SOLAR TEC/24

6301 Highland Place

Sebastopol, CA 95472

Title 24
Energy Compliance
Documentation

Job No: 00101-041

project: **The Young Family: Non-Residential**

location: 1818 La Plaza, Cotati, CA

designer: **Avila Architects**

date: 7/28/2001

Method of Compliance: Performance Method (Climate Zone 2) showing that this project is in compliance with the 2001 edition of the California Non-Residential Energy Standards when built as documented in this submittal.

Summary: Only the non-residential portion of the building is included in this documentation. All the components: envelope, lighting and HVAC are documented. One extra copy of each of the certificates of compliance and the mandatory measures forms (**PERF-1, ENV-1, LTG-1, MECH-1 & MM forms**) is included for putting on the plans. All submitted copies of said certificates must be signed by the person, designer, or architect responsible for the design.

Specific Requirements: (must also conform to all applicable Mandatory Measures)

INSULATION: R30 insulation at roof; R19 insulation at walls; no insulation at slab floors **GLAZING:** All glass is double pane, wood frame, metal clad NFRC tested assemblies Marvin brand or equal with low solar gain low-E glass. **Note:** Glass U-values and solar heat gain coefficients (SHGC's) are per the default values given in Tables G-4 & G-8 of the Residential Energy Manual or per the NFRC tested values published by the manufacturer. **Note:** Maximum allowed glazing U-values are as follows: operable = 0.42; fixed = 0.42; French doors = 0.40. Maximum allowed Solar Heat Gain Coefficients (SHGC's) are as follows: operable = 0.34; fixed = 0.34; French & doors = 0.34.	**LIGHTING:** See mandatory features list for switching requirements. **HVAC:** Four zone system as follows: ZONE 1: East One gas FAU/AC Pkg unit ZONE 2: Middle 1 One gas FAU/AC Pkg unit ZONE 3: Middle 2 One gas FAU/AC Pkg unit ZONE 4: Middle 1 One gas FAU/AC Pkg unit Economizers: not required.

21146

The Young Family: Non-Residential

TABLE OF CONTENTS

Table of Contents	1
Form ENV-1 Certificate of Compliance	2
Form ENV-2 Overall Envelope Method	5
Form ENV-MM Envelope Mandatory Measures	13
Form LTG-1 Certificate of Compliance	14
Form LTG-2 Lighting Compliance Summary	17
Form LTG-MM Lighting Mandatory Measures	18
Form MECH-1 Certificate of Compliance	19
Form MECH-2 Mechanical Equipment Summary	22
Form MECH-3 Mechanical Ventilation	24
Form MECH-4 Mechanical Sizing and Fan Power	25
Form MECH-MM Mechanical Mandatory Measures	29

CERTIFICATE OF COMPLIANCE

Part 1 of 2 **ENV-1**

PROJECT NAME: The Young Family Non-Residential		DATE: 7/28/2001
PROJECT ADDRESS: 1818 La Plaza Cotati		Building Permit #
PRINCIPAL DESIGNER - ENVELOPE: Avila Architects	TELEPHONE: (707) 585-3711	
DOCUMENTATION AUTHOR: Save Energy Consulting	TELEPHONE: (707) 838-8505	Checked by/Date Enforcement Agency Use

GENERAL INFORMATION

DATE OF PLANS	BUILDING CONDITIONED FLOOR AREA: 3,612 Sq.Ft.			CLIMATE ZONE: 2
BUILDING TYPE	[X] NONRESIDENTIAL	[ ] HIGH RISE RESIDENTIAL		[ ] HOTEL/MOTEL GUEST ROOM
PHASE OF CONSTRUCTION	[X] NEW CONSTRUCTION	[ ] ADDITION	[ ] ALTERATION	[ ] EXISTING + ADDITION
METHOD OF ENVELOPE COMPLIANCE	[ ] COMPONENT	[X] OVERALL ENVELOPE		[ ] PERFORMANCE

STATEMENT OF COMPLIANCE

This Certificate of Compliance lists the building features and performance specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations. This certificate applies only to building envelope requirements.

The documentation preparer hereby certifies that the document is accurate and complete.

DOCUMENTATION AUTHOR	SIGNATURE	DATE
Skeer	Certified Energy Analyst CABEC Skeer	7.28.01

The Principal Envelope Designer hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application. The proposed building has been designed to meet the envelope requirements contained in Sections 110, 116 through 118, and 140, 142, 143 or 149 of Title 24, Part 6.

Please check one:

[X] I hereby affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am licensed in the state of California as a civil engineer or mechanical engineer, or I am a licensed architect.

[ ] I affirm that I am eligible under the exemption to Division 3 of the Business and Professions Code by Section 5537.2 or 6737.3 to sign this document as the person responsible for its preparation; and that I am a licensed contractor performing this work.

[ ] I affirm that I am eligible under Division 3 of the Business and Professions Code to sign this document because it pertains to a structure or type of work described as exempt pursuant to Business and Professions Code Sections 5537, 5538, and 6737.1.

PRINCIPAL ENVELOPE DESIGNER - NAME	SIGNATURE	DATE	LIC. #
Avila Architects	MERLE Avila	7.30.01	C-24986

ENVELOPE MANDATORY MEASURES

Indicate location on plans of Note Block for Mandatory Measures

INSTRUCTIONS TO APPLICANT

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Manual published by the California Energy Commission.

ENV-1: Required on plans for all submittals. Part 2 may be incorporated in schedules on plans.

ENV-2: Used for all submittals; choose appropriate version depending on method of envelope compliance.

ENV-3: Optional. Use if default U-values are not used. Choose appropriate version for assembly U-value to be calculated.

ENVELOPE COMPLIANCE SUMMARY

Part 2 of 2 **ENV-1**

PROJECT NAME The Young Family Non-Residential

DATE 7/28/2001

OPAQUE SURFACES

#	Surface Type	Framing Type	Area	U-Fac.	Act. Azm.	Tilt	Solar Gains Y/N		Form 3 Reference	Location / Comments
1	Roof	Wood	149	0.035	353	22	X		R-30 Roof Deck (R.30.2x12.16)	Office East
2	Wall	Wood	180	0.065	353	90	X		R-19 Wall (W.19.2x6.16)	Office East
3	Wall	Wood	323	0.065	83	90	X		R-19 Wall (W.19.2x6.16)	Office East
4	Wall	Wood	93	0.065	173	90	X		R-19 Wall (W.19.2x6.16)	Office East
5	Roof	Wood	149	0.035	353	22	X		R-30 Roof Deck (R.30.2x12.16)	Office Middle 1
6	Wall	Wood	180	0.065	353	90	X		R-19 Wall (W.19.2x6.16)	Office Middle 1
7	Wall	Wood	93	0.065	173	90	X		R-19 Wall (W.19.2x6.16)	Office Middle 1
8	Roof	Wood	149	0.035	353	22	X		R-30 Roof Deck (R.30.2x12.16)	Office Middle 2
9	Wall	Wood	180	0.065	353	90	X		R-19 Wall (W.19.2x6.16)	Office Middle 2
10	Wall	Wood	93	0.065	173	90	X		R-19 Wall (W.19.2x6.16)	Office Middle 2
11	Roof	Wood	149	0.035	353	22	X		R-30 Roof Deck (R.30.2x12.16)	Office West
12	Wall	Wood	180	0.065	353	90	X		R-19 Wall (W.19.2x6.16)	Office West
13	Wall	Wood	93	0.065	173	90	X		R-19 Wall (W.19.2x6.16)	Office West
14	Wall	Wood	323	0.065	263	90	X		R-19 Wall (W.19.2x6.16)	Office West

FENESTRATION SURFACES

Site Assembled Glazing ☐ Check box if Building is >= 100,000 sqft of CFA and >= 10,000 sqft vertical glazing then NFRC Certification is required. Follow NFRC 100-SB Procedures and submit NFRC Label Certificate Form.

#	Type	Area	U-Fac.	Act. Azm.	SHGC	Glazing Type	Location / Comments
1	Window	25	0.420	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office East
2	Window	25	0.420	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office East
3	Window	24	0.400	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office East
4	Window	8	0.420	173	0.34	Dbl.Wood.Clad.Marvin LowE	Office East
5	Window	20	0.400	173	0.34	Dbl.Wood.Clad.Marvin LowE	Office East
6	Window	25	0.420	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office Middle 1
7	Window	25	0.420	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office Middle 1
8	Window	24	0.400	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office Middle 1
9	Window	8	0.420	173	0.34	Dbl.Wood.Clad.Marvin LowE	Office Middle 1
10	Window	20	0.400	173	0.34	Dbl.Wood.Clad.Marvin LowE	Office Middle 1
11	Window	25	0.420	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office Middle 2
12	Window	25	0.420	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office Middle 2
13	Window	24	0.400	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office Middle 2
14	Window	8	0.420	173	0.34	Dbl.Wood.Clad.Marvin LowE	Office Middle 2
15	Window	20	0.400	173	0.34	Dbl.Wood.Clad.Marvin LowE	Office Middle 2

EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	None	0.76	5.0	5.0	2.0	2.0	2.0	2.0						
2	None	0.76	5.0	5.0	2.0	2.0	2.0	2.0						
3	None	0.76	8.0	3.0	4.0	2.0	4.0	4.0						
4	None	0.76												
5	None	0.76												
6	None	0.76	5.0	5.0	2.0	2.0	2.0	2.0						
7	None	0.76	5.0	5.0	2.0	2.0	2.0	2.0						
8	None	0.76	8.0	3.0	4.0	2.0	4.0	4.0						
9	None	0.76												
10	None	0.76												
11	None	0.76	5.0	5.0	2.0	2.0	2.0	2.0						
12	None	0.76	5.0	5.0	2.0	2.0	2.0	2.0						
13	None	0.76	8.0	3.0	4.0	2.0	4.0	4.0						
14	None	0.76												
15	None	0.76												

ENVELOPE COMPLIANCE SUMMARY

Part 2 of 2 **ENV-1**

PROJECT NAME: The Young Family Non-Residential

DATE: 7/28/2001

OPAQUE SURFACES

#	Surface Type	Framing Type	Area	U-Fac.	Act. Azm.	Tilt	Solar Gains Y/N		Form 3 Reference	Location / Comments

FENESTRATION SURFACES

Site Assembled Glazing ☐ Check box if Building is >= 100,000 sqft of CFA and >= 10,000 sqft vertical glazing then NFRC Certification is required. Follow NFRC 100-SB Procedures and submit NFRC Label Certificate Form.

#	Type	Area	U-Fac.	Act. Azm.	SHGC	Glazing Type	Location / Comments
16	Window	25	0.420	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office West
17	Window	25	0.420	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office West
18	Window	24	0.400	353	0.34	Dbl.Wood.Clad.Marvin LowE	Office West
19	Window	8	0.420	173	0.34	Dbl.Wood.Clad.Marvin LowE	Office West
20	Window	20	0.400	173	0.34	Dbl.Wood.Clad.Marvin LowE	Office West

EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
16	None	0.76	5.0	5.0	2.0	2.0	2.0	2.0						
17	None	0.76	5.0	5.0	2.0	2.0	2.0	2.0						
18	None	0.76	8.0	3.0	4.0	2.0	4.0	4.0						
19	None	0.76												
20	None	0.76												

OVERALL ENVELOPE METHOD

Part 1 of 6 **ENV-2**

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

WINDOW AREA TEST

A. DISPLAY PERIMETER	0	ft X 6 =	0	sf DISPLAY AREA
B. GROSS EXTERIOR WALL AREA	2,146	sf X 0.40 =	858	sf 40% AREA
C. GROSS EXTERIOR WALL AREA	2,146	sf X 0.10 =	215	sf MINIMUM STND. AREA
D. ENTER LARGER OF A or B			858	sf MAXIMUM STND. AREA
E. ENTER PROPOSED WINDOW AREA			408	sf PROPOSED AREA

F. WINDOW WALL RATIO = Proposed Window Area Divided by Gross Exterior Wall Area = 19.01%

IF E IS GREATER THAN D OR LESS THAN C, PROCEED TO THE NEXT CALCULATION FOR THE WINDOW AREA ADJUSTMENT. IF NOT, GO TO PART 2 OF 6.

1. IF E GREATER THAN D:

MAXIMUM STANDARD AREA		PROPOSED WINDOW AREA		WINDOW ADJUSTMENT FACTOR
	÷		=	

GO TO PART 6 TO CALCULATE ADJUSTED AREAS.

2. IF LESS THAN C:

MINIMUM STANDARD AREA		PROPOSED AREA		WINDOW ADJUSTMENT FACTOR
	÷		=	

GO TO PART 6 TO CALCULATE ADJUSTED AREAS.

SKYLIGHT AREA TEST

ATRIUM HEIGHT: 10 FT

IF <= 55 FT / IF > 55 FT

0.10	X		=		
0.05	X	596	=	30	
STANDARD %		GROSS ROOF AREA		STANDARD SKYLIGHT AREA	

0 — PROPOSED SKYLIGHT AREA

IF THE PROPOSED SKYLIGHT AREA IS GREATER THAN THE STANDARD SKYLIGHT AREA, PROCEED TO THE NEXT CALCULATION FOR THE SKYLIGHT AREA ADJUSTMENT. IF NOT, GO TO PART 2 OF 6.

1. IF PROPOSED SKYLIGHT AREA >= STANDARD SKYLIGHT AREA:

STANDARD SKYLIGHT AREA		PROPOSED SKYLIGHT AREA		SKYLIGHT ADJUSTMENT FACTOR
	÷		=	

GO TO PART 6 TO CALCULATE ADJUSTED AREAS.

OVERALL ENVELOPE METHOD

PROJECT NAME The Young Family Non-Residential

DATE 7/28/2001

OVERALL HEAT LOSS

A	B	C	D			E	F	G	H
	PROPOSED						STANDARD		
ASSEMBLY NAME (e.g. Wall-1, Floor-1)	AREA	HEAT CAPACITY	U-FACTOR	TABLE VALUES Y	TABLE VALUES N	UA (B X D)	AREA* (Adjusted)	U-FACTOR	UA (F X G)
R-30 Roof	149	3.06	0.035	X		5.2	149	0.057	8.5
Front Wall	180	3.23	0.065	X		11.8	180	0.084	15.1
Fixed.25	25		0.420		X	10.5	25	0.490	12.2
Fixed.25	25		0.420		X	10.5	25	0.490	12.2
French.Dr.24	24		0.400		X	9.6	24	0.490	11.8
Left Wall	323	3.23	0.065	X		21.1	323	0.084	27.1
Back Wall	93	3.23	0.065	X		6.1	93	0.084	7.8
V.Slider.8	8		0.420		X	3.4	8	0.490	3.9
French.Dr.20	20		0.400		X	8.0	20	0.490	9.8
R-30 Roof	149	3.06	0.035	X		5.2	149	0.057	8.5
Front Wall	180	3.23	0.065	X		11.8	180	0.084	15.1
Fixed.25	25		0.420		X	10.5	25	0.490	12.2
Fixed.25	25		0.420		X	10.5	25	0.490	12.2
French.Dr.24	24		0.400		X	9.6	24	0.490	11.8
Back Wall	93	3.23	0.065	X		6.1	93	0.084	7.8
V.Slider.8	8		0.420		X	3.4	8	0.490	3.9
French.Dr.20	20		0.400		X	8.0	20	0.490	9.8
R-30 Roof	149	3.06	0.035	X		5.2	149	0.057	8.5
Front Wall	180	3.23	0.065	X		11.8	180	0.084	15.1
Fixed.25	25		0.420		X	10.5	25	0.490	12.2
Fixed.25	25		0.420		X	10.5	25	0.490	12.2
French.Dr.24	24		0.400		X	9.6	24	0.490	11.8
Back Wall	93	3.23	0.065	X		6.1	93	0.084	7.8
V.Slider.8	8		0.420		X	3.4	8	0.490	3.9
French.Dr.20	20		0.400		X	8.0	20	0.490	9.8
R-30 Roof	149	3.06	0.035	X		5.2	149	0.057	8.5
Front Wall	180	3.23	0.065	X		11.8	180	0.084	15.1
Fixed.25	25		0.420		X	10.5	25	0.490	12.2
Fixed.25	25		0.420		X	10.5	25	0.490	12.2
French.Dr.24	24		0.400		X	9.6	24	0.490	11.8

* If Window and/or Skylight Area Adjustment is Required, use Adjusted Areas from Part 6 of 6.	Column E shall be no greater than Column H	264	This Page Total	331
		302	Building Total	380

OVERALL ENVELOPE METHOD

PROJECT NAME: The Young Family Non-Residential

DATE: 7/28/2001

OVERALL HEAT LOSS

A	B	C	D			E	F	G	H
	PROPOSED						STANDARD		
				TABLE VALUES					
ASSEMBLY NAME (e.g. Wall-1, Floor-1)	AREA	HEAT CAPACITY	U-FACTOR	Y	N	UA (B X D)	AREA* (Adjusted)	U-FACTOR	UA (F X G)
Back Wall	93	3.23	0.065	X		6.1	93	0.084	7.8
V.Slider.8	8		0.420		X	3.4	8	0.490	3.9
French.Dr.20	20		0.400		X	8.0	20	0.490	9.8
Right Wall	323	3.23	0.065	X		21.1	323	0.084	27.1

* If Window and/or Skylight Area Adjustment is Required, use Adjusted Areas from Part 6 of 6.

Column E shall be no greater than Column H

	Column E		Column H
This Page Total	39		49
Building Total	302		380

OVERALL ENVELOPE METHOD

PROJECT NAME The Young Family Non-Residential

DATE 7/28/2001

OVERALL HEAT GAIN FROM CONDUCTION

A	B	C	D	E			F	G	H	I	J
	PROPOSED							STANDARD			
ASSEMBLY NAME (e.g. Wall-1, Floor-1)	AREA	TF	HEAT CAPACITY	U-FACTOR	TABLE VALUES Y	TABLE VALUES N	HEAT GAIN Q (BxCxE)	AREA* (Adjusted)	U-FACTOR	TF	HEAT GAIN Q (GxHxI)
R-30 Roof	149	40	3.06	0.035	X		208	149	0.057	40	340
Front Wall	180	40	3.23	0.065	X		471	180	0.084	40	605
Fixed.25	25	40		0.420		X	420	25	0.490	40	490
Fixed.25	25	40		0.420		X	420	25	0.490	40	490
French.Dr.24	24	40		0.400		X	384	24	0.490	40	470
Left Wall	323	40	3.23	0.065	X		846	323	0.084	40	1,085
Back Wall	93	40	3.23	0.065	X		243	93	0.084	40	312
V.Slider.8	8	40		0.420		X	134	8	0.490	40	157
French.Dr.20	20	40		0.400		X	320	20	0.490	40	392
R-30 Roof	149	40	3.06	0.035	X		208	149	0.057	40	340
Front Wall	180	40	3.23	0.065	X		471	180	0.084	40	605
Fixed.25	25	40		0.420		X	420	25	0.490	40	490
Fixed.25	25	40		0.420		X	420	25	0.490	40	490
French.Dr.24	24	40		0.400		X	384	24	0.490	40	470
Back Wall	93	40	3.23	0.065	X		243	93	0.084	40	312
V.Slider.8	8	40		0.420		X	134	8	0.490	40	157
French.Dr.20	20	40		0.400		X	320	20	0.490	40	392
R-30 Roof	149	40	3.06	0.035	X		208	149	0.057	40	340
Front Wall	180	40	3.23	0.065	X		471	180	0.084	40	605
Fixed.25	25	40		0.420		X	420	25	0.490	40	490
Fixed.25	25	40		0.420		X	420	25	0.490	40	490
French.Dr.24	24	40		0.400		X	384	24	0.490	40	470
Back Wall	93	40	3.23	0.065	X		243	93	0.084	40	312
V.Slider.8	8	40		0.420		X	134	8	0.490	40	157
French.Dr.20	20	40		0.400		X	320	20	0.490	40	392
R-30 Roof	149	40	3.06	0.035	X		208	149	0.057	40	340
Front Wall	180	40	3.23	0.065	X		471	180	0.084	40	605
Fixed.25	25	40		0.420		X	420	25	0.490	40	490
Fixed.25	25	40		0.420		X	420	25	0.490	40	490
French.Dr.24	24	40		0.400		X	384	24	0.490	40	470
						Subtotal	10,552			Subtotal	13,249

*** If Window and/or Skylight Area Adjustment is Required, use Adjusted Areas from Part 6 of 6.**

OVERALL ENVELOPE METHOD

PROJECT NAME The Young Family Non-Residential

DATE 7/28/2001

OVERALL HEAT GAIN FROM CONDUCTION

A	B	C	D	E			F	G	H	I	J
	PROPOSED							STANDARD			
ASSEMBLY NAME (e.g. Wall-1, Floor-1)	AREA	TF	HEAT CAPACITY	U-FACTOR	TABLE VALUES Y	TABLE VALUES N	HEAT GAIN Q (BxCxE)	AREA* (Adjusted)	U-FACTOR	TF	HEAT GAIN Q (GxHxI)
Back Wall	93	40	3.23	0.065	X		243	93	0.084	40	312
V.Slider.8	8	40		0.420		X	134	8	0.490	40	157
French.Dr.20	20	40		0.400		X	320	20	0.490	40	392
Right Wall	323	40	3.23	0.065	X		846	323	0.084	40	1,085

* If Window and/or Skylight Area Adjustment is Required, use Adjusted Areas from Part 6 of 6.

Subtotal (F): 1,544

Subtotal (J): 1,947

OVERALL ENVELOPE METHOD

Part 4 of 6 **ENV-2**

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

OVERALL HEAT GAIN FROM RADIATION — OPAQUE SURFACES

A	B	C	D	E	F	G	H	I	J	K
	PROPOSED						STANDARD			
ASSEMBLY NAME (e.g. Roof-1)	AREA	SF	WEIGHTING FACTOR	U-FACTOR	Absorp	HEAT GAIN (BxCxDxExF)	AREA* (ADJUSTED)	U-Factor	Absorp	HEAT GAIN (CxDxHxIxJ)
R-30 Roof	149	126	1.12	0.035	0.70	513	149	0.057	0.70	839
R-30 Roof	149	126	1.12	0.035	0.70	513	149	0.057	0.70	839
R-30 Roof	149	126	1.12	0.035	0.70	513	149	0.057	0.70	839
R-30 Roof	149	126	1.12	0.035	0.70	513	149	0.057	0.70	839
						2,054				3,356
						SUBTOTAL				SUBTOTAL

OVERALL ENVELOPE METHOD

PROJECT NAME The Young Family Non-Residential

DATE 7/28/2001

OVERALL HEAT GAIN FROM RADIATION — FENESTRATION SURFACES

A		B	C	D	E	F	G	H		I	J	K	L	M
			PROPOSED								STANDARD			
						OVERHANG								
WINDOW/SKYLIGHT NAME (e.g. Wind-1, Sky-1)	ORIENT.	WEIGHTING FACTOR	AREA	SF	SHGC	H	V	H/V	OHF	HEAT GAIN Q (BxCxDxExH)	AREA* (ADJUSTED)	RSHG (or SHGC**)	SF	HEAT GAIN Q (BxJxKxL)
Fixed.25	N	0.56	25	126	0.34	2.0	7.0	0.29	0.90	539	25	0.51	126	900
Fixed.25	N	0.56	25	126	0.34	2.0	7.0	0.29	0.90	539	25	0.51	126	900
French.Dr.24	N	0.56	24	126	0.34	4.0	10.0	0.40	0.87	500	24	0.51	126	864
V.Slider.8	S	1.30	8	126	0.34					446	8	0.36	126	472
French.Dr.20	S	1.30	20	126	0.34					1,114	20	0.36	126	1,179
Fixed.25	N	0.56	25	126	0.34	2.0	7.0	0.29	0.90	539	25	0.51	126	900
Fixed.25	N	0.56	25	126	0.34	2.0	7.0	0.29	0.90	539	25	0.51	126	900
French.Dr.24	N	0.56	24	126	0.34	4.0	10.0	0.40	0.87	500	24	0.51	126	864
V.Slider.8	S	1.30	8	126	0.34					446	8	0.36	126	472
French.Dr.20	S	1.30	20	126	0.34					1,114	20	0.36	126	1,179
Fixed.25	N	0.56	25	126	0.34	2.0	7.0	0.29	0.90	539	25	0.51	126	900
Fixed.25	N	0.56	25	126	0.34	2.0	7.0	0.29	0.90	539	25	0.51	126	900
French.Dr.24	N	0.56	24	126	0.34	4.0	10.0	0.40	0.87	500	24	0.51	126	864
V.Slider.8	S	1.30	8	126	0.34					446	8	0.36	126	472
French.Dr.20	S	1.30	20	126	0.34					1,114	20	0.36	126	1,179
Fixed.25	N	0.56	25	126	0.34	2.0	7.0	0.29	0.90	539	25	0.51	126	900
Fixed.25	N	0.56	25	126	0.34	2.0	7.0	0.29	0.90	539	25	0.51	126	900
French.Dr.24	N	0.56	24	126	0.34	4.0	10.0	0.40	0.87	500	24	0.51	126	864
V.Slider.8	S	1.30	8	126	0.34					446	8	0.36	126	472
French.Dr.20	S	1.30	20	126	0.34					1,114	20	0.36	126	1,179

** Only SHGC is used for Skylights

	Proposed		Standard
Part 3 Subtotal	12,095	Part 3 Subtotal	15,195
Part 4 Subtotal	2,054	Part 4 Subtotal	3,356
Part 5 Subtotal	12,551	Part 5 Subtotal	17,256
	26,700	Total Heat Gain	35,807

*If Window and/or Skylight Area Adjustment is Required, use Adjusted Areas from Part 6 of 6.

Column I must be less than column M

OVERALL ENVELOPE METHOD

Part 6 of 6 **ENV-2**

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

WINDOW AREA ADJUSTMENT CALCULATIONS

[X] CHECK IF NOT APPLICABLE (See Part 1 of 6.)

A	ORIENTATION				B	C	D	E	F	G
WALL NAME (e.g. Wall-1, Wall-2)	N	E	S	W	GROSS AREA	DOOR AREA	WINDOW AREA	WINDOW ADJUST. FACTOR (From Part 1)	ADJUSTED WINDOW AREA (D X E)	ADJUSTED WALL AREA B - (F + C)
TOTALS								N/A		

SKYLIGHT AREA ADJUSTMENT CALCULATIONS

[X] CHECK IF NOT APPLICABLE (See Part 1 of 5.)

A	B	C	D	E	F
ROOF NAME (e.g. Roof-1, Roof-2)	GROSS AREA	SKYLIGHT AREA	SKYLIGHT ADJUST. FACTOR (From Part 1)	ADJUSTED SKYLIGHT AREA (C X D)	ADJUSTED ROOF AREA (B - E)
TOTALS			N/A		

ENVELOPE MANDATORY MEASURES ENV-MM

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

DESCRIPTION	Designer	Enforcement
[X] § 118(a) Installed Insulating Material shall have been certified by the manufacturer to comply with the California Quality Standards for insulating material, Title 20, Chapter 4, Article 3.		
[X] § 118(c) All Insulating Materials shall be installed in compliance with the flame spread rating and smoke density requirements of Sections 2602 and 707 of Title 24, Part 2.		
[X] § 117(a) All Exterior Joints and openings in the building that are observable sources of air leakage shall be caulked, gasketed, weatherstripped or otherwise sealed.		
[X] § 116(b) Site Constructed Doors, Windows and Skylights shall be caulked between the unit and the building, and shall be weatherstripped (except for unframed glass doors and fire doors).		
[X] § 116(a)1 Manufactured Doors and Windows installed shall have air infiltration rates not exceeding those shown in Table Number 1-E. of the Standards. Manufactured fenestration products must be labeled for U-value according to NFRC procedures.		
[X] § 118(e) Demising Walls in Nonresidential Buildings: The opaque portions of framed demising walls in nonresidential buildings shall have insulation with an installed R-value of no less than R-11 between framing members.		

CERTIFICATE OF COMPLIANCE

Part 1 of 3 **LTG-1**

PROJECT NAME: The Young Family Non-Residential		DATE: 7/28/2001
PROJECT ADDRESS: 1818 La Plaza Cotati		Building Permit #
PRINCIPAL DESIGNER - LIGHTING: Avila Architects	TELEPHONE: (707) 585-3711	
DOCUMENTATION AUTHOR: Save Energy Consulting	TELEPHONE: (707) 838-8505	Checked by/Date Enforcement Agency Use

GENERAL INFORMATION

DATE OF PLANS	BUILDING CONDITIONED FLOOR AREA: 3,612 Sq.Ft.				CLIMATE ZONE: 2
BUILDING TYPE	[X] NONRESIDENTIAL	[ ] HIGH RISE RESIDENTIAL		[ ] HOTEL/MOTEL GUEST ROOM	
PHASE OF CONSTRUCTION	[X] NEW CONSTRUCTION	[ ] ADDITION	[ ] ALTERATION	[ ] EXISTING + ADDITION	
METHOD OF LIGHTING COMPLIANCE	[ ] COMPLETE BUILDING	[X] AREA CATEGORY	[ ] TAILORED	[ ] PERFORMANCE	

STATEMENT OF COMPLIANCE

This Certificate of Compliance lists the building features and performance specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations. This certificate applies only to building lighting requirements.

The documentation preparer hereby certifies that the documentation is accurate and complete.

DOCUMENTATION AUTHOR	SIGNATURE	DATE
Skeer		

The Principal Lighting Designer hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application. The proposed building has been designed to meet the lighting requirements contained in Sections 110, 119, 130 through 132, and 146 or 149 of Title 24, Part 6.

Please check one:

[ ] I hereby affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am licensed in the State of California as a civil engineer or electrical engineer, or I am a licensed architect.

[ ] I affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code by Section 5537.2 or 6737.3 to sign this document as the person responsible for its preparation; and that I am a licensed contractor performing this work.

[ ] I affirm that I am eligible under the exemption to Division 3 of the Business and Professions Code to sign this document because it pertains to a structure or type of work described as exempt pursuant to Business and Professions Code Sections 5537, 5538 and 6737.1.

PRINCIPAL LIGHTING DESIGNER - NAME	SIGNATURE	DATE	LIC. #
Avila Architects			

LIGHTING MANDATORY MEASURES

Indicate location on plans of Note Block for Mandatory Measures

INSTRUCTIONS TO APPLICANT

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Manual published by the California Energy Commission.

LTG-1: Required on plans for all submittals. Part 2 and 3 may be incorporated in schedules on plans.
LTG-2: Required on all submittals.
LTG-3: Optional. Use only if lighting control credits are taken.
LTG-4: Optional. Use only if Tailored method is used.
LTG-5: Optional. Use only if Tailored method is used.

LIGHTING COMPLIANCE SUMMARY

Part 2 of 3 **LTG-1**

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

INSTALLED LIGHTING SCHEDULE

Code	LUMINAIRE DESCRIPTION	LAMPS TYPE DESCRIPTION	LAMPS #	LAMPS Watts Per Lamp	BALLASTS DESCRIPTION	BALLASTS #	Luminaire (Lamp + Ballast) #	Luminaire (Lamp + Ballast) Watts	Total Watts
	(2) 13w Compact Fluorescent Twin 2 Pin	CFT13W/GX23	2	13	Magnetic Standard	2.0	8	34.0	272
	3F032-T8 Elec	3F32T8	3	32	Electronic	1.0	40	90.0	3,600

Lighting Schedule on Plans Show Exterior Lighting Meets

- ☐ Efficacy and Control Requirement of 130(c)
- ☐ Control Requirements of 131(f)

Subtotal from this Page	3,872
Total	3,872
Portable Lighting (From LTG-1)	658
Less Control Credit Watts (From LTG-3)	0
Adjusted Actual Watts	4,530

MANDATORY AUTOMATIC CONTROLS

CONTROL LOCATION (Room #)	CONTROL IDENTIFICATION	CONTROL TYPE (Auto Time Switch, Exterior, etc.)	SPACE CONTROLLED	NOTE TO FIELD

CONTROLS FOR CREDIT

CONTROL LOCATION (Room # or Dwg. #)	CONTROL IDENTIFICATION	CONTROL TYPE (Occupant, Daylight, Dimming, etc.)	LUMINAIRES CONTROLLED TYPE	LUMINAIRES CONTROLLED # OF LUMINAIRES	NOTE TO FIELD

NOTES TO FIELD - For Building Department Use Only

LIGHTING COMPLIANCE SUMMARY

Part 3 of 3 **LTG-1**

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

TABLE 1A - PORTABLE LIGHTING NOT SHOWN ON PLANS FOR OFFICE AREAS >250 SQUARE FEET

A ROOM # OR ZONE ID	B DEFAULT (W/sqft)	C AREA (SF)	D TOTAL WATTS (B X C)
Office East	0.2	822	164
Office Middle 1	0.2	822	164
Office Middle 2	0.2	822	164
Office West	0.2	822	164
TOTAL		3,288	658

TABLE 1B - PORTABLE LIGHTING SHOWN ON PLANS FOR OFFICE AREAS >250 SQUARE FEET

A ROOM # OR ZONE ID	B PORTABLE LIGHTING Description	C # OF FIXT.	C LUMIN. WATTS PER FIXTURE	D TASK AREA (SF)	E # OF TASK AREAS	F TOTAL AREA (SF) (D x E)	G TOTAL WATTS (C x E)
					TOTAL	0	0

TABLE 1C - PLANS SHOW PORTABLE LIGHTING IS NOT REQUIRED FOR OFFICE AREAS > 250 SQUARE FEET

ROOM # OR ZONE ID	TOTAL AREA (SF)
TOTAL	0

Designer needs to provide detailed documentation that the lighting level provided by the overhead lighting meets the needs of the space. The details include luminaire types, CU, and mounting locations relative to work areas.

BUILDING SUMMARY - PORTABLE LIGHTING

BUILDING SUMMARY	TOTAL AREA (SF) (FROM TABLES 1A+1B+1C)	TOTAL WATTS (FROM TABLES 1A+1B)
BUILDING TOTAL	3,288	658

LIGHTING COMPLIANCE SUMMARY — LTG-2

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

ACTUAL LIGHTING POWER

LUMINAIRE NAME	DESCRIPTION	NUMBER OF LUMINAIRES	WATTS PER LUMINAIRE (Including Ballast)	CEC DEFAULT Y	CEC DEFAULT N*	Total Watts
	(2) 13w Compact Fluorescent Twin 2 Pin	8	34.0	X		272
	3F032-T8 Elec	40	90.0		X	3,600

Subtotal from this Page	3,872
Building Total	3,872
Portable Lighting (From LTG-1)	658
Less Control Credit Watts (From LTG-3)	0
Adjusted Actual Watts	4,530

ALLOWED LIGHTING POWER (Choose One Method)

COMPLETE BUILDING METHOD

BUILDING CATEGORY (From Table 1-M)	WATTS PER SF	COMPLETE BLDG. AREA	ALLOWED WATTS

AREA CATEGORY METHOD

AREA CATEGORY (From Table 1-N)	WATTS PER SF	AREA (SF)	ALLOWED WATTS
Office	1.30	3,288	4,274
Corridor/Restroom/Support	0.60	324	194
PAGE TOTAL		3,612	4,469
BUILDING TOTAL		3,612	4,469
		AREA	WATTS

TAILORED METHOD

TOTAL ALLOWED WATTS (From LTG-4 or from computer run.)	

LIGHTING MANDATORY MEASURES — LTG-MM

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

DESCRIPTION	Designer	Enforcement
[X] § 131(d)1 For every floor, all interior lighting systems shall be equipped with a separate automatic control to shut off the lighting. This automatic control shall meet the requirements of Section 119 and may be an occupancy sensor, automatic time switch, or other device capable of automatically shutting off the lighting.		
[X] § 131(d)2 Override for Building Lighting Shut-off: The automatic building shut-off system is provided with a manual, accessible override switch in sight of the lights. The area of override is not to exceed 5,000 square feet.		
[X] § 119(h) Automatic Control Devices Certified: All automatic control devices specified are certified, all alternate equipment shall be certified and installed as directed by the manufacturer.		
[X] Fluorescent Ballast and Luminaires Certified: All fluorescent fixtures specified for the project are certified and listed in the Directory. All installed fixtures shall be certified.		
[X] § 132 Tandem Wiring for One and Three Lamp Fluorescent Fixtures: All one and three lamp fluorescent fixtures are tandem wired with two lamp ballasts where required by Standards Section 132; or all three lamp fluorescent fixtures are specified with electronic high-frequency ballasts and are exempt from tandem wiring requirements.		
[X] § 131(a) Individual Room/Area Controls: Each room and area in this building is equipped with a separate switch or occupancy sensor device for each area with floor-to-ceiling walls.		
[X] § 131(b) Uniform Reduction for Individual Rooms: All rooms and areas greater than 100 square feet and more than 0.8 watts per square foot of lighting load shall be controlled with bi-level switching for uniform reduction of lighting within the room.		
[X] § 131(c) Daylight Area Control: All rooms with windows and skylights that are greater than 250 square feet and that allow for the effective use of daylight in the area shall have 50% of the lamps in each daylit area controlled by a separate switch; or the effective use of daylight cannot be accomplished because the windows are continuously shaded by a building on the adjacent lot. Diagram of shading during different times of the year is included on plans.		
[X] § 131(f) Control of Exterior Lights: Exterior mounted fixtures served from the electrical panel inside the building are controlled with a directional photo cell control on the roof and a corresponding relay in the electrical panel.		
[ ] § 131(e) Display Lighting. Display lighting shall be separately switched on circuits that are 20 amps or less.		

CERTIFICATE OF COMPLIANCE

Part 1 of 2 **MECH-1**

PROJECT NAME: The Young Family Non-Residential		DATE: 7/28/2001
PROJECT ADDRESS: 1818 La Plaza Cotati		Building Permit #
PRINCIPAL DESIGNER - MECHANICAL: Avila Architects	TELEPHONE: (707) 585-3711	
DOCUMENTATION AUTHOR: Save Energy Consulting	TELEPHONE: (707) 838-8505	Checked by/Date Enforcement Agency Use

GENERAL INFORMATION

DATE OF PLANS	BUILDING CONDITIONED FLOOR AREA: 3,612 Sq.Ft.				CLIMATE ZONE: 2	
BUILDING TYPE	[X] NONRESIDENTIAL	[ ] HIGH RISE RESIDENTIAL		[ ] HOTEL/MOTEL GUEST ROOM		
PHASE OF CONSTRUCTION	[X] NEW CONSTRUCTION	[ ] ADDITION	[ ] ALTERATION	[ ] EXISTING + ADDITION		
METHOD OF MECHANICAL COMPLIANCE	[X] PRESCRIPTIVE	[ ] PERFORMANCE				
PROOF OF ENVELOPE COMPLIANCE	[ ] PREVIOUS ENVELOPE PERMIT	[ ] ENVELOPE COMPLIANCE ATTACHED				

STATEMENT OF COMPLIANCE

This Certificate of Compliance lists the building features and performance specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations. This certificate applies only to building mechanical requirements.

The documentation preparer hereby certifies that the documentation is accurate and complete.

DOCUMENTATION AUTHOR	SIGNATURE	DATE
Skeer		

The Principal Mechanical Designer hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application. The proposed building has been designed to meet the mechanical requirements contained in Sections 110 through115, 120 through 124, 140 through 142, 144 and 145.

Please check one:

- [ ] I hereby affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am licensed in the State of California as a civil engineer, or mechanical engineer or I am a licensed architect.
- [ ] I affirm that I am eligible under the exemption to Division 3 of the Business and Professions Code by Section 5537.2 or 6737.3 to sign this document as the person responsible for its preparation; and that I am a licensed contractor performing this work.
- [ ] I affirm that I am eligible under the exemption to Division 3 of the Business and Professions Code to sign this document because it pertains to a structure or type of work described pursuant to Business and Professions Code sections 5537, 5538, and 6737.1.

PRINCIPAL MECHANICAL DESIGNER - NAME	SIGNATURE	DATE	LIC. #
Avila Architects			

MECHANICAL MANDATORY MEASURES

Indicate location on plans of Note Block for Mandatory Measures

INSTRUCTIONS TO APPLICANT

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Manual published by the California Energy Commission.

MECH-1: Required on plans for all submittals. Parts 2 may be incorporated in schedules on plans.

MECH-2: Required for all submittals, but form does not have to be completed if location of mechanical equipment schedule is indicated on the form per Section 4.3.3.

MECH-3: Required for all submittals unless required outdoor ventilation rates and airflows are shown on plans per Section 4.3.4.

MECH-4: Required for Prescriptive submittals.

MECH-5: Optional. Performance use only for mechanical distribution summary.

CERTIFICATE OF COMPLIANCE

Part 2 of 2 **MECH-1**

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

SYSTEM FEATURES

SYSTEM NAME	MECHANICAL SYSTEMS			NOTE TO FIELD
	DHW Heater	Hvac System: Zone East	Hvac System: Zone Middle 1	
TIME CONTROL	n/a	Programmable Switch	Programmable Switch	
SETBACK CONTROL	n/a	Heating Required	Heating Required	
ISOLATION ZONES	n/a	n/a	n/a	
HEAT PUMP THERMOSTAT?	n/a	n/a	n/a	
ELECTRIC HEAT?	n/a	n/a	n/a	
FAN CONTROL	n/a	Constant Volume	Constant Volume	
VAV MINIMUM POSITION CONTROL?	n/a	No	No	
SIMULTANEOUS HEAT/COOL?	n/a	No	No	
HEATING SUPPLY RESET	n/a	Constant Temp	Constant Temp	
COOLING SUPPLY RESET	n/a	Constant Temp	Constant Temp	
HEAT REJECTION CONTROL	n/a	n/a	n/a	
VENTILATION	n/a	Air Balance	Air Balance	
OUTDOOR DAMPER CONTROL	n/a	Auto	Auto	
ECONOMIZER TYPE	n/a	No Economizer	No Economizer	
DESIGN AIR CFM (MECH-3, COLUMN I)	n/a	135 cfm	135 cfm	
HEATING EQUIPMENT TYPE	Electric Res	Gas Furnace	Gas Furnace	
HEATING EQUIPMENT EFFICIENCY	100%	81% AFUE	81% AFUE	
COOLING EQUIPMENT TYPE	20 Gal.Elect.WH	Packaged DX	Packaged DX	
COOLING EQUIPMENT EFFICIENCY	n/a	10.0 SEER / 8.8 EER	10.0 SEER / 8.8 EER	
MAKE AND MODEL NUMBER	n/a	CARRIER 48SS03004052	CARRIER 48SS03004052	
HEATING DUCT LOCATION / R-VALUE	n/a / n/a	Ducts in Attic / 4.2	Ducts in Attic / 4.2	
COOLING DUCT LOCATION / R-VALUE	n/a / n/a	Ducts in Attic / 4.2	Ducts in Attic / 4.2	
PIPE/DUCT INSULATION PROTECTED?	Yes	Yes	Yes	
PIPE TYPE (SUPPLY, RETURN, ETC.)	Supply HW			
PIPE INSULATION REQUIRED?	Yes	Yes	Yes	
VERIFIED SEALED DUCTS IN CEILING/ROOF SPACE	n/a	No	No	

CODE TABLES: Enter code from table below into columns above.

HEAT PUMP THERMOSTAT?	Y: Yes N: No
ELECTRIC HEAT?	
VAV MINIMUM POSITION CONTROL?	
SIMULTANEOUS HEAT / COOL?	
HEAT AND COOL SUPPLY RESET?	
HIGH EFFICIENCY?	
PIPE INSULATION REQUIRED?	
PIPE/DUCT INSULATION PROTECTED?	
SEALED DUCTS IN CEILING/ROOF SPACE?	

TIME CONTROL	SETBACK CTRL.	ISOLATION ZONES	FAN CONTROL
S: Prog. Switch O: Occupancy Sensor M: Manual Timer	H: Heating C: Cooling B: Both	Enter Number of Isolation Zones.	I: Inlet Vanes P: Variable Pitch V: VFD O: Other C: Curve

VENTILATION	OUTDOOR DAMPER	ECONOMIZER	O.A. CFM
B: Air Balance C: Outside Air Cert. M: Out. Air Measure D: Demand Control N: Natural	A: Auto G: Gravity	A: Air W: Water N: Not Required EC: Economizer Control See Section 144(e)3	Enter Outdoor Air CFM. Note: This shall be no less than Col. H on MECH-3.

NOTES TO FIELD - For Building Department Use Only

CERTIFICATE OF COMPLIANCE

Part 2 of 2 **MECH-1**

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

SYSTEM FEATURES

SYSTEM NAME	MECHANICAL SYSTEMS			NOTE TO FIELD
	Hvac System: Zone Middle 2	Hvac System: Zone West		
TIME CONTROL	Programmable Switch	Programmable Switch		
SETBACK CONTROL	Heating Required	Heating Required		
ISOLATION ZONES	n/a	n/a		
HEAT PUMP THERMOSTAT?	n/a	n/a		
ELECTRIC HEAT?	n/a	n/a		
FAN CONTROL	Constant Volume	Constant Volume		
VAV MINIMUM POSITION CONTROL?	No	No		
SIMULTANEOUS HEAT/COOL?	No	No		
HEATING SUPPLY RESET	Constant Temp	Constant Temp		
COOLING SUPPLY RESET	Constant Temp	Constant Temp		
HEAT REJECTION CONTROL	n/a	n/a		
VENTILATION	Air Balance	Air Balance		
OUTDOOR DAMPER CONTROL	Auto	Auto		
ECONOMIZER TYPE	No Economizer	No Economizer		
DESIGN AIR CFM (MECH-3, COLUMN I)	135 cfm	135 cfm		
HEATING EQUIPMENT TYPE	Gas Furnace	Gas Furnace		
HEATING EQUIPMENT EFFICIENCY	81% AFUE	81% AFUE		
COOLING EQUIPMENT TYPE	Packaged DX	Packaged DX		
COOLING EQUIPMENT EFFICIENCY	10.0 SEER / 8.8 EER	10.0 SEER / 8.8 EER		
MAKE AND MODEL NUMBER	CARRIER 48SS03004052	CARRIER 48SS03004052		
HEATING DUCT LOCATION / R-VALUE	Ducts in Attic / 4.2	Ducts in Attic / 4.2		
COOLING DUCT LOCATION / R-VALUE	Ducts in Attic / 4.2	Ducts in Attic / 4.2		
PIPE/DUCT INSULATION PROTECTED?	Yes	Yes		
PIPE TYPE (SUPPLY, RETURN, ETC.)				
PIPE INSULATION REQUIRED?	Yes	Yes		
VERIFIED SEALED DUCTS IN CEILING/ROOF SPACE	No	No		

CODE TABLES: Enter code from table below into columns above.

HEAT PUMP THERMOSTAT?	Y: Yes N: No
ELECTRIC HEAT?	
VAV MINIMUM POSITION CONTROL?	
SIMULTANEOUS HEAT / COOL?	
HEAT AND COOL SUPPLY RESET?	
HIGH EFFICIENCY?	
PIPE INSULATION REQUIRED?	
PIPE/DUCT INSULATION PROTECTED?	
SEALED DUCTS IN CEILING/ROOF SPACE?	

TIME CONTROL	SETBACK CTRL.	ISOLATION ZONES	FAN CONTROL
S: Prog. Switch O: Occupancy Sensor M: Manual Timer	H: Heating C: Cooling B: Both	Enter Number of Isolation Zones.	I: Inlet Vanes P: Variable Pitch V: VFD O: Other C: Curve

VENTILATION	OUTDOOR DAMPER	ECONOMIZER	O.A. CFM
B: Air Balance C: Outside Air Cert. M: Out. Air Measure D: Demand Control N: Natural	A: Auto G: Gravity	A: Air W: Water N: Not Required EC: Economizer Control See Section 144(e)3	Enter Outdoor Air CFM. Note: This shall be no less than Col. H on MECH-3.

NOTES TO FIELD - For Building Department Use Only

MECHANICAL EQUIPMENT SUMMARY

Part 1 of 2 **MECH-2**

PROJECT NAME: The Young Family Non-Residential

DATE: 7/28/2001

CHILLER AND TOWER SUMMARY

Equipment Name	Equipment Type	Qty.	Efficiency	Tons	PUMPS					
					Tot. Qty	GPM	BHP	Motor Eff.	Drive Eff.	Pump Control

DHW / BOILER SUMMARY

System Name	System Type	Distribution Type	Qty	Rated Input	Vol. (Gals.)	Energy Factor or Recovery Efficiency	Standby Loss or Pilot	TANK INSUL. Ext. R-Val.
20 Gal.Elect.WH	Storage Elec.	Standard	4	20,478	20	0.93	n/a	n/a

CENTRAL SYSTEM RATINGS

System Name	System Type	Qty.	HEATING			COOLING			
			Output	Aux. kW	Eff.	Output	Sensible	Efficiency	Economizer Type
CARRIER 48SS03004052	Packaged DX	4	32,400	0.0	81% AFUE	29,200	20,440	10.0 SEER / 8.8 EER	No Economizer

CENTRAL SYSTEM FAN SUMMARY

System Name	Fan Type	SUPPLY FAN					RETURN FAN			
		Motor Location	CFM	BHP	Motor Eff.	Drive Eff.	CFM	BHP	Motor Eff.	Drive Eff.
CARRIER 48SS03004052	Constant Volume	Blow-Through	1,000	0.33	77.0%	100.0%	none			

MECHANICAL EQUIPMENT SUMMARY

PROJECT NAME The Young Family Non-Residential

DATE 7/28/2001

ZONE TERMINAL SUMMARY

	VAV TERMINAL BOX					TERMINAL FAN				BASEBOARD	
				Reheat Coil							
Zone Name	System Type	Qty.	Min. CFM Ratio	Type	DeltaT	CFM	BHP	Motor Eff.	Drive Eff.	Type	Output

EXHAUST FAN SUMMARY

EXHAUST FAN					
Room Name	Qty.	CFM	BHP	Motor Eff.	Drive Eff.

EXHAUST FAN					
Room Name	Qty.	CFM	BHP	Motor Eff.	Drive Eff.

MECHANICAL VENTILATION

MECH-3

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

MECHANICAL VENTILATION

A	B	C	D	E	F	G	H	I	J	K
	AREA BASIS			OCCUPANCY BASIS						
ZONE/SYSTEM	COND. AREA (SF)	CFM PER SF	MIN. CFM (B x C)	NO. OF PEOPLE	CFM PER PERSON	MIN. CFM (ExF)	REQ'D O.A. (MAX OF D OR G)	DESIGN OUTDOOR AIR CFM	VAV MIN. RATIO	TRANS-FER AIR
Office East	822	0.15	123				123	123		
Corridor/Restrm East	81	0.15	12				12	12		
Hvac System: Zone East						Total	135	135		
Office Middle 1	822	0.15	123				123	123		
Corridor/RestrmMiddle1	81	0.15	12				12	12		
Hvac System: Zone Middle 1						Total	135	135		
Office Middle 2	822	0.15	123				123	123		
Corridor/RestrmMiddle2	81	0.15	12				12	12		
Hvac System: Zone Middle 2						Total	135	135		
Office West	822	0.15	123				123	123		
Corridor/Restrm West	81	0.15	12				12	12		
Hvac System: Zone West						Total	135	135		

C Minimum Ventilation Rate per Section 121, Table 1-F.
E Based on Expected Number of Occupants or at least 50% of Chapter 10 1997 UBC Occupant Density.
I Must be greater than or equal to H, or use Transfer Air. Design Outdoor Air includes ventilation from Supply Air System & Room Exhaust Fans.
K Must be greater than or equal to (H minus I), and, for VAV, greater than or equal to (H-J).

MECHANICAL SIZING AND FAN POWER — MECH-4

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001
SYSTEM NAME	**FLOOR AREA**
Hvac System: Zone East	903

NOTE: Provide one copy of this form for each mechanical system when using the Prescriptive Approach.

SIZING AND EQUIPMENT SELECTION

1. DESIGN CONDITIONS:		COOLING	HEATING
- OUTDOOR DRY BULB TEMPERATURE	(APPENDIX C)	96 °F	24 °F
- OUTDOOR WET BULB TEMPERATURE	(APPENDIX C)	69 °F	
- INDOOR, DRY BULB TEMPERATURE	SEE ASHRAE CHAPTER 8, 1993 OR APPENDIX B	74 °F	70 °F

2. SIZING:		COOLING	HEATING
- DESIGN OUTDOOR AIR	135 CFM (MECH 3; COLUMN I)	3,116	6,653
- ROOM LOADS		13,266	7,331
- RETURN VENTED LIGHTING		0	n/a
- RETURN AIR DUCTS		663	367
- RETURN FAN		0	0
- SUPPLY FAN		0	0
- SUPPLY DUCTS		663	367
	TOTALS	17,709	14,717
SAFETY / WARM-UP FACTOR		1.21	1.43
MAXIMUM ADJUSTED LOAD (TOTALS FROM ABOVE x SAFETY / WARM-UP FACTOR)		21,428	21,045

3. SELECTION:	COOLING	HEATING
INSTALLED EQUIPMENT CAPACITY (ADJUSTED FOR DESIGN CONDITIONS)	21,327 Btu / Hr	32,400 Btu / Hr
IF INSTALLED CAPACITY EXCEEDS MAXIMUM ADJUSTED LOAD, EXPLAIN		

FAN POWER CONSUMPTION

A	B	C	D	E	F	G
FAN DESCRIPTION	DESIGN BRAKE HP	EFFICIENCY MOTOR	EFFICIENCY DRIVE	NUMBER OF FANS	PEAK WATTS B x E x 746 / (C X D)	CFM (Supply Fans)
Supply Fan	0.333	77.0%	100.0%	1	323	1,000
TOTALS					323	1,000

NOTE: Include only fan systems exceeding 25 HP (see Section 144). Total Fan System Power Demand may not exceed 0.8 Watts/cfm for constant volume systems or 1.25 Watts/cfm for VAV systems.

TOTAL FAN SYSTEM POWER DEMAND WATTS / CFM: 0.323 (Col. F / Col. G)

MECHANICAL SIZING AND FAN POWER — MECH-4

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001
SYSTEM NAME	**FLOOR AREA**
Hvac System: Zone Middle 1	903

NOTE: Provide one copy of this form for each mechanical system when using the Prescriptive Approach.

SIZING AND EQUIPMENT SELECTION

1. DESIGN CONDITIONS:		COOLING	HEATING
- OUTDOOR DRY BULB TEMPERATURE	(APPENDIX C)	96 °F	24 °F
- OUTDOOR WET BULB TEMPERATURE	(APPENDIX C)	69 °F	
- INDOOR, DRY BULB TEMPERATURE	SEE ASHRAE CHAPTER 8, 1993 OR APPENDIX B	74 °F	70 °F

2. SIZING:		COOLING	HEATING
- DESIGN OUTDOOR AIR	135 CFM (MECH 3; COLUMN I)	3,119	6,670
- ROOM LOADS		12,794	4,857
- RETURN VENTED LIGHTING		0	n/a
- RETURN AIR DUCTS		640	243
- RETURN FAN		0	0
- SUPPLY FAN		0	0
- SUPPLY DUCTS		640	243
	TOTALS	17,193	12,012
SAFETY / WARM-UP FACTOR		1.21	1.43
MAXIMUM ADJUSTED LOAD (TOTALS FROM ABOVE x SAFETY / WARM-UP FACTOR)		20,803	17,178

3. SELECTION:	COOLING	HEATING
INSTALLED EQUIPMENT CAPACITY (ADJUSTED FOR DESIGN CONDITIONS)	21,314 Btu / Hr	32,400 Btu / Hr
IF INSTALLED CAPACITY EXCEEDS MAXIMUM ADJUSTED LOAD, EXPLAIN		

FAN POWER CONSUMPTION

A	B	C	D	E	F	G
FAN DESCRIPTION	DESIGN BRAKE HP	EFFICIENCY MOTOR	EFFICIENCY DRIVE	NUMBER OF FANS	PEAK WATTS B x E x 746 / (C X D)	CFM (Supply Fans)
Supply Fan	0.333	77.0%	100.0%	1	323	1,000
TOTALS					323	1,000

NOTE: Include only fan systems exceeding 25 HP (see Section 144). Total Fan System Power Demand may not exceed 0.8 Watts/cfm for constant volume systems or 1.25 Watts/cfm for VAV systems.

TOTAL FAN SYSTEM POWER DEMAND WATTS / CFM: 0.323 (Col. F / Col. G)

MECHANICAL SIZING AND FAN POWER — MECH-4

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001
SYSTEM NAME	**FLOOR AREA**
Hvac System: Zone Middle 2	903

NOTE: Provide one copy of this form for each mechanical system when using the Prescriptive Approach.

SIZING AND EQUIPMENT SELECTION

1. DESIGN CONDITIONS:		COOLING	HEATING
- OUTDOOR DRY BULB TEMPERATURE	(APPENDIX C)	96 °F	24 °F
- OUTDOOR WET BULB TEMPERATURE	(APPENDIX C)	69 °F	
- INDOOR, DRY BULB TEMPERATURE	SEE ASHRAE CHAPTER 8, 1993 OR APPENDIX B	74 °F	70 °F

2. SIZING:			
- DESIGN OUTDOOR AIR	135 CFM (MECH 3; COLUMN I)	3,119	6,670
- ROOM LOADS		12,794	4,857
- RETURN VENTED LIGHTING		0	n/a
- RETURN AIR DUCTS		640	243
- RETURN FAN		0	0
- SUPPLY FAN		0	0
- SUPPLY DUCTS		640	243
	TOTALS	17,193	12,012
SAFETY / WARM-UP FACTOR		1.21	1.43
MAXIMUM ADJUSTED LOAD (TOTALS FROM ABOVE x SAFETY / WARM-UP FACTOR)		20,803	17,178

3. SELECTION:		
INSTALLED EQUIPMENT CAPACITY (ADJUSTED FOR DESIGN CONDITIONS)	21,314 Btu / Hr	32,400 Btu / Hr
IF INSTALLED CAPACITY EXCEEDS MAXIMUM ADJUSTED LOAD, EXPLAIN		

FAN POWER CONSUMPTION

A	B	C	D	E	F	G
FAN DESCRIPTION	DESIGN BRAKE HP	EFFICIENCY MOTOR	EFFICIENCY DRIVE	NUMBER OF FANS	PEAK WATTS B x E x 746 / (C X D)	CFM (Supply Fans)
Supply Fan	0.333	77.0%	100.0%	1	323	1,000
TOTALS					323	1,000

NOTE: Include only fan systems exceeding 25 HP (see Section 144). Total Fan System Power Demand may not exceed 0.8 Watts/cfm for constant volume systems or 1.25 Watts/cfm for VAV systems.

TOTAL FAN SYSTEM POWER DEMAND WATTS / CFM: 0.323 (Col. F / Col. G)

MECHANICAL SIZING AND FAN POWER — MECH-4

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001
SYSTEM NAME	**FLOOR AREA**
Hvac System: Zone West	903

NOTE: Provide one copy of this form for each mechanical system when using the Prescriptive Approach.

SIZING AND EQUIPMENT SELECTION

1. DESIGN CONDITIONS:		COOLING	HEATING
- OUTDOOR DRY BULB TEMPERATURE	(APPENDIX C)	96 °F	24 °F
- OUTDOOR WET BULB TEMPERATURE	(APPENDIX C)	69 °F	
- INDOOR, DRY BULB TEMPERATURE	SEE ASHRAE CHAPTER 8, 1993 OR APPENDIX B	74 °F	70 °F

2. SIZING:		COOLING	HEATING
- DESIGN OUTDOOR AIR	135 CFM (MECH 3; COLUMN I)	3,114	6,653
- ROOM LOADS		13,585	7,331
- RETURN VENTED LIGHTING		0	n/a
- RETURN AIR DUCTS		679	367
- RETURN FAN		0	0
- SUPPLY FAN		0	0
- SUPPLY DUCTS		679	367
TOTALS		18,058	14,717
SAFETY / WARM-UP FACTOR		1.21	1.43
MAXIMUM ADJUSTED LOAD (TOTALS FROM ABOVE x SAFETY / WARM-UP FACTOR)		21,850	21,045

3. SELECTION:	COOLING	HEATING
INSTALLED EQUIPMENT CAPACITY (ADJUSTED FOR DESIGN CONDITIONS)	21,335 Btu / Hr	32,400 Btu / Hr
IF INSTALLED CAPACITY EXCEEDS MAXIMUM ADJUSTED LOAD, EXPLAIN		

FAN POWER CONSUMPTION

A	B	C	D	E	F	G
FAN DESCRIPTION	DESIGN BRAKE HP	EFFICIENCY MOTOR	EFFICIENCY DRIVE	NUMBER OF FANS	PEAK WATTS B x E x 746 / (C X D)	CFM (Supply Fans)
Supply Fan	0.333	77.0%	100.0%	1	323	1,000
TOTALS					323	1,000

NOTE: Include only fan systems exceeding 25 HP (see Section 144). Total Fan System Power Demand may not exceed 0.8 Watts/cfm for constant volume systems or 1.25 Watts/cfm for VAV systems.

TOTAL FAN SYSTEM POWER DEMAND WATTS / CFM: 0.323 (Col. F / Col. G)

MECHANICAL MANDATORY MEASURES Part 1 of 2 MECH-MM

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

		DESCRIPTION	Designer	Enforcement
		Equipment and Systems Efficiencies		
[X]	§ 111	Any appliance for which there is a California standard established in the Appliance Efficiency Regulations will comply with the applicable standard.		
[X]	§ 115(a)	Fan type central furnaces shall not have a pilot light.		
[X]	§ 123	Piping, except that conveying fluids at temperatures between 60 and 105 degrees Fahrenheit, or within HVAC equipment, shall be insulated in accordance with Standards Section 123.		
[X]	§ 124	Air handling duct systems shall be installed and insulated in compliance with Sections 601, 603 and 604 of the Uniform Mechanical Code.		
		Controls		
	§ 122(e)	Each space conditioning system shall be installed with one of the following:		
[X]	§ 122(e)1A	Each space conditioning system serving building types such as offices and manufacturing facilities (and all others not explicitly exempt from the requirements of Section 112 (d)) shall be installed with an automatic time switch with an accessible manual override that allows operation of the system during off-hours for up to 4 hours. The time switch shall be capable of programming different schedules for weekdays and weekends; incorporate an automatic holiday "shut-off" feature that turns off all loads for at least 24 hours, then resumes the normally scheduled operation; and has program backup capabilities that prevent the loss of the device's program and time setting for at least 10 hours if power is interrupted; or		
[ ]	§ 122(e)1B	An occupancy sensor to control the operating period of the system; or		
[ ]	§ 122(e)1C	A 4-hour timer that can be manually operated to control the operating period of the system.		
[X]	§ 122(e)2	Each space conditioning system shall be installed with controls that temporarily restart and temporarily operate the system as required to maintain a setback heating and/or a setup cooling thermostat setpoint.		
[ ]	§ 122(g)	Each space conditioning system serving multiple zones with a combined conditioned floor area more than 25,000 square feet shall be provided with isolation zones. Each zone: shall not exceed 25,000 square feet; shall be provided with isolation devices, such as valves or dampers, that allow the supply of heating or cooling to be setback or shut off independently of other isolation areas; and shall be controlled by a time control device as described above.		
[X]	§ 122(a&b)	Each space conditioning system shall be controlled by an individual thermostat that responds to temperature within the zone. Where used to control heating, the control shall be adjustable down to 55 degrees F or lower. For cooling, the control shall be adjustable up to 85 degrees F or higher. Where used for both heating and cooling, the control shall be capable of providing a deadband of at least 5 degrees F within which the supply of heating and cooling is shut off or reduced to a minimum.		
[X]	§ 122(c)	Thermostats shall have numeric setpoints in degrees Fahrenheit (F) and adjustable setpoint stops accessible only to authorized personnel.		
[ ]	§ 112(b)	Heat pumps shall be installed with controls to prevent electric resistance supplementary heater operation when the heating load can be met by the heat pump alone.		

MECHANICAL MANDATORY MEASURES

Part 2 of 2 **MECH-MM**

PROJECT NAME	DATE
The Young Family Non-Residential	7/28/2001

		Description	Designer	Enforcement
Ventilation				
[X]	§ 121(e)	Controls shall be provided to allow outside air dampers or devices to be operated at the ventilation rates as specified on these plans.		
[X]	§ 122(f)	Gravity or automatic dampers interlocked and closed on fan shutdown shall be provided on the outside air intakes and discharges of all space conditioning and exhaust systems.		
[X]	§ 122(f)	All gravity ventilating systems shall be provided with automatic or readily accessible manually operated dampers in all openings to the outside, except for combustion air openings.		
[ ]	§ 121(f)1	Air Balancing: The system shall be balanced in accordance with the National Environmental Balancing Bureau (NEBB) Procedural Standards (1983), or Associated Air Balance Council (AABC) National Standards (1989); or		
[X]	§ 121(f)2	Outside Air Certification: The system shall provide the minimum outside air as shown on the mechanical drawings, and shall be measured and certified by the installing licensed C-20 mechanical contractor and certified by (1) the design mechanical engineer, (2) the installing licenced C-20 mechanical contractor, or (3) the person with overall responsibility for the design of the ventilation system; or		
[ ]	§ 121(f)3	Outside Air Measurement: The system shall be equipped with a calibrated local or remote device capable of measuring the quantity of outside air on a continuous basis and displaying that quantity on a readily accessible display divice; or		
[ ]	§ 121(f)4	Another method approved by the Commission.		
Service Water Heating Systems				
[X]	§ 113(b)2	If a circulating hot water system is installed, it shall have a control capable of automatically turning off the circulating pump(s) when hot water is not required.		
[X]	§ 113(b)3B	Lavatories in restrooms of public facilities shall be equipped with controls to limit the outlet temperature to 110 degrees F.		
[X]	§ 113(b)3C	Lavatories in restrooms of public facilities shall be equipped with one of the following: Outlet devices that limit the flow of hot water to a maximum of 0.5 gallons per minute. Foot actuated control valves, and outlet devices that limit the flow of hot water to a maximum of 0.75 gallons per minute. Proximity sensor actuated control valves, and outlet devices that limit the flow of hot water to a maximum of 0.75 gallons per minute. Self-closing valves, and outlet devices that limit the flow of hot water to a maximum of 2.5 gallons per minute, and 0.25 gallons/cycle (circulating system). Self-closing valves, and outlet devices that limit the flow of hot water to a maximum of 2.5 gallons per minute, and 0.50 gallons/cycle (non-circulating system). Self-closing valves, and outlet devices that limit the flow of hot water to a maximum of 2.5 gallons per minute, and 0.75 gallons/cycle (foot switches and proximity sensor controls).		

MKM & Associates
structural engineering
441 College Avenue • Santa Rosa, CA 95401• (707)578-8185 • Fax:(707)578-7153

YOUNG OFFICE BUILDING
1818 LaPlaza
Cotati, CA.

Job #	012045	
Date	6/21/01	
PE	JK	PM JK
1	of	14

Avila job# 00101

21146

DESIGN CRITERIA

UNIFORM BUILDING CODE 1997 EDITION

VERTICAL LOADS

		Dead		Live	
Roof	(comp)	14	psf	16	psf
Roof	( )		psf		psf
Floor	(1/2 gyp on wood)	30	psf	40	psf
Floor	( )		psf		psf
Deck	( )		psf		psf
Exterior Walls	(wood)	15	psf		
Exterior Walls	(stucco)	20	psf		
Interior Walls	(gyp)	10	psf		

LATERAL LOADS

Wind: Speed - 80 mph Exposure 'B'

Design pressure @ 0-15' = 13.2 psf (lower level)

Design pressure @ 15-30' = 15.4 psf (upper level)

Earthquake: Seismic Zone 4 Fault Distance 7.5 km

Soil Profile Sd Seismic Source Type A

$V = \frac{3.0\, C_a N_a W}{1.4\, R}$ C_a = .44 N_a = 1.1

R = 5.5 (Wood Shear Wall)

V = 0.19 W

SOIL REPORT

Soil Engineer: PJC & Assoc.

Title: Proposed Commercial/Residential Building
1818 LaPlaza

File #: ~~887.01~~

Dated: ~~9/11/01~~

2000 psf dead + live.
12" wide x 12" deep.

REGISTERED PROFESSIONAL ENGINEER
JEFFREY P. KENNEDY
No. SE 2538
Exp. 8-31-2004
STRUCTURAL
STATE OF CALIFORNIA

MKM & Associates
structural engineering
441 College Avenue • Santa Rosa, CA 95401• (707)573-8185 • Fax:(707)578-7153

MOMENT AND SHEAR CAPACITIES

Job # 012045
Date 02/97
PE MKM | 2 of

DOUGLAS FIR LARCH		A	MOMENT CAPACITY ('#)			SHEAR CAPACITY (#)		
		S						
SIZE	GRADE	I	1.00	1.15	1.25	1.00	1.15	1.25
4X6	NO. 1	19.25	1912	2198	2390	1219	1402	1524
	----------	17.65	----------	----------	----------	----------	----------	----------
	NO. 2	48.53	1673	1924	2091	1219	1402	1524
4x8	NO. 1	25.38	3322	3820	4152	1607	1848	2009
	----------	30.66	----------	----------	----------	----------	----------	----------
	NO. 2	111.15	2906	3342	3633	1607	1848	2009
4x10	NO. 1	32.38	4991	5740	6239	2050	2358	2563
	----------	49.91	----------	----------	----------	----------	----------	----------
	NO. 2	230.84	4367	5022	5459	2050	2358	2563
4x12	NO. 1	39.38	6768	7783	8459	2494	2868	3117
	----------	73.83	----------	----------	----------	----------	----------	----------
	NO. 2	415.28	5922	6810	7402	2494	2868	3117
4x14	NO. 1	46.38	8534	9814	10668	2937	3378	3671
	----------	102.41	----------	----------	----------	----------	----------	----------
	NO. 2	678.48	7468	8588	9334	2937	3378	3671
6x6	S. S.	30.25	3466	3986	4333	1714	1971	2143
	----------	27.73	----------	----------	----------	----------	----------	----------
	NO. 1	76.26	2773	3189	3466	1714	1971	2143
6x8	S. S.	41.25	6445	7412	8057	2338	2688	2922
	----------	51.56	----------	----------	----------	----------	----------	----------
	NO. 1	193.36	5156	5930	6445	2338	2688	2922
6x10	S. S.	52.25	11031	12685	13788	2961	3405	3701
	----------	82.73	----------	----------	----------	----------	----------	----------
	NO. 1	392.96	9307	10703	11634	2961	3405	3701
6x12	S. S.	63.25	16164	18588	20205	3584	4122	4480
	----------	121.23	----------	----------	----------	----------	----------	----------
	NO. 1	697.07	13638	15684	17048	3584	4122	4480
6x14	S. S.	74.25	21985	25283	27482	4208	4839	5259
	----------	167.06	----------	----------	----------	----------	----------	----------
	NO. 1	1127.67	18550	21333	23188	4208	4839	5259
6x16	S. S.	85.25	28541	32822	35676	4831	5555	6039
	----------	220.23	----------	----------	----------	----------	----------	----------
	NO. 1	1706.78	24081	27693	30101	4831	5555	6039

STRESSES (psi):

	4x #1:	4x #2:	6x6 & 6x8 S.S.:	6x6 & 6x8 #1:	6x10 to 6x16 S.S.:	6x10 to 6x16 #1:
Fb:	1000	875	1500	1200	1600	1350
Fv:	95	95	85	85	85	85

SIZE FACTOR FOR 4x's:

4x6, 4x8:	4x10:	4x12:	4x14:
1.3	1.2	1.1	1.0

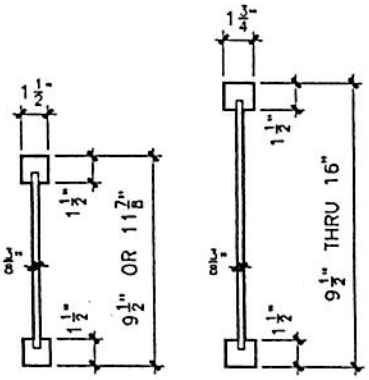
SIZE FACTOR FOR 6x's: Cf = (12/d)^(1/9) <= 1

MKM & Associates
structural engineering
441 College Avenue • Santa Rosa, CA 95401• (707)578-8185 • Fax:(707)578-7153

Job #	012045
Date	08/99
PE MKM	3 of

"I" JOIST DESIGN PROPERTIES

Depth (in)	Manufacturer	EI * $(10)^6$	K *	Max vertical shear & end reaction (lbs) 100%	125%	Interior reaction (lbs) Max	Maximum resistive moment (ft-lbs) 100%	125%
9-1/2	SJ-15, CTR150, TJI150	160	4.5	945	1181	1895	2730	3413
11-7/8	SJ-15, CTR150, TJI150	276	4.5	945	1181	1895	3620	4545
9-1/2	SJ-25, CTR250, TJI250	185	4.5	1015	1269	2030	3210	4013
11-7/8	SJ-25, CTR250, TJI250	319	4.5	1015	1269	2030	4260	5325
14	SJ-25, CTR250, TJI250	474	4.5	1015	1269	2030	5210	6513
16	SJ-25, CTR250, TJI250	653	4.5	1015	1269	2030	6075	7594



- * The following formula approximates the uniform load deflection of Δ (inches)
  $\Delta = 22.5wl^4/EI + 12WL^2/KdX10^5$
  w = uniform load in pounds per lineal foot EI = value from table
  l = clear span in feet k = value from table
- The shear values above are based on an assumed minimum bearing length of 1-3/4".
- See manufacturers ICBO report for additional design information.

REFERENCES:
Georgia Pacific #NER 475 (11/1/98)
Louisiana Pacific #PFC 3754 (4/1/99)
Trus Joist MacMillan #NER-200 (8/1/98)

LAMINATE VENEER LUMBER DESIGN PROPERTIES

SIZE	Max. Vertical Shear (lbs) 100%	125%	Max. Resistive Moment (ft-lbs) 100%	125%	Moment of Inertia (in^4)
1-3/4 X 7-1/4	2410	3013	3322	4152	55
1-3/4 X 9-1/2	3159	3948	5703	7129	125
1-3/4 X 11-7/8	3948	4936	8911	11139	245
1-3/4 X 14	4655	5819	12,116	15145	400
1-3/4 X 16	5320	6650	15,527	19408	595
1-3/4 X 18	5985	7481	19,323	24153	850

- Values for depths greater than 12" have been multiplied by [12/d]1/7
- See manufacturers ICBO report for additional design information.
- Assumes continuous lateral support of top of beam simple span applications.
- See manufacturers information

ALLOWABLE DESIGN STRESSES

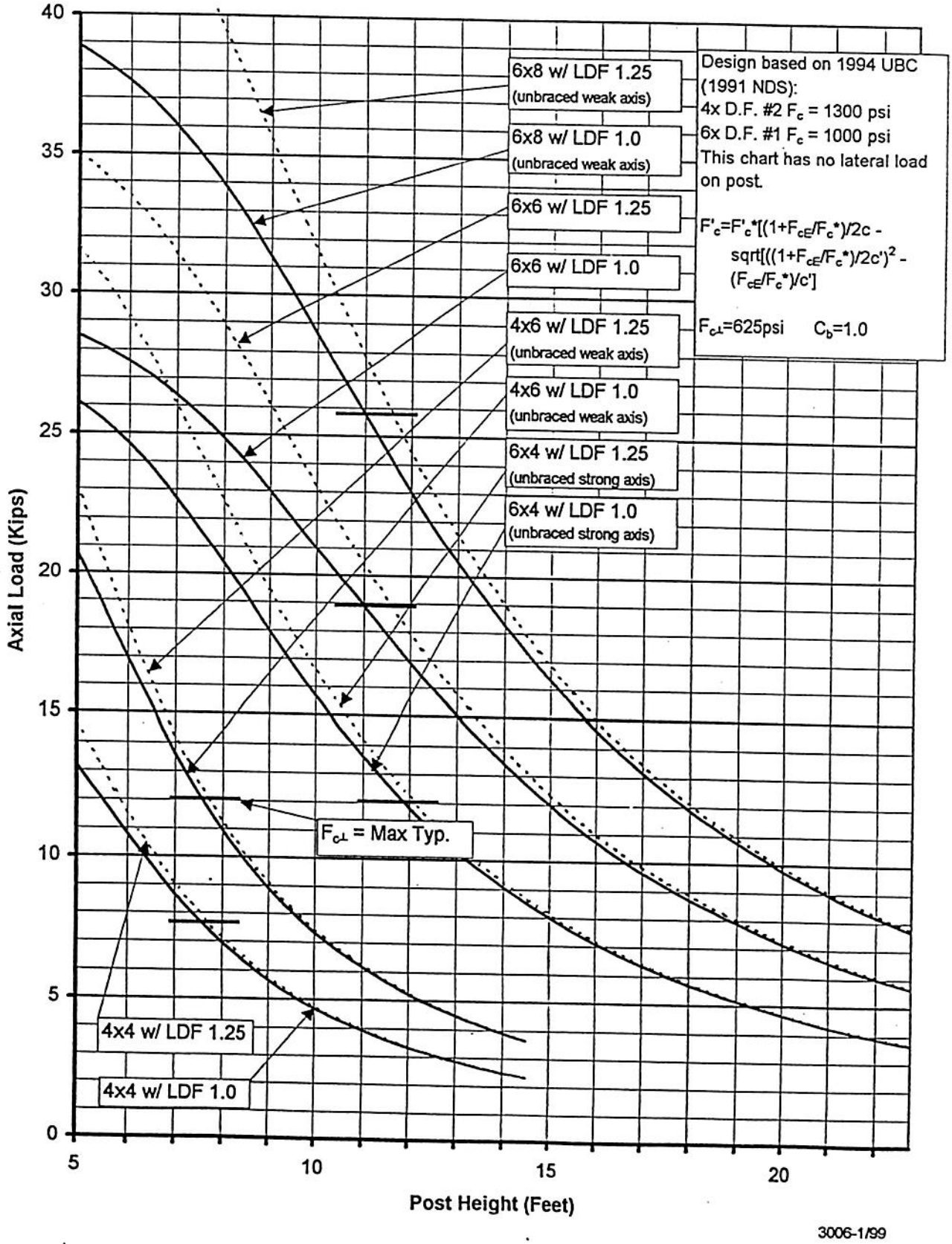
Modulus of elasticity	E	=	1.8×10^6 psi
Flexural stress	Fb	=	2600 psi
Tension parallel to grain	F_t	=	1750 psi
Compression parallel to grain	F_{cll}	=	2150 psi
Horizontal shear perpendicular to glue line	F_v	=	285 psi

REFERENCES:
Georgia Pacific #NER-472 (10/1/98)
Louisiana Pacific #PFC 5004 (4/1/99)
Trus Joist MacMillan #NER 481 (3/1/99)

MKM & Associates
structural engineering
441 College Avenue • Santa Rosa, CA 95401 • (707)578-8185 • Fax:(707)578-7153

Post Capacity Chart (Unbraced in One Direction)

Job #	012045
Date	1/99
PE MKM	4 of



MKM & Associates
structural engineering

Job # 012045	
Date 6/21/01	
PE JK	5 of

Upper Floor Framing.

- beam @ edge of floor above - span 25' [B1]

$W = \underset{\text{deck}}{30} + 40(3.0) + \underset{\text{roof}}{30(10.5)} + \underset{\text{wall}}{15(8)} = 885$ plf.

$R = 885\left(\frac{25}{2}\right) = 11{,}063\#$.

post: 4-x10 or 6x6

$M = \frac{885(25)^2}{8} = 69{,}141'\text{-}\#$.

$S_{req} = \frac{69{,}141(12)}{2400(1.25)} = 277\ in^3$

$6\frac{3}{4}'' \times 19\frac{1}{2}''$ GLB w/3200' camber

or

$6\frac{3}{4} \times 18''$ GLB w/ 1" camber.

$\Delta_{DL} = \frac{5(469)(25)^4 1728}{384\ 1.8\times10^6\ 471} = .55''$

end pad.

$b = \sqrt{\frac{11{,}063}{2000}} = 2.4'$

30" x 30" pad.

center pad

$b = \sqrt{\frac{11{,}063(2)}{2000}} = 3.3'$

42" x 42" pad.

MKM & Associates
structural engineering

Job #	012045
Date	6/21/01
PE JK	6 of

· beam @ edge of floor above - span 14½' B2

W = 885 plf. V = 6416#. Post: 4x6

M = 23,259 l-#. 24" x 24" pad.

$S_{req} = \frac{23,259(12)}{2400} = 116 in^3$ 3⅛ x 18 GLB.

or 3½ x 18 parallam.

@ center post.

P = 6416(2) = 12,832#

$b = \sqrt{\frac{12,832}{2000}} = 2.53$ use 36" x 36" pad

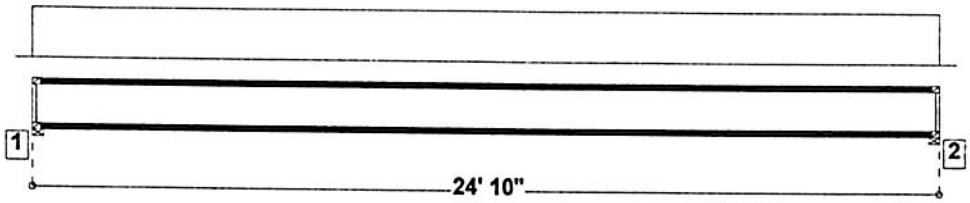
3120+5

7

18" TJI®/L90 JOIST @ 16.0" o/c

TJ-Beam™ v5.55 Serial Number: 700100289
BEAMUSA 1001 06/22/2001 8:46:25 AM
Page 1 of 1 Build Code: 146

THIS PRODUCT MEETS OR EXCEEDS THE SET DESIGN CONTROLS FOR THE APPLICATION AND LOADS LISTED



Product Diagram is Conceptual.

LOADS:

Analysis for Joist Member Supporting FLOOR - RES. Application. Loads(psf): 40 Live at 100% duration; 30 Dead; 0 Partition

SUPPORTS:

		INPUT WIDTH	BEARING LENGTH	REACTIONS(lbs.) LIVE/DEAD/TOT.	PLY	DEPTH	DETAIL	OTHER
1	2x4 Plate	3.50"	3.5"	662 / 497 / 1159	1	18.0"		TJI® Blocking Panel
2	2x4 Plate	3.50"	3.5"	662 / 497 / 1159	1	18.0"		TJI® Blocking Panel

DESIGN CONTROLS:

	MAXIMUM	DESIGN	CONTROL	CONTROL	LOCATION
Shear(lb)	1139	1132	2535	Passed(45%)	Lt. end Span 1 under Floor loading
Reaction(lb)	1139	1139	1885	Passed(60%)	Bearing 1 under Floor loading
Moment(ft-lb)	6955	6955	14227	Passed(49%)	MID Span 1 under Floor loading
Live Defl.(in)		0.280	0.610	Passed(L/999+)	MID Span 1 under Floor loading
Total Defl.(in)		0.489	1.221	Passed(L/599)	MID Span 1 under Floor loading

- Allowable moment was increased for repetitive member usage.
- Deflection Criteria: STANDARD(LL: L/480, TL:L/240).
- Deflection analysis is based on composite action with single layer of the appropriate span-rated, GLUED & NAILED wood decking.
- Bracing(Lu): All compression edges (top and bottom) must be braced at 2' 8" o/c unless detailed otherwise. Proper attachment and positioning of lateral bracing is required to achieve member stability.

ADDITIONAL NOTES:

- IMPORTANT! The analysis presented is output from software developed by Trus Joist (TJ). TJ warrants the sizing of its products by this software will be accomplished in accordance with TJ product design criteria and code accepted design values. The specific product application, input design loads, and stated dimensions have been provided by the software user. This output has not been reviewed by a TJ Associate.
- Not all products are readily available. Check with your supplier or TJ technical representative for product availability.
- THIS ANALYSIS FOR TRUS JOIST PRODUCTS ONLY! PRODUCT SUBSTITUTION VOIDS THIS ANALYSIS.
- Allowable Stress Design methodology was used for Code NER analyzing the TJ Commercial product listed above.

PROJECT INFORMATION

No Project Information available

OPERATOR INFORMATION:

MKM & Associates
Roger Blais
441 College Ave
Santa Rosa, CA 95401
707-578-8185
707-578-7153

MKM & Associates
structural engineering
441 College Avenue • Santa Rosa, CA 95401• (707)578-8185 • Fax:(707)578-7153

Job # 012045
Date 07/99
PE MKM
8 of

SHEAR WALL CAPACITY GUIDE

Type	Sheathing/Nailing	Allowable Shear
A6	3/8" or 15/32" / 8d at 6" o.c	260 plf
A4	3/8" or 15/32" / 8d at 4" o.c.	350 plf
A3	3/8" or 15/32" / 8d at 3" o.c. *Note 11	490 plf
A2	3/8" or 15/32" / 8d at 2" o.c. *Note 11	600 plf
A3 / A3	3/8" or 15/32" each side / 8d at 3" o.c. *Notes 11 & 12	980 plf
B6	15/32" / 10d at 6" o.c.	310 plf
B4	15/32" / 10d at 4" o.c. *Note 11	460 plf
B3	15/32" / 10d at 3" o.c. *Note 11	600 plf
B2	15/32" / 10d at 2" o.c. *Notes 11 & 12	770 plf
B3 / B3	15/32" each side / 10d at 3" o.c. *Notes 11 & 12	1200 plf
T6	303 siding / 8d at 6" o.c.	180 plf
T3	303 siding / 8d at 3" o.c.	350 plf
G7	1/2" gypboard / 5d at 7" (cooler or wallboard nails) *Note 13	
	Wind	100 plf
	Earthquake	50 plf

***Special Notes**

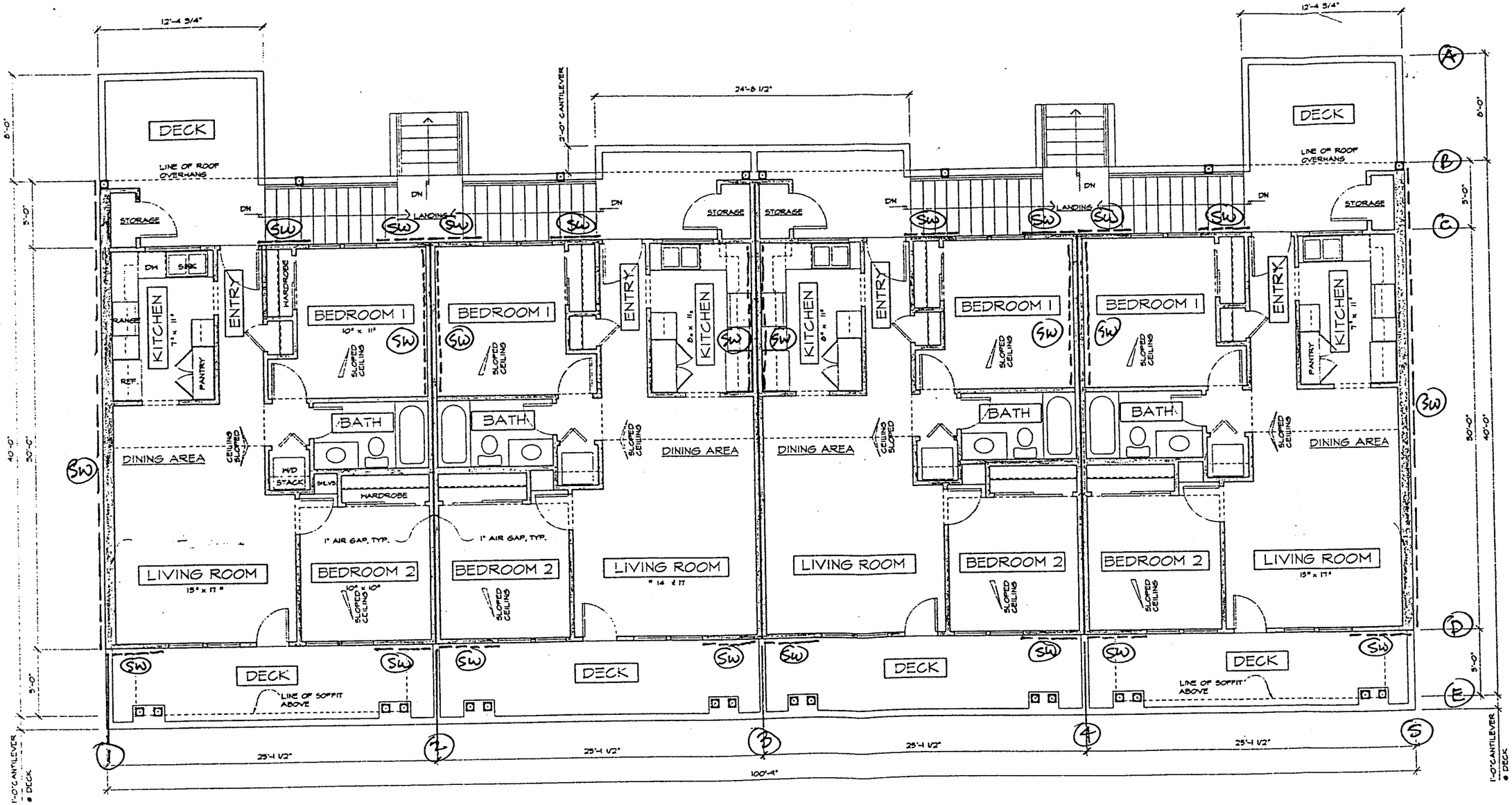
11. Use 3x minimum studs or blocking at sheathing joints. Stagger nails at sheathing edges typical.
12. Provide 3x minimum mudsill.
13. Nailing applies to all studs, top & bottom plates and blocking. Provide blocking at joints when height to length ratio exceeds 1.5:1.
    Use 5d cooler or gypsum board nails at 1/2" gypsum board. Increase nail size to 6d at 5/8" gypsum board.

Note: For A2, A3, B3, & B4 decrease all bolt values by 50% or specify special note 12.

Anchor Bolt	Sill Plate	Parallel Bolt Value/+33%	Anchor Bolt Spacing (PLF) 16"	24"	32"	4'-0"	5'-4"	6'-0"
1/2"	2X	620/825	618	412	309	206	155	137
	3X	730/971	728	485	364	243	182	162
	4X	730/971	728	485	364	243	182	162
5/8"	2X	890/1184	888	592	444	296	222	197
	3X	1140/1516	1137	758	569	379	284	253
	4X	1140/1516	1137	758	569	379	284	253
3/4"	2X	1220/1623	1217	811	608	406	304	270
	3X	1480/1968	1476	984	738	492	369	328
	4X	1640/2181	1636	1091	818	545	409	364

MKM & Associates
structural engineering
441 College Avenue • Santa Rosa, CA 95401 • (707)578-8185 • Fax:(707)578-7153

Job #	012045
Date	6/21/01
PE JK	9 of

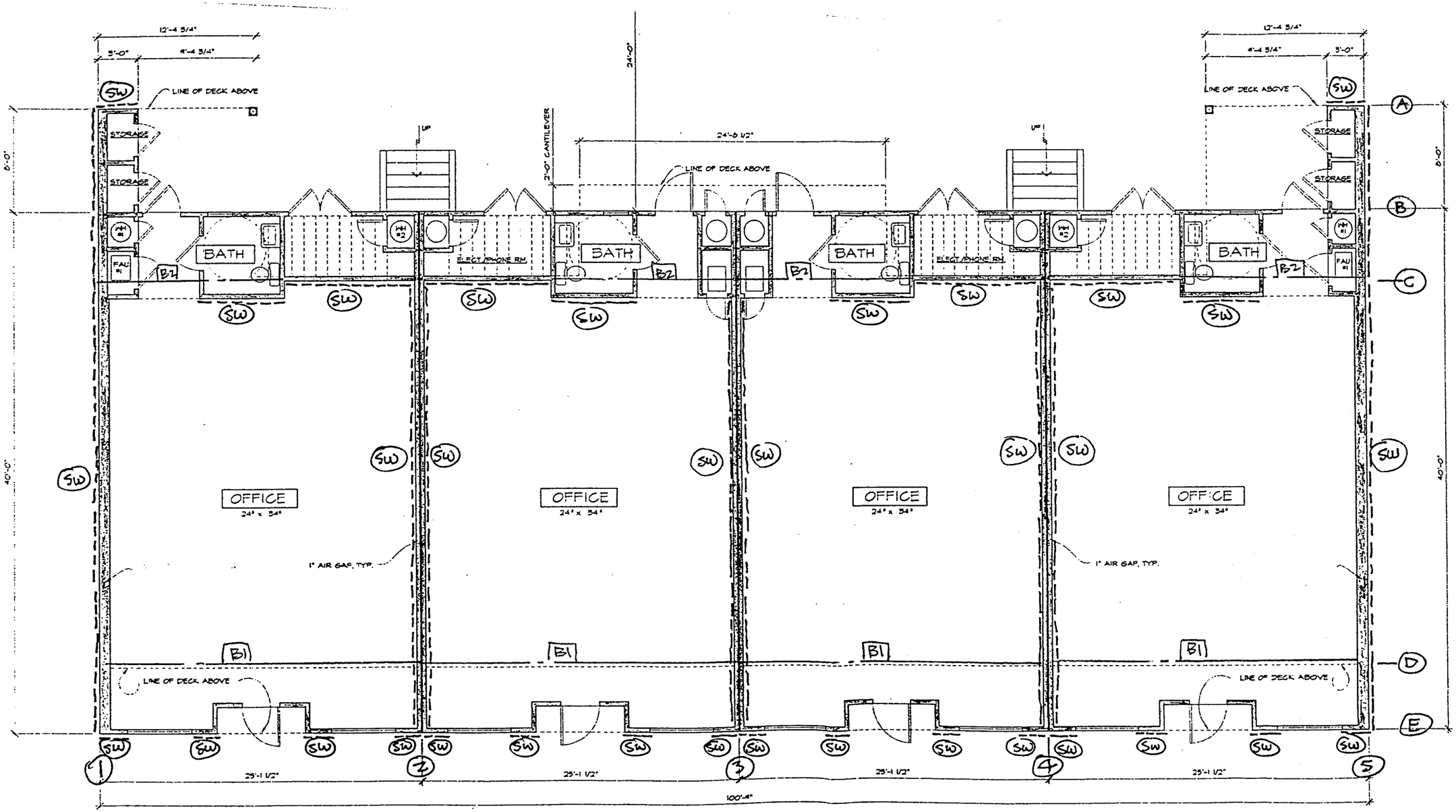


UPPER FLOOR PLAN 754 SQ. FT. PER UNIT

SCALE: 1/4"=1'-0"

MKM & Associates
structural engineering
441 College Avenue • Santa Rosa, CA 95401 • (707)578-8185 • Fax:(707)578-7153

Job #	012045
Date	6/21/01
PE JK	10 of



LOWER FLOOR PLAN 822 SQ. FT. PER UNIT
SCALE: 1/4"=1'-0"

MKM & Associates
structural engineering

Job #	01245
Date	6/21/01
PE JK	11 of

Lateral Design:

. upper level

line ⓒ = line Ⓓ

$F_Q = .19\left[23\,(22)(61)\right] = \underline{5865^{\#}}$

$F_W = 15.4\,(12)(23) = 4250^{\#}$

line ① = line ⑤

$F_W = 15.4\,(12.5)\,\frac{25}{2} = 2406^{\#}$

$F_Q = .19\left[(12.5)(45)\,23\right] = \underline{2458^{\#}}$

line ② = line ③ = line ④

$F_Q = 2458(2) = \underline{4916^{\#}}$

diaphragm

$V_{mx} = \frac{2458}{30} = 82$ plf.

½" APA 8d @ 6" unblocked.

chord

$C = \frac{4916(25)}{8(30)} = 512^{\#}$

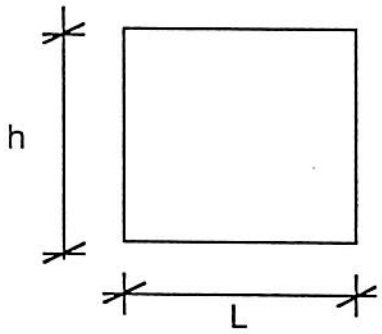
typ plate splice ok.

MKM & Associates
structural engineering
441 College Avenue • Santa Rosa, CA 95401• (707)578-8185 • Fax:(707)578-7153

Job #	012045
Date	6/21/01
PE JK	12 of

SHEAR WALL DESIGN

W_{DL} (dead load only)



V = lateral load
L_t = total length of shear walls
v = shear stress = V/L_t
L_{min} = shortest shear wall length
S.W. = shear wall
P_{up} = uplift force at ends
[vh-2/3W_{DL} (L_{min}/2)]

Location or grid	V (lbs) (plf) v	L_t (ft)	L_1, L_2,... (ft)	S.W. Type	h (ft)	W_{DL} (plf)	P_{up} (lbs)	HOLDOWN A.B.'s	Comments
upper level. (D)	5865 / 163	36	4,5 x 8	(A6)	8'	304	848#	strap / —	
(C)	5865 / 183	32	4x8	(A6)	8'	304	1059#	strap. / —	
(1) (5)	2458 / 72	34	34	(A6) over 5/8 gyp	10'	128	0	none / —	
(2) (3) (4)	4916 / 223	22	11,11	(A6)	10'	108	1834#	strap or HTT22 / —	

MKM & Associates
structural engineering

Job #	012045	
Date	6/21/01	
PE JK	13 of	

• lower level.

line (A)

$F_w = 13.2(9) = 832^{\#}$

Simpson SW24x10 strongwall panel. good for 1590#

line (C)

$F_\varphi = 5865 + .19\left[45\left(22\overset{19,203}{(101)} + 12(2)\right)\right] = 25,068^{\#}$

line (E)

$F_\varphi = 5865 + .19\left[45\overset{15,544}{(18(101)}\right] = 21,409^{\#}$

16 - simpson SW24x10
good for $1590(16) = 25,440^{\#}$.

line (1) = line (5)

$F_\varphi = 2458 + .19\left[45\overset{5134}{(41(12.5) + 11(8)}\right] = 7592^{\#}$.

line (2) = line (3) = line (4)

$F_\varphi = 4916 + .19\left[45(41)25\right] = 13,680^{\#}$

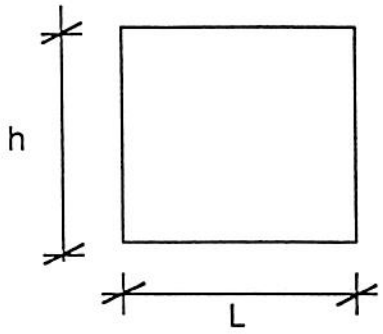
diaphragm & chord OK by observation.

MKM & Associates
structural engineering
441 College Avenue • Santa Rosa, CA 95401• (707)578-8185 • Fax:(707)578-7153

Job #	012045
Date	6/21/01
PE VK	14 of 14

SHEAR WALL DESIGN

W_{DL} (dead load only)



V = lateral load
L_t = total length of shear walls
v = shear stress = V/L_t
L_{min} = shortest shear wall length
S.W. = shear wall
P_{up} = uplift force at ends
[vh-2/3W_{DL} (L_{min}/2)]

Location or grid	V (lbs) (plf) v	L_t (ft)	L_1, L_2,... (ft)	S.W. Type	h (ft)	W_{DL} (plf)	P_{up} (lbs)	HOLDOWN A.B.'s	Comments
lower level (C)	25,068 / 380	66	10x4 6.5x4	A2	10	–	3800	HTT22. 7-5/8@10', 5-5/8@6'	50% AB stress 2X mudsill.
(1) (5)	7592 / 158	48	48	A6 over 5/8" gyp	10'	462	–	none / 5/8"@4'	
(2) (3) (4)	13,680 / 201	68	34, 34	A6	10'	475	0	none / 5/8"@4'	

SOLAR TEC/24

6301 Highland Place

Sebastopol, CA 95472

Title 24
Energy Compliance
Documentation

Job No: 00101-041

project: **The Young Family Residential Units**

location: 1818 La Plaza, Cotati, CA

designer: **Avila Architects**

date: 7/28/2001

Method of Compliance: Performance Method (Climate Zone 2) showing that this project is in compliance with the 2001 edition of the California Residential Energy Standards when built as documented in this submittal.

Summary: The standard house in this climate zone has R-13 walls, R-30 roof/ceiling, R-19 floor and 16% glass to floor area ratio, with glass evenly distributed around the house. This report shows the compliance margin on Form C2-R to be very comfortable. Although the glass area is a little high at 17.9%; the following off-setting features help the design comply easily: medium efficient 40 gallon water heaters; dual pane wood framed windows and doors with above standard, low solar gain low-E glass. The specific compliance requirements are shown in the tables below.

Specific Requirements: (must also conform to all applicable Mandatory Measures on Form MF-1)

INSULATION: R30 insulation at roof/ceiling; R13 insulation at walls; no insulation required at floors above conditioned space. **GLAZING:** All glass is double pane, wood frame, metal clad NFRC tested assemblies Marvin brand or equal with low solar gain low-E glass. **Note:** Glass U-values and solar heat gain coefficients (SHGC's) are per the default values given in Tables G-4 & G-8 of the Residential Energy Manual or per the NFRC tested values published by the manufacturer. **Note:** Maximum allowed glazing U-values are as follows: operable = 0.42; fixed = 0.42; French doors = 0.40. Maximum allowed Solar Heat Gain Coefficients (SHGC's) are as follows: operable = 0.34; fixed = 0.34; French & doors = 0.34.	**HEATING:** Four Gas FAU's (one for each dwelling unit) with a minimum 80% AFUE. **AC:** If installed , must have a minimum SEER of 10.0. **DUCTS:** Minimum R-4.2 insulation. **WATER HEATING:** Four 40 gallon (or less) certified gas storage units (one for each dwelling unit) with a minimum Energy Factor = 0.58 and no external blanket wrap is required. **THERMAL MASS:** NA **HOUSEWRAP:** NR **RADIANT BARRIER:** NR

21146

The Young Family Residential Units

TABLE OF CONTENTS

Table of Contents	1
Form CF-1R Certificate of Compliance	2
Form MF-1R Mandatory Measures Checklist	4
Form C-2R Computer Method Summary	5
HVAC System Heating and Cooling Loads Summary	9

Certificate of Compliance: Residential (Part 1 of 2) CF-1R

The Young Family Residential
Project Title

7/28/2001
Date

1818 La Plaza Cotati
Project Address

Building Permit #

Save Energy Consulting (707) 838-8505
Documentation Author Telephone

Plan Check / Date

Computer Performance 2
Compliance Method (Package or Computer) Climate Zone

Field Check / Date

Enforcement Agency Use Only

GENERAL INFORMATION

Total Conditioned Floor Area: 3,016 ft^2

Average Ceiling Height: 10.3 ft

Total Conditioned Slab Area: 0 ft^2

Building Type:
(check one or more)

- [ ] Single Family Detached
- [X] Single Family Attached
- [ ] Multi-Family
- [ ] Addition
- [ ] Existing Building
- [ ] Existing Plus Addition

Front Orientation: (North) 353 deg

Floor Construction Type: [ ] Slab Floor

Number of Dwelling Units: 4.00

Number of Stories: 1

[ ] Raised Floor

BUILDING SHELL INSULATION

Component Type	Frame Type	Const. Assembly U-Value	Location/Comments (attic, garage, typical, etc.)
R-13 Wall (W.13.2x4.16)	Wood	0.088	Exterior Wall
Solid Wood Door	None	0.387	Exterior Door
R-30 Roof (R.30.2x4.24)	Wood	0.031	Exterior Roof

FENESTRATION

Type	Orientation	Area (SF)	U-Factor	Fenestration SHGC	Exterior Shading	Shading Devices: Overhang Yes	Overhang No	Side Fins Yes	Side Fins No
Front	(North)	200.0	0.42	0.34	Bug Screen	X			X
Front	(North)	96.0	0.40	0.34	Bug Screen	X			X
Rear	(South)	100.0	0.42	0.34	Bug Screen		X		X
Rear	(South)	64.0	0.42	0.34	Bug Screen	X			X
Rear	(South)	80.0	0.40	0.34	Bug Screen	X			X

Certificate of Compliance: Residential (Part 2 of 2) CF-1R

The Young Family Residential
Project Title

7/28/2001
Date

HVAC SYSTEMS

Note: Input Hydronic or Combined Hydronic data under Water Heating Systems, except Design Heating Load.

Heating Equipment Type (furnace, heat pump, etc.)	Minimum Efficiency (AFUE/HSPF)	Distribution Type and Location (ducts, attic, etc.)	Duct or Piping R-Value	Thermostat Type	Location / Comments
Central Furnace	80% AFUE	Ducts in Attic	4.2	Setback	Hvac System: Zone East

Cooling Equipment Type (air conditioner, heat pump, evap. cooling)	Minimum Efficiency (SEER)	Duct Location (attic, etc.)	Duct R-Value	Thermostat Type	Location / Comments
Split Air Conditioner	10.0 SEER	Ducts in Attic	4.2	Setback	Hvac System: Zone East

WATER HEATING SYSTEMS

Water Heater System Name	Water Heater Type	Distribution Type	# in Syst.	Rated Input[1] Btu/hr	Tank Cap. (gal)	Energy Fact.[1] or Recovery Efficiency	Standby[1] Loss (%)	External Tank Insul. R-Value
40 Gal.EF.58	Small Gas	Standard	4	32,000	40	0.58	n/a	n/a

1 For small gas storage (rated inputs of less than or equal to 75,000 Btu/hr), electric resistance and heat pump water heaters, list energy factor.
For large gas storage water heaters (rated input of greater than 75,000 Btu/hr), list Rated Input, Recovery Efficiency and Standby Loss.
For instantaneous gas water heaters, list Rated Input and Recovery Efficiency.

REMARKS

Standard Building (Compliance)

COMPLIANCE STATEMENT

This certificate of compliance lists the building features and performance specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations, and the administrative regulations to implement them. This certificate has been signed by the individual with overall design responsibility. When this certificate of compliance is submitted for a single building plan to be built in multiple orientations, any shading feature that is varied is indicated in the Special Features/Remarks section.

Designer or Owner (per Business & Professions Code)

Name: MERLE AVILA
Title/Firm: Avila Architects
Address: 5850 Commercial Blvd
Rohnert Park, CA 94928
Telephone: (707) 585-3711
Lic. #: C-24986

(signature) (date)

Documentation Author

Name: Skeer
Title/Firm: Save Energy Consulting
Address: 10555 Chalk Hill Road
Healdsburg, CA 95448
Telephone: (707) 838-8505

(signature) (date)

Enforcement Agency

Name:
Title/Firm:
Address:
Telephone:

Certified Energy Analyst
Skeer
HERS 98-90-536
HERS 98-90-136
CABEC
California Association of Building Energy Consultants

(signature/stamp) (date)

Mandatory Measures Checklist: Residential — MF-1R

NOTE: Lowrise residential buildings subject to the Standards must contain these measures regardless of the compliance approach used. Items marked with an asterisk (*) may be superseded by more stringent compliance requirements listed on the Certificate of Compliance. When this checklist is incorporated into the permit documents, the features noted shall be considered by all parties as minimum component specifications for the mandatory measures whether they are shown elsewhere in the documents or on this checklist only.

DESCRIPTION Instructions: Check or initial applicable boxes or enter N/A if not applicable.	DESIGNER	ENFORCEMENT
Building Envelope Measures		
[X] *§150(a): Minimum R-19 ceiling insulation in wood frame assembly, or equivalent U-value.		
[X] §150(b): Loose fill insulation manufacturer's labeled R-Value.		
[X] *§150(c): Minimum R-13 wall insulation in wood framed walls or equivalent U-value in metal frame walls (does not apply to exterior mass walls).		
[X] *§150(d): Minimum R-13 raised floor insulation in framed floors.		
[ ] §150(l): Slab edge insulation - water absorption rate <= 0.3%, water vapor transmission rate <= 2.0 perm/inch.		
[X] §118: Insulation specified or installed meets insulation quality standards. Indicate type and form.		
[X] §116-17: Fenestration Products, Exterior Doors and Infiltration/Exfiltration Controls 1. Doors and windows between conditioned and unconditioned spaces designed to limit air leakage. 2. Fenestration products (except field fabricated) have label with certified U-Factor, certified SHGC, and infiltration certification. 3. Exterior doors and windows weatherstripped; all joints and penetrations caulked and sealed.		
[ ] §150(g): Vapor barriers mandatory in Climate Zones 14 and 16 only.		
[ ] §150(f): Special infiltration barrier installed to comply with Section 151 meets Commission quality standards.		
[ ] §150(e): Installation of Fireplaces, Decorative Gas Appliances and Gas Logs. 1. Masonry and factory-built fireplaces have closable doors, outside air intake with damper and control, and flue damper and control; 2. No continuous burning gas pilots allowed.		
Space Conditioning, Water Heating and Plumbing System Measures		
[X] §110-13: HVAC equipment, water heaters, showerheads and faucets certified by the Commission.		
[X] §150(h): Heating and/or cooling loads calculated in accordance with ASHRAE, SMACNA or ACCA.		
[X] §150(i): Setback thermostat on all applicable heating and/or cooling systems.		
[X] §150(j): Pipe and Tank Insulation 1. Storage gas water heaters with less than 0.58 energy factor shall be externally wrapped with R-12. 2. First 5 feet of pipes closest to water heater tank, non-recirculating systems, insulated (R-4 or greater) 3. Back-up tanks for solar system, unfired storage tanks, or other indirect hot water tanks have R-12 external insulation or R-16 combined internal/external insulation. 4. All buried or exposed piping insulated in recirculating sections of hot water systems. 5. Cooling system piping below 55 degrees F. insulated. 6. Piping insulating between heating source and indirect hot water tank.		
[X] *§150(m): Ducts and Fans 1. All ducts and plenums installed, sealed and insulated to meet the requirements of the 1998 CMC Sections 601, 603, 604 and Standard 6-3; ducts insulated to a minimum installed level of R-4.2 or enclosed in conditioned space. Openings shall be sealed with mastic, tape aerosol sealant or other duct- closure system that meets the applicable requirements of UL181, UL181A, or UL181B. If mastic or tape is used to seal openings greater than 1/4 inch, the combination of mastic and either mesh tape or tape shall be used. Building cavities shall not be used for conveying conditioned air. Joints and seams of duct systems and their components shall not be sealed with cloth back rubber adhesive duct tapes unless such tape is used in combination with mastic and drawbands. 2. Exhaust fans systems have back draft or automatic dampers. 3. Gravity ventilating systems serving conditioned space have either automatic or readily accessible, manually operated dampers.		
[ ] §114: Pool and Spa Heating Systems and Equipment 1. Certified with 78% thermal efficiency, on-off switch, weatherproof instructions, no electric resistance heating, no pilot. 2. System is installed with at least 36" of pipe between filter and heater for future solar, cover for outdoor pools or spas. 3. Pool system has directional inlets and a circulation pump time switch.		
[ ] §115: Gas fired central furnaces, pool heaters, spa heaters or household cooking appliances have no continuously burning pilot light. (Exception: Non-electrical cooking appliances with pilot < 150 Btu/hr)		
Lighting Measures		
[X] §150(k)1: Luminaires for general lighting in kitchens shall have lamps with an efficacy 40 lumens/watt or greater for general lighting in kitchens. This general lighting shall be controlled by a switch on a readily accessible lighting control panel at an entrance to the kitchen.		
[X] 150(k)2: Rooms with a shower or bathtub must have either at least one luminaire with lamps with an efficacy of 40 lumens/watt or greater switched at the entrance to the room or one of the alternative to this requirement allowed in Section 150(k)2.; and recessed ceiling fixtures are IC (insulation cover) approved.		

Computer Method Summary (Part 1 of 3) C-2R

The Young Family Residential
Project Title

7/28/2001
Date

1818 La Plaza Cotati
Project Address

Building Permit #

Save Energy Consulting (707) 838-8505
Documentation Author Telephone

Plan Check/Date

Computer Performance 2
Compliance Method (Package or Computer) Climate Zone

Field Check/Date

Source Energy Use (kBtu/sf-yr)	Standard Design	Proposed Design	Compliance Margin
Space Heating	9.34	8.26	1.08
Space Cooling	8.86	6.63	2.23
Domestic Hot Water	26.56	23.49	3.07
Totals	44.76	38.37	6.39

BUILDING COMPLIES

GENERAL INFORMATION

Conditioned Floor Area: 3,016
Building Type: Single Fam Attached
Building Front Orientation: (North) 353 deg
Number of Dwelling Units: 4.00
Number of Stories: 1

Floor Construction Type: ☐ Slab Floor ☐ Raised Floor
Total Conditioned Volume: 31,065
Slab Floor Area: 0

BUILDING ZONE INFORMATION

Zone Name	Floor Area	Volume	# of Units	Zone Type	Thermostat Type	Vent Hgt.	Vent Area
Hvac System: Zone East	3,016	31,065	4.00	Conditioned	Setback	2	n/a

OPAQUE SURFACES

Type	Area	U-Val.	Act. Azm.	Tilt	Solar Gains Y	Solar Gains N	Form 3 Reference	Location / Comments
Wall	112	0.088	353	90	X		R-13 Wall (W.13.2x4.16)	Unit East
Door	17	0.387	353	90	X		Solid Wood Door	Unit East
Wall	330	0.088	83	90	X		R-13 Wall (W.13.2x4.16)	Unit East
Wall	142	0.088	173	90	X		R-13 Wall (W.13.2x4.16)	Unit East
Roof	771	0.031	353	22	X		R-30 Roof (R.30.2x4.24)	Unit East
Wall	112	0.088	353	90	X		R-13 Wall (W.13.2x4.16)	Unit Middle 1
Door	17	0.387	353	90	X		Solid Wood Door	Unit Middle 1
Wall	142	0.088	173	90	X		R-13 Wall (W.13.2x4.16)	Unit Middle 1
Roof	771	0.031	353	22	X		R-30 Roof (R.30.2x4.24)	Unit Middle 1
Wall	112	0.088	353	90	X		R-13 Wall (W.13.2x4.16)	Unit Middle 2
Door	17	0.387	353	90	X		Solid Wood Door	Unit Middle 2
Wall	142	0.088	173	90	X		R-13 Wall (W.13.2x4.16)	Unit Middle 2
Roof	771	0.031	353	22	X		R-30 Roof (R.30.2x4.24)	Unit Middle 2
Wall	112	0.088	353	90	X		R-13 Wall (W.13.2x4.16)	Unit West
Door	17	0.387	353	90	X		Solid Wood Door	Unit West
Wall	142	0.088	173	90	X		R-13 Wall (W.13.2x4.16)	Unit West
Wall	330	0.088	263	90	X		R-13 Wall (W.13.2x4.16)	Unit West
Roof	771	0.031	353	22	X		R-30 Roof (R.30.2x4.24)	Unit West

Computer Method Summary (Part 2 of 3) C-2R

The Young Family Residential
Project Title

7/28/2001
Date

FENESTRATION SURFACES

#	Type	Area	U-Factor	SHGC	Act. Azm.	Tilt	Glazing Type	Location/ Comments
1	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit East
2	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit East
3	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit East
4	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit East
5	Window Front (North)	24.0	0.400	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit East
6	Window Rear (South)	12.5	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit East
7	Window Rear (South)	12.5	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit East
8	Window Rear (South)	16.0	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit East
9	Window Rear (South)	20.0	0.400	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit East
10	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 1
11	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 1
12	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 1
13	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 1
14	Window Front (North)	24.0	0.400	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 1
15	Window Rear (South)	12.5	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 1
16	Window Rear (South)	12.5	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 1
17	Window Rear (South)	16.0	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 1
18	Window Rear (South)	20.0	0.400	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 1
19	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 2
20	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 2
21	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 2
22	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 2
23	Window Front (North)	24.0	0.400	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 2
24	Window Rear (South)	12.5	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 2
25	Window Rear (South)	12.5	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 2
26	Window Rear (South)	16.0	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 2
27	Window Rear (South)	20.0	0.400	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit Middle 2
28	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit West
29	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit West

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
1	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
2	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
3	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
4	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
5	Bug Screen	0.76	8.0	3.0	4.0	2.0	4.0	4.0						
6	Bug Screen	0.76												
7	Bug Screen	0.76												
8	Bug Screen	0.76	4.0	4.0	6.7	1.2	6.7	6.7						
9	Bug Screen	0.76	6.7	3.0	6.7	1.2	6.7	6.7						
10	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
11	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
12	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
13	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
14	Bug Screen	0.76	8.0	3.0	4.0	2.0	4.0	4.0						
15	Bug Screen	0.76												
16	Bug Screen	0.76												
17	Bug Screen	0.76	4.0	4.0	6.7	1.2	6.7	6.7						
18	Bug Screen	0.76	6.7	3.0	6.7	1.2	6.7	6.7						
19	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
20	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
21	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
22	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
23	Bug Screen	0.76	8.0	3.0	4.0	2.0	4.0	4.0						
24	Bug Screen	0.76												
25	Bug Screen	0.76												
26	Bug Screen	0.76	4.0	4.0	6.7	1.2	6.7	6.7						
27	Bug Screen	0.76	6.7	3.0	6.7	1.2	6.7	6.7						
28	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
29	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						

Computer Method Summary (Part 2 of 3) C-2R

The Young Family Residential
Project Title

7/28/2001
Date

FENESTRATION SURFACES

#	Type	Area	U-Factor	SHGC	Act. Azm.	Tilt	Glazing Type	Location/ Comments
30	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit West
31	Window Front (North)	12.5	0.420	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit West
32	Window Front (North)	24.0	0.400	0.34	353	90	Dbl.Wood.Clad.Marvin LowE	Unit West
33	Window Rear (South)	12.5	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit West
34	Window Rear (South)	12.5	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit West
35	Window Rear (South)	16.0	0.420	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit West
36	Window Rear (South)	20.0	0.400	0.34	173	90	Dbl.Wood.Clad.Marvin LowE	Unit West

INTERIOR AND EXTERIOR SHADING

#	Exterior Shade Type	SHGC	Window Hgt.	Window Wd.	Overhang Len.	Overhang Hgt.	Overhang LExt.	Overhang RExt.	Left Fin Dist.	Left Fin Len.	Left Fin Hgt.	Right Fin Dist.	Right Fin Len.	Right Fin Hgt.
30	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
31	Bug Screen	0.76	5.0	2.5	5.5	0.5	5.5	5.5						
32	Bug Screen	0.76	8.0	3.0	4.0	2.0	4.0	4.0						
33	Bug Screen	0.76												
34	Bug Screen	0.76												
35	Bug Screen	0.76	4.0	4.0	6.7	1.2	6.7	6.7						
36	Bug Screen	0.76	6.7	3.0	6.7	1.2	6.7	6.7						

Computer Method Summary (Part 3 of 3) C-2R

The Young Family Residential
Project Title

7/28/2001
Date

THERMAL MASS FOR HIGH MASS DESIGN

Type	Area (sf)	Thick. (in.)	Heat Cap.	Cond.	Form 3 Reference	Inside R-Val.	Location Comments

PERIMETER LOSSES

Type	Length	F2 Factor	Insulation R-Val.	Depth	Location / Comments

HVAC SYSTEMS

Heating Equipment Type (furnace, heat pump, etc.)	Minimum Efficiency (AFUE/HSPF)	Distribution Type and Location (ducts/attic, etc.)	Duct R-Value	Thermostat Type	Location / Comments
Central Furnace	80% AFUE	Ducts in Attic	4.2	Setback	Hvac System: Zone East

Hydronic Piping System Name	Pipe Length	Pipe Diameter	Insul. Thick.

Cooling Equipment Type (air conditioner, heat pump, evap. cooling)	Minimum Efficiency (SEER)	Duct Location (attic, etc,)	Duct R-Value	Thermostat Type	Location / Comments
Split Air Conditioner	10.0 SEER	Ducts in Attic	4.2	Setback	Hvac System: Zone East

WATER HEATING SYSTEMS

Water Heater System Name	Water Heater Type	Distribution Type	# in Syst.	Rated[1] Input (Btu/hr)	Tank Cap. (gal)	Energy Fact.[1] or Recovery Efficiency	Standby Loss (%)[1]	Tank Insul. R-Value Ext.
40 Gal.EF.58	Small Gas	Standard	4	32,000	40	0.58	n/a	n/a

1 For small gas storage (rated input <= 75000 Btu/hr), electric resistance and heat pump water heaters, list energy factor.
For large gas storage water heaters (rated input > 75000 Btu/hr), list Rated Input, Recovery Efficiency and Standby Loss.
For instantaneous gas water heaters, list Rated Input, and Recovery Efficiency.

REMARKS

Standard Building (Compliance)

HVAC SYSTEM HEATING AND COOLING LOADS SUMMARY

PROJECT NAME	DATE
The Young Family Residential	7/28/2001
SYSTEM NAME	**FLOOR AREA**
Hvac System: Zone East	3,016

ENGINEERING CHECKS

Number of Systems	4
Heating System	
Output per System	32,400
Total Output (Btuh)	129,600
Output (Btuh/sqft)	43.0
Cooling System	
Output per System	29,200
Total Output (Btuh)	116,800
Total Output (Tons)	9.7
Total Output (Btuh/sqft)	38.7
Total Output (sqft/Ton)	309.9
Air System	
CFM per System	1,000
Airflow (cfm)	4,000
Airflow (cfm/sqft)	1.33
Airflow (cfm/Ton)	411.0
Outside Air (%)	0.0
Outside Air (cfm/sqft)	0.00

Note: values above given at ARI conditions

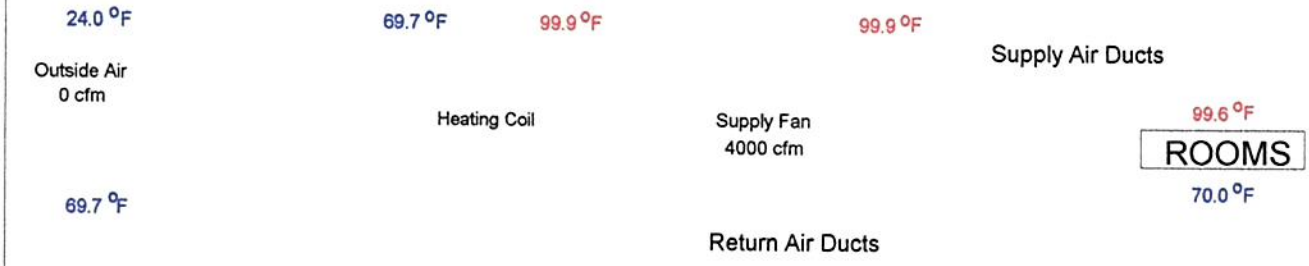
SYSTEM LOAD

	COIL COOLING PEAK			COIL HTG. PEAK	
	CFM	Sensible	Latent	CFM	Sensible
Total Room Loads	1,013	22,251	1,402	713	22,692
Return Vented Lighting		0			
Return Air Ducts		1,113			1,135
Return Fan		0			0
Ventilation	0	0	0	0	0
Supply Fan		0			0
Supply Air Ducts		1,113			1,135
TOTAL SYSTEM LOAD		24,476	1,402		24,961

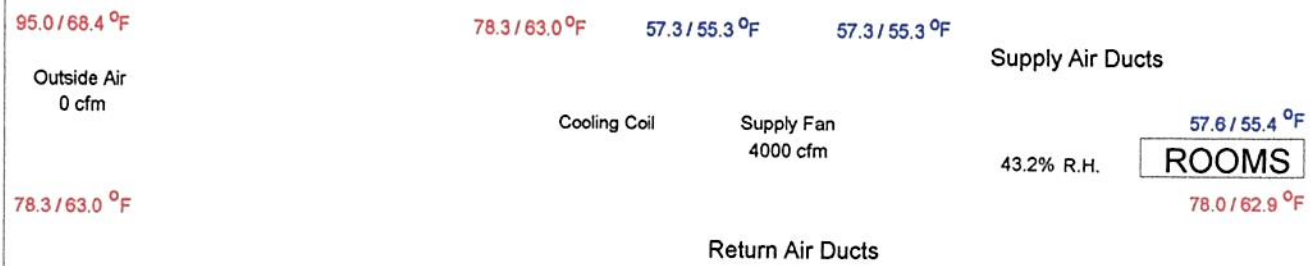
HVAC EQUIPMENT SELECTION

Gas FAU.80% AFUE	90,087	19,503	129,600
Total Adjusted System Output (Adjusted for Peak Design Conditions)	90,087	19,503	129,600
TIME OF SYSTEM PEAK	Aug 2 pm		Jan 12 am

HEATING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Heating Peak)



COOLING SYSTEM PSYCHROMETRICS (Airstream Temperatures at Time of Cooling Peak)



ALPHA FIRE SUPPRESSION SYSTEMS, INC.
1621 AUSTIN WAY
SANTA ROSA, CA 95404

HYDRAULIC CALCULATIONS

FOR

YOUNG FAMILY PROJECT
1818 LA PLAZA, COTATI
FIRST FLOOR-ORDINARY HAZARD

FILE NUMBER:02-693
DATE: AUG 9, 2002

-DESIGN DATA-

OCCUPANCY CLASSIFICATION:	ORDINARY HAZARD - 13
DENSITY:	.10 gpm/sq. ft.
AREA OF APPLICATION:	ENTIRE ROOM
COVERAGE PER SPRINKLER:	125 sq. ft.
NUMBER OF SPRINKLERS CALCULATED:	9 sprinklers
TOTAL SPRINKLER WATER FLOW REQUIRED:	232.4 gpm
TOTAL WATER REQUIRED (including hose):	482.4 gpm
FLOW AND PRESSURE (@ BOR):	232.4 gpm @ 52.1 psi
SPRINKLER ORIFICE SIZE:	1/2" inch
NAME OF CONTRACTOR:	VANN CONSTRUCTION
DESIGN/LAYOUT BY:	M. RUZICKA
AUTHORITY HAVING JURISDICTION:	CITY OF COTATI
CONTRACTOR CERTIFICATION NUMBER:	C16-670313

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 27011210)
HRS SYSTEMS, INC.
TUCKER, GA 30084

21146

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-1.SDF
JOB TITLE: Young Family Project - First Floor

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
M11	9.7	- - - -	44.7	- - -
M12	9.7	- - - -	48.3	- - -
M12A	1.5	HOSE STREAM	52.1	100.0
M13	1.0	- - - -	52.3	- - -
M14	1.0	- - - -	56.3	- - -
U1	-3.0	- - - -	58.5	- - -
SOURCE	-3.0	SOURCE	59.8	332.4

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-1.SDF

JOB TITLE: Young Family Project - First Floor

PIPE DATA

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)	PRESS. SUM. (PSI)
Pipe: 1					0.0	1.101 PL	3.00 PF	0.0
1A	20.8	0.0	19.4	0.0	0.0	150 FTG	2T PE	-1.0
1	23.0	0.0	18.4	0.0		0.000 TL	13.00 PV	
Pipe: 2					4.5	1.101 PL	41.00 PF	0.2
1	23.0	0.0	18.4	0.0	1.5	150 FTG	E6R PE	-0.6
2	24.5	0.0	17.5	0.0		0.004 TL	54.00 PV	
Pipe: 3					-4.5	1.101 PL	54.00 PF	0.3
1	23.0	0.0	18.4	0.0	1.5	150 FTG	T6R PE	0.0
5	23.0	0.0	18.7	0.0		0.004 TL	65.00 PV	
Pipe: 4					-3.6	1.101 PL	32.00 PF	0.1
2	24.5	0.0	17.5	0.0	1.2	150 FTG	T8R PE	0.0
2A	24.5	0.0	17.6	0.0		0.003 TL	45.00 PV	
Pipe: 5					-3.6	1.101 PL	5.25 PF	0.0
2A	24.5	0.0	17.6	0.0	1.2	150 FTG	R PE	0.0
3A	24.5	0.0	17.6	0.0		0.003 TL	6.25 PV	
Pipe: 6					-3.6	1.101 PL	52.00 PF	0.2
3A	24.5	0.0	17.6	0.0	1.2	150 FTG	T9R PE	0.0
4	24.5	0.0	17.8	0.0		0.003 TL	66.00 PV	
Pipe: 7					8.1	1.101 PL	10.00 PF	0.4
2	24.5	0.0	17.5	0.0	2.7	150 FTG	2ET PE	0.6
3	23.0	0.0	17.8	0.0		0.013 TL	29.00 PV	
Pipe: 8					-5.0	1.101 PL	37.00 PF	0.2
3	23.0	0.0	17.8	0.0	1.7	150 FTG	T4R PE	0.0
4A	23.0	0.0	18.0	0.0		0.005 TL	46.00 PV	
Pipe: 9					-5.0	1.101 PL	62.00 PF	0.5
4A	23.0	0.0	18.0	0.0	1.7	150 FTG	3E5R PE	-0.6
4	24.5	0.0	17.8	0.0		0.005 TL	88.00 PV	
Pipe: 10					-8.6	1.101 PL	6.00 PF	0.2
4	24.5	0.0	17.8	0.0	2.9	150 FTG	TR PE	0.6
5	23.0	0.0	18.7	0.0		0.014 TL	12.00 PV	
Pipe: 11					13.1	1.101 PL	17.00 PF	1.1
3	23.0	0.0	17.8	0.0	4.4	150 FTG	2ETR PE	5.8
M3	9.7	0.0	22.4	0.0		0.031 TL	37.00 PV	
Pipe: 12					-13.1	1.101 PL	17.00 PF	1.1
5	23.0	0.0	18.7	0.0	4.4	150 FTG	2ETR PE	5.8
M7	9.7	0.0	25.6	0.0		0.031 TL	37.00 PV	

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-1.SDF

JOB TITLE: Young Family Project - First Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)	PRESS. SUM. (PSI)
Pipe: 13					-36.9	1.728 PL	10.00 PF	0.4
M1	9.7	0.0	21.6	0.0	5.1	120 FTG	---- PE	0.0
M2	9.7	0.0	21.9	0.0		0.036 TL	10.00 PV	
Pipe: 14					-47.8	1.728 PL	8.25 PF	0.5
M2	9.7	0.0	21.9	0.0	6.5	120 FTG	---- PE	0.0
M3	9.7	0.0	22.4	0.0		0.057 TL	8.25 PV	
Pipe: 15					-34.8	1.728 PL	1.25 PF	0.0
M3	9.7	0.0	22.4	0.0	4.8	120 FTG	---- PE	0.0
M4	9.7	0.0	22.5	0.0		0.032 TL	1.25 PV	
Pipe: 16					-40.7	1.728 PL	8.00 PF	0.3
M4	9.7	0.0	22.5	0.0	5.6	120 FTG	---- PE	0.0
M5	9.7	0.0	22.8	0.0		0.043 TL	8.00 PV	
Pipe: 17					-40.7	1.728 PL	7.00 PF	0.5
M5	9.7	0.0	22.8	0.0	5.6	120 FTG	E PE	0.0
8B	9.7	5.4	23.3	26.3		0.043 TL	12.60 PV	
Pipe: 18					-38.5	1.728 PL	3.00 PF	0.1
M6	9.7	0.0	25.5	0.0	5.3	120 FTG	---- PE	0.0
M7	9.7	0.0	25.6	0.0		0.038 TL	3.00 PV	
Pipe: 19					-51.6	1.728 PL	7.00 PF	0.5
M7	9.7	0.0	25.6	0.0	7.1	120 FTG	---- PE	0.0
M8	9.7	0.0	26.0	0.0		0.066 TL	7.00 PV	
Pipe: 20					-91.1	1.728 PL	9.50 PF	1.8
M8	9.7	0.0	26.0	0.0	12.5	120 FTG	---- PE	0.0
M9	9.7	0.0	27.8	0.0		0.189 TL	9.50 PV	
Pipe: 21					-136.4	1.728 PL	8.00 PF	3.2
M9	9.7	0.0	27.8	0.0	18.7	120 FTG	---- PE	0.0
M10	9.7	0.0	31.0	0.0		0.399 TL	8.00 PV	
Pipe: 22					11.6	1.728 PL	1.00 PF	0.1
M1	9.7	0.0	21.6	0.0	1.6	120 FTG	T PE	-0.4
R1	10.5	0.0	21.2	0.0		0.004 TL	12.30 PV	
Pipe: 23					10.9	1.728 PL	1.00 PF	0.0
M2	9.7	0.0	21.9	0.0	1.5	120 FTG	T PE	-0.4
R2	10.5	0.0	21.5	0.0		0.004 TL	12.30 PV	
Pipe: 24					5.9	1.728 PL	1.00 PF	0.0
M4	9.7	0.0	22.5	0.0	0.8	120 FTG	T PE	-0.4
R3	10.5	0.0	22.1	0.0		0.001 TL	12.30 PV	
Pipe: 25					38.5	1.728 PL	1.00 PF	0.5
M6	9.7	0.0	25.5	0.0	5.3	120 FTG	T PE	-0.4
R4	10.5	0.0	24.6	0.0		0.038 TL	12.30 PV	

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-1.SDF

JOB TITLE: Young Family Project - First Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT		LENGTH (FT)		PRESS. SUM. (PSI)
Pipe: 26					39.6	1.728	PL	1.00	PF	0.5
M8	9.7	0.0	26.0	0.0	5.4	120	FTG	T	PE	-0.4
R5	10.5	0.0	25.2	0.0		0.040	TL	12.30	PV	
Pipe: 27					45.2	1.728	PL	1.00	PF	0.6
M9	9.7	0.0	27.8	0.0	6.2	120	FTG	T	PE	-0.4
R6	10.5	0.0	26.8	0.0		0.052	TL	12.30	PV	
Pipe: 28					-136.4	1.728	PL	17.50	PF	13.7
M10	9.7	0.0	31.0	0.0	18.7	120	FTG	ET	PE	0.0
M11	9.7	0.0	44.7	0.0		0.399	TL	34.40	PV	
Pipe: 29					96.0	1.728	PL	66.50	PF	16.2
M11	9.7	0.0	44.7	0.0	13.1	120	FTG	T	PE	0.0
9B	9.7	5.4	28.5	29.1		0.209	TL	77.80	PV	
Pipe: 30					67.0	1.728	PL	48.50	PF	5.2
9B	9.7	5.4	28.5	29.1	9.2	120	FTG	----	PE	0.0
8B	9.7	5.4	23.3	26.3		0.107	TL	48.50	PV	
Pipe: 31					11.6	1.728	PL	7.00	PF	0.1
R1	10.5	0.0	21.2	0.0	1.6	120	FTG	E	PE	0.0
3B	10.5	5.4	21.1	25.0		0.004	TL	12.60	PV	
Pipe: 32					13.4	1.728	PL	12.00	PF	0.1
2B	10.5	5.4	21.2	25.0	1.8	120	FTG	----	PE	0.0
3B	10.5	5.4	21.1	25.0		0.005	TL	12.00	PV	
Pipe: 33					-38.5	1.728	PL	84.00	PF	3.4
2B	10.5	5.4	21.2	25.0	5.3	120	FTG	E	PE	0.0
R4	10.5	0.0	24.6	0.0		0.038	TL	89.60	PV	
Pipe: 34					25.4	1.728	PL	9.50	PF	0.3
M1	9.7	0.0	21.6	0.0	3.5	120	FTG	E	PE	0.4
1B	8.7	5.4	21.7	25.4		0.018	TL	15.10	PV	
Pipe: 35					10.9	1.728	PL	7.00	PF	0.0
R2	10.5	0.0	21.5	0.0	1.5	120	FTG	E	PE	0.0
4B	10.5	5.4	21.5	25.2		0.004	TL	12.60	PV	
Pipe: 36					-14.3	1.728	PL	12.00	PF	0.1
4B	10.5	5.4	21.5	25.2	2.0	120	FTG	----	PE	0.0
5B	10.5	5.4	21.6	25.3		0.006	TL	12.00	PV	
Pipe: 37					-39.6	1.728	PL	84.00	PF	3.6
5B	10.5	5.4	21.6	25.3	5.4	120	FTG	E	PE	0.0
R5	10.5	0.0	25.2	0.0		0.040	TL	89.60	PV	
Pipe: 38					5.9	1.728	PL	7.00	PF	0.0
R3	10.5	0.0	22.1	0.0	0.8	120	FTG	E	PE	0.0
6B	10.5	5.4	22.1	25.6		0.001	TL	12.60	PV	

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-1.SDF

JOB TITLE: Young Family Project - First Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)		PRESS. SUM. (PSI)	
Pipe: 39					-19.6	1.728 PL	12.00	PF		0.1
6B	10.5	5.4	22.1	25.6	2.7	120 FTG	----	PE		0.0
7B	10.5	5.4	22.2	25.6		0.011 TL	12.00	PV		
Pipe: 40					-45.2	1.728 PL	84.00	PF		4.6
7B	10.5	5.4	22.2	25.6	6.2	120 FTG	E	PE		0.0
R6	10.5	0.0	26.8	0.0		0.052 TL	89.60	PV		
Pipe: 41					-232.4	2.203 PL	4.00	PF		3.5
M11	9.7	0.0	44.7	0.0	19.6	120 FTG	E	PE		0.0
M12	9.7	0.0	48.3	0.0		0.328 TL	10.80	PV		
Pipe: 41A					-232.4	4.310 PL	8.17	PF		0.3
M12	9.7	0.0	48.3	0.0	5.1	120 FTG	E	PE		3.5
M12A	1.5	H.S.	52.1	100.0		0.012 TL	22.07	PV		
Pipe: 42					-332.4	4.310 PL	0.50	PF		0.0
M12A	1.5	H.S.	52.1	100.0	7.3	120 FTG	----	PE		0.2
M13	1.0	0.0	52.3	0.0		0.024 TL	0.50	PV		
Pipe: 43					FIXED PRESSURE LOSS DEVICE					
M14	1.0	0.0	56.3	0.0	4.0 psi, 332.4 gpm					
M13	1.0	0.0	52.3	0.0						
Pipe: 44					-332.4	4.220 PL	4.00	PF		0.4
M14	1.0	0.0	56.3	0.0	7.6	140 FTG	E	PE		1.7
U1	-3.0	0.0	58.5	0.0		0.020 TL	22.00	PV		
Pipe: 45					-332.4	4.220 PL	30.00	PF		1.3
U1	-3.0	0.0	58.5	0.0	7.6	140 FTG	T	PE		0.0
SOURCE	-3.0	SRCE	59.8	(N/A)		0.020 TL	66.00	PV		

NOTES:

(1) Calculations were performed by the HASS 7.4 computer program under license no. 27011210 granted by

HRS Systems, Inc.
4792 LaVista Road
Tucker, GA 30084

(2) The system has been calculated to provide an average imbalance at each node of 0.002 gpm and a maximum imbalance at any node of 0.080 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 19.6 ft/sec at pipe 41.

(4) PIPE FITTINGS TABLE

Pipe Table Name: ALPHA.PIP

PAGE: D MATERIAL: DIRON HWC: 140

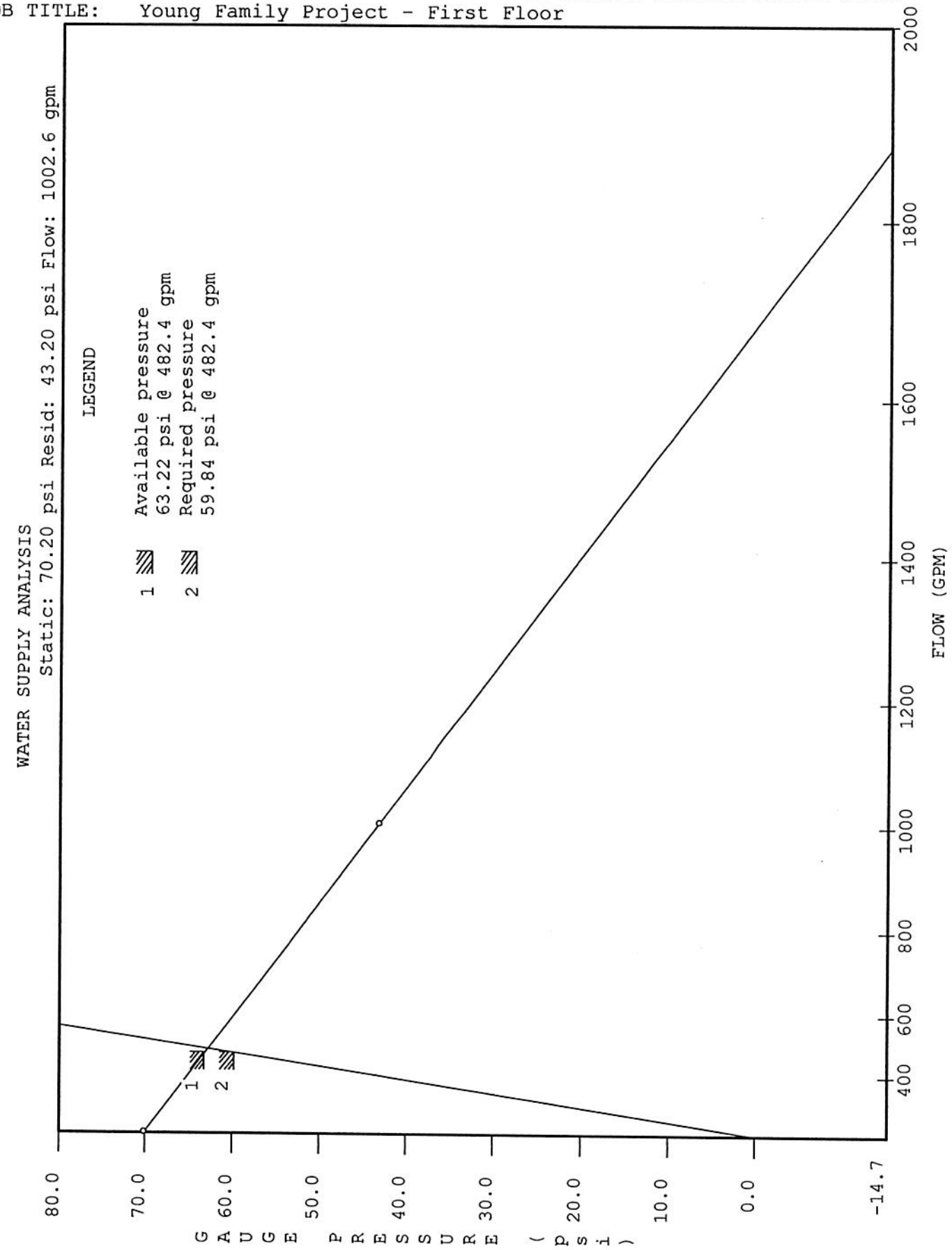
Diameter (in)	Equivalent Fitting Lengths in Feet						
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	N NPTee
4.220	18.00	36.00	11.00	39.00	22.00	4.00	36.00

PAGE: F MATERIAL: D-Flow HWC: 120

Diameter (in)	Equivalent Fitting Lengths in Feet								
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	A	D	N
1.728	5.60	11.30	2.80	12.70	8.20	1.40	0.00	0.00	0.00
2.203	6.80	13.60	4.10	15.00	8.20	1.40	0.00	0.00	0.00
4.310	13.90	27.90	8.40	30.70	16.70	2.80	0.00	0.00	0.00

PAGE: P MATERIAL: CPVC HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet				
	F 45	E 90	T Branch	R Run	C Coup.
1.101	1.00	7.00	5.00	1.00	1.00


WATER SUPPLY ANALYSIS
Static: 70.20 psi Resid: 43.20 psi Flow: 1002.6 gpm
LEGEND
1 Available pressure
63.22 psi @ 482.4 gpm
2 Required pressure
59.84 psi @ 482.4 gpm
GAUGE PRESSURE (psi)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-14.7
400
600
800
1000
1200
1400
1600
1800
2000
FLOW (GPM)

Utility Report:

Equivalent K-Factor Calculator

Node Name	Sprinkler K-Factor	Pres. (psi)	Dia. (in)	Pipe Len.(ft)	Ftgs.	Total Len.(ft)	H-W coef.	Equivalent K-factor
1B,2B,3B	5.60	7.00	1.191	1.00	T	10.28	120.00	5.44
4B,5B,6B	5.60	7.00	1.191	1.00	T	10.28	120.00	5.44
7B,8B,9B	5.60	7.00	1.191	1.00	T	10.28	120.00	5.44

Equivalent K-Factor Calculator

Node Name	Sprinkler K-Factor	Pres. (psi)	Dia. (in)	Pipe Len.(ft)	Ftgs.	Total Len.(ft)	H-W coef.	Equivalent K-factor
1A	4.30	9.10	1.109	1.00	E	3.62	120.00	4.26
2A	4.30	9.10	1.109	4.00	TE	13.18	120.00	4.17
3A,4A	4.30	17.50	1.109	1.00	T	7.56	120.00	4.23

ALPHA FIRE SUPPRESSION SYSTEMS, INC.
1621 AUSTIN WAY
SANTA ROSA, CA 95404

HYDRAULIC CALCULATIONS

FOR

YOUNG FAMILY PROJECT
1818 LA PLAZA, COTATI
SECOND FLOOR-MULTI FAMILY

FILE NUMBER:02-693
DATE: AUG 9, 2002

-DESIGN DATA-

OCCUPANCY CLASSIFICATION:	MULTI FAMILY - 13R
DENSITY:	.05 gpm/sq. ft.
AREA OF APPLICATION:	1024 sq. ft.
COVERAGE PER SPRINKLER:	256 sq. ft.
NUMBER OF SPRINKLERS CALCULATED:	4 sprinklers
TOTAL SPRINKLER WATER FLOW REQUIRED:	75.1 gpm
TOTAL WATER REQUIRED (including hose):	482.4 gpm
FLOW AND PRESSURE (@ BOR):	75.1 gpm @ 44.5 psi
SPRINKLER ORIFICE SIZE:	1/2 inch
NAME OF CONTRACTOR:	VANN CONSTRUCTION
DESIGN/LAYOUT BY:	M. RUZICKA
AUTHORITY HAVING JURISDICTION:	CITY OF COTATI
CONTRACTOR CERTIFICATION NUMBER:	C16-670313

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 27011210)
HRS SYSTEMS, INC.
TUCKER, GA 30084

21146

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-2.SDF
JOB TITLE: Young Family Project - Second Floor

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
M11	9.7	- - - -	40.4	- - -
M12	9.7	- - - -	40.9	- - -
M12A	1.5	HOSE STREAM	44.5	100.0
M13	1.0	- - - -	44.7	- - -
M14	1.0	- - - -	48.7	- - -
U1	-3.0	- - - -	50.5	- - -
SOURCE	-3.0	SOURCE	51.0	175.1

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-2.SDF
JOB TITLE: Young Family Project - Second Floor
PIPE DATA

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT		LENGTH (FT)		PRESS. SUM. (PSI)
Pipe: 1					-19.6	1.101	PL	3.00	PF	0.8
1/2	20.8	4.3	21.1	19.6	6.6	150	FTG	2T	PE	-1.0
1A	23.0	0.0	21.0	0.0		0.065	TL	13.00	PV	
Pipe: 2					-4.8	1.101	PL	41.00	PF	0.3
1A	23.0	0.0	21.0	0.0	1.6	150	FTG	E6R	PE	-0.6
2A	24.5	0.0	20.6	0.0		0.005	TL	54.00	PV	
Pipe: 3					-14.7	1.101	PL	54.00	PF	2.5
1A	23.0	0.0	21.0	0.0	5.0	150	FTG	T6R	PE	0.0
5A	23.0	0.0	23.5	0.0		0.039	TL	65.00	PV	
Pipe: 4					17.8	1.101	PL	32.00	PF	2.5
2A	24.5	0.0	20.6	0.0	6.0	150	FTG	T8R	PE	0.0
2/2	24.5	4.2	18.1	17.7		0.055	TL	45.00	PV	
Pipe: 5					0.1	1.101	PL	5.25	PF	0.0
2/2	24.5	4.2	18.1	17.7	0.0	150	FTG	R	PE	0.0
3/1	24.5	4.2	18.1	18.0		0.000	TL	6.25	PV	
Pipe: 6					-17.9	1.101	PL	52.00	PF	3.7
3/1	24.5	4.2	18.1	18.0	6.0	150	FTG	T9R	PE	0.0
4A	24.5	0.0	21.8	0.0		0.055	TL	66.00	PV	
Pipe: 7					-22.7	1.101	PL	10.00	PF	2.5
2A	24.5	0.0	20.6	0.0	7.6	150	FTG	2ET	PE	0.6
3A	23.0	0.0	23.7	0.0		0.086	TL	29.00	PV	
Pipe: 8					14.7	1.101	PL	37.00	PF	1.8
3A	23.0	0.0	23.7	0.0	5.0	150	FTG	T4R	PE	0.0
4/1	23.0	4.2	21.9	19.8		0.039	TL	46.00	PV	
Pipe: 9					-5.1	1.101	PL	62.00	PF	0.5
4/1	23.0	4.2	21.9	19.8	1.7	150	FTG	3E5R	PE	-0.6
4A	24.5	0.0	21.8	0.0		0.005	TL	88.00	PV	
Pipe: 10					-23.0	1.101	PL	6.00	PF	1.1
4A	24.5	0.0	21.8	0.0	7.8	150	FTG	TR	PE	0.6
5A	23.0	0.0	23.5	0.0		0.088	TL	12.00	PV	
Pipe: 11					-37.4	1.101	PL	17.00	PF	8.0
3A	23.0	0.0	23.7	0.0	12.6	150	FTG	2ETR	PE	5.8
M3	9.7	0.0	37.5	0.0		0.216	TL	37.00	PV	
Pipe: 12					-37.7	1.101	PL	17.00	PF	8.1
5A	23.0	0.0	23.5	0.0	12.7	150	FTG	2ETR	PE	5.8
M7	9.7	0.0	37.4	0.0		0.220	TL	37.00	PV	

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-2.SDF

JOB TITLE: Young Family Project - Second Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)	PRESS. SUM. (PSI)
Pipe: 13					-4.2	1.728 PL	10.00 PF	0.0
M1	9.7	0.0	37.5	0.0	0.6	120 FTG	---- PE	0.0
M2	9.7	0.0	37.5	0.0		0.001 TL	10.00 PV	
Pipe: 14					0.6	1.728 PL	8.25 PF	0.0
M2	9.7	0.0	37.5	0.0	0.1	120 FTG	---- PE	0.0
M3	9.7	0.0	37.5	0.0		0.000 TL	8.25 PV	
Pipe: 15					-36.8	1.728 PL	1.25 PF	0.0
M3	9.7	0.0	37.5	0.0	5.0	120 FTG	---- PE	0.0
M4	9.7	0.0	37.5	0.0		0.035 TL	1.25 PV	
Pipe: 16					-26.9	1.728 PL	8.00 PF	0.2
M4	9.7	0.0	37.5	0.0	3.7	120 FTG	---- PE	0.0
M5	9.7	0.0	37.7	0.0		0.020 TL	8.00 PV	
Pipe: 17					-26.9	1.728 PL	7.00 PF	0.2
M5	9.7	0.0	37.7	0.0	3.7	120 FTG	E PE	0.0
8B	9.7	0.0	38.0	0.0		0.020 TL	12.60 PV	
Pipe: 18					4.2	1.728 PL	3.00 PF	0.0
M6	9.7	0.0	37.4	0.0	0.6	120 FTG	---- PE	0.0
M7	9.7	0.0	37.4	0.0		0.001 TL	3.00 PV	
Pipe: 19					-33.6	1.728 PL	7.00 PF	0.2
M7	9.7	0.0	37.4	0.0	4.6	120 FTG	---- PE	0.0
M8	9.7	0.0	37.6	0.0		0.030 TL	7.00 PV	
Pipe: 20					-38.4	1.728 PL	9.50 PF	0.4
M8	9.7	0.0	37.6	0.0	5.2	120 FTG	---- PE	0.0
M9	9.7	0.0	38.0	0.0		0.038 TL	9.50 PV	
Pipe: 21					-48.2	1.728 PL	8.00 PF	0.5
M9	9.7	0.0	38.0	0.0	6.6	120 FTG	---- PE	0.0
M10	9.7	0.0	38.4	0.0		0.058 TL	8.00 PV	
Pipe: 22					4.2	1.728 PL	1.00 PF	0.0
M1	9.7	0.0	37.5	0.0	0.6	120 FTG	T PE	-0.4
R1	10.5	0.0	37.1	0.0		0.001 TL	12.30 PV	
Pipe: 23					-4.8	1.728 PL	1.00 PF	0.0
M2	9.7	0.0	37.5	0.0	0.7	120 FTG	T PE	-0.4
R2	10.5	0.0	37.1	0.0		0.001 TL	12.30 PV	
Pipe: 24					-9.9	1.728 PL	1.00 PF	0.0
M4	9.7	0.0	37.5	0.0	1.4	120 FTG	T PE	-0.4
R3	10.5	0.0	37.2	0.0		0.003 TL	12.30 PV	
Pipe: 25					-4.2	1.728 PL	1.00 PF	0.0
M6	9.7	0.0	37.4	0.0	0.6	120 FTG	T PE	-0.4
R4	10.5	0.0	37.1	0.0		0.001 TL	12.30 PV	

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-2.SDF

JOB TITLE: Young Family Project - Second Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)	PRESS. SUM. (PSI)
Pipe: 26					4.8	1.728 PL	1.00 PF	0.0
M8	9.7	0.0	37.6	0.0	0.7	120 FTG	T PE	-0.4
R5	10.5	0.0	37.2	0.0		0.001 TL	12.30 PV	
Pipe: 27					9.9	1.728 PL	1.00 PF	0.0
M9	9.7	0.0	38.0	0.0	1.4	120 FTG	T PE	-0.4
R6	10.5	0.0	37.6	0.0		0.003 TL	12.30 PV	
Pipe: 28					-48.2	1.728 PL	17.50 PF	2.0
M10	9.7	0.0	38.4	0.0	6.6	120 FTG	ET PE	0.0
M11	9.7	0.0	40.4	0.0		0.058 TL	34.40 PV	
Pipe: 29					26.9	1.728 PL	66.50 PF	1.5
M11	9.7	0.0	40.4	0.0	3.7	120 FTG	T PE	0.0
9B	9.7	0.0	38.9	0.0		0.020 TL	77.80 PV	
Pipe: 30					26.9	1.728 PL	48.50 PF	1.0
9B	9.7	0.0	38.9	0.0	3.7	120 FTG	---- PE	0.0
8B	9.7	0.0	38.0	0.0		0.020 TL	48.50 PV	
Pipe: 31					4.2	1.728 PL	7.00 PF	0.0
R1	10.5	0.0	37.1	0.0	0.6	120 FTG	E PE	0.0
3B	10.5	0.0	37.1	0.0		0.001 TL	12.60 PV	
Pipe: 32					-4.2	1.728 PL	12.00 PF	0.0
2B	10.5	0.0	37.1	0.0	0.6	120 FTG	---- PE	0.0
3B	10.5	0.0	37.1	0.0		0.001 TL	12.00 PV	
Pipe: 33					4.2	1.728 PL	84.00 PF	0.1
2B	10.5	0.0	37.1	0.0	0.6	120 FTG	E PE	0.0
R4	10.5	0.0	37.1	0.0		0.001 TL	89.60 PV	
Pipe: 34					0.0	1.728 PL	9.50 PF	0.0
M1	9.7	0.0	37.5	0.0	0.0	120 FTG	E PE	0.4
1B	8.7	0.0	37.9	0.0		0.000 TL	15.10 PV	
Pipe: 35					-4.8	1.728 PL	7.00 PF	0.0
R2	10.5	0.0	37.1	0.0	0.7	120 FTG	E PE	0.0
4B	10.5	0.0	37.2	0.0		0.001 TL	12.60 PV	
Pipe: 36					-4.8	1.728 PL	12.00 PF	0.0
4B	10.5	0.0	37.2	0.0	0.7	120 FTG	---- PE	0.0
5B	10.5	0.0	37.2	0.0		0.001 TL	12.00 PV	
Pipe: 37					-4.8	1.728 PL	84.00 PF	0.1
5B	10.5	0.0	37.2	0.0	0.7	120 FTG	E PE	0.0
R5	10.5	0.0	37.2	0.0		0.001 TL	89.60 PV	
Pipe: 38					-9.9	1.728 PL	7.00 PF	0.0
R3	10.5	0.0	37.2	0.0	1.4	120 FTG	E PE	0.0
6B	10.5	0.0	37.3	0.0		0.003 TL	12.60 PV	

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-2.SDF

JOB TITLE: Young Family Project - Second Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)	PRESS. SUM. (PSI)
Pipe: 39					-9.9	1.728 PL	12.00 PF	0.0
6B	10.5	0.0	37.3	0.0	1.4	120 FTG	---- PE	0.0
7B	10.5	0.0	37.3	0.0		0.003 TL	12.00 PV	
Pipe: 40					-9.9	1.728 PL	84.00 PF	0.3
7B	10.5	0.0	37.3	0.0	1.4	120 FTG	E PE	0.0
R6	10.5	0.0	37.6	0.0		0.003 TL	89.60 PV	
Pipe: 41					-75.1	2.203 PL	4.00 PF	0.4
M11	9.7	0.0	40.4	0.0	6.3	120 FTG	E PE	0.0
M12	9.7	0.0	40.9	0.0		0.041 TL	10.80 PV	
Pipe: 41A					-75.1	4.310 PL	8.17 PF	0.0
M12	9.7	0.0	40.9	0.0	1.7	120 FTG	E PE	3.5
M12A	1.5	H.S.	44.5	100.0		0.002 TL	22.07 PV	
Pipe: 42					-175.1	4.310 PL	0.50 PF	0.0
M12A	1.5	H.S.	44.5	100.0	3.9	120 FTG	---- PE	0.2
M13	1.0	0.0	44.7	0.0		0.007 TL	0.50 PV	
Pipe: 43					FIXED PRESSURE LOSS DEVICE			
M14	1.0	0.0	48.7	0.0	4.0 psi, 175.1 gpm			
M13	1.0	0.0	44.7	0.0				
Pipe: 44					-175.1	4.220 PL	4.00 PF	0.1
M14	1.0	0.0	48.7	0.0	4.0	140 FTG	E PE	1.7
U1	-3.0	0.0	50.5	0.0		0.006 TL	22.00 PV	
Pipe: 45					-175.1	4.220 PL	30.00 PF	0.4
U1	-3.0	0.0	50.5	0.0	4.0	140 FTG	T PE	0.0
SOURCE	-3.0	SRCE	51.0	(N/A)		0.006 TL	66.00 PV	

NOTES:

(1) Calculations were performed by the HASS 7.4 computer program under license no. 27011210 granted by

HRS Systems, Inc.
4792 LaVista Road
Tucker, GA 30084

(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 0.054 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 12.7 ft/sec at pipe 12.

(4) PIPE FITTINGS TABLE

Pipe Table Name: ALPHA.PIP

PAGE: D MATERIAL: DIRON HWC: 140

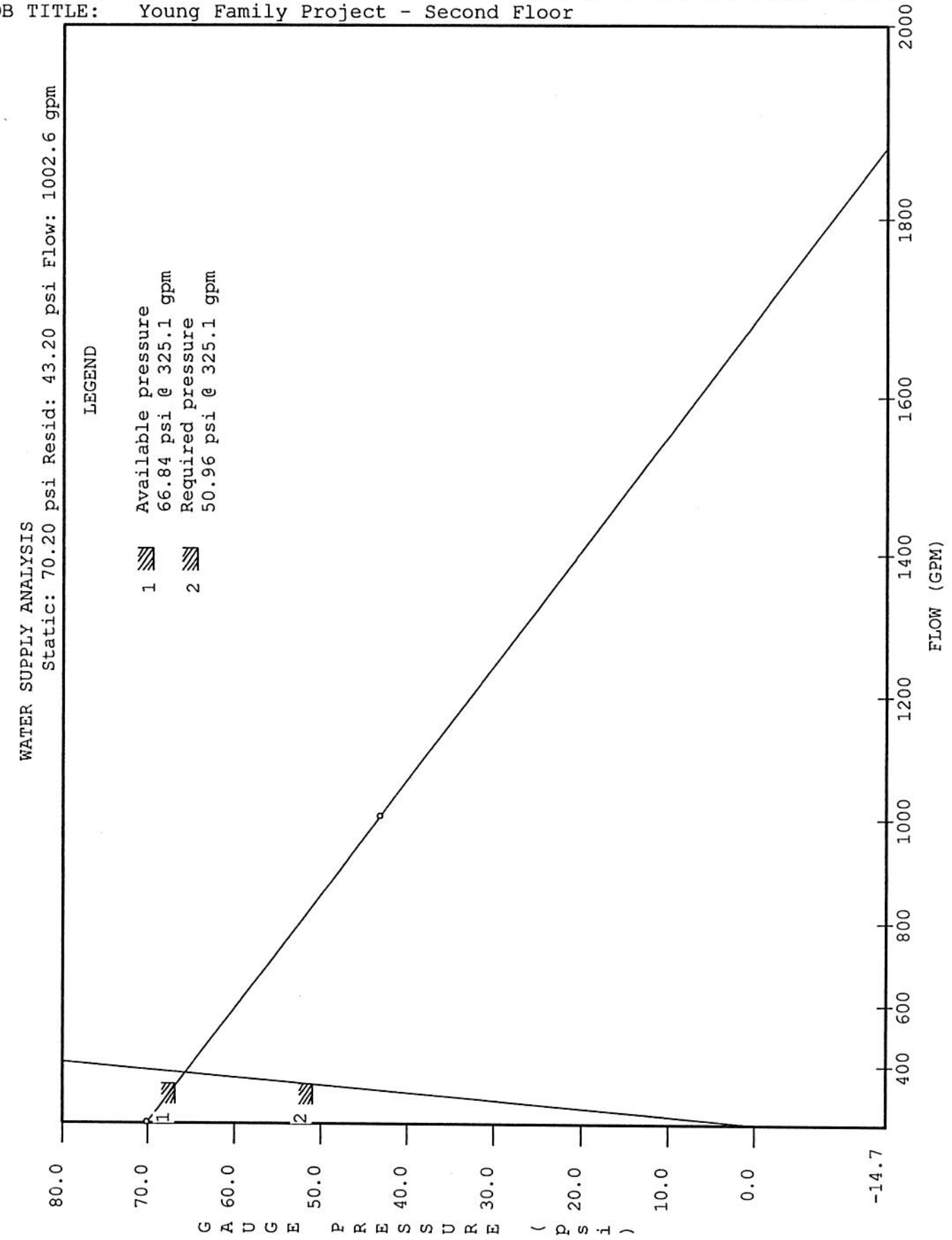
Diameter (in)	Equivalent Fitting Lengths in Feet						
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	N NPTee
4.220	18.00	36.00	11.00	39.00	22.00	4.00	36.00

PAGE: F MATERIAL: D-Flow HWC: 120

Diameter (in)	Equivalent Fitting Lengths in Feet								
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	A	D	N
1.728	5.60	11.30	2.80	12.70	8.20	1.40	0.00	0.00	0.00
2.203	6.80	13.60	4.10	15.00	8.20	1.40	0.00	0.00	0.00
4.310	13.90	27.90	8.40	30.70	16.70	2.80	0.00	0.00	0.00

PAGE: P MATERIAL: CPVC HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet				
	F 45	E 90	T Branch	R Run	C Coup.
1.101	1.00	7.00	5.00	1.00	1.00


WATER SUPPLY ANALYSIS
Static: 70.20 psi Resid: 43.20 psi Flow: 1002.6 gpm
LEGEND
1 Available pressure
66.84 psi @ 325.1 gpm
2 Required pressure
50.96 psi @ 325.1 gpm
GAUGE PRESSURE (psi)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-14.7
400
600
800
1000
1200
1400
1600
1800
2000
FLOW (GPM)

ALPHA FIRE SUPPRESSION SYSTEMS, INC.
1621 AUSTIN WAY
SANTA ROSA, CA 95404

HYDRAULIC CALCULATIONS

FOR

YOUNG FAMILY PROJECT
1818 LA PLAZA, COTATI
FIRST FLOOR-ORDINARY HAZARD

FILE NUMBER:02-693
DATE: AUG 9, 2002

-DESIGN DATA-

OCCUPANCY CLASSIFICATION:	ORDINARY HAZARD - 13
DENSITY:	.10 gpm/sq. ft.
AREA OF APPLICATION:	ENTIRE ROOM
COVERAGE PER SPRINKLER:	125 sq. ft.
NUMBER OF SPRINKLERS CALCULATED:	9 sprinklers
TOTAL SPRINKLER WATER FLOW REQUIRED:	232.4 gpm
TOTAL WATER REQUIRED (including hose):	482.4 gpm
FLOW AND PRESSURE (@ BOR):	232.4 gpm @ 52.1 psi
SPRINKLER ORIFICE SIZE:	1/2" inch
NAME OF CONTRACTOR:	VANN CONSTRUCTION
DESIGN/LAYOUT BY:	M. RUZICKA
AUTHORITY HAVING JURISDICTION:	CITY OF COTATI
CONTRACTOR CERTIFICATION NUMBER:	C16-670313

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 27011210)
HRS SYSTEMS, INC.
TUCKER, GA 30084

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-1.SDF
JOB TITLE: Young Family Project - First Floor
NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
M11	9.7	- - - -	44.7	- - -
M12	9.7	- - - -	48.3	- - -
M12A	1.5	HOSE STREAM	52.1	100.0
M13	1.0	- - - -	52.3	- - -
M14	1.0	- - - -	56.3	- - -
U1	-3.0	- - - -	58.5	- - -
SOURCE	-3.0	SOURCE	59.8	332.4

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-1.SDF

JOB TITLE: Young Family Project - First Floor

PIPE DATA

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)		PRESS. SUM. (PSI)
Pipe: 1					0.0	1.101 PL	3.00	PF	0.0
1A	20.8	0.0	19.4	0.0	0.0	150 FTG	2T	PE	-1.0
1	23.0	0.0	18.4	0.0		0.000 TL	13.00	PV	
Pipe: 2					4.5	1.101 PL	41.00	PF	0.2
1	23.0	0.0	18.4	0.0	1.5	150 FTG	E6R	PE	-0.6
2	24.5	0.0	17.5	0.0		0.004 TL	54.00	PV	
Pipe: 3					-4.5	1.101 PL	54.00	PF	0.3
1	23.0	0.0	18.4	0.0	1.5	150 FTG	T6R	PE	0.0
5	23.0	0.0	18.7	0.0		0.004 TL	65.00	PV	
Pipe: 4					-3.6	1.101 PL	32.00	PF	0.1
2	24.5	0.0	17.5	0.0	1.2	150 FTG	T8R	PE	0.0
2A	24.5	0.0	17.6	0.0		0.003 TL	45.00	PV	
Pipe: 5					-3.6	1.101 PL	5.25	PF	0.0
2A	24.5	0.0	17.6	0.0	1.2	150 FTG	R	PE	0.0
3A	24.5	0.0	17.6	0.0		0.003 TL	6.25	PV	
Pipe: 6					-3.6	1.101 PL	52.00	PF	0.2
3A	24.5	0.0	17.6	0.0	1.2	150 FTG	T9R	PE	0.0
4	24.5	0.0	17.8	0.0		0.003 TL	66.00	PV	
Pipe: 7					8.1	1.101 PL	10.00	PF	0.4
2	24.5	0.0	17.5	0.0	2.7	150 FTG	2ET	PE	0.6
3	23.0	0.0	17.8	0.0		0.013 TL	29.00	PV	
Pipe: 8					-5.0	1.101 PL	37.00	PF	0.2
3	23.0	0.0	17.8	0.0	1.7	150 FTG	T4R	PE	0.0
4A	23.0	0.0	18.0	0.0		0.005 TL	46.00	PV	
Pipe: 9					-5.0	1.101 PL	62.00	PF	0.5
4A	23.0	0.0	18.0	0.0	1.7	150 FTG	3E5R	PE	-0.6
4	24.5	0.0	17.8	0.0		0.005 TL	88.00	PV	
Pipe: 10					-8.6	1.101 PL	6.00	PF	0.2
4	24.5	0.0	17.8	0.0	2.9	150 FTG	TR	PE	0.6
5	23.0	0.0	18.7	0.0		0.014 TL	12.00	PV	
Pipe: 11					13.1	1.101 PL	17.00	PF	1.1
3	23.0	0.0	17.8	0.0	4.4	150 FTG	2ETR	PE	5.8
M3	9.7	0.0	22.4	0.0		0.031 TL	37.00	PV	
Pipe: 12					-13.1	1.101 PL	17.00	PF	1.1
5	23.0	0.0	18.7	0.0	4.4	150 FTG	2ETR	PE	5.8
M7	9.7	0.0	25.6	0.0		0.031 TL	37.00	PV	

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-1.SDF

JOB TITLE: Young Family Project - First Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)	PRESS. SUM. (PSI)
Pipe: 13					-36.9	1.728 PL	10.00 PF	0.4
M1	9.7	0.0	21.6	0.0	5.1	120 FTG	---- PE	0.0
M2	9.7	0.0	21.9	0.0		0.036 TL	10.00 PV	
Pipe: 14					-47.8	1.728 PL	8.25 PF	0.5
M2	9.7	0.0	21.9	0.0	6.5	120 FTG	---- PE	0.0
M3	9.7	0.0	22.4	0.0		0.057 TL	8.25 PV	
Pipe: 15					-34.8	1.728 PL	1.25 PF	0.0
M3	9.7	0.0	22.4	0.0	4.8	120 FTG	---- PE	0.0
M4	9.7	0.0	22.5	0.0		0.032 TL	1.25 PV	
Pipe: 16					-40.7	1.728 PL	8.00 PF	0.3
M4	9.7	0.0	22.5	0.0	5.6	120 FTG	---- PE	0.0
M5	9.7	0.0	22.8	0.0		0.043 TL	8.00 PV	
Pipe: 17					-40.7	1.728 PL	7.00 PF	0.5
M5	9.7	0.0	22.8	0.0	5.6	120 FTG	E PE	0.0
8B	9.7	5.4	23.3	26.3		0.043 TL	12.60 PV	
Pipe: 18					-38.5	1.728 PL	3.00 PF	0.1
M6	9.7	0.0	25.5	0.0	5.3	120 FTG	---- PE	0.0
M7	9.7	0.0	25.6	0.0		0.038 TL	3.00 PV	
Pipe: 19					-51.6	1.728 PL	7.00 PF	0.5
M7	9.7	0.0	25.6	0.0	7.1	120 FTG	---- PE	0.0
M8	9.7	0.0	26.0	0.0		0.066 TL	7.00 PV	
Pipe: 20					-91.1	1.728 PL	9.50 PF	1.8
M8	9.7	0.0	26.0	0.0	12.5	120 FTG	---- PE	0.0
M9	9.7	0.0	27.8	0.0		0.189 TL	9.50 PV	
Pipe: 21					-136.4	1.728 PL	8.00 PF	3.2
M9	9.7	0.0	27.8	0.0	18.7	120 FTG	---- PE	0.0
M10	9.7	0.0	31.0	0.0		0.399 TL	8.00 PV	
Pipe: 22					11.6	1.728 PL	1.00 PF	0.1
M1	9.7	0.0	21.6	0.0	1.6	120 FTG	T PE	-0.4
R1	10.5	0.0	21.2	0.0		0.004 TL	12.30 PV	
Pipe: 23					10.9	1.728 PL	1.00 PF	0.0
M2	9.7	0.0	21.9	0.0	1.5	120 FTG	T PE	-0.4
R2	10.5	0.0	21.5	0.0		0.004 TL	12.30 PV	
Pipe: 24					5.9	1.728 PL	1.00 PF	0.0
M4	9.7	0.0	22.5	0.0	0.8	120 FTG	T PE	-0.4
R3	10.5	0.0	22.1	0.0		0.001 TL	12.30 PV	
Pipe: 25					38.5	1.728 PL	1.00 PF	0.5
M6	9.7	0.0	25.5	0.0	5.3	120 FTG	T PE	-0.4
R4	10.5	0.0	24.6	0.0		0.038 TL	12.30 PV	

JOB TITLE: Young Family Project - First Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT		LENGTH (FT)		PRESS. SUM. (PSI)
Pipe: 26					39.6	1.728	PL	1.00	PF	0.5
M8	9.7	0.0	26.0	0.0	5.4	120	FTG	T	PE	-0.4
R5	10.5	0.0	25.2	0.0		0.040	TL	12.30	PV	
Pipe: 27					45.2	1.728	PL	1.00	PF	0.6
M9	9.7	0.0	27.8	0.0	6.2	120	FTG	T	PE	-0.4
R6	10.5	0.0	26.8	0.0		0.052	TL	12.30	PV	
Pipe: 28					-136.4	1.728	PL	17.50	PF	13.7
M10	9.7	0.0	31.0	0.0	18.7	120	FTG	ET	PE	0.0
M11	9.7	0.0	44.7	0.0		0.399	TL	34.40	PV	
Pipe: 29					96.0	1.728	PL	66.50	PF	16.2
M11	9.7	0.0	44.7	0.0	13.1	120	FTG	T	PE	0.0
9B	9.7	5.4	28.5	29.1		0.209	TL	77.80	PV	
Pipe: 30					67.0	1.728	PL	48.50	PF	5.2
9B	9.7	5.4	28.5	29.1	9.2	120	FTG	----	PE	0.0
8B	9.7	5.4	23.3	26.3		0.107	TL	48.50	PV	
Pipe: 31					11.6	1.728	PL	7.00	PF	0.1
R1	10.5	0.0	21.2	0.0	1.6	120	FTG	E	PE	0.0
3B	10.5	5.4	21.1	25.0		0.004	TL	12.60	PV	
Pipe: 32					13.4	1.728	PL	12.00	PF	0.1
2B	10.5	5.4	21.2	25.0	1.8	120	FTG	----	PE	0.0
3B	10.5	5.4	21.1	25.0		0.005	TL	12.00	PV	
Pipe: 33					-38.5	1.728	PL	84.00	PF	3.4
2B	10.5	5.4	21.2	25.0	5.3	120	FTG	E	PE	0.0
R4	10.5	0.0	24.6	0.0		0.038	TL	89.60	PV	
Pipe: 34					25.4	1.728	PL	9.50	PF	0.3
M1	9.7	0.0	21.6	0.0	3.5	120	FTG	E	PE	0.4
1B	8.7	5.4	21.7	25.4		0.018	TL	15.10	PV	
Pipe: 35					10.9	1.728	PL	7.00	PF	0.0
R2	10.5	0.0	21.5	0.0	1.5	120	FTG	E	PE	0.0
4B	10.5	5.4	21.5	25.2		0.004	TL	12.60	PV	
Pipe: 36					-14.3	1.728	PL	12.00	PF	0.1
4B	10.5	5.4	21.5	25.2	2.0	120	FTG	----	PE	0.0
5B	10.5	5.4	21.6	25.3		0.006	TL	12.00	PV	
Pipe: 37					-39.6	1.728	PL	84.00	PF	3.6
5B	10.5	5.4	21.6	25.3	5.4	120	FTG	E	PE	0.0
R5	10.5	0.0	25.2	0.0		0.040	TL	89.60	PV	
Pipe: 38					5.9	1.728	PL	7.00	PF	0.0
R3	10.5	0.0	22.1	0.0	0.8	120	FTG	E	PE	0.0
6B	10.5	5.4	22.1	25.6		0.001	TL	12.60	PV	

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-1.SDF

JOB TITLE: Young Family Project - First Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT		LENGTH (FT)		PRESS. SUM. (PSI)
Pipe: 39					-19.6	1.728	PL	12.00	PF	0.1
6B	10.5	5.4	22.1	25.6	2.7	120	FTG	----	PE	0.0
7B	10.5	5.4	22.2	25.6		0.011	TL	12.00	PV	
Pipe: 40					-45.2	1.728	PL	84.00	PF	4.6
7B	10.5	5.4	22.2	25.6	6.2	120	FTG	E	PE	0.0
R6	10.5	0.0	26.8	0.0		0.052	TL	89.60	PV	
Pipe: 41					-232.4	2.203	PL	4.00	PF	3.5
M11	9.7	0.0	44.7	0.0	19.6	120	FTG	E	PE	0.0
M12	9.7	0.0	48.3	0.0		0.328	TL	10.80	PV	
Pipe: 41A					-232.4	4.310	PL	8.17	PF	0.3
M12	9.7	0.0	48.3	0.0	5.1	120	FTG	E	PE	3.5
M12A	1.5	H.S.	52.1	100.0		0.012	TL	22.07	PV	
Pipe: 42					-332.4	4.310	PL	0.50	PF	0.0
M12A	1.5	H.S.	52.1	100.0	7.3	120	FTG	----	PE	0.2
M13	1.0	0.0	52.3	0.0		0.024	TL	0.50	PV	
Pipe: 43					FIXED PRESSURE LOSS DEVICE					
M14	1.0	0.0	56.3	0.0	4.0 psi, 332.4 gpm					
M13	1.0	0.0	52.3	0.0						
Pipe: 44					-332.4	4.220	PL	4.00	PF	0.4
M14	1.0	0.0	56.3	0.0	7.6	140	FTG	E	PE	1.7
U1	-3.0	0.0	58.5	0.0		0.020	TL	22.00	PV	
Pipe: 45					-332.4	4.220	PL	30.00	PF	1.3
U1	-3.0	0.0	58.5	0.0	7.6	140	FTG	T	PE	0.0
SOURCE	-3.0	SRCE	59.8	(N/A)		0.020	TL	66.00	PV	

NOTES:

(1) Calculations were performed by the HASS 7.4 computer program under license no. 27011210 granted by
HRS Systems, Inc.
4792 LaVista Road
Tucker, GA 30084

(2) The system has been calculated to provide an average imbalance at each node of 0.002 gpm and a maximum imbalance at any node of 0.080 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 19.6 ft/sec at pipe 41.

(4) PIPE FITTINGS TABLE

Pipe Table Name: ALPHA.PIP

PAGE: D MATERIAL: DIRON HWC: 140

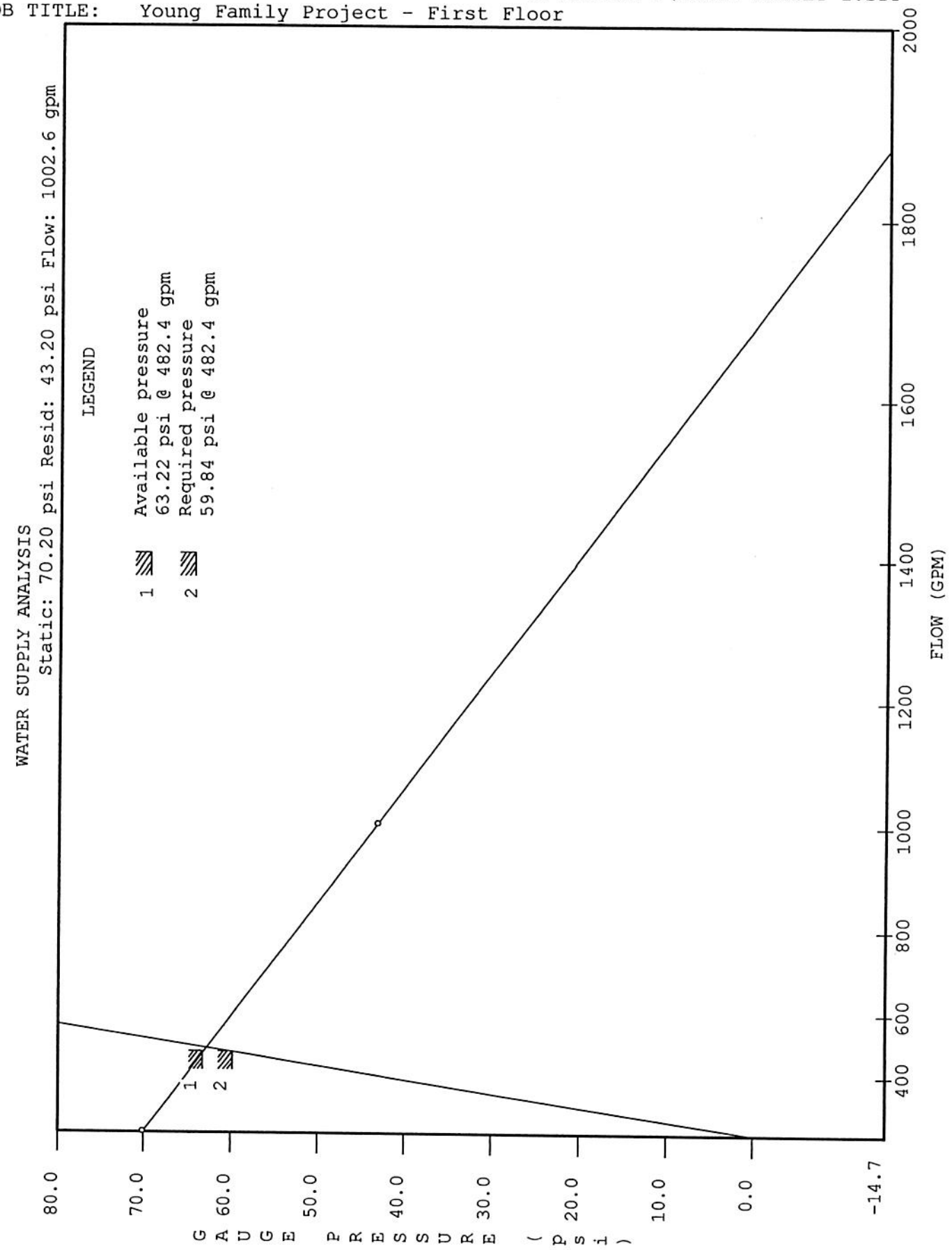
Diameter (in)	Equivalent Fitting Lengths in Feet						
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	N NPTee
4.220	18.00	36.00	11.00	39.00	22.00	4.00	36.00

PAGE: F MATERIAL: D-Flow HWC: 120

Diameter (in)	Equivalent Fitting Lengths in Feet								
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	A	D	N
1.728	5.60	11.30	2.80	12.70	8.20	1.40	0.00	0.00	0.00
2.203	6.80	13.60	4.10	15.00	8.20	1.40	0.00	0.00	0.00
4.310	13.90	27.90	8.40	30.70	16.70	2.80	0.00	0.00	0.00

PAGE: P MATERIAL: CPVC HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet				
	F 45	E 90	T Branch	R Run	C Coup.
1.101	1.00	7.00	5.00	1.00	1.00


WATER SUPPLY ANALYSIS
Static: 70.20 psi Resid: 43.20 psi Flow: 1002.6 gpm
LEGEND
1 Available pressure
63.22 psi @ 482.4 gpm
2 Required pressure
59.84 psi @ 482.4 gpm
GAUGE PRESSURE (psi)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-14.7
400
600
800
1000
1200
1400
1600
1800
2000
FLOW (GPM)

Utility Report:

Equivalent K-Factor Calculator

Node Name	Sprinkler K-Factor	Pres. (psi)	Dia. (in)	Pipe Len.(ft)	Ftgs.	Total Len.(ft)	H-W coef.	Equivalent K-factor
1B,2B,3B	5.60	7.00	1.191	1.00	T	10.28	120.00	5.44
4B,5B,6B	5.60	7.00	1.191	1.00	T	10.28	120.00	5.44
7B,8B,9B	5.60	7.00	1.191	1.00	T	10.28	120.00	5.44

Equivalent K-Factor Calculator

Node Name	Sprinkler K-Factor	Pres. (psi)	Dia. (in)	Pipe Len.(ft)	Ftgs.	Total Len.(ft)	H-W coef.	Equivalent K-factor
1A	4.30	9.10	1.109	1.00	E	3.62	120.00	4.26
2A	4.30	9.10	1.109	4.00	TE	13.18	120.00	4.17
3A,4A	4.30	17.50	1.109	1.00	T	7.56	120.00	4.23

ALPHA FIRE SUPPRESSION SYSTEMS, INC.
1621 AUSTIN WAY
SANTA ROSA, CA 95404

HYDRAULIC CALCULATIONS

FOR

YOUNG FAMILY PROJECT
1818 LA PLAZA, COTATI
SECOND FLOOR-MULTI FAMILY

FILE NUMBER:02-693
DATE: AUG 9, 2002

-DESIGN DATA-

OCCUPANCY CLASSIFICATION:	MULTI FAMILY - 13R
DENSITY:	.05 gpm/sq. ft.
AREA OF APPLICATION:	1024 sq. ft.
COVERAGE PER SPRINKLER:	256 sq. ft.
NUMBER OF SPRINKLERS CALCULATED:	4 sprinklers
TOTAL SPRINKLER WATER FLOW REQUIRED:	75.1 gpm
TOTAL WATER REQUIRED (including hose):	482.4 gpm
FLOW AND PRESSURE (@ BOR):	75.1 gpm @ 44.5 psi
SPRINKLER ORIFICE SIZE:	1/2 inch
NAME OF CONTRACTOR:	VANN CONSTRUCTION
DESIGN/LAYOUT BY:	M. RUZICKA
AUTHORITY HAVING JURISDICTION:	CITY OF COTATI
CONTRACTOR CERTIFICATION NUMBER:	C16-670313

CALCULATIONS BY HASS COMPUTER PROGRAM (LICENSE # 27011210)
HRS SYSTEMS, INC.
TUCKER, GA 30084

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-2.SDF
JOB TITLE: Young Family Project - Second Floor

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)
M11	9.7	- - - -	40.4	- - -
M12	9.7	- - - -	40.9	- - -
M12A	1.5	HOSE STREAM	44.5	100.0
M13	1.0	- - - -	44.7	- - -
M14	1.0	- - - -	48.7	- - -
U1	-3.0	- - - -	50.5	- - -
SOURCE	-3.0	SOURCE	51.0	175.1

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-2.SDF

JOB TITLE: Young Family Project - Second Floor

PIPE DATA

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)		PRESS. SUM. (PSI)
Pipe: 1					-19.6	1.101 PL	3.00	PF	0.8
1/2	20.8	4.3	21.1	19.6	6.6	150 FTG	2T	PE	-1.0
1A	23.0	0.0	21.0	0.0		0.065 TL	13.00	PV	
Pipe: 2					-4.8	1.101 PL	41.00	PF	0.3
1A	23.0	0.0	21.0	0.0	1.6	150 FTG	E6R	PE	-0.6
2A	24.5	0.0	20.6	0.0		0.005 TL	54.00	PV	
Pipe: 3					-14.7	1.101 PL	54.00	PF	2.5
1A	23.0	0.0	21.0	0.0	5.0	150 FTG	T6R	PE	0.0
5A	23.0	0.0	23.5	0.0		0.039 TL	65.00	PV	
Pipe: 4					17.8	1.101 PL	32.00	PF	2.5
2A	24.5	0.0	20.6	0.0	6.0	150 FTG	T8R	PE	0.0
2/2	24.5	4.2	18.1	17.7		0.055 TL	45.00	PV	
Pipe: 5					0.1	1.101 PL	5.25	PF	0.0
2/2	24.5	4.2	18.1	17.7	0.0	150 FTG	R	PE	0.0
3/1	24.5	4.2	18.1	18.0		0.000 TL	6.25	PV	
Pipe: 6					-17.9	1.101 PL	52.00	PF	3.7
3/1	24.5	4.2	18.1	18.0	6.0	150 FTG	T9R	PE	0.0
4A	24.5	0.0	21.8	0.0		0.055 TL	66.00	PV	
Pipe: 7					-22.7	1.101 PL	10.00	PF	2.5
2A	24.5	0.0	20.6	0.0	7.6	150 FTG	2ET	PE	0.6
3A	23.0	0.0	23.7	0.0		0.086 TL	29.00	PV	
Pipe: 8					14.7	1.101 PL	37.00	PF	1.8
3A	23.0	0.0	23.7	0.0	5.0	150 FTG	T4R	PE	0.0
4/1	23.0	4.2	21.9	19.8		0.039 TL	46.00	PV	
Pipe: 9					-5.1	1.101 PL	62.00	PF	0.5
4/1	23.0	4.2	21.9	19.8	1.7	150 FTG	3E5R	PE	-0.6
4A	24.5	0.0	21.8	0.0		0.005 TL	88.00	PV	
Pipe: 10					-23.0	1.101 PL	6.00	PF	1.1
4A	24.5	0.0	21.8	0.0	7.8	150 FTG	TR	PE	0.6
5A	23.0	0.0	23.5	0.0		0.088 TL	12.00	PV	
Pipe: 11					-37.4	1.101 PL	17.00	PF	8.0
3A	23.0	0.0	23.7	0.0	12.6	150 FTG	2ETR	PE	5.8
M3	9.7	0.0	37.5	0.0		0.216 TL	37.00	PV	
Pipe: 12					-37.7	1.101 PL	17.00	PF	8.1
5A	23.0	0.0	23.5	0.0	12.7	150 FTG	2ETR	PE	5.8
M7	9.7	0.0	37.4	0.0		0.220 TL	37.00	PV	

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-2.SDF

JOB TITLE: Young Family Project - Second Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)	PRESS. SUM. (PSI)
Pipe: 13					-4.2	1.728 PL	10.00 PF	0.0
M1	9.7	0.0	37.5	0.0	0.6	120 FTG	---- PE	0.0
M2	9.7	0.0	37.5	0.0		0.001 TL	10.00 PV	
Pipe: 14					0.6	1.728 PL	8.25 PF	0.0
M2	9.7	0.0	37.5	0.0	0.1	120 FTG	---- PE	0.0
M3	9.7	0.0	37.5	0.0		0.000 TL	8.25 PV	
Pipe: 15					-36.8	1.728 PL	1.25 PF	0.0
M3	9.7	0.0	37.5	0.0	5.0	120 FTG	---- PE	0.0
M4	9.7	0.0	37.5	0.0		0.035 TL	1.25 PV	
Pipe: 16					-26.9	1.728 PL	8.00 PF	0.2
M4	9.7	0.0	37.5	0.0	3.7	120 FTG	---- PE	0.0
M5	9.7	0.0	37.7	0.0		0.020 TL	8.00 PV	
Pipe: 17					-26.9	1.728 PL	7.00 PF	0.2
M5	9.7	0.0	37.7	0.0	3.7	120 FTG	E PE	0.0
8B	9.7	0.0	38.0	0.0		0.020 TL	12.60 PV	
Pipe: 18					4.2	1.728 PL	3.00 PF	0.0
M6	9.7	0.0	37.4	0.0	0.6	120 FTG	---- PE	0.0
M7	9.7	0.0	37.4	0.0		0.001 TL	3.00 PV	
Pipe: 19					-33.6	1.728 PL	7.00 PF	0.2
M7	9.7	0.0	37.4	0.0	4.6	120 FTG	---- PE	0.0
M8	9.7	0.0	37.6	0.0		0.030 TL	7.00 PV	
Pipe: 20					-38.4	1.728 PL	9.50 PF	0.4
M8	9.7	0.0	37.6	0.0	5.2	120 FTG	---- PE	0.0
M9	9.7	0.0	38.0	0.0		0.038 TL	9.50 PV	
Pipe: 21					-48.2	1.728 PL	8.00 PF	0.5
M9	9.7	0.0	38.0	0.0	6.6	120 FTG	---- PE	0.0
M10	9.7	0.0	38.4	0.0		0.058 TL	8.00 PV	
Pipe: 22					4.2	1.728 PL	1.00 PF	0.0
M1	9.7	0.0	37.5	0.0	0.6	120 FTG	T PE	-0.4
R1	10.5	0.0	37.1	0.0		0.001 TL	12.30 PV	
Pipe: 23					-4.8	1.728 PL	1.00 PF	0.0
M2	9.7	0.0	37.5	0.0	0.7	120 FTG	T PE	-0.4
R2	10.5	0.0	37.1	0.0		0.001 TL	12.30 PV	
Pipe: 24					-9.9	1.728 PL	1.00 PF	0.0
M4	9.7	0.0	37.5	0.0	1.4	120 FTG	T PE	-0.4
R3	10.5	0.0	37.2	0.0		0.003 TL	12.30 PV	
Pipe: 25					-4.2	1.728 PL	1.00 PF	0.0
M6	9.7	0.0	37.4	0.0	0.6	120 FTG	T PE	-0.4
R4	10.5	0.0	37.1	0.0		0.001 TL	12.30 PV	

JOB TITLE: Young Family Project - Second Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)	PRESS. SUM. (PSI)
Pipe: 26					4.8	1.728 PL	1.00 PF	0.0
M8	9.7	0.0	37.6	0.0	0.7	120 FTG	T PE	-0.4
R5	10.5	0.0	37.2	0.0		0.001 TL	12.30 PV	
Pipe: 27					9.9	1.728 PL	1.00 PF	0.0
M9	9.7	0.0	38.0	0.0	1.4	120 FTG	T PE	-0.4
R6	10.5	0.0	37.6	0.0		0.003 TL	12.30 PV	
Pipe: 28					-48.2	1.728 PL	17.50 PF	2.0
M10	9.7	0.0	38.4	0.0	6.6	120 FTG	ET PE	0.0
M11	9.7	0.0	40.4	0.0		0.058 TL	34.40 PV	
Pipe: 29					26.9	1.728 PL	66.50 PF	1.5
M11	9.7	0.0	40.4	0.0	3.7	120 FTG	T PE	0.0
9B	9.7	0.0	38.9	0.0		0.020 TL	77.80 PV	
Pipe: 30					26.9	1.728 PL	48.50 PF	1.0
9B	9.7	0.0	38.9	0.0	3.7	120 FTG	---- PE	0.0
8B	9.7	0.0	38.0	0.0		0.020 TL	48.50 PV	
Pipe: 31					4.2	1.728 PL	7.00 PF	0.0
R1	10.5	0.0	37.1	0.0	0.6	120 FTG	E PE	0.0
3B	10.5	0.0	37.1	0.0		0.001 TL	12.60 PV	
Pipe: 32					-4.2	1.728 PL	12.00 PF	0.0
2B	10.5	0.0	37.1	0.0	0.6	120 FTG	---- PE	0.0
3B	10.5	0.0	37.1	0.0		0.001 TL	12.00 PV	
Pipe: 33					4.2	1.728 PL	84.00 PF	0.1
2B	10.5	0.0	37.1	0.0	0.6	120 FTG	E PE	0.0
R4	10.5	0.0	37.1	0.0		0.001 TL	89.60 PV	
Pipe: 34					0.0	1.728 PL	9.50 PF	0.0
M1	9.7	0.0	37.5	0.0	0.0	120 FTG	E PE	0.4
1B	8.7	0.0	37.9	0.0		0.000 TL	15.10 PV	
Pipe: 35					-4.8	1.728 PL	7.00 PF	0.0
R2	10.5	0.0	37.1	0.0	0.7	120 FTG	E PE	0.0
4B	10.5	0.0	37.2	0.0		0.001 TL	12.60 PV	
Pipe: 36					-4.8	1.728 PL	12.00 PF	0.0
4B	10.5	0.0	37.2	0.0	0.7	120 FTG	---- PE	0.0
5B	10.5	0.0	37.2	0.0		0.001 TL	12.00 PV	
Pipe: 37					-4.8	1.728 PL	84.00 PF	0.1
5B	10.5	0.0	37.2	0.0	0.7	120 FTG	E PE	0.0
R5	10.5	0.0	37.2	0.0		0.001 TL	89.60 PV	
Pipe: 38					-9.9	1.728 PL	7.00 PF	0.0
R3	10.5	0.0	37.2	0.0	1.4	120 FTG	E PE	0.0
6B	10.5	0.0	37.3	0.0		0.003 TL	12.60 PV	

DATE: 8/9/2002 C:\HASSDA~1\YOUNG FAMILY-2.SDF

JOB TITLE: Young Family Project - Second Floor

PIPE TAG / END NODES	ELEV. (FT)	NOZ. (K)	PT (PSI)	DISC. (GPM)	Q(GPM) VEL(FPS)	DIA(IN) HW(C) FL/FT	LENGTH (FT)	PRESS. SUM. (PSI)
Pipe: 39					-9.9	1.728 PL	12.00 PF	0.0
6B	10.5	0.0	37.3	0.0	1.4	120 FTG	---- PE	0.0
7B	10.5	0.0	37.3	0.0		0.003 TL	12.00 PV	
Pipe: 40					-9.9	1.728 PL	84.00 PF	0.3
7B	10.5	0.0	37.3	0.0	1.4	120 FTG	E PE	0.0
R6	10.5	0.0	37.6	0.0		0.003 TL	89.60 PV	
Pipe: 41					-75.1	2.203 PL	4.00 PF	0.4
M11	9.7	0.0	40.4	0.0	6.3	120 FTG	E PE	0.0
M12	9.7	0.0	40.9	0.0		0.041 TL	10.80 PV	
Pipe: 41A					-75.1	4.310 PL	8.17 PF	0.0
M12	9.7	0.0	40.9	0.0	1.7	120 FTG	E PE	3.5
M12A	1.5	H.S.	44.5	100.0		0.002 TL	22.07 PV	
Pipe: 42					-175.1	4.310 PL	0.50 PF	0.0
M12A	1.5	H.S.	44.5	100.0	3.9	120 FTG	---- PE	0.2
M13	1.0	0.0	44.7	0.0		0.007 TL	0.50 PV	
Pipe: 43					FIXED PRESSURE LOSS DEVICE			
M14	1.0	0.0	48.7	0.0	4.0 psi, 175.1 gpm			
M13	1.0	0.0	44.7	0.0				
Pipe: 44					-175.1	4.220 PL	4.00 PF	0.1
M14	1.0	0.0	48.7	0.0	4.0	140 FTG	E PE	1.7
U1	-3.0	0.0	50.5	0.0		0.006 TL	22.00 PV	
Pipe: 45					-175.1	4.220 PL	30.00 PF	0.4
U1	-3.0	0.0	50.5	0.0	4.0	140 FTG	T PE	0.0
SOURCE	-3.0	SRCE	51.0	(N/A)		0.006 TL	66.00 PV	

NOTES:

(1) Calculations were performed by the HASS 7.4 computer program under license no. 27011210 granted by
HRS Systems, Inc.
4792 LaVista Road
Tucker, GA 30084

(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 0.054 gpm.

(3) Total pressure at each node is used in balancing the system. Maximum water velocity is 12.7 ft/sec at pipe 12.

(4) PIPE FITTINGS TABLE

Pipe Table Name: ALPHA.PIP

PAGE: D MATERIAL: DIRON HWC: 140

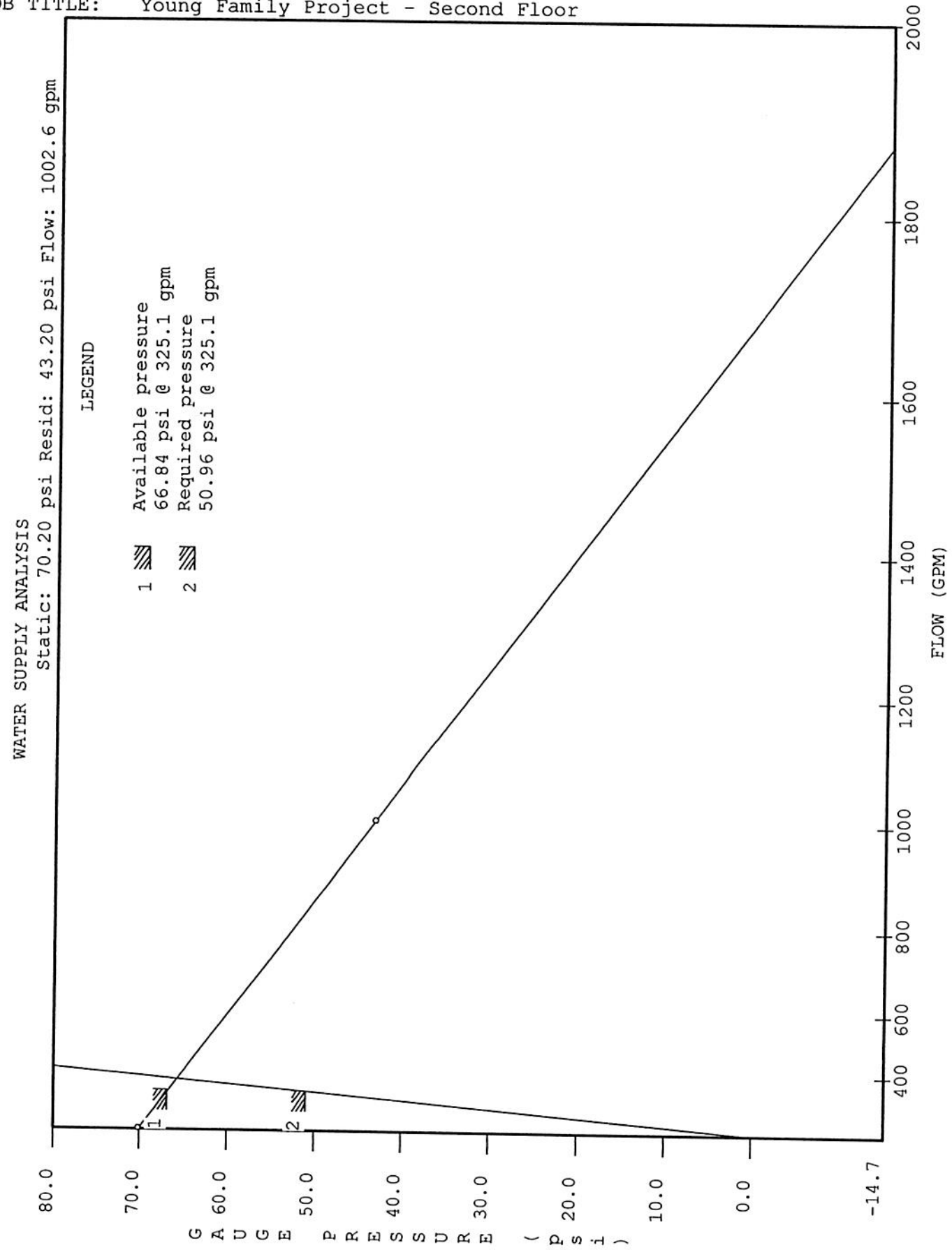
Diameter (in)	Equivalent Fitting Lengths in Feet						
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	N NPTee
4.220	18.00	36.00	11.00	39.00	22.00	4.00	36.00

PAGE: F MATERIAL: D-Flow HWC: 120

Diameter (in)	Equivalent Fitting Lengths in Feet								
	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	A	D	N
1.728	5.60	11.30	2.80	12.70	8.20	1.40	0.00	0.00	0.00
2.203	6.80	13.60	4.10	15.00	8.20	1.40	0.00	0.00	0.00
4.310	13.90	27.90	8.40	30.70	16.70	2.80	0.00	0.00	0.00

PAGE: P MATERIAL: CPVC HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet				
	F 45	E 90	T Branch	R Run	C Coup.
1.101	1.00	7.00	5.00	1.00	1.00

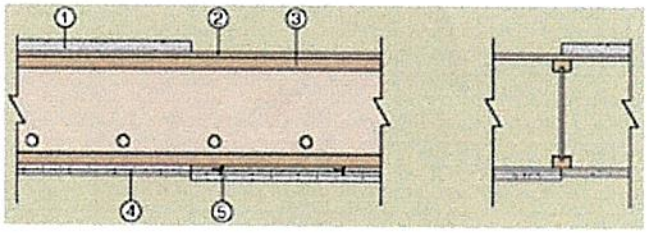

WATER SUPPLY ANALYSIS
Static: 70.20 psi Resid: 43.20 psi Flow: 1002.6 gpm
LEGEND
1 Available pressure
66.84 psi @ 325.1 gpm
2 Required pressure
50.96 psi @ 325.1 gpm
GAUGE PRESSURE (psi)
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-14.7
400
600
800
1000
1200
1400
1600
1800
2000
FLOW (GPM)

1818 LA PLAZA

THE YOUNG PROJECT

DESIGN NO. TJM/FCA 60-01
ASSEMBLY RATING - 60 MINUTE
FLOOR/CEILING ASSEMBLY

STC 50 with Resilient Channels
STC 58 with Minimum 1-1/2" of Topping & Resilient Channels



(1) Topping (Optional) - Lightweight concrete or proprietary topping.
(2) SubFlooring - 5/8" plywood or oriented strandbaord (OSB).
(3) Structural Members - TJI® Series Joists, Product Fire Classes A-H, (see Section 4 of General Information).
(4) Gypsum Board -
Option 1: Two layers 1/2" USG/CGC "Sheetrock Fire Code C" or Westroc "Fireboard C" gypsum board.
Option 2: Tow layers 5/8" Type X.
(5) Furring Channel (Optional) - Resilient channels or hat channel fastened to joist. Joist spacing may be increased to 32" o.c. if hat channels are used and spaced 16" o.c. maximum. (Plywood thickness shall be upgraded in accordance with Trus Joist Specifications). To Maintain an STC of 50, resilient channels may be omitted if 1-1/2" of topping is used.

21146

MiTek Industries, Inc.
7777 GREENBACK LANE
SUITE 109
CITRUS HEIGHTS CA 95610
USA
FAX (916) 676 1909
TELEPHONE (916) 676 1900

Re: young

The truss drawing(s) referenced below have been prepared by MiTek Industries, Inc. under my direct supervision based on the parameters provided by All Truss Inc.

Pages or sheets covered by this seal: R2290307 thru R2290319

My license renewal date for the state of California is September 30, 2004.

May 24,2002

Yu, Ray

The seal on these drawings indicate acceptance of professional engineering responsibility solely for the truss components shown. The suitability and use of this component for any particular building is the responsibility of the building designer, per ANSI/TPI-1995 Sec. 2.

Job	Truss	Truss Type	Qty	Ply	R2290307
YOUNG	A	VAULTED	2	1	(optional)

ALL TRUSS INC., SONOMA, Ca. 95476 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:08 2002 Page 1

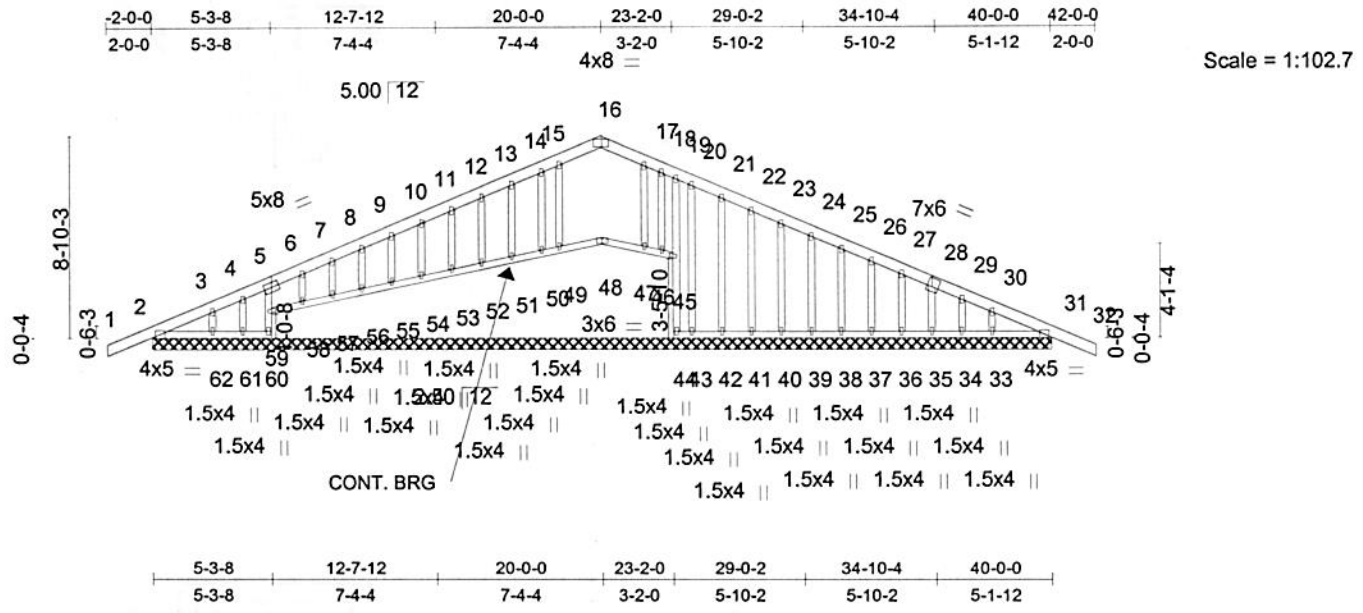


Plate Offsets (X,Y): [16:0-3-11,Edge], [28:0-3-0,0-4-8]

LOADING (psf)		SPACING 2-0-0		CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.11	Vert(LL)	n/a	-	n/a	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.04	Vert(TL)	0.01	1-2	>999		
BCLL	0.0	Rep Stress Incr	NO	WB	0.04	Horz(TL)	0.01	31	n/a		
BCDL	5.0	Code	UBC97/ANSI95	(Matrix)		1st LC LL Min l/defl = 240				Weight: 271 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
OTHERS 2 X 4 DF Std-G

BRACING
TOP CHORD Sheathed or 6-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 10-0-0 oc bracing, Except:
6-0-0 oc bracing: 2-62,61-62,60-61,59-60,44-45.

REACTIONS (lb/size) 2=216/40-0-0, 60=76/40-0-0, 48=23/40-0-0, 44=33/40-0-0, 31=218/40-0-0, 49=153/40-0-0, 47=147/40-0-0, 50=47/40-0-0, 51=66/40-0-0, 52=81/40-0-0, 53=81/40-0-0, 54=80/40-0-0, 55=80/40-0-0, 56=80/40-0-0, 57=78/40-0-0, 58=87/40-0-0, 61=83/40-0-0, 62=81/40-0-0, 46=43/40-0-0, 43=39/40-0-0, 42=82/40-0-0, 41=82/40-0-0, 40=80/40-0-0, 39=80/40-0-0, 38=80/40-0-0, 37=80/40-0-0, 36=81/40-0-0, 35=79/40-0-0, 34=83/40-0-0, 33=81/40-0-0
Max Horz 2=-15(load case 3)
Max Uplift 2=-58(load case 5), 31=-59(load case 5), 50=-16(load case 5), 51=-11(load case 5), 61=-14(load case 5), 46=-19(load case 3), 43=-25(load case 3), 34=-10(load case 5)
Max Grav 2=216(load case 1), 60=76(load case 1), 48=62(load case 2), 44=33(load case 1), 31=218(load case 1), 49=153(load case 1), 47=147(load case 1), 50=52(load case 6), 51=70(load case 6), 52=81(load case 1), 53=81(load case 1), 54=80(load case 6), 55=80(load case 6), 56=80(load case 1), 57=78(load case 1), 58=88(load case 6), 61=83(load case 6), 62=100(load case 2), 46=49(load case 7), 43=45(load case 2), 42=82(load case 1), 41=82(load case 7), 40=80(load case 1), 39=80(load case 7), 38=80(load case 1), 37=80(load case 7), 36=81(load case 1), 35=79(load case 7), 34=83(load case 1), 33=100(load case 2)

FORCES(lb) - First Load Case Only
TOP CHORD 1-2=34, 2-3=-39, 3-4=13, 4-5=12, 5-6=-20, 6-7=-21, 7-8=-20, 8-9=-20, 9-10=-20, 10-11=-20, 11-12=-20, 12-13=-21, 13-14=11, 14-15=11, 15-16=-42, 16-17=-43, 17-18=9, 18-19=-5, 19-20=-8, 20-21=-18, 21-22=-18, 22-23=-17, 23-24=-17, 24-25=-17, 25-26=-17, 26-27=-17, 27-28=-17, 28-29=-18, 29-30=-18, 30-31=-45, 31-32=34
BOT CHORD 2-62=-0, 61-62=-0, 60-61=-0, 59-60=-72, 5-59=-68, 58-59=9, 57-58=8, 56-57=8, 55-56=8, 54-55=8, 53-54=8, 52-53=8, 51-52=8, 50-51=8, 49-50=8, 48-49=9, 47-48=9, 46-47=8, 45-46=9, 44-45=-20, 19-45=-25, 43-44=4, 42-43=4, 41-42=4, 40-41=4, 39-40=4, 38-39=4, 37-38=4, 36-37=4, 35-36=4, 34-35=5, 33-34=5, 31-33=5
WEBS 15-49=-138, 17-47=-135, 14-50=-39, 13-51=-51, 12-52=-68, 11-53=-67, 10-54=-67, 9-55=-67, 8-56=-67, 7-57=-66, 6-58=-71, 4-61=-67, 3-62=-71, 18-46=-30, 20-43=-40, 21-42=-67, 22-41=-69, 23-40=-67, 24-39=-67, 25-38=-67, 26-37=-67, 27-36=-68, 28-35=-66, 29-34=-67, 30-33=-71

NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) Truss designed for wind loads in the plane of the truss only. For studs exposed to wind (normal to the face), see MiTek "Standard Gable End Detail"
4) All plates are 2x4 MII20 unless otherwise indicated.
5) Gable requires continuous bottom chord bearing.

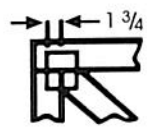
Continued on page 2

REGISTERED PROFESSIONAL ENGINEER
REDONG YU
NO. C049919
EXP. 9-30-04
STATE OF CALIFORNIA

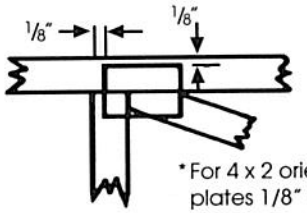
May 24,2002

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4 — The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

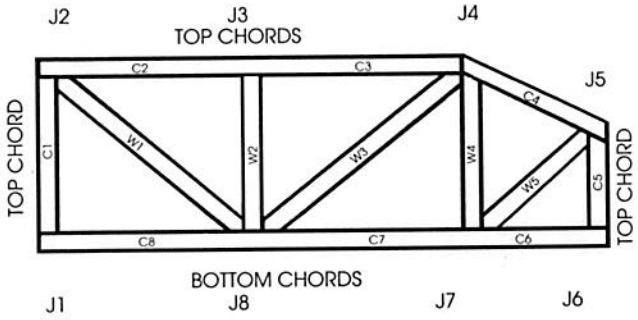
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

⚠ General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

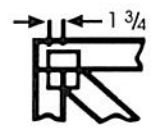
Job	Truss	Truss Type	Qty	Ply	R2290307
YOUNG	A	VAULTED	2	1	(optional)

NOTES
6) Gable studs spaced at 1-4-0 oc.
7) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B, UBC-97.
8) A plate rating reduction of 20% has been applied for the green lumber members.
9) This truss has been designed with ANSI/TPI 1-1995 criteria.

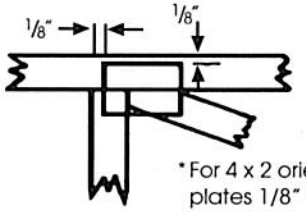
LOAD CASE(S) Standard

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4

The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

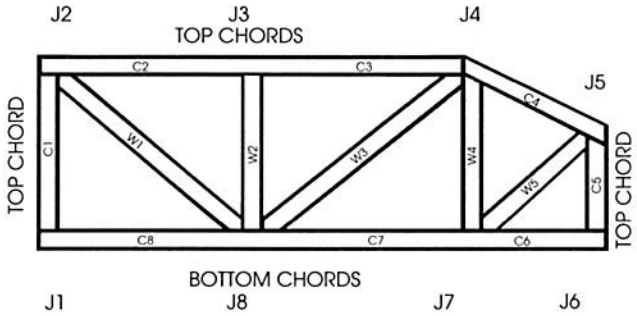
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

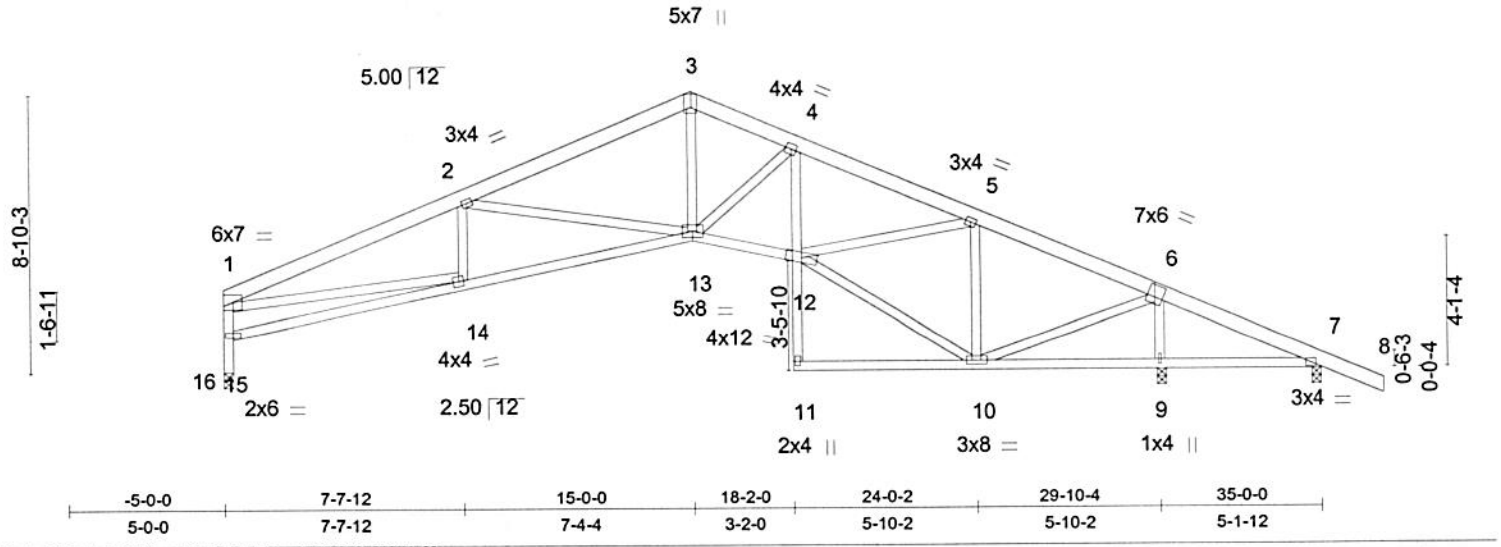
1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply	R2290308
YOUNG	A1	VAULTED	12	1	(optional)

ALL TRUSS INC., SONOMA, Ca. 95476 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:09 2002 Page 1

-5-0-0	7-7-12	15-0-0	18-2-0	24-2-0	29-10-4	35-0-0	37-0-0
5-0-0	7-7-12	7-4-4	3-2-0	5-10-2	5-10-2	5-1-12	2-0-0

Scale = 1:73.6



-5-0-0	7-7-12	15-0-0	18-2-0	24-0-2	29-10-4	35-0-0
5-0-0	7-7-12	7-4-4	3-2-0	5-10-2	5-10-2	5-1-12

Plate Offsets (X,Y): [3:0-2-3,Edge], [6:0-3-0,0-4-8]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.81	Vert(LL)	-0.09	13-14	>999	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.31	Vert(TL)	-0.19	13-14	>999		
BCLL	0.0	Rep Stress Incr	YES	WB	0.57	Horz(TL)	0.11	9	n/a		
BCDL	5.0	Code	UBC97/ANSI95	(Matrix)		1st LC LL Min l/defl = 240				Weight: 213 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
WEBS 2 X 4 DF Std-G *Except*
1-16 2 X 4 DF Stud-G

REACTIONS (lb/size) 7=-120/0-3-8, 9=1486/0-3-8, 16=824/0-3-8
Max Horz 16=-81(load case 3)
Max Uplift 7=-176(load case 6)

BRACING
TOP CHORD Sheathed or 5-7-12 oc purlins, except end verticals.
BOT CHORD Rigid ceiling directly applied or 10-0-0 oc bracing, Except:
6-0-0 oc bracing: 9-10,7-9.

LEGDOWN NOT CHECKED FOR ANY LATERAL LOADS.
THIS DESIGN SHALL BE REVIEWED AND APPROVED
BY PROJECT ENGINEER OR QUALIFIED BUILDING DESIGNER
FOR LATERAL LOAD AND LATERAL STABILITY.

FORCES (lb) - First Load Case Only
TOP CHORD 1-2=-1876, 2-3=-1532, 3-4=-1476, 4-5=-1610, 5-6=-684, 6-7=923, 7-8=34, 15-16=-824, 1-15=-828
BOT CHORD 14-15=263, 13-14=1706, 12-13=1454, 11-12=32, 4-12=-63, 10-11=20, 9-10=-697, 7-9=-786
WEBS 2-14=-175, 2-13=-316, 3-13=803, 4-13=-97, 10-12=654, 5-12=873, 5-10=-817, 6-10=1375, 6-9=-1420
, 1-14=1411

NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Bearing at joint(s) 16 considers parallel to grain value using ANSI/TPI 1-1995 angle to grain formula. Building designer should verify capacity of bearing surface.
6) This truss has been designed with ANSI/TPI 1-1995 criteria.

LOAD CASE(S) Standard

REGISTERED PROFESSIONAL ENGINEER
REDONG YU
NO. C049919
EXP. 9-30-04
STATE OF CALIFORNIA

May 24,2002

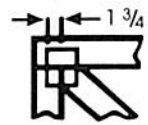
WARNING - Verify design parameters and READ NOTES ON THIS AND REVERSE SIDE BEFORE USE

Design valid for use only with **MiTek** connectors. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer – not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection, and bracing, consult **QST-88 Quality Standard, DSB-89 Bracing Specification, and HIB-91 Handling Installation and Bracing Recommendation** available from **Truss Plate Institute, 583 D'Onofrio Drive, Madison, WI 53719**

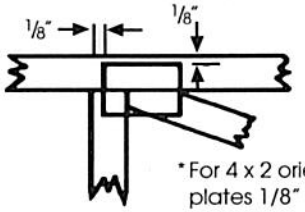
MiTek Industries, Inc.

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4 — The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

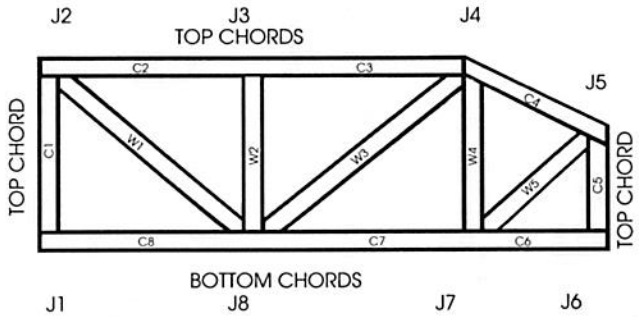
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

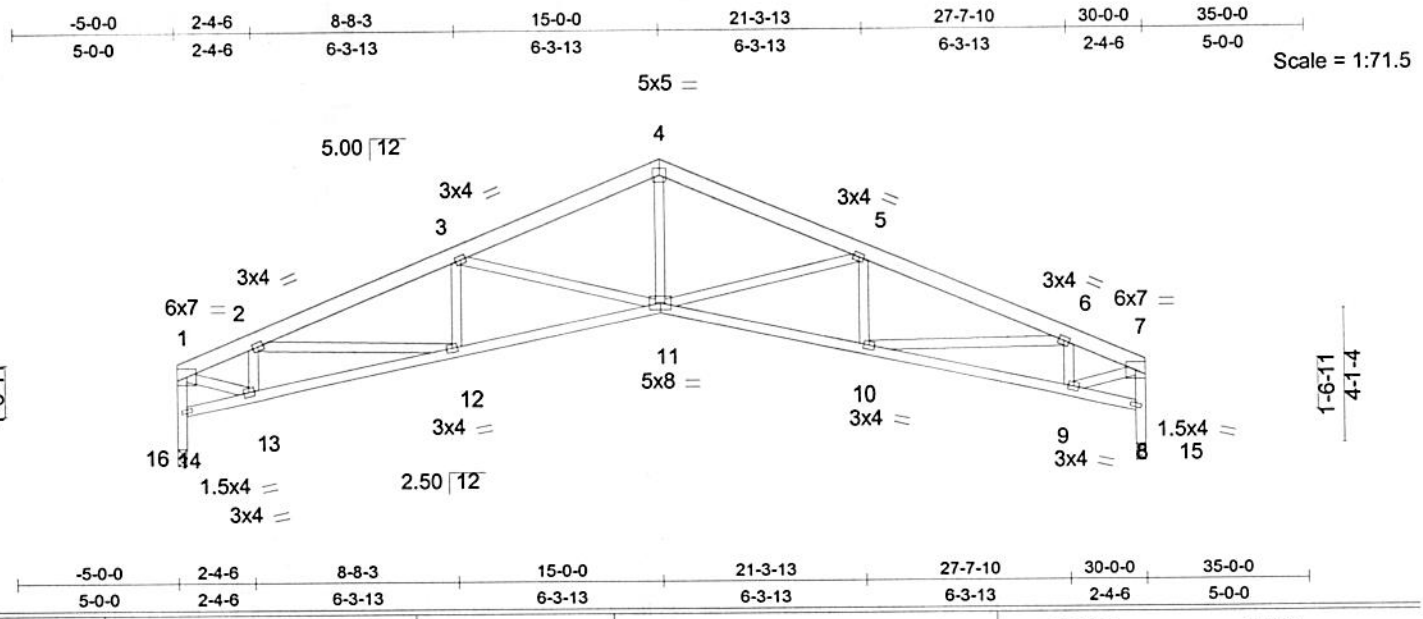
⚠ General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply	R2290309
YOUNG	A2	ROOF TRUSS	10	1	(optional)

ALL TRUSS INC., SONOMA, Ca. 95476 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:10 2002 Page 1



LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.22	Vert(LL)	-0.09	11	>999	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.30	Vert(TL)	-0.17	11-12	>999		
BCLL	0.0	Rep Stress Incr	YES	WB	0.47	Horz(TL)	0.16	15	n/a		
BCDL	5.0	Code	UBC97/ANSI95	(Matrix)		1st LC LL Min l/defl = 240				Weight: 172 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
WEBS 2 X 4 DF Std-G *Except*
7-15 2 X 4 DF Stud-G, 1-16 2 X 4 DF Stud-G

REACTIONS (lb/size) 15=891/0-3-8, 16=891/0-3-8
Max Horz 16=10(load case 4)

BRACING
TOP CHORD Sheathed or 5-5-3 oc purlins, except end verticals.
BOT CHORD Rigid ceiling directly applied or 10-0-0 oc bracing.

LEGDOWN NOT CHECKED FOR ANY LATERAL LOADS.
THIS DESIGN SHALL BE REVIEWED AND APPROVED
BY PROJECT ENGINEER OR QUALIFIED BUILDING DESIGNER
FOR LATERAL LOAD AND LATERAL STABILITY.

FORCES (lb) - First Load Case Only
TOP CHORD 1-2=-1241, 2-3=-2049, 3-4=-1760, 4-5=-1760, 5-6=-2049, 6-7=-1241, 8-15=-891, 7-8=-886, 14-16=-891, 1-14=-886
BOT CHORD 13-14=44, 12-13=1169, 11-12=1882, 10-11=1882, 9-10=1169, 8-9=44
WEBS 4-11=974, 2-13=-580, 3-12=-127, 5-10=-127, 6-9=-580, 2-12=699, 3-11=-273, 5-11=-273, 6-10=699, 7-9=1164, 1-13=1164

NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Bearing at joint(s) 15, 16 considers parallel to grain value using ANSI/TPI 1-1995 angle to grain formula. Building designer should verify capacity of bearing surface.
6) This truss has been designed with ANSI/TPI 1-1995 criteria.

LOAD CASE(S) Standard

May 24,2002

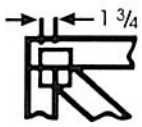
WARNING - Verify design parameters and READ NOTES ON THIS AND REVERSE SIDE BEFORE USE

Design valid for use only with **MiTek** connectors. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer – not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection, and bracing, consult **QST-88 Quality Standard, DSB-89 Bracing Specification, and HIB-91 Handling Installation and Bracing Recommendation** available from **Truss Plate Institute, 583 D'Onofrio Drive, Madison, WI 53719**

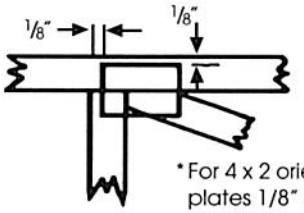
MiTek Industries, Inc.

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4

The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

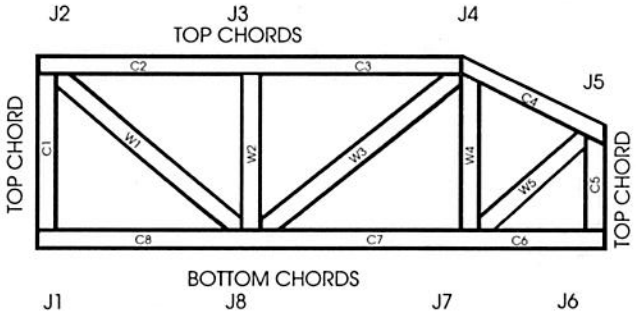
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

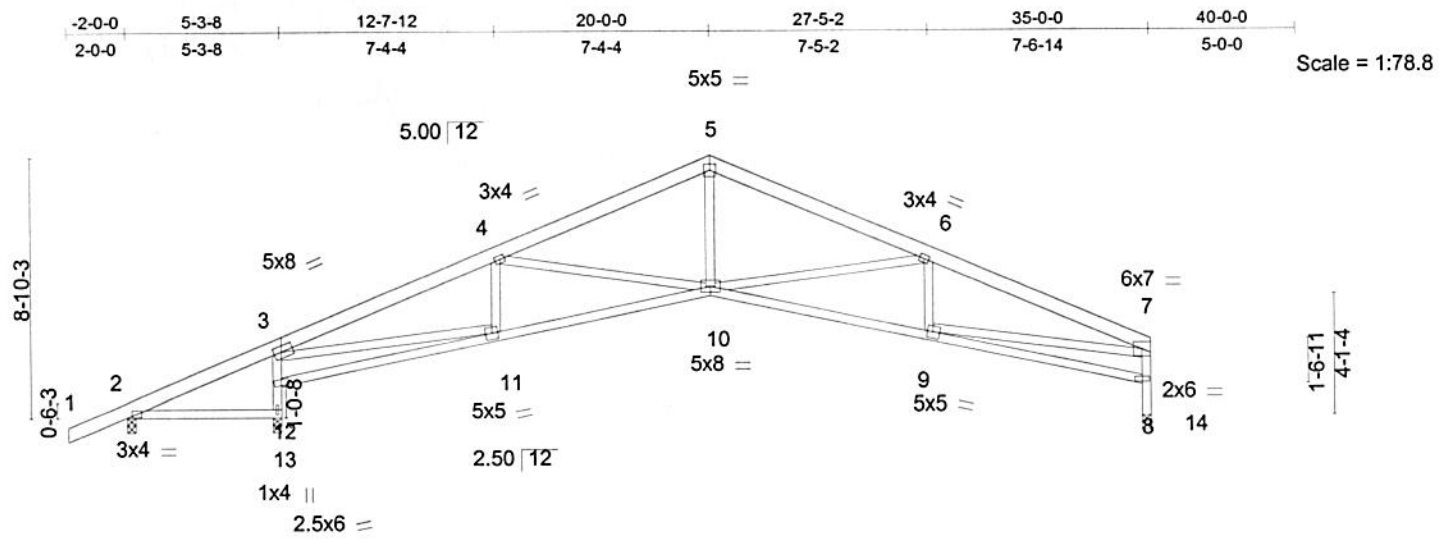
General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply		
YOUNG	A3	VAULT	14	1	(optional)	R2290310

ALL TRUSS INC., SONOMA, Ca. 95476 — 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:11 2002 Page 1



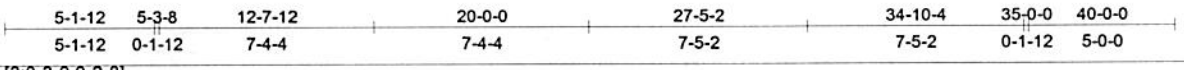


Plate Offsets (X,Y): [3:0-3-0,0-2-8]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.84	Vert(LL)	-0.11	10-11	>999	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.34	Vert(TL)	-0.21	9-10	>999		
BCLL	0.0	Rep Stress Incr	YES	WB	0.70	Horz(TL)	0.12	14	n/a		
BCDL	5.0	Code	UBC97/ANSI95	(Matrix)		1st LC LL Min l/defl = 240				Weight: 191 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
WEBS 2 X 4 DF Std-G *Except*
7-14 2 X 4 DF Stud-G

BRACING
TOP CHORD Sheathed or 5-5-7 oc purlins, except end verticals.
BOT CHORD Rigid ceiling directly applied or 6-0-0 oc bracing.

LEGDOWN NOT CHECKED FOR ANY LATERAL LOADS.
THIS DESIGN SHALL BE REVIEWED AND APPROVED
BY PROJECT ENGINEER OR QUALIFIED BUILDING DESIGNER
FOR LATERAL LOAD AND LATERAL STABILITY.

REACTIONS (lb/size) 2=179/0-3-8, 13=1136/0-3-8, 14=874/0-3-8
Max Horz 2=81(load case 4)
Max Uplift 2=-28(load case 5)
Max Grav 2=198(load case 6), 13=1136(load case 1), 14=874(load case 1)

FORCES (lb) - First Load Case Only
TOP CHORD 1-2=34, 2-3=196, 3-4=-1910, 4-5=-1730, 5-6=-1732, 6-7=-2010, 8-14=-874, 7-8=-880
BOT CHORD 2-13=-118, 12-13=-1123, 3-12=-1066, 11-12=-41, 10-11=1731, 9-10=1832, 8-9=272
WEBS 4-11=-233, 4-10=-149, 5-10=877, 6-10=-250, 6-9=-201, 7-9=1525, 3-11=1717

NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) Bearing at joint(s) 14 considers parallel to grain value using ANSI/TPI 1-1995 angle to grain formula. Building designer should verify capacity of bearing surface.
6) This truss has been designed with ANSI/TPI 1-1995 criteria.

LOAD CASE(S) Standard

REGISTERED PROFESSIONAL ENGINEER
REDONG YU
NO. C049919
EXP. 9-30-04
STATE OF CALIFORNIA

May 24,2002

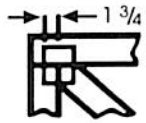
WARNING - Verify design parameters and READ NOTES ON THIS AND REVERSE SIDE BEFORE USE

Design valid for use only with **MiTek** connectors. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer – not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection, and bracing, consult **QST-88 Quality Standard, DSB-89 Bracing Specification, and HIB-91 Handling Installation and Bracing Recommendation** available from **Truss Plate Institute, 583 D'Onofrio Drive, Madison, WI 53719**

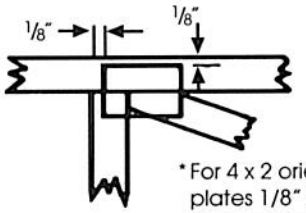
MiTek Industries, Inc.

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4

The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

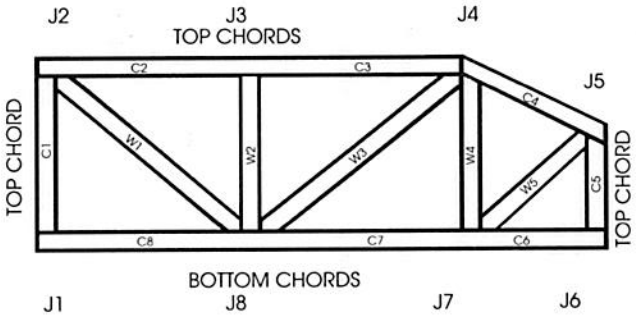
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply		R2290311
YOUNG	A4	COMMON	4	1	(optional)	

ALL TRUSS INC., SONOMA, Ca. 95476 — 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:12 2002 Page 1

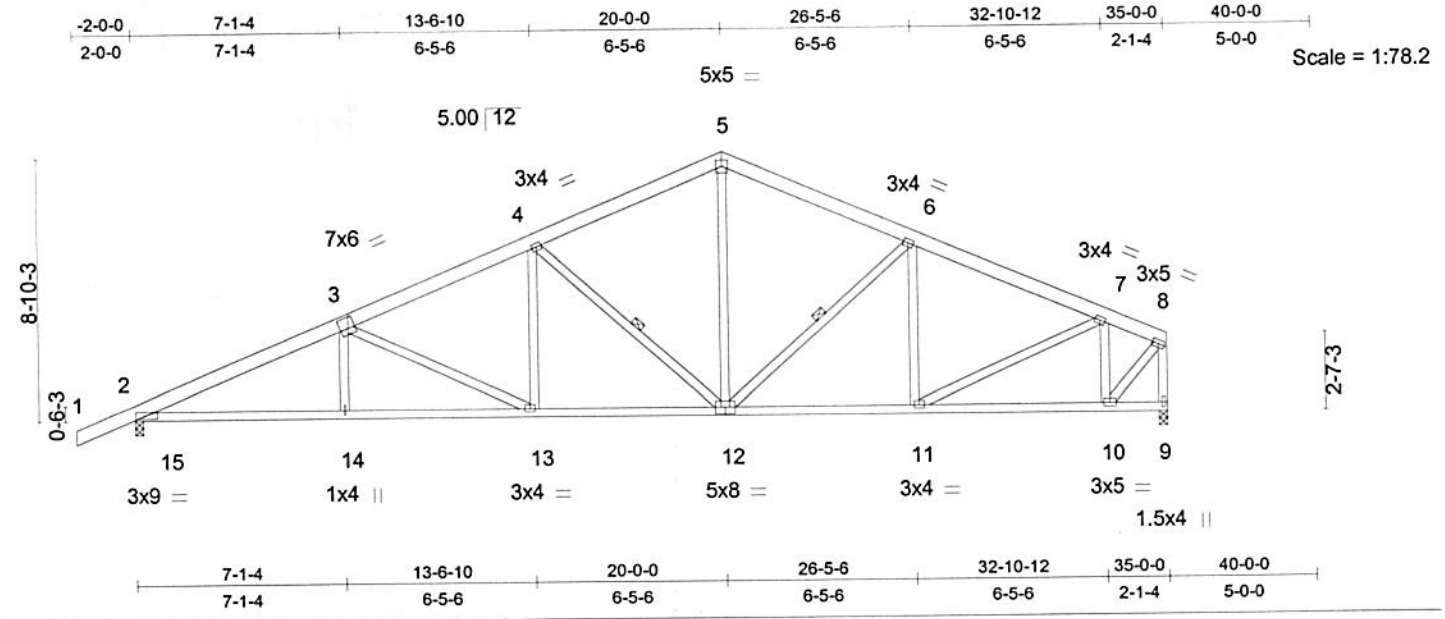


Plate Offsets (X,Y): [2:0-9-3,0-0-6], [3:0-3-0,0-4-8], [12:0-4-0,0-3-0]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.23	Vert(LL)	-0.09	13-14	>999	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.42	Vert(TL)	-0.17	13-14	>999		
BCLL	0.0	Rep Stress Incr	YES	WB	0.58	Horz(TL)	0.09	9	n/a		
BCDL	5.0	Code	UBC97/ANSI95	(Matrix)		1st LC LL Min l/defl = 240				Weight: 214 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
WEBS 2 X 4 DF Std-G

BRACING
TOP CHORD Sheathed or 3-11-1 oc purlins.
BOT CHORD Rigid ceiling directly applied or 8-0-12 oc bracing.
WEBS 1 Row at midpt 4-12, 6-12

REACTIONS (lb/size) 2=1152/0-3-8, 9=1038/0-3-8
Max Horz 2=424(load case 13)
Max Uplift 2=-571(load case 12), 9=-369(load case 11)
Max Grav 2=1830(load case 7), 9=1554(load case 6)

FORCES(lb) - First Load Case Only
TOP CHORD 1-2=34, 2-3=-2149, 3-4=-1689, 4-5=-1216, 5-6=-1217, 6-7=-1335, 7-8=-716
BOT CHORD 2-15=1902, 14-15=1902, 13-14=1898, 12-13=1503, 11-12=1177, 10-11=669, 9-10=0
WEBS 3-14=69, 4-13=261, 5-12=553, 6-11=-178, 7-10=-722, 3-13=-442, 4-12=-584, 6-12=-147, 7-11=563, 8-9=-1040, 8-10=1023

NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) This truss has been designed with ANSI/TPI 1-1995 criteria.
6) This truss has been designed for a total drag load of 2500 lb. Connect truss to resist drag loads along bottom chord from 0-0-0 to 1-0-0 for 2500.0 plf.

LOAD CASE(S) Standard

May 24,2002

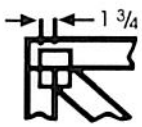
WARNING - Verify design parameters and READ NOTES ON THIS AND REVERSE SIDE BEFORE USE

Design valid for use only with **MiTek** connectors. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer – not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection, and bracing, consult **QST-88 Quality Standard, DSB-89 Bracing Specification, and HIB-91 Handling Installation and Bracing Recommendation** available from **Truss Plate Institute, 583 D'Onofrio Drive, Madison, WI 53719**

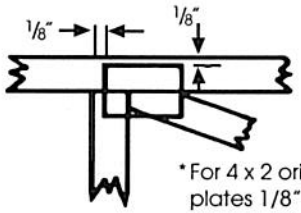
MiTek Industries, Inc.

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4 — The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

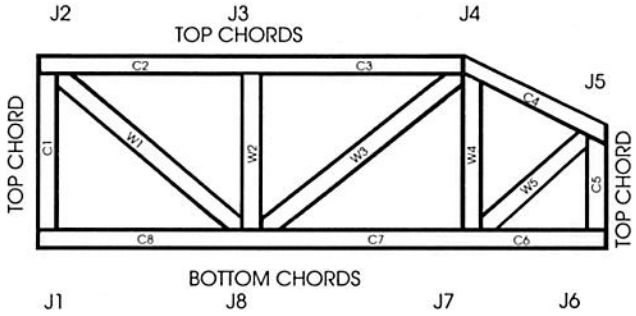
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply	R2290312
YOUNG	A5	VAULTED	14	1	(optional)

ALL TRUSS INC., SONOMA, Ca. 95476 — 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:13 2002 Page 1

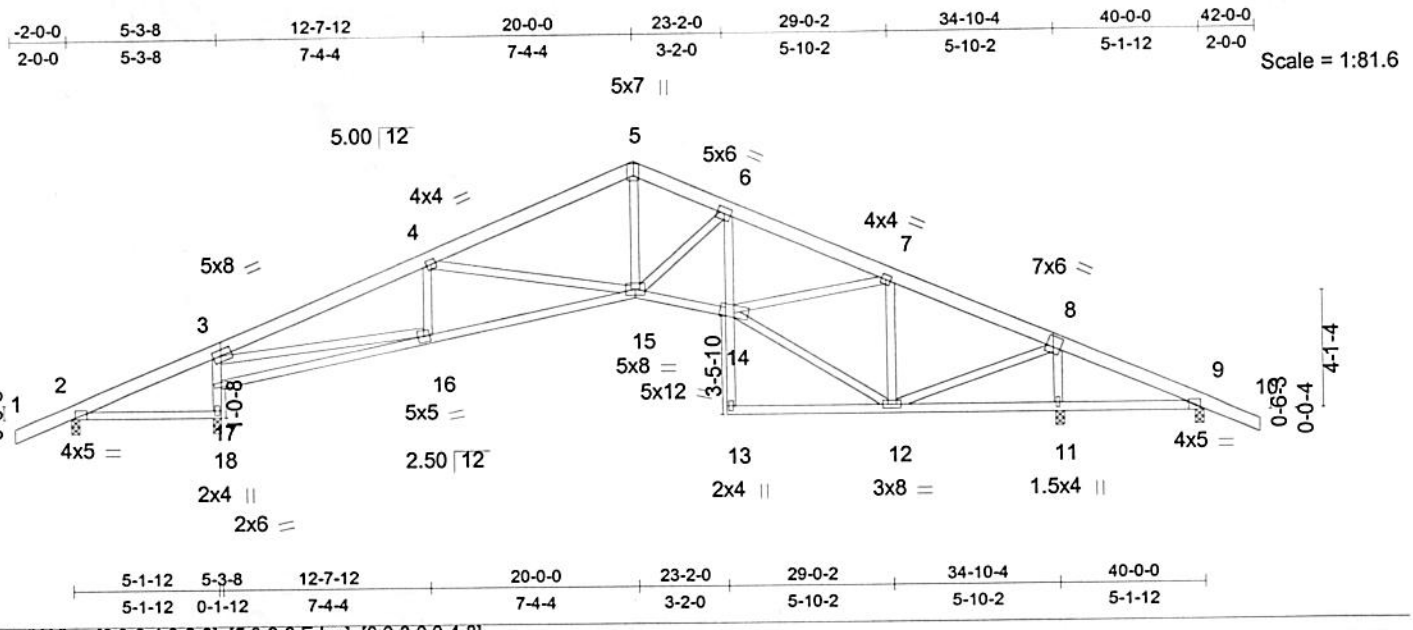


Plate Offsets (X,Y): [3:0-3-4,0-2-8], [5:0-2-3,Edge], [8:0-3-0,0-4-8]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.30	Vert(LL)	-0.09	15-16	>999	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.31	Vert(TL)	-0.19	15-16	>999		
BCLL	0.0	Rep Stress Incr	YES	WB	0.62	Horz(TL)	0.09	11	n/a		
BCDL	5.0	Code	UBC97/ANSI95	(Matrix)		1st LC LL Min l/defl = 240				Weight: 236 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
WEBS 2 X 4 DF Std-G

BRACING
TOP CHORD Sheathed or 5-9-10 oc purlins.
BOT CHORD Rigid ceiling directly applied or 6-0-0 oc bracing.

REACTIONS (lb/size) 2=196/0-3-8, 18=1051/0-3-8, 9=-112/0-3-8, 11=1463/0-3-8
Max Horz 2=-15(load case 3)
Max Uplift 2=-56(load case 5), 9=-169(load case 6)
Max Grav 2=209(load case 6), 18=1051(load case 1), 11=1463(load case 1)

FORCES (lb) - First Load Case Only
TOP CHORD 1-2=34, 2-3=161, 3-4=-1753, 4-5=-1484, 5-6=-1429, 6-7=-1568, 7-8=-672, 8-9=904, 9-10=34
BOT CHORD 2-18=-88, 17-18=-1036, 3-17=-988, 16-17=14, 15-16=1585, 14-15=1413, 13-14=31, 6-14=-56, 12-13=20, 11-12=-681, 9-11=-769
WEBS 4-16=-198, 4-15=-238, 5-15=761, 6-15=-101, 12-14=642, 7-14=844, 7-12=-799, 8-12=1347, 8-11=-1396, 3-16=1536

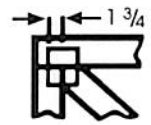
NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) This truss has been designed with ANSI/TPI 1-1995 criteria.

LOAD CASE(S) Standard

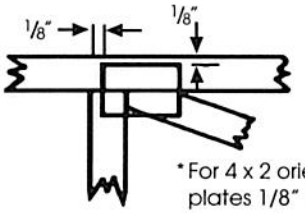
May 24,2002

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4 — The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

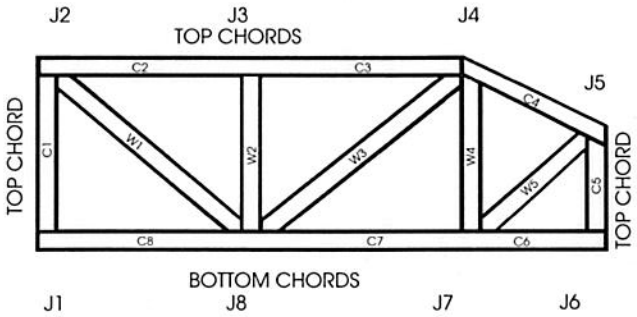
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

⚠ General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply	R2290313
YOUNG	A6	VAULTED	2	2 (optional)	

ALL TRUSS INC., SONOMA, Ca. 95476 — 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:14 2002 Page 1

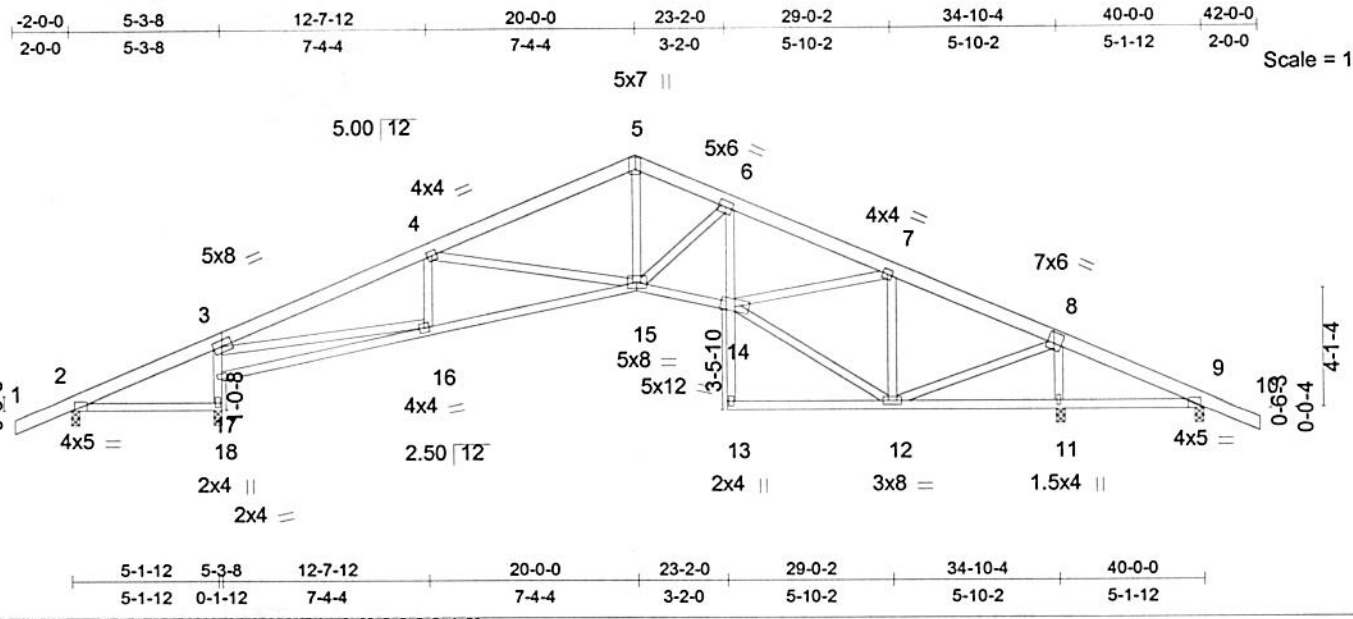


Plate Offsets (X,Y): [3:0-3-8,0-2-8], [5:0-2-3,Edge], [8:0-3-0,0-4-8]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.29	Vert(LL)	-0.07	15-16	>999	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.21	Vert(TL)	-0.13	15-16	>999		
BCLL	0.0	Rep Stress Incr	NO	WB	0.36	Horz(TL)	0.07	11	n/a		
BCDL	5.0	Code	UBC97/ANSI95	(Matrix)		1st LC LL Min l/defl = 240				Weight: 472 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
WEBS 2 X 4 DF Stud-G

BRACING
TOP CHORD Sheathed or 6-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 6-0-0 oc bracing.

REACTIONS (lb/size) 2=279/0-3-8, 18=1734/0-3-8, 9=-180/0-3-8, 11=2347/0-3-8
Max Horz 2=-15(load case 3)
Max Uplift 2=-46(load case 5), 9=-236(load case 6)
Max Grav 2=292(load case 6), 18=1734(load case 1), 11=2347(load case 1)

FORCES(lb) - First Load Case Only
TOP CHORD 1-2=34, 2-3=266, 3-4=-2689, 4-5=-2210, 5-6=-2119, 6-7=-2357, 7-8=-1057, 8-9=1390, 9-10=34
BOT CHORD 2-18=-119, 17-18=-1716, 3-17=-1663, 16-17=19, 15-16=2399, 14-15=2110, 13-14=35, 6-14=-78, 12-13=26, 11-12=-1008, 9-11=-1150
WEBS 4-16=-340, 4-15=-407, 5-15=1137, 6-15=-173, 12-14=991, 7-14=1239, 7-12=-1250, 8-12=2027, 8-11=-2265, 3-16=2326

NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) This truss has been designed with ANSI/TPI 1-1995 criteria.
6) 2-ply truss to be connected together with 10d Common(.148"x3") Nails as follows:
Top chords connected as follows: 2 X 6 - 2 rows at 0-9-0 oc.
Bottom chords connected as follows: 2 X 4 - 1 row at 0-9-0 oc.
Webs connected as follows: 2 X 4 - 1 row at 0-9-0 oc.

LOAD CASE(S) Standard
1) Regular: Lumber Increase=1.25, Plate Increase=1.25
Uniform Loads (plf)
Vert: 1-2=-50.0, 9-10=-50.0, 2-18=-10.0, 15-17=-10.0, 14-15=-10.0, 9-13=-10.0
Trapezoidal Loads (plf)
Vert: 2=-109.7-to-5=-70.0, 5=-70.0-to-9=-109.7

REGISTERED PROFESSIONAL ENGINEER
REDONG YU
NO. C049919
EXP 9-30-04
STATE OF CALIFORNIA

May 24,2002

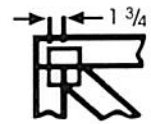
WARNING - Verify design parameters and READ NOTES ON THIS AND REVERSE SIDE BEFORE USE

Design valid for use only with **MiTek** connectors. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer – not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection, and bracing, consult **QST-88 Quality Standard, DSB-89 Bracing Specification, and HIB-91 Handling Installation and Bracing Recommendation** available from **Truss Plate Institute, 583 D'Onofrio Drive, Madison, WI 53719**

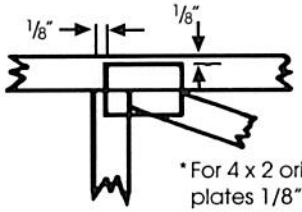
MiTek Industries, Inc.

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4

The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

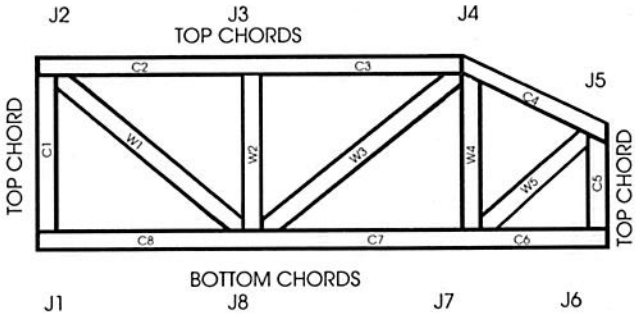
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply	R2290314
YOUNG	A7	COMMON	4	1	(optional)

ALL TRUSS INC., SONOMA, Ca. 95476 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:15 2002 Page 1

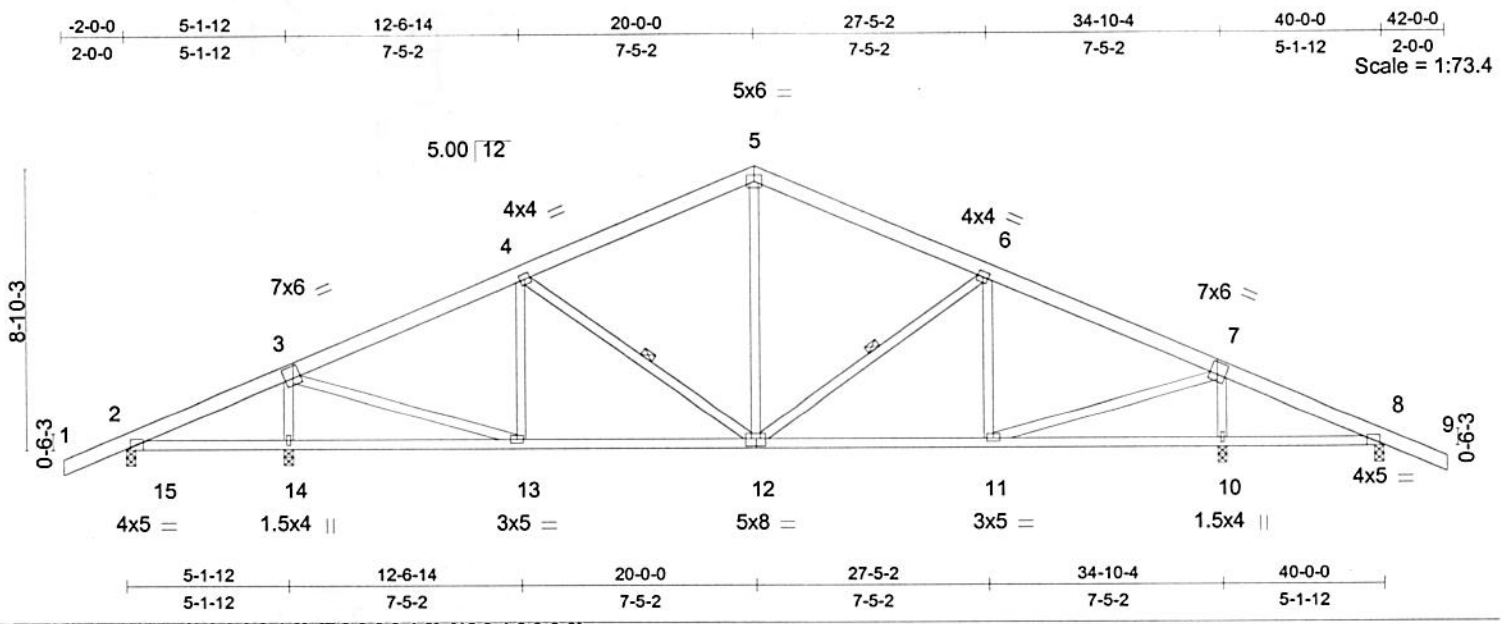


Plate Offsets (X,Y): [3:0-3-0,0-4-8], [7:0-3-0,0-4-8], [12:0-4-0,0-3-0]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.39	Vert(LL)	-0.06	11-12	>999	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.34	Vert(TL)	-0.10	11-12	>999		
BCLL	0.0	Rep Stress Incr	YES	WB	0.60	Horz(TL)	0.05	8	n/a		
BCDL	5.0	Code	UBC97/ANSI95	(Matrix)		1st LC LL Min l/defl = 240				Weight: 231 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
WEBS 2 X 4 DF Std-G

BRACING
TOP CHORD Sheathed or 5-1-4 oc purlins.
BOT CHORD Rigid ceiling directly applied or 5-7-6 oc bracing.
WEBS 1 Row at midpt 4-12, 6-12

REACTIONS (lb/size) 2=210/0-3-8, 14=1088/0-3-8, 10=1088/0-3-8, 8=210/0-3-8
Max Horz 2=361(load case 13)
Max Uplift 2=-827(load case 10), 14=-47(load case 13), 10=-296(load case 11), 8=-146(load case 11)
Max Grav 2=995(load case 7), 14=1305(load case 6), 10=1557(load case 6), 8=310(load case 6)

FORCES (lb) - First Load Case Only
TOP CHORD 1-2=34, 2-3=119, 3-4=-1051, 4-5=-910, 5-6=-910, 6-7=-1051, 7-8=119, 8-9=34
BOT CHORD 2-15=-52, 14-15=-52, 13-14=11, 12-13=906, 11-12=906, 10-11=11, 8-10=-52
WEBS 3-14=-1021, 3-13=939, 4-13=-214, 4-12=-160, 5-12=264, 6-12=-160, 6-11=-214, 7-11=939, 7-10=-1021

NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) This truss has been designed with ANSI/TPI 1-1995 criteria.
6) This truss has been designed for a total drag load of 2500 lb. Connect truss to resist drag loads along bottom chord from 0-0-0 to 1-0-0 for 2500.0 plf.

LOAD CASE(S) Standard

May 24,2002

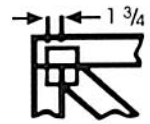
WARNING - Verify design parameters and READ NOTES ON THIS AND REVERSE SIDE BEFORE USE

Design valid for use only with **MiTek** connectors. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer – not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection, and bracing, consult **QST-88 Quality Standard, DSB-89 Bracing Specification, and HIB-91 Handling Installation and Bracing Recommendation** available from **Truss Plate Institute, 583 D'Onofrio Drive, Madison, WI 53719**

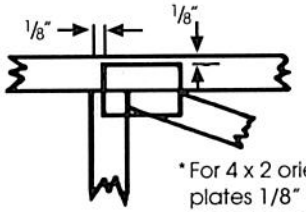
MiTek Industries, Inc.

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4

The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

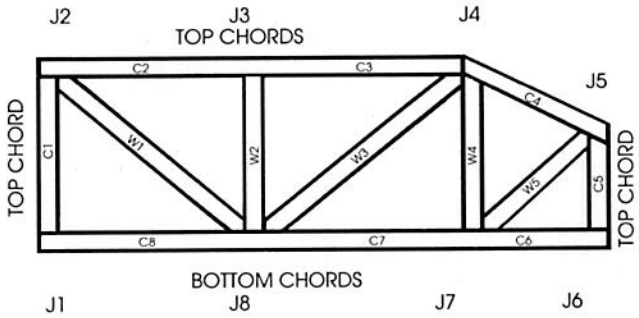
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply	R2290315
YOUNG	B	ROOF TRUSS	2	1	(optional)

ALL TRUSS INC., SONOMA, Ca. 95476 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:16 2002 Page 1

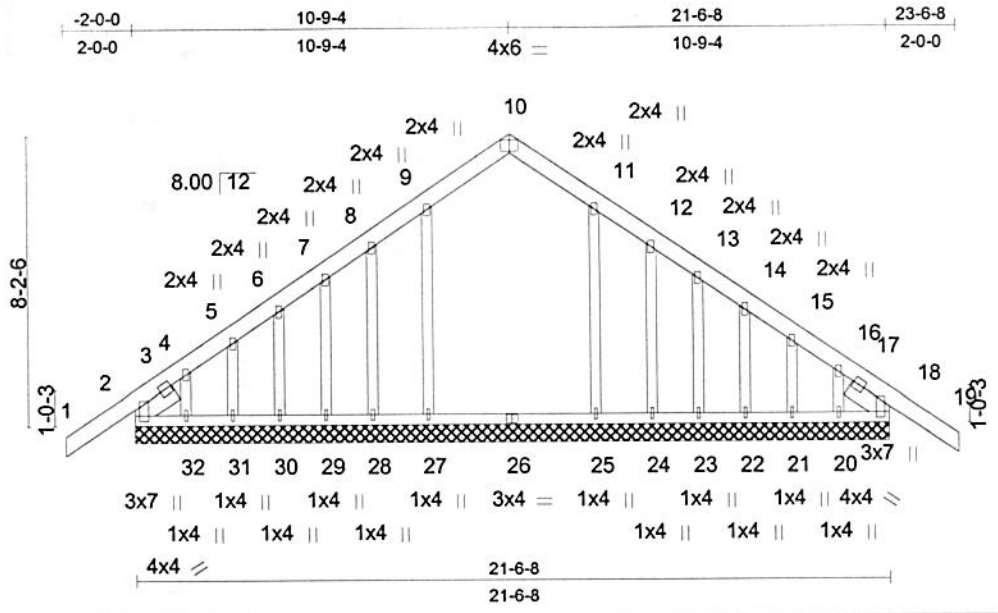


Plate Offsets (X,Y): [2:0-1-6,0-4-1], [18:0-1-6,0-4-1]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.11	Vert(LL)	n/a	-	n/a	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.03	Vert(TL)	0.01	1-2	>999		
BCLL	0.0	Rep Stress Incr	NO	WB	0.08	Horz(TL)	0.00	18	n/a		
BCDL	5.0	Code	UBC97/ANSI95	(Matrix)		1st LC LL Min l/defl = 240				Weight: 158 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
OTHERS 2 X 4 DF Std-G
SLIDER Left 2 X 6 DF No.2 1-3-15, Right 2 X 6 DF No.2 1-3-15

BRACING
TOP CHORD Sheathed or 6-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 10-0-0 oc bracing.

REACTIONS (lb/size) 26=25/21-6-8, 18=291/21-6-8, 27=147/21-6-8, 25=147/21-6-8, 28=76/21-6-8, 29=77/21-6-8, 30=81/21-6-8, 31=89/21-6-8, 32=-27/21-6-8, 24=76/21-6-8, 23=77/21-6-8, 22=81/21-6-8, 21=89/21-6-8, 20=-27/21-6-8, 2=291/21-6-8
Max Horz 2=129(load case 4)
Max Uplift 28=-15(load case 5), 29=-3(load case 5), 31=-3(load case 5), 32=-27(load case 1), 24=-15(load case 3), 23=-3(load case 5), 21=-3(load case 5), 20=-27(load case 1)
Max Grav 26=76(load case 2), 18=291(load case 1), 27=147(load case 1), 25=147(load case 1), 28=79(load case 6), 29=78(load case 6), 30=81(load case 1), 31=89(load case 1), 32=39(load case 3), 24=79(load case 7), 23=78(load case 7), 22=81(load case 1), 21=89(load case 1), 20=31(load case 2), 2=291(load case 1)

FORCES (lb) - First Load Case Only
TOP CHORD 1-2=35, 2-3=-180, 3-4=-129, 4-5=-96, 5-6=-102, 6-7=-103, 7-8=-102, 8-9=-99, 9-10=-125, 10-11=-125, 11-12=-99, 12-13=-102, 13-14=-103, 14-15=-102, 15-16=-96, 16-17=-129, 17-18=-180, 18-19=35
BOT CHORD 2-32=70, 31-32=70, 30-31=70, 29-30=70, 28-29=70, 27-28=70, 26-27=70, 25-26=70, 24-25=70, 23-24=70, 22-23=70, 21-22=70, 20-21=70, 18-20=70
WEBS 9-27=-126, 11-25=-126, 8-28=-62, 7-29=-64, 6-30=-68, 5-31=-71, 4-32=26, 12-24=-62, 13-23=-64, 14-22=-68, 15-21=-71, 16-20=26

NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) Truss designed for wind loads in the plane of the truss only. For studs exposed to wind (normal to the face), see MiTek "Standard Gable End Detail"
4) Gable requires continuous bottom chord bearing.
5) Gable studs spaced at 1-4-0 oc.
6) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
7) A plate rating reduction of 20% has been applied for the green lumber members.
8) This truss has been designed with ANSI/TPI 1-1995 criteria.

LOAD CASE(S) Standard

REGISTERED PROFESSIONAL ENGINEER
REDONG YU
NO. C049919
EXP. 9-30-04
STATE OF CALIFORNIA

May 24,2002

WARNING - Verify design parameters and READ NOTES ON THIS AND REVERSE SIDE BEFORE USE

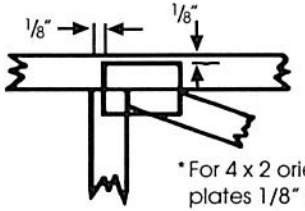
Design valid for use only with **MiTek** connectors. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer – not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection, and bracing, consult **QST-88 Quality Standard, DSB-89 Bracing Specification, and HIB-91 Handling Installation and Bracing Recommendation** available from **Truss Plate Institute, 583 D'Onofrio Drive, Madison, WI 53719**

MiTek Industries, Inc.

Symbols

PLATE LOCATION AND ORIENTATION

* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4

The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

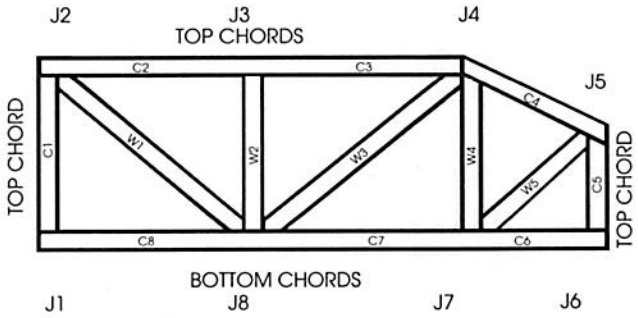
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply	R2290316
YOUNG	B1	ROOF TRUSS	4	1	(optional)

ALL TRUSS INC., SONOMA, Ca. 95476 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:17 2002 Page 1

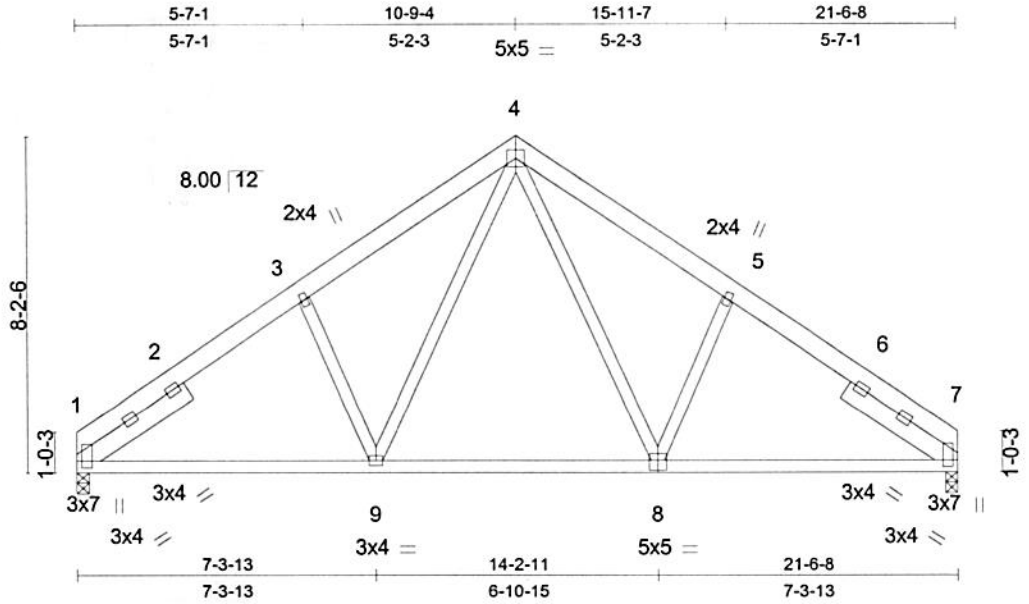


Plate Offsets (X,Y): [1:0-1-6,0-2-0], [7:0-1-6,0-4-1], [8:0-2-8,0-3-0]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.15	Vert(LL)	-0.06	8-9	>999	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.38	Vert(TL)	-0.10	8-9	>999		
BCLL	0.0	Rep Stress Incr	NO	WB	0.11	Horz(TL)	0.02	7	n/a		
BCDL	5.0	Code	UBC97/ANSI95			1st LC LL Min l/defl = 240				Weight: 133 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
WEBS 2 X 4 DF Std-G
SLIDER Left 2 X 6 DF No.2 3-2-11, Right 2 X 6 DF No.2 3-2-11

BRACING
TOP CHORD Sheathed or 6-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 10-0-0 oc bracing.

REACTIONS (lb/size) 1=646/0-3-8, 7=646/0-3-8
Max Horz 1=-118(load case 3)

FORCES (lb) - First Load Case Only
TOP CHORD 1-2=-777, 2-3=-777, 3-4=-651, 4-5=-651, 5-6=-777, 6-7=-777
BOT CHORD 1-9=610, 8-9=440, 7-8=610
WEBS 3-9=-172, 4-9=251, 4-8=251, 5-8=-172

NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) This truss has been designed with ANSI/TPI 1-1995 criteria.

LOAD CASE(S) Standard

May 24,2002

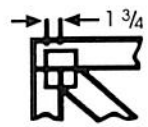
WARNING - Verify design parameters and READ NOTES ON THIS AND REVERSE SIDE BEFORE USE

Design valid for use only with **MiTek** connectors. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer – not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection, and bracing, consult **QST-88 Quality Standard, DSB-89 Bracing Specification, and HIB-91 Handling Installation and Bracing Recommendation** available from **Truss Plate Institute, 583 D'Onofrio Drive, Madison, WI 53719**

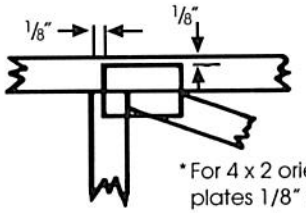
MiTek Industries, Inc.

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



* For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

=

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4

The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

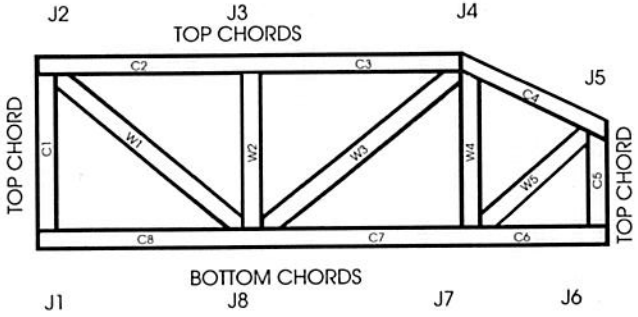
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

⚠ General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply	R2290317
YOUNG	C	ROOF TRUSS	4	1	(optional)

ALL TRUSS INC., SONOMA, Ca. 95476 — 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:17 2002 Page 1

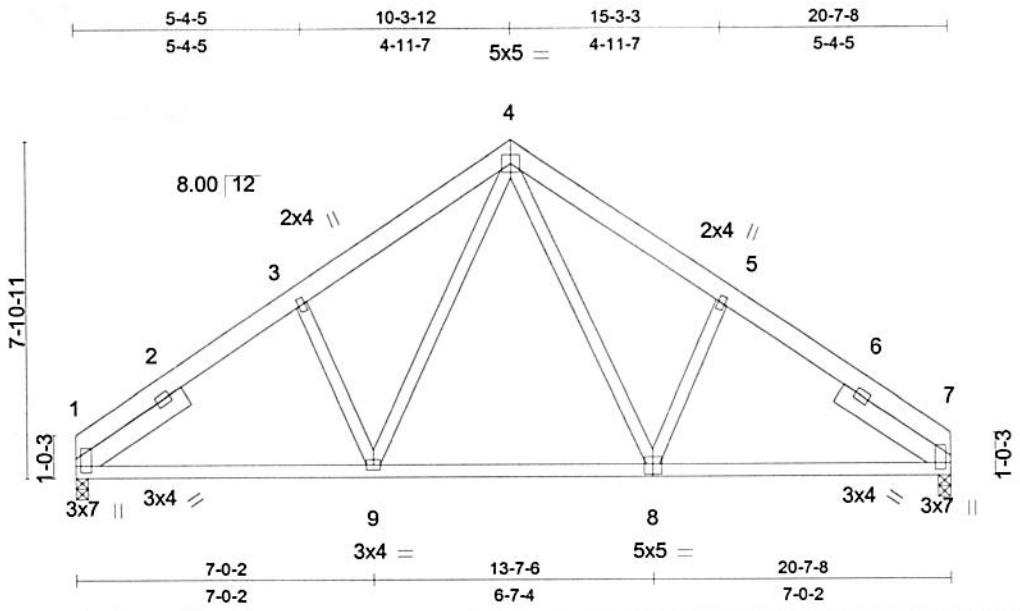


Plate Offsets (X,Y): [1:0-1-6,0-2-0], [7:0-1-6,0-4-1], [8:0-2-8,0-3-0]

LOADING (psf)		SPACING 2-0-0		CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.14	Vert(LL)	-0.05	8-9	>999	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.35	Vert(TL)	-0.09	8-9	>999		
BCLL	0.0	Rep Stress Incr	NO	WB	0.11	Horz(TL)	0.01	7	n/a		
BCDL	5.0	Code	UBC97/ANSI95			1st LC LL Min l/defl = 240				Weight: 127 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
WEBS 2 X 4 DF Std-G
SLIDER Left 2 X 6 DF No.2 3-1-1, Right 2 X 6 DF No.2 3-1-1

BRACING
TOP CHORD Sheathed or 6-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 10-0-0 oc bracing.

REACTIONS (lb/size) 1=619/0-3-8, 7=619/0-3-8
Max Horz 1=-113(load case 3)

FORCES (lb) - First Load Case Only
TOP CHORD 1-2=-741, 2-3=-741, 3-4=-620, 4-5=-620, 5-6=-741, 6-7=-741
BOT CHORD 1-9=580, 8-9=420, 7-8=580
WEBS 3-9=-163, 4-9=238, 4-8=238, 5-8=-163

NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) This truss has been designed with ANSI/TPI 1-1995 criteria.

LOAD CASE(S) Standard

May 24,2002

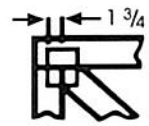
WARNING - Verify design parameters and READ NOTES ON THIS AND REVERSE SIDE BEFORE USE

Design valid for use only with **MiTek** connectors. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer – not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection, and bracing, consult **QST-88 Quality Standard, DSB-89 Bracing Specification, and HIB-91 Handling Installation and Bracing Recommendation** available from **Truss Plate Institute, 583 D'Onofrio Drive, Madison, WI 53719**

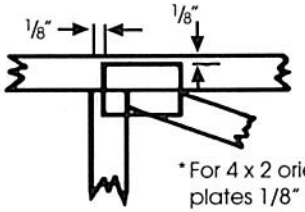
MiTek Industries, Inc.

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4 — The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

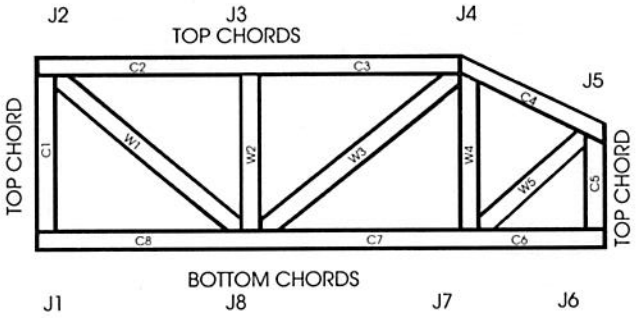
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply	R2290318
YOUNG	C1	ROOF TRUSS	2	1	(optional)

ALL TRUSS INC., SONOMA, Ca. 95476 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:18 2002 Page 1

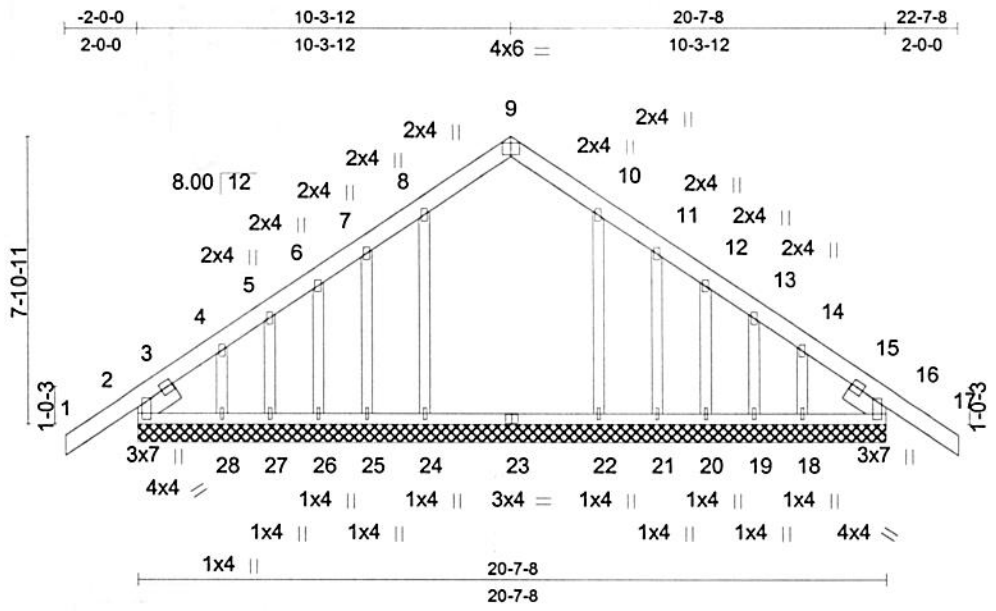


Plate Offsets (X,Y): [2:0-1-6,0-4-1], [16:0-1-6,0-4-1]

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.11	Vert(LL)	n/a	-	n/a	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.04	Vert(TL)	0.01	1-2	>999		
BCLL	0.0	Rep Stress Incr	NO	WB	0.07	Horz(TL)	0.00	16	n/a		
BCDL	5.0	Code	UBC97/ANSI95	(Matrix)		1st LC LL Min l/defl = 240				Weight: 147 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
OTHERS 2 X 4 DF Std-G
SLIDER Left 2 X 6 DF No.2 1-2-14, Right 2 X 6 DF No.2 1-2-14

BRACING
TOP CHORD Sheathed or 6-0-0 oc purlins.
BOT CHORD Rigid ceiling directly applied or 10-0-0 oc bracing.

REACTIONS (lb/size) 2=278/20-7-8, 23=25/20-7-8, 24=150/20-7-8, 22=150/20-7-8, 25=74/20-7-8, 26=77/20-7-8, 27=93/20-7-8, 28=34/20-7-8, 21=74/20-7-8, 20=77/20-7-8, 19=93/20-7-8, 18=34/20-7-8, 16=278/20-7-8
Max Horz 2=124(load case 4)
Max Uplift 25=-15(load case 5), 26=-2(load case 5), 27=-1(load case 5), 28=-23(load case 4), 21=-15(load case 5), 20=-2(load case 5), 19=-1(load case 5), 18=-16(load case 3)
Max Grav 2=278(load case 1), 23=76(load case 2), 24=150(load case 1), 22=150(load case 1), 25=78(load case 6), 26=77(load case 6), 27=93(load case 1), 28=72(load case 2), 21=78(load case 7), 20=77(load case 7), 19=93(load case 1), 18=72(load case 2), 16=278(load case 1)

FORCES (lb) - First Load Case Only
TOP CHORD 1-2=35, 2-3=-168, 3-4=-121, 4-5=-91, 5-6=-100, 6-7=-99, 7-8=-95, 8-9=-123, 9-10=-123, 10-11=-95, 11-12=-99, 12-13=-100, 13-14=-91, 14-15=-121, 15-16=-168, 16-17=35
BOT CHORD 2-28=68, 27-28=68, 26-27=68, 25-26=68, 24-25=68, 23-24=68, 22-23=68, 21-22=68, 20-21=68, 19-20=68, 18-19=68, 16-18=68
WEBS 8-24=-130, 10-22=-130, 7-25=-61, 6-26=-64, 5-27=-77, 4-28=-26, 11-21=-61, 12-20=-64, 13-19=-77, 14-18=-26

NOTES
1) This truss has been checked for unbalanced loading conditions.
2) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
3) Truss designed for wind loads in the plane of the truss only. For studs exposed to wind (normal to the face), see MiTek "Standard Gable End Detail"
4) Gable requires continuous bottom chord bearing.
5) Gable studs spaced at 1-4-0 oc.
6) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
7) A plate rating reduction of 20% has been applied for the green lumber members.
8) This truss has been designed with ANSI/TPI 1-1995 criteria.

LOAD CASE(S) Standard

REGISTERED PROFESSIONAL ENGINEER
REDONG YU
NO. C049919
EXP. 9-30-04
STATE OF CALIFORNIA

May 24,2002

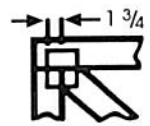
WARNING - Verify design parameters and READ NOTES ON THIS AND REVERSE SIDE BEFORE USE

Design valid for use only with **MiTek** connectors. This design is based only upon parameters shown, and is for an individual building component to be installed and loaded vertically. Applicability of design parameters and proper incorporation of component is responsibility of building designer – not truss designer. Bracing shown is for lateral support of individual web members only. Additional temporary bracing to insure stability during construction is the responsibility of the erector. Additional permanent bracing of the overall structure is the responsibility of the building designer. For general guidance regarding fabrication, quality control, storage, delivery, erection, and bracing, consult **QST-88 Quality Standard, DSB-89 Bracing Specification, and HIB-91 Handling Installation and Bracing Recommendation** available from **Truss Plate Institute, 583 D'Onofrio Drive, Madison, WI 53719**

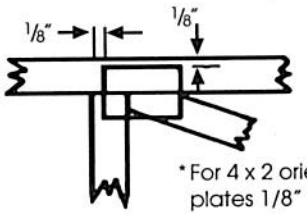
MiTek Industries, Inc.

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

=

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4

The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

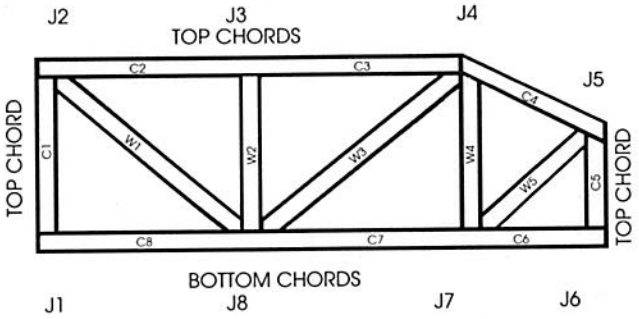
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

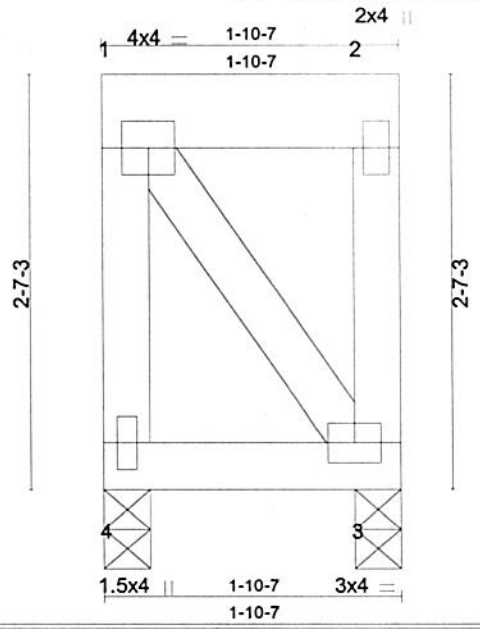
General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Job	Truss	Truss Type	Qty	Ply	R2290319
YOUNG	SP	FLAT	92	1	(optional)

ALL TRUSS INC., SONOMA, Ca. 95476 — 4.201 SR1 s Apr 2 2002 MiTek Industries, Inc. Fri May 24 11:55:19 2002 Page 1



Scale = 1:14.5

LOADING (psf)		SPACING	2-0-0	CSI		DEFL	in	(loc)	l/defl	PLATES	GRIP
TCLL	16.0	Plates Increase	1.25	TC	0.01	Vert(LL)	-0.00	4	>999	MII20	220/195
TCDL	9.0	Lumber Increase	1.25	BC	0.01	Vert(TL)	-0.00	4	>999		
BCLL	0.0	Rep Stress Incr	YES	WB	0.00	Horz(TL)	-0.00	3	n/a		
BCDL	5.0	Code	UBC97/ANSI95			1st LC LL Min l/defl = 240				Weight: 15 lb	

LUMBER
TOP CHORD 2 X 6 DF No.2-G
BOT CHORD 2 X 4 DF No.1&Btr-G
WEBS 2 X 4 DF Std-G

BRACING
TOP CHORD 2-0-0 oc purlins: 1-2, except end verticals.
BOT CHORD Rigid ceiling directly applied or 10-0-0 oc bracing.

REACTIONS (lb/size) 4=47/0-3-8, 3=47/0-3-8

FORCES (lb) - First Load Case Only
TOP CHORD 1-4=-39, 1-2=0, 2-3=-39
BOT CHORD 3-4=-0
WEBS 1-3=0

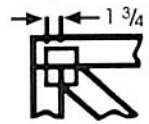
NOTES
1) This truss has been designed for the wind loads generated by 80 mph winds at 25 ft above ground level, using 9.0 psf top chord dead load and 5.0 psf bottom chord dead load, 100 mi from hurricane oceanline, on an occupancy category I, condition I enclosed building, of dimensions 45 ft by 24 ft with exposure B ASCE 7-93 per UBC97/ANSI95 If end verticals or cantilevers exist, they are not exposed to wind. If porches exist, they are not exposed to wind. The lumber DOL increase is 1.33, and the plate grip increase is 1.33
2) Provide adequate drainage to prevent water ponding.
3) This truss has been designed for a 10.0 psf bottom chord live load nonconcurrent with any other live loads per Table No. 16-B , UBC-97.
4) A plate rating reduction of 20% has been applied for the green lumber members.
5) This truss has been designed with ANSI/TPI 1-1995 criteria.
6) Design assumes 4x2 (flat orientation) purlins at oc spacing indicated, fastened to truss TC w/ 2-10d nails.

LOAD CASE(S) Standard

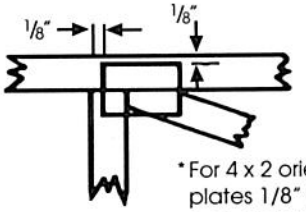
May 24,2002

Symbols

PLATE LOCATION AND ORIENTATION



* Center plate on joint unless dimensions indicate otherwise. Dimensions are in inches. Apply plates to both sides of truss and securely seat.



*For 4 x 2 orientation, locate plates 1/8" from outside edge of truss and vertical web.

=

*This symbol indicates the required direction of slots in connector plates.

***For tabular plating format refer to the MiTek/Gang-Nail Joint/Plate Placement Chart**

PLATE SIZE

4 x 4

The first dimension is the width perpendicular to slots. Second dimension is the length parallel to slots.

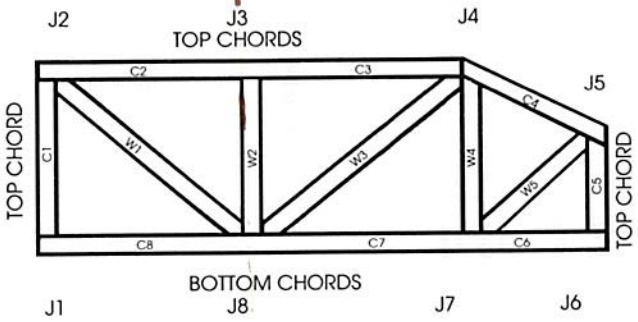
LATERAL BRACING

Indicates location of required continuous lateral bracing.

BEARING

Indicates location of joints at which bearings (supports) occur.

Numbering System



JOINTS AND CHORDS ARE NUMBERED CLOCKWISE AROUND THE TRUSS STARTING WITH THE LOWEST JOINT FARTHEST TO THE LEFT.

WEBS ARE NUMBERED FROM LEFT TO RIGHT.

CONNECTOR PLATE CODE APPROVALS

BOCA	86-93, 85-75, 91-28
HUD/FHA	TCB 17.08
ICBO	1591, 1329, 4922
SBCCI	87206, 86217, 9190
WISC/DILHR	870040-N, 930013-N, 910080-N

MiTek Industries, Inc.

GANG-NAIL ®

HYDRO-AIR ®

PANEL CLIP ™

General Safety Notes

Failure to Follow Could Cause Property Damage or Personal Injury

1. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
2. Cut members to bear tightly against each other.
3. Place plates on each face of truss at each joint and embed fully. Avoid knots and wane at joint locations.
4. Unless otherwise noted, location chord splices at 1/4 panel length (±6" from adjacent joint.)
5. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
6. Unless expressly noted, this design is not applicable for use with fire retardant or preservative treated lumber.
7. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
8. Plate type, size and location dimensions shown indicate minimum plating requirements.
9. Lumber shall be of the species and size, and in all respects, equal to or better than the grade specified.
10. Top chords must be sheathed or purlins provided at spacing shown on design.
11. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
12. Anchorage and/or load transferring connections to trusses are the responsibility of others unless shown.
13. Do not overload roof or floor trusses with stacks of construction materials.
14. Do not cut or alter truss members or plate without prior approval of a professional engineer.
15. Care should be exercised in handling, erection and installation of trusses.

Notes:
- M.F.G. TRUSSES @ 24" O.C. TYP.
- CALIF. FRAME o/CONT. PLY SHTG. w/2x LAID FLAT @ VALLEY, 2x8 RIDGE, 2x6 D.F. RFTRS. @ 24" O.C., SUPPORTED TO LOWER ROOF @ 48" O.C. TYP.
- PROVIDE (3) 10d Commons. Typ. @ each T.C B.C. CONN. TYP. AT OPEN-END TRUSS U.O.N. ON PLANS.
- METAL CONNECTORS USE SIMPSON STRONG-TIE HANGERS ONLY WHERE NOTED ON PLANS.
- S.A.D. FOR INFO NOT NOTED ON THIS PLAN.

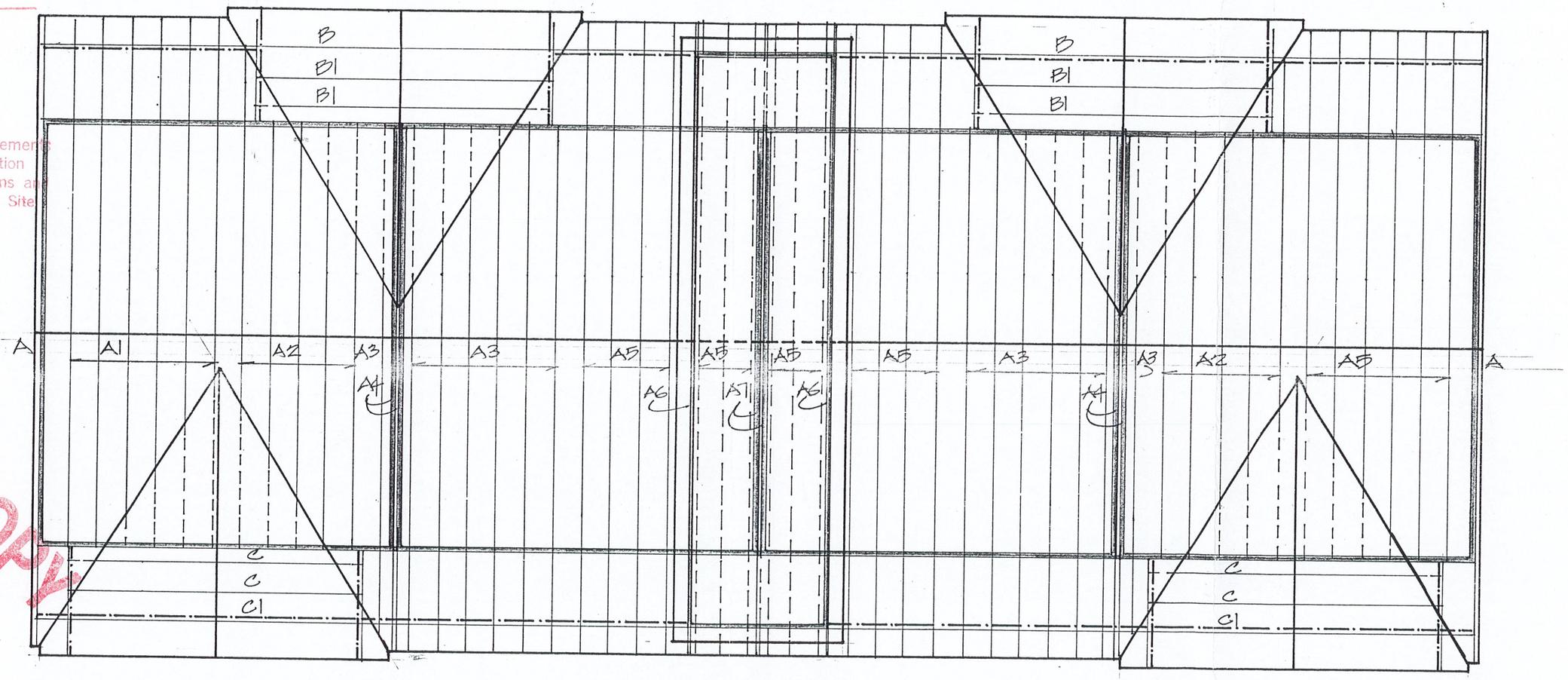
ALL TRUSS, INC.
22700 BROADWAY, SONOMA, CA. 95476
PH: 707-938-5595 FAX : 707-938-5596

BUILDING INSPECTION DEPARTMENT
COMPLETED
Date 11-12-02

CITY OF COTATI

Subject to all Code Requirements
Subject to Field Inspection
Approved Job Copy of Plans and
Job Cards to be on Job Site

FILE COPY



YOUNG FAMILY
1818 LA PLAZA
COTATI, CA.

21146

TRUSS LAYOUT
1/8"=1'-0"