

Structural Calculations

For

VISHY AND MADHURI REMODEL
8203 AVALON DRIVE,
MERCER ISLAND, WA 98040
January 23, 2026

Structural Revision- Correction Cycle 3

2021 International Building Code
Wind: 110 MPH, Exposure C, Kzt= 1.0
Seismic: Design Category D



Response to structural correction comments under review cycle #1 and #2:

- Please provide results to the structural engineer and project team. Please include the estimated vertical and lateral deformations on the structural notes with a statement from the structural engineer indicating whether the proposed structural design can accommodate the estimated post-liquefaction settlement and lateral displacements without risk of structural collapse.

Response: Based on the latest soils report by Geotech Consultants Inc., loose colluvium is found up to a depth of 30 ft to 35 ft, because of this, 4" diameter pipe piles shall be used to support the all existing and new foundation elements. In regard to potential lateral spreading, a horizontal ground movement of between 10 to 30 feet is stated to be theoretically occur during maximum considered earthquake, and a 3'-4" vertical settlement, representing by a minimum of 10% global building tilt, is stated to be a practical design scenario. Structural design will be revised based on the following criteria:

- Allowable building horizontal drift of 30 feet maximum. The soils report does not indicate this horizontal displacement will happen abruptly, which will induce additional horizontal forces due to sliding acceleration. The building framing and foundation system is designed with ASCE 7 seismic load effects under SDC D, no additional horizontal loading will be added to the design of lateral force resisting system.
- Allowable building vertical settlement of 3'-4" maximum. Although it is a lower-bound settlement value provided by the geotechnical engineer, it is stated that the value is estimated based on a practical standpoint. Building framing will be designed to account this global building drift, 10%, on all gravity framing and shear wall system. Please note that the idea of this added retrofit is to assure the structure will not undergo complete collapse that threaten life safety under a short period of time during lateral spreading event, providing the resident ample time to evacuate the building. After the lateral spreading and liquefaction event, the building shall be evaluated for any damage by an E.O.R. and geotechnical engineer before any reoccupation.

PROJECT NAME

ADDRESS

PROJECT #

DATE

8203 AVALON DRIVE, MERCER ISLAND, WA 98040

1/10/2026

BUILDING CODE

2021 International Residential Code

2021 International Building Code

WIND DESIGN

Vult = 110 MPH

Vasd = 85 MPH

Exposure = C

KzT = 1.00

Importance Factor = 1.0

SEISMIC DESIGN

Ss(g) = 1.46 Sms(g) = 1.46 Sbs(g) = 0.974

S1(g) = 0.503

Seismic Design Category = D

Site Class = E

Importance Factor = 1.0

DESIGN LOADING

Roof Snow Load = 25 PSF

Floor Live Load = 40 PSF

Bedroom Live Load = 30 PSF

Deck & Balcony Live Load = 60 PSF

Roof Dead Load = 15 PSF

Floor Dead Load = 15 PSF (For framing gravity design)

Exterior Wall Dead Load = 10 PSF

Partition Wall Seismic Weight = 10 PSF

Floor Seismic Weight = 10 PSF

SCOPE OF WORK

Existing residence upper building addition design, with new main floor framing and existing basement foundation wall. New 4" diameter pin pile deep foundation design for existing basement.

Design Requirements:

Roof framing

- Blocked diaphragm will be added to all roof framing locations to provide additional in-plane stiffness
- Additional horizontal drag straps will be added to tie between different roof joist spans, adding significant in-plane stiffness to the diaphragm system.
- Additional shear connections will be provided in in-plane roof diaphragm, relative to exterior wall out-of-plane direction, adding diaphragm connection strength to resist building tilt.
- Connection to shear wall system will be re-evaluate for global building tilt

Building framing

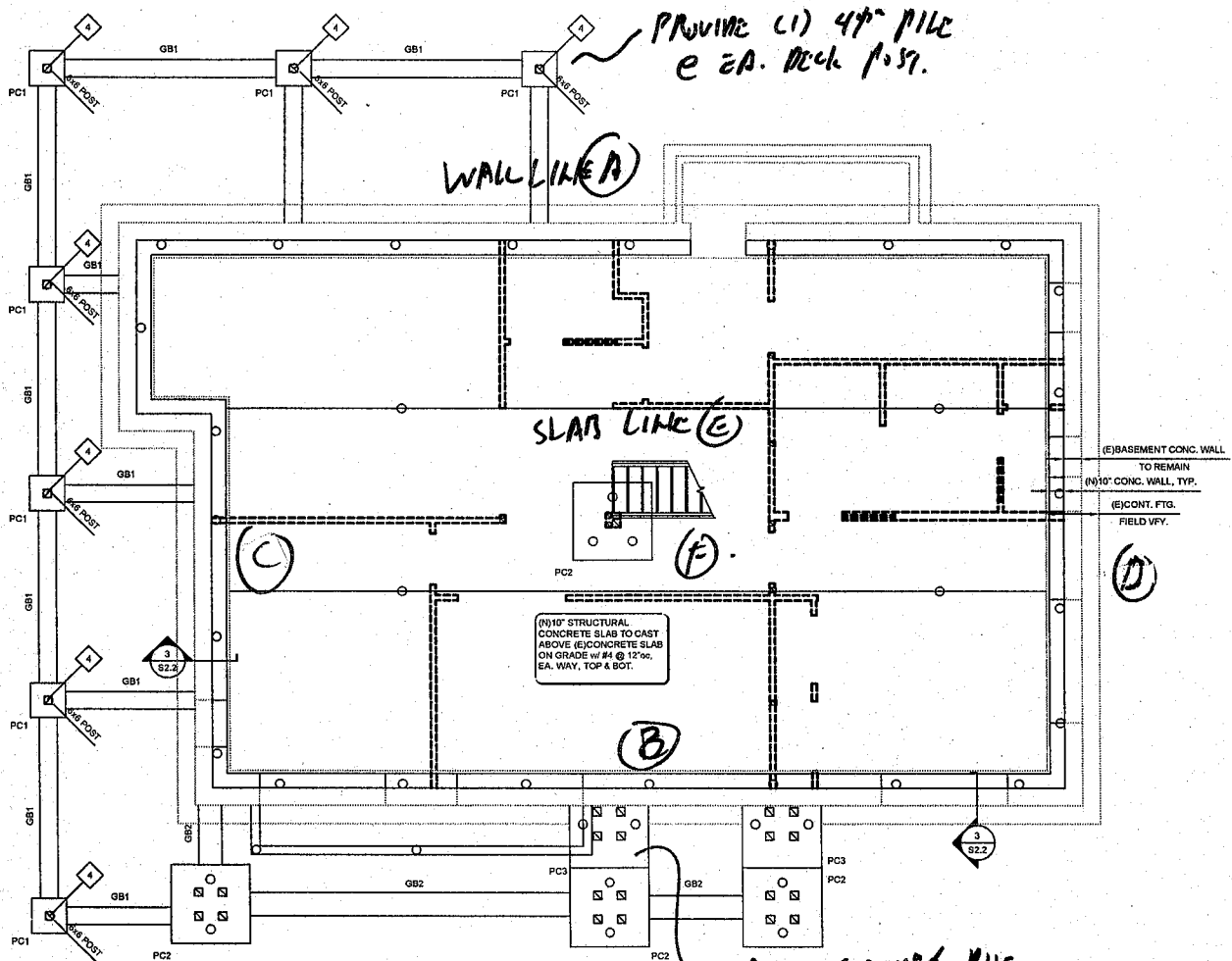
- Blocked diaphragm will be added to all floor framing locations to provide additional in-plane stiffness
- Additional horizontal drag straps will be added around the proposed diaphragm opening corners
- Additional horizontal drag straps will be added at major interior and exterior posts that support beams and roof framing.
- Re-evaluate all shear wall system to resist three loading combinations 1)wind, 2)seismic, 3)global building 10% tilt, not cumulative.

Basement level

- New 10" concrete wall at the inside face of existing basement wall, new concrete wall will be doweled into existing basement wall for gravity loading transfer.
- New 10" structural slab above existing SOG, purpose of new structural slab is to tie all foundation wall together for structural integrity. New structural slab only supports basement level live loading. Additional pipe piles will be added for concentrated loading on new structural slab.
- Revise all pin pile design with 4" diameter pipe piles

FOUNDATION SUMMARY DESIGN CHECK

4" ϕ . PIPE PILE - 107-41. = 20 kip.



DESIGN LOT.

PROVIDE (2) 4" ϕ . PILE @ EP. ENTRY COL. GARAGE. ALLOWABLE LOAD = 40 kip.

9' EXISTING 8" CONC. WALL, 700 #/ft.

9' NEW 10" CONC. WALL, 1125 #/ft.

NEW 10" CONC. STRUCTURAL DECK, 125 PSF.

EXISTING BASEMENT WALL RTH, 675 #/ft.

| | ROOF WT. | LV2. | LV3 |
|-------------------|-----------------|-----------------|-----------------|
| WALL LINE D. : DL | 4 ft. · 15 psf. | 8 ft. · 15 psf. | 8 ft. · 15 psf. |
| | | + | + |
| LL | | 8 ft. · 40 psf. | 8 ft. · 40 psf. |
| | = 60 #/ft. | 467 #/ft. | 440 #/ft. |

WALL WT : 2025 #/ft.

Deck WT : 125 psf · 4' = 500 #/ft.

(E) Fin WT : 675 #/ft.

$\Sigma = 4167 \text{ #/ft.}$

→ SPALL PILE @ 4'6" oc.

→ (11) PILE. TOTAL.

| | | | |
|-------------------|-----------------|-----------------|-----------------|
| WALL LINE B, : DL | 4 ft. · 15 psf. | 4 ft. · 15 psf. | 8 ft. · 15 psf. |
| | | + | + |
| LL | | 4 ft. · 40 psf. | 8 ft. · 40 psf. |
| | = 60 #/ft. | 220 #/ft. | 440 #/ft. |

WALL WT : 2025 #/ft.

Deck WT : 500 #/ft.

(E) Fin WT : 675 #/ft.

$\Sigma = 3920 \text{ #/ft.}$

→ SPALL PILE @ 5'0" oc.

→ (10) PILE. TOTAL.

WALL LINE C. ML

14' . 15 P/P

8'6" . 15 P/P

2' . 15 P/P

LL.

8'6" +
8'6" . 40 P/P.

2' +
2' . 40 P/P.

210 #/ft.

467 #/ft.

110 #/ft.

"

$$\Sigma = 3987 \text{ #/ft.}$$

→ SPACE NILE @ 5'0" oc.

(7) PILES TOTAL

WALL LINE D: ML

14' . 15 P/P

8'6" . 15 P/P

8' . 15 P/P.

LL.

+
8'6" . 40 P/P.

+
8' . 40 P/P.

210 #/ft.

467 #/ft.

440 #/ft.

"

$$\Sigma = 4317 \text{ #/ft.}$$

→ SPACE NILE @ 4'6" oc.

→ (7) PILES TOTAL

DECK LÄNGE (E), (F). DECK WT: 125 MP.

BASEMENT DL = 18 MP.

BASEMENT LL = 40 MP.

$\Sigma = 180 \text{ MP.}$

$$\begin{aligned} 20 \text{ l.} / 180 \text{ MP} &= 111 \text{ FFL} \\ &= 10' \times 10' \text{ GRUND.} \end{aligned}$$

→ NEHMEN AUCH 8' x 8'
GRUND MAß.

NEW 10" CONC. WALL ANCHOR TO (E) WALL CHECK.

→ (E) RETAINING 8" - 900 #/ft.

(E) FTL - 675 #/ft.

BUILDING WT: - 1000 #/ft. MAX.

Z = 2575 #/ft.

EA. REBAR ANCHOR W/ SIMPSON SET-367

Vall = 5000 #

→ PROVIDE (3) # 4 DOWEL @ 5'-0" oc.

2575 #/ft. 5' = 12875 lb.

5000# · 3 = 15000 lb ok



| | | | |
|-----------|--|-------|-----------|
| Company: | | Date: | 1/23/2026 |
| Engineer: | | Page: | 1 |
| Project: | | | |
| Address: | | | |
| Phone: | | | |
| E-mail: | | | |

1. Project information

Project description:
Location:
Design name: Design

Comment:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-19
Units: Imperial units

Anchor Information:

Anchor type: Bonded anchor
Material: A615 Grade 60 Rebar
Diameter (inch): 0.500
Effective Embedment depth, h_{ef} (inch): 3.500
Code report: ICC-ES ESR-4057
Anchor category: -
Anchor ductility: Yes
 h_{min} (inch): 4.75
 C_{ac} (inch): 5.71
 C_{min} (inch): 1.75
 S_{min} (inch): 2.50

Base Material

Concrete: Normal-weight
Concrete thickness, h (inch): 8.00
State: Cracked
Compressive strength, f_c (psi): 2500
 $\Psi_{c,v}$: 1.0
Reinforcement condition: B tension, B shear
Supplemental edge reinforcement: Not applicable
Reinforcement provided at corners: No
Ignore concrete breakout in tension: No
Ignore concrete breakout in shear: No
Hole condition: Dry concrete
Inspection: Continuous
Temperature range, Short/Long: 150/110°F
Reduced installation torque (for AT-3G): Not applicable
Ignore 6do requirement: Not applicable
Build-up grout pad: No

Recommended Anchor

Anchor Name: SET-3G™ - SET-3G w/ #4 A615 Gr. 60 Rebar
Code Report: ICC-ES ESR-4057



| | | | |
|-----------|--|-------|-----------|
| Company: | | Date: | 1/23/2026 |
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| Address: | | | |
| Phone: | | | |
| E-mail: | | | |

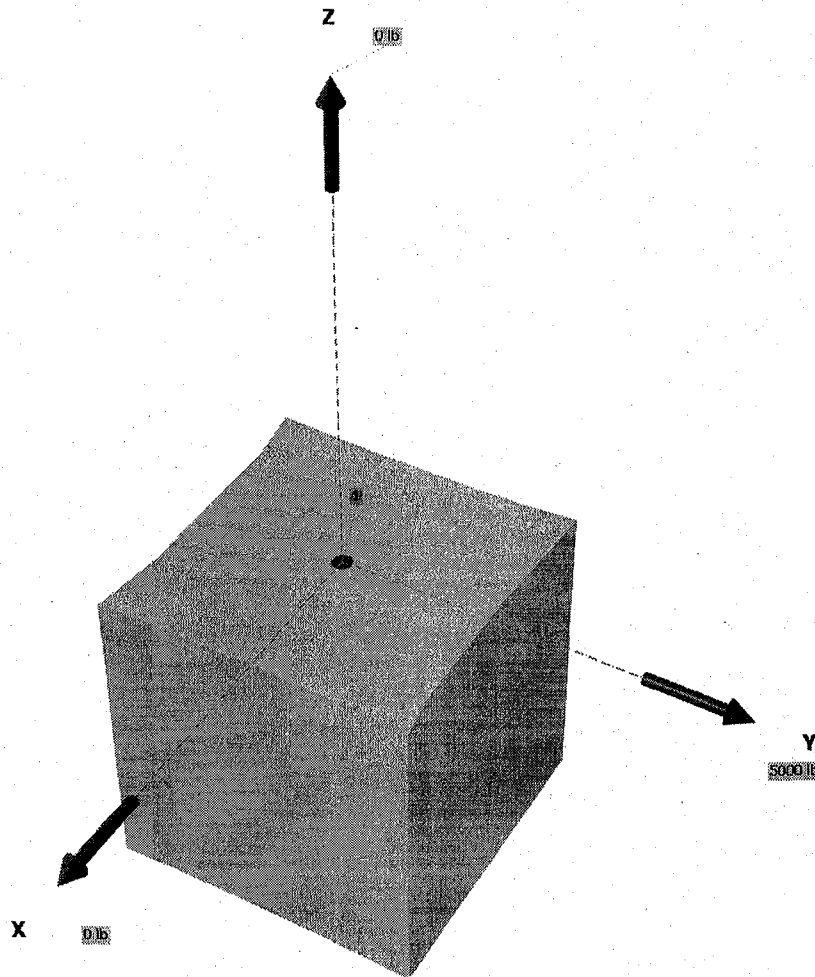
Load and Geometry

Load factor source: ACI 318 Section 5.3
 Load combination: not set
 Seismic design: No
 Anchors subjected to sustained tension: No
 Apply entire shear load at front row: Yes
 Anchors only resisting wind and/or seismic loads: No

Strength level loads:

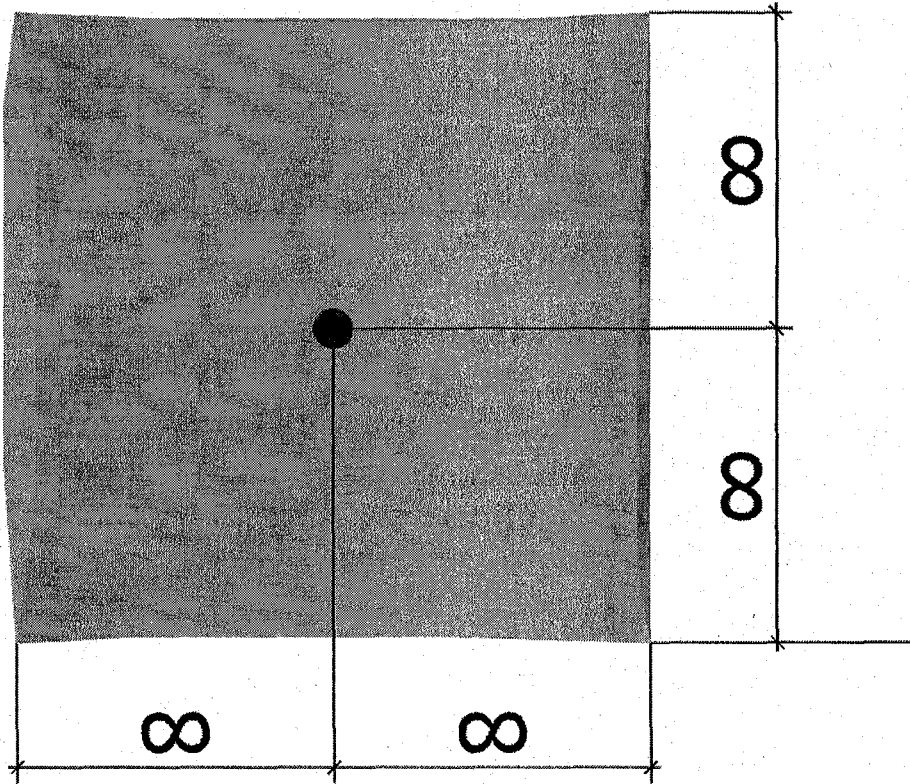
N_{ua} [lb]: 0
 V_{uax} [lb]: 0
 V_{uay} [lb]: 5000

<Figure 1>



| | | | |
|-----------|--|-------|-----------|
| Company: | | Date: | 1/23/2026 |
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| Phone: | | | |
| E-mail: | | | |

<Figure 2>



3. Resulting Anchor Forces

| Anchor | Tension load, N _{ua} (lb) | Shear load x, V _{uax} (lb) | Shear load y, V _{uay} (lb) | Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb) |
|--------|---------------------------------------|--|--|---|
| 1 | 0.0 | 0.0 | 5000.0 | 5000.0 |
| Sum | 0.0 | 0.0 | 5000.0 | 5000.0 |

Maximum concrete compression strain (‰): 0.00
 Maximum concrete compression stress (psi): 0
 Resultant tension force (lb): 0
 Resultant compression force (lb): 0
 Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
 Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00
 Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.00
 Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.00



| | | | |
|-----------|--|-------|-----------|
| Company: | | Date: | 1/23/2026 |
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| Address: | | | |
| Phone: | | | |
| E-mail: | | | |

4. Steel Strength of Anchor in Shear (Sec. 17.7.1)

| V_{sa} (lb) | ϕ_{grout} | ϕ | $\phi_{grout}\phi V_{sa}$ (lb) |
|---------------|----------------|--------|--------------------------------|
| 10800 | 1.0 | 0.65 | 7020 |

5. Concrete Pryout Strength of Anchor in Shear (Sec. 17.7.3)

$$\phi V_{cp} = \phi \min |k_{cp} N_a ; k_{cp} N_{cb}| = \phi \min |k_{cp} (A_{Na} / A_{Na0}) \psi_{ed,Na} \psi_{cp,Na} N_{ba} ; k_{cp} (A_{Nc} / A_{Nco}) \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b| \text{ (Sec. 17.5.1.2 \& Eq. 17.7.3.1a)}$$

| k_{cp} | A_{Na} (in ²) | A_{Na0} (in ²) | $\psi_{ed,Na}$ | $\psi_{cp,Na}$ | N_{ba} (lb) | N_a (lb) |
|----------|-----------------------------|------------------------------|----------------|----------------|---------------|------------|
| 2.0 | 195.00 | 195.00 | 1.000 | 1.000 | 7708 | 7708 |

| A_{Nc} (in ²) | A_{Nco} (in ²) | $\psi_{ed,N}$ | $\psi_{c,N}$ | $\psi_{cp,N}$ | N_b (lb) | N_{cb} (lb) | ϕ | ϕV_{cp} (lb) |
|-----------------------------|------------------------------|---------------|--------------|---------------|------------|---------------|--------|--------------------|
| 110.25 | 110.25 | 1.000 | 1.000 | 1.000 | 5566 | 5566 | 0.70 | 7792 |

6. Results

Interaction of Tensile and Shear Forces (Sec. 17.8)

| Shear | Factored Load, V_{ua} (lb) | Design Strength, ϕV_n (lb) | Ratio | Status |
|--------|------------------------------|----------------------------------|-------|----------------|
| Steel | 5000 | 7020 | 0.71 | Pass (Governs) |
| Pryout | 5000 | 7792 | 0.64 | Pass |

SET-3G w/ #4 A615 Gr. 60 Rebar with hef = 3.500 inch meets the selected design criteria.

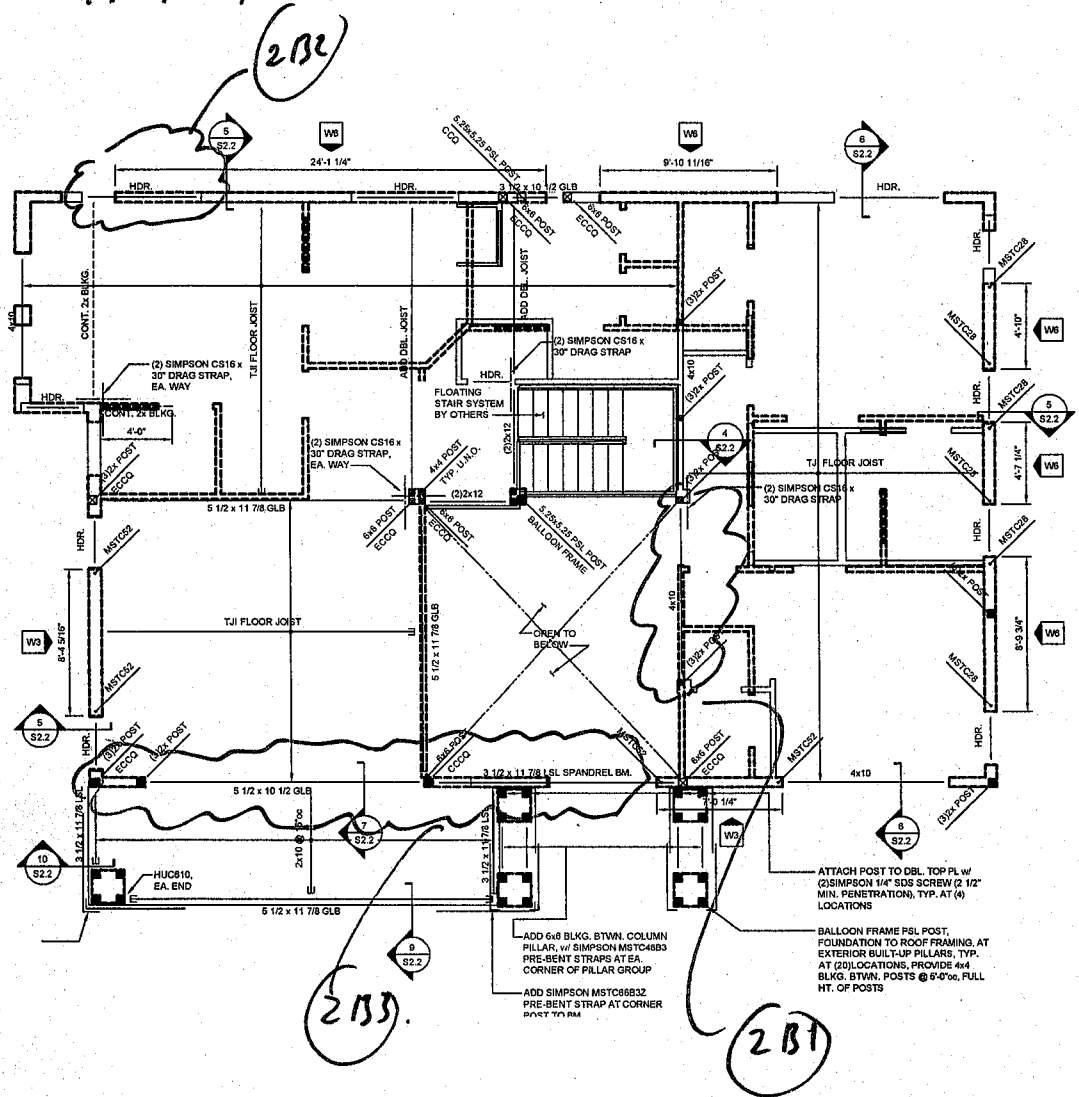
7. Warnings

- Designer must exercise own judgement to determine if this design is suitable.
- Refer to manufacturer's product literature for hole cleaning and installation instructions.

SECOND FLOOR PLAN.

-> REVISED BEAM.

-> SEE ORIGINAL DESIGN CALCULATION FOR ALL GENERAL FRAMING DESIGN.



2B1, L: 10'2, TL: 8'6 3 1/2 x 11 7/8 GLB.

2B2, L: 6'8, TL: 8'6 FLOOR, 2'6 ROOF. (2) 2x10. HAM.

2B3, L: 18'3, 11'1, TL: 3'6 DECK., 2'6 ROOF, 2' FLOOR.
 PLE 15'6 5 1/2 x 11 7/8 GLB.

Wood Beam

Project File: WISHWAS MOHAN RESIDENCE.ec6

LIC# : KW-06014812, Build:20.25.12.17

BURT ENGINEERING PLLC

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DESCRIPTION: 2B1**Maximum Forces & Stresses for Load Combinations**

| Load Combination | Segment Length | Span # | Max Stress Ratios | | | | | | | | | | Moment Values | | | Shear Values | | |
|--------------------|----------------|--------|-------------------|-------|------|------|----------------|------|----------------|-----------------|----------------|----------------|---------------|-------|---------|--------------|------|-------|
| | | | M | V | CD | CM | C _t | CLx | C _v | C _{fu} | C _i | C _r | M | fb | F'b | V | fv | F'v |
| Length = 10.170 ft | | 1 | 0.040 | 0.029 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 1.06 | 154.5 | 3,840.0 | 0.34 | 12.2 | 424.0 |

Overall Maximum Deflections

| Span | Load Combination | Max. "-" Defl | Location in Span | Load Combination | Max. "+" Defl | Location in Span |
|------|------------------|---------------|------------------|------------------|---------------|------------------|
| 1 | +D+L | 0.1312 | 5.122 | | 0.0000 | 0.000 |

Maximum Deflections for Load Combinations

| Load Combination | Span | Max. Downward Defl | Location in Span | Max. Upward Defl | Location in Span |
|------------------|------|--------------------|------------------|------------------|------------------|
| D Only | 1 | 0.0376 in | 5.122 ft | 0.0000 in | 0.000 ft |
| +D+L | 1 | 0.1312 in | 5.122 ft | 0.0000 in | 0.000 ft |
| +D+0.750L | 1 | 0.1078 in | 5.122 ft | 0.0000 in | 0.000 ft |
| +0.60D | 1 | 0.0226 in | 5.122 ft | 0.0000 in | 0.000 ft |
| L Only | 1 | 0.0936 in | 5.122 ft | 0.0000 in | 0.000 ft |

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

| Load Combination | Support 1 | Support 2 |
|-------------------------------------|-----------|-----------|
| Max Upward from all Load Conditions | 2.423 | 2.423 |
| Max Upward from Load Combinations | 2.423 | 2.423 |
| Max Upward from Load Cases | 1.729 | 1.729 |
| D Only | 0.694 | 0.694 |
| +D+L | 2.423 | 2.423 |
| +D+0.750L | 1.991 | 1.991 |
| +0.60D | 0.416 | 0.416 |
| L Only | 1.729 | 1.729 |

Wood Beam

Project File: WISHWAS MOHAN RESIDENCE.ec6

LIC# : KW-06014812, Build:20.25.12.17

BURT ENGINEERING PLLC

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DESCRIPTION: 2B2

Code References

Governing Code : IBC 2021

Referenced Design Standard(s) : NDS 2024*

Load Combination Set : IBC 2021 (1)

*User-selected, not referenced by : IBC 2021

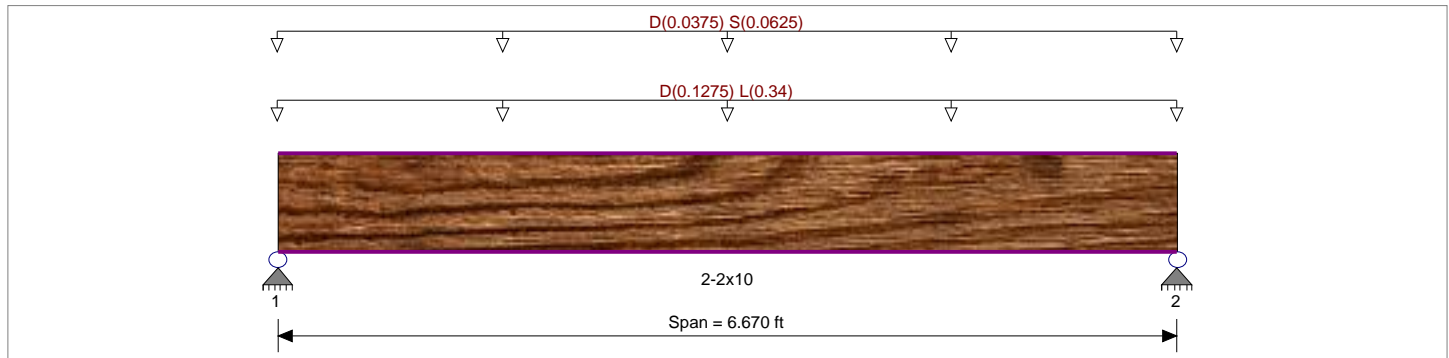
Material Properties

Analysis Method : Allowable Stress Design
Load Combination IBC 2021 (1)

Wood Species : Douglas Fir-Larch
Wood Grade : No.2

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

| | | | |
|-----------|-------------|---------------------------|------------|
| Fb + | 900.0 psi | E : Modulus of Elasticity | |
| Fb - | 900.0 psi | Ebend- xx | 1,600.0ksi |
| Fc - Prll | 1,350.0 psi | Eminbend - xx | 580.0ksi |
| Fc - Perp | 625.0 psi | | |
| Fv | 180.0 psi | | |
| Ft | 575.0 psi | Density | 31.210pcf |



Applied Loads

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

Beam self weight calculated and added to loading

Uniform Load : D = 0.0150, L = 0.040 ksf, Tributary Width = 8.50 ft

Uniform Load : D = 0.0150, S = 0.0250 ksf, Tributary Width = 2.50 ft

DESIGN SUMMARY

Design OK

| | | | | | |
|-----------------------------------|---|------------------|-----------------------------|-------------|------------------|
| Maximum Bending Stress Ratio | = | 0.805 : 1 | Maximum Shear Stress Ratio | = | 0.396 : 1 |
| Section used for this span | | 2-2x10 | Section used for this span | | 2-2x10 |
| | | NDS2018 | | | NDS2018 |
| fb: Actual | = | 797.12psi | fv: Actual | = | 71.28 psi |
| F'b | = | 990.00psi | F'v | = | 180.00 psi |
| Load Combination | | | Load Combination | | |
| | | +D+L | | | +D+L |
| Location of maximum on span | = | 3.335ft | 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 | | 0.048 in | Ratio = | 1663 | >=360 |
| Max Upward Transient Deflection | | 0 in | Ratio = | 0 | >=360 |
| Max Downward Total Deflection | | 0.072 in | Ratio = | 1106 | >=240 |
| Max Upward Total Deflection | | 0 in | Ratio = | 0 | >=240 |

Maximum Forces & Stresses for Load Combinations

| Load Combination | Segment Length | Span # | Max Stress Ratios | | | | | | | | | | Moment Values | | | Shear Values | | | |
|------------------|-------------------|--------|-------------------|-------|------|------|----------------|-------|----------------|-----------------|----------------|----------------|---------------|---------|-------|--------------|-------|-----|-----|
| | | | M | V | CD | CM | C _t | CLx | C _F | C _{fu} | C _i | C _r | M | fb | F'b | V | fv | F'v | |
| D Only | Length = 6.670 ft | 1 | 0.299 | 0.147 | 0.90 | 1.00 | 1.00 | 1.00 | 1.100 | 1.00 | 1.00 | 1.00 | 0.95 | 266.8 | 891.0 | 0.0 | 0.00 | 0.0 | 0.0 |
| +D+L | Length = 6.670 ft | 1 | 0.805 | 0.396 | 1.00 | 1.00 | 1.00 | 1.100 | 1.00 | 1.00 | 1.00 | 2.84 | 797.1 | 990.0 | 1.32 | 71.3 | 180.0 | 0.0 | 0.0 |
| +D+S | Length = 6.670 ft | 1 | 0.320 | 0.157 | 1.15 | 1.00 | 1.00 | 1.100 | 1.00 | 1.00 | 1.00 | 1.30 | 364.3 | 1,138.5 | 0.60 | 32.6 | 207.0 | 0.0 | 0.0 |

Wood Beam

Project File: WISHWAS MOHAN RESIDENCE.ec6

LIC# : KW-06014812, Build:20.25.12.17

BURT ENGINEERING PLLC

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DESCRIPTION: 2B2

Maximum Forces & Stresses for Load Combinations

| Load Combination | Segment Length | Span # | Max Stress Ratios | | | | | | | | | | Moment Values | | | Shear Values | | |
|-------------------|----------------|--------|-------------------|-------|------|------|----------------|------|----------------|-----------------|----------------|----------------|---------------|-------|---------|--------------|------|-------|
| | | | M | V | CD | CM | C _t | CLx | C _F | C _{fu} | C _i | C _r | M | fb | F'b | V | fv | F'v |
| +D+0.750L | | | | | | 1.00 | 1.00 | 1.00 | 1.100 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 6.670 ft | 1 | | 0.537 | 0.264 | 1.25 | 1.00 | 1.00 | 1.00 | 1.100 | 1.00 | 1.00 | 1.00 | 2.37 | 664.5 | 1,237.5 | 1.10 | 59.4 | 225.0 |
| +D+0.750L+0.750S | | | | | | 1.00 | 1.00 | 1.00 | 1.100 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 6.670 ft | 1 | | 0.648 | 0.319 | 1.15 | 1.00 | 1.00 | 1.00 | 1.100 | 1.00 | 1.00 | 1.00 | 2.63 | 737.6 | 1,138.5 | 1.22 | 66.0 | 207.0 |
| +0.60D | | | | | | 1.00 | 1.00 | 1.00 | 1.100 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 6.670 ft | 1 | | 0.101 | 0.050 | 1.60 | 1.00 | 1.00 | 1.00 | 1.100 | 1.00 | 1.00 | 1.00 | 0.57 | 160.1 | 1,584.0 | 0.26 | 14.3 | 288.0 |

Overall Maximum Deflections

| Span | Load Combination | Max. "-" Defl | Location in Span | Load Combination | Max. "+" Defl | Location in Span |
|------|------------------|---------------|------------------|------------------|---------------|------------------|
| 1 | +D+L | 0.0723 | 3.359 | | 0.0000 | 0.000 |

Maximum Deflections for Load Combinations

| Load Combination | Span | Max. Downward Defl | Location in Span | Max. Upward Defl | Location in Span |
|------------------|------|--------------------|------------------|------------------|------------------|
| D Only | 1 | 0.0242 in | 3.359 ft | 0.0000 in | 0.000 ft |
| +D+L | 1 | 0.0723 in | 3.359 ft | 0.0000 in | 0.000 ft |
| +D+S | 1 | 0.0330 in | 3.359 ft | 0.0000 in | 0.000 ft |
| +D+0.750L | 1 | 0.0603 in | 3.359 ft | 0.0000 in | 0.000 ft |
| +D+0.750L+0.750S | 1 | 0.0669 in | 3.359 ft | 0.0000 in | 0.000 ft |
| +0.60D | 1 | 0.0145 in | 3.359 ft | 0.0000 in | 0.000 ft |
| L Only | 1 | 0.0481 in | 3.359 ft | 0.0000 in | 0.000 ft |
| S Only | 1 | 0.0088 in | 3.359 ft | 0.0000 in | 0.000 ft |

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

| Load Combination | Support 1 | Support 2 |
|-------------------------------------|-----------|-----------|
| Max Upward from all Load Conditions | 1.704 | 1.704 |
| Max Upward from Load Combinations | 1.704 | 1.704 |
| Max Upward from Load Cases | 1.134 | 1.134 |
| D Only | 0.570 | 0.570 |
| +D+L | 1.704 | 1.704 |
| +D+S | 0.779 | 0.779 |
| +D+0.750L | 1.421 | 1.421 |
| +D+0.750L+0.750S | 1.577 | 1.577 |
| +0.60D | 0.342 | 0.342 |
| L Only | 1.134 | 1.134 |
| S Only | 0.208 | 0.208 |

Wood Beam

Project File: WISHWAS MOHAN RESIDENCE.ec6

LIC# : KW-06014812, Build:20.25.12.17

BURT ENGINEERING PLLC

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DESCRIPTION: 2B3

Maximum Forces & Stresses for Load Combinations

| Load Combination | Segment Length | Span # | Max Stress Ratios | | | | | | | | | Moment Values | | | Shear Values | | | |
|--|----------------|--------|-------------------|-------|------|------|----------------|------|----------------|-----------------|----------------|----------------|-------|---------|--------------|------|-------|-------|
| | | | M | V | CD | CM | C _t | CLx | C _v | C _{fu} | C _i | C _r | M | fb | F'b | V | fv | F'v |
| Length = 11.080 ft | 2 | | 0.328 | 0.124 | 0.90 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 1,665.0 | 1.29 | 29.6 | 238.5 |
| +D+L+H, LL Comb Run (*L) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.295 | 0.203 | 1.00 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 1,850.0 | 2.34 | 53.8 | 265.0 |
| Length = 11.080 ft | 2 | | 0.295 | 0.112 | 1.00 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 1,850.0 | 1.29 | 29.6 | 265.0 |
| +D+L+H, LL Comb Run (L*) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.866 | 0.675 | 1.00 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 17.26 | 1,602.4 | 1,850.0 | 7.79 | 178.9 | 265.0 |
| Length = 11.080 ft | 2 | | 0.866 | 0.201 | 1.00 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 17.26 | 1,602.4 | 1,850.0 | 2.31 | 53.2 | 265.0 |
| +D+L+H, LL Comb Run (LL) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.866 | 0.675 | 1.00 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 17.26 | 1,602.4 | 1,850.0 | 7.79 | 178.9 | 265.0 |
| Length = 11.080 ft | 2 | | 0.866 | 0.201 | 1.00 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 17.26 | 1,602.4 | 1,850.0 | 2.31 | 53.2 | 265.0 |
| +D+Lr+H, LL Comb Run (*L) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.236 | 0.162 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,312.5 | 2.34 | 53.8 | 331.3 |
| Length = 11.080 ft | 2 | | 0.236 | 0.089 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,312.5 | 1.29 | 29.6 | 331.3 |
| +D+Lr+H, LL Comb Run (L*) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.236 | 0.162 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,312.5 | 2.34 | 53.8 | 331.3 |
| Length = 11.080 ft | 2 | | 0.236 | 0.089 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,312.5 | 1.29 | 29.6 | 331.3 |
| +D+Lr+H, LL Comb Run (LL) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.236 | 0.162 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,312.5 | 2.34 | 53.8 | 331.3 |
| Length = 11.080 ft | 2 | | 0.236 | 0.089 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,312.5 | 1.29 | 29.6 | 331.3 |
| +D+S+H | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.390 | 0.228 | 1.15 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 8.95 | 830.5 | 2,127.5 | 3.02 | 69.4 | 304.8 |
| Length = 11.080 ft | 2 | | 0.390 | 0.205 | 1.15 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 8.95 | 830.5 | 2,127.5 | 2.72 | 62.4 | 304.8 |
| +D+0.750Lr+0.750L+H, LL Comb Run (*L) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.236 | 0.162 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,312.5 | 2.34 | 53.8 | 331.3 |
| Length = 11.080 ft | 2 | | 0.236 | 0.089 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,312.5 | 1.29 | 29.6 | 331.3 |
| +D+0.750Lr+0.750L+H, LL Comb Run (L*) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.579 | 0.446 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 14.42 | 1,338.2 | 2,312.5 | 6.43 | 147.6 | 331.3 |
| Length = 11.080 ft | 2 | | 0.579 | 0.143 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 14.42 | 1,338.2 | 2,312.5 | 2.06 | 47.3 | 331.3 |
| +D+0.750Lr+0.750L+H, LL Comb Run (LL) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.579 | 0.446 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 14.42 | 1,338.2 | 2,312.5 | 6.43 | 147.6 | 331.3 |
| Length = 11.080 ft | 2 | | 0.579 | 0.143 | 1.25 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 14.42 | 1,338.2 | 2,312.5 | 2.06 | 47.3 | 331.3 |
| +D+0.750Lr+0.750S+H, LL Comb Run (*L) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.357 | 0.215 | 1.15 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 8.18 | 759.3 | 2,127.5 | 2.85 | 65.5 | 304.8 |
| Length = 11.080 ft | 2 | | 0.357 | 0.178 | 1.15 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 8.18 | 759.3 | 2,127.5 | 2.36 | 54.2 | 304.8 |
| +D+0.750Lr+0.750S+H, LL Comb Run (L*) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.729 | 0.523 | 1.15 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,127.5 | 6.94 | 159.4 | 304.8 |
| Length = 11.080 ft | 2 | | 0.729 | 0.236 | 1.15 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,127.5 | 3.13 | 71.9 | 304.8 |
| +D+0.750Lr+0.750S+H, LL Comb Run (LL) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.729 | 0.523 | 1.15 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,127.5 | 6.94 | 159.4 | 304.8 |
| Length = 11.080 ft | 2 | | 0.729 | 0.236 | 1.15 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,127.5 | 3.13 | 71.9 | 304.8 |
| +D+0.60W+H | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.184 | 0.127 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,960.0 | 2.34 | 53.8 | 424.0 |
| Length = 11.080 ft | 2 | | 0.184 | 0.070 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,960.0 | 1.29 | 29.6 | 424.0 |
| +D+0.70E+H | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | | 0.184 | 0.127 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,960.0 | 2.34 | 53.8 | 424.0 |
| Length = 11.080 ft | 2 | | 0.184 | 0.070 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,960.0 | 1.29 | 29.6 | 424.0 |
| +D+0.750Lr+0.750L+0.450W+H, LL Comb Run (*L) | | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |

Wood Beam

Project File: WISHWAS MOHAN RESIDENCE.ec6

LIC# : KW-06014812, Build:20.25.12.17

BURT ENGINEERING PLLC

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: 2B3

Maximum Forces & Stresses for Load Combinations

| Load Combination | Segment Length | Span # | Max Stress Ratios | | | | | | | | | Moment Values | | | Shear Values | | |
|--|----------------|--------|-------------------|------|------|------|----------------|-------|----------------|-----------------|----------------|----------------|---------|---------|--------------|-------|-------|
| | | | M | V | CD | CM | C _t | CLx | C _v | C _{fu} | C _i | C _r | M | fb | F'b | V | fv |
| Length = 18.250 ft | 1 | 0.184 | 0.127 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,960.0 | 2.34 | 53.8 | 424.0 |
| Length = 11.080 ft | 2 | 0.184 | 0.070 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 5.88 | 545.7 | 2,960.0 | 1.29 | 29.6 | 424.0 |
| +D+0.750Lr+0.750L+0.450W+H, LL Comb Run (L*) | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | 0.452 | 0.348 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 14.42 | 1,338.2 | 2,960.0 | 6.43 | 147.6 | 424.0 |
| Length = 11.080 ft | 2 | 0.452 | 0.111 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 14.42 | 1,338.2 | 2,960.0 | 2.06 | 47.3 | 424.0 |
| +D+0.750Lr+0.750L+0.450W+H, LL Comb Run (LL) | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | 0.452 | 0.348 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 14.42 | 1,338.2 | 2,960.0 | 6.43 | 147.6 | 424.0 |
| Length = 11.080 ft | 2 | 0.452 | 0.111 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 14.42 | 1,338.2 | 2,960.0 | 2.06 | 47.3 | 424.0 |
| +D+0.750L+0.750S+0.450W+H, LL Comb Run (*L) | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | 0.257 | 0.154 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 8.18 | 759.3 | 2,960.0 | 2.85 | 65.5 | 424.0 |
| Length = 11.080 ft | 2 | 0.257 | 0.128 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 8.18 | 759.3 | 2,960.0 | 2.36 | 54.2 | 424.0 |
| +D+0.750L+0.750S+0.450W+H, LL Comb Run (L*) | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | 0.524 | 0.376 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,960.0 | 6.94 | 159.4 | 424.0 |
| Length = 11.080 ft | 2 | 0.524 | 0.170 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,960.0 | 3.13 | 71.9 | 424.0 |
| +D+0.750L+0.750S+0.450W+H, LL Comb Run (LL) | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | 0.524 | 0.376 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,960.0 | 6.94 | 159.4 | 424.0 |
| Length = 11.080 ft | 2 | 0.524 | 0.170 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,960.0 | 3.13 | 71.9 | 424.0 |
| +D+0.750L+0.750S+0.5250E+H, LL Comb Run (*L) | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | 0.257 | 0.154 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 8.18 | 759.3 | 2,960.0 | 2.85 | 65.5 | 424.0 |
| Length = 11.080 ft | 2 | 0.257 | 0.128 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 8.18 | 759.3 | 2,960.0 | 2.36 | 54.2 | 424.0 |
| +D+0.750L+0.750S+0.5250E+H, LL Comb Run (L*) | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | 0.524 | 0.376 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,960.0 | 6.94 | 159.4 | 424.0 |
| Length = 11.080 ft | 2 | 0.524 | 0.170 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,960.0 | 3.13 | 71.9 | 424.0 |
| +D+0.750L+0.750S+0.5250E+H, LL Comb Run (LL) | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | 0.524 | 0.376 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,960.0 | 6.94 | 159.4 | 424.0 |
| Length = 11.080 ft | 2 | 0.524 | 0.170 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 16.72 | 1,551.8 | 2,960.0 | 3.13 | 71.9 | 424.0 |
| +0.60D+0.60W+0.60H | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | 0.111 | 0.076 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 3.53 | 327.4 | 2,960.0 | 1.40 | 32.3 | 424.0 |
| Length = 11.080 ft | 2 | 0.111 | 0.042 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 3.53 | 327.4 | 2,960.0 | 0.77 | 17.7 | 424.0 |
| +0.60D+0.70E+0.60H | | | | | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | | | 0.0 | 0.00 | 0.0 | 0.0 |
| Length = 18.250 ft | 1 | 0.111 | 0.076 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 3.53 | 327.4 | 2,960.0 | 1.40 | 32.3 | 424.0 |
| Length = 11.080 ft | 2 | 0.111 | 0.042 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 3.53 | 327.4 | 2,960.0 | 0.77 | 17.7 | 424.0 |

Overall Maximum Deflections

| Span | Load Combination | Max. "-" Defl | Location in Span | Load Combination | Max. "+" Defl | Location in Span |
|------|--------------------------|---------------|------------------|--------------------------|---------------|------------------|
| 1 | +D+L+H, LL Comb Run (LL) | 0.5988 | 8.768 | | 0.0000 | 0.000 |
| 2 | | 0.0000 | 8.768 | +D+L+H, LL Comb Run (LL) | -0.1334 | 4.457 |

Maximum Deflections for Load Combinations

| Load Combination | Span | Max. Downward Defl | Location in Span | Max. Upward Defl | Location in Span |
|---------------------------------------|------|--------------------|------------------|------------------|------------------|
| +D+H | 1 | 0.1668 in | 8.564 ft | 0.0000 in | 0.000 ft |
| +D+L+H, LL Comb Run (*L) | 1 | 0.1668 in | 8.564 ft | 0.0000 in | 0.000 ft |
| +D+L+H, LL Comb Run (L*) | 1 | 0.5988 in | 8.768 ft | 0.0000 in | 0.000 ft |
| +D+L+H, LL Comb Run (LL) | 1 | 0.5988 in | 8.768 ft | 0.0000 in | 0.000 ft |
| +D+Lr+H, LL Comb Run (*L) | 1 | 0.1668 in | 8.564 ft | 0.0000 in | 0.000 ft |
| +D+Lr+H, LL Comb Run (L*) | 1 | 0.1668 in | 8.564 ft | 0.0000 in | 0.000 ft |
| +D+Lr+H, LL Comb Run (LL) | 1 | 0.1668 in | 8.564 ft | 0.0000 in | 0.000 ft |
| +D+S+H | 1 | 0.2020 in | 8.258 ft | 0.0000 in | 0.000 ft |
| +D+S+H | 2 | 0.0202 in | 7.304 ft | -0.0079 in | 1.424 ft |
| +D+0.750Lr+0.750L+H, LL Comb Run (*L) | 1 | 0.1668 in | 8.564 ft | 0.0000 in | 0.000 ft |
| +D+0.750Lr+0.750L+H, LL Comb Run (L*) | 1 | 0.4908 in | 8.768 ft | 0.0000 in | 0.000 ft |

Wood Beam

Project File: WISHWAS MOHAN RESIDENCE.ec6

LIC# : KW-06014812, Build:20.25.12.17

BURT ENGINEERING PLLC

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: 2B3

Maximum Deflections for Load Combinations

| Load Combination | Span | Max. Downward Defl | Location in Span | Max. Upward Defl | Location in Span |
|--|------|--------------------|------------------|------------------|------------------|
| +D+0.750Lr+0.750L+H, LL Comb Run (LL) | 1 | 0.4908 in | 8.768 ft | 0.0000 in | 0.000 ft |
| +D+0.750L+0.750S+H, LL Comb Run (*L) | 1 | 0.1932 in | 8.360 ft | 0.0000 in | 0.000 ft |
| +D+0.750L+0.750S+H, LL Comb Run (*L) | 2 | 0.0127 in | 7.676 ft | -0.0101 in | 1.733 ft |
| +D+0.750L+0.750S+H, LL Comb Run (L*) | 1 | 0.5167 in | 8.666 ft | 0.0000 in | 0.000 ft |
| +D+0.750L+0.750S+H, LL Comb Run (LL) | 1 | 0.5167 in | 8.666 ft | 0.0000 in | 0.000 ft |
| +D+0.60W+H | 1 | 0.1668 in | 8.564 ft | 0.0000 in | 0.000 ft |
| +D+0.70E+H | 1 | 0.1668 in | 8.564 ft | 0.0000 in | 0.000 ft |
| +D+0.750Lr+0.750L+0.450W+H, LL Comb Run (*L) | 1 | 0.1668 in | 8.564 ft | 0.0000 in | 0.000 ft |
| +D+0.750Lr+0.750L+0.450W+H, LL Comb Run (L*) | 1 | 0.4908 in | 8.768 ft | 0.0000 in | 0.000 ft |
| +D+0.750Lr+0.750L+0.450W+H, LL Comb Run (LL) | 1 | 0.4908 in | 8.768 ft | 0.0000 in | 0.000 ft |
| +D+0.750L+0.750S+0.450W+H, LL Comb Run (*L) | 1 | 0.1932 in | 8.360 ft | 0.0000 in | 0.000 ft |
| +D+0.750L+0.750S+0.450W+H, LL Comb Run (*L) | 2 | 0.0127 in | 7.676 ft | -0.0101 in | 1.733 ft |
| +D+0.750L+0.750S+0.450W+H, LL Comb Run (L*) | 1 | 0.5167 in | 8.666 ft | 0.0000 in | 0.000 ft |
| +D+0.750L+0.750S+0.450W+H, LL Comb Run (LL) | 1 | 0.5167 in | 8.666 ft | 0.0000 in | 0.000 ft |
| +D+0.750L+0.750S+0.5250E+H, LL Comb Run (*L) | 1 | 0.1932 in | 8.360 ft | 0.0000 in | 0.000 ft |
| +D+0.750L+0.750S+0.5250E+H, LL Comb Run (*L) | 2 | 0.0127 in | 7.676 ft | -0.0101 in | 1.733 ft |
| +D+0.750L+0.750S+0.5250E+H, LL Comb Run (L*) | 1 | 0.5167 in | 8.666 ft | 0.0000 in | 0.000 ft |
| +D+0.750L+0.750S+0.5250E+H, LL Comb Run (LL) | 1 | 0.5167 in | 8.666 ft | 0.0000 in | 0.000 ft |
| +0.60D+0.60W+0.60H | 1 | 0.1001 in | 8.564 ft | 0.0000 in | 0.000 ft |
| +0.60D+0.70E+0.60H | 1 | 0.1001 in | 8.564 ft | 0.0000 in | 0.000 ft |
| D Only | 1 | 0.1668 in | 8.564 ft | 0.0000 in | 0.000 ft |
| L Only, LL Comb Run (L*) | 1 | 0.4321 in | 8.870 ft | 0.0000 in | 0.000 ft |
| L Only, LL Comb Run (LL) | 1 | 0.4321 in | 8.870 ft | 0.0000 in | 0.000 ft |
| S Only | 1 | 0.0364 in | 7.239 ft | -0.0014 in | 17.230 ft |
| S Only | 2 | 0.0326 in | 6.190 ft | 0.0000 in | 0.000 ft |

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

| Load Combination | Support 1 | Support 2 | Support 3 |
|--|-----------|-----------|-----------|
| Max Upward from all Load Conditions | 3.521 | 10.761 | 1.487 |
| Max Upward from Load Combinations | 3.521 | 10.761 | 1.487 |
| Max Upward from Load Cases | 2.457 | 6.743 | 1.108 |
| Max Downward from all Load Conditions (Resisting Uplift) | | | -1.027 |
| Max Downward from Load Combinations (Resisting Uplift) | | | -0.648 |
| Max Downward from Load Cases (Resisting Uplift) | | | -1.027 |
| +D+H | 1.065 | 3.903 | 0.379 |
| +D+L+H, LL Comb Run (*L) | 1.065 | 3.903 | 0.379 |
| +D+L+H, LL Comb Run (L*) | 3.521 | 10.647 | -0.648 |
| +D+L+H, LL Comb Run (LL) | 3.521 | 10.647 | -0.648 |
| +D+Lr+H, LL Comb Run (*L) | 1.065 | 3.903 | 0.379 |
| +D+Lr+H, LL Comb Run (L*) | 1.065 | 3.903 | 0.379 |
| +D+Lr+H, LL Comb Run (LL) | 1.065 | 3.903 | 0.379 |
| +D+S+H | 1.467 | 6.304 | 1.487 |
| +D+0.750Lr+0.750L+H, LL Comb Run (*L) | 1.065 | 3.903 | 0.379 |
| +D+0.750Lr+0.750L+H, LL Comb Run (L*) | 2.907 | 8.961 | -0.392 |
| +D+0.750Lr+0.750L+H, LL Comb Run (LL) | 2.907 | 8.961 | -0.392 |
| +D+0.750L+0.750S+H, LL Comb Run (*L) | 1.366 | 5.704 | 1.210 |
| +D+0.750L+0.750S+H, LL Comb Run (L*) | 3.209 | 10.761 | 0.439 |
| +D+0.750L+0.750S+H, LL Comb Run (LL) | 3.209 | 10.761 | 0.439 |
| +D+0.60W+H | 1.065 | 3.903 | 0.379 |
| +D+0.70E+H | 1.065 | 3.903 | 0.379 |
| +D+0.750Lr+0.750L+0.450W+H, LL Comb Run (*L) | 1.065 | 3.903 | 0.379 |
| +D+0.750Lr+0.750L+0.450W+H, LL Comb Run (L*) | 2.907 | 8.961 | -0.392 |
| +D+0.750Lr+0.750L+0.450W+H, LL Comb Run (LL) | 2.907 | 8.961 | -0.392 |
| +D+0.750L+0.750S+0.450W+H, LL Comb Run (*L) | 1.366 | 5.704 | 1.210 |
| +D+0.750L+0.750S+0.450W+H, LL Comb Run (L*) | 3.209 | 10.761 | 0.439 |
| +D+0.750L+0.750S+0.450W+H, LL Comb Run (LL) | 3.209 | 10.761 | 0.439 |
| +D+0.750L+0.750S+0.5250E+H, LL Comb Run (*L) | 1.366 | 5.704 | 1.210 |
| +D+0.750L+0.750S+0.5250E+H, LL Comb Run (L*) | 3.209 | 10.761 | 0.439 |
| +D+0.750L+0.750S+0.5250E+H, LL Comb Run (LL) | 3.209 | 10.761 | 0.439 |
| +0.60D+0.60W+0.60H | 0.639 | 2.342 | 0.227 |

Wood Beam

Project File: WISHWAS MOHAN RESIDENCE.ec6

LIC# : KW-06014812, Build:20.25.12.17

BURT ENGINEERING PLLC

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: 2B3

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

| Load Combination | Support 1 | Support 2 | Support 3 |
|--------------------------|-----------|-----------|-----------|
| +0.60D+0.70E+0.60H | 0.639 | 2.342 | 0.227 |
| D Only | 1.065 | 3.903 | 0.379 |
| L Only, LL Comb Run (L*) | 2.457 | 6.743 | -1.027 |
| L Only, LL Comb Run (LL) | 2.457 | 6.743 | -1.027 |
| S Only | 0.402 | 2.400 | 1.108 |
| H Only | | | |

Wood Beam

Project File: WISHWAS MOHAN RESIDENCE.ec6

LIC# : KW-06014812, Build:20.25.12.17

BURT ENGINEERING PLLC

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: NEW DECK BEAM**Maximum Forces & Stresses for Load Combinations**

| Load Combination | Segment Length | Span # | Max Stress Ratios | | | | | | | | Moment Values | | | Shear Values | | | | |
|--------------------|----------------|--------|-------------------|-------|------|------|----------------|------|----------------|-----------------|----------------|----------------|------|--------------|---------|------|-----|-------|
| | | | M | V | CD | CM | C _t | CLx | C _F | C _{fu} | C _i | C _r | M | fb | F'b | V | fv | F'v |
| Length = 16.330 ft | | 1 | 0.081 | 0.033 | 1.60 | 1.00 | 1.00 | 1.00 | 1.000 | 1.00 | 1.00 | 1.00 | 1.77 | 175.6 | 2,160.0 | 0.38 | 9.1 | 272.0 |

Overall Maximum Deflections

| Span | Load Combination | Max. "-" Defl | Location in Span | Load Combination | Max. "+" Defl | Location in Span |
|------|------------------|---------------|------------------|------------------|---------------|------------------|
| 1 | +D+L | 0.5609 | 8.225 | | 0.0000 | 0.000 |

Maximum Deflections for Load Combinations

| Load Combination | Span | Max. Downward Defl | Location in Span | Max. Upward Defl | Location in Span |
|------------------|------|--------------------|------------------|------------------|------------------|
| D Only | 1 | 0.1280 in | 8.225 ft | 0.0000 in | 0.000 ft |
| +D+L | 1 | 0.5609 in | 8.225 ft | 0.0000 in | 0.000 ft |
| +D+0.750L | 1 | 0.4527 in | 8.225 ft | 0.0000 in | 0.000 ft |
| +0.60D | 1 | 0.0768 in | 8.225 ft | 0.0000 in | 0.000 ft |
| L Only | 1 | 0.4329 in | 8.225 ft | 0.0000 in | 0.000 ft |

Vertical Reactions

Support notation : Far left is #1

Values in KIPS

| Load Combination | Support 1 | Support 2 |
|-------------------------------------|-----------|-----------|
| Max Upward from all Load Conditions | 3.174 | 3.174 |
| Max Upward from Load Combinations | 3.174 | 3.174 |
| Max Upward from Load Cases | 2.450 | 2.450 |
| D Only | 0.724 | 0.724 |
| +D+L | 3.174 | 3.174 |
| +D+0.750L | 2.561 | 2.561 |
| +0.60D | 0.435 | 0.435 |
| L Only | 2.450 | 2.450 |

Building shear wall design comments:

Per geotechnical engineer's recommendation, to achieve lateral spreading event building integrity, the building shall be designed to withstand 10% of building tilt in the downhill direction. Based on this requirement, building shear walls shall be designed to withstand this tilting resultant loading in both East to West, North to South directions.

For a differential settlement of 10%, the resultant loading is equal to 0.1 times the total structural weight of the building. In comparison to the required seismic design force, seismic response coefficient C_s is determined to be at 0.1538, and the resulting seismic base shear becomes C_s multiply by the structural seismic weight.

Per NDS Table 2.3.2, load duration factor C_d for wind and seismic loading is equal to 1.6. It is noted that the shear wall capacity prescribed in the SDPWS nominal unit shear capacity for wood framed shear walls is adjusted based on the duration factor. In order to determine the adequacy of using wood shear wall system to resist building tilting forces, the following method shall be used:

- Assume the tilting force as temporary live load, with C_d of 1.0. This assumption is based on the life safety immediate evacuation after the lateral spreading event. The building shall not be re-occupied.
- Bring tilting loading, $1.0W$, up to wind/seismic duration level for ease of comparison and calculation, resulting loading will become $1.6W$.
- Comparing $1.538W$ versus $1.6W$, tilting load is the critical loading condition, shear wall base shear design will be adjusted based on this new multiplier.
- Redundancy factor of 1.3 will be applied to shear wall design to account for any building irregularities.
- Additional edge reinforcement at diaphragm corners will be added to ensure diaphragm serviceability during lateral spreading event.
- Please note site coefficient F_a is revised from 1.0 to 1.2 to account for Site Class E as permitted by the soils report recommendations.

ASCE 7-16 Seismic Base Shear

Project File: WISHWAS MOHAN RESIDENCE.ec6

LIC#: KW-06014812, Build:20.25.12.17

BURT ENGINEERING PLLC

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DESCRIPTION: Seismic Base Shear Analysis**Specific Description:****Risk Category**

Calculations per ASCE 7-16

Risk Category of Building or Other Structure: "II": All Buildings and other structures except those listed as Category I, III, and IV *SCE 7-16, Page 4, Table 1.5-1*Seismic Importance Factor = 1 *ASCE 7-16, Page 5, Table 1.5-2***USER DEFINED Ground Motion***ASCE 7-16 11.4.2***Max. Ground Motions, 5% Damping** $S_S = 1.460$ g, 0.2 sec response $S_1 = 0.5030$ g, 1.0 sec response**For the closest datapoint grid location . . .**

Latitude = 0.000 deg North

Longitude = 0.000 deg West

Conforms to ASCE 7 Section 12.8.1.3: Regular structure with period of 0.5 s or less, SDS limited to max of 0.7*SDS or 1.0 for calculator

Site Class, Site Coeff. and Design CategoryClassification: "E": Shear Wave Velocity must be less than 600 ft/sec = E *ASCE 7-16 Table 20.3-1*Site Coefficients F_a & F_v $F_a = 1.20$ $F_v = 2.19$ *ASCE 7-16 Table 11.4-1 & 11.4-2*
(using straight-line interpolation from table val)Maximum Considered Earthquake Accelerat $S_{MS} = F_a * S_s = 1.752$ *ASCE 7-16 Eq. 11.4-1*
 $S_{M1} = F_v * S_1 = 1.104$ *ASCE 7-16 Eq. 11.4-2*Design Spectral Acceleration $S_{DS} = S_{MS} * 2/3 = 1.168$ *ASCE 7-16 Eq. 11.4-3*
 $S_{D1} = S_{M1} * 2/3 = 0.736$ *ASCE 7-16 Eq. 11.4-4*Seismic Design Category = D *ASCE 7-16 Table 11.6-1 & -2***Resisting System***ASCE 7-16 Table 12.2-1***Basic Seismic Force Resisting System . . .****Bearing Wall Systems****15. Light-frame (wood) walls sheathed w/wood structural panels rated for shear resistance.**Response Modification Coefficient "I" = 6.50
System Overstrength Factor "Wo" = 2.50
Deflection Amplification Factor "Cd" = 4.00Building height Limits:
Category "A & B" Limit: No Limit
Category "C" Limit: No Limit
Category "D" Limit: Limit = 65
Category "E" Limit: Limit = 65
Category "F" Limit: Limit = 65

NOTE! See ASCE 7-16 for all applicable footnc

Lateral Force Procedure*ASCE 7-16 Section 12.8.2***Equivalent Lateral Force Procedure**

The "Equivalent Lateral Force Procedure" is being used according to the provisions of ASCE 7-16 12.8

Determine Building Period*Use ASCE 12.8-7***Structure Type for Building Period Calc: All Other Structural Systems**

"Ct" value = 0.020 "hn": Height from base to highest level = 20.50 ft

"x" value = 0.75

"Ta" Approximate fundamental period using Eq. 12.8-7: $T_a = C_t * (h_n^x) = 0.193$ sec

"TL": Long-period transition period per ASCE 7-16 Maps 22-14 -> 22-17 = 6.000 sec

Building Period "Ta" Calculated from Approximate Method sel= 0.193

ASCE 7-16 Seismic Base Shear

Project File: WISHWAS MOHAN RESIDENCE.ec6

LIC#: KW-06014812, Build:20.25.12.17

BURT ENGINEERING PLLC

(c) ENERCALC, LLC 1982-2026

DESCRIPTION: Seismic Base Shear Analysis

"Cs" Response Coefficient

ASCE 7-16 Section 12.8.1.1

| | | | | | |
|--|---|-------|---|---|-------|
| S_{DS} : Short Period Design Spectral Response | = | 1.168 | "R" : Response Modification Factor | = | 6.500 |
| Upper limit on SDS | = | 1.000 | "I" : Seismic Importance Factor | = | 1 |
| SDS used for CS calc | = | 1.000 | From Eq. 12.8-2, Preliminary Cs | = | 0.154 |
| | | | From Eq. 12.8-3 & 12.8-4, Cs need not exceed | = | 0.587 |
| | | | From Eq. 12.8-5 & 12.8-6, Cs not be less than | = | 0.044 |

User has selected ASCE 12.8.1.3 : Regular structure, **Cs : Seismic Response Coefficient = 0.1538**
 Less than 5 Stories and with $T \leq 0.5$ sec, SO $S_s \leq 1.5$ for Cs calculation

Seismic Base Shear

ASCE 7-16 Section 12.8.1

| | | |
|---------------------------|-----------------------------------|---------|
| Cs = 0.1538 from 12.8.1.1 | W (see Sum Wi below) = | 84.90 k |
| | Seismic Base Shear $V = Cs * W =$ | 13.06 k |

Vertical Distribution of Seismic Forces

ASCE 7-16 Section 12.8.3

"k" : hx exponent based on $T_a = 1.00$

Table of building Weights by Floor Level...

| Level # | Wi : Weight | Hi : Height | (Wi * Hi^k) | Cvx | Fx=Cvx * V | Sum Story Shear | Sum Story Moment |
|----------|-------------|---------------|---------------|--------|--------------------|-----------------|--------------------------|
| 2 | 49.80 | 20.50 | 1,020.90 | 0.7256 | 9.48 | 9.48 | 0.00 |
| 1 | 35.10 | 11.00 | 386.10 | 0.2744 | 3.58 | 13.06 | 90.03 |
| Sum Wi = | 84.90 k | Sum Wi * Hi = | 1,407.00 k-ft | | Total Base Shear = | 13.06 k | Base Moment = 233.7 k-ft |

Diaphragm Forces : Seismic Design Category "B" to "F"

ASCE 7-16 12.10.1.1

| Level # | Wi | Fi | Sum Fi | Sum Wi | Fpx : Calcd | Fpx : Min | Fpx : Max | Fpx | Dsgn. Force |
|---------|-------|------|--------|--------|-------------|-----------|-----------|-------|-------------|
| 2 | 49.80 | 9.48 | 9.48 | 49.80 | 9.48 | 11.63 | 23.27 | 11.63 | 11.63 |
| 1 | 35.10 | 3.58 | 13.06 | 84.90 | 5.40 | 8.20 | 16.40 | 8.20 | 8.20 |

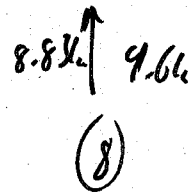
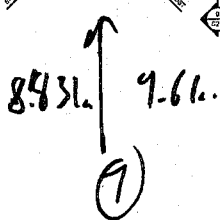
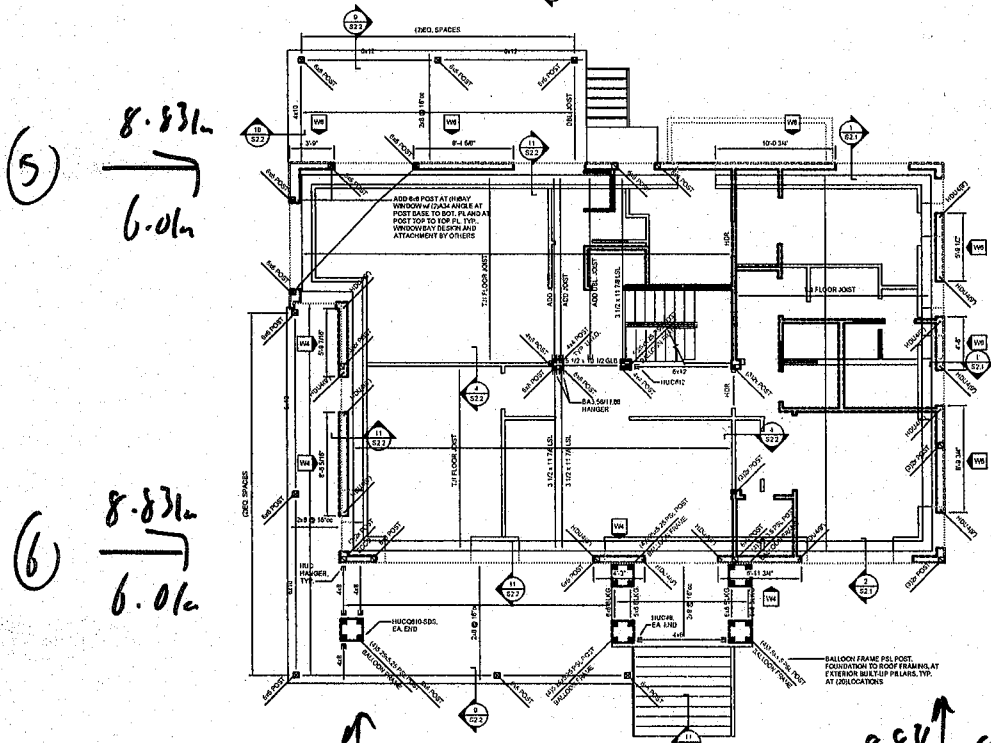
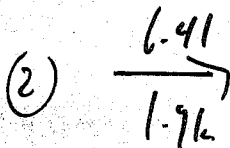
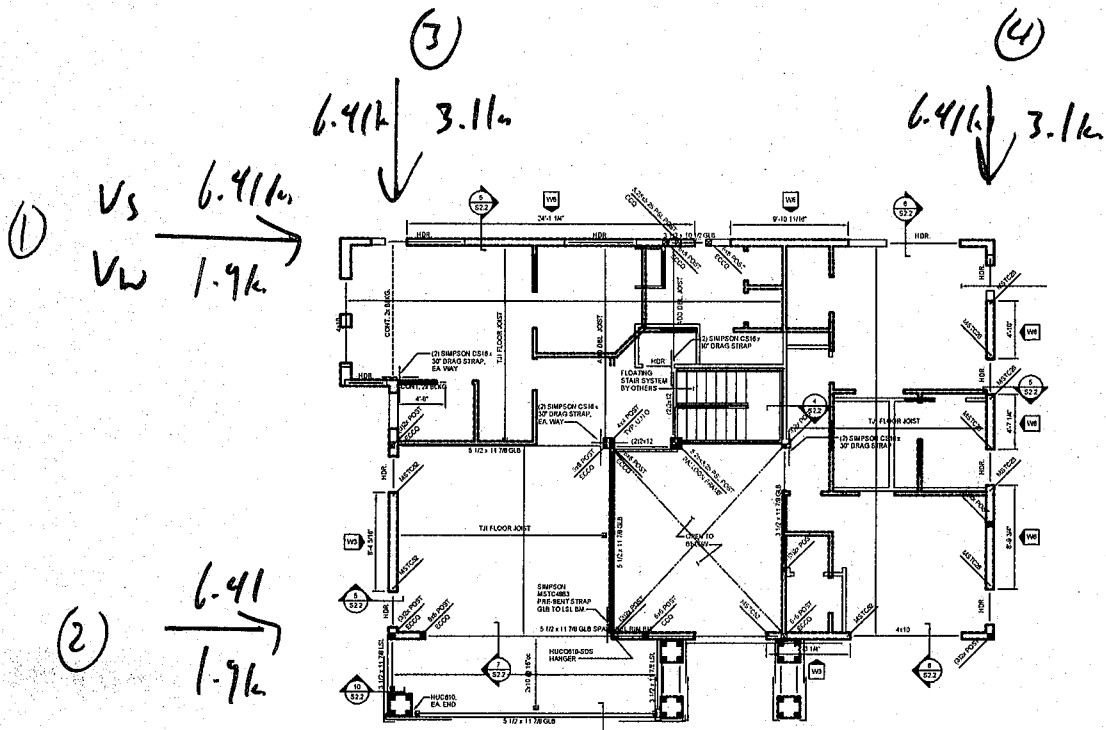
Wpx Weight at level of diaphragm and other structure elements attached to it.
 Fi Design Lateral Force applied at the level.
 Sum Fi Sum of "Lat. Force" of current level plus all levels above
 MIN Req'd Force @ Level ... $0.20 * S_{DS} * I * W_{px}$
 MAX Req'd Force @ Level ... $0.40 * S_{DS} * I * W_{px}$
 Fpx : Design Force @ Level . $W_{px} * \text{SUM}(x > n) Fi / \text{SUM}(x > n) wi$, x = Current level, n = Top Level

$9.48 \cdot \frac{1.6}{0.1538} = 9.86k$

$13.06 \cdot \frac{1.6}{0.1538} = 13.586k$

$(=1.3) \rightarrow V_s = 12.82k$
 $= 17.66k$

SHEAR WALL DESIGN PLAN.



Wood Shear Wall Design 2021 IBC

| Seisc. | SW# | Length b(ft) | Height h(ft) | Vseismic (LRFD)(kips) | Vwind (LRFD)(kips) | Aspect Ratio | | Total Design V (ASD) | SW | | | Foundation Holddown |
|--------|-----|-----------------|-----------------|--------------------------|-----------------------|--------------|--------|----------------------|----------|-----------------|---------------|------------------------|
| | | | | | | h/b | h/b>2? | | Design | SW Uplift (ASD) | Wall Holddown | |
| | SW1 | 33.92' | 9.50' | 6.41 k | 1.90 k | 0.28 | N | 4.49 k | 0.13 kif | W6 | .29 k | Not Reqd' |
| | | WALL | | | | | | | | ✓ | | ✓ |
| | SW2 | 7.0' | 9.50' | 6.41 k | 1.90 k | 1.36 | N | 4.49 k | 0.64 kif | 2W4 | 5.89 k | MST72 |
| | | WALL | | | | | | | | ✓ | | ✓ |
| | SW3 | 8.33' | 9.50' | 6.41 k | 3.10 k | 1.14 | N | 4.49 k | 0.54 kif | 2W4 | 4.88 k | MSTC66 |
| | | WALL | | | | | | | | ✓ | | ✓ |
| | SW4 | 18.17' | 9.50' | 6.41 k | 3.10 k | 0.52 | N | 4.49 k | 0.25 kif | W6 | 1.83 k | MSTC40 |
| | | WALL | | | | | | | | ✓ | | ✓ |
| | SW5 | 27.17' | 11.0' | 8.83 k | 6.0 k | 0.40 | N | 6.18 k | 0.23 kif | W6 | 1.61 k | HDU4(9") |
| | | | | | | | | | | ✓ | | ✓ |
| | SW6 | 11.17' | 11.0' | 8.83 k | 6.0 k | 0.99 | N | 6.18 k | 0.55 kif | 2W4 | 5.72 k | HDU8(12") |
| | | | | | | | | | | ✓ | | ✓ |
| | SW7 | 14.25' | 11.0' | 8.83 k | 9.60 k | 0.77 | N | 6.18 k | 0.43 kif | W3 | 4.30 k | HDU4(9") |
| | | | | | | | | | | ✓ | | ✓ |
| | SW8 | 19.0' | 11.0' | 8.83 k | 9.60 k | 0.58 | N | 6.18 k | 0.33 kif | W4 | 2.95 k | HDU4(9") |
| | | | | | | | | | | ✓ | | ✓ |

| SW # | Vs,all (ASD) (kip/ft) | Vw,all (ASD) (kip/ft) | Wall HD | Tall (ASD)(kips) | FTG HD | Tall (ASD) (kips) |
|------|-----------------------------|--------------------------|--------------|------------------|-------------|----------------------|
| W6 | 0.26 | 0.37 | MSTC28 | 1.54 | STHD10 | 3.40 |
| W4 | 0.38 | 0.53 | MSTC40 | 3.08 | STHD14 | 3.82 |
| W3 | 0.49 | 0.69 | MSTC52 | 4.62 | HDU4 | 4.57 |
| 2W6 | 0.52 | 0.73 | MSTC66 | 5.86 | HDU5 | 5.65 |
| 2W4 | 0.76 | 1.07 | MST72 | 6.73 | HDU8 | 6.97 |
| 2W3 | 0.98 | 1.37 | CMST12x84" | 9.215 | HDU11 | 9.34 |
| 2W2 | 1.28 | 1.79 | 2xMSTC66 | 11.72 | HDU14 | 10.77 |
| | | | 2xMST72 | 13.46 | HD12 | 12.67 |
| | | | 2xCMST12x84" | 18.43 | HDU14(SPC.) | 14.44 |
| | | | HD19(SPC.) | 19.07 | HD12(SPC.) | 15.51 |
| | | | | | HD19 | 16.77 |
| | | | | | HD19(SPC.) | 19.07 |

*Holddown not required for uplift less than 1 Kips(ASD)