

#24307

REVISED Structural Calculations For:

TAM- SIBAY Residence Addition & Alteration

4215 Holly Ln
Mercer Island, WA 98040

Designer: TAM Design

Design Criteria: IBC 2021 as adopted by the city of Mercer Island
Wind: Wind Speed = 100 mph, Exposure 'C', Kzt = 1.00
Seismic: Site Class D [Default], SDC = D, R = 6.5, I=1.0
Roof Rain-on-Snow Load = 25 psf
Roof Future PV Load = 5psf
Deck Live Load = 60psf
Residential Floor Live Load = 40psf

Summary:

The previously submitted plan set has been updated with load path traced down to the foundation:

- The scope of the proposed upper level roof deck between grids 5 & 7 has been removed.
- Upper floor joists have been doubled for a longer span and to remove the steel beams on grid B.6 and 5
- The western wall on grid A has been adjusted for larger windows, incorporating Simpson Strongwalls and a steel beam at the 2nd level
- The attic trusses over the garage have been replaced with a full second level.





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CALCULATION SECTION 1.0: LOADING

THE FOLLOWING CALCULATIONS & KEYPLANS ARE NOT CONSTRUCTION DOCUMENTS. THEY ARE SUPPLIED FOR THE BUILDING DEPARTMENT'S REVIEW ONLY & SHOULD NOT BE USED ON THE JOB SITE. THE FINAL SPECIFICATIONS & DETAILS CAN BE FOUND ON THE STAMPED ENGINEERED PLAN SET ("S"-SHEETS) APPROVED BY THE BUILDING DEPARTMENT. DRAFTED KEYPLANS IN THESE CALCULATIONS ARE COMPILED DURING DESIGN & MAY NOT MATCH THAT FINAL STAMPED PLAN SET.

SHEET TITLE: **DEAD LOAD SUMMARY****1.1) ESTIMATED DEADLOADS****RESIDENTIAL TRUSSED ROOF**

Roofing -	3.5 psf
5/8" plywood (O.S.B.)	2.2 psf
Trusses at 24" o.c.	3.4 psf
Insulation	1.0 psf
(1) 5/8" gypsum ceiling	2.8 psf
Misc./Mech.	1.5 psf
ROOF DEAD LOAD	14.4 PSF
FUTURE P.V. AUX. LOAD	5.0 PSF

RESIDENTIAL FLOOR (NO GYPCRETE)

floor finish	4.0 psf
3/4" plywood (O.S.B.)	2.7 psf
Joists @ 16" o.c.	2.5 psf
Insulation	1.0 psf
(1) 5/8" gypsum ceiling	2.8 psf
Misc.	2.0 psf
FLOOR DEAD LOAD	15.0 PSF



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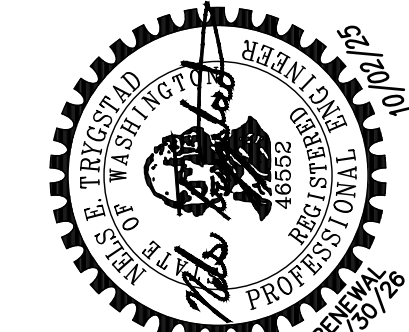
CALCULATION
SECTION 2.0:
ROOF
FRAMING

Permit Set	
Job # 24-028	TE# 24307
Description	Date
Permit Intake	10/07/24
Correction 01	02/04/25
Correction 02	03/06/25
Field Rev	06/11/25
Field Rev	10/02/25

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nels@trygstadeng.com
(208)262-6884

Permit No.: 2407-213

Drawn:
Stamp/Approval:



Sheet Name:

**ROOF
FRAMING
PLAN**

Sheet No:

S2.4

POST OOP WIND LOAD:
P=0.6*28PSF
(ZONE 5, 100MPH, EXP. C, Kzt=1.0, h=32FT)
P=16.8psf (ASD)
w=17.3/2*16.8psf=141plf

AXIAL:
3.1K RB18 + 1.7K RB17 + 4.5K GT = 9.3K

BEAM ID'S NOT USED

RB10 RB08
RB12
RB13
RR05
RB15

LOADING & LABELING KEY

TYPE:
B=BEAM
R=RAFTER
J=JOIST

BEAM LABEL: **2FB08**

FLOOR OR
ROOF LEVEL:
2=2ND, ETC.
L=LOW

BM. CALC
SEQ.
NO.

LINE LOADING (PLF)

BEAM TRANSFER WALL TRANSFER
"RED" = ROOF ONLY [25 S+15D+5PV]
"YELLOW" = TOP FLR [40L+15D]
"ORANGE" = ROOF + FLR
"BLUE" = LOWER FLOOR ONLY [40L+15D]
"GREEN" = MULTIPLE FLOORS

POINT LOADING (K)

BM. LOAD (THIS LVL.) TO TRANSFER BM
COL. LOAD TO LVL. BELOW
COL. LOAD FROM ABV. TO TRANSFER BM
KING POST W/IN LVL TO TRANSFER BM

Ceiling Joist Spans

CEILING JOISTS	MAX. SPAN
2x4 @ 24" O.C.	7'-3"
2x4 @ 16" O.C.	8'-11"
2x6 @ 24" O.C.	10'-8"
2x6 @ 16" O.C.	13'-0"
2x8 @ 24" O.C.	13'-6"
2x10 @ 24" O.C.	16'-5"
2x8 @ 16" O.C.	16'-6"
2x10 @ 16" O.C.	20'-2"

CEILING JOISTS NOTES:

1. SIZE & SPAN BASED ON UNINHABITABLE ATTIC WITH LIMITED STORAGE (20PSF LL) + 10psf DL
2. USE OF L2 JOISTS

Framing Notes

1. REFER TO S9.1 FOR TYPICAL FRAMING DETAILS
2. ROOF FRAMING - PREMANUFACTURED TRUSSES (PMT) OR RAFTERS PER PLAN. 2x4 ON-EDGE OUTRIGGERS (O.R.) @ 24" O.C.
3. FLOOR FRAMING - 1x12 JOISTS PER PLAN. BLOCKING AT BEARING AND SHEARWALLS SHALL BE PER BEARING AND SHEARWALL SCHEDULE (VERIFY EXIST. BRG. LOC.). FLOOR SHEATHING SHALL BE GLUED AND NAILED.
4. WALLS INDICATED ARE BELOW THE FRAMING LEVEL (REFER TO SYMBOL KEY FOR TYPE). SEE BEARING WALL SCHEDULE THIS SHEET
5. PLUMBING, MECHANICAL, AND ELECTRICAL SYSTEMS SHALL BE DESIGNED AND BUILT TO ACCOMMODATE 3/8" PER FLOOR WOOD SHRINKAGE.
6. SEE DETAIL 1/S9.1 FOR TYPICAL HEADER/BUNDLED STUD CONSTRUCTION.
7. SEE ARCHITECTURAL FOR DRAFTSTOP AND VENTING LOCATIONS.
8. FRAMING MEMBERS AND SHEATHING SHALL BE PER STRUCTURAL NOTES AS NOTED ON SHEET S1.1
9. ALL UNLABELED EXTERIOR WALLS ARE TO BE TYPE 'P6'; SEE SHEARWALL SCHEDULE ON SHEET S1.2
10. HANGERS INDICATED ARE AS MANUFACTURED BY SIMPSON STRONG-TIE. SEE SEC. 06103/S1.1 FOR TYPICAL HANGERS, U.N.O.
11. PROVIDE JOIST OR BLOCKING AT TOP SHEARWALLS.
12. SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND TOP PLATE ELEVATIONS.
13. BUNDLED STUDS FROM THIS LEVEL SHALL BE CONTINUED DOWN TO FOUNDATION OR SUPPORTING BEAM. (RE: 4/S9.1)
14. ALL BEAMS AND HEADERS SHALL HAVE A MINIMUM OF (1) FULL HEIGHT STUD AT EACH END FOR BRACING TYPICAL UNLESS NOTED OTHERWISE.
15. PROVIDE MINIMUM (2) 2x BUNDLED STUDS UNDER EACH BEAM END, TYPICAL UNLESS NOTED OTHERWISE. (AT HEADERS: TRIMMER-KING=2 BUNDLED STUDS)
16. SEE DETAILS 19 & 20 ON SHEET S1.3 FOR TYPICAL CORNER FRAMING DETAILS AT HOLD DOWNS & SHEARWALLS.
17. HANGER OCCURS WHERE FLUSH BEAM HANGS TO SUPPORT BEAMS, TYP. U.N.O.

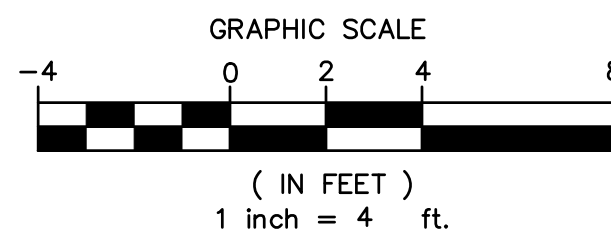
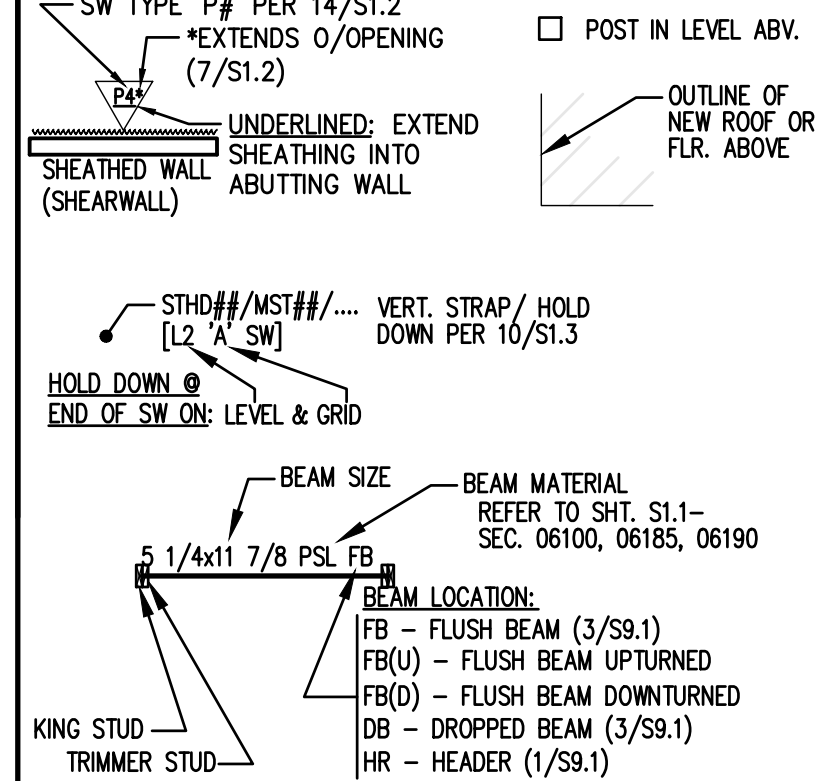
Bearing Wall Stud Schedule

BEARING WALL TYPE	STUD SIZE AND SPACING, U.N.O.
EXTERIOR	2 X 6 AT 16" O.C., U.N.O.
INTERIOR NON-BEARING	2 X 4 AT 16" O.C.

BEARING WALL NOTES

1. SEE SHEARWALL SCHEDULE SHEET S1.2 FOR WALL SHEATHING, ADDITIONAL PLATE AND STUD REQUIREMENTS, BLOCKING AND PLATE NAILING. SEE SAWN LUMBER STRUCTURAL NOTES SHEET S1.1 FOR SPECIES AND GRADE OF WALL PLATES AND STUDS.
2. SECURE SILL PLATES TO CONCRETE WITH 5/8" DIA. ANCHOR BOLTS AT 48" ON CENTER TYPICAL UNLESS NOTED OTHERWISE. RE: S1.2. REFER TO SHEARWALL AND HOLDOWN SCHEDULE FOR ADDITIONAL ANCHOR BOLT REQUIREMENTS. WHERE PRESERVATIVE TREATED WOOD IS USED, REFER TO THAT NOTE SECTION FOR CORROSION PROTECTION REQUIREMENTS FOR CONNECTORS.
3. SEE 2/S9.1 FOR TOP PLATE SPLICE. PROVIDE ADDITIONAL CONNECTORS AT SHEARWALLS AS INDICATED ON THE PLANS.
4. ALIGN STUDS UNDER JOISTS

Framing Legend



Roof Framing Plan

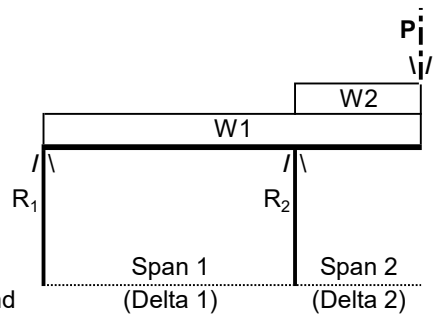
SCALE: 1/4" = 1'-0"



RR1) TYP. OUTRIGGERS UNO
OVERHANGING CANTILEVER

Span 1 = 3.6 ft
 Span 2 = 2.67 ft

Spacing = 24 in o.c.
 Uniform Load W1 = 90 lb/ft
 Add'l. Uniform Load W2 = 0 lb/ft
 Concentrated Load = 0 lb @ Cantilever End



$V_{max} = 251$ lb
 $M_{max} = 321$ lb-ft

$R_{1Max} = 162$ lb
 $R_{2Max} = 491$ lb

Nominal Beam Size: $b = 2$ in. $d = 6$ in. Number of Sections = 1
 $b_{act} = 1.50$ in. $d_{act} = 5.50$ in.

Lumber Species/Type:----- **HF2**

REPETITIVE MEMBER?----- **Y**

POST?: NO

Design Stresses and Factors:

$C_L = 0.96$ Moisture > 19%? **NO**
 $F_v = 145$ psi $LDF = 1.00$ $C_{M(v)} = 1.00$
 $F_b = 850$ psi $Cr = 1.15$ $C_{M(b)} = 1.00$
 $F_{c||} = 1,300$ psi $C_v = 1.00$ $C_{M(c||)} = 1.00$
 $F_{c\perp} = 405$ psi $CF_{(B)} = 1.30$ $C_{M(c\perp)} = 1.00$
 $E = 1.3E+06$ psi $\Delta 1 = L/360$ $C_{M(E)} = 1.00$
 $E_{min} = .47E+06$ psi $\Delta 2 = L/360$ Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	38.2	145
F_b (psi)	581	1219
$\Delta 1$ (in)	0.02	0.12
$\Delta 2$ (in)	0.12	0.18

Section Properties		
	Required	Provided
A (in ²)	2.2	8.3
S_x (in ³)	3.2	6.6
I (1) (in ⁴)	3.0	18.2
I (2) (in ⁴)	12.4	18.9

0 INCH
φ HOLE
SEC.
REDUC.

0.0 in3
 0.0 in4

REQ'D END BEARING = 0.81 inches

UNBAL. UPLIFT AT R1 = -89 LBS

NOTCH DEPTH = 0 inches

$f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 145$ psi

"PURLIN" TILT: 4:12 PITCH

Sec. Mod. Factor, $C_{TILT.Sx} = 0.88$

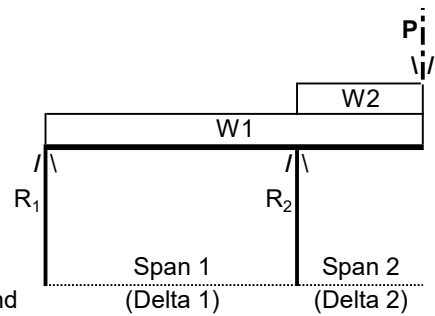
M.O.I. Factor, $C_{TILT.Ix} = 0.91$

USE: 2 x 6 HF2 @ 24 IN. O.C.

RR02) OUTRIGGERS W/LONG BACK-SPAN
OVERHANGING CANTILEVER

Span 1 = 5.83 ft
 Span 2 = 2.67 ft

Spacing = 12 in o.c.
 Uniform Load W1 = 45 lb/ft
 Add'l. Uniform Load W2 = 0 lb/ft
 Concentrated Load = 0 lb @ Cantilever End



$V_{max} = 159$ lb
 $M_{max} = 191$ lb-ft

$R_{1Max} = 131$ lb
 $R_{2Max} = 279$ lb

Nominal Beam Size: $b = 2$ in. $d = 6$ in. Number of Sections = 1
 $b_{act} = 1.50$ in. $d_{act} = 5.50$ in.

Lumber Species/Type:----- HF2

REPETITIVE MEMBER?----- Y

POST?: NO

Design Stresses and Factors:

$C_L = 0.91$ Moisture > 19%? NO
 $F_v = 145$ psi $LDF = 1.00$ $C_{M(v)} = 1.00$
 $F_b = 850$ psi $Cr = 1.15$ $C_{M(b)} = 1.00$
 $F_{c||} = 1,300$ psi $C_v = 1.00$ $C_{M(c||)} = 1.00$
 $F_{c\perp} = 405$ psi $CF_{(B)} = 1.30$ $C_{M(c\perp)} = 1.00$
 $E = 1.3E+06$ psi $\Delta 1=L/360$ $C_{M(E)} = 1.00$
 $E_{min} = .47E+06$ psi $\Delta 2=L/240$ Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	25.1	145
F_b (psi)	346	1160
$\Delta 1$ (in)	0.05	0.19
$\Delta 2$ (in)	0.08	0.27

Section Properties		
	Required	Provided
A (in ²)	1.4	8.3
S_x (in ³)	2.0	6.6
I (1) (in ⁴)	4.6	18.2
I (2) (in ⁴)	5.8	18.9

0 INCH
 ϕ HOLE
 SEC.
 REDUC.
 0.0 in3
 0.0 in4

REQ'D END BEARING = 0.46 inches

UNBAL. UPLIFT AT R1 = -28 LBS

NOTCH DEPTH = 0 inches

$f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 145$ psi

"PURLIN" TILT: 4:12 PITCH

Sec. Mod. Factor, $C_{TILT.Sx} = 0.88$

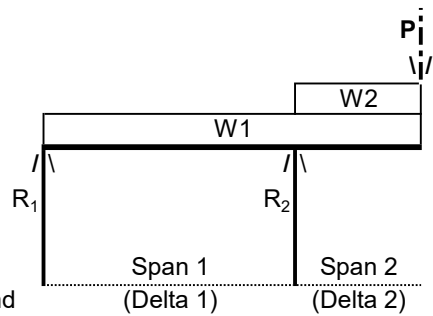
M.O.I. Factor, $C_{TILT.Ix} = 0.91$

USE: 2 x 6 HF2 @ 12 IN. O.C.

RR3) STRUC FASCIA
OVERHANGING CANTILEVER

Span 1 = 6 ft
 Span 2 = 2.7 ft

Spacing = 16 in o.c.
 Uniform Load W1 = 60 lb/ft
 Add'l. Uniform Load W2 = 0 lb/ft
 Concentrated Load = 0 lb @ Cantilever End



$V_{max} = 216$ lb
 $M_{max} = 270$ lb-ft

$R_{1Max} = 180$ lb
 $R_{2Max} = 378$ lb

Nominal Beam Size: $b = 2$ in. $d = 12$ in. Number of Sections = 1
 $b_{act} = 1.50$ in. $d_{act} = 11.25$ in.

Lumber Species/Type:----- **HF2**

REPETITIVE MEMBER?----- **Y**

POST?: NO

Design Stresses and Factors:

$C_L = 0.70$ Moisture > 19%? **NO**
 $F_v = 145$ psi $LDF = 1.00$ $CM(v) = 1.00$
 $F_b = 850$ psi $Cr = 1.15$ $CM(b) = 1.00$
 $F_{c||} = 1,300$ psi $C_v = 1.00$ $CM(c||) = 1.00$
 $F_{c\perp} = 405$ psi $CF_{(B)} = 1.00$ $CM(c\perp) = 1.00$
 $E = 1.3E+06$ psi $\Delta 1 = L/360$ $CM(E) = 1.00$
 $E_{min} = .47E+06$ psi $\Delta 2 = L/360$ Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	14.2	145
F_b (psi)	102	682
$\Delta 1$ (in)	0.01	0.20
$\Delta 2$ (in)	0.01	0.18

Section Properties		
	Required	Provided
A (in ²)	1.7	16.9
S_x (in ³)	4.8	31.6
I (1) (in ⁴)	6.7	178.0
I (2) (in ⁴)	11.7	178.0

0 INCH
φ HOLE
SEC.
REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 0.62 inches

UNBAL. UPLIFT AT R1 = -36 LBS

NOTCH DEPTH = 0 inches

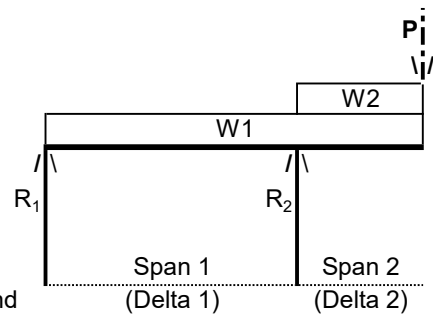
$f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 145$ psi

USE: 2 x 12 HF2 @ 16 IN. O.C.

RR3) STRUC FASCIA**OVERHANGING CANTILEVER**

Span 1 = 6 ft
 Span 2 = 2.7 ft

Uniform Load W1 = 54 lb/ft
 Add'l. Uniform Load W2 = 76 lb/ft
 Concentrated Load = 0 lb @ Cantilever End



$V_{max} = 351$ lb
 $M_{max} = 474$ lb-ft

$R_{1Max} = 162$ lb
 $R_{2Max} = 592$ lb

Nominal Beam Size: $b = 2$ in. $d = 6$ in. Number of Sections = 2
 $b_{act} = 1.50$ in. $d_{act} = 5.50$ in.

Lumber Species/Type:----- **HF2**

REPETITIVE MEMBER?----- **N**

POST?: **NO**

Design Stresses and Factors:

$C_L = 0.99$
 $F_v = 145$ psi $LDF = 1.00$
 $F_b = 850$ psi $Cr = 1.00$
 $F_{c||} = 1,300$ psi $C_v = 1.00$
 $F_{c\perp} = 405$ psi $CF_{(B)} = 1.30$
 $E = 1.3E+06$ psi $\Delta 1 = L/360$
 $E_{min} = .47E+06$ psi $\Delta 2 = L/360$

Moisture > 19%? **NO**

$CM_{(v)} = 1.00$
 $CM_{(b)} = 1.00$
 $CM_{(c||)} = 1.00$
 $CM_{(c\perp)} = 1.00$
 $CM_{(E)} = 1.00$
 Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	29.7	145
F_b (psi)	376	1095
$\Delta 1$ (in)	0.03	0.20
$\Delta 2$ (in)	0.11	0.18

Section Properties		
	Required	Provided
A (in ²)	3.4	16.5
S_x (in ³)	5.2	15.1
I (1) (in ⁴)	7.3	41.6
I (2) (in ⁴)	25.3	41.6

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3
 0.0 in4

REQ'D END BEARING = 0.49 inches

UNBAL. UPLIFT AT R1 = -79 LBS

NOTCH DEPTH = 0 inches

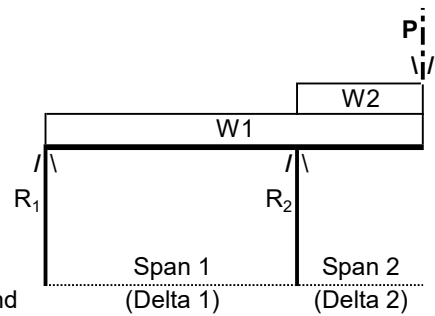
$f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 145$ psi

USE: (2) 2 x 6 HF2

RR4) OUTRIGGER CARRYING STRUC FASICA @ BLDG CORNER**OVERHANGING CANTILEVER**

Span 1 = 3.8 ft
 Span 2 = 2.7 ft

Uniform Load W1 = 0 lb/ft
 Add'l. Uniform Load W2 = 0 lb/ft
 Concentrated Load = 600 lb @ Cantilever End



$V_{max} = 600$ lb
 $M_{max} = 1620$ lb-ft

$R_{1Max} = 426$ lb
 $R_{2Max} = 1026$ lb

Nominal Beam Size: $b = 2$ in. $d = 6$ in. Number of Sections = 3
 $b_{act} = 1.50$ in. $d_{act} = 5.50$ in.

Lumber Species/Type:----- **HF2**

REPETITIVE MEMBER?----- **N**

POST?: **NO**

Design Stresses and Factors:

$C_L = 1.00$
 $F_v = 145$ psi $LDF = 1.00$
 $F_b = 850$ psi $Cr = 1.00$
 $F_{c||} = 1,300$ psi $C_v = 1.00$
 $F_{c\perp} = 405$ psi $CF_{(B)} = 1.30$
 $E = 1.3E+06$ psi $\Delta 1 = L/360$
 $E_{min} = .47E+06$ psi $\Delta 2 = L/240$

Moisture > 19%? **NO**

$CM_{(v)} = 1.00$
 $CM_{(b)} = 1.00$
 $CM_{(c||)} = 1.00$
 $CM_{(c\perp)} = 1.00$
 $CM_{(E)} = 1.00$
 Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	36.4	145
F_b (psi)	857	1102
$\Delta 1$ (in)	0.03	0.13
$\Delta 2$ (in)	0.20	0.27

Section Properties		
	Required	Provided
A (in ²)	6.2	24.8
S_x (in ³)	17.6	22.7
I (1) (in ⁴)	15.7	62.4
I (2) (in ⁴)	46.7	62.4

0 INCH
 ϕ HOLE
 SEC.
 REDUC.
 0.0 in3
 0.0 in4

REQ'D END BEARING = 0.00 inches

UNBAL. UPLIFT AT R1 = -426 LBS

NOTCH DEPTH = 0 inches

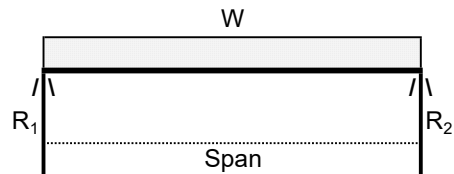
$f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 145$ psi

USE: (3) 2 x 6 HF2

RB01) GRID 1 8FT HEADER @ GARAGE DOOR**SIMPLE SPAN - UNIFORM LOAD**

Span = 8.25 ft

Uniform Load (full span), W = 1024 lb/ft

 $V_{max} = 4224$ lb $M_{max} = 8712$ lb-ftReactionsR₁ = 4224 lbR₂ = 4224 lb

Nominal Beam Size: b = 6 in. d = 12 in. Number of Sections = 1
 b_{act} = 5.50 in. d_{act} = 11.50 in.

Lumber Species/Type:----- HF1

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

C_L = 0.99

Moisture > 19%? N

F_v = 140 psi

LDF = 1.00

C_{M(v)} = 1.00F_b = 1,050 psiC_r = 1.00C_{M(b)} = 1.00F_{c||} = 750 psiC_v = 1.00C_{M(c||)} = 1.00F_{c⊥} = 405 psiC_{F(B)} = 1.00C_{M(c⊥)} = 1.00

E = 1.3E+06 psi

δ_{TOTAL} = L/ 480C_{M(E)} = 1.00E_{min} = .47E+06 psiIncise C_i = 1.00

Stresses and Deflections		
	Actual	Allowable
F _v (psi)	76.9	140
F _b (psi)	862	1042
Delta (in.)	0.12	0.21

Section Properties		
	Required	Provided
A (in ²)	34.74	63.3
S _x (in ³)	100.36	121.23
I (in ⁴)	398.07	697.1

0 INCH
 φ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.90 inches

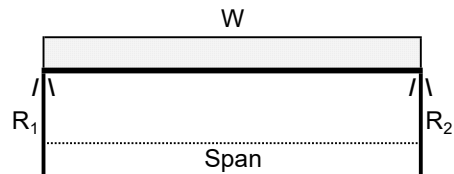
NOTCH DEPTH = 0 inches

f_{v,NOTCH} (Tension Face) = < F_v' = 140 psi**USE: (1) 6 x 12 HF1**

RB02) GRID 1 HEADER @ GARAGE DOOR**5/15/2025****SIMPLE SPAN - UNIFORM LOAD**

Span = 18.3 ft

Uniform Load (full span), W = 1024 lb/ft

 $V_{max} = 9370$ lb $M_{max} = 42866$ lb-ftReactions $R_1 = 9370$ lb $R_2 = 9370$ lb

Nominal Beam Size: $b = 5.5$ in. $d = 19.5$ in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 19.50$ in.

Lumber Species/Type:----- GLB

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

 $C_L = 0.95$

Moisture > 19%? N

 $F_v = 240$ psi $LDF = 1.00$ $C_{M(v)} = 1.00$ $F_b = 2,400$ psi $Cr = 1.00$ $C_{M(b)} = 1.00$ $F_{c||} = 1,650$ psi $C_v = 0.96$ $C_{M(c||)} = 1.00$ $F_{c\perp} = 650$ psi $CF_{(B)} = 1.00$ $C_{M(c\perp)} = 1.00$ $E = 1.8E+06$ psi $\delta_{TOTAL} = L/480$ $C_{M(E)} = 1.00$ $E_{min} = .93E+06$ psiIncise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	107.8	240
F_b (psi)	1476	2181
Delta (in.)	0.42	0.46

Section Properties		
	Required	Provided
A (in ²)	48.16	107.3
S_x (in ³)	235.83	348.56
I (in ⁴)	3137.79	3398.5

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 2.62 inches

NOTCH DEPTH = 0 inches

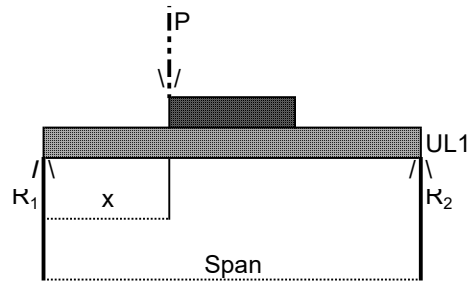
 $f_{v,NOTCH}$ (Tension Face) = $< F_v' = 240$ psi**USE: 5.5 x 19-1/2 IN. 24F-V4 GLB**

RB03) GRID 1 GARAGE MAN DOOR HEADER CARRYING GT

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 3.2 ft

Load
 Uniform Load 1 (full span) = 743 lb/ft
 Uniform Load 2 (lbs/ft) = 0 from x = 0 2.4 feet
 Sum UL1 + UL2 = 743
 Concentrated Load (lbs) = 10700 @ x = 2.4 feet



$V_{max} = 9214$ lb
 $M_{max} = 7021$ lb-ft

Reactions
 $R_1 = 3864$ lb
 $R_2 = 9214$ lb

Nominal Beam Size: b = 5.5 in. d = 10.5 in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 10.50$ in.

Lumber Species/Type:----- GLB

REPETITIVE MEMBER?----- N

POST?: NO

Design Stresses and Factors:

$C_L = 1.00$
 $F_v = 240$ psi LDF = 1.00
 $F_b = 2,400$ psi Cr = 1.00
 $F_{c||} = 1,650$ psi Cv = 1.00
 $F_{c\perp} = 650$ psi $CF_{(B)} = 1.00$
 $E = 1.8E+06$ psi Delta = L/ 360
 $E_{min} = .93E+06$ psi

Moisture > 19%? N
 $CM_{(v)} = 1.00$
 $CM_{(b)} = 1.00$
 $CM_{(c||)} = 1.00$
 $CM_{(c\perp)} = 1.00$
 $CM_{(E)} = 1.00$
 Incise Ci = 1.00

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	222.43	240
F_b (psi)	834	2393
Delta (in.)	0.01	0.11

Section Properties		
	Required	Provided
A (in ²)	53.5	57.8
S_x (in ³)	35.2	101.1
I (in ⁴)	45.4	530.6

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 2.58 inches

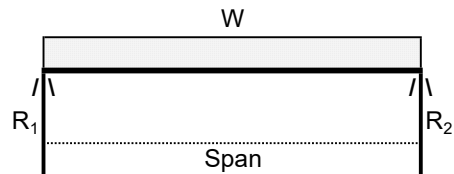
NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 240$ psi**USE: 5.5 x 10-1/2 IN. 24F-V4 GLB**

RB04) GRID 4 GARAGE WDW HEADER**5/15/2025****SIMPLE SPAN - UNIFORM LOAD**

Span = 5.2 ft

Uniform Load (full span), W = 1074 lb/ft

 $V_{max} = 2792$ lb $M_{max} = 3630$ lb-ftReactions $R_1 = 2792$ lb $R_2 = 2792$ lb

Nominal Beam Size: b = 6 in. d = 8 in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 7.50$ in.

Lumber Species/Type:----- HF1

REPETITIVE MEMBER?----- N

Post?: YES

Design Stresses and Factors:

 $C_L = 1.00$

Moisture > 19%? N

 $F_v = 135$ psi $LDF = 1.00$ $CM(v) = 1.00$ $F_b = 975$ psi $Cr = 1.00$ $CM(b) = 1.00$ $F_{c||} = 850$ psi $C_v = 1.00$ $CM(c||) = 1.00$ $F_{c\perp} = 405$ psi $CF_{(B)} = 1.00$ $CM(c\perp) = 1.00$ $E = 1.3E+06$ psi $\delta_{TOTAL} = L/480$ $CM(E) = 1.00$ $E_{min} = .00E+00$ psiIncise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	77.1	135
F_b (psi)	845	975
Delta (in.)	0.07	0.13

Section Properties		
	Required	Provided
A (in ²)	23.57	41.3
S_x (in ³)	44.68	51.56
I (in ⁴)	104.55	193.4

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.25 inches

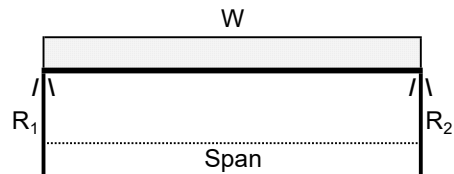
NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = < $F_v' = 135$ psi**USE: (1) 6 x 8 HF1**

RB05) GRID G WDW HEADER**SIMPLE SPAN - UNIFORM LOAD**

Span = 5.3 ft

Uniform Load (full span), W = 855 lb/ft

 $V_{max} = 2266$ lb $M_{max} = 3002$ lb-ftReactions $R_1 = 2266$ lb $R_2 = 2266$ lb

Nominal Beam Size: $b = 2$ in. $d = 8$ in. Number of Sections = 3
 $b_{act} = 1.50$ in. $d_{act} = 7.25$ in.

Lumber Species/Type:----- HF2

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

 $C_L = 1.00$

Moisture > 19%? N

 $F_v = 145$ psi $LDF = 1.00$ $CM(v) = 1.00$ $F_b = 850$ psi $Cr = 1.00$ $CM(b) = 1.00$ $F_{c||} = 1,300$ psi $C_v = 1.00$ $CM(c||) = 1.00$ $F_{c\perp} = 405$ psi $CF_{(B)} = 1.20$ $CM(c\perp) = 1.00$ $E = 1.3E+06$ psi $\delta_{TOTAL} = L/360$ $CM(E) = 1.00$ $E_{min} = .47E+06$ psiIncise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	80.4	145
F_b (psi)	914	1016
Delta (in.)	0.08	0.18

Section Properties		
	Required	Provided
A (in ²)	18.10	32.6
S_x (in ³)	35.47	39.42
I (in ⁴)	66.09	142.9

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.24 inches

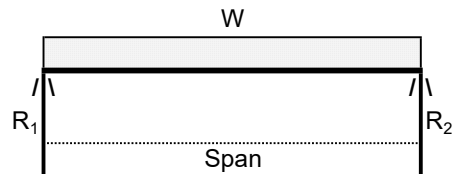
NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = < $F_v' = 145$ psi**USE: (3) 2 x 8 HF2**

RB06) GRID 1 WDW HEADER**SIMPLE SPAN - UNIFORM LOAD**

Span = 13.5 ft

Uniform Load (full span), W = 272 lb/ft

 $V_{max} = 1836$ lb $M_{max} = 6197$ lb-ft**Reactions** $R_1 = 1836$ lb $R_2 = 1836$ lb

Nominal Beam Size: $b = 6$ in. $d = 10$ in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 9.50$ in.

Lumber Species/Type:----- HF1

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

 $C_L = 0.99$

Moisture > 19%? N

 $F_v = 140$ psi $LDF = 1.00$ $CM(v) = 1.00$ $F_b = 1,050$ psi $Cr = 1.00$ $CM(b) = 1.00$ $F_{c||} = 750$ psi $C_v = 1.00$ $CM(c||) = 1.00$ $F_{c\perp} = 405$ psi $CF_{(B)} = 1.00$ $CM(c\perp) = 1.00$ $E = 1.3E+06$ psi $\delta_{TOTAL} = L/360$ $CM(E) = 1.00$ $E_{min} = .47E+06$ psiIncise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	46.5	140
F_b (psi)	899	1039
Delta (in.)	0.40	0.45

Section Properties		
	Required	Provided
A (in ²)	17.36	52.3
S_x (in ³)	71.54	82.73
I (in ⁴)	347.48	393.0

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 0.82 inches

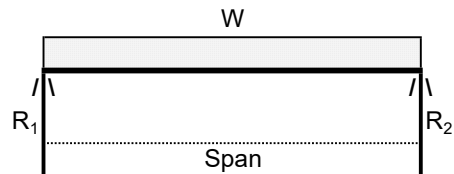
NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = < $F_v' = 140$ psi**USE: (1) 6 x 10 HF1**

RB07) HEADER CARRYING OUTRIGGERS @ GRID 6**SIMPLE SPAN - UNIFORM LOAD**

Span = 10 ft

Uniform Load (full span), W = 189 lb/ft

 $V_{max} = 945$ lb $M_{max} = 2363$ lb-ftReactions $R_1 = 945$ lb $R_2 = 945$ lb

Nominal Beam Size: $b = 6$ in. $d = 8$ in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 7.50$ in.

Lumber Species/Type:----- HF1

REPETITIVE MEMBER?----- N

Post?: YES

Design Stresses and Factors:

 $C_L = 1.00$

Moisture > 19%? N

 $F_v = 135$ psi $LDF = 1.00$ $F_b = 975$ psi $Cr = 1.00$ $F_{c||} = 850$ psi $C_v = 1.00$ $F_{c\perp} = 405$ psi $CF_{(B)} = 1.00$ $E = 1.3E+06$ psi $\delta_{TOTAL} = L/360$ $E_{min} = .00E+00$ psi $CM_{(v)} = 1.00$ $CM_{(b)} = 1.00$ $CM_{(c||)} = 1.00$ $CM_{(c\perp)} = 1.00$ $CM_{(E)} = 1.00$ Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	30.1	135
F_b (psi)	550	975
Delta (in.)	0.17	0.33

Section Properties		
	Required	Provided
A (in ²)	9.19	41.3
S_x (in ³)	29.08	51.56
I (in ⁴)	98.13	193.4

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 0.42 inches

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = < $F_v' = 135$ psi**USE: (1) 6 x 8 HF1**

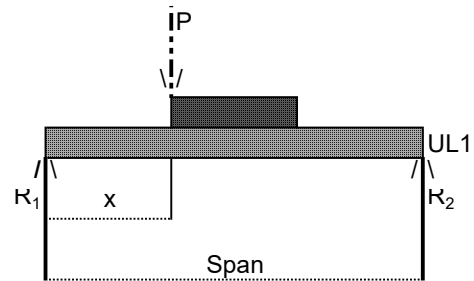
R0B8) GRID A WDW HEADER

1/21/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 7.25 ft

Load
 Uniform Load 1 (full span) = 0 lb/ft
 Uniform Load 2 (lbs/ft) = 855 from x = 3.6 7.25 feet
 Sum UL1 + UL2 = 0
 Concentrated Load (lbs) = 3000 @ x = 3.6 feet



$V_{max} = 3825$ lb
 $M_{max} = 8247$ lb-ft

Reactions

$R_1 = 2296$ lb
 $R_2 = 3825$ lb

Nominal Beam Size: b = 5.5 in. d = 9 in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 9.00$ in.

Lumber Species/Type:----- GLB

REPETITIVE MEMBER?----- N

POST?: NO

Design Stresses and Factors:

$C_L = 0.99$
 $F_v = 240$ psi LDF = 1.00
 $F_b = 2,400$ psi Cr = 1.00
 $F_{c||} = 1,650$ psi Cv = 1.00
 $F_{c\perp} = 650$ psi $CF_{(B)} = 1.00$
 $E = 1.8E+06$ psi Delta = L/ 360
 $E_{min} = .93E+06$ psi

Moisture > 19%? N

$CM_{(v)} = 1.00$
 $CM_{(b)} = 1.00$
 $CM_{(c||)} = 1.00$
 $CM_{(c\perp)} = 1.00$
 $CM_{(E)} = 1.00$
 Incise Ci = 1.00

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	115.90	240
F_b (psi)	1333	2386
Delta (in.)	0.11	0.24

Section Properties		
	Required	Provided
A (in ²)	23.9	49.5
S_x (in ³)	41.5	74.3
I (in ⁴)	156.4	334.1

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.07 inches

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 240$ psi**USE: 5.5 x 9 IN. 24F-V4 GLB**

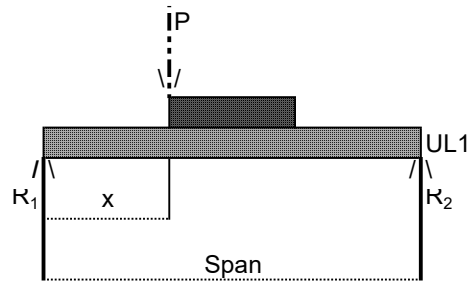
RB09) GRID A HEADER @ SUNROOM

8/7/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 15.9 ft

Load
 Uniform Load 1 (full span) = 0 lb/ft
 Uniform Load 2 (lbs/ft) = 855 from x = 3.8 15.9 feet
 Sum UL1 + UL2 = 0
 Concentrated Load (lbs) = 3000 @ x = 3.8 feet



$V_{max} = 7126$ lb
 $M_{max} = 29687$ lb-ft

Reactions
 $R_1 = 6220$ lb
 $R_2 = 7126$ lb

Nominal Beam Size: b = 7 in. d = 14 in. Number of Sections = 1
 $b_{act} = 7.00$ in. $d_{act} = 14.00$ in.

Lumber Species/Type:----- PSL REPETITIVE MEMBER?----- N

POST?: NO

Design Stresses and Factors:

$C_L = 0.98$ Moisture > 19%? N
 $F_v = 290$ psi LDF = 1.00 $CM(v) = 1.00$
 $F_b = 2,900$ psi $Cr = 1.00$ $CM(b) = 1.00$
 $F_c|| = 2,900$ psi $C_v = 1.00$ $CM(c||) = 1.00$
 $F_c\perp = 750$ psi $CF(B) = 1.00$ $CM(c\perp) = 1.00$
 $E = 2.0E+06$ psi Delta = L/ 360 $CM(E) = 1.00$
 $E_{min} = .10E+07$ psi Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	109.07	290
F_b (psi)	1558	2856
Delta (in.)	0.42	0.53

Section Properties		
	Required	Provided
A (in ²)	36.9	98.0
S_x (in ³)	124.7	228.7
I (in ⁴)	1273.4	1600.7

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.36 inches

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 290$ psi**USE: (1) 7 x 14 PSL**

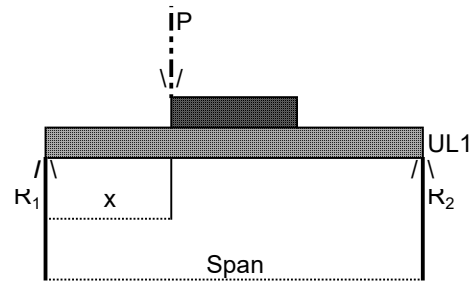
RB11) GRID A HEADER @ KITCHEN

8/7/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 7.7 ft

Load
 Uniform Load 1 (full span) = 0 lb/ft
 Uniform Load 2 (lbs/ft) = 855 from x = 0 5.4 feet
 Sum UL1 + UL2 = 0
 Concentrated Load (lbs) = 2100 @ x = 5.4 feet



$V_{max} = 3625 \text{ lb}$
 $M_{max} = 7679 \text{ lb-ft}$

Reactions

$R_1 = 3625 \text{ lb}$
 $R_2 = 3092 \text{ lb}$

Nominal Beam Size: b = 5.5 in. d = 7.5 in. Number of Sections = 1
 b_{act} = 5.50 in. d_{act} = 7.50 in.

Lumber Species/Type:----- GLB

REPETITIVE MEMBER?----- N

POST?: YES

Design Stresses and Factors:

$C_L = 1.00$
 $F_v = 240 \text{ psi}$ LDF = 1.00
 $F_b = 2,400 \text{ psi}$ Cr = 1.00
 $F_{c||} = 1,650 \text{ psi}$ Cv = 1.00
 $F_{c\perp} = 650 \text{ psi}$ CF_(B) = 1.00
 $E = 1.8\text{E}+06 \text{ psi}$ Delta = L/ 360
 $E_{min} = .00\text{E}+00 \text{ psi}$

Moisture > 19%? N

$CM(v) = 1.00$
 $CM(b) = 1.00$
 $CM(c||) = 1.00$
 $CM(c\perp) = 1.00$
 $CM(E) = 1.00$
 Incise Ci = 1.00

Stresses and Deflections		
	Actual	Allowable
Fv (psi)	131.83	240
Fb (psi)	1787	2400
Delta (in.)	0.23	0.26

Section Properties		
	Required	Provided
A (in ²)	22.7	41.3
Sx (in ³)	38.4	51.6
I (in ⁴)	172.9	193.4

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.01 inches

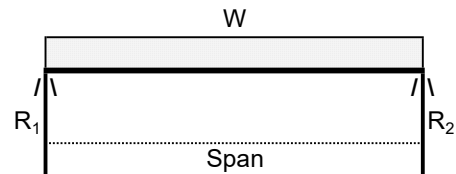
NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 240 \text{ psi}$ **USE: 5.5 x 7-1/2 IN. 24F-V4 GLB**

RB14) GRID A BETWEEN GRIDS 2:4**5/2/2025****SIMPLE SPAN - UNIFORM LOAD**

Span = 16.3 ft

Uniform Load (full span), W = 855 lb/ft

 $V_{max} = 6968$ lb $M_{max} = 28396$ lb-ftReactions $R_1 = 6968$ lb $R_2 = 6968$ lb

Nominal Beam Size: $b = 5.5$ in. $d = 15$ in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 15.00$ in.

Lumber Species/Type:----- GLB

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

 $C_L = 0.97$

Moisture > 19%? N

 $F_v = 240$ psi $LDF = 1.00$ $C_{M(v)} = 1.00$ $F_b = 2,400$ psi $C_r = 1.00$ $C_{M(b)} = 1.00$ $F_{c||} = 1,650$ psi $C_v = 1.00$ $C_{M(c||)} = 1.00$ $F_{c\perp} = 650$ psi $CF_{(B)} = 1.00$ $C_{M(c\perp)} = 1.00$ $E = 1.8E+06$ psi $\delta_{TOTAL} = L/360$ $C_{M(E)} = 1.00$ $E_{min} = .93E+06$ psiIncise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	107.3	240
F_b (psi)	1652	2321
Delta (in.)	0.49	0.54

Section Properties		
	Required	Provided
A (in ²)	36.87	82.5
S_x (in ³)	146.83	206.25
I (in ⁴)	1388.55	1546.9

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.95 inches

NOTCH DEPTH = 0 inches

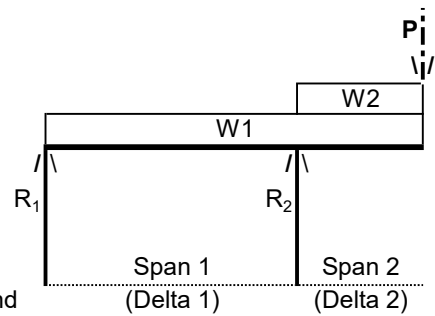
 $f_{v,NOTCH}$ (Tension Face) = $< F_v' = 240$ psi**USE: 5.5 x 15 IN. 24F-V4 GLB**

RR05) GRID G:G.1 RR @ GARAGE

5/15/2025

Span 1 = 13.5 ft
 Span 2 = 2.7 ft

Spacing = 16 in o.c.
 Uniform Load W1 = 60 lb/ft
 Add'l. Uniform Load W2 = 0 lb/ft
 Concentrated Load = 0 lb @ Cantilever End



$V_{max} = 421$ lb
 $M_{max} = 1367$ lb-ft

$R_{1Max} = 405$ lb
 $R_{2Max} = 583$ lb

Nominal Beam Size: $b = 2$ in. $d = 12$ in. Number of Sections = 1
 $b_{act} = 1.50$ in. $d_{act} = 11.25$ in.

Lumber Species/Type:----- HF2

REPETITIVE MEMBER?----- Y

POST?: NO

Design Stresses and Factors:

$C_L = 0.64$ Moisture > 19%? NO
 $F_v = 145$ psi $LDF = 1.00$ $CM(v) = 1.00$
 $F_b = 850$ psi $Cr = 1.15$ $CM(b) = 1.00$
 $F_c|| = 1,300$ psi $C_v = 1.00$ $CM(c||) = 1.00$
 $F_c\perp = 405$ psi $CF(B) = 1.00$ $CM(c\perp) = 1.00$
 $E = 1.3E+06$ psi $\Delta 1=L/480$ $CM(E) = 1.00$
 $E_{min} = .47E+06$ psi $\Delta 2=L/480$ Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	32.4	145
F_b (psi)	518	625
$\Delta 1$ (in)	0.19	0.34
$\Delta 2$ (in)	0.02	0.14

Section Properties		
	Required	Provided
A (in ²)	3.8	16.9
S_x (in ³)	26.2	31.6
I (1) (in ⁴)	102.2	178.0
I (2) (in ⁴)	30.1	178.0

0 INCH
 ϕ HOLE
 SEC.
 REDUC.
 0.0 in3
 0.0 in4

REQ'D END BEARING = 0.96 inches

UNBAL. UPLIFT AT R1 = -16 LBS

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 145$ psi**USE: 2 x 12 HF2 @ 16 IN. O.C.**

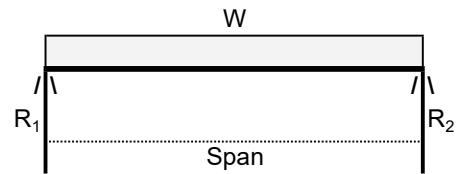
RB15) RIDGE BEAM NEAR GRID G & 2.3

5/15/2025

SIMPLE SPAN - UNIFORM LOAD

Span = 7 ft

Uniform Load (full span), W = 608 lb/ft

 $V_{max} = 2128$ lb $M_{max} = 3724$ lb-ftReactions $R_1 = 2128$ lb $R_2 = 2128$ lb

Nominal Beam Size: $b = 2$ in. $d = 12$ in. Number of Sections = 2
 $b_{act} = 1.50$ in. $d_{act} = 11.25$ in.

Lumber Species/Type:----- HF2

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

 $C_L = 0.98$

Moisture > 19%? N

 $F_v = 145$ psi $LDF = 1.00$ $CM(v) = 1.00$ $F_b = 850$ psi $Cr = 1.00$ $CM(b) = 1.00$ $F_{c||} = 1,300$ psi $C_v = 1.00$ $CM(c||) = 1.00$ $F_{c\perp} = 405$ psi $CF_{(B)} = 1.00$ $CM(c\perp) = 1.00$ $E = 1.3E+06$ psi $\delta_{TOTAL} = L/480$ $CM(E) = 1.00$ $E_{min} = .47E+06$ psiIncise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	69.2	145
F_b (psi)	706	831
Delta (in.)	0.07	0.18

Section Properties		
	Required	Provided
A (in ²)	16.12	33.8
S_x (in ³)	53.78	63.28
I (in ⁴)	144.38	356.0

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.75 inches

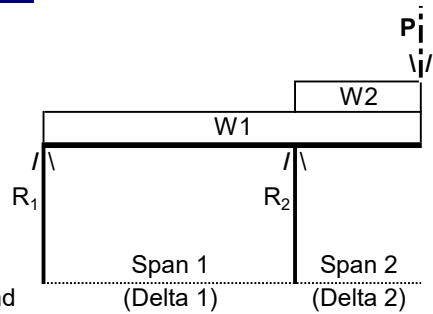
NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = < $F_v' = 145$ psi**USE: (2) 2 x 12 HF2**

RR06) PURLINS @ KITCHEN DECK DORMER- SHORTER BACK SPAN

6/2/2025

Span 1 = 9.363104 ft
 Span 2 = 3 ft
 Spacing = 16 in o.c.
 Uniform Load W1 = 60 lb/ft
 Add'l. Uniform Load W2 = 0 lb/ft
 Concentrated Load = 0 lb @ Cantilever End



V_{max} = 310 lb
 M_{max} = 658 lb-ft

R_{1Max} = 281 lb
 R_{2Max} = 490 lb

Nominal Beam Size: b = 2 in. d = 6 in. Number of Sections = 1
 b_{act} = 1.50 in. d_{act} = 5.50 in.

Lumber Species/Type:----- DF2

REPETITIVE MEMBER?----- Y

POST?: NO

Design Stresses and Factors:

C_L = 0.84 Moisture > 19%? NO
 F_v = 180 psi LDF = 1.00 $CM(v)$ = 1.00
 F_b = 900 psi Cr = 1.15 $CM(b)$ = 1.00
 $F_{c||}$ = 1,400 psi C_v = 1.00 $CM(c||)$ = 1.00
 $F_{c\perp}$ = 625 psi $CF_{(B)}$ = 1.30 $CM(c\perp)$ = 1.00
 E = 1.6E+06 psi $\Delta 1=L/$ 360 $CM(E)$ = 1.00
 E_{min} = .58E+06 psi $\Delta 2=L/$ 240 Incise C_i = 1.00

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	51.3	180
F_b (psi)	1043	1130
$\Delta 1$ (in)	0.31	0.31
$\Delta 2$ (in)	0.16	0.30

Section Properties		
	Required	Provided
A (in ²)	2.4	8.3
S_x (in ³)	7.0	7.6
I (1) (in ⁴)	20.8	20.8
I (2) (in ⁴)	11.3	20.8

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 0.52 inches

UNBAL. UPLIFT AT R1 = -29 LBS

NOTCH DEPTH = 0 inches

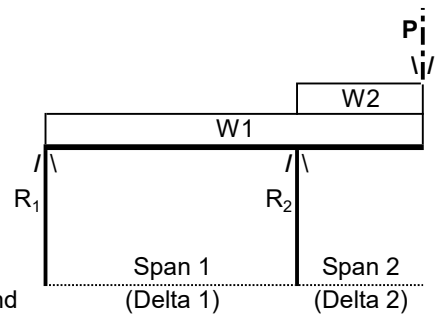
 $f_{V,NOTCH}$ (Tension Face) = N/A < F_v' = 180 psi**USE: 2 x 6 DF2 @ 16 IN. O.C.**

RR06) PURLINS @ KITCHEN DECK DORMER--LONG SPAN

6/2/2025

Span 1 = 11.25 ft
 Span 2 = 3 ft

Spacing = 16 in o.c.
 Uniform Load W1 = 60 lb/ft
 Add'l. Uniform Load W2 = 0 lb/ft
 Concentrated Load = 0 lb @ Cantilever End



V_{max} = 362 lb
 M_{max} = 949 lb-ft

R_{1Max} = 338 lb
 R_{2Max} = 542 lb

Nominal Beam Size: b = 2 in. d = 6 in. Number of Sections = 2
 b_{act} = 1.50 in. d_{act} = 5.50 in.

Lumber Species/Type:----- DF2

REPETITIVE MEMBER?----- Y

POST?: NO

Design Stresses and Factors:

C_L = 0.98 Moisture > 19%? NO
 F_v = 180 psi LDF = 1.00 $CM(v)$ = 1.00
 F_b = 900 psi Cr = 1.15 $CM(b)$ = 1.00
 $F_{c||}$ = 1,400 psi C_v = 1.00 $CM(c||)$ = 1.00
 $F_{c\perp}$ = 625 psi $CF_{(B)}$ = 1.30 $CM(c\perp)$ = 1.00
 E = 1.6E+06 psi $\Delta 1=L/360$ $CM(E)$ = 1.00
 E_{min} = .58E+06 psi $\Delta 2=L/240$ Incise C_i = 1.00

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	30.4	180
F_b (psi)	753	1321
$\Delta 1$ (in)	0.32	0.38
$\Delta 2$ (in)	0.09	0.30

Section Properties		
	Required	Provided
A (in ²)	2.8	16.5
S_x (in ³)	8.6	15.1
I (1) (in ⁴)	36.0	41.6
I (2) (in ⁴)	13.1	41.6

0 INCH
 ϕ HOLE
 SEC.
 REDUC.
 0.0 in3
 0.0 in4

REQ'D END BEARING = 0.29 inches

UNBAL. UPLIFT AT R1 = -24 LBS

NOTCH DEPTH = 0 inches

 $f_{V,NOTCH}$ (Tension Face) = N/A < $F_v' = 180$ psi**USE: (2) 2 x 6 DF2 @ 16 IN. O.C.**

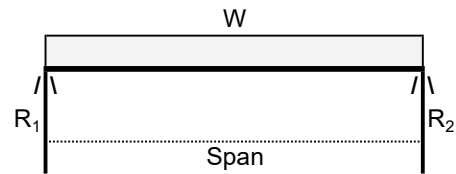
RB16) VALLEY BEAM @ KITCHEN DORMER

5/5/2025

SIMPLE SPAN - UNIFORM LOAD

Span = 11.6 ft

Uniform Load (full span), W = 182.9363 lb/ft

 $V_{max} = 1061$ lb $M_{max} = 3077$ lb-ftReactions $R_1 = 1061$ lb $R_2 = 1061$ lb

Nominal Beam Size: $b = 2$ in. $d = 12$ in. Number of Sections = 2
 $b_{act} = 1.50$ in. $d_{act} = 11.25$ in.

Lumber Species/Type:----- HF2

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

 $C_L = 0.96$

Moisture > 19%? N

 $F_v = 145$ psi $LDF = 1.00$ $C_{M(v)} = 1.00$ $F_b = 850$ psi $C_r = 1.00$ $C_{M(b)} = 1.00$ $F_{c||} = 1,300$ psi $C_v = 1.00$ $C_{M(c||)} = 1.00$ $F_{c\perp} = 405$ psi $CF_{(B)} = 1.00$ $C_{M(c\perp)} = 1.00$ $E = 1.3E+06$ psi $\delta_{TOTAL} = L/360$ $C_{M(E)} = 1.00$ $E_{min} = .47E+06$ psiIncise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	39.5	145
F_b (psi)	583	814
Delta (in.)	0.16	0.39

Section Properties		
	Required	Provided
A (in ²)	9.20	33.8
S_x (in ³)	45.37	63.28
I (in ⁴)	148.26	356.0

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 0.87 inches

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = < $F_v' = 145$ psi**USE: (2) 2 x 12 HF2**

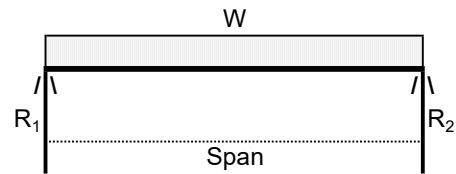
RB17) GRID A DORMER HEADER CARRYING RR06

6/2/2025

SIMPLE SPAN - UNIFORM LOAD

Span = 8 ft

Uniform Load (full span), W = 406 lb/ft

 $V_{max} = 1624$ lb $M_{max} = 3248$ lb-ftReactions $R_1 = 1624$ lb $R_2 = 1624$ lb

Nominal Beam Size: $b = 6$ in. $d = 10$ in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 9.50$ in.

Lumber Species/Type:----- HF1

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

 $C_L = 0.99$

Moisture > 19%? N

 $F_v = 140$ psi $LDF = 1.00$ $C_{M(v)} = 1.00$ $F_b = 1,050$ psi $C_r = 1.00$ $C_{M(b)} = 1.00$ $F_{c||} = 750$ psi $C_v = 1.00$ $C_{M(c||)} = 1.00$ $F_{c\perp} = 405$ psi $CF_{(B)} = 1.00$ $C_{M(c\perp)} = 1.00$ $E = 1.3E+06$ psi $\delta_{TOTAL} = L/480$ $C_{M(E)} = 1.00$ $E_{min} = .47E+06$ psiIncise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	37.4	140
F_b (psi)	471	1044
Delta (in.)	0.07	0.20

Section Properties		
	Required	Provided
A (in ²)	13.96	52.3
S_x (in ³)	37.34	82.73
I (in ⁴)	143.91	393.0

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 0.73 inches

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = < $F_v' = 140$ psi**USE: (1) 6 x 10 HF1**

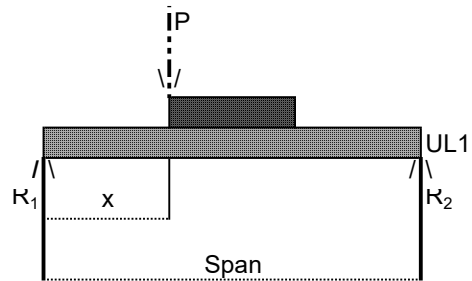
RB18) BEAM OVERDOORS

6/2/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 16 ft

Load
 Uniform Load 1 (full span) = 80 lb/ft
 Uniform Load 2 (lbs/ft) = 0 from x = 0 8 feet
 Sum UL1 + UL2 = 80
 Concentrated Load (lbs) = 3300 @ x = 8 feet



$V_{max} = 2290$ lb
 $M_{max} = 15760$ lb-ft

Reactions
 $R_1 = 2290$ lb
 $R_2 = 2290$ lb

Nominal Beam Size: b = 5.5 in. d = 12 in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 12.00$ in.

Lumber Species/Type:----- GLB

REPETITIVE MEMBER?----- N

POST?: NO

Design Stresses and Factors:

$C_L = 0.98$ Moisture > 19%? N
 $F_v = 240$ psi LDF = 1.00 $CM(v) = 1.00$
 $F_b = 2,400$ psi Cr = 1.00 $CM(b) = 1.00$
 $F_{c||} = 1,650$ psi Cv = 1.00 $CM(c||) = 1.00$
 $F_{c\perp} = 650$ psi $CF_{(B)} = 1.00$ $CM(c\perp) = 1.00$
 $E = 1.8E+06$ psi Delta = L/ 600 $CM(E) = 1.00$
 $E_{min} = .93E+06$ psi Incise Ci = 1.00

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	50.23	240
F_b (psi)	1433	2352
Delta (in.)	0.42	0.32

Section Properties		
	Required	Provided
A (in ²)	13.8	66.0
S_x (in ³)	80.4	132.0
I (in ⁴)	1049.6	792.0

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 0.64 inches

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 240$ psi**USE: 5.5 x 12 IN. 24F-V4 GLB**



Trygstad
ENGINEERING

CALCULATION
SECTION 3.0:
FLOOR
FRAMING

BEAM ID'S NOT USED

2FB04	2FB13	2FB21
2FB05	2FB14	2FB22
2FB06	2FB15	
2FB07	2FB16	
2FB08	2FB17	
2FB09	2FB18	

LOADING & LABELING KEY

TYPE: B=BEAM R=RAFTER J=JOIST	BM. CALC. SEQ. NO.	BEAM LABEL: 2FB08	FLOOR OR ROOF LEVEL: 2=2ND. ETC. L=LOW	LEVEL: R=ROOF F=FLOOR
LINE LOADING [PLF] BEAM TRANSFER: "RED" = ROOF ONLY [25 S+15D+5PV] WALL TRANSFER: "YELLOW" = FLR [40L+15D], R/DK:60+27 "ORANGE" = ROOF + FLR "BLUE" = LOWER FLOOR ONLY [40L+15D] "GREEN" = MULTIPLE FLOORS POINT LOADING [K] BM. LOAD (THIS LVL.) TO TRANSFER BM COL. LOAD TO LVL. BELOW COL. LOAD FROM ABV. TO TRANSFER BM KING POST WIN LVL TO TRANSFER BM				

Framing Notes

- REFER TO S9.1 FOR TYPICAL FRAMING DETAILS
- ROOF FRAMING - PREMANUFACTURED TRUSSES (PMT) OR RAFTERS PER PLAN. 2x4 ON-EDGE OUTRIGGERS (O.R.) @ 24" O.C.
- FLOOR FRAMING - 14 JOISTS PER PLAN. BLOCKING AT BEARING AND SHEARWALLS SHALL BE PER BEARING AND SHEARWALL SCHEDULE (VERIFY EXIST. BRG. LOC.). FLOOR SHEATHING SHALL BE GLUED AND NAILED.
- WALLS INDICATED ARE BELOW THE FRAMING LEVEL (REFER TO SYMBOL KEY FOR TYPE). SEE BEARING WALL SCHEDULE THIS SHEET
- PLUMBING, MECHANICAL, AND ELECTRICAL SYSTEMS SHALL BE DESIGNED AND BUILT TO ACCOMMODATE 3/8" PER FLOOR WOOD SHRINKAGE.
- SEE DETAIL 1/59.1 FOR TYPICAL HEADER/BUNDLED STUD CONSTRUCTION.
- SEE ARCHITECTURAL FOR DRAFTSTOP AND VENTING LOCATIONS.
- FRAMING MEMBERS AND SHEATHING SHALL BE PER STRUCTURAL NOTES AS NOTED ON SHEET S1.1
- ALL UNLABELED EXTERIOR WALLS ARE TO BE TYPE 'P6'; SEE SHEARWALL SCHEDULE ON SHEET S1.2
- HANGERS INDICATED ARE AS MANUFACTURED BY SIMPSON STRONG-TIE. SEE SEC. 06103/S1.1 FOR TYPICAL HANGERS, U.N.O.
- PROVIDE JOIST OR BLOCKING AT TOP SHEARWALLS.
- SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND TOP PLATE ELEVATIONS.
- BUNDLED STUDS FROM THIS LEVEL SHALL BE CONTINUED DOWN TO FOUNDATION OR SUPPORTING BEAM. (RE: 4/S9.1)
- ALL BEAMS AND HEADERS SHALL HAVE A MINIMUM OF (1) FULL HEIGHT STUD AT EACH END FOR BRACING TYPICAL UNLESS NOTED OTHERWISE.
- PROVIDE MINIMUM (2) 2X BUNDLED STUDS UNDER EACH BEAM END, TYPICAL UNLESS NOTED OTHERWISE. (AT HEADERS: TRIMMER+KING=2 BUNDLED STUDS)
- SEE DETAILS 19 & 20 ON SHEET S1.3 FOR TYPICAL CORNER FRAMING DETAILS AT HOLD DOWNS & SHEARWALLS.
- HANGER OCCURS WHERE FLUSH BEAM HANGS TO SUPPORT BEAMS, TYP. U.N.O.

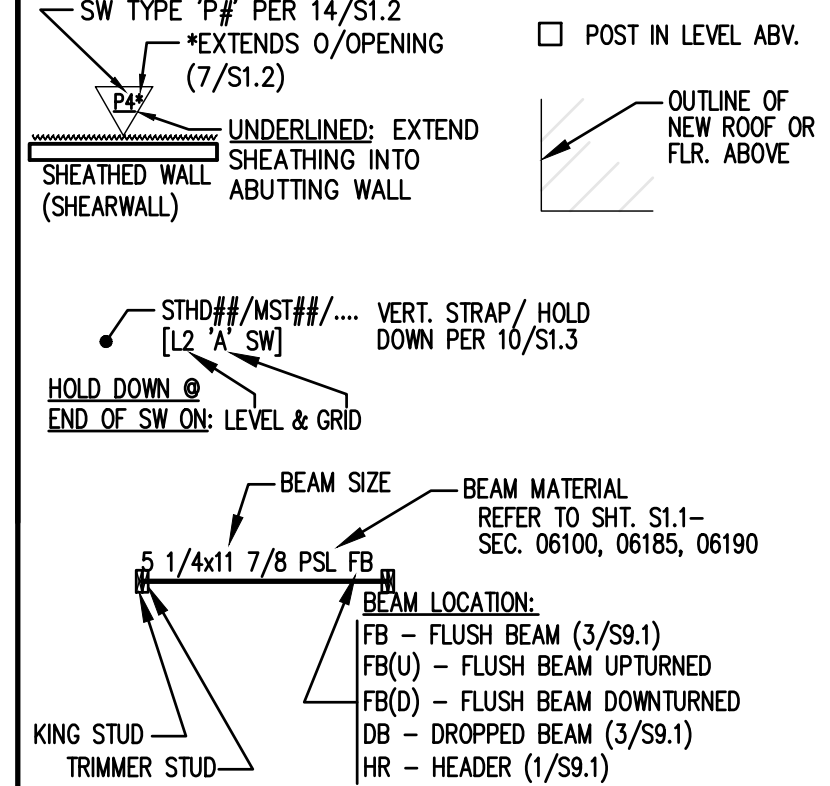
Bearing Wall Stud Schedule

BEARING WALL TYPE	STUD SIZE AND SPACING, U.N.O.
EXTERIOR	2 X 6 AT 16" O.C., U.N.O.
INTERIOR NON-BEARING	2 X 4 AT 16" O.C.

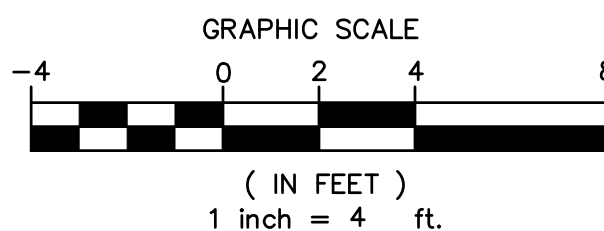
BEARING WALL NOTES

- SEE SHEARWALL SCHEDULE SHEET S1.2 FOR WALL SHEATHING, ADDITIONAL PLATE AND STUD REQUIREMENTS, BLOCKING AND PLATE NAILING. SEE SAWN LUMBER STRUCTURAL NOTES SHEET S1.1 FOR SPECIES AND GRADE
- SECURE SILL PLATES TO CONCRETE WITH 5/8" DIA. ANCHOR BOLTS AT 48" ON CENTER TYPICAL UNLESS NOTED OTHERWISE. RE:S1.2. REFER TO SHEARWALL AND HOLDOWN SCHEDULE FOR ADDITIONAL ANCHOR BOLT REQUIREMENTS. WHERE PRESERVATIVE TREATED WOOD IS USED, REFER TO THAT NOTE SECTION FOR CORROSION PROTECTION REQUIREMENTS FOR CONNECTORS.
- SEE 2/S9.1 FOR TOP PLATE SPLICE. PROVIDE ADDITIONAL CONNECTORS AT SHEARWALLS AS INDICATED ON THE PLANS.
- ALIGN STUDS UNDER JOISTS

Framing Legend



Note:
PLANS PREPARED USING
ARCHITECTURAL BACKGROUNDS
RECEIVED 09/29/2025



Second Floor Framing Plan

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



BM O.T. RXN:
2*(3.2K/4)*15' TALL/23' BM
=2.2K E ASD RXN
OMEGA * 2.2K =5.5K
FULL L +S+ D= 5.8K
~GOV BLC: 0.85 *5.8K + 0.75*5.5K
=9.1K DN
OR
0.6*(5.8K*30%) - 5.5K = -4.5K UP

TAM CEM - RESIDENCE

Addition & Alteration
4215 Holly Ln, Mercer Island, WA 98040

Permit Set

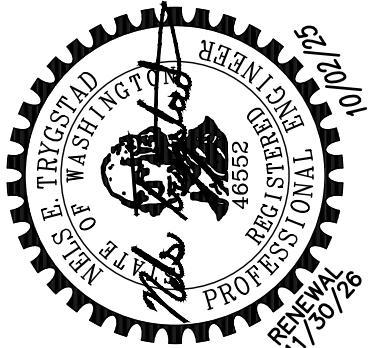
Job # 24-028 TE# 24307

Description	Date
Permit Intake	10/07/24
Correction 01	02/04/25
Correction 02	03/06/25
Field Rev	06/11/25
Field Rev	10/02/25

Trygstad
ENGINEERING
nels@trygstadeng.com
(208)262-6884

Permit No.: 2407-213

Drawn:
Stamp/Approval:



Sheet Name:

SECOND FLOOR
FRAMING
PLAN

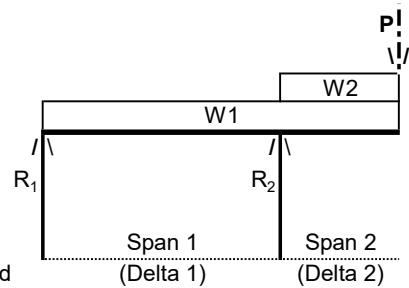
Sheet No:

S2.3

2DJ01) DECK JOISTS @ LEVEL L2
OVERHANGING CANTILEVER

Span 1 = 9.7 ft
 Span 2 = 3.3 ft

Spacing = 16 in o.c.
 Uniform Load W1 = 100 lb/ft
 Add'l. Uniform Load W2 = 0 lb/ft
 Concentrated Load = 66.7 lb @ Cantilever End



$V_{max} = 564$ lb
 $M_{max} = 1176$ lb-ft

$R_{1Max} = 485$ lb
 $R_{2Max} = 960$ lb

Nominal Beam Size: $b = 2$ in. $d = 10$ in. Number of Sections = 1
 $b_{act} = 1.50$ in. $d_{act} = 9.25$ in.

Lumber Species/Type:----- HF2 REPETITIVE MEMBER?----- Y
 POST?: NO
 Design Stresses and Factors:

$C_L = 0.80$	Moisture > 19%? Y
$F_v = 145$ psi	$CM(v) = 0.97$
$F_b = 850$ psi	$CM(b) = 1.00$
$F_{c } = 1,300$ psi	$CM(c) = 0.80$
$F_{c\perp} = 405$ psi	$CM(c\perp) = 0.67$
$E = 1.3E+06$ psi	$CM(E) = 0.90$
$E_{min} = .47E+06$ psi	Incise Ci= 1.00
$LDF = 1.00$	
$Cr = 1.15$	
$C_v = 1.00$	
$CF(B) = 1.10$	
$\Delta 1 = L/480$	
$\Delta 2 = L/480$	

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	52.6	140.65
F_b (psi)	660	859
$\Delta 1$ (in)	0.17	0.24
$\Delta 2$ (in)	0.16	0.17

Section Properties		
	Required	Provided
A (in ²)	5.2	13.9
S_x (in ³)	16.4	21.4
I (1) (in ⁴)	70.2	98.9
I (2) (in ⁴)	93.4	98.9

0 INCH φ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 2.14 inches
 UNBAL. UPLIFT AT R1 = -79 LBS
 NOTCH DEPTH = 0 inches
 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 141$ psi

USE: 2 x 10 HF2 @ 16 IN. O.C.

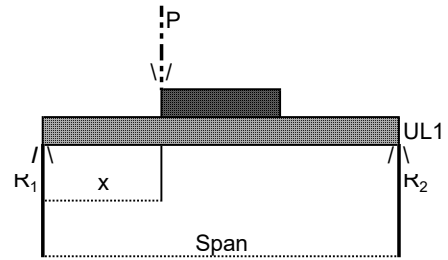
2FB01) GRID A BEAM BTWN. 1:2

6/6/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 10.8 ft

Uniform Load 1 (full span) = Load 136.85 lb/ft
 Uniform Load 2 (lbs/ft) = 4982.5 from x = 1 2 feet
 Sum UL1 + UL2 = 137
 Concentrated Load (lbs) = 3100 @ x = 9.6 feet



$V_{max} = 5374$ lb
 $M_{max} = 8033$ lb-ft

Reactions

$R_1 = 5374$ lb
 $R_2 = 4187$ lb

Nominal Beam Size: $b = 3.5$ in. $d = 14$ in. Number of Sections = 1
 $b_{act} = 3.50$ in. $d_{act} = 14.00$ in.

Lumber Species/Type:----- PSL REPETITIVE MEMBER?----- N
 POST?: NO

Design Stresses and Factors:

$C_L = 0.92$ Moisture > 19%? N
 $F_v = 290$ psi $LDF = 1.00$ $CM(v) = 1.00$
 $F_b = 2,900$ psi $Cr = 1.00$ $CM(b) = 1.00$
 $F_c|| = 2,900$ psi $C_v = 1.00$ $CM(c||) = 1.00$
 $F_c\perp = 750$ psi $CF_{(B)} = 1.00$ $CM(c\perp) = 1.00$
 $E = 2.0E+06$ psi $\Delta = L/480$ $CM(E) = 1.00$
 $E_{min} = .10E+07$ psi Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	159.62	290
F_b (psi)	843	2669
Δ (in.)	0.09	0.27

Section Properties		
	Required	Provided
A (in ²)	27.0	49.0
S_x (in ³)	36.1	114.3
I (in ⁴)	264.9	800.3

0 INCH ϕ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 2.05 inches
 NOTCH DEPTH = 0 inches
 $f_{V,NOTCH}$ (Tension Face) = N/A < $F_v' = 290$ psi

USE: (1) 3.5 x 14 PSL

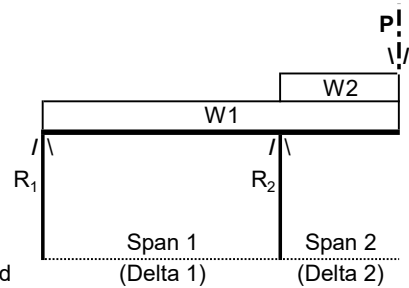
2FB02) GRID 1 BEM CARRYING 2FB01

6/6/2025

OVERHANGING CANTILEVER

Span 1 = 7.3 ft
 Span 2 = 2.3 ft

Uniform Load W1 = 689 lb/ft
 Add'l. Uniform Load W2 = 0 lb/ft
 Concentrated Load = 5300 lb @ Cantilever End



$V_{max} = 6885$ lb
 $M_{max} = 14012$ lb-ft

$R1_{max} = 2515$ lb
 $R2_{max} = 11319$ lb

Nominal Beam Size: $b = 5.25$ in. $d = 14$ in. Number of Sections = 1
 $b_{act} = 5.25$ in. $d_{act} = 13.50$ in.

Lumber Species/Type:----- PSL REPETITIVE MEMBER?----- N
 POST?: NO

Design Stresses and Factors:

$C_L = 0.99$	Moisture > 19%? NO
$F_v = 290$ psi	$CM(v) = 1.00$
$F_b = 2,900$ psi	$CM(b) = 1.00$
$F_c = 2,900$ psi	$CM(c) = 1.00$
$F_c\perp = 750$ psi	$CM(c\perp) = 1.00$
$E = 2.0E+06$ psi	$CM(E) = 1.00$
$E_{min} = .10E+07$ psi	Incise Ci= 1.00
$LDF = 1.00$	
$Cr = 1.00$	
$C_v = 1.00$	
$CF(B) = 1.00$	
$\Delta 1 = L/480$	
$\Delta 2 = L/480$	

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	129.3	290
F_b (psi)	1054	2863
$\Delta 1$ (in)	0.05	0.18
$\Delta 2$ (in)	0.08	0.12

Section Properties		
	Required	Provided
A (in ²)	31.6	70.9
S_x (in ³)	58.7	159.5
I (1) (in ⁴)	284.1	1076.4
I (2) (in ⁴)	768.8	1076.4

0 INCH φ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 1.10 inches
 UNBAL. UPLIFT AT R1 = -1920 LBS
 NOTCH DEPTH = 0 inches
 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 290$ psi

USE: (1) 5.25 x 14 PSL

2FB03) GRID 2 BEAM @ DECK

8/7/2025

OVERHANGING CANTILEVER

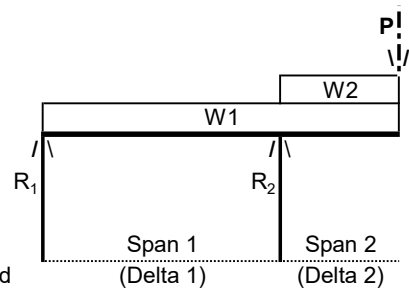
Span 1 = 26.4 ft

Span 2 = 3.5 ft

Uniform Load W1 = 80 lb/ft

Add'l. Uniform Load W2 = 0 lb/ft

Concentrated Load = 1100 lb @ Cantilever End


 $V_{max} = 1380 \text{ lb}$
 $M_{max} = 6970 \text{ lb-ft}$
 $R_{1Max} = 1056 \text{ lb}$
 $R_{2Max} = 2600 \text{ lb}$

Nominal Beam Size: $b = 5.25 \text{ in.}$ $d = 14 \text{ in.}$ Number of Sections = 1
 $b_{act} = 5.25 \text{ in.}$ $d_{act} = 13.50 \text{ in.}$

Lumber Species/Type:----- PSL REPETITIVE MEMBER?----- N

POST?: NO

Design Stresses and Factors:

	$C_L = 0.93$	Moisture > 19%? NO
$F_v = 290 \text{ psi}$	$LDF = 1.00$	$CM(v) = 1.00$
$F_b = 2,900 \text{ psi}$	$Cr = 1.00$	$CM(b) = 1.00$
$F_{c } = 2,900 \text{ psi}$	$C_v = 1.00$	$CM(c) = 1.00$
$F_{c\perp} = 750 \text{ psi}$	$CF_{(B)} = 1.00$	$CM(c\perp) = 1.00$
$E = 2.0E+06 \text{ psi}$	$\Delta 1 = L/480$	$CM(E) = 1.00$
$E_{min} = .10E+07 \text{ psi}$	$\Delta 2 = L/480$	Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
$F_v \text{ (psi)}$	27.3	290
$F_b \text{ (psi)}$	524	2696
$\Delta 1 \text{ (in)}$	0.52	0.66
$\Delta 2 \text{ (in)}$	0.12	0.18

Section Properties		
	Required	Provided
$A \text{ (in}^2\text{)}$	6.7	70.9
$S_x \text{ (in}^3\text{)}$	31.0	159.5
$I \text{ (1) (in}^4\text{)}$	854.0	1076.4
$I \text{ (2) (in}^4\text{)}$	745.0	1076.4

0 INCH φ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 0.34 inches

UNBAL. UPLIFT AT R1 = -164 LBS

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH} \text{ (Tension Face)} = \text{N/A} < F_v' = 290 \text{ psi}$ **USE: (1) 5.25 x 14 PSL**

2FB04) TYP HDR UNO**SIMPLE SPAN - UNIFORM LOAD**

Span = 5.3 ft

Uniform Load (full span), W = 375 lb/ft

 $V_{max} = 994$ lb $M_{max} = 1317$ lb-ft

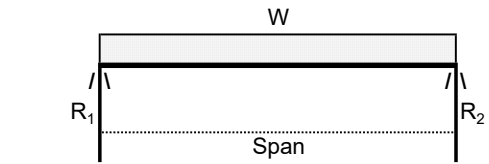
Nominal Beam Size: b = 2 in. d = 8 in. Number of Sections = 2
 $b_{act} = 1.50$ in. $d_{act} = 7.25$ in.

Lumber Species/Type:----- HF2

Post?: NO

Design Stresses and Factors:

$C_L = 0.99$
 $F_v = 145$ psi LDF = 1.00
 $F_b = 850$ psi Cr = 1.00
 $F_c|| = 1,300$ psi Cv = 1.00
 $F_c\perp = 405$ psi $CF_{(B)} = 1.20$
 $E = 1.3E+06$ psi $\delta_{TOTAL} = L/480$
 $E_{min} = .47E+06$ psi

Reactions $R_1 = 994$ lb $R_2 = 994$ lb

REPETITIVE MEMBER?----- N

Moisture > 19%? N

 $CM(v) = 1.00$ $CM(b) = 1.00$ $CM(c||) = 1.00$ $CM(c\perp) = 1.00$ $CM(E) = 1.00$

Incise Ci = 1.00

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	52.9	145
F_b (psi)	601	1009
Delta (in.)	0.05	0.13

Section Properties		
	Required	Provided
A (in ²)	7.94	21.8
S_x (in ³)	15.66	26.28
I (in ⁴)	38.65	95.3

0 INCH Ø HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 0.82 inches

NOTCH DEPTH = 0 inches

 $f_{V,NOTCH}$ (Tension Face) = < $F_v' = 145$ psi**USE: (2) 2 x 8 HF2**

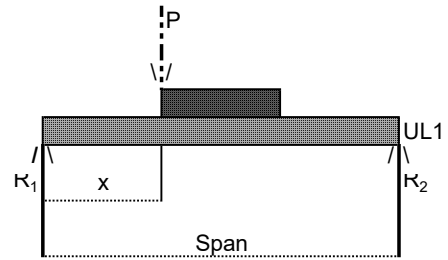
2FB04) GRID A BEAM @ 4.1:4.5

6/6/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 5.5 ft

Load
 Uniform Load 1 (full span) = 375 lb/ft
 Uniform Load 2 (lbs/ft) = 855 from x = 3.3 5.5 feet
 Sum UL1 + UL2 = 375
 Concentrated Load (lbs) = 6500 @ x = 3.3 feet



$V_{max} = 6436$ lb
 $M_{max} = 11183$ lb-ft

Reactions

$R_1 = 4007$ lb
 $R_2 = 6436$ lb

Nominal Beam Size: $b = 5.5$ in. $d = 10.5$ in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 10.50$ in.

Lumber Species/Type:----- GLB REPETITIVE MEMBER?----- N
 POST?: NO

Design Stresses and Factors:

$C_L = 0.99$ Moisture > 19%? N
 $F_v = 240$ psi $LDF = 1.00$ $CM(v) = 1.00$
 $F_b = 2,400$ psi $Cr = 1.00$ $CM(b) = 1.00$
 $F_c|| = 1,650$ psi $C_v = 1.00$ $CM(c||) = 1.00$
 $F_c\perp = 650$ psi $CF_{(B)} = 1.00$ $CM(c\perp) = 1.00$
 $E = 1.8E+06$ psi $\Delta = L/480$ $CM(E) = 1.00$
 $E_{min} = .93E+06$ psi Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	158.65	240
F_b (psi)	1328	2387
Δ (in.)	0.05	0.14

Section Properties		
	Required	Provided
A (in ²)	38.2	57.8
S_x (in ³)	56.2	101.1
I (in ⁴)	199.1	530.6

0 INCH ϕ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 1.80 inches
 NOTCH DEPTH = 0 inches
 $f_{V,NOTCH}$ (Tension Face) = N/A $< F_v' = 240$ psi

USE: 5.5 x 10-1/2 IN. 24F-V4 GLB

2FB10) GRID D BEAM @ END OF CANTILEVERED FLOOR**SIMPLE SPAN - UNIFORM LOAD**

Span = 6.6 ft

Uniform Load (full span), W = 105 lb/ft

 $V_{max} = 347$ lb $M_{max} = 572$ lb-ft

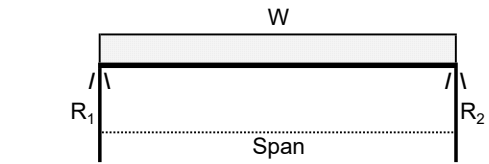
Nominal Beam Size: b = 3.5 in. d = 14 in. Number of Sections = 1
 $b_{act} = 3.50$ in. $d_{act} = 14.00$ in.

Lumber Species/Type:----- PSL

Post?: NO

Design Stresses and Factors:

$C_L = 0.96$
 $F_v = 290$ psi $LDF = 1.00$
 $F_b = 2,900$ psi $Cr = 1.00$
 $F_c|| = 2,900$ psi $C_v = 1.00$
 $F_c\perp = 750$ psi $CF_{(B)} = 1.00$
 $E = 2.0E+06$ psi $\delta_{TOTAL} = L/480$
 $E_{min} = .10E+07$ psi

**Reactions** $R_1 = 347$ lb $R_2 = 347$ lb

REPETITIVE MEMBER?----- N

Moisture > 19%? N

 $CM(v) = 1.00$ $CM(b) = 1.00$ $CM(c||) = 1.00$ $CM(c\perp) = 1.00$ $CM(E) = 1.00$ Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	6.9	290
F_b (psi)	60	2796
Delta (in.)	0.00	0.17

Section Properties		
	Required	Provided
A (in ²)	1.16	49.0
S_x (in ³)	2.45	114.33
I (in ⁴)	13.58	800.3

0 INCH Ø HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 0.13 inches

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = < $F_v' = 290$ psi**USE: (1) 3.5 x 14 PSL**

2FB11) BEAM (LOOKUP NAME "CBO")**OVERHANGING CANTILEVER**

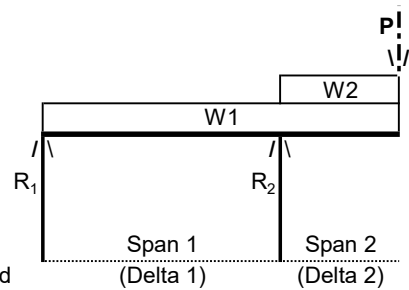
Span 1 = 7.9 ft

Span 2 = 3.8 ft

Uniform Load W1 = 73.7 lb/ft

Add'l. Uniform Load W2 = 0 lb/ft

Concentrated Load = 400 lb @ Cantilever End


 $V_{max} = 680 \text{ lb}$
 $M_{max} = 2052 \text{ lb-ft}$
 $R1_{max} = 291 \text{ lb}$
 $R2_{max} = 1231 \text{ lb}$

Nominal Beam Size: $b = 3.5 \text{ in.}$ $d = 14 \text{ in.}$ Number of Sections = 1
 $b_{act} = 3.50 \text{ in.}$ $d_{act} = 14.00 \text{ in.}$

Lumber Species/Type:----- PSL REPETITIVE MEMBER?----- N

POST?: NO

Design Stresses and Factors:

$C_L = 0.95$	Moisture > 19%? NO
$F_v = 290 \text{ psi}$	$CM(v) = 1.00$
$F_b = 2,900 \text{ psi}$	$CM(b) = 1.00$
$F_{c } = 2,900 \text{ psi}$	$CM(c) = 1.00$
$F_{c\perp} = 750 \text{ psi}$	$CM(c\perp) = 1.00$
$E = 2.0E+06 \text{ psi}$	$CM(E) = 1.00$
$E_{min} = .10E+07 \text{ psi}$	Incise Ci= 1.00
$LDF = 1.00$	
$Cr = 1.00$	
$C_v = 1.00$	
$CF_{(B)} = 1.00$	
$\Delta 1 = L/480$	
$\Delta 2 = L/480$	

Stresses and Deflections		
	Actual	Allowable
$F_v \text{ (psi)}$	18.2	290
$F_b \text{ (psi)}$	215	2759
$\Delta 1 \text{ (in)}$	0.01	0.20
$\Delta 2 \text{ (in)}$	0.03	0.19

Section Properties		
	Required	Provided
$A \text{ (in}^2\text{)}$	3.1	49.0
$S_x \text{ (in}^3\text{)}$	8.9	114.3
$I \text{ (1) (in}^4\text{)}$	35.9	800.3
$I \text{ (2) (in}^4\text{)}$	135.4	800.3

0 INCH φ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 0.24 inches

UNBAL. UPLIFT AT R1 = -260 LBS

NOTCH DEPTH = 0 inches

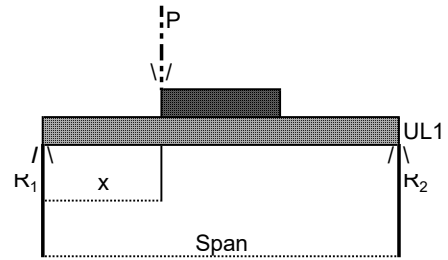
 $f_{v,NOTCH} \text{ (Tension Face)} = \text{N/A} < F_v' = 290 \text{ psi}$ **USE: (1) 3.5 x 14 PSL**

2FB12 GRID 4.5 BM CARRYING 2FB10

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 8.4 ft

Uniform Load 1 (full span) = 73.7 lb/ft
 Uniform Load 2 (lbs/ft) = 0 from x = 0 to 4.4 feet
 Sum UL1 + UL2 = 74
 Concentrated Load (lbs) = 400 @ x = 4.4 feet



$V_{max} = 519$ lb
 $M_{max} = 1468$ lb-ft

Reactions
 $R_1 = 500$ lb
 $R_2 = 519$ lb

Nominal Beam Size: $b = 5.125$ in. $d = 12$ in. Number of Sections = 1
 $b_{act} = 5.13$ in. $d_{act} = 12.00$ in.

Lumber Species/Type:----- GLB REPETITIVE MEMBER?----- N
 POST?: NO

Design Stresses and Factors:

$C_L = 0.99$ Moisture > 19%? N
 $F_v = 240$ psi $LDF = 1.00$ $CM(v) = 1.00$
 $F_b = 2,400$ psi $Cr = 1.00$ $CM(b) = 1.00$
 $F_c|| = 1,650$ psi $C_v = 1.00$ $CM(c||) = 1.00$
 $F_c\perp = 650$ psi $CF(B) = 1.00$ $CM(c\perp) = 1.00$
 $E = 1.8E+06$ psi $\Delta = L/480$ $CM(E) = 1.00$
 $E_{min} = .93E+06$ psi Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	10.86	240
F_b (psi)	143	2371
Δ (in.)	0.01	0.21

Section Properties		
	Required	Provided
A (in ²)	2.8	61.5
S_x (in ³)	7.4	123.0
I (in ⁴)	44.1	738.0

0 INCH ϕ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 0.16 inches
 NOTCH DEPTH = 0 inches
 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 240$ psi

USE: 5-1/8 IN. x 12 IN. 24F-V4 GLB

2FB19) BONUS ROOM FLOOR BEAM FLANKING STAIS

5/15/2025

SIMPLE SPAN - UNIFORM LOAD

Span = 4.3 ft

Uniform Load (full span), W = 580 lb/ft

 $V_{max} = 1247$ lb $M_{max} = 1341$ lb-ft

Nominal Beam Size: $b = 6$ in. $d = 10$ in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 9.50$ in.

Lumber Species/Type:----- HF1

Post?: NO

Design Stresses and Factors:

$C_L = 1.00$
 $F_v = 140$ psi $LDF = 1.00$
 $F_b = 1,050$ psi $Cr = 1.00$
 $F_c|| = 750$ psi $C_v = 1.00$
 $F_c\perp = 405$ psi $CF_{(B)} = 1.00$
 $E = 1.3E+06$ psi $\delta_{TOTAL} = L/480$
 $E_{min} = .47E+06$ psi

Moisture > 19%? N

$CM_{(v)} = 1.00$
 $CM_{(b)} = 1.00$
 $CM_{(c||)} = 1.00$
 $CM_{(c\perp)} = 1.00$
 $CM_{(E)} = 1.00$

Incise $C_i = 1.00$

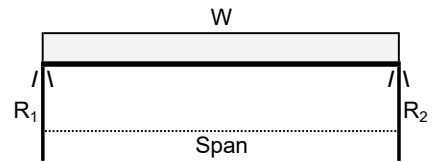
Stresses and Deflections		
	Actual	Allowable
F_v (psi)	22.6	140
F_b (psi)	194	1047
Delta (in.)	0.01	0.11

Section Properties		
	Required	Provided
A (in ²)	8.44	52.3
S_x (in ³)	15.37	82.73
I (in ⁴)	31.93	393.0

0 INCH φ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 0.56 inches

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = < $F_v' = 140$ psi**USE: (1) 6 x 10 HF1**Reactions $R_1 = 1247$ lb $R_2 = 1247$ lb

2FB20) GRID 1.5

6/3/2025

SIMPLE SPAN - UNIFORM LOAD

Span = 8.2 ft

Uniform Load (full span), W = 480 lb/ft

V_{max} = 1968 lbM_{max} = 4034 lb-ft

Nominal Beam Size: b = 6 in. d = 10 in. Number of Sections = 1
 b_{act} = 5.50 in. d_{act} = 9.50 in.

Lumber Species/Type:-----

HF1

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

C_L = 0.99

Moisture > 19%? N

F_v = 140 psi

LDF = 1.00

C_{M(v)} = 1.00F_b = 1,050 psiC_r = 1.00C_{M(b)} = 1.00F_{c||} = 750 psiC_v = 1.00C_{M(c||)} = 1.00F_{c⊥} = 405 psiC_{F(B)} = 1.00C_{M(c⊥)} = 1.00

E = 1.3E+06 psi

δ_{TOTAL} = L/ 480C_{M(E)} = 1.00E_{min} = .47E+06 psiIncise C_i = 1.00

Stresses and Deflections		
	Actual	Allowable
F _v (psi)	45.6	140
F _b (psi)	585	1044
Delta (in.)	0.10	0.21

Section Properties		
	Required	Provided
A (in ²)	17.01	52.3
S _x (in ³)	46.39	82.73
I (in ⁴)	183.22	393.0

0 INCH φ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 0.88 inches

NOTCH DEPTH = 0 inches

f_{v,NOTCH} (Tension Face) = < F_v' = 140 psi**USE: (1) 6 x 10 HF1**

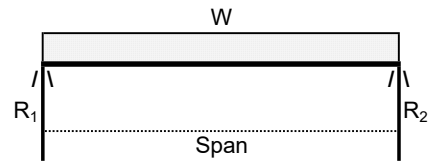
2FB23) GRID B @ 1:2

8/7/2025

SIMPLE SPAN - UNIFORM LOAD

Span = 11 ft

Uniform Load (full span), W = 789 lb/ft

V_{max} = 4340 lbM_{max} = 11934 lb-ftReactionsR₁ = 4340 lbR₂ = 4340 lb

Nominal Beam Size: b = 5.5 in. d = 10.5 in. Number of Sections = 1
 b_{dact} = 5.50 in. d_{dact} = 10.50 in.

Lumber Species/Type:-----

GLB

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

C_L = 0.99

Moisture > 19%? N

F_v = 240 psi

LDF = 1.00

C_{M(v)} = 1.00F_b = 2,400 psiC_r = 1.00C_{M(b)} = 1.00F_{c||} = 1,650 psiC_v = 1.00C_{M(c||)} = 1.00F_{c⊥} = 650 psiC_{F(B)} = 1.00C_{M(c⊥)} = 1.00

E = 1.8E+06 psi

δ_{TOTAL} = L/ 480C_{M(E)} = 1.00E_{min} = .93E+06 psiIncise C_i = 1.00

Stresses and Deflections		
	Actual	Allowable
F _v (psi)	94.8	240
F _b (psi)	1417	2374
Delta (in.)	0.27	0.28

Section Properties		
	Required	Provided
A (in ²)	22.81	57.8
S _x (in ³)	60.33	101.06
I (in ⁴)	525.08	530.6

0 INCH φ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 1.21 inches

NOTCH DEPTH = 0 inches

f_{v,NOTCH} (Tension Face) = < F_v' = 240 psi**USE: 5.5 x 10-1/2 IN. 24F-V4 GLB**

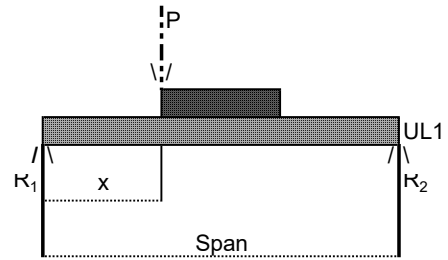
2FB25) GRID E @ 1.3:3

8/7/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 13.3 ft

Uniform Load 1 (full span) = 849 lb/ft
 Uniform Load 2 (lbs/ft) = 207 from x = 3.4 10.2 feet
 Sum UL1 + UL2 = 849
 Concentrated Load (lbs) = 0 @ x = 6.65 feet



$V_{max} = 6366$ lb
 $M_{max} = 22254$ lb-ft

Reactions

$R_1 = 6334$ lb
 $R_2 = 6366$ lb

Nominal Beam Size: $b = 5.25$ in. $d = 14$ in. Number of Sections = 1
 $b_{act} = 5.25$ in. $d_{act} = 14.00$ in.

Lumber Species/Type:----- PSL REPETITIVE MEMBER?----- N
 POST?: NO

Design Stresses and Factors:

$C_L = 0.97$ Moisture > 19%? N
 $F_v = 290$ psi $LDF = 1.00$ $CM(v) = 1.00$
 $F_b = 2,900$ psi $Cr = 1.00$ $CM(b) = 1.00$
 $F_c|| = 2,900$ psi $C_v = 1.00$ $CM(c||) = 1.00$
 $F_c\perp = 750$ psi $CF_{(B)} = 1.00$ $CM(c\perp) = 1.00$
 $E = 2.0E+06$ psi $\Delta = L/480$ $CM(E) = 1.00$
 $E_{min} = .10E+07$ psi Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	109.69	290
F_b (psi)	1557	2822
Δ (in.)	0.29	0.33

Section Properties		
	Required	Provided
A (in ²)	27.8	73.5
S_x (in ³)	94.6	171.5
I (in ⁴)	1057.6	1200.5

0 INCH ϕ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 1.62 inches
 NOTCH DEPTH = 0 inches
 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 290$ psi

USE: (1) 5.25 x 14 PSL

2FB26) DECK RIM BEAM

8/7/2025

OVERHANGING CANTILEVER

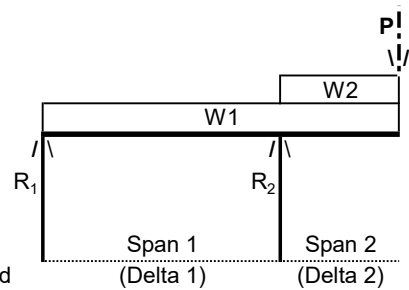
Span 1 = 11.3 ft

Span 2 = 4.5 ft

Uniform Load W1 = 182 lb/ft

Add'l. Uniform Load W2 = 0 lb/ft

Concentrated Load = 0 lb @ Cantilever End



V_{max} = 1191 lb
M_{max} = 2905 lb-ft

R_{1Max} = 1028 lb
R_{2Max} = 2010 lb

Nominal Beam Size: b = 4 in. d = 10 in. Number of Sections = 1
b_{act} = 3.50 in. d_{act} = 9.25 in.

Lumber Species/Type:----- GLB REPETITIVE MEMBER?----- N

POST?: NO

Design Stresses and Factors:

C _L = 0.96	Moisture > 19%? NO
F _v = 240 psi LDF = 1.00	C _{M(v)} = 1.00
F _b = 2,400 psi Cr = 1.00	C _{M(b)} = 1.00
F _c = 1,650 psi C _v = 1.00	C _{M(c)} = 1.00
F _{c⊥} = 650 psi C _{F(B)} = 1.20	C _{M(c⊥)} = 1.00
E = 1.8E+06 psi Delta1=L/ 480	C _{M(E)} = 1.00
E _{min} = .93E+06 psi Delta2=L/ 480	Incise Ci= 1.00

Stresses and Deflections		
	Actual	Allowable
F _v (psi)	48.7	240
F _b (psi)	698	2760
Delta1(in)	0.16	0.28
Delta2(in)	0.17	0.23

Section Properties		
	Required	Provided
A (in ²)	6.6	32.4
S _x (in ³)	12.6	49.9
I (1) (in ⁴)	131.3	230.8
I (2) (in ⁴)	173.1	230.8

0 INCH
φ HOLE
SEC.
REDUC.

0.0 in3
0.0 in4

REQ'D END BEARING = 0.88 inches

UNBAL. UPLIFT AT R1 = -163 LBS

NOTCH DEPTH = 0 inches

f_{v,NOTCH} (Tension Face) = N/A < F_v' = 240 psi**USE: 4 x 10 IN. 24F-V4 GLB**

2FB27) GRID 3 BEAM @ DECK CARRYING 2FB26

8/7/2025

OVERHANGING CANTILEVER

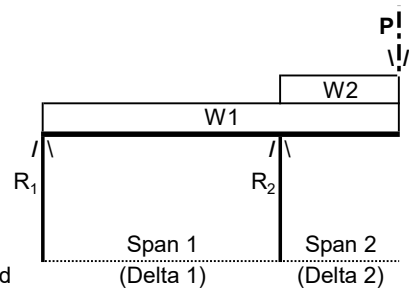
Span 1 = 26.4 ft

Span 2 = 3.5 ft

Uniform Load W1 = 80 lb/ft

Add'l. Uniform Load W2 = 0 lb/ft

Concentrated Load = 2100 lb @ Cantilever End


 $V_{max} = 2380 \text{ lb}$
 $M_{max} = 7840 \text{ lb-ft}$
 $R1_{Max} = 1056 \text{ lb}$
 $R2_{Max} = 3733 \text{ lb}$

Nominal Beam Size: $b = 7 \text{ in.}$ $d = 14 \text{ in.}$ Number of Sections = 1
 $b_{act} = 7.00 \text{ in.}$ $d_{act} = 13.50 \text{ in.}$

Lumber Species/Type:----- PSL REPETITIVE MEMBER?----- N

POST?: NO

Design Stresses and Factors:

	$C_L = 0.97$	Moisture > 19%? NO
$F_v = 290 \text{ psi}$	$LDF = 1.00$	$CM(v) = 1.00$
$F_b = 2,900 \text{ psi}$	$Cr = 1.00$	$CM(b) = 1.00$
$F_{c } = 2,900 \text{ psi}$	$C_v = 1.00$	$CM(c) = 1.00$
$F_{c\perp} = 750 \text{ psi}$	$CF_{(B)} = 1.00$	$CM(c\perp) = 1.00$
$E = 2.0E+06 \text{ psi}$	$\Delta 1 = L/480$	$CM(E) = 1.00$
$E_{min} = .10E+07 \text{ psi}$	$\Delta 2 = L/480$	Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
$F_v \text{ (psi)}$	36.3	290
$F_b \text{ (psi)}$	442	2822
$\Delta 1 \text{ (in)}$	0.48	0.66
$\Delta 2 \text{ (in)}$	0.16	0.18

Section Properties		
	Required	Provided
$A \text{ (in}^2\text{)}$	11.8	94.5
$S_x \text{ (in}^3\text{)}$	33.3	212.6
$I \text{ (1) (in}^4\text{)}$	1053.6	1435.2
$I \text{ (2) (in}^4\text{)}$	1347.8	1435.2

0 INCH φ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 0.26 inches

UNBAL. UPLIFT AT R1 = -297 LBS

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH} \text{ (Tension Face)} = \text{N/A} < F_v' = 290 \text{ psi}$ **USE: (1) 7 x 14 PSL**

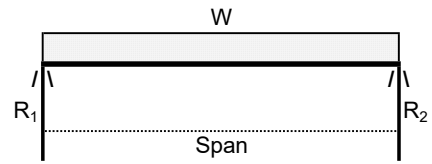
2FB28) GRID C.5 @ 4:5 (UNLOAD BEAM BELOW)

8/7/2025

SIMPLE SPAN - UNIFORM LOAD

Span = 13.5 ft

Uniform Load (full span), W = 1500 lb/ft

V_{max} = 10125 lbM_{max} = 34172 lb-ftReactionsR₁ = 10125 lbR₂ = 10125 lb

Nominal Beam Size: b = 2 in. d = 10 in. Number of Sections = 2
 b_{dact} = 1.50 in. d_{dact} = 9.25 in.

Lumber Species/Type:-----

HF2

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

C_L = 0.96

Moisture > 19%? N

F_v = 145 psi

LDF = 1.00

C_{M(v)} = 1.00F_b = 850 psiC_r = 1.00C_{M(b)} = 1.00F_{c||} = 1,300 psiC_v = 1.00C_{M(c||)} = 1.00F_{c⊥} = 405 psiC_{F(B)} = 1.10C_{M(c⊥)} = 1.00

E = 1.3E+06 psi

δ_{TOTAL} = L/ 480C_{M(E)} = 1.00E_{min} = .47E+06 psiIncise C_i = 1.00

Stresses and Deflections		
	Actual	Allowable
F _v (psi)	484.8	145
F _b (psi)	9585	894
Delta (in.)	4.36	0.34

Section Properties		
	Required	Provided
A (in ²)	92.78	27.8
S _x (in ³)	458.46	42.78
I (in ⁴)	2555.00	197.9

0 INCH φ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 8.33 inches

NOTCH DEPTH = 0 inches

f_{v,NOTCH} (Tension Face) = < F_v' = 145 psi**USE: (2) 2 x 10 HF2**

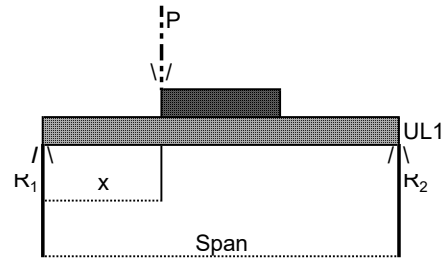
2FB28) GRID C.5 @ 4:5 (UNLOAD BEAM BELOW)

8/7/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 13.5 ft

Uniform Load 1 (full span) = 597 lb/ft
 Uniform Load 2 (lbs/ft) = 129 from x = 0 7.6 feet
 Sum UL1 + UL2 = 597
 Concentrated Load (lbs) = 600 @ x = 6.75 feet



$V_{max} = 5034$ lb
 $M_{max} = 17442$ lb-ft

Reactions
 $R_1 = 5034$ lb
 $R_2 = 4606$ lb

Nominal Beam Size: $b = 5.5$ in. $d = 13.5$ in. Number of Sections = 1
 $b_{act} = 5.50$ in. $d_{act} = 13.50$ in.

Lumber Species/Type:----- GLB REPETITIVE MEMBER?----- N
 POST?: NO

Design Stresses and Factors:

$C_L = 0.98$ Moisture > 19%? N
 $F_v = 240$ psi $LDF = 1.00$ $CM(v) = 1.00$
 $F_b = 2,400$ psi $Cr = 1.00$ $CM(b) = 1.00$
 $F_c|| = 1,650$ psi $C_v = 1.00$ $CM(c||) = 1.00$
 $F_c\perp = 650$ psi $CF_{(B)} = 1.00$ $CM(c\perp) = 1.00$
 $E = 1.8E+06$ psi $\Delta = L/480$ $CM(E) = 1.00$
 $E_{min} = .93E+06$ psi Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	88.13	240
F_b (psi)	1253	2353
Δ (in.)	0.27	0.34

Section Properties		
	Required	Provided
A (in ²)	27.3	74.3
S_x (in ³)	89.0	167.1
I (in ⁴)	917.1	1127.7

0 INCH ϕ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 1.41 inches
 NOTCH DEPTH = 0 inches
 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 240$ psi

USE: 5.5 x 13-1/2 IN. 24F-V4 GLB

Steel Beam

Project File: 24307 Tam Cem.ec6

LIC# : KW-06020766, Build:20.24.07.08

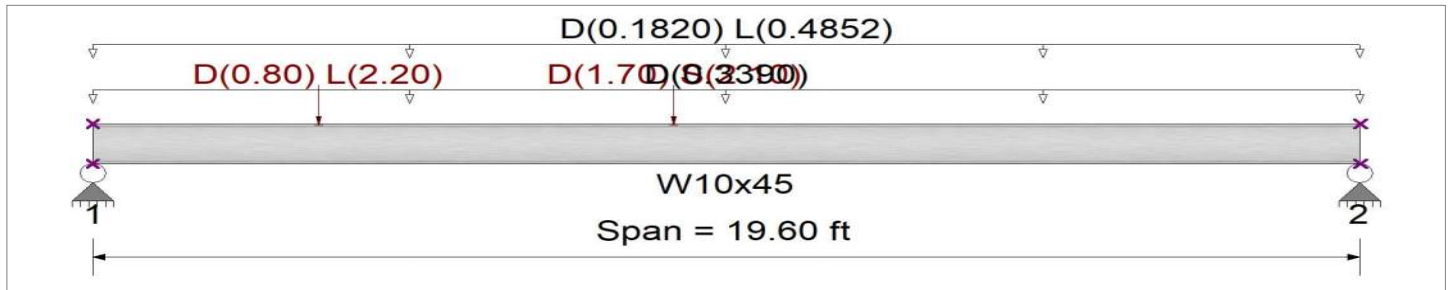
TRYGSTAD ENGINEERING

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DESCRIPTION: 1FB02) GRID 6 BEAM BETWEEN B:D**CODE REFERENCES**

Calculations per AISC 360-16, IBC 2021, ASCE 7-16

Load Combination Set : ASCE 7-22 / IBC 2024 (L<=100psf)

Material PropertiesAnalysis Method : Allowable Strength Design
Beam Bracing : Completely Unbraced
Bending Axis : Major Axis BendingFy : Steel Yield : 50.0 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

Uniform Load : D = 0.3390 k/ft, Tributary Width = 1.0 ft

Uniform Load : D = 0.0150, L = 0.040 ksf, Tributary Width = 12.130 ft

Point Load : D = 0.80, L = 2.20 k @ 3.50 ft

Point Load : D = 1.70, S = 2.10 k @ 9.0 ft

DESIGN SUMMARY**Design OK**

Maximum Bending Stress Ratio =		0.533 : 1	Maximum Shear Stress Ratio =		0.194 : 1
Section used for this span		W10x45	Section used for this span		W10x45
Ma : Applied		64.085 k-ft	Va : Applied		13.685 k
Mn / Omega : Allowable		120.279 k-ft	Vn/Omega : Allowable		70.70 k
Load Combination		+D+L	Load Combination		+D+L
Span # where maximum occurs		Span # 1	Location of maximum on span		0.000 ft
Span # where maximum occurs		Span # 1	Span # where maximum occurs		Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.268 in	Ratio =	877	>=480. Span: 1 : L Only
Max Upward Transient Deflection		0 in	Ratio =	0	<480.0 n/a
Max Downward Total Deflection		0.610 in	Ratio =	386	>=360. Span: 1 : +D+L
Max Upward Total Deflection		0 in	Ratio =	0	<360.0 n/a

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only													
Dsgn. L = 19.60 ft	1	0.300	0.101	36.78		36.78	204.71	122.58	1.17	1.00	7.12	106.05	70.70
+D+L													
Dsgn. L = 19.60 ft	1	0.533	0.194	64.09		64.09	200.87	120.28	1.15	1.00	13.68	106.05	70.70
+D+0.70S													
Dsgn. L = 19.60 ft	1	0.350	0.112	43.92		43.92	209.43	125.41	1.20	1.00	7.92	106.05	70.70
+D+0.750L													
Dsgn. L = 19.60 ft	1	0.475	0.170	57.26		57.26	201.39	120.59	1.15	1.00	12.04	106.05	70.70
+D+0.750L+0.5250S													
Dsgn. L = 19.60 ft	1	0.513	0.179	62.62		62.62	204.01	122.16	1.17	1.00	12.64	106.05	70.70
+0.60D													
Dsgn. L = 19.60 ft	1	0.180	0.060	22.07		22.07	204.71	122.58	1.17	1.00	4.27	106.05	70.70
+D+0.750L+0.10S													
Dsgn. L = 19.60 ft	1	0.482	0.172	58.28		58.28	201.92	120.91	1.16	1.00	12.16	106.05	70.70

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+L	1	0.6098	9.688		0.0000	0.000

Steel Beam

Project File: 24307 Tam Cem.ec6

LIC# : KW-06020766, Build:20.24.07.08

TRYGSTAD ENGINEERING

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DESCRIPTION: 1FB02) GRID 6 BEAM BETWEEN B:D

Vertical Reactions

Support notation : Far left is #:

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	13.685	11.618
Max Upward from Load Combinations	13.685	11.618
Max Upward from Load Cases	7.123	6.470
D Only	7.123	6.470
+D+L	13.685	11.618
+D+0.70S	7.918	7.145
+D+0.750L	12.044	10.331
+D+0.750L+0.5250S	12.641	10.837
+0.60D	4.274	3.882
+D+0.750L+0.10S	12.158	10.427
L Only	6.562	5.148
S Only	1.136	0.964

Steel Beam

Project File: 24307 Tam Cem_R1.ec6

LIC#: KW-06020766, Build:20.24.07.08

TRYGSTAD ENGINEERING

(c) ENERCALC INC 1983-2023

DESCRIPTION: RB18) GRID A BEAM CARRYING DORMER KING POST

CODE REFERENCES

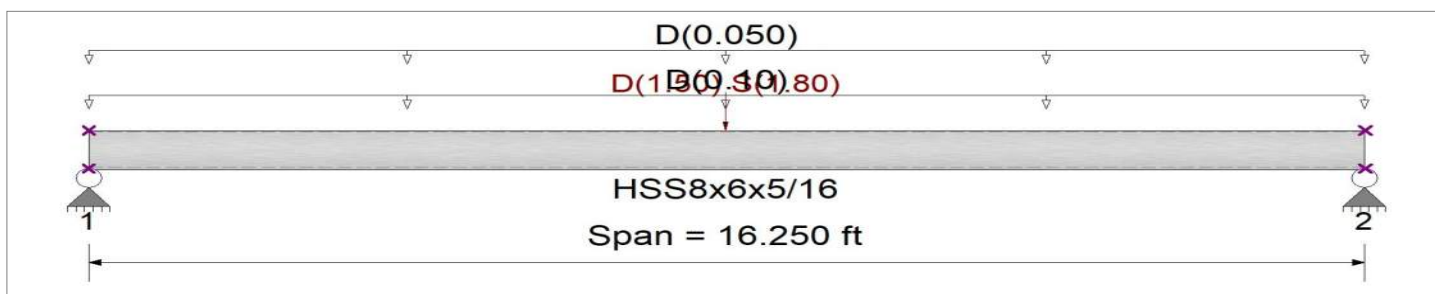
Calculations per AISC 360-16, IBC 2021, ASCE 7-16

Load Combination Set : ASCE 7-22 / IBC 2024 (L<=100psf)

Material Properties

Analysis Method : Allowable Strength Design
Beam Bracing : Completely Unbraced
Bending Axis : Major Axis Bending

Fy : Steel Yield : 50.0 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
Uniform Load : D = 0.10 ksf, Tributary Width = 1.0 ft, (Hanging Door)
Point Load : D = 1.50, S = 1.80 k @ 8.125 ft
Uniform Load : D = 0.050 k/ft, Tributary Width = 1.0 ft, (Wall)

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =		0.332 : 1	Maximum Shear Stress Ratio =		0.038 : 1
Section used for this span		HSS8x6x5/16	Section used for this span		HSS8x6x5/16
Ma : Applied		17.074 k-ft	Va : Applied		2.823 k
Mn / Omega : Allowable		51.397 k-ft	Vn/Omega : Allowable		74.513 k
Load Combination		+D+0.70S	Load Combination		+D+0.70S
Span # where maximum occurs		Span # 1	Location of maximum on span		0.000 ft
			Span # where maximum occurs		Span # 1
Maximum Deflection					
Max Downward Transient Deflection		0.141 in	Ratio =	1,383	>=700. Span: 1 : S Only
Max Upward Transient Deflection		0 in	Ratio =	0	<700.0 n/a
Max Downward Total Deflection		0.357 in	Ratio =	545	>=360. Span: 1 : +D+0.70S
Max Upward Total Deflection		0 in	Ratio =	0	<360.0 n/a

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
D Only													
Dsgn. L = 16.25 ft	1	0.233	0.029	11.96		11.96	85.83	51.40	1.22	1.00	2.19	124.44	74.51
+D+0.70S													
Dsgn. L = 16.25 ft	1	0.332	0.038	17.07		17.07	85.83	51.40	1.25	1.00	2.82	124.44	74.51
+D+0.5250S													
Dsgn. L = 16.25 ft	1	0.307	0.036	15.79		15.79	85.83	51.40	1.24	1.00	2.67	124.44	74.51
+0.60D													
Dsgn. L = 16.25 ft	1	0.140	0.018	7.17		7.17	85.83	51.40	1.22	1.00	1.32	124.44	74.51
+D+0.10S													
Dsgn. L = 16.25 ft	1	0.247	0.031	12.69		12.69	85.83	51.40	1.23	1.00	2.28	124.44	74.51

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.70S	1	0.3575	8.171		0.0000	0.000

Vertical Reactions

Support notation : Far left is #:

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	2.823	2.823
Max Upward from Load Combinations	2.823	2.823
Max Upward from Load Cases	2.193	2.193
D Only	2.193	2.193
+D+0.70S	2.823	2.823

Steel Beam

Project File: 24307 Tam Cem_R1.ec6

LIC# : KW-06020766, Build:20.24.07.08

TRYGSTAD ENGINEERING

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DESCRIPTION: RB18) GRID A BEAM CARRYING DORMER KING POST

Vertical Reactions

Support notation : Far left is #:

Values in KIPS

Load Combination	Support 1	Support 2
+D+0.5250S	2.665	2.665
+0.60D	1.316	1.316
+D+0.10S	2.283	2.283
S Only	0.900	0.900

Steel Beam

Project File: 24307 Tam Cem_R1.ec6

LIC# : KW-06020766, Build:20.24.07.08

TRYGSTAD ENGINEERING

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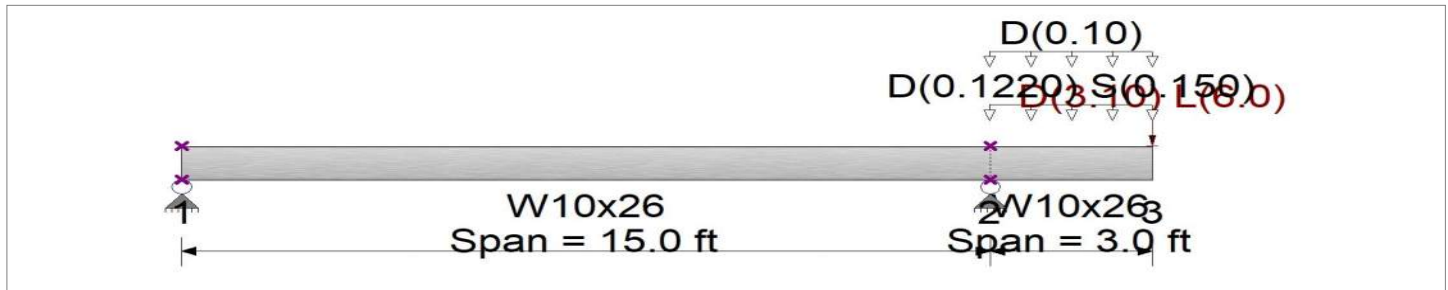
DESCRIPTION: 2FB02) GRID 1 BTM @A:C.5

CODE REFERENCES

Calculations per AISC 360-16, IBC 2021, ASCE 7-16

Load Combination Set : ASCE 7-22 / IBC 2024 (L<=100psf)

Material Properties

Analysis Method : Allowable Strength Design
Beam Bracing : Completely Unbraced
Bending Axis : Major Axis BendingFy : Steel Yield : 50.0 ksi
E: Modulus : 29,000.0 ksi

Applied Loads

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

Beam self weight NOT internally calculated and added
Load(s) for Span Number 2

Point Load : D = 3.10, L = 6.0 k @ 3.0 ft

Uniform Load : D = 0.1220, S = 0.150 k/ft, Tributary Width = 1.0 ft

Uniform Load : D = 0.10 k/ft, Tributary Width = 1.0 ft

DESIGN SUMMARY

Design OK

Maximum Bending Stress Ratio =		0.362 : 1		Maximum Shear Stress Ratio =		0.182 : 1	
Section used for this span		W10x26		Section used for this span		W10x26	
Ma : Applied		28.299 k-ft		Va : Applied		9.766 k	
Mn / Omega : Allowable		78.094 k-ft		Vn/Omega : Allowable		53.560 k	
Load Combination		+D+L+H, LL Comb Run (*L)		Load Combination		+D+L+H, LL Comb Run (*L)	
				Location of maximum on span		15.000 ft	
Span # where maximum occurs		Span # 1		Span # where maximum occurs		Span # 1	
Maximum Deflection							
Max Downward Transient Deflection		0.134 in Ratio = 537 >=360		Span: 2 : L Only, LL Comb Run (*L)			
Max Upward Transient Deflection		-0.108 in Ratio = 1,665 >=360		Span: 2 : L Only, LL Comb Run (*L)			
Max Downward Total Deflection		0.210 in Ratio = 342 >=180		Span: 2 : +D+L+H, LL Comb Run (*L)			
Max Upward Total Deflection		-0.170 in Ratio = 1059 >=180		Span: 2 : +D+L+H, LL Comb Run (*L)			

Maximum Forces & Stresses for Load Combinations

Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx	Vnx/Omega
+D+H													
Dsgn. L = 15.00 ft	1	0.132	0.070		-10.30	10.30	130.42	78.09	1.67	1.00	3.77	80.34	53.56
Dsgn. L = 3.00 ft	2	0.132	0.070		-10.30	10.30	130.42	78.09	1.00	1.00	3.77	80.34	53.56
+D+L+H, LL Comb Run (*L)													
Dsgn. L = 15.00 ft	1	0.362	0.182		-28.30	28.30	130.42	78.09	1.67	1.00	9.77	80.34	53.56
Dsgn. L = 3.00 ft	2	0.362	0.182		-28.30	28.30	130.42	78.09	1.00	1.00	9.77	80.34	53.56
+D+L+H, LL Comb Run (L*)													
Dsgn. L = 15.00 ft	1	0.132	0.070		-10.30	10.30	130.42	78.09	1.67	1.00	3.77	80.34	53.56
Dsgn. L = 3.00 ft	2	0.132	0.070		-10.30	10.30	130.42	78.09	1.00	1.00	3.77	80.34	53.56
+D+L+H, LL Comb Run (LL)													
Dsgn. L = 15.00 ft	1	0.362	0.182		-28.30	28.30	130.42	78.09	1.67	1.00	9.77	80.34	53.56
Dsgn. L = 3.00 ft	2	0.362	0.182		-28.30	28.30	130.42	78.09	1.00	1.00	9.77	80.34	53.56
+D+Lr+H, LL Comb Run (*L)													
Dsgn. L = 15.00 ft	1	0.132	0.070		-10.30	10.30	130.42	78.09	1.67	1.00	3.77	80.34	53.56
Dsgn. L = 3.00 ft	2	0.132	0.070		-10.30	10.30	130.42	78.09	1.00	1.00	3.77	80.34	53.56
+D+Lr+H, LL Comb Run (L*)													
Dsgn. L = 15.00 ft	1	0.132	0.070		-10.30	10.30	130.42	78.09	1.67	1.00	3.77	80.34	53.56
Dsgn. L = 3.00 ft	2	0.132	0.070		-10.30	10.30	130.42	78.09	1.00	1.00	3.77	80.34	53.56
+D+Lr+H, LL Comb Run (LL)													
Dsgn. L = 15.00 ft	1	0.132	0.070		-10.30	10.30	130.42	78.09	1.67	1.00	3.77	80.34	53.56
Dsgn. L = 3.00 ft	2	0.132	0.070		-10.30	10.30	130.42	78.09	1.00	1.00	3.77	80.34	53.56

Steel Beam

Project File: 24307 Tam Cem_R1.ec6

LIC# : KW-06020766, Build:20.24.07.08

TRYGSTAD ENGINEERING

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DESCRIPTION: 2FB02) GRID 1 BTM @A:C.5**Maximum Forces & Stresses for Load Combinations**

Load Combination		Max Stress Ratios		Summary of Moment Values							Summary of Shear Values		
Segment Length	Span #	M	V	Mmax +	Mmax -	Ma Max	Mnx	Mnx/Omega	Cb	Rm	Va Max	Vnx/Vnx/Omega	
+D+0.70S+H													
Dsgn. L = 15.00 ft	1	0.138	0.076		-10.77	10.77	130.42	78.09	1.67	1.00	4.08	80.34	53.56
Dsgn. L = 3.00 ft	2	0.138	0.076		-10.77	10.77	130.42	78.09	1.00	1.00	4.08	80.34	53.56
+D+0.750Lr+0.750L+H, LL Comb													
Dsgn. L = 15.00 ft	1	0.305	0.154		-23.80	23.80	130.42	78.09	1.67	1.00	8.27	80.34	53.56
Dsgn. L = 3.00 ft	2	0.305	0.154		-23.80	23.80	130.42	78.09	1.00	1.00	8.27	80.34	53.56
+D+0.750Lr+0.750L+H, LL Comb													
Dsgn. L = 15.00 ft	1	0.132	0.070		-10.30	10.30	130.42	78.09	1.67	1.00	3.77	80.34	53.56
Dsgn. L = 3.00 ft	2	0.132	0.070		-10.30	10.30	130.42	78.09	1.00	1.00	3.77	80.34	53.56
+D+0.750Lr+0.750L+H, LL Comb													
Dsgn. L = 15.00 ft	1	0.305	0.154		-23.80	23.80	130.42	78.09	1.67	1.00	8.27	80.34	53.56
Dsgn. L = 3.00 ft	2	0.305	0.154		-23.80	23.80	130.42	78.09	1.00	1.00	8.27	80.34	53.56
+D+0.750L+0.5250S+H, LL Comb													
Dsgn. L = 15.00 ft	1	0.309	0.159		-24.15	24.15	130.42	78.09	1.67	1.00	8.50	80.34	53.56
Dsgn. L = 3.00 ft	2	0.309	0.159		-24.15	24.15	130.42	78.09	1.00	1.00	8.50	80.34	53.56
+D+0.750L+0.5250S+H, LL Comb													
Dsgn. L = 15.00 ft	1	0.136	0.075		-10.65	10.65	130.42	78.09	1.67	1.00	4.00	80.34	53.56
Dsgn. L = 3.00 ft	2	0.136	0.075		-10.65	10.65	130.42	78.09	1.00	1.00	4.00	80.34	53.56
+D+0.750L+0.5250S+H, LL Comb													
Dsgn. L = 15.00 ft	1	0.309	0.159		-24.15	24.15	130.42	78.09	1.67	1.00	8.50	80.34	53.56
Dsgn. L = 3.00 ft	2	0.309	0.159		-24.15	24.15	130.42	78.09	1.00	1.00	8.50	80.34	53.56
+D+0.60W+H													
Dsgn. L = 15.00 ft	1	0.132	0.070		-10.30	10.30	130.42	78.09	1.67	1.00	3.77	80.34	53.56
Dsgn. L = 3.00 ft	2	0.132	0.070		-10.30	10.30	130.42	78.09	1.00	1.00	3.77	80.34	53.56
+D+0.750Lr+0.750L+0.450W+H, I													
Dsgn. L = 15.00 ft	1	0.305	0.154		-23.80	23.80	130.42	78.09	1.67	1.00	8.27	80.34	53.56
Dsgn. L = 3.00 ft	2	0.305	0.154		-23.80	23.80	130.42	78.09	1.00	1.00	8.27	80.34	53.56
+D+0.750Lr+0.750L+0.450W+H, I													
Dsgn. L = 15.00 ft	1	0.132	0.070		-10.30	10.30	130.42	78.09	1.67	1.00	3.77	80.34	53.56
Dsgn. L = 3.00 ft	2	0.132	0.070		-10.30	10.30	130.42	78.09	1.00	1.00	3.77	80.34	53.56
+D+0.750Lr+0.750L+0.450W+H, I													
Dsgn. L = 15.00 ft	1	0.305	0.154		-23.80	23.80	130.42	78.09	1.67	1.00	8.27	80.34	53.56
Dsgn. L = 3.00 ft	2	0.305	0.154		-23.80	23.80	130.42	78.09	1.00	1.00	8.27	80.34	53.56
+D+0.750L+0.5250S+0.450W+H,													
Dsgn. L = 15.00 ft	1	0.309	0.159		-24.15	24.15	130.42	78.09	1.67	1.00	8.50	80.34	53.56
Dsgn. L = 3.00 ft	2	0.309	0.159		-24.15	24.15	130.42	78.09	1.00	1.00	8.50	80.34	53.56
+D+0.750L+0.5250S+0.450W+H,													
Dsgn. L = 15.00 ft	1	0.136	0.075		-10.65	10.65	130.42	78.09	1.67	1.00	4.00	80.34	53.56
Dsgn. L = 3.00 ft	2	0.136	0.075		-10.65	10.65	130.42	78.09	1.00	1.00	4.00	80.34	53.56
+D+0.750L+0.5250S+0.450W+H,													
Dsgn. L = 15.00 ft	1	0.309	0.159		-24.15	24.15	130.42	78.09	1.67	1.00	8.50	80.34	53.56
Dsgn. L = 3.00 ft	2	0.309	0.159		-24.15	24.15	130.42	78.09	1.00	1.00	8.50	80.34	53.56
+0.60D+0.60W+0.60H													
Dsgn. L = 15.00 ft	1	0.079	0.042		-6.18	6.18	130.42	78.09	1.67	1.00	2.26	80.34	53.56
Dsgn. L = 3.00 ft	2	0.079	0.042		-6.18	6.18	130.42	78.09	1.00	1.00	2.26	80.34	53.56
+D+0.70E+H													
Dsgn. L = 15.00 ft	1	0.132	0.070		-10.30	10.30	130.42	78.09	1.67	1.00	3.77	80.34	53.56
Dsgn. L = 3.00 ft	2	0.132	0.070		-10.30	10.30	130.42	78.09	1.00	1.00	3.77	80.34	53.56
+D+0.750L+0.10S+0.5250E+H, LI													
Dsgn. L = 15.00 ft	1	0.306	0.155		-23.87	23.87	130.42	78.09	1.67	1.00	8.31	80.34	53.56
Dsgn. L = 3.00 ft	2	0.306	0.155		-23.87	23.87	130.42	78.09	1.00	1.00	8.31	80.34	53.56
+D+0.750L+0.10S+0.5250E+H, LI													
Dsgn. L = 15.00 ft	1	0.133	0.071		-10.37	10.37	130.42	78.09	1.67	1.00	3.81	80.34	53.56
Dsgn. L = 3.00 ft	2	0.133	0.071		-10.37	10.37	130.42	78.09	1.00	1.00	3.81	80.34	53.56
+D+0.750L+0.10S+0.5250E+H, LI													
Dsgn. L = 15.00 ft	1	0.306	0.155		-23.87	23.87	130.42	78.09	1.67	1.00	8.31	80.34	53.56
Dsgn. L = 3.00 ft	2	0.306	0.155		-23.87	23.87	130.42	78.09	1.00	1.00	8.31	80.34	53.56
+0.60D+0.70E+0.60H													
Dsgn. L = 15.00 ft	1	0.079	0.042		-6.18	6.18	130.42	78.09	1.67	1.00	2.26	80.34	53.56
Dsgn. L = 3.00 ft	2	0.079	0.042		-6.18	6.18	130.42	78.09	1.00	1.00	2.26	80.34	53.56

Steel Beam

Project File: 24307 Tam Cem_R1.ec6

LIC# : KW-06020766, Build:20.24.07.08

TRYGSTAD ENGINEERING

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DESCRIPTION: 2FB02) GRID 1 BTM @A:C.5

Overall Maximum Deflections

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
	1	0.0000	0.000		-0.1699	8.700
+D+L+H	2	0.2104	3.000	+D+L+H	0.0000	8.700

Vertical Reactions

Support notation : Far left is #:

Values in KIPS

Load Combination	Support 1	Support 2	Support 3
Max Upward from all Load Conditions		11.653	
Max Upward from Load Combinations		11.653	
Max Upward from Load Cases		7.200	
Max Downward from all Load Conditions (Resis	-1.887		
Max Downward from Load Combinations (Resi	-1.887		
Max Downward from Load Cases (Resisting U _r	-1.200		
+D+H	-0.687	4.453	
+D+L+H, LL Comb Run (*L)	-1.887	11.653	
+D+L+H, LL Comb Run (L*)	-0.687	4.453	
+D+L+H, LL Comb Run (LL)	-1.887	11.653	
+D+Lr+H, LL Comb Run (*L)	-0.687	4.453	
+D+Lr+H, LL Comb Run (L*)	-0.687	4.453	
+D+Lr+H, LL Comb Run (LL)	-0.687	4.453	
+D+0.70S+H	-0.718	4.799	
+D+0.750Lr+0.750L+H, LL Comb Run (*L)	-1.587	9.853	
+D+0.750Lr+0.750L+H, LL Comb Run (L*)	-0.687	4.453	
+D+0.750Lr+0.750L+H, LL Comb Run (LL)	-1.587	9.853	
+D+0.750L+0.5250S+H, LL Comb Run (*L)	-1.610	10.112	
+D+0.750L+0.5250S+H, LL Comb Run (L*)	-0.710	4.712	
+D+0.750L+0.5250S+H, LL Comb Run (LL)	-1.610	10.112	
+D+0.60W+H	-0.687	4.453	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	-1.587	9.853	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	-0.687	4.453	
+D+0.750Lr+0.750L+0.450W+H, LL Comb Rur	-1.587	9.853	
+D+0.750L+0.5250S+0.450W+H, LL Comb Ru	-1.610	10.112	
+D+0.750L+0.5250S+0.450W+H, LL Comb Ru	-0.710	4.712	
+D+0.750L+0.5250S+0.450W+H, LL Comb Ru	-1.610	10.112	
+0.60D+0.60W+0.60H	-0.412	2.672	
+D+0.70E+H	-0.687	4.453	
+D+0.750L+0.10S+0.5250E+H, LL Comb Run	-1.591	9.902	
+D+0.750L+0.10S+0.5250E+H, LL Comb Run	-0.691	4.502	
+D+0.750L+0.10S+0.5250E+H, LL Comb Run	-1.591	9.902	
+0.60D+0.70E+0.60H	-0.412	2.672	
D Only	-0.687	4.453	
L Only, LL Comb Run (*L)	-1.200	7.200	
L Only, LL Comb Run (LL)	-1.200	7.200	
S Only	-0.045	0.495	
H Only			

Wood Column

Project File: 24307 Tam Cem_R1.ec6

LIC# : KW-06020766, Build:20.24.07.08

TRYGSTAD ENGINEERING

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DESCRIPTION: GRID A COLUMNS TOP FLOOR (08/20/25)**Code References**Calculations per NDS 2018, IBC 2021, ASCE 7-16
Load Combinations Used : ASCE 7-22 / IBC 2024 (L<=100psf)**General Information**

Analysis Method	Allowable Stress Design			Wood Section Name	4x8	
End Fixities	Top & Bottom Pinned			Wood Grading/Manuf.	Graded Lumber	
Overall Column Height	15 ft			Wood Member Type	Sawn	
(Used for non-slender calculations)						
Wood Species	Douglas Fir-Larch			Exact Width	3.50 in	Allow Stress Modification Factors
Wood Grade	No.2			Exact Depth	7.250 in	Cf or Cv for Bending 1.30
Fb +	900 psi	Fv	180 psi	Area	25.375 in^2	Cf or Cv for Compression 1.050
Fb -	900 psi	Ft	575 psi	Ix	111.148 in^4	Cf or Cv for Tension 1.20
Fc - Prll	1350 psi	Density	31.21 pcf	Iy	25.904 in^4	Cm : Wet Use Factor 1.0
Fc - Perp	625 psi					Ct : Temperature Fact 1.0
E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial			Cfu : Flat Use Factor 1.0
	Basic	1600	1600	1600 ksi		Kf : Built-up columns 1.0
	Minimum	580	580			Use Cr : Repetitive ? No
Column Buckling Condition:						
Fully braced against buckling ABOUT X-X Axis						
Fully braced against buckling ABOUT Y-Y Axis						

Applied Loads

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

Column self weight included : 82.495 lbs * Dead Load Factor

AXIAL LOADS . . .

Axial Load at 15.0 ft, D = 4.20, L = 5.10 k

BENDING LOADS . . .

Lat. Uniform Load creating Mx-x, W = 0.2350 k/ft

DESIGN SUMMARY**Bending & Shear Check Results**

PASS Max. Axial+Bending Stress Ratio = **0.8562 : 1**
 Load Combination +D+0.60W+H
 Governing NDS Formula Comp + Mxx, NDS Eq. 3.9-3
 Location of max.above base 7.450 ft
 At maximum location values are .
 Applied Axial 4.283 k
 Applied Mx 3.965 k-ft
 Applied My 0.0 k-ft
 Fc : Allowable 2,268.0 psi

Maximum SERVICE Lateral Load Reactions . .
 Top along Y-Y 1.763 k Bottom along Y-Y 1.763 k
 Top along X-X 0.0 k Bottom along X-X 0.0 k

Maximum SERVICE Load Lateral Deflections . . .
 Along Y-Y 1.521 in at 7.550 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 = **0.2171 : 1**
 Load Combination +D+0.60W+H
 Location of max.above base 0.0 ft
 Applied Design Shear 93.768 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+H	0.900	1.000	0.1323	PASS	0.0 ft	0.0	PASS	15.0 ft
+D+L+H	1.000	1.000	0.2608	PASS	0.0 ft	0.0	PASS	15.0 ft
+D+Lr+H	1.250	1.000	0.09525	PASS	0.0 ft	0.0	PASS	15.0 ft
+D+0.70S+H	1.150	1.000	0.1035	PASS	0.0 ft	0.0	PASS	15.0 ft
+D+0.750Lr+0.750L+H	1.250	1.000	0.1803	PASS	0.0 ft	0.0	PASS	15.0 ft
+D+0.750L+0.5250S+H	1.150	1.000	0.1960	PASS	0.0 ft	0.0	PASS	15.0 ft
+D+0.60W+H	1.600	1.000	0.8562	PASS	7.450 ft	0.2171	PASS	0.0 ft
+D+0.750Lr+0.750L+0.450W+H	1.600	1.000	0.6578	PASS	7.450 ft	0.1628	PASS	0.0 ft
+D+0.750L+0.5250S+0.450W+H	1.600	1.000	0.6578	PASS	7.450 ft	0.1628	PASS	0.0 ft

Wood Column

Project File: 24307 Tam Cem_R1.ec6

LIC# : KW-06020766, Build:20.24.07.08

TRYGSTAD ENGINEERING

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DESCRIPTION: GRID A COLUMNS TOP FLOOR (08/20/25)

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+0.60W+0.60H	1.600	1.000	0.8526	PASS	7.450 ft	0.2171	PASS	0.0 ft
+D+0.70E+H	1.600	1.000	0.07441	PASS	0.0 ft	0.0	PASS	15.0 ft
+D+0.750L+0.10S+0.5250E+H	1.600	1.000	0.1409	PASS	0.0 ft	0.0	PASS	15.0 ft
+0.60D+0.70E+0.60H	1.600	1.000	0.04465	PASS	0.0 ft	0.0	PASS	15.0 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		k-ft	Mx - End Moments	
	@ Base	@ Top		@ Base	@ Top	@ Base	@ Base	@ Top		@ Base	@ Top
+D+H						4.282					
+D+L+H						9.382					
+D+Lr+H						4.282					
+D+0.70S+H						4.282					
+D+0.750Lr+0.750L+H						8.107					
+D+0.750L+0.5250S+H						8.107					
+D+0.60W+H				1.058	1.057	4.282					
+D+0.750Lr+0.750L+0.450W+H				0.793	0.793	8.107					
+D+0.750L+0.5250S+0.450W+H				0.793	0.793	8.107					
+0.60D+0.60W+0.60H				1.058	1.057	2.569					
+D+0.70E+H						4.282					
+D+0.750L+0.10S+0.5250E+H						8.107					
+0.60D+0.70E+0.60H						2.569					
D Only						4.282					
Lr Only											
L Only						5.100					
S Only											
W Only				1.763	1.762						
E Only											
H Only											

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection		Max. Y-Y Deflection	
	Distance		Distance	
+D+H	0.0000 in	0.000ft	0.000 in	0.000ft
+D+L+H	0.0000 in	0.000ft	0.000 in	0.000ft
+D+Lr+H	0.0000 in	0.000ft	0.000 in	0.000ft
+D+0.70S+H	0.0000 in	0.000ft	0.000 in	0.000ft
+D+0.750Lr+0.750L+H	0.0000 in	0.000ft	0.000 in	0.000ft
+D+0.750L+0.5250S+H	0.0000 in	0.000ft	0.000 in	0.000ft
+D+0.60W+H	0.0000 in	0.000ft	0.913 in	7.550ft
+D+0.750Lr+0.750L+0.450W+H	0.0000 in	0.000ft	0.685 in	7.550ft
+D+0.750L+0.5250S+0.450W+H	0.0000 in	0.000ft	0.685 in	7.550ft
+0.60D+0.60W+0.60H	0.0000 in	0.000ft	0.913 in	7.550ft
+D+0.70E+H	0.0000 in	0.000ft	0.000 in	0.000ft
+D+0.750L+0.10S+0.5250E+H	0.0000 in	0.000ft	0.000 in	0.000ft
+0.60D+0.70E+0.60H	0.0000 in	0.000ft	0.000 in	0.000ft
D Only	0.0000 in	0.000ft	0.000 in	0.000ft
Lr Only	0.0000 in	0.000ft	0.000 in	0.000ft
L Only	0.0000 in	0.000ft	0.000 in	0.000ft
S Only	0.0000 in	0.000ft	0.000 in	0.000ft
W Only	0.0000 in	0.000ft	1.521 in	7.550ft
E Only	0.0000 in	0.000ft	0.000 in	0.000ft
H Only	0.0000 in	0.000ft	0.000 in	0.000ft

Wood Column

Project File: 24307 Tam Cem_R1.ec6

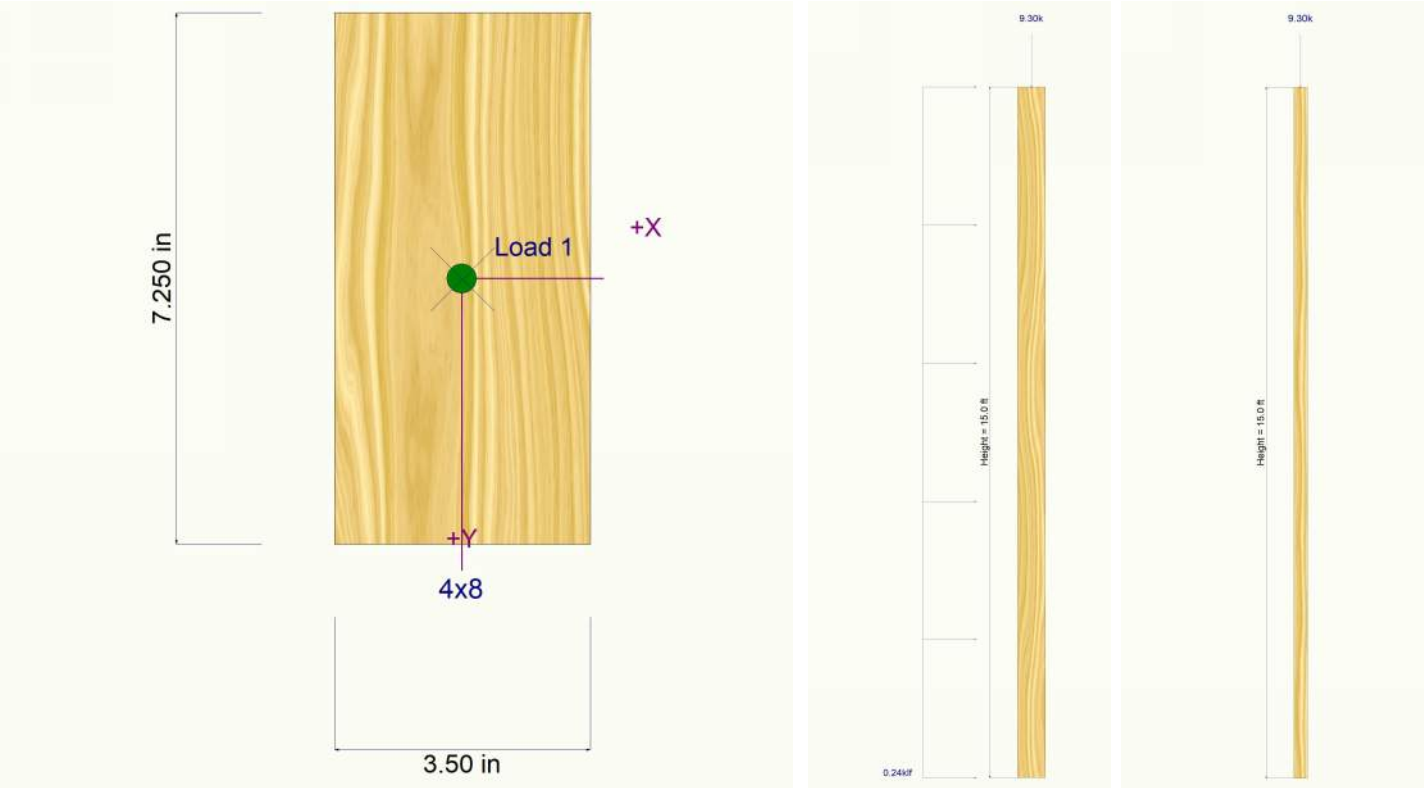
LIC# : KW-06020766, Build:20.24.07.08

TRYGSTAD ENGINEERING

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DESCRIPTION: GRID A COLUMNS TOP FLOOR (08/20/25)

Sketches





Trygstad
ENGINEERING

CALCULATION
SECTION 4.0:
FLOOR
FRAMING

Permit Set

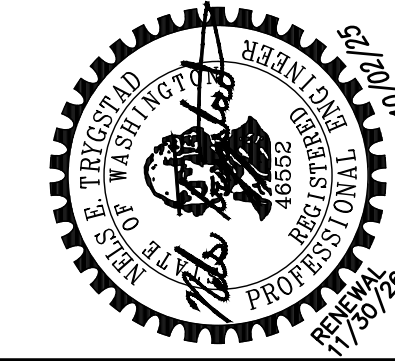
Job # 24-028 TE# 24307

Description	Date
Permit Intake	10/07/24
Correction 01	02/04/25
Correction 02	03/06/25
Field Rev	06/11/25
Field Rev	10/02/25

Trygstad
ENGINEERING
nels@trygstadeng.com
(206)262-6884

Permit No.: 2407-213

Drawn:
Stamp/Approval:

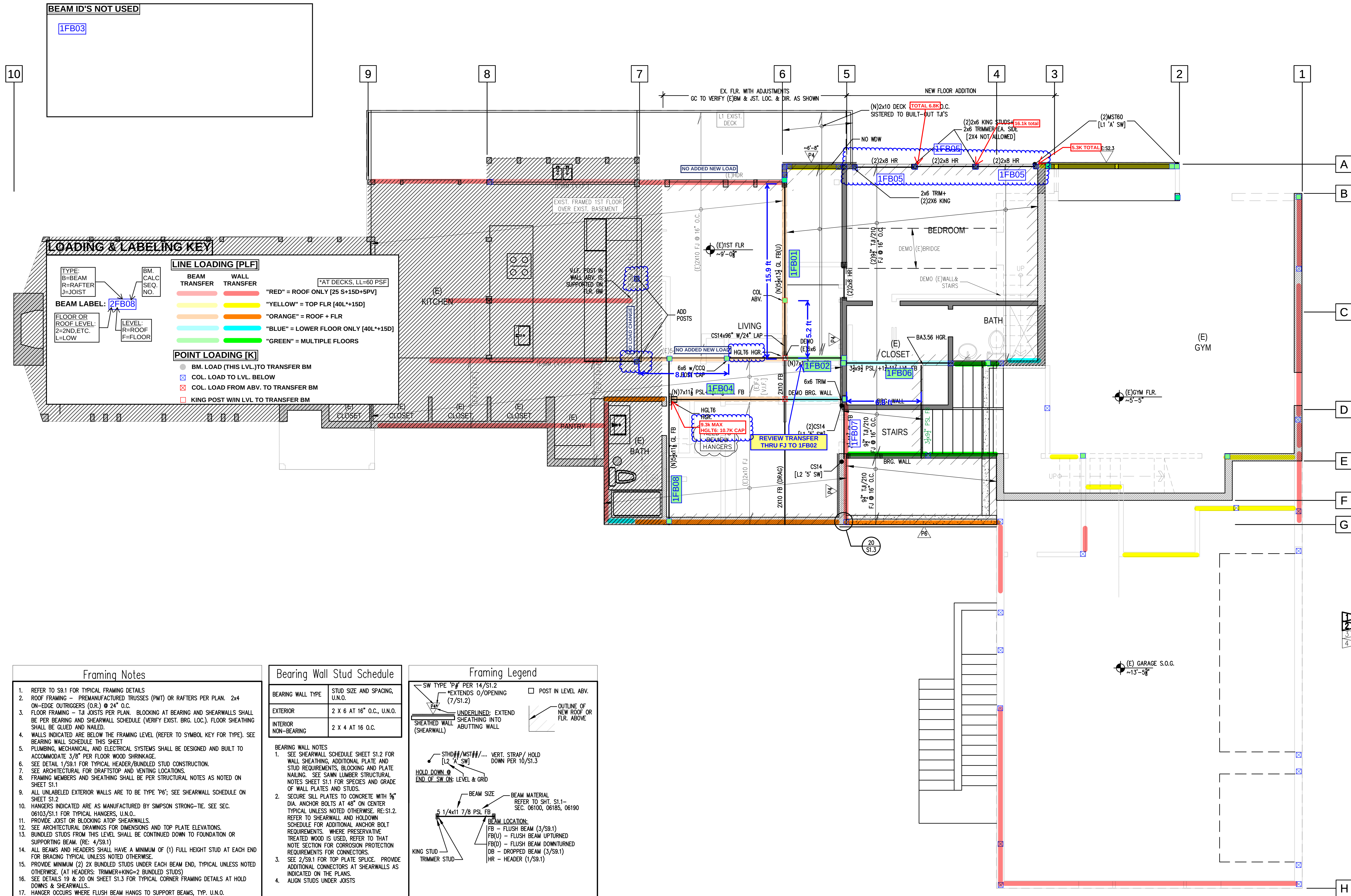


Sheet Name:

**MAIN FLOOR
FRAMING
PLAN**

Sheet No:

S2.2



1FB01) GRID 6 BEAM (SIMPLE SPAN)

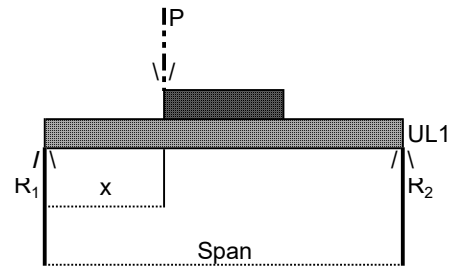
5/12/2025

7/3/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 16 ft

Uniform Load 1 (full span) = Load 640 lb/ft
 Uniform Load 2 (lbs/ft) = 0 from x = 0.7 1.7 feet
 Sum UL1 + UL2 = 640
 Concentrated Load (lbs) = 5800 @ x = 1.2 feet



$V_{max} = 10485$ lb
 $M_{max} = 24101$ lb-ft

Reactions
 $R_1 = 10485$ lb
 $R_2 = 5555$ lb

Nominal Beam Size: b = 7 in. d = 14 in. Number of Sections = 1
 $b_{act} = 7.00$ in. $d_{act} = 14.00$ in.

Lumber Species/Type:----- **PSL** REPETITIVE MEMBER?----- N
 POST?: NO

Design Stresses and Factors:

$C_L = 0.98$ Moisture > 19%? N
 $F_v = 290$ psi $LDF = 1.00$ $C_{M(v)} = 1.00$
 $F_b = 2,900$ psi $Cr = 1.00$ $C_{M(b)} = 1.00$
 $F_{c||} = 2,900$ psi $C_v = 1.00$ $C_{M(c||)} = 1.00$
 $F_{c\perp} = 750$ psi $CF_{(B)} = 1.00$ $C_{M(c\perp)} = 1.00$
 $E = 2.0E+06$ psi $\Delta = L/456.5724$ $C_{M(E)} = 1.00$
 $E_{min} = .10E+07$ psi Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	149.06	290
F_b (psi)	1265	2856
Δ (in.)	0.35	0.42

Section Properties		
	Required	Provided
A (in ²)	50.4	98.0
S_x (in ³)	101.3	228.7
I (in ⁴)	1347.1	1600.7

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 2.00 inches
 NOTCH DEPTH = 0 inches
 $f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 290$ psi

USE: (1) 7 x 14 PSL

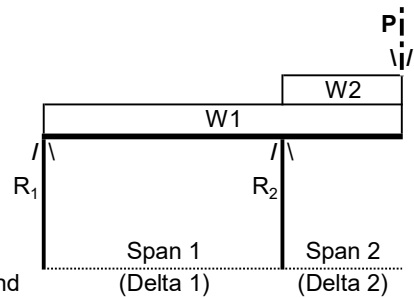
1FB01) GRID 6 BEAM

5/12/2025

8/7/2025

Span 1 = 16 ft
Span 2 = 0 ft

Uniform Load W1 = 339 lb/ft
Add'l. Uniform Load W2 = 0 lb/ft
Concentrated Load = 0 lb @ Cantilever End



$V_{max} = 2712$ lb
 $M_{max} = 10848$ lb-ft

$R_{1Max} = 2712$ lb
 $R_{2Max} = 2712$ lb

Nominal Beam Size: $b = 5.25$ in. $d = 11.875$ in. Number of Sections = 1
 $b_{act} = 5.25$ in. $d_{act} = 11.88$ in.

Lumber Species/Type: GLB REPETITIVE MEMBER? N

POST?: NO

Design Stresses and Factors:

$C_L = 0.98$ Moisture > 19%? NO
 $F_v = 240$ psi $LDF = 1.00$ $C_{M(v)} = 1.00$
 $F_b = 2,400$ psi $Cr = 1.00$ $C_{M(b)} = 1.00$
 $F_{c||} = 1,650$ psi $C_v = 1.00$ $C_{M(c||)} = 1.00$
 $F_{c\perp} = 650$ psi $CF_{(B)} = 1.00$ $C_{M(c\perp)} = 1.00$
 $E = 1.8E+06$ psi $\Delta 1=L/436.4518$ $C_{M(E)} = 1.00$
 $E_{min} = .93E+06$ psi $\Delta 2=L/470.2504$ Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	57.2	240
F_b (psi)	1055	2346
$\Delta 1$ (in)	0.38	0.44
$\Delta 2$ (in)	0.00	0.00

Section Properties		
	Required	Provided
A (in ²)	14.9	62.3
S_x (in ³)	55.5	123.4
I (1) (in ⁴)	631.3	732.6
I (2) (in ⁴)	#DIV/0!	732.6

0 INCH ϕ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 0.79 inches

UNBAL. UPLIFT AT R1 = 0 LBS

NOTCH DEPTH = 0 inches

$f_{v,NOTCH}$ (Tension Face) = N/A < $F_v' = 240$ psi

USE: 5.25 x 11-1/2 IN. 24F-V4 GLB

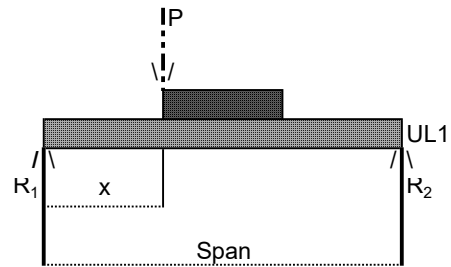
1FB01) GRID 6 BEAM

8/7/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 16 ft

Uniform Load 1 (full span) = Load 339 lb/ft
 Uniform Load 2 (lbs/ft) = 0 from x = 0 5.2 feet
 Sum UL1 + UL2 = 339
 Concentrated Load (lbs) = 2700 @ x = 5.2 feet



$V_{max} = 4535$ lb
 $M_{max} = 19003$ lb-ft

Reactions
 $R_1 = 4535$ lb
 $R_2 = 3590$ lb

Nominal Beam Size: b = 5.5 in. d = 13.5 in. Number of Sections = 1
 b_{act} = 5.50 in. d_{act} = 13.50 in.

Lumber Species/Type:----- GLB REPETITIVE MEMBER?----- N
 POST?: NO

Design Stresses and Factors:

$C_L = 0.98$ Moisture > 19%? N
 $F_v = 240$ psi LDF = 1.00 $C_{M(v)} = 1.00$
 $F_b = 2,400$ psi Cr = 1.00 $C_{M(b)} = 1.00$
 $F_{c||} = 1,650$ psi Cv = 1.00 $C_{M(c||)} = 1.00$
 $F_{c\perp} = 650$ psi $CF_{(B)} = 1.00$ $C_{M(c\perp)} = 1.00$
 $E = 1.8E+06$ psi Delta = L/ 480 $C_{M(E)} = 1.00$
 $E_{min} = .93E+06$ psi Incise Ci = 1.00

Stresses and Deflections		
	Actual	Allowable
Fv (psi)	83.90	240
Fb (psi)	1365	2342
Delta (in.)	0.37	0.40

Section Properties		
	Required	Provided
A (in ²)	26.0	74.3
Sx (in ³)	97.4	167.1
I (in ⁴)	1034.7	1127.7

0 INCH
 φ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.27 inches
 NOTCH DEPTH = 0 inches
 $f_{V,NOTCH}$ (Tension Face) = N/A < $F_v' = 240$ psi

USE: 5.5 x 13-1/2 IN. 24F-V4 GLB

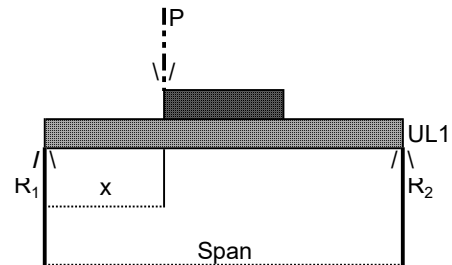
1FB02) GRID C.5 BTWN. GRIDS 5:6.5

8/7/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 10.6 ft

Uniform Load 1 (full span) = 650 lb/ft
 Uniform Load 2 (lbs/ft) = 133 from x = 5.3 10.6 feet
 Sum UL1 + UL2 = 650
 Concentrated Load (lbs) = 6500 @ x = 5.3 feet



$V_{max} = 7224$ lb
 $M_{max} = 27288$ lb-ft

Reactions
 $R_1 = 6871$ lb
 $R_2 = 7224$ lb

Nominal Beam Size: b = 7 in. d = 11.875 in. Number of Sections = 1
 b_{act} = 7.00 in. d_{act} = 11.88 in.

Lumber Species/Type:----- PSL REPETITIVE MEMBER?----- N
 POST?: NO

Design Stresses and Factors:

$C_L = 0.99$ Moisture > 19%? N
 $F_v = 290$ psi LDF = 1.00 $C_{M(v)} = 1.00$
 $F_b = 2,900$ psi Cr = 1.00 $C_{M(b)} = 1.00$
 $F_{c||} = 2,900$ psi Cv = 1.00 $C_{M(c||)} = 1.00$
 $F_{c\perp} = 750$ psi $CF_{(B)} = 1.00$ $C_{M(c\perp)} = 1.00$
 $E = 2.0E+06$ psi Delta = L/ 480 $C_{M(E)} = 1.00$
 $E_{min} = .10E+07$ psi Incise Ci = 1.00

Stresses and Deflections		
	Actual	Allowable
Fv (psi)	118.74	290
Fb (psi)	1990	2877
Delta (in.)	0.25	0.27

Section Properties		
	Required	Provided
A (in ²)	34.0	83.1
Sx (in ³)	113.8	164.5
I (in ⁴)	909.9	976.8

0 INCH
 φ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.38 inches
 NOTCH DEPTH = 0 inches
 $f_{V,NOTCH}$ (Tension Face) = N/A < $F_v' = 290$ psi

USE: (1) 7 x 11.875 PSL**1FB03) REMOVED**

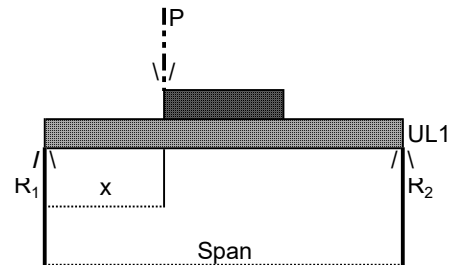
1FB04) GRID D BTWN. 5:7

8/7/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 15.9 ft

Uniform Load 1 (full span) = Load 499 lb/ft
 Uniform Load 2 (lbs/ft) = 79 from x = 0 10.6 feet
 Sum UL1 + UL2 = 499
 Concentrated Load (lbs) = 1100 @ x = 10.6 feet



$V_{max} = 4980$ lb
 $M_{max} = 20702$ lb-ft

Reactions
 $R_1 = 4892$ lb
 $R_2 = 4980$ lb

Nominal Beam Size: b = 8.75 in. d = 11.875 in. Number of Sections = 1
 b_{act} = 8.75 in. d_{act} = 11.88 in.

Lumber Species/Type:----- PSL REPETITIVE MEMBER?----- N
 POST?: NO

Design Stresses and Factors:

$C_L = 0.99$ Moisture > 19%? N
 $F_v = 290$ psi LDF = 1.00 $C_{M(v)} = 1.00$
 $F_b = 2,900$ psi Cr = 1.00 $C_{M(b)} = 1.00$
 $F_{c||} = 2,900$ psi Cv = 1.00 $C_{M(c||)} = 1.00$
 $F_{c\perp} = 750$ psi $CF_{(B)} = 1.00$ $C_{M(c\perp)} = 1.00$
 $E = 2.0E+06$ psi Delta = L/ 438.5585 $C_{M(E)} = 1.00$
 $E_{min} = .10E+07$ psi Incise Ci = 1.00

Stresses and Deflections		
	Actual	Allowable
Fv (psi)	64.76	290
Fb (psi)	1208	2879
Delta (in.)	0.38	0.44

Section Properties		
	Required	Provided
A (in ²)	23.2	103.9
Sx (in ³)	86.3	205.6
I (in ⁴)	1074.7	1221.0

0 INCH
 φ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 0.76 inches
 NOTCH DEPTH = 0 inches
 $f_{V,NOTCH}$ (Tension Face) = N/A < $F_v' = 290$ psi

USE: (1) 8.75 x 11.875 PSL

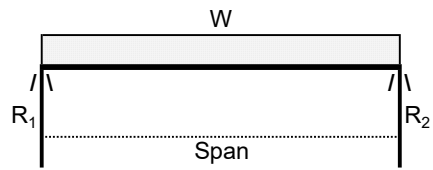
1FB05) GRID A HEADER

1/17/2025 (NO CHANGE ON 5/12/25)

SIMPLE SPAN - UNIFORM LOAD

Span = 5.4 ft

Uniform Load (full span), W = 595 lb/ft

 $V_{max} = 1607$ lb $M_{max} = 2169$ lb-ftReactions $R_1 = 1607$ lb $R_2 = 1607$ lb

Nominal Beam Size: $b = 2$ in. $d = 8$ in. Number of Sections = 2
 $b_{act} = 1.50$ in. $d_{act} = 7.25$ in.

Lumber Species/Type:----- HF2

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

$C_L = 0.99$
 $F_v = 145$ psi $LDF = 1.00$
 $F_b = 850$ psi $Cr = 1.00$
 $F_c|| = 1,300$ psi $C_v = 1.00$
 $F_c\perp = 405$ psi $CF_{(B)} = 1.20$
 $E = 1.3E+06$ psi $\delta_{TOTAL} = L/480$
 $E_{min} = .47E+06$ psi

Moisture > 19%? N

 $C_{M(v)} = 1.00$ $C_{M(b)} = 1.00$ $C_{M(c||)} = 1.00$ $C_{M(c\perp)} = 1.00$ $C_{M(E)} = 1.00$ Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	86.0	145
F_b (psi)	990	1009
Delta (in.)	0.09	0.14

Section Properties		
	Required	Provided
A (in ²)	12.90	21.8
S_x (in ³)	25.80	26.28
I (in ⁴)	64.86	95.3

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.32 inches

NOTCH DEPTH = 0 inches

 $f_{v,NOTCH}$ (Tension Face) = < $F_v' = 145$ psi**USE: (2) 2 x 8 HF2**

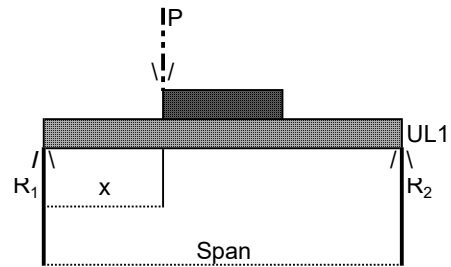
1FB06) GRID C.5 BTWN. 4.5:5

8/7/2025 (NO CHANGE ON 5/12/25)

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 9.7 ft

Uniform Load 1 (full span) = Load 694 lb/ft
 Uniform Load 2 (lbs/ft) = 0 from x = 0 6.8 feet
 Sum UL1 + UL2 = 694
 Concentrated Load (lbs) = 0 @ x = 6.8 feet



$V_{max} = 3366$ lb
 $M_{max} = 8162$ lb-ft

Reactions
 $R_1 = 3366$ lb
 $R_2 = 3366$ lb

Nominal Beam Size: b = 5.25 in. d = 9.5 in. Number of Sections = 1
 b_{act} = 5.25 in. d_{act} = 9.50 in.

Lumber Species/Type:----- PSL REPETITIVE MEMBER?----- N
 POST?: NO

Design Stresses and Factors:

$C_L = 0.99$ Moisture > 19%? N
 $F_v = 290$ psi LDF = 1.00 $C_{M(v)} = 1.00$
 $F_b = 2,900$ psi Cr = 1.00 $C_{M(b)} = 1.00$
 $F_{c||} = 2,900$ psi Cv = 1.00 $C_{M(c||)} = 1.00$
 $F_{c\perp} = 750$ psi $CF_{(B)} = 1.00$ $C_{M(c\perp)} = 1.00$
 $E = 2.0E+06$ psi Delta = L/ 480 $C_{M(E)} = 1.00$
 $E_{min} = .10E+07$ psi Incise Ci = 1.00

Stresses and Deflections		
	Actual	Allowable
Fv (psi)	84.71	290
Fb (psi)	1240	2869
Delta (in.)	0.18	0.24

Section Properties		
	Required	Provided
A (in ²)	14.6	49.9
Sx (in ³)	34.1	79.0
I (in ⁴)	285.0	375.1

0 INCH
 φ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 0.85 inches
 NOTCH DEPTH = 0 inches
 $f_{V,NOTCH}$ (Tension Face) = N/A < $F_v' = 290$ psi

USE: (1) 5.25 x 9.5 PSL

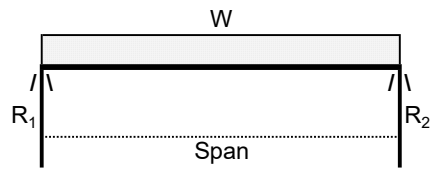
1FB07) GRID 5 HEADER @ E:D

1/17/2025

SIMPLE SPAN - UNIFORM LOAD

Span = 4.3 ft

Uniform Load (full span), W = 478 lb/ft

 $V_{max} = 1028$ lb $M_{max} = 1105$ lb-ftReactions $R_1 = 1028$ lb $R_2 = 1028$ lb

Nominal Beam Size: $b = 2$ in. $d = 10$ in. Number of Sections = 2
 $b_{act} = 1.50$ in. $d_{act} = 9.25$ in.

Lumber Species/Type:----- HF2

REPETITIVE MEMBER?----- N

Post?: NO

Design Stresses and Factors:

$C_L = 0.99$ Moisture > 19%? N
 $F_v = 145$ psi $LDF = 1.00$ $C_{M(v)} = 1.00$
 $F_b = 850$ psi $Cr = 1.00$ $C_{M(b)} = 1.00$
 $F_{c||} = 1,300$ psi $C_v = 1.00$ $C_{M(c||)} = 1.00$
 $F_{c\perp} = 405$ psi $CF_{(B)} = 1.10$ $C_{M(c\perp)} = 1.00$
 $E = 1.3E+06$ psi $\delta_{TOTAL} = L/480$ $C_{M(E)} = 1.00$
 $E_{min} = .47E+06$ psi Incise $C_i = 1.00$

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	35.6	145
F_b (psi)	310	925
Delta (in.)	0.01	0.11

Section Properties		
	Required	Provided
A (in ²)	6.82	27.8
S_x (in ³)	14.33	42.78
I (in ⁴)	26.31	197.9

0 INCH
 ϕ HOLE
 SEC.
 REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 0.85 inches

NOTCH DEPTH = 0 inches

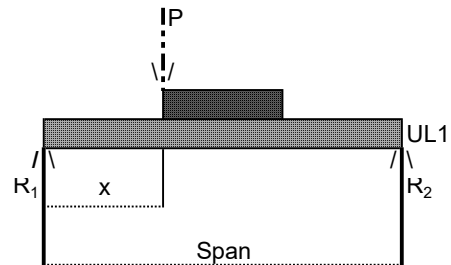
 $f_{v,NOTCH}$ (Tension Face) = < $F_v' = 145$ psi**USE: (2) 2 x 10 HF2**

1FB08) GRID 6.8 BEAM CARRYING 1FB04

8/7/2025

SIMPLE SPAN - UNIFORM LOAD/PARTIAL LOAD/CONC. LD.

Span = 14.7 ft



	Load	Span
Uniform Load 1 (full span) =	73.33333333 lb/ft	
Uniform Load 2 (lbs/ft) =	0	11.1 feet
Sum UL1 + UL2 =	73	
Concentrated Load (lbs) =	4900	@ x = 11.1 feet

$$\begin{aligned} V_{\max} &= 4239 \text{ lb} \\ M_{\max} &= 14485 \text{ lb-ft} \end{aligned}$$

<u>Reactions</u>	
$R_1 =$	1739 lb
$R_2 =$	4239 lb

Nominal Beam Size: b = 5.5 in. d= 11.875 in. Number of Sections = 1
b_{act} = 5.50 in. d_{act} = 11.88 in.

Lumber Species/Type:----- GLB REPETITIVE MEMBER?----- N
POST?: NO

Design Stresses and Factors:

		C _L =	0.98	Moisture > 19%?	N
Fv =	240 psi	LDF =	1.00	C _{M(v)} =	1.00
Fb =	2,400 psi	Cr =	1.00	C _{M(b)} =	1.00
Fc =	1,650 psi	Cv =	1.00	C _{M(c)} =	1.00
Fc⊥ =	650 psi	CF _(B) =	1.00	C _{M(c⊥)} =	1.00
E =	1.8E+06 psi	Delta = L/	480	C _{M(E)} =	1.00
Emin =	.93E+06 psi			Incise Ci=	1.00

Stresses and Deflections		
	Actual	Allowable
Fv (psi)	95.69	240
Fb (psi)	1345	2357
Delta (in.)	0.28	0.37

Section Properties		
	Required	Provided
A (in ²)	26.0	65.3
S _x (in ³)	73.8	129.3
I (in ⁴)	576.7	767.5

0 INCH
φ HOLE
SEC.
REDUC.

0.0 in3

0.0 in4

REQ'D END BEARING = 1.19 inches
 NOTCH DEPTH = 0 inches
 $f_{V, \text{NOTCH}}$ (Tension Face) = N/A < $F_v' = 240$ psi

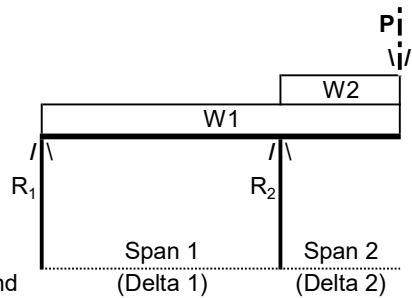
USE: 5.5 x 11-1/2 IN. 24F-V4 GLB

2.#) RAFTER OR JOIST (LOOKUP NAME "CBOR")

5/5/2025

Span 1 = 10.9 ft
Span 2 = 4.7 ft

Spacing = 16 in o.c.
Uniform Load W1 = 100 lb/ft
Add'l. Uniform Load W2 = 0 lb/ft
Concentrated Load = 0 lb @ Cantilever End



V_{max} = 646 lb
 M_{max} = 1485 lb-ft

R_{1Max} = 545 lb
 R_{2Max} = 1116 lb

Nominal Beam Size: b = 2 in. d = 10 in. Number of Sections = 2
 b_{act} = 1.50 in. d_{act} = 9.25 in.

Lumber Species/Type:----- df2

REPETITIVE MEMBER?----- Y

POST?: NO

Design Stresses and Factors:

C_L = 0.97 Moisture > 19%? NO
 F_v = 180 psi LDF = 1.00 $C_{M(v)}$ = 1.00
 F_b = 900 psi Cr = 1.15 $C_{M(b)}$ = 1.00
 $F_{c||}$ = 1,400 psi C_v = 1.00 $C_{M(c||)}$ = 1.00
 $F_{c\perp}$ = 625 psi $CF_{(B)}$ = 1.10 $C_{M(c\perp)}$ = 1.00
 E = 1.6E+06 psi $\Delta 1=L/$ 480 $C_{M(E)}$ = 1.00
 E_{min} = .58E+06 psi $\Delta 2=L/$ 480 Incise C_i = 1.00

Stresses and Deflections		
	Actual	Allowable
F_v (psi)	30.8	180
F_b (psi)	417	1103
$\Delta 1$ (in)	0.10	0.27
$\Delta 2$ (in)	0.14	0.24

Section Properties		
	Required	Provided
A (in ²)	4.7	27.8
S_x (in ³)	16.2	42.8
I (1) (in ⁴)	72.8	197.9
I (2) (in ⁴)	114.7	197.9

0 INCH φ HOLE SEC. REDUC.
0.0 in3
0.0 in4

REQ'D END BEARING = 0.60 inches

UNBAL. UPLIFT AT R1 = -101 LBS

NOTCH DEPTH = 0 inches

 $f_{V,NOTCH}$ (Tension Face) = N/A < F_v' = 180 psi**USE: (2) 2 x 10 df2 @ 16 IN. O.C.**

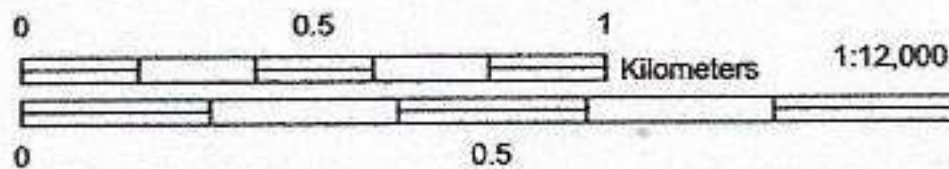


Trygstad
ENGINEERING

CALCULATION
SECTION 7.0:
**LATERAL
ENGINEERING**

Mercer Island Wind Exposure and Wind Speed-Up (Topographic Effect)

by Development Services Group (DSG), City of Mercer Island
April 2009



WIND EXPOSURE CATEGORIES & WIND SPEED-UP FACTORS (ICC Section 1609 & ASCE 7-05 Chapter 6)

It is the responsibility of the Owner (or their Design Professional) to review site conditions and determine the K_{zt} factor to be utilized for each specific project. The K_{zt} factors and wind exposure categories indicated on this map are the minimum values accepted by the City of Mercer Island without requiring the design professional to submit additional calculations and supporting topographic documentation (to verify the values utilized in their wind load determination).

Please note – The K_{zt} values indicated on this map are approximations based upon periodic calculations of representative samplings around Mercer Island. These values are intended for City of Mercer Island's plan review purposes only.

WIND EXPOSURE CATEGORIES:

Wind Exposure Category		Exposure 'C' (1500 feet from Lake)
		Exposure 'B' (all other areas)

WIND SPEED-UP (TOPOGRAPHIC EFFECT) - K_{zt} Factor :

K_{zt} Factor	
	$K_{zt} = 1.0$
	$K_{zt} = 1.3$
	$K_{zt} = 1.6$
	$K_{zt} = 1.9$

PURPLE, HATCHED
ZONE:
 $K_{zt}=1.0$, Exp. C
100mph

GENERAL NOTES FOR WIND EXPOSURE AND WIND SPEED-UP MAP

This map is the Wind Exposure Category and Wind Speed-up (Topographic Effects) Map for the City of Mercer Island. This map shows the minimum wind exposure category and the minimum wind speed-up, K_{zt} factor, which will be accepted without site specific documentation and calculation.

Other wind speed phenomena may occur on Mercer Island that is not specifically identified on this map. It is the responsibility of the Owner (or their Design Professional) to review site conditions and determine the appropriate design wind speed and exposure category for their specific project and location.

This map is for the sole use of the staff of the City of Mercer Island's Development Services Group (DSG) for the purposes of permit application evaluation. This map provides DSG staff a general assessment of Wind Exposure Category and Wind Speed-up (Topographic Effects). All areas have not been specifically evaluated and there may be locations that are not correctly represented on this map. It is the responsibility of individual property owners and map users to evaluate risk associated with their proposed development. No site-specific assessment of risk is implied or otherwise indicated by the City of Mercer Island with this map.

Information about data used for the map, references, and data limitation are all described in the associated "Read Me" document. The digital version of this map is accompanied by a meta data file containing pertinent information about map construction. This data map is available on the City of Mercer Island website.

The City of Mercer Island is using guidance provided within ICC Section 1609 & ASCE 7-05 Chapter 6 regarding definitions used when creating this map.

DEFINITIONS:

K_{zt} factor: The topographic effect of wind speed-up at isolated hills, ridges, and escarpments constituting abrupt changes in the general topography, located in any exposure category, that meet all of the conditions noted in ASCE 7-05 Minimum Design Loads for Buildings and Other Structures, Section 6.5.7.

Exposure B: The wind exposure category that applies where the site in question is located a minimum of 1500 feet from the shoreline and the mean roof height is less than or equal to 30 feet per IBC 2006 section 1609.4.3.

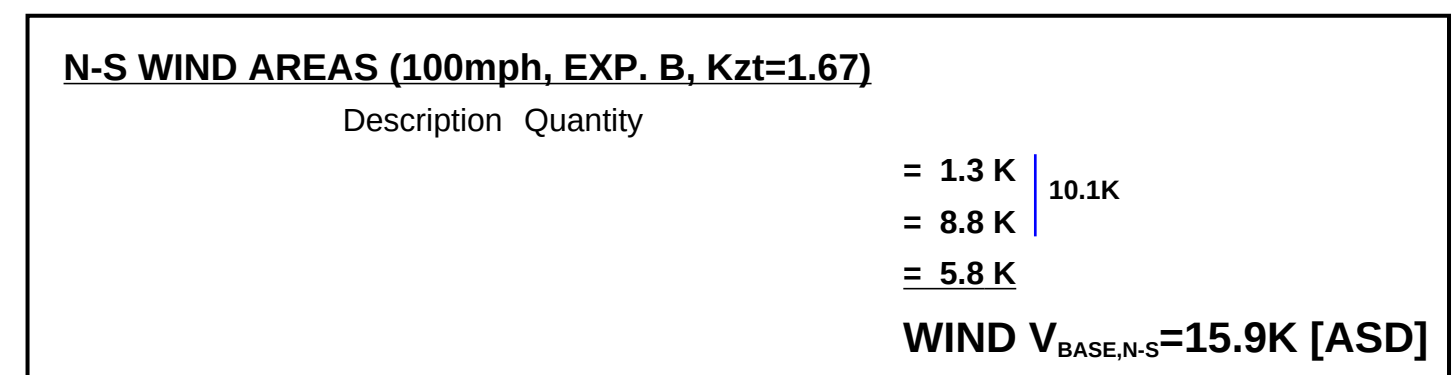
Exposure C: The wind exposure category that applies where the site in question is located within 1500 feet from the shoreline per IBC 2006 section 1609.4.3.

Wind Speed: Minimum 85 mph 3-second gust per IRC Figure R301.2(4)





A3.2



TAM CEM - RESIDENCE

Addition & Alteration
4215 Holly Ln, Mercer Island, WA 98040

Permit Set

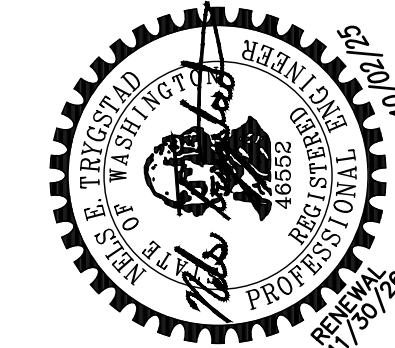
Job # 24-028 TE# 24307

Description	Date
Permit Intake	10/07/24
Correction 01	02/04/25
Correction 02	03/06/25
Field Rev	06/11/25
Field Rev	10/02/25

Trygstad
ENGINEERING
nels@trygstadeng.com
(208) 262-6884

Permit No.: 2407-213

Drawn:
Stamp/Approval:



Sheet Name:

**MAIN FLOOR
FRAMING
PLAN**

Sheet No:

S2.2

10

9

8

7

6

5

4

3

2

1

A

B

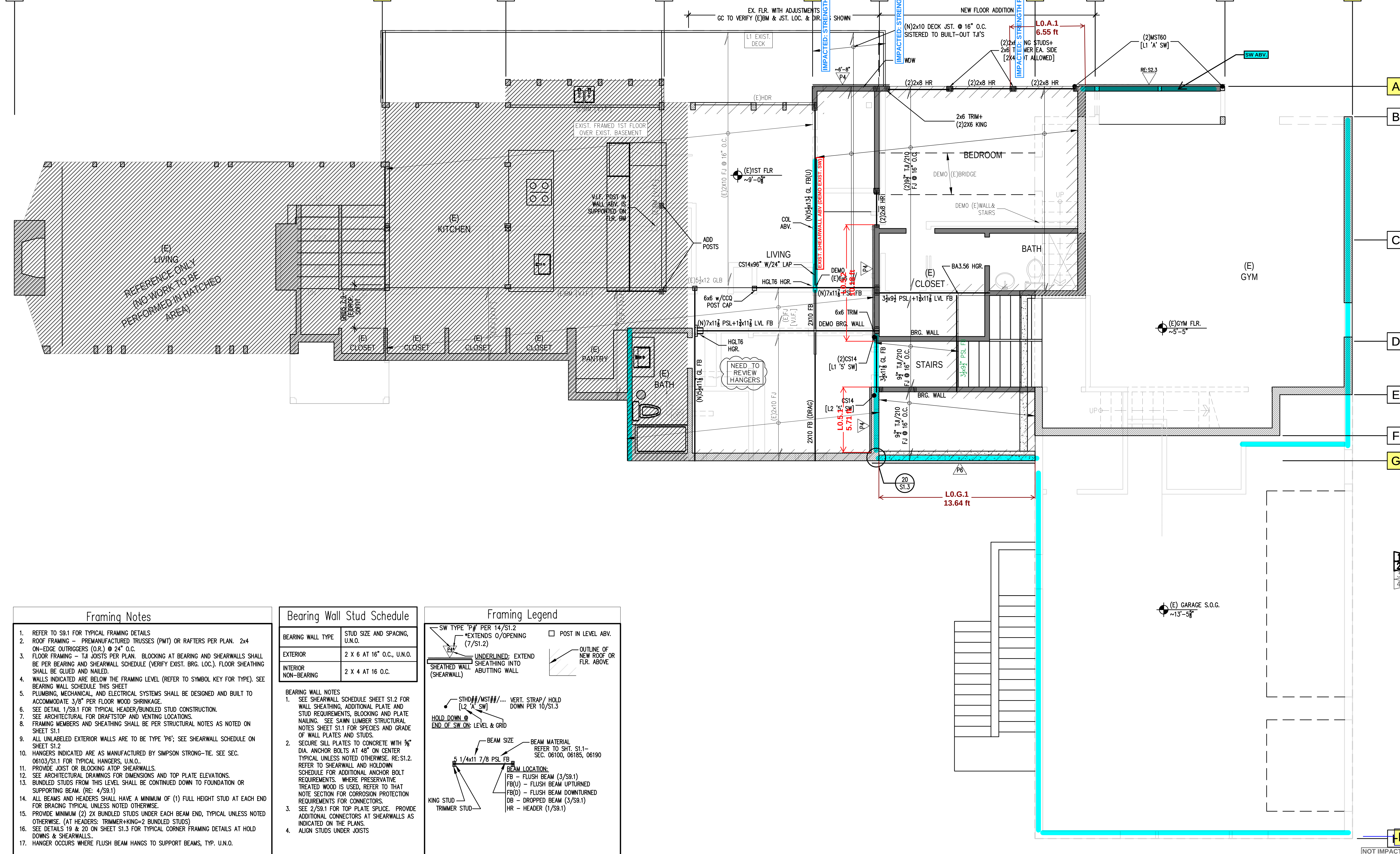
C

D

E

F

G



Framing Notes

- REFER TO S9.1 FOR TYPICAL FRAMING DETAILS
- ROOF FRAMING - PREMANUFACTURED TRUSSES (PMT) OR RAFTERS PER PLAN. 2x4 ON-EDGE OUTRIGGERS (O.R.) @ 24" O.C.
- FLOOR FRAMING - 14 JOISTS PER PLAN. BLOCKING AT BEARING AND SHEARWALLS SHALL BE PER BEARING AND SHEARWALL SCHEDULE (VERIFY EXIST. BRG. LOC.), FLOOR SHEATHING SHALL BE GLUED AND NAILED.
- WALLS INDICATED ARE BELOW THE FRAMING LEVEL (REFER TO SYMBOL KEY FOR TYPE). SEE BEARING WALL SCHEDULE THIS SHEET
- PLUMBING, MECHANICAL, AND ELECTRICAL SYSTEMS SHALL BE DESIGNED AND BUILT TO ACCOMMODATE 3/8" PER FLOOR WOOD SHRINKAGE.
- SEE DETAIL 1/59.1 FOR TYPICAL HEADER/BUNDLED STUD CONSTRUCTION.
- SEE ARCHITECTURAL DRAWINGS FOR DRAFTSTOP AND VENTING LOCATIONS.
- FRAMING MEMBERS AND SHEATHING SHALL BE PER STRUCTURAL NOTES AS NOTED ON SHEET S1.1
- ALL UNLABELED EXTERIOR WALLS ARE TO BE TYPE 'P6'; SEE SHEARWALL SCHEDULE ON SHEET S1.2
- HANGERS INDICATED ARE AS MANUFACTURED BY SIMPSON STRONG-TIE. SEE SEC. 06103/S1.1 FOR TYPICAL HANGERS, U.N.O.
- PROVIDE JOIST OR BLOCKING ATOP SHEARWALLS.
- SEE ARCHITECTURAL DRAWINGS FOR DIMENSIONS AND TOP PLATE ELEVATIONS.
- BUNDLED STUDS FROM THIS LEVEL SHALL BE CONTINUED DOWN TO FOUNDATION OR SUPPORTING BEAM. (RE: 4/S9.1)
- ALL BEAMS AND HEADERS SHALL HAVE A MINIMUM OF (1) FULL HEIGHT STUD AT EACH END FOR BRACING TYPICAL UNLESS NOTED OTHERWISE.
- PROVIDE MINIMUM (2) 2X BUNDLED STUDS UNDER EACH BEAM END, TYPICAL UNLESS NOTED OTHERWISE. (AT HEADERS: TRIMMER+KING=2 BUNDLED STUDS)
- SEE DETAILS 19 & 20 ON SHEET S1.3 FOR TYPICAL CORNER FRAMING DETAILS AT HOLD DOWNS & SHEARWALLS.
- HANGER OCCURS WHERE FLUSH BEAM HANGS TO SUPPORT BEAMS, TYP. U.N.O.

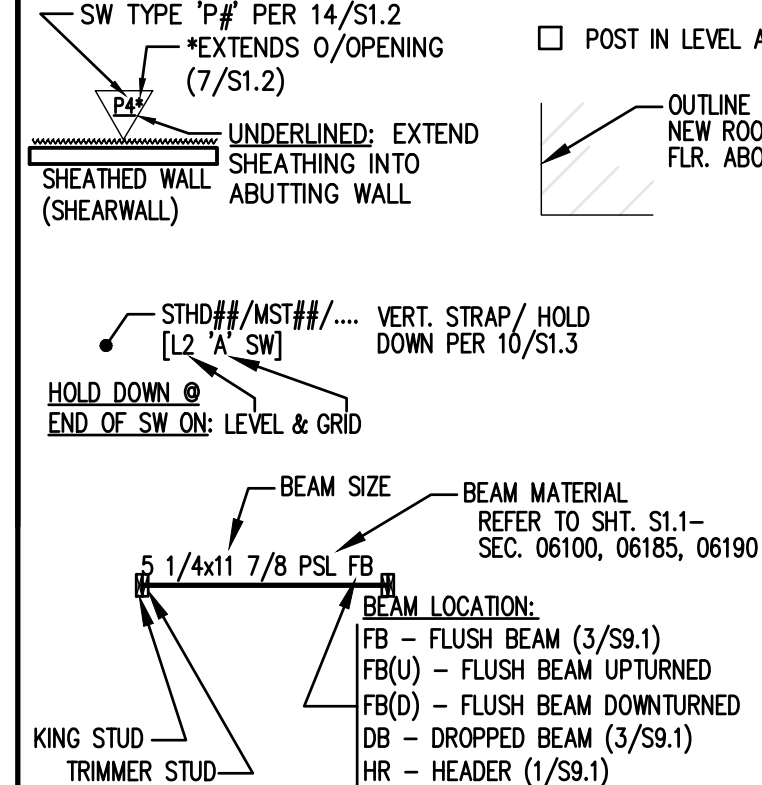
Bearing Wall Stud Schedule

BEARING WALL TYPE	STUD SIZE AND SPACING, U.N.O.
EXTERIOR	2 X 6 AT 16" O.C., U.N.O.
INTERIOR NON-BEARING	2 X 4 AT 16 O.C.

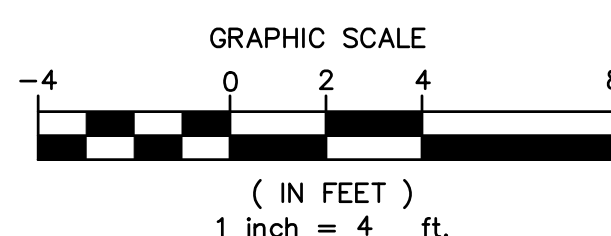
BEARING WALL NOTES

- SEE SHEARWALL SCHEDULE SHEET S1.2 FOR WALL SHEATHING, ADDITIONAL PLATE AND STUD REQUIREMENTS, BLOCKING AND PLATE NAILING. SEE SAW LUMBER STRUCTURAL NOTES SHEET S1.1 FOR SPECIES AND GRADE OF WALL PLATES AND STUDS.
- SECURE SILL PLATES TO CONCRETE WITH 5/8" DIA. ANCHOR BOLTS AT 48" ON CENTER TYPICAL UNLESS NOTED OTHERWISE. RE:S1.2. REFER TO SHEARWALL AND HOLDOWN SCHEDULE FOR ADDITIONAL ANCHOR BOLT REQUIREMENTS. WHERE PRESERVATIVE TREATED WOOD IS USED, REFER TO THAT NOTE SECTION FOR CORROSION PROTECTION REQUIREMENTS FOR CONNECTORS.
- SEE 2/S9.1 FOR TOP PLATE SPLICE. PROVIDE ADDITIONAL CONNECTORS AT SHEARWALLS AS INDICATED ON THE PLANS.
- ALIGN STUDS UNDER JOISTS

Framing Legend

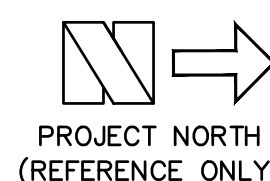


Note:
PLANS PREPARED USING
ARCHITECTURAL BACKGROUNDS
RECEIVED 09/29/2025



Main Floor Framing Plan

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

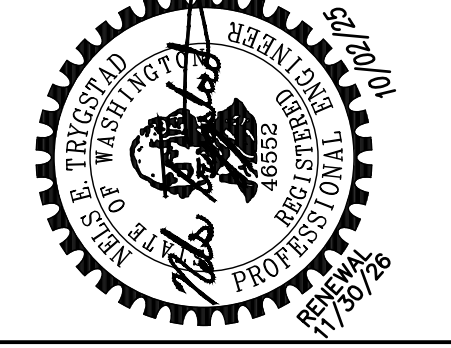


Permit Set	
Job # 24-028	TE# 24307
Description	Date
Permit Intake	10/07/24
Correction 01	02/04/25
Correction 02	03/06/25
Field Rev	06/11/25
Field Rev	10/02/25

Trygstad ENGINEERING
nels@trygstadeng.com
(208)262-6884

Permit No.: 2407-213

Drawn:
Stamp/Approval:

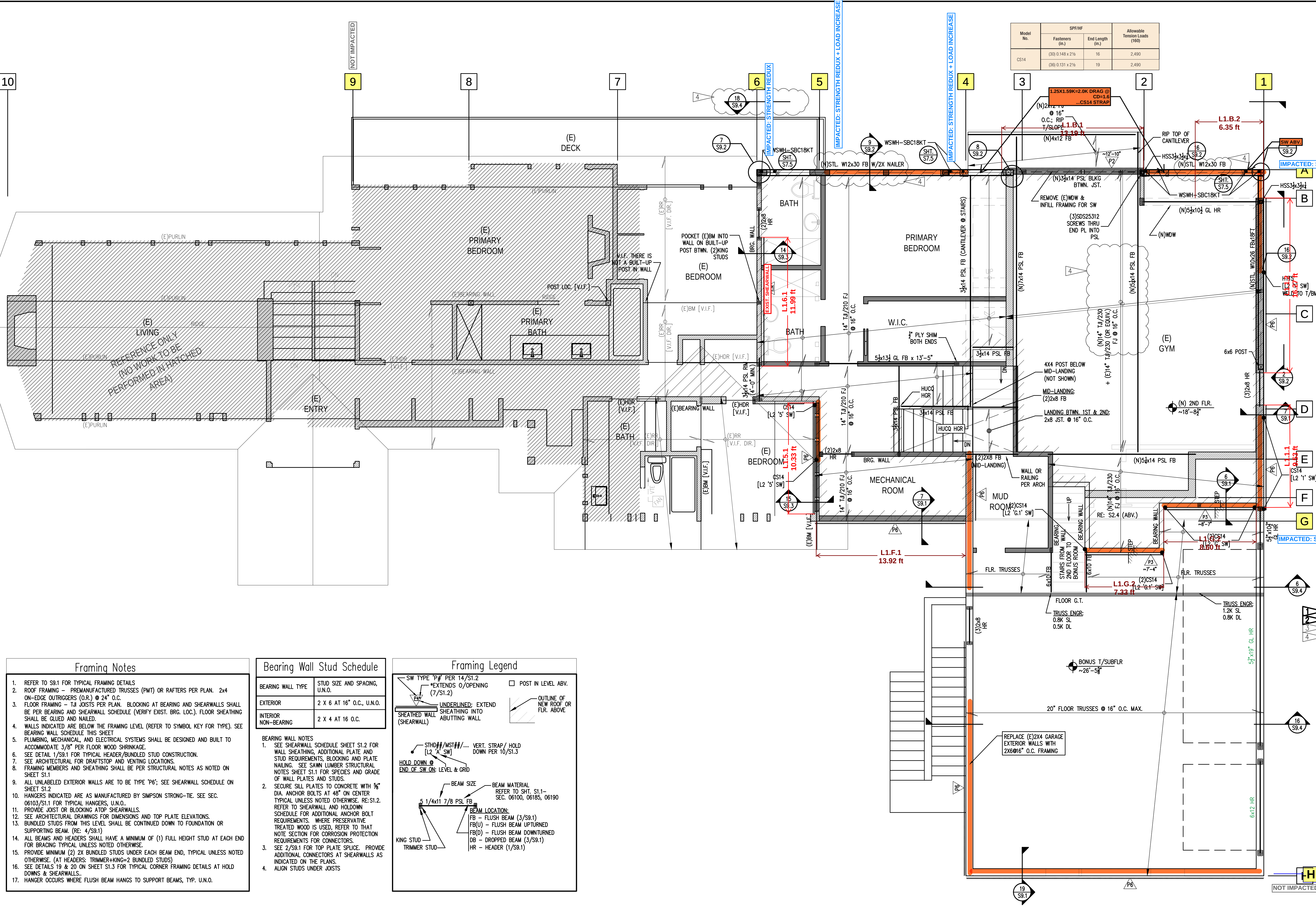


Sheet Name:

SECOND FLOOR FRAMING PLAN

Sheet No:

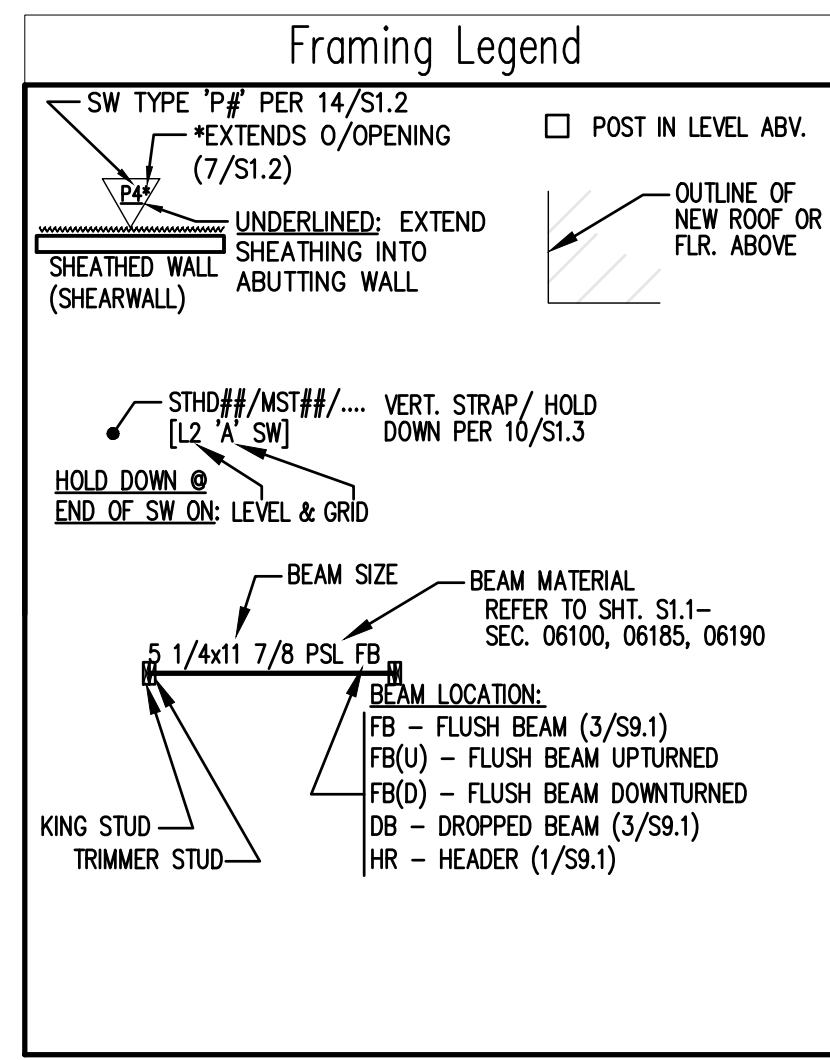
S2.3



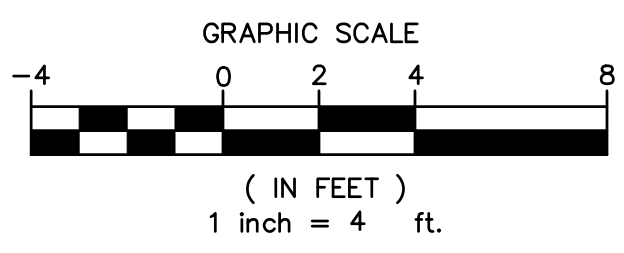
- Framing Notes**
- REFER TO S9.1 FOR TYPICAL FRAMING DETAILS
 - ROOF FRAMING - PREMANUFACTURED TRUSSES (PMT) OR RAFTERS PER PLAN. 2x4 ON-EDGE OUTRIGGERS (O.R.) @ 24" O.C.
 - FLOOR FRAMING - 14 JOISTS PER PLAN. BLOCKING AT BEARING AND SHEARWALLS SHALL BE PER BEARING AND SHEARWALL SCHEDULE (VERIFY EXIST. BRG. LOC.). FLOOR SHEATHING SHALL BE GLUED AND NAILED.
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 - SEE DETAILS 19 & 20 ON SHEET S1.3 FOR TYPICAL CORNER FRAMING DETAILS AT HOLD DOWNS & SHEARWALLS.
 - HANGER OCCURS WHERE FLUSH BEAM HANGS TO SUPPORT BEAMS, TYP. U.N.O.

Bearing Wall Stud Schedule	
BEARING WALL TYPE	STUD SIZE AND SPACING, U.N.O.
EXTERIOR	2 X 6 AT 16" O.C., U.N.O.
INTERIOR NON-BEARING	2 X 4 AT 16" O.C.

- BEARING WALL NOTES**
- SEE SHEARWALL SCHEDULE SHEET S1.2 FOR WALL SHEATHING, ADDITIONAL PLATE AND STUD REQUIREMENTS, BLOCKING AND PLATE NAILING. SEE SAWN LUMBER STRUCTURAL NOTES SHEET S1.1 FOR SPECIES AND GRADE
 - SECURE SILL PLATES TO CONCRETE WITH 5/8" DIA. ANCHOR BOLTS AT 48" ON CENTER TYPICAL UNLESS NOTED OTHERWISE. RE: S1.2. REFER TO SHEARWALL AND HOLDOWN SCHEDULE FOR ADDITIONAL ANCHOR BOLT REQUIREMENTS. WHERE PRESERVATIVE TREATED WOOD IS USED, REFER TO THAT NOTE SECTION FOR CORROSION PROTECTION REQUIREMENTS FOR CONNECTORS.
 - SEE 2/59.1 FOR TOP PLATE SPLICE. PROVIDE ADDITIONAL CONNECTORS AT SHEARWALLS AS INDICATED ON THE PLANS.
 - ALIGN STUDS UNDER JOISTS



Note:
PLANS PREPARED USING
ARCHITECTURAL BACKGROUNDS
RECEIVED 09/29/2025



Second Floor Framing Plan

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



Permit Set
Job # 24-028 TE# 24307

Description	Date
Permit Intake	10/07/24
Correction 01	02/04/25
Correction 02	03/06/25
Field Rev	06/11/25
Field Rev	10/02/25

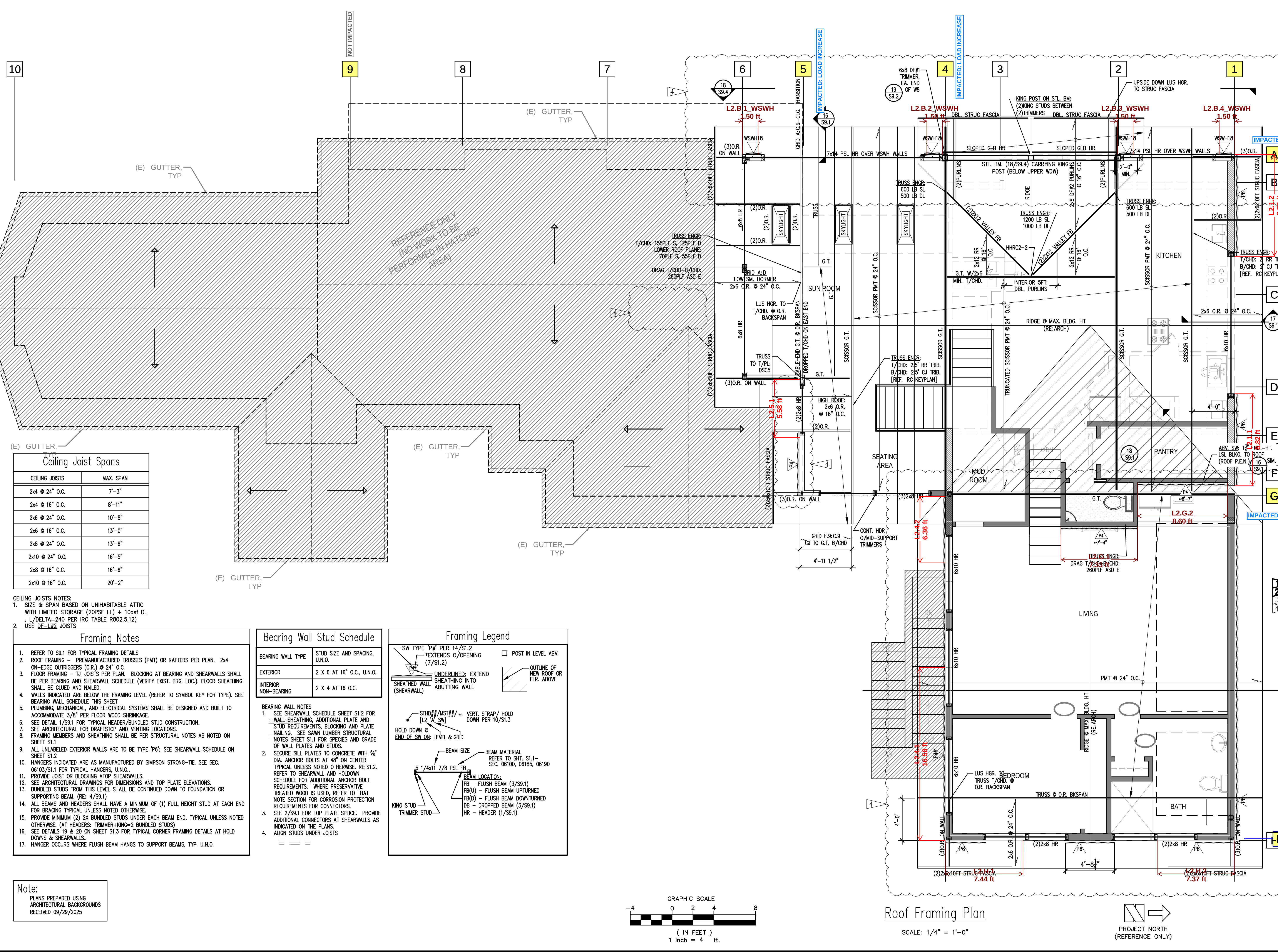
Permit No.: 2407-213

Drawn:
Stamp/Approval:

Sheet Name:
IMPACTED: STRENGTH REDUX + LOAD INCREASE

ROOF FRAMING PLAN

Sheet No:
S2.4



SHEET TITLE:
PROJECT # :

7.1) IBC SEISMIC OVERVIEW
TAM & CEM REMODEL

Step #			IBC	ASCE 7
1.	OCCUPANCY CATEGORY	TYPE = II	Table 1604.5	Table 1.5-1
2.	IMPORTANCE FACTOR	$I_E = 1.00$	Section 1613.1 -> ASCE	Table 1.5-2
3.	Site Class - Per Geo. Engr.	S.C. = D	Section 1613.3.5 Table 1613.3.3(2)	Section 11.4.2 / Ch. 20 Table 20.3-1
4.	0.2 Sec. Spectral Response	$S_S = 1.4260$	Figure 1613.3.1(1)	Figure 22-1
5.	1.0 Sec. Spectral Response	$S_1 = 0.4960$	Figure 1613.3.1(2)	Figure 22-2
6.	Site Coefficient (short period)	$F_a = 1.20$	Figure 1613.3.3(1)	Table 11.4-1
7.	Site Coefficient (1.0 second)	$F_v = 0.00$	Figure 1613.3.3(2)	Table 11.4-2
	$S_{MS} = F_a * S_S$	$S_{MS} = 1.7120$	EQ 16-37	EQ 11.4-1
	$S_{M1} = F_v * S_1$	$S_{M1} = 0.0000$	EQ 16-38	EQ 11.4-2
	$S_{DS} = 2/3 * S_{MS}$	$S_{DS} = 1.141$	EQ 16-39	EQ 11.4-3
	$S_{D1} = 2/3 * S_{M1}$	$S_{D1} = 0.000$	EQ 16-40	EQ 11.4-4
8.	Seismic Design Category 0.2s	$SDC_S = D$	Table 1613.3.5(1)	Table 11.6-1
9.	Seismic Design Category 1.0s	$SDC_1 = C$	Table 1613.3.5(2)	Table 11.6-2
10.	Seismic Design Category	$SDC = D$	Max.	Max.
11.	Wood structural panels	---	N/A	Table 12.2-1
12.	Response Modification Coef.	$R = 6.5$	N/A	Table 12.2-1
13.	Overstrength Factor	$\Omega_0 = 2.5$	N/A	Table 12.2-1
14.	Deflection Amplification Factor	$C_D = 2.0$	N/A	Table 12.2-1
15.	Horizontal Structural Irregularities	--- NO	N/A	Table 12.3-1
16.	Vertical Structural Irregularities	--- NO	N/A	Table 12.3-2
17.	Permitted Procedure	Equiv. Lateral Force	---	Table 12.6-1

SHEET TITLE: **7.2) IBC EQUIVALENT LATERAL FORCE PROCEDURE PER ASCE 7**
 PROJECT #: **TAM & CEM REMODEL**

$S_{DS} = 1.14$ $h_n = 28.00$ (ft)
 $S_{D1} = 0.00$ $x = 0.75$ ASCE 7 (Table 12.8-2)
 $R = 6.5$ $C_t = 0.020$ ASCE 7 (Table 12.8-2)
 $I_E = 1.0$ $T = 0.243$ ASCE 7 (EQ 12.8-7)
 $S_1 = 0.50$ $k = 1$ ASCE 7 (Section 12.8.3)

 $T_L = 6$ ASCE 7 (Section 11.4.5: Figure 22-15)

$C_S = S_{DS} / (R/I_E)$ 0.176 W ASCE 7 (EQ 12.8-2)
 $C_S = S_{D1} / (T^*(R/I_E))$ (for $T \leq T_L$) 0.000 W ASCE 7 (EQ 12.8-3) (MAX.)
 $C_S = (S_{D1} * T_L) / (T^2 * (R/I_E))$ (for $T \geq T_L$) 0.000 W ASCE 7 (EQ 12.8-4) (MAX.)
 $C_S = 0.01$ 0.010 W ASCE 7 (EQ 12.8-5) (MIN.)
 $C_S = (0.5 S_1) / (R/I_E)$ 0.038 W ASCE 7 (EQ 12.8-6) (MIN. if $S_1 > 0.6g$)

CONTROLLING DESIGN BASE SHEAR = 0.176 W

VERTICAL DISTRIBUTION OF SEISMIC FORCES PER ASCE 7 SECTION 12.8.3

													(EQ 12.8-11)
													(EQ 12.8-12)
				Roof		Floor		Area #3				$C_{vx} =$	
DIAPHR.	Story	Elevation	Height	AREA	DL	AREA	DL	AREA	DL	w_i	$w_i * h_i^k$	$w_x * h_x^k$	DESIGN
LEVEL	Height	(ft)	h_i (ft)	(sqft)	(ksf)	(sqft)	(ksf)	(sqft)	(ksf)	(kips)	(kips)	$\sum w_i * h_i^k$	V_i
Roof	---	28.00	28.00	3092	0.020					61.8	1731.5	0.55	10.55
2nd	---	18.00	18.00	1463	0.020	1488	0.025			66.5	1196.3	0.38	7.29
1st	---	9.00	9.00			876	0.025	239	0.012	24.8	222.9	0.07	1.36
Ground	---	0.00											
										153.1	3150.7	1.00	19.20
										E = V = 26.88			
										E/1.4 = 19.20			

V_{wind}	
N-S	E-W
10.10	5.90
5.80	11.60
15.90	17.50

SHEET TITLE: **7.4) NDS SHEARWALL VALUES**
 PROJECT #: TAM & CEM REMODEL

SHEATHING THICKNESS $t_{\text{sheathing}} =$ **7/16**
 NAIL SIZE nail size = 8d Com.
 STUD SPECIES SPECIES = **HF**
 SPECIFIC GRAVITY S.G. = 0.43
 ANCOR BOLT DIAMETER Anc. Bolt dia. = 0.625

SHEARWALL TYPE SDPW&S Table 4.3a

V_{nominal}
 (PER Table 4.3A)
 0.3

Seismic	Wind
$V_{\text{s allowable}}$	$V_{\text{w allowable}}$
modify per S. G.	modify per S. G.
	inc. 40% per 2306.3

SHEARWALL TYPE SDPW&S Table 4.3a

			Seismic	Wind
---	0	0	1	1
P6TN	150	2	150	150
P6	520	151	242	339
P4	760	243	353	495
P3	980	354	456	638
P2	1280	457	595	833
2P4	1520	596	707	990
2P3	1960	708	911	1276
2P2	2560	912	1190	1667
N.G.	10000	###	9300	13020

SHEET TITLE: **7.5.1) LATERAL N-S (front to back - up/down)**
 PROJECT #: TAM & CEM REMODEL

Diaph. Level: **Roof**
 Direction: **N-S**
 Typ. Panel Height = **10.5** ft.

Seismic V i = **10.55** kips
 Sum Seismic V i = **10.55** kips

Design Wind N-S V i = **10.10** kips
 Sum Wind N-S V i = **10.10** kips

1) DISTRIBUTION TO SHEAR LINES

C1		C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	
Line	Trib %		V level		Above Line Load			V abv.		V total		Line		brm Shear, v			
	E	W	E [k]	W [k]	1st Line	Trib	2nd Line	Trib.	E [k]	W [k]	E [k]	W [k]	L [ft]	E [plf]	W [plf]		
B	30%	30%	3.189	3.0525	-	100%	-	100%	-	0	3.19	3.05	0				
G	50%	50%	5.275	5.05	-	100%	-	100%	-	0	5.28	5.05	15.93	331	317		
H	20%	20%	2.087	1.9975	-	100%	-	100%	-	0	2.09	2.00	14.81	141	135		
		0%	0	0	-	100%	-	100%	-	0	0.00	0.00	0				
Σ=			10.55	10.10	Σ=			0.00	0.00	10.55	10.10						
Balance Check:					ok	ok	Balance Check:					ok	ok	ok	ok		

2) DISTRIBUTION TO SHEARWALLS

2) DISTRIBUTION TO SHEARWALLS				E.Q.			E.Q.			E.Q.		E.Q.	E.Q.	Wind	Wind	Wind
Line	ID	Lwall	C ₀	Lwall'	H _{WALL}	v	V	Amplifiers		v'	Type	Type	v	V		
		(ft)		(ft)	(ft)	(plf)	(k)	ρ	$2w/h^{(1)}$	(plf)			(plf)	(k)		(k)
REF#...	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14		
			1.00	0.00	10.50	0	0.00		1.00	0	---	---	0	0		
			1.00	0.00	10.50	0	0.00		1.00	0	---	---	0	0		
G	L2.G.1	7.33	1.00	7.33	10.50	331	2.43		1.00	331	P4	P6	317	2.324		
G	L2.G.2	8.6	1.00	8.60	10.50	331	2.85		1.00	331	P4	P6	317	2.726		
H	L2.H.1	7.44	1.00	7.44	10.50	141	1.05		1.00	141	P6TN	P6TN	135	1.003		
H	L2.H.2	7.37	1.00	7.37	10.50	141	1.04		1.00	141	P6TN	P6TN	135	0.994		
			1.00	0.00	10.50	0	0.00		1.00	0	---	---	0	0		

$\rho = 1.00$

⁽¹⁾Table 4.3.4 AF&PA SDPWS, Footnote 1

Fir. Thk. (Add to OTM arm):

0.0 ft

*E.Q. DL Uplift Factor:

44.0%

DL Uplift Factor w/Wind:

60.0%

3) OVERTURNING RESISTANCE										Seismic Uplift						Wind Uplift							
Line	ID	Resisted		Resisted		L _{ARM} (ft)	Reduced		Net OTM			Add'l			Reduced		Net OTM			Add'l		Max. U _{sum} (kip)	HD
		L _{DL eff.} (ft)	w dl (klf)	ID (#1) Above	ID (#2) Above		OTM (kip-ft)	R _{OTM} (kip-ft)	Level (kip-ft)	Abv. (kip-ft)	Total (kip-ft)	Ω	U (k)	U _{sum} (kip)	OTM (kip-ft)	R _{OTM} (kip-ft)	Level (kip-ft)	Abv. (kip-ft)	Total (kip-ft)	U (k)	U _{sum} (kip)		
0	0	21.5	0.20	-	-	19.25	#N/A	39.42	#N/A	0	#N/A	1.00	0	#N/A	#N/A	46.12	#N/A	0	#N/A	0	#N/A	#N/A	#N/A
0	0	13.5	0.20	-	-	11.25	#N/A	14.60	#N/A	0	#N/A	1.00	0	#N/A	#N/A	17.08	#N/A	0	#N/A	0	#N/A	#N/A	#N/A
G	L2.G.1	9.3	0.20	-	-	7.08	25.49	6.43	19.06	0	19.06	1.00	0	2.69	24.40	7.52	16.88	0	16.88	0	2.38	2.69	2-CS14
G	L2.G.2	10.6	0.20	-	-	8.35	29.90	8.57	21.33	0	21.33	1.00	0	2.55	28.63	10.03	18.60	0	18.60	0	2.23	2.55	2-CS14
		0.0	0.20	-	-					0		1.00	0					0		0		0.00	NONE
		0.0	0.20	-	-					0		1.00	0					0		0		0.00	NONE
		0.0	0.20	-	-					0		1.00	0					0		0		0.00	NONE

Holdown Ctr. Offset from SW End: 3 in

Σ= 0.00 #N/A

Design Wind N-S V i = 5.8 kips
Sum Wind N-S V i = 15.9 kips

7) DISTRIBUTION OF SHEAR LINE																
		Trib %		V level		Above Line Load				V abv.		V total		Line L [ft]	Uniform Shear, v	
Line	E	W	E [k]	W [k]		1st Line	Trib	2nd Line	Trib.	E [k]	W [k]	E [k]	W [k]		E [plf]	W [plf]
B	50%	50%	3.645	2.9		B	100%	-	100%	3.19	3.05	6.83	5.95	13.19	518	451
G	25%	25%	1.822	1.45		G	100%	-	100%	5.28	5.05	7.10	6.50	15.93	446	408
H	0%	0%	0	0		H	100%	-	100%	2.09	2.00	2.09	2.00	0		
F	25%	25%	1.822	1.45			100%	-	100%	0.00	0.00	1.82	1.45	13.92	131	104
		0%	0	0		O	100%	-	100%	0.00	0.00	0.00	0.00	0		
		0%	0	0		O	100%	-	100%	0.00	0.00	0.00	0.00	0		
		0%	0	0		O	100%	-	100%	0.00	0.00	0.00	0.00	0		
		0%	0	0		O	100%	-	100%	0.00	0.00	0.00	0.00	0		
		Σ=	7.29	5.80						Σ=	10.55	10.10	17.84	15.90		
Balance Check:			ok	ok		Balance Check:				ok	ok	ok	ok			

2) DISTRIBUTION TO SHEARWALLS				E.Q.	E.Q.	E.Q.	E.Q.	E.Q.	Wind	Wind	Wind			
Line	ID	L _{wall}	C ₀	L _{wall} '	H _{WALL}	v	V	Amplifiers	v'	Type	Type	v	V	
		(ft)		(ft)	(ft)	(plf)	(k)	ρ 2w/h ^(-L)	(plf)			(plf)	(k)	
B	L1.B.1	13.19	1.00	13.19	11.00	518	6.83		1.00	518	P2	P4	451	5.95
F	L1.F.1	13.92	1.00	13.92	11.00	131	1.82		1.00	131	P6TN	P6TN	104	1.45
G	L1.G.2	8.6	1.00	8.60	4.00	446	3.83		1.00	446	P3	P4	408	3.51
G	L1.G.1	7.33	1.00	7.33	4.00	446	3.27		1.00	446	P3	P4	408	2.99
			1.00	0.00	11.00	0	0.00		1.00	0	---	---	0	0.00
			1.00	0.00	11.00	0	0.00		1.00	0	---	---	0	0.00
			1.00	0.00	11.00	0	0.00		1.00	0	---	---	0	0.00
$\rho = 1.00$														

⁽¹⁾Table 4.3.4 AF&PA SDPWS, Footnote 1

60.0%

3) OVERTURNING RESISTANCE				Seismic Uplift										Wind Uplift										Max. U _{sum} HD	
Line	ID	Resisted		Resisted		L _{ARM} (ft)	Reduced		Net OTM			Add'l			Reduced		Net OTM			Add'l					
		L _{DL eff.} (ft)	w dl (klf)	ID (#1) Above	ID (#2) Above		OTM (kip-ft)	R _{OTM} (kip-ft)	Level (kip-ft)	Abv. (kip-ft)	Total (kip-ft)	Ω	U (k)	U _{sum} (kip)	OTM (kip-ft)	R _{OTM} (kip-ft)	Level (kip-ft)	Abv. (kip-ft)	Total (kip-ft)	U (k)	U _{sum} (kip)				
B	L1.B.1	15.2	0.20	-	-	12.94	82.00	18.84	63.16	0.00	63.16	1.00	0	4.88	71.43	22.04	49.39	0.00	49.39	0	3.82	4.88	(2)MST60		
F	L1.F.1	15.9	0.20	-	-	13.67	21.87	20.84	1.03	0.00	1.03	1.00	0	0.08	17.40	24.38	-6.98	0.00	-6.98	0	-0.51	0.08	NONE		
G	L1.G.2	10.6	0.20	L2.G.2	-	8.35	19.16	8.57	10.59	21.33	31.92	1.00	0	3.82	17.55	10.03	7.52	18.60	26.12	0	3.13	3.82	HDQ8		
G	L1.G.1	9.3	0.20	L2.G.1	-	7.08	16.33	6.43	9.90	19.06	28.96	1.00	0	4.09	14.95	7.52	7.43	16.88	24.31	0	3.43	4.09	HDQ8		
0	0	#N/A	0.20	-	-	#N/A	#N/A	#N/A	#N/A	0.00	#N/A	1.00	0	#N/A	#N/A	#N/A	#N/A	0.00	#N/A	0	#N/A	#N/A	#N/A		
		0.0	0.20	-	-					0.00		1.00	0					0.00		0		0.00	NONE		
		0.0	0.20	-	-					0.00		1.00	0					0.00		0		0.00	NONE		

$\Sigma = 40.39$ #N/A

SHEET TITLE: **7.5.3) LATERAL N-S (front to back - up/down)**
 PROJECT #: TAM & CEM REMODEL

Diaph. Level: **1st N-S**
 Direction:
 Typ. Panel Height = **8 ft.**

Seismic V i = **1.4 kips**
 Sum Seismic V i = **19.2 kips**

Design Wind N-S V i = **0.0 kips**
 Sum Wind N-S V i = **15.9 kips**

1) DISTRIBUTION TO SHEAR LINES

Line	Trib % E	W	V level E [k]	W [k]	1st Line	Above Line Load Trib	2nd Line	Trib.	V abv. E [k]	W [k]	V total E [k]	W [k]	Line L [ft]	Uniform Shear, v E [plf]	W [plf]
A	50%	50%	0.679	0		100%	-	100%	0.00	0.00	0.68	0.00	6.5	104	0
G	50%	50%	0.679	0	G	100%	-	100%	7.10	6.50	7.78	6.50	0		
H	0%	0%	0	0	H	100%	-	100%	2.09	2.00	2.09	2.00	0		
B	0%	0%	0	0	B	100%	-	100%	6.83	5.95	6.83	5.95	0		
F	0%	0%	0	0	F	100%	-	100%	1.82	1.45	1.82	1.45	13.64	134	106
	0%	0%	0	0	0	100%	-	100%	0.00	0.00	0.00	0.00	0		
	0%	0%	0	0	0	100%	-	100%	0.00	0.00	0.00	0.00	0		
	0%	0%	0	0	0	100%	-	100%	0.00	0.00	0.00	0.00	0		
	0%	0%	0	0	0	100%	-	100%	0.00	0.00	0.00	0.00	0		
Σ=			1.36	0.00	Σ=				17.84	15.90	19.20	15.90			
Balance Check:			ok	ok	Balance Check:				ok	ok	ok	ok			

2) DISTRIBUTION TO SHEARWALLS

Line	ID	Lwall (ft)	C ₀	Lwall' (ft)	H _{WALL} (ft)	E.Q. v (plf)	E.Q. V (k)	E.Q. Amplifiers ρ	E.Q. 2w/h ⁽¹⁾	E.Q. v' (plf)	E.Q. Type	Wind Type	Wind v (plf)	Wind V (k)
F	L0.F.1	13.64	1.00	13.64	4.00	134	1.82		1.00	134	P6TN	P6TN	106	1.45
A	L0.A.1	6.5	1.00	6.50	8.00	104	0.68		1.00	104	P6TN	---	0	0.00
		1.00	0.00	8.00	0	0.00			1.00	0	---	---	0	0.00
		1.00	0.00	8.00	0	0.00			1.00	0	---	---	0	0.00
		1.00	0.00	8.00	0	0.00			1.00	0	---	---	0	0.00
		1.00	0.00	8.00	0	0.00			1.00	0	---	---	0	0.00
		1.00	0.00	8.00	0	0.00			1.00	0	---	---	0	0.00
		1.00	0.00	8.00	0	0.00			1.00	0	---	---	0	0.00

$\rho = 1.00$

⁽¹⁾Table 4.3.4 AF&PA SDPWS, Footnote 1

Fir. Thk. (Add to OTM arm):

1.0 ft

*E.Q. DL Uplift Factor: **44.0%**

DL Uplift Factor w/Wind: **60.0%**

3) OVERTURNING RESISTANCE

3) OVERTURNING RESISTANCE				Seismic Uplift										Wind Uplift										Max. U _{sum} HD	
Line	ID	L _{DL eff.} (ft)	Resisted w dl (klf)	Resisted ID (#1) Above	Resisted ID (#2) Above	L _{ARM} (ft)	OTM (kip-ft)	Reduced R _{OTM} (kip-ft)	Level (kip-ft)	Net OTM Abv. (kip-ft)	Total (kip-ft)	Ω	Add'l U (k)	U _{sum} (kip)	OTM (kip-ft)	Reduced R _{OTM} (kip-ft)	Level (kip-ft)	Net OTM Abv. (kip-ft)	Total (kip-ft)	Add'l U (k)	U _{sum} (kip)				
F	L0.F.1	15.6	0.20	L1.G.1	-	13.39	9.11	20.06	-10.95	28.96	18.01	1.00	0	1.35		7.25	23.47	-16.22	24.31	8.09	0	0.60	1.35	STHD14	
A	L0.A.1	8.5	0.20	-	-	6.25	6.11	5.19	0.92	0.00	0.92	1.00	0	0.15		0.00	6.08	-6.08	0.00	-6.08	0	-0.97	0.15	NONE	
		0.0	0.20	-	-					0.00		1.00	0						0.00		0		0.00	NONE	
		0.0	0.20	-	-					0.00		1.00	0						0.00		0		0.00	NONE	
		0.0	0.20	-	-					0.00		1.00	0						0.00		0		0.00	NONE	
		0.0	0.20	-	-					0.00		1.00	0						0.00		0		0.00	NONE	
		0.0	0.20	-	-					0.00		1.00	0						0.00		0		0.00	NONE	

Holdown Ctr. Offset from SW End: **3 in**

Σ= 28.96 18.93

-

SHEET TITLE:
PROJECT # :

7.6.1) LATERAL E-W (side to side - left/right)
TAM & CEM REMODEL

Diaph. Level:
Direction:

Roof
E-W

Typ. Panel Height = 10.5 ft.

Seismic V i = 10.55 kips
Sum Seismic V i = 10.55 kips

Design Wind E-W V i = 5.90 kips
Sum Wind E-W V i = 5.90 kips

1) DISTRIBUTION TO SHEAR LINES

		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16
Line	Trib %	V level		Above Line Load		V abv.		V total		Line		Uniform Shear, v					
		E	W	E [k]	W [k]	1st Line	Trib	2nd Line	Trib.	E [k]	W [k]	E [k]	W [k]	L [ft]	E [plf]	W [plf]	
1	38%	38%		4.009	2.242	-	100%	-	100%	-	0	4.01	2.24	18.57	216	121	
4	50%	50%		5.275	2.95	-	100%	-	100%	-	0	5.28	2.95	22.96	230	128	
5	12%	12%		1.266	0.708	-	100%	-	100%	-	0	1.27	0.71	5.58	227	127	
	0%			0	0	-	100%	-	100%	-	0	0.00	0.00	0			
		Σ=		10.55		5.90				Σ=		0.00		0.00		10.55	
		Balance Check:		ok		ok				Balance Check:		ok		ok		ok	

2) DISTRIBUTION TO SHEARWALLS

Line	ID	Lwall	C ₀	Lwall'	H _{WALL}	E.Q. v	E.Q. V	E.Q. Amplifiers	E.Q. v'	E.Q. Type	Wind Type	Wind v	Wind V
		(ft)		(ft)	(ft)	(plf)	(k)	ρ	2w/h ⁽¹⁾	(plf)		(plf)	(k)
1	L2.1.1	8.82	1.00	8.82	10.50	216	1.90		1.00	216	P6	P6TN	121
5	L2.5.1	5.58	1.00	5.58	10.50	227	1.27		1.00	227	P6	P6TN	127
1	L2.1.2	9.75	1.00	9.75	10.50	216	2.10		1.00	216	P6	P6TN	121
4	L2.4.1	16.58	1.00	16.58	10.50	230	3.81		1.00	230	P6	P6TN	128
4	L2.4.2	6.38	1.00	6.38	10.50	230	1.47		1.00	230	P6	P6TN	128
			1.00	0.00	10.50	0	0.00		1.00	0	---	---	0
			1.00	0.00	10.50	0	0.00		1.00	0	---	---	0

ρ = 1.00

(1) Table 4.3.4 AF&PA SDPWS, Footnote 1

		Flr. Thk. (Add to OTM arm):					0.0 ft	*E.Q. DL Uplift Factor:					44.0%	DL Uplift Factor w/Wind:										60.0%		
3) OVERTURNING RESISTANCE				Seismic Uplift											Wind Uplift											
Line	ID	Resisted				L _{ARM}	Reduced					Add'l			Reduced					Add'l			Max. U _{sum} (kip)	HD		
		L _{DL eff.}	w dl	ID (#1)	ID (#2)		OTM	R _{OTM}	Level	Abv.	Total	Ω	U	U _{sum}	OTM	R _{OTM}	Level	Abv.	Total	U	U _{sum}					
		(ft)	(klf)	Above	Above		(ft)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)		(k)	(kip)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)	(k)	(kip)				
1	L2.1.1	10.8	0.20	-	-	8.57	19.99	8.97	11.02	0	11.02	1.00	0	1.29	11.18	10.50	0.68	0	0.68	0	0.08	1.29	CS14			
5	L2.5.1	7.6	0.20	-	-	5.33	13.29	3.98	9.32	0	9.32	1.00	0	1.75	7.43	4.65	2.78	0	2.78	0	0.52	1.75	CS14			
1	L2.1.2	11.8	0.20	-	-	9.50	22.10	10.77	11.33	0	11.33	1.00	0	1.19	12.36	12.60	-0.24	0	-0.24	0	-0.03	1.19	CS14			
4	L2.4.1	18.6	0.20	-	-	16.33	40.00	28.96	11.03	0	11.03	1.00	0	0.68	22.37	33.89	-11.52	0	-11.52	0	-0.71	0.68	NONE			
4	L2.4.2	8.4	0.20	-	-	6.13	15.39	5.03	10.36	0	10.36	1.00	0	1.69	8.61	5.88	2.73	0	2.73	0	0.44	1.69	CS14			
		0.0	0.20	-	-					0		1.00	0					0		0	0.00	NONE				
		0.0	0.20	-	-					0		1.00	0					0		0	0.00	NONE				
Holdown Ctr. Offset from SW End:						3 in	Σ= 0.00 53.07																			

SHEET TITLE: **7.6.2) LATERAL E-W (side to side - left/right)**
 PROJECT #: TAM & CEM REMODEL

Diaph. Level: **2nd**
 Direction: **E-W**
 Typ. Panel Height = 11 ft.

Seismic V i = 7.3 kips
 Sum Seismic V i = 17.8 kips

Design Wind E-W V i = 11.6 kips
 Sum Wind E-W V i = 17.5 kips

1) DISTRIBUTION TO SHEAR LINES

Line	Trib % E	W	V level		1st Line	Above Line Load			V abv.		V total		Line L [ft]	Uniform Shear, v	
			E [k]	W [k]		Trib	2nd Line	Trib.	E [k]	W [k]	E [k]	W [k]		E [plf]	W [plf]
1	14%	14%	1.02	1.624	1	100%	-	100%	4.01	2.24	5.03	3.87	25.8	195	150
4	28%	28%	2.041	3.248	4	100%	-	100%	5.28	2.95	7.32	6.20	0		
5	14%	14%	1.02	1.624	5	100%	-	100%	1.27	0.71	2.29	2.33	10.33	221	226
6	22%	22%	1.604	2.552		100%	-	100%	0.00	0.00	1.60	2.55	11.99	134	213
9	22%	22%	1.604	2.552		100%	-	100%	0.00	0.00	1.60	2.55	0		
	0%	0%	0	0		100%	-	100%	0.00	0.00	0.00	0.00	0		
	0%	0%	0	0		100%	-	100%	0.00	0.00	0.00	0.00	0		
	0%	0%	0	0		100%	-	100%	0.00	0.00	0.00	0.00	0		
Σ=			7.29	11.60	Σ=				10.55	5.90	17.84	17.50			
Balance Check:			ok	ok	Balance Check:				ok	ok	ok	ok			

2) DISTRIBUTION TO SHEARWALLS

Line	ID	Lwall	C ₀	Lwall'	H _{WALL}	E.Q. v	E.Q. V	E.Q. Amplifiers	E.Q. v'	E.Q. Type	Wind Type	Wind v	Wind V
		(ft)		(ft)	(ft)	(plf)	(k)	ρ 2w/h ⁽¹⁾	(plf)			(plf)	(k)
1	L1.1.1	9.53	1.00	9.53	11.00	195	1.86	1.00	195	P6	P6TN	150	1.43
5	L1.5.1	10.33	1.00	10.33	11.00	221	2.29	1.00	221	P6	P6	226	2.33
6	L1.6.1	11.99	1.00	11.99	11.00	134	1.60	1.00	134	P6TN	P6	213	2.55
1	L1.1.2	16.27	1.00	16.27	11.00	195	3.17	1.00	195	P6	P6TN	150	2.44
			1.00	0.00	11.00	0	0.00	1.00	0	---	---	0	0.00
			1.00	0.00	11.00	0	0.00	1.00	0	---	---	0	0.00
			1.00	0.00	11.00	0	0.00	1.00	0	---	---	0	0.00

$\rho = 1.00$

⁽¹⁾Table 4.3.4 AF&PA SDPWS, Footnote 1

Fir. Thk. (Add to OTM arm):

1.0 ft

*E.Q. DL Uplift Factor:

44.0%

DL Uplift Factor w/Wind:

60.0%

3) OVERTURNING RESISTANCE

3) OVERTURNING RESISTANCE								Seismic Uplift							Wind Uplift								
Line	ID	Resisted		Resisted	L _{ARM}	Reduced		Net OTM			Add'l			Reduced		Net OTM			Add'l		Max. U _{sum} (kip)	HD	
		L _{DL eff.}	w dl	ID (#1)		ID (#2)	OTM	R _{OTM}	Level	Abv.	Total	Ω	U	U _{sum}	OTM	R _{OTM}	Level	Abv.	Total	U			U _{sum}
		(ft)	(klf)	Above	Above	(ft)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)	(k)	(kip)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)	(k)	(kip)			
1	L1.1.1	11.5	0.20	L2.1.1	-	9.28	22.29	10.33	11.96	11.02	22.98	1.00	0	2.48	17.14	12.09	5.05	0.68	5.73	0	0.62	2.48	HTT5
5	L1.5.1	12.3	0.20	-	-	10.08	27.44	11.98	15.46	0.00	15.46	1.00	0	1.53	27.98	14.01	13.97	0.00	13.97	0	1.39	1.53	CS14
6	L1.6.1	14.0	0.20	-	-	11.74	19.24	15.77	3.47	0.00	3.47	1.00	0	0.30	30.62	18.45	12.17	0.00	12.17	0	1.04	1.04	STHD14
1	L1.1.2	18.3	0.20	-	-	16.02	38.06	27.95	10.11	0.00	10.11	1.00	0	0.63	29.26	32.70	-3.44	0.00	-3.44	0	-0.21	0.63	NONE
		0.0	0.20	-	-					0.00		1.00	0				0.00			0		0.00	NONE
		0.0	0.20	-	-					0.00		1.00	0				0.00			0		0.00	NONE
		0.0	0.20	-	-					0.00		1.00	0				0.00			0		0.00	NONE

Holdown Ctr. Offset from SW End: 3 in

Σ = 11.02 52.03

-

SHEET TITLE:
PROJECT # :

7.6.3) LATERAL E-W (side to side - left/right)
TAM & CEM REMODEL

Diaph. Level:
Direction:

1st
E-W

Typ. Panel Height =
8 ft.

Seismic V i =
Sum Seismic V i =

1.4 kips
19.2 kips

Design Wind E-W V i =
Sum Wind E-W V i =

0.0 kips
17.5 kips

1) DISTRIBUTION TO SHEAR LINES

Line	Trib %		V level		Above Line Load				V abv.		V total		Line L [ft]	Uniform Shear, v	
	E	W	E [k]	W [k]	1st Line	Trib	2nd Line	Trib.	E [k]	W [k]	E [k]	W [k]		E [plf]	W [plf]
1	0%	0%	0	0	1	100%	-	100%	5.03	3.87	5.03	3.87	0		
4	20%	20%	0.272	0	4	100%	-	100%	7.32	6.20	7.59	6.20	0		
5	50%	50%	0.679	0	5	100%	6	100%	3.89	4.88	4.57	4.88	15.89	288	307
		0%	0	0	0	100%	-	100%	0.00	0.00	0.00	0.00	0		
9	30%	30%	0.407	0	9	100%	-	100%	1.60	2.55	2.01	2.55	0		
		0%	0	0	0	100%	-	100%	0.00	0.00	0.00	0.00	0		
		0%	0	0	0	100%	-	100%	0.00	0.00	0.00	0.00	0		
		0%	0	0	0	100%	-	100%	0.00	0.00	0.00	0.00	0		
		0%	0	0	0	100%	-	100%	0.00	0.00	0.00	0.00	0		
Σ=			1.36	0.00	Σ=				17.84	17.50	19.20	17.50			
Balance Check:			ok	ok	Balance Check:				ok	ok	ok	ok			

2) DISTRIBUTION TO SHEARWALLS

Line	ID	Lwall	C ₀	Lwall'	H _{WALL}	E.Q.		E.Q. Amplifiers	E.Q. v'	E.Q. Type	Wind Type	Wind v	Wind V
						v	V						
		(ft)		(ft)	(ft)	(plf)	(k)	ρ	2w/h ⁽¹⁾	(plf)		(plf)	(k)
5	L0.5.1	5.71	1.00	5.71	8.00	288	1.64		1.00	288	P4	P6	307
5	L0.5.2	10.18	1.00	10.18	8.00	288	2.93		1.00	288	P4	P6	307
			1.00	0.00	8.00	0	0.00		1.00	0	---	---	0
			1.00	0.00	8.00	0	0.00		1.00	0	---	---	0
			1.00	0.00	8.00	0	0.00		1.00	0	---	---	0
			1.00	0.00	8.00	0	0.00		1.00	0	---	---	0
			1.00	0.00	8.00	0	0.00		1.00	0	---	---	0
			1.00	0.00	8.00	0	0.00		1.00	0	---	---	0
ρ = 1.00													

(1) Table 4.3.4 AF&PA SDPWS, Footnote 1

Flr. Thk. (Add to OTM arm):						1.0 ft	*E.Q. DL Uplift Factor:				44.0%	DL Uplift Factor w/Wind:						60.0%					
3) OVERTURNING RESISTANCE							Seismic Uplift								Wind Uplift								
Line	ID	Resisted		Resisted ID (#1)	Resisted ID (#2)	L _{ARM}	Reduced Net OTM				Add'l			Reduced Net OTM				Add'l		Max. U _{sum} (kip)	HD		
		L _{DL eff.}	w dl				OTM	R _{OTM}	Level	Abv.	Total	Ω	U	U _{sum}	OTM	R _{OTM}	Level	Abv.	Total			U	U _{sum}
		(ft)	(klf)	Above	Above	(ft)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)	(k)	(kip)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)	(kip-ft)	(k)	(kip)			
5	L0.5.1	7.7	0.15	-	-	5.46	14.78	3.65	11.12	0.00	11.12	1.00	0	2.04	15.80	4.18	11.61	0.00	11.61	0	2.13	2.13	HTT5
5	L0.5.2	12.2	0.15	-	-	9.93	26.35	10.29	16.05	0.00	16.05	1.00	0	1.62	28.16	11.78	16.38	0.00	16.38	0	1.65	1.65	HTT5
		0.0	0.15	-	-					0.00		1.00	0					0.00		0		0.00	NONE
		0.0	0.15	-	-					0.00		1.00	0					0.00		0		0.00	NONE
		0.0	0.15	-	-					0.00		1.00	0					0.00		0		0.00	NONE
		0.0	0.15	-	-					0.00		1.00	0					0.00		0		0.00	NONE
		0.0	0.15	-	-					0.00		1.00	0					0.00		0		0.00	NONE
Holdown Ctr. Offset from SW End:						3 in	Σ=				0.00	27.18											

Job Name: Tam Cem
Wall Name: Grid 1 Top Level
Application: Balloon Framed

Design Criteria:

- * 2021 International Bldg Code
- * Seismic R=6.5
- * 2500 psi concrete
- * ASD Design Shear = 3200 lbs
- * Nominal wall height = 15 ft

Selected Strong-Wall® Panel Solution:

Model	Type	W (in)	H (in)	T (in)	Sill Anchor	End Anchor Bolts	Total Axial Load (lbs)	Actual Uplift (lbs)
WSWH18x15	Wood	18	180	3.5	N/A	2 - 1"	0	11520 lb
WSWH18x15	Wood	18	180	3.5	N/A	2 - 1"	0	11520 lb
WSWH18x15	Wood	18	180	3.5	N/A	2 - 1"	0	11520 lb
WSWH18x15	Wood	18	180	3.5	N/A	2 - 1"	0	11520 lb

Actual Shear & Drift Distribution:

Model	RR Relative Rigidity	Actual Shear (lbs)		Allowable Shear (lbs)		Actual / Allow Shear	Actual Drift (in)	Drift Limit (in)
WSWH18x15	0.25	800	≤	1085	OK	0.74	0.57	0.79
WSWH18x15	0.25	800	≤	1085	OK	0.74	0.57	0.79
WSWH18x15	0.25	800	≤	1085	OK	0.74	0.57	0.79
WSWH18x15	0.25	800	≤	1085	OK	0.74	0.57	0.79

Notes:

- Strong-Wall High-Strength Wood Shearwalls have been evaluated to the 2021 IBC/IRC. See www.strongtie.com for additional design and installation information.
- Anchor templates are recommended for proper anchor bolt placement, and are required in some jurisdictions.
- The applied vertical load shall be a concentric point load or a uniformly distributed load not exceeding the allowable vertical load. Alternatively, the load may be applied anywhere along the width of the panel if imposed by a continuous bearing vertical load transfer element such as a rimboard or beam. For eccentric axial loads applied directly to the panel, the allowable vertical load shall be divided by two.
- Panels may be trimmed to a minimum height of 74½".

Disclaimer:

It is the Designer's responsibility to verify product suitability under applicable building codes. In order to verify code listed applications please refer to the appropriate product code reports at www.strongtie.com or contact Simpson Strong-Tie Company Inc. at 1-800-999-5099.



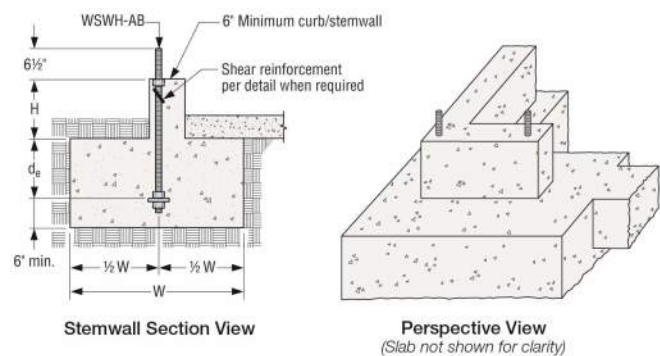
Job Name: Tam Cem
Wall Name: Grid 1 Top Level
Application: Balloon Framed

Design Criteria:

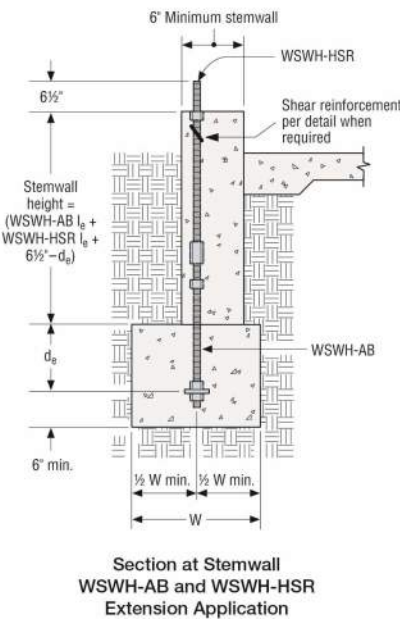
- * Stemwall - Perimeter
- * 2021 International Bldg Code
- * Seismic R=6.5
- * 2500 psi concrete

Anchor Solution Details:

Stemwall Installation



Stemwall Extension Installation



Anchor Solution Assuming Cracked Concrete Design:

Model	W	de	B	Anchor Bolt	Strength
WSWH18x15	33	11	14	WSWH-AB	Standard

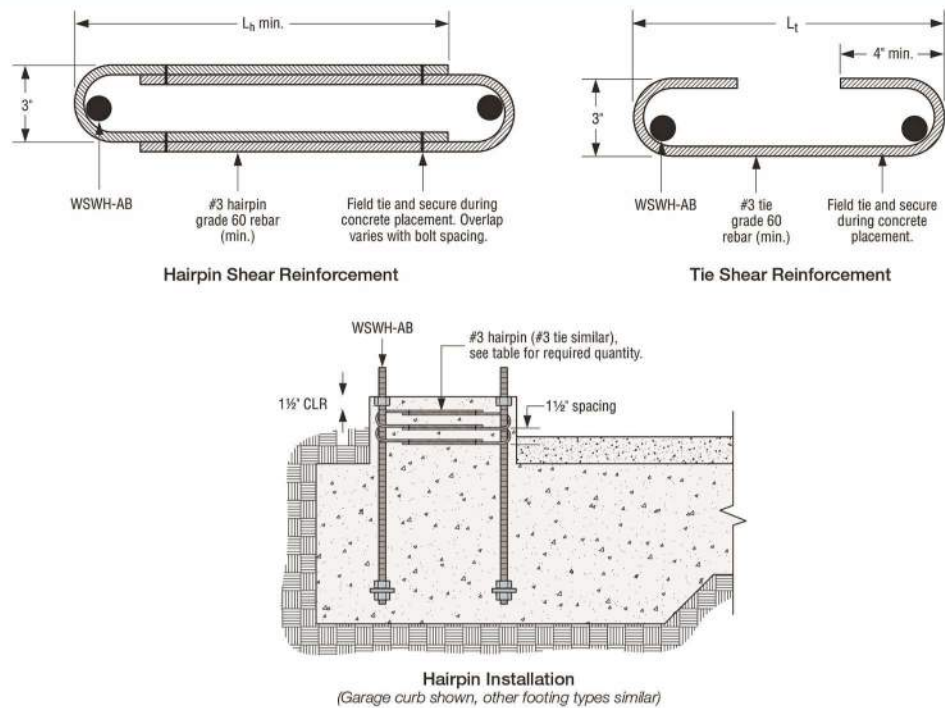
Anchor Solution Assuming Uncracked Concrete Design:

Model	W	de	B	Anchor Bolt	Strength
WSWH18x15	28	10	14	WSWH-AB	Standard



Notes:

1. Anchorage designs conform to ACI 318-19, ACI 318-14 and 318-11 Appendix D with no supplementary reinforcement for cracked and uncracked concrete as noted.
2. Anchorage strength indicates required grade of anchor bolt. Standard (ASTM F1554 grade 36) or High Strength (HS)(ASTM A193 Grade B7).
3. Seismic indicates Seismic Design Category C through F. Detached 1 & 2 family dwellings in SDC C may use wind anchorage solutions. Seismic anchorage designs conform to ACI 318-11 section D.3.3.4.3 and ACI 318-14 section 17.2.3.4.3 and ACI 318-19 section 17.10.5.3.
4. Foundation dimensions are for anchorage only. Foundation design (size and reinforcement) by others. The registered design professional may specify alternate embedment, footing size or anchor bolt.



Shear Anchorage Solutions

Strong-Wall High-Strength Wood Shearwall Model No.	L_1 or L_h (in.)	Seismic ¹		Wind ⁴			
		Shear Reinforcement	Minimum Curb/ Stemwall Width (in.)	Shear Reinforcement	Minimum Curb/ Stemwall Width (in.)	ASD Allowable Shear Load, V (lb.) ⁷	
						Uncracked	Cracked
WSWH12	10 1/4	(1) #3 Tie	6	See Note 7	6	1,080	770
WSWH18	15	(2) #3 hairpins ^{6, 8}	6	(1) #3 hairpin	6	Hairpin reinforcement achieves maximum allowable shear load of the Strong-Wall® WSWH	
WSWH24	19	(2) #3 hairpins ⁸	6	(2) #3 hairpins ⁸	6		

1. Shear anchorage designs conform to ACI 318-14 Chapter 17 and ACI 318-11 and assume minimum 2,500 psi concrete.
2. Shear reinforcement is not required for interior foundation applications (panel installed away from edge of concrete), or braced wall panel applications.
3. Seismic indicates seismic design category C through F. Detached one- and two-family dwellings in SDC C may use wind anchorage solutions. Seismic shear reinforcement designs conform to ACI 318-14, section 17.2.3.5.3 and ACI 318-11 section D.3.3.5.
4. Wind includes seismic design category A and B and detached one- and two-family dwellings in SDC C.
5. Additional ties may be required at garage curb or stemwall installations below anchor reinforcement per designer.
6. Use (1) #3 hairpin for WSWH18 when standard strength anchor is used.
7. Use (1) #3 tie for WSWH12 when panel design shear force exceeds tabulated anchorage allowable shear load.
8. No. 4 grade 40 shear reinforcement may be substituted for WSWH shear anchorage solutions.
9. Concrete edge distance for anchors must comply with ACI 318-14 section 17.7.2 and ACI 318-11 section D.8.2.
10. The designer may specify alternate shear anchorage.

STRONG-WALL® WSWH SHEAR ANCHORAGE SCHEDULE AND DETAILS



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CALCULATION
SECTION 8.0:
**FOUNDATION
ENGINEERING**

TAM CEM - RESIDENCE

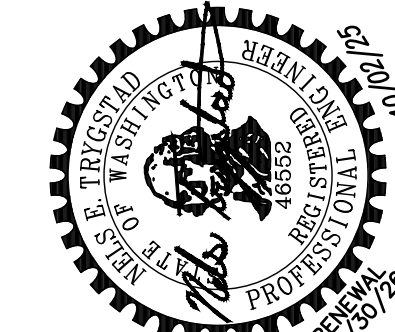
Addition & Alteration
4215 Holly Ln, Mercer Island, WA 98040

Permit Set	Job # 24-028	TE# 24307
Description	Permit Intake	10/07/24
	Correction 01	02/04/25
	Correction 02	03/06/25
	Field Rev	06/11/25
	Field Rev	10/02/25

Trygstad
ENGINEERING
nels@trygstadeng.com
(208)262-6884

Permit No.: 2407-213

Drawn:
Stamp/Approval:

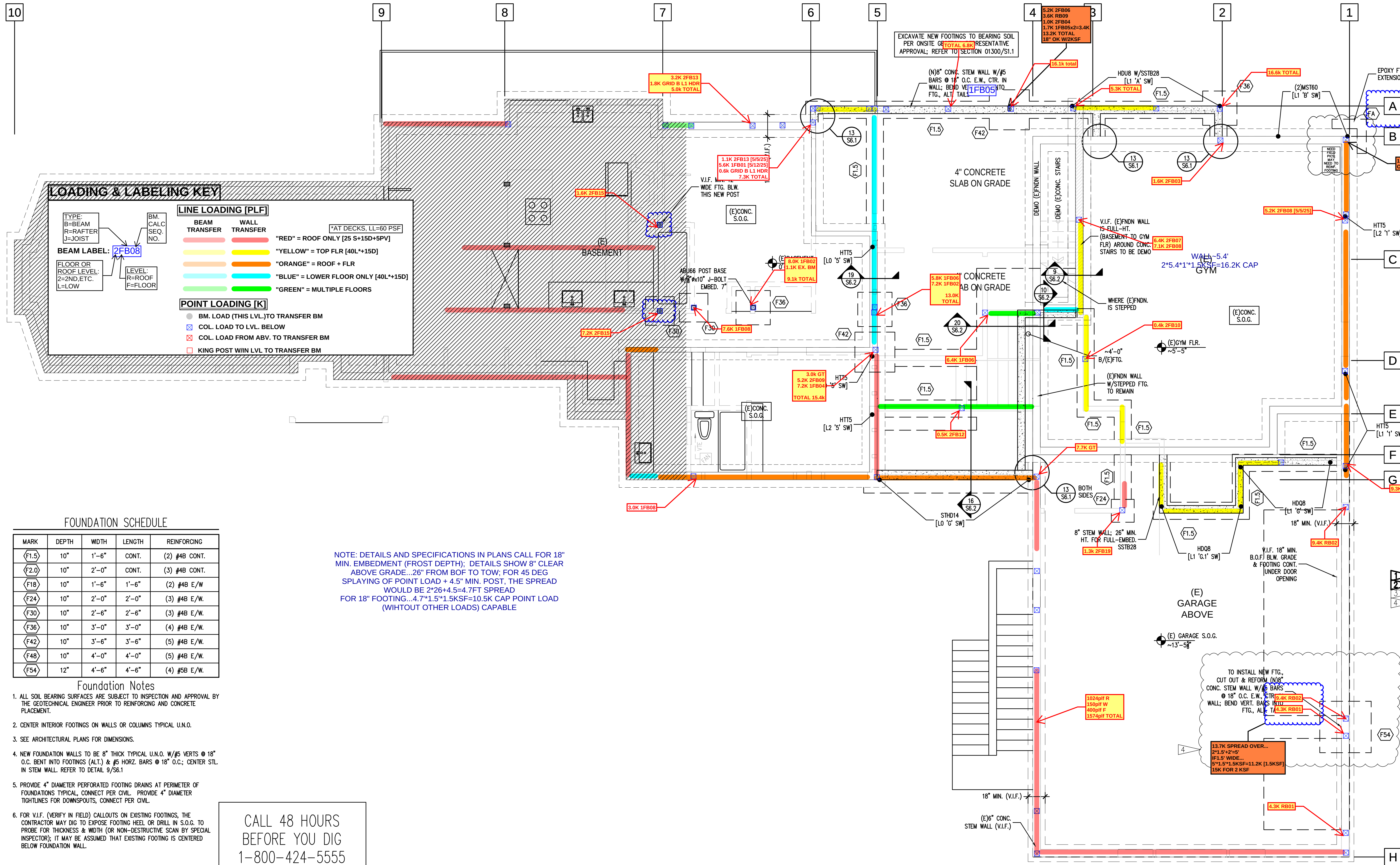


Sheet Name:

FOUNDATION
PLAN

Sheet No:

S2.1



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 ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

General Footing

Lic. # : KW-06002997

Description : F2.0: 24"x24" Footing with 1500psf ASBP

General Information

Calculations per ACI 318-08, IBC 2009, CBC 2010, ASCE 7-05

Material Properties

f'_c : Concrete 28 day strength	=	2.50	ksi
f_y : Rebar Yield	=	40.0	ksi
E_c : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
ϕ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	0.00140	
Min Allow % Temp Reinf.	=	0.00180	
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	
Include Pedestal Weight as DL	:	No	

Soil Design Values

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

Increases based on footing Depth

Footing base depth below soil surface	=	0.0	ft
Allowable pressure increase per foot of dept	=	0.0	ksf
when footing base is below	=	0.0	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of dept	=	0.0	ksf
when maximum length or width is greater	=	0.0	ft

Dimensions

Width parallel to X-X Axis	=	2.0	ft
Length parallel to Z-Z Axis	=	2.0	ft
Footing Thickness	=	10.0	in

Load location offset from footing center...

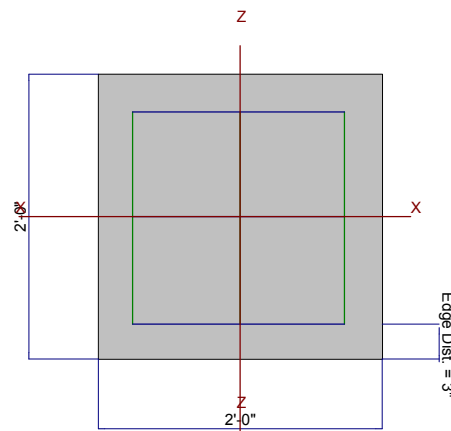
ex : parallel to X-X Axis	=	0	in
ez : parallel to Z-Z Axis	=	0	in

Pedestal dimensions...

px : parallel to X-X Axis	=	0.0	in
pz : parallel to Z-Z Axis	=	0.0	in
Height	=	0.0	in

Rebar Centerline to Edge of Concrete..

at Bottom of footing	=	3.250	in
----------------------	---	-------	----

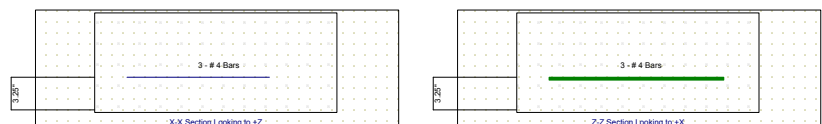


Reinforcing

Bars parallel to X-X Axis	=	3.0	
Number of Bars	=	# 4	
Reinforcing Bar Size	=	# 4	
Bars parallel to Z-Z Axis	=	3.0	
Number of Bars	=	# 4	
Reinforcing Bar Size	=	# 4	

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a



Applied Loads

		D	Lr	L	S	W	E	H
P : Column Load	=	0.0	0.0	5.50	0.0	0.0	0.0	0.0 k
OB : Overburden	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ksf
M-xx	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
M-zz	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
V-x	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k
V-z	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k

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General Footing

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ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

Lic. # : KW-06002997

Description : F2.0: 24"x24" Footing with 1500psf ASBP

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9973	Soil Bearing	1.496 ksf	1.50 ksf	+D+L+H
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	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.1876	Z Flexure (+X)	1.10 k-ft	5.863 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1876	Z Flexure (-X)	1.10 k-ft	5.863 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1876	X Flexure (+Z)	1.10 k-ft	5.863 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1876	X Flexure (-Z)	1.10 k-ft	5.863 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1545	1-way Shear (+X)	11.588 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1545	1-way Shear (-X)	11.588 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1545	1-way Shear (+Z)	11.588 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.1545	1-way Shear (-Z)	11.588 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2967	2-way Punching	44.50 psi	150.0 psi	+1.20D+0.50Lr+1.60L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc	+Z	Actual Soil Bearing Stress +Z	-X	-X	Actual / Allowable Ratio
X-X, +D	1.50	n/a	0.0	0.1208	0.1208	n/a	n/a	0.081
X-X, +D+L+H	1.50	n/a	0.0	1.496	1.496	n/a	n/a	0.997
X-X, +D+0.750Lr+0.750L+H	1.50	n/a	0.0	1.152	1.152	n/a	n/a	0.768
X-X, +D+0.750Lr+0.750S+H	1.50	n/a	0.0	1.152	1.152	n/a	n/a	0.768
X-X, +D+0.750Lr+0.750L+0.750W+H	1.50	n/a	0.0	1.152	1.152	n/a	n/a	0.768
X-X, +D+0.750Lr+0.750S+0.750W+H	1.50	n/a	0.0	1.152	1.152	n/a	n/a	0.768
X-X, +D+0.750Lr+0.750L+0.5250E+H	1.50	n/a	0.0	1.152	1.152	n/a	n/a	0.768
X-X, +D+0.750Lr+0.750S+0.5250E+H	1.50	n/a	0.0	1.152	1.152	n/a	n/a	0.768
Z-Z, +D	1.50	0.0	n/a	n/a	n/a	0.1208	0.1208	0.081
Z-Z, +D+L+H	1.50	0.0	n/a	n/a	n/a	1.496	1.496	0.997
Z-Z, +D+0.750Lr+0.750L+H	1.50	0.0	n/a	n/a	n/a	1.152	1.152	0.768
Z-Z, +D+0.750Lr+0.750S+H	1.50	0.0	n/a	n/a	n/a	1.152	1.152	0.768
Z-Z, +D+0.750Lr+0.750L+0.750W+H	1.50	0.0	n/a	n/a	n/a	1.152	1.152	0.768
Z-Z, +D+0.750Lr+0.750S+0.750W+H	1.50	0.0	n/a	n/a	n/a	1.152	1.152	0.768
Z-Z, +D+0.750Lr+0.750L+0.5250E+H	1.50	0.0	n/a	n/a	n/a	1.152	1.152	0.768
Z-Z, +D+0.750Lr+0.750S+0.5250E+H	1.50	0.0	n/a	n/a	n/a	1.152	1.152	0.768

Overturing Stability

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

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0	+Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.40D	0	-Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	1.1	+Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	1.1	-Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+1.60L+0.50S+1.60H	1.1	+Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+1.60L+0.50S+1.60H	1.1	-Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+1.60Lr+0.50L	0.3437	+Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+1.60Lr+0.50L	0.3437	-Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+0.50L+1.60S	0.3437	+Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+0.50L+1.60S	0.3437	-Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	0.3437	+Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	0.3437	-Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+0.50L+0.50S+1.60W	0.3437	+Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+0.50L+0.50S+1.60W	0.3437	-Z	Bottom	0.22	Bending	0.3	5.863	OK
X-X, +1.20D+0.50L+0.20S+E	0.3437	+Z	Bottom	0.22	Bending	0.3	5.863	OK

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Lic. # : KW-06002997

Description : F2.0: 24"x24" Footing with 1500psf ASBP

X-X. +1.20D+0.50L+0.20S+E	0.3437	-Z	Bottom	0.22	Bending	0.3	5.863	OK
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Description : F2.0: 24"x24" Footing with 1500psf ASBP

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
Z-Z. +1.40D	0	-X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.40D	0	+X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+0.50Lr+1.60L+1.60H	1.1	-X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+0.50Lr+1.60L+1.60H	1.1	+X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+1.60L+0.50S+1.60H	1.1	-X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+1.60L+0.50S+1.60H	1.1	+X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+1.60Lr+0.50L	0.3437	-X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+1.60Lr+0.50L	0.3437	+X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+0.50L+1.60S	0.3437	-X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+0.50L+1.60S	0.3437	+X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+0.50Lr+0.50L+1.60W	0.3437	-X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+0.50Lr+0.50L+1.60W	0.3437	+X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+0.50L+0.50S+1.60W	0.3437	-X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+0.50L+0.50S+1.60W	0.3437	+X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+0.50L+0.20S+E	0.3437	-X	Bottom	0.22	Bending	0.3	5.863	OK
Z-Z. +1.20D+0.50L+0.20S+E	0.3437	+X	Bottom	0.22	Bending	0.3	5.863	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 psi	0 psi	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	11.588 psi	11.588 psi	11.588 psi	11.588 psi	11.588 psi	75 psi	0.1545	OK
+1.20D+1.60L+0.50S+1.60H	11.588 psi	11.588 psi	11.588 psi	11.588 psi	11.588 psi	75 psi	0.1545	OK
+1.20D+1.60Lr+0.50L	3.621 psi	3.621 psi	3.621 psi	3.621 psi	3.621 psi	75 psi	0.04829	OK
+1.20D+0.50L+1.60S	3.621 psi	3.621 psi	3.621 psi	3.621 psi	3.621 psi	75 psi	0.04829	OK
+1.20D+0.50Lr+0.50L+1.60W	3.621 psi	3.621 psi	3.621 psi	3.621 psi	3.621 psi	75 psi	0.04829	OK
+1.20D+0.50L+0.50S+1.60W	3.621 psi	3.621 psi	3.621 psi	3.621 psi	3.621 psi	75 psi	0.04829	OK
+1.20D+0.50L+0.20S+E	3.621 psi	3.621 psi	3.621 psi	3.621 psi	3.621 psi	75 psi	0.04829	OK

Punching Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	0 psi	150psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	44.5 psi	150psi	0.2967	OK
+1.20D+1.60L+0.50S+1.60H	44.5 psi	150psi	0.2967	OK
+1.20D+1.60Lr+0.50L	13.906 psi	150psi	0.09271	OK
+1.20D+0.50L+1.60S	13.906 psi	150psi	0.09271	OK
+1.20D+0.50Lr+0.50L+1.60W	13.906 psi	150psi	0.09271	OK
+1.20D+0.50L+0.50S+1.60W	13.906 psi	150psi	0.09271	OK
+1.20D+0.50L+0.20S+E	13.906 psi	150psi	0.09271	OK

All units k

Title Block Line 1
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Title :
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 Project Desc.:
 Project Notes :

Job #

Printed: 10 DEC 2012, 12:16PM

General Footing

File: g:\Nels\Calc Catalog\nels std calc catalog.ec6
 ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

Lic. # : KW-06002997

Description : F2.5: 30"x30" Footing with 1500psf ASBP

General Information

Calculations per ACI 318-08, IBC 2009, CBC 2010, ASCE 7-05

Material Properties

f'_c : Concrete 28 day strength	=	2.50	ksi
f_y : Rebar Yield	=	40.0	ksi
E_c : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
ϕ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	0.00140	
Min Allow % Temp Reinf.	=	0.00180	
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	
Include Pedestal Weight as DL	:	No	

Soil Design Values

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

Increases based on footing Depth

Footing base depth below soil surface	=	0.0	ft
Allowable pressure increase per foot of dept	=	0.0	ksf
when footing base is below	=	0.0	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of dept	=	0.0	ksf
when maximum length or width is greater than	=	0.0	ft

Dimensions

Width parallel to X-X Axis	=	2.50	ft
Length parallel to Z-Z Axis	=	2.50	ft
Footing Thickness	=	10.0	in

Load location offset from footing center...

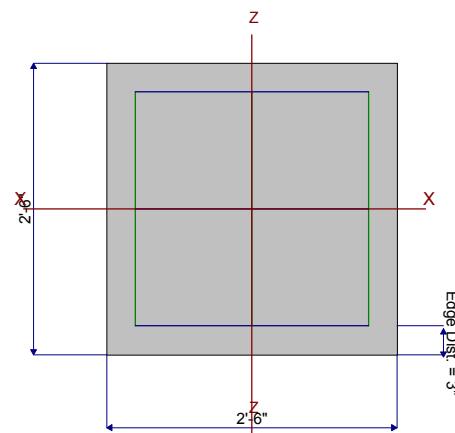
ex : parallel to X-X Axis	=	0	in
ez : parallel to Z-Z Axis	=	0	in

Pedestal dimensions...

px : parallel to X-X Axis	=	0.0	in
pz : parallel to Z-Z Axis	=	0.0	in
Height	=	0.0	in

Rebar Centerline to Edge of Concrete..

at Bottom of footing	=	3.250	in
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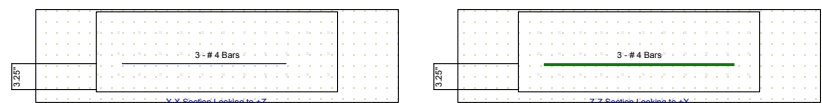


Reinforcing

Bars parallel to X-X Axis	=	3.0	
Number of Bars	=	# 4	
Reinforcing Bar Size	=	# 4	
Bars parallel to Z-Z Axis	=	3.0	
Number of Bars	=	# 4	
Reinforcing Bar Size	=	# 4	

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	=	n/a	
# Bars required within zone	=	n/a	
# Bars required on each side of zone	=	n/a	



Applied Loads

		D	Lr	L	S	W	E	H
P : Column Load	=	0.0	0.0	8.60	0.0	0.0	0.0	0.0 k
OB : Overburden	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ksf
M-xx	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
M-zz	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
V-x	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k
V-z	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k

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Job #

Printed: 10 DEC 2012, 12:16PM

General Footing

File: g:\Nels\Calc Catalog\nels std calc catalog.ec6
 ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

Lic. # : KW-06002997

Description : F2.5: 30"x30" Footing with 1500psf ASBP

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9980	Soil Bearing	1.497 ksf	1.50 ksf	+D+L+H
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	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.3640	Z Flexure (+X)	1.720 k-ft	4.724 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3640	Z Flexure (-X)	1.720 k-ft	4.724 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3640	X Flexure (+Z)	1.720 k-ft	4.724 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3640	X Flexure (-Z)	1.720 k-ft	4.724 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2537	1-way Shear (+X)	19.026 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2537	1-way Shear (-X)	19.026 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2537	1-way Shear (+Z)	19.026 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.2537	1-way Shear (-Z)	19.026 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4775	2-way Punching	71.622 psi	150.0 psi	+1.20D+0.50Lr+1.60L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc	+Z	Actual Soil Bearing Stress +Z	-X	-X	Actual / Allowable Ratio
X-X, +D	1.50	n/a	0.0	0.1208	0.1208	n/a	n/a	0.081
X-X, +D+L+H	1.50	n/a	0.0	1.497	1.497	n/a	n/a	0.998
X-X, +D+0.750Lr+0.750L+H	1.50	n/a	0.0	1.153	1.153	n/a	n/a	0.769
X-X, +D+0.750Lr+0.750S+H	1.50	n/a	0.0	1.153	1.153	n/a	n/a	0.769
X-X, +D+0.750Lr+0.750L+0.750W+H	1.50	n/a	0.0	1.153	1.153	n/a	n/a	0.769
X-X, +D+0.750Lr+0.750S+0.750W+H	1.50	n/a	0.0	1.153	1.153	n/a	n/a	0.769
X-X, +D+0.750Lr+0.750L+0.5250E+H	1.50	n/a	0.0	1.153	1.153	n/a	n/a	0.769
X-X, +D+0.750Lr+0.750S+0.5250E+H	1.50	n/a	0.0	1.153	1.153	n/a	n/a	0.769
Z-Z, +D	1.50	0.0	n/a	n/a	n/a	0.1208	0.1208	0.081
Z-Z, +D+L+H	1.50	0.0	n/a	n/a	n/a	1.497	1.497	0.998
Z-Z, +D+0.750Lr+0.750L+H	1.50	0.0	n/a	n/a	n/a	1.153	1.153	0.769
Z-Z, +D+0.750Lr+0.750S+H	1.50	0.0	n/a	n/a	n/a	1.153	1.153	0.769
Z-Z, +D+0.750Lr+0.750L+0.750W+H	1.50	0.0	n/a	n/a	n/a	1.153	1.153	0.769
Z-Z, +D+0.750Lr+0.750S+0.750W+H	1.50	0.0	n/a	n/a	n/a	1.153	1.153	0.769
Z-Z, +D+0.750Lr+0.750L+0.5250E+H	1.50	0.0	n/a	n/a	n/a	1.153	1.153	0.769
Z-Z, +D+0.750Lr+0.750S+0.5250E+H	1.50	0.0	n/a	n/a	n/a	1.153	1.153	0.769

Overturing Stability

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

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0	+Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.40D	0	-Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	1.72	+Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	1.72	-Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+1.60L+0.50S+1.60H	1.72	+Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+1.60L+0.50S+1.60H	1.72	-Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+1.60Lr+0.50L	0.5374	+Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+1.60Lr+0.50L	0.5374	-Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+0.50L+1.60S	0.5374	+Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+0.50L+1.60S	0.5374	-Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	0.5374	+Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	0.5374	-Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+0.50L+0.50S+1.60W	0.5374	+Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+0.50L+0.50S+1.60W	0.5374	-Z	Bottom	0.22	Bending	0.24	4.724	OK
X-X, +1.20D+0.50L+0.20S+E	0.5374	+Z	Bottom	0.22	Bending	0.24	4.724	OK

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Title :
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Project Notes :

Printed: 10 DEC 2012, 12:16PM

General Footing

File: g:\Nels\Calc Catalog\nels std calc catalog.ec6
ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

Lic. # : KW-06002997								
Description : F2.5: 30"x30" Footing with 1500psf ASBP								
X-X. +1.20D+0.50L+0.20S+E	0.5374	-Z	Bottom	0.22	Bending	0.24	4.724	OK

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Title :
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General Footing

File: g:\Nels\Calc Catalog\nels std calc catalog.ec6
 ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

Lic. # : KW-06002997

Description : F2.5: 30"x30" Footing with 1500psf ASBP

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
Z-Z. +1.40D	0	-X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.40D	0	+X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+0.50Lr+1.60L+1.60H	1.72	-X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+0.50Lr+1.60L+1.60H	1.72	+X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+1.60L+0.50S+1.60H	1.72	-X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+1.60L+0.50S+1.60H	1.72	+X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+1.60Lr+0.50L	0.5374	-X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+1.60Lr+0.50L	0.5374	+X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+0.50L+1.60S	0.5374	-X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+0.50L+1.60S	0.5374	+X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+0.50Lr+0.50L+1.60W	0.5374	-X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+0.50Lr+0.50L+1.60W	0.5374	+X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+0.50L+0.50S+1.60W	0.5374	-X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+0.50L+0.50S+1.60W	0.5374	+X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+0.50L+0.20S+E	0.5374	-X	Bottom	0.22	Bending	0.24	4.724	OK
Z-Z. +1.20D+0.50L+0.20S+E	0.5374	+X	Bottom	0.22	Bending	0.24	4.724	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 psi	0 psi	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	19.026 psi	19.026 psi	19.026 psi	19.026 psi	19.026 psi	75 psi	0.2537	OK
+1.20D+1.60L+0.50S+1.60H	19.026 psi	19.026 psi	19.026 psi	19.026 psi	19.026 psi	75 psi	0.2537	OK
+1.20D+1.60Lr+0.50L	5.946 psi	5.946 psi	5.946 psi	5.946 psi	5.946 psi	75 psi	0.07928	OK
+1.20D+0.50L+1.60S	5.946 psi	5.946 psi	5.946 psi	5.946 psi	5.946 psi	75 psi	0.07928	OK
+1.20D+0.50Lr+0.50L+1.60W	5.946 psi	5.946 psi	5.946 psi	5.946 psi	5.946 psi	75 psi	0.07928	OK
+1.20D+0.50L+0.50S+1.60W	5.946 psi	5.946 psi	5.946 psi	5.946 psi	5.946 psi	75 psi	0.07928	OK
+1.20D+0.50L+0.20S+E	5.946 psi	5.946 psi	5.946 psi	5.946 psi	5.946 psi	75 psi	0.07928	OK

Punching Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	0 psi	150psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	71.622 psi	150psi	0.4775	OK
+1.20D+1.60L+0.50S+1.60H	71.622 psi	150psi	0.4775	OK
+1.20D+1.60Lr+0.50L	22.382 psi	150psi	0.1492	OK
+1.20D+0.50L+1.60S	22.382 psi	150psi	0.1492	OK
+1.20D+0.50Lr+0.50L+1.60W	22.382 psi	150psi	0.1492	OK
+1.20D+0.50L+0.50S+1.60W	22.382 psi	150psi	0.1492	OK
+1.20D+0.50L+0.20S+E	22.382 psi	150psi	0.1492	OK

All units k

Title Block Line 1
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 Title Block Line 6

Title :
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Job #

Printed: 10 DEC 2012, 1:02PM

File: g:\Nels\Calc Catalog\nels std calc catalog.ec6
 ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

General Footing

Lic. # : KW-06002997

Description : F3.0: 36"x36" Footing with 1500psf ASBP

General Information

Calculations per ACI 318-08, IBC 2009, CBC 2010, ASCE 7-05

Material Properties

f'_c : Concrete 28 day strength	=	2.50	ksi
f_y : Rebar Yield	=	40.0	ksi
E_c : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
ϕ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	0.00140	
Min Allow % Temp Reinf.	=	0.00180	
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	
Include Pedestal Weight as DL	:	No	

Soil Design Values

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

Increases based on footing Depth

Footing base depth below soil surface	=	0.0	ft
Allowable pressure increase per foot of dept	=	0.0	ksf
when footing base is below	=	0.0	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of dept	=	0.0	ksf
when maximum length or width is greater than	=	0.0	ft

Dimensions

Width parallel to X-X Axis	=	3.0	ft
Length parallel to Z-Z Axis	=	3.0	ft
Footing Thickness	=	10.0	in

Load location offset from footing center...

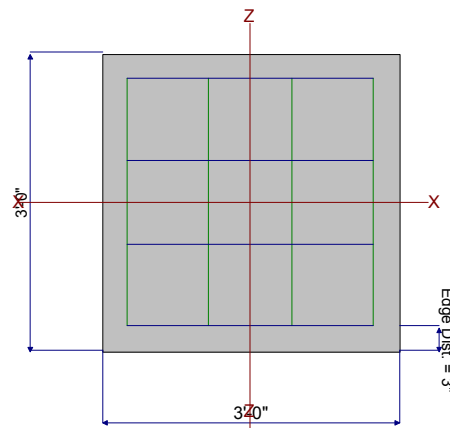
ex : parallel to X-X Axis	=	0	in
ez : parallel to Z-Z Axis	=	0	in

Pedestal dimensions...

px : parallel to X-X Axis	=	0.0	in
pz : parallel to Z-Z Axis	=	0.0	in
Height	=	0.0	in

Rebar Centerline to Edge of Concrete..

at Bottom of footing	=	3.250	in
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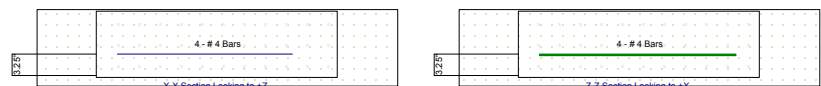


Reinforcing

Bars parallel to X-X Axis	=	4.0	
Number of Bars	=	# 4	
Reinforcing Bar Size	=	# 4	
Bars parallel to Z-Z Axis	=	4.0	
Number of Bars	=	# 4	
Reinforcing Bar Size	=	# 4	

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a



Applied Loads

	D	Lr	L	S	W	E	H
P : Column Load	=	0.0	0.0	12.40	0.0	0.0	0.0 k
OB : Overburden	=	0.0	0.0	0.0	0.0	0.0	0.0 ksf
M-xx	=	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
M-zz	=	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
V-x	=	0.0	0.0	0.0	0.0	0.0	0.0 k
V-z	=	0.0	0.0	0.0	0.0	0.0	0.0 k

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Project Desc.:

Project Notes :

Job #

Printed: 10 DEC 2012, 1:02PM

General Footing

File: g:\Nels\Calc Catalog\nels std calc catalog.ec6
ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

Lic. # : KW-06002997

Description : F3.0: 36"x36" Footing with 1500psf ASBP

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9993	Soil Bearing	1.499 ksf	1.50 ksf	+D+L+H
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	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.4739	Z Flexure (+X)	2.480 k-ft	5.233 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4739	Z Flexure (-X)	2.480 k-ft	5.233 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4739	X Flexure (+Z)	2.480 k-ft	5.233 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4739	X Flexure (-Z)	2.480 k-ft	5.233 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3338	1-way Shear (+X)	25.038 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3338	1-way Shear (-X)	25.038 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3338	1-way Shear (+Z)	25.038 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.3338	1-way Shear (-Z)	25.038 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.6967	2-way Punching	104.51 psi	150.0 psi	+1.20D+0.50Lr+1.60L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc	+Z	Actual Soil Bearing Stress +Z	-X	-X	Actual / Allowable Ratio
X-X, +D	1.50	n/a	0.0	0.1208	0.1208	n/a	n/a	0.081
X-X, +D+L+H	1.50	n/a	0.0	1.499	1.499	n/a	n/a	0.999
X-X, +D+0.750Lr+0.750L+H	1.50	n/a	0.0	1.154	1.154	n/a	n/a	0.769
X-X, +D+0.750L+0.750S+H	1.50	n/a	0.0	1.154	1.154	n/a	n/a	0.769
X-X, +D+0.750Lr+0.750L+0.750W+H	1.50	n/a	0.0	1.154	1.154	n/a	n/a	0.769
X-X, +D+0.750L+0.750S+0.750W+H	1.50	n/a	0.0	1.154	1.154	n/a	n/a	0.769
X-X, +D+0.750Lr+0.750L+0.5250E+H	1.50	n/a	0.0	1.154	1.154	n/a	n/a	0.769
X-X, +D+0.750L+0.750S+0.5250E+H	1.50	n/a	0.0	1.154	1.154	n/a	n/a	0.769
Z-Z, +D	1.50	0.0	n/a	n/a	n/a	0.1208	0.1208	0.081
Z-Z, +D+L+H	1.50	0.0	n/a	n/a	n/a	1.499	1.499	0.999
Z-Z, +D+0.750Lr+0.750L+H	1.50	0.0	n/a	n/a	n/a	1.154	1.154	0.769
Z-Z, +D+0.750L+0.750S+H	1.50	0.0	n/a	n/a	n/a	1.154	1.154	0.769
Z-Z, +D+0.750Lr+0.750L+0.750W+H	1.50	0.0	n/a	n/a	n/a	1.154	1.154	0.769
Z-Z, +D+0.750L+0.750S+0.750W+H	1.50	0.0	n/a	n/a	n/a	1.154	1.154	0.769
Z-Z, +D+0.750Lr+0.750L+0.5250E+H	1.50	0.0	n/a	n/a	n/a	1.154	1.154	0.769
Z-Z, +D+0.750L+0.750S+0.5250E+H	1.50	0.0	n/a	n/a	n/a	1.154	1.154	0.769

Overturing Stability

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

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0	+Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.40D	0	-Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	2.48	+Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	2.48	-Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+1.60L+0.50S+1.60H	2.48	+Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+1.60L+0.50S+1.60H	2.48	-Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+1.60Lr+0.50L	0.7749	+Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+1.60Lr+0.50L	0.7749	-Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+0.50L+1.60S	0.7749	+Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+0.50L+1.60S	0.7749	-Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	0.7749	+Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	0.7749	-Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+0.50L+0.50S+1.60W	0.7749	+Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+0.50L+0.50S+1.60W	0.7749	-Z	Bottom	0.22	Bending	0.27	5.233	OK
X-X, +1.20D+0.50L+0.20S+E	0.7749	+Z	Bottom	0.22	Bending	0.27	5.233	OK

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Job #

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General Footing

File: g:\Nels\Calc Catalog\nels std calc catalog.ec6
ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

Lic. # : KW-06002997

Description : F3.0: 36"x36" Footing with 1500psf ASBP

X-X. +1.20D+0.50L+0.20S+E	0.7749	-Z	Bottom	0.22	Bending	0.27	5.233	OK
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Description : F3.0: 36"x36" Footing with 1500psf ASBP

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
Z-Z. +1.40D	0	-X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.40D	0	+X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+0.50Lr+1.60L+1.60H	2.48	-X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+0.50Lr+1.60L+1.60H	2.48	+X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+1.60L+0.50S+1.60H	2.48	-X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+1.60L+0.50S+1.60H	2.48	+X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+1.60Lr+0.50L	0.7749	-X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+1.60Lr+0.50L	0.7749	+X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+0.50L+1.60S	0.7749	-X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+0.50L+1.60S	0.7749	+X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+0.50Lr+0.50L+1.60W	0.7749	-X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+0.50Lr+0.50L+1.60W	0.7749	+X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+0.50L+0.50S+1.60W	0.7749	-X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+0.50L+0.50S+1.60W	0.7749	+X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+0.50L+0.20S+E	0.7749	-X	Bottom	0.22	Bending	0.27	5.233	OK
Z-Z. +1.20D+0.50L+0.20S+E	0.7749	+X	Bottom	0.22	Bending	0.27	5.233	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 psi	0 psi	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	25.038 psi	25.038 psi	25.038 psi	25.038 psi	25.038 psi	75 psi	0.3338	OK
+1.20D+1.60L+0.50S+1.60H	25.038 psi	25.038 psi	25.038 psi	25.038 psi	25.038 psi	75 psi	0.3338	OK
+1.20D+1.60Lr+0.50L	7.824 psi	7.824 psi	7.824 psi	7.824 psi	7.824 psi	75 psi	0.1043	OK
+1.20D+0.50L+1.60S	7.824 psi	7.824 psi	7.824 psi	7.824 psi	7.824 psi	75 psi	0.1043	OK
+1.20D+0.50Lr+0.50L+1.60W	7.824 psi	7.824 psi	7.824 psi	7.824 psi	7.824 psi	75 psi	0.1043	OK
+1.20D+0.50L+0.50S+1.60W	7.824 psi	7.824 psi	7.824 psi	7.824 psi	7.824 psi	75 psi	0.1043	OK
+1.20D+0.50L+0.20S+E	7.824 psi	7.824 psi	7.824 psi	7.824 psi	7.824 psi	75 psi	0.1043	OK

Punching Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	0 psi	150psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	104.51 psi	150psi	0.6967	OK
+1.20D+1.60L+0.50S+1.60H	104.51 psi	150psi	0.6967	OK
+1.20D+1.60Lr+0.50L	32.658 psi	150psi	0.2177	OK
+1.20D+0.50L+1.60S	32.658 psi	150psi	0.2177	OK
+1.20D+0.50Lr+0.50L+1.60W	32.658 psi	150psi	0.2177	OK
+1.20D+0.50L+0.50S+1.60W	32.658 psi	150psi	0.2177	OK
+1.20D+0.50L+0.20S+E	32.658 psi	150psi	0.2177	OK

All units k

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File: g:\Nels\Calc Catalog\nels std calc catalog.ec6
 ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

General Footing

Lic. # : KW-06002997

Description : F3.5: 42"x42" Footing with 1500psf ASBP

General Information

Calculations per ACI 318-08, IBC 2009, CBC 2010, ASCE 7-05

Material Properties

f'_c : Concrete 28 day strength	=	2.50	ksi
f_y : Rebar Yield	=	40.0	ksi
E_c : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
ϕ Values Flexure	=	0.90	
Shear	=	0.750	

Analysis Settings

Min Steel % Bending Reinf.	=	0.00140	
Min Allow % Temp Reinf.	=	0.00180	
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	
Include Pedestal Weight as DL	:	No	

Soil Design Values

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

Increases based on footing Depth

Footing base depth below soil surface	=	0.0	ft
Allowable pressure increase per foot of dept	=	0.0	ksf
when footing base is below	=	0.0	ft

Increases based on footing plan dimension

Allowable pressure increase per foot of dept	=	0.0	ksf
when maximum length or width is greater than	=	0.0	ft

Dimensions

Width parallel to X-X Axis	=	3.50	ft
Length parallel to Z-Z Axis	=	3.50	ft
Footing Thickness	=	10.0	in

Load location offset from footing center...

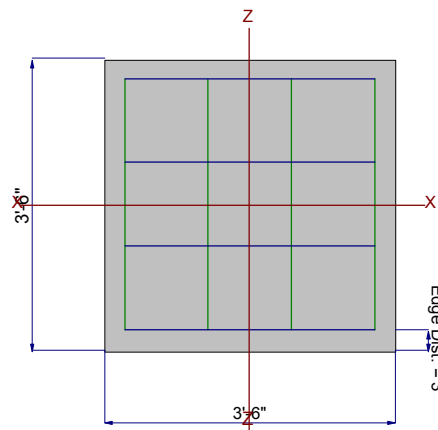
ex : parallel to X-X Axis	=	0	in
ez : parallel to Z-Z Axis	=	0	in

Pedestal dimensions...

px : parallel to X-X Axis	=	0.0	in
pz : parallel to Z-Z Axis	=	0.0	in
Height	=	0.0	in

Rebar Centerline to Edge of Concrete..

at Bottom of footing	=	3.250	in
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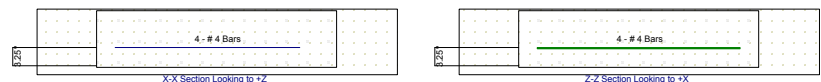


Reinforcing

Bars parallel to X-X Axis	=	4.0	
Number of Bars	=	# 4	
Reinforcing Bar Size	=	# 4	
Bars parallel to Z-Z Axis	=	4.0	
Number of Bars	=	# 4	
Reinforcing Bar Size	=	# 4	

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	=	n/a	
# Bars required within zone	=	n/a	
# Bars required on each side of zone	=	n/a	



Applied Loads

		D	Lr	L	S	W	E	H
P : Column Load	=	0.0	0.0	16.90	0.0	0.0	0.0	0.0 k
OB : Overburden	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ksf
M-xx	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
M-zz	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
V-x	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k
V-z	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k

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General Footing

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ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

Lic. # : KW-06002997

Description : F3.5: 42"x42" Footing with 1500psf ASBP

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	1.0	Soil Bearing	1.50 ksf	1.50 ksf	+D+L+H
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	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.750	Z Flexure (+X)	3.379 k-ft	4.506 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.750	Z Flexure (-X)	3.379 k-ft	4.506 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.750	X Flexure (+Z)	3.379 k-ft	4.506 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.750	X Flexure (-Z)	3.379 k-ft	4.506 k-ft	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4239	1-way Shear (+X)	31.793 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4239	1-way Shear (-X)	31.793 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4239	1-way Shear (+Z)	31.793 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.4239	1-way Shear (-Z)	31.793 psi	75.0 psi	+1.20D+0.50Lr+1.60L+1.60H
PASS	0.9594	2-way Punching	143.91 psi	150.0 psi	+1.20D+0.50Lr+1.60L+1.60H

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Zecc	+Z	Actual Soil Bearing Stress +Z	-X	-X	Actual / Allowable Ratio
X-X, +D	1.50	n/a	0.0	0.1208	0.1208	n/a	n/a	0.081
X-X, +D+L+H	1.50	n/a	0.0	1.50	1.50	n/a	n/a	1.000
X-X, +D+0.750Lr+0.750L+H	1.50	n/a	0.0	1.156	1.156	n/a	n/a	0.771
X-X, +D+0.750Lr+0.750S+H	1.50	n/a	0.0	1.156	1.156	n/a	n/a	0.771
X-X, +D+0.750Lr+0.750L+0.750W+H	1.50	n/a	0.0	1.156	1.156	n/a	n/a	0.771
X-X, +D+0.750Lr+0.750S+0.750W+H	1.50	n/a	0.0	1.156	1.156	n/a	n/a	0.771
X-X, +D+0.750Lr+0.750L+0.5250E+H	1.50	n/a	0.0	1.156	1.156	n/a	n/a	0.771
X-X, +D+0.750Lr+0.750S+0.5250E+H	1.50	n/a	0.0	1.156	1.156	n/a	n/a	0.771
Z-Z, +D	1.50	0.0	n/a	n/a	n/a	0.1208	0.1208	0.081
Z-Z, +D+L+H	1.50	0.0	n/a	n/a	n/a	1.50	1.50	1.000
Z-Z, +D+0.750Lr+0.750L+H	1.50	0.0	n/a	n/a	n/a	1.156	1.156	0.771
Z-Z, +D+0.750Lr+0.750S+H	1.50	0.0	n/a	n/a	n/a	1.156	1.156	0.771
Z-Z, +D+0.750Lr+0.750L+0.750W+H	1.50	0.0	n/a	n/a	n/a	1.156	1.156	0.771
Z-Z, +D+0.750Lr+0.750S+0.750W+H	1.50	0.0	n/a	n/a	n/a	1.156	1.156	0.771
Z-Z, +D+0.750Lr+0.750L+0.5250E+H	1.50	0.0	n/a	n/a	n/a	1.156	1.156	0.771
Z-Z, +D+0.750Lr+0.750S+0.5250E+H	1.50	0.0	n/a	n/a	n/a	1.156	1.156	0.771

Overturing Stability

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

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
X-X, +1.40D	0	+Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.40D	0	-Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	3.379	+Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+0.50Lr+1.60L+1.60H	3.379	-Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+1.60L+0.50S+1.60H	3.379	+Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+1.60L+0.50S+1.60H	3.379	-Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+1.60Lr+0.50L	1.056	+Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+1.60Lr+0.50L	1.056	-Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+0.50L+1.60S	1.056	+Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+0.50L+1.60S	1.056	-Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	1.056	+Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+0.50Lr+0.50L+1.60W	1.056	-Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+0.50L+0.50S+1.60W	1.056	+Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+0.50L+0.50S+1.60W	1.056	-Z	Bottom	0.22	Bending	0.23	4.506	OK
X-X, +1.20D+0.50L+0.20S+E	1.056	+Z	Bottom	0.22	Bending	0.23	4.506	OK

Title Block Line 1
You can change this area
using the "Settings" menu item
and then using the "Printing &
Title Block" selection.
Title Block Line 6

Title :
Dsgnr:
Project Desc.:

Project Notes :

Printed: 10 DEC 2012, 1:06PM

General Footing

File: g:\Nels\Calc Catalog\nels std calc catalog.ec6
ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

Lic. # : KW-06002997									
Description : F3.5: 42"x42" Footing with 1500psf ASBP									
X-X. +1.20D+0.50L+0.20S+E	1.056	-Z	Bottom	0.22	Bending	0.23	4.506	OK	

Title Block Line 1
 You can change this area
 using the "Settings" menu item
 and then using the "Printing &
 Title Block" selection.
 Title Block Line 6

Title :
 Dsgnr:
 Project Desc.:

 Project Notes :

Job #

Printed: 10 DEC 2012, 1:06PM

General Footing

File: g:\Nels\Calc Catalog\nels std calc catalog.ec6
 ENERCALC, INC. 1983-2011, Build:6.11.5.3, Ver:6.11.5.3

Lic. # : KW-06002997

Description : F3.5: 42"x42" Footing with 1500psf ASBP

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in ²	Gvrn. As in ²	Actual As in ²	Phi*Mn k-ft	Status
Z-Z. +1.40D	0	-X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.40D	0	+X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+0.50Lr+1.60L+1.60H	3.379	-X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+0.50Lr+1.60L+1.60H	3.379	+X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+1.60L+0.50S+1.60H	3.379	-X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+1.60L+0.50S+1.60H	3.379	+X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+1.60Lr+0.50L	1.056	-X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+1.60Lr+0.50L	1.056	+X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+0.50L+1.60S	1.056	-X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+0.50L+1.60S	1.056	+X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+0.50Lr+0.50L+1.60W	1.056	-X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+0.50Lr+0.50L+1.60W	1.056	+X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+0.50L+0.50S+1.60W	1.056	-X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+0.50L+0.50S+1.60W	1.056	+X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+0.50L+0.20S+E	1.056	-X	Bottom	0.22	Bending	0.23	4.506	OK
Z-Z. +1.20D+0.50L+0.20S+E	1.056	+X	Bottom	0.22	Bending	0.23	4.506	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 psi	0 psi	0 psi	0 psi	0 psi	75 psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	31.793 psi	31.793 psi	31.793 psi	31.793 psi	31.793 psi	75 psi	0.4239	OK
+1.20D+1.60L+0.50S+1.60H	31.793 psi	31.793 psi	31.793 psi	31.793 psi	31.793 psi	75 psi	0.4239	OK
+1.20D+1.60Lr+0.50L	9.935 psi	9.935 psi	9.935 psi	9.935 psi	9.935 psi	75 psi	0.1325	OK
+1.20D+0.50L+1.60S	9.935 psi	9.935 psi	9.935 psi	9.935 psi	9.935 psi	75 psi	0.1325	OK
+1.20D+0.50Lr+0.50L+1.60W	9.935 psi	9.935 psi	9.935 psi	9.935 psi	9.935 psi	75 psi	0.1325	OK
+1.20D+0.50L+0.50S+1.60W	9.935 psi	9.935 psi	9.935 psi	9.935 psi	9.935 psi	75 psi	0.1325	OK
+1.20D+0.50L+0.20S+E	9.935 psi	9.935 psi	9.935 psi	9.935 psi	9.935 psi	75 psi	0.1325	OK

Punching Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	0 psi	150psi	0	OK
+1.20D+0.50Lr+1.60L+1.60H	143.91 psi	150psi	0.9594	OK
+1.20D+1.60L+0.50S+1.60H	143.91 psi	150psi	0.9594	OK
+1.20D+1.60Lr+0.50L	44.972 psi	150psi	0.2998	OK
+1.20D+0.50L+1.60S	44.972 psi	150psi	0.2998	OK
+1.20D+0.50Lr+0.50L+1.60W	44.972 psi	150psi	0.2998	OK
+1.20D+0.50L+0.50S+1.60W	44.972 psi	150psi	0.2998	OK
+1.20D+0.50L+0.20S+E	44.972 psi	150psi	0.2998	OK

General Footing

File = G:\MAIL\Nels\Calc Catalog\nels std calc catalog.ec6
ENERCALC, INC. 1983-2017, Build:6.17.3.29, Ver:6.17.3.29

Lic. # : KW-06002997

Description : F4.0: 48"x48" Footing with 1500psf ASBP

Code References

Calculations per ACI 318-05, IBC 2006, CBC 2007, ASCE 7-05

Load Combinations Used : 2006 IBC & ASCE 7-05

General Information

Material Properties

f _c : Concrete 28 day strength	=	2.50	ksi
f _y : Rebar Yield	=	40.0	ksi
E _c : Concrete Elastic Modulus	=	3,122.0	ksi
Concrete Density	=	145.0	pcf
φ Values Flexure	=	0.90	
Shear	=	0.750	

Soil Design Values

Allowable Soil Bearing	=	1.50	ksf
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.	=	0.00180	
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	:	No	
Use Pedestal wt for stability, mom & shear	:	No	

Increases based on footing Depth

Footing base depth below soil surface	=	0.0	ft
Allow press. increase per foot of depth when footing base is below	=	0.0	ksf
	=	0.0	ft

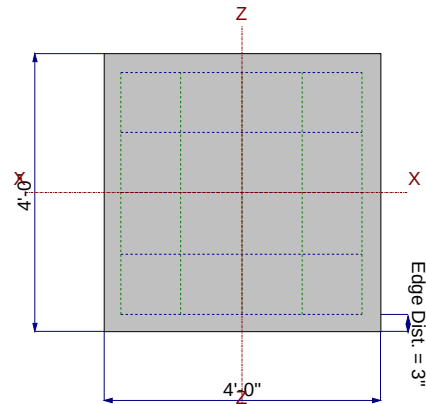
Increases based on footing plan dimension

Allowable pressure increase per foot of depth when max. length or width is greater than	=	0.0	ksf
	=	0.0	ft

Dimensions

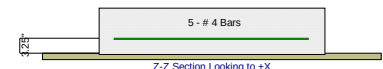
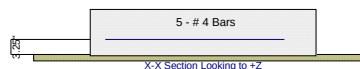
Width parallel to X-X Axis	=	4.0	ft
Length parallel to Z-Z Axis	=	4.0	ft
Footing Thickness	=	10.0	in

Pedestal dimensions...	=		
px : parallel to X-X Axis	=	3.50	in
pz : parallel to Z-Z Axis	=	3.50	in
Height	=	0.0	in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.250	in



Reinforcing

Bars parallel to X-X Axis	=		
Number of Bars	=	5	
Reinforcing Bar Size	=	# 4	
Bars parallel to Z-Z Axis	=		
Number of Bars	=	5	
Reinforcing Bar Size	=	# 4	



Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a

Applied Loads

		D	L _r	L	S	W	E	H
P : Column Load	=	0.0	0.0	22.10	0.0	0.0	0.0	0.0 k
OB : Overburden	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ksf
M-xx	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
M-zz	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k-ft
V-x	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k
V-z	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 k

General Footing

File = G:\MAIL\Nels\Calc Catalog\nels std calc catalog.ec6
ENERCALC, INC. 1983-2017, Build:6.17.3.29, Ver:6.17.3.29

Lic. # : KW-06002997

Description : F4.0: 48"x48" Footing with 1500psf ASBP

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.9207	Soil Bearing	1.381 ksf	1.50 ksf	L Only about Z-Z axis
PASS	n/a	Overturning - X-X	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.7728	Z Flexure (+X)	3.799 k-ft	4.915 k-ft	+1.60L
PASS	0.7728	Z Flexure (-X)	3.799 k-ft	4.915 k-ft	+1.60L
PASS	0.7728	X Flexure (+Z)	3.799 k-ft	4.915 k-ft	+1.60L
PASS	0.7728	X Flexure (-Z)	3.799 k-ft	4.915 k-ft	+1.60L
PASS	0.4608	1-way Shear (+X)	34.560 psi	75.0 psi	+1.60L
PASS	0.4608	1-way Shear (-X)	34.560 psi	75.0 psi	+1.60L
PASS	0.4608	1-way Shear (+Z)	34.560 psi	75.0 psi	+1.60L
PASS	0.4608	1-way Shear (-Z)	34.560 psi	75.0 psi	+1.60L
PASS	0.8177	2-way Punching	122.658 psi	150.0 psi	+1.60L

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc (in)	Zecc (in)	Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
				Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X,	1.50	n/a	0.0	0.0	0.0	n/a	n/a	0.000
X-X, L Only	1.50	n/a	0.0	1.381	1.381	n/a	n/a	0.921
X-X, +0.750L	1.50	n/a	0.0	1.036	1.036	n/a	n/a	0.691
Z-Z,	1.50	0.0	n/a	n/a	n/a	0.0	0.0	0.000
Z-Z, L Only	1.50	0.0	n/a	n/a	n/a	1.381	1.381	0.921
Z-Z, +0.750L	1.50	0.0	n/a	n/a	n/a	1.036	1.036	0.691

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
Footing Has NO Overturning				

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,	0.0	+Z	Bottom	0.216	Min Temp %	0.250	4.915	OK
X-X,	0.0	-Z	Bottom	0.216	Min Temp %	0.250	4.915	OK
X-X, +1.60L	3.799	+Z	Bottom	0.216	Min Temp %	0.250	4.915	OK
X-X, +1.60L	3.799	-Z	Bottom	0.216	Min Temp %	0.250	4.915	OK
X-X, +0.50L	1.187	+Z	Bottom	0.216	Min Temp %	0.250	4.915	OK
X-X, +0.50L	1.187	-Z	Bottom	0.216	Min Temp %	0.250	4.915	OK
Z-Z,	0.0	-X	Bottom	0.216	Min Temp %	0.250	4.915	OK
Z-Z,	0.0	+X	Bottom	0.216	Min Temp %	0.250	4.915	OK
Z-Z, +1.60L	3.799	-X	Bottom	0.216	Min Temp %	0.250	4.915	OK
Z-Z, +1.60L	3.799	+X	Bottom	0.216	Min Temp %	0.250	4.915	OK
Z-Z, +0.50L	1.187	-X	Bottom	0.216	Min Temp %	0.250	4.915	OK
Z-Z, +0.50L	1.187	+X	Bottom	0.216	Min Temp %	0.250	4.915	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
	0.00 psi	0.00 psi	0.00 psi	0.00 psi	0.00 psi	75.00 psi	0.00	0.00
+1.60L	34.56 psi	34.56 psi	34.56 psi	34.56 psi	34.56 psi	75.00 psi	0.46	0.00
+0.50L	10.80 psi	10.80 psi	10.80 psi	10.80 psi	10.80 psi	75.00 psi	0.14	0.00

Two-Way "Punching" Shear

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
	0.00 psi	150.00psi	0	OK
+1.60L	122.66 psi	150.00psi	0.8177	OK
+0.50L	38.33 psi	150.00psi	0.2555	OK