

CITY OF SACRAMENTO  
1231 I Street, Sacramento, CA 95814

Permit No: 0406823

Insp Area: 2  
Thos Bros: 336H3

Site Address: 7658 KAVOORAS DR SAC  
Parcel No: 031-1140-056

Sub-Type: RES  
Housing (Y/N): N

CONTRACTOR  
MONARCH ROOFING INC  
8262 ALPINE AVE SUITE A  
SACRAMENTO, CA 95826

OWNER  
SHIMIZU ALENE G  
7658 KAVOORAS DR  
SACRAMENTO CA 95831

ARCHITECT

Nature of Work: REROOF T/O RESHT 22 SQ SNGL STRY INSTALL METAL BATTEN SYSTEM & LT WT TILE

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 C-39 License Number 806787 Date 5/4/04 Contractor Signature PAUL RUSHING

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 included in 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 herby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

Date MAY 5 2004 Applicant/Agent Signature PAUL RUSHING

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:

Carrier VIRGINIA SURETY COMPANY, INC Policy Number 005-00016796 Exp Date 01/01/2005

(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 MAY 4 2004 Applicant Signature PAUL RUSHING

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.

0406823

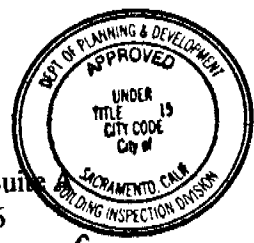
Shimbazu

Paul Zacher - Structural Engineers, Inc  
4701 Lakeside Way  
Fair Oaks, CA 95628

TEL: 916.961.3960  
FAX: 916.961.6552

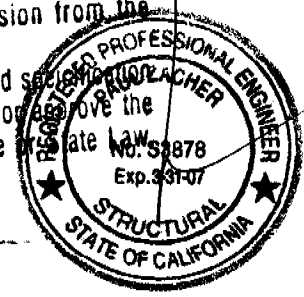
April 28, 2004

Monarch Roofing  
8262 Alpine Avenue, Suite  
Sacramento, CA 95826  
TEL: (916) 978-3182  
FAX: (916) 456-1703



This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations from the same without written permission from the Building Inspection Division.

The approval of this plan and seal of the engineer shall NOT be held to permit or constitute a violation of any City Ordinance or State Law.



Attn.: Mr. Neal Weber,

*Imp 5404  
see page 2 of 20-21 for details*

re: Job 2004234: SHIMAZU

*Do not cover prior to inspection*

Subject: Structural Investigation Report of the Roof for the Residence located at 7658 Kavooras Drive, Sacramento, CA 95831.

As requested by Mr. Neal Weber, this is a report to determine what needs should be addressed to correct any structural deficiencies of the roof. Paul Zacher visited the site April 28, 2004. The investigation was made to determine the existing condition of the structure. All information, data and analysis contained within this report are based on the 1997 Uniform Building Code with 2001 CBC Title 24 Amendments.

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: One.  
Dimensions: Approximately 2000 square feet.

**ISSUED**  
City of Sacramento  
MAY 04 2004  
NORTH PERMIT CENTER

**CONSTRUCTION:**

Roof:  
The roof covering will consist of a Light Weight Concrete Tile over a batten system. The roof structure is framed with pre-engineered wood trusses spaced at 24" on center.

**CONCLUSIONS:**

Roof:  
The roof structure currently lacks sufficient structural capacity for the applied live and dead loads. See "Recommendations" for location and repair to bring the roof structure up to the required capacity.

*CPB 5-7-04*

RECEIVED BY MAIL 05/04/04

Shimazu



Paul Zacher - Structural Engineers, Inc  
4701 Lakeside Way  
Fair Oaks, CA 95628

TEL: 916.961.3960  
FAX: 916.961.6552

**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.

**Roof Structure:**

1. Add a 2x6 DF#2 x 6'-0" long fascia board attached to each existing rafter tail with a Simpson A34 clip. Cut back the existing rafter tails as required to provide a flush fit. See detail 1.
2. Scab a 2x6 DF#2 x 10'-6" long rafter to the top chord of the existing truss. See details 1 and 2.
3. Scab a 2x6 rafter to the existing 2x6 rafters with 16d's @ 12" on center where the span is greater than 12'-0". The rafter to be scabbed to the existing rafter may be held short of the intersecting bearing wall, hip, valley, ridge or purlin by no more than 4". See detail 1.

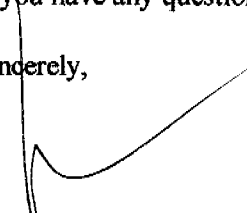
It shall be noted that small hairline cracking may occur at exterior stucco and interior gypboard finished walls that are load bearing or distributing roof strut loads. These cracks are a natural occurrence as the existing structure re-distributes the new roof weight. They are cosmetic in nature and 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.

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 that 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	6	in 12
Pitch Adjustment Factor	1.12	

**LOCATION: ROOF BATTEN SYTEM**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.30	psf
Roofing felt	0.30	psf
1x4 skip sht'g	1.09	psf
Batten system	0.50	psf
2x6 rafters @ 24" oc	1.00	psf
Load	10.2	psf
Roof Pitch Adjustment	1.20	psf
Total Load	11.4	psf

The dead and live load on truss top chord is placed along the length of the top chord. Therefore, the live load is as follows:

Live Load on top chord	14.3	psf
------------------------	------	-----

**LOCATION: TOP CHORD BATTEN SYSTEM**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Light Weight Tile	7.30	psf
Roofing felt	0.30	psf
Batten system	0.50	psf
1x4 skip sht'g	1.09	psf
2x4 truss @ 24" oc	0.64	psf
Total Load	9.8	psf

**LOCATION: BOTTOM CHORD BATTEN SYSTEM**

<u>MATERIAL</u>	<u>WEIGHT</u>	
Batt/blown insul	0.50	psf
2x4 truss @ 24" oc	1.28	psf
1/2" Gypboard	2.50	psf
Load	4.3	psf

Job #: 04\_234

Date: 04/28/2004

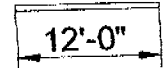
LOADING:

Rafter:

Dr = 11.4 psf x 2'-0" = 22.8 plf  
Lr = 16.0 psf x 2'-0" = 32.0 plf

2x6 #2

22.8 / 32.0

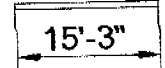


Rafter:

Dr = 11.4 psf x 2'-0" = 22.8 plf  
Lr = 16.0 psf x 2'-0" = 32.0 plf

2-2x6 #2

22.8 / 32.0

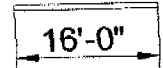


B1:

Dr = 11.4 psf x 7'-0" = 80 plf  
Lr = 16.0 psf x 7'-0" = 112 plf

4x12 #2

80 / 112

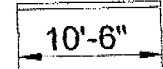


B2:

Dr = 14.1 psf x 16'-0" = 226 plf  
Lr = 16.0 psf x 16'-0" = 256 plf

4x12 #2

226 / 256



Paul Zacher - Structural Engr's  
 4701 Lakeside Way  
 Fair Oaks, CA 95628  
 TEL: (916) 961-3960  
 FAX: (916) 961-6552

Title :  
 Dsgnr:  
 Description :

Job #  
 Date: 6:58PM, 28 APR 04

Scope :

Rev: 580100  
 User: KW-0602844, Ver 5.6.1, 25-Oct-2002  
 (c)1983-2002 ENERCALC Engineering Software

### Timber Beam & Joist

c:\documents and settings\paul.zacher\desktop

#### Description RAFTERS AND BEAMS

#### Timber Member Information

Calculations are designed to 1997 NDS and 1997 UBC Requirements

		rafter	rafter	B1	B2
Timber Section		2x6	2-2x6	4x12	4x12
Beam Width	in	1.500	3.000	3.500	3.500
Beam Depth	in	5.500	5.500	11.250	11.250
Le: Unbraced Length	ft	0.00	0.00	0.00	0.00
Timber Grade		Douglas Fir - Larch	Douglas Fir - Larch	Douglas Fir - Larch	Douglas Fir - Larch
Fb - Basic Allow	psi	875.0	875.0	875.0	1,000.0
Fv - Basic Allow	psi	95.0	95.0	95.0	95.0
Elastic Modulus	ksi	1,600.0	1,600.0	1,600.0	1,700.0
Load Duration Factor		1.250	1.250	1.250	1.250
Member Type		Sawn	Sawn	Sawn	Sawn
Repetitive Status		Repetitive	Repetitive	No	No

#### Center Span Data

Span	ft	12.00	15.25	16.00	10.50
Dead Load	#/ft	22.80	22.80	80.00	226.00
Live Load	#/ft	32.00	32.00	112.00	256.00

#### Results

Ratio = 0.9572 0.7730 0.8300 0.7852

Mmax @ Center	in-k	11.84	19.12	73.73	79.71
@ X =	ft	6.00	7.62	8.00	5.25
fb : Actual	psi	1,565.2	1,263.9	998.6	1,079.7
Fb : Allowable	psi	1,635.2	1,635.2	1,203.1	1,375.0
		Bending OK	Bending OK	Bending OK	Bending OK
fv : Actual	psi	55.5	35.9	52.0	79.4
Fv : Allowable	psi	118.8	118.8	118.8	118.8
		Shear OK	Shear OK	Shear OK	Shear OK

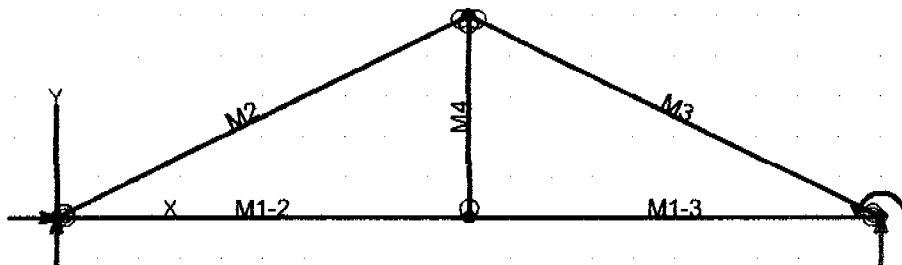
#### Reactions

@ Left End	DL	lbs	136.80	173.85	640.00	1,186.50
	LL	lbs	192.00	244.00	896.00	1,344.00
	Max. DL+LL	lbs	328.80	417.85	1,536.00	2,530.50
@ Right End	DL	lbs	136.80	173.85	640.00	1,186.50
	LL	lbs	192.00	244.00	896.00	1,344.00
	Max. DL+LL	lbs	328.80	417.85	1,536.00	2,530.50

#### Deflections

Ratio OK Deflection OK Deflection OK Deflection OK

Center DL Defl	in	-0.320	-0.417	-0.178	-0.088
L/Defl Ratio		450.5	438.9	1,081.5	1,439.2
Center LL Defl	in	-0.449	-0.585	-0.249	-0.099
L/Defl Ratio		320.9	312.8	772.5	1,270.6
Center Total Defl	in	-0.768	-1.002	-0.426	-0.187
Location	ft	6.000	7.625	8.000	5.250
L/Defl Ratio		187.4	182.6	450.6	674.8



C

# Truss 1

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural Engineers Engineer: Paul Zacher

File: C:\Documents and Settings\Paul Zacher\Desktop\Shimbazu04\_234\truss 1.vap

## Nodes

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	0.00	0.00	Yes		Yes			No
N2	10.00	5.00	No		No			"
N3	20.00	0.00	"		Yes			Yes
N4	10.00	0.00	"		No			No

## Member Elements

Member	Section	Material	Length ft
M1-2	SS2x4	Wood	10.00
M1-3	"	"	10.00
M2	SS2x6	"	11.18
M3	"	"	11.18
M4	SS2x4	"	5.00

## Section Properties

Category	Section	Ax in <sup>2</sup>	Iz in <sup>4</sup>	Sz (+y) in <sup>3</sup>	Sz (-y) in <sup>3</sup>
Wood Sha	SS2x4	5.25	5.36	3.06	3.06
"	SS2x6	8.25	20.80	7.56	7.56

## Material Properties

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft <sup>3</sup>
Wood	-NA-	1700000.00	0.36	40.47

## Load Combination Summary

Equation Case: UBC97 12.8a

Combination: 1D+1Lr

Contributing Cases &amp; Source

Dead Load (Dead loads)

Roof Live Load (Roof Live loads)

## Nodal Reactions

Node	Load Case	FX lb	FY lb	MZ lb-ft
N1	UBC97 12.8a	0.00	568.00	-NA-
N3	"	-NA-	568.00	0.00



## Member Results

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M1-2	588.53	-53.27	-102.66	0.01	-0.03
"	588.53	-24.60	27.08	0.01	-0.08
"	588.53	4.07	61.30	0.00	-0.10
"	<b>588.53</b>	32.73	0.00	0.00	0.00
M1-3	588.53	-32.73	0.00	0.02	0.00
"	588.53	-4.07	61.30	0.01	-0.10
"	588.53	24.60	27.08	0.01	-0.08
"	588.53	53.27	-102.66	0.01	-0.03
M2	<b>-765.78</b>	<b>215.56</b>	0.00	0.00	0.00
"	-693.92	71.85	<b>535.34</b>	-0.00	-0.34
"	-622.07	-71.85	535.34	-0.00	<b>-0.35</b>
"	-550.22	<b>-215.56</b>	0.00	<b>-0.01</b>	-0.03
M3	-765.78	-215.56	0.00	0.01	<b>0.01</b>
"	-693.92	-71.85	535.34	0.02	-0.34
"	-622.07	71.85	535.34	0.02	-0.35
"	-550.22	215.56	0.00	0.02	-0.02
M4	106.53	0.00	0.00	0.03	0.01
"	106.53	0.00	0.00	0.03	0.01
"	106.53	0.00	0.00	0.03	0.01
"	106.53	0.00	0.00	<b>0.03</b>	0.01

## **BENDING & COMP: TRUSS 1 - MEMBER 2**

Design based on 1997 UBC 2321 Division V and ANSI/TPI 1-1995

### Grading:

2x or 4x

Doug-fir larch: No. 2

### Assumptions:

Solid sheathing on top chord of truss. Therefore,  
continuous lateral support is provided along compression face  
Maximum center-center spacing = 24"

Width, b	1.5 inches
Depth, d	5.5 inches
Length	11.18 feet
Max Axial Comp, C	693 lbs
Max Reaction, R	71 lbs
Max Moment, M	535 ft-lbs
Max LL Deflection	0.17 inches
Max TL Deflection	0.34 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.3 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.1 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.31
fc =	84 psi
Fce=	1121 psi
Fc*=	1994 psi
F'c=	949 psi
fb=	849 psi
F'b=Fb*=	1869 psi
Shear D/C ratio	0.11 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.50 < 1.0, Member OK
Live Load defl ratio	0.30 < 1.0, Member OK
Total Load defl ratio	0.46 < 1.0, Member OK



## Truss 2

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural Engineers Engineer: Paul Zacher

File: C:\Documents and Settings\Paul Zacher\Desktop\Shimbazu04\_234\truss 2.vap

## Nodes

Node	X ft	Y ft	Fix DX	Fix DY	Fix RZ
N1	0.00	0.00	Yes	Yes	No
N2	16.00	8.00	No	No	"
N3	16.00	0.00	"	Yes	Yes
N4	32.00	0.00	"	"	"
N5	16.00	4.00	"	No	No
N6	5.33	0.00	"	"	"
N7	10.67	0.00	"	"	"
N8	21.33	2.67	"	"	"
N9	26.67	1.33	"	"	"
N10	5.33	2.67	"	"	"
N11	10.67	5.33	"	"	"
N12	21.33	5.33	"	"	"
N13	26.67	2.67	"	"	"

## Member Elements

Member	Section	Material	Length ft
M1-2	SS2x4	Wood	5.33
M1-3	"	"	5.33
M1-4	"	"	5.33
M2-2	"	"	5.50
M2-3	"	"	5.50
M2-4	"	"	5.50
M3-2	"	"	5.96
M3-3	"	"	5.96
M3-4	"	"	5.96
M4-2	"	"	5.96
M4-3	"	"	5.96
M4-4	"	"	5.96
M5	"	"	4.00
M6	"	"	4.00
M7	"	"	2.67
M8	"	"	5.96
M9	"	"	5.33
M10	"	"	7.54
M11	"	"	5.50
M12	"	"	2.67
M13	"	"	5.33
M14	"	"	1.33

## Section Properties

Category	Section	Ax in <sup>2</sup>	Iz in <sup>4</sup>	Sz (+y) in <sup>3</sup>	Sz (-y) in <sup>3</sup>
Wood Sha	SS2x4	5.25	5.36	3.06	3.06

## Material Properties

	Material Strength psi	Elasticity psi	Poisson psi	Density lb/ft <sup>3</sup>
Wood	-NA-	1700000.00	0.36	40.47

## Load Combination Summary

Equation Case: UBC97 12.8a

Combination: 1D+1Lr

Contributing Cases &amp; Source

Dead Load (Dead loads)

Roof Live Load (Roof Live loads)

## Nodal Reactions

Node	Load Case	FX lb	FY lb	MZ lb-ft
N1	UBC97 12.8a	0.00	448.03	-NA-
N3	"	-NA-	921.54	0.00
N4	"	-NA-	448.03	0.00

## Member Results

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M1-2	646.06	-25.55	-13.98	0.00	-0.03
"	646.06	-10.27	17.85	0.00	-0.03
"	646.06	5.02	22.51	0.00	-0.02
"	646.06	20.31	0.00	0.00	0.00
M1-3	646.06	-24.81	-23.98	0.01	-0.02
"	646.06	-9.52	6.52	0.01	-0.03
"	646.06	5.77	9.86	0.01	-0.03
"	646.06	21.06	-13.98	0.00	-0.03
M1-4	320.74	-18.44	0.00	0.01	0.00
"	320.74	-3.15	19.18	0.01	-0.02
"	320.74	12.14	11.18	0.01	-0.02
"	320.74	27.43	-23.98	0.01	-0.02
M2-2	656.56	-27.20	-27.20	-0.04	-0.08
"	660.27	-12.36	9.03	-0.04	-0.06
"	663.97	2.47	18.10	-0.05	-0.04
"	667.68	17.30	0.00	-0.05	-0.01
M2-3	1284.62	-14.47	15.57	-0.03	-0.12
"	1288.33	0.36	28.48	-0.04	-0.12
"	1292.03	15.20	14.22	-0.04	-0.10
"	1295.74	30.03	-27.20	-0.04	-0.08
M2-4	1281.96	-25.08	0.00	-0.02	-0.01
"	1285.67	-10.25	32.36	-0.03	-0.06
"	1289.38	4.58	37.55	-0.03	-0.10
"	1293.09	19.42	15.57	-0.03	-0.12
M3-2	-769.14	93.64	0.00	0.00	0.00
"	-730.82	16.99	109.88	-0.00	-0.07
"	-692.50	-59.65	67.49	-0.00	-0.07
"	-654.18	-136.29	-127.18	-0.01	-0.03
M3-3	-415.10	113.00	-127.18	-0.01	-0.03
"	-376.78	36.35	21.18	-0.01	-0.03
"	-338.45	-40.29	17.27	-0.01	-0.03
"	-300.13	-116.93	-138.92	-0.01	-0.02

12

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M3-4	-54.89	<b>138.26</b>	-138.92	-0.01	-0.02
"	-16.57	61.62	59.66	-0.01	-0.06
"	21.75	-15.02	105.97	-0.01	-0.06
"	60.07	-91.67	0.00	-0.01	-0.00
M4-2	-40.85	<b>-138.65</b>	<b>-141.21</b>	-0.00	-0.08
"	-2.52	-62.00	58.13	-0.00	-0.10
"	35.80	14.64	105.20	-0.00	-0.09
"	74.12	91.28	0.00	-0.00	-0.01
M4-3	-773.56	-108.09	-100.24	-0.01	-0.12
"	-735.24	-31.45	38.37	-0.01	-0.12
"	-696.92	45.19	24.72	-0.01	-0.11
"	-658.60	121.83	-141.21	-0.00	-0.08
M4-4	<b>-1446.3</b>	-98.15	0.00	-0.02	-0.01
"	-1408.0	-21.51	<b>118.86</b>	-0.02	-0.12
"	-1369.7	55.13	85.45	-0.01	<b>-0.15</b>
"	-1331.4	131.78	-100.24	-0.01	-0.12
M5	-223.65	12.74	-50.94	-0.00	<b>0.05</b>
"	-223.65	12.74	-33.96	-0.00	0.04
"	-223.65	12.74	-16.98	-0.00	0.03
"	-223.65	12.74	0.00	-0.00	0.01
M6	-569.62	-12.74	0.00	0.00	0.01
"	-569.62	-12.74	16.98	0.00	-0.02
"	-569.62	-12.74	33.96	0.00	-0.04
"	-569.62	-12.74	50.94	0.00	-0.05
M7	46.61	0.00	0.00	0.03	0.00
"	46.61	0.00	0.00	0.03	0.01
"	46.61	0.00	0.00	0.03	0.01
"	46.61	0.00	0.00	0.03	0.01
M8	-363.72	0.00	0.00	0.02	-0.02
"	-363.72	0.00	0.00	0.02	-0.02
"	-363.72	0.00	0.00	0.02	-0.02
"	-363.72	0.00	0.00	0.02	-0.01
M9	214.90	0.00	0.00	-0.02	-0.01
"	214.90	0.00	0.00	-0.02	-0.01
"	214.90	0.00	0.00	-0.02	0.00
"	214.90	0.00	0.00	-0.02	-0.00
M10	-471.61	0.00	0.00	0.01	-0.01
"	-471.61	0.00	0.00	0.01	-0.01
"	-471.61	0.00	0.00	0.01	0.00
"	-471.61	0.00	0.00	0.01	0.01
M11	-689.61	0.00	0.00	-0.05	-0.06
"	-689.61	0.00	0.00	-0.05	-0.03
"	-689.61	0.00	0.00	-0.05	-0.01
"	-689.61	0.00	0.00	-0.05	0.01
M12	210.54	0.00	0.00	0.07	-0.06
"	210.54	0.00	0.00	0.07	-0.05
"	210.54	0.00	0.00	0.07	-0.05
"	210.54	0.00	0.00	0.07	-0.04
M13	-606.22	0.00	0.00	-0.06	-0.11
"	-606.22	0.00	0.00	-0.06	-0.09
"	-606.22	0.00	0.00	-0.06	-0.08
"	-606.22	0.00	0.00	<b>-0.06</b>	-0.07
M14	34.93	0.00	0.00	0.11	-0.06
"	34.93	0.00	0.00	<b>0.11</b>	-0.06
"	34.93	0.00	0.00	0.11	-0.06
"	34.93	0.00	0.00	0.11	-0.06

**BENDING & COMP: TRUSS 2 - MEMBER 4-4**

Design based on 1997 UBC 2321 Division V and ANSI/TPI 1-1995

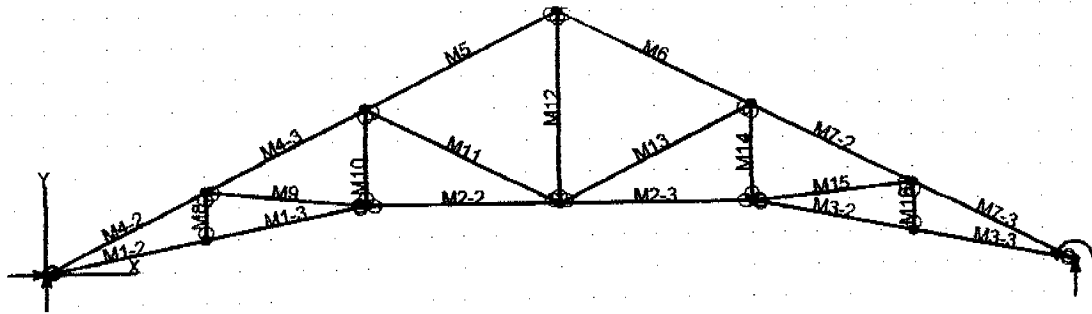
Grading:

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

Assumptions:

Solid sheathing on top chord of truss. Therefore,  
continuous lateral support is provided along compression face  
Maximum center-center spacing = 24"

Width, b	1.5 inches
Depth, d	3.5 inches
Length	5.96 feet
Max Axial Comp, C	1331 lbs
Max Reaction, R	131 lbs
Max Moment, M	100 ft-lbs
Max LL Deflection	0.06 inches
Max TL Deflection	0.12 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.16
fc =	254 psi
Fce=	1422 psi
Fc*=	2084 psi
F'c=	1144 psi
fb=	392 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.32 < 1.0, Member OK
Interaction equation:	
(fc/F'c)^2 +	
fb/ (F'b(1-fc/Fce)) =	0.27 < 1.0, Member OK
Live Load defl ratio	0.20 < 1.0, Member OK
Total Load defl ratio	0.30 < 1.0, Member OK





**Truss 3**

VisualAnalysis 4.00 Report

Company: Paul Zacher - Structural Engineers Engineer: Paul Zacher

File: C:\Documents and Settings\Paul Zacher\Desktop\Shimbazu04\_234\truss 3.vap

**Nodes**

Node	X ft	Y ft	Fix	DX	Fix	DY	Fix	RZ
N1	0.00	0.00	Yes		Yes			No
N2	32.00	0.00	No		"			Yes
N3	16.00	8.00	"		No			No
N4	10.00	5.00	"		"			"
N5	22.00	5.00	"		"			"
N6	22.00	2.00	"		"			"
N7	10.00	2.00	"		"			"
N8	5.00	1.00	"		"			"
N9	27.00	1.00	"		"			"
N10	5.00	2.50	"		"			"
N11	27.00	2.50	"		"			"
N12	16.00	2.00	"		"			"

**Member Elements**

Member	Section	Material	Length ft
M1-2	SS2x4	Wood	5.10
M1-3	"	"	5.10
M2-2	"	"	6.00
M2-3	"	"	6.00
M3-2	"	"	5.10
M3-3	"	"	5.10
M4-2	"	"	5.59
M4-3	"	"	5.59
M5	"	"	6.71
M6	"	"	6.71
M7-2	"	"	5.59
M7-3	"	"	5.59
M8	"	"	1.50
M9	"	"	5.02
M10	"	"	3.00
M11	"	"	6.71
M12	"	"	6.00
M13	"	"	6.71
M14	"	"	3.00
M15	"	"	5.02
M16	"	"	1.50

**Section Properties**

Category	Section	Ax in <sup>2</sup>	Iz in <sup>4</sup>	Sz (+y) in <sup>3</sup>	Sz (-y) in <sup>3</sup>
Wood Sha	SS2x4	5.25	5.36	3.06	3.06

**Material Properties**

Material	Strength psi	Elasticity psi	Poisson	Density lb/ft <sup>3</sup>
Wood	-NA-	1700000.00	0.36	40.47

## Load Combination Summary

Equation Case: UBC97 12.8a

Combination: 1D+1Lr

Contributing Cases &amp; Source

Dead Load (Dead loads)

Roof Live Load (Roof Live loads)

## Nodal Reactions

Node	Load Case	FX lb	FY lb	MZ lb-ft
N1	UBC97 12.8a	0.00	908.80	-NA-
N2	"	-NA-	908.80	0.00

## Member Results

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M1-2	2609.56	28.71	0.00	0.00	0.00
"	2612.37	14.65	36.84	0.01	-0.12
"	2615.18	0.60	49.80	0.01	-0.23
"	2618.00	-13.46	38.88	0.02	-0.30
M1-3	2612.61	13.46	38.88	0.02	-0.30
"	2615.42	-0.60	49.80	0.02	-0.36
"	2618.23	-14.65	36.84	0.03	-0.38
"	<b>2621.05</b>	-28.71	0.00	0.04	-0.39
M2-2	2134.40	-31.88	-36.49	0.13	-0.38
"	2134.40	-14.68	10.06	0.12	-0.39
"	2134.40	2.52	22.22	0.12	-0.39
"	2134.40	19.72	0.00	0.11	-0.38
M2-3	2134.40	-19.72	0.00	0.15	-0.38
"	2134.40	-2.52	22.22	0.14	-0.39
"	2134.40	14.68	10.06	0.13	-0.39
"	2134.40	31.88	-36.49	0.13	-0.38
M3-2	2612.61	-13.46	38.88	0.24	-0.25
"	2615.42	0.60	49.80	0.23	-0.31
"	2618.23	14.65	36.84	0.22	-0.33
"	2621.05	28.71	0.00	0.22	-0.34
M3-3	2609.56	-28.71	0.00	0.25	0.05
"	2612.37	-14.65	36.84	0.25	-0.07
"	2615.18	-0.60	49.80	0.24	-0.18
"	2618.00	13.46	38.88	0.24	-0.25
M4-2	<b>-2916.4</b>	98.54	0.00	0.00	0.00
"	-2880.5	26.69	116.62	-0.01	-0.17
"	-2844.6	-45.17	99.40	-0.01	-0.27
"	-2808.7	-117.02	-51.65	-0.02	-0.32
M4-3	-2430.9	89.26	-51.65	-0.02	-0.32
"	-2395.0	17.40	47.67	-0.03	-0.36
"	-2359.1	-54.45	13.15	-0.03	-0.38
"	-2323.1	-126.30	-155.20	-0.04	-0.40
M5	-1437.7	<b>152.47</b>	<b>-155.20</b>	-0.04	-0.40
"	-1394.6	66.25	89.26	-0.04	-0.48
"	-1351.5	-19.98	<b>140.99</b>	-0.05	<b>-0.50</b>
"	-1308.4	-106.20	0.00	-0.05	-0.39

Member	Fx lb	Vy lb	Mz lb-ft	Dx in	Dy in
M6	-1437.7	-152.47	-155.20	0.27	-0.28
"	-1394.6	-66.25	89.26	0.27	-0.37
"	-1351.5	19.98	140.99	0.28	-0.38
"	-1308.4	106.20	0.00	0.28	-0.28
M7-2	-2430.9	-89.26	-51.65	0.25	-0.20
"	-2395.0	-17.40	47.67	0.26	-0.25
"	-2359.1	54.45	13.15	0.26	-0.27
"	-2323.1	126.30	-155.20	0.27	-0.28
M7-3	-2916.4	-98.54	0.00	0.23	0.12
"	-2880.5	-26.69	116.62	0.24	-0.06
"	-2844.6	45.17	99.40	0.25	-0.16
"	-2808.7	117.02	-51.65	0.25	-0.20
M8	27.45	0.00	0.00	0.29	0.08
"	27.45	0.00	0.00	0.29	0.09
"	27.45	0.00	0.00	0.29	0.11
"	27.45	0.00	0.00	0.29	0.12
M9	-432.26	0.00	0.00	0.15	-0.36
"	-432.26	0.00	0.00	0.15	-0.34
"	-432.26	0.00	0.00	0.15	-0.31
"	-432.26	0.00	0.00	0.15	-0.28
M10	604.91	0.00	0.00	-0.38	-0.13
"	604.91	0.00	0.00	-0.38	-0.12
"	604.91	0.00	0.00	-0.38	-0.11
"	604.91	0.00	0.00	-0.37	-0.14
M11	-1024.7	0.00	0.00	0.29	-0.28
"	-1024.7	0.00	0.00	0.29	-0.28
"	-1024.7	0.00	0.00	0.29	-0.28
"	-1024.7	0.00	0.00	0.30	-0.27
M12	980.35	0.00	0.00	-0.38	-0.13
"	980.35	0.00	0.00	-0.38	-0.13
"	980.35	0.00	0.00	-0.38	-0.13
"	980.35	0.00	0.00	-0.37	-0.13
M13	-1024.7	0.00	0.00	-0.06	-0.40
"	-1024.7	0.00	0.00	-0.06	-0.40
"	-1024.7	0.00	0.00	-0.06	-0.39
"	-1024.7	0.00	0.00	-0.06	-0.39
M14	604.91	0.00	0.00	0.37	0.12
"	604.91	0.00	0.00	0.38	0.13
"	604.91	0.00	0.00	0.38	0.14
"	604.91	0.00	0.00	0.38	0.15
M15	-432.26	0.00	0.00	0.11	-0.39
"	-432.26	0.00	0.00	0.11	-0.36
"	-432.26	0.00	0.00	0.11	-0.33
"	-432.26	0.00	0.00	0.11	-0.31
M16	27.45	0.00	0.00	0.29	0.14
"	27.45	0.00	0.00	0.29	0.15
"	27.45	0.00	0.00	0.29	0.17
"	27.45	0.00	0.00	0.29	0.18

**BENDING & COMP: TRUSS 3 - MEMBER 4-2**

Design based on 1997 UBC 2321 Division V and ANSI/TPI 1-1995

Grading:

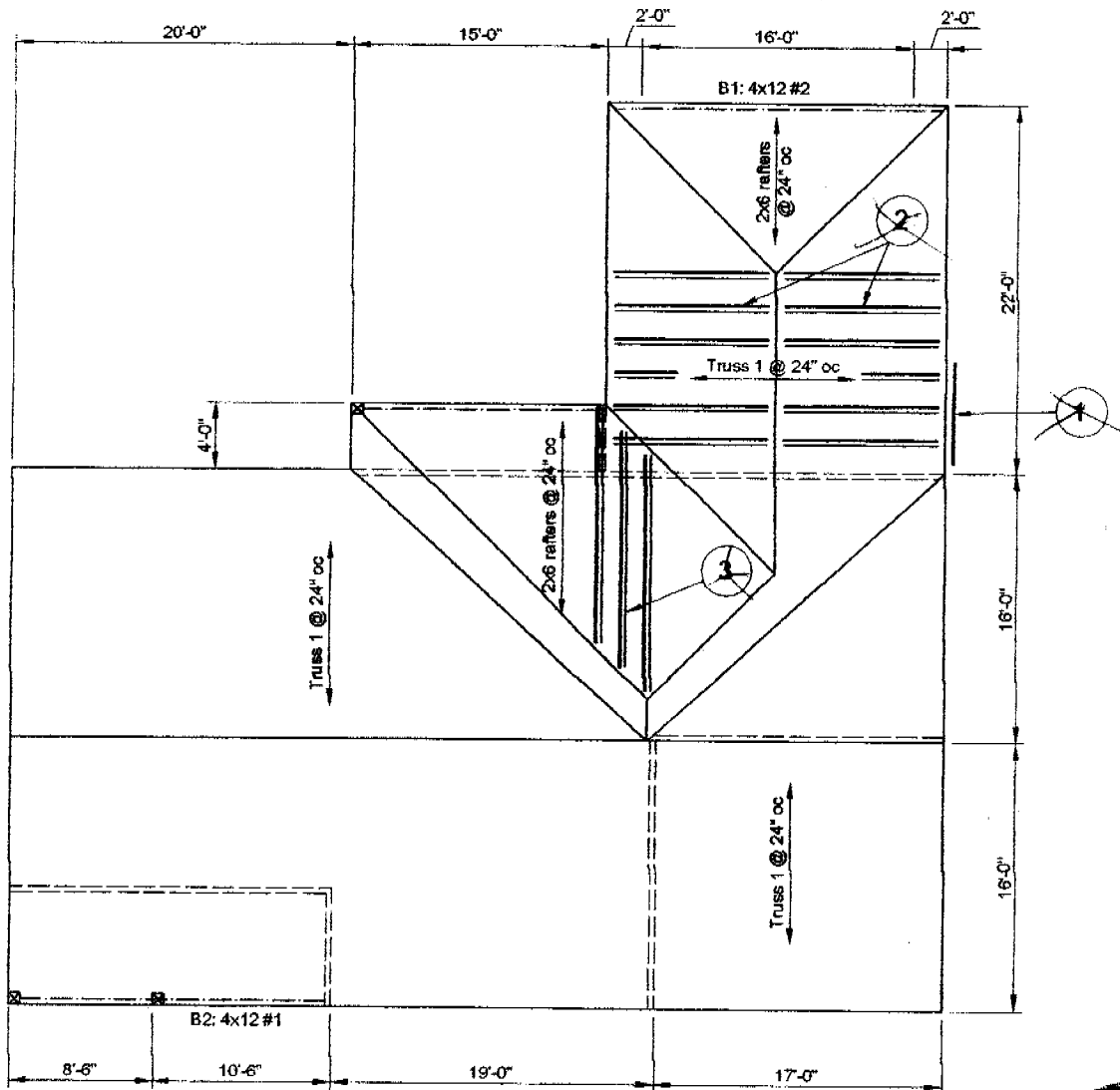
2x or 4x

Doug-fir larch: No. 2

Assumptions:

Solid sheathing on top chord of truss. Therefore,  
 continuous lateral support is provided along compression face  
 Maximum center-center spacing = 24"

Width, b	1.5 inches
Depth, d	3.5 inches
Length	5.59 feet
Max Axial Comp, C	2808 lbs
Max Reaction, R	117 lbs
Max Moment, M	51 ft-lbs
Max LL Deflection	0.16 inches
Max TL Deflection	0.32 inches
LL Defl Criteria = L/	240
TL Defl Criteria = L/	180
Duration factor, Cd	1.25
Repetitive Factor, Cr	1.15
Size Factor, Cf bending	1.5 1.5 for 2x4, 1.3 for 2x6
Size Factor, Cf comp	1.15 1.15 for 2x4, 1.1 for 2x6
Buckling Factor, CT =	1.15
fc =	535 psi
Fce=	1602 psi
Fc*=	2084 psi
F'c=	1239 psi
fb=	200 psi
F'b=Fb*=	2156 psi
Shear D/C ratio	0.28 < 1.0, Member OK
Interaction equation:	
(fc/F'c) <sup>2</sup> +	
fb/ (F'b(1-fc/Fce)) =	0.33 < 1.0, Member OK
Live Load defl ratio	0.57 < 1.0, Member OK
Total Load defl ratio	0.86 < 1.0, Member OK



**FRAMING NOTES:**

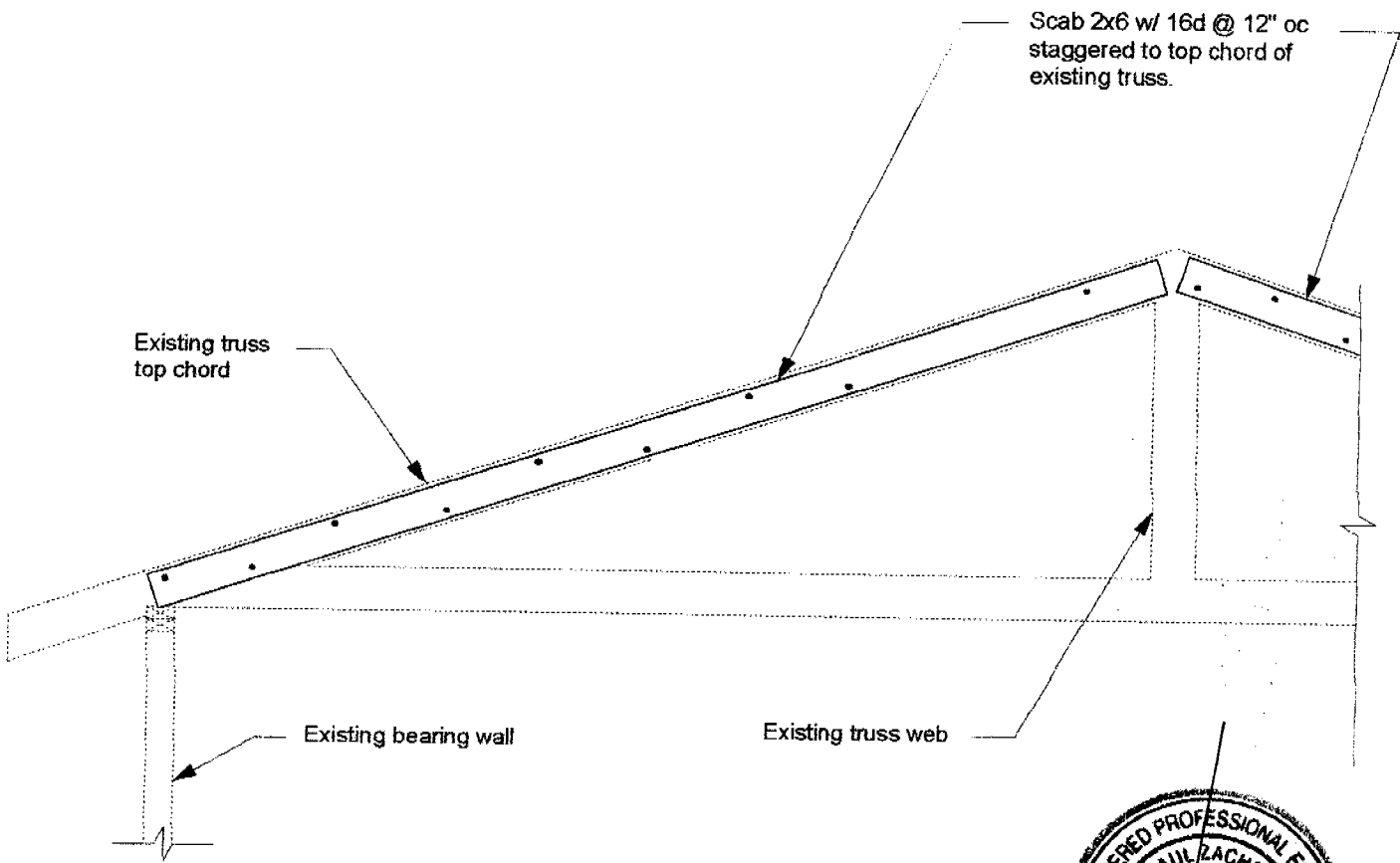
1. Add a 2x6 x 6'-0" long fascia board attached to each existing rafter tail with a Simpson A34 clip.  
Cut back the ends of the rafter tails as required to provide a flush fit.
2. Scab a 2x6 DF#2 x 10'-6" long rafter to the top chord of the existing truss #1 (total 12) . See detail 2.
3. Scab a 2x6 to existing 2x6 rafters where the span is greater than 12'-0" (total 3) .

**NOTES:**

- A. This is a reroof project. The new roofing material shall be a Light Weight Concrete Tile. The tile shall weigh less than or equal to 7.3 psf.
- B. All rafters are 2x6 DF#2 and hips and valleys are 2x8 DF#2 unless otherwise noted.
- C. All existing rafter, hips, valleys, rafter ties, and purlins are braced per UBC Section 2320.1 "Roof and Ceiling Framing" unless otherwise shown.
- D. All structural wood members that were observed appear to be in sound condition and without structural defect.

**1 ROOF PLAN - SHIMAZU**  
Not to Scale

20



Scab 2x6 w/ 16d @ 12" oc staggered to top chord of existing truss.

Existing truss top chord

Existing bearing wall

Existing truss web



2

### TRUSS REINFORCEMENT DETAIL

scale: 1/2" = 1'-0"

21