A
				14.0" oc	24.0" oc	12.0" oc	N/A
SW 19	3x	1215plf (W)	870plf (E)	12.2" oc	18.6" oc	10.7" oc	N/A
				12.0" oc	18.0" oc	10.0" oc	N/A
SW 20	3x	1425plf (W)	1020plf (E)	10.4" oc	15.9" oc	9.1" oc	N/A
				10.0" oc	14.0" oc	8.0" oc	N/A
SW 21	3x	1860plf (W)	1330plf (E)	7.9" oc	12.2" oc	7.0" oc	N/A
				6.0" oc	12.0" oc	N/A	N/A

1. Shading indicates spacing used in shearwall schedule

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Stud Calculations Per 2012 NDS

Stud/Post Properties		14' Stud - 2x6 Wall	14' Stud - 2x6 Wall
Height	ft	14.00	14.00
Depth/Width (d)	in	5.50	5.50
Thickness	in	1.50	1.50
Grade		DF #2 (2"-4" thick)	DF Stud
O.C. Spacing	in	16.00	16.00
Repetitive Factor		NDS Repetitive Factor	IBC System Factor
			8d's @ 6 in o.c. shtg to stud
Location		exterior - zone 5	exterior - zone 5

Load Combinations:		1. DL+LL	2. DL+(0.6W or 0.7E)		3. DL+0.75[LL+(0.6W or 0.7E)]		
Loads & Load Factors		LC #1	LC #2	LC #3	LC #1	LC #2	LC #3
Axial Dead Load - DL	plf	420.00	420.00	420.00	420.00	420.00	420.00
Axial Live Load - LL	plf	200.00	0.00	150.00	200.00	0.00	150.00
0.6* Wind Load (C&C)	psf	5.00	17.48	13.11	5.00	17.48	13.11
0.7* Seismic Load	psf	0.00	2.64	1.98	0.00	2.64	1.98
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.35	1.35	1.35
Material Properties							
E (Adjusted)	ksi	1600.0	1600.0	1600.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	580.0	580.0	580.0	510.0	510.0	510.0
Fb (Adjusted)	psi	1345.5	1345.5	1345.5	945.0	945.0	945.0
Fcll (Adjusted)	psi	1485.0	1485.0	1485.0	850.0	850.0	850.0
Compression Calcs							
E_{min}'	psi	5.8E+05	5.8E+05	5.8E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		30.5			30.5		
F_{cE}		511	511	511	449	449	449
F*c	psi	1708	2376	2376	978	1360	1360
F_{cE}/Fc^*		0.30	0.22	0.22	0.46	0.33	0.33
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.28	0.20	0.20	0.40	0.30	0.30
Fc'	psi	474	486	486	396	413	413
fc	psi	100	68	92	100	68	92
Stress Ratio		**0.2112**	**0.1397**	**0.1896**	**0.2533**	**0.1643**	**0.2229**
Bending Calcs							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	1960	6852	5139	1960	6852	5139
Fb'	psi	1547	2153	2153	1087	1512	1512
fb	psi	259	906	680	259	906	680
Stress Ratio		**0.1675**	**0.4209**	**0.3157**	**0.2385**	**0.5993**	**0.4494**
Combined Stresses							
(fc/F'c)^2		0.0446	0.0195	0.0359	0.0642	0.0270	0.0497
fb/Fb'(1-(fc/Fce)		0.2084	0.4854	0.3851	0.3069	0.7059	0.5654
Combined Stress Ratio		**0.2530**	**0.5049**	**0.4210**	**0.3711**	**0.7329**	**0.6150**
Deflection Check							
Deflection	in	0.173	0.605	0.454	0.140	0.490	0.368
0.7 Deflection	in	0.121	0.424	0.318	0.098	0.343	0.257
Deflection Limit (L/360)	in	0.467	0.467	0.467	0.467	0.467	0.467
Deflection Ratio		**0.3711**	**0.9081**	**0.6811**	**0.3005**	**0.7353**	**0.5515**
Results			**OK**			**OK**	

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Stud Calculations Per 2012 NDS

Stud/Post Properties		16' Stud - 2x6 Wall	16' Stud - 2x6 Wall
Height	ft	16.00	16.00
Depth/Width (d)	in	5.50	5.50
Thickness	in	3.00	1.50
Grade		DF Stud	DF #2 (2"-4" thick)
O.C. Spacing	in	16.00	16.00
Repetitive Factor		NDS Repetitive Factor	IBC System Factor
			8d's @ 6 in o.c. shtg to stud
Location		exterior - zone 5	exterior - zone 5

Load Combinations:		1. DL+LL	2. DL+(0.6W or 0.7E)		3. DL+0.75[LL+(0.6W or 0.7E)]		
Loads & Load Factors		LC #1	LC #2	LC #3	LC #1	LC #2	LC #3
Axial Dead Load - DL	plf	450.00	450.00	450.00	450.00	450.00	450.00
Axial Live Load - LL	plf	200.00	0.00	150.00	200.00	0.00	150.00
0.6* Wind Load (C&C)	psf	5.00	17.48	13.11	5.00	17.48	13.11
0.7* Seismic Load	psf	0.00	2.64	1.98	0.00	2.64	1.98
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.35	1.35	1.35
Material Properties							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1600.0	1600.0	1600.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	580.0	580.0	580.0
Fb (Adjusted)	psi	805.0	805.0	805.0	1579.5	1579.5	1579.5
Fcll (Adjusted)	psi	850.0	850.0	850.0	1485.0	1485.0	1485.0
Compression Calcs							
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.8E+05	5.8E+05	5.8E+05
Le/d		34.9			34.9		
F_{cE}		344	344	344	391	391	391
F*c	psi	978	1360	1360	1708	2376	2376
F_{cE}/Fc^*		0.35	0.25	0.25	0.23	0.16	0.16
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.32	0.24	0.24	0.22	0.16	0.16
Fc'	psi	314	324	324	371	377	377
fc	psi	53	36	48	105	73	97
Stress Ratio		**0.1672**	**0.1123**	**0.1497**	**0.2834**	**0.1929**	**0.2572**
Bending Calcs							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	2560	8950	6712	2560	8950	6712
Fb'	psi	926	1288	1288	1816	2527	2527
fb	psi	169	592	444	339	1183	888
Stress Ratio		**0.1828**	**0.4594**	**0.3446**	**0.1864**	**0.4683**	**0.3512**
Combined Stresses							
(fc/F'c)^2		0.0279	0.0126	0.0224	0.0803	0.0372	0.0662
fb/Fb'(1-(fc/Fce)		0.2158	0.5137	0.4011	0.2548	0.5752	0.4670
Combined Stress Ratio		**0.2437**	**0.5263**	**0.4235**	**0.3351**	**0.6124**	**0.5331**
Deflection Check							
Deflection	in	0.169	0.590	0.443	0.209	0.732	0.549
0.7 Deflection	in	0.118	0.413	0.310	0.147	0.512	0.384
Deflection Limit (L/360)	in	0.533	0.533	0.533	0.533	0.533	0.533
Deflection Ratio		**0.3165**	**0.7746**	**0.5810**	**0.3925**	**0.9604**	**0.7203**
Results			**OK**			**OK**	

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Stud Calculations Per 2012 NDS

Stud/Post Properties		19' Stud - 2x6 Wall	19' Stud - 2x6 Wall
Height	ft	19.00	19.00
Depth/Width (d)	in	5.50	5.50
Thickness	in	4.50	3.00
Grade		DF Stud	DF Stud
O.C. Spacing	in	16.00	16.00
Repetitive Factor		NDS Repetitive Factor	IBC System Factor
			8d's @ 6 in o.c. shtg to stud
Location		exterior - zone 5	exterior - zone 5

Load Combinations:		1. DL+LL	2. DL+(0.6W or 0.7E)		3. DL+0.75[LL+(0.6W or 0.7E)]		
Loads & Load Factors		LC #1	LC #2	LC #3	LC #1	LC #2	LC #3
Axial Dead Load - DL	plf	495.00	495.00	495.00	495.00	495.00	495.00
Axial Live Load - LL	plf	200.00	0.00	150.00	200.00	0.00	150.00
0.6* Wind Load (C&C)	psf	5.00	17.48	13.11	5.00	17.48	13.11
0.7* Seismic Load	psf	0.00	2.64	1.98	0.00	2.64	1.98
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.00	1.00	1.00
Material Properties							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	510.0	510.0	510.0
Fb (Adjusted)	psi	805.0	805.0	805.0	700.0	700.0	700.0
Fcll (Adjusted)	psi	850.0	850.0	850.0	850.0	850.0	850.0
Compression Calcs							
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		41.5			41.5		
F_{cE}		244	244	244	244	244	244
F*c	psi	978	1360	1360	978	1360	1360
F_{cE}/Fc^*		0.25	0.18	0.18	0.25	0.18	0.18
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.24	0.17	0.17	0.24	0.17	0.17
Fc'	psi	230	234	234	230	234	234
fc	psi	37	27	35	56	40	52
Stress Ratio		**0.1629**	**0.1139**	**0.1484**	**0.2444**	**0.1708**	**0.2225**
Bending Calcs							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	3610	12621	9465	3610	12621	9465
Fb'	psi	926	1288	1288	805	1120	1120
fb	psi	159	556	417	239	834	626
Stress Ratio		**0.1719**	**0.4319**	**0.3239**	**0.2965**	**0.7450**	**0.5588**
Combined Stresses							
(fc/F'c)^2		0.0265	0.0130	0.0220	0.0597	0.0292	0.0495
fb/Fb'(1-(fc/Fce)		0.2030	0.4849	0.3777	0.3852	0.8911	0.7106
Combined Stress Ratio		**0.2296**	**0.4979**	**0.3997**	**0.4449**	**0.9203**	**0.7601**
Deflection Check							
Deflection	in	0.224	0.782	0.587	0.258	0.904	0.678
0.7 Deflection	in	0.157	0.548	0.411	0.181	0.633	0.474
Deflection Limit (L/360)	in	0.633	0.633	0.633	0.633	0.633	0.633
Deflection Ratio		**0.3534**	**0.8648**	**0.6486**	**0.4081**	**0.9988**	**0.7491**
Results			**OK**			**OK**	

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Stud Calculations Per 2012 NDS

Stud/Post Properties		9/10 Plates - 2x6 Wall	9/10 Plates - 2x8 Wall
Height	ft	20.00	20.00
Depth/Width (d)	in	5.50	5.50
Thickness	in	4.50	4.50
Grade		DF #2 (2"-4" thick)	DF Stud
O.C. Spacing	in	16.00	16.00
Repetitive Factor		NDS Repetitive Factor	IBC System Factor
			8d's @ 6 in o.c. shtg to stud
Location		exterior - zone 5	exterior - zone 5

Load Combinations:		1. DL+LL	2. DL+(0.6W or 0.7E)		3. DL+0.75[LL+(0.6W or 0.7E)]		
Loads & Load Factors		LC #1	LC #2	LC #3	LC #1	LC #2	LC #3
Axial Dead Load - DL	plf	510.00	510.00	510.00	510.00	510.00	510.00
Axial Live Load - LL	plf	200.00	0.00	150.00	200.00	0.00	150.00
0.6* Wind Load (C&C)	psf	5.00	17.48	13.11	5.00	17.48	13.11
0.7* Seismic Load	psf	0.00	2.64	1.98	0.00	2.64	1.98
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.00	1.00	1.00
Material Properties							
E (Adjusted)	ksi	1600.0	1600.0	1600.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	580.0	580.0	580.0	510.0	510.0	510.0
Fb (Adjusted)	psi	1345.5	1345.5	1345.5	700.0	700.0	700.0
Fcll (Adjusted)	psi	1485.0	1485.0	1485.0	850.0	850.0	850.0
Compression Calcs							
E_{min}'	psi	5.8E+05	5.8E+05	5.8E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		43.6			43.6		
F_{cE}		250	250	250	220	220	220
F*c	psi	1708	2376	2376	978	1360	1360
F_{cE}/Fc^*		0.15	0.11	0.11	0.23	0.16	0.16
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.14	0.10	0.10	0.21	0.16	0.16
Fc'	psi	242	245	245	209	212	212
fc	psi	38	27	36	38	27	36
Stress Ratio		**0.1578**	**0.1123**	**0.1453**	**0.1832**	**0.1294**	**0.1675**
Bending Calcs							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	4000	13984	10488	4000	13984	10488
Fb'	psi	1547	2153	2153	805	1120	1120
fb	psi	176	616	462	176	616	462
Stress Ratio		**0.1139**	**0.2863**	**0.2147**	**0.2190**	**0.5503**	**0.4128**
Combined Stresses							
(fc/F'c)^2		0.0249	0.0126	0.0211	0.0336	0.0167	0.0280
fb/Fb'(1-(fc/Fce)		0.1345	0.3216	0.2503	0.2651	0.6288	0.4922
Combined Stress Ratio		**0.1594**	**0.3342**	**0.2714**	**0.2986**	**0.6456**	**0.5203**
Deflection Check							
Deflection	in	0.240	0.841	0.630	0.214	0.747	0.560
0.7 Deflection	in	0.168	0.588	0.441	0.150	0.523	0.392
Deflection Limit (L/360)	in	0.667	0.667	0.667	0.667	0.667	0.667
Deflection Ratio		**0.3606**	**0.8825**	**0.6619**	**0.3206**	**0.7845**	**0.5884**
Results			**OK**			**OK**	

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	3/12/15		

Lateral Analysis Calculations

P9 **1st Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Above Plate:			
Wall Area Above Plate	46	0	ft^2
Average Elevation	13.7	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Wall Load	888	0	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	5.34	9.18	psf
Roof Load	0	0	#
Add'l Load (From P5)	=	4117	#
Total Wind Load	=	**5005**	**#**

Shear Wall Summary

See manufactured shearwalls on next page(s)

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	22.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0524	W
Rho	=	1.00	
Diaphragm Load	244	0	#
Add'l Load (From P5)	=	2897	#
Total Seismic Load	=	**3141**	**#**
1.25 Total Load*	=	**3927**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	4117#	0#	
Total Load in Diaphragm	5005#	0#	
Diaphgram Shear	300 plf (W)	0 plf (E)	
Total Diaphragm Length	=	17	ft
Total Diaphragm Shear	=	300 plf (W)	
Shear for drag & collectors*	=	300 plf (W)	

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	3/12/15		

Lateral Analysis Calculations For Simpson Steel Strong-Wall

9 1st Floor; Rear; Left to Right

See load calculations on previous page

Total Wind Load = 5005 # **Total Seismic Load = 3141 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
1	SSW24x7	1000	5730	5495	0.31	0.29

Total Load Capacity	=	5730	5495	
Pecent of Capacity Used	=	87%	57%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
1	SSW24x7	18484	18948	5005	3141	LOAD OK

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2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
www.hscgi.com

Structural
Engineering
Consultants

Structural Calculation Package

for

Standard Pacific Homes - Bay

Village Walk

Cotati, California

Plan # 1

Job # HS13068

2010 CBC



Date 7/8/2013

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Structural Calculation Package

Client Information

Standard Pacific Homes - Bay
3825 Hopyard Road, Suite 195
Pleasanton, CA 94588

Project Information

Village Walk
Cotati, California
Plan No. 1

Loading Information

Roof Loads

Roofing (Tile)	=	10.0 psf
Sheathing	=	1.7 psf
Framing	=	2.3 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	1.5 psf
Wall (Seismic only)	=	9.0 psf
Total DL	=	21.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	20.0 psf

Floor Loads

Flooring	=	1.5 psf
Sheathing	=	2.5 psf
Framing	=	2.5 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	3.0 psf
Wall (Seismic only)	=	15.0 psf
Total DL	=	15.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	40.0 psf

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Seismic Design Per IBC Section 1613

Building Information

R	=	6.50	ASCE Table 12.2-1
Occupancy Cat.	=	II	IBC Sect. 1604.5
Number of Stories	=	3	
Importance Factor	=	1.0	
Max Level Height	=	27.4 ft	
Design Approach		Normal/Equivalent	

Site Information

S_s	=	1.615	IBC Sect. 1613.5.1
S_1	=	0.634	IBC Sect. 1613.5.1
Site Class	=	D	
S_s	=	1.615	Used For Design
S_1	=	0.634	Used For Design

Seismic Loads: ASCE 7 Section 12.8 Equivalent Lateral Force Procedure

Short Period Response

F_a	=	1.000	IBC 1613.5.3
$S_{MS} = F_a S_s$	=	1.615	IBC Eqn. 16-36
$S_{DS} = (^2/_3) S_{MS}$	=	1.077	IBC Eqn. 16-38
SDC per S_{DS}	=	D	IBC Table 1613.5.6(1)

1-Second Period Response

F_v	=	1.500	IBC 1613.5.3
$S_{M1} = F_v S_1$	=	0.951	IBC Eqn. 16-37
$S_{D1} = (^2/_3) S_{M1}$	=	0.634	IBC Eqn. 16-39
SDC per S_{D1}	=	D	IBC Table 1613.5.6(2)

Seismic Design Category

Period, T	=	0.24 s,	ASCE 7 12.8.2.1
0.8 Ts	=	0.47 s,	ASCE 7 11.4.5
SDC Required	=	D	IBC Sect. 1613.5.6
SDC Used	=	**D**	

Seismic Design Factors

Overstrength Factor	=	2.5	Table 12.2-1, Footnote g
Dead Load Reduction:			
(0.6 - 0.14 Sds)D	=	0.449 D	ASCE Sect 12.4.3.2
Rho, left to right	=	1.3	ASCE Sect 12.3.4
Rho, front to back	=	1.0	

ASD Seismic Response Coefficient

$$C_s = \frac{I(S_{DS})}{R}$$

C_s per ASCE Eqn. 12.8-2

C_s	=	0.1656	ASCE Eqn. 12.8-2
C_s (upper limit)	=	0.4072	ASCE Eqn. 12.8-3
C_s (lower limit)	=	0.0100	ASCE Eqn. 12.8-5
C_s (alt low limit)	=	0.0488	ASCE Eqn. 12.8-6
C_s	=	0.1656	

Base Shear, V = 0.1159 W

(Includes 0.7 factor from ASD Basic LC)

Vertical Shear Distribution

Story	h (ft)	Area (sq ft)	DL (psf)	w_x (lb)	w_x x h	C_{vx}	C_{sx}*
1	8	920	30	27600	220800	0.1750	0.0543
2	18.2	822	30	24660	448812	0.3558	0.1236
3	27.4	720	30	21600	591840	0.4692	0.1860
	Sum:	2462		73860	1261452		

*Derived equivalent shear ratio per story: $F_x = C_{sx} w_x$

where: $C_{sx} = C_{vx} C_s (W/w_x)$

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Project	Village Walk		
Client	Standard Pacific Homes - B	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (V)	85 mph (3-second gust)	
Importance Factor (I)	1.00 ASCE 7 - Table 6-1	
Exposure Category	C ASCE 7 - Section 6.5.6.3;	
Directionality Factor (K_d)	0.85 ASCE 7 - Table 6-4	
Gust Factor (G)	0.85 ASCE 7 - Section 6.5.8.1	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\, K_z\, K_{zt}\, K_d\, V^2\, I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects Hill Type None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	29.90 ft	Velocity Pressure (q_h) for MWFRS	15.39 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.18
min L/B (Front to Back)	1.59
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.38

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C 15.39 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
8.0 ft	-1.04	18.81	-1.28	22.53
15.0 ft	-0.95	17.33	-1.09	19.57
18.2 ft	-0.92	16.87	-1.03	18.65
22.0 ft	-0.89	16.42	-0.97	17.76

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-1.17	
Int. Pressure Coeff. (*Cpi*)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-13 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	psf	Available to offset overturning from wind

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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Beam Specifications

BEAM #	SIZE	GRADE	LOCATION
Beam #1	3 1/2"x 9 1/2"	1.5E SCL	Beam over stair @ Roof
Beam #2	5 1/4"x14"	1.5E SCL	Beam over Living @ third floor
Beam #3	3 1/2"x 9 1/2"	1.5E SCL	Beam over living / dining @ third floor
Beam #4	5 1/4"x14"	1.9E SCL	Beam over Deck
Beam #5	3 1/2"x11 7/8"	1.5E SCL	Deck beam under beam #4
Beam #6	4x10	#2 D.F.	Deck beam
Beam #7	3 1/2"x14"	1.5E SCL	Beam over Tech
Beam #8	3 1/2"x14"	1.5E SCL	Beam over hall @ second floor
Beam #9	7"x14"	1.5E SCL	Beam over bedroom #3 @ second floor
Beam #10	3 1/2"x14"	1.5E SCL	Beam over garage
Beam #11	6 3/4"x 24"	GLB	Beam over garage
Beam #12	5 1/4"x16"	1.9E SCL	Garage Header

Header Specifications

First & Second Floor Walls

Length	Size	Grade
4'-0"	4x8	#2 D.F.
6'-0"	4x10	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Third Floor Walls

Length	Size	Grade
4'-0"	4x6	#2 D.F.
6'-0"	4x8	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Description : Headers Unit 1

Wood Beam Design : Headers Unit 1

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

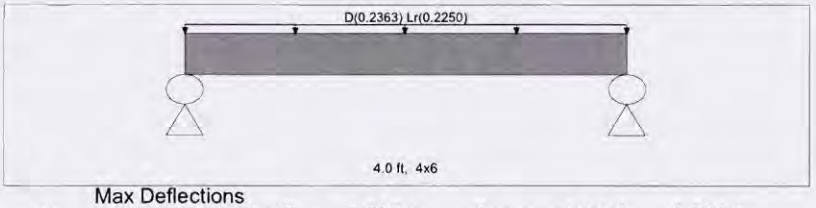
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 11.250 ft

Design Summary

Max fb/Fb Ratio = **0.536** : 1
fb : Actual : 627.34 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.309** : 1
fv : Actual : 55.59 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.47		0.45				
Right Support	0.47		0.45				



Max Deflections

Downward L+Lr+S	0.017 in	Downward Total	0.034 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2860 >360	Total Defl Ratio	1395 >240

Wood Beam Design : 6 ft Headers Upper Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

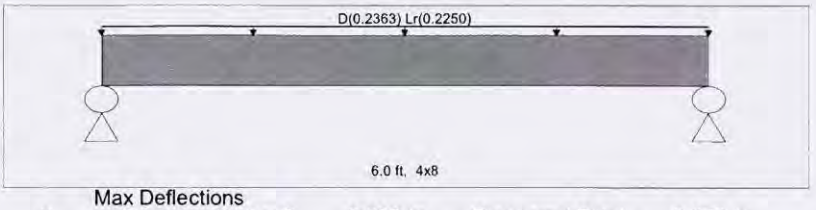
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 11.250 ft

Design Summary

Max fb/Fb Ratio = **0.694** : 1
fb : Actual : 812.34 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.364** : 1
fv : Actual : 65.44 psi at 5.400 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.71		0.68				
Right Support	0.71		0.68				



Max Deflections

Downward L+Lr+S	0.037 in	Downward Total	0.076 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1941 >360	Total Defl Ratio	946 >240

Wood Beam Design : 4 ft Headers Third Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

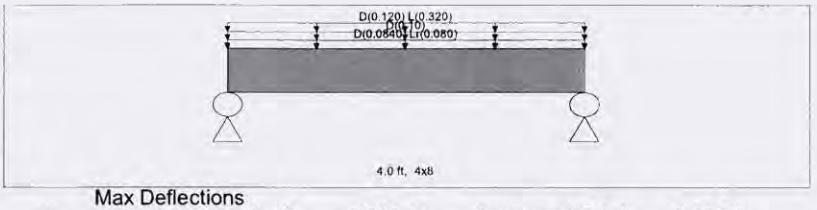
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 4.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft

Design Summary

Max fb/Fb Ratio = **0.417** : 1
fb : Actual : 488.43 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.287** : 1
fv : Actual : 51.64 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.61	0.64	0.16				
Right Support	0.61	0.64	0.16				



Max Deflections

Downward L+Lr+S	0.013 in	Downward Total	0.023 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3685 >360	Total Defl Ratio	2093 >240

Wood Beam Design : 6 ft Headers Third Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade :	No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

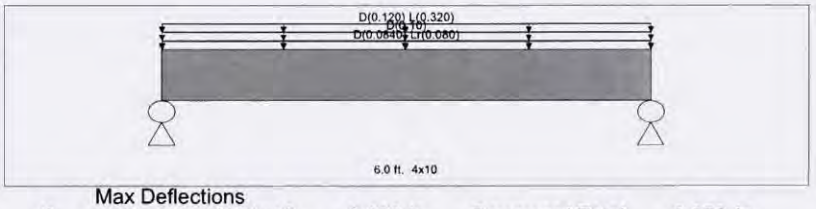
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 4.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft

Design Summary

Max fb/Fb Ratio = **0.625** : 1
fb : Actual : 675.12 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.360** : 1
fv : Actual : 64.76 psi at 5.240 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.91	0.96	0.24				
Right Support	0.91	0.96	0.24				



Max Deflections

Downward L+Lr+S	0.032 in	Downward Total	0.056 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2267 >360	Total Defl Ratio	1288 >240

Wood Beam Design : 4 ft Headers second floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade :	No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

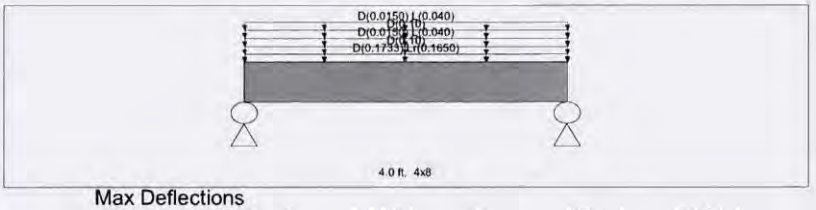
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 8.250 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 0.0 to 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.393** : 1
fb : Actual : 459.47 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.270** : 1
fv : Actual : 48.58 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.81	0.16	0.33				
Right Support	0.81	0.16	0.33				



Max Deflections

Downward L+Lr+S	0.008 in	Downward Total	0.021 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	6016 >360	Total Defl Ratio	2273 >240

Wood Beam Design : 4 ft Headers second floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

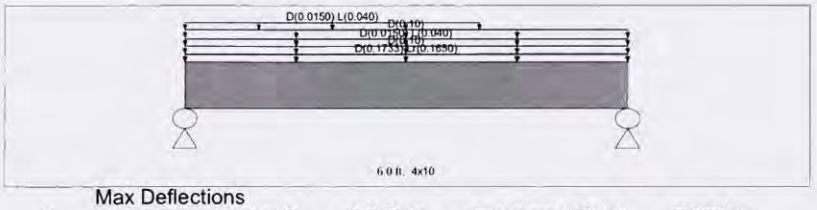
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 8.250 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 0.0 to 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.578** : 1
fb : Actual : 624.31 psi at 2.980 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.335** : 1
fv : Actual : 60.23 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.20	0.23	0.50				
Right Support	1.18	0.17	0.50				



Max Deflections

Downward L+Lr+S	0.019 in	Downward Total	0.050 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3857 >360	Total Defl Ratio	1429 >240

Wood Beam Design : Header at rear wall at Roof under GT

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

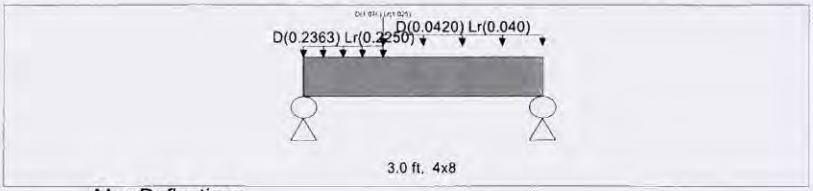
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 1.0 ft, Trib= 11.250 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 1.0 to 3.0 ft, Trib= 2.0 ft
Point: D = 1.076, Lr = 1.025 k @ 1.0 ft

Design Summary

Max fb/Fb Ratio = **0.538** : 1
fb : Actual : 629.75 psi at 1.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.513** : 1
fv : Actual : 92.39 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.94		0.90				
Right Support	0.45		0.43				



Max Deflections

Downward L+Lr+S	0.006 in	Downward Total	0.012 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	6278 >360	Total Defl Ratio	3063 >240

Wood Beam Design : Porch Headers

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

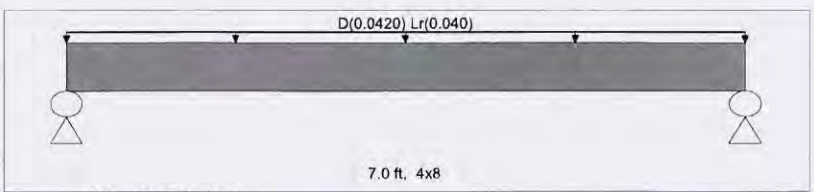
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft

Design Summary

Max fb/Fb Ratio = **0.168** : 1
fb : Actual : 196.57 psi at 3.500 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.079** : 1
fv : Actual : 14.14 psi at 6.417 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.15		0.14				
Right Support	0.15		0.14				



Max Deflections

Downward L+Lr+S	0.012 in	Downward Total	0.025 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	6876 >360	Total Defl Ratio	3354 >240

Description : Beams Unit 1 (Beam #1 to Beam #7)

Wood Beam Design : Beam #1 at Roof

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x9.5, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

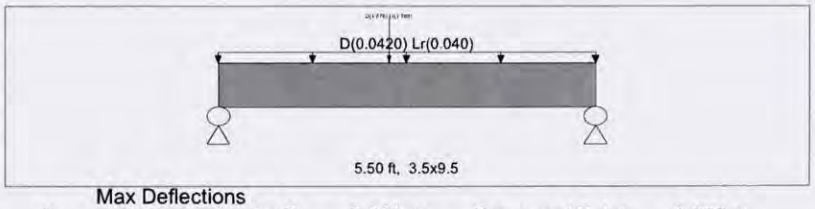
Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Point: D = 1.878, Lr = 1.788 k @ 2.50 ft

Design Summary

Max fb/Fb Ratio =	**0.561** : 1			
fb : Actual :	1,206.50 psi	at	2.493 ft	in Span # 1
Fb : Allowable :	2,150.00 psi			
Load Comb :	+D+Lr+H			
Max fv/FvRatio =	**0.342** : 1			
fv : Actual :	97.47 psi	at	0.000 ft	in Span # 1
Fv : Allowable :	285.00 psi			
Load Comb :	+D+Lr+H			



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.14		1.09				
Right Support	0.97		0.92				

Max Deflections

Downward L+Lr+S	0.031 in	Downward Total	0.063 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2157 >360	Total Defl Ratio	1052 >240

Wood Beam Design : Beam #2

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

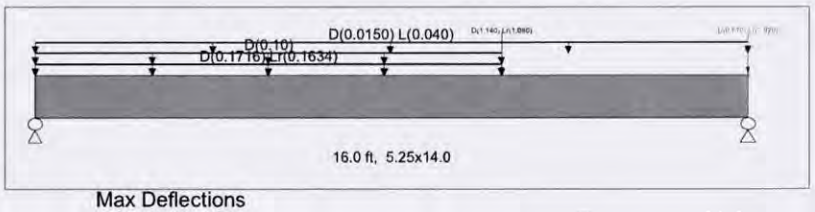
Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 10.50 ft, Trib= 8.170 ft
Unif Load: D = 0.10 k/ft, 0.0 to 10.50 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Point: D = 1.140, Lr = 1.090 k @ 10.50 ft
Point: D = 0.970, Lr = 0.920 k @ 16.0 ft

Design Summary

Max fb/Fb Ratio =	**0.566** : 1			
fb : Actual :	1,216.27 psi	at	8.800 ft	in Span # 1
Fb : Allowable :	2,150.00 psi			
Load Comb :	+D+Lr+H			
Max fv/FvRatio =	**0.247** : 1			
fv : Actual :	70.43 psi	at	0.000 ft	in Span # 1
Fv : Allowable :	285.00 psi			
Load Comb :	+D+Lr+H			



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	2.43	0.32	1.53				
Right Support	2.77	0.32	2.20				

Max Deflections

Downward L+Lr+S	0.210 in	Downward Total	0.469 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	913 >480	Total Defl Ratio	409 >360

Wood Beam Design : Beam #3

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

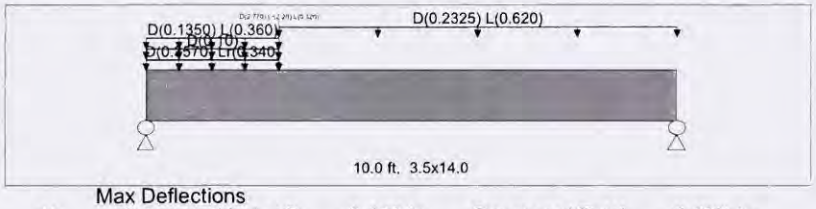
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 2.50 ft, Trib= 17.0 ft
Unif Load: D = 0.10 k/ft, 0.0 to 2.50 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 0.0 to 2.50 ft, Trib= 9.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 2.50 to 10.0 ft, Trib= 15.50 ft
Point: D = 2.770, Lr = 2.20, L = 0.320 k @ 2.50 ft

Design Summary

Max fb/Fb Ratio = **0.801** : 1
fb : Actual : 1,721.64 psi at 3.133 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.709** : 1
fv : Actual : 201.95 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	4.03	2.77	2.39				
Right Support	1.97	3.10	0.66				

Max Deflections

Downward L+Lr+S	0.172 in	Downward Total	0.283 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	699 >480	Total Defl Ratio	423 >360

Wood Beam Design : Beam #4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.9E SCL			
Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

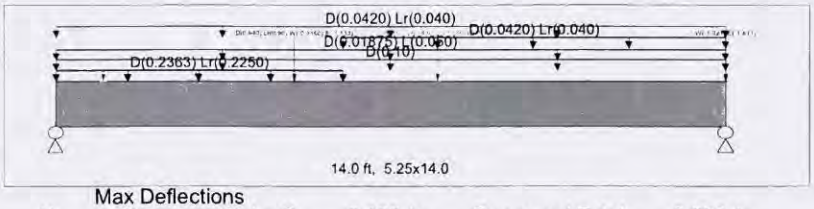
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 6.0 ft, Trib= 11.250 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.250 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 6.0 to 14.0 ft, Trib= 2.0 ft
Point: D = 0.940, Lr = 0.90, W = -0.3160, E = -1.133 k @ 5.0 ft
Point: D = 0.450, Lr = 0.430, W = 0.3160, E = 1.133 k @ 8.0 ft
Point: W = 1.021, E = 1.811 k @ 1.0 ft
Point: W = -1.021, E = -1.811 k @ 14.0 ft
Unif Load: D = 0.0420, Lr = 0.040 k/ft, 0.0 to 14.0 ft

Design Summary

Max fb/Fb Ratio = **0.520** : 1
fb : Actual : 1,286.37 psi at 5.273 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.326** : 1
fv : Actual : 92.96 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+Lr+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	3.13	0.35	2.20		0.88	1.44	
Right Support	2.26	0.35	1.37		-0.88	-1.44	

Max Deflections

Downward L+Lr+S	0.130 in	Downward Total	0.293 in
Upward L+Lr+S	0.000 in	Upward Total	-0.021 in
Live Load Defl Ratio	1291 >480	Total Defl Ratio	573 >360

Wood Beam Design : Beam #5 with uplift reaction from Beam #4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

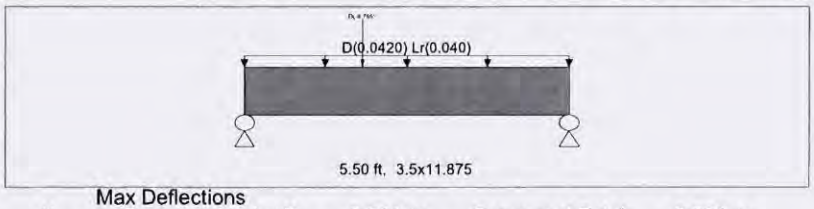
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Point: D = -6.785 k @ 2.0 ft

Design Summary

Max fb/Fb Ratio = **0.575** : 1
fb : Actual : 1,237.26 psi at 1.998 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : D Only

Max fv/FvRatio = **0.543** : 1
fv : Actual : 154.69 psi at 1.998 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : D Only

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	-4.20		0.11				
Right Support	-2.35		0.11				



Max Deflections

Downward L+Lr+S	0.001 in	Downward Total	0.001 in
Upward L+Lr+S	0.000 in	Upward Total	-0.049 in
Live Load Defl Ratio	58400 >480	Total Defl Ratio	1338 >360

Wood Beam Design : Beam #5 with downward reaction from Beam #4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber Wood Grade : 1.5E SCL

Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

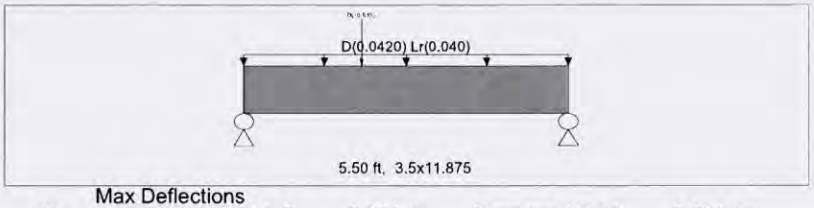
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Point: D = 10.535 k @ 2.0 ft

Design Summary

Max fb/Fb Ratio = **0.928** : 1
fb : Actual : 1,996.21 psi at 1.998 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.867** : 1
fv : Actual : 247.21 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	6.82		0.11				
Right Support	3.95		0.11				



Max Deflections

Downward L+Lr+S	0.001 in	Downward Total	0.081 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	58400 >480	Total Defl Ratio	817 >360

Wood Beam Design : Beam #6

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

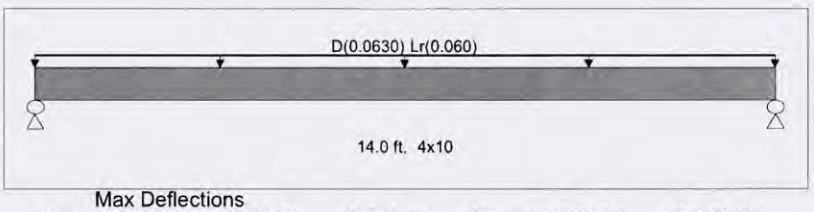
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.671** : 1
fb : Actual : 724.52 psi at 7.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.198** : 1
fv : Actual : 35.64 psi at 13.253 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.44		0.42				
Right Support	0.44		0.42				



Max Deflections

Downward L+Lr+S	0.141 in	Downward Total	0.289 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1190 >360	Total Defl Ratio	580 >240

Wood Beam Design : Beam #7

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber Wood Grade : 1.5E SCL

Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 11.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 9.0 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 1.50 ft

Multiple Simple Beam

File = G:\JO7AE6~1\HS13068\CALCUL~1\Enercalc\HS1306~4.EC6
ENERCALC, INC. 1983-2013, Build:6.13.2.27, Ver:6.13.2.27
Lic. # : KW-06004839 — Licensee : HARRIS & SLOAN CONSULTING

Design Summary

Max fb/Fb Ratio = **0.246** : 1
fb : Actual : 529.36 psi at 3.250 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.216** : 1
fv : Actual : 61.44 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.62	1.17	0.81				
Right Support	1.62	1.17	0.81				



Max Deflections

Downward L+Lr+S	0.021 in	Downward Total	0.037 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3801 >480	Total Defl Ratio	2093 >360

Wood Beam Design : Header under beam #4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **6x8, Sawn, Fully Braced**

Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species : Structural Composite Lumber — Wood Grade : 1.5E SCL

Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft

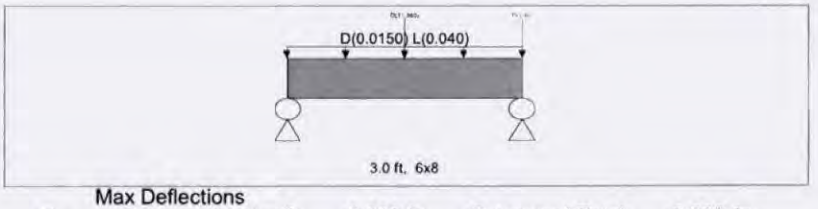
Point: D = 11.360 k @ 1.50 ft

Point: D = 3.60 k @ 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.929** : 1
fb : Actual : 1,997.27 psi at 1.500 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.731** : 1
fv : Actual : 208.31 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H



Max Reactions (k)

	D	L	Lr	S	W	E	H
Left Support	5.70	0.06					
Right Support	9.30	0.06					

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.039 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	999999 >480	Total Defl Ratio	932 >360

Description : Beams Unit 1 (Beam #8 to Beam #12)

Wood Beam Design : Beam #8

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

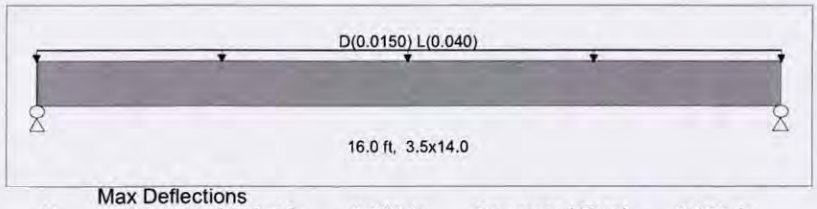
Applied Loads

Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft

Design Summary

Max fb/Fb Ratio = **0.086** : 1
fb : Actual : 184.72 psi at 8.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.041** : 1
fv : Actual : 11.58 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.12	0.32					
Right Support	0.12	0.32					

Max Deflections

Downward L+Lr+S	0.049 in	Downward Total	0.068 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3887 >480	Total Defl Ratio	2827 >360

Wood Beam Design : Header under Beam #8 & PL from Beam #2 above

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

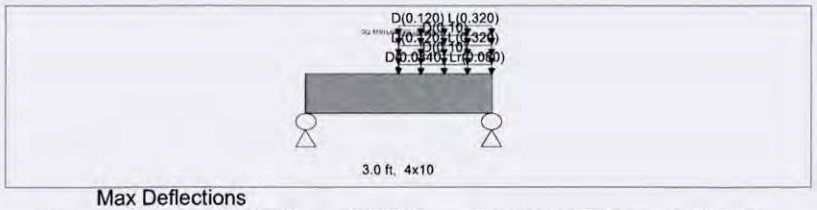
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, 1.50 ft to 3.0 ft, Trib= 4.0 ft
Unif Load: D = 0.10 k/ft, 1.50 to 3.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 1.50 to 3.0 ft, Trib= 8.0 ft
Unif Load: D = 0.10 k/ft, 1.50 to 3.0 ft, Trib= 1.0 ft
Point: D = 2.550, Lr = 1.530, L = 0.640 k @ 1.50 ft
Unif Load: D = 0.120, L = 0.320 k/ft, 1.50 to 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.831** : 1
fb : Actual : 897.18 psi at 1.500 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.640** : 1
fv : Actual : 115.26 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.47	0.56	0.80				
Right Support	1.86	1.04	0.86				

Max Deflections

Downward L+Lr+S	0.008 in	Downward Total	0.016 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	4782 >480	Total Defl Ratio	2311 >360

Wood Beam Design : Beam #9 under shear wall in bldg 201, 203 & 301

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **7x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

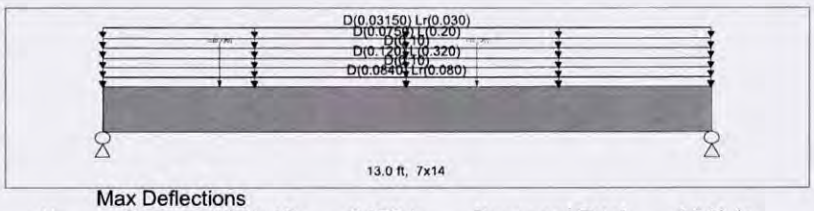
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 4.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Point: E = 0.730 k @ 2.50 ft
Point: E = 0.730 k @ 8.0 ft
Unif Load: D = 0.0750, L = 0.20 k/ft, 0.0 to 13.0 ft
Unif Load: D = 0.03150, Lr = 0.030 k/ft, 0.0 to 13.0 ft

Design Summary

Max fb/Fb Ratio = **0.531** : 1
fb : Actual : 1,142.41 psi at 6.500 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.297** : 1
fv : Actual : 84.75 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	3.32	3.38	0.72			0.87	
Right Support	3.32	3.38	0.72			0.59	

Max Deflections

Downward L+Lr+S	0.170 in	Downward Total	0.313 in
Upward L+Lr+S	0.000 in	Upward Total	-0.036 in
Live Load Defl Ratio	920 >480	Total Defl Ratio	498 >360

Wood Beam Design : Beam #9 under shear wall in bldg 202

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **7x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

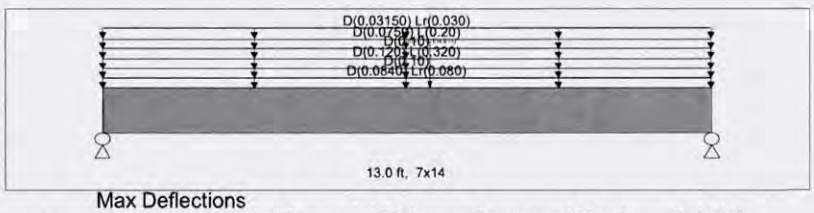
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 4.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Point: W = 4.170, E = 4.014 k @ 7.0 ft
Unif Load: D = 0.0750, L = 0.20 k/ft, 0.0 to 13.0 ft
Unif Load: D = 0.03150, Lr = 0.030 k/ft, 0.0 to 13.0 ft

Design Summary

Max fb/Fb Ratio = **0.577** : 1
fb : Actual : 1,985.45 psi at 6.977 ft in Span # 1
Fb : Allowable : 3,440.00 psi
Load Comb : +1.210D+1.923E+H

Max fv/FvRatio = **0.297** : 1
fv : Actual : 84.75 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	3.32	3.38	0.72		1.92	1.85	
Right Support	3.32	3.38	0.72		2.25	2.16	

Max Deflections

Downward L+Lr+S	0.170 in	Downward Total	0.414 in
Upward L+Lr+S	0.000 in	Upward Total	-0.137 in
Live Load Defl Ratio	920 >480	Total Defl Ratio	376 >360

Wood Beam Design : Beam #10

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

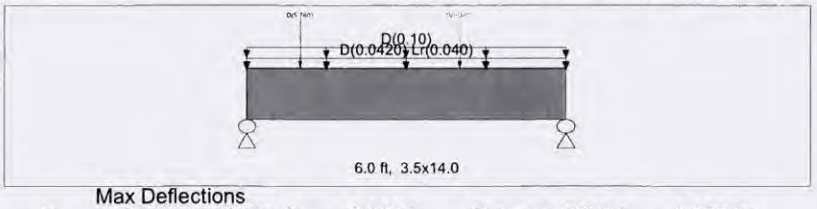
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Point: D = 5.760 k @ 1.0 ft
Point: D = 9.360 k @ 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.739** : 1
fb : Actual : 1,587.78 psi at 4.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.809** : 1
fv : Actual : 230.66 psi at 4.840 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	8.35		0.12				
Right Support	7.63		0.12				



Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.075 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	999999 >480	Total Defl Ratio	966 >360

Wood Beam Design : Beam #11

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **6.75x24, GLB, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : DF/DF Wood Grade : 24F - V8

Fb - Tension	2,400.0 psi	Fc - Prll	1,650.0 psi	Fv	265.0 psi	Ebend- xx	1,800.0 ksi	Density	32.210 pcf
Fb - Compr	2,400.0 psi	Fc - Perp	650.0 psi	Ft	1,100.0 psi	Eminbend - xx	930.0 ksi		

Applied Loads

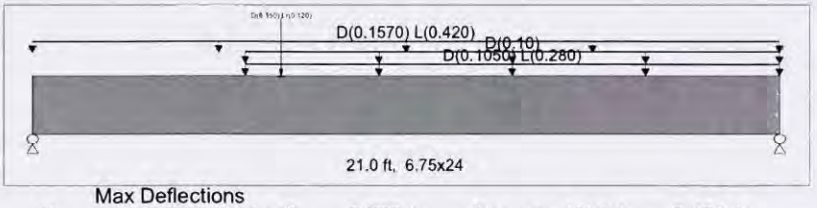
Unif Load: D = 0.0150, L = 0.040 k/ft, 6.0 to 21.0 ft, Trib= 7.0 ft
Unif Load: D = 0.10 k/ft, 6.0 to 21.0 ft, Trib= 1.0 ft
Point: D = 8.350, Lr = 0.120 k @ 7.0 ft
Unif Load: D = 0.1570, L = 0.420 k/ft, 0.0 to 21.0 ft

Design Summary

Max fb/Fb Ratio = **0.731** : 1
fb : Actual : 1,593.37 psi at 8.260 ft in Span # 1
Fb : Allowable : 2,178.45 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.457** : 1
fv : Actual : 121.23 psi at 0.000 ft in Span # 1
Fv : Allowable : 265.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	8.31	5.91	0.08				
Right Support	6.41	7.11	0.04				



Max Deflections

Downward L+Lr+S	0.206 in	Downward Total	0.479 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1222 >480	Total Defl Ratio	526 >360

Wood Beam Design : Beam #12

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x16.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber Wood Grade : 1.9E SCL

Fb - Tension	2475 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1900 ksi	Density	35 pcf
Fb - Compr	2475 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	875 ksi		

Applied Loads

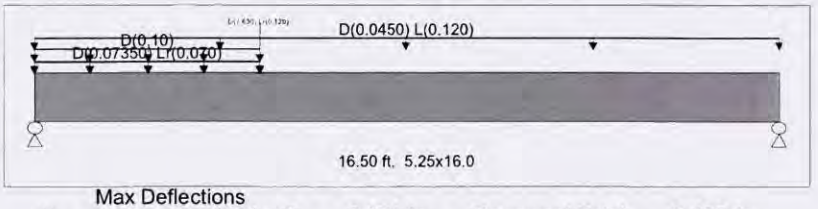
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 5.0 ft, Trib= 3.50 ft
Unif Load: D = 0.10 k/ft, 0.0 to 5.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 3.0 ft
Point: D = 7.630, Lr = 0.120 k @ 5.0 ft

Design Summary

Max fb/Fb Ratio = **0.711** : 1
fb : Actual : 1,759.03 psi at 5.005 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.437** : 1
fv : Actual : 124.58 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	6.43	0.99	0.38				
Right Support	2.81	0.99	0.09				



Max Deflections

Downward L+Lr+S	0.071 in	Downward Total	0.405 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2795 >480	Total Defl Ratio	489 >360

Description : Overstrength rims

Wood Beam Design : Rim along P2

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.250 X 14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species : Structural Composite Lumber — Wood Grade : 1.3E SCL

Fb - Tension	1650 psi	Fc - Prll	1400 psi	Fv	285 psi	Ebend- xx	1300 ksi	Density	35 pcf
Fb - Compr	1650 psi	Fc - Perp	680 psi	Ft	1000 psi	Eminbend - xx	600 ksi		

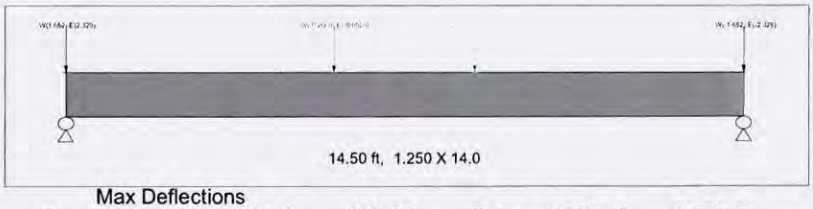
Applied Loads

Point: W = 1.652, E = 2.329 k @ 0.0 ft
Point: W = -0.2060, E = -0.9520 k @ 5.750 ft
Point: W = 0.2060, E = 0.9520 k @ 8.750 ft
Point: W = -1.652, E = -2.329 k @ 14.50 ft

Design Summary

Max fb/Fb Ratio = **0.315** : 1
fb : Actual : 831.12 psi at 5.752 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.355** : 1
fv : Actual : 161.79 psi at 5.752 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support					1.61	2.13	
Right Support					-1.61	-2.13	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.021 in
Upward L+Lr+S	0.000 in	Upward Total	-0.021 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	8226 >240

Studs up to and Including 10' - 0" in Height

Table 2308.9.1 of the 2009 IBC lists the maximum height and spacing for wood studs which conform to the limitations of the conventional framing provisions (Section 2308.2). While the design loads and roof spans used in this project do not explicitly meet the conventional framing limitations, it is HSCGI's interpretation that Table 2308.9.1 is applicable for any stud wall with applied loads less than or equal to the worst case loading allowed by the conventional framing provisions (i.e. the loads resulting from roofs, floors, and/or walls spanning the maximum distance and carrying the maximum loads allowed by the limitations listed below).

Limitations (Summary of Section 2308.2):

1. Structure is not more than 3 stories.
2. Plate heights are not greater than 10' - 0".
3.1. Average dead load of combined roof and ceiling, exterior walls, floors and partitions does not exceed 15 psf .
3.2. Live load does not exceed 40 psf.
3.3. Ground snow load does not exceed 50 psf.
4. Wind speed does not exceed 100 mph.
5. Roof truss and rafter spans (between points of vertical supports) are not greater than 40 feet.
6. Structure does not belong to Occupancy Category IV.
7. Irregularity limitation. Limits for irregularities apply to wall bracing, not to Table 2308.9.1.
8. Structure does not fall under DSA-SS or OSHPD 1, 2 or 4.

Determination of Maximum Loads and Spans:

The conventional framing limitations, together with the maximum floor span listed in Table 2308.8(2), have been used to determine the equivalent maximum allowable loads that may be applied to wood wall studs. Below is a list of maximum loads and corresponding maximum spans allowed by section 2308.

Parameter	Roof	Floor	Wall
Dead Load	15 psf	15 psf	15 psf
Span/Height	40 feet	21 feet	10 feet

Table 2308.9.1 allows 10' - 0" tall 2x4 wall studs spaced at 16" o.c. to support one floor, roof and ceiling. Based on the spans and loads listed above, the maximum allowable dead load (DL) on a standard stud wall is as follows:

Exterior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)/2	= 300 plf
Floor	(15psf DL) x (21 foot floor span)/2	= 158 plf
Wall	(15psf DL) x (10 foot wall height)	= 150 plf
		= 608 plf

Interior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)	= 600 plf
Floor	(15psf DL) x (21 foot floor span)	= 315 plf
		= 915 plf

Wood studs exceeding the height and/or loading criteria listed above are calculated using the design criteria of IBC Chapters 16 and 23.

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Project	Village Walk		
Client	Standard Pacific Home	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Stud Calculations Per 2005 NDS

STUD/POST		**Stud/Post Description**			**Stud/Post Description**		
Height	ft		**19.20**			**9.00**	
Depth/Width (d)	in		5.50			5.50	
Thickness	in		3.00			3.00	
Grade			DF Stud			DF Stud	
O.C. Spacing	in		16.00			16.00	
Repetitive Factor			NDS Repetitive Factor			NDS Repetitive Factor	
Location			exterior - zone 5			interior	
LOADS							
AXIAL LOAD - DL	plf	0.00	0.00	0.00	0.00	0.00	0.00
AXIAL LOAD - LL	plf	0.00	0.00	0.00	0.00	0.00	0.00
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
WIND LOAD (C&C)	psf	5.00	18.65	13.99	5.00	5.00	3.75
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.15	1.15	1.15
PROPERTIES							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	510.0	510.0	510.0
Fb (Adjusted)	psi	805.0	805.0	805.0	805.0	805.0	805.0
Fcll (Adjusted)	psi	850.0	850.0	850.0	850.0	850.0	850.0
COMPRESSION		DL+LL	DL+W	DL+0.75(LL+W)	DL+LL	DL+W	DL+0.75(LL+W)
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		41.9			19.6		
F_{cE}		239	239	239	1087	1087	1087
F*c	psi	978	1360	1360	978	1360	1360
F_{cE}/Fc^*		0.24	0.18	0.18	1.11	0.80	0.80
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.23	0.17	0.17	0.73	0.61	0.61
Fc'	psi	225	230	230	710	829	829
fc	psi	0	0	0	0	0	0
Stress Ratio		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
BENDING							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	3686.4	13752	10314	810	810	608
Fb'	psi	926	1288	1288	926	1288	1288
fb	psi	244	909	682	54	54	40
Stress Ratio		**0.2633**	**0.7059**	**0.5295**	**0.0578**	**0.0416**	**0.0312**
COMBINED STRESSES							
(fc/F'c)^2		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
fb/Fb'(1-(fc/Fce)		0.2633	0.7059	0.5295	0.0578	0.0416	0.0312
Combined Stress Ratio		**0.2633**	**0.7059**	**0.5295**	**0.0578**	**0.0416**	**0.0312**
DEFLECTION							
Deflection	in	0.350	1.306	0.979	0.017	0.017	0.013
0.7 Deflection	in		0.914	0.686		0.012	0.009
Deflection Limit (L/240)	in	0.960	0.960	0.960	0.450	0.450	0.450
Deflection Ratio		**0.3646**	**0.9522**	**0.7142**	**0.0376**	**0.0263**	**0.0197**

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Project	Village Walk		
Client	Standard Pacific Hc	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Footing Calculations

Soils Engineer

ENGEO, Inc. (San Ramon)
2010 Crow Canyon Pl., Ste. 250
San Ramon, CA 94583

Report #: 6858.200.102
Date: 04/16/2013

Foundation Design Information

Allowable Soil Pressure	=	1000 psf
Retaining Wall Design:		
Friction Factor	=	N/A
Active Pressure	=	N/A pcf
Passive Pressure	=	N/A pcf

Post-Tension Foundation Calculations (expansive soil)

Average Soil Pressure = 1,000 psf

		Center Lift	Edge Lift
Edge Moisture Variation (e_m)	=	5.10 ft	2.70 ft
Differential Soil Movement (y_m)	=	1.50 in	2.00 in

Design Rectangles
R1 = 0.00 ft x 0.00 ft

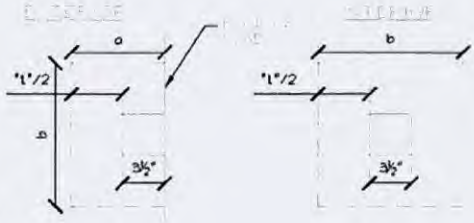
Maximum Point Load Capacity of Slab
Slab Thickness (t) = 12 in
Concrete Compressive Strength (f'c) = 4000 psi

Punching Shear Calculation

$$V_u = \phi V_n$$
$$\phi = 0.85$$
$$V_c = 4\sqrt{f_c}\, b_o\, t$$
$$V_{allowable} = V_u / 1.7$$

Exterior Condidtion $b_o = 2a+b$ = 34.5 in
Maximum allowable point load = 52 kips

Interior Condidtion $b_o = 4b$ = 62 in
Maximum allowable point load = 94 kips



hscgi limit 10,000# at interior
8000# at exterior

Pad Footing Calculations

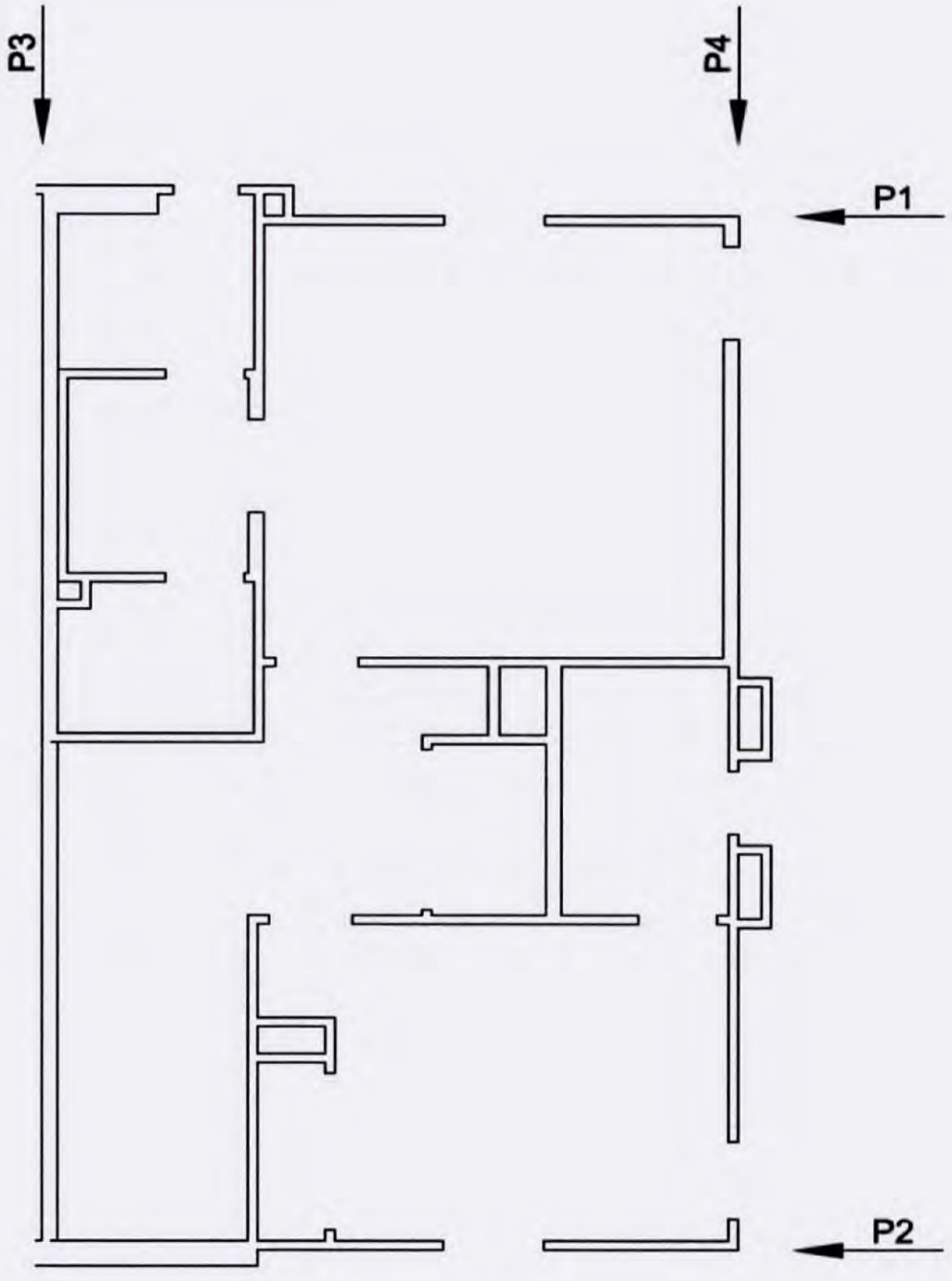
Maximum Localized Bearing Pressure = 1,000 psf
Minimum Pad Footing Depth = 12 in

Footing #	Load	Minimum Size	Reinforcing
FTG#3	9000#	36" SQUARE X 12" DEEP	#4 BARS AT 8" OC
FTG#5	16000#	48" SQUARE X 18" DEEP	#5 BARS AT 8" OC

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3rd Floor P-Line Layout



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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P1 **3rd Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	33.34	0	ft
Additional Width	0	1	ft
Avg. Roof Ht abv Plate	3.5	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	16.80	16.80	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	17.01	17.01	psf
Wall Load	1120	67	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	58	1	ft^2
Pressure @ Elevation	8.67	8.67	psf
Roof Load	506	9	#
Additional Load	=		#

Total Wind Load = **1702 #**

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	13.34	ft
Net Length of Walls	=	10.34	ft
Maximum H:W Ratio	=	1.22	
Seismic H:W Adjustment	=	1.00	
		Shear @ T&B of wall	
Wind Wall Shear	=	**165 plf**	**128 plf**
Seismic Wall Shear	=	**251 plf**	**195 plf**
1.25 Seismic Shear*	=	**314 plf**	

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	33.34	0	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area	7.67	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1860	W
Rho	=	1.30	
Diaphragm Load	2595	0	#
Additional Load	=		#

Total Seismic Load = **2595 #**

1.25 Total Load* = **3244 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2595#	76#	
Diaphgram Shear	124 plf (E)	4 plf (W)	

Total Diaphragm Length	=	21 ft
Total Diaphragm Shear	=	124 plf (E)
Shear for drag & collectors*	=	154 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN

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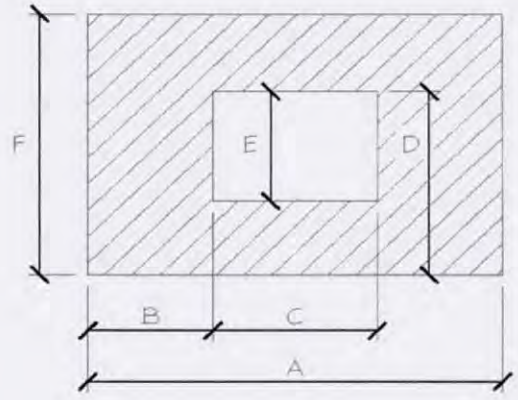
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P1 **3rd Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 13.34 ft.
Dist from left end of wall to 1st opening	B	= 4.50 ft.
Opening Width	C	= 3.00 ft.
Net Length		= 10.34 ft.
Opening Header Height	D	= 6.67 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 8.00 ft.



LOADS

Wind Load (W)	1702#
Seismic Load (E)	2595#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	128 plf	195 plf
Piers	165 plf	251 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 330 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-295#	-264#
Left Pier	905#	1380#
Right Pier	905#	1380#
Bottom	213#	325#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown KN
Left End	1386# (E)	1
L King	1133# (E)	1
R King	1133# (E)	1
Right End	1386# (E)	1

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P2 **3rd Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	33.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	4	0	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	16.80	16.80	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	17.01	17.01	psf
Wall Load	1120	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	67	0	ft^2
Pressure @ Elevation	8.67	8.67	psf
Roof Load	578	0	#
Additional Load	=		#

Total Wind Load = **1698 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	14.50 ft
Net Length of Walls	=	11.50 ft
Maximum H:W Ratio	=	0.96
Seismic H:W Adjustment	=	1.00

			Shear @ T&B of wall
Wind Wall Shear	=	**148 plf**	**117 plf**
Seismic Wall Shear	=	**223 plf**	**177 plf**
1.25 Seismic Shear*	=	**279 plf**	

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	33.34	0	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area	4.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1860	W
Rho	=	1.30	
Diaphragm Load	2569	0	#
Additional Load	=		#

Total Seismic Load = **2569 #**

1.25 Total Load* = **3211 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2569#	0#	
Diaphgram Shear	122 plf (E)	0 plf (E)	

Total Diaphragm Length	=	21 ft
Total Diaphragm Shear	=	122 plf (E)
Shear for drag & collectors*	=	153 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN

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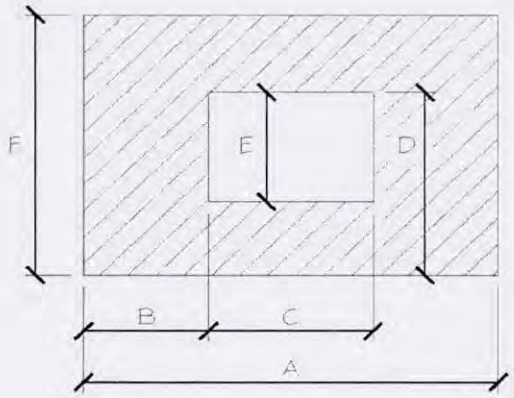
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P2 **3rd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 14.50 ft.
Dist from left end of wall to 1st opening	B	= 5.75 ft.
Opening Width	C	= 3.00 ft.
Net Length		= 11.50 ft.
Opening Header Height	D	= 6.67 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 8.00 ft.



LOADS

Wind Load (W)	1698#
Seismic Load (E)	2569#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	117 plf	177 plf
Piers	148 plf	223 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 266 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-339#	-315#
Left Pier	812#	1228#
Right Pier	812#	1228#
Bottom	196#	296#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location
715 #	0.00 ft.
715 #	14.50 ft.

	Total Uplift	Holdown KN
Left End	1866# (E)	2
L King	952# (E)	1
R King	952# (E)	1
Right End	1866# (E)	2

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
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Lateral Analysis Calculations

P3 **3rd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	15.26	15.26	psf
Above Plate:			
Wall Area Above Plate	7	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	15.47	15.47	psf
Wall Load	749	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	46	0	ft^2
Pressure @ Elevation	9.68	9.68	psf
Roof Load	440	0	#
Additional Load	=		#

Total Wind Load = **1189 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**74 plf**
Seismic Wall Shear	=	**128 plf**
1.25 Seismic Shear*	=	**159 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Length of Diaphragm	34.8	34.8	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1860	W
Rho	=	1.00	
Diaphragm Load	2041	0	#
Additional Load	=		#

Total Seismic Load = **2041 #**
1.25 Total Load* = **2551 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	34.8	34.8	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2041#	0#	
Diaphgram Shear	59 plf (E)	0 plf (E)	

Total Diaphragm Length	=	35 ft
Total Diaphragm Shear	=	59 plf (E)
Shear for drag & collectors*	=	73 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
16.00 ft.	2.0 ft.						510# (E)	510# (E)	1		1	

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
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Date	7/8/13		

Lateral Analysis Calculations

P4 **3rd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	1	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	15.26	15.26	psf
Above Plate:			
Wall Area Above Plate	29	1	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	15.47	15.47	psf
Wall Load	1082	77	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	3	0	ft^2
Pressure @ Elevation	9.68	9.68	psf
Roof Load	29	0	#
Additional Load	=		#

Total Wind Load = **1187 #**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	20.00 ft
Maximum H:W Ratio	=	1.00
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**59 plf**
Seismic Wall Shear	=	**102 plf**
1.25 Seismic Shear*	=	**128 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Length of Diaphragm	34.8	34.8	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1860	W
Rho	=	1.00	
Diaphragm Load	2041	0	#
Additional Load	=		#

Total Seismic Load = **2041 #**
1.25 Total Load* = **2551 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	34.8	34.8	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2041#	77#	
Diaphgram Shear	59 plf (E)	2 plf (W)	

Total Diaphragm Length	=	35 ft
Total Diaphragm Shear	=	59 plf (E)
Shear for drag & collectors*	=	73 plf (E)

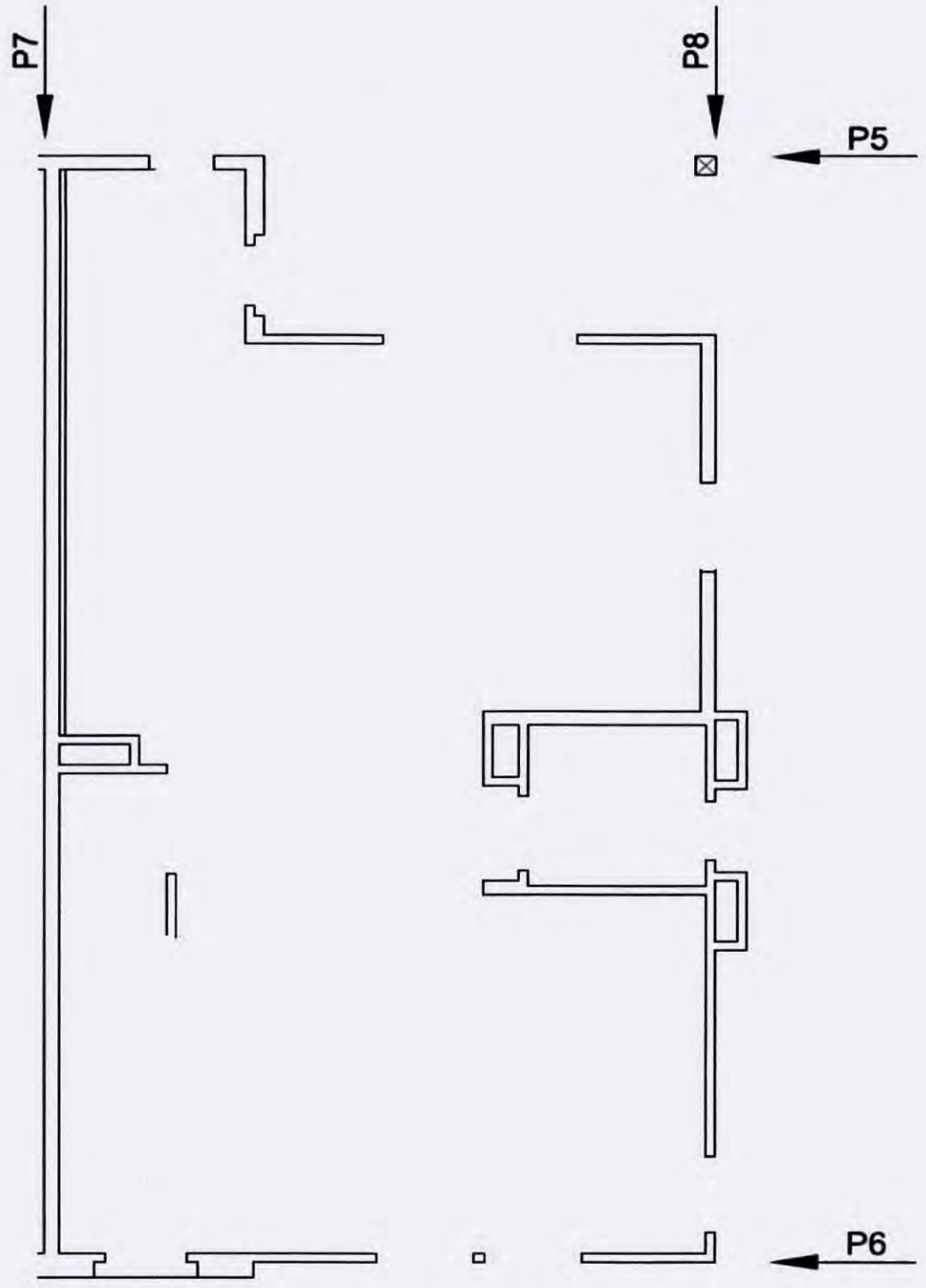
Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left KN	Holdown Right KN
8.00 ft.	4.0 ft.						486# (E)	486# (E)	**NONE**	**NONE**
12.00 ft.	4.0 ft.						320# (E)	320# (E)	**NONE**	**NONE**

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		
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2nd Floor P-Line Layout



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Client	Standard Pacific Homes	**Plan #**	1
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Date	7/8/13		

Lateral Analysis Calculations

P5 **2nd Floor; Rear; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	15.39	15.39	psf
Above Plate:			
Wall Area Above Plate	96	0	ft^2
Average Elevation	23.4	19.2	ft
Pressure @ Elevation	15.87	15.50	psf
Wall Load	2808	0	#
Mean Roof Height (h)	19.2	19.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	8.18	8.18	psf
Roof Load	0	0	#
Add'l Load (From P1)	=	1702	#

Total Wind Load = **4510 #**

Shear Wall Summary

# of Shear Walls	=	3
Total Length of Walls	=	10.75 ft
Maximum H:W Ratio	=	2.31
Seismic H:W Adjustment	=	0.87
Wind Wall Shear	=	**420 plf**
Seismic Wall Shear	=	**416 plf**
1.25 Seismic Shear*	=	**519 plf**

USE SHEAR WALL TYPE **12**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	37		0	ft
Length of Diaphragm	21.0		21.0	ft
Additional Diaphragm Area			0.	ft^2
Building Dead Load	30		30	psf
V	=		0.1236	W
Rho	=		1.30	
Diaphragm Load	1872		0	#
Add'l Load (From P1)	=		2595	#
Total Seismic Load	=		**4467**	#
1.25 Total Load*	=		**5584**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	21.0		21.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	2595#		0#	
Total Load in Diaphragm	4510#		0#	
Diaphgram Shear	215 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		21	ft
Total Diaphragm Shear	=		215 plf	(W)
Shear for drag & collectors*	=		266 plf	(E)

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
3.25 ft.	2.0 ft.						3049# (W)	3049# (W)	3		3	
3.50 ft.		6.0 ft.					3175# (E)	3175# (E)	3		3	
4.00 ft.		6.0 ft.					3154# (E)	3154# (E)	3		3	

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Project	Village Walk		
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Lateral Analysis Calculations

P6 **2nd Floor; Front; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Additional Width	0	0.5	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	15.39	15.39	psf
Above Plate:			
Wall Area Above Plate	96	3	ft^2
Average Elevation	23.4	23.4	ft
Pressure @ Elevation	15.87	15.87	psf
Wall Load	2808	76	#
Mean Roof Height (h)	19.2	19.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	8.18	8.18	psf
Roof Load	0	0	#
Add'l Load (From P2)	=	1698	#
Total Wind Load	=	**4582**	**#**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	10.00 ft
Maximum H:W Ratio	=	0.90
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**458 plf**
Seismic Wall Shear	=	**446 plf**
1.25 Seismic Shear*	=	**558 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	37		0	ft
Length of Diaphragm	21.0		21.0	ft
Additional Diaphragm Area			4.	ft^2
Building Dead Load	30		30	psf
V		=	0.1236	W
Rho		=	1.30	
Diaphragm Load	1872	=	19	#
Add'l Load (From P2)		=	2569	#
Total Seismic Load		=	**4460**	**#**
1.25 Total Load*		=	**5575**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	21.0		21.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	2808#		76#	
Diaphgram Shear	134 plf	(W)	4 plf	(W)
Total Diaphragm Length		=	21	ft
Total Diaphragm Shear		=	137 plf	(W)
Shear for drag & collectors*		=	137 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
10.00 ft.		6.0 ft.			1866#	10.00	3587# (E)	5454# (E)	3		6	

NOTE: SHEARWALL IS FOR BUILIDNGS 202 & 302 ONLY.
SEE FOLLOWING PAGES FOR CALCULATIONS OF
BUILDINGS 201, 203, AND 301

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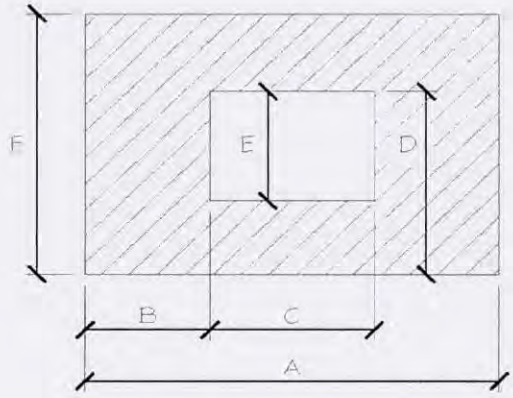
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Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P6 **2nd Floor; Front; Left to Right**
Bldgs 201 & 301

SHEARWALL GEOMETRY

Total Length	A	= 16.00 ft.
Dist from left end of wall to 1st opening	B	= 5.50 ft.
Opening Width	C	= 6.50 ft.
Net Length		= 9.50 ft.
Opening Header Height	D	= 7.50 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	4582#
Seismic Load (E)	4460#
DL Trib Length Roof	0 ft
DL Trib Length Floor	6 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	286 plf	279 plf
Piers	482 plf	469 plf

Use Shear Wall Type **12**

STRAP CALCULATIONS

Max. Load @ Opening = 1078 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-590#	-377#
Left Pier	2653#	2582#
Right Pier	2653#	2582#
Bottom	716#	697#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location
952 #	5.50 ft.
952 #	12.00 ft.
1866 #	16.00 ft.

	Total Uplift	Holdown KN
Left End	2275# (E)	2A
L King	1991# (E)	2
R King	1991# (E)	2
Right End	4141# (E)	3

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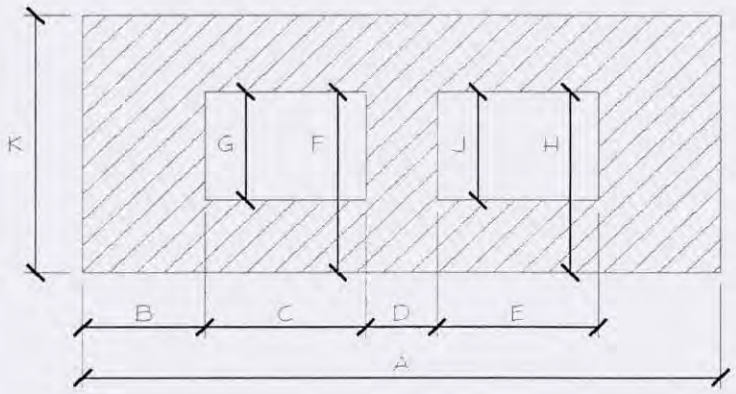
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at (2) Openings Calculation

P6 **2nd Floor; Front; Left to Right**
Bldg 203

SHEARWALL GEOMETRY

Total Length	A	= 16.00 ft.
Dist from left end of wall to 1st opening	B	= 4.92 ft.
1st Opening Width	C	= 2.50 ft.
Distance b/t Openings	D	= 2.92 ft.
2nd Opening Width	E	= 2.50 ft.
Net Length		= 11.00 ft.
1st Opening Header Height	F	= 8.00 ft.
1st Opening Height	G	= 5.00 ft.
2nd Opening Header Height	H	= 8.00 ft.
2nd Opening Height	J	= 5.00 ft.
Plate Height	K	= 9.00 ft.



LOADS

Wind Load (W)	4582#
Seismic Load (E)	4460#
DL Trib Length Roof	0 ft
DL Trib Length Floor	6 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	286 plf	279 plf
Piers	417 plf	405 plf

Use Shear Wall Type **12**

STRAP CALCULATIONS

Max. Load @ Opening = 640 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-733#	-517#
Left Pier	2291#	2230#
Middle Pier	2291#	2230#
Right Pier	2291#	2230#
Bottom	859#	836#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location
952 #	7.42 ft.
952 #	10.34 ft.
1866 #	16.00 ft.

		Total Uplift	Holdown KN
	Left End	1853# (E)	2
Left Opening	L King	378# (E)	NONE
	R King	1330# (E)	1
Right Opening	L King (2)	1330# (E)	1
	R King (2)	378# (E)	NONE
	Right End	3719# (E)	2B

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Lateral Analysis Calculations

P7 **2nd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	1	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	13.99	13.99	psf
Above Plate:			
Wall Area Above Plate	55	0	ft^2
Average Elevation	23.4	19.2	ft
Pressure @ Elevation	14.47	14.10	psf
Wall Load	1451	0	#
Mean Roof Height (h)	19.2	19.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.71	9.71	psf
Roof Load	0	0	#
Add'l Load (From P3)	=	1189	#

Total Wind Load = **2641 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.56
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**165 plf**
Seismic Wall Shear	=	**224 plf**
1.25 Seismic Shear*	=	**280 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Length of Diaphragm	39.5	39.5	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1236	W
Rho	=	1.00	
Diaphragm Load	1537	0	#
Add'l Load (From P3)	=	2041	#
Total Seismic Load	=	**3578**	#
1.25 Total Load*	=	**4473**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	39.5	39.5	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1537#	0#	
Diaphgram Shear	39 plf (E)	0 plf (E)	
Total Diaphragm Length	=	40	ft
Total Diaphragm Shear	=	39 plf (E)	
Shear for drag & collectors*	=	49 plf (E)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
16.00 ft.		1.0 ft.	510#	0.00	510#	16.00	2110# (E)	2110# (E)	2		2	

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Lateral Analysis Calculations

P8 **2nd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	13.99	13.99	psf
Above Plate:			
Wall Area Above Plate	55	0	ft^2
Average Elevation	23.4	19.2	ft
Pressure @ Elevation	14.47	14.10	psf
Wall Load	1451	0	#
Mean Roof Height (h)	19.2	19.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.71	9.71	psf
Roof Load	0	0	#
Add'l Load (From P4)	=	1187	#

Total Wind Load = **2639 #**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	12.00 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**220 plf**
Seismic Wall Shear	=	**297 plf**
1.25 Seismic Shear*	=	**371 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Length of Diaphragm	39.0	39.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1236	W
Rho	=	1.00	
Diaphragm Load	1518	0	#
Add'l Load (From P4)	=	2041	#
Total Seismic Load	=	**3559**	**#**
1.25 Total Load*	=	**4449**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	39.0	39.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1518#	0#	
Diaphgram Shear	39 plf (E)	0 plf (E)	
Total Diaphragm Length	=	39	ft
Total Diaphragm Shear	=	39 plf (E)	
Shear for drag & collectors*	=	49 plf (E)	

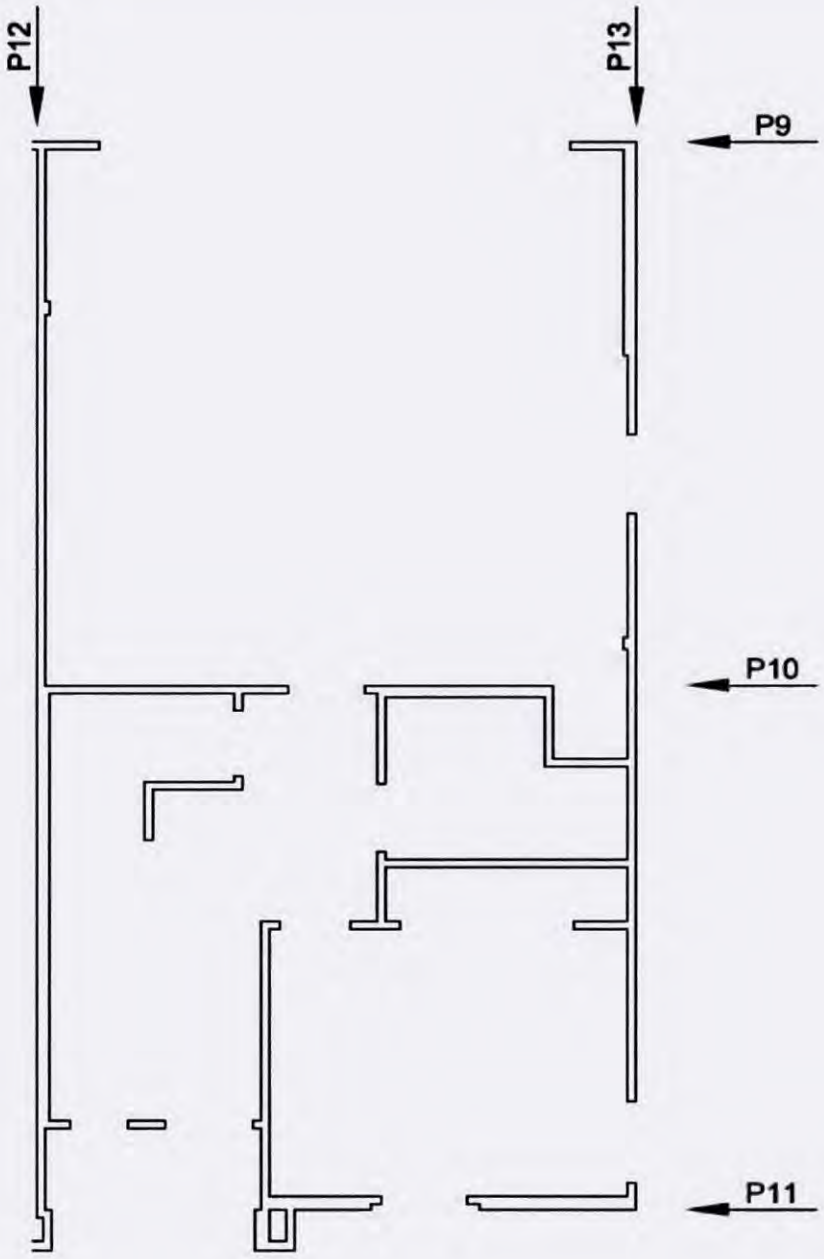
Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
6.00 ft.		1.0 ft.					2514# (E)	2514# (E)	2		2	
6.00 ft.							2534# (E)	2534# (E)	2		2	

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1st Floor P-Line Layout



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Lateral Analysis Calculations

P9 **1st Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20.42	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	58	0	ft^2
Average Elevation	13.7	10.5	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1462	0	#
Mean Roof Height (h)	10.5	10.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.09	9.09	psf
Roof Load	0	0	#
Add'l Load (70% of P5)	=	3157	#

Total Wind Load = **4619 #**

Shear Wall Summary

See manufactured shearwalls on next page(s)

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20.42	0	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0543	W
Rho	=	1.30	
Diaphragm Load	454	0	#
Add'l Load (70% of P5)	=	3127	#

Total Seismic Load = **3581 #**

1.25 Total Load* = **4477 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	3157#	0#	
Total Load in Diaphragm	4619#	0#	
Diaphgram Shear	220 plf (W)	0 plf (E)	

Total Diaphragm Length	=	21 ft
Total Diaphragm Shear	=	220 plf (W)
Shear for drag & collectors*	=	220 plf (W)

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN

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Lateral Analysis Calculations For Simpson Steel Strong-Wall

P9 **1st Floor; Rear; Left to Right**

See load calculations on previous page

Total Wind Load = **4619 #** **Total Seismic Load** = **3581 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
2	SSW18x8	1000	5970	4960	0.50	0.41

Total Load Capacity	=	5970	4960	
Pecent of Capacity Used	=	77%	72%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
2	SSW18x8	11940	12098	4619	3581	LOAD OK

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Lateral Analysis Calculations

P10 **1st Floor; Interior; Left to Right**
Garage wall

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20.42	19.5	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	58	56	ft^2
Average Elevation	13.7	13.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1462	1397	#
Mean Roof Height (h)	10.5	10.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.09	9.09	psf
Roof Load	0	0	#
Add'l Load (30% of P5)	=	1353	#

Total Wind Load = **4212 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.00
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**526 plf**
Seismic Wall Shear	=	**279 plf**
1.25 Seismic Shear*	=	**348 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20.42	19.5	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0543	W
Rho	=	1.30	
Diaphragm Load	454	434	#
Add'l Load (30% of P5)	=	1340	#

Total Seismic Load = **2228 #**
1.25 Total Load* = **2785 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	1353#	0#	
Total Load in Diaphragm	2815#	1397#	
Diaphgram Shear	134 plf (W)	67 plf (W)	

Total Diaphragm Length	=	21 ft
Total Diaphragm Shear	=	201 plf (W)
Shear for drag & collectors*	=	201 plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
8.00 ft.							4237# (W)	4237# (W)	9		9	

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Lateral Analysis Calculations

P11 **1st Floor; Front; Left to Right** See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	19.5	0	ft
Additional Width	0	1.5	ft
Avg. Roof Ht abv Plate	3	5	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	56	0	ft^2
Average Elevation	13.7	10.5	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1397	89	#
Mean Roof Height (h)	10.5	10.5	
Roof Area	0	8	ft^2
Pressure @ Elevation	9.09	9.09	psf
Roof Load	0	68	#
Add'l Load (From P6)	=	4582	#
Total Wind Load	=	**6135**	**#**

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	13.00	ft
Net Length of Walls	=	9.25	ft
Maximum H:W Ratio	=	1.47	
Seismic H:W Adjustment	=	1.00	
		Shear @ T&B of wall	
Wind Wall Shear	=	**663 plf**	**472 plf**
Seismic Wall Shear	=	**532 plf**	**379 plf**
1.25 Seismic Shear*	=	**665 plf**	

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

USE SHEAR WALL TYPE **12**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	19.5	0	ft
Length of Diaphragm	21.0	21.0	ft
Additional Diaphragm Area	0.	14.	ft^2
Building Dead Load	30	30	psf
V	=	0.0543	W
Rho	=	1.30	
Diaphragm Load	434	30	#
Add'l Load (From P6)	=	4460	#
Total Seismic Load	=	**4923**	**#**
1.25 Total Load*	=	**6154**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.0	21.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	4582#	0#	
Total Load in Diaphragm	5979#	157#	
Diaphgram Shear	285 plf (W)	7 plf (W)	
Total Diaphragm Length	=	21	ft
Total Diaphragm Shear	=	292 plf (W)	
Shear for drag & collectors*	=	293 plf (E)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN

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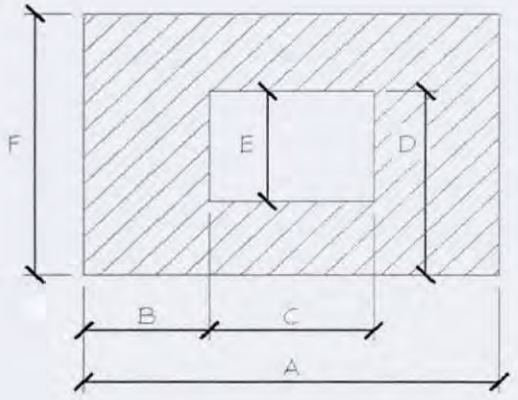
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P11 **1st Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 13.00 ft.
Dist from left end of wall to 1st opening	B	= 3.75 ft.
Opening Width	C	= 3.75 ft.
Net Length		= 9.25 ft.
Opening Header Height	D	= 6.58 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 8.00 ft.



LOADS

Wind Load (W)	6135#
Seismic Load (E)	4923#
DL Trib Length Roof	2 ft
DL Trib Length Floor	5 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	472 plf	379 plf
Piers	663 plf	532 plf

Use Shear Wall Type **12**

STRAP CALCULATIONS

Max. Load @ Opening = 1052 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-641#	-579#
Left Pier	3648#	2927#
Right Pier	3648#	2927#
Bottom	747#	600#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown KN
Left End	3397# (W)	19 corner
L King	2409# (W)	17
R King	2409# (W)	17
Right End	3397# (W)	19 corner

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
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Date	7/8/13		

Lateral Analysis Calculations

P12 **1st Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	13.43	13.43	psf
Above Plate:			
Wall Area Above Plate	60	0	ft^2
Average Elevation	13.7	10.5	ft
Pressure @ Elevation	13.43	13.43	psf
Wall Load	1368	0	#
Mean Roof Height (h)	10.5	10.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.21	10.21	psf
Roof Load	0	0	#
Add'l Load (From P7)	=	2641	#

Total Wind Load = **4009 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**251 plf**
Seismic Wall Shear	=	**268 plf**
1.25 Seismic Shear*	=	**335 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	21		0	ft
Length of Diaphragm	41.5		41.5	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0543	W
Rho	=		1.00	
Diaphragm Load	710		0	#
Add'l Load (From P7)	=		3578	#
Total Seismic Load	=		**4288**	#
1.25 Total Load*	=		**5360**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	41.5		41.5	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1368#		0#	
Diaphgram Shear	33 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		42	ft
Total Diaphragm Shear	=		33 plf	(W)
Shear for drag & collectors*	=		33 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	KN	Holdown Right	KN
16.00 ft.		1.0 ft.	2110#	0.00	2110#	16.00	3896# (E)	3896# (E)	**19 interior**		**19 interior**	

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
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Lateral Analysis Calculations

P13 **1st Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	13.43	13.43	psf
Above Plate:			
Wall Area Above Plate	60	0	ft^2
Average Elevation	13.7	10.5	ft
Pressure @ Elevation	13.43	13.43	psf
Wall Load	1368	0	#
Mean Roof Height (h)	10.5	10.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.21	10.21	psf
Roof Load	0	0	#
Add'l Load (From P8)	=	2639	#

Total Wind Load = **4007 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	12.00 ft
Maximum H:W Ratio	=	0.67
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**334 plf**
Seismic Wall Shear	=	**356 plf**
1.25 Seismic Shear*	=	**446 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	21		0	ft
Length of Diaphragm	42.0		42.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0543	W
Rho	=		1.00	
Diaphragm Load	719		0	#
Add'l Load (From P8)	=		3559	#
Total Seismic Load	=		**4277**	**#**
1.25 Total Load*	=		**5347**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	42.0		42.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1368#		0#	
Diaphgram Shear	33	plf (W)	0	plf (E)
Total Diaphragm Length	=		42	ft
Total Diaphragm Shear	=		33	plf (W)
Shear for drag & collectors*	=		33	plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left		Right		Holdown Left	KN	Holdown Right	KN
12.00 ft.		1.0 ft.	2514#	0.00	#REF!	12.00	#REF!	###	#REF!	##	**#REF!**		**#REF!**	

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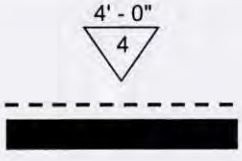
Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall Table

Type	*Wind*	*Seismic*	*Description*
1	254.8	182	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
2	350	266	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 4" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
3	480.2	343	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X OR (2) 2X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
4	600	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. MAX. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
5	627.2	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
12	754.6	539	15/32" APA RATED SHEATHING ONE FACE WITH 10d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
7	960.4	686	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
8	1254.4	896	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.

NOTES:

1. Shearwalls are designated on the plans by a triangle symbol surrounding the shearwall type.
2. Shearwall length is indicated above the shearwall callout and is shown graphically with shading & a dashed line.
3. See anchor bolt calculations for required anchor spacing.



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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Simpson Holdown Table

	Wind		*Seismic*		
Type	*Typ*	*End*	*Typ*	*End*	***Description***
NONE	500	500	500	500	Below limit
1	1705	1705	1705	1705	CS16 STRAP, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2	3410	3410	3410	3410	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
3	4585	4585	4585	4585	CMSTC16 STRAP, 23" MINIMUM END SPAN, CLEAR SPAN VARIES.
6	6490	6490	6490	6490	CMST14 STRAP, 30" MINIMUM END SPAN, CLEAR SPAN VARIES.
1A	942	942	942	942	CS16 STRAP, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
1B	1884	1884	1884	1884	(2) CS16 STRAPS, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
2A	3300	3300	3300	3300	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2B	4950	4950	4950	4950	(3) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
9	4755	0	3400	0	STHD10 HOLDOWN TO MINIMUM 4X POST.
17	4565	4470	3740	3325	HDU4 HOLDOWN TO MINIMUM 4X POST W/ SSTB24/24
19	6970	6970	6970	6970	HDU8 HOLDOWN TO MINIMUM 4X POST W/ SSTB28/34 ANCHOR.
19A	7870	7870	7870	7315	HDU8 HOLDOWN TO MINIMUM 4X6 POST W/ SSTB28/34 ANCHOR.
20	9535	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X6 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
20A	10470	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X8 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
21	14390	14390	14390	14390	HDU14 HOLDOWN TO MINIMUM 4X8 POST W/ 1" ANCHOR ROD.
16	19070	19070	19070	19070	HD19 HOLDOWN TO MINIMUM 4X10 OR 6X6 POST W/ 1 1/4" ANCHOR ROD.

NOTE: Holdowns are designated on the plans by a diamond symbol surrounding the holdown type, e.g.:



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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	1
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

CALCULATIONS FOR ANCHOR BOLTS & MASA* ANCHORS AT SHEARWALLS

*MASA anchor values per ESR-2555, Issued November 2010

Allowable loads per NDS/hardware values (1.6 load duration factor):

Condition	1/2" ϕ A.B.	MASA
2X sill plate; sw capacity ≤ 350 plf	650#	1515#
2X sill plate; sw capacity b/t 350 & 600 plf	325#	758#
3X sill plate	770#	1215#

Allowable Shear Loads per ACI 318-08 Appendix D (assuming uncracked concrete at service loads):

		1/2" ϕ A.B.		MASA	
Wind:	$(F*V_{nx}) / 1.6 =$	1064#	Wind:	2X sill = 1388#	
				3X sill = 1109#	
Seismic:	$(F*V_{nx}) * 0.7 =$	1192#	Seismic:	2X sill = 1138#	
				3X sill = 931#	

Seismic (in SDC C, D, E and F):
$(0.75*F*_{Vnx}) * 0.7 =$ 894#

		1/2" AB	MASA
SW 1 (2x sill)	NDS	49.0" oc	71.4" oc
255plf (W)	ACI (W)	50.1" oc	65.3" oc
182plf (E)	ACI (E)	58.9" oc	75.0" oc
	per plan	**48" oc**	**48" oc**

		1/2" AB	MASA
SW 2 (2x sill)	NDS	35.7" oc	51.9" oc
350plf (W)	ACI (W)	36.5" oc	47.6" oc
266plf (E)	ACI (E)	40.3" oc	51.3" oc
	per plan	**35" oc**	**35" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW3	NDS	13.0" oc	18.9" oc	30.8" oc	30.4" oc
480plf (W)	ACI (W)	26.6" oc	34.7" oc	26.6" oc	27.7" oc
343plf (E)	ACI (E)	31.3" oc	39.8" oc	31.3" oc	32.6" oc
	per plan	**12" oc**	**12" oc**	**20" oc**	**20" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW4	NDS	10.4" oc	15.2" oc	24.6" oc	24.3" oc
600plf (W)	ACI (W)	21.3" oc	27.8" oc	21.3" oc	22.2" oc
448plf (E)	ACI (E)	23.9" oc	30.5" oc	23.9" oc	24.9" oc
	per plan	**10" oc**	**10" oc**	**16" oc**	**16" oc**

		1/2" AB	MASA
SW 5 (3x sill)	NDS	23.6" oc	23.2" oc
627plf (W)	ACI (W)	20.4" oc	21.2" oc
448plf (E)	ACI (E)	23.9" oc	24.9" oc
	per plan	**20" oc**	**20" oc**

		1/2" AB	MASA
SW 7 (3x sill)	NDS	15.4" oc	15.2" oc
960plf (W)	ACI (W)	13.3" oc	13.9" oc
686plf (E)	ACI (E)	15.6" oc	16.3" oc
	per plan	**13" oc**	**13" oc**

		1/2" AB	MASA
SW 8 (3x sill)	NDS	11.8" oc	11.6" oc
1254plf (W)	ACI (W)	10.2" oc	10.6" oc
896plf (E)	ACI (E)	12.0" oc	12.5" oc
	per plan	**10" oc**	**10" oc**

		1/2" AB	MASA
SW 12 (3x sill	NDS	19.6" oc	19.3" oc
755plf (W)	ACI (W)	16.9" oc	17.6" oc
539plf (E)	ACI (E)	19.9" oc	20.7" oc
	per plan	**12" oc**	**12" oc**

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tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
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Structural
Engineering
Consultants

Structural Calculation Package

for

Standard Pacific Homes - Bay

Village Walk

Cotati, California

Plan # 2



Job # HS13068

2010 CBC



Date 7/8/2013

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Structural Calculation Package

Client Information

Standard Pacific Homes - Bay
3825 Hopyard Road, Suite 195
Pleasanton, CA 94588

Project Information

Village Walk
Cotati, California
Plan No. 2

Loading Information

Roof Loads

Roofing (Tile)	=	10.0 psf
Sheathing	=	1.7 psf
Framing	=	2.3 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	1.5 psf
Wall (Seismic only)	=	9.0 psf
Total DL	=	21.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	20.0 psf

Floor Loads

Flooring	=	1.5 psf
Sheathing	=	2.5 psf
Framing	=	2.5 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	3.0 psf
Wall (Seismic only)	=	15.0 psf
Total DL	=	15.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	40.0 psf

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Project Village Walk
Client Standard Pacific Homes - Ba **Plan #** 2
Job # HS13068 **Designer:** RM:jg
Date 7/8/13

Seismic Design Per IBC Section 1613

Building Information

R	=	6.50	ASCE Table 12.2-1
Occupancy Cat.	=	II	IBC Sect. 1604.5
Number of Stories	=	3	
Importance Factor	=	1.0	
Max Level Height	=	27.4	ft
Design Approach		Normal/Equivalent	

Site Information

S_s	=	1.615	IBC Sect. 1613.5.1
S_1	=	0.634	IBC Sect. 1613.5.1
Site Class	=	D	
S_s	=	1.615	Used For Design
S_1	=	0.634	Used For Design

Seismic Loads: ASCE 7 Section 12.8 Equivalent Lateral Force Procedure

Short Period Response

F_a	=	1.000	IBC 1613.5.3
$S_{MS} = F_a S_s$	=	1.615	IBC Eqn. 16-36
$S_{DS} = (^2/_3) S_{MS}$	=	1.077	IBC Eqn. 16-38
SDC per S_{DS}	=	D	IBC Table 1613.5.6(1)

1-Second Period Response

F_v	=	1.500	IBC 1613.5.3
$S_{M1} = F_v S_1$	=	0.951	IBC Eqn. 16-37
$S_{D1} = (^2/_3) S_{M1}$	=	0.634	IBC Eqn. 16-39
SDC per S_{D1}	=	D	IBC Table 1613.5.6(2)

Seismic Design Category

Period, T	=	0.24	s, ASCE 7 12.8.2.1
0.8 Ts	=	0.47	s, ASCE 7 11.4.5
SDC Required	=	D	IBC Sect. 1613.5.6
SDC Used	=	**D**	

Seismic Design Factors

Overstrength Factor	=	2.5	Table 12.2-1, Footnote g
Dead Load Reduction:			
(0.6 - 0.14 Sds)D	=	0.449 D	ASCE Sect 12.4.3.2
Rho, left to right	=	1.0	ASCE Sect 12.3.4
Rho, front to back	=	1.0	

ASD Seismic Response Coefficient

$$C_s = \frac{I(S_{DS})}{R}$$

C_s per ASCE Eqn. 12.8-2

C_s	=	0.1656	ASCE Eqn. 12.8-2
C_s (upper limit)	=	0.4072	ASCE Eqn. 12.8-3
C_s (lower limit)	=	0.0100	ASCE Eqn. 12.8-5
C_s (alt low limit)	=	0.0488	ASCE Eqn. 12.8-6
C_s	=	0.1656	

Base Shear, V = **0.1159 W**
(Includes 0.7 factor from ASD Basic LC)

Vertical Shear Distribution

Story	h (ft)	Area (sq ft)	DL (psf)	w_x (lb)	w_x x h	C_{vx}	C_{sx}*
1	8	700	30	21000	168000	0.1555	0.0524
2	18.2	667	30	20010	364182	0.3371	0.1192
3	27.4	667	30	20010	548274	0.5074	0.1794
	Sum:	2034		61020	1080456		

*Derived equivalent shear ratio per story: $F_x = C_{sx} w_x$
where: $C_{sx} = C_{vx} C_s (W/w_x)$

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Project	Village Walk		
Client	Standard Pacific Homes - B	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (V)	85 mph	(3-second gust)
Importance Factor (I)	1.00	ASCE 7 - Table 6-1
Exposure Category	C	ASCE 7 - Section 6.5.6.3;
Directionality Factor (K_d)	0.85	ASCE 7 - Table 6-4
Gust Factor (G)	0.85	ASCE 7 - Section 6.5.8.1

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\, K_z\, K_{zt}\, K_d\, V^2\, I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects — Hill Type: None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	29.90 ft	Velocity Pressure (q_h) for MWFRS	15.39 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.42
min L/B (Front to Back)	2.40
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.28

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C: 15.39 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
8.0 ft	-1.04	18.81	-1.28	22.53
15.0 ft	-0.95	17.33	-1.09	19.57
18.2 ft	-0.92	16.87	-1.03	18.65
22.0 ft	-0.89	16.42	-0.97	17.76

harris & sloan
CONSULTING GROUP, INC.

Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-1.17	
Int. Pressure Coeff. (*Cpi*)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-13 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	psf	Available to offset overturning from wind

harris & sloan
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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Beam Specifications

BEAM #	SIZE	GRADE	LOCATION
Beam #15	5 1/4"x14"	1.9E SCL	Beam over kitchen / dining
Beam #16	5 1/4"x14"	1.9E SCL	Beam over dining
Beam #17	5 1/4"x14"	1.9E SCL	Beam over deck
Beam #18	3 1/2"x11 7/8"	1.5E SCL	Beam over garage
Beam #19	3 1/2"x14"	1.5E SCL	Beam over garage
Beam #20	7"x14"	1.9E SCL	Beam over garage
Beam #21	4x12	#2 D.F.	Garage Header

Header Specifications

First Floor Walls

Length	Size	Grade
4'-0"	4x8	#2 D.F.
6'-0"	4x10	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Second Floor Walls

Length	Size	Grade
4'-0"	4x6	#2 D.F.
6'-0"	4x8	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Description : Headers Unit 2

Wood Beam Design : 4ft Headers, Upper floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

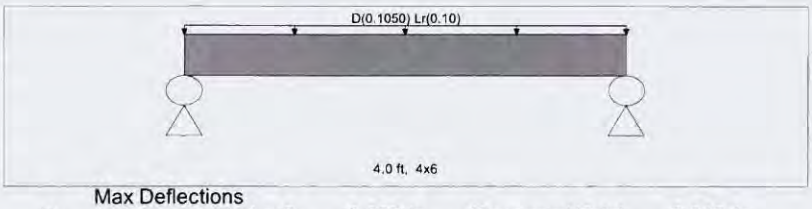
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft

Design Summary

Max fb/Fb Ratio = **0.238** : 1
fb : Actual : 278.82 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.137** : 1
fv : Actual : 24.71 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.21		0.20				
Right Support	0.21		0.20				



Max Deflections

Downward L+Lr+S	0.007 in	Downward Total	0.015 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	6435 >360	Total Defl Ratio	3139 >240

Wood Beam Design : 6ft Headers, Upper floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

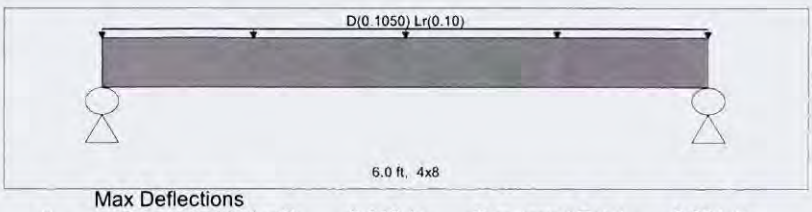
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft

Design Summary

Max fb/Fb Ratio = **0.309** : 1
fb : Actual : 361.04 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.162** : 1
fv : Actual : 29.08 psi at 5.400 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.32		0.30				
Right Support	0.32		0.30				



Max Deflections

Downward L+Lr+S	0.016 in	Downward Total	0.034 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	4367 >360	Total Defl Ratio	2130 >240

Wood Beam Design : 4ft Headers, Third floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

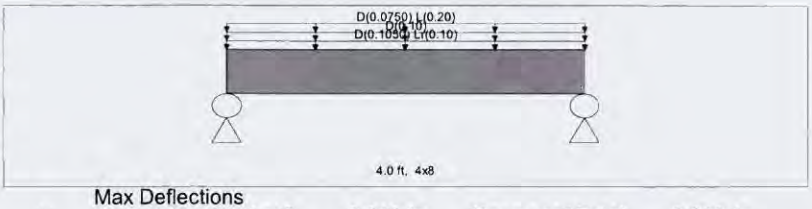
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Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 5.0 ft

Design Summary

Max fb/Fb Ratio = **0.338** : 1
fb : Actual : 395.28 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.232** : 1
fv : Actual : 41.79 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.56	0.40	0.20				
Right Support	0.56	0.40	0.20				



Max Deflections

Downward L+Lr+S	0.010 in	Downward Total	0.019 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	4913 >360	Total Defl Ratio	2541 >240

Wood Beam Design : 6ft Headers, Third floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

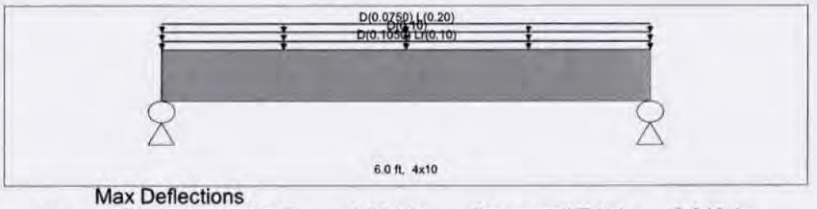
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 5.0 ft

Design Summary

Max fb/Fb Ratio = **0.506** : 1
fb : Actual : 546.37 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.291** : 1
fv : Actual : 52.41 psi at 5.240 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.84	0.60	0.30				
Right Support	0.84	0.60	0.30				

Max Deflections

Downward L+Lr+S	0.024 in	Downward Total	0.046 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3023 >360	Total Defl Ratio	1564 >240

Wood Beam Design : 4ft Headers, Second floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

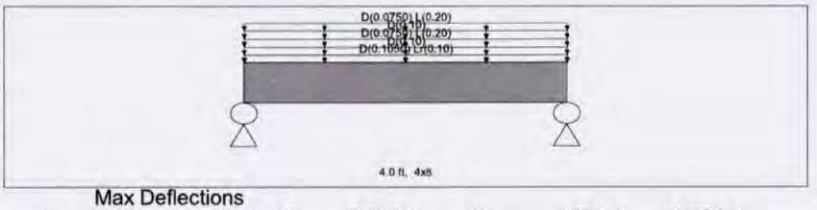
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0750, L = 0.20 k/ft, 0.0 to 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.572** : 1
fb : Actual : 669.24 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.393** : 1
fv : Actual : 70.76 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.91	0.80	0.20				
Right Support	0.91	0.80	0.20				

Max Deflections

Downward L+Lr+S	0.016 in	Downward Total	0.031 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2948 >360	Total Defl Ratio	1543 >240

Wood Beam Design : 6ft Headers, Second floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

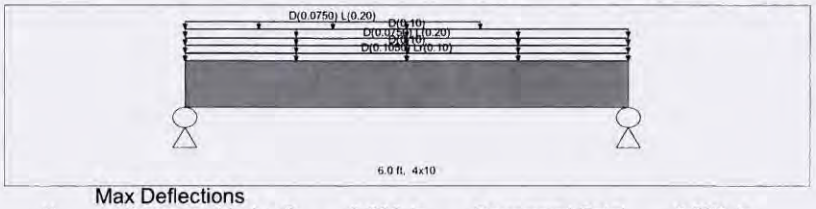
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0750, L = 0.20 k/ft, 0.0 to 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.796** : 1
fb : Actual : 860.10 psi at 2.900 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.469** : 1
fv : Actual : 84.49 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.34	1.13	0.30				
Right Support	1.24	0.87	0.30				



Max Deflections

Downward L+Lr+S	0.036 in	Downward Total	0.070 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2012 >360	Total Defl Ratio	1022 >240

Wood Beam Design : 8ft Header @ rear wall of family, Third floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x9.5, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber Wood Grade : 1.5E SCL

Fb - Tension	2150 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1500 ksi	Density	35 pcf
Fb - Compr	2150 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	700 ksi		

Applied Loads

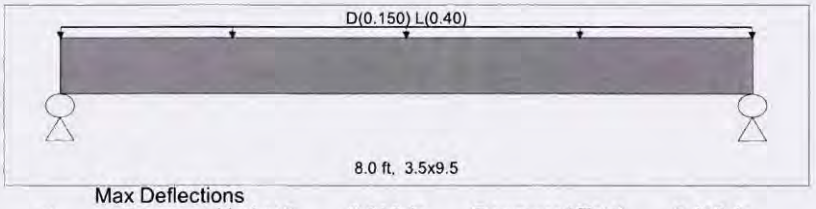
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 10.0 ft

Design Summary

Max fb/Fb Ratio = **0.466** : 1
fb : Actual : 1,002.93 psi at 4.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.281** : 1
fv : Actual : 80.06 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.60	1.60					
Right Support	0.60	1.60					



Max Deflections

Downward L+Lr+S	0.099 in	Downward Total	0.136 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	971 >360	Total Defl Ratio	706 >240

Description : Beams Unit 2 (Beam #15 to Beam #20)

Wood Beam Design : Beam #15

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.9E SCL

Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

Applied Loads

Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 12.0 ft

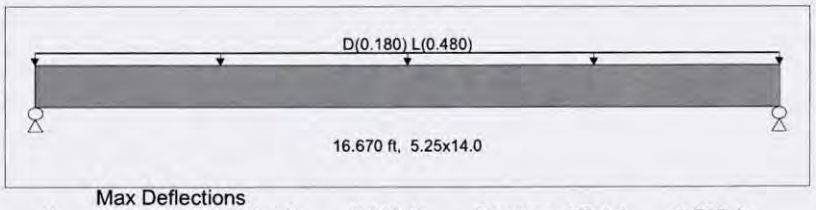
Design Summary

Max fb/Fb Ratio = **0.648** : 1
fb : Actual : 1,604.14 psi at 8.335 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.341** : 1
fv : Actual : 97.30 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)

	D	L	Lr	S	W	E	H
Left Support	1.50	4.00					
Right Support	1.50	4.00					



Max Deflections

Downward L+Lr+S	0.368 in	Downward Total	0.505 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	544 >480	Total Defl Ratio	395 >360

Wood Beam Design : Beam #16

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.9E SCL

Fb - Tension	2475 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1900 ksi	Density	35 pcf
Fb - Compr	2475 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	875 ksi		

Applied Loads

Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 13.50 ft

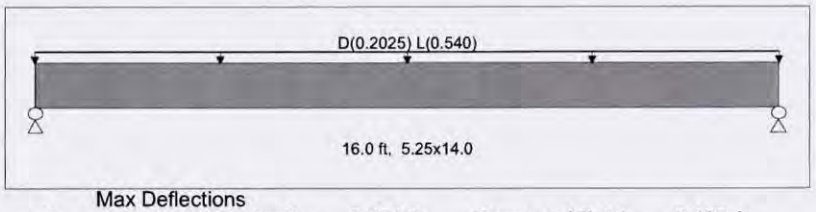
Design Summary

Max fb/Fb Ratio = **0.672** : 1
fb : Actual : 1,662.51 psi at 8.000 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.366** : 1
fv : Actual : 104.25 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)

	D	L	Lr	S	W	E	H
Left Support	1.62	4.32					
Right Support	1.62	4.32					



Max Deflections

Downward L+Lr+S	0.351 in	Downward Total	0.483 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	547 >480	Total Defl Ratio	397 >360

Wood Beam Design : Beam #17

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.9E SCL

Fb - Tension	2475 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1900 ksi	Density	35 pcf
Fb - Compr	2475 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	875 ksi		

Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.50 ft

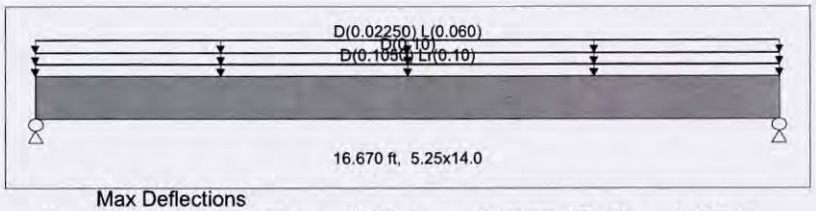
Design Summary

Max fb/Fb Ratio = **0.341** : 1
fb : Actual : 844.60 psi at 8.335 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.180** : 1
fv : Actual : 51.23 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)

	D	L	Lr	S	W	E	H
Left Support	1.90	0.50	0.83				
Right Support	1.90	0.50	0.83				



Max Deflections

Downward L+Lr+S	0.123 in	Downward Total	0.297 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1632 >480	Total Defl Ratio	674 >360

Wood Beam Design : Beam #18

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.5E SCL

Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

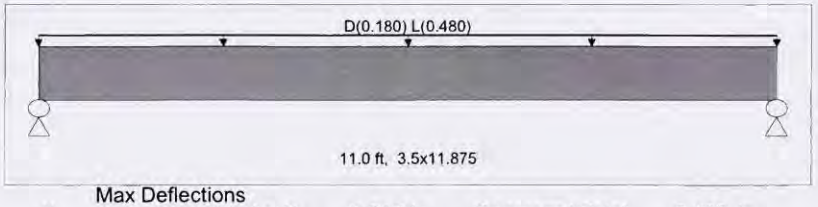
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 12.0 ft

Design Summary

Max fb/Fb Ratio = **0.677** : 1
fb : Actual : 1,456.25 psi at 5.500 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.380** : 1
fv : Actual : 108.30 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.99	2.64					
Right Support	0.99	2.64					



Max Deflections

Downward L+Lr+S	0.217 in	Downward Total	0.298 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	608 >480	Total Defl Ratio	442 >360

Wood Beam Design : Beam #19

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.5E SCL

Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

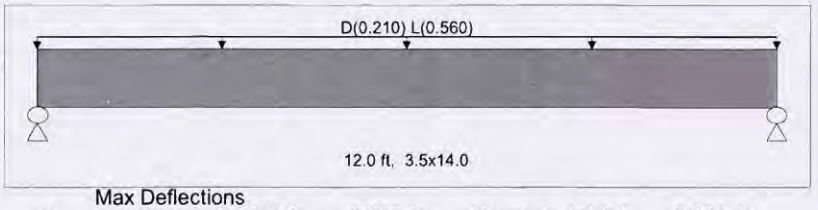
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 14.0 ft

Design Summary

Max fb/Fb Ratio = **0.677** : 1
fb : Actual : 1,454.69 psi at 6.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.400** : 1
fv : Actual : 114.09 psi at 10.840 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.26	3.36					
Right Support	1.26	3.36					



Max Deflections

Downward L+Lr+S	0.219 in	Downward Total	0.301 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	658 >480	Total Defl Ratio	478 >360

Wood Beam Design : Beam #20

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **7x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.9E SCL

Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

Applied Loads

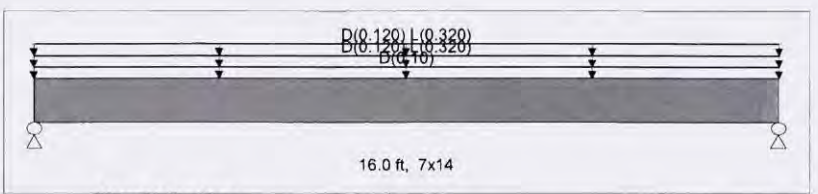
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 8.0 ft

Design Summary

Max fb/Fb Ratio = **0.665** : 1
fb : Actual : 1,645.71 psi at 8.000 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.362** : 1
fv : Actual : 103.20 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	2.72	5.12					
Right Support	2.72	5.12					



Max Deflections

Downward L+Lr+S	0.312 in	Downward Total	0.478 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	615 >480	Total Defl Ratio	401 >360

Wood Beam Design : Beam #21

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x12, Sawn, Fully Braced**

Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species : Douglas Fir - Larch Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

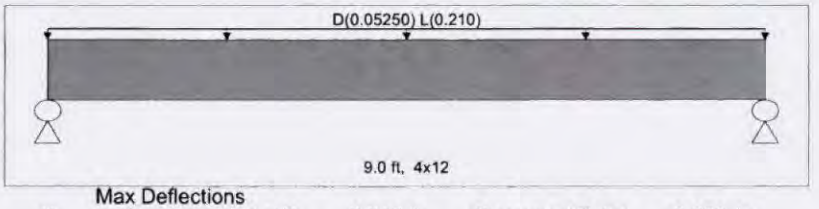
Applied Loads

Unif Load: D = 0.0150, L = 0.060 k/ft, Trib= 3.50 ft

Design Summary

Max fb/Fb Ratio = **0.436** : 1
fb : Actual : 432.00 psi at 4.500 ft in Span # 1
Fb : Allowable : 990.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.198** : 1
fv : Actual : 35.70 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.24	0.95					
Right Support	0.24	0.95					

Max Deflections

Downward L+Lr+S	0.047 in	Downward Total	0.059 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2302 >480	Total Defl Ratio	1842 >360

Studs up to and Including 10' - 0" in Height

Table 2308.9.1 of the 2009 IBC lists the maximum height and spacing for wood studs which conform to the limitations of the conventional framing provisions (Section 2308.2). While the design loads and roof spans used in this project do not explicitly meet the conventional framing limitations, it is HSCGI's interpretation that Table 2308.9.1 is applicable for any stud wall with applied loads less than or equal to the worst case loading allowed by the conventional framing provisions (i.e. the loads resulting from roofs, floors, and/or walls spanning the maximum distance and carrying the maximum loads allowed by the limitations listed below).

Limitations (Summary of Section 2308.2):

1. Structure is not more than 3 stories.
2. Plate heights are not greater than 10' - 0".
3.1. Average dead load of combined roof and ceiling, exterior walls, floors and partitions does not exceed 15 psf .
3.2. Live load does not exceed 40 psf.
3.3. Ground snow load does not exceed 50 psf.
4. Wind speed does not exceed 100 mph.
5. Roof truss and rafter spans (between points of vertical supports) are not greater than 40 feet.
6. Structure does not belong to Occupancy Category IV.
7. Irregularity limitation. Limits for irregularities apply to wall bracing, not to Table 2308.9.1.
8. Structure does not fall under DSA-SS or OSHPD 1, 2 or 4.

Determination of Maximum Loads and Spans:

The conventional framing limitations, together with the maximum floor span listed in Table 2308.8(2), have been used to determine the equivalent maximum allowable loads that may be applied to wood wall studs. Below is a list of maximum loads and corresponding maximum spans allowed by section 2308.

Parameter	Roof	Floor	Wall
Dead Load	15 psf	15 psf	15 psf
Span/Height	40 feet	21 feet	10 feet

Table 2308.9.1 allows 10' - 0" tall 2x4 wall studs spaced at 16" o.c. to support one floor, roof and ceiling. Based on the spans and loads listed above, the maximum allowable dead load (DL) on a standard stud wall is as follows:

Exterior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)/2	= 300 plf
Floor	(15psf DL) x (21 foot floor span)/2	= 158 plf
Wall	(15psf DL) x (10 foot wall height)	= 150 plf
		= 608 plf

Interior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)	= 600 plf
Floor	(15psf DL) x (21 foot floor span)	= 315 plf
		= 915 plf

Wood studs exceeding the height and/or loading criteria listed above are calculated using the design criteria of IBC Chapters 16 and 23.

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Project	Village Walk		
Client	Standard Pacific Home	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Stud Calculations Per 2005 NDS

STUD/POST		**Stud/Post Description**			**Stud/Post Description**		
Height	ft		**19.20**			**9.00**	
Depth/Width (d)	in		5.50			5.50	
Thickness	in		3.00			3.00	
Grade			DF Stud			DF Stud	
O.C. Spacing	in		16.00			16.00	
Repetitive Factor			NDS Repetitive Factor			NDS Repetitive Factor	
Location			exterior - zone 5			interior	
LOADS							
AXIAL LOAD - DL	plf	0.00	0.00	0.00	0.00	0.00	0.00
AXIAL LOAD - LL	plf	0.00	0.00	0.00	0.00	0.00	0.00
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
WIND LOAD (C&C)	psf	5.00	18.65	13.99	5.00	5.00	3.75
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.15	1.15	1.15
PROPERTIES							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	510.0	510.0	510.0
Fb (Adjusted)	psi	805.0	805.0	805.0	805.0	805.0	805.0
Fcll (Adjusted)	psi	850.0	850.0	850.0	850.0	850.0	850.0
COMPRESSION		DL+LL	DL+W	DL+0.75(LL+W)	DL+LL	DL+W	DL+0.75(LL+W)
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		41.9			19.6		
F_{cE}		239	239	239	1087	1087	1087
F*c	psi	978	1360	1360	978	1360	1360
F_{cE}/Fc^*		0.24	0.18	0.18	1.11	0.80	0.80
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.23	0.17	0.17	0.73	0.61	0.61
Fc'	psi	225	230	230	710	829	829
fc	psi	0	0	0	0	0	0
Stress Ratio		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
BENDING							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	3686.4	13752	10314	810	810	608
Fb'	psi	926	1288	1288	926	1288	1288
fb	psi	244	909	682	54	54	40
Stress Ratio		**0.2633**	**0.7059**	**0.5295**	**0.0578**	**0.0416**	**0.0312**
COMBINED STRESSES							
(fc/F'c)^2		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
fb/Fb'(1-(fc/Fce)		0.2633	0.7059	0.5295	0.0578	0.0416	0.0312
Combined Stress Ratio		**0.2633**	**0.7059**	**0.5295**	**0.0578**	**0.0416**	**0.0312**
DEFLECTION							
Deflection	in	0.350	1.306	0.979	0.017	0.017	0.013
0.7 Deflection	in		0.914	0.686		0.012	0.009
Deflection Limit (L/240)	in	0.960	0.960	0.960	0.450	0.450	0.450
Deflection Ratio		**0.3646**	**0.9522**	**0.7142**	**0.0376**	**0.0263**	**0.0197**

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Project	Village Walk		
Client	Standard Pacific Hc	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Footing Calculations

Soils Engineer

ENGEO, Inc. (San Ramon)
2010 Crow Canyon Pl., Ste. 250
San Ramon, CA 94583

Report #: 6858.200.102
Date: 04/16/2013

Foundation Design Information

Allowable Soil Pressure	=	1000 psf
Retaining Wall Design:		
Friction Factor	=	N/A
Active Pressure	=	N/A pcf
Passive Pressure	=	N/A pcf

Post-Tension Foundation Calculations (expansive soil)

Average Soil Pressure = 1,000 psf

		Center Lift	Edge Lift
Edge Moisture Variation (e_m)	=	5.10 ft	2.70 ft
Differential Soil Movement (y_m)	=	1.50 in	2.00 in

Design Rectangles
R1 = 0.00 ft x 0.00 ft

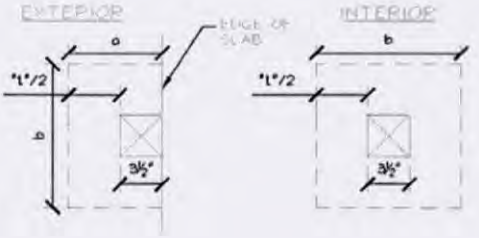
Maximum Point Load Capacity of Slab
Slab Thickness (t) = 12 in
Concrete Compressive Strength (f'c) = 4000 psi

Punching Shear Calculation

$$V_u = \phi V_n$$
$$\phi = 0.85$$
$$V_c = 4\sqrt{f_c}\, b_o t$$
$$V_{allowable} = V_u / 1.7$$

Exterior Condidtion $b_o = 2a+b$ = 34.5 in
Maximum allowable point load = 52 kips

Interior Condidtion $b_o = 4b$ = 62 in
Maximum allowable point load = 94 kips



hscgi limit 10,000# at interior
8000# at exterior

Pad Footing Calculations

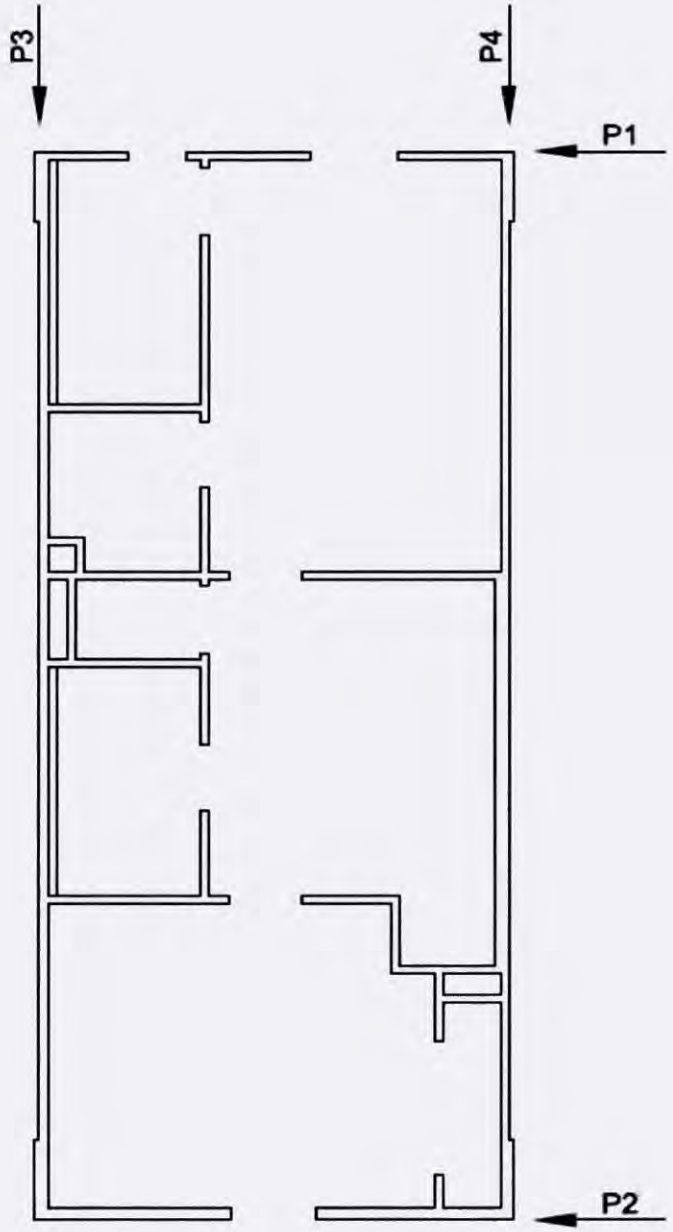
Maximum Localized Bearing Pressure = 1,000 psf
Minimum Pad Footing Depth = 12 in

Footing #	Load	Minimum Size	Reinforcing
FTG#4	12250#	42" SQUARE X 18" DEEP	#5 BARS AT 8" OC

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Project	Village Walk		
Client	Standard Pacific Homes ·	**Plan #**	2
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3rd Floor P-Line Layout



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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P1 **3rd Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	40	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	4	0	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	12.61	16.80	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	12.82	17.01	psf
Wall Load	1009	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	80	0	ft^2
Pressure @ Elevation	8.08	8.67	psf
Roof Load	646	0	#
Additional Load	=		#

Total Wind Load = **1655 #**

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	16.34	ft
Net Length of Walls	=	11.34	ft
Maximum H:W Ratio	=	1.50	
Seismic H:W Adjustment	=	1.00	
		Shear @ T&B of wall	
Wind Wall Shear	=	**146 plf**	**101 plf**
Seismic Wall Shear	=	**158 plf**	**110 plf**
1.25 Seismic Shear*	=	**198 plf**	

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	40	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1794	W
Rho	=	1.00	
Diaphragm Load	1795	0	#
Additional Load	=		#

Total Seismic Load = **1795 #**

1.25 Total Load* = **2243 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1795#	0#	
Diaphgram Shear	108 plf (E)	0 plf (E)	

Total Diaphragm Length	=	17 ft
Total Diaphragm Shear	=	108 plf (E)
Shear for drag & collectors*	=	135 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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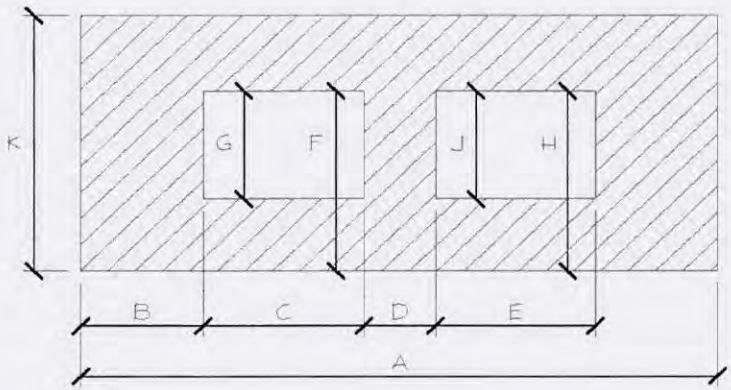
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at (2) Openings Calculation

P1 **3rd Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 16.34 ft.
Dist from left end of wall to 1st opening	B	= 3.00 ft.
1st Opening Width	C	= 2.00 ft.
Distance b/t Openings	D	= 4.50 ft.
2nd Opening Width	E	= 3.00 ft.
Net Length		= 11.34 ft.
1st Opening Header Height	F	= 6.67 ft.
1st Opening Height	G	= 4.00 ft.
2nd Opening Header Height	H	= 6.67 ft.
2nd Opening Height	J	= 5.00 ft.
Plate Height	K	= 8.00 ft.



LOADS

Wind Load (W)	1655#
Seismic Load (E)	1795#
DL Trib Length Roof	4 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	101 plf	110 plf
Piers	146 plf	158 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 186 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-408#	-584#
Left Pier	803#	870#
Middle Pier	803#	870#
Right Pier	803#	870#
Bottom	270#	293#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

		Total Uplift	Holdown
	Left End	318# (W)	NONE
Left Opening	L King	248# (E)	NONE
	R King	248# (E)	NONE
Right Opening	L King (2)	481# (E)	NONE
	R King (2)	481# (E)	NONE
	Right End	318# (W)	NONE

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P2 **3rd Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	40	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	0	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	12.61	16.80	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	12.82	17.01	psf
Wall Load	1009	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	100	0	ft^2
Pressure @ Elevation	8.08	8.67	psf
Roof Load	808	0	#
Additional Load	=		#

Total Wind Load = **1817 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.34 ft
Net Length of Walls	=	13.34 ft
Maximum H:W Ratio	=	0.84
Seismic H:W Adjustment	=	1.00

			Shear @ T&B of wall
Wind Wall Shear	=	**136 plf**	**111 plf**
Seismic Wall Shear	=	**135 plf**	**110 plf**
1.25 Seismic Shear*	=	**168 plf**	

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	40		0	ft
Length of Diaphragm	16.7		16.7	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.1794	W
Rho	=		1.00	
Diaphragm Load	1795		0	#
Additional Load	=			#

Total Seismic Load = **1795 #**

1.25 Total Load* = **2243 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	16.7		16.7	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1817#		0#	
Diaphgram Shear	109 plf	(W)	0 plf	(E)

Total Diaphragm Length	=	17 ft
Total Diaphragm Shear	=	109 plf (W)
Shear for drag & collectors*	=	135 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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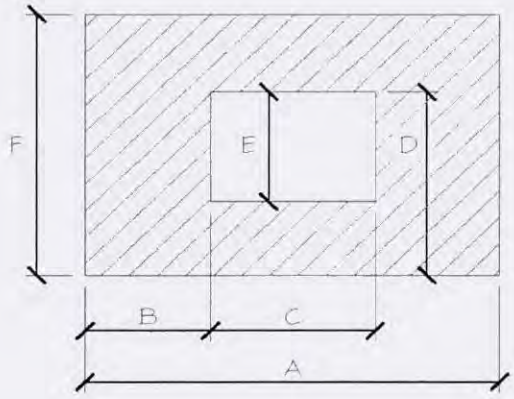
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
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Shear Wall w/ Force Transfer at Opening Calculation

P2 **3rd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 16.34 ft.
Dist from left end of wall to 1st opening	B	= 6.83 ft.
Opening Width	C	= 3.00 ft.
Net Length		= 13.34 ft.
Opening Header Height	D	= 6.67 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 8.00 ft.



LOADS

Wind Load (W)	1817#
Seismic Load (E)	1795#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	111 plf	110 plf
Piers	136 plf	135 plf

Use Shear Wall Type 3

STRAP CALCULATIONS

Max. Load @ Opening = 171 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-399#	-430#
Left Pier	749#	740#
Right Pier	749#	740#
Bottom	186#	183#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	398# (W)	NONE
L King	351# (E)	NONE
R King	351# (E)	NONE
Right End	398# (W)	NONE

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Lateral Analysis Calculations

P3 **3rd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	13.92	13.92	psf
Above Plate:			
Wall Area Above Plate	38	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	14.13	14.13	psf
Wall Load	1001	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	4	0	ft^2
Pressure @ Elevation	9.58	9.58	psf
Roof Load	35	0	#
Additional Load	=		#

Total Wind Load = **1036 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**65 plf**
Seismic Wall Shear	=	**112 plf**
1.25 Seismic Shear*	=	**140 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Length of Diaphragm	40.0	40.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1794	W
Rho	=	1.00	
Diaphragm Load	1795	0	#
Additional Load	=		#

Total Seismic Load = **1795 #**
1.25 Total Load* = **2243 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	40.0	40.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1795#	0#	
Diaphgram Shear	45 plf (E)	0 plf (E)	

Total Diaphragm Length	=	40 ft
Total Diaphragm Shear	=	45 plf (E)
Shear for drag & collectors*	=	56 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
16.00 ft.	2.0 ft.						387# (E)	387# (E)	**NONE**	**NONE**

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Lateral Analysis Calculations

P4 **3rd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	27.4	27.4	ft
Pressure @ Elevation	13.92	13.92	psf
Above Plate:			
Wall Area Above Plate	38	0	ft^2
Average Elevation	29.9	29.9	ft
Pressure @ Elevation	14.13	14.13	psf
Wall Load	1001	0	#
Mean Roof Height (h)	29.9	29.9	
Roof Area	4	0	ft^2
Pressure @ Elevation	9.58	9.58	psf
Roof Load	35	0	#
Additional Load	=		#

Total Wind Load = **1036 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	14.00 ft
Maximum H:W Ratio	=	0.57
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**74 plf**
Seismic Wall Shear	=	**128 plf**
1.25 Seismic Shear*	=	**160 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Length of Diaphragm	40.0	40.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1794	W
Rho	=	1.00	
Diaphragm Load	1795	0	#
Additional Load	=		#

Total Seismic Load = **1795 #**

1.25 Total Load* = **2243 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	40.0	40.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1795#	0#	
Diaphgram Shear	45 plf (E)	0 plf (E)	

Total Diaphragm Length	=	40 ft
Total Diaphragm Shear	=	45 plf (E)
Shear for drag & collectors*	=	56 plf (E)

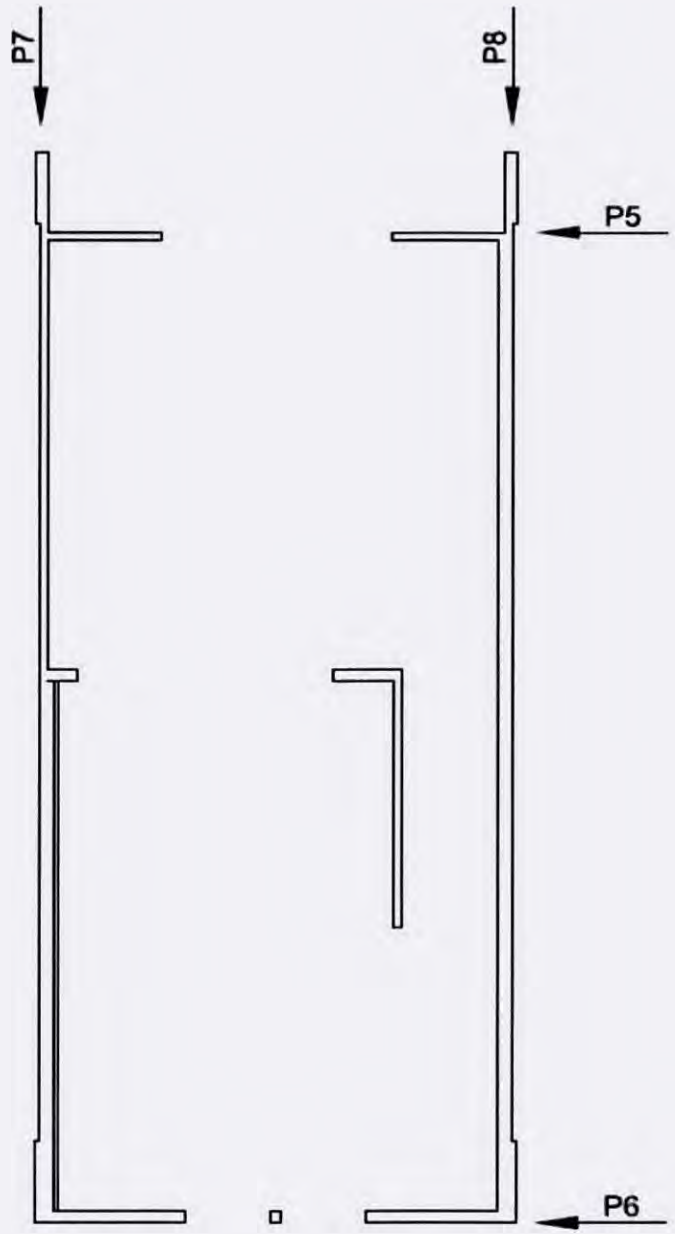
Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
14.00 ft.	2.0 ft.						579# (E)	579# (E)	1	1

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2nd Floor P-Line Layout



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Lateral Analysis Calculations

P5 **2nd Floor; Rear; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Additional Width	0	3	ft
Avg. Roof Ht abv Plate	0	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	11.78	15.32	psf
Above Plate:			
Wall Area Above Plate	96	0	ft^2
Average Elevation	23.4	18.2	ft
Pressure @ Elevation	12.27	15.32	psf
Wall Load	2161	207	#
Mean Roof Height (h)	18.2	18.2	
Roof Area	0	12	ft^2
Pressure @ Elevation	7.51	7.81	psf
Roof Load	0	94	#
Add'l Load (From P1)	=	1655	#

Total Wind Load = **4117 #**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	7.00 ft
Maximum H:W Ratio	=	2.57
Seismic H:W Adjustment	=	0.78
Wind Wall Shear	=	**588 plf**
Seismic Wall Shear	=	**414 plf**
1.25 Seismic Shear*	=	**517 plf**

USE SHEAR WALL TYPE **12**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1192	W
Rho	=	1.00	
Diaphragm Load	1103	0	#
Add'l Load (From P1)	=	1795	#

Total Seismic Load = **2897 #**

1.25 Total Load* = **3622 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	1795#	0#	
Total Load in Diaphragm	3816#	301#	
Diaphgram Shear	229 plf	(W) 18 plf	(W)

Total Diaphragm Length	=	17 ft
Total Diaphragm Shear	=	247 plf (W)
Shear for drag & collectors*	=	247 plf (W)

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
3.50 ft.							5188# (W)	5188# (W)	4	4
3.50 ft.							5188# (W)	5188# (W)	4	4

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Lateral Analysis Calculations

P6 **2nd Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Additional Width	0	3	ft
Avg. Roof Ht abv Plate	4	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	11.78	15.32	psf
Above Plate:			
Wall Area Above Plate	96	0	ft^2
Average Elevation	23.4	18.2	ft
Pressure @ Elevation	12.27	15.32	psf
Wall Load	2161	207	#
Mean Roof Height (h)	18.2	18.2	
Roof Area	0	24	ft^2
Pressure @ Elevation	7.51	7.81	psf
Roof Load	0	187	#
Add'l Load (From P2)	=	1817	#
Total Wind Load	=	**4372**	**#**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	37	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1192	W
Rho	=	1.00	
Diaphragm Load	1103	0	#
Add'l Load (From P2)	=	1795	#
Total Seismic Load	=	**2897**	**#**
1.25 Total Load*	=	**3622**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	16.34	ft
Net Length of Walls	=	9.92	ft
Maximum H:W Ratio	=	0.91	
Seismic H:W Adjustment	=	1.00	
		Shear @ T&B of wall	
Wind Wall Shear	=	**441**	**plf** **268 plf**
Seismic Wall Shear	=	**292**	**plf** **177 plf**
1.25 Seismic Shear*	=	**365**	**plf**

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2161#	394#	
Diaphgram Shear	130 plf (W)	24 plf (W)	
Total Diaphragm Length	=	17	ft
Total Diaphragm Shear	=	153 plf (W)	
Shear for drag & collectors*	=	153 plf (W)	

USE SHEAR WALL TYPE **3**

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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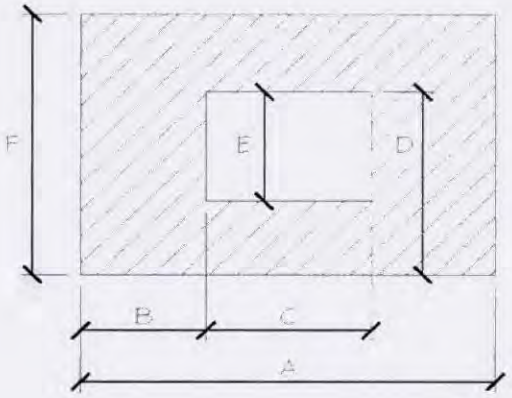
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P6 **2nd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 16.34 ft.
Dist from left end of wall to 1st opening	B	= 5.00 ft.
Opening Width	C	= 6.42 ft.
Net Length		= 9.92 ft.
Opening Header Height	D	= 8.00 ft.
Opening Height	E	= 4.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	4372#
Seismic Load (E)	2897#
DL Trib Length Roof	0 ft
DL Trib Length Floor	5 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	268 plf	177 plf
Piers	441 plf	292 plf

Use Shear Wall Type 3

STRAP CALCULATIONS

Max. Load @ Opening = 866 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-724#	-554#
Left Pier	1983#	1314#
Right Pier	1983#	1314#
Bottom	1070#	709#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location
398 #	0.00 ft.
351 #	6.83 ft.
351 #	9.83 ft.
398 #	16.34 ft.

	Total Uplift	Holdown
Left End	2394# (W)	2 corner
L King	1470# (W)	1
R King	1496# (W)	1
Right End	2394# (W)	2 corner

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Lateral Analysis Calculations

P7 **2nd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	12.73	12.73	psf
Above Plate:			
Wall Area Above Plate	43	0	ft^2
Average Elevation	23.4	18.2	ft
Pressure @ Elevation	13.21	12.73	psf
Wall Load	1050	0	#
Mean Roof Height (h)	18.2	18.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.64	9.64	psf
Roof Load	0	0	#
Add'l Load (From P3)	=	1036	#

Total Wind Load = **2086 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.56
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**130 plf**
Seismic Wall Shear	=	**187 plf**
1.25 Seismic Shear*	=	**233 plf**

USE SHEAR WALL TYPE **2**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	16.67		0	ft
Length of Diaphragm	40.0		40.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.1192	W
Rho	=		1.00	
Diaphragm Load	1192		0	#
Add'l Load (From P3)	=		1795	#
Total Seismic Load	=		**2987**	**#**
1.25 Total Load*	=		**3733**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	40.0		40.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1192#		0#	
Diaphgram Shear	30 plf	(E)	0 plf	(E)
Total Diaphragm Length	=		40	ft
Total Diaphragm Shear	=		30 plf	(E)
Shear for drag & collectors*	=		37 plf	(E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
16.00 ft.		1.0 ft.					1267# (E)	1267# (E)	1	1

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Lateral Analysis Calculations

P8 **2nd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	18.2	18.2	ft
Pressure @ Elevation	12.73	12.73	psf
Above Plate:			
Wall Area Above Plate	43	0	ft^2
Average Elevation	23.4	18.2	ft
Pressure @ Elevation	13.21	12.73	psf
Wall Load	1050	0	#
Mean Roof Height (h)	18.2	18.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.64	9.64	psf
Roof Load	0	0	#
Add'l Load (From P4)	=	1036	#

Total Wind Load = **2086 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	14.00 ft
Maximum H:W Ratio	=	0.64
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**149 plf**
Seismic Wall Shear	=	**213 plf**
1.25 Seismic Shear*	=	**267 plf**

USE SHEAR WALL TYPE **2**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Length of Diaphragm	40.0	40.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1192	W
Rho	=	1.00	
Diaphragm Load	1192	0	#
Add'l Load (From P4)	=	1795	#
Total Seismic Load	=	**2987**	#
1.25 Total Load*	=	**3733**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	40.0	40.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1192#	0#	
Diaphgram Shear	30 plf	0 plf	(E)
Total Diaphragm Length	=	40	ft
Total Diaphragm Shear	=	30 plf	(E)
Shear for drag & collectors*	=	37 plf	(E)

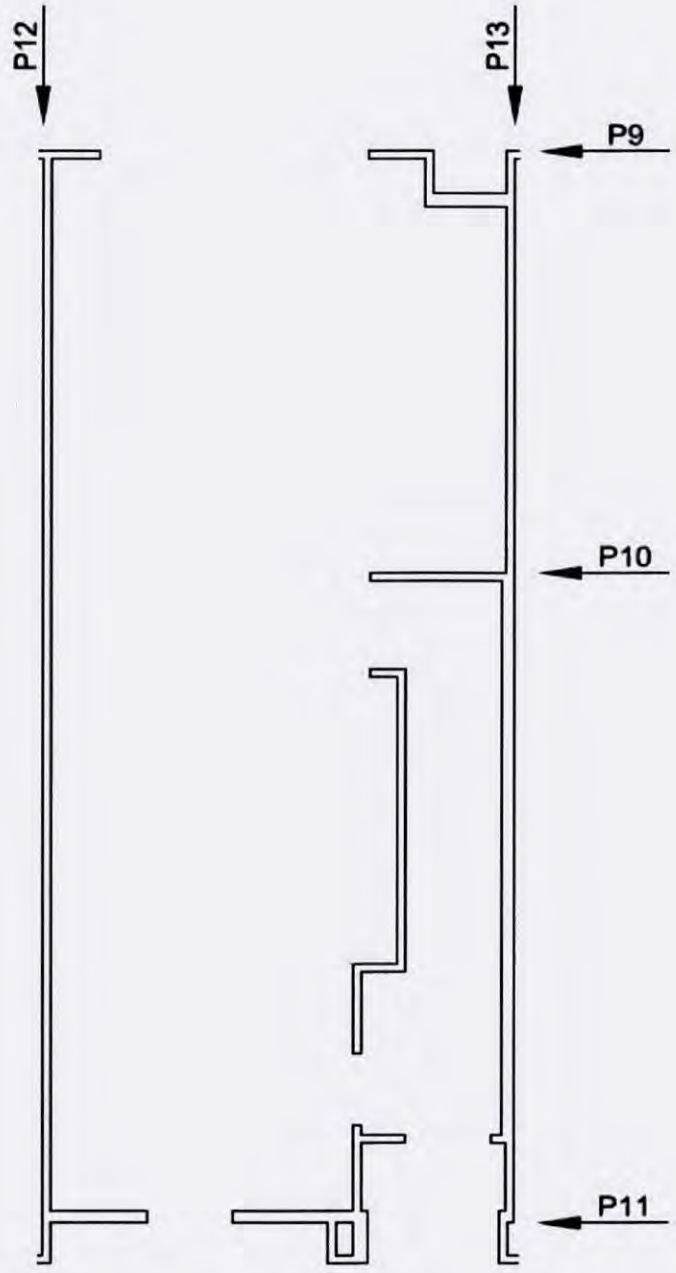
Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
14.00 ft.	2.0 ft.		579#	0.00	579#	14.00	2052# (E)	2052# (E)	2	2

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1st Floor P-Line Layout



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Lateral Analysis Calculations

P9 **1st Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Above Plate:			
Wall Area Above Plate	46	0	ft^2
Average Elevation	13.7	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Wall Load	888	0	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	5.34	9.18	psf
Roof Load	0	0	#
Add'l Load (From P5)	=	4117	#
Total Wind Load	=	**5005**	**#**

Shear Wall Summary

See manufactured shearwalls on next page(s)

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	22.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0524	W
Rho	=	1.00	
Diaphragm Load	244	0	#
Add'l Load (From P5)	=	2897	#
Total Seismic Load	=	**3141**	**#**
1.25 Total Load*	=	**3927**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	4117#	0#	
Total Load in Diaphragm	5005#	0#	
Diaphgram Shear	300 plf (W)	0 plf (E)	
Total Diaphragm Length	=	17	ft
Total Diaphragm Shear	=	300 plf (W)	
Shear for drag & collectors*	=	300 plf (W)	

Block & E.N. Area 1 w/ 8d's @ 6" o.c. edge & 12" o.c. field

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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Client	Standard Pacific Homes - E	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations For Simpson Steel Strong-Wall

9 **1st Floor; Rear; Left to Right**

See load calculations on previous page

Total Wind Load = **5005 #** **Total Seismic Load** = **3141 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
2	SSW18x7	1000	6960	5810	0.41	0.34

Total Load Capacity	=	6960	5810	
Pecent of Capacity Used	=	72%	54%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
2	SSW18x7	16976	17088	5005	3141	LOAD OK

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Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P10 **1st Floor; Interior; Left to Right**
Interior wall of garage

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	24	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Above Plate:			
Wall Area Above Plate	46	68	ft^2
Average Elevation	13.7	13.7	ft
Pressure @ Elevation	11.44	14.77	psf
Wall Load	888	1719	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	5.34	9.18	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **2607 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	4.00 ft
Maximum H:W Ratio	=	2.00
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**652 plf**
Seismic Wall Shear	=	**131 plf**
1.25 Seismic Shear*	=	**164 plf**

USE SHEAR WALL TYPE **12**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	24	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0524	W
Rho	=	1.00	
Diaphragm Load	210	314	#
Additional Load	=		#
Total Seismic Load	=	**524**	#
1.25 Total Load*	=	**655**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	888#	1719#	
Diaphgram Shear	53 plf (W)	103 plf (W)	
Total Diaphragm Length	=	17 ft	
Total Diaphragm Shear	=	156 plf (W)	
Shear for drag & collectors*	=	156 plf (W)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
4.00 ft.		6.0 ft.					5698# (W)	5698# (W)	**19**	**19**

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Client	Standard Pacific Homes	**Plan #**	2
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Lateral Analysis Calculations

P11 **1st Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	24	0	ft
Additional Width	0	1.5	ft
Avg. Roof Ht abv Plate	5	1	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Above Plate:			
Wall Area Above Plate	68	2	ft^2
Average Elevation	13.7	8.0	ft
Pressure @ Elevation	11.44	14.77	psf
Wall Load	1332	111	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	5.34	9.18	psf
Roof Load	0	0	#
Add'l Load (From P6)	=	4372	#
Total Wind Load	=	**5815**	**#**

Shear Wall Summary

See manufactured shearwalls on next page(s)

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	24	0	ft
Length of Diaphragm	16.7	16.7	ft
Additional Diaphragm Area	0.	10.	ft^2
Building Dead Load	30	30	psf
V	=	0.0524	W
Rho	=	1.00	
Diaphragm Load	314	16	#
Add'l Load (From P6)	=	2897	#
Total Seismic Load	=	**3227**	**#**
1.25 Total Load*	=	**4034**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	16.7	16.7	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1332#	111#	
Diaphgram Shear	80 plf (W)	7 plf (W)	
Total Diaphragm Length	=	17	ft
Total Diaphragm Shear	=	87 plf (W)	
Shear for drag & collectors*	=	87 plf (W)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations For Simpson Steel Strong-Wall

P11 **1st Floor; Front; Left to Right**

See load calculations on previous page

Total Wind Load = **5815 #** **Total Seismic Load** = **3227 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
1	SSW24x8	1000	5105	4785	0.39	0.36
1	SSW15x8	1000	1530	1505	0.43	0.42

Total Load Capacity	=	6635	6290	
Pecent of Capacity Used	=	88%	51%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
1	SSW24x8	13090	13292	4572	2542	LOAD OK
1	SSW15x8	3558	3583	1243	685	LOAD OK

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P12 **1st Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	12.27	12.27	psf
Above Plate:			
Wall Area Above Plate	48	0	ft^2
Average Elevation	13.7	8.0	ft
Pressure @ Elevation	12.27	12.27	psf
Wall Load	992	0	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (From P7)	=	2086	#

Total Wind Load = **3078 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	16.00 ft
Maximum H:W Ratio	=	0.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**192 plf**
Seismic Wall Shear	=	**222 plf**
1.25 Seismic Shear*	=	**277 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Length of Diaphragm	41.5	41.5	ft
Additional Diaphragm Area	11.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0524	W
Rho	=	1.00	
Diaphragm Load	561	0	#
Add'l Load (From P7)	=	2987	#
Total Seismic Load	=	**3548**	**#**
1.25 Total Load*	=	**4434**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	41.5	41.5	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	992#	0#	
Diaphgram Shear	24 plf (W)	0 plf (E)	
Total Diaphragm Length	=	42	ft
Total Diaphragm Shear	=	24 plf (W)	
Shear for drag & collectors*	=	24 plf (W)	

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
16.00 ft.		1.0 ft.	1267#	0.00	1267#	16.00	2671# (E)	2671# (E)	**17 interior**	**17 interior**

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P13 **1st Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	8.0	8.0	ft
Average Elevation	8.0	8.0	ft
Pressure @ Elevation	12.27	12.27	psf
Above Plate:			
Wall Area Above Plate	48	0	ft^2
Average Elevation	13.7	8.0	ft
Pressure @ Elevation	12.27	12.27	psf
Wall Load	992	0	#
Mean Roof Height (h)	8.0	8.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (From P8)	=	2086	#

Total Wind Load = **3078 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	14.00 ft
Maximum H:W Ratio	=	0.57
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**220 plf**
Seismic Wall Shear	=	**253 plf**
1.25 Seismic Shear*	=	**317 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16.67	0	ft
Length of Diaphragm	41.5	41.5	ft
Additional Diaphragm Area	11.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0524	W
Rho	=	1.00	
Diaphragm Load	561	0	#
Add'l Load (From P8)	=	2987	#
Total Seismic Load	=	**3548**	#
1.25 Total Load*	=	**4434**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	41.5	41.5	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	992#	0#	
Diaphgram Shear	24 plf (W)	0 plf (E)	
Total Diaphragm Length	=	42	ft
Total Diaphragm Shear	=	24 plf (W)	
Shear for drag & collectors*	=	24 plf (W)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
14.00 ft.		1.0 ft:	2052#	0.00	2052#	14.00	3780# (E)	3780# (E)	**19 interior**	**19 interior**

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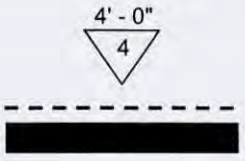
Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall Table

Type	*Wind*	*Seismic*	*Description*
1	254.8	182	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
2	350	266	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 4" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
3	480.2	343	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X OR (2) 2X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
4	600	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. MAX. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
5	627.2	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
12	754.6	539	15/32" APA RATED SHEATHING ONE FACE WITH 10d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
7	960.4	686	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
8	1254.4	896	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.

NOTES:

1. Shearwalls are designated on the plans by a triangle symbol surrounding the shearwall type.
2. Shearwall length is indicated above the shearwall callout and is shown graphically with shading & a dashed line.
3. See anchor bolt calculations for required anchor spacing.



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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Simpson Holdown Table

	Wind		*Seismic*		
Type	*Typ*	*End*	*Typ*	*End*	***Description***
NONE	500	500	500	500	Below limit
1	1705	1705	1705	1705	CS16 STRAP, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2	3410	3410	3410	3410	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
3	4585	4585	4585	4585	CMSTC16 STRAP, 23" MINIMUM END SPAN, CLEAR SPAN VARIES.
4	5860	5860	5860	5860	MSTC66 STRAP, 18" MAXIMUM CLEAR SPAN.
1A	942	942	942	942	CS16 STRAP, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
1B	1884	1884	1884	1884	(2) CS16 STRAPS, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
2A	3300	3300	3300	3300	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2B	4950	4950	4950	4950	(3) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
9	4755	0	3400	0	STHD10 HOLDOWN TO MINIMUM 4X POST.
17	4565	4470	3740	3325	HDU4 HOLDOWN TO MINIMUM 4X POST W/ SSTB24/24
19	6970	6970	6970	6970	HDU8 HOLDOWN TO MINIMUM 4X POST W/ SSTB28/34 ANCHOR.
19A	7870	7870	7870	7315	HDU8 HOLDOWN TO MINIMUM 4X6 POST W/ SSTB28/34 ANCHOR.
20	9535	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X6 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
20A	10470	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X8 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
21	14390	14390	14390	14390	HDU14 HOLDOWN TO MINIMUM 4X8 POST W/ 1" ANCHOR ROD.
16	19070	19070	19070	19070	HD19 HOLDOWN TO MINIMUM 4X10 OR 6X6 POST W/ 1 1/4" ANCHOR ROD.

NOTE: Holdowns are designated on the plans by a diamond symbol surrounding the holdown type, e.g.: 

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	2
Job #	HS13068	**Designer:**	RM:jg
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CALCULATIONS FOR ANCHOR BOLTS & MASA* ANCHORS AT SHEARWALLS

*MASA anchor values per ESR-2555, Issued November 2010

Allowable loads per NDS/hardware values (1.6 load duration factor):

Condition	1/2" ϕ A.B.	MASA
2X sill plate; sw capacity ≤ 350 plf	650#	1515#
2X sill plate; sw capacity b/t 350 & 600 plf	325#	758#
3X sill plate	770#	1215#

Allowable Shear Loads per ACI 318-08 Appendix D (assuming uncracked concrete at service loads):

		1/2" ϕ A.B.		MASA	
Wind:	$(F^*V_{nx}) / 1.6 =$	1064#	Wind:	2X sill = 1388#	
				3X sill = 1109#	
Seismic:	$(F^*V_{nx}) * 0.7 =$	1192#	Seismic:	2X sill = 1138#	
				3X sill = 931#	

Seismic (in SDC C, D, E and F):
$(0.75^*F^*_{Vnx}) * 0.7 =$ 894#

		1/2" AB	MASA
SW 1 (2x sill)	NDS	49.0" oc	71.4" oc
255plf (W)	ACI (W)	50.1" oc	65.3" oc
182plf (E)	ACI (E)	58.9" oc	75.0" oc
	per plan	**48" oc**	**48" oc**

		1/2" AB	MASA
SW 2 (2x sill)	NDS	35.7" oc	51.9" oc
350plf (W)	ACI (W)	36.5" oc	47.6" oc
266plf (E)	ACI (E)	40.3" oc	51.3" oc
	per plan	**35" oc**	**35" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW3	NDS	13.0" oc	18.9" oc	30.8" oc	30.4" oc
480plf (W)	ACI (W)	26.6" oc	34.7" oc	26.6" oc	27.7" oc
343plf (E)	ACI (E)	31.3" oc	39.8" oc	31.3" oc	32.6" oc
	per plan	**12" oc**	**12" oc**	**20" oc**	**20" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW4	NDS	10.4" oc	15.2" oc	24.6" oc	24.3" oc
600plf (W)	ACI (W)	21.3" oc	27.8" oc	21.3" oc	22.2" oc
448plf (E)	ACI (E)	23.9" oc	30.5" oc	23.9" oc	24.9" oc
	per plan	**10" oc**	**10" oc**	**16" oc**	**16" oc**

		1/2" AB	MASA
SW 5 (3x sill)	NDS	23.6" oc	23.2" oc
627plf (W)	ACI (W)	20.4" oc	21.2" oc
448plf (E)	ACI (E)	23.9" oc	24.9" oc
	per plan	**20" oc**	**20" oc**

		1/2" AB	MASA
SW 7 (3x sill)	NDS	15.4" oc	15.2" oc
960plf (W)	ACI (W)	13.3" oc	13.9" oc
686plf (E)	ACI (E)	15.6" oc	16.3" oc
	per plan	**13" oc**	**13" oc**

		1/2" AB	MASA
SW 8 (3x sill)	NDS	11.8" oc	11.6" oc
1254plf (W)	ACI (W)	10.2" oc	10.6" oc
896plf (E)	ACI (E)	12.0" oc	12.5" oc
	per plan	**10" oc**	**10" oc**

		1/2" AB	MASA
SW 12 (3x sill	NDS	19.6" oc	19.3" oc
755plf (W)	ACI (W)	16.9" oc	17.6" oc
539plf (E)	ACI (E)	19.9" oc	20.7" oc
	per plan	**12" oc**	**12" oc**

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tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
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Structural
Engineering
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Structural Calculation Package

for

Standard Pacific Homes - Bay

Village Walk

Cotati, California

Plan # 3

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Date 7/8/2013

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Structural Calculation Package

Client Information

Standard Pacific Homes - Bay
3825 Hopyard Road, Suite 195
Pleasanton, CA 94588

Project Information

Village Walk
Cotati, California
Plan No. 3

Loading Information

Roof Loads

Roofing (Tile)	=	10.0 psf
Sheathing	=	1.7 psf
Framing	=	2.3 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	1.5 psf
Wall (Seismic only)	=	9.0 psf
Total DL	=	21.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	20.0 psf

Floor Loads

Flooring	=	1.5 psf
Sheathing	=	2.5 psf
Framing	=	2.5 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	3.0 psf
Wall (Seismic only)	=	15.0 psf
Total DL	=	15.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	40.0 psf

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Seismic Design Per IBC Section 1613

Building Information

R	=	6.50	ASCE Table 12.2-1
Occupancy Cat.	=	II	IBC Sect. 1604.5
Number of Stories	=	2	
Importance Factor	=	1.0	
Max Level Height	=	19.2 ft	
Design Approach		Normal/Equivalent	

Site Information

S_s	=	1.615	IBC Sect. 1613.5.1
S_1	=	0.634	IBC Sect. 1613.5.1
Site Class	=	D	
S_s	=	1.615	Used For Design
S_1	=	0.634	Used For Design

Seismic Loads: ASCE 7 Section 12.8 Equivalent Lateral Force Procedure

Short Period Response

F_a	=	1.000	IBC 1613.5.3
$S_{MS} = F_a S_s$	=	1.615	IBC Eqn. 16-36
$S_{DS} = (^2/_3) S_{MS}$	=	1.077	IBC Eqn. 16-38
SDC per S_{DS}	=	D	IBC Table 1613.5.6(1)

1-Second Period Response

F_v	=	1.500	IBC 1613.5.3
$S_{M1} = F_v S_1$	=	0.951	IBC Eqn. 16-37
$S_{D1} = (^2/_3) S_{M1}$	=	0.634	IBC Eqn. 16-39
SDC per S_{D1}	=	D	IBC Table 1613.5.6(2)

Seismic Design Category

Period, T	=	0.18 s, ASCE 7 12.8.2.1
0.8 Ts	=	0.47 s, ASCE 7 11.4.5
SDC Required	=	D IBC Sect. 1613.5.6
SDC Used	=	**D**

Seismic Design Factors

Overstrength Factor	=	2.5	Table 12.2-1, Footnote g
Dead Load Reduction:			
(0.6 - 0.14 Sds)D	=	0.449 D	ASCE Sect 12.4.3.2
Rho, left to right	=	1.0	ASCE Sect 12.3.4
Rho, front to back	=	1.0	

ASD Seismic Response Coefficient

$$C_s = \frac{I(S_{DS})}{R}$$

C_s per ASCE Eqn. 12.8-2

C_s	=	0.1656	ASCE Eqn. 12.8-2
C_s (upper limit)	=	0.5317	ASCE Eqn. 12.8-3
C_s (lower limit)	=	0.0100	ASCE Eqn. 12.8-5
C_s (alt low limit)	=	0.0488	ASCE Eqn. 12.8-6
C_s	=	0.1656	

Base Shear, V = 0.1159 W
(Includes 0.7 factor from ASD Basic LC)

Vertical Shear Distribution

Story	h (ft)	Area (sq ft)	DL (psf)	w_x (lb)	w_x x h	C_{vx}	C_{sx}*
1	9	1086	30	32580	293220	0.3816	0.0779
2	19.2	825	30	24750	475200	0.6184	0.1661
Sum:		1911		57330	768420		

*Derived equivalent shear ratio per story: $F_x = C_{sx} w_x$
where: $C_{sx} = C_{vx} C_s (W/w_x)$

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Project	Village Walk		
Client	Standard Pacific Homes - B	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (V)	85 mph (3-second gust)	
Importance Factor (I)	1.00 ASCE 7 - Table 6-1	
Exposure Category	C ASCE 7 - Section 6.5.6.3;	
Directionality Factor (K_d)	0.85 ASCE 7 - Table 6-4	
Gust Factor (G)	0.85 ASCE 7 - Section 6.5.8.1	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\, K_z\, K_{zt}\, K_d\, V^2\, I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects Hill Type None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	22.45 ft	Velocity Pressure (q_h) for MWFRS	14.46 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.23
min L/B (Front to Back)	0.58
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.50

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C 14.46 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
9.0 ft	-1.02	17.40	-1.25	20.64
15.0 ft	-0.95	16.27	-1.09	18.38
19.2 ft	-0.91	15.72	-1.02	17.28
22.0 ft	-0.89	15.42	-0.97	16.68

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-1.13	
Int. Pressure Coeff. (Cpi)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-11 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	1 psf	Available to offset overturning from wind

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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Beam Specifications

BEAM #	SIZE	GRADE	LOCATION
Beam #1	1 3/4"x14"	1.5E SCL	Beam over 2-car tandem garage
Beam #2	1 3/4"x14"	1.5E SCL	Beam over 2-car tandem garage
Beam #3	5 1/4"x11 7/8"	1.9E SCL	Beam over 2-car tandem garage
Beam #4	4x12	#1 D.F.	2- car garage header
Beam #5	5 1/4"x11 7/8"	1.9E SCL	Beam over 2-car tandem garage
Beam #6	5 1/4"x11 7/8"	1.9E SCL	Beam over 2-car tandem garage
Beam #7	3 1/2"x14"	1.5E SCL	Beam over dining / great room
Beam #8	5 1/4"x16"	1.9E SCL	Beam over garage, plan 3X
Beam #9	5 1/4"x16"	1.9E SCL	Garage header, plan 3X
Beam #10	3 1/2"x11 7/8"	1.5E SCL	Porch beam under shear wall

Header Specifications

First Floor Walls

Length	Size	Grade
4'-0"	4x8	#2 D.F.
6'-0"	4x10	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Second Floor Walls

Length	Size	Grade
4'-0"	4x6	#2 D.F.
6'-0"	4x8	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Description : Headers Plan 3

Wood Beam Design : Headers Plan 3

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

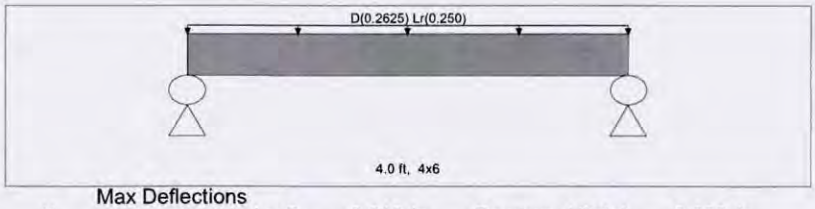
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft

Design Summary

Max fb/Fb Ratio = **0.596** : 1
fb : Actual : 697.05 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.343** : 1
fv : Actual : 61.77 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.53		0.50				
Right Support	0.53		0.50				

Max Deflections

Downward L+Lr+S	0.019 in	Downward Total	0.038 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2574 >360	Total Defl Ratio	1255 >240

Wood Beam Design : 6ft Header Upper floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

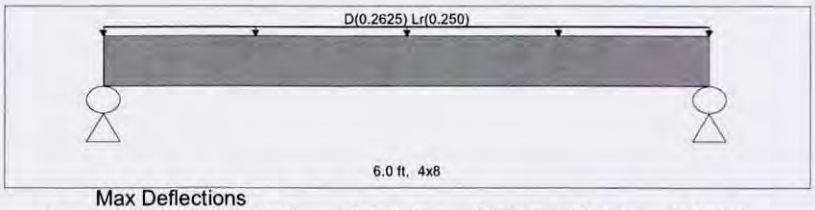
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft

Design Summary

Max fb/Fb Ratio = **0.771** : 1
fb : Actual : 902.60 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.404** : 1
fv : Actual : 72.71 psi at 5.400 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.79		0.75				
Right Support	0.79		0.75				

Max Deflections

Downward L+Lr+S	0.041 in	Downward Total	0.084 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1747 >360	Total Defl Ratio	852 >240

Wood Beam Design : 4ft Header Lower floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

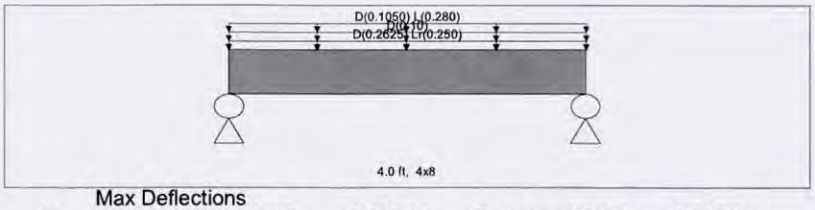
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 7.0 ft

Design Summary

Max fb/Fb Ratio = **0.579** : 1
fb : Actual : 677.07 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.398** : 1
fv : Actual : 71.59 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.94	0.56	0.50				
Right Support	0.94	0.56	0.50				

Max Deflections

Downward L+Lr+S	0.017 in	Downward Total	0.032 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2781 >360	Total Defl Ratio	1477 >240

Wood Beam Design : 6ft Header Lower floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade :	No.2		
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

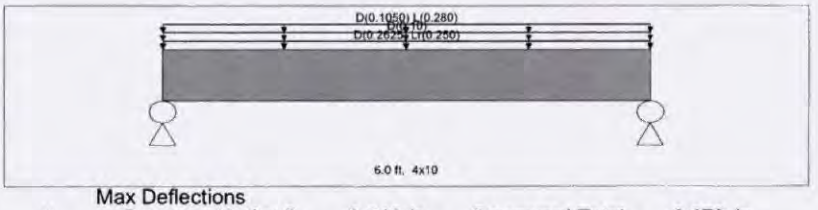
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 7.0 ft

Design Summary

Max fb/Fb Ratio = **0.867** : 1
fb : Actual : 935.86 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.499** : 1
fv : Actual : 89.77 psi at 5.240 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.40	0.84	0.75				
Right Support	1.40	0.84	0.75				

Max Deflections

Downward L+Lr+S	0.042 in	Downward Total	0.079 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1711 >360	Total Defl Ratio	909 >240

Description : Beams Plan 3

Wood Beam Design : Beams Plan 3

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

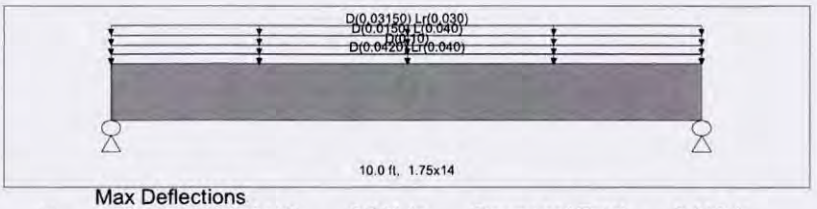
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 1.50 ft

Design Summary

Max fb/Fb Ratio = **0.331** : 1
fb : Actual : 711.08 psi at 5.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.225** : 1
fv : Actual : 64.16 psi at 8.867 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.94	0.20	0.35				
Right Support	0.94	0.20	0.35				



Max Deflections

Downward L+Lr+S	0.041 in	Downward Total	0.112 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2894 >480	Total Defl Ratio	1066 >360

Wood Beam Design : Beam #3

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.9E SCL			
Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

Applied Loads

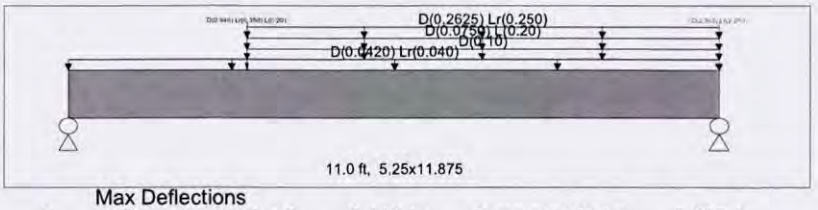
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 3.0 to 11.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 3.0 to 11.0 ft, Trib= 5.0 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 3.0 to 11.0 ft, Trib= 12.50 ft
Point: D = 0.940, Lr = 0.350, L = 0.20 k @ 3.0 ft
Point: D = 2.363, Lr = 2.250 k @ 11.0 ft

Design Summary

Max fb/Fb Ratio = **0.515** : 1
fb : Actual : 1,273.79 psi at 5.427 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.329** : 1
fv : Actual : 93.90 psi at 10.047 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	2.19	0.73	1.20				
Right Support	5.08	1.07	3.84				



Max Deflections

Downward L+Lr+S	0.112 in	Downward Total	0.233 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1174 >480	Total Defl Ratio	566 >360

Wood Beam Design : Beam #4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x12, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

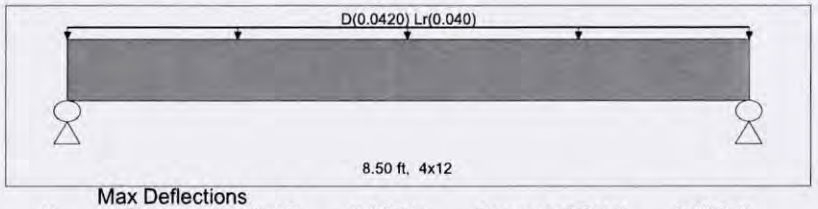
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft

Design Summary

Max fb/Fb Ratio = **0.122** : 1
fb : Actual : 120.37 psi at 4.250 ft in Span # 1
Fb : Allowable : 990.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.058** : 1
fv : Actual : 10.36 psi at 7.565 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.18		0.17				
Right Support	0.18		0.17				

Max Deflections

Downward L+Lr+S	0.007 in	Downward Total	0.015 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	14349 >480	Total Defl Ratio	6999 >360

Wood Beam Design : Beam #5

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber				Wood Grade : 1.9E SCL				
Fb - Tension	2475 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1900 ksi	Density	35 pcf
Fb - Compr	2475 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	875 ksi		

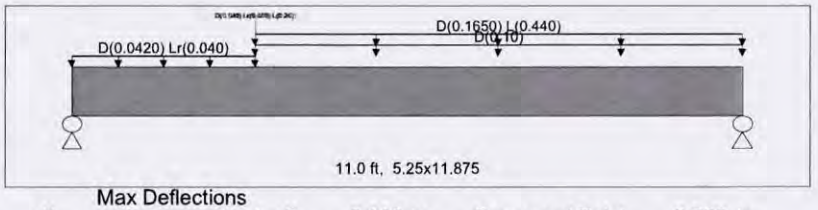
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 3.0 ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 3.0 to 11.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 3.0 to 11.0 ft, Trib= 11.0 ft
Point: D = 0.940, Lr = 0.350, L = 0.20 k @ 3.0 ft
Point: D = 1.120, Lr = 0.420, L = 0.240 k @ 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.512** : 1
fb : Actual : 1,268.28 psi at 4.913 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.338** : 1
fv : Actual : 96.41 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	2.38	1.60	0.66				
Right Support	1.93	2.36	0.23				

Max Deflections

Downward L+Lr+S	0.119 in	Downward Total	0.226 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1105 >480	Total Defl Ratio	583 >360

Wood Beam Design : Beam #6

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber				Wood Grade : 1.9E SCL				
Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

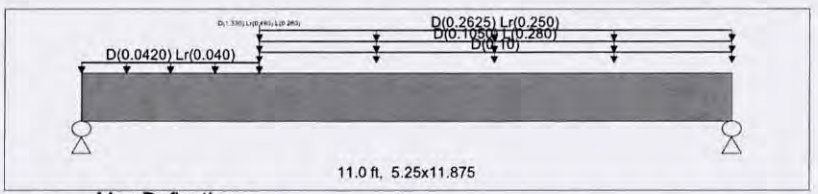
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 3.0 ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 3.0 to 11.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 3.0 to 11.0 ft, Trib= 7.0 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 3.0 to 11.0 ft, Trib= 12.50 ft
Point: D = 1.330, Lr = 0.490, L = 0.280 k @ 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.557** : 1
fb : Actual : 1,379.28 psi at 5.280 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.349** : 1
fv : Actual : 99.34 psi at 10.047 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H

Max Deflections

Downward L+Lr+S	0.126 in	Downward Total	0.254 in

Wood Beam Design : Beam #7

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

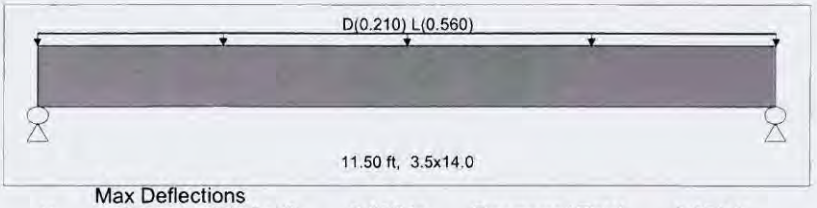
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 14.0 ft

Design Summary

Max fb/Fb Ratio = **0.621** : 1
fb : Actual : 1,335.99 psi at 5.750 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.380** : 1
fv : Actual : 108.43 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.21	3.22					
Right Support	1.21	3.22					



Max Deflections

Downward L+Lr+S	0.185 in	Downward Total	0.254 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	747 >480	Total Defl Ratio	543 >360

Wood Beam Design : Beam #9

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x16.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.9E SCL			
Fb - Tension	2,475.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,900.0 ksi	Density	35.0 pcf
Fb - Compr	2,475.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	875.0 ksi		

Applied Loads

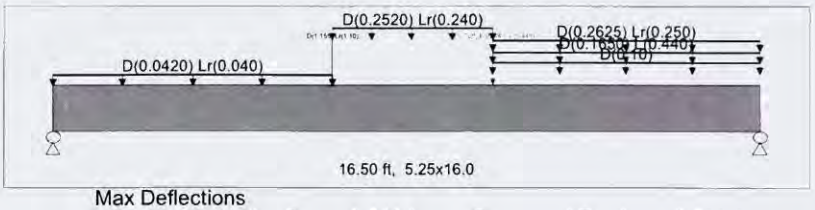
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 6.50 ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 10.250 to 16.50 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 10.250 to 16.50 ft, Trib= 11.0 ft
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 10.250 to 16.50 ft, Trib= 12.50 ft
Point: D = 1.155, Lr = 1.10 k @ 6.50 ft
Point: D = 1.720, Lr = 0.440, L = 0.440 k @ 10.250 ft
Unif Load: D = 0.2520, Lr = 0.240 k/ft, 6.50 to 10.250 ft

Design Summary

Max fb/Fb Ratio = **0.703** : 1
fb : Actual : 1,741.12 psi at 10.230 ft in Span # 1
Fb : Allowable : 2,475.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.444** : 1
fv : Actual : 126.57 psi at 15.180 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	2.66	0.69	1.78				
Right Support	4.73	2.50	2.48				



Max Deflections

Downward L+Lr+S	0.243 in	Downward Total	0.502 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	816 >360	Total Defl Ratio	394 >240

Wood Beam Design : Beam #10

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x11.875, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 3.0 ft
Point: W = 2.467, E = 1.727 k @ 5.0 ft

Multiple Simple Beam

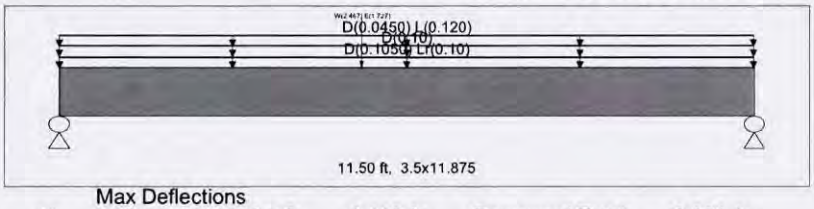
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ENERCALC, INC. 1983-2013, Build:6.13.2.27, Ver:6.13.2.27

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Design Summary

Max fb/Fb Ratio = **0.605** : 1
fb : Actual : 2,082.40 psi at 5.022 ft in Span # 1
Fb : Allowable : 3,440.00 psi
Load Comb : +1.210D+1.923E+H

Max fv/FvRatio = **0.263** : 1
fv : Actual : 120.06 psi at 0.000 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+1.923E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.44	0.69	0.58		1.39	0.98	
Right Support	1.44	0.69	0.58		1.07	0.75	

Max Deflections

Downward L+Lr+S	0.119 in	Downward Total	0.381 in
Upward L+Lr+S	0.000 in	Upward Total	-0.181 in
Live Load Defl Ratio	1161 >480	Total Defl Ratio	362 >360

Wood Beam Design : Porch Headers

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch — Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

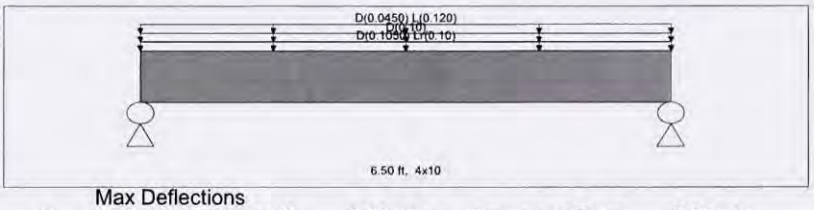
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.488** : 1
fb : Actual : 526.95 psi at 3.250 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.266** : 1
fv : Actual : 47.91 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.81	0.39	0.33				
Right Support	0.81	0.39	0.33				

Max Deflections

Downward L+Lr+S	0.024 in	Downward Total	0.051 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3243 >360	Total Defl Ratio	1518 >240

Description : Beam #2

CODE REFERENCES

Calculations per NDS 2005, IBC 2006, CBC 2007, ASCE 7-05
Load Combination Set : 2006IBC&ASCE7-05(HSCGI)

Material Properties

Analysis Method : Allowable Stress Design
Load Combination 2006IBC&ASCE7-05(HSCGI)

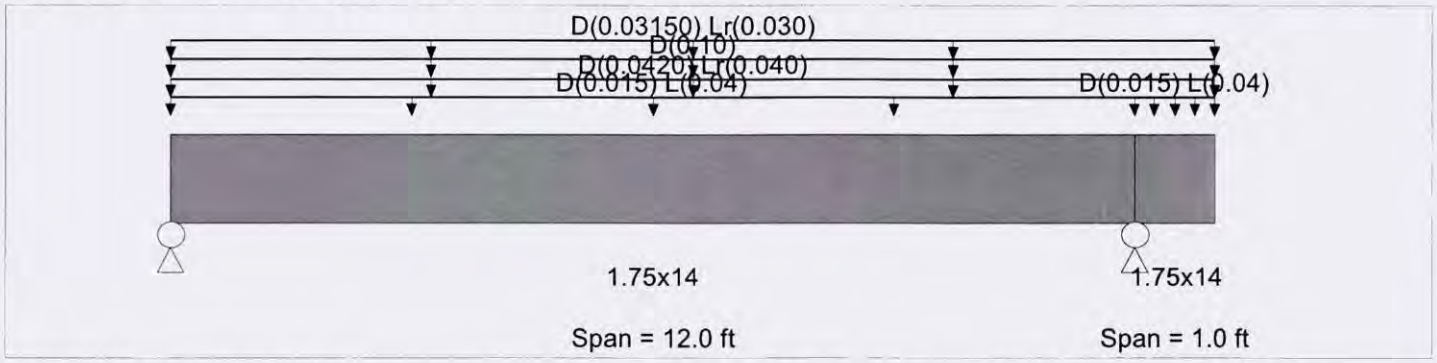
Wood Species : Structural Composite Lumber
Wood Grade : 1.5E SCL

Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	2,150.0 psi
Fb - Compr	2,150.0 psi
Fc - Prll	1,600.0 psi
Fc - Perp	750.0 psi
Fv	285.0 psi
Ft	1,000.0 psi

E : Modulus of Elasticity

Ebend- xx	1,500.0 ksi
Eminbend - xx	700.0 ksi
Density	35.0 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Loads on all spans...
Uniform Load on ALL spans : D = 0.0210, Lr = 0.020 ksf, Tributary Width = 2.0 ft
Partial Length Uniform Load : D = 0.10 k/ft, Extent = 0.0 -->> 13.0 ft
Partial Length Uniform Load : D = 0.03150, Lr = 0.030 k/ft, Extent = 0.0 -->> 13.0 ft
Load for Span Number 1
Uniform Load : D = 0.0150, L = 0.040 , Tributary Width = 1.0 ft, (Floor Load)
Load for Span Number 2
Uniform Load : D = 0.0150, L = 0.040 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	**0.470** : 1	Maximum Shear Stress Ratio	=	**0.285** : 1
Section used for this span		**1.75x14**	Section used for this span		**1.75x14**
fb : Actual	=	1,009.78 psi	fv : Actual	=	81.33 psi
FB : Allowable	=	2,150.00 psi	Fv : Allowable	=	285.00 psi
Load Combination		+D+0.750Lr+0.750L+H	Load Combination		+D+0.750Lr+0.750L+H
Location of maximum on span	=	5.966 ft	Location of maximum on span	=	10.860 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.085 in	Ratio =	1697
Max Upward L+Lr+S Deflection	-0.022 in	Ratio =	1084
Max Downward Total Deflection	0.230 in	Ratio =	625
Max Upward Total Deflection	-0.060 in	Ratio =	398

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios									Moment Values			Shear Values		
Segment Length	Span #	M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	M	fb	F'b	V	fv	F'v
D Only													0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.327	0.199	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.35	702.37	2150.00	0.92	56.57	285.00
Length = 1.0 ft	2	0.009	0.199	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.09	19.78	2150.00	0.19	56.57	285.00
+D+L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00

Description : Beam #2

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
Length = 12.0 ft	1	0.396	0.241	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.06	851.42	2150.00	1.12	68.58	285.00
Length = 1.0 ft	2	0.011	0.241	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.11	23.98	2150.00	0.23	68.58	285.00
+D+Lr+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.448	0.272	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.59	963.20	2150.00	1.27	77.58	285.00
Length = 1.0 ft	2	0.013	0.272	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.13	27.13	2150.00	0.26	77.58	285.00
+D+S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.327	0.199	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.35	702.37	2150.00	0.92	56.57	285.00
Length = 1.0 ft	2	0.009	0.199	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.09	19.78	2150.00	0.19	56.57	285.00
+D+0.750Lr+0.750L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.470	0.285	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.81	1,009.78	2150.00	1.33	81.33	285.00
Length = 1.0 ft	2	0.013	0.285	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.14	28.44	2150.00	0.27	81.33	285.00
+D+0.750L+0.750S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.379	0.230	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.88	814.16	2150.00	1.07	65.58	285.00
Length = 1.0 ft	2	0.011	0.230	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.11	22.93	2150.00	0.22	65.58	285.00
+D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.204	0.124	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.35	702.37	3440.00	0.92	56.57	456.00
Length = 1.0 ft	2	0.006	0.124	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	19.78	3440.00	0.19	56.57	456.00
+D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.204	0.124	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.35	702.37	3440.00	0.92	56.57	456.00
Length = 1.0 ft	2	0.006	0.124	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	19.78	3440.00	0.19	56.57	456.00
+D+0.750Lr+0.750L+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.294	0.178	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.81	1,009.78	3440.00	1.33	81.33	456.00
Length = 1.0 ft	2	0.008	0.178	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.14	28.44	3440.00	0.27	81.33	456.00
+D+0.750Lr+0.750L-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.294	0.178	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.81	1,009.78	3440.00	1.33	81.33	456.00
Length = 1.0 ft	2	0.008	0.178	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.14	28.44	3440.00	0.27	81.33	456.00
+D+0.750L+0.750S+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.237	0.144	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.88	814.16	3440.00	1.07	65.58	456.00
Length = 1.0 ft	2	0.007	0.144	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	22.93	3440.00	0.22	65.58	456.00
+D+0.750L+0.750S-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.237	0.144	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.88	814.16	3440.00	1.07	65.58	456.00
Length = 1.0 ft	2	0.007	0.144	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	22.93	3440.00	0.22	65.58	456.00
+0.60D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.123	0.074	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.01	421.42	3440.00	0.55	33.94	456.00
Length = 1.0 ft	2	0.003	0.074	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.06	11.87	3440.00	0.11	33.94	456.00
+0.60D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.123	0.074	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.01	421.42	3440.00	0.55	33.94	456.00
Length = 1.0 ft	2	0.003	0.074	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.06	11.87	3440.00	0.11	33.94	456.00
+1.210D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.247	0.150	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.05	849.87	3440.00	1.12	68.45	456.00
Length = 1.0 ft	2	0.007	0.150	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	23.94	3440.00	0.23	68.45	456.00
+1.210D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.247	0.150	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.05	849.87	3440.00	1.12	68.45	456.00
Length = 1.0 ft	2	0.007	0.150	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	23.94	3440.00	0.23	68.45	456.00
+0.390D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.080	0.048	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.30	273.93	3440.00	0.36	22.06	456.00
Length = 1.0 ft	2	0.002	0.048	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.04	7.72	3440.00	0.07	22.06	456.00
+0.390D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 12.0 ft	1	0.080	0.048	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.30	273.93	3440.00	0.36	22.06	456.00
Length = 1.0 ft	2	0.002	0.048	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.04	7.72	3440.00	0.07	22.06	456.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L+Lr	1	0.2302	6.034		0.0000	0.000
	2	0.0000	6.034	D+L+Lr	-0.0600	1.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	1.779	2.102	
D Only	1.123	1.327	

Description : Beam #2

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
L Only	0.238	0.282	
Lr Only	0.417	0.493	
L+Lr	0.655	0.775	
D+Lr	1.540	1.820	
D+L	1.361	1.609	
D+L+Lr	1.779	2.102	

Description : Beam #8

CODE REFERENCES

Calculations per NDS 2005, IBC 2006, CBC 2007, ASCE 7-05
Load Combination Set : 2006IBC&ASCE7-05(HSCGI)

Material Properties

Analysis Method : Allowable Stress Design
Load Combination 2006IBC&ASCE7-05(HSCGI)

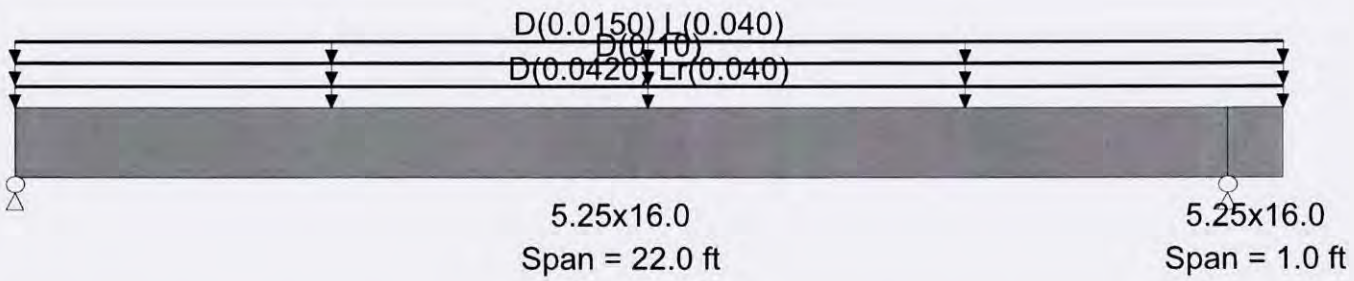
Wood Species : Structural Composite Lumber
Wood Grade : 1.9E SCL

Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	2,475.0 psi
Fb - Compr	2,475.0 psi
Fc - Prll	1,600.0 psi
Fc - Perp	750.0 psi
Fv	285.0 psi
Ft	1,000.0 psi

E : Modulus of Elasticity

Ebend- xx	1,900.0 ksi
Eminbend - xx	875.0 ksi
Density	35.0 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Loads on all spans...
Uniform Load on ALL spans : D = 0.0210, Lr = 0.020 ksf, Tributary Width = 2.0 ft
Partial Length Uniform Load : D = 0.10 k/ft, Extent = 0.0 -->> 23.0 ft
Partial Length Uniform Load : D = 0.0150, L = 0.040 k/ft, Extent = 0.0 -->> 23.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	**0.283** : 1	Maximum Shear Stress Ratio	=	**0.133** : 1
Section used for this span		**5.25x16.0**	Section used for this span		**5.25x16.0**
fb : Actual	=	700.40 psi	fv : Actual	=	37.95 psi
FB : Allowable	=	2,475.00 psi	Fv : Allowable	=	285.00 psi
Load Combination		+D+0.750Lr+0.750L+H	Load Combination		+D+0.750Lr+0.750L+H
Location of maximum on span	=	10.939 ft	Location of maximum on span	=	20.771 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.124 in	Ratio =	2123
Max Upward L+Lr+S Deflection	-0.018 in	Ratio =	1342
Max Downward Total Deflection	0.368 in	Ratio =	716
Max Upward Total Deflection	-0.053 in	Ratio =	452

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
D Only													0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.205	0.096	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.46	506.74	2475.00	1.54	27.46	285.00
Length = 1.0 ft	2	0.002	0.096	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.08	4.21	2475.00	0.16	27.46	285.00
+D+L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.257	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	11.87	635.85	2475.00	1.93	34.45	285.00
Length = 1.0 ft	2	0.002	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.10	5.28	2475.00	0.20	34.45	285.00
+D+Lr+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.257	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	11.87	635.85	2475.00	1.93	34.45	285.00
Length = 1.0 ft	2	0.002	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.10	5.28	2475.00	0.20	34.45	285.00

Description : Beam #8

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
+D+S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.205	0.096	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.46	506.74	2475.00	1.54	27.46	285.00
Length = 1.0 ft	2	0.002	0.096	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.08	4.21	2475.00	0.16	27.46	285.00
+D+0.750Lr+0.750L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.283	0.133	1.00	1.00	1.00	1.00	1.00	1.00	1.00	13.07	700.40	2475.00	2.13	37.95	285.00
Length = 1.0 ft	2	0.002	0.133	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.11	5.81	2475.00	0.22	37.95	285.00
+D+0.750L+0.750S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.244	0.115	1.00	1.00	1.00	1.00	1.00	1.00	1.00	11.27	603.57	2475.00	1.83	32.70	285.00
Length = 1.0 ft	2	0.002	0.115	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.09	5.01	2475.00	0.19	32.70	285.00
+D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.128	0.060	1.60	1.00	1.00	1.00	1.00	1.00	1.00	9.46	506.74	3960.00	1.54	27.46	456.00
Length = 1.0 ft	2	0.001	0.060	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.08	4.21	3960.00	0.16	27.46	456.00
+D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.128	0.060	1.60	1.00	1.00	1.00	1.00	1.00	1.00	9.46	506.74	3960.00	1.54	27.46	456.00
Length = 1.0 ft	2	0.001	0.060	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.08	4.21	3960.00	0.16	27.46	456.00
+D+0.750Lr+0.750L+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.177	0.083	1.60	1.00	1.00	1.00	1.00	1.00	1.00	13.07	700.40	3960.00	2.13	37.95	456.00
Length = 1.0 ft	2	0.001	0.083	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	5.81	3960.00	0.22	37.95	456.00
+D+0.750Lr+0.750L-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.177	0.083	1.60	1.00	1.00	1.00	1.00	1.00	1.00	13.07	700.40	3960.00	2.13	37.95	456.00
Length = 1.0 ft	2	0.001	0.083	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.11	5.81	3960.00	0.22	37.95	456.00
+D+0.750L+0.750S+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.152	0.072	1.60	1.00	1.00	1.00	1.00	1.00	1.00	11.27	603.57	3960.00	1.83	32.70	456.00
Length = 1.0 ft	2	0.001	0.072	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	5.01	3960.00	0.19	32.70	456.00
+D+0.750L+0.750S-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.152	0.072	1.60	1.00	1.00	1.00	1.00	1.00	1.00	11.27	603.57	3960.00	1.83	32.70	456.00
Length = 1.0 ft	2	0.001	0.072	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	5.01	3960.00	0.19	32.70	456.00
+0.60D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.077	0.036	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.68	304.04	3960.00	0.92	16.47	456.00
Length = 1.0 ft	2	0.001	0.036	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.05	2.52	3960.00	0.09	16.47	456.00
+0.60D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.077	0.036	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.68	304.04	3960.00	0.92	16.47	456.00
Length = 1.0 ft	2	0.001	0.036	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.05	2.52	3960.00	0.09	16.47	456.00
+1.210D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.155	0.073	1.60	1.00	1.00	1.00	1.00	1.00	1.00	11.45	613.16	3960.00	1.86	33.22	456.00
Length = 1.0 ft	2	0.001	0.073	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	5.09	3960.00	0.19	33.22	456.00
+1.210D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.155	0.073	1.60	1.00	1.00	1.00	1.00	1.00	1.00	11.45	613.16	3960.00	1.86	33.22	456.00
Length = 1.0 ft	2	0.001	0.073	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.09	5.09	3960.00	0.19	33.22	456.00
+0.390D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.050	0.023	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.69	197.63	3960.00	0.60	10.71	456.00
Length = 1.0 ft	2	0.000	0.023	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.03	1.64	3960.00	0.06	10.71	456.00
+0.390D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 22.0 ft	1	0.050	0.023	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.69	197.63	3960.00	0.60	10.71	456.00
Length = 1.0 ft	2	0.000	0.023	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.03	1.64	3960.00	0.06	10.71	456.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L+Lr	1	0.3683	11.061		0.0000	0.000
	2	0.0000	11.061	D+L+Lr	-0.0529	1.000

Vertical Reactions - Unfactored

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	2.602	2.849	
D Only	1.723	1.888	
L Only	0.439	0.481	
Lr Only	0.439	0.481	
L+Lr	0.878	0.962	
D+Lr	2.163	2.368	
D+L	2.163	2.368	

Description : Beam #8

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
D+L+Lr	2.602	2.849	

Description : Overstrength rims/beams

Wood Beam Design : Rim along P2 holdowns

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.3E SCL

Fb - Tension	1,650.0 psi	Fc - Prll	1,400.0 psi	Fv	285.0 psi	Ebend- xx	1,300.0 ksi	Density	35.0 pcf
Fb - Compr	1,650.0 psi	Fc - Perp	680.0 psi	Ft	1,000.0 psi	Eminbend - xx	600.0 ksi		

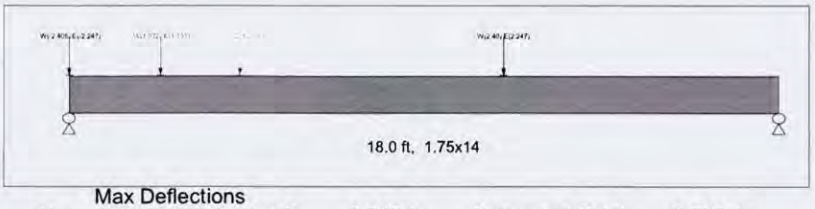
Applied Loads

Point: W = -2.405, E = -2.247 k @ 0.0 ft
Point: W = 1.072, E = 1.331 k @ 2.330 ft
Point: W = -1.072, E = -1.331 k @ 4.330 ft
Point: W = 2.40, E = 2.247 k @ 11.0 ft

Design Summary

Max fb/Fb Ratio = **1.701** : 1
fb : Actual : 4,490.26 psi at 10.980 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.411** : 1
fv : Actual : 187.54 psi at 11.040 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support					-1.35	-1.23	
Right Support					1.35	1.23	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.790 in
Upward L+Lr+S	0.000 in	Upward Total	-0.790 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	273 >240

Wood Beam Design : Rim along P2 holdowns

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber — Wood Grade : 1.3E SCL

Fb - Tension	1,650.0 psi	Fc - Prll	1,400.0 psi	Fv	285.0 psi	Ebend- xx	1,300.0 ksi	Density	35.0 pcf
Fb - Compr	1,650.0 psi	Fc - Perp	680.0 psi	Ft	1,000.0 psi	Eminbend - xx	600.0 ksi		

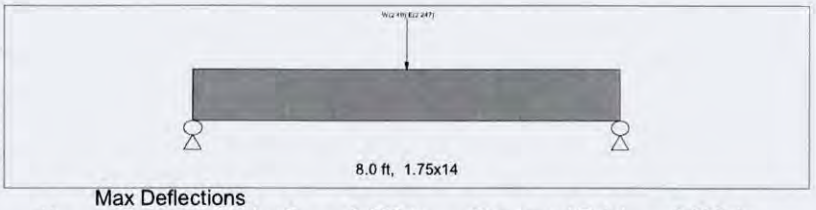
Applied Loads

Point: W = 2.40, E = 2.247 k @ 4.0 ft

Design Summary

Max fb/Fb Ratio = **0.893** : 1
fb : Actual : 2,358.37 psi at 4.000 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.377** : 1
fv : Actual : 171.96 psi at 0.000 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support					1.20	1.12	
Right Support					1.20	1.12	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.085 in
Upward L+Lr+S	0.000 in	Upward Total	-0.085 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	1123 >240

Studs up to and Including 10' - 0" in Height

Table 2308.9.1 of the 2009 IBC lists the maximum height and spacing for wood studs which conform to the limitations of the conventional framing provisions (Section 2308.2). While the design loads and roof spans used in this project do not explicitly meet the conventional framing limitations, it is HSCGI's interpretation that Table 2308.9.1 is applicable for any stud wall with applied loads less than or equal to the worst case loading allowed by the conventional framing provisions (i.e. the loads resulting from roofs, floors, and/or walls spanning the maximum distance and carrying the maximum loads allowed by the limitations listed below).

Limitations (Summary of Section 2308.2):

1. Structure is not more than 3 stories.
2. Plate heights are not greater than 10' - 0".
3.1. Average dead load of combined roof and ceiling, exterior walls, floors and partitions does not exceed 15 psf .
3.2. Live load does not exceed 40 psf.
3.3. Ground snow load does not exceed 50 psf.
4. Wind speed does not exceed 100 mph.
5. Roof truss and rafter spans (between points of vertical supports) are not greater than 40 feet.
6. Structure does not belong to Occupancy Category IV.
7. Irregularity limitation. Limits for irregularities apply to wall bracing, not to Table 2308.9.1.
8. Structure does not fall under DSA-SS or OSHPD 1, 2 or 4.

Determination of Maximum Loads and Spans:

The conventional framing limitations, together with the maximum floor span listed in Table 2308.8(2), have been used to determine the equivalent maximum allowable loads that may be applied to wood wall studs. Below is a list of maximum loads and corresponding maximum spans allowed by section 2308.

Parameter	Roof	Floor	Wall
Dead Load	15 psf	15 psf	15 psf
Span/Height	40 feet	21 feet	10 feet

Table 2308.9.1 allows 10' - 0" tall 2x4 wall studs spaced at 16" o.c. to support one floor, roof and ceiling. Based on the spans and loads listed above, the maximum allowable dead load (DL) on a standard stud wall is as follows:

Exterior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)/2	= 300 plf
Floor	(15psf DL) x (21 foot floor span)/2	= 158 plf
Wall	(15psf DL) x (10 foot wall height)	= 150 plf
		= 608 plf

Interior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)	= 600 plf
Floor	(15psf DL) x (21 foot floor span)	= 315 plf
		= 915 plf

Wood studs exceeding the height and/or loading criteria listed above are calculated using the design criteria of IBC Chapters 16 and 23.

harris & sloan
CONSULTING GROUP, INC.

Project	Village Walk		
Client	Standard Pacific Home	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Stud Calculations Per 2005 NDS

STUD/POST		**Stud/Post Description**			**Stud/Post Description**		
Height	ft	**19.20**			**9.00**		
Depth/Width (d)	in	5.50			5.50		
Thickness	in	3.00			3.00		
Grade		DF Stud			DF Stud		
O.C. Spacing	in	16.00			16.00		
Repetitive Factor		NDS Repetitive Factor			NDS Repetitive Factor		
Location		exterior - zone 5			interior		
LOADS							
AXIAL LOAD - DL	plf	0.00	0.00	0.00	0.00	0.00	0.00
AXIAL LOAD - LL	plf	0.00	0.00	0.00	0.00	0.00	0.00
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
WIND LOAD (C&C)	psf	5.00	17.28	12.96	5.00	5.00	3.75
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.15	1.15	1.15
PROPERTIES							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	510.0	510.0	510.0
Fb (Adjusted)	psi	805.0	805.0	805.0	805.0	805.0	805.0
Fcll (Adjusted)	psi	850.0	850.0	850.0	850.0	850.0	850.0
COMPRESSION		DL+LL	DL+W	DL+0.75(LL+W)	DL+LL	DL+W	DL+0.75(LL+W)
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		41.9			19.6		
F_{cE}		239	239	239	1087	1087	1087
F*c	psi	978	1360	1360	978	1360	1360
F_{cE}/Fc^*		0.24	0.18	0.18	1.11	0.80	0.80
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.23	0.17	0.17	0.73	0.61	0.61
Fc'	psi	225	230	230	710	829	829
fc	psi	0	0	0	0	0	0
Stress Ratio		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
BENDING							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	3686.4	12740	9555	810	810	608
Fb'	psi	926	1288	1288	926	1288	1288
fb	psi	244	842	632	54	54	40
Stress Ratio		**0.2633**	**0.6540**	**0.4905**	**0.0578**	**0.0416**	**0.0312**
COMBINED STRESSES							
(fc/F'c)^2		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
fb/Fb'(1-(fc/Fce)		0.2633	0.6540	0.4905	0.0578	0.0416	0.0312
Combined Stress Ratio		**0.2633**	**0.6540**	**0.4905**	**0.0578**	**0.0416**	**0.0312**
DEFLECTION							
Deflection	in	0.350	1.210	0.907	0.017	0.017	0.013
0.7 Deflection	in		0.847	0.635		0.012	0.009
Deflection Limit (L/240)	in	0.960	0.960	0.960	0.450	0.450	0.450
Deflection Ratio		**0.3646**	**0.8822**	**0.6616**	**0.0376**	**0.0263**	**0.0197**

harris & sloan
CONSULTING GROUP, INC.

Project	Village Walk		
Client	Standard Pacific H(	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Footing Calculations

Soils Engineer

ENGEO, Inc. (San Ramon)
2010 Crow Canyon Pl., Ste. 250
San Ramon, CA 94583

Report #: 6858.200.102
Date: 04/16/2013

Foundation Design Information

Allowable Soil Pressure	=	1000 psf
Retaining Wall Design:		
Friction Factor	=	N/A
Active Pressure	=	N/A pcf
Passive Pressure	=	N/A pcf

Post-Tension Foundation Calculations (expansive soil)

Average Soil Pressure = 1,000 psf

		Center Lift	Edge Lift
Edge Moisture Variation (e_m)	=	5.10 ft	2.70 ft
Differential Soil Movement (y_m)	=	1.50 in	2.00 in

Design Rectangles

R1 = 11.00 ft x 39.00 ft
R2 = 24.00 ft x 29.00 ft

Maximum Point Load Capacity of Slab

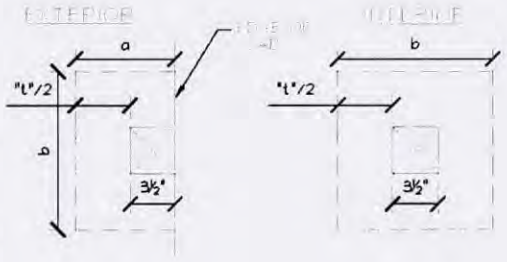
Slab Thickness (t) = 12 in
Concrete Compressive Strength (f'c) = 4500 psi

Punching Shear Calculation

$$V_u = \phi V_n$$
$$\phi = 0.85$$
$$V_c = 4\sqrt{f_c}\, b_o\, t$$
$$V_{allowable} = V_u / 1.7$$

Exterior Condidtion $b_o = 2a+b$ = 34.5 in
Maximum allowable point load = 56 kips

Interior Condidtion $b_o = 4b$ = 62 in
Maximum allowable point load = 100 kips



hscgi limit 10,000# at interior
8000# at exterior

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	11.00 FT x 39.00 FT x 12.00	Inches
Uniform Thickness Slab :	12.00 (11.89)	Inches
(rounded to the nearest 0.25 inch)		

Material Properties

Concrete Strength, f'_c :	4,500	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	15.9	Cubic Yards
Prestressing Tendon :	426.0	Linear Feet
Number of End Anchorages :	44	

In the LONG direction ...

Number of Slab Tendons :	5	
Slab Tendon Spacing :	2.25	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	17	
Slab Tendon Spacing :	2.31	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	5,616	1,584
Moment of Inertia ($Inch^4$) :	67,392	19,008
Section Modulus, Top and Bottom ($Inch^3$) :	11,232	3,168
Beta Distance (Feet) :	5.50	6.09

Jacking Force : 33.05 KIPS

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.89) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	17	5
Spacing of Tendons (FT)	2.31	2.25
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	429.2	109.8
Beta Distance Effective Prestress Force (K)	429.2	125.8
Minimum Effective Prestress (PSI)	76	69
Beta Distance Effective Prestress (PSI)	76	79

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction 7.60 FT-K/FT
Maximum Moment, Long Direction 6.91 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.240	-0.208	Actual Stress	0.393	0.367

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	67,392	19,008
Required Moment of Inertia ($Inch^4$)	12,518	10,661
Required Moment of Inertia controlled by	Width	6*Beta

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 1.58 K/FT
Maximum Shear, Long Direction 1.37 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	177
Actual Shear Stress (PSI)	11	10

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	221.5	65.1
0.5 Moment (FT-K)	148.2	38.0

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.024	-0.022	Actual Stress	0.177	0.181

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	67,392	19,008
Required Moment of Inertia ($Inch^4$)	7,963	7,523
Required Moment of Inertia controlled by	Width	6*Beta

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.27 K/FT
Maximum Shear, Long Direction	1.39 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	177
Actual Shear Stress (PSI)	9	10

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	221.5	65.1
0.5 Moment (FT-K)	47.1	13.4

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	4,500.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R1 (11x39)

Rectangle Geometry : 11.00 FT x 39.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	70.00 PSI	60.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	37	0	8	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load : 40.00 PSF
Total Perimeter Load : 1,250.00 PLF
Smallest Load Intensity : 500.00 PLF

Stiffness Coefficients

Center Lift : 480
Edge Lift : 960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R1
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	24.00 FT x 29.00 FT x 12.00	Inches
Uniform Thickness Slab :	12.00 (11.93)	Inches
(rounded to the nearest 0.25 inch)		

Material Properties

Concrete Strength, f'_c :	4,500	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	25.8	Cubic Yards
Prestressing Tendon :	679.0	Linear Feet
Number of End Anchorages :	48	

In the LONG direction ...

Number of Slab Tendons :	11	
Slab Tendon Spacing :	2.20	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	13	
Slab Tendon Spacing :	2.25	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	4,176	3,456
Moment of Inertia ($Inch^4$) :	50,112	41,472
Section Modulus, Top and Bottom ($Inch^3$) :	8,352	6,912
Beta Distance (Feet) :	7.76	7.40

Jacking Force : 33.05 KIPS

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.93) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	13	11
Spacing of Tendons (FT)	2.25	2.20
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	308.2	255.0
Beta Distance Effective Prestress Force (K)	321.6	273.5
Minimum Effective Prestress (PSI)	74	74
Beta Distance Effective Prestress (PSI)	77	79

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction	7.57 FT-K/FT
Maximum Moment, Long Direction	6.88 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.238	-0.208	Actual Stress	0.392	0.366

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	50,112	41,472
Required Moment of Inertia ($Inch^4$)	20,231	18,392
Required Moment of Inertia controlled by	Width	Length

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction	1.83 K/FT
Maximum Shear, Long Direction	1.34 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	177
Actual Shear Stress (PSI)	13	9

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Geotechnical Report : Engeo
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	169.3	143.2
0.5 Moment (FT-K)	109.8	82.6

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.024	-0.023	Actual Stress	0.178	0.181

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	50,112	41,472
Required Moment of Inertia ($Inch^4$)	12,944	13,053
Required Moment of Inertia controlled by	Width	Length

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.34 K/FT
Maximum Shear, Long Direction	1.36 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	177
Actual Shear Stress (PSI)	9	9

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	169.3	143.2
0.5 Moment (FT-K)	35.1	29.3

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	4,500.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R2 (24x29)

Rectangle Geometry : 24.00 FT x 29.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	65.00 PSI	65.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	28	0	23	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load :	40.00 PSF
Total Perimeter Load :	1,250.00 PLF
Smallest Load Intensity :	500.00 PLF

Stiffness Coefficients

Center Lift :	480
Edge Lift :	960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R2
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

PTISlab 3.5

Geostructural Tool Kit, Inc.

Registered To : Harris and Sloan Consulting Group

Serial Number : 100-350-005

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	18.00 FT x 34.00 FT x 12.00	Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	12.00 (11.94)	Inches

Material Properties

Concrete Strength, f'_c :	4,500	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	22.7	Cubic Yards
Prestressing Tendon :	588.0	Linear Feet
Number of End Anchorages :	46	

In the LONG direction ...

Number of Slab Tendons :	8	
Slab Tendon Spacing :	2.29	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	15	
Slab Tendon Spacing :	2.29	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	4,896	2,592
Moment of Inertia ($Inch^4$) :	58,752	31,104
Section Modulus, Top and Bottom ($Inch^3$) :	9,792	5,184
Beta Distance (Feet) :	8.07	6.89

Jacking Force : 33.05 KIPS

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.94) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	15	8
Spacing of Tendons (FT)	2.29	2.29
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	366.1	179.7
Beta Distance Effective Prestress Force (K)	369.5	199.5
Minimum Effective Prestress (PSI)	75	69
Beta Distance Effective Prestress (PSI)	75	77

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction 8.21 FT-K/FT
Maximum Moment, Long Direction 7.46 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.267	-0.234	Actual Stress	0.418	0.388

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	58,752	31,104
Required Moment of Inertia ($Inch^4$)	19,293	17,539
Required Moment of Inertia controlled by	Width	Length

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 2.23 K/FT
Maximum Shear, Long Direction 1.67 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	15	12

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Geotechnical Report : Engeo
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	195.4	104.2
0.5 Moment (FT-K)	139.6	67.2

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.025	-0.025	Actual Stress	0.176	0.179

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	58,752	31,104
Required Moment of Inertia ($Inch^4$)	11,370	11,466
Required Moment of Inertia controlled by	Width	Length

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.32 K/FT
Maximum Shear, Long Direction	1.38 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	9	10

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	195.4	104.2
0.5 Moment (FT-K)	41.1	22.0

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	4,500.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R3 (18x34)

Rectangle Geometry : 18.00 FT x 34.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	70.00 PSI	60.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	33	0	17	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load :	40.00 PSF
Total Perimeter Load :	2,000.00 PLF
Smallest Load Intensity :	500.00 PLF

Stiffness Coefficients

Center Lift :	480
Edge Lift :	960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R3
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

PTISlab 3.5

Geostructural Tool Kit, Inc.

Registered To : Harris and Sloan Consulting Group

Serial Number : 100-350-005

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	22.00 FT x 38.00 FT x 12.00	Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	12.00 (11.94)	Inches

Material Properties

Concrete Strength, f'_c :	3,000	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	31.0	Cubic Yards
Prestressing Tendon :	808.0	Linear Feet
Number of End Anchorages :	54	

In the LONG direction ...

Number of Slab Tendons :	10	
Slab Tendon Spacing :	2.22	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	17	
Slab Tendon Spacing :	2.25	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	5,472	3,168
Moment of Inertia ($Inch^4$) :	65,664	38,016
Section Modulus, Top and Bottom ($Inch^3$) :	10,944	6,336
Beta Distance (Feet) :	8.30	7.24

Jacking Force : 33.05 KIPS

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.94) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	17	10
Spacing of Tendons (FT)	2.25	2.22
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	407.1	220.8
Beta Distance Effective Prestress Force (K)	418.3	248.9
Minimum Effective Prestress (PSI)	74	70
Beta Distance Effective Prestress (PSI)	76	79

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction 7.60 FT-K/FT
Maximum Moment, Long Direction 6.91 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.240	-0.209	Actual Stress	0.393	0.366

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	65,664	38,016
Required Moment of Inertia ($Inch^4$)	24,386	22,169
Required Moment of Inertia controlled by	Width	Length

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 1.80 K/FT
Maximum Shear, Long Direction 1.37 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	147
Actual Shear Stress (PSI)	12	10

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	218.9	128.7
0.5 Moment (FT-K)	144.3	76.0

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Tension in Bottom Fiber (KSI) Long Direction		Compression in Top Fiber (KSI) Short Direction	Compression in Top Fiber (KSI) Long Direction
Allowable Stress	-0.329	-0.329	Allowable Stress	1.350	1.350
Actual Stress	-0.024	-0.023	Actual Stress	0.177	0.180

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	65,664	38,016
Required Moment of Inertia ($Inch^4$)	15,521	15,651
Required Moment of Inertia controlled by	Width	Length

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.34 K/FT
Maximum Shear, Long Direction	1.39 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	147	147
Actual Shear Stress (PSI)	9	10

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	218.9	128.7
0.5 Moment (FT-K)	45.9	26.8

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	3,000.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R4 (22x38)

Rectangle Geometry : 22.00 FT x 38.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	70.00 PSI	60.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	37	0	21	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load :	40.00 PSF
Total Perimeter Load :	1,250.00 PLF
Smallest Load Intensity :	500.00 PLF

Stiffness Coefficients

Center Lift :	480
Edge Lift :	960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

Project Title : Village Walk - Plan 3, R4
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

harris & sloan
CONSULTING GROUP, INC.

Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P1 **2nd Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	4	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.68	15.68	psf
Above Plate:			
Wall Area Above Plate	40	0	ft^2
Average Elevation	22.5	22.5	ft
Pressure @ Elevation	15.98	15.98	psf
Wall Load	1874	0	#
Mean Roof Height (h)	22.5	22.5	
Roof Area	30	0	ft^2
Pressure @ Elevation	9.52	9.52	psf
Roof Load	286	0	#
Additional Load	=		#

Total Wind Load = **2160 #**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Length of Diaphragm	24.0	24.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1661	W
Rho	=	1.00	
Diaphragm Load	2093	0	#
Additional Load	=		#

Total Seismic Load = **2093 #**

1.25 Total Load* = **2616 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	24.0	24.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2160#	0#	
Diaphgram Shear	90 plf (W)	0 plf (E)	

Total Diaphragm Length	=	24 ft
Total Diaphragm Shear	=	90 plf (W)
Shear for drag & collectors*	=	109 plf (E)

Shear Wall Summary

			Shear @ T&B of wall
# of Shear Walls	=	1	
Total Length of Walls	=	18.00 ft	
Net Length of Walls	=	15.00 ft	
Maximum H:W Ratio	=	1.22	
Seismic H:W Adjustment	=	1.00	
Wind Wall Shear	=	**144 plf**	**120 plf**
Seismic Wall Shear	=	**140 plf**	**116 plf**
1.25 Seismic Shear*	=	**174 plf**	

USE SHEAR WALL TYPE **3**

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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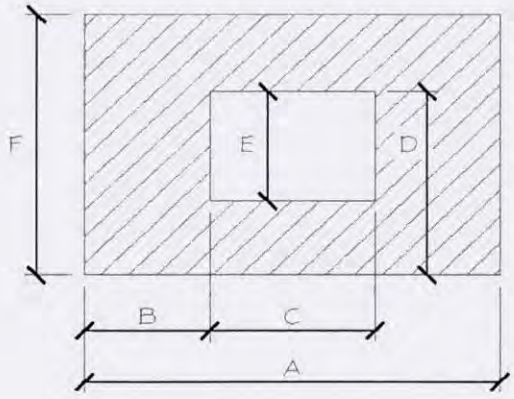
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P1 **2nd Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 18.00 ft.
Dist from left end of wall to 1st opening	B	= 10.50 ft.
Opening Width	C	= 3.00 ft.
Net Length		= 15.00 ft.
Opening Header Height	D	= 8.00 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	2160#
Seismic Load (E)	2093#
DL Trib Length Roof	12 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	120 plf	116 plf
Piers	144 plf	140 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 252 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-625#	-1365#
Left Pier	792#	767#
Right Pier	792#	767#
Bottom	360#	349#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	395# (W)	NONE
L King	87# (E)	NONE
R King	87# (E)	NONE
Right End	395# (W)	NONE

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P2 **2nd Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.68	15.68	psf
Above Plate:			
Wall Area Above Plate	11	0	ft^2
Average Elevation	22.5	22.5	ft
Pressure @ Elevation	15.98	15.98	psf
Wall Load	1403	0	#
Mean Roof Height (h)	22.5	22.5	
Roof Area	77	0	ft^2
Pressure @ Elevation	9.52	9.52	psf
Roof Load	733	0	#
Add'l Load (Balloon frm)	=	431	#

Total Wind Load	=	**2567 #**
Load w/o balloon wall	=	**2136 #**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Length of Diaphragm	18.0	18.0	ft
Additional Diaphragm Area	44.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1661	W
Rho	=	1.00	
Diaphragm Load	1789	0	#
Add'l Load (Balloon frm)	=		#

Total Seismic Load	=	**1789 #**
1.25 Total Load*	=	**2236 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	18.0	18.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2136#	0#	
Diaphgram Shear	119 plf (W)	0 plf (E)	

Total Diaphragm Length	=	18 ft
Total Diaphragm Shear	=	119 plf (W)
Shear for drag & collectors*	=	124 plf (E)

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	10.50	ft
Net Length of Walls	=	8.50	ft
Maximum H:W Ratio	=	2.36	
Seismic H:W Adjustment	=	0.85	
		Shear @ T&B of wall	
Wind Wall Shear	=	**302 plf**	**244 plf**
Seismic Wall Shear	=	**210 plf**	**170 plf**
1.25 Seismic Shear*	=	**263 plf**	

USE SHEAR WALL TYPE **2**

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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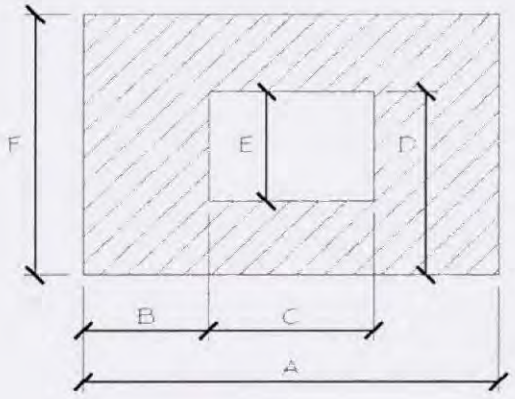
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P2 **2nd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 10.50 ft.
Dist from left end of wall to 1st opening	B	= 2.33 ft.
Opening Width	C	= 2.00 ft.
Net Length		= 8.50 ft.
Opening Header Height	D	= 7.50 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	2567#
Seismic Load (E)	1789#
DL Trib Length Roof	5 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	244 plf	170 plf
Piers	302 plf	210 plf

Use Shear Wall Type **2**

STRAP CALCULATIONS

Max. Load @ Opening = 355 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-106#	-313#
Left Pier	1661#	1157#
Right Pier	1661#	1157#
Bottom	611#	426#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	2116# (W)	2 corner
L King	1397# (W)	1
R King	1397# (W)	1
Right End	2116# (W)	2

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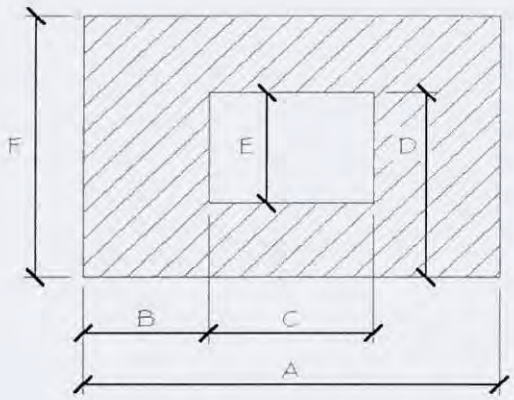
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P2 **2nd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 18.00 ft.
Dist from left end of wall to 1st opening	B	= 5.83 ft.
Opening Width	C	= 5.50 ft.
Net Length		= 12.50 ft.
Opening Header Height	D	= 8.00 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	2567#
Seismic Load (E)	1789#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	143 plf	99 plf
Piers	205 plf	143 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 419 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-493#	-524#
Left Pier	1130#	787#
Right Pier	1130#	787#
Bottom	428#	298#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location
442 #	0.00 ft.
442 #	18.00 ft.

	Total Uplift	Holdown
Left End	1161# (W)	1
L King	117# (W)	NONE
R King	117# (W)	NONE
Right End	1161# (W)	1

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Lateral Analysis Calculations

P3 **2nd Floor; Left; Front to Back**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	26	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	6.5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.68	15.68	psf
Above Plate:			
Wall Area Above Plate	9	0	ft^2
Average Elevation	22.5	22.5	ft
Pressure @ Elevation	15.98	15.98	psf
Wall Load	1061	0	#
Mean Roof Height (h)	22.5	22.5	
Roof Area	76	0	ft^2
Pressure @ Elevation	10.04	10.04	psf
Roof Load	758	0	#
Additional Load	=		#

Total Wind Load = **1819 #**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	26	0	ft
Length of Diaphragm	32.0	32.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1661	W
Rho	=	1.00	
Diaphragm Load	2073	0	#
Additional Load	=		#

Total Seismic Load = **2073 #**

1.25 Total Load* = **2591 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	32.0	32.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2073#	0#	
Diaphgram Shear	65 plf (E)	0 plf (E)	

Total Diaphragm Length	=	32 ft
Total Diaphragm Shear	=	65 plf (E)
Shear for drag & collectors*	=	81 plf (E)

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	18.00	ft
Net Length of Walls	=	16.00	ft
Maximum H:W Ratio	=	0.64	
Seismic H:W Adjustment	=	1.00	
		Shear @ T&B of wall	
Wind Wall Shear	=	**114 plf**	**101 plf**
Seismic Wall Shear	=	**130 plf**	**115 plf**
1.25 Seismic Shear*	=	**162 plf**	

USE SHEAR WALL TYPE **1**

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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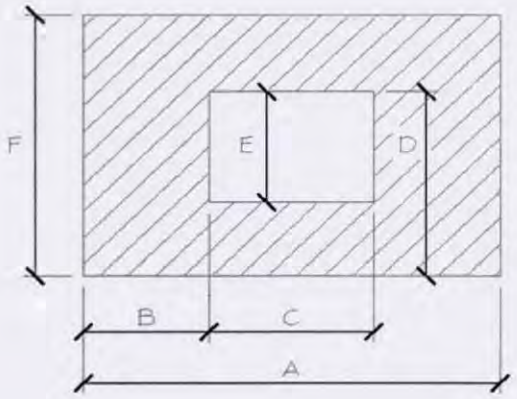
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Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P3 **2nd Floor; Left; Front to Back**

SHEARWALL GEOMETRY

Total Length	A	= 18.00 ft.
Dist from left end of wall to 1st opening	B	= 7.00 ft.
Opening Width	C	= 2.00 ft.
Net Length		= 16.00 ft.
Opening Header Height	D	= 8.00 ft.
Opening Height	E	= 4.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	1819#
Seismic Load (E)	2073#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	101 plf	115 plf
Piers	114 plf	130 plf

Use Shear Wall Type **1**

STRAP CALCULATIONS

Max. Load @ Opening = 130 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-514#	-517#
Left Pier	512#	583#
Right Pier	512#	583#
Bottom	404#	461#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	462# (E)	NONE
L King	316# (E)	NONE
R King	316# (E)	NONE
Right End	462# (E)	NONE

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Lateral Analysis Calculations

P4 **2nd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	26	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	6.5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.68	15.68	psf
Above Plate:			
Wall Area Above Plate	42	0	ft^2
Average Elevation	22.5	22.5	ft
Pressure @ Elevation	15.98	15.98	psf
Wall Load	1588	0	#
Mean Roof Height (h)	22.5	22.5	
Roof Area	43	0	ft^2
Pressure @ Elevation	10.04	10.04	psf
Roof Load	427	0	#
Additional Load	=		#

Total Wind Load = **2015 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	12.00 ft
Maximum H:W Ratio	=	0.75
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**168 plf**
Seismic Wall Shear	=	**173 plf**
1.25 Seismic Shear*	=	**216 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	26		0	ft
Length of Diaphragm	32.0		32.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.1661	W
Rho	=		1.00	
Diaphragm Load	2073		0	#
Additional Load	=			#

Total Seismic Load = **2073 #**
1.25 Total Load* = **2591 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	32.0		32.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	2073#		0#	
Diaphgram Shear	65 plf	(E)	0 plf	(E)
Total Diaphragm Length	=		32	ft
Total Diaphragm Shear	=		65 plf	(E)
Shear for drag & collectors*	=		81 plf	(E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
12.00 ft.	2.0 ft.						1172# (E)	1172# (E)	1	1

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Lateral Analysis Calculations

P5 **1st Floor; Rear; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	15.25	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	10.8	10.8	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	507	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	27	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	269	0	#
Additional Load	=		#

Total Wind Load = **776 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	4.00 ft
Maximum H:W Ratio	=	2.25
Seismic H:W Adjustment	=	0.89
Wind Wall Shear	=	**194 plf**
Seismic Wall Shear	=	**50 plf**
1.25 Seismic Shear*	=	**63 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	15.25	0	ft
Length of Diaphragm	11.3	11.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	202	0	#
Additional Load	=		#

Total Seismic Load = **202 #**
1.25 Total Load* = **252 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	11.3	11.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	776#	0#	
Diaphgram Shear	68 plf (W)	0 plf (E)	

Total Diaphragm Length	=	11 ft
Total Diaphragm Shear	=	68 plf (W)
Shear for drag & collectors*	=	68 plf (W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
4.00 ft.							1857# (W)	1857# (W)	**9**	**17 corner**

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Lateral Analysis Calculations

P6 **1st Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	15.25	12	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	0	34	ft^2
Average Elevation	10.8	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	507	904	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	27	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	269	0	#
Add'l Load (From P1)	=	2160	#
Total Wind Load	=	**3839**	**#**

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	9.75	ft
Net Length of Walls	=	6.75	ft
Maximum H:W Ratio	=	1.82	
Seismic H:W Adjustment	=	1.00	
		Shear @ T&B of wall	
Wind Wall Shear	=	**569**	**plf** **394 plf**
Seismic Wall Shear	=	**400**	**plf** **277 plf**
1.25 Seismic Shear*	=	**500**	**plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	15.25	12	ft
Length of Diaphragm	11.3	29.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	202	406	#
Add'l Load (From P1)	=	2093	#
Total Seismic Load	=	**2701**	**#**
1.25 Total Load*	=	**3376**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	11.3	29.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	2160#	
Total Load in Diaphragm	776#	3063#	
Diaphgram Shear	68 plf (W)	106 plf (W)	
Total Diaphragm Length	=	29	ft
Total Diaphragm Shear	=	132 plf (W)	
Shear for drag & collectors*	=	132 plf (W)	

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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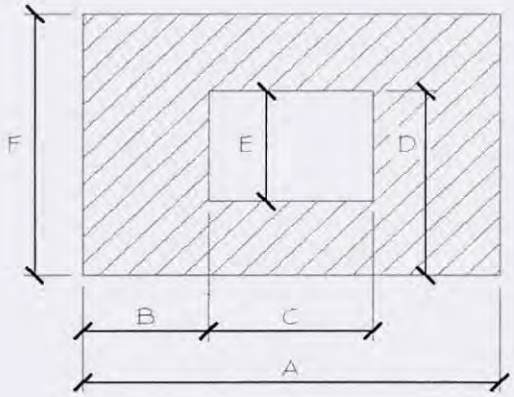
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P6 **1st Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 9.75 ft.
Dist from left end of wall to 1st opening	B	= 2.75 ft.
Opening Width	C	= 3.00 ft.
Net Length		= 6.75 ft.
Opening Header Height	D	= 7.50 ft.
Opening Height	E	= 4.50 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	3839#
Seismic Load (E)	2701#
DL Trib Length Roof	0 ft
DL Trib Length Floor	6 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	394 plf	277 plf
Piers	569 plf	400 plf

Use Shear Wall Type 4

STRAP CALCULATIONS

Max. Load @ Opening = 700 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-162#	-139#
Left Pier	2844#	2001#
Right Pier	2844#	2001#
Bottom	1181#	831#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	3647# (W)	9
L King	2143# (W)	9
R King	2143# (W)	9
Right End	3647# (W)	9

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Lateral Analysis Calculations

P6 **1st Floor; Rear; Left to Right**
Plan 3X - Lot 36

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	0	ft
Additional Width	1	0	ft
Avg. Roof Ht abv Plate	0	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	40	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1054	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	0	0	#
Add'l Load (From P1)	=	2160	#
Total Wind Load	=	**3214**	**#**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	10.00 ft
Maximum H:W Ratio	=	0.90
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**321 plf**
Seismic Wall Shear	=	**263 plf**
1.25 Seismic Shear*	=	**328 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	12		0	ft
Length of Diaphragm	38.0		29.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0779	W
Rho	=		1.00	
Diaphragm Load	533		0	#
Add'l Load (From P1)	=		2093	#
Total Seismic Load	=		**2625**	**#**
1.25 Total Load*	=		**3282**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	38.0		29.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	2160#		0#	
Total Load in Diaphragm	3214#		0#	
Diaphgram Shear	85 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		38	ft
Total Diaphragm Shear	=		85 plf	(W)
Shear for drag & collectors*	=		86 plf	(E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
10.00 ft.							2729# (W)	2729# (W)	9	9

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Lateral Analysis Calculations

P7 **1st Floor; Interior; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	16	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	34	46	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	904	1205	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **2109 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	6.00 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**351 plf**
Seismic Wall Shear	=	**145 plf**
1.25 Seismic Shear*	=	**181 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	12		16	ft
Length of Diaphragm	38.0		18.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0779	W
Rho	=		1.00	
Diaphragm Load	533		336	#
Additional Load	=			#

Total Seismic Load = **869 #**

1.25 Total Load* = **1086 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	38.0		18.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	904#		1205#	
Diaphgram Shear	24 plf	(W)	67 plf	(W)
Total Diaphragm Length	=		38	ft
Total Diaphragm Shear	=		55 plf	(W)
Shear for drag & collectors*	=		55 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
6.00 ft.		6.0 ft.					3077# (W)	3077# (W)	**17 interior**	**17 interior**

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Lateral Analysis Calculations

P8 **1st Floor; Front; Left to Right**
Front wall of entry (Elev A & C)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	6	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	46	17	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1205	452	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **1657 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	3.25 ft
Maximum H:W Ratio	=	2.77
Seismic H:W Adjustment	=	0.72
Wind Wall Shear	=	**510 plf**
Seismic Wall Shear	=	**194 plf**
1.25 Seismic Shear*	=	**243 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	6	ft
Length of Diaphragm	27.0	18.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	505	126	#
Additional Load	=		#
Total Seismic Load	=	**631**	#
1.25 Total Load*	=	**788**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	27.0	18.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1205#	452#	
Diaphgram Shear	45 plf (W)	25 plf (W)	
Total Diaphragm Length	=	27 ft	
Total Diaphragm Shear	=	61 plf (W)	
Shear for drag & collectors*	=	61 plf (W)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
3.25 ft.							5307# (W)	5307# (W)	**19 interior**	**19 interior**

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P9 **1st Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	6	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	17	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	452	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	0	0	#
Add'l Load (From P2)	=	2567	#
Total Wind Load	=	**3019**	**#**

Shear Wall Summary

See manufactured shearwalls on next page(s)

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	6	0	ft
Length of Diaphragm	18.0	38.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	126	0	#
Add'l Load (From P2)	=	1789	#
Total Seismic Load	=	**1915**	**#**
1.25 Total Load*	=	**2394**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	18.0	38.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	452#	0#	
Diaphgram Shear	25 plf (W)	0 plf (E)	
Total Diaphragm Length	=	18	ft
Total Diaphragm Shear	=	25 plf (W)	
Shear for drag & collectors*	=	25 plf (W)	

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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Client	Standard Pacific Homes - E	**Plan #**	3
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Lateral Analysis Calculations For Simpson Steel Strong-Wall

P10 **1st Floor; Front; Left to Right**

See load calculations on previous page

Total Wind Load = **3019 #** **Total Seismic Load** = **1915 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
1	SSW21x9	1000	3475	3100	0.50	0.45

Total Load Capacity	=	3475	3100	
Pecent of Capacity Used	=	87%	62%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
1	SSW21x9	6950	6889	3019	1915	LOAD OK

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Client	Standard Pacific Homes	**Plan #**	3
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Date	7/8/13		

Lateral Analysis Calculations

P10 **1st Floor; Front; Left to Right**
Garage Wall

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	34	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	904	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.07	10.07	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **904 #**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	0	ft
Length of Diaphragm	20.0	38.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	280	0	#
Additional Load	=		#

Total Seismic Load = **280 #**
1.25 Total Load* = **350 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	20.0	38.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	904#	0#	
Diaphgram Shear	45 plf (W)	0 plf (E)	

Total Diaphragm Length	=	20 ft
Total Diaphragm Shear	=	45 plf (W)
Shear for drag & collectors*	=	45 plf (W)

Shear Wall Summary

See manufactured shearwalls on next page(s)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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Client	Standard Pacific Homes - E	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations For Simpson Steel Strong-Wall

P10 **1st Floor; Front; Left to Right**

See load calculations on previous page

Total Wind Load = **904 #** **Total Seismic Load** = **280 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
1	SSW15x7	7500	1445	1445	0.28	0.28

Total Load Capacity	=	1445	1445	
Pecent of Capacity Used	=	63%	19%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
1	SSW15x7	5161	5161	904	280	LOAD OK

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Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
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Lateral Analysis Calculations

P11 **1st Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	11	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	31	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	828	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (70% of P3)	=	1273	#

Total Wind Load = **2102 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**263 plf**
Seismic Wall Shear	=	**244 plf**
1.25 Seismic Shear*	=	**305 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	11		0	ft
Length of Diaphragm	39.0		38.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0779	W
Rho	=		1.00	
Diaphragm Load	501		0	#
Add'l Load (70% of P3)	=		1451	#
Total Seismic Load	=		**1952**	**#**
1.25 Total Load*	=		**2440**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	39.0		38.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	1451#		0#	
Total Load in Diaphragm	2102#		0#	
Diaphgram Shear	54 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		39	ft
Total Diaphragm Shear	=		54 plf	(W)
Shear for drag & collectors*	=		63 plf	(E)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
8.00 ft.		1.0 ft.					2228# (W)	2228# (W)	**9**	**9**

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
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Lateral Analysis Calculations

P12 **1st Floor; Interior; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20	18	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	57	51	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1506	1356	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (60% of P3)	=	1091	#

Total Wind Load = **3953 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	12.00 ft
Maximum H:W Ratio	=	0.75
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**329 plf**
Seismic Wall Shear	=	**210 plf**
1.25 Seismic Shear*	=	**262 plf**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20	18	ft
Length of Diaphragm	23.0	35.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	537	736	#
Add'l Load (60% of P3)	=	1244	#

Total Seismic Load = **2517 #**

1.25 Total Load* = **3146 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	35.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	1244#	0#	
Total Load in Diaphragm	2598#	1356#	
Diaphgram Shear	113 plf (W)	39 plf (W)	

Total Diaphragm Length	=	35 ft
Total Diaphragm Shear	=	113 plf (W)
Shear for drag & collectors*	=	113 plf (W)

#REF!
#REF!
#REF!

USE SHEAR WALL TYPE **#N/A**

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
12.00 ft.		1.0 ft.					2662# (W)	2662# (W)	9	9

#REF!

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Client	Standard Pacific Homes	**Plan #**	3
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Date	7/8/13		

Lateral Analysis Calculations

P13 **1st Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	18	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	51	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1356	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (From P4)	=	2015	#

Total Wind Load = **3370 #**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	9.00 ft
Maximum H:W Ratio	=	2.25
Seismic H:W Adjustment	=	0.89
Wind Wall Shear	=	**374 plf**
Seismic Wall Shear	=	**312 plf**
1.25 Seismic Shear*	=	**390 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	18	0	ft
Length of Diaphragm	35.0	35.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0779	W
Rho	=	1.00	
Diaphragm Load	736	0	#
Add'l Load (From P4)	=	2073	#

Total Seismic Load = **2809 #**

1.25 Total Load* = **3511 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	35.0	35.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	2073#	0#	
Total Load in Diaphragm	3370#	0#	
Diaphgram Shear	96 plf (W)	0 plf (E)	

Total Diaphragm Length	=	35 ft
Total Diaphragm Shear	=	96 plf (W)
Shear for drag & collectors*	=	100 plf (E)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
4.00 ft.			1172#	0.00			4887# (W)	3715# (W)	**19**	**9**
5.00 ft.					1172#	5.00	3578# (W)	4750# (W)	**9**	**19 corner**

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P14 **1st Floor; Left; Front to Back**
Plan 3X - Lot 36

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	20	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	57	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1506	0	#
Mean Roof Height (h)	10.8	10.8	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.22	10.22	psf
Roof Load	0	0	#
Add'l Load (40 % of P3)	=	728	#

Total Wind Load = **2234 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	5.50 ft
Maximum H:W Ratio	=	1.64
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**406 plf**
Seismic Wall Shear	=	**244 plf**
1.25 Seismic Shear*	=	**305 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	20		0	ft
Length of Diaphragm	22.0		35.0	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0779	W
Rho	=		1.00	
Diaphragm Load	514		0	#
Add'l Load (40 % of P3)	=		829	#
Total Seismic Load	=		**1343**	#
1.25 Total Load*	=		**1679**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	22.0		35.0	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	829#		0#	
Total Load in Diaphragm	2234#		0#	
Diaphgram Shear	102 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		22	ft
Total Diaphragm Shear	=		102 plf	(W)
Shear for drag & collectors*	=		102 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
5.50 ft.	5.0 ft.						3819# (W)	3819# (W)	9	9

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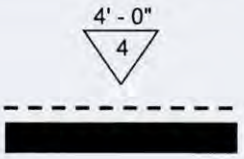
Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall Table

Type	*Wind*	*Seismic*	*Description*
1	254.8	182	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
2	350	266	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 4" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
3	480.2	343	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X OR (2) 2X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
4	600	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. MAX. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
5	627.2	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
12	754.6	539	15/32" APA RATED SHEATHING ONE FACE WITH 10d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
7	960.4	686	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
8	1254.4	896	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.

NOTES:

1. Shearwalls are designated on the plans by a triangle symbol surrounding the shearwall type.
2. Shearwall length is indicated above the shearwall callout and is shown graphically with shading & a dashed line.
3. See anchor bolt calculations for required anchor spacing.



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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	3
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Simpson Holdown Table

	Wind		*Seismic*		
Type	*Typ*	*End*	*Typ*	*End*	***Description***
NONE	500	500	500	500	Below limit
1	1705	1705	1705	1705	CS16 STRAP, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2	3410	3410	3410	3410	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
3	4585	4585	4585	4585	CMSTC16 STRAP, 23" MINIMUM END SPAN, CLEAR SPAN VARIES.
4	5860	5860	5860	5860	MSTC66 STRAP, 18" MAXIMUM CLEAR SPAN.
1A	942	942	942	942	CS16 STRAP, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
1B	1884	1884	1884	1884	(2) CS16 STRAPS, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
2A	3300	3300	3300	3300	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2B	4950	4950	4950	4950	(3) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
9	4755	0	3400	0	STHD10 HOLDOWN TO MINIMUM 4X POST.
17	4565	4470	3740	3325	HDU4 HOLDOWN TO MINIMUM 4X POST W/ SSTB24/24
19	6970	6970	6970	6970	HDU8 HOLDOWN TO MINIMUM 4X POST W/ SSTB28/34 ANCHOR.
19A	7870	7870	7870	7315	HDU8 HOLDOWN TO MINIMUM 4X6 POST W/ SSTB28/34 ANCHOR.
20	9535	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X6 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
20A	10470	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X8 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
21	14390	14390	14390	14390	HDU14 HOLDOWN TO MINIMUM 4X8 POST W/ 1" ANCHOR ROD.
16	19070	19070	19070	19070	HD19 HOLDOWN TO MINIMUM 4X10 OR 6X6 POST W/ 1 1/4" ANCHOR ROD.

NOTE: Holdowns are designated on the plans by a diamond symbol surrounding the holdown type, e.g.: 

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	3
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

CALCULATIONS FOR ANCHOR BOLTS & MASA* ANCHORS AT SHEARWALLS

*MASA anchor values per ESR-2555, Issued November 2010

Allowable loads per NDS/hardware values (1.6 load duration factor):

Condition	1/2" ϕ A.B.	MASA
2X sill plate; sw capacity ≤ 350 plf	650#	1515#
2X sill plate; sw capacity b/t 350 & 600 plf	325#	758#
3X sill plate	770#	1215#

Allowable Shear Loads per ACI 318-08 Appendix D (assuming uncracked concrete at service loads):

		1/2" ϕ A.B.		MASA	
Wind:	$(F^*V_{nx}) / 1.6 =$	1064#	Wind:	2X sill = 1388#	
				3X sill = 1109#	
Seismic:	$(F^*V_{nx}) * 0.7 =$	1192#	Seismic:	2X sill = 1138#	
				3X sill = 931#	

Seismic (in SDC C, D, E and F):
$(0.75^*F^*_{Vnx}) * 0.7 =$ 894#

		1/2" AB	MASA
SW 1 (2x sill)	NDS	49.0" oc	71.4" oc
255plf (W)	ACI (W)	50.1" oc	65.3" oc
182plf (E)	ACI (E)	58.9" oc	75.0" oc
	per plan	**48" oc**	**48" oc**

		1/2" AB	MASA
SW 2 (2x sill)	NDS	35.7" oc	51.9" oc
350plf (W)	ACI (W)	36.5" oc	47.6" oc
266plf (E)	ACI (E)	40.3" oc	51.3" oc
	per plan	**35" oc**	**35" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW3	NDS	13.0" oc	18.9" oc	30.8" oc	30.4" oc
480plf (W)	ACI (W)	26.6" oc	34.7" oc	26.6" oc	27.7" oc
343plf (E)	ACI (E)	31.3" oc	39.8" oc	31.3" oc	32.6" oc
	per plan	**12" oc**	**12" oc**	**20" oc**	**20" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW4	NDS	10.4" oc	15.2" oc	24.6" oc	24.3" oc
600plf (W)	ACI (W)	21.3" oc	27.8" oc	21.3" oc	22.2" oc
448plf (E)	ACI (E)	23.9" oc	30.5" oc	23.9" oc	24.9" oc
	per plan	**10" oc**	**10" oc**	**16" oc**	**16" oc**

		1/2" AB	MASA
SW 5 (3x sill)	NDS	23.6" oc	23.2" oc
627plf (W)	ACI (W)	20.4" oc	21.2" oc
448plf (E)	ACI (E)	23.9" oc	24.9" oc
	per plan	**20" oc**	**20" oc**

		1/2" AB	MASA
SW 7 (3x sill)	NDS	15.4" oc	15.2" oc
960plf (W)	ACI (W)	13.3" oc	13.9" oc
686plf (E)	ACI (E)	15.6" oc	16.3" oc
	per plan	**13" oc**	**13" oc**

		1/2" AB	MASA
SW 8 (3x sill)	NDS	11.8" oc	11.6" oc
1254plf (W)	ACI (W)	10.2" oc	10.6" oc
896plf (E)	ACI (E)	12.0" oc	12.5" oc
	per plan	**10" oc**	**10" oc**

		1/2" AB	MASA
SW 12 (3x sill	NDS	19.6" oc	19.3" oc
755plf (W)	ACI (W)	16.9" oc	17.6" oc
539plf (E)	ACI (E)	19.9" oc	20.7" oc
	per plan	**12" oc**	**12" oc**

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2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
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Structural
Engineering
Consultants

Structural Calculation Package

for

Standard Pacific Homes - Bay

Village Walk

Cotati, California

Plan # 4

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PLANNING AND BUILDING DEPT.

Job # HS13068

2010 CBC



Date 7/8/2013

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Structural Calculation Package

Client Information

Standard Pacific Homes - Bay
3825 Hopyard Road, Suite 195
Pleasanton, CA 94588

Project Information

Village Walk
Cotati, California
Plan No. 4

Loading Information

Roof Loads

Roofing (Tile)	=	10.0 psf
Sheathing	=	1.7 psf
Framing	=	2.3 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	1.5 psf
Wall (Seismic only)	=	9.0 psf
Total DL	=	21.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	20.0 psf

Floor Loads

Flooring	=	1.5 psf
Sheathing	=	2.5 psf
Framing	=	2.5 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	3.0 psf
Wall (Seismic only)	=	15.0 psf
Total DL	=	15.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	40.0 psf

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Seismic Design Per IBC Section 1613

Building Information

R	=	6.50	ASCE Table 12.2-1
Occupancy Cat.	=	II	IBC Sect. 1604.5
Number of Stories	=	2	
Importance Factor	=	1.0	
Max Level Height	=	19.2 ft	
Design Approach		Normal/Equivalent	

Site Information

S_s	=	1.615	IBC Sect. 1613.5.1
S_1	=	0.634	IBC Sect. 1613.5.1
Site Class	=	D	
S_s	=	1.615	Used For Design
S_1	=	0.634	Used For Design

Seismic Loads: ASCE 7 Section 12.8 Equivalent Lateral Force Procedure

Short Period Response

F_a	=	1.000	IBC 1613.5.3
$S_{MS} = F_a S_s$	=	1.615	IBC Eqn. 16-36
$S_{DS} = (^2/_3) S_{MS}$	=	1.077	IBC Eqn. 16-38
SDC per S_{DS}	=	D	IBC Table 1613.5.6(1)

1-Second Period Response

F_v	=	1.500	IBC 1613.5.3
$S_{M1} = F_v S_1$	=	0.951	IBC Eqn. 16-37
$S_{D1} = (^2/_3) S_{M1}$	=	0.634	IBC Eqn. 16-39
SDC per S_{D1}	=	D	IBC Table 1613.5.6(2)

Seismic Design Category

Period, T	=	0.18 s, ASCE 7 12.8.2.1
0.8 Ts	=	0.47 s, ASCE 7 11.4.5
SDC Required	=	D IBC Sect. 1613.5.6
SDC Used	=	**D**

Seismic Design Factors

Overstrength Factor	=	2.5	Table 12.2-1, Footnote g
Dead Load Reduction:			
(0.6 - 0.14 Sds)D	=	0.449 D	ASCE Sect 12.4.3.2
Rho, left to right	=	1.3	ASCE Sect 12.3.4
Rho, front to back	=	1.0	

ASD Seismic Response Coefficient

$$C_s = \frac{I(S_{DS})}{R}$$

C_s per ASCE Eqn. 12.8-2

C_s	=	0.1656	ASCE Eqn. 12.8-2
C_s (upper limit)	=	0.5317	ASCE Eqn. 12.8-3
C_s (lower limit)	=	0.0100	ASCE Eqn. 12.8-5
C_s (alt low limit)	=	0.0488	ASCE Eqn. 12.8-6
C_s	=	0.1656	

Base Shear, V = 0.1159 W
(Includes 0.7 factor from ASD Basic LC)

Vertical Shear Distribution

Story	h (ft)	Area (sq ft)	DL (psf)	w_x (lb)	w_x x h	C_{vx}	C_{sx}*
1	9	820	30	24600	221400	0.3218	0.0742
2	19.2	810	30	24300	466560	0.6782	0.1582
Sum:		1630		48900	687960		

*Derived equivalent shear ratio per story: $F_x = C_{sx} w_x$
where: $C_{sx} = C_{vx} C_s (W/w_x)$

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (V)	85 mph	(3-second gust)
Importance Factor (I)	1.00	ASCE 7 - Table 6-1
Exposure Category	C	ASCE 7 - Section 6.5.6.3;
Directionality Factor (K_d)	0.85	ASCE 7 - Table 6-4
Gust Factor (G)	0.85	ASCE 7 - Section 6.5.8.1

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\, K_z\, K_{zt}\, K_d\, V^2\, I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects — Hill Type: None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	21.50 ft	Velocity Pressure (q_h) for MWFRS	14.34 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.34
min L/B (Front to Back)	1.43
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.41

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C: 14.34 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
9.0 ft	-1.02	17.26	-1.25	20.47
15.0 ft	-0.95	16.14	-1.09	18.22
19.2 ft	-0.91	15.59	-1.02	17.14
22.0 ft	-0.89	15.30	-0.97	16.54

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-1.17	
Int. Pressure Coeff. (*Cpi*)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-12 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	1 psf	Available to offset overturning from wind

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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Beam Specifications

BEAM #	SIZE	GRADE	LOCATION
Beam #1	3 1/2"x14"	1.5E SCL	Beam over dining / great room
Beam #2	3 1/2"x14"	1.5E SCL	Beam over porch

Header Specifications

First Floor Walls

Length	Size	Grade
4'-0"	4x8	#2 D.F.
6'-0"	4x10	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Second Floor Walls

Length	Size	Grade
4'-0"	4x6	#2 D.F.
6'-0"	4x8	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Description : Headers Plan 4

Wood Beam Design : Headers Plan 4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

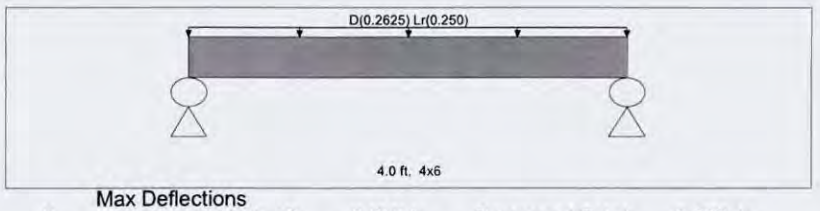
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft

Design Summary

Max fb/Fb Ratio = **0.596** : 1
fb : Actual : 697.05 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.343** : 1
fv : Actual : 61.77 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.53		0.50				
Right Support	0.53		0.50				



Max Deflections

Downward L+Lr+S	0.019 in	Downward Total	0.038 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2574 >360	Total Defl Ratio	1255 >240

Wood Beam Design : 6ft Header, Upper floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

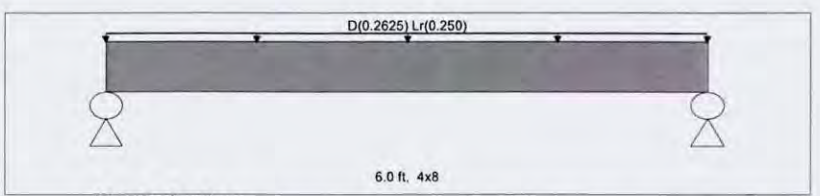
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft

Design Summary

Max fb/Fb Ratio = **0.771** : 1
fb : Actual : 902.60 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.404** : 1
fv : Actual : 72.71 psi at 5.400 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.79		0.75				
Right Support	0.79		0.75				



Max Deflections

Downward L+Lr+S	0.041 in	Downward Total	0.084 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1747 >360	Total Defl Ratio	852 >240

Wood Beam Design : 4ft Header, Lower floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

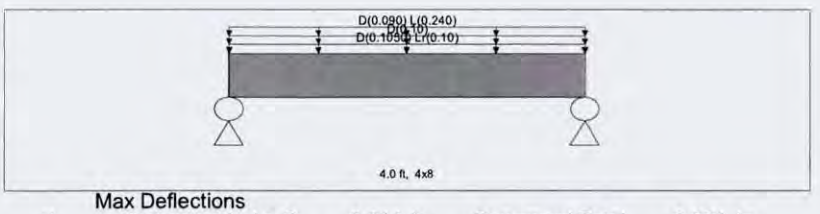
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 6.0 ft

Design Summary

Max fb/Fb Ratio = **0.368** : 1
fb : Actual : 430.51 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.253** : 1
fv : Actual : 45.52 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.59	0.48	0.20				
Right Support	0.59	0.48	0.20				



Max Deflections

Downward L+Lr+S	0.011 in	Downward Total	0.021 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	4335 >480	Total Defl Ratio	2321 >360

Wood Beam Design : 4ft Header, Lower floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

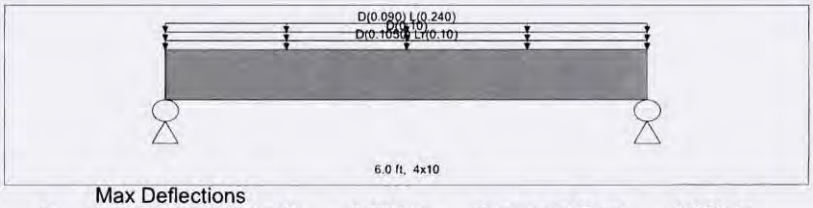
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 6.0 ft

Design Summary

Max fb/Fb Ratio = **0.551** : 1
fb : Actual : 595.05 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.317** : 1
fv : Actual : 57.08 psi at 5.240 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.89	0.72	0.30				
Right Support	0.89	0.72	0.30				

Max Deflections

Downward L+Lr+S	0.027 in	Downward Total	0.050 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2668 >360	Total Defl Ratio	1428 >240

Multiple Simple Beam

Description : Headers Plan 4

Wood Beam Design : Headers Plan 4

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.5E SCL			
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

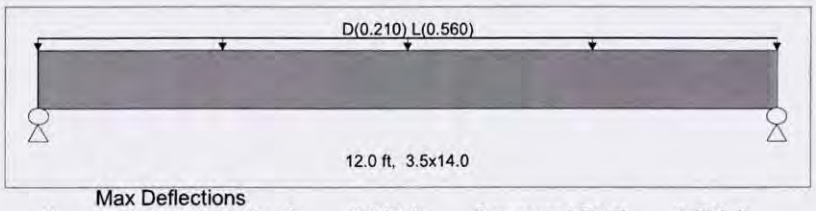
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 14.0 ft

Design Summary

Max fb/Fb Ratio = **0.677** : 1
fb : Actual : 1,454.69 psi at 6.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.400** : 1
fv : Actual : 114.09 psi at 10.840 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.26	3.36					
Right Support	1.26	3.36					



Max Deflections

Downward L+Lr+S	0.219 in	Downward Total	0.301 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	658 >480	Total Defl Ratio	478 >360

Wood Beam Design : Header under Beam #1

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

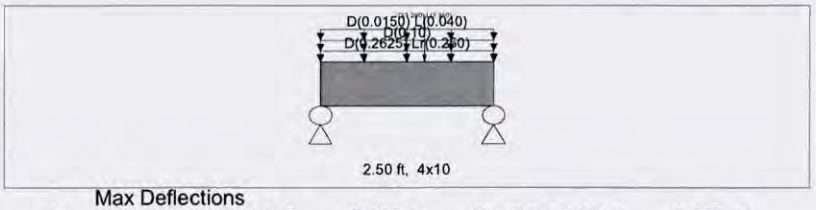
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 12.50 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Point: D = 1.260, L = 3.360 k @ 1.50 ft

Design Summary

Max fb/Fb Ratio = **0.687** : 1
fb : Actual : 741.74 psi at 1.500 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.765** : 1
fv : Actual : 137.78 psi at 1.733 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.98	1.39	0.31				
Right Support	1.23	2.07	0.31				



Max Deflections

Downward L+Lr+S	0.006 in	Downward Total	0.008 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	5389 >480	Total Defl Ratio	3616 >360

Wood Beam Design : Porch beam under point load

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch					Wood Grade : No.2			
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

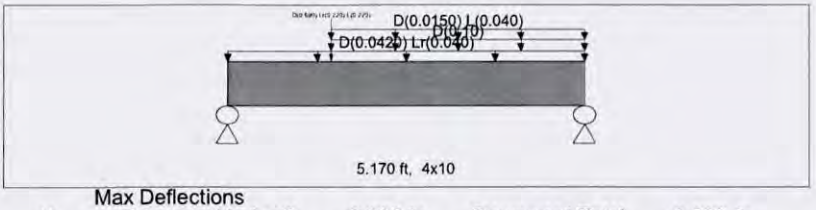
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 1.50 to 5.170 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, 1.50 to 5.170 ft, Trib= 1.0 ft
Point: D = 0.590, Lr = 0.220, L = 0.220 k @ 1.50 ft

Design Summary

Max fb/Fb Ratio = **0.325** : 1
fb : Actual : 351.28 psi at 1.517 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.251** : 1
fv : Actual : 45.10 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.68	0.21	0.26				



Max Deflections

Downward L+Lr+S	0.008 in	Downward Total	0.020 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in

Wood Beam Design : Porch beam

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x9.5, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber				Wood Grade : 1.5E SCL				
Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

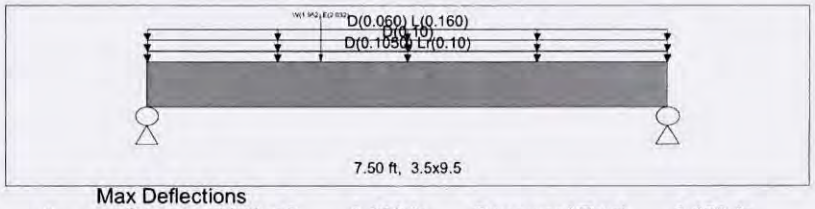
Applied Loads

Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 5.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 4.0 ft
Point: W = 1.952, E = 2.032 k @ 2.50 ft

Design Summary

Max fb/Fb Ratio = **0.564** : 1
fb : Actual : 1,941.26 psi at 2.500 ft in Span # 1
Fb : Allowable : 3,440.00 psi
Load Comb : +1.210D+1.923E+H

Max fv/FvRatio = **0.352** : 1
fv : Actual : 160.55 psi at 0.000 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+1.923E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.99	0.60	0.38		1.30	1.35	
Right Support	0.99	0.60	0.38		0.65	0.68	

Max Deflections

Downward L+Lr+S	0.050 in	Downward Total	0.152 in
Upward L+Lr+S	0.000 in	Upward Total	-0.071 in
Live Load Defl Ratio	1814 >360	Total Defl Ratio	592 >240

Description : Beam #2

CODE REFERENCES

Calculations per NDS 2005, IBC 2006, CBC 2007, ASCE 7-05
Load Combination Set : 2006IBC&ASCE7-05(HSCGI)

Material Properties

Analysis Method : Allowable Stress Design
Load Combination 2006IBC&ASCE7-05(HSCGI)

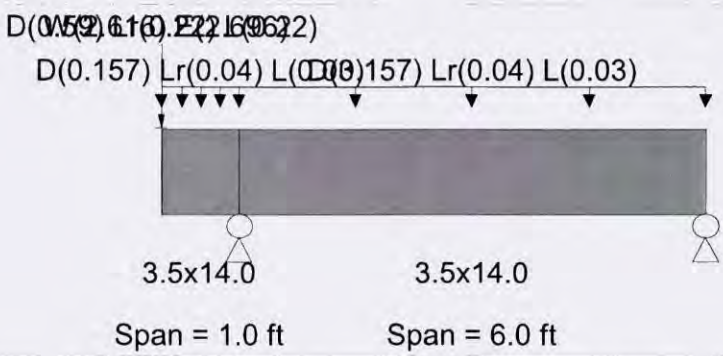
Wood Species : Structural Composite Lumber
Wood Grade : 1.5E SCL

Beam Bracing : Beam is Fully Braced against lateral-torsion buckling

Fb - Tension	2,150.0 psi
Fb - Compr	2,150.0 psi
Fc - Prll	1,600.0 psi
Fc - Perp	750.0 psi
Fv	285.0 psi
Ft	1,000.0 psi

E : Modulus of Elasticity

Ebend- xx	1,500.0 ksi
Eminbend - xx	700.0 ksi
Density	35.0 pcf



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Load for Span Number 1
Uniform Load : D = 0.1570, Lr = 0.040, L = 0.030 , Tributary Width = 1.0 ft, (Roof Load + Wall load + Floor Lo)
Point Load : D = 0.590, Lr = 0.220, L = 0.220 k @ 0.0 ft
Point Load : W = 2.616, E = 2.696 k @ 0.0 ft, (Holdown)
Load for Span Number 2
Uniform Load : D = 0.1570, Lr = 0.040, L = 0.030 , Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	**0.183** : 1	Maximum Shear Stress Ratio	=	**0.409** : 1
Section used for this span		**3.5x14.0**	Section used for this span		**3.5x14.0**
fb : Actual	=	629.03 psi	fv : Actual	=	186.38 psi
FB : Allowable	=	3,440.00 psi	Fv : Allowable	=	456.00 psi
Load Combination		+1.210D+1.923E+H	Load Combination		+1.210D+1.923E+H
Location of maximum on span	=	1.000 ft	Location of maximum on span	=	1.000 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1

Maximum Deflection

Max Downward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Upward L+Lr+S Deflection	0.000 in	Ratio =	0 <360
Max Downward Total Deflection	0.010 in	Ratio =	2482
Max Upward Total Deflection	-0.009 in	Ratio =	2648

Maximum Forces & Stresses for Load Combinations

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
D Only													0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.033	0.080	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	70.16	2150.00	0.75	22.87	285.00
Length = 6.0 ft	2	0.033	0.080	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	70.16	2150.00	0.40	22.87	285.00
+D+L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.044	0.107	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	94.83	2150.00	1.00	30.52	285.00
Length = 6.0 ft	2	0.044	0.107	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.90	94.83	2150.00	0.50	30.52	285.00
+D+Lr+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00

Description : Beam #2

Load Combination / Segment Length	Span #	Max Stress Ratios M	V	C_d	$C_{F/V}$	C_i	C_r	C_m	C_t	C_L	Moment Values M	fb	F'b	Shear Values V	fv	F'v
Length = 1.0 ft	1	0.044	0.108	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	95.35	2150.00	1.01	30.83	285.00
Length = 6.0 ft	2	0.044	0.108	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	95.35	2150.00	0.52	30.83	285.00
+D+S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.033	0.080	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	70.16	2150.00	0.75	22.87	285.00
Length = 6.0 ft	2	0.033	0.080	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.67	70.16	2150.00	0.40	22.87	285.00
+D+0.750Lr+0.750L+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.050	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	107.55	2150.00	1.13	34.58	285.00
Length = 6.0 ft	2	0.050	0.121	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.02	107.55	2150.00	0.56	34.58	285.00
+D+0.750L+0.750S+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.041	0.100	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.84	88.66	2150.00	0.93	28.61	285.00
Length = 6.0 ft	2	0.041	0.100	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.84	88.66	2150.00	0.47	28.61	285.00
+D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.100	0.226	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.28	344.73	3440.00	3.36	102.95	456.00
Length = 6.0 ft	2	0.100	0.226	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.28	344.73	3440.00	0.84	102.95	456.00
+D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.059	0.136	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.95	204.40	3440.00	2.03	62.02	456.00
Length = 6.0 ft	2	0.062	0.136	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.02	211.57	3440.00	0.62	62.02	456.00
+D+0.750Lr+0.750L+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.091	0.208	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.99	313.48	3440.00	3.09	94.64	456.00
Length = 6.0 ft	2	0.091	0.208	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.99	313.48	3440.00	0.89	94.64	456.00
+D+0.750Lr+0.750L-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.029	0.070	1.60	1.00	1.00	1.00	1.00	1.00	1.00	0.94	98.37	3440.00	1.04	31.90	456.00
Length = 6.0 ft	2	0.045	0.070	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.47	154.24	3440.00	0.55	31.90	456.00
+D+0.750L+0.750S+0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.086	0.194	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.81	294.59	3440.00	2.90	88.67	456.00
Length = 6.0 ft	2	0.086	0.194	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.81	294.59	3440.00	0.80	88.67	456.00
+D+0.750L+0.750S-0.750W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.034	0.081	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.12	117.26	3440.00	1.21	36.95	456.00
Length = 6.0 ft	2	0.045	0.081	1.60	1.00	1.00	1.00	1.00	1.00	1.00	1.46	153.54	3440.00	0.52	36.95	456.00
+0.60D+W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.092	0.206	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.02	316.66	3440.00	3.06	93.80	456.00
Length = 6.0 ft	2	0.092	0.206	1.60	1.00	1.00	1.00	1.00	1.00	1.00	3.02	316.66	3440.00	0.68	93.80	456.00
+0.60D-1.0W+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.068	0.152	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.21	232.47	3440.00	2.26	69.24	456.00
Length = 6.0 ft	2	0.068	0.152	1.60	1.00	1.00	1.00	1.00	1.00	1.00	2.21	232.47	3440.00	0.54	69.24	456.00
+1.210D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.183	0.409	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.99	629.03	3440.00	6.09	186.38	456.00
Length = 6.0 ft	2	0.183	0.409	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.99	629.03	3440.00	1.35	186.38	456.00
+1.210D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.133	0.300	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.38	459.24	3440.00	4.47	136.85	456.00
Length = 6.0 ft	2	0.133	0.300	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.38	459.24	3440.00	1.08	136.85	456.00
+0.390D+1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.166	0.368	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.45	571.50	3440.00	5.48	167.62	456.00
Length = 6.0 ft	2	0.166	0.368	1.60	1.00	1.00	1.00	1.00	1.00	1.00	5.45	571.50	3440.00	1.02	167.62	456.00
+0.390D-1.923E+H					1.00	1.00	1.00	1.00	1.00	1.00			0.00	0.00	0.00	0.00
Length = 1.0 ft	1	0.150	0.333	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.92	516.77	3440.00	4.95	151.66	456.00
Length = 6.0 ft	2	0.150	0.333	1.60	1.00	1.00	1.00	1.00	1.00	1.00	4.92	516.77	3440.00	0.93	151.66	456.00

Overall Maximum Deflections - Unfactored Loads

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
D+L+E	1	0.0097	0.000		0.0000	0.000
D+Lr-E	2	0.0108	2.782	D+L+E	-0.0005	0.067

Vertical Reactions - Unfactored

Support notation : Far left is #1 — Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Overall MAXimum		4.895	0.889
D Only		1.329	0.360
L Only		0.379	0.051
Lr Only		0.420	0.080
L+Lr		0.799	0.131

Description : Beam #2

Vertical Reactions - Unfactored

Support notation : Far left is #1 Values in KIPS

Load Combination	Support 1	Support 2	Support 3
W Only		3.052	-0.436
-W Only		-3.052	0.436
E Only		3.145	-0.449
-E Only		-3.145	0.449
D+Lr		1.749	0.440
D+L		1.709	0.410
D+L+Lr		2.129	0.490
D+W		4.381	-0.076
D+L+W		4.761	-0.026
D+Lr+W		4.801	0.004
D+E		4.475	-0.090
D-E		-1.816	0.809
D+L+E		4.854	-0.039
D+L-E		-1.437	0.860
D+Lr+E		4.895	-0.010
D+Lr-E		-1.396	0.889

Description : Overstrength Beams

Wood Beam Design : Rim along P1

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.250 X 14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.3E SCL			
Fb - Tension	1650 psi	Fc - Prll	1400 psi	Fv	285 psi	Ebend- xx	1300 ksi	Density	35 pcf
Fb - Compr	1650 psi	Fc - Perp	680 psi	Ft	1000 psi	Eminbend - xx	600 ksi		

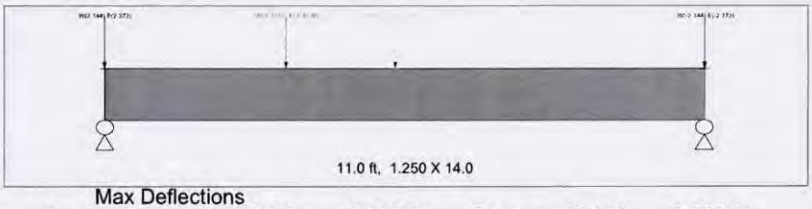
Applied Loads

Point: W = 2.144, E = 2.373 k @ 0.0 ft
Point: W = -0.3510, E = -0.9530 k @ 3.330 ft
Point: W = 0.3510, E = 0.9530 k @ 5.330 ft
Point: W = -2.144, E = -2.373 k @ 11.0 ft

Design Summary

Max fb/Fb Ratio = **0.272** : 1
fb : Actual : 718.84 psi at 5.353 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.366** : 1
fv : Actual : 167.08 psi at 3.337 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support					2.08	2.20	
Right Support					-2.08	-2.20	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.026 in
Upward L+Lr+S	0.000 in	Upward Total	-0.026 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	5010 >240

Wood Beam Design : Rim along P2

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber					Wood Grade : 1.3E SCL			
Fb - Tension	1,650.0 psi	Fc - Prll	1,400.0 psi	Fv	285.0 psi	Ebend- xx	1,300.0 ksi	Density	35.0 pcf
Fb - Compr	1,650.0 psi	Fc - Perp	680.0 psi	Ft	1,000.0 psi	Eminbend - xx	600.0 ksi		

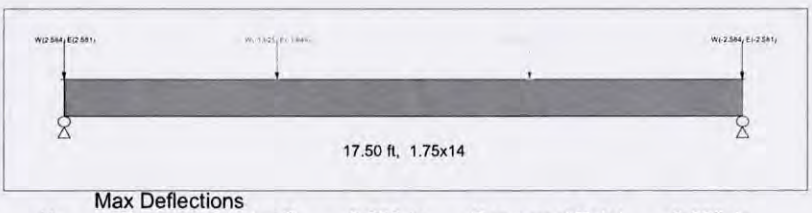
Applied Loads

Point: W = 2.584, E = 2.581 k @ 0.0 ft
Point: W = -1.925, E = -1.949 k @ 5.50 ft
Point: W = 1.925, E = 1.949 k @ 12.0 ft
Point: W = -2.584, E = -2.581 k @ 17.50 ft

Design Summary

Max fb/Fb Ratio = **0.789** : 1
fb : Actual : 2,083.06 psi at 5.483 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.411** : 1
fv : Actual : 187.51 psi at 5.542 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support					1.87	1.86	
Right Support					-1.87	-1.86	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.083 in
Upward L+Lr+S	0.000 in	Upward Total	-0.083 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	2515 >240

Wood Beam Design : Rim along P2

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber				Wood Grade : 1.3E SCL				
Fb - Tension	1,650.0 psi	Fc - Prll	1,400.0 psi	Fv	285.0 psi	Ebend- xx	1,300.0 ksi	Density	35.0 pcf
Fb - Compr	1,650.0 psi	Fc - Perp	680.0 psi	Ft	1,000.0 psi	Eminbend - xx	600.0 ksi		

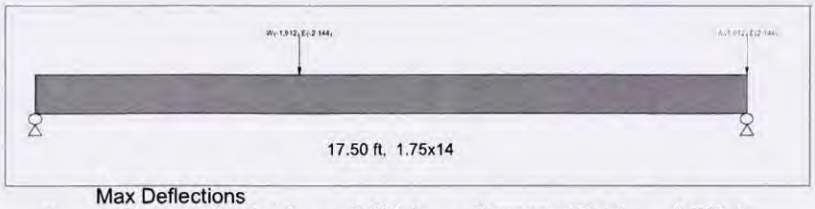
Applied Loads

Point: W = -1.912, E = -2.144 k @ 6.50 ft
Point: W = 1.912, E = 2.144 k @ 17.50 ft

Design Summary

Max fb/Fb Ratio = **1.736** : 1
fb : Actual : 4,583.00 psi at 6.533 ft in Span # 1
Fb : Allowable : 2,640.00 psi
Load Comb : +1.210D+2.50E+H

Max fv/FvRatio = **0.452** : 1
fv : Actual : 206.27 psi at 0.000 ft in Span # 1
Fv : Allowable : 456.00 psi
Load Comb : +1.210D+2.50E+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support					-1.20	-1.35	
Right Support					1.20	1.35	

Max Deflections

Downward L+Lr+S	0.000 in	Downward Total	0.732 in
Upward L+Lr+S	0.000 in	Upward Total	-0.732 in
Live Load Defl Ratio	0 <360	Total Defl Ratio	286 >240

Studs up to and Including 10' - 0" in Height

Table 2308.9.1 of the 2009 IBC lists the maximum height and spacing for wood studs which conform to the limitations of the conventional framing provisions (Section 2308.2). While the design loads and roof spans used in this project do not explicitly meet the conventional framing limitations, it is HSCGI's interpretation that Table 2308.9.1 is applicable for any stud wall with applied loads less than or equal to the worst case loading allowed by the conventional framing provisions (i.e. the loads resulting from roofs, floors, and/or walls spanning the maximum distance and carrying the maximum loads allowed by the limitations listed below).

Limitations (Summary of Section 2308.2):

1. Structure is not more than 3 stories.
2. Plate heights are not greater than 10' - 0".
3.1. Average dead load of combined roof and ceiling, exterior walls, floors and partitions does not exceed 15 psf .
3.2. Live load does not exceed 40 psf.
3.3. Ground snow load does not exceed 50 psf.
4. Wind speed does not exceed 100 mph.
5. Roof truss and rafter spans (between points of vertical supports) are not greater than 40 feet.
6. Structure does not belong to Occupancy Category IV.
7. Irregularity limitation. Limits for irregularities apply to wall bracing, not to Table 2308.9.1.
8. Structure does not fall under DSA-SS or OSHPD 1, 2 or 4.

Determination of Maximum Loads and Spans:

The conventional framing limitations, together with the maximum floor span listed in Table 2308.8(2), have been used to determine the equivalent maximum allowable loads that may be applied to wood wall studs. Below is a list of maximum loads and corresponding maximum spans allowed by section 2308.

Parameter	Roof	Floor	Wall
Dead Load	15 psf	15 psf	15 psf
Span/Height	40 feet	21 feet	10 feet

Table 2308.9.1 allows 10' - 0" tall 2x4 wall studs spaced at 16" o.c. to support one floor, roof and ceiling. Based on the spans and loads listed above, the maximum allowable dead load (DL) on a standard stud wall is as follows:

Exterior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)/2	= 300 plf
Floor	(15psf DL) x (21 foot floor span)/2	= 158 plf
Wall	(15psf DL) x (10 foot wall height)	= 150 plf
		= 608 plf

Interior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)	= 600 plf
Floor	(15psf DL) x (21 foot floor span)	= 315 plf
		= 915 plf

Wood studs exceeding the height and/or loading criteria listed above are calculated using the design criteria of IBC Chapters 16 and 23.

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Project	Village Walk		
Client	Standard Pacific Hc	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Footing Calculations

Soils Engineer

ENGEO, Inc. (San Ramon)
2010 Crow Canyon Pl., Ste. 250
San Ramon, CA 94583

Report #: 6858.200.102
Date: 04/16/2013

Foundation Design Information

Allowable Soil Pressure	=	1000 psf
Retaining Wall Design:		
Friction Factor	=	N/A
Active Pressure	=	N/A pcf
Passive Pressure	=	N/A pcf

Post-Tension Foundation Calculations (expansive soil)

Average Soil Pressure = 1,000 psf

		Center Lift	Edge Lift
Edge Moisture Variation (e_m)	=	5.10 ft	2.70 ft
Differential Soil Movement (y_m)	=	1.50 in	2.00 in

Design Rectangles
R1 = 23.00 ft x 34.00 ft

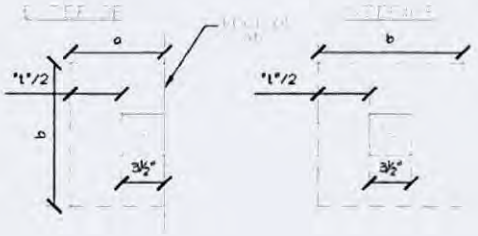
Maximum Point Load Capacity of Slab
Slab Thickness (t) = 12 in
Concrete Compressive Strength (f'c) = 4500 psi

Punching Shear Calculation

$$V_u = \phi V_n$$
$$\phi = 0.85$$
$$V_c = 4\sqrt{f_c}\, b_o\, t$$
$$V_{allowable} = V_u / 1.7$$

Exterior Condidtion $b_o = 2a+b$ = 34.5 in
Maximum allowable point load = 56 kips

Interior Condidtion $b_o = 4b$ = 62 in
Maximum allowable point load = 100 kips



hscgi limit 10,000# at interior
8000# at exterior

Pad Footing Calculations

Maximum Localized Bearing Pressure = 1,000 psf
Minimum Pad Footing Depth = 12 in

Footing #	Load	Minimum Size	Reinforcing
FTG#3	9000#	36" SQUARE X 12" DEEP	#4 BARS AT 8" OC
FTG#4	12250#	42" SQUARE X 18" DEEP	#5 BARS AT 8" OC

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	23.00 FT x 34.00 FT x 12.00 Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	12.00 (11.94) Inches

Material Properties

Concrete Strength, f'_c :	4,500 PSI
Tendon Strength, F_{pu} :	270 KSI
Tendon Diameter :	1 / 2 Inch

Material Quantities

Concrete Volume :	29.0 Cubic Yards
Prestressing Tendon :	735.0 Linear Feet
Number of End Anchorages :	50

In the LONG direction ...

Number of Slab Tendons :	10
Slab Tendon Spacing :	2.33 Feet O.C.
Slab Tendon Centroid :	6.00 Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	15
Slab Tendon Spacing :	2.29 Feet O.C.
Slab Tendon Centroid :	6.00 Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	4,896	3,312
Moment of Inertia ($Inch^4$) :	58,752	39,744
Section Modulus, Top and Bottom ($Inch^3$) :	9,792	6,624
Beta Distance (Feet) :	8.07	7.32

Jacking Force : 33.05 KIPS

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Geotechnical Report : Engeo
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.94) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	15	10
Spacing of Tendons (FT)	2.29	2.33
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	356.8	223.7
Beta Distance Effective Prestress Force (K)	369.5	247.9
Minimum Effective Prestress (PSI)	73	68
Beta Distance Effective Prestress (PSI)	75	75

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction 7.59 FT-K/FT
Maximum Moment, Long Direction 6.90 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.241	-0.212	Actual Stress	0.392	0.362

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	58,752	39,744
Required Moment of Inertia ($Inch^4$)	22,778	20,707
Required Moment of Inertia controlled by	Width	Length

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 1.81 K/FT
Maximum Shear, Long Direction 1.36 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	13	9

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Geotechnical Report : Engeo
Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	195.4	130.3
0.5 Moment (FT-K)	128.9	79.3

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Long Direction		Compression in Top Fiber (KSI) Short Direction	Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.025	-0.027	Actual Stress	0.176	0.176

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	58,752	39,744
Required Moment of Inertia ($Inch^4$)	14,529	14,651
Required Moment of Inertia controlled by	Width	Length

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.34 K/FT
Maximum Shear, Long Direction	1.38 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	9	10

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	195.4	130.3
0.5 Moment (FT-K)	41.1	28.1

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	4,500.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R3 (23x34)

Rectangle Geometry : 23.00 FT x 34.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	65.00 PSI	60.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	33	0	22	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load : 40.00 PSF
Total Perimeter Load : 1,250.00 PLF
Smallest Load Intensity : 500.00 PLF

Stiffness Coefficients

Center Lift : 480
Edge Lift : 960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

Project Title : Village Walk - Plan 4
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P1 **2nd Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Additional Width	0	1.5	ft
Avg. Roof Ht abv Plate	5	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.63	15.63	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	21.5	21.5	ft
Pressure @ Elevation	15.84	15.84	psf
Wall Load	1231	106	#
Mean Roof Height (h)	21.5	21.5	
Roof Area	88	6	ft^2
Pressure @ Elevation	8.29	8.29	psf
Roof Load	726	50	#
Add'l Load (Balloon frm)	=	430	#

Total Wind Load	=	**2542 #**
Wind Load w/o Balloon l	=	**2112**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	19.	ft^2
Building Dead Load	30	30	psf
V	=	0.1582	W
Rho	=	1.30	
Diaphragm Load	2484	117	#
Add'l Load (Balloon frm)	=		#

Total Seismic Load	=	**2601 #**
1.25 Total Load*	=	**3252 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2484#	155#	
Diaphgram Shear	108 plf (E)	7 plf (W)	

Total Diaphragm Length	=	23 ft
Total Diaphragm Shear	=	113 plf (E)
Shear for drag & collectors*	=	141 plf (E)

Shear Wall Summary

# of Shear Walls	=	1	
Total Length of Walls	=	10.67	ft
Net Length of Walls	=	8.67	ft
Maximum H:W Ratio	=	1.29	
Seismic H:W Adjustment	=	1.00	
		Shear @ T&B of wall	
Wind Wall Shear	=	**293 plf**	**238 plf**
Seismic Wall Shear	=	**300 plf**	**244 plf**
1.25 Seismic Shear*	=	**375 plf**	

USE SHEAR WALL TYPE **3**

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right

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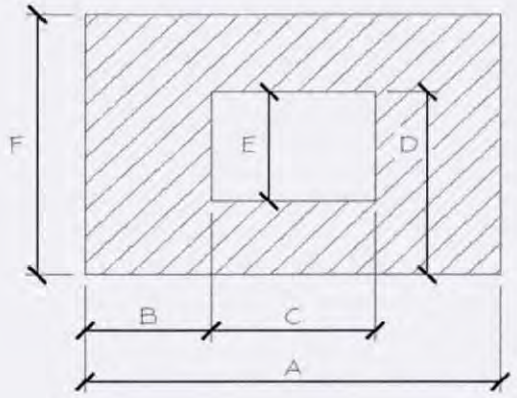
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P1 **2nd Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 10.67 ft.
Dist from left end of wall to 1st opening	B	= 3.50 ft.
Opening Width	C	= 2.00 ft.
Net Length		= 8.67 ft.
Opening Header Height	D	= 8.00 ft.
Opening Height	E	= 4.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	2542#
Seismic Load (E)	2601#
DL Trib Length Roof	5 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	238 plf	244 plf
Piers	293 plf	300 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 291 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-226#	-369#
Left Pier	1319#	1350#
Right Pier	1319#	1350#
Bottom	953#	975#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	1881# (E)	2 corner
L King	953# (E)	1
R King	953# (E)	1
Right End	1881# (E)	2

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P2 **2nd Floor; Front; Left to Right**
Elev A

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	4	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.63	15.63	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	21.5	21.5	ft
Pressure @ Elevation	15.84	15.84	psf
Wall Load	1231	0	#
Mean Roof Height (h)	21.5	21.5	
Roof Area	70	0	ft^2
Pressure @ Elevation	8.29	8.29	psf
Roof Load	581	0	#
Add'l Load (Balloon frm)	=	313	#

Total Wind Load	=	**2124 #**
Wind Load w/o Balloon l	=	**1811**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	10.00 ft
Maximum H:W Ratio	=	0.90
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**212 plf**
Seismic Wall Shear	=	**248 plf**
1.25 Seismic Shear*	=	**310 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1582	W
Rho	=	1.30	
Diaphragm Load	2484	0	#
Add'l Load (Balloon frm)	=		#

Total Seismic Load	=	**2484 #**
1.25 Total Load*	=	**3105 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2484#	0#	
Diaphgram Shear	108 plf (E)	0 plf (E)	

Total Diaphragm Length	=	23 ft
Total Diaphragm Shear	=	108 plf (E)
Shear for drag & collectors*	=	135 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
10.00 ft.							2011# (E)	2011# (E)	2	2

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P2 **2nd Floor; Front; Left to Right**
Elev B&C

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.63	15.63	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	21.5	21.5	ft
Pressure @ Elevation	15.84	15.84	psf
Wall Load	1231	0	#
Mean Roof Height (h)	21.5	21.5	
Roof Area	88	0	ft^2
Pressure @ Elevation	8.29	8.29	psf
Roof Load	726	0	#
Add'l Load (Balloon frm)	=	430	#

Total Wind Load	=	**2386 #**
Wind Load w/o Balloon	=	**1957**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	11.00 ft
Maximum H:W Ratio	=	1.64
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**217 plf**
Seismic Wall Shear	=	**226 plf**
1.25 Seismic Shear*	=	**282 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	35	0	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1582	W
Rho	=	1.30	
Diaphragm Load	2484	0	#
Add'l Load (Balloon frm)	=		#

Total Seismic Load	=	**2484 #**
1.25 Total Load*	=	**3105 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	2484#	0#	
Diaphgram Shear	108 plf (E)	0 plf (E)	

Total Diaphragm Length	=	23 ft
Total Diaphragm Shear	=	108 plf (E)
Shear for drag & collectors*	=	135 plf (E)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
5.50 ft.	2.0 ft.		663#	0.00			2520# (E)	1857# (E)	2	2
5.50 ft.	2.0 ft.				663#	5.50	1857# (E)	2520# (E)	2	2

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Lateral Analysis Calculations

P3 **2nd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.25	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	14.57	14.57	psf
Above Plate:			
Wall Area Above Plate	59	0	ft^2
Average Elevation	21.5	21.5	ft
Pressure @ Elevation	14.78	14.78	psf
Wall Load	1626	0	#
Mean Roof Height (h)	21.5	21.5	
Roof Area	-22	0	ft^2
Pressure @ Elevation	9.45	9.45	psf
Roof Load	-204	0	#
Additional Load	=		#

Total Wind Load = **1422 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**178 plf**
Seismic Wall Shear	=	**239 plf**
1.25 Seismic Shear*	=	**299 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Length of Diaphragm	35.0	35.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1582	W
Rho	=	1.00	
Diaphragm Load	1911	0	#
Additional Load	=		#

Total Seismic Load = **1911 #**
1.25 Total Load* = **2388 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	35.0	35.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1911#	0#	
Diaphgram Shear	55 plf (E)	0 plf (E)	

Total Diaphragm Length	=	35 ft
Total Diaphragm Shear	=	55 plf (E)
Shear for drag & collectors*	=	68 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
8.00 ft.	12.0 ft.						1517# (E)	1517# (E)	1	1

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Lateral Analysis Calculations

P4 **2nd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.25	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	14.57	14.57	psf
Above Plate:			
Wall Area Above Plate	59	0	ft^2
Average Elevation	21.5	21.5	ft
Pressure @ Elevation	14.78	14.78	psf
Wall Load	1626	0	#
Mean Roof Height (h)	21.5	21.5	
Roof Area	-22	0	ft^2
Pressure @ Elevation	9.45	9.45	psf
Roof Load	-204	0	#
Additional Load	=		#

Total Wind Load = **1422 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	7.00 ft
Maximum H:W Ratio	=	1.29
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**203 plf**
Seismic Wall Shear	=	**273 plf**
1.25 Seismic Shear*	=	**341 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Length of Diaphragm	35.0	35.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1582	W
Rho	=	1.00	
Diaphragm Load	1911	0	#
Additional Load	=		#

Total Seismic Load = **1911 #**

1.25 Total Load* = **2388 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	35.0	35.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1911#	0#	
Diaphgram Shear	55 plf (E)	0 plf (E)	

Total Diaphragm Length	=	35 ft
Total Diaphragm Shear	=	55 plf (E)
Shear for drag & collectors*	=	68 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
7.00 ft.	2.0 ft.						2233# (E)	2233# (E)	2	2

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Lateral Analysis Calculations

P5 **1st Floor; Rear; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	0	ft
Additional Width	0	1.5	ft
Avg. Roof Ht abv Plate	5	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	34	9	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	904	226	#
Mean Roof Height (h)	9.5	9.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.48	9.48	psf
Roof Load	0	0	#
Add'l Load (From P1)	=	2112	#

Total Wind Load = **3241 #**

Shear Wall Summary

# of Shear Walls	=	2
Total Length of Walls	=	10.75 ft
Maximum H:W Ratio	=	2.25
Seismic H:W Adjustment	=	0.89
Wind Wall Shear	=	**302 plf**
Seismic Wall Shear	=	**284 plf**
1.25 Seismic Shear*	=	**355 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	0	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	19.	ft^2
Building Dead Load	30	30	psf
V	=	0.0742	W
Rho	=	1.30	
Diaphragm Load	399	55	#
Add'l Load (From P1)	=	2601	#
Total Seismic Load	=	**3055**	**#**
1.25 Total Load*	=	**3819**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	904#	226#	
Diaphgram Shear	39 plf (W)	10 plf (W)	
Total Diaphragm Length	=	23 ft	
Total Diaphragm Shear	=	49 plf (W)	
Shear for drag & collectors*	=	49 plf (W)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
6.75 ft.		6.0 ft.					2515# (W)	2515# (W)	9	9
4.00 ft.							2964# (W)	2964# (W)	9	17 corner

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Lateral Analysis Calculations

P6 **1st Floor; Interior; Left to Right**
Stair wall

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	16	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	34	46	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	904	1205	#
Mean Roof Height (h)	9.5	9.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.48	9.48	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **2109 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	6.00 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**351 plf**
Seismic Wall Shear	=	**155 plf**
1.25 Seismic Shear*	=	**194 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	12	16	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0742	W
Rho	=	1.30	
Diaphragm Load	399	532	#
Additional Load	=		#

Total Seismic Load = **931 #**
1.25 Total Load* = **1164 #**
*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	904#	1205#	
Diaphgram Shear	39 plf (W)	52 plf (W)	

Total Diaphragm Length	=	23 ft
Total Diaphragm Shear	=	92 plf (W)
Shear for drag & collectors*	=	92 plf (W)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right
6.00 ft.		6.0 ft.					3077# (W)	3077# (W)	17 interior	17 interior

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Lateral Analysis Calculations

P7 **1st Floor; Front; Left to Right**
Front wall of PWDR

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Additional Width	0	7	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	46	40	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1205	1054	#
Mean Roof Height (h)	9.5	9.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.48	9.48	psf
Roof Load	0	0	#
Add'l Load (From P2)	=	1957	#

Total Wind Load = **4216 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**527 plf**
Seismic Wall Shear	=	**521 plf**
1.25 Seismic Shear*	=	**651 plf**

USE SHEAR WALL TYPE **12**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	16	0	ft
Length of Diaphragm	23.0	23.0	ft
Additional Diaphragm Area	0.	397.	ft^2
Building Dead Load	30	30	psf
V	=	0.0742	W
Rho	=	1.30	
Diaphragm Load	532	1148	#
Add'l Load (From P2)	=	2484	#
Total Seismic Load	=	**4165**	**#**
1.25 Total Load*	=	**5206**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	23.0	23.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	2484#	
Total Load in Diaphragm	1205#	3632#	
Diaphgram Shear	52 plf (W)	158 plf (E)	
Total Diaphragm Length	=	23	ft
Total Diaphragm Shear	=	183 plf (W)	
Shear for drag & collectors*	=	226 plf (E)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
8.00 ft.		6.0 ft.					4633# (E)	4633# (E)	**19**	**19 corner**

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Lateral Analysis Calculations

P8 **1st Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	13.78	13.78	psf
Above Plate:			
Wall Area Above Plate	66	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	13.78	13.78	psf
Wall Load	1616	0	#
Mean Roof Height (h)	9.5	9.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.17	10.17	psf
Roof Load	0	0	#
Add'l Load (From P3)	=	1422	#

Total Wind Load = **3038 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**380 plf**
Seismic Wall Shear	=	**351 plf**
1.25 Seismic Shear*	=	**438 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Length of Diaphragm	35.0	35.0	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0742	W
Rho	=	1.00	
Diaphragm Load	896	0	#
Add'l Load (From P3)	=	1911	#
Total Seismic Load	=	**2806**	**#**
1.25 Total Load*	=	**3508**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	35.0	35.0	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1616#	0#	
Diaphgram Shear	46 plf (W)	0 plf (E)	
Total Diaphragm Length	=	35	ft
Total Diaphragm Shear	=	46 plf (W)	
Shear for drag & collectors*	=	46 plf (W)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	DL Tributary Length Floor	Additional Uplift Loads Load	Additional Uplift Loads Location	Additional Uplift Loads Load	Additional Uplift Loads Location	Total Uplift Left	Total Uplift Right	Holdown Left	Holdown Right
8.00 ft.		1.0 ft.	1517#	0.00	1517#	8.00	4868# (W)	4868# (W)	**19**	**19**

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Lateral Analysis Calculations

P9 **1st Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	5	4	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	13.78	13.78	psf
Above Plate:			
Wall Area Above Plate	66	0	ft^2
Average Elevation	14.7	14.7	ft
Pressure @ Elevation	13.78	13.78	psf
Wall Load	1616	0	#
Mean Roof Height (h)	9.5	9.5	
Roof Area	0	0	ft^2
Pressure @ Elevation	10.17	10.17	psf
Roof Load	0	0	#
Add'l Load (From P4)	=	1422	#

Total Wind Load = **3038 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	7.00 ft
Maximum H:W Ratio	=	1.29
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**434 plf**
Seismic Wall Shear	=	**377 plf**
1.25 Seismic Shear*	=	**472 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	23	0	ft
Length of Diaphragm	35.5	35.5	ft
Additional Diaphragm Area	-80.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0742	W
Rho	=	1.00	
Diaphragm Load	730	0	#
Add'l Load (From P4)	=	1911	#
Total Seismic Load	=	**2641**	#
1.25 Total Load*	=	**3301**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	35.5	35.5	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1616#	0#	
Diaphgram Shear	46 plf (W)	0 plf (E)	
Total Diaphragm Length	=	36	ft
Total Diaphragm Shear	=	46 plf (W)	
Shear for drag & collectors*	=	46 plf (W)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
7.00 ft.		1.0 ft.	2233#	0.00	2233#	7.00	6180# (W)	6180# (W)	**19**	**19**

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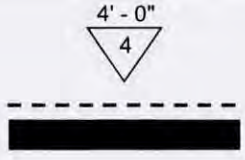
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Shear Wall Table

Type	*Wind*	*Seismic*	*Description*
1	254.8	182	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
2	350	266	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 4" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
3	480.2	343	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X OR (2) 2X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
4	600	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. MAX. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
5	627.2	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
12	754.6	539	15/32" APA RATED SHEATHING ONE FACE WITH 10d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
7	960.4	686	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
8	1254.4	896	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.

NOTES:

1. Shearwalls are designated on the plans by a triangle symbol surrounding the shearwall type.
2. Shearwall length is indicated above the shearwall callout and is shown graphically with shading & a dashed line.
3. See anchor bolt calculations for required anchor spacing.



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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Simpson Holdown Table

	Wind		*Seismic*		
Type	*Typ*	*End*	*Typ*	*End*	***Description***
NONE	500	500	500	500	Below limit
1	1705	1705	1705	1705	CS16 STRAP, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2	3410	3410	3410	3410	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
3	4585	4585	4585	4585	CMSTC16 STRAP, 23" MINIMUM END SPAN, CLEAR SPAN VARIES.
4	5860	5860	5860	5860	MSTC66 STRAP, 18" MAXIMUM CLEAR SPAN.
1A	942	942	942	942	CS16 STRAP, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
1B	1884	1884	1884	1884	(2) CS16 STRAPS, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
2A	3300	3300	3300	3300	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2B	4950	4950	4950	4950	(3) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
9	4755	0	3400	0	STHD10 HOLDOWN TO MINIMUM 4X POST.
17	4565	4470	3740	3325	HDU4 HOLDOWN TO MINIMUM 4X POST W/ SSTB24/24
19	6970	6970	6970	6970	HDU8 HOLDOWN TO MINIMUM 4X POST W/ SSTB28/34 ANCHOR.
19A	7870	7870	7870	7315	HDU8 HOLDOWN TO MINIMUM 4X6 POST W/ SSTB28/34 ANCHOR.
20	9535	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X6 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
20A	10470	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X8 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
21	14390	14390	14390	14390	HDU14 HOLDOWN TO MINIMUM 4X8 POST W/ 1" ANCHOR ROD.
16	19070	19070	19070	19070	HD19 HOLDOWN TO MINIMUM 4X10 OR 6X6 POST W/ 1 1/4" ANCHOR ROD.

NOTE: Holdowns are designated on the plans by a diamond symbol surrounding the holdown type, e.g.:



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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	4
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

CALCULATIONS FOR ANCHOR BOLTS & MASA* ANCHORS AT SHEARWALLS

*MASA anchor values per ESR-2555, Issued November 2010

Allowable loads per NDS/hardware values (1.6 load duration factor):

Condition	1/2" ϕ A.B.	MASA
2X sill plate; sw capacity ≤ 350 plf	650#	1515#
2X sill plate; sw capacity b/t 350 & 600 plf	325#	758#
3X sill plate	770#	1215#

Allowable Shear Loads per ACI 318-08 Appendix D (assuming uncracked concrete at service loads):

		1/2" ϕ A.B.		MASA	
Wind:	$(F^*V_{nx}) / 1.6 =$	1064#	Wind:	2X sill = 1388#	
				3X sill = 1109#	
Seismic:	$(F^*V_{nx}) * 0.7 =$	1192#	Seismic:	2X sill = 1138#	
				3X sill = 931#	

Seismic (in SDC C, D, E and F):
$(0.75^*F^*_{Vnx}) * 0.7 =$ 894#

		1/2" AB	MASA
SW 1 (2x sill)	NDS	49.0" oc	71.4" oc
255plf (W)	ACI (W)	50.1" oc	65.3" oc
182plf (E)	ACI (E)	58.9" oc	75.0" oc
	per plan	**48" oc**	**48" oc**

		1/2" AB	MASA
SW 2 (2x sill)	NDS	35.7" oc	51.9" oc
350plf (W)	ACI (W)	36.5" oc	47.6" oc
266plf (E)	ACI (E)	40.3" oc	51.3" oc
	per plan	**35" oc**	**35" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW3	NDS	13.0" oc	18.9" oc	30.8" oc	30.4" oc
480plf (W)	ACI (W)	26.6" oc	34.7" oc	26.6" oc	27.7" oc
343plf (E)	ACI (E)	31.3" oc	39.8" oc	31.3" oc	32.6" oc
	per plan	**12" oc**	**12" oc**	**20" oc**	**20" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW4	NDS	10.4" oc	15.2" oc	24.6" oc	24.3" oc
600plf (W)	ACI (W)	21.3" oc	27.8" oc	21.3" oc	22.2" oc
448plf (E)	ACI (E)	23.9" oc	30.5" oc	23.9" oc	24.9" oc
	per plan	**10" oc**	**10" oc**	**16" oc**	**16" oc**

		1/2" AB	MASA
SW 5 (3x sill)	NDS	23.6" oc	23.2" oc
627plf (W)	ACI (W)	20.4" oc	21.2" oc
448plf (E)	ACI (E)	23.9" oc	24.9" oc
	per plan	**20" oc**	**20" oc**

		1/2" AB	MASA
SW 7 (3x sill)	NDS	15.4" oc	15.2" oc
960plf (W)	ACI (W)	13.3" oc	13.9" oc
686plf (E)	ACI (E)	15.6" oc	16.3" oc
	per plan	**13" oc**	**13" oc**

		1/2" AB	MASA
SW 8 (3x sill)	NDS	11.8" oc	11.6" oc
1254plf (W)	ACI (W)	10.2" oc	10.6" oc
896plf (E)	ACI (E)	12.0" oc	12.5" oc
	per plan	**10" oc**	**10" oc**

		1/2" AB	MASA
SW 12 (3x sill	NDS	19.6" oc	19.3" oc
755plf (W)	ACI (W)	16.9" oc	17.6" oc
539plf (E)	ACI (E)	19.9" oc	20.7" oc
	per plan	**12" oc**	**12" oc**

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2295 Gateway Oaks Dr. Suite 165, Sacramento, CA 95833
tel 916.921.2800, toll free 800.877.1430, fax 916.921.2878
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Structural
Engineering
Consultants

Structural Calculation Package

for

Standard Pacific Homes - Bay

Village Walk

Cotati, California

Plan # 5

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Job # HS13068

2010 CBC



Date 7/8/2013

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Structural Calculation Package

Client Information

Standard Pacific Homes - Bay
3825 Hopyard Road, Suite 195
Pleasanton, CA 94588

Project Information

Village Walk
Cotati, California
Plan No. 5

Loading Information

Roof Loads

Roofing (Tile)	=	10.0 psf
Sheathing	=	1.7 psf
Framing	=	2.3 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	1.5 psf
Wall (Seismic only)	=	9.0 psf
Total DL	=	21.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	20.0 psf

Floor Loads

Flooring	=	1.5 psf
Sheathing	=	2.5 psf
Framing	=	2.5 psf
Insulation	=	1.5 psf
Ceiling	=	2.5 psf
Sprinklers	=	1.5 psf
Misc.	=	3.0 psf
Wall (Seismic only)	=	15.0 psf
Total DL	=	15.0 psf
Total DL (Seismic)	=	30.0 psf
Total LL	=	40.0 psf

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Project	Village Walk		
Client	Standard Pacific Homes - Ba	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Seismic Design Per IBC Section 1613

Building Information

R	=	6.50	ASCE Table 12.2-1
Occupancy Cat.	=	II	IBC Sect. 1604.5
Number of Stories	=	2	
Importance Factor	=	1.0	
Max Level Height	=	19.2	ft
Design Approach		Normal/Equivalent	

Site Information

S_s	=	1.615	IBC Sect. 1613.5.1
S_1	=	0.634	IBC Sect. 1613.5.1
Site Class	=	D	
S_s	=	1.615	Used For Design
S_1	=	0.634	Used For Design

Seismic Loads: ASCE 7 Section 12.8 Equivalent Lateral Force Procedure

Short Period Response

F_a	=	1.000	IBC 1613.5.3
$S_{MS} = F_a S_s$	=	1.615	IBC Eqn. 16-36
$S_{DS} = (^2/_3) S_{MS}$	=	1.077	IBC Eqn. 16-38
SDC per S_{DS}	=	D	IBC Table 1613.5.6(1)

1-Second Period Response

F_v	=	1.500	IBC 1613.5.3
$S_{M1} = F_v S_1$	=	0.951	IBC Eqn. 16-37
$S_{D1} = (^2/_3) S_{M1}$	=	0.634	IBC Eqn. 16-39
SDC per S_{D1}	=	D	IBC Table 1613.5.6(2)

Seismic Design Category

Period, T	=	0.18	s, ASCE 7 12.8.2.1
0.8 Ts	=	0.47	s, ASCE 7 11.4.5
SDC Required	=	D	IBC Sect. 1613.5.6
SDC Used	=	**D**	

Seismic Design Factors

Overstrength Factor	=	2.5	Table 12.2-1, Footnote g
Dead Load Reduction:			
(0.6 - 0.14 Sds)D	=	0.449 D	ASCE Sect 12.4.3.2
Rho, left to right	=	1.0	ASCE Sect 12.3.4
Rho, front to back	=	1.0	

ASD Seismic Response Coefficient

$$C_s = \frac{I\left(S_{DS}\right)}{R}$$

C_s per ASCE Eqn. 12.8-2

C_s	=	0.1656	ASCE Eqn. 12.8-2
C_s (upper limit)	=	0.5317	ASCE Eqn. 12.8-3
C_s (lower limit)	=	0.0100	ASCE Eqn. 12.8-5
C_s (alt low limit)	=	0.0488	ASCE Eqn. 12.8-6
C_s	=	0.1656	

Base Shear, V = 0.1159 W

(Includes 0.7 factor from ASD Basic LC)

Vertical Shear Distribution

Story	h (ft)	Area (sq ft)	DL (psf)	w_x (lb)	w_x x h	C_{vx}	C_{sx}*
1	9	541	30	16230	146070	0.3191	0.0740
2	19.2	541	30	16230	311616	0.6809	0.1579
Sum:		1082		32460	457686		

*Derived equivalent shear ratio per story: $F_x = C_{sx} w_x$

where: $C_{sx} = C_{vx} C_s (W/w_x)$

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Project	Village Walk		
Client	Standard Pacific Homes - B	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure

Basic Wind Speed (V)	85 mph	(3-second gust)
Importance Factor (I)	1.00	ASCE 7 - Table 6-1
Exposure Category	C	ASCE 7 - Section 6.5.6.3;
Directionality Factor (K_d)	0.85	ASCE 7 - Table 6-4
Gust Factor (G)	0.85	ASCE 7 - Section 6.5.8.1

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Velocity Pressures by Height

$$q_z = 0.00256\, K_z\, K_{zt}\, K_d\, V^2\, I$$

ASCE 7 - Section 6.5.10
K_z Per ASCE 7 - Table 6-3
K_{zt} Per ASCE 7 - Table 6-4

Topographic Effects — Hill Type: None

Height Factors			MWFRS		Comp's and Cladding	
z (ft)	K_3	K_{zt}	K_z	q_z (psf)	K_z	q_z (psf)
15	1.000	1.000	0.850	13.36	0.850	13.36
20	1.000	1.000	0.900	14.15	0.900	14.15
25	1.000	1.000	0.940	14.78	0.940	14.78
30	1.000	1.000	0.980	15.41	0.980	15.41
40	1.000	1.000	1.040	16.35	1.040	16.35

Pressure Coefficients by Surface

Main Wind Force Resisting System, Roof

Roof Pitch (worst case)	6.00 : 12 pitch	Roof Angle, θ	27 degrees
Mean Roof Height (h)	22.20 ft	Velocity Pressure (q_h) for MWFRS	14.43 psf

Normal to Ridge for θ ≥ 10 degrees

Wind Direction and Load Case	h/L: ≤ 0.25	h/L: 0.5	h/L: ≥ 1.0	
Cp, Windward Roofs (q_h) Load Case 1	-0.20	-0.27	-0.44	
Cp, Windward Roofs (q_h) Load Case 2	0.30	0.20	0.06	Cp per ASCE 7 - Figure 6-6
Cp, Leeward Roofs (q_h)	-0.60	-0.60	-0.60	

MWFRS, Walls

Cp for Windward Walls	0.8
min L/B (Left to Right)	0.84
min L/B (Front to Back)	1.19
Cp for Leeward (L to R)	-0.50
Cp for Leeward (F to B)	-0.46

Components and Cladding, Walls

Velocity Pressure (q_h) for C&C: 14.43 psf

Wall Height	Zone 4 GCp	Zone 4 p (psf)	Zone 5 GCp	Zone 5 p (psf)
9.0 ft	-1.02	17.37	-1.25	20.60
15.0 ft	-0.95	16.24	-1.09	18.34
19.2 ft	-0.91	15.69	-1.02	17.24
22.0 ft	-0.89	15.39	-0.97	16.64

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Wind Design Per IBC/ASCE 7 Section 6 Analytical Procedure, Continued

Design Uplift Loads

Calculation of roof dead load available to offset overturning of shearwalls.

Pressure Coeff.- End (C_p)	-1.3	ASCE 7 - Figure 6-6
Area Reduction Factor	0.9	ASCE 7 - Figure 6-6
Pressure Coeff.- Mid (C_p)	-0.7	ASCE 7 - Figure 6-6
Avg. Pressure Coeff. (C_p)	-1.17	
Int. Pressure Coeff. (*Cpi*)	0.18	ASCE 7 - Figure 6-5
Wind Uplift Pressure (p)	-12 psf	

$$p = qGC_p - q_i(GC_{pi})$$

ASCE 7 - Section 6.5.12.2.1

Controlling Load Combo	0.6D+1.0W	ASCE 7 - Section 2.4.1
Net pressure from Roof	1 psf	Available to offset overturning from wind

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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Beam Specifications

BEAM #	SIZE	GRADE	LOCATION
Beam #1	3 1/2"x14"	1.5E SCL	Beam over garage
Beam #2	5 1/4"x18"	2.0E SCL	Garage Header

Header Specifications

First Floor Walls

Length	Size	Grade
4'-0"	4x8	#2 D.F.
6'-0"	4x10	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Second Floor Walls

Length	Size	Grade
4'-0"	4x6	#2 D.F.
6'-0"	4x8	#2 D.F.
6'-0" Gable	4x6	#2 D.F.

Description : Headers Unit 5

Wood Beam Design : 4 ft Header Upper Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

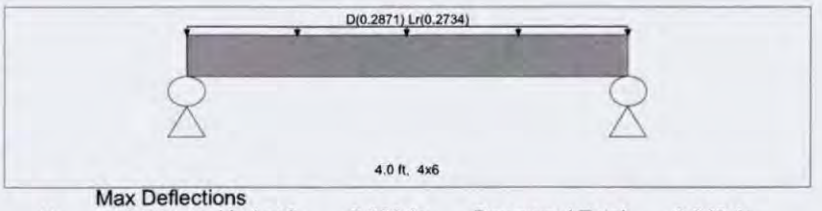
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 13.670 ft

Design Summary

Max fb/Fb Ratio = **0.652** : 1
fb : Actual : 762.29 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.375** : 1
fv : Actual : 67.55 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.57		0.55				
Right Support	0.57		0.55				



Max Deflections

Downward L+Lr+S	0.020 in	Downward Total	0.042 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2353 >360	Total Defl Ratio	1148 >240

Wood Beam Design : 6 ft Header Upper Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

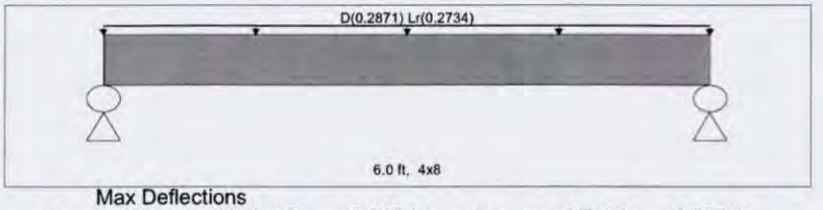
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 13.670 ft

Design Summary

Max fb/Fb Ratio = **0.844** : 1
fb : Actual : 987.08 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.442** : 1
fv : Actual : 79.51 psi at 5.400 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.86		0.82				
Right Support	0.86		0.82				



Max Deflections

Downward L+Lr+S	0.045 in	Downward Total	0.092 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	1597 >360	Total Defl Ratio	779 >240

Wood Beam Design : 4 ft Header lower Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x8, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Douglas Fir - Larch
Wood Grade : No.2

Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

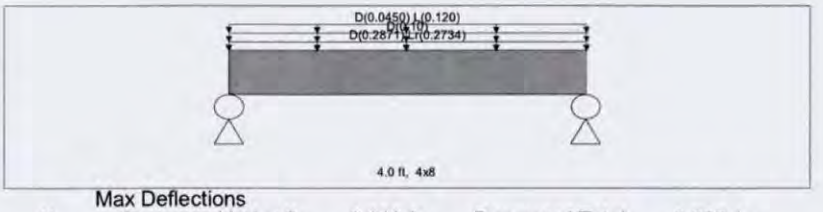
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 13.670 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.486** : 1
fb : Actual : 569.15 psi at 2.000 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.334** : 1
fv : Actual : 60.18 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.86	0.24	0.55				
Right Support	0.86	0.24	0.55				



Max Deflections

Downward L+Lr+S	0.013 in	Downward Total	0.027 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	3747 >480	Total Defl Ratio	1785 >360

Wood Beam Design : 6ft Header lower Floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x10, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

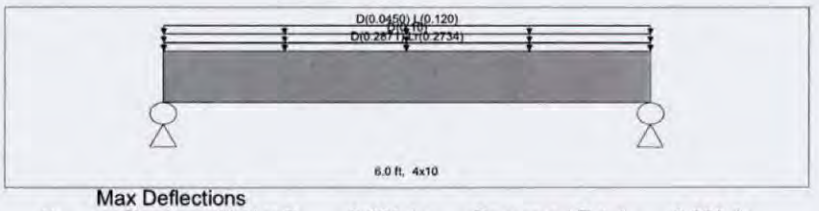
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 13.670 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.728** : 1
fb : Actual : 786.68 psi at 3.000 ft in Span # 1
Fb : Allowable : 1,080.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.419** : 1
fv : Actual : 75.46 psi at 5.240 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.30	0.36	0.82				
Right Support	1.30	0.36	0.82				



Max Deflections

Downward L+Lr+S	0.031 in	Downward Total	0.066 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2305 >480	Total Defl Ratio	1098 >360

Wood Beam Design : Porch Header

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **1.75x14, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Structural Composite Lumber				Wood Grade : 1.5E SCL				
Fb - Tension	2150 psi	Fc - Prll	1600 psi	Fv	285 psi	Ebend- xx	1500 ksi	Density	35 pcf
Fb - Compr	2150 psi	Fc - Perp	750 psi	Ft	1000 psi	Eminbend - xx	700 ksi		

Applied Loads

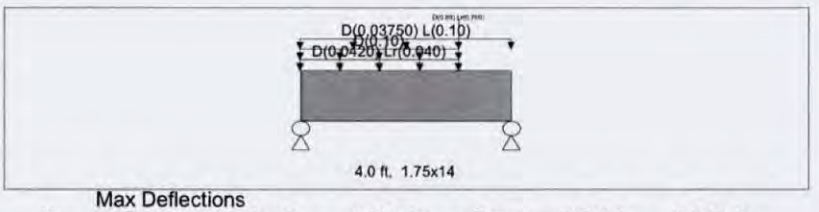
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 3.0 ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, 0.0 to 3.0 ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 2.50 ft
Point: D = 0.80, Lr = 0.760 k @ 3.0 ft

Design Summary

Max fb/Fb Ratio = **0.140** : 1
fb : Actual : 300.38 psi at 3.000 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.120** : 1
fv : Actual : 34.28 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.54	0.20	0.27				
Right Support	0.83	0.20	0.62				



Max Deflections

Downward L+Lr+S	0.003 in	Downward Total	0.007 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	14421 >480	Total Defl Ratio	6857 >360

Wood Beam Design : Header @ rear wall under GT @ upper floor

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **4x6, Sawn, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

Applied Loads

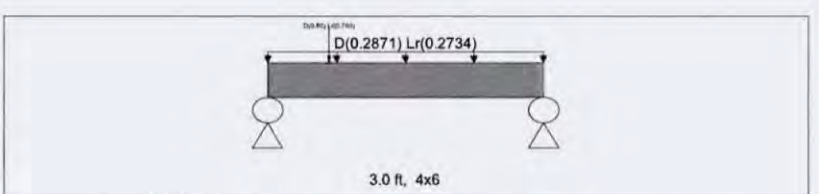
Unif Load: D = 0.0210, Lr = 0.020 k/ft, Trib= 13.670 ft
Point: D = 0.80, Lr = 0.760 k @ 0.670 ft

Design Summary

Max fb/Fb Ratio = **0.733** : 1
fb : Actual : 857.82 psi at 0.880 ft in Span # 1
Fb : Allowable : 1,170.00 psi
Load Comb : +D+Lr+H

Max fv/FvRatio = **0.779** : 1
fv : Actual : 140.27 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+Lr+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	1.05		1.00				
Right Support	0.61		0.58				



Max Deflections

Downward L+Lr+S	0.012 in	Downward Total	0.026 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	2881 >480	Total Defl Ratio	1404 >360

Description : Beams Unit 5 (BEam #1 & 2)

Wood Beam Design : Beams Unit 5 (BEam #1 & 2)

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **3.5x14.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber Wood Grade : 1.5E SCL

Fb - Tension	2,150.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	1,500.0 ksi	Density	35.0 pcf
Fb - Compr	2,150.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	700.0 ksi		

Applied Loads

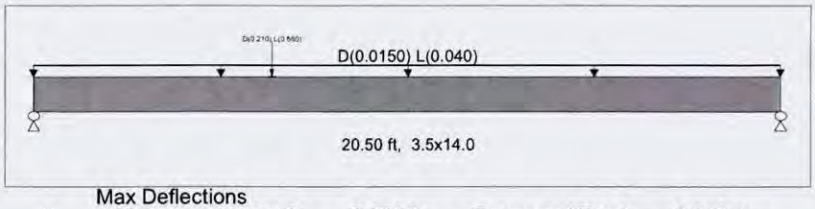
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 1.0 ft
Point: D = 0.210, L = 0.560 k @ 6.50 ft

Design Summary

Max fb/Fb Ratio = **0.289** : 1
fb : Actual : 621.15 psi at 6.560 ft in Span # 1
Fb : Allowable : 2,150.00 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.110** : 1
fv : Actual : 31.40 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.30	0.79					
Right Support	0.22	0.59					



Max Deflections

Downward L+Lr+S	0.254 in	Downward Total	0.349 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	969 >480	Total Defl Ratio	705 >360

Wood Beam Design : Beam #2

Calculations per 2005 NDS, IBC 2006, CBC 2007, ASCE 7-05

BEAM Size : **5.25x18.0, Parallam, Fully Braced**
Using Allowable Stress Design with 2006IBC&ASCE7-05(HSCGI) Load Combinations, Major Axis Bending
Wood Species : Structural Composite Lumber Wood Grade : 2.0E SCL

Fb - Tension	2,775.0 psi	Fc - Prll	1,600.0 psi	Fv	285.0 psi	Ebend- xx	2,000.0 ksi	Density	35.0 pcf
Fb - Compr	2,775.0 psi	Fc - Perp	750.0 psi	Ft	1,000.0 psi	Eminbend - xx	925.0 ksi		

Applied Loads

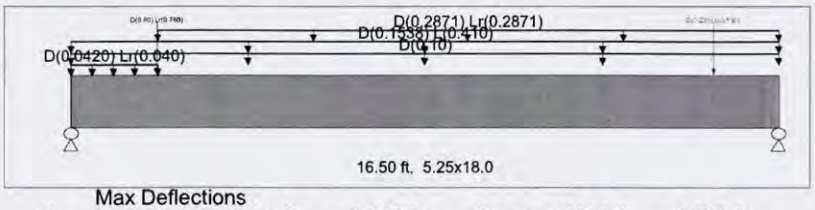
Unif Load: D = 0.0210, Lr = 0.020 k/ft, 0.0 ft to 2.0 ft, Trib= 2.0 ft
Unif Load: D = 0.10 k/ft, Trib= 1.0 ft
Unif Load: D = 0.0150, L = 0.040 k/ft, Trib= 10.250 ft
Unif Load: D = 0.0210, Lr = 0.0210 k/ft, 2.0 to 16.50 ft, Trib= 13.670 ft
Point: D = 0.80, Lr = 0.760 k @ 2.0 ft
Point: D = 0.220, L = 0.590 k @ 15.0 ft

Design Summary

Max fb/Fb Ratio = **0.574** : 1
fb : Actual : 1,592.98 psi at 8.195 ft in Span # 1
Fb : Allowable : 2,775.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max fv/FvRatio = **0.462** : 1
fv : Actual : 131.59 psi at 0.000 ft in Span # 1
Fv : Allowable : 285.00 psi
Load Comb : +D+0.750Lr+0.750L+H

Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	4.72	3.44	2.57				
Right Support	4.73	3.92	2.43				



Max Deflections

Downward L+Lr+S	0.240 in	Downward Total	0.426 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	825 >480	Total Defl Ratio	465 >360

Studs up to and Including 10' - 0" in Height

Table 2308.9.1 of the 2009 IBC lists the maximum height and spacing for wood studs which conform to the limitations of the conventional framing provisions (Section 2308.2). While the design loads and roof spans used in this project do not explicitly meet the conventional framing limitations, it is HSCGI's interpretation that Table 2308.9.1 is applicable for any stud wall with applied loads less than or equal to the worst case loading allowed by the conventional framing provisions (i.e. the loads resulting from roofs, floors, and/or walls spanning the maximum distance and carrying the maximum loads allowed by the limitations listed below).

Limitations (Summary of Section 2308.2):

1. Structure is not more than 3 stories.
2. Plate heights are not greater than 10' - 0".
3.1. Average dead load of combined roof and ceiling, exterior walls, floors and partitions does not exceed 15 psf .
3.2. Live load does not exceed 40 psf.
3.3. Ground snow load does not exceed 50 psf.
4. Wind speed does not exceed 100 mph.
5. Roof truss and rafter spans (between points of vertical supports) are not greater than 40 feet.
6. Structure does not belong to Occupancy Category IV.
7. Irregularity limitation. Limits for irregularities apply to wall bracing, not to Table 2308.9.1.
8. Structure does not fall under DSA-SS or OSHPD 1, 2 or 4.

Determination of Maximum Loads and Spans:

The conventional framing limitations, together with the maximum floor span listed in Table 2308.8(2), have been used to determine the equivalent maximum allowable loads that may be applied to wood wall studs. Below is a list of maximum loads and corresponding maximum spans allowed by section 2308.

Parameter	Roof	Floor	Wall
Dead Load	15 psf	15 psf	15 psf
Span/Height	40 feet	21 feet	10 feet

Table 2308.9.1 allows 10' - 0" tall 2x4 wall studs spaced at 16" o.c. to support one floor, roof and ceiling. Based on the spans and loads listed above, the maximum allowable dead load (DL) on a standard stud wall is as follows:

Exterior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)/2	= 300 plf
Floor	(15psf DL) x (21 foot floor span)/2	= 158 plf
Wall	(15psf DL) x (10 foot wall height)	= 150 plf
		= 608 plf

Interior Bearing Walls:

Roof	(15psf DL) x (40 foot roof span)	= 600 plf
Floor	(15psf DL) x (21 foot floor span)	= 315 plf
		= 915 plf

Wood studs exceeding the height and/or loading criteria listed above are calculated using the design criteria of IBC Chapters 16 and 23.

harris & sloan
CONSULTING GROUP, INC.

Project	Village Walk		
Client	Standard Pacific Home	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Stud Calculations Per 2005 NDS

STUD/POST		**Stud/Post Description**			**Stud/Post Description**		
Height	ft		**19.20**			**9.00**	
Depth/Width (d)	in		5.50			5.50	
Thickness	in		3.00			3.00	
Grade			DF Stud			DF Stud	
O.C. Spacing	in		16.00			16.00	
Repetitive Factor			NDS Repetitive Factor			NDS Repetitive Factor	
Location			exterior - zone 5			interior	
LOADS							
AXIAL LOAD - DL	plf	0.00	0.00	0.00	0.00	0.00	0.00
AXIAL LOAD - LL	plf	0.00	0.00	0.00	0.00	0.00	0.00
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
WIND LOAD (C&C)	psf	5.00	17.24	12.93	5.00	5.00	3.75
Tributary Width	in	16.00	16.00	16.00	16.00	16.00	16.00
Load Duration, Cd		1.15	1.60	1.60	1.15	1.60	1.60
Repetitive Factor, Cr		1.15	1.15	1.15	1.15	1.15	1.15
PROPERTIES							
E (Adjusted)	ksi	1400.0	1400.0	1400.0	1400.0	1400.0	1400.0
E_{min} (Adjusted)	ksi	510.0	510.0	510.0	510.0	510.0	510.0
Fb (Adjusted)	psi	805.0	805.0	805.0	805.0	805.0	805.0
Fcll (Adjusted)	psi	850.0	850.0	850.0	850.0	850.0	850.0
COMPRESSION		DL+LL	DL+W	DL+0.75(LL+W)	DL+LL	DL+W	DL+0.75(LL+W)
E_{min}'	psi	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05	5.1E+05
Le/d		41.9			19.6		
F_{cE}		239	239	239	1087	1087	1087
F*c	psi	978	1360	1360	978	1360	1360
F_{cE}/Fc^*		0.24	0.18	0.18	1.11	0.80	0.80
c		0.80	0.80	0.80	0.80	0.80	0.80
Cp		0.23	0.17	0.17	0.73	0.61	0.61
Fc'	psi	225	230	230	710	829	829
fc	psi	0	0	0	0	0	0
Stress Ratio		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
BENDING							
C_L		1.00	1.00	1.00	1.00	1.00	1.00
M	lb-in	3686.4	12713	9535	810	810	608
Fb'	psi	926	1288	1288	926	1288	1288
fb	psi	244	841	630	54	54	40
Stress Ratio		**0.2633**	**0.6526**	**0.4894**	**0.0578**	**0.0416**	**0.0312**
COMBINED STRESSES							
(fc/F'c)^2		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
fb/Fb'(1-(fc/Fce)		0.2633	0.6526	0.4894	0.0578	0.0416	0.0312
Combined Stress Ratio		**0.2633**	**0.6526**	**0.4894**	**0.0578**	**0.0416**	**0.0312**
DEFLECTION							
Deflection	in	0.350	1.207	0.905	0.017	0.017	0.013
0.7 Deflection	in		0.845	0.634		0.012	0.009
Deflection Limit (L/240)	in	0.960	0.960	0.960	0.450	0.450	0.450
Deflection Ratio		**0.3646**	**0.8802**	**0.6602**	**0.0376**	**0.0263**	**0.0197**

harris & sloan
CONSULTING GROUP, INC.

Project	Village Walk		
Client	Standard Pacific Hc	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Footing Calculations

Soils Engineer

ENGEO, Inc. (San Ramon)
2010 Crow Canyon Pl., Ste. 250
San Ramon, CA 94583

Report #: 6858.200.102
Date: 04/16/2013

Foundation Design Information

Allowable Soil Pressure	=	1000 psf
Retaining Wall Design:		
Friction Factor	=	N/A
Active Pressure	=	N/A pcf
Passive Pressure	=	N/A pcf

Post-Tension Foundation Calculations (expansive soil)

Average Soil Pressure = 1,000 psf

		Center Lift	Edge Lift
Edge Moisture Variation (e_m)	=	5.10 ft	2.70 ft
Differential Soil Movement (y_m)	=	1.50 in	2.00 in

Design Rectangles
R1 = 25.00 ft x 43.00 ft

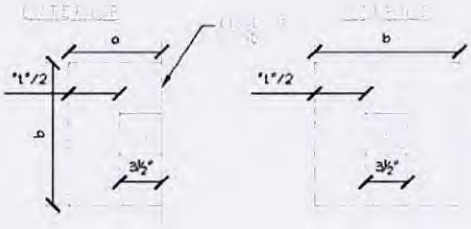
Maximum Point Load Capacity of Slab
Slab Thickness (t) = 12 in
Concrete Compressive Strength (f'c) = 4500 psi

Punching Shear Calculation

$$V_u = \phi V_n$$
$$\phi = 0.85$$
$$V_c = 4\sqrt{f_c}\, b_o t$$
$$V_{allowable} = V_u / 1.7$$

Exterior Condidtion $b_o = 2a+b$ = 34.5 in
Maximum allowable point load = 56 kips

Interior Condidtion $b_o = 4b$ = 62 in
Maximum allowable point load = 100 kips



hscgi limit 10,000# at interior
8000# at exterior

Pad Footing Calculations

Maximum Localized Bearing Pressure = 1,000 psf
Minimum Pad Footing Depth = 12 in

Footing #	Load	Minimum Size	Reinforcing
FTG#4	12250#	42" SQUARE X 18" DEEP	#5 BARS AT 8" OC

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN SUMMARY

Slab Dimensions :	25.00 FT x 43.00 FT x 12.00	Inches
Uniform Thickness Slab : (rounded to the nearest 0.25 inch)	12.00 (11.95)	Inches

Material Properties

Concrete Strength, f'_c :	4,500	PSI
Tendon Strength, F_{pu} :	270	KSI
Tendon Diameter :	1 / 2	Inch

Material Quantities

Concrete Volume :	39.8	Cubic Yards
Prestressing Tendon :	1,008.0	Linear Feet
Number of End Anchorages :	60	

In the LONG direction ...

Number of Slab Tendons :	11	
Slab Tendon Spacing :	2.30	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

In the SHORT direction ...

Number of Slab Tendons :	19	
Slab Tendon Spacing :	2.28	Feet O.C.
Slab Tendon Centroid :	6.00	Inches from top of slab

Selected Variables

	Short Direction	Long Direction
Cross Sectional Area ($Inch^2$) :	6,192	3,600
Moment of Inertia ($Inch^4$) :	74,304	43,200
Section Modulus, Top and Bottom ($Inch^3$) :	12,384	7,200
Beta Distance (Feet) :	8.56	7.48

Jacking Force : 33.05 KIPS

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - DESIGN COMPLIANCE SUMMARY

The **BOLD** values exceed allowable or are less than minimum limits by the percentage indicated:

RIBBED FOUNDATION COMPLIANCE :

RIBBED FOUNDATION IN COMPLIANCE.

CENTER LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

EDGE LIFT MODE :

ALL VALUES WITHIN ALLOWABLE LIMITS.

PTISlab 3.5

Geostructural Tool Kit, Inc.

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS

Uniform Thickness Slab **12.00 (11.95) Inches**
(rounded to nearest 0.25 inch)

Prestress Summary

Subgrade Friction calculated by method prescribed in PTI Manual

	Short Direction	Long Direction
Number of Tendons	19	11
Spacing of Tendons (FT)	2.28	2.30
Center of Gravity of Concrete (from top of slab) (Inch)	6.00	6.00
Center of Gravity of Tendons (from top of slab) (Inch)	6.00	6.00
Eccentricity of Prestressing (Inch)	0.00	0.00
Minimum Effective Prestress Force (K)	447.4	234.4
Beta Distance Effective Prestress Force (K)	465.8	272.5
Minimum Effective Prestress (PSI)	72	65
Beta Distance Effective Prestress (PSI)	75	76

Moment Analysis - Center Lift Mode

Maximum Moment, Short Direction 7.61 FT-K/FT
Maximum Moment, Long Direction 6.92 FT-K/FT

	Tension in Top Fiber (KSI) Short Direction	Tension in Top Fiber (KSI) Long Direction		Compression in Bottom Fiber (KSI) Short Direction	Compression in Bottom Fiber (KSI) Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.242	-0.213	Actual Stress	0.392	0.364

Stiffness Analysis - Center Lift Mode

Based on a Stiffness Coefficient of 480

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	74,304	43,200
Required Moment of Inertia ($Inch^4$)	31,408	28,552
Required Moment of Inertia controlled by	Width	Length

Shear Analysis - Center Lift Mode

Maximum Shear, Short Direction 1.84 K/FT
Maximum Shear, Long Direction 1.39 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	13	10

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Geotechnical Report : Engeo Report Date : 4/16/13
Report Number : 6858.200.102

UNIFORM THICKNESS FOUNDATION - RESULTS OF ANALYSIS continued

Cracked Section Analysis - Center Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	247.5	143.3
0.5 Moment (FT-K)	163.6	86.5

Moment Analysis - Edge Lift Mode

Maximum Moment, Short Direction	2.42 FT-K/FT
Maximum Moment, Long Direction	2.44 FT-K/FT

	Tension in Bottom Fiber (KSI) Short Direction	Long Direction		Compression in Top Fiber (KSI) Short Direction	Long Direction
Allowable Stress	-0.402	-0.402	Allowable Stress	2.025	2.025
Actual Stress	-0.025	-0.026	Actual Stress	0.176	0.177

Stiffness Analysis - Edge Lift Mode

Based on a Stiffness Coefficient of 960

	Short Direction	Long Direction
Available Moment of Inertia ($Inch^4$)	74,304	43,200
Required Moment of Inertia ($Inch^4$)	19,942	20,109
Required Moment of Inertia controlled by	Width	Length

Shear Stress Analysis - Edge Lift Mode

Maximum Shear, Short Direction	1.35 K/FT
Maximum Shear, Long Direction	1.40 K/FT

	Short Direction	Long Direction
Allowable Shear Stress (PSI)	176	176
Actual Shear Stress (PSI)	9	10

Cracked Section Analysis - Edge Lift Mode

	Short Direction	Long Direction
Cracked Section Capacity (FT-K)	247.5	143.3
0.5 Moment (FT-K)	51.9	30.4

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

Geotechnical Report : Engeo

SUMMARY OF INPUT DATA

Material Properties

Concrete Strength, f'_c :	4,500.0	PSI
Concrete Creep Modulus, E_c :	1,500,000.0	PSI
Concrete Unit Weight :	145.0	PCF
Tendon Strength, F_{pu} :	270.0	KSI
Tendon Diameter :	1 / 2	Inch

Slab Properties

Rectangle Label : R1 (25x43)

Rectangle Geometry : 25.00 FT x 43.00 FT x 4.00 Inches

	Short Direction	Long Direction
Minimum Permissible Prestress :	65.00 PSI	55.00 PSI

Beam Properties

	Short Direction		Long Direction		
	Type I	Type II	Type I	Type II	
Quantity :	42	0	24	0	
Depth :	12.0	0.0	12.0	0.0	Inches
Width :	12.0	0.0	12.0	0.0	Inches
Tendons :	0	0	0	0	
Cover :	0.00	0.00	0.00	0.00	Inches

Average beam spacing used in analysis

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

SUMMARY OF INPUT DATA - Continued

Soil Properties

Allowable Bearing Pressure : 1,000.0 PSF

	Center Lift	Edge Lift
Edge Moisture Variation Distance, e_m :	8.00 Feet	5.00 Feet
Differential Soil Movement, y_m :	2.500 Inches	0.700 Inches

Load, Deflection and Subgrade Properties

Slab Loading

Uniform Superimposed Total Load : 40.00 PSF
Total Perimeter Load : 1,250.00 PLF
Smallest Load Intensity : 500.00 PLF

Stiffness Coefficients

Center Lift : 480
Edge Lift : 960

Prestress Calculation

Subgrade Friction calculated by method prescribed in PTI Manual

Prestress Loss : 15.0 KSI

Subgrade Friction Coefficient : 0.75

Project Title : Village Walk - Plan 5
Project Engineer : JG:wh

Geotechnical Report : Engeo

Project Number : HS13068
Project Date : June 20, 2013
Report Date : 4/16/13
Report Number : 6858.200.102

PTI EXCEPTION SUMMARY

The following elements of the design are not in strict compliance with the *Design of Post-Tensioned Slabs-On-Ground* 3rd Edition manual published by the Post-Tensioning Institute.

NO PTI EXCEPTIONS EXIST

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P1 **2nd Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.67	15.67	psf
Above Plate:			
Wall Area Above Plate	44	0	ft^2
Average Elevation	22.2	22.2	ft
Pressure @ Elevation	15.94	15.94	psf
Wall Load	1600	0	#
Mean Roof Height (h)	22.2	22.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	8.12	8.12	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **1600 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	14.50 ft
Net Length of Walls	=	8.17 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00

			Shear @ T&B of wall
Wind Wall Shear	=	**196 plf**	**110 plf**
Seismic Wall Shear	=	**157 plf**	**88 plf**
1.25 Seismic Shear*	=	**196 plf**	

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Length of Diaphragm	21.3	21.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1579	W
Rho	=	1.00	
Diaphragm Load	1281	0	#
Additional Load	=		#

Total Seismic Load = **1281 #**

1.25 Total Load* = **1601 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.3	21.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1600#	0#	
Diaphgram Shear	75 plf (W)	0 plf (E)	

Total Diaphragm Length	=	21 ft
Total Diaphragm Shear	=	75 plf (W)
Shear for drag & collectors*	=	75 plf (E)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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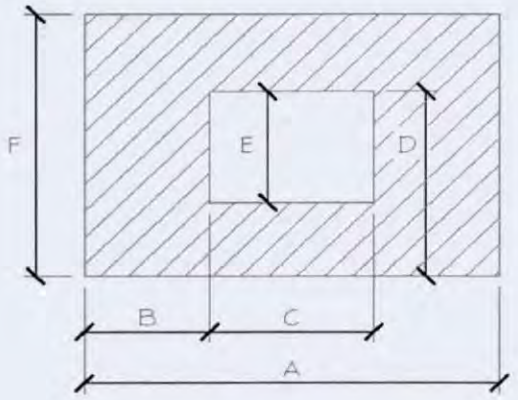
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at Opening Calculation

P1 **2nd Floor; Rear; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 14.50 ft.
Dist from left end of wall to 1st opening	B	= 4.50 ft.
Opening Width	C	= 6.33 ft.
Net Length		= 8.17 ft.
Opening Header Height	D	= 7.50 ft.
Opening Height	E	= 5.00 ft.
Plate Height	F	= 9.00 ft.



LOADS

Wind Load (W)	1600#
Seismic Load (E)	1281#
DL Trib Length Roof	12 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	110 plf	88 plf
Piers	196 plf	157 plf

Use Shear Wall Type **3**

STRAP CALCULATIONS

Max. Load @ Opening = 385 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-399#	-1058#
Left Pier	1077#	862#
Right Pier	1077#	862#
Bottom	276#	221#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

	Total Uplift	Holdown
Left End	484# (W)	NONE
L King	225# (E)	NONE
R King	225# (E)	NONE
Right End	484# (W)	NONE

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P2 **2nd Floor; Front; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.67	15.67	psf
Above Plate:			
Wall Area Above Plate	44	0	ft^2
Average Elevation	22.2	22.2	ft
Pressure @ Elevation	15.94	15.94	psf
Wall Load	1600	0	#
Mean Roof Height (h)	22.2	22.2	
Roof Area	0	0	ft^2
Pressure @ Elevation	8.12	8.12	psf
Roof Load	0	0	#
Additional Load	=		#

Total Wind Load = **1600 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	18.00 ft
Net Length of Walls	=	13.00 ft
Maximum H:W Ratio	=	1.94
Seismic H:W Adjustment	=	1.00

			Shear @ T&B of wall
Wind Wall Shear	=	**123 plf**	**89 plf**
Seismic Wall Shear	=	**99 plf**	**71 plf**
1.25 Seismic Shear*	=	**123 plf**	

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Length of Diaphragm	21.3	21.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1579	W
Rho	=	1.00	
Diaphragm Load	1281	0	#
Additional Load	=		#

Total Seismic Load	=	**1281 #**
1.25 Total Load*	=	**1601 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.3	21.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1600#	0#	
Diaphgram Shear	75 plf (W)	0 plf (E)	

Total Diaphragm Length	=	21 ft
Total Diaphragm Shear	=	75 plf (W)
Shear for drag & collectors*	=	75 plf (E)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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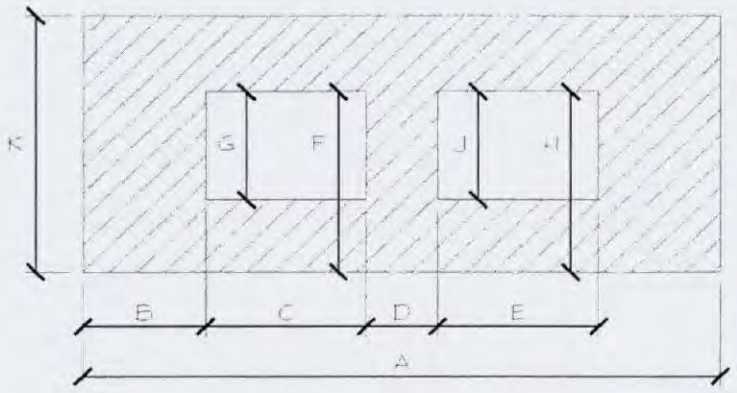
Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall w/ Force Transfer at (2) Openings Calculation

P2 **2nd Floor; Front; Left to Right**

SHEARWALL GEOMETRY

Total Length	A	= 18.00 ft.
Dist from left end of wall to 1st opening	B	= 4.17 ft.
1st Opening Width	C	= 3.00 ft.
Distance b/t Openings	D	= 6.00 ft.
2nd Opening Width	E	= 2.00 ft.
Net Length		= 13.00 ft.
1st Opening Header Height	F	= 8.00 ft.
1st Opening Height	G	= 5.00 ft.
2nd Opening Header Height	H	= 8.00 ft.
2nd Opening Height	J	= 5.00 ft.
Plate Height	K	= 9.00 ft.



LOADS

Wind Load (W)	1600#
Seismic Load (E)	1281#
DL Trib Length Roof	2 ft
DL Trib Length Floor	0 ft

SHEAR CALCULATIONS

	Wind	Seismic
Full Width	89 plf	71 plf
Piers	123 plf	99 plf

Use Shear Wall Type **1**

STRAP CALCULATIONS

Max. Load @ Opening = 143 #
Use (1) Simpson CS16 Strap
Extend strap full length of opening

PIER UPLIFT CALCULATIONS

	Wind	Seismic
Top	-511#	-539#
Left Pier	677#	542#
Middle Pier	677#	542#
Right Pier	677#	542#
Bottom	267#	213#

HOLDOWN CALCULATIONS AND SPECIFICATIONS

Additional Uplift Loads

Load	Location

		Total Uplift	Holdown
	Left End	245# (W)	NONE
Left Opening	L King	209# (E)	NONE
	R King	209# (E)	NONE
Right Opening	L King (2)	209# (E)	NONE
	R King (2)	209# (E)	NONE
	Right End	245# (W)	NONE

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P3 **2nd Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	7	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.21	15.21	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	22.2	22.2	ft
Pressure @ Elevation	15.48	15.48	psf
Wall Load	730	0	#
Mean Roof Height (h)	22.2	22.2	
Roof Area	75	0	ft^2
Pressure @ Elevation	8.54	8.54	psf
Roof Load	638	0	#
Additional Load	=		#

Total Wind Load = **1368 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	6.00 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**228 plf**
Seismic Wall Shear	=	**213 plf**
1.25 Seismic Shear*	=	**267 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Length of Diaphragm	25.3	25.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1579	W
Rho	=	1.00	
Diaphragm Load	1281	0	#
Additional Load	=		#

Total Seismic Load = **1281 #**

1.25 Total Load* = **1601 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	25.3	25.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1368#	0#	
Diaphgram Shear	54 plf (W)	0 plf (E)	

Total Diaphragm Length	=	25 ft
Total Diaphragm Shear	=	54 plf (W)
Shear for drag & collectors*	=	63 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
6.00 ft.	2.0 ft.						1867# (W)	1867# (W)	2	2

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P4 **2nd Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	7	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	19.2	19.2	ft
Pressure @ Elevation	15.21	15.21	psf
Above Plate:			
Wall Area Above Plate	0	0	ft^2
Average Elevation	22.2	22.2	ft
Pressure @ Elevation	15.48	15.48	psf
Wall Load	730	0	#
Mean Roof Height (h)	22.2	22.2	
Roof Area	75	0	ft^2
Pressure @ Elevation	8.54	8.54	psf
Roof Load	638	0	#
Additional Load	=		#

Total Wind Load = **1368 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**171 plf**
Seismic Wall Shear	=	**160 plf**
1.25 Seismic Shear*	=	**200 plf**

USE SHEAR WALL TYPE **1**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Length of Diaphragm	25.3	25.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.1579	W
Rho	=	1.00	
Diaphragm Load	1281	0	#
Additional Load	=		#

Total Seismic Load = **1281 #**

1.25 Total Load* = **1601 #**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	25.3	25.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1368#	0#	
Diaphgram Shear	54 plf (W)	0 plf (E)	

Total Diaphragm Length	=	25 ft
Total Diaphragm Shear	=	54 plf (W)
Shear for drag & collectors*	=	63 plf (E)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
8.00 ft.	2.0 ft.						1292# (W)	1292# (W)	1	1

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P5 **1st Floor; Rear; Left to Right**

See calculations next page(s)

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	72	0	ft^2
Average Elevation	14.7	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1908	0	#
Mean Roof Height (h)	9.0	9.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.44	9.44	psf
Roof Load	0	0	#
Add'l Load (From P1)	=	1600	#
Total Wind Load	=	**3508**	**#**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Length of Diaphragm	21.3	21.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0740	W
Rho	=	1.00	
Diaphragm Load	600	0	#
Add'l Load (From P1)	=	1281	#
Total Seismic Load	=	**1881**	**#**
1.25 Total Load*	=	**2351**	**#**

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.3	21.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1908#	0#	
Diaphgram Shear	89 plf (W)	0 plf (E)	
Total Diaphragm Length	=	21	ft
Total Diaphragm Shear	=	89 plf (W)	
Shear for drag & collectors*	=	89 plf (W)	

Shear Wall Summary

See manufactured shearwalls on next page(s)

Shear Wall Specifications

Wall	DL Tributary Length		Additional Uplift Loads				Total Uplift		Holdown	Holdown
Length	Roof	Floor	Load	Location	Load	Location	Left	Right	Left	Right

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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations For Simpson Steel Strong-Wall

P5 **1st Floor; Rear; Left to Right**

See load calculations on previous page

Total Wind Load = **3508 #** **Total Seismic Load** = **1881 #**

Steel Strong-Wall Capacities Per ICC ESR-1679

Panels Used and Allowable Load Calculations

			Load Capacity (lb)		Drift @ Capacity (in)	
#	Type	Axial Load (	Wind	Seismic	Wind	Seismic
1	SSW24x7	7500	5730	5495	0.31	0.29

Total Load Capacity	=	5730	5495	
Pecent of Capacity Used	=	61%	34%	TOTAL CAPACITY OK

Distribution of Loads by Relative Stiffness

		Stiffness (lb/in)		Distributed Loads (lb)		
#	Type	Wind	Seismic	Wind	Seismic	
1	SSW24x7	18484	18948	3508	1881	LOAD OK

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P6 **1st Floor; Front; Left to Right**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	3.5	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Above Plate:			
Wall Area Above Plate	72	0	ft^2
Average Elevation	14.7	9.0	ft
Pressure @ Elevation	14.77	14.77	psf
Wall Load	1908	0	#
Mean Roof Height (h)	9.0	9.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.44	9.44	psf
Roof Load	0	0	#
Add'l Load (From P2)	=	1600	#

Total Wind Load = **3508 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	10.00 ft
Maximum H:W Ratio	=	0.90
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**351 plf**
Seismic Wall Shear	=	**188 plf**
1.25 Seismic Shear*	=	**235 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	25.34	0	ft
Length of Diaphragm	21.3	21.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0740	W
Rho	=	1.00	
Diaphragm Load	600	0	#
Add'l Load (From P2)	=	1281	#
Total Seismic Load	=	**1881**	#
1.25 Total Load*	=	**2351**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	21.3	21.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1908#	0#	
Diaphgram Shear	89 plf (W)	0 plf (E)	
Total Diaphragm Length	=	21	ft
Total Diaphragm Shear	=	89 plf (W)	
Shear for drag & collectors*	=	89 plf (W)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	DL Tributary Length Floor	Additional Uplift Loads Load	Additional Uplift Loads Location	Additional Uplift Loads Load	Additional Uplift Loads Location	Total Uplift Left	Total Uplift Right	Holdown Left	Holdown Right
10.00 ft.		2.0 ft.					2913# (W)	2913# (W)	**19**	**19 corner**

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P7 **1st Floor; Left; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	0	0	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.34	14.34	psf
Above Plate:			
Wall Area Above Plate	61	0	ft^2
Average Elevation	14.7	9.0	ft
Pressure @ Elevation	14.34	14.34	psf
Wall Load	1561	0	#
Mean Roof Height (h)	9.0	9.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.75	9.75	psf
Roof Load	0	0	#
Add'l Load (From P3)	=	1368	#

Total Wind Load = **2929 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	6.00 ft
Maximum H:W Ratio	=	1.50
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**488 plf**
Seismic Wall Shear	=	**313 plf**
1.25 Seismic Shear*	=	**392 plf**

USE SHEAR WALL TYPE **4**

Seismic (E) Load Calculations

	Area 1:		Area 2:	
Width of Diaphragm	21.34		0	ft
Length of Diaphragm	25.3		25.3	ft
Additional Diaphragm Area	0.		0.	ft^2
Building Dead Load	30		30	psf
V	=		0.0740	W
Rho	=		1.00	
Diaphragm Load	600		0	#
Add'l Load (From P3)	=		1281	#
Total Seismic Load	=		**1881**	#
1.25 Total Load*	=		**2351**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:		Area 2:	
Length of Diaphragm	25.3		25.3	ft
Sheathing Thickness	23/32		23/32	in
Diaphragm Case (1 or 3)	3		3	
Additional Load in Diaphragm	0#		0#	
Total Load in Diaphragm	1561#		0#	
Diaphgram Shear	62 plf	(W)	0 plf	(E)
Total Diaphragm Length	=		25	ft
Total Diaphragm Shear	=		62 plf	(W)
Shear for drag & collectors*	=		62 plf	(W)

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
6.00 ft.		1.0 ft.	1867#	0.00	1867#	6.00	6434# (W)	6434# (W)	**19**	**19**

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Project	Village Walk		
Client	Standard Pacific Homes	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Lateral Analysis Calculations

P8 **1st Floor; Right; Front to Back**

Wind (W) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Additional Width	0	0	ft
Avg. Roof Ht abv Plate	7	8	ft
Below Plate:			
Plate Height	9.0	9.0	ft
Average Elevation	9.0	9.0	ft
Pressure @ Elevation	14.34	14.34	psf
Above Plate:			
Wall Area Above Plate	61	0	ft^2
Average Elevation	14.7	9.0	ft
Pressure @ Elevation	14.34	14.34	psf
Wall Load	1561	0	#
Mean Roof Height (h)	9.0	9.0	
Roof Area	0	0	ft^2
Pressure @ Elevation	9.75	9.75	psf
Roof Load	0	0	#
Add'l Load (From P4)	=	1368	#

Total Wind Load = **2929 #**

Shear Wall Summary

# of Shear Walls	=	1
Total Length of Walls	=	8.00 ft
Maximum H:W Ratio	=	1.13
Seismic H:W Adjustment	=	1.00
Wind Wall Shear	=	**366 plf**
Seismic Wall Shear	=	**235 plf**
1.25 Seismic Shear*	=	**294 plf**

USE SHEAR WALL TYPE **3**

Seismic (E) Load Calculations

	Area 1:	Area 2:	
Width of Diaphragm	21.34	0	ft
Length of Diaphragm	25.3	25.3	ft
Additional Diaphragm Area	0.	0.	ft^2
Building Dead Load	30	30	psf
V	=	0.0740	W
Rho	=	1.00	
Diaphragm Load	600	0	#
Add'l Load (From P4)	=	1281	#
Total Seismic Load	=	**1881**	#
1.25 Total Load*	=	**2351**	#

*25% increase per ASCE 12.3.3.4 for drag & collectors

Diaphragm Calculations

	Area 1:	Area 2:	
Length of Diaphragm	25.3	25.3	ft
Sheathing Thickness	23/32	23/32	in
Diaphragm Case (1 or 3)	3	3	
Additional Load in Diaphragm	0#	0#	
Total Load in Diaphragm	1561#	0#	
Diaphgram Shear	62 plf (W)	0 plf (E)	
Total Diaphragm Length	=	25	ft
Total Diaphragm Shear	=	62 plf (W)	
Shear for drag & collectors*	=	62 plf (W)	

Shear Wall Specifications

Wall Length	DL Tributary Length Roof	Floor	Additional Uplift Loads Load	Location	Load	Location	Total Uplift Left	Right	Holdown Left	Holdown Right
8.00 ft.		1.0 ft.	1292#	0.00	1292#	8.00	4513# (W)	4513# (W)	17 interior	17 interior

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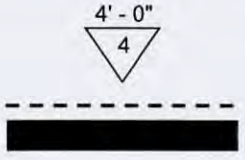
Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Shear Wall Table

Type	*Wind*	*Seismic*	*Description*
1	254.8	182	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 6" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
2	350	266	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 4" O.C. EDGE AND 12" O.C. FIELD. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
3	480.2	343	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X OR (2) 2X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
4	600	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. MAX. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
5	627.2	448	3/8" APA RATED SHEATHING ONE FACE WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
12	754.6	539	15/32" APA RATED SHEATHING ONE FACE WITH 10d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
7	960.4	686	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 3" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.
8	1254.4	896	3/8" APA RATED SHEATHING TWO FACES WITH 8d COMMON NAILS AT 2" O.C. EDGE AND 12" O.C. FIELD. INSTALL MINIMUM 3X NOMINAL FRAMING MEMBERS AT ADJOINING PANEL EDGES WITH STAGGERED NAILING. HOLDOWNS AS SPECIFIED IN CALCULATIONS.

NOTES:

1. Shearwalls are designated on the plans by a triangle symbol surrounding the shearwall type.
2. Shearwall length is indicated above the shearwall callout and is shown graphically with shading & a dashed line.
3. See anchor bolt calculations for required anchor spacing.



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Project	Village Walk		
Client	Standard Pacific Homes -	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

Simpson Holdown Table

	Wind		*Seismic*		
Type	*Typ*	*End*	*Typ*	*End*	***Description***
NONE	500	500	500	500	Below limit
1	1705	1705	1705	1705	CS16 STRAP, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2	3410	3410	3410	3410	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
3	4585	4585	4585	4585	CMSTC16 STRAP, 23" MINIMUM END SPAN, CLEAR SPAN VARIES.
4	5860	5860	5860	5860	MSTC66 STRAP, 18" MAXIMUM CLEAR SPAN.
1A	942	942	942	942	CS16 STRAP, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
1B	1884	1884	1884	1884	(2) CS16 STRAPS, 8" MINIMUM END SPAN, CLEAR SPAN VARIES.
2A	3300	3300	3300	3300	(2) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
2B	4950	4950	4950	4950	(3) CS16 STRAPS, 14" MINIMUM END SPAN, CLEAR SPAN VARIES.
9	4755	0	3400	0	STHD10 HOLDOWN TO MINIMUM 4X POST.
17	4565	4470	3740	3325	HDU4 HOLDOWN TO MINIMUM 4X POST W/ SSTB24/24
19	6970	6970	6970	6970	HDU8 HOLDOWN TO MINIMUM 4X POST W/ SSTB28/34 ANCHOR.
19A	7870	7870	7870	7315	HDU8 HOLDOWN TO MINIMUM 4X6 POST W/ SSTB28/34 ANCHOR.
20	9535	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X6 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
20A	10470	9355	8795	7855	HDU11 HOLDOWN TO MINIMUM 4X8 POST W/ SB1X30 @ MONO POUR & 1" ANCHOR ROD @ 2-POUR
21	14390	14390	14390	14390	HDU14 HOLDOWN TO MINIMUM 4X8 POST W/ 1" ANCHOR ROD.
16	19070	19070	19070	19070	HD19 HOLDOWN TO MINIMUM 4X10 OR 6X6 POST W/ 1 1/4" ANCHOR ROD.

NOTE: Holdowns are designated on the plans by a diamond symbol surrounding the holdown type, e.g.:



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Project	Village Walk		
Client	Standard Pacific Homes - E	**Plan #**	5
Job #	HS13068	**Designer:**	RM:jg
Date	7/8/13		

CALCULATIONS FOR ANCHOR BOLTS & MASA* ANCHORS AT SHEARWALLS

*MASA anchor values per ESR-2555, Issued November 2010

Allowable loads per NDS/hardware values (1.6 load duration factor):

Condition	1/2" ϕ A.B.	MASA
2X sill plate; sw capacity ≤ 350 plf	650#	1515#
2X sill plate; sw capacity b/t 350 & 600 plf	325#	758#
3X sill plate	770#	1215#

Allowable Shear Loads per ACI 318-08 Appendix D (assuming uncracked concrete at service loads):

		1/2" ϕ A.B.		MASA	
Wind:	$(F^*V_{nx}) / 1.6 =$	1064#	Wind:	2X sill = 1388#	
				3X sill = 1109#	
Seismic:	$(F^*V_{nx}) * 0.7 =$	1192#	Seismic:	2X sill = 1138#	
				3X sill = 931#	

Seismic (in SDC C, D, E and F):
$(0.75*F^*_{Vnx}) * 0.7 =$ 894#

		1/2" AB	MASA
SW 1 (2x sill)	NDS	49.0" oc	71.4" oc
255plf (W)	ACI (W)	50.1" oc	65.3" oc
182plf (E)	ACI (E)	58.9" oc	75.0" oc
	per plan	**48" oc**	**48" oc**

		1/2" AB	MASA
SW 2 (2x sill)	NDS	35.7" oc	51.9" oc
350plf (W)	ACI (W)	36.5" oc	47.6" oc
266plf (E)	ACI (E)	40.3" oc	51.3" oc
	per plan	**35" oc**	**35" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW3	NDS	13.0" oc	18.9" oc	30.8" oc	30.4" oc
480plf (W)	ACI (W)	26.6" oc	34.7" oc	26.6" oc	27.7" oc
343plf (E)	ACI (E)	31.3" oc	39.8" oc	31.3" oc	32.6" oc
	per plan	**12" oc**	**12" oc**	**20" oc**	**20" oc**

		2x sill plate		3x sill plate	
		1/2" AB	MASA	1/2" AB	MASA
SW4	NDS	10.4" oc	15.2" oc	24.6" oc	24.3" oc
600plf (W)	ACI (W)	21.3" oc	27.8" oc	21.3" oc	22.2" oc
448plf (E)	ACI (E)	23.9" oc	30.5" oc	23.9" oc	24.9" oc
	per plan	**10" oc**	**10" oc**	**16" oc**	**16" oc**

		1/2" AB	MASA
SW 5 (3x sill)	NDS	23.6" oc	23.2" oc
627plf (W)	ACI (W)	20.4" oc	21.2" oc
448plf (E)	ACI (E)	23.9" oc	24.9" oc
	per plan	**20" oc**	**20" oc**

		1/2" AB	MASA
SW 7 (3x sill)	NDS	15.4" oc	15.2" oc
960plf (W)	ACI (W)	13.3" oc	13.9" oc
686plf (E)	ACI (E)	15.6" oc	16.3" oc
	per plan	**13" oc**	**13" oc**

		1/2" AB	MASA
SW 8 (3x sill)	NDS	11.8" oc	11.6" oc
1254plf (W)	ACI (W)	10.2" oc	10.6" oc
896plf (E)	ACI (E)	12.0" oc	12.5" oc
	per plan	**10" oc**	**10" oc**

		1/2" AB	MASA
SW 12 (3x sill	NDS	19.6" oc	19.3" oc
755plf (W)	ACI (W)	16.9" oc	17.6" oc
539plf (E)	ACI (E)	19.9" oc	20.7" oc
	per plan	**12" oc**	**12" oc**

GENERAL INFORMATION					
01	Project Name	Village Walk Plan5			
02	Calculation Description	Plan 3			
03	Project Location	Some St.			
04	City	Cotati, CA	06	Standards Version	Compliance 2016
05	Zip Code		07	Compliance Manager Version	BEMCmpMgr 2013.3c (710)
08	Climate Zone	CZ2	09	Software Version	CBECC-Res 2013.3c (710)
10	Building Type	Multifamily	11	Front Orientation (deg/Cardinal)	Cardinal
12	Project Scope	Newly Constructed	13	Number of Dwelling Units	1
14	Total Cond. Floor Area (FT^2)	511	15	Number of Zones	1
16	Slab Area (FT^2)	45	17	Number of Stories	2
18	Addition Cond. Floor Area	N/A	19	Natural Gas Available	Yes
20	Addition Slab Area (FT^2)	N/A	21	Glazing Percentage (%)	20.0%

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

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RECEIVED
MAR 24 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

ENERGY USE SUMMARY				
Energy Use (kTDV/ft²-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	22.57	16.93	5.64	25.0%
Space Cooling	25.80	19.35	6.45	25.0%
IAQ Ventilation	2.76	2.76	0.00	0.0%
Water Heating	40.32	23.31	17.01	42.2%
PV Credit	----	0.00	0.00	----
North Facing Compliance Total	**91.45**	**62.36**	**29.10**	**31.8%**
Space Heating	22.57	15.72	6.85	30.4%
Space Cooling	25.80	29.80	-4.00	-15.5%
IAQ Ventilation	2.76	2.76	0.00	0.0%
Water Heating	40.32	23.31	17.01	42.2%
PV Credit		0.00	0.00	
East Facing Compliance Total	**91.45**	**71.59**	**19.86**	**21.7%**
Space Heating	22.57	17.08	5.49	24.3%
Space Cooling	25.80	19.38	6.42	24.9%
IAQ Ventilation	2.76	2.76	0.00	0.0%
Water Heating	40.32	23.31	17.01	42.2%
PV Credit	----	0.00	0.00	----
South Facing Compliance Total	**91.45**	**62.53**	**28.92**	**31.6%**
Space Heating	22.57	20.35	2.22	9.8%
Space Cooling	25.80	24.66	1.14	4.4%
IAQ Ventilation	2.76	2.76	0.00	0.0%
Water Heating	40.32	23.31	17.01	42.2%
PV Credit	----	0.00	0.00	----
West Facing Compliance Total	**91.45**	**71.08**	**20.37**	**22.3%**

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REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- **Cool roof**
- **Ceiling has high level of insulation**
- **Exposed slab floor in conditioned zone**

HERS FEATURE SUMMARY

The following is a summary of the features that must be field verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building components tables below.

Building-level Verifications:
- **High Quality Insulation Installation (QII)**
- **IAQ mechanical ventilation**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified EER**
- **Refrigerant Charge**
- **Fan Efficacy Watts/CFM**

HVAC Distribution System Verifications:
- **Duct Sealing**
- **Low-leakage Air Handling Unit**

Domestic Hot Water System Verifications:
- **-- None --**

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ENERGY DESIGN RATING

This is the sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building (Energy Budget) and the annual TDV energy consumption for lighting and components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics) and accounting for the annual TDV energy offset by an on-site renewable energy system.

	Reference Energy Use	Energy Design Rating	Margin	Percent Improvement
Total Energy (kTDV/f2-yr)*	**194.78**	**174.92**	**19.86**	**10.2%**

* includes calculated Appliances and Miscellaneous Energy Use (AMEU)

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	**Conditioned Floor Area (sf)**	**Number of Dwelling Units**	**Number of Bedrooms**	**Number of Zones**	**Number of Ventilation Cooling Systems**	**Number of Water Heating Systems**
Village Walk Plan5	511	1	1	1	0	1

ZONE INFORMATION				
01	02	03	04	05
Zone Name	Zone Type	Zone Floor Area (ft^2)	Avg. Ceiling Height	Number of Dwelling Units
House	Conditioned	511	9	1

DWELLING UNIT INFORMATION		
01	02	03
Dwelling Unit Name	Dwelling Unit Type	Zone
DwellingUnit 1 (1/1)	DwellingUnitType 1	House

DWELLING UNIT TYPES						
01	02	03	04	05	06	07
Name	CFA (ft2)	Number of Bedrooms	Number in Building	Space Conditioning System Name (Count)	DHW System Name	IAQ Vent Fan Name
DwellingUnit Type 1	511	1	1	Split 14 12:Furn 80:Attic Default:HVAC Fan 1:1 (1)	Water Heater	Default Minimum IAQ Fan

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OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft^2)**	**Window Area (ft^2)**	**Tilt (deg)**
Front 2x6 Siding	House	R19 Wall	70	Front	153	10	90
Ceiling (below attic) 1	House	R38 Ceiling below attic			875		
Ceiling (at FAU)	House	R19 Ceiling below attic			60		
Interior Wall 2x4	House>>Garage	Gar House R13			102		
Interior Wall 2x6	House>>Garage	Gar House R19			168		
Interior Floor 1	House>>Garage	Garage Ceiling R19			185		
Front 2x6	House	R19 R4 Stucco Wall	70	Front	90	20	90
Front 2x4	House	R13 R4 Stucco Wall	70	Front	102	15	90
Left 2x4 Siding	House	R 13 Wall	160	Left	41	0	90
Left 2x4	House	R13 R4 Stucco Wall	160	Left	228	12	90
Back 2x4	House	R13 R4 Stucco Wall	250	Back	193	45	90
Gwall Right	Garage	Garage Ext Wall	340	Right	189	0	90
Gwall Left	Garage	Garage Ext Wall	160	Left	189	0	90
Gwall Front	Garage	Garage Ext Wall	70	Front	41	0	90
Gcell	Garage	R0 CigBlwAttic Cons			0.0001		
Gwall Back	Garage	Garage Ext Wall	250	Back	194	0	90

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ATTIC

01	02	03	04	05	06	07	08
Name	**Construction**	**Type**	**Roof Rise**	**Roof Reflectance**	**Roof Emittance**	**Radiant Barrier**	**Cool Roof**
Attic	Asphalt RB Roof	Ventilated	6	0.2	0.85	Yes	Yes

WINDOWS

01	02	03	04	05	06	07	08	09	10
Name	Type	Surface (Orientation-Azimuth)	Width (ft)	Height (ft)	Multiplier	Area (ft^2)	U-factor	SHGC	Exterior Shading
00a Entry	Window	Front 2x6 Siding (Front 70)	2.0	5.0	1	10.0	0.31	0.29	Insect Screen (default)
00b Stair	Window	Front 2x6 (Front-70)	2.0	5.0	1	10.0	0.35	0.29	Insect Screen (default)
00c Stair	Window	Front 2x6 (Front-70)	2.0	5.0	1	10.0	0.35	0.29	Insect Screen (default)
00d Mbed	Window	Front 2x4 (Front 70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00a Kitchen	Window	Left 2x4 (Left 160)	3.0	4.0	1	12.0	0.31	0.29	Insect Screen (default)
00b Kitchen	Window	Back 2x4 (Back-250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00c Great	Window	Back 2x4 (Back 250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00d Great	Window	Back 2x4 (Back 250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)

DOORS

01	02	03	04
Name	Side of Building	Area (ft^2)	U-factor
FrDr	Left 2x4-Siding	28.0	0.50
FrDr-2	Gwall Front	22.0	0.50
GDoor	Gwall Back	144.0	1.00

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OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Winter Design U-value**	**Assembly Layers**
Garage Ext Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	none	0.361	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4* • *Exterior Finish: 3 Coat Stucco*
R0 CiglswAttic Cons	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	none	0.481	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4 Btm Chrd*
Asphalt R0 Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.644	• *Cavity / Frame: no insul. / 2x4* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 28.9 Insul.*
R19 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.072	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: 3 Coat Stucco*
R19 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.054	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: R4 Synthetic Stucco*
R19 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 19	0.049	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R-9.9 insul.*
R13 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.069	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: R4 Synthetic Stucco*
Gar House R19	Interior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.067	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Other Side Finish: Gypsum Board*
Gar House R13	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.092	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Other Side Finish: Gypsum Board*
Garage Ceiling R19	Interior Floors	Wood Framed Floor	2x12 @ 16 in. O.C.	R 19	0.044	• *Floor Surface: Carpeted* • *Floor Deck: Wood Siding/sheathing/decking* • *Cavity / Frame: R-19 / 2x12* • *Ceiling Below Finish: Gypsum Board*
R-13 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.101	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: 3 Coat Stucco*

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SLAB FLOORS

01	02	03	04	05	06	07
Name	Zone	Area (ft^2)	Perimeter (ft)	Edge Insul. R-value & Depth	Carpeted Fraction	Heated
Slab On Grade	House	45	33	None	0	No
Cslab	Garage	444	100	None	0	No

BUILDING ENVELOPE HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	Quality Installation of Spray Foam Insulation	Building Envelope Air Leakage	ACH @ 50 Pa
Required	Not Required	Not Required	—

WATER HEATING SYSTEMS

01	02	03	04	05	06	07
Name	System Type	Number of Systems in Building	Multi-Family Distribution Type	Water Heater	Number of Water Heaters/System	Solar Fraction (%)
Water Heater	Standard	1	- none -	Tankless 82 EF	1	—

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WATER HEATERS

01	02	03	04	05	06	07	08
Name	Heater Element Type	Tank Type	Tank Volume (gal)	Energy Factor or Efficiency	Input Rating	Tank Exterior Insulation R-value	Standby Loss (Fraction)
Tankless 82 EF	Natural Gas	Small Instantaneous	0	0.82	199900-Btu/hr	0	0

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06
SC Sys Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name
Split 14 12:Furn 80:Attic Default:HVAC Fan 1:1	Other Heating and Cooling System	Furn 80	Split 14 12	HVAC Fan 1	Attic Default

HVAC - HEATING UNIT TYPES

01	02	03
Name	Type	Efficiency
Furn 80	Ctrlfurnace - Fuel-fired central furnace	80 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07
Name	System Type	Efficiency EER	Efficiency SEER	Zonally Controlled	Multi-speed Compressor	HERS Verification
Split 14 12	SplitAirCond	12.2	14	Zonally Controlled	Single Speed	Split 14 12 hers cool

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge
Split 14 12 hers cool	Required	275	Required	Not Required	Required

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HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07
Name	Type	Duct Leakage	Insulation R-value	Duct Location	Bypass Duct	HERS Verification
Attic Default	DuctsAttic	Sealed and tested	6	Attic	None	Attic Default-hers-dist

HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	Duct Leakage Verification	Duct Leakage Target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler
Attic Default-hers-dist	Required	total leakage <= 12.0 or leakage to outdoors <= 6.0	Not Required	Not Required	Not Required	Not Required	Required

HVAC - FAN SYSTEMS

01	02	03	04
Name	Type	Fan Power (Watts/CFM)	HERS Verification
HVAC Fan 1	Single Speed PSC Furnace Fan	0.58	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION		
01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficiency (Watts/CFM)
HVAC Fan 1-hers-fan	Required	0.58

IAQ (Indoor Air Quality) FANS					
01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness(%)	HERS Verification
DwellingUnit 1 1/1	30.33	0.25	Default	0	Required

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1 I certify that this Certificate of Compliance documentation is accurate and complete	
Documentation Author Name: Vern Crawford	Documentation Author Signature: *Vern Crawford*
Company: Harris & Sloan Consulting Group, Inc.	Signature Date: 2015-03-13 09:01:55
Address: 2295 Gateway Oaks Drive Suite 165	CEA/HERS Certification Identification (If applicable):
City/State/Zip: Sacramento, CA 95833	Phone: 916-921-2800
RESPONSIBLE PERSON'S DECLARATION STATEMENT	
I certify the following under penalty of perjury, under the laws of the State of California: 1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance. 2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations. 3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.	
Responsible Designer Name: Mandi Kaercher	Responsible Designer Signature: *Mandi Kaercher*
Company: Standard Pacific Homes - Bay Area	Date Signed: 2015-03-13 11:55:11
Address: 3825 Hopyard Rd, Ste 275	License:
City/State/Zip: Pleasanton, CA 94588	Phone: 925-730-1373

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Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD **CF1R-PRF-01**

Project Name: Village Walk Plan5 **Calculation Date/Time:** 08:26, Fri, Mar 13, 2015 **Page 1 of 11**

Calculation Description: Cardinal **Input File Name:** cPlan5 0511.ribd

GENERAL INFORMATION					
01	Project Name	Village Walk Plan5			
02	Calculation Description	Plan 3			
03	Project Location	Some St.			
04	City	Cotati, CA	06	Standards Version	Compliance 2016
05	Zip Code		07	Compliance Manager Version	BEMCmpMgr 2013.3c (710)
08	Climate Zone	CZ2	09	Software Version	CBECC-Res 2013.3c (710)
10	Building Type	Multifamily	11	Front Orientation (deg/Cardinal)	Cardinal
12	Project Scope	Newly Constructed	13	Number of Dwelling Units	1
14	Total Cond. Floor Area (FT^2)	511	15	Number of Zones	1
16	Slab Area (FT^2)	45	17	Number of Stories	2
18	Addition Cond. Floor Area	N/A	19	Natural Gas Available	Yes
20	Addition Slab Area (FT^2)	N/A	21	Glazing Percentage (%)	20.0%

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

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RECEIVED
MAR 24 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

ENERGY USE SUMMARY				
Energy Use (kTDV/ft²-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	22.57	16.93	5.64	25.0%
Space Cooling	25.80	19.35	6.45	25.0%
IAQ Ventilation	2.76	2.76	0.00	0.0%
Water Heating	40.32	23.31	17.01	42.2%
PV Credit	----	0.00	0.00	----
North Facing Compliance Total	**91.46**	**62.36**	**29.10**	**31.8%**
Space Heating	22.57	15.72	6.85	30.4%
Space Cooling	25.80	29.80	-4.00	-15.5%
IAQ Ventilation	2.76	2.76	0.00	0.0%
Water Heating	40.32	23.31	17.01	42.2%
PV Credit		0.00	0.00	
East Facing Compliance Total	**91.45**	**71.59**	**19.86**	**21.7%**
Space Heating	22.57	17.08	5.49	24.3%
Space Cooling	25.80	19.38	6.42	24.9%
IAQ Ventilation	2.76	2.76	0.00	0.0%
Water Heating	40.32	23.31	17.01	42.2%
PV Credit	----	0.00	0.00	----
South Facing Compliance Total	**91.45**	**62.53**	**28.92**	**31.6%**
Space Heating	22.57	20.35	2.22	9.8%
Space Cooling	25.80	24.66	1.14	4.4%
IAQ Ventilation	2.76	2.76	0.00	0.0%
Water Heating	40.32	23.31	17.01	42.2%
PV Credit	----	0.00	0.00	----
West Facing Compliance Total	**91.45**	**71.08**	**20.37**	**22.3%**

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REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- **Cool roof**
- **Ceiling has high level of insulation**
- **Exposed slab floor in conditioned zone**

HERS FEATURE SUMMARY

The following is a summary of the features that must be field verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building components tables below.

Building-level Verifications:
- **High Quality Insulation Installation (QII)**
- **IAQ mechanical ventilation**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified EER**
- **Refrigerant Charge**
- **Fan Efficacy Watts/CFM**

HVAC Distribution System Verifications:
- **Duct Sealing**
- **Low-leakage Air Handling Unit**

Domestic Hot Water System Verifications:
- **-- None --**

ENERGY DESIGN RATING

This is the sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building (Energy Budget) and the annual TDV energy consumption for lighting and components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics) and accounting for the annual TDV energy offset by an on-site renewable energy system.

	Reference Energy Use	Energy Design Rating	Margin	Percent Improvement
Total Energy (kTDV/f2-yr)*	**194.78**	**174.92**	**19.86**	**10.2%**

* includes calculated Appliances and Miscellaneous Energy Use (AMEU)

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	**Conditioned Floor Area (sf)**	**Number of Dwelling Units**	**Number of Bedrooms**	**Number of Zones**	**Number of Ventilation Cooling Systems**	**Number of Water Heating Systems**
Village Walk Plan5	511	1	1	1	0	1

ZONE INFORMATION				
01	02	03	04	05
Zone Name	Zone Type	Zone Floor Area (ft^2)	Avg. Ceiling Height	Number of Dwelling Units
House	Conditioned	511	9	1

DWELLING UNIT INFORMATION		
01	02	03
Dwelling Unit Name	Dwelling Unit Type	Zone
DwellingUnit 1 (1/1)	DwellingUnitType 1	House

DWELLING UNIT TYPES						
01	02	03	04	05	06	07
Name	CFA (ft2)	Number of Bedrooms	Number in Building	Space Conditioning System Name (Count)	DHW System Name	IAQ Vent Fan Name
DwellingUnit Type 1	511	1	1	Split 14 12:Furn 80:Attic Default:HVAC Fan 1:1 (1)	Water Heater	Default Minimum IAQ Fan

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OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft^2)**	**Window Area (ft^2)**	**Tilt (deg)**
Front 2x6 Siding	House	R19 Wall	70	Front	153	10	90
Ceiling (below attic) 1	House	R38 Ceiling below attic			676		
Ceiling (at FAU)	House	R19 Ceiling below attic			50		
Interior Wall 2x4	House>>Garage	Gar House R13			102		
Interior Wall 2x6	House>>Garage	Gar House R19			168		
Interior Floor 1	House>>Garage	Garage Ceiling R19			185		
Front 2x6	House	R19 R4 Stucco Wall	70	Front	90	20	90
Front 2x4	House	R13 R4 Stucco Wall	70	Front	102	16	90
Left 2x4 Siding	House	R 13 Wall	160	Left	41	0	90
Left 2x4	House	R13 R4 Stucco Wall	160	Left	228	12	90
Back 2x4	House	R13 R4 Stucco Wall	250	Back	193	46	90
Gwall Right	Garage	Garage Ext Wall	340	Right	189	0	90
Gwall Left	Garage	Garage Ext Wall	160	Left	189	0	90
Gwall Front	Garage	Garage Ext Wall	70	Front	41	0	90
Gceil	Garage	R0 CigBlwAttic Cons			0.0001		
Gwall Back	Garage	Garage Ext Wall	250	Back	194	0	90

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ATTIC

01	02	03	04	05	06	07	08
Name	**Construction**	**Type**	**Roof Rise**	**Roof Reflectance**	**Roof Emittance**	**Radiant Barrier**	**Cool Roof**
Attic	Asphalt RB Roof	Ventilated	6	0.2	0.85	Yes	Yes

WINDOWS

01	02	03	04	05	06	07	08	09	10
Name	Type	Surface (Orientation-Azimuth)	Width (ft)	Height (ft)	Multiplier	Area (ft^2)	U-factor	SHGC	Exterior Shading
00a Entry	Window	Front 2x6 Siding (Front 70)	2.0	5.0	1	10.0	0.31	0.29	Insect Screen (default)
00b Stair	Window	Front 2x6 (Front-70)	2.0	5.0	1	10.0	0.35	0.29	Insect Screen (default)
00c Stair	Window	Front 2x6 (Front-70)	2.0	5.0	1	10.0	0.35	0.29	Insect Screen (default)
00d Mbed	Window	Front 2x4 (Front 70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00a Kitchen	Window	Left 2x4 (Left 160)	3.0	4.0	1	12.0	0.31	0.29	Insect Screen (default)
00b Kitchen	Window	Back 2x4 (Back-250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00c Great	Window	Back 2x4 (Back 250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00d Great	Window	Back 2x4 (Back 250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)

DOORS

01	02	03	04
Name	Side of Building	Area (ft^2)	U-factor
FrDr	Left 2x4-Siding	28.0	0.50
FrDr-2	Gwall Front	22.0	0.50
GDoor	Gwall Back	144.0	1.00

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OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Winter Design U-value**	**Assembly Layers**
Garage Ext Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	none	0.361	• Inside Finish: Gypsum Board • Cavity / Frame: no insul. / 2x4 • Exterior Finish: 3 Coat Stucco
R0 CiglowAttic Cons	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	none	0.481	• Inside Finish: Gypsum Board • Cavity / Frame: no insul. / 2x4 Btm Chrd
Asphalt R0 Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.644	• Cavity / Frame: no insul. / 2x4 • Roof Deck: Wood Siding/sheathing/decking • Roofing: Light Roof (Asphalt Shingle)
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	• Inside Finish: Gypsum Board • Cavity / Frame: R-9.1 / 2x4 Btm Chrd • Over Floor Joists: R 28.9 Insul.
R19 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.072	• Inside Finish: Gypsum Board • Cavity / Frame: R-19 / 2x6 • Exterior Finish: 3 Coat Stucco
R19 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.054	• Inside Finish: Gypsum Board • Cavity / Frame: R 19 / 2x6 • Exterior Finish: R4 Synthetic Stucco
R19 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 19	0.049	• Inside Finish: Gypsum Board • Cavity / Frame: R-9.1 / 2x4 Btm Chrd • Over Floor Joists: R-9.9 insul.
R13 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.069	• Inside Finish: Gypsum Board • Cavity / Frame: R-13 / 2x4 • Exterior Finish: R4 Synthetic Stucco
Gar House R19	Interior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.067	• Inside Finish: Gypsum Board • Cavity / Frame: R-19 / 2x6 • Other Side Finish: Gypsum Board
Gar House R13	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.092	• Inside Finish: Gypsum Board • Cavity / Frame: R-13 / 2x4 • Other Side Finish: Gypsum Board
Garage Ceiling R19	Interior Floors	Wood Framed Floor	2x12 @ 16 in. O.C.	R 19	0.044	• Floor Surface: Carpeted • Floor Deck: Wood Siding/sheathing/decking • Cavity / Frame: R-19 / 2x12 • Ceiling Below Finish: Gypsum Board
R-13 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.101	• Inside Finish: Gypsum Board • Cavity / Frame: R-13 / 2x4 • Exterior Finish: 3 Coat Stucco

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SLAB FLOORS

01	02	03	04	05	06	07
Name	Zone	Area (ft^2)	Perimeter (ft)	Edge Insul. R-value & Depth	Carpeted Fraction	Heated
Slab On Grade	House	45	33	None	0	No
Gslab	Garage	444	100	None	0	No

BUILDING ENVELOPE HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	Quality Installation of Spray Foam Insulation	Building Envelope Air Leakage	ACH @ 50 Pa
Required	Not Required	Not Required	—

WATER HEATING SYSTEMS

01	02	03	04	05	06	07
Name	System Type	Number of Systems in Building	Multi-Family Distribution Type	Water Heater	Number of Water Heaters/System	Solar Fraction (%)
Water Heater	Standard	1	- none -	Tankless 82 EF	1	—

CalCERTS inc.

WATER HEATERS

01	02	03	04	05	06	07	08
Name	Heater Element Type	Tank Type	Tank Volume (gal)	Energy Factor or Efficiency	Input Rating	Tank Exterior Insulation R-value	Standby Loss (Fraction)
Tankless 82 EF	Natural Gas	Small Instantaneous	0	0.82	199900-Btu/hr	0	0

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06
SC Sys Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name
Split 14 12:Furn 80:Attic Default:HVAC Fan 1:1	Other Heating and Cooling System	Furn 80	Split 14 12	HVAC Fan 1	Attic Default

HVAC - HEATING UNIT TYPES

01	02	03
Name	**Type**	**Efficiency**
Furn 80	Cntrl-urnace - Fuel-fired central furnace	80 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07
		Efficiency				
Name	**System Type**	**EER**	**SEER**	**Zonally Controlled**	**Multi-speed Compressor**	**HERS Verification**
Split 14 12	SplitAirCond	12.2	14	Zonally Controlled	Single Speed	Split 14 12 hers cool

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	**Verified Airflow**	**Airflow Target**	**Verified EER**	**Verified SEER**	**Verified Refrigerant Charge**
Split 14 12 hers cool	Required	275	Required	Not Required	Required

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HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07
Name	**Type**	**Duct Leakage**	**Insulation R-value**	**Duct Location**	**Bypass Duct**	**HERS Verification**
Attic Default	DuctsAttic	Sealed and tested	6	Attic	None	Attic Default-hers-dist

HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	**Duct Leakage Verification**	**Duct Leakage Target (%)**	**Verified Duct Location**	**Verified Duct Design**	**Buried Ducts**	**Deeply Buried Ducts**	**Low-leakage Air Handler**
Attic Default-hers-dist	Required	total leakage <= 12.0 or leakage to outdoors <= 6.0	Not Required	Not Required	Not Required	Not Required	Required

HVAC - FAN SYSTEMS

01	02	03	04
Name	**Type**	**Fan Power (Watts/CFM)**	**HERS Verification**
HVAC Fan 1	Single Speed PSC Furnace Fan	0.58	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION		
01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficiency (Watts/CFM)
HVAC Fan 1-hers-fan	Required	0.58

IAQ (Indoor Air Quality) FANS					
01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness(%)	HERS Verification
DwellingUnit 1 1/1	30.33	0.25	Default	0	Required

CalCERTS inc.®

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1 I certify that this Certificate of Compliance documentation is accurate and complete	
Documentation Author Name: Vern Crawford	Documentation Author Signature: *Vern Crawford*
Company: Harris & Sloan Consulting Group, Inc.	Signature Date: 2015-03-13 09:01:55
Address: 2295 Gateway Oaks Drive Suite 165	CEA/HERS Certification Identification (If applicable):
City/State/Zip: Sacramento, CA 95833	Phone: 916-921-2800

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

CalCERTS inc.

Responsible Designer Name: Mandi Kaercher	Responsible Designer Signature: *Mandi Kaercher*
Company: Standard Pacific Homes - Bay Area	Date Signed: 2015-03-13 11:55:11
Address: 3825 Hopyard Rd, Ste 275	License:
City/State/Zip: Pleasanton, CA 94588	Phone: 925-730-1373

Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD **CF1R-PRF-01**

Project Name: Village Walk Plan4 **Calculation Date/Time:** 08:20, Fri, Mar 13, 2015

Calculation Description: Cardinal **Input File Name:** cPlan4 1379.ribd

GENERAL INFORMATION					
01	Project Name	Village Walk Plan4			
02	Calculation Description	Plan 4			
03	Project Location	Some St			
04	City	Cotati, CA	05	Standards Version	Compliance 2015
06	Zip Code		07	Compliance Manager Version	BEMCmpMgr 2013.3c (710)
08	Climate Zone	CZ2	09	Software Version	CBECC-Res 2013.3c (710)
10	Building Type	Single Family	11	Front Orientation (deg/Cardinal)	Cardinal
12	Project Scope	Newly Constructed	13	Number of Dwelling Units	1
14	Total Cond. Floor Area (FT^2)	1379	15	Number of Zones	1
16	Slab Area (FT^2)	644	17	Number of Stories	2
18	Addition Cond. Floor Area	N/A	19	Natural Gas Available	Yes
20	Addition Slab Area (FT^2)	N/A	21	Glazing Percentage (%)	18.9%

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

CalCERTS Inc.

RECEIVED
MAR 24 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

ENERGY USE SUMMARY				
Energy Use (kTDV/ft²-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	21.91	18.29	3.62	16.5%
Space Cooling	6.45	3.97	2.48	38.4%
IAQ Ventilation	1.48	1.48	0.00	0.0%
Water Heating	18.28	12.02	6.26	34.2%
PV Credit	----	0.00	0.00	----
North Facing Compliance Total	**48.12**	**35.76**	**12.36**	**25.7%**
Space Heating	21.91	17.71	4.20	19.2%
Space Cooling	6.45	4.55	1.90	29.5%
IAQ Ventilation	1.48	1.48	0.00	0.0%
Water Heating	18.28	12.02	6.26	34.2%
PV Credit		0.00	0.00	
East Facing Compliance Total	**48.12**	**35.76**	**12.36**	**25.7%**
Space Heating	21.91	18.51	3.40	15.5%
Space Cooling	6.45	4.05	2.40	37.2%
IAQ Ventilation	1.48	1.48	0.00	0.0%
Water Heating	18.28	12.02	6.26	34.2%
PV Credit	----	0.00	0.00	----
South Facing Compliance Total	**48.12**	**36.06**	**12.06**	**25.1%**
Space Heating	21.91	19.12	2.79	12.7%
Space Cooling	6.45	3.93	2.52	39.1%
IAQ Ventilation	1.48	1.48	0.00	0.0%
Water Heating	18.28	12.02	6.26	34.2%
PV Credit	----	0.00	0.00	----
West Facing Compliance Total	**48.12**	**36.55**	**11.57**	**24.0%**

CalCERTS, inc.

REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- **Cool roof**
- **Ceiling has high level of insulation**
- **Exposed slab floor in conditioned zone**

HERS FEATURE SUMMARY

The following is a summary of the features that must be field verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building components tables below.

Building-level Verifications:
- **High Quality Insulation Installation (QII)**
- **IAQ mechanical ventilation**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified EER**
- **Fan Efficacy Watts/CFM**

HVAC Distribution System Verifications:
- **Duct Sealing**
- **Low-leakage Air Handling Unit**

Domestic Hot Water System Verifications:
- **-- None --**

ENERGY DESIGN RATING

This is the sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building (Energy Budget) and the annual TDV energy consumption for lighting and components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics) and accounting for the annual TDV energy offset by an on-site renewable energy system.

	Reference Energy Use	Energy Design Rating	Margin	Percent Improvement
Total Energy (kTDV/f2-yr)*	106.07	94.50	11.57	10.9%

* includes calculated Appliances and Miscellaneous Energy Use (AMEU)

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	Conditioned Floor Area (ft2)	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems
Village Walk Plan4	1379	1	3	1	0	1

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft^2)	Avg. Ceiling Height	Water Heating System 1	Water Heating System 2
House	Conditioned	HVAC System 1	1379	9	Water Heater	

OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft^2)	Window Area (ft^2)	Tilt (deg)
Front 2x4	House	R13 R4 Stucco Wall	70	Front	240	37.5	90
Ceiling (below attic) 1	House	R38 Ceiling below attic			885		
Ceiling (at FAU)	House	R19 Ceiling below attic			50		
Front 2x4 Siding	House	R 13 Wall	70	Front	154	25	90
Left 2x4	House	R13 R4 Stucco Wall	160	Left	244	30	90
Left 2x4 Siding	House	R 13 Wall	160	Left	338	40	90
Back 2x6	House	R19 R4 Stucco Wall	250	Back	170	23	90
Back 2x6-Siding	House	R19 Wall	250	Back	244	60	90
Right 2x4	House	R13 R4 Stucco Wall	340	Right	123	12.5	90
Right 2x6-Siding	House	R19 Wall	340	Right	259	8	90
Right 2x6	House	R19 R4 Stucco Wall	340	Right	187	25	90
Exterior Floor 1	House	Ext R19 Floor			144		

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ATTIC

01	02	03	04	05	06	07	08
Name	Construction	Type	Roof Rise	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof
Attic	Asphalt RB Roof	Ventilated	6	0.2	0.85	Yes	Yes

WINDOWS

01	02	03	04	05	06	07	08	09	10
Name	Type	Surface (Orientation-Azimuth)	Width (ft)	Height (ft)	Multiplier	Area (ft^2)	U-factor	SHGC	Exterior Shading
00c Mbed	Window	Front 2x4 (Front 70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00d Mbed	Window	Front 2x4 (Front-70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00e Mbd	Window	Front 2x4 (Front-70)	1.5	5.0	1	7.5	0.31	0.29	Insect Screen (default)
00a Great	Window	Front 2x4 Siding (Front 70)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
00b Great	Window	Front 2x4 Siding (Front 70)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
00a Mbed	Window	Left 2x4 (Left-160)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00b bed2	Window	Left 2x4 (Left 160)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00c Great	Window	Left 2x4 Siding (Left 160)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
00d Great	Window	Left 2x4 Siding (Left-160)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
00e Dining	Window	Left 2x4 Siding (Left 160)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00c Bed3	Window	Back 2x6 (Back 250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00d Bed2	Window	Back 2x6 (Back-250)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
00a Kitchen	Window	Back 2x6-Siding (Back-250)	3.0	4.0	1	12.0	0.31	0.29	Insect Screen (default)
00b Dining	Window	Back 2x6-Siding (Back-250)	6.0	8.0	1	48.0	0.35	0.29	Insect Screen (default)
00b Bed3	Window	Right 2x4 (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
00a Pwdr	Window	Right 2x6-Siding (Right-340)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
00c Stair	Window	Right 2x6 (Right-340)	2.5	5.0	1	12.5	0.28	0.32	Insect Screen (default)
00d Stair	Window	Right 2x6 (Right-340)	2.5	5.0	1	12.5	0.28	0.32	Insect Screen (default)

DOORS

01	02	03	04
Name	Side of Building	Area (ft^2)	U-factor
FrDr	Front 2x4-Siding	28.0	0.50

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OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Winter Design U-value**	**Assembly Layers**
Ext H19 Floor	Exterior Floors	Wood Framed Floor	2x4 @ 16 in. O.C.	H 19	0.053	• *Floor Surface: Carpeted* • *Floor Deck: Wood Siding/sheathing/decking* • *Cavity / Frame: H-19 / 2x4*
Asphalt R8 Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.644	• *Cavity / Frame: no insul. / 2x4* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 28.9 insul*
H19 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	H 19	0.072	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R 19 / 2x6* • *Exterior Finish: 3 Coat Stucco*
H19 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	H 19	0.054	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R 19 / 2x6* • *Exterior Finish: R4 Synthetic Stucco*
R19 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 19	0.049	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R-9.9 insul.*
R13 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.069	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: R4 Synthetic Stucco*
R-13 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.101	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: 3 Coat Stucco*

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SLAB FLOORS

01	02	03	04	05	06	07
Name	**Zone**	**Area (ft^2)**	**Perimeter (ft)**	**Edge Insul. R-value & Depth**	**Carpeted Fraction**	**Heated**
Slab On Grade	House	644	103	None	0	No

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	**Quality Installation of Spray Foam Insulation**	**Building Envelope Air Leakage**	**ACH @ 50 Pa**
Required	Not Required	Not Required	—

WATER HEATING SYSTEMS

01	02	03	04	05	06
Name	System Type	Distribution Type	Water Heater	Number of Heaters	Solar Fraction (%)
Water Heater - 1/1	DHW	Standard	Tankless 82 EF	1	- none -

WATER HEATERS

01	02	03	04	05	06	07	08
Name	Heater Element Type	Tank Type	Tank Volume (gal)	Energy Factor or Efficiency	Input Rating	Tank Exterior Insulation R-value	Standby Loss (Fraction)
Tankless 82 EF	Natural Gas	Small Instantaneous	0	0.82	199900 Btu/hr	0	0

WATER HEATING - HERS VERIFICATION

01	02	03	04	05	06	07
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Point-of Use	Recirculation Control	Central DHW Distribution
Water Heater 1/1						

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SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06
SC Sys Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name
Split 14 12:Furn 92:Attic Default:HVAC Fan 1:3	Variable Outdoor Air Ventilation Central Heat/Cool System	Furn 92	Split 14 12	HVAC Fan 1	Attic Default

HVAC - HEATING UNIT TYPES

01	02	03
Name	Type	Efficiency
Furn 92	CntrlFurnace - Fuel-fired central furnace	92 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07
		Efficiency				
Name	System Type	EER	SEER	Zonally Controlled	Multi-speed Compressor	HERS Verification
Split 14 12	SplitAirCond	12.2	14	Zonally Controlled	Single Speed	Split 14 12-hers cool

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge
Split 14 12-hers-cool	Required	275	Required	Not Required	Not Required

HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07
Name	Type	Duct Leakage	Insulation R-value	Duct Location	Bypass Duct	HERS Verification
Attic Default	DuctsAttic	Sealed and tested	6	Attic	None	Attic Default hers-dist

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HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	Duct Leakage Verification	Duct Leakage Target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler
Attic Default-hers-dist	Required	6.0	Not Required	Not Required	Not Required	Not Required	Required

HVAC - FAN SYSTEMS

01	02	03	04
Name	Type	Fan Power (Watts/CFM)	HERS Verification
HVAC Fan 1	Single Speed PSC Furnace Fan	0.58	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION

01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficiency (Watts/CFM)
HVAC Fan 1-hers-fan	Required	0.58

IAQ (Indoor Air Quality) FANS					
01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness(%)	HERS Verification
Sl am IAQVentRpt	43.79	0.25	Default	0	Required

CalCERTS inc.

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1 I certify that this Certificate of Compliance documentation is accurate and complete	
Documentation Author Name: Vern Crawford	Documentation Author Signature: *Vern Crawford*
Company: Harris & Sloan Consulting Group, Inc.	Signature Date: 2015-03-13 08:51:23
Address: 2295 Gateway Oaks Drive Suite 165	CEA/HERS Certification Identification (If applicable):
City/State/Zip: Sacramento, CA 95833	Phone: 916-921-2800

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Responsible Designer Name: Mandi Kaercher	Responsible Designer Signature: *Mandi Kaercher*
Company: Standard Pacific Homes - Bay Area	Date Signed: 2015-03-13 11:57:29
Address: 3825 Hopyard Rd, Ste 275	License:
City/State/Zip: Pleasanton, CA 94588	Phone: 925-730-1373

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Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD **CF1R-PRF-01**

Project Name: Village Walk Plan4 **Calculation Date/Time:** 08:20, Fri, Mar 13, 2015

Calculation Description: Cardinal **Input File Name:** cPlan4 1379.ribd

GENERAL INFORMATION					
01	Project Name	Village Walk Plan4			
02	Calculation Description	Plan 4			
03	Project Location	Some St			
04	City	Cotati, CA	05	Standards Version	Compliance 2015
06	Zip Code		07	Compliance Manager Version	BEMCmpMgr 2013.3c (710)
08	Climate Zone	CZ2	09	Software Version	CBECC-Res 2013.3c (710)
10	Building Type	Single Family	11	Front Orientation (deg/Cardinal)	Cardinal
12	Project Scope	Newly Constructed	13	Number of Dwelling Units	1
14	Total Cond. Floor Area (FT^2)	1379	15	Number of Zones	1
16	Slab Area (FT^2)	644	17	Number of Stories	2
18	Addition Cond. Floor Area	N/A	19	Natural Gas Available	Yes
20	Addition Slab Area (FT^2)	N/A	21	Glazing Percentage (%)	18.9%

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

CalCERTS inc.

RECEIVED
MAR 24 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

ENERGY USE SUMMARY				
Energy Use (kTDV/ft²-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	21.91	18.29	3.62	16.5%
Space Cooling	6.45	3.97	2.48	38.4%
IAQ Ventilation	1.48	1.48	0.00	0.0%
Water Heating	18.28	12.02	6.26	34.2%
PV Credit	----	0.00	0.00	----
North Facing Compliance Total	**48.12**	**35.76**	**12.36**	**25.7%**
Space Heating	21.91	17.71	4.20	19.2%
Space Cooling	6.45	4.55	1.90	29.5%
IAQ Ventilation	1.48	1.48	0.00	0.0%
Water Heating	18.28	12.02	6.26	34.2%
PV Credit		0.00	0.00	
East Facing Compliance Total	**48.12**	**35.76**	**12.36**	**25.7%**
Space Heating	21.91	18.51	3.40	15.5%
Space Cooling	6.45	4.05	2.40	37.2%
IAQ Ventilation	1.48	1.48	0.00	0.0%
Water Heating	18.28	12.02	6.26	34.2%
PV Credit	----	0.00	0.00	----
South Facing Compliance Total	**48.12**	**36.06**	**12.06**	**25.1%**
Space Heating	21.91	19.12	2.79	12.7%
Space Cooling	6.45	3.93	2.52	39.1%
IAQ Ventilation	1.48	1.48	0.00	0.0%
Water Heating	18.28	12.02	6.26	34.2%
PV Credit	----	0.00	0.00	----
West Facing Compliance Total	**48.12**	**36.55**	**11.57**	**24.0%**

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REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- **Cool roof**
- **Ceiling has high level of Insulation**
- **Exposed slab floor in conditioned zone**

HERS FEATURE SUMMARY

The following is a summary of the features that must be field verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building components tables below.

Building-level Verifications:
- **High Quality Insulation Installation (QII)**
- **IAQ mechanical ventilation**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified EER**
- **Fan Efficacy Watts/CFM**

HVAC Distribution System Verifications:
- **Duct Sealing**
- **Low-leakage Air Handling Unit**

Domestic Hot Water System Verifications:
- **-- None --**

CalCERTS inc.

ENERGY DESIGN RATING

This is the sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building (Energy Budget) and the annual TDV energy consumption for lighting and components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics) and accounting for the annual TDV energy offset by an on-site renewable energy system.

	Reference Energy Use	Energy Design Rating	Margin	Percent Improvement
Total Energy (kTDV/f2-yr)*	106.07	94.50	11.57	10.9%

* includes calculated Appliances and Miscellaneous Energy Use (AMEU)

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	Conditioned Floor Area (ft2)	Number of Dwelling Units	Number of Bedrooms	Number of Zones	Number of Ventilation Cooling Systems	Number of Water Heating Systems
Village Walk Plan4	1379	1	3	1	0	1

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft^2)	Avg. Ceiling Height	Water Heating System 1	Water Heating System 2
House	Conditioned	HVAC System 1	1379	9	Water Heater	

OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft^2)	Window Area (ft^2)	Tilt (deg)
Front 2x4	House	R13 R4 Stucco Wall	70	Front	240	37.5	90
Ceiling (below attic) 1	House	R38 Ceiling below attic			685		
Ceiling (at FAU)	House	R19 Ceiling below attic			50		
Front 2x4 Siding	House	R 13 Wall	70	Front	154	25	90
Left 2x4	House	R13 R4 Stucco Wall	160	Left	244	30	90
Left 2x4 Siding	House	R 13 Wall	160	Left	338	40	90
Back 2x6	House	R19 R4 Stucco Wall	250	Back	170	23	90
Back 2x6-Siding	House	R19 Wall	250	Back	244	60	90
Right 2x4	House	R13 R4 Stucco Wall	340	Right	123	12.5	90
Right 2x6-Siding	House	R19 Wall	340	Right	259	8	90
Right 2x6	House	R19 R4 Stucco Wall	340	Right	187	25	90
Exterior Floor 1	House	Ext R19 Floor			144		

ATTIC

01	02	03	04	05	06	07	08
Name	Construction	Type	Roof Rise	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof
Attic	Asphalt RB Roof	Ventilated	6	0.2	0.85	Yes	Yes

WINDOWS

01	02	03	04	05	06	07	08	09	10
Name	Type	Surface (Orientation-Azimuth)	Width (ft)	Height (ft)	Multiplier	Area (ft^2)	U-factor	SHGC	Exterior Shading
00c Mbed	Window	Front 2x4 (Front 70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00d Mbed	Window	Front 2x4 (Front-70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00e Mbd	Window	Front 2x4 (Front-70)	1.5	5.0	1	7.5	0.31	0.29	Insect Screen (default)
00a Great	Window	Front 2x4 Siding (Front 70)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
00b Great	Window	Front 2x4 Siding (Front 70)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
00a Mbed	Window	Left 2x4 (Left-160)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00b bed2	Window	Left 2x4 (Left 160)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00c Great	Window	Left 2x4 Siding (Left 160)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
00d Great	Window	Left 2x4 Siding (Left-160)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
00e Dining	Window	Left 2x4 Siding (Left 160)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00c Bed3	Window	Back 2x6 (Back 250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00d Bed2	Window	Back 2x6 (Back-250)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
00a Kitchen	Window	Back 2x6 Siding (Back-250)	3.0	4.0	1	12.0	0.31	0.29	Insect Screen (default)
00b Dining	Window	Back 2x6 Siding (Back-250)	6.0	8.0	1	48.0	0.35	0.29	Insect Screen (default)
00b Bed3	Window	Right 2x4 (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
00a Pwdr	Window	Right 2x6 Siding (Right-340)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
00c Stair	Window	Right 2x6 (Right-340)	2.5	5.0	1	12.5	0.28	0.32	Insect Screen (default)
00d Stair	Window	Right 2x6 (Right-340)	2.5	5.0	1	12.5	0.28	0.32	Insect Screen (default)

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DOORS

01	02	03	04
Name	Side of Building	Area (ft^2)	U-factor
FrDr	Front 2x4-Siding	28.0	0.50

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Winter Design U-value**	**Assembly Layers**
Ext H19 Floor	Exterior Floors	Wood Framed Floor	2x4 @ 16 in. O.C.	H 19	0.053	• *Floor Surface: Carpeted* • *Floor Deck: Wood Siding/sheathing/decking* • *Cavity / Frame: H-19 / 2x4*
Asphalt R8 Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.644	• *Cavity / Frame: no insul. / 2x4* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 28.9 Insul*
H19 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	H 19	0.072	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R 19 / 2x6* • *Exterior Finish: 3 Coat Stucco*
H19 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	H 19	0.054	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R 19 / 2x6* • *Exterior Finish: R4 Synthetic Stucco*
R19 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 19	0.049	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R-9.9 Insul.*
R13 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.069	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: R4 Synthetic Stucco*
R-13 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.101	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: 3 Coat Stucco*

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SLAB FLOORS

01	02	03	04	05	06	07
Name	**Zone**	**Area (ft^2)**	**Perimeter (ft)**	**Edge Insul. R-value & Depth**	**Carpeted Fraction**	**Heated**
Slab On Grade	House	644	103	None	0	No

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	**Quality Installation of Spray Foam Insulation**	**Building Envelope Air Leakage**	**ACH @ 50 Pa**
Required	Not Required	Not Required	—

WATER HEATING SYSTEMS

01	02	03	04	05	06
Name	System Type	Distribution Type	Water Heater	Number of Heaters	Solar Fraction (%)
Water Heater - 1/1	DHW	Standard	Tankless 82 EF	1	- none -

WATER HEATERS

01	02	03	04	05	06	07	08
Name	Heater Element Type	Tank Type	Tank Volume (gal)	Energy Factor or Efficiency	Input Rating	Tank Exterior Insulation R-value	Standby Loss (Fraction)
Tankless 82 EF	Natural Gas	Small Instantaneous	0	0.82	199900 Btu/hr	0	0

WATER HEATING - HERS VERIFICATION

01	02	03	04	05	06	07
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Point-of Use	Recirculation Control	Central DHW Distribution
Water Heater - 1/1						

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SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06
SC Sys Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name
Split 14 12:Furn 92:Attic Default:HVAC Fan 1:3	Variable Outdoor Air Ventilation Central Heat/Cool System	Furn 92	Split 14 12	HVAC Fan 1	Attic Default

HVAC - HEATING UNIT TYPES

01	02	03
Name	Type	Efficiency
Furn 92	CntrlFurnace - Fuel-fired central furnace	92 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07
		Efficiency				
Name	System Type	EER	SEER	Zonally Controlled	Multi-speed Compressor	HERS Verification
Split 14 12	SplitAirCond	12.2	14	Zonally Controlled	Single Speed	Split 14 12-hers-cool

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge
Split 14 12-hers-cool	Required	275	Required	Not Required	Not Required

HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07
Name	Type	Duct Leakage	Insulation R-value	Duct Location	Bypass Duct	HERS Verification
Attic Default	DuctsAttic	Sealed and tested	6	Attic	None	Attic Default-hers-dist

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HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	Duct Leakage Verification	Duct Leakage Target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler
Attic Default-hers-dist	Required	6.0	Not Required	Not Required	Not Required	Not Required	Required

HVAC - FAN SYSTEMS

01	02	03	04
Name	Type	Fan Power (Watts/CFM)	HERS Verification
HVAC Fan 1	Single Speed PSC Furnace Fan	0.58	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION

01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficiency (Watts/CFM)
HVAC Fan 1-hers-fan	Required	0.58

IAQ (Indoor Air Quality) FANS					
01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness(%)	HERS Verification
Sham IAQVentRpt	43.79	0.25	Default	0	Required

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1 I certify that this Certificate of Compliance documentation is accurate and complete	
Documentation Author Name: Vern Crawford	Documentation Author Signature: *Vern Crawford*
Company: Harris & Sloan Consulting Group, Inc.	Signature Date: 2015-03-13 08:51:23
Address: 2295 Gateway Oaks Drive Suite 165	CEA/HERS Certification Identification (If applicable):
City/State/Zip: Sacramento, CA 95833	Phone: 916-921-2800

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Responsible Designer Name: Mandi Kaercher	Responsible Designer Signature: *Mandi Kaercher*
Company: Standard Pacific Homes - Bay Area	Date Signed: 2015-03-13 11:57:29
Address: 3825 Hopyard Rd, Ste 275	License:
City/State/Zip: Pleasanton, CA 94588	Phone: 925-730-1373

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Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD **CF1R-PRF-01**

Project Name: Village Walk Plan3 **Calculation Date/Time:** 08:13, Fri, Mar 13, 2015

Calculation Description: Cardinal **Input File Name:** cPlan3 1300.ribd

GENERAL INFORMATION					
01	Project Name	Village Walk Plan3			
02	Calculation Description	Plan 3			
03	Project Location	Some St.			
04	City	Cotati, CA	06	Standards Version	Compliance 2016
05	Zip Code		07	Compliance Manager Version	BEMCmpMgr 2013.3c (710)
08	Climate Zone	CZ2	09	Software Version	CBECC-Res 2013.3c (710)
10	Building Type	Single Family	11	Front Orientation (deg/Cardinal)	Cardinal
12	Project Scope	Newly Constructed	13	Number of Dwelling Units	1
14	Total Cond. Floor Area (FT^2)	1300	15	Number of Zones	1
16	Slab Area (FT^2)	541	17	Number of Stories	2
18	Addition Cond. Floor Area	N/A	19	Natural Gas Available	Yes
20	Addition Slab Area (FT^2)	N/A	21	Glazing Percentage (%)	19.5%

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

CalCERTS Inc.

RECEIVED
MAR 24 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

ENERGY USE SUMMARY				
Energy Use ($kTDV/ft^2$-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	20.73	17.81	2.92	14.1%
Space Cooling	8.12	5.13	2.99	36.8%
IAQ Ventilation	1.54	1.54	0.00	0.0%
Water Heating	19.07	12.42	6.65	34.9%
PV Credit	---	0.00	0.00	---
North Facing Compliance Total	**49.46**	**36.90**	**12.56**	**25.4%**
Space Heating	20.73	18.84	1.89	9.1%
Space Cooling	8.12	6.85	1.27	15.6%
IAQ Ventilation	1.54	1.54	0.00	0.0%
Water Heating	19.07	12.42	6.65	34.9%
PV Credit		0.00	0.00	
East Facing Compliance Total	**49.46**	**39.65**	**9.81**	**19.8%**
Space Heating	20.73	18.32	2.41	11.6%
Space Cooling	8.12	4.66	3.46	42.6%
IAQ Ventilation	1.54	1.54	0.00	0.0%
Water Heating	19.07	12.42	6.65	34.9%
PV Credit	---	0.00	0.00	---
South Facing Compliance Total	**49.46**	**36.94**	**12.52**	**25.3%**
Space Heating	20.73	17.82	2.91	14.0%
Space Cooling	8.12	7.15	0.97	11.9%
IAQ Ventilation	1.54	1.54	0.00	0.0%
Water Heating	19.07	12.42	6.65	34.9%
PV Credit	---	0.00	0.00	---
West Facing Compliance Total	**49.46**	**38.93**	**10.53**	**21.3%**

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REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- **Cool roof**
- **Ceiling has high level of insulation**
- **Exposed slab floor in conditioned zone**

HERS FEATURE SUMMARY

The following is a summary of the features that must be field verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building components tables below.

Building-level Verifications:
- **High Quality Insulation Installation (QII)**
- **IAQ mechanical ventilation**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified EER**
- **Fan Efficacy Watts/CFM**

HVAC Distribution System Verifications:
- **Duct Sealing**
- **Low-leakage Air Handling Unit**

Domestic Hot Water System Verifications:
- **-- None --**

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ENERGY DESIGN RATING

This is the sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building (Energy Budget) and the annual TDV energy consumption for lighting and components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics) and accounting for the annual TDV energy offset by an on-site renewable energy system.

	Reference Energy Use	Energy Design Rating	Margin	Percent Improvement
Total Energy (kTDV/f2-yr)*	109.07	99.26	9.81	9.0%

* includes calculated Appliances and Miscellaneous Energy Use (AMEU)

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	**Conditioned Floor Area (ft2)**	**Number of Dwelling Units**	**Number of Bedrooms**	**Number of Zones**	**Number of Ventilation Cooling Systems**	**Number of Water Heating Systems**
Village Walk Plan3	1300	1	3	1	0	1

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft^2)	Avg. Ceiling Height	Water Heating System 1	Water Heating System 2
House	Conditioned	HVAC System 1	1300	9	Water Heater	

OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft^2)	Window Area (ft^2)	Tilt (deg)
Front 2x4	House	R13 R4 Stucco Wall	70	Front	261	46	90
Ceiling (below attic) 1	House	R38 Ceiling below attic			676		
Ceiling (at FAU)	House	R19 Ceiling below attic			50		
Interior Wall 2x4	House>>Garage	Gar House R13			153		
Interior Wall 2x6	House>>Garage	Gar House R19			72		
Interior Floor 1	House>>Garage	Garage Ceiling R21			185		
Front 2x4 Siding	House	R 13 Wall	70	Front	142	26	90
Left 2x4	House	R13 R4 Stucco Wall	160	Left	62	6.75	90
Left 2x4-Siding	House	R-13 Wall	160	Left	132	0	90
Left 2x6	House	R19 R4 Stucco Wall	160	Left	40	12.5	90
Left 2x6 Siding	House	R19 Wall	160	Left	170	8	90
Back 2x4	House	R13 R4 Stucco Wall	250	Back	233	30	90
Back 2x4-Siding	House	R-13 Wall	250	Back	233	60	90
Right 2x4	House	R15 Wall	340	Right	30	25	90
Right 2x4-Siding	House	R-13 Wall	340	Right	328	37.5	90
Gwall Right	Garage	Garage Ext Wall	340	Right	135	0	90
Gwall Left	Garage	Garage Ext Wall	160	Left	351	0	90
Gwall Front	Garage	Garage Ext Wall	70	Front	102	0	90
Gceil	Garage	R0 CigBlwAttic Cons			251		
Gwall Back	Garage	Garage Ext Wall	250	Back	102	0	90

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ATTIC

01	02	03	04	05	06	07	08
Name	Construction	Type	Roof Rise	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof
Attic	Asphalt Rib Roof	Ventilated	6	0.2	0.85	Yes	Yes

WINDOWS

01	02	03	04	05	06	07	08	09	10
Name	Type	Surface (Orientation-Azimuth)	Width (ft)	Height (ft)	Multiplier	Area (ft^2)	U-factor	SHGC	Exterior Shading
004 Mbed	Window	Front 2x4 (Front-70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
005 Mbed	Window	Front 2x4 (Front-70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
006 wic	Window	Front 2x4 (Front-70)	2.0	5.0	1	10.0	0.31	0.29	Insect Screen (default)
007 ba2	Window	Front 2x4 (Front-70)	2.0	3.0	1	6.0	0.31	0.29	Insect Screen (default)
001 Entry	Window	Front 2x4 Siding (Front-70)	2.0	5.0	1	10.0	0.31	0.29	Insect Screen (default)
002 Entry	Window	Front 2x4-Siding (Front-70)	2.0	5.0	1	10.0	0.31	0.29	Insect Screen (default)
003 Pwdr	Window	Front 2x4 Siding (Front-70)	2.0	3.0	1	6.0	0.31	0.29	Insect Screen (default)
001 Stair	Window	Left 2x4 (Left-160)	2.5	3.5	1	8.8	0.35	0.29	Insect Screen (default)
002 Stair	Window	Left 2x6 (Left-160)	2.5	5.0	1	12.5	0.35	0.29	Insect Screen (default)
003 Ba2	Window	Left 2x6 Siding (Left-160)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
003 Bed3	Window	Back 2x4 (Back-250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
004 Bed2	Window	Back 2x4 (Back-250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
001 Kitchen	Window	Back 2x4-Siding (Back-250)	3.0	4.0	1	12.0	0.31	0.29	Insect Screen (default)
002 Dining	Window	Back 2x4-Siding (Back-250)	6.0	8.0	1	48.0	0.28	0.32	Insect Screen (default)
004 Mba	Window	Right 2x4 (Right-340)	2.0	5.0	1	10.0	0.31	0.29	Insect Screen (default)
005 Mbed>	Window	Right 2x4 (Right-340)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
001 Dining	Window	Right 2x4-Siding (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
002 Great	Window	Right 2x4-Siding (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
003 Entry	Window	Right 2x4-Siding (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)

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DOORS			
01	02	03	04
Name	**Side of Building**	**Area (ft^2)**	**U-factor**
FrDr	Front 2x4 Siding	28.0	0.50
GDoor	Gwall Front	66.0	1.00

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OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Winter Design U-value**	**Assembly Layers**
Garage Ext Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	none	0.361	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4* • *Exterior Finish: 3 Coat Stucco*
R0 CigBlwAttic Cons	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	none	0.481	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4 Btm Chrd*
Asphalt RB Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.644	• *Cavity / Frame: no insul. / 2x4* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R-28.9 Insul.*
R15 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 15	0.095	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-15 / 2x4* • *Exterior Finish: 3 Coat Stucco*
R19 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.072	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: 3 Coat Stucco*
R19 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.054	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: R4 Synthetic Stucco*
R19 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 19	0.049	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R-9.9 insul.*
R13 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.069	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: R4 Synthetic Stucco*
Gar House R19	Interior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.067	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Other Side Finish: Gypsum Board*
Gar House R13	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.092	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Other Side Finish: Gypsum Board*
R-13 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.101	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: 3 Coat Stucco*

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Garage Ceiling R21	Interior Floors	Wood Framed Floor	2x12 @ 16 in. O.C.	R 21	0.041	- Floor Surface: Carpeted - Floor Deck: Wood Siding/sheathing/decking - Cavity / Frame: R-21 / 2x12 - Ceiling Below Finish: Gypsum Board

SLAB FLOORS

01	02	03	04	05	06	07
Name	Zone	Area (ft^2)	Perimeter (ft)	Edge Insul. R-value & Depth	Carpeted Fraction	Heated
Slab On Grade	House	541	104	None	0	No
Gslab	Garage	434	100	None	0	No

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	Quality Installation of Spray Foam Insulation	Building Envelope Air Leakage	ACH @ 50 Pa
Required	Not Required	Not Required	---

WATER HEATING SYSTEMS

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01	02	03	04	05	06
Name	System Type	Distribution Type	Water Heater	Number of Heaters	Solar Fraction (%)
Water Heater - 1/1	DHW	Standard	Tankless 82 EF	1	- none -

WATER HEATERS

01	02	03	04	05	06	07	08
Name	Heater Element Type	Tank Type	Tank Volume (gal)	Energy Factor or Efficiency	Input Rating	Tank Exterior Insulation R-value	Standby Loss (Fraction)
Tankless 82 EF	Natural Gas	Small Instantaneous	0	0.82	199900-Btu/hr	0	0

WATER HEATING - HERS VERIFICATION

01	02	03	04	05	06	07
Name	Pipe Insulation	Parallel Piping	Compact Distribution	Point-of Use	Recirculation Control	Central DHW Distribution
Water Heater - 1/1	---	---	---	---	---	---

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06
SC Sys Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name
Split 14 12:Furn 92:Attic Default:HVAC Fan 1:3	Variable Outdoor Air Ventilation Central Heat/Cool System	Furn 92	Split 14 12	HVAC Fan 1	Attic Default

HVAC HEATING UNIT TYPES

01	02	03
Name	Type	Efficiency
Furn 92	Cntrl-urnace - Fuel-fired central furnace	92 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07
Name	System Type	Efficiency EER	Efficiency SEER	Zonally Controlled	Multi-speed Compressor	HERS Verification
Split 14 12	SplitAirCond	12.2	14	Zonally Controlled	Single Speed	Split 14 12-hers-cool

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HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge
Split 14 12-hers-cool	Required	275	Required	Not Required	Not Required

HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07
Name	Type	Duct Leakage	Insulation R-value	Duct Location	Bypass Duct	HERS Verification
Attic Default	DuctsAttic	Sealed and tested	6	Attic	None	Attic Default-hers-dist

HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	Duct Leakage Verification	Duct Leakage Target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler
Attic Default-hers-dist	Required	6.0	Not Required	Not Required	Not Required	Not Required	Required

HVAC - FAN SYSTEMS			
01	02	03	04
Name	Type	Fan Power (Watts/CFM)	HERS Verification
HVAC Fan 1	Single Speed PSC Furnace Fan	0.58	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION		
01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficiency (Watts/CFM)
HVAC Fan 1-hers-fan	Required	0.58

IAQ (Indoor Air Quality) FANS					
01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness(%)	HERS Verification
SFam IAQVentRpt	43	0.25	Default	0	Required

CalCERTS,inc.®

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1 I certify that this Certificate of Compliance documentation is accurate and complete	
Documentation Author Name: Vern Crawford	Documentation Author Signature: *Vern Crawford*
Company: Harris & Sloan Consulting Group, Inc.	Signature Date: 2015-03-13 08:48:50
Address: 2295 Gateway Oaks Drive Suite 165	CFA/HERS Certification Identification (If applicable):
City/State/Zip: Sacramento, CA 95833	Phone: 916-921-2800

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Responsible Designer Name: Mandi Kaercher	Responsible Designer Signature: *Mandi Kaercher*
Company: Standard Pacific Homes - Bay Area	Date Signed: 2015-03-13 11:56:37
Address: 3825 Hopyard Rd, Ste 275	License:
City/State/Zip: Pleasanton, CA 94588	Phone: 925-730-1373

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Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD **CF1R-PRF-01**

Project Name: Village Walk Plan3 **Calculation Date/Time:** 08:13, Fri, Mar 13, 2015

Calculation Description: Cardinal **Input File Name:** cPlan3 1300.ribd

GENERAL INFORMATION					
01	Project Name	Village Walk Plan3			
02	Calculation Description	Plan 3			
03	Project Location	Some St.			
04	City	Cotati, CA	05	Standards Version	Compliance 2015
06	Zip Code		07	Compliance Manager Version	BEMCmpMgr 2013.3c (710)
08	Climate Zone	CZ2	09	Software Version	CBECC-Res 2013.3c (710)
10	Building Type	Single Family	11	Front Orientation (deg/Cardinal)	Cardinal
12	Project Scope	Newly Constructed	13	Number of Dwelling Units	1
14	Total Cond. Floor Area (FT^2)	1300	15	Number of Zones	1
16	Slab Area (FT^2)	541	17	Number of Stories	2
18	Addition Cond. Floor Area	N/A	19	Natural Gas Available	Yes
20	Addition Slab Area (FT^2)	N/A	21	Glazing Percentage (%)	19.5%

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

CalCERTS Inc.

RECEIVED
MAR 24 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

ENERGY USE SUMMARY

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Space Heating	20.73	17.81	2.92	14.1%
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PV Credit	----	0.00	0.00	----
North Facing Compliance Total	**49.46**	**36.90**	**12.56**	**25.4%**
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Space Cooling	8.12	6.85	1.27	15.6%
IAQ Ventilation	1.54	1.54	0.00	0.0%
Water Heating	19.07	12.42	6.65	34.9%
PV Credit		0.00	0.00	
East Facing Compliance Total	**49.46**	**39.65**	**9.81**	**19.8%**
Space Heating	20.73	18.32	2.41	11.6%
Space Cooling	8.12	4.66	3.46	42.6%
IAQ Ventilation	1.54	1.54	0.00	0.0%
Water Heating	19.07	12.42	6.65	34.9%
PV Credit	----	0.00	0.00	----
South Facing Compliance Total	**49.46**	**36.94**	**12.52**	**25.3%**
Space Heating	20.73	17.82	2.91	14.0%
Space Cooling	8.12	7.15	0.97	11.9%
IAQ Ventilation	1.54	1.54	0.00	0.0%
Water Heating	19.07	12.42	6.65	34.9%
PV Credit	----	0.00	0.00	----
West Facing Compliance Total	**49.46**	**38.93**	**10.53**	**21.3%**

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REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- **Cool roof**
- **Ceiling has high level of insulation**
- **Exposed slab floor in conditioned zone**

HERS FEATURE SUMMARY

The following is a summary of the features that must be field verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building components tables below.

Building-level Verifications:
- **High Quality Insulation Installation (QII)**
- **IAQ mechanical ventilation**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified EER**
- **Fan Efficacy Watts/CFM**

HVAC Distribution System Verifications:
- **Duct Sealing**
- **Low-leakage Air Handling Unit**

Domestic Hot Water System Verifications:
- **-- None --**

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ENERGY DESIGN RATING

This is the sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building (Energy Budget) and the annual TDV energy consumption for lighting and components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics) and accounting for the annual TDV energy offset by an on-site renewable energy system.

	Reference Energy Use	Energy Design Rating	Margin	Percent Improvement
Total Energy (kTDV/f2-yr)*	109.07	99.26	9.81	9.0%

* includes calculated Appliances and Miscellaneous Energy Use (AMEU)

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	**Conditioned Floor Area (ft2)**	**Number of Dwelling Units**	**Number of Bedrooms**	**Number of Zones**	**Number of Ventilation Cooling Systems**	**Number of Water Heating Systems**
Village Walk Plan3	1300	1	3	1	0	1

ZONE INFORMATION

01	02	03	04	05	06	07
Zone Name	Zone Type	HVAC System Name	Zone Floor Area (ft^2)	Avg. Ceiling Height	Water Heating System 1	Water Heating System 2
House	Conditioned	HVAC System 1	1300	9	Water Heater	

OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	Zone	Construction	Azimuth	Orientation	Gross Area (ft^2)	Window Area (ft^2)	Tilt (deg)
Front 2x4	House	R13 R4 Stucco Wall	70	Front	251	46	90
Ceiling (below attic) 1	House	R38 Ceiling below attic			675		
Ceiling (at FAU)	House	R19 Ceiling below attic			50		
Interior Wall 2x4	House>>Garage	Gar House R13			153		
Interior Wall 2x6	House>>Garage	Gar House R19			72		
Interior Floor 1	House>>Garage	Garage Ceiling R21			185		
Front 2x4 Siding	House	R 13 Wall	70	Front	142	26	90
Left 2x4	House	R13 R4 Stucco Wall	160	Left	62	8.75	90
Left 2x4-Siding	House	R-13 Wall	160	Left	132	0	90
Left 2x6	House	R19 R4 Stucco Wall	160	Left	40	12.5	90
Left 2x6 Siding	House	R19 Wall	160	Left	170	8	90
Back 2x4	House	R13 R4 Stucco Wall	250	Back	233	30	90
Back 2x4-Siding	House	R-13 Wall	250	Back	233	60	90
Right 2x4	House	R15 Wall	340	Right	30	25	90
Right 2x4-Siding	House	R-13 Wall	340	Right	328	37.5	90
Gwall Right	Garage	Garage Ext Wall	340	Right	135	0	90
Gwall Left	Garage	Garage Ext Wall	160	Left	351	0	90
Gwall Front	Garage	Garage Ext Wall	70	Front	102	0	90
Gceil	Garage	R0 CigBlwAttic Cons			251		
Gwall Back	Garage	Garage Ext Wall	250	Back	102	0	90

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ATTIC

01	02	03	04	05	06	07	08
Name	Construction	Type	Roof Rise	Roof Reflectance	Roof Emittance	Radiant Barrier	Cool Roof
Attic	Asphalt RB Roof	Ventilated	6	0.2	0.85	Yes	Yes

WINDOWS

01	02	03	04	05	06	07	08	09	10
Name	Type	Surface (Orientation-Azimuth)	Width (ft)	Height (ft)	Multiplier	Area (ft^2)	U-factor	SHGC	Exterior Shading
004 Mbed	Window	Front 2x4 (Front-70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
005 Mbed	Window	Front 2x4 (Front-70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
006 wic	Window	Front 2x4 (Front-70)	2.0	5.0	1	10.0	0.31	0.29	Insect Screen (default)
007 ba2	Window	Front 2x4 (Front-70)	2.0	3.0	1	6.0	0.31	0.29	Insect Screen (default)
001 Entry	Window	Front 2x4-Siding (Front-70)	2.0	5.0	1	10.0	0.31	0.29	Insect Screen (default)
002 Entry	Window	Front 2x4-Siding (Front-70)	2.0	5.0	1	10.0	0.31	0.29	Insect Screen (default)
003 Pwdr	Window	Front 2x4-Siding (Front-70)	2.0	3.0	1	6.0	0.31	0.29	Insect Screen (default)
001 Stair	Window	Left 2x4 (Left-160)	2.5	3.5	1	8.8	0.35	0.29	Insect Screen (default)
002 Stair	Window	Left 2x6 (Left-160)	2.5	5.0	1	12.5	0.35	0.29	Insect Screen (default)
003 Ba2	Window	Left 2x6-Siding (Left-160)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
003 Bed3	Window	Back 2x4 (Back-250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
004 Bed2	Window	Back 2x4 (Back-250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
001 Kitchen	Window	Back 2x4-Siding (Back-250)	3.0	4.0	1	12.0	0.31	0.29	Insect Screen (default)
002 Dining	Window	Back 2x4-Siding (Back-250)	6.0	8.0	1	48.0	0.28	0.32	Insect Screen (default)
004 Mba	Window	Right 2x4 (Right-340)	2.0	5.0	1	10.0	0.31	0.29	Insect Screen (default)
005 Mbed>	Window	Right 2x4 (Right-340)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
001 Dining	Window	Right 2x4-Siding (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
002 Great	Window	Right 2x4-Siding (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
003 Entry	Window	Right 2x4-Siding (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)

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DOORS			
01	02	03	04
Name	**Side of Building**	**Area (ft^2)**	**U-factor**
FrDr	Front 2x4 Siding	28.0	0.50
GDoor	Gwall Front	66.0	1.00

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OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Winter Design U-value**	**Assembly Layers**
Garage Ext Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	none	0.361	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4* • *Exterior Finish: 3 Coat Stucco*
R0 CathwAttic Cons	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	none	0.481	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4 Btm Chrd*
Asphalt RB Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.644	• *Cavity / Frame: no insul. / 2x4* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 28.9 Insul.*
R15 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 15	0.095	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-15 / 2x4* • *Exterior Finish: 3 Coat Stucco*
R19 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.072	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: 3 Coat Stucco*
R19 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.054	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: R4 Synthetic Stucco*
R19 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 19	0.049	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R-9.9 insul.*
R13 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.069	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: R4 Synthetic Stucco*
Gar House R19	Interior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.067	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Other Side Finish: Gypsum Board*
Gar House R13	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.092	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Other Side Finish: Gypsum Board*
R-13 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.101	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: 3 Coat Stucco*

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Garage Ceiling R21	Interior Floors	Wood Framed Floor	2x12 @ 16 in. O.C.	R-21	0.041	- *Floor Surface: Carpeted* - *Floor Deck: Wood Subfloor/sheathing/decking* - *Cavity / Frame: R-21 / 2x12* - *Ceiling Below Finish: Gypsum Board*

SLAB FLOORS

01	02	03	04	05	06	07
Name	**Zone**	**Area (ft^2)**	**Perimeter (ft)**	**Edge Insul. R-value & Depth**	**Carpeted Fraction**	**Heated**
Slab On Grade	House	541	104	None	0	No
Cslab	Garage	434	100	None	0	No

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	**Quality Installation of Spray Foam Insulation**	**Building Envelope Air Leakage**	**ACH @ 50 Pa**
Required	Not Required	Not Required	---

WATER HEATING SYSTEMS

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01	02	03	04	05	06
Name	**System Type**	**Distribution Type**	**Water Heater**	**Number of Heaters**	**Solar Fraction (%)**
Water Heater - 1/1	DHW	Standard	Tankless 82 EF	1	- none -

WATER HEATERS

01	02	03	04	05	06	07	08
Name	**Heater Element Type**	**Tank Type**	**Tank Volume (gal)**	**Energy Factor or Efficiency**	**Input Rating**	**Tank Exterior Insulation R-value**	**Standby Loss (Fraction)**
Tankless 82 EF	Natural Gas	Small Instantaneous	0	0.82	199900-Btu/hr	0	0

WATER HEATING - HERS VERIFICATION

01	02	03	04	05	06	07
Name	**Pipe Insulation**	**Parallel Piping**	**Compact Distribution**	**Point-of Use**	**Recirculation Control**	**Central DHW Distribution**
Water Heater - 1/1	---	---	---	---	---	---

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06
SC Sys Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name
Split 14 12:Furn 92:Attic Default:HVAC Fan 1:3	Variable Outdoor Air Ventilation Central Heat/Cool System	Furn 92	Split 14 12	HVAC Fan 1	Attic Default

HVAC HEATING UNIT TYPES

01	02	03
Name	Type	Efficiency
Furn 92	Cntrl-urnace - Fuel-fired central furnace	92 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07
Name	System Type	Efficiency EER	Efficiency SEER	Zonally Controlled	Multi-speed Compressor	HERS Verification
Split 14 12	SplitAirCond	12.2	14	Zonally Controlled	Single Speed	Split 14 12-hers-cool

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HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge
Split 14 12-hers-cool	Required	275	Required	Not Required	Not Required

HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07
Name	Type	Duct Leakage	Insulation R-value	Duct Location	Bypass Duct	HERS Verification
Attic Default	DuctsAttic	Sealed and tested	6	Attic	None	Attic Default-hers-dist

HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	Duct Leakage Verification	Duct Leakage Target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler
Attic Default-hers-dist	Required	6.0	Not Required	Not Required	Not Required	Not Required	Required

HVAC - FAN SYSTEMS

01	02	03	04
Name	**Type**	**Fan Power (Watts/CFM)**	**HERS Verification**
HVAC Fan 1	Single Speed PSC Furnace Fan	0.68	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION

01	02	03
Name	**Verified Fan Watt Draw**	**Required Fan Efficiency (Watts/CFM)**
HVAC Fan 1-hers-fan	Required	0.58

IAQ (Indoor Air Quality) FANS

01	02	03	04	05	06
Dwelling Unit	**IAQ CFM**	**IAQ Watts/CFM**	**IAQ Fan Type**	**IAQ Recovery Effectiveness(%)**	**HERS Verification**
SFam IAQVentRpt	43	0.25	Default	0	Required

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1 I certify that this Certificate of Compliance documentation is accurate and complete	
Documentation Author Name: Vern Crawford	Documentation Author Signature: *Vern Crawford*
Company: Harris & Sloan Consulting Group, Inc.	Signature Date: 2015-03-13 08:48:50
Address: 2295 Gateway Oaks Drive Suite 165	CEA/HERS Certification Identification (If applicable):
City/State/Zip: Sacramento, CA 95833	Phone: 916-921-2800

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

CalCERTS inc.

Responsible Designer Name: Mandi Kaercher	Responsible Designer Signature: *Mandi Kaercher*
Company: Standard Pacific Homes - Bay Area	Date Signed: 2015-03-13 11:56:37
Address: 3825 Hopyard Rd, Ste 275	License:
City/State/Zip: Pleasanton, CA 94588	Phone: 925-730-1373

Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD **CF1R-PRF-01**

Project Name: Village Walk Plan2 **Calculation Date/Time:** 08:17, Fri, Mar 13, 2015

Calculation Description: Cardinal **Input File Name:** cPlan2 1248.ribd

GENERAL INFORMATION					
01	Project Name	Village Walk Plan2			
02	Calculation Description	Plan 2			
03	Project Location	Some St.			
04	City	Cotati, CA	06	Standards Version	Compliance 2016
05	Zip Code		07	Compliance Manager Version	BEMCmpMgr 2013.3c (710)
08	Climate Zone	CZ2	09	Software Version	CBECC-Res 2013.3c (710)
10	Building Type	Multifamily	11	Front Orientation (deg/Cardinal)	Cardinal
12	Project Scope	Newly Constructed	13	Number of Dwelling Units	1
14	Total Cond. Floor Area (FT^2)	1248	15	Number of Zones	1
16	Slab Area (FT^2)	53	17	Number of Stories	3
18	Addition Cond. Floor Area	N/A	19	Natural Gas Available	Yes
20	Addition Slab Area (FT^2)	N/A	21	Glazing Percentage (%)	11.3%

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

CalCERTS Inc.

RECEIVED
MAR 24 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

ENERGY USE SUMMARY				
Energy Use (kTU/ft²-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	12.05	9.35	2.70	22.4%
Space Cooling	12.18	6.58	5.60	46.0%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	19.64	12.70	6.94	35.3%
PV Credit	----	0.00	0.00	----
North Facing Compliance Total	**46.11**	**30.87**	**15.24**	**33.1%**
Space Heating	12.05	10.12	1.93	16.0%
Space Cooling	12.18	13.28	-1.10	-9.0%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	19.64	12.70	6.94	35.3%
PV Credit		0.00	0.00	
East Facing Compliance Total	**46.11**	**38.34**	**7.77**	**16.9%**
Space Heating	12.05	10.36	1.69	14.0%
Space Cooling	12.18	6.49	5.69	46.7%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	19.64	12.70	6.94	35.3%
PV Credit	----	0.00	0.00	----
South Facing Compliance Total	**46.11**	**31.79**	**14.32**	**31.1%**
Space Heating	12.05	10.43	1.62	13.4%
Space Cooling	12.18	13.09	-0.91	-7.5%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	19.64	12.70	6.94	35.3%
PV Credit	----	0.00	0.00	----
West Facing Compliance Total	**46.11**	**38.46**	**7.65**	**16.6%**

CalCERTS inc.

REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- **Cool roof**
- **Ceiling has high level of insulation**
- **Floor has high level of insulation**
- **Window overhangs and/or fins**
- **Exposed slab floor in conditioned zone**

HERS FEATURE SUMMARY

The following is a summary of the features that must be field verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building components tables below

Building-level Verifications:
- **High Quality Insulation Installation (QII)**
- **IAQ mechanical ventilation**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified EER**
- **Fan Efficacy Watts/CFM**

HVAC Distribution System Verifications:
- **Duct Sealing**
- **Low-leakage Air Handling Unit**

Domestic Hot Water System Verifications:
- **-- None --**

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ENERGY DESIGN RATING

This is the sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building (Energy Budget) and the annual TDV energy consumption for lighting and components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics) and accounting for the annual TDV energy offset by an on-site renewable energy system.

	Reference Energy Use	Energy Design Rating	Margin	Percent Improvement
Total Energy (kTDV/f2-yr)*	**106.94**	**99.29**	**7.65**	**7.2%**

* includes calculated Appliances and Miscellaneous Energy Use (AMEU)

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	**Conditioned Floor Area (sft)**	**Number of Dwelling Units**	**Number of Bedrooms**	**Number of Zones**	**Number of Ventilation Cooling Systems**	**Number of Water Heating Systems**
Village Walk Plan2	1248	1	2	1	0	1

ZONE INFORMATION				
01	02	03	04	05
Zone Name	**Zone Type**	**Zone Floor Area (ft^2)**	**Avg. Ceiling Height**	**Number of Dwelling Units**
House	Conditioned	1248	9	1

DWELLING UNIT INFORMATION		
01	02	03
Dwelling Unit Name	**Dwelling Unit Type**	**Zone**
DwellingUnit 1 (1/1)	DwellingUnitType 1	House

DWELLING UNIT TYPES						
01	02	03	04	05	06	07
Name	**CFA (ft2)**	**Number of Bedrooms**	**Number in Building**	**Space Conditioning System Name (Count)**	**DHW System Name**	**IAQ Vent Fan Name**
DwellingUnit Type 1	1248	2	1	Split 14 12:Furn 92:Attic Default:HVAC Fan 1:1 (1)	Water Heater	Default Minimum IAQ Fan

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OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft^2)**	**Window Area (ft^2)**	**Tilt (deg)**
Ceiling (below attic) 1	House	R38 Ceiling below attic			542		
Ceiling (at HAU)	House	R19 Ceiling below attic			60		
GarageWall 2x4	House>>Garage	Gar House R13			234		
Party Wall 2x4	House>>Garage	Gar House R13			231		
Interior Floor 1	House>>Garage	Garage Ceiling R21			473		
Front 2x4 1st Flr	House	R 13 Wall	70	Front	52	0	90
Front 2x6	House	R19 R4 Stucco Wall	70	Front	301	54	90
Back 2x4	House	R13 R4 Stucco Wall	250	Back	301	87	90
Right 2x4	House	R 13 Wall	340	Right	27	0	90
Party Wall 2x6	House>>Garage	Gar House R19			655		
Ceiling (2nd Flr)	House	R30 Ceiling below attic			22		
Exterior Floor 1	House	Ext R21 Floor			60		
Gwall Right	Garage	Garage Ext Wall	340	Right	143	0	90
Gwall Left	Garage	Garage Ext Wall	160	Left	360	0	90
Gceil	Garage	R0 CigBlwAttic Cons			47		
Gwall Back	Garage	Garage Ext Wall	250	Back	150	0	90
Gwall Front	Garage	Garage Ext Wall	250	Back	102	0	90

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ATTIC

01	02	03	04	05	06	07	08
Name	**Construction**	**Type**	**Roof Rise**	**Roof Reflectance**	**Roof Emittance**	**Radiant Barrier**	**Cool Roof**
Attic	Asphalt RB Roof	Ventilated	6	0.2	0.85	Yes	Yes

WINDOWS

01	02	03	04	05	06	07	08	09	10
Name	Type	Surface (Orientation-Azimuth)	Width (ft)	Height (ft)	Multiplier	Area (ft^2)	U-factor	SHGC	Exterior Shading
00a Kitchen	Window	Front 2x6 (Front 70)	3.0	4.0	1	12.0	0.31	0.29	Insect Screen (default)
00b Kitchen	Window	Front 2x6 (Front-70)	3.0	4.0	1	12.0	0.31	0.29	Insect Screen (default)
00c Bed2	Window	Front 2x6 (Front-70)	3.0	5.0	1	15.0	0.28	0.32	Insect Screen (default)
00c Bed2-2	Window	Front 2x6 (Front 70)	3.0	5.0	1	15.0	0.28	0.32	Insect Screen (default)
00a Family	Window	Back 2x4 (Back 250)	8.0	8.0	1	64.0	0.35	0.29	Insect Screen (default)
00b Mbed	Window	Back 2x4 (Back-250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00c Mba	Window	Back 2x4 (Back 250)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)

DOORS

01	02	03	04
Name	Side of Building	Area (ft^2)	U-factor
FrDr-2	GarageWall 2x4	28.0	0.50
FrDr	Front 2x4 1st Flr	28.0	0.50
GDoor	Gwall Back	144.0	1.00

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OVERHANGS AND FINS

01	02	03	04	05	06	07	08	09	10	11	12	13	14
	Overhang					Left Fin				Right Fin			
Window	Depth	Dist Up	Left Extent	Right Extent	Flap Ht.	Depth	Top Up	DistL	Bot Up	Depth	Top Up	Dist R	Bot Up
00a Kitchen	2.5	1	5	5	0.4	0	1.33	1	0	0	0	0	0
00b Kitchen	2.5	1	5	5	0.4	0	1.33	1	0	0	0	0	0
00c Bed2	1.5	0	4	4	0.4	0	1.33	1	0	0	0	0	0
00c Bed2-2	1.5	0	4	4	0.4	0	1.33	1	0	0	0	0	0
00a Family	3	1	4	4	0.4	3	1	4	0	3	1	4	0
00b Mbed	1.67	0.5	4	4	0.4	0	1.33	1	0	0	0	0	0
00c Mba	1.67	0.5	4	4	0.4	0	1.33	1	0	0	0	0	0

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Winter Design U-value**	**Assembly Layers**
Garage Ext Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	none	0.361	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul / 2x4* • *Exterior Finish: 3 Coat Stucco*
R0 CigBrwAttic Cons	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	none	0.481	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul / 2x4 Btm Chrd*
Asphalt R0 Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.644	• *Cavity / Frame: no insul / 2x4* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 28.9 Insul*
R30 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 30	0.032	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 20.9 Insul*
R19 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.054	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: R4 Synthetic Stucco*
R19 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 19	0.049	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R-9.9 insul.*
R13 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.069	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: R4 Synthetic Stucco*
Gar House R19	Interior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.067	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Other Side Finish: Gypsum Board*
Gar House R13	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.092	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Other Side Finish: Gypsum Board*
R-13 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.101	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: 3 Coat Stucco*
Ext R21 Floor	Exterior Floors	Wood Framed Floor	2x4 @ 16 in. O.C.	R 21	0.050	• *Floor Surface: Carpeted* • *Floor Deck: Wood Siding/sheathing/decking* • *Cavity / Frame: R-21 / 2x4*

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Garage Ceiling R21	Interior Floors	Wood Framed Floor	2x12 @ 16 in. O.C.	R-21	0.041	• *Floor Surface: Carpeted* • *Floor Deck: Wood Siding/sheathing/decking* • *Cavity / Frame: R-21 / 2x12* • *Ceiling Below Finish: Gypsum Board*

SLAB FLOORS

01	02	03	04	05	06	07
Name	**Zone**	**Area (ft^2)**	**Perimeter (ft)**	**Edge Insul. R-value & Depth**	**Carpeted Fraction**	**Heated**
Slab On Grade	House	53	52	None	0	No
Cslab	Garage	586	113	None	0	No

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	**Quality Installation of Spray Foam Insulation**	**Building Envelope Air Leakage**	**ACH @ 50 Pa**
Required	Not Required	Not Required	---

WATER HEATING SYSTEMS

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01	02	03	04	05	06	07
Name	**System Type**	**Number of Systems in Building**	**Multi-Family Distribution Type**	**Water Heater**	**Number of Water Heaters/System**	**Solar Fraction (%)**
Water Heater	Standard	1	- none -	Tankless 82 EF	1	---

WATER HEATERS

01	02	03	04	05	06	07	08
Name	**Heater Element Type**	**Tank Type**	**Tank Volume (gal)**	**Energy Factor or Efficiency**	**Input Rating**	**Tank Exterior Insulation R-value**	**Standby Loss (Fraction)**
Tankless 82 EF	Natural Gas	Small Instantaneous	0	0.82	199900-Btu/hr	0	0

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06
SC Sys Name	**System Type**	**Heating Unit Name**	**Cooling Unit Name**	**Fan Name**	**Distribution Name**
Split 14 12:Furn 92:Attic Default:HVAC Fan 1:1	Other Heating and Cooling System	Furn 92	Split 14 12	HVAC Fan 1	Attic Default

HVAC - HEATING UNIT TYPES

01	02	03
Name	**Type**	**Efficiency**
Furn 92	Cntrl-urnace - Fuel-fired central furnace	92 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07
		Efficiency				
Name	**System Type**	**EER**	**SEER**	**Zonally Controlled**	**Multi-speed Compressor**	**HERS Verification**
Split 14 12	SplitAirCond	12.2	14	Zonally Controlled	Single Speed	Split 14 12 hers cool

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	**Verified Airflow**	**Airflow Target**	**Verified EER**	**Verified SEER**	**Verified Refrigerant Charge**
Split 14 12 hers cool	Required	275	Required	Not Required	Not Required

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HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07
Name	**Type**	**Duct Leakage**	**Insulation R-value**	**Duct Location**	**Bypass Duct**	**HERS Verification**
Attic Default	DuctsAttic	Sealed and tested	6	Attic	None	Attic Default-hers-dist

HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	**Duct Leakage Verification**	**Duct Leakage Target (%)**	**Verified Duct Location**	**Verified Duct Design**	**Buried Ducts**	**Deeply Buried Ducts**	**Low-leakage Air Handler**
Attic Default-hers-dist	Required	total leakage <= 12.0 or leakage to outdoors <= 6.0	Not Required	Not Required	Not Required	Not Required	Required

HVAC - FAN SYSTEMS

01	02	03	04
Name	**Type**	**Fan Power (Watts/CFM)**	**HERS Verification**
HVAC Fan 1	Single Speed PSC Furnace Fan	0.58	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION		
01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficiency (Watts/CFM)
HVAC Fan 1-hers-fan	Required	0.58

IAQ (Indoor Air Quality) FANS					
01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness(%)	HERS Verification
DwellingUnit 1 1/1	59.94	0.25	Default	0	Required

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1 I certify that this Certificate of Compliance documentation is accurate and complete	
Documentation Author Name: Vern Crawford	Documentation Author Signature: *Vern Crawford*
Company: Harris & Sloan Consulting Group, Inc.	Signature Date: 2015-03-13 08:59:55
Address: 2295 Gateway Oaks Drive Suite 165	CEA/HERS Certification Identification (If applicable):
City/State/Zip: Sacramento, CA 95833	Phone: 916-921-2800

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

CalCERTS inc.

Responsible Designer Name: Mandi Kaercher	Responsible Designer Signature: *Mandi Kaercher*
Company: Standard Pacific Homes - Bay Area	Date Signed: 2015-03-13 11:54:47
Address: 3825 Hopyard Rd, Ste 275	License:
City/State/Zip: Pleasanton, CA 94588	Phone: 925-730-1373

Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD **CF1R-PRF-01**

Project Name: Village Walk Plan2 **Calculation Date/Time:** 08:17, Fri, Mar 13, 2015

Calculation Description: Cardinal **Input File Name:** cPlan2 1248.ribd

GENERAL INFORMATION					
01	Project Name	Village Walk Plan2			
02	Calculation Description	Plan 2			
03	Project Location	Some St.			
04	City	Cotati, CA	06	Standards Version	Compliance 2015
05	Zip Code		07	Compliance Manager Version	BEMCmpMgr 2013.3c (710)
08	Climate Zone	CZ2	09	Software Version	CBECC-Res 2013.3c (710)
10	Building Type	Multifamily	11	Front Orientation (deg/Cardinal)	Cardinal
12	Project Scope	Newly Constructed	13	Number of Dwelling Units	1
14	Total Cond. Floor Area (FT^2)	1248	15	Number of Zones	1
16	Slab Area (FT^2)	53	17	Number of Stories	3
18	Addition Cond. Floor Area	N/A	19	Natural Gas Available	Yes
20	Addition Slab Area (FT^2)	N/A	21	Glazing Percentage (%)	11.3%

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

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RECEIVED
MAR 2 4 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

ENERGY USE SUMMARY

Energy Use (kTDV/ft²-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	12.05	9.35	2.70	22.4%
Space Cooling	12.18	6.58	5.60	46.0%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	19.64	12.70	6.94	35.3%
PV Credit	----	0.00	0.00	----
North Facing Compliance Total	**46.11**	**30.87**	**15.24**	**33.1%**
Space Heating	12.05	10.12	1.93	16.0%
Space Cooling	12.18	13.28	-1.10	-9.0%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	19.64	12.70	6.94	35.3%
PV Credit		0.00	0.00	
East Facing Compliance Total	**46.11**	**38.34**	**7.77**	**16.9%**
Space Heating	12.05	10.36	1.69	14.0%
Space Cooling	12.18	6.49	5.69	46.7%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	19.64	12.70	6.94	35.3%
PV Credit	----	0.00	0.00	----
South Facing Compliance Total	**46.11**	**31.79**	**14.32**	**31.1%**
Space Heating	12.05	10.43	1.62	13.4%
Space Cooling	12.18	13.09	-0.91	-7.5%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	19.64	12.70	6.94	35.3%
PV Credit	----	0.00	0.00	----
West Facing Compliance Total	**46.11**	**38.46**	**7.65**	**16.6%**

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REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- **Cool roof**
- **Ceiling has high level of insulation**
- **Floor has high level of insulation**
- **Window overhangs and/or fins**
- **Exposed slab floor in conditioned zone**

HERS FEATURE SUMMARY

The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building components tables below.

Building-level Verifications:
- **High Quality Insulation Installation (QII)**
- **IAQ mechanical ventilation**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified EER**
- **Fan Efficacy Watts/CFM**

HVAC Distribution System Verifications:
- **Duct Sealing**
- **Low-leakage Air Handling Unit**

Domestic Hot Water System Verifications:
- **-- None --**

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ENERGY DESIGN RATING

This is the sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building (Energy Budget) and the annual TDV energy consumption for lighting and components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics) and accounting for the annual TDV energy offset by an on-site renewable energy system.

	Reference Energy Use	Energy Design Rating	Margin	Percent Improvement
Total Energy (kTDV/f2-yr)*	106.94	99.29	7.65	7.2%

* includes calculated Appliances and Miscellaneous Energy Use (AMEU)

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	**Conditioned Floor Area (sft)**	**Number of Dwelling Units**	**Number of Bedrooms**	**Number of Zones**	**Number of Ventilation Cooling Systems**	**Number of Water Heating Systems**
Village Walk Plan2	1248	1	2	1	0	1

ZONE INFORMATION				
01	02	03	04	05
Zone Name	**Zone Type**	**Zone Floor Area (ft^2)**	**Avg. Ceiling Height**	**Number of Dwelling Units**
House	Conditioned	1248	9	1

DWELLING UNIT INFORMATION		
01	02	03
Dwelling Unit Name	**Dwelling Unit Type**	**Zone**
DwellingUnit 1 (1/1)	DwellingUnitType 1	House

DWELLING UNIT TYPES						
01	02	03	04	05	06	07
Name	**CFA (ft2)**	**Number of Bedrooms**	**Number in Building**	**Space Conditioning System Name (Count)**	**DHW System Name**	**IAQ Vent Fan Name**
DwellingUnit Type 1	1248	2	1	Split 14 12:Furn 92:Attic Default:HVAC Fan 1:1 (1)	Water Heater	Default Minimum IAQ Fan

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OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft^2)**	**Window Area (ft^2)**	**Tilt (deg)**
Ceiling (below attic) 1	House	R38 Ceiling below attic			542		
Ceiling (at HAU)	House	R19 Ceiling below attic			60		
GarageWall 2x4	House>>Garage	Gar House R13			234		
Party Wall 2x4	House>>Garage	Gar House R13			231		
Interior Floor 1	House>>Garage	Garage Ceiling R21			473		
Front 2x4 1st Flr	House	R 13 Wall	70	Front	52	0	90
Front 2x6	House	R19 R4 Stucco Wall	70	Front	301	54	90
Back 2x4	House	R13 R4 Stucco Wall	250	Back	301	87	90
Right 2x4	House	R 13 Wall	340	Right	27	0	90
Party Wall 2x6	House>>Garage	Gar House R19			655		
Ceiling (2nd Flr)	House	R30 Ceiling below attic			22		
Exterior Floor 1	House	Ext R21 Floor			60		
Gwall Right	Garage	Garage Ext Wall	340	Right	143	0	90
Gwall Left	Garage	Garage Ext Wall	160	Left	360	0	90
Gceil	Garage	R0 CigBlwAttic Cons			47		
Gwall Back	Garage	Garage Ext Wall	250	Back	150	0	90
Gwall Front	Garage	Garage Ext Wall	250	Back	102	0	90

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ATTIC

01	02	03	04	05	06	07	08
Name	**Construction**	**Type**	**Roof Rise**	**Roof Reflectance**	**Roof Emittance**	**Radiant Barrier**	**Cool Roof**
Attic	Asphalt RB Roof	Ventilated	6	0.2	0.85	Yes	Yes

WINDOWS

01	02	03	04	05	06	07	08	09	10
Name	Type	Surface (Orientation-Azimuth)	Width (ft)	Height (ft)	Multiplier	Area (ft^2)	U-factor	SHGC	Exterior Shading
00a Kitchen	Window	Front 2x6 (Front-70)	3.0	4.0	1	12.0	0.31	0.29	Insect Screen (default)
00b Kitchen	Window	Front 2x6 (Front-70)	3.0	4.0	1	12.0	0.31	0.29	Insect Screen (default)
00c Bed2	Window	Front 2x6 (Front-70)	3.0	5.0	1	15.0	0.28	0.32	Insect Screen (default)
00c Bed2-2	Window	Front 2x6 (Front-70)	3.0	5.0	1	15.0	0.28	0.32	Insect Screen (default)
00a Family	Window	Back 2x4 (Back-250)	8.0	8.0	1	64.0	0.35	0.29	Insect Screen (default)
00b Mbed	Window	Back 2x4 (Back-250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
00c Mba	Window	Back 2x4 (Back-250)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)

DOORS

01	02	03	04
Name	Side of Building	Area (ft^2)	U-factor
FrDr-2	GarageWall 2x4	28.0	0.50
FrDr	Front 2x4 1st Flr	28.0	0.50
GDoor	Gwall Back	144.0	1.00

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OVERHANGS AND FINS

01	02	03	04	05	06	07	08	09	10	11	12	13	14
	Overhang					Left Fin				Right Fin			
Window	Depth	Dist Up	Left Extent	Right Extent	Flap Ht.	Depth	Top Up	DistL	Bot Up	Depth	Top Up	Dist R	Bot Up
00a Kitchen	2.5	1	5	5	0.4	0	1.33	1	0	0	0	0	0
00b Kitchen	2.5	1	5	5	0.4	0	1.33	1	0	0	0	0	0
00c Bed2	1.5	0	4	4	0.4	0	1.33	1	0	0	0	0	0
00c Bed2-2	1.5	0	4	4	0.4	0	1.33	1	0	0	0	0	0
00a Family	3	1	4	4	0.4	3	1	4	0	3	1	4	0
00b Mbed	1.67	0.5	4	4	0.4	0	1.33	1	0	0	0	0	0
00c Mba	1.67	0.5	4	4	0.4	0	1.33	1	0	0	0	0	0

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Winter Design U-value**	**Assembly Layers**
Garage Ext Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	none	0.361	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4* • *Exterior Finish: 3 Coat Stucco*
R0 CigBrwAttic Cons	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	none	0.481	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4 Btm Chrd*
Asphalt R0 Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.644	• *Cavity / Frame: no insul. / 2x4* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 28.9 Insul.*
R30 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 30	0.032	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 20.9 Insul.*
R19 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.054	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: R4 Synthetic Stucco*
R19 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 19	0.049	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R-9.9 insul.*
R13 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.069	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: R4 Synthetic Stucco*
Gar House R19	Interior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.067	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Other Side Finish: Gypsum Board*
Gar House R13	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.092	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Other Side Finish: Gypsum Board*
R-13 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.101	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: 3 Coat Stucco*
Ext R21 Floor	Exterior Floors	Wood Framed Floor	2x4 @ 16 in. O.C.	R 21	0.050	• *Floor Surface: Carpeted* • *Floor Deck: Wood Siding/sheathing/decking* • *Cavity / Frame: R-21 / 2x4*

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Garage Ceiling H21	Interior Floors	Wood Framed Floor	2x12 @ 16 in. O.C.	H 21	0.041	• *Floor Surface: Carpeted* • *Floor Deck: Wood Siding/sheathing/decking* • *Cavity / Frame: R 21 / 2x12* • *Ceiling below Finish: Gypsum Board*

SLAB FLOORS

01	02	03	04	05	06	07
Name	**Zone**	**Area (ft^2)**	**Perimeter (ft)**	**Edge Insul. R-value & Depth**	**Carpeted Fraction**	**Heated**
Slab On Grade	House	53	52	None	0	No
Cslab	Garage	686	113	None	0	No

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	**Quality Installation of Spray Foam Insulation**	**Building Envelope Air Leakage**	**ACH @ 50 Pa**
Required	Not Required	Not Required	---

WATER HEATING SYSTEMS

CalCERTS inc.

01	02	03	04	05	06	07
Name	**System Type**	**Number of Systems in Building**	**Multi-Family Distribution Type**	**Water Heater**	**Number of Water Heaters/System**	**Solar Fraction (%)**
Water Heater	Standard	1	- none -	Tankless 82 EF	1	---

WATER HEATERS

01	02	03	04	05	06	07	08
Name	**Heater Element Type**	**Tank Type**	**Tank Volume (gal)**	**Energy Factor or Efficiency**	**Input Rating**	**Tank Exterior Insulation R-value**	**Standby Loss (Fraction)**
Tankless 82 EF	Natural Gas	Small Instantaneous	0	0.82	199900-Btu/hr	0	0

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06
SC Sys Name	**System Type**	**Heating Unit Name**	**Cooling Unit Name**	**Fan Name**	**Distribution Name**
Split 14 12:Furn 92:Attic Default:HVAC Fan 1:1	Other Heating and Cooling System	Furn 92	Split 14 12	HVAC Fan 1	Attic Default

HVAC - HEATING UNIT TYPES

01	02	03
Name	Type	Efficiency
Furn 92	Ctrl-furnace - Fuel-fired central furnace	92 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07
Name	System Type	Efficiency EER	Efficiency SEER	Zonally Controlled	Multi-speed Compressor	HERS Verification
Split 14 12	SplitAirCond	12.2	14	Zonally Controlled	Single Speed	Split 14 12 hers cool

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge
Split 14 12 hers cool	Required	275	Required	Not Required	Not Required

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HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07
Name	Type	Duct Leakage	Insulation R-value	Duct Location	Bypass Duct	HERS Verification
Attic Default	DuctsAttic	Sealed and tested	6	Attic	None	Attic Default-hers-dist

HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	Duct Leakage Verification	Duct Leakage Target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler
Attic Default-hers-dist	Required	total leakage <= 12.0 or leakage to outdoors <= 6.0	Not Required	Not Required	Not Required	Not Required	Required

HVAC - FAN SYSTEMS

01	02	03	04
Name	Type	Fan Power (Watts/CFM)	HERS Verification
HVAC Fan 1	Single Speed PSC Furnace Fan	0.58	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION		
01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficiency (Watts/CFM)
HVAC Fan 1-hers-fan	Required	0.58

IAQ (Indoor Air Quality) FANS					
01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness(%)	HERS Verification
DwellingUnit 1 1/1	59.84	0.25	Default	0	Required

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1 I certify that this Certificate of Compliance documentation is accurate and complete	
Documentation Author Name: Vern Crawford	Documentation Author Signature: *Vern Crawford*
Company: Harris & Sloan Consulting Group, Inc.	Signature Date: 2015-03-13 08:59:55
Address: 2295 Gateway Oaks Drive Suite 165	CFA/HERS Certification Identification (If applicable):
City/State/Zip: Sacramento, CA 95833	Phone: 916-921-2800

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

CalCERTS inc.

Responsible Designer Name: Mandi Kaercher	Responsible Designer Signature: *Mandi Kaercher*
Company: Standard Pacific Homes - Bay Area	Date Signed: 2015-03-13 11:54:47
Address: 3825 Hopyard Rd, Ste 275	License:
City/State/Zip: Pleasanton, CA 94588	Phone: 925-730-1373

Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD **CF1R-PRF-01**

Project Name: Village Walk Plan1 **Calculation Date/Time:** 08:15, Fri, Mar 13, 2015

Calculation Description: Cardinal **Input File Name:** cPlan1 1664.ribd

GENERAL INFORMATION					
01	Project Name	Village Walk Plan1			
02	Calculation Description	Plan 3			
03	Project Location	Some St			
04	City	Cotati, CA	05	Standards Version	Compliance 2015
06	Zip Code		07	Compliance Manager Version	BEMCmpMgr 2013.3c (710)
08	Climate Zone	CZ2	09	Software Version	CBECC-Res 2013.3c (710)
10	Building Type	Multifamily	11	Front Orientation (deg/Cardinal)	Cardinal
12	Project Scope	Newly Constructed	13	Number of Dwelling Units	1
14	Total Cond. Floor Area (FT^2)	1664	15	Number of Zones	1
16	Slab Area (FT^2)	377	17	Number of Stories	3
18	Addition Cond. Floor Area	N/A	19	Natural Gas Available	Yes
20	Addition Slab Area (FT^2)	N/A	21	Glazing Percentage (%)	13.9%

COMPLIANCE RESULTS	
01	Building Complies with Computer Performance
02	This building incorporates features that require field testing and/or verification by a certified HERS rater under the supervision of a CEC-approved HERS provider.
03	This building incorporates one or more Special Features shown below

CalCERTS inc.

RECEIVED
MAR 24 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

ENERGY USE SUMMARY				
Energy Use (kTDV/ft²-yr)	Standard Design	Proposed Design	Compliance Margin	Percent Improvement
Space Heating	17.47	16.59	0.88	5.0%
Space Cooling	8.46	5.15	3.31	39.1%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	16.06	10.91	5.15	32.1%
PV Credit	----	0.00	0.00	----
North Facing Compliance Total	**44.23**	**34.89**	**9.34**	**21.1%**
Space Heating	17.47	17.81	-0.34	-1.9%
Space Cooling	8.46	6.23	2.23	26.4%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	16.06	10.91	5.15	32.1%
PV Credit		0.00	0.00	
East Facing Compliance Total	**44.23**	**37.19**	**7.04**	**15.9%**
Space Heating	17.47	14.79	2.68	15.3%
Space Cooling	8.46	6.29	2.17	25.7%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	16.06	10.91	5.15	32.1%
PV Credit	----	0.00	0.00	----
South Facing Compliance Total	**44.23**	**34.23**	**10.00**	**22.6%**
Space Heating	17.47	13.09	4.38	25.1%
Space Cooling	8.46	8.67	-0.21	-2.5%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	16.06	10.91	5.15	32.1%
PV Credit	----	0.00	0.00	----
West Facing Compliance Total	**44.23**	**34.91**	**9.32**	**21.1%**

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REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- **Cool roof**
- **Ceiling has high level of insulation**
- **Window overhangs and/or fins**
- **Exposed slab floor in conditioned zone**

HERS FEATURE SUMMARY

The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building components tables below.

Building-level Verifications:
- **High Quality Insulation Installation (QII)**
- **IAQ mechanical ventilation**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified EER**
- **Fan Efficacy Watts/CFM**

HVAC Distribution System Verifications:
- **Duct Sealing**
- **Low-leakage Air Handling Unit**

Domestic Hot Water System Verifications:
- **-- None --**

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ENERGY DESIGN RATING

This is the sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building (Energy Budget) and the annual TDV energy consumption for lighting and components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics) and accounting for the annual TDV energy offset by an on-site renewable energy system.

	Reference Energy Use	Energy Design Rating	Margin	Percent Improvement
Total Energy (kTDV/f2-yr)*	**97.49**	**90.45**	**7.04**	**7.2%**

* Includes calculated Appliances and Miscellaneous Energy Use (AMEU)

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	**Conditioned Floor Area (sft)**	**Number of Dwelling Units**	**Number of Bedrooms**	**Number of Zones**	**Number of Ventilation Cooling Systems**	**Number of Water Heating Systems**
Village Walk Plan1	1664	1	3	1	0	1

ZONE INFORMATION				
01	02	03	04	05
Zone Name	Zone Type	Zone Floor Area (ft^2)	Avg. Ceiling Height	Number of Dwelling Units
House	Conditioned	1664	9	1

DWELLING UNIT INFORMATION		
01	02	03
Dwelling Unit Name	Dwelling Unit Type	Zone
DwellingUnit 1 (1/1)	DwellingUnitType 1	House

DWELLING UNIT TYPES						
01	02	03	04	05	06	07
Name	CFA (ft2)	Number of Bedrooms	Number in Building	Space Conditioning System Name (Count)	DHW System Name	IAQ Vent Fan Name
DwellingUnitType 1	1664	3	1	Split 14 12:Furn 92:Attic Default:HVAC Fan 1:1 (1)	Water Heater	Default Minimum IAQ Fan

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OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft^2)**	**Window Area (ft^2)**	**Tilt (deg)**
Front 2x6 1st Flr	House	R19 Wall	70	Front	85	15	90
Ceiling (below attic) 1	House	R38 Ceiling below attic			552		
Ceiling (at FAU)	House	R19 Ceiling below attic			50		
GarageWall 2x4	House>>Garage	Gar House R13			189		
Interior Wall 2x6	House>>Garage	Gar House R19			800		
Interior Floor 1	House>>Garage	Garage Ceiling R21			342		
Front 2x4 1st Flr	House	R 13 Wall	70	Front	74	8	90
Front 2x4	House	R13 R4 Stucco Wall	70	Front	358	42.5	90
Left 2x4 Siding	House	R 13 Wall	160	Left	27	0	90
Back 2x4	House	R13 R4 Stucco Wall	250	Back	316	71	90
Ceiling (2nd Flr)	House	R30 Ceiling below attic			19		
Back 2x6	House	R19 R4 Stucco Wall	250	Back	62	8	90
Right 2x4	House	R13 R4 Stucco Wall	340	Right	568	56	90
Right 2x6	House	R19 R4 Stucco Wall	340	Right	247	30	90
Gwall Right	Garage	Garage Ext Wall	340	Right	189	0	90
Gwall Left	Garage	Garage Ext Wall	160	Left	189	0	90
Gceil	Garage	R0 CigBlwAttic Cons			86		
Gwall Back	Garage	Garage Ext Wall	250	Back	194	0	90

ATTIC

01	02	03	04	05	06	07	08
Name	**Construction**	**Type**	**Roof Rise**	**Roof Reflectance**	**Roof Emittance**	**Radiant Barrier**	**Cool Roof**
Attic	Asphalt RB Roof	Ventilated	6	0.2	0.85	Yes	Yes

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WINDOWS

01	02	03	04	05	06	07	08	09	10
Name	Type	Surface (Orientation-Azimuth)	Width (ft)	Height (ft)	Multiplier	Area (ft^2)	U-factor	SHGC	Exterior Shading
001 Bed3	Window	Front 2x6 1st Flr (Front 70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
002 Entry	Window	Front 2x4 1st Flr (Front-70)	2.0	4.0	1	8.0	0.28	0.32	Insect Screen (default)
003 Living	Window	Front 2x4 (Front-70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
004 Living	Window	Front 2x4 (Front 70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
005 Stair	Window	Front 2x4 (Front 70)	2.5	5.0	1	12.5	0.28	0.32	Insect Screen (default)
001 Dining	Window	Back 2x4 (Back-250)	6.0	8.0	1	48.0	0.35	0.29	Insect Screen (default)
003 Mbd	Window	Back 2x4 (Back 250)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
004 Mbed	Window	Back 2x4 (Back 250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
002 Tech	Window	Back 2x6 (Back-250)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
002 Pwdr>	Window	Right 2x4 (Right-340)	2.0	4.0	1	8.0	0.35	0.29	Insect Screen (default)
003 Living>	Window	Right 2x4 (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
004 Bed3>	Window	Right 2x4 (Right-340)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
006 Bd2>	Window	Right 2x4 (Right-340)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
007 Bed2	Window	Right 2x4 (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
001 Dining>	Window	Right 2x6 (Right-340)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
005 Mbed>	Window	Right 2x6 (Right-340)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)

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DOORS

01	02	03	04
Name	Side of Building	Area (ft^2)	U-factor
FrDr	Front 2x4 1st Flr	28.0	0.50
GDoor	Gwall Back	144.0	1.00

OVERHANGS AND FINS

01	02	03	04	05	06	07	08	09	10	11	12	13	14
	Overhang					Left Fin				Right Fin			
Window	Depth	Dist Up	Left Extent	Right Extent	Flap Ht.	Depth	Top Up	DistL	Bot Up	Depth	Top Up	Dist R	Bot Up
001 Dining	6	1	4	4	0.4	0	1.33	1	0	6	1	4	0

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Winter Design U-value**	**Assembly Layers**
Garage Ext Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	none	0.361	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4* • *Exterior Finish: 3 Coat Stucco*
R0 CathwAttic Cons	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	none	0.481	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4 Btm Chrd*
Asphalt RB Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.644	• *Cavity / Frame: no insul. / 2x4* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 28.9 Insul.*
R30 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 30	0.032	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 20.9 Insul.*
R19 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.072	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: 3 Coat Stucco*
R19 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.054	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: R4 Synthetic Stucco*
R19 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 19	0.049	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R-9.9 insul.*
R13 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.069	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: R4 Synthetic Stucco*
Gar House R19	Interior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.067	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Other Side Finish: Gypsum Board*
Gar House R13	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.092	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Other Side Finish: Gypsum Board*
R-13 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.101	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: 3 Coat Stucco*

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Garage Ceiling H21	Interior Floors	Wood Framed Floor	2x12 @ 16 in. O.C.	H 21	0.041	• Floor Surface: Carpeted • Floor Deck: Wood Siding/sheathing/decking • Cavity / Frame: R-21 / 2x12 • Ceiling Below Finish: Gypsum Board

SLAB FLOORS

01	02	03	04	05	06	07
Name	Zone	Area (ft^2)	Perimeter (ft)	Edge Insul. R-value & Depth	Carpeted Fraction	Heated
Slab On Grade	House	377	83	None	0	No
Gslab	Garage	433	84	None	0	No

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	Quality Installation of Spray Foam Insulation	Building Envelope Air Leakage	ACH @ 50 Pa
Required	Not Required	Not Required	—

WATER HEATING SYSTEMS

01	02	03	04	05	06	07
Name	System Type	Number of Systems in Building	Multi-Family Distribution Type	Water Heater	Number of Water Heaters/System	Solar Fraction (%)
Water Heater	Standard	1	- none -	Tankless 82 EF	1	—

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WATER HEATERS

01	02	03	04	05	06	07	08
Name	Heater Element Type	Tank Type	Tank Volume (gal)	Energy Factor or Efficiency	Input Rating	Tank Exterior Insulation R-value	Standby Loss (Fraction)
Tankless 82 EF	Natural Gas	Small Instantaneous	0	0.82	199900-Btu/hr	0	0

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06
SC Sys Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name
Split 14 12:Furn 92:Attic Default:HVAC Fan 1:1	Other Heating and Cooling System	Furn 92	Split 14 12	HVAC Fan 1	Attic Default

HVAC - HEATING UNIT TYPES

01	02	03
Name	Type	Efficiency
Furn 92	Cntrl-urnace - Fuel-fired central furnace	92 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07
		Efficiency				
Name	System Type	EER	SEER	Zonally Controlled	Multi-speed Compressor	HERS Verification
Split 14 12	SplitAirCond	12.2	14	Zonally Controlled	Single Speed	Split 14 12-hers cool

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge
Split 14 12 hers cool	Required	275	Required	Not Required	Not Required

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HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07
Name	Type	Duct Leakage	Insulation R-value	Duct Location	Bypass Duct	HERS Verification
Attic Default	DuctsAttic	Sealed and tested	6	Attic	None	Attic Default-hers-dist

HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	Duct Leakage Verification	Duct Leakage Target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler
Attic Default-hers-dist	Required	total leakage <= 12.0 or leakage to outdoors <= 6.0	Not Required	Not Required	Not Required	Not Required	Required

HVAC - FAN SYSTEMS

01	02	03	04
Name	Type	Fan Power (Watts/CFM)	HERS Verification
HVAC Fan 1	Single Speed PSC Furnace Fan	0.58	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION		
01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficiency (Watts/CFM)
HVAC Fan 1-hers-fan	Required	0.58

IAQ (Indoor Air Quality) FANS					
01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness(%)	HERS Verification
DwellingUnit 1 1/1	79.92	0.25	Default	0	Required

CalCERTS,inc.

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1 I certify that this Certificate of Compliance documentation is accurate and complete	
Documentation Author Name: Vern Crawford	Documentation Author Signature: *Vern Crawford*
Company: Harris & Sloan Consulting Group, Inc.	Signature Date: 2015-03-13 08:57:59
Address: 2295 Gateway Oaks Drive Suite 165	CEA/HERS Certification Identification (If applicable):
City/State/Zip: Sacramento, CA 95833	Phone: 916-921-2800

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CalCERTS inc.

Responsible Designer Name: Mandi Kaercher	Responsible Designer Signature: *Mandi Kaercher*
Company: Standard Pacific Homes - Bay Area	Date Signed: 2015-03-13 11:54:25
Address: 3825 Hopyard Rd, Ste 275	License:
City/State/Zip: Pleasanton, CA 94588	Phone: 925-730-1373

Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

CERTIFICATE OF COMPLIANCE - RESIDENTIAL PERFORMANCE COMPLIANCE METHOD **CF1R-PRF-01**

Project Name: Village Walk Plan1 **Calculation Date/Time:** 08:15, Fri, Mar 13, 2015

Calculation Description: Cardinal **Input File Name:** cPlan1 1664.ribd

GENERAL INFORMATION					
01	Project Name	Village Walk Plan1			
02	Calculation Description	Plan 3			
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04	City	Cotati, CA	05	Standards Version	Compliance 2015
06	Zip Code		07	Compliance Manager Version	BEMCmpMgr 2013.3c (710)
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CalCERTS Inc.

RECEIVED
MAR 24 2015
CITY OF COTATI
PLANNING AND BUILDING DEPT.

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Water Heating	16.06	10.91	5.15	32.1%
PV Credit	----	0.00	0.00	----
North Facing Compliance Total	**44.23**	**34.89**	**9.34**	**21.1%**
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IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	16.06	10.91	5.15	32.1%
PV Credit		0.00	0.00	
East Facing Compliance Total	**44.23**	**37.19**	**7.04**	**15.9%**
Space Heating	17.47	14.79	2.68	15.3%
Space Cooling	8.46	6.29	2.17	25.7%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	16.06	10.91	5.15	32.1%
PV Credit	----	0.00	0.00	----
South Facing Compliance Total	**44.23**	**34.23**	**10.00**	**22.6%**
Space Heating	17.47	13.09	4.38	25.1%
Space Cooling	8.46	8.67	-0.21	-2.5%
IAQ Ventilation	2.24	2.24	0.00	0.0%
Water Heating	16.06	10.91	5.15	32.1%
PV Credit	----	0.00	0.00	----
West Facing Compliance Total	**44.23**	**34.91**	**9.32**	**21.1%**

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REQUIRED SPECIAL FEATURES

The following are features that must be installed as condition for meeting the modeled energy performance for this computer analysis.

- **Cool roof**
- **Ceiling has high level of insulation**
- **Window overhangs and/or fins**
- **Exposed slab floor in conditioned zone**

HERS FEATURE SUMMARY

The following is a summary of the features that must be field-verified by a certified HERS Rater as a condition for meeting the modeled energy performance for this computer analysis. Additional detail is provided in the building components tables below.

Building-level Verifications:
- **High Quality Insulation Installation (QII)**
- **IAQ mechanical ventilation**

Cooling System Verifications:
- **Minimum Airflow**
- **Verified EER**
- **Fan Efficacy Watts/CFM**

HVAC Distribution System Verifications:
- **Duct Sealing**
- **Low-leakage Air Handling Unit**

Domestic Hot Water System Verifications:
- **-- None --**

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ENERGY DESIGN RATING

This is the sum of the annual TDV energy consumption for energy use components included in the performance compliance approach for the Standard Design Building (Energy Budget) and the annual TDV energy consumption for lighting and components not regulated by Title 24, Part 6 (such as domestic appliances and consumer electronics) and accounting for the annual TDV energy offset by an on-site renewable energy system.

	Reference Energy Use	Energy Design Rating	Margin	Percent Improvement
Total Energy (kTDV/f2-yr)*	**97.49**	**90.45**	**7.04**	**7.2%**

* Includes calculated Appliances and Miscellaneous Energy Use (AMEU)

BUILDING - FEATURES INFORMATION

01	02	03	04	05	06	07
Project Name	**Conditioned Floor Area (sft)**	**Number of Dwelling Units**	**Number of Bedrooms**	**Number of Zones**	**Number of Ventilation Cooling Systems**	**Number of Water Heating Systems**
Village Walk Plan1	1664	1	3	1	0	1

ZONE INFORMATION				
01	02	03	04	05
Zone Name	Zone Type	Zone Floor Area (ft^2)	Avg. Ceiling Height	Number of Dwelling Units
House	Conditioned	1664	9	1

DWELLING UNIT INFORMATION		
01	02	03
Dwelling Unit Name	Dwelling Unit Type	Zone
DwellingUnit 1 (1/1)	DwellingUnitType 1	House

DWELLING UNIT TYPES						
01	02	03	04	05	06	07
Name	CFA (ft2)	Number of Bedrooms	Number in Building	Space Conditioning System Name (Count)	DHW System Name	IAQ Vent Fan Name
DwellingUnit Type 1	1664	3	1	Split 14 12:Furn 92:Attic Default:HVAC Fan 1:1 (1)	Water Heater	Default Minimum IAQ Fan

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OPAQUE SURFACES

01	02	03	04	05	06	07	08
Name	**Zone**	**Construction**	**Azimuth**	**Orientation**	**Gross Area (ft^2)**	**Window Area (ft^2)**	**Tilt (deg)**
Front 2x6 1st Flr	House	R19 Wall	70	Front	85	15	90
Ceiling (below attic) 1	House	R38 Ceiling below attic			552		
Ceiling (at FAU)	House	R19 Ceiling below attic			50		
GarageWall 2x4	House>>Garage	Gar House R13			189		
Interior Wall 2x6	House>>Garage	Gar House R19			800		
Interior Floor 1	House>>Garage	Garage Ceiling R21			342		
Front 2x4 1st Flr	House	R 13 Wall	70	Front	74	8	90
Front 2x4	House	R13 R4 Stucco Wall	70	Front	358	42.5	90
Left 2x4 Siding	House	R 13 Wall	160	Left	27	0	90
Back 2x4	House	R13 R4 Stucco Wall	250	Back	316	71	90
Ceiling (2nd Flr)	House	R30 Ceiling below attic			19		
Back 2x6	House	R19 R4 Stucco Wall	250	Back	62	8	90
Right 2x4	House	R13 R4 Stucco Wall	340	Right	568	56	90
Right 2x6	House	R19 R4 Stucco Wall	340	Right	247	30	90
Gwall Right	Garage	Garage Ext Wall	340	Right	189	0	90
Gwall Left	Garage	Garage Ext Wall	160	Left	189	0	90
Gceil	Garage	R0 CigBlwAttic Cons			86		
Gwall Back	Garage	Garage Ext Wall	250	Back	194	0	90

ATTIC

01	02	03	04	05	06	07	08
Name	**Construction**	**Type**	**Roof Rise**	**Roof Reflectance**	**Roof Emittance**	**Radiant Barrier**	**Cool Roof**
Attic	Asphalt RB Roof	Ventilated	6	0.2	0.85	Yes	Yes

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WINDOWS

01	02	03	04	05	06	07	08	09	10
Name	Type	Surface (Orientation-Azimuth)	Width (ft)	Height (ft)	Multiplier	Area (ft^2)	U-factor	SHGC	Exterior Shading
001 Bed3	Window	Front 2x6 1st Flr (Front 70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
002 Entry	Window	Front 2x4 1st Flr (Front-70)	2.0	4.0	1	8.0	0.28	0.32	Insect Screen (default)
003 Living	Window	Front 2x4 (Front-70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
004 Living	Window	Front 2x4 (Front 70)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
005 Stair	Window	Front 2x4 (Front 70)	2.5	5.0	1	12.5	0.28	0.32	Insect Screen (default)
001 Dining	Window	Back 2x4 (Back-250)	6.0	8.0	1	48.0	0.35	0.29	Insect Screen (default)
003 Mbd	Window	Back 2x4 (Back 250)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
004 Mbed	Window	Back 2x4 (Back 250)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
002 Tech	Window	Back 2x6 (Back-250)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
002 Pwdr>	Window	Right 2x4 (Right-340)	2.0	4.0	1	8.0	0.35	0.29	Insect Screen (default)
003 Living>	Window	Right 2x4 (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
004 Bed3>	Window	Right 2x4 (Right-340)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
006 Bd2>	Window	Right 2x4 (Right-340)	2.0	4.0	1	8.0	0.31	0.29	Insect Screen (default)
007 Bed2	Window	Right 2x4 (Right-340)	2.5	5.0	1	12.5	0.31	0.29	Insect Screen (default)
001 Dining>	Window	Right 2x6 (Right-340)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)
005 Mbed>	Window	Right 2x6 (Right-340)	3.0	5.0	1	15.0	0.31	0.29	Insect Screen (default)

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DOORS

01	02	03	04
Name	Side of Building	Area (ft^2)	U-factor
FrDr	Front 2x4 1st Flr	28.0	0.50
GDoor	Gwall Back	144.0	1.00

OVERHANGS AND FINS

01	02	03	04	05	06	07	08	09	10	11	12	13	14
	Overhang					Left Fin				Right Fin			
Window	Depth	Dist Up	Left Extent	Right Extent	Flap Ht.	Depth	Top Up	DistL	Bot Up	Depth	Top Up	Dist R	Bot Up
001 Dining	6	1	4	4	0.4	0	1.33	1	0	6	1	4	0

OPAQUE SURFACE CONSTRUCTIONS

01	02	03	04	05	06	07
Construction Name	**Surface Type**	**Construction Type**	**Framing**	**Total Cavity R-value**	**Winter Design U-value**	**Assembly Layers**
Garage Ext Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	none	0.361	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4* • *Exterior Finish: 3 Coat Stucco*
H0 CtgBtwAttic Cons	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	none	0.481	• *Inside Finish: Gypsum Board* • *Cavity / Frame: no insul. / 2x4 Btm Chrd*
Asphalt RB Roof	Attic Roofs	Wood Framed Ceiling	2x4 @ 24 in. O.C.	none	0.644	• *Cavity / Frame: no insul. / 2x4* • *Roof Deck: Wood Siding/sheathing/decking* • *Roofing: Light Roof (Asphalt Shingle)*
R38 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 38	0.025	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 28.9 Insul.*
R30 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 30	0.032	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R 20.9 Insul.*
R19 Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.072	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: 3 Coat Stucco*
R19 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.054	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Exterior Finish: R4 Synthetic Stucco*
R19 Ceiling below attic	Ceilings (below attic)	Wood Framed Ceiling	2x4 Bottom Chord of Truss @ 24 in. O.C.	R 19	0.049	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-9.1 / 2x4 Btm Chrd* • *Over Floor Joists: R-9.9 insul.*
R13 R4 Stucco Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.069	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: R4 Synthetic Stucco*
Gar House R19	Interior Walls	Wood Framed Wall	2x6 @ 16 in. O.C.	R 19	0.067	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-19 / 2x6* • *Other Side Finish: Gypsum Board*
Gar House R13	Interior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.092	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Other Side Finish: Gypsum Board*
R-13 Wall	Exterior Walls	Wood Framed Wall	2x4 @ 16 in. O.C.	R 13	0.101	• *Inside Finish: Gypsum Board* • *Cavity / Frame: R-13 / 2x4* • *Exterior Finish: 3 Coat Stucco*

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Garage Ceiling R21	Interior Floors	Wood Framed Floor	2x12 @ 16 in. O.C.	R-21	0.041	• Floor Surface: Carpeted • Floor Deck: Wood Siding/sheathing/decking • Cavity / Frame: R-21 / 2x12 • Ceiling Below Finish: Gypsum Board

SLAB FLOORS

01	02	03	04	05	06	07
Name	Zone	Area (ft^2)	Perimeter (ft)	Edge Insul. R-value & Depth	Carpeted Fraction	Heated
Slab On Grade	House	377	83	None	0	No
Gslab	Garage	433	84	None	0	No

BUILDING ENVELOPE - HERS VERIFICATION

01	02	03	04
Quality Insulation Installation (QII)	Quality Installation of Spray Foam Insulation	Building Envelope Air Leakage	ACH @ 50 Pa
Required	Not Required	Not Required	—

WATER HEATING SYSTEMS

01	02	03	04	05	06	07
Name	System Type	Number of Systems In Building	Multi-Family Distribution Type	Water Heater	Number of Water Heaters/System	Solar Fraction (%)
Water Heater	Standard	1	- none -	Tankless 82 EF	1	—

WATER HEATERS

01	02	03	04	05	06	07	08
Name	Heater Element Type	Tank Type	Tank Volume (gal)	Energy Factor or Efficiency	Input Rating	Tank Exterior Insulation R-value	Standby Loss (Fraction)
Tankless 82 EF	Natural Gas	Small Instantaneous	0	0.82	199900-Btu/hr	0	0

SPACE CONDITIONING SYSTEMS

01	02	03	04	05	06
SC Sys Name	System Type	Heating Unit Name	Cooling Unit Name	Fan Name	Distribution Name
Split 14 12:Furn 92:Attic Default:HVAC Fan 1:1	Other Heating and Cooling System	Furn 92	Split 14 12	HVAC Fan 1	Attic Default

HVAC - HEATING UNIT TYPES

01	02	03
Name	Type	Efficiency
Furn 92	CntrlFurnace - Fuel-fired central furnace	92 AFUE

HVAC - COOLING UNIT TYPES

01	02	03	04	05	06	07
		Efficiency				
Name	System Type	EER	SEER	Zonally Controlled	Multi-speed Compressor	HERS Verification
Split 14 12	SplitAirCond	12.2	14	Zonally Controlled	Single Speed	Split 14 12-hers cool

HVAC COOLING - HERS VERIFICATION

01	02	03	04	05	06
Name	Verified Airflow	Airflow Target	Verified EER	Verified SEER	Verified Refrigerant Charge
Split 14 12 hers-cool	Required	275	Required	Not Required	Not Required

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HVAC - DISTRIBUTION SYSTEMS

01	02	03	04	05	06	07
Name	Type	Duct Leakage	Insulation R-value	Duct Location	Bypass Duct	HERS Verification
Attic Default	DuctsAttic	Sealed and tested	6	Attic	None	Attic Default-hers-dist

HVAC DISTRIBUTION - HERS VERIFICATION

01	02	03	04	05	06	07	08
Name	Duct Leakage Verification	Duct Leakage Target (%)	Verified Duct Location	Verified Duct Design	Buried Ducts	Deeply Buried Ducts	Low-leakage Air Handler
Attic Default-hers-dist	Required	total leakage <= 12.0 or leakage to outdoors <= 6.0	Not Required	Not Required	Not Required	Not Required	Required

HVAC - FAN SYSTEMS

01	02	03	04
Name	Type	Fan Power (Watts/CFM)	HERS Verification
HVAC Fan 1	Single Speed PSC Furnace Fan	0.58	HVAC Fan 1-hers-fan

HVAC FAN SYSTEMS - HERS VERIFICATION		
01	02	03
Name	Verified Fan Watt Draw	Required Fan Efficiency (Watts/CFM)
HVAC Fan 1-hers-fan	Required	0.58

IAQ (Indoor Air Quality) FANS					
01	02	03	04	05	06
Dwelling Unit	IAQ CFM	IAQ Watts/CFM	IAQ Fan Type	IAQ Recovery Effectiveness(%)	HERS Verification
DwellingUnit 1 1/1	79.92	0.25	Default	0	Required

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DOCUMENTATION AUTHOR'S DECLARATION STATEMENT	
1 I certify that this Certificate of Compliance documentation is accurate and complete	
Documentation Author Name: Vern Crawford	Documentation Author Signature: *Vern Crawford*
Company: Harris & Sloan Consulting Group, Inc.	Signature Date: 2015-03-13 08:57:59
Address: 2295 Gateway Oaks Drive Suite 165	CEA/HERS Certification Identification (If applicable):
City/State/Zip: Sacramento, CA 95833	Phone: 916-921-2800

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design identified on this Certificate of Compliance.
2. I certify that the energy features and performance specifications identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
3. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Responsible Designer Name: Mandi Kaercher	Responsible Designer Signature: *Mandi Kaercher*
Company: Standard Pacific Homes - Bay Area	Date Signed: 2015-03-13 11:54:25
Address: 3825 Hopyard Rd, Ste 275	License:
City/State/Zip: Pleasanton, CA 94588	Phone: 925-730-1373

CalCERTS inc.

Digitally signed by CalCERTS. This digital signature is provided in order to secure the content of this registered document, and in no way implies Registration Provider responsibility for the accuracy of the information.

harris & sloan

2295 Gateway Oaks Dr., Sacramento, CA 95833
tel. 916.921.2441, toll free 800.877.1430, fax 916.921.2878
www.harrisandsloan.com

Structural & Mechanical Engineers

July 6, 2016

Keith Christopherson
Synergy-McKinley DCF Village Walk
435 E St.
Santa Rosa, CA 95404

RE: Village Walk - Detached (HS13068)
Truss Compliance Verification

The purpose of this letter is to verify that this office has received and reviewed the following roof truss engineering and layouts by Hanson Truss Components, Inc. for Village Walk - Attached located in Cotati, CA.

Truss engineering package sealed date 07/05/2016.

The above referenced roof truss layouts and calculations were reviewed for general compliance with the design concept of the project as indicated by the structural documents prepared by our office. We have not reviewed quantities, dimensions, fabrication process, techniques of construction, or coordination of the work with any trade. This letter is equivalent to a shop drawing review stamp and in no way represents responsibility for the truss design or alleviates the truss manufacturer design professional's responsibility.

Our review of these drawings has determined that the layouts and roof truss loading are in general compliance with the design specifications of the structural documents.

It is our recommendation that jack or mono trusses exceeding 7'-6" between supports include a web or end vertical. Jack or mono trusses must meet this recommendation or must be sealed and signed by a design professional.

Respectfully,

Harris & Sloan

Jon Solomon

JS:ks

harris & sloan

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tel. 916.921.2441, toll free 800.877.1430, fax 916.921.2878
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Respectfully,

Harris & Sloan



Jon Solomon

JS:ks

RECEIVED
JUL 29 2013
CITY OF COTATI
PLANNING AND BUILDING DEPT.

Color and Material Samples
June 12, 2013
VILLAGE WALK
Standard Pacific Homes of Northern California

VILLAGE WALK
at Santero Court

COLORS AND MATERIALS FOR THE TRIPLEX AND DUPLEX HOMES February 2, 2012

Lancaster Drive	Scheme Number 1	Accent 1 (Unit Plan 1R Entry Door)	Accent 2 (Unit Plan 2 Entry Door)	Accent 3 (Unit Plan 1 Entry Door)	Trim	Stucco	Unit Plan 1R Siding 1	Unit Plan 2 Siding 2	Unit Plan 1 Siding 3	Roof
	Triplex Building Lancaster Drive (Lot 20,19,18)	SW6034 Arresting Auburn	SW6034 Arresting Auburn	SW6151 Quiver Tan	SW7103 Whitetail	SW6150 Universal Khaki	SW0067 Belvedere Cream	SW2806 Rockwood Brown	SW6508 Secure Blue	Prestique BARKWOOD Elk Roofing
	Scheme Number 2	Accent 1 (Unit Plan 1R Entry Door)	Accent 2 (Unit Plan 1 Entry Door)		Trim	Stucco	Unit Plan 1R Siding 1	Unit Plan 1 Siding 2		Roof
	Duet Building Lancaster Drive (Lot 17,16)	SW6112 Biscuit	SW6034 Arresting Auburn		SW7103 Whitetail	SW6074 Spalding Gray	SW6516 Down Pour	SW0067 Belvedere Cream		Prestique CHARCOAL Elk Roofing
	Scheme Number 3	Accent 1 (Unit Plan 1 Entry Door)	Accent 2 (Unit Plan 2 Entry Door)	Accent 3 (Unit Plan 1R Entry Door)	Trim	Stucco	Unit Plan 1 Siding 1	Unit Plan 2 Siding 2	Unit Plan 1R Siding 3	Roof
	Triplex Building Lancaster Drive (Lot 15,14,13)	SW6991 Black Magic	SW6112 Biscuit	SW6991 Black Magic	SW7103 Whitetail	SW6073 Perfect Greige	SW2848 Roycroft Pewter	SW2839 Roycroft Copper Red	SW6243 Distance	Prestique BARKWOOD Elk Roofing
East Cotati Avenue	Scheme Number 4	Accent 1 (Unit Plan 1R Entry Door)	Accent 2 (Unit Plan 2 Entry Door)	Accent 3 (Unit Plan 1 Entry Door)	Trim	Stucco	Unit Plan 1R Siding 1	Unit Plan 2 Siding 2	Unit Plan 1 Siding 3	Roof
	Triplex Building East Cotati Ave. (Lot 12,11,10)	SW7103 Whitetail	SW0032 Needlepoint Navy	SW6112 Biscuit	SW7103 Whitetail	SW6149 Relaxed Khaki	SW2810 Rockwood Sash Green	SW6080 Utterly Beige	SW6516 Down Pour	Prestique CHARCOAL Elk Roofing
	Scheme Number 5	Accent 1 (Unit Plan 1R Entry Door)	Accent 2 (Unit Plan 1 Entry Door)		Trim	Stucco	Unit Plan 1R Siding 1	Unit Plan 1 Siding 2		Roof
	Duet Building East Cotati Ave. (Lot 9,8)	SW2807 Rockwood Medium Brown	SW6034 Arresting Auburn		SW7103 Whitetail	SW6074 Spalding Gray	SW6186 Dried Thyme	SW6379 Jersey Cream		Prestique BARKWOOD Elk Roofing
	Scheme Number 6	Accent 1 (Unit Plan 1R Entry Door)	Accent 2 (Unit Plan 1 Entry Door)		Trim	Stucco	Unit Plan 1R Siding 1	Unit Plan 1 Siding 2		Roof
	Duet Building East Cotati Ave. (Lot 7,6)	SW7019 Gauntlet Gray	SW2810 Rockwood Sash Green		SW7103 Whitetail	SW2822 Downing Sand	SW2837 Aurora Brown	SW2827 Colonial Revival Stone		Prestique CHARCOAL Elk Roofing
	Scheme Number 2	Accent 1 (Unit Plan 1R Entry Door)	Accent 2 (Unit Plan 1 Entry Door)		Trim	Stucco	Unit Plan 1R Siding 1	Unit Plan 1 Siding 2		Roof
	Duet Building East Cotati Ave. (Lot 5,4)	SW6112 Biscuit	SW6034 Arresting Auburn		SW7103 Whitetail	SW6074 Spalding Gray	SW6516 Down Pour	SW0067 Belvedere Cream		Prestique CHARCOAL Elk Roofing
	Scheme Number 3	Accent 1 (Unit Plan 1 Entry Door)	Accent 2 (Unit Plan 2 Entry Door)	Accent 3 (Unit Plan 1R Entry Door)	Trim	Stucco	Unit Plan 1 Siding 1	Unit Plan 2 Siding 2	Unit Plan 1R Siding 3	Roof
	Triplex Building East Cotati Ave. (Lot 3,2,1)	SW6991 Black Magic	SW6112 Biscuit	SW6991 Black Magic	SW7103 Whitetail	SW6073 Perfect Greige	SW2848 Roycroft Pewter	SW2839 Roycroft Copper Red	SW6243 Distance	Prestique BARKWOOD Elk Roofing

ALL PAINT COLORS LISTED ARE FROM SHERWIN WILLIAMS

ELEVATIONS ABOVE ARE DESCRIBED FROM LEFT TO RIGHT WHILE FACING THE ENTRY DOOR AS THEY APPEAR IN THE STEETSCAPE

VILLAGE WALK
at Santero Court



LANCASTER DRIVE

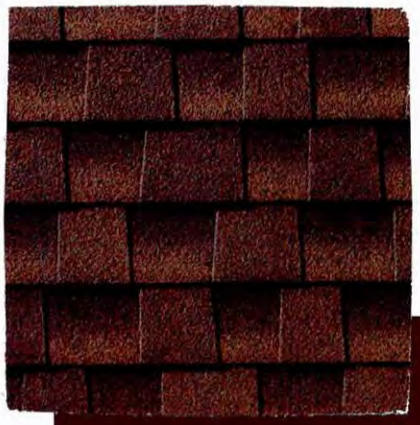


EAST COTATI AVENUE

THE VILLAGE WALK
Standard Pacific Homes of Northern California
Cotati, California

Triplex Building Lancaster Drive
Scheme 1 Lots 20/19/18

ROOF
GAF/Elk Prestique
Barkwood



Accent 1
Unit Plan 1R Entry Door
SW6034 Arresting
Auburn

Accent 2
Unit Plan 2 Entry Door
SW6034 Arresting
Auburn



Accent 3
Unit Plan 1 Entry Door
SW6151 Quiver Tan



Trim
SW7103 Whitetail

Stucco
SW6150 Universal Khaki



Siding 1 Unit Plan 1R
SW0067 Belvedere Cream



Siding 2 Unit Plan 2
SW2806 Rockwood Brown



Siding 3 Unit Plan 1
SW6508 Secure Blue

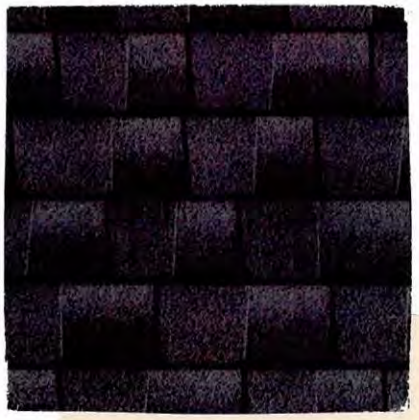


Village Walk, Cotati, CA
for Standard Pacific Homes

Dahlin Group Architecture Planning

Duet Building Lancaster Drive & East Cotati Ave.
Scheme 2 Lots 17/16 & 5/4

ROOF
GAF/Elk Prestique
Charcoal



Siding 1 Unit Plan 1R
SW6516 Down Pour

Accent 1
Unit Plan 1R Entry Door
SW6112 Biscuit

Siding 2 Unit Plan 1
SW0067 Belvedere Cream

Accent 2
Unit Plan 1 Entry Door
SW6034 Arresting
Auburn



Trim
SW7103 Whitetail

Stucco
SW6074 Spalding Gray



Village Walk, Cotati, CA
for Standard Pacific Homes

Dahlin Group Architecture Planning

Triplex Building Lancaster Drive & East Cotati Ave.
Scheme 3 Lots 15/14/13 & 3/2/1

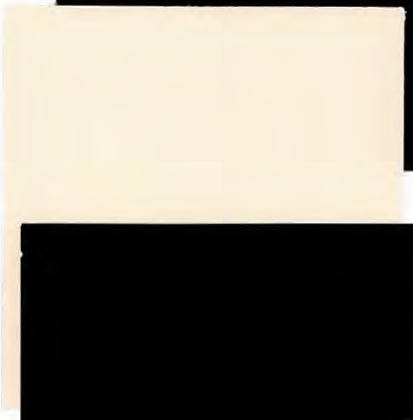
ROOF
GAF/Elk Prestique
Barkwood



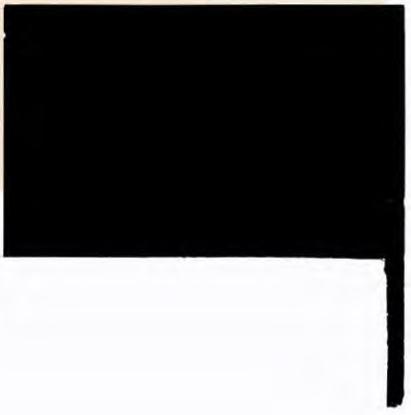
Accent 1
Unit Plan 1 Entry Door
SW6991 Black Magic



Accent 2
Unit Plan 2 Entry Door
SW6112 Biscuit



Accent 3
Unit Plan 1R Entry Door
SW6991 Black Magic



Trim
SW7103 Whitetail

Stucco
SW6073 Perfect Greige



Siding 1 Unit Plan 1
SW2848 Roycroft Pewter



Siding 2 Unit Plan 2
SW2839 Roycroft Copper Red



Siding 3 Unit Plan 1R
SW6243 Distance



Village Walk, Cotati, CA
for Standard Pacific Homes

Dahlin Group Architecture Planning

Triplex Building East Cotati Ave.
Scheme 4 Lots 12/11/10

ROOF
GAF/Elk Prestique
Charcoal



Accent 1
Unit Plan 1R Entry Door
SW7103 Whitetail

Siding 1 Unit Plan 1R
SW2810 Rockwood Sash Green



Accent 2
Unit Plan 2 Entry Door
SW0032 Needlepoint
Navy



Accent 3
Unit Plan 1 Entry Door
SW6112 Biscuit

Siding 2 Unit Plan 2
SW6080 Utterly Beige



Siding 3 Unit Plan 1
SW 6516 Down Pour

Trim
SW7103 Whitetail



Stucco
SW6149 Relaxed Khaki



Village Walk, Cotati, CA
for Standard Pacific Homes

Dahlin Group Architecture Planning

Duet Building East Cotati Ave.
Scheme 5 Lots 9/8

ROOF
GAF/Elk Prestique
Barkwood



Accent 1
Unit Plan 1R Entry Door
SW2807 Rockwood
Medium Brown

Accent 2
Unit Plan 1 Entry Door
SW6034 Arresting
Auburn

Siding 1 Unit Plan 1R
Sw6186 Dried Thyme

Siding 2 Unit Plan 1
SW6379 Jersey Cream

Trim
SW7103 Whitetail

Stucco
SW6074 Spalding Gray

Village Walk, Cotati, CA
for Standard Pacific Homes

Dahlin Group Architecture Planning

Duet Building East Cotati Ave.
Scheme 6 Lots 7/6

ROOF
GAF/Elk Prestique
Charcoal



Siding 1 Unit Plan 1R
Sw2837 Aurora Brown



Accent 1
Unit Plan 1R Entry Door
SW7019 Gauntlet Gray



Accent 2
Unit Plan 1 Entry Door
SW2810 Rockwood Sash
Green



Siding 2 Unit Plan 1
SW2827 Colonial Revival Stone



Trim
SW7103 Whitetail



Stucco
SW2822 Downing Sand

Village Walk, Cotati, CA
for Standard Pacific Homes

Dahlin Group Architecture Planning

VILLAGE WALK
at Santero Court

	February 2, 2012					
	Scheme Number	ACCENT	TRIM	STUCCO	SIDING	ROOF
Elevation Style A	1A	SW6034 Arresting Auburn	SW7103 Whitetail	SW6112 Biscuit	SW0067 Belvedere Cream	Prestique BARKWOOD Elk Roofing
	2A	SW6034 Arresting Auburn	SW7103 Whitetail	SW2827 Colonial Revival Stone	SW2806 Rockwood Brown	Prestique CHARCOAL Elk Roofing
	3A	SW6991 Black Magic	SW7103 Whitetail	SW6073 Perfect Greige	SW2848 Roycroft Pewter	Prestique BARKWOOD Elk Roofing
Elevation Style B	4B	SW0032 Needlepoint Navy	SW7103 Whitetail	SW2805 Renwick Beige	SW6080 Utterly Beige	Prestique CHARCOAL Elk Roofing
	5B	SW7019 Gauntlet Gray	SW7103 Whitetail	SW6150 Universal Khaki	SW2837 Aurora Brown	Prestique CHARCOAL Elk Roofing
	6B	SW6991 Black Magic	SW7103 Whitetail	SW2844 Roycroft Mist Gray	SW6243 Distance	Prestique BARKWOOD Elk Roofing
Elevation Style C	7C	SW7103 Whitetail	SW7103 Whitetail	SW 6149 Relaxed Khaki	SW2810 Rockwood Sash Green	Prestique BARKWOOD Elk Roofing
	8C	SW2807 Rockwood Medium Brown	SW7103 Whitetail	SW6185 Escape Gray	SW6186 Dried Thyme	Prestique BARKWOOD Elk Roofing
	9C	SW6112 Biscuit	SW7103 Whitetail	SW6074 Spalding Gray	SW6516 Down Pour	Prestique CHARCOAL Elk Roofing

Color and Materials Board
Scheme 1A



ROOF

GAF / Elk Roofing,
BARKWOOD

ACCENT

Sherwin Williams,
SW6034 Arresting Auburn

TRIM

Sherwin Williams,
Sw7103 Whitetail

STUCCO

Sherwin Williams,
SW6112 Biscuit

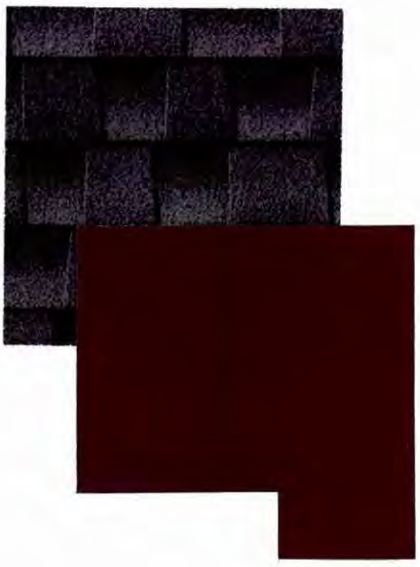
SIDING

Sherwin Williams,
SW0067 Belvedere Cream

Village Walk, Cotati, CA
for Standard Pacific Homes

Dahlin Group Architecture Planning

Color and Materials Board
Scheme 2A



ROOF

GAF / Elk Roofing,
CHARCOAL

ACCENT

Sherwin Williams,
SW6034 Arresting Auburn

TRIM

Sherwin Williams,
SW7103 Whitetail



STUCCO

Sherwin Williams,
SW2827 Colonial Revival Stone

SIDING

Sherwin Williams,
SW2806 Rockwood Brown

Village Walk, Cotati, CA

Dahlin Group Architecture Planning

for Standard Pacific Homes

Color and Materials Board
Scheme 3A

ROOF



GAF / Elk Roofing,
BARKWOOD

ACCENT

Sherwin Williams,
SW6991 Black Magic

TRIM

Sherwin Williams,
SW7103 Whitetail

STUCCO



Sherwin Williams,
SW6073 Perfect Greige

SIDING



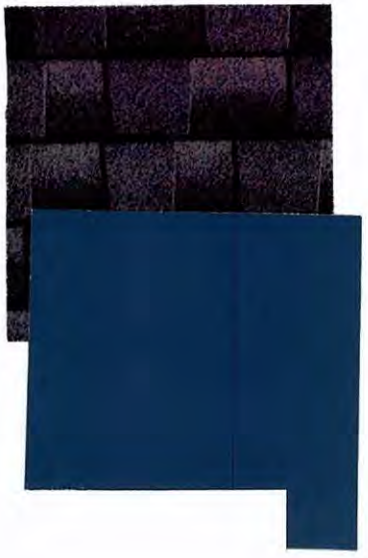
Sherwin Williams,
SW2848 Roycroft Pewter

Village Walk, Cotati, CA

Dahlin Group Architecture Planning

for Standard Pacific Homes

Color and Materials Board
Scheme 4B



ROOF

GAF / Elk Roofing,
CHARCOAL

ACCENT

Sherwin Williams,
SW0032 Needlepoint Navy

TRIM

Sherwin Williams,
SW7103 Whitetail



STUCCO

Sherwin Williams,
SW2805 Renwick Beige

SIDING

Sherwin Williams,
SW6080 Utterly Beige

Village Walk, Cotati, CA

Dahlin Group Architecture Planning

for Standard Pacific Homes

Color and Materials Board
Scheme 5B



ROOF

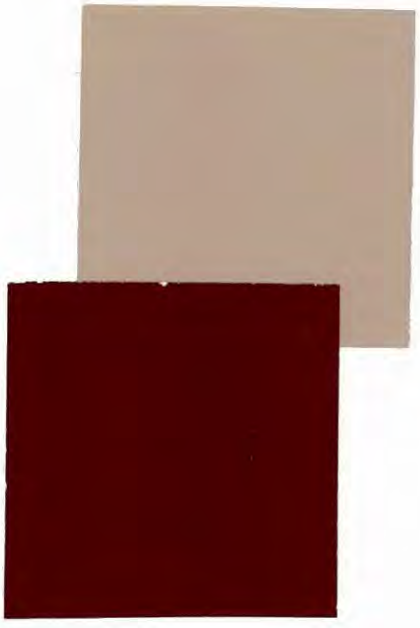
GAF / Elk Roofing,
CHARCOAL

ACCENT

Sherwin Williams,
SW7019 Gauntlet Gray

TRIM

Sherwin Williams,
SW7013 Whitetail



STUCCO

Sherwin Williams,
SW6150 Universal Khaki

SIDING

Sherwin Williams,
SW2837 Aurora Brown

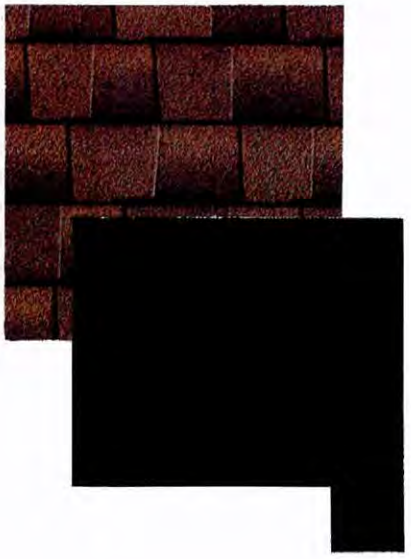
Village Walk, Cotati, CA

Dahlin Group Architecture Planning

for Standard Pacific Homes

Color and Materials Board
Scheme 6B

ROOF



GAF / Elk Roofing,
BARKWOOD

ACCENT

Sherwin Williams,
SW6991 Black Magic

TRIM

Sherwin Williams,
SW7103 Whitetail

STUCCO



Sherwin Williams,
SW2844 Roycroft Mist Gray

SIDING



Sherwin Williams,
SW6243 Distance

Village Walk, Cotati, CA
for Standard Pacific Homes

Dahlin Group Architecture Planning

Color and Materials Board
Scheme 7C

ROOF



GAF / Elk Roofing,
BARKWOOD

ACCENT

Sherwin Williams,
SW7103 Whitetail

TRIM

Sherwin Williams,
SW7103 Whitetail

STUCCO



Sherwin Williams,
SW6149 Relaxed Khaki

SIDING



Sherwin Williams,
SW2810 Rockwood Sash Green

Village Walk, Cotati, CA

Dahlin Group Architecture Planning

for Standard Pacific Homes

Color and Materials Board
Scheme 8C



ROOF

GAF / Elk Roofing,
BARKWOOD

ACCENT

Sherwin Williams,
SW2807 Rockwood
Medium Brown

TRIM

Sherwin Williams,
SW7103 Whitetail



STUCCO

Sherwin Williams,
SW6185 Escape Gray

SIDING

Sherwin Williams,
SW6186 Dried Thyme

Village Walk, Cotati, CA

Dahlin Group Architecture Planning

for Standard Pacific Homes

Color and Materials Board
Scheme 9C

ROOF



GAF / Elk Roofing,
CHARCOAL

ACCENT



Sherwin Williams,
SW6112 Biscuit

TRIM

Sherwin Williams,
SW7103 Whitetail

STUCCO



Sherwin Williams,
SW6074 Spalding Gray

SIDING



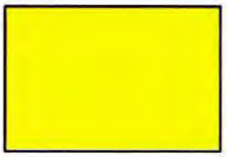
Sherwin Williams,
SW6516 Down Pour

Village Walk, Cotati, CA

Dahlin Group Architecture Planning

for Standard Pacific Homes

COLOR APPLICATION LEGEND



STUCCO
(BODY 1)



SIDING
(BODY 2)



TRIM



ACCENT

ALL DOWNSPOUTS SHALL BE PAINTED THE COLOR OF THE ADJACENT SURFACE

ALL WROUGHT IRON SHALL BE PAINTED BLACK



PLAN 1(R) PLAN 1

DUPLEX BUILDING 201, FRONT ELEVATION

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PLAN 1(R)

DUPLEX BUILDING 201, LEFT SIDE ELEVATION

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PLAN 1 PLAN 1(R)

DUPLEX BUILDING 201, REAR ELEVATION

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PLAN 1

DUPLEX BUILDING 201, RIGHT SIDE ELEVATION

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PLAN 1(R) PLAN 1

DUPLEX BUILDING 202, FRONT ELEVATION

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PLAN 1(R)

DUPLEX BUILDING 202, LEFT ELEVATION

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PLAN 1 PLAN 1(R)

DUPLEX BUILDING 202, REAR ELEVATION

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PLAN 1

DUPLEX BUILDING 202, RIGHT ELEVATION

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PLAN 1(R) PLAN 1

DUPLEX BUILDING 203, FRONT ELEVATION

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PLAN 1(R)

DUPLEX BUILDING 203, LEFT SIDE ELEVATION

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PLAN 1 PLAN 1(R)

DUPLEX BUILDING 203, REAR ELEVATION

SCALE: 1/4" = 1'-0"



PLAN 1

DUPLEX BUILDING 203, RIGHT SIDE ELEVATION

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PLAN 1 (R) PLAN 2 PLAN 1

TRIPLEX BUILDING 301, FRONT ELEVATION



PLAN 1 (R)

TRIPLEX BUILDING 301, LEFT SIDE ELEVATION



PLAN 1 PLAN 2 PLAN 1 (R)

TRIPLEX BUILDING 301, REAR ELEVATION

SCALE: 1/4" = 1'-0"



PLAN 1

TRIPLEX BUILDING 301, RIGHT SIDE ELEVATION

SCALE: 1/4" = 1'-0"



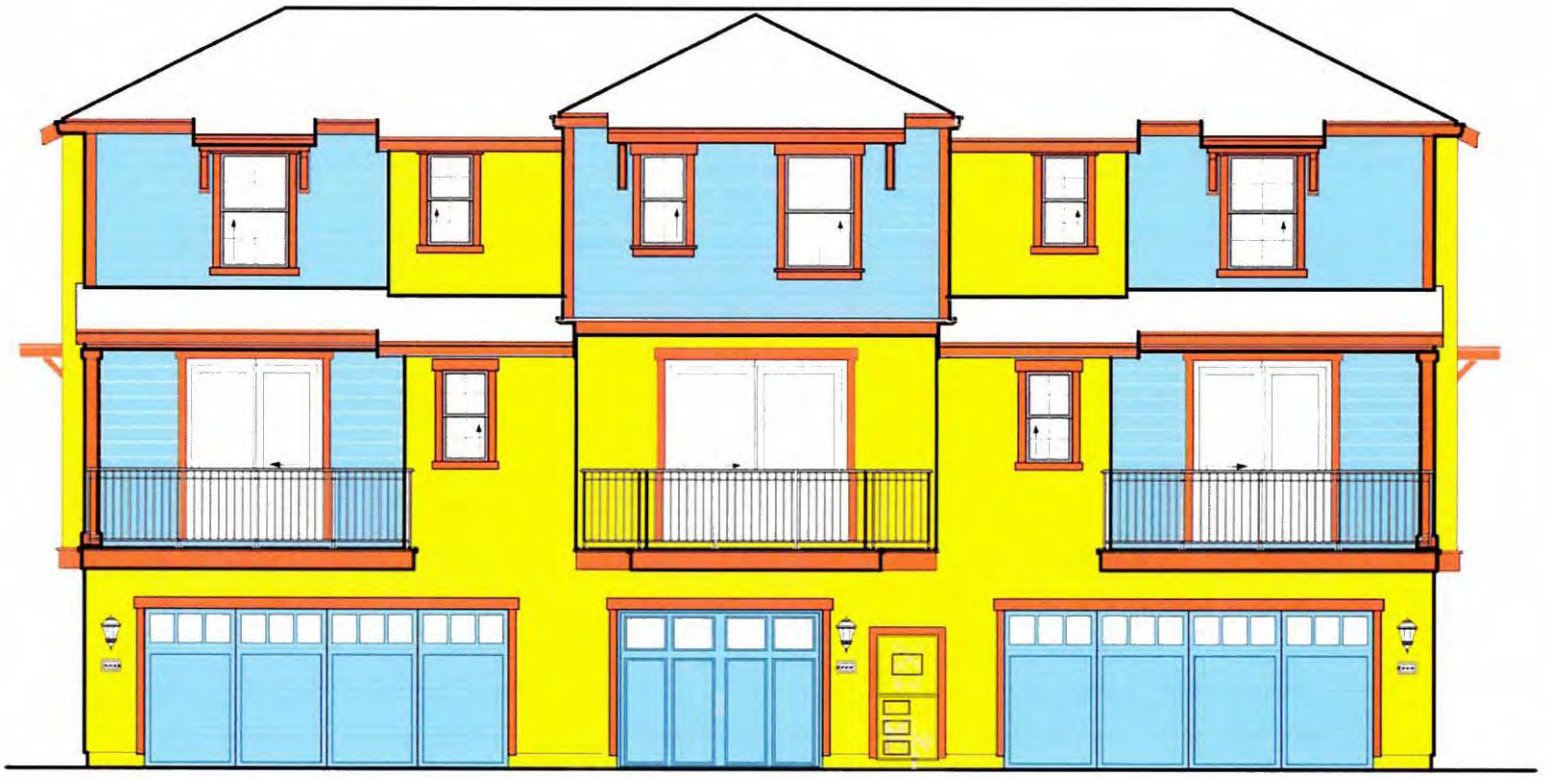
PLAN 1 (R) PLAN 2 (R) PLAN 1

TRIPLEX BUILDING 302. FRONT ELEVATION



PLAN 1 (R)

TRIPLEX BUILDING 302, LEFT SIDE ELEVATION



PLAN 1 PLAN 2 (R) PLAN 1 (R)

TRIPLEX BUILDING 302, REAR ELEVATION

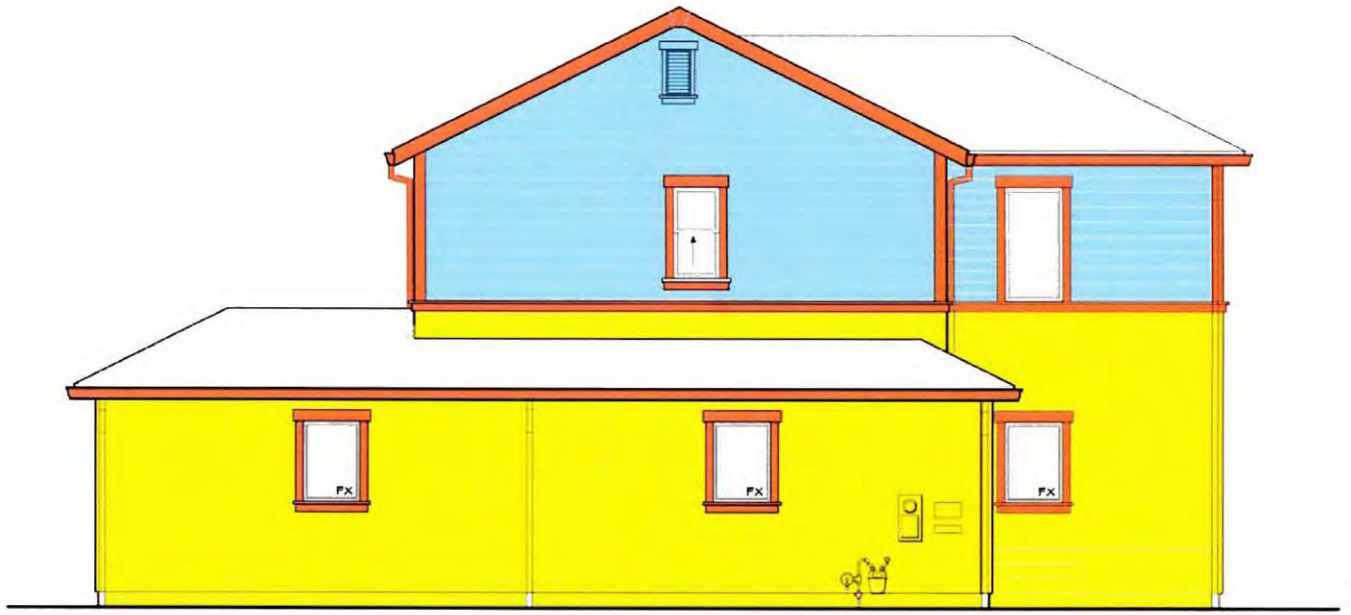


PLAN 1

TRIPLEX BUILDING 302, RIGHT SIDE ELEVATION



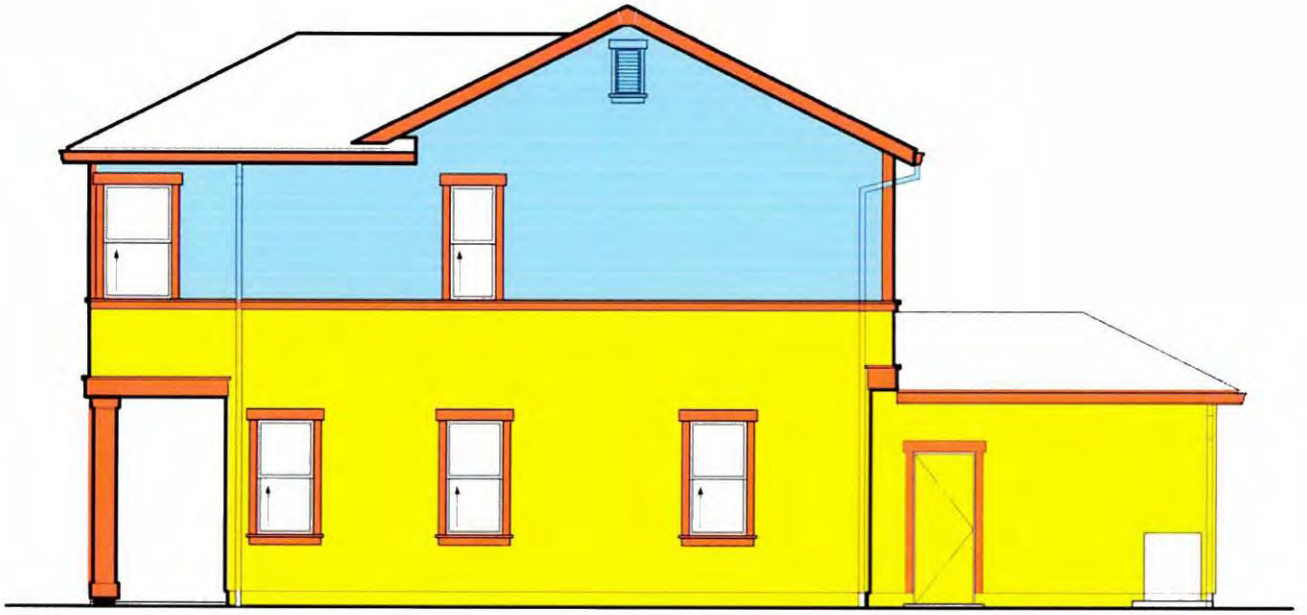
PLAN 3 FRONT ELEVATION A



PLAN 3 LEFT SIDE ELEVATION A



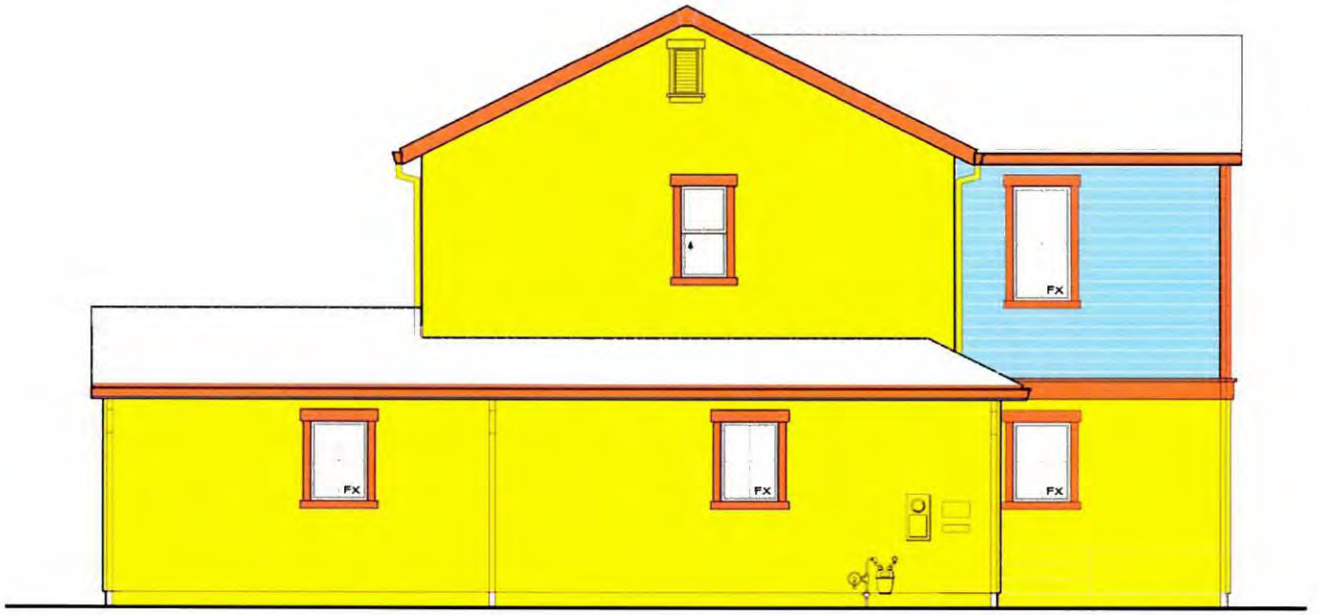
PLAN 3 REAR ELEVATION A



PLAN 3 RIGHT SIDE ELEVATION A



PLAN 3 FRONT ELEVATION B



PLAN 3 LEFT SIDE ELEVATION B



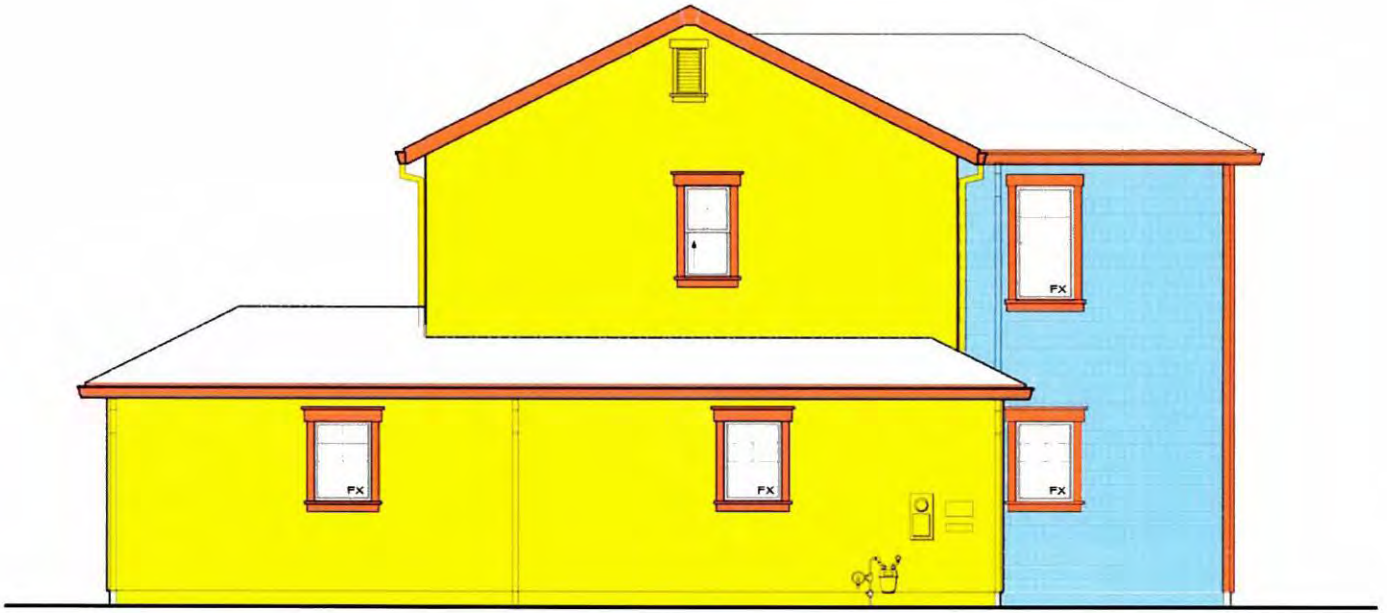
PLAN 3 REAR ELEVATION B



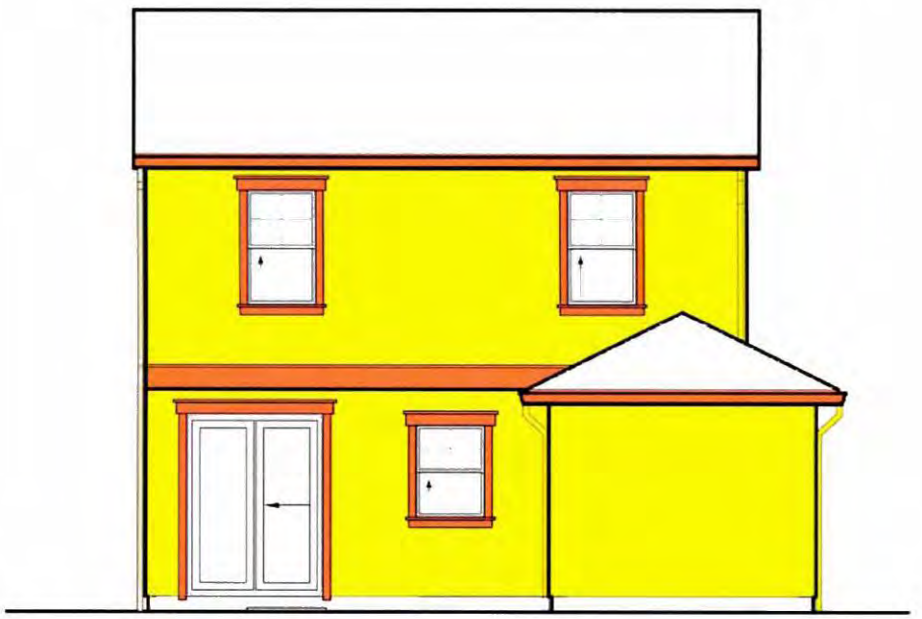
PLAN 3 RIGHT SIDE ELEVATION B



PLAN 3 FRONT ELEVATION C



PLAN 3 LEFT SIDE ELEVATION C



PLAN 3 REAR ELEVATION C



PLAN 3 RIGHT SIDE ELEVATION C



PLAN 3R REAR ENHANCED ELEVATION C



PLAN 3R RIGHT SIDE ENHANCED ELEVATION C



PLAN 4 FRONT ELEVATION A

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PLAN 4 LEFT SIDE ELEVATION A



PLAN 4 REAR ELEVATION A



PLAN 4 RIGHT SIDE ELEVATION A

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PLAN 4 FRONT ELEVATION B



PLAN 4 LEFT SIDE ELEVATION B



PLAN 4 REAR ELEVATION B

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PLAN 4 RIGHT SIDE ELEVATION B



PLAN 4 FRONT ENHANCED ELEVATION B



PLAN 4 LEFT SIDE ENHANCED ELEVATION B



PLAN 4 REAR ENHANCED ELEVATION B
Lot #37, 42 & 46



PLAN 4 RIGHT SIDE ENHANCED ELEVATION B
Lot #37, 42 & 46

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PLAN 4 FRONT ELEVATION C



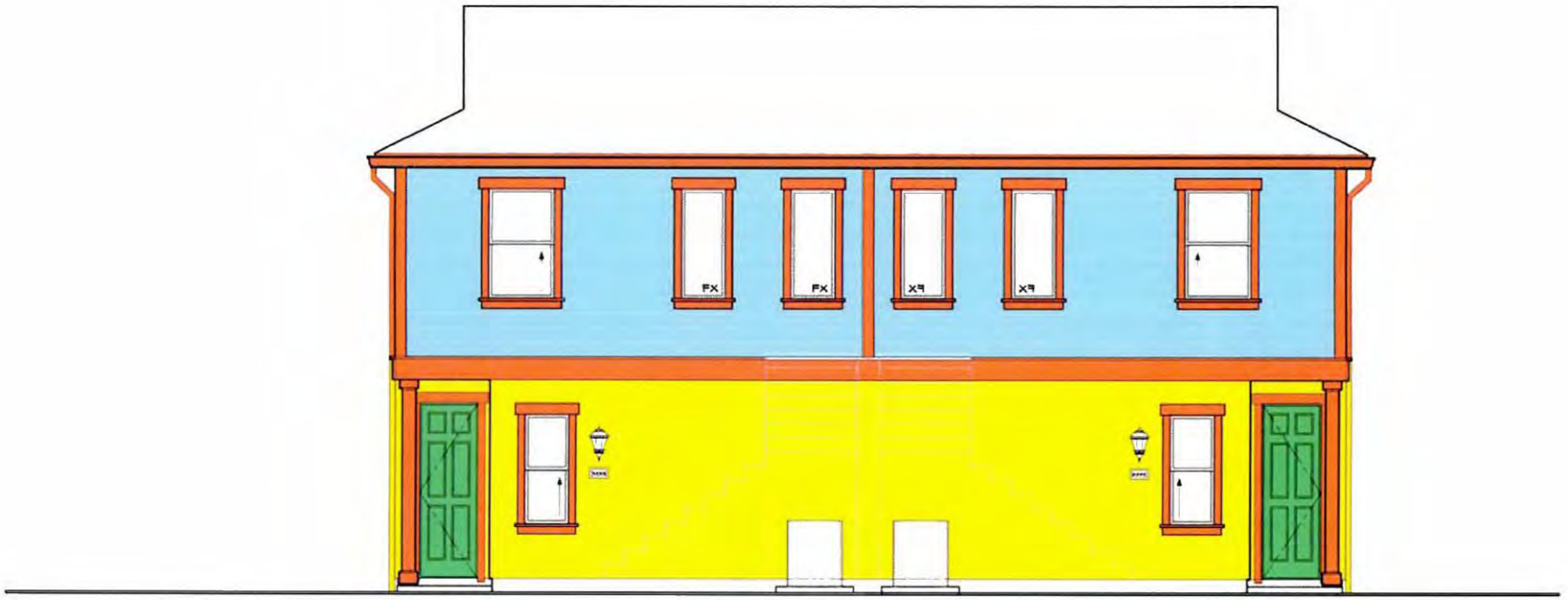
PLAN 4 LEFT SIDE ELEVATION C



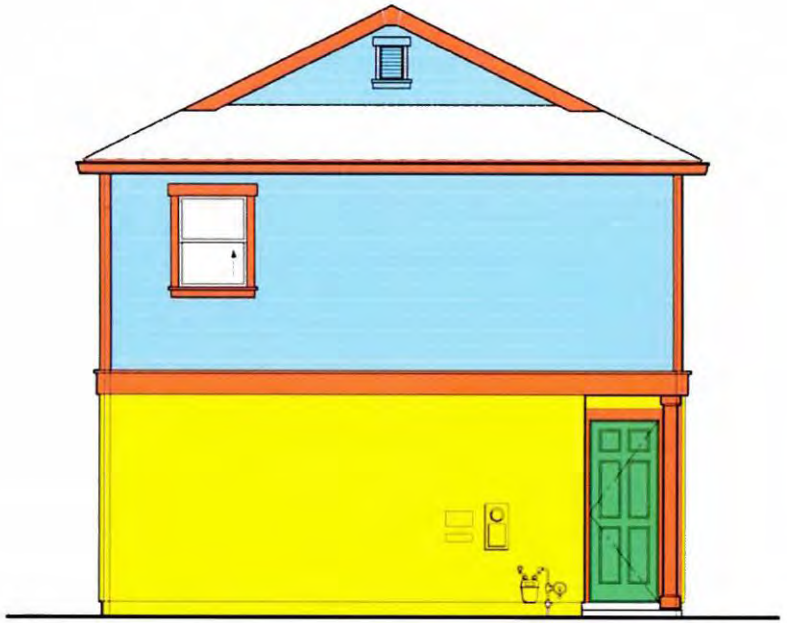
PLAN 4 REAR ELEVATION C



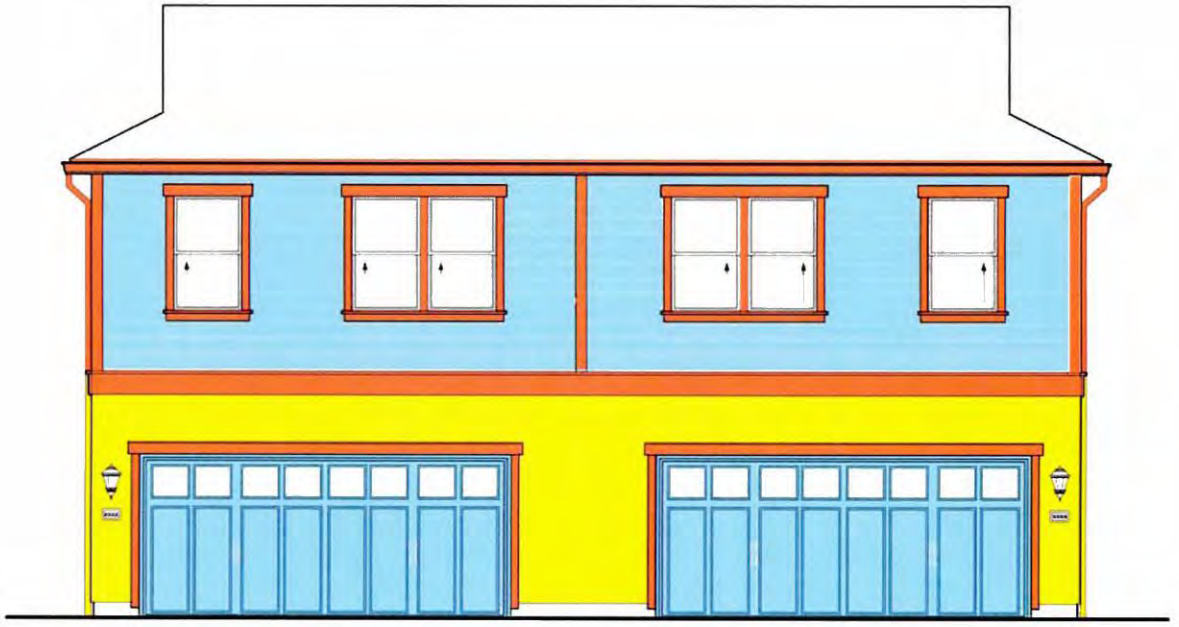
PLAN 4 RIGHT SIDE ELEVATION C



PLAN 5 GARAGE/GUEST SUITE
FRONT ELEVATION STYLE B FRONT ELEVATION STYLE A



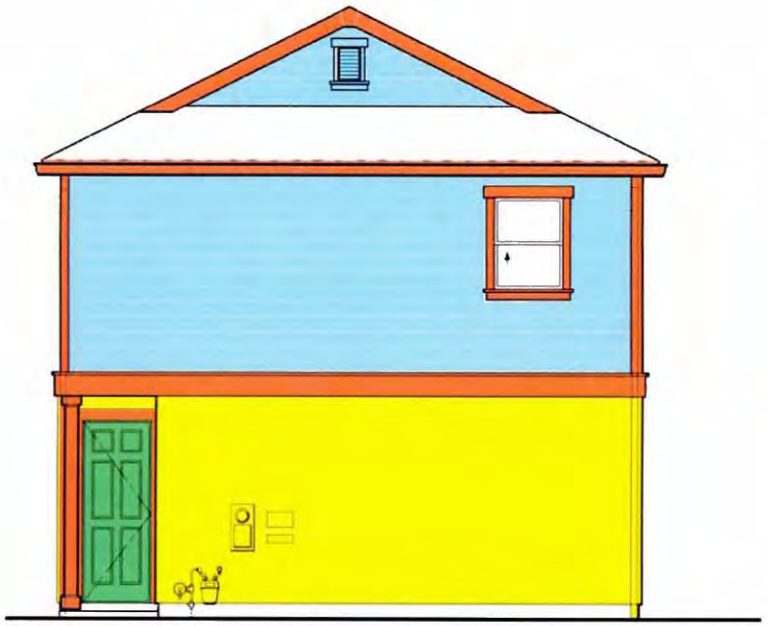
PLAN 5 GARAGE/GUEST SUITE



PLAN 5 GARAGE/GUEST SUITE

REAR ELEVATION STYLE A

REAR ELEVATION STYLE B



PLAN 5 GARAGE/GUEST SUITE
RIGHT SIDE ELEVATION STYLE A

15043

HANSON TRUSS COMPONENTS, INC.

RECEIVED
JUL 11 2016
CITY OF COTATI
PLANNING AND BUILDING DEPT.

Developer	**SYNERGY HOMES**
Project Name	**VILLAGE WALK**
Location	**COTATI, CA**
	BLDG. 201,202,203-301,302
Bldng.	
Contact:	

Revisions

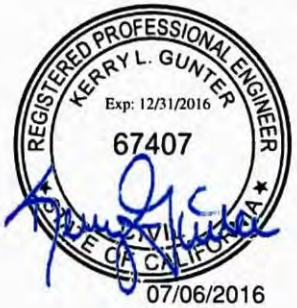
Date	Changes

FILE COPY

TRUSS ENGINEERING DESIGNED PER IBC 2012 (CBC 2013) / TPI I-2007

PLATES I.C.C. ESR REPORT 32765 AS-20 / AS-18HS

MINIMUM PLATE DESIGN VALUES HAVE BEEN USED IN THE DESIGN OF THE TRUSSES



Date: **7/6/2016**

1. The truss design drawings referenced below have been prepared based on design criteria and requirements set forth in the Construction Documents, as communicated by the Truss Manufacturer.

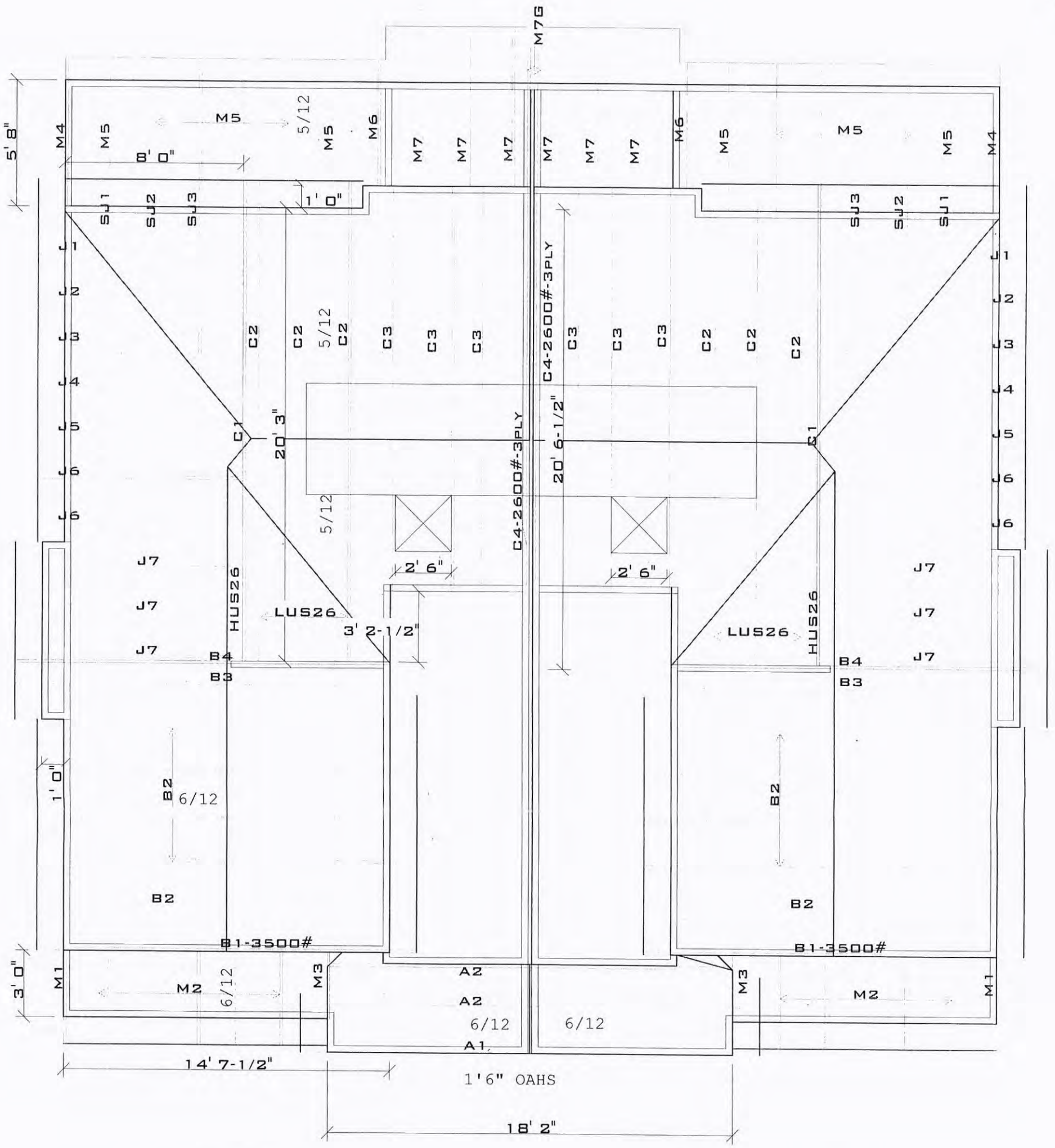
2. The engineer's signature on these drawings indicates professional engineering responsibility solely for the individual components to be able to resist the design loads indicated, utilizing all the design parameter and materials indicated or referenced on each individual design.

3. It is the Building Designer's responsibility to review the truss design drawings to insure compatibility with the Building design. Refer to all notes on the individual truss design drawings.

Hanson Truss Components Inc. 4476 Skyway Drive Olivehurst, CA 95961

Mailing Address: PO Box 31 Marysville, CA 95901

Phone: 530-740-7750 Fax: 530-740-7754



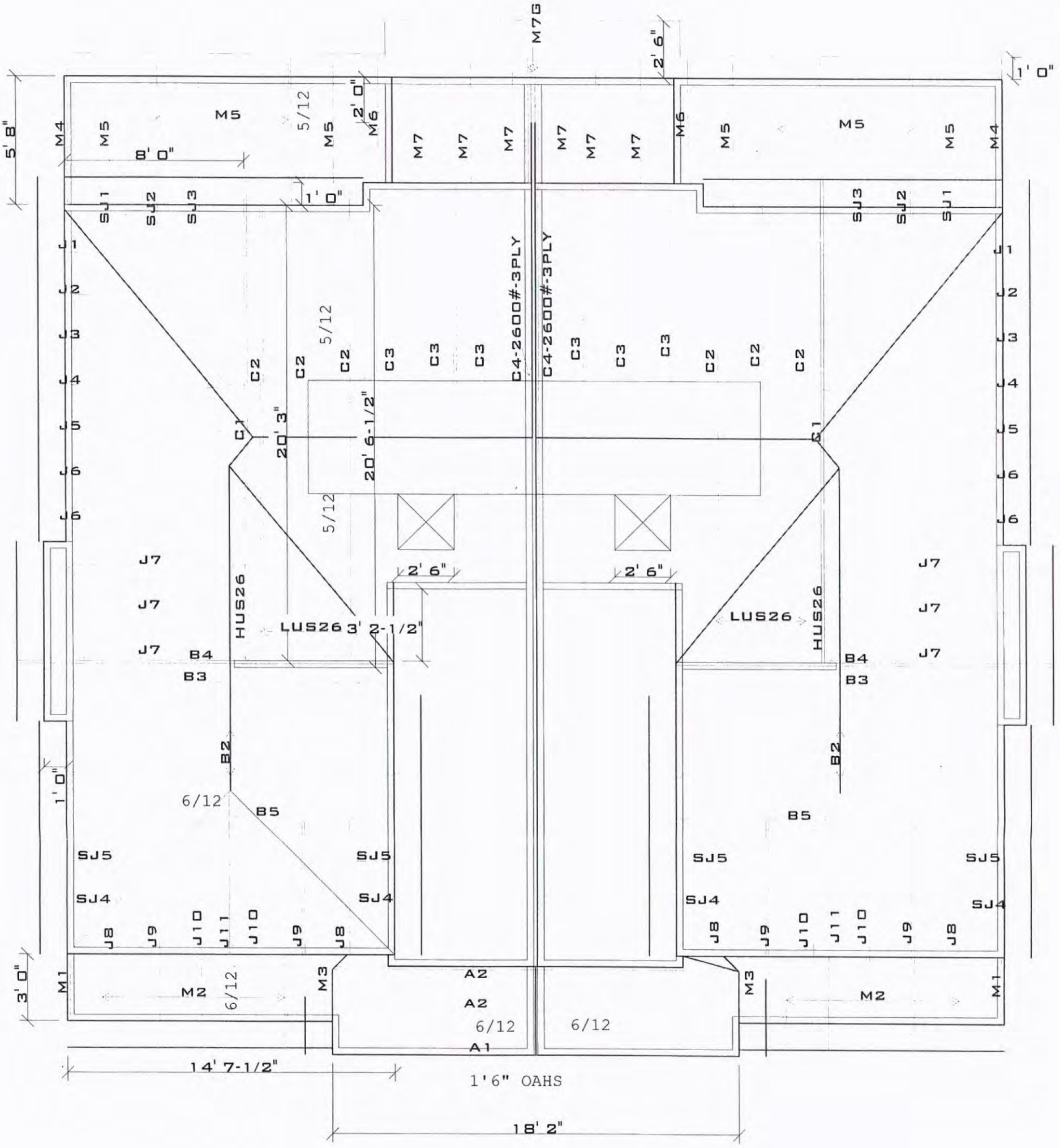
NOTE:

- 5/12 ROOF PITCH TYP., U.N.O.
- 1'2-1/2" OVERHANGS TYP., U.N.O.
- FAU IS LOCATED INSIDE ATTIC.
- ALL BEAMS TO BE PROVIDED B/O.
- SIMPSON OR EQUAL HANGERS TO BE PROVIDED B/O.
- SOFFITS BELOW PLATE HEIGHT TO BE PROVIDED B/O.
- SEE STRUCTURAL PLANS FOR RIDGE AND SHEAR BLOCKING
- MAIN ROOF @6/12 5-3/16" HEEL

SYNERGY VILLAGE WALK 201 AND 202

JOB NAME: **VILLAGE BLDGS**		PLAN:	ISSUE	DATE	DESCRIPTION	NOTES:
DRAWN BY: BEN M.	SCALE: Not Scaled	ELEV: .		6/23/2016	FINAL	
				N/A	N/A	
FILE NAME: c:\kmw\jobs\village bldgs_1743\village bldgs\village bldgs.LAY		LOT #:		N/A	N/A	
				N/A	N/A	
NULL AND VOID IF NOT FABRICATED BY HANSON TRUSS COMPONENTS, INC.						

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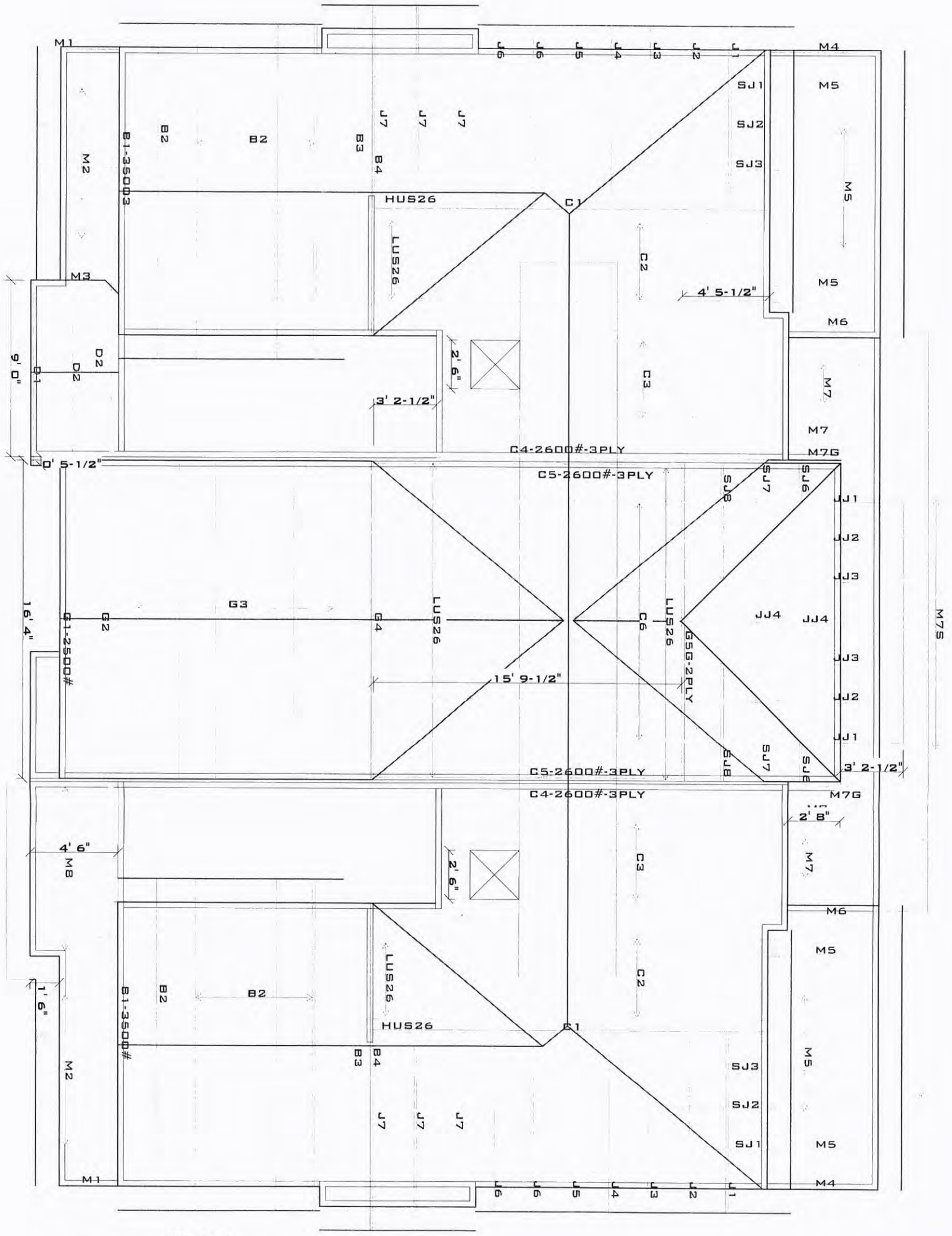
NOTE:

- 5/12 ROOF PITCH TYP., U.N.O.
- 1'2-1/2" OVERHANGS TYP., U.N.O.
- FAU IS LOCATED INSIDE ATTIC.
- ALL BEAMS TO BE PROVIDED B/O.
- SIMPSON OR EQUAL HANGERS TO BE PROVIDED B/O.
- SOFFITS BELOW PLATE HEIGHT TO BE PROVIDED B/O.
- SEE STRUCTURAL PLANS FOR RIDGE AND SHEAR BLOCKING
- MAIN ROOF @6/12 5-3/16" HEEL

SYNERGY VILLAGE WALK 203

JOB NAME: **VILLAGE BLDGS**		PLAN:	ISSUE	DATE	DESCRIPTION	NOTES:
				6/23/2016	FINAL	
DRAWN BY: BEN M.	SCALE: Not Scaled	ELEV: .		N/A	N/A	
				N/A	N/A	
FILE NAME: c:\kmw\jobs\village bldgs_1743\village bldgs\village bldgs.LAY		LOT #:		N/A	N/A	
				N/A	N/A	
NULL AND VOID IF NOT FABRICATED BY HANSON TRUSS COMPONENTS, INC.						

PDF created with pdfFactory trial version www.pdffactory.com



NOTE:

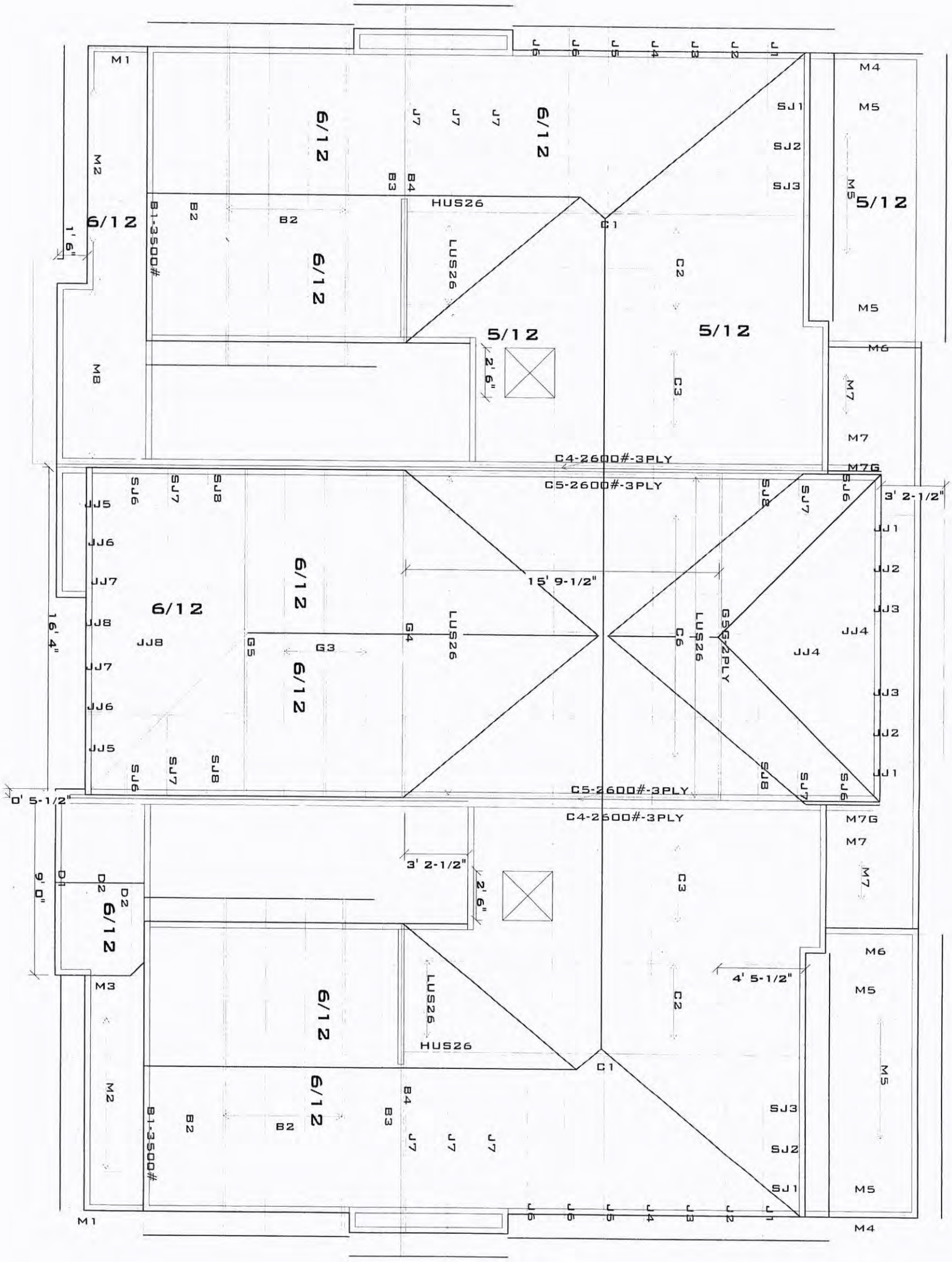
- 5/12 ROOF PITCH TYP., U.N.O.
- 1"2-1/2" OVERHANGS TYP., U.N.O.
- FAU IS LOCATED INSIDE ATTIC.
- ALL BEAMS TO BE PROVIDED B/O.
- SIMPSON OR EQUAL HANGERS TO BE PROVIDED B/O.
- SOFFITS BELOW PLATE HEIGHT TO BE PROVIDED B/O.
- SEE STRUCTURAL PLANS FOR RIDGE AND SHEAR BLOCKING
- HEEL @ 6/12 5-3/16"

SYNERGY VILLAGE WALK 301

JOB NAME: VILLAGE BLDGS		PLAN:	ISSUE:	DATE:	DESCRIPTION:	NOTES:
				6/23/2016	FINAL	
DRAWN BY: BEN M.	SCALE: Not Scaled	ELEV: .		N/A	N/A	
				N/A	N/A	
FILE NAME: c:\kmw\jobs\village bldgs_1743\village bldgs\village bldgs.LAY		LOT #:		N/A	N/A	
				N/A	N/A	

HTCI HANSON TRUSS COMPONENTS, INC.

NULL AND VOID IF NOT FABRICATED BY HANSON TRUSS COMPONENTS, INC.
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NOTE:

- 5/12 ROOF PITCH TYP., U.N.O.
- 1'2-1/2"" OVERHANGS TYP., U.N.O.
- FAU IS LOCATED INSIDE ATTIC.
- ALL BEAMS TO BE PROVIDED B/O.
- SIMPSON OR EQUAL HANGERS TO BE PROVIDED B/O.
- SOFFITS BELOW PLATE HEIGHT TO BE PROVIDED B/O.
- SEE STRUCTURAL PLANS FOR RIDGE AND SHEAR BLOCKING
- HEEL @ 6/12 5-3/16"

SYNERGY VILLAGE WALK 302

JOB NAME: VILLAGE BLDGS		PLAN:	ISSUE:	DATE:	DESCRIPTION:	NOTES:
				6/23/2016	FINAL	
DRAWN BY: BEN M.	SCALE: Not Scaled	ELEV: .		N/A	N/A	
				N/A	N/A	
FILE NAME: c:\kmw\jobs\village bldgs_1743\village bldgs\village bldgs.LAY		LOT #:		N/A	N/A	
				N/A	N/A	
NULL AND VOID IF NOT FABRICATED BY HANSON TRUSS COMPONENTS, INC.						

PDF created with pdfFactory trial version www.pdffactory.com

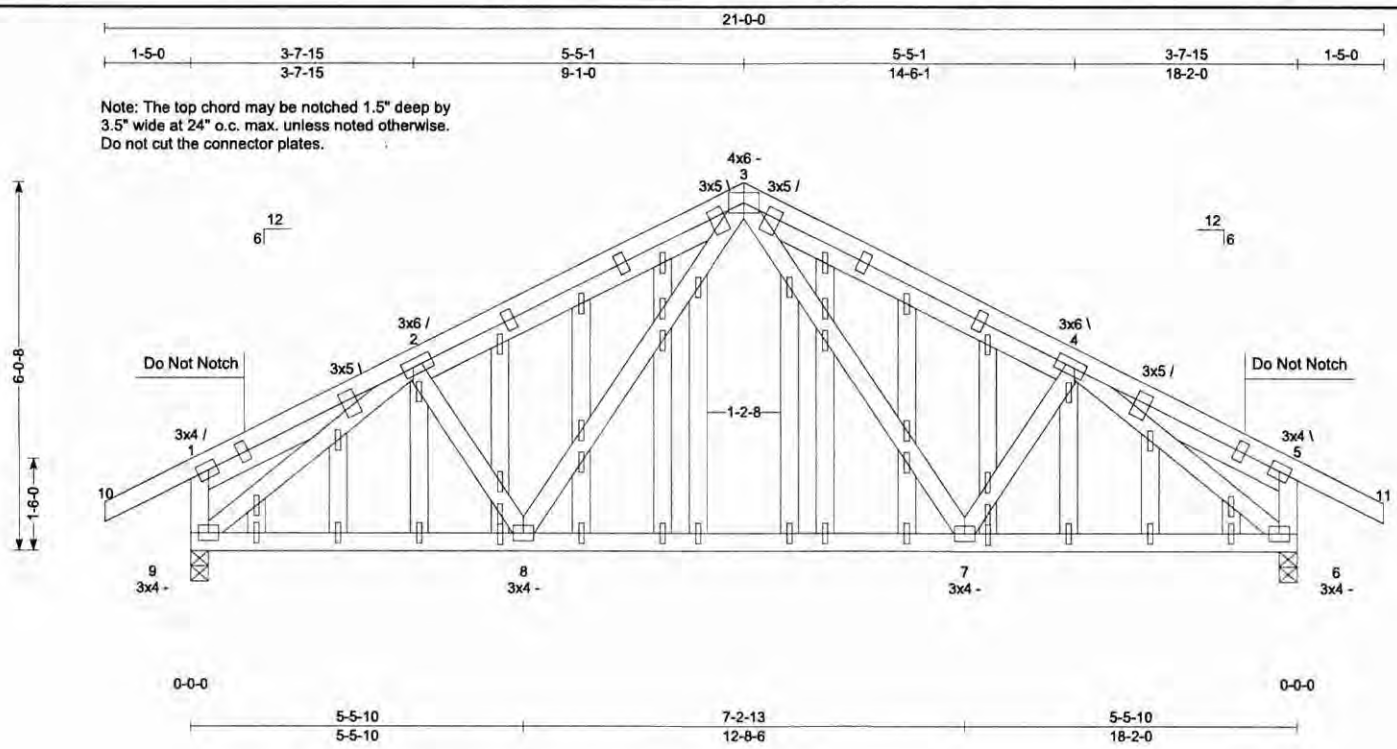
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: A1
Project Name: village bldgs
Date: 7/6/2016 10:09:39 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
18-2-0	6 /12	1	1-5-0	1-5-0	0-0-0	0-0-0	1	24 in	172 lbs



Loading

	(psf)
Load	
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.32 (3-4)
BC:	0.76 (7-8)
Web:	0.50 (2-9)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.18 in	L / 999	(7-8)	L / 240
Vert LL:	0.09 in	L / 999	(7-8)	L / 360
Horz TL:	0.02 in		6	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,26.) (2:0-13,3-8,26.) (3:0-0,3-15,0.) (4:0-12,3-9,26.) (5:3-6,2-3,26.) (6:3-8,3-8,0.) (7:0-0,3-8,0.) (8:0-0,3-8,0.) (9:3-8,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
9	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,004 lbs	-161 lbs	-33 lbs	-161 lbs	-1,817 lbs
6	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,004 lbs	-161 lbs	-33 lbs	-161 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 6-10-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 100 plf drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

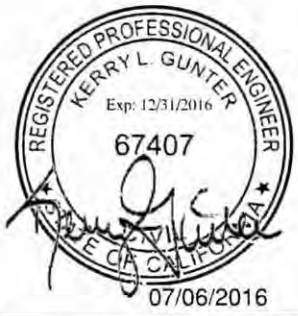
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	10-1	0.175	48 lbs		2-3	0.317	-909 lbs		4-5	0.207	424 lbs	(-378 lbs)			
	1-2	0.207	425 lbs	(-379 lbs)	3-4	0.317	-909 lbs		5-11	0.175	48 lbs				
BC	6-7	0.684	1,019 lbs	(-320 lbs)	7-8	0.756	1,203 lbs	(-613 lbs)	8-9	0.684	1,493 lbs	(-795 lbs)			
Webs	1-9	0.112	219 lbs	(-216 lbs)	2-8	0.072	228 lbs	(-215 lbs)	3-7	0.136	335 lbs	(-115 lbs)	4-6	0.497	-1,348 lbs
	2-9	0.499	-1,352 lbs		3-8	0.136	335 lbs	(-113 lbs)	4-7	0.073	230 lbs	(-216 lbs)	5-6	0.112	219 lbs (-216 lbs)

Notes:

1) Unlabeled plates are 1x4 20ga. Attach stacked chords with 2x4 20ga, U.N.O.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
6) This gable has been designed for a 12" (max.) rake overhang.
7) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.



NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company, Inc in accordance with ESR-2762. All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

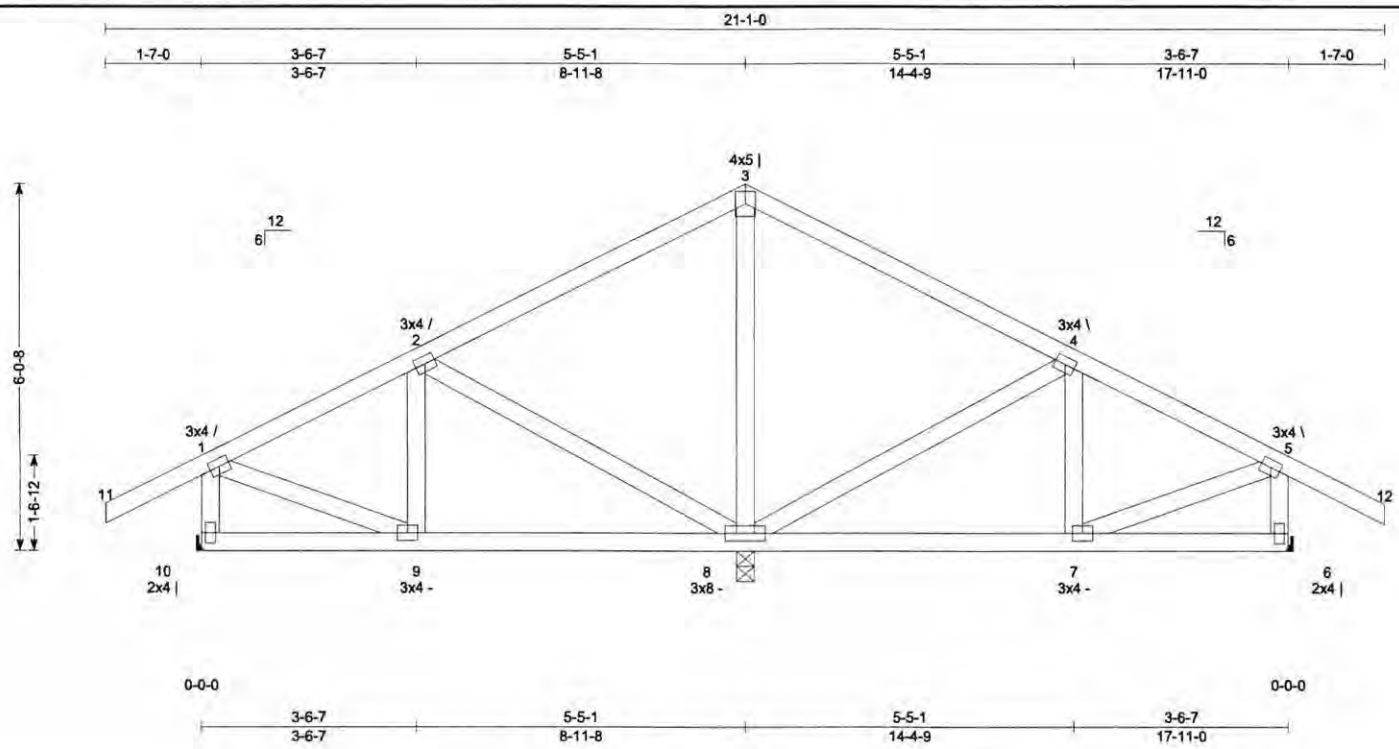
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: A2
Project Name: village bldgs
Date: 07/05/16 16:35:02
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
17-11-0	6 / 12	1	1-7-0	1-7-0	0-0-0	0-0-0	1	24 in	94 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.33 (3-4)
BC :	0.53 (7-8)
Web :	0.26 (3-8)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.02 in	L / 999	(7-8)	L / 240
Vert LL:	0 in	L / 999	(7-8)	L / 360
Horz TL:	0 in		6	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-8,2-3,26.) (2:1-12,3-1,26.) (3:0-0,3-15,90.) (4:1-12,3-1,26.) (5:3-8,2-3,26.) (6:1-12,3-8,90.) (7:1-12,3-8,0.) (8:0-0,3-8,0.) (9:1-12,3-8,0.) (10:1-12,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
10	Pin (Truss)	1	1.5 in	-	1.50 in	455 lbs	-	-22 lbs	-22 lbs	-90 lbs
8	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	826 lbs	-	-24 lbs	-24 lbs	0 lbs
6	H Roll (Truss)	1	1.5 in	-	1.50 in	455 lbs	-	-22 lbs	-22 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

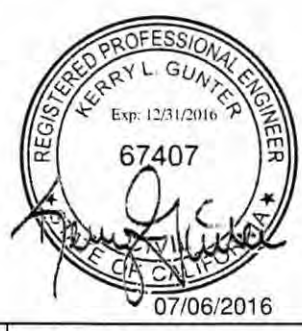
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	11-1	0.214	53 lbs		2-3	0.327	152 lbs	(-31 lbs)	4-5	0.198	-297 lbs	
	1-2	0.198	-297 lbs		3-4	0.327	152 lbs	(-31 lbs)	5-12	0.214	53 lbs	
BC	6-7	0.386	33 lbs	(-17 lbs)	8-9	0.528	247 lbs	(-6 lbs)				
	7-8	0.528	247 lbs		9-10	0.386	73 lbs	(-57 lbs)				
Webs	1-10	0.101	-423 lbs		2-8	0.238	-360 lbs		4-7	0.088	217 lbs	(-23 lbs)
	1-9	0.108	265 lbs		3-8	0.261	-456 lbs		5-7	0.108	265 lbs	
	2-9	0.088	217 lbs	(-23 lbs)	4-8	0.238	-360 lbs		5-6	0.105	-423 lbs	

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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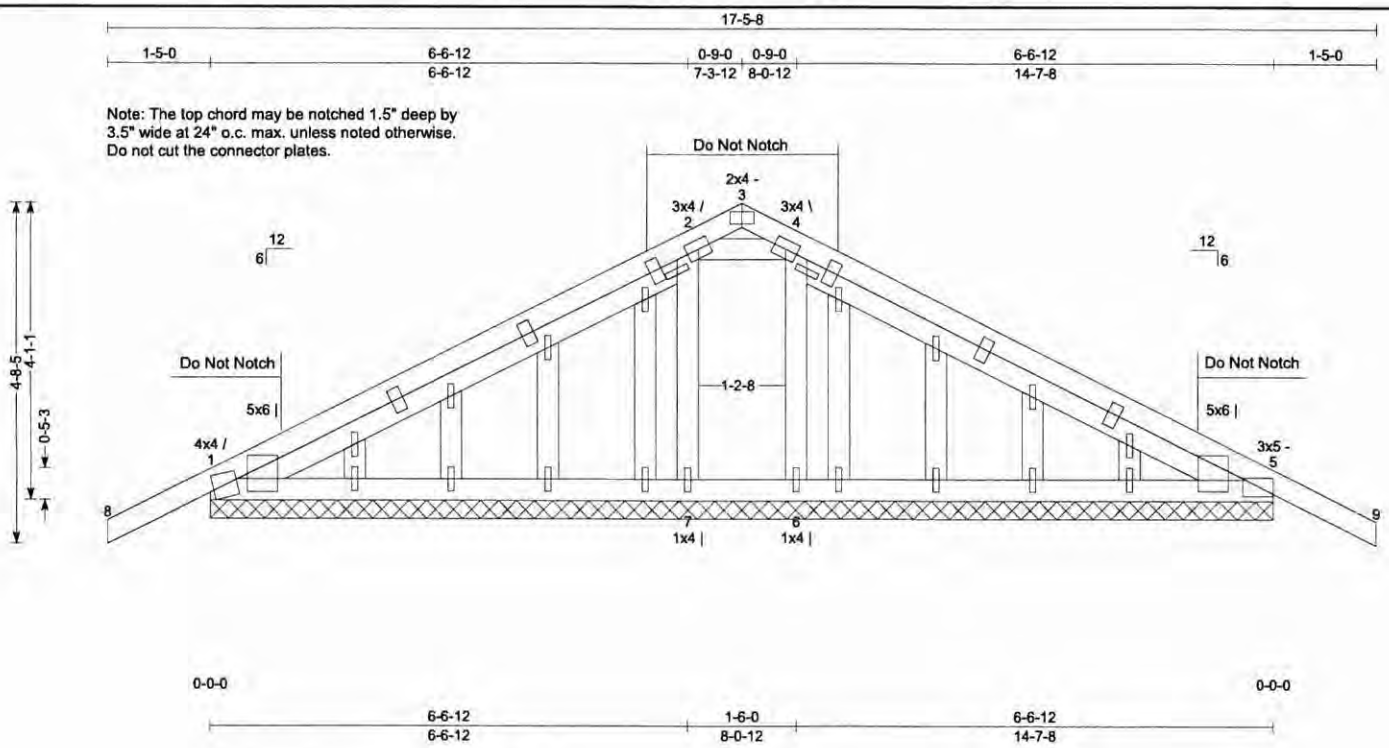
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: B1
Project Name: village bldgs
Date: 7/6/2016 9:26:51 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
14-7-8	6 /12	1	1-5-0	1-5-0	0-0-0	0-0-0	1	24 in	90 lbs



Loading

	(psf)
Load	
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.81 (1-2)
BC:	0.64 (7-1)
Web:	0.12 (2-7)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.07 in	L / 999	(5-6)	L / 240
Vert LL:	0.01 in	L / 999	(5-6)	L / 360
Horz TL:	0.01 in		5	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-6,2-13,13.) (2:1-12,3-1,26.) (3:0-0,2-6,0.) (4:1-12,3-1,26.) (5:2-8,2-13,0.) (6:0-0,3-8,90.) (7:0-0,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
6	H Roll (Wall)	1	175.5 in	Douglas-Fir-Larch	Unknown	349 lbs	-148 lbs	-19 lbs	-148 lbs	0 lbs
7	H Roll (Wall)	1	175.5 in	Douglas-Fir-Larch	Unknown	713 lbs	-515 lbs	-21 lbs	-515 lbs	0 lbs
5	H Roll (Wall)	1	175.5 in	Douglas-Fir-Larch	Unknown	996 lbs	-500 lbs	-42 lbs	-500 lbs	0 lbs
1	Pin (Wall)	1	175.5 in	Douglas-Fir-Larch	Unknown	1,515 lbs	-1,020 lbs	-42 lbs	-1,020 lbs	3,500 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 2-7-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 4-10-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 3,500 lbs drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	8-1	0.145	43 lbs		2-3	0.467	389 lbs	(-177 lbs)	4-5	0.374	-1,579 lbs	
	1-2	0.812	-2,632 lbs		3-4	0.467	368 lbs	(-178 lbs)	5-9	0.145	43 lbs	
BC	5-6	0.611	1,431 lbs	(-1,138 lbs)	6-7	0.502	1,431 lbs	(-1,138 lbs)	7-1	0.644	1,431 lbs	(-1,138 lbs)
Webs	2-7	0.118	-449 lbs		2-4	0.106	-716 lbs		4-6	0.052	-240 lbs	

Notes:

1) Unlabeled plates are 1x4 20ga. Attach stacked chords with 2x4 20ga, U.N.O.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
6) This gable has been designed for a 12" (max.) rake overhang.
7) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.



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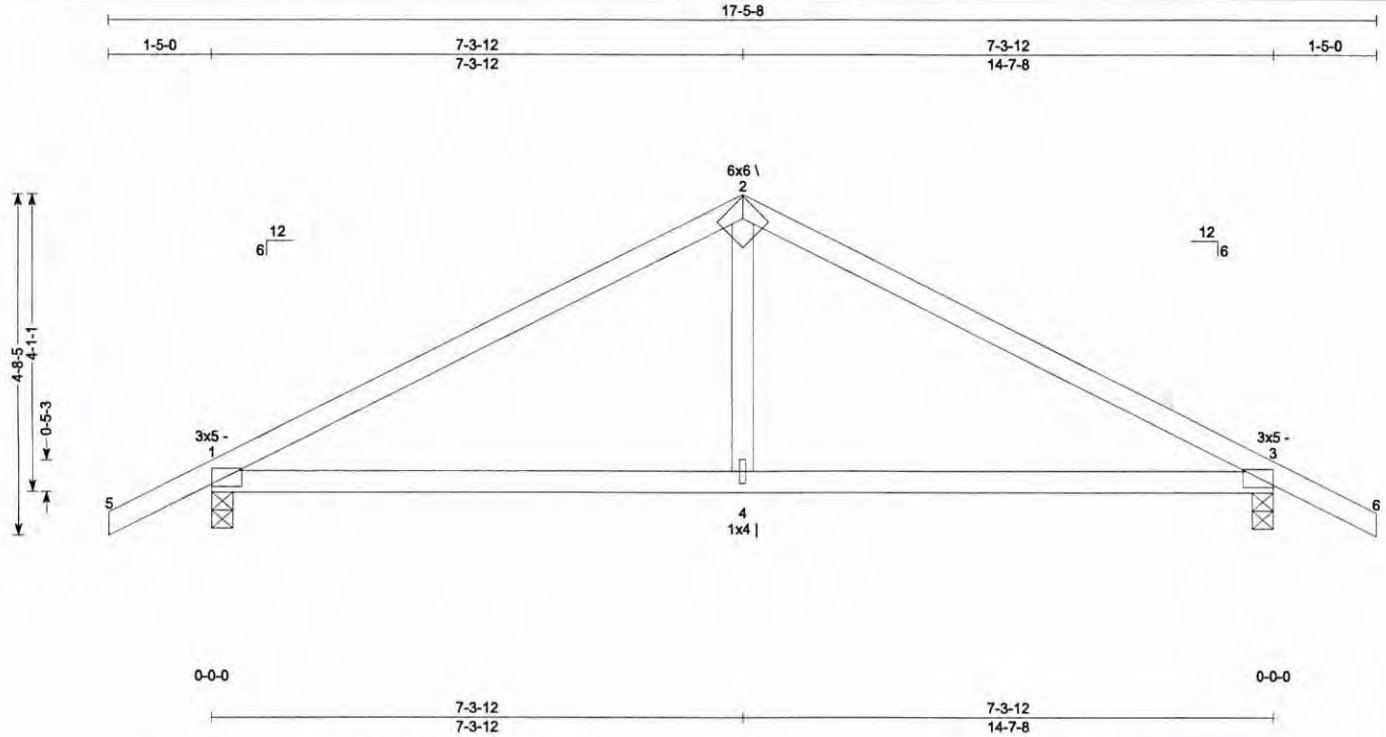
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: B2
Project Name: village bldgs
Date: 07/05/16 16:35:03
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
14-7-8	6 /12	1	1-5-0	1-5-0	0-0-0	0-0-0	1	24 in	49 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.54 (1-2)
BC :	0.81 (4-1)
Web :	0.15 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.14 in	L / 999	(3-4)	L / 240
Vert LL:	0.03 in	L / 999	(3-4)	L / 360
Horz TL:	0.02 in		3	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.) (2:0-0,4-8,45.) (3:2-8,2-13,0.) (4:0-0,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	696 lbs	-	-29 lbs	-29 lbs	18 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	696 lbs	-	-29 lbs	-29 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

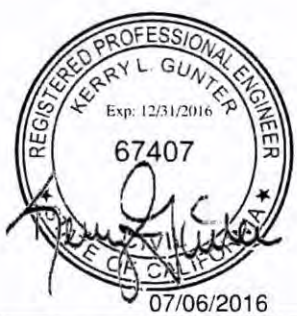
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	5-1	0.145	43 lbs	2-3	0.540	-860 lbs		
	1-2	0.540	-860 lbs	3-6	0.145	43 lbs		
BC	3-4	0.806	684 lbs (-36 lbs)	4-1	0.806	684 lbs	(-36 lbs)	
Webs	2-4	0.151	371 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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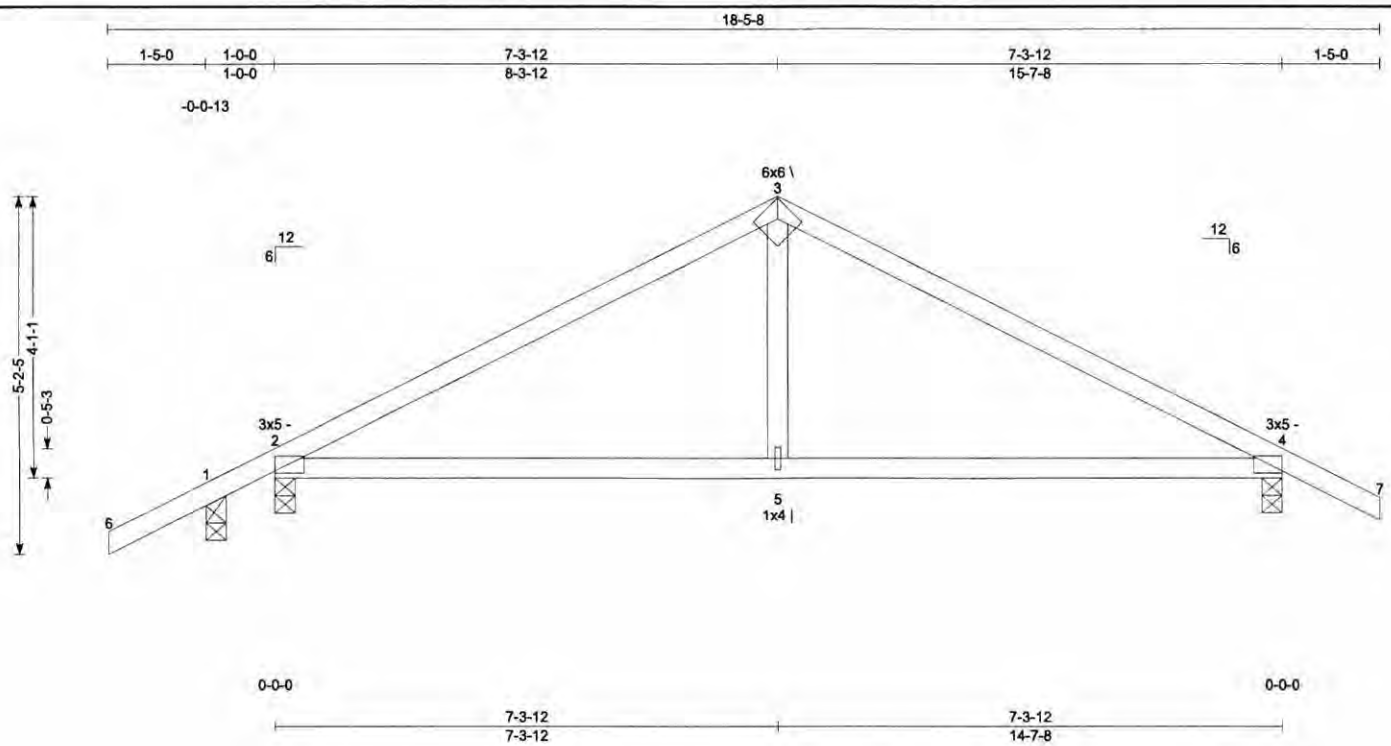
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: B3
Project Name: village bldgs
Date: 07/05/16 16:35:03
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
14-7-8	6 /12	1	1-5-0	1-5-0	0-0-0	0-0-0	1	24 in	50 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.60 (1-2)
BC :	0.81 (4-5)
Web :	0.15 (3-5)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.16 in	L / 999	(4-5)	L / 240
Vert LL:	0.04 in	L / 999	(4-5)	L / 360
Horz TL:	0.02 in		4	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (2:2-8,2-13,0.) (3:0-0,4-8,45.) (4:2-8,2-13,0.) (5:0-0,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	69 lbs	-237 lbs	-101 lbs	-237 lbs	36 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	817 lbs	-	-16 lbs	-16 lbs	0 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	688 lbs	-	-29 lbs	-29 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

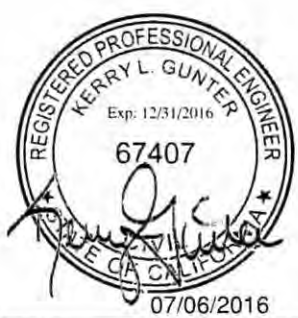
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	6-1	0.175	48 lbs		2-3	0.514	-838 lbs		4-7	0.145	43 lbs
	1-2	0.596	-482 lbs		3-4	0.523	-835 lbs				
BC	4-5	0.805	661 lbs	(-34 lbs)	5-2	0.697	661 lbs	(-63 lbs)			
Webs	3-5	0.148	364 lbs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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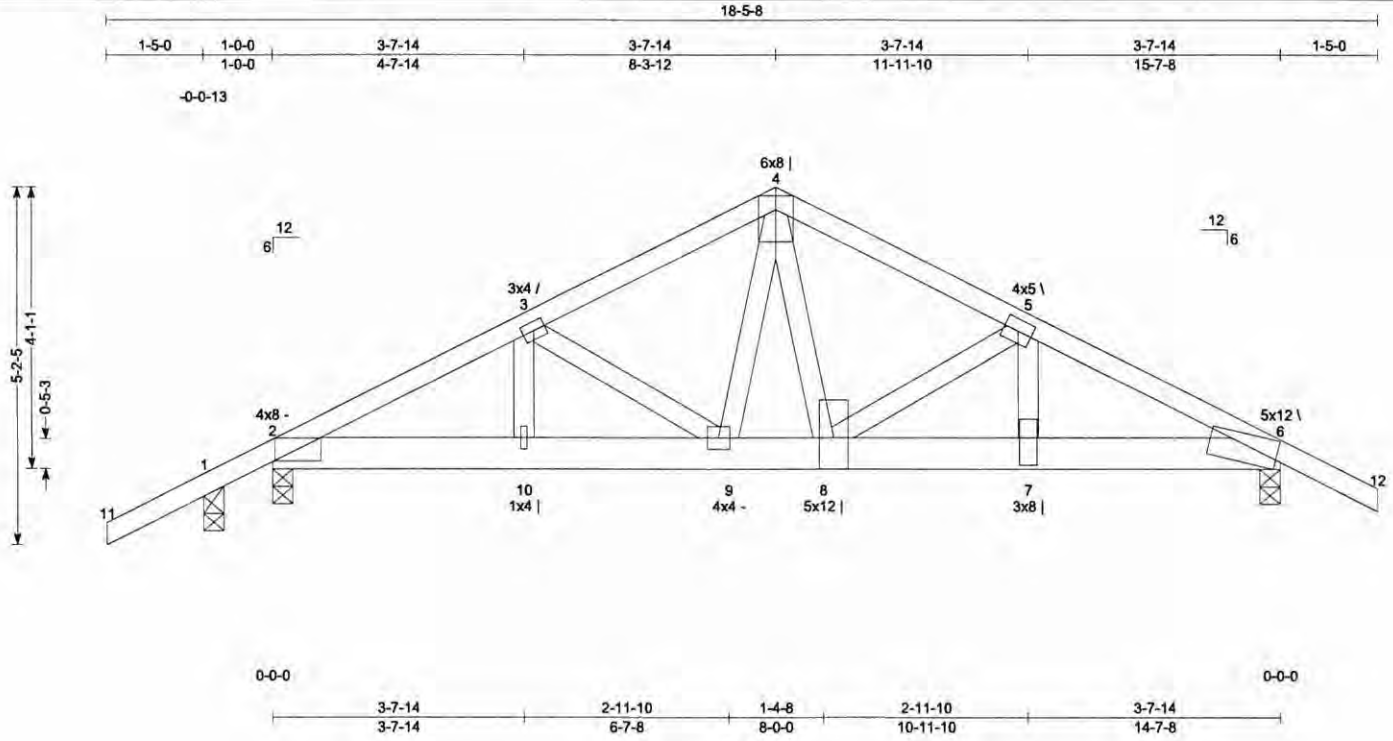
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: B4
Project Name: village bldgs
Date: 7/6/2016 9:29:46 AM
Page: 1 of2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
14-7-8	6/12	1	1-5-0	1-5-0	0-0-0	0-0-0	1	24 in	81 lbs



Loading

Carried Loads (psf)

TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	No
D.O.L.:	125 %

CSI Summary

TC:	0.67 (5-6)
BC:	0.75 (6-7)
Web:	0.63 (4-8)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.31 in	L / 543	(7-8)	L / 240
Vert LL:	0.1 in	L / 999	(7-8)	L / 360
Horz TL:	0.07 in		6	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (2:4-6,1-13,0.) (3:1-12,3-1,26.) (4:0-0,5-8,90.) (5:1-12,3-1,26.) (6:6-7,1-6,13.) (7:0-0,4-12,90.) (8:1-13,6-0,90.) (9:1-13,5-8,0.) (10:0-0,5-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	57 lbs	-103 lbs	-122 lbs	-122 lbs	37 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	2.54 in	2,377 lbs	-	-30 lbs	-30 lbs	0 lbs
6	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	3.99 in	3,738 lbs	-	-78 lbs	-78 lbs	0 lbs

The following bearings may require additional considerations:

Brg #	Brg Area	Rqd Brg Area	Rqd Truss Width	Enhancement
6	5.25 in^2	5.98 in^2	1.71 in	See TD-BRG-0001A

Material Summary

TC	DFL #2 2x4	
BC	DFL SS 2x6	
Webs	DFL Std/Stud 2x4	except:
4-8	DFL #2 2x4	

Bracing Summary

TC Bracing: Sheathed
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied.
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-2-5-0	8-0-12	Down	Proj	20 psf	20 psf	12 in
Bot Chd	8-0-0	14-7-8	Down	Proj	200 plf	200 plf	
Top Chd	-2-5-0	16-0-8	Down	Proj	20 psf	20 psf	12 in

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	8-0-12	Down	1,049 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-2-5-0	8-0-12	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	8-0-12	Down	Proj	7 psf	7 psf	12 in
Bot Chd	8-0-0	14-7-8	Down	Proj	210 plf	210 plf	
Top Chd	-2-5-0	16-0-8	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	14-7-8	Down	Proj	7 psf	7 psf	12 in

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	8-0-12	Down	1,154 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	1-1	0.201	48 lbs	(-7 lbs)	2-3	0.487	-4,162 lbs		4-5	0.528	-4,869 lbs		6-12	0.160	34 lbs	(-3 lbs)
	1-2	0.585	-2,225 lbs		3-4	0.452	-4,176 lbs		5-6	0.668	-6,296 lbs					

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
Exp: 12/31/2016
67407
CIVIL
STATE OF CALIFORNIA
07/06/2016

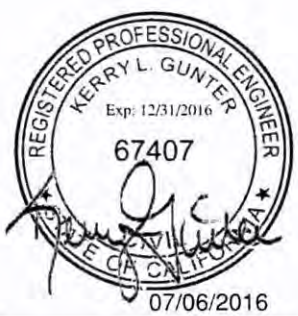
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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
14-7-8	6/12	1	1-5-0	1-5-0	0-0-0	0-0-0	1	24 in	81 lbs

BC	6-7	0.749	5,616 lbs	(-99 lbs)	8-9	0.343	3,644 lbs	(-60 lbs)	10-2	0.441	3,672 lbs	(-62 lbs)
	7-8	0.698	5,616 lbs	(-99 lbs)	9-10	0.441	3,672 lbs	(-62 lbs)				
Webs	3-10	0.051	-216 lbs		4-9	0.153	376 lbs	(-26 lbs)	5-8	0.324	-1,512 lbs	
	3-9	0.065	205 lbs	(-204 lbs)	4-8	0.632	3,577 lbs	(-43 lbs)	5-7	0.550	1,353 lbs	(-18 lbs)

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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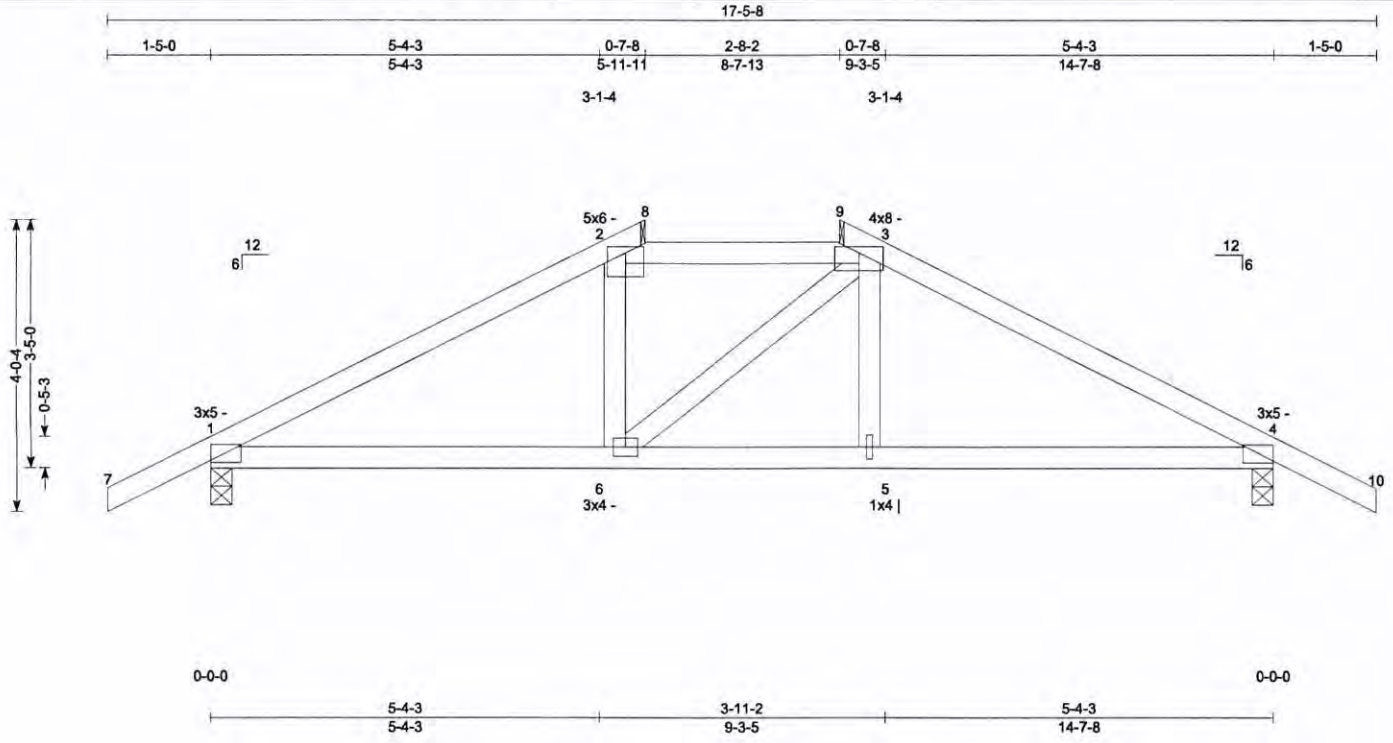
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: B5
Project Name: village bldgs
Date: 07/05/16 16:35:05
Page: 1 of 2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
14-7-8	6 /12	1	1-5-0	1-5-0	0-0-0	0-0-0	1	24 in	57 lbs



Loading

Carried Loads (psf)	
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	No
D.O.L.:	125 %

CSI Summary

TC:	0.33 (3-4)
BC:	0.82 (4-5)
Web:	0.15 (3-5)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.13 in	L / 999	(4-5)	L / 240
Vert LL:	0.04 in	L / 999	(5-6)	L / 360
Horz TL:	0.05 in		4	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.) (2:4-5,3-3,0.) (3:4-5,2-11,0.) (4:2-8,2-13,0.) (5:2-9,3-8,90.) (6:4-5,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,256 lbs	-	-37 lbs	-37 lbs	4 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,256 lbs	-	-37 lbs	-37 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 4-1-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-5-0	5-4-3	Down	Proj	20 psf	20 psf	24 in
Top Chd	9-3-5	16-0-8	Down	Proj	20 psf	20 psf	24 in
Top Chd	5-4-3	9-3-5	Down	Proj	66.56 plf	66.56 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	5-4-3	Down	217 lbs	
Top Chd	9-3-5	Down	217 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-5-0	5-4-3	Down	Proj	14 psf	14 psf	24 in
Top Chd	9-3-5	16-0-8	Down	Proj	14 psf	14 psf	24 in
Bot Chd	0-0-0	14-7-8	Down	Proj	7 psf	7 psf	12 in
Top Chd	5-4-3	9-3-5	Down	Proj	46.59 plf	46.59 plf	
Bot Chd	0-0-0	14-7-8	Down	Proj	21 plf	21 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	5-4-3	Down	152 lbs	
Top Chd	9-3-5	Down	152 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	7-1	0.166	43 lbs	(-7 lbs)	2-8	0.017	-21 lbs	4-10	0.166	43 lbs	(-7 lbs)
	1-2	0.328	-2,028 lbs		9-3	0.017	-21 lbs				
	2-3	0.239	-1,740 lbs		3-4	0.328	-2,028 lbs				
BC	4-5	0.819	1,740 lbs	(-68 lbs)	5-6	0.593	1,740 lbs (-68 lbs)	6-1	0.818	1,740 lbs	(-68 lbs)
Webs	2-6	0.110	270 lbs		3-6	0.063	155 lbs (-153 lbs)	3-5	0.150	368 lbs	

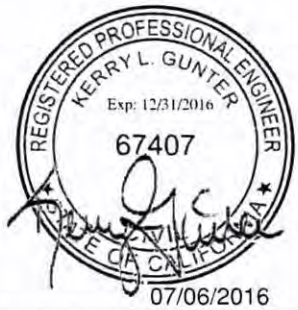
REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
Exp: 12/31/2016
67407
STATE OF CALIFORNIA
07/06/2016

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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
14-7-8	6/12	1	1-5-0	1-5-0	0-0-0	0-0-0	1	24 in	57 lbs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) California Girder setback equals 6-0-0, truss spacing behind girder equals 2-0-0, there is no second girder setback, end jack type is Open Faced, and the corner girders are Rafter's.
4) Provide adequate drainage to prevent ponding.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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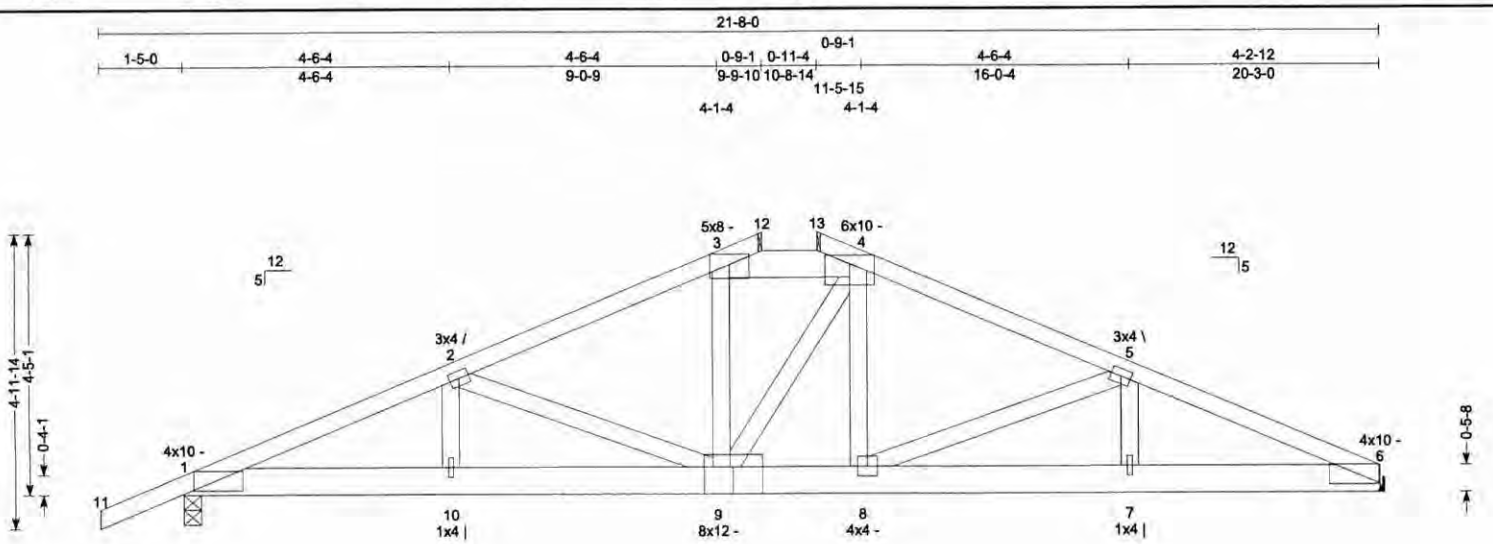
SIMPSON Strong-Tie

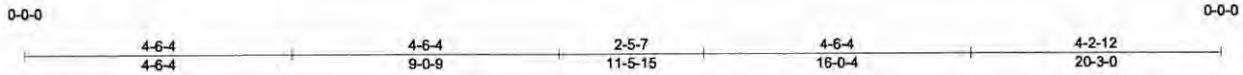
Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: C1
Project Name: village bldgs
Date: 07/05/16 16:35:05
Page: 1 of 2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
20-3-0	5/12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	108 lbs





Loading

Carried Loads (psf)

TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	No
D.O.L.:	125 %

CSI Summary

TC:	0.59 (1-2)
BC:	0.93 (10-1)
Web:	0.31 (2-9)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.42 in	L/563	(9-10)	L/240
Vert LL:	0.13 in	L/999	9	L/360
Horz TL:	0.13 in		6	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:7-0,1-3,0.) (2:1-12,3-1,22.) (3:2-8,3-2,0.) (4:2-8,4-1,0.) (5:1-12,3-1,22.) (6:5-4,1-14,0.) (7:0-0,5-8,90.) (8:1-0,5-8,0.) (9:3-2,4-0,0.) (10:0-0,5-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	2.43 in	2,275 lbs	-	-31 lbs	-31 lbs	38 lbs
6	H Roll (Truss)	1	1.5 in	-	2.35 in	2,203 lbs	-	-21 lbs	-21 lbs	0 lbs

Material Summary

TC	DFL #2 2x4	except:
3-4	DFL #2 2x6	
BC	DFL #2 2x6	
Webs	DFL Std/Stud 2x4	

Bracing Summary

TC Bracing: Sheathed or Purlins at 2-3-0, Purlin design by Others.

BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL = 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-5-0	9-0-9	Down	Proj	20 psf	20 psf	24 in
Top Chd	11-5-15	20-3-0	Down	Proj	20 psf	20 psf	24 in
Top Chd	9-0-9	11-5-15	Down	Proj	99.77 plf	99.77 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	9-0-9	Down	564 lbs	
Top Chd	11-5-15	Down	564 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-5-0	9-0-9	Down	Proj	14 psf	14 psf	24 in
Top Chd	11-5-15	20-3-0	Down	Proj	14 psf	14 psf	24 in
Bot Chd	0-0-0	20-3-0	Down	Proj	7 psf	7 psf	12 in
Top Chd	9-0-9	11-5-15	Down	Proj	69.84 plf	69.84 plf	
Bot Chd	0-0-0	20-3-0	Down	Proj	34.4 plf	34.4 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	9-0-9	Down	395 lbs	
Top Chd	11-5-15	Down	395 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	11-1	0.165	37 lbs	(-6 lbs)	3-4	0.279	-4,113 lbs	4-5	0.493	-4,488 lbs
	1-2	0.592	-5,136 lbs		3-12	0.073	-45 lbs	5-6	0.515	-4,898 lbs
	2-3	0.495	-4,489 lbs		13-4	0.073	-45 lbs			

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
Exp: 12/31/2016
67407
STATE OF CALIFORNIA
07/06/2016

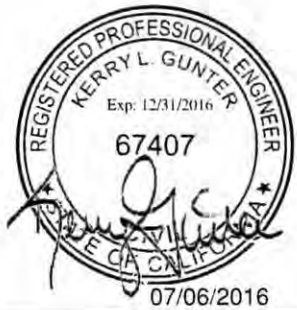
NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company, Inc in accordance with ESR-2762 . All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
20-3-0	5 /12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	108 lbs

BC	6-7	0.773	4,474 lbs	(-100 lbs)	8-9	0.575	4,093 lbs	(-195 lbs)	10-1	0.929	4,704 lbs (-97 lbs)
	7-8	0.803	4,474 lbs	(-100 lbs)	9-10	0.783	4,704 lbs	(-97 lbs)			
Webs	2-10	0.177	437 lbs		4-9	0.077	190 lbs	(-124 lbs)	5-7	0.141	347 lbs
	2-9	0.308	-745 lbs		4-8	0.207	509 lbs				
	3-9	0.174	429 lbs		5-8	0.242	-586 lbs				

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) California Girder setback equals 9-9-15, truss spacing behind girder equals 2-0-0, there is no second girder setback, end jack type is Open Faced, and the corner girders are Rafter's.
4) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
5) Provide adequate drainage to prevent ponding.
6) Listed wind uplift reactions based on MWFRS Only loading.
7) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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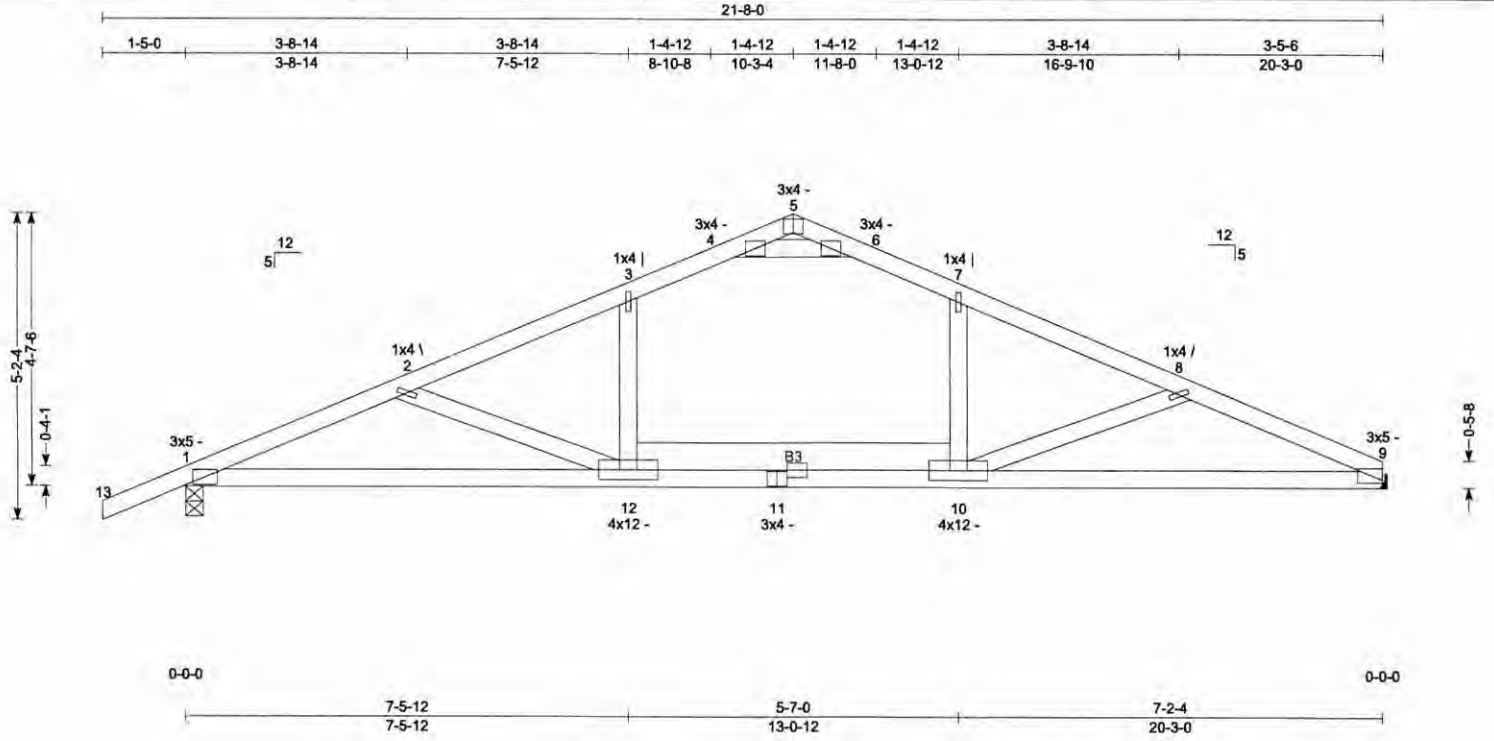
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: C2
Project Name: village bldgs
Date: 7/6/2016 9:31:30 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
20-3-0	5 /12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	89 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	1.00 (4-5)
BC:	0.89 (12-1)
StkChd:	0.27 (B3)
Web:	0.25 (4-6)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.46 in	L / 518	(11-18n)	L / 240
Vert LL:	0.12 in	L / 999	(11-18n)	L / 360
Horz TL:	0.07 in		9	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-14,2-3,0.) (2:0-0,3-13,19.) (3:0-0,3-13,90.) (4:9-2,0-0,0.) (5:0-0,2-8,0.) (6:9-2,0-0,0.) (7:0-0,3-13,90.) (8:0-0,3-13,19.) (9:2-8,2-14,0.) (10:0-0,3-8,0.) (11:0-0,1-12,0.) (12:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	979 lbs	-	-6 lbs	-6 lbs	34 lbs
9	H Roll (Truss)	1	1.5 in	-	1.50 in	908 lbs	-	-	-	0 lbs

Material Summary

TC	DFL #1B 2x4	except:
13-5	DFL #2 2x4	
BC	DFL #2 2x4	
StkChd	DFL #2 2x6	
Webs	DFL Std/Stud 2x4	

Bracing Summary

TC Bracing: Sheathed

BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case D1: Std Dead Load

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	10-3-4	Down	100 lbs	

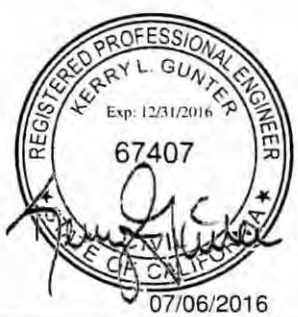
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	13-1	0.144	37 lbs		3-4	0.689	-1,295 lbs		6-7	0.532	-1,300 lbs	
	1-2	0.408	-1,991 lbs		4-5	1.002	849 lbs	(-76 lbs)	7-8	0.544	-1,522 lbs	
	2-3	0.765	-1,530 lbs		5-6	0.765	844 lbs	(-66 lbs)	8-9	0.186	-1,897 lbs	
BC	9-10	0.827	1,716 lbs	(-246 lbs)	10-12	0.473	1,332 lbs	(-90 lbs)	12-1	0.888	1,824 lbs	(-209 lbs)
StkChd	B3	0.272	-54 lbs									
Webs	2-12	0.175	-580 lbs		4-6	0.248	-2,255 lbs		8-10	0.152	-503 lbs	
	3-12	0.185	455 lbs		7-10	0.175	431 lbs					

Notes:

1) Unlabeled plates are 3x4 20ga.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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Simpson Strong-Tie Company

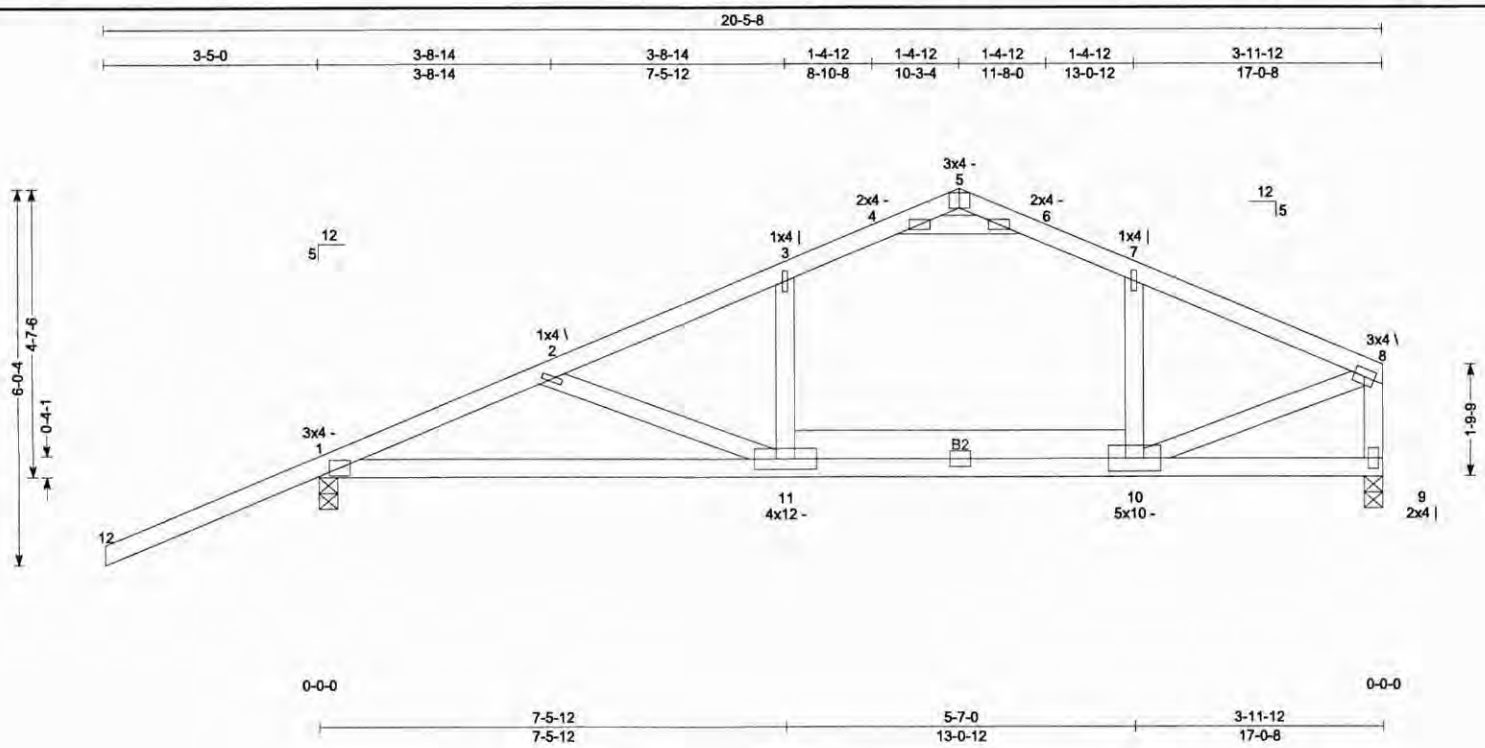
SIMPSON StrongTie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: C3
Project Name: village bldgs
Date: 7/6/2016 9:32:33 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
17-0-8	5 /12	1	3-5-0	0-0-0	0-0-0	0-0-0	1	24 in	85 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.82 (12-1)
BC :	0.86 (11-1)
StkChd:	0.31 (B2)
Web :	0.35 (8-10)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.56 in	L / 355	(11-1)	L / 240
Vert LL:	0.14 in	L / 999	(11-1)	L / 360
Horz TL:	0.03 in		9	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-14,2-3,0.) (2:0-0,3-13,19.) (3:0-0,3-13,90.) (4:9-2,0-0,0.) (5:0-0,2-6,0.) (6:9-2,0-0,0.) (7:0-0,3-13,90.) (8:3-8,2-5,22.) (9:1-12,3-8,90.) (10:0-0,3-8,0.) (11:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	988 lbs	-	-32 lbs	-32 lbs	171 lbs
9	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	788 lbs	-	-	-	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
StkChd	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 4-9-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case D1: Std Dead Load

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	10-3-4	Down	100 lbs	

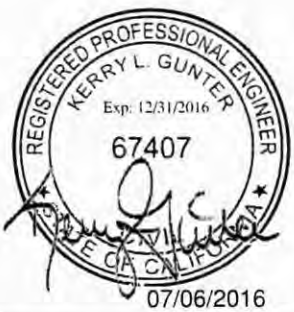
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	12-1	0.816	89 lbs		2-3	0.720	-1,027 lbs		4-5	0.478	506 lbs	(-36 lbs)	6-7	0.526	-894 lbs
	1-2	0.622	-1,483 lbs		3-4	0.655	-837 lbs		5-6	0.720	448 lbs	(-24 lbs)	7-8	0.277	-970 lbs
BC	9-10	0.643	38 lbs	(-20 lbs)	10-11	0.746	882 lbs	(-67 lbs)	11-1	0.863	1,356 lbs	(-29 lbs)			
StkChd	B2	0.313	-64 lbs												
Webs	2-11	0.157	-535 lbs		4-6	0.150	-1,387 lbs		8-10	0.352	924 lbs	(-51 lbs)			
	3-11	0.152	374 lbs		7-10	0.057	139 lbs	(-79 lbs)	8-9	0.108	-820 lbs				

Notes:

1) Unlabeled plates are 3x4 20ga.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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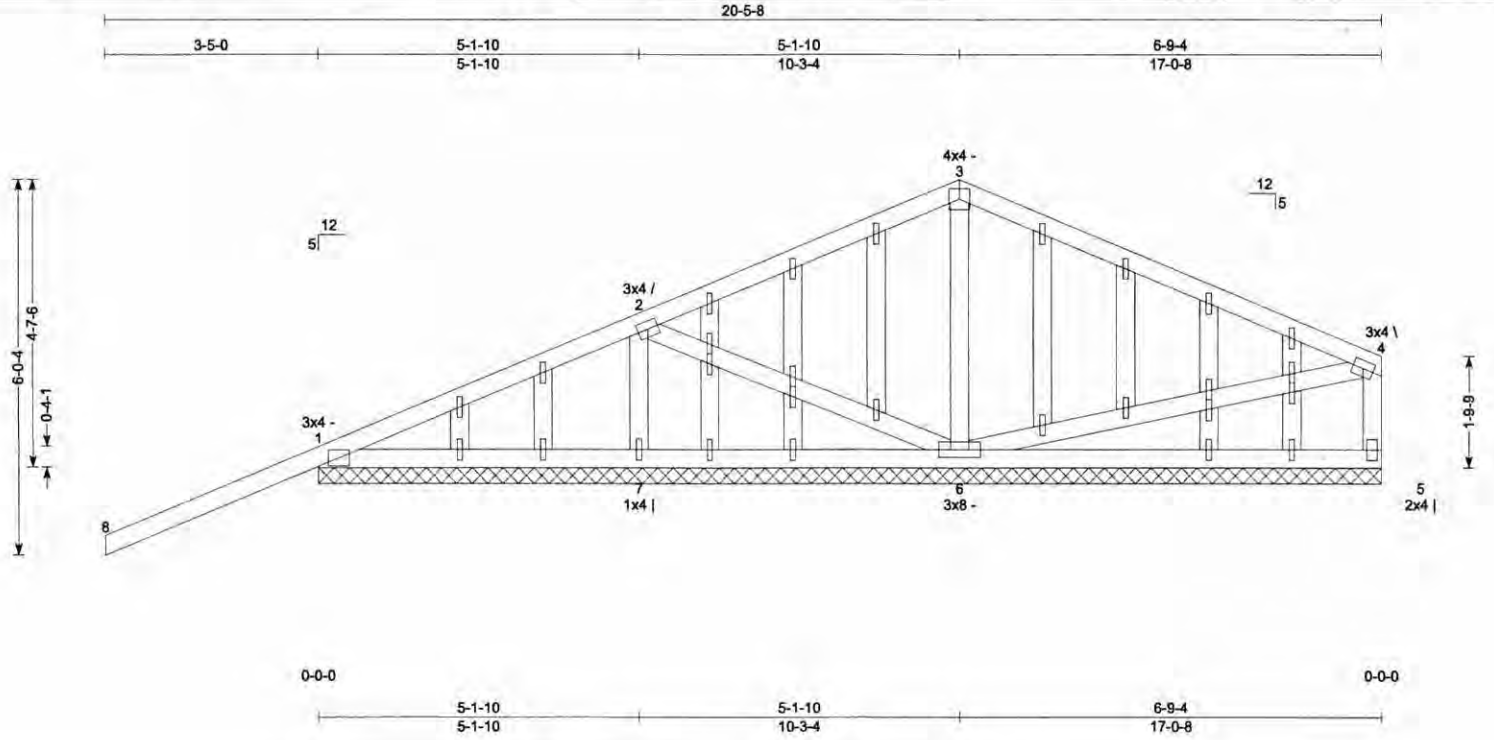
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: C4
Project Name: village bldgs
Date: 07/05/16 16:35:07
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
17-0-8	5 /12	1	3-5-0	0-0-0	0-0-0	0-0-0	3	24 in	101 lbs



Loading	(psf)	General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.32 (1-2)	Vert TL:	0.03 in	L / 999	(5-6)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.25 (5-6)	Vert LL:	0.01 in UP	L / 999	(7-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.08 (4-6)	Horz TL:	0 in		5	
BCLL :	0	D.O.L :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-14,2-3,0.) (2:1-12,3-1,22.) (3:0-0,3-13,0.) (4:3-8,2-5,22.) (5:1-12,3-8,90.) (6:0-0,3-8,0.) (7:0-0,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
5	H Roll (Wall)	1	204.5 in	Douglas-Fir-Larch	Unknown	607 lbs	-382 lbs	-	-382 lbs	0 lbs
6	H Roll (Wall)	1	204.5 in	Douglas-Fir-Larch	Unknown	523 lbs	-	-7 lbs	-7 lbs	0 lbs
7	H Roll (Wall)	1	204.5 in	Douglas-Fir-Larch	Unknown	493 lbs	-	-38 lbs	-38 lbs	0 lbs
1	Pin (Wall)	1	204.5 in	Douglas-Fir-Larch	Unknown	913 lbs	-502 lbs	-27 lbs	-502 lbs	-2,600 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 2,600 lbs drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

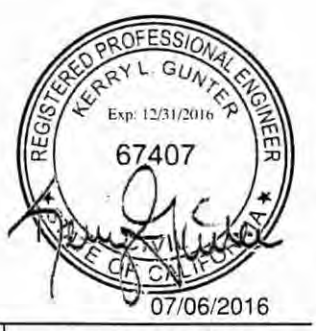
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	8-1	0.272	30 lbs		2-3	0.157	-386 lbs			
	1-2	0.319	533 lbs	(-482 lbs)	3-4	0.179	-271 lbs			
BC	5-6	0.251	13 lbs	(-7 lbs)	6-7	0.155	-412 lbs	7-1	0.136	-412 lbs
Webs	2-7	0.030	-162 lbs		3-6	0.027	-170 lbs	4-5	0.044	-189 lbs
	2-6	0.054	171 lbs	(-105 lbs)	4-6	0.081	-261 lbs			

Notes:

1) Gable webs placed at 16" o.c., U.N.O.
2) Attach structural gable blocks with 1x4 20ga plates, U.N.O.
3) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
4) This truss has been designed using the green lumber reduction factors.
5) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
6) The forces shown for this multi-ply truss are per ply and the reactions are for all plies. Three identical trusses shall be built and attached as follows: TC - 1 row of 16d Nails or Gun Nails [min 0.135" dia. x 3 1/4" long] @ 12" o.c., BC - 1 row of 16d Nails or Gun Nails [min 0.135" dia. x 3 1/4" long] @ 12" o.c. , Webs - 1 row 16d Nails or Gun Nails [min 0.135" dia. x 3 1/4" long] @ 9" o.c.. Repeat nailing as each layer is applied.
7) Where required, sufficient hangers shall be provided (by others) to resist reactions shown.
8) Install the screws/nails on one side; do not flip truss. Screws/nails shall be installed in the same truss ply that the hangers are attached to.
9) Lateral bracing shall be attached to each ply.
10) All fasteners minimum 2-1/2" long, unless otherwise noted.
11) Nails in 1st and 2nd ply shall be staggered from successive plies by 1/2 the nail spacing.
12) Listed wind uplift reactions based on MWFRS Only loading.
13) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
14) This gable has been designed for a 12" (max.) rake overhang.



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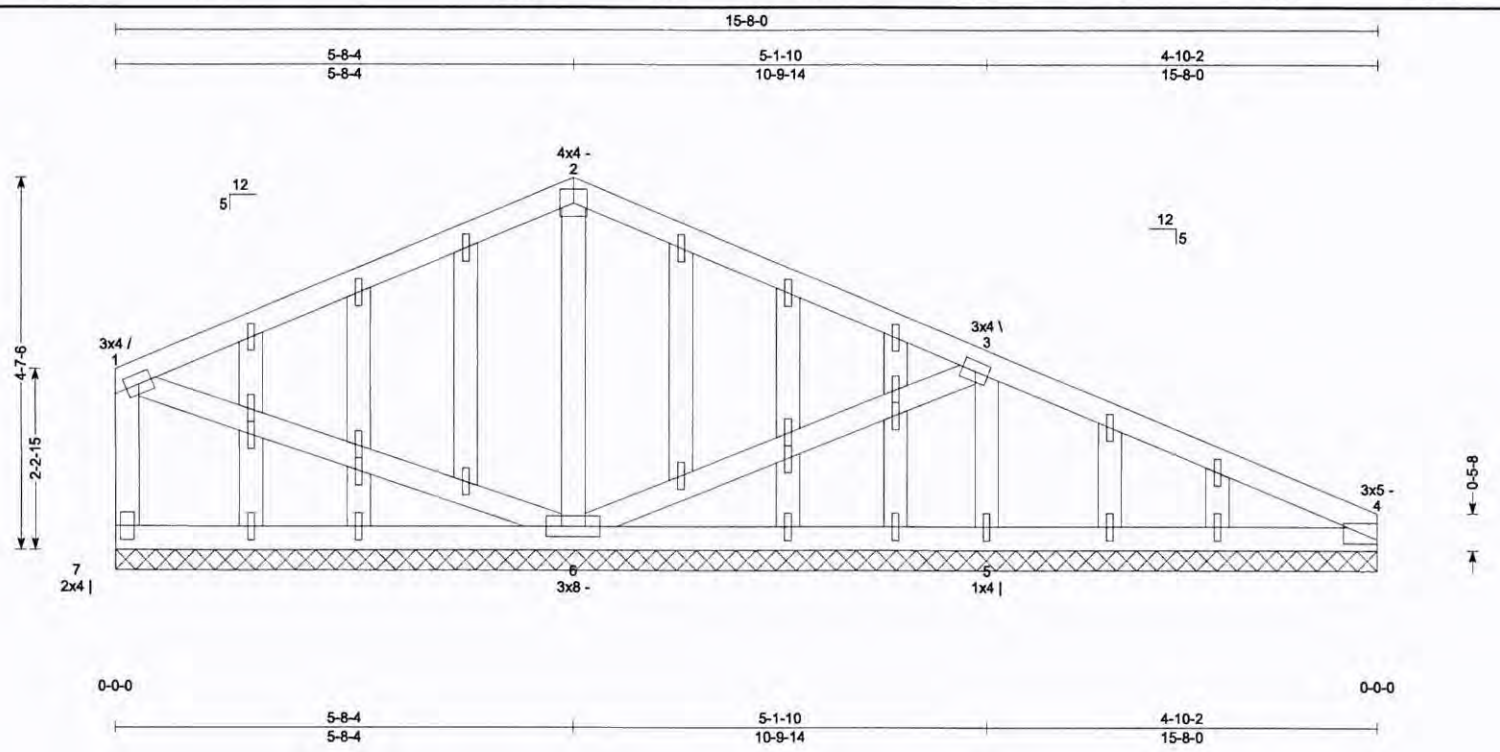
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: C5
Project Name: village bldgs
Date: 07/05/16 16:35:08
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
15-8-0	5 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	3	24 in	91 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.12 (1-2)	Vert TL:	0.01 in	L / 999	(6-7)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.21 (6-7)	Vert LL:	0 in	L / 999	(4-5)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.12 (3-6)	Horz TL:	0 in		4	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-8,2-5,22.) (2:0-0,3-13,0.) (3:1-12,3-1,22.) (4:2-8,2-14,0.) (5:0-0,3-8,90.) (6:0-0,3-8,0.) (7:1-12,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Gmv Uplift	Max Wind Uplift	Max Uplift	Max Horiz
5	H Roll (Truss)	1	188 in	-	Unknown	1,022 lbs	-683 lbs	-	-683 lbs	0 lbs
6	H Roll (Truss)	1	188 in	-	Unknown	589 lbs	-	-	-	0 lbs
7	Pin (Truss)	1	188 in	-	Unknown	886 lbs	-640 lbs	-14 lbs	-640 lbs	-2,600 lbs
4	H Roll (Truss)	1	188 in	-	Unknown	420 lbs	-168 lbs	-12 lbs	-168 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 2,600 lbs drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case D1: Std Dead Load

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	5-8-4	Down	100 lbs	

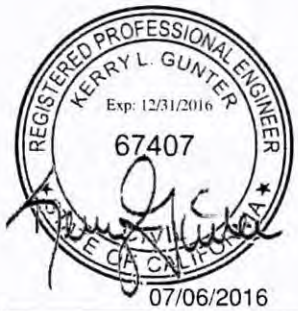
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	1-2	0.123	-364 lbs		2-3	0.109	-314 lbs		3-4	0.080	-220 lbs
BC	4-5	0.156	209 lbs	(-157 lbs)	5-6	0.157	209 lbs	(-157 lbs)	6-7	0.210	-867 lbs
Webs	1-7	0.071	-284 lbs		2-6	0.015	-120 lbs		3-5	0.083	-324 lbs
	1-6	0.114	358 lbs	(-336 lbs)	3-6	0.118	-406 lbs				

Notes:

1) Gable webs placed at 16" o.c., U.N.O.
2) Attach structural gable blocks with 1x4 20ga plates, U.N.O.
3) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
4) This truss has been designed using the green lumber reduction factors.
5) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
6) The forces shown for this multi-ply truss are per ply and the reactions are for all plies. Three identical trusses shall be built and attached as follows: TC - 1 row of 16d Nails or Gun Nails [min 0.135" dia. x 3 1/4" long] @ 12" o.c., BC - 1 row of 16d Nails or Gun Nails [min 0.135" dia. x 3 1/4" long] @ 12" o.c. , Webs - 1 row 16d Nails or Gun Nails [min 0.135" dia. x 3 1/4" long] @ 9" o.c.. Repeat nailing as each layer is applied.
7) Where required, sufficient hangers shall be provided (by others) to resist reactions shown.
8) Install the screws/nails on one side; do not flip truss. Screws/nails shall be installed in the same truss ply that the hangers are attached to.
9) Lateral bracing shall be attached to each ply.
10) All fasteners minimum 2-1/2" long, unless otherwise noted.
11) Nails in 1st and 2nd ply shall be staggered from successive plies by 1/2 the nail spacing.
12) Listed wind uplift reactions based on MWFRS Only loading.
13) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
14) This gable has been designed for a 12" (max.) rake overhang.



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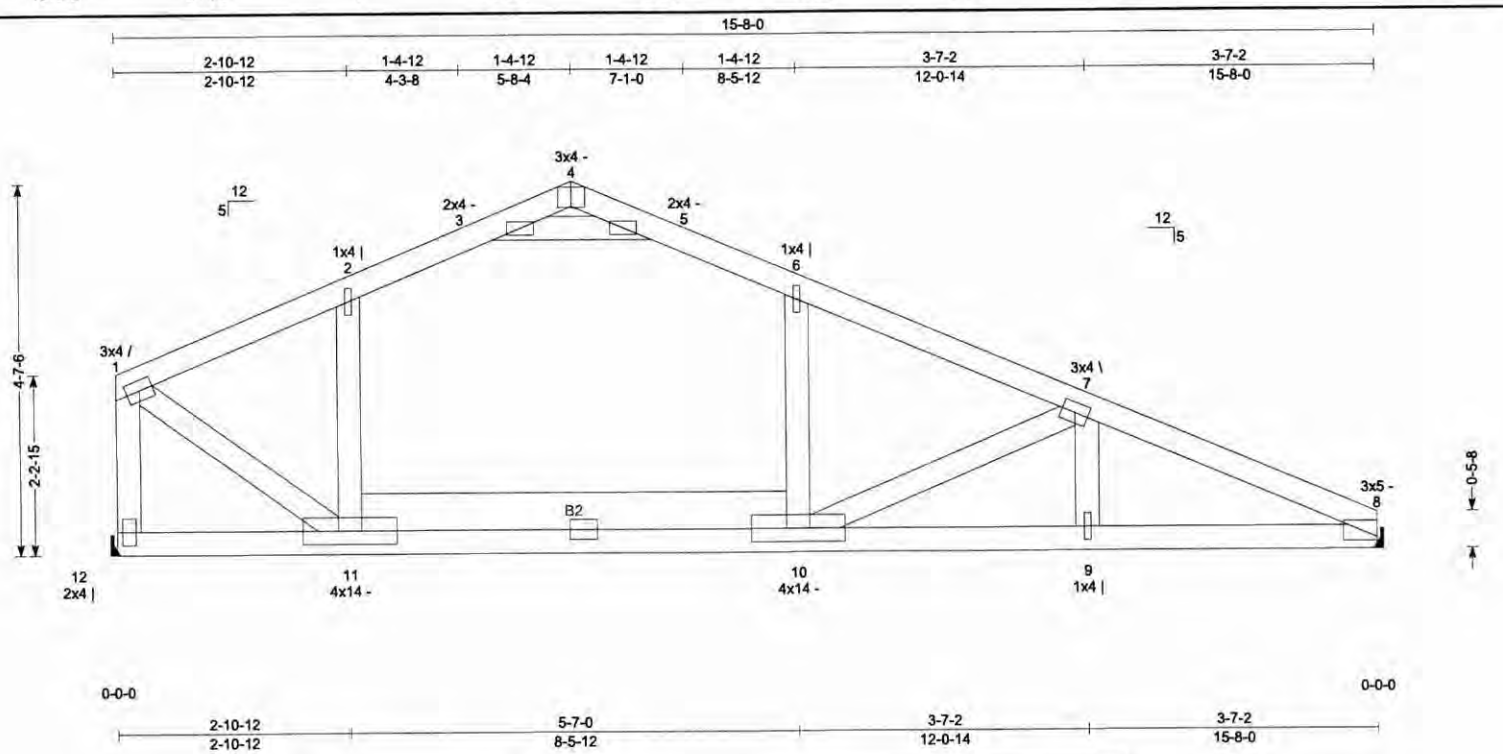
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: C6
Project Name: village bldgs
Date: 7/6/2016 9:42:20 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
15-8-0	5 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	78 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.68 (6-7)
BC :	0.88 (10-11)
StkChd :	0.31 (B2)
Web :	0.34 (1-11)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.58 in	L / 318	(9-10)	L / 240
Vert LL:	0.17 in	L / 999	(9-10)	L / 360
Horz TL:	0.03 in		8	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-8,2-5,22.) (2:0-0,3-13,90.) (3:9-2,0-0,0.) (4:0-0,2-6,0.) (5:9-2,0-0,0.) (6:0-0,3-13,90.) (7:1-12,3-1,22.) (8:2-8,2-14,0.) (9:0-0,3-8,90.) (10:0-0,3-8,0.) (11:0-0,3-8,0.) (12:1-12,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
12	Pin (Truss)	1	1.5 in	-	1.50 in	754 lbs	-	-	-	-127 lbs
8	H Roll (Truss)	1	1.5 in	-	1.50 in	691 lbs	-	-	-	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
StkChd	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 5-0-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case D1: Std Dead Load

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	5-8-4	Down	100 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	1-2	0.222	-784 lbs		3-4	0.617	306 lbs	(-14 lbs)	5-6	0.617	-694 lbs		7-8	0.214	-1,430 lbs	
	2-3	0.475	-760 lbs		4-5	0.311	378 lbs	(-38 lbs)	6-7	0.676	-862 lbs					
BC	8-9	0.398	1,285 lbs	(-183 lbs)	9-10	0.831	1,285 lbs	(-183 lbs)	10-11	0.876	737 lbs	(-69 lbs)	11-12	0.790	102 lbs	(-12 lbs)
StkChd	B2	0.312	-69 lbs													
Webs	1-12	0.157	-864 lbs		2-11	0.038	-138 lbs		6-10	0.135	333 lbs		7-9	0.144	355 lbs	(-1 lbs)
	1-11	0.339	877 lbs	(-132 lbs)	3-5	0.117	-1,068 lbs		7-10	0.189	-693 lbs					

Notes:

1) Unlabeled plates are 3x4 20ga.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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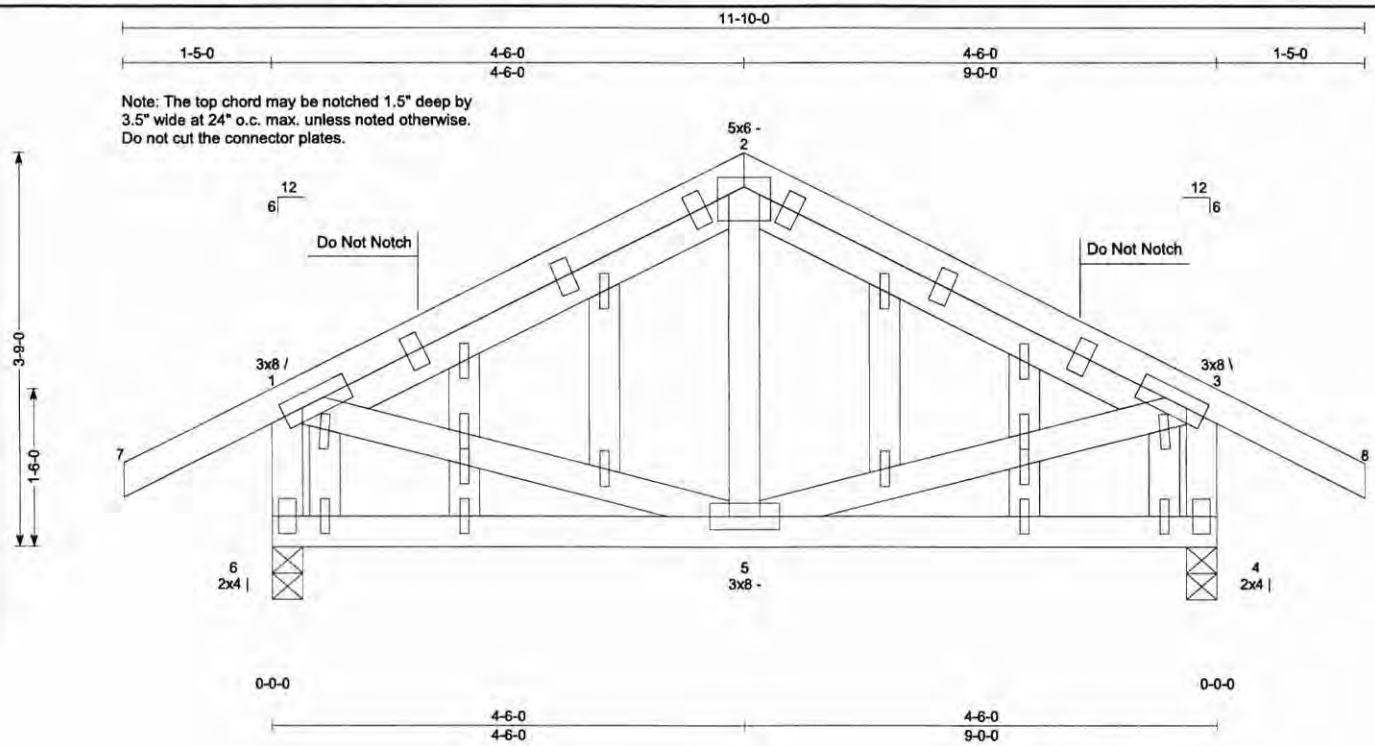
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: D1
Project Name: village bldgs
Date: 7/6/2016 10:10:15 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
9-0-0	6/12	1	1-5-0	1-5-0	0-0-0	0-0-0	1	24 in	71 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.20 (1-2)	Vert TL:	0.02 in	L/999	(4-5)	L/240
TCLL :	20		TPI 1-2007	BC :	0.49 (4-5)	Vert LL:	0 in	L/999	5	L/360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.19 (1-5)	Horz TL:	0 in		4	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:5-1,1-6,26.) (2:0-0,5-5,0.) (3:5-2,1-6,26.) (4:1-12,3-8,90.) (5:0-0,3-8,0.) (6:1-12,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
6	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	584 lbs	-127 lbs	-24 lbs	-127 lbs	900 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	584 lbs	-127 lbs	-24 lbs	-127 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 6-6-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 100 plf drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

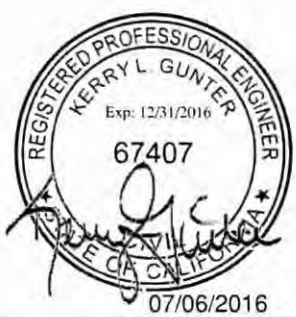
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	7-1	0.186	48 lbs		1-2	0.200	-656 lbs		2-3	0.200	-656 lbs		3-8	0.186	48 lbs
BC	4-5	0.494	32 lbs	(-16 lbs)	5-6	0.494	-900 lbs								
Webs	1-6	0.124	-559 lbs		2-5	0.064	158 lbs	(-69 lbs)	3-4	0.124	-559 lbs				
	1-5	0.191	602 lbs	(-335 lbs)	3-5	0.191	602 lbs	(-335 lbs)							

Notes:

1) Gable webs placed at 16" o.c., U.N.O.
2) Attach structural gable blocks with 1x4 20ga plates and stacked chords with 2x4 20ga, U.N.O.
3) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
4) This truss has been designed using the green lumber reduction factors.
5) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
6) Listed wind uplift reactions based on MWFRS Only loading.
7) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
8) This gable has been designed for a 12" (max.) rake overhang.



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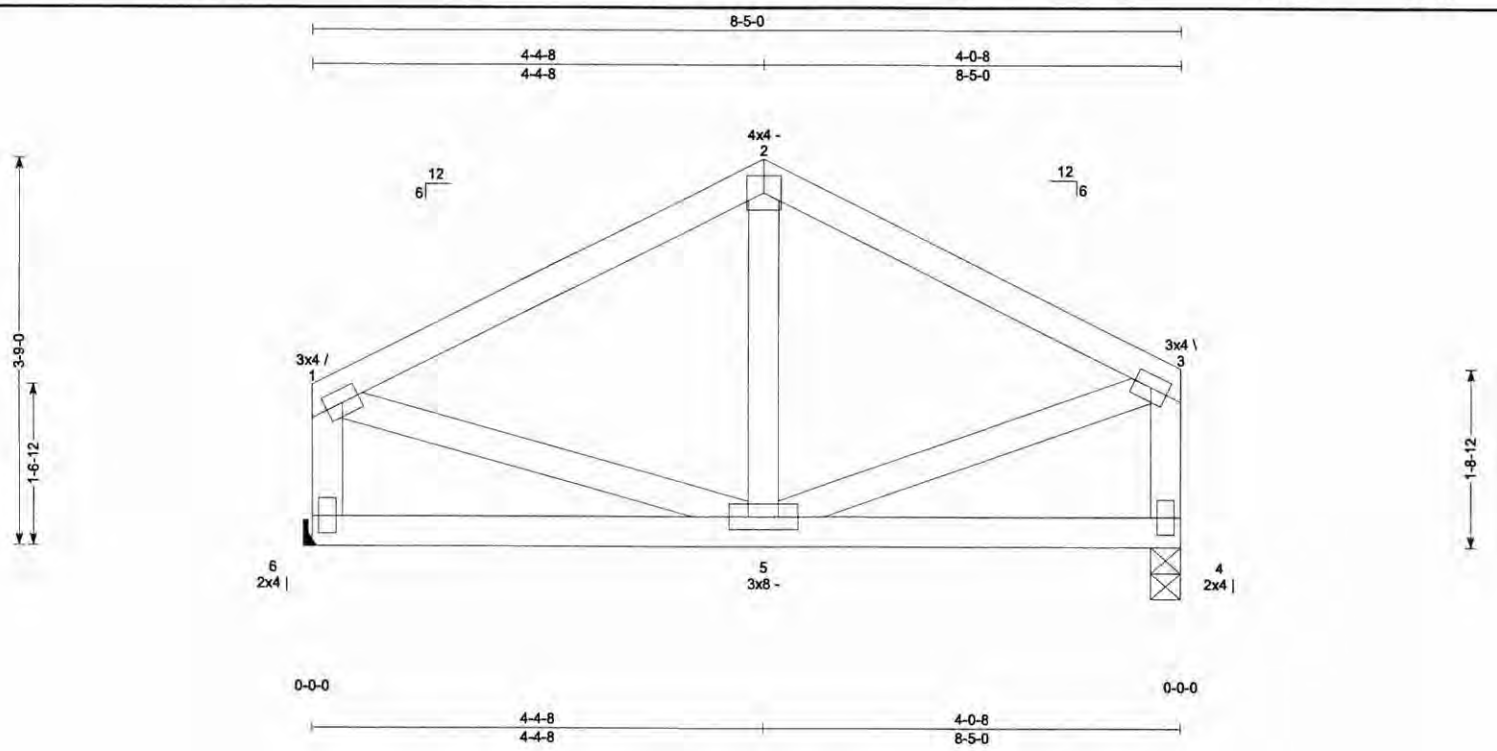
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: D2
Project Name: village bldgs
Date: 07/05/16 16:35:09
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-5-0	6 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	41 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.21 (2-3)
BC :	0.48 (5-6)
Web :	0.12 (3-5)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.02 in	L / 999	(5-6)	L / 240
Vert LL:	0 in	L / 999	5	L / 360
Horz TL:	0 in		4	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-8,2-3,26.) (2:0-0,3-15,0.) (3:3-8,2-3,26.) (4:1-12,3-8,90.) (5:0-0,3-8,0.) (6:1-12,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
6	Pin (Truss)	1	1.5 in	-	1.50 in	427 lbs	-	-8 lbs	-8 lbs	112 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	427 lbs	-	-9 lbs	-9 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

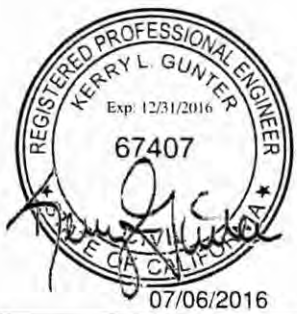
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	1-2	0.213	-323 lbs		2-3	0.215	-320 lbs				
BC	4-5	0.441	37 lbs	(-19 lbs)	5-6	0.477	83 lbs	(-79 lbs)			
Webs	1-6	0.099	-319 lbs		2-5	0.053	130 lbs	(-100 lbs)	3-4	0.111	-322 lbs
	1-5	0.115	283 lbs	(-99 lbs)	3-5	0.118	289 lbs	(-105 lbs)			

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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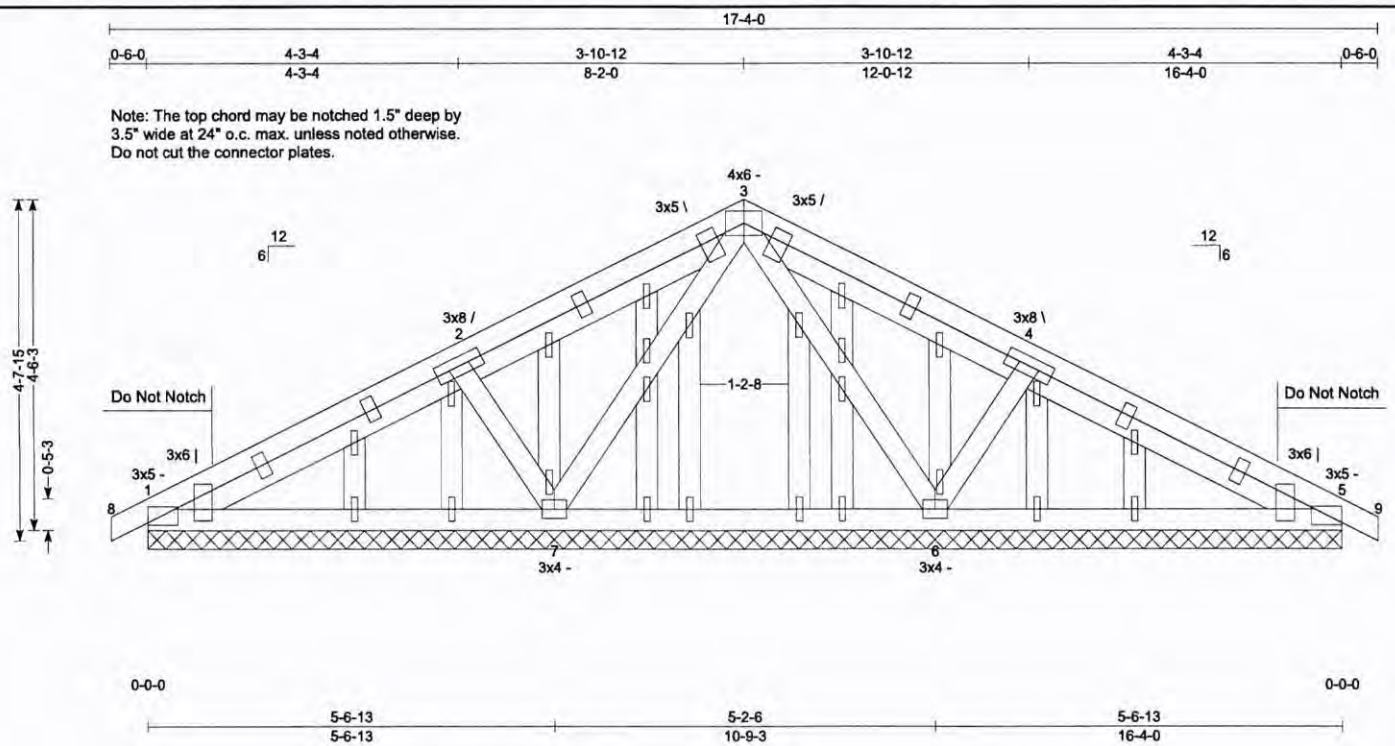
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: G1
Project Name: village bldgs
Date: 7/6/2016 9:58:36 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
16-4-0	6 / 12	1	0-6-0	0-6-0	0-0-0	0-0-0	1	24 in	116 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/ TPI 1-2007	TC :	0.41 (1-2)	Vert TL:	0.03 in	L / 999	(5-6)	L / 240
TCLL :	20			BC :	0.52 (5-6)	Vert LL:	0 in	L / 999	(5-6)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.38 (3-6)	Horz TL:	0 in		5	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.) (2:0-0,3-15,26.) (3:0-0,3-15,0.) (4:0-0,3-15,26.) (5:2-8,2-13,0.) (6:0-0,3-8,0.) (7:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
6	H Roll (Wall)	1	196 in	Douglas-Fir-Larch	Unknown	867 lbs	-451 lbs	-10 lbs	-451 lbs	0 lbs
7	H Roll (Wall)	1	196 in	Douglas-Fir-Larch	Unknown	487 lbs	-71 lbs	-10 lbs	-71 lbs	0 lbs
5	H Roll (Wall)	1	196 in	Douglas-Fir-Larch	Unknown	490 lbs	-192 lbs	-11 lbs	-192 lbs	0 lbs
1	Pin (Wall)	1	196 in	Douglas-Fir-Larch	Unknown	870 lbs	-572 lbs	-11 lbs	-572 lbs	-2,500 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 4-7-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 5-1-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 2,500 lbs drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

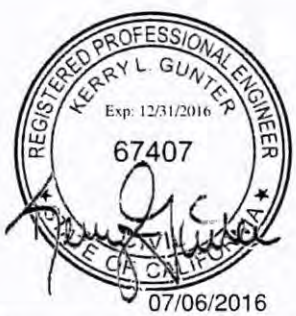
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	8-1	0.020	15 lbs		2-3	0.188	-736 lbs		4-5	0.163	-703 lbs			
	1-2	0.407	-1,457 lbs		3-4	0.161	-767 lbs		5-9	0.020	15 lbs			
BC	5-6	0.519	643 lbs	(-474 lbs)	6-7	0.475	1,062 lbs	(-957 lbs)	7-1	0.519	1,365 lbs	(-1,196 lbs)		
Webs	2-7	0.043	-262 lbs		3-7	0.213	-496 lbs		3-6	0.378	-882 lbs		4-6	0.043	-262 lbs

Notes:

1) Unlabeled plates are 1x4 20ga. Attach stacked chords with 2x4 20ga, U.N.O.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
6) This gable has been designed for a 12" (max.) rake overhang.
7) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.



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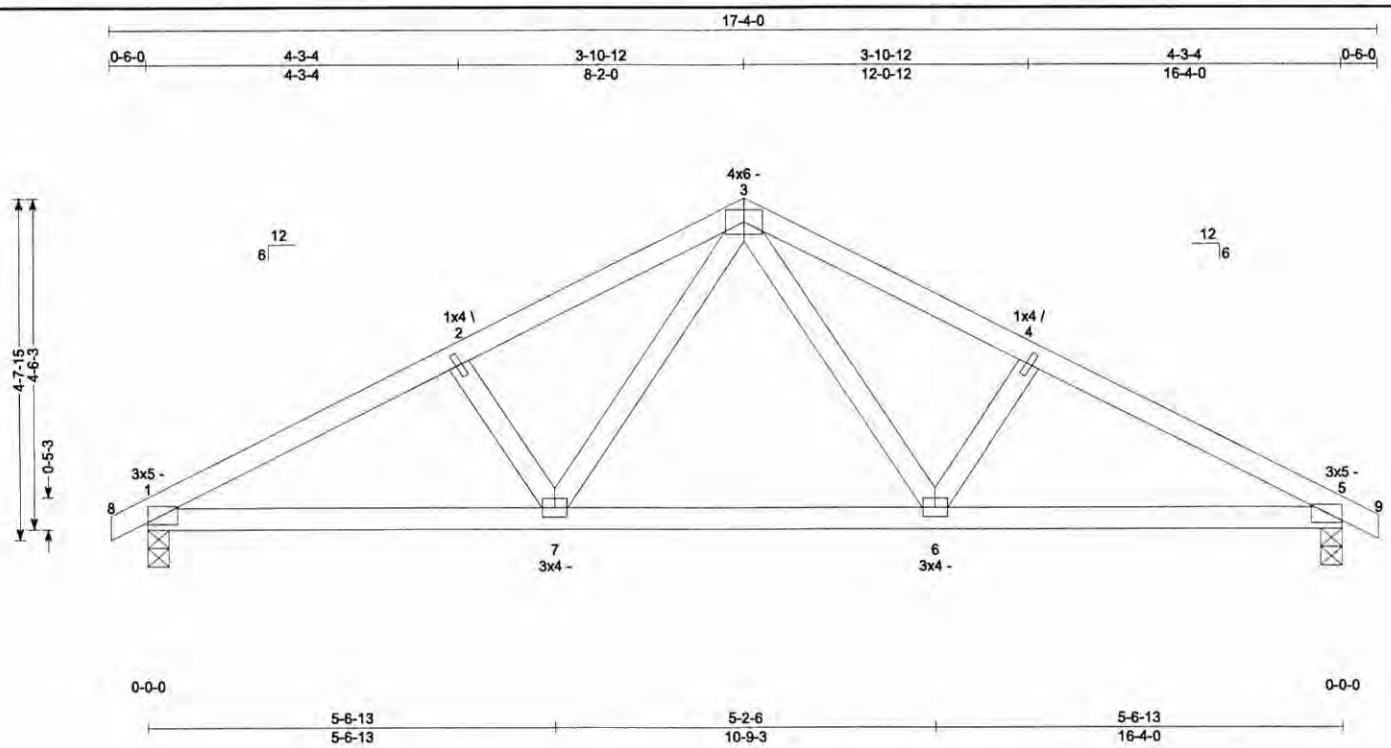
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: G2
Project Name: village bldgs
Date: 07/05/16 16:35:10
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
16-4-0	6/12	1	0-6-0	0-6-0	0-0-0	0-0-0	1	24 in	64 lbs



Loading (psf)

Load	
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.21 (4-5)
BC:	0.61 (5-6)
Web:	0.19 (3-6)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.09 in	L/999	(6-7)	L/240
Vert LL:	0.02 in	L/999	(6-7)	L/360
Horz TL:	0.03 in		5	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.) (2:0-0,3-15,56.) (3:0-0,3-15,0.) (4:0-0,3-15,56.) (5:2-8,2-13,0.) (6:0-0,3-8,0.) (7:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	704 lbs	-	-21 lbs	-21 lbs	26 lbs
5	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	704 lbs	-	-21 lbs	-21 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 5-9-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

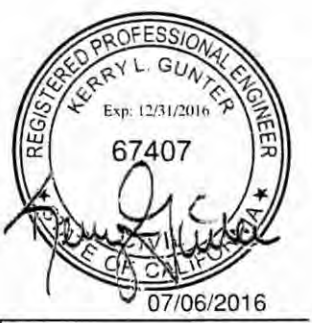
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	8-1	0.020	15 lbs		2-3	0.157	-996 lbs		4-5	0.209	-1,137 lbs	
	1-2	0.209	-1,137 lbs		3-4	0.157	-996 lbs		5-9	0.020	15 lbs	
BC	5-6	0.610	965 lbs	(-165 lbs)	6-7	0.582	666 lbs	(-56 lbs)	7-1	0.610	965 lbs	(-165 lbs)
Webs	2-7	0.041	-253 lbs		3-6	0.189	465 lbs	(-75 lbs)				
	3-7	0.189	465 lbs	(-75 lbs)	4-6	0.041	-253 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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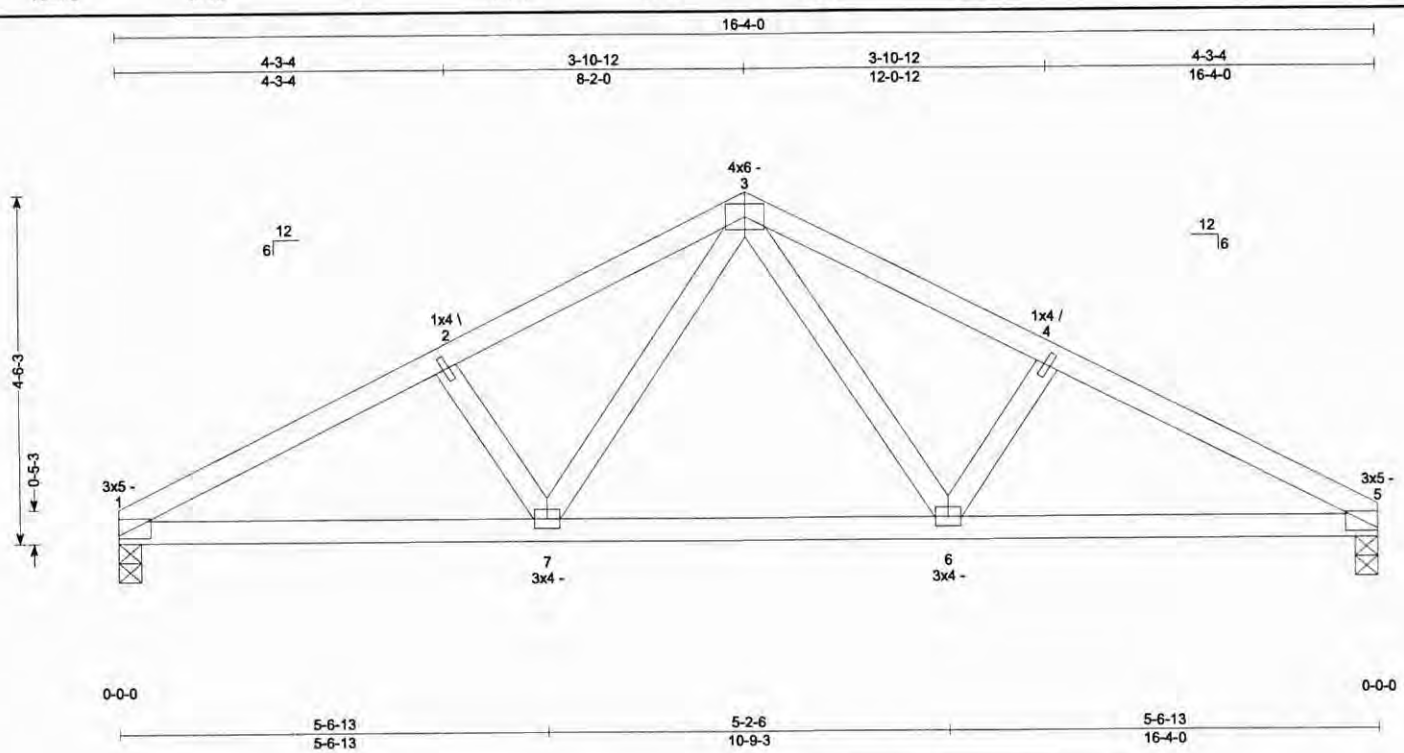
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: G3
Project Name: village bldgs
Date: 07/05/16 16:35:10
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
16-4-0	6 / 12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	63 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.21 (1-2)
BC :	0.61 (7-1)
Web :	0.19 (3-7)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.09 in	L / 999	(6-7)	L / 240
Vert LL:	0.02 in	L / 999	(6-7)	L / 360
Horz TL:	0.03 in		5	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.) (2:0-0,3-15,56.) (3:0-0,3-15,0.) (4:0-0,3-15,56.) (5:2-8,2-13,0.) (6:0-0,3-8,0.) (7:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Gmv Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	670 lbs	-	-16 lbs	-16 lbs	29 lbs
5	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	670 lbs	-	-16 lbs	-16 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 5-9-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

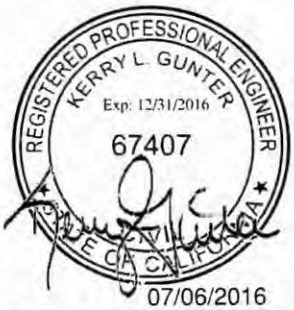
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	1-2	0.212	-1,141 lbs		3-4	0.156	-1,000 lbs				
	2-3	0.156	-1,000 lbs		4-5	0.212	-1,141 lbs				
BC	5-6	0.611	969 lbs	(-188 lbs)	6-7	0.581	668 lbs	(-78 lbs)	7-1	0.611	969 lbs	(-186 lbs)
Webs	2-7	0.042	-255 lbs		3-6	0.189	466 lbs	(-80 lbs)				
	3-7	0.189	466 lbs	(-80 lbs)	4-6	0.042	-255 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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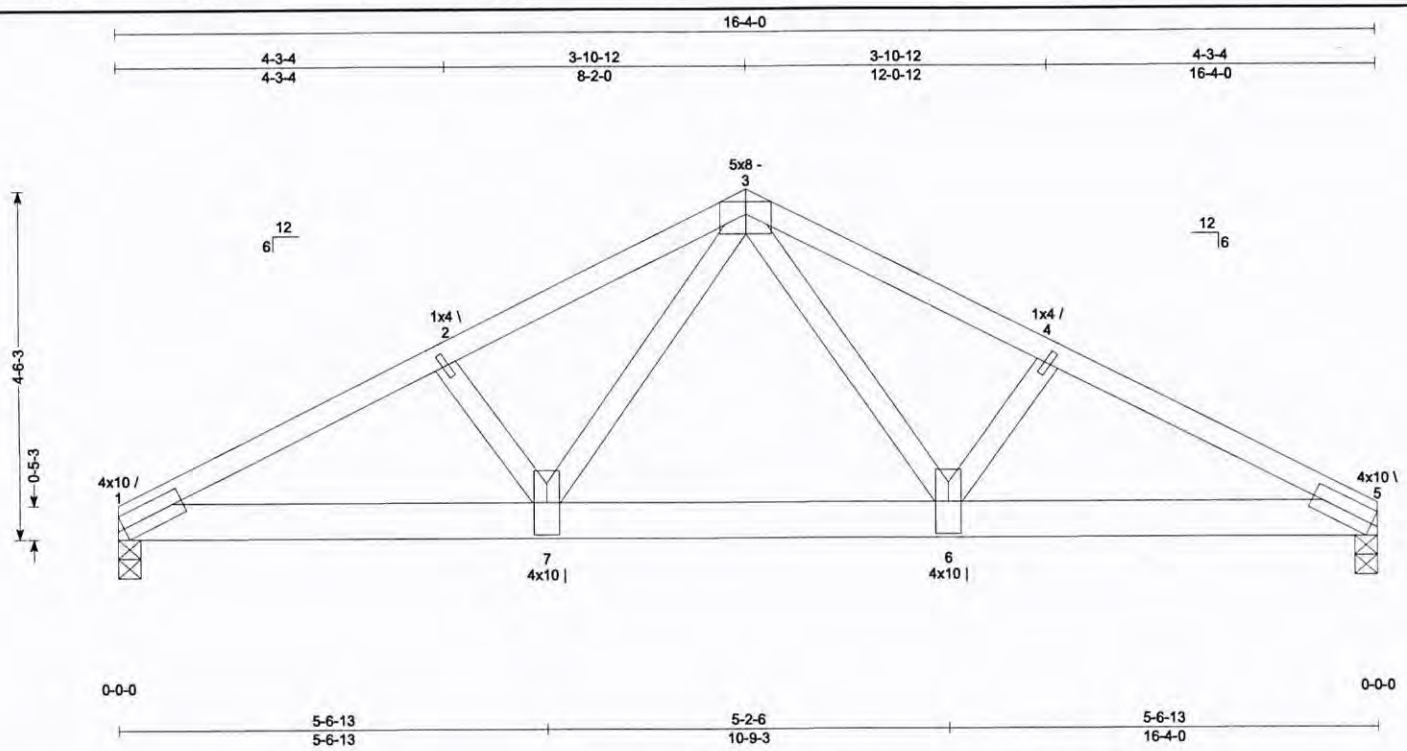
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: G4
Project Name: village bldgs
Date: 07/05/16 16:35:11
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
16-4-0	6 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	77 lbs



Loading

Carried Loads (psf)

TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	No
D.O.L. :	125 %

CSI Summary

TC :	0.68 (4-5)
BC :	0.81 (5-6)
Web :	0.95 (3-6)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.35 in	L / 533	(6-7)	L / 240
Vert LL:	0.11 in	L / 999	(6-7)	L / 360
Horz TL:	0.07 in		5	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:5-6,1-3,26.) (2:0-0,3-15,53.) (3:0-0,4-8,0.) (4:0-0,3-15,53.) (5:5-6,1-3,26.) (6:0-0,5-8,90.) (7:0-0,5-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	3.18 in	2,979 lbs	-	-72 lbs	-72 lbs	-1 lbs
5	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	3.18 in	2,979 lbs	-	-72 lbs	-72 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL SS 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 2-2-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	16-4-0	Down	Proj	157.92 plf	157.92 plf	
Top Chd	0-0-0	16-4-0	Down	Proj	20 psf	20 psf	12 in

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	16-4-0	Down	Proj	165.81 plf	165.81 plf	
Top Chd	0-0-0	16-4-0	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	16-4-0	Down	Proj	7 psf	7 psf	12 in

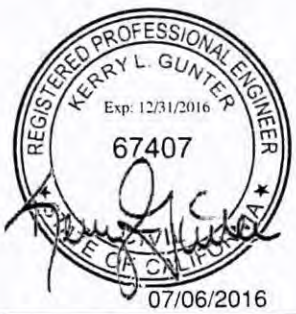
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	1-2	0.683	-4,707 lbs		3-4	0.515	-4,634 lbs				
	2-3	0.515	-4,634 lbs		4-5	0.683	-4,707 lbs				
BC	5-6	0.812	4,207 lbs	(-104 lbs)	6-7	0.685	2,869 lbs	(-71 lbs)	7-1	0.812	4,207 lbs	(-104 lbs)
Webs	2-7	0.047	-221 lbs		3-6	0.954	2,347 lbs	(-43 lbs)				
	3-7	0.954	2,347 lbs	(-43 lbs)	4-6	0.047	-221 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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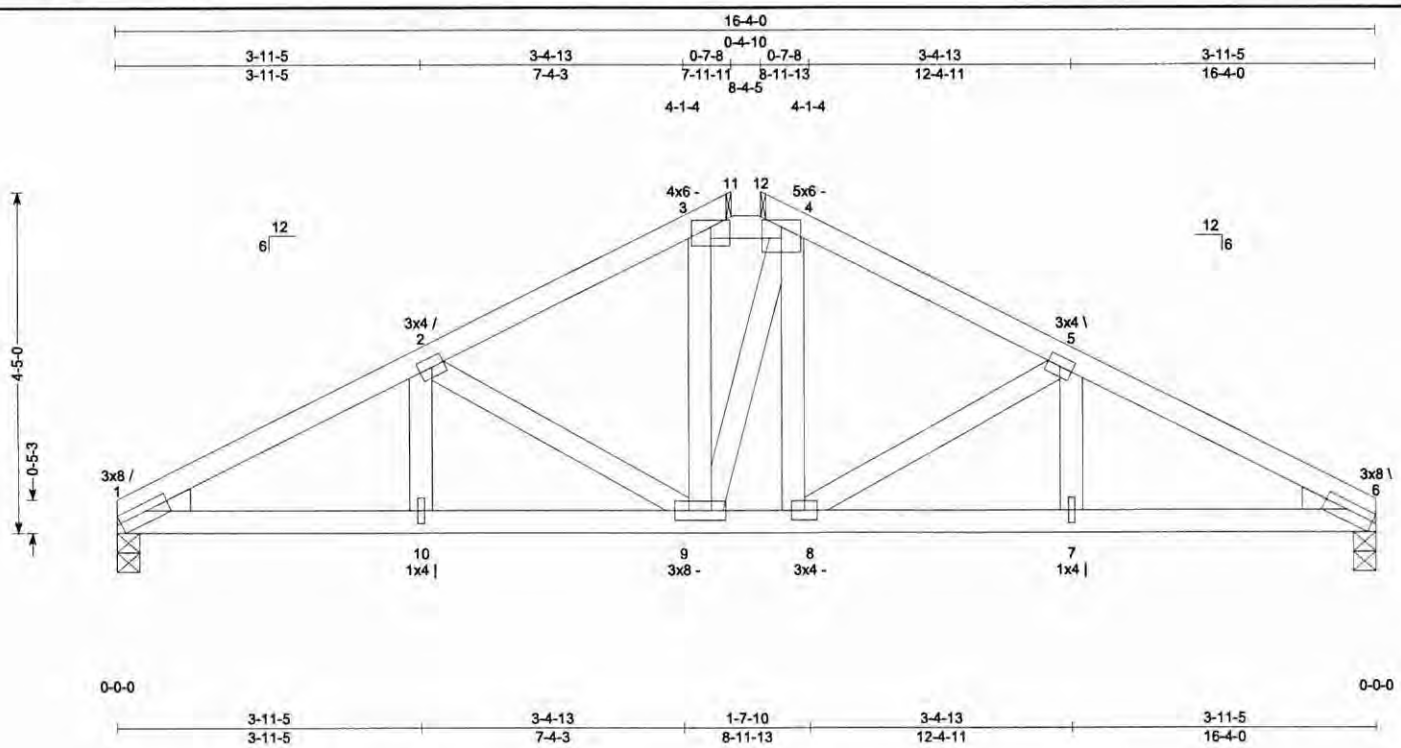
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: G5
Project Name: village bldgs
Date: 07/05/16 16:35:12
Page: 1 of 2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
16-4-0	6/12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	77 lbs



Loading

Carried Loads (psf)

TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.28 (5-6)
BC:	0.64 (7-8)
Web:	0.18 (4-8)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.2 in	L/936	(7-8)	L/240
Vert LL:	0.06 in	L/999	(7-8)	L/360
Horz TL:	0.09 in		6	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:4-4,2-1,26.) (2:1-12,3-1,26.) (3:4-5,2-11,0.) (4:4-5,3-3,0.) (5:1-12,3-1,26.) (6:4-4,2-1,26.) (7:0-0,3-8,90.) (8:0-13,3-8,0.) (9:2-9,3-8,0.) (10:0-0,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.64 in	1,533 lbs	-	-19 lbs	-19 lbs	3 lbs
6	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.64 in	1,533 lbs	-	-19 lbs	-19 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 3-6-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL = 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	0-0-0	7-4-3	Down	Proj	20 psf	20 psf	24 in
Top Chd	8-11-13	16-4-0	Down	Proj	20 psf	20 psf	24 in
Top Chd	7-4-3	8-11-13	Down	Proj	80.83 plf	80.83 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	7-4-3	Down	373 lbs	
Top Chd	8-11-13	Down	373 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	0-0-0	7-4-3	Down	Proj	14 psf	14 psf	24 in
Top Chd	8-11-13	16-4-0	Down	Proj	14 psf	14 psf	24 in
Bot Chd	0-0-0	16-4-0	Down	Proj	7 psf	7 psf	12 in
Top Chd	7-4-3	8-11-13	Down	Proj	56.58 plf	56.58 plf	
Bot Chd	0-0-0	16-4-0	Down	Proj	28 plf	28 plf	

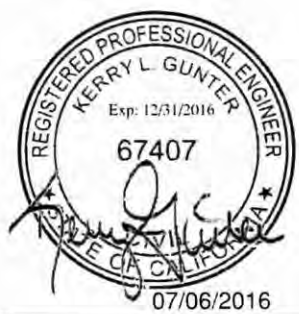
Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	7-4-3	Down	261 lbs	
Top Chd	8-11-13	Down	261 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	1-2	0.276	-2,858 lbs		3-11	0.018	-25 lbs		5-6	0.276	-2,860 lbs	
	2-3	0.245	-2,556 lbs		12-4	0.018	-25 lbs					
	3-4	0.209	-2,242 lbs		4-5	0.247	-2,552 lbs					
BC	6-7	0.566	2,508 lbs	(-65 lbs)	8-9	0.457	2,238 lbs	(-113 lbs)	10-1	0.568	2,506 lbs	(-65 lbs)
	7-8	0.644	2,508 lbs	(-65 lbs)	9-10	0.637	2,506 lbs	(-65 lbs)				



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Hanson Components, Inc.

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
16-4-0	6/12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	77 lbs

Webs	2-10	0.139	342 lbs		4-9	0.076	186 lbs	(-156 lbs)	5-7	0.140	345 lbs
	2-9	0.133	-443 lbs		4-8	0.183	451 lbs				
	3-9	0.128	314 lbs	(-38 lbs)	5-8	0.135	-449 lbs				

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) California Girder setback equals 8-0-0, truss spacing behind girder equals 2-0-0, there is no second girder setback, end jack type is Open Faced, and the corner girders are Rafter's.
4) Provide adequate drainage to prevent ponding.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
Exp: 12/31/2016
67407
STATE OF CALIFORNIA
07/06/2016

NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company, Inc in accordance with ESR-2762 . All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

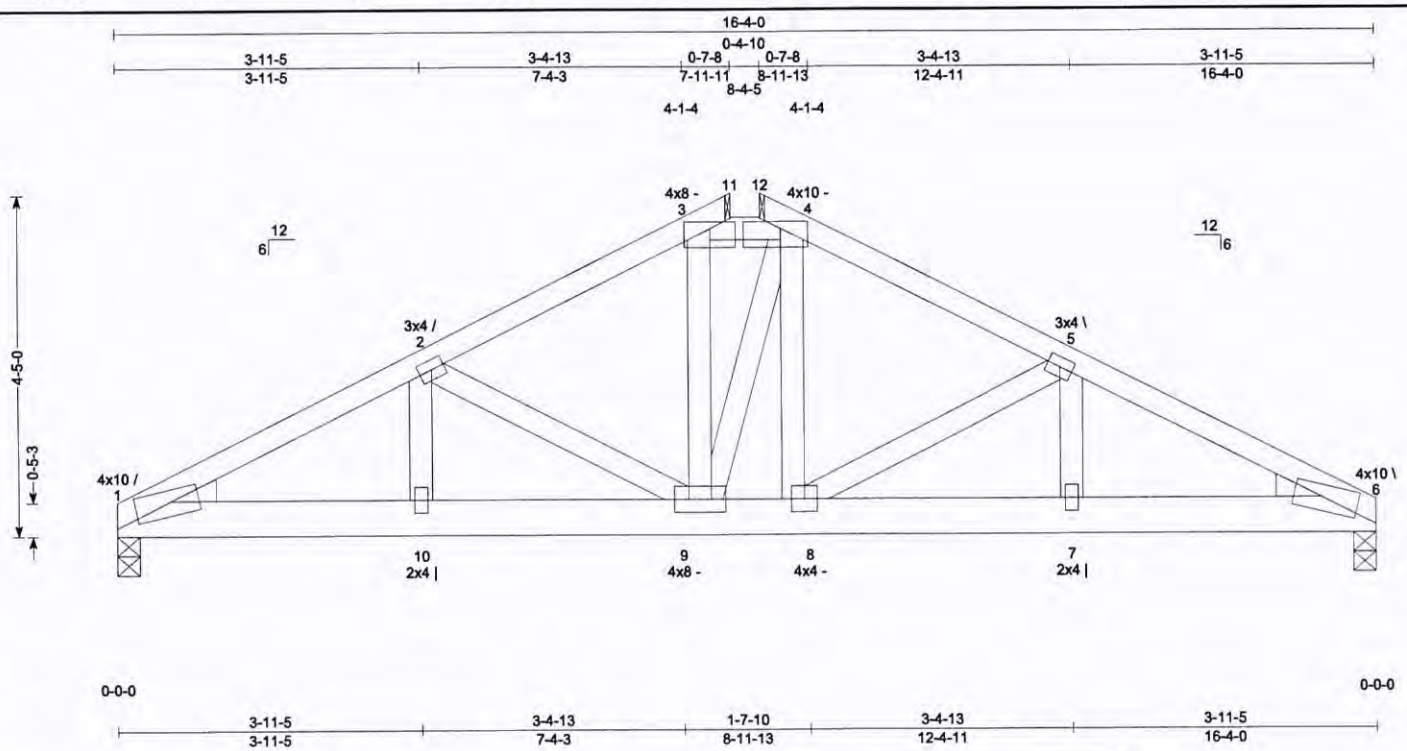
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: G5G
Project Name: village bldgs
Date: 07/05/16 16:35:12
Page: 1 of 2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
16-4-0	6 / 12	1	0-0-0	0-0-0	0-0-0	0-0-0	2	24 in	89 lbs



Loading

Carried Loads (psf)

TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	No
D.O.L. :	125 %

CSI Summary

TC :	0.41 (5-6)
BC :	0.78 (10-1)
Web :	0.36 (3-9)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.24 in	L / 773	(7-8)	L / 240
Vert LL:	0.08 in	L / 999	(7-8)	L / 360
Horz TL:	0.08 in		6	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:7-12,0-0,13.) (2:1-12,3-1,26.) (3:4-5,2-11,0.) (4:5-1,2-11,0.) (5:1-12,3-1,26.) (6:7-12,0-0,13.) (7:0-0,5-8,90.) (8:0-13,5-8,0.) (9:2-9,5-8,0.) (10:0-0,5-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	2.41 in	4,512 lbs	-	-90 lbs	-90 lbs	-1 lbs
6	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	2.41 in	4,512 lbs	-	-90 lbs	-90 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 3-9-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	16-4-0	Down	Proj	157.92 plf	157.92 plf	
Top Chd	0-0-0	16-4-0	Down	Proj	20 psf	20 psf	12 in
Top Chd	0-0-0	7-4-3	Down	Proj	20 psf	20 psf	24 in
Top Chd	8-11-13	16-4-0	Down	Proj	20 psf	20 psf	24 in
Top Chd	7-4-3	8-11-13	Down	Proj	80.83 plf	80.83 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	7-4-3	Down	373 lbs	
Top Chd	8-11-13	Down	373 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	16-4-0	Down	Proj	165.81 plf	165.81 plf	
Top Chd	0-0-0	16-4-0	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	16-4-0	Down	Proj	7 psf	7 psf	12 in
Top Chd	0-0-0	7-4-3	Down	Proj	14 psf	14 psf	24 in
Top Chd	8-11-13	16-4-0	Down	Proj	14 psf	14 psf	24 in
Bot Chd	0-0-0	16-4-0	Down	Proj	7 psf	7 psf	12 in
Top Chd	7-4-3	8-11-13	Down	Proj	56.58 plf	56.58 plf	
Bot Chd	0-0-0	16-4-0	Down	Proj	28 plf	28 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	7-4-3	Down	261 lbs	
Top Chd	8-11-13	Down	261 lbs	



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Hanson Components, Inc.

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
16-4-0	6/12	1	0-0-0	0-0-0	0-0-0	0-0-0	2	24 in	89 lbs

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	1-2	0.413	-4,000 lbs		3-11	0.013	-16 lbs		5-6	0.414	-4,010 lbs	
	2-3	0.329	-3,140 lbs		12-4	0.013	-16 lbs					
	3-4	0.275	-2,775 lbs		4-5	0.329	-3,114 lbs					
BC	6-7	0.779	3,567 lbs	(-89 lbs)	8-9	0.545	2,749 lbs	(-96 lbs)	10-1	0.779	3,557 lbs	(-89 lbs)
	7-8	0.697	3,567 lbs	(-89 lbs)	9-10	0.664	3,557 lbs	(-89 lbs)				
Webs	2-10	0.261	643 lbs		4-9	0.051	125 lbs	(-18 lbs)	5-7	0.272	670 lbs	
	2-9	0.194	-895 lbs		4-8	0.342	840 lbs					
	3-9	0.361	889 lbs		5-8	0.203	-936 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) California Girder setback equals 8-0-0, truss spacing behind girder equals 2-0-0, there is no second girder setback, end jack type is Open Faced, and the corner girders are Rafter's.
4) Provide adequate drainage to prevent ponding.
5) The forces shown for this multi-ply truss are per ply and the reactions are for all plies. Two identical trusses shall be built and attached as follows: TC - 1 row of 10d Nails or Gun Nails [min 0.120" dia. x 2 7/8" long] @ 12" o.c., BC - 2 staggered rows of 10d Nails or Gun Nails [min 0.120" dia. x 2 7/8" long] @ 10" o.c. , Webs - 1 row 10d Nails or Gun Nails [min 0.120" dia. x 2 7/8" long] @ 9" o.c..
In addition to the fastening outlined above, provide the following supplemental fasteners within 24" of the location(s) listed below in lieu of using hanger connectors that are capable of transferring the entire load between the plies:
TC: 7-4-3, (3) 10d Nails or Gun Nails [min 0.120" dia. x 2 7/8" long]
TC: 8-11-13, (3) 10d Nails or Gun Nails [min 0.120" dia. x 2 7/8" long]
6) Where required, sufficient hangers shall be provided (by others) to resist reactions shown.
7) Install the screws/nails on one side; do not flip truss. Screws/nails shall be installed in the same truss ply that the hangers are attached to.
8) Lateral bracing shall be attached to each ply.
9) All fasteners minimum 2-1/2" long, unless otherwise noted.
10) Nails in 1st and 2nd ply shall be staggered from successive plies by 1/2 the nail spacing.
11) Listed wind uplift reactions based on MWFRS Only loading.
12) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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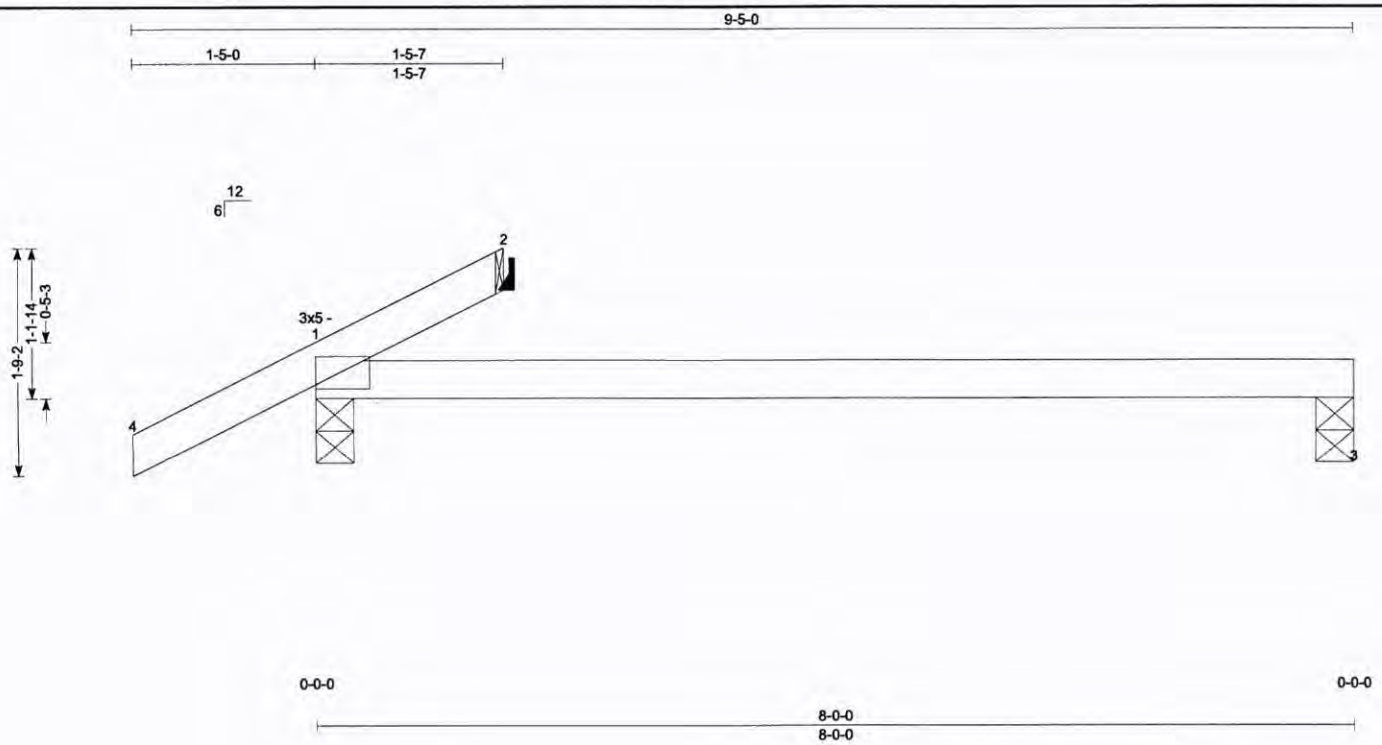
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J1
Project Name: village bldgs
Date: 7/6/2016 9:59:53 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6/12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	15 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.62 (1-2)	Vert TL:	0.13 in	L/680	(3-1)	L/240
TCLL :	20		TPI 1-2007	BC :	0.76 (3-1)	Vert LL:	0 in UP	L/999	(3-1)	L/360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.00 (1)	Horz TL:	0 in		2	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	280 lbs	-6 lbs	-30 lbs	-30 lbs	123 lbs
2	H Roll (Truss)	1	1.5 in	-	1.50 in	327 lbs	-	-	-	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	292 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.160	43 lbs		1-2	0.616	-233 lbs				
BC	3-1	0.762	129 lbs	(-80 lbs)							
Webs											

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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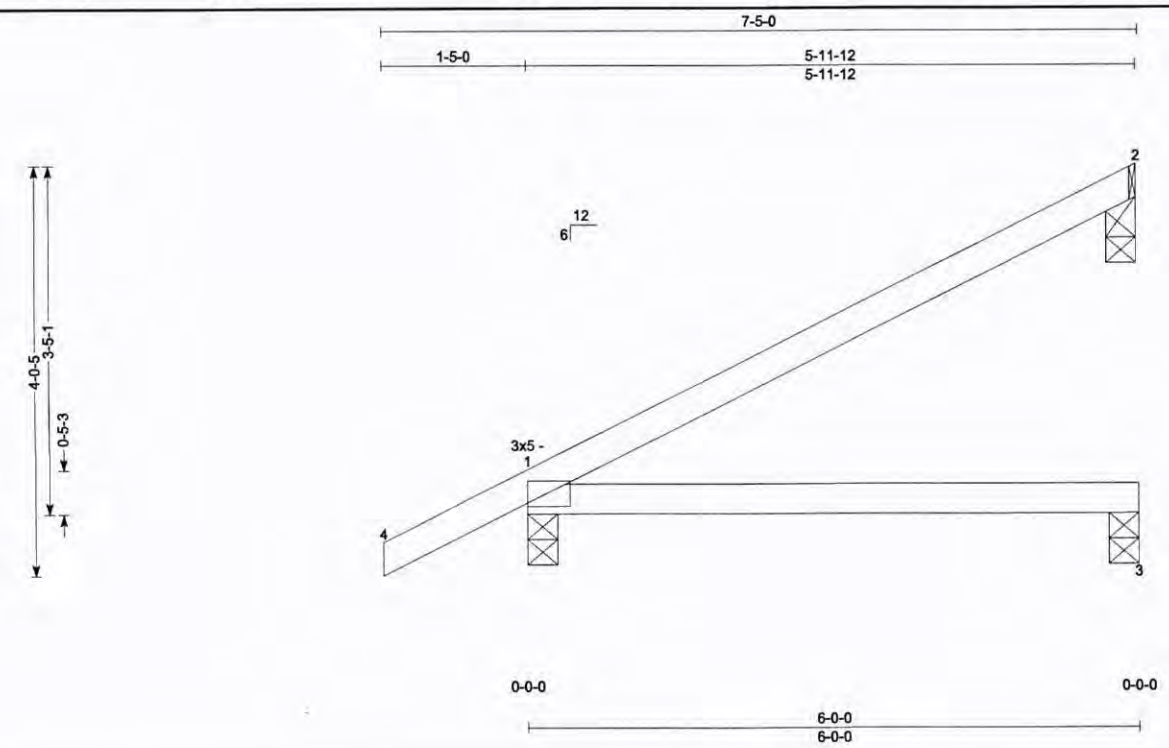
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J10
Project Name: village bldgs
Date: 07/05/16 16:35:13
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
6-0-0	6 / 12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	18 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.45 (1-2)
BC :	0.76 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.16 in	L / 410	(3-1)	L / 240
Vert LL:	0.04 in	L / 999	(3-1)	L / 360
Horz TL:	0.01 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	408 lbs	-	-1 lbs	-1 lbs	244 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	173 lbs	-	-40 lbs	-40 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	296 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

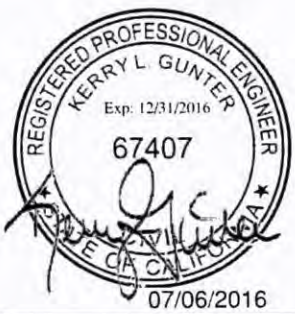
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.176	43 lbs		1-2	0.453	-375 lbs		
BC	3-1	0.762	223 lbs	(-94 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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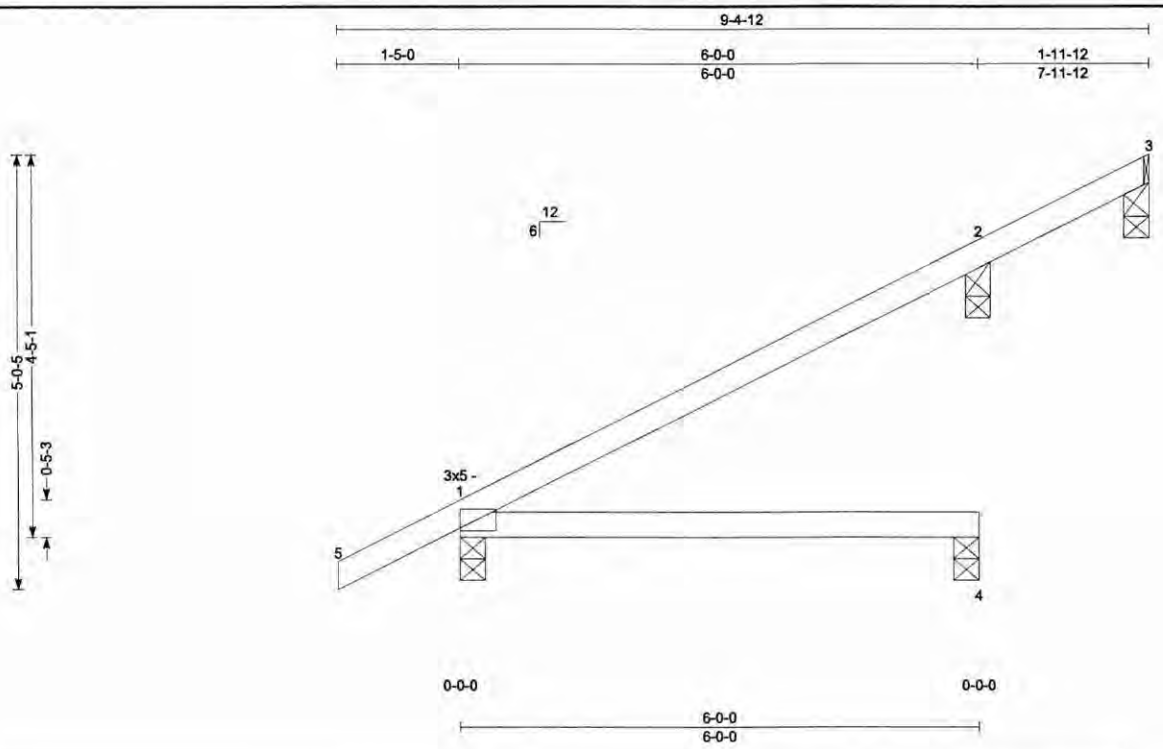
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J11
Project Name: village bldgs
Date: 07/05/16 16:35:14
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
6-0-0	6/12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	21 lbs



Loading

	(psf)
Load	
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.33 (1-2)
BC:	0.72 (4-1)
Web:	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.12 in	L/532	(4-1)	L/240
Vert LL:	0.03 in	L/999	(4-1)	L/360
Horz TL:	0.01 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	392 lbs	-	-	-	293 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	292 lbs	-	-	-	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	377 lbs	-	-85 lbs	-85 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	8 lbs	-46 lbs	-30 lbs	-46 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

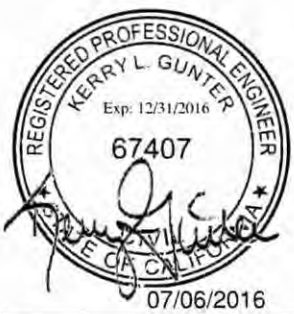
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	5-1	0.176	43 lbs		1-2	0.335	-357 lbs	2-3	0.295	-73 lbs
BC	4-1	0.719	212 lbs	(-93 lbs)						
Webs										

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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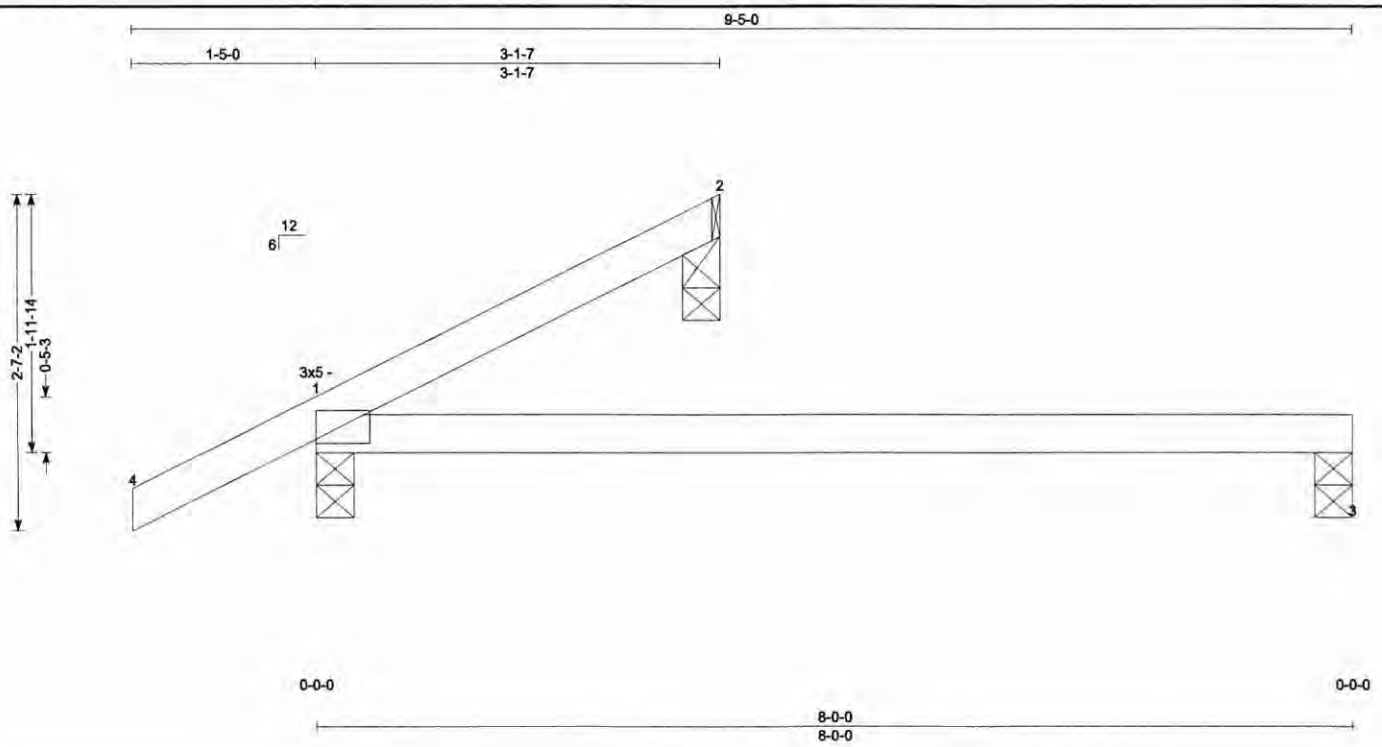
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J2
Project Name: village bldgs
Date: 07/05/16 16:35:14
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6/12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	17 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.59 (1-2)
BC:	0.85 (3-1)
Web:	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.17 in	L/514	(3-1)	L/240
Vert LL:	0 in	L/999	(3-1)	L/360
Horz TL:	0 in		2	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	363 lbs	-	-2 lbs	-2 lbs	161 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	159 lbs	-	-5 lbs	-5 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	295 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 9-1-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL = 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

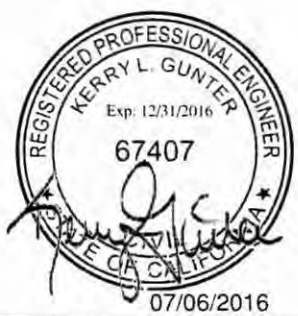
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.160	43 lbs		1-2	0.588	-325 lbs	
BC	3-1	0.850	190 lbs	(-24 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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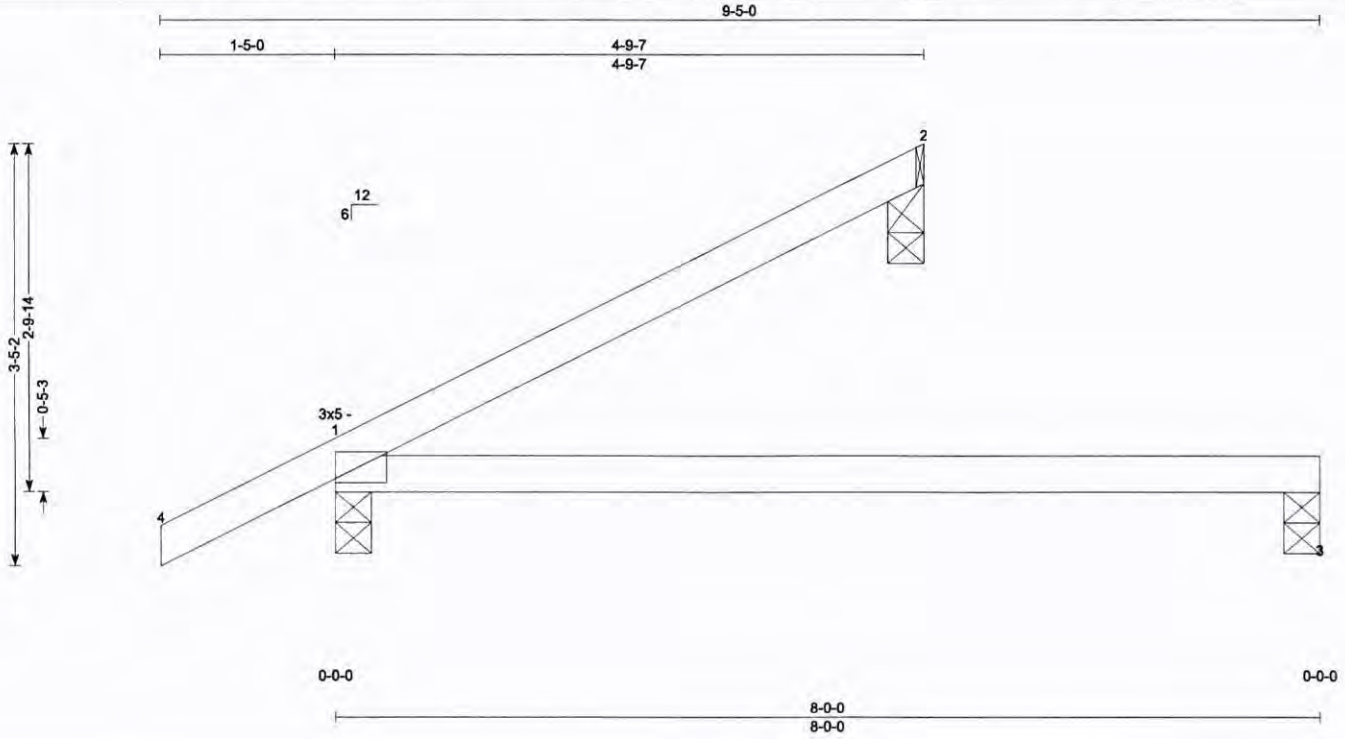
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J3
Project Name: village bldgs
Date: 07/05/16 16:35:15
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	19 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.55 (1-2)	Vert TL:	0.25 in	L / 352	(3-1)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.93 (3-1)	Vert LL:	0.03 in	L / 999	(3-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.00 (1)	Horz TL:	0.01 in		2	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	402 lbs	-	-	-	200 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	152 lbs	-	-26 lbs	-26 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	300 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 4-8-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

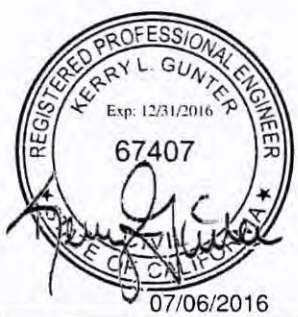
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.160	43 lbs		1-2	0.551	-367 lbs	
BC	3-1	0.932	219 lbs	(-52 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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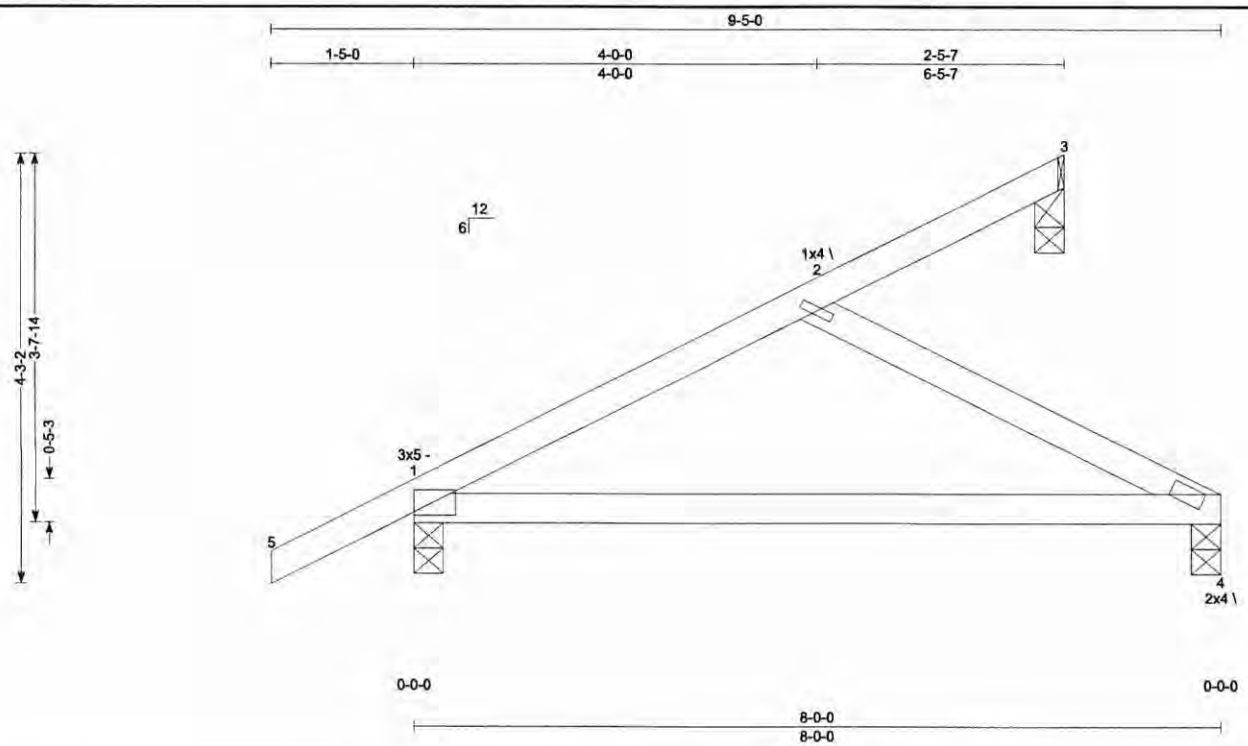
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J4
Project Name: village bldgs
Date: 07/05/16 16:35:15
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	27 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.58 (1-2)
BC :	0.89 (4-1)
Web :	0.10 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.17 in	L / 520	(4-1)	L / 240
Vert LL:	0 in	L / 999	(4-1)	L / 360
Horz TL:	0 in		4	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.) (2:0-0,3-15,26.) (4:3-15,3-8,26.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	446 lbs	-	-	-	238 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	57 lbs	-14 lbs	-21 lbs	-21 lbs	0 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	361 lbs	-	-	-	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 9-11-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied.
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

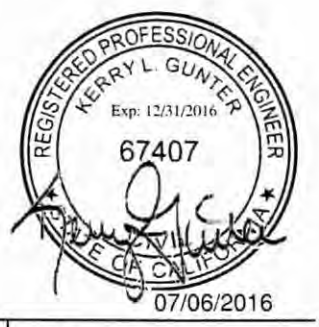
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	5-1	0.160	43 lbs		1-2	0.576	-416 lbs	2-3	0.208	-56 lbs
BC	4-1	0.886	272 lbs	(-161 lbs)						
Webs	2-4	0.103	-303 lbs							

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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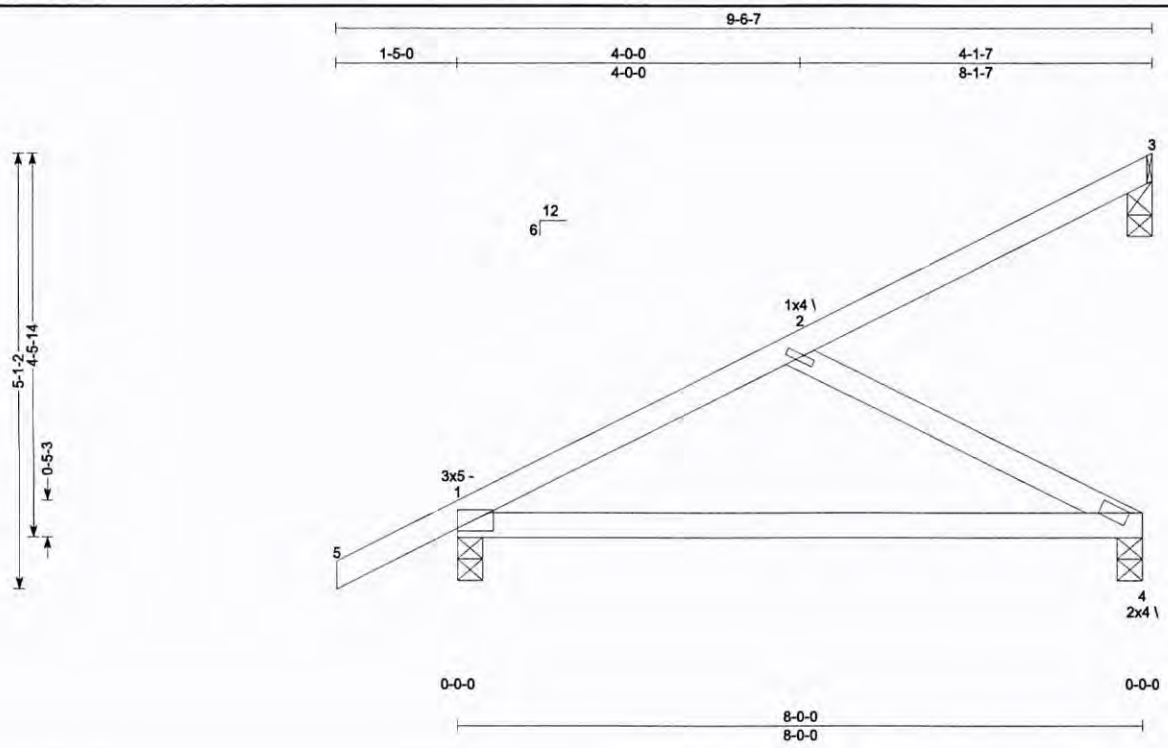
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J5
Project Name: village bldgs
Date: 07/05/16 16:35:16
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 / 12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	30 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.59 (1-2)
BC :	0.89 (4-1)
Web :	0.13 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.16 in	L / 551	(4-1)	L / 240
Vert LL:	0 in UP	L / 999	(4-1)	L / 360
Horz TL:	0.01 in		4	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.) (2:0-0,3-15,26.) (4:3-15,3-8,26.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	453 lbs	-	-	-	276 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	372 lbs	-	-4 lbs	-4 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	115 lbs	-	-32 lbs	-32 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 9-11-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL = 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	5-1	0.160	43 lbs		1-2	0.587	-424 lbs	2-3	0.206	-87 lbs
BC	4-1	0.887	339 lbs	(-201 lbs)						
Webs	2-4	0.129	-377 lbs							

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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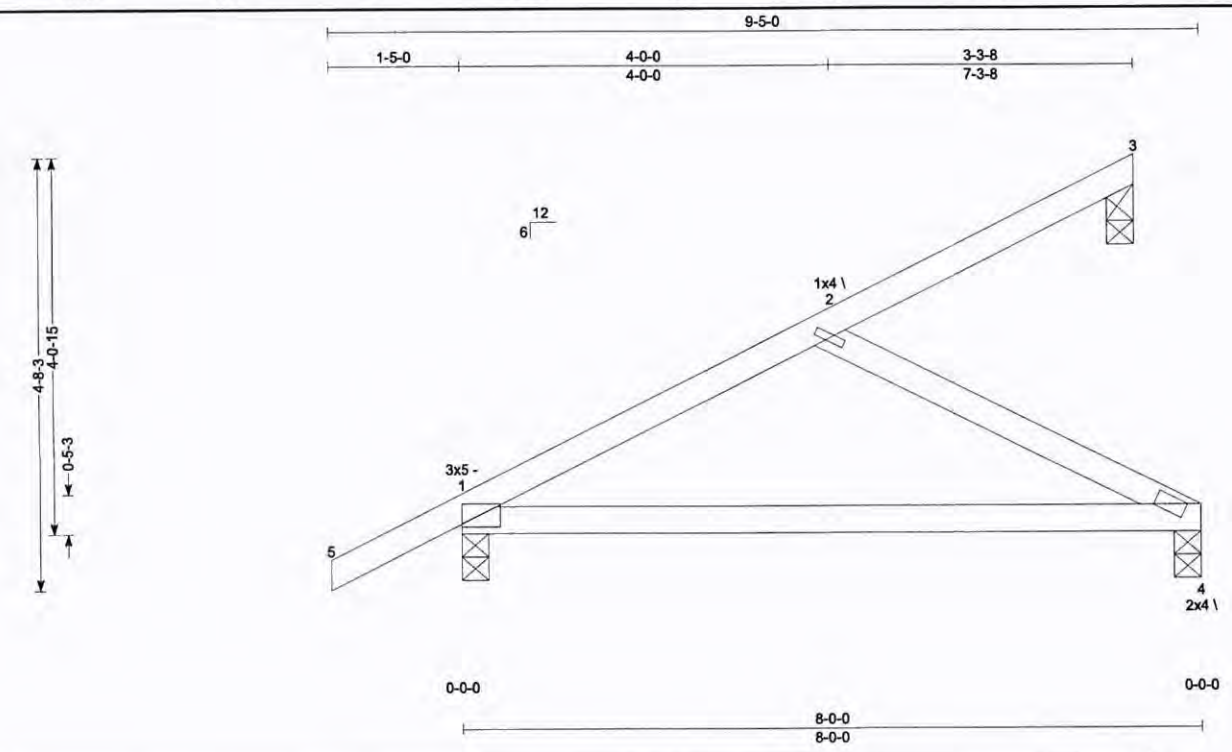
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J6
Project Name: village bldgs
Date: 07/05/16 16:35:16
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	29 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.59 (1-2)
BC :	0.89 (4-1)
Web :	0.11 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.17 in	L / 534	(4-1)	L / 240
Vert LL:	0 in	L / 999	(4-1)	L / 360
Horz TL:	0.01 in		4	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.) (2:0-0,3-15,26.) (4:3-15,3-8,26.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	449 lbs	-	-	-	257 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	88 lbs	-	-27 lbs	-27 lbs	0 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	366 lbs	-	-	-	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 9-11-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

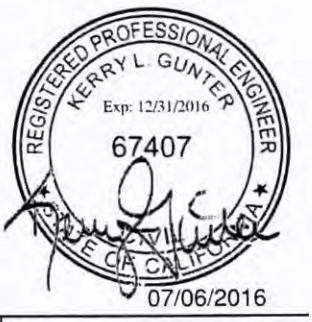
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	5-1	0.160	43 lbs		1-2	0.588	-419 lbs	2-3	0.202	-72 lbs
BC	4-1	0.887	302 lbs	(-179 lbs)						
Webs	2-4	0.115	-336 lbs							

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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Simpson Strong-Tie Company

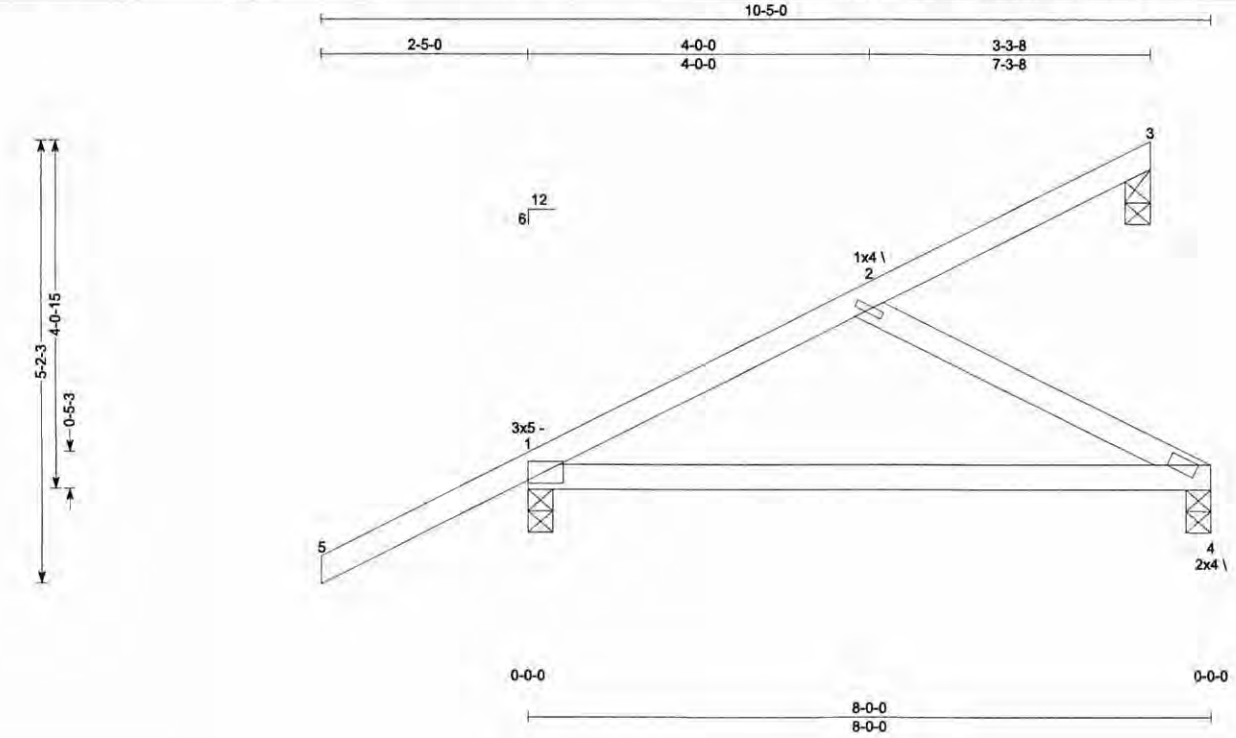
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J7
Project Name: village bldgs
Date: 07/05/16 16:35:17
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6/12	1	2-5-0	0-0-0	0-0-0	0-0-0	1	24 in	30 lbs



Loading

	(psf)
Load	
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.52 (1-2)
BC:	0.87 (4-1)
Web:	0.10 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.14 in	L/628	(4-1)	L/240
Vert LL:	0.02 in UP	L/999	(4-1)	L/360
Horz TL:	0 in		4	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.) (2:0-0,3-15,26.) (4:3-15,3-8,26.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	507 lbs	-	-12 lbs	-12 lbs	292 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	95 lbs	-	-29 lbs	-29 lbs	0 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	357 lbs	-	-	-	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

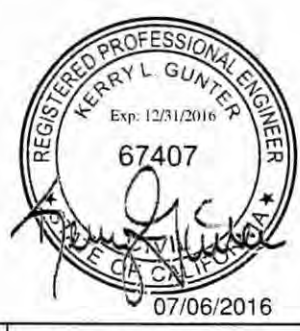
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	5-1	0.463	73 lbs		1-2	0.523	-374 lbs	2-3	0.187	-75 lbs
BC	4-1	0.869	277 lbs	(-145 lbs)						
Webs	2-4	0.103	-309 lbs							

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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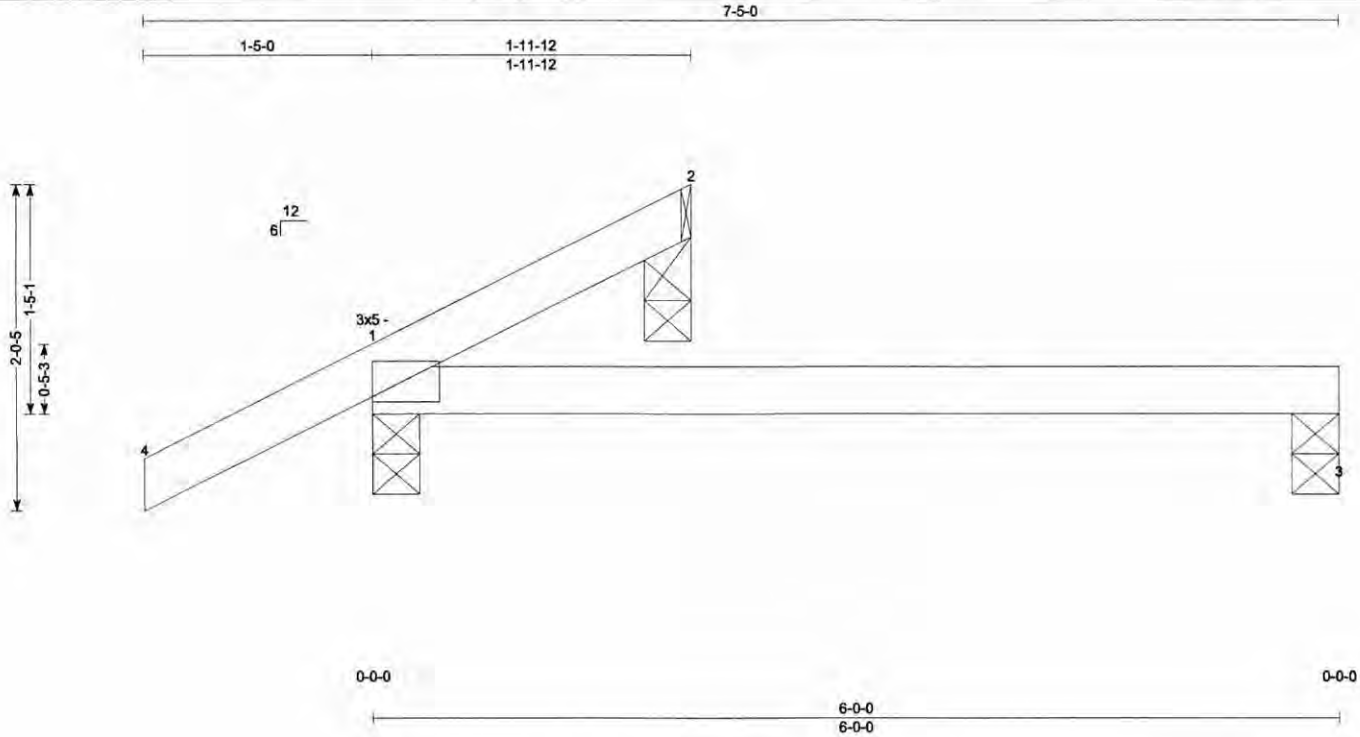
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J8
Project Name: village bldgs
Date: 07/05/16 16:35:17
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
6-0-0	6/12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	13 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.42 (1-2)
BC :	0.58 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.05 in	L / 999	(3-1)	L / 240
Vert LL:	0 in UP	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	324 lbs	-	-11 lbs	-11 lbs	145 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	168 lbs	-	-	-	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	282 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.176	43 lbs		1-2	0.418	-282 lbs		
BC	3-1	0.579	162 lbs	(-22 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
Exp: 12/31/2016
67407
STATE OF CALIFORNIA
07/06/2016

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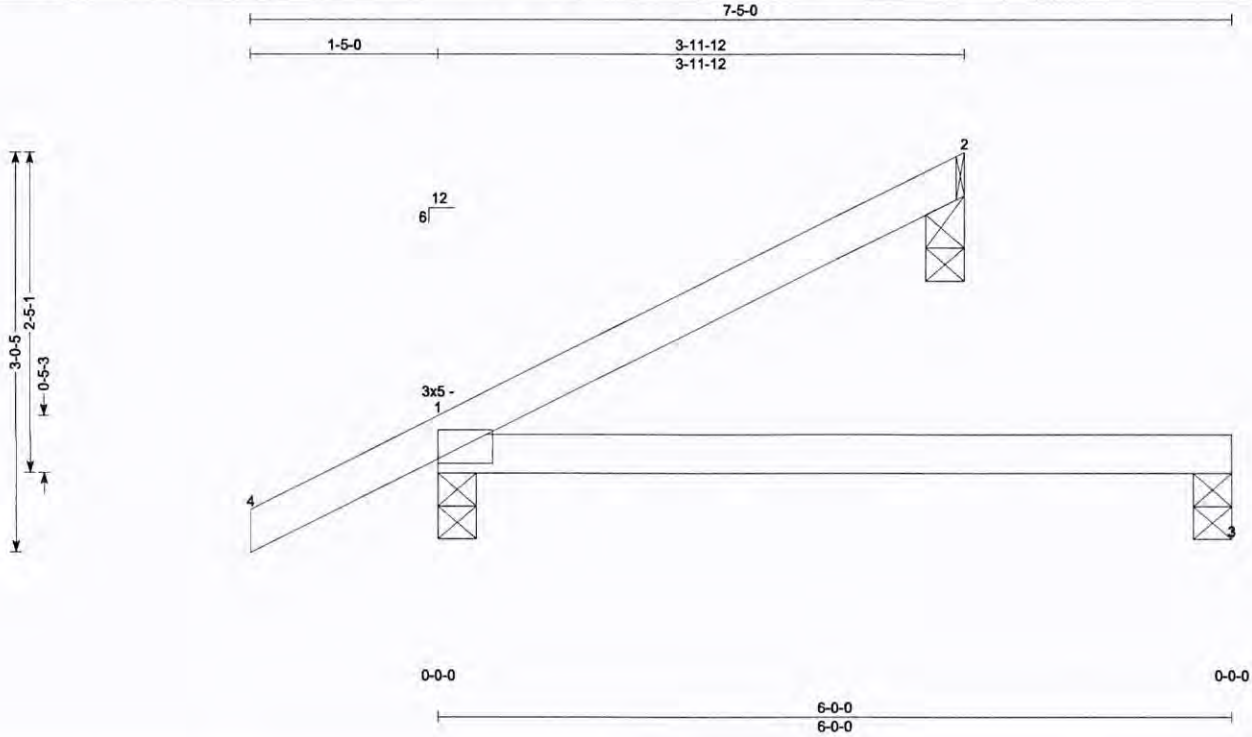
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J9
Project Name: village bldgs
Date: 07/05/16 16:35:17
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
6-0-0	6 /12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	16 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.36 (1-2)
BC :	0.67 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.08 in	L / 779	(3-1)	L / 240
Vert LL:	0.01 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	377 lbs	-	-2 lbs	-2 lbs	194 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	120 lbs	-	-22 lbs	-22 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	288 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.176	43 lbs		1-2	0.361	-340 lbs		
BC	3-1	0.671	200 lbs	(-50 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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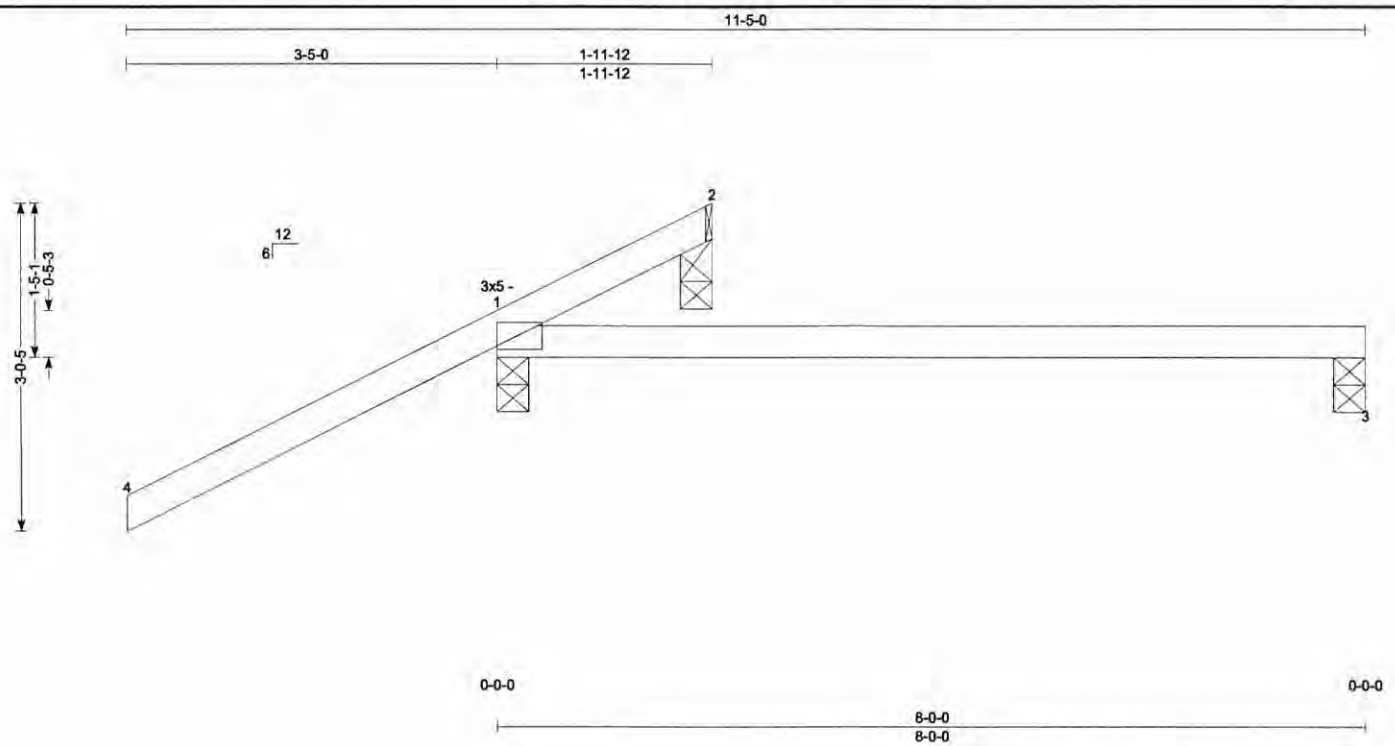
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JJ1
Project Name: village bldgs
Date: 07/05/16 16:35:18
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 / 12	1	3-5-0	0-0-0	0-0-0	0-0-0	1	24 in	18 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.91 (4-1)
BC :	0.77 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.12 in	L / 765	(3-1)	L / 240
Vert LL:	0.03 in UP	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	494 lbs	-	-72 lbs	-72 lbs	200 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	230 lbs	-51 lbs	-	-51 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	290 lbs	-	-	-	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	

Bracing Summary

TC Bracing:	Sheathed or Purlins at 5-1-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 9-6-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.909	104 lbs		1-2	0.770	-281 lbs		
BC	3-1	0.766	650 lbs	(-423 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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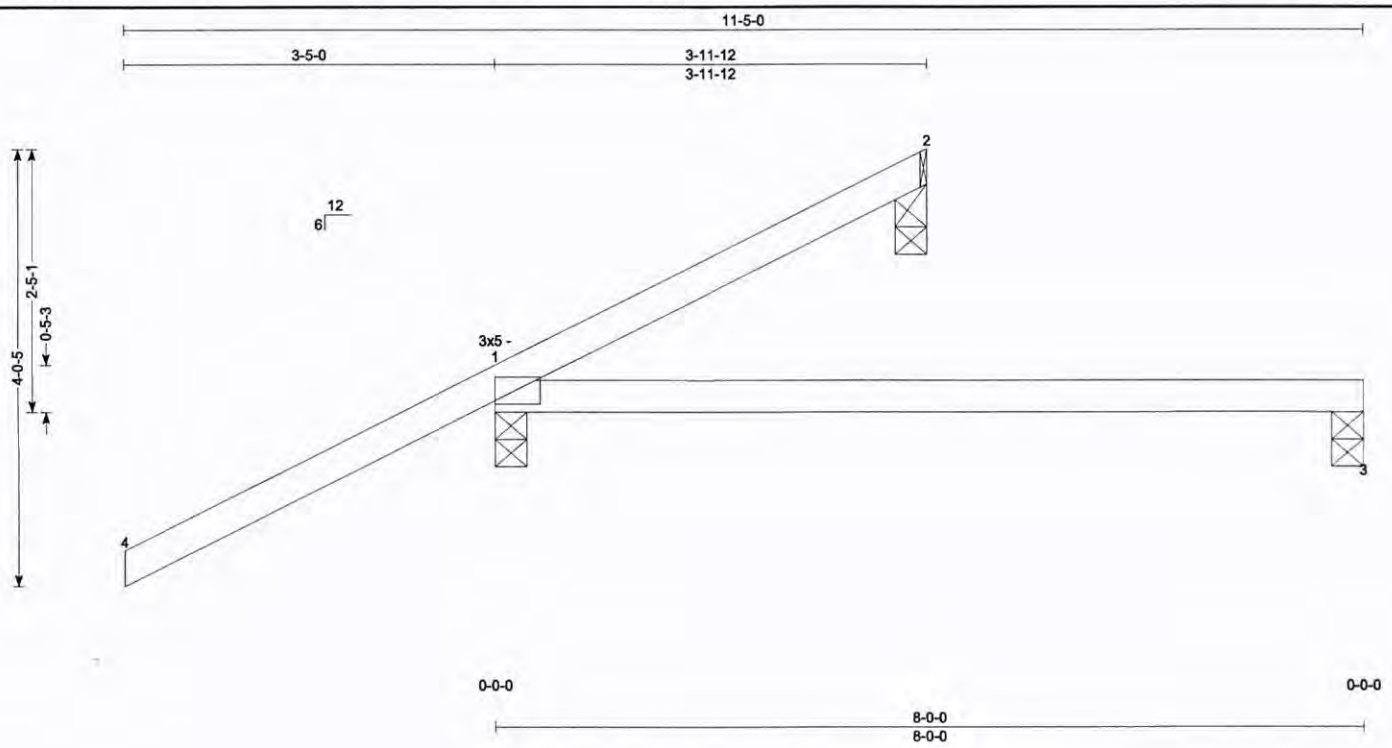
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JJ2
Project Name: village bldgs
Date: 07/05/16 16:35:18
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6/12	1	3-5-0	0-0-0	0-0-0	0-0-0	1	24 in	21 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/ TPI 1-2007	TC :	0.91 (4-1)	Vert TL:	0.17 in	L / 535	(3-1)	L / 240
TCLL :	20			BC :	0.85 (3-1)	Vert LL:	0.04 in UP	L / 999	(3-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.00 (1)	Horz TL:	0.01 in		2	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	503 lbs	-	-36 lbs	-36 lbs	246 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	112 lbs	-	-3 lbs	-3 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	292 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 5-1-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 9-2-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.909	104 lbs		1-2	0.863	-428 lbs	
BC	3-1	0.847	703 lbs	(-416 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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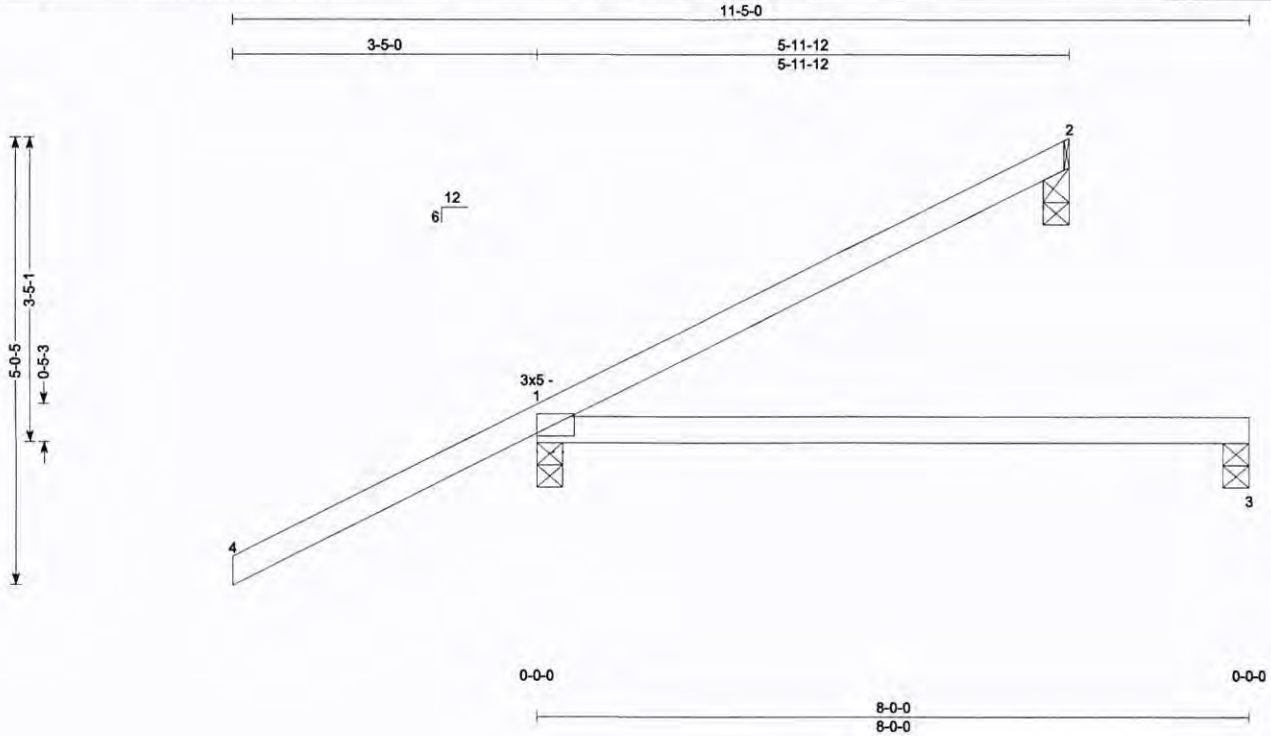
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JJ3
Project Name: village bldgs
Date: 07/05/16 16:35:19
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	3-5-0	0-0-0	0-0-0	0-0-0	1	24 in	24 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.92 (1-2)
BC :	0.93 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.19 in	L / 475	(3-1)	L / 240
Vert LL:	0.01 in UP	L / 999	(3-1)	L / 360
Horz TL:	0.01 in		2	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	554 lbs	-	-29 lbs	-29 lbs	292 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	160 lbs	-	-30 lbs	-30 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	296 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 4-5-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 4-10-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.909	104 lbs		1-2	0.922	-457 lbs		
BC	3-1	0.931	678 lbs	(-379 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
Exp: 12/31/2016
67407
CIVIL
STATE OF CALIFORNIA
07/06/2016

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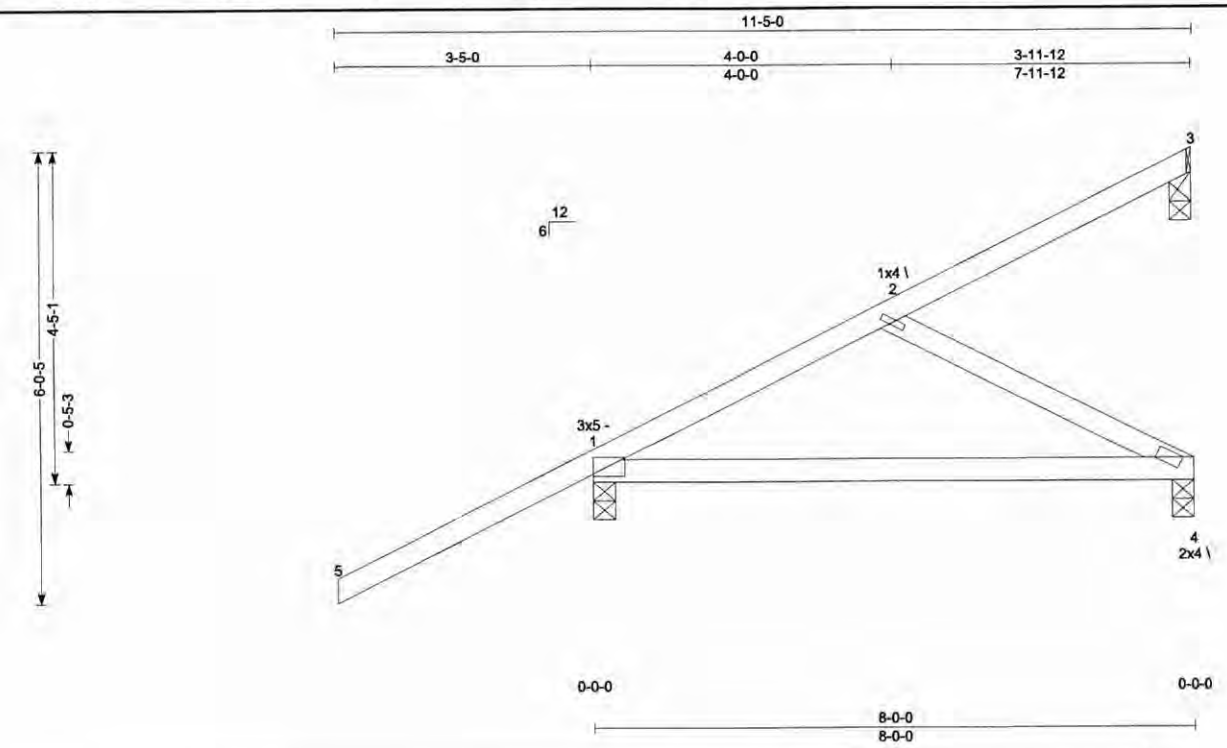
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JJ4
Project Name: village bldgs
Date: 07/05/16 16:35:19
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 / 12	1	3-5-0	0-0-0	0-0-0	0-0-0	1	24 in	32 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.91 (5-1)
BC :	0.84 (4-1)
Web :	0.10 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.15 in	L / 589	(4-1)	L / 240
Vert LL:	0.05 in UP	L / 999	(4-1)	L / 360
Horz TL:	0.01 in		3	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.) (2:0-0,3-15,26.) (4:3-15,3-8,26.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	610 lbs	-	-27 lbs	-27 lbs	338 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	124 lbs	-	-35 lbs	-35 lbs	0 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	349 lbs	-	-	-	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 5-1-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

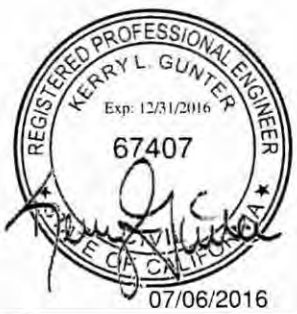
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	5-1	0.909	104 lbs		1-2	0.704	-463 lbs	2-3	0.218	-90 lbs
BC	4-1	0.843	638 lbs	(-338 lbs)						
Webs	2-4	0.102	-305 lbs							

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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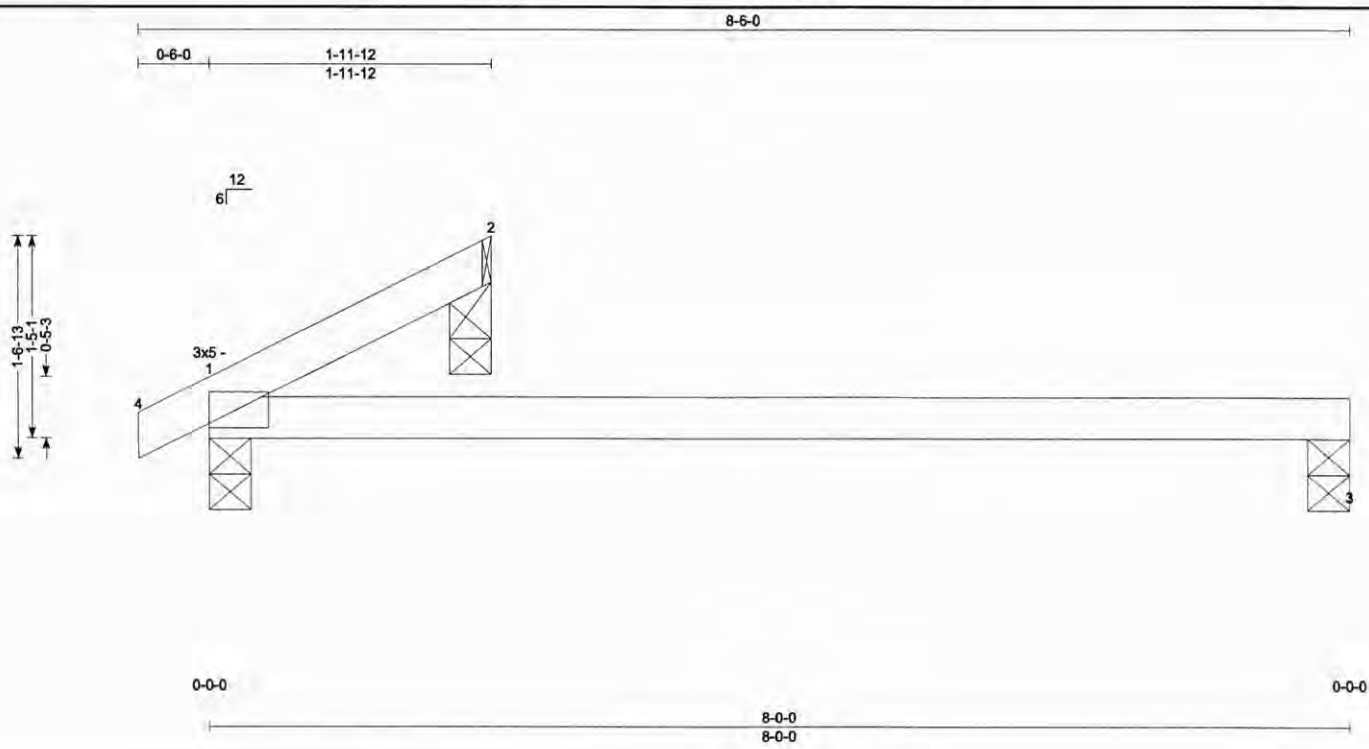
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JJ5
Project Name: village bldgs
Date: 07/05/16 16:35:20
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	0-6-0	0-0-0	0-0-0	0-0-0	1	24 in	14 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.65 (1-2)	Vert TL:	0.15 in	L / 593	(3-1)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.79 (3-1)	Vert LL:	0 in	L / 999	(3-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.00 (1)	Horz TL:	0 in		2	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	281 lbs	-	-	-	100 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	249 lbs	-	-	-	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	294 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

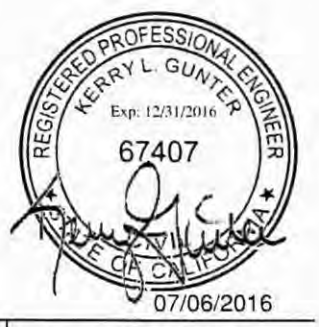
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.020	15 lbs		1-2	0.646	-287 lbs		
BC	3-1	0.795	187 lbs	(-65 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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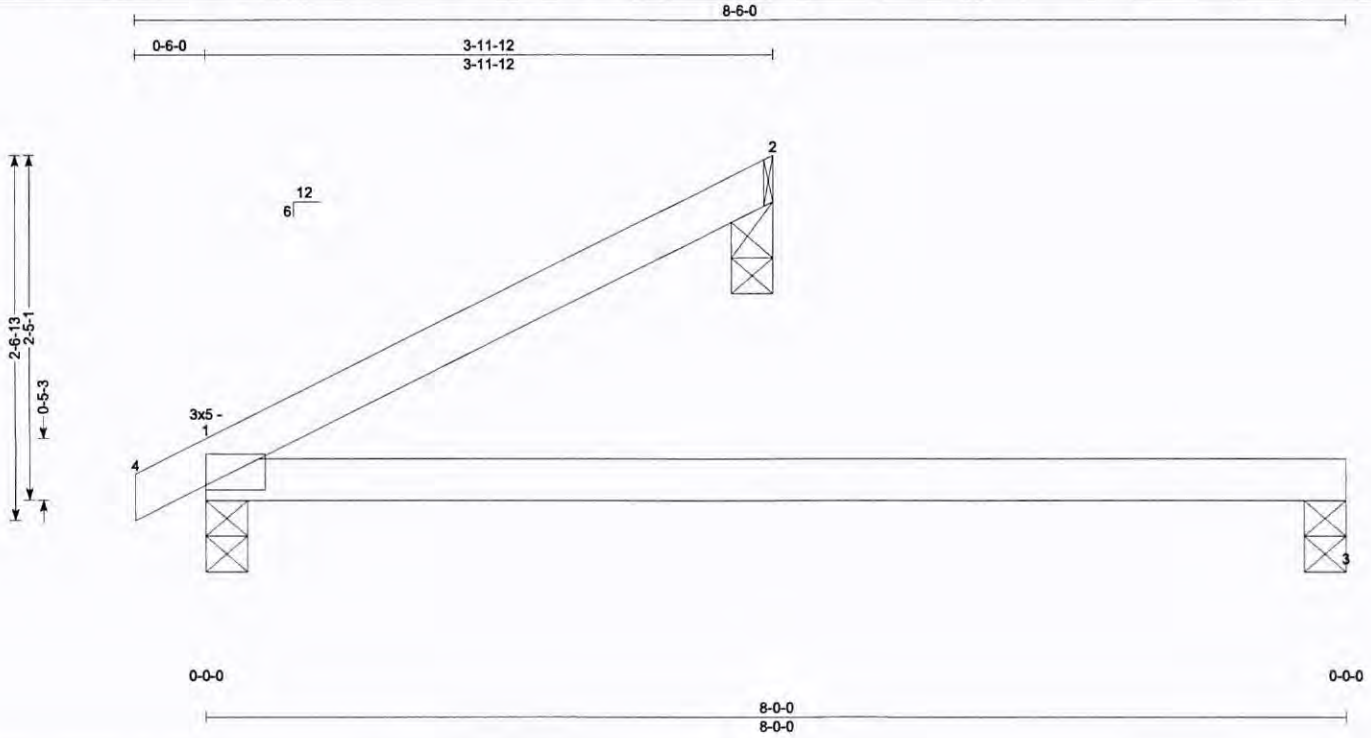
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JJ6
Project Name: village bldgs
Date: 07/05/16 16:35:20
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6/12	1	0-6-0	0-0-0	0-0-0	0-0-0	1	24 in	17 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.59 (1-2)
BC:	0.90 (3-1)
Web:	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.23 in	L/384	(3-1)	L/240
Vert LL:	0.02 in	L/999	(3-1)	L/360
Horz TL:	0.01 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	354 lbs	-	-	-	149 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	141 lbs	-	-19 lbs	-19 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	298 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 6-10-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

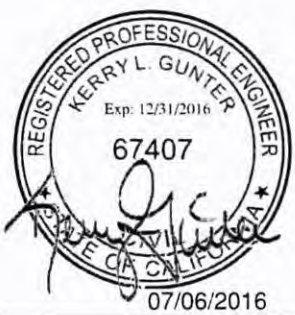
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.020	15 lbs		1-2	0.589	-367 lbs		
BC	3-1	0.901	240 lbs	(-116 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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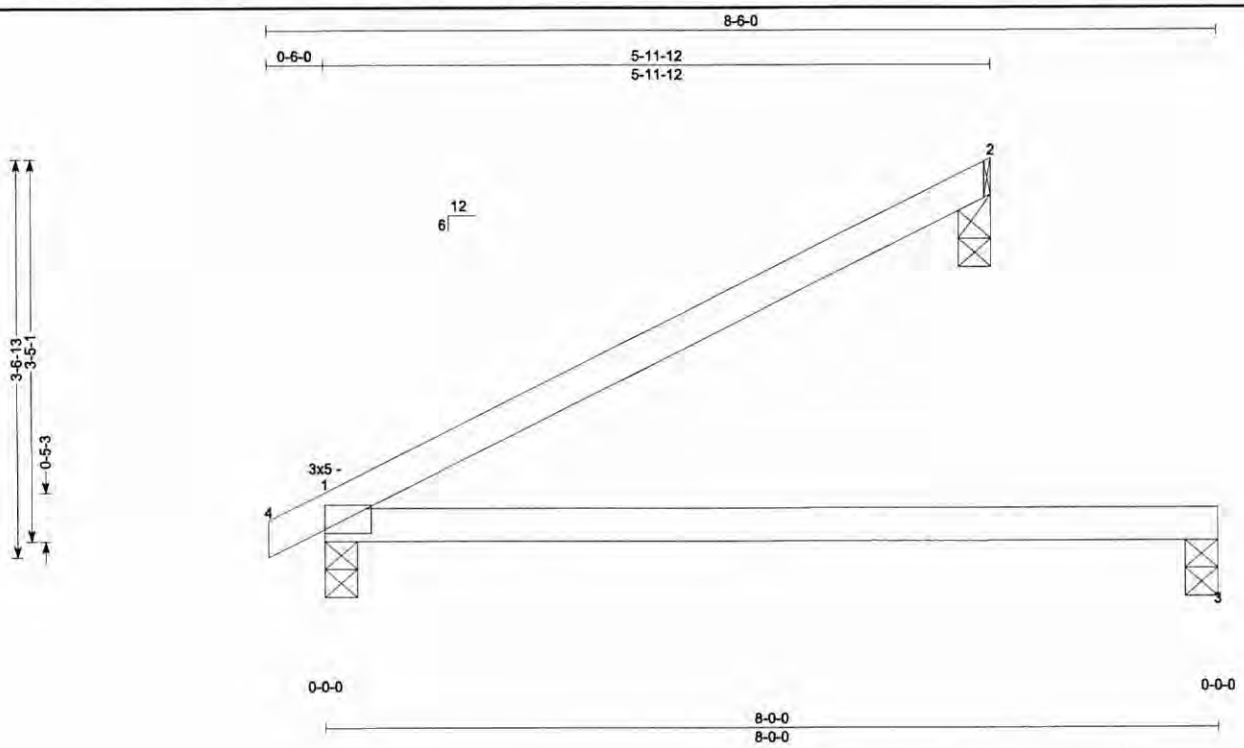
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JJ7
Project Name: village bldgs
Date: 07/05/16 16:35:21
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 / 12	1	0-6-0	0-0-0	0-0-0	0-0-0	1	24 in	20 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.43 (1-2)
BC :	0.98 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.35 in	L / 256	(3-1)	L / 240
Vert LL:	0.07 in	L / 999	(3-1)	L / 360
Horz TL:	0.02 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	393 lbs	-	-	-	195 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	190 lbs	-	-39 lbs	-39 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	304 lbs	-	-	-	0 lbs

Material Summary

TC DFL #1B 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

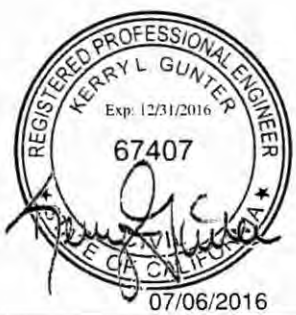
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.015	15 lbs		1-2	0.434	-417 lbs
BC	3-1	0.984	274 lbs	(-171 lbs)			
Webs							

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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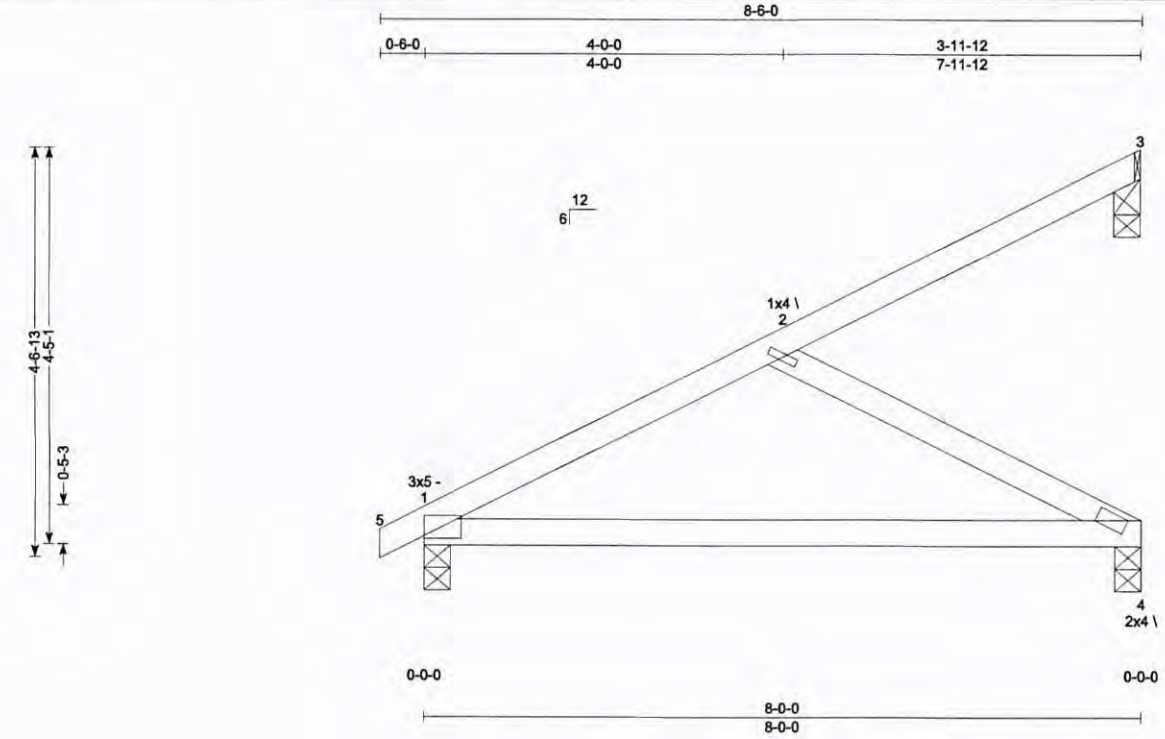
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JJ8
Project Name: village bldgs
Date: 07/05/16 16:35:21
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	0-6-0	0-0-0	0-0-0	0-0-0	1	24 in	28 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.62 (1-2)
BC :	0.89 (4-1)
Web :	0.13 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.18 in	L / 495	(4-1)	L / 240
Vert LL:	0.01 in	L / 999	(4-1)	L / 360
Horz TL:	0.01 in		4	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.) (2:0-0,3-15,26.) (4:3-15,3-8,26.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	424 lbs	-	-	-	241 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	109 lbs	-	-31 lbs	-31 lbs	0 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	375 lbs	-	-5 lbs	-5 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 9-9-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	5-1	0.020	15 lbs		1-2	0.617	-443 lbs	2-3	0.211	-84 lbs
BC	4-1	0.895	348 lbs	(-221 lbs)						
Webs	2-4	0.132	-388 lbs							

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
Exp: 12/31/2016
67407
STATE OF CALIFORNIA
07/06/2016

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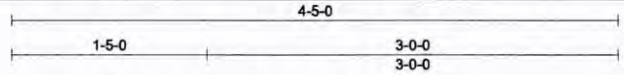
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

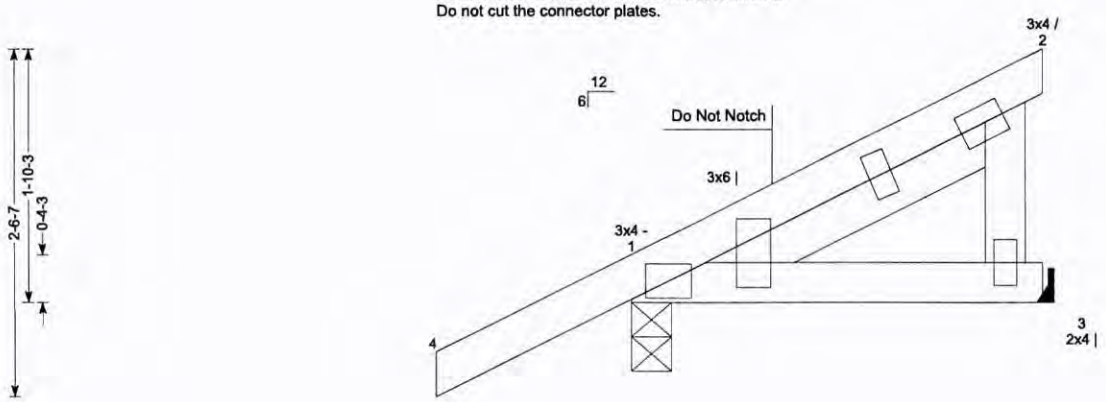
Hanson Components, Inc.

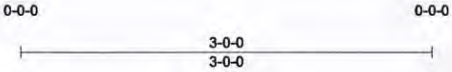
Truss: M1
Project Name: village bldgs
Date: 7/6/2016 10:01:30 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
3-0-0	6 / 12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	16 lbs



Note: The top chord may be notched 1.5" deep by 3.5" wide at 24" o.c. max. unless noted otherwise. Do not cut the connector plates.





Loading	(psf)	General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.18 (4-1)	Vert TL:	0 in	L / 999	(3-1)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.29 (3-1)	Vert LL:	0 in	L / 999	(3-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.08 (2-3)	Horz TL:	0 in		3	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:5-5,6-9,26.) (3:3-4,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	319 lbs	-51 lbs	-12 lbs	-51 lbs	-300 lbs
3	H Roll (Truss)	1	1.5 in	-	1.50 in	334 lbs	-	-9 lbs	-9 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 100 plf drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

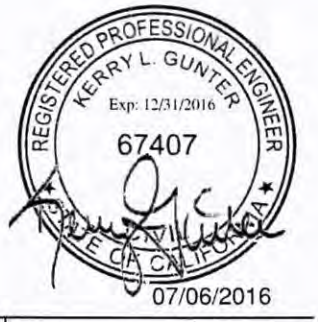
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.181	43 lbs		1-2	0.163	-307 lbs				
BC	3-1	0.288	223 lbs	(-76 lbs)							
Webs	2-3	0.082	-88 lbs								

Notes:

1) Gable webs placed at 16" o.c., U.N.O.
2) Attach structural gable blocks with 2x4 20ga plates, U.N.O.
3) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
4) This truss has been designed using the green lumber reduction factors.
5) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
6) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
7) Listed wind uplift reactions based on MWFRS Only loading.
8) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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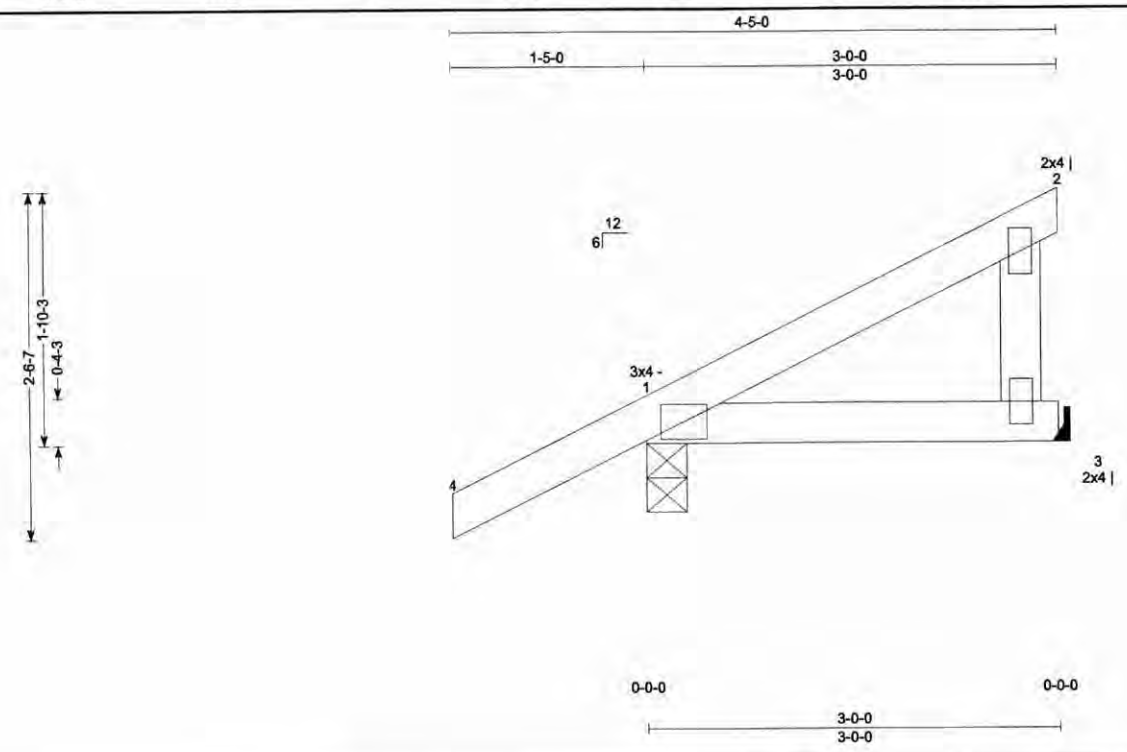
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: M2
Project Name: village bldgs
Date: 07/05/16 16:35:22
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
3-0-0	6 /12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	12 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.18 (4-1)
BC :	0.29 (3-1)
Web :	0.08 (2-3)

Deflection

		L/	(loc)	Allowed
Vert TL:	0 in	L / 999	(3-1)	L / 240
Vert LL:	0 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		3	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:3-4,5-9,90.) (3:3-4,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	319 lbs	-	-12 lbs	-12 lbs	208 lbs
3	H Roll (Truss)	1	1.5 in	-	1.50 in	334 lbs	-	-9 lbs	-9 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

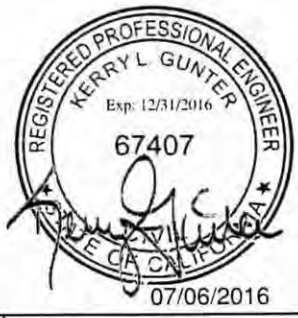
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.181	43 lbs		1-2	0.163	-307 lbs	
BC	3-1	0.288	223 lbs	(-20 lbs)				
Webs	2-3	0.082	-88 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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Simpson Strong-Tie Company

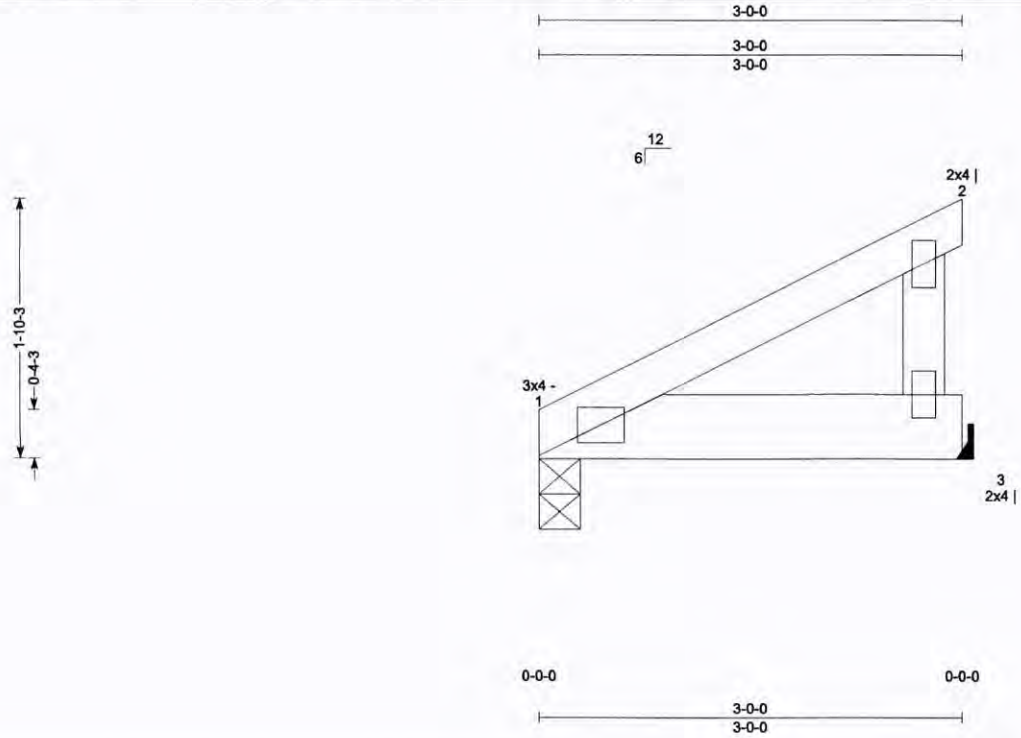
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: M3
Project Name: village bldgs
Date: 07/05/16 16:35:23
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
3-0-0	6/12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	12 lbs



Loading

Carried Loads (psf)

TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	No
D.O.L. :	125 %

CSI Summary

TC :	0.11 (1-2)
BC :	0.26 (3-1)
Web :	0.08 (2-3)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.01 in	L/999	(3-1)	L/240
Vert LL:	0 in	L/999	(3-1)	L/360
Horz TL:	0 in		3	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:5-4,1-5,0.) (2:3-4,5-9,90.) (3:3-4,5-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	406 lbs	-	-15 lbs	-15 lbs	149 lbs
3	H Roll (Truss)	1	1.5 in	-	1.50 in	465 lbs	-	-15 lbs	-15 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	3-0-0	Down	Proj	90 plf	90 plf	
Top Chd	0-0-0	3-0-0	Down	Proj	20 psf	20 psf	12 in

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	3-0-0	Down	Proj	94.5 plf	94.5 plf	
Top Chd	0-0-0	3-0-0	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	3-0-0	Down	Proj	7 psf	7 psf	12 in

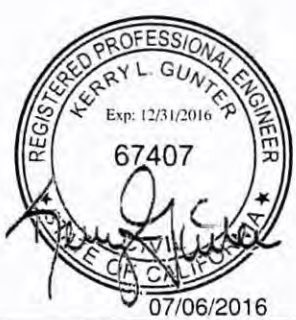
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	1-2	0.109	-311 lbs			
BC	3-1	0.256	260 lbs	(-91 lbs)		
Webs	2-3	0.079	95 lbs	(-76 lbs)		

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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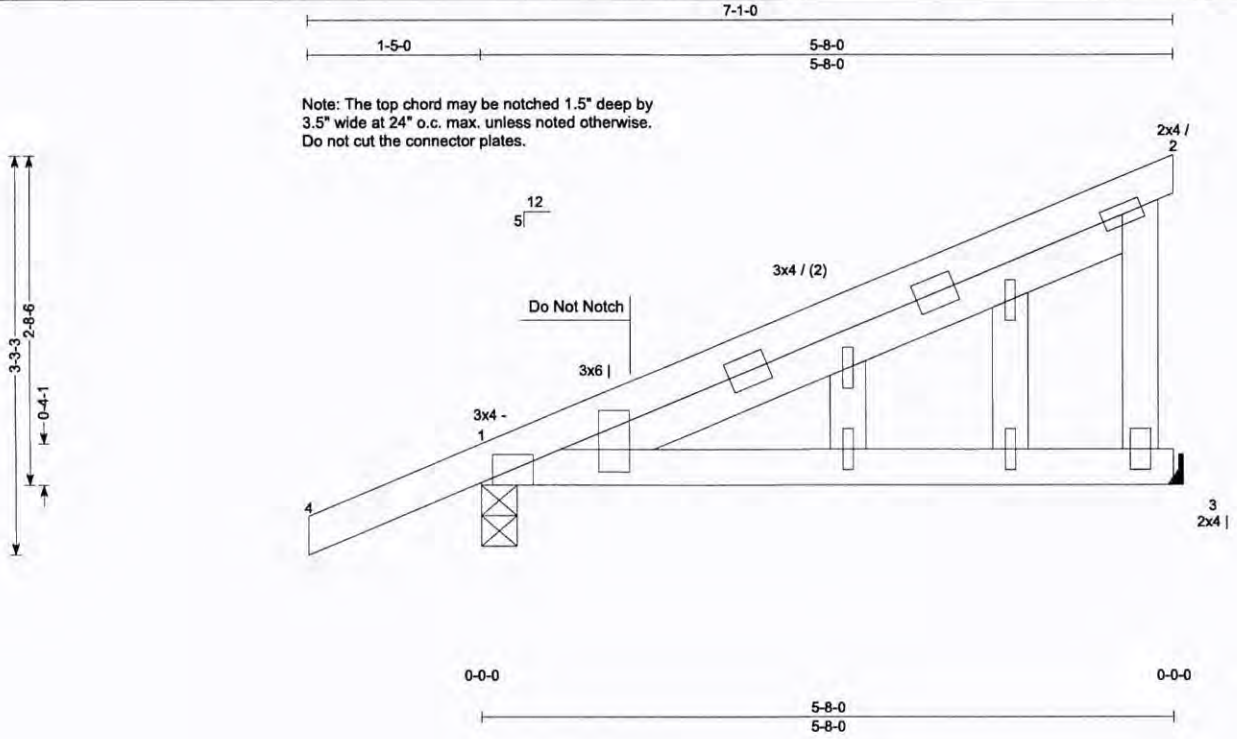
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: M4
Project Name: village bldgs
Date: 7/6/2016 10:04:05 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
5-8-0	5 /12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	30 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.22 (1-2)
BC:	0.41 (3-1)
Web:	0.18 (2-3)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.04 in	L / 999	(3-1)	L / 240
Vert LL:	0.01 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		3	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:1-1-0,0-4,90.) (2:5-0,5-14,22.) (3:3-4,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	400 lbs	-84 lbs	-8 lbs	-84 lbs	-567 lbs
3	H Roll (Truss)	1	1.5 in	-	1.50 in	382 lbs	-	-17 lbs	-17 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4
Slider	DFL #2 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 100 plf drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

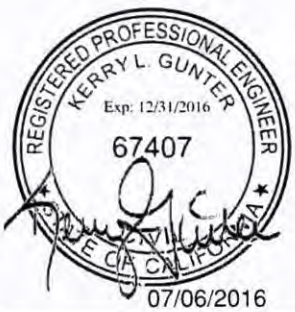
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.166	37 lbs		1-2	0.223	-789 lbs	
BC	3-1	0.409	450 lbs	(-39 lbs)				
Webs	2-3	0.180	-193 lbs					

Notes:

1) Gable webs placed at 16" o.c., U.N.O.
2) Attach structural gable blocks with 1x4 20ga plates, U.N.O.
3) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
4) This truss has been designed using the green lumber reduction factors.
5) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
6) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
7) Listed wind uplift reactions based on MWFRS Only loading.
8) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
9) This gable has been designed for a 12" (max.) rake overhang.



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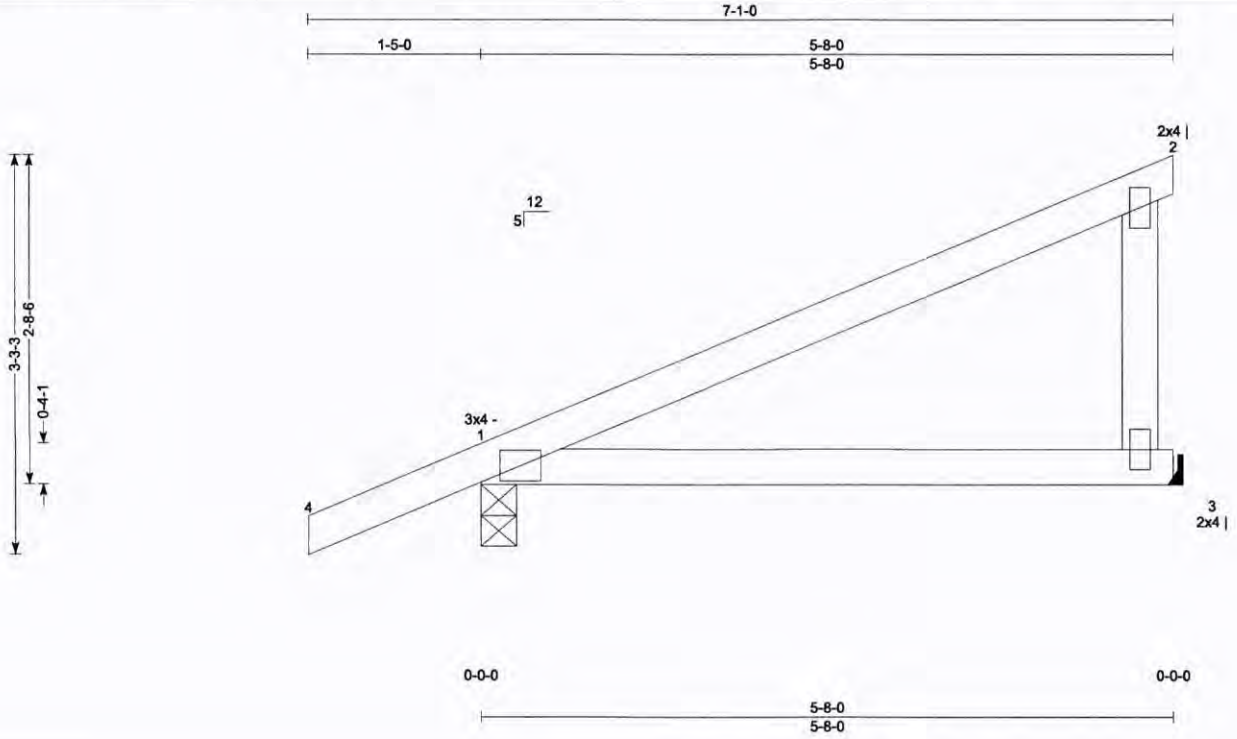
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: M5
Project Name: village bldgs
Date: 07/05/16 16:35:24
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
5-8-0	5 /12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	20 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/
	TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.35 (1-2)
BC :	0.66 (3-1)
Web :	0.18 (2-3)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.11 in	L / 598	(3-1)	L / 240
Vert LL:	0.03 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		3	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-14,2-3,0.) (2:3-4,5-2,90.) (3:3-4,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	385 lbs	-	-8 lbs	-8 lbs	254 lbs
3	H Roll (Truss)	1	1.5 in	-	1.50 in	382 lbs	-	-17 lbs	-17 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.166	37 lbs		1-2	0.345	-415 lbs	
BC	3-1	0.659	329 lbs	(-30 lbs)				
Webs	2-3	0.181	-172 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



07/06/2016

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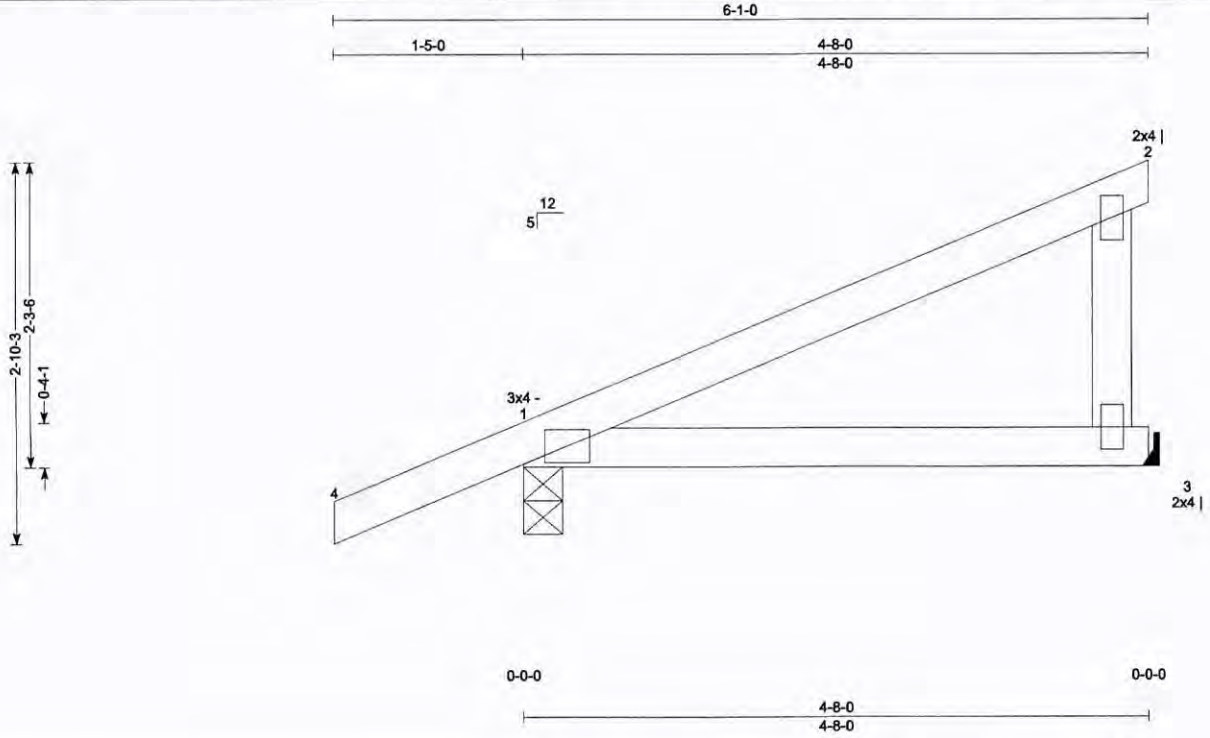
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: M6
Project Name: village bldgs
Date: 07/05/16 16:35:24
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
4-8-0	5 /12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	17 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.24 (1-2)
BC :	0.51 (3-1)
Web :	0.13 (2-3)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.04 in	L / 999	(3-1)	L / 240
Vert LL:	0.01 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		3	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-14,2-3,0.) (2:3-4,5-2,90.) (3:3-4,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Gmv Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	360 lbs	-	-10 lbs	-10 lbs	226 lbs
3	H Roll (Truss)	1	1.5 in	-	1.50 in	363 lbs	-	-14 lbs	-14 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

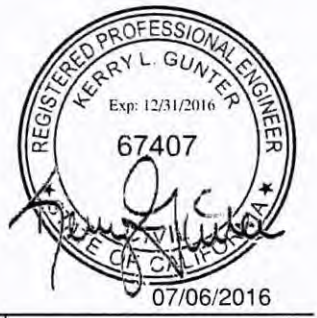
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.168	37 lbs		1-2	0.236	-381 lbs	
BC	3-1	0.509	300 lbs	(-25 lbs)				
Webs	2-3	0.132	-140 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



07/06/2016

NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company, Inc in accordance with ESR-2762 . All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

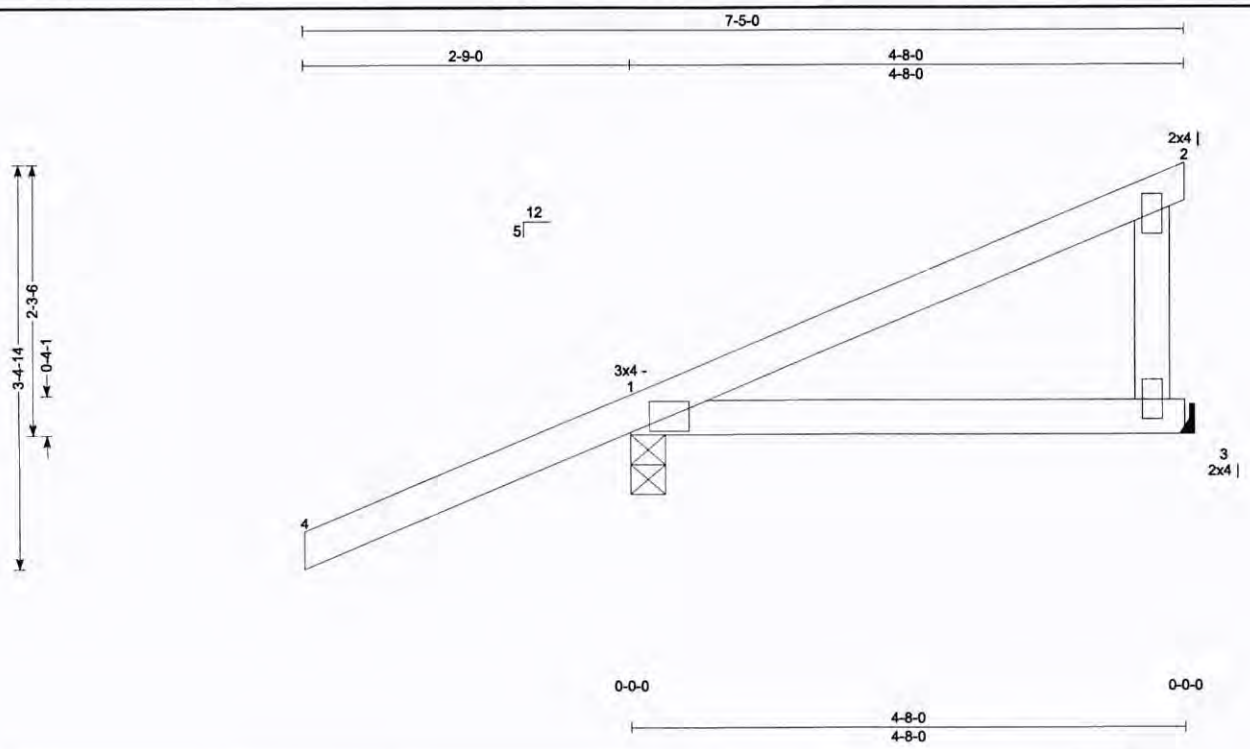
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: M7
Project Name: village bldgs
Date: 07/05/16 16:35:25
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
4-8-0	5 /12	1	2-9-0	0-0-0	0-0-0	0-0-0	1	24 in	19 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L :	125 %

CSI Summary

TC :	0.63 (4-1)
BC :	0.47 (3-1)
Web :	0.13 (2-3)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.03 in	L / 999	(3-1)	L / 240
Vert LL:	0 in UP	L / 999	(3-1)	L / 360
Horz TL:	0 in		3	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-14,2-3,0.) (2:3-4,5-2,90.) (3:3-4,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	425 lbs	-	-34 lbs	-34 lbs	269 lbs
3	H Roll (Truss)	1	1.5 in	-	1.50 in	345 lbs	-	-4 lbs	-4 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.631	72 lbs		1-2	0.611	-521 lbs		
BC	3-1	0.471	532 lbs	(-246 lbs)					
Webs	2-3	0.126	-121 lbs						

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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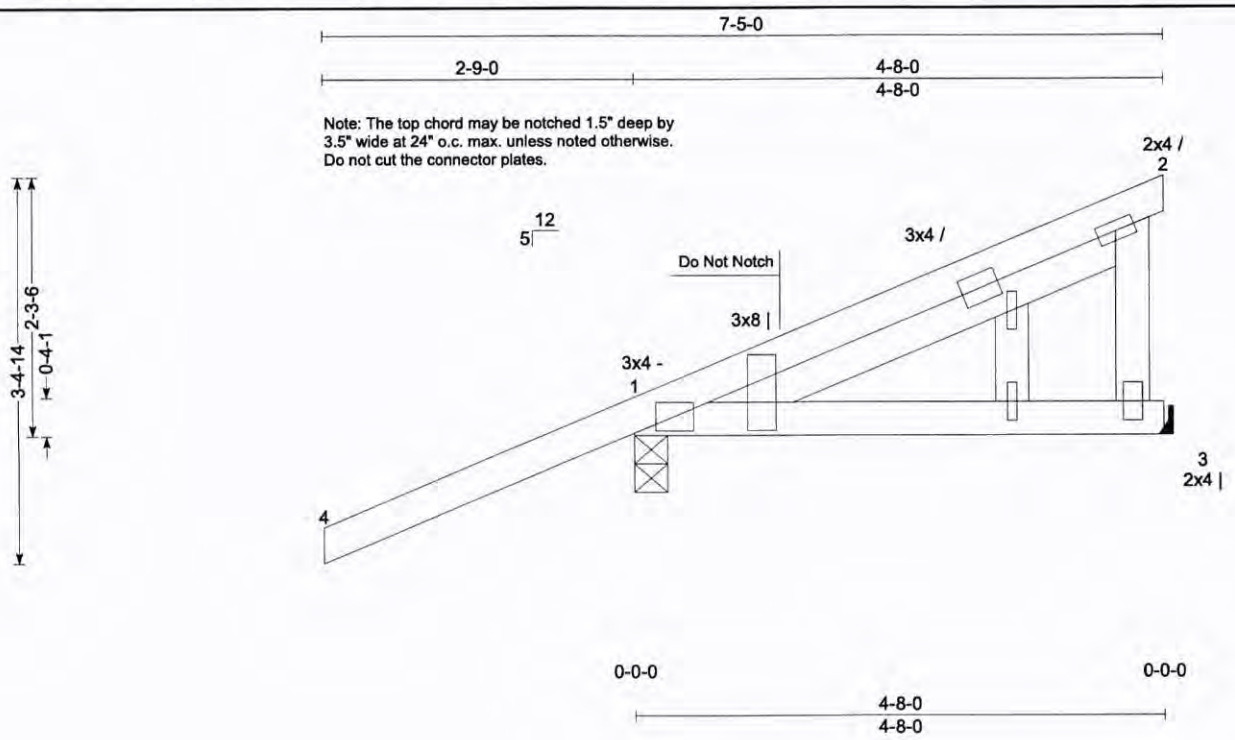
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: M7G
Project Name: village bldgs
Date: 7/6/2016 9:03:10AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
4-8-0	5/12	1	2-9-0	0-0-0	0-0-0	0-0-0	1	24 in	26 lbs



Loading

	(psf)
Load	
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.63 (4-1)
BC:	0.29 (3-1)
Web:	0.12 (2-3)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.01 in	L/999	(3-1)	L/240
Vert LL:	0 in UP	L/999	(1-1)	L/360
Horz TL:	0 in		3	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:1-1-8,0-7,90.) (2:5-0,5-14,22.) (3:3-4,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	443 lbs	-	-34 lbs	-34 lbs	269 lbs
3	H Roll (Truss)	1	1.5 in	-	1.50 in	345 lbs	-	-4 lbs	-4 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4
Slider	DFL #2 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.631	72 lbs		1-2	0.611	-539 lbs				
BC	3-1	0.285	511 lbs	(-179 lbs)							
Webs	2-3	0.121	-128 lbs								

Notes:

1) Gable webs placed at 16" o.c., U.N.O.
2) Attach structural gable blocks with 1x4 20ga plates, U.N.O.
3) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
4) This truss has been designed using the green lumber reduction factors.
5) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
6) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
7) Listed wind uplift reactions based on MWFRS Only loading.
8) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
9) This gable has been designed for a 12" (max.) rake overhang.



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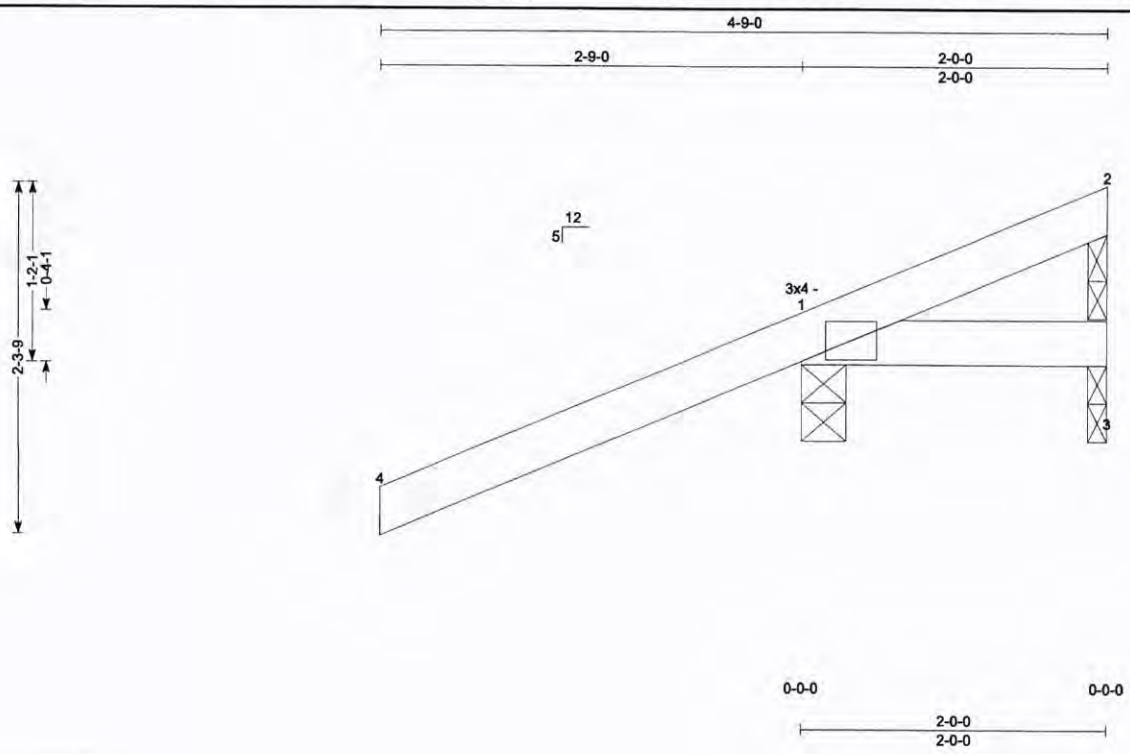
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: M7S
Project Name: village bldgs
Date: 07/05/16 16:35:26
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	5 /12	1	2-9-0	0-0-0	0-0-0	0-0-0	1	24 in	9 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.63 (4-1)
BC :	0.18 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.01 in UP	L / 999	(3-1)	L / 240
Vert LL:	0 in UP	L / 999	(3-1)	L / 360
Horz TL:	0 in		3	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-14,2-3,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	398 lbs	-	-54 lbs	-54 lbs	163 lbs
3	H Roll (Wall)	1	1.5 in	Douglas-Fir-Larch	1.50 in	240 lbs	-41 lbs	-17 lbs	-41 lbs	0 lbs
2	H Roll (Wall)	1	1.5 in	Douglas-Fir-Larch	1.50 in	64 lbs	-6 lbs	-3 lbs	-6 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

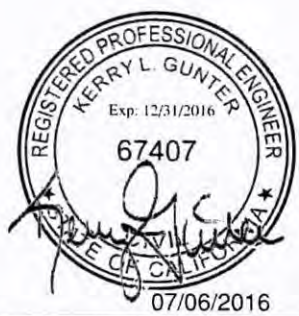
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.631	72 lbs		1-2	0.531	-361 lbs		
BC	3-1	0.182	501 lbs	(-277 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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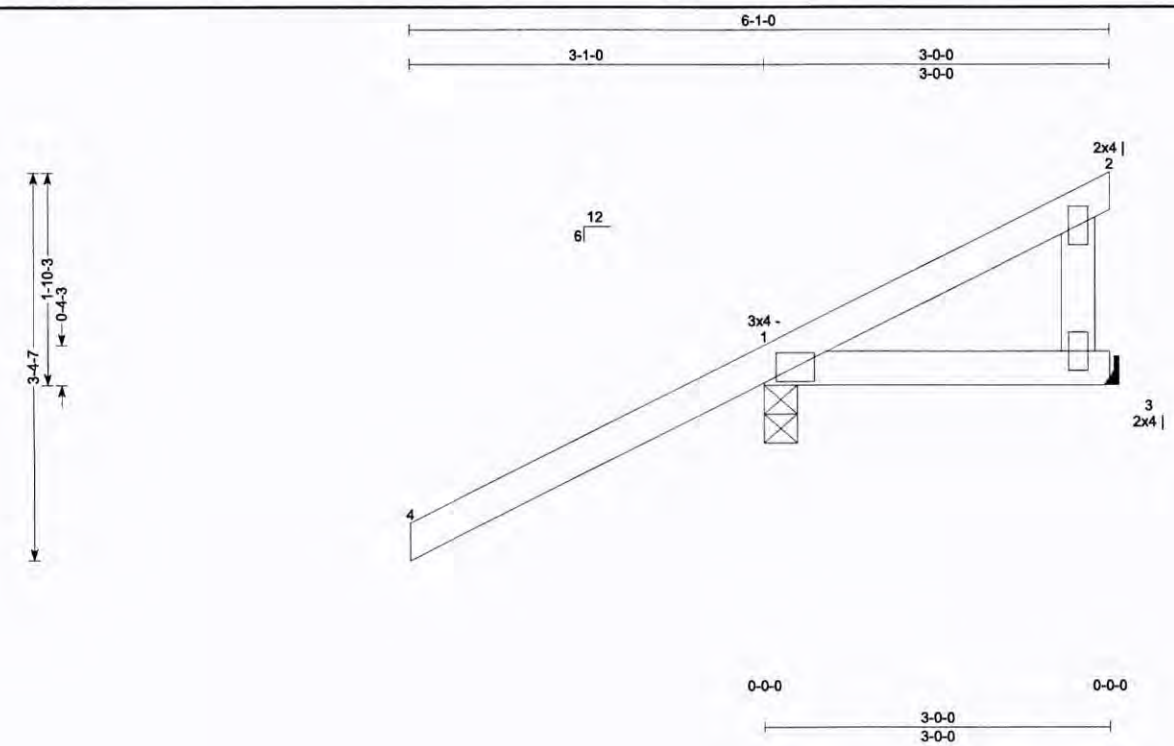
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: M8
Project Name: village bldgs
Date: 07/05/16 16:35:26
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
3-0-0	6 /12	1	3-1-0	0-0-0	0-0-0	0-0-0	1	24 in	15 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.85 (4-1)	Vert TL:	0.02 in	L / 999	(3-1)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.30 (3-1)	Vert LL:	0.01 in UP	L / 999	(3-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.07 (2-3)	Horz TL:	0 in		3	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:3-4,5-9,90.) (3:3-4,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	439 lbs	-	-53 lbs	-53 lbs	271 lbs
3	H Roll (Truss)	1	1.5 in	-	1.50 in	295 lbs	-	-3 lbs	-3 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.847	94 lbs		1-2	0.766	-523 lbs				
BC	3-1	0.295	674 lbs	(-366 lbs)							
Webs	2-3	0.069	-59 lbs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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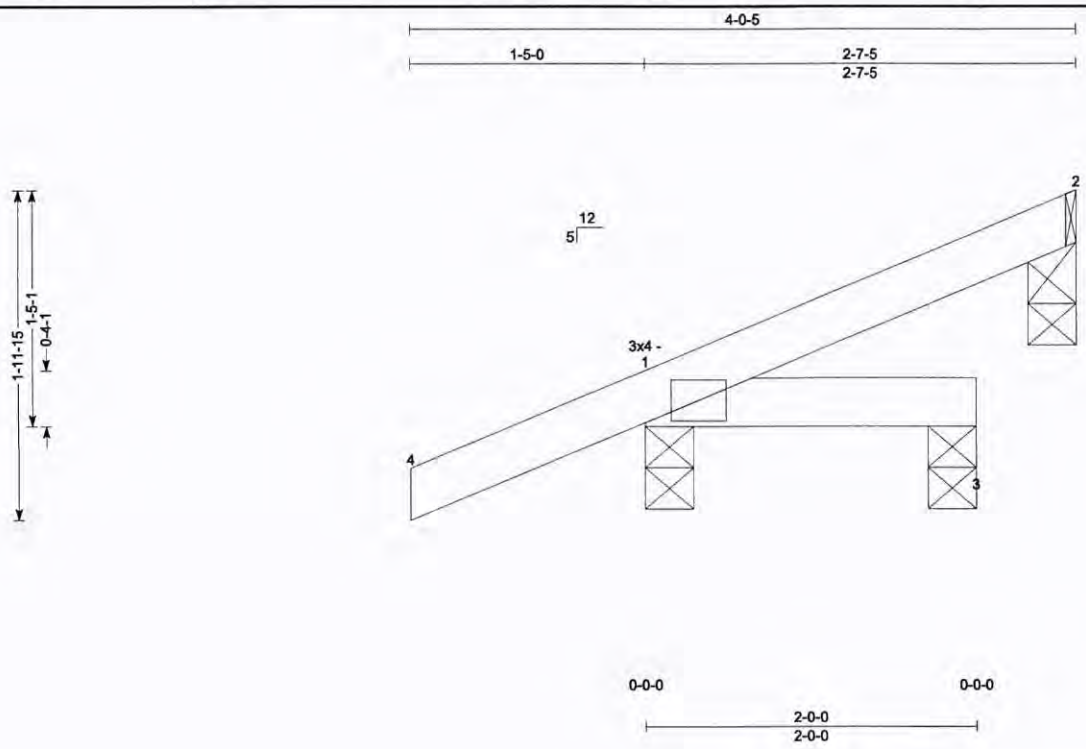
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ1
Project Name: village bldgs
Date: 07/05/16 16:35:27
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	5/12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	8 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.17 (4-1)	Vert TL:	0 in	L/999	(3-1)	L/240
TCLL :	20		TPI 1-2007	BC :	0.20 (3-1)	Vert LL:	0 in	L/999	(3-1)	L/360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.00 (1)	Horz TL:	0 in		2	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-14,2-3,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	295 lbs	-	-18 lbs	-18 lbs	132 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	264 lbs	-	-	-	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	60 lbs	-	-12 lbs	-12 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

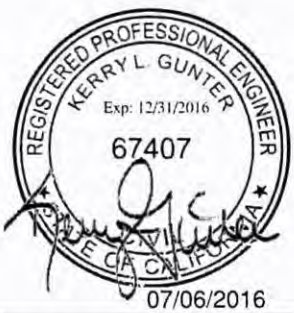
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.168	37 lbs		1-2	0.147	-292 lbs		
BC	3-1	0.205	226 lbs	(-14 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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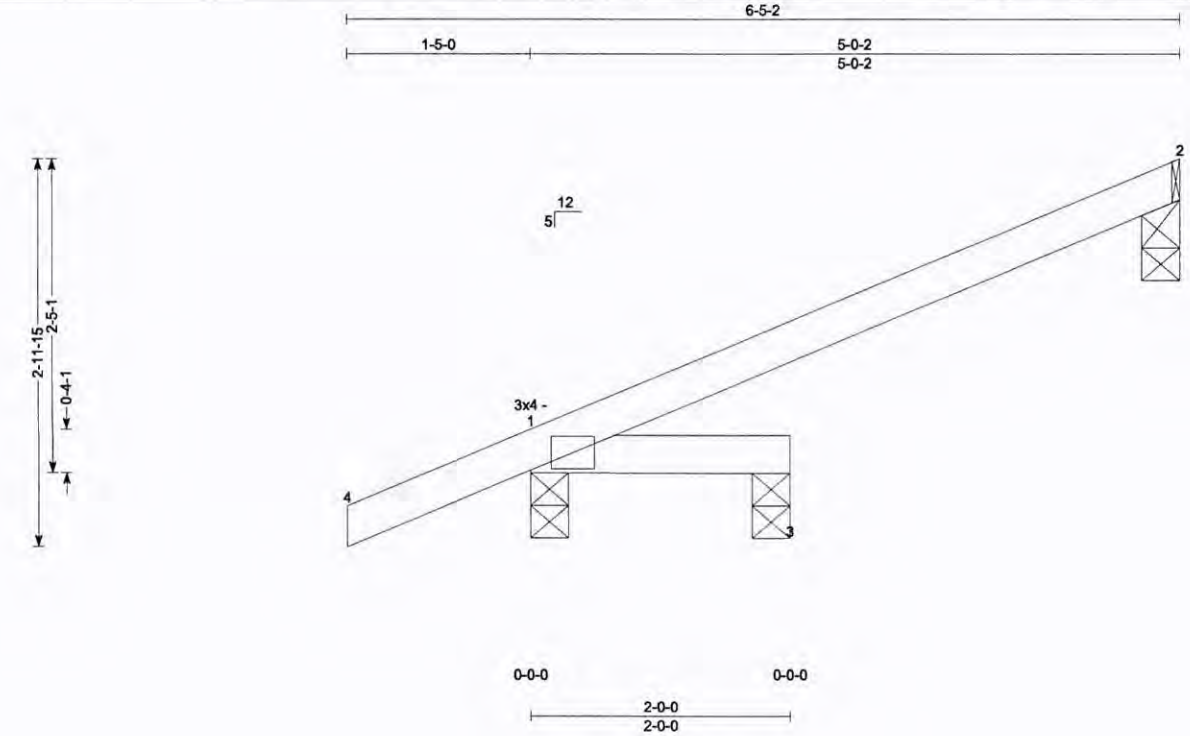
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ2
Project Name: village bldgs
Date: 07/05/16 16:35:27
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	5/12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	12 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.27 (1-2)	Vert TL:	0.01 in	L / 999	(3-1)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.30 (3-1)	Vert LL:	0 in	L / 999	(3-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.00 (1)	Horz TL:	0 in		2	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-14,2-3,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Gmv Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	306 lbs	-	-11 lbs	-11 lbs	183 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	297 lbs	-	-11 lbs	-11 lbs	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	124 lbs	-	-27 lbs	-27 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

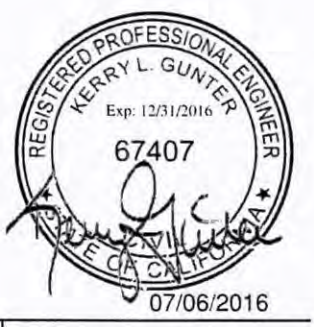
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.168	37 lbs		1-2	0.265	-306 lbs		
BC	3-1	0.302	238 lbs	(-21 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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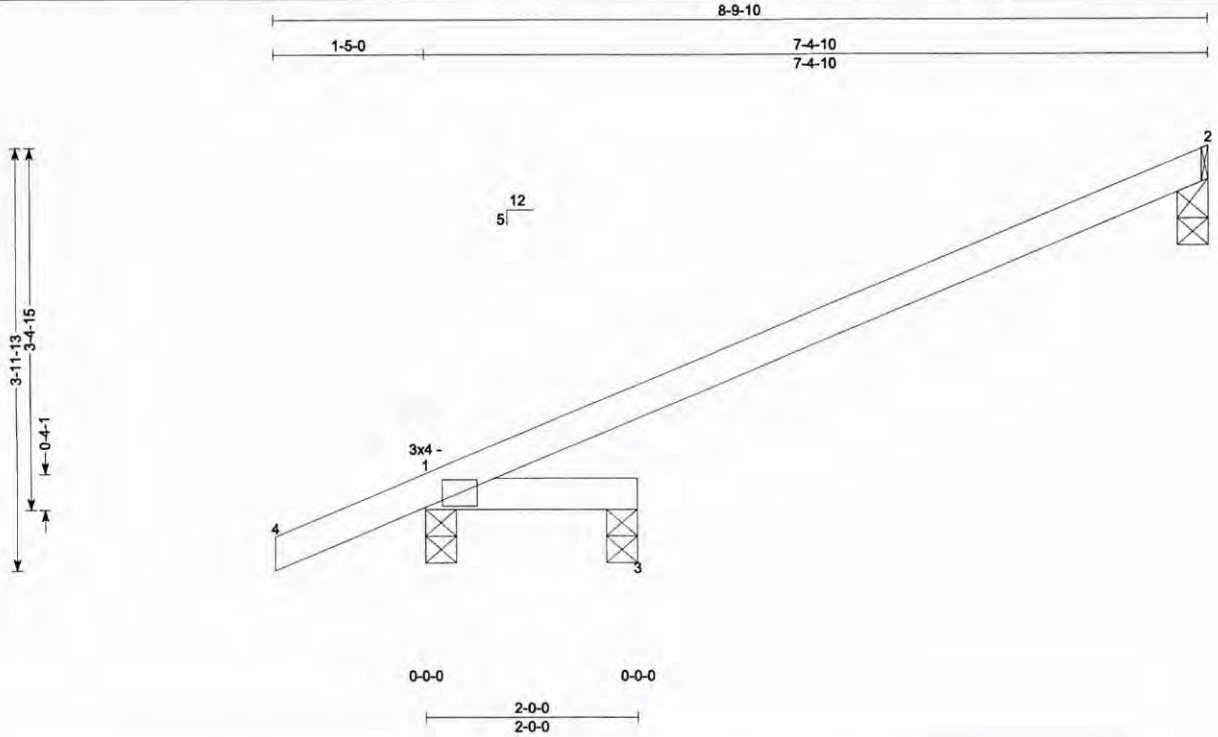
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ3
Project Name: village bldgs
Date: 07/05/16 16:35:28
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	5/12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	15 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.72 (1-2)
BC :	0.53 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.03 in	L / 636	(3-1)	L / 240
Vert LL:	0.01 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-14,2-3,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	293 lbs	-	-	-	233 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	350 lbs	-	-40 lbs	-40 lbs	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	185 lbs	-	-41 lbs	-41 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

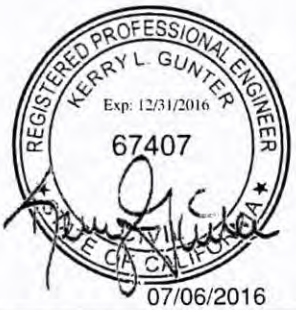
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.168	37 lbs		1-2	0.723	-289 lbs		
BC	3-1	0.530	223 lbs	(-15 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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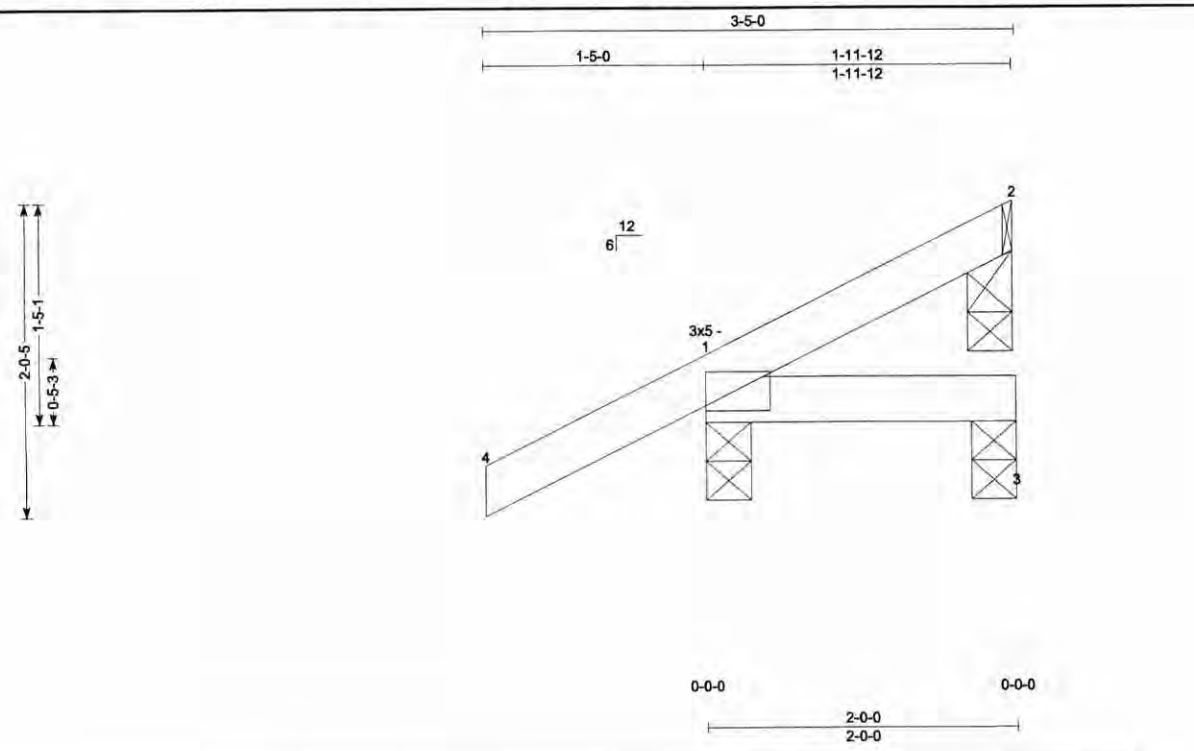
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ4
Project Name: village bldgs
Date: 07/05/16 16:35:28
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	6 / 12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	8 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.18 (4-1)
BC :	0.20 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0 in	L / 999	(3-1)	L / 240
Vert LL:	0 in UP	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Gnrv Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	311 lbs	-	-17 lbs	-17 lbs	148 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	50 lbs	-	-9 lbs	-9 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	259 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

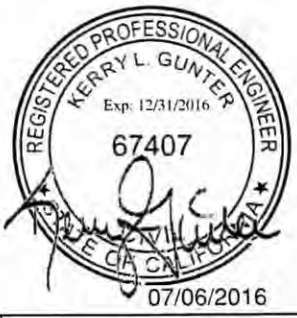
Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.181	43 lbs		1-2	0.152	-267 lbs	
BC	3-1	0.195	152 lbs	(-27 lbs)				

Webs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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Simpson Strong-Tie Company

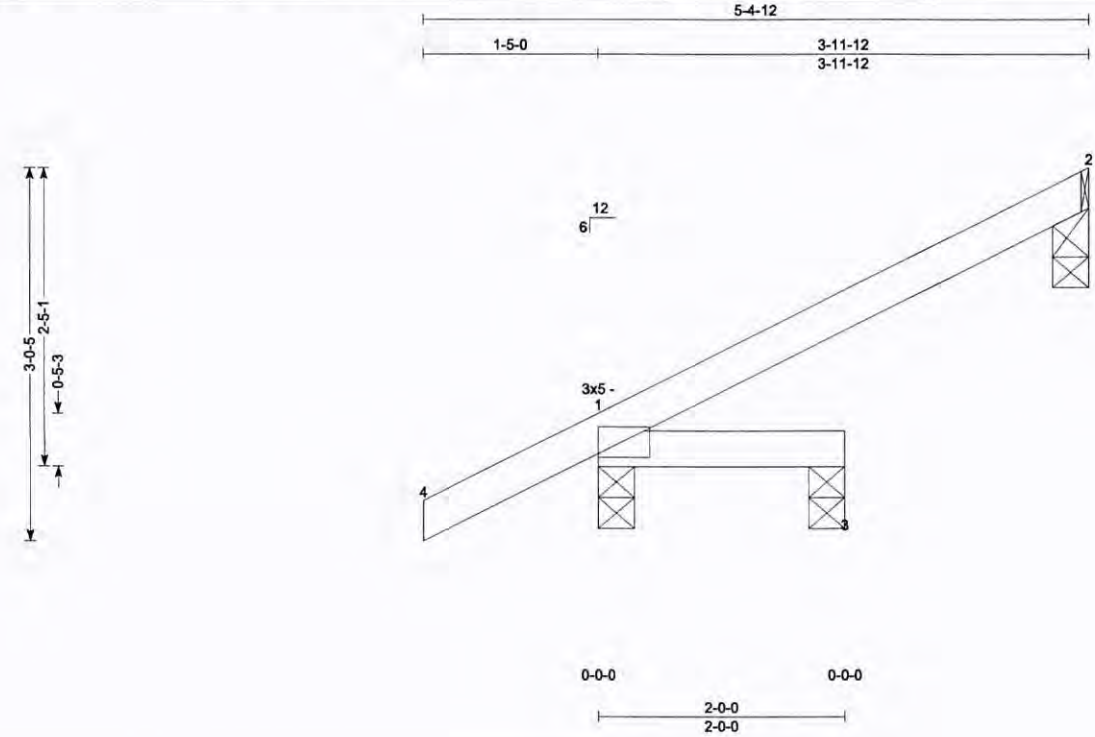
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ5
Project Name: village bldgs
Date: 07/05/16 16:35:29
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	6 /12	1	1-5-0	0-0-0	0-0-0	0-0-0	1	24 in	11 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.18 (4-1)
BC :	0.26 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.01 in	L / 999	(3-1)	L / 240
Vert LL:	0 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	330 lbs	-	-10 lbs	-10 lbs	199 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	276 lbs	-	-3 lbs	-3 lbs	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	102 lbs	-	-26 lbs	-26 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

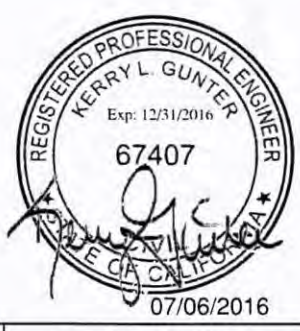
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.181	43 lbs		1-2	0.171	-289 lbs		
BC	3-1	0.257	166 lbs	(-46 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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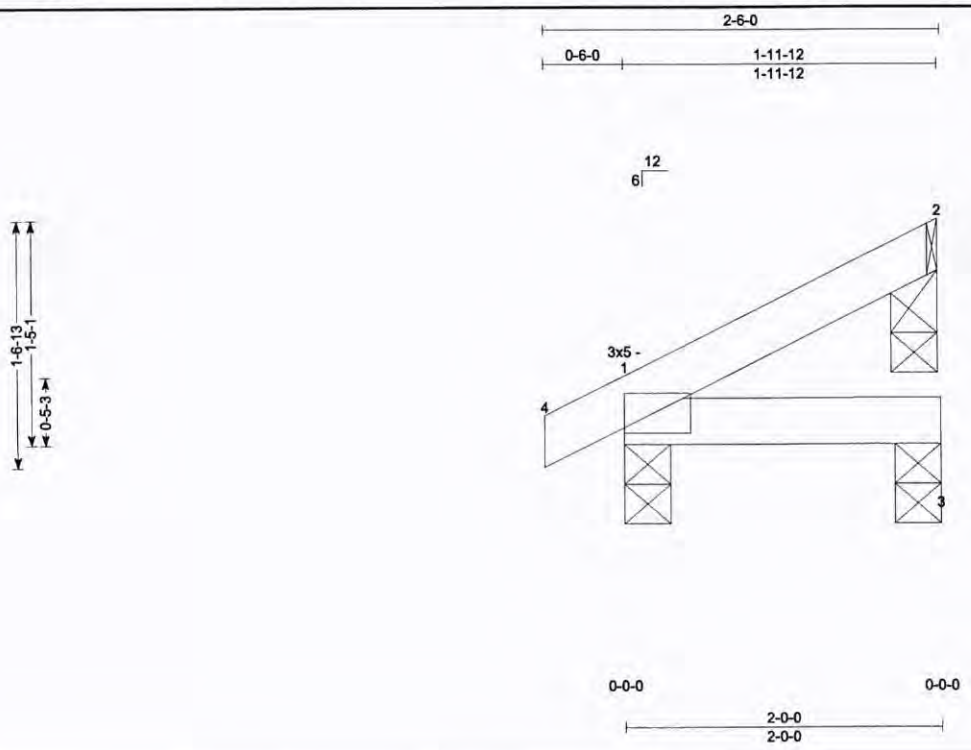
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ6
Project Name: village bldgs
Date: 07/05/16 16:35:29
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	6 / 12	1	0-6-0	0-0-0	0-0-0	0-0-0	1	24 in	6 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.10 (1-2)
BC :	0.21 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0 in	L / 999	(3-1)	L / 240
Vert LL:	0 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	273 lbs	-	-	-	109 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	56 lbs	-	-13 lbs	-13 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	266 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.023	15 lbs		1-2	0.102	-277 lbs	
BC	3-1	0.208	180 lbs	(-71 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
Exp: 12/31/2016
67407
STATE OF CALIFORNIA
07/06/2016

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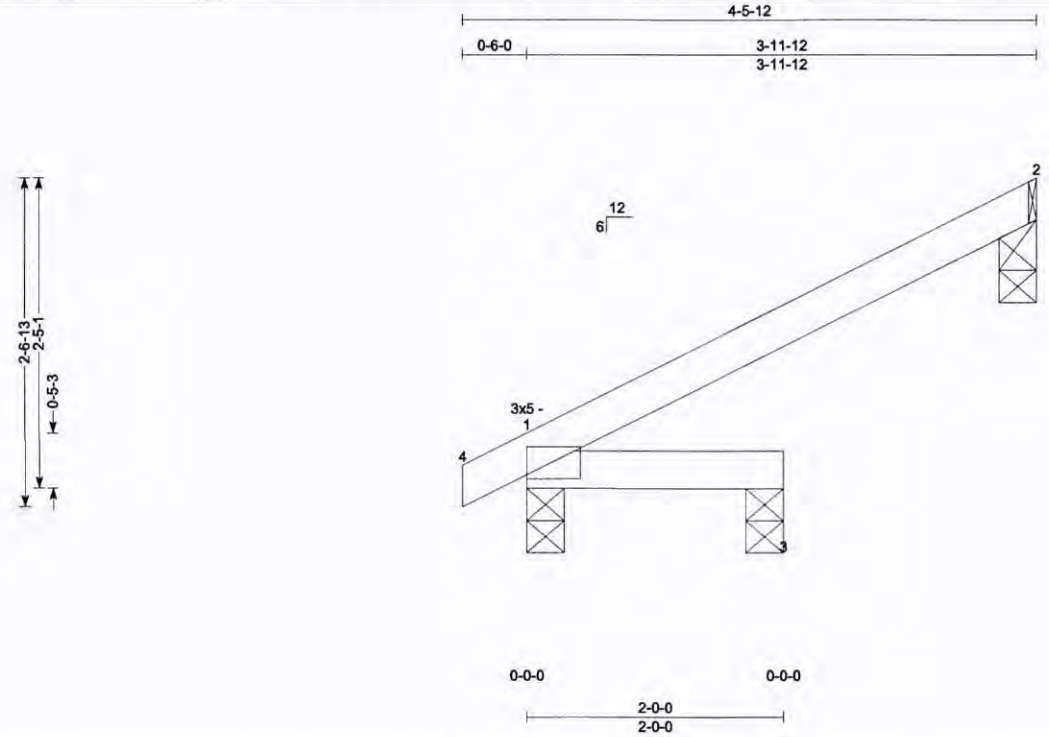
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ7
Project Name: village bldgs
Date: 07/05/16 16:35:30
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	6 /12	1	0-6-0	0-0-0	0-0-0	0-0-0	1	24 in	9 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.16 (1-2)
BC :	0.27 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.01 in	L / 999	(3-1)	L / 240
Vert LL:	0 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	294 lbs	-	-	-	162 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	285 lbs	-	-9 lbs	-9 lbs	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	106 lbs	-	-27 lbs	-27 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

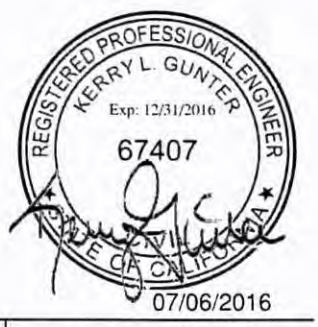
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.023	15 lbs		1-2	0.159	-301 lbs		
BC	3-1	0.275	196 lbs	(-116 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company, Inc in accordance with ESR-2762 . All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

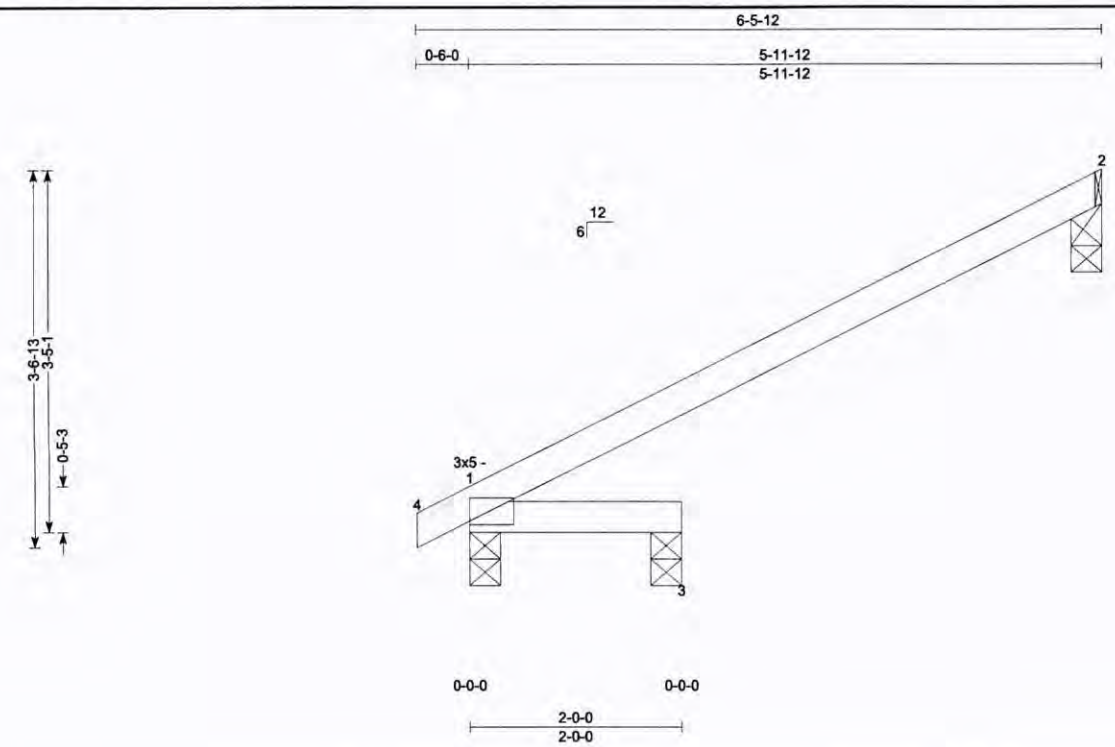
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ8
Project Name: village bldgs
Date: 07/05/16 16:35:30
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	6 /12	1	0-6-0	0-0-0	0-0-0	0-0-0	1	24 in	12 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.43 (1-2)
BC :	0.39 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.02 in	L / 856	(3-1)	L / 240
Vert LL:	0.01 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-13,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	295 lbs	-	-	-	212 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	319 lbs	-	-30 lbs	-30 lbs	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	157 lbs	-	-40 lbs	-40 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

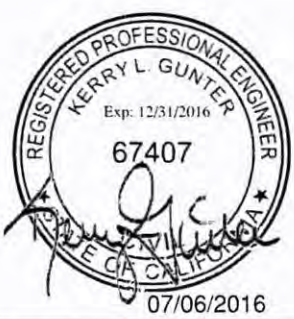
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.023	15 lbs		1-2	0.432	-302 lbs		
BC	3-1	0.388	197 lbs	(-142 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company, Inc in accordance with ESR-2762 . All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

SIMPSON Strong-Tie

BEARING BLOCK DETAIL FOR SINGLE-PLY TRUSS - BLOCK ON ONE FACE

TD-BRG-0001A

Date: 06/11/2014 | Rev: A | Pg. 1 of 1

NOTES:

1. This detail provides information for attaching a bearing block to one face of a single-ply truss to increase the allowable reaction of the truss.
2. Refer to the individual truss design drawing for the bottom chord size and other design information.
3. The bearing blocks must be min. 16" long and the same size, species and grade as the truss bottom chord.
4. If the truss bottom chord species is different than the bearing material, the lower of the listed reactions for Details A-C shall apply. Values listed for SP do not apply to Non-Dense (ND) grades.

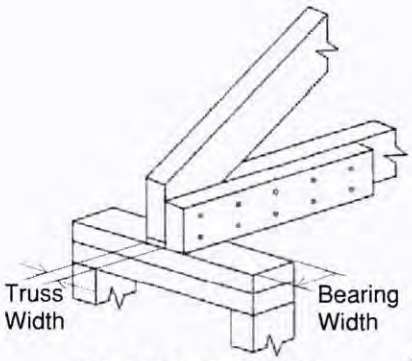


Fig. 1 Bearing Block at End of Truss

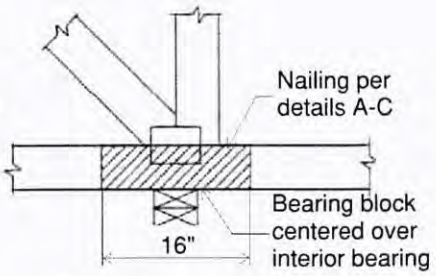
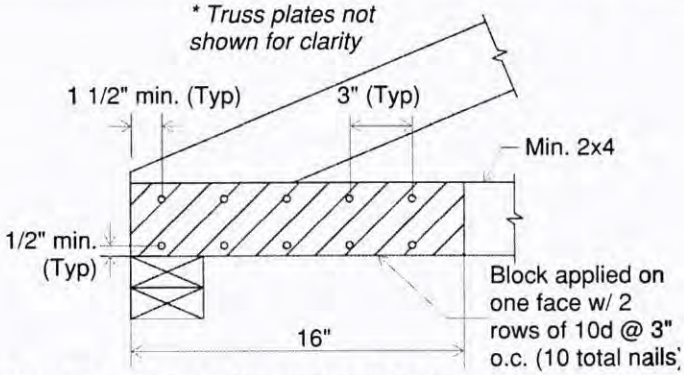
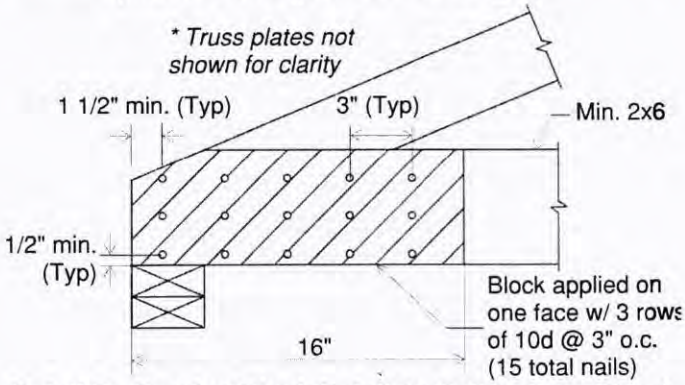


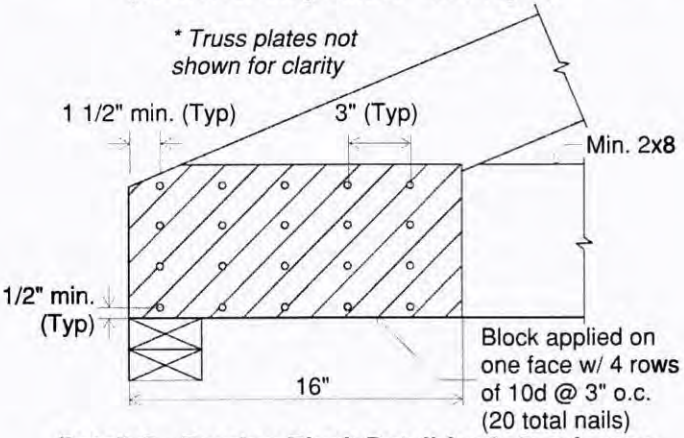
Fig. 2 Bearing Block at Interior Bearing



Detail A - Bearing Block Detail for 2x4 Bottom Chord *(Interior Bearing Similar - See Fig. 2)*



Detail B - Bearing Block Detail for 2x6 Bottom Chord *(Interior Bearing Similar - See Fig. 2)*



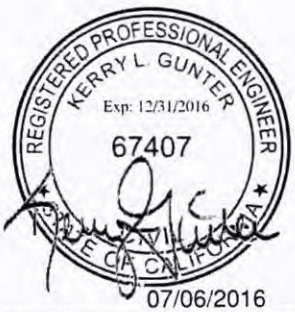
Detail C - Bearing Block Detail for 2x8 or Larger Bottom Chord *(Interior Bearing Similar - See Fig. 2)*

Maximum Reactions for Bearing Block Details A-C (Single-Ply Truss with Bearing Block on One Face)

Detail	Bottom Chord (BC) Size	Lumber Species	Max. Reaction	
			3.5" Brg Width	5.5" Brg Width
A	2x4	SP	4185 lbs.	5880 lbs.
		DF	4395 lbs.	6270 lbs.
		HF	3090 lbs.	4305 lbs.
		SPF	3175 lbs.	4450 lbs.
B	2x6	SP	4795 lbs.	6490 lbs.
		DF	4955 lbs.	6830 lbs.
		HF	3575 lbs.	4790 lbs.
		SPF	3645 lbs.	4920 lbs.
C	2x8 or larger	SP	5405 lbs.	7100 lbs.
		DF	5510 lbs.	7385 lbs.
		HF	4060 lbs.	5275 lbs.
		SPF	4115 lbs.	5390 lbs.

DETAIL LIMITATIONS:
Load Duration Factor: 1.15

Nail Dimension
10d = 3" x 0.131"



07/06/2016

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SIMPSON Strong-Tie

INDIVIDUAL WEB REINFORCEMENT DETAIL

D-WEBREINFORCE

Date: 06/11/2014 | Rev: A | Pg. 1 of 1

NOTES:

1. This detail provides web reinforcement options that may be used as an alternative to continuous lateral restraint (CLR) when installing CLRs in combination with diagonal bracing is not practical or desired.
2. Refer to the truss design drawing for web lateral restraint requirements. A ⊠ on the truss design drawing indicates that continuous lateral restraint is required at the locations shown (either at the midpoint or 1/3-points of the web member). Refer to the tables below for acceptable web reinforcement options that may be used in place of one or two rows of CLR.
3. This detail may not be used to substitute CLRs for T-, L-, I- or scab reinforcements that are specified on the truss design drawing.
4. T-, L-, I- and scab web reinforcements must be the same or better species and grade of the web member as indicated on the truss design drawing.
5. All reinforcements must extend to within 6" of each end of the web member.
6. This detail does not apply to single-ply webs that exceed 14' in length.



1 Row of CLR @ Web Mid-point



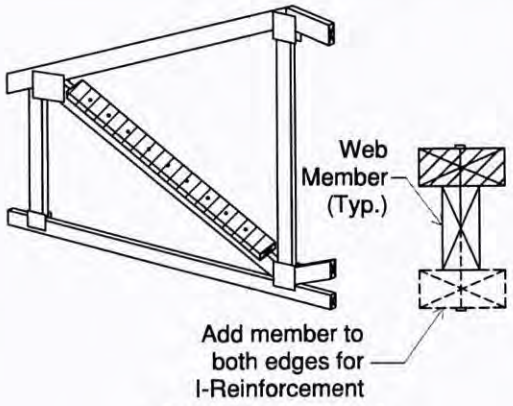
2 Rows of CLRs @ Web 1/3 points

WEB REINFORCEMENT OPTIONS FOR SINGLE-PLY TRUSSES [1]						
Specified Web Member Lateral Restraint (CLRs)	Web Member Size	Acceptable Web Reinforcement Substitutions - Type & Size				Reinforcement-to-Web Connection Requirements
		T-	L-	Scab	I-	
1 Row @ Mid-point	2x4	2x4	2x4	2x4	---	16d gun nails @ 6" on-center
	2x6	2x6	2x6	2x6	---	
	2x8	2x8	2x8	2x8	---	
2 Row @ 1/3-points	2x4	No substitutions allowed			2-2x4	
	2x6				2-2x6	
	2x8				2-2x8	

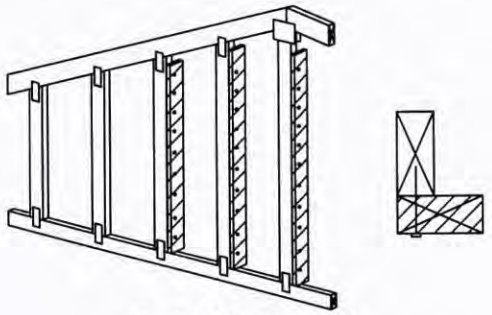
WEB REINFORCEMENT OPTIONS FOR 2-PLY TRUSSES [2]						
Specified Web Member Lateral Restraint (CLRs)	Web Member Size	Acceptable Web Reinforcement Substitutions - Type & Size				Reinforcement-to-Web Connection Requirements
		T-	L-	Scab	I-	
1 Row @ Mid-point	2x4	2x4	2x4	---	---	16d gun nails @ 6" on-center
	2x6	2x6	2x6	---	---	
	2x8	2x8	2x8	---	---	
2 Row @ 1/3-points	2x4	No substitutions allowed			2-2x4	
	2x6				2-2x6	
	2x8				2-2x8	

1. The maximum allowable web length for single-ply trusses is 14'.
2. For 2-ply trusses, the reinforcement must be nailed to both plies of the web with the nailing pattern specified in the table.
3. For the scab reinforcement, 2 rows of 10d gun nails @ 6" o.c may be used in place of 16d gun nails for attaching the reinforcement to the web.
4. For I-reinforcement, attach each 2x_member to opposite edges of the web using the nailing pattern specified in the table.

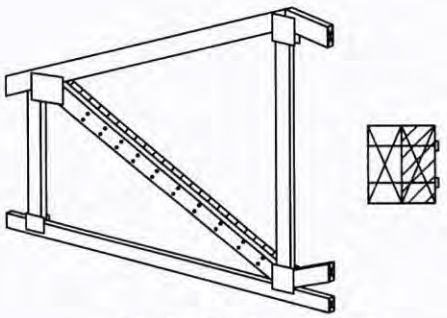
Nail Dimension
16d = 3.5" x 0.131"
10d = 3" x 0.120"



T- Reinforcement
(I-Reinforcement similar)



L- Reinforcement



Scab Reinforcement

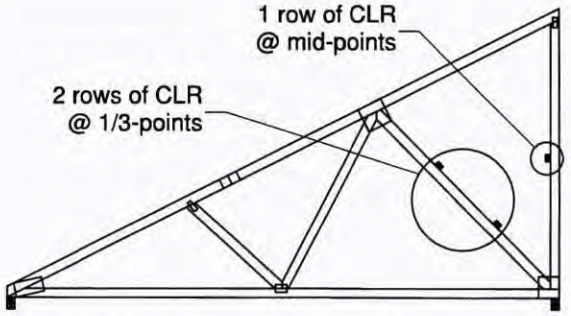
REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
Exp: 12/31/2016
67407
STATE OF CALIFORNIA
07/06/2016

This detail is to be used only for the application and conditions indicated herein, and its suitability for any particular truss/project shall be verified (by others). This detail is not intended to supersede any project-specific details provided in the Construction Documents. Truss configurations shown are for illustration only. Refer to the truss design drawing(s) accompanying this detail for specific truss design information. Simpson Strong-Tie Inc. is not responsible for any deviations from this design.

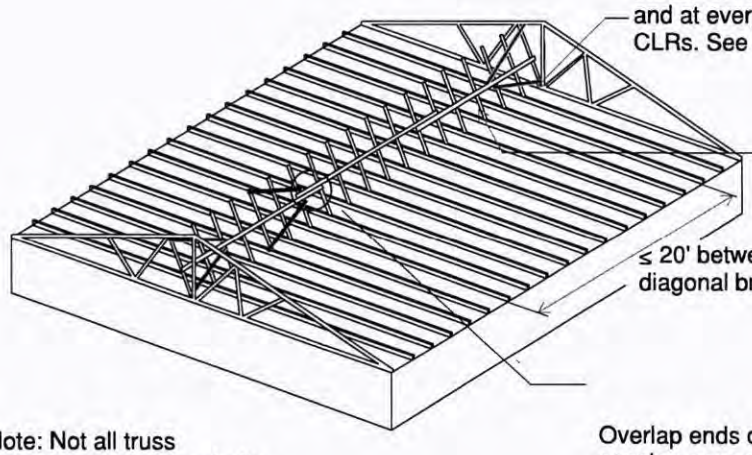
LATERAL RESTRAINT & DIAGONAL BRACING DETAILS FOR WEB MEMBERS

D-WEBCLRBRACE

This detail provides information for laterally restraining and bracing web members to prevent lateral buckling using continuous lateral restraints (CLRs) in combination with diagonal bracing. In addition to the CLRs indicated on the truss design drawing, diagonal bracing must be installed as indicated in this detail and BSCI-B3. See WEBREINFORCE for web reinforcement options that may be used as an alternative to this detail when installing CLRs and diagonal bracing is not practical or desired. Properly attached full-length sheathing satisfies (may replace) any bracing requirements specified for end vertical webs. Refer to the Construction Documents for additional bracing requirements.

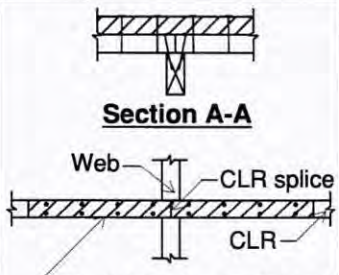


WEB MEMBERS WITH LATERAL RESTRAINT



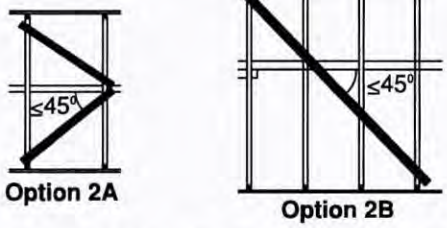
Note: Not all truss members shown for clarity.

Overlap ends of CLRs at least one truss spacing or use splice detail (see Detail 1)



Detail 1 - CLR Splice

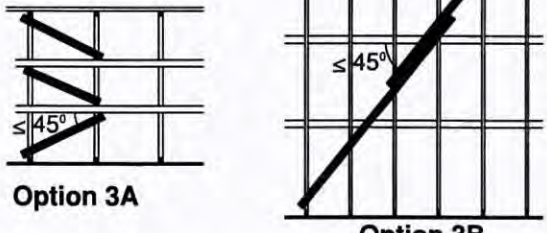
For webs with one row of CLRs, diagonal bracing shall be installed using Option 2A or 2B. Attach diagonal braces to each truss with min. 2-10d nails.



Option 2A Option 2B

Detail 2 - Diagonal Bracing for 1 Row of CLRs

For webs with 2 rows of CLRs, diagonal bracing shall be installed using Option 3A or 3B. Attach diagonal braces to each truss with min. 2-10d nails.



Option 3A Option 3B

Detail 3 - Diagonal Bracing for 2 Rows of CLRs

DETAIL LIMITATIONS:

1. Restraint and Bracing Material min. 2x4 stress graded lumber.
2. This detail does not address permanent building stability bracing to resist lateral forces acting on the building.
3. This detail shall not supersede any project-specific truss member permanent bracing design for the roof framing structural system.

Nail Dimensions:
10d = 3" x 0.128"



07/06/2016

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Component Solutions™ Important Information & General Notes

Symbols and Nomenclature

5x7 Indicates the plate size; the first digit is the plate width (perpendicular to the slots) and the second digit is the plate length (parallel to the slots).

5x7-18 Indicates the plate is 18 ga.

**- | / ** These symbols, which follow the truss plate size, designate the required direction of the slots in the connector plate.

- Plates with this symbol next to it must be installed with a solid section of steel (area between the slots) directly over the joint.

10-4-3 Dimensions are shown in feet-inches-sixteenths (for this example the dimension is **10'-4 $^{3}/_{16}$"**).



Joints are numbered clockwise around the truss starting at the left end. Chords and webs are identified using their end joint numbers (e.g., TC 2-3).


When this symbol is shown, lateral restraint is required on the member near the location indicated and may be on either edge of the member. See Note 3 under Handling, Installing, Restraint & Bracing for more information.


Truss-to-wall (or other structural support) connection. Trusses must bear completely on all supports. When the species of bearing material is shown on the TDD, it indicates that the perpendicular-to-grain resistance of the material has been checked. The Building Designer is responsible for all other bearing design considerations.


Truss-to-Structural Element Connection. The design of the Structural Element and the connection of the Truss to the Structural Element is by others.


Truss-to-Truss Connection, which may be a hanger or other structural connection (e.g., toe-nail) that has adequate capacity to resist the max. reactions and uplifts shown in the Reaction Summary on the TDD.

Note: These symbols are for graphical interpretation only; they are not intended to give any indication of the geometry requirements of the actual item (i.e., restraint, bearing, Structural Element, hanger, etc.) that is represented.

Materials and Fabrication

1. Design assumes truss is manufactured in accordance with the TDD and the quality criteria in ANSI/TPI 1 Chapter 3, unless more restrictive criteria are part of the contract specifications.
2. Unless specifically stated, lumber shall not exceed 19% moisture content at time of fabrication or in service.
3. Design is not applicable for use with fire retardant, preservative treated or green lumber unless specifically stated on the TDD.
4. Plate type, size, orientation and location indicated are minimum plating requirements. Plates shall be embedded on both faces of the truss at each joint.
5. Truss plates shall be centered on the joint unless otherwise specified by the plate offsets on the TDD or joint details.

General Notes

1. Each Truss Design Drawing (TDD) provided with this sheet has been prepared in conformance with ANSI/TPI 1. Refer to ANSI/TPI 1 Chapter 2 for definitions of all capitalized terms and for the responsibilities of all parties involved, which include but are not limited to the responsibilities listed on this sheet.
2. TDDs should not be assumed to be to scale.
3. The Contractor and Building Designer shall review and approve the Truss Submittal Package.
4. The suitability and use of the component depicted on the TDD for any particular building design is the responsibility of the Building Designer.
5. The Building Designer is responsible for the anchorage of the truss at all bearing locations as required to resist uplift, gravity and lateral loads, and for all Truss-to-Structural Element connections except Truss-to-Truss connections.
6. The Building Designer shall ensure that the supporting structure can accommodate the vertical and/or horizontal truss deflections.
7. Unless specifically stated otherwise, each Design assumes trusses will be adequately protected from the environment, including not being used in locations where the sustained temperature is greater than 150° F.
8. Trusses are designed to carry loads within their plane. Any out-of-plane loads must be resisted by the Permanent Building Stability Bracing.
9. Design dead loads must account for all materials, including self-weight (if the word "rake" follows the specified dead load on the TDD that indicates the software applied a pitch increase).
10. Trusses installed with roof slopes less than 0.25/12 may experience (but are not designed for) ponding. The Building Designer must ensure that adequate drainage is provided to prevent ponding.

Handling, Installing, Restraint & Bracing

1. The Contractor is responsible for the proper handling, erection, restraint and bracing of the Trusses. In lieu of job-specific details, refer to BCSI.
2. ANSI/TPI 1 stipulates that for trusses spanning 60' or greater, the Owner shall contract with any Registered Design Professional for the design and inspection of the temporary and permanent truss restraint and bracing. Simpson Strong-Tie is not responsible for providing these services.
3. Trusses require permanent lateral restraint of chords and certain web members (when indicated) at the locations or intervals indicated on the TDD. This shall be accomplished in accordance with: standard industry lateral restraint/bracing details in BCSI-B3 or BCSI-B7, supplemental bracing details referenced on the TDD, or as specified in a project-specific truss permanent bracing plan provided by the Building Designer.
4. Additional building stability permanent bracing shall be installed as specified in the Construction Documents.
5. Special end wall bracing design considerations may be required if a flat gable end frame is used with adjacent trusses that have sloped bottom chords (see BCSI-B3).
6. Do not cut, drill, trim, or otherwise alter truss members or plates without prior written approval of an engineer, unless specifically noted on the TDD.
7. Piggyback assemblies shall be braced as per BCSI-B3 unless otherwise specified in the Construction Documents.

Referenced Standards

ANSI/TPI 1: National Design Standard for Metal Plate Connected Wood Truss Construction , a Truss Plate Institute publication (www.tpinst.org).

BCSI: Guide to Good Practice for Handling, Installing, Restraining & Bracing Metal Plate Connected Wood Trusses, a joint publication of the Truss Plate Institute (www.tpinst.org) and the Structural Building Components Association (www.sbcindustry.com).

DSB-89: Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses, a Truss Plate Institute publication (www.tpinst.org).

NDS: National Design Specification for Wood Construction published by American Forest & Paper Association and American Wood Council.

ESR-2762: Simpson Strong-Tie® AS Truss Plates are covered under ESR-2762 published by the International Code Council Evaluation Service (www.icc-es.org).

HANSON
TRUSS COMPONENTS, INC.

GENERAL NOTES

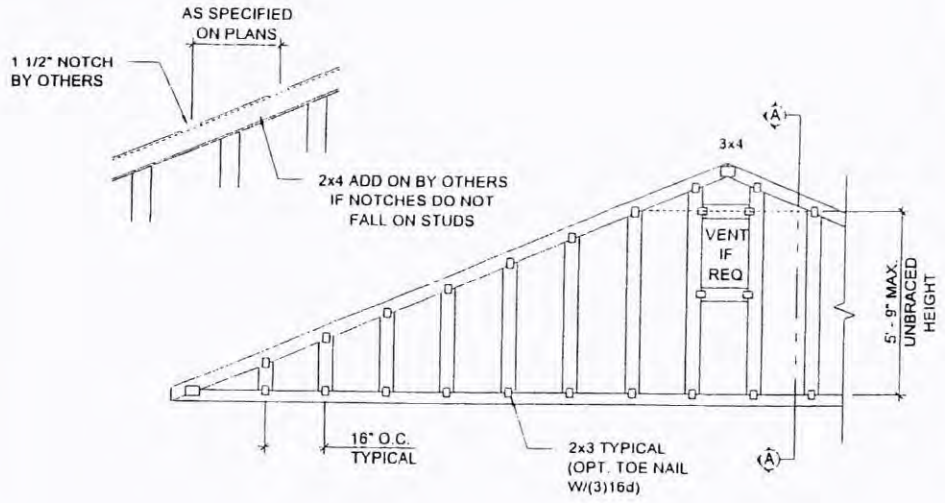
1. No splices except as noted on truss drawings.
2. Panel point locations shall be equal divisions unless noted or dimensioned otherwise.
3. Gusset plates shall be installed on each side of all joints and shall not be installed where knots or wane are greater than 10% of plate area.
4. Gusset plates shall be centered on joints unless noted or dimensioned otherwise.
5. Truss designs shall comply with ANSI/T.P.I - 1-2002 unless noted otherwise.
6. All gusset plates are 20 gauge and stamped TP. Unless noted otherwise.
7. All hangers specified are Simpson strong-tie or equal and are provided by others unless noted otherwise.
8. All trusses are spaced at 24" on center unless dimensioned otherwise.
9. Moisture content in the lumber used may exceed 19% at the time of fabrication. A 20% reduction in plate values has been used.
10. The Hanson Truss, Inc., engineering program is in compliance with section 2321 of the 2006 I.B.C. All heel joint connections are designed using an analysis considering the vector sum of concentric and eccentric loads.
11. All nails specified are to be **box nails** or better.
12. Top chord dead load (**TCDL**) may vary due to roof load adjustment.
13. Wind loads are applied at exposure (C), speed at (105) MPH. average height a t (25) feet. Uno.

ABBREVIATIONS

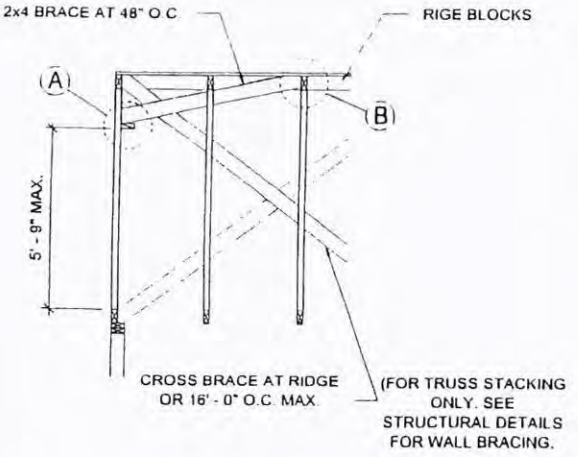
B.C.	Bottom Chord	**MBKG**	Mono Backing
B/0	By Others	**MGET**	Mono gable end truss
BKG	Backing	**MGOV.**	Mono gable over
BLK.	Blocking	**O.A.H.S.**	Overall heel stand
BM.	Beam	**S.B**	Setback
BRG.	Bearing	**Sc.**	Scissor
CBO	Conventional framing by others	**ScBKG**	Scissor Backing
DBL.	Double member	**ScGET**	Scissor gable end truss
DR. BM.	Drop Beam	**SOF.**	Soffit (Non-structural)
FILL	Vertical @ 16" o.c	**SPL.**	Splice
FL. BM.	Flush Beam	**STB.**	Stub
GET	Gable end truss	**T.C.**	Top chord
GIR	Girder truss	**U.N.O.**	Unless noted otherwise
GOV.	Gable over	**w/**	With
HGR	Hanger(s)	**w/o**	Without
INV. GOV.	Inverted gable over		
JKS	Jacks		

BASE DESIGN VALUES FOR VISUALLY GRADED LUMBER

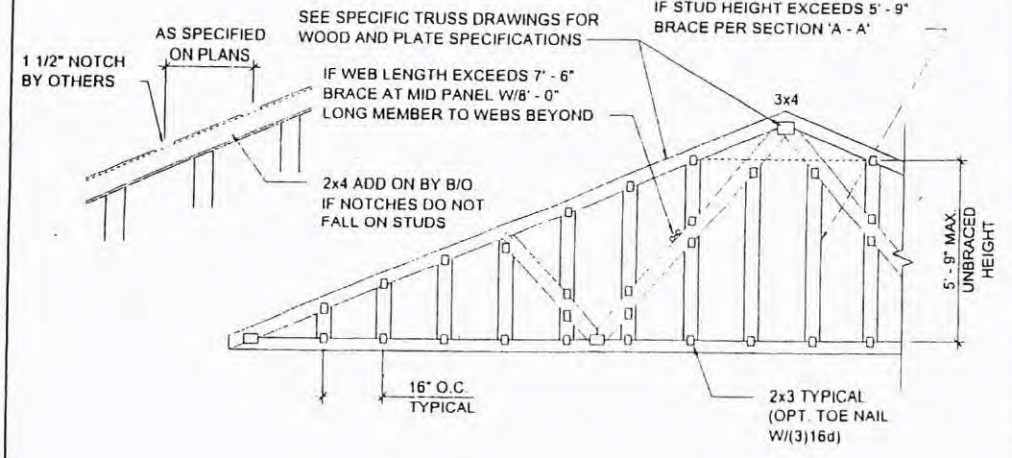
SPECIES & COMMERCIAL GRADES	SIZE CLASSIFICATION X25.4 for mm	Bending *Fb*	Tension Parallel To grain *Fv*	Shear Parallel to grain *Fv*	Compression Perpendicular to grain *Fc* ⊥	Compression Parallel to grain *Fc*	Modulus of Elasticity *E*	GRADING RULES AGENCY
DOUGLAS FIR LARCH								
Select Struct.		1,500	1,000	95	625	1,700	1,900,000	WCLIB WWPA
No.1 & Better	2" to 4" thick	1,200	800	95	625	1,550	1,800,000	
No.1		1,000	675	95	625	1,500	1,700,000	
No.2	2" to 4" wide	900	575	95	625	1,350	1,600,000	
Stud		700	450	95	625	850	1,400,000	
Construction	2" to 4" thicker	1,000	650	95	625	1,650	1,500,000	
Standard		575	375	95	625	1,400	1,400,000	



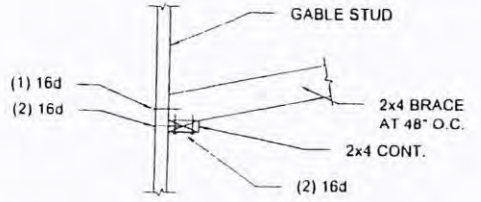
TYPICAL GABLE END TRUSS



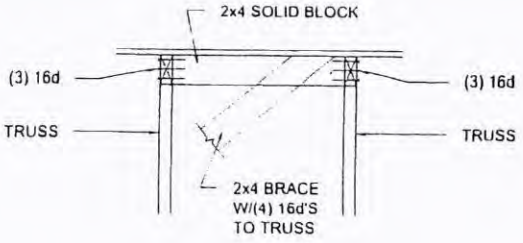
SECTION A-A



TYPICAL FILL TRUSS



(A) CONNECTION DETAIL



(B) CONNECTION DETAIL

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HANSON TRUSS COMPONENTS, INC.

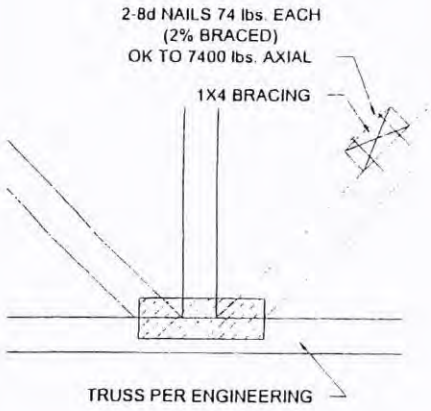
JOBNAME
GABLE END & FILL
TRUSS DETAIL

DRAWN BY
PETE ROBERTS

FILENAME
MS-END-FILL

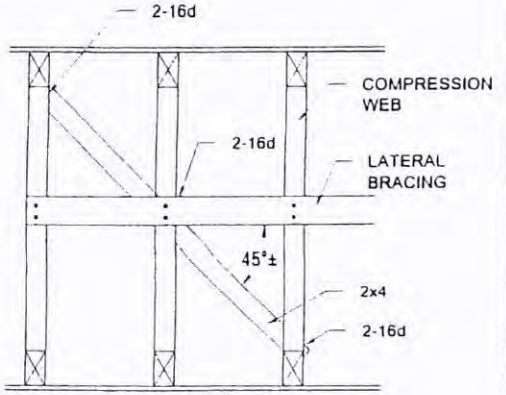
DATE
11-27-96

NULL AND VOID IF NOT FABRICATED BY HANSON TRUSS COMPONENTS, INC.

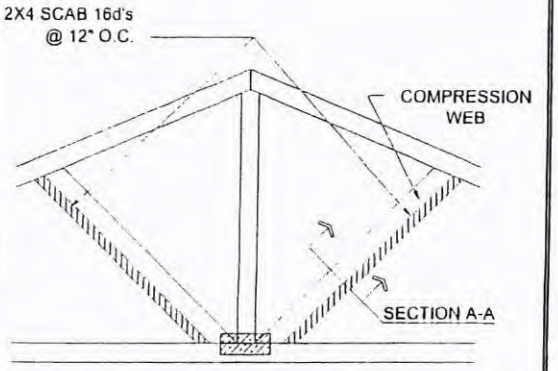


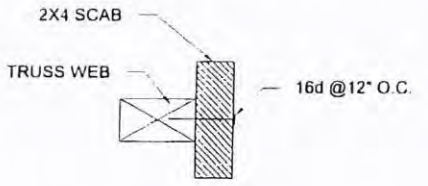
A COMPRESSION WEB BRACE

NOTE:
COMPRESSION WEBS MAY OCCUR AT ANY ANGLE, THEREFORE THE 45 DIAGONAL IS NAILED TO THE WEB ON THE SAME PLANE THAT THE WEB OCCURS.
PLEASE SE FIGURE 1(d) IN THE COMMENTARY AND RECOMMENDATIONS FOR BRACING WOOD TRUSSES BY T P I Inc FOUND IN THE INSIDE FRONT COVER OF OUR SHOP DRAWINGS



B END OF COMPRESSION BRACING DETAIL





SECTION A-A

C "TEE" BRACING

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HANSON TRUSS COMPONENTS, INC.

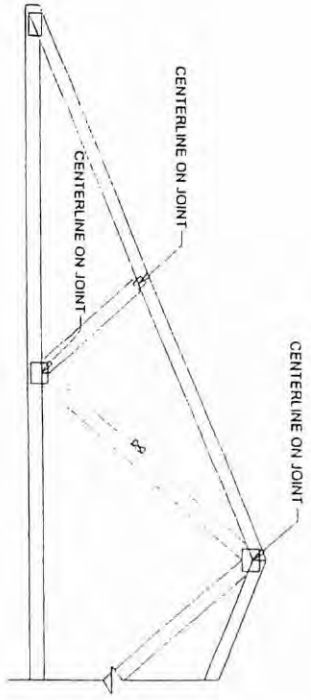
NULL AND VOID IF NOT FABRICATED BY HANSON TRUSSCOMPONENTS, INC.

D1 COMPRESSION WEB BRACING

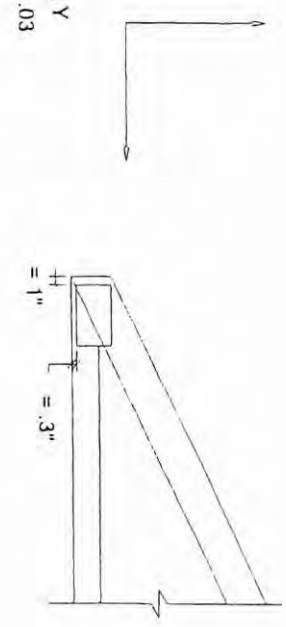
DRAWN BY P. DAVID | FILENAME MS-COMP-DRAC.Dwg | DATE r11-15-00

REFER TO GENERAL NOTES AND SAMPLE CALC

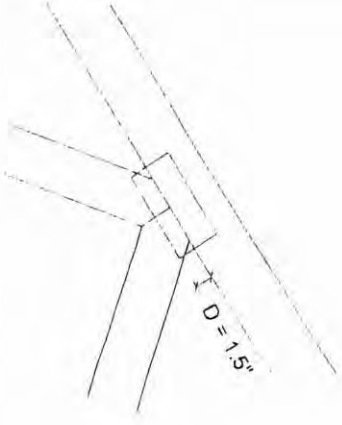
TYPICAL CENTERLINE ON JOINT



TYPICAL HEEL CONDITION



OFF SET CONDITIONS



OFF SET CONDITIONS

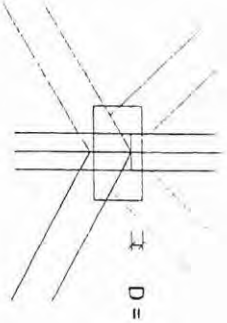


PLATE PLACEMENT

DRAWN BY	FILENAME	DATE
RB	PLATE PLACEMENT	1-14-08

HANSON TRUSS COMPONENTS, INC.

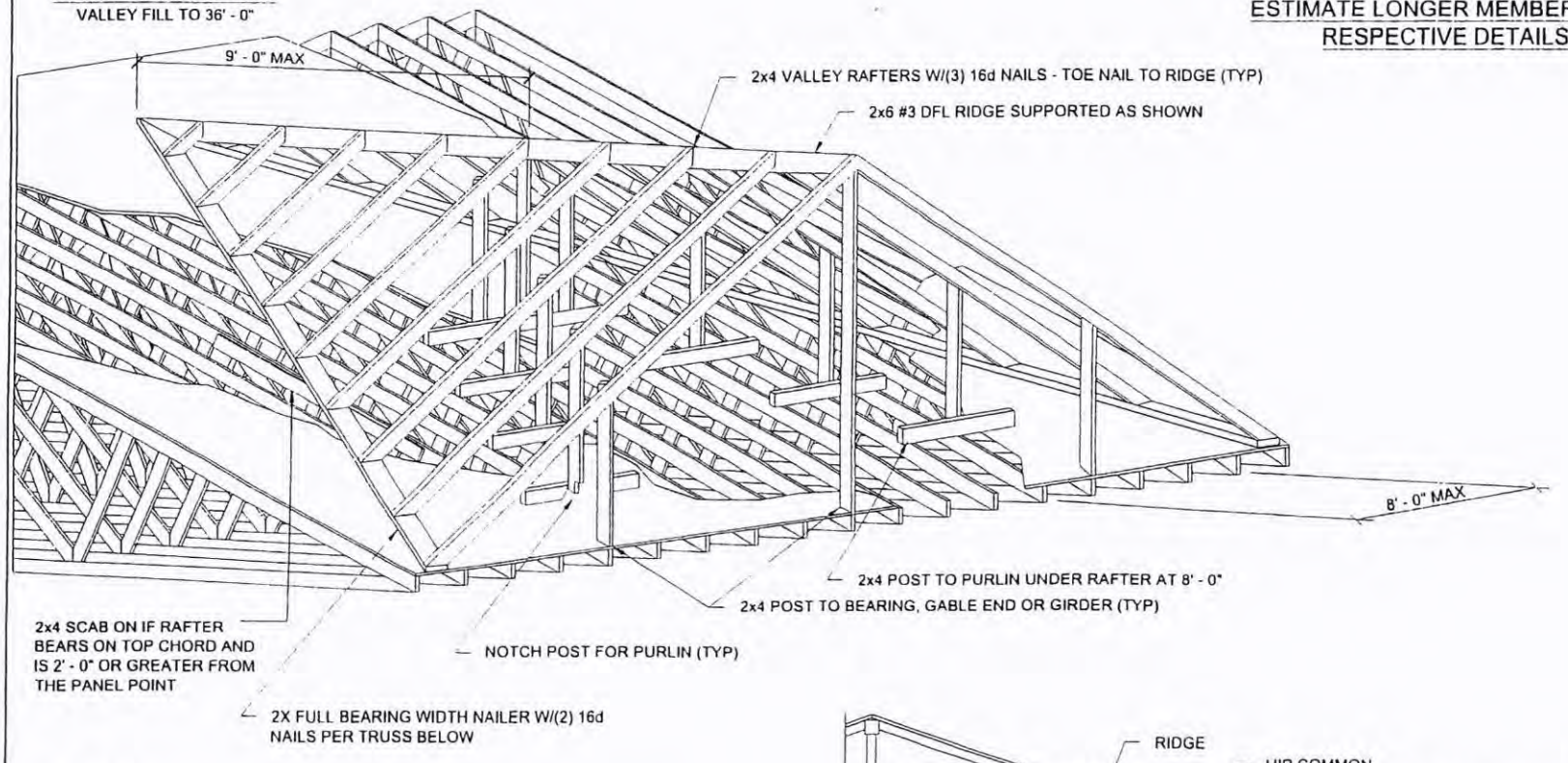
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GABLE OVERSTACK

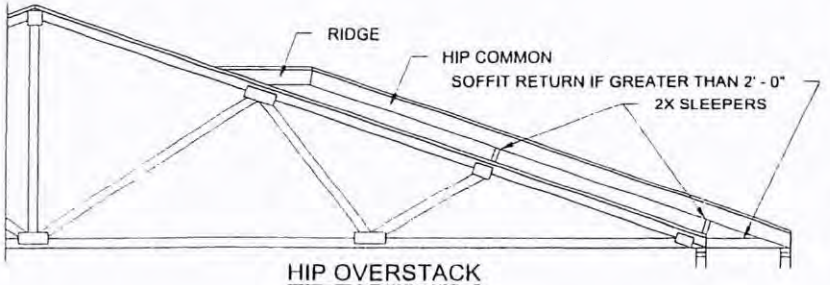
VALLEY FILL TO 36' - 0"

NOTE! FOR SHORTER VALLEY FILLS, ESTIMATE LONGER MEMBERS AND RESPECTIVE DETAILS.



NOTES:

1. ROOF LIVE LOAD + DEAD LOAD = 32 PSF.
2. VALLEY RAFTERS TO BE MIN. 2x4 CONST. GRADE DOUG-FIR OR #2 HEM-FIR. CLEAR SPANS NOT TO EXCEED 8' - 0" FOR 32 PSF LOADING OR 7' - 0" FOR 32 PSF LOADING, OR 2X6 NOT TO EXCEED 10' - 0"
3. ALL NAILING PER U.B.C 94 EXCEPT AS NOTED.
4. PROVIDE SOLID BLOCKING BETWEEN TRUSSES TO SUPPORT RIDGE IF NECESSARY.
5. ALL POST & PURLIN MATERIALS TO BE PROVIDED BY OTHERS.



HIP OVERSTACK

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NULL AND VOID IF NOT FABRICATED BY HANSON TRUSS COMPONENTS, INC.

JOBNAME: CALIFORNIA "FILL" DETAIL

DRAWN BY: PETE ROBERTS

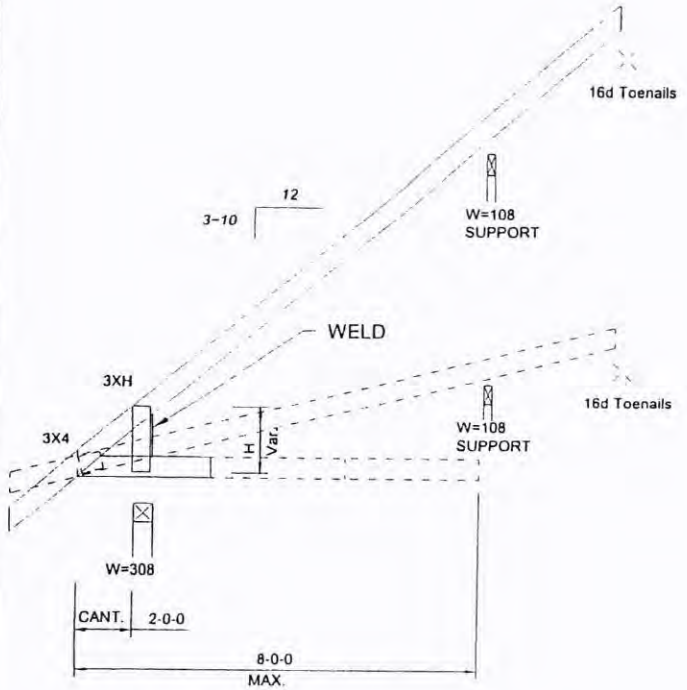
FILENAME: MS-CALFILL

DATE: 11-21-96

TC: DFL #2 2X4
BC: DFL #2 2X4
SPCG: 24", O.C. 1-PLY
LSI: 1.25, PSI: 1.25

TCLL= 20 psf.
TCDL= 26 psf.
BCLL= 10 psf.
BCDL= 10 psf.

STANDARD LOADING 1.25
UBC LL CHECK 1.25
PLUS UNBALANCED LOAD CASES



CANT. JACKS

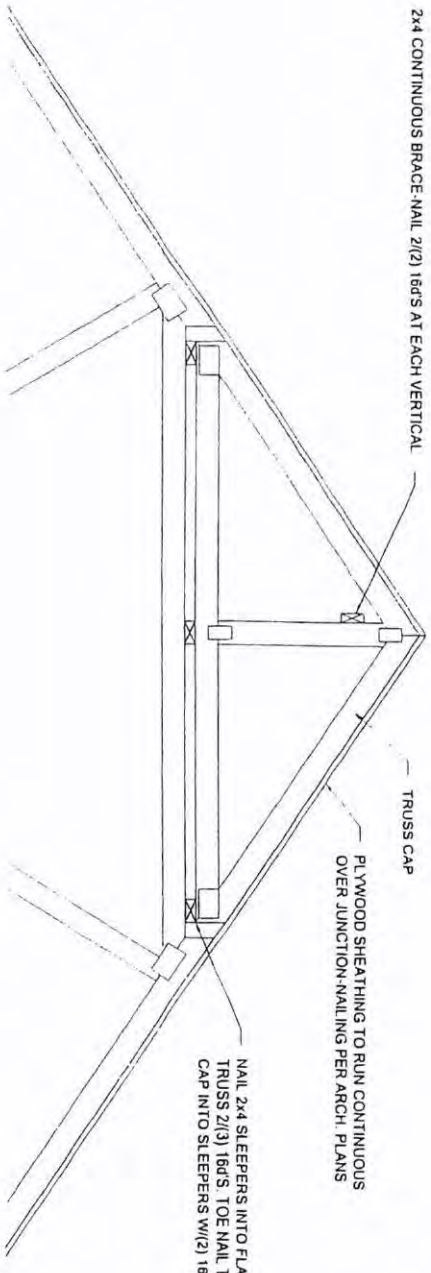
* SEE "CA HIP DETAIL" DESIGN FOR TOE NAILING PATTERN IN THIS PACKAGE.

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HANSON Truss Components, INC.

NULL AND VOID IF NOT FABRICATED BY HANSON TRUSS COPONENTS, INC.

JOBNAME: GENERAL CALCs. STRUCTURAL JACKS
PLAN: -
ELEV: JACK
REVISIONS: - -
DRAWN BY: R.GORJI
DATE: OCT.23.2010
SCALE: -
FILENAME: GEN-JACK-02



ALL BY OTHERS UNLESS NOTED OTHERWISE

TRUSS CAP DETAIL

DRAWN BY	FILENAME	DATE
PETE ROBERTS	MS-TRUSSCAP	11-27-96

HTCI HANSON TRUSS COMPONENTS, INC.

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NULL AND VOID IF NOT FABRICATED BY HANSON TRUSS COMPONENTS, INC.

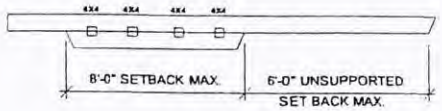
8' SET BACK STACK 2X4 HIP RAFTER

Over-All Length: 11 .3 Rcts at: 0 11.3
Applied Loads (Down +)
128 AT 2.8 Conc Load #
256 AT 5.7 Conc Load #
384 AT 8.5 Conc Load #

Reactions (Up +):
Left: 318 Right: 450
****** Use 2 - NO2 DFL 2X4 Stacked ******

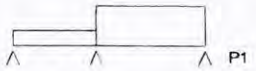
A= 10.5 S= 12.25 I= 42.875
Fv= 95 E= 1600000 Df= 1.25
Crit Shear: V= 450 @ 10.7 1.5*V/(Fv*A*Df)= 0.54

Span: Max Mom= 17317" # @ 5.7
Fb= 1313 M/(Fb*S*Df)= 0.86
Defl= -0.46 @ 5.81 L/120= 1.13



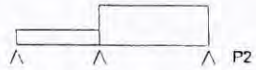
BUILT - UP HIP RAFTER

P1 Load at 2' Set Back
Over-All Length: 10 Rcts at: 0 8 10
Applied Loads (Down +)
32 FROM 0 TO 8 P'tl Load #/lf
64 FROM 8 TO 10 P'tl Load #/lf
Reactions (Up +):
Left: 102 Mid: 324 Right: -42
****** Use 1&B DFL 2X4 ******
A= 5.25 S= 3.063 I= 5.359
Fv= 95 E= 1800000 Df= 1.25
Crit Shear: V= 151 @ 8.29 1.5*V/(Fv*A*Df)= 0.36
Lft Span: Max Mom= 2534"# @ 8
Fb= 1725 M/(Fb*S*Df)= 0.38
Defl= -0.16 @ 3.57 L/240= 0.4
Rgt Span: Max Mom= 2534"# @ 8
Fb= 1725 M/(Fb*S*Df)= 0.38
Defl= 0.01 @ 8.77 L/240= 0.1



P1 = 0

P2 Load at 4' Set Back
Over-All Length: 12 Rcts at: 0 8 10
Applied Loads (Down +)
32 FROM 0 TO 8 P'tl Load #/lf
64 FROM 8 TO 10 P'tl Load #/lf
Reactions (Up +):
Left: 101 Mid: 336 Right: 75
****** Use 1&B DFL 2X4 ******
A= 5.25 S= 3.063 I= 5.359
Fv= 95 E= 1800000 Df= 1.25
Crit Shear: V= 163 @ 8.29 1.5*V/(Fv*A*Df)= 0.39
Lft Span: Max Mom= 2560"# @ 8
Fb= 1725 M/(Fb*S*Df)= 0.39
Defl= -0.16 @ 3.57 L/240= 0.4
Rgt Span: Max Mom= 2560"# @ 8
Fb= 1725 M/(Fb*S*Df)= 0.39
Defl= 0.01 @ 9.2 L/240= 0.2



P2= 75 * 2 = 150lbs

6' RUN CANTILEVER 2X4 HIP RFTR
Over-All Length: 8.49 Rcts at: 0 8.49
Applied Loads (Down +)
12 Unif Load #/lf
150 AT 5.66 Conc Load #/lf
Reactions (Up +):
Left: 101 Right: 75
****** Use NO2 DFL 2X4 ******
A= 5.25 S= 3.063 I= 5.359
Fv= 95 E= 1600000 Df= 1.25
Crit Shear: V= 147 @ 8.2 1.5*V/(Fv*A*Df)= 0.35
Span: Max Mom= 4549"# @ 5.66
Fb= 1313 M/(Fb*S*Df)= 0.9
Defl= -0.49 @ 4.46 L/120= 0.85



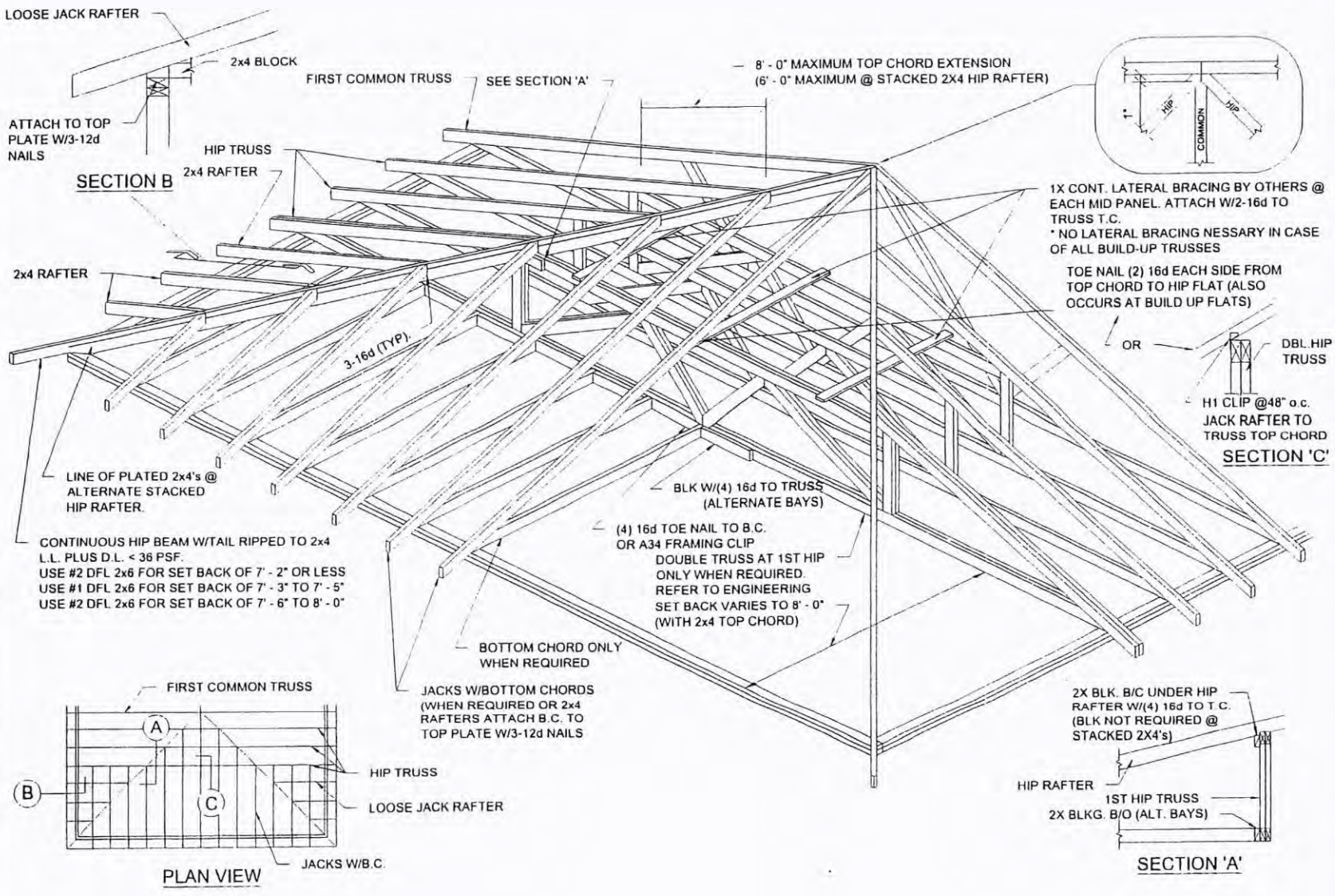
CALCULATIONS FOR STACKED
2X4 HIP RAFTER

DRAWN BY	FILENAME	DATE
PD	MS-HIPCALC.DWG	11-11-99

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HANSON TRUSS COMPONENTS, INC.

JOBNAME
CALIFORNIA HIP DETAIL

DRAWN BY
PETE ROBERTS

FILENAME
MS-CALHIP

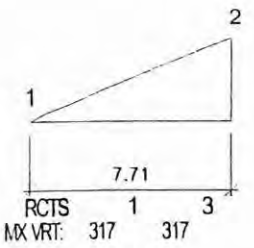
DATE
11-21-96

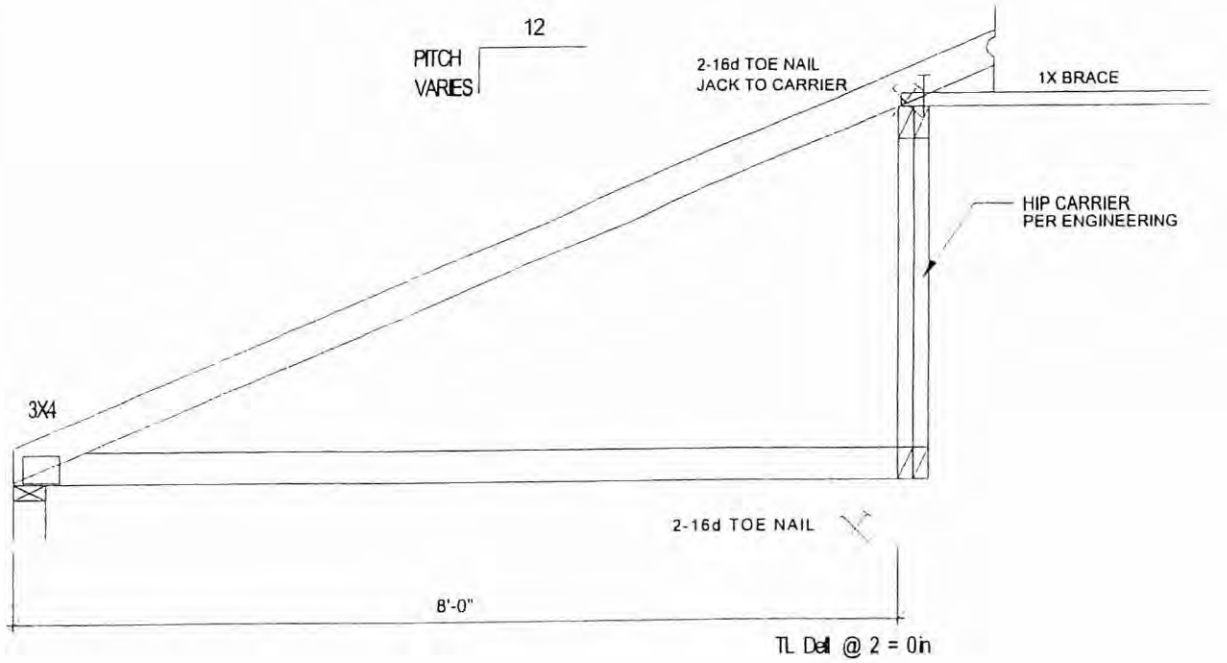
Code: CBC 10 Rdg:Y 1-Ply
TC 1-2 N02 DFL 2x4: P=99C 0.000 Mn=7046 Mp=1792 0.944=0.945
BC 1-3 N02 DFL 2x4: P=OC 0.000 Mn=6433 Mp=366 0.972=0.972

TC AXIAL: 1-2 -102
BC AXIAL: 1-30
WB AXIAL:3-2-236

SEE "CALIFORNIA HIP DETAIL"
FOR GENERAL JACK/HIP DETAIL

*1x Bracing
By Others





3/4" = 1'

UNO	GRAD	SPEC	SIZE
TC:	NO2	DFL	2X4
BC:	NO2	DFL	2X4
WEB:	STDB	DFL	2X4

TCLL: 20 PLF
TCDL: 14
BCLL:
BCDL: 7

DUR LDG FCTR: 1.25

3.5" Min Brg Width UNO

Plates: TP-500
ICBO:5039 LA:23996
Centered on joint UNO

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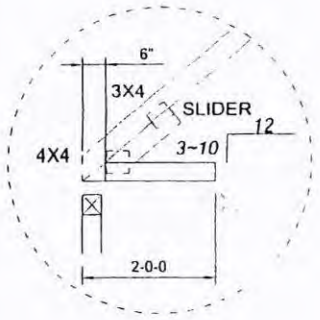
HTCI
HANSON TRUSS COMPONENTS, INC.

DATE: 12/16/00 PD

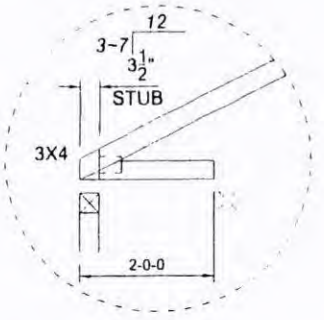
DRWG #s

JACK CALC

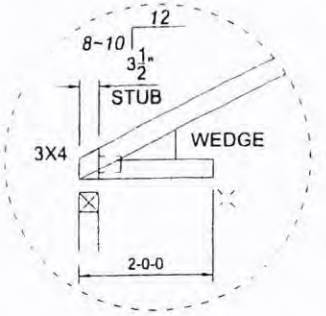
NULL AND VOID IF NOT FABRICATED BY HANSON TRUSS COMPONENTS, INC.



STUB 6"



STUB 3 1/2"

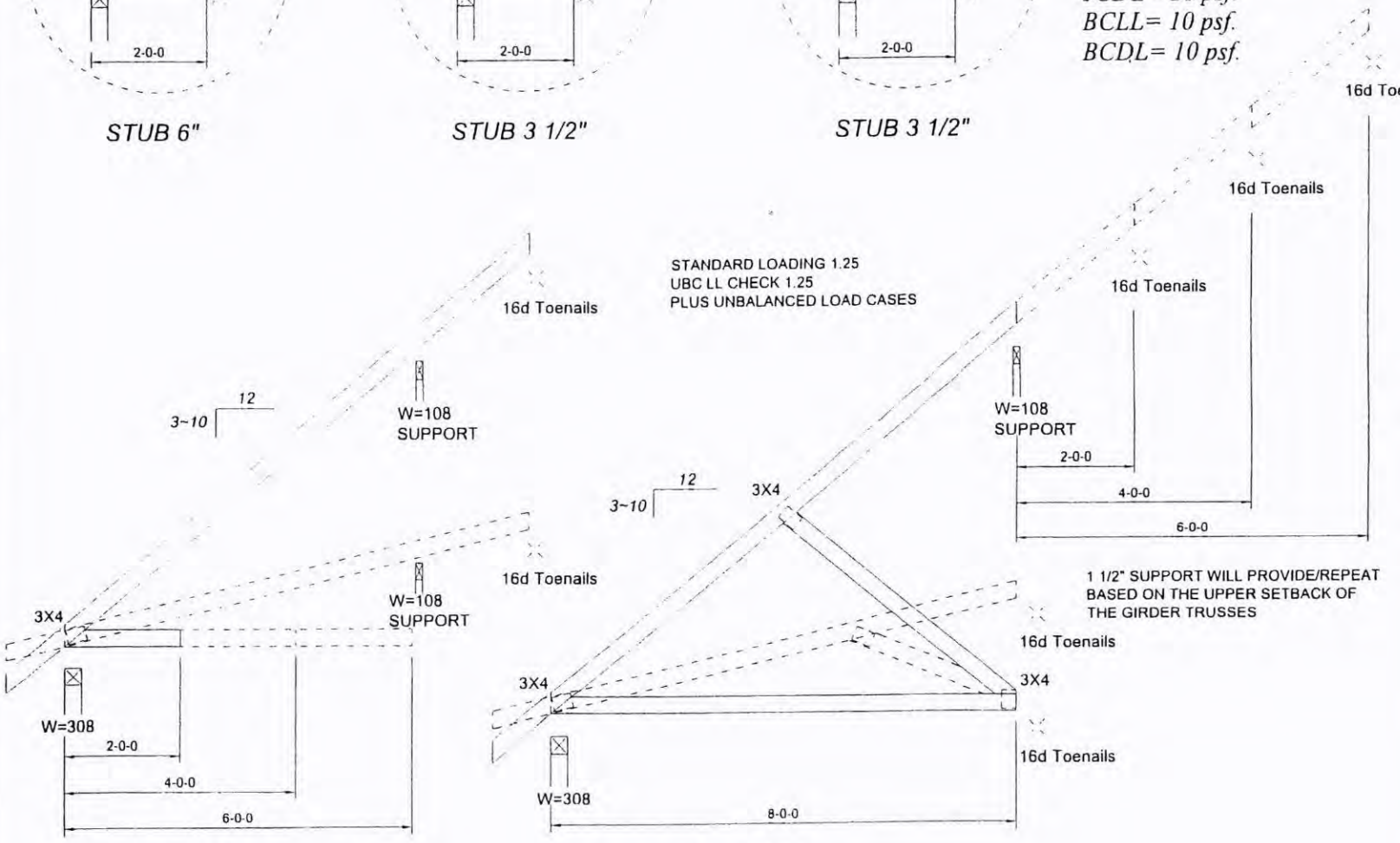


STUB 3 1/2"

TC: DFL #2 2X4
BC: DFL #2 2X4
SPCG: 24", O.C. 1-PLY
LSI: 1.25, PSI: 1.25

TCLL= 20 psf.
TCDL= 26 psf.
BCLL= 10 psf.
BCDL= 10 psf.

STANDARD LOADING 1.25
UBC LL CHECK 1.25
PLUS UNBALANCED LOAD CASES



SIDE / END JACKS

END JACKS

* SEE "CA HIP DETAIL" DESIGN FOR TOE NAILING PATTERN IN THIS PACKAGE.

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PLAN -
ELEV JACK

REVISIONS
-
-

DATE MAR.22.2010

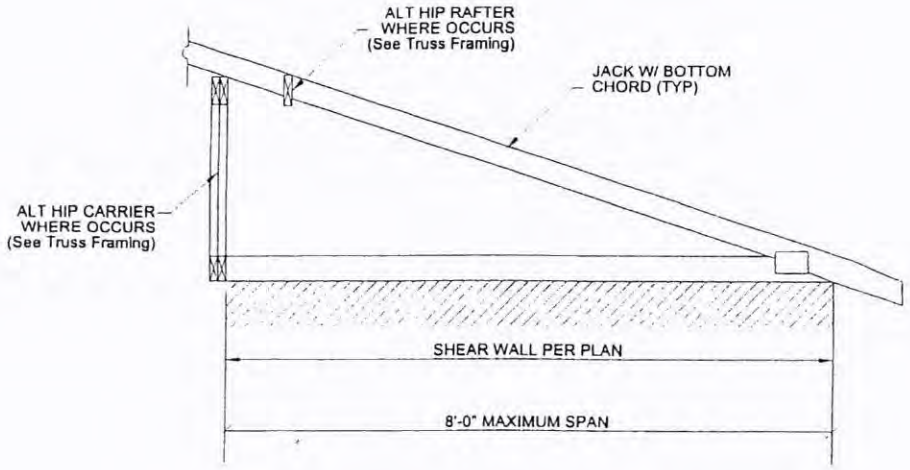
SCALE -

JOBNAME GENERAL CALCs. STRUCTURAL JACKS

DRAWN BY R.GORJI

FILENAME GEN-JACK-01

HEEL PLATE	DRAG FORCE	
3X4	1870#	☐
3X6	2800#	☐
4X8	3740#	☐
5X10	4680#	☐



JACK W/ BOTTOM CHORD OVER SHEAR WALL
TO TRANSFER LATERAL FORCES

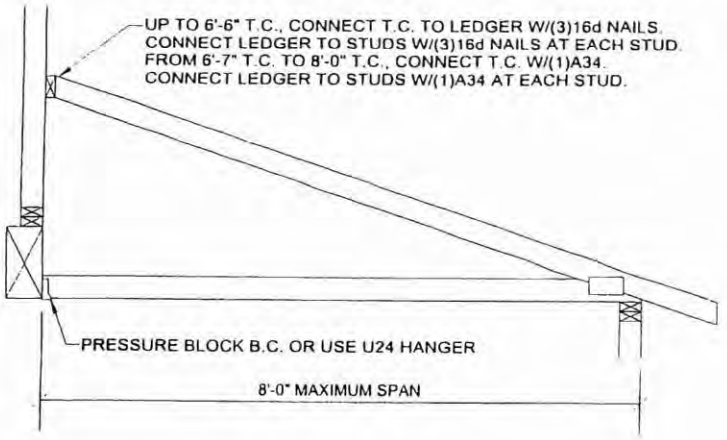
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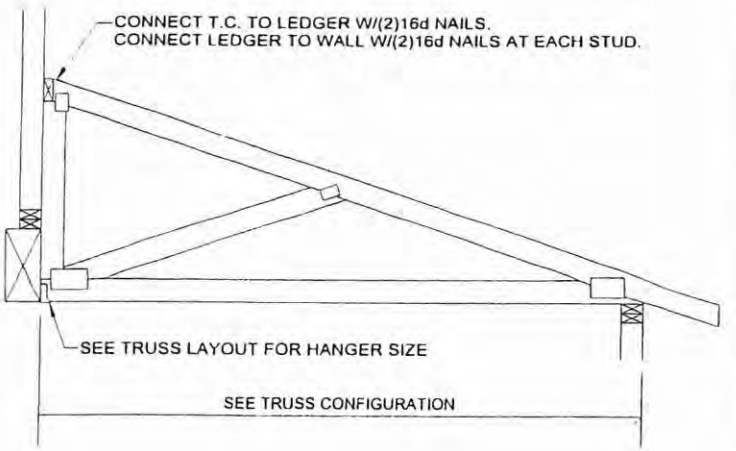
SHEAR JACK

DRAWN BY	FILENAME	DATE
PD	MS-SHEARJACK.DWG	11-17-99

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JACK TRUSS SUPPORT DETAIL (AGAINST HIGH WALL)



MONO TRUSS SUPPORT DETAIL (AGAINST HIGH WALL)

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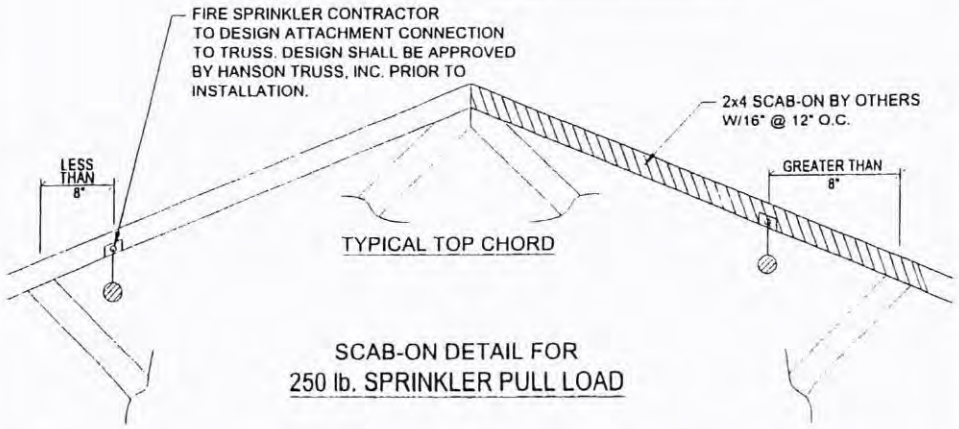
HANSON TRUSS COMPONENTS, INC.

DEATIL 'J1'
JACK & MONO TRUSS SUPPORT

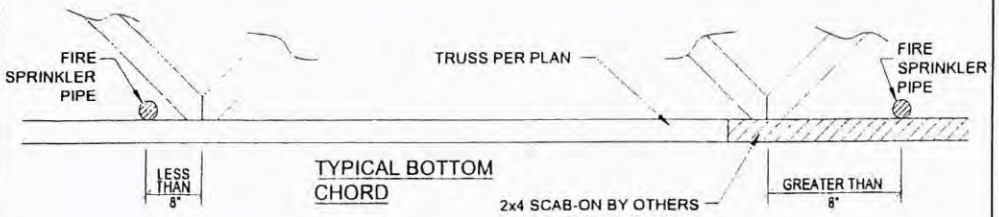
DRAWN BY	FILENAME	DATE
PETE ROBERTS	MS-DET_J1	11-26-96

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FIRE SPRINKLER NOTES:
- IF PIPE ATTACHMENT OCCURS 8" OR LESS FROM A JOINT, NO SCAB-ON IS REQUIRED.
- IF PIPE ATTACHMENT OCCURS GREATER THAN 8" FROM A JOINT, PROVIDE 2x4 SCAB-ON TO ONE SIDE W/16d NAILS @ 12" O.C.

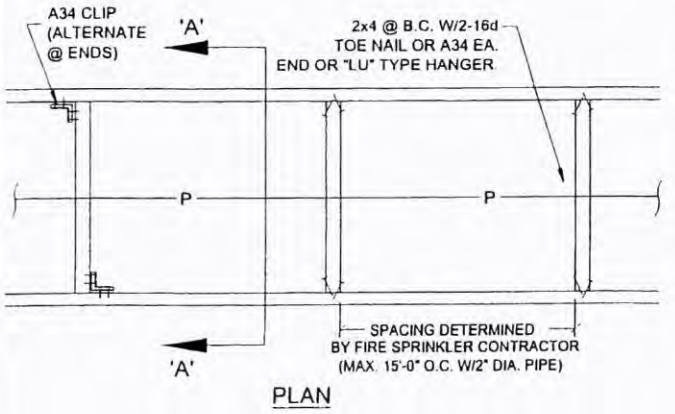


SCAB-ON DETAIL FOR 250 lb. SPRINKLER PULL LOAD

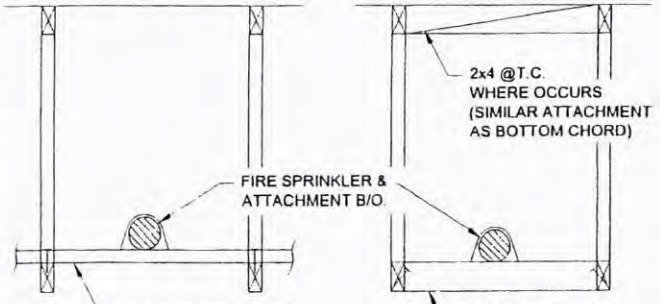


MATERIAL AND HARDWARE BY OTHERS

DETAILS SHOWN ARE CONCEPTUAL AND DO NOT NECESSARILY REFLECT ACTUAL CONDITIONS. CONSULT DRAWINGS BY DESIGN ENGINEER FOR ACTUAL CONDITION. ATTACHMENT SIZE & QUANTITY ARE RECOMMENDED GUIDELINES. REFER TO DESIGN DRAWINGS FOR ACTUAL CONDITIONS. APPLICABLE USE & ATTACHMENT



PLAN



ALTERNATE SUPPORT

A SECTION

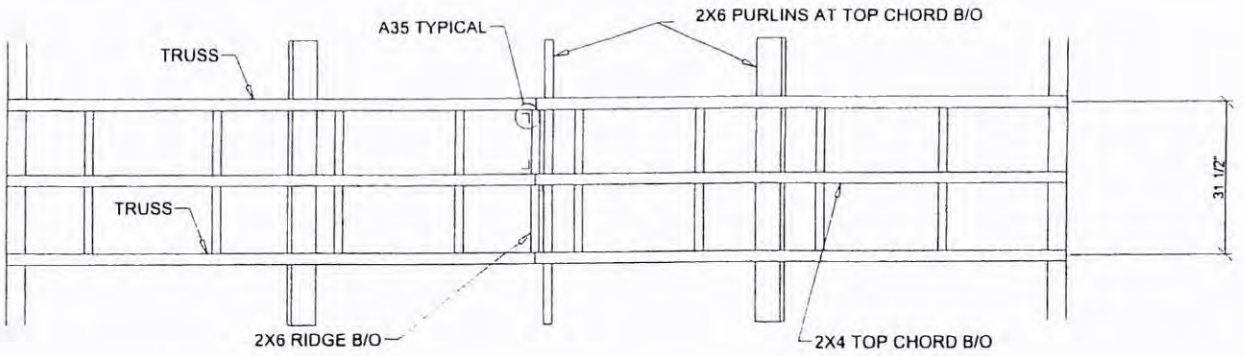
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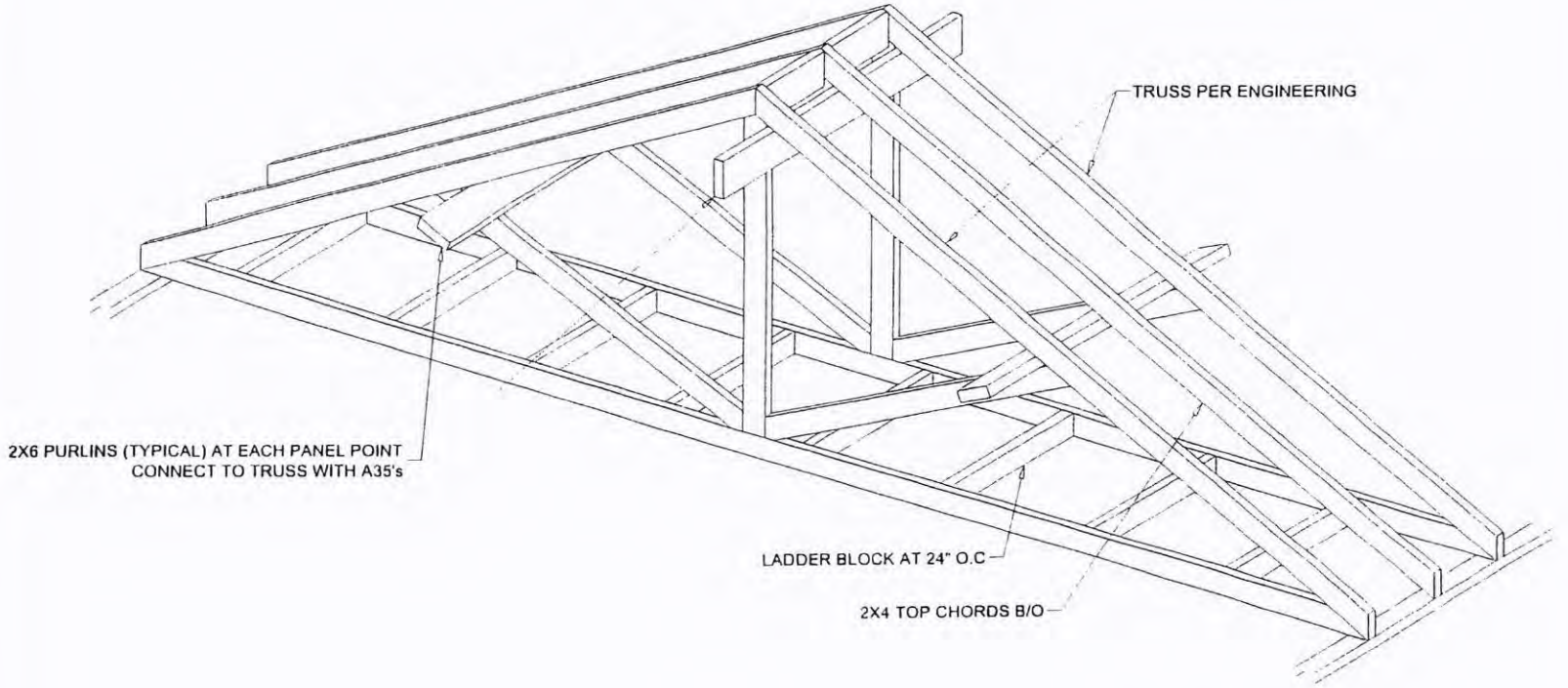
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FIRE SPRINKLER DETAIL

DRAWN BY	FILENAME	DATE
JRR	MS-FSPR	05-13-03

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- MATERIAL & HARDWARE BY OTHERS.
- TRUSS WEB CONFIGURATION MAY VARY. SEE SHOP DRAWING FOR ACTUAL LOCATION OF PURLINS.

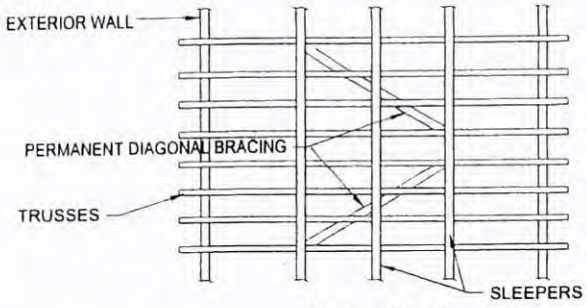
DETAIL 'A' ATTIC ACCESS (ALT 2)

DRAWN BY: PETE ROBERTS | FILENAME: MS-DET A A2 | DATE: 11-25-96

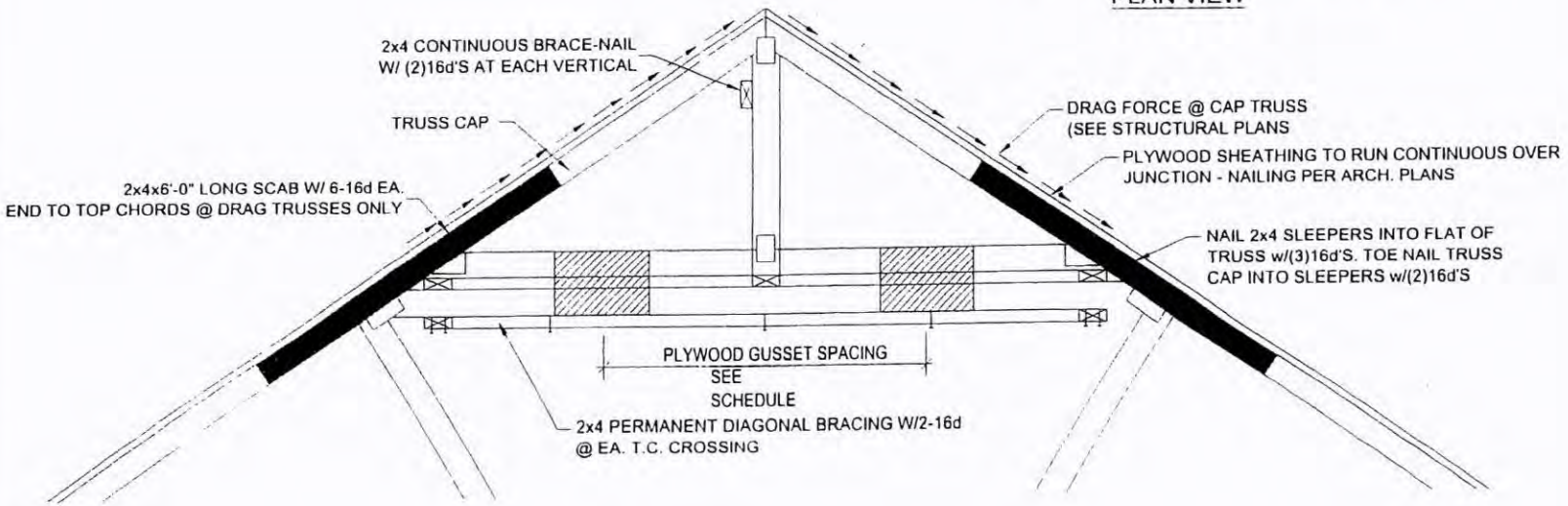
HANSON TRUSS COMPONENTS

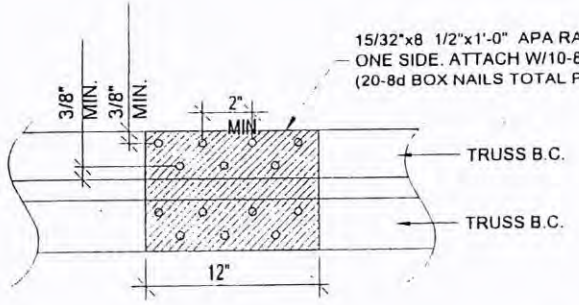
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PLAN VIEW





PLYWOOD GUSSET	
DRAG FORCE @ CAP TRUSS	PLYWOOD SPACING
700 PLF	1' - 0" O.C
600 PLF	1' - 4" O.C
400 PLF	2' - 0" O.C
200 PLF	4' - 0" O.C
100 PLF	8' - 0" O.C

MATERIAL AND HARDWARE BY OTHERS

DETAILS SHOWN ARE CONCEPTUAL AND DO NOT NECESSARILY REFLECT ACTUAL CONDITIONS. CONSULT DRAWINGS BY DESIGN ENGINEER FOR ACTUAL CONDITION ATTACHMENT, SIZE & QUANTITY ARE RECOMMENDED GUIDELINES REFERTO DESIGN DRAWINGS FOR ACTUAL CONDITIONS. APPLICABLE USE & ATTACHMENT

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SHEAR TRUSS CAP DETAIL

-

DRAWN BY: GINNO G.

FILENAME: MS-SHRTRCAP

DATE: 01-07-04

Photo Voltaic

Over-All Length: 7.75 Rcts at: 0 7.75
Applied Loads (Down +)
64 Unif Load #/lf
20 AT 4 Conc Load #
Reactions (Up +)
Left: 258 Right: 258

****** Use 1&B DFL 2X4 ******
A = 5.25 S = 3.063 I = 5.359
Fv = 95 E = 1800000 Df = 1.25
Crit Shear: V = 240 @ 7.46 1.5*V/(Fv*A*Df) = .58

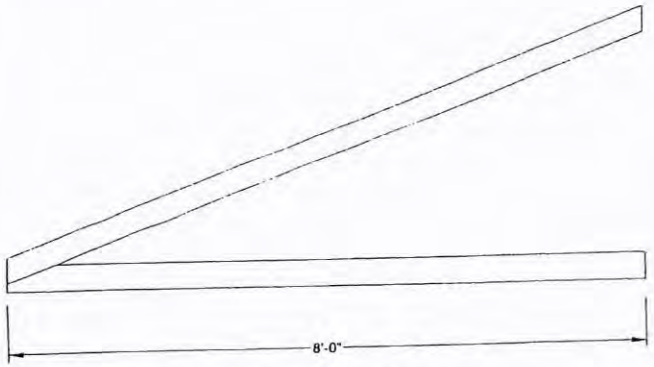
Span: Max Mom = 6225"# @ 4
Fb = 1984 M/(Fb*S*Df) = .82
Defl = -.57 @ 3.91 L/240 = .39

Solar Water

Over-All Length: 7.75 Rcts at: 0 7.75
Applied Loads (Down +)
84 Unif Load #/lf
Reactions (Up +):
Left: 326 Right: 326

****** Use NO2 DFL 2-2X4 ******
A = 10.5 S = 6.126 I = 10.718
Fv = 95 E = 1600000 Df = 1.25
Crit Shear: V = 301 @ .29 1.5*V/(Fv*A*Df) = .36

Span: Max Mom = 7568"# @ 3.88
Fb = 1509 M/(Fb*S*Df) = .65
Defl = -.4 @ 3.88 L/240 = .39



TYPICAL JACK CALCULATION

Max Rafter Lgth for Solar Water

Over-All Length: 6.75 Rcts at: 0 6.75
Applied Loads (Down +)
84 Unif Load #/lf
Reactions (Up +)
Left: 284 Right: 284

****** Use NO2 DFL 2X4 ******
A = 5.25 S = 3.063 I = 5.359
Fv = 95 E = 1600000 Df = 1.25
Crit Shear: V = 259 @ .29 1.5*V/(Fv*A*Df) = .62

Span: Max Mom = 5741"# @ 3.38
Fb = 1509 M/(Fb*S*Df) = .99
Defl = -.46 @ 3.38 L/240 = .34

PHOTO VOLTAIC

JACK OR JACK RAFTER OK UP 8'-0"

SOLAR WATER

SINGLE RAFTER OK UP TO 6'-9"

DOUBLE RAFTER OK UP TO 8'-0"

SOLAR PANEL CALCULATIONS

PHOTO VOLTAIC

LEAVE TILE ON ROOF
4X10.5' AREA 2.8LBS/FT^2
20LBS PER CLEAT ~ 4'-0" o.c
WORST CASE @ 8'-0" PANEL ADDITIONAL MOMENT = 480in lbs

LUMBER	ADDITIONAL C.S.I
NO2 DFL 2X4	.08
1&B DFL 2X4	.06
NO2 DFL 2X6	.04

SOLAR WATER

26LBS/FT^2, REMOVE TILE
(ie) CHECK W/26psf DEAD LOAD OVER 3'X8' AREA

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TYPICAL JACK @ SOLAR PANEL

DRAWN BY: PD
FILENAME: SOLARPNL.DWG
DATE: 07-02-01

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This report is subject to renewal 01/2016.

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

SECTION: 06 17 53—SHOP-FABRICATED WOOD TRUSSES

REPORT HOLDER:

SIMPSON STRONG-TIE COMPANY INC.

5956 WEST LAS POSITAS BOULEVARD
PLEASANTON, CALIFORNIA 94588

EVALUATION SUBJECT:

SIMPSON STRONG-TIE® METAL CONNECTOR PLATES FOR WOOD TRUSSES

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ESR-2762*

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 17 53—Shop-Fabricated Wood Trusses

REPORT HOLDER:

SIMPSON STRONG-TIE COMPANY INC.
5956 WEST LAS POSITAS BOULEVARD
PLEASANTON, CALIFORNIA 94588
(800) 999-5099
www.strongtie.com

EVALUATION SUBJECT:

SIMPSON STRONG-TIE® METAL CONNECTOR PLATES FOR WOOD TRUSSES

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2015, 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2015, 2012, 2009 and 2006 *International Residential Code®* (IRC)

Property evaluated:

Structural

2.0 USES

Simpson Strong-Tie® metal connector plates are used as joint connectors for wood roof and floor trusses.

3.0 DESCRIPTION

3.1 AS-20 (AS≠20):

Simpson Strong-Tie AS-20 metal connector plates are staggered-tooth metal plates manufactured from minimum No. 20 gage [0.0356 inch (0.904 mm) total thickness] steel complying with ASTM A653, SS Grade 40 with a minimum G60 galvanization coating [0.0005 inch on each side (0.013 mm)] and having a base-metal thickness of 0.0346 inch (0.879 mm). Each plate has eight teeth per square inch, and each tooth is 0.375 inch (9.5 mm) long. The teeth are punched in pairs and formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch on center (25.4 mm), and the pairs are spaced 0.25 inch on center (6.35 mm) along the width of the plate. Alternating rows of teeth are staggered 0.125 inch (3.18 mm) from adjacent rows. See Figure 1.

3.2 AS-18-HS (AS≠18HS):

Simpson Strong-Tie AS-18-HS metal connector plates are staggered-tooth metal plates manufactured from minimum No. 18 gage [0.0466 inch (1.184 mm) total thickness] steel complying with ASTM A653, HSLAS Grade 60 with a minimum G60 galvanization coating [0.0005 inch on each side (0.013 mm)] and having a base-metal thickness of 0.0456 inch (1.158 mm). Each plate has eight teeth per square inch, and each tooth is 0.375 inch (9.5 mm) long. The teeth are punched in pairs and formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch on center (25.4 mm), and the pairs are spaced 0.25 inch on center (6.35 mm) along the width of the plate. Alternating rows of teeth are staggered 0.125 inch (3.18 mm) from adjacent rows. See Figure 2.

3.3 AS≠18S:

Simpson Strong-Tie AS≠18S metal connector plates are staggered-tooth metal plates manufactured from minimum No. 18 gage [0.0466 inch (1.184 mm) total thickness] steel complying with ASTM A653 HSLAS Grade 60 with a minimum G60 galvanized coating [0.0005 inch (0.013 mm) on each side] and having a base-metal thickness of 0.0456 inch (1.158 mm). Each tooth is 0.375 inch (9.5 mm) long. The teeth are punched in pairs and formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch on center (25.4 mm).

3.3.1 AS≠18S6: Each plate has six teeth per square inch. The punched slots are spaced a minimum of 0.25 inch apart and are grouped in sets of three and four as shown in Figure 3.

3.3.2 AS≠18S5: Each plate has five teeth per square inch. The punched slots are spaced a minimum of 0.25 inch apart and are grouped in sets of two and three as shown in Figure 4.

4.0 DESIGN AND INSTALLATION

4.1 General:

The design, manufacture and installation of wood trusses employing the metal connector plates must comply with IBC Section 2303.4 and IRC Section R502.11 or R802.10, as applicable. All truss plates are pressed into the wood for the full depth of their teeth by hydraulic-platen embedment presses, multiple roller presses that use partial embedment followed by full-embedment rollers, or combinations of

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partial embedment roller presses and hydraulic-platen embedment presses that feed trusses into a stationary finish roller press. Trusses must be assembled within the tolerances provided by the Truss Plate Institute (TPI) Quality Criteria for the Manufacture of Metal Plate Connected Wood Trusses, shown as Chapter 3 in ANSI/TPI 1, National Design Standard for Metal Plate Connected Wood Truss Construction.

4.2 Design Values:

Allowable design values for Simpson Strong-Tie metal connector plates to be used in the design of metal-plate-connected wood roof and floor trusses are shown in Tables 1 and 2 of this report. Allowable design values are applicable when the connection is made with identical plates on opposite sides of the joint.

5.0 CONDITIONS OF USE

The Simpson Strong-Tie metal connector plates for wood trusses described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 This evaluation report and the manufacturer's published installation instructions, when required by the code official, must be submitted at the time of permit application. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.

5.2 Each application for a building permit, where these metal connector plates are to be used, must be accompanied by calculations, details and other documentation showing that the design, manufacture and proposed installation conforms with the requirements of the applicable code.

5.3 This report establishes plate design values only. For items not covered by this report, such as truss design, fabrication, quality assurance and inspection, refer to ANSI/TPI 1, engineering drawings and the applicable code.

5.4 The applied design values used in the design of trusses using Simpson Strong-Tie metal connector plates, must not exceed the allowable lateral resistance, tension and shear values listed in Tables 1 and 2 of this report. Load combination reductions must be in accordance with the applicable code.

5.5 All lumber used in the fabrication of trusses using Simpson Strong-Tie metal connector plates must be graded in compliance with the applicable building code, and must have a moisture content not exceeding 19 percent at the time of assembly. Wet service factors from ANSI/TPI 1 Section 6.4.6 must be applied to the table values when the lumber moisture content exceeds 19 percent. Allowable values shown in the tables of this report are not applicable to metal connector plates embedded in either fire-retardant-treated lumber or preservative-treated lumber.

5.6 Metal connector plates must be installed in pairs, on opposite faces of truss members.

5.7 Galvanized G60 metal connector plates subject to corrosive environments must be protected in accordance with ANSI/TPI 1 Section 6.5.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the National Design Standard for Metal-plate-connected Wood Truss Construction, ANSI/TPI 1-2002, 2007 and 2014.

6.2 Quality documentation in accordance with the ICC-ES Acceptance Criteria for Quality Documentation (AC10).

7.0 IDENTIFICATION

Each Simpson Strong-Tie metal truss connector plate is identified by the product name (AS-20, AS≠20, AS-18-HS, AS≠18HS, or AS≠18S) embossed into the surface of the plate. Additionally, boxes containing the Simpson Strong-Tie metal connector plates are identified with the name of the manufacturer (Simpson Strong-Tie), the product name (AS-20, AS≠20, AS-18-HS, AS≠18HS, AS≠18S) and the evaluation report number (ESR-2762).

TABLE 1—ALLOWABLE LATERAL RESISTANCE DESIGN VALUES[1, 2, 3] (lb/in.²/PLATE)

CONNECTOR PLATE DESIGNATION	LUMBER SPECIES	SG[4]	AA	EA	AE	EE
AS-20 AS≠20 AS-18-HS AS≠18HS	Douglas Fir–Larch	0.50	248	194	168	167
	Douglas Fir–Larch North	0.49	247	190	164	164
	Hem-Fir	0.43	217	167	144	144
	Spruce- Pine-Fir	0.42	211	170	154	136
	Southern Yellow Pine	0.55	246	195	186	185
AS≠18S6	Douglas Fir–Larch	0.50	158	145	-	-
	Douglas Fir–Larch North	0.49	158	145	-	-
	Hem-Fir	0.43	148	135	-	-
	Spruce- Pine-Fir	0.42	145	132	-	-
	Southern Yellow Pine	0.55	158	145	-	-
AS≠A8S5	Douglas Fir–Larch	0.50	165	154	-	-
	Douglas Fir–Larch North	0.49	165	154	-	-
	Hem-Fir	0.43	149	144	-	-
	Spruce- Pine-Fir	0.42	145	141	-	-
	Southern Yellow Pine	0.55	165	154	-	-

For **SI:** 1lb/in.² = 6.9 kPa.

[1]Tooth holding units = psi for a single plate (double for plates on both faces when applying to area on only one face). To achieve values, plates of equal size must be installed on opposite sides of the joint with the teeth oriented in the same direction.
[2]AA = Plate parallel to load, wood grain parallel to load.
EA = Plate perpendicular to load, wood grain parallel to load.
AE = Plate parallel to load, wood grain perpendicular to load.
EE = Plate perpendicular to load, wood grain perpendicular to load.
[3]All truss plates are pressed into the wood for the full depth of their teeth by hydraulic-platen embedment presses, multiple roller presses that use partial embedment followed by full-embedment rollers, or combinations of partial embedment roller presses and hydraulic-platen presses that feed trusses into a stationary finish roller press.
[4]Specific gravity.

TABLE 2—ALLOWABLE TENSION AND SHEAR DESIGN VALUES[1]

PROPERTY FORCE DIRECTION	CONNECTOR PLATE							
	AS-20 AS≠20		AS-18-HS AS≠18HS		AS≠18S6		AS≠18S5	
	Efficiency	Pounds/ inch/Pair of Connector Plates	Efficiency	Pounds/ inch/Pair of Connector Plates	Efficiency	Pounds/ inch/Pair of Connector Plates	Efficiency	Pounds/ inch/Pair of Connector Plates
Tension Values in Accordance with Section 5.4.4.2 of TPI 1 (Minimum Net Section over the Joint)[2]								
Tension @ 0°	0.51	901	0.50	1728	0.61	2108	0.65	2246
Tension @ 90°	0.51	901	0.50	1728	0.50	1728	0.50	1728
Shear Values								
Shear at 0°	0.57	671	0.58	1336	0.58	1336	0.58	1336
Shear at 30°	0.72	848	0.66	1521	0.66	1521	0.66	1521
Shear at 60°	0.82	966	0.75	1728	0.75	1728	0.75	1728
Shear at 90°	0.46	542	0.50	1152	0.50	1152	0.50	1152
Shear at 120°	0.50	589	0.46	1060	0.46	1060	0.46	1060
Shear at 150°	0.57	671	0.52	1198	0.52	1198	0.52	1198

For **SI:** 1 lbf/inch = 0.175 n/mm, 1 inch = 25.4 mm.

[1]Minimum coated thickness for 20 gage is 0.0356 inch (0.904 mm) and for 18 gage is 0.0466 inch (1.184 mm). Minimum coating thickness for G60 is 0.0010 inch (0.025 mm), total, for both sides in accordance with Section 6.3.4.1.3 of ANSI/TPI 1 2007 and 2014.

FIGURE 1: AS-20 PLATE PATTERN
(DIMENSIONS IN INCHES)

FIGURE 2: AS-18-HS PLATE PATTERN
(DIMENSIONS IN INCHES)

FIGURE 3: AS≠S6 PLATE PATTERN
(DIMENSIONS IN INCHES)

FIGURE 4: AS≠S5 PLATE PATTERN
(DIMENSIONS IN INCHES)

15043

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PLANNING AND BUILDING DEPT.

Developer	**SYNERGY**
Project Name	**VILLAGE WALK**
Plan	**SINGLE FAMILY HOMES**
Bldng.	
Contact:	

Revisions

FILE COPY

Date	Changes

TRUSS ENGINEERING DESIGNED PER IBC 2012 (CBC 2013) / TPI I-2007

PLATES I.C.C. ESR REPORT 32765 AS-20 / AS-18HS

MINIMUM PLATE DESIGN VALUES HAVE BEEN USED IN THE DESIGN OF THE TRUSSES

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
Exp: 12/31/2016
67407
CIVIL
STATE OF CALIFORNIA
07/05/2016

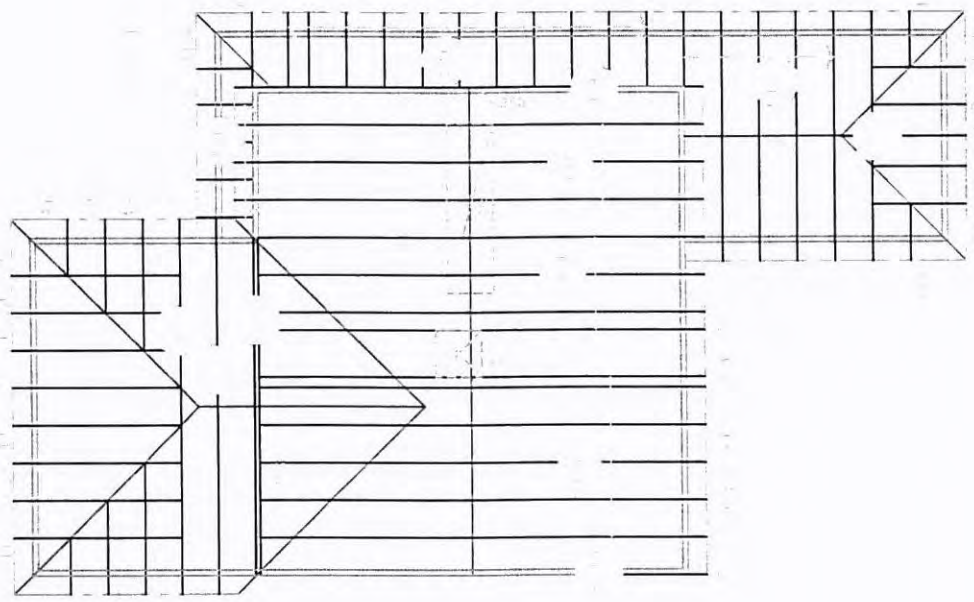
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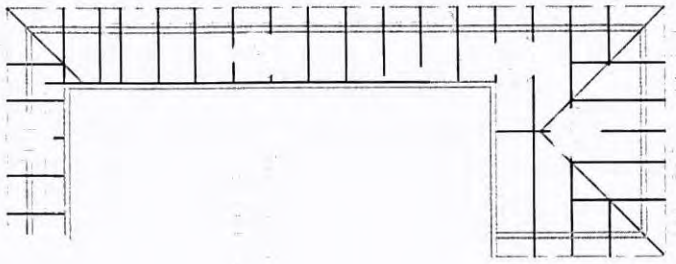
1. The truss design drawings referenced below have been prepared based on design criteria and requirements set forth in the Construction Documents, as communicated by the Truss Manufacturer.

2. The engineer's signature on these drawings indicates professional engineering responsibility solely for the individual components to be able to resist the design loads indicated, utilizing all the design parameter and materials indicated or referenced on each individual design.

3. It is the Building Designer's responsibility to review the truss design drawings to insure compatibility with the Building design. Refer to all notes on the individual truss design drawings.

Hanson Truss Components Inc. 4476 Skyway Drive Olivehurst, CA 95961
Mailing Address: PO Box 31 Marysville, CA 95901
Phone: 530-740-7750 Fax: 530-740-7754

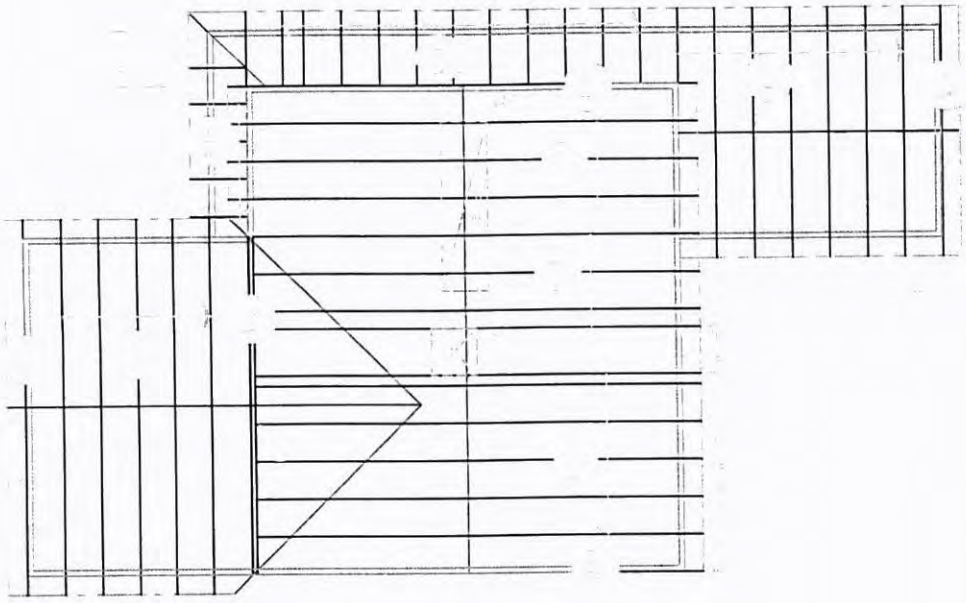


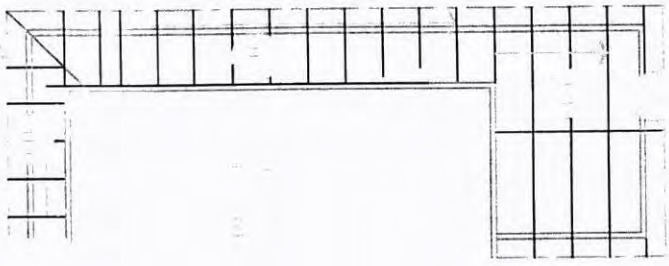


JOBNAME: VILLAGE WALK PLAN 3A		PLAN: 3 ELEV: A	
DRAWN BY: RICK PATTERSON	DATE: 6-22-16	REVISIONS:	-
FILENAME: PL3A	SCALE: 1/8"=1'-0"		-

HTCI HANSON

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JOBNAME
VILLAGE WALK
PLAN 3B

PLAN 3
ELEV B

DRAWN BY
RICK PATTERSON

DATE
6-22-16

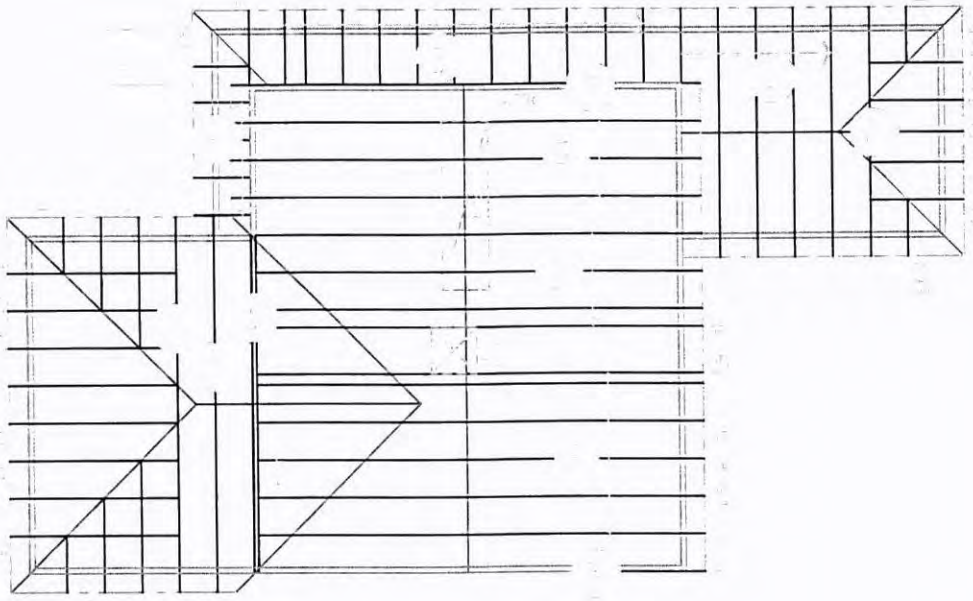
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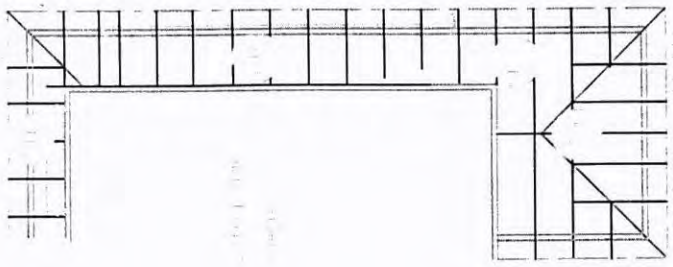
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SCALE
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JOBNAME
VILLAGE WALK
PLAN 3C

PLAN 3
ELEV C

DRAWN BY
RICK PATTERSON

DATE
6-22-16

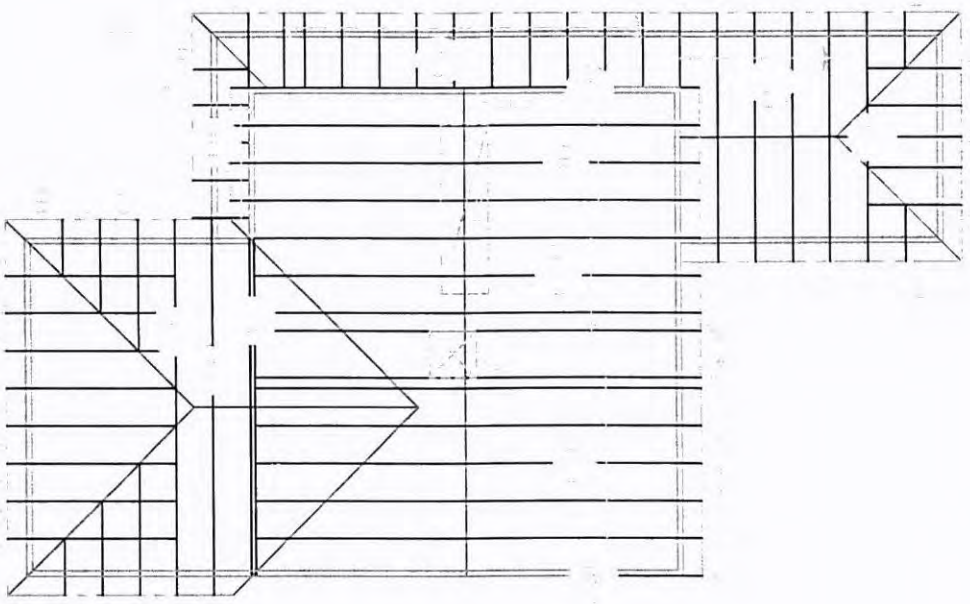
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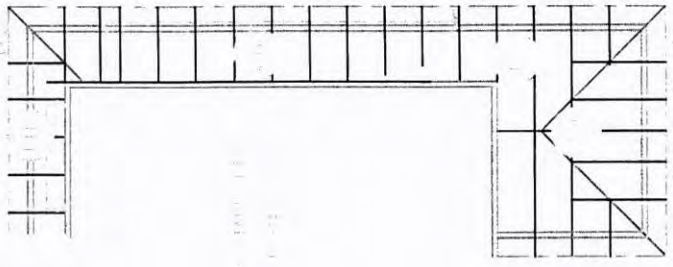
FILENAME
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SCALE
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JOBNAME
VILLAGE WALK
PLAN 3A

PLAN 3
ELEV A

DRAWN BY
RICK PATTERSON

DATE
6-22-16

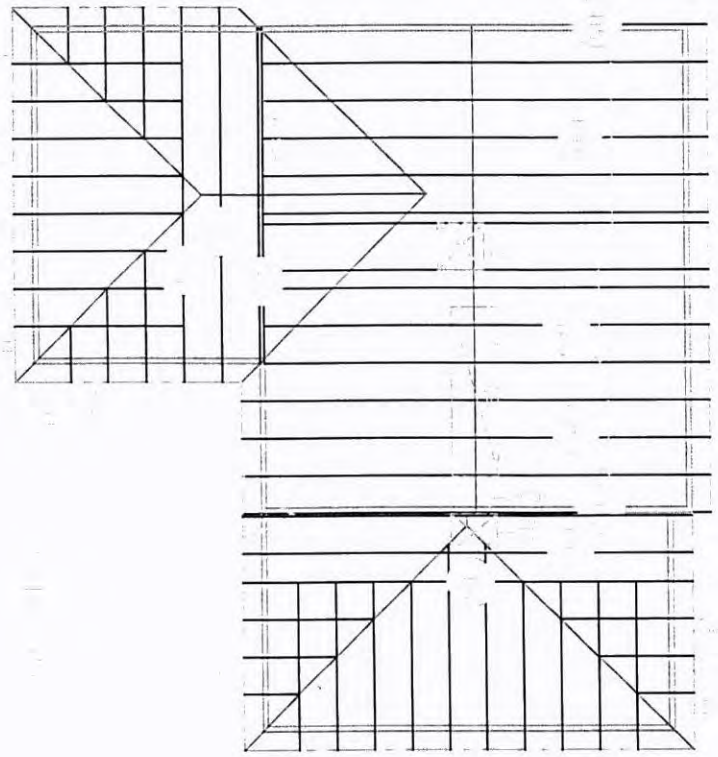
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FILENAME
PL3A

SCALE
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JOBNAME
VILLAGE WALK
PLAN 3A LOT 36

PLAN 3
ELEV A

DRAWN BY
RICK PATTERSON

DATE
6-22-16

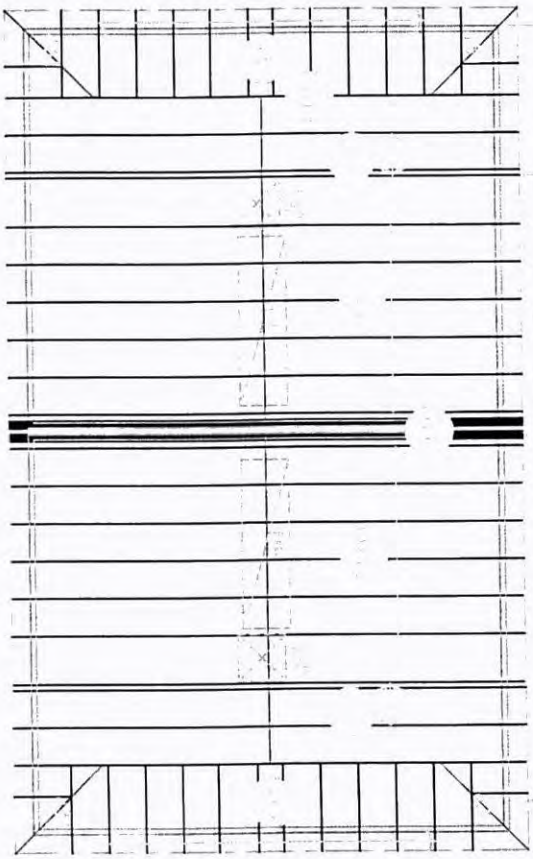
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FILENAME
PL3A

SCALE
1/8"=1'-0"

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JOBNAME
VILLAGE WALK
DETACHED GARAGE

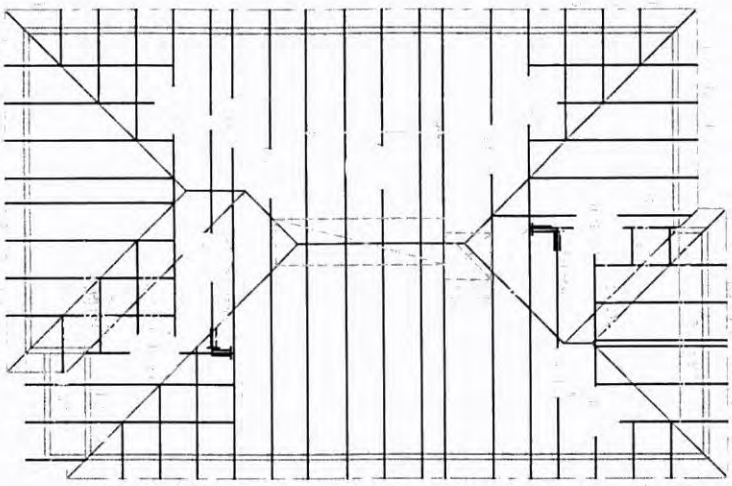
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ELEV

DRAWN BY: RICK PATTERSON
DATE: 6-22-16
REVISIONS: -
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FILENAME: DETACHED GARAGE
SCALE: 1/8"=1'-0"

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JOBNAME
VILLAGE WALK
PLAN 4A

PLAN 4
ELEV A

DRAWN BY
RICK PATTERSON

DATE
6-22-16

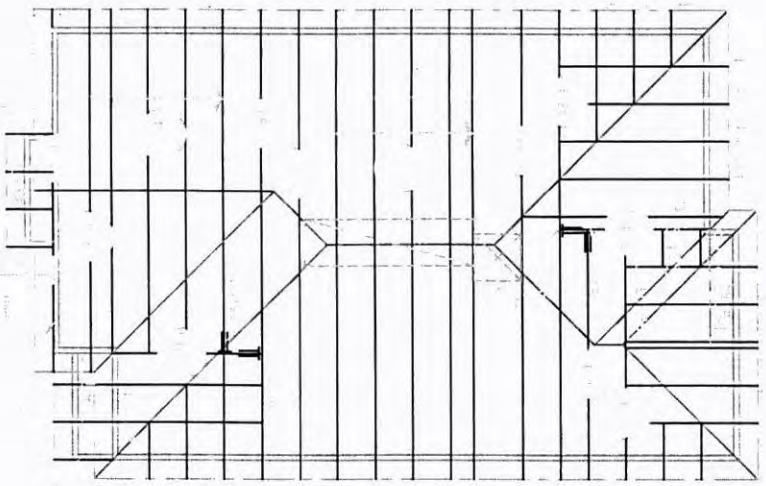
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FILENAME
PL3A

SCALE
1/8"=1'-0"

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JOBNAME
VILLAGE WALK
PLAN 4B

PLAN 4
ELEV B

DRAWN BY
RICK PATTERSON

DATE
6-22-16

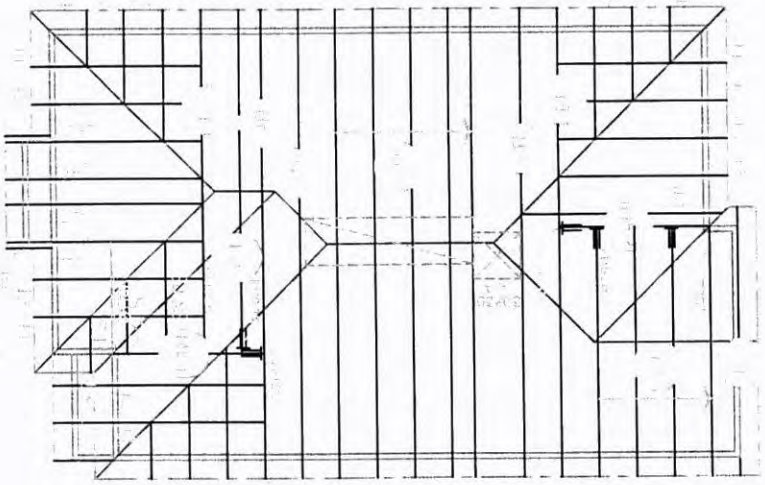
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FILENAME
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SCALE
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JOBNAME
VILLAGE WALK
PLAN 4C

PLAN 4
ELEV C

DRAWN BY
RICK PATTERSON

DATE
6-22-16

SCALE
1/8"=1'-0"

FILENAME
PL3A

REVISIONS
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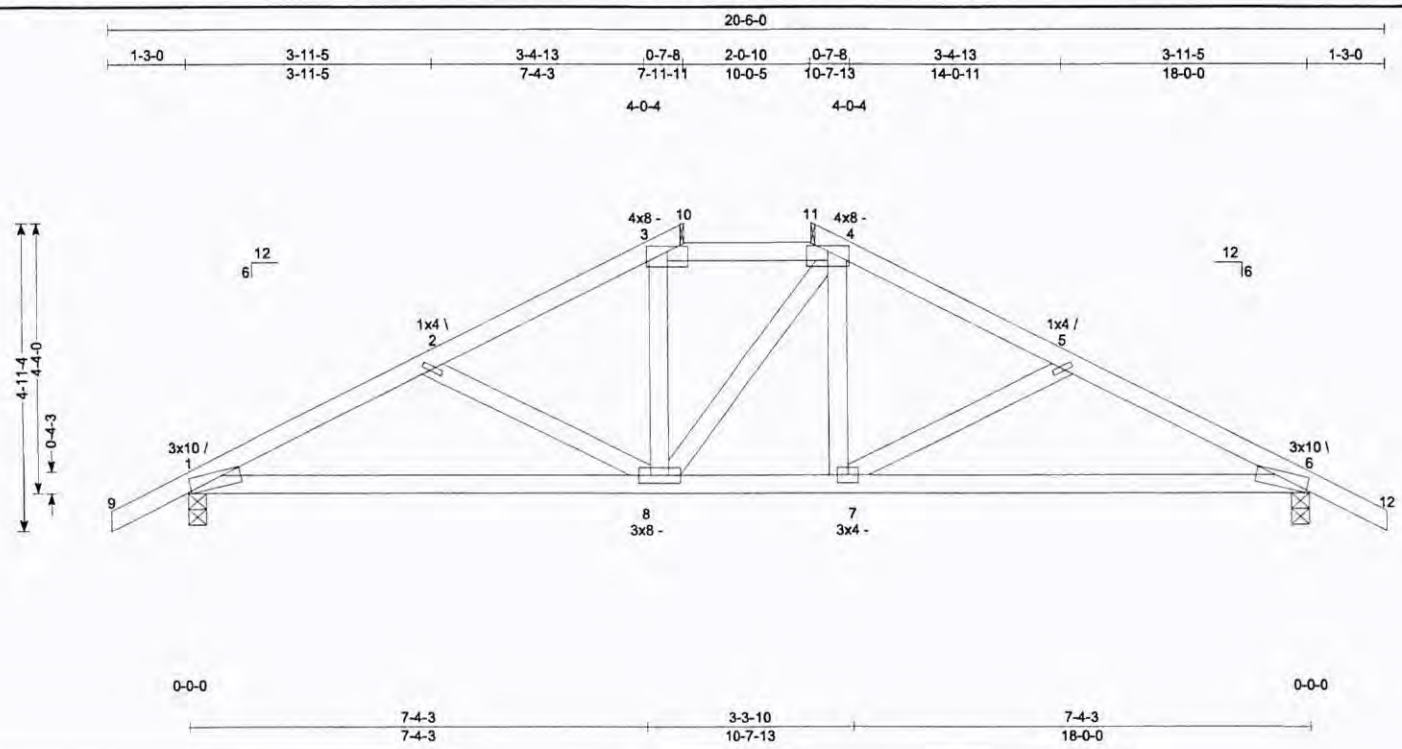
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: A1
Project Name: village walk
Date: 07/01/16 11:09:36
Page: 1 of2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
18-0-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	80 lbs



Loading

Carried Loads (psf)

TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	No
D.O.L. :	125 %

CSI Summary

TC :	0.61 (5-6)
BC :	0.91 (6-7)
Web :	0.20 (4-7)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.36 in	L / 588	(6-7)	L / 240
Vert LL:	0.08 in	L / 999	(7-8)	L / 360
Horz TL:	0.1 in		6	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:5-3,1-9,13.) (2:0-0,3-15,26.) (3:4-5,2-11,0.) (4:4-5,2-11,0.) (5:0-0,3-15,26.) (6:5-3,1-9,13.) (7:0-13,3-8,0.) (8:2-9,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.90 in	1,780 lbs	-	-34 lbs	-34 lbs	8 lbs
6	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.90 in	1,780 lbs	-	-34 lbs	-34 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #1B 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 3-1-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	7-4-3	Down	Proj	20 psf	20 psf	24 in
Top Chd	10-7-13	19-3-0	Down	Proj	20 psf	20 psf	24 in
Top Chd	7-4-3	10-7-13	Down	Proj	85 plf	85 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	7-4-3	Down	378 lbs	
Top Chd	10-7-13	Down	378 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	7-4-3	Down	Proj	14 psf	14 psf	24 in
Top Chd	10-7-13	19-3-0	Down	Proj	14 psf	14 psf	24 in
Bot Chd	0-0-0	18-0-0	Down	Proj	7 psf	7 psf	12 in
Top Chd	7-4-3	10-7-13	Down	Proj	59.5 plf	59.5 plf	
Bot Chd	0-0-0	18-0-0	Down	Proj	28 plf	28 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	7-4-3	Down	264 lbs	
Top Chd	10-7-13	Down	264 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	9-1	0.130	38 lbs	(-6 lbs)	3-4	0.270	-2,620 lbs		4-5	0.321	-2,981 lbs	
	1-2	0.609	-3,254 lbs		3-10	0.022	-27 lbs		5-6	0.612	-3,254 lbs	
	2-3	0.314	-2,982 lbs		11-4	0.022	-27 lbs		6-12	0.130	38 lbs	(-6 lbs)
BC	6-7	0.907	2,874 lbs	(-105 lbs)	7-8	0.673	2,618 lbs	(-106 lbs)	8-1	0.905	2,874 lbs	(-105 lbs)
Webs	2-8	0.098	-317 lbs		4-8	0.059	145 lbs	(-139 lbs)	5-7	0.098	-319 lbs	
	3-8	0.157	386 lbs		4-7	0.199	490 lbs					



NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company, Inc in accordance with ESR-2762 . All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

Simpson Strong-Tie Company

Hanson Components, Inc.

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
18-0-0	6/12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	80 lbs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) California Girder setback equals 8-0-0, truss spacing behind girder equals 2-0-0, there is no second girder setback, end jack type is Open Faced, and the corner girders are Rafter's.
4) Provide adequate drainage to prevent ponding.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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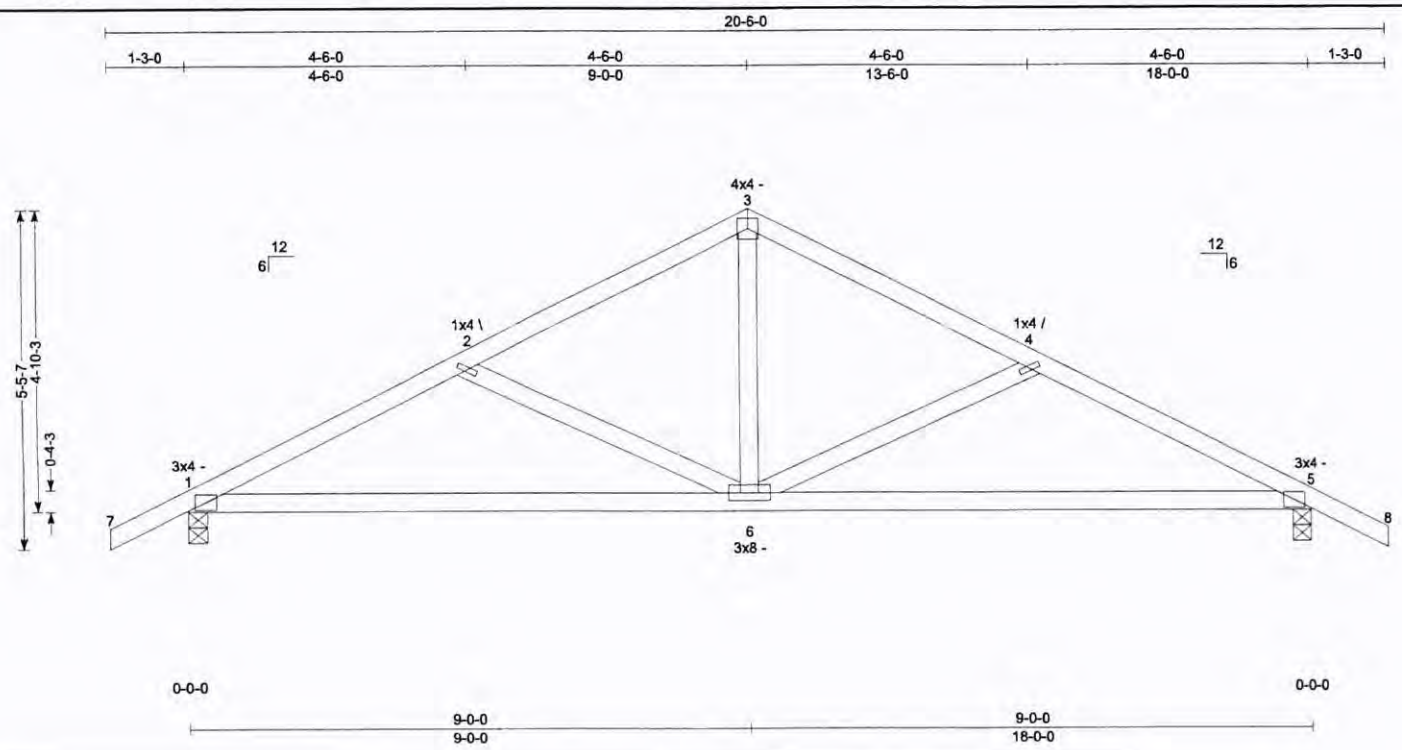
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: A2
Project Name: village walk
Date: 07/01/16 11:09:36
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
18-0-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	71 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.55 (4-5)
BC:	0.94 (5-6)
Web:	0.21 (3-6)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.2 in	L / 999	(5-6)	L / 240
Vert LL:	0.03 in	L / 999	(5-6)	L / 360
Horz TL:	0.04 in		5	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,24.) (3:0-0,3-15,0.) (4:0-0,3-15,24.) (5:3-4,2-5,0.) (6:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	823 lbs	-	-31 lbs	-31 lbs	-24 lbs
5	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	823 lbs	-	-31 lbs	-31 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 5-4-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	7-1	0.113	38 lbs		2-3	0.209	-932 lbs		4-5	0.546	-1,275 lbs
	1-2	0.546	-1,275 lbs		3-4	0.209	-932 lbs		5-8	0.113	38 lbs
BC	5-6	0.941	1,098 lbs	(-147 lbs)	6-1	0.941	1,098 lbs	(-154 lbs)			
Webs	2-6	0.172	-380 lbs		3-6	0.211	519 lbs	(-37 lbs)	4-6	0.172	-380 lbs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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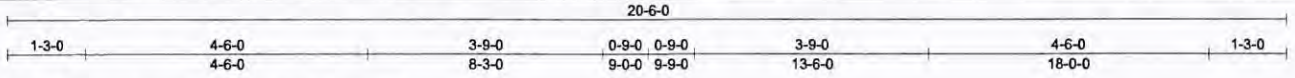
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

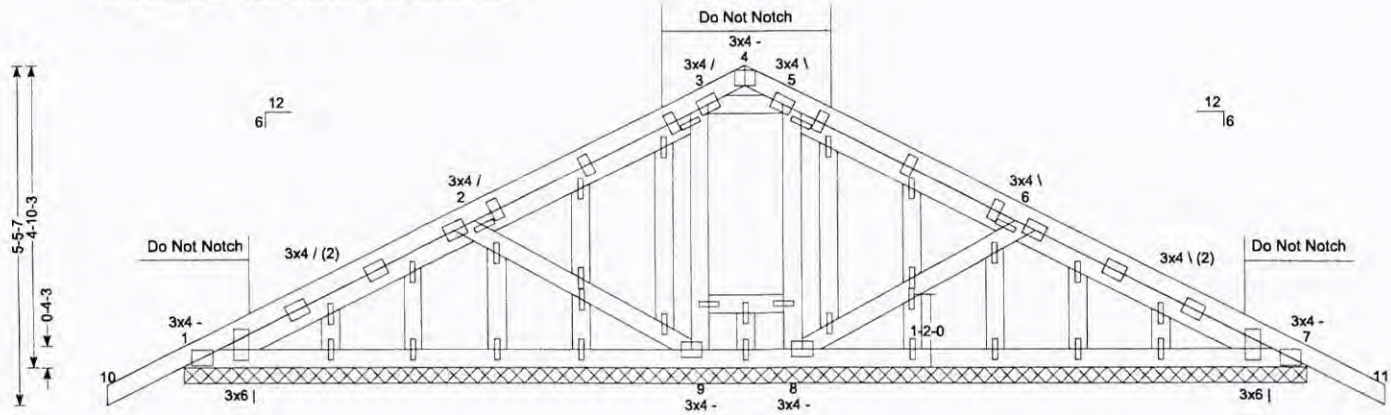
Hanson Components, Inc.

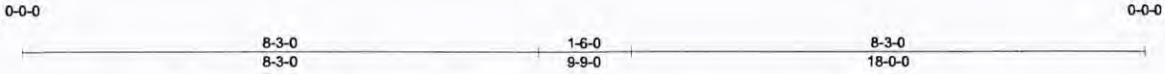
Truss: A2G
Project Name: village walk
Date: 7/4/2016 10:30:05 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
18-0-0	6 / 12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	127 lbs



The top chord may be notched 1.5" deep by 3.5" wide at 24" o.c. max., unless noted otherwise. Do not cut the connector plates





Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.22 (2-3)
BC:	0.67 (7-8)
Web:	0.11 (2-9)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.06 in	L / 999	(7-8)	L / 240
Vert LL:	0 in	L / 999	(7-7)	L / 360
Horz TL:	0 in		7	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:10-13,0-4,90.)(2:1-13,4-13,26.)(3:1-12,3-1,26.) (4:0-0,2-8,0.) (5:1-12,3-1,26.) (6:1-13,4-13,26.)(7:10-5,0-2,90.) (8:1-12,3-8,0.) (9:1-12,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
8	H Roll (Wall)	1	216 in	Douglas-Fir-Larch	Unknown	456 lbs	-	-15 lbs	-15 lbs	0 lbs
9	H Roll (Wall)	1	216 in	Douglas-Fir-Larch	Unknown	456 lbs	-	-15 lbs	-15 lbs	0 lbs
7	H Roll (Wall)	1	216 in	Douglas-Fir-Larch	Unknown	1,062 lbs	-648 lbs	-16 lbs	-648 lbs	0 lbs
1	Pin (Wall)	1	216 in	Douglas-Fir-Larch	Unknown	1,062 lbs	-648 lbs	-16 lbs	-648 lbs	24 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4
Slider	DFL #2 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 5-11-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 3,000 lbs drag load distributed along the TC rake from each direction and resisted along the BC (166.7 plf) by shear walls from 0-0-0 to 18-0-0.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	10-1	0.113	38 lbs		3-4	0.162	189 lbs	(-114 lbs)	6-7	0.175	541 lbs	(-525 lbs)
	1-2	0.175	541 lbs	(-525 lbs)	4-5	0.162	189 lbs	(-114 lbs)	7-11	0.113	38 lbs	
	2-3	0.220	875 lbs	(-847 lbs)	5-6	0.220	875 lbs	(-847 lbs)				
BC	7-8	0.670	1,229 lbs	(-1,102 lbs)	8-9	0.428	173 lbs	(-160 lbs)	9-1	0.670	1,229 lbs	(-1,102 lbs)
Webs	2-9	0.110	-326 lbs		3-5	0.039	124 lbs	(-49 lbs)	6-8	0.110	-326 lbs	
	3-9	0.073	-239 lbs		5-8	0.073	-239 lbs					

Notes:

1) Attach structural gable blocks with 1x4 20ga plates and stacked chords with 2x4 20ga plates, U.N.O.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
6) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
7) This gable has been designed for a 12" (max.) rake overhang.



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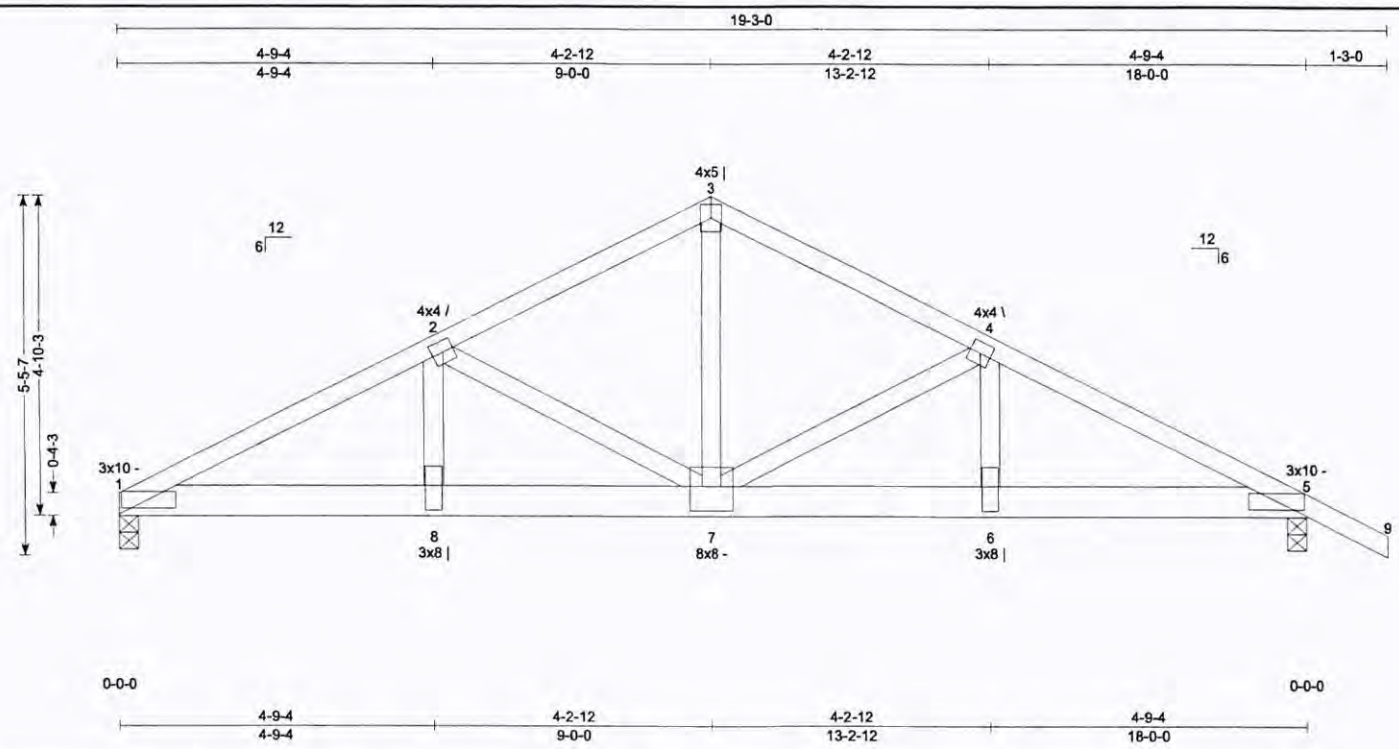
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: A3
Project Name: village walk
Date: 07/01/16 11:09:37
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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
18-0-0	6 /12	1	0-0-0	1-3-0	0-0-0	0-0-0	2	24 in	89 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Carried Loads (psf)		Bldg Code :	CBC 2013/	TC :	0.50 (1-2)	Vert TL:	0.29 in	L / 719	(6-7)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.64 (8-1)	Vert LL:	0.09 in	L / 999	(6-7)	L / 360
TCDL :	14	Rep Mbr Increase :	No	Web :	0.95 (3-7)	Horz TL:	0.08 in		5	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:5-7,1-5,0.) (2:1-12,3-1,26.) (3:0-0,3-15,90.) (4:1-12,3-1,26.) (5:5-7,1-5,0.) (6:0-0,5-0,90.) (7:0-0,5-0,0.) (8:0-0,5-0,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	2.46 in	4,611 lbs	-	-111 lbs	-111 lbs	-3,000 lbs
5	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	2.48 in	4,656 lbs	-	-117 lbs	-117 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL SS 2x6
Webs DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 3-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 3,000 lbs drag load distributed along the TC rake from each direction.
3) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
4) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
5) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
6) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1 : Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	18-0-0	Down	Proj	230 plf	230 plf	
Top Chd	0-0-0	19-3-0	Down	Proj	20 psf	20 psf	12 in

Load Case D1 : Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	18-0-0	Down	Proj	241.5 plf	241.5 plf	
Top Chd	0-0-0	19-3-0	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	18-0-0	Down	Proj	7 psf	7 psf	12 in

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	1-2	0.503	-4,014 lbs		3-4	0.309	-2,711 lbs		5-9	0.058	15 lbs	(-1 lbs)
	2-3	0.309	-2,711 lbs		4-5	0.499	-4,010 lbs					
BC	5-6	0.632	3,585 lbs	(-86 lbs)	7-8	0.489	3,589 lbs	(-86 lbs)				
	6-7	0.488	3,585 lbs	(-86 lbs)	8-1	0.636	3,589 lbs	(-86 lbs)				
Webs	2-8	0.463	1,140 lbs	(-18 lbs)	3-7	0.947	2,331 lbs	(-47 lbs)	4-6	0.462	1,137 lbs	(-18 lbs)
	2-7	0.326	-1,345 lbs		4-7	0.325	-1,340 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) The forces shown for this multi-ply truss are per ply and the reactions are for all plies. Two identical trusses shall be built and attached as follows: TC - 1 row of 10d Nails or Gun Nails [min 0.120" dia. x 2 7/8" long] @ 12" o.c., BC - 2 staggered rows of 10d Nails or Gun Nails [min 0.120" dia. x 2 7/8" long] @ 8.75" o.c. , Webs - 1 row 10d Nails or Gun Nails [min 0.120" dia. x 2 7/8" long] @ 9" o.c..
4) Where required, sufficient hangers shall be provided (by others) to resist reactions shown.
5) Install the screws/nails on one side; do not flip truss. Screws/nails shall be installed in the same truss ply that the hangers are attached to.
6) Lateral bracing shall be attached to each ply.
7) All fasteners minimum 2-1/2" long, unless otherwise noted.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
67407
STATE OF CALIFORNIA
07/05/2016

NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company, Inc in accordance with ESR-2762 . All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
18-0-0	6/12	1	0-0-0	1-3-0	0-0-0	0-0-0	2	24 in	89 lbs

8) Nails in 1st and 2nd ply shall be staggered from successive plies by 1/2 the nail spacing.
9) Listed wind uplift reactions based on MWFRS Only loading.
10) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
67407
STATE OF CALIFORNIA
07/05/2016

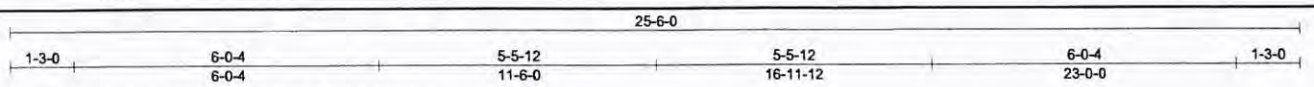
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SIMPSON
Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

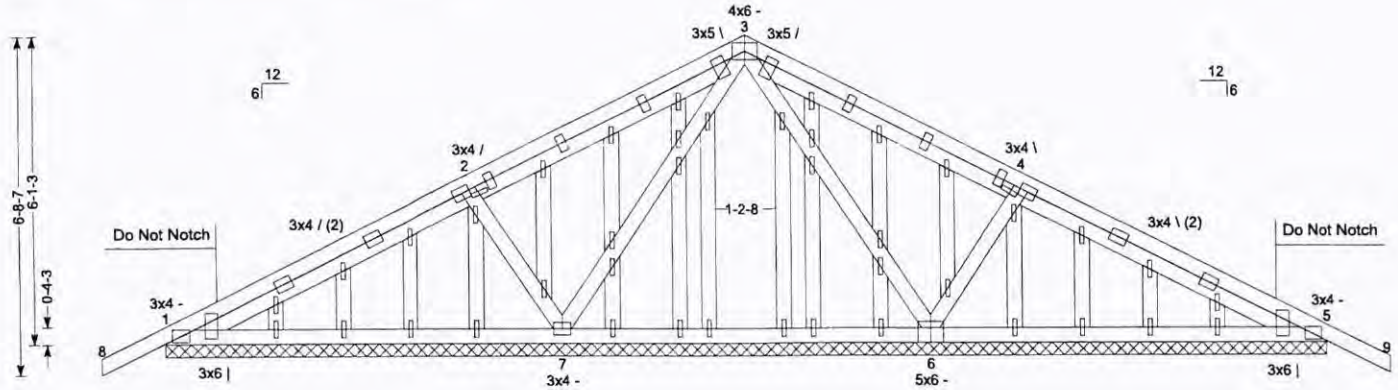
Hanson Components, Inc.

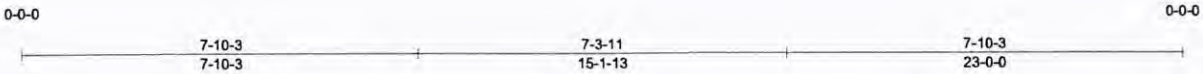
Truss: B1
Project Name: village walk
Date: 7/4/2016 10:35:32 AM
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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
23-0-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	182 lbs



The top chord may be notched 1.5" deep by 3.5" wide at 24" o.c. max., unless noted otherwise. Do not cut the connector plates





Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/ TPI 1-2007	TC :	0.30 (3-4)	Vert TL:	0.13 in	L / 999	(6-7)	L / 240
TCLL :	20			BC :	0.68 (6-7)	Vert LL:	0.08 in	L / 999	(6-7)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.60 (3-6)	Horz TL:	0.01 in		5	
BCLL :	0	D.O.L :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:10-10,0-4,90.)(2:1-9,4-11,26.) (3:0-0,3-15,0.) (4:1-9,4-11,26.) (5:10-8,0-4,90.) (6:0-0,2-8,0.) (7:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
6	H Roll (Wall)	1	276 in	Douglas-Fir-Larch	Unknown	742 lbs	-147 lbs	-11 lbs	-147 lbs	0 lbs
7	H Roll (Wall)	1	276 in	Douglas-Fir-Larch	Unknown	742 lbs	-147 lbs	-11 lbs	-147 lbs	0 lbs
5	H Roll (Wall)	1	276 in	Douglas-Fir-Larch	Unknown	836 lbs	-395 lbs	-24 lbs	-395 lbs	0 lbs
1	Pin (Wall)	1	276 in	Douglas-Fir-Larch	Unknown	836 lbs	-395 lbs	-24 lbs	-395 lbs	-32 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4
Slider	DFL #2 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 2,800 lbs drag load distributed along the TC rake from each direction and resisted along the BC (121.7 plf) by shear walls from 0-0-0 to 23-0-0.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	8-1	0.113	38 lbs		2-3	0.304	418 lbs	(-408 lbs)	4-5	0.275	-572 lbs	
	1-2	0.275	-572 lbs		3-4	0.304	418 lbs	(-408 lbs)	5-9	0.113	38 lbs	
BC	5-6	0.640	977 lbs	(-844 lbs)	6-7	0.685	490 lbs	(-399 lbs)	7-1	0.640	977 lbs	(-844 lbs)
Webs	2-7	0.078	-332 lbs		3-6	0.598	-725 lbs					
	3-7	0.598	-725 lbs		4-6	0.078	-332 lbs					

Notes:

1) Attach structural gable blocks with 1x4 20ga plates and stacked chords with 2x4 20ga plates, U.N.O.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
6) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
7) This gable has been designed for a 12" (max.) rake overhang.



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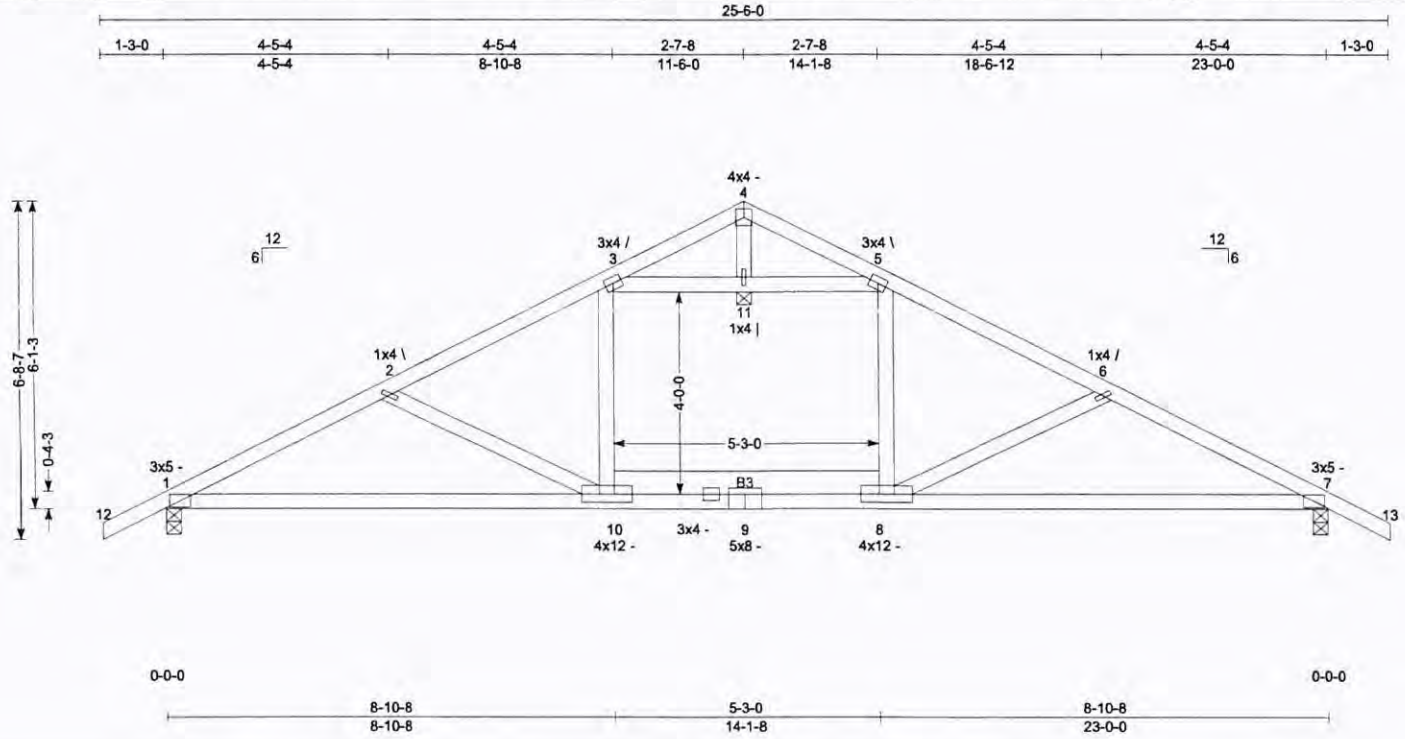
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: B2
Project Name: village walk
Date: 07/01/16 11:09:39
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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
23-0-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	110 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/ TPI 1-2007	TC :	0.54 (1-2)	Vert TL:	0.24 in	L / 999	(7-8)	L / 240
TCLL :	20			BC :	0.99 (10-1)	Vert LL:	0.02 in	L / 999	(14n-9)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	StkChd:	0.22 (B3)	Horz TL:	0.08 in		7	
BCLL :	0	D.O.L. :	125 %	Web :	0.21 (11-5)	Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,25.) (3:0-0,3-15,26.) (4:0-0,3-15,0.) (5:0-0,3-15,26.) (6:0-0,3-15,25.) (7:3-4,2-5,0.) (8:1-12,3-8,0.) (9:0-0,2-8,0.) (10:1-12,3-8,0.) (11:0-0,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,143 lbs	-	-6 lbs	-6 lbs	32 lbs
7	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,143 lbs	-	-6 lbs	-6 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
StkChd	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 4-2-0, Purlin design by Others.
BC Bracing: Sheathed

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.
5) Attic floor area has been designed as a living area with 0 psf floor live load and a 0 psf floor dead load, and the interior vertical webs and ceiling has been designed for a 0 psf dead load.

Load Case D1: Std Dead Load

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	11-6-0	Down	100 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	12-1	0.113	38 lbs	3-4	0.271	-334 lbs		6-7	0.545	-2,023 lbs	
	1-2	0.545	-2,023 lbs	4-5	0.271	-334 lbs		7-13	0.113	38 lbs	
	2-3	0.330	-1,709 lbs	5-6	0.330	-1,709 lbs					
BC	7-8	0.994	1,776 lbs	(-137 lbs)	8-10	0.578	1,459 lbs	(-30 lbs)	10-1	0.994	1,776 lbs	(-144 lbs)
StkChd	B3	0.219	54 lbs	(-30 lbs)							
Webs	2-10	0.180	-431 lbs		4-11	0.040	106 lbs	(-15 lbs)	6-8	0.180	-431 lbs	
	3-10	0.177	436 lbs		11-5	0.210	-1,225 lbs					
	3-11	0.210	-1,225 lbs		5-8	0.177	436 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bottom chord in the open area of this truss meets L/360 for live load and L/240 for total load deflection criteria.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
6) ☒ Indicates continuous lateral restraint (CLR) required at the location(s) shown. Rows of CLR must be adequately diagonally braced, see and BSCI-B3: Permanent Restraint/Bracing of Chords & Web Members.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
67407
STATE OF CALIFORNIA
07/05/2016

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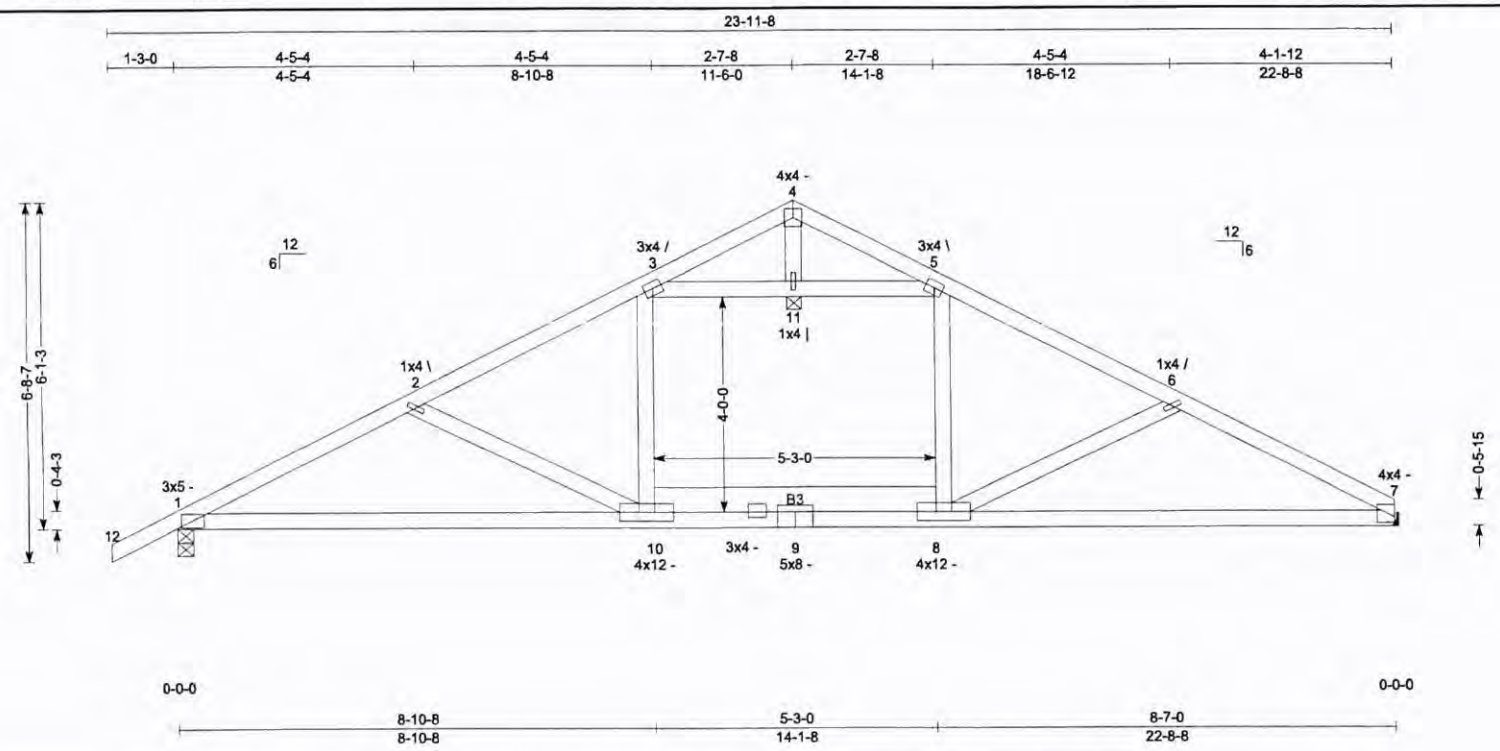
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: B3
Project Name: village walk
Date: 07/01/16 11:09:39
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
22-8-8	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	108 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.55 (1-2)
BC :	1.00 (10-1)
StkChd:	0.23 (B3)
Web :	0.21 (11-5)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.27 in	L / 979	(10-1)	L / 240
Vert LL:	0.02 in	L / 999	(13n-9)	L / 360
Horz TL:	0.07 in		7	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,25.) (3:0-0,3-15,26.) (4:0-0,3-15,0.) (5:0-0,3-15,26.) (6:0-0,3-15,25.) (7:2-0,3-3,0.) (8:1-12,3-8,0.) (9:0-0,2-8,0.) (10:1-12,3-8,0.) (11:0-0,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,131 lbs	-	-6 lbs	-6 lbs	2,000 lbs
7	H Roll (Truss)	1	1.5 in	-	1.50 in	1,072 lbs	-	-	-	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
StkChd	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 4-2-0, Purlin design by Others.
BC Bracing: Sheathed

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 2,000 lbs drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.
6) Attic floor area has been designed as a living area with 0 psf floor live load and a 0 psf floor dead load, and the interior vertical webs and ceiling has been designed for a 0 psf dead load.

Load Case D1: Std Dead Load

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	11-6-0	Down	100 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	12-1	0.113	38 lbs	3-4	0.241	-432 lbs		6-7	0.299	-1,941 lbs	
	1-2	0.552	-2,059 lbs	4-5	0.307	-425 lbs					
	2-3	0.358	-1,674 lbs	5-6	0.328	-1,661 lbs					
BC	7-8	0.936	1,712 lbs (-200 lbs)	8-10	0.559	1,668 lbs	(-272 lbs)	10-1	0.998	1,831 lbs	(-648 lbs)
StkChd	B3	0.226	50 lbs (-34 lbs)								
Webs	2-10	0.183	-439 lbs	4-11	0.039	104 lbs	(-16 lbs)	6-8	0.154	-369 lbs	
	3-10	0.177	437 lbs	11-5	0.206	-1,201 lbs					
	3-11	0.206	-1,201 lbs	5-8	0.164	405 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bottom chord in the open area of this truss meets L/360 for live load and L/240 for total load deflection criteria.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
7) ☒ Indicates continuous lateral restraint (CLR) required at the location(s) shown. Rows of CLR must be adequately diagonally braced, see and BSCI-B3: Permanent Restraint/Bracing of Chords & Web Members.



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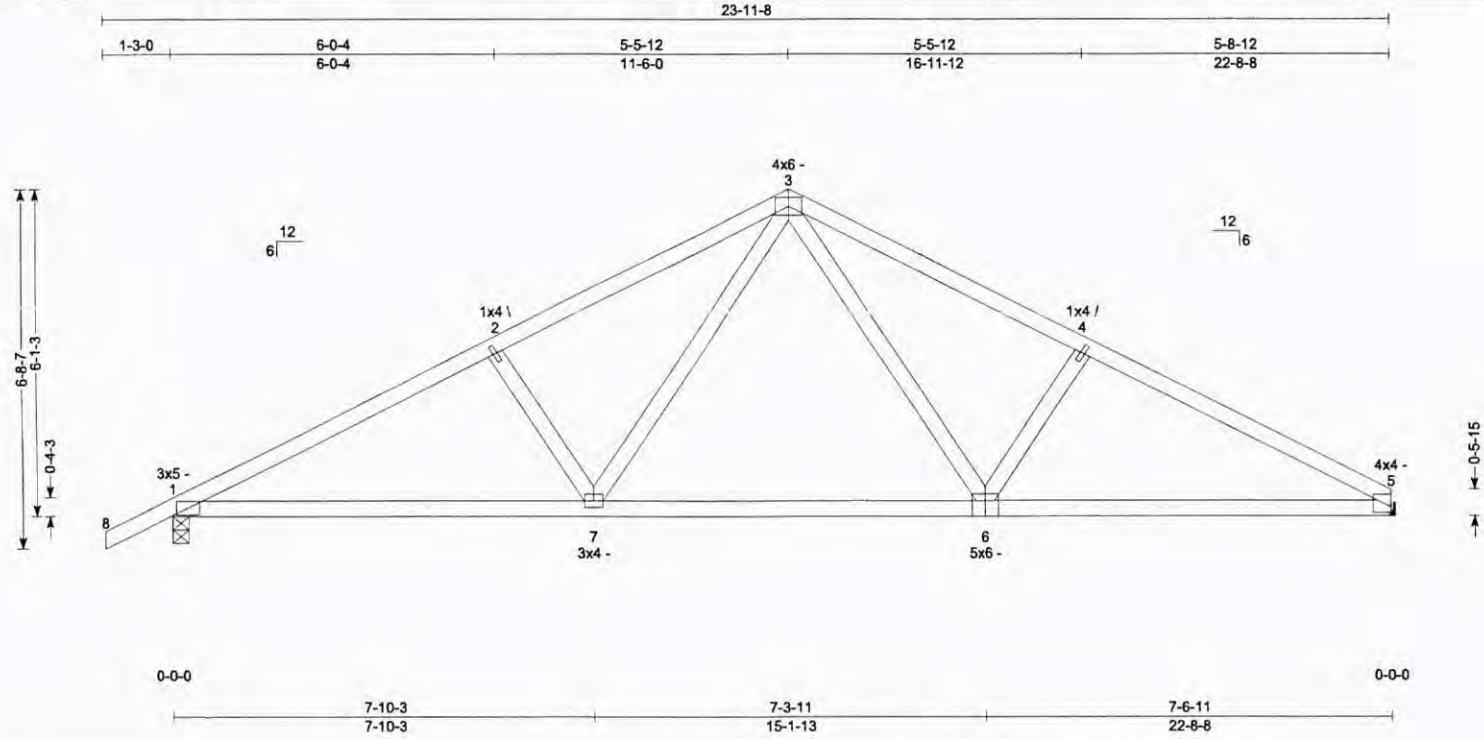
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: B4
Project Name: village walk
Date: 07/01/16 11:09:40
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
22-8-8	6 / 12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	89 lbs



Loading

	(psf)
Load	
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.45 (1-2)
BC:	0.91 (7-1)
Web:	0.24 (3-7)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.24 in	L / 999	(7-1)	L / 240
Vert LL:	0.1 in	L / 999	(6-7)	L / 360
Horz TL:	0.06 in		5	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,56.) (3:0-0,3-15,0.) (4:0-0,3-15,56.) (5:2-0,3-3,0.) (6:0-0,2-8,0.) (7:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Gnv Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,037 lbs	-	-36 lbs	-36 lbs	48 lbs
5	H Roll (Truss)	1	1.5 in	-	1.50 in	976 lbs	-	-22 lbs	-22 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 4-5-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	8-1	0.113	38 lbs	2-3	0.335	-1,552 lbs		4-5	0.294	-1,685 lbs	
	1-2	0.445	-1,732 lbs	3-4	0.294	-1,510 lbs					
BC	5-6	0.844	1,432 lbs (-211 lbs)	6-7	0.804	978 lbs	(-79 lbs)	7-1	0.907	1,484 lbs	(-213 lbs)
Webs	2-7	0.089	-378 lbs	3-6	0.219	538 lbs	(-90 lbs)				
	3-7	0.236	592 lbs (-87 lbs)	4-6	0.084	-354 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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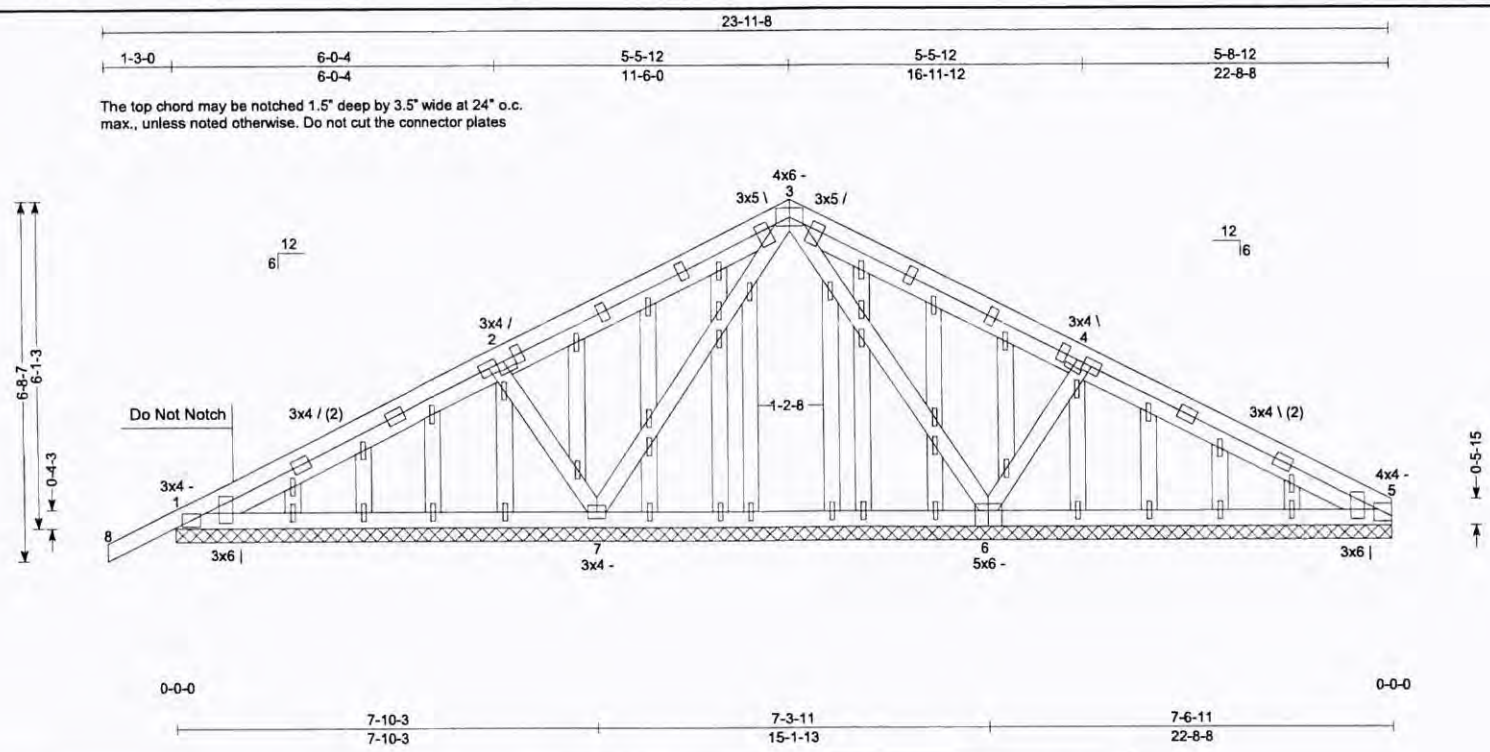
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: B5
Project Name: village walk
Date: 7/4/2016 10:58:44 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
22-8-8	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	179 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.30 (2-3)
BC:	0.68 (6-7)
Web:	0.61 (3-7)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.13 in	L / 999	(6-7)	L / 240
Vert LL:	0.08 in	L / 999	(6-7)	L / 360
Horz TL:	0.01 in		5	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:11-0,0-3,90.) (2:1-9,4-11,26.) (3:0-0,3-15,0.) (4:1-9,4-11,26.) (5:7-10,1-8,90.) (6:0-0,2-8,0.) (7:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
6	H Roll (Wall)	1	272.5 in	Douglas-Fir-Larch	Unknown	732 lbs	-151 lbs	-12 lbs	-151 lbs	0 lbs
7	H Roll (Wall)	1	272.5 in	Douglas-Fir-Larch	Unknown	750 lbs	-149 lbs	-16 lbs	-149 lbs	0 lbs
5	H Roll (Wall)	1	272.5 in	Douglas-Fir-Larch	Unknown	805 lbs	-456 lbs	-7 lbs	-456 lbs	0 lbs
1	Pin (Wall)	1	272.5 in	Douglas-Fir-Larch	Unknown	846 lbs	-399 lbs	-22 lbs	-399 lbs	48 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4
Slider	DFL #2 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 2,800 lbs drag load distributed along the TC rake from each direction and resisted along the BC (121.7 plf) by shear walls from 0-0-0 to 23-0-0.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	8-1	0.113	38 lbs		2-3	0.301	419 lbs	(-417 lbs)	4-5	0.279	-660 lbs	
	1-2	0.275	-580 lbs		3-4	0.296	-437 lbs					
BC	5-6	0.625	1,001 lbs	(-830 lbs)	6-7	0.684	505 lbs	(-400 lbs)	7-1	0.641	991 lbs	(-850 lbs)
Webs	2-7	0.078	-332 lbs		3-6	0.587	-711 lbs					
	3-7	0.607	-735 lbs		4-6	0.082	-349 lbs					

Notes:

1) Attach structural gable blocks with 1x4 20ga plates and stacked chords with 2x4 20ga plates, U.N.O.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
6) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
7) This gable has been designed for a 12" (max.) rake overhang.



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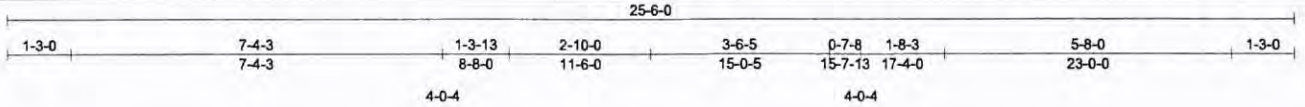
SIMPSON STRONG-TIE

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

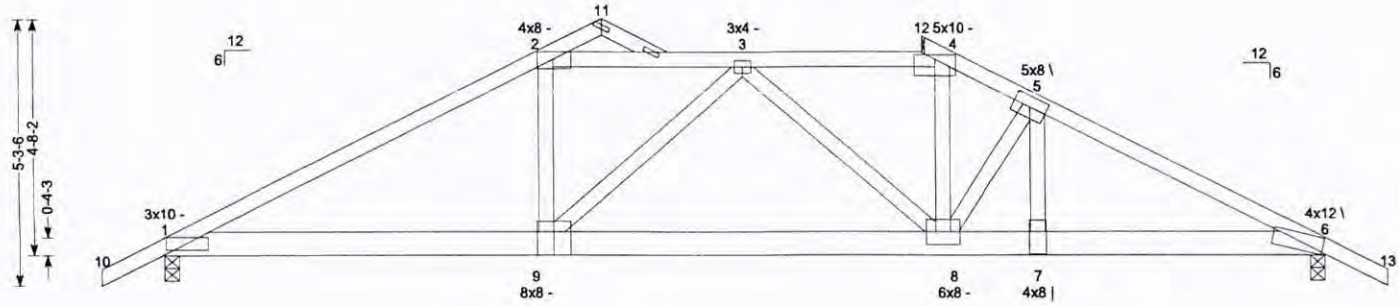
Hanson Components, Inc.

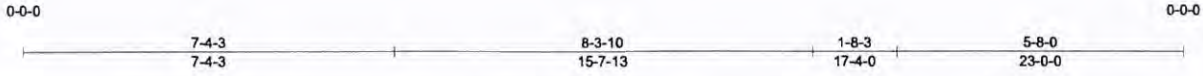
Truss: B6
Project Name: village walk
Date: 7/4/2016 11:04:02 AM
Page: 1 of 2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
23-0-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	120 lbs



Member 2-4 is a TC and shall be braced at a maximum of 24" o.c.





Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	No
D.O.L.:	125 %

CSI Summary

TC:	0.85 (5-6)
BC:	0.75 (9-1)
Web:	0.79 (4-8)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.4 in	L / 670	(7-8)	L / 240
Vert LL:	0.14 in	L / 999	(7-8)	L / 360
Horz TL:	0.12 in		6	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:5-7,1-5,0.) (2:4-9,2-0,0.) (3:0-0,3-8,0.) (4:4-5,3-3,0.) (5:1-12,3-1,26.) (6:6-5,0-13,13.) (7:0-0,4-4,90.) (8:2-9,5-8,0.) (9:4-5,4-0,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.84 in	1,724 lbs	-	-65 lbs	-65 lbs	31 lbs
6	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	3.37 in	3,157 lbs	-	-132 lbs	-132 lbs	0 lbs

Material Summary

TC	DFL #2 2x4	except:
12-13	DFL #1B 2x4	
BC	DFL #2 2x6	except:
6-9	DFL SS 2x6	
Webs	DFL Std/Stud 2x4	except:
5-7	DFL #2 2x4	

Bracing Summary

TC Bracing: Sheathed

BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	17-4-0	Down	1,475 lbs	

Load Case D1: Std Dead Load

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	17-4-0	Down	1,350 lbs	

User-defined Load Case W11: MWFRS-Wind || to Ridge (DOL = 1.60)

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	8-8-0	N Up	Rake	22.64 psf	22.64 psf	24 in
Top Chd	8-8-0	15-0-5	N Up	Rake	22.64 psf	22.64 psf	24 in
Top Chd	15-0-5	24-3-0	N Up	Rake	22.64 psf	22.64 psf	24 in

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	17-4-0	Up	1,560 lbs	

Load Combinations

#	Load Combo	Factor	Load Duration Factor
1	D1	1.000	0.900
2	D1 + Lr1	1.000	1.250
3	D1 + 0.6 W3	1.000	1.600
4	D1 + 0.6 W11	1.000	1.600
5	D1 + 0.45 W3 + 0.75 Lr1	1.000	1.600
6	D1 + 0.45 W11 + 0.75 Lr1	1.000	1.600



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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
23-0-0	6 / 12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	120 lbs

7	D1 + 0.45 W3	1.000	1.600
8	D1 + 0.45 W11	1.000	1.600
9	0.6 D1 + 0.6 W1	1.000	1.600
10	0.6 D1 + 0.6 W2	1.000	1.600
11	0.6 D1 + 0.6 W4	1.000	1.600
12	0.6 D1 + 0.6 W8	1.000	1.600
13	0.6 D1 + 0.6 W9	1.000	1.600
14	0.6 D1 + 0.6 W11	1.000	1.600
15	D1 + L10*	1.000	1.250
16	D1 + UR1	1.000	1.250
17	D1 + UR2	1.000	1.250
18	D1 + OFlr1	1.000	1.250
19	D1 + OFlr2	1.000	1.250
20	D1 + OFlr3	1.000	1.250
21	D1 + OFlr4	1.000	1.250
22	D1 + OFlr5	1.000	1.250
23	D1 + OFlr6	1.000	1.250
24	D1 + OFlr7	1.000	1.250
25	D1 + OFlr8	1.000	1.250
26	D1 + OFlr9	1.000	1.250

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	10-1	0.130	38 lbs		2-11	0.074	-34 lbs		4-5	0.416	-4,683 lbs	
	1-2	0.844	-3,197 lbs		3-4	0.443	-4,176 lbs		5-6	0.853	-6,433 lbs	
	2-3	0.437	-2,811 lbs		12-4	0.008	-13 lbs		6-13	0.097	38 lbs	
BC	6-7	0.677	5,686 lbs	(-172 lbs)	8-9	0.388	3,666 lbs	(-77 lbs)				
	7-8	0.576	5,686 lbs	(-172 lbs)	9-1	0.752	2,769 lbs	(-34 lbs)				
Webs	2-9	0.413	1,017 lbs		3-8	0.280	690 lbs	(-9 lbs)	5-8	0.538	-2,691 lbs	
	3-9	0.586	-1,189 lbs		4-8	0.789	1,941 lbs	(-73 lbs)	5-7	0.490	2,773 lbs	(-112 lbs)

Notes:

1) Unlabeled plates are 1x4 20ga.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Provide adequate drainage to prevent ponding.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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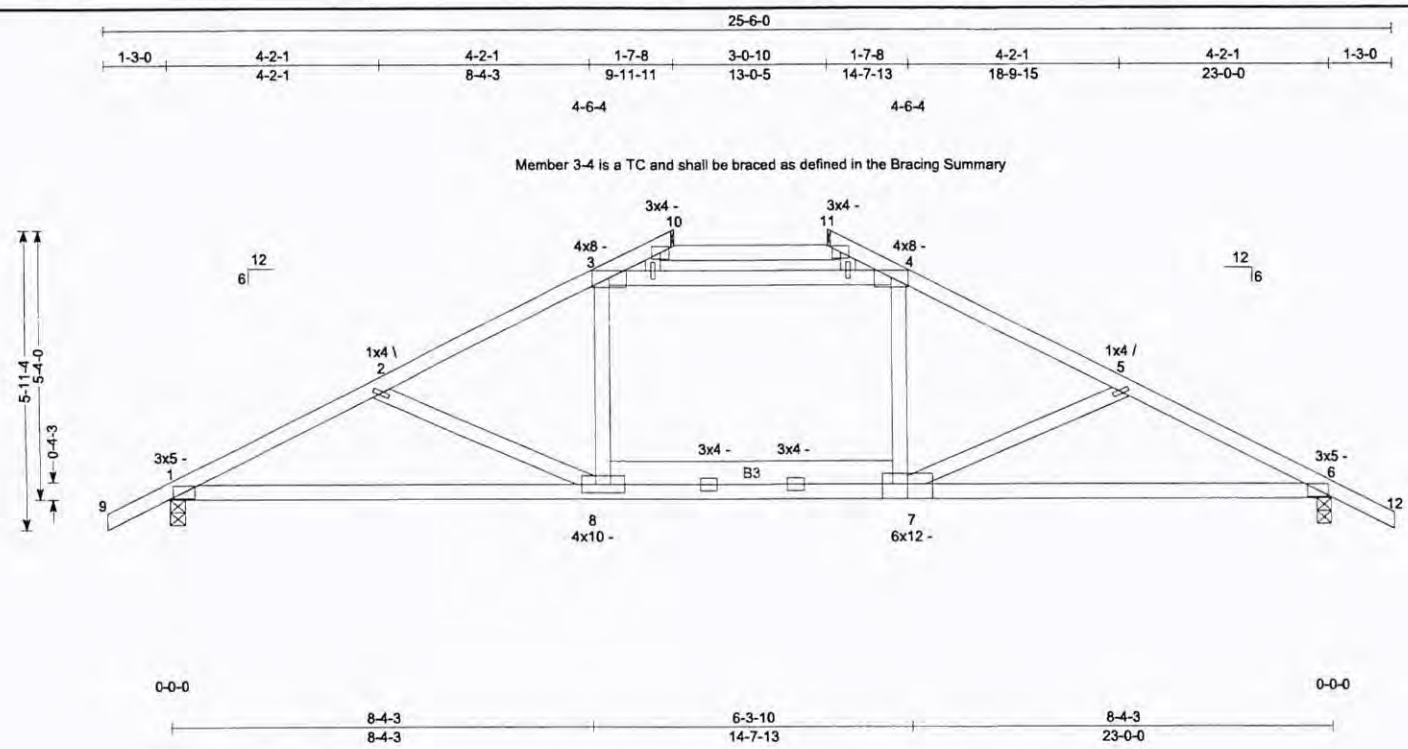
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: B7
Project Name: village walk
Date: 7/4/2016 4:11:37 PM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
23-0-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	112 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code:	CBC 2013/ TPI 1-2007	TC:	0.54 (1-2)	Vert TL:	0.24 in	L / 999	(8-1)	L / 240
TCLL:	20	Rep Mbr Increase:	Yes	BC:	0.97 (8-1)	Vert LL:	0.05 in	L / 999	(16n-17n)	L / 360
TCDL:	14	D.O.L.:	125 %	StkChd:	0.25 (B3)	Horz TL:	0.08 in		6	
BCLL:	0			Web:	0.18 (2-8)	Creep Factor, Kcr = 2.0				
BCDL:	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,23.) (3:4-5,2-0,0.) (4:4-5,2-0,0.) (5:0-0,3-15,23.) (6:3-4,2-5,0.) (7:0-13,3-0,0.) (8:2-9,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,138 lbs	-	-6 lbs	-6 lbs	-27 lbs
6	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,138 lbs	-	-6 lbs	-6 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
StkChd	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 4-2-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case D1: Std Dead Load

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	11-6-0	Down	100 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	9-1	0.113	38 lbs		3-4	0.422	-1,506 lbs		4-5	0.400	-1,735 lbs	
	1-2	0.544	-2,020 lbs		3-10	0.106	-43 lbs		5-6	0.524	-2,021 lbs	
	2-3	0.385	-1,722 lbs		11-4	0.106	-43 lbs		6-12	0.113	38 lbs	
BC	6-7	0.956	1,774 lbs	(-143 lbs)	7-8	0.592	1,483 lbs	(-65 lbs)	8-1	0.966	1,775 lbs	(-151 lbs)
StkChd	B3	0.252	-65 lbs									
Webs	2-8	0.175	-414 lbs		4-7	0.174	427 lbs					
	3-8	0.174	429 lbs		5-7	0.171	-404 lbs					

Notes:

1) Unlabeled plates are 1x4 20ga.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Provide adequate drainage to prevent ponding.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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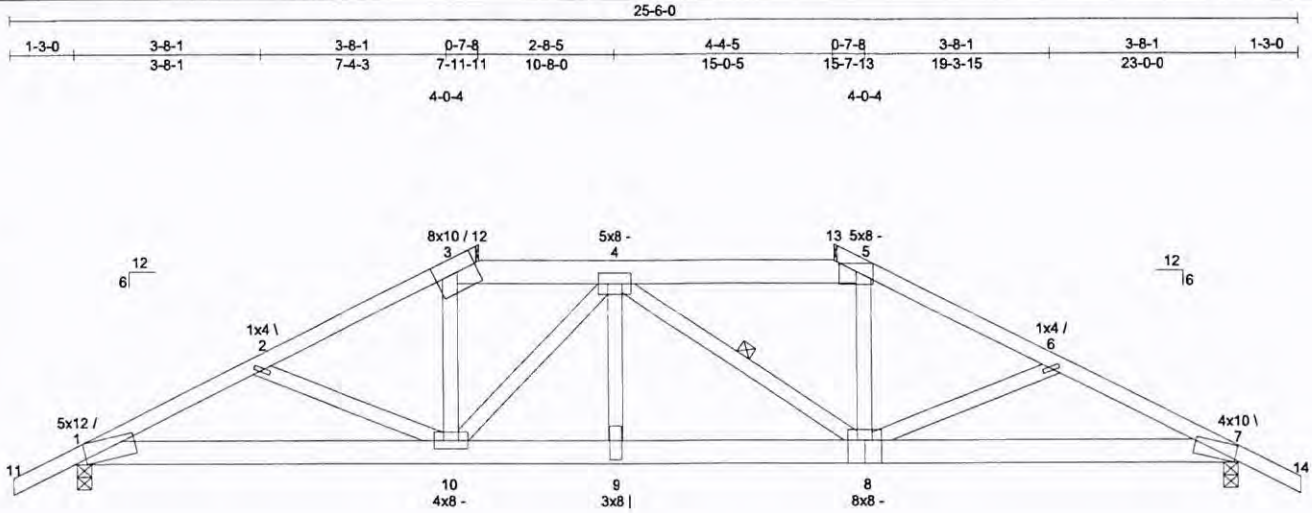
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: B8
Project Name: village walk
Date: 7/6/2016 12:46:54 AM
Page: 1 of2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
23-0-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	130 lbs





Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	No
D.O.L. :	125 %

CSI Summary

TC :	0.50 (1-2)
BC :	0.72 (7-8)
Web :	0.62 (5-8)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.44 in	L / 606	(8-9)	L / 240
Vert LL:	0.15 in	L / 999	9	L / 360
Horz TL:	0.14 in		7	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:7-13,0-6,13.) (2:0-0,3-15,21.) (3:2-3,3-6,26.) (4:0-0,5-8,0.) (5:2-5,3-5,0.) (6:0-0,3-15,21.) (7:5-5,1-1,13.) (8:0-9,4-0,0.) (9:0-0,5-0,90.) (10:0-9,5-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	3.04 in	2,848 lbs	-	-294 lbs	-294 lbs	-21 lbs
7	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	2.30 in	2,155 lbs	-	-194 lbs	-194 lbs	0 lbs

Material Summary

TC	DFL #1B 2x4	except:		
3-5	DFL #2 2x6	13-14	DFL #2 2x4	
BC	DFL #2 2x6	except:		
8-1	DFL SS 2x6			
Webs	DFL Std/Stud 2x4			

Bracing Summary

TC Bracing: Sheathed or Purlins at 2-4-0, Purlin design by Others.

BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	8-0-0	10-8-0	Down	Proj	80 psf	80 psf	24 in

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	10-8-0	Down	620 lbs	
Top Chd	8-0-0	Down	390 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	10-0-0	Down	Proj	28 psf	28 psf	24 in

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	10-8-0	Down	675 lbs	
Top Chd	8-0-0	Down	275 lbs	



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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
23-0-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	130 lbs

User-defined Load Case W11: MWFRS-Wind || to Ridge (DOL = 1.60)

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	7-11-11	N Up	Rake	22.64 psf	22.64 psf	24 in
Top Chd	7-11-11	15-0-5	N Up	Rake	22.64 psf	22.64 psf	24 in
Top Chd	15-0-5	24-3-0	N Up	Rake	22.64 psf	22.64 psf	24 in
Top Chd	8-0-0	10-8-0	Up	Proj	91 psf	91 psf	24 in
Bot Chd	0-0-0	10-0-0	Up	Proj	32 psf	32 psf	24 in

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	10-8-0	Up	713 lbs	
Top Chd	8-0-0	Up	366 lbs	

Load Combinations

#	Load Combo	Factor	Load Duration Factor
1	D1	1.000	0.900
2	D1 + Lr1	1.000	1.250
3	D1 + 0.6 W3	1.000	1.600
4	D1 + 0.6 W11	1.000	1.600
5	D1 + 0.45 W3 + 0.75 Lr1	1.000	1.600
6	D1 + 0.45 W11 + 0.75 Lr1	1.000	1.600
7	D1 + 0.45 W3	1.000	1.600
8	D1 + 0.45 W11	1.000	1.600
9	0.6 D1 + 0.6 W1	1.000	1.600
10	0.6 D1 + 0.6 W2	1.000	1.600
11	0.6 D1 + 0.6 W4	1.000	1.600
12	0.6 D1 + 0.6 W8	1.000	1.600
13	0.6 D1 + 0.6 W9	1.000	1.600
14	0.6 D1 + 0.6 W11	1.000	1.600
15	D1 + L10*	1.000	1.250
16	D1 + UR1	1.000	1.250
17	D1 + UR2	1.000	1.250
18	D1 + OFlr1	1.000	1.250
19	D1 + OFlr2	1.000	1.250
20	D1 + OFlr3	1.000	1.250
21	D1 + OFlr4	1.000	1.250
22	D1 + OFlr5	1.000	1.250
23	D1 + OFlr6	1.000	1.250
24	D1 + OFlr7	1.000	1.250
25	D1 + OFlr8	1.000	1.250
26	D1 + OFlr9	1.000	1.250

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	11-1	0.097	38 lbs		3-12	0.015	-18 lbs		6-7	0.444	-4,333 lbs
	1-2	0.501	-5,521 lbs		4-5	0.251	-3,624 lbs		7-14	0.130	38 lbs
	2-3	0.489	-5,259 lbs		13-5	0.020	-18 lbs				
	3-4	0.456	-4,683 lbs		5-6	0.439	-4,093 lbs				
BC	7-8	0.717	3,840 lbs	(-329 lbs)	9-10	0.566	5,363 lbs	(-521 lbs)			
	8-9	0.526	5,363 lbs	(-521 lbs)	10-1	0.633	4,920 lbs	(-500 lbs)			
Webs	2-10	0.100	-328 lbs		4-9	0.495	1,219 lbs		6-8	0.079	-260 lbs
	3-10	0.576	1,419 lbs	(-77 lbs)	4-8	0.400	-2,149 lbs				
	4-10	0.383	-1,027 lbs		5-8	0.621	1,529 lbs	(-146 lbs)			

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Provide adequate drainage to prevent ponding.
4) ☒ Indicates continuous lateral restraint (CLR) required at the location(s) shown. Rows of CLR must be adequately diagonally braced, see D-WEBCLRBRACE. For alternatives to CLRs and diagonal bracing, see D-WEBREINFORCE.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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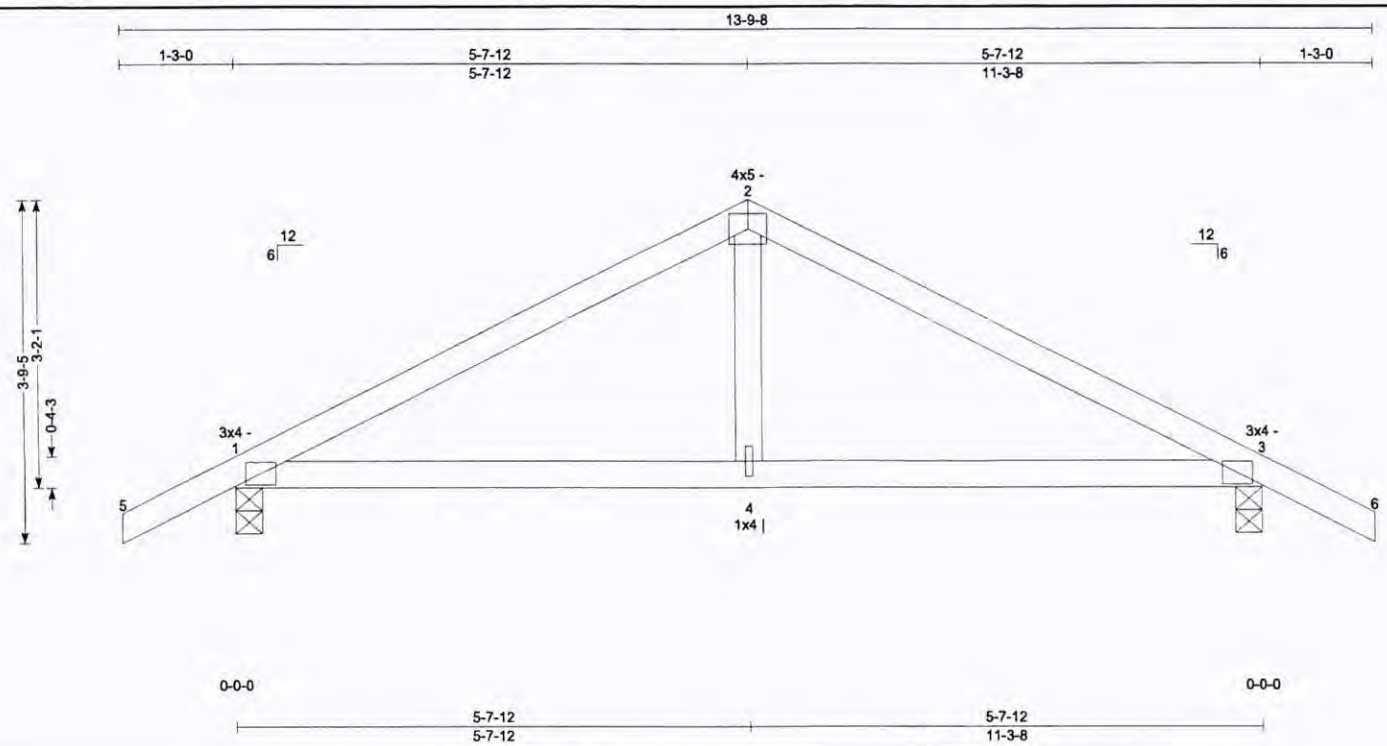
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: C1
Project Name: village walk
Date: 07/01/16 11:09:42
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
11-3-8	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	38 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.31 (1-2)
BC:	0.61 (3-4)
Web:	0.14 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.07 in	L / 999	(3-4)	L / 240
Vert LL:	0.02 in	L / 999	(3-4)	L / 360
Horz TL:	0.01 in		3	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,0.) (3:3-4,2-5,0.) (4:0-0,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	548 lbs	-	-24 lbs	-24 lbs	12 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	548 lbs	-	-24 lbs	-24 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compt force if different from max axial force)

TC	5-1	0.113	38 lbs		2-3	0.311	-665 lbs		
	1-2	0.311	-665 lbs		3-6	0.113	38 lbs		
BC	3-4	0.613	534 lbs	(-44 lbs)	4-1	0.613	534 lbs	(-44 lbs)	
Webs	2-4	0.141	347 lbs						

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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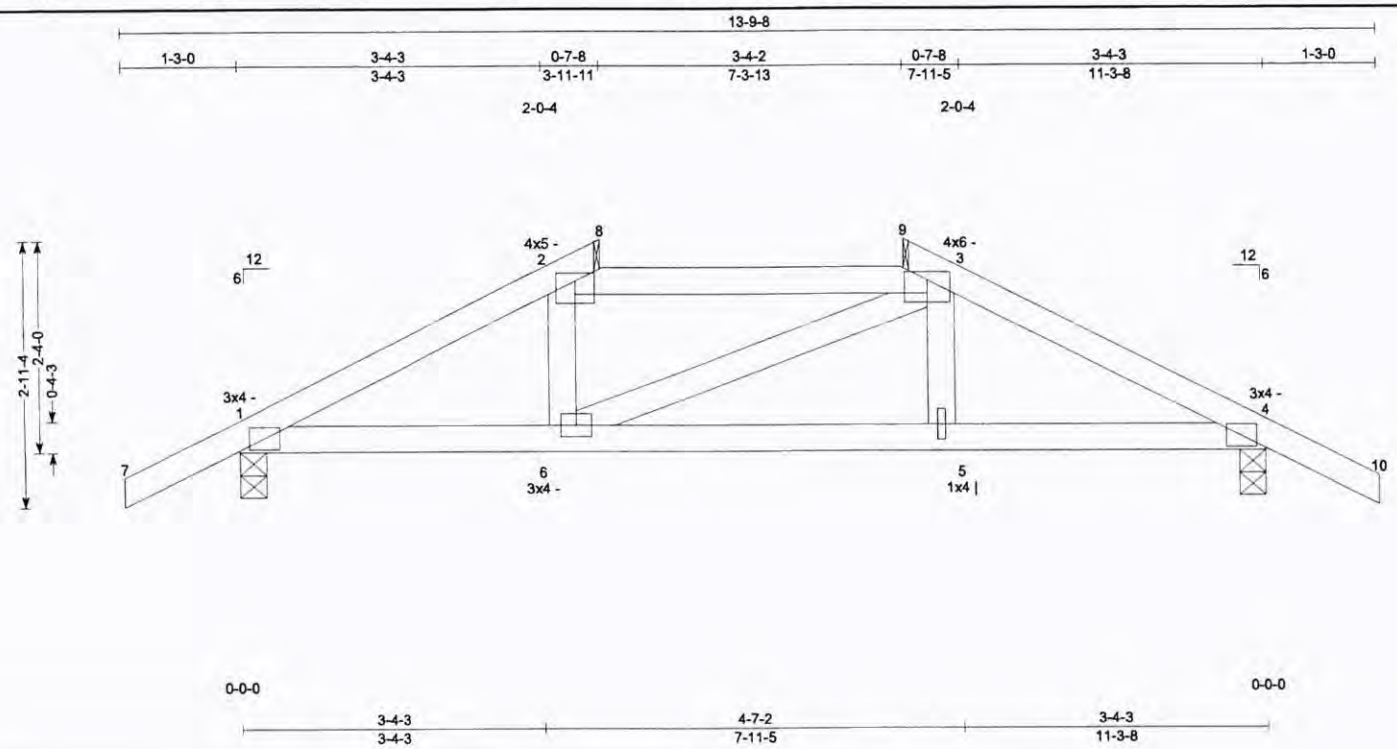
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: C2
Project Name: village walk
Date: 07/01/16 11:09:43
Page: 1 of 2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
11-3-8	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	45 lbs



Loading

Carried Loads (psf)

TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	No
D.O.L. :	125 %

CSI Summary

TC :	0.22 (2-3)
BC :	0.62 (5-6)
Web :	0.13 (3-5)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.08 in	L / 999	(5-6)	L / 240
Vert LL:	0.02 in	L / 999	(5-6)	L / 360
Horz TL:	0.03 in		4	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:4-5,2-11,0.) (3:4-5,2-11,0.) (4:3-4,2-5,0.) (5:2-9,3-8,90.) (6:4-5,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	797 lbs	-	-32 lbs	-32 lbs	1 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	797 lbs	-	-32 lbs	-32 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 5-4-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	3-4-3	Down	Proj	20 psf	20 psf	24 in
Top Chd	7-11-5	12-6-8	Down	Proj	20 psf	20 psf	24 in
Top Chd	3-4-3	7-11-5	Down	Proj	48.23 plf	48.23 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	3-4-3	Down	105 lbs	
Top Chd	7-11-5	Down	105 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	3-4-3	Down	Proj	14 psf	14 psf	24 in
Top Chd	7-11-5	12-6-8	Down	Proj	14 psf	14 psf	24 in
Bot Chd	0-0-0	11-3-8	Down	Proj	7 psf	7 psf	12 in
Top Chd	3-4-3	7-11-5	Down	Proj	33.76 plf	33.76 plf	
Bot Chd	0-0-0	11-3-8	Down	Proj	14 plf	14 plf	

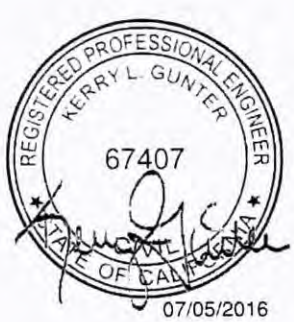
Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	3-4-3	Down	73 lbs	
Top Chd	7-11-5	Down	73 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	7-1	0.130	38 lbs	(-6 lbs)	2-8	0.012	-15 lbs		4-10	0.130	38 lbs	(-6 lbs)
	1-2	0.172	-1,281 lbs		9-3	0.012	-15 lbs					
	2-3	0.220	-1,110 lbs		3-4	0.173	-1,280 lbs					
BC	4-5	0.497	1,110 lbs	(-39 lbs)	5-6	0.623	1,110 lbs	(-39 lbs)	6-1	0.496	1,110 lbs	(-39 lbs)
Webs	2-6	0.098	241 lbs		3-6	0.078	193 lbs	(-192 lbs)	3-5	0.129	318 lbs	



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Hanson Components, Inc.

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
11-3-8	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	45 lbs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) California Girder setback equals 4-0-0, truss spacing behind girder equals 2-0-0, there is no second girder setback, end jack type is Open Faced, and the corner girders are Rafter's.
4) Provide adequate drainage to prevent ponding.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



07/05/2016

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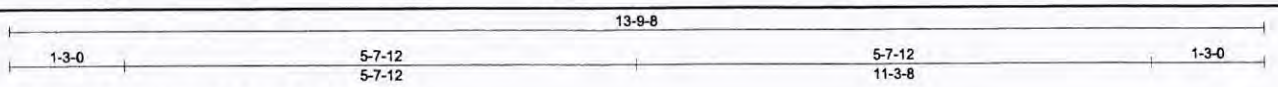
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

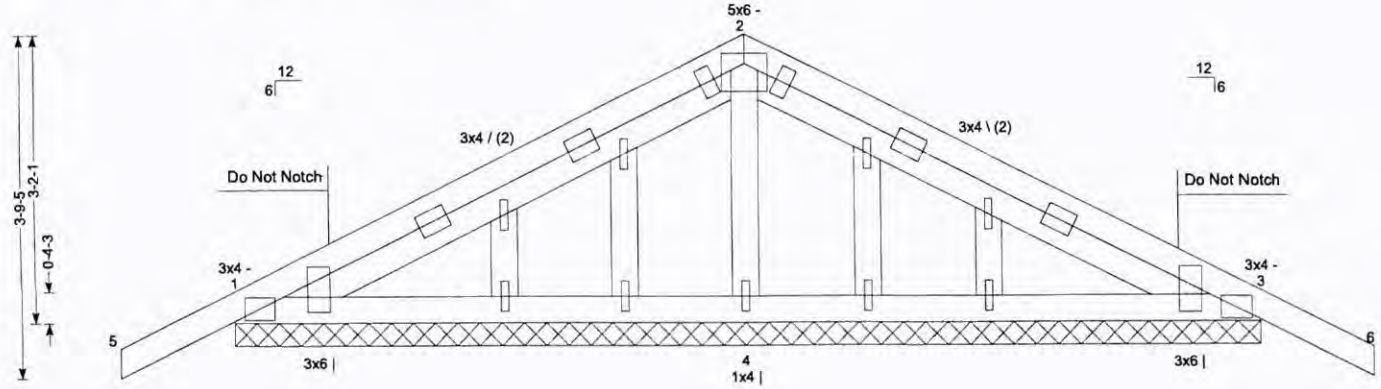
Hanson Components, Inc.

Truss: C3
Project Name: village walk
Date: 7/4/2016 11:26:05 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
11-3-8	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	62 lbs



The top chord may be notched 1.5" deep by 3.5" wide at 24" o.c. max., unless noted otherwise. Do not cut the connector plates





Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.26 (2-3)
BC:	0.40 (3-4)
Web:	0.04 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.01 in	L / 999	(3-4)	L / 240
Vert LL:	0 in	L / 999	(3-3)	L / 360
Horz TL:	0 in		3	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:11-4,0-5,90.) (2:0-0,5-1,0.) (3:9-3,0-1,90.) (4:0-0,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
4	H Roll (Wall)	1	135.5 in	Douglas-Fir-Larch	Unknown	421 lbs	-	-	-	0 lbs
3	H Roll (Wall)	1	135.5 in	Douglas-Fir-Larch	Unknown	530 lbs	-157 lbs	-40 lbs	-157 lbs	0 lbs
1	Pin (Wall)	1	135.5 in	Douglas-Fir-Larch	Unknown	530 lbs	-157 lbs	-40 lbs	-157 lbs	-12 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4
Slider	DFL #2 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 100 plf drag load distributed along the TC rake from each direction and resisted along the BC (100 plf) by shear walls from 0-0-0 to 11-3-8.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	5-1	0.113	38 lbs		2-3	0.256	541 lbs	(-446 lbs)
	1-2	0.256	541 lbs	(-446 lbs)	3-6	0.113	38 lbs	
BC	3-4	0.398	502 lbs	(-467 lbs)	4-1	0.398	502 lbs	(-467 lbs)
Webs	2-4	0.045	-269 lbs					

Notes:

1) Gable webs placed at 16" o.c., U.N.O. Attach structural gable blocks with 1x4 20ga plates and stacked chords with 2x4 20ga plates, U.N.O.
2) This gable has been designed for a 12" (max.) rake overhang.
3) This truss has been designed for in-plane wind loading. See TD-GBL-0002B for gable stud bracing/reinforcement requirements for out-of-plane wind loading.
4) This truss has been designed using the green lumber reduction factors.
5) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
6) Listed wind uplift reactions based on MWFRS Only loading.
7) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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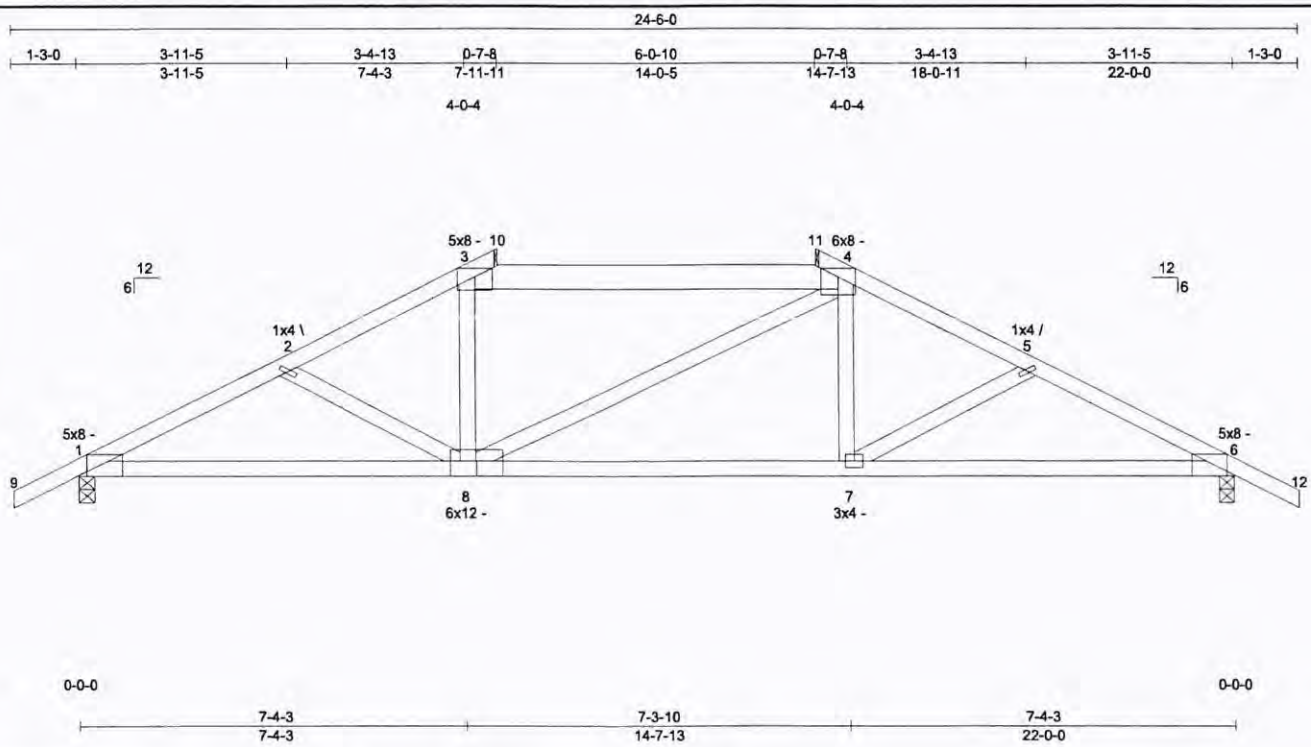
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: D1
Project Name: village walk
Date: 07/01/16 11:09:44
Page: 1 of2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
22-0-0	6 / 12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	101 lbs



Loading

Carried Loads (psf)	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	No
D.O.L :	125 %

CSI Summary

TC :	0.99 (3-4)
BC :	0.97 (8-1)
Web :	0.22 (4-7)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.44 in	L / 579	(7-8)	L / 240
Vert LL:	0.13 in	L / 999	(7-8)	L / 360
Horz TL:	0.15 in		6	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:5-11,1-11,0.) (2:0-0,3-15,27.) (3:2-5,3-5,0.) (4:2-5,3-13,0.) (5:0-0,3-15,27.) (6:5-11,1-11,0.) (7:1-3,3-8,0.) (8:2-9,3-0,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	2.40 in	2,254 lbs	-	-54 lbs	-54 lbs	-8 lbs
6	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	2.40 in	2,254 lbs	-	-54 lbs	-54 lbs	0 lbs

Material Summary

TC	DFL #2 2x4	except:
3-4	DFL #2 2x6	
BC	DFL #1B 2x4	
Webs	DFL Std/Stud 2x4	

Bracing Summary

TC Bracing: Sheathed

BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	7-4-3	Down	Proj	20 psf	20 psf	24 in
Top Chd	14-7-13	23-3-0	Down	Proj	20 psf	20 psf	24 in
Top Chd	7-4-3	14-7-13	Down	Proj	100 plf	100 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	7-4-3	Down	390 lbs	
Top Chd	14-7-13	Down	390 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	7-4-3	Down	Proj	14 psf	14 psf	24 in
Top Chd	14-7-13	23-3-0	Down	Proj	14 psf	14 psf	24 in
Bot Chd	0-0-0	22-0-0	Down	Proj	7 psf	7 psf	12 in
Top Chd	7-4-3	14-7-13	Down	Proj	70 plf	70 plf	
Bot Chd	0-0-0	22-0-0	Down	Proj	28 plf	28 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	7-4-3	Down	273 lbs	
Top Chd	14-7-13	Down	273 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	9-1	0.130	38 lbs	(-6 lbs)	3-4	0.991	-3,663 lbs		4-5	0.799	-4,090 lbs	
	1-2	0.600	-4,260 lbs		3-10	0.051	-44 lbs		5-6	0.574	-4,263 lbs	
	2-3	0.801	-4,085 lbs		11-4	0.051	-44 lbs		6-12	0.130	38 lbs	(-6 lbs)
BC	6-7	0.958	3,760 lbs	(-133 lbs)	7-8	0.918	3,652 lbs	(-148 lbs)	8-1	0.970	3,757 lbs	(-134 lbs)

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
67407
STATE OF CALIFORNIA
07/05/2016

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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
22-0-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	101 lbs

Webs	2-8	0.063	-219 lbs	4-8	0.184	191 lbs	(-166 lbs)	5-7	0.062	-216 lbs
	3-8	0.183	451 lbs	4-7	0.218	535 lbs				

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) California Girder setback equals 8-0-0, truss spacing behind girder equals 2-0-0, the second girder setback equals 10-0-0, end jack type is Open Faced, and the corner girders are Rafter's.
4) Provide adequate drainage to prevent ponding.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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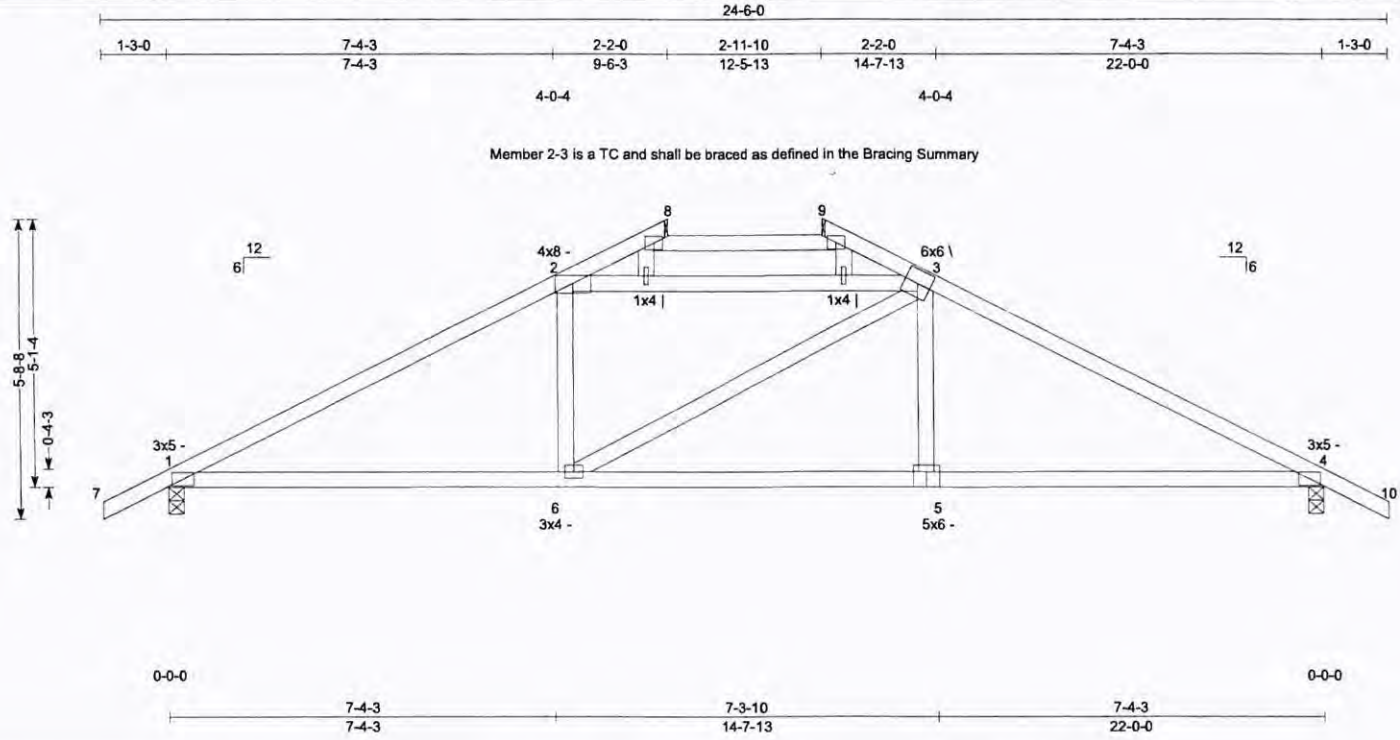
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: D2
Project Name: village walk
Date: 7/4/2016 11:27:40 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
22-0-0	6 / 12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	94 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.55 (1-2)
BC :	0.92 (4-5)
Web :	0.23 (3-6)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.29 in	L / 900	(4-5)	L / 240
Vert LL:	0.08 in	L / 999	(4-5)	L / 360
Horz TL:	0.06 in		4	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:4-5,2-0,0.) (3:4-5,1-12,26.) (4:3-4,2-5,0.) (5:2-9,2-8,0.) (6:4-5,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	987 lbs	-	-35 lbs	-35 lbs	25 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	987 lbs	-	-35 lbs	-35 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 4-4-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	7-1	0.113	38 lbs		2-8	0.203	-59 lbs		4-10	0.113	38 lbs	
	1-2	0.552	-1,512 lbs		9-3	0.203	-59 lbs					
	2-3	0.316	-1,266 lbs		3-4	0.552	-1,512 lbs					
BC	4-5	0.919	1,266 lbs	(-128 lbs)	5-6	0.776	1,266 lbs	(-128 lbs)	6-1	0.919	1,266 lbs	(-135 lbs)
Webs	2-6	0.111	274 lbs		3-6	0.225	215 lbs	(-215 lbs)	3-5	0.147	361 lbs	

Notes:

1) Unlabeled plates are 3x4 20ga.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Provide adequate drainage to prevent ponding.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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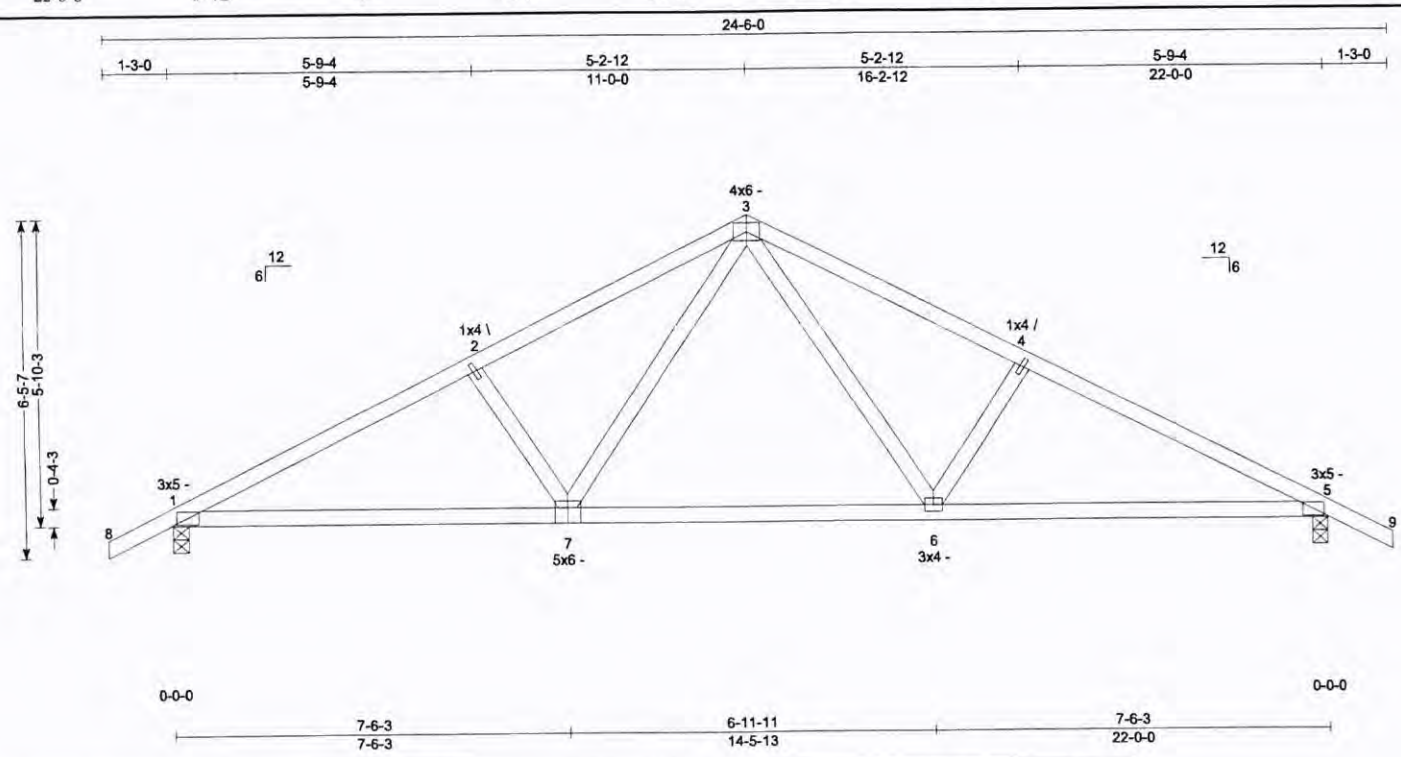
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: D3
Project Name: village walk
Date: 07/01/16 11:09:45
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
22-0-0	6/12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	88 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.42 (1-2)
BC:	0.87 (7-1)
Web:	0.23 (3-7)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.21 in	L / 999	(5-6)	L / 240
Vert LL:	0.05 in	L / 999	(5-6)	L / 360
Horz TL:	0.06 in		5	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,56.) (3:0-0,3-15,0.) (4:0-0,3-15,56.) (5:3-4,2-5,0.) (6:0-0,3-8,0.) (7:0-0,2-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	987 lbs	-	-35 lbs	-35 lbs	-30 lbs
5	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	987 lbs	-	-35 lbs	-35 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 4-7-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	8-1	0.113	38 lbs		2-3	0.305	-1,387 lbs		4-5	0.416	-1,582 lbs	
	1-2	0.416	-1,582 lbs		3-4	0.305	-1,387 lbs		5-9	0.113	38 lbs	
BC	5-6	0.867	1,353 lbs	(-162 lbs)	6-7	0.758	911 lbs	(-41 lbs)	7-1	0.867	1,353 lbs	(-170 lbs)
Webs	2-7	0.080	-362 lbs		3-6	0.229	564 lbs	(-84 lbs)				
	3-7	0.229	564 lbs	(-84 lbs)	4-6	0.080	-362 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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Simpson Strong-Tie Company

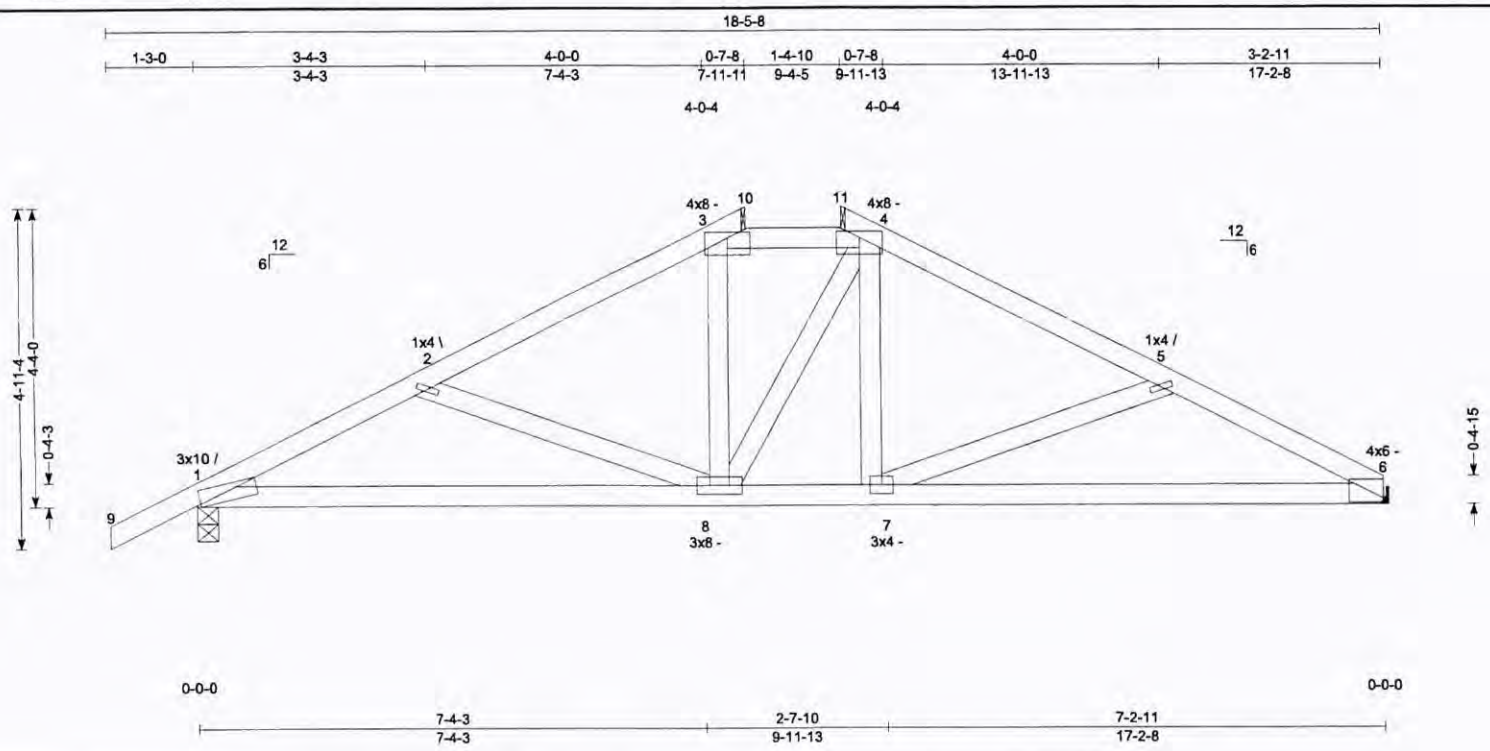
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: E1
Project Name: village walk
Date: 07/01/16 11:09:46
Page: 1 of2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
17-2-8	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	77 lbs



Loading

Carried Loads (psf)

TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	No
D.O.L. :	125 %

CSI Summary

TC :	0.61 (1-2)
BC :	0.88 (8-1)
Web :	0.18 (4-7)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.32 in	L / 628	(8-1)	L / 240
Vert LL:	0.07 in	L / 999	(7-8)	L / 360
Horz TL:	0.09 in		6	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:5-3,1-9,13.) (2:0-0,3-15,19.) (3:4-5,2-11,0.) (4:4-5,2-11,0.) (5:0-0,3-15,19.) (6:3-0,2-11,0.) (7:0-13,3-8,0.) (8:2-9,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.82 in	1,703 lbs	-	-33 lbs	-33 lbs	38 lbs
6	H Roll (Truss)	1	1.5 in	-	1.73 in	1,622 lbs	-	-21 lbs	-21 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #1B 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 3-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	7-4-3	Down	Proj	20 psf	20 psf	24 in
Top Chd	9-11-13	17-2-8	Down	Proj	20 psf	20 psf	24 in
Top Chd	7-4-3	9-11-13	Down	Proj	83.02 plf	83.02 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	7-4-3	Down	375 lbs	
Top Chd	9-11-13	Down	375 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	7-4-3	Down	Proj	14 psf	14 psf	24 in
Top Chd	9-11-13	17-2-8	Down	Proj	14 psf	14 psf	24 in
Bot Chd	0-0-0	17-2-8	Down	Proj	7 psf	7 psf	12 in
Top Chd	7-4-3	9-11-13	Down	Proj	58.11 plf	58.11 plf	
Bot Chd	0-0-0	17-2-8	Down	Proj	28 plf	28 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	7-4-3	Down	262 lbs	
Top Chd	9-11-13	Down	262 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	9-1	0.130	38 lbs	(-6 lbs)	3-4	0.252	-2,469 lbs		4-5	0.329	-2,810 lbs	
	1-2	0.608	-3,132 lbs		3-10	0.021	-26 lbs		5-6	0.481	-3,083 lbs	
	2-3	0.305	-2,823 lbs		11-4	0.021	-26 lbs					
BC	6-7	0.853	2,719 lbs	(-100 lbs)	7-8	0.672	2,459 lbs	(-104 lbs)	8-1	0.877	2,777 lbs	(-98 lbs)
Webs	2-8	0.135	-363 lbs		4-8	0.069	169 lbs	(-141 lbs)	5-7	0.123	-330 lbs	
	3-8	0.146	358 lbs		4-7	0.181	445 lbs					



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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
17-2-8	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	77 lbs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) California Girder setback equals 8-0-0, truss spacing behind girder equals 2-0-0, there is no second girder setback, end jack type is Open Faced, and the corner girders are Rafter's.
4) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
5) Provide adequate drainage to prevent ponding.
6) Listed wind uplift reactions based on MWFRS Only loading.
7) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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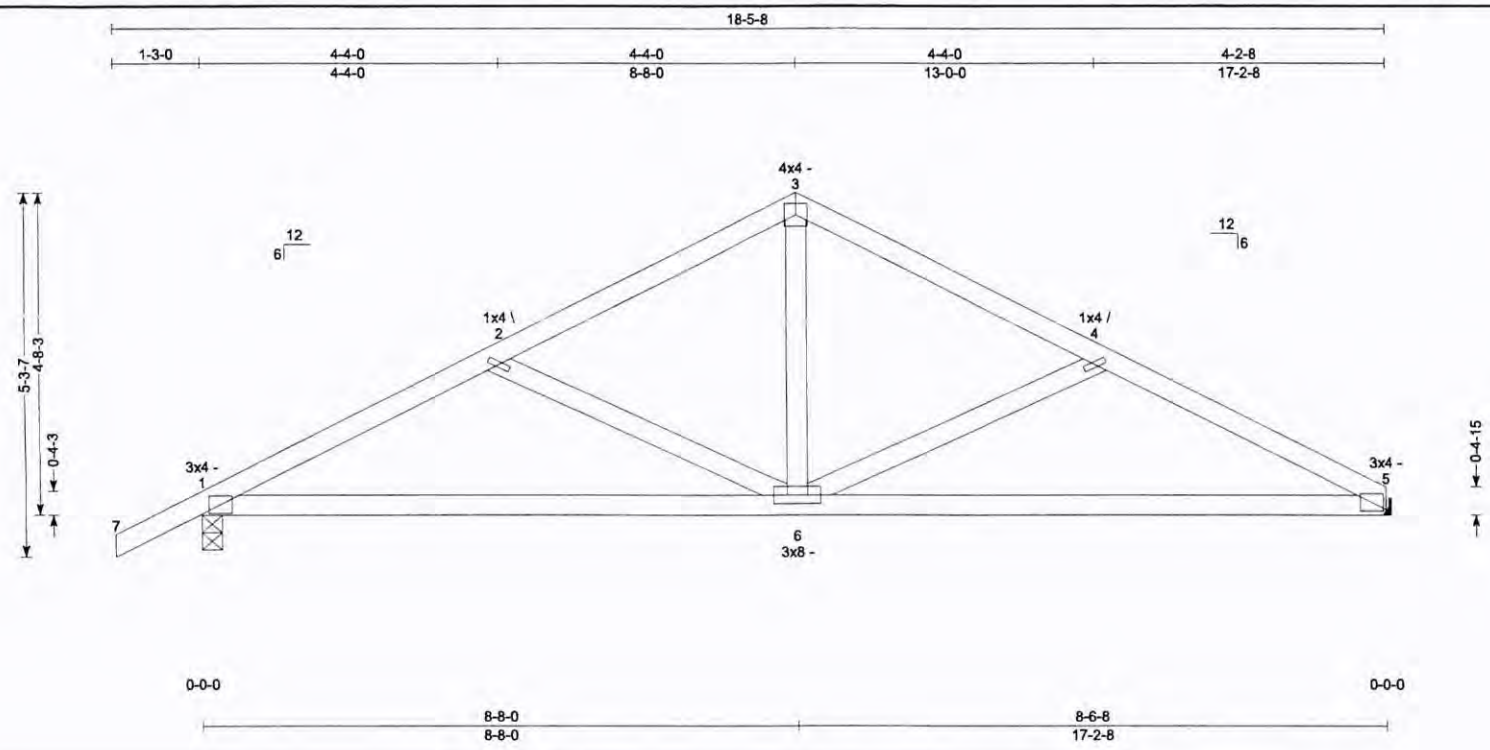
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: E2
Project Name: village walk
Date: 07/01/16 11:09:46
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
17-2-8	6/12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	66 lbs



Loading

	(psf)
Load	
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.52 (1-2)
BC:	0.90 (6-1)
Web:	0.20 (3-6)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.18 in	L/999	(6-1)	L/240
Vert LL:	0.03 in	L/999	(6-1)	L/360
Horz TL:	0.04 in		5	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,24.) (3:0-0,3-15,0.) (4:0-0,3-15,24.) (5:2-8,2-11,0.) (6:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	913 lbs	-118 lbs	-31 lbs	-118 lbs	2,000 lbs
5	H Roll (Truss)	1	1.5 in	-	1.50 in	876 lbs	-156 lbs	-16 lbs	-156 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 4-9-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 6-9-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 2,000 lbs drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL = 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	7-1	0.113	38 lbs		2-3	0.198	-1,053 lbs		4-5	0.466	-1,634 lbs
	1-2	0.521	-1,683 lbs		3-4	0.198	-1,033 lbs				
BC	5-6	0.886	1,474 lbs	(-430 lbs)	6-1	0.902	1,518 lbs	(-816 lbs)			
Webs	2-6	0.153	-364 lbs		3-6	0.203	500 lbs	(-54 lbs)	4-6	0.150	-357 lbs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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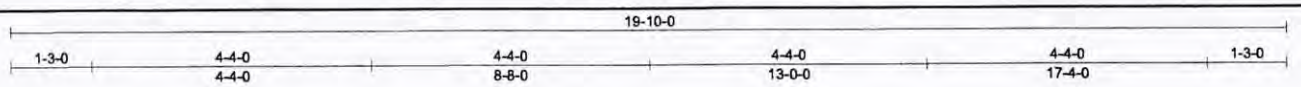
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

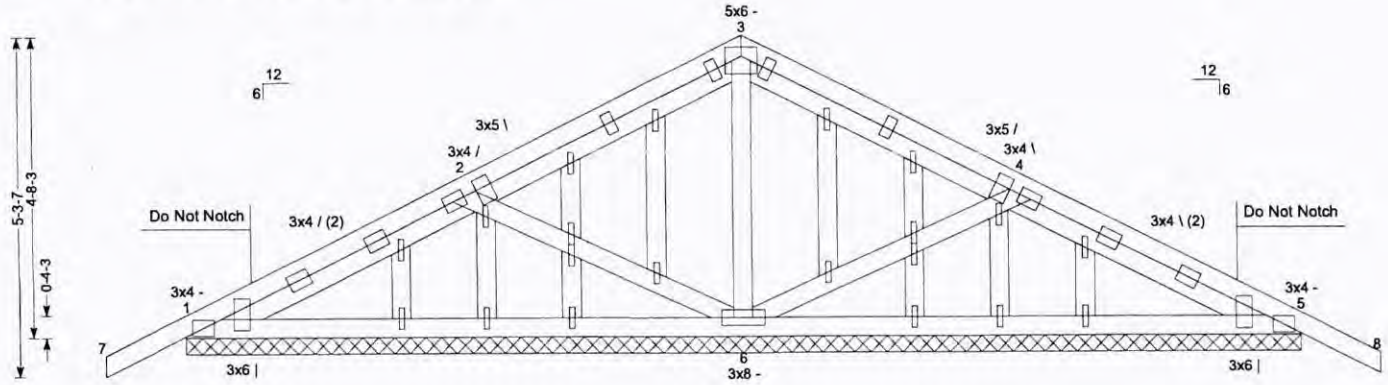
Hanson Components, Inc.

Truss: E3
Project Name: village walk
Date: 7/4/2016 11:31:20 AM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
17-4-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	115 lbs



The top chord may be notched 1.5" deep by 3.5" wide at 24" o.c. max., unless noted otherwise. Do not cut the connector plates





Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.29 (2-3)
BC:	0.76 (5-6)
Web:	0.15 (2-6)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.06 in	L / 999	(5-6)	L / 240
Vert LL:	0 in	L / 999	(5-5)	L / 360
Horz TL:	0 in		5	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:10-7,0-4,90.) (2:1-13,4-13,26.)(3:0-0,4-12,0.) (4:1-13,4-13,26.)(5:10-9,0-0,90.) (6:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
6	H Roll (Wall)	1	208 in	Douglas-Fir-Larch	Unknown	752 lbs	-	-25 lbs	-25 lbs	0 lbs
5	H Roll (Wall)	1	208 in	Douglas-Fir-Larch	Unknown	1,119 lbs	-695 lbs	-18 lbs	-695 lbs	0 lbs
1	Pin (Wall)	1	208 in	Douglas-Fir-Larch	Unknown	1,119 lbs	-695 lbs	-18 lbs	-695 lbs	-22 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4
Slider	DFL #2 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 5-10-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 3,200 lbs drag load distributed along the TC rake from each direction and resisted along the BC (184.6 plf) by shear walls from 0-0-0 to 17-4-0.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	7-1	0.113	38 lbs		2-3	0.293	934 lbs	(-920 lbs)	4-5	0.206	-595 lbs
	1-2	0.206	-595 lbs		3-4	0.293	934 lbs	(-920 lbs)	5-8	0.113	38 lbs
BC	5-6	0.762	1,295 lbs	(-1,140 lbs)	6-1	0.762	1,295 lbs	(-1,140 lbs)			
Webs	2-6	0.148	-359 lbs		3-6	0.142	-421 lbs		4-6	0.148	-359 lbs

Notes:

1) Gable webs placed at 16" o.c., U.N.O. Attach structural gable blocks with 1x4 20ga plates and stacked chords with 2x4 20ga plates, U.N.O.
2) This gable has been designed for a 12" (max.) rake overhang.
3) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
4) This truss has been designed using the green lumber reduction factors.
5) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
6) Listed wind uplift reactions based on MWFRS Only loading.
7) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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Simpson Strong-Tie Company

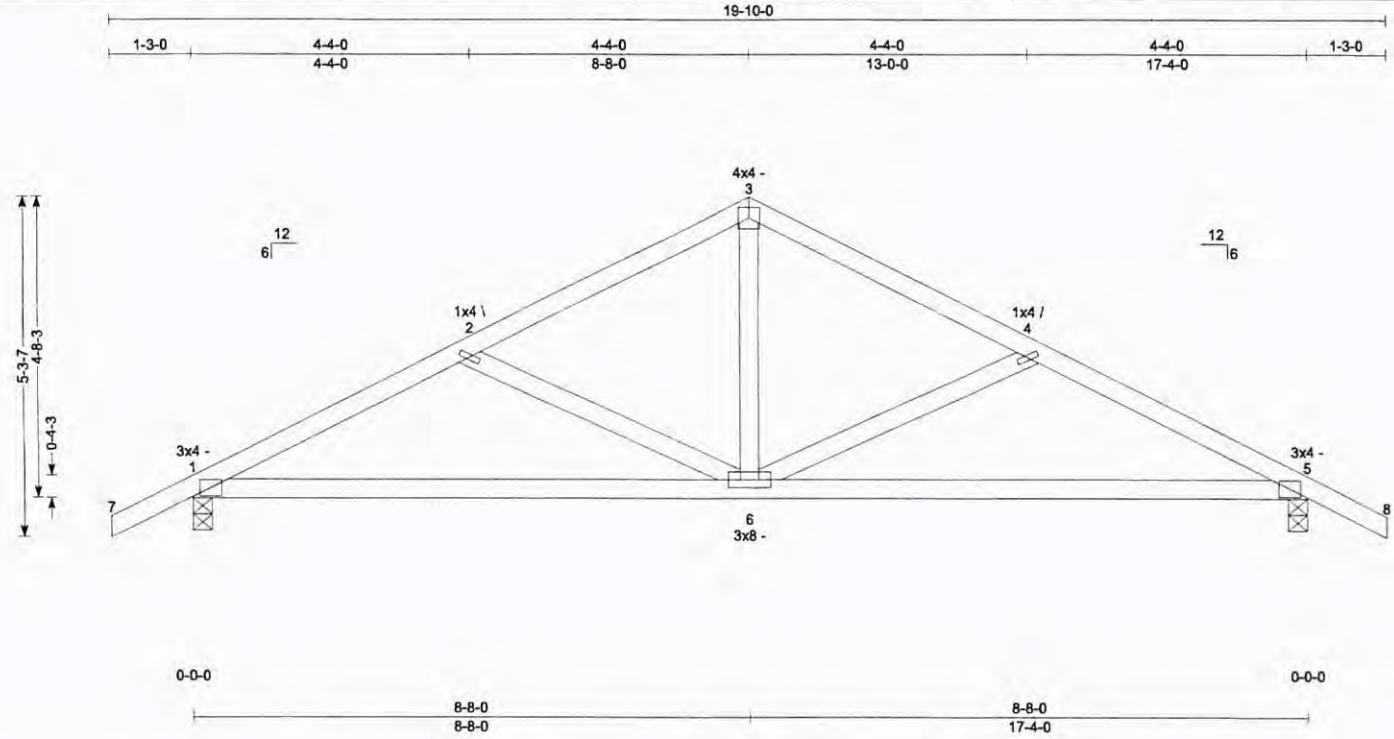
SIMPSON STRONG-TIE

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: E4
Project Name: village walk
Date: 07/01/16 11:09:47
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
17-4-0	6/12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	68 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.52 (4-5)	Vert TL:	0.18 in	L / 999	(5-6)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.90 (5-6)	Vert LL:	0.03 in	L / 999	(5-6)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.21 (3-6)	Horz TL:	0.04 in		5	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,24.) (3:0-0,3-15,0.) (4:0-0,3-15,24.) (5:3-4,2-5,0.) (6:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	908 lbs	-110 lbs	-30 lbs	-110 lbs	2,000 lbs
5	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	908 lbs	-110 lbs	-30 lbs	-110 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 4-9-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 6-9-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 2,000 lbs drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	7-1	0.113	38 lbs		2-3	0.196	-1,044 lbs		4-5	0.519	-1,658 lbs
	1-2	0.519	-1,670 lbs		3-4	0.196	-1,042 lbs		5-8	0.113	38 lbs
BC	5-6	0.901	1,513 lbs	(-451 lbs)	6-1	0.901	1,535 lbs	(-822 lbs)			
Webs	2-6	0.153	-364 lbs		3-6	0.206	507 lbs	(-35 lbs)	4-6	0.153	-364 lbs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
67407
STATE OF CALIFORNIA
07/05/2016

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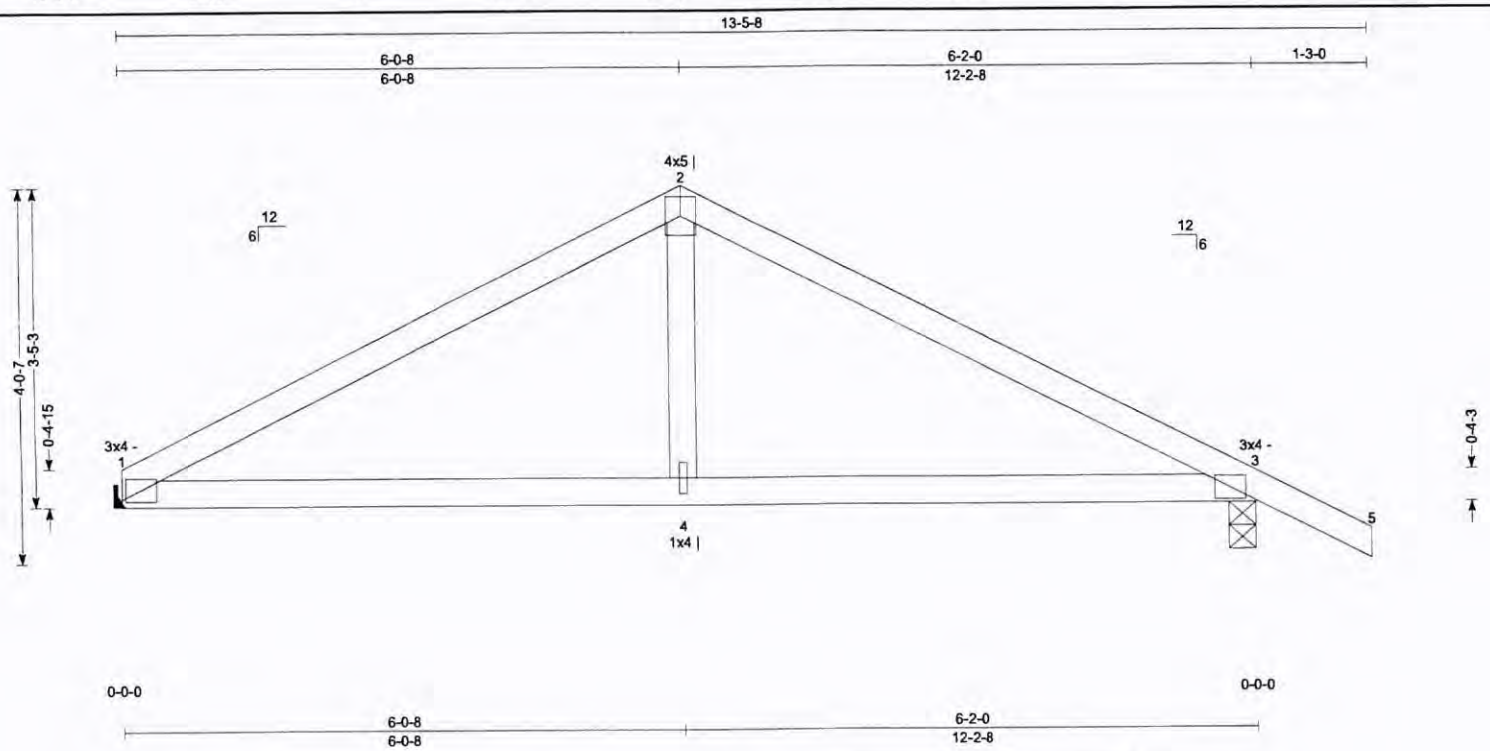
SIMPSON STRONG-TIE

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: F1
Project Name: village walk
Date: 7/4/2016 1:05:22 PM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
12-2-8	6 /12	1	0-0-0	1-3-0	0-0-0	0-0-0	1	24 in	39 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.38 (1-2)
BC:	0.68 (3-4)
Web:	0.14 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.09 in	L / 999	(3-4)	L / 240
Vert LL:	0.02 in	L / 999	(3-4)	L / 360
Horz TL:	0.02 in		1	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-11,0.) (2:0-0,3-15,90.) (3:3-4,2-5,0.) (4:0-0,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	H Roll (Truss)	1	1.5 in	-	1.50 in	698 lbs	-189 lbs	-11 lbs	-189 lbs	0 lbs
3	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	737 lbs	-151 lbs	-26 lbs	-151 lbs	1,700 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 5-6-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 7-3-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 1,700 lbs drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

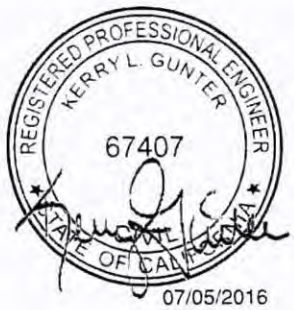
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	1-2	0.377	-1,246 lbs		2-3	0.377	-1,281 lbs		3-5	0.113	38 lbs
BC	3-4	0.677	1,169 lbs	(-744 lbs)	4-1	0.659	1,128 lbs	(-524 lbs)			
Webs	2-4	0.145	356 lbs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



07/05/2016

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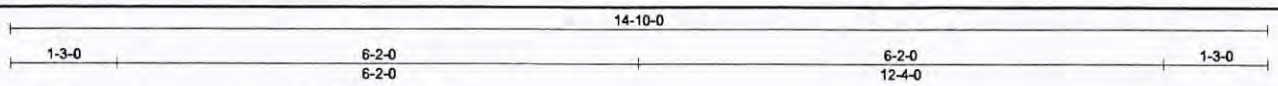
SIMPSON STRONG-TIE

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

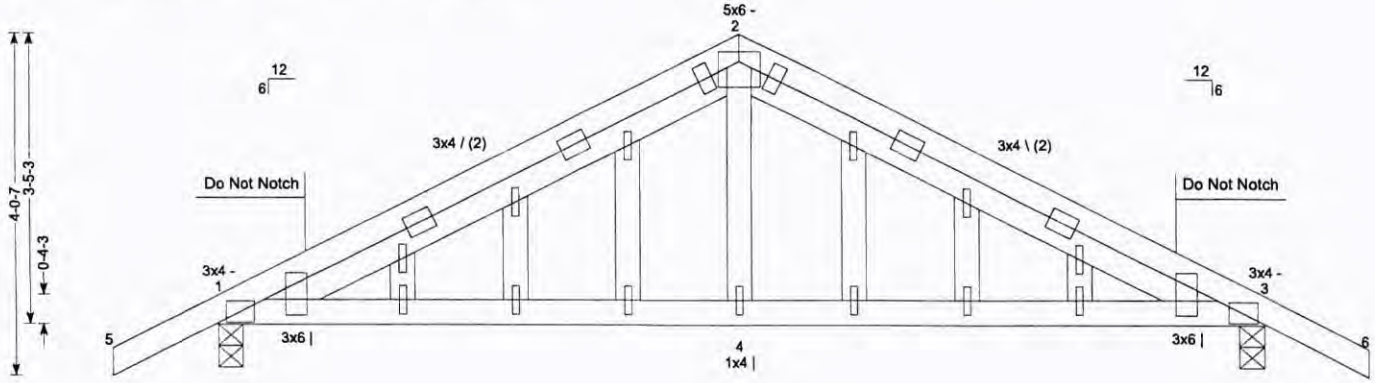
Hanson Components, Inc.

Truss: F1F
Project Name: village walk
Date: 7/4/2016 1:07:08 PM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
12-4-0	6/12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	69 lbs



The top chord may be notched 1.5" deep by 3.5" wide at 24" o.c. max., unless noted otherwise. Do not cut the connector plates





Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code:	CBC 2013/	TC:	0.31 (2-3)	Vert TL:	0:08 in	L/999	(3-4)	L/240
TCLL:	20		TPI 1-2007	BC:	0.53 (3-4)	Vert LL:	0.02 in	L/999	(3-4)	L/360
TCDL:	14	Rep Mbr Increase:	Yes	Web:	0.14 (2-4)	Horz TL:	0.02 in		3	
BCLL:	0	D.O.L.:	125 %			Creep Factor, Kcr = 2.0				
BCDL:	7									

Plate Offsets (Jnt:X,Y,Ang): (1:11-1,0-2,90.) (2:0-0,5-0,0.) (3:10-15,0-4,90.)(4:0-0,3-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	609 lbs	-21 lbs	-25 lbs	-25 lbs	-1,233 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	609 lbs	-21 lbs	-25 lbs	-25 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4
Slider	DFL #2 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 5-8-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 100 plf drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	5-1	0.113	38 lbs		2-3	0.312	-1,093 lbs		
	1-2	0.312	-1,093 lbs		3-6	0.113	38 lbs		
BC	3-4	0.532	907 lbs	(-321 lbs)	4-1	0.532	960 lbs	(-354 lbs)	
Webs	2-4	0.143	351 lbs						

Notes:

1) Gable webs placed at 16" o.c., U.N.O. Attach structural gable blocks with 1x4 20ga plates and stacked chords with 2x4 20ga plates, U.N.O.
2) This gable has been designed for a 12" (max.) rake overhang.
3) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
4) This truss has been designed using the green lumber reduction factors.
5) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
6) Listed wind uplift reactions based on MWFRS Only loading.
7) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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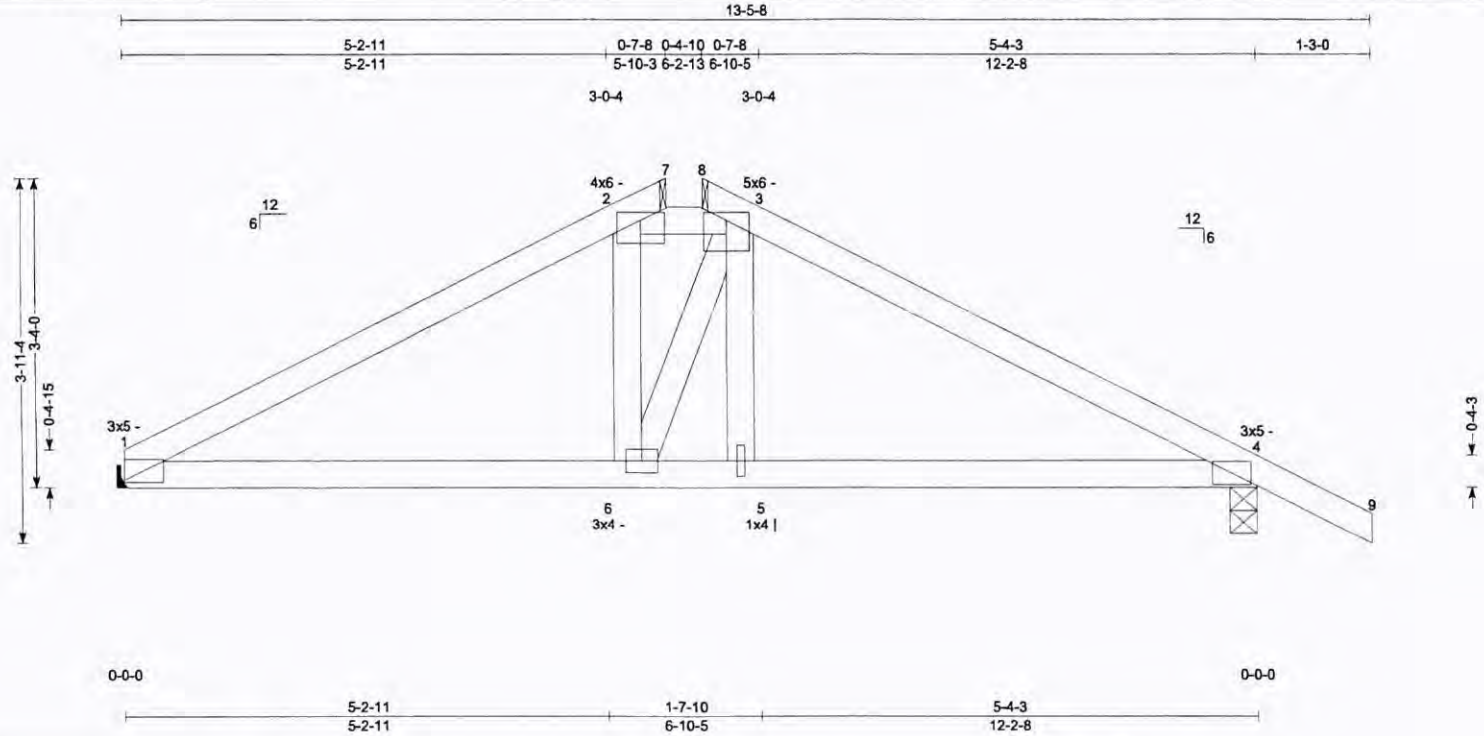
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: F2
Project Name: village walk
Date: 07/01/16 11:09:49
Page: 1 of2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
12-2-8	6 / 12	1	0-0-0	1-3-0	0-0-0	0-0-0	1	24 in	47 lbs



Loading

Carried Loads (psf)	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	No
D.O.L. :	125 %

CSI Summary

TC :	0.34 (3-4)
BC :	0.80 (4-5)
Web :	0.15 (3-5)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.13 in	L / 999	(4-5)	L / 240
Vert LL:	0.03 in	L / 999	(4-5)	L / 360
Horz TL:	0.04 in		4	
Creep Factor, Ker = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-11,0.) (2:4-5,2-11,0.) (3:4-5,3-3,0.) (4:3-4,2-5,0.) (5:2-9,3-8,90.) (6:4-5,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Truss)	1	1.5 in	-	1.50 in	971 lbs	-	-19 lbs	-19 lbs	-38 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,057 lbs	-	-33 lbs	-33 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 4-4-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	0-0-0	5-2-11	Down	Proj	20 psf	20 psf	24 in
Top Chd	6-10-5	13-5-8	Down	Proj	20 psf	20 psf	24 in
Top Chd	5-2-11	6-10-5	Down	Proj	60.52 plf	60.52 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	5-2-11	Down	210 lbs	
Top Chd	6-10-5	Down	210 lbs	

Load Case Dl: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	0-0-0	5-2-11	Down	Proj	14 psf	14 psf	24 in
Top Chd	6-10-5	13-5-8	Down	Proj	14 psf	14 psf	24 in
Bot Chd	0-0-0	12-2-8	Down	Proj	7 psf	7 psf	12 in
Top Chd	5-2-11	6-10-5	Down	Proj	42.36 plf	42.36 plf	
Bot Chd	0-0-0	12-2-8	Down	Proj	21 plf	21 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	5-2-11	Down	147 lbs	
Top Chd	6-10-5	Down	147 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	1-2	0.310	-1,680 lbs		2-7	0.016	-19 lbs		3-4	0.337	-1,689 lbs	
	2-3	0.277	-1,436 lbs		8-3	0.016	-19 lbs		4-9	0.130	38 lbs	(-6 lbs)
BC	4-5	0.802	1,447 lbs	(-63 lbs)	5-6	0.649	1,447 lbs	(-63 lbs)	6-1	0.769	1,436 lbs	(-63 lbs)
Webs	2-6	0.098	242 lbs	(-0 lbs)	3-6	0.088	-254 lbs		3-5	0.154	379 lbs	(-20 lbs)



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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
12-2-8	6/12	1	0-0-0	1-3-0	0-0-0	0-0-0	1	24 in	47 lbs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) California Girder setback equals 6-0-0, truss spacing behind girder equals 2-0-0, there is no second girder setback, end jack type is Open Faced, and the corner girders are Rafter's.
4) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
5) Provide adequate drainage to prevent ponding.
6) Listed wind uplift reactions based on MWFRS Only loading.
7) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
67407
STATE OF CALIFORNIA
07/05/2016

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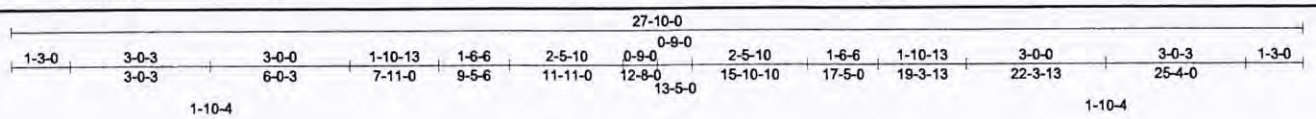
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

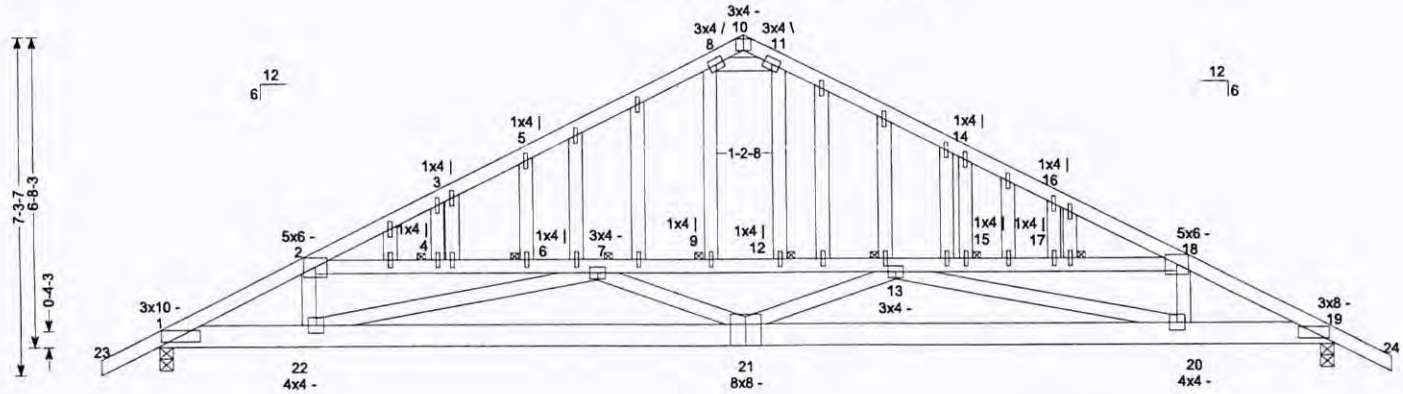
Hanson Components, Inc.

Truss: G1
Project Name: village walk
Date: 7/4/2016 1:10:39 PM
Page: 1 of 2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
25-4-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	194 lbs



This truss is not symmetric – proper orientation is critical





Loading

Carried Loads (psf)

TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	No
D.O.L:	125 %

CSI Summary

TC:	0.97 (8-10)
BC:	0.85 (21-22)
Web:	0.29 (13-20)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.59 in	L / 506	(21-22)	L / 240
Vert LL:	0.17 in	L / 999	(21-22)	L / 360
Horz TL:	0.11 in		19	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang):
(1:5-7,1-5,0.) (2:4-5,1-13,0.) (3:0-0,3-15,90.) (4:0-0,0-0,90.) (5:0-0,3-15,90.) (6:0-0,0-0,90.) (7:0-0,3-8,0.) (8:1-12,3-1,26.)
(9:0-0,0-0,90.) (10:0-0,2-9,0.) (11:1-12,3-1,26.) (12:0-0,0-0,90.) (13:0-0,3-8,0.) (14:0-0,3-15,90.) (15:0-0,0-0,90.) (16:0-0,3-15,90.)
(17:0-0,0-0,90.) (18:4-5,1-13,0.) (19:5-4,1-5,0.) (20:4-5,5-8,0.) (21:0-0,4-0,0.) (22:4-5,5-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.72 in	1,608 lbs	-	-154 lbs	-154 lbs	8 lbs
19	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,384 lbs	-	-210 lbs	-210 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 3-2-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 9-10-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	3-0-3	Down	Proj	20 psf	20 psf	24 in
Top Chd	12-8-0	26-7-0	Down	Proj	20 psf	20 psf	24 in
Top Chd	3-0-3	12-8-0	Down	Proj	56.67 plf	56.67 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	3-0-3	Down	95 lbs	
Top Chd	12-8-0	Down	95 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Top Chd	-1-3-0	3-0-3	Down	Proj	14 psf	14 psf	24 in
Top Chd	12-8-0	26-7-0	Down	Proj	14 psf	14 psf	24 in
Bot Chd	0-0-0	25-4-0	Down	Proj	7 psf	7 psf	12 in
Top Chd	3-0-3	12-8-0	Down	Proj	39.67 plf	39.67 plf	
Bot Chd	0-0-0	25-4-0	Down	Proj	12.83 plf	12.83 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Top Chd	3-0-3	Down	67 lbs	
Top Chd	12-8-0	Down	67 lbs	



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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
25-4-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	194 lbs

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	23-1	0.130	38 lbs	(-6 lbs)	6-7	0.535	-1,853 lbs		13-15	0.421	-1,375 lbs	
	1-2	0.668	-3,315 lbs		7-9	0.466	-2,184 lbs		14-16	0.458	-1,310 lbs	
	2-4	0.490	-1,849 lbs		8-10	0.965	465 lbs	(-294 lbs)	15-17	0.488	-1,375 lbs	
	2-3	0.406	-1,398 lbs		9-12	0.627	-2,184 lbs		16-18	0.306	-1,366 lbs	
	4-6	0.658	-1,853 lbs		10-11	0.883	483 lbs	(-288 lbs)	17-18	0.383	-1,372 lbs	
	3-5	0.520	-1,306 lbs		11-14	0.633	-1,280 lbs		18-19	0.528	-2,796 lbs	
	5-8	0.700	-1,303 lbs		12-13	0.549	-2,184 lbs		19-24	0.130	38 lbs	(-6 lbs)
BC	19-20	0.574	2,517 lbs	(-394 lbs)	21-22	0.846	3,296 lbs	(-517 lbs)				
	20-21	0.817	2,902 lbs	(-614 lbs)	22-1	0.583	2,995 lbs	(-276 lbs)				
Webs	2-22	0.153	376 lbs		8-9	0.066	163 lbs	(-25 lbs)	14-15	0.045	142 lbs	(-121 lbs)
	7-22	0.238	-324 lbs		8-11	0.198	-1,712 lbs		16-17	0.008	-66 lbs	
	3-4	0.008	-63 lbs		13-21	0.254	624 lbs		18-20	0.160	394 lbs	
	5-6	0.036	-177 lbs		11-12	0.086	213 lbs					
	7-21	0.181	445 lbs	(-94 lbs)	13-20	0.291	-396 lbs					

Notes:

1) Unlabeled plates are 1x4 20ga.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) California Girder setback equals 3-8-0, truss spacing behind girder equals 2-0-0, the second girder setback equals 5-8-0, end jack type is Open Faced, and the corner girders are Rafter's.
5) Provide adequate drainage to prevent ponding.
6) Listed wind uplift reactions based on MWFRS Only loading.
7) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
8) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
9) This gable has been designed for a 12" (max.) rake overhang.
10) Structural member 2-18 must be laterally restrained by sheathing (connection per Building Designer) or braced at 24" o.c. max.
11) ☒ Indicates continuous lateral restraint (CLR) required at the location(s) shown. Rows of CLR must be adequately diagonally braced, see BCSI-B3 Permanent Restraint/Bracing of Chords & Web Members.



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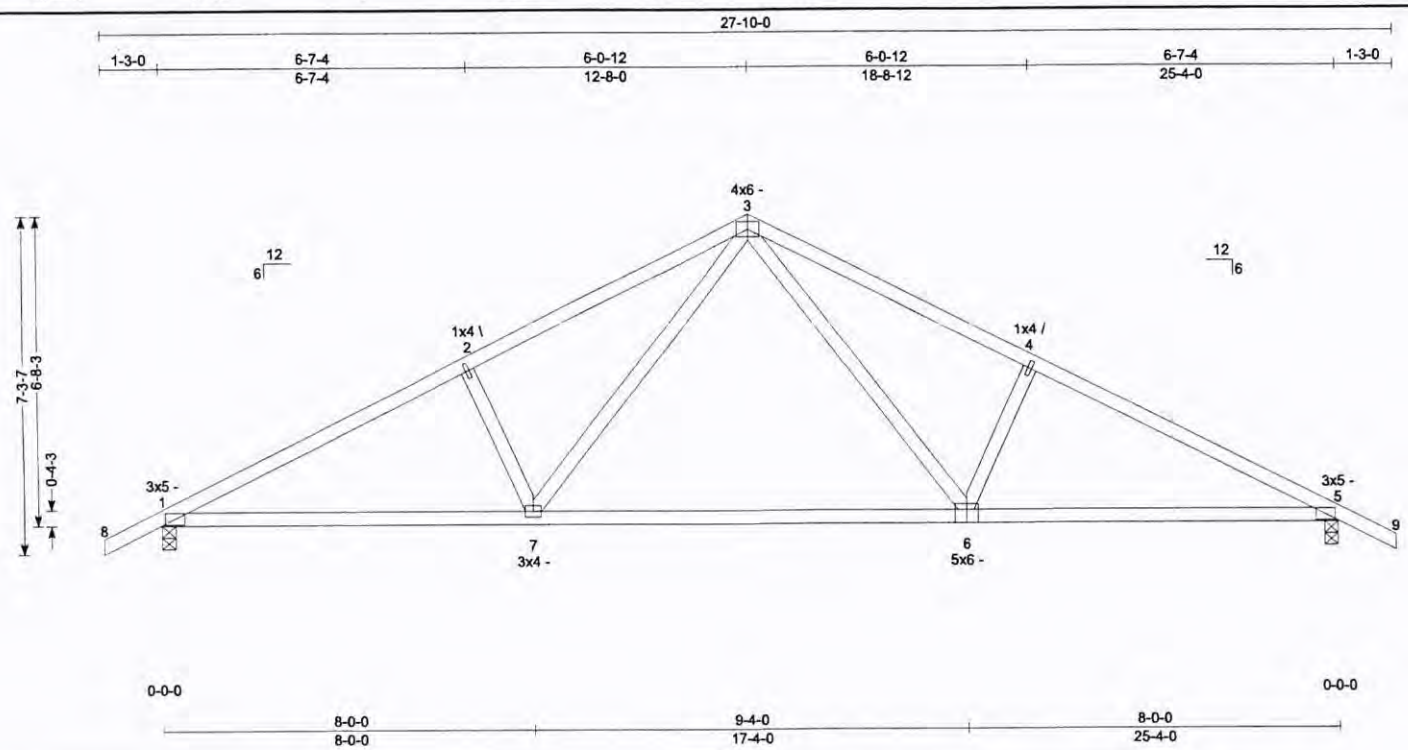
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: G2
Project Name: village walk
Date: 07/01/16 11:09:50
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
25-4-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	101 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.47 (4-5)
BC:	0.95 (5-6)
Web:	0.28 (3-7)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.5 in	L / 592	(6-7)	L / 240
Vert LL:	0.26 in	L / 999	(6-7)	L / 360
Horz TL:	0.07 in		5	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,65.) (3:0-0,3-15,0.) (4:0-0,3-15,65.) (5:3-4,2-5,0.) (6:0-0,2-8,0.) (7:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,165 lbs	-	-38 lbs	-38 lbs	36 lbs
5	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,165 lbs	-	-38 lbs	-38 lbs	0 lbs

Material Summary

TC	DFL #2 2x4	
BC	DFL #1B 2x4	except:
5-6	DFL #2 2x4	
Webs	DFL Std/Stud 2x4	

Bracing Summary

TC Bracing: Sheathed or Purlins at 4-0-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL = 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	8-1	0.113	38 lbs		2-3	0.407	-1,862 lbs		4-5	0.472	-2,001 lbs	
	1-2	0.450	-2,002 lbs		3-4	0.410	-1,861 lbs		5-9	0.113	38 lbs	
BC	5-6	0.946	1,723 lbs	(-183 lbs)	6-7	0.760	1,127 lbs	(-52 lbs)	7-1	0.718	1,723 lbs	(-191 lbs)
Webs	2-7	0.100	-414 lbs		3-6	0.278	745 lbs	(-112 lbs)				
	3-7	0.279	747 lbs	(-112 lbs)	4-6	0.100	-415 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
67407
STATE OF CALIFORNIA
07/05/2016

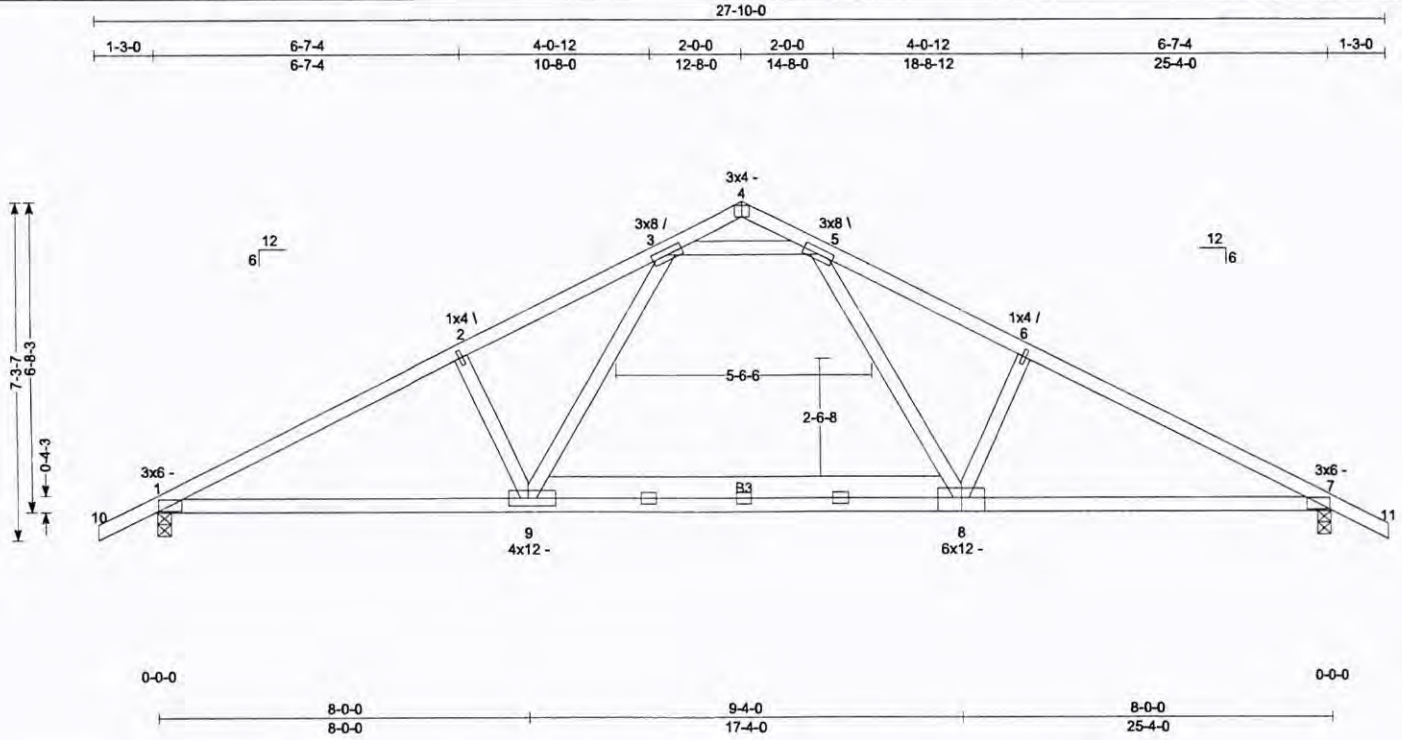
NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company, Inc in accordance with ESR-2762 . All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

SIMPSON
Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: G3
Project Name: village walk
Date: 7/4/2016 1:11:54 PM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
25-4-0	6 /12	1	1-3-0	1-3-0	0-0-0	0-0-0	1	24 in	122 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.45 (1-2)
BC :	0.93 (9-1)
StkChd:	0.54 (B3)
Web :	0.28 (3-9)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.4 in	L / 739	16n	L / 240
Vert LL:	0.12 in	L / 999	16n	L / 360
Horz TL:	0.08 in		7	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,65.) (3:4-5,1-12,26.) (4:0-0,2-9,0.) (5:4-5,1-12,26.) (6:0-0,3-15,65.) (7:3-4,2-5,0.) (8:0-0,3-0,0.) (9:1-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,235 lbs	-	-8 lbs	-8 lbs	36 lbs
7	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,235 lbs	-	-8 lbs	-8 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
StkChd	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 3-10-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case D1: Std Dead Load

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	12-8-0	Down	100 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	10-1	0.113	38 lbs	3-4	0.309	-138 lbs		6-7	0.452	-2,145 lbs	
	1-2	0.452	-2,145 lbs	4-5	0.309	-138 lbs		7-11	0.113	38 lbs	
	2-3	0.408	-2,003 lbs	5-6	0.408	-2,003 lbs					
BC	7-8	0.926	1,850 lbs (-116 lbs)	8-9	0.705	1,451 lbs	(-204 lbs)	9-1	0.926	1,850 lbs	(-124 lbs)
StkChd	B3	0.544	-204 lbs								
Webs	2-9	0.103	-427 lbs	3-5	0.212	-1,288 lbs		6-8	0.103	-427 lbs	
	3-9	0.277	735 lbs (-49 lbs)	5-8	0.277	735 lbs	(-49 lbs)				

Notes:

1) Unlabeled plates are 3x4 20ga.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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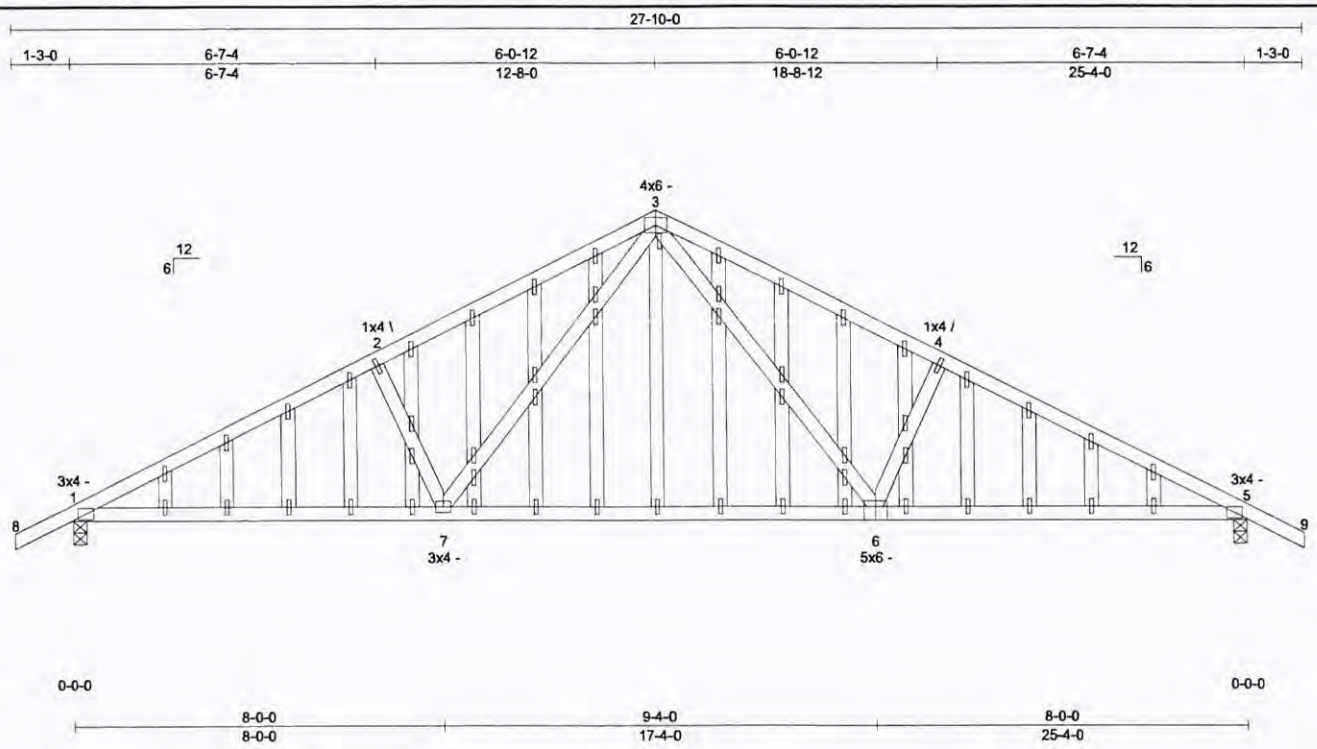
SIMPSON STRONG-TIE

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: G4
Project Name: village walk
Date: 7/4/2016 1:12:34 PM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
25-4-0	6/12	1	1-3-0	1-3-0	0-0-0	0-0-0	3	24 in	174 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.14 (1-2)
BC:	0.34 (6-7)
Web:	0.09 (3-7)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.18 in	L/999	(6-7)	L/240
Vert LL:	0.09 in	L/999	(6-7)	L/360
Horz TL:	0.02 in		5	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,65.) (3:0-0,3-15,0.) (4:0-0,3-15,65.) (5:3-4,2-5,0.) (6:0-0,2-8,0.) (7:0-0,3-8,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,165 lbs	-	-38 lbs	-38 lbs	-1,600 lbs
5	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,165 lbs	-	-38 lbs	-38 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for a 1,600 lbs drag load distributed along the TC rake from each direction.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	8-1	0.038	13 lbs		2-3	0.133	-621 lbs		4-5	0.140	-667 lbs	
	1-2	0.140	-667 lbs		3-4	0.133	-621 lbs		5-9	0.038	13 lbs	
BC	5-6	0.317	575 lbs	(-61 lbs)	6-7	0.337	443 lbs	(-90 lbs)	7-1	0.317	575 lbs	(-143 lbs)
Webs	2-7	0.019	-138 lbs		3-6	0.093	249 lbs	(-37 lbs)				
	3-7	0.093	249 lbs	(-37 lbs)	4-6	0.019	-138 lbs					

Notes:

1) Gable webs placed at 16" o.c., U.N.O. Attach structural gable blocks with 1x4 20ga plates, U.N.O.
2) This gable has been designed for a 12" (max.) rake overhang.
3) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
4) This truss has been designed using the green lumber reduction factors.
5) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
6) The forces shown for this multi-ply truss are per ply and the reactions are for all plies. Three identical trusses shall be built and attached as follows: TC - 1 row of 16d Nails or Gun Nails [min 0.135" dia. x 3 1/4" long] @ 12" o.c., BC - 1 row of 16d Nails or Gun Nails [min 0.135" dia. x 3 1/4" long] @ 12" o.c. , Webs - 1 row 16d Nails or Gun Nails [min 0.135" dia. x 3 1/4" long] @ 9" o.c.. Repeat nailing as each layer is applied.
7) Where required, sufficient hangers shall be provided (by others) to resist reactions shown.
8) Install the screws/nails on one side; do not flip truss. Screws/nails shall be installed in the same truss ply that the hangers are attached to.
9) Lateral bracing shall be attached to each ply.
10) All fasteners minimum 2-1/2" long, unless otherwise noted.
11) Nails in 1st and 2nd ply shall be staggered from successive plies by 1/2 the nail spacing.
12) Listed wind uplift reactions based on MWFRS Only loading.
13) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



07/05/2016

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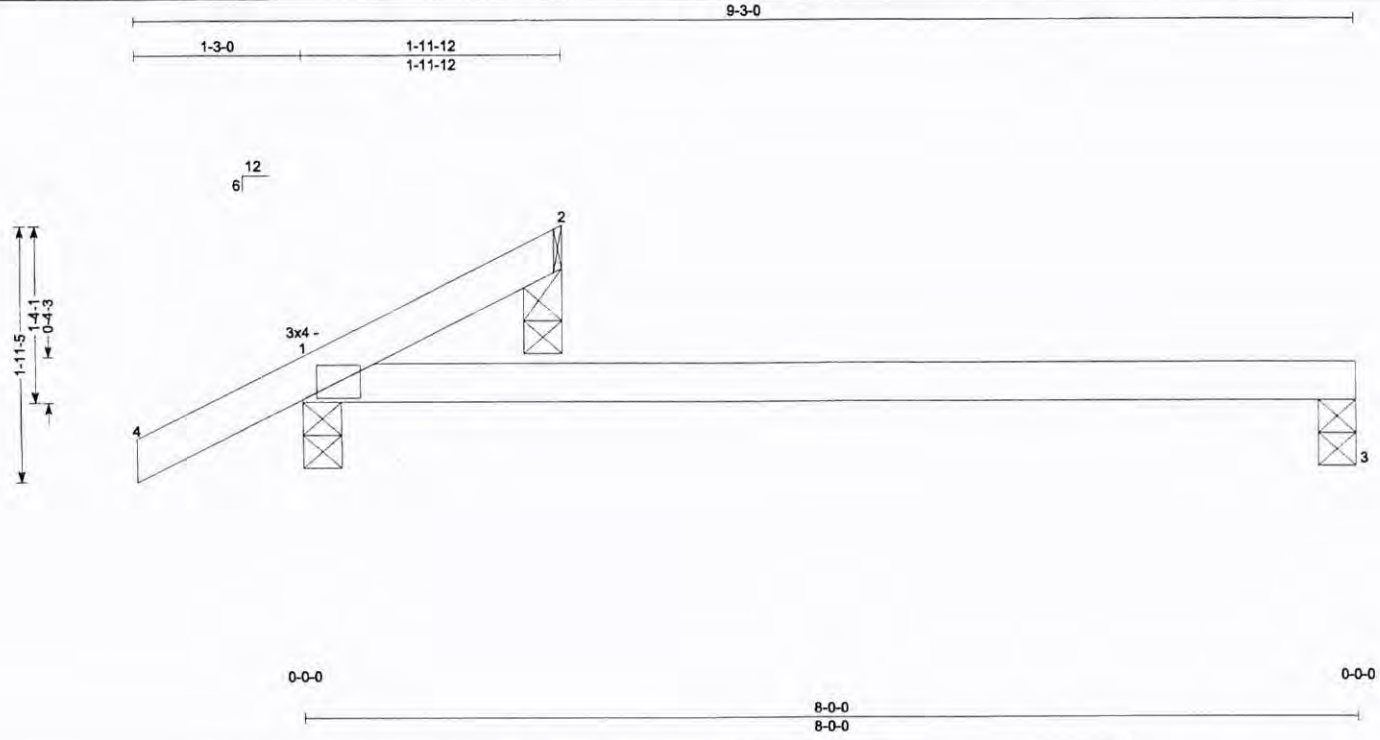
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J1
Project Name: village walk
Date: 07/01/16 11:09:52
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	15 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.63 (1-2)
BC :	0.76 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.13 in	L / 672	(3-1)	L / 240
Vert LL:	0 in UP	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	293 lbs	-	-14 lbs	-14 lbs	123 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	258 lbs	-	-	-	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	292 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.124	38 lbs		1-2	0.626	-288 lbs	
BC	3-1	0.758	212 lbs	(-8 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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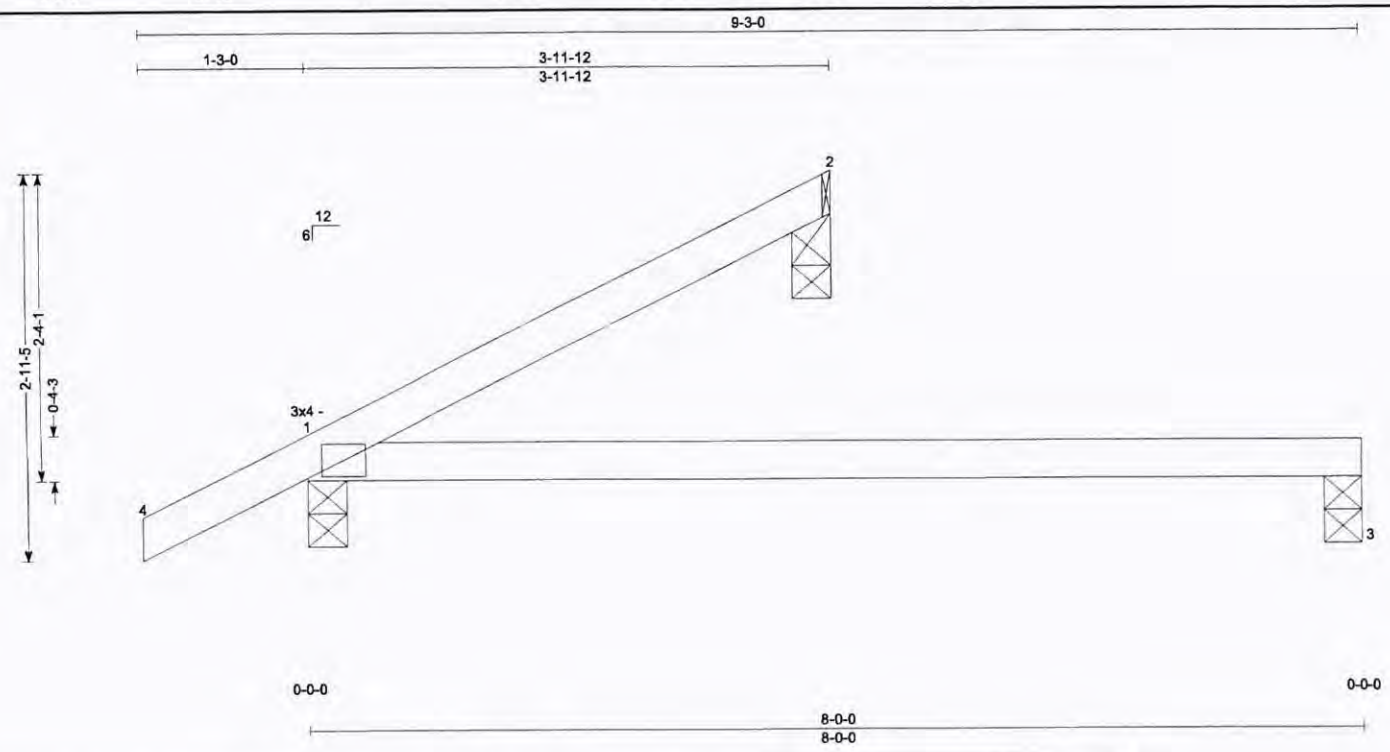
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J2
Project Name: village walk
Date: 07/01/16 11:09:52
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	18 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.59 (1-2)
BC :	0.87 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.21 in	L / 423	(3-1)	L / 240
Vert LL:	0.02 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	372 lbs	-	-	-	169 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	142 lbs	-	-16 lbs	-16 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	297 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 8-2-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.124	38 lbs		1-2	0.591	-388 lbs	
BC	3-1	0.873	291 lbs	(-42 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
67407
STATE OF CALIFORNIA
07/05/2016

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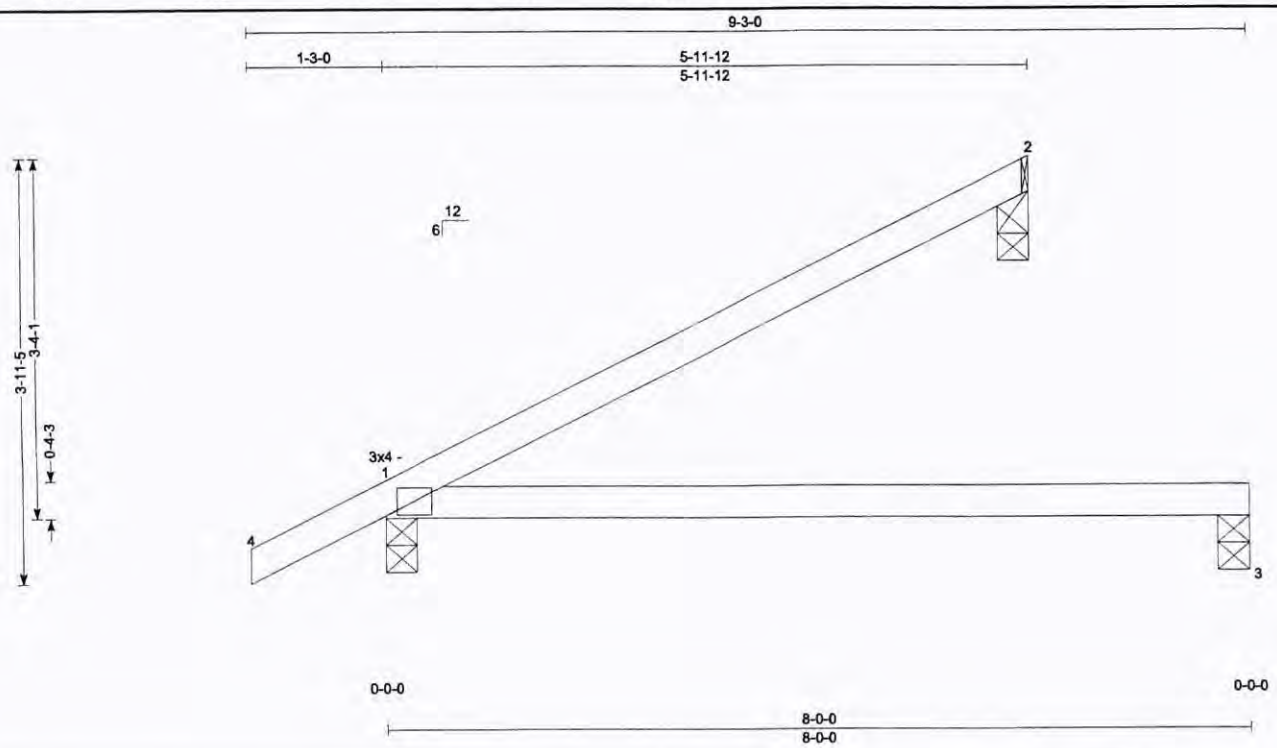
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J3
Project Name: village walk
Date: 07/01/16 11:09:53
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6/12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	21 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.44 (1-2)
BC :	0.96 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.33 in	L/271	(3-1)	L/240
Vert LL:	0.06 in	L/999	(3-1)	L/360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	412 lbs	-	-	-	215 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	186 lbs	-	-36 lbs	-36 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	303 lbs	-	-	-	0 lbs

Material Summary

TC DFL #1B 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.093	38 lbs		1-2	0.437	-448 lbs	
BC	3-1	0.962	341 lbs	(-84 lbs)				

Webs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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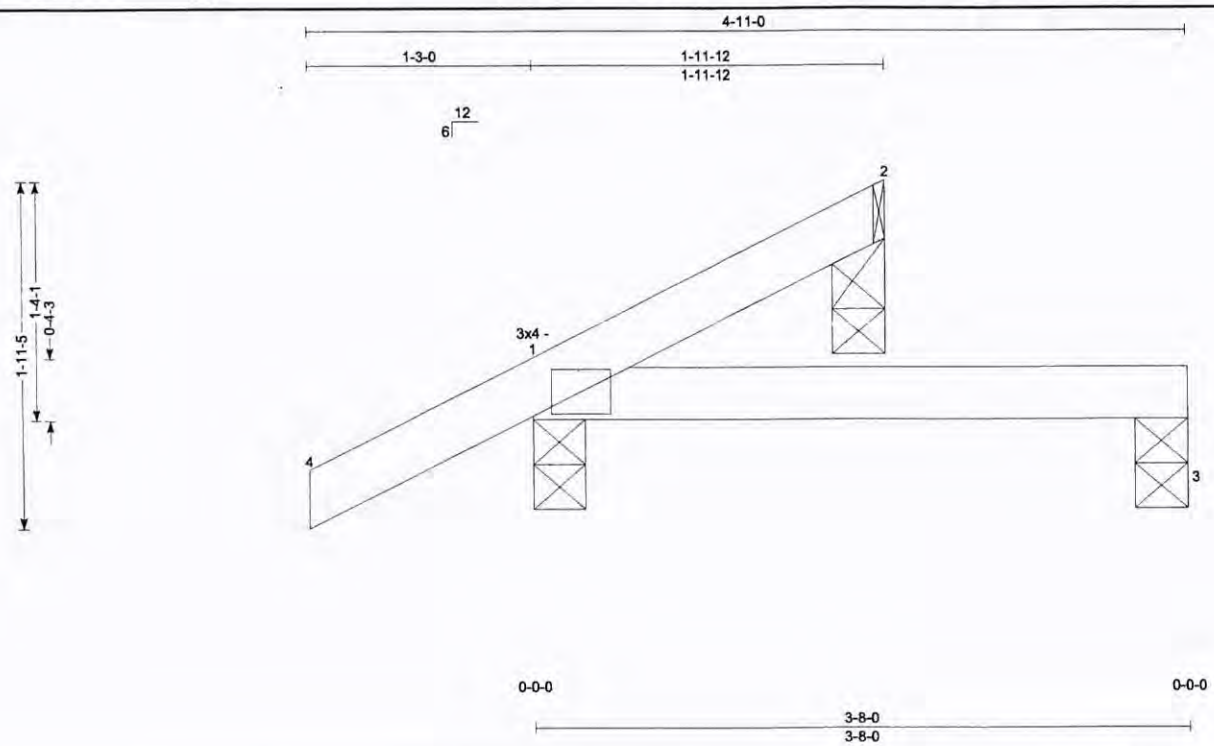
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J31
Project Name: village walk
Date: 07/01/16 11:09:53
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
3-8-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	10 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.23 (1-2)
BC :	0.33 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.01 in	L / 999	(3-1)	L / 240
Vert LL:	0 in UP	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	300 lbs	-	-10 lbs	-10 lbs	135 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	107 lbs	-	-4 lbs	-4 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	270 lbs	-	-	-	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.232	-298 lbs	
BC	3-1	0.331	220 lbs	(-10 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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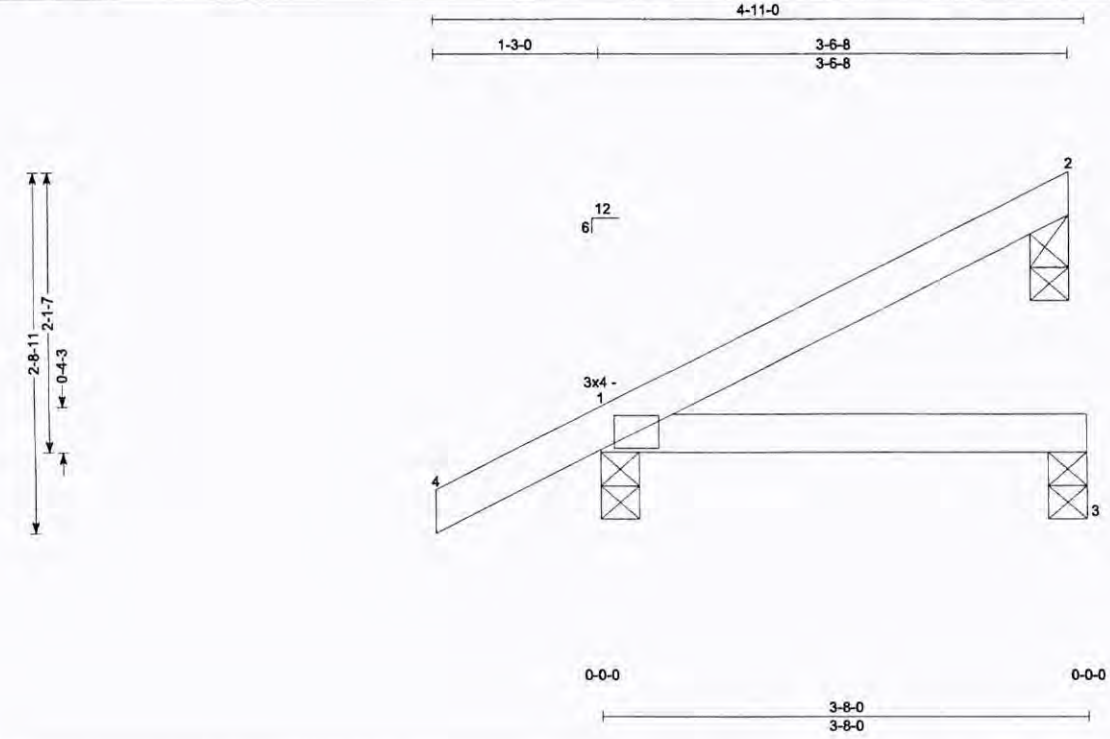
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J32
Project Name: village walk
Date: 07/01/16 11:09:54
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
3-8-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	12 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.18 (1-2)
BC :	0.40 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.02 in	L / 999	(3-1)	L / 240
Vert LL:	0 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	338 lbs	-	-7 lbs	-7 lbs	174 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	97 lbs	-	-21 lbs	-21 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	277 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.183	-346 lbs	
BC	3-1	0.404	258 lbs	(-54 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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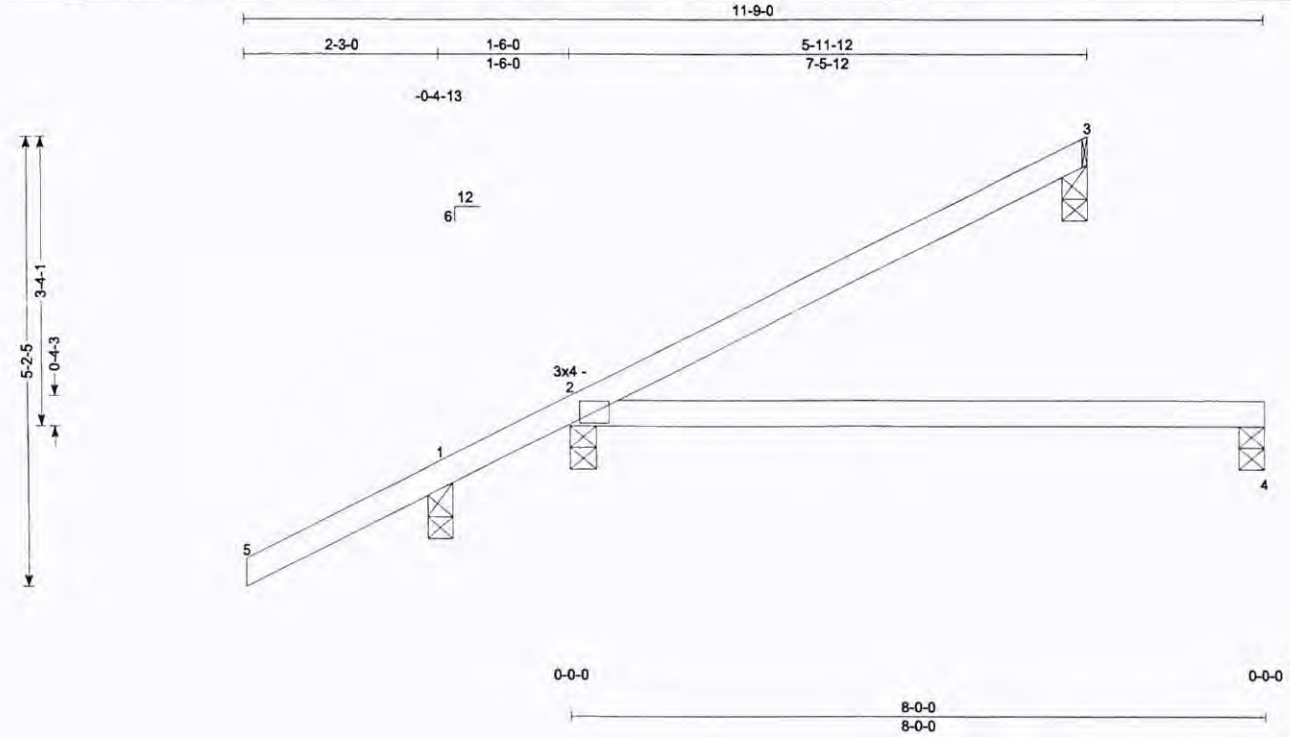
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J3T
Project Name: village walk
Date: 07/01/16 11:09:54
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	2-3-0	0-0-0	0-0-0	0-0-0	1	24 in	24 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.75 (1-2)
BC :	0.83 (4-2)
Web :	0.00 (2)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.24 in	L / 375	(4-2)	L / 240
Vert LL:	0.04 in	L / 999	(4-2)	L / 360
Horz TL:	0 in		3	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (2:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	157 lbs	-110 lbs	-68 lbs	-110 lbs	299 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	524 lbs	-	-10 lbs	-10 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	166 lbs	-	-37 lbs	-37 lbs	0 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	298 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 9-9-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	5-1	0.402	68 lbs	1-2	0.748	-233 lbs	2-3	0.583	-233 lbs		
BC	4-2	0.829	-350 lbs								
Webs											

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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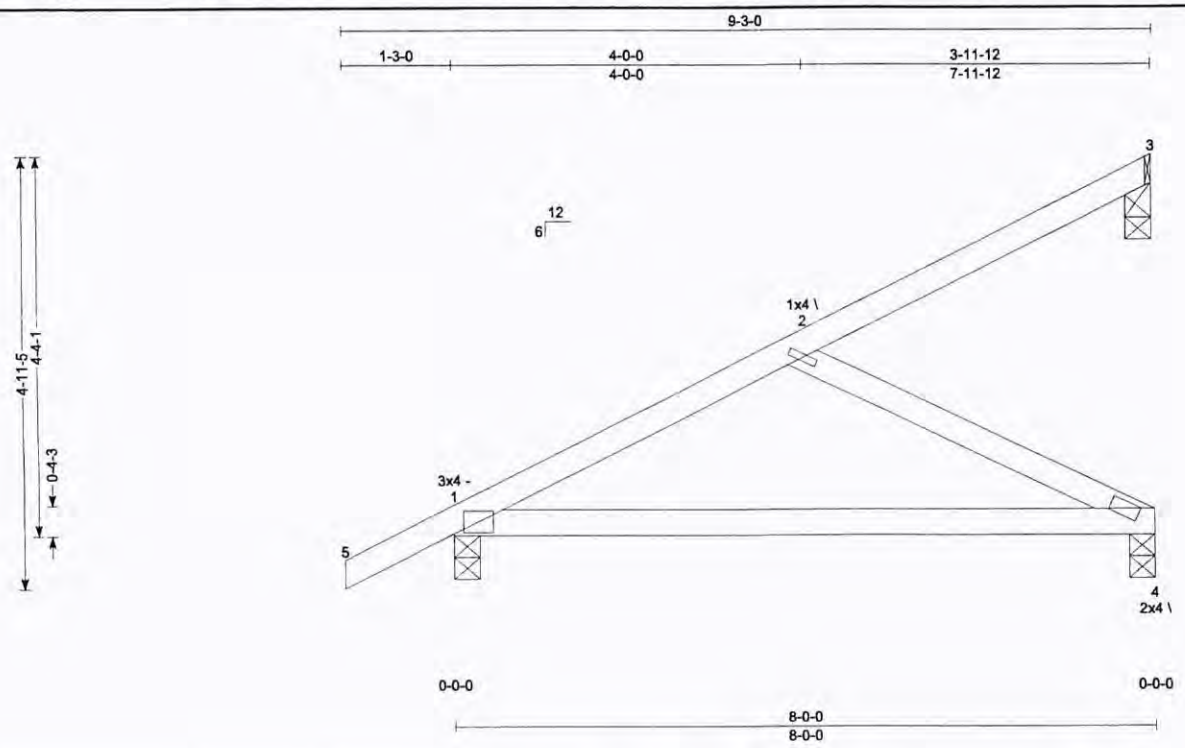
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J4
Project Name: village walk
Date: 07/01/16 11:09:55
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	29 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.64 (1-2)
BC :	0.88 (4-1)
Web :	0.13 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.17 in	L / 520	(4-1)	L / 240
Vert LL:	0.01 in	L / 999	(4-1)	L / 360
Horz TL:	0.01 in		4	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,25.) (4:4-2,3-8,25.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	443 lbs	-	-	-	261 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	110 lbs	-	-32 lbs	-32 lbs	0 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	373 lbs	-	-2 lbs	-2 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	5-1	0.124	38 lbs		1-2	0.637	-478 lbs		2-3	0.209	-85 lbs
BC	4-1	0.877	363 lbs	(-204 lbs)							
Webs	2-4	0.130	-388 lbs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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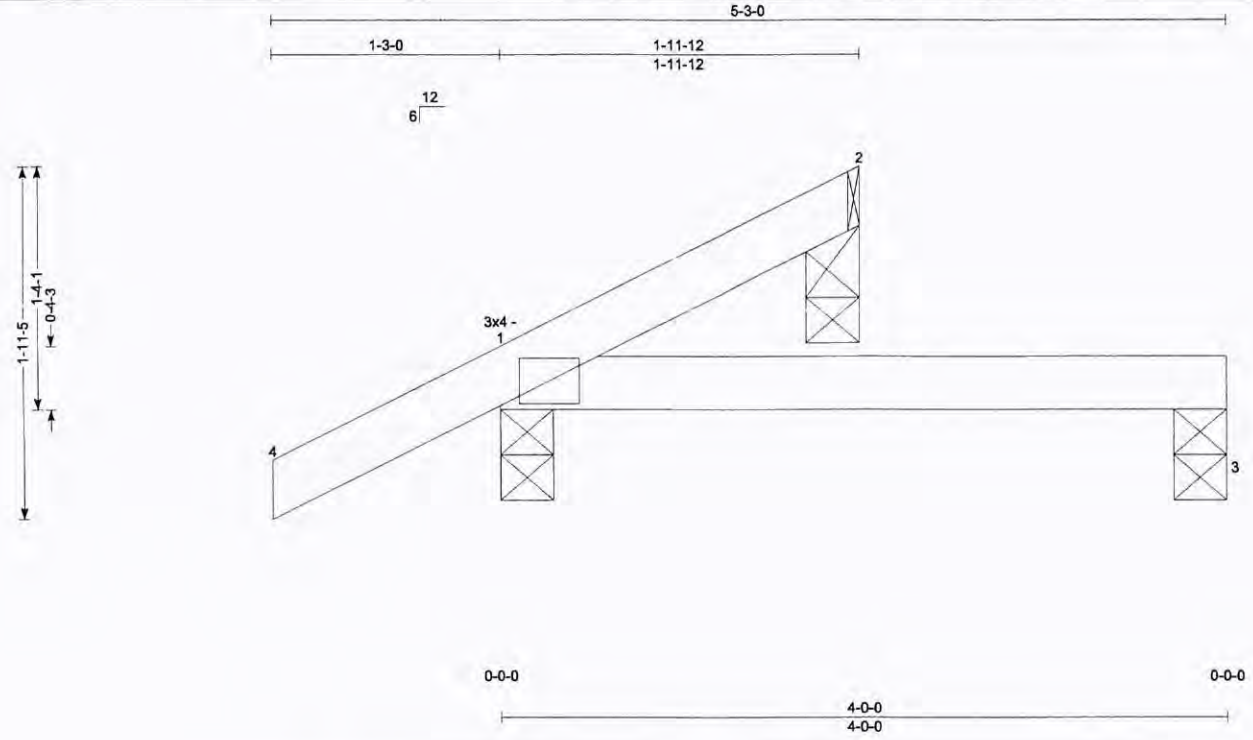
SIMPSON StrongTie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J41
Project Name: village walk
Date: 07/01/16 11:09:55
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
4-0-0	6 / 12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	10 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.26 (1-2)	Vert TL:	0.01 in	L / 999	(3-1)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.36 (3-1)	Vert LL:	0 in UP	L / 999	(3-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.00 (1)	Horz TL:	0 in		2	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	301 lbs	-	-10 lbs	-10 lbs	135 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	118 lbs	-	-3 lbs	-3 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	272 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.260	-299 lbs	
BC	3-1	0.361	220 lbs	(-10 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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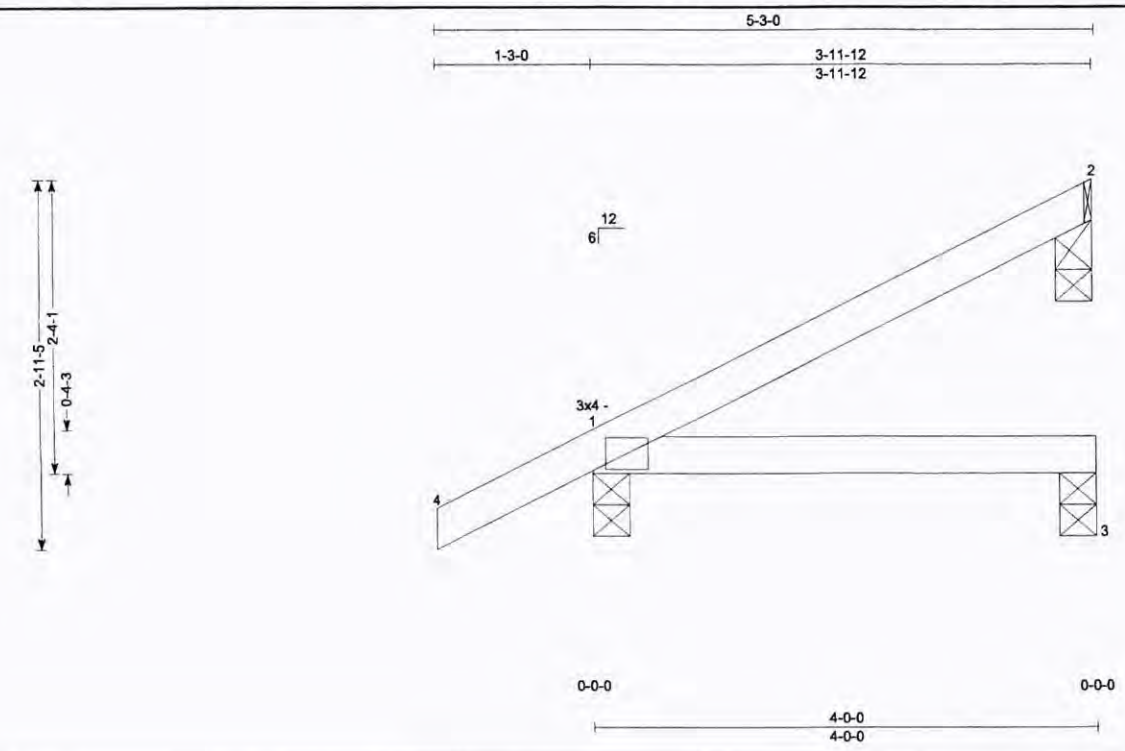
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J42
Project Name: village walk
Date: 07/01/16 11:09:56
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
4-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	13 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.20 (1-2)
BC :	0.46 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.03 in	L / 999	(3-1)	L / 240
Vert LL:	0.01 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	349 lbs	-	-6 lbs	-6 lbs	185 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	110 lbs	-	-24 lbs	-24 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	280 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.204	-359 lbs	
BC	3-1	0.455	268 lbs	(-61 lbs)				

Webs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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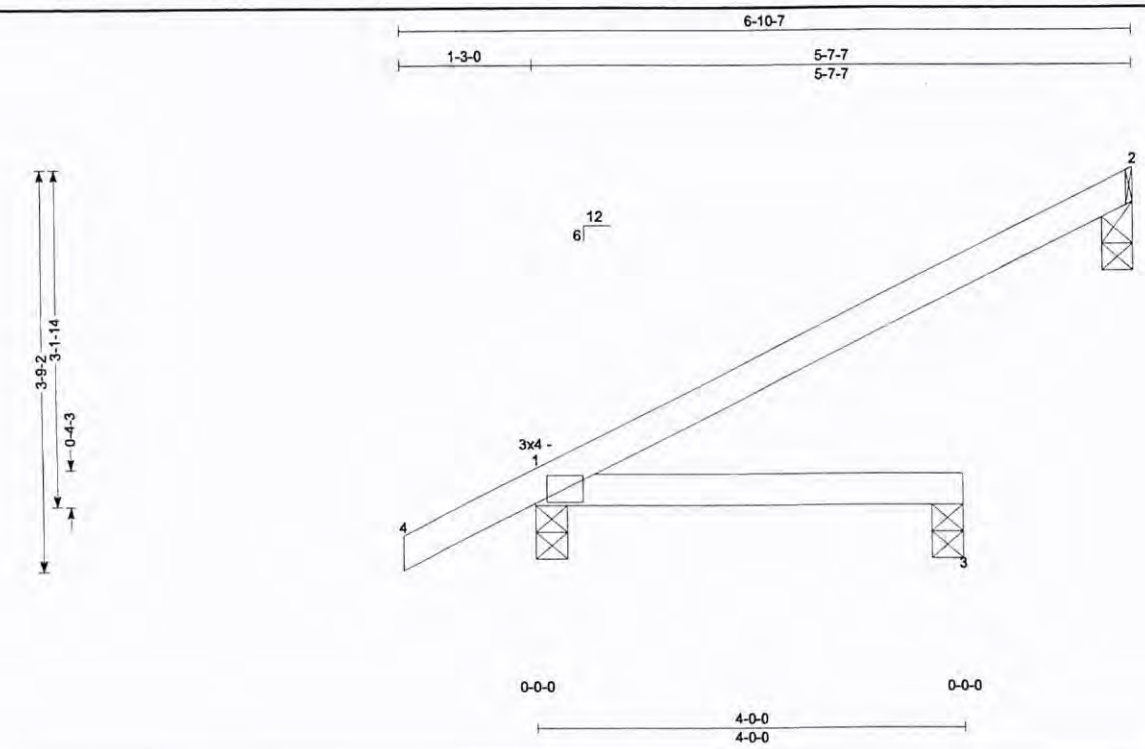
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J43
Project Name: village walk
Date: 07/01/16 11:09:56
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
4-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	15 lbs



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.35 (1-2)
BC :	0.53 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.06 in	L / 658	(3-1)	L / 240
Vert LL:	0.02 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	
Creep Factor, Ker = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	369 lbs	-	-4 lbs	-4 lbs	227 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	292 lbs	-	-	-	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	154 lbs	-	-37 lbs	-37 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.351	-384 lbs	
BC	3-1	0.530	288 lbs	(-90 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
67407
STATE OF CALIFORNIA
07/05/2016

NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company, Inc in accordance with ESR-2762 . All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

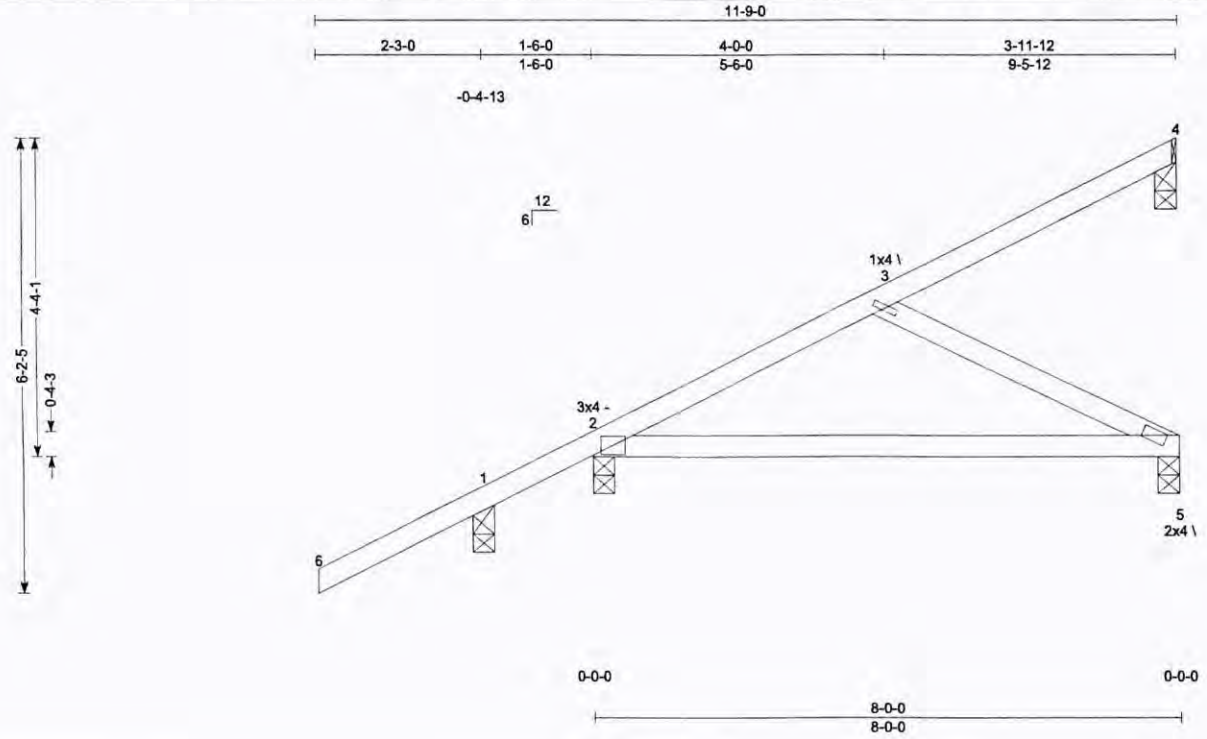
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J4T
Project Name: village walk
Date: 07/01/16 11:09:57
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	2-3-0	0-0-0	0-0-0	0-0-0	1	24 in	33 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.49 (1-2)	Vert TL:	0.16 in	L / 565	(5-2)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.81 (5-2)	Vert LL:	0.01 in	L / 999	(5-2)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.13 (3-5)	Horz TL:	0.01 in		5	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (2:3-4,2-5,0.) (3:0-0,3-15,25.) (5:4-2,3-8,25.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	269 lbs	-26 lbs	-45 lbs	-45 lbs	345 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	462 lbs	-	-	-	0 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	110 lbs	-	-30 lbs	-30 lbs	0 lbs
5	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	366 lbs	-	-8 lbs	-8 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	6-1	0.402	68 lbs		2-3	0.369	-418 lbs	
	1-2	0.485	-376 lbs		3-4	0.198	-83 lbs	
BC	5-2	0.808	346 lbs	(-252 lbs)				
Webs	3-5	0.128	-382 lbs					

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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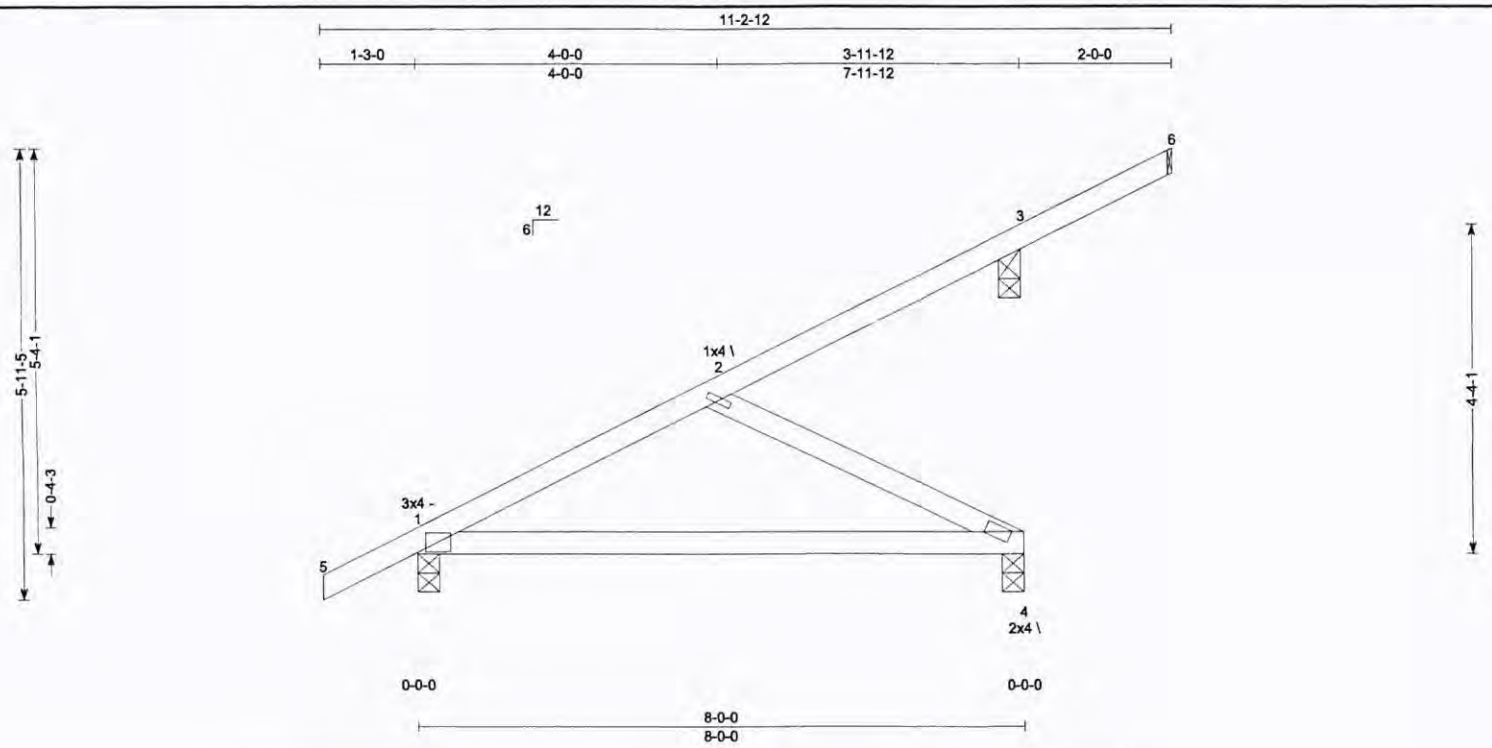
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J5
Project Name: village walk
Date: 07/01/16 11:09:57
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 / 12	1	1-3-0	2-0-0	0-0-0	0-0-0	1	24 in	32 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.64 (1-2)
BC :	0.88 (4-1)
Web :	0.10 (2-4)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.18 in	L / 492	(4-1)	L / 240
Vert LL:	0.01 in	L / 999	(4-1)	L / 360
Horz TL:	0 in		4	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.) (2:0-0,3-15,25.) (4:4-2,3-8,25.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	434 lbs	-	-	-	327 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	299 lbs	-	-80 lbs	-80 lbs	0 lbs
4	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	360 lbs	-	-	-	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	5-1	0.124	38 lbs		2-3	0.349	-209 lbs				
	1-2	0.636	-466 lbs		3-6	0.311	-65 lbs				
BC	4-1	0.876	354 lbs	(-106 lbs)							
Webs	2-4	0.104	-315 lbs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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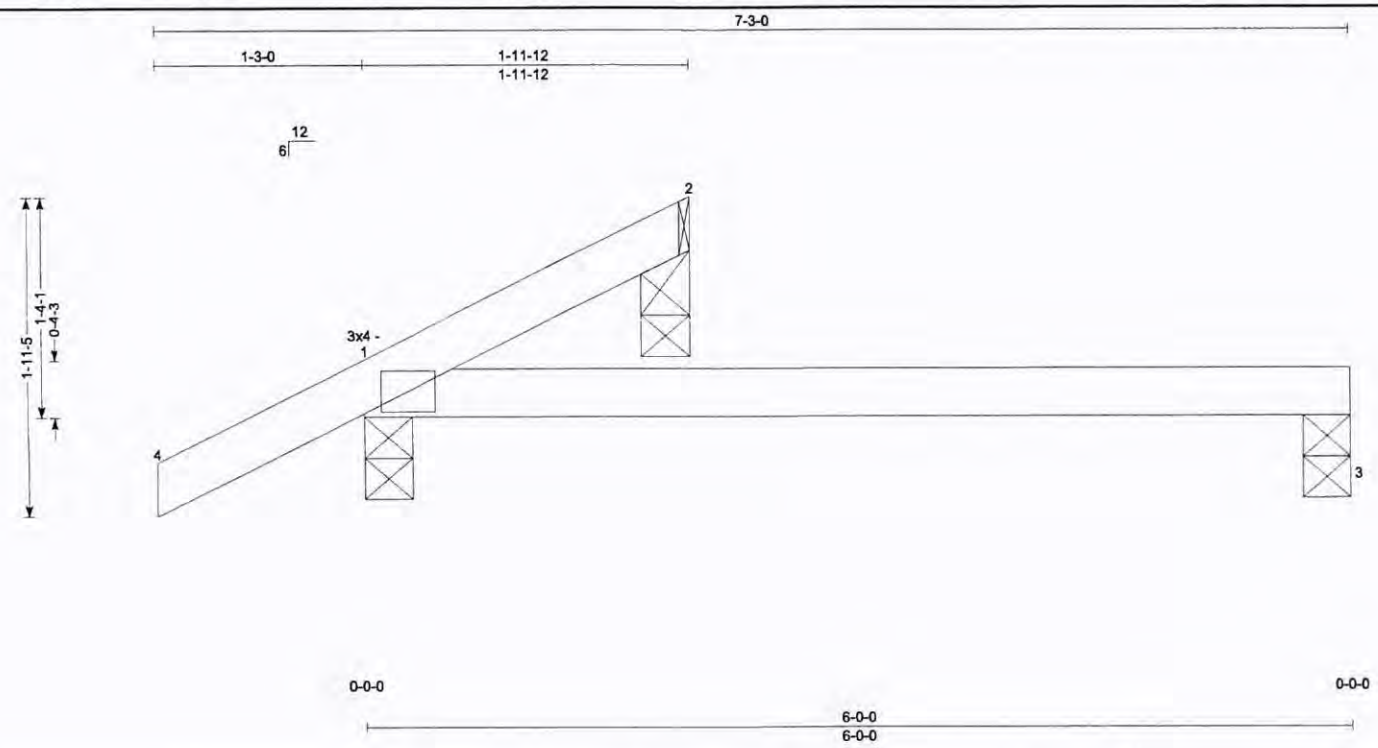
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J61
Project Name: village walk
Date: 07/01/16 11:09:58
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
6-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	12 lbs



Loading

	(psf)
Load	
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.43 (1-2)
BC :	0.55 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.04 in	L / 999	(3-1)	L / 240
Vert LL:	0 in UP	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	301 lbs	-	-10 lbs	-10 lbs	132 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	184 lbs	-	-	-	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	282 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.137	38 lbs		1-2	0.435	-298 lbs	
BC	3-1	0.552	220 lbs	(-8 lbs)				

Webs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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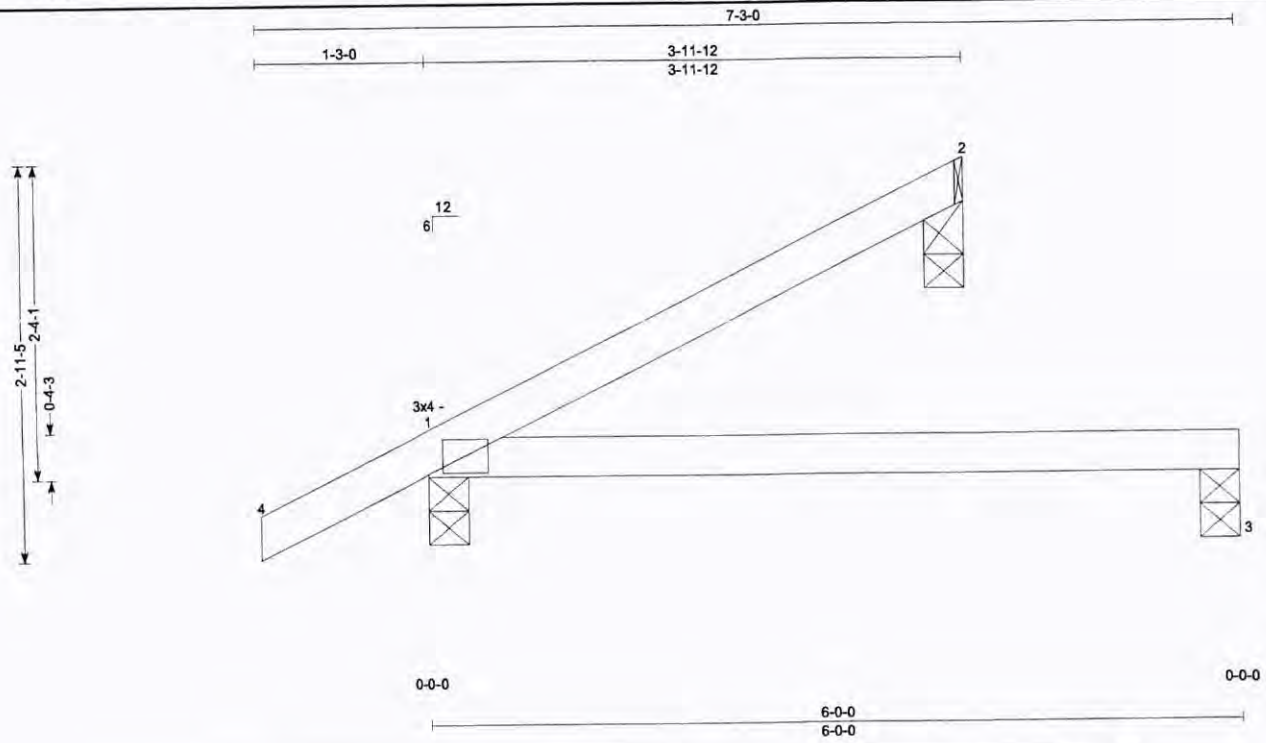
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J62
Project Name: village walk
Date: 07/01/16 11:09:58
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
6-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	15 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.39 (1-2)
BC :	0.66 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.09 in	L / 747	(3-1)	L / 240
Vert LL:	0.01 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	364 lbs	-	-1 lbs	-1 lbs	182 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	121 lbs	-	-21 lbs	-21 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	288 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

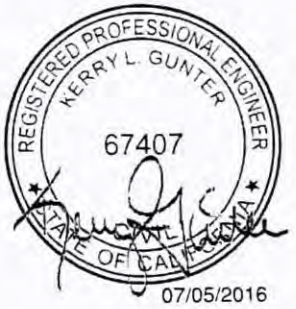
Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.137	38 lbs		1-2	0.392	-378 lbs	
BC	3-1	0.657	283 lbs	(-56 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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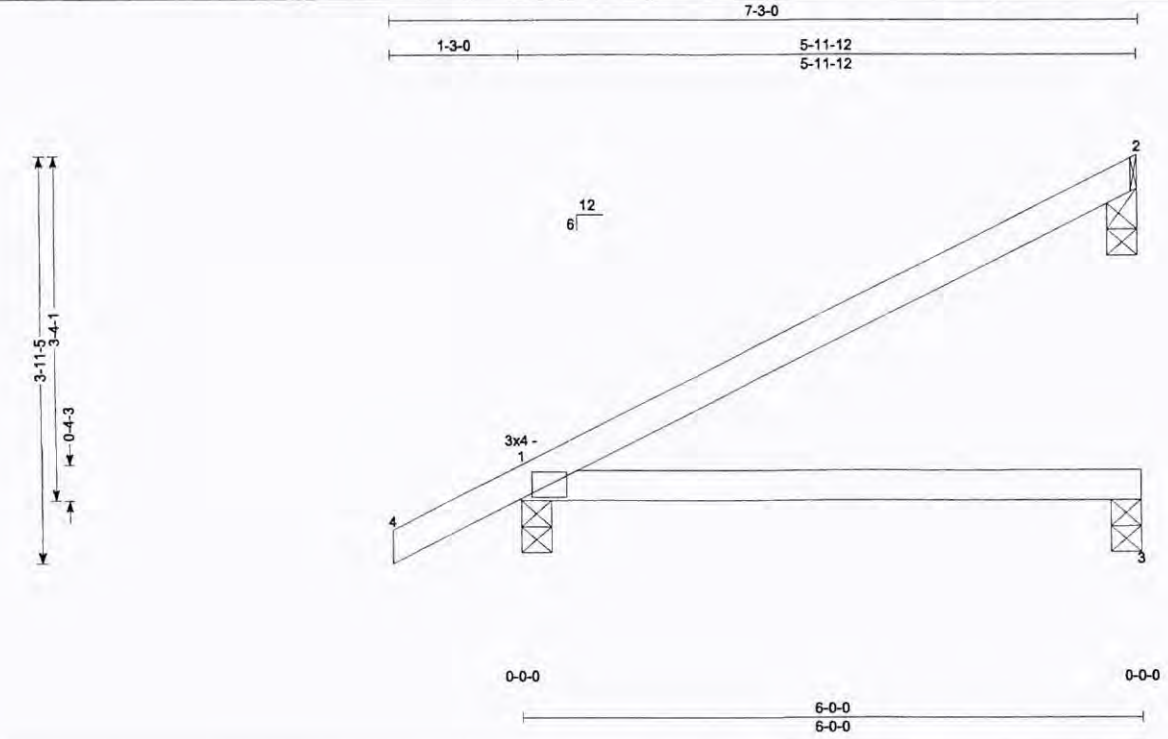
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: J63
Project Name: village walk
Date: 07/01/16 11:09:59
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
6-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	18 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.45 (1-2)
BC :	0.76 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.17 in	L / 385	(3-1)	L / 240
Vert LL:	0.04 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	397 lbs	-	-0 lbs	-0 lbs	231 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	173 lbs	-	-39 lbs	-39 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	297 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.137	38 lbs		1-2	0.451	-420 lbs	
BC	3-1	0.758	317 lbs	(-98 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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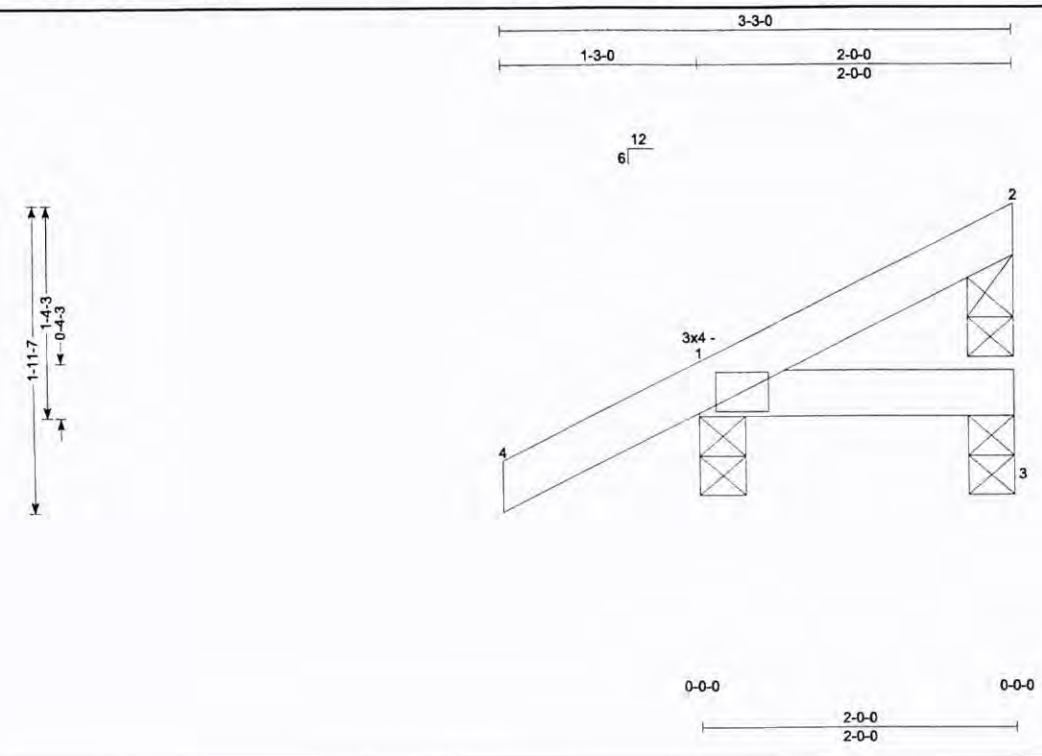
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JT1
Project Name: village walk
Date: 07/01/16 11:09:59
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	7 lbs



Loading

	(psf)
Load	
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.14 (4-1)
BC:	0.19 (3-1)
Web:	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0 in	L / 999	(3-1)	L / 240
Vert LL:	0 in	L / 999	1	L / 360
Horz TL:	0 in		2	

Creep Factor, Ker = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	287 lbs	-	-14 lbs	-14 lbs	136 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	261 lbs	-	-	-	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	56 lbs	-	-9 lbs	-9 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x4
Webs	

Bracing Summary

TC Bracing:	Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.118	-281 lbs	
BC	3-1	0.189	206 lbs	(-14 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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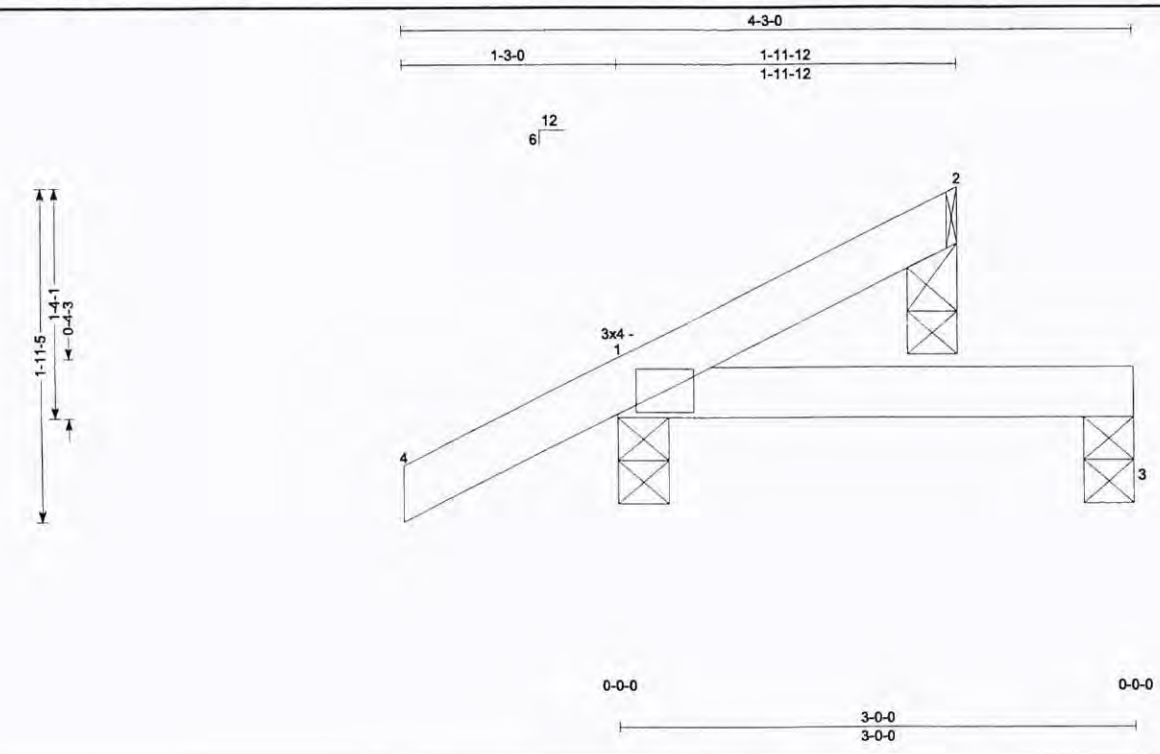
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JT2
Project Name: village walk
Date: 07/01/16 11:10:00
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
3-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	9 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.18 (1-2)
BC :	0.27 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0 in	L / 999	(3-1)	L / 240
Vert LL:	0 in UP	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	298 lbs	-	-12 lbs	-12 lbs	135 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	86 lbs	-	-6 lbs	-6 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	266 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.178	-294 lbs	
BC	3-1	0.272	217 lbs	(-11 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used.. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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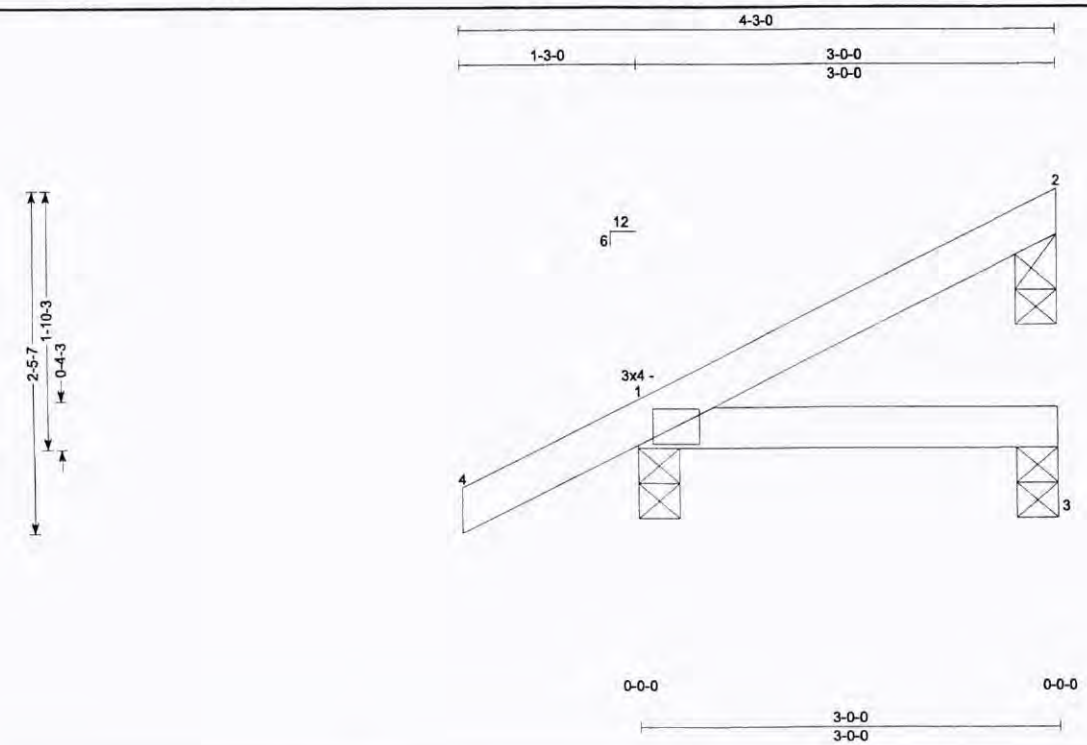
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JT3
Project Name: village walk
Date: 07/01/16 11:10:00
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
3-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	10 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.14 (1-2)
BC :	0.32 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.01 in	L / 999	(3-1)	L / 240
Vert LL:	0 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	321 lbs	-	-10 lbs	-10 lbs	161 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	271 lbs	-	-	-	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	79 lbs	-	-17 lbs	-17 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.141	-324 lbs	
BC	3-1	0.318	241 lbs	(-48 lbs)				

Webs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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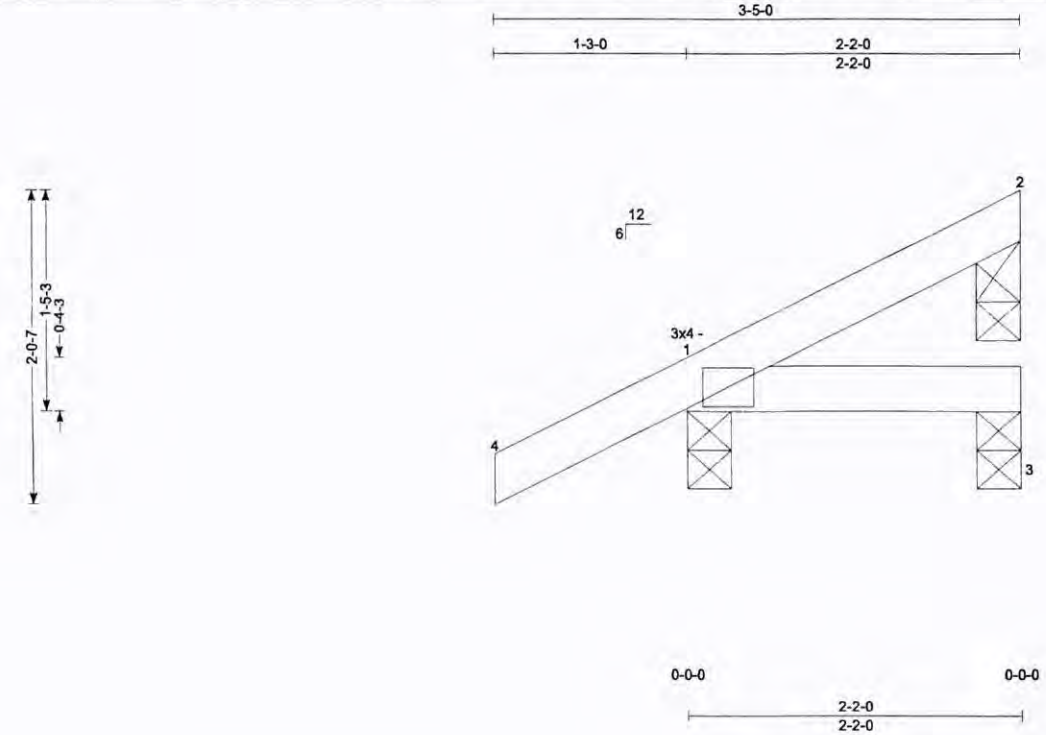
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JT4
Project Name: village walk
Date: 07/01/16 11:10:01
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-2-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	8 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/	TC :	0.14 (4-1)	Vert TL:	0 in	L / 999	(3-1)	L / 240
TCLL :	20		TPI 1-2007	BC :	0.21 (3-1)	Vert LL:	0 in	L / 999	(3-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.00 (1)	Horz TL:	0 in		2	
BCLL :	0	D.O.L :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	294 lbs	-	-13 lbs	-13 lbs	140 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	263 lbs	-	-	-	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	57 lbs	-	-11 lbs	-11 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.120	-289 lbs		
BC	3-1	0.210	213 lbs	(-20 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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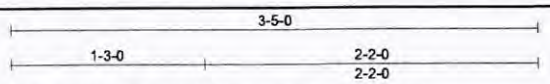
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

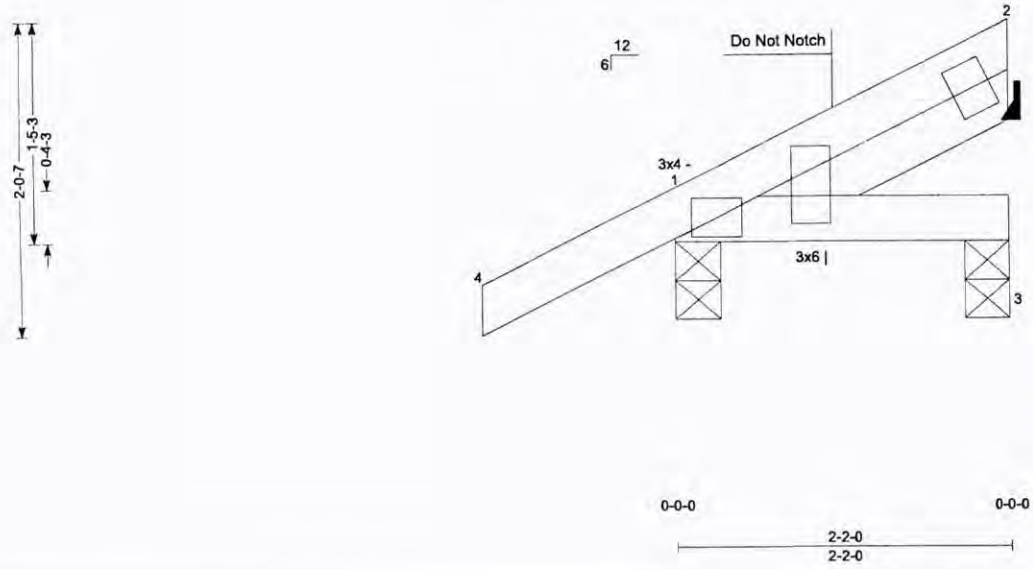
Hanson Components, Inc.

Truss: JT4F
Project Name: village walk
Date: 7/4/2016 1:17:49 PM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-2-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	11 lbs



The top chord may be notched 1.5" deep by 3.5" wide at 24" o.c. max., unless noted otherwise. Do not cut the connector plates



Loading

Load	(psf)
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.14 (4-1)
BC:	0.21 (3-1)
Web:	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0 in	L / 999	(3-1)	L / 240
Vert LL:	0 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	294 lbs	-	-13 lbs	-13 lbs	140 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	263 lbs	-	-	-	0 lbs
2	H Roll (Truss)	1	1.5 in	-	1.50 in	57 lbs	-	-11 lbs	-11 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.120	-289 lbs		
BC	3-1	0.210	213 lbs	(-20 lbs)					

Webs

Notes:

1) Attach structural gable blocks with 1x4 20ga plates and stacked chords with 2x4 20ga plates, U.N.O.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
7) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
8) This gable has been designed for a 12" (max.) rake overhang.



07/05/2016

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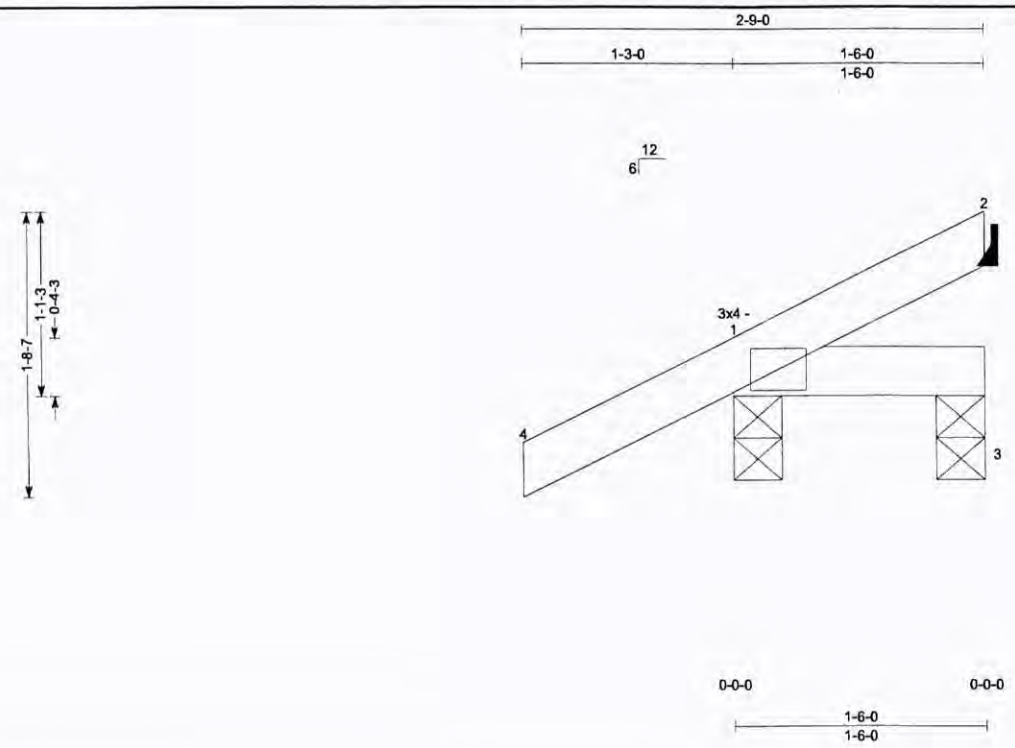
SIMPSON STRONG-TIE

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JT5
Project Name: village walk
Date: 7/4/2016 1:19:19 PM
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
1-6-0	6 / 12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	6 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/ TPI 1-2007	TC :	0.14 (4-1)	Vert TL:	0 in	L / 999	(3-1)	L / 240
TCLL :	20	Rep Mbr Increase :	Yes	BC :	0.13 (3-1)	Vert LL:	0 in UP	L / 999	(3-1)	L / 360
TCDL :	14	D.O.L. :	125 %	Web :	0.00 (1)	Horz TL:	0 in		2	
BCLL :	0					Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	263 lbs	-	-18 lbs	-18 lbs	123 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	255 lbs	-	-	-	0 lbs
2	H Roll (Truss)	1	1.5 in	-	1.50 in	53 lbs	-	-5 lbs	-5 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.113	-251 lbs		
BC	3-1	0.127	182 lbs	(-13 lbs)					
Webs									

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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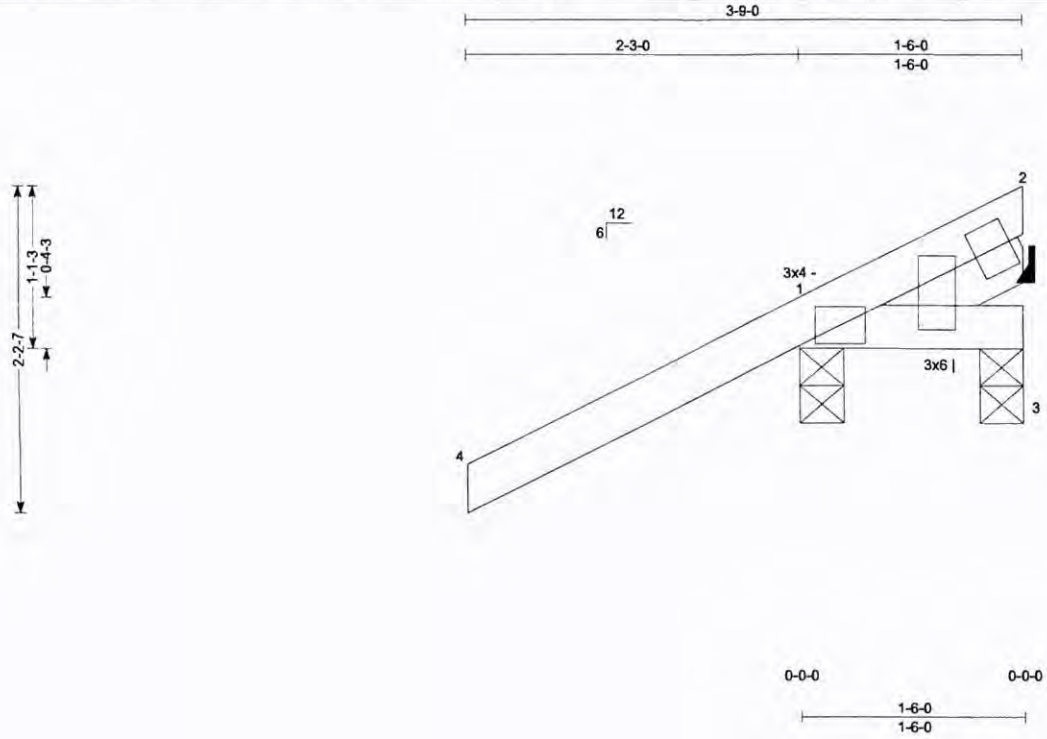
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: JT5F
Project Name: village walk
Date: 7/4/2016 1:20:36 PM
Page: 1 of1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
1-6-0	6 / 12	1	2-3-0	0-0-0	0-0-0	0-0-0	1	24 in	9 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/ TPI 1-2007	TC :	0.45 (4-1)	Vert TL:	0 in UP	L / 999	(3-1)	L / 240
TCLL :	20			BC :	0.13 (3-1)	Vert LL:	0 in UP	L / 999	(3-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.00 (1)	Horz TL:	0 in		2	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	329 lbs	-	-48 lbs	-48 lbs	163 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	238 lbs	-40 lbs	-20 lbs	-40 lbs	0 lbs
2	H Roll (Truss)	1	1.5 in	-	1.50 in	65 lbs	-13 lbs	-2 lbs	-13 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	4-1	0.454	68 lbs		1-2	0.366	-224 lbs		
BC	3-1	0.127	284 lbs	(-147 lbs)					
Webs									

Notes:

1) Attach structural gable blocks with 1x4 20ga plates and stacked chords with 2x4 20ga plates, U.N.O.
2) This truss has been designed using the green lumber reduction factors.
3) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
4) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.
7) This truss has been designed for in-plane wind loading. For bracing requirements for out-of-plane wind loading, refer to the Construction Documents and/or BCSI-B3.
8) This gable has been designed for a 12" (max.) rake overhang.



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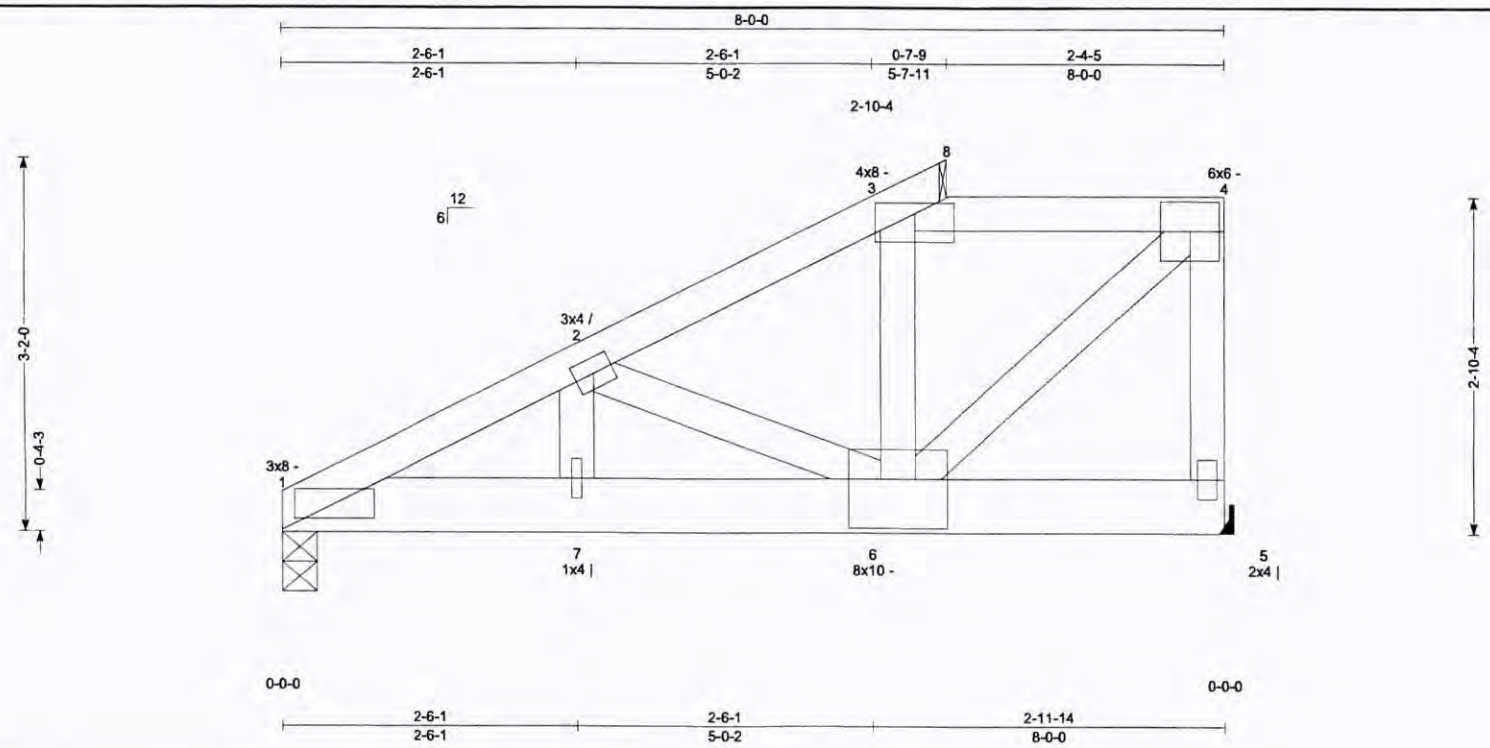
SIMPSON

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: ME1
Project Name: village walk
Date: 7/4/2016 1:22:28 PM
Page: 1 of2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	45 lbs



Loading

Carried Loads (psf)

TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	No
D.O.L. :	125 %

CSI Summary

TC :	0.27 (3-4)
BC :	0.45 (7-1)
Web :	0.47 (4-6)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.07 in	L / 999	(6-7)	L / 240
Vert LL:	0.02 in	L / 999	(6-7)	L / 360
Horz TL:	0.02 in		5	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:5-4,1-5,0.) (2:1-12,3-1,26.) (3:4-5,2-11,0.) (4:3-8,3-8,0.) (5:1-12,5-8,90.) (6:2-9,4-8,0.) (7:0-0,5-8,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,245 lbs	-	-43 lbs	-43 lbs	224 lbs
5	H Roll (Truss)	1	1.5 in	-	2.81 in	2,638 lbs	-	-81 lbs	-81 lbs	0 lbs

Material Summary

TC	DFL #2 2x4	
BC	DFL #2 2x6	
Webs	DFL Std/Stud 2x4	except:
4-6	DFL #2 2x4	

Bracing Summary

TC Bracing: Sheathed or Purlins at 3-9-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1 : Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	5-9-0	8-0-0	Down	Proj	173.33 plf	173.33 plf	
Top Chd	0-0-0	8-0-0	Down	Proj	20 psf	20 psf	12 in
Top Chd	0-0-0	8-0-0	Down	Proj	20 psf	20 psf	12 in
Top Chd	0-0-0	3-2-14	Down	Proj	20 psf	20 psf	12 in
Top Chd	3-2-14	5-0-2	Down	Proj	20 psf	0 psf	12 in
Top Chd	5-0-2	8-0-0	Down	Proj	56.67 plf	56.67 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	4-9-0	Down	780 lbs	
Top Chd	5-0-2	Down	166 lbs	



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Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	45 lbs

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	5-9-0	8-0-0	Down	Proj	182 plf	182 plf	
Top Chd	0-0-0	8-0-0	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	8-0-0	Down	Proj	7 psf	7 psf	12 in
Top Chd	0-0-0	8-0-0	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	8-0-0	Down	Proj	7 psf	7 psf	12 in
Top Chd	0-0-0	3-2-14	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	3-2-14	Down	Proj	7 psf	7 psf	12 in
Top Chd	3-2-14	5-0-2	Down	Proj	14 psf	0 psf	12 in
Bot Chd	3-2-14	5-0-2	Down	Proj	7 psf	0 psf	12 in
Top Chd	5-0-2	8-0-0	Down	Proj	39.67 plf	39.67 plf	
Bot Chd	5-0-2	8-0-0	Down	Proj	19.83 plf	19.83 plf	

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	4-9-0	Down	850 lbs	
Top Chd	5-0-2	Down	116 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	1-2	0.250	-2,462 lbs	3-4	0.265	-1,926 lbs					
	2-3	0.223	-2,193 lbs	3-8	0.025	-31 lbs					
BC	5-6	0.341	60 lbs (-31 lbs)	6-7	0.414	2,171 lbs	(-90 lbs)	7-1	0.446	2,171 lbs	(-90 lbs)
Webs	2-7	0.103	254 lbs (-3 lbs)	3-6	0.140	344 lbs		4-5	0.292	-2,085 lbs	
	2-6	0.067	-396 lbs	4-6	0.466	2,636 lbs	(-88 lbs)				

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Step Down Girder setback equals 5-8-0, truss spacing behind girder is 2-0-0, end jack type is Open Faced, and the corner girders are Rafter's.
4) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
5) Provide adequate drainage to prevent ponding.
6) Listed wind uplift reactions based on MWFRS Only loading.
7) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

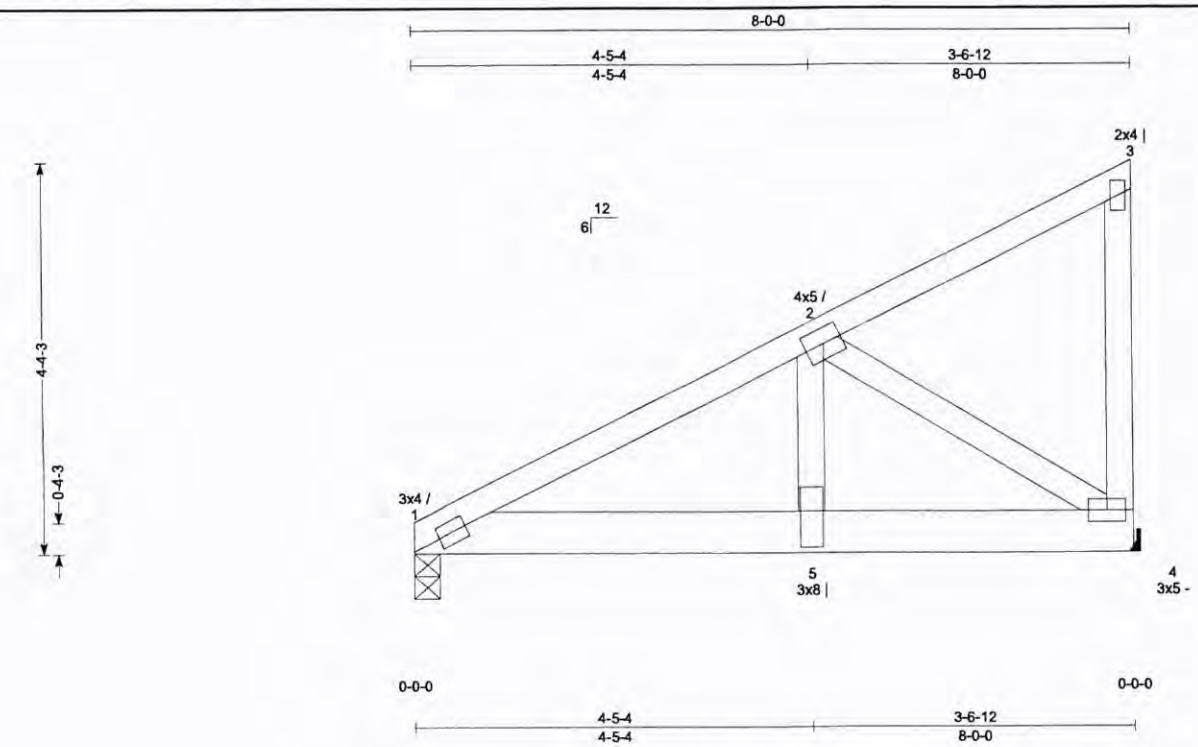
REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
67407
STATE OF CALIFORNIA
07/05/2016

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Hanson Components, Inc.

Truss: ME2
Project Name: village walk
Date: 7/4/2016 1:24:00 PM
Page: 1 of 2

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	40 lbs



Loading

Carried Loads (psf)

TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	No
D.O.L.:	125 %

CSI Summary

TC:	0.20 (1-2)
BC:	0.48 (4-5)
Web:	0.54 (2-5)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.06 in	L / 999	(4-5)	L / 240
Vert LL:	0.02 in	L / 999	(4-5)	L / 360
Horz TL:	0.02 in		4	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:5-4,1-5,26.) (2:1-12,3-1,26.) (3:1-12,4-13,90.)(4:3-8,5-8,0.) (5:0-0,4-12,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	816 lbs	-	-30 lbs	-30 lbs	311 lbs
4	H Roll (Truss)	1	1.5 in	-	1.50 in	1,328 lbs	-	-37 lbs	-37 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing: Sheathed or Purlins at 4-9-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	5-6-0	8-0-0	Down	Proj	123.33 plf	123.33 plf	
Top Chd	0-0-0	8-0-0	Down	Proj	20 psf	20 psf	12 in
Top Chd	0-0-0	4-6-0	Down	Proj	20 psf	20 psf	12 in

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	4-6-0	Down	475 lbs	

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	5-6-0	8-0-0	Down	Proj	129.5 plf	129.5 plf	
Top Chd	0-0-0	8-0-0	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	8-0-0	Down	Proj	7 psf	7 psf	12 in
Top Chd	0-0-0	4-6-0	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	4-6-0	Down	Proj	7 psf	7 psf	12 in

Point Loads

Member	Location	Direction	Load	Trib Width
Bot Chd	4-6-0	Down	525 lbs	

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	1-2	0.198	-1,563 lbs		2-3	0.159	-98 lbs					
BC	4-5	0.482	1,348 lbs	(-48 lbs)	5-1	0.404	1,348 lbs	(-155 lbs)				
Webs	2-5	0.538	1,324 lbs		2-4	0.443	-1,598 lbs		3-4	0.403	93 lbs	(-78 lbs)

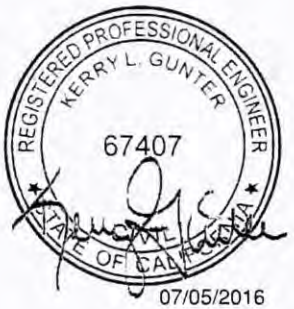
REGISTERED PROFESSIONAL ENGINEER
KERRY L. GUNTER
67407
STATE OF CALIFORNIA
07/05/2016

NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company Inc in accordance with ESR-2762. All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	40 lbs

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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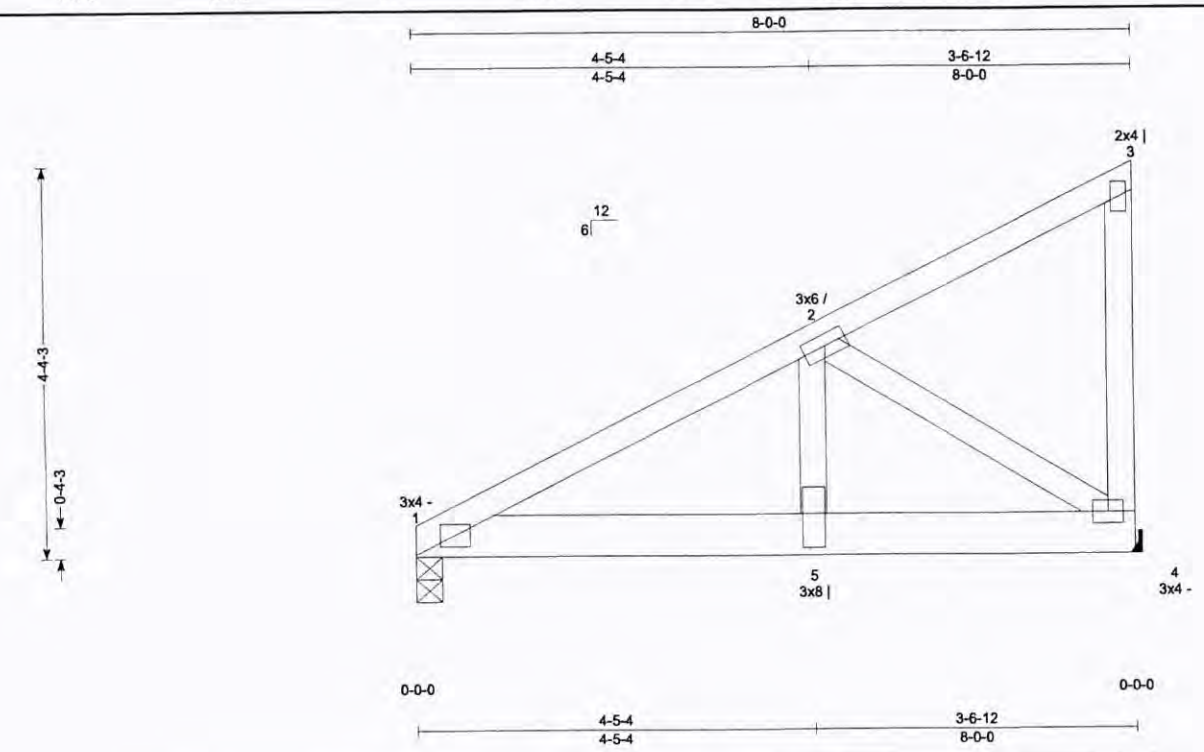
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: ME3
Project Name: village walk
Date: 07/01/16 11:10:04
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	40 lbs



Loading

Carried Loads (psf)

TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	No
D.O.L.:	125 %

CSI Summary

TC:	0.28 (1-2)
BC:	0.65 (5-1)
Web:	0.49 (2-5)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.1 in	L / 899	(5-1)	L / 240
Vert LL:	0.03 in	L / 999	(5-1)	L / 360
Horz TL:	0.02 in		4	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:5-4,1-5,0.) (2:1-12,3-1,26.) (3:1-12,4-13,90.)(4:3-8,5-8,0.) (5:0-0,5-0,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	1,154 lbs	-	-46 lbs	-46 lbs	311 lbs
4	H Roll (Truss)	1	1.5 in	-	1.50 in	1,197 lbs	-	-43 lbs	-43 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 4-10-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	8-0-0	Down	Proj	123.33 plf	123.33 plf	
Top Chd	0-0-0	8-0-0	Down	Proj	20 psf	20 psf	12 in

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	8-0-0	Down	Proj	129.5 plf	129.5 plf	
Top Chd	0-0-0	8-0-0	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	8-0-0	Down	Proj	7 psf	7 psf	12 in

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	1-2	0.278	-1,381 lbs		2-3	0.154	-98 lbs				
BC	4-5	0.566	1,227 lbs	(-59 lbs)	5-1	0.647	1,227 lbs	(-70 lbs)			
Webs	2-5	0.491	1,207 lbs	(-12 lbs)	2-4	0.404	-1,455 lbs		3-4	0.404	94 lbs	(-75 lbs)

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Listed wind uplift reactions based on MWFRS Only loading.
5) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



07/05/2016

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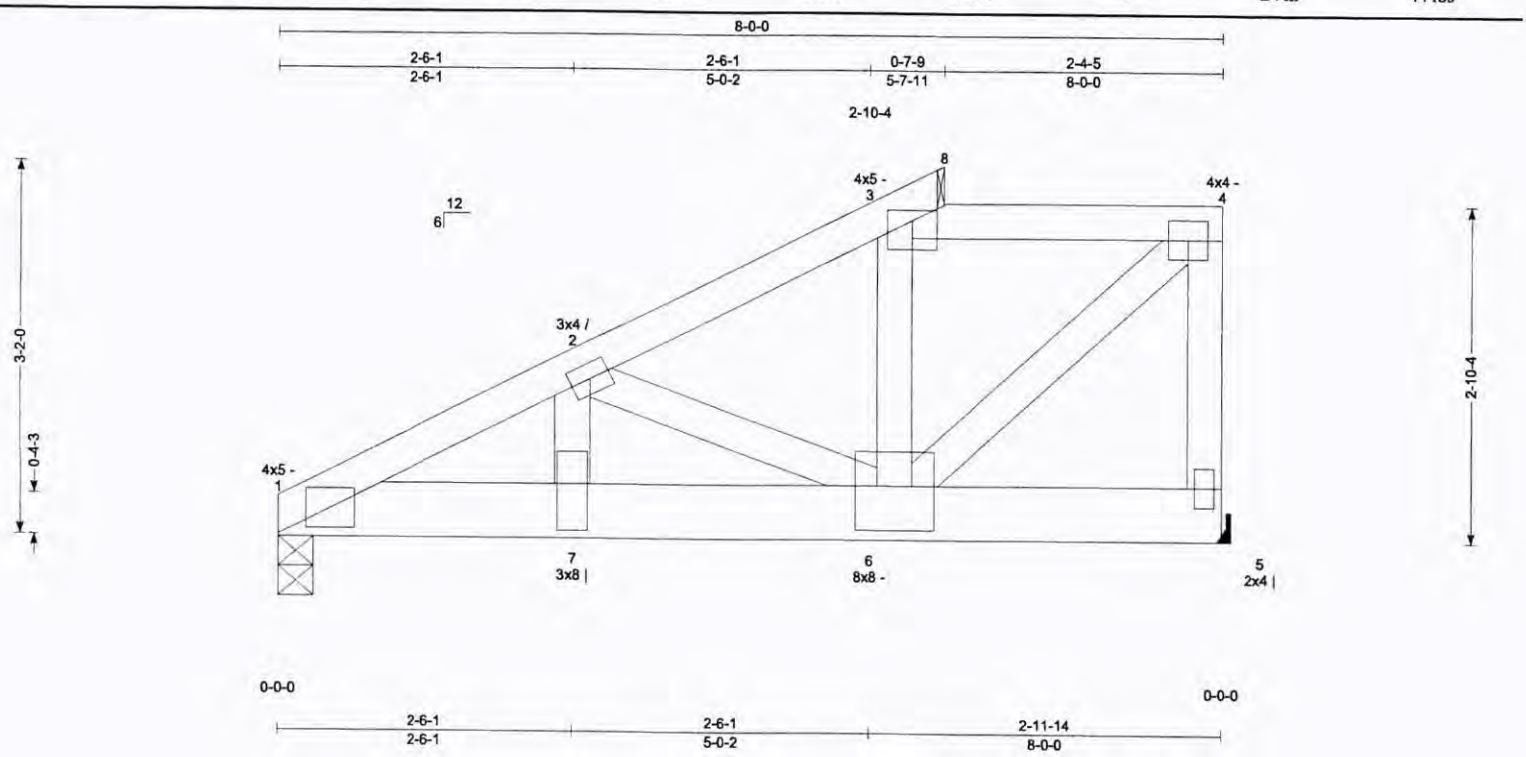
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: ME4
Project Name: village walk
Date: 07/01/16 11:10:05
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
8-0-0	6 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	44 lbs



Loading

Carried Loads (psf)

TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	No
D.O.L. :	125 %

CSI Summary

TC :	0.29 (1-2)
BC :	0.59 (7-1)
Web :	0.64 (4-6)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.08 in	L / 999	(6-7)	L / 240
Vert LL:	0.03 in	L / 999	(6-7)	L / 360
Horz TL:	0.02 in		5	

Creep Factor, Ker = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:5-4,1-5,0.) (2:1-12,3-1,26.) (3:4-5,2-11,0.) (4:3-8,3-8,0.) (5:1-12,5-8,90.) (6:2-9,5-0,0.) (7:0-0,4-12,90.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.66 in	1,556 lbs	-	-45 lbs	-45 lbs	224 lbs
5	H Roll (Truss)	1	1.5 in	-	1.72 in	1,615 lbs	-	-45 lbs	-45 lbs	0 lbs

Material Summary

TC	DFL #2 2x4
BC	DFL #2 2x6
Webs	DFL Std/Stud 2x4

Bracing Summary

TC Bracing:	Sheathed or Purlins at 3-8-0, Purlin design by Others.
BC Bracing:	Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) Standard Loads on Trusses Carried by this Girder: TC Live = 20 psf; TC Dead = 14 psf; BC Live = 0 psf; BC Dead = 7 psf.
3) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
4) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
5) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Load Case Lr1: Std Live Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	8-0-0	Down	Proj	173.33 plf	173.33 plf	
Top Chd	0-0-0	8-0-0	Down	Proj	20 psf	20 psf	12 in

Load Case D1: Std Dead Load

Distributed Loads

Member	Location 1	Location 2	Direction	Spread	Start Load	End Load	Trib Width
Bot Chd	0-0-0	8-0-0	Down	Proj	182 plf	182 plf	
Top Chd	0-0-0	8-0-0	Down	Proj	14 psf	14 psf	12 in
Bot Chd	0-0-0	8-0-0	Down	Proj	7 psf	7 psf	12 in

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	1-2	0.291	-2,456 lbs		3-4	0.120	-1,151 lbs				
	2-3	0.133	-1,300 lbs		3-8	0.013	-10 lbs				
BC	5-6	0.268	60 lbs	(-31 lbs)	6-7	0.535	2,201 lbs	(-79 lbs)	7-1	0.591	2,201 lbs	(-79 lbs)
Webs	2-7	0.359	884 lbs	(-11 lbs)	3-6	0.205	504 lbs	(-7 lbs)	4-5	0.163	-1,164 lbs	
	2-6	0.195	-1,151 lbs		4-6	0.642	1,579 lbs	(-48 lbs)				

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Truss-to-truss connection is for graphical interpretation only. A hanger or other structural connection shall be provided to resist the max reaction and uplift shown in the Reaction Summary.
4) Provide adequate drainage to prevent ponding.
5) Listed wind uplift reactions based on MWFRS Only loading.
6) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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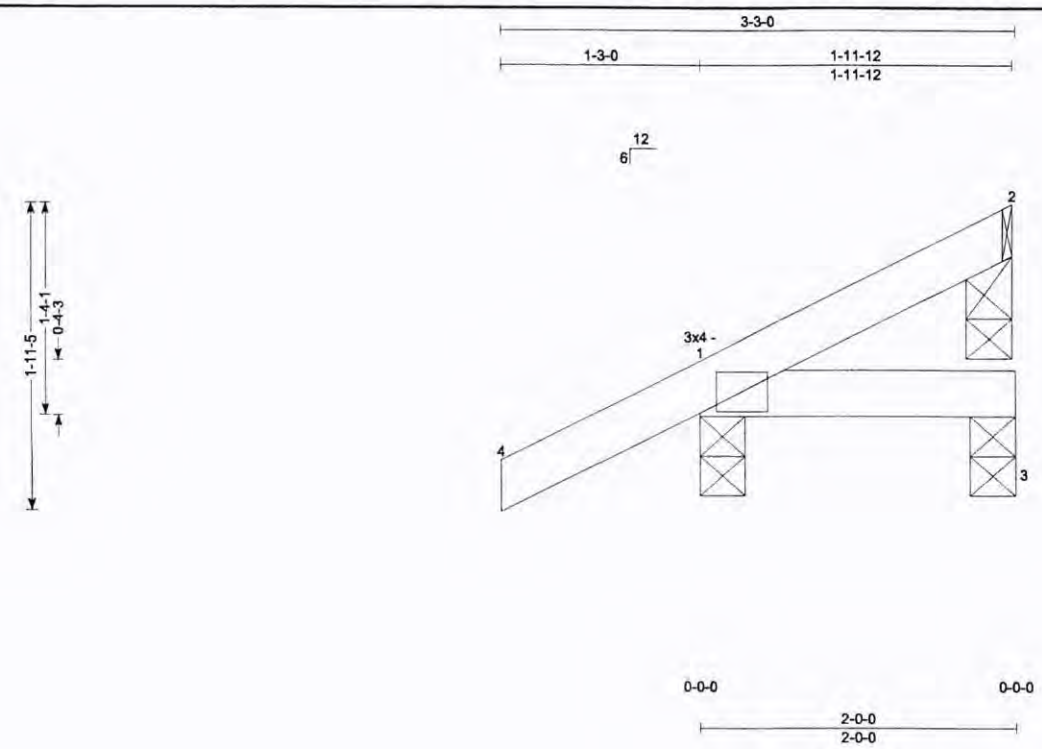
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ1
Project Name: village walk
Date: 07/01/16 11:10:05
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	7 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.14 (4-1)
BC :	0.19 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0 in	L / 999	(3-1)	L / 240
Vert LL:	0 in UP	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	287 lbs	-	-14 lbs	-14 lbs	135 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	56 lbs	-	-9 lbs	-9 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	261 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.118	-280 lbs	
BC	3-1	0.188	206 lbs	(-13 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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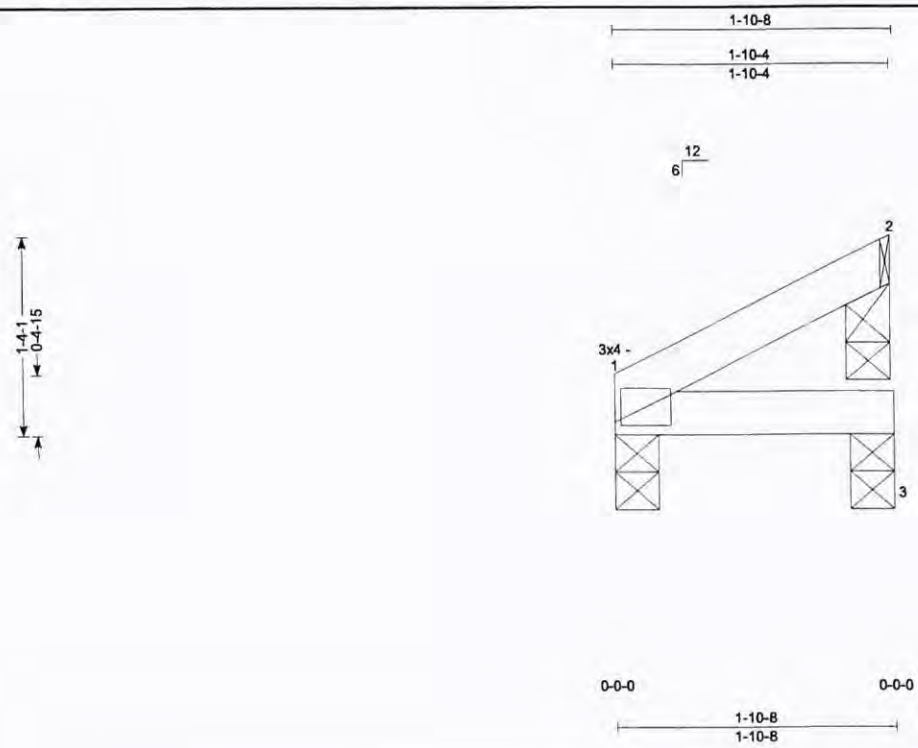
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ1S
Project Name: village walk
Date: 07/01/16 11:10:06
Page: 1 of1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
1-10-8	6 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	5 lbs



Loading

	(psf)
Load	
TCLL:	20
TCDL:	14
BCLL:	0
BCDL:	7

General

Bldg Code:	CBC 2013/ TPI 1-2007
Rep Mbr Increase:	Yes
D.O.L.:	125 %

CSI Summary

TC:	0.10 (1-2)
BC:	0.19 (3-1)
Web:	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0 in	L / 999	(3-1)	L / 240
Vert LL:	0 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-11,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	247 lbs	-	-	-	77 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	57 lbs	-	-12 lbs	-12 lbs	0 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	266 lbs	-	-	-	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00). Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	1-2	0.101	-279 lbs			
BC	3-1	0.192	196 lbs	(-74 lbs)		
Webs						

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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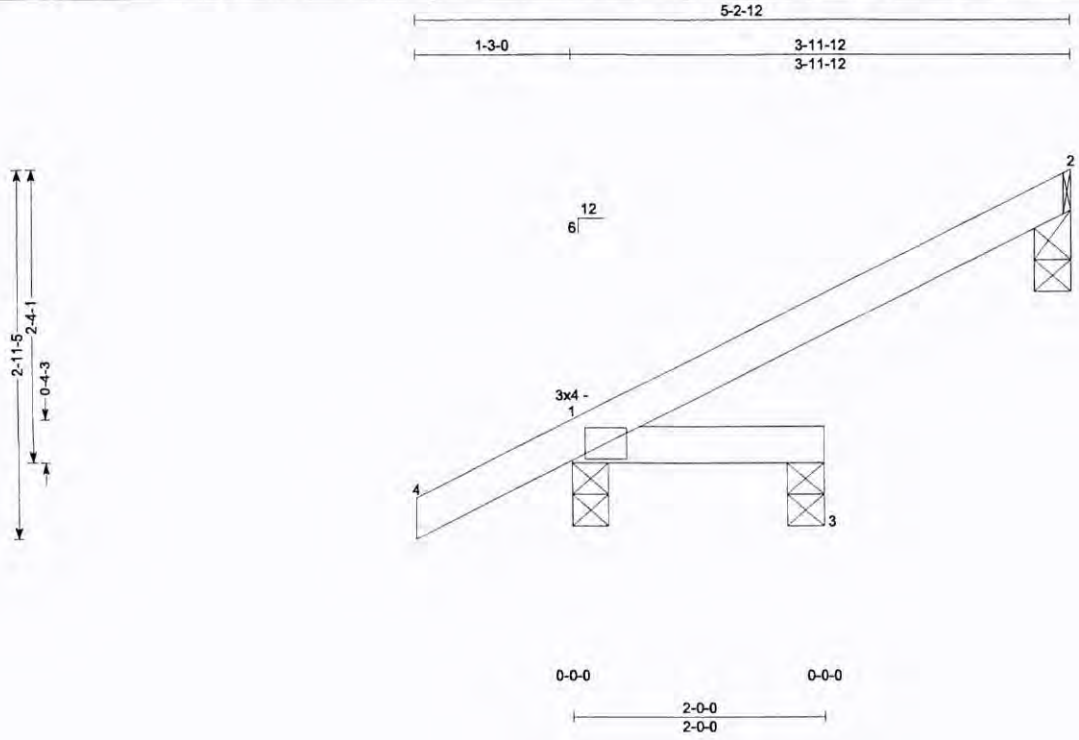
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ2
Project Name: village walk
Date: 07/01/16 11:10:07
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	6 / 12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	10 lbs



Loading	(psf)	General		CSI Summary		Deflection		L/	(loc)	Allowed
Load		Bldg Code :	CBC 2013/ TPI 1-2007	TC :	0.15 (1-2)	Vert TL:	0.01 in	L / 999	(3-1)	L / 240
TCLL :	20			BC :	0.26 (3-1)	Vert LL:	0 in	L / 999	(3-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.00 (1)	Horz TL:	0 in		2	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	307 lbs	-	-8 lbs	-8 lbs	185 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	281 lbs	-	-5 lbs	-5 lbs	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	100 lbs	-	-25 lbs	-25 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.147	-306 lbs	
BC	3-1	0.263	226 lbs	(-45 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



NOTICE A copy of this design shall be furnished to the erection contractor. The design of this individual truss is based on design criteria and requirements supplied by the Truss Manufacturer and relies upon the accuracy and completeness of the information set forth by the Building Designer. A seal on this drawing indicates acceptance of professional engineering responsibility solely for the truss component design shown. See the cover page and the "Important Information & General Notes" page for additional information. All connector plates shall be manufactured by Simpson Strong-Tie Company, Inc in accordance with ESR-2762 . All connector plates are 20 gauge, unless the specified plate size is followed by a "-18" which indicates an 18 gauge plate, or "S# 18", which indicates a high tension 18 gauge plate.

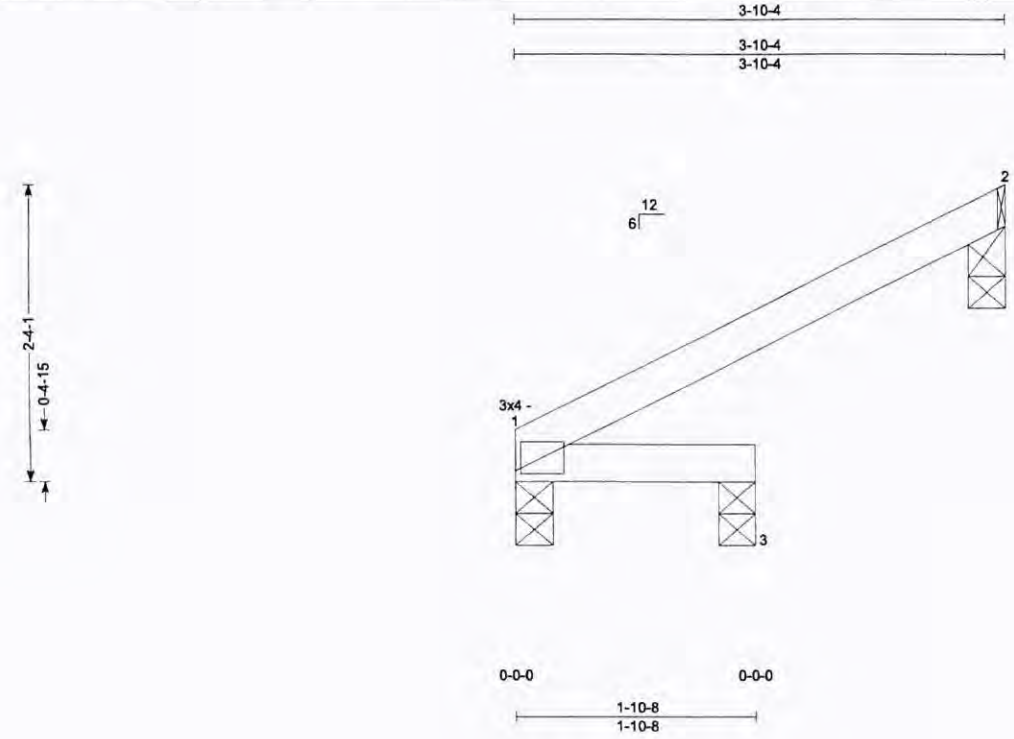
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ2S
Project Name: village walk
Date: 07/01/16 11:10:07
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
1-10-8	6 / 12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	8 lbs



Loading		General		CSI Summary		Deflection		L/	(loc)	Allowed
Load	(psf)	Bldg Code :	CBC 2013/ TPI 1-2007	TC :	0.15 (1-2)	Vert TL:	0.01 in	L / 999	(3-1)	L / 240
TCLL :	20			BC :	0.26 (3-1)	Vert LL:	0 in	L / 999	(3-1)	L / 360
TCDL :	14	Rep Mbr Increase :	Yes	Web :	0.00 (1)	Horz TL:	0 in		2	
BCLL :	0	D.O.L. :	125 %			Creep Factor, Kcr = 2.0				
BCDL :	7									

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-11,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	269 lbs	-	-	-	137 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	287 lbs	-	-10 lbs	-10 lbs	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	102 lbs	-	-26 lbs	-26 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr. force if different from max axial force)

TC	1-2	0.146	-303 lbs	
BC	3-1	0.261	213 lbs	(-131 lbs)
Webs				

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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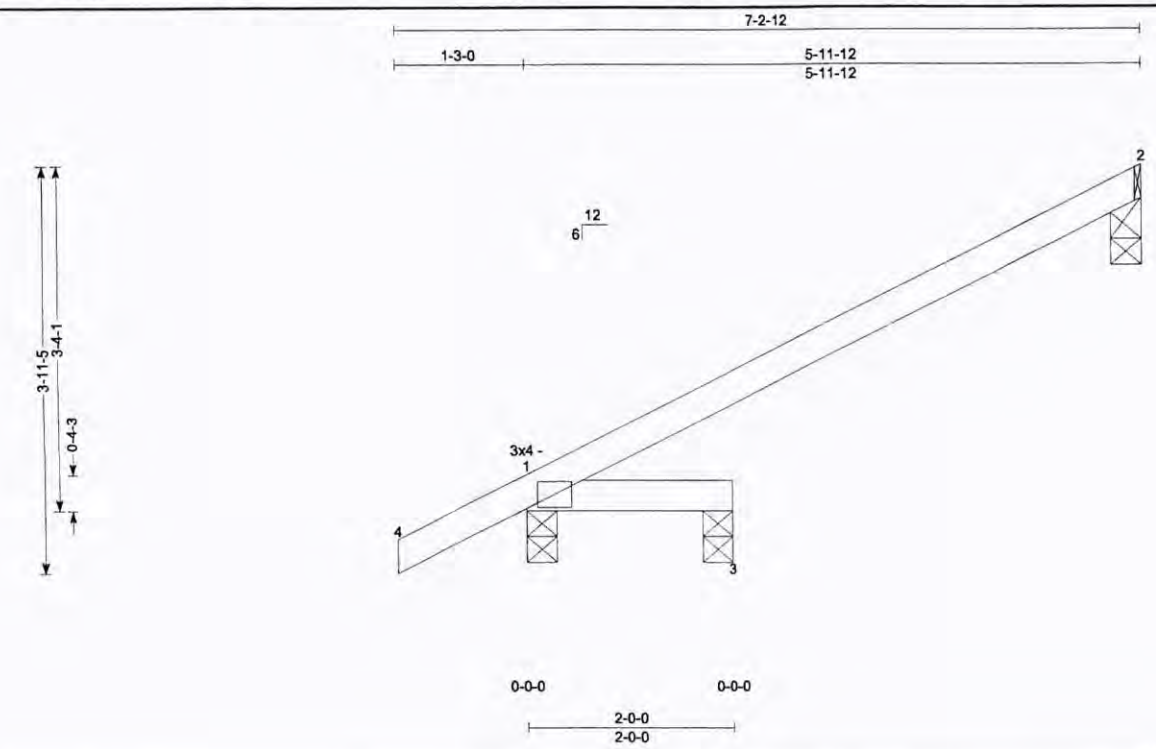
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ3
Project Name: village walk
Date: 07/01/16 11:10:08
Page: 1 of 1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
2-0-0	6 /12	1	1-3-0	0-0-0	0-0-0	0-0-0	1	24 in	13 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.43 (1-2)
BC :	0.35 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.02 in	L / 962	(3-1)	L / 240
Vert LL:	0.01 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	

Creep Factor, Kcr = 2.0

Plate Offsets (Jnt:X,Y,Ang): (1:3-4,2-5,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	307 lbs	-	-	-	236 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	316 lbs	-	-26 lbs	-26 lbs	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	152 lbs	-	-38 lbs	-38 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	4-1	0.141	38 lbs		1-2	0.432	-305 lbs	
BC	3-1	0.347	226 lbs	(-46 lbs)				
Webs								

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.



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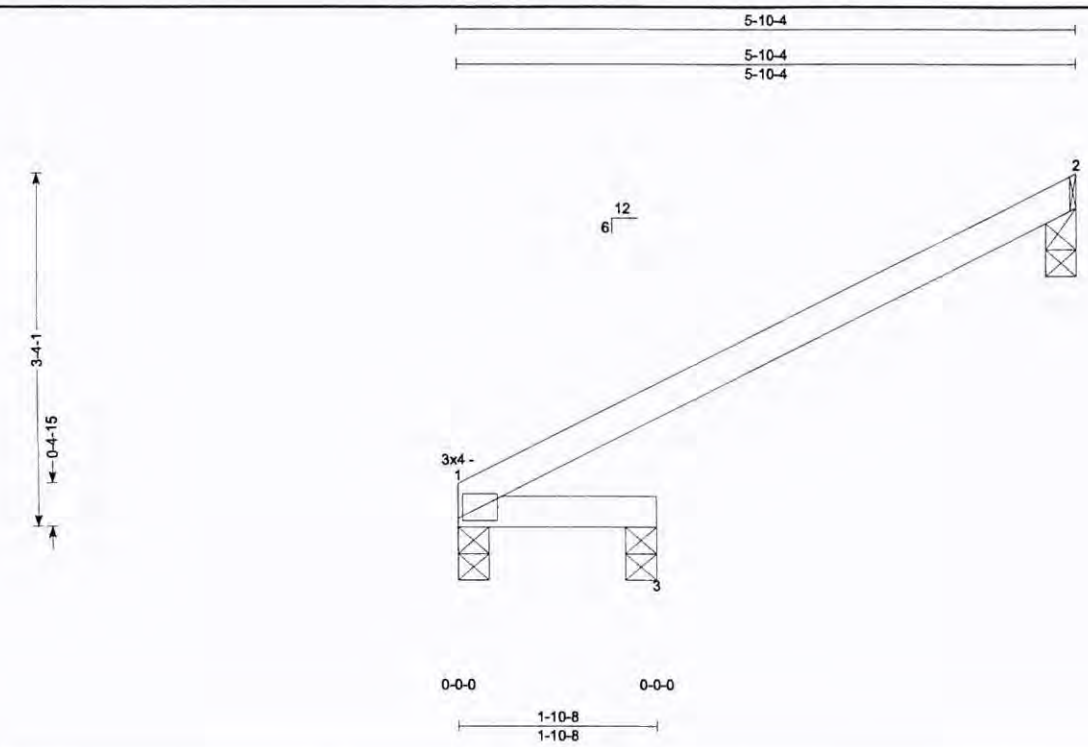
SIMPSON Strong-Tie

Component Solutions™
Truss
Version: 2016.5.1 [Build 5]

Hanson Components, Inc.

Truss: SJ3S
Project Name: village walk
Date: 07/01/16 11:10:08
Page: 1 of1

Span	Pitch	Qty	OHL	OHR	CANT L	CANT R	PLIES	Spacing	WGT/PLY
1-10-8	6 /12	1	0-0-0	0-0-0	0-0-0	0-0-0	1	24 in	11 lbs



Loading

Load	(psf)
TCLL :	20
TCDL :	14
BCLL :	0
BCDL :	7

General

Bldg Code :	CBC 2013/ TPI 1-2007
Rep Mbr Increase :	Yes
D.O.L. :	125 %

CSI Summary

TC :	0.41 (1-2)
BC :	0.38 (3-1)
Web :	0.00 (1)

Deflection

		L/	(loc)	Allowed
Vert TL:	0.02 in	L / 900	(3-1)	L / 240
Vert LL:	0.01 in	L / 999	(3-1)	L / 360
Horz TL:	0 in		2	
Creep Factor, Kcr = 2.0				

Plate Offsets (Jnt:X,Y,Ang): (1:2-8,2-11,0.)

Reaction Summary

JT	Type	Brg Combo	Brg Width	Material	Rqd Brg Width	Max React	Max Grav Uplift	Max Wind Uplift	Max Uplift	Max Horiz
1	Pin (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	268 lbs	-	-	-	187 lbs
3	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	323 lbs	-	-33 lbs	-33 lbs	0 lbs
2	H Roll (Wall)	1	3.5 in	Douglas-Fir-Larch	1.50 in	152 lbs	-	-38 lbs	-38 lbs	0 lbs

Material Summary

TC DFL #2 2x4
BC DFL #2 2x4
Webs

Bracing Summary

TC Bracing: Sheathed or Purlins at 6-3-0, Purlin design by Others.
BC Bracing: Sheathed or Purlins at 10-0-0, Purlin design by Others.

Loads Summary

1) This truss has been designed for the effects due to 10 psf bottom chord live load plus dead loads.
2) This truss has been designed for the effects of wind loads in accordance with ASCE7 - 10 with the following user defined input: 110 mph ultimate, Exposure C, Fully Enclosed, Gable/Hip, Building Category II (I = 1.00), Overall Bldg Dims 25 ft x 60 ft, h = 15 ft, End Zone Truss, Both end webs considered. DOL= 1.60 , CC Zone Width 3 ft.
3) Minimum storage attic loading in accordance with IBC Table 1607.1 has been applied
4) A 250 lbs moving point live load has been applied to the BC concurrent with other dead loads.

Member Forces Summary

Table indicates: Member ID, max CSI, max axial force, (max compr force if different from max axial force)

TC	1-2	0.411	-302 lbs	
BC	3-1	0.383	213 lbs	(-151 lbs)
Webs				

Notes:

1) This truss has been designed using the green lumber reduction factors.
2) When this truss has been chosen for quality assurance inspection, the Double Polygon Method per TPI 1-2007/Chapter 3 shall be used. Fabrication tolerance = 5 %.
3) Listed wind uplift reactions based on MWFRS Only loading.
4) Bearing material shown in the above table has only been checked for resistance perpendicular to grain, and does not indicate adequacy of material for other design considerations.

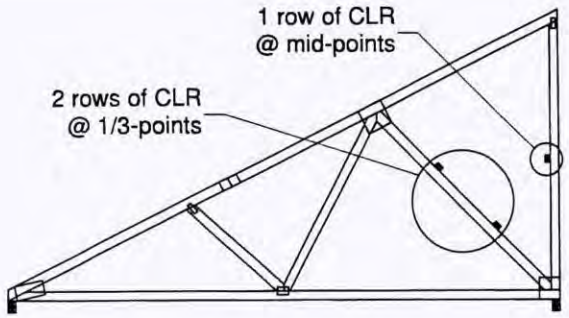


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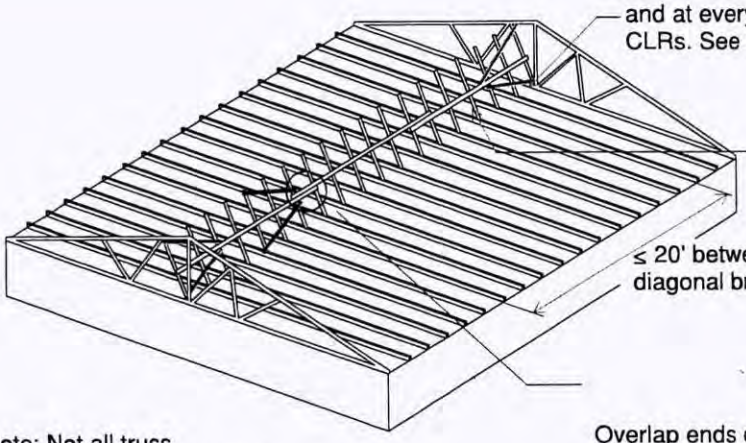
LATERAL RESTRAINT & DIAGONAL BRACING DETAILS FOR WEB MEMBERS

D-WEBCLRBRACE

This detail provides information for laterally restraining and bracing web members to prevent lateral buckling using continuous lateral restraints (CLRs) in combination with diagonal bracing. In addition to the CLRs indicated on the truss design drawing, diagonal bracing must be installed as indicated in this detail and BSCI-B3. See WEBREINFORCE for web reinforcement options that may be used as an alternative to this detail when installing CLRs and diagonal bracing is not practical or desired. Properly attached full-length sheathing satisfies (may replace) any bracing requirements specified for end vertical webs. Refer to the Construction Documents for additional bracing requirements.

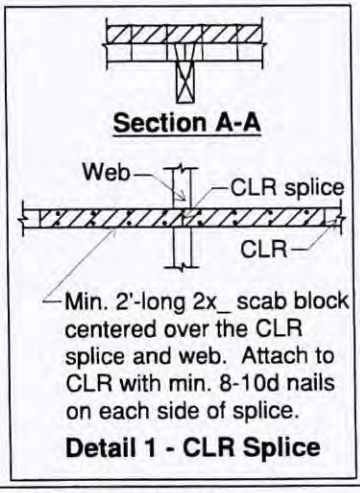


WEB MEMBERS WITH LATERAL RESTRAINT



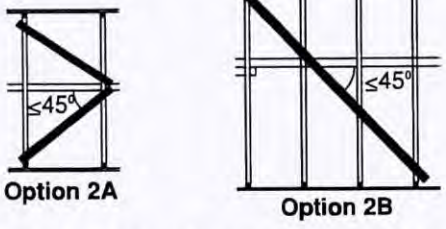
Note: Not all truss members shown for clarity.

Overlap ends of CLRs at least one truss spacing or use splice detail (see Detail 1)



Detail 1 - CLR Splice

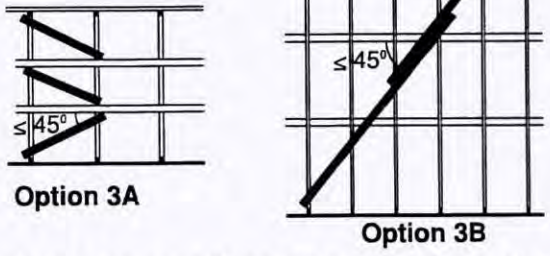
For webs with one row of CLRs, diagonal bracing shall be installed using Option 2A or 2B. Attach diagonal braces to each truss with min. 2-10d nails.



Option 2A Option 2B

Detail 2 - Diagonal Bracing for 1 Row of CLRs

For webs with 2 rows of CLRs, diagonal bracing shall be installed using Option 3A or 3B. Attach diagonal braces to each truss with min. 2-10d nails.



Option 3A Option 3B

Detail 3 - Diagonal Bracing for 2 Rows of CLRs

DETAIL LIMITATIONS:

1. Restraint and Bracing Material min. 2x4 stress graded lumber.
2. This detail does not address permanent building stability bracing to resist lateral forces acting on the building.
3. This detail shall not supersede any project-specific truss member permanent bracing design for the roof framing structural system.

Nail Dimensions:
10d = 3" x 0.128"



07/05/2016

This detail is to be used only for the application and conditions indicated herein, and its suitability for any particular truss/project shall be verified (by others). This detail is not intended to supersede any project-specific details provided in the Construction Documents. Truss configurations shown are for illustration only. Refer to the truss design drawing(s) accompanying this detail for specific truss design information. Simpson Strong-Tie Inc. is not responsible for any deviations from this design.

SIMPSON Strong-Tie

INDIVIDUAL WEB REINFORCEMENT DETAIL

D-WEBREINFORCE

Date: 06/11/2014 | Rev: A | Pg. 1 of 1

NOTES:

1. This detail provides web reinforcement options that may be used as an alternative to continuous lateral restraint (CLR) when installing CLRs in combination with diagonal bracing is not practical or desired.
2. Refer to the truss design drawing for web lateral restraint requirements. A ⊠ on the truss design drawing indicates that continuous lateral restraint is required at the locations shown (either at the midpoint or 1/3-points of the web member). Refer to the tables below for acceptable web reinforcement options that may be used in place of one or two rows of CLR.
3. This detail may not be used to substitute CLRs for T-, L-, I- or scab reinforcements that are specified on the truss design drawing.
4. T-, L-, I- and scab web reinforcements must be the same or better species and grade of the web member as indicated on the truss design drawing.
5. All reinforcements must extend to within 6" of each end of the web member.
6. This detail does not apply to single-ply webs that exceed 14' in length.



1 Row of CLR @ Web Mid-point



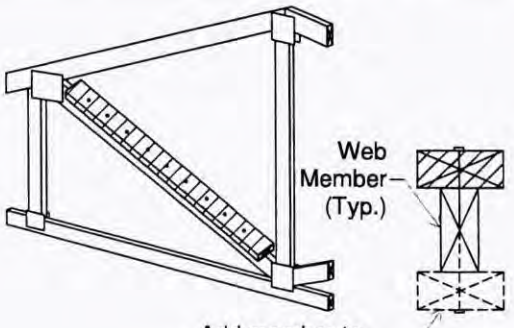
2 Rows of CLRs @ Web 1/3 points

WEB REINFORCEMENT OPTIONS FOR SINGLE-PLY TRUSSES [1]						
Specified Web Member Lateral Restraint (CLRs)	Web Member Size	Acceptable Web Reinforcement Substitutions - Type & Size				Reinforcement-to-Web Connection Requirements
		T-	L-	Scab	I-	
1 Row @ Mid-point	2x4	2x4	2x4	2x4	---	16d gun nails @ 6" on-center
	2x6	2x6	2x6	2x6	---	
	2x8	2x8	2x8	2x8	---	
2 Row @ 1/3-points	2x4	No substitutions allowed			2-2x4	
	2x6				2-2x6	
	2x8				2-2x8	

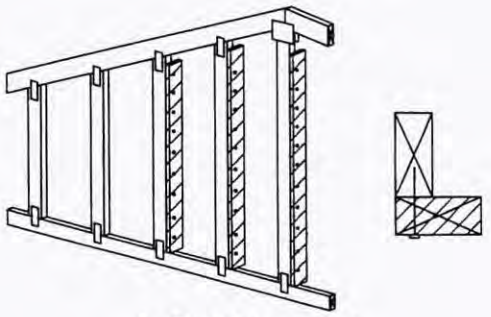
WEB REINFORCEMENT OPTIONS FOR 2-PLY TRUSSES [2]						
Specified Web Member Lateral Restraint (CLRs)	Web Member Size	Acceptable Web Reinforcement Substitutions - Type & Size				Reinforcement-to-Web Connection Requirements
		T-	L-	Scab	I-	
1 Row @ Mid-point	2x4	2x4	2x4	---	---	16d gun nails @ 6" on-center
	2x6	2x6	2x6	---	---	
	2x8	2x8	2x8	---	---	
2 Row @ 1/3-points	2x4	No substitutions allowed			2-2x4	
	2x6				2-2x6	
	2x8				2-2x8	

1. The maximum allowable web length for single-ply trusses is 14'.
2. For 2-ply trusses, the reinforcement must be nailed to both plies of the web with the nailing pattern specified in the table.
3. For the scab reinforcement, 2 rows of 10d gun nails @ 6" o.c may be used in place of 16d gun nails for attaching the reinforcement to the web.
4. For I-reinforcement, attach each 2x_member to opposite edges of the web using the nailing pattern specified in the table.

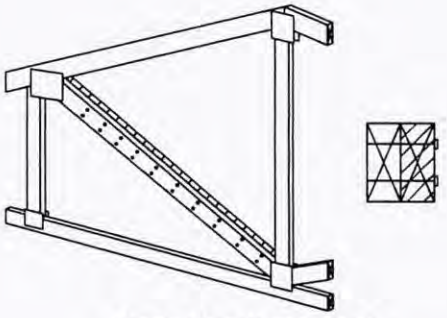
Nail Dimension
16d = 3.5" x 0.131"
10d = 3" x 0.120"



T- Reinforcement
(I-Reinforcement similar)



L- Reinforcement



Scab Reinforcement



07/05/2016

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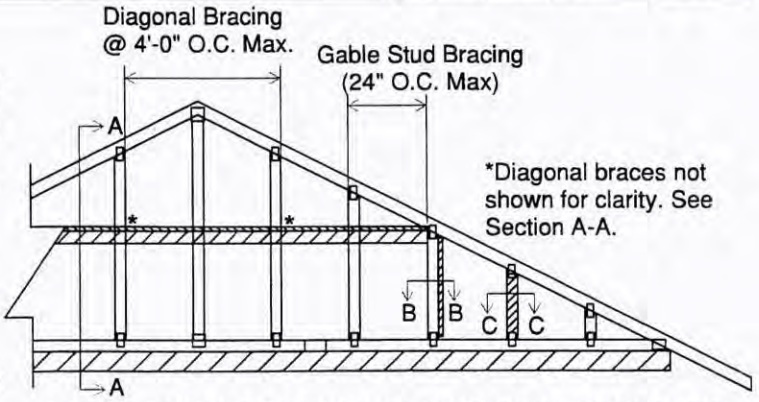
GABLE STUD BRACING DETAIL - 90 MPH (NOMINAL), 115 MPH (ULTIMATE)

TD-GBL-0002B

Date: 05/12/2014 | Rev:B | Pg. 1 of 1

NOTES:

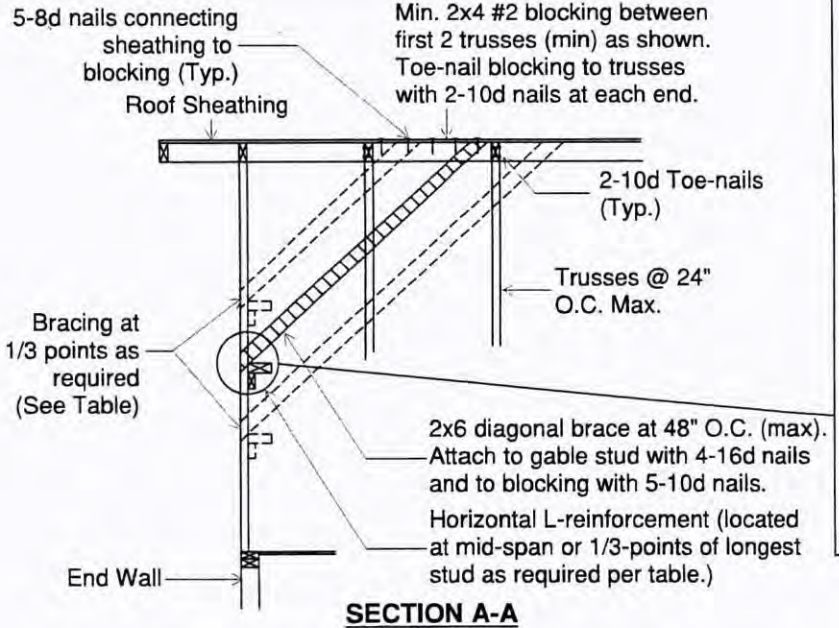
1. This detail provides bracing/reinforcement options for the gable studs to resist the out-of-plane wind loading. Refer to the individual truss design drawing for bracing/reinforcement requirements for resisting the vertical (in-plane) loads assumed in the design of the gable end frame. Additional bracing/reinforcement at the end of the building and/or at the gable end wall may be required. Refer to the Building Designer/Construction Documents for all gable end frame and roof system bracing requirements. For additional information, see BCSI-B3.
2. This detail does not apply to structural gables.
3. Connection requirements between the gable end frame and the wall to be specified by the Building Designer.
4. The gable end frame must match the profile of the adjacent trusses. Do not use a gable end frame with a flat bottom chord next to trusses with sloped bottom chords, such as scissor or vaulted trusses.



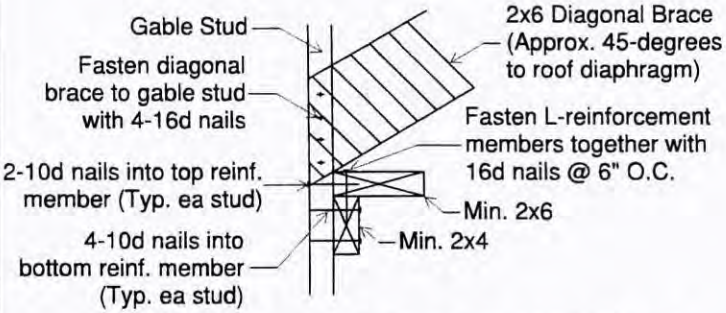
GABLE END WITH STUD BRACING/REINFORCEMENT

MINIMUM GABLE STUD SIZE, SPECIES & GRADE	MAX. GABLE STUD SPACING	WITHOUT BRACE	L-REINFORCEMENT [1]	SCAB REINFORCEMENT [1]	DIAGONAL BRACING @ MID-SPAN [2]	DIAGONAL BRACING @ 1/3 POINTS [2]
		MAXIMUM STUD LENGTH [3]				
2X4 SPF STUD or STANDARD	12" O.C.	5-1-12	9-0-12	10-3-12	10-3-12	15-5-12
	16" O.C.	4-8-4	8-3-0	9-4-8	9-4-8	14-0-12
	24" O.C.	4-1-0	7-0-0	8-2-4	8-2-4	12-3-8

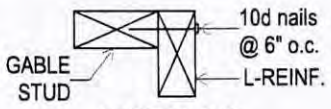
1. L- and Scab Reinforcements shall be minimum 2x4 stud grade and must be a minimum of 90% of the gable stud length. Fasten the reinforcement member to the gable stud with 10d nails @ 6" o.c.
2. Attach horizontal reinforcing member at mid-span (or 1/3 points as required) of the longest stud and install diagonal bracing @ 4' o.c. (max) as shown in Section A-A.
3. Tabulated maximum stud lengths are based on components and cladding wind pressures using the wind design parameters listed in the detail limitations. Gable stud deflection criteria is L/240.



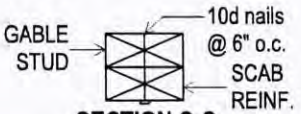
SECTION A-A



NOTE: Diagonal braces over 6'-3" require a 2x4 T-brace attached to one narrow edge. Diagonal braces over 12'-6" require 2x4s attached on both narrow edges. The braces must cover 90% of the diagonal brace and shall be fastened to the narrow edge with 10d nails at 6" o.c. (min. 3" end distance). When attached on both narrow edges, stagger the nails on each side by 3".



SECTION B-B



SECTION C-C

DETAIL LIMITATIONS:
Max. Mean Roof Height: 30'
Category: II
Exposure: B or C
Load Duration Factor: 1.6
Wind Speed: 90 mph Nominal

Wind Speed Equivalent	
Nominal	(Ultimate)
90 mph	(115 mph)

Nail Dimension
16d = 3.5" x 0.162"
10d = 3" x 0.148"
8d = 2.5" x 0.131"



07/05/2016

This detail is to be used only for the application and conditions indicated herein, and its suitability for any particular truss/project shall be verified (by others). This detail is not intended to supersede any project-specific details provided in the Construction Documents. Truss configurations shown are for illustration only. Refer to the truss design drawing(s) accompanying this detail for specific truss design information. Simpson Strong-Tie Inc. is not responsible for any deviations from this design.

Component Solutions™ Important Information & General Notes

Symbols and Nomenclature

5x7 Indicates the plate size; the first digit is the plate width (perpendicular to the slots) and the second digit is the plate length (parallel to the slots).

5x7-18 Indicates the plate is 18 ga.

**- | / ** These symbols, which follow the truss plate size, designate the required direction of the slots in the connector plate.

- Plates with this symbol next to it must be installed with a solid section of steel (area between the slots) directly over the joint.

10-4-3 Dimensions are shown in feet-inches-sixteenths (for this example the dimension is **10'-4** $^{3}/_{16}$").



Joints are numbered clockwise around the truss starting at the left end. Chords and webs are identified using their end joint numbers (e.g., TC 2-3).


When this symbol is shown, lateral restraint is required on the member near the location indicated and may be on either edge of the member. See Note 3 under Handling, Installing, Restraint & Bracing for more information.


Truss-to-wall (or other structural support) connection. Trusses must bear completely on all supports. When the species of bearing material is shown on the TDD, it indicates that the perpendicular-to-grain resistance of the material has been checked. The Building Designer is responsible for all other bearing design considerations.


Truss-to-Structural Element Connection. The design of the Structural Element and the connection of the Truss to the Structural Element is by others.


Truss-to-Truss Connection, which may be a hanger or other structural connection (e.g., toe-nail) that has adequate capacity to resist the max. reactions and uplifts shown in the Reaction Summary on the TDD.

Note: These symbols are for graphical interpretation only; they are not intended to give any indication of the geometry requirements of the actual item (i.e., restraint, bearing, Structural Element, hanger, etc.) that is represented.

Materials and Fabrication

1. Design assumes truss is manufactured in accordance with the TDD and the quality criteria in ANSI/TPI 1 Chapter 3, unless more restrictive criteria are part of the contract specifications.
2. Unless specifically stated, lumber shall not exceed 19% moisture content at time of fabrication or in service.
3. Design is not applicable for use with fire retardant, preservative treated or green lumber unless specifically stated on the TDD.
4. Plate type, size, orientation and location indicated are minimum plating requirements. Plates shall be embedded on both faces of the truss at each joint.
5. Truss plates shall be centered on the joint unless otherwise specified by the plate offsets on the TDD or joint details.

General Notes

1. Each Truss Design Drawing (TDD) provided with this sheet has been prepared in conformance with ANSI/TPI 1. Refer to ANSI/TPI 1 Chapter 2 for definitions of all capitalized terms and for the responsibilities of all parties involved, which include but are not limited to the responsibilities listed on this sheet.
2. TDDs should not be assumed to be to scale.
3. The Contractor and Building Designer shall review and approve the Truss Submittal Package.
4. The suitability and use of the component depicted on the TDD for any particular building design is the responsibility of the Building Designer.
5. The Building Designer is responsible for the anchorage of the truss at all bearing locations as required to resist uplift, gravity and lateral loads, and for all Truss-to-Structural Element connections except Truss-to-Truss connections.
6. The Building Designer shall ensure that the supporting structure can accommodate the vertical and/or horizontal truss deflections.
7. Unless specifically stated otherwise, each Design assumes trusses will be adequately protected from the environment, including not being used in locations where the sustained temperature is greater than 150° F.
8. Trusses are designed to carry loads within their plane. Any out-of-plane loads must be resisted by the Permanent Building Stability Bracing.
9. Design dead loads must account for all materials, including self-weight (if the word "rake" follows the specified dead load on the TDD that indicates the software applied a pitch increase).
10. Trusses installed with roof slopes less than 0.25/12 may experience (but are not designed for) ponding. The Building Designer must ensure that adequate drainage is provided to prevent ponding.

Handling, Installing, Restraint & Bracing

1. The Contractor is responsible for the proper handling, erection, restraint and bracing of the Trusses. In lieu of job-specific details, refer to BCSI.
2. ANSI/TPI 1 stipulates that for trusses spanning 60' or greater, the Owner shall contract with any Registered Design Professional for the design and inspection of the temporary and permanent truss restraint and bracing. Simpson Strong-Tie is not responsible for providing these services.
3. Trusses require permanent lateral restraint of chords and certain web members (when indicated) at the locations or intervals indicated on the TDD. This shall be accomplished in accordance with: standard industry lateral restraint/bracing details in BCSI-B3 or BCSI-B7, supplemental bracing details referenced on the TDD, or as specified in a project-specific truss permanent bracing plan provided by the Building Designer.
4. Additional building stability permanent bracing shall be installed as specified in the Construction Documents.
5. Special end wall bracing design considerations may be required if a flat gable end frame is used with adjacent trusses that have sloped bottom chords (see BCSI-B3).
6. Do not cut, drill, trim, or otherwise alter truss members or plates without prior written approval of an engineer, unless specifically noted on the TDD.
7. Piggyback assemblies shall be braced as per BCSI-B3 unless otherwise specified in the Construction Documents.

Referenced Standards

ANSI/TPI 1: National Design Standard for Metal Plate Connected Wood Truss Construction , a Truss Plate Institute publication (www.tpinst.org).

BCSI: Guide to Good Practice for Handling, Installing, Restraining & Bracing Metal Plate Connected Wood Trusses, a joint publication of the Truss Plate Institute (www.tpinst.org) and the Structural Building Components Association (www.sbcindustry.com).

DSB-89: Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses, a Truss Plate Institute publication (www.tpinst.org).

NDS: National Design Specification for Wood Construction published by American Forest & Paper Association and American Wood Council.

ESR-2762: Simpson Strong-Tie® AS Truss Plates are covered under ESR-2762 published by the International Code Council Evaluation Service (www.icc-es.org).

HANSON
TRUSS COMPONENTS, INC.

GENERAL NOTES

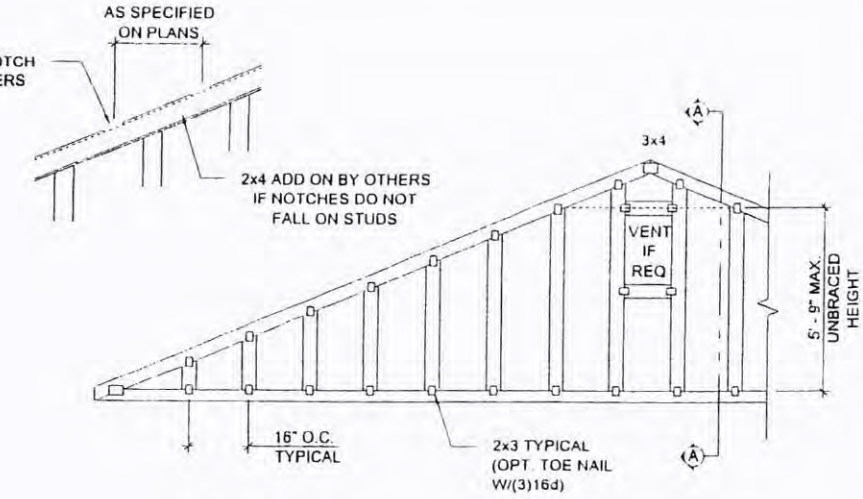
1. No splices except as noted on truss drawings.
2. Panel point locations shall be equal divisions unless noted or dimensioned otherwise.
3. Gusset plates shall be installed on each side of all joints and shall not be installed where knots or wane are greater than 10% of plate area.
4. Gusset plates shall be centered on joints unless noted or dimensioned otherwise.
5. Truss designs shall comply with ANSI/T.P.I - 1-2002 unless noted otherwise.
6. All gusset plates are 20 gauge and stamped TP. Unless noted otherwise.
7. All hangers specified are Simpson strong-tie or equal and are provided by others unless noted otherwise.
8. All trusses are spaced at 24" on center unless dimensioned otherwise.
9. Moisture content in the lumber used may exceed 19% at the time of fabrication. A 20% reduction in plate values has been used.
10. The Hanson Truss, Inc., engineering program is in compliance with section 2321 of the 2006 I.B.C. All heel joint connections are designed using an analysis considering the vector sum of concentric and eccentric loads.
11. All nails specified are to be **box nails** or better.
12. Top chord dead load (TCDL) may vary due to roof load adjustment.
13. Wind loads are applied at exposure (C), speed at (105) MPH. average height a t (25) feet. Uno.

ABBREVIATIONS

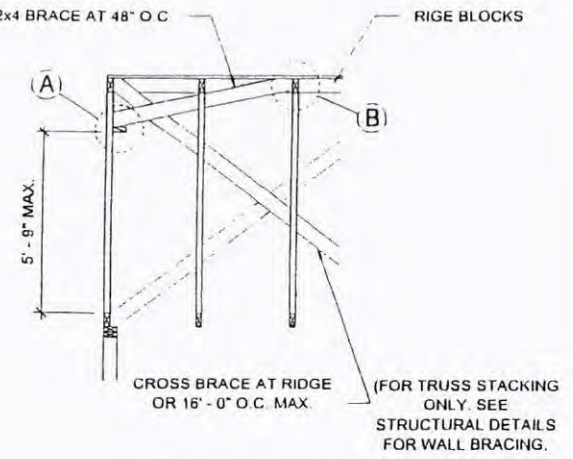
B.C.	Bottom Chord	**MBKG**	Mono Backing
B/0	By Others	**MGET**	Mono gable end truss
BKG	Backing	**MGOV.**	Mono gable over
BLK.	Blocking	**O.A.H.S.**	Overall heel stand
BM.	Beam	**S.B**	Setback
BRG.	Bearing	**Sc.**	Scissor
CBO	Conventional framing by others	**ScBKG**	Scissor Backing
DBL.	Double member	**ScGET**	Scissor gable end truss
DR. BM.	Drop Beam	**SOF.**	Soffit (Non-structural)
FILL	Vertical @ 16" o.c	**SPL.**	Splice
FL. BM.	Flush Beam	**STB.**	Stub
GET	Gable end truss	**T.C.**	Top chord
GIR	Girder truss	**U.N.O.**	Unless noted otherwise
GOV.	Gable over	**w/**	With
HGR	Hanger(s)	**w/o**	Without
INV. GOV.	Inverted gable over		
JKS	Jacks		

BASE DESIGN VALUES FOR VISUALLY GRADED LUMBER

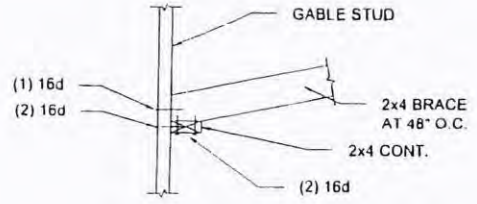
SPECIES & COMMERCIAL GRADES	SIZE CLASSIFICATION X25.4 for mm	Bending *Fb*	Tension Parallel To grain *Fv*	Shear Parallel to grain *Fv*	Compression Perpendicular to grain *Fc ⊥*	Compression Parallel to grain *Fc*	Modulus of Elasticity *E*	GRADING RULES AGENCY
DOUGLAS FIR LARCH								
Select Struct.		1,500	1,000	95	625	1,700	1,900,000	WCLIB WWPA
No.1 & Better	2" to 4" thick	1,200	800	95	625	1,550	1,800,000	
No.1		1,000	675	95	625	1,500	1,700,000	
No.2	2" to 4" wide	900	575	95	625	1,350	1,600,000	
Stud		700	450	95	625	850	1,400,000	
Construction	2" to 4" thicker	1,000	650	95	625	1,650	1,500,000	
Standard		575	375	95	625	1,400	1,400,000	



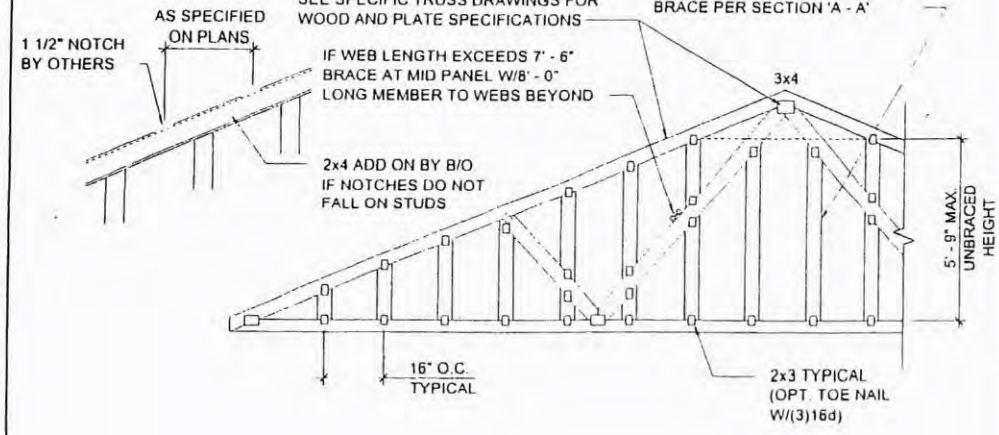
TYPICAL GABLE END TRUSS



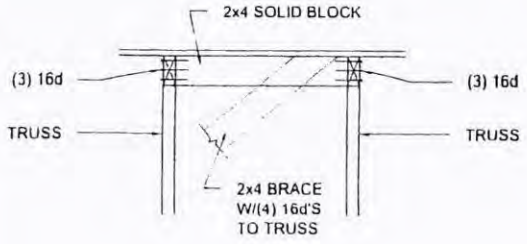
SECTION A-A



(A) CONNECTION DETAIL



TYPICAL FILL TRUSS



(B) CONNECTION DETAIL

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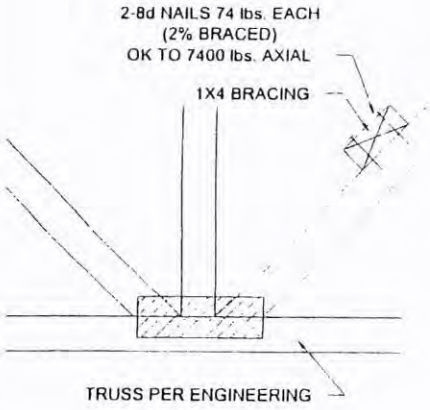
HANSON TRUSS COMPONENTS, INC.

JOBNAME: GABLE END & FILL TRUSS DETAIL

DRAWN BY: PETE ROBERTS

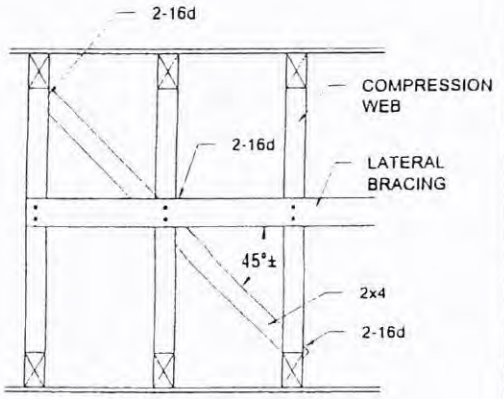
FILENAME: MS-END-FILL

DATE: 11-27-96

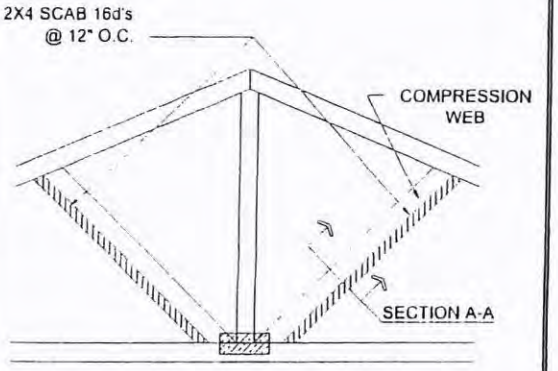


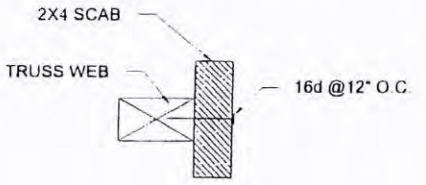
A COMPRESSION WEB BRACE

NOTE:
COMPRESSION WEBS MAY OCCUR AT ANY ANGLE, THEREFORE THE 45 DIAGONAL IS NAILED TO THE WEB ON THE SAME PLANE THAT THE WEB OCCURS.
PLEASE SE FIGURE 1(d) IN THE COMMENTARY AND RECOMMENDATIONS FOR BRACING WOOD TRUSSES BY T.P.I inc FOUND IN THE INSIDE FRONT COVER OF OUR SHOP DRAWINGS



B END OF COMPRESSION BRACING DETAIL





SECTION A-A

C "TEE" BRACING

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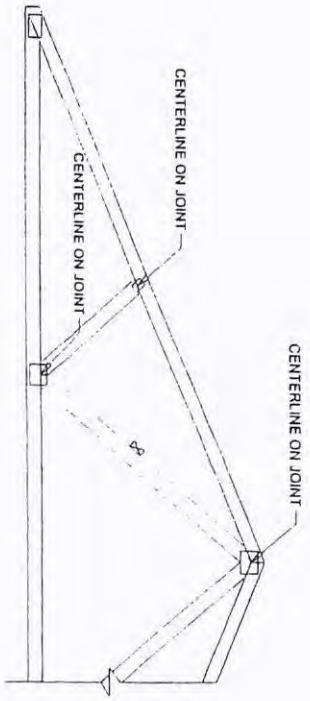
HANSON TRUSS COMPONENTS, INC.

D1 COMPRESSION WEB BRACING

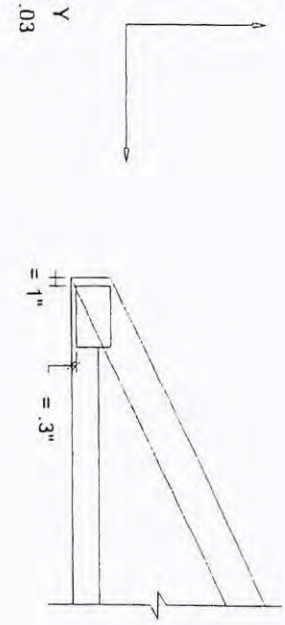
DRAWN BY P. DAVID | FILENAME MS-COMP-DRAC.Dwg | DATE r11-15-00

REFER TO GENERAL NOTES AND SAMPLE CALC

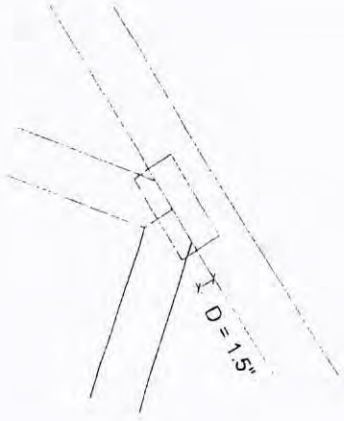
TYPICAL CENTERLINE ON JOINT



TYPICAL HEEL CONDITION



OFF SET CONDITIONS



OFF SET CONDITIONS

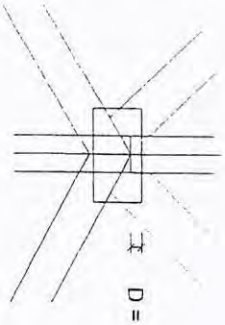


PLATE PLACEMENT

DRAWN BY	FILENAME	DATE
RB	PLATE PLACEMENT	1-14-08

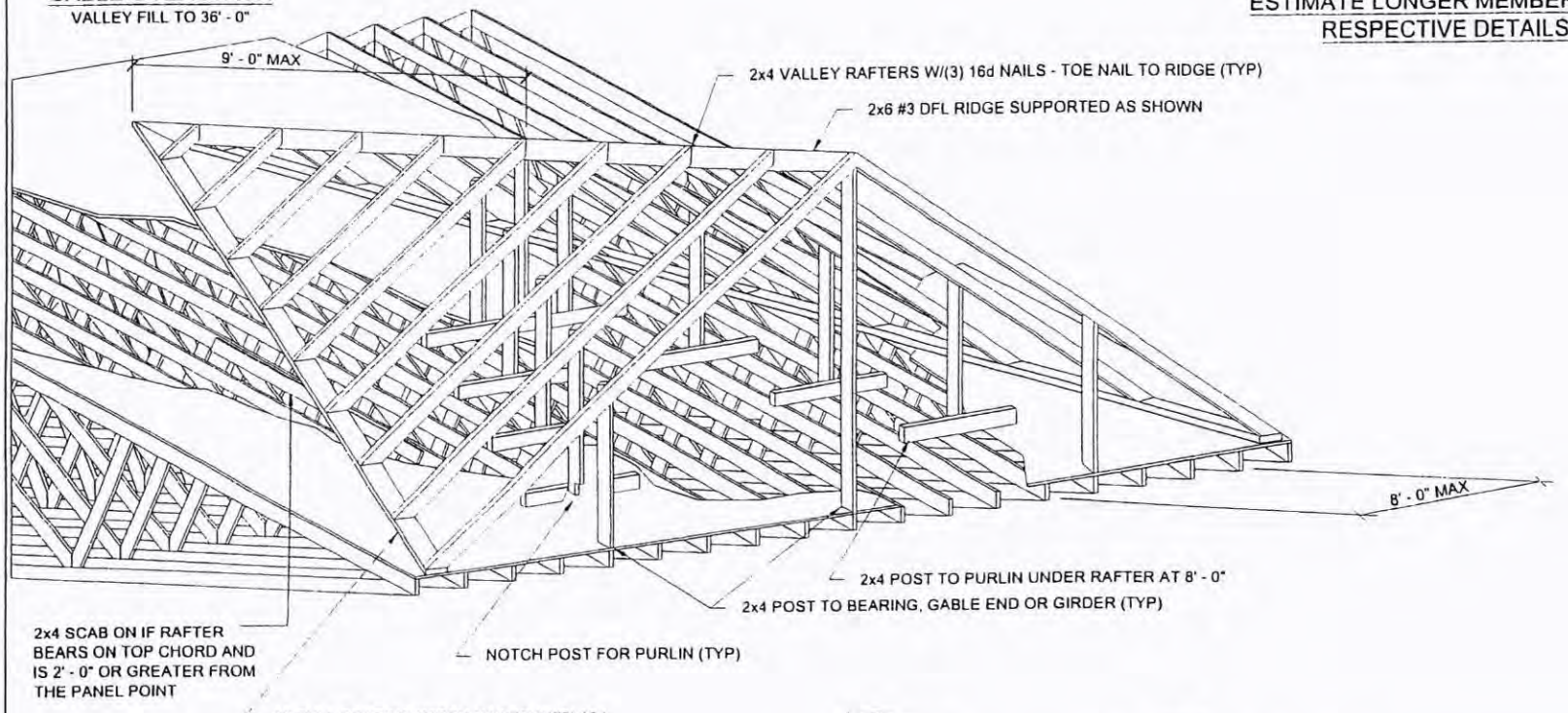
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GABLE OVERSTACK

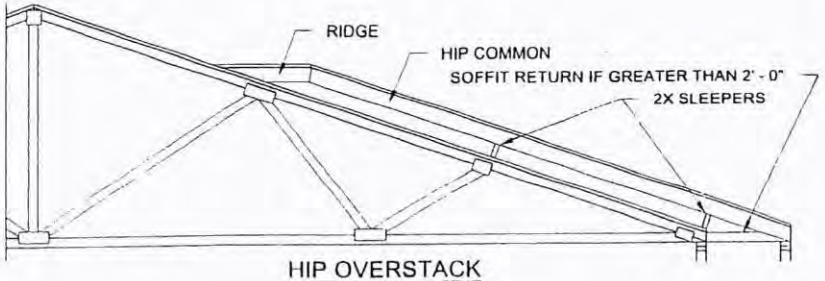
VALLEY FILL TO 36' - 0"



NOTE! FOR SHORTER VALLEY FILLS, ESTIMATE LONGER MEMBERS AND RESPECTIVE DETAILS.

NOTES:

1. ROOF LIVE LOAD + DEAD LOAD = 32 PSF.
2. VALLEY RAFTERS TO BE MIN. 2x4 CONST. GRADE DOUG-FIR OR #2 HEM-FIR. CLEAR SPANS NOT TO EXCEED 8' - 0" FOR 32 PSF LOADING OR 7' - 0" FOR 32 PSF LOADING, OR 2X6 NOT TO EXCEED 10' - 0"
3. ALL NAILING PER U.B.C 94 EXCEPT AS NOTED.
4. PROVIDE SOLID BLOCKING BETWEEN TRUSSES TO SUPPORT RIDGE IF NECESSARY.
5. ALL POST & PURLIN MATERIALS TO BE PROVIDED BY OTHERS.



HIP OVERSTACK

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JOBNAME: CALIFORNIA "FILL" DETAIL

DRAWN BY: PETE ROBERTS

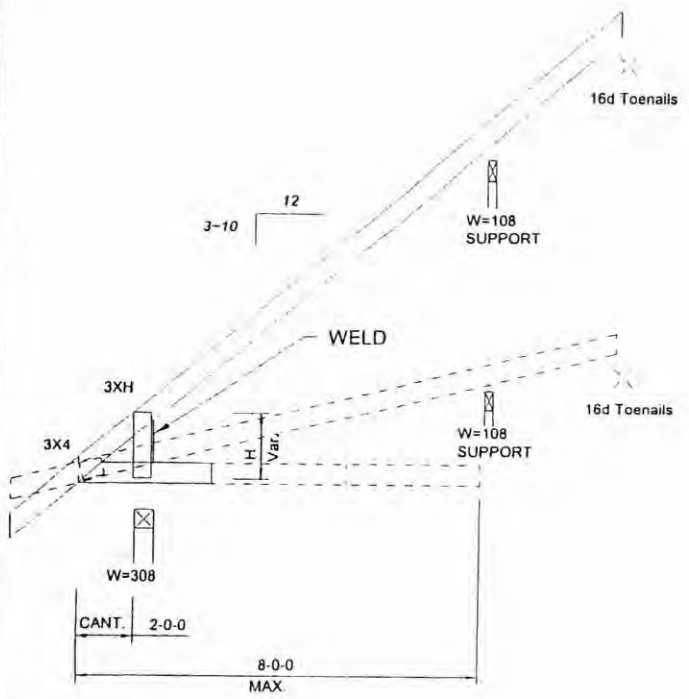
FILENAME: MS-CALFILL

DATE: 11-21-96

TC: DFL #2 2X4
BC: DFL #2 2X4
SPCG: 24", O.C. 1-PLY
LSI: 1.25, PSI: 1.25

TCLL= 20 psf.
TCDL= 26 psf.
BCLL= 10 psf.
BCDL= 10 psf.

STANDARD LOADING 1.25
UBC LL CHECK 1.25
PLUS UNBALANCED LOAD CASES



CANT. JACKS

* SEE "CA HIP DETAIL" DESIGN FOR TOE NAILING PATTERN IN THIS PACKAGE.

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HANSON Truss Components, Inc.

JOBNAME
GENERAL CALCs.
STRUCTURAL JACKS

PLAN -
ELEV JACK

REVISIONS
-
-

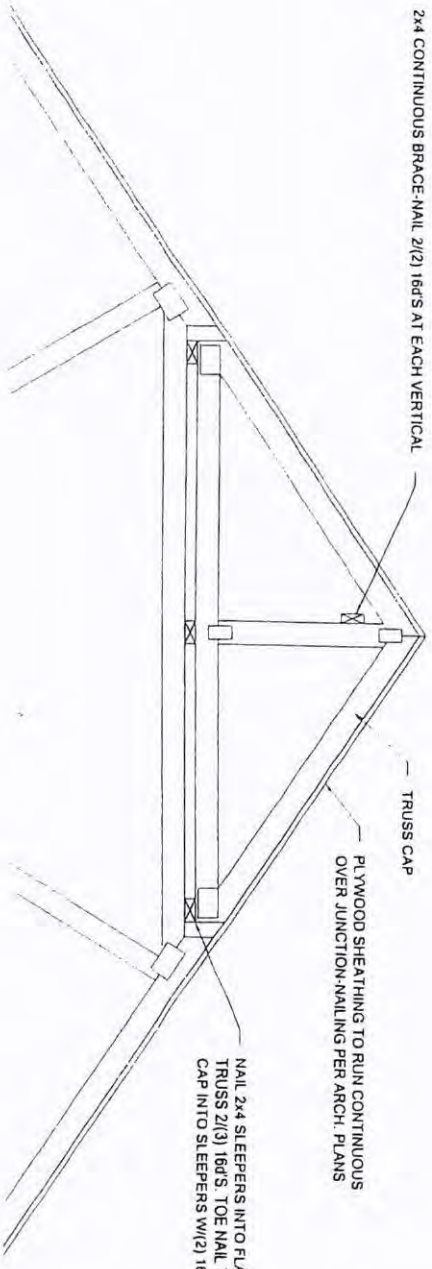
DRAWN BY
R.GORJI

DATE
OCT.23.2010

SCALE
-

FILENAME
GEN-JACK-02

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ALL BY OTHERS UNLESS NOTED OTHERWISE

TRUSS CAP DETAIL

-

DRAWN BY	FILENAME	DATE
PETE ROBERTS	MS-TRUSSCAP	11-27-96

HTCI HANSON TRUSS COMPONENTS, INC.

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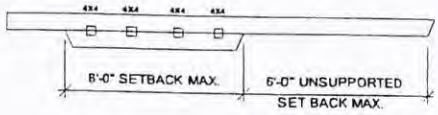
8' SET BACK STACK 2X4 HIP RAFTER

Over-All Length: 11 .3 Rcts at: 0 11.3
Applied Loads (Down +)
128 AT 2.8 Conc Load #
256 AT 5.7 Conc Load #
384 AT 8.5 Conc Load #

Reactions (Up +):
Left: 318 Right: 450
****** Use 2 - NO2 DFL 2X4 Stocked ******

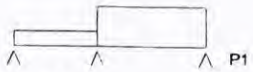
A= 10.5 S= 12.25 I= 42.875
Fv= 95 E= 1600000 Df= 1.25
Crit Shear: V= 450 @ 10.7 1.5*V/(Fv*A*Df)= 0.54

Span: Max Mom= 17317* # @ 5.7
Fb= 1313 M/(Fb*S*Df)= 0.86
Defl= -0.46 @ 5.81 L/120= 1.13



BUILT - UP HIP RAFTER

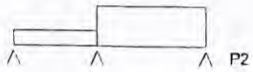
P1 Load at 2' Set Back
Over-All Length: 10 Rcts at: 0 8 10
Applied Loads (Down +)
32 FROM 0 TO 8 P'tl Load #/lf
64 FROM 8 TO 10 P'tl Load #/lf
Reactions (Up +):
Left: 102 Mid: 324 Right: -42
****** Use 1&B DFL 2X4 ******



P1 = 0

A= 5.25 S= 3.063 I= 5.359
Fv= 95 E= 1800000 Df= 1.25
Crit Shear: V= 151 @ 8.29 1.5*V/(Fv*A*Df)= 0.36
Lft Span: Max Mom= 2534*# @ 8
Fb= 1725 M/(Fb*S*Df)= 0.38
Defl= -0.16 @ 3.57 L/240= 0.4
Rgt Span: Max Mom= 2534*# @ 8
Fb= 1725 M/(Fb*S*Df)= 0.38
Defl= 0.01 @ 8.77 L/240= 0.1

P2 Load at 4' Set Back
Over-All Length: 12 Rcts at: 0 8 10
Applied Loads (Down +)
32 FROM 0 TO 8 P'tl Load #/lf
64 FROM 8 TO 10 P'tl Load #/lf
Reactions (Up +):
Left: 101 Mid: 336 Right: 75
****** Use 1&B DFL 2X4 ******



P2= 75 * 2 = 150lbs

A= 5.25 S= 3.063 I= 5.359
Fv= 95 E= 1800000 Df= 1.25
Crit Shear: V= 163 @ 8.29 1.5*V/(Fv*A*Df)= 0.39
Lft Span: Max Mom= 2560*# @ 8
Fb= 1725 M/(Fb*S*Df)= 0.39
Defl= -0.16 @ 3.57 L/240= 0.4
Rgt Span: Max Mom= 2560*# @ 8
Fb= 1725 M/(Fb*S*Df)= 0.39
Defl= 0.01 @ 9.2 L/240= 0.2

6' RUN CANTILEVER 2X4 HIP RFTR
Over-All Length: 8.49 Rcts at: 0 8.49
Applied Loads (Down +)
12 Unif Load #/lf
150 AT 5.66 Conc Load #/lf
Reactions (Up +):
Left: 101 Right: 75
****** Use NO2 DFL 2X4 ******



A= 5.25 S= 3.063 I= 5.359
Fv= 95 E= 1600000 Df= 1.25
Crit Shear: V= 147 @ 8.2 1.5*V/(Fv*A*Df)= 0.35
Span: Max Mom= 4549*# @ 5.66
Fb= 1313 M/(Fb*S*Df)= 0.9
Defl= -0.49 @ 4.46 L/120= 0.85

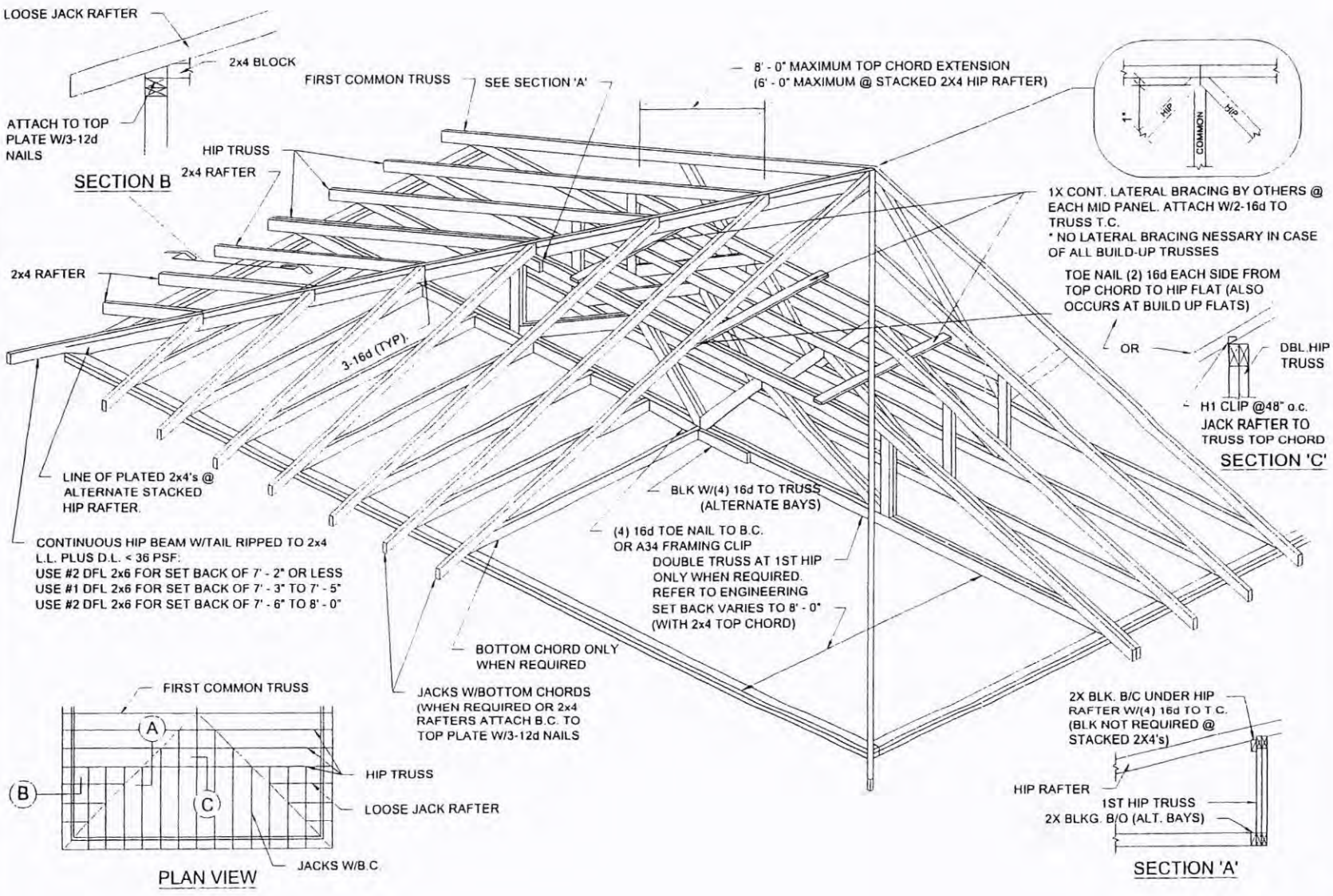
CALCULATIONS FOR STACKED 2X4 HIP RAFTER

DRAWN BY	FILENAME	DATE
PD	MS-HIPCALC.DWG	11-11-99

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HANSON TRUSS COMPONENTS, INC.

JOBNAME
CALIFORNIA
HIP DETAIL

DRAWN BY
PETE ROBERTS

FILENAME
MS-CALHIP

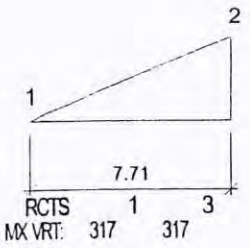
DATE
11-21-96

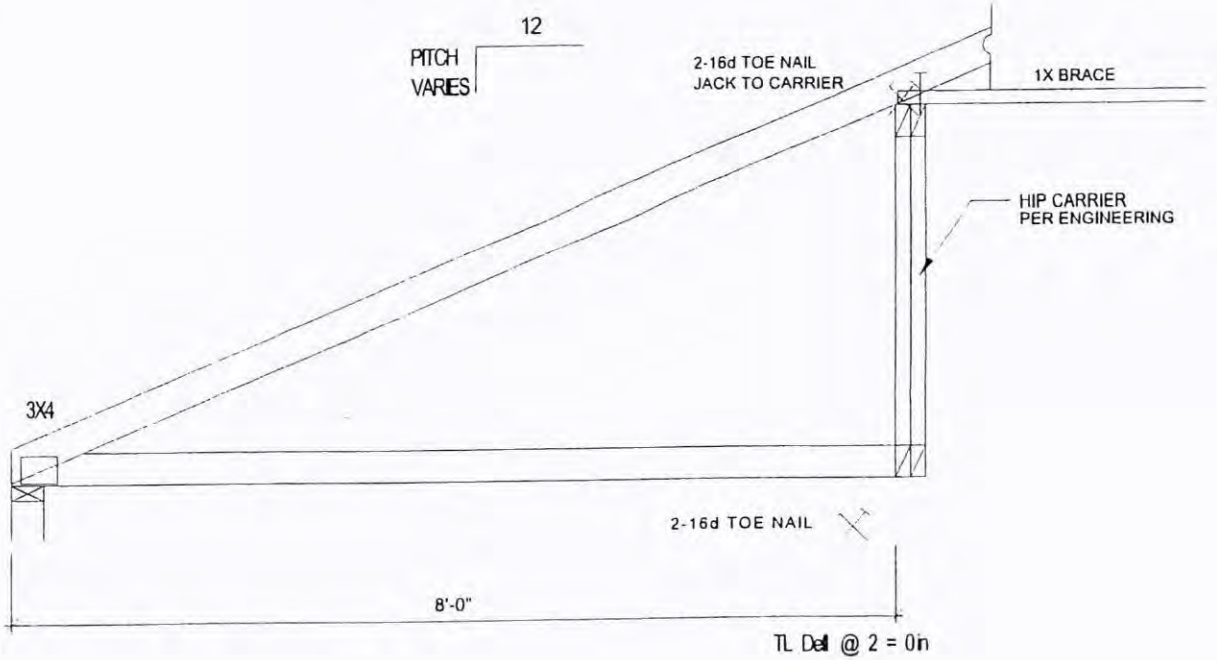
Code: CBC 10 Rbdg:Y 1-Ply
TC 1-2 N02 DFL 2x4: P=99C 0.000 Mm=7046 Mp=1792 0.944=0.945
BC 1-3 N02 DFL 2x4: P=OC 0.000 Mm=6433 Mp=366 0.972=0.972

TC AXIAL: 1-2 -102
BC AXIAL: 1-30
WB AXIAL:3-2- 236

SEE "CALIFORNIA HIP DETAIL"
FOR GENERAL JACK/HIP DETAIL

*1x Bracing
By Others





3/4" = 1'

UNO	GRAD	SPEC	SIZE
TC:	NO2	DFL	2X4
BC:	NO2	DFL	2X4
WEB:	STDB	DFL	2X4

TCLL: 20 PLF
TCDL: 14
BCLL:
BCDL: 7

DUR LDG FCTR: 1.25

3.5" Min Brg Width UNO

Plates: TP-500
ICBO:5039 LA:23996
Centered on joint UNO

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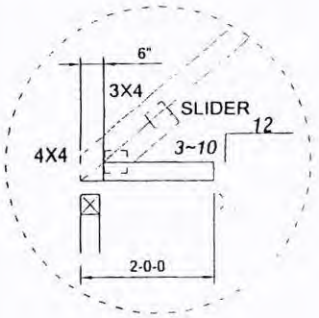
HTCI
HANSON
TRUSS COMPONENTS, INC.

DATE: 12/16/00 PD

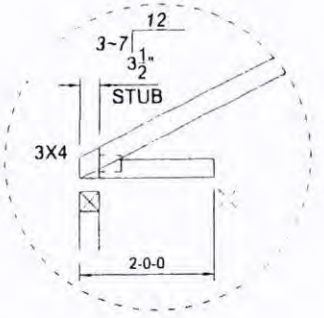
DRWG #s

JACK CALC

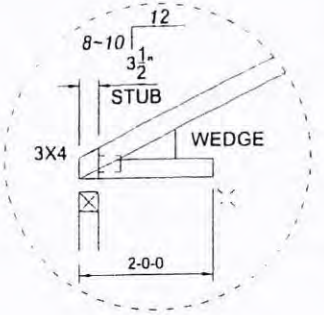
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STUB 6"



STUB 3 1/2"

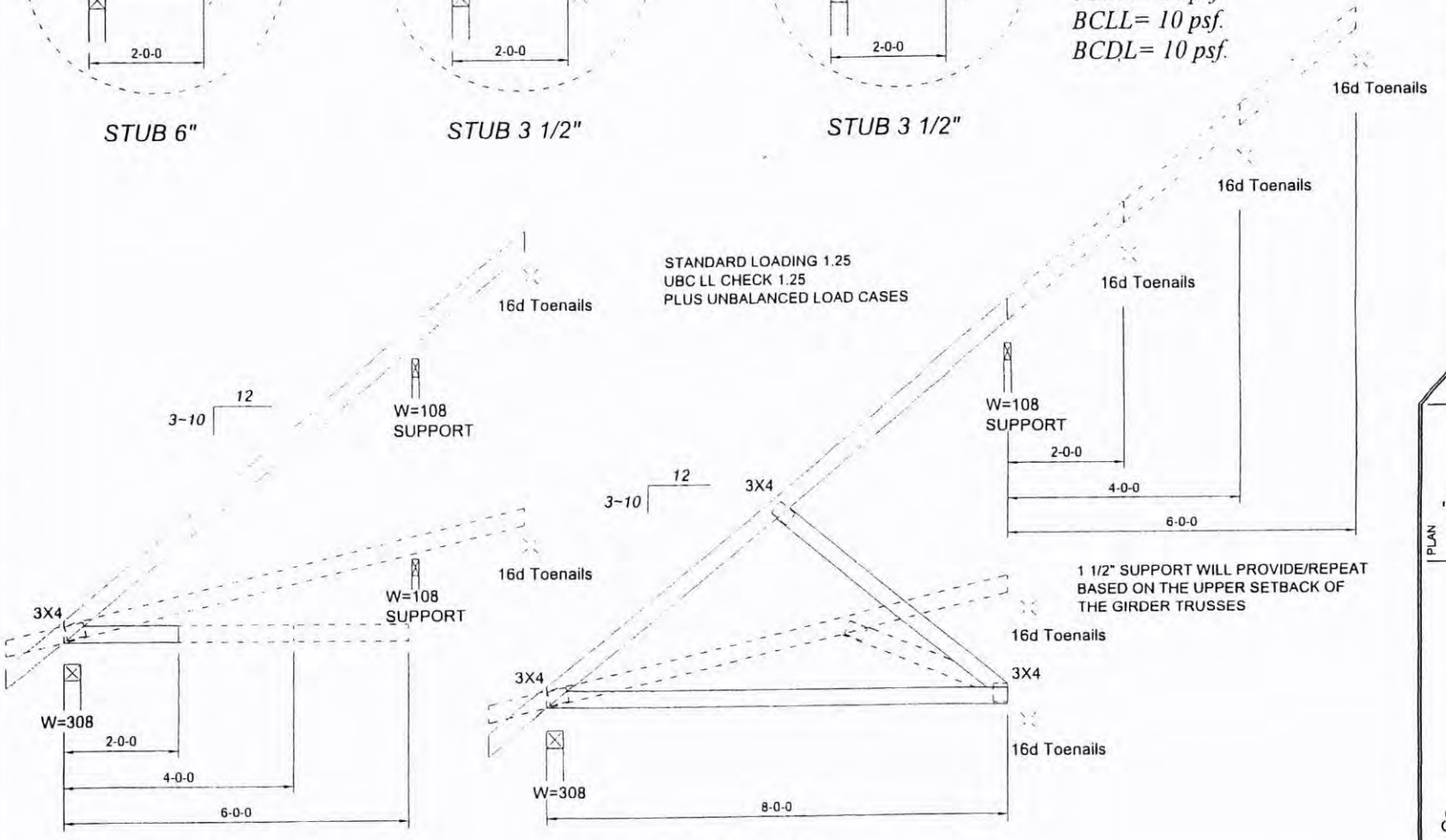


STUB 3 1/2"

TC: DFL #2 2X4
BC: DFL #2 2X4
SPCG: 24", O.C. 1-PLY
LSI: 1.25, PSI: 1.25

TCLL= 20 psf.
TCDL= 26 psf.
BCLL= 10 psf.
BCDL= 10 psf.

STANDARD LOADING 1.25
UBC LL CHECK 1.25
PLUS UNBALANCED LOAD CASES



SIDE / END JACKS

END JACKS

* SEE "CA HIP DETAIL" DESIGN FOR TOE NAILING PATTERN IN THIS PACKAGE.

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HANSON TRUSS COMPONENTS, INC.

PLAN -
ELEV JACK

REVISIONS	-
	-

JOBNAME
GENERAL CALCs.
STRUCTURAL JACKS

DRAWN BY	DATE	SCALE
R.GORJI	MAR.22.2010	-

FILENAME
GEN-JACK-01

HEEL PLATE	DRAG FORCE	
3X4	1870#	☐
3X6	2800#	☐
4X8	3740#	☐
5X10	4680#	☐

JACK W/ BOTTOM CHORD OVER SHEAR WALL
TO TRANSFER LATERAL FORCES

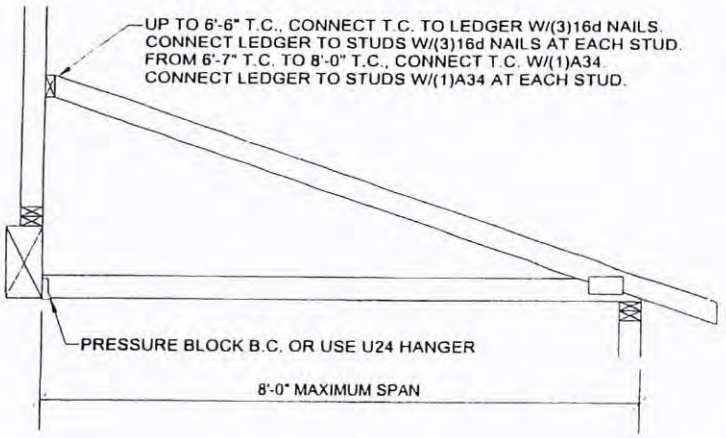
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HANSON TRUSS COMPONENTS, INC.

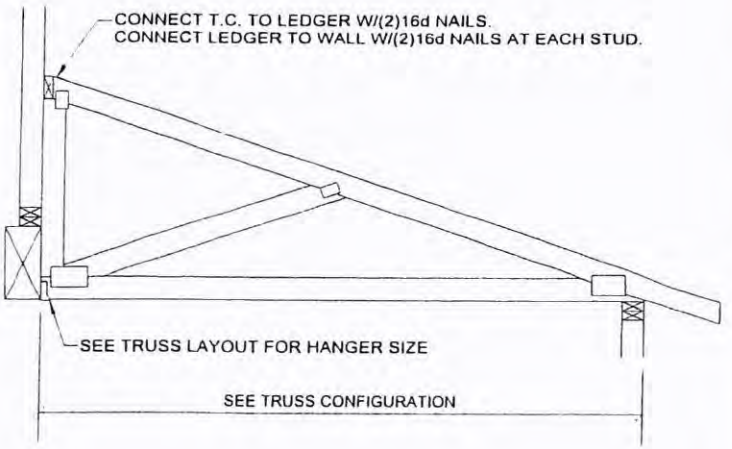
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SHEAR JACK

DRAWN BY	FILENAME	DATE
PD	MS-SHEARJACK.DWG	11-17-99



JACK TRUSS SUPPORT DETAIL (AGAINST HIGH WALL)



MONO TRUSS SUPPORT DETAIL (AGAINST HIGH WALL)

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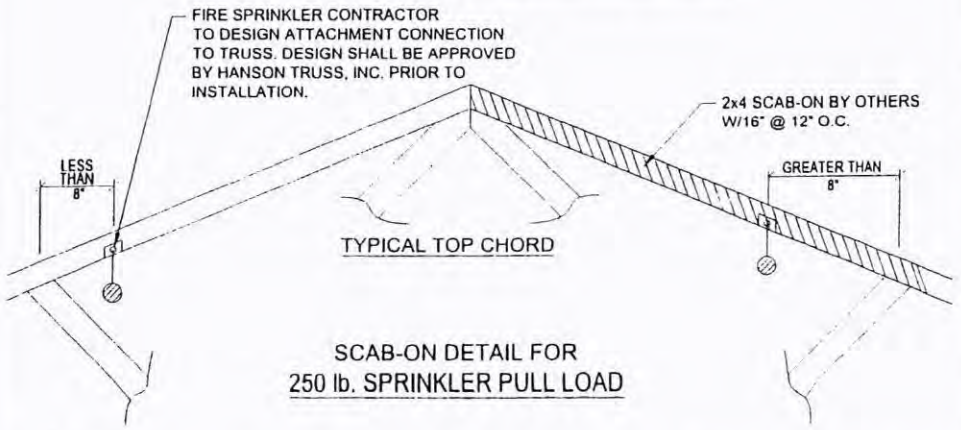
NULL AND VOID IF NOT FABRICATED BY HANSON TRUSS COMPONENTS, INC.

HANSON TRUSS COMPONENTS, INC.

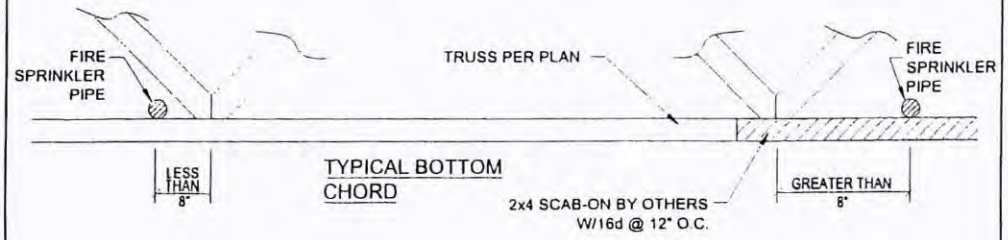
DEATIL 'J1'
JACK & MONO TRUSS SUPPORT

DRAWN BY	FILENAME	DATE
PETE ROBERTS	MS-DET_J1	11-26-96

FIRE SPRINKLER NOTES:
- IF PIPE ATTACHMENT OCCURS 8" OR LESS FROM A JOINT, NO SCAB-ON IS REQUIRED
- IF PIPE ATTACHMENT OCCURS GREATER THAN 8" FROM A JOINT, PROVIDE 2x4 SCAB-ON TO ONE SIDE W/16d NAILS @ 12" O.C.

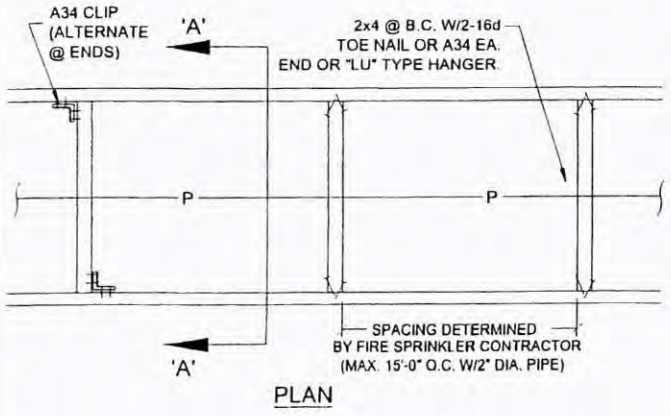


SCAB-ON DETAIL FOR 250 lb. SPRINKLER PULL LOAD

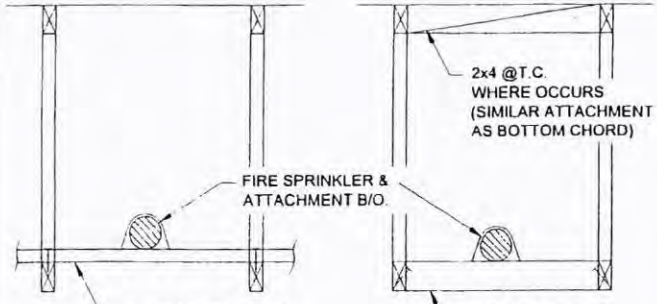


MATERIAL AND HARDWARE BY OTHERS

DETAILS SHOWN ARE CONCEPTUAL AND DO NOT NECESSARILY REFLECT ACTUAL CONDITIONS. CONSULT DRAWINGS BY DESIGN ENGINEER FOR ACTUAL CONDITION ATTACHMENT SIZE & QUANTITY ARE RECOMMENDED GUIDELINES. REFER TO DESIGN DRAWINGS FOR ACTUAL CONDITIONS. APPLICABLE USE & ATTACHMENT



PLAN



ALTERNATE SUPPORT

A SECTION

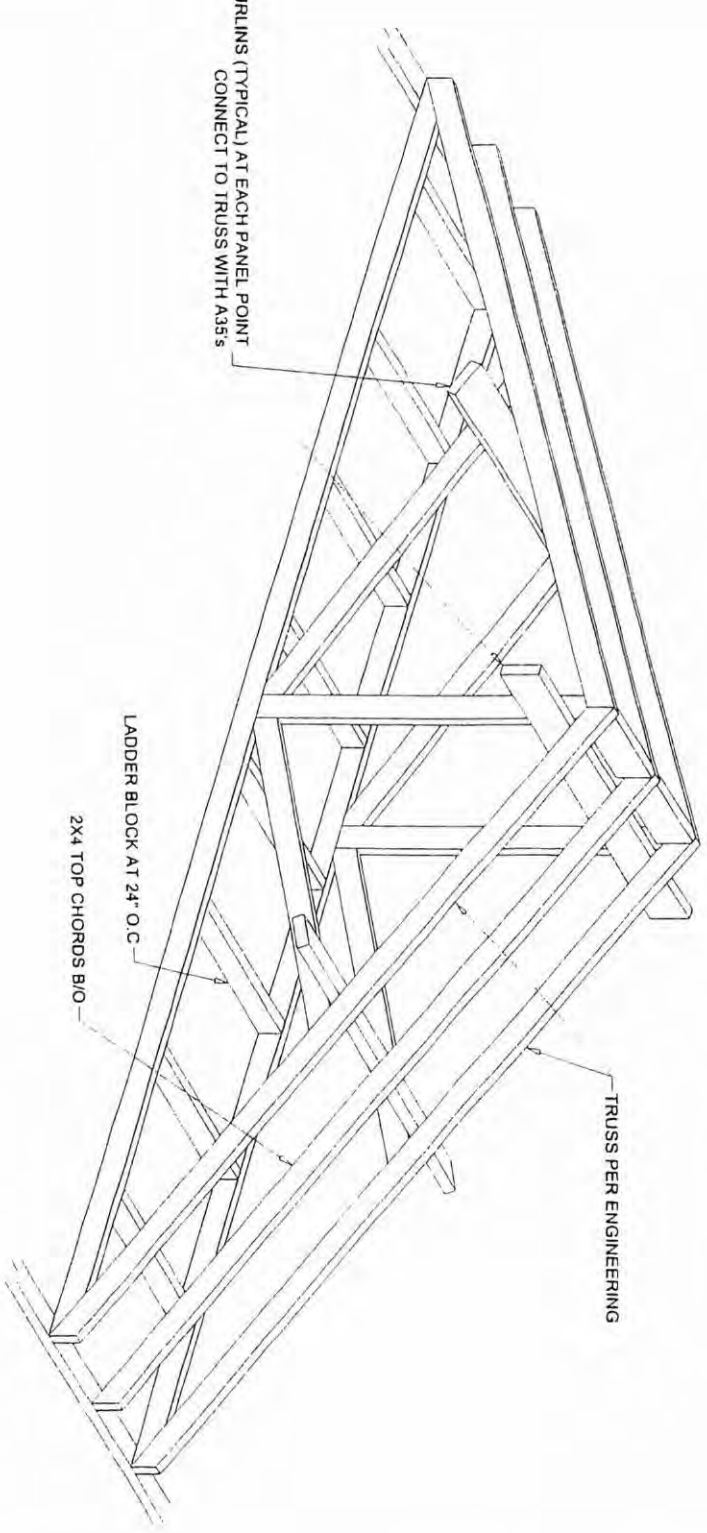
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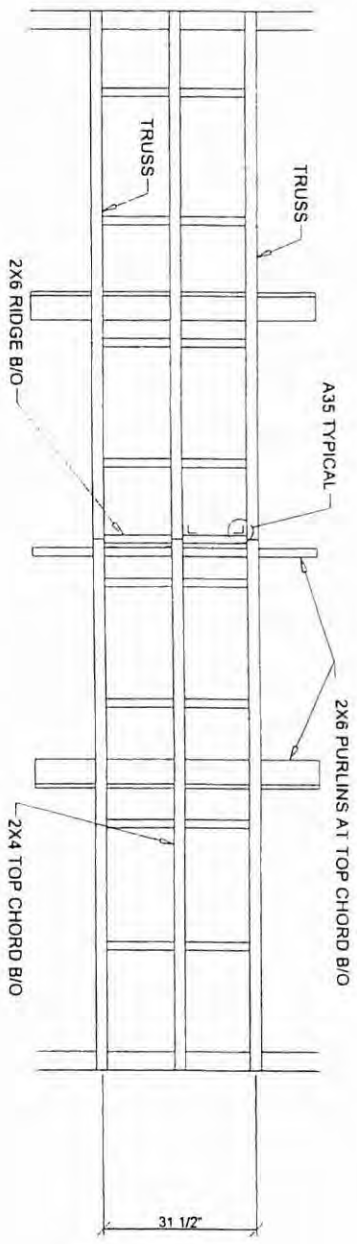
HANSON TRUSS COMPONENTS, INC.

FIRE SPRINKLER DETAIL

DRAWN BY JRR | FILENAME MS-FSPR | DATE 05-13-03

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- MATERIAL & HARDWARE BY OTHERS.
- TRUSS WEB CONFIGURATION MAY VARY. SEE SHOP DRAWING FOR ACTUAL LOCATION OF PURLINS.

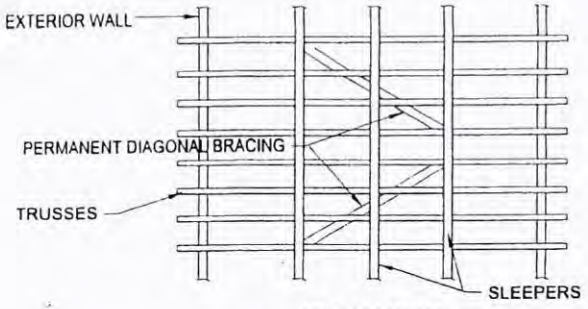
DETAIL 'A'
ATTIC ACCESS (ALT 2)

DRAWN BY	FILENAME	DATE
PETE ROBERTS	MS-DET_A_A2	11-25-96

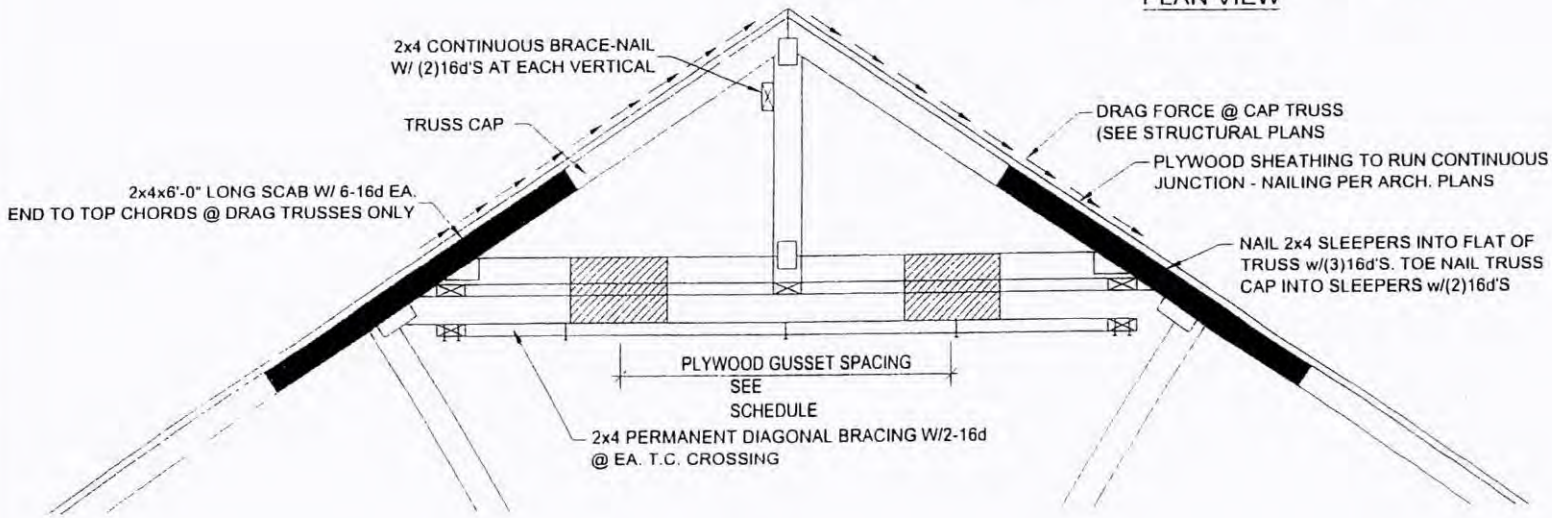
HTCI HANSON TRUSS COMPONENTS, INC.

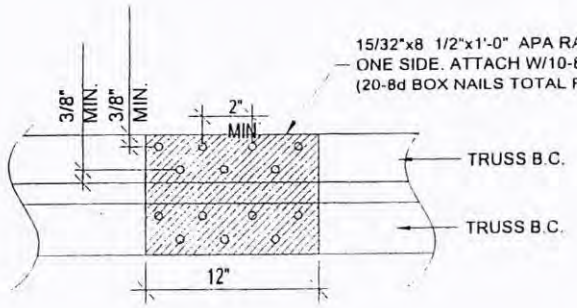
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PLAN VIEW





PLYWOOD GUSSET	
DRAG FORCE @ CAP TRUSS	PLYWOOD SPACING
700 PLF	1' - 0" O.C
600 PLF	1' - 4" O.C
400 PLF	2' - 0" O.C
200 PLF	4' - 0" O.C
100 PLF	8' - 0" O.C

MATERIAL AND HARDWARE BY OTHERS

DETAILS SHOWN ARE CONCEPTUAL AND DO NOT NECESSARILY REFLECT ACTUAL CONDITIONS. CONSULT DRAWINGS BY DESIGN ENGINEER FOR ACTUAL CONDITION ATTACHMENT. SIZE & QUANTITY ARE RECOMMENDED GUIDELINES. REFER TO DESIGN DRAWINGS FOR ACTUAL CONDITIONS. APPLICABLE USE & ATTACHMENT

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HANSON TRUSS COMPONENTS, INC.

SHEAR TRUSS CAP DETAIL

-

DRAWN BY: GINNO G.
FILENAME: MS-SHRTRCAP
DATE: 01-07-04

Photo Voltaic

Over-All Length: 7.75 Rcts at: 0 7.75
Applied Loads (Down +)
64 Unif Load #/lf
20 AT 4 Conc Load #
Reactions (Up +)
Left: 258 Right: 258

****** Use 1&B DFL 2X4 ******
A = 5.25 S = 3.063 I = 5.359
Fv = 95 E = 1800000 Df = 1.25
Crit Shear: V = 240 @ 7.46 1.5*V/(Fv*A*Df) = .58

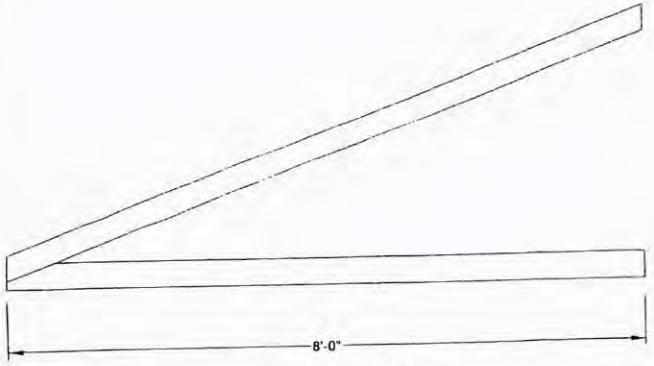
Span: Max Mom = 6225"# @ 4
Fb = 1984 M/(Fb*S*Df) = .82
Defl = -.57 @ 3.91 L/240 = .39

Solar Water

Over-All Length: 7.75 Rcts at: 0 7.75
Applied Loads (Down +)
84 Unif Load #/lf
Reactions (Up +):
Left: 326 Right: 326

****** Use NO2 DFL 2-2X4 ******
A = 10.5 S = 6.126 I = 10.718
Fv = 95 E = 1600000 Df = 1.25
Crit Shear: V = 301 @ .29 1.5*V/(Fv*A*Df) = .36

Span: Max Mom = 7568"# @ 3.88
Fb = 1509 M/(Fb*S*Df) = .65
Defl = -.4 @ 3.88 L/240 = .39



TYPICAL JACK CALCULATION

Max Rafter Lgth for Solar Water

Over-All Length: 6.75 Rcts at: 0 6.75
Applied Loads (Down +)
84 Unif Load #/lf
Reactions (Up +)
Left: 284 Right: 284

****** Use NO2 DFL 2X4 ******
A = 5.25 S = 3.063 I = 5.359
Fv = 95 E = 1600000 Df = 1.25
Crit Shear: V = 259 @ .29 1.5*V/(Fv*A*Df) = .62

Span: Max Mom = 5741"# @ 3.38
Fb = 1509 M/(Fb*S*Df) = .99
Defl = -.46 @ 3.38 L/240 = .34

PHOTO VOLTAIC

JACK OR JACK RAFTER OK UP 8'-0"

SOLAR WATER

SINGLE RAFTER OK UP TO 6'-9"

DOUBLE RAFTER OK UP TO 8'-0"

SOLAR PANEL CALCULATIONS

PHOTO VOLTAIC

LEAVE TILE ON ROOF
4X10.5' AREA 2.8LBS/FT^2
20LBS PER CLEAT ~ 4'-0" o.c
WORST CASE @ 8'-0" PANEL ADDITIONAL MOMENT = 480in lbs

LUMBER	ADDITIONAL C.S.I
NO2 DFL 2X4	.08
1&B DFL 2X4	.06
NO2 DFL 2X6	.04

SOLAR WATER

26LBS/FT^2, REMOVE TILE
(ie) CHECK W/26psf DEAD LOAD OVER 3'X8' AREA

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HANSON TRUSS COMPONENTS, INC.

TYPICAL JACK @ SOLAR PANEL

DRAWN BY: PD
FILENAME: SOLARPNL.DWG
DATE: 07-02-01

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ICC-ES Report

ESR-2762

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Reissued 01/2015
This report is subject to renewal 01/2016.

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
SECTION: 06 17 53—SHOP-FABRICATED WOOD TRUSSES

REPORT HOLDER:

SIMPSON STRONG-TIE COMPANY INC.

5956 WEST LAS POSITAS BOULEVARD
PLEASANTON, CALIFORNIA 94588

EVALUATION SUBJECT:

SIMPSON STRONG-TIE® METAL CONNECTOR PLATES FOR WOOD TRUSSES

ICC ES ICC ES PMG ICC ES LISTED

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ICC-ES Evaluation Report

ESR-2762*

Reissued January 2015

This report is subject to renewal January 2016.

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 17 53—Shop-Fabricated Wood Trusses

REPORT HOLDER:

SIMPSON STRONG-TIE COMPANY INC.
5956 WEST LAS POSITAS BOULEVARD
PLEASANTON, CALIFORNIA 94588
(800) 999-5099
www.strongtie.com

EVALUATION SUBJECT:

SIMPSON STRONG-TIE® METAL CONNECTOR PLATES FOR WOOD TRUSSES

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2015, 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2015, 2012, 2009 and 2006 *International Residential Code®* (IRC)

Property evaluated:

Structural

2.0 USES

Simpson Strong-Tie® metal connector plates are used as joint connectors for wood roof and floor trusses.

3.0 DESCRIPTION

3.1 AS-20 (AS≠20):

Simpson Strong-Tie AS-20 metal connector plates are staggered-tooth metal plates manufactured from minimum No. 20 gage [0.0356 inch (0.904 mm) total thickness] steel complying with ASTM A653, SS Grade 40 with a minimum G60 galvanization coating [0.0005 inch on each side (0.013 mm)] and having a base-metal thickness of 0.0346 inch (0.879 mm). Each plate has eight teeth per square inch, and each tooth is 0.375 inch (9.5 mm) long. The teeth are punched in pairs and formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch on center (25.4 mm), and the pairs are spaced 0.25 inch on center (6.35 mm) along the width of the plate. Alternating rows of teeth are staggered 0.125 inch (3.18 mm) from adjacent rows. See Figure 1.

3.2 AS-18-HS (AS≠18HS):

Simpson Strong-Tie AS-18-HS metal connector plates are staggered-tooth metal plates manufactured from minimum No. 18 gage [0.0466 inch (1.184 mm) total thickness] steel complying with ASTM A653, HSLAS Grade 60 with a minimum G60 galvanization coating [0.0005 inch on each side (0.013 mm)] and having a base-metal thickness of 0.0456 inch (1.158 mm). Each plate has eight teeth per square inch, and each tooth is 0.375 inch (9.5 mm) long. The teeth are punched in pairs and formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch on center (25.4 mm), and the pairs are spaced 0.25 inch on center (6.35 mm) along the width of the plate. Alternating rows of teeth are staggered 0.125 inch (3.18 mm) from adjacent rows. See Figure 2.

3.3 AS≠18S:

Simpson Strong-Tie AS≠18S metal connector plates are staggered-tooth metal plates manufactured from minimum No. 18 gage [0.0466 inch (1.184 mm) total thickness] steel complying with ASTM A653 HSLAS Grade 60 with a minimum G60 galvanized coating [0.0005 inch (0.013 mm) on each side] and having a base-metal thickness of 0.0456 inch (1.158 mm). Each tooth is 0.375 inch (9.5 mm) long. The teeth are punched in pairs and formed at right angles to the face of the parent metal so that two teeth per hole occur along the length. The spacing along the longitudinal direction of each punched slot is 1 inch on center (25.4 mm).

3.3.1 AS≠18S6: Each plate has six teeth per square inch. The punched slots are spaced a minimum of 0.25 inch apart and are grouped in sets of three and four as shown in Figure 3.

3.3.2 AS≠18S5: Each plate has five teeth per square inch. The punched slots are spaced a minimum of 0.25 inch apart and are grouped in sets of two and three as shown in Figure 4.

4.0 DESIGN AND INSTALLATION

4.1 General:

The design, manufacture and installation of wood trusses employing the metal connector plates must comply with IBC Section 2303.4 and IRC Section R502.11 or R802.10, as applicable. All truss plates are pressed into the wood for the full depth of their teeth by hydraulic-platen embedment presses, multiple roller presses that use partial embedment followed by full-embedment rollers, or combinations of

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partial embedment roller presses and hydraulic-platen embedment presses that feed trusses into a stationary finish roller press. Trusses must be assembled within the tolerances provided by the Truss Plate Institute (TPI) Quality Criteria for the Manufacture of Metal Plate Connected Wood Trusses, shown as Chapter 3 in ANSI/TPI 1, National Design Standard for Metal Plate Connected Wood Truss Construction.

4.2 Design Values:

Allowable design values for Simpson Strong-Tie metal connector plates to be used in the design of metal-plate-connected wood roof and floor trusses are shown in Tables 1 and 2 of this report. Allowable design values are applicable when the connection is made with identical plates on opposite sides of the joint.

5.0 CONDITIONS OF USE

The Simpson Strong-Tie metal connector plates for wood trusses described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 This evaluation report and the manufacturer's published installation instructions, when required by the code official, must be submitted at the time of permit application. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.

5.2 Each application for a building permit, where these metal connector plates are to be used, must be accompanied by calculations, details and other documentation showing that the design, manufacture and proposed installation conforms with the requirements of the applicable code.

5.3 This report establishes plate design values only. For items not covered by this report, such as truss design, fabrication, quality assurance and inspection, refer to ANSI/TPI 1, engineering drawings and the applicable code.

5.4 The applied design values used in the design of trusses using Simpson Strong-Tie metal connector plates, must not exceed the allowable lateral resistance, tension and shear values listed in Tables 1 and 2 of this report. Load combination reductions must be in accordance with the applicable code.

5.5 All lumber used in the fabrication of trusses using Simpson Strong-Tie metal connector plates must be graded in compliance with the applicable building code, and must have a moisture content not exceeding 19 percent at the time of assembly. Wet service factors from ANSI/TPI 1 Section 6.4.6 must be applied to the table values when the lumber moisture content exceeds 19 percent. Allowable values shown in the tables of this report are not applicable to metal connector plates embedded in either fire-retardant-treated lumber or preservative-treated lumber.

5.6 Metal connector plates must be installed in pairs, on opposite faces of truss members.

5.7 Galvanized G60 metal connector plates subject to corrosive environments must be protected in accordance with ANSI/TPI 1 Section 6.5.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the National Design Standard for Metal-plate-connected Wood Truss Construction, ANSI/TPI 1-2002, 2007 and 2014.

6.2 Quality documentation in accordance with the ICC-ES Acceptance Criteria for Quality Documentation (AC10).

7.0 IDENTIFICATION

Each Simpson Strong-Tie metal truss connector plate is identified by the product name (AS-20, AS≠20, AS-18-HS, AS≠18HS, or AS≠18S) embossed into the surface of the plate. Additionally, boxes containing the Simpson Strong-Tie metal connector plates are identified with the name of the manufacturer (Simpson Strong-Tie), the product name (AS-20, AS≠20, AS-18-HS, AS≠18HS, AS≠18S) and the evaluation report number (ESR-2762).

TABLE 1—ALLOWABLE LATERAL RESISTANCE DESIGN VALUES[1, 2, 3] (lb/in.²/PLATE)

CONNECTOR PLATE DESIGNATION	LUMBER SPECIES	SG[4]	AA	EA	AE	EE
AS-20 AS≠20 AS-18-HS AS≠18HS	Douglas Fir–Larch	0.50	248	194	168	167
	Douglas Fir–Larch North	0.49	247	190	164	164
	Hem-Fir	0.43	217	167	144	144
	Spruce- Pine-Fir	0.42	211	170	154	136
	Southern Yellow Pine	0.55	246	195	186	185
AS≠18S6	Douglas Fir–Larch	0.50	158	145	-	-
	Douglas Fir–Larch North	0.49	158	145	-	-
	Hem-Fir	0.43	148	135	-	-
	Spruce- Pine-Fir	0.42	145	132	-	-
	Southern Yellow Pine	0.55	158	145	-	-
AS≠A8S5	Douglas Fir–Larch	0.50	165	154	-	-
	Douglas Fir–Larch North	0.49	165	154	-	-
	Hem-Fir	0.43	149	144	-	-
	Spruce- Pine-Fir	0.42	145	141	-	-
	Southern Yellow Pine	0.55	165	154	-	-

For **SI:** 1lb/in.² = 6.9 kPa.

[1]Tooth holding units = psi for a single plate (double for plates on both faces when applying to area on only one face). To achieve values, plates of equal size must be installed on opposite sides of the joint with the teeth oriented in the same direction.
[2]AA = Plate parallel to load, wood grain parallel to load.
EA = Plate perpendicular to load, wood grain parallel to load.
AE = Plate parallel to load, wood grain perpendicular to load.
EE = Plate perpendicular to load, wood grain perpendicular to load.
[3]All truss plates are pressed into the wood for the full depth of their teeth by hydraulic-platen embedment presses, multiple roller presses that use partial embedment followed by full-embedment rollers, or combinations of partial embedment roller presses and hydraulic-platen presses that feed trusses into a stationary finish roller press.
[4]Specific gravity.

TABLE 2—ALLOWABLE TENSION AND SHEAR DESIGN VALUES[1]

PROPERTY FORCE DIRECTION	CONNECTOR PLATE							
	AS-20 AS≠20		AS-18-HS AS≠18HS		AS≠18S6		AS≠18S5	
	Efficiency	Pounds/ inch/Pair of Connector Plates	Efficiency	Pounds/ inch/Pair of Connector Plates	Efficiency	Pounds/ inch/Pair of Connector Plates	Efficiency	Pounds/ inch/Pair of Connector Plates
Tension Values in Accordance with Section 5.4.4.2 of TPI 1 (Minimum Net Section over the Joint)[2]								
Tension @ 0°	0.51	901	0.50	1728	0.61	2108	0.65	2246
Tension @ 90°	0.51	901	0.50	1728	0.50	1728	0.50	1728
Shear Values								
Shear at 0°	0.57	671	0.58	1336	0.58	1336	0.58	1336
Shear at 30°	0.72	848	0.66	1521	0.66	1521	0.66	1521
Shear at 60°	0.82	966	0.75	1728	0.75	1728	0.75	1728
Shear at 90°	0.46	542	0.50	1152	0.50	1152	0.50	1152
Shear at 120°	0.50	589	0.46	1060	0.46	1060	0.46	1060
Shear at 150°	0.57	671	0.52	1198	0.52	1198	0.52	1198

For **SI:** 1 lbf/inch = 0.175 n/mm, 1 inch = 25.4 mm.

[1]Minimum coated thickness for 20 gage is 0.0356 inch (0.904 mm) and for 18 gage is 0.0466 inch (1.184 mm). Minimum coating thickness for G60 is 0.0010 inch (0.025 mm), total, for both sides in accordance with Section 6.3.4.1.3 of ANSI/TPI 1 2007 and 2014.

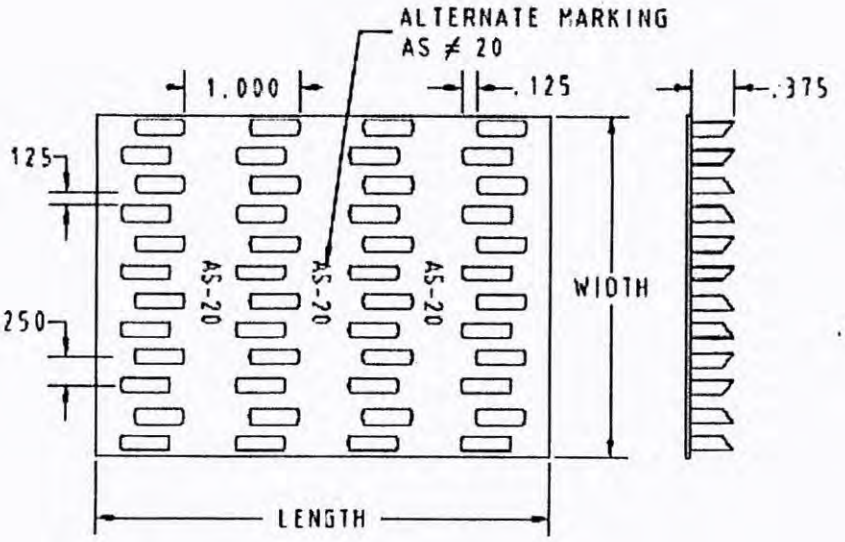


FIGURE 1 AS-20 PLATE PATTERN
(DIMENSIONS IN INCHES)

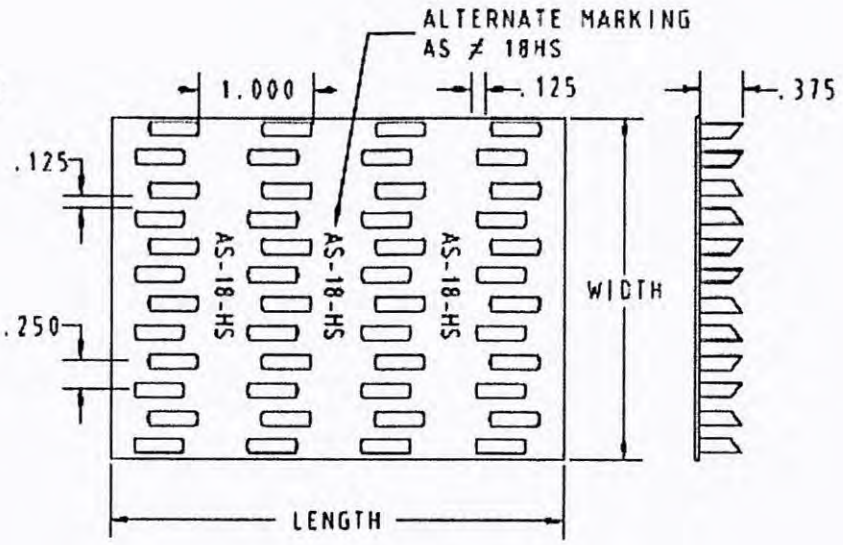


FIGURE 2: AS-18-HS PLATE PATTERN
(DIMENSIONS IN INCHES)

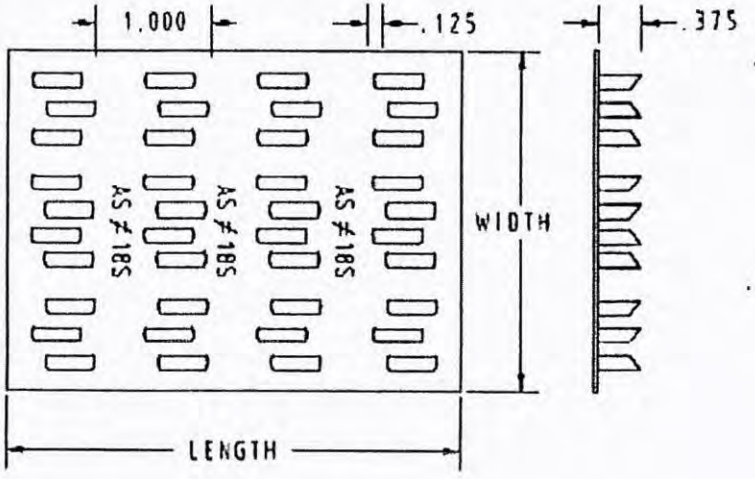


FIGURE 3: AS≠S6 PLATE PATTERN
(DIMENSIONS IN INCHES)

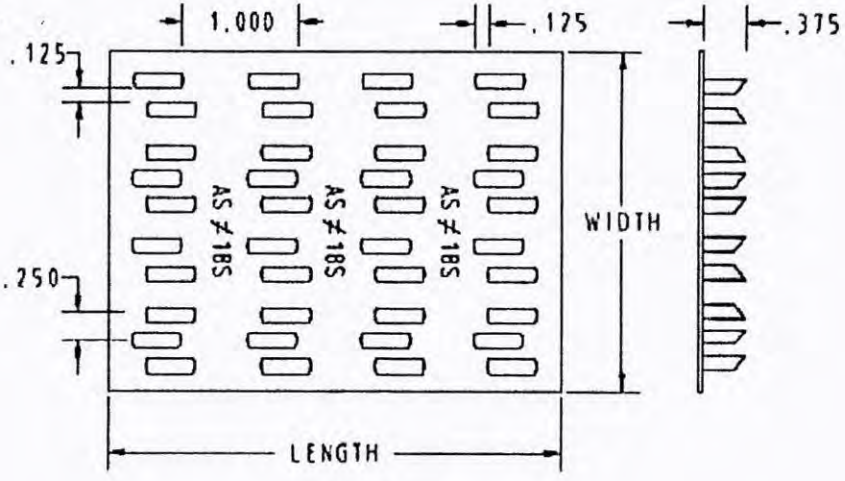


FIGURE 4 AS≠S5 PLATE PATTERN
(DIMENSIONS IN INCHES)