

Fire Rebuild

A Senior Project

Presented to:

The Faculty of the Architectural Engineering Department,
College of Architecture and Environmental Design
California Polytechnic State University, San Luis Obispo

In Partial Fulfillment

Of the Requirements for the Degree
Bachelor of Science

By: Erin L. Dupree

Advisor: James Mwangi, PhD, SE

March 2022



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ABET

Abstract:

The “Fire Rebuild” project involves the structural design of a single-family residence and garage. The original property was destroyed in the Tubb’s Fire, which swept through the city of Santa Rosa in 2017. The original structures were damaged beyond repair and allowed for the owner to customize the property. Following conventional residential building in the United States, the structures were designed as light framed construction, using a mixture of douglas-fir and engineered lumber. As the property is located in a WUI (Wildlife Urban Interface), and a historic California burn scar, special consideration was given to the materials and design of the residence and garage. The design was originally completed in 2019 and has been updated to meet the 2019 California Building Code (CBC).

Considerations:

The Leete Ave. property was located directly in the historic fire path of Sonoma County. Three fires have ravaged this area: Great Fire of 1870, 1964 Hanly Fire, and the 2017 Tubb’s Fire. Sonoma County is far from the only California county affected by wildfires, as climate change continues to increase the weather extremes, much of California has been affected by wildland fires threatening communities.

As the threat of wildland fires increase, the need for more durable and fire resilient materials is apparent. With increased durability, comes increased costs. Both material durability and the associated increased weight, cost the homeowner, or insurance company more. With significant swaths of the country burning each year, it becomes a question of how cost effective it is to rebuild. Where is line between economic building systems/practice and durability?

Today, the greatest cost in building is labor. As a result, creating efficient building systems and repetitive framing is the goal to maintain low labor costs. The “Fire Rebuild” made use of manufactured roof trusses, and manufactured I-joist at the roof, and floor to maximize our structural efficiency versus costs where possible and allow for greater financial flexibility in the design of special structural elements to maintain the client’s architectural vision.

Design Team:

- Erin Dupree: Architectural Engineering Student and Structural Designer at MKM & Associates
- Silas Lacey Designs & Construction Admin: Architect
- Walters Lumber Company, Inc.: Truss Manufacturer
- MiTek Engineers: Truss Engineer

Learning Outcomes:

The “Fire Rebuild” design focused on the preventative fire measures and WUI design standards. The designed also allowed for the opportunity to work with the client and architect to facilitate creative structural designs to maintain the architectural integrity, as with the steel transfer column and steel overhangs, a departure from the typical wood framed residences of the area.



PROJECT SCOPE

Scope:

The “Fire Rebuild” project entailed the complete structural design of the gravity and lateral systems of the Leete Ave Residence and Garage. Collaboration with the client, architect, truss manufactures and engineer.


The structures are constructed from a mixture of dimensional and engineered lumber. Exterior and interior stud walls act as the main bearing points for the roof framing. To maintain a large open main room, engineered lumber was selected to achieve the long spans desired by the client, without excessive deflection or shrinkage, while dimensional lumber was used at the walls to keep client cost manageable.

The foundation is comprised of continuous spread and pad footings which support a raised wood floor. To maximize efficiency, in both structural and economic regards, I-Joists were selected as the main floor framing system. The continuous footings rely on the soil bearing pressure, supplied by the 2019 CBC minimum soil bearing values for clayey-sandy soil.

Wood shear walls are the primary lateral resistance system. The shear walls work to resist the lateral loads distributed through the roof diaphragm. The flexible timber roof diaphragm distributes such loads by acting as a beam, simple or cantilever, between the shear walls. The timber shear walls act as vertical, cantilevered diaphragm, transferring the lateral forces from the diagrams to the floor or foundation below. Both the vertical (shear walls) and horizontal (roof) diaphragms are composed of APA rated structural sheathing applied to repetitive framing members and nailed at specific spacings to achieve the required shear transfer. The shear walls are attached to the foundation with embedded anchor bolts, to resist shear loads, and tiedowns, to resist overturning loads.



STRUCTURAL CALCULATIONS

 ELD	JOB NAME: Fire Rebuild	Prepared by: Erin L. Dupree	
	Subject: CODE	Date:	Sheet:
	Advisor: James Mwangi	Class: ARCE 453-03	
References:	[GOVERNING CODES] IBC 2018 CALIFORNIA BLDG CODE (CBC) 2019 ASCE 7-16 NDS 2015 ACI 318-14 AISC 360-16		



ELD

JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LOAD TAKE OFF

Date:

1/6/22

Sheet:

Advisor: James Mwangi

Class: ARCE 453-03

References:

[LOAD TAKE OFF]

ROOF - DEAD LOADS

SLOPE 3:12 ; DL FACTOR = 1

ROOFING - 16 GA. METAL	2.9 psf
SHEATHING - 15/32" PLYWOOD	1.5 psf
FRAMING @ 16" O.C. - 16" TJI 230 → GOVERNS	2.6 psf
FRAMING @ 24" O.C. - MFR TRUSSES	2.5 psf
INSULATION - R30 BATTIS	0.8 psf
CETILING - 5/8" SHEET ROCK	2.8 psf
MISC	1.5 psf
FUTURE SOLAR	2.0 psf
FIRE SPRINKLERS	1.0 psf

ROOF - LIVE LOADS20 psf *
* REDUCIBLE

$$W_{ROOF} = 15 \text{ psf} + 20 \text{ psf}$$

WALL LOAD

EXTERIOR - STUCCO	15.0 psf
INTERIOR - GYP	10.0 psf

$$W_{EXT} = 15 \text{ psf} \quad W_{GYP} = 10 \text{ psf}$$

FLOOR - DEAD LOAD


FINISH - HARDWOOD 1"	4.0 psf
SHEATHING - 5/8" PLYWOOD	1.8 psf
FRAMING @ 16" O.C. : 9 1/2 TJI 230	2.0 psf
INSULATION - R30 BATTIS	0.8 psf
MISC	1.4 psf


FLOOR - LIVE LOAD40 psf *
* REDUCIBLE

$$W_{FLOOR} = 10 \text{ psf} + 40 \text{ psf}$$

CBC T1607.1

CBC 1607.1

 ELD	JOB NAME: Fire Rebuild		Prepared by: Erin L. Dupree	
	Subject: LATERAL DESIGN		Date: 1/10/22	Sheet:
	Advisor: James Mwangi		Class: ARCE 453-03	
References:	<p>[LATERAL DESIGN]</p> <p><u>PROJECT DESCRIPTION</u></p> <p>SINGLE FAMILY DWELLING 2017 TUBB'S FIRE REBUILD LEETE AVE. SANTA ROSA, CA 95404</p> <p><u>DESIGN CRITERIA</u></p> <p>OCCUPANCY CLASSIFICATION : RESIDENTIAL, R-3 ALLOWABLE BLDG LIFE SPAN : 50 YRS TYPE OF CONSTRUCTION : TYPE III RISK CATEGORY : II</p> <p>ALLOWABLE BLDG HGT ABV GRADE — UNLIMITED MAXIMUM FLOOR AREA PER LEVEL — UNLIMITED SOIL TYPE — "D" DEFAULT</p> <p>ALLOWABLE BEARING, DTL — 1500 psf ALLOWABLE BEARING, WTE — 2490 psf</p> <p>LIVE LOADS ROOF LIVE LOAD - ORDINARY, REDUCIBLE — 20 psf PRIMARY ROOF MEMBERS — 300 lbs FLOOR LIVE LOAD — 40 psf</p> <p><u>MATERIAL SPECIFICATIONS</u></p> <p>CONCRETE : NORMAL WT STEM WALL/ FTG $f'_c = 3000$ psi SLAB ON GRADE $f'_c = 3000$ psi</p> <p>REINFORCING STEEL : ASTM A615 GRD 60</p> <p>STEEL : HSS RECTANGULAR TUBING ASTM A500, $F = 29000$ ksi</p> <p>WOOD : 2x DIMENSIONAL LUMBER ; DF No 2 6x MID LARGER ; DF No 1 $f_b = 2400$ psi, $E = 1.7 \times 10^6$ psi $f_b = 2800$ psi, $E = 2.0 \times 10^6$ psi 1 3/4 x SCL 3 1/2 x SCL I-JOIST ; WEYERHAEUSER TJI 230</p> <p>ADHESIVE SYSTEMS : SIMPSON STRONGTIE - SET XP</p>			

	JOB NAME: Fire Rebuild	Prepared by: Erin L. Dupree	
	Subject: Lateral Design Seismic Criteria	Date: 1/22/22	Sheet:
	Advisor: James Mwangi	Class: ARCE 453-03	

References:



Fire Rebuild

Leete Ave, Santa Rosa, CA 95404, USA

Date	1/22/2022, 3:57:38 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	2.548	MCE_R ground motion. (for 0.2 second period)
S_1	0.979	MCE_R ground motion. (for 1.0s period)
S_{MS}	3.058	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	2.039	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1.2	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	1.068	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	1.281	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
S_{sRT}	2.607	Probabilistic risk-targeted ground motion. (0.2 second)
S_{sUH}	2.925	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
S_{sD}	2.548	Factored deterministic acceleration value. (0.2 second)
S_{1RT}	0.999	Probabilistic risk-targeted ground motion. (1.0 second)
S_{1UH}	1.129	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S_{1D}	0.979	Factored deterministic acceleration value. (1.0 second)
PGAd	1.068	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.891	Mapped value of the risk coefficient at short periods
C_{R1}	0.885	Mapped value of the risk coefficient at a period of 1 s



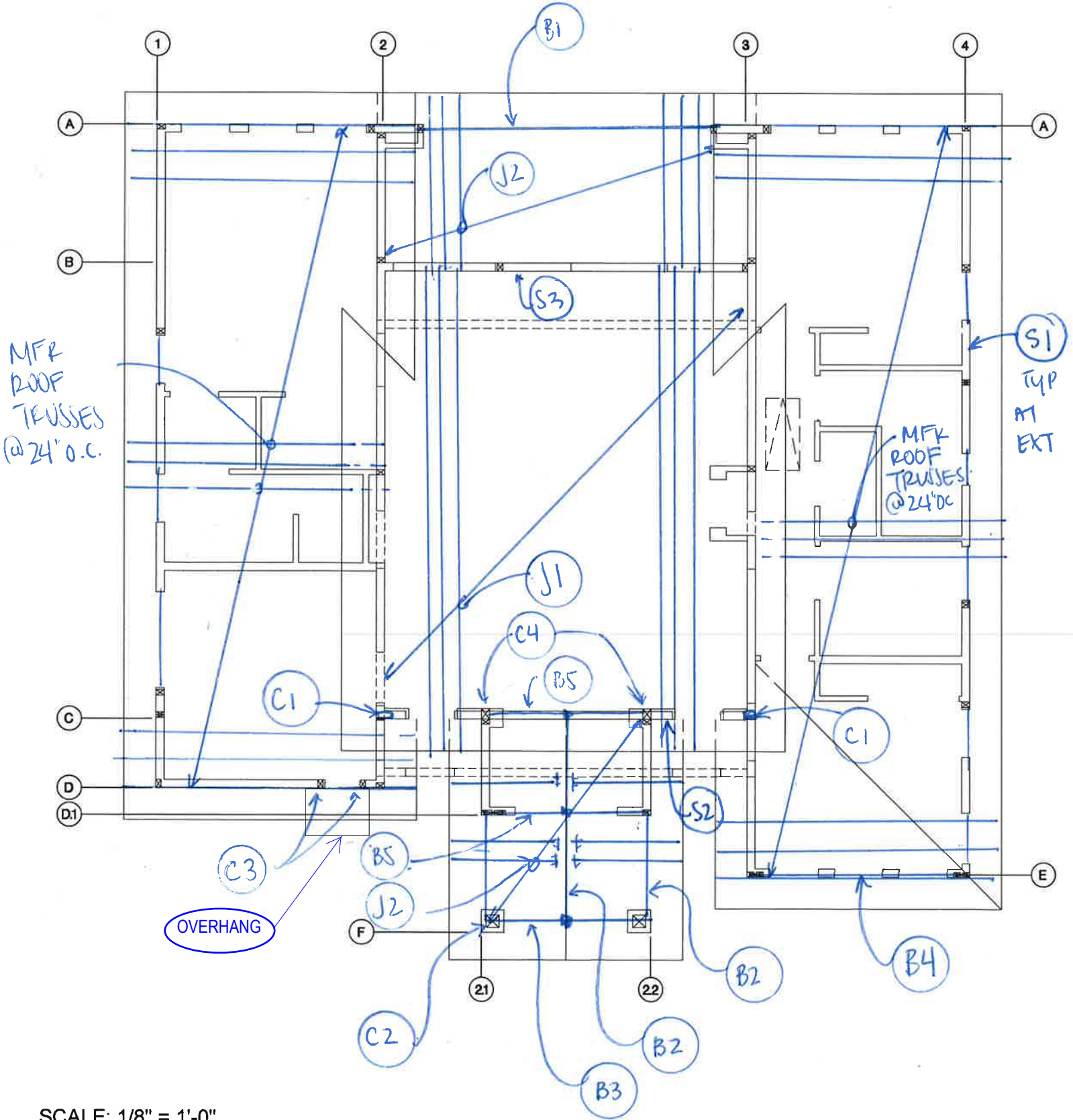
MAIN HOUSE GRAVITY CALCULATIONS



FIRE REBUILD

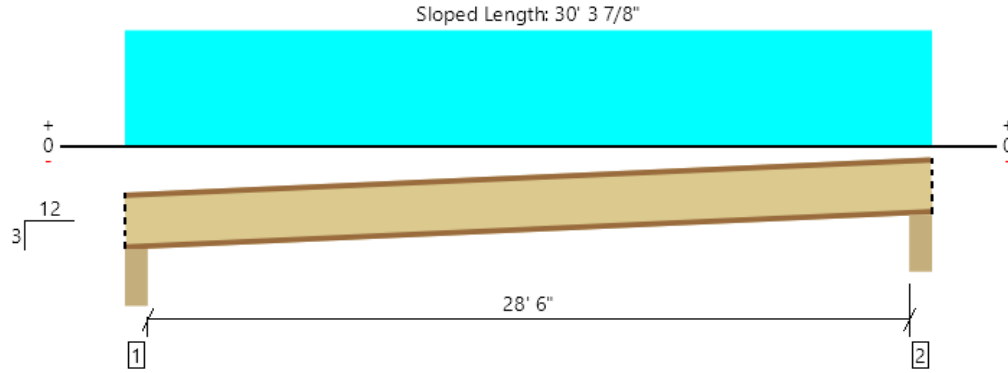
VERTICAL SYSTEM: 2nd FLOOR FRAMING KEY PLAN
LEETE AVENUE
SANTA ROSA, CA 95404

Class	ARCE 453-03
Date	3/2/2022
PE	ELD



SCALE: 1/8" = 1'-0"

Level, J1- TJI Roof Joist
1 piece(s) 16" TJI® 360 @ 12" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Member Length : 30' 7 7/8"

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	522 @ 4 1/2"	1881 (3.50")	Passed (28%)	1.25	1.0 D + 1.0 Lr (All Spans)
Shear (lbs)	505 @ 5 1/2"	2738	Passed (18%)	1.25	1.0 D + 1.0 Lr (All Spans)
Moment (Ft-lbs)	3643 @ 14' 8 1/2"	10506	Passed (35%)	1.25	1.0 D + 1.0 Lr (All Spans)
Live Load Defl. (in)	0.416 @ 14' 8 1/2"	0.985	Passed (L/852)	--	1.0 D + 1.0 Lr (All Spans)
Total Load Defl. (in)	0.738 @ 14' 8 1/2"	1.477	Passed (L/480)	--	1.0 D + 1.0 Lr (All Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 3/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Roof Live	Total	
1 - Beveled Plate - DF	5.50"	5.50"	1.75"	227	294	521	Blocking
2 - Beveled Plate - DF	5.50"	5.50"	1.75"	227	294	521	Blocking

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	5' 10" o/c	
Bottom Edge (Lu)	30' 4" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Roof Live (non-snow: 1.25)	Comments
1 - Uniform (PSF)	0 to 29' 5"	12"	15.0	20.0	Default Load

Weyerhaeuser Notes

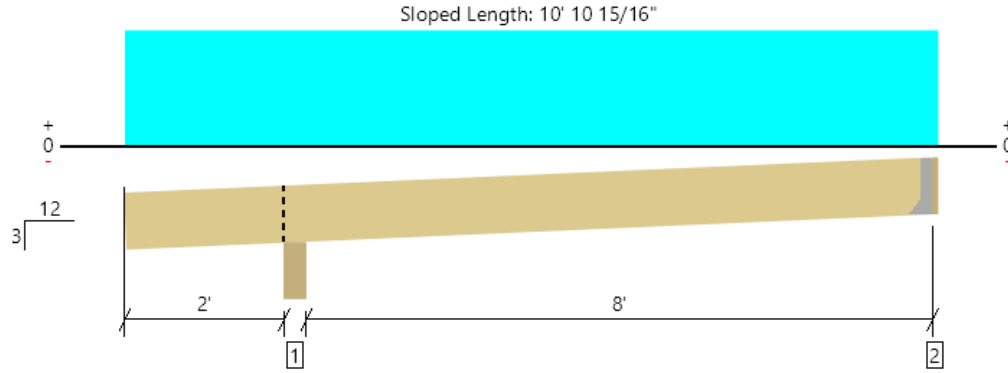
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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Erin Dupree MKM & Associates (707) 578-8185 erin@mkmassociates.com	



Level, J2- Dim Roof Joist
1 piece(s) 2 x 8 DF No.2 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Member Length : 10' 11 3/16"

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	184 @ 10' 5 1/2"	1406 (1.50")	Passed (13%)	--	1.0 D + 1.0 Lr (Alt Spans)
Shear (lbs)	170 @ 3' 9/16"	1631	Passed (10%)	1.25	1.0 D + 1.0 Lr (All Spans)
Moment (Ft-lbs)	359 @ 6' 4 3/4"	1700	Passed (21%)	1.25	1.0 D + 1.0 Lr (Alt Spans)
Live Load Defl. (in)	0.035 @ 6' 4 11/16"	0.283	Passed (L/999+)	--	1.0 D + 1.0 Lr (Alt Spans)
Total Load Defl. (in)	0.059 @ 6' 5"	0.424	Passed (L/999+)	--	1.0 D + 1.0 Lr (Alt Spans)

System : Roof
Member Type : Joist
Building Use : Residential
Building Code : IBC 2015
Design Methodology : ASD
Member Pitch : 3/12

- Deflection criteria: LL (L/360) and TL (L/240).
- Overhang deflection criteria: LL (2L/360) and TL (2L/240).
- Birdsmouth cut has not been analyzed.
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.
- Applicable calculations are based on NDS.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Roof Live	Total	
1 - Birdsmouth - DF	5.50"	5.50"	1.50"	137	177	314	Blocking
2 - Hanger on 7 1/4" DF ledgerOnMasonry	1.50"	Hanger ¹	1.50"	81	109	190	See note ¹

- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.
- At hanger supports, the Total Bearing dimension is equal to the width of the material that is supporting the hanger
- ¹ See Connector grid below for additional information and/or requirements.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	10' 9" o/c	
Bottom Edge (Lu)	10' 9" o/c	

- Maximum allowable bracing intervals based on applied load.

Connector: Simpson Strong-Tie							
Support	Model	Seat Length	Top Fasteners	Face Fasteners	Member Fasteners	Accessories	
2 - Face Mount Hanger	LRU26Z	1.94"	N/A	4-10dx1.5	5-10d		

- Refer to manufacturer notes and instructions for proper installation and use of all connectors.

Vertical Load	Location (Side)	Spacing	Dead (0.90)	Roof Live (non-snow: 1.25)	Comments
1 - Uniform (PSF)	0 to 10' 7"	16"	15.0	20.0	Default Load

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Erin Dupree MKM & Associates (707) 578-8185 erin@mkmassociates.com	

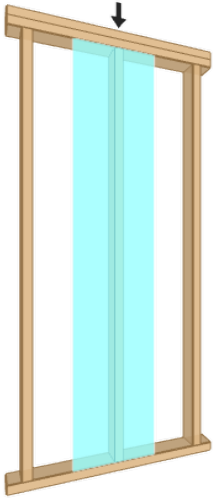


Level, S1: Typ Ext Stud
1 piece(s) 2 x 6 DF No.2 @ 16" OC

Wall Height: 10'

Member Height: 9' 7 1/2"

O. C. Spacing: 16.00"



Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	21	50	Passed (42%)	--	--
Compression (lbs)	420	7487	Passed (6%)	1.25	1.0 D + 1.0 Lr
Plate Bearing (lbs)	420	6445	Passed (7%)	--	1.0 D + 1.0 Lr
Lateral Reaction (lbs)	133	--	--	1.60	1.0 D + 0.6 W
Lateral Shear (lbs)	120	1584	Passed (8%)	1.60	1.0 D + 0.6 W
Lateral Moment (ft-lbs)	319 @ mid-span	1342	Passed (24%)	1.60	1.0 D + 0.6 W
Total Deflection (in)	0.12 @ mid-span	0.32	Passed (L/995)	--	1.0 D + 0.6 W
Bending/Compression	0.25	1	Passed (25%)	1.60	1.0 D + 0.6 W

- Lateral deflection criteria: Wind (L/360)
- Input axial load eccentricity for this design is 16.67% of applicable member side dimension.
- Applicable calculations are based on NDS.
- A bearing area factor of 1.25 has been applied to base plate bearing capacity.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.

Supports	Type	Material
Top	Dbl 2X	Douglas Fir-Larch
Base	2X	Douglas Fir-Larch

System : Wall
Member Type : Stud
Building Code : IBC 2015
Design Methodology : ASD

Max Unbraced Length	Comments
1'	

Lateral Connections				
Supports	Connector	Type/Model	Quantity	Connector Nailing
Top	Nails	8d x 2.5" Box (Toe)	2	N/A
Base	Nails	8d x 2.5" Box (Toe)	2	N/A

- Nailed connection at the top of the member is assumed to be nailed through the bottom 2x plate prior to placement of the top 2x of the double top plate assembly.

Vertical Load	Spacing	Dead (0.90)	Roof Live (non-snow: 1.25)	Comments
1 - Point (lb)	N/A	180	240	Default Load

Lateral Load	Location	Spacing	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	16.00"	34.4	

- ASCE/SEI 7 Sec. 30.4: Exposure Category (C), Mean Roof Height (33'), Topographic Factor (1.0), Wind Directionality Factor (0.85), Basic Wind Speed (115), Risk Category(II), Effective Wind Area determined using full member span and trib. width.
- IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

Member Notes
S1- Typ Ext Stud

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

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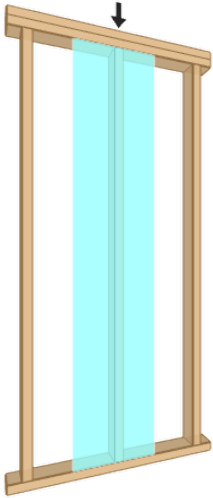


Level, S2: Line B Stud
1 piece(s) 2 x 6 DF No.2 @ 16" OC

Wall Height: 13' 6"

Member Height: 13' 1 1/2"

O. C. Spacing: 16.00"



Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	29	50	Passed (57%)	--	--
Compression (lbs)	1114	4435	Passed (25%)	1.25	1.0 D + 1.0 Lr
Plate Bearing (lbs)	1114	6445	Passed (17%)	--	1.0 D + 1.0 Lr
Lateral Reaction (lbs)	174	--	--	1.60	1.0 D + 0.6 W
Lateral Shear (lbs)	161	1584	Passed (10%)	1.60	1.0 D + 0.6 W
Lateral Moment (ft-lbs)	569 @ mid-span	1342	Passed (42%)	1.60	1.0 D + 0.6 W
Total Deflection (in)	0.39 @ mid-span	0.44	Passed (L/401)	--	1.0 D + 0.6 W
Bending/Compression	0.51	1	Passed (51%)	1.60	1.0 D + 0.6 W

- Lateral deflection criteria: Wind (L/360)
- Input axial load eccentricity for this design is 16.67% of applicable member side dimension.
- Applicable calculations are based on NDS.
- A bearing area factor of 1.25 has been applied to base plate bearing capacity.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.

Supports	Type	Material
Top	Dbl 2X	Douglas Fir-Larch
Base	2X	Douglas Fir-Larch

System : Wall
Member Type : Stud
Building Code : IBC 2015
Design Methodology : ASD

Max Unbraced Length	Comments
1'	

Lateral Connections				
Supports	Connector	Type/Model	Quantity	Connector Nailing
Top	Nails	8d x 2.5" Box (Toe)	2	N/A
Base	Nails	8d x 2.5" Box (Toe)	2	N/A

- Nailed connection at the top of the member is assumed to be nailed through the bottom 2x plate prior to placement of the top 2x of the double top plate assembly.

Vertical Load	Spacing	Dead (0.90)	Roof Live (non-snow: 1.25)	Comments
1 - Point (lb)	N/A	478	637	Default Load

Lateral Load	Location	Spacing	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	16.00"	33.0	

- ASCE/SEI 7 Sec. 30.4: Exposure Category (C), Mean Roof Height (33'), Topographic Factor (1.0), Wind Directionality Factor (0.85), Basic Wind Speed (115), Risk Category(II), Effective Wind Area determined using full member span and trib. width.
- IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

Member Notes
S1- Typ Ext Stud

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Erin Dupree MKM & Associates (707) 578-8185 erin@mkmassociates.com	





Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC#: KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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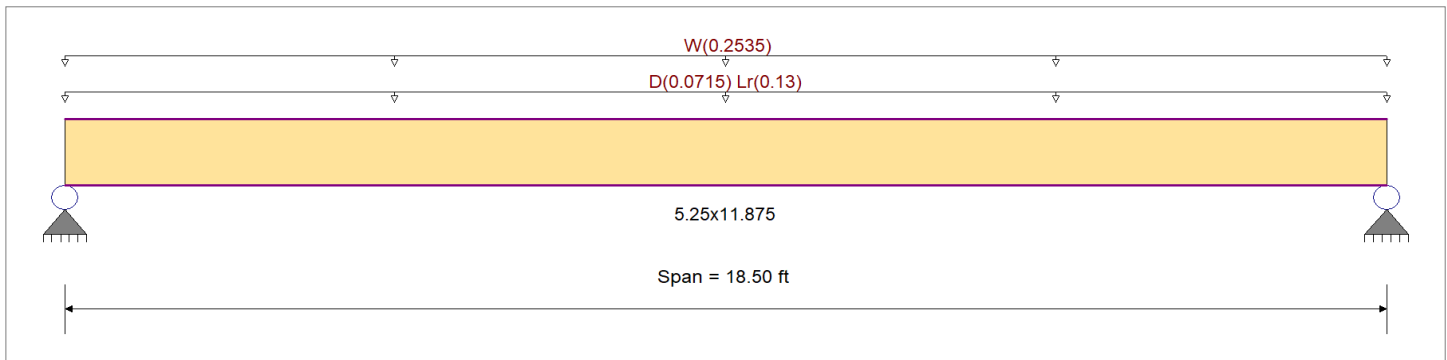
DESCRIPTION: B1- Porch

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,800.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	2,800.0 psi	Ebend- xx	2,000.0ksi
	Fc - Prll	2,750.0 psi	Eminbend - xx	1,000.0ksi
Wood Species : 3-1/2-7 SCL	Fc - Perp	700.0 psi		
Wood Grade : Manufactured	Fv	285.0 psi		
	Ft	200.0 psi	Density	35.020pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : D = 0.0110, Lr = 0.020 ksf, Tributary Width = 6.50 ft, (Roof)
Uniform Load : W = 0.0390 ksf, Tributary Width = 6.50 ft, (Wind)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.277 : 1	Maximum Shear Stress Ratio	=	0.131 : 1
Section used for this span		5.25x11.875	Section used for this span		5.25x11.875
fb: Actual	=	1,240.85psi	fv: Actual	=	59.59 psi
Fb: Allowable	=	4,480.00psi	Fv: Allowable	=	456.00 psi
Load Combination	=	+D+0.750Lr+0.450W	Load Combination	=	+D+0.750Lr+0.450W
Location of maximum on span	=	9.250ft	Location of maximum on span	=	17.555 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection	0.459 in	Ratio = 484 >=360	Span: 1 : W Only		
Max Upward Transient Deflection	-0.459 in	Ratio = 484 >=360	Span: 1 : -W		
Max Downward Total Deflection	0.540 in	Ratio = 411 >=240	Span: 1 : +D+0.750Lr+0.450W		
Max Upward Total Deflection	-0.181 in	Ratio = 1225 >=240	Span: 1 : +0.60D-0.60W		

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios								Moment Values			Shear Values								
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	fv	F'v					
D Only	Length = 18.50 ft	1	0.143	0.068	0.90	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.71	360.57	2520.00	0.00	0.00	0.00	0.72	17.32	256.50
+D+Lr	Length = 18.50 ft	1	0.258	0.122	1.25	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.27	901.45	3500.00	0.00	0.00	0.00	1.80	43.29	356.25
+D+0.750Lr	Length = 18.50 ft	1	0.219	0.103	1.25	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	7.88	766.23	3500.00	0.00	0.00	0.00	1.53	36.80	356.25
+D+0.60W	Length = 18.50 ft	1	0.222	0.105	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.21	993.40	4480.00	0.00	0.00	0.00	1.98	47.71	456.00
+D-0.60W	Length = 18.50 ft	1	0.061	0.029	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.80	272.26	4480.00	0.00	0.00	0.00	0.54	13.08	456.00
+D+0.750Lr+0.450W	Length = 18.50 ft	1	0.277	0.131	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.76	1,240.85	4480.00	0.00	0.00	0.00	2.48	59.59	456.00



5880 Commerce Blvd.
Suite 105
Rohnert Park, Ca
Phone: (707) 578-8185

Project Title: **Fire Rebuild**
Engineer: **ELD**
Project ID: **ARCE 453-03**
Project Descr:

Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: B1- Porch

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios								Moment Values			Shear Values					
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	f _v	F _v		
+D+0.750Lr-0.450W	Length = 18.50 ft	1	0.065	0.031	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	3.00	291.60	4480.00	0.58	14.00	456.00
+D+0.450W	Length = 18.50 ft	1	0.186	0.088	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	8.59	835.19	4480.00	1.67	40.11	456.00
+D-0.450W	Length = 18.50 ft	1	0.025	0.012	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.17	114.06	4480.00	0.23	5.48	456.00	
+0.60D+0.60W	Length = 18.50 ft	1	0.190	0.089	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	8.73	849.17	4480.00	1.69	40.78	456.00
+0.60D-0.60W	Length = 18.50 ft	1	0.093	0.044	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	4.28	416.49	4480.00	0.83	20.00	456.00
+0.60D	Length = 18.50 ft	1	0.048	0.023	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.22	216.34	4480.00	0.43	10.39	456.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750Lr+0.450W	1	0.5396	9.318		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.759	2.759
Overall MINimum	-2.345	-2.345
D Only	0.802	0.802
+D+Lr	2.004	2.004
+D+0.750Lr	1.703	1.703
+D+0.60W	2.209	2.209
+D-0.60W	-0.605	-0.605
+D+0.750Lr+0.450W	2.759	2.759
+D+0.750Lr-0.450W	0.648	0.648
+D+0.450W	1.857	1.857
+D-0.450W	-0.254	-0.254
+0.60D+0.60W	1.888	1.888
+0.60D-0.60W	-0.926	-0.926
+0.60D	0.481	0.481
Lr Only	1.203	1.203
W Only	2.345	2.345
-W	-2.345	-2.345



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Project Title: Fire Rebuild
Engineer: ELD
Project ID: ARCE 453-03
Project Descr:

Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: B1- Porch Wind OOP

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values		
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	f _v	F'v
Length = 18.50 ft	1	0.016	0.004	1.60	0.983	1.00	1.00	1.00	1.00	1.00	1.00	0.38	71.48	4404.00	0.08	1.62	456.00
+0.60D					0.983	1.00	1.00	1.00	1.00	1.00				0.00	0.00	0.00	0.00
Length = 18.50 ft	1	0.019	0.004	1.60	0.983	1.00	1.00	1.00	1.00	1.00	0.46	85.61	4404.00	0.09	1.94	456.00	

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.60W	1	0.2949	9.318		0.0000	0.000

Vertical Reactions

Load Combination	Support notation : Far left is #1		Values in KIPS	
	Support 1	Support 2		
Overall MAXimum	0.347	0.347		
Overall MINimum	-0.303	-0.303		
D Only	0.165	0.165		
+D+0.60W	0.347	0.347		
+D-0.60W	-0.017	-0.017		
+D+0.450W	0.302	0.302		
+D-0.450W	0.029	0.029		
+0.60D+0.60W	0.281	0.281		
+0.60D-0.60W	-0.083	-0.083		
+0.60D	0.099	0.099		
W Only	0.303	0.303		
-W	-0.303	-0.303		



Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

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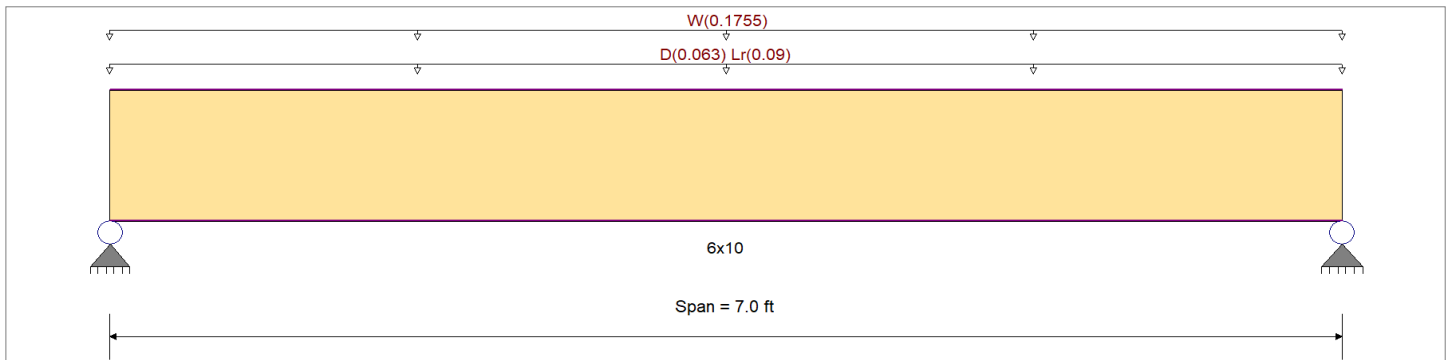
DESCRIPTION: B2- Front Entrance Ridge

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design	Fb +	625.0 psi	<i>E : Modulus of Elasticity</i>	
Load Combination : ASCE 7-16	Fb -	625.0 psi	Ebend- xx	800.0ksi
	Fc - Prll	475.0 psi	Eminbend - xx	290.0ksi
Wood Species : Western Cedars	Fc - Perp	425.0 psi		
Wood Grade : No.2	Fv	140.0 psi		
	Ft	325.0 psi	Density	22.470pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : D = 0.0140, Lr = 0.020 ksf, Tributary Width = 4.50 ft, (Roof)
Uniform Load : W = 0.0390 ksf, Tributary Width = 4.50 ft, (Wind)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.193 : 1	Maximum Shear Stress Ratio	=	0.076 : 1
Section used for this span		6x10	Section used for this span		6x10
fb: Actual	=	193.35psi	fv: Actual	=	17.08 psi
Fb: Allowable	=	1,000.00psi	Fv: Allowable	=	224.00 psi
Load Combination	=	+D+0.750Lr+0.450W	Load Combination	=	+D+0.750Lr+0.450W
Location of maximum on span	=	3.500ft	Location of maximum on span	=	6.234 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.030 in Ratio = 2769 >=360	Span: 1 : W Only		
Max Upward Transient Deflection		-0.030 in Ratio = 2769 >=360	Span: 1 : -W		
Max Downward Total Deflection		0.038 in Ratio = 2233 >=240	Span: 1 : +D+0.750Lr+0.450W		
Max Upward Total Deflection		-0.011 in Ratio = 7762 >=240	Span: 1 : +0.60D-0.60W		

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios								Moment Values			Shear Values								
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	fv	F'v					
D Only	Length = 7.0 ft	1	0.112	0.044	0.90	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.44	63.22	562.50	0.00	0.00	0.00	0.19	5.58	126.00
+D+Lr	Length = 7.0 ft	1	0.183	0.072	1.25	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99	143.18	781.25	0.00	0.00	0.00	0.44	12.65	175.00
+D+0.750Lr	Length = 7.0 ft	1	0.158	0.062	1.25	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	123.19	781.25	0.00	0.00	0.00	0.38	10.88	175.00
+D+0.60W	Length = 7.0 ft	1	0.157	0.062	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.08	156.77	1000.00	0.00	0.00	0.00	0.48	13.85	224.00
+D-0.60W	Length = 7.0 ft	1	0.030	0.012	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.21	30.34	1000.00	0.00	0.00	0.00	0.09	2.68	224.00
+D+0.750Lr+0.450W	Length = 7.0 ft	1	0.193	0.076	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	193.35	1000.00	0.00	0.00	0.00	0.59	17.08	224.00



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Phone: (707) 578-8185

Project Title: Fire Rebuild
Engineer: ELD
Project ID: ARCE 453-03
Project Descr:

Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

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DESCRIPTION: B2- Front Entrance Ridge

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios								Moment Values			Shear Values						
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	f _v	F'v			
+D+0.750Lr-0.450W	Length = 7.0 ft	1	0.053	0.021	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.37	53.02	1000.00	0.00	0.16	4.68	224.00
+D+0.450W	Length = 7.0 ft	1	0.133	0.053	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	133.38	1000.00	0.00	0.41	11.78	224.00
+D-0.450W	Length = 7.0 ft	1	0.007	0.003	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.05	6.95	1000.00	0.00	0.02	0.61	224.00
+0.60D+0.60W	Length = 7.0 ft	1	0.131	0.052	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	131.48	1000.00	0.00	0.40	11.61	224.00
+0.60D-0.60W	Length = 7.0 ft	1	0.056	0.022	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.38	55.62	1000.00	0.00	0.17	4.91	224.00
+0.60D	Length = 7.0 ft	1	0.038	0.015	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.26	37.93	1000.00	0.00	0.12	3.35	224.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750Lr+0.450W	1	0.0376	3.526		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.762	0.762
Overall MINimum	-0.614	-0.614
D Only	0.249	0.249
+D+Lr	0.564	0.564
+D+0.750Lr	0.485	0.485
+D+0.60W	0.618	0.618
+D-0.60W	-0.120	-0.120
+D+0.750Lr+0.450W	0.762	0.762
+D+0.750Lr-0.450W	0.209	0.209
+D+0.450W	0.525	0.525
+D-0.450W	-0.027	-0.027
+0.60D+0.60W	0.518	0.518
+0.60D-0.60W	-0.219	-0.219
+0.60D	0.149	0.149
Lr Only	0.315	0.315
W Only	0.614	0.614
-W	-0.614	-0.614



Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

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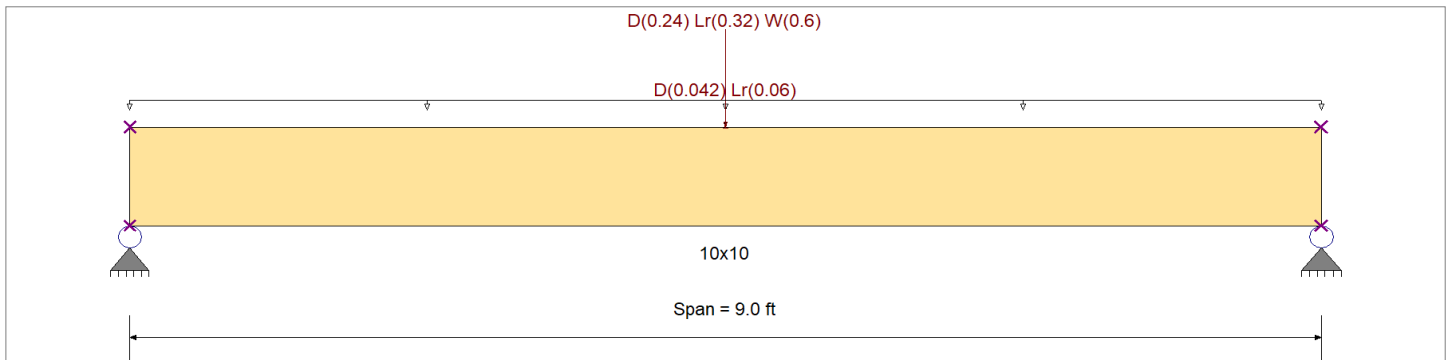
DESCRIPTION: B3- Front Entrance Faux Truss

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design	Fb +	625.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	625.0 psi	Ebend- xx	800.0ksi
	Fc - Prll	475.0 psi	Eminbend - xx	290.0ksi
Wood Species : Western Cedars	Fc - Perp	425.0 psi		
Wood Grade : No.2	Fv	140.0 psi		
	Ft	325.0 psi	Density	22.470pcf
Beam Bracing : Completely Unbraced				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : D = 0.0140, Lr = 0.020 ksf, Tributary Width = 3.0 ft, (Roof)
Point Load : D = 0.240, Lr = 0.320, W = 0.60 k @ 4.50 ft, (B2)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.262	1	Maximum Shear Stress Ratio	=	0.068	: 1
Section used for this span		10x10		Section used for this span		10x10	
fb: Actual	=	204.51 psi		fv: Actual	=	11.81 psi	
Fb: Allowable	=	781.25 psi		Fv: Allowable	=	175.00 psi	
Load Combination		+D+Lr		Load Combination		+D+Lr	
Location of maximum on span	=	4.500ft		Location of maximum on span	=	8.212 ft	
Span # where maximum occurs	=	Span # 1		Span # where maximum occurs	=	Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.032 in	Ratio =	3379	>=	360	Span: 1 : Lr Only
Max Upward Transient Deflection		-0.029 in	Ratio =	3704	>=	360	Span: 1 : -W
Max Downward Total Deflection		0.064 in	Ratio =	1685	>=	240	Span: 1 : +D+0.750Lr+0.450W
Max Upward Total Deflection		-0.001 in	Ratio =	83396	>=	240	Span: 1 : +0.60D-0.60W

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios								Moment Values			Shear Values						
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	fv	F'v			
D Only	Length = 9.0 ft	1	0.165	0.043	0.90	1.000	1.00	1.00	1.00	1.00	1.00	1.11	93.03	562.50	0.00	0.00	0.00	0.33	5.45	126.00
+D+Lr	Length = 9.0 ft	1	0.262	0.068	1.25	1.000	1.00	1.00	1.00	1.00	1.00	2.44	204.51	781.25	0.00	0.00	0.00	0.71	11.81	175.00
+D+0.750Lr	Length = 9.0 ft	1	0.226	0.058	1.25	1.000	1.00	1.00	1.00	1.00	1.00	2.10	176.64	781.25	0.00	0.00	0.00	0.62	10.22	175.00
+D+0.60W	Length = 9.0 ft	1	0.161	0.038	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.92	161.05	1000.00	0.00	0.00	0.00	0.51	8.45	224.00
+D-0.60W	Length = 9.0 ft	1	0.028	0.011	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.33	27.71	1000.00	0.00	0.00	0.00	0.15	2.46	224.00
+D+0.750Lr+0.450W	Length = 9.0 ft	1	0.228	0.056	1.60	1.000	1.00	1.00	1.00	1.00	1.00	2.71	227.66	1000.00	0.00	0.00	0.00	0.75	12.47	224.00



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Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

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DESCRIPTION: B3- Front Entrance Faux Truss

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios								Moment Values			Shear Values								
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	fv	F'v					
+D+0.750Lr-0.450W	Length = 9.0 ft	1	0.126	0.036	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.50	125.63	1000.00	0.00	0.00	0.00	0.48	7.98	224.00
+D+0.450W	Length = 9.0 ft	1	0.144	0.034	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.72	144.05	1000.00	0.00	0.00	0.00	0.46	7.70	224.00
+D-0.450W	Length = 9.0 ft	1	0.042	0.014	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.50	42.19	1000.00	0.00	0.00	0.00	0.19	3.21	224.00
+0.60D+0.60W	Length = 9.0 ft	1	0.124	0.028	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.47	123.84	1000.00	0.00	0.00	0.00	0.38	6.26	224.00
+0.60D-0.60W	Length = 9.0 ft	1	0.012	0.008	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.15	12.20	1000.00	0.00	0.00	0.00	0.11	1.80	224.00
+0.60D	Length = 9.0 ft	1	0.056	0.015	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.66	55.82	1000.00	0.00	0.00	0.00	0.20	3.27	224.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750Lr+0.450W	1	0.0641	4.533		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.830	0.830
Overall MINimum	-0.300	-0.300
D Only	0.372	0.372
+D+Lr	0.802	0.802
+D+0.750Lr	0.695	0.695
+D+0.60W	0.552	0.552
+D-0.60W	0.192	0.192
+D+0.750Lr+0.450W	0.830	0.830
+D+0.750Lr-0.450W	0.560	0.560
+D+0.450W	0.507	0.507
+D-0.450W	0.237	0.237
+0.60D+0.60W	0.403	0.403
+0.60D-0.60W	0.043	0.043
+0.60D	0.223	0.223
Lr Only	0.430	0.430
W Only	0.300	0.300
-W	-0.300	-0.300



Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

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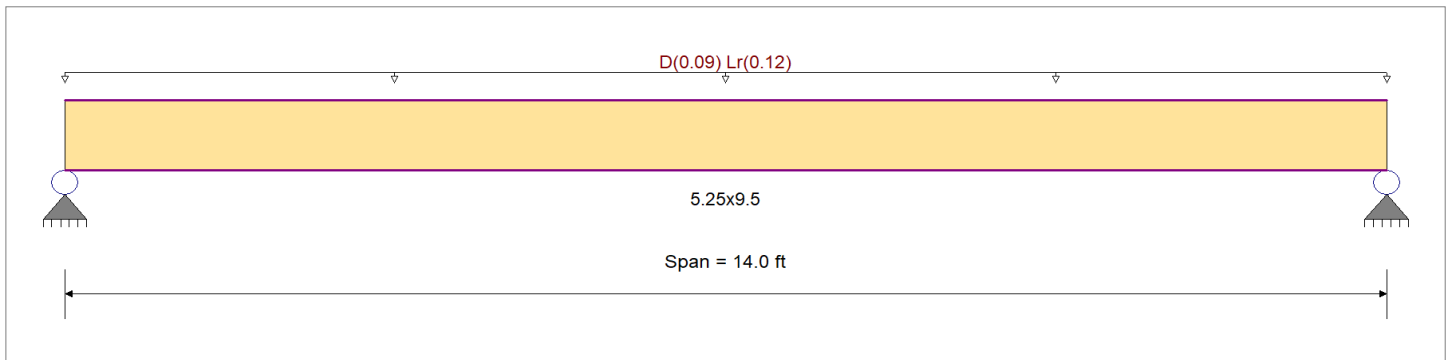
DESCRIPTION: B4- Line E Portal Header

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,800.0 psi	<i>E : Modulus of Elasticity</i>	
Load Combination : ASCE 7-16	Fb -	2,800.0 psi	Ebend- xx	2,000.0ksi
	Fc - Prll	2,750.0 psi	Eminbend - xx	1,000.0ksi
Wood Species : 3-1/2-7 SCL	Fc - Perp	700.0 psi		
Wood Grade : Manufactured	Fv	285.0 psi		
	Ft	200.0 psi	Density	35.020pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : D = 0.0150, Lr = 0.020 ksf, Tributary Width = 6.0 ft, (Roof)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.236 < 1	Maximum Shear Stress Ratio =	0.117 < 1
Section used for this span	5.25x9.5	Section used for this span	5.25x9.5
fb: Actual =	826.99psi	fv: Actual =	41.64 psi
Fb: Allowable =	3,500.00psi	Fv: Allowable =	356.25 psi
Load Combination	+D+Lr	Load Combination	+D+Lr
Location of maximum on span	7.000ft	Location of maximum on span	13.234 ft
Span # where maximum occurs	Span # 1	Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.139 in Ratio = 1208 >=360	Span: 1 : Lr Only	
Max Upward Transient Deflection	0 in Ratio = 0 <360	n/a	
Max Downward Total Deflection	0.257 in Ratio = 652 >=240	Span: 1 : +D+Lr	
Max Upward Total Deflection	0 in Ratio = 0 <240	n/a	

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios								Moment Values			Shear Values						
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	fv	F'v			
D Only	Length = 14.0 ft	1	0.151	0.075	0.90	1.000	1.00	1.00	1.00	1.00	1.00	2.50	380.23	2520.00	0.00	0.00	0.00	0.64	19.15	256.50
+D+Lr	Length = 14.0 ft	1	0.236	0.117	1.25	1.000	1.00	1.00	1.00	1.00	1.00	5.44	826.99	3500.00	0.00	0.00	0.00	1.38	41.64	356.25
+D+0.750Lr	Length = 14.0 ft	1	0.204	0.101	1.25	1.000	1.00	1.00	1.00	1.00	1.00	4.71	715.30	3500.00	0.00	0.00	0.00	1.20	36.02	356.25
+0.60D	Length = 14.0 ft	1	0.051	0.025	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.50	228.14	4480.00	0.00	0.00	0.00	0.38	11.49	456.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+Lr	1	0.2574	7.051		0.0000	0.000



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Project Title: **Fire Rebuild**
 Engineer: **ELD**
 Project ID: **ARCE 453-03**
 Project Descr:

Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

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DESCRIPTION: B4- Line E Portal Header

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.555	1.555
Overall MINimum	0.840	0.840
D Only	0.715	0.715
+D+Lr	1.555	1.555
+D+0.750Lr	1.345	1.345
+0.60D	0.429	0.429
Lr Only	0.840	0.840



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LIC# : KW-06016132, Build:20.22.2.9

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DESCRIPTION: B5- Line D.1 Header

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values		
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	f _v	F'v
Length = 9.50 ft	1	0.087	0.036	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.98	2.50	380.60	4398.35	0.54	16.21	456.00
+0.60D					1.000	1.00	1.00	1.00	1.00	1.00	0.98			0.00	0.00	0.00	0.00
Length = 9.50 ft	1	0.027	0.012	1.60	1.000	1.00	1.00	1.00	1.00	1.00	0.98	0.79	120.75	4398.35	0.18	5.38	456.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750Lr+0.450W	1	0.0659	4.785		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	0.818	0.818
Overall MINimum	0.600	0.600
D Only	0.308	0.308
+D+Lr	0.628	0.628
+D+0.750Lr	0.548	0.548
+D+0.60W	0.668	0.668
+D+0.750Lr+0.450W	0.818	0.818
+D+0.450W	0.578	0.578
+0.60D+0.60W	0.545	0.545
+0.60D	0.185	0.185
Lr Only	0.320	0.320
W Only	0.600	0.600



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Project Title: **Fire Rebuild**
Engineer: **ELD**
Project ID: **ARCE 453-03**
Project Descr:

Wood Column

Project File: SC010222ELD_FireRebuild.ec6

LIC#: KW-06016132, Build:20.22.2.9

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DESCRIPTION: C2- Front Entrance

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	10x10
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber
Overall Column Height	12.0 ft			Wood Member Type	Sawn
<i>(Used for non-slender calculations)</i>					
Wood Species	Western Cedars			Exact Width	9.50 in Allow Stress Modification Factors
Wood Grade	No.2			Exact Depth	9.50 in Cf or Cv for Bending 1.0
Fb +	550.0 psi	Fv	140.0 psi	Area	90.250 in^2 Cf or Cv for Compression 1.0
Fb -	550.0 psi	Ft	350.0 psi	Ix	678.76 in^4 Cf or Cv for Tension 1.0
Fc - Prll	550.0 psi	Density	22.470 pcf	Iy	678.76 in^4 Cm : Wet Use Factor 1.0
Fc - Perp	425.0 psi				Ct : Temperature Fact 1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial		Cfu : Flat Use Factor 1.0
	Basic	800.0	800.0	800.0 ksi	Kf : Built-up columns 1.0 <i>NDS 15.3.2</i>
	Minimum	290.0	290.0		Use Cr : Repetitive ? No
Brace condition for deflection (buckling) along columns :					
X-X (width) axis : Unbraced Length for buckling ABOUT Y-Y Axis = 12					
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 12					

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 168.993 lbs * Dead Load Factor

AXIAL LOADS . . .

B2: Axial Load at 12.0 ft, D = 0.270, Lr = 0.320, L = 0.620 k

B3: Axial Load at 12.0 ft, D = 0.370, Lr = 0.420, L = 0.30 k

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.04080 : 1**
 Load Combination +D+0.750Lr+0.750L
 Governing NDS Formula Comp Only, fc/Fc'
 Location of max.above base 0.0 ft
 At maximum location values are .
 Applied Axial 2.054 k
 Applied Mx 0.0 k-ft
 Applied My 0.0 k-ft
 Fc : Allowable 557.79 psi

Maximum SERVICE Lateral Load Reactions . .
 Top along Y-Y 0.0 k Bottom along Y-Y 0.0 k
 Top along X-X 0.0 k Bottom along X-X 0.0 k

Maximum SERVICE Load Lateral Deflections . . .
 Along Y-Y 0.0 in at 0.0 ft above base
 for load combination : n/a
 Along X-X 0.0 in at 0.0 ft above base
 for load combination : n/a

PASS Maximum Shear Stress Ratio = **0.0 : 1**
 Load Combination +0.60D
 Location of max.above base 12.0 ft
 Applied Design Shear 0.0 psi
 Allowable Shear 224.0 psi

Other Factors used to calculate allowable stresses . . .
 Bending Compression Tension

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.875	0.02070	PASS	0.0 ft	0.0	PASS	12.0 ft
+D+L	1.000	0.857	0.04064	PASS	0.0 ft	0.0	PASS	12.0 ft
+D+Lr	1.250	0.811	0.03077	PASS	0.0 ft	0.0	PASS	12.0 ft
+D+0.750Lr+0.750L	1.250	0.811	0.04080	PASS	0.0 ft	0.0	PASS	12.0 ft
+D+0.750L	1.150	0.830	0.03164	PASS	0.0 ft	0.0	PASS	12.0 ft
+D+0.750Lr	1.600	0.745	0.02306	PASS	0.0 ft	0.0	PASS	12.0 ft
+0.60D	1.600	0.745	0.008207	PASS	0.0 ft	0.0	PASS	12.0 ft



Wood Column

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DESCRIPTION: C2- Front Entrance

Maximum Reactions

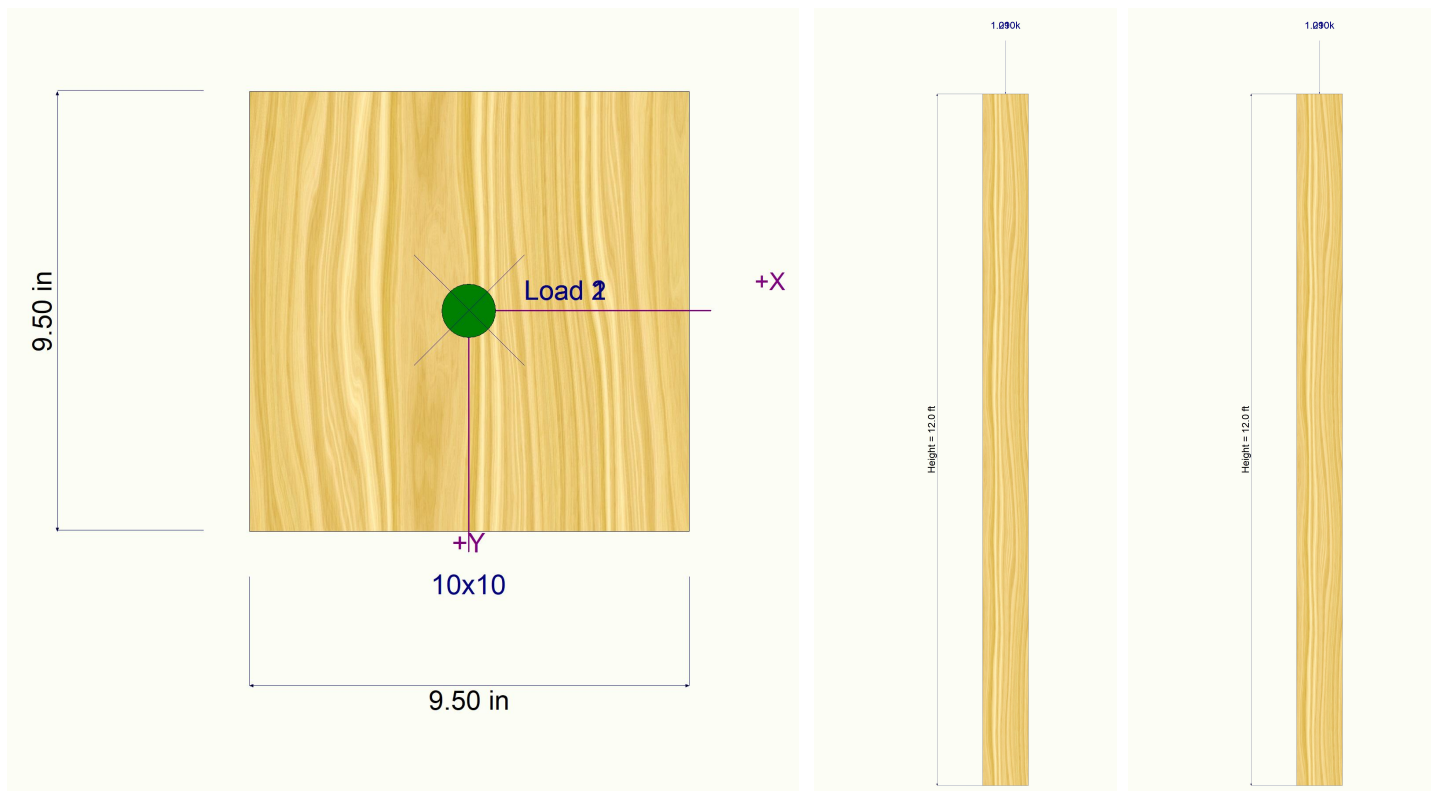
Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		k-ft Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only						0.809				
+D+L						1.729				
+D+Lr						1.549				
+D+0.750Lr+0.750L						2.054				
+D+0.750L						1.499				
+D+0.750Lr						1.364				
+0.60D						0.485				
Lr Only						0.740				
L Only						0.920				

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.000 in	0.000ft	0.000 in	0.000 ft
+D+L	0.000 in	0.000ft	0.000 in	0.000 ft
+D+Lr	0.000 in	0.000ft	0.000 in	0.000 ft
+D+0.750Lr+0.750L	0.000 in	0.000ft	0.000 in	0.000 ft
+D+0.750L	0.000 in	0.000ft	0.000 in	0.000 ft
+D+0.750Lr	0.000 in	0.000ft	0.000 in	0.000 ft
+0.60D	0.000 in	0.000ft	0.000 in	0.000 ft
Lr Only	0.000 in	0.000ft	0.000 in	0.000 ft
L Only	0.000 in	0.000ft	0.000 in	0.000 ft

Sketches





Wood Column

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

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DESCRIPTION: C3- Overhang Post

Code References

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Analysis Method	Allowable Stress Design			Wood Section Name	4x6
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber
Overall Column Height	13.0 ft			Wood Member Type	Sawn
<i>(Used for non-slender calculations)</i>					
Wood Species	Douglas Fir - Larch			Exact Width	3.50 in
Wood Grade	No.2			Exact Depth	5.50 in
Fb +	900.0 psi	Fv	180.0 psi	Area	19.250 in ²
Fb -	900.0 psi	Ft	575.0 psi	Ix	48.526 in ⁴
Fc - Prll	1,350.0 psi	Density	31.210 pcf	Iy	19.651 in ⁴
Fc - Perp	625.0 psi			Allow Stress Modification Factors	
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial	Cf or Cv for Bending 1.30	
	Basic	1,600.0	1,600.0	1,600.0 ksi	Cf or Cv for Compression 1.10
	Minimum	580.0	580.0		Cf or Cv for Tension 1.30
					Cm : Wet Use Factor 1.0
					Ct : Temperature Fact 1.0
					Cfu : Flat Use Factor 1.0
					Kf : Built-up columns 1.0 <i>NDS 15.3.2</i>
					Use Cr : Repetitive ? Yes
Brace condition for deflection (buckling) along columns :					
X-X (width) axis : Fully braced against buckling ABOUT Y-Y Axis					
Y-Y (depth) axis : Unbraced Length for buckling ABOUT X-X Axis = 1C					

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 54.238 lbs * Dead Load Factor

AXIAL LOADS . . .

Overhang: Axial Load at 11.0 ft, Lr = 0.50 k

Overhang: Axial Load at 11.0 ft, Yecc = 2.750 in, Lr = 0.50 k

BENDING LOADS . . .

Overhang Withdrawal: Lat. Point Load at 0.0 ft creating Mx-x, LR = 1.40 k

Wind: Lat. Uniform Load creating Mx-x, W = 0.050 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio = **0.2008 : 1**
 Load Combination +D+0.60W
 Governing NDS Formula: $\frac{P}{A} + \frac{M}{S} \leq F_c + F_t$, NDS Eq. 3.9-3
 Location of max.above base 6.456 ft
 At maximum location values are .
 Applied Axial 0.05424 k
 Applied Mx 0.6337 k-ft
 Applied My 0.0 k-ft
 Fc : Allowable 893.75 psi

Maximum SERVICE Lateral Load Reactions . .
 Top along Y-Y 0.3250 k Bottom along Y-Y 0.3250 k
 Top along X-X 0.0 k Bottom along X-X 0.0 k

Maximum SERVICE Load Lateral Deflections . . .
 Along Y-Y 0.4183 in at 6.544 ft above base
 for load combination : W Only
 Along X-X 0.0 in at 0.0 ft above base
 for load combination : n/a

Other Factors used to calculate allowable stresses . . .
Bending Compression Tension

PASS Maximum Shear Stress Ratio = **0.05276 : 1**
 Load Combination +D+0.60W
 Location of max.above base 13.0 ft
 Applied Design Shear 15.195 psi
 Allowable Shear 288.0 psi

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
D Only	0.900	0.585	0.003605	PASS	0.0 ft	0.0	PASS	13.0 ft
+D+Lr	1.250	0.461	0.06403	PASS	0.08725 ft	0.003053	PASS	13.0 ft
+D+0.750Lr	1.250	0.461	0.04885	PASS	0.08725 ft	0.002289	PASS	13.0 ft
+D+0.60W	1.600	0.376	0.2008	PASS	6.456 ft	0.05276	PASS	13.0 ft
+D+0.750Lr+0.450W	1.600	0.376	0.1450	PASS	6.195 ft	0.04136	PASS	13.0 ft
+D+0.450W	1.600	0.376	0.1506	PASS	6.456 ft	0.03957	PASS	13.0 ft
+0.60D+0.60W	1.600	0.376	0.2005	PASS	6.456 ft	0.05276	PASS	13.0 ft



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Project Title: Fire Rebuild
Engineer: ELD
Project ID: ARCE 453-03
Project Descr:

Wood Column

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

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DESCRIPTION: C3- Overhang Post

Load Combination Results

Load Combination	C _D	C _P	Maximum Axial + Bending Stress Ratios			Maximum Shear Ratios		
			Stress Ratio	Status	Location	Stress Ratio	Status	Location
+0.60D	1.600	0.376	0.001892	PASS	0.0 ft	0.0	PASS	13.0 ft

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	X-X Axis Reaction		k	Y-Y Axis Reaction		Axial Reaction	My - End Moments		Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top		@ Base	@ Top	@ Base	@ Top
D Only						0.054				
+D+Lr				-0.009	0.009	1.054				
+D+0.750Lr				-0.007	0.007	0.804				
+D+0.60W				0.195	0.195	0.054				
+D+0.750Lr+0.450W				0.140	0.153	0.804				
+D+0.450W				0.146	0.146	0.054				
+0.60D+0.60W				0.195	0.195	0.033				
+0.60D						0.033				
Lr Only				-0.009	0.009	1.000				
W Only				0.325	0.325					

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection		Max. Y-Y Deflection	
	Distance	Distance	Distance	Distance
D Only	0.0000 in	0.000ft	0.000 in	0.000ft
+D+Lr	0.0000 in	0.000ft	-0.025 in	7.242ft
+D+0.750Lr	0.0000 in	0.000ft	-0.019 in	7.242ft
+D+0.60W	0.0000 in	0.000ft	0.251 in	6.544ft
+D+0.750Lr+0.450W	0.0000 in	0.000ft	0.170 in	6.456ft
+D+0.450W	0.0000 in	0.000ft	0.188 in	6.544ft
+0.60D+0.60W	0.0000 in	0.000ft	0.251 in	6.544ft
+0.60D	0.0000 in	0.000ft	0.000 in	0.000ft
Lr Only	0.0000 in	0.000ft	-0.025 in	7.242ft
W Only	0.0000 in	0.000ft	0.418 in	6.544ft



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Project Title: Fire Rebuild
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Project Descr:

Wood Column

Project File: SC010222ELD_FireRebuild.ec6

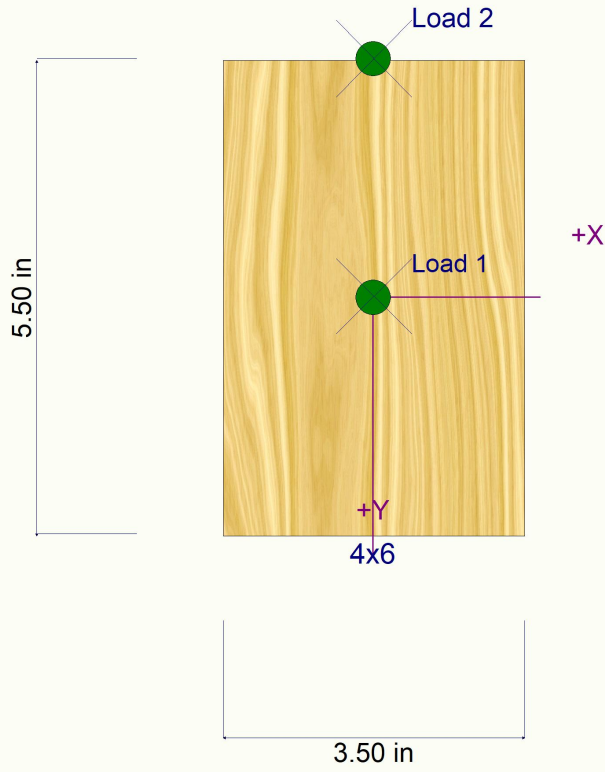
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DESCRIPTION: C3- Overhang Post

Sketches





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Project Title: Fire Rebuild
Engineer: ELD
Project ID: ARCE 453-03
Project Descr:

Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: C4- King Post Line C

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values		
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	f _v	F'v
Length = 19.0 ft	1	0.175	0.031	1.60	1.000	1.00	1.15	1.00	1.00	1.00	1.25	290.11	1656.00	0.25	8.92	288.00	
+0.60D					1.000	1.00	1.15	1.00	1.00	1.00			0.00	0.00	0.00	0.00	
Length = 19.0 ft	1	0.034	0.006	1.60	1.000	1.00	1.15	1.00	1.00	1.00	0.24	56.33	1656.00	0.05	1.73	288.00	

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	-W	-0.5242	9.569

Vertical Reactions

Load Combination	Support notation : Far left is #1		Values in KIPS	
	Support 1	Support 2		
Overall MAXimum	-0.522	-0.522		
Overall MINimum	-0.522	-0.522		
D Only	0.085	0.085		
+D+0.60W	0.398	0.398		
+D-0.60W	-0.228	-0.228		
+D+0.450W	0.320	0.320		
+D-0.450W	-0.150	-0.150		
+0.60D+0.60W	0.364	0.364		
+0.60D-0.60W	-0.262	-0.262		
+0.60D	0.051	0.051		
W Only	0.522	0.522		
-W	-0.522	-0.522		


JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: GRAVITY DESIGN
STEEL OVERHANG

Date:
2/2/22

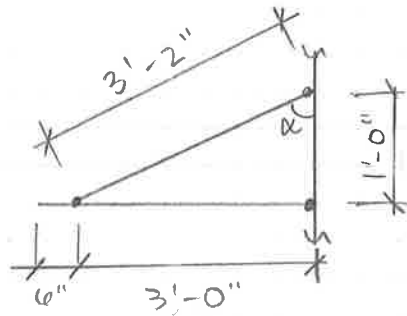
Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

[OVERHANG DESIGN]

ASCE T4.1


DEMAND

AWNINGS + CANOPIES

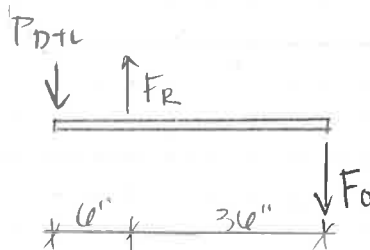
$$w_L = 5 \text{ psf}$$

$$P_L = 200 \# \rightarrow 60 \text{ WINDS}$$

$$P_D = 100 \#$$

$$P_T = 400 \#$$

$$1.2D + 1.6L_V, LRFD$$

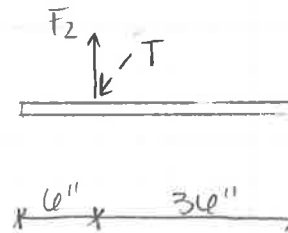


$$\uparrow \sum M_o = 0 = 400\#(3.5') - F_R(3')$$

$$F_R = \underline{466.67 \#}$$

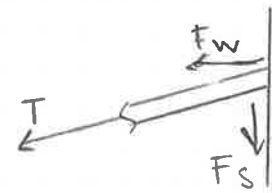
$$\uparrow \sum F_y = 0 = F_R - F_o - P_{D+L}$$

$$F_o = \underline{66.67 \#}$$



$$\uparrow \sum F_y = 0 = F_R - T \left(\frac{1'-0''}{3'-2''} \right)$$

$$T = \underline{1478 \#}$$



TENSION LOAD: 1478 #

PULLOUT LOAD: 1400 #

SHEAR LOAD: 467 #

$$F_S = F_R = 467 \#$$

$$F_W = T \left(\frac{3'-0''}{3'-2''} \right) = 1400 \#$$


JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: GRAVITY DESIGN
STEEL OVERHANG

Date:
2/2/22

Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

NDS T12R

NDS T11.3.1

NDS T12.5.1C

[OVERHANG DESIGN - CONT]

SHEAR - Z: WOOD SCREWS

~0.239 GAUGE STEEL

G=0.5 (DF)

#10 SCREW = 159# PER 3" EMBED

TRY (4) #10

$$Z' = (4)(159\#) \left[\frac{3.32}{K_F} \times \frac{0.65}{\phi} \times \chi \right]$$

$$Z' = \underline{1372\#} > 467\# \quad \checkmark$$

LRFD

WITHDRAWAL - W: WOOD SCREWS

#10 SCREWS = 135# /in x 3" EMBED

TRY (4) #10

$$W' = (4)(135\#/in)(3") \left[\frac{3.32}{K_F} \times \frac{0.65}{\phi} \times \chi \right]$$

$$W' = \underline{3495\#} > 1478\# \quad \checkmark$$

USE (4) #10 WOOD SCREWS
AT WALL CONNECTION

EDGE DISTANCE


d edge min = 1.5D || GRAIN


D #10 SCREW = 1/4"

$$d \text{ edge min} = \underline{0.375"} \quad \checkmark$$

S min = 1.5D || GRAIN

$$S \text{ min} = \underline{0.375"} \quad \checkmark$$

	JOB NAME: Fire Rebuild		Prepared by: Erin L. Dupree	
	Subject: GRAVITY DESIGN STEEL OVERHANG		Date: 2/2/22	Sheet:
	Advisor: James Mwangi		Class: ARCE 453-03	
References: NDS §12.4.1 EQN 12.4-1	<p>[OVERHANG DESIGN]</p> <p>COMBINED LATERAL + WITHDRAWAL LOADING</p> $Z'_a = \frac{(W'_p) Z'}{(W'_p) \cos^2 \alpha + Z' \sin^2 \alpha}$ $W'_p = 3495 \#$ $Z' = 1372 \#$ $\alpha = 71.3^\circ$ $\underline{Z'_a = 3008 \# > 1478 \# \checkmark}$ <div style="border: 1px solid black; padding: 5px; margin-top: 20px;"> USE (4) #10 WOOD SCREWS WITH 3" MIN EMBEDMENT AT WALL CONN. </div>			

 ELD	JOB NAME: Fire Rebuild		Prepared by: Erin L. Dupree	
	Subject: GRAVITY DESIGN STEEL OVERHANG		Date: 2/2/22	Sheet:
	Advisor: James Mwangi		Class: ARCE 453-03	
References:	<p>[OVERHANG DESIGN - CONT]</p> <p><u>BASE PL</u></p> <p>AISC E09 9-206</p> $t_{min} = \sqrt{\frac{4Tb'}{\phi P F_u}}$ <p>$T = \text{PULL OUT LOAD}$ $b' = b - \frac{d_b}{2} = 2.425"$ $P = 2.75"$ $F_u = 58 \text{ ksi}$ $\phi = 0.9$</p> <p>$t_{min} = 0.32"$</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;">USE 3/8" PL</div> <p><u>CLEVICE</u></p> <p>AISC T15-4</p> <p>TRY # 2 1/2</p> <p>$d_{max} = 7/8" \phi \text{ THREAD ROD}$</p> <p>AVAILABLE STRENGTH = 18.8 k > 1.47 k ✓</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;">USE # 2 1/2 CLEVICE</div> <p><u>CLEVICE PIN</u></p> <p>AISC T15-5</p> <p># 2 1/2 CLEVICE → 3/4" - 1 1/2" φ PIN</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;">USE 3/4" φ PIN AT CLEVICE</div> <p><u>ROD DIAMETER</u></p> <p>AISC E09 J3.1 T3.2.1 P3 14.1-12.4</p> $\phi R_n = \phi F_u A_b$ $F_u = .75 F_u$ $\phi = 0.75 \quad F_u = 58 \text{ ksi}$ $R_n = \text{TENSION LOAD}$ $A_b = 0.034 \text{ in}^2$ $A_b = \frac{\pi d^2}{4} \rightarrow d = \sqrt{\frac{4A_b}{\pi}} \quad d = 0.2"$ <div style="border: 1px solid black; padding: 5px; display: inline-block;">USE 1/4" φ - 7/8" φ THREAD ROD</div>			



MAIN HOUSE LATERAL CALCULATIONS



FIRE REBUILD

LATERAL LAYOUT - LOWER LEVEL
 LEETE AVENUE
 SANTA ROSA, CA 95404

Class		ARCE 453-03
Date		3/2/2022
PE	ELD	

LATERAL PLAN KEY

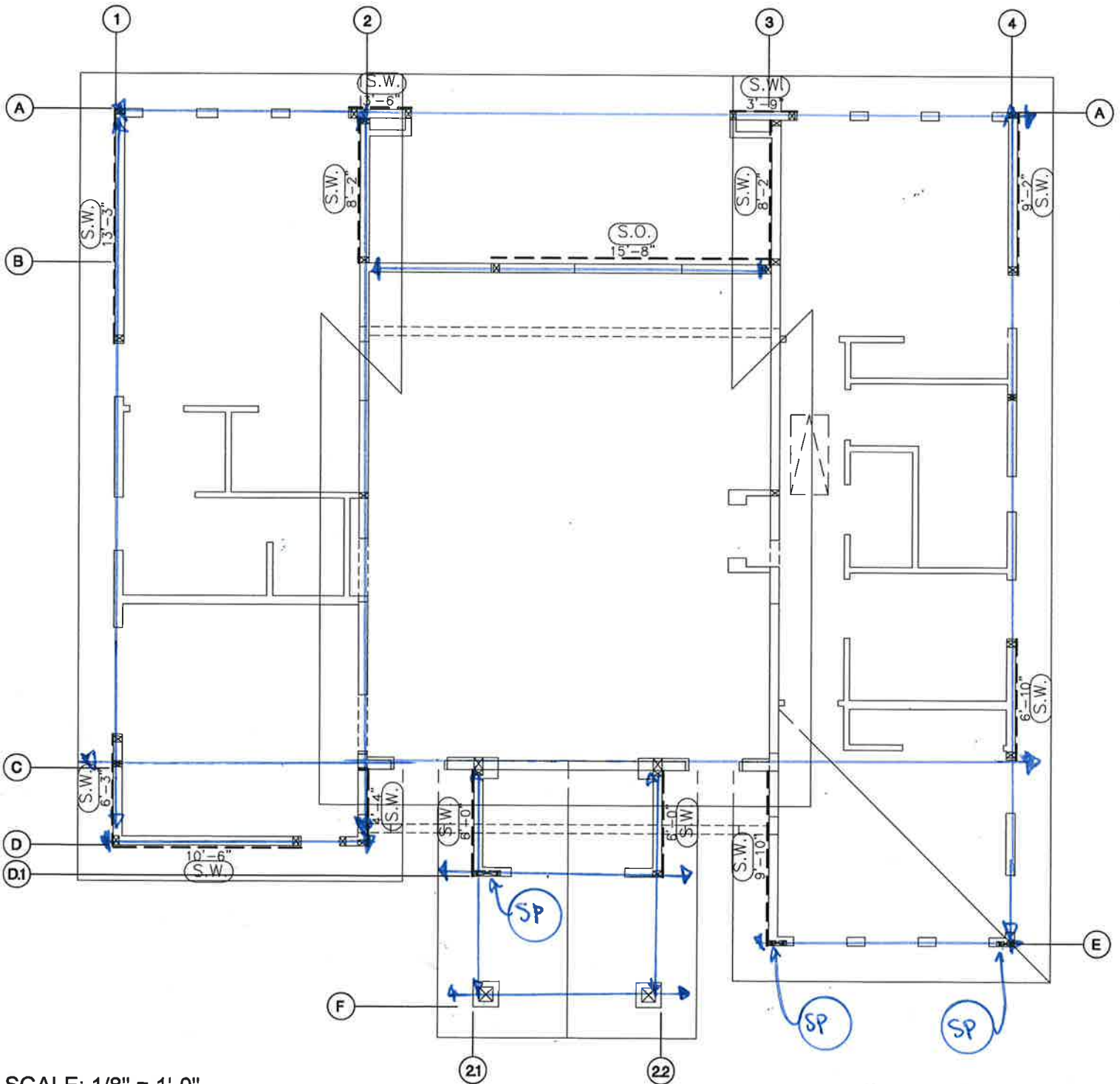
(SW) = Designed sheathed wall

(SO) = Designed sheathed wall with opening


(SP) = Designed Manufactured shear panel or frame

← = Collector/drag

ZCALC



SCALE: 1/8" = 1'-0"

	JOB NAME: Fire Rebuild	Prepared by: Erin L. Dupree	
	Subject: Lateral Design Wind	Date: 1/6/22	Sheet:
	Advisor: James Mwangi	Class: ARCE 453-03	

References:

MWFRS Windward + Leeward Component (ASD)			
Pressures On Vertical Projected Area ^{4,5,6}			
Interior		End ¹	
Wall	Roof (horiz. compnt) ^{7,8}	Wall	Roof (horiz. compnt) ^{7,8}
8.5	0.0	12.8	0.0

Windward Coefficient (ASD)			
p (neg GCpi)			
Interior		End ¹	
Wall	Roof ³	Wall	Roof ³
0.77	0.00	0.71	0.00

MWFRS Zone Pressures (Normal Pressures, psf) ⁴ Load Case "A" (ASD)								
Zone (Fig. 28.3-1)	1	2	3	4	1E	2E	3E	4E
case 1: pos int.press	3.0	-8.7	-6.2	-5.5	5.4	-12.5	-8.1	-7.4
case 2: neg int.press	6.6	-5.1	-2.6	-1.9	9.0	-8.9	-4.5	-3.5

MWFRS Zone Pressures (Normal Pressures, psf) ⁴ Load Case "B" (ASD)						
Zone (Fig. 28.3-1)	1	2	3	4	5	6
case 1: pos int.press	-6.3	-8.7	-5.5	-6.3	2.2	-4.7
case 2: neg int.press	-2.7	-5.1	-1.9	-2.7	5.8	-1.1
Zone (Fig. 28.3-1)	1E	2E	3E	4E	5E	6E
case 1: pos int.press	-6.60	-12.50	-7.10	-6.60	4.30	-6.10
case 2: neg int.press	-3.00	-8.90	-3.50	-3.00	7.90	-2.50

Maximum Component @ Cladding Wall Pressures (psf, see Figure 30.3-1) (ASD)						
Effective Wind Area (ft ²)	10		100		500	
	pos.	neg	pos	neg	pos	neg
Zone 4	11.80	-12.80	9.00	-11.00	9.60	-9.80
Zone 5	11.80	-15.80	9.90	-12.20	9.60	-9.80

Notes:

- End zone width = $2a$; a = smallest of 0.1 (least horiz. bldg. dimension) or $0.4h$, but not less than 4% of least horiz. dim. or $3'$.
- h = mean roof ht. except that eave ht. shall be used for $\theta \leq 10^\circ$.
- Roof windward coefficients = 0 if roof zone 2 or 2E normal forces are ≤ 0 .
- Positive and negative values signify pressures acting toward and away from the surfaces, respect
- Loads to MWFRS shall not be less than 10 psf multiplied by the projected area normal to the wind direction.
- Check Figure 28.3-1 footnotes for additional requirements.
- Where combined roof horizontal component pressures are negative, 0 will be used in design of the MWFRS.
- Roof component pressure calculation assumes symmetry about the ridge. For other conditions, use horizontal component pressures along the length of sloping roof for zones 2,3,2E,3E.



ELD

JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
WIND CRITERIA - MH

Date:
11/6/22

Sheet:

Advisor: James Mwangi

Class: ARCE 453-03

References:

ASCE § 28
T28.5-1
§ 24.5

§ 24.7
FIG 24.5-1A
§ 24.8

§ 24.10

[LATERAL DESIGN] WIND CRITERIA, MAIN HOUSE
ENVELOPE PROCEDURE, ENCLOSED SIMPLE DIAPH

$K_d = 0.85$

RISK CATEGORY: II

EXPOSURE CATEGORY: C $V_{WT} = 95 \text{ mph}$

$K_{zt} = 1.0$

$K_e = 1.0$

BLDG CLASSIFICATION: ENCLOSED

ROOF PITCH: 3:12 ROOF $\theta = 14^\circ$

MEAN ROOF HGT, $h_m = 15 \text{ ft}$

$q_w = 0.00256 K_z K_{zt} K_e V^2$

$q_w = 10 \text{ psf}$

T28.3-1

EXTERNAL WIND PRESSURES

ZONE	1	2	3	4	5	6	1E	2E	3E	4E
GC Pf	0.478	-0.0910	-0.436	-0.234	0.400	-0.210	0.724	-1.070	-0.0210	-0.557
(-) GCpi	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18
GC Pf - GCpi	0.658	-0.510	-0.256	-0.914	0.580	-0.110	0.904	-0.890	-0.440	-0.377
P (-)	6.6	-5.1	-2.6	-1.9	5.8	-1.1	9.0	-8.9	-4.5	-3.8
(+) GCpi	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
GC Pf - GCpi	0.298	-0.370	-0.066	-0.554	0.220	-0.470	0.540	-1.25	-0.800	-0.737
P (+)	3.0	-8.7	-0.2	-5.5	2.2	-4.7	5.4	-12.5	-8.1	-7.4



JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
WIND - MH

Date: 11/4/22

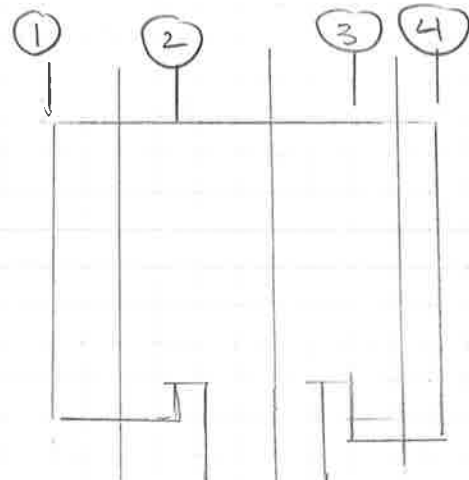
Sheet:

Advisor: James Mwangi

Class: ARCE 453-03

References:

[LATERAL DESIGN] - WIND, NUMERICAL - MH

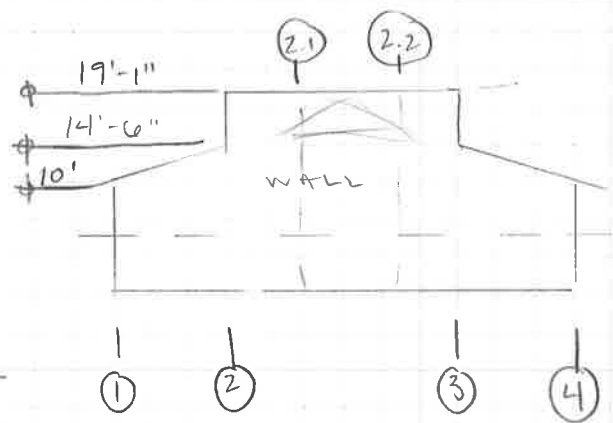


$$V_{USD} = \rho_{wind} \rho_{wind} (W)(L)$$

$$V_{ASD} = 0.16 V_{ASD} \text{ WIND}$$

$$\rho_{ROOF} \text{ MIN} = 5 \text{ psf}$$

$$\rho_{WALL} \text{ MIN} = 10 \text{ psf}$$



ρ_{WIND} , VARIES (psf)

LINE	LOCATION	END ZONE			INTERIOR ZONE			V WIND (ASD) (ms)
		ρ_{WIND}	W^H	L^H	ρ_{WIND}	W^H	L^H	
LINE 1	WALL	12.8	4.5	7.0	10	0	0	583
LINE 2	WALL	12.8	4.5	3.2	10	9.5	15	1433
LINE 3	WALL	12.8	4.5	3.2	10	9.5	15	1433
LINE 4	WALL	12.8	4.5	7.0	10	0	0	583
LINE 2.1	WALL	12.8	0	0	10	9.5	5.5	523
LINE 2.2	WALL	12.8	0	0	10	9.5	5.5	523

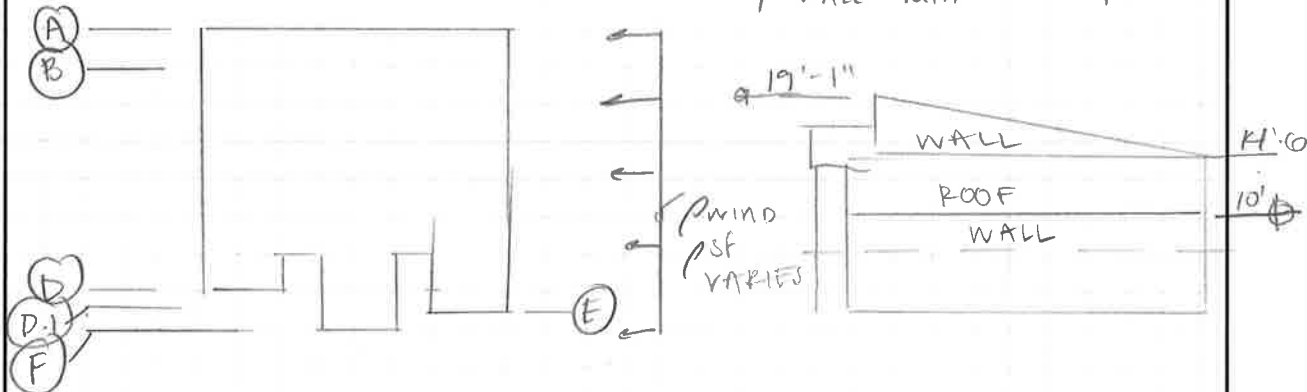
**JOB NAME:** Fire Rebuild**Prepared by:** Erin L. Dupree**Subject:** LATERAL DESIGN
WIND - MH**Date:**
1/6/22**Sheet:****Advisor:** James Mwangi**Class:** ARCE 453-03**References:**

[LATERAL DESIGN] WIND CONT., MAIN HOUSE - ALPHA


$$V_{ASD} = 0.6 V_{USD}$$

$$P_{ROOF} \text{ min} = 5 \text{ psf}$$

$$P_{WALL} \text{ min} = 10 \text{ psf}$$



	LOCATION	END ZONE			INTERIOR ZONE			$V_{wind} \text{ (lbs)}$ ASD
		P_{wind}	W	L	P_{wind}	W	L	
A	ROOF	5	3	4.5	5	0	0	2555
	WALL	12.8	5	4.5	10	9.5	23.5	
B	ROOF	5	0	0	5	0	0	0
	WALL	12.8	0	0	10	0	0	
D	ROOF	5	3	5	5	0	0	2273
	WALL	12.8	5	5	10	9.5	20.5	
D.1	ROOF	5	5	12	5	0	0	480
	WALL	12.8	0	0	10	0	0	
E	ROOF	5	3	7.2	5	0	0	2601
	WALL	12.8	5	5.2	10	9.5	23.5	

 ELD	JOB NAME: Fire Rebuild		Prepared by: Erin L. Dupree	
	Subject: LATERAL DESIGN SEISMIC CRITERIA		Date: 11/6/22	Sheet:
	Advisor: James Mwangi		Class: ARCE 453-03	
References:	<p>[LATERAL DESIGN] SEISMIC CRITERIA</p> <p>PRIMARY SEISMIC FORCE RESISTING SYSTEM LIGHT FRAMED WOOD SHEATHED WALLS, R = 6.5</p>			
ASCE T12.2.1				
ASCE T20-3.1	SITE CLASS : D DEFAULT			
CBC FIG 1603-1	$S_g = 2.548 g$	$S_1 = 0.979$		
ASCE T 11.4-1 11.4-2	$F_a = 1.2$	$F_v = 1.7$		
ASCE EON 11.4-1 11.4-2	$S_{ms} = F_a S_g$ $= 3.0576 g$	$S_{M1} = F_v S_1$ $= 1.664$		
ASCE EON 11.4-3 11.4-4	$S_{ps} = \frac{2}{3}(S_{ms})$ $= 2.038 g$	$S_{D1} = \frac{2}{3}(S_{M1})$ $= 1.110 g$		
	$h_n = \frac{(19' + 10')}{2}$ $h_n = 14'-6"$			
ASCE T 12.8-2 ASCE T 1.5.2 ASCE EON 12.8-7 § 11.4.6	$C_t = 0.20$	$\kappa = 0.75$	$I = 1.0$	
	$T_a = C_t h_n^x$ $= 0.149 s$	$T_s = S_{D1} / S_{ps}$ $= 0.544 s$		
FIG 22-14	$T_L = 8 s$			
EON 12.8-2	$C_s = \frac{S_{ps}}{R/I} = 0.314$			
EON 12.8-3	$C_{sMAX} = \frac{S_{D1}}{(T \times R)/I} = 1.15$	$T_a \leq T_L$		
EON 12.8-5	$C_{sMIN} = 0.044 S_{ps} I = 0.09$	$C_s > 0.01$		
	$C_{sMIN} = \frac{0.5 S_1}{(R/I)} = 0.075$	$S_1 > 0.6 g$		
EON 12.8-1	$V = C_s \times W = 0.314 W$ $E_v = 0.2 S_{ps} \Delta = 0.408 \Delta$			
CRC TR 301.22.1.1 ASCE T 11.6	SEISMIC DESIGN CATEGORY, CRC = E SEISMIC DESIGN CATEGORY, CBC = E			

**JOB NAME:** Fire Rebuild**Prepared by:** Erin L. Dupree**Subject:** LATERAL DESIGN
SEISMIC - MH**Date:**
1/4/22**Sheet:****Advisor:** James Mwangi**Class:** ARCE 453-03**References:**

[LATERAL DESIGN] SEISMIC, STORY DISTRIBUTION

MAIN HOUSE - SINGLE STORY

$$h_x = 14'-10''$$

$$A_x = 2665 \text{ ft}^2$$

$$\frac{w_x}{W_x} = \frac{22.5 \text{ psf}}{60 \text{ k}} \quad (w_{\text{ROOF}} + \frac{1}{2} w_{\text{WALL}})$$

$$\sum W_i = 60 \text{ k}$$

$$W_x h_x^k = 869 \text{ kft} \quad k = 1.0$$

$$C_{vx} = \frac{W_x h_x^k}{\sum W_i h_x} = 1.0$$

$$F_x = C_{vx} V = 18.80 \text{ k}$$

$$F_x / W_x = 0.314$$

$$\sum F_i / W_i = 0.408$$

STRENGTH DESIGN VALUES

$$C_s = 0.31$$

$$V = C_s W = 18.80 \text{ k}$$

ALLOWABLE STRESS VALUES

$$C_{s, \text{ASD}} = 0.7(C_s) = 0.220$$

$$C_s \text{ COLLECTOR} = 0.7(\sum F_i / \sum W_i) \rho = 0.285$$

$$C_s \text{ DIAPHR} = 0.7(\sum F_i / \sum W_i) \rho = 0.285$$

$$V_{\text{ASD}} = \underline{\underline{13.16 \text{ k}}}$$


JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
SEISMIC DISTRIB - MH

Date:
1/6/22

Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

[LATERAL DESIGN] SEISMIC DISTRIB, MAIN HOUSE

ROOF - NUMERICAL

NOTE.. LOADS IN ASD

$$w_x = 22.5 \text{ psf}$$

$$C_s = 0.220$$

$$V_{USD E Q} = C_s w_x A_T$$

$$V_{ASD} = 0.7 V_{USD E Q}$$

LINE 1

$$l_1 = 46'-0'' \quad w_1 = 9'-0'' \quad A_{T1} = 414 \text{ ft}^2$$

$$V_1 = \underline{2045 \text{ lbs}}$$

LINE 2

$$l_{2.A} = 46'-0'' \quad w_{2.A} = 7'-0''$$

$$l_{2.B} = 41'-0'' \quad w_{2.B} = 11'-0''$$

$$A_2 = 773 \text{ ft}^2 \quad V_2 = \underline{3818 \text{ lbs}}$$

LINE 3

$$l_{3.A} = 41'-0''$$

$$w_{3.A} = 11'-0''$$

$$l_{3.B} = 51'-0''$$

$$w_{3.B} = 7'-0''$$

$$A_3 = 808 \text{ ft}^2$$

$$V_3 = \underline{3991 \text{ lbs}}$$

LINE 4

$$l_4 = 51'-0''$$

$$w_4 = 9'-0''$$

$$A_4 = 459 \text{ ft}^2$$

$$V_4 = \underline{2247 \text{ lbs}}$$

LINE 2.1

$$l_{2.1} = 15'-0''$$

$$w_{2.1} = 7'-0''$$

$$A_{2.1} = 105 \text{ ft}^2$$

$$V_{2.1} = \underline{519 \text{ lbs}}$$

LINE 2.2

$$l_{2.2} = 15'-0''$$

$$w_{2.2} = 7'-0''$$

$$A_{2.2} = 105 \text{ ft}^2$$

$$V_{2.2} = \underline{519 \text{ lbs}}$$

$$A_{Tot} = 2664 \text{ ft}^2$$

$$V_{NUM} = 13.16 \text{ K}$$




JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
SEISMIC DISTRIBUTION - MH

Date: 1/16/22

Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

[LATERAL DESIGN] SEISMIC DISTRIB, MAIN HOUSE

ROOF - ALPHA
NOTE: LOADS IN ASD

$$V_{USD EQ} = C_s \times W_{SEISMIC} \times A_T$$

$$V_{ASD} = 0.7 V_{USD EQ}$$

LINE A

$$L_{A.1} = 16'-0''$$

$$L_{A.2} = 23'-6''$$

$$L_{A.3} = 15'-6''$$

$$A_A = 9116 \text{ ft}^2$$

$$W_{A.1} = 23'-0''$$

$$W_{A.2} = 6'-6''$$

$$W_{A.3} = 25'-6''$$

$$V_A = \underline{4524 \text{ lbs}} \quad (\text{ASD})$$

LINE B

$$L_{B.1} = 23'-6''$$

$$L_{B.2} = 23'-6''$$

$$A_B = 383 \text{ ft}^2$$

$$W_{B.1} = 14'-0''$$

$$W_{B.2} = 4'-6''$$

$$V_B = \underline{1891 \text{ lbs}} \quad (\text{ASD})$$

LINE D

$$L_{D.1} = 10'-0''$$

$$L_{D.2} = 11'-9''$$

$$A_D = 532 \text{ ft}^2$$

$$W_{D.1} = 23'-0''$$

$$W_{D.2} = 14'-0''$$

$$V_D = \underline{2630 \text{ lbs}} \quad (\text{ASD})$$

LINE D.1

$$L_{D.1} = 15'-6''$$

$$A_{D.1} = 224.8 \text{ ft}^2$$

$$W_{D.1} = 14'-6''$$

$$V_{D.1} = \underline{1110 \text{ lbs}} \quad (\text{ASD})$$

LINE E

$$L_{E.1} = 15'-6''$$

$$L_{E.2} = 11'-9''$$

$$A_E = 560 \text{ ft}^2$$

$$W_{E.1} = 25'-6''$$

$$W_{E.2} = 14'-0''$$

$$V_E = \underline{2765 \text{ lbs}} \quad (\text{ASD})$$

$$A_{TOT} = 2667 \text{ ft}^2$$

$$V_{ALPHA} = 13.17 \text{ K} \quad (\text{ASD}) \quad \checkmark$$


JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
SW DEMAND

Date:

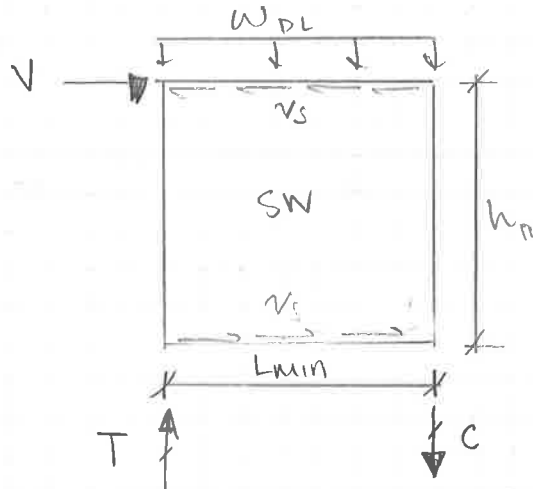
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Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

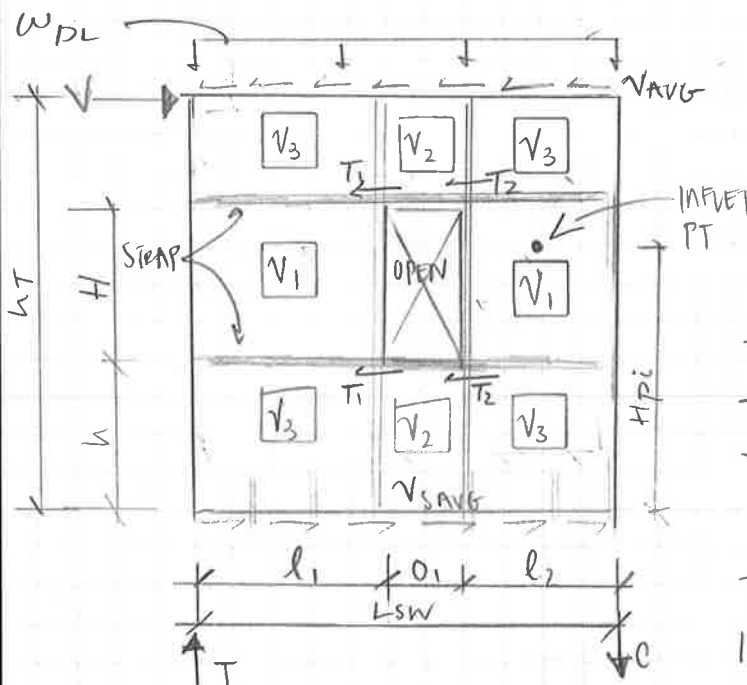
[LATERAL DESIGN] SW DEMAND, MAIN HOUSE
SHEAR WALL DESIGN


 $V = \text{LATERAL LOAD (lbs)}$
 $l_{sw} = \text{LENGTH OF INDIVID SW (ft)}$
 $l_{min} = \text{SHORTEST SW LENGTH (ft)}$
 $L_{TOT} = \sum l_{sw} \quad (ft)$
 $V = V / \sum l_{sw} \quad (plf)$
 $W_{DL} = \text{TOTAL DL} \quad (plf)$

$$T_w = \left[v_h - 0.10(W_{DL}) \left(\frac{l_{min}}{2} \right) \right]$$

$$T_{EQ} = \left[v_h - (0.10 - 0.14 S_{DS}) (W_{DL}) \left(\frac{l_{min}}{2} \right) \right]$$

SHEAR WALL WITH OPENING DESIGN



SHEAR

$$v_{AVG} = V / L_{SW}$$

$$v_1 = V / \left(\sum l_i \right)$$

$$v_2 = v_{AVG} \left(\frac{h_t}{h_t - h_o} \right)$$

$$v_3 = (v_1 - v_{AVG}) \left(\frac{h_t}{h_t - h_o} \right) - v_{AVG}$$

TENSION - STRAP

$$T_1 = (v_1 + v_3) (l_1)$$

$$T_2 = T_1 - v_2 l_o$$

$$T_{STRAP} = \text{MAX OF } T_1, \text{ OR } T_2$$

TENSION - HD

$T \Rightarrow$ SEE T_{SW} WITH E

INFLECTION PT

$$h_{pi} = \left(\frac{h_t}{h_t - h_o} \right)$$



JOB NAME: Fire Rebuild

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NDS SDPMW
T4.3.A

[LATERAL DESIGN] SW CAPACITY

SHTG CAPACITY = 15/32" WOOD STRUCTURAL PANELS

SW	NAILING	γ_s WIND		γ_s EARTHQUAKE	
		2:1	3.5:1 ²	2:1	3.5:1 ²
A0	8d @ 6" o.c.	304 plf	208 plf	200 plf	149 plf
A4	8d @ 4" o.c.	532 plf	304 plf	350 plf ³	217 plf
A3	8d @ 3" o.c.	680 plf	392 plf	490 plf	280 plf
A2	8d @ 2" o.c.	892 plf	512 plf	640 plf	306 plf
A3 A3	STRENGTHENED EA SIDE 8d @ 3" o.c.	1372 plf	784 plf	980 plf	560 plf

NOTES

- LOADS PER NDS SDPMW T4.3.A → ASD, $\gamma_s/2$
- 3.5:1 ASPECT RATIO PER § 4.3.3.4.1
- $V_{smax} = 380$ plf → LIMITED TO $V_s = 350$ plf TO AVOID 3x EDGE MEMBER REQUIREMENT

ANCHOR BOLT CAPACITY

5/8" ϕ A.B.	PARALLEL BOLT	V_{allow}	
		24" o.c.	48" o.c.
2x SILL TR	650 / 1040	520	260
3x SILL TR	770 / 1232	616	308
	(lbs) +40%	(plf)	(plf)

HOLDOWN CAPACITY

HD	A.T.R. ϕ (in)	FASTENERS	MIN WOOD (in)	CAPACITY (lbs) ASD
HDV2	5/8" ϕ	(6) 1/4" ϕ x 2 1/2 SDS	3 1/2" x 3 1/2"	3075
HDV5	5/8" ϕ	(14) 1/4" ϕ x 2 1/2 SDS	3 1/2" x 3 1/2"	5045
HDV8	7/8" ϕ	(20) 1/4" ϕ x 2 1/2 SDS	3 1/2" x 3 1/2"	6970 DF / SP

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C-C-2021


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SHEAR WALLS - MH

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[LATERAL DESIGN] SHEAR WALLS - MAIN HOUSE

$$\begin{aligned}
 V &= \text{TOTAL LATERAL LINE LOAD} && \text{lbs.} \\
 V &= \text{LATERAL LOAD PER FT OF SW} && \text{plf} \\
 W_{DL} &= \text{WALL DEAD LOAD PER FT} && \text{plf} \\
 l &= \text{SHEAR WALL LENGTH} && \text{ft} \\
 h &= \text{WALL HGT} && \text{ft} \\
 P_{up} &= \text{HOLDOWN TENSION FORCE} && \text{lbs} \\
 &= \frac{V \times h - [0.10 - 0.14(S_{ps})] W_{DL} (l_{min})}{2}
 \end{aligned}$$

MAIN HOUSE ROOF - NUMERICAL
 $S_{ps} = 2.038$
LINE 1

$$\begin{aligned}
 l_1 &= 13'-0'' \\
 l_{TOT} &= 19'-0''
 \end{aligned}$$

$$l_2 = 6'-0''$$

$$h_R = 10'-0''$$

$$\begin{aligned}
 \text{WIND : } V_1 &= 563 \text{ lbs} & v_1 &= 31 \text{ plf} \\
 \text{SEISMIC : } V_1 &= 2045 \text{ lbs} & v_1 &= 108 \text{ plf}
 \end{aligned}$$

 \Rightarrow GOVERNS

$$\begin{aligned}
 W_{DL} &= W_{WALL} (10') + W_{ROOF} (14'/2) \\
 &= 205 \text{ plf}
 \end{aligned}$$

$$T_{1w} = (108 \text{ plf})(10') - \frac{[(0.10 - 0.14)(2.038)](205 \text{ plf})(6')}{2}$$

$$T_{1w} = 0\#$$

$$T_{1E} = 803\# \rightarrow \text{GOVERNS}$$

**USE "A6" SHEAR WALL WITH HDU2
2x SILL TR W/ AB @ 4'-0" O.C.**
LINE 2

$$l_1 = 4'-0''$$

$$l_2 = 8'-0''$$

$$l_{TOT} = 12'-0''$$

$$h_R = 10'-0''$$

$$\text{WIND : } V_2 = 1033 \text{ lbs} \quad v_2 = 136 \text{ plf}$$

$$\text{SEISMIC : } V_2 = 3818 \text{ lbs} \quad v_2 = 318 \text{ plf} \quad \Rightarrow \text{GOVERNS}$$

$$W_{DL} = W_{WALL} (10') + W_{ROOF} (18'/2) = 235 \text{ plf}$$

$$T_{2w} = 1079\#$$

$$T_{2E} = 3034\# \rightarrow \text{GOVERNS}$$

**USE "A3" SHEAR WALL WITH HDU2
2x SILL TR W/ AB @ 4'-0" O.C.**


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[LATERAL DESIGN] SHEARWALL DESIGN, MH

MAIN HOUSE ROOF - NUMERAL, CONT.

LINE 3 → (2) TR HDZ, ANALYZE SEPARATELY

$$3.A \quad l = 8'-0" \quad h_R = 10'-0"$$

$$3.B \quad l = 9'-6" \quad h_R = 13'-0"$$

$$l_{TOTAL} = 17'-6"$$

WIND: $V_3 = 1033 \#$

$V_3 = 93 \text{ plf}$

SEISMIC: $V_3 = 3991 \#$

$V_3 = 228 \text{ plf} \Rightarrow \text{GOVERNS}$

$$V_{3.i} = V_3 \left(\frac{l_i}{l_{TOT}} \right)$$

 LINE 3.A SEISMIC $V_{3.A} = 1824 \#$

$$w_{DL\ 3.A} = w_{WALL} (10') + w_{ROOF} (7'-0") = 198 \text{ plf}$$

$$T_{3.AW} = 458 \#$$

$$T_{3.AE} = 2031 \#$$

 LINE 3.B SEISMIC $V_{3.B} = 2166 \#$

$$w_{DL\ 3.B} = w_{WALL} (13') + w_{ROOF} (7'-0") = 228 \text{ plf}$$

$$T_{3.BW} = 503 \#$$

$$T_{3.BE} = 2624 \# \rightarrow \text{GOVERNS}$$

 USE "A4" SHEARWALL WITH HDZ,
2x SILL TR W/ 5/8" ϕ AB @ 4'-0" o.c.

LINE 4

$$l_1 = 9'-0" \quad l_2 = 6'-6" \quad l_{TOT} = 15'-6" \quad h_R = 10'-0"$$

WIND: $V_4 = 584 \#$

$V_4 = 38 \text{ plf}$

SEISMIC: $V_4 = 2267 \#$

$V_4 = 146 \text{ plf} \Rightarrow \text{GOVERNS}$

$$w_{DL} = w_{WALL} (10') + w_{ROOF} (7'-0") = 198 \text{ plf}$$

$$T_{4W} = 0 \#$$

$$T_{4E} = 1200 \# \rightarrow \text{GOVERNS}$$

 USE "A6" SHEARWALL WITH HDZ,
2x SILL TR W/ 5/8" ϕ AB @ 4'-0" o.c.


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[LATERAL DESIGN] SHEAR WALL DESIGN, RH

MAIN HOUSE ROOF - NUMERICAL, CONT

LINE 2.1

$$l_1 = 6'-0" \quad h_p = 14'-0"$$

$$\begin{array}{ll} \text{WIND: } V_{2.1} = 523 \# & V_{2.1} = 87 \text{ plf} \Rightarrow \text{GOVERNS} \\ \text{SEISMIC: } V_{2.1} = 519 \# & V_{2.1} = 86 \text{ plf} \end{array}$$

$$w_{DL} = w_{WALL} (14') = 210 \text{ plf}$$

$$T_{2.1W} = 841 \# \quad T_{2.1E} = 1012 \# \rightarrow \text{GOVERNS}$$

USE "AG" SHEARWALL WITH HDU2,
2x SILL TR WITH 5/8" ϕ AB @ 4'-0" O.C

LINE 2.2

$$l_1 = 6'-0" \quad h_p = 14'-0"$$

$$\begin{array}{ll} \text{WIND: } V_{2.2} = 523 \# & V_{2.2} = 87 \text{ plf} \rightarrow \text{GOVERNS} \\ \text{SEISMIC: } V_{2.2} = 519 \# & V_{2.2} = 86 \text{ plf} \end{array}$$

$$w_{DL} = w_{WALL} (14') = 210 \text{ plf}$$

$$T_{2.2W} = 841 \# \quad T_{2.2E} = 1012 \# \rightarrow \text{GOVERNS}$$

USE "AG" SHEARWALL WITH HDU2,
2x SILL TR W/ 5/8" ϕ AB @ 4'-0" O.C


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SHEAR WALL - MH

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[LATERAL DESIGN] SHEAR WALLS - MAIN HOUSE

MAIN HOUSE ROOF - ALPHA
LINE A

$$l_1 = 3'-6" \quad l_2 = 3'-6" \quad h_p = 10'-0"$$

$$l_{TOT} = 7'-0"$$

$$h_{STRAP} = 8'-0"$$

↳ FOR ASPECT RATIO

WIND: $V_A = 2555 \#$

$V_A = 3605 \text{ plf}$

SEISMIC: $V_A = 4524 \#$

$V_A = 646 \text{ plf} \Rightarrow \text{GOVERNS}$

$$w_{DL} = w_{MAN} (10'-0") + w_{ROOF} (3'-0")$$

$$T_{AW} = 3842 \#$$

$$T_{HE} = 6372 \# \rightarrow \text{GOVERNS}$$

USE "A3/A3" WITH CS16 AT HEADER, HDU B
3x IR WITH 5/8" Ø AB @ 2'-6"

LINE B

$$l_1 = 4'-0" \quad o_1 = 6'-0" \quad l_2 = 5'-0" \quad l_{TOT} = 15'-0"$$

$$h_p = 10'-0" \quad H = 5'-0" \quad h_T = 3'-0"$$

WIND: $V_B = 0 \#$

SEISMIC: $V_B = \dots \rightarrow \text{GOVERNS}$

$$V_1 = 224 \text{ plf} \quad V_2 = 277 \text{ plf} \quad V_3 = 51 \text{ plf} \quad V_{avg} = 139 \text{ plf}$$

↳ GOVERNS

$$T_1 = 787 \#$$

$$T_2 = 875 \#$$

$$CS16 = 1705 \# \text{ (ASD)}$$

$$w_{DL} = w_{MAN} (10'-0") + w_{ROOF} (3 \frac{1}{2}) = 408 \text{ plf}$$

$$T_{BE} = 391 \#$$

USE "A4" SHEAR WALL WITH CS16 x SW LENGTH,
HDU 2, 2x SILL IR w/ 5/8" Ø NB @ 4'-0" O.C.

SIMPSON C-C 2021
CS16 = 1705 #

SIMPSON
STRONGTIE
CC 2021


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SHEARWALL - MH

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[LATERAL DESIGN] SHEARWALLS - MAIN HOUSE

MAIN HOUSE ROOF - ALPHA CONT

LINE D

$$L_{TOT} = 10' - 6" \quad u_R = 12' - 0"$$

$$\begin{array}{l} \text{WIND: } V_D = 2273\# \quad V_D = 216 \text{ plf} \\ \text{SEISMIC } V_D = 2630\# \quad V_D = 250 \text{ plf} \rightarrow \text{GOVERNS} \end{array}$$

$$w_{DL} = w_{WALL} (10' - 0") = 150 \text{ plf}$$

$$T_{DN} = 2030\# \quad T_{DE} = 2709\# \rightarrow \text{GOVERNS}$$

 USE "A4" SHEARWALL WITH HDUZ,
2x SILL TR W/ 5/8" ϕ RB @ 4'-0" OC

LINE D.1 \rightarrow WSWH

$$L_{HEADER} = 13' - 0" \quad w_{DL} = w_{WALL} (13') = 195 \text{ plf}$$

$$\begin{array}{l} \text{WIND} = V_{D.1} = 480\# \quad T_{D.1 W} = 3647\# \\ \text{SEISMIC} = V_{D.1} = 1100\# \quad T_{D.1 E} = 8608\# \end{array}$$

TRY WSWH 24x13

$$\begin{array}{l} V_W = 3500\# \\ V_E = 3110\# \end{array}$$

$$b = 20"$$

$$\begin{array}{l} T_W = 31715\# \\ T_E = 27705\# \end{array}$$

 CRACKED
2500 PSI CONC

$$p = 2500\# \checkmark$$

USE WSWH 24x13 AS SINGLE PORTAL.

 PROVIDE WSWH-TP PORTAL CONNECTION AND
(4) WSWH-PS STRAPS TO HEADER.

 TIE HEADER TO TRIMMER AT OPP END
WITH 2STA24 EA SIDE, AND HDUZ AT
TRIMMER TO FDN.

WSWH 13x24

$$1\frac{1}{2}" \text{ A.P. } d_{min} = 11"$$

$$W_{FTG \text{ MIN}} = 33"$$

 SIMPSON
STRONGTIE
C-L-SW21



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[LATERAL DESIGN] SHARPSHAWNS - MH

MAIN HOUSE ROOF - ALPHA CONT.

LINE E

$L_{HEADER} = 9'-0"$ $w_{DL} = w_{MAN} (10') = 150 \text{ plf}$

WIND: $V_E = 2601 \#$ $T_{E_w} = 16994 \#$
 SEISMIC $V_E = 2765 \#$ $T_{E_E} = 18082 \# \rightarrow \text{GOVERN'S}$

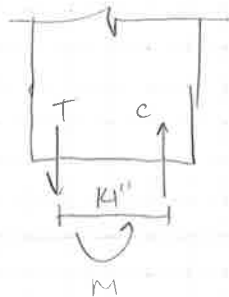
SIMPSON
STRONGTIE
C-L-SW21

TRY (2) WSWH 18x9 $b = 14"$
 $V_w = 2575 \#$ $2V_w = 5150 \# \checkmark$
 $V_E = 3005 \#$ $2V_E = 6010 \# \checkmark$
 $T_w = 25285 \#$ $T_E = 21680 \# \checkmark$ $P = 7500 \#$

USE (2) WSWH 18x9 GARAGE PORTAL
 PROVIDE WSWH-TP PORTAL CONNECTION
 AND (4) WSWH-PS STRAPS TO HEADER.

SIMPSON
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C-L-SW21

WSWH 18
 1" ϕ HIGH STRENGTH A.B. $d_e = 18"$ $w_{MAN} = 52"$
 (1) #3 HAIRPIN \hookrightarrow REDUCE w/ REINF.
 $L_w = 10'14"$ CRACKED CONC. 2500 psi



$M = Td$
 $M_{E_w} = 19.8 \text{ KH}$ $M_{E_E} = 21.1 \text{ KH (ASD)}$
 APPLY TO FPN



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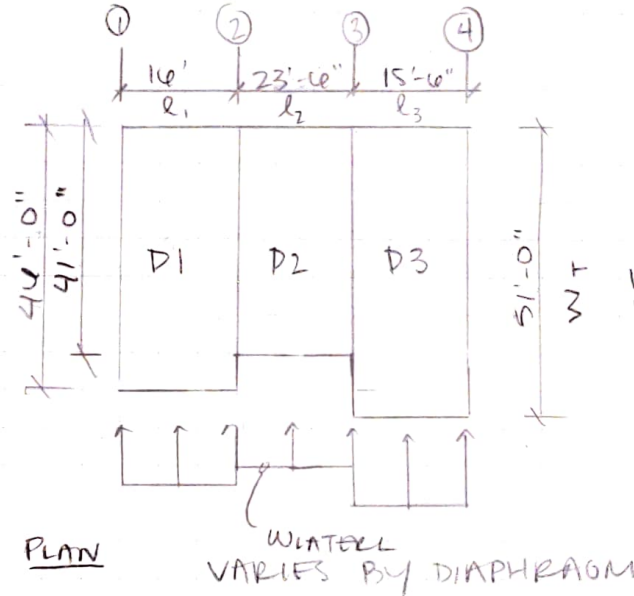
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[LATERAL DESIGN] DIAPHRAGM DESIGN, NUMERICAL - MH



DEMAND

$w_{SEISMIC DL} = 22.5 \text{ psf}$

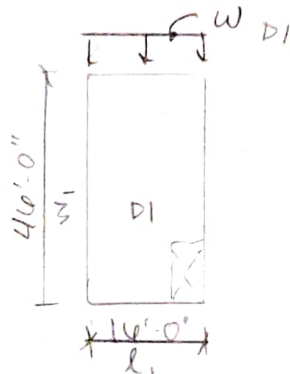
$w_{window wall} = 10 \text{ psf}$

$w_E = C_{SDIAPH} w_{SEISDL} w_T$

$w_w = w_{window wall} w_T$

D1: $w_{ED1} = 0.285 (22.5 \text{ psf})(46') = 29.5 \text{ plf} \rightarrow \text{GOVERNS}$
 $w_{WD1} = 10 \text{ psf} (6.5 \text{ ft}) = 65 \text{ plf}$

NDS T4.2.4
SPDWS



ASPECT RATIO:

MAX UNBLOCKED: 3:1 L:W

$l/a - z/d = 0.4:1 \checkmark$

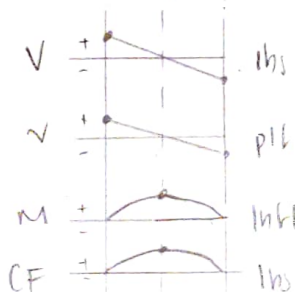
$V_{MAX} = w_{ED1} (\frac{l_1}{2}) = 2390 \text{ lbs}$

$v_{MAX} = V_{MAX} / w_1 = 51 \text{ plf}$

$M_{MAX} = w_{ED1} (\frac{l_1}{2})(l_1) = 37,740 \text{ lbf-ft}$

$C_{FMAX} = M_{MAX} / w_1 = 821 \text{ lbs}$

NDS T4.2.C
SPDWS



USE 19/32" SHTG W/ 2X MEMBERS
AND 10=1 @ 6' O.C., CASE 3 UNBK
 $v_{CAP} = 215 \text{ plf} > v_{MAX} \checkmark$



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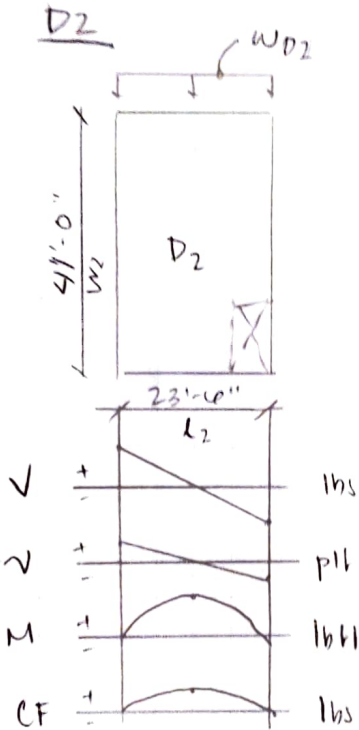
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[LATERAL DESIGN] DIAPHRAGM DESIGN, NUMERICAL - MH



DEMAND

$$w_{E D2} = 0.285 (22.5 \text{ plf}) (41'-0") = 263 \text{ plf} \rightarrow \text{GOVERNS}$$

$$w_{W1} = 10 \text{ plf} (9.5') = 95 \text{ plf}$$

ASPECT RATIO = 3:1 L:W
0.6:1 ✓

$V_{MAX} = 2773 \text{ lbs}$

$V_{MAX} = 68 \text{ plf}$

$M_{MAX} = 65166 \text{ lb-ft}$

$CF_{MAX} = 1589 \text{ lbs}$

NDS T
SPDWS 4.2C

USE 15/32 SHTG W/ 2X MEMBERS AND
8d @ 6" O.C. CASE 3 UNBLOCKED
SEISMIC
 $V_{CAP} = 180 \text{ plf} > V_{MAX} \checkmark$



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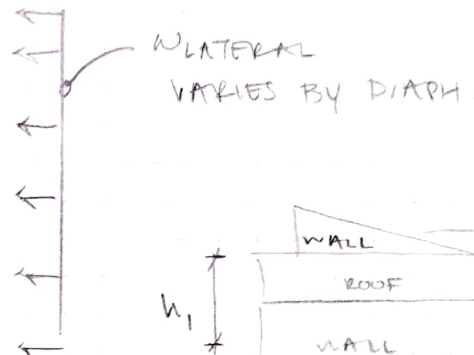
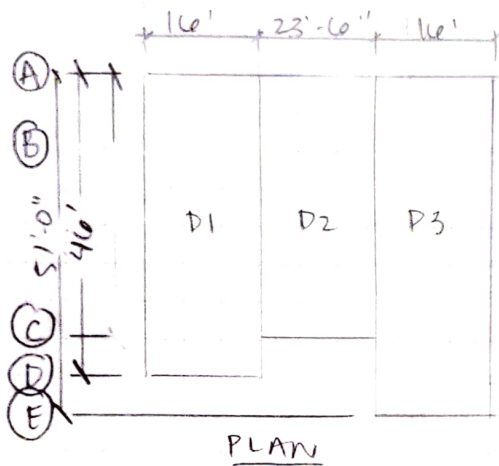
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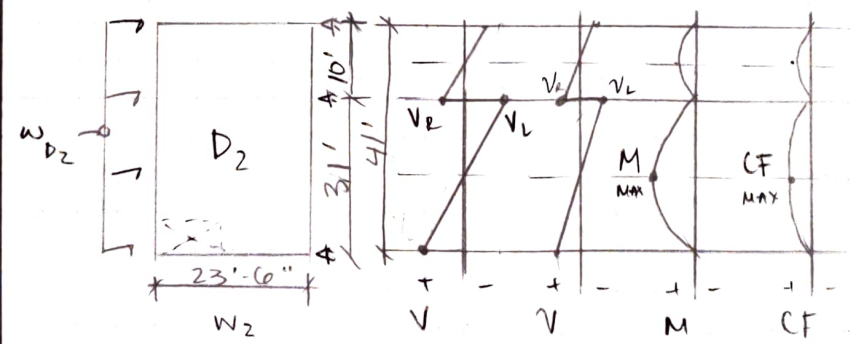


DEMAND

$w_{SEISMIC} = 22.5 \text{ psf}$
 $w_E = C_{DIAPHR} w_{SEISMIC} w_T$

$w_{WIND} = 10 \text{ psf (FOR SIMPLICITY)}$
 $w_w = w_{WIND} h_T$

D2
 $w_{E D2} = 0.285 (22.5 \text{ psf})(23.5') = 151 \text{ psf} \rightarrow \text{GOVERNS}$
 $w_{W D2} = 10 \text{ psf}(8.5') = 85 \text{ psf}$



ASPECT RATIO
 $\frac{w_{MAX}}{w_{UNBLOCKED}} = \frac{3'}{1'}$
 $1.7 < 1 \checkmark$

$V_{MAX} = V_{LMAX} + V_{KMAX} = 2340.5\# + 755 = 3096 \text{ lbs}$
 $V_{MAX} = V_{MAX} / w = 131 \text{ psf}$
 $M_{MAX} = V_{LMAX} / w_L = 72540 \text{ lb-ft}$
 $CF_{MAX} = M_{MAX} / w = 3087 \text{ lbs}$

USE 19/32" SHTG W/ 2X FRAMING MEMBERS WITH 10d @ 6" O.C. (CASE 3 UNBLOCKED)
 $V_{SCAP} = 215 \text{ psf} > V_{MAX} \checkmark \text{ SEISMIC}$


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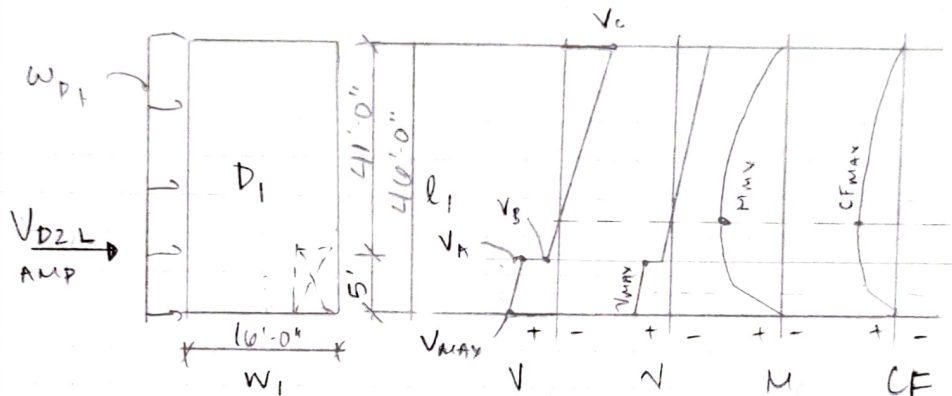
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[LATERAL DESIGN] DIAPHRAGM DESIGN, MH ALPHA
D1


DEMAND

$$W_{E D_1} = 0.285 (22.5 \text{ plf})(16') = 103 \text{ plf} \rightarrow \text{GOVERNS}$$

$$W_{W D_1} = 10 \text{ plf} (8.5') = 85 \text{ plf}$$

ASPECT RATIO

$$\text{UNBLOCKED MAX } 3:1, L:W; 2.80:1 \checkmark$$

ASCE § 12.3.3.3

$$V_{D2L} = 2341 \text{ lbs} \rightarrow \text{MULTIPLY BY } \Omega_0; \Omega_0 = 2.5$$

$$V_{D2L \Omega} = \underline{5853 \text{ lbs}} \quad \text{USE FOR TRANSFER COLUMN CONNECTIONS}$$

$$V_{MAX} = 4460 \text{ lbs} \quad M_{MAX} =$$

$$V_{MAX} = 279 \text{ plf} \quad CF_{MAX} =$$

$$V_A = 4460 \# - 103 \text{ plf} (5') = 3945 \#$$

$$V_B = V_A - V_{D2L} = 1604 \#$$

$$V_C = V_B - 103 \text{ plf} (41') = -2614 \#$$

$$V_{END} = V_C + 2614 \# = 0 \checkmark$$

USE 19/32" SHFG W/ 2x FRAMING MEMBERS
AND 10# @ 6" O.C. CASE 1 UNBLOCKED

$$V_s = 285 \text{ plf} > V_{max} \checkmark \text{ SEISMIC}$$


JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
MH - DIAPHRAGM DESIGN

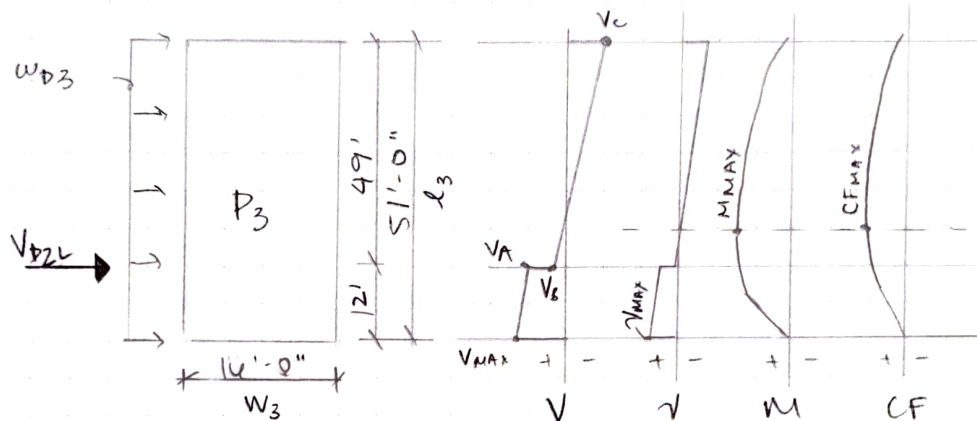
Date:
2/16/22

Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

[LATERAL DESIGN] DIAPHRAGM DESIGN - MH ALPHA
D3


DEMAND

$$w_{ED3} = 0.285 (22.5 \text{ plf})(16') = 103 \text{ plf} \rightarrow \text{GOVERNS}$$

$$w_{WD3} = 10 \text{ psf}(8.5') = 85 \text{ plf}$$

ASPECT RATIO

$$\text{UNBLOCKED MAX} : 3:1 \text{ L:W} ; 3.2 : 1 \quad \checkmark \text{ X}$$

$$\text{BLOCKED MAX} : 4:1 \quad \checkmark$$

BLOCKED DIAPHRAGM REQ'D

$$V_{MAX} = 4420 \text{ lbs} \quad M_{MAX} = 34305 \text{ lb-ft}$$

$$V_{MAX} = 276 \text{ plf} \quad CF_{MAX} = 2144 \text{ lbs}$$

$$V_A = 4420 \# - 103 \text{ plf}(12') = 3184 \#$$

$$V_B = V_A - V_{D2L} = 843 \#$$

$$V_C = V_B - 103 \text{ plf}(49') = -3380 \#$$

$$V_D = V_C + 3380 \# = 0 \quad \checkmark$$

USE $1\frac{1}{32}$ " SHTG w/ 3x FRAMING MEMBERS
AND 104 @ 6" o.c. CASE 1 BLOCKED
 $V_s = 360 \text{ plf} > V_{max} \quad \checkmark$ SEISMIC


JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
MH - TRANSFER COLUMN

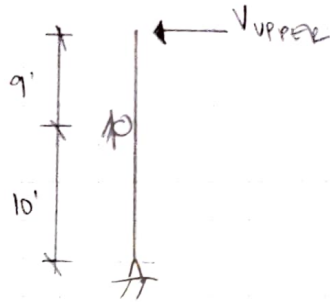
Date:
2/20/22

Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

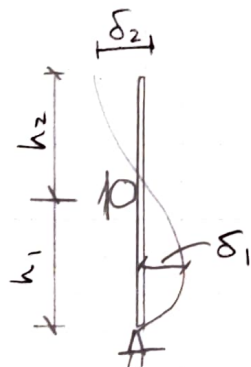
[LATERAL DESIGN] MH - TRANSFER COLUMN - C1

C1

DEMANDS

$$V_{UPPER} = \frac{V_{DZL}}{2 \text{ COLUMNS}}$$

OMEGA

$$V_{UPPER} = \underline{\underline{2927 \text{ lbs}}}$$


DEFLECTION LIMITS

$$\delta_{1A} = \frac{w_1 \times 12^{in}/ft}{360} \quad \text{SIMPLE SPAN}$$

$$\delta_{1A} = \underline{\underline{0.33''}}$$

$$\delta_{2A} = \frac{(w_2 \times 2)(12^{in}/ft)}{360} \quad \text{CANTILEVER}$$

$$\delta_{2A} = \underline{\underline{0.46''}}$$

SEE ENERCALC OUTPUT FOR COLUMN DATA

USE HSS 12x6x1/2 FOR TRANSFER COLUMN
(2) LOCATIONS


JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN

Date:
2/23/22

Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

[LATERAL DESIGN] TRANSFER COLUMN CONNECTIONS

DEMAND

$$V_{UPPER} = 2927 \text{ lbs}$$

TRANSFER FROM UPPER DIAPHRAGM
TO LOWER DIAPHRAGM

TRY $TB \frac{3}{16}$ WITH SDS x 2 1/2 SCREWS

CAPACITY - SCREWS

$$F_{SDS} = 420 \text{ lbs/SCREWS}$$

$$\# \text{ SCREWS} = \frac{2927 \#}{420 \text{ lbs/SCREW}}$$

$$\# \text{ SCREWS} = 6.7 \text{ SCREWS}$$

USE (7) SDS x 2 1/2 SCREWS MIN

SIMPSON C-F 701+


JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
MH-TRANSFER COLUMN

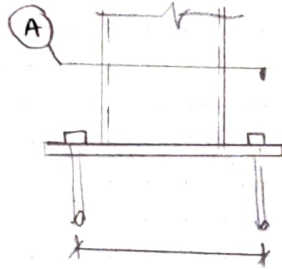
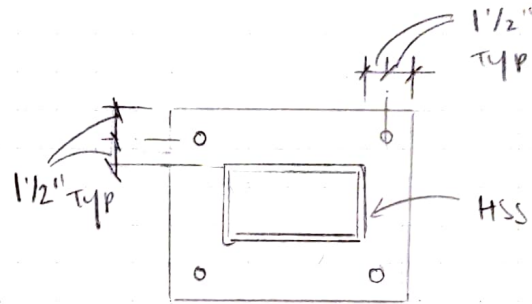
Date:
2/20/22

Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

[LATERAL DESIGN] MH-TRANSFER COLUMN, C1

BASE TR

ELEVATION

(A) PLAN
DEMANDS

$$V = R_2 \text{ OF } C_1 = 5561 \#$$

$$T = \text{SW UPLIFT AT LINE 2} = 3034 \#$$

} SEISMIC

SEE SIMPSON STRONGTIE ANCHORAGE OUTPUT

 USE TR 20 x 12 x 3/8 WITH (4) 5/8" Ø ANK x 6"



Steel Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC#: KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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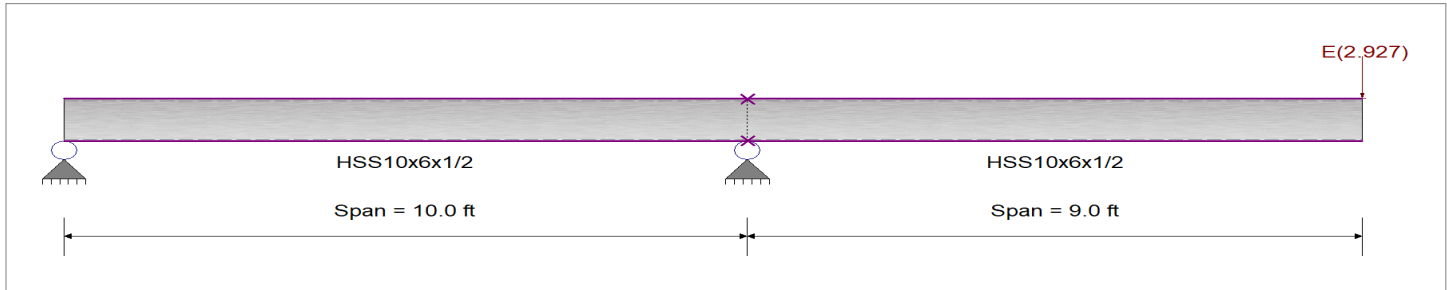
DESCRIPTION: C1- Transfer Post Steel

CODE REFERENCES

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Strength Design
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling
Bending Axis : Major Axis Bending
Fy : Steel Yield : 42.0 ksi
E: Modulus : 29,000.0 ksi



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Load(s) for Span Number 2
Point Load : E = 2.927 k @ 9.0 ft, (Upper Diaphragm)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.227 : 1	Maximum Shear Stress Ratio =	0.021 : 1
Section used for this span	HSS10x6x1/2	Section used for this span	HSS10x6x1/2
Ma : Applied	20.419 k-ft	Va : Applied	2.489 k
Mn / Omega : Allowable	90.120 k-ft	Vn/Omega : Allowable	120.759 k
Load Combination	+D+0.70E	Load Combination	+D+0.70E
Span # where maximum occurs	Span # 1	Location of maximum on span	10.000 ft
		Span # where maximum occurs	Span # 1
Maximum Deflection			
Max Downward Transient Deflection	0.522 in Ratio = 413 >=360	Span: 2 : E Only	
Max Upward Transient Deflection	-0.059 in Ratio = 2,027 >=360	Span: 2 : E Only	
Max Downward Total Deflection	0.394 in Ratio = 548 >=360	Span: 2 : +D+0.70E	
Max Upward Total Deflection	-0.044 in Ratio = 2745 >=360	Span: 2 : +D+0.70E	

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios		Summary of Moment Values						Summary of Shear Values			
			M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only														
Dsgn. L =	10.00 ft	1	0.022	0.004	0.02	-1.98	1.98	150.50	90.12	1.00	1.00	0.44	201.67	120.76
Dsgn. L =	9.00 ft	2	0.022	0.004		-1.98	1.98	150.50	90.12	1.00	1.00	0.44	201.67	120.76
+0.60D														
Dsgn. L =	10.00 ft	1	0.013	0.002	0.01	-1.19	1.19	150.50	90.12	1.00	1.00	0.27	201.67	120.76
Dsgn. L =	9.00 ft	2	0.013	0.002		-1.19	1.19	150.50	90.12	1.00	1.00	0.26	201.67	120.76
+D+0.70E														
Dsgn. L =	10.00 ft	1	0.227	0.021	-20.42	20.42	150.50	90.12	1.00	1.00	2.49	201.67	120.76	
Dsgn. L =	9.00 ft	2	0.227	0.021	-20.42	20.42	150.50	90.12	1.00	1.00	2.49	201.67	120.76	
+D+0.5250E														
Dsgn. L =	10.00 ft	1	0.175	0.016	-15.81	15.81	150.50	90.12	1.00	1.00	1.98	201.67	120.76	
Dsgn. L =	9.00 ft	2	0.175	0.016	-15.81	15.81	150.50	90.12	1.00	1.00	1.98	201.67	120.76	
+0.60D+0.70E														
Dsgn. L =	10.00 ft	1	0.218	0.019	-19.63	19.63	150.50	90.12	1.00	1.00	2.31	201.67	120.76	
Dsgn. L =	9.00 ft	2	0.218	0.019	-19.63	19.63	150.50	90.12	1.00	1.00	2.31	201.67	120.76	

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000	E Only	-0.0592	5.800
E Only	2	0.5225	9.000		0.0000	5.800



5880 Commerce Blvd.
 Suite 105
 Rohnert Park, Ca
 Phone: (707) 578-8185

Project Title: **Fire Rebuild**
 Engineer: **ELD**
 Project ID: **ARCE 453-03**
 Project Descr:

Steel Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: C1- Transfer Post Steel

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

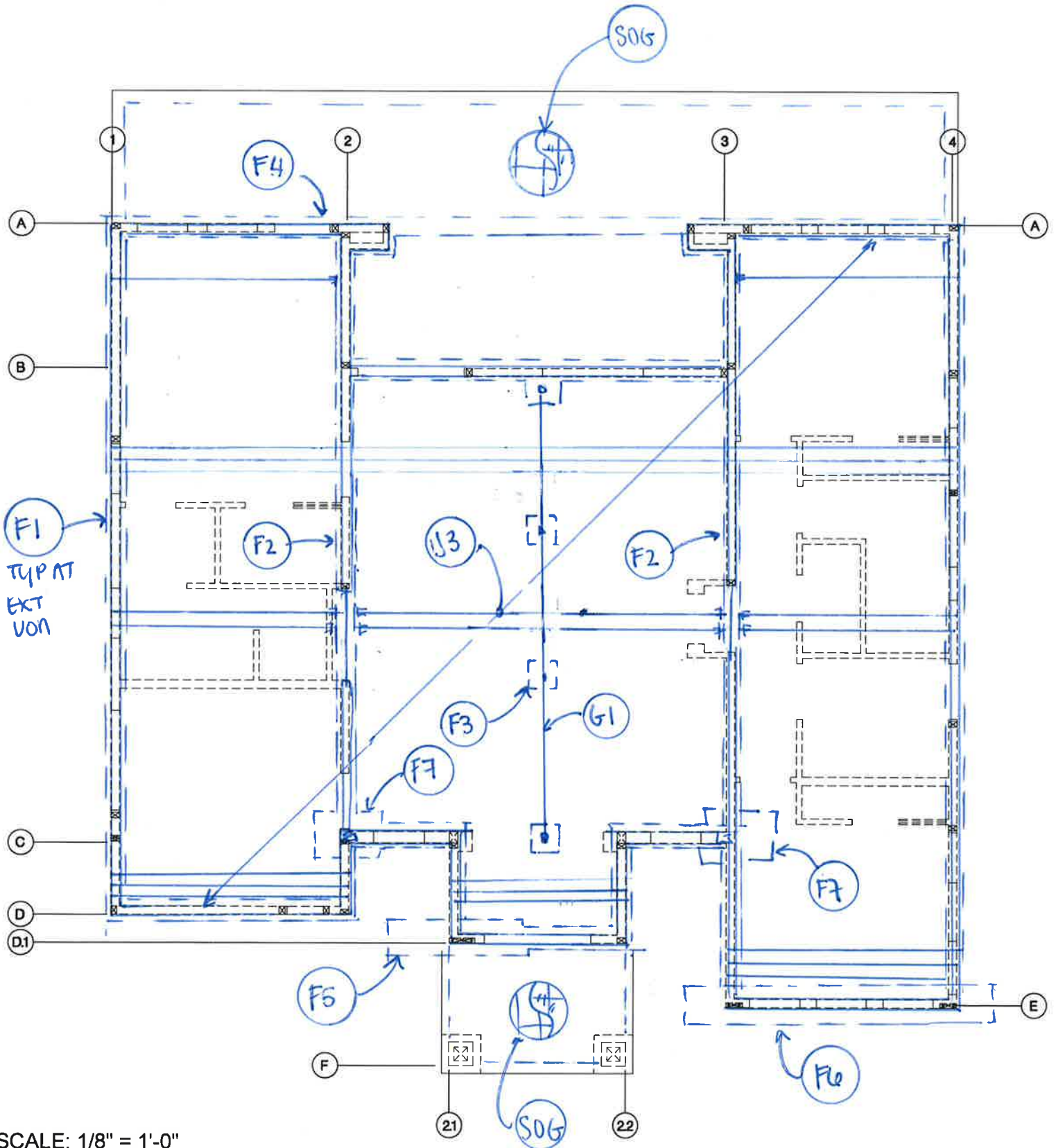
Load Combination	Support 1	Support 2	Support 3
Overall MAXimum	-2.634	5.561	
Overall MINimum	0.028	0.529	
D Only	0.046	0.882	
+0.60D	0.028	0.529	
+D+0.70E	-1.798	4.775	
+D+0.5250E	-1.337	3.801	
+0.60D+0.70E	-1.816	4.422	
E Only	-2.634	5.561	



FIRE REBUILD

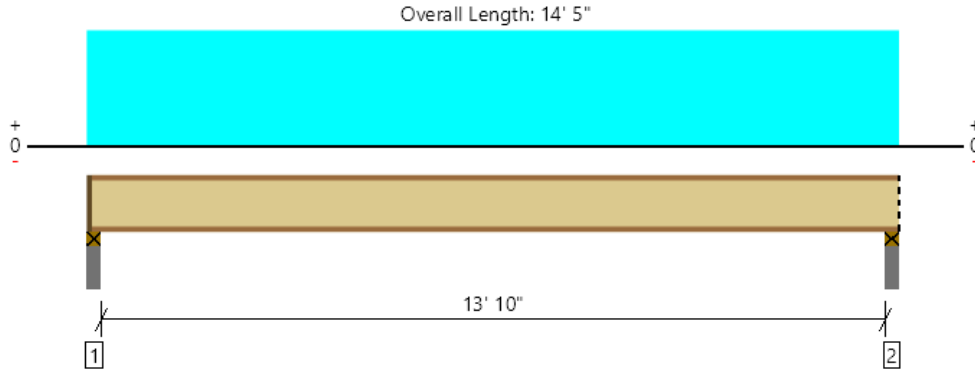
VERTICAL SYSTEM: FOUNDATION KEY PLAN
LEETE AVENUE
SANTA ROSA, CA 95404

Class	ARCE 453-03
Date	3/2/2022
PE	ELD



SCALE: 1/8" = 1'-0"

Level, J3- Floor Joist
 1 piece(s) 11 7/8" TJI ® 230 @ 16" OC



All locations are measured from the outside face of left support (or left cantilever end). All dimensions are horizontal.

Design Results	Actual @ Location	Allowed	Result	LDF	Load: Combination (Pattern)
Member Reaction (lbs)	483 @ 2 1/2"	1183 (2.25")	Passed (41%)	1.00	1.0 D + 1.0 L (All Spans)
Shear (lbs)	470 @ 3 1/2"	1655	Passed (28%)	1.00	1.0 D + 1.0 L (All Spans)
Moment (Ft-lbs)	1666 @ 7' 2 1/2"	4215	Passed (40%)	1.00	1.0 D + 1.0 L (All Spans)
Live Load Defl. (in)	0.133 @ 7' 2 1/2"	0.350	Passed (L/999+)	--	1.0 D + 1.0 L (All Spans)
Total Load Defl. (in)	0.169 @ 7' 2 1/2"	0.700	Passed (L/991)	--	1.0 D + 1.0 L (All Spans)
TJ-Pro™ Rating	53	50	Passed	--	--

System : Floor
 Member Type : Joist
 Building Use : Residential
 Building Code : IBC 2015
 Design Methodology : ASD

- Deflection criteria: LL (L/480) and TL (L/240).
- Allowed moment does not reflect the adjustment for the beam stability factor.
- A structural analysis of the deck has not been performed.
- Deflection analysis is based on composite action with a single layer of 23/32" Weyerhaeuser Edge™ Panel (24" Span Rating) that is glued and nailed down.
- Additional considerations for the TJ-Pro™ Rating include: None.

Supports	Bearing Length			Loads to Supports (lbs)			Accessories
	Total	Available	Required	Dead	Floor Live	Total	
1 - Plate on concrete - DF	3.50"	2.25"	1.75"	106	384	490	1 1/4" Rim Board
2 - Plate on concrete - DF	3.50"	3.50"	1.75"	106	384	490	Blocking

- Rim Board is assumed to carry all loads applied directly above it, bypassing the member being designed.
- Blocking Panels are assumed to carry no loads applied directly above them and the full load is applied to the member being designed.

Lateral Bracing	Bracing Intervals	Comments
Top Edge (Lu)	6' 8" o/c	
Bottom Edge (Lu)	14' 4" o/c	

- TJI joists are only analyzed using Maximum Allowable bracing solutions.
- Maximum allowable bracing intervals based on applied load.

Vertical Load	Location	Spacing	Dead (0.90)	Floor Live (1.00)	Comments
1 - Uniform (PSF)	0 to 14' 5"	16"	11.0	40.0	Default Load

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 The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Erin Dupree MKM & Associates (707) 578-8185 erin@mkmassociates.com	





Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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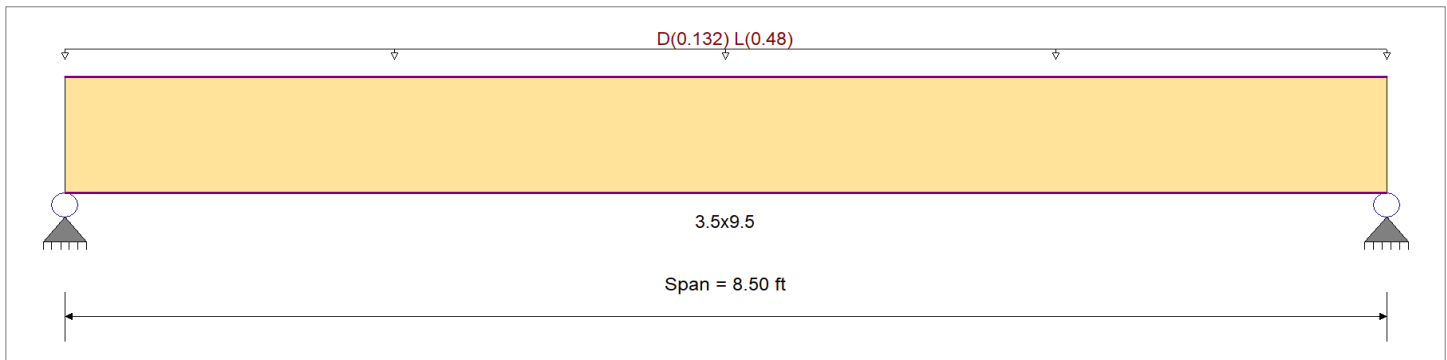
DESCRIPTION: G1- Typ Girder

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design	Fb +	2800 psi	<i>E : Modulus of Elasticity</i>	
Load Combination : ASCE 7-16	Fb -	2800 psi	Ebend- xx	2000ksi
	Fc - Prll	2750 psi	Eminbend - xx	1000ksi
Wood Species : 3-1/2-7 SCL	Fc - Perp	700 psi		
Wood Grade : Manufactured	Fv	285 psi		
	Ft	200 psi	Density	35.02pcf
Beam Bracing : Beam is Fully Braced against lateral-torsional buckling				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : D = 0.0110, L = 0.040 ksf, Tributary Width = 12.0 ft, (Floor)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.456 1	Maximum Shear Stress Ratio	=	0.341 : 1
Section used for this span		3.5x9.5	Section used for this span		3.5x9.5
fb: Actual	=	1,276.49psi	fv: Actual	=	97.19 psi
Fb: Allowable	=	2,800.00psi	Fv: Allowable	=	285.00 psi
Load Combination		+D+L	Load Combination		+D+L
Location of maximum on span	=	4.250ft	Location of maximum on span	=	0.000ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.113 in	Ratio =	899 >=360	Span: 1 : L Only
Max Upward Transient Deflection		0 in	Ratio =	0 <360	n/a
Max Downward Total Deflection		0.146 in	Ratio =	696 >=180	Span: 1 : +D+L
Max Upward Total Deflection		0 in	Ratio =	0 <180	n/a

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios								Moment Values			Shear Values									
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	fv	F'v						
D Only	Length = 8.50 ft	1	0.114	0.086	0.90	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
+D+L	Length = 8.50 ft	1	0.456	0.341	1.00	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
+D+0.750L	Length = 8.50 ft	1	0.294	0.220	1.25	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
+0.60D	Length = 8.50 ft	1	0.039	0.029	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L	1	0.1465	4.281		0.0000	0.000



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Suite 105
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Phone: (707) 578-8185

Project Title: Fire Rebuild
Engineer: ELD
Project ID: ARCE 453-03
Project Descr:

Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: G1- Typ Girder

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	2.635	2.635
Overall MINimum	2.040	2.040
D Only	0.595	0.595
+D+L	2.635	2.635
+D+0.750L	2.125	2.125
+0.60D	0.357	0.357
L Only	2.040	2.040



Beam on Elastic Foundation

Project File: SC010222ELD_FireRebuild.ec6

LIC#: KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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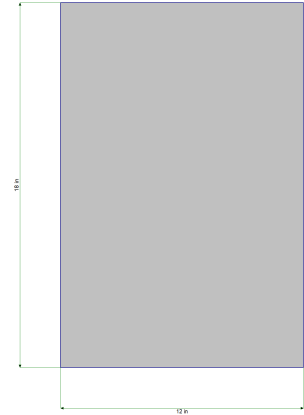
DESCRIPTION: F1- Typ Footing

CODE REFERENCES

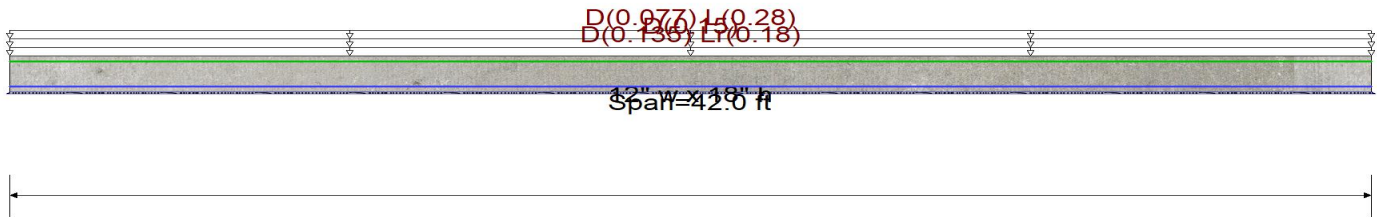
Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

Material Properties

f'_c	=	3.0 ksi	ϕ Phi Values	Flexure :	0.90
$f_r = f'_c^{1/2} \cdot 7.50$	=	410.792 psi		Shear :	0.750
ψ Density	=	150.0 pcf	β_1	=	
λ Lt Wt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi			
Soil Subgrade Modulus	=	150.0 psi / (inch deflection)			
Load Combination	ASCE 7-16				
f_y - Main Rebar	=	60.0 ksi	Fy - Stirrups	=	40.0 ksi
E - Main Rebar	=	29,000.0 ksi	E - Stirrups	=	29,000.0 ksi
			Stirrup Bar Size #	=	# 3
			Number of Resisting Legs Per Stirrup		



Beam is supported on an elastic foundation.



Cross Section & Reinforcing Details

Rectangular Section, Width = 12.0 in, Height = 18.0 in
Span #1 Reinforcing....

1-#4 at 3.0 in from Bottom, from 0.0 to 42.0 ft in this span

1-#4 at 3.0 in from Top, from 0.0 to 42.0 ft in this span

Service loads entered. Load Factors will be applied for calculations.

Applied Loads

Beam self weight calculated and added to loads

Load for Span Number 1

Uniform Load : D = 0.0150, Lr = 0.020 ksf, Tributary Width = 9.0 ft, (Roof)

Uniform Load : D = 0.0150 ksf, Tributary Width = 10.0 ft, (Wall)

Uniform Load : D = 0.0110, L = 0.040 ksf, Tributary Width = 7.0 ft, (Floor)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.002 : 1	Maximum Deflection	
Section used for this span	Typical Section	Max Downward L+Lr+S Deflection	0.000 in
Mu : Applied	-0.02447 k-ft	Max Upward L+Lr+S Deflection	0.000 in
Mn * Phi : Allowable	15.494 k-ft	Max Downward Total Deflection	0.037 in
Load Combination	+1.20D+1.60L	Max Upward Total Deflection	0.023 in
Location of maximum on span	21.247 ft		
Span # where maximum occurs	Span # 1		

Maximum Soil Pressure = **0.798** ksf at 10.73 ft LdComb: +D+0.750L
Allowable Soil Pressure = **1.50** ksf **OK**

Shear Stirrup Requirements

Entire Beam Span Length : , Req'd Vs = , use stirrups spaced at 0.000 in

Maximum Forces & Stresses for Load Combination

Load Combination	Segment Length	Span #	Location (ft) in Span	Bending Stress Results (k-ft)		
				Mu : Max	Phi*Mnx	Stress Ratio
MAXimum Bending Envelope						
Span # 1	1		41.506	-0.00	15.49	0.00
+1.40D						



Beam on Elastic Foundation

Project File: SC010222ELD_FireRebuild.ec6

LIC#: KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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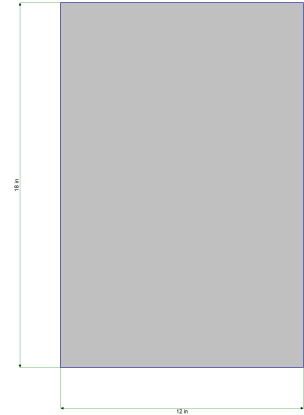
DESCRIPTION: F2- Typ Int Footing

CODE REFERENCES

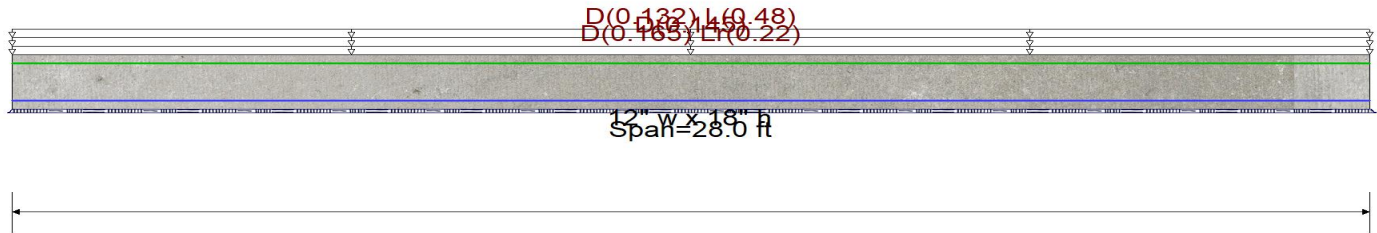
Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

Material Properties

f'_c	=	3.0 ksi	ϕ Phi Values	Flexure :	0.90
$f_r = f'_c^{1/2} \cdot 7.50$	=	410.792 psi		Shear :	0.750
ψ Density	=	150.0 pcf	β_1	=	
λ Lt Wt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi			
Soil Subgrade Modulus	=	250.0 psi / (inch deflection)			
Load Combination	ASCE 7-16				
f_y - Main Rebar	=	60.0 ksi	Fy - Stirrups	=	40.0 ksi
E - Main Rebar	=	29,000.0 ksi	E - Stirrups	=	29,000.0 ksi
			Stirrup Bar Size #	=	# 3
			Number of Resisting Legs Per Stirrup		



Beam is supported on an elastic foundation.



Cross Section & Reinforcing Details

Rectangular Section, Width = 12.0 in, Height = 18.0 in
Span #1 Reinforcing....

1-#4 at 3.0 in from Bottom, from 0.0 to 28.0 ft in this span

1-#4 at 3.0 in from Top, from 0.0 to 28.0 ft in this span

Service loads entered. Load Factors will be applied for calculations.

Applied Loads

Beam self weight calculated and added to loads

Load for Span Number 1

Uniform Load : D = 0.0150, Lr = 0.020 ksf, Tributary Width = 11.0 ft, (Roof)

Uniform Load : D = 0.010 ksf, Tributary Width = 14.50 ft, (Wall)

Uniform Load : D = 0.0110, L = 0.040 ksf, Tributary Width = 12.0 ft, (Floor)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.001 : 1	Maximum Deflection	
Section used for this span	Typical Section	Max Downward L+Lr+S Deflection	0.000 in
Mu : Applied	-0.01388 k-ft	Max Upward L+Lr+S Deflection	0.000 in
Mn * Phi : Allowable	15.494 k-ft	Max Downward Total Deflection	0.032 in
Load Combination	+1.20D+1.60L	Max Upward Total Deflection	0.018 in
Location of maximum on span	14.165 ft		
Span # where maximum occurs	Span # 1		

Maximum Soil Pressure = **1.148** ksf at 12.13 ft LdComb: +D+L
Allowable Soil Pressure = **1.50** ksf **OK**

Shear Stirrup Requirements

Entire Beam Span Length : , Req'd Vs = , use stirrups spaced at 0.000 in

Maximum Forces & Stresses for Load Combinator

Load Combination	Segment Length	Span #	Location (ft) in Span	Bending Stress Results (k-ft)		
				Mu : Max	Phi*Mnx	Stress Ratio
MAXimum Bending Envelope						
Span # 1	1	27.671	-0.00	15.49	0.00	
+1.40D						



General Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC#: KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F3- Typ Pad Footing

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Material Properties

f'c : Concrete 28 day strength	=	3.0 ksi
fy : Rebar Yield	=	60.0 ksi
Ec : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	150.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Soil Design Values

Allowable Soil Bearing	=	1.50 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	No
Soil Passive Resistance (for Sliding)	=	250.0 pcf
Soil/Concrete Friction Coeff.	=	0.30

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00090
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	Yes
Use Pedestal wt for stability, mom & shear	:	No

Increases based on footing depth

Footing base depth below soil surface	=	1.50 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

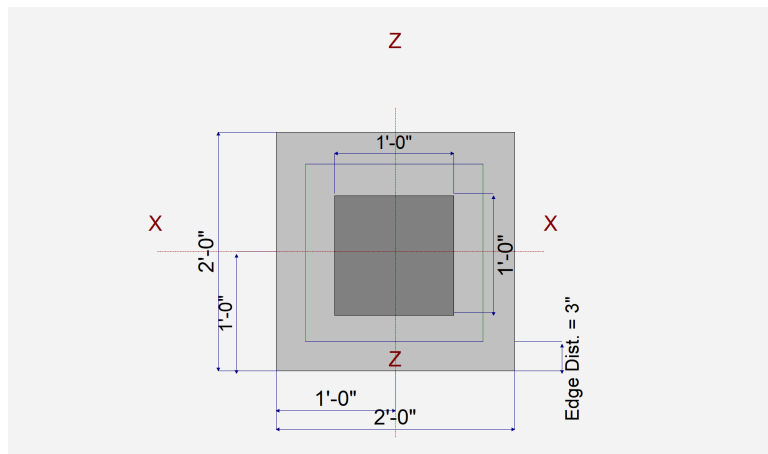
Increases based on footing plan dimension

Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
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Dimensions

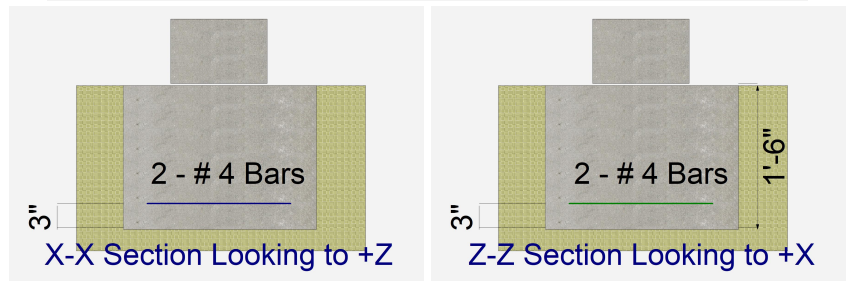
Width parallel to X-X Axis	=	2.0 ft
Length parallel to Z-Z Axis	=	2.0 ft
Footing Thickness	=	18.0 in

Pedestal dimensions...		
px : parallel to X-X Axis	=	12.0 in
pz : parallel to Z-Z Axis	=	12.0 in
Height	=	8.0 in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



Reinforcing

Bars parallel to X-X Axis		
Number of Bars	=	2
Reinforcing Bar Size	=	# 4
Bars parallel to Z-Z Axis		
Number of Bars	=	2
Reinforcing Bar Size	=	# 4
Bandwidth Distribution Check (ACI 15.4.4.2)		
Direction Requiring Closer Separation		
# Bars required within zone	n/a	n/a
# Bars required on each side of zone	n/a	n/a



Applied Loads

	D	Lr	L	S	W	E	H
P : Column Load	=	1.20	2.20				k
OB : Overburden	=						ksf
M-xx	=						k-ft
M-zz	=						k-ft
V-x	=						k
V-z	=						k



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Phone: (707) 578-8185

Project Title: Fire Rebuild
Engineer: ELD
Project ID: ARCE 453-03
Project Descr:

General Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC#: KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F3- Typ Pad Footing

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.7333	Soil Bearing	1.10 ksf	1.50 ksf	+D+L about Z-Z axis
PASS	n/a	Overturing - X-X	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Overturing - Z-Z	0.0 k-ft	0.0 k-ft	No Overturing
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	n/a	Sliding - Z-Z	0.0 k	0.0 k	No Sliding
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.01192	Z Flexure (+X)	0.1588 k-ft/ft	13.324 k-ft/ft	+1.20D+1.60L
PASS	0.01192	Z Flexure (-X)	0.1588 k-ft/ft	13.324 k-ft/ft	+1.20D+1.60L
PASS	0.01192	X Flexure (+Z)	0.1588 k-ft/ft	13.324 k-ft/ft	+1.20D+1.60L
PASS	0.01192	X Flexure (-Z)	0.1588 k-ft/ft	13.324 k-ft/ft	+1.20D+1.60L
PASS	n/a	1-way Shear (+X)	0.0 psi	82.158 psi	n/a
PASS	n/a	1-way Shear (-X)	0.0 psi	82.158 psi	n/a
PASS	n/a	1-way Shear (+Z)	0.0 psi	82.158 psi	n/a
PASS	n/a	1-way Shear (-Z)	0.0 psi	82.158 psi	n/a
PASS	n/a	2-way Punching	0.0 psi	82.158 psi	n/a

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
		Zecc (in)		Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	1.50	n/a	0.0	0.550	0.550	n/a	n/a	0.367
X-X, +D+L	1.50	n/a	0.0	1.10	1.10	n/a	n/a	0.733
Z-Z, D Only	1.50	0.0	n/a	n/a	n/a	0.550	0.550	0.367
Z-Z, +D+L	1.50	0.0	n/a	n/a	n/a	1.10	1.10	0.733

Overturing Stability

Rotation Axis & Load Combination...	Overturing Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturing				
All units k				

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
Footing Has NO Sliding				

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0.05688	+Z	Bottom	0.1944	AsMin	0.20	13.324	OK
X-X, +1.40D	0.05688	-Z	Bottom	0.1944	AsMin	0.20	13.324	OK
X-X, +1.20D+1.60L	0.1588	+Z	Bottom	0.1944	AsMin	0.20	13.324	OK
X-X, +1.20D+1.60L	0.1588	-Z	Bottom	0.1944	AsMin	0.20	13.324	OK
Z-Z, +1.40D	0.05688	-X	Bottom	0.1944	AsMin	0.20	13.324	OK
Z-Z, +1.40D	0.05688	+X	Bottom	0.1944	AsMin	0.20	13.324	OK
Z-Z, +1.20D+1.60L	0.1588	-X	Bottom	0.1944	AsMin	0.20	13.324	OK
Z-Z, +1.20D+1.60L	0.1588	+X	Bottom	0.1944	AsMin	0.20	13.324	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.00 psi	0.00 psi	0.00 psi	0.00 psi	0.00 psi	82.16 psi	0.00	OK
+1.20D+1.60L	0.00 psi	0.00 psi	0.00 psi	0.00 psi	0.00 psi	82.16 psi	0.00	OK

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	0.00 psi	164.32psi	0	OK
+1.20D+1.60L	0.00 psi	164.32psi	0	OK



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Project Title: **Fire Rebuild**
Engineer: **ELD**
Project ID: **ARCE 453-03**
Project Descr:

Beam on Elastic Foundation

Project File: SC010222ELD_FireRebuild.ec6

LIC#: KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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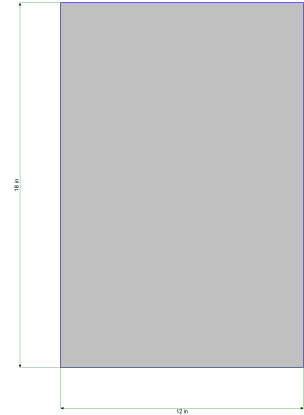
DESCRIPTION: F4- Gridline A

CODE REFERENCES

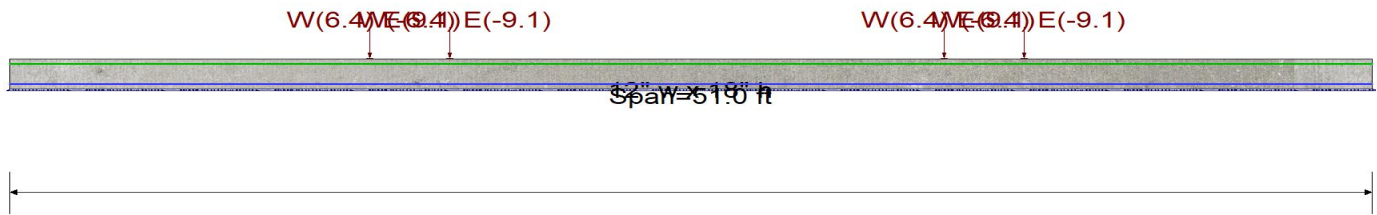
Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

Material Properties

f'_c	=	3.0 ksi	ϕ Phi Values	Flexure :	0.90
$f_r = f'_c^{1/2}$	=	7.50		Shear :	0.750
ψ Density	=	150.0 pcf	β_1	=	
λ Lt Wt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi			
Soil Subgrade Modulus	=	250.0 psi / (inch deflection)			
Load Combination	ASCE 7-16				
f_y - Main Rebar	=	60.0 ksi	Fy - Stirrups	=	40.0 ksi
E - Main Rebar	=	29,000.0 ksi	E - Stirrups	=	29,000.0 ksi
			Stirrup Bar Size #	=	# 3
			Number of Resisting Legs Per Stirrup		



Beam is supported on an elastic foundation.



Cross Section & Reinforcing Details

Rectangular Section, Width = 12.0 in, Height = 18.0 in
Span #1 Reinforcing....

1-#4 at 3.0 in from Bottom, from 0.0 to 51.0 ft in this span

1-#4 at 3.0 in from Top, from 0.0 to 51.0 ft in this span

Service loads entered. Load Factors will be applied for calculations.

Applied Loads

Beam self weight calculated and added to loads

Point Load : W = 6.40, E = 9.10 k @ 13.50 ft
Point Load : W = -6.40, E = -9.10 k @ 16.50 ft
Point Load : W = 6.40, E = 9.10 k @ 35.0 ft
Point Load : W = -6.40, E = -9.10 k @ 38.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.000 : 1	Maximum Deflection	
Section used for this span	Typical Section	Max Downward L+Lr+S Deflection	0.000 in
Mu : Applied	-0.007040 k-ft	Max Upward L+Lr+S Deflection	0.000 in
Mn * Phi : Allowable	15.494 k-ft	Max Downward Total Deflection	0.006 in
Load Combination	+1.40D	Max Upward Total Deflection	0.006 in
Location of maximum on span	32.400 ft		
Span # where maximum occurs	Span # 1		

Maximum Soil Pressure = **0.225** ksf at 9.63 ft LdComb: D Only
Allowable Soil Pressure = **1.995** ksf **OK**

Shear Stirrup Requirements

Entire Beam Span Length : , Req'd Vs = , use stirrups spaced at 0.000 in

Maximum Forces & Stresses for Load Combinator

Load Combination	Segment Length	Span #	Location (ft) in Span	Bending Stress Results (k-ft)		
				Mu : Max	Phi*Mnx	Stress Ratio
MAXimum Bending Envelope						
Span # 1	1		50.400	-0.00	15.49	0.00
+1.40D						



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Project Title: **Fire Rebuild**
 Engineer: **ELD**
 Project ID: **ARCE 453-03**
 Project Descr:

Beam on Elastic Foundation

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

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DESCRIPTION: F4- Gridline A

Load Combination			Bending Stress Results (k-ft)			
Segment Length	Span #	Location (ft) in Span	Mu : Max	Phi*Mnx	Stress Ratio	
Span # 1	1	50.400	-0.00	15.49	0.00	
+1.20D						
Span # 1	1	50.400	-0.00	15.49	0.00	

Overall Maximum Deflections - Unfactored Lo

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
Span 1	1	0.0063	9.633		0.0000	0.000

Detailed Shear Information

Load Combination	Span Number	Distance 'd' (ft) (in)	Vu (k) Actual	Mu (k-ft) Design	d*Vu/Mu	Phi*Vc (k)	Comment	Phi*Vs (k)	Spacing (in) Req'd Suggest
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Project Title: **Fire Rebuild**
Engineer: **ELD**
Project ID: **ARCE 453-03**
Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC#: KW-06016132, Build:20.22.2.9

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DESCRIPTION: F5- Grid D.1 WSWH

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Material Properties

f'c : Concrete 28 day strength	3.0 ksi
fy : Rebar Yield	60.0 ksi
Ec : Concrete Elastic Modulus	3,122.0 ksi
Concrete Density	150.0 pcf
φ : Phi Values	
Flexure :	0.90
Shear :	0.750

Analysis/Design Settings

Calculate footing weight as dead load ?	Yes
Calculate Pedestal weight as dead load ?	No
Min Steel % Bending Reinf (based on 'd')	
Min Allow % Temp Reinf (based on thick)	0.00180
Min. Overturning Safety Factor	1.0: 1
Min. Sliding Safety Factor	1.0: 1

Soil Information

Allowable Soil Bearing	1.995 ksf
Increase Bearing By Footing Weight	No
Soil Passive Sliding Resistance	150.0 pcf
<i>(Uses entry for "Footing base depth below soil surface" for force)</i>	
Coefficient of Soil/Concrete Friction	0.30

Soil Bearing Increase

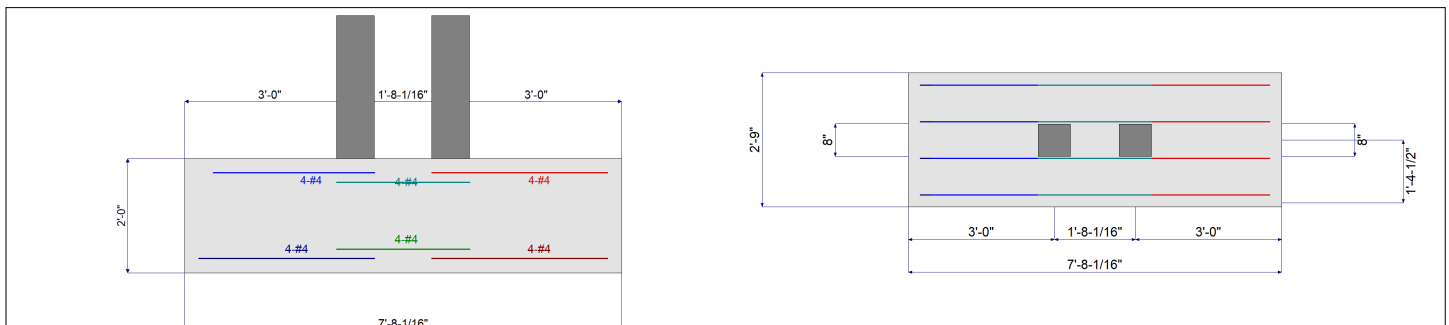
Footing base depth below soil surface	1.50 ft
Increases based on footing Depth	
Allowable pressure increase per foot when base of footing is below	ksf ft
Increases based on footing Width	
Allowable pressure increase per foot when maximum length or width is greater than	ksf ft
Maximum Allowed Bearing Pressure	10.0 ksf
<i>(A value of zero implies no limit)</i>	
Adjusted Allowable Soil Bearing	ksf
<i>(Allowable Soil Bearing adjusted for footing weight and depth & width increases as specified by user.)</i>	

Dimensions & Reinforcing

Distance Left of Column #1 = 3.0 ft	Pedestal dimensions...								
Between Columns = 1.667 ft		Col #1	Col #2	Bars left of Col #1	Count	Size #	As Provided	As Req'd	
Distance Right of Column #2 = 3.0 ft		Sq. Dim. = 8.0	8.0 in	Bottom Bars	4.0	4	0.80	0.7128 in^2	
Total Footing Length = 7.667 ft		Height = 30.0	30.0 in	Top Bars	4.0	4	0.80	0.7128 in^2	
Footing Width = 2.750 ft				Bars Btwn Cols					
Footing Thickness = 24.0 in				Bottom Bars	4.0	4	0.80	0.7128 in^2	
Rebar Center to Concrete Edge @ Top = 3.0 in				Top Bars	4.0	4	0.80	0.7128 in^2	
Rebar Center to Concrete Edge @ Bottom = 3.0 in				Bars Right of Col #2					
				Bottom Bars	4.0	4	0.80	0.7128 in^2	
				Top Bars	4.0	4	0.80	0.7128 in^2	

Applied Loads

Applied @ Left Column	D	Lr	L	S	W	E	H
Axial Load Downward =					6.080	12.30	k
Moment (+CW) =							k-ft
Shear (+X) =					0.40	0.80	k
Applied @ Right Column							
Axial Load Downward =					-6.080	-12.30	k
Moment (+CW) =							k-ft
Shear (+X) =					0.40	0.80	k
Overburden							





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Project Title: Fire Rebuild
Engineer: ELD
Project ID: ARCE 453-03
Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F5- Grid D.1 WSWH

DESIGN SUMMARY

Design OK

Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS 1.507	Overturing	30.137 k-ft	45.419 k-ft	+0.60D+0.70E
PASS 1.431	Sliding	1.120 k	1.603 k	+0.60D+0.70E
PASS 1.441	Uplift	8.610 k	12.405 k	+0.60D+0.70E

Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS 0.3335	Soil Bearing	0.6653 ksf	1.995 ksf	+0.60D+0.70E
PASS 0.2434	1-way Shear - Col #1	19.996 psi	82.158 psi	+0.4924D+E
PASS 0.2434	1-way Shear - Col #2	19.996 psi	82.158 psi	+0.4924D-E
PASS 0.03288	2-way Punching - Col #1	5.403 psi	164.317 psi	+0.4924D+E
PASS 0.03288	2-way Punching - Col #2	5.403 psi	164.317 psi	+0.4924D+E
PASS 0.04964	Flexure - Left of Col #1 - Top	-3.701 k-ft	74.573 k-ft	+1.608D-E
PASS 0.09830	Flexure - Left of Col #1 - Bottom	7.330 k-ft	74.573 k-ft	+0.4924D+E
PASS 0.06488	Flexure - Between Cols - Top	-4.838 k-ft	74.573 k-ft	+1.608D-E
PASS 0.110	Flexure - Between Cols - Bottom	8.199 k-ft	74.573 k-ft	+0.4924D+E
PASS 0.04964	Flexure - Right of Col #2 - Top	-3.701 k-ft	74.573 k-ft	+1.608D+E
PASS 0.09830	Flexure - Right of Col #2 - Bottom	7.330 k-ft	74.573 k-ft	+0.4924D-E

Soil Bearing

Load Combination...	Total Bearing	Eccentricity from Ftg CL	Actual Soil Bearing Stress		Allowable	Actual / Allow Ratio
			@ Left Edge	@ Right Edge		
D Only	6.33 k	0.000 ft	0.30 ksf	0.30 ksf	2.00 ksf	0.150
+D+0.60W	6.33 k	-0.620 ft	0.45 ksf	0.15 ksf	2.00 ksf	0.223
+D-0.60W	6.33 k	0.620 ft	0.15 ksf	0.45 ksf	2.00 ksf	0.223
+0.60D+0.60W	3.80 k	-1.033 ft	0.33 ksf	0.03 ksf	2.00 ksf	0.163
+0.60D-0.60W	3.80 k	1.033 ft	0.03 ksf	0.33 ksf	2.00 ksf	0.163
+D+0.70E	6.33 k	-1.472 ft	0.65 ksf	0.00 ksf	2.00 ksf	0.325
+D-0.70E	6.33 k	1.472 ft	0.00 ksf	0.65 ksf	2.00 ksf	0.325
+D+0.5250E	6.33 k	-1.104 ft	0.56 ksf	0.04 ksf	2.00 ksf	0.280
+D-0.5250E	6.33 k	1.104 ft	0.04 ksf	0.56 ksf	2.00 ksf	0.280
+0.60D+0.70E	3.80 k	-2.454 ft	0.67 ksf	0.00 ksf	2.00 ksf	0.334
+0.60D-0.70E	3.80 k	2.454 ft	0.00 ksf	0.67 ksf	2.00 ksf	0.334

Overturing Stability

Load Combination...	Moments about Left Edge k-ft			Moments about Right Edge k-ft		
	Overturing	Resisting	Ratio	Overturing	Resisting	Ratio
+D+0.60W	17.03	37.35	2.194	13.10	41.27	3.150
+0.60D+0.60W	17.03	27.65	1.624	13.10	31.57	2.409
+D+0.70E	30.14	55.12	1.829	23.15	64.43	2.783
+D+0.5250E	22.60	47.40	2.097	17.36	54.39	3.132
+0.60D+0.70E	30.14	45.42	1.507	23.15	54.73	2.364

Sliding Stability

Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio
+D+0.60W	0.48 k	2.36 k	4.92
+0.60D+0.60W	0.48 k	1.60 k	3.339
+D+0.70E	1.12 k	2.36 k	2.109
+D+0.5250E	0.84 k	2.36 k	2.811
+0.60D+0.70E	1.12 k	1.60 k	1.431

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.60D+0.70E	0.000	0.000	0	0.000	0	0.000	0.000	0.000
+0.4924D+E	0.063	0.019	Bottom	0.713	Min Temp %	0.800	74.573	0.001
+0.4924D+E	0.126	0.038	Bottom	0.713	Min Temp %	0.800	74.573	0.002
+0.4924D+E	0.189	0.058	Bottom	0.713	Min Temp %	0.800	74.573	0.003
+0.4924D+E	0.251	0.077	Bottom	0.713	Min Temp %	0.800	74.573	0.003
+0.4924D+E	0.314	0.096	Bottom	0.713	Min Temp %	0.800	74.573	0.004



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Project Title: **Fire Rebuild**
Engineer: **ELD**
Project ID: **ARCE 453-03**
Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F5- Grid D.1 WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D+E	0.376	0.115	Bottom	0.713	Min Temp %	0.800	74.573	0.005
+0.4924D+E	0.438	0.134	Bottom	0.713	Min Temp %	0.800	74.573	0.006
+0.4924D+E	0.500	0.153	Bottom	0.713	Min Temp %	0.800	74.573	0.007
+0.4924D+E	0.562	0.173	Bottom	0.713	Min Temp %	0.800	74.573	0.008
+0.4924D+E	0.624	0.192	Bottom	0.713	Min Temp %	0.800	74.573	0.008
+0.4924D+E	0.685	0.211	Bottom	0.713	Min Temp %	0.800	74.573	0.009
+0.4924D+E	0.747	0.230	Bottom	0.713	Min Temp %	0.800	74.573	0.010
+0.4924D+E	0.808	0.249	Bottom	0.713	Min Temp %	0.800	74.573	0.011
+0.4924D+E	0.869	0.268	Bottom	0.713	Min Temp %	0.800	74.573	0.012
+0.4924D+E	0.930	0.288	Bottom	0.713	Min Temp %	0.800	74.573	0.012
+0.4924D+E	0.991	0.307	Bottom	0.713	Min Temp %	0.800	74.573	0.013
+0.4924D+E	1.051	0.326	Bottom	0.713	Min Temp %	0.800	74.573	0.014
+0.4924D+E	1.112	0.345	Bottom	0.713	Min Temp %	0.800	74.573	0.015
+0.4924D+E	1.172	0.364	Bottom	0.713	Min Temp %	0.800	74.573	0.016
+0.4924D+E	1.232	0.383	Bottom	0.713	Min Temp %	0.800	74.573	0.017
+0.4924D+E	1.292	0.403	Bottom	0.713	Min Temp %	0.800	74.573	0.017
+0.4924D+E	1.352	0.422	Bottom	0.713	Min Temp %	0.800	74.573	0.018
+0.4924D+E	1.412	0.441	Bottom	0.713	Min Temp %	0.800	74.573	0.019
+0.4924D+E	1.472	0.460	Bottom	0.713	Min Temp %	0.800	74.573	0.020
+0.4924D+E	1.531	0.479	Bottom	0.713	Min Temp %	0.800	74.573	0.021
+0.4924D+E	1.590	0.498	Bottom	0.713	Min Temp %	0.800	74.573	0.021
+0.4924D+E	1.650	0.518	Bottom	0.713	Min Temp %	0.800	74.573	0.022
+0.4924D+E	1.709	0.537	Bottom	0.713	Min Temp %	0.800	74.573	0.023
+0.4924D+E	1.767	0.556	Bottom	0.713	Min Temp %	0.800	74.573	0.024
+0.4924D+E	1.826	0.575	Bottom	0.713	Min Temp %	0.800	74.573	0.024
+0.4924D+E	1.885	0.594	Bottom	0.713	Min Temp %	0.800	74.573	0.025
+0.4924D+E	1.943	0.613	Bottom	0.713	Min Temp %	0.800	74.573	0.026
+0.4924D+E	2.001	0.633	Bottom	0.713	Min Temp %	0.800	74.573	0.027
+0.4924D+E	2.059	0.652	Bottom	0.713	Min Temp %	0.800	74.573	0.028
+0.4924D+E	2.117	0.671	Bottom	0.713	Min Temp %	0.800	74.573	0.028
+0.4924D+E	2.175	0.690	Bottom	0.713	Min Temp %	0.800	74.573	0.029
+0.4924D+E	2.233	0.709	Bottom	0.713	Min Temp %	0.800	74.573	0.030
+0.4924D+E	2.290	0.728	Bottom	0.713	Min Temp %	0.800	74.573	0.031
+0.4924D+E	2.348	0.748	Bottom	0.713	Min Temp %	0.800	74.573	0.031
+0.4924D+E	2.405	0.767	Bottom	0.713	Min Temp %	0.800	74.573	0.032
+0.4924D+E	2.462	0.786	Bottom	0.713	Min Temp %	0.800	74.573	0.033
+0.4924D+E	2.519	0.805	Bottom	0.713	Min Temp %	0.800	74.573	0.034
+0.4924D+E	2.576	0.824	Bottom	0.713	Min Temp %	0.800	74.573	0.035
+0.4924D+E	2.632	0.843	Bottom	0.713	Min Temp %	0.800	74.573	0.035
+0.4924D+E	2.689	0.863	Bottom	0.713	Min Temp %	0.800	74.573	0.036
+0.4924D+E	2.745	0.882	Bottom	0.713	Min Temp %	0.800	74.573	0.037
+0.4924D+E	2.801	0.901	Bottom	0.713	Min Temp %	0.800	74.573	0.038
+0.4924D+E	2.857	0.920	Bottom	0.713	Min Temp %	0.800	74.573	0.038
+0.4924D+E	2.913	0.939	Bottom	0.713	Min Temp %	0.800	74.573	0.039
+0.4924D+E	2.969	0.958	Bottom	0.713	Min Temp %	0.800	74.573	0.040
+0.4924D+E	3.024	0.978	Bottom	0.713	Min Temp %	0.800	74.573	0.041
+0.4924D+E	3.080	0.997	Bottom	0.713	Min Temp %	0.800	74.573	0.041
+0.4924D+E	3.135	1.016	Bottom	0.713	Min Temp %	0.800	74.573	0.042
+0.4924D+E	3.190	1.035	Bottom	0.713	Min Temp %	0.800	74.573	0.043
+0.4924D+E	3.245	1.054	Bottom	0.713	Min Temp %	0.800	74.573	0.044
+0.4924D+E	3.300	1.073	Bottom	0.713	Min Temp %	0.800	74.573	0.044
+0.4924D+E	3.355	1.093	Bottom	0.713	Min Temp %	0.800	74.573	0.045
+0.4924D+E	3.409	1.112	Bottom	0.713	Min Temp %	0.800	74.573	0.046
+0.4924D+E	3.464	1.131	Bottom	0.713	Min Temp %	0.800	74.573	0.046
+0.4924D+E	3.518	1.150	Bottom	0.713	Min Temp %	0.800	74.573	0.047
+0.4924D+E	3.572	1.169	Bottom	0.713	Min Temp %	0.800	74.573	0.048
+0.4924D+E	3.626	1.188	Bottom	0.713	Min Temp %	0.800	74.573	0.049
+0.4924D+E	3.680	1.208	Bottom	0.713	Min Temp %	0.800	74.573	0.049
+0.4924D+E	3.733	1.227	Bottom	0.713	Min Temp %	0.800	74.573	0.050
+0.4924D+E	3.787	1.246	Bottom	0.713	Min Temp %	0.800	74.573	0.051
+0.4924D+E	3.840	1.265	Bottom	0.713	Min Temp %	0.800	74.573	0.051
+0.4924D+E	3.893	1.284	Bottom	0.713	Min Temp %	0.800	74.573	0.052
+0.4924D+E	3.946	1.303	Bottom	0.713	Min Temp %	0.800	74.573	0.053



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Project Title: **Fire Rebuild**
 Engineer: **ELD**
 Project ID: **ARCE 453-03**
 Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F5- Grid D.1 WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D+E	3.999	1.323	Bottom	0.713	Min Temp %	0.800	74.573	0.054
+0.4924D+E	4.052	1.342	Bottom	0.713	Min Temp %	0.800	74.573	0.054
+0.4924D+E	4.105	1.361	Bottom	0.713	Min Temp %	0.800	74.573	0.055
+0.4924D+E	4.157	1.380	Bottom	0.713	Min Temp %	0.800	74.573	0.056
+0.4924D+E	4.209	1.399	Bottom	0.713	Min Temp %	0.800	74.573	0.056
+0.4924D+E	4.261	1.418	Bottom	0.713	Min Temp %	0.800	74.573	0.057
+0.4924D+E	4.313	1.438	Bottom	0.713	Min Temp %	0.800	74.573	0.058
+0.4924D+E	4.365	1.457	Bottom	0.713	Min Temp %	0.800	74.573	0.059
+0.4924D+E	4.417	1.476	Bottom	0.713	Min Temp %	0.800	74.573	0.059
+0.4924D+E	4.469	1.495	Bottom	0.713	Min Temp %	0.800	74.573	0.060
+0.4924D+E	4.520	1.514	Bottom	0.713	Min Temp %	0.800	74.573	0.061
+0.4924D+E	4.571	1.533	Bottom	0.713	Min Temp %	0.800	74.573	0.061
+0.4924D+E	4.622	1.553	Bottom	0.713	Min Temp %	0.800	74.573	0.062
+0.4924D+E	4.673	1.572	Bottom	0.713	Min Temp %	0.800	74.573	0.063
+0.4924D+E	4.724	1.591	Bottom	0.713	Min Temp %	0.800	74.573	0.063
+0.4924D+E	4.775	1.610	Bottom	0.713	Min Temp %	0.800	74.573	0.064
+0.4924D+E	4.825	1.629	Bottom	0.713	Min Temp %	0.800	74.573	0.065
+0.4924D+E	4.876	1.648	Bottom	0.713	Min Temp %	0.800	74.573	0.065
+0.4924D+E	4.926	1.668	Bottom	0.713	Min Temp %	0.800	74.573	0.066
+0.4924D+E	4.976	1.687	Bottom	0.713	Min Temp %	0.800	74.573	0.067
+0.4924D+E	5.026	1.706	Bottom	0.713	Min Temp %	0.800	74.573	0.067
+0.4924D+E	5.075	1.725	Bottom	0.713	Min Temp %	0.800	74.573	0.068
+0.4924D+E	5.125	1.744	Bottom	0.713	Min Temp %	0.800	74.573	0.069
+0.4924D+E	5.174	1.763	Bottom	0.713	Min Temp %	0.800	74.573	0.069
+0.4924D+E	5.224	1.783	Bottom	0.713	Min Temp %	0.800	74.573	0.070
+0.4924D+E	5.273	1.802	Bottom	0.713	Min Temp %	0.800	74.573	0.071
+0.4924D+E	5.322	1.821	Bottom	0.713	Min Temp %	0.800	74.573	0.071
+0.4924D+E	5.371	1.840	Bottom	0.713	Min Temp %	0.800	74.573	0.072
+0.4924D+E	5.419	1.859	Bottom	0.713	Min Temp %	0.800	74.573	0.073
+0.4924D+E	5.468	1.878	Bottom	0.713	Min Temp %	0.800	74.573	0.073
+0.4924D+E	5.516	1.898	Bottom	0.713	Min Temp %	0.800	74.573	0.074
+0.4924D+E	5.565	1.917	Bottom	0.713	Min Temp %	0.800	74.573	0.075
+0.4924D+E	5.613	1.936	Bottom	0.713	Min Temp %	0.800	74.573	0.075
+0.4924D+E	5.661	1.955	Bottom	0.713	Min Temp %	0.800	74.573	0.076
+0.4924D+E	5.709	1.974	Bottom	0.713	Min Temp %	0.800	74.573	0.077
+0.4924D+E	5.756	1.993	Bottom	0.713	Min Temp %	0.800	74.573	0.077
+0.4924D+E	5.804	2.013	Bottom	0.713	Min Temp %	0.800	74.573	0.078
+0.4924D+E	5.851	2.032	Bottom	0.713	Min Temp %	0.800	74.573	0.078
+0.4924D+E	5.898	2.051	Bottom	0.713	Min Temp %	0.800	74.573	0.079
+0.4924D+E	5.945	2.070	Bottom	0.713	Min Temp %	0.800	74.573	0.080
+0.4924D+E	5.992	2.089	Bottom	0.713	Min Temp %	0.800	74.573	0.080
+0.4924D+E	6.039	2.108	Bottom	0.713	Min Temp %	0.800	74.573	0.081
+0.4924D+E	6.086	2.128	Bottom	0.713	Min Temp %	0.800	74.573	0.082
+0.4924D+E	6.132	2.147	Bottom	0.713	Min Temp %	0.800	74.573	0.082
+0.4924D+E	6.179	2.166	Bottom	0.713	Min Temp %	0.800	74.573	0.083
+0.4924D+E	6.225	2.185	Bottom	0.713	Min Temp %	0.800	74.573	0.083
+0.4924D+E	6.271	2.204	Bottom	0.713	Min Temp %	0.800	74.573	0.084
+0.4924D+E	6.317	2.223	Bottom	0.713	Min Temp %	0.800	74.573	0.085
+0.4924D+E	6.362	2.243	Bottom	0.713	Min Temp %	0.800	74.573	0.085
+0.4924D+E	6.408	2.262	Bottom	0.713	Min Temp %	0.800	74.573	0.086
+0.4924D+E	6.453	2.281	Bottom	0.713	Min Temp %	0.800	74.573	0.087
+0.4924D+E	6.499	2.300	Bottom	0.713	Min Temp %	0.800	74.573	0.087
+0.4924D+E	6.544	2.319	Bottom	0.713	Min Temp %	0.800	74.573	0.088
+0.4924D+E	6.589	2.338	Bottom	0.713	Min Temp %	0.800	74.573	0.088
+0.4924D+E	6.633	2.358	Bottom	0.713	Min Temp %	0.800	74.573	0.089
+0.4924D+E	6.678	2.377	Bottom	0.713	Min Temp %	0.800	74.573	0.090
+0.4924D+E	6.723	2.396	Bottom	0.713	Min Temp %	0.800	74.573	0.090
+0.4924D+E	6.767	2.415	Bottom	0.713	Min Temp %	0.800	74.573	0.091
+0.4924D+E	6.811	2.434	Bottom	0.713	Min Temp %	0.800	74.573	0.091
+0.4924D+E	6.855	2.453	Bottom	0.713	Min Temp %	0.800	74.573	0.092
+0.4924D+E	6.899	2.473	Bottom	0.713	Min Temp %	0.800	74.573	0.093
+0.4924D+E	6.943	2.492	Bottom	0.713	Min Temp %	0.800	74.573	0.093
+0.4924D+E	6.987	2.511	Bottom	0.713	Min Temp %	0.800	74.573	0.094



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Project Title: **Fire Rebuild**
Engineer: **ELD**
Project ID: **ARCE 453-03**
Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F5- Grid D.1 WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D+E	7.030	2.530	Bottom	0.713	Min Temp %	0.800	74.573	0.094
+0.4924D+E	7.074	2.549	Bottom	0.713	Min Temp %	0.800	74.573	0.095
+0.4924D+E	7.117	2.568	Bottom	0.713	Min Temp %	0.800	74.573	0.095
+0.4924D+E	7.160	2.588	Bottom	0.713	Min Temp %	0.800	74.573	0.096
+0.4924D+E	7.203	2.607	Bottom	0.713	Min Temp %	0.800	74.573	0.097
+0.4924D+E	7.245	2.626	Bottom	0.713	Min Temp %	0.800	74.573	0.097
+0.4924D+E	7.288	2.645	Bottom	0.713	Min Temp %	0.800	74.573	0.098
+0.4924D+E	7.330	2.664	Bottom	0.713	Min Temp %	0.800	74.573	0.098
+0.4924D+E	7.370	2.683	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D+E	7.403	2.703	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D+E	7.429	2.722	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D+E	7.448	2.741	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D+E	7.460	2.760	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D+E	7.465	2.779	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D+E	7.463	2.798	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D+E	7.454	2.818	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D+E	7.439	2.837	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D+E	7.416	2.856	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D+E	7.387	2.875	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D+E	7.350	2.894	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D+E	7.307	2.913	Bottom	0.713	Min Temp %	0.800	74.573	0.098
+0.4924D+E	7.256	2.933	Bottom	0.713	Min Temp %	0.800	74.573	0.097
+0.4924D+E	7.199	2.952	Bottom	0.713	Min Temp %	0.800	74.573	0.097
+0.4924D+E	7.135	2.971	Bottom	0.713	Min Temp %	0.800	74.573	0.096
+0.4924D+E	7.064	2.990	Bottom	0.713	Min Temp %	0.800	74.573	0.095
+0.4924D+E	10.586	3.009	Bottom	0.713	Min Temp %	0.800	74.573	0.142
+0.4924D+E	10.501	3.028	Bottom	0.713	Min Temp %	0.800	74.573	0.141
+0.4924D+E	10.409	3.048	Bottom	0.713	Min Temp %	0.800	74.573	0.140
+0.4924D+E	10.310	3.067	Bottom	0.713	Min Temp %	0.800	74.573	0.138
+0.4924D+E	10.204	3.086	Bottom	0.713	Min Temp %	0.800	74.573	0.137
+0.4924D+E	10.092	3.105	Bottom	0.713	Min Temp %	0.800	74.573	0.135
+0.4924D+E	9.972	3.124	Bottom	0.713	Min Temp %	0.800	74.573	0.134
+0.4924D+E	9.846	3.143	Bottom	0.713	Min Temp %	0.800	74.573	0.132
+0.4924D+E	9.712	3.163	Bottom	0.713	Min Temp %	0.800	74.573	0.130
+0.4924D+E	9.572	3.182	Bottom	0.713	Min Temp %	0.800	74.573	0.128
+0.4924D+E	9.425	3.201	Bottom	0.713	Min Temp %	0.800	74.573	0.126
+0.4924D+E	9.270	3.220	Bottom	0.713	Min Temp %	0.800	74.573	0.124
+0.4924D+E	9.109	3.239	Bottom	0.713	Min Temp %	0.800	74.573	0.122
+0.4924D+E	8.941	3.258	Bottom	0.713	Min Temp %	0.800	74.573	0.120
+0.4924D+E	8.766	3.278	Bottom	0.713	Min Temp %	0.800	74.573	0.118
+0.4924D+E	8.584	3.297	Bottom	0.713	Min Temp %	0.800	74.573	0.115
+0.4924D+E	8.395	3.316	Bottom	0.713	Min Temp %	0.800	74.573	0.113
+0.4924D+E	8.199	3.335	Bottom	0.713	Min Temp %	0.800	74.573	0.110
+0.4924D+E	8.001	3.354	Bottom	0.713	Min Temp %	0.800	74.573	0.107
+0.4924D+E	7.802	3.373	Bottom	0.713	Min Temp %	0.800	74.573	0.105
+0.4924D+E	7.603	3.393	Bottom	0.713	Min Temp %	0.800	74.573	0.102
+0.4924D+E	7.404	3.412	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D+E	7.205	3.431	Bottom	0.713	Min Temp %	0.800	74.573	0.097
+0.4924D+E	7.005	3.450	Bottom	0.713	Min Temp %	0.800	74.573	0.094
+0.4924D+E	6.805	3.469	Bottom	0.713	Min Temp %	0.800	74.573	0.091
+0.4924D+E	6.606	3.488	Bottom	0.713	Min Temp %	0.800	74.573	0.089
+0.4924D+E	6.406	3.508	Bottom	0.713	Min Temp %	0.800	74.573	0.086
+0.4924D+E	6.206	3.527	Bottom	0.713	Min Temp %	0.800	74.573	0.083
+0.4924D+E	6.006	3.546	Bottom	0.713	Min Temp %	0.800	74.573	0.081
+0.4924D+E	5.805	3.565	Bottom	0.713	Min Temp %	0.800	74.573	0.078
+0.4924D+E	5.605	3.584	Bottom	0.713	Min Temp %	0.800	74.573	0.075
+0.4924D+E	5.404	3.603	Bottom	0.713	Min Temp %	0.800	74.573	0.072
+0.4924D+E	5.203	3.623	Bottom	0.713	Min Temp %	0.800	74.573	0.070
+0.4924D+E	5.002	3.642	Bottom	0.713	Min Temp %	0.800	74.573	0.067
+0.4924D+E	4.801	3.661	Bottom	0.713	Min Temp %	0.800	74.573	0.064
+0.4924D+E	4.600	3.680	Bottom	0.713	Min Temp %	0.800	74.573	0.062
+0.4924D+E	4.399	3.699	Bottom	0.713	Min Temp %	0.800	74.573	0.059
+0.4924D+E	4.197	3.718	Bottom	0.713	Min Temp %	0.800	74.573	0.056



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 Engineer: **ELD**
 Project ID: **ARCE 453-03**
 Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F5- Grid D.1 WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D+E	3.996	3.738	Bottom	0.713	Min Temp %	0.800	74.573	0.054
+0.4924D+E	3.794	3.757	Bottom	0.713	Min Temp %	0.800	74.573	0.051
+0.4924D+E	3.592	3.776	Bottom	0.713	Min Temp %	0.800	74.573	0.048
+0.4924D+E	3.390	3.795	Bottom	0.713	Min Temp %	0.800	74.573	0.045
+0.4924D+E	3.187	3.814	Bottom	0.713	Min Temp %	0.800	74.573	0.043
+0.4924D+E	2.985	3.834	Bottom	0.713	Min Temp %	0.800	74.573	0.040
+0.4924D-E	3.187	3.853	Bottom	0.713	Min Temp %	0.800	74.573	0.043
+0.4924D-E	3.390	3.872	Bottom	0.713	Min Temp %	0.800	74.573	0.045
+0.4924D-E	3.592	3.891	Bottom	0.713	Min Temp %	0.800	74.573	0.048
+0.4924D-E	3.794	3.910	Bottom	0.713	Min Temp %	0.800	74.573	0.051
+0.4924D-E	3.996	3.929	Bottom	0.713	Min Temp %	0.800	74.573	0.054
+0.4924D-E	4.197	3.949	Bottom	0.713	Min Temp %	0.800	74.573	0.056
+0.4924D-E	4.399	3.968	Bottom	0.713	Min Temp %	0.800	74.573	0.059
+0.4924D-E	4.600	3.987	Bottom	0.713	Min Temp %	0.800	74.573	0.062
+0.4924D-E	4.801	4.006	Bottom	0.713	Min Temp %	0.800	74.573	0.064
+0.4924D-E	5.002	4.025	Bottom	0.713	Min Temp %	0.800	74.573	0.067
+0.4924D-E	5.203	4.044	Bottom	0.713	Min Temp %	0.800	74.573	0.070
+0.4924D-E	5.404	4.064	Bottom	0.713	Min Temp %	0.800	74.573	0.072
+0.4924D-E	5.605	4.083	Bottom	0.713	Min Temp %	0.800	74.573	0.075
+0.4924D-E	5.805	4.102	Bottom	0.713	Min Temp %	0.800	74.573	0.078
+0.4924D-E	6.006	4.121	Bottom	0.713	Min Temp %	0.800	74.573	0.081
+0.4924D-E	6.206	4.140	Bottom	0.713	Min Temp %	0.800	74.573	0.083
+0.4924D-E	6.406	4.159	Bottom	0.713	Min Temp %	0.800	74.573	0.086
+0.4924D-E	6.606	4.179	Bottom	0.713	Min Temp %	0.800	74.573	0.089
+0.4924D-E	6.805	4.198	Bottom	0.713	Min Temp %	0.800	74.573	0.091
+0.4924D-E	7.005	4.217	Bottom	0.713	Min Temp %	0.800	74.573	0.094
+0.4924D-E	7.205	4.236	Bottom	0.713	Min Temp %	0.800	74.573	0.097
+0.4924D-E	7.404	4.255	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D-E	7.603	4.274	Bottom	0.713	Min Temp %	0.800	74.573	0.102
+0.4924D-E	7.802	4.294	Bottom	0.713	Min Temp %	0.800	74.573	0.105
+0.4924D-E	8.001	4.313	Bottom	0.713	Min Temp %	0.800	74.573	0.107
+0.4924D-E	8.199	4.332	Bottom	0.713	Min Temp %	0.800	74.573	0.110
+0.4924D-E	8.395	4.351	Bottom	0.713	Min Temp %	0.800	74.573	0.113
+0.4924D-E	8.584	4.370	Bottom	0.713	Min Temp %	0.800	74.573	0.115
+0.4924D-E	8.766	4.389	Bottom	0.713	Min Temp %	0.800	74.573	0.118
+0.4924D-E	8.941	4.409	Bottom	0.713	Min Temp %	0.800	74.573	0.120
+0.4924D-E	9.109	4.428	Bottom	0.713	Min Temp %	0.800	74.573	0.122
+0.4924D-E	9.270	4.447	Bottom	0.713	Min Temp %	0.800	74.573	0.124
+0.4924D-E	9.425	4.466	Bottom	0.713	Min Temp %	0.800	74.573	0.126
+0.4924D-E	9.572	4.485	Bottom	0.713	Min Temp %	0.800	74.573	0.128
+0.4924D-E	9.712	4.504	Bottom	0.713	Min Temp %	0.800	74.573	0.130
+0.4924D-E	9.846	4.524	Bottom	0.713	Min Temp %	0.800	74.573	0.132
+0.4924D-E	9.972	4.543	Bottom	0.713	Min Temp %	0.800	74.573	0.134
+0.4924D-E	10.092	4.562	Bottom	0.713	Min Temp %	0.800	74.573	0.135
+0.4924D-E	10.204	4.581	Bottom	0.713	Min Temp %	0.800	74.573	0.137
+0.4924D-E	10.310	4.600	Bottom	0.713	Min Temp %	0.800	74.573	0.138
+0.4924D-E	10.409	4.619	Bottom	0.713	Min Temp %	0.800	74.573	0.140
+0.4924D-E	10.501	4.639	Bottom	0.713	Min Temp %	0.800	74.573	0.141
+0.4924D-E	10.586	4.658	Bottom	0.713	Min Temp %	0.800	74.573	0.142
+0.4924D-E	7.064	4.677	Bottom	0.713	Min Temp %	0.800	74.573	0.095
+0.4924D-E	7.135	4.696	Bottom	0.713	Min Temp %	0.800	74.573	0.096
+0.4924D-E	7.199	4.715	Bottom	0.713	Min Temp %	0.800	74.573	0.097
+0.4924D-E	7.256	4.734	Bottom	0.713	Min Temp %	0.800	74.573	0.097
+0.4924D-E	7.307	4.754	Bottom	0.713	Min Temp %	0.800	74.573	0.098
+0.4924D-E	7.350	4.773	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D-E	7.387	4.792	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D-E	7.416	4.811	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D-E	7.439	4.830	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D-E	7.454	4.849	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D-E	7.463	4.869	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D-E	7.465	4.888	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D-E	7.460	4.907	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D-E	7.448	4.926	Bottom	0.713	Min Temp %	0.800	74.573	0.100



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DESCRIPTION: F5- Grid D.1 WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D-E	7.429	4.945	Bottom	0.713	Min Temp %	0.800	74.573	0.100
+0.4924D-E	7.403	4.964	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D-E	7.370	4.984	Bottom	0.713	Min Temp %	0.800	74.573	0.099
+0.4924D-E	7.330	5.003	Bottom	0.713	Min Temp %	0.800	74.573	0.098
+0.4924D-E	7.288	5.022	Bottom	0.713	Min Temp %	0.800	74.573	0.098
+0.4924D-E	7.245	5.041	Bottom	0.713	Min Temp %	0.800	74.573	0.097
+0.4924D-E	7.203	5.060	Bottom	0.713	Min Temp %	0.800	74.573	0.097
+0.4924D-E	7.160	5.079	Bottom	0.713	Min Temp %	0.800	74.573	0.096
+0.4924D-E	7.117	5.099	Bottom	0.713	Min Temp %	0.800	74.573	0.095
+0.4924D-E	7.074	5.118	Bottom	0.713	Min Temp %	0.800	74.573	0.095
+0.4924D-E	7.030	5.137	Bottom	0.713	Min Temp %	0.800	74.573	0.094
+0.4924D-E	6.987	5.156	Bottom	0.713	Min Temp %	0.800	74.573	0.094
+0.4924D-E	6.943	5.175	Bottom	0.713	Min Temp %	0.800	74.573	0.093
+0.4924D-E	6.899	5.194	Bottom	0.713	Min Temp %	0.800	74.573	0.093
+0.4924D-E	6.855	5.214	Bottom	0.713	Min Temp %	0.800	74.573	0.092
+0.4924D-E	6.811	5.233	Bottom	0.713	Min Temp %	0.800	74.573	0.091
+0.4924D-E	6.767	5.252	Bottom	0.713	Min Temp %	0.800	74.573	0.091
+0.4924D-E	6.723	5.271	Bottom	0.713	Min Temp %	0.800	74.573	0.090
+0.4924D-E	6.678	5.290	Bottom	0.713	Min Temp %	0.800	74.573	0.090
+0.4924D-E	6.633	5.309	Bottom	0.713	Min Temp %	0.800	74.573	0.089
+0.4924D-E	6.589	5.329	Bottom	0.713	Min Temp %	0.800	74.573	0.088
+0.4924D-E	6.544	5.348	Bottom	0.713	Min Temp %	0.800	74.573	0.088
+0.4924D-E	6.499	5.367	Bottom	0.713	Min Temp %	0.800	74.573	0.087
+0.4924D-E	6.453	5.386	Bottom	0.713	Min Temp %	0.800	74.573	0.087
+0.4924D-E	6.408	5.405	Bottom	0.713	Min Temp %	0.800	74.573	0.086
+0.4924D-E	6.362	5.424	Bottom	0.713	Min Temp %	0.800	74.573	0.085
+0.4924D-E	6.317	5.444	Bottom	0.713	Min Temp %	0.800	74.573	0.085
+0.4924D-E	6.271	5.463	Bottom	0.713	Min Temp %	0.800	74.573	0.084
+0.4924D-E	6.225	5.482	Bottom	0.713	Min Temp %	0.800	74.573	0.083
+0.4924D-E	6.179	5.501	Bottom	0.713	Min Temp %	0.800	74.573	0.083
+0.4924D-E	6.132	5.520	Bottom	0.713	Min Temp %	0.800	74.573	0.082
+0.4924D-E	6.086	5.539	Bottom	0.713	Min Temp %	0.800	74.573	0.082
+0.4924D-E	6.039	5.559	Bottom	0.713	Min Temp %	0.800	74.573	0.081
+0.4924D-E	5.992	5.578	Bottom	0.713	Min Temp %	0.800	74.573	0.080
+0.4924D-E	5.945	5.597	Bottom	0.713	Min Temp %	0.800	74.573	0.080
+0.4924D-E	5.898	5.616	Bottom	0.713	Min Temp %	0.800	74.573	0.079
+0.4924D-E	5.851	5.635	Bottom	0.713	Min Temp %	0.800	74.573	0.078
+0.4924D-E	5.804	5.654	Bottom	0.713	Min Temp %	0.800	74.573	0.078
+0.4924D-E	5.756	5.674	Bottom	0.713	Min Temp %	0.800	74.573	0.077
+0.4924D-E	5.709	5.693	Bottom	0.713	Min Temp %	0.800	74.573	0.077
+0.4924D-E	5.661	5.712	Bottom	0.713	Min Temp %	0.800	74.573	0.076
+0.4924D-E	5.613	5.731	Bottom	0.713	Min Temp %	0.800	74.573	0.075
+0.4924D-E	5.565	5.750	Bottom	0.713	Min Temp %	0.800	74.573	0.075
+0.4924D-E	5.516	5.769	Bottom	0.713	Min Temp %	0.800	74.573	0.074
+0.4924D-E	5.468	5.789	Bottom	0.713	Min Temp %	0.800	74.573	0.073
+0.4924D-E	5.419	5.808	Bottom	0.713	Min Temp %	0.800	74.573	0.073
+0.4924D-E	5.371	5.827	Bottom	0.713	Min Temp %	0.800	74.573	0.072
+0.4924D-E	5.322	5.846	Bottom	0.713	Min Temp %	0.800	74.573	0.071
+0.4924D-E	5.273	5.865	Bottom	0.713	Min Temp %	0.800	74.573	0.071
+0.4924D-E	5.224	5.884	Bottom	0.713	Min Temp %	0.800	74.573	0.070
+0.4924D-E	5.174	5.904	Bottom	0.713	Min Temp %	0.800	74.573	0.069
+0.4924D-E	5.125	5.923	Bottom	0.713	Min Temp %	0.800	74.573	0.069
+0.4924D-E	5.075	5.942	Bottom	0.713	Min Temp %	0.800	74.573	0.068
+0.4924D-E	5.026	5.961	Bottom	0.713	Min Temp %	0.800	74.573	0.067
+0.4924D-E	4.976	5.980	Bottom	0.713	Min Temp %	0.800	74.573	0.067
+0.4924D-E	4.926	5.999	Bottom	0.713	Min Temp %	0.800	74.573	0.066
+0.4924D-E	4.876	6.019	Bottom	0.713	Min Temp %	0.800	74.573	0.065
+0.4924D-E	4.825	6.038	Bottom	0.713	Min Temp %	0.800	74.573	0.065
+0.4924D-E	4.775	6.057	Bottom	0.713	Min Temp %	0.800	74.573	0.064
+0.4924D-E	4.724	6.076	Bottom	0.713	Min Temp %	0.800	74.573	0.063
+0.4924D-E	4.673	6.095	Bottom	0.713	Min Temp %	0.800	74.573	0.063
+0.4924D-E	4.622	6.114	Bottom	0.713	Min Temp %	0.800	74.573	0.062
+0.4924D-E	4.571	6.134	Bottom	0.713	Min Temp %	0.800	74.573	0.061



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DESCRIPTION: F5- Grid D.1 WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D-E	4.520	6.153	Bottom	0.713	Min Temp %	0.800	74.573	0.061
+0.4924D-E	4.469	6.172	Bottom	0.713	Min Temp %	0.800	74.573	0.060
+0.4924D-E	4.417	6.191	Bottom	0.713	Min Temp %	0.800	74.573	0.059
+0.4924D-E	4.365	6.210	Bottom	0.713	Min Temp %	0.800	74.573	0.059
+0.4924D-E	4.313	6.229	Bottom	0.713	Min Temp %	0.800	74.573	0.058
+0.4924D-E	4.261	6.249	Bottom	0.713	Min Temp %	0.800	74.573	0.057
+0.4924D-E	4.209	6.268	Bottom	0.713	Min Temp %	0.800	74.573	0.056
+0.4924D-E	4.157	6.287	Bottom	0.713	Min Temp %	0.800	74.573	0.056
+0.4924D-E	4.105	6.306	Bottom	0.713	Min Temp %	0.800	74.573	0.055
+0.4924D-E	4.052	6.325	Bottom	0.713	Min Temp %	0.800	74.573	0.054
+0.4924D-E	3.999	6.344	Bottom	0.713	Min Temp %	0.800	74.573	0.054
+0.4924D-E	3.946	6.364	Bottom	0.713	Min Temp %	0.800	74.573	0.053
+0.4924D-E	3.893	6.383	Bottom	0.713	Min Temp %	0.800	74.573	0.052
+0.4924D-E	3.840	6.402	Bottom	0.713	Min Temp %	0.800	74.573	0.051
+0.4924D-E	3.787	6.421	Bottom	0.713	Min Temp %	0.800	74.573	0.051
+0.4924D-E	3.733	6.440	Bottom	0.713	Min Temp %	0.800	74.573	0.050
+0.4924D-E	3.680	6.459	Bottom	0.713	Min Temp %	0.800	74.573	0.049
+0.4924D-E	3.626	6.479	Bottom	0.713	Min Temp %	0.800	74.573	0.049
+0.4924D-E	3.572	6.498	Bottom	0.713	Min Temp %	0.800	74.573	0.048
+0.4924D-E	3.518	6.517	Bottom	0.713	Min Temp %	0.800	74.573	0.047
+0.4924D-E	3.464	6.536	Bottom	0.713	Min Temp %	0.800	74.573	0.046
+0.4924D-E	3.409	6.555	Bottom	0.713	Min Temp %	0.800	74.573	0.046
+0.4924D-E	3.355	6.574	Bottom	0.713	Min Temp %	0.800	74.573	0.045
+0.4924D-E	3.300	6.594	Bottom	0.713	Min Temp %	0.800	74.573	0.044
+0.4924D-E	3.245	6.613	Bottom	0.713	Min Temp %	0.800	74.573	0.044
+0.4924D-E	3.190	6.632	Bottom	0.713	Min Temp %	0.800	74.573	0.043
+0.4924D-E	3.135	6.651	Bottom	0.713	Min Temp %	0.800	74.573	0.042
+0.4924D-E	3.080	6.670	Bottom	0.713	Min Temp %	0.800	74.573	0.041
+0.4924D-E	3.024	6.689	Bottom	0.713	Min Temp %	0.800	74.573	0.041
+0.4924D-E	2.969	6.709	Bottom	0.713	Min Temp %	0.800	74.573	0.040
+0.4924D-E	2.913	6.728	Bottom	0.713	Min Temp %	0.800	74.573	0.039
+0.4924D-E	2.857	6.747	Bottom	0.713	Min Temp %	0.800	74.573	0.038
+0.4924D-E	2.801	6.766	Bottom	0.713	Min Temp %	0.800	74.573	0.038
+0.4924D-E	2.745	6.785	Bottom	0.713	Min Temp %	0.800	74.573	0.037
+0.4924D-E	2.689	6.804	Bottom	0.713	Min Temp %	0.800	74.573	0.036
+0.4924D-E	2.632	6.824	Bottom	0.713	Min Temp %	0.800	74.573	0.035
+0.4924D-E	2.576	6.843	Bottom	0.713	Min Temp %	0.800	74.573	0.035
+0.4924D-E	2.519	6.862	Bottom	0.713	Min Temp %	0.800	74.573	0.034
+0.4924D-E	2.462	6.881	Bottom	0.713	Min Temp %	0.800	74.573	0.033
+0.4924D-E	2.405	6.900	Bottom	0.713	Min Temp %	0.800	74.573	0.032
+0.4924D-E	2.348	6.919	Bottom	0.713	Min Temp %	0.800	74.573	0.031
+0.4924D-E	2.290	6.939	Bottom	0.713	Min Temp %	0.800	74.573	0.031
+0.4924D-E	2.233	6.958	Bottom	0.713	Min Temp %	0.800	74.573	0.030
+0.4924D-E	2.175	6.977	Bottom	0.713	Min Temp %	0.800	74.573	0.029
+0.4924D-E	2.117	6.996	Bottom	0.713	Min Temp %	0.800	74.573	0.028
+0.4924D-E	2.059	7.015	Bottom	0.713	Min Temp %	0.800	74.573	0.028
+0.4924D-E	2.001	7.034	Bottom	0.713	Min Temp %	0.800	74.573	0.027
+0.4924D-E	1.943	7.054	Bottom	0.713	Min Temp %	0.800	74.573	0.026
+0.4924D-E	1.885	7.073	Bottom	0.713	Min Temp %	0.800	74.573	0.025
+0.4924D-E	1.826	7.092	Bottom	0.713	Min Temp %	0.800	74.573	0.024
+0.4924D-E	1.767	7.111	Bottom	0.713	Min Temp %	0.800	74.573	0.024
+0.4924D-E	1.709	7.130	Bottom	0.713	Min Temp %	0.800	74.573	0.023
+0.4924D-E	1.650	7.149	Bottom	0.713	Min Temp %	0.800	74.573	0.022
+0.4924D-E	1.590	7.169	Bottom	0.713	Min Temp %	0.800	74.573	0.021
+0.4924D-E	1.531	7.188	Bottom	0.713	Min Temp %	0.800	74.573	0.021
+0.4924D-E	1.472	7.207	Bottom	0.713	Min Temp %	0.800	74.573	0.020
+0.4924D-E	1.412	7.226	Bottom	0.713	Min Temp %	0.800	74.573	0.019
+0.4924D-E	1.352	7.245	Bottom	0.713	Min Temp %	0.800	74.573	0.018
+0.4924D-E	1.292	7.264	Bottom	0.713	Min Temp %	0.800	74.573	0.017
+0.4924D-E	1.232	7.284	Bottom	0.713	Min Temp %	0.800	74.573	0.017
+0.4924D-E	1.172	7.303	Bottom	0.713	Min Temp %	0.800	74.573	0.016
+0.4924D-E	1.112	7.322	Bottom	0.713	Min Temp %	0.800	74.573	0.015
+0.4924D-E	1.051	7.341	Bottom	0.713	Min Temp %	0.800	74.573	0.014



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Project Title: Fire Rebuild
Engineer: ELD
Project ID: ARCE 453-03
Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F5- Grid D.1 WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D-E	0.991	7.360	Bottom	0.713	Min Temp %	0.800	74.573	0.013
+0.4924D-E	0.930	7.379	Bottom	0.713	Min Temp %	0.800	74.573	0.012
+0.4924D-E	0.869	7.399	Bottom	0.713	Min Temp %	0.800	74.573	0.012
+0.4924D-E	0.808	7.418	Bottom	0.713	Min Temp %	0.800	74.573	0.011
+0.4924D-E	0.747	7.437	Bottom	0.713	Min Temp %	0.800	74.573	0.010
+0.4924D-E	0.685	7.456	Bottom	0.713	Min Temp %	0.800	74.573	0.009
+0.4924D-E	0.624	7.475	Bottom	0.713	Min Temp %	0.800	74.573	0.008
+0.4924D-E	0.562	7.494	Bottom	0.713	Min Temp %	0.800	74.573	0.008
+0.4924D-E	0.500	7.514	Bottom	0.713	Min Temp %	0.800	74.573	0.007
+0.4924D-E	0.438	7.533	Bottom	0.713	Min Temp %	0.800	74.573	0.006
+0.4924D-E	0.376	7.552	Bottom	0.713	Min Temp %	0.800	74.573	0.005
+0.4924D-E	0.314	7.571	Bottom	0.713	Min Temp %	0.800	74.573	0.004
+0.4924D-E	0.251	7.590	Bottom	0.713	Min Temp %	0.800	74.573	0.003
+0.4924D-E	0.189	7.609	Bottom	0.713	Min Temp %	0.800	74.573	0.003
+0.4924D-E	0.126	7.629	Bottom	0.713	Min Temp %	0.800	74.573	0.002
+0.4924D-E	0.063	7.648	Bottom	0.713	Min Temp %	0.800	74.573	0.001
+0.4924D-E	0.000	7.667	0	0.000	0	0.000	0.000	0.000

One Way Shear

Punching Shear

Load Combination...	Phi Vn	vu @ Col #1	vu @ Col #2	Phi Vn	vu @ Col #1	vu @ Col #2
+1.40D	82.16 psi	0.01 psi	0.01 psi	164.32 psi	0.02psi	0.02 psi
+0.90D+W	82.16 psi	6.93 psi	6.93 psi	164.32 psi	2.36psi	2.61 psi
+0.90D-W	82.16 psi	6.93 psi	6.93 psi	164.32 psi	2.38psi	2.63 psi
+1.608D+E	82.16 psi	13.99 psi	13.99 psi	164.32 psi	4.77psi	5.29 psi
+1.608D-E	82.16 psi	13.99 psi	13.99 psi	164.32 psi	4.81psi	5.33 psi
+0.4924D+E	82.16 psi	20.00 psi	15.50 psi	164.32 psi	5.40psi	5.40 psi
+0.4924D-E	82.16 psi	15.50 psi	20.00 psi	164.32 psi	4.70psi	4.70 psi



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Project Title: **Fire Rebuild**
Engineer: **ELD**
Project ID: **ARCE 453-03**
Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

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DESCRIPTION: F6- Grid E WSWH

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Material Properties

f'c : Concrete 28 day strength	3.0 ksi
fy : Rebar Yield	60.0 ksi
Ec : Concrete Elastic Modulus	3,122.0 ksi
Concrete Density	150.0 pcf
φ : Phi Values	
Flexure :	0.90
Shear :	0.750

Analysis/Design Settings

Calculate footing weight as dead load ?	Yes
Calculate Pedestal weight as dead load ?	No
Min Steel % Bending Reinf (based on 'd')	
Min Allow % Temp Reinf (based on thick)	0.00180
Min. Overturning Safety Factor	1.0: 1
Min. Sliding Safety Factor	1.0: 1

Soil Information

Allowable Soil Bearing	1.995 ksf
Increase Bearing By Footing Weight	No
Soil Passive Sliding Resistance	150.0 pcf
<i>(Uses entry for "Footing base depth below soil surface" for force)</i>	
Coefficient of Soil/Concrete Friction	0.30

Soil Bearing Increase

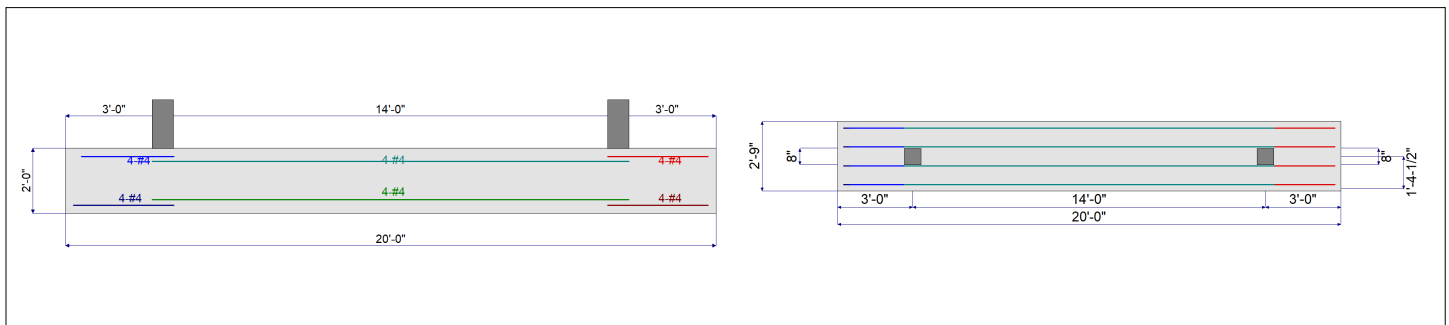
Footing base depth below soil surface	2.0 ft
Increases based on footing Depth	
Allowable pressure increase per foot when base of footing is below	ksf ft
Increases based on footing Width	
Allowable pressure increase per foot when maximum length or width is greater tha	ksf ft
Maximum Allowed Bearing Pressure	10.0 ksf
<i>(A value of zero implies no limit)</i>	
Adjusted Allowable Soil Bearing	ksf
<i>(Allowable Soil Bearing adjusted for footing weight and depth & width increases as specified by user.)</i>	

Dimensions & Reinforcing

Distance Left of Column #1 = 3.0 ft	Pedestal dimensions...	Col #1	Col #2	Bars left of Col #1	Count	Size #	As Provided	As Req'd
Between Columns = 14.0 ft								
Distance Right of Column #2 = 3.0 ft								
Total Footing Length = 20.0 ft	Height = 18.0	18.0 in		Bars Btwn Cols				
Footing Width = 2.750 ft				Bottom Bars	4.0	4	0.80	0.7128 in^2
Footing Thickness = 24.0 in				Top Bars	4.0	4	0.80	0.7128 in^2
Rebar Center to Concrete Edge @ Top = 3.0 in				Bars Right of Col #2				
Rebar Center to Concrete Edge @ Bottom = 3.0 in				Bottom Bars	4.0	4	0.80	0.7128 in^2
				Top Bars	4.0	4	0.80	0.7128 in^2

Applied Loads

	D	Lr	L	S	W	E	H
Applied @ Left Column							
Axial Load Downward =							k
Moment (+CW) =					33.0	30.0	k-ft
Shear (+X) =					0.1670	1.975	k
Applied @ Right Column							
Axial Load Downward =							k
Moment (+CW) =					33.0	30.0	k-ft
Shear (+X) =					2.167	1.975	k
Overburden							





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Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

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DESCRIPTION: F6- Grid E WSWH

DESIGN SUMMARY

Design OK

Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS 2.225	Overturing	44.501 k-ft	99.0 k-ft	+0.60D+0.60W
PASS 1.373	Sliding	2.765 k	3.795 k	+0.60D+0.70E
PASS No Uplift	Uplift	0.0 k	0.0 k	No Uplift

Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS 0.2913	Soil Bearing	0.5812 ksf	1.995 ksf	+D-0.70E
PASS 0.1064	1-way Shear - Col #1	8.744 psi	82.158 psi	+0.4924D-E
PASS 0.1064	1-way Shear - Col #2	8.744 psi	82.158 psi	+0.4924D+E
PASS 0.004398	2-way Punching - Col #1	0.7226 psi	164.317 psi	+0.90D-W
PASS 0.004398	2-way Punching - Col #2	0.7226 psi	164.317 psi	+0.90D+W
PASS 0.04754	Flexure - Left of Col #1 - Top	-3.545 k-ft	74.573 k-ft	+1.608D+E
PASS 0.1701	Flexure - Left of Col #1 - Bottom	12.682 k-ft	74.573 k-ft	+0.4924D-E
PASS 0.4623	Flexure - Between Cols - Top	-34.478 k-ft	74.573 k-ft	+0.90D+W
PASS 0.4884	Flexure - Between Cols - Bottom	36.418 k-ft	74.573 k-ft	+0.90D-W
PASS 0.04754	Flexure - Right of Col #2 - Top	-3.545 k-ft	74.573 k-ft	+1.608D-E
PASS 0.1701	Flexure - Right of Col #2 - Bottom	12.682 k-ft	74.573 k-ft	+0.4924D+E

Soil Bearing

Load Combination...	Total Bearing	Eccentricity from Ftg CL	Actual Soil Bearing Stress		Allowable	Actual / Allow Ratio
			@ Left Edge	@ Right Edge		
D Only	16.50 k	0.000 ft	0.30 ksf	0.30 ksf	2.00 ksf	0.150
+D+0.60W	16.50 k	2.697 ft	0.06 ksf	0.54 ksf	2.00 ksf	0.272
+D-0.60W	16.50 k	-2.697 ft	0.54 ksf	0.06 ksf	2.00 ksf	0.272
+0.60D+0.60W	9.90 k	4.495 ft	0.00 ksf	0.44 ksf	2.00 ksf	0.218
+0.60D-0.60W	9.90 k	-4.495 ft	0.44 ksf	0.00 ksf	2.00 ksf	0.218
+D+0.70E	16.50 k	3.132 ft	0.02 ksf	0.58 ksf	2.00 ksf	0.291
+D-0.70E	16.50 k	-3.132 ft	0.58 ksf	0.02 ksf	2.00 ksf	0.291
+D+0.5250E	16.50 k	2.349 ft	0.09 ksf	0.51 ksf	2.00 ksf	0.256
+D-0.5250E	16.50 k	-2.349 ft	0.51 ksf	0.09 ksf	2.00 ksf	0.256
+0.60D+0.70E	9.90 k	5.220 ft	0.00 ksf	0.50 ksf	2.00 ksf	0.251
+0.60D-0.70E	9.90 k	-5.220 ft	0.50 ksf	0.00 ksf	2.00 ksf	0.251

Overturing Stability

Load Combination...	Moments about Left Edge k-ft			Moments about Right Edge k-ft		
	Overturing	Resisting	Ratio	Overturing	Resisting	Ratio
+D+0.60W	0.00	0.00	999.000	44.50	165.00	3.708
+0.60D+0.60W	0.00	0.00	999.000	44.50	99.00	2.225
+D+0.70E	0.00	0.00	999.000	38.76	165.00	4.257
+D+0.5250E	0.00	0.00	999.000	29.07	165.00	5.676
+0.60D+0.70E	0.00	0.00	999.000	38.76	99.00	2.554

Sliding Stability

Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio
+D+0.60W	1.40 k	5.78 k	4.124
+0.60D+0.60W	1.40 k	3.80 k	2.71
+D+0.70E	2.77 k	5.78 k	2.089
+D+0.5250E	2.07 k	5.78 k	2.785
+0.60D+0.70E	2.77 k	3.80 k	1.373

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.60D+0.70E	0.000	0.000	0	0.000	0	0.000	0.000	0.000
+0.60D+0.70E	0.000	0.050	0	0.000	0	0.000	0.000	0.000
+0.4924D-E	0.027	0.100	Bottom	0.713	Min Temp %	0.800	74.573	0.000
+0.4924D-E	0.061	0.150	Bottom	0.713	Min Temp %	0.800	74.573	0.001
+0.4924D-E	0.108	0.200	Bottom	0.713	Min Temp %	0.800	74.573	0.001
+0.4924D-E	0.167	0.250	Bottom	0.713	Min Temp %	0.800	74.573	0.002



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Project Title: **Fire Rebuild**
 Engineer: **ELD**
 Project ID: **ARCE 453-03**
 Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F6- Grid E WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D-E	0.239	0.300	Bottom	0.713	Min Temp %	0.800	74.573	0.003
+0.4924D-E	0.323	0.350	Bottom	0.713	Min Temp %	0.800	74.573	0.004
+0.4924D-E	0.419	0.400	Bottom	0.713	Min Temp %	0.800	74.573	0.006
+0.4924D-E	0.526	0.450	Bottom	0.713	Min Temp %	0.800	74.573	0.007
+0.4924D-E	0.645	0.500	Bottom	0.713	Min Temp %	0.800	74.573	0.009
+0.4924D-E	0.775	0.550	Bottom	0.713	Min Temp %	0.800	74.573	0.010
+0.4924D-E	0.916	0.600	Bottom	0.713	Min Temp %	0.800	74.573	0.012
+0.4924D-E	1.068	0.650	Bottom	0.713	Min Temp %	0.800	74.573	0.014
+0.4924D-E	1.229	0.700	Bottom	0.713	Min Temp %	0.800	74.573	0.016
+0.4924D-E	1.401	0.750	Bottom	0.713	Min Temp %	0.800	74.573	0.019
+0.4924D-E	1.583	0.800	Bottom	0.713	Min Temp %	0.800	74.573	0.021
+0.4924D-E	1.774	0.850	Bottom	0.713	Min Temp %	0.800	74.573	0.024
+0.4924D-E	1.974	0.900	Bottom	0.713	Min Temp %	0.800	74.573	0.026
+0.4924D-E	2.183	0.950	Bottom	0.713	Min Temp %	0.800	74.573	0.029
+0.4924D-E	2.401	1.000	Bottom	0.713	Min Temp %	0.800	74.573	0.032
+0.4924D-E	2.627	1.050	Bottom	0.713	Min Temp %	0.800	74.573	0.035
+0.4924D-E	2.861	1.100	Bottom	0.713	Min Temp %	0.800	74.573	0.038
+0.4924D-E	3.104	1.150	Bottom	0.713	Min Temp %	0.800	74.573	0.042
+0.4924D-E	3.353	1.200	Bottom	0.713	Min Temp %	0.800	74.573	0.045
+0.4924D-E	3.611	1.250	Bottom	0.713	Min Temp %	0.800	74.573	0.048
+0.4924D-E	3.875	1.300	Bottom	0.713	Min Temp %	0.800	74.573	0.052
+0.4924D-E	4.146	1.350	Bottom	0.713	Min Temp %	0.800	74.573	0.056
+0.4924D-E	4.423	1.400	Bottom	0.713	Min Temp %	0.800	74.573	0.059
+0.4924D-E	4.707	1.450	Bottom	0.713	Min Temp %	0.800	74.573	0.063
+0.4924D-E	4.996	1.500	Bottom	0.713	Min Temp %	0.800	74.573	0.067
+0.4924D-E	5.292	1.550	Bottom	0.713	Min Temp %	0.800	74.573	0.071
+0.4924D-E	5.593	1.600	Bottom	0.713	Min Temp %	0.800	74.573	0.075
+0.4924D-E	5.898	1.650	Bottom	0.713	Min Temp %	0.800	74.573	0.079
+0.4924D-E	6.209	1.700	Bottom	0.713	Min Temp %	0.800	74.573	0.083
+0.4924D-E	6.525	1.750	Bottom	0.713	Min Temp %	0.800	74.573	0.087
+0.4924D-E	6.844	1.800	Bottom	0.713	Min Temp %	0.800	74.573	0.092
+0.4924D-E	7.168	1.850	Bottom	0.713	Min Temp %	0.800	74.573	0.096
+0.4924D-E	7.496	1.900	Bottom	0.713	Min Temp %	0.800	74.573	0.101
+0.4924D-E	7.827	1.950	Bottom	0.713	Min Temp %	0.800	74.573	0.105
+0.4924D-E	8.161	2.000	Bottom	0.713	Min Temp %	0.800	74.573	0.109
+0.4924D-E	8.499	2.050	Bottom	0.713	Min Temp %	0.800	74.573	0.114
+0.4924D-E	8.839	2.100	Bottom	0.713	Min Temp %	0.800	74.573	0.119
+0.4924D-E	9.181	2.150	Bottom	0.713	Min Temp %	0.800	74.573	0.123
+0.4924D-E	9.526	2.200	Bottom	0.713	Min Temp %	0.800	74.573	0.128
+0.4924D-E	9.873	2.250	Bottom	0.713	Min Temp %	0.800	74.573	0.132
+0.4924D-E	10.221	2.300	Bottom	0.713	Min Temp %	0.800	74.573	0.137
+0.4924D-E	10.571	2.350	Bottom	0.713	Min Temp %	0.800	74.573	0.142
+0.4924D-E	10.922	2.400	Bottom	0.713	Min Temp %	0.800	74.573	0.146
+0.4924D-E	11.273	2.450	Bottom	0.713	Min Temp %	0.800	74.573	0.151
+0.4924D-E	11.625	2.500	Bottom	0.713	Min Temp %	0.800	74.573	0.156
+0.4924D-E	11.978	2.550	Bottom	0.713	Min Temp %	0.800	74.573	0.161
+0.4924D-E	12.330	2.600	Bottom	0.713	Min Temp %	0.800	74.573	0.165
+0.4924D-E	12.682	2.650	Bottom	0.713	Min Temp %	0.800	74.573	0.170
+0.4924D-E	13.034	2.700	Bottom	0.713	Min Temp %	0.800	74.573	0.175
+0.4924D-E	13.385	2.750	Bottom	0.713	Min Temp %	0.800	74.573	0.179
+0.4924D-E	13.735	2.800	Bottom	0.713	Min Temp %	0.800	74.573	0.184
+0.4924D-E	14.083	2.850	Bottom	0.713	Min Temp %	0.800	74.573	0.189
+0.4924D-E	14.431	2.900	Bottom	0.713	Min Temp %	0.800	74.573	0.194
+0.4924D-E	14.778	2.950	Bottom	0.713	Min Temp %	0.800	74.573	0.198
+0.4924D+E	35.084	3.000	Bottom	0.713	Min Temp %	0.800	74.573	0.470
+0.4924D+E	35.023	3.050	Bottom	0.713	Min Temp %	0.800	74.573	0.470
+0.4924D+E	34.960	3.100	Bottom	0.713	Min Temp %	0.800	74.573	0.469
+0.4924D+E	34.897	3.150	Bottom	0.713	Min Temp %	0.800	74.573	0.468
+0.4924D+E	34.832	3.200	Bottom	0.713	Min Temp %	0.800	74.573	0.467
+0.4924D+E	34.767	3.250	Bottom	0.713	Min Temp %	0.800	74.573	0.466
+0.4924D+E	34.700	3.300	Bottom	0.713	Min Temp %	0.800	74.573	0.465
+0.4924D+E	34.633	3.350	Bottom	0.713	Min Temp %	0.800	74.573	0.464
+0.4924D+E	34.564	3.400	Bottom	0.713	Min Temp %	0.800	74.573	0.463



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Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F6- Grid E WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D+E	34.495	3.450	Bottom	0.713	Min Temp %	0.800	74.573	0.463
+0.4924D+E	34.424	3.500	Bottom	0.713	Min Temp %	0.800	74.573	0.462
+0.4924D+E	34.353	3.550	Bottom	0.713	Min Temp %	0.800	74.573	0.461
+0.4924D+E	34.280	3.600	Bottom	0.713	Min Temp %	0.800	74.573	0.460
+0.4924D+E	34.206	3.650	Bottom	0.713	Min Temp %	0.800	74.573	0.459
+0.4924D+E	34.132	3.700	Bottom	0.713	Min Temp %	0.800	74.573	0.458
+0.4924D+E	34.056	3.750	Bottom	0.713	Min Temp %	0.800	74.573	0.457
+0.4924D+E	33.979	3.800	Bottom	0.713	Min Temp %	0.800	74.573	0.456
+0.4924D+E	33.902	3.850	Bottom	0.713	Min Temp %	0.800	74.573	0.455
+0.4924D+E	33.823	3.900	Bottom	0.713	Min Temp %	0.800	74.573	0.454
+0.4924D+E	33.743	3.950	Bottom	0.713	Min Temp %	0.800	74.573	0.452
+0.4924D+E	33.662	4.000	Bottom	0.713	Min Temp %	0.800	74.573	0.451
+0.4924D+E	33.581	4.050	Bottom	0.713	Min Temp %	0.800	74.573	0.450
+0.4924D+E	33.498	4.100	Bottom	0.713	Min Temp %	0.800	74.573	0.449
+0.4924D+E	33.414	4.150	Bottom	0.713	Min Temp %	0.800	74.573	0.448
+0.4924D+E	33.329	4.200	Bottom	0.713	Min Temp %	0.800	74.573	0.447
+0.4924D+E	33.244	4.250	Bottom	0.713	Min Temp %	0.800	74.573	0.446
+0.4924D+E	33.157	4.300	Bottom	0.713	Min Temp %	0.800	74.573	0.445
+0.4924D+E	33.069	4.350	Bottom	0.713	Min Temp %	0.800	74.573	0.443
+0.4924D+E	32.980	4.400	Bottom	0.713	Min Temp %	0.800	74.573	0.442
+0.4924D+E	32.890	4.450	Bottom	0.713	Min Temp %	0.800	74.573	0.441
+0.4924D+E	32.799	4.500	Bottom	0.713	Min Temp %	0.800	74.573	0.440
+0.4924D+E	32.707	4.550	Bottom	0.713	Min Temp %	0.800	74.573	0.439
+0.4924D+E	32.614	4.600	Bottom	0.713	Min Temp %	0.800	74.573	0.437
+0.4924D+E	32.520	4.650	Bottom	0.713	Min Temp %	0.800	74.573	0.436
+0.4924D+E	32.425	4.700	Bottom	0.713	Min Temp %	0.800	74.573	0.435
+0.4924D+E	32.329	4.750	Bottom	0.713	Min Temp %	0.800	74.573	0.434
+0.4924D+E	32.233	4.800	Bottom	0.713	Min Temp %	0.800	74.573	0.432
+0.4924D+E	32.134	4.850	Bottom	0.713	Min Temp %	0.800	74.573	0.431
+0.4924D+E	32.035	4.900	Bottom	0.713	Min Temp %	0.800	74.573	0.430
+0.4924D+E	31.935	4.950	Bottom	0.713	Min Temp %	0.800	74.573	0.428
+0.4924D+E	31.834	5.000	Bottom	0.713	Min Temp %	0.800	74.573	0.427
+0.4924D+E	31.732	5.050	Bottom	0.713	Min Temp %	0.800	74.573	0.426
+0.4924D+E	31.629	5.100	Bottom	0.713	Min Temp %	0.800	74.573	0.424
+0.4924D+E	31.525	5.150	Bottom	0.713	Min Temp %	0.800	74.573	0.423
+0.4924D+E	31.420	5.200	Bottom	0.713	Min Temp %	0.800	74.573	0.421
+0.4924D+E	31.314	5.250	Bottom	0.713	Min Temp %	0.800	74.573	0.420
+0.4924D+E	31.207	5.300	Bottom	0.713	Min Temp %	0.800	74.573	0.418
+0.4924D+E	31.099	5.350	Bottom	0.713	Min Temp %	0.800	74.573	0.417
+0.4924D+E	30.989	5.400	Bottom	0.713	Min Temp %	0.800	74.573	0.416
+0.4924D+E	30.879	5.450	Bottom	0.713	Min Temp %	0.800	74.573	0.414
+0.4924D+E	30.768	5.500	Bottom	0.713	Min Temp %	0.800	74.573	0.413
+0.4924D+E	30.656	5.550	Bottom	0.713	Min Temp %	0.800	74.573	0.411
+0.4924D+E	30.543	5.600	Bottom	0.713	Min Temp %	0.800	74.573	0.410
+0.4924D+E	30.428	5.650	Bottom	0.713	Min Temp %	0.800	74.573	0.408
+0.4924D+E	30.313	5.700	Bottom	0.713	Min Temp %	0.800	74.573	0.406
+0.4924D+E	30.197	5.750	Bottom	0.713	Min Temp %	0.800	74.573	0.405
+0.4924D+E	30.079	5.800	Bottom	0.713	Min Temp %	0.800	74.573	0.403
+0.4924D+E	29.961	5.850	Bottom	0.713	Min Temp %	0.800	74.573	0.402
+0.4924D+E	29.842	5.900	Bottom	0.713	Min Temp %	0.800	74.573	0.400
+0.4924D+E	29.721	5.950	Bottom	0.713	Min Temp %	0.800	74.573	0.399
+0.4924D+E	29.600	6.000	Bottom	0.713	Min Temp %	0.800	74.573	0.397
+0.4924D+E	29.478	6.050	Bottom	0.713	Min Temp %	0.800	74.573	0.395
+0.4924D+E	29.354	6.100	Bottom	0.713	Min Temp %	0.800	74.573	0.394
+0.4924D+E	29.230	6.150	Bottom	0.713	Min Temp %	0.800	74.573	0.392
+0.4924D+E	29.104	6.200	Bottom	0.713	Min Temp %	0.800	74.573	0.390
+0.4924D+E	28.978	6.250	Bottom	0.713	Min Temp %	0.800	74.573	0.389
+0.4924D+E	28.851	6.300	Bottom	0.713	Min Temp %	0.800	74.573	0.387
+0.4924D+E	28.722	6.350	Bottom	0.713	Min Temp %	0.800	74.573	0.385
+0.4924D+E	28.593	6.400	Bottom	0.713	Min Temp %	0.800	74.573	0.383
+0.4924D+E	28.462	6.450	Bottom	0.713	Min Temp %	0.800	74.573	0.382
+0.4924D+E	28.331	6.500	Bottom	0.713	Min Temp %	0.800	74.573	0.380
+0.4924D+E	28.198	6.550	Bottom	0.713	Min Temp %	0.800	74.573	0.378



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Project Title: **Fire Rebuild**
Engineer: **ELD**
Project ID: **ARCE 453-03**
Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F6- Grid E WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D+E	28.064	6.600	Bottom	0.713	Min Temp %	0.800	74.573	0.376
+0.4924D+E	27.930	6.650	Bottom	0.713	Min Temp %	0.800	74.573	0.375
+0.4924D+E	27.794	6.700	Bottom	0.713	Min Temp %	0.800	74.573	0.373
+0.4924D+E	27.658	6.750	Bottom	0.713	Min Temp %	0.800	74.573	0.371
+0.4924D+E	27.520	6.800	Bottom	0.713	Min Temp %	0.800	74.573	0.369
+0.4924D+E	27.382	6.850	Bottom	0.713	Min Temp %	0.800	74.573	0.367
+0.4924D+E	27.242	6.900	Bottom	0.713	Min Temp %	0.800	74.573	0.365
+0.4924D+E	27.101	6.950	Bottom	0.713	Min Temp %	0.800	74.573	0.363
+0.4924D+E	26.960	7.000	Bottom	0.713	Min Temp %	0.800	74.573	0.362
+0.4924D+E	26.817	7.050	Bottom	0.713	Min Temp %	0.800	74.573	0.360
+0.4924D+E	26.673	7.100	Bottom	0.713	Min Temp %	0.800	74.573	0.358
+0.4924D+E	26.528	7.150	Bottom	0.713	Min Temp %	0.800	74.573	0.356
+0.4924D+E	26.383	7.200	Bottom	0.713	Min Temp %	0.800	74.573	0.354
+0.4924D+E	26.236	7.250	Bottom	0.713	Min Temp %	0.800	74.573	0.352
+0.4924D+E	26.088	7.300	Bottom	0.713	Min Temp %	0.800	74.573	0.350
+0.4924D+E	25.939	7.350	Bottom	0.713	Min Temp %	0.800	74.573	0.348
+0.4924D+E	25.790	7.400	Bottom	0.713	Min Temp %	0.800	74.573	0.346
+0.4924D+E	25.639	7.450	Bottom	0.713	Min Temp %	0.800	74.573	0.344
+0.4924D+E	25.487	7.500	Bottom	0.713	Min Temp %	0.800	74.573	0.342
+0.4924D+E	25.334	7.550	Bottom	0.713	Min Temp %	0.800	74.573	0.340
+0.4924D+E	25.180	7.600	Bottom	0.713	Min Temp %	0.800	74.573	0.338
+0.4924D+E	25.025	7.650	Bottom	0.713	Min Temp %	0.800	74.573	0.336
+0.4924D+E	24.869	7.700	Bottom	0.713	Min Temp %	0.800	74.573	0.333
+0.4924D+E	24.713	7.750	Bottom	0.713	Min Temp %	0.800	74.573	0.331
+0.4924D+E	24.555	7.800	Bottom	0.713	Min Temp %	0.800	74.573	0.329
+0.4924D+E	24.396	7.850	Bottom	0.713	Min Temp %	0.800	74.573	0.327
+0.4924D+E	24.236	7.900	Bottom	0.713	Min Temp %	0.800	74.573	0.325
+0.4924D+E	24.075	7.950	Bottom	0.713	Min Temp %	0.800	74.573	0.323
+0.4924D+E	23.913	8.000	Bottom	0.713	Min Temp %	0.800	74.573	0.321
+0.4924D+E	23.750	8.050	Bottom	0.713	Min Temp %	0.800	74.573	0.318
+0.4924D+E	23.586	8.100	Bottom	0.713	Min Temp %	0.800	74.573	0.316
+0.4924D+E	23.421	8.150	Bottom	0.713	Min Temp %	0.800	74.573	0.314
+0.4924D+E	23.255	8.200	Bottom	0.713	Min Temp %	0.800	74.573	0.312
+0.4924D+E	23.088	8.250	Bottom	0.713	Min Temp %	0.800	74.573	0.310
+0.4924D+E	22.920	8.300	Bottom	0.713	Min Temp %	0.800	74.573	0.307
+0.4924D+E	22.750	8.350	Bottom	0.713	Min Temp %	0.800	74.573	0.305
+0.4924D+E	22.580	8.400	Bottom	0.713	Min Temp %	0.800	74.573	0.303
+0.4924D+E	22.409	8.450	Bottom	0.713	Min Temp %	0.800	74.573	0.300
+0.4924D+E	22.237	8.500	Bottom	0.713	Min Temp %	0.800	74.573	0.298
+0.4924D+E	22.064	8.550	Bottom	0.713	Min Temp %	0.800	74.573	0.296
+0.4924D+E	21.890	8.600	Bottom	0.713	Min Temp %	0.800	74.573	0.294
+0.4924D+E	21.715	8.650	Bottom	0.713	Min Temp %	0.800	74.573	0.291
+0.4924D+E	21.538	8.700	Bottom	0.713	Min Temp %	0.800	74.573	0.289
+0.4924D+E	21.361	8.750	Bottom	0.713	Min Temp %	0.800	74.573	0.286
+0.4924D+E	21.183	8.800	Bottom	0.713	Min Temp %	0.800	74.573	0.284
+0.4924D+E	21.004	8.850	Bottom	0.713	Min Temp %	0.800	74.573	0.282
+0.4924D+E	20.823	8.900	Bottom	0.713	Min Temp %	0.800	74.573	0.279
+0.4924D+E	20.642	8.950	Bottom	0.713	Min Temp %	0.800	74.573	0.277
+0.4924D+E	20.460	9.000	Bottom	0.713	Min Temp %	0.800	74.573	0.274
+0.4924D+E	20.276	9.050	Bottom	0.713	Min Temp %	0.800	74.573	0.272
+0.4924D+E	20.092	9.100	Bottom	0.713	Min Temp %	0.800	74.573	0.269
+0.4924D+E	19.907	9.150	Bottom	0.713	Min Temp %	0.800	74.573	0.267
+0.4924D+E	19.720	9.200	Bottom	0.713	Min Temp %	0.800	74.573	0.264
+0.4924D+E	19.533	9.250	Bottom	0.713	Min Temp %	0.800	74.573	0.262
+0.4924D+E	19.345	9.300	Bottom	0.713	Min Temp %	0.800	74.573	0.259
+0.4924D+E	19.155	9.350	Bottom	0.713	Min Temp %	0.800	74.573	0.257
+0.4924D+E	18.965	9.400	Bottom	0.713	Min Temp %	0.800	74.573	0.254
+0.4924D+E	18.773	9.450	Bottom	0.713	Min Temp %	0.800	74.573	0.252
+0.4924D+E	18.581	9.500	Bottom	0.713	Min Temp %	0.800	74.573	0.249
+0.4924D+E	18.387	9.550	Bottom	0.713	Min Temp %	0.800	74.573	0.247
+0.4924D+E	18.193	9.600	Bottom	0.713	Min Temp %	0.800	74.573	0.244
+0.4924D+E	17.997	9.650	Bottom	0.713	Min Temp %	0.800	74.573	0.241
+0.4924D+E	17.801	9.700	Bottom	0.713	Min Temp %	0.800	74.573	0.239



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Project Title: **Fire Rebuild**
 Engineer: **ELD**
 Project ID: **ARCE 453-03**
 Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F6- Grid E WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D+E	17.603	9.750	Bottom	0.713	Min Temp %	0.800	74.573	0.236
+0.4924D+E	17.405	9.800	Bottom	0.713	Min Temp %	0.800	74.573	0.233
+0.4924D+E	17.205	9.850	Bottom	0.713	Min Temp %	0.800	74.573	0.231
+0.4924D+E	17.005	9.900	Bottom	0.713	Min Temp %	0.800	74.573	0.228
+0.4924D+E	16.803	9.950	Bottom	0.713	Min Temp %	0.800	74.573	0.225
+0.4924D-E	16.601	10.000	Bottom	0.713	Min Temp %	0.800	74.573	0.223
+0.4924D-E	16.803	10.050	Bottom	0.713	Min Temp %	0.800	74.573	0.225
+0.4924D-E	17.005	10.100	Bottom	0.713	Min Temp %	0.800	74.573	0.228
+0.4924D-E	17.205	10.150	Bottom	0.713	Min Temp %	0.800	74.573	0.231
+0.4924D-E	17.405	10.200	Bottom	0.713	Min Temp %	0.800	74.573	0.233
+0.4924D-E	17.603	10.250	Bottom	0.713	Min Temp %	0.800	74.573	0.236
+0.4924D-E	17.801	10.300	Bottom	0.713	Min Temp %	0.800	74.573	0.239
+0.4924D-E	17.997	10.350	Bottom	0.713	Min Temp %	0.800	74.573	0.241
+0.4924D-E	18.193	10.400	Bottom	0.713	Min Temp %	0.800	74.573	0.244
+0.4924D-E	18.387	10.450	Bottom	0.713	Min Temp %	0.800	74.573	0.247
+0.4924D-E	18.581	10.500	Bottom	0.713	Min Temp %	0.800	74.573	0.249
+0.4924D-E	18.773	10.550	Bottom	0.713	Min Temp %	0.800	74.573	0.252
+0.4924D-E	18.965	10.600	Bottom	0.713	Min Temp %	0.800	74.573	0.254
+0.4924D-E	19.155	10.650	Bottom	0.713	Min Temp %	0.800	74.573	0.257
+0.4924D-E	19.345	10.700	Bottom	0.713	Min Temp %	0.800	74.573	0.259
+0.4924D-E	19.533	10.750	Bottom	0.713	Min Temp %	0.800	74.573	0.262
+0.4924D-E	19.720	10.800	Bottom	0.713	Min Temp %	0.800	74.573	0.264
+0.4924D-E	19.907	10.850	Bottom	0.713	Min Temp %	0.800	74.573	0.267
+0.4924D-E	20.092	10.900	Bottom	0.713	Min Temp %	0.800	74.573	0.269
+0.4924D-E	20.276	10.950	Bottom	0.713	Min Temp %	0.800	74.573	0.272
+0.4924D-E	20.460	11.000	Bottom	0.713	Min Temp %	0.800	74.573	0.274
+0.4924D-E	20.642	11.050	Bottom	0.713	Min Temp %	0.800	74.573	0.277
+0.4924D-E	20.823	11.100	Bottom	0.713	Min Temp %	0.800	74.573	0.279
+0.4924D-E	21.004	11.150	Bottom	0.713	Min Temp %	0.800	74.573	0.282
+0.4924D-E	21.183	11.200	Bottom	0.713	Min Temp %	0.800	74.573	0.284
+0.4924D-E	21.361	11.250	Bottom	0.713	Min Temp %	0.800	74.573	0.286
+0.4924D-E	21.538	11.300	Bottom	0.713	Min Temp %	0.800	74.573	0.289
+0.4924D-E	21.715	11.350	Bottom	0.713	Min Temp %	0.800	74.573	0.291
+0.4924D-E	21.890	11.400	Bottom	0.713	Min Temp %	0.800	74.573	0.294
+0.4924D-E	22.064	11.450	Bottom	0.713	Min Temp %	0.800	74.573	0.296
+0.4924D-E	22.237	11.500	Bottom	0.713	Min Temp %	0.800	74.573	0.298
+0.4924D-E	22.409	11.550	Bottom	0.713	Min Temp %	0.800	74.573	0.300
+0.4924D-E	22.580	11.600	Bottom	0.713	Min Temp %	0.800	74.573	0.303
+0.4924D-E	22.750	11.650	Bottom	0.713	Min Temp %	0.800	74.573	0.305
+0.4924D-E	22.920	11.700	Bottom	0.713	Min Temp %	0.800	74.573	0.307
+0.4924D-E	23.088	11.750	Bottom	0.713	Min Temp %	0.800	74.573	0.310
+0.4924D-E	23.255	11.800	Bottom	0.713	Min Temp %	0.800	74.573	0.312
+0.4924D-E	23.421	11.850	Bottom	0.713	Min Temp %	0.800	74.573	0.314
+0.4924D-E	23.586	11.900	Bottom	0.713	Min Temp %	0.800	74.573	0.316
+0.4924D-E	23.750	11.950	Bottom	0.713	Min Temp %	0.800	74.573	0.318
+0.4924D-E	23.913	12.000	Bottom	0.713	Min Temp %	0.800	74.573	0.321
+0.4924D-E	24.075	12.050	Bottom	0.713	Min Temp %	0.800	74.573	0.323
+0.4924D-E	24.236	12.100	Bottom	0.713	Min Temp %	0.800	74.573	0.325
+0.4924D-E	24.396	12.150	Bottom	0.713	Min Temp %	0.800	74.573	0.327
+0.4924D-E	24.555	12.200	Bottom	0.713	Min Temp %	0.800	74.573	0.329
+0.4924D-E	24.713	12.250	Bottom	0.713	Min Temp %	0.800	74.573	0.331
+0.4924D-E	24.869	12.300	Bottom	0.713	Min Temp %	0.800	74.573	0.333
+0.4924D-E	25.025	12.350	Bottom	0.713	Min Temp %	0.800	74.573	0.336
+0.4924D-E	25.180	12.400	Bottom	0.713	Min Temp %	0.800	74.573	0.338
+0.4924D-E	25.334	12.450	Bottom	0.713	Min Temp %	0.800	74.573	0.340
+0.4924D-E	25.487	12.500	Bottom	0.713	Min Temp %	0.800	74.573	0.342
+0.4924D-E	25.639	12.550	Bottom	0.713	Min Temp %	0.800	74.573	0.344
+0.4924D-E	25.790	12.600	Bottom	0.713	Min Temp %	0.800	74.573	0.346
+0.4924D-E	25.939	12.650	Bottom	0.713	Min Temp %	0.800	74.573	0.348
+0.4924D-E	26.088	12.700	Bottom	0.713	Min Temp %	0.800	74.573	0.350
+0.4924D-E	26.236	12.750	Bottom	0.713	Min Temp %	0.800	74.573	0.352
+0.4924D-E	26.383	12.800	Bottom	0.713	Min Temp %	0.800	74.573	0.354
+0.4924D-E	26.528	12.850	Bottom	0.713	Min Temp %	0.800	74.573	0.356



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Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F6- Grid E WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D-E	26.673	12.900	Bottom	0.713	Min Temp %	0.800	74.573	0.358
+0.4924D-E	26.817	12.950	Bottom	0.713	Min Temp %	0.800	74.573	0.360
+0.4924D-E	26.960	13.000	Bottom	0.713	Min Temp %	0.800	74.573	0.362
+0.4924D-E	27.101	13.050	Bottom	0.713	Min Temp %	0.800	74.573	0.363
+0.4924D-E	27.242	13.100	Bottom	0.713	Min Temp %	0.800	74.573	0.365
+0.4924D-E	27.382	13.150	Bottom	0.713	Min Temp %	0.800	74.573	0.367
+0.4924D-E	27.520	13.200	Bottom	0.713	Min Temp %	0.800	74.573	0.369
+0.4924D-E	27.658	13.250	Bottom	0.713	Min Temp %	0.800	74.573	0.371
+0.4924D-E	27.794	13.300	Bottom	0.713	Min Temp %	0.800	74.573	0.373
+0.4924D-E	27.930	13.350	Bottom	0.713	Min Temp %	0.800	74.573	0.375
+0.4924D-E	28.064	13.400	Bottom	0.713	Min Temp %	0.800	74.573	0.376
+0.4924D-E	28.198	13.450	Bottom	0.713	Min Temp %	0.800	74.573	0.378
+0.4924D-E	28.331	13.500	Bottom	0.713	Min Temp %	0.800	74.573	0.380
+0.4924D-E	28.462	13.550	Bottom	0.713	Min Temp %	0.800	74.573	0.382
+0.4924D-E	28.593	13.600	Bottom	0.713	Min Temp %	0.800	74.573	0.383
+0.4924D-E	28.722	13.650	Bottom	0.713	Min Temp %	0.800	74.573	0.385
+0.4924D-E	28.851	13.700	Bottom	0.713	Min Temp %	0.800	74.573	0.387
+0.4924D-E	28.978	13.750	Bottom	0.713	Min Temp %	0.800	74.573	0.389
+0.4924D-E	29.104	13.800	Bottom	0.713	Min Temp %	0.800	74.573	0.390
+0.4924D-E	29.230	13.850	Bottom	0.713	Min Temp %	0.800	74.573	0.392
+0.4924D-E	29.354	13.900	Bottom	0.713	Min Temp %	0.800	74.573	0.394
+0.4924D-E	29.478	13.950	Bottom	0.713	Min Temp %	0.800	74.573	0.395
+0.4924D-E	29.600	14.000	Bottom	0.713	Min Temp %	0.800	74.573	0.397
+0.4924D-E	29.721	14.050	Bottom	0.713	Min Temp %	0.800	74.573	0.399
+0.4924D-E	29.842	14.100	Bottom	0.713	Min Temp %	0.800	74.573	0.400
+0.4924D-E	29.961	14.150	Bottom	0.713	Min Temp %	0.800	74.573	0.402
+0.4924D-E	30.079	14.200	Bottom	0.713	Min Temp %	0.800	74.573	0.403
+0.4924D-E	30.197	14.250	Bottom	0.713	Min Temp %	0.800	74.573	0.405
+0.4924D-E	30.313	14.300	Bottom	0.713	Min Temp %	0.800	74.573	0.406
+0.4924D-E	30.428	14.350	Bottom	0.713	Min Temp %	0.800	74.573	0.408
+0.4924D-E	30.543	14.400	Bottom	0.713	Min Temp %	0.800	74.573	0.410
+0.4924D-E	30.656	14.450	Bottom	0.713	Min Temp %	0.800	74.573	0.411
+0.4924D-E	30.768	14.500	Bottom	0.713	Min Temp %	0.800	74.573	0.413
+0.4924D-E	30.879	14.550	Bottom	0.713	Min Temp %	0.800	74.573	0.414
+0.4924D-E	30.989	14.600	Bottom	0.713	Min Temp %	0.800	74.573	0.416
+0.4924D-E	31.099	14.650	Bottom	0.713	Min Temp %	0.800	74.573	0.417
+0.4924D-E	31.207	14.700	Bottom	0.713	Min Temp %	0.800	74.573	0.418
+0.4924D-E	31.314	14.750	Bottom	0.713	Min Temp %	0.800	74.573	0.420
+0.4924D-E	31.420	14.800	Bottom	0.713	Min Temp %	0.800	74.573	0.421
+0.4924D-E	31.525	14.850	Bottom	0.713	Min Temp %	0.800	74.573	0.423
+0.4924D-E	31.629	14.900	Bottom	0.713	Min Temp %	0.800	74.573	0.424
+0.4924D-E	31.732	14.950	Bottom	0.713	Min Temp %	0.800	74.573	0.426
+0.4924D-E	31.834	15.000	Bottom	0.713	Min Temp %	0.800	74.573	0.427
+0.4924D-E	31.935	15.050	Bottom	0.713	Min Temp %	0.800	74.573	0.428
+0.4924D-E	32.035	15.100	Bottom	0.713	Min Temp %	0.800	74.573	0.430
+0.4924D-E	32.134	15.150	Bottom	0.713	Min Temp %	0.800	74.573	0.431
+0.4924D-E	32.233	15.200	Bottom	0.713	Min Temp %	0.800	74.573	0.432
+0.4924D-E	32.329	15.250	Bottom	0.713	Min Temp %	0.800	74.573	0.434
+0.4924D-E	32.425	15.300	Bottom	0.713	Min Temp %	0.800	74.573	0.435
+0.90D-W	32.557	15.350	Bottom	0.713	Min Temp %	0.800	74.573	0.437
+0.90D-W	32.729	15.400	Bottom	0.713	Min Temp %	0.800	74.573	0.439
+0.90D-W	32.899	15.450	Bottom	0.713	Min Temp %	0.800	74.573	0.441
+0.90D-W	33.067	15.500	Bottom	0.713	Min Temp %	0.800	74.573	0.443
+0.90D-W	33.233	15.550	Bottom	0.713	Min Temp %	0.800	74.573	0.446
+0.90D-W	33.397	15.600	Bottom	0.713	Min Temp %	0.800	74.573	0.448
+0.90D-W	33.559	15.650	Bottom	0.713	Min Temp %	0.800	74.573	0.450
+0.90D-W	33.720	15.700	Bottom	0.713	Min Temp %	0.800	74.573	0.452
+0.90D-W	33.879	15.750	Bottom	0.713	Min Temp %	0.800	74.573	0.454
+0.90D-W	34.036	15.800	Bottom	0.713	Min Temp %	0.800	74.573	0.456
+0.90D-W	34.191	15.850	Bottom	0.713	Min Temp %	0.800	74.573	0.458
+0.90D-W	34.344	15.900	Bottom	0.713	Min Temp %	0.800	74.573	0.461
+0.90D-W	34.495	15.950	Bottom	0.713	Min Temp %	0.800	74.573	0.463
+0.90D-W	34.644	16.000	Bottom	0.713	Min Temp %	0.800	74.573	0.465



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Project Title: **Fire Rebuild**
 Engineer: **ELD**
 Project ID: **ARCE 453-03**
 Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F6- Grid E WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.90D-W	34.792	16.050	Bottom	0.713	Min Temp %	0.800	74.573	0.467
+0.90D-W	34.938	16.100	Bottom	0.713	Min Temp %	0.800	74.573	0.469
+0.90D-W	35.082	16.150	Bottom	0.713	Min Temp %	0.800	74.573	0.470
+0.90D-W	35.224	16.200	Bottom	0.713	Min Temp %	0.800	74.573	0.472
+0.90D-W	35.364	16.250	Bottom	0.713	Min Temp %	0.800	74.573	0.474
+0.90D-W	35.502	16.300	Bottom	0.713	Min Temp %	0.800	74.573	0.476
+0.90D-W	35.638	16.350	Bottom	0.713	Min Temp %	0.800	74.573	0.478
+0.90D-W	35.773	16.400	Bottom	0.713	Min Temp %	0.800	74.573	0.480
+0.90D-W	35.906	16.450	Bottom	0.713	Min Temp %	0.800	74.573	0.481
+0.90D-W	36.037	16.500	Bottom	0.713	Min Temp %	0.800	74.573	0.483
+0.90D-W	36.166	16.550	Bottom	0.713	Min Temp %	0.800	74.573	0.485
+0.90D-W	36.293	16.600	Bottom	0.713	Min Temp %	0.800	74.573	0.487
+0.90D-W	36.418	16.650	Bottom	0.713	Min Temp %	0.800	74.573	0.488
+0.90D-W	36.542	16.700	Bottom	0.713	Min Temp %	0.800	74.573	0.490
+0.90D-W	36.663	16.750	Bottom	0.713	Min Temp %	0.800	74.573	0.492
+0.90D-W	36.783	16.800	Bottom	0.713	Min Temp %	0.800	74.573	0.493
+0.90D-W	36.901	16.850	Bottom	0.713	Min Temp %	0.800	74.573	0.495
+0.90D-W	37.017	16.900	Bottom	0.713	Min Temp %	0.800	74.573	0.496
+0.90D-W	37.131	16.950	Bottom	0.713	Min Temp %	0.800	74.573	0.498
+0.90D-W	37.243	17.000	Bottom	0.713	Min Temp %	0.800	74.573	0.499
+0.4924D+E	14.778	17.050	Bottom	0.713	Min Temp %	0.800	74.573	0.198
+0.4924D+E	14.431	17.100	Bottom	0.713	Min Temp %	0.800	74.573	0.194
+0.4924D+E	14.083	17.150	Bottom	0.713	Min Temp %	0.800	74.573	0.189
+0.4924D+E	13.735	17.200	Bottom	0.713	Min Temp %	0.800	74.573	0.184
+0.4924D+E	13.385	17.250	Bottom	0.713	Min Temp %	0.800	74.573	0.179
+0.4924D+E	13.034	17.300	Bottom	0.713	Min Temp %	0.800	74.573	0.175
+0.4924D+E	12.682	17.350	Bottom	0.713	Min Temp %	0.800	74.573	0.170
+0.4924D+E	12.330	17.400	Bottom	0.713	Min Temp %	0.800	74.573	0.165
+0.4924D+E	11.978	17.450	Bottom	0.713	Min Temp %	0.800	74.573	0.161
+0.4924D+E	11.625	17.500	Bottom	0.713	Min Temp %	0.800	74.573	0.156
+0.4924D+E	11.273	17.550	Bottom	0.713	Min Temp %	0.800	74.573	0.151
+0.4924D+E	10.922	17.600	Bottom	0.713	Min Temp %	0.800	74.573	0.146
+0.4924D+E	10.571	17.650	Bottom	0.713	Min Temp %	0.800	74.573	0.142
+0.4924D+E	10.221	17.700	Bottom	0.713	Min Temp %	0.800	74.573	0.137
+0.4924D+E	9.873	17.750	Bottom	0.713	Min Temp %	0.800	74.573	0.132
+0.4924D+E	9.526	17.800	Bottom	0.713	Min Temp %	0.800	74.573	0.128
+0.4924D+E	9.181	17.850	Bottom	0.713	Min Temp %	0.800	74.573	0.123
+0.4924D+E	8.839	17.900	Bottom	0.713	Min Temp %	0.800	74.573	0.119
+0.4924D+E	8.499	17.950	Bottom	0.713	Min Temp %	0.800	74.573	0.114
+0.4924D+E	8.161	18.000	Bottom	0.713	Min Temp %	0.800	74.573	0.109
+0.4924D+E	7.827	18.050	Bottom	0.713	Min Temp %	0.800	74.573	0.105
+0.4924D+E	7.496	18.100	Bottom	0.713	Min Temp %	0.800	74.573	0.101
+0.4924D+E	7.168	18.150	Bottom	0.713	Min Temp %	0.800	74.573	0.096
+0.4924D+E	6.844	18.200	Bottom	0.713	Min Temp %	0.800	74.573	0.092
+0.4924D+E	6.525	18.250	Bottom	0.713	Min Temp %	0.800	74.573	0.087
+0.4924D+E	6.209	18.300	Bottom	0.713	Min Temp %	0.800	74.573	0.083
+0.4924D+E	5.898	18.350	Bottom	0.713	Min Temp %	0.800	74.573	0.079
+0.4924D+E	5.593	18.400	Bottom	0.713	Min Temp %	0.800	74.573	0.075
+0.4924D+E	5.292	18.450	Bottom	0.713	Min Temp %	0.800	74.573	0.071
+0.4924D+E	4.996	18.500	Bottom	0.713	Min Temp %	0.800	74.573	0.067
+0.4924D+E	4.707	18.550	Bottom	0.713	Min Temp %	0.800	74.573	0.063
+0.4924D+E	4.423	18.600	Bottom	0.713	Min Temp %	0.800	74.573	0.059
+0.4924D+E	4.146	18.650	Bottom	0.713	Min Temp %	0.800	74.573	0.056
+0.4924D+E	3.875	18.700	Bottom	0.713	Min Temp %	0.800	74.573	0.052
+0.4924D+E	3.611	18.750	Bottom	0.713	Min Temp %	0.800	74.573	0.048
+0.4924D+E	3.353	18.800	Bottom	0.713	Min Temp %	0.800	74.573	0.045
+0.4924D+E	3.104	18.850	Bottom	0.713	Min Temp %	0.800	74.573	0.042
+0.4924D+E	2.861	18.900	Bottom	0.713	Min Temp %	0.800	74.573	0.038
+0.4924D+E	2.627	18.950	Bottom	0.713	Min Temp %	0.800	74.573	0.035
+0.4924D+E	2.401	19.000	Bottom	0.713	Min Temp %	0.800	74.573	0.032
+0.4924D+E	2.183	19.050	Bottom	0.713	Min Temp %	0.800	74.573	0.029
+0.4924D+E	1.974	19.100	Bottom	0.713	Min Temp %	0.800	74.573	0.026
+0.4924D+E	1.774	19.150	Bottom	0.713	Min Temp %	0.800	74.573	0.024



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Project Title: Fire Rebuild
 Engineer: ELD
 Project ID: ARCE 453-03
 Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F6- Grid E WSWH

Z-Axis Footing Flexure - Maximum Values for Load Combination

Load Combination...	Mu (ft-k)	Distance from left (ft)	Tension Side	As Req'd (in^2)	Governed by	Actual As (in^2)	Phi*Mn (ft-k)	Mu / PhiMn
+0.4924D+E	1.583	19.200	Bottom	0.713	Min Temp %	0.800	74.573	0.021
+0.4924D+E	1.401	19.250	Bottom	0.713	Min Temp %	0.800	74.573	0.019
+0.4924D+E	1.229	19.300	Bottom	0.713	Min Temp %	0.800	74.573	0.016
+0.4924D+E	1.068	19.350	Bottom	0.713	Min Temp %	0.800	74.573	0.014
+0.4924D+E	0.916	19.400	Bottom	0.713	Min Temp %	0.800	74.573	0.012
+0.4924D+E	0.775	19.450	Bottom	0.713	Min Temp %	0.800	74.573	0.010
+0.4924D+E	0.645	19.500	Bottom	0.713	Min Temp %	0.800	74.573	0.009
+0.4924D+E	0.526	19.550	Bottom	0.713	Min Temp %	0.800	74.573	0.007
+0.4924D+E	0.419	19.600	Bottom	0.713	Min Temp %	0.800	74.573	0.006
+0.4924D+E	0.323	19.650	Bottom	0.713	Min Temp %	0.800	74.573	0.004
+0.4924D+E	0.239	19.700	Bottom	0.713	Min Temp %	0.800	74.573	0.003
+0.4924D+E	0.167	19.750	Bottom	0.713	Min Temp %	0.800	74.573	0.002
+0.4924D+E	0.108	19.800	Bottom	0.713	Min Temp %	0.800	74.573	0.001
+0.4924D+E	0.061	19.850	Bottom	0.713	Min Temp %	0.800	74.573	0.001
+0.4924D+E	0.027	19.900	Bottom	0.713	Min Temp %	0.800	74.573	0.000
+0.4924D+E	0.000	19.950	0	0.000	0	0.000	0.000	0.000
+0.4924D+E	0.000	20.000	0	0.000	0	0.000	0.000	0.000

One Way Shear

Punching Shear

Load Combination...	Phi Vn	vu @ Col #1	vu @ Col #2	Phi Vn	vu @ Col #1	vu @ Col #2
+1.40D	82.16 psi	0.03 psi	0.03 psi	164.32 psi	0.01 psi	0.01 psi
+0.90D+W	82.16 psi	5.45 psi	6.64 psi	164.32 psi	0.65 psi	0.72 psi
+0.90D-W	82.16 psi	6.64 psi	5.45 psi	164.32 psi	0.72 psi	0.65 psi
+1.608D+E	82.16 psi	6.04 psi	6.10 psi	164.32 psi	0.68 psi	0.66 psi
+1.608D-E	82.16 psi	6.10 psi	6.04 psi	164.32 psi	0.66 psi	0.68 psi
+0.4924D+E	82.16 psi	2.98 psi	8.74 psi	164.32 psi	0.35 psi	0.01 psi
+0.4924D-E	82.16 psi	8.74 psi	2.98 psi	164.32 psi	0.01 psi	0.35 psi



Company:	ARCE 453-03	Date:	3/15/2022
Engineer:	ELD	Page:	1/5
Project:	Fire Rebuild		
Address:			
Phone:			
E-mail:			

1. Project information

Customer company:
 Customer contact name:
 Customer e-mail:
 Comment:

Project description:
 Location:
 Fastening description:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-14
 Units: Imperial units

Anchor Information:

Anchor type: Cast-in-place
 Material: AB
 Diameter (inch): 0.625
 Effective Embedment depth, h_{ef} (inch): 6.000
 Anchor category: -
 Anchor ductility: Yes
 h_{min} (inch): 8.13
 C_{min} (inch): 3.75
 S_{min} (inch): 3.75

Base Material

Concrete: Normal-weight
 Concrete thickness, h (inch): 12.00
 State: Uncracked
 Compressive strength, f'_c (psi): 2500
 $\Psi_{c,v}$: 1.4
 Reinforcement condition: B tension, B shear
 Supplemental reinforcement: No
 Reinforcement provided at corners: No
 Ignore concrete breakout in tension: No
 Ignore concrete breakout in shear: No
 Ignore 6do requirement: No
 Build-up grout pad: No

Base Plate

Length x Width x Thickness (inch): 20.00 x 12.00 x 0.25
 Yield stress: 36000 psi

Profile type/size: HSS12X6X1/2

Recommended Anchor

Anchor Name: PAB Pre-Assembled Anchor Bolt - PAB5 (5/8"Ø)



Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

Company:	ARCE 453-03	Date:	3/15/2022
Engineer:	ELD	Page:	2/5
Project:	Fire Rebuild		
Address:			
Phone:			
E-mail:			

Load and Geometry

Load factor source: ACI 318 Section 5.3

Load combination: not set

Seismic design: No

Anchors subjected to sustained tension: Not applicable

Apply entire shear load at front row: No

Anchors only resisting wind and/or seismic loads: Yes

Strength level loads:

N_{ua} [lb]: 3034

V_{uax} [lb]: 5561

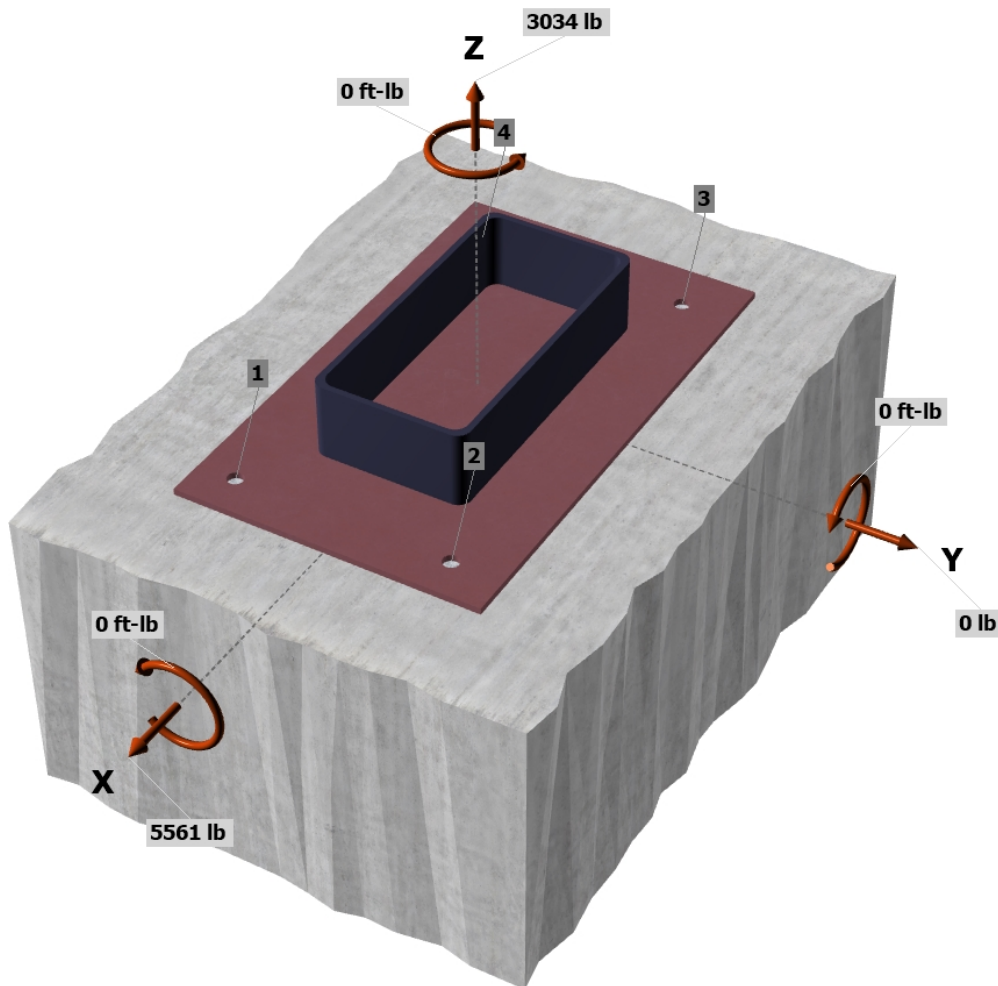
V_{uay} [lb]: 0

M_{ux} [ft-lb]: 0

M_{uy} [ft-lb]: 0

M_{uz} [ft-lb]: 0

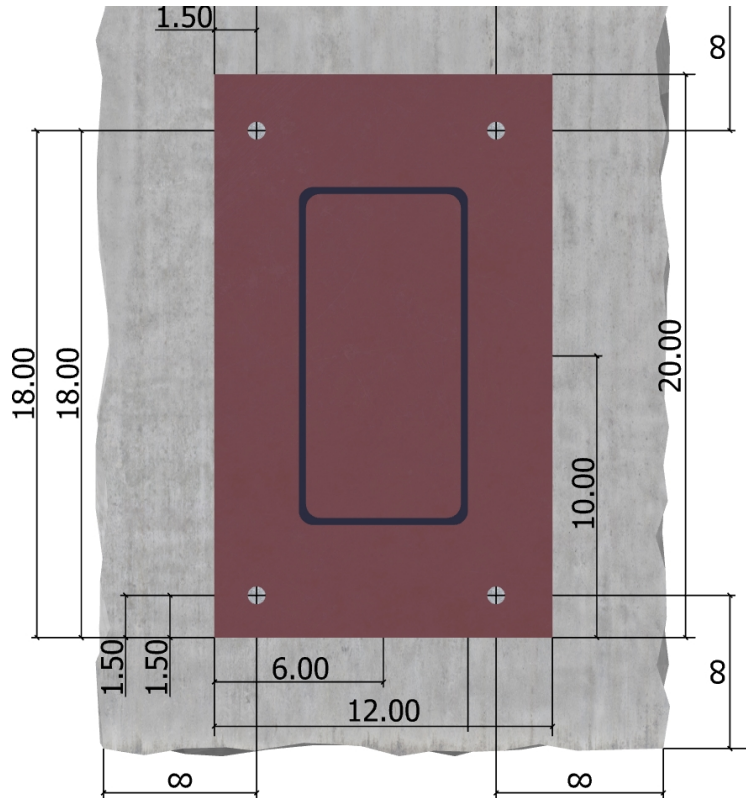
<Figure 1>



Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.

Company:	ARCE 453-03	Date:	3/15/2022
Engineer:	ELD	Page:	3/5
Project:	Fire Rebuild		
Address:			
Phone:			
E-mail:			

<Figure 2>



Company:	ARCE 453-03	Date:	3/15/2022
Engineer:	ELD	Page:	4/5
Project:	Fire Rebuild		
Address:			
Phone:			
E-mail:			

3. Resulting Anchor Forces

Anchor	Tension load, N_{ua} (lb)	Shear load x, V_{uax} (lb)	Shear load y, V_{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	691.2	1373.1	-33.3	1373.5
2	779.7	1407.4	-33.3	1407.8
3	825.8	1407.4	33.3	1407.8
4	737.3	1373.1	33.3	1373.5
Sum	3034.0	5561.0	0.0	5562.6

Maximum concrete compression strain (%): 0.00

Maximum concrete compression stress (psi): 0

Resultant tension force (lb): 3034

Resultant compression force (lb): 0

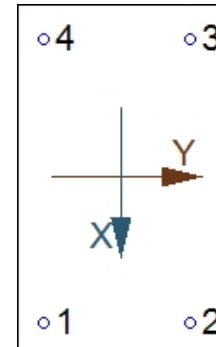
Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.25

Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.25

Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.00

Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.00

<Figure 3>



4. Steel Strength of Anchor in Tension (Sec. 17.4.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
13100	0.75	9825

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.4.2)

$$N_b = k_c \lambda_a \sqrt{f_c} h_{ef}^{1.5} \text{ (Eq. 17.4.2.2a)}$$

k_c	λ_a	f_c (psi)	h_{ef} (in)	N_b (lb)
24.0	1.00	2500	6.000	17636

$$\phi N_{cbg} = \phi (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b \text{ (Sec. 17.3.1 \& Eq. 17.4.2.1b)}$$

A_{Nc} (in ²)	A_{Nco} (in ²)	$C_{a,min}$ (in)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕN_{cbg} (lb)
1024.06	324.00	-	0.947	1.000	1.25	1.000	17636	0.70	46181

6. Pullout Strength of Anchor in Tension (Sec. 17.4.3)

$$\phi N_{pn} = \phi \Psi_{c,P} N_p = \phi \Psi_{c,P} 8 A_{brg} f_c \text{ (Sec. 17.3.1, Eq. 17.4.3.1 \& 17.4.3.4)}$$

$\Psi_{c,P}$	A_{brg} (in ²)	f_c (psi)	ϕ	ϕN_{pn} (lb)
1.4	2.10	2500	0.70	41121

Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.



Company:	ARCE 453-03	Date:	3/15/2022
Engineer:	ELD	Page:	5/5
Project:	Fire Rebuild		
Address:			
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8. Steel Strength of Anchor in Shear (Sec. 17.5.1)

V_{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout}\phi V_{sa}$ (lb)
7865	1.0	0.65	5112

10. Concrete Pryout Strength of Anchor in Shear (Sec. 17.5.3)

$$\phi V_{cp} = \phi k_{cp} N_{cb} = \phi k_{cp} (A_{Nc} / A_{Nco}) \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,NNb} \quad (\text{Sec. 17.3.1 \& Eq. 17.5.3.1a})$$

k_{cp}	A_{Nc} (in ²)	A_{Nco} (in ²)	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,NN}$	N_b (lb)	ϕ	ϕV_{cp} (lb)
2.0	256.02	324.00	1.000	1.250	1.000	17636	0.70	24388

11. Results

Interaction of Tensile and Shear Forces (Sec. 17.6.)

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status	
Steel	826	9825	0.08	Pass (Governs)	
Concrete breakout	3034	46181	0.07	Pass	
Pullout	826	41121	0.02	Pass	
Shear	Factored Load, V_{ua} (lb)	Design Strength, ϕV_n (lb)	Ratio	Status	
Steel	1408	5112	0.28	Pass (Governs)	
Pryout	1408	24388	0.06	Pass	
Interaction check	$N_{ua}/\phi N_n$	$V_{ua}/\phi V_n$	Combined Ratio	Permissible	Status
Sec. 17.6..2	0.00	0.28	27.5%	1.0	Pass

PAB5 (5/8"Ø) with hef = 6.000 inch meets the selected design criteria.

Base Plate Thickness

Required base plate thickness: 0.248 inch

12. Warnings

- Designer must exercise own judgement to determine if this design is suitable.



5880 Commerce Blvd.
Suite 105
Rohnert Park, Ca
Phone: (707) 578-8185

Project Title: **Fire Rebuild**
Engineer: **ELD**
Project ID: **ARCE 453-03**
Project Descr:

Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F7- Tranfser Post Column Fdn

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

General Information

Material Properties

f'c : Concrete 28 day strength	2.50 ksi
fy : Rebar Yield	60.0 ksi
Ec : Concrete Elastic Modulus	3,122.0 ksi
Concrete Density	150.0 pcf
φ : Phi Values	
Flexure :	0.90
Shear :	0.750

Analysis/Design Settings

Calculate footing weight as dead load ?	Yes
Calculate Pedestal weight as dead load ?	Yes
Min Steel % Bending Reinf (based on 'd')	
Min Allow % Temp Reinf (based on thick)	0.00180
Min. Overturning Safety Factor	1.0: 1
Min. Sliding Safety Factor	1.0: 1

Soil Information

Allowable Soil Bearing	1.995 ksf
Increase Bearing By Footing Weight	Yes
Soil Passive Sliding Resistance	150.0 pcf
<i>(Uses entry for "Footing base depth below soil surface" for force)</i>	
Coefficient of Soil/Concrete Friction	0.30

Soil Bearing Increase

Footing base depth below soil surface	3.0 ft
Increases based on footing Depth	
Allowable pressure increase per foot when base of footing is below	ksf ft
Increases based on footing Width . . .	
Allowable pressure increase per foot when maximum length or width is greater tha	ksf ft
Maximum Allowed Bearing Pressure	10.0 ksf
<i>(A value of zero implies no limit)</i>	
Adjusted Allowable Soil Bearing	2.445 ksf
<i>(Allowable Soil Bearing adjusted for footing weight and depth & width increases as specified by user.)</i>	

Dimensions & Reinforcing

Distance Left of Column #1 = 3.50 ft	Pedestal dimensions...	Col #1	Col #2	Bars left of Col #1	Count	Size #	As Provided	As Req'd
Between Columns = ft								
Distance Right of Column #2 = 3.50 ft	Sq. Dim. = 12.0	12.0 in		Bottom Bars	4.0	6	1.760	1.555 in^2
Total Footing Length = 7.0 ft	Height = 8.0	8.0 in		Top Bars	4.0	6	1.760	1.555 in^2
Footing Width = 4.0 ft				Bars Btwn Cols				
Footing Thickness = 36.0 in				Bottom Bars	4.0	6	1.760	1.555 in^2
				Top Bars	4.0	6	1.760	1.555 in^2
Rebar Center to Concrete Edge @ Top = 3.0 in				Bars Right of Col #2				
Rebar Center to Concrete Edge @ Bottom = 3.0 in				Bottom Bars	4.0	6	1.760	1.555 in^2
				Top Bars	4.0	6	1.760	1.555 in^2

Applied Loads

Applied @ Left Column	D	Lr	L	S	W	E	H
Axial Load Downward =						4.030	k
Moment (+CW) =							k-ft
Shear (+X) =						5.60	k
Applied @ Right Column							
Axial Load Downward =							k
Moment (+CW) =							k-ft
Shear (+X) =							k
Overburden =							





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Combined Footing

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: F7- Tranfser Post Column Fdn

DESIGN SUMMARY

Design OK

Factor of Safety	Item	Applied	Capacity	Governing Load Combination
PASS 1.478	Overturning	18.185 k-ft	26.880 k-ft	+0.60D-0.70E
PASS 1.061	Sliding	-3.920 k	4.158 k	+0.60D-0.70E
PASS 2.722	Uplift	2.821 k	7.680 k	+0.60D-0.70E

Utilization Ratio	Item	Applied	Capacity	Governing Load Combination
PASS 0.6079	Soil Bearing	1.486 ksf	2.445 ksf	+0.60D-0.70E
PASS 0.05590	1-way Shear - Col #1	4.192 psi	75.0 psi	+0.4924D+E
PASS 0.05590	1-way Shear - Col #2	4.192 psi	75.0 psi	+0.4924D+E
PASS 0.003611	2-way Punching - Col #1	0.5417 psi	150.0 psi	+0.4924D+E
PASS 0.003611	2-way Punching - Col #2	0.5417 psi	150.0 psi	+0.4924D+E
PASS 0.02047	Flexure - Left of Col #1 - Top	-5.266 k-ft	257.260 k-ft	+1.608D+E
PASS 0.03191	Flexure - Left of Col #1 - Bottom	8.210 k-ft	257.260 k-ft	+0.4924D-E
PASS No Bending	Flexure - Between Cols - Top	0.0 k-ft	0.0 k-ft	N/A
PASS No Bending	Flexure - Between Cols - Bottom	0.0 k-ft	0.0 k-ft	N/A
PASS 0.04044	Flexure - Right of Col #2 - Top	-10.405 k-ft	257.260 k-ft	+1.608D-E
PASS 0.04641	Flexure - Right of Col #2 - Bottom	11.939 k-ft	257.260 k-ft	+0.4924D+E

Soil Bearing

Load Combination...	Total Bearing	Eccentricity from Ftg CL	Actual Soil Bearing Stress		Allowable	Actual / Allow Ratio
			@ Left Edge	@ Right Edge		
D Only	12.80 k	0.000 ft	0.46 ksf	0.46 ksf	2.45 ksf	0.187
+0.60D	7.68 k	0.000 ft	0.27 ksf	0.27 ksf	2.45 ksf	0.112
+D+0.70E	15.62 k	0.920 ft	0.12 ksf	1.00 ksf	2.45 ksf	0.408
+D-0.70E	9.98 k	-1.440 ft	0.81 ksf	0.00 ksf	2.45 ksf	0.330
+D+0.5250E	14.92 k	0.723 ft	0.20 ksf	0.86 ksf	2.45 ksf	0.353
+D-0.5250E	10.68 k	-1.009 ft	0.71 ksf	0.05 ksf	2.45 ksf	0.291
+0.60D+0.70E	10.50 k	1.369 ft	0.00 ksf	0.82 ksf	2.45 ksf	0.335
+0.60D-0.70E	4.86 k	-2.958 ft	1.49 ksf	0.00 ksf	2.45 ksf	0.608

Overturning Stability

Load Combination...	Moments about Left Edge k-ft			Moments about Right Edge k-ft		
	Overturning	Resisting	Ratio	Overturning	Resisting	Ratio
D Only	0.00	0.00	999.000	0.00	0.00	999.000
+0.60D	0.00	0.00	999.000	0.00	0.00	999.000
+D+0.70E	0.00	0.00	999.000	10.78	54.67	5.072
+D-0.70E	18.19	44.80	2.464	7.41	59.17	7.991
+D+0.5250E	0.00	0.00	999.000	8.09	52.21	6.457
+D-0.5250E	13.64	44.80	3.285	5.55	55.58	10.007
+0.60D+0.70E	0.00	0.00	999.000	10.78	36.75	3.409
+0.60D-0.70E	18.19	26.88	1.478	7.41	41.25	5.571

Sliding Stability

Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio
D Only	0.00 k	6.54 k	999
+0.60D	0.00 k	5.00 k	999
+D+0.70E	3.92 k	7.39 k	1.884
+D-0.70E	-3.92 k	5.69 k	1.452
+D+0.5250E	2.94 k	7.17 k	2.44
+D-0.5250E	-2.94 k	5.91 k	2.009
+0.60D+0.70E	3.92 k	5.85 k	1.492
+0.60D-0.70E	-3.92 k	4.16 k	1.061



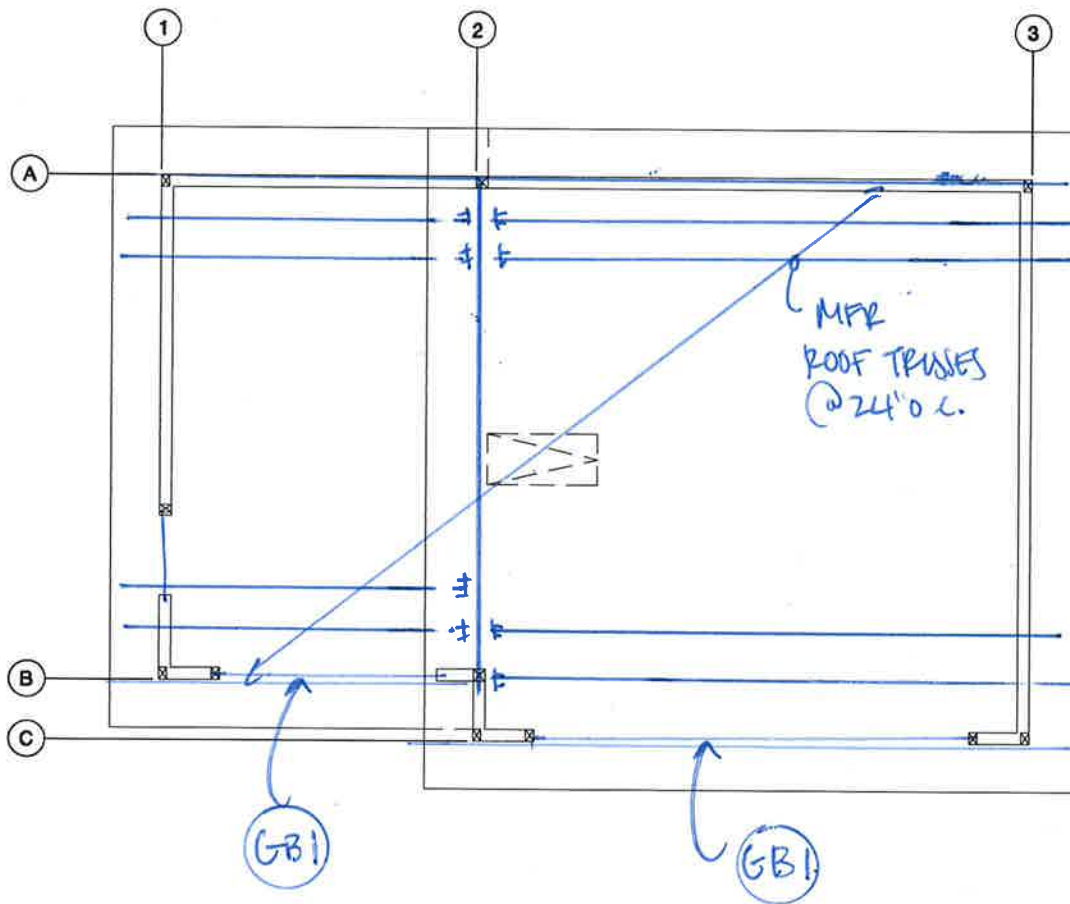
GARAGE GRAVITY CALCULATIONS



FIRE REBUILD

VERTICAL SYSTEM: 2nd FLOOR FRAMING KEY PLAN
LEETE AVENUE
SANTA ROSA, CA 95404

Class	ARCE 453-03
Date	3/2/2022
PE	ELD

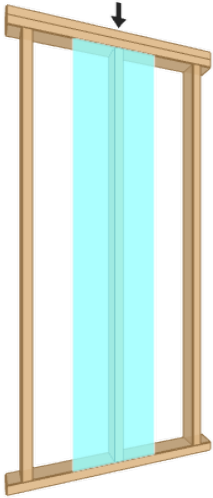


Level, S3: Garage Grid C Stud
2 piece(s) 2 x 6 DF No.2 @ 16" OC

Wall Height: 15' 6"

Member Height: 15' 1 1/2"

O. C. Spacing: 16.00"



Drawing is Conceptual

Design Results	Actual	Allowed	Result	LDF	Load: Combination
Slenderness	33	50	Passed (66%)	--	--
Compression (lbs)	652	6831	Passed (10%)	1.25	1.0 D + 1.0 Lr
Plate Bearing (lbs)	652	11602	Passed (6%)	--	1.0 D + 1.0 Lr
Lateral Reaction (lbs)	196	--	--	1.60	1.0 D + 0.6 W
Lateral Shear (lbs)	184	3168	Passed (6%)	1.60	1.0 D + 0.6 W
Lateral Moment (ft-lbs)	742 @ mid-span	2707	Passed (27%)	1.60	1.0 D + 0.6 W
Total Deflection (in)	0.33 @ mid-span	0.50	Passed (L/551)	--	1.0 D + 0.6 W
Bending/Compression	0.29	1	Passed (29%)	1.60	1.0 D + 0.6 W

- Lateral deflection criteria: Wind (L/360)
- Input axial load eccentricity for this design is 16.67% of applicable member side dimension.
- Applicable calculations are based on NDS.
- A bearing area factor of 1.125 has been applied to base plate bearing capacity.
- The column stability factor (Kf = 0.6) applied to this design assumes nailed built-up columns per NDS section 15.3.3. For Weyerhaeuser ELP products refer to the U.S. Wall Guide for multiple-member connection requirements.
- A 15% increase in the moment capacity has been added to account for repetitive member usage.

Supports	Type	Material
Top	Dbl 2X	Douglas Fir-Larch
Base	2X	Douglas Fir-Larch

System : Wall
Member Type : Stud
Building Code : IBC 2015
Design Methodology : ASD

Max Unbraced Length	Comments
1'	

Lateral Connections				
Supports	Connector	Type/Model	Quantity	Connector Nailing
Top	Nails	8d x 2.5" Box (Toe)	3	N/A
Base	Nails	8d x 2.5" Box (Toe)	3	N/A

- Nailed connection at the top of the member is assumed to be nailed through the bottom 2x plate prior to placement of the top 2x of the double top plate assembly.

Vertical Load	Spacing	Dead (0.90)	Roof Live (non-snow: 1.25)	Comments
1 - Point (lb)	N/A	280	372	Default Load

Lateral Load	Location	Spacing	Wind (1.60)	Comments
1 - Uniform (PSF)	Full Length	16.00"	32.4	

- ASCE/SEI 7 Sec. 30.4: Exposure Category (C), Mean Roof Height (33'), Topographic Factor (1.0), Wind Directionality Factor (0.85), Basic Wind Speed (115), Risk Category(II), Effective Wind Area determined using full member span and trib. width.
- IBC Table 1604.3, footnote f: Deflection checks are performed using 42% of this lateral wind load.

Member Notes
S1- Typ Ext Stud

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The product application, input design loads, dimensions and support information have been provided by ForteWEB Software Operator

ForteWEB Software Operator	Job Notes
Erin Dupree MKM & Associates (707) 578-8185 erin@mkmassociates.com	





Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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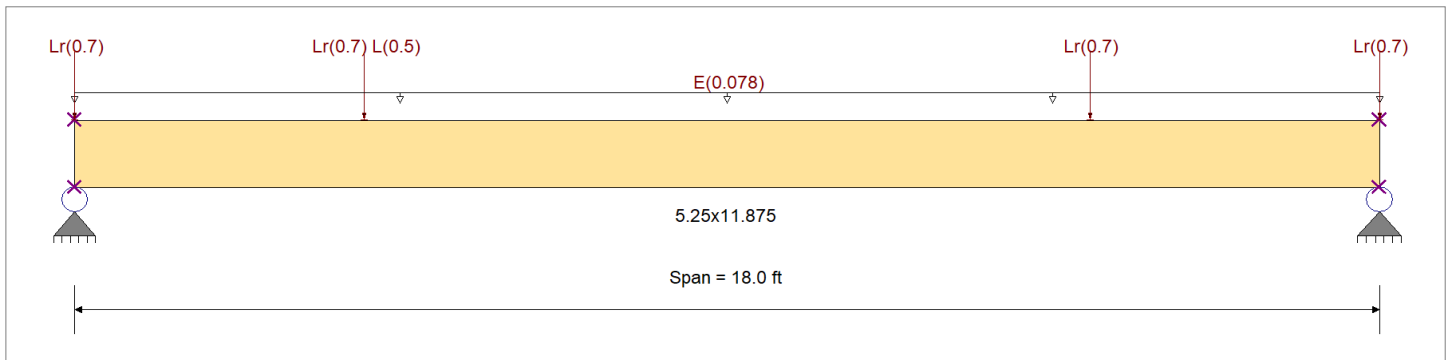
DESCRIPTION: GB1- Garage Header OOP

CODE REFERENCES

Calculations per NDS 2018, IBC 2018, CBC 2019, ASCE 7-16
Load Combination Set : ASCE 7-16

Material Properties

Analysis Method : Allowable Stress Design	Fb +	2,800.0 psi	E : Modulus of Elasticity	
Load Combination : ASCE 7-16	Fb -	2,800.0 psi	Ebend- xx	2,000.0ksi
	Fc - Prll	2,750.0 psi	Eminbend - xx	1,000.0ksi
Wood Species : 3-1/2-7 SCL	Fc - Perp	700.0 psi		
Wood Grade : Manufactured	Fv	285.0 psi		
	Ft	200.0 psi	Density	35.020pcf
Beam Bracing : Completely Unbraced				



Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Beam self weight calculated and added to loading
Uniform Load : E = 0.0260 ksf, Tributary Width = 3.0 ft, (Wind)
Point Load : Lr = 0.70 k @ 0.0 ft, (Awning)
Point Load : Lr = 0.70, L = 0.50 k @ 4.0 ft, (Awning)
Point Load : Lr = 0.70 k @ 14.0 ft, (Awning)
Point Load : Lr = 0.70 k @ 18.0 ft, (Awning)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio	=	0.133 : 1	Maximum Shear Stress Ratio	=	0.034 : 1
Section used for this span		5.25x11.875	Section used for this span		5.25x11.875
fb: Actual	=	597.03psi	fv: Actual	=	15.56 psi
Fb: Allowable	=	4,480.00psi	Fv: Allowable	=	456.00 psi
Load Combination		+D+0.750Lr	Load Combination		+D+0.750Lr
Location of maximum on span	=	9.000ft	Location of maximum on span	=	17.015 ft
Span # where maximum occurs	=	Span # 1	Span # where maximum occurs	=	Span # 1
Maximum Deflection					
Max Downward Transient Deflection	0.643 in	Ratio = 335 >=240	Span: 1 : Lr Only		
Max Upward Transient Deflection	0 in	Ratio = 0 <240	n/a		
Max Downward Total Deflection	0.608 in	Ratio = 355 >=240	Span: 1 : +D+0.750Lr		
Max Upward Total Deflection	0 in	Ratio = 0 <240	n/a		

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios								Moment Values			Shear Values									
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	fv	F'v						
D Only	Length = 18.0 ft	1	0.030	0.006	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.61	135.08	4480.00	0.00	0.00	0.00	0.12	2.92	456.00
+D+0.750Lr	Length = 18.0 ft	1	0.133	0.034	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.71	597.03	4480.00	0.00	0.00	0.00	0.65	15.56	456.00	
+0.60D	Length = 18.0 ft	1	0.018	0.004	1.60	1.000	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.37	81.05	4480.00	0.00	0.00	0.00	0.07	1.75	456.00	



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 Engineer: **ELD**
 Project ID: **ARCE 453-03**
 Project Descr:

Wood Beam

Project File: SC010222ELD_FireRebuild.ec6

LIC# : KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

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DESCRIPTION: GB1- Garage Header OOP

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
Lr Only	1	0.6431	9.066		0.0000	0.000

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Overall MAXimum	1.186	1.186
Overall MINimum	0.082	0.082
D Only	0.136	0.136
+D+0.750Lr	1.186	1.186
+0.60D	0.082	0.082



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DESCRIPTION: GB1- Garage Header

Maximum Forces & Stresses for Load Combinations

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values		
			M	V	C _d	C _{F/V}	C _i	C _r	C _m	C _t	C _L	M	fb	F'b	V	f _v	F'v
Length = 18.0 ft	1	0.147	0.066	1.60	1.000	1.00	1.00	1.00	1.00	0.93	6.30	612.61	4172.90	1.25	30.12	456.00	
+0.60D					1.000	1.00	1.00	1.00	1.00	0.93			0.00	0.00	0.00	0.00	
Length = 18.0 ft	1	0.063	0.028	1.60	1.000	1.00	1.00	1.00	1.00	0.93	2.69	261.22	4172.90	0.53	12.87	456.00	

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+Lr	1	0.2766	9.000		0.0000	0.000

Vertical Reactions

Load Combination	Support notation : Far left is #1		Values in KIPS	
	Support 1	Support 2		
Overall MAXimum	1.540	1.533		
Overall MINimum	0.017	0.003		
D Only	1.000	0.993		
+D+L	1.016	0.996		
+D+Lr	1.540	1.533		
+D+0.750Lr+0.750L	1.417	1.401		
+D+0.750L	1.012	0.996		
+D+0.750Lr	1.405	1.398		
+0.60D	0.600	0.596		
Lr Only	0.540	0.540		
L Only	0.017	0.003		



FIRE REBUILD

LATERAL LAYOUT - LOWER LEVEL
 LEETE AVENUE
 SANTA ROSA, CA 95404

Class		ARCE 453-03
Date		3/2/2022
PE	ELD	

LATERAL PLAN KEY

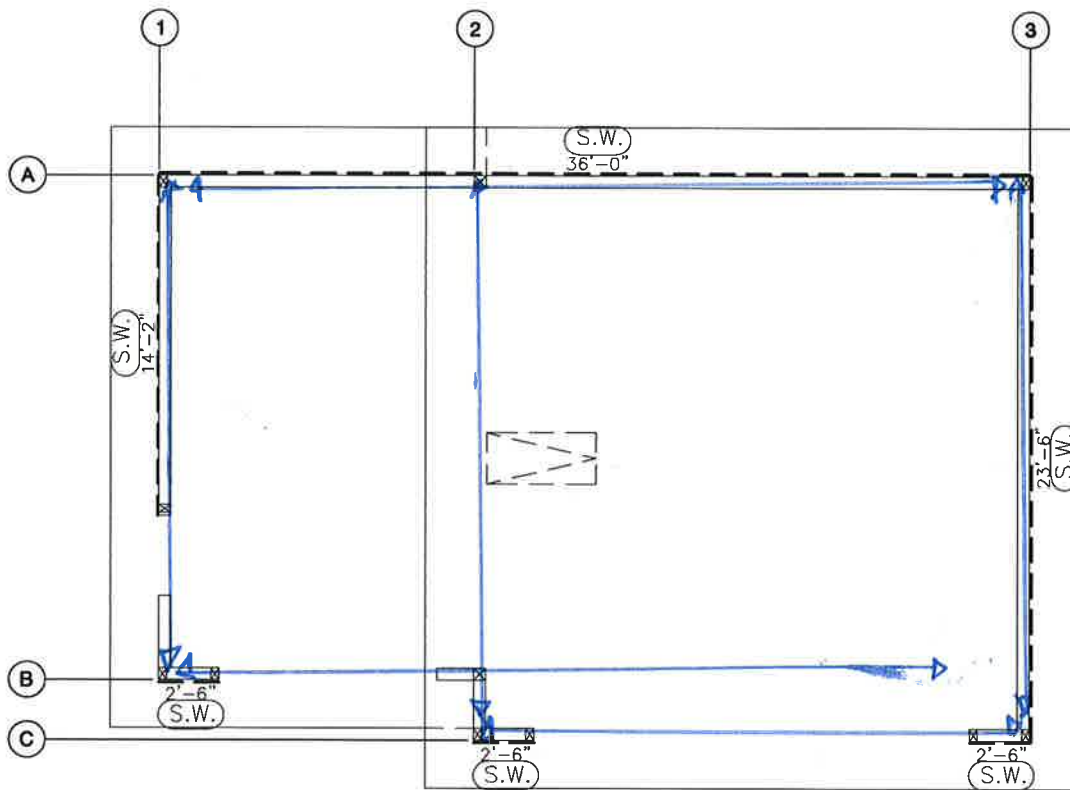
(SW) = Designed sheathed wall

(SP) = Designed Manufactured shear panel or frame

(SO) = Designed sheathed wall with opening

← = Collector/drag

ZCALC - GAR



SCALE: 1/8" = 1'-0"



JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
WIND - GARAGE

Date:
2/1/22

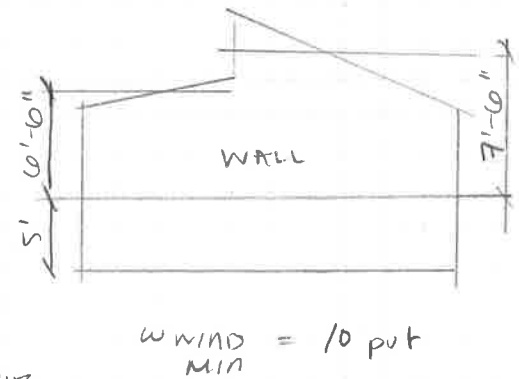
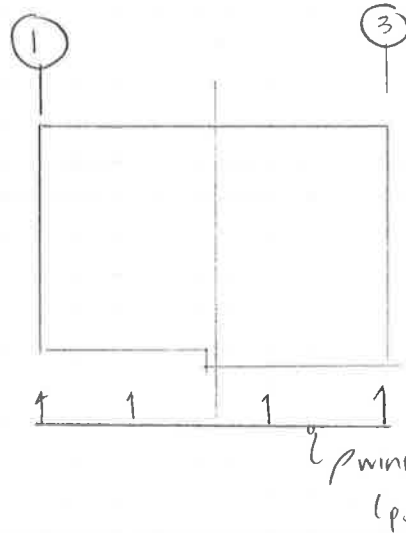
Sheet:

Advisor: James Mwangi

Class: ARCE 453-03

References:

[LATERAL DESIGN] WIND DESIGN, NUMERAL - GARAGE
SEE MAIN HOUSE WIND CRITERIA



	LOCATION	END ZONE			INTERIOR ZONE			(ASD) V _{wind} (lbs)
		p _{wind}	h (ft)	l (ft)	p _{wind}	h (ft)	l (ft)	
LINE 1	WALL	12.8	6'-6"	6'-0"	10	6'-6"	11'	1109
LINE 3	WALL	12.8	7'-6"	6'	10	7'-6"	11'	1208



JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
WIND - GARAGE

Date:

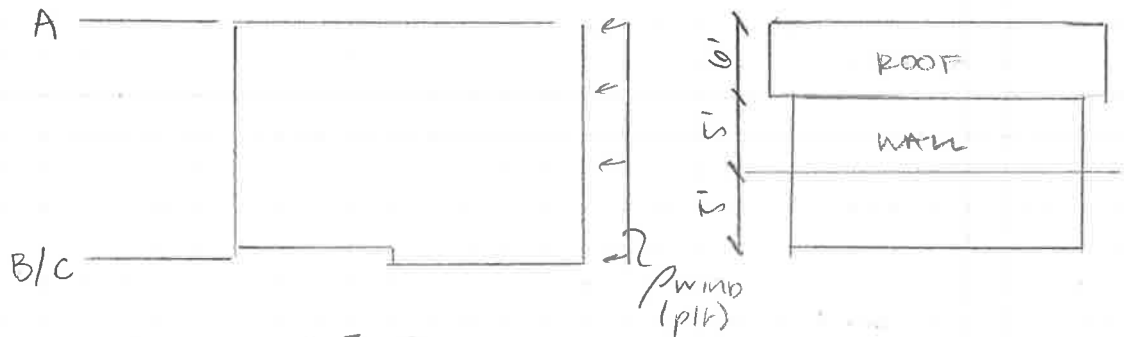
Sheet:

Advisor: James Mwangi

Class: ARCE 453-03

References:

[LATERAL DESIGN] WIND DESIGN, ALPHA - GARAGE
SEE MAIN HOUSE FOR WIND CRITERIA



$w_{ROOF\ MIN} = 5\ psf$
 $w_{WALL\ MIN} = 10\ psf$

LOCATION	END ZONE			INTERIOR ZONE			(ASD) V_{WIND} (plf)	
	p_{WIND}	$w (A)$	$l (ft)$	p_{WIND}	$w (ft)$	$l (ft)$		
LINE A	ROOF	5.0	6'	6'	5	6	7.5	1005#
	WALL	12.8	5'	6'	10	5	6	
LINE B/C	ROOF	5.0	6'	6'	5	6	7.5	1005#
	WALL	12.8	5'	6'	10	5	6	

**JOB NAME:** Fire Rebuild**Prepared by:** Erin L. Dupree**Subject:** LATERAL DESIGN
SEISMIC - GARAGE**Date:**
1/17/22**Sheet:****Advisor:** James Mwangi**Class:** ARCE 453-03**References:**

[LATERAL DESIGN] STORY DISTRIBUTION - GARAGE

GARAGE - SINGLE STORY

$$W_x = 12' - 9''$$

$$A_x = 1115 \text{ ft}^2$$

$$W_x = 19.5 \text{ psf}$$

$$W_x = 22 \text{ k}$$

(W_{ROOF} - W_{SOLAR} - W_{SPRINKLER} + 1/2 W_{WALL})

$$\sum W_i = 22 \text{ k}$$

$$W_x H_x = 277 \text{ kH}$$

$$K = 1.0$$

$$C_{vx} = 1.0$$

$$F_x = 6.82 \text{ k}$$

$$F_x / W_x = 0.31$$

$$\sum F_i / W_i = 0.408$$

STRENGTH DESIGN VALUES

$$C_s = 0.31$$

$$V = 6.82 \text{ k}$$

ALLOWABLE DESIGN VALUES

$$C_{sASD} = 0.7(C_s) = 0.220$$

$$C_{s \text{ COLLECTOR}} = 0.285$$

$$C_{s \text{ DIAPHR}} = 0.285$$

$$V_{ASD} = \underline{\underline{4.77 \text{ k}}}$$


JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
SEISMIC DISTRIB. - GARAGE

Date:
2/1/22

Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

[LATERAL DESIGN] SEISMIC DISTRIBUTION, GARAGE

GARAGE - ROOF

NOTE: LOADS IN ASD

$$w_x = 19.5 \text{ psf}$$

$$C_s = 0.220$$

$$V_{ASD} = 0.7 V_{USD EQ}$$

LINE 1

$$l_1 = 25'-0'' \quad w_1 = 20'-6'' \quad A_{T1} = 512 \text{ ft}^2$$

$$V_1 = \underline{2194 \text{ lbs}}$$

LINE 3

$$l_3 = 28'-0'' \quad w_3 = 21'-6'' \quad A_{T3} = 602 \text{ ft}^2$$

$$V_3 = \underline{2577 \#}$$

LINE A

$$l_A = 39'-0'' \quad w_A = 14'-0'' \quad A_{TA} = 546 \text{ ft}^2$$

$$V_A = \underline{2377 \#}$$

LINE B/C

$$l_{B1} = 15'-0'' \quad w_{B1} = 12'-6'' \quad A_{TB} = 565.5 \text{ ft}^2$$

$$l_{B2} = 27'-0'' \quad w_{B2} = 14'-0''$$

$$V_B = \underline{2421 \#}$$

$$A_{TOT \text{ NUM}} = 1114.5 \text{ ft}^2$$

$$V_{NUM} = 4771 \text{ lbs} \quad \checkmark$$

$$A_{TOT \text{ ALPHA}} = 1115.3 \text{ ft}^2$$

$$V_{ALPHA} = 4774 \text{ lbs} \quad \checkmark$$


JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
SHEAR WALL - GARAGE

Date:
2/1/22

Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

[LATERAL DESIGN] SHEAR WALLS - GARAGE

 SEE MAIN HOUSE CALCS FOR DESIGN CAPACITIES
AND EQUATIONS

 GARAGE ROOF - NUMERAL $S_{DS} = 2.038$
LINE 1

$$l_{sw} = 14'-0"$$

$$h_{RE} = 10'-0"$$

WIND: $V_1 = 1195\#$

$v_1 = 85 \text{ plf}$

SEISMIC: $V_1 = 2194\#$

$v_1 = 157 \text{ plf} \rightarrow \text{GOVERNS}$

$$w_{DL} = w_{WALL} (10') + w_{ROOF} (8'-0") = 202 \text{ plf}$$

$$T_{1W} = 5\# \quad T_{1E} = 1122\# \rightarrow \text{GOVERNS}$$

 USE "A6" SHEARWALL WITH HDU2
2x SILL TR W/ AB @ 4'-0" O.C.

LINE 3

$$l_{sw} = 23'-0"$$

$$h_{RE} = 10'-0"$$

WIND: $V_3 = 1366\#$

$v_3 = 58 \text{ plf}$

SEISMIC: $V_3 = 2577\#$

$v_3 = 110 \text{ plf} \rightarrow \text{GOVERNS}$

$$w_{DL} = w_{WALL} (10') + w_{ROOF} (14') = 248 \text{ plf}$$

$$T_{3W} = 0\# \quad T_{3E} = 106\# \rightarrow \text{GOVERNS}$$

 USE "A6" SHEARWALL WITH HDU2,
2x SILL TR WITH 5/8" AB @ 4'-0" OC


JOB NAME: Fire Rebuild

Prepared by: Erin L. Dupree

Subject: LATERAL DESIGN
SW DESIGN - GARAGE

Date:
2/1/22

Sheet:
Advisor: James Mwangi

Class: ARCE 453-03

References:

[LATERAL DESIGN] SHEARWALL DESIGN - GARAGE

GARAGE ROOF - ALPHA
LINE A

$$l_A = 36'-0" \quad w_R = 10'-0"$$

$$\begin{array}{ll} \text{WIND} = & V_A = 880\# \\ \text{SEISMIC} = & V_A = 2337\# \end{array} \quad \begin{array}{ll} V_A = & 24 \text{ plf} \\ V_A = & 65 \text{ plf} \rightarrow \text{GOVERNS} \end{array}$$

$$w_{DL} = w_{WALL} (10') + w_{ROOF} (3') = 136 \text{ plf}$$

$$T_{AW} = 0\# \quad T_{AE} = 0\# \quad \text{NO HD REQ'D}$$

USE "A6" SHEARWALL, 2x SILL TR
WITH 5/8" ϕ AB @ 4'-0" O.C.

LINE B/C

$$l_{B1} = 2'-4" \quad l_{B2} = 2'-4" \quad l_{B3} = 2'-4" \quad w_{PL} = 8$$

$$w_R = \frac{(15'-6" + 10'-0")}{2} = 12'-6" \quad \left\{ \begin{array}{l} w_{SW} = 8'-0" \\ \text{STEEL AT HEADER} \end{array} \right.$$

$$\begin{array}{ll} \text{WIND} = & V_B = 970\# \\ \text{SEISMIC} = & V_B = 2437\# \end{array} \quad \begin{array}{ll} V_B = & 139 \text{ plf} \\ V_B = & 349 \text{ plf} \rightarrow \text{GOVERNS} \end{array}$$

$$w_{DL} = w_{WALL} (12'-6") + w_{ROOF} (3') = 101 \text{ plf}$$

$$T_{BW} = 1022\# \quad T_{BE} = 2730\# \rightarrow \text{GOVERNS}$$

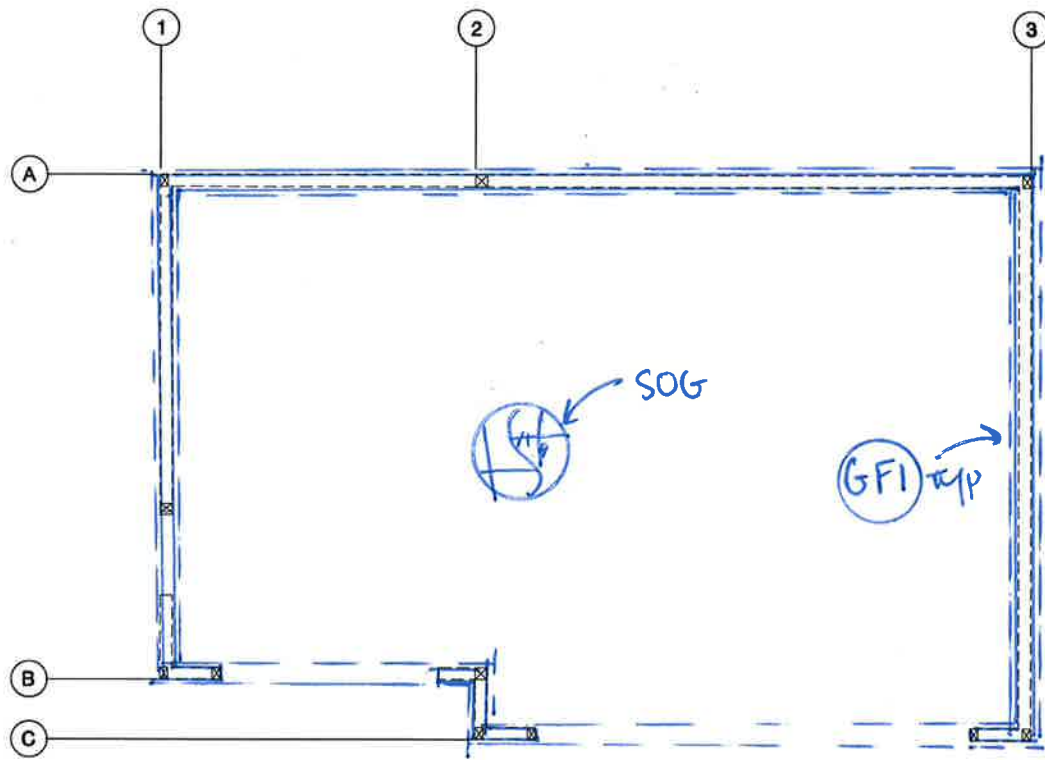
USE "A2" SHEARWALL, WITH HDUZ,
2x SILL TR WITH 5/8" ϕ AB @ 4'-0" O.C.



FIRE REBUILD

VERTICAL SYSTEM: FOUNDATION KEY PLAN
LEETE AVENUE
SANTA ROSA, CA 95404

Class	ARCE 453-03
Date	3/2/2022
PE	ELD





5880 Commerce Blvd.
Suite 105
Rohnert Park, Ca
Phone: (707) 578-8185

Project Title: **Fire Rebuild**
Engineer: **ELD**
Project ID: **ARCE 453-03**
Project Descr:

Beam on Elastic Foundation

Project File: SC010222ELD_FireRebuild.ec6

LIC#: KW-06016132, Build:20.22.2.9

MKM ASSOCIATES

(c) ENERCALC INC 1983-2022

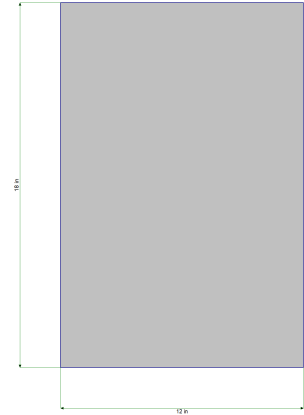
DESCRIPTION: GF1- Garage Footing, Typ.

CODE REFERENCES

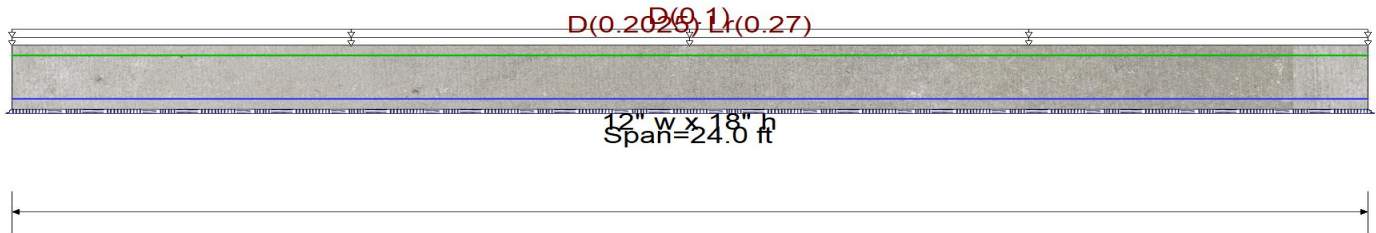
Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16
Load Combinations Used : ASCE 7-16

Material Properties

f'_c	=	3.0 ksi	ϕ Phi Values	Flexure :	0.90
$f_r = f'_c^{1/2} \cdot 7.50$	=	410.792 psi		Shear :	0.750
ψ Density	=	150.0 pcf	β_1	=	
λ Lt Wt Factor	=	1.0			
Elastic Modulus	=	3,122.0 ksi			
Soil Subgrade Modulus	=	250.0 psi / (inch deflection)			
Load Combination	ASCE 7-16				
f_y - Main Rebar	=	60.0 ksi	Fy - Stirrups	=	40.0 ksi
E - Main Rebar	=	29,000.0 ksi	E - Stirrups	=	29,000.0 ksi
			Stirrup Bar Size #	=	# 3
			Number of Resisting Legs Per Stirrup	=	



Beam is supported on an elastic foundation.



Cross Section & Reinforcing Details

Rectangular Section, Width = 12.0 in, Height = 18.0 in
Span #1 Reinforcing....

1-#4 at 3.0 in from Bottom, from 0.0 to 24.0 ft in this span

1-#4 at 3.0 in from Top, from 0.0 to 24.0 ft in this span

Service loads entered. Load Factors will be applied for calculations.

Applied Loads

Beam self weight calculated and added to loads

Load for Span Number 1

Uniform Load : D = 0.0150, Lr = 0.020 ksf, Tributary Width = 13.50 ft, (Roof)

Uniform Load : D = 0.010 ksf, Tributary Width = 10.0 ft, (Wall)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =	0.000 : 1	Maximum Deflection	
Section used for this span	Typical Section	Max Downward L+Lr+S Deflection	0.000 in
Mu : Applied	-0.00380 k-ft	Max Upward L+Lr+S Deflection	0.000 in
Mn * Phi : Allowable	15.494 k-ft	Max Downward Total Deflection	0.015 in
Load Combination	+1.40D	Max Upward Total Deflection	0.006 in
Location of maximum on span	11.859 ft		
Span # where maximum occurs	Span # 1		

Maximum Soil Pressure = **0.528** ksf at 12.00 ft LdComb: D Only
Allowable Soil Pressure = **1.50** ksf **OK**

Shear Stirrup Requirements

Entire Beam Span Length : , Req'd Vs = , use stirrups spaced at 0.000 in

Maximum Forces & Stresses for Load Combination

Load Combination	Segment Length	Span #	Location (ft) in Span	Bending Stress Results (k-ft)		
				Mu : Max	Phi*Mnx	Stress Ratio
MAXIMUM Bending Envelope						
Span # 1	1	1	23.718	-0.00	15.49	0.00
+1.40D						
Span # 1	1	1	23.718	-0.00	15.49	0.00



STRUCTURAL PLANS

03-17-22 ELD ELD
02-15-22 ELD ELD
75% PROGRESS SET

ISSUE INFORMATION

Designer:	Erin
PD:	ELD SR#:
Job:	ARCE 353-04
Checked by:	---
Plot Date:	1-28-20

Sheet Title:
FOUNDATION PLAN

Sheet
S1

FOUNDATION NOTES

- See structural detail (SD) sheets for standard construction details and "STRUCTURAL NOTES".
- Typical slab requirements

EXTERIOR PATIO:
 4" thick with #3 bars @ 18" o.c. each way
 (1/2" clear from top of slab);
 over 4" minimum compacted free-draining crushed rock

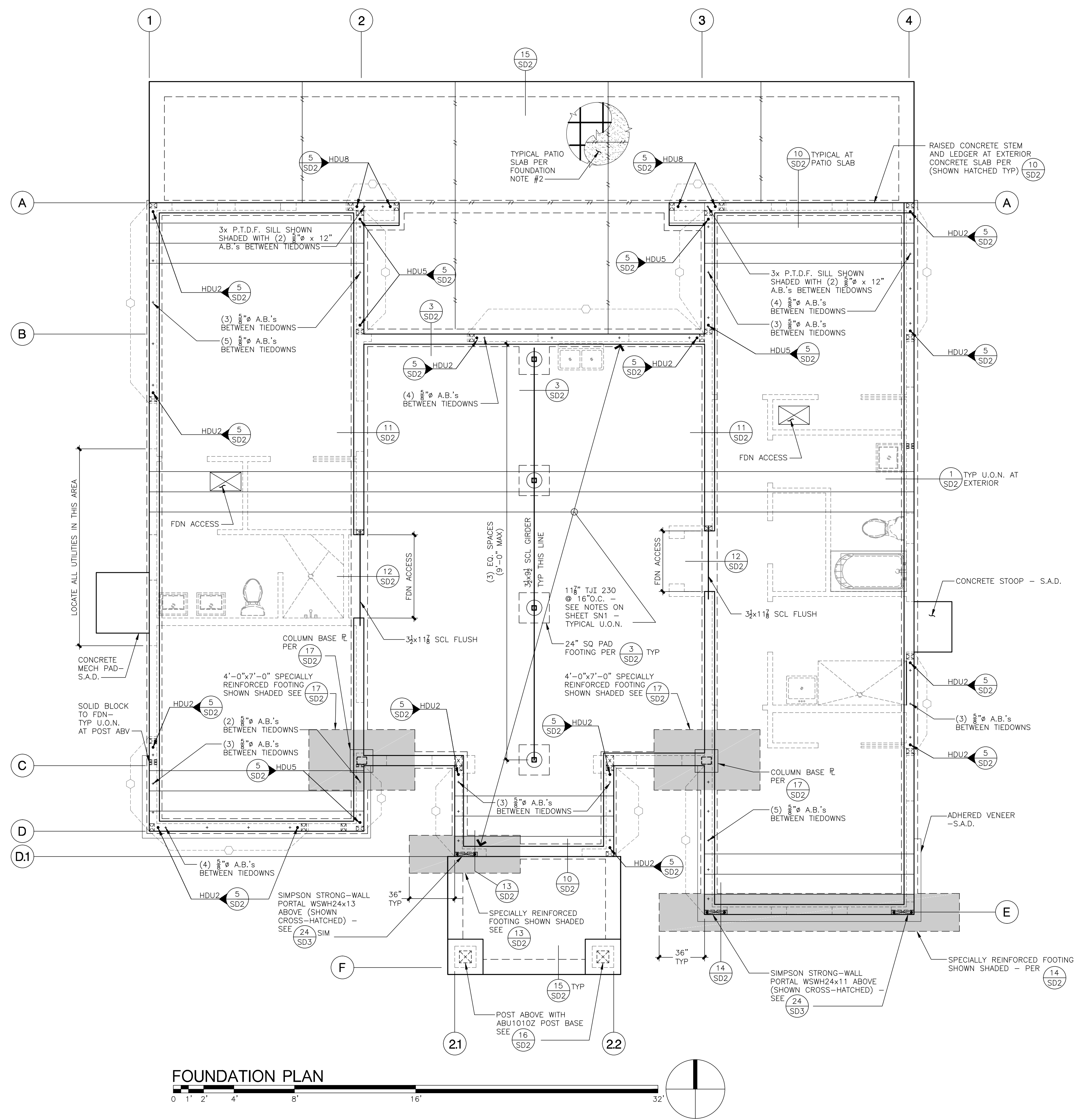
- ANCHOR BOLTS:**
 - Use 3/8" anchor bolts with standard cut washer over BPS 3/8" - 3" R washer.
 - Space anchor bolts at 48" o.c. maximum typical U.O.N.
 - Provide (2) 1/2" Anchor Bolts minimum per sill R.
 - All sill plates shall be P.T.D.F.
 - Use 12" long anchor bolts at 3x & 4x mudsills.

4. DRAINAGE:

- Finished grade to slope away from the building at a minimum slope of 5% for a minimum distance of 10 feet measured perpendicular to the exterior wall. If lot lines or obstructions prohibit 10 feet of slope, provide 5% slope to an approved alternate drainage method. Exterior paving, concrete slabs, or other impervious surfaces within 10 feet of the foundation to be sloped a minimum of 2% away from the building.
- The discharge of roof gutter downspouts to be as follows; (See also geotechnical report) into non-perforated pipes that discharge away from the structure per the geotechnical report and/or civil engineer. Non-perforated pipes connected to downspouts are **not** to be connected to perforated drain piping.
- Rigid drain piping discharging from drop inlets are to be separated from rigid downspout pipes and perforated drain piping. See civil drawings as applicable for additional information.
- Grade under floor ground surface to provide positive drainage to unobstructed outlet. Provide downslope underfloor foundation drains shall be provided through the foundation wall at spread footing foundations or under grade beams. See geotechnical engineer for locations of underfloor drains. Slope drainage pipes to suitable drainage outlet location per geotechnical engineer.
- Provide under slab drainage as directed by the geotechnical engineer. Slope sub grade to drainage pipes and slope pipe to suitable drainage outlet location per geotechnical engineer.
- Provide perimeter foundation subdrains per the geotechnical engineer. Perimeter foundation subdrains may be omitted at downhill foundation per geotechnical engineer. Drains to be sloped to suitable drainage outlets per geotechnical engineer.

- Prior to the contractor requesting a Building Department foundation inspection, the geotechnical engineer to advise the building official in writing that:
 - The building pad was prepared in accordance with the geotechnical report.
 - The utility trenches have been properly backfilled, compacted and "sealed off" to prevent moisture intrusion under the slab.
 - Foundation excavations, soil expansive characteristics and bearing capacity conform to the geotechnical report.
- Provide 15 mil Stego Vapor Barrier on top of sloped underfloor grade (See 4e).
- See Architectural, as applicable, for location of foundation penetrations.
- See Architectural drawings for dimensions, concrete stoops, landings, mechanical pads, exterior walkways, steps, driveways, etc.
- Walls above shown dashed.

7002 FIRE REBUILD 02-19-22



TYPICAL HANGER SCHEDULE
 USE HANGERS NOTED BELOW U.O.N.

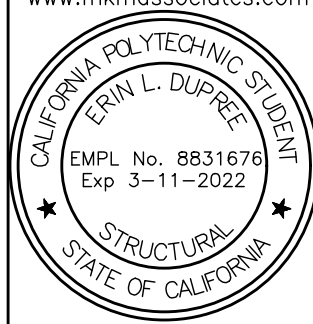
MEMBER	HANGER
1 1/2"x9 1/2" SCL	HUS1.81/10
3 1/2"x9 1/2" SCL	HHUS410
5 1/2"x9 1/2" SCL	HHUS5.50/10
1 1/2" TJI 230	IUS2.37/11.88 ITS2.37/11.88

NOTE TO CONTRACTOR
 PRIOR TO ANY WORK BEING PERFORMED, PLEASE VERIFY WITH MKM & ASSOCIATES THAT THE CONSTRUCTION DOCUMENTS BEING USED ARE THE CURRENT APPROVED PLANS

FOUNDATION PLAN



\\SERVER\REDIRECTED\FOLDERS\ERIN\DESKTOP\CAO\2022\CAO\FROM MD\CAO\FIRE REBUILD 51.DWG 3/17/2022 4:16 PM Plotted by (Last Drafter): ###



03/16/2022
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PROJECT MANAGER
Mark Douglas

STRUCTURAL OBSERVATION REQUIRED
SEE "STRUCTURAL OBSERVATION" NOTES ON SHEET SN1

FIRE REBUILD
Leete Avenue
Santa Rosa, CA 95404

03-17-22	ELD	ELD
02-15-22	ELD	ELD
02-15-22	ELD	ELD
75%	PROGRESS	SET

ISSUE INFORMATION

Designer: Erin
PD: ELD SR#: --

Job: ARCE 353-04
Checked by: --

Plot Date: 1-28-20

Sheet Title:
ROOF FRAMING PLAN

Sheet
S2

ROOF FRAMING NOTES

- See "SD" sheet(s) for structural details and "SN" sheet(s) for structural notes.
- Structural sheathed walls are designated per **SYMBOLS LEGEND** on sheet SN1 and are below the level of framing shown unless otherwise noted. See "Structural Wall Sheathing Schedule" on sheet SD1 for specific and general requirements. All structural wall sheathing to be continuous at intersecting walls per detail 13/SD1 unless otherwise noted.
- Sheathe all exterior walls per "Structural Wall Sheathing Schedule" type "A6" unless otherwise noted. Sheathe all specified interior walls per plans and "Structural Wall Sheathing Schedule" on sheet SD1.
- Roof to be sheathed with APA rated sheathing, 40/20, Exposure 1, 15/32" minimum thickness. Verify additional requirements with metal roofing manufacturer. Install sheets with face grain perpendicular to supports. Stagger sheets and nail with 10d at 6" o.c. edges and at 12" o.c. field, typical, unless otherwise noted. Provide sheets not less than 4'-0" x 8'-0" except at boundaries and changes in framing. Minimum sheet size to be 24" x 24" unless all edges of undersized sheets are supported by and fastened to framing members or blocking.
- Building has been designed for roofing with a max weight of 5 psf. See **WALL LEGEND** for wall types.
- See detail 1/SD1 for framing at headers and required number of king studs at openings. See detail 6/SD1 for typical header size unless otherwise noted.

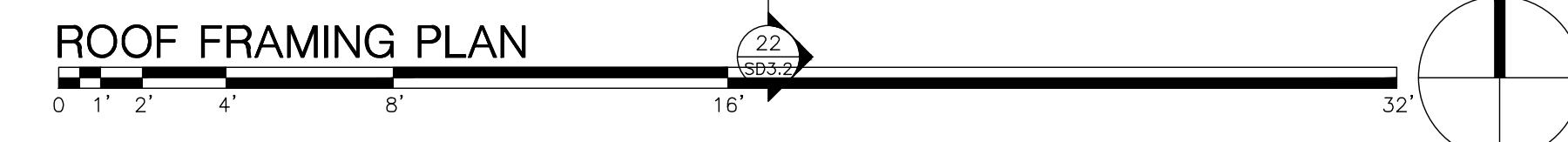
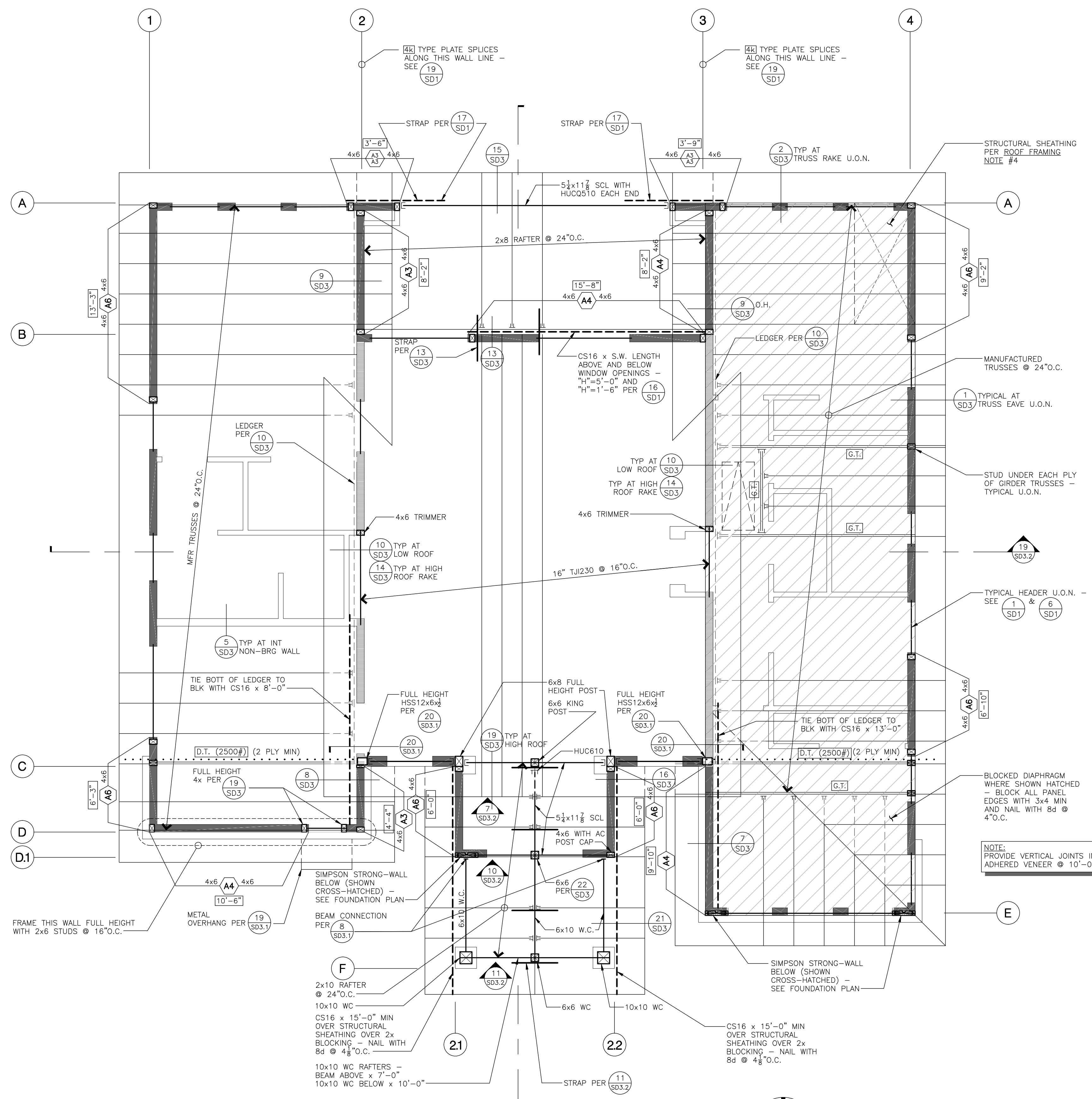
FIRE REBUILD S2 5060 8/04/20

WALL LEGEND	
SYMBOL	DESCRIPTION
	NON-BEARING WALL
	EXTERIOR WALL
	INTERIOR BEARING WALL*
	WALL ABOVE

* SPLICE FRAMING MEMBERS ONLY OVER BEARING WALLS OR BEAMS

PLASTER FINISH EXTERIOR STUD SCHEDULE	
2x6 #2 @ 16"O.C.	13'-6"
(2) 2x6 @ 16"O.C.	17'-6"

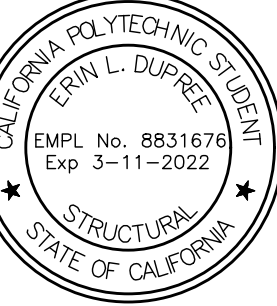
TYPICAL HANGER SCHEDULE	
USE HANGERS NOTED BELOW U.O.N.	
MEMBER	HANGER
1 1/2 x 9 1/2 SCL	HUS1.81/10
3 1/2 x 9 1/2 SCL	HHUS410
5 1/4 x 9 1/2 SCL	HHUS5.50/10
1 1/2 x 11 7/8 SCL	HUS1.81/10
3 1/2 x 11 7/8 SCL	HHUS410
5 1/4 x 11 7/8 SCL	HHUS5.50/10
7 x 11 7/8 SCL	HHUS7.25/10
16" TJI 230	IUS2.37/16 ITS2.37/16



\\SERVER\REDIRECTED\FOLDERS\ERIN\DESKTOP\ELD_MISC\2022\CAO\FROM MD\CAO\FIRE REBUILD S2.DWG 3/17/2022 4:16 PM Plotted by (Last Drafter): ###



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www.mkmassociates.com



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actual or designed conditions.
Written dimensions shall govern.

PROJECT MANAGER
Mark Douglas

**STRUCTURAL
OBSERVATION
REQUIRED**

SEE "STRUCTURAL
OBSERVATION" NOTES
ON SHEET SN1

FIRE REBUILD
Leete Avenue
Santa Rosa, CA 95404

03-17-22	ELD	ELD
02-15-22	ELD	ELD
02-15-22	ELD	ELD
03-17-22	ELD	ELD

ISSUE INFORMATION

Designer:	Erin
PD:	ELD SR#:
Job:	ARCE 353-04
Checked by:	--
Plot Date:	1-28-20

Sheet Title:
**GARAGE
FOUNDATION AND
ROOF FRAMING
PLAN**

Sheet
S3

ROOF FRAMING NOTES

- See "SD" sheet(s) for structural details and "SN" sheet(s) for structural notes.
- Structural sheathed walls are designated per **SYMBOLS LEGEND** on sheet SN1 and are below the level of framing shown unless otherwise noted. See "Structural Wall Sheathing Schedule" on sheet SD1 for specific and general requirements. All structural wall sheathing to be continuous at intersecting walls per detail 13/SD1 unless otherwise noted.
- Sheathe all exterior walls per "Structural Wall Sheathing Schedule" type "A6" unless otherwise noted. Sheathe all specified interior walls per plans and "Structural Wall Sheathing Schedule" on sheet SD1.
- Roof to be sheathed with APA rated sheathing, 40/20, Exposure 1, 19/32" minimum thickness. Verify additional requirements with metal roofing manufacturer. Install sheets with face grain perpendicular to supports. Stagger sheets and nail with 10d at 6" o.c. edges and at 12" o.c. field, typical, unless otherwise noted. Provide sheets not less than 4'-0" x 8'-0" except at boundaries and changes in framing. Minimum sheet size to be 24" x 24" unless all edges of undersized sheets are supported by and fastened to framing members or blocking.
- Building has been designed for roofing with a max weight of 5 psf. See **WALL LEGEND** for wall types.
- See detail 1/SD1 for framing at headers and required number of king studs at openings. See detail 6/SD1 for typical header size unless otherwise noted.

FIRE REBUILD S3 5060 8/04/20

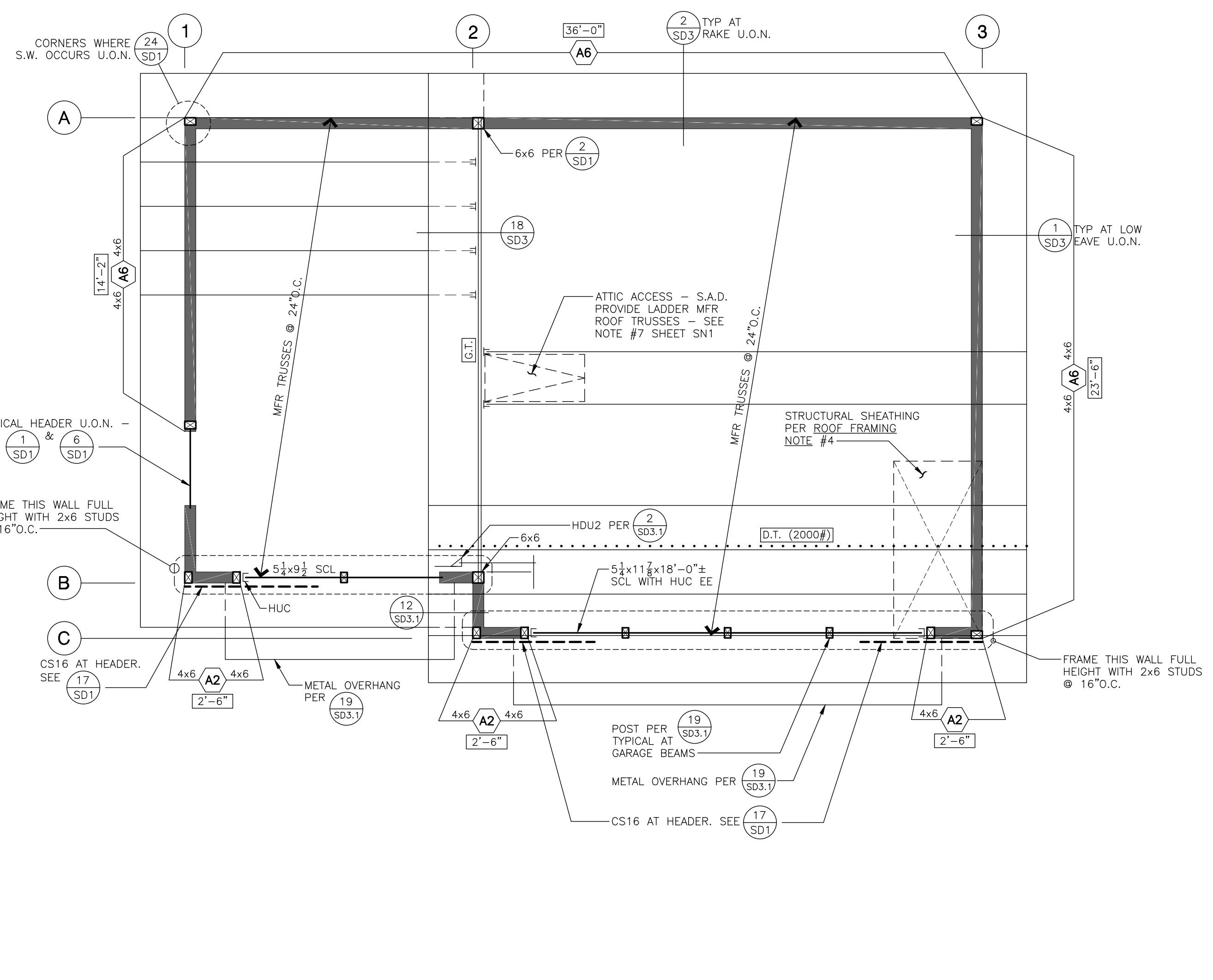
WALL LEGEND	
SYMBOL	DESCRIPTION
[Symbol: Dashed line]	NON-BEARING WALL
[Symbol: Solid line]	EXTERIOR WALL
[Symbol: Dotted line]	INTERIOR BEARING WALL*
[Symbol: Long dashed line]	WALL ABOVE

* SPLICE FRAMING MEMBERS ONLY OVER BEARING WALLS OR BEAMS

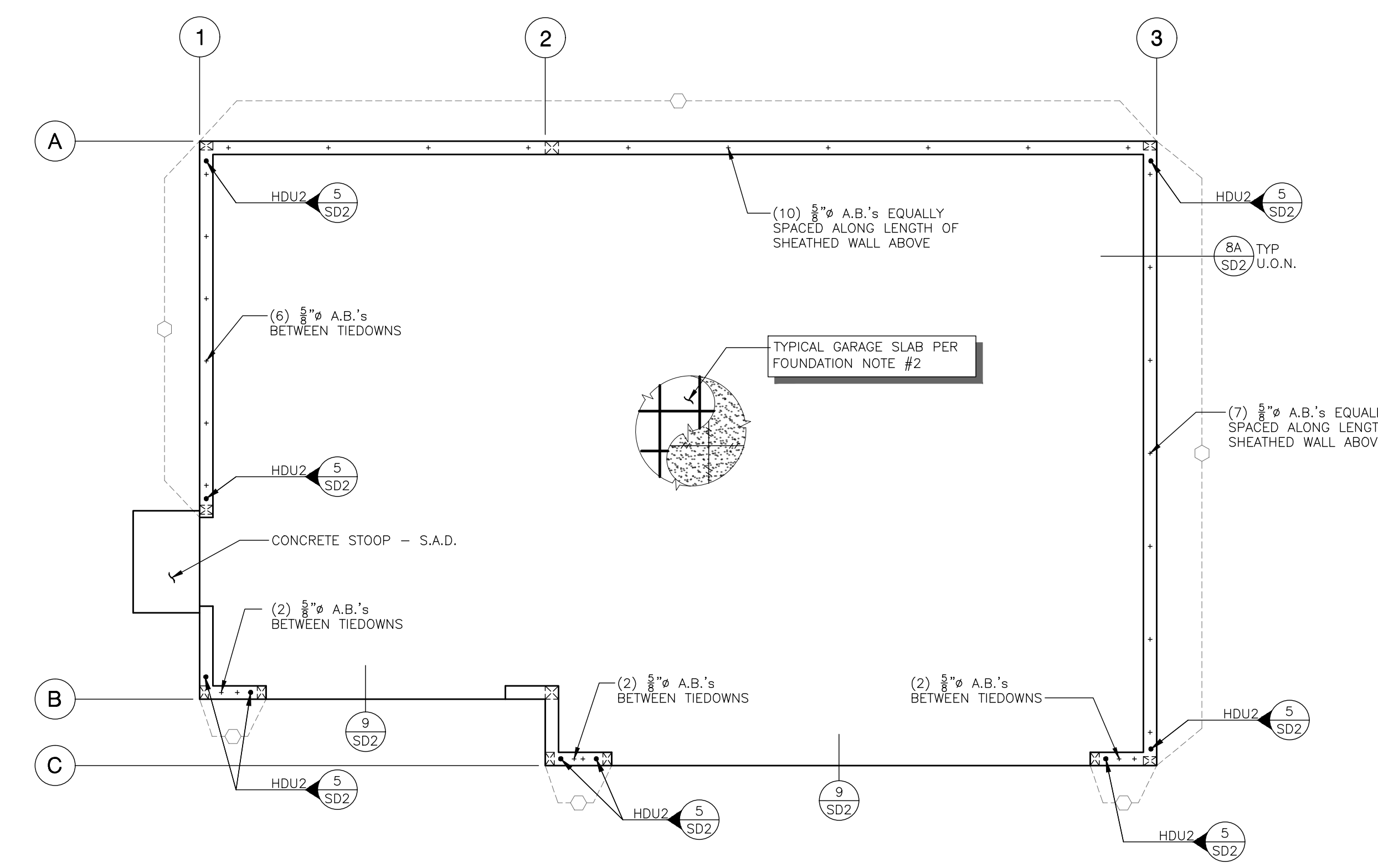
FOUNDATION NOTES

- See structural detail (SD) sheets for standard construction details and "STRUCTURAL NOTES".
 - Typical slab requirements
- EXTERIOR PATIO:**
- 4" thick with #3 bars @ 18" o.c. each way (1 1/2" clear from top of slab); over 4" minimum compacted free-draining crushed rock
- ANCHOR BOLTS:**
- Use 5/8" anchor bolts with standard cut washer over BPS#-3 E washer.
 - Space anchor bolts at 48" o.c. maximum typical U.O.N.
 - Provide (2) #4 Anchor Bolts minimum per sill E
 - All sill plates shall be P.T.D.F.
- DRAINAGE:**
- Finished grade to slope away from the building at a minimum slope of 5% for a minimum distance of 10 feet measured perpendicular to the exterior wall. If lot lines or obstructions prohibit 10 feet of slope, provide 5% slope to an approved alternate drainage method. Exterior paving, concrete slabs, or other impervious surfaces within 10 feet of the foundation to be sloped a minimum of 2% away from the building.
 - The discharge of roof gutter downspouts to be as follows: (See also geotechnical report) into non-perforated pipes that discharge away from the structure per the geotechnical report and/or civil engineer. Non-perforated pipes connected to downspouts are **not** to be connected to perforated drain piping.
 - Rigid drain piping discharging from drop inlets are to be separated from rigid downspout pipes and perforated drain piping. See civil drawings as applicable for additional information.
 - Provide under slab drainage as directed by the geotechnical engineer. Slope sub grade to drainage pipes and slope pipe to suitable drainage outlet location per geotechnical engineer.
 - Provide perimeter foundation subdrains per the geotechnical engineer. Perimeter foundation subdrains may be omitted at downhill foundation per geotechnical engineer. Drains to be sloped to suitable drainage outlets per geotechnical engineer.
- Prior to the contractor requesting a Building Department foundation inspection, the geotechnical engineer to advise the building official in writing that:
 - The building pad was prepared in accordance with the geotechnical report.
 - The utility trenches have been properly backfilled, compacted and "sealed off" to prevent moisture intrusion under the slab.
 - Foundation excavations, soil expansive characteristics and bearing capacity conform to the geotechnical report.
 - See Architectural, as applicable, for location of foundation penetrations.
 - See Architectural drawings for dimensions, concrete steps, landings, mechanical pads, exterior walkways, steps, driveways, etc.
 - Walls above shown dashed.

7002 FIRE REBUILD 02-19-22

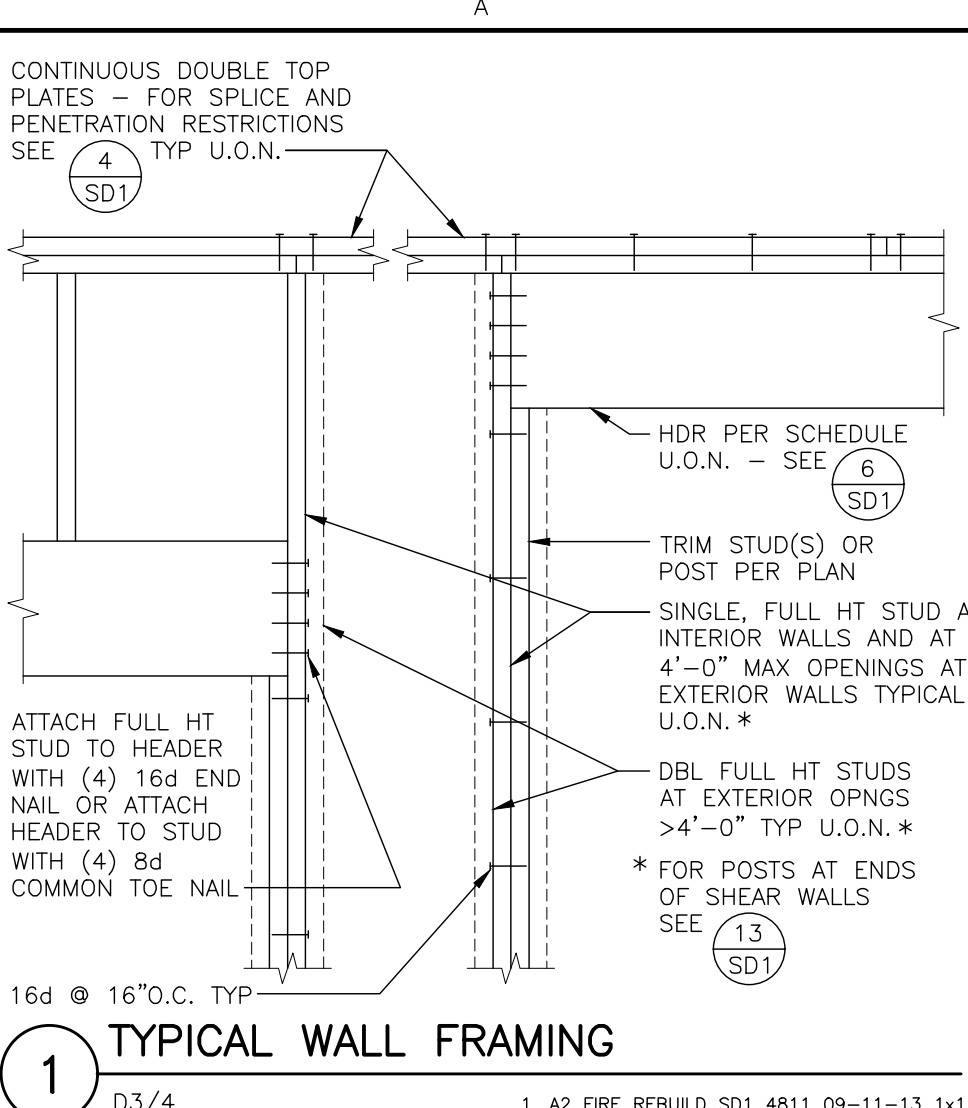


GARAGE ROOF FRAMING PLAN

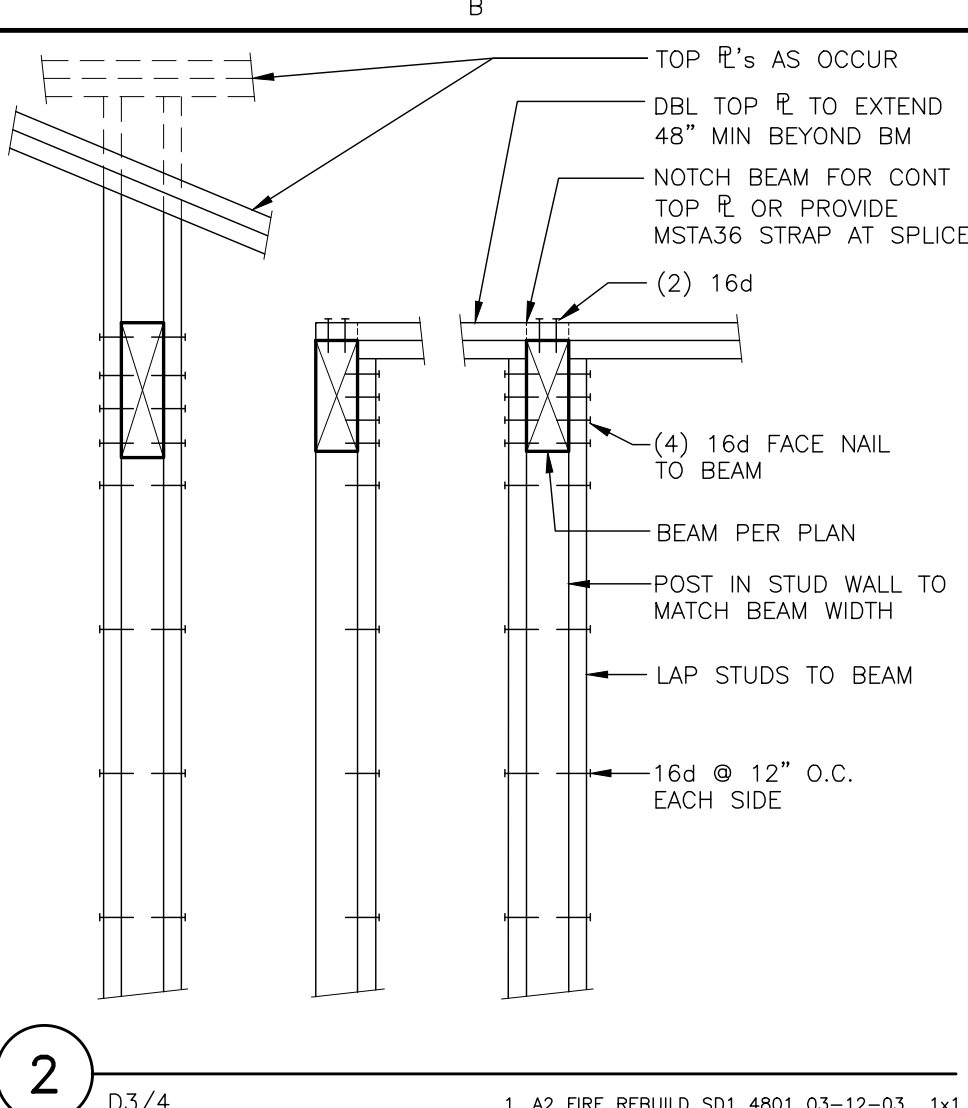


GARAGE FOUNDATION PLAN

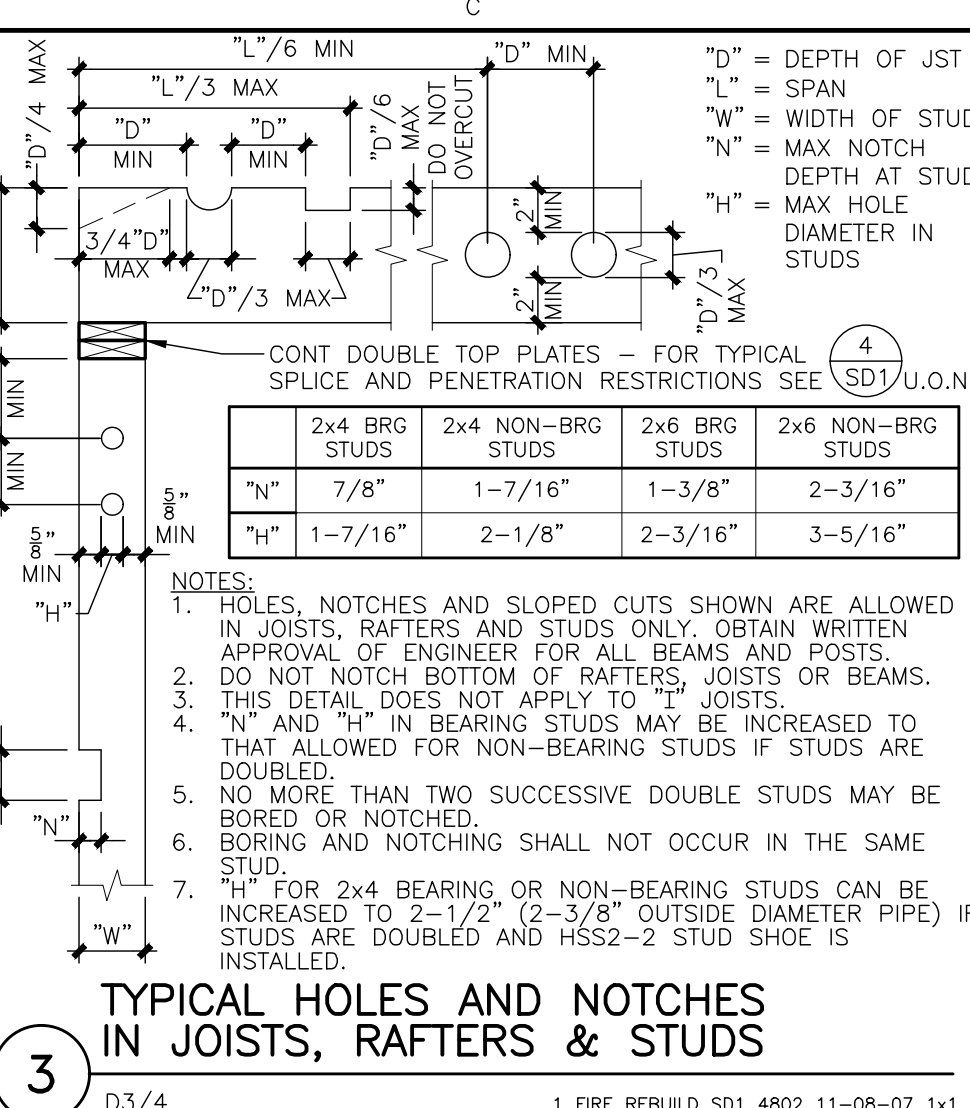
NOTE TO CONTRACTOR
PRIOR TO ANY WORK BEING PERFORMED, PLEASE VERIFY WITH MKM & ASSOCIATES THAT THE CONSTRUCTION DOCUMENTS BEING USED ARE THE CURRENT APPROVED PLANS



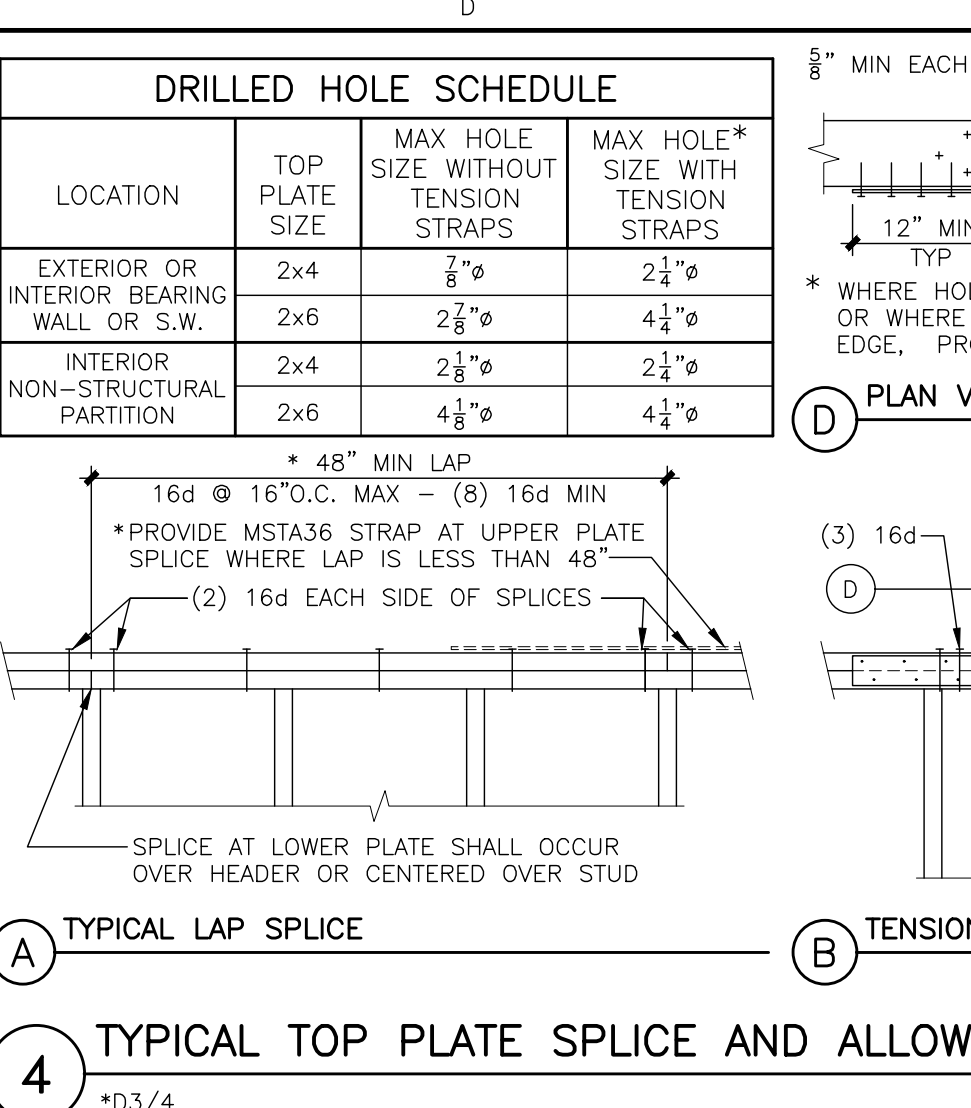
1 TYPICAL WALL FRAMING
D3/4
1, A2 FIRE REBUILD SD1 4811 09-11-13 1x1



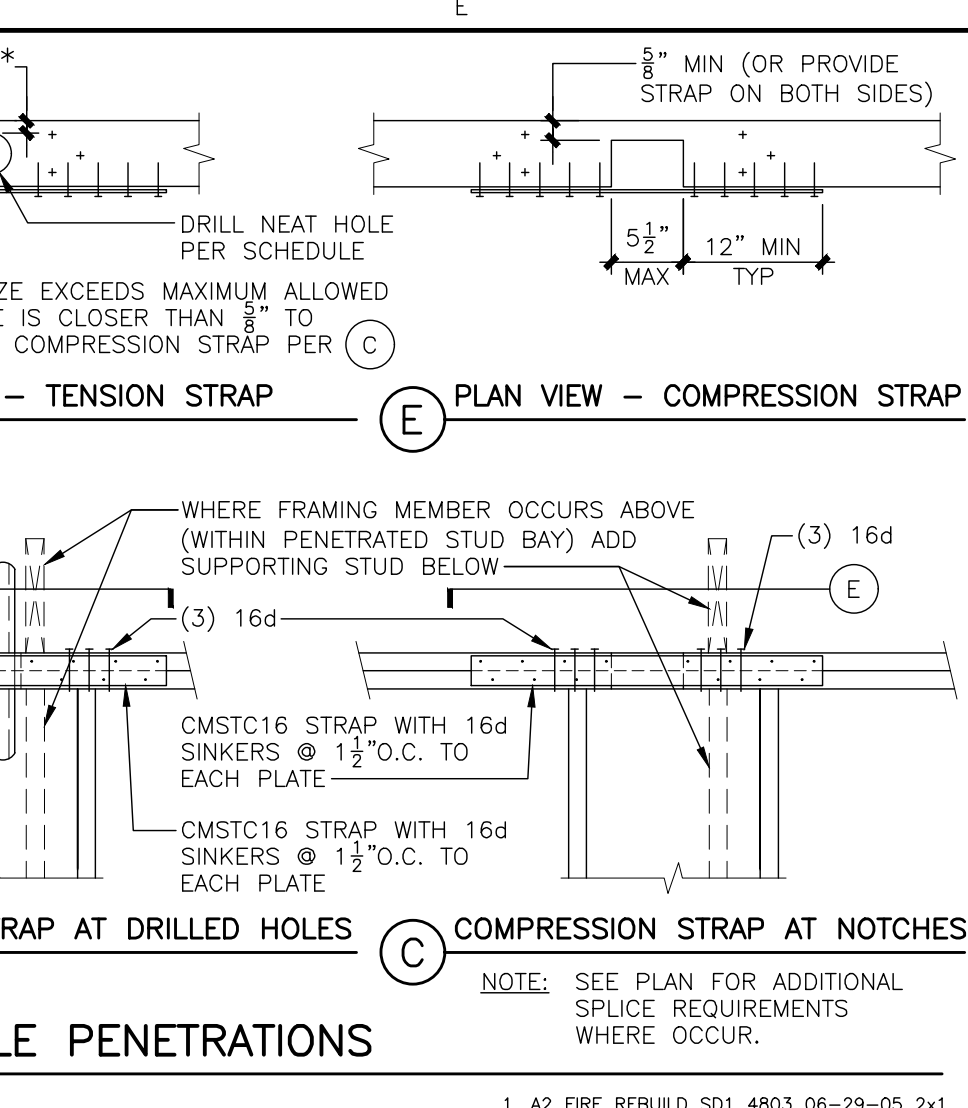
2
D3/4
1, A2 FIRE REBUILD SD1 4801 03-12-03 1x1



3 TYPICAL HOLES AND NOTCHES IN JOISTS, RAFTERS & STUDS
D3/4
1, FIRE REBUILD SD1 4802 11-08-07 1x1



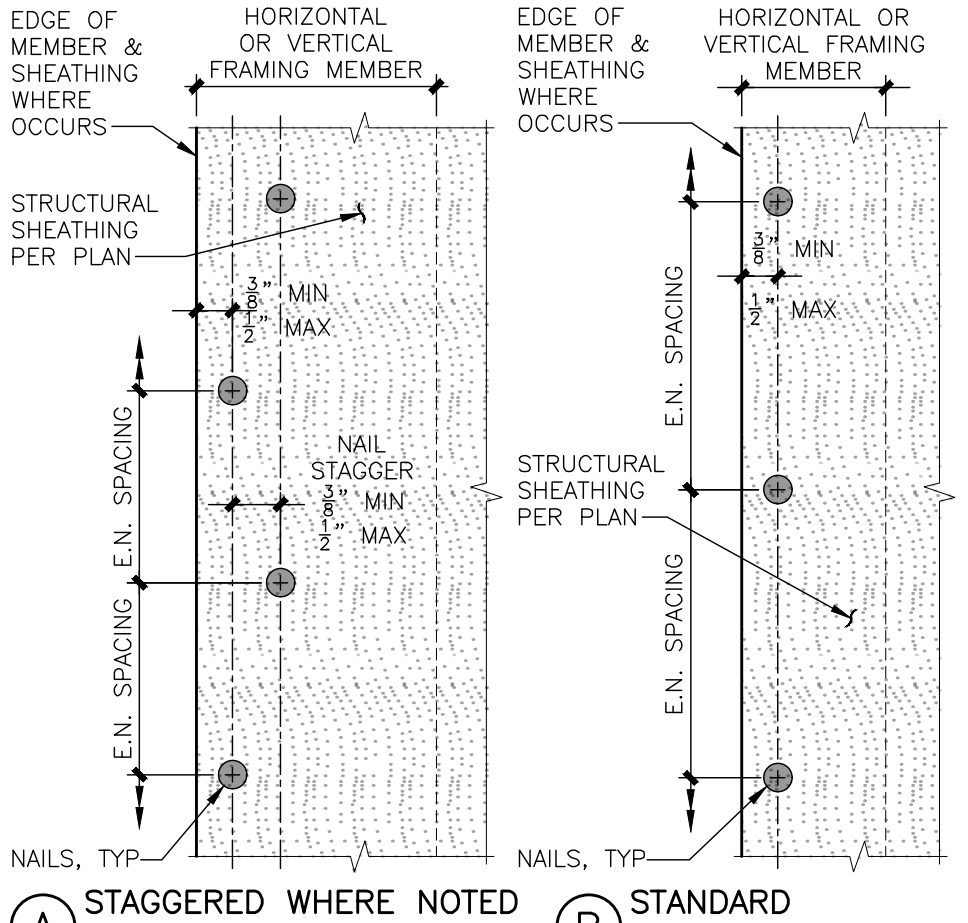
4 TYPICAL TOP PLATE SPlice AND ALLOWABLE PENETRATIONS
D3/4
1, A2 FIRE REBUILD SD1 4803 06-29-05 2x1



5 PLAN VIEW - TENSION STRAP
PLAN VIEW - COMPRESSION STRAP
NOTE: SEE PLAN FOR ADDITIONAL SPlice REQUIREMENTS WHERE OCCUR.

Table 6: TYPICAL HEADER SCHEDULE. Columns: OPENING SIZE, EXTERIOR & INTERIOR BEARING WALLS AT LOWER LEVELS OF MULTISTORY, EXTERIOR & INTERIOR BEARING WALLS AT UPPERMOST LEVEL, INTERIOR NON-BEARING.

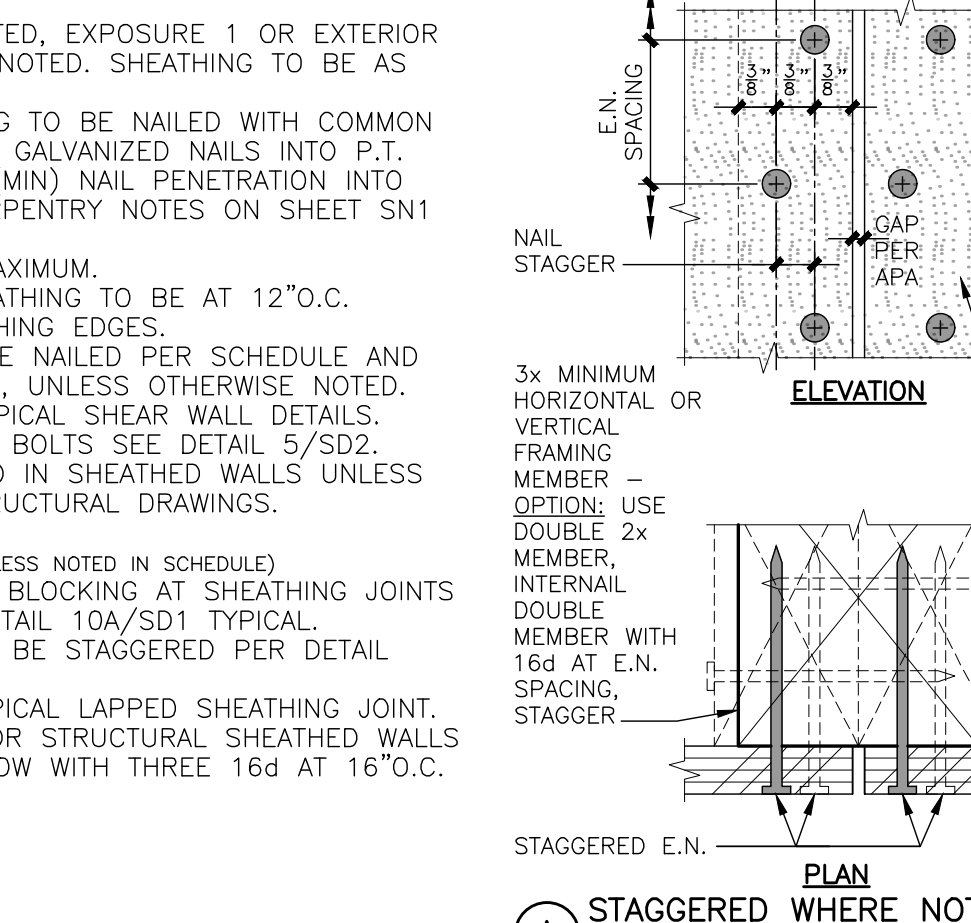
6 TYPICAL HEADER SCHEDULE
D1
1, 11E FIRE REBUILD SD1 4628 07-18-16 1x1



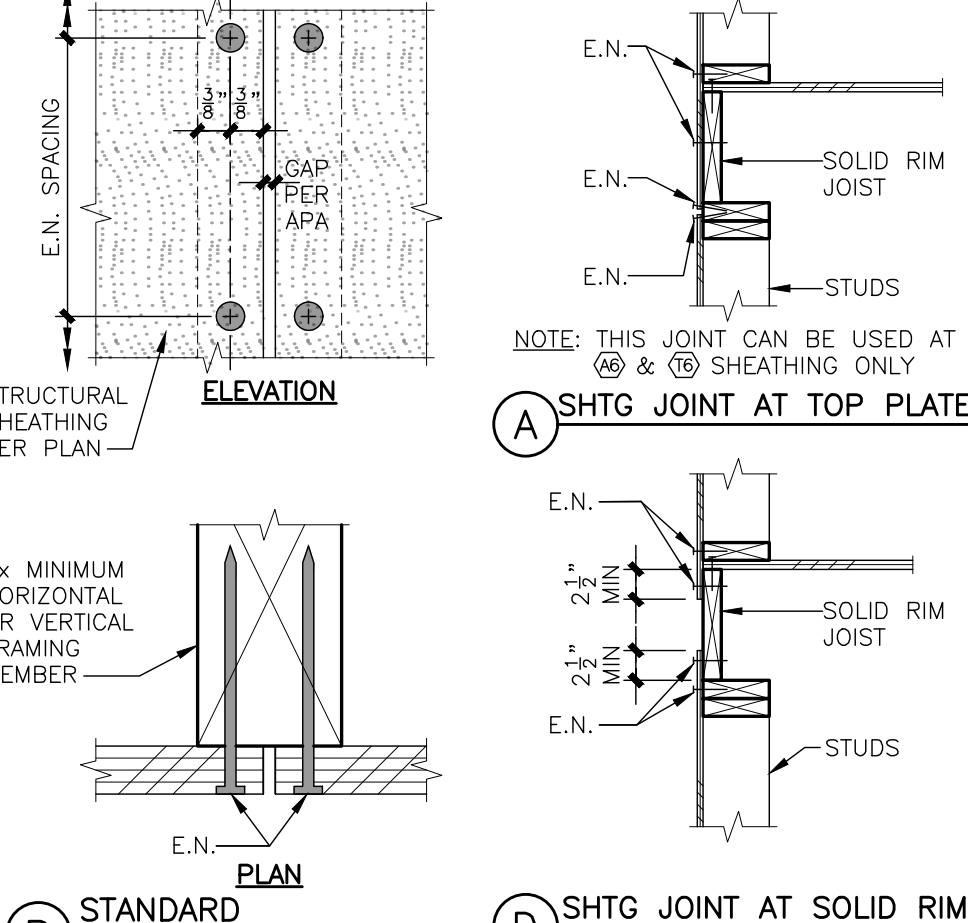
7 TYPICAL SHEATHING EDGE NAILING
D2
1, A2 FIRE REBUILD SD1 4805A 12-19-06 1x1

Table 8: TYPICAL STRUCTURAL WALL SHEATHING SCHEDULE. Columns: TYPE, MIN SHTG THK; PANEL INDEX (PI), EDGE NAILING, ANCHOR BOLTS; SOLE PL NAILING, ACCEPTABLE SHTG JOINTS PER DETAIL 11/SD1, REMARKS.

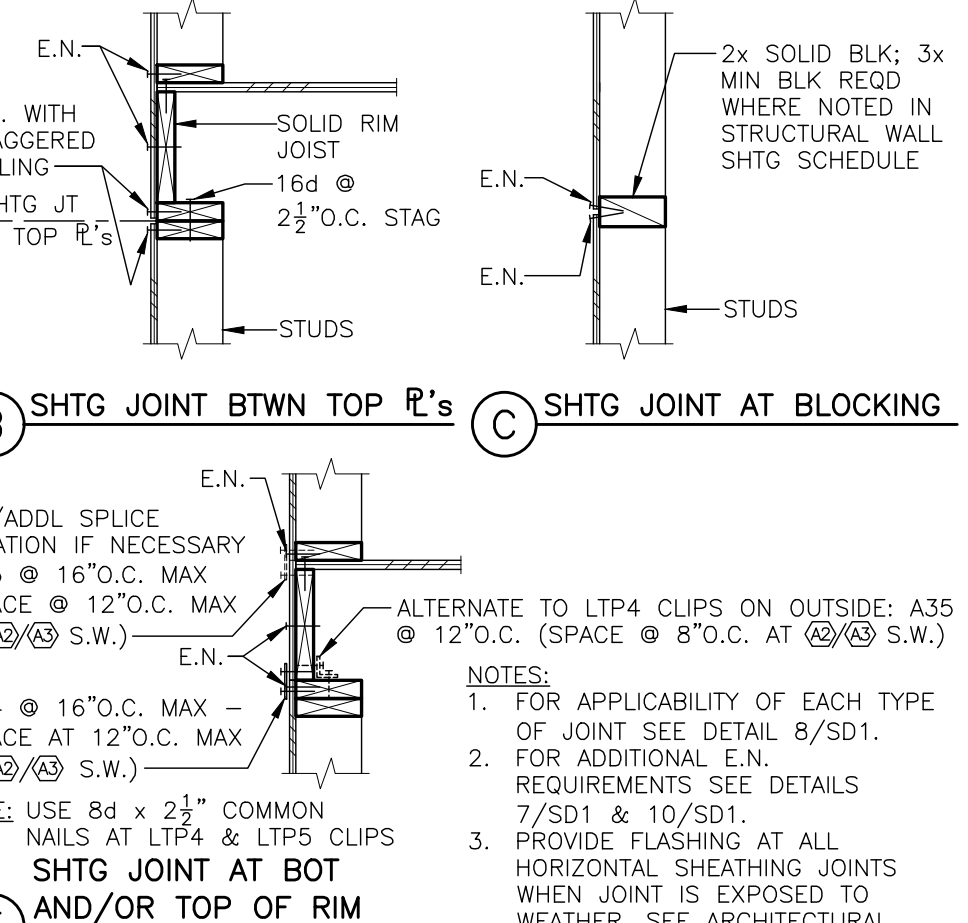
8 TYPICAL STRUCTURAL WALL SHEATHING SCHEDULE (SEE TYPICAL NOTES 1-9)
D3/4
1, FIRE REBUILD SD1 4808 01-30-17 2.5x1



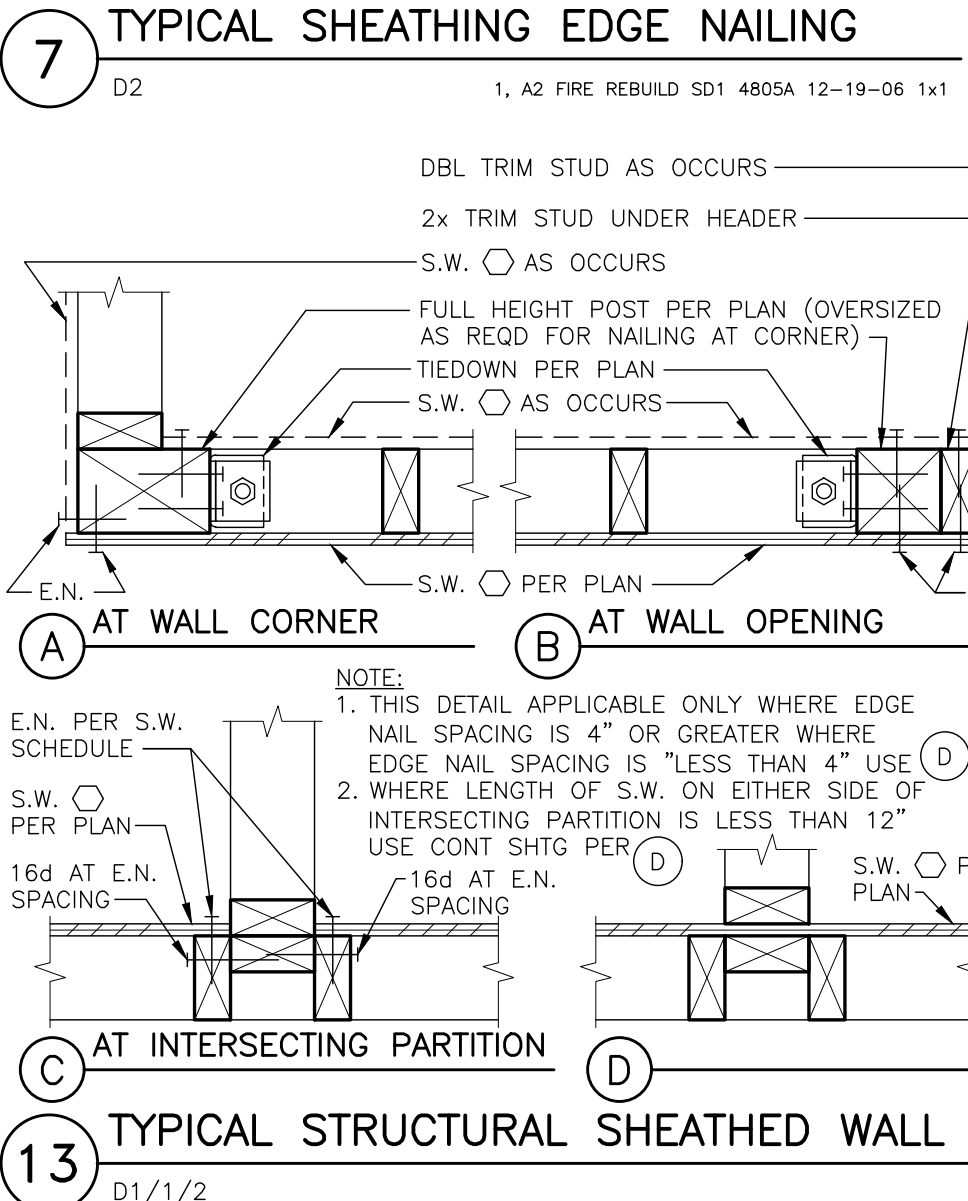
9 TYPICAL SHEATHING JOINT NAILING
D1/1/2
1, A2 FIRE REBUILD SD1 4805C 01-11-07 1x1



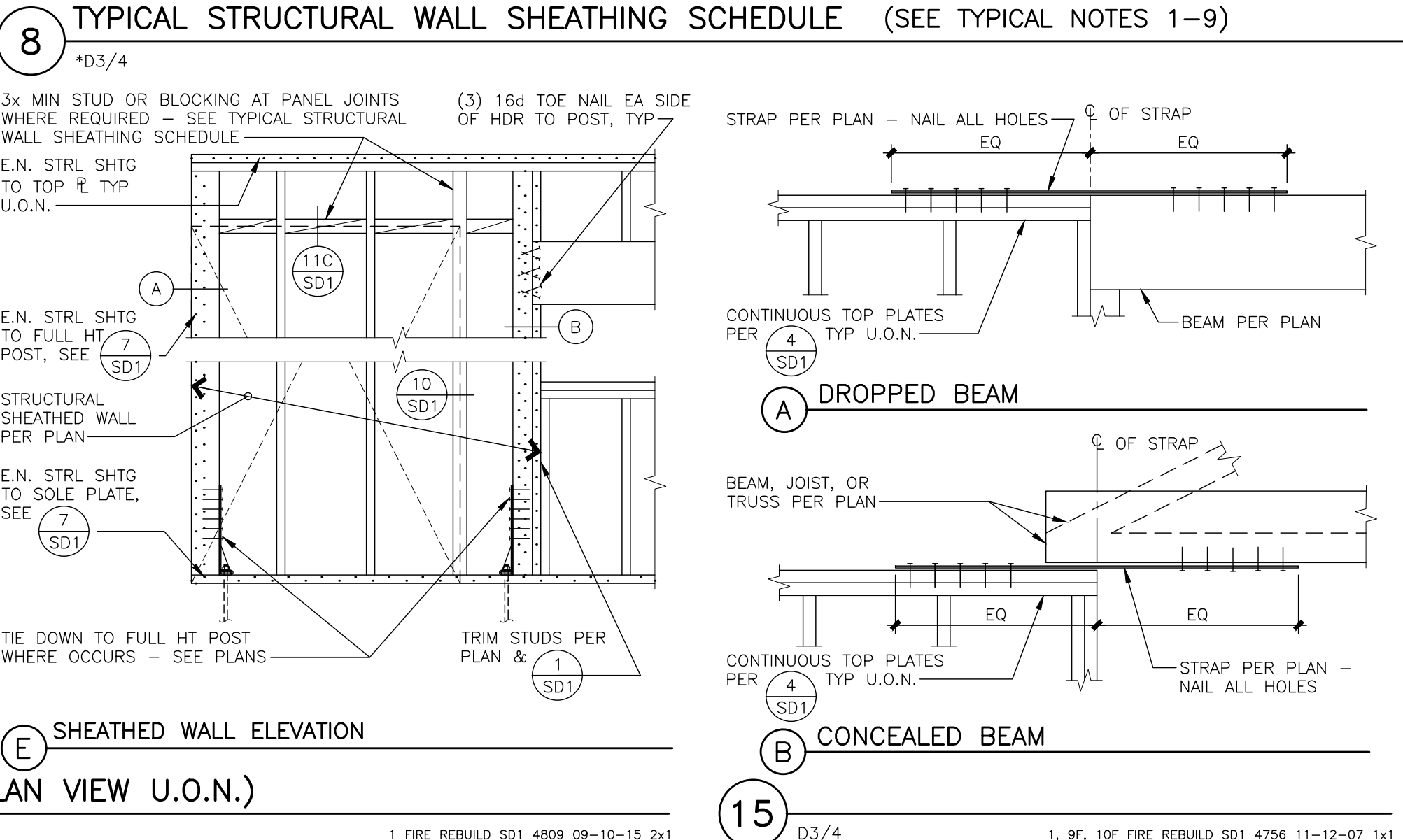
10 TYPICAL HORIZONTAL SHEATHING JOINTS
D3/4
1, FIRE REBUILD SD1 4806 10-19-16 1x1



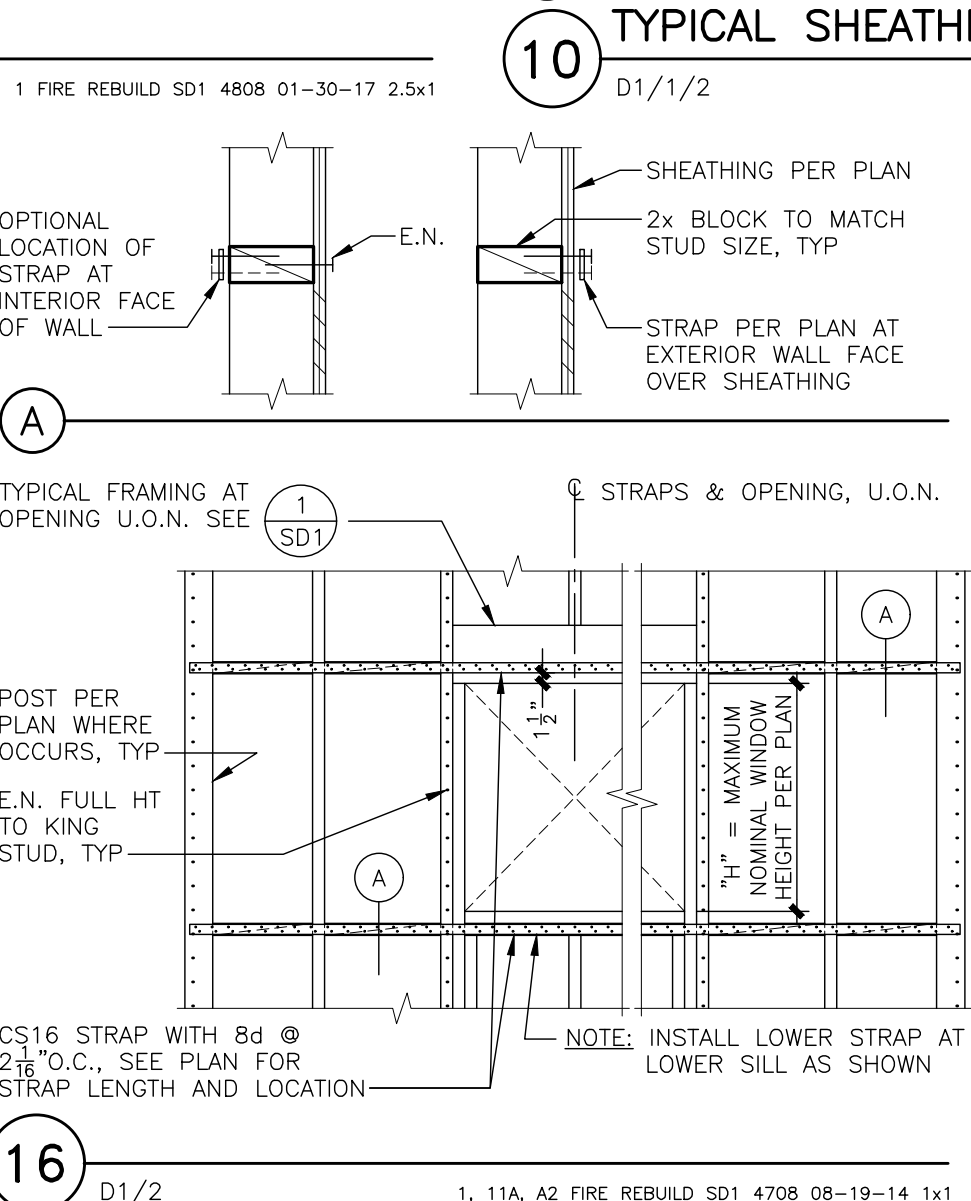
11 TYPICAL HORIZONTAL SHEATHING JOINTS
D3/4
1, FIRE REBUILD SD1 4806 10-19-16 1x1



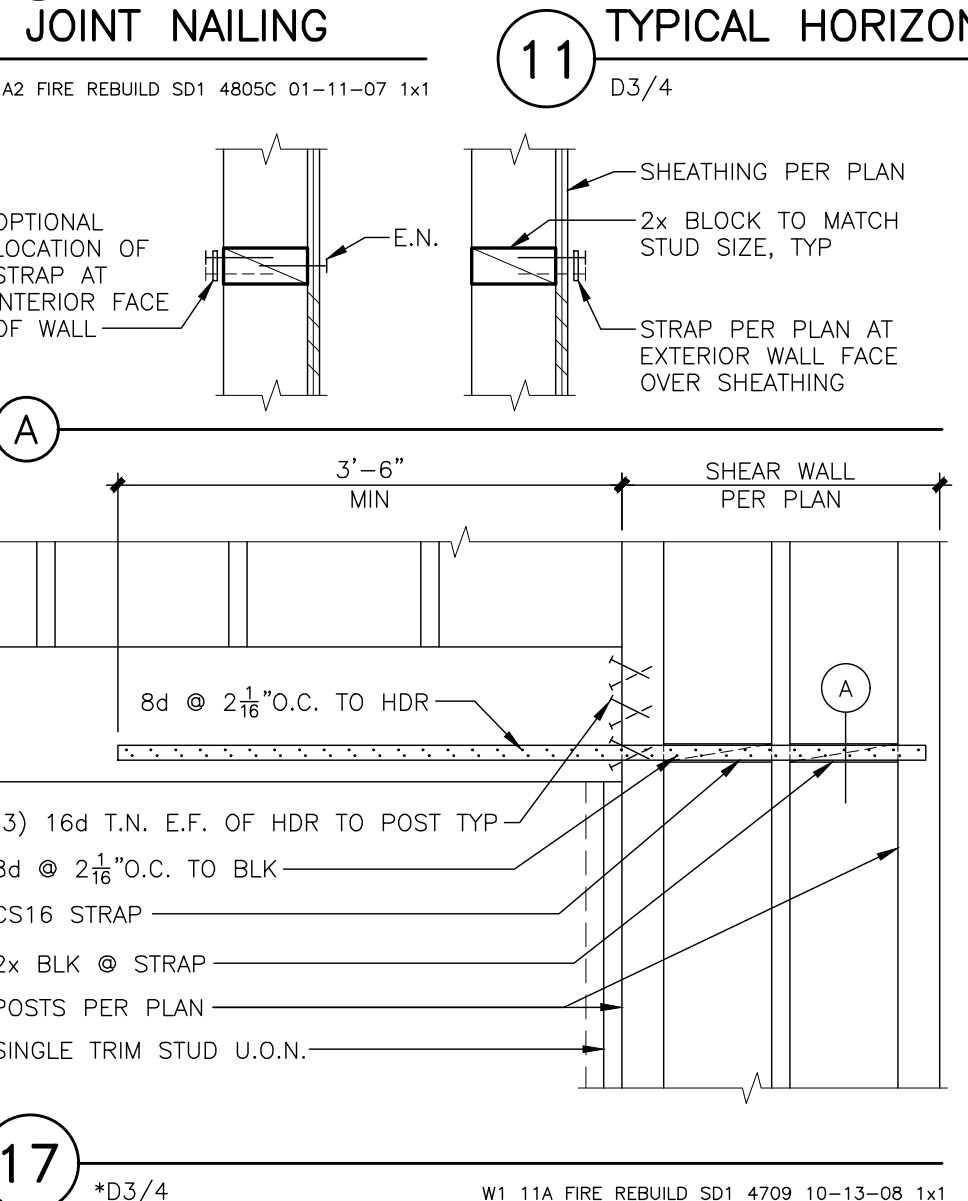
12 TYPICAL STRUCTURAL SHEATHED WALL (PLAN VIEW U.O.N.)
D1/1/2
1, FIRE REBUILD SD1 4809 09-10-15 2x1



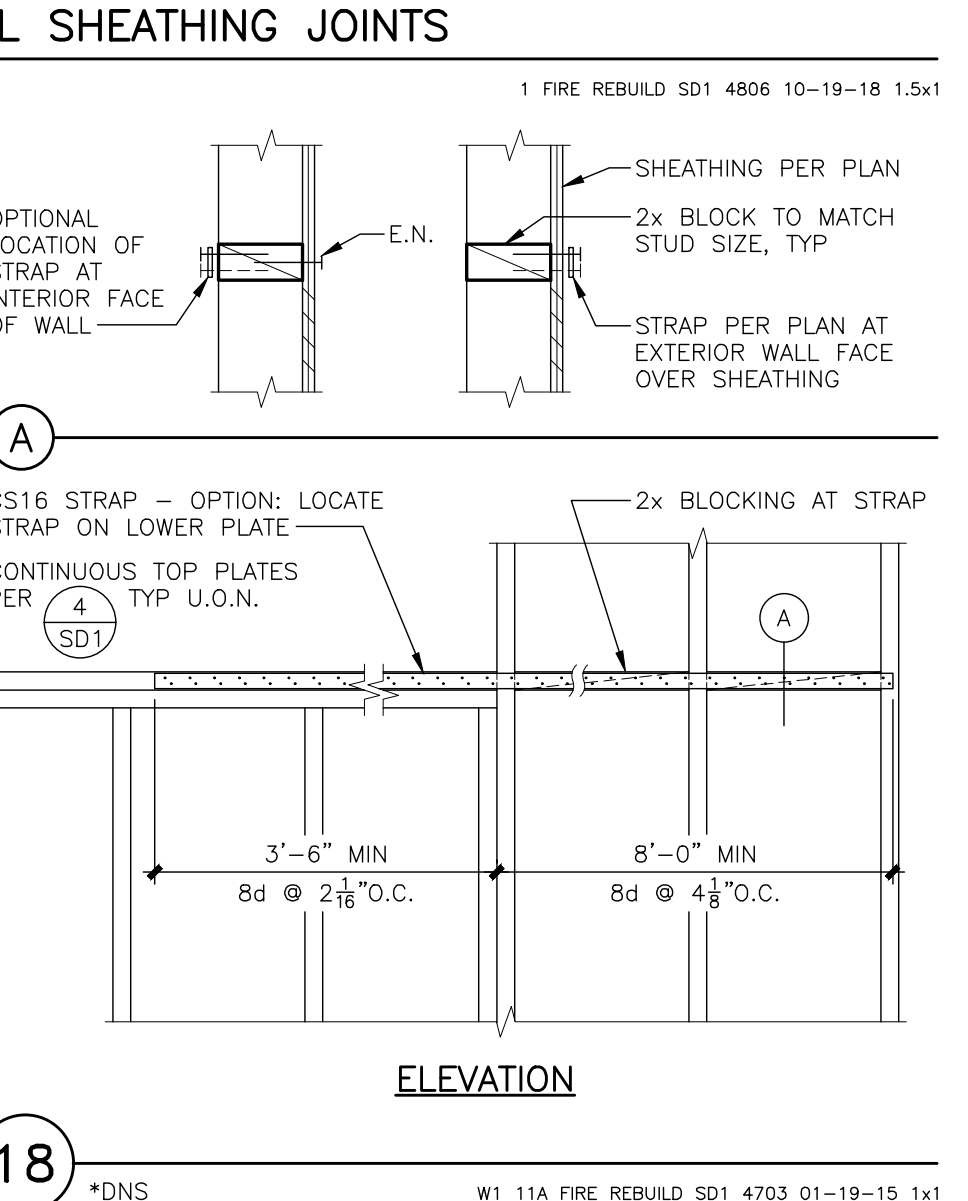
13 SHEATHED WALL ELEVATION
D3/4
1, 9F, 10F FIRE REBUILD SD1 4756 11-12-07 1x1



14 DROPPED BEAM
CONCEALED BEAM
D1/2
1, 11A, A2 FIRE REBUILD SD1 4708 08-19-14 1x1

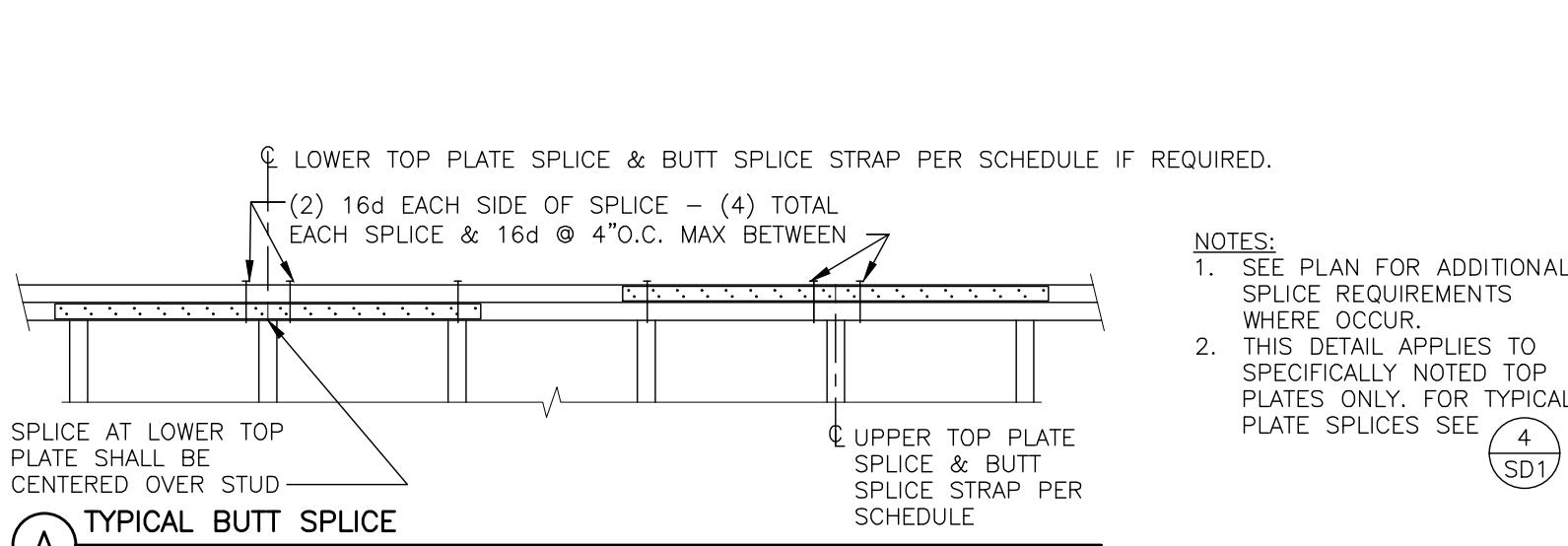


15 SHEATHED WALL ELEVATION
D3/4
W1 11A FIRE REBUILD SD1 4709 10-13-08 1x1

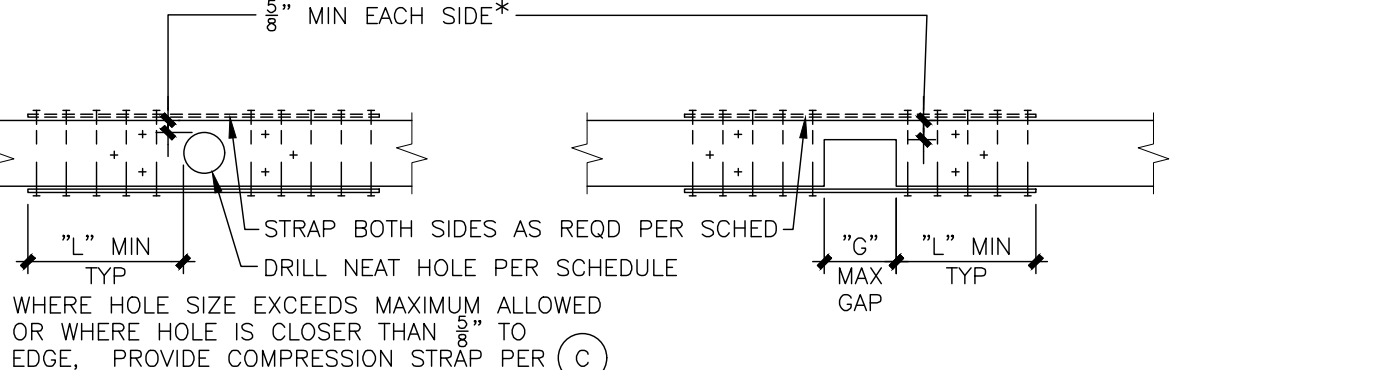


16 SHEATHED WALL ELEVATION
D3/4
W1 11A FIRE REBUILD SD1 4709 10-13-08 1x1

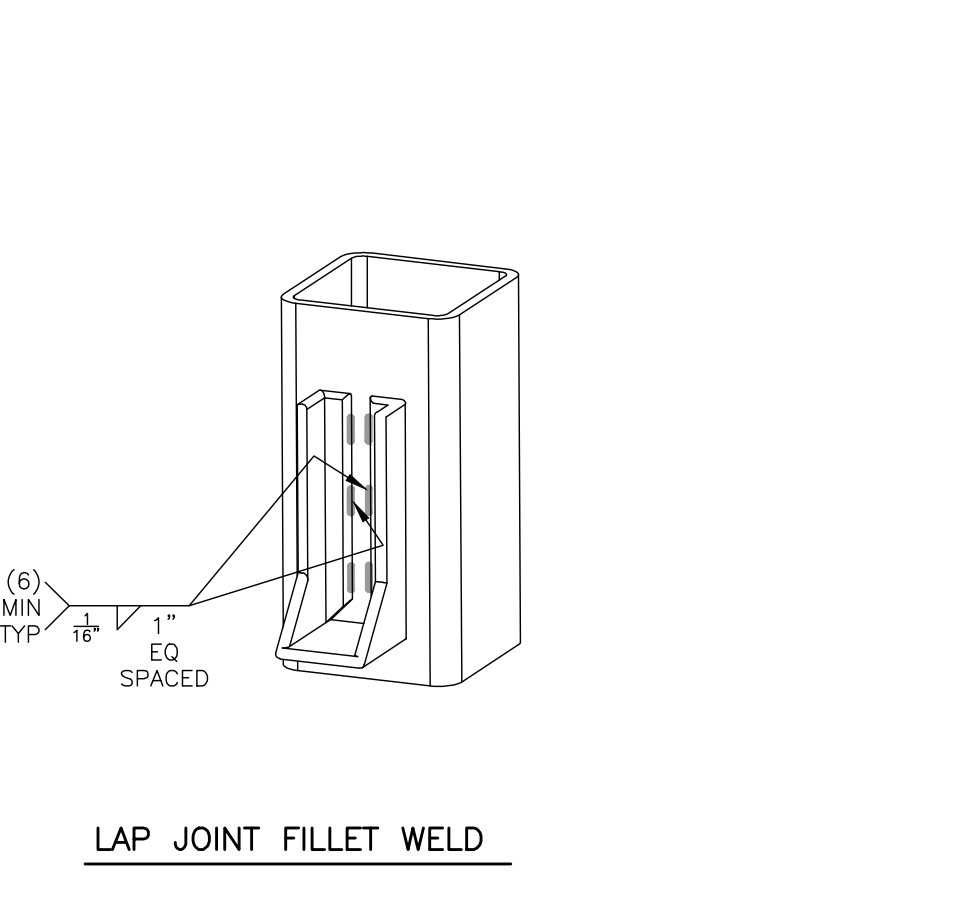
Table 13: SPlice REQUIREMENTS. Columns: TYPE, TOP PLATE SIZE, TYPICAL BUTT SPlice PER, MAX HOLE SIZE W/O TENSION STRAPS, MAX HOLE* SIZE WITH TENSION STRAPS, TENSION STRAPS PER, "L", COMPRESSION STRAP SIZE PER, "C".



17 TYPICAL BUTT SPlice
D3/4
1, A2 FIRE REBUILD SD1 4804 08-04-17 3x1



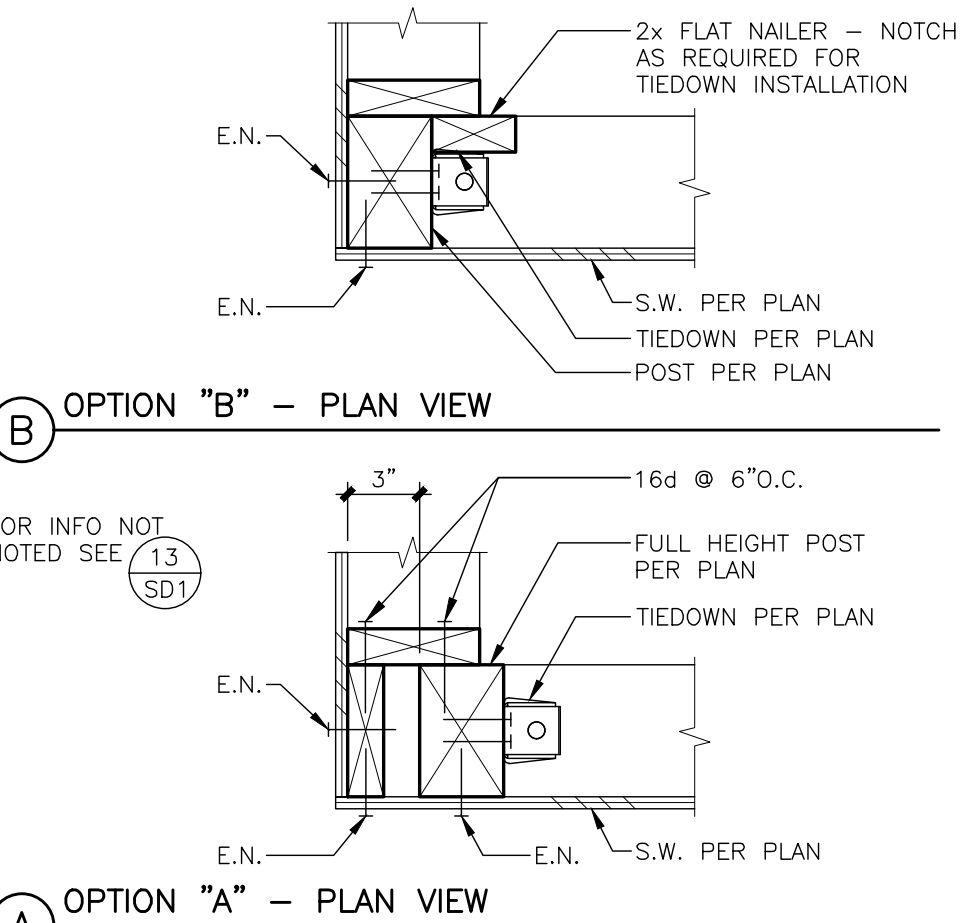
18 TENSION STRAP AT DRILLED HOLES
COMPRESSION STRAP AT NOTCHES
D3
H1 Fire Rebuild SD1 4490 03-17-17 1x1



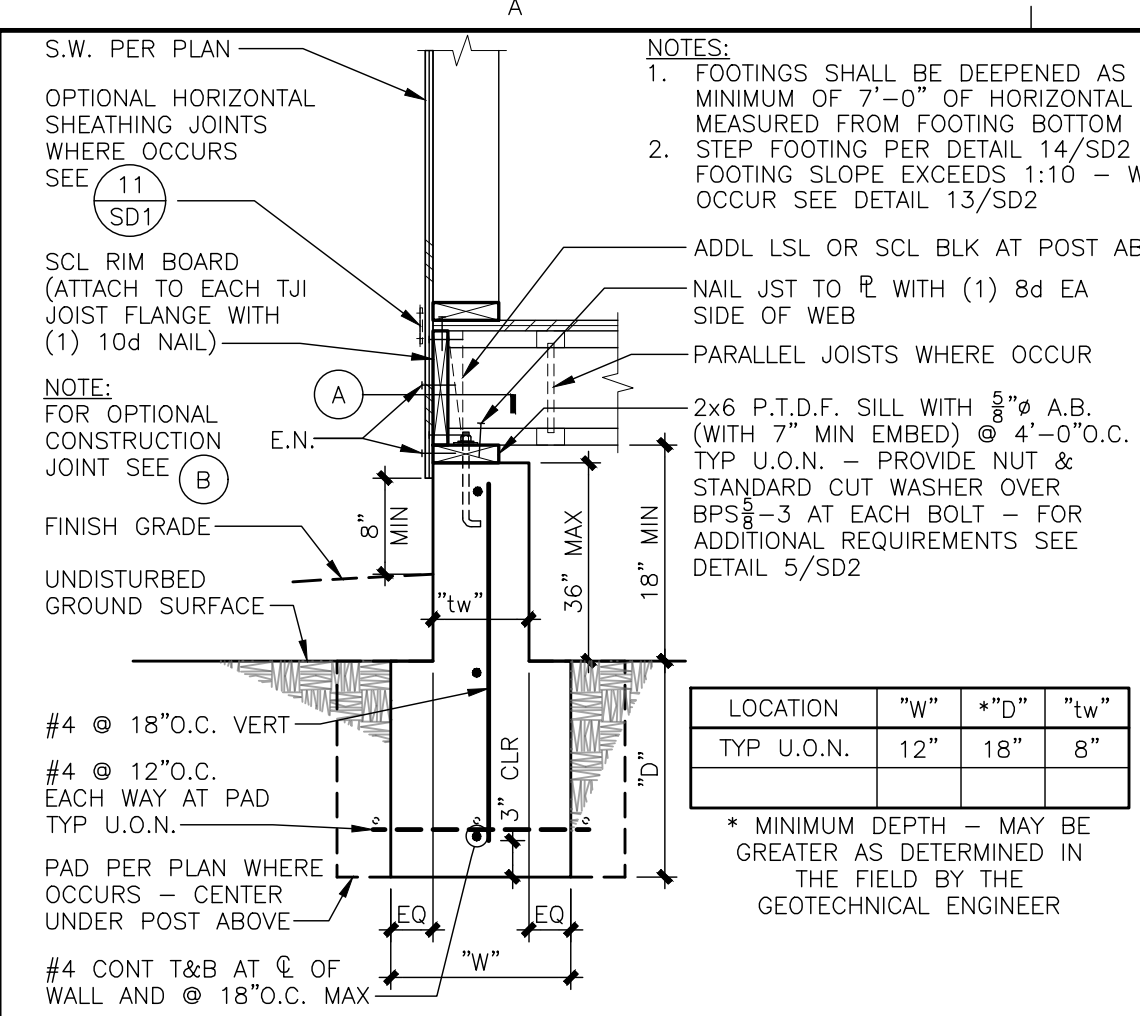
19 HUC TO CONTINUOUS HSS COLUMN
D3
H1 Fire Rebuild SD1 4490 03-17-17 1x1



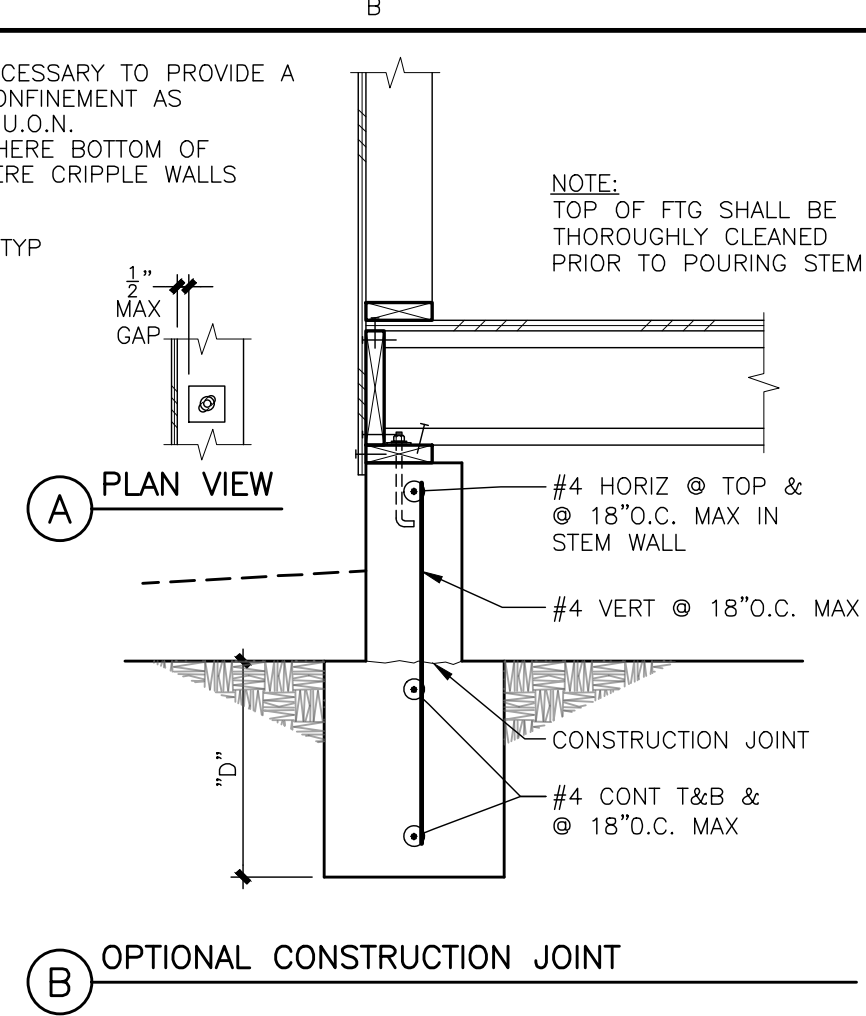
20 OPTION "A" - PLAN VIEW
D1/1/2
1B, 1C Fire Rebuild SD1 4809A 08-03-16 1x1



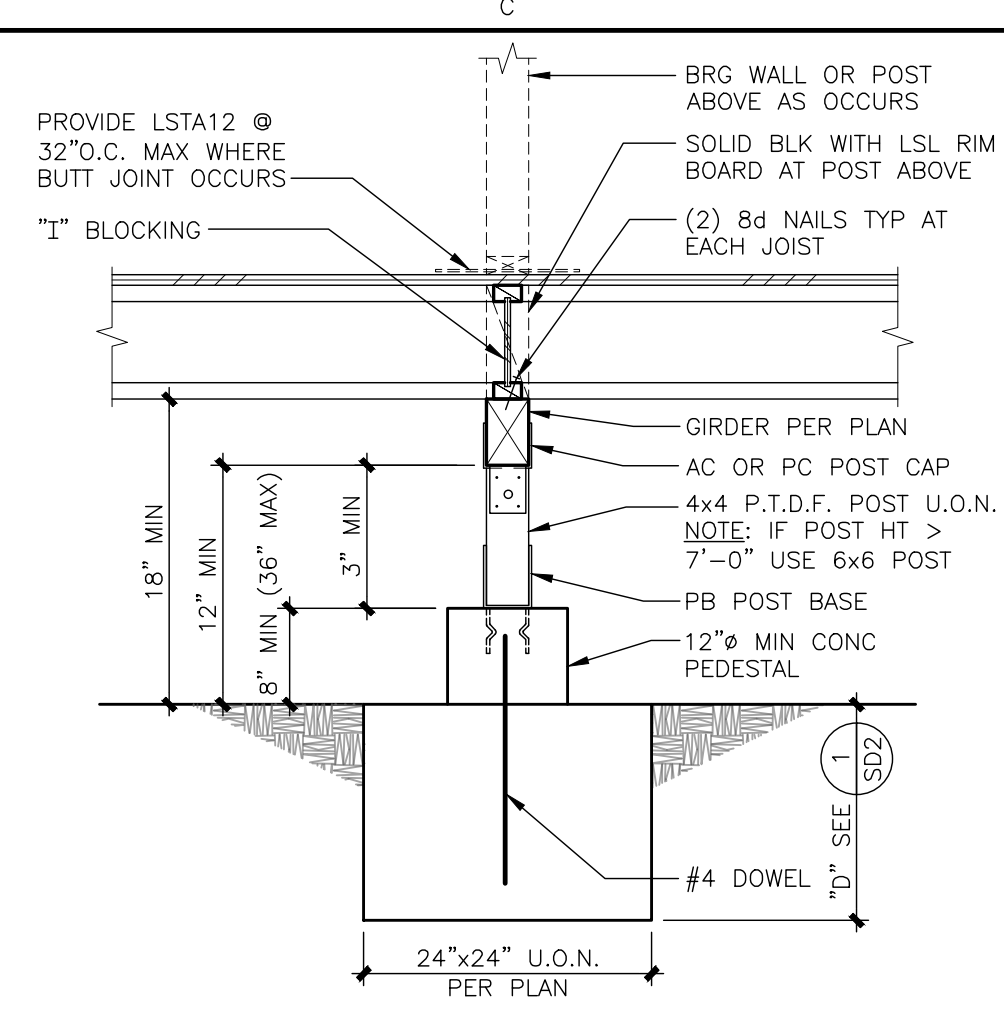
21 OPTION "B" - PLAN VIEW
D1/1/2
1B, 1C Fire Rebuild SD1 4809A 08-03-16 1x1



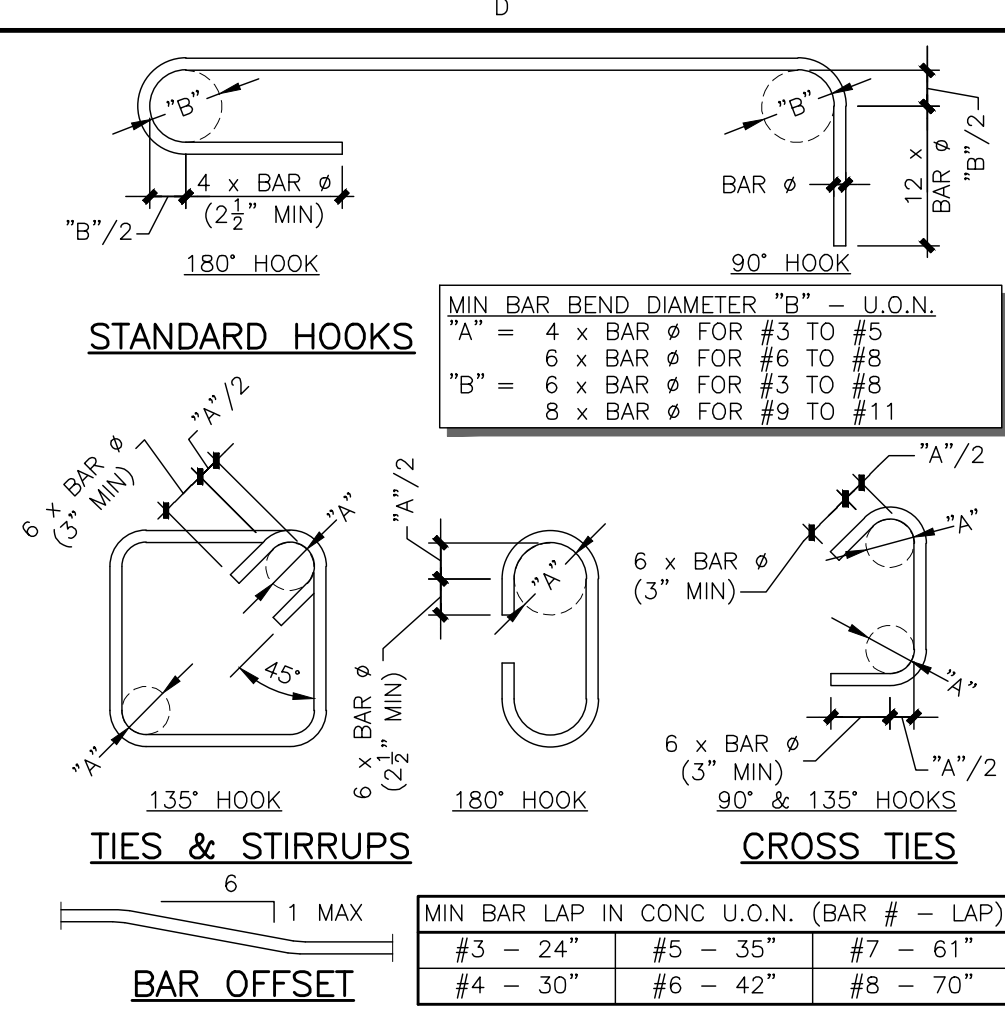
1 TYPICAL EXTERIOR FOOTING
D3/4



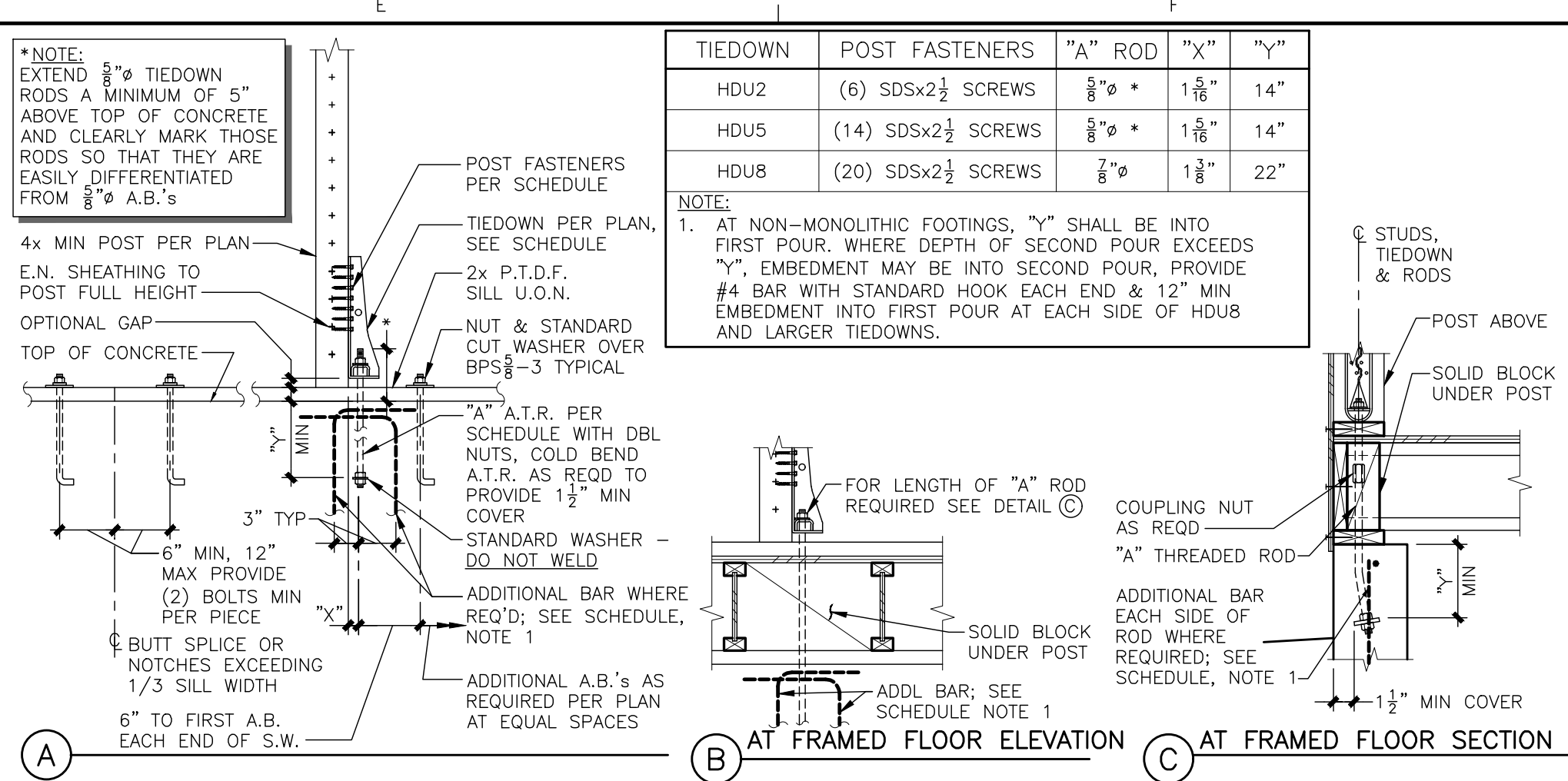
2 TYPICAL INTERIOR PAD
D3/4



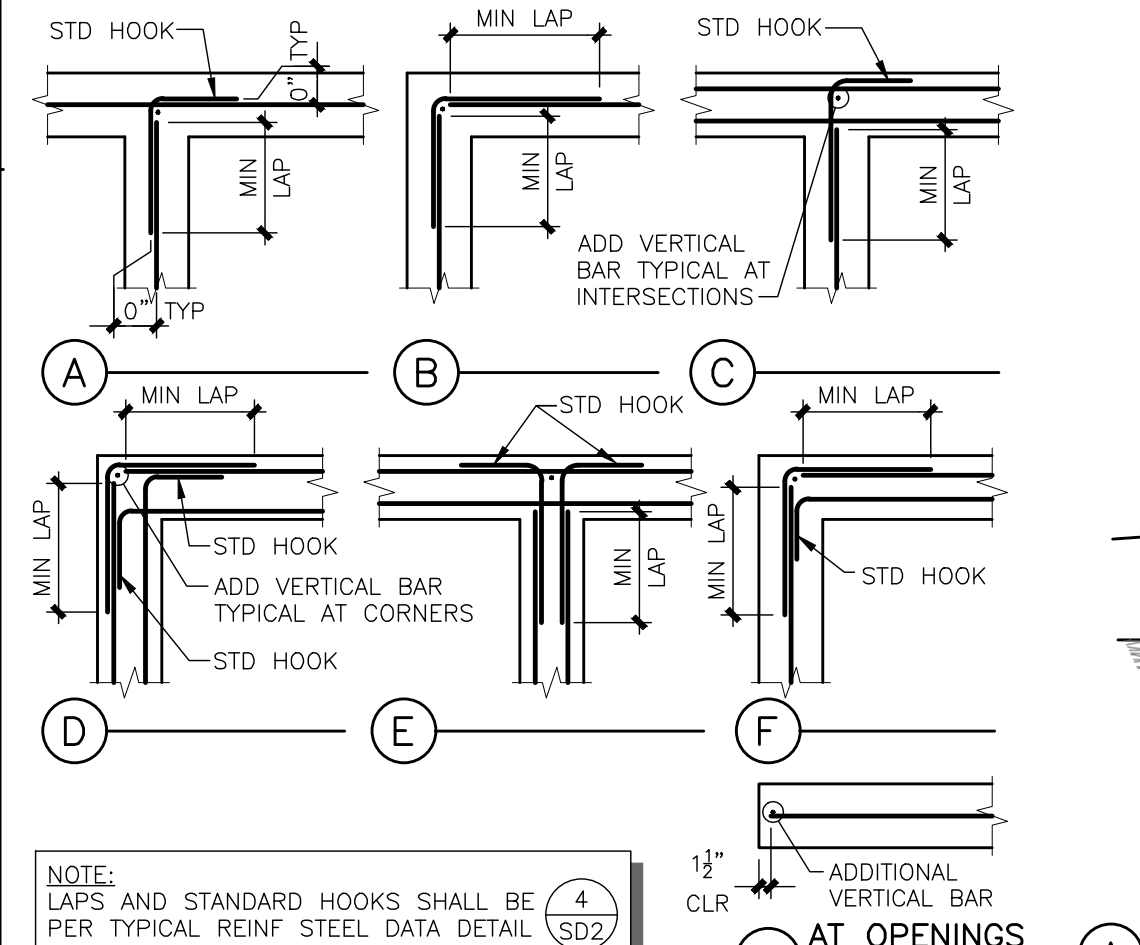
3 TYPICAL INTERIOR PAD
D3/4



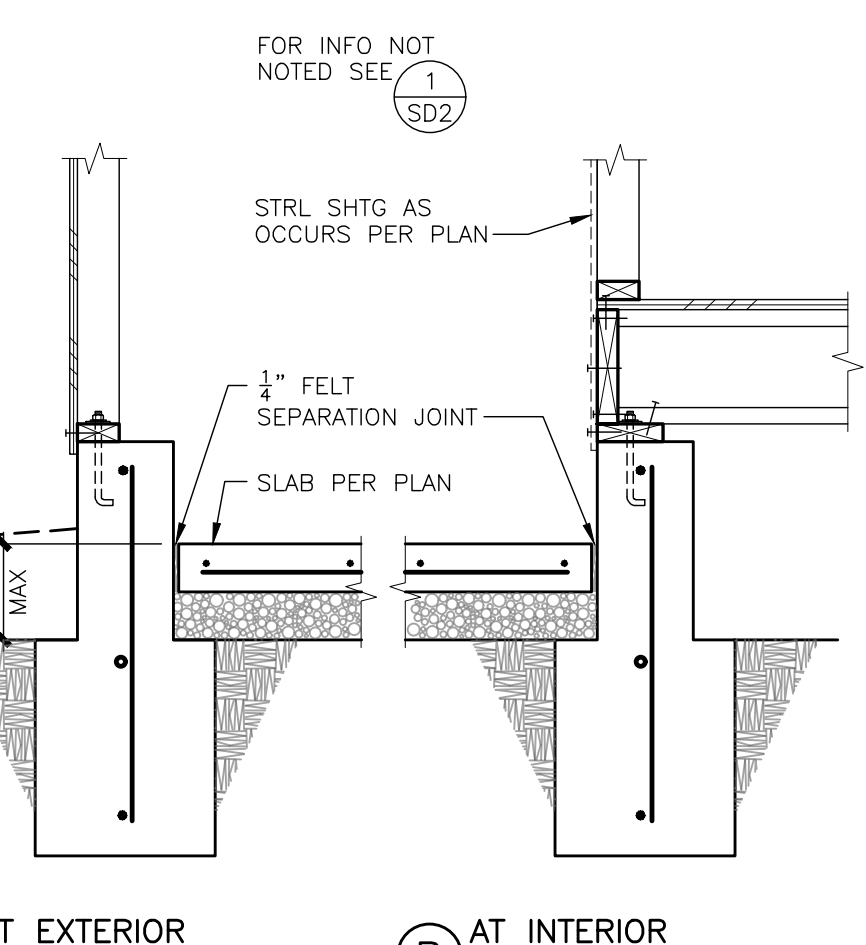
4 TYPICAL REINFORCING STEEL DATA
D3/4



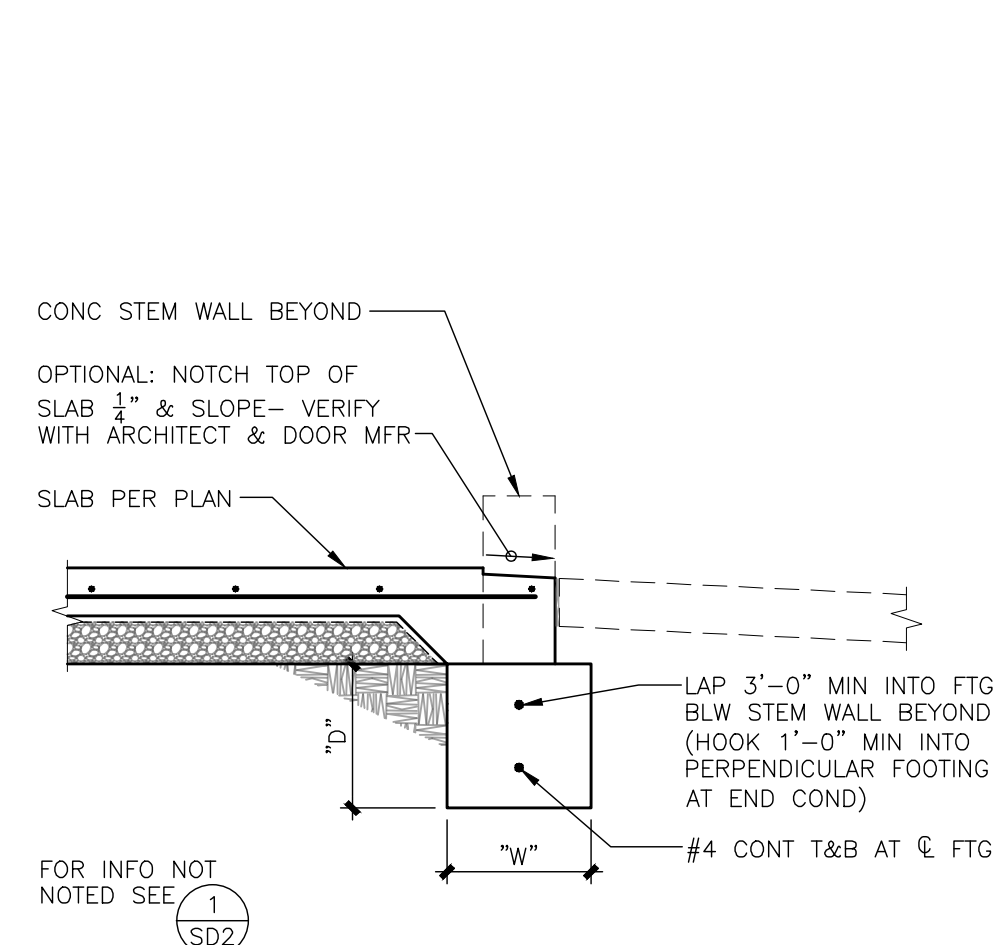
5 TYPICAL HOLDDOWN & ANCHOR BOLT INSTALLATION
D3/4



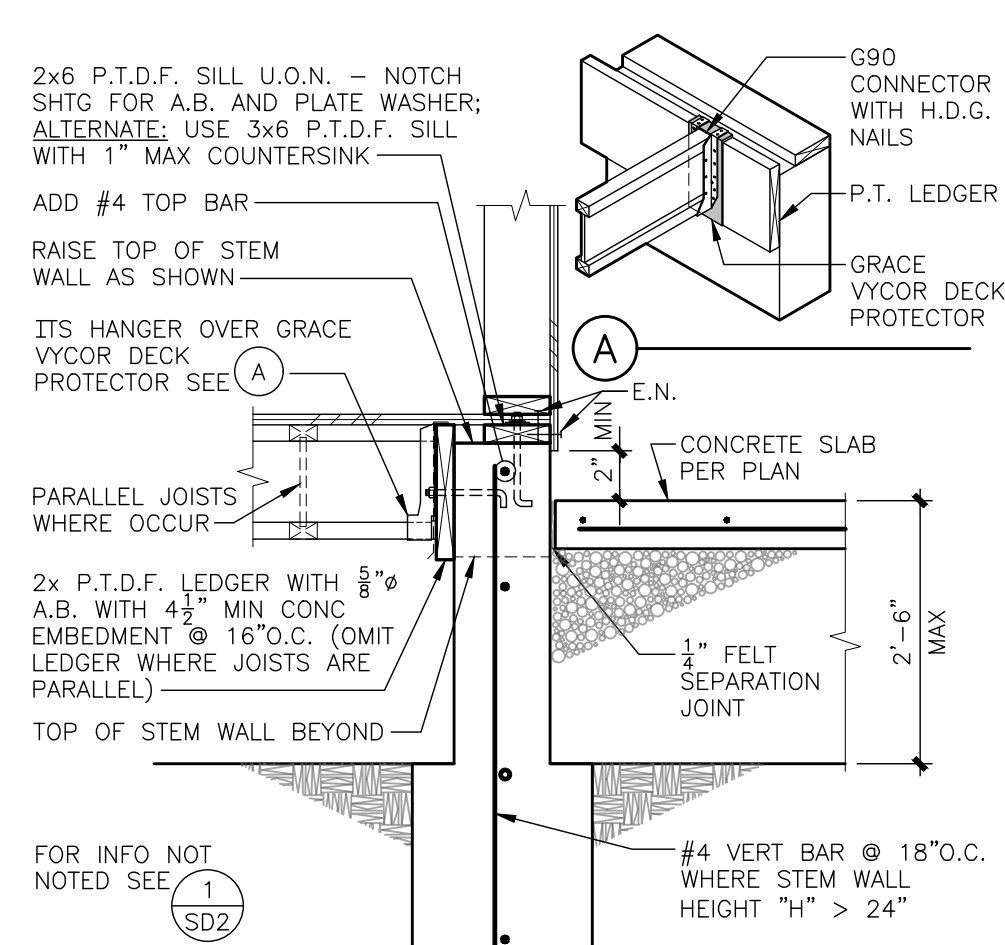
6 TYPICAL WALL AT SLAB
D1/2



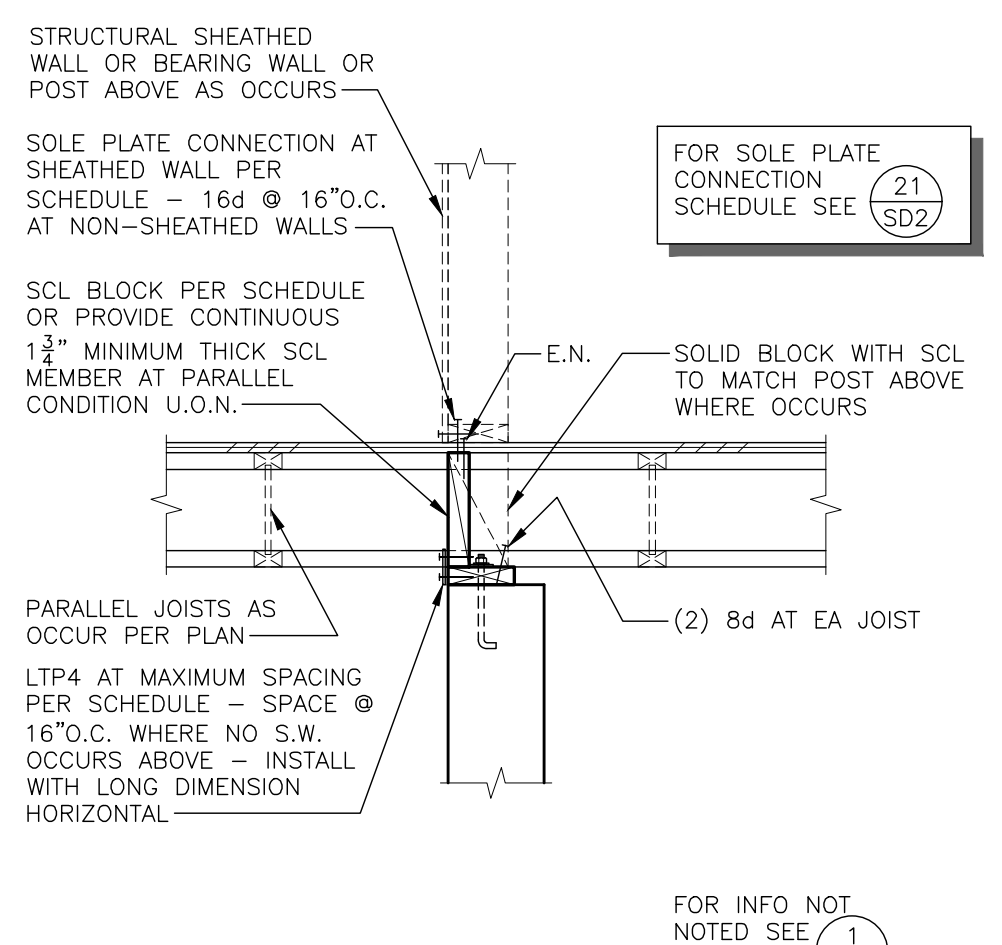
7 TYPICAL WALL AT SLAB
D3/4



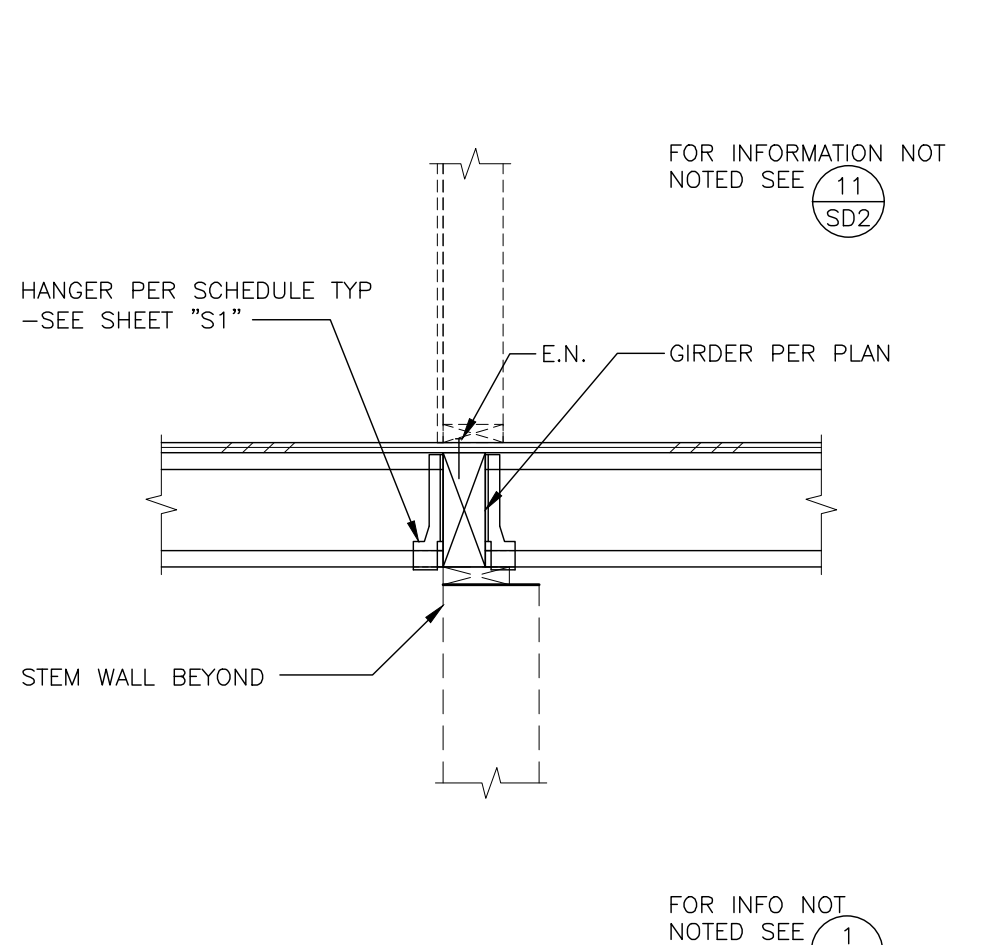
8 TYPICAL GARAGE SLAB AT OPENING
D3/4



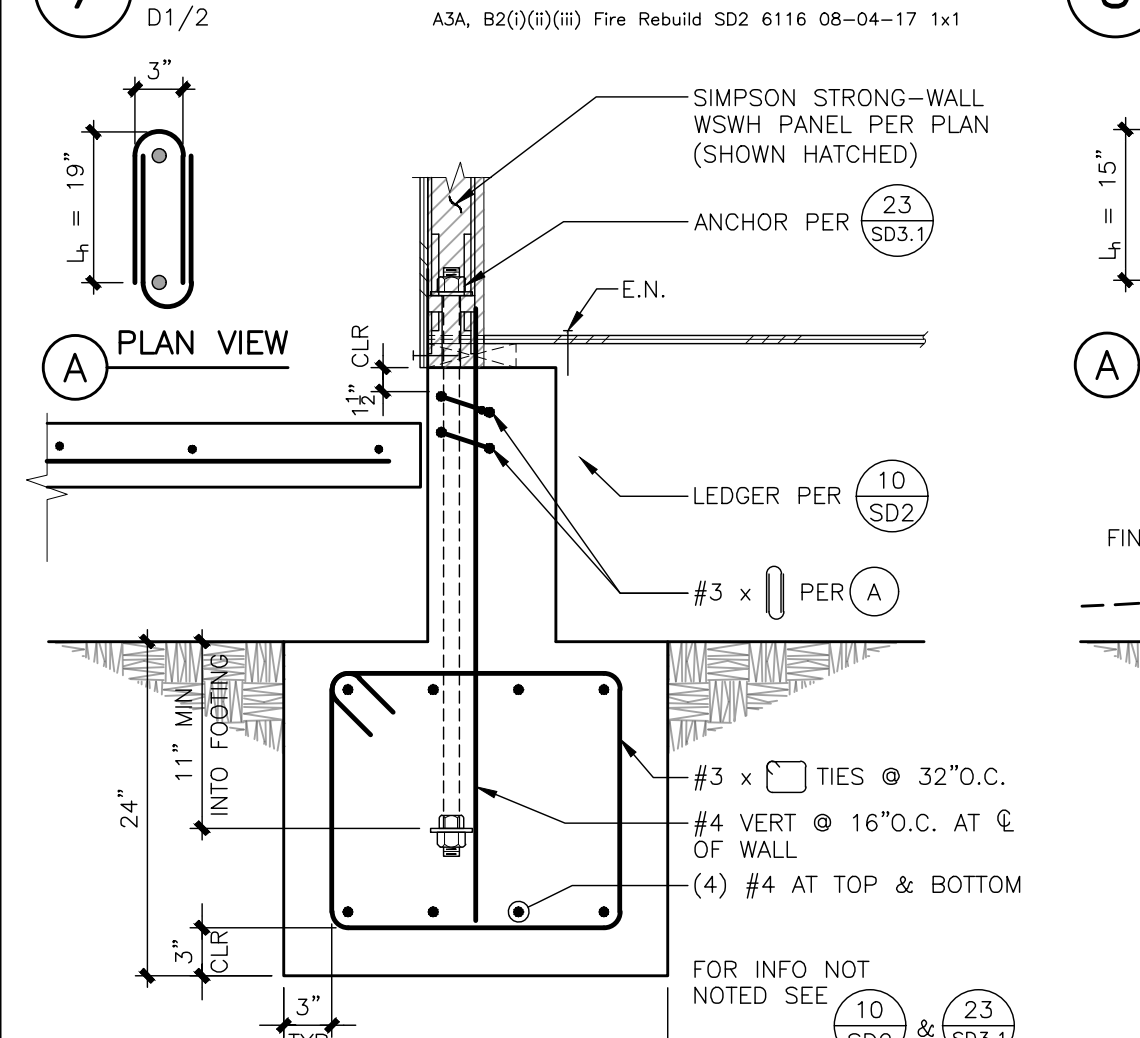
9 TYPICAL EXTERIOR FOOTING AT SLAB
D3/4



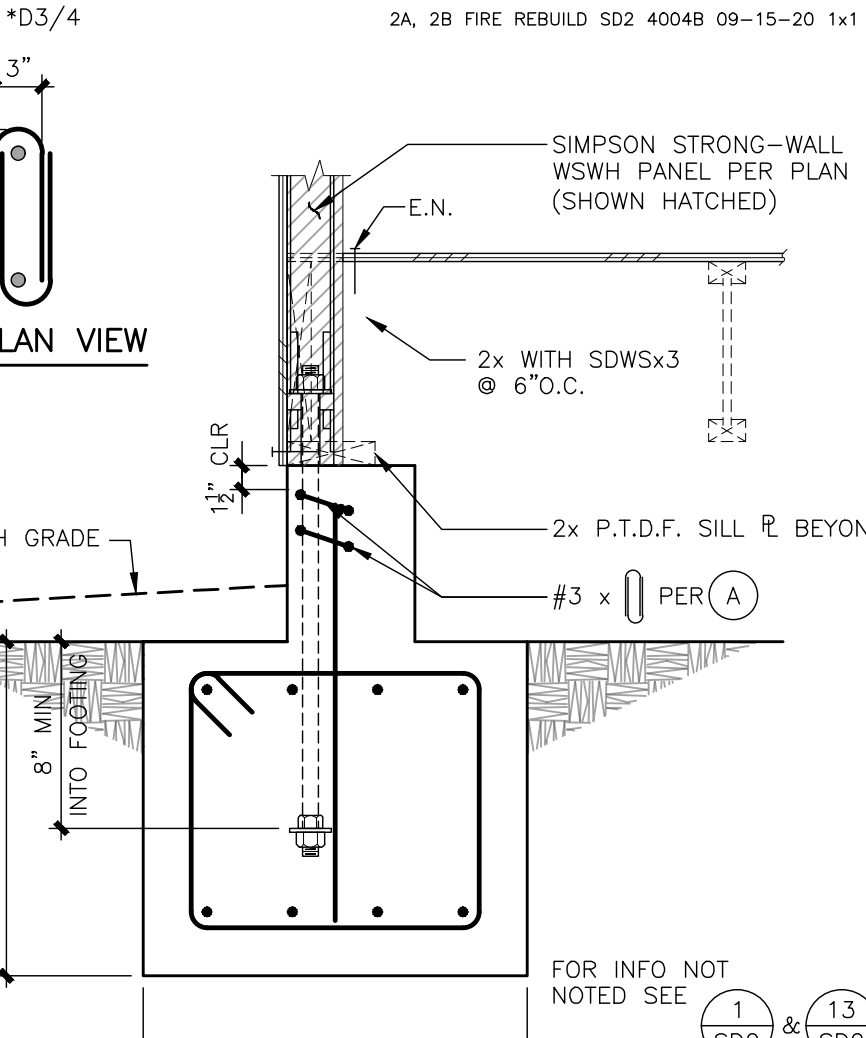
10 TYPICAL INTERIOR BEARING
D3/4



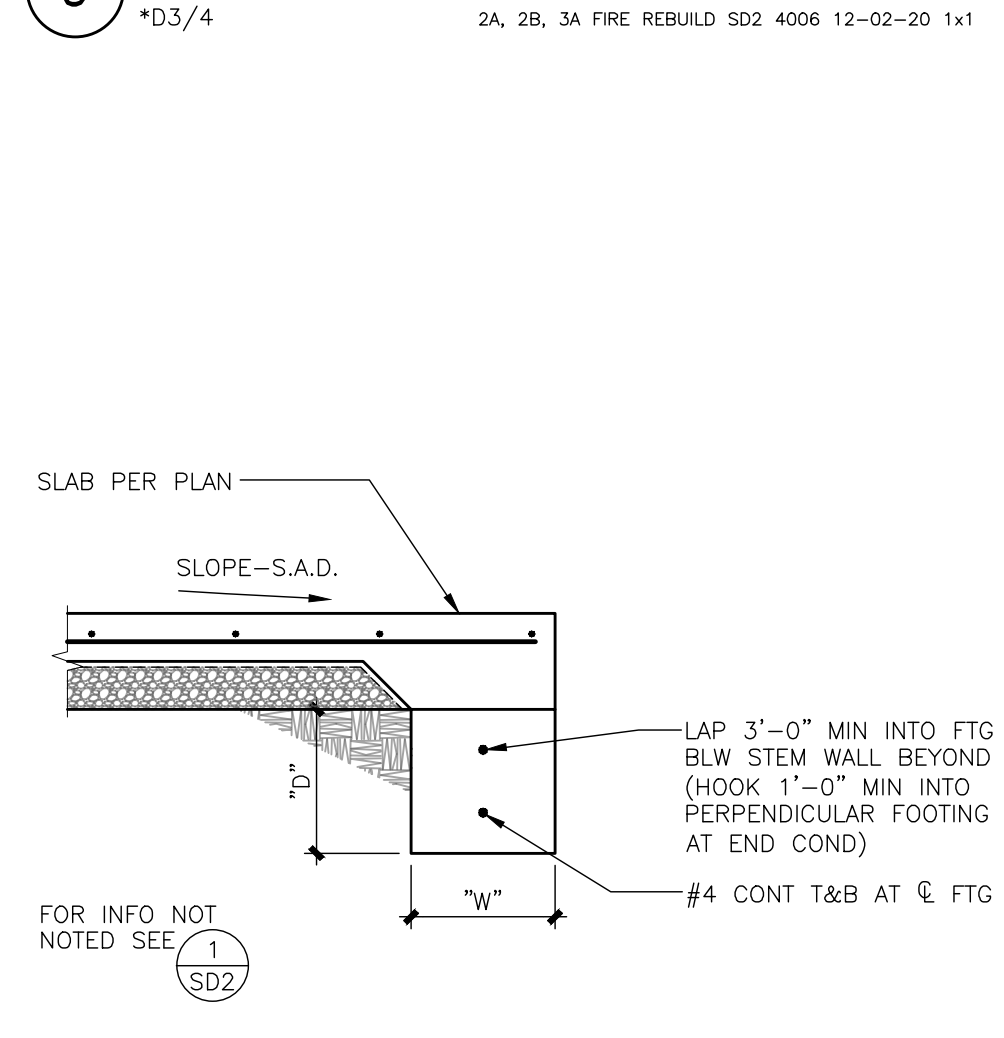
11 TYPICAL INTERIOR BEARING
D3/4



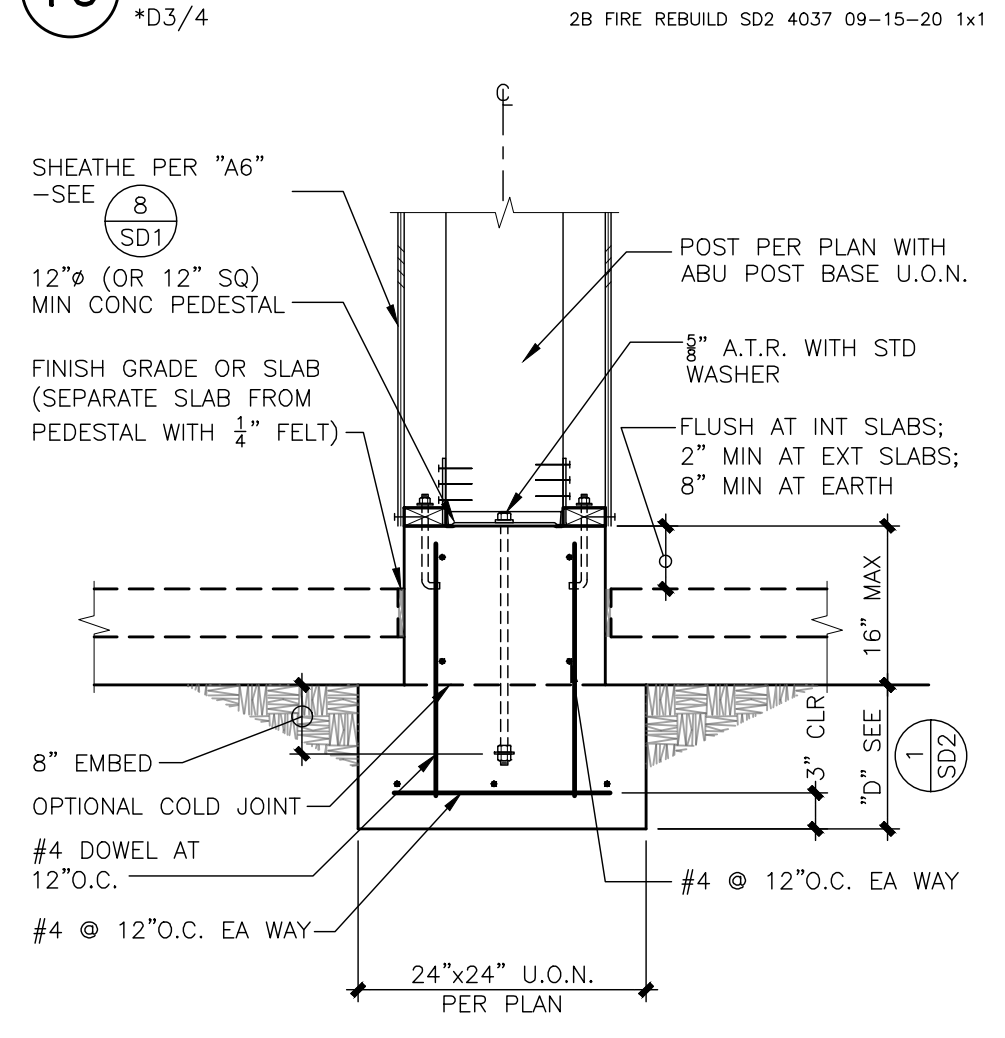
12 TYPICAL PIPE THROUGH FOUNDATION
D1



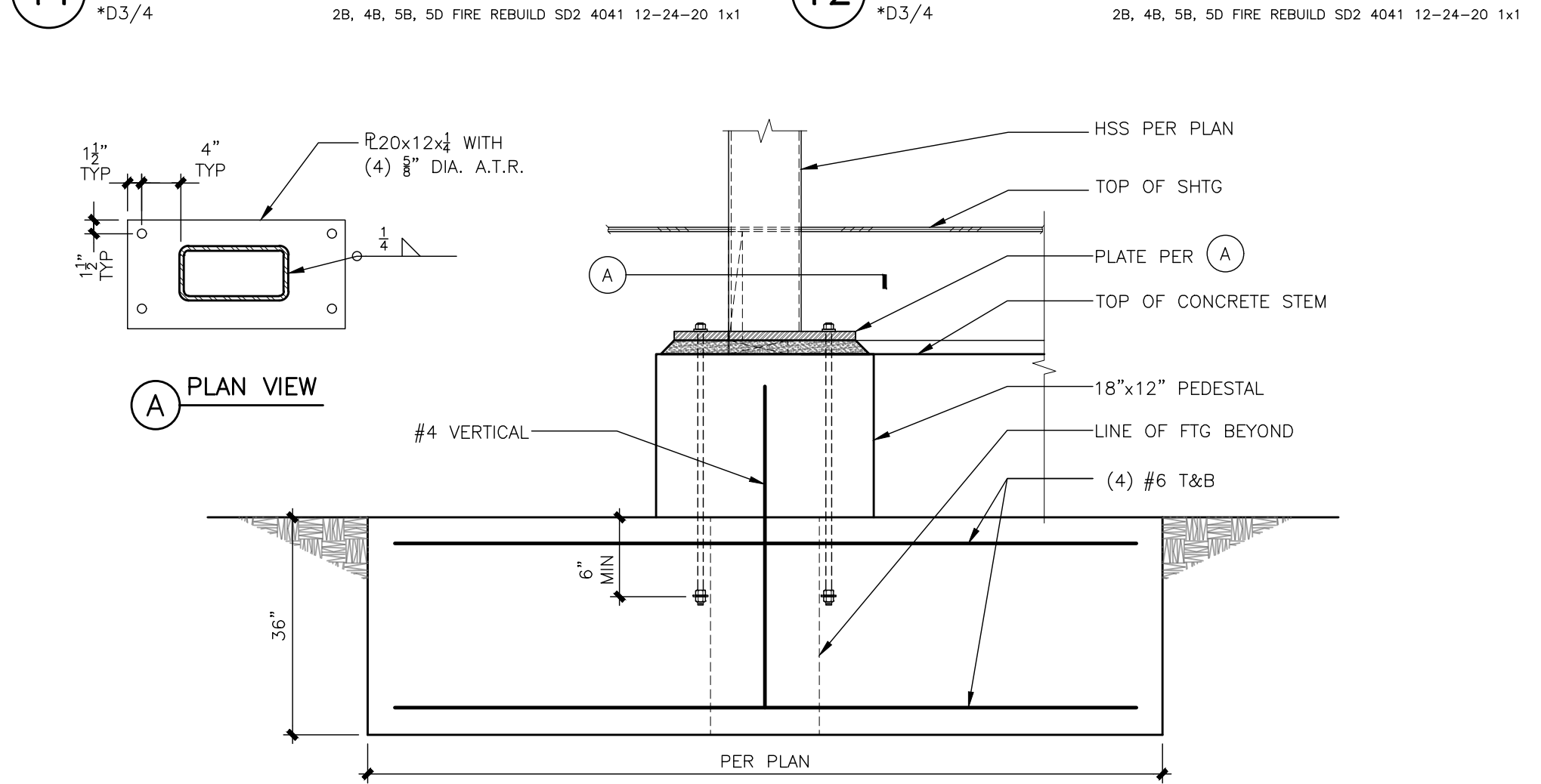
13 TYPICAL SLAB EDGE
D1



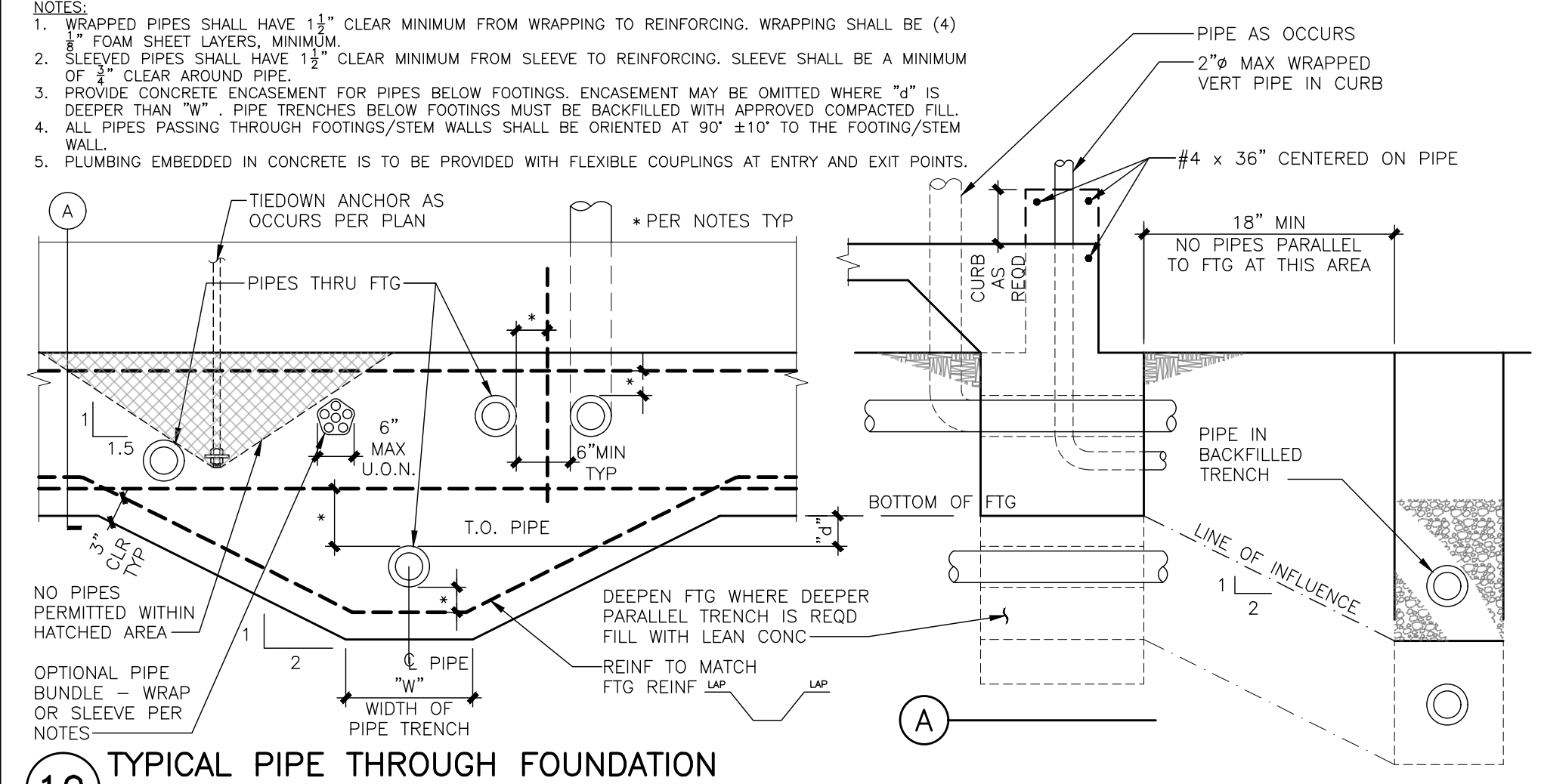
14 TYPICAL SLAB EDGE
D3/4



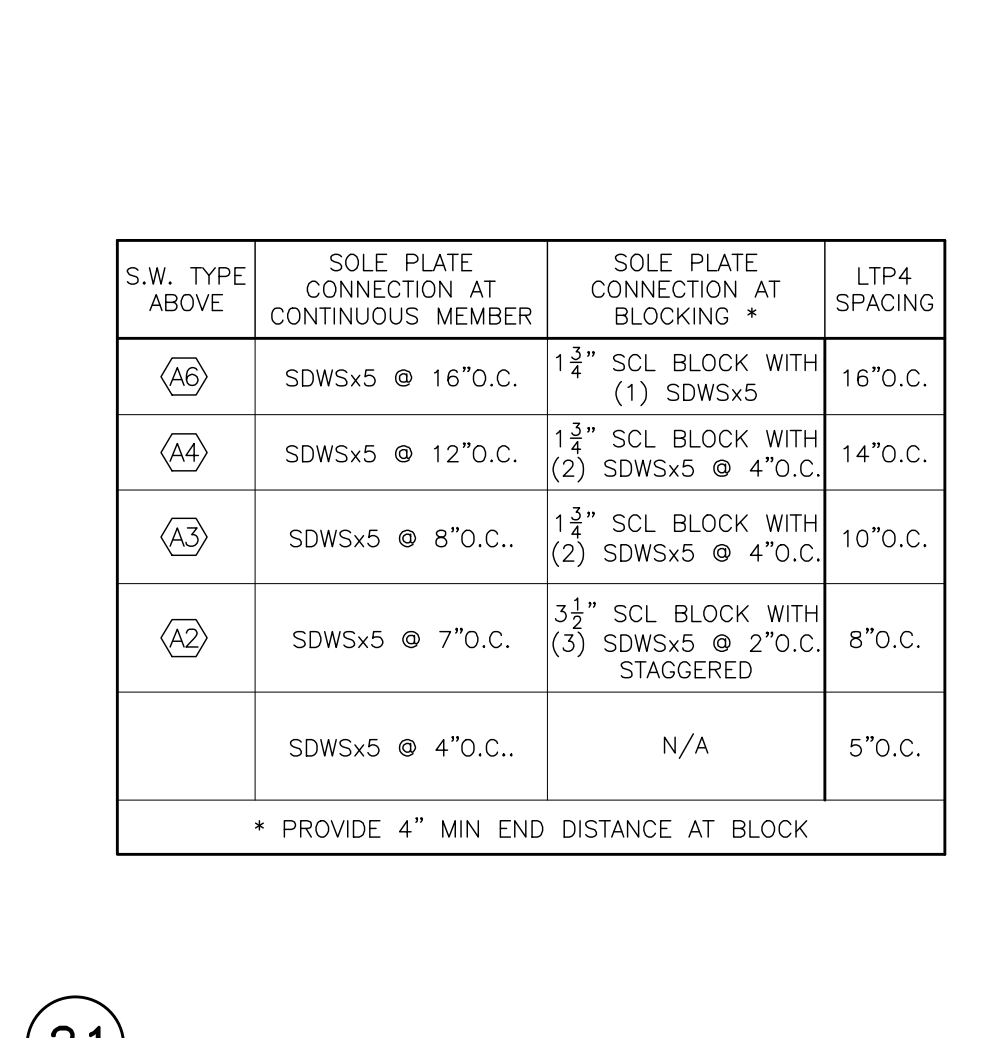
15 TYPICAL RETROFIT SILL ANCHOR
D3/4



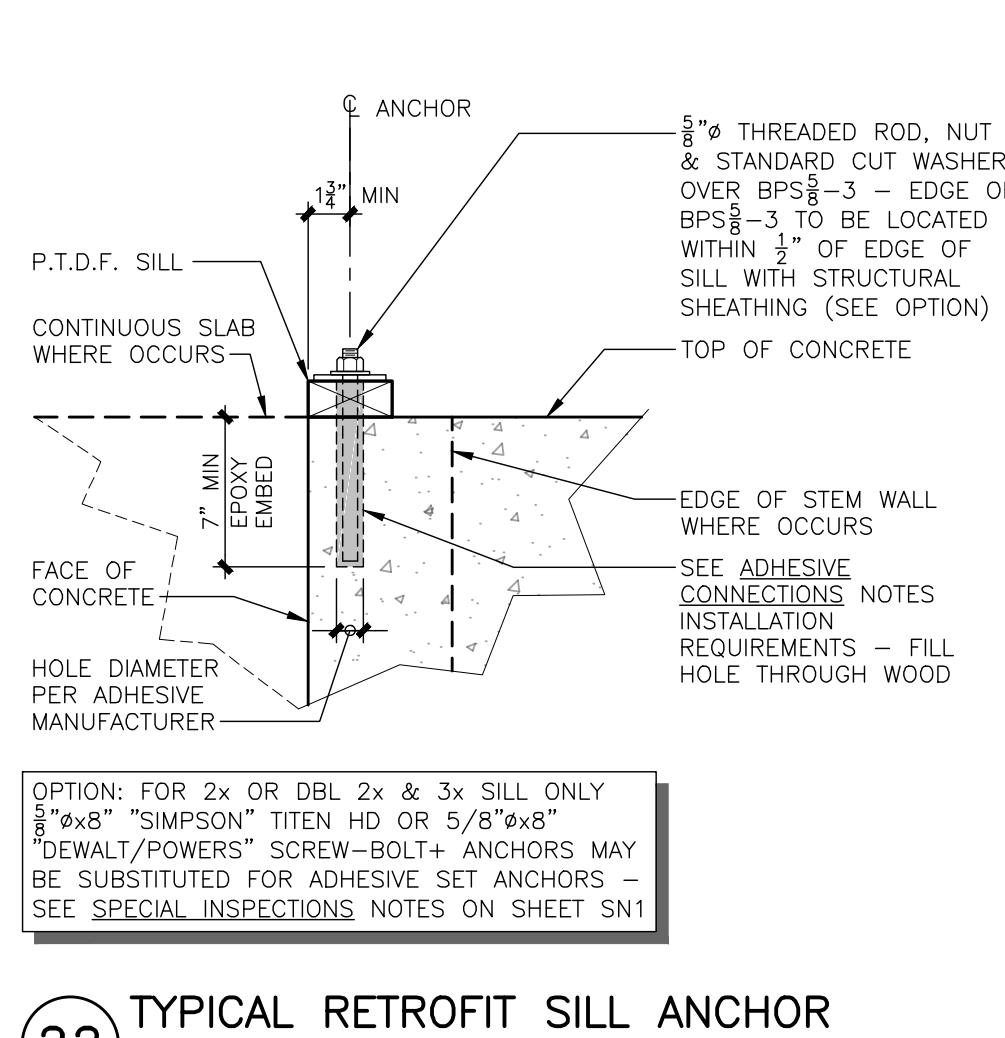
16 TYPICAL RETROFIT HOLDDOWN
D3/4



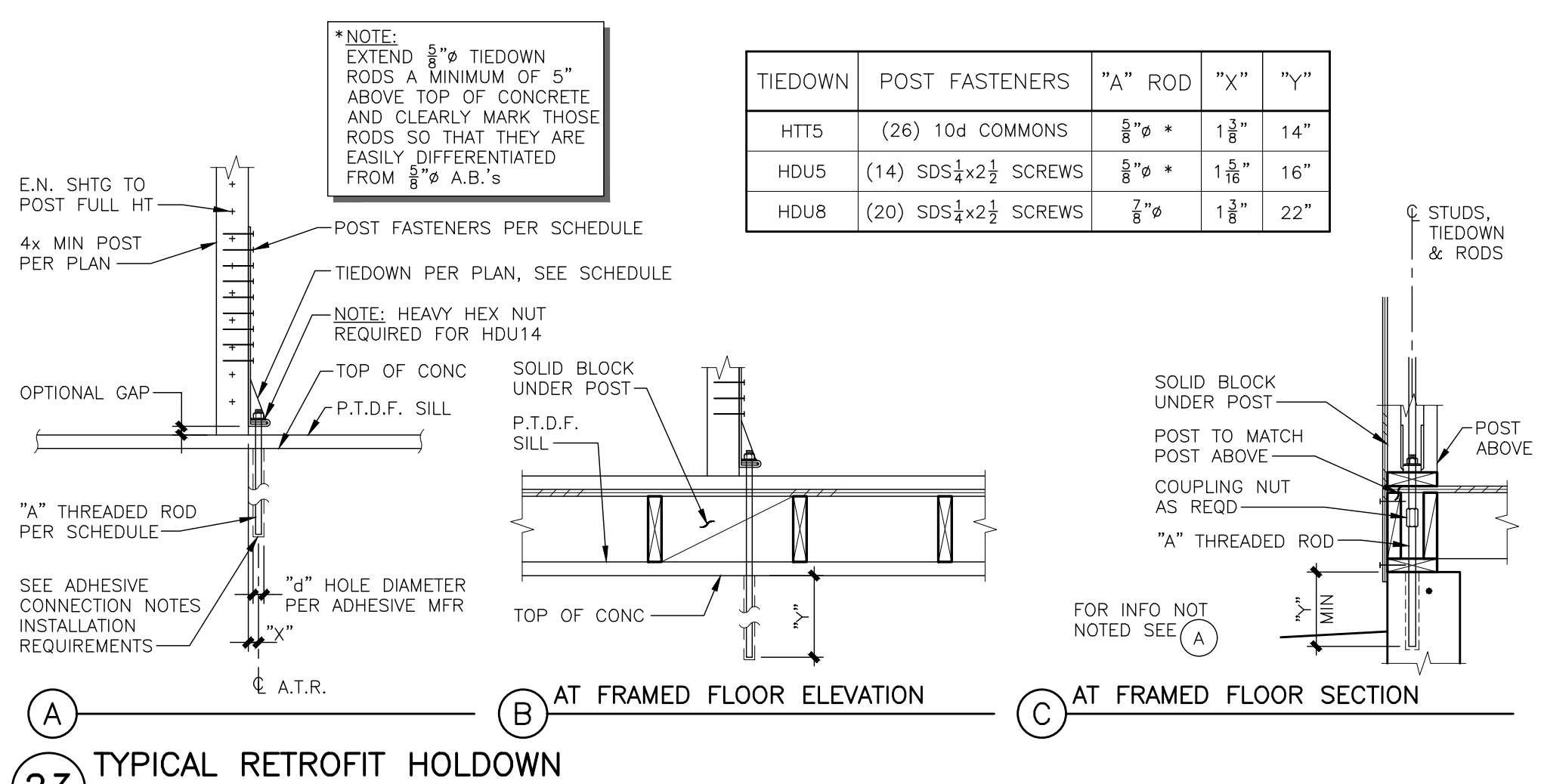
17 TYPICAL PIPE THROUGH FOUNDATION
D3/4



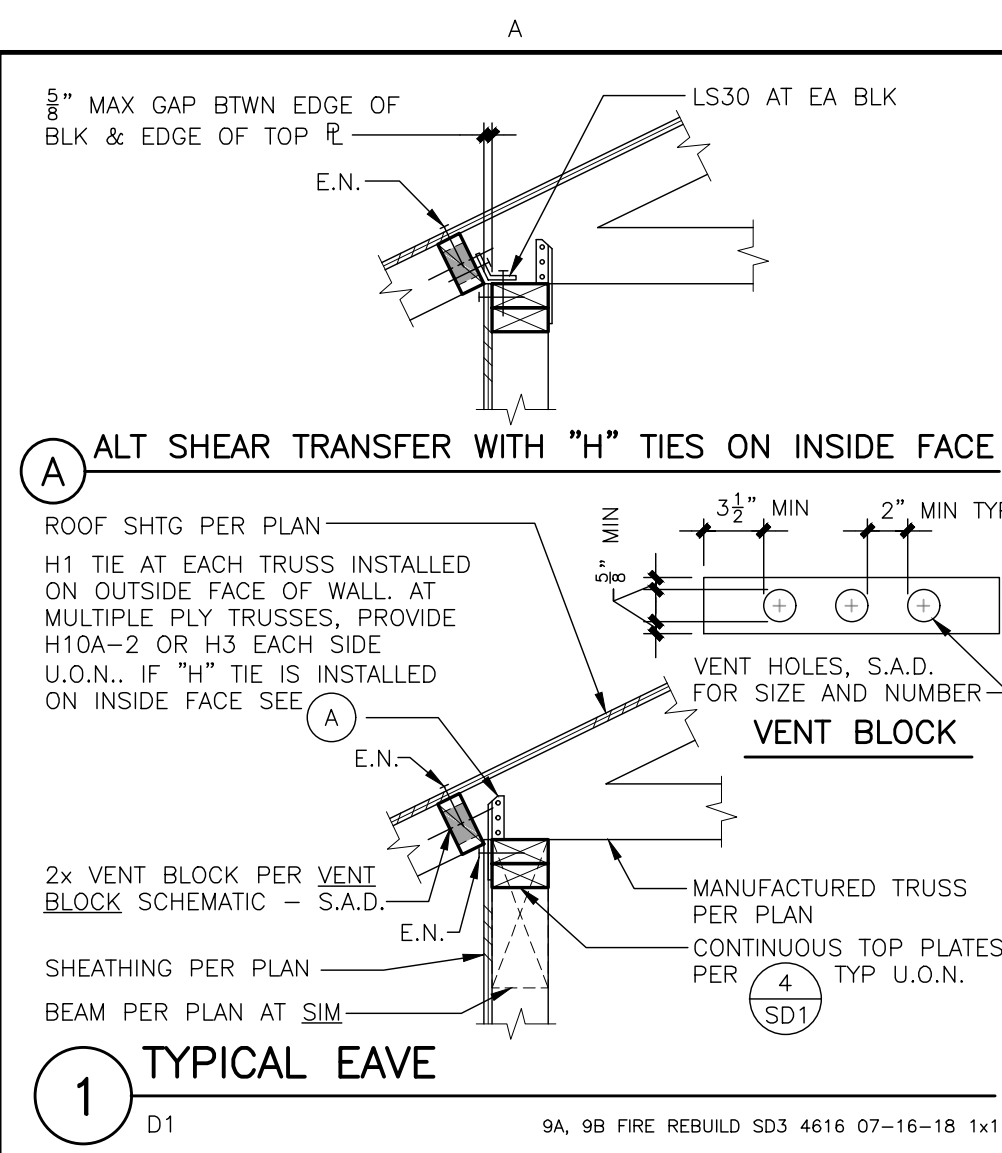
18 TYPICAL RETROFIT SILL ANCHOR
D3/4



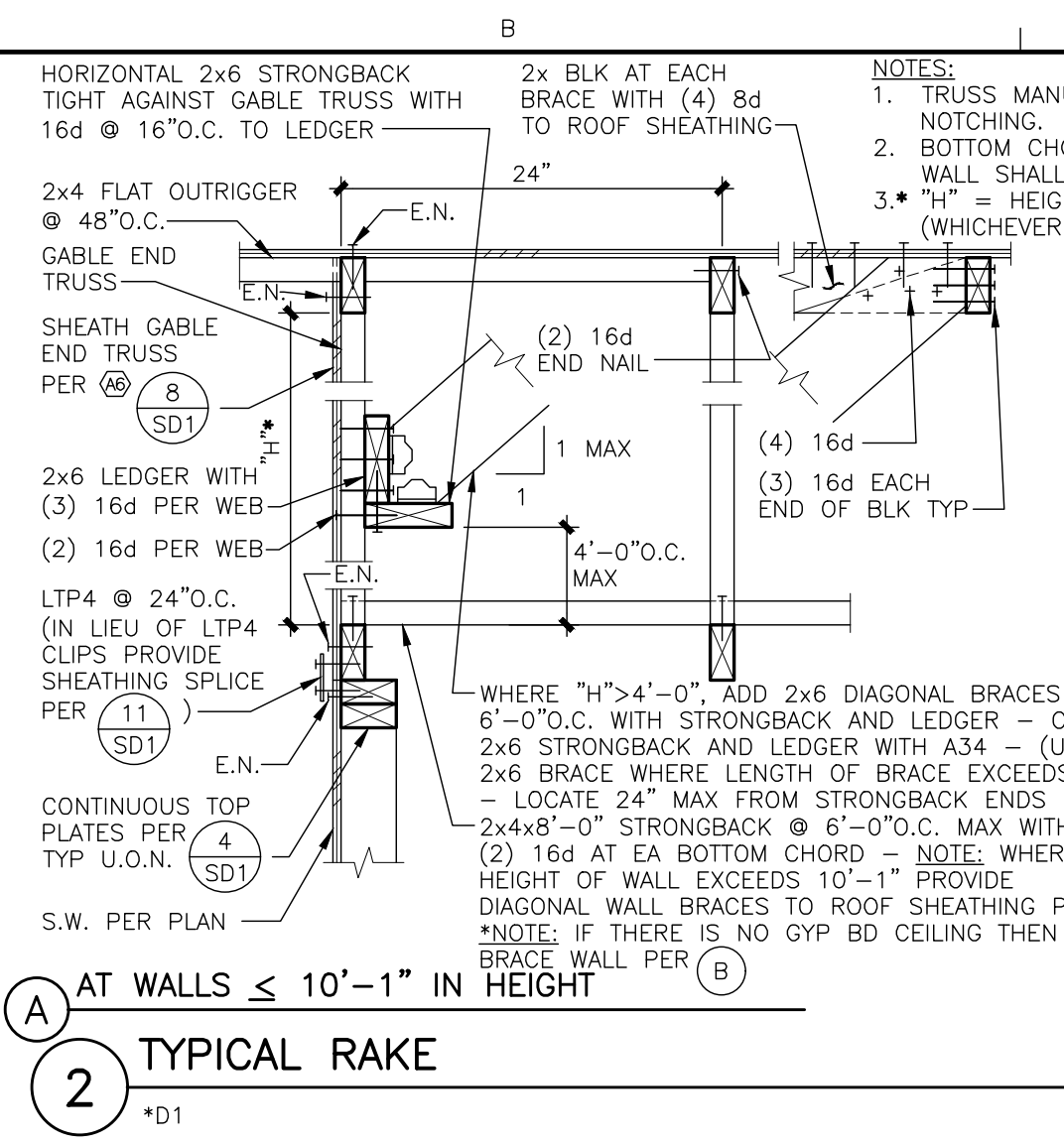
19 TYPICAL RETROFIT HOLDDOWN
D3/4



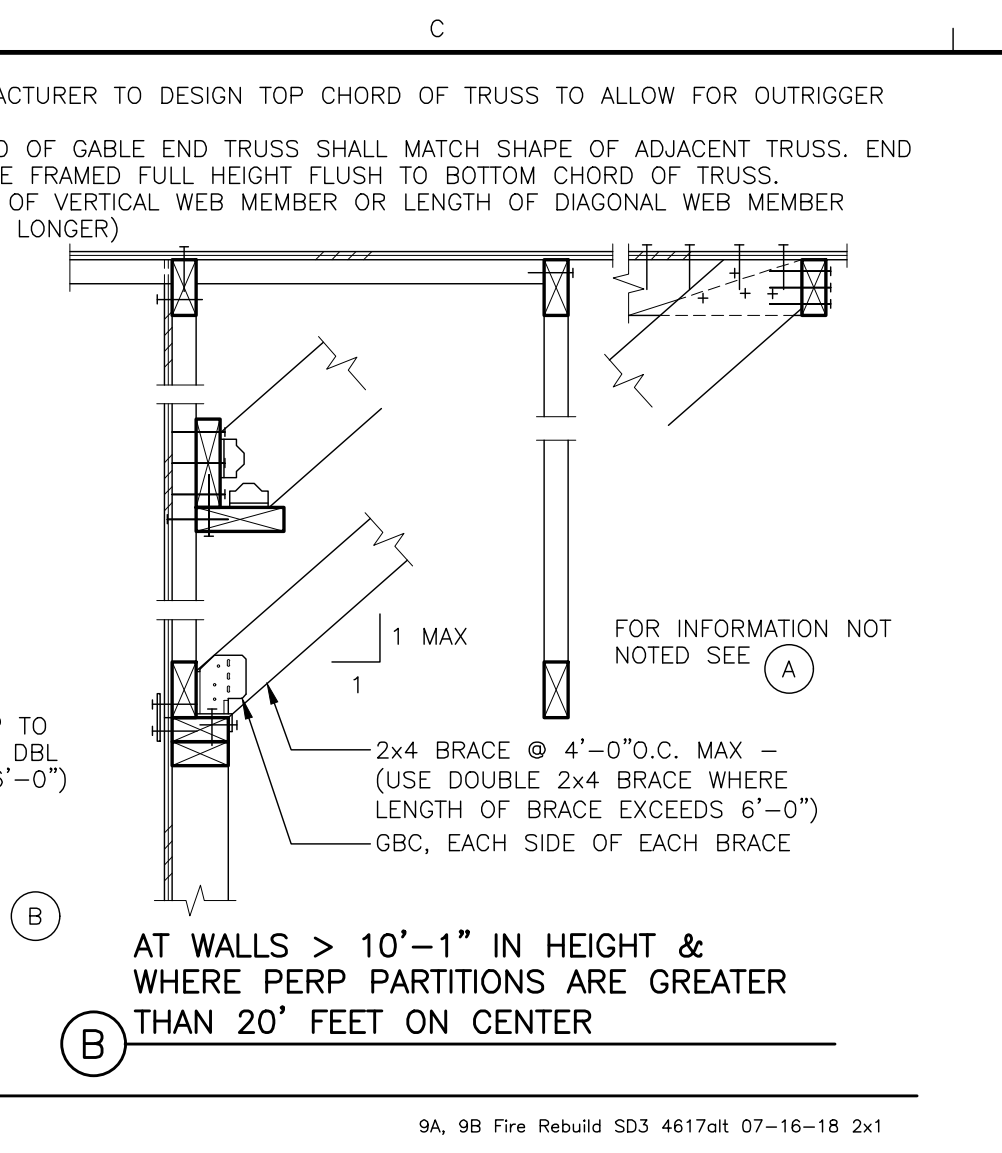
20 TYPICAL RETROFIT HOLDDOWN
D3/4



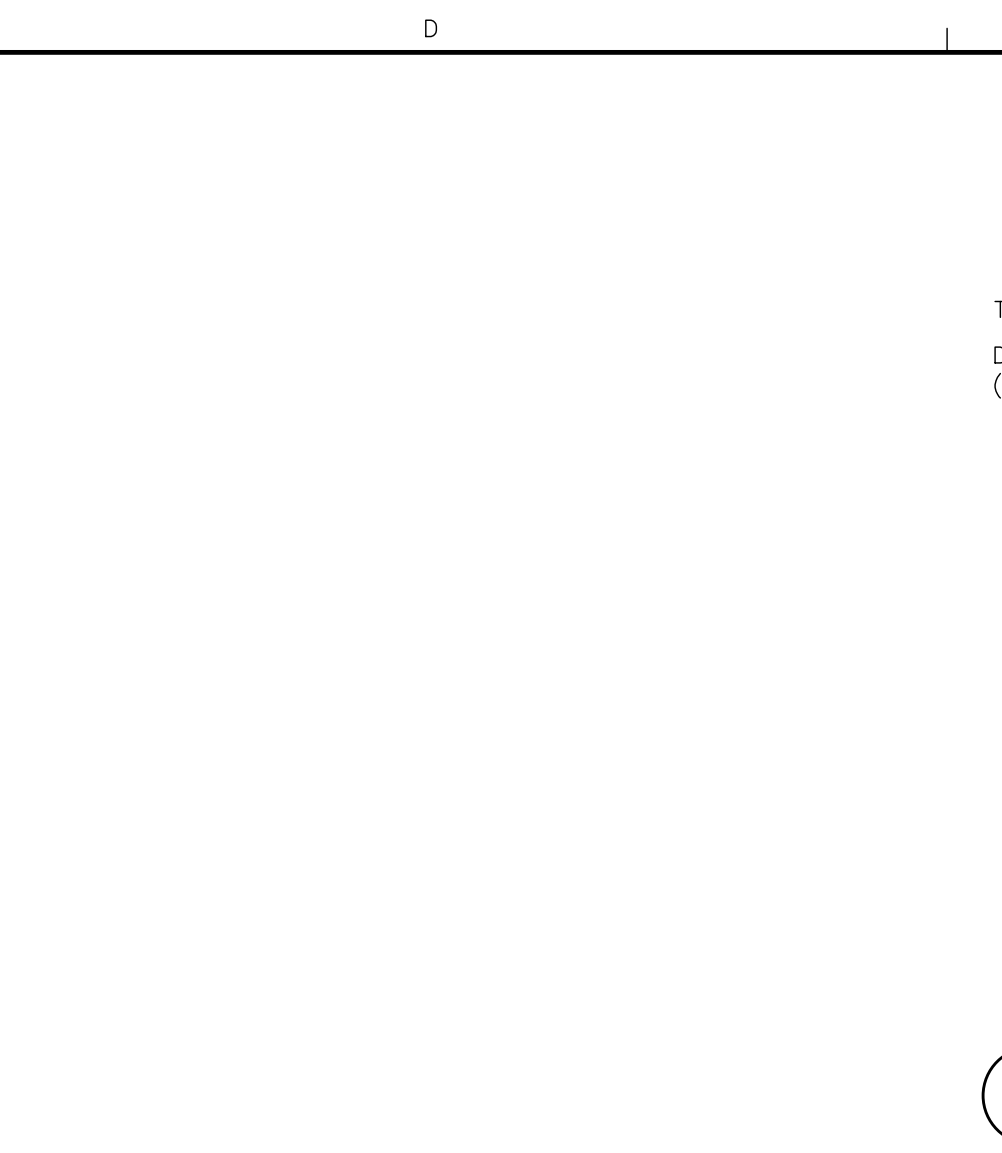
1 TYPICAL EAVE
D1 9A, 9B FIRE REBUILD SD3 4616 07-16-18 1x1



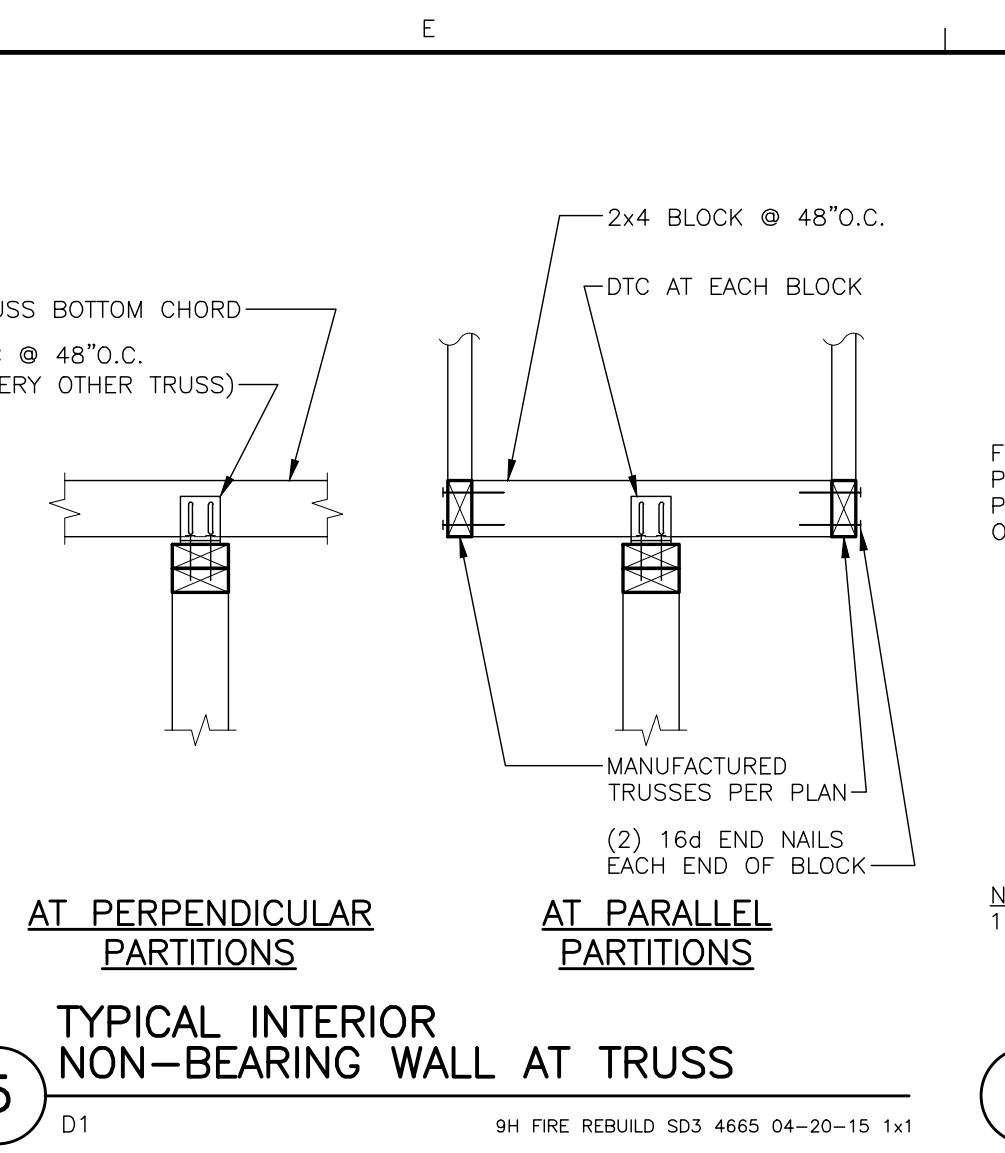
2 TYPICAL RAKE
D1



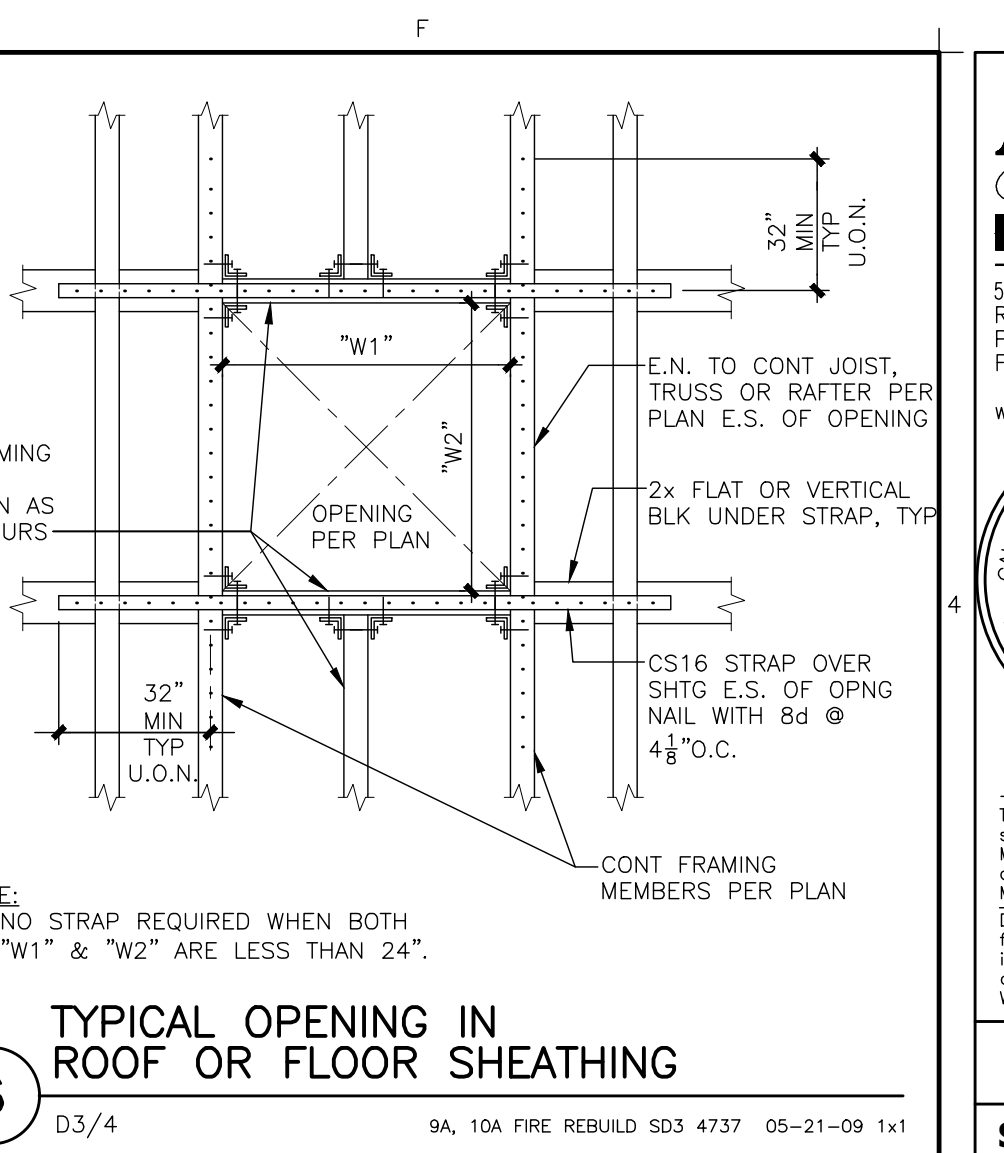
3 TYPICAL INTERIOR NON-BEARING WALL AT TRUSS
D1 9H FIRE REBUILD SD3 4665 04-20-15 1x1



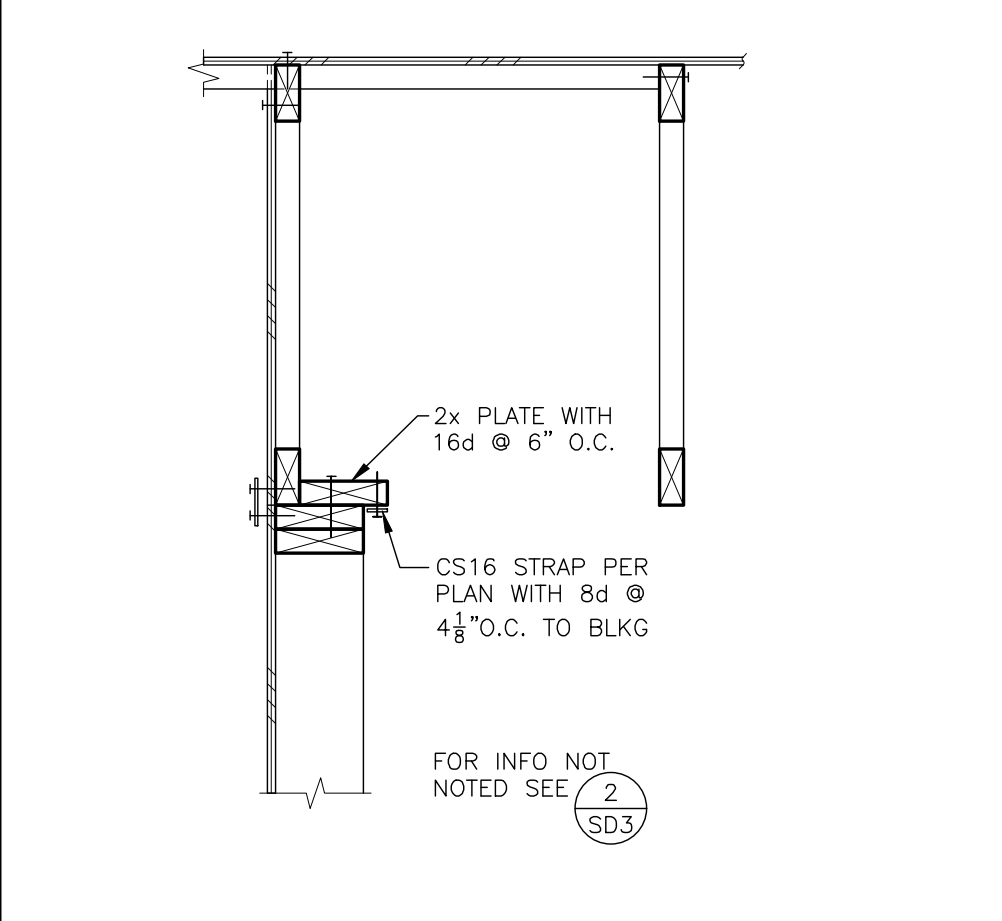
4 TYPICAL OPENING IN ROOF OR FLOOR SHEATHING
D3/4 9A, 10A FIRE REBUILD SD3 4737 05-21-09 1x1



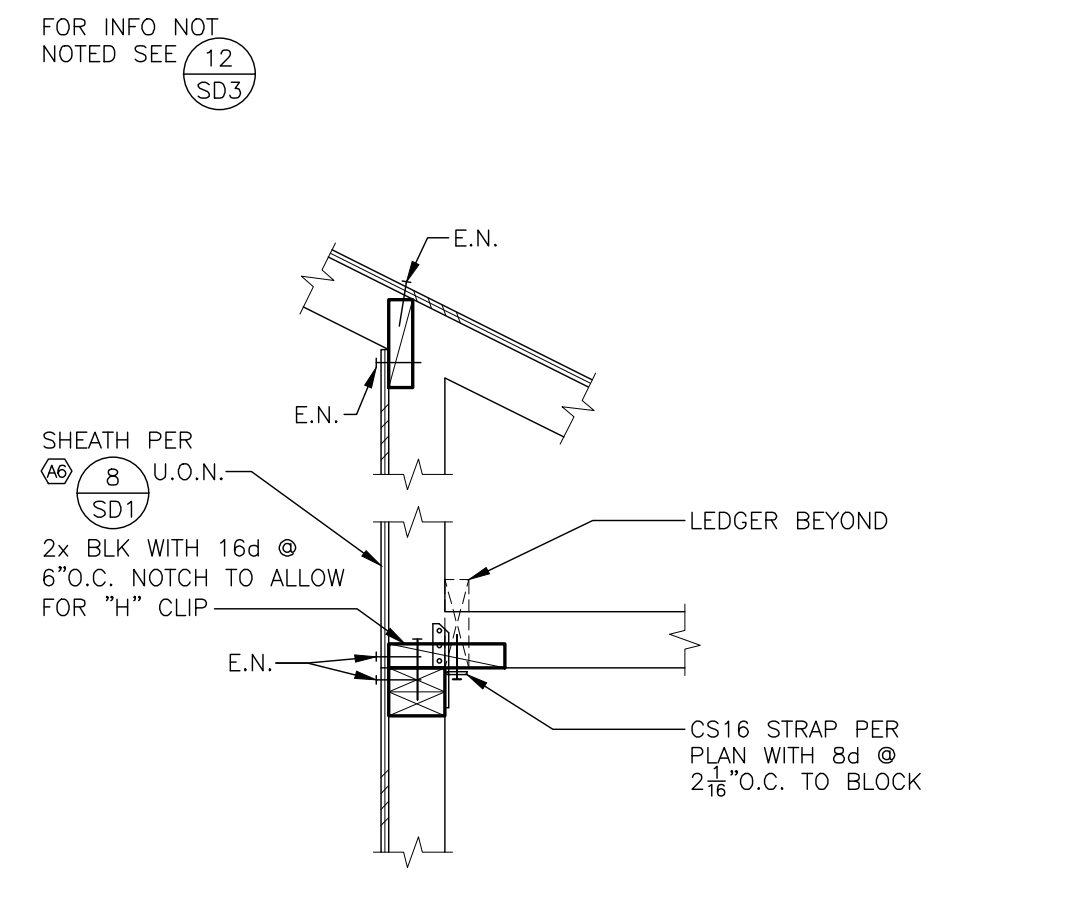
5 TYPICAL INTERIOR NON-BEARING WALL AT TRUSS
D1 9H FIRE REBUILD SD3 4665 04-20-15 1x1



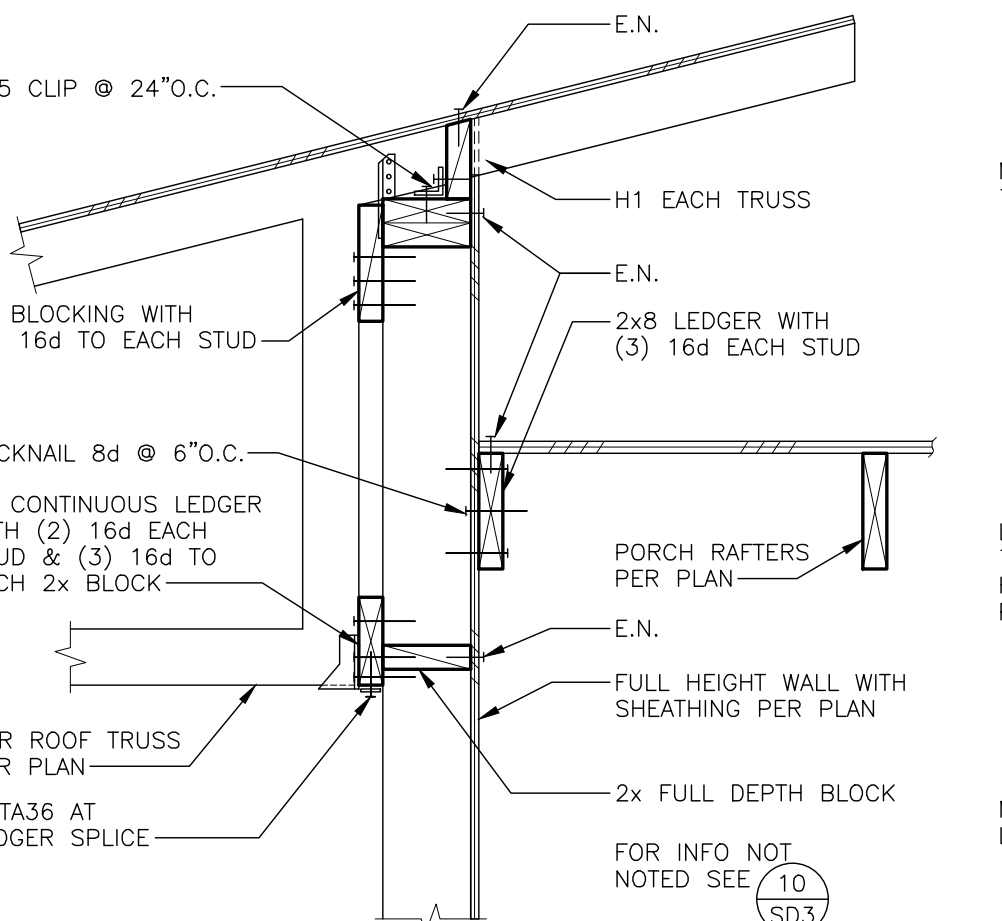
6 TYPICAL OPENING IN ROOF OR FLOOR SHEATHING
D3/4 9A, 10A FIRE REBUILD SD3 4737 05-21-09 1x1



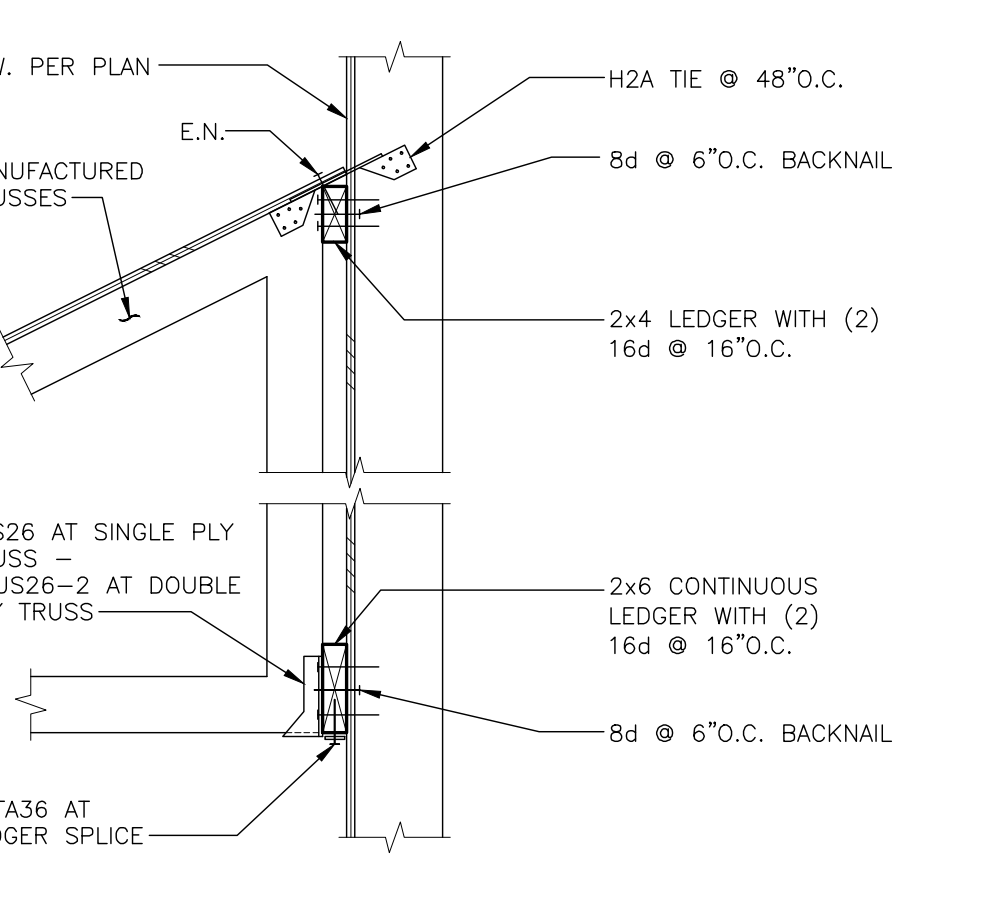
7 TYPICAL EAVE
D1 7/SD3-1 ZHD 07/30/19 FIRE REBUILD SD3 1x1



8 TYPICAL RAKE
D1 A1 9A, 9B FIRE REBUILD SD3 4648 08-04-17 1x1



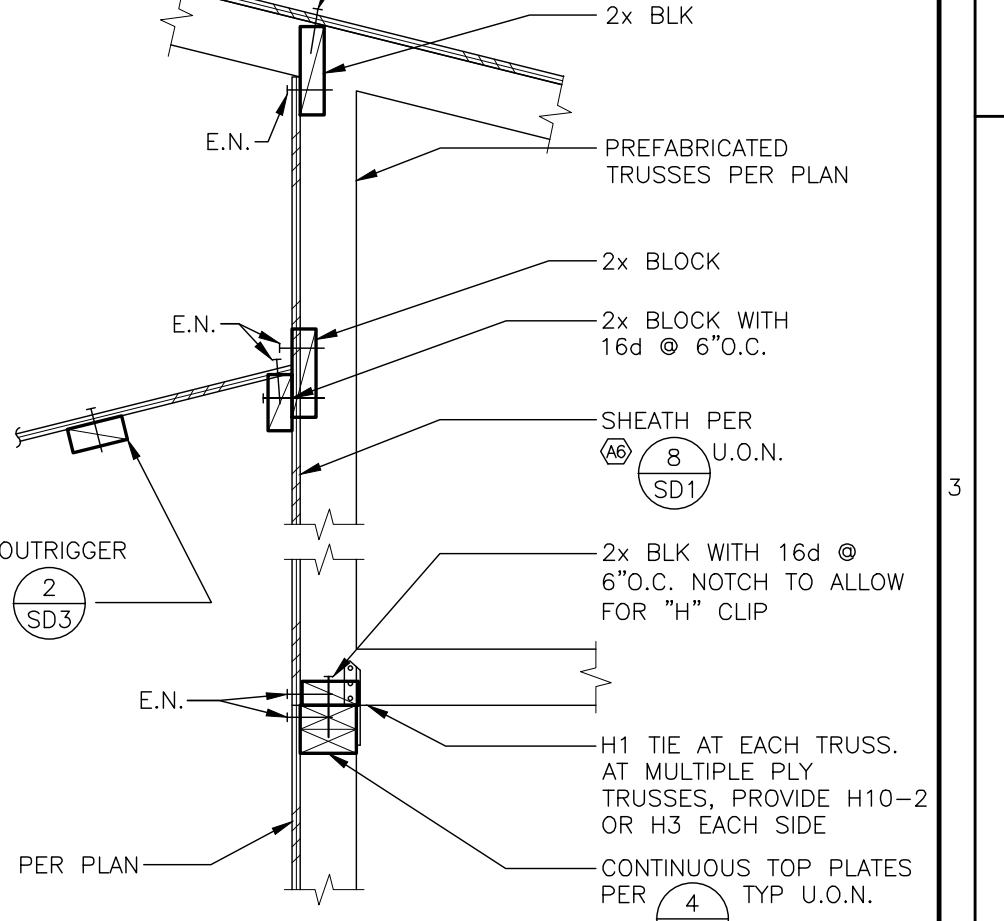
9 TYPICAL INTERIOR NON-BEARING WALL AT TRUSS
D1 T1 RR 09/19/19 FIRE REBUILD SD3 1x1



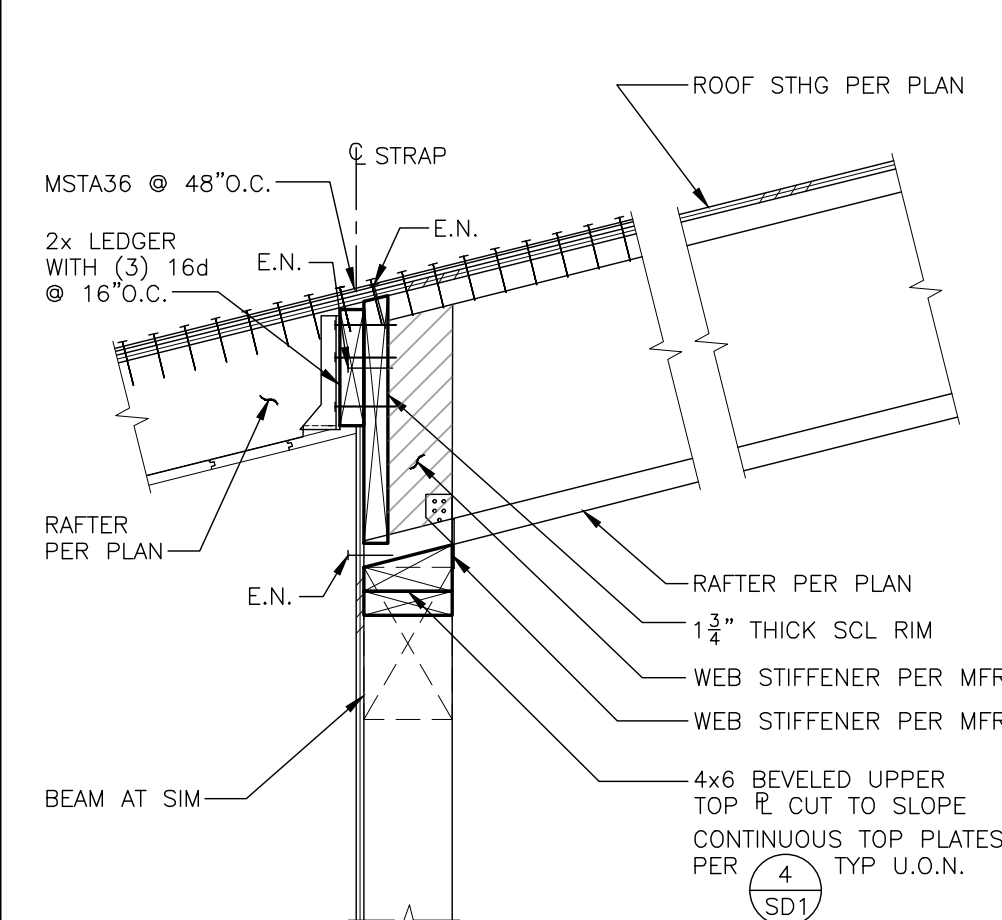
10 TYPICAL INTERIOR NON-BEARING WALL AT TRUSS
D1 T1 9B FIRE REBUILD SD3 4650 04-25-16 1x1



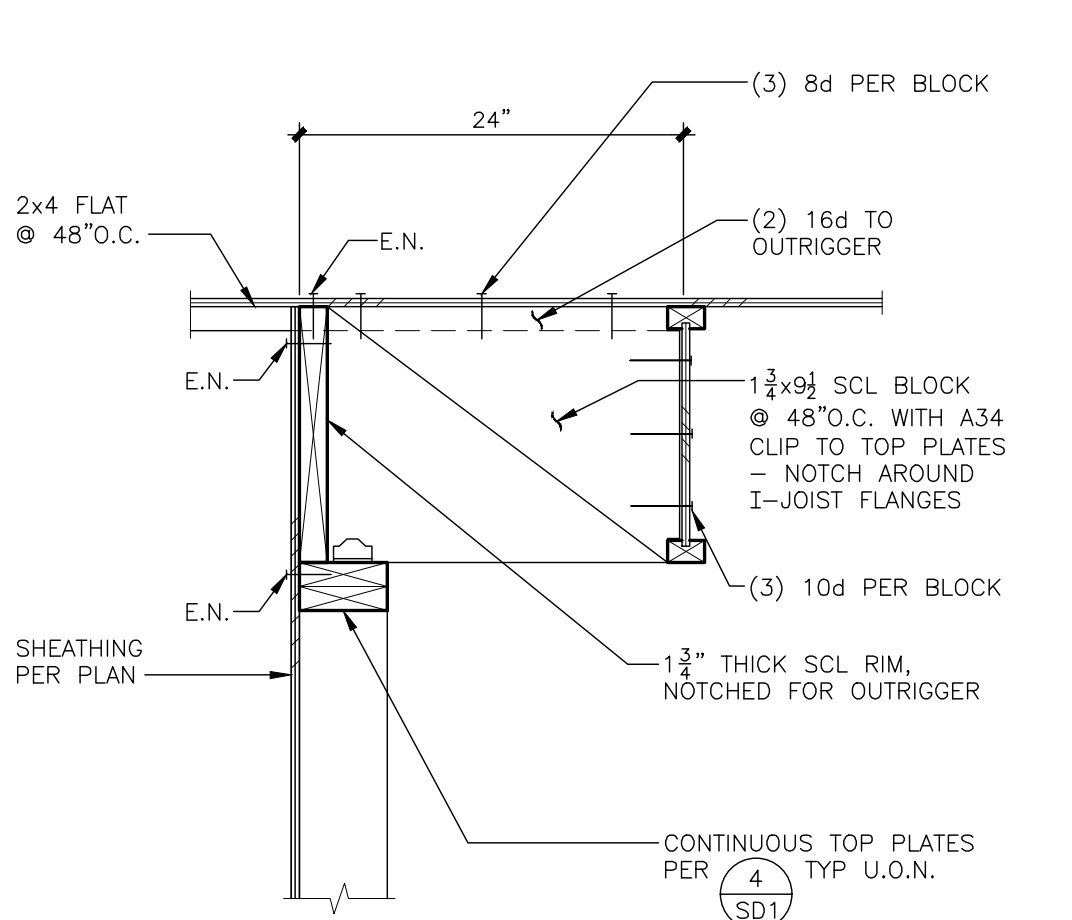
11 TYPICAL OPENING IN ROOF OR FLOOR SHEATHING
D1 A1 9A, 9B FIRE REBUILD SD3 4648 08-04-17 1x1



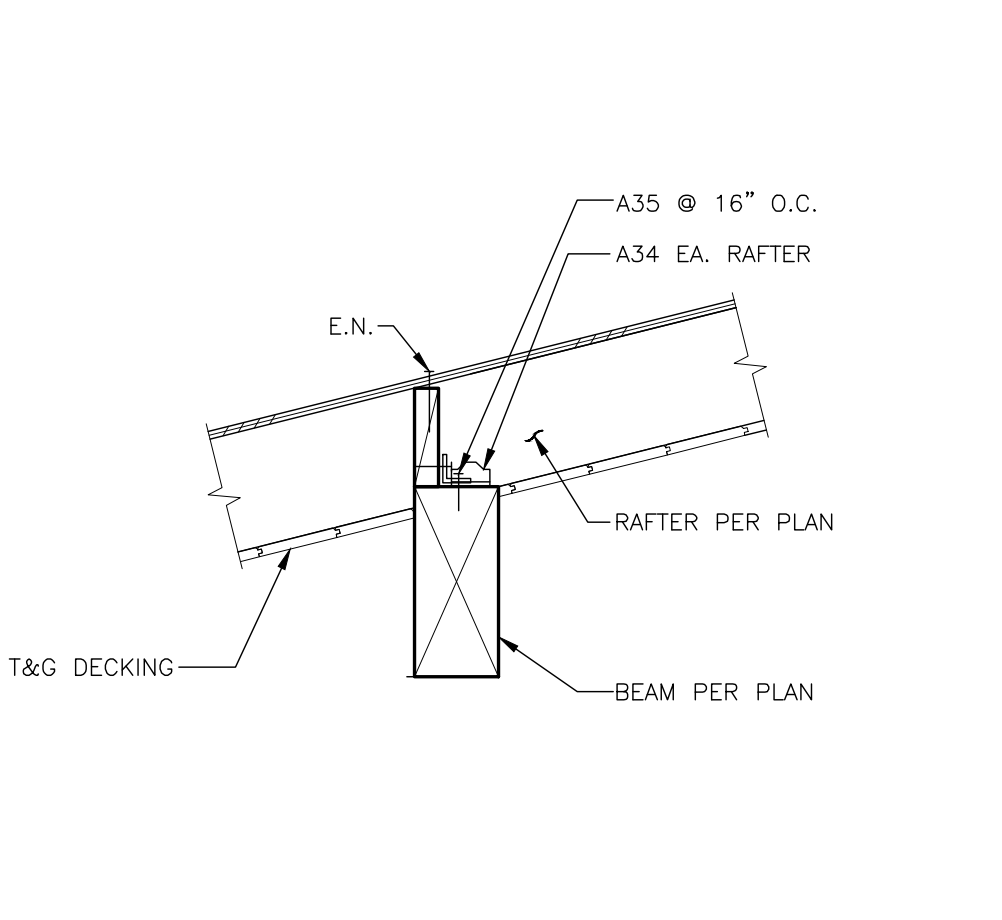
12 TYPICAL OPENING IN ROOF OR FLOOR SHEATHING
D1 A1 9A, 9B FIRE REBUILD SD3 4648 08-04-17 1x1



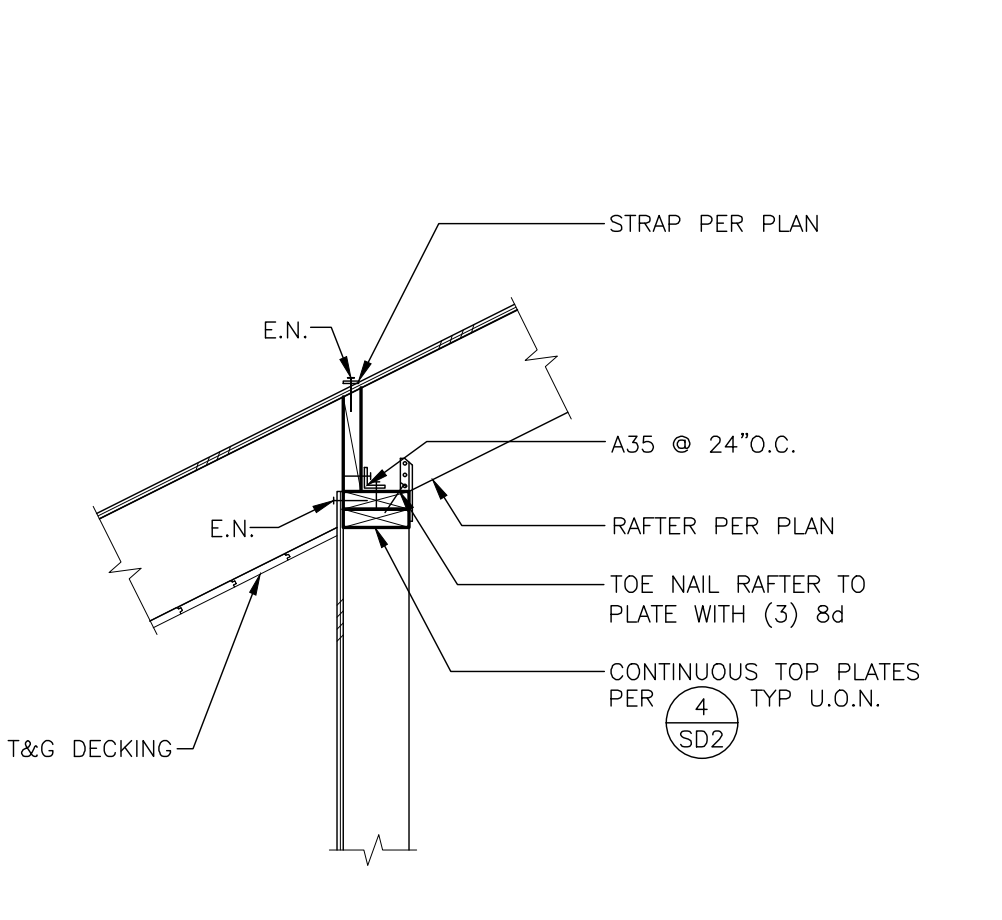
13 TYPICAL AT HIGH RAFTER EAVE
D1 9C FIRE REBUILD SD3 4656 107-16-18 1x1



14 TYPICAL RAKE
D1 A6, A6B FIRE REBUILD SD3 6741 06-27-17 1x1



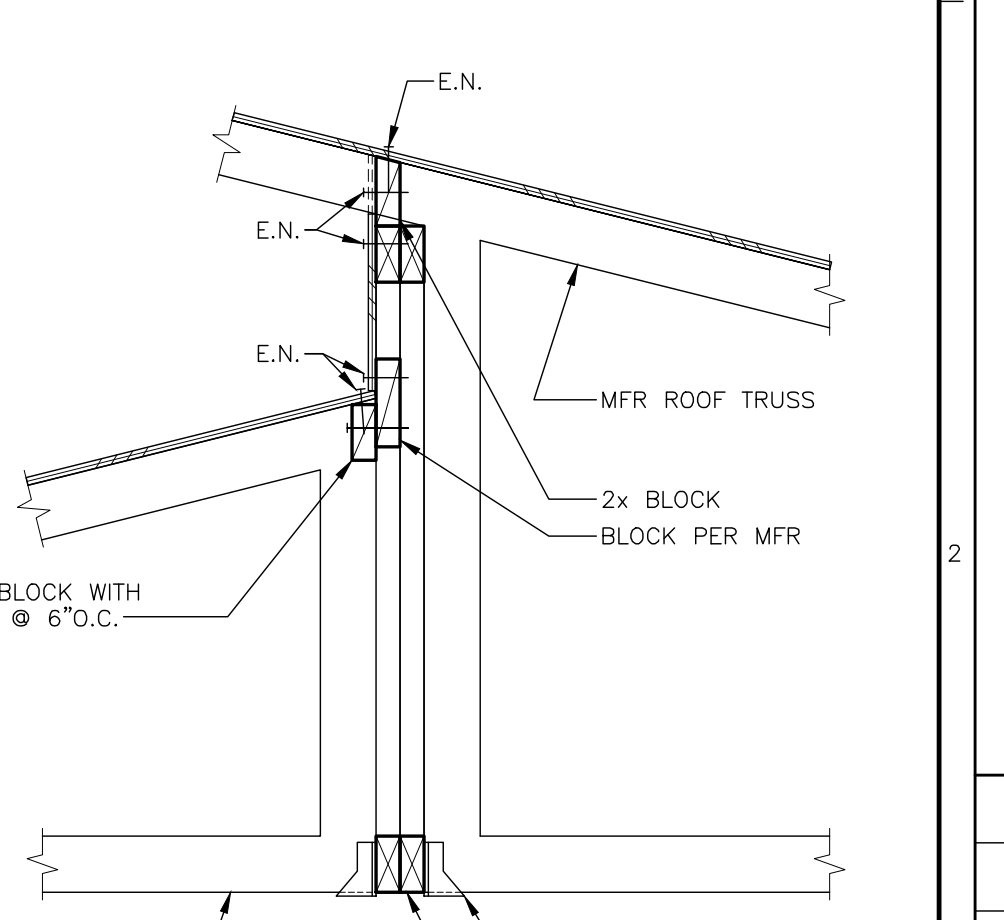
15 TYPICAL INTERIOR NON-BEARING WALL AT TRUSS
D1 9E FIRE REBUILD SD3 4636 10-15-03 1x1



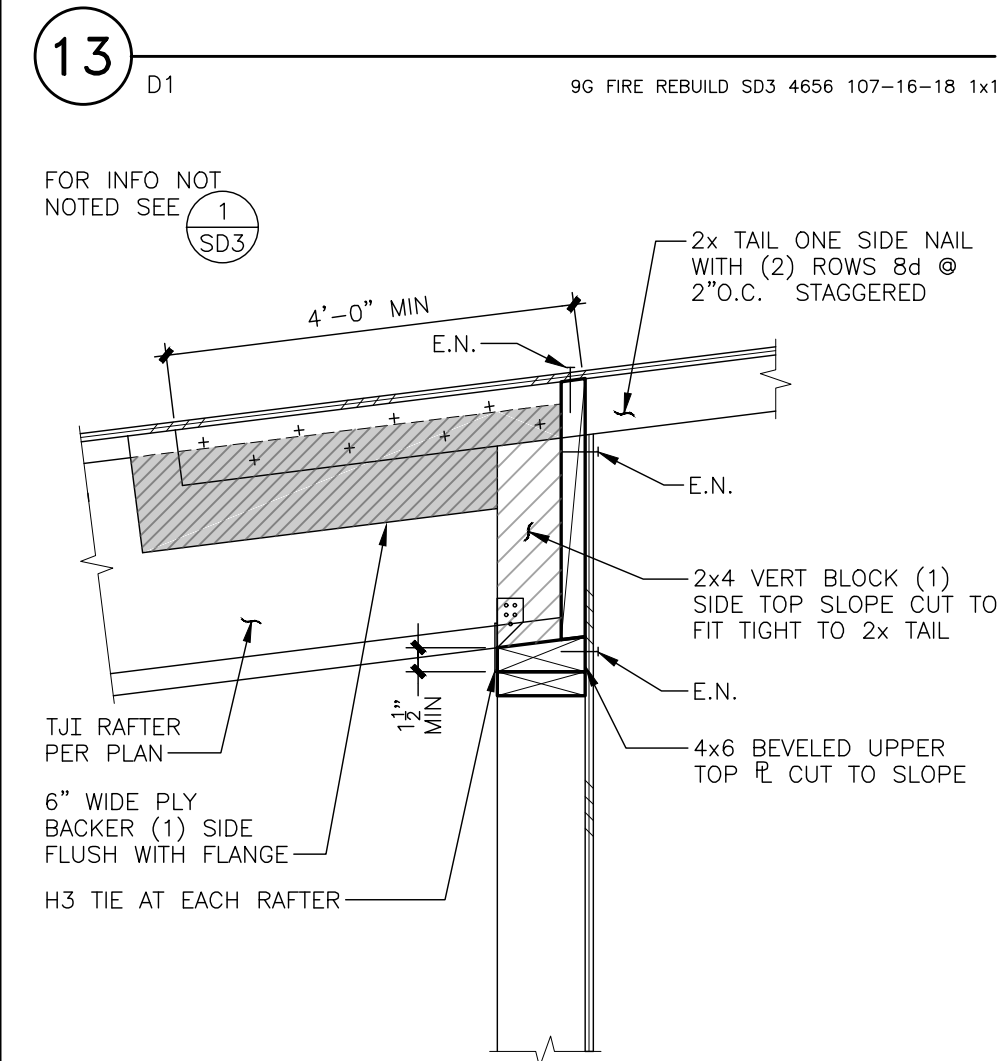
16 TYPICAL INTERIOR NON-BEARING WALL AT TRUSS
D3/4 F2 9E FIRE REBUILD SD3 4639 10-15-03 1x1



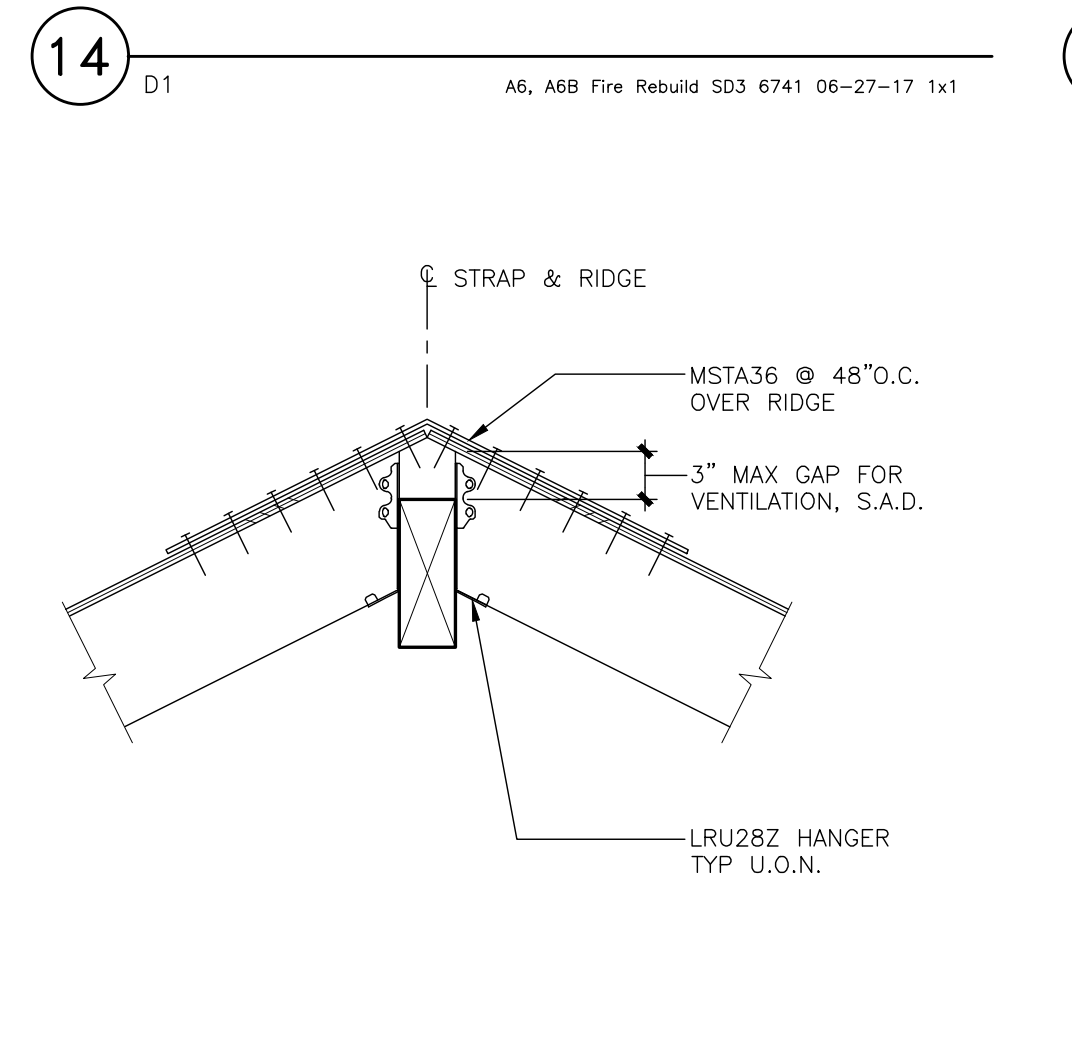
17 TYPICAL OPENING IN ROOF OR FLOOR SHEATHING
D1 G1 BR 04/5/19 FIRE REBUILD SD3 1x1



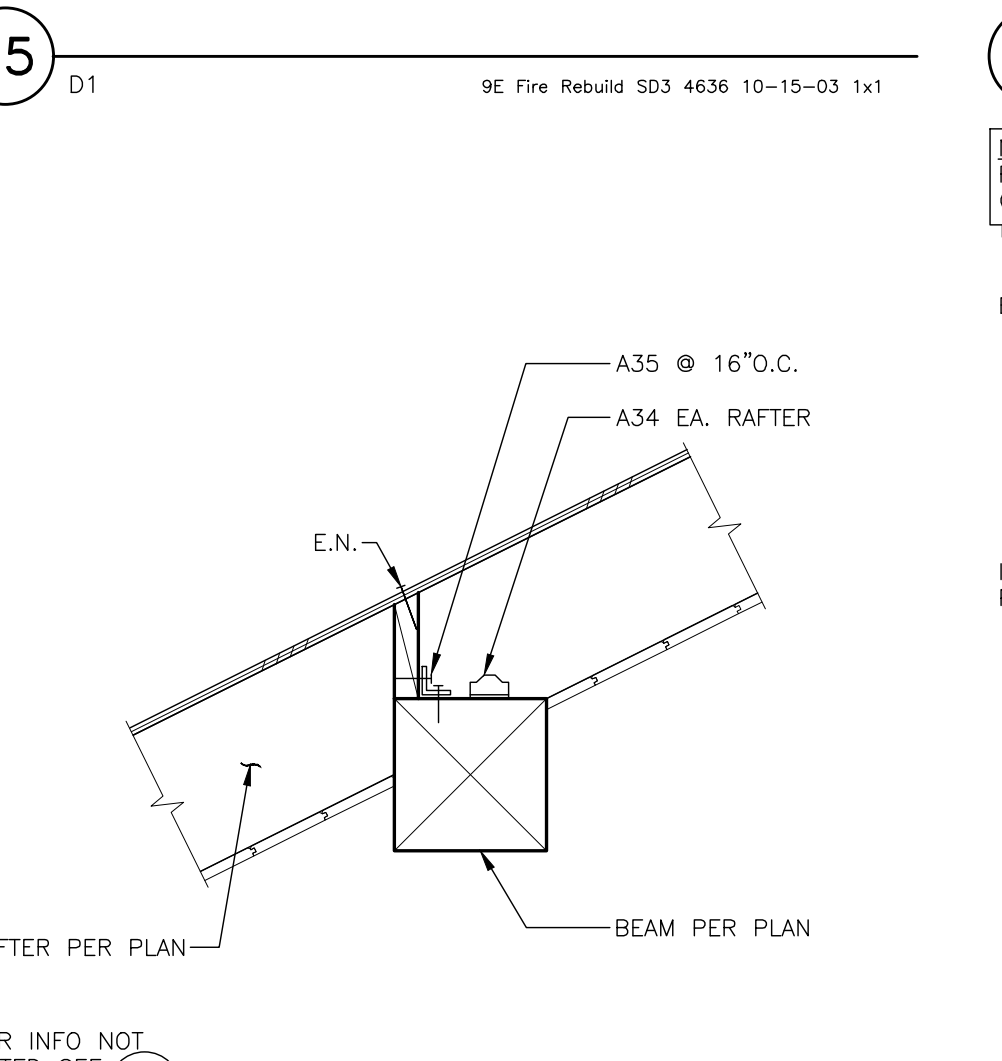
18 TYPICAL OPENING IN ROOF OR FLOOR SHEATHING
D1 G1 BR 04/5/19 FIRE REBUILD SD3 1x1



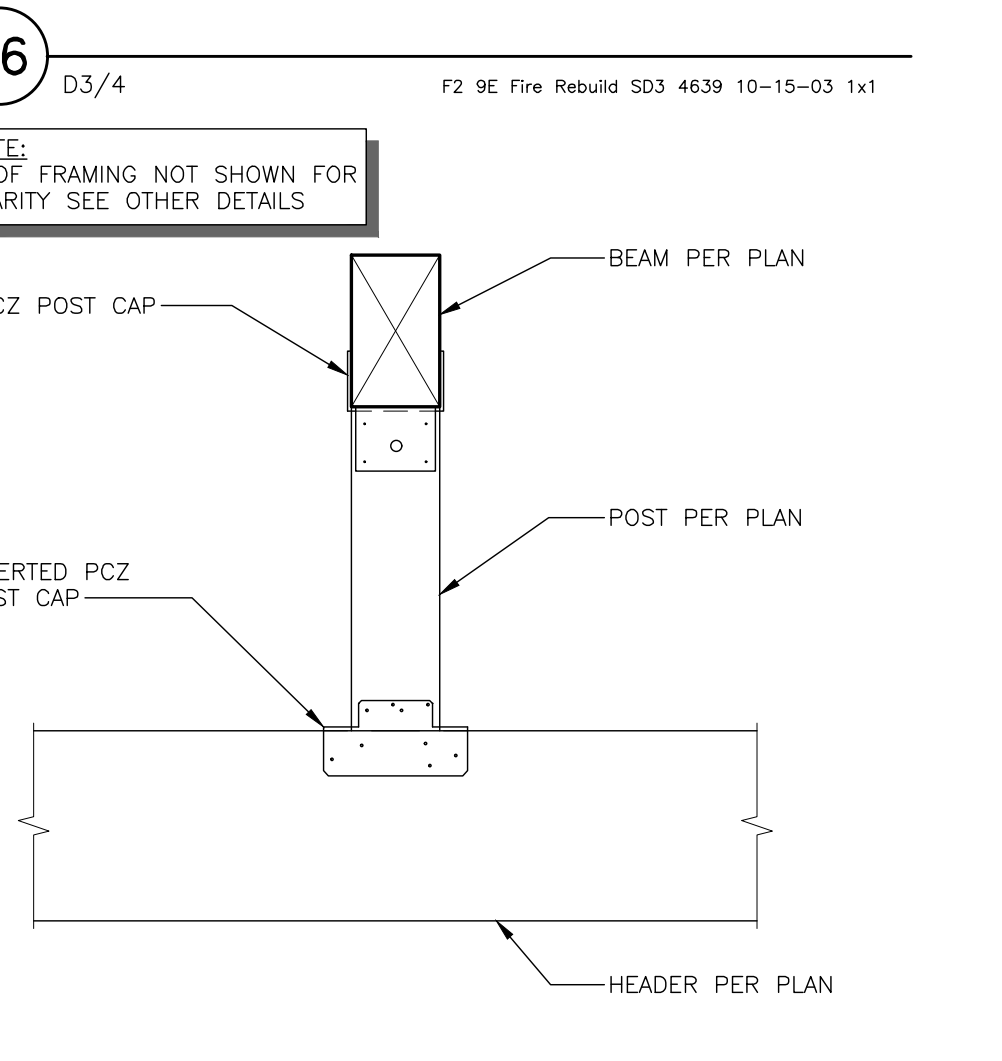
19 TYPICAL AT HIGH RAFTER EAVE
D1 7/SD3 ZHD 01/15/19 FIRE REBUILD SD3 1x1



20 TYPICAL RAKE
D1 9H FIRE REBUILD SD3 4659 05-24-19 1x1



21 TYPICAL INTERIOR NON-BEARING WALL AT TRUSS
D1 F3 BR 04/9/19 FIRE REBUILD SD3 1x1



22 TYPICAL INTERIOR NON-BEARING WALL AT TRUSS
D1 H1 BR 04/9/19 FIRE REBUILD SD3 1x1

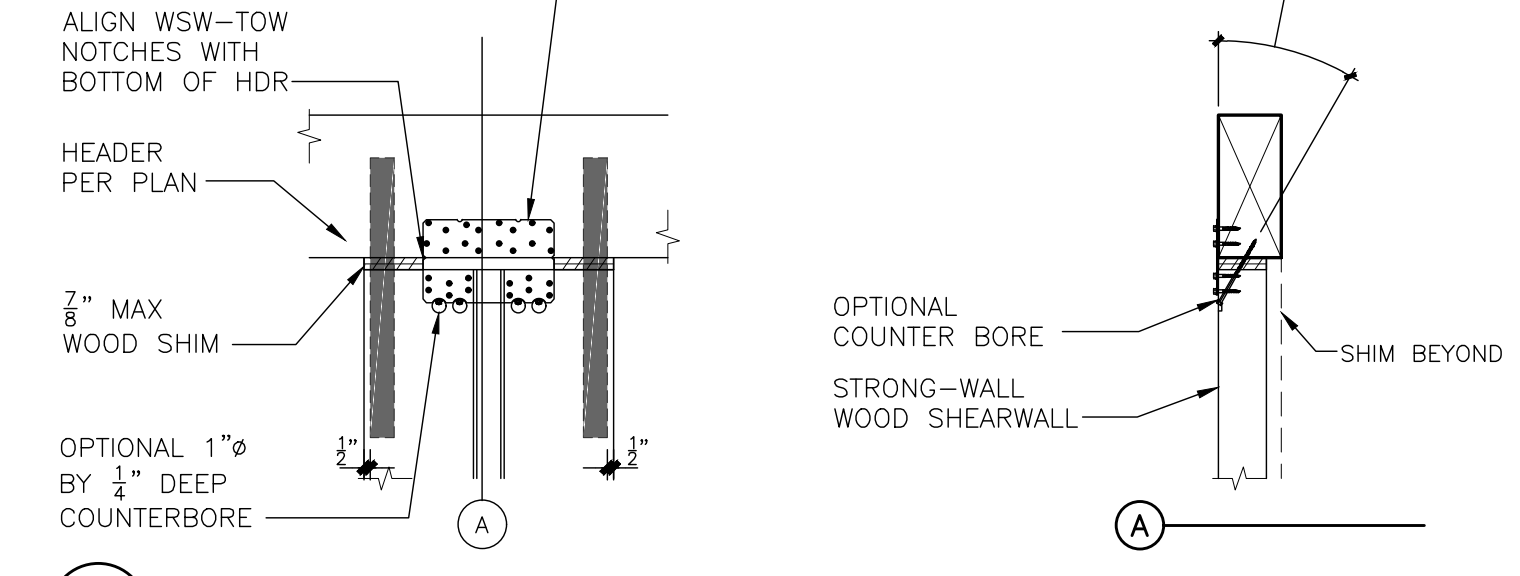
\\SERVER\REDIRECTED\FOLDERS\ERIN\DESKTOP\ELD_MISC\2022\CAO\FROM MD\CAO\FIRE REBUILD SD3.DWG 3/17/2022 4:16 PM Plotted by (Last Drafter): ###

Table with columns for ELD, SUBMITAL SET, and PROGRESS SET. Includes Designer: Erin, Job: ARCE 353-04, and Sheet: SD3.

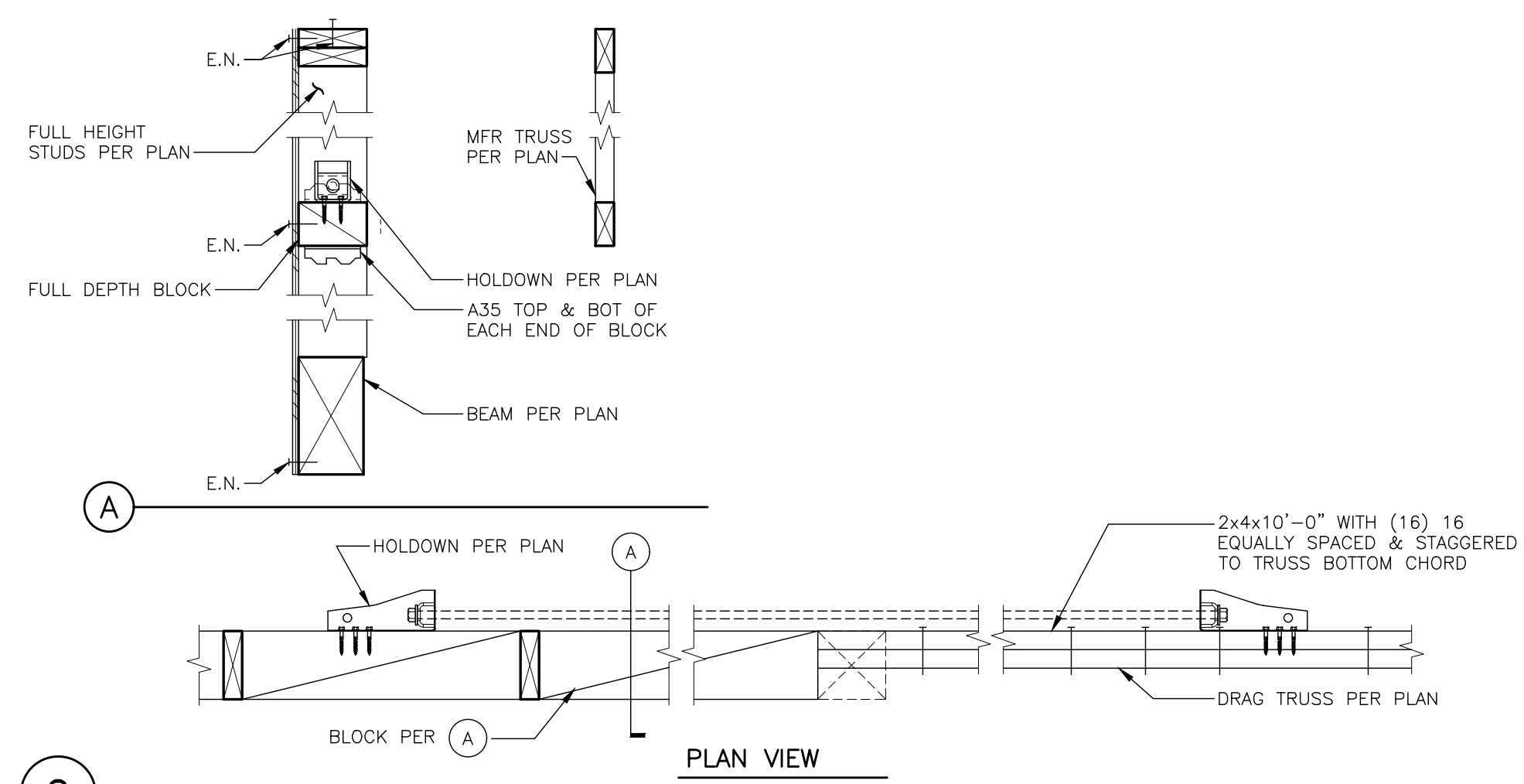
WSW-TOW ALTERNATE CONNECTION KIT		FASTENER QUANTITY	
PANEL	MODEL NO.	SD #10 x 1 1/2"	SDS 1/2" x 6"
WSW-12	WSW-TOW12KT	20	2
WSW-18	WSW-TOW18KT	28	4
WSW-24	WSW-TOW24KT	40	8

ATTACH WSW-TOW PLATE (PROVIDED) ON ONE SIDE ONLY WITH A COMBINATION OF SDS 1/2" x 6" AND SD #10 x 1 1/2" CONNECTOR SCREWS (ORDER SEPARATELY AS WSW-TOW__KT)

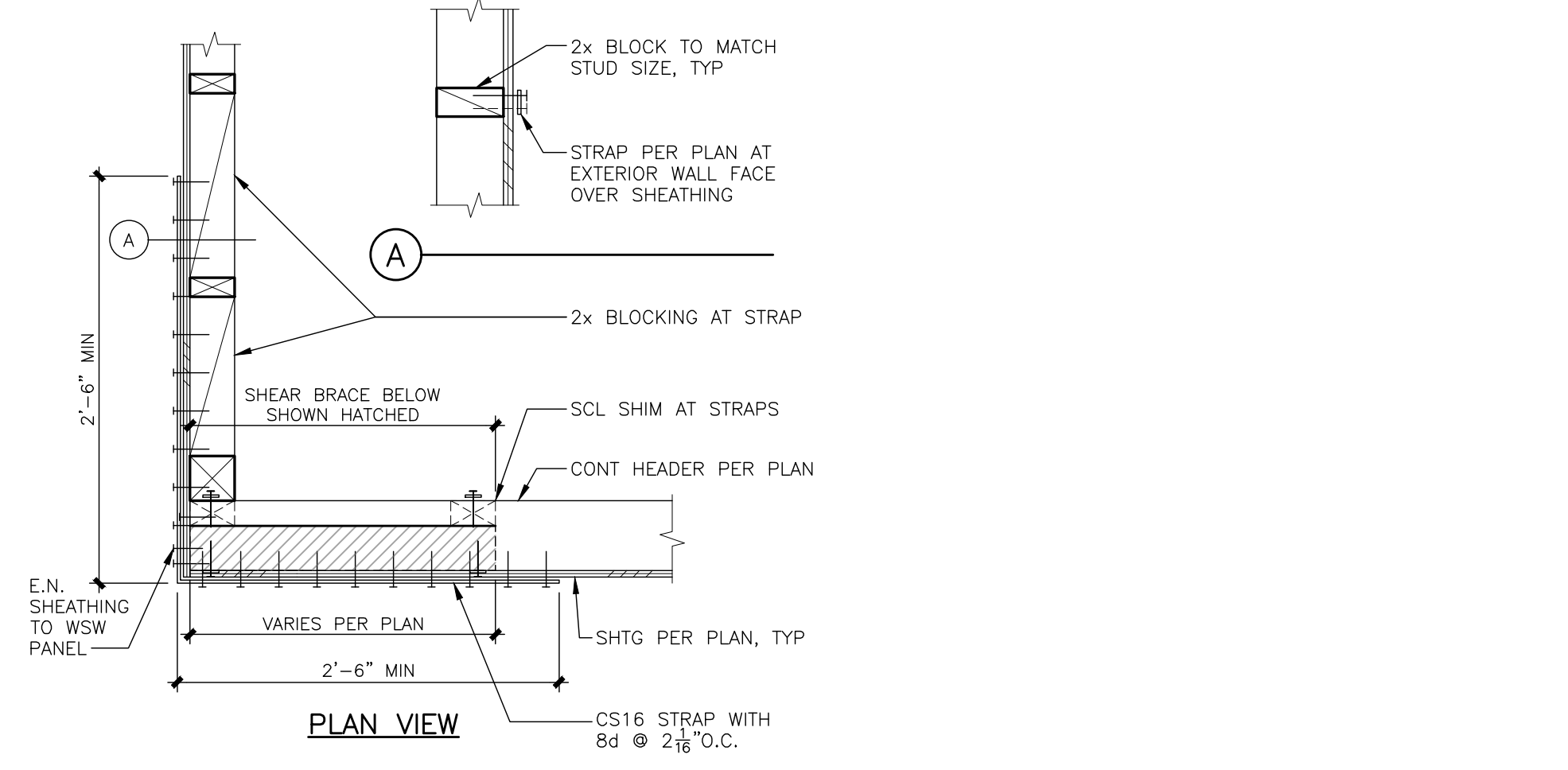
INSTALL SDS 1/2" x 6" SCREWS AT AN ANGLE THAT PREVENTS THEM FROM (E) SIDE OF FRAMING; APPROX. 30 DEGREES (TYP.)



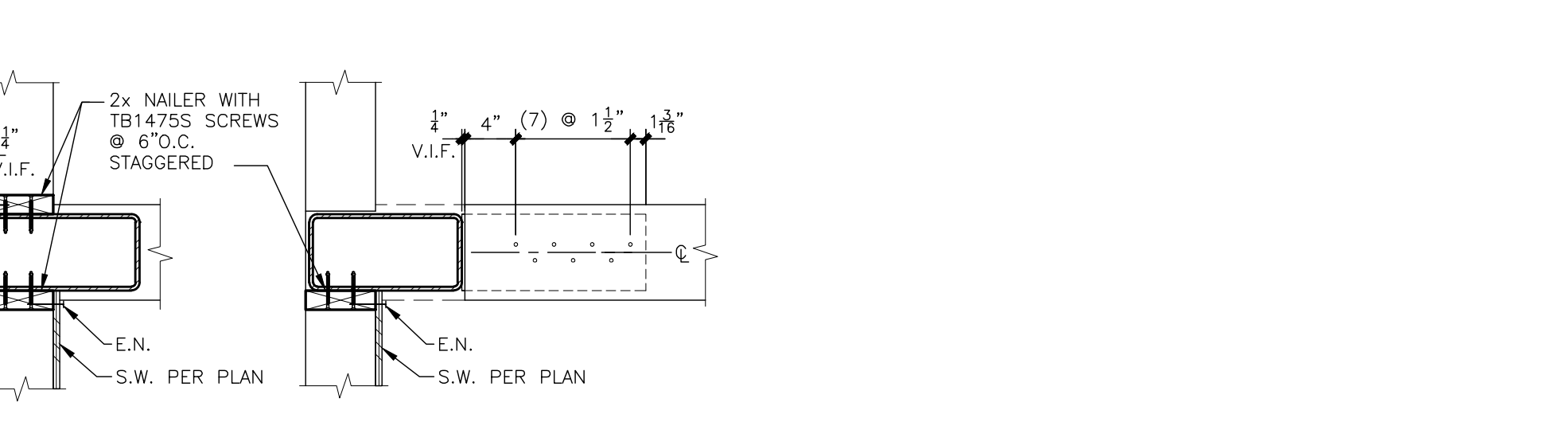
3 D3/4 WSW4 TB 03/13/19 FIRE REBUILD SD3-1 1.5x1



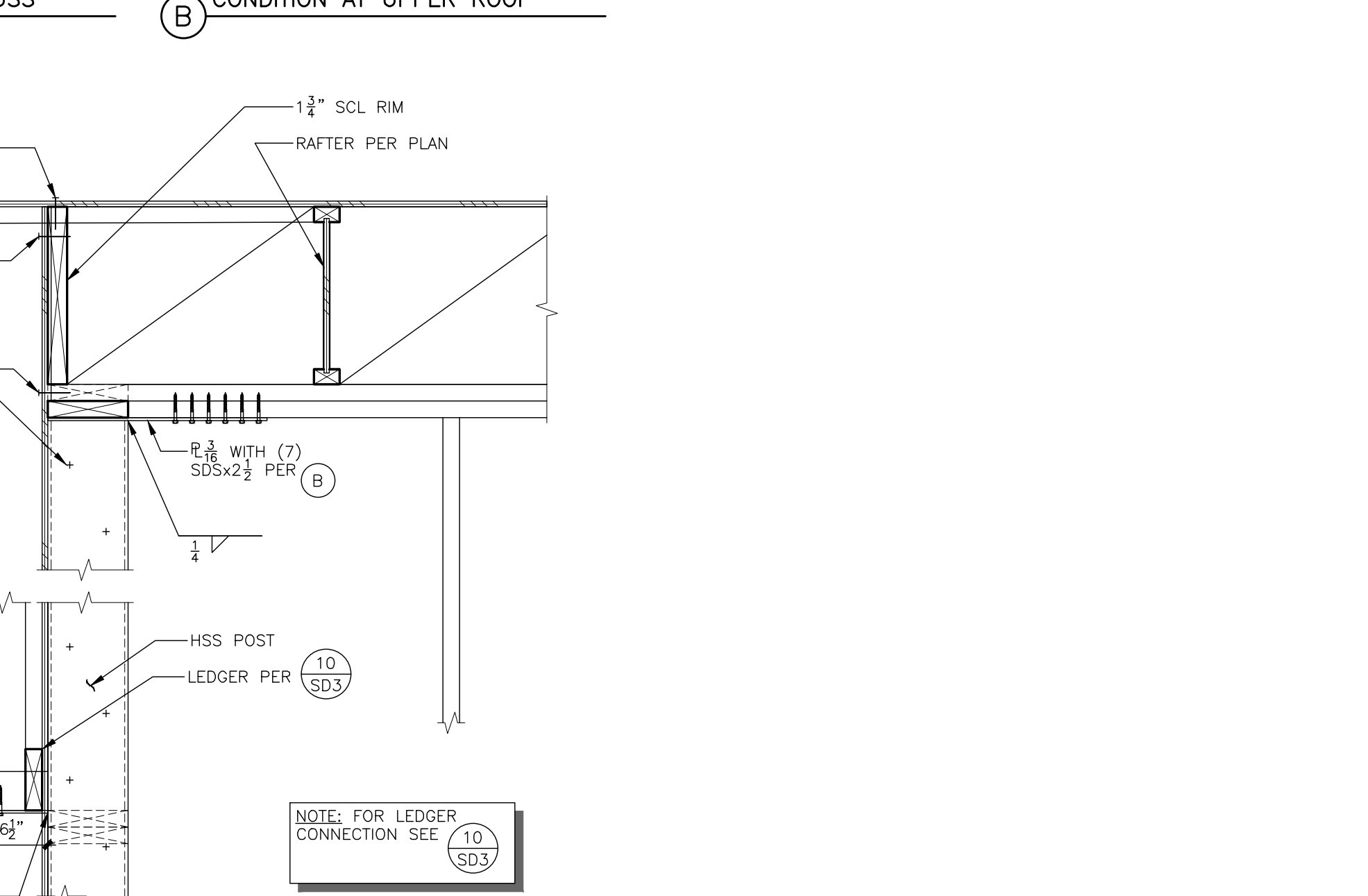
2 D1 H1 ZHD 06/20/19 FIRE REBUILD SD3-1 2x1



9 D1 S2 11A, 11B, A8B FIRE REBUILD SD3-1 4716B 12-02-16 1x1

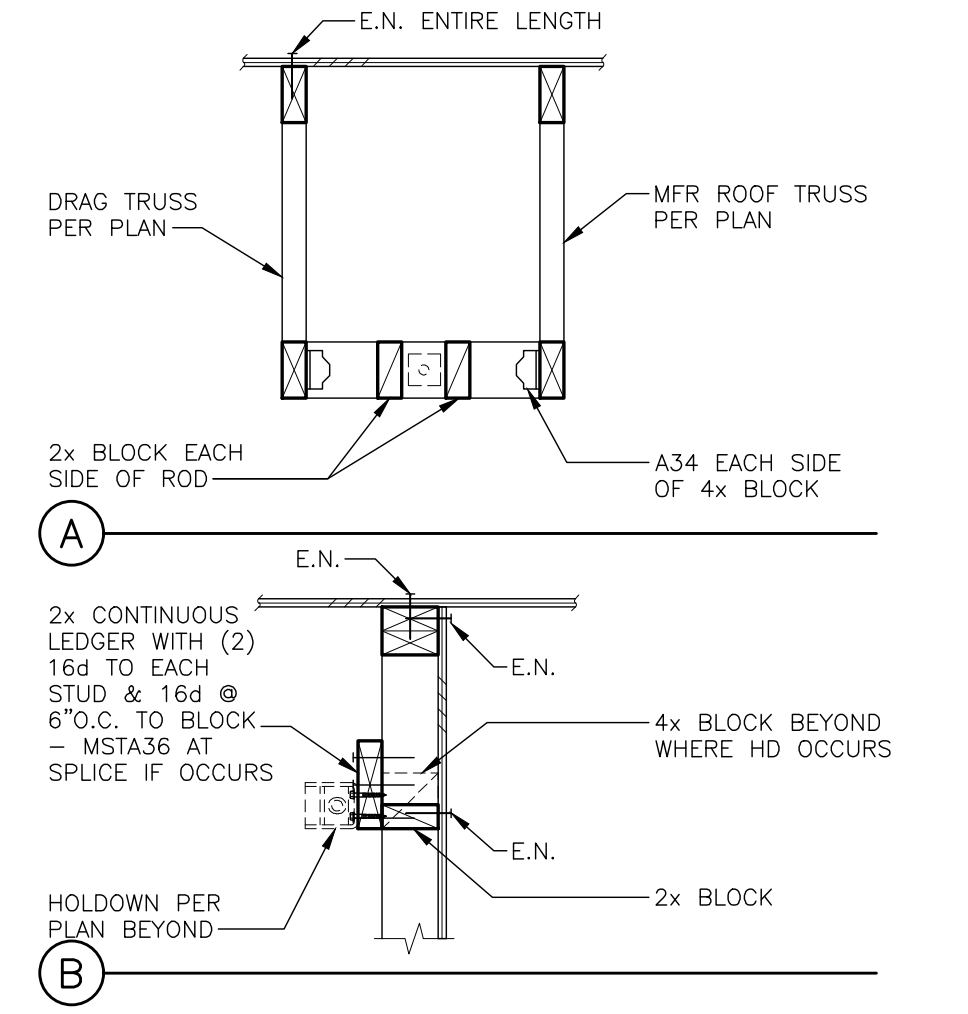


20 D1 P1 BR 04/9/19 FIRE REBUILD SD3-1 1.5x2

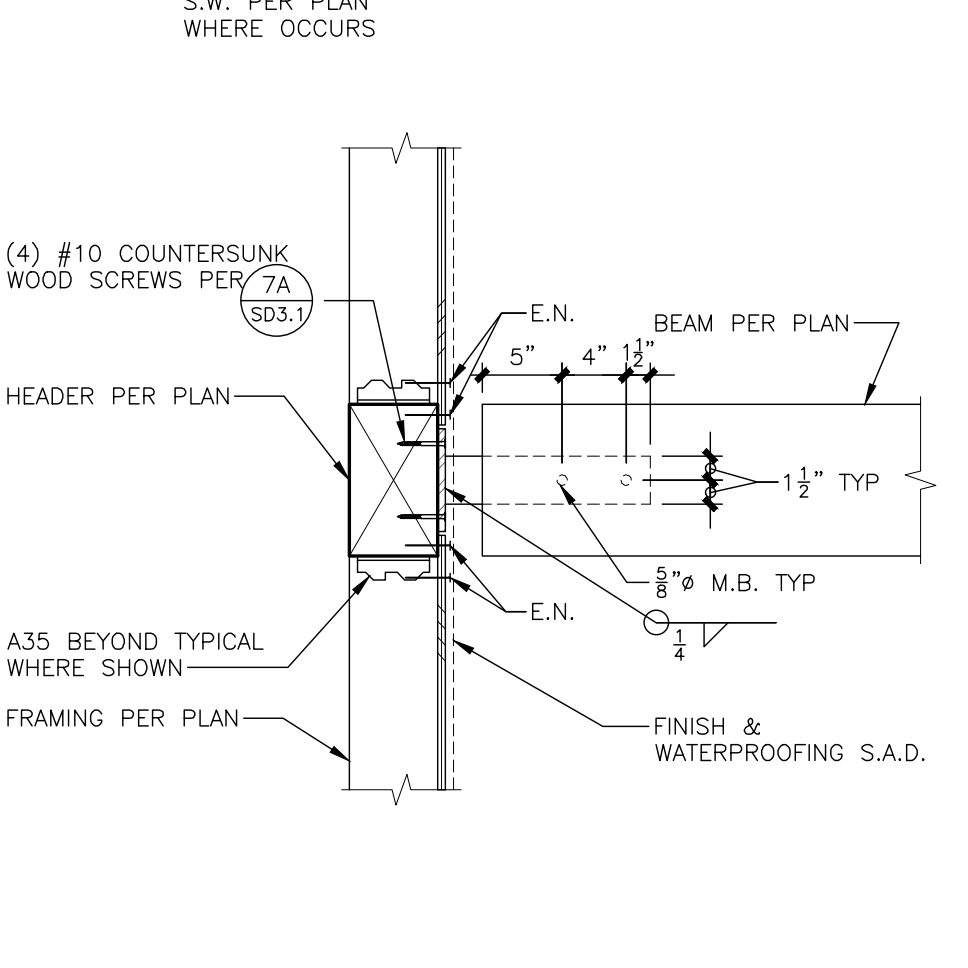


19 D1 H2 SJP 01/30/19 FIRE REBUILD SD3-1 1.5x2

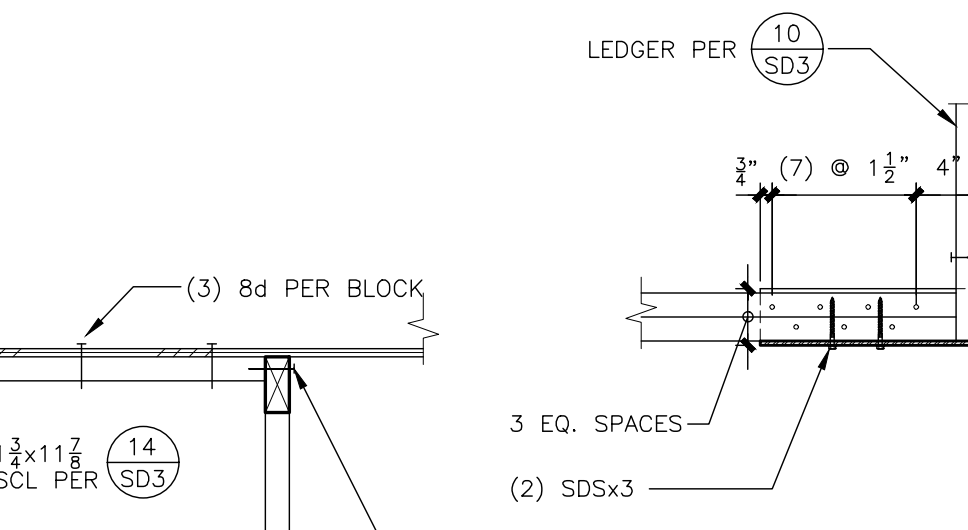
20 D1 P1 BR 04/9/19 FIRE REBUILD SD3-1 1.5x2



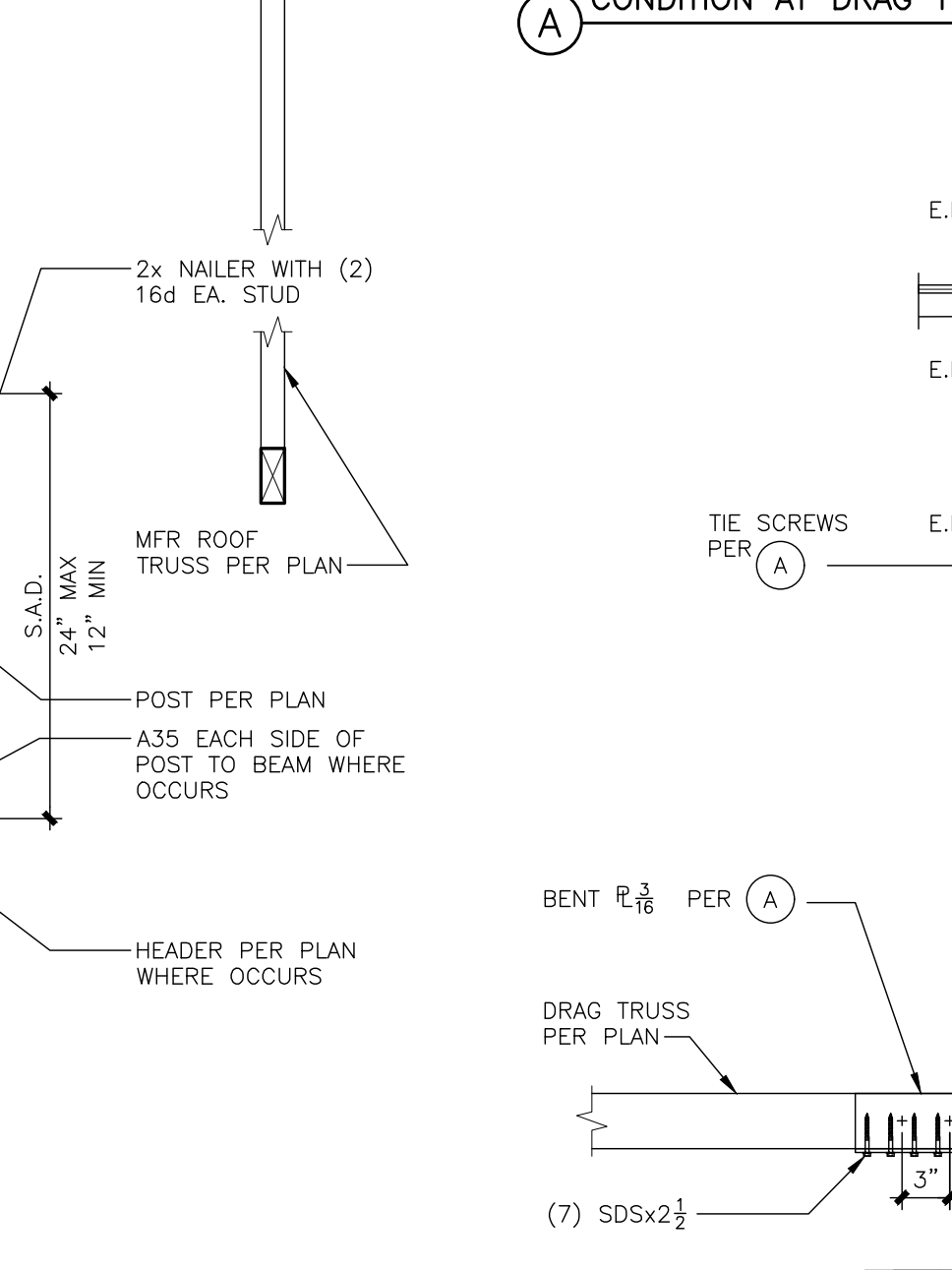
1 D1 16/SD3-1 BR 01/17/20 FIRE REBUILD SD3-1 2x1



8 D1 K1 BR 04/9/19 FIRE REBUILD SD3-1 1x1

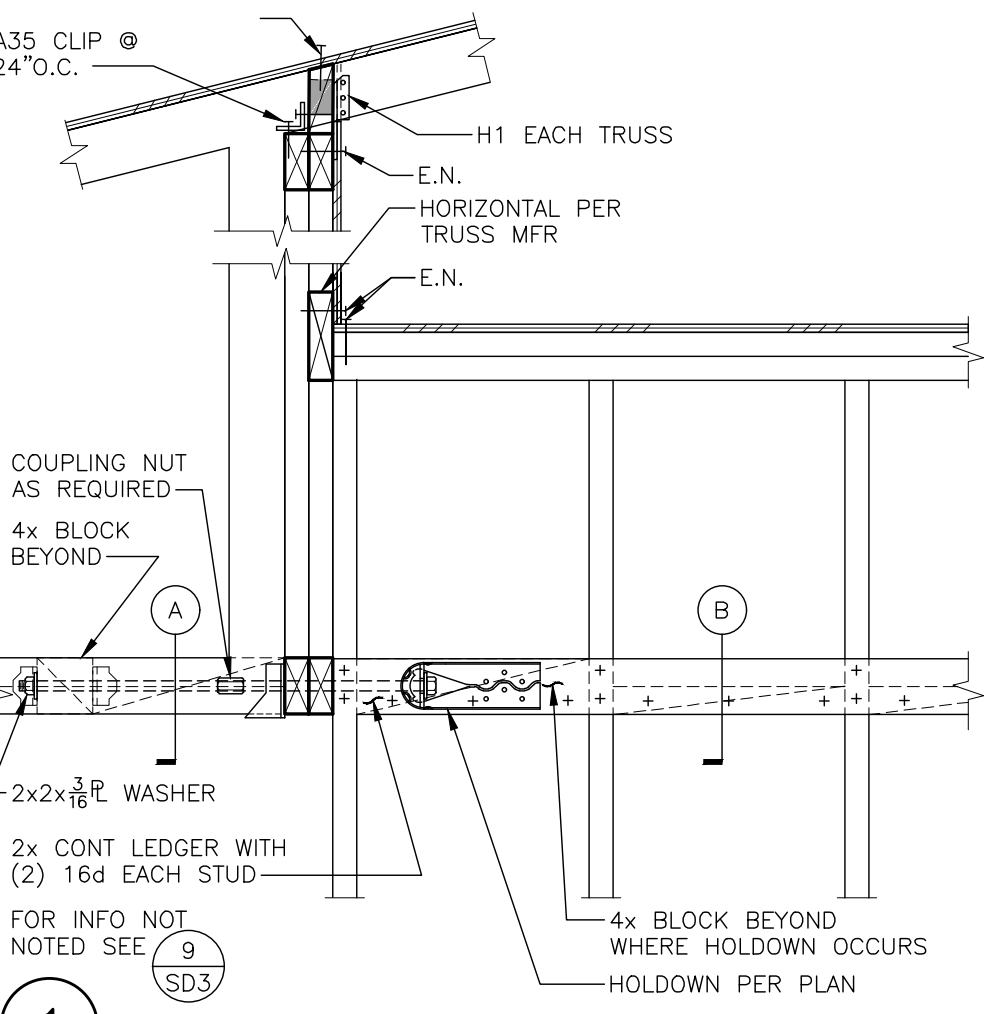


7 D1 K1 BR 04/9/19 FIRE REBUILD SD3-1 1x1

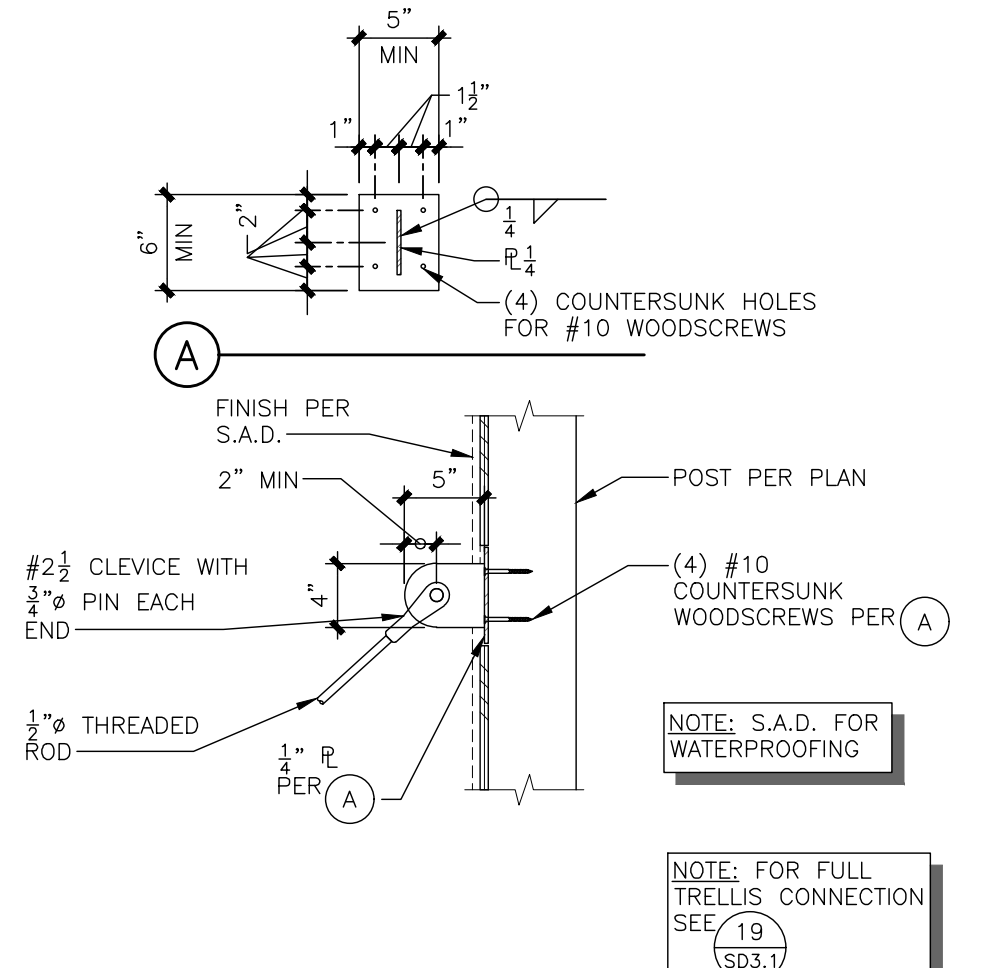


16 SD3-1 BR 01/17/20 FIRE REBUILD SD3-1 2x1

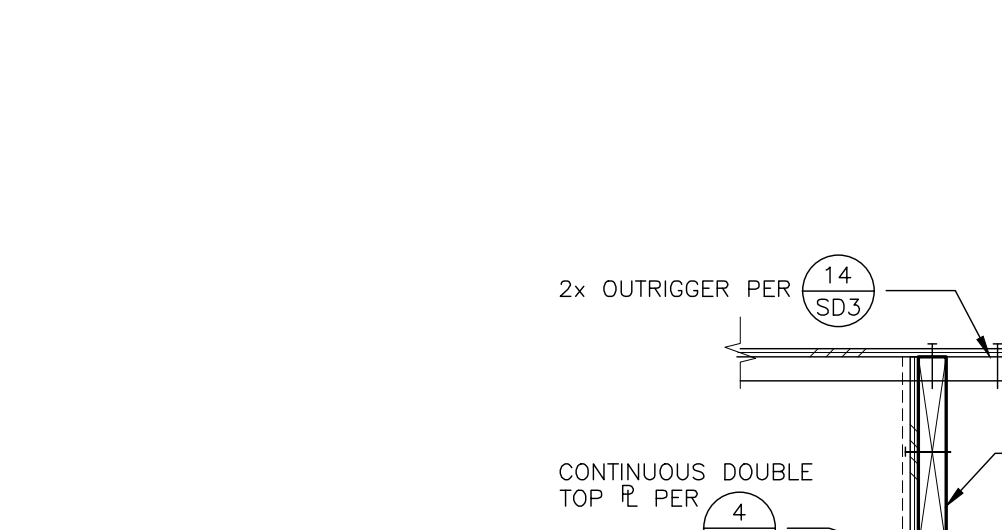
16 SD3-1 BR 01/17/20 FIRE REBUILD SD3-1 2x1



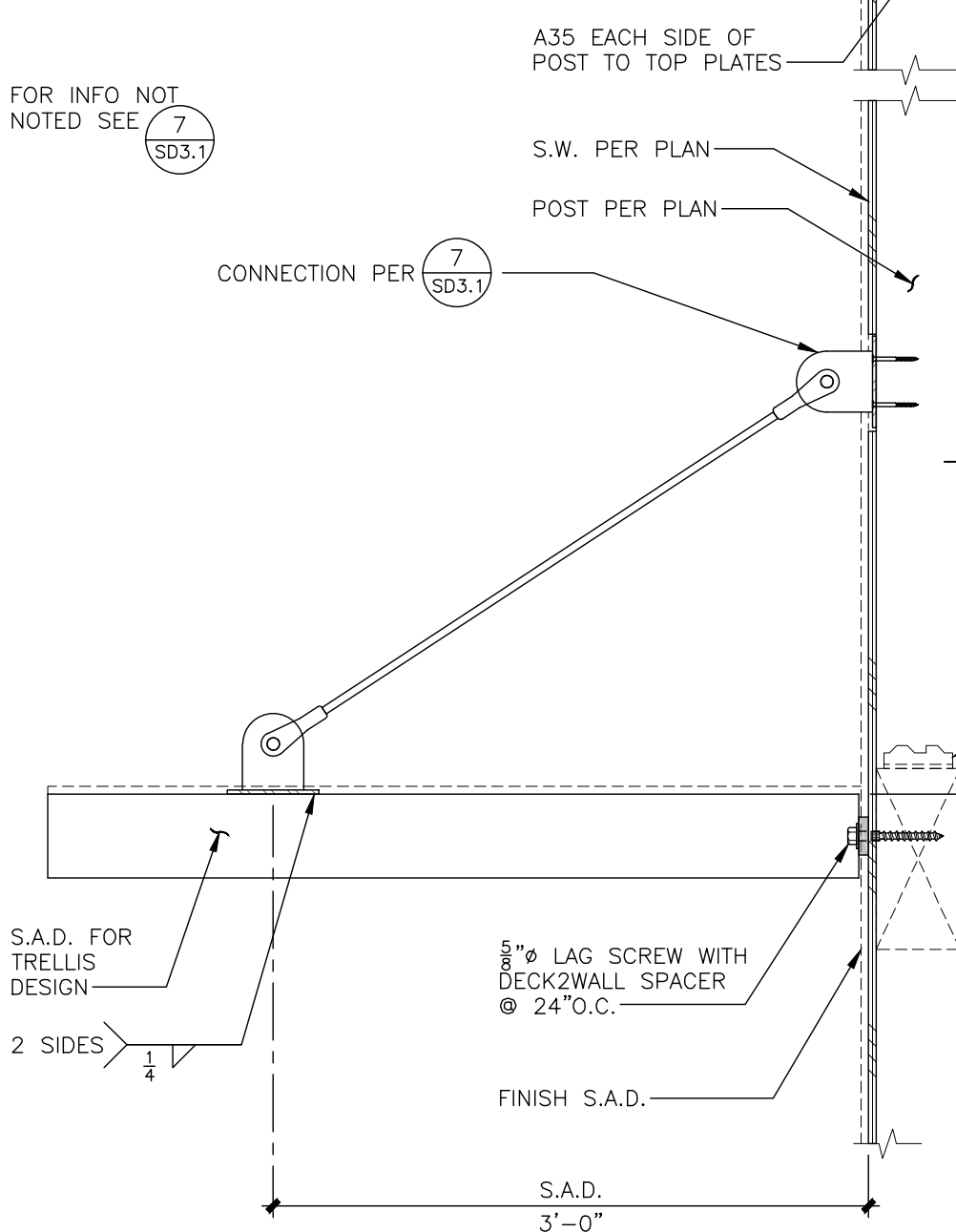
4 D1



17 D1



14 SD3.1



18 D1

18 D1

\\SERVER\REDIRECTED\FOLDERS\ERIN\DESKTOP\ELD_MISC\2022\CAD\FROM MD\CAD\FIRE REBUILD SD3-1.DWG 3/17/2022 4:16 PM Plotted by (Last Drafter): ###

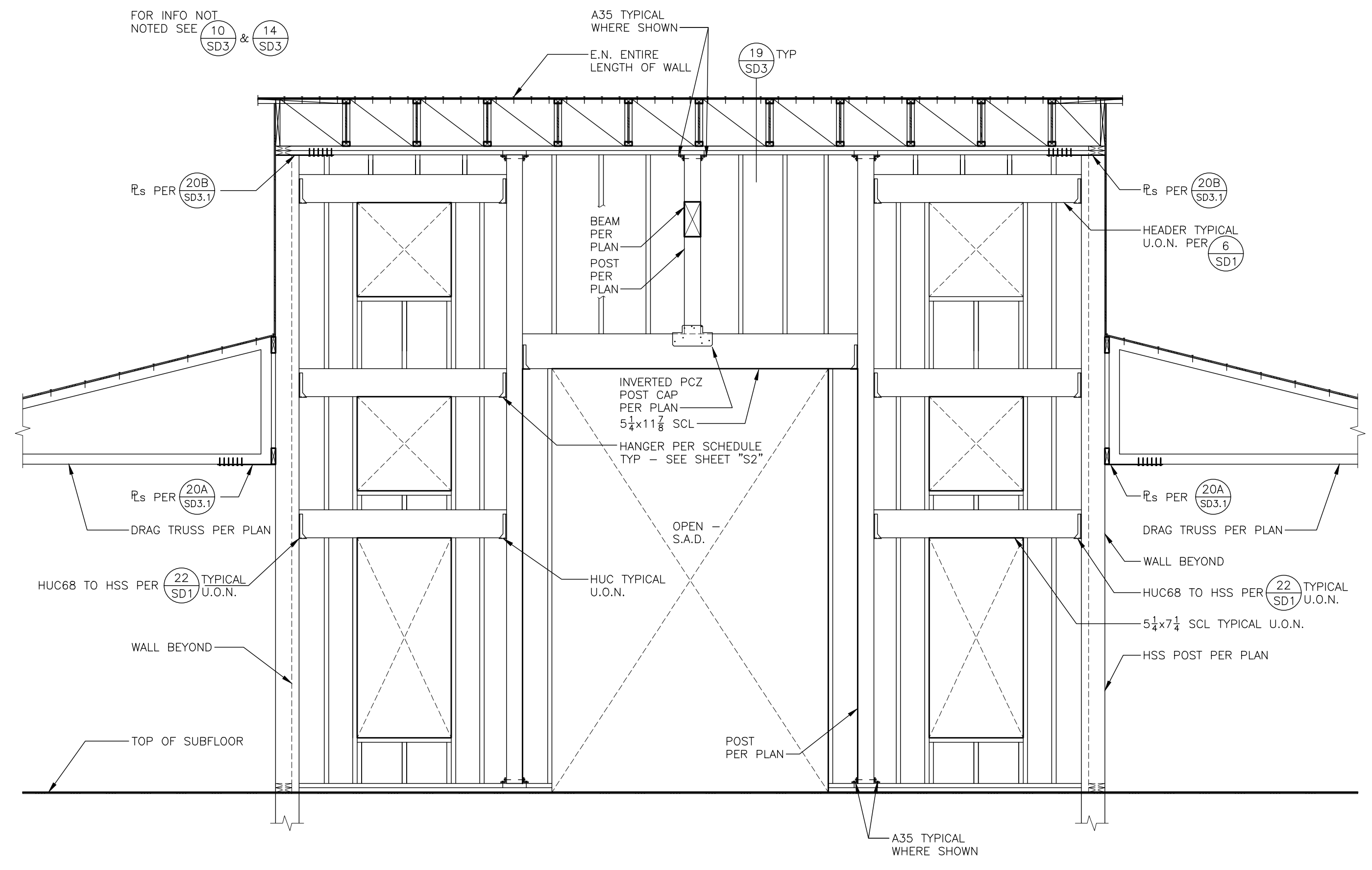
03-17-22	ELD	ELD
02-15-22	ELD	ELD
75% PROGRESS SET		

ISSUE INFORMATION

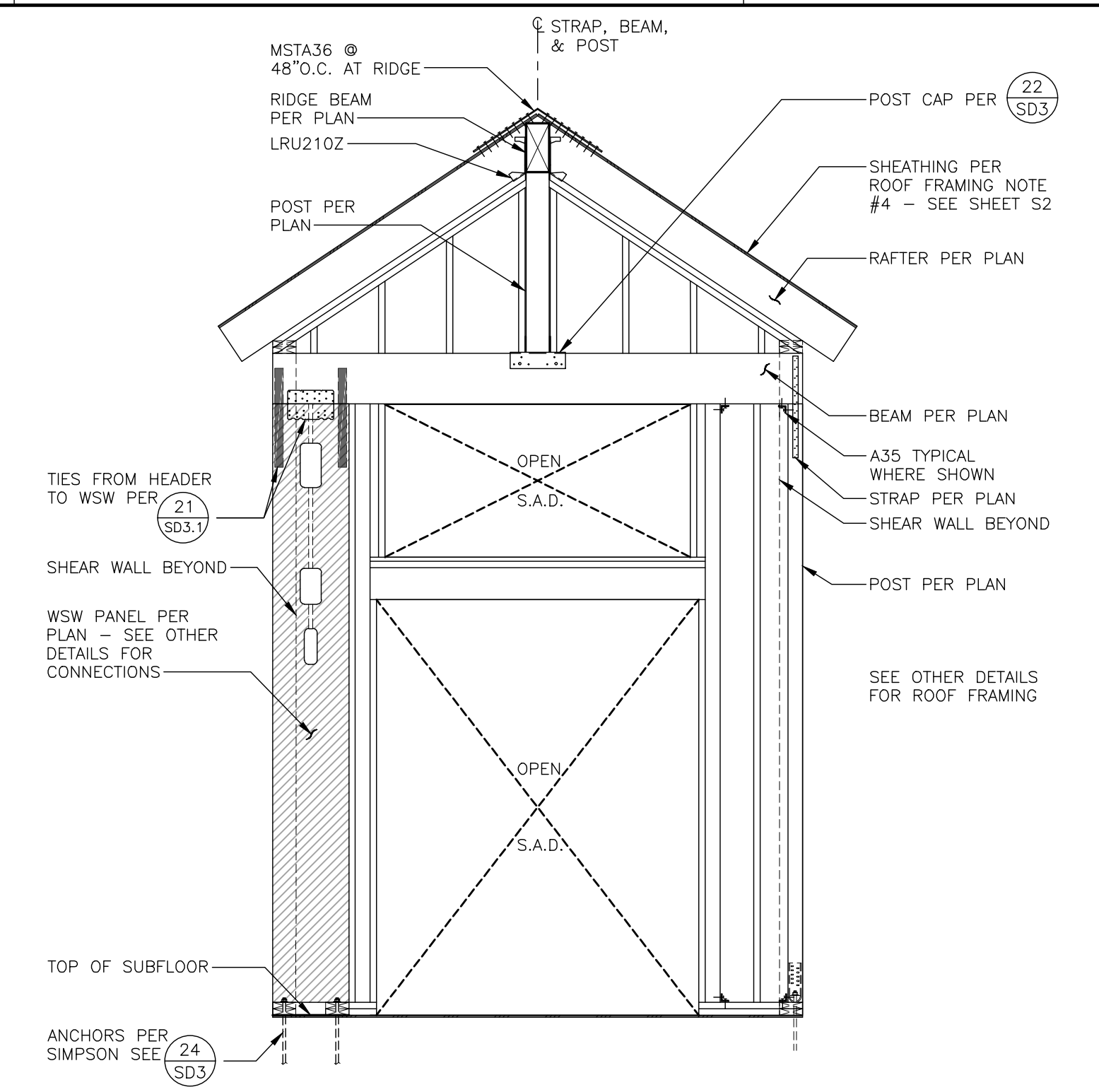
Designer:	Erin		
PD:	ELD	SR#:	
Job:	ARCE 353-04		
Checked by:	---		
Plot Date:	1-28-20		

Sheet Title:
**STRUCTURAL
 DETAILS**

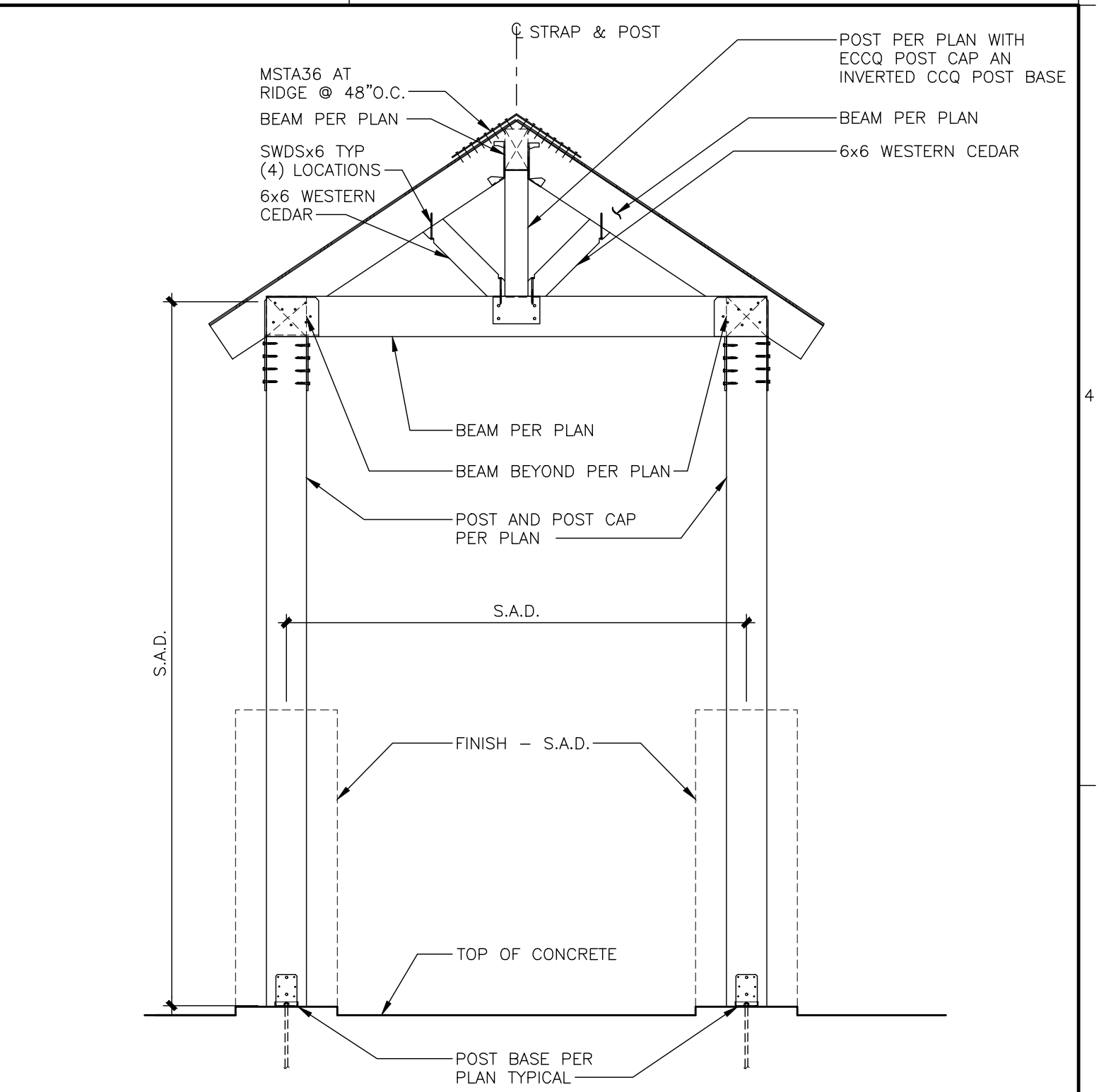
Sheet
SD3.2



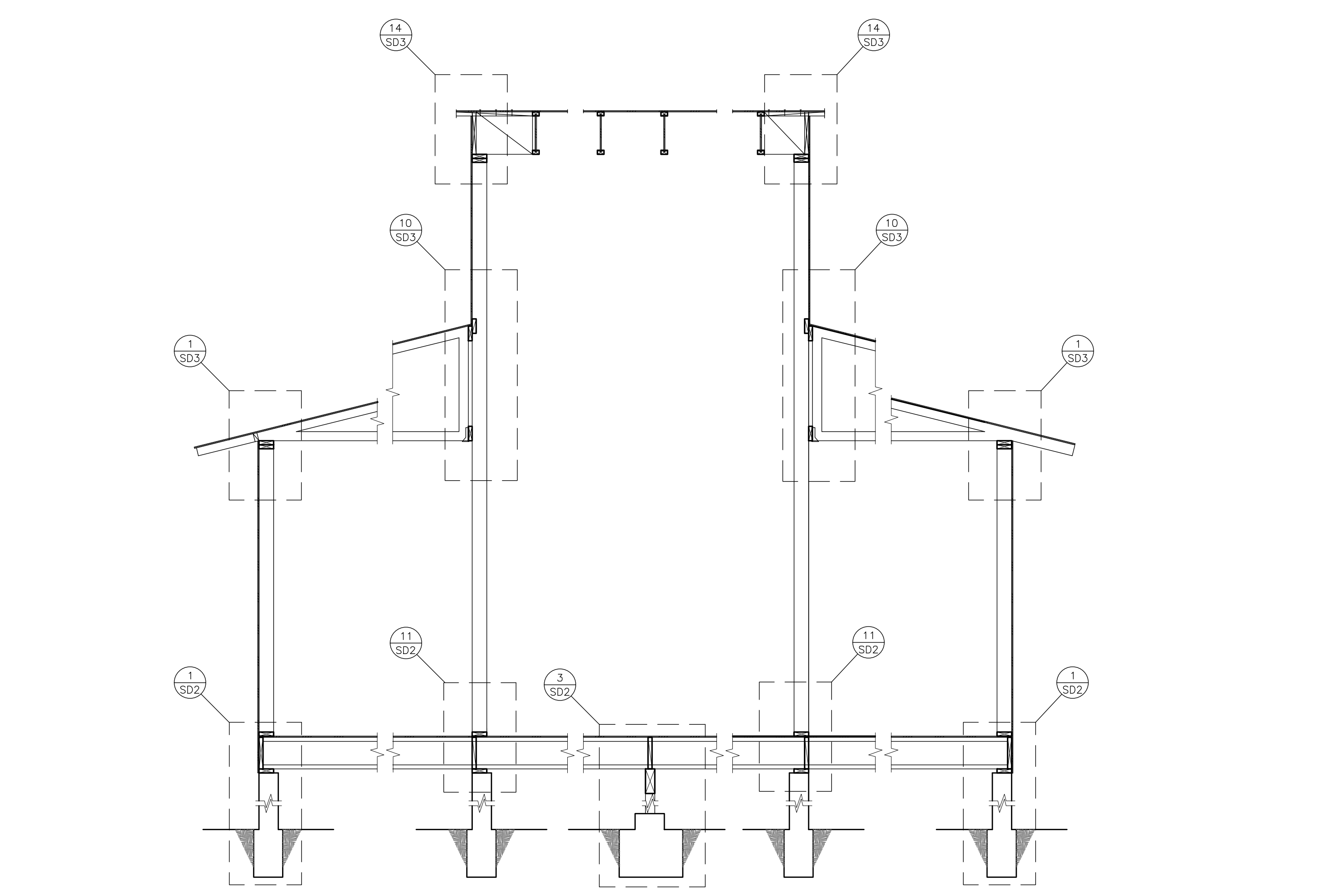
7 D3/8 E1 ZHD 06/21/19 FIRE REBUILD SD3-2 3x2



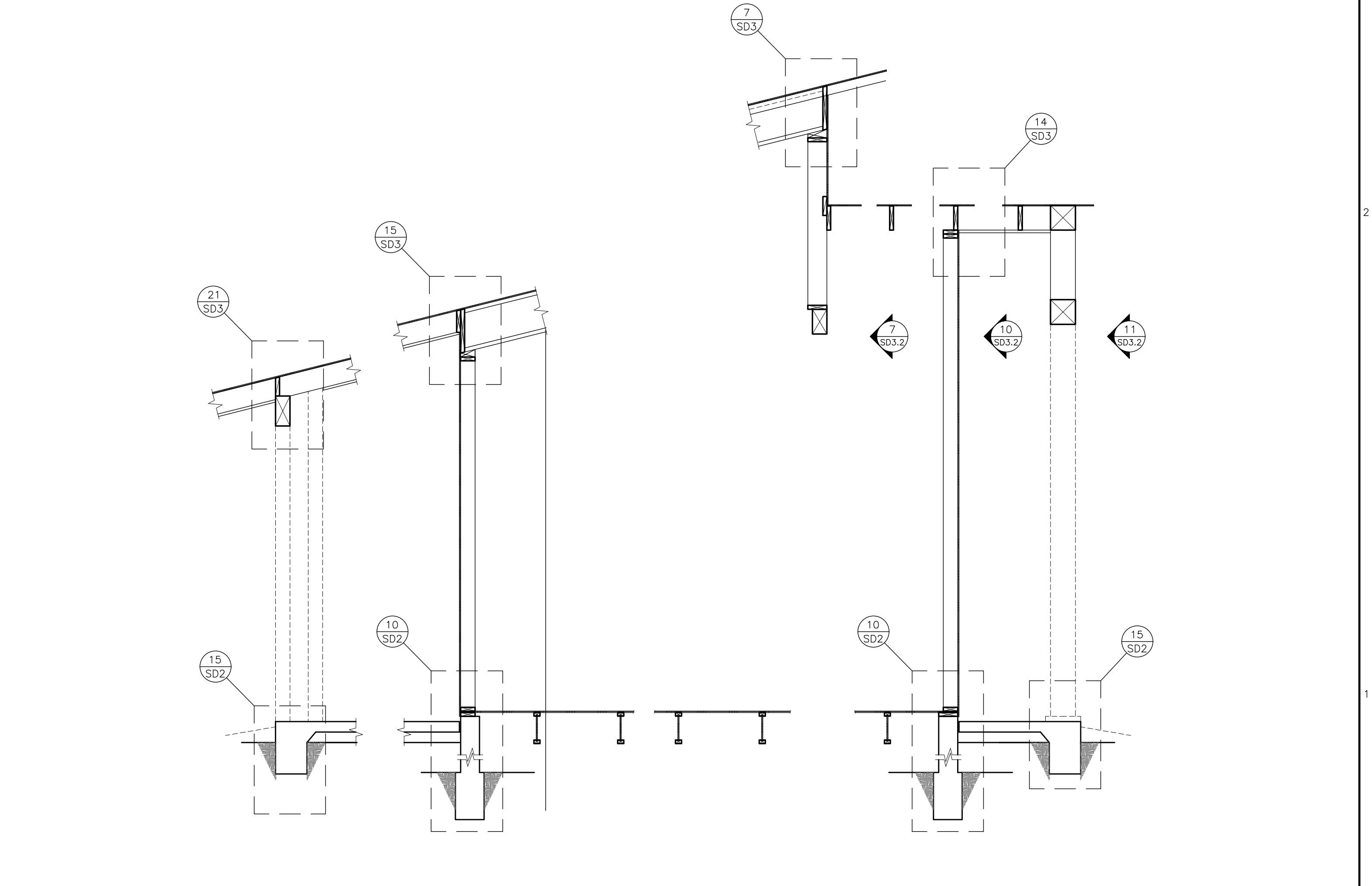
10 D3/8 E2 ZHD 06/21/19 FIRE REBUILD SD3-2 1.5x1.5



11 D3/8 E3 ZHD 06/21/19 FIRE REBUILD SD3-2 1.5x1.5



19 SECTION E-W D3/8 E1 ELD 02/20/22 FIRE REBUILD SD3-2 3x2



22 SECTION N-S D3/8 E1 ELD 02/20/22 FIRE REBUILD SD3-2 3x2

\\SERVER\REDIRECTED\FOLDERS\ERIN\DESKTOP\ELD_MISC\2022\CAD\FROM MD\CAD\FIRE REBUILD SD3-2.DWG 3/17/2022 4:17 PM Plotted by (Last Drafter): ###



ARCHITECTURAL PLANS

NOTE:

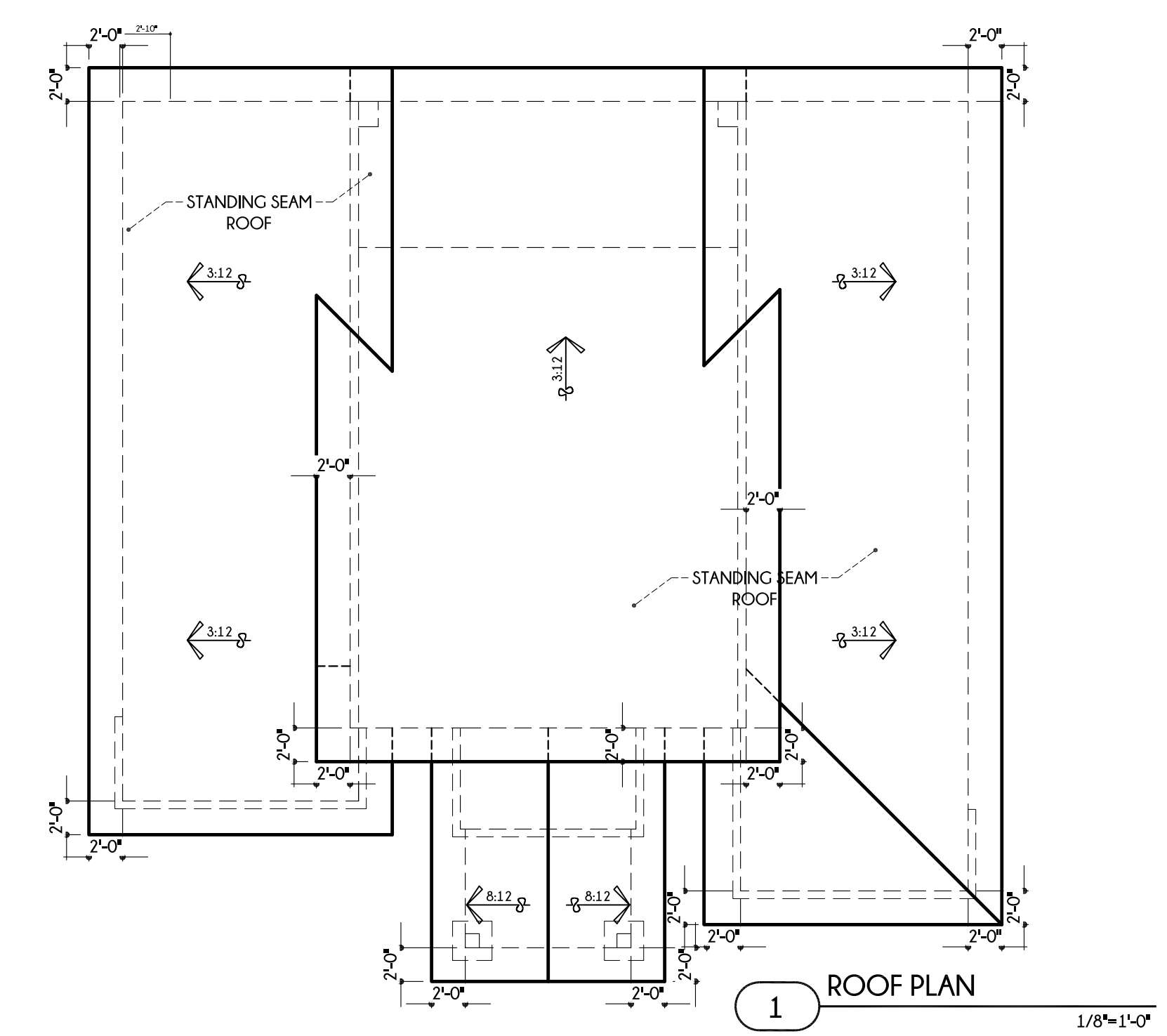
- HOUSE TO BE LOCATED WITHIN BUILDING SETBACK LINES.
- EXACT LOCATION OF HOUSE TO BE DETERMINED AT JOBSITE BY BUILDER & HOME OWNER.
- ALL FLATWORK & LANDSCAPING TO BE DESIGNED BY LANDSCAPE ARCHITECT & TO BE APPROVED BY HOME OWNER.

LEETE AVENUE

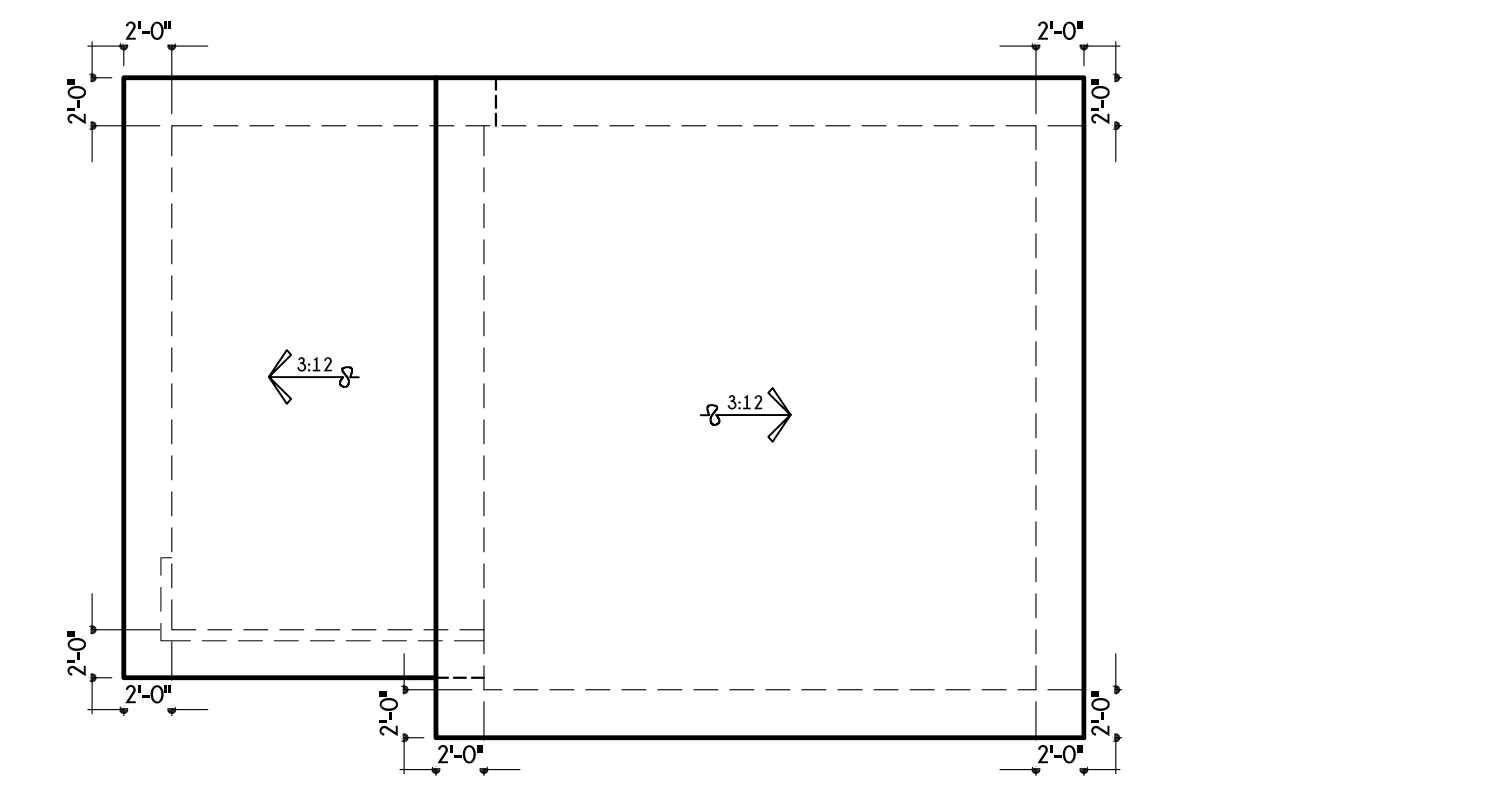
231'

127'

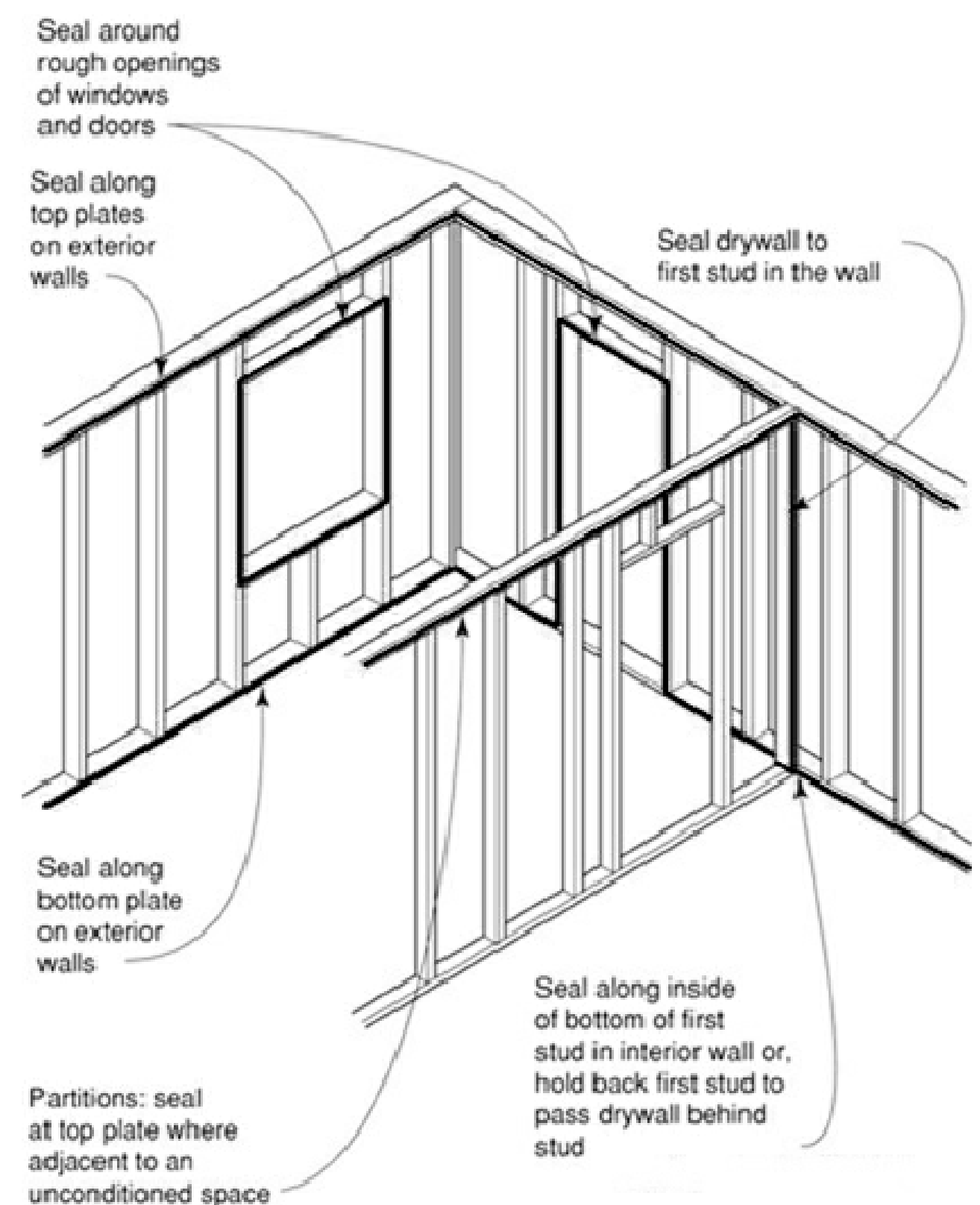
2 SITE PLAN 1/4"=20'-0"



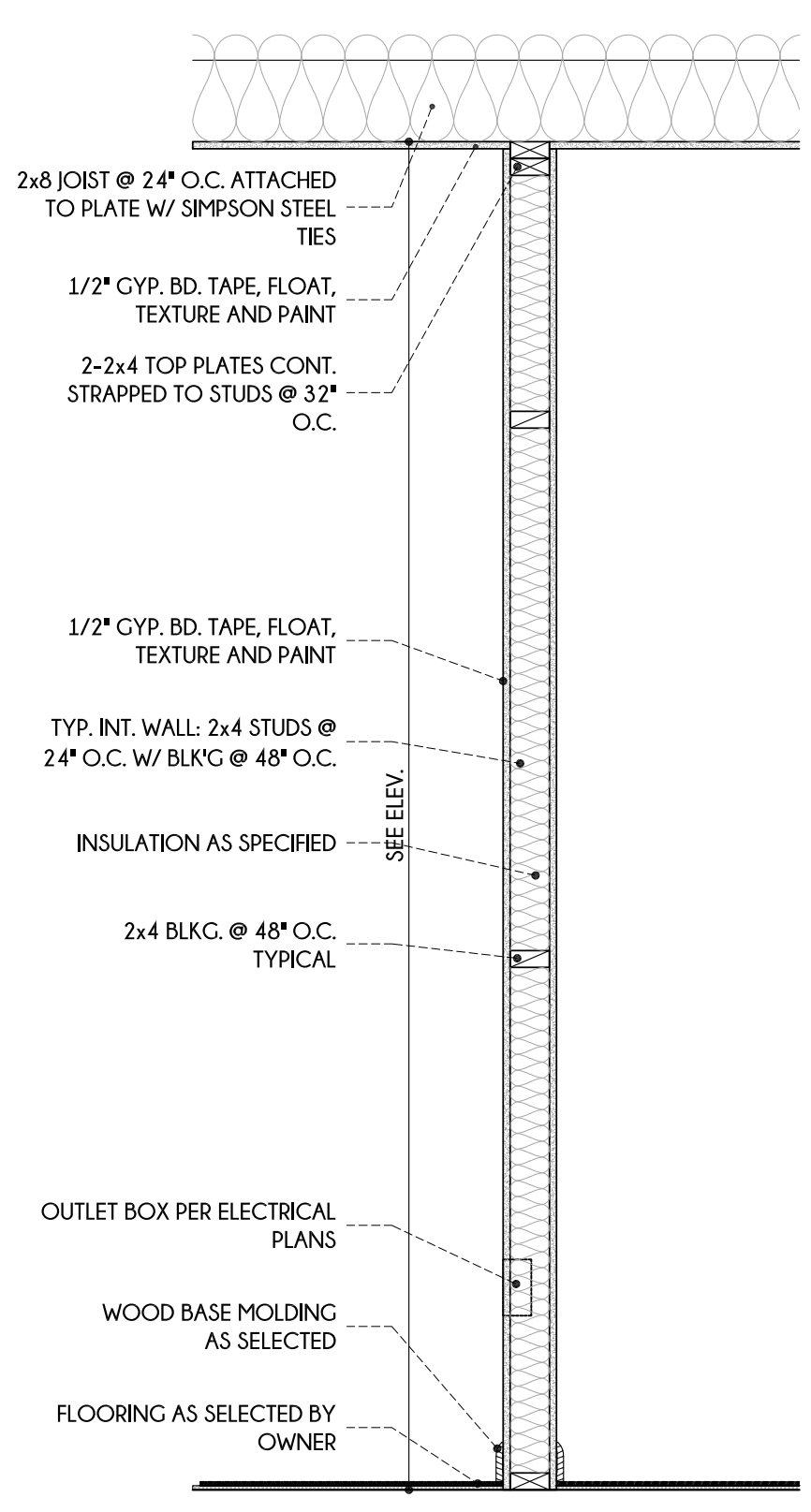
1 ROOF PLAN 1/8"=1'-0"



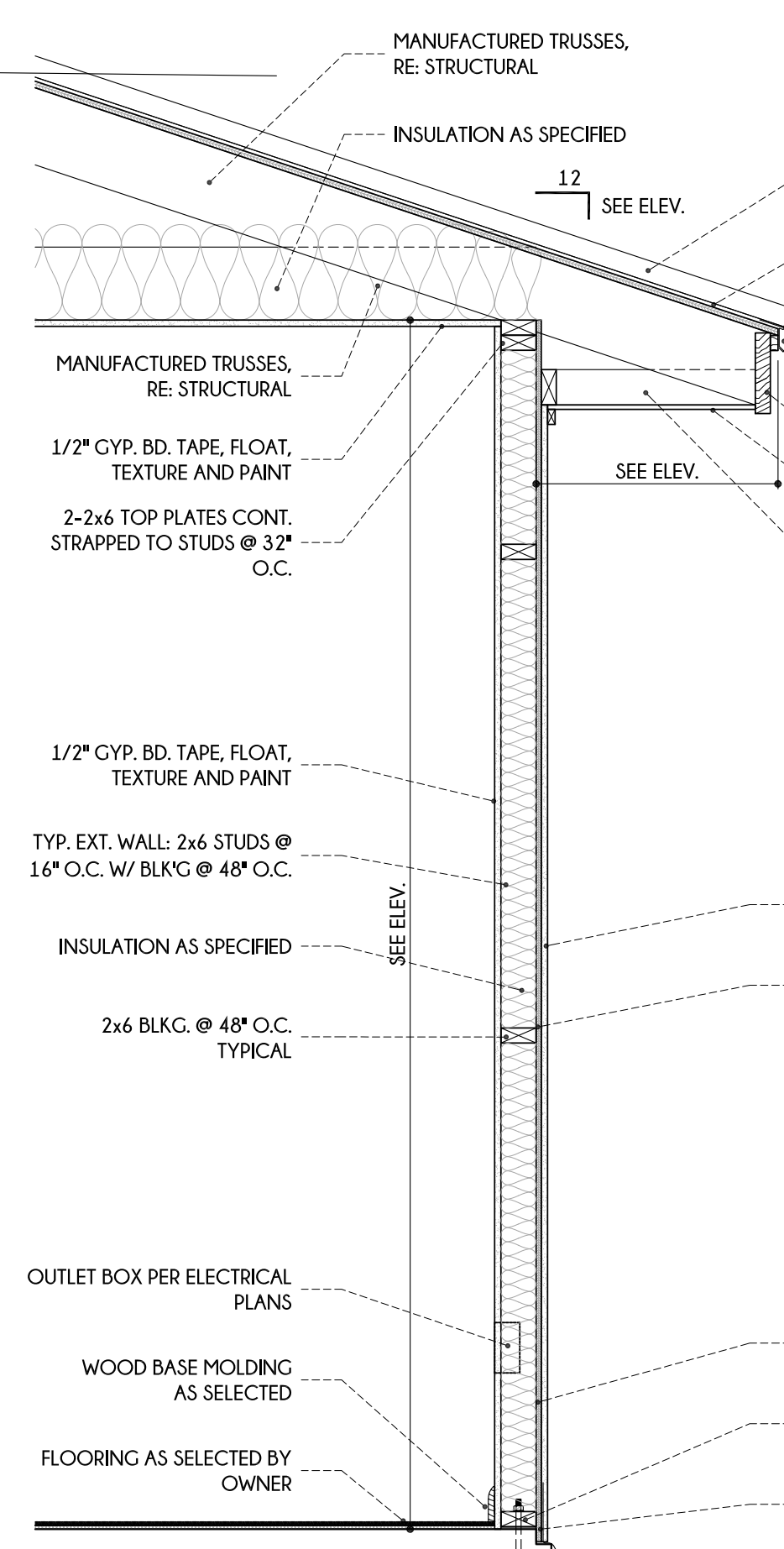
2 ROOF PLAN - GARAGE 1/8"=1'-0"



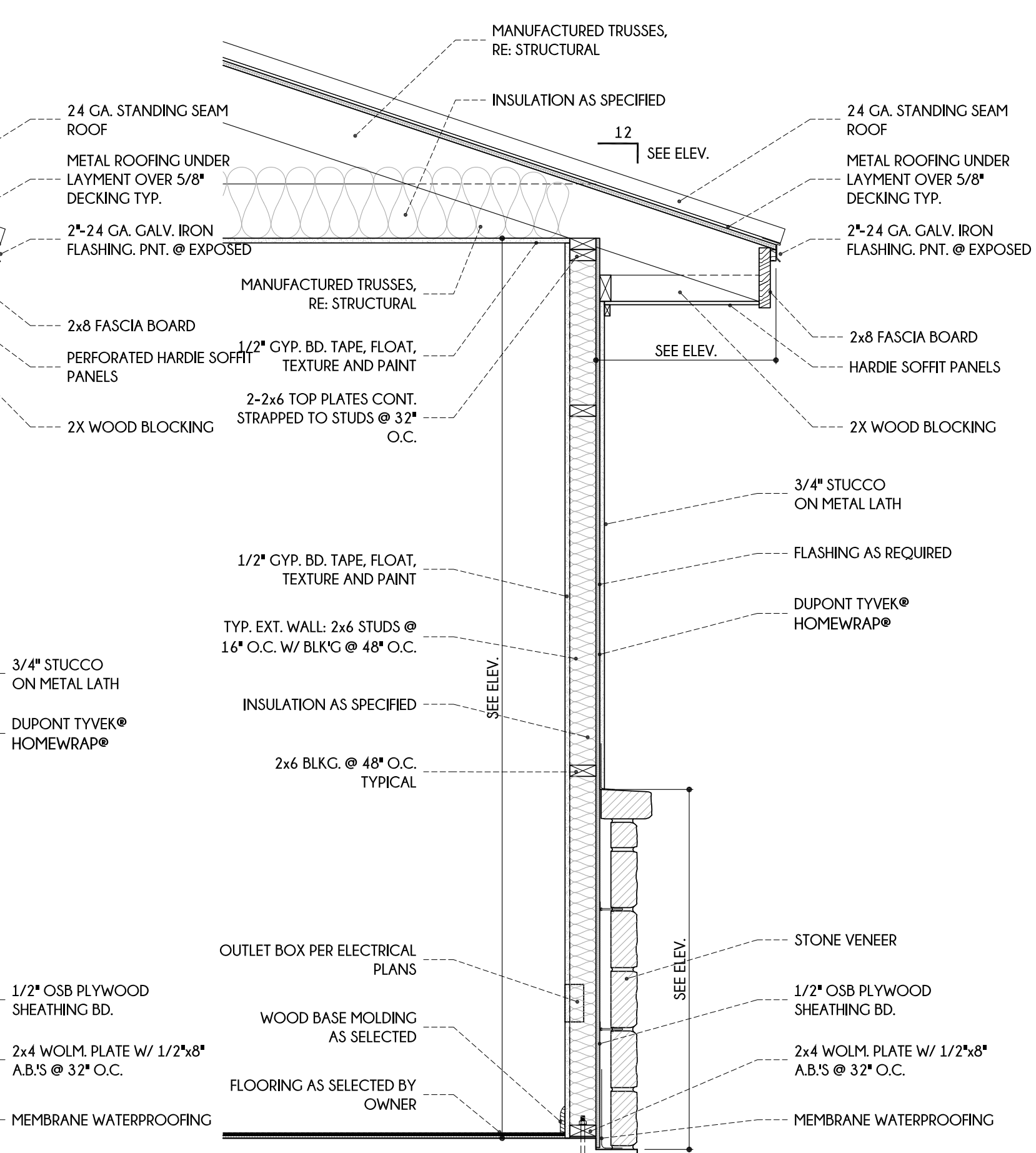
7 AIRTIGHT DRYWALL DETAIL N.T.S.



6 TYP. INT. WALL SECTION 3/4"=1'-0"



5 TYP. EXT. WALL SECTION 3/4"=1'-0"



4 TYP. EXT. WALL SECTION 3/4"=1'-0"

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ADMINISTRATION

Silas LACEY

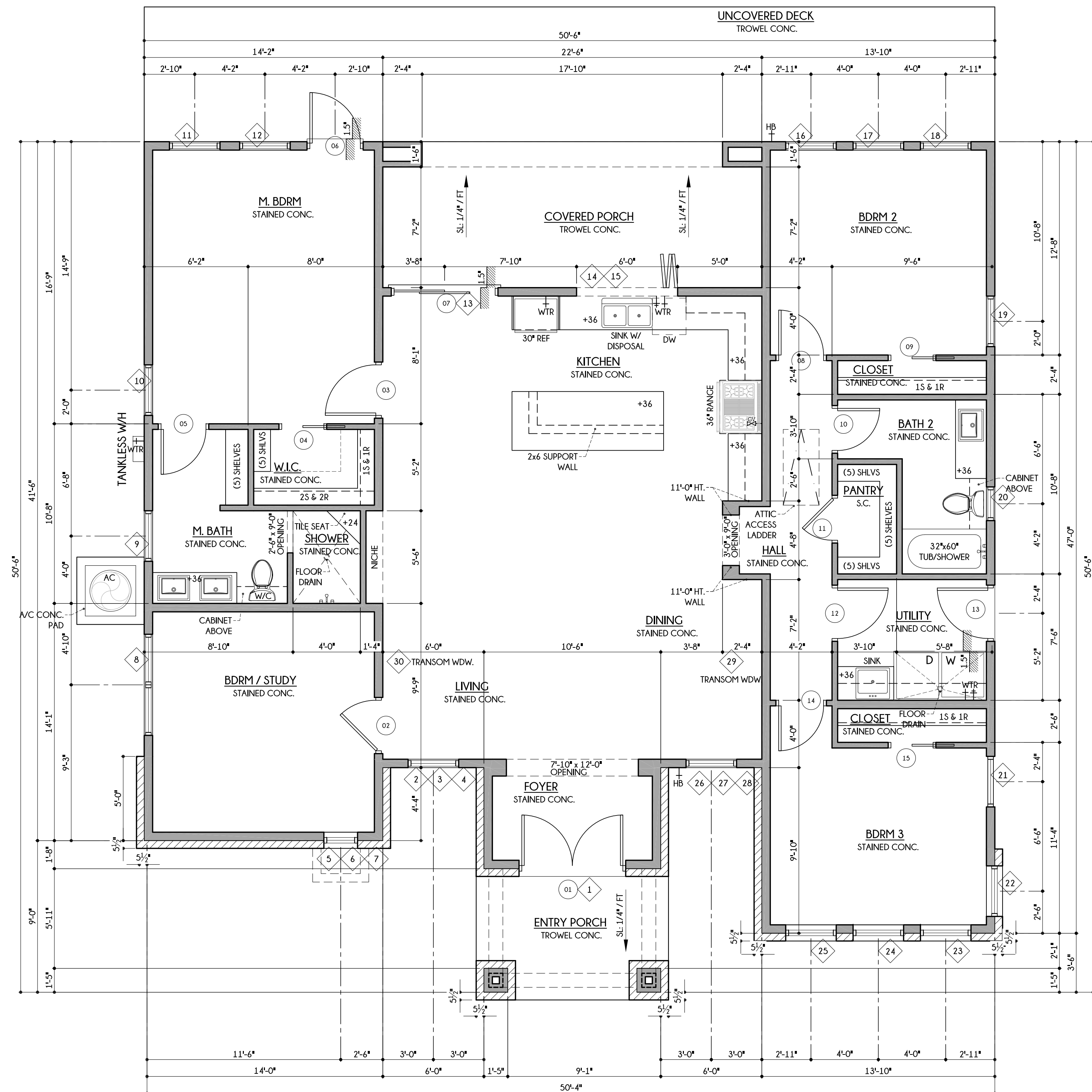
PHONE: (210) 601.2391
EMAIL: info@silaslacey.com
WEBSITE: silaslacey.com

A NEW RESIDENCE
LEETE AVE.
SANTA ROSA CALIFORNIA 95404

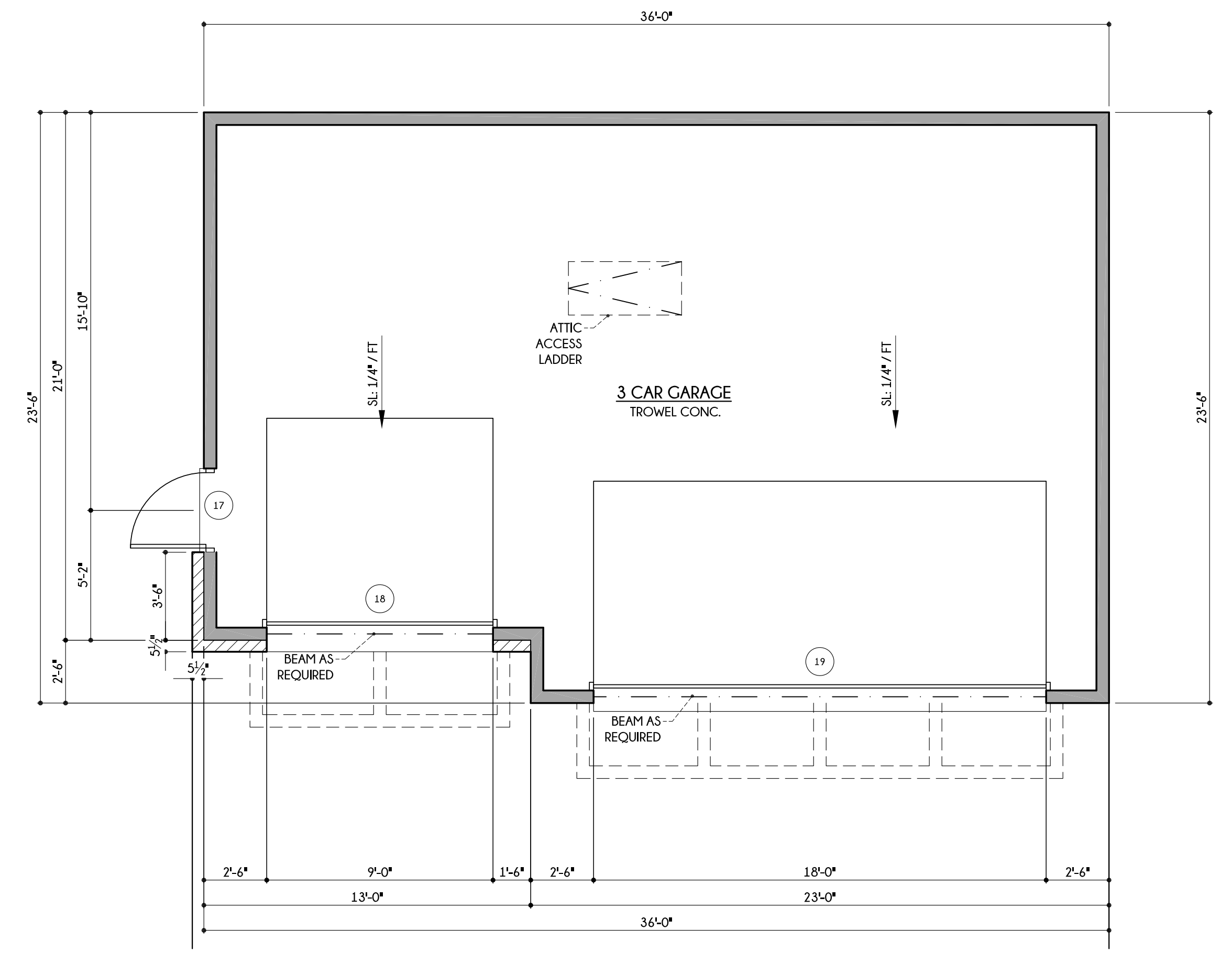
DATE: 3-29-19
DRAWN BY: JZ
CHECKED BY: JZ
REVIEWED:

3/4"=1'-0"

SHEET NO:
A2
SITE PLAN
2 OF 6 SHEETS



1 MAIN RESIDENCE FLOOR PLAN
1/4"=1'-0"



2 DETACHED GARAGE FLOOR PLAN
1/4"=1'-0"

DOOR SCHEDULE

MARK	SIZE WD HGT	MATERIAL	GLAZING	NOTES
1	6'-0" 8'-0"	AS SELECTED	AS SELECTED	ENTRY DOOR
2	3'-0" 8'-0"	WOOD	-	-
3	2'-0" 8'-0"	WOOD	-	-
4	2'-0" 8'-0"	WOOD	-	POCKET DR.
5	2'-0" 8'-0"	WOOD	-	-
6	3'-0" 8'-0"	STEEL	FULL LITE	-
7	6'-0" 8'-0"	AS SELECTED	FULL LITE	SLIDING GLASS DR.
8	2'-0" 8'-0"	WOOD	-	-
9	2'-0" 8'-0"	WOOD	-	POCKET DR.
10	2'-0" 8'-0"	WOOD	-	-
11	2'-0" 8'-0"	WOOD	-	PR. 2'-0" X 8'-0" DR.
12	3'-0" 8'-0"	WOOD	-	-
13	3'-0" 8'-0"	STEEL	HALF LITE	-
14	2'-0" 8'-0"	WOOD	-	-
15	2'-0" 8'-0"	WOOD	-	POCKET DR.

WINDOW SCHEDULE

MARK	SIZE WIDTH HEIGHT	TYPE	HDR. HT.	NOTES
1	6'-0" 3'-0"	F.C.	12'-0"	TRANSOM WINDOW
2	3'-0" 6'-0"	F.C.	8'-0"	-
3	3'-0" 3'-0"	F.C.	12'-0"	TRANSOM WINDOW
4	3'-0" 3'-0"	F.C.	17'-0"	TRANSOM WINDOW
5	2'-0" 8'-0"	F.C.	8'-0"	-
6	3'-0" 7'-0"	F.C.	7'-0"	-
7	2'-0" 2'-0"	F.C.	10'-0"	-
8	6'-0" 6'-0"	SH	8'-0"	PR. 3'-0" X 6'-0" SH
9	3'-0" 8'-0"	SH	8'-0"	-
10	3'-0" 8'-0"	SH	8'-0"	-
11	3'-0" 6'-0"	SH	8'-0"	-
12	3'-0" 8'-0"	SH	8'-0"	-
13	6'-0" 2'-0"	F.C.	11'-0"	TRANSOM WINDOW
14	6'-0" 3'-0"	FOLDING	8'-0"	(3) PANEL FOLDING WINDOW
15	3'-0" 2'-0"	F.C.	11'-0"	TRANSOM WINDOW
16	3'-0" 8'-0"	SH	8'-0"	-
17	3'-0" 6'-0"	SH	8'-0"	-
18	3'-0" 8'-0"	SH	8'-0"	-
19	3'-0" 8'-0"	SH	8'-0"	-
20	2'-0" 7'-0"	SH	8'-0"	-
21	3'-0" 8'-0"	SH	8'-0"	-
22	3'-0" 8'-0"	SH	8'-0"	-
23	3'-0" 2'-0"	F.C.	8'-0"	-
24	3'-0" 2'-0"	F.C.	8'-0"	-
25	3'-0" 2'-0"	F.C.	8'-0"	-
26	3'-0" 6'-0"	F.C.	8'-0"	-
27	3'-0" 3'-0"	F.C.	12'-0"	TRANSOM WINDOW
28	3'-0" 3'-0"	F.C.	17'-0"	TRANSOM WINDOW
29	12'-0" 3'-0"	F.C.	17'-0"	TRIANGULAR TRANSOM WINDOW, SEE ELEV.
30	12'-0" 3'-0"	F.C.	17'-0"	TRIANGULAR TRANSOM WINDOW, SEE ELEV.

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A NEW RESIDENCE
LEETE AVE.
SANTA ROSA CALIFORNIA 95404

DATE: 3-29-19

DRAWN BY: JZ	CHECKED BY: JZ
REVIEWED BY:	

SHEET NO:
A3
FLOOR PLAN

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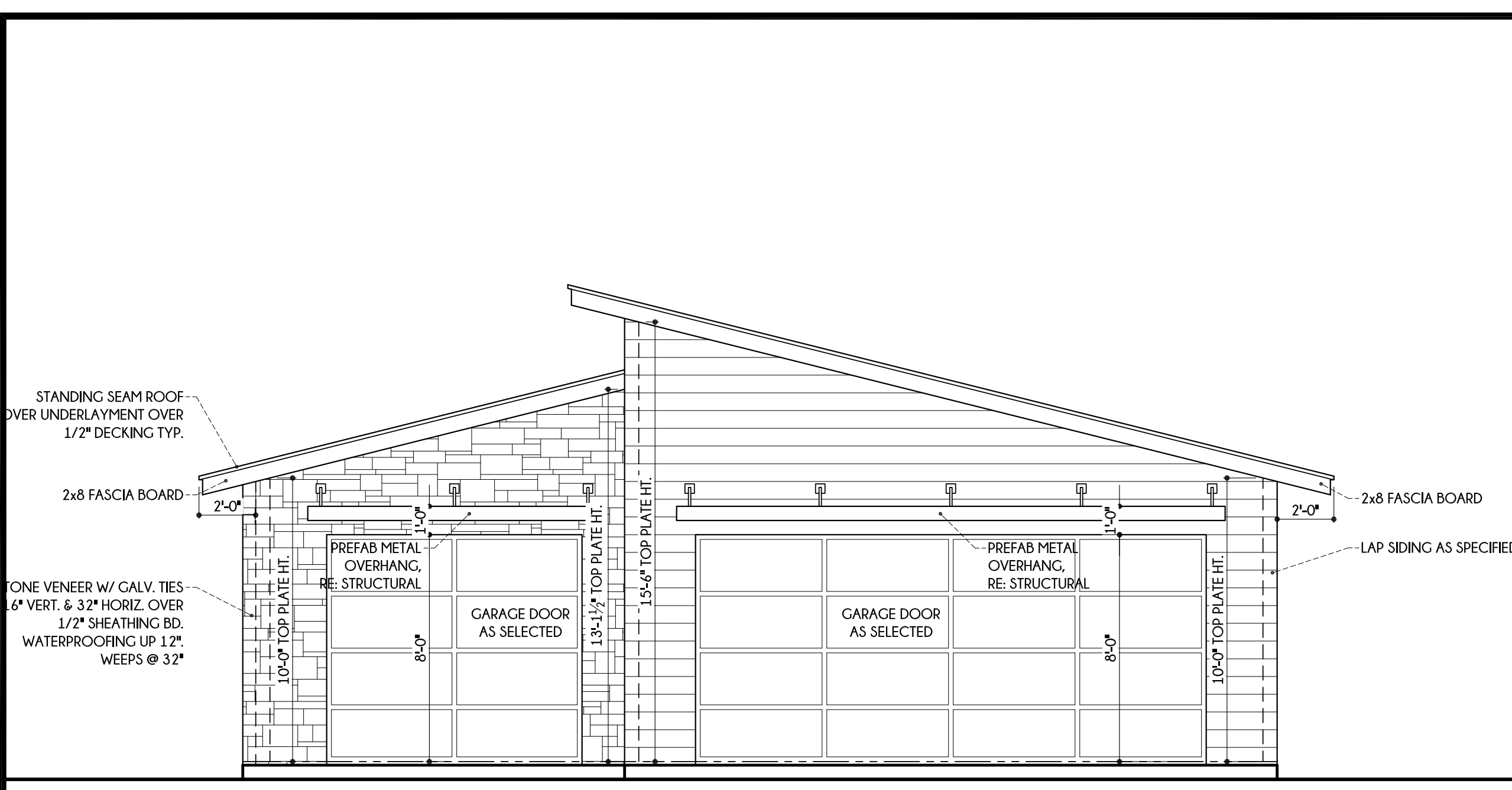


A NEW RESIDENCE
LEETE AVE.
SANTA ROSA CALIFORNIA 95404

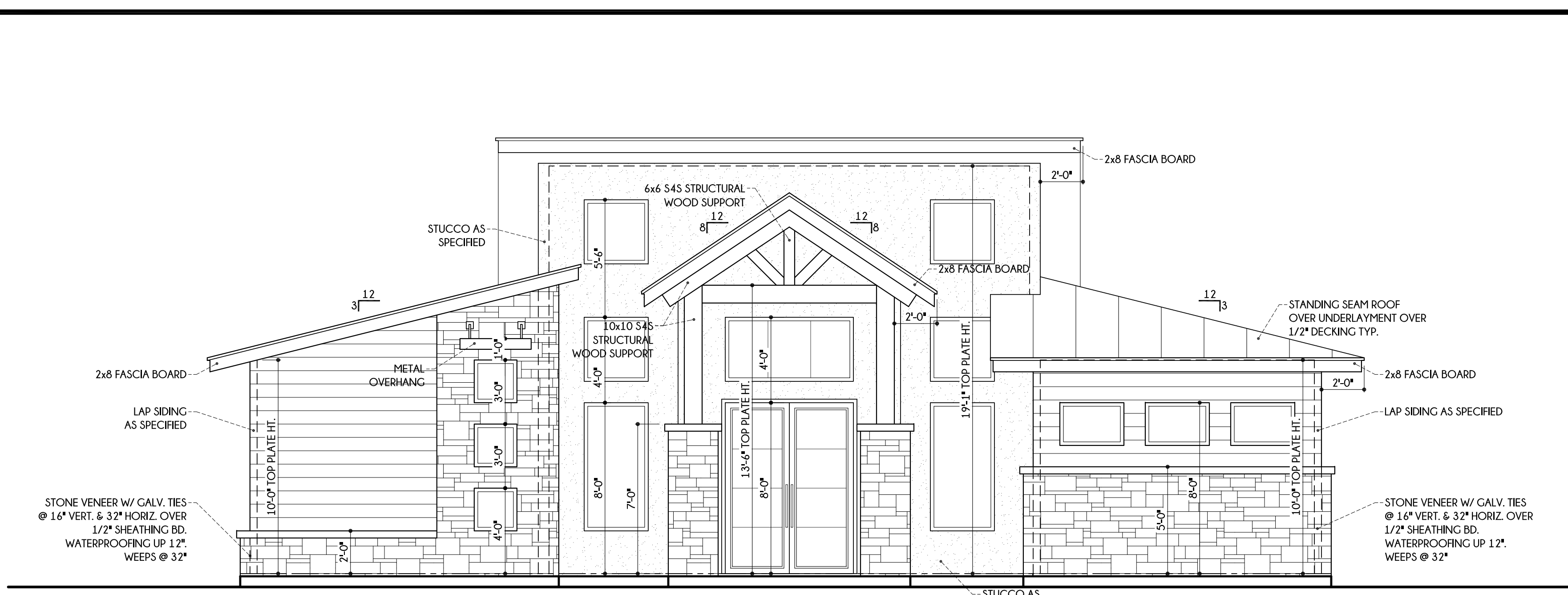
DATE:	3-29-19
DRAWN BY:	JZ
CHECKED BY:	JZ
REVIEWED:	



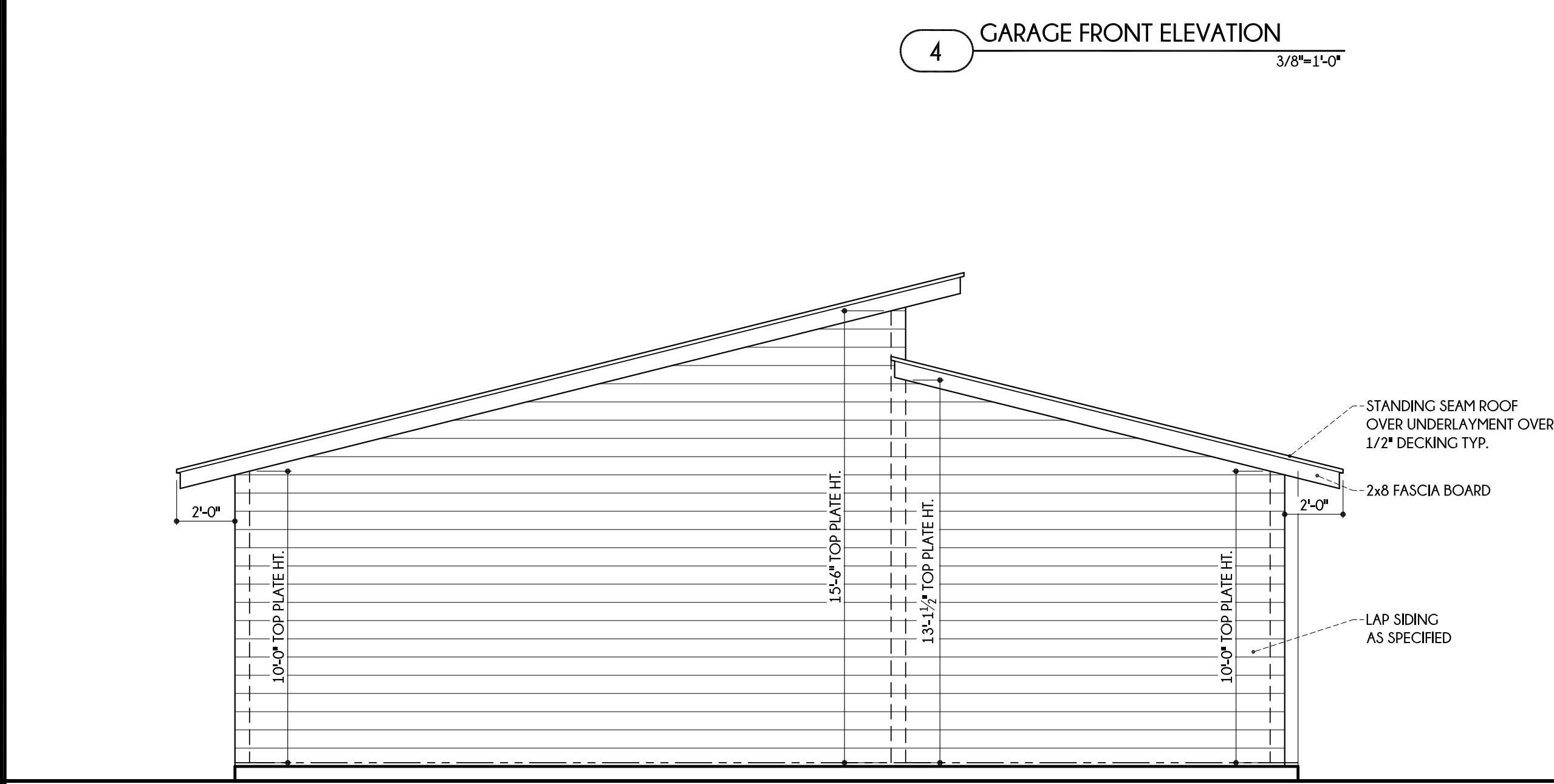
SHEET NO:
A4
EXTERIOR ELEVATIONS
4 OF 6 SHEETS



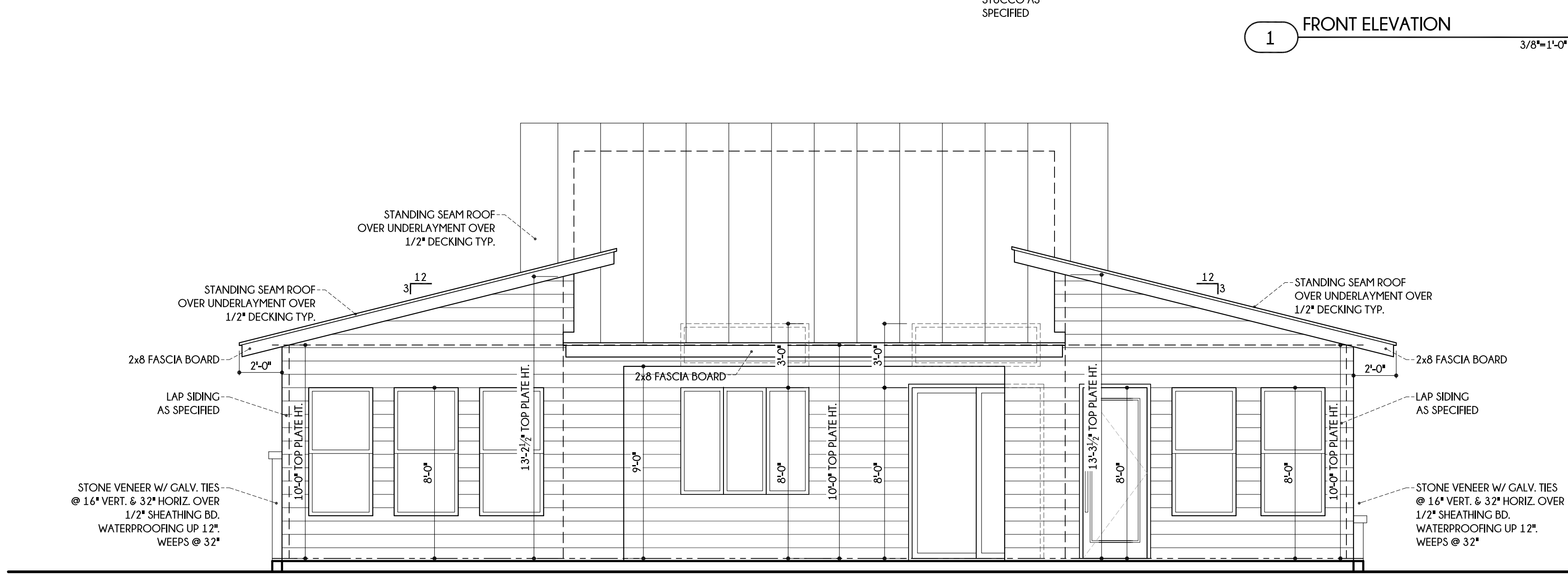
4 GARAGE FRONT ELEVATION
3/8"=1'-0"



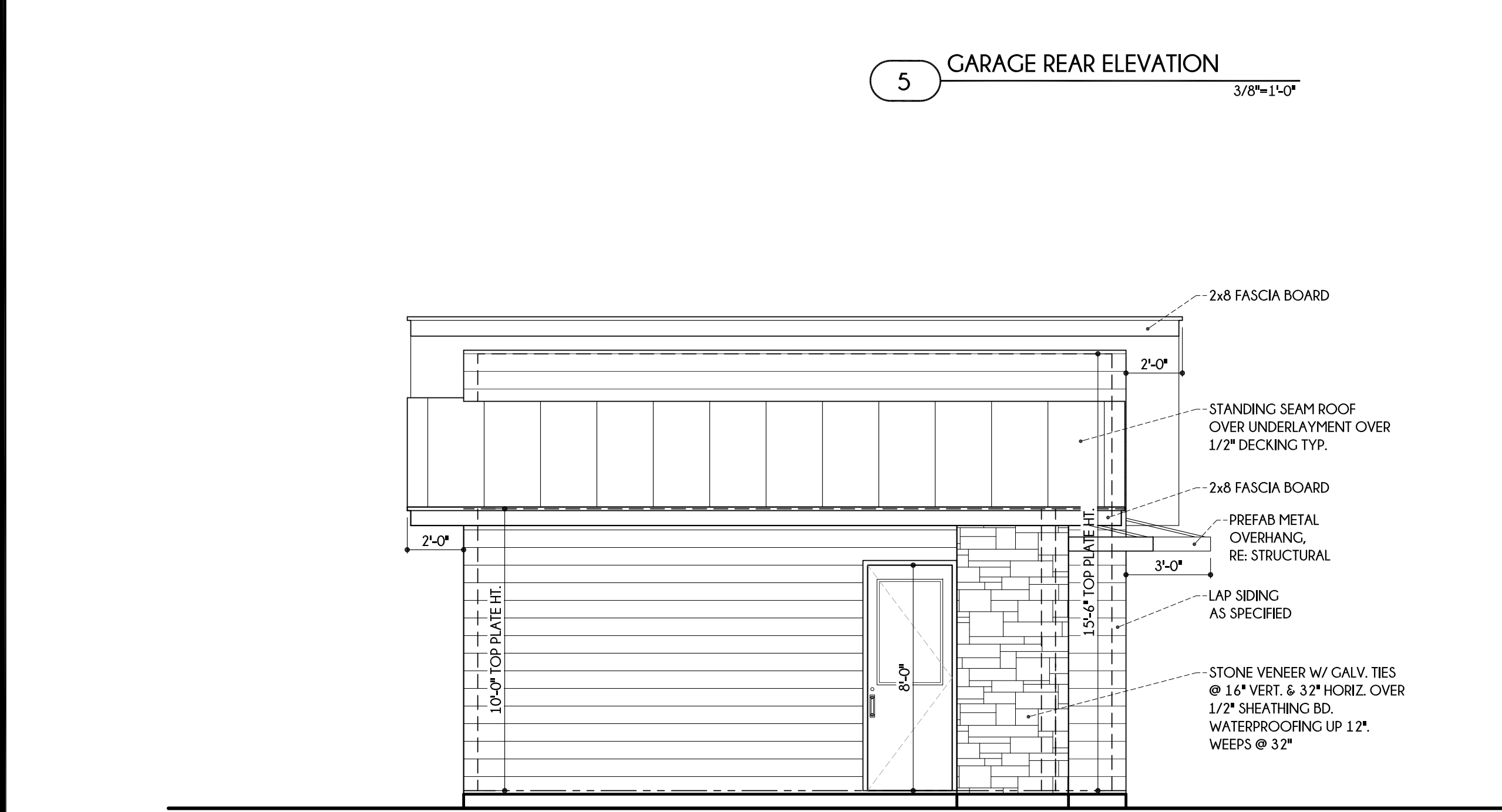
1 FRONT ELEVATION
3/8"=1'-0"



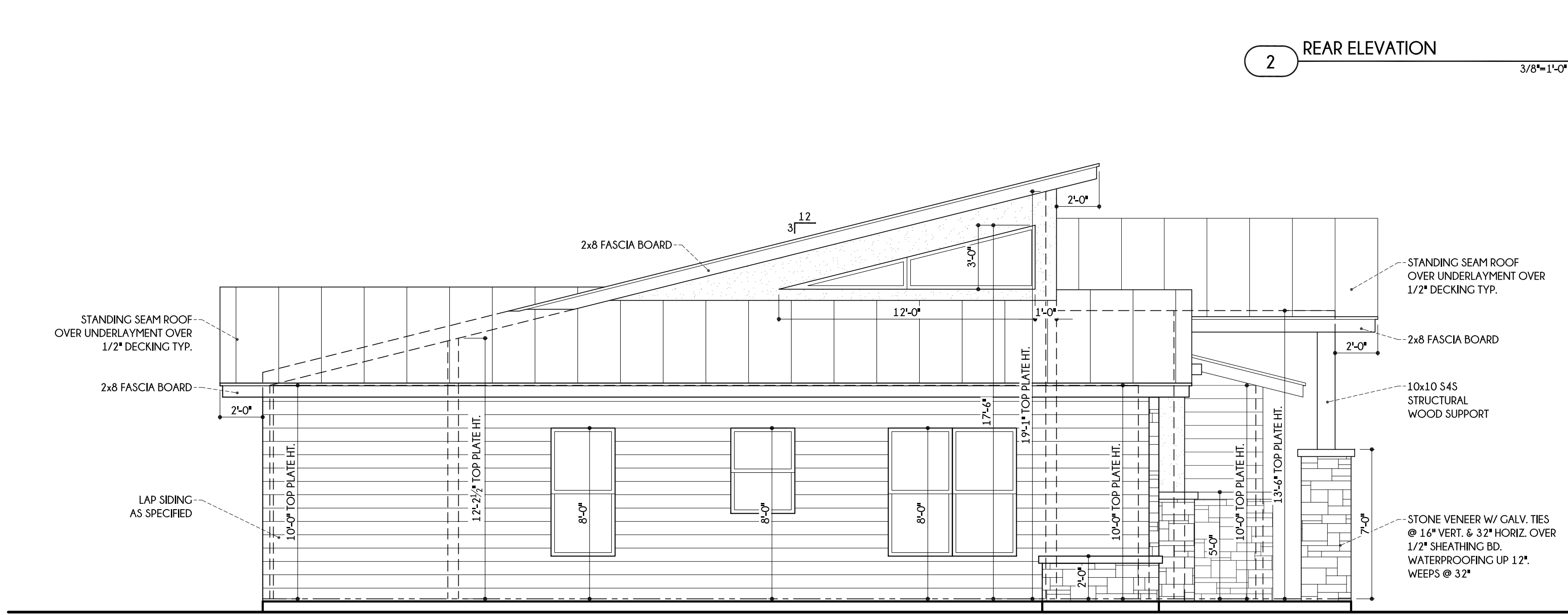
5 GARAGE REAR ELEVATION
3/8"=1'-0"



2 REAR ELEVATION
3/8"=1'-0"



6 GARAGE LEFT ELEVATION
3/8"=1'-0"



3 LEFT ELEVATION
3/8"=1'-0"

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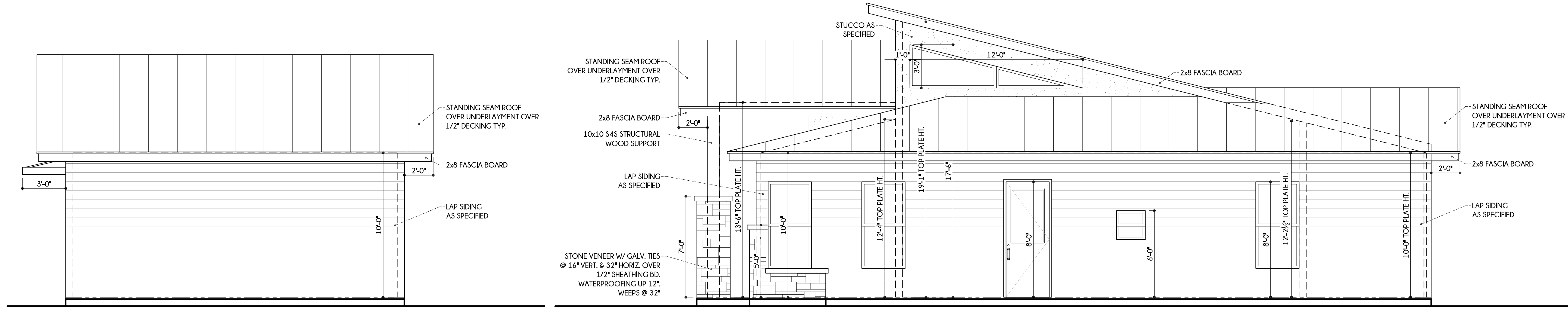
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WEBSITE: silaslacey.com

A NEW RESIDENCE
LEETE AVE.
SANTA ROSA CALIFORNIA 95404

DATE:	3-29-19
DRAWN BY:	JZ
CHECKED BY:	JZ
REVISION:	

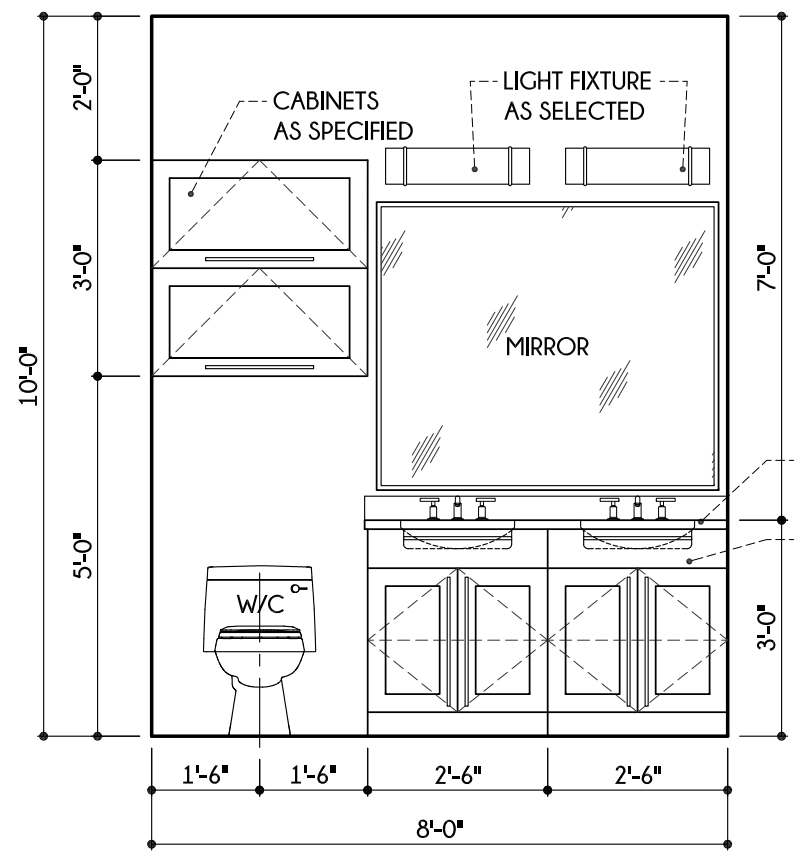


SHEET NO:
A5
EXTERIOR & INTERIOR ELEVATIONS
5 OF 6 SHEETS

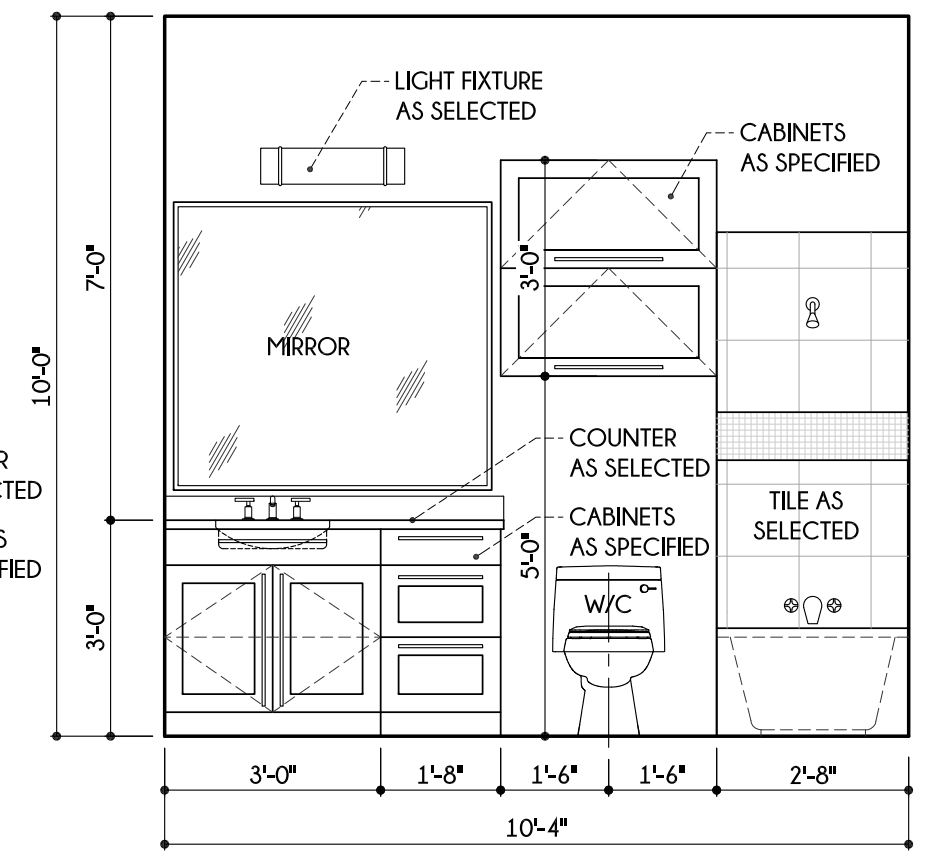


2 GARAGE RIGHT ELEVATION 3/8"=1'-0"

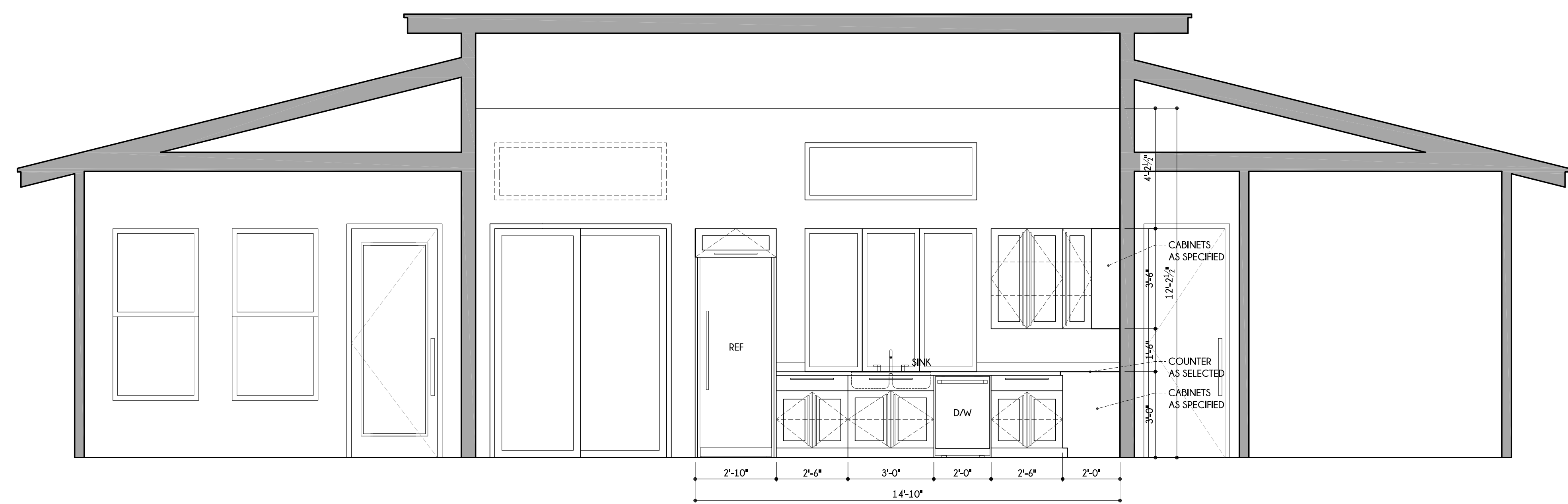
1 RIGHT ELEVATION 3/8"=1'-0"



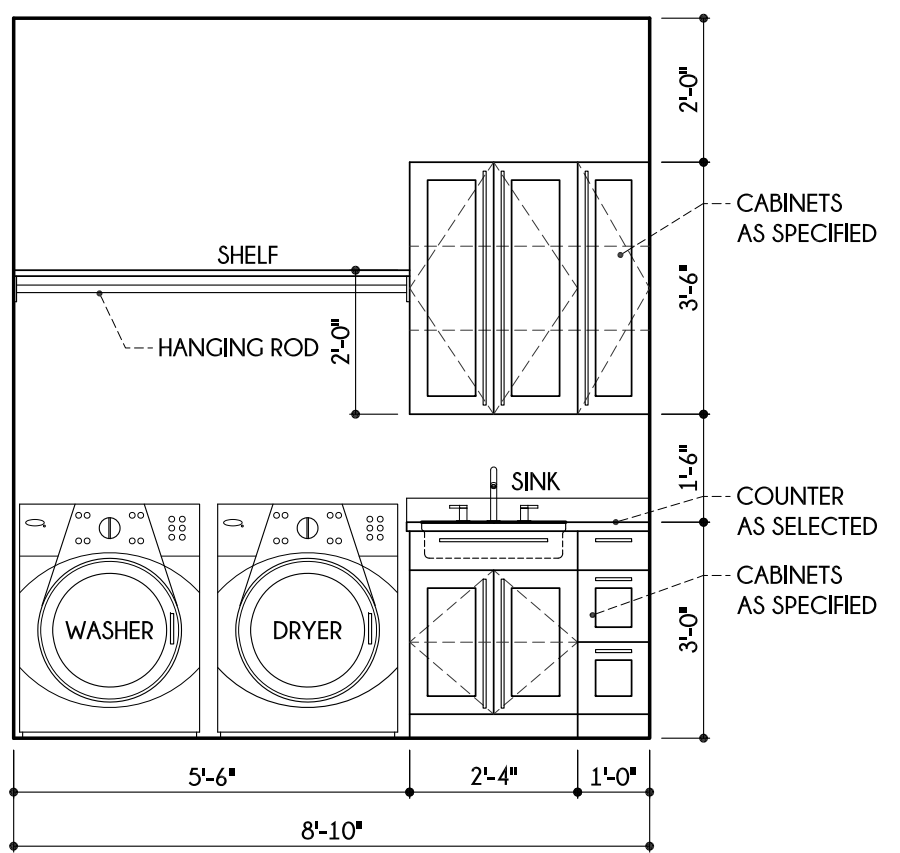
5 MASTER BATH 3/8"=1'-0"



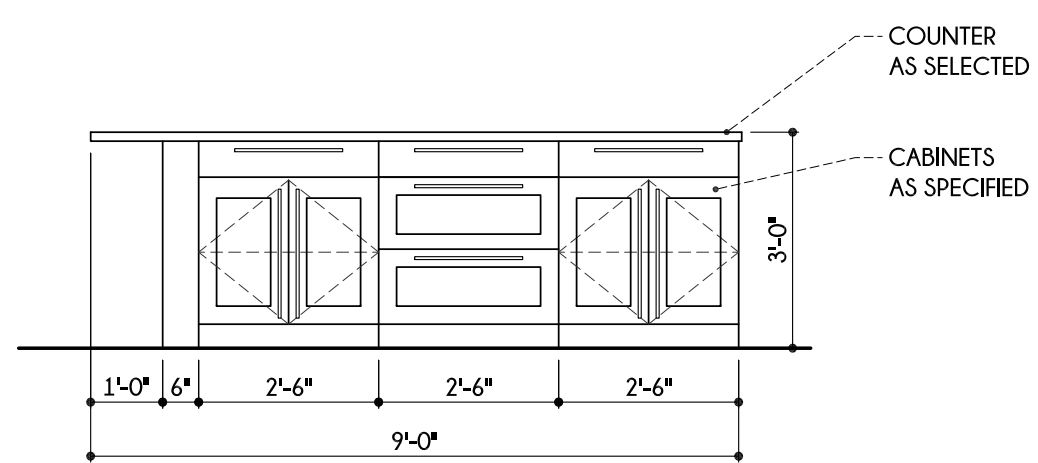
6 BATH 2 3/8"=1'-0"



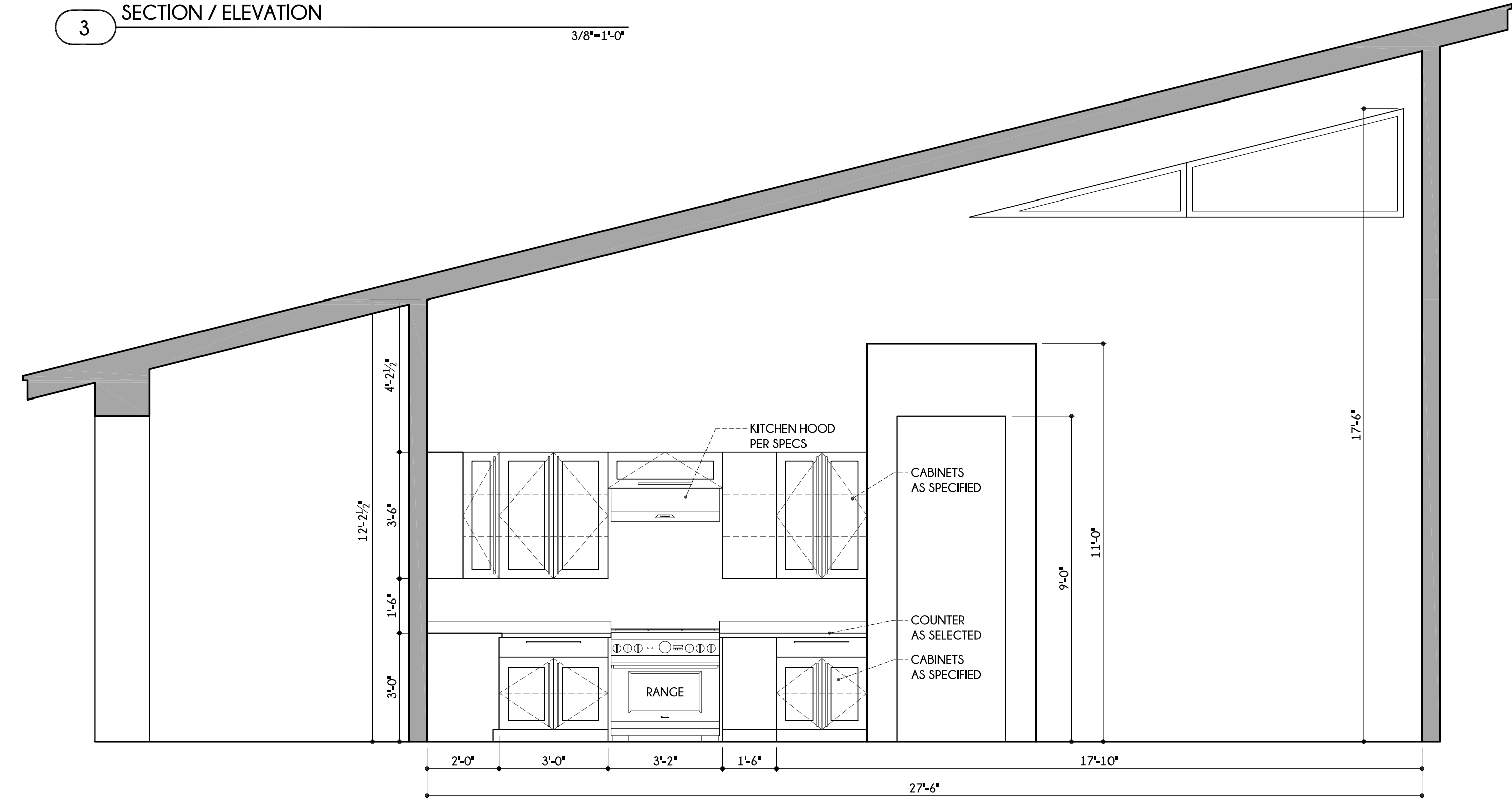
3 SECTION / ELEVATION 3/8"=1'-0"



7 UTILITY 3/8"=1'-0"



8 KITCHEN ISLAND 3/8"=1'-0"



4 SECTION / ELEVATION 3/8"=1'-0"

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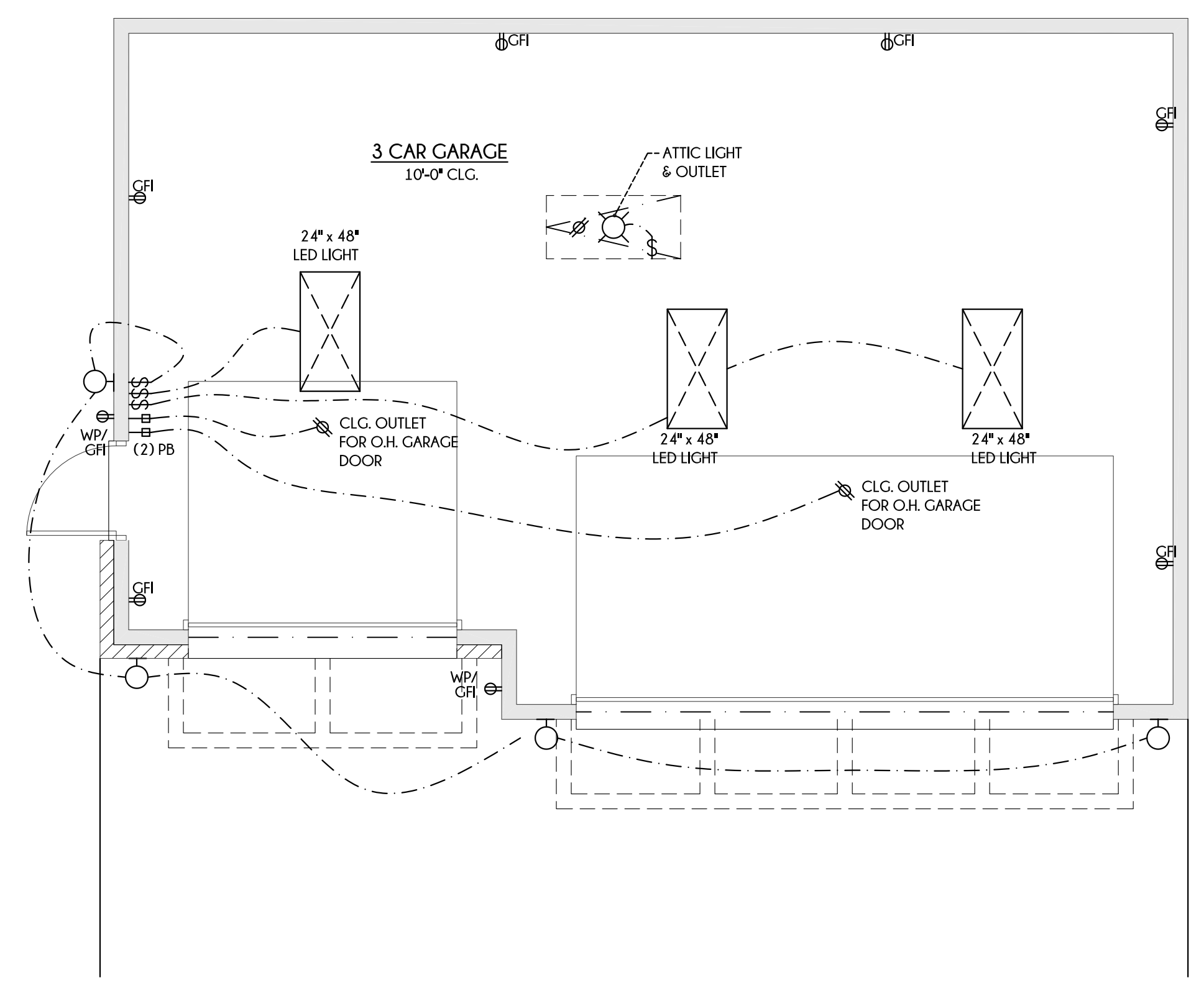
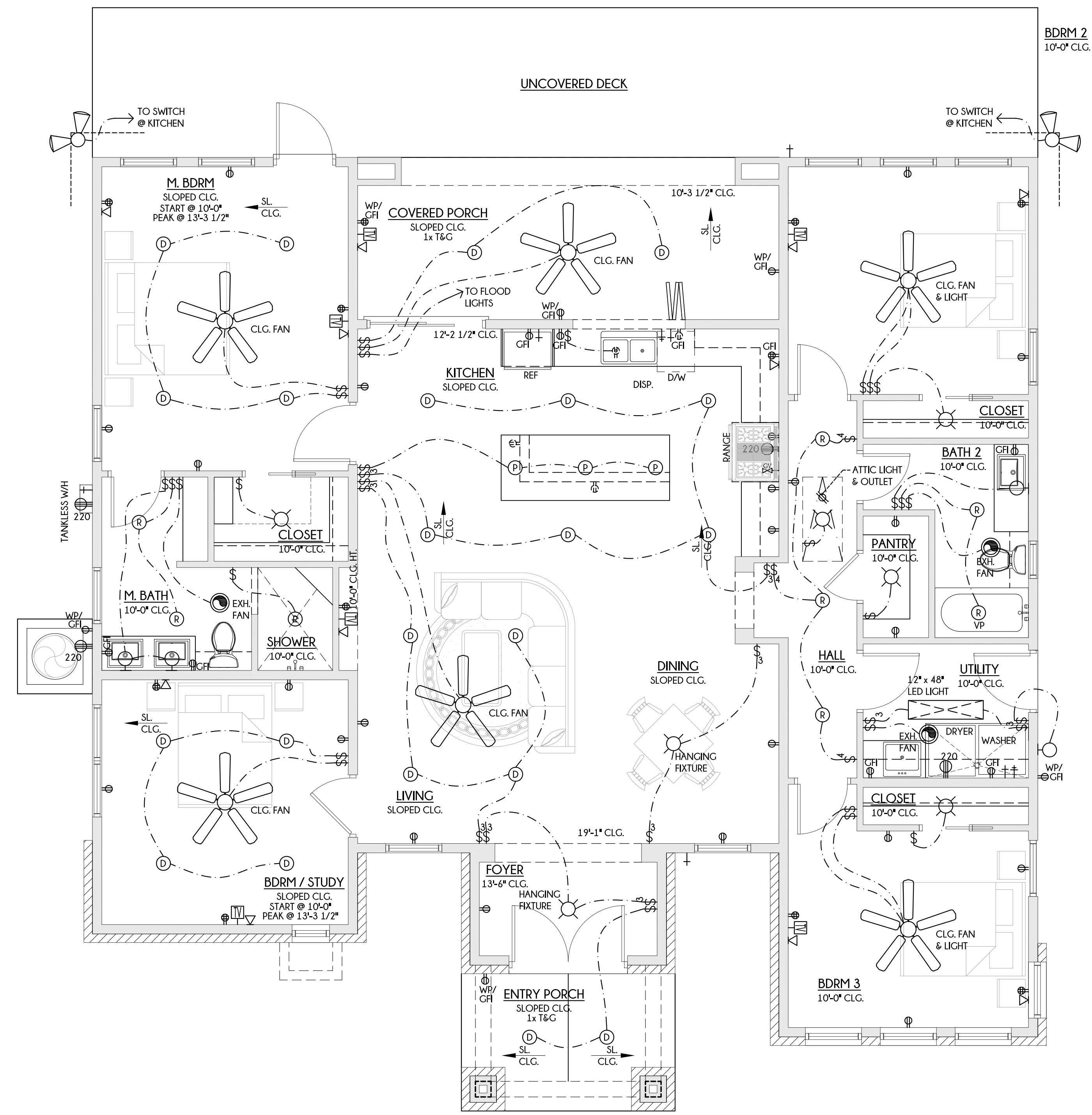
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EMAIL: info@silaslacey.com
WEBSITE: silaslacey.com

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LEETE AVE.
SANTA ROSA CALIFORNIA 95404

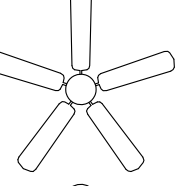



















DATE:	3-29-19
DRAWN BY:	JZ
CHECKED BY:	JZ
REVIEWED BY:	



SHEET NO:
A6
REFLECTIVE CEILING PLAN / ELECTRICAL PLAN
6 OF 6 SHEETS



LEGEND

-  CEILING FAN AS SELECTED BY OWNER
-  DIRECTIONAL RECESSED LIGHT FIXTURES
-  RECESSED LIGHTING
-  PENDANT LIGHTING AS SELECTED BY OWNER
-  VAPOR PROOF LIGHT FIXTURE
-  WALL MOUNTED/SCONCE LIGHT FIXTURE
-  CEILING MOUNTED LIGHT FIXTURE
-  VENT/LAMP FIXTURE
-  HEAT/VENT/LAMP FIXTURE
-  FLOOR PLUG LOCATED BY OWNER
-  DUPLEX OUTLET
-  GROUND FAULT DUPLEX OUTLET
-  WATER PROOF DUPLEX OUTLET
-  220V OUTLET
-  TELEPHONE / DATA OUTLET
-  CABLE OUTLET
-  FLUORESCENT LIGHT FIXTURE
-  SMOKE ALARM
-  GARAGE OPENER PUSH BUTTON
-  SPEAKER



MANUFACTURED ROOF TRUSSES

Leete Avenue
Santa Rosa, CA

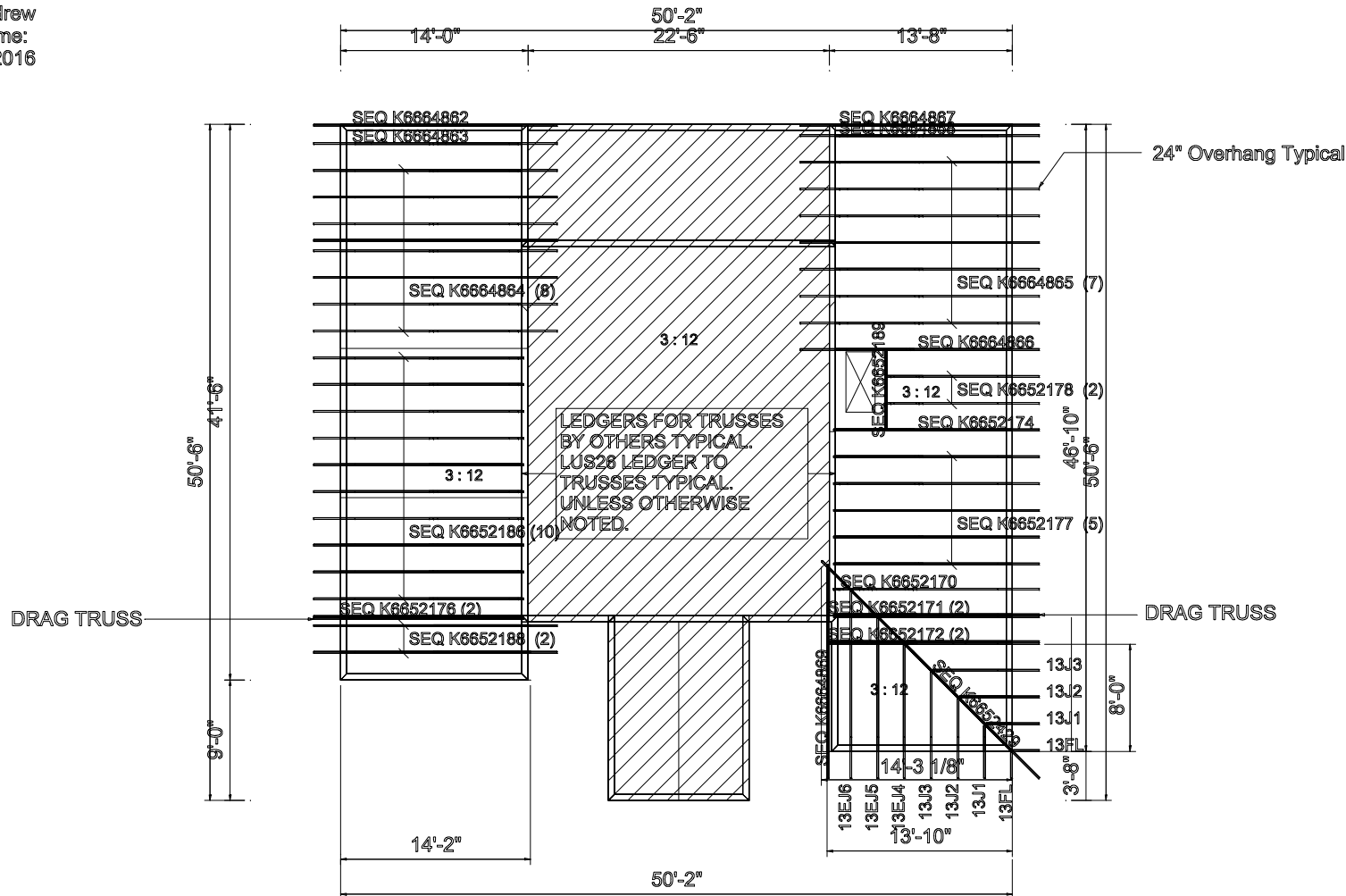
Date: 08/12/19
DrawnBy: Andrew
DefaultSetName:
Walters CBC2016

Truss Qty Hanger

SEQ K6652170	1	
SEQ K6652171	1	LUS24-2
SEQ K6652172	1	
SEQ K6652174	1	MUS26
SEQ K6652176	1	LUS24-2
SEQ K6652177	5	
SEQ K6652178	2	LUS24
SEQ K6652186	10	
SEQ K6652188	2	
SEQ K6652189	1	(2) LUS24
SEQ K6652429	1	
SEQ K6664862	1	
SEQ K6664863	1	
SEQ K6664864	8	
SEQ K6664865	7	
SEQ K6664866	1	MUS26
SEQ K6664867	1	
SEQ K6664868	1	
SEQ K6664869	1	

Jack Qty Hanger SEQ #

13EJ4	1	LUS24	SEQ K6652428
13EJ5	1	LUS24	SEQ K6652431
13EJ6	1	LUS24	SEQ K6652430
13J1	2	TJC37	SEQ K6652427
13J2	2	TJC37	SEQ K6652426
13J3	2	TJC37	SEQ K6652425



!! Warning Prop 65 !!
Raw Wood Product Exposure and
Metal Truss Connector Plates
Cancer and Reproductive Harm
Cancer y Dano Reproductivo
More information on the web.
www.P65Warning.ca.gov/wood
www.P65Warning.ca.gov
www.mitek-us.com/products/prop65
Mitek 1-800-328-5934



WALTERS LUMBER INC.
9293 OLD REDWOOD HWY.
PENNGROVE CA, 94951

Phone 707.795.3277
Email walterslumber@sbcglobal.net

**MiTek USA, Inc.**

250 Klug Circle
 Corona, CA 92880
 951-245-9525

Re: Leete Ave ROOF DESIGN INFO

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

Pages or sheets covered by this seal: K6664862 thru K6664869

My license renewal date for the state of California is September 30, 2020.



September 16, 2019

Zhao, Xiaoming

IMPORTANT NOTE: The seal on these truss component designs is a certification that the engineer named is licensed in the jurisdiction(s) identified and that the designs comply with ANSI/TPI 1. These designs are based upon parameters shown (e.g., loads, supports, dimensions, shapes and design codes), which were given to MiTek or TRENCO. Any project specific information included is for MiTek's or TRENCO's customers file reference purpose only, and was not taken into account in the preparation of these designs. MiTek or TRENCO has not independently verified the applicability of the design parameters or the designs for any particular building. Before use, the building designer should verify applicability of design parameters and properly incorporate these designs into the overall building design per ANSI/TPI 1, Chapter 2.

This design prepared from computer input by
Type in your company name here!

LUMBER SPECIFICATIONS

TC: 2x4 DF #2
BC: 2x4 DF #2

TC LATERAL SUPPORT <= 12"OC. UON.
BC LATERAL SUPPORT <= 12"OC. UON.

Unbalanced live loads have been
considered for this design.

TRUSS SPAN 14'- 2.0"
LOAD DURATION INCREASE = 1.25
SPACED 24.0" O.C.

LOADING
LL (20.0)+DL (9.0) ON TOP CHORD = 29.0 PSF
DL ON BOTTOM CHORD = 7.0 PSF
TOTAL LOAD = 36.0 PSF

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP
AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

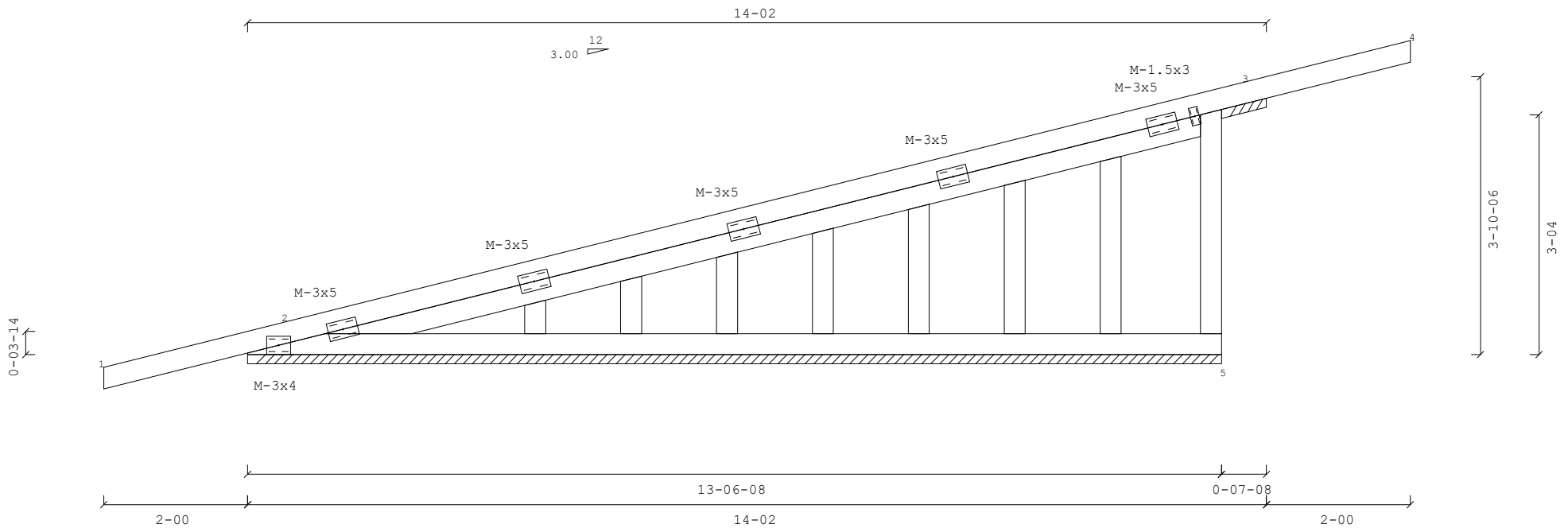
Design conforms to main windforce-resisting
system and components and cladding criteria.

Wind: 110 mph, h=15ft, TC DL=5.4, BCDL=4.2, ASCE 7-10,
(All Heights), Enclosed, Cat.2, Exp.C, MWFRS(Dir),
load duration factor=1.6,
Bottom chord at cantilevered end(s) not exposed to wind,
Truss designed for wind loads
in the plane of the truss only.

Gable end truss on continuous bearing wall UON.
M-1x2 or equal typical at stud verticals.
Refer to CompuTrus gable end detail for
complete specifications.

Max CSI: TC:0.00 BC:0.00 Web:0.00

Truss designed for 4x2 outlookers. 2x4 let-ins
of the same size and grade as structural top
chord. Insure tight fit at each end of let-in.
Outlookers must be cut with care and are
permissible at inlet board areas only.



JOB NAME:

Scale: 0.4712

Truss: MONAGAB

DATE: 9/16/2019
SEQ.: K6664862
TRANS ID: LINK

WARNINGS:

1. Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
2. 2x4 compression web bracing must be installed where shown +.
3. 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.
4. No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
5. CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
6. This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

MiTek USA, Inc./CompuTrus Software 7.6.8(1L)-E

GENERAL NOTES, unless otherwise noted:

1. This design is based only upon the parameters shown and is for an individual building component. Applicability of design parameters and proper incorporation of component is the responsibility of the building designer.
2. Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
3. 2x Impact bridging or lateral bracing required where shown + +.
4. Installation of truss is the responsibility of the respective contractor.
5. Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
6. Design assumes full bearing at all supports shown. Shim or wedge if necessary.
7. Design assumes adequate drainage is provided.
8. Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
9. Digits indicate size of plate in inches.
10. For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



September 16, 2019

LUMBER SPECIFICATIONS

TC: 2x4 DF #2
 BC: 2x4 DF #2
 WEBS: 2x4 DF #2

TC LATERAL SUPPORT <= 12"OC. UON.
 BC LATERAL SUPPORT <= 12"OC. UON.

OVERHANGS: 24.0" 24.0"

Unbalanced live loads have been considered for this design.

TRUSS SPAN 14'- 2.0"
 LOAD DURATION INCREASE = 1.25
 SPACED 24.0" O.C.

LOADING
 LL(20.0)+DL(9.0) ON TOP CHORD = 29.0 PSF
 DL ON BOTTOM CHORD = 7.0 PSF
 TOTAL LOAD = 36.0 PSF

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

CBC2016/IBC2015	MAX MEMBER FORCES	4WR/GDF/Cq=1.00
1-2=(0)	28	2-7=(-270) 942
2-3=(-1016)	137	7-3=(0) 266
3-4=(-90)	60	7-8=(-274) 936
4-5=(-75)	38	3-8=(-987) 288
5-6=(-32)	0	8-4=(-495) 270

BEARING LOCATIONS	MAX VERT REACTIONS	MAX HORZ REACTIONS	BRG SIZE	REQUIRED BRG AREA SQ.IN. (SPECIES)
0'- 0.0"	-122/ 607V	0/ 146H	5.50"	0.97 DF (625)
13'- 3.0"	-125/ 799V	0/ 0H	1.75"	1.28 DF (625)
14'- 2.0"	-285/ 61V	0/ 0H	5.50"	0.09 DF (625)

PROVIDE FULL BEARING; Jts: 2, 8, 5

VERTICAL DEFLECTION LIMITS: LL=L/360, TL=L/240
 MAX LL DEFL = 0.038" @ -2'- 0.0" Allowed = 0.133"
 MAX TL DEFL = 0.035" @ -2'- 0.0" Allowed = 0.200"
 MAX LL DEFL = -0.036" @ 6'- 10.6" Allowed = 0.431"
 MAX TL CREEP DEFL = -0.097" @ 6'- 9.3" Allowed = 0.647"
 MAX LL DEFL = 0.022" @ 16'- 2.0" Allowed = 0.133"
 MAX TL CREEP DEFL = -0.033" @ 16'- 2.0" Allowed = 0.200"

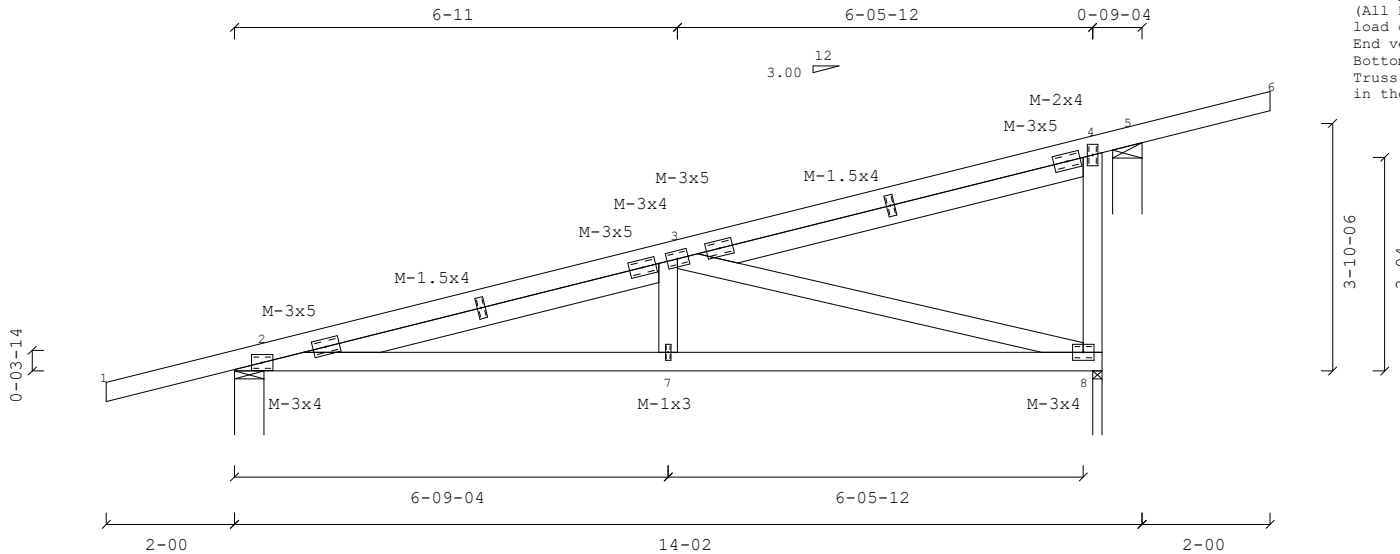
MAX HORIZ. LL DEFL = -0.009" @ 13'- 3.0"
 MAX HORIZ. TL DEFL = 0.017" @ 13'- 3.0"

Design conforms to main windforce-resisting system and components and cladding criteria.

Wind: 110 mph, h=15ft, TC DL=5.4, BCDL=4.2, ASCE 7-10, (All Heights), Enclosed, Cat.2, Exp.C, MWFRS (Dir), load duration factor=1.6, End vertical(s) not exposed to wind, Bottom chord at cantilevered end(s) not exposed to wind, Truss designed for wind loads in the plane of the truss only.

Max CSI: TC:0.48 BC:0.42 Web:0.70

Truss designed for 4x2 outlookers. 2x4 let-ins of the same size and grade as structural top chord. Insure tight fit at each end of let-in. Outlookers must be cut with care and are permissible at inlet board areas only.



JOB NAME: _____ Scale: 0.3337

Truss: MONADT

DATE: 9/16/2019
 SEQ.: K6664863
 TRANS ID: LINK

WARNINGS:

- Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
- 2x4 compression web bracing must be installed where shown +.
- 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.
- No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
- CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
- This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

MiTek USA, Inc./CompuTrus Software 7.6.8(1L)-E

GENERAL NOTES, unless otherwise noted:

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- Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
- 2x Impact bridging or lateral bracing required where shown +.
- Installation of truss is the responsibility of the respective contractor.
- Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
- Design assumes full bearing at all supports shown. Shim or wedge if necessary.
- Design assumes adequate drainage is provided.
- Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
- Digits indicate size of plate in inches.
- For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



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LUMBER SPECIFICATIONS

TC: 2x4 DF #2
BC: 2x4 DF #2
WEBS: 2x4 DF #2

TC LATERAL SUPPORT <= 12"OC. UON.
BC LATERAL SUPPORT <= 12"OC. UON.

OVERHANGS: 24.0" 24.0"

Unbalanced live loads have been considered for this design.

TRUSS SPAN 14'- 2.0"
LOAD DURATION INCREASE = 1.25
SPACED 24.0" O.C.

LOADING
LL(20.0)+DL(9.0) ON TOP CHORD = 29.0 PSF
DL ON BOTTOM CHORD = 7.0 PSF
TOTAL LOAD = 36.0 PSF

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

CBC2016/IBC2015	MAX MEMBER FORCES	4WR/GDF/Cq=1.00
1-2=(0)	28	2-7=(-270) 942
2-3=(-1016)	137	7-3=(0) 266
3-4=(-90)	60	3-8=(-987) 288
4-5=(-75)	38	8-4=(-495) 270
5-6=(-32)	0	

BEARING LOCATIONS	MAX VERT REACTIONS	MAX HORIZ REACTIONS	BRG SIZE	REQUIRED BRG AREA SQ.IN. (SPECIES)
0'- 0.0"	-122/ 607V	0/ 146H	5.50"	0.97 DF (625)
13'- 3.0"	-125/ 799V	0/ 0H	1.75"	1.28 DF (625)
14'- 2.0"	-285/ 61V	0/ 0H	5.50"	0.09 DF (625)

PROVIDE FULL BEARING; Jts:2,8,5

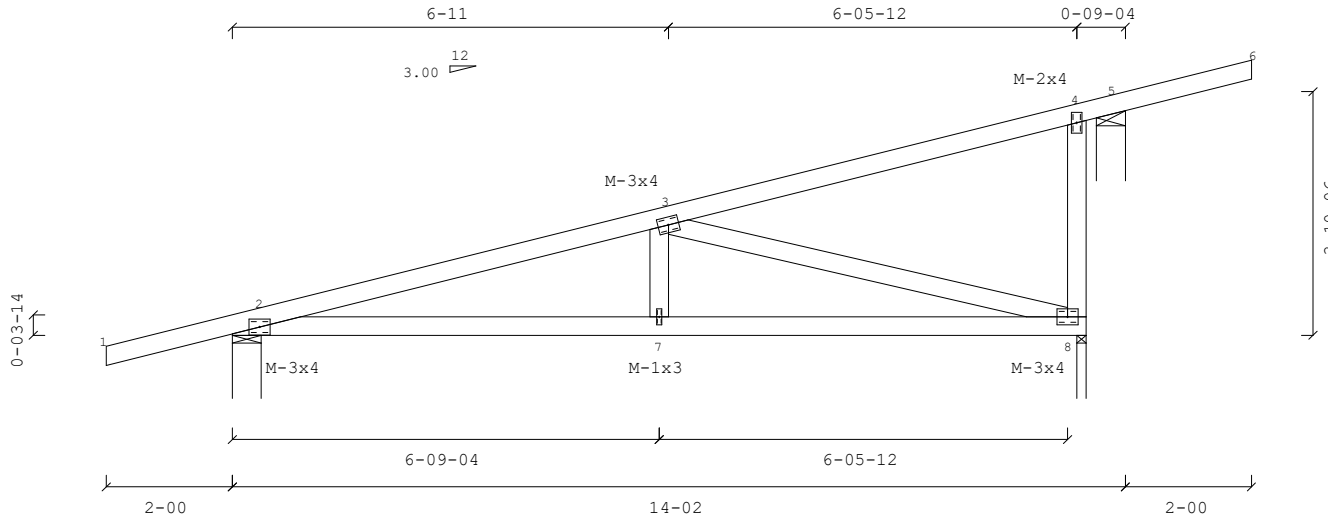
VERTICAL DEFLECTION LIMITS: LL=L/360, TL=L/240
 MAX LL DEFL = 0.038" @ -2'- 0.0" Allowed = 0.133"
 MAX TL DEFL = 0.035" @ -2'- 0.0" Allowed = 0.200"
 MAX LL DEFL = -0.036" @ 6'- 10.6" Allowed = 0.431"
 MAX TL CREEP DEFL = -0.097" @ 6'- 9.3" Allowed = 0.647"
 MAX LL DEFL = 0.022" @ 16'- 2.0" Allowed = 0.133"
 MAX TL CREEP DEFL = -0.033" @ 16'- 2.0" Allowed = 0.200"

MAX HORIZ. LL DEFL = -0.009" @ 13'- 3.0"
 MAX HORIZ. TL DEFL = 0.017" @ 13'- 3.0"

Design conforms to main windforce-resisting system and components and cladding criteria.

Wind: 110 mph, h=15ft, TC DL=5.4, BC DL=4.2, ASCE 7-10, (All Heights), Enclosed, Cat.2, Exp.C, MWFRS (Dir), load duration factor=1.6, End vertical(s) not exposed to wind, Bottom chord at cantilevered end(s) not exposed to wind, Truss designed for wind loads in the plane of the truss only.

Max CSI: TC:0.48 BC:0.42 Web:0.70



JOB NAME:

Scale: 0.3284

Truss: MONA

DATE: 9/16/2019
SEQ.: K6664864
TRANS ID: LINK

WARNINGS:

- Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
- 2x4 compression web bracing must be installed where shown +.
- 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.
- No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
- CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
- This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

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GENERAL NOTES, unless otherwise noted:

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- Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
- 2x Impact bridging or lateral bracing required where shown +.
- Installation of truss is the responsibility of the respective contractor.
- Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
- Design assumes full bearing at all supports shown. Shim or wedge if necessary.
- Design assumes adequate drainage is provided.
- Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
- Digits indicate size of plate in inches.
- For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



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LUMBER SPECIFICATIONS
TC: 2x4 DF #2
BC: 2x4 DF #2
WEBS: 2x4 DF STAND

TRUSS SPAN 13'- 10.0"
LOAD DURATION INCREASE = 1.25
SPACED 24.0" O.C.

CBC2016/IBC2015	MAX MEMBER FORCES	4WR/GDF/Cq=1.00
1-2=(0)	28	2-7=(-257) 893
2-3=(-966) 128	7-8=(-261) 886	3-8=(-939) 274
3-4=(-85) 54		8-4=(-430) 237
4-5=(-63) 32		
5-6=(-32) 0		

TC LATERAL SUPPORT <= 12"OC. UON.
BC LATERAL SUPPORT <= 12"OC. UON.

LOADING
LL(20.0)+DL(9.0) ON TOP CHORD = 29.0 PSF
DL ON BOTTOM CHORD = 7.0 PSF
TOTAL LOAD = 36.0 PSF

OVERHANGS: 24.0" 24.0"

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP
AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

BEARING LOCATIONS	MAX VERT REACTIONS	MAX HORIZ REACTIONS	BRG SIZE	REQUIRED BRG AREA SQ. IN. (SPECIES)
0'- 0.0"	-121/ 598V	0/ 144H	5.50"	0.96 DF (625)
12'- 11.0"	-106/ 736V	0/ 0H	1.75"	1.18 DF (625)
13'- 10.0"	-236/ 108V	0/ 0H	5.50"	0.16 DF (625)

Unbalanced live loads have been considered for this design.

PROVIDE FULL BEARING; Jts: 2, 8, 5

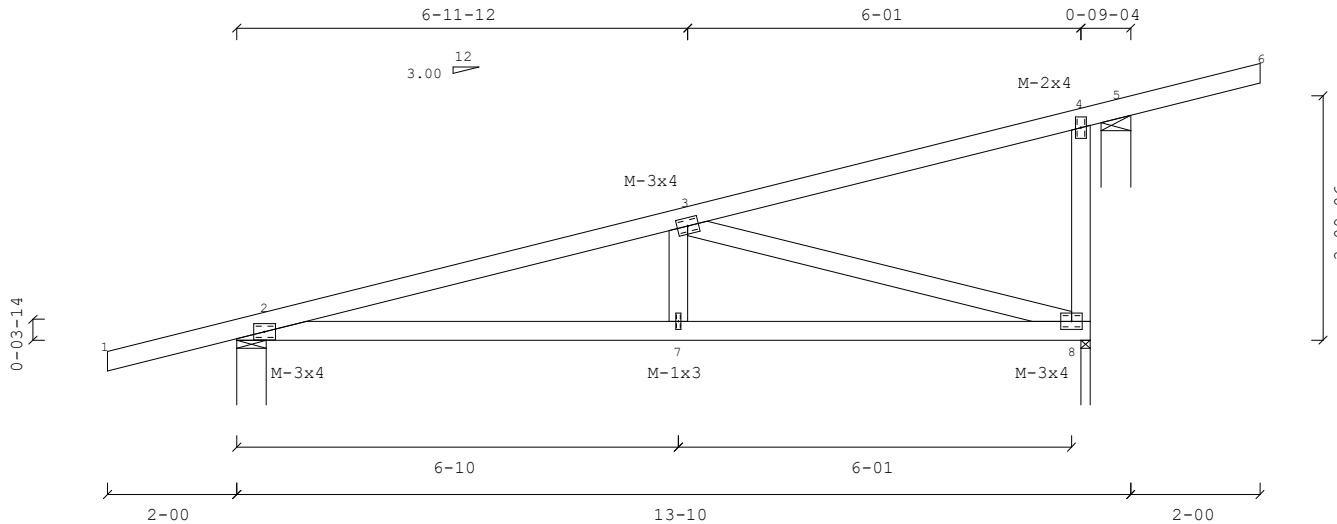
VERTICAL DEFLECTION LIMITS: LL=L/360, TL=L/240
MAX LL DEFL = 0.038" @ -2'- 0.0" Allowed = 0.133"
MAX TL DEFL = 0.035" @ -2'- 0.0" Allowed = 0.200"
MAX LL DEFL = -0.034" @ 6'- 10.0" Allowed = 0.420"
MAX TL CREEP DEFL = -0.090" @ 6'- 10.0" Allowed = 0.630"
MAX LL DEFL = 0.022" @ 15'- 10.0" Allowed = 0.133"
MAX TL CREEP DEFL = -0.033" @ 15'- 10.0" Allowed = 0.200"

MAX HORIZ. LL DEFL = -0.009" @ 12'- 11.0"
MAX HORIZ. TL DEFL = 0.016" @ 12'- 11.0"

Design conforms to main windforce-resisting system and components and cladding criteria.

Wind: 110 mph, h=15ft, TC DL=5.4, BC DL=4.2, ASCE 7-10, (All Heights), Enclosed, Cat.2, Exp.C, MWFRS (Dir), load duration factor=1.6, End vertical(s) not exposed to wind, Bottom chord at cantilevered end(s) not exposed to wind, Truss designed for wind loads in the plane of the truss only.

Max CSI: TC:0.47 BC:0.40 Web:0.68



JOB NAME:

Scale: 0.3367

Truss: MONB

DATE: 9/16/2019
SEQ.: K6664865
TRANS ID: LINK

WARNINGS:

- Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
- 2x4 compression web bracing must be installed where shown +.
- 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.
- No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
- CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
- This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

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GENERAL NOTES, unless otherwise noted:

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- Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
- 2x Impact bridging or lateral bracing required where shown +.
- Installation of truss is the responsibility of the respective contractor.
- Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
- Design assumes full bearing at all supports shown. Shim or wedge if necessary.
- Design assumes adequate drainage is provided.
- Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
- Digits indicate size of plate in inches.
- For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



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LUMBER SPECIFICATIONS

TC: 2x4 DF #2
BC: 2x6 DF #2
WEBS: 2x4 DF #2

TC LATERAL SUPPORT <= 12"OC. UON.
BC LATERAL SUPPORT <= 12"OC. UON.

OVERHANGS: 24.0" 24.0"

Unbalanced live loads have been considered for this design.

TRUSS SPAN 13'- 10.0"
LOAD DURATION INCREASE = 1.25 (Non-Rep)
SPACED 24.0" O.C.

LOADING
LL(20.0)+DL(9.0) ON TOP CHORD = 29.0 PSF
DL ON BOTTOM CHORD = 7.0 PSF
TOTAL LOAD = 36.0 PSF

ADDL: BC CONC LL+DL= 601.0 LBS @ 9'- 5.2"

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

CBC2016/IBC2015	MAX MEMBER FORCES	4WR/GDF/Cq=1.00
1-2=(0)	28	2-7=(-162) 1598
2-3=(-1694)	79	7-3=(0) 544
3-4=(-75)	43	3-8=(-1670) 173
4-5=(-72)	15	8-4=(-335) 141
5-6=(-32)	0	

BEARING LOCATIONS	MAX VERT REACTIONS	MAX HORIZ REACTIONS	BRG SIZE	REQUIRED BRG AREA SQ.IN. (SPECIES)
0'- 0.0"	-136/ 769V	0/ 143H	5.50"	1.23 DF (625)
12'- 11.0"	-108/ 1102V	0/ 0H	1.75"	1.76 DF (625)
13'- 10.0"	-173/ 168V	0/ 0H	5.50"	0.25 DF (625)

PROVIDE FULL BEARING: Jts: 2, 8, 5

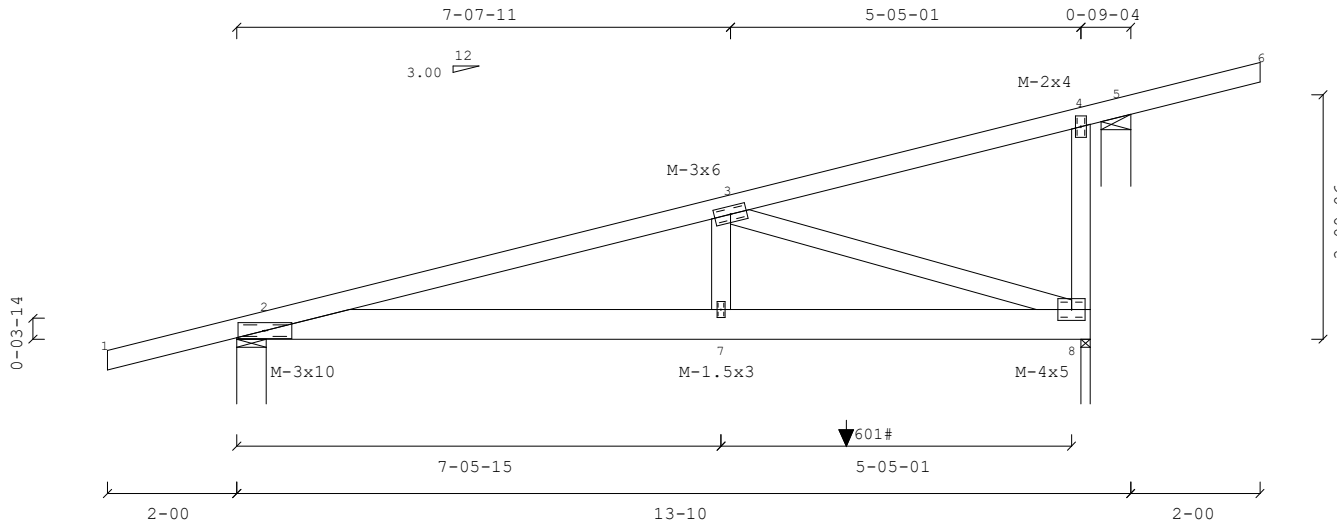
VERTICAL DEFLECTION LIMITS: LL=L/360, TL=L/240
 MAX LL DEFL = 0.038" @ -2'- 0.0" Allowed = 0.133"
 MAX TL DEFL = 0.035" @ -2'- 0.0" Allowed = 0.200"
 MAX LL DEFL = -0.064" @ 7'- 5.9" Allowed = 0.420"
 MAX TL CREEP DEFL = -0.105" @ 7'- 5.9" Allowed = 0.630"
 MAX LL DEFL = 0.022" @ 15'- 10.0" Allowed = 0.133"
 MAX TL CREEP DEFL = -0.033" @ 15'- 10.0" Allowed = 0.200"

MAX HORIZ. LL DEFL = 0.014" @ 12'- 11.0"
 MAX HORIZ. TL DEFL = 0.018" @ 12'- 11.0"

Design conforms to main windforce-resisting system and components and cladding criteria.

Wind: 110 mph, h=15ft, TCCL=5.4,BCDL=4.2, ASCE 7-10, (All Heights), Enclosed, Cat.2, Exp.C, MWFRS(Dir), load duration factor=1.6, End vertical(s) not exposed to wind, Bottom chord at cantilevered end(s) not exposed to wind, Truss designed for wind loads in the plane of the truss only.

Max CSI: TC:0.79 BC:0.90 Web:0.86



JOB NAME:

Scale: 0.3367

Truss: MONBGT

DATE: 9/16/2019
SEQ.: K6664866
TRANS ID: LINK

WARNINGS:

- Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
- 2x4 compression web bracing must be installed where shown +.
- 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.
- No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
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- Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
- 2x Impact bridging or lateral bracing required where shown +.
- Installation of truss is the responsibility of the respective contractor.
- Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
- Design assumes full bearing at all supports shown. Shim or wedge if necessary.
- Design assumes adequate drainage is provided.
- Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
- Digits indicate size of plate in inches.
- For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



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LUMBER SPECIFICATIONS

TC: 2x4 DF #2
BC: 2x4 DF #2

TC LATERAL SUPPORT <= 12"OC. UON.
BC LATERAL SUPPORT <= 12"OC. UON.

Unbalanced live loads have been considered for this design.

TRUSS SPAN 13'- 10.0"
LOAD DURATION INCREASE = 1.25
SPACED 24.0" O.C.

LOADING

LL (20.0)+DL (9.0) ON TOP CHORD = 29.0 PSF
DL ON BOTTOM CHORD = 7.0 PSF
TOTAL LOAD = 36.0 PSF

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

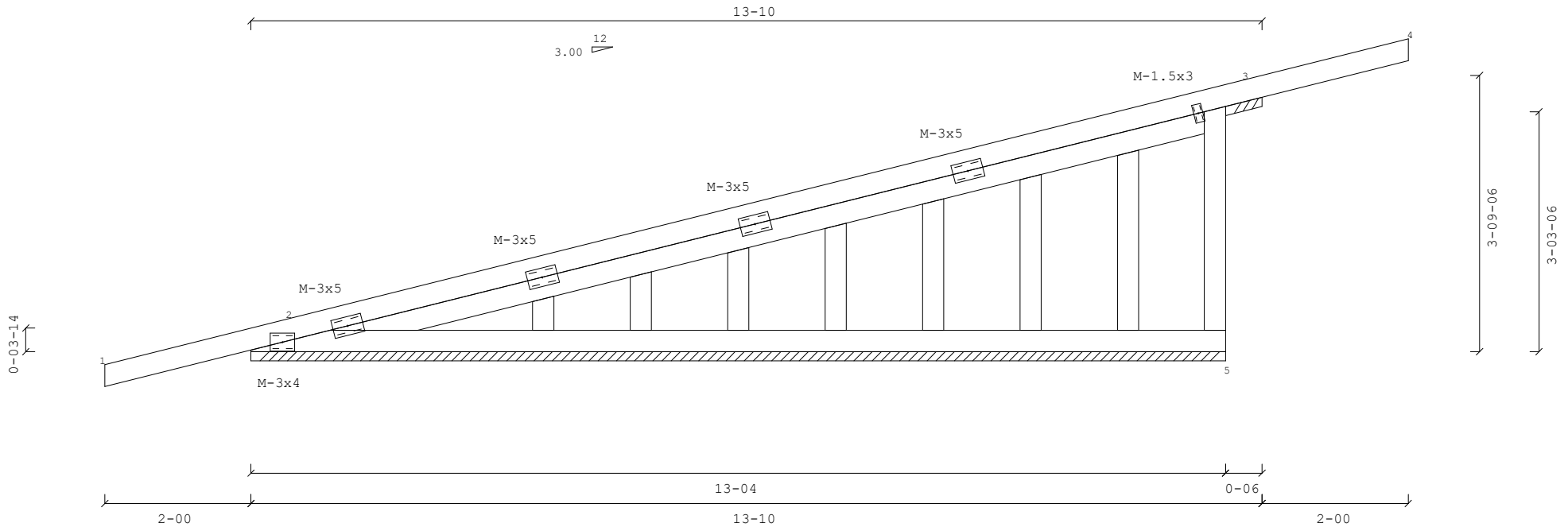
Design conforms to main windforce-resisting system and components and cladding criteria.

Wind: 110 mph, h=15ft, TCCL=5.4,BCDL=4.2, ASCE 7-10, (All Heights), Enclosed, Cat.2, Exp.C, MWFRS(Dir), load duration factor=1.6, Bottom chord at cantilevered end(s) not exposed to wind, Truss designed for wind loads in the plane of the truss only.

Gable end truss on continuous bearing wall UON. M-1x2 or equal typical at stud verticals. Refer to CompuTrus gable end detail for complete specifications.

Max CSI: TC:0.00 BC:0.00 Web:0.00

Truss designed for 4x2 outlookers. 2x4 let-ins of the same size and grade as structural top chord. Insure tight fit at each end of let-in. Outlookers must be cut with care and are permissible at inlet board areas only.



JOB NAME:

Scale: 0.4789

Truss: MONBGAB

DATE: 9/16/2019
SEQ.: K6664867
TRANS ID: LINK

WARNINGS:

1. Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
2. 2x4 compression web bracing must be installed where shown +.
3. 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.
4. No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
5. CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
6. This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

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2. Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
3. 2x Impact bridging or lateral bracing required where shown +.
4. Installation of truss is the responsibility of the respective contractor.
5. Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
6. Design assumes full bearing at all supports shown. Shim or wedge if necessary.
7. Design assumes adequate drainage is provided.
8. Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
9. Digits indicate size of plate in inches.
10. For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



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LUMBER SPECIFICATIONS

TC: 2x4 DF #2
BC: 2x4 DF #2
WEBS: 2x4 DF STAND

TC LATERAL SUPPORT <= 12"OC. UON.
BC LATERAL SUPPORT <= 12"OC. UON.

OVERHANGS: 24.0" 24.0"

Unbalanced live loads have been considered for this design.

TRUSS SPAN 13'- 10.0"
LOAD DURATION INCREASE = 1.25
SPACED 24.0" O.C.

LOADING

LL(20.0)+DL(9.0) ON TOP CHORD = 29.0 PSF
DL ON BOTTOM CHORD = 7.0 PSF
TOTAL LOAD = 36.0 PSF

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

CBC2016/IBC2015	MAX MEMBER FORCES	4WR/GDF/Cq=1.00
1-2=(0)	28	2-7=(-257) 893
2-3=(-966)	128	7-8=(-261) 886
3-4=(-85)	54	3-8=(-939) 274
4-5=(-63)	32	8-4=(-430) 237
5-6=(-32)	0	

BEARING LOCATIONS	MAX VERT REACTIONS	MAX HORIZ REACTIONS	BRG SIZE	REQUIRED BRG AREA SQ.IN. (SPECIES)
0'- 0.0"	-121/ 598V	0/ 144H	5.50"	0.96 DF (625)
12'- 11.0"	-106/ 736V	0/ 0H	1.75"	1.18 DF (625)
13'- 10.0"	-236/ 108V	0/ 0H	5.50"	0.16 DF (625)

PROVIDE FULL BEARING; Jts:2,8,5

VERTICAL DEFLECTION LIMITS: LL=L/360, TL=L/240
 MAX LL DEFL = 0.038" @ -2'- 0.0" Allowed = 0.133"
 MAX TL DEFL = 0.035" @ -2'- 0.0" Allowed = 0.200"
 MAX LL DEFL = -0.034" @ 6'- 10.0" Allowed = 0.420"
 MAX TL CREEP DEFL = -0.090" @ 6'- 10.0" Allowed = 0.630"
 MAX LL DEFL = 0.022" @ 15'- 10.0" Allowed = 0.133"
 MAX TL CREEP DEFL = -0.033" @ 15'- 10.0" Allowed = 0.200"

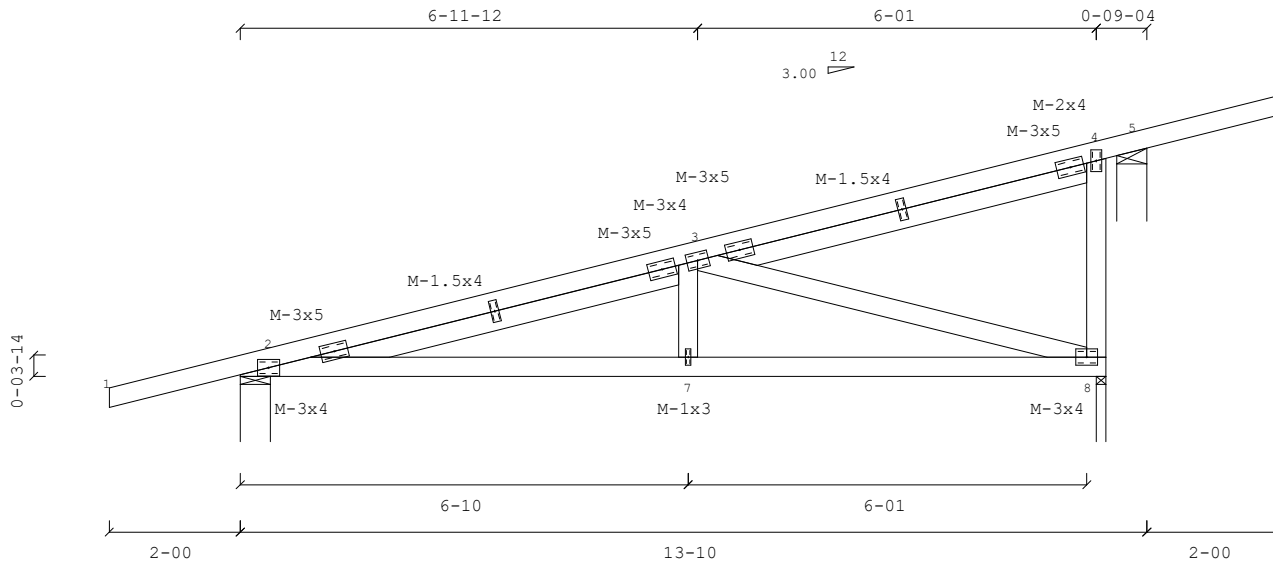
MAX HORIZ. LL DEFL = -0.009" @ 12'- 11.0"
 MAX HORIZ. TL DEFL = 0.016" @ 12'- 11.0"

Design conforms to main windforce-resisting system and components and cladding criteria.

Wind: 110 mph, h=15ft, TC DL=5.4, BCDL=4.2, ASCE 7-10, (All Heights), Enclosed, Cat.2, Exp.C, MWFRS(Dir), load duration factor=1.6, End vertical(s) not exposed to wind, Bottom chord at cantilevered end(s) not exposed to wind, Truss designed for wind loads in the plane of the truss only.

Max CSI: TC:0.47 BC:0.40 Web:0.68

Truss designed for 4x2 outlookers. 2x4 let-ins of the same size and grade as structural top chord. Insure tight fit at each end of let-in. Outlookers must be cut with care and are permissible at inlet board areas only.



JOB NAME:

Scale: 0.3414

Truss: MONBDT

DATE: 9/16/2019
SEQ.: K6664868
TRANS ID: LINK

WARNINGS:

- Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
- 2x4 compression web bracing must be installed where shown +.
- 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.
- No load should be applied to any component until after all bracing and fasteners are complete and no time should any loads greater than design loads be applied to any component.
- CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
- This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

MiTek USA, Inc./CompuTrus Software 7.6.8(1L)-E

GENERAL NOTES, unless otherwise noted:

- This design is based only upon the parameters shown and is for an individual building component. Applicability of design parameters and proper incorporation of component is the responsibility of the building designer.
- Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
- 2x Impact bridging or lateral bracing required where shown +.
- Installation of truss is the responsibility of the respective contractor.
- Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
- Design assumes full bearing at all supports shown. Shim or wedge if necessary.
- Design assumes adequate drainage is provided.
- Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
- Digits indicate size of plate in inches.
- For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



September 16, 2019

This design prepared from computer input by
Type in your company name here!

LUMBER SPECIFICATIONS

TC: 2x4 DF #2
BC: 2x4 DF #2
WEBS: 2x4 DF STAND

TC LATERAL SUPPORT <= 12"OC. UON.
BC LATERAL SUPPORT <= 12"OC. UON.

OVERHANGS: 24.0" 0.0"

M-1x3 or equal at non-structural
vertical members (uon).

TRUSS SPAN 13'- 11.6"
LOAD DURATION INCREASE = 1.25
SPACED 24.0" O.C.

LOADING
LL(20.0)+DL(9.0) ON TOP CHORD = 29.0 PSF
DL ON BOTTOM CHORD = 7.0 PSF
TOTAL LOAD = 36.0 PSF

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP
AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

CBC2016/IBC2015 MAX MEMBER FORCES 4WR/GDF/Cq=1.00
1-2=(0) 28 2-6=(0) 0 6-3=(-331) 119
2-3=(-79) 42
3-4=(-47) 0
4-5=(-18) 0

BEARING LOCATIONS	MAX VERT REACTIONS	MAX HORZ REACTIONS	BRG SIZE	REQUIRED BRG AREA SQ.IN. (SPECIES)
0'- 0.0"	-102/ 194V	0/ 114H	0.00" @0 (0)	
1'- 8.2"	0/ 338V	0/ 0H	96.00" 0.54 DF (625)	
7'- 10.3"	-92/ 377V	0/ 0H	96.00" 0.60 DF (625)	
12'- 0.9"	-66/ 171V	0/ 0H	1.75" 0.23 DF (625)	
13'- 11.6"	-11/ 34V	0/ 0H	1.75" 0.05 DF (625)	

Full height blocking is required at left bearing

PROVIDE FULL BEARING: Jts:2-6,4,5

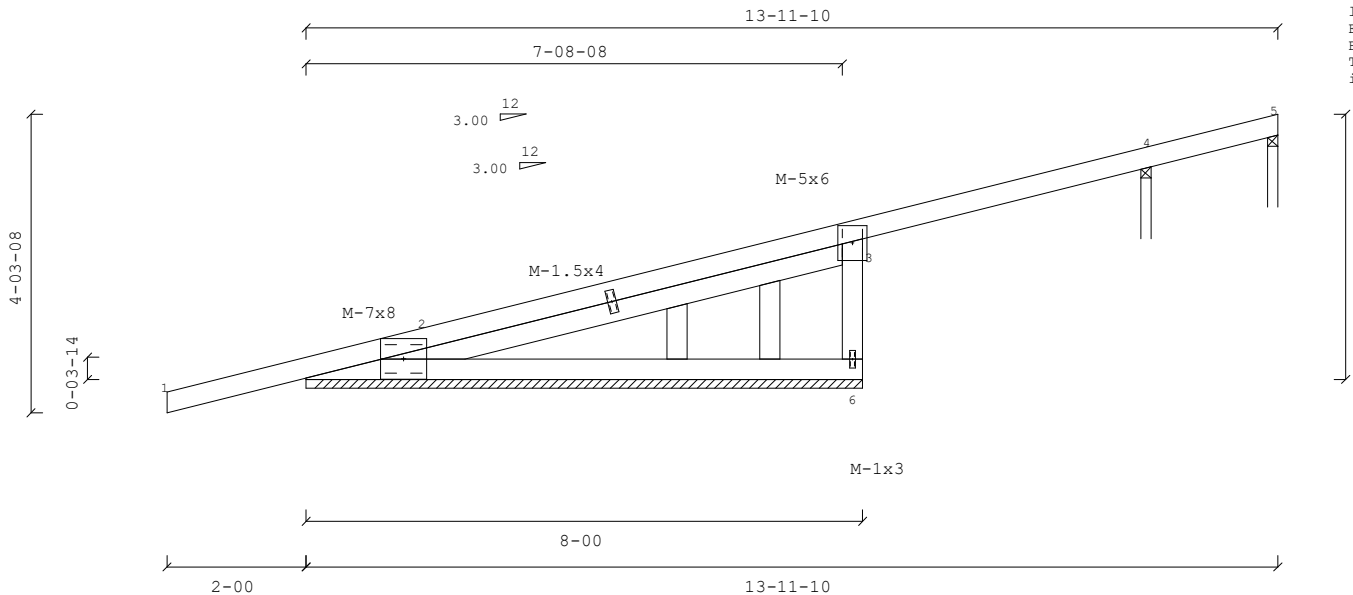
VERTICAL DEFLECTION LIMITS: LL=L/360, TL=L/240
MAX LL DEFL = 0.025" @ 2'- 0.0" Allowed = 0.133"
MAX TL CREEP DEFL = -0.031" @ 2'- 0.0" Allowed = 0.200"

MAX HORIZ. LL DEFL = -0.001" @ 13'- 10.8"
MAX HORIZ. TL DEFL = -0.001" @ 13'- 10.8"

Wind: 110 mph, h=15ft, TC DL=5.4, BCDL=4.2, ASCE 7-10,
(All Heights), Enclosed, Cat.2, Exp.C, MWFRS(Dir),
load duration factor=1.6,
End vertical(s) not exposed to wind,
Bottom chord at cantilevered end(s) not exposed to wind,
Truss designed for wind loads
in the plane of the truss only.

Max CSI: TC:0.34 BC:0.00 Web:0.04

Truss designed for 4x2 outlookers. 2x4 let-ins
of the same size and grade as structural top
chord. Insure tight fit at each end of let-in.
Outlookers must be cut with care and are
permissible at inlet board areas only.



JOB NAME:

Scale: 0.3624

Truss: 8GAB

DATE: 9/16/2019
SEQ.: K6664869
TRANS ID: LINK

WARNINGS:

- Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
- 2x4 compression web bracing must be installed where shown +.
- 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.
- No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
- CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
- This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

MiTek USA, Inc./CompuTrus Software +7.7.0(1L)-E

GENERAL NOTES, unless otherwise noted:

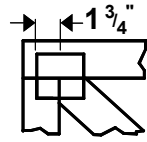
- This design is based only upon the parameters shown and is for an individual building component. Applicability of design parameters and proper incorporation of component is the responsibility of the building designer.
- Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
- 2x Impact bridging or lateral bracing required where shown +
- Installation of truss is the responsibility of the respective contractor.
- Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
- Design assumes full bearing at all supports shown. Shim or wedge if necessary.
- Design assumes adequate drainage is provided.
- Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
- Digits indicate size of plate in inches.
- For basic connector plate design values see ESR-1311, ESR-1988 (MITek)



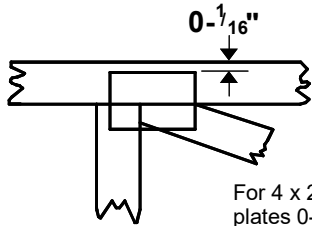
September 16, 2019

Symbols

PLATE LOCATION AND ORIENTATION



Center plate on joint unless x, y offsets are indicated. Dimensions are in ft-in-sixteenths. Apply plates to both sides of truss and fully embed teeth.



For 4 x 2 orientation, locate plates 0- $\frac{1}{16}$ " from outside edge of truss.



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

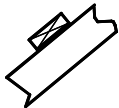
* Plate location details available in MiTek 20/20 software or upon request.

PLATE SIZE

4 x 4

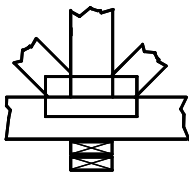
The first dimension is the plate width measured perpendicular to slots. Second dimension is the length parallel to slots.

LATERAL BRACING LOCATION



Indicated by symbol shown and/or by text in the bracing section of the output. Use T or I bracing if indicated.

BEARING

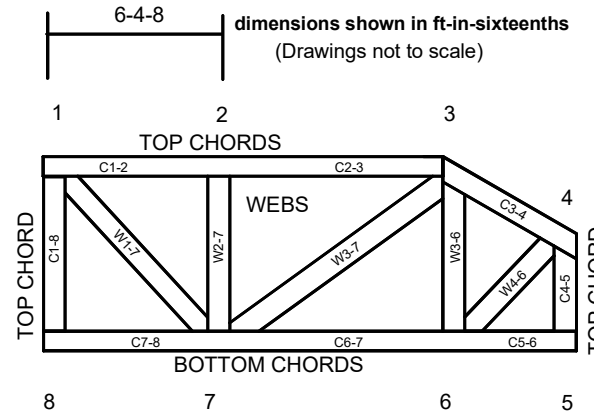


Indicates location where bearings (supports) occur. Icons vary but reaction section indicates joint number where bearings occur. Min size shown is for crushing only.

Industry Standards:

ANSI/TPI1: National Design Specification for Metal Plate Connected Wood Truss Construction.
DSB-89: Design Standard for Bracing.
BCSI: Building Component Safety Information, Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses.

Numbering System



JOINTS ARE GENERALLY NUMBERED/LETTERED CLOCKWISE AROUND THE TRUSS STARTING AT THE JOINT FARTHEST TO THE LEFT.

CHORDS AND WEBS ARE IDENTIFIED BY END JOINT NUMBERS/LETTERS.

PRODUCT CODE APPROVALS

ICC-ES Reports:

ESR-1311, ESR-1352, ESR1988
ER-3907, ESR-2362, ESR-1397, ESR-3282

Trusses are designed for wind loads in the plane of the truss unless otherwise shown.

Lumber design values are in accordance with ANSI/TPI 1 section 6.3 These truss designs rely on lumber values established by others.

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MiTek Engineering Reference Sheet: MII-7473 rev. 10/03/2015



General Safety Notes

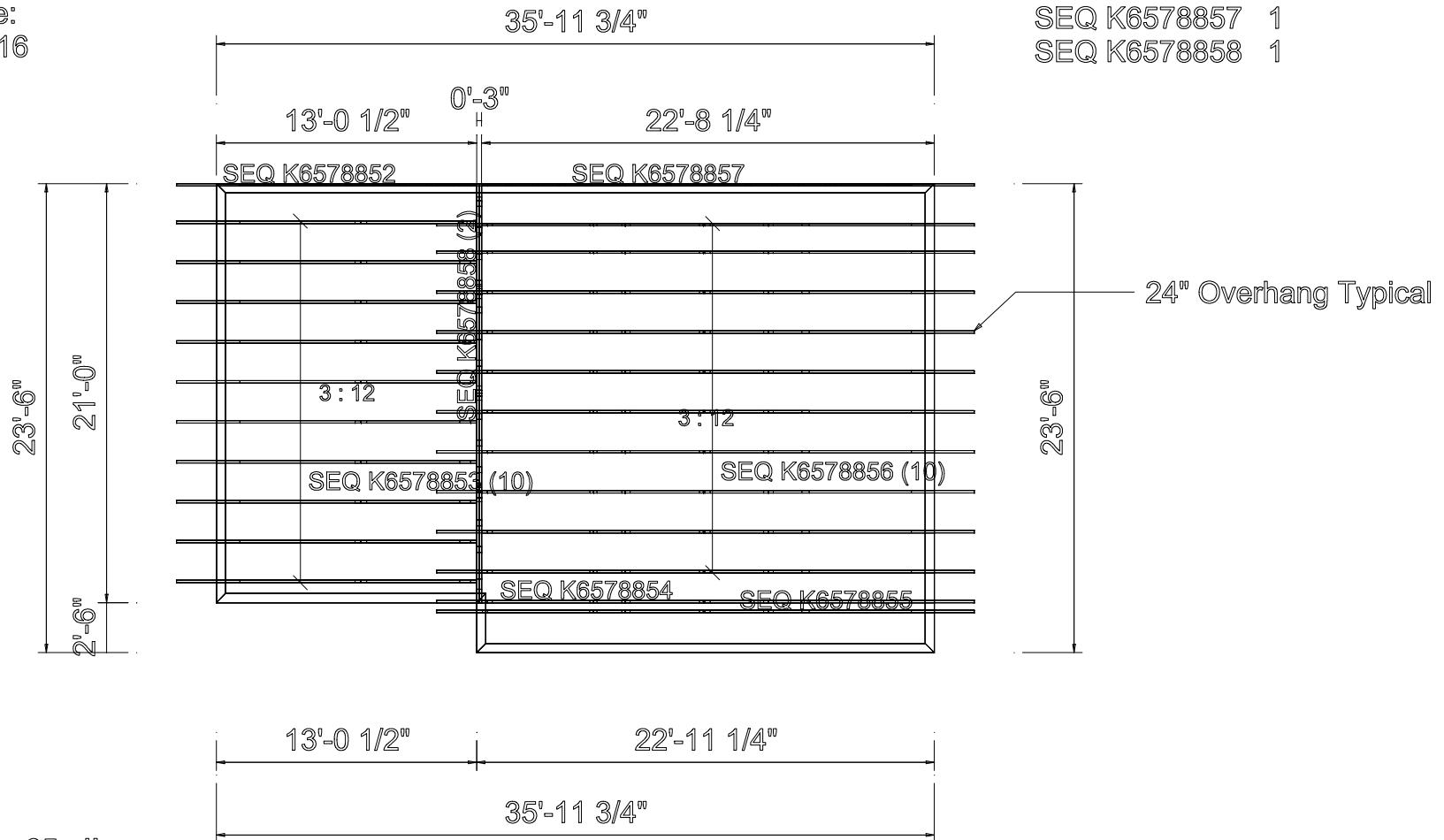
Failure to Follow Could Cause Property Damage or Personal Injury

1. Additional stability bracing for truss system, e.g. diagonal or X-bracing, is always required. See BCSI.
2. Truss bracing must be designed by an engineer. For wide truss spacing, individual lateral braces themselves may require bracing, or alternative Tor I bracing should be considered.
3. Never exceed the design loading shown and never stack materials on inadequately braced trusses.
4. Provide copies of this truss design to the building designer, erection supervisor, property owner and all other interested parties.
5. Cut members to bear tightly against each other.
6. Place plates on each face of truss at each joint and embed fully. Knots and wane at joint locations are regulated by ANSI/TPI 1.
7. Design assumes trusses will be suitably protected from the environment in accord with ANSI/TPI 1.
8. Unless otherwise noted, moisture content of lumber shall not exceed 19% at time of fabrication.
9. Unless expressly noted, this design is not applicable for use with fire retardant, preservative treated, or green lumber.
10. Camber is a non-structural consideration and is the responsibility of truss fabricator. General practice is to camber for dead load deflection.
11. Plate type, size, orientation and location dimensions indicated are minimum plating requirements.
12. Lumber used shall be of the species and size, and in all respects, equal to or better than that specified.
13. Top chords must be sheathed or purlins provided at spacing indicated on design.
14. Bottom chords require lateral bracing at 10 ft. spacing, or less, if no ceiling is installed, unless otherwise noted.
15. Connections not shown are the responsibility of others.
16. Do not cut or alter truss member or plate without prior approval of an engineer.
17. Install and load vertically unless indicated otherwise.
18. Use of green or treated lumber may pose unacceptable environmental, health or performance risks. Consult with project engineer before use.
19. Review all portions of this design (front, back, words and pictures) before use. Reviewing pictures alone is not sufficient.
20. Design assumes manufacture in accordance with ANSI/TPI 1 Quality Criteria.

Garage
 Leete Avenue
 Santa Rosa, CA

Date: 08/12/19
 DrawnBy: Andrew
 DefaultSetName:
 Walters CBC2016

Type	Qty	Hanger
SEQ K6578852	1	
SEQ K6578853	10	LUS26
SEQ K6578854	1	LUS28C
SEQ K6578855	1	
SEQ K6578856	10	LUS28
SEQ K6578857	1	
SEQ K6578858	1	



!! Warning Prop 65 !!
 Raw Wood Product Exposure and
 Metal Truss Connector Plates
 Cancer and Reproductive Harm
 Cancer y Dano Reproductivo
 More information on the web.
www.P65Warning.ca.gov/wood
www.P65Warning.ca.gov
www.mitek-us.com/products/prop65
 Mitek 1-800-328-5934

WALTERS LUMBER INC.
 9293 OLD REDWOOD HWY.
 PENNGROVE CA, 94951

Phone 707.795.3277
 Email walterslumber@sbcglobal.net

**MiTek USA, Inc.**

250 Klug Circle
Corona, CA 92880
951-245-9525

Re: Leete Ave
ROOF DESIGN INFO

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

Pages or sheets covered by this seal: K6578852 thru K6578858

My license renewal date for the state of California is September 30, 2020.



August 23, 2019

Zhao, Xiaoming

IMPORTANT NOTE: The seal on these truss component designs is a certification that the engineer named is licensed in the jurisdiction(s) identified and that the designs comply with ANSI/TPI 1. These designs are based upon parameters shown (e.g., loads, supports, dimensions, shapes and design codes), which were given to MiTek or TRENCO. Any project specific information included is for MiTek's or TRENCO's customers file reference purpose only, and was not taken into account in the preparation of these designs. MiTek or TRENCO has not independently verified the applicability of the design parameters or the designs for any particular building. Before use, the building designer should verify applicability of design parameters and properly incorporate these designs into the overall building design per ANSI/TPI 1, Chapter 2.

LUMBER SPECIFICATIONS

TC: 2x4 DF #2
 BC: 2x4 DF #2

TC LATERAL SUPPORT <= 12"OC. UON.
 BC LATERAL SUPPORT <= 12"OC. UON.

TRUSS SPAN 13'- 0.5"
 LOAD DURATION INCREASE = 1.25
 SPACED 24.0" O.C.

LOADING
 LL (20.0) + DL (9.0) ON TOP CHORD = 29.0 PSF
 DL ON BOTTOM CHORD = 7.0 PSF
 TOTAL LOAD = 36.0 PSF

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP
 AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

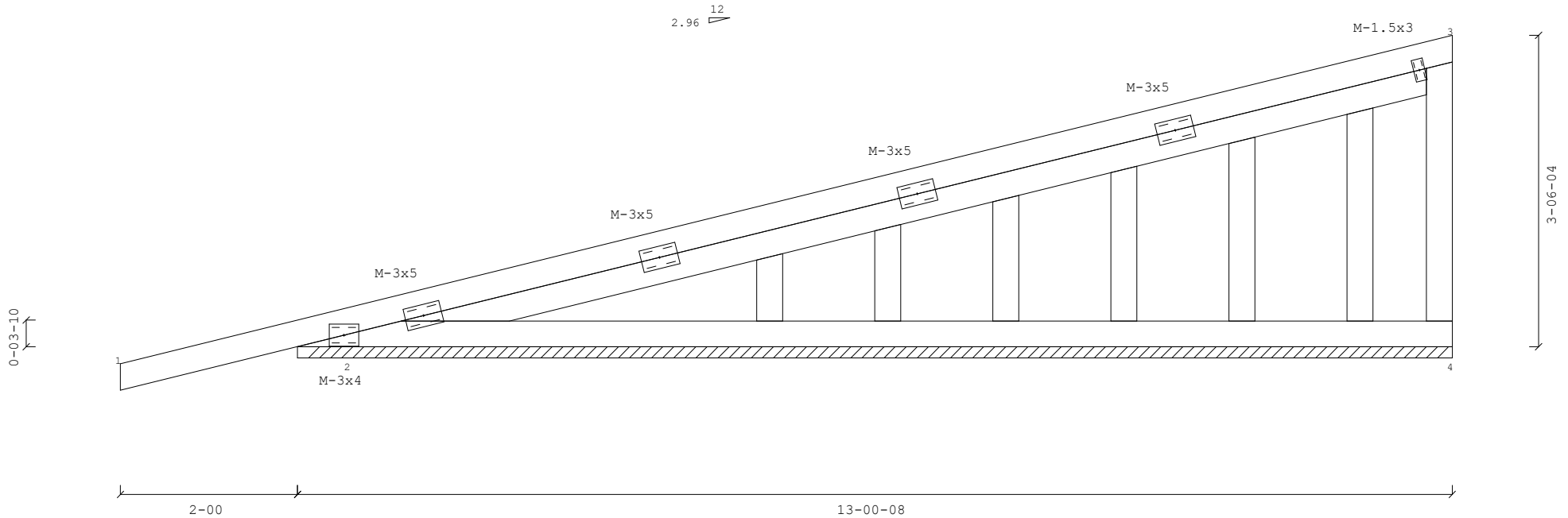
Design conforms to main windforce-resisting
 system and components and cladding criteria.

Wind: 110 mph, h=15ft, TC DL=5.4, BC DL=4.2, ASCE 7-10,
 (All Heights), Enclosed, Cat.2, Exp.C, MWFRS (Dir),
 load duration factor=1.6,
 Bottom chord at cantilevered end(s) not exposed to wind,
 Truss designed for wind loads
 in the plane of the truss only.

Gable end truss on continuous bearing wall UON.
 M-1x2 or equal typical at stud verticals.
 Refer to CompuTrus gable end detail for
 complete specifications.

Max CSI: TC:0.00 BC:0.00 Web:0.00

Truss designed for 4x2 outlookers. 2x4 let-ins
 of the same size and grade as structural top
 chord. Insure tight fit at each end of let-in.
 Outlookers must be cut with care and are
 permissible at inlet board areas only.



JOB NAME:

Scale: 0.5801

Truss: 13_GAB

DATE: 8/23/2019
 SEQ.: K6578852
 TRANS ID: LINK

WARNINGS:

1. Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
2. 2x4 compression web bracing must be installed where shown +.
3. 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.
4. No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
5. CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
6. This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

MiTek USA, Inc./CompuTrus Software 7.6.8(1L)-E

GENERAL NOTES, unless otherwise noted:

1. This design is based only upon the parameters shown and is for an individual building component. Applicability of design parameters and proper incorporation of component is the responsibility of the building designer.
2. Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
3. 2x Impact bridging or lateral bracing required where shown +.
4. Installation of truss is the responsibility of the respective contractor.
5. Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
6. Design assumes full bearing at all supports shown. Shim or wedge if necessary.
7. Design assumes adequate drainage is provided.
8. Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
9. Digits indicate size of plate in inches.
10. For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



August 23, 2019

LUMBER SPECIFICATIONS
 TC: 2x4 DF #2
 BC: 2x4 DF #2
 WEBS: 2x4 DF STAND

TRUSS SPAN 13'- 0.5"
 LOAD DURATION INCREASE = 1.25
 SPACED 24.0" O.C.

CBC2016/IBC2015	MAX MEMBER FORCES	4WR/GDF/Cq=1.00
1-2=(0) 27	2-5=(-310) 922	5-3=(0) 256
2-3=(-995) 220	5-6=(-314) 916	3-6=(-967) 334
3-4=(-45) 14		6-4=(-137) 108

TC LATERAL SUPPORT <= 12"OC. UON.
 BC LATERAL SUPPORT <= 12"OC. UON.

LOADING
 LL(20.0)+DL(9.0) ON TOP CHORD = 29.0 PSF
 DL ON BOTTOM CHORD = 7.0 PSF
 TOTAL LOAD = 36.0 PSF

BEARING LOCATIONS	MAX VERT REACTIONS	MAX HORIZ REACTIONS	BRG SIZE	REQUIRED BRG AREA SQ.IN.	(SPECIES)
0'- 0.0"	-133/ 606V	0/ 113H	5.50"	0.97	DF (625)
13'- 0.5"	-73/ 463V	0/ 0H	1.75"	0.74	DF (625)

OVERHANGS: 24.0" 0.0"

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

** For hanger specs. - See approved plans

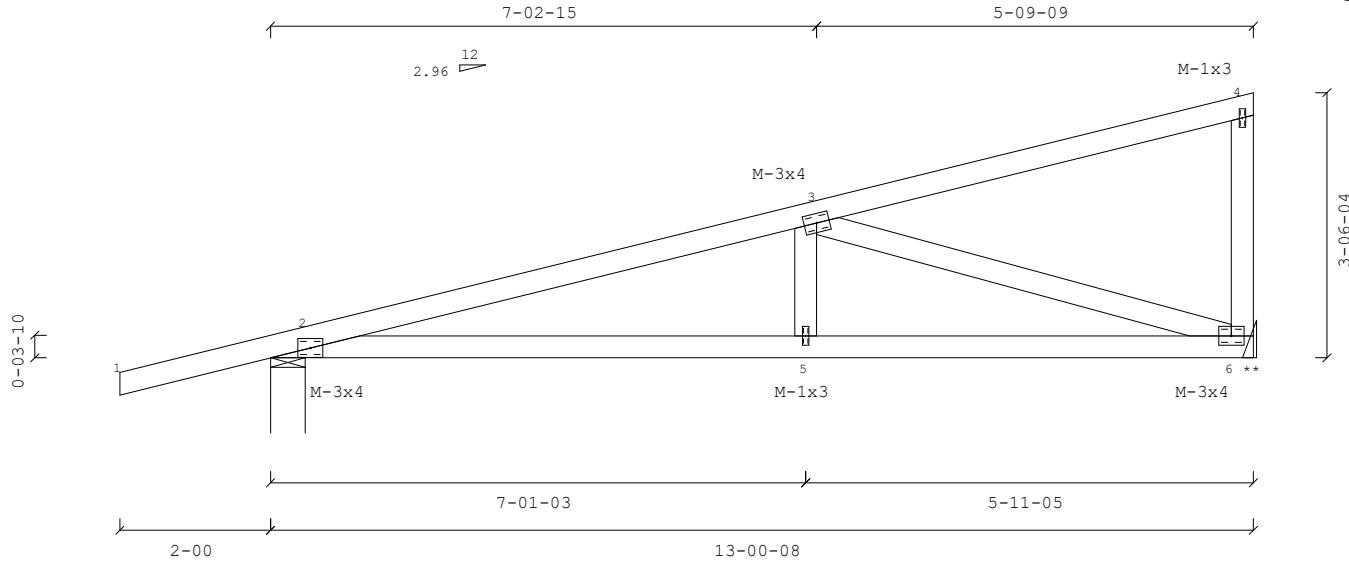
VERTICAL DEFLECTION LIMITS: LL=L/360, TL=L/240
 MAX LL DEFL = 0.038" @ -2'- 0.0" Allowed = 0.133"
 MAX TL DEFL = 0.035" @ -2'- 0.0" Allowed = 0.200"
 MAX LL DEFL = 0.034" @ 7'- 1.2" Allowed = 0.415"
 MAX TL CREEP DEFL = -0.088" @ 7'- 1.2" Allowed = 0.622"

MAX HORIZ. LL DEFL = -0.010" @ 12'- 9.0"
 MAX HORIZ. TL DEFL = 0.016" @ 12'- 9.0"

Design conforms to main windforce-resisting system and components and cladding criteria.

Wind: 110 mph, h=15ft, TCCL=5.4,BCDL=4.2, ASCE 7-10, (All Heights), Enclosed, Cat.2, Exp.C, MWFRS(Dir), load duration factor=1.6, End vertical(s) not exposed to wind, Bottom chord at cantilevered end(s) not exposed to wind, Truss designed for wind loads in the plane of the truss only.

Max CSI: TC:0.51 BC:0.40 Web:0.61



JOB NAME:

Scale: 0.3926

Truss: 13_MON

DATE: 8/23/2019
 SEQ.: K6578853
 TRANS ID: LINK

WARNINGS:

1. Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
2. 2x4 compression web bracing must be installed where shown +.
3. 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.
4. No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
5. CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
6. This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

MiTek USA, Inc./CompuTrus Software 7.6.8(1L)-E

GENERAL NOTES, unless otherwise noted:

1. This design is based only upon the parameters shown and is for an individual building component. Applicability of design parameters and proper incorporation of component is the responsibility of the building designer.
2. Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
3. 2x Impact bridging or lateral bracing required where shown +.
4. Installation of truss is the responsibility of the respective contractor.
5. Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
6. Design assumes full bearing at all supports shown. Shim or wedge if necessary.
7. Design assumes adequate drainage is provided.
8. Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
9. Digits indicate size of plate in inches.
10. For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



August 23, 2019

LUMBER SPECIFICATIONS
 TC: 2x4 DF #2
 BC: 2x4 DF #2
 WEBS: 2x4 DF STAND

TC LATERAL SUPPORT <= 12"OC. UON.
 BC LATERAL SUPPORT <= 12"OC. UON.

OVERHANGS: 24.0" 27.0"

** For hanger specs. - See approved plans

TRUSS SPAN 22'- 8.2"
 LOAD DURATION INCREASE = 1.25
 SPACED 24.0" O.C.

LOADING
 LL (20.0)+DL (9.0) ON TOP CHORD = 29.0 PSF
 DL ON BOTTOM CHORD = 7.0 PSF
 TOTAL LOAD = 36.0 PSF

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP
 AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

CBC2016/IBC2015	MAX MEMBER FORCES	4WR/GDF/Cq=1.00
1- 2=(0) 28	2- 8=(-695) 2189	3- 8=(-368) 213
2- 3=(-2303) 511	8- 9=(-1102) 2169	8- 4=(-97) 520
3- 4=(-2001) 431	9-10=(-1551) 2100	4- 9=(-678) 236
4- 5=(-1036) 273		9- 5=(-82) 542
5- 6=(-279) 276		5-10=(-1010) 294
6- 7=(-35) 0		10- 6=(-312) 267

BEARING LOCATIONS	MAX VERT REACTIONS	MAX HORZ REACTIONS	BRG SIZE	REQUIRED BRG AREA SQ. IN. (SPECIES)
0'- 0.0"	-175/ 938V	-2000/ 2000H	5.50"	1.50 DF (625)
22'- 8.2"	-206/ 946V	-2000/ 2000H	1.75"	1.51 DF (625)

VERTICAL DEFLECTION LIMITS: LL=L/360, TL=L/240
 MAX LL DEFL = 0.038" @ 2'- 0.0" Allowed = 0.133"
 MAX TL DEFL = 0.035" @ 2'- 0.0" Allowed = 0.200"
 MAX LL DEFL = -0.107" @ 8'- 3.8" Allowed = 0.736"
 MAX TL CREEP DEFL = -0.278" @ 8'- 3.8" Allowed = 1.104"
 MAX LL DEFL = 0.035" @ 24'- 11.2" Allowed = 0.150"
 MAX TL CREEP DEFL = -0.052" @ 24'- 11.2" Allowed = 0.225"

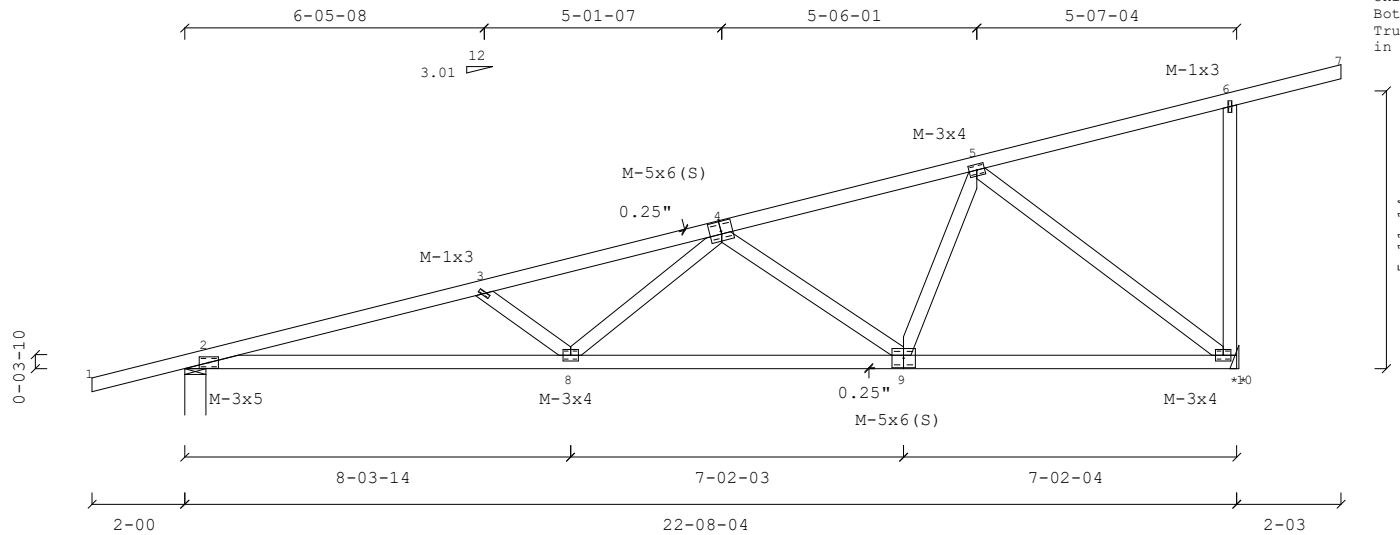
MAX HORIZ. LL DEFL = 0.047" @ 0'- 5.5"
 MAX HORIZ. TL DEFL = -0.068" @ 0'- 5.5"

COND. 2: 2000.00 LBS SEISMIC LOAD.

Design conforms to main windforce-resisting system and components and cladding criteria.

Wind: 110 mph, h=15ft, TCCL=5.4,BCDL=4.2, ASCE 7-10, (All Heights), Enclosed, Cat.2, Exp.C, MWFRS(Dir), load duration factor=1.6, Only right end vertical is exposed to wind, Bottom chord at cantilevered end(s) not exposed to wind, Truss designed for wind loads in the plane of the truss only.

Max CSI: TC:0.52 BC:0.60 Web:0.86



JOB NAME:

Scale: 0.2416

Truss: 22_8DRAG

DATE: 8/23/2019
 SEQ.: K6578854
 TRANS ID: LINK

WARNINGS:

- Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
- 2x4 compression web bracing must be installed where shown +.
- 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.
- No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
- CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
- This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

MiTek USA, Inc./CompuTrus Software 7.6.8(1L)-E

GENERAL NOTES, unless otherwise noted:

- This design is based only upon the parameters shown and is for an individual building component. Applicability of design parameters and proper incorporation of component is the responsibility of the building designer.
- Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
- 2x Impact bridging or lateral bracing required where shown +.
- Installation of truss is the responsibility of the respective contractor.
- Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
- Design assumes full bearing at all supports shown. Shim or wedge if necessary.
- Design assumes adequate drainage is provided.
- Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
- Digits indicate size of plate in inches.
- For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



August 23, 2019

LUMBER SPECIFICATIONS

TC: 2x4 DF #2
BC: 2x4 DF #2
WEBS: 2x4 DF STAND

TC LATERAL SUPPORT <= 12"OC. UON.
BC LATERAL SUPPORT <= 12"OC. UON.

OVERHANGS: 24.0" 24.0"

TRUSS SPAN 22'- 11.2"
LOAD DURATION INCREASE = 1.25
SPACED 24.0" O.C.

LOADING
LL (20.0)+DL(9.0) ON TOP CHORD = 29.0 PSF
DL ON BOTTOM CHORD = 7.0 PSF
TOTAL LOAD = 36.0 PSF

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP
AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

CBC2016/IBC2015	MAX MEMBER FORCES	4WR/GDF/Cq=1.00
1- 2=(0) 28	2- 8=(-712) 2218	3- 8=(-368) 213
2- 3=(-2337) 518	8- 9=(-476) 1551	8- 4=(-98) 519
3- 4=(-2035) 438	9-10=(-263) 824	4- 9=(-672) 231
4- 5=(-1074) 279		9- 5=(-77) 546
5- 6=(-131) 79		5-10=(-1040) 301
6- 7=(-31) 0		10- 6=(-295) 251

BEARING LOCATIONS	MAX VERT REACTIONS	MAX HORZ REACTIONS	BRG SIZE	REQUIRED BRG AREA SQ. IN.	(SPECIES)
0'- 0.0"	-178/ 949V	-64/ 207H	5.50"	1.52	DF (625)
22'- 11.2"	-198/ 939V	0/ 0H	5.50"	1.50	DF (625)

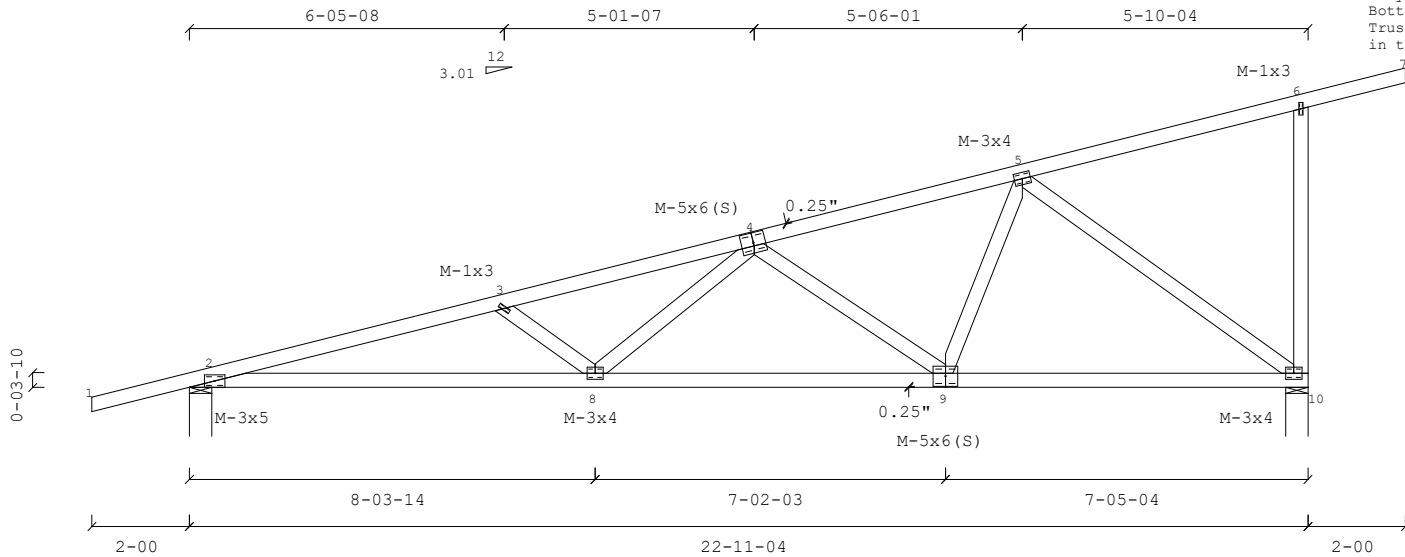
VERTICAL DEFLECTION LIMITS: LL=L/360, TL=L/240
 MAX LL DEFL = 0.038" @ 2'- 0.0" Allowed = 0.133"
 MAX TL DEFL = 0.035" @ 2'- 0.0" Allowed = 0.200"
 MAX LL DEFL = -0.110" @ 8'- 3.8" Allowed = 0.734"
 MAX TL CREEP DEFL = -0.285" @ 8'- 3.8" Allowed = 1.101"
 MAX LL DEFL = 0.022" @ 24'- 11.2" Allowed = 0.133"
 MAX TL CREEP DEFL = -0.033" @ 24'- 11.2" Allowed = 0.200"

MAX HORIZ. LL DEFL = -0.028" @ 22'- 7.7"
 MAX HORIZ. TL DEFL = 0.049" @ 22'- 7.7"

Design conforms to main windforce-resisting system and components and cladding criteria.

Wind: 110 mph, h=15ft, TC=1.0, BCDL=4.2, ASCE 7-10, (All Heights), Enclosed, Cat.2, Exp.C, MWFRS(Dir), load duration factor=1.6, Only right end vertical is exposed to wind, Bottom chord at cantilevered end(s) not exposed to wind, Truss designed for wind loads in the plane of the truss only.

Max CSI: TC:0.52 BC:0.62 Web:0.93



JOB NAME:

Scale: 0.2541

Truss: 22_8MONB

DATE: 8/23/2019
SEQ.: K6578855
TRANS ID: LINK

WARNINGS:

- Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
- 2x4 compression web bracing must be installed where shown +.
- 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.
- No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
- CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
- This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

MiTek USA, Inc./CompuTrus Software 7.6.8(1L)-E

GENERAL NOTES, unless otherwise noted:

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- Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
- 2x Impact bridging or lateral bracing required where shown +.
- Installation of truss is the responsibility of the respective contractor.
- Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
- Design assumes full bearing at all supports shown. Shim or wedge if necessary.
- Design assumes adequate drainage is provided.
- Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
- Digits indicate size of plate in inches.
- For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



August 23, 2019

LUMBER SPECIFICATIONS

TC: 2x4 DF #2
BC: 2x4 DF #2
WEBS: 2x4 DF STAND

TC LATERAL SUPPORT <= 12"OC. UON.
BC LATERAL SUPPORT <= 12"OC. UON.

OVERHANGS: 24.0" 27.0"

** For hanger specs. - See approved plans

TRUSS SPAN 22'- 8.2"
LOAD DURATION INCREASE = 1.25
SPACED 24.0" O.C.

LOADING
LL (20.0)+DL(9.0) ON TOP CHORD = 29.0 PSF
DL ON BOTTOM CHORD = 7.0 PSF
TOTAL LOAD = 36.0 PSF

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP
AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

CBC2016/IBC2015	MAX MEMBER FORCES	4WR/GDF/Cq=1.00
1- 2=(0) 28	2- 8=(-695) 2185	3- 8=(-368) 213
2- 3=(-2303) 511	8- 9=(-461) 1517	8- 4=(-97) 520
3- 4=(-2001) 431	9-10=(-242) 786	4- 9=(-678) 236
4- 5=(-1036) 273		9- 5=(-82) 542
5- 6=(-134) 78		5-10=(-1010) 294
6- 7=(-35) 0		10- 6=(-312) 267

BEARING LOCATIONS	MAX VERT REACTIONS	MAX HORZ REACTIONS	BRG SIZE	REQUIRED BRG AREA SQ. IN. (SPECIES)
0'- 0.0"	-175/ 938V	-63/ 207H	5.50"	1.50 DF (625)
22'- 8.2"	-206/ 946V	0/ 0H	1.75"	1.51 DF (625)

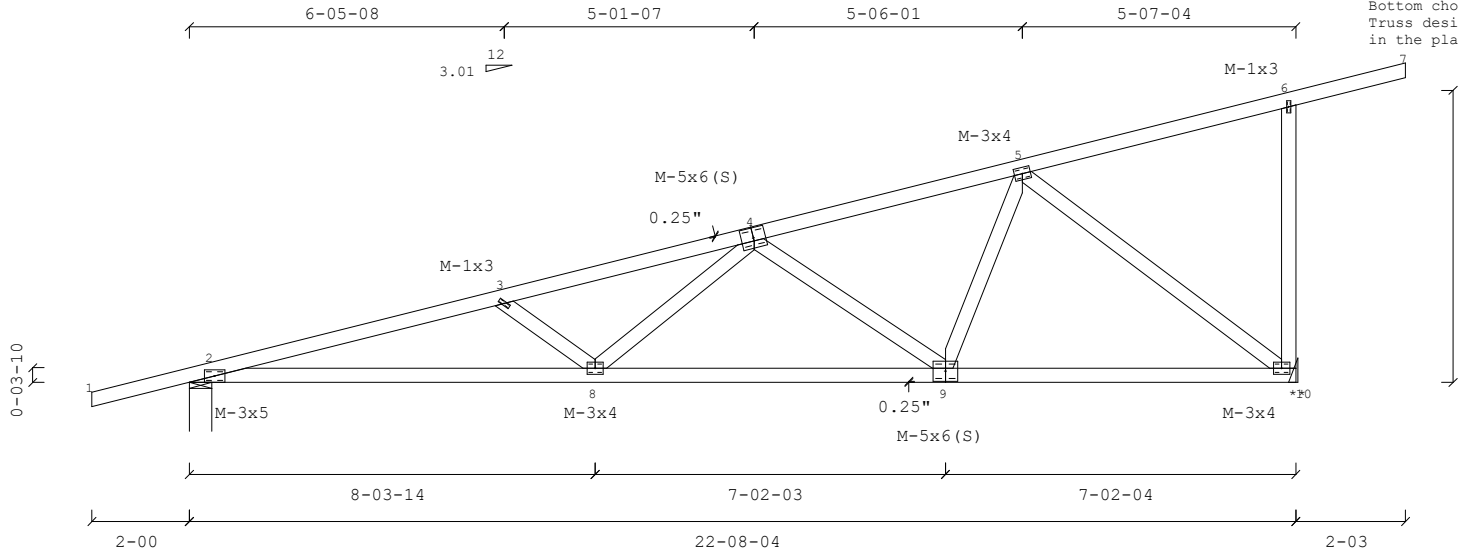
VERTICAL DEFLECTION LIMITS: LL=L/360, TL=L/240
 MAX LL DEFL = 0.038" @ 2'- 0.0" Allowed = 0.133"
 MAX TL DEFL = 0.035" @ 2'- 0.0" Allowed = 0.200"
 MAX LL DEFL = -0.107" @ 8'- 3.8" Allowed = 0.736"
 MAX TL CREEP DEFL = -0.278" @ 8'- 3.8" Allowed = 1.104"
 MAX LL DEFL = 0.035" @ 24'- 11.2" Allowed = 0.150"
 MAX TL CREEP DEFL = -0.052" @ 24'- 11.2" Allowed = 0.225"

MAX HORIZ. LL DEFL = -0.027" @ 22'- 4.7"
 MAX HORIZ. TL DEFL = 0.048" @ 22'- 4.7"

Design conforms to main windforce-resisting system and components and cladding criteria.

Wind: 110 mph, h=15ft, TC DL=5.4, BCDL=4.2, ASCE 7-10, (All Heights), Enclosed, Cat.2, Exp.C, MWFRS(Dir), load duration factor=1.6, Only right end vertical is exposed to wind, Bottom chord at cantilevered end(s) not exposed to wind, Truss designed for wind loads in the plane of the truss only.

Max CSI: TC:0.52 BC:0.60 Web:0.86



JOB NAME:

Scale: 0.2541

Truss: 22_8MONA

DATE: 8/23/2019
SEQ.: K6578856
TRANS ID: LINK

WARNINGS:

- Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
- 2x4 compression web bracing must be installed where shown +.
- 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.
- No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
- CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
- This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

MiTek USA, Inc./CompuTrus Software 7.6.8(1L)-E

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- Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
- 2x Impact bridging or lateral bracing required where shown +.
- Installation of truss is the responsibility of the respective contractor.
- Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
- Design assumes full bearing at all supports shown. Shim or wedge if necessary.
- Design assumes adequate drainage is provided.
- Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
- Digits indicate size of plate in inches.
- For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



August 23, 2019

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LUMBER SPECIFICATIONS
TC: 2x4 DF #2
BC: 2x4 DF #2

TC LATERAL SUPPORT <= 12"OC. UON.
BC LATERAL SUPPORT <= 12"OC. UON.

TRUSS SPAN 22'- 8.2"
LOAD DURATION INCREASE = 1.25
SPACED 24.0" O.C.

LOADING
LL(20.0)+DL(9.0) ON TOP CHORD = 29.0 PSF
DL ON BOTTOM CHORD = 7.0 PSF
TOTAL LOAD = 36.0 PSF

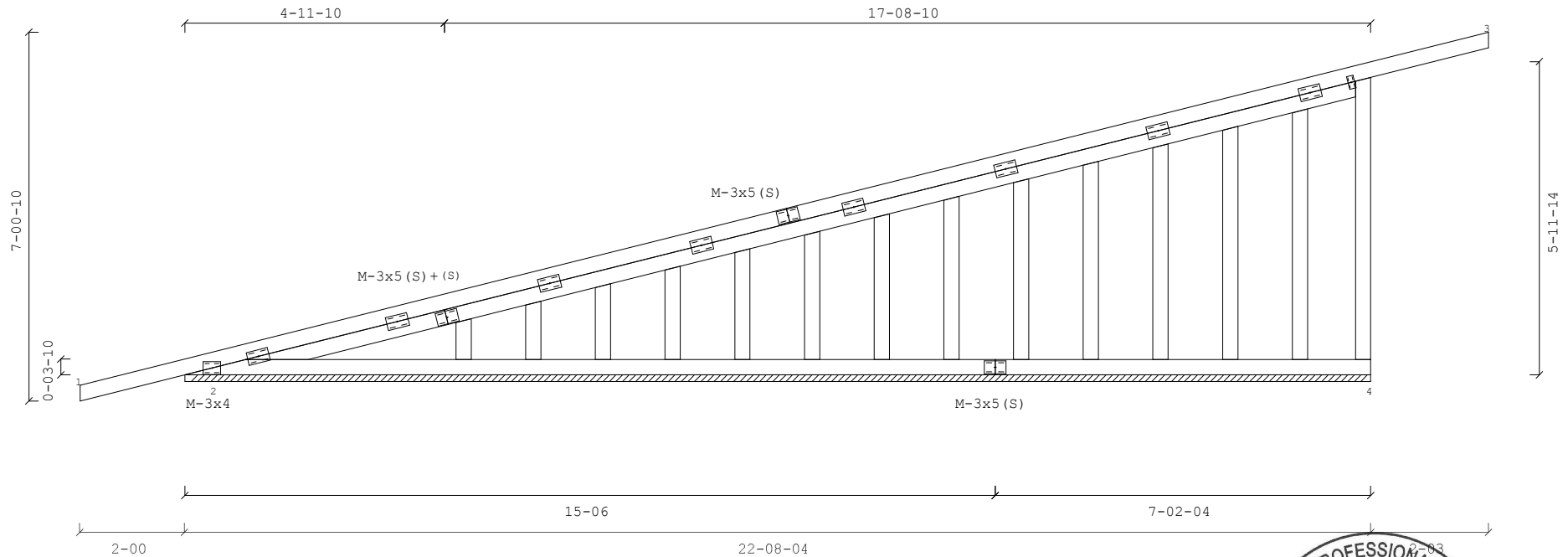
BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP
AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

Wind: 110 mph, h=15ft, TC DL=5.4, BC DL=4.2, ASCE 7-10,
(All Heights), Enclosed, Cat.2, Exp.C, MWFRS(Dir),
load duration factor=1.6,
Bottom chord at cantilevered end(s) not exposed to wind,
Truss designed for wind loads
in the plane of the truss only.

Note: Outlooker truss. Upper top chords require same material
as structural top chord. Connect with M-3x5
min typical 36"oc (uon).

Sable end truss on continuous bearing wall UON.
M-1x2 or equal typical at stud verticals.
Refer to CompuTruss gable end detail for
complete specifications.

Max CSI: TC:0.00 BC:0.00 Web:0.00



JOB NAME:

Scale: 0.3319

Truss: 22_8GAB

DATE: 8/23/2019

SEQ.: K6578857

TRANS ID: LINK

WARNINGS:

1. Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
2. 2x4 compression web bracing must be installed where shown +.
3. 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.
4. No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
5. CompuTruss has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
6. This design is furnished subject to the limitations set forth by TPI/WTCA in BCSI, copies of which will be furnished upon request.

MiTek USA, Inc./CompuTruss Software +7.7.0(1L)-E

GENERAL NOTES, unless otherwise noted:

1. This design is based only upon the parameters shown and is for an individual building component. Applicability of design parameters and proper incorporation of component is the responsibility of the building designer.
2. Design assumes the top and bottom chords to be laterally braced at 2' o.c. and at 10' o.c. respectively unless braced throughout their length by continuous sheathing such as plywood sheathing(TC) and/or drywall(BC).
3. 2x Impact bridging or lateral bracing required where shown ++
4. Installation of truss is the responsibility of the respective contractor.
5. Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
6. Design assumes full bearing at all supports shown. Shim or wedge if necessary.
7. Design assumes adequate drainage is provided.
8. Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
9. Digits indicate size of plate in inches.
10. For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



August 23, 2019

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LUMBER SPECIFICATIONS

TC: 2x6 DF #2
BC: 2x8 DF #2
WEBS: 2x4 DF #2;
2x6 DF #2 A

TC LATERAL SUPPORT <= 12"OC. UON.
BC LATERAL SUPPORT <= 12"OC. UON.

M-1x3 or equal at non-structural
vertical members (uon).

(2) complete trusses required.
Attach 2 ply with 3"x.131 DIA GUN
nails staggered:
9" oc in 2 row(s) throughout 2x6 top chords,
9" oc in 2 row(s) throughout 2x8 bottom chords,
9" oc in 2 row(s) throughout 2x6 webs,
9" oc in 1 row(s) throughout 2x4 webs.

M-2.5x4 TYPICAL AT NON-
STRUCTURAL HORIZONTAL INLETS.



21-00-00 GIRDER SUPPORTING 22-08-04
21-00-00 GIRDER SUPPORTING 13-00-08
LOAD DURATION INCREASE = 1.25 (Non-Rep)

LOADING
TC UNIF LL(40.0)+DL(18.0)= 58.0 PLF 0'- 0.0" TO 21'- 0.0" V
BC UNIF LL(197.0)+DL(179.5)= 376.5 PLF 0'- 0.0" TO 21'- 0.0" V
BC UNIF LL(110.4)+DL(88.3)= 198.8 PLF 0'- 0.0" TO 21'- 0.0" V

BOTTOM CHORD CHECKED FOR 10PSF LIVE LOAD. TOP
AND BOTTOM CHORD LIVE LOADS ACT NON-CONCURRENTLY.

CBC2016/IBC2015 MAX MEMBER FORCES 4WR/GDF/Cq=1.00

1- 2= (-712) 714	6- 7= (-2880) 6256	1- 6= (-136) 54	3- 9= (-2854) 1402
2- 3= (-4942) 424	7- 8= (-1002) 6338	6- 2= (-6872) 522	9- 4= (-272) 4688
3- 4= (-4940) 422	8- 9= (-1002) 6338	2- 7= (-272) 4686	4-10= (-6874) 522
4- 5= (-712) 714	9-10= (-2880) 6258	7- 3= (-2854) 1402	10- 5= (-136) 54
		8- 3= (-132) 2660	

BEARING LOCATIONS	MAX VERT REACTIONS	MAX HORZ REACTIONS	BRG SIZE	REQUIRED BRG AREA SQ.IN. (SPECIES)
0'- 0.0"	-501/ 6649V	-5460/ 5460H	5.50"	10.64 DF (625)
21'- 0.0"	-501/ 6649V	-5460/ 5460H	5.50"	10.64 DF (625)

VERTICAL DEFLECTION LIMITS: LL=L/360, TL=L/240
MAX LL DEFL = -0.071" @ 10'- 6.0" Allowed = 0.669"
MAX TL CREEP DEFL = -0.187" @ 10'- 6.0" Allowed = 1.004"

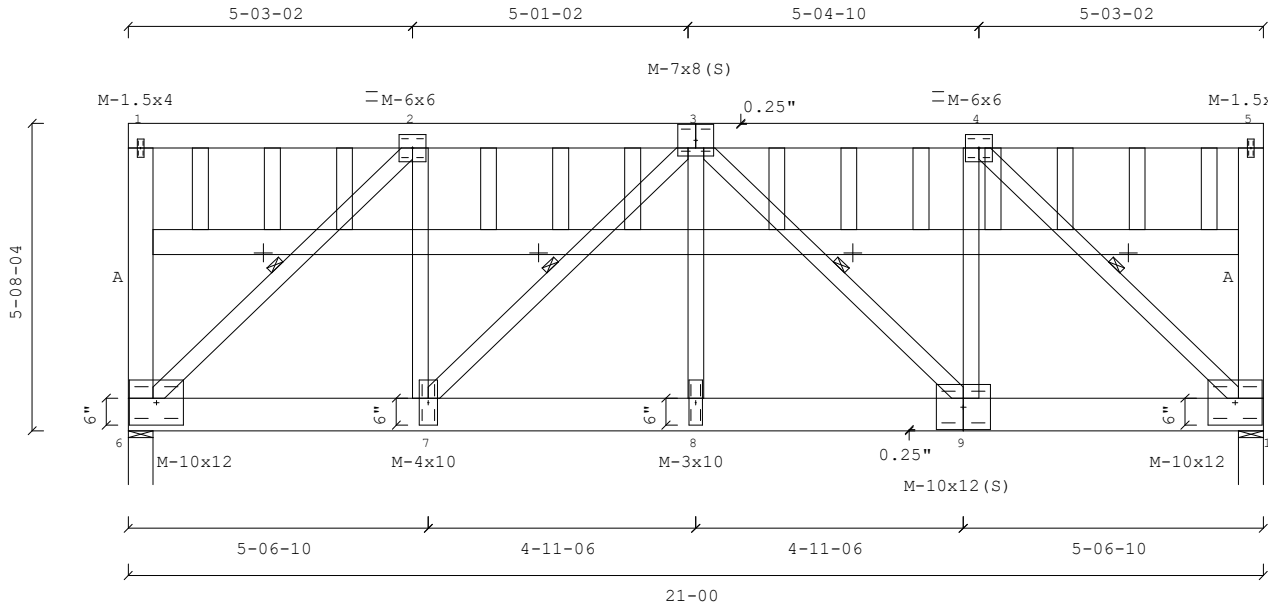
MAX HORIZ. LL DEFL = 0.021" @ 20'- 6.5"
MAX HORIZ. TL DEFL = 0.038" @ 20'- 6.5"

COND. 2: 260.00 PLF SEISMIC LOAD.

Design conforms to main windforce-resisting
system and components and cladding criteria.

Wind: 110 mph, h=15ft, TC DL=5.4, BCDL=4.2, ASCE 7-10,
(All Heights), Enclosed, Cat.2, Exp.C, MWFRS(Dir),
load duration factor=1.6,
End vertical(s) are exposed to wind,
Bottom chord at cantilevered end(s) not exposed to wind,
Truss designed for wind loads
in the plane of the truss only.

Max CSI: TC:0.11 BC:0.76 Web:0.93



JOB NAME:

Scale: 0.2816

Truss: 21_GT

DATE: 8/23/2019
SEQ.: K6578858
TRANS ID: LINK

WARNINGS:

- Builder and erection contractor should be advised of all General Notes and Warnings before construction commences.
- 2x4 compression web bracing must be installed where shown +.
- 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.
- No load should be applied to any component until after all bracing and fasteners are complete and at no time should any loads greater than design loads be applied to any component.
- CompuTrus has no control over and assumes no responsibility for the fabrication, handling, shipment and installation of components.
- This design is furnished subject to the limitations set forth by TPI/WTC in BCSI, copies of which will be furnished upon request.

MiTek USA, Inc./CompuTrus Software 7.6.8(1L)-E

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- 2x Impact bridging or lateral bracing required where shown +.
- Installation of truss is the responsibility of the respective contractor.
- Design assumes trusses are to be used in a non-corrosive environment, and are for "dry condition" of use.
- Design assumes full bearing at all supports shown. Shim or wedge if necessary.
- Design assumes adequate drainage is provided.
- Plates shall be located on both faces of truss, and placed so their center lines coincide with joint center lines.
- Digits indicate size of plate in inches.
- For basic connector plate design values see ESR-1311, ESR-1988 (MiTek)



August 23, 2019

Summary:

The structural design of the Leete Ave “Fire Rebuild” involved significant collaborative efforts between the various disciplines and the client to develop a habitable and desirable dwelling in W.U.I. territory. The client’s over-arching vision for the property provided opportunities for the structural and architectural designs to be creative in their solutions. While the “Fire Rebuild” is almost traditionally timber framed, steel elements were required to maintain the architectural features desired by the client while maintaining structural integrity. In addition to the aesthetic limitations, environmental considerations played a significant part in the structures’ design and lateral loading.

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