

CITY OF SACRAMENTO

1231 I Street, Sacramento, CA 95814

Permit No: 9809040

Insp Area: 2

Site Address: 9 MORNINGSUN CT SAC

Parcel No: 0310520005

Sub-Type: RES

Housing (Y/N): N

CONTRACTOR
ZIMMERMAN ROOFING
3560 RAMONA AV
SACRAMENTO, CA

95826

OWNER
YIP YUK CHEONG/SHEUNG MA
9 MORNINGSUN CT
SACRAMENTO CA

95831

ARCHITECT

Nature of Work: REMOVE OLD ROOF & REROOF W/PIONEER TILE 4/12 PITCH SFR (26SQS)

CONSTRUCTION LENDING AGENCY : I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C).

Lender's Name _____

Lender's Address _____

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

License Class C39 License Number 657559 Date 9-21-98 Contractor Signature Billy Coy

OWNER-BUILDER DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code; any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars (\$500.00);

_____, I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professional Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

_____, I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law).

_____ I am exempt under Sec. _____ B & PC for this reason: _____

Date _____ Owner Signature _____

IN ISSUING THIS BUILDING PERMIT, the applicant represents, and the city relies on the representation of the applicant, that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement to be constructed does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and hereby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

Date 9-21-98 Applicant/Agent Signature Billy Coy

WORKER'S COMPENSATION DECLARATION: I hereby affirm under penalty of perjury one of the following declarations:

_____ I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued.

I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are: Exp-10-1-98

Carrier State Fund Policy Number 713 97 002021

_____ (This section need not be completed if the permit is for \$100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date 9-21-98 Applicant Signature Billy Coy

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS (\$100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.



DEPARTMENT OF
PLANNING AND DEVELOPMENT

CITY OF SACRAMENTO
CALIFORNIA

1231 I STREET
ROOM 200
SACRAMENTO, CA
95814-2998

Permit Service
916-264-7619
FAX 916-264-7046

Gordon ^{1/10}
9 Morning Sun Ct
95831

TILE ROOF WORKSHEET

This worksheet must be filled out whenever any type of tile roof is applied for.

If the answer to question #5 is yes, a written engineering report from a registered engineer must be provided with each application.

1. BRAND AND MODEL OF TILE Pioneer Hacienda
2. TILE WEIGHT PER SQUARE 600
3. WEIGHT OF ROOF SYSTEM PER SQUARE 180
4. TOTAL WEIGHT OF ROOF SYSTEM 780
5. DOES TOTAL WEIGHT OF ROOF SYSTEM EXCEED 750# PER SQUARE? YES NO
6. ROOF SLOPE 4/12

PLEASE PROVIDE A SEPARATE WORKSHEET FOR EACH APPLICATION INVOLVING A TILE ROOF

See attached engineering

O.K. Mark P. 7/5/98

Verify structural elements noted
in notes on p. (2) in field.

Yip

Paul Zacher-Structural Engineers

4701 Lakeside Way
Fair Oaks, CA 95628

TEL: 916.961.3960
FAX: 916.961.3960
e-mail: pzacher@softcom.net

September 8, 1998

Zimmerman Roofing
3560 Ramona Avenue
Sacramento, CA 95826
TEL: 916.454.3667
FAX: 916.455.3784
TEL (Jeff): 916.392.1971
FAX (Jeff): 916.392.6853
FAX (Framer) : 916.383.5308

Attn.: Mr. Jeff Tucker,

re: Job 98196: YIP

Subject: Structural Investigation Report of the Roof for the Residence located at 9 Morning Sun Court, Sacramento, CA 95831.

As requested by Mr. Jeff Tucker, this is a report to determine what needs should be addressed to correct any structural deficiencies of the roof. Paul Zacher visited the site September 8, 1998. The investigation was made to determine the existing condition of the structure. All information, data and analysis contained within this report is based on the 1994 Uniform Building Code.

The following is based on visual observations with no subsurface investigation being made.

DESCRIPTION:

Type of Facility: Residence.
Year Built: Estimated 1980's vintage.
Occupancy: Residential.
No. of Stories: Two.
Dimensions: Approximately 2000 square feet with a first story plate height of 8 feet.

CONSTRUCTION:

Roof:

The roof covering will consist of Pioneer Light Weight Concrete Tile over 1/2" solid sheathing. The living area is framed with pre-engineered trusses spaced at 24" on center except over the vaulted ceiling areas. The vaulted ceiling portions were inaccessible but appeared to be constructed of both 2x6 rafters spaced at 16" on center and 2x10 rafters spaced at 16" on center. The garage area was inaccessible.

CONCLUSIONS:

Roof:

The living area has sufficient structural capacity for the applied live and dead loads for the accessible portions. The garage area was unaccessible and therefore no conclusions were drawn.

RECOMMENDATIONS:

If any of the following recommendations do not correspond to actual field conditions, the engineer of record shall be notified for further investigation and evaluation before continuing work.

Living Area:

1. After the roofing material has been removed, the contractor shall verify that the framing in the non-accessible portion of the structure does not exceed the following:

Vaulted Ceiling Portion:

- a. 2x6 @ 16" oc - max span = 12'-0"
- b. 2x10 @ 16" oc - max span = 18'-0"

- If the framing differs from the above, the contractor shall supply the engineer with diagrams showing the member sizes and span lengths. The engineer shall then determine if the structure can adequately support the applied dead and live loads and a supplemental report shall be issued. See detail 1.

Garage:

2. After the roofing material has been removed, the contractor shall verify that the framing in the non-accessible portion of the structure does not exceed the following:

Flat Ceiling Portion:

- a. 2x6 @ 24" oc - max span = 12'-0"

- If the framing differs from the above, the contractor shall supply the engineer with diagrams showing the member sizes and span lengths. The engineer shall then determine if the structure can adequately support the applied dead and live loads and a supplemental report shall be issued. See detail 1.

It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls which are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and are not an indication of a structural hazard or failure.

It shall be noted that some deflection of the rafters may be evident after installation of the tile. The existing roof framing has deflected but this may not be readily evident due to the uneven nature of the existing roofing material. Concrete tile is a very consistent and uniform product and when installed in an even plane, even small deflections can become apparent. This is only a cosmetic issue and not a structural concern.

Yip

The inspection consisted of visual observation only, made solely to determine the structural capacity of the existing roof. Analysis does not determine any effects on the overall structure under lateral forces or effects on the foundation unless specifically noted in the calculations and in this document. No warranties, expressed or implied, are made or intended in conjunction with this report. The inspection was made only to the portions that were accessible. The specific items noted were those that were observable and there may be defects which are not observable, or are hidden by architectural and structural materials.

If you have any questions on the above, do not hesitate to call.

Sincerely,



Paul Zacher, P.E., S.E.
file



DESIGN LOADING:

Roof Pitch 4 in 12
Pitch Adjustment Factor 1.05

LOCATION: ROOF

<u>MATERIAL</u>	<u>WEIGHT</u>	
Pioneer Everwest Light Wt	7.00	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
1/2" OSB/ plywood	1.50	psf
2x6 rafters @ 24" oc	<u>1.00</u>	psf
Load	10.9	psf
Roof Pitch Adjustment	<u>0.59</u>	psf
Total Load	11.5	psf

LOCATION: VAULT

<u>MATERIAL</u>	<u>WEIGHT</u>	
Pioneer Everwest Light Wt	7.00	psf
Roofing felt	0.30	psf
1/2" OSB/ plywood	1.50	psf
1x4 skip sht'g	1.09	psf
2x8 rafters @ 24" oc	1.32	psf
Batt/blown insul	0.50	psf
1/2" Gypboard	<u>2.50</u>	psf
Load	14.2	psf
Roof Pitch Adjustment	<u>0.77</u>	psf
Total Load	15.0	psf

LOCATION: TOP CHORD

<u>MATERIAL</u>	<u>WEIGHT</u>	
Pioneer Everwest Light Wt	7.00	psf
Roofing felt	0.30	psf
1/2" OSB/ plywood	1.50	psf
1x4 skip sht'g	1.09	psf
2x4 truss @ 24" oc	<u>1.28</u>	psf
Load	11.2	psf
Roof Pitch Adjustment	<u>0.60</u>	psf
Total Load	11.8	psf

LOCATION: BOTTOM CHORD

<u>MATERIAL</u>	<u>WEIGHT</u>	
Batt/blown insul	0.50	psf
2x4 truss @ 24" oc	0.64	psf
1/2" Gypboard	<u>2.50</u>	psf
Load	3.6	psf

BEAM DESIGN FOR UNIFORM LOAD: 2x6

(Values for DF Larch #2)

Width, b	1.5 inches
Depth, d	5.5 inches
Length of beam	12 feet
Dead load roof	11.5 psf
Live load roof	16 psf
Contributory width of roof load	2 feet
Dead load floor	0 psf
Live load floor	0 psf
Contributory width of floor load	0 feet
Dead load wall	0 plf
Live load defl ratio	240
Total load defl ratio	180
Total dead load	23 plf
Total live load	32 plf

Base design values:

Shear, F_v	95 psi
Bending, F_b	875 psi
Comp. perp. to grain, F_c	625 psi
Mod of Elasticity, E	1600000 psi
Load duration factor, C_d	1.25
Size Factor, C_f	1.30
Repetitive factor, C_r	1.15

Dead load reaction	138 lbs
Live load reaction	192 lbs
Total load reaction	330 lbs

Allowable shear, F_v'	119 psi	Horizontal Shear OK
Actual shear, f_v	55 psi	
Allowable bending, F_b'	1635 psi	Bending OK
Actual bending, f_b	1571 psi	
Allowable live load defl	0.60 inches	Live Load Deflection OK
Actual live load defl	0.45 inches	
Allowable total load defl	0.80 inches	Total Load Deflection OK
Actual total load defl	0.77 inches	

Bearing length req'd	0.35 inches
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BEAM DESIGN FOR UNIFORM LOAD: 2x6 @ 16

(Values for DF Larch #2)

Width, b	1.5 inches
Depth, d	5.5 inches
Length of beam	12 feet
Dead load roof	15 psf
Live load roof	16 psf
Contributory width of roof load	1.33 feet
Dead load floor	0 psf
Live load floor	0 psf
Contributory width of floor load	0 feet
Dead load wall	0 plf
Live load defl ratio	360
Total load defl ratio	240
Total dead load	19.95 plf
Total live load	21.28 plf

Base design values:

Shear, F_v	95 psi
Bending, F_b	875 psi
Comp. perp. to grain, F_c	625 psi
Mod of Elasticity, E	1600000 psi
Load duration factor, C_d	1.25
Size Factor, C_f	1.30
Repetitive factor, C_r	1.15

Dead load reaction	120 lbs
Live load reaction	128 lbs
Total load reaction	247 lbs

Allowable shear, F_v'	119 psi	Horizontal Shear OK
Actual shear, f_v	42 psi	
Allowable bending, F_b'	1635 psi	Bending OK
Actual bending, f_b	1178 psi	
Allowable live load defl	0.40 inches	Live Load Deflection OK
Actual live load defl	0.30 inches	
Allowable total load defl	0.60 inches	Total Load Deflection OK
Actual total load defl	0.58 inches	

Bearing length req'd	0.26 inches
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BEAM DESIGN FOR UNIFORM LOAD: 2-2x6 @ 24

(Values for DF Larch #2)

Width, b	3 inches
Depth, d	5.5 inches
Length of beam	13.25 feet
Dead load roof	15 psf
Live load roof	16 psf
Contributory width of roof load	2 feet
Dead load floor	0 psf
Live load floor	0 psf
Contributory width of floor load	0 feet
Dead load wall	0 plf
Live load defl ratio	360
Total load defl ratio	240
Total dead load	30 plf
Total live load	32 plf

Base design values:

Shear, Fv	95 psi
Bending, Fb	875 psi
Comp. perp. to grain, Fc	625 psi
Mod of Elasticity, E	1600000 psi
Load duration factor, Cd	1.25
Size Factor, Cf	1.30
Repetitive factor, Cr	1.15

Dead load reaction	199 lbs
Live load reaction	212 lbs
Total load reaction	411 lbs

Allowable shear, Fv'	119 psi	Horizontal Shear OK
Actual shear, fv	35 psi	
Allowable bending, Fb'	1635 psi	Bending OK
Actual bending, fb	1079 psi	
Allowable live load defl	0.44 inches	Live Load Deflection OK
Actual live load defl	0.33 inches	
Allowable total load defl	0.66 inches	Total Load Deflection OK
Actual total load defl	0.65 inches	

Bearing length req'd	0.22 inches
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BEAM DESIGN FOR UNIFORM LOAD: 2x10 @ 16

(Values for DF Larch #2)

Width, b	1.5 inches
Depth, d	9.25 inches
Length of beam	18 feet
Dead load roof	15 psf
Live load roof	16 psf
Contributory width of roof load	1.33 feet
Dead load floor	0 psf
Live load floor	0 psf
Contributory width of floor load	0 feet
Dead load wall	0 plf
Live load defl ratio	360
Total load defl ratio	240
Total dead load	19.95 plf
Total live load	21.28 plf

Base design values:

Shear, F_v	95 psi
Bending, F_b	875 psi
Comp. perp. to grain, F_c	625 psi
Mod of Elasticity, E	1600000 psi
Load duration factor, C_d	1.25
Size Factor, C_f	1.10
Repetitive factor, C_r	1.15

Dead load reaction	180 lbs
Live load reaction	192 lbs
Total load reaction	371 lbs

Allowable shear, F_v'	119 psi	Horizontal Shear OK
Actual shear, f_v	37 psi	
Allowable bending, F_b'	1384 psi	Bending OK
Actual bending, f_b	937 psi	
Allowable live load defl	0.60 inches	Live Load Deflection OK
Actual live load defl	0.32 inches	
Allowable total load defl	0.90 inches	Total Load Deflection OK
Actual total load defl	0.62 inches	
Bearing length req'd	0.40 inches	

BEAM DESIGN FOR UNIFORM LOAD: 4x12

(Values for DF Larch #1)

Width, b	3.5 inches
Depth, d	11.25 inches
Length of beam	18 feet
Dead load roof	11.5 psf
Live load roof	16 psf
Contributory width of roof load	7 feet
Dead load floor	0 psf
Live load floor	0 psf
Contributory width of floor load	0 feet
Dead load wall	0 plf
Live load defl ratio	240
Total load defl ratio	180
Total dead load	80.5 plf
Total live load	112 plf

Base design values:

Shear, Fv	95 psi
Bending, Fb	1000 psi
Comp. perp. to grain, Fc	625 psi
Mod of Elasticity, E	1600000 psi
Load duration factor, Cd	1.25
Size Factor, Cf	1.10

Dead load reaction	725 lbs
Live load reaction	1008 lbs
Total load reaction	1733 lbs

Allowable shear, Fv'	119 psi	Horizontal Shear OK
Actual shear, fv	59 psi	
Allowable bending, Fb'	1375 psi	Bending OK
Actual bending, fb	1267 psi	
Allowable live load defl	0.90 inches	Live Load Deflection OK
Actual live load defl	0.40 inches	
Allowable total load defl	1.20 inches	Total Load Deflection OK
Actual total load defl	0.68 inches	
Bearing length req'd	0.79 inches	

BEAM DESIGN FOR UNIFORM LOAD: 6x12

(Values for DF Larch #1)

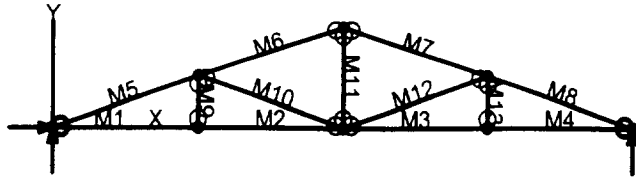
Width, b	5.5 inches
Depth, d	11.5 inches
Length of beam	10.5 feet
Dead load roof	15 psf
Live load roof	16 psf
Contributory width of roof load	14 feet
Dead load floor	0 psf
Live load floor	0 psf
Contributory width of floor load	0 feet
Dead load wall	0 plf
Live load defl ratio	360
Total load defl ratio	240
Total dead load	210 plf
Total live load	224 plf

Base design values:

Shear, F_v	85 psi
Bending, F_b	1000 psi
Comp. perp. to grain, F_c	625 psi
Mod of Elasticity, E	1600000 psi
Load duration factor, C_d	1.25
Size Factor, C_f	1.00

Dead load reaction	1103 lbs
Live load reaction	1176 lbs
Total load reaction	2279 lbs

Allowable shear, F_v'	106 psi	Horizontal Shear OK
Actual shear, f_v	44 psi	
Allowable bending, F_b'	1250 psi	Bending OK
Actual bending, f_b	592 psi	
Allowable live load defl	0.35 inches	Live Load Deflection OK
Actual live load defl	0.05 inches	
Allowable total load defl	0.53 inches	Total Load Deflection OK
Actual total load defl	0.11 inches	
Bearing length req'd	0.66 inches	



VisualAnalysis 3.12.c Report

September 8, 1998 2:30 PM

Project:

File: D:\Paul\d_and_d\zzzfolder\truss1.VAP

Engineer: Paul Zacher

Default Units: Feet, Pounds, Degrees, °Fahrenheit, Seconds.

Nodes

Node	X ft	Y ft	Fix	DX Fix	DY Fix	RZ
N1	0.00	0.00	Yes	Yes	No	
N2	6.00	0.00	No	No	"	
N3	12.00	0.00	"	"	"	
N4	18.00	0.00	"	"	"	
N5	24.00	0.00	"	Yes	"	
N6	6.00	2.00	"	No	"	
N7	12.00	4.00	"	"	"	
N8	18.00	2.00	"	"	"	

Spring Elements

This item is empty. Check the selection state, or report properties.

Member Elements

Member	Section	Material	Length ft	Weight lbs	Theta deg
M1	SS2x4	Wood	6.00	8.85	0.00
M2	"	"	6.00	8.85	0.00
M3	"	"	6.00	8.85	0.00
M4	"	"	6.00	8.85	0.00
M5	"	"	6.32	9.33	0.00
M6	"	"	6.32	9.33	0.00
M7	"	"	6.32	9.33	0.00
M8	"	"	6.32	9.33	0.00
M9	"	"	2.00	2.95	0.00
M10	"	"	6.32	9.33	0.00
M11	"	"	4.00	5.90	0.00
M12	"	"	6.32	9.33	0.00
M13	"	"	2.00	2.95	0.00

Section Properties

Category	Section	Ax in ²	Iz in ⁴	Sy+ in ³	Sy- in ³
Wood	3ha SS2x4	5.25	5.36	3.06	3.06

Material Properties

Material	Strength ksi	Elasticity ksi	Poisson	Density lb/ft ³	Therm. /F
Wood	-NA-	1700.00	0.36	40.47	0.00

Plate Elements

This item is empty. Check the selection state, or report properties.

VisualAnalysis 3.12.c Report

September 8, 1998 2:31 PM

Project:

File: D:\Paul\d_and_d\zzfolder\truss1.VAP

Engineer: Paul Zacher

Default Units: Feet, Pounds, Degrees, °Fahrenheit, Seconds.

Load Cases

Load Case	Strength	Service	Results
1 Service Case 1	Yes	Yes	1st Ord
2 Service Case 2	"	"	"
3 Equation Case 1	"	"	"

Service Load Cases

Load Case	Load Source	Self Weight	Loads
Service Case 1	Dead loads	None	
Service Case 2	Roof Live 1	"	

Load Combination Summary

Equation Case: Equation Case 1

Combination: +1D+1L+1Lr+1R+1W+1S+1E+1H+1F+1TS+1T+1TC+1I+1U+1LE

Contributing Cases & Source

Service Case 1 (Dead loads)

Service Case 2 (Roof Live loads)

Equation Case Combinations

Load Case	Cases	Equation
Equation Case 1	0.00	0.00

Factored Case Combinations

This item is empty. Check the selection state, or report properties.

Nodal Loads

This item is empty. Check the selection state, or report properties.

Member Point Loads

This item is empty. Check the selection state, or report properties.

Member Uniform Loads

Load Case	Member	Direction	Offset ft	End Off ft	Magnitude
Service Case 1	M1	DY proj.	0.00	6.00	-0.01 K/ft
"	M2	"	0.00	6.00	-0.01 K/ft
"	M3	"	0.00	6.00	-0.01 K/ft
"	M4	"	0.00	6.00	-0.01 K/ft
"	M5	"	0.00	6.32	-0.02 K/ft
"	M6	"	0.00	6.32	-0.02 K/ft
"	M7	"	0.00	6.32	-0.02 K/ft
"	M8	"	0.00	6.32	-0.02 K/ft
Service Case 2	M5	"	0.00	6.32	-0.03 K/ft
"	M6	"	0.00	6.32	-0.03 K/ft
"	M7	"	0.00	6.32	-0.03 K/ft

pi

12

M8

"

0.00

6.32

-0.03 K/Et

Member Linear Loads

This item is empty. Check the selection state, or report properties.

Member Temperature Changes

This item is empty. Check the selection state, or report properties.

Member Gradient Temperatures

This item is empty. Check the selection state, or report properties.

VisualAnalysis 3.12.c Report

September 8, 1998 2:31 PM

Project:

File: D:\Paul\d_and_d\zzfolder\truss1.VAP

Engineer: Paul Zacher

Default Units: Feet, Pounds, Degrees, °Fahrenheit, Seconds.

Load Cases

Load Case	Strength Service Results		
1: Service Case 1	Yes	Yes	1st Ord
2: Service Case 2	"	"	"
3: Equation Case 1	"	"	"

Member Extreme Results

Member	Fx(lc) K	Fy(lc) K	Mz(lc) K-ft	fc max(lc) ksi	fc min(lc) ksi	Dx(lc) in	Dy(lc) in
M1	0.89(1)	-0.02(1)	-0.01(1)	0.17(1)	0.06(1)	0.00(1)	-0.17(3)
"	1.81(3)	0.02(3)	0.04(3)	0.50(3)	0.34(3)	0.01(3)	0.00(1)
M2	0.89(1)	-0.03(3)	-0.04(3)	0.17(1)	0.06(1)	0.01(1)	-0.18(3)
"	1.81(3)	0.02(1)	0.02(3)	0.48(3)	0.34(3)	0.03(3)	-0.08(1)
M3	0.89(1)	-0.02(1)	-0.04(3)	0.17(1)	0.06(1)	0.01(1)	-0.18(3)
"	1.81(3)	0.03(3)	0.02(3)	0.48(3)	0.34(3)	0.04(3)	-0.08(1)
M4	0.89(1)	-0.02(3)	-0.01(1)	0.17(1)	0.06(1)	0.02(1)	-0.17(3)
"	1.81(3)	0.02(1)	0.04(3)	0.50(3)	0.34(3)	0.06(3)	0.00(1)
M5	-1.95(3)	-0.19(3)	-0.22(3)	-0.37(3)	-1.20(3)	-0.02(3)	-0.18(3)
"	-0.91(1)	0.12(3)	0.15(3)	0.50(3)	-0.18(2)	0.00(1)	0.00(1)
M6	-1.27(3)	-0.12(3)	-0.22(3)	-0.23(3)	-1.09(3)	-0.03(3)	-0.27(3)
"	-0.58(1)	0.19(3)	0.15(3)	0.61(3)	-0.11(1)	-0.01(1)	-0.08(1)
M7	-1.27(3)	-0.19(3)	-0.22(3)	-0.23(3)	-1.09(3)	0.04(1)	-0.25(3)
"	-0.58(1)	0.12(3)	0.15(3)	0.61(3)	-0.11(1)	0.08(3)	-0.07(1)
M8	-1.95(3)	-0.12(3)	-0.22(3)	-0.37(3)	-1.20(3)	0.03(1)	-0.17(3)
"	-0.91(1)	0.19(3)	0.15(3)	0.50(3)	-0.18(2)	0.07(3)	0.02(3)
M9	-0.01(2)	0.00(3)	0.00(3)	0.00(2)	0.00(2)	0.08(1)	0.01(1)
"	0.04(1)	0.00(1)	0.00(1)	0.01(1)	0.01(1)	0.17(3)	0.04(3)
M10	-0.70(3)	0.00(1)	0.00(1)	-0.13(3)	-0.13(3)	0.04(1)	-0.16(3)
"	-0.34(1)	0.00(3)	0.00(3)	-0.07(1)	-0.07(1)	0.09(3)	-0.07(1)
M11	0.24(2)	0.00(3)	0.00(3)	0.04(2)	0.04(2)	0.08(1)	0.01(1)
"	0.50(3)	0.00(1)	0.00(1)	0.10(3)	0.10(3)	0.17(3)	0.03(3)
M12	-0.70(3)	0.00(2)	0.00(1)	-0.13(3)	-0.13(3)	-0.03(3)	-0.17(3)
"	-0.34(1)	0.00(3)	0.00(3)	-0.07(1)	-0.07(1)	-0.01(1)	-0.08(1)
M13	-0.01(2)	0.00(1)	0.00(1)	0.00(2)	0.00(2)	0.08(1)	0.01(1)
"	0.04(1)	0.00(3)	0.00(3)	0.01(1)	0.01(1)	0.17(3)	0.04(3)

BENDING & COMP: TRUSS 1; MEMBER 5

Grading:

2x or 4x Doug-fir larch: No. 2

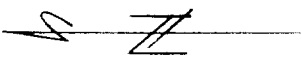
Assumptions:

Lateral support at points of bearing

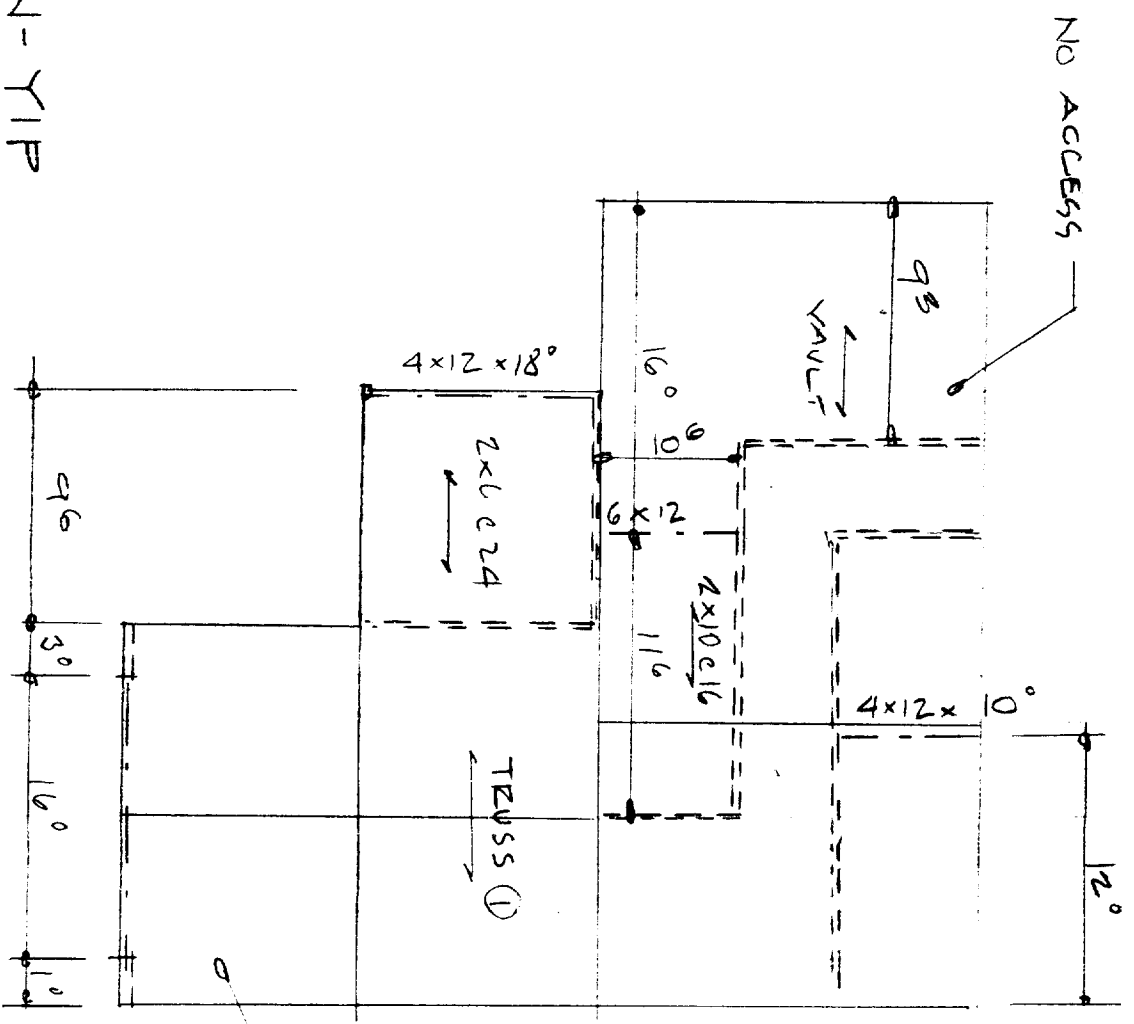
SPS or gypboard attached to compression face

Maximum center-center spacing = 24"

Width, b	1.5 inches
Depth, d	3.5 inches
Length	6.32 feet
Max Axial Comp, C	1950 lbs
Max Reaction, R	190 lbs
Max Moment, M	220 ft-lbs
Max LL Deflection	0.09 inches
Max TL Deflection	0.18 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
fc =	371 psi
Fce=	1597 psi
Fc*=	1094 psi
F'c=	879 psi
fb=	72 psi
F'b=	1258 psi
Shear D/C ratio	0.46 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.25 < 1.0, Member OK
Live Load defl ratio	0.28 < 1.0, Member OK
Total Load defl ratio	0.43 < 1.0, Member OK



①
ROOF PLAN - YIP
N.T.S.



(GARAGE)
- NO ACCESS

