Cheema Residence Addition

Structural Calculations

3606 81st Avenue S.E.
Mercer Island, WA 98040
King County

Sidesway Project No. 18041.01

Prepared By:

SIDESWAY ENGINEERING

05/03/18

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Project Description

Sidesway Engineering was retained by the homeowner to perform analysis and design as necessary to obtain a building permit for the proposed enclosure of their existing carport and addition of a covered entry way at the single family residence located at 3606 81st Avenue S.E. on Mercer Island.

New walls with continuous footings will be added around the perimeter of the existing carport to enclose the space into a garage. New roof framing extends beyond the garage to create a covered entry way. The existing carport and house framing will be reinforced with beams to provide sufficient capacity to support new over-framing. Lateral forces on the garage will be resisted by new shear walls and a portal frame at the garage door. All existing house framing was provided to us from the homeowner or the DC Designs construction drawings.

Scope of Work

Provide gravity and lateral calculations for the proposed structure as required to obtain a building permit. Redline structural framing requirements onto the architectural plan set. Provide mark-ups on framing details as required for permit.

Design Criteria

2015 International Building Code (IBC)
2015 International Existing Building Code (IEBC)
2015 International Residential Code (IRC)
ASCE 7-10 Minimum Design Loads for Buildings and Other Structures
Applicable Material Reference Standards (ACI, MSJC, AISC, NDS)

This is a Risk Category II structure designed for the following loads:

Dead Loads:	15psf (roof), 8psf (ext. walls)
Snow Loads:	25psf
Wind Loads:	110mph, Exp. B, K_{zt} = 1.00 (refer to wind loads)
Seismic Loads:	R = 6.5, Site Class 'D', SDC 'D' (refer to seismic loads)

Project Summary

The proposed garage as designed in the following calculations conforms to the 2015 IBC and IEBC. Refer to the calculations and DC Designs construction drawings structural framing requirements.

Disclaimer

This calculation package is based on the documentation that was available to us. Sidesway Engineering did not perform an as-built to verify the accuracy of the provided data and we should be contacted if there are any discrepancies with the assumptions contained within these calculations. We assume the structure has no known deterioration or damage that would adversely affect capacity.

1 DOWEL FTG'S AND WALLS W/ HORIZONTAL REINFORCING 3" INTO EXISTING CONCRETE. USE HILTI HIT-RE 500 V3 EPOXY OR EQUAL.

FAMILY

DINING

36" HALFWALL

DN

BATH

BED ROOM

SD

2'-0"x2'-0"x8" DP FTG W/(3)#4 BOTTOM EA. WAY

HALL

CLOSET

SD

SD

ABA44Z POST BASE

BED ROOM

NEW NOOK

NEW KITCHEN

NEW ENTRY

NEW GARAGE

NEW COVERED

12"X8" DP FTG W/(2)#4 CONTINUOUS, TYP U.N.O

6" STEM W/#4@18" OC VERT. AND #4@16" OC HORIZ., TYPICAL

2'-0"x2'-0"x1'-0" DP FTG W/(3) #4 EA WAY BOTTOM. ABA44Z POST BASE.

12" WIDE X 12" DP FTG W/ (2) #4 TOP AND BTM @ FRONT OF GARAGE

NEW

EXISTING

APA RATED PORTAL FRAME, 20" IN LENG-TH. USE STHD 14 EA SIDE OF PORTAL FRAME.
SEE SHEET 11 FOR CONSTRUCTION REQUIREMENTS

FAMILY

DINING

BATH

BED ROOM

SD

HALL

CLOSET

36" HALFWALL

DN

4X4 DF#2 POST W/(2) LCE4 POST CAPS

NEW NOOK

NEW KITCHEN

NEW ENTRY

NEW COVERED

NEW GARAGE

BED ROOM

(E) ROOF FRAMING

BORDER OF NEW OVERFRAMING

(2) 2x POST

4X12 DF#2 RIDGE BM

4X4 DF#2 KING POST TOENAILED W/(2) 10d TOP AND BTM

3 1/2 X 13 1/2 DF GLB

(2) 2x POST

2X6 DF#2 @ 12" OC

LSSU26, TYP

2X6 DF#2 @ 24" OC, TYP

(2) 2x POST

LCE4 POST CAP

4X6 DF#2 W/ (1) CRIPPLE & (1) FULL HT STUD

VERIFY/PROVIDE (2) 2x STUDS

4X4 DF#2 KING POST W/PC42 POST CAP AND A34 CLIPS EA SIDE OF POST TO GLB

VERIFY/PROVIDE (2) 2x STUDS

5 1/8 X 13 1/2, 24F-V4 DF GLB

SLU6

4X4 DF#2 KING POST TOENAILED W/(2) 10d TOP AND BTM

2X6 DF#2 @ 12" OC

LSSU26, TYP

4X12 DF#2 RIDGE BM

(E) RIDGE BM

SLU6

(E) PORCH RAFTERS

(E) PORCH RAFTERS

PT4X10 HF#2

2X6 DF#2 @ 16" CEILING JOISTS

(2) 2x POST W/LPC2 POST CAP

PT4X4 HF#2 W/(2) LCE4 POST CAPS

PT4X10 HF#2

3 1/2 X 13 1/2, 24F-V4 DF GLB

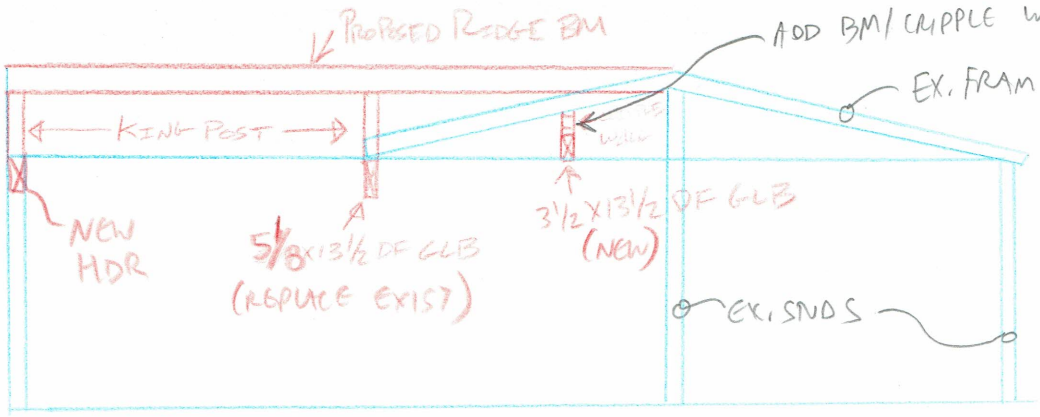
4X4 DF#2 KING POST W/(2) LCE4 POST CAPS AND A34 CLIPS EA SIDE OF POST TO GLB

4 (2) LOAD BEARING STUDS EA SIDE OF BM

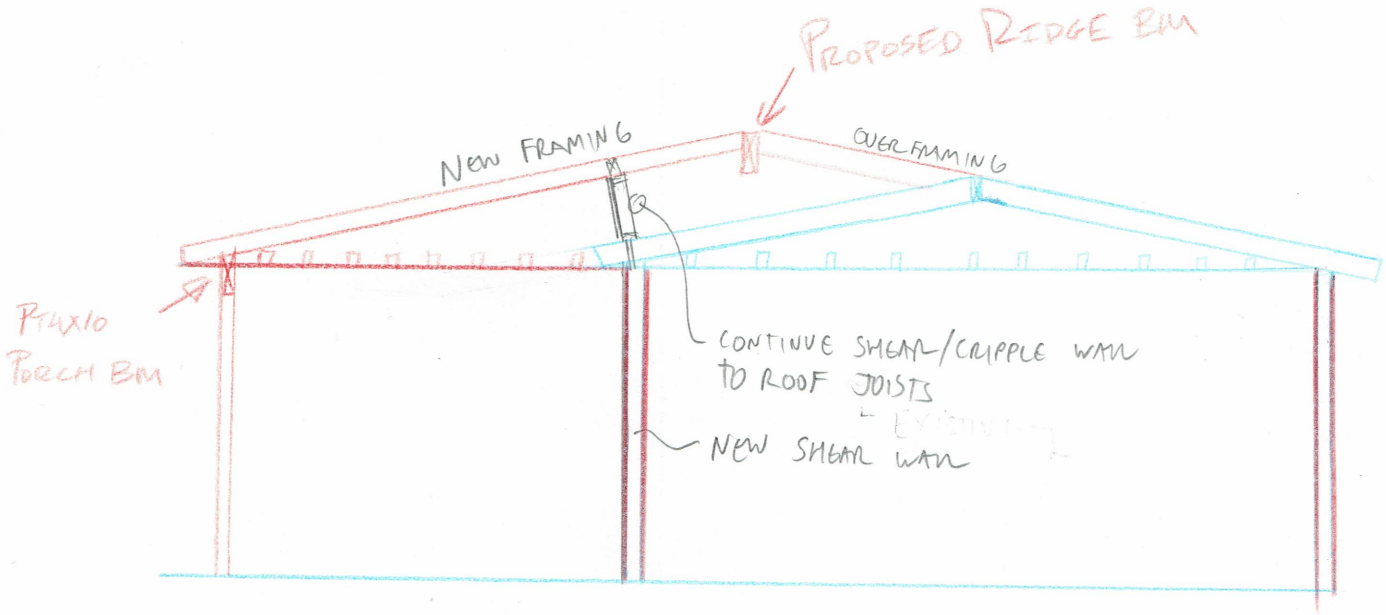
LSTHD8 TO DBL 2X PER PORTAL FRAME DETAIL

NEW

EXISTING



SIDE SECTION



FRONT VIEW

GRAVITY LOADS

DEAD

ROOF: 15 PSF OVERFRAMING: 5PSF

WALLS: 8 PSF EXTERIOR
7PSF INTERIOR

SNOW 25PSF

LIVE 40 PSF (RESIDENTIAL)

GEOTECHNICAL 1500PSF ALLOWABLE BEARING PRESSURE

LATERAL LOADS REFER TO LATERAL SYSTEM DESIGN FOR SPECIFICS

SEISMIC DL: $\text{ROOF} = 1993\text{FT}^2 \cdot [15\text{PSF}_{\text{ROOF}} + 5\text{PSF}_{\text{WALLS}}] = 39.86^{\text{K}}$ OR 20 PSF

SEISMIC BASE SHEAR

$V = C_S \cdot W$ WHERE $C_S = \frac{S_{DS}}{\left[\frac{R}{I_e}\right]} = \frac{0.928}{\frac{6.5}{1.0}} = 0.143$ ← GOVERNS

$C_{S\text{MIN}} = 0.041$ $C_{S\text{MAX}} = 0.793$

$V = 0.143 \cdot 39.86^{\text{K}} = 5.7^{\text{K}}$

$$V_{ASD} = 0.7 \cdot V = 0.7 \cdot 5.7^{\text{K}} = 3.99^{\text{K}}$$

SIDE SWAY ENGINEERING	Description: GRAVITY LOADS	By: JMD	Project No.: 18041.01
		Date: 4/25/18	
	Project: CHEEMA RESIDENCE	Checked: MB	Sheet No.: 1
		Date: 5/2/18	

OVERFRAMING BEAMS AND SUPPORTS

BEAM 1 – OVERFRAMING RIDGE

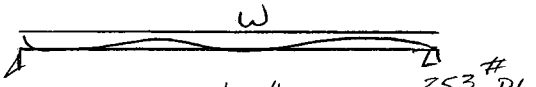
$W=[12.2'+3.1']/2 \cdot [5PSF\,DL+25PSF\,SL]$

$7.65'$

$M=6264\#'$ $\quad f_b/F_b'=0.90$

$V=1498\#$ $\quad f_v/F_v'=0.28$

$\Delta_{LL}=0.29"=\ell/609$ $\quad \Delta_{TO}=0.39"=\ell/443$



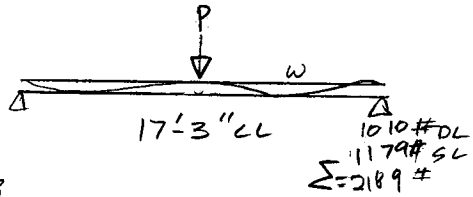
USE 4X12 DF#2

BEAM 2 – CROSS BEAM

$M=15531\#'$ $\quad f_b/F_b'=0.73$

$V=2058\#$ $\quad f_v/F_v'=0.19$

$\Delta_{LL}=0.25"=\ell/833$ $\quad \Delta_{TO}=0.47"=\ell/438$



CEILING
$W=6PSF \cdot 12.5'$

$P=\frac{24.5'}{2} \cdot \frac{15.4'}{2} \cdot [5PSF_{DL}+25PSF_{SL}] = 472\#_{DL}+2358\#_{SL}$

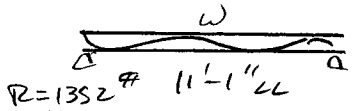
USE 3½ X 15, 24F-V4 DF GLB → USE 5¼ X 13½ GLB to MATCH OTHER BM DEPTH

BEAM 3 – PORCH ROOF BM

$M=3559\#'$ $\quad f_b/F_b'=0.92$

$V=1077\#$ $\quad f_v/F_v'=0.37$

$\Delta=0.38"=\ell/359$



$W=7.3'[5PSF_{DL}+25PSF_{SL}]$

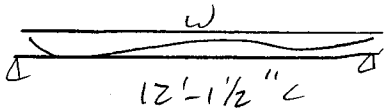
USE PT 4X10 HF#2

OVERFRAMING RAFTERS (LONG SPAN)

$M=555\#'$ $\quad f_b/F_b'=0.57$

$V=168\#$ $\quad f_v/F_v'=0.15$

$\Delta_{LL}=0.37"=\ell/394$ $\quad \Delta_{TO}=0.48"=\ell/303$



$W=5PSF_{DL}+25PSF_{SL}$

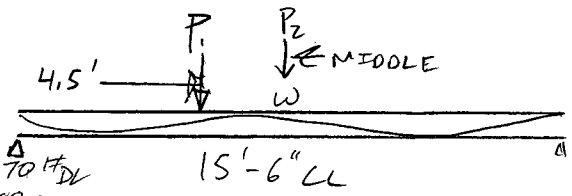
USE 2X6 DF#2 @ 12" O.C. (LONGER SPAN)

FOR SPANS ≤ 6', USE 2X6 DF#2 @ 24" O.C. $f_b/F_b'=0.24$

SIDE SWAY ENGINEERING	Description	By JMO	Project No. 18041.01
		Date	
	Project CHEEMA RESIDENCE	Checked UB	Sheet No. 2
		Date 9/12/18	

FRAMING DESIGN/ANALYSES

GARAGE DOOR HDR



GABLE WALL CEILING
w = 7PSF · 3' + 6PSF · 5'

M = 9204 #'
V = 2086 #
Δ_{LL} = 0.25" = l/745
Δ_{TOT} = 0.51" = l/369
f_b/F_b' = 0.56
f_v/F_v' = 0.24 (BM + RXN) $P_1 = 353^{\#}_{DL} + 1426^{\#}_{SL}$

(EXISTING RIDGE BM) $P_2 = 4' \cdot \frac{17.2'}{2} \cdot 8\,PSF\,DL + 4' \cdot 5.6' \cdot 25PSF\,SL = 275^{\#}_{DL} + 560^{\#}_{SL}$

USE 3½ x 12, 24F-V4 DF GLB → USE 13½" DEEP TO CONTROL Δ

EXISTING RIDGE BM ALLOWABLE LOAD INCREASE:

[8PSF DL + 25PSF SL] · 17.2'/2 = 284PLF · 1.0S = 298PLF

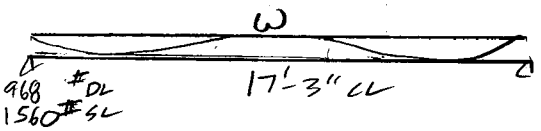
PROPOSED LOADING TO BM:

8PSF · 17.2'/2 + 1.6' · 5PSF + 5.6' · 25PSF SL = 217 PLF, LOAD DECREASE

OVERFRAMING — LESS ROOF AREA TAKING SNOW, DUE TO OVERFRAMING

SINCE THE PROPOSED LOAD IS LESS THAN THE EXISTING, OR PERIEBL

BEAM 4 - INTERIOR BEAM



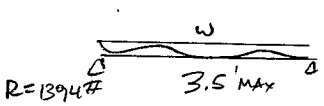
M = 10673 #'
V = 2129 #
Δ_{LL} = l/754
f_b/F_b' = 0.58
f_v/F_v' = 0.22
Δ_{TOT} = 0.53" = l/390

CEILING
w = [8 PSF DL + 25PSF SL] · 7' + 6PSF · 7'

USE 3½ x 13½, 24F-V4 DF GLB

PORCH HDR

f_b/F_b' = 0.59
f_v/F_v' = 0.36



ROOF CEILING
w = 15' · [15PSF DL + 25PSF SL] + 4.5' · [6PSF DL + 25PSF SL]

USE 4X6 DF#2 w/ (1) CRIPPLE (1) FULL HT STUD

SIDE SWAY ENGINEERING	Description: FRAMING DESIGN/ANALYSES	By: JWD	Project No.: 18041.01
		Date: 5/1/18	
	Project: CHEEMA RESIDENCE	Checked	Sheet No.: 3
		Date	

DIAPHRAGM / CHORD ANALYSIS

$w = \frac{4776^{Lb}}{41.2'} = 115.9\,PLF$ $\quad V = 115.9\,PLF \cdot \frac{15.3'}{2} = 886.6^{Lb}$ $\quad v_{MAX} = \frac{886.6^{\#}}{18.3'} = 48.4\,PLF$

TYPICAL 1/2" SHEATHING ADEQUATE w/ 8d @ 6"/12" O.C.

CHORD

$T = C = \frac{wl^2}{8b} = \frac{115.9PLF \cdot (15.3')^2}{8 \cdot 18.3'} = 185.3^{Lb}$

TYPICAL DOUBLE TOP PLATE SPLICE NAILING ADEQUATE

FOUNDATION

USE 12" WIDE X 8" DP FTG w/ (2) #4 CONTINUOUS EXCEPT @ PORTAL FRAME
USE 12" WIDE X 12" DP FTG w/ (2) #4 TOP & BOT.
USE 6" STEM w/ #4 AT 18" O.C. VERTICAL AND #4 AT 16" O.C. HORIZ.

INTERIOR SPREAD FTG DESIGN

$P = 250^{\#}_{DL} + 830^{\#}_{SL} = 1100^{Lb}$

$\square$ FTG REQ'd $= \sqrt{\frac{1100^{\#}}{1500\,PSF}} \simeq 1'\square$

USE 2'-0" X 2'-0" X 8" DP w/ (3) #4 EA WAY BOTTOM

PORCH SPREAD FTG

$P = 257^{\#}_{DL\ BM4} + 1095^{\#}_{SL} + 100^{\#}_{DL\ LEDGER\ BM} + 400^{\#}_{SL} = 1852^{\#}$

$\square = \sqrt{\frac{1852^{\#}}{1500PSF}} = 1.11'\square$

USE 2'-0" X 2'-0" X 12" DP FTG w/ (3) #4 EA WAY

SIDE SWAY ENGINEERING	Description: DIAPHRAGM/CHORD	By: JMD	Project No.: 18041.01
		Date: 4/26/18	
	Project: CHEEMA RESIDENCE	Checked: CB	Sheet No.: 4
		Date: 5/2/18	

USGS Design Maps Summary Report

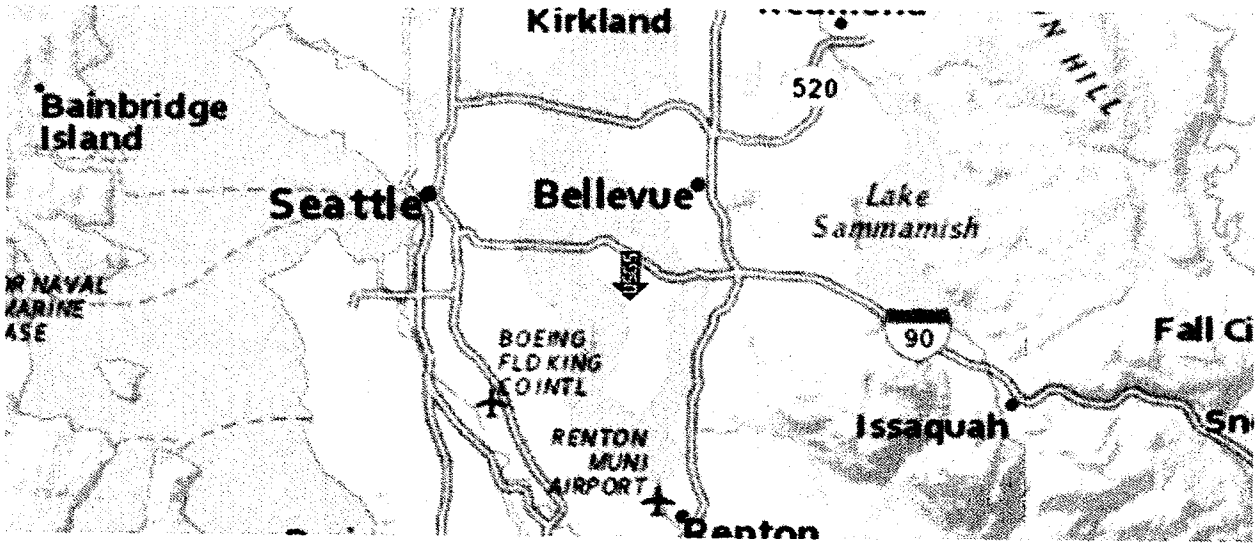
User-Specified Input

Building Code Reference Document ASCE 7-10 Standard
(which utilizes USGS hazard data available in 2008)

Site Coordinates 47.57875°N, 122.23044°W

Site Soil Classification Site Class D – "Stiff Soil"

Risk Category I/II/III

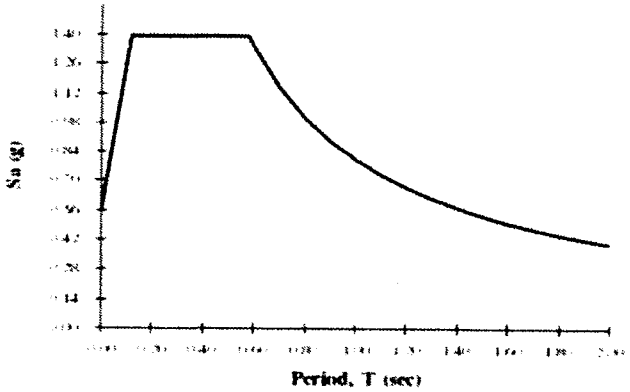


USGS-Provided Output

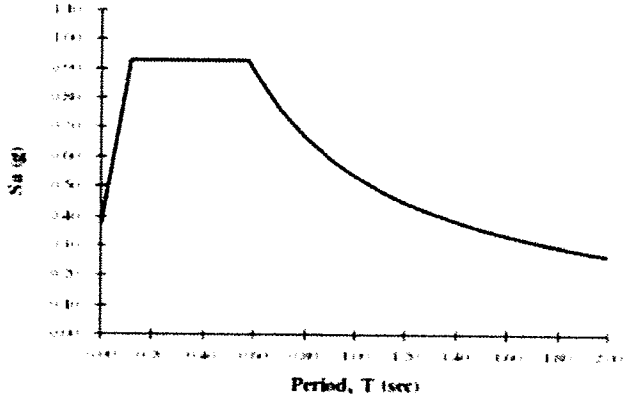
S_S =	1.393 g	S_{MS} =	1.393 g	S_{DS} =	0.928 g
S_1 =	0.536 g	S_{M1} =	0.803 g	S_{D1} =	0.536 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.

MCE_R Response Spectrum



Design Response Spectrum



SIDE SWAY ENGINEERING	Description: USGS Data	By: JMD	Project No.: 18041.01
		Date: 04/24/18	
	Project: Cheema Residence Remodel	Checked: CA	Sheet No.: 5
		Date: 5/2/18	

WIND ANALYSIS

$P_S = \lambda \cdot k_{ZT} \cdot P_{S30}$ (ENCLOSED, SIMPLE DIAPHRAGM, LOW RISE, V_{ULT}=110MPH)

λ=1.0 (EXPOSURE 'B', h=23') $2a = 2 \cdot 26' 0.1 = 5.2'$ USE 6'

k_{ZT}=1.0 (SEE ATTACHED 'TOPOGRAPHY... SHEET)

ROOF SLOPE: 4:12 PITCH

P_S = A = 26.6 PSF B = -7 PSF (USE 0 PSF)

C = 17.7 PSF D = -3.9 PSF

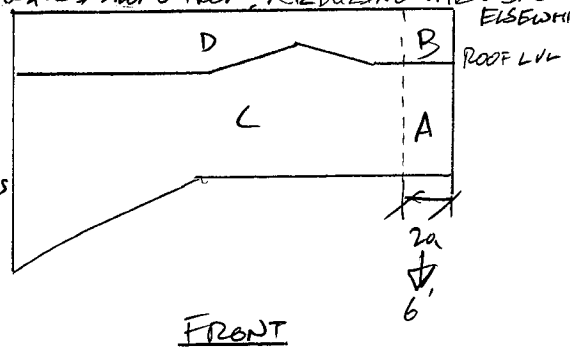
FRONT: (NOTE: WIND LOAD IS ONLY ADDED TO NEW GARAGE WALLS ALONG FRONT, REDUCING THE WIND ELSEWHERE)

AREAS: A = 27.3 Ft^2 B = 74.5 Ft^2

C = 330 Ft^2 D = 422 Ft^2

F_{MIN} = 16PSF · 357 Ft^2 + 8 PSF · 497 Ft^2 = 9688 LB ← GOVERNS

F_{ROOF} = 26.6PSF · 27.3 Ft^2 + 17.7PSF · 330 Ft^2 = 6567 LB



FRONT

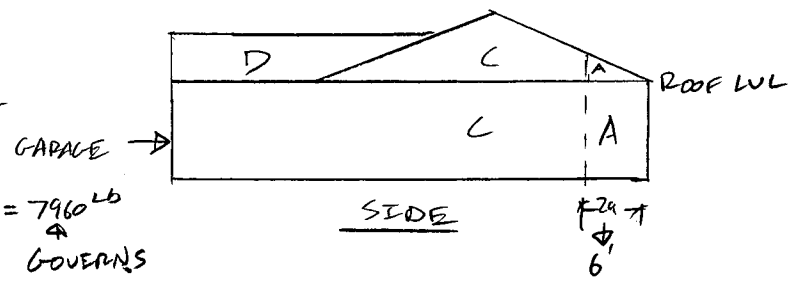
SIDE

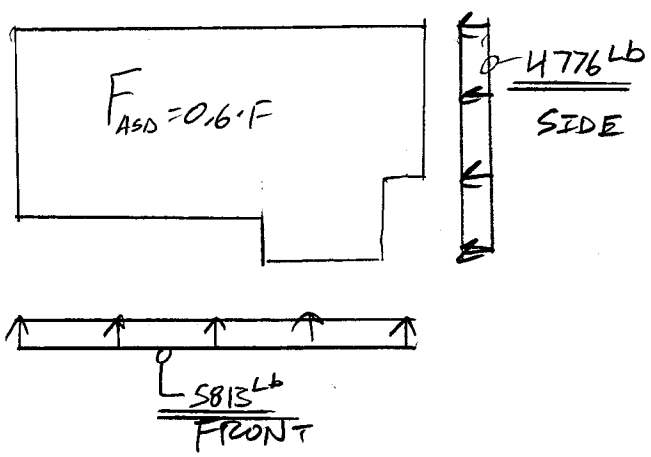
AREAS: A = 35.8 Ft^2 B = 0 Ft^2

C = 395 Ft^2 D = 127.4 Ft^2

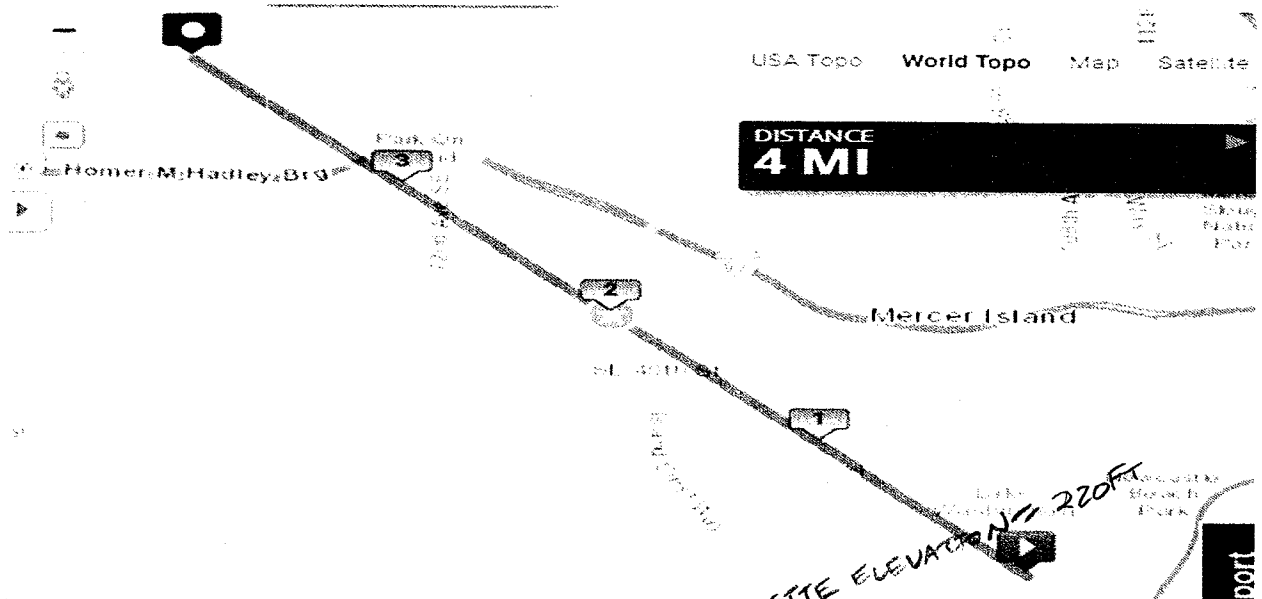
F_{MIN} = 16PSF · 433.8 Ft^2 + 8PSF · 127.4 Ft^2 = 7960 LB ← GOVERNS

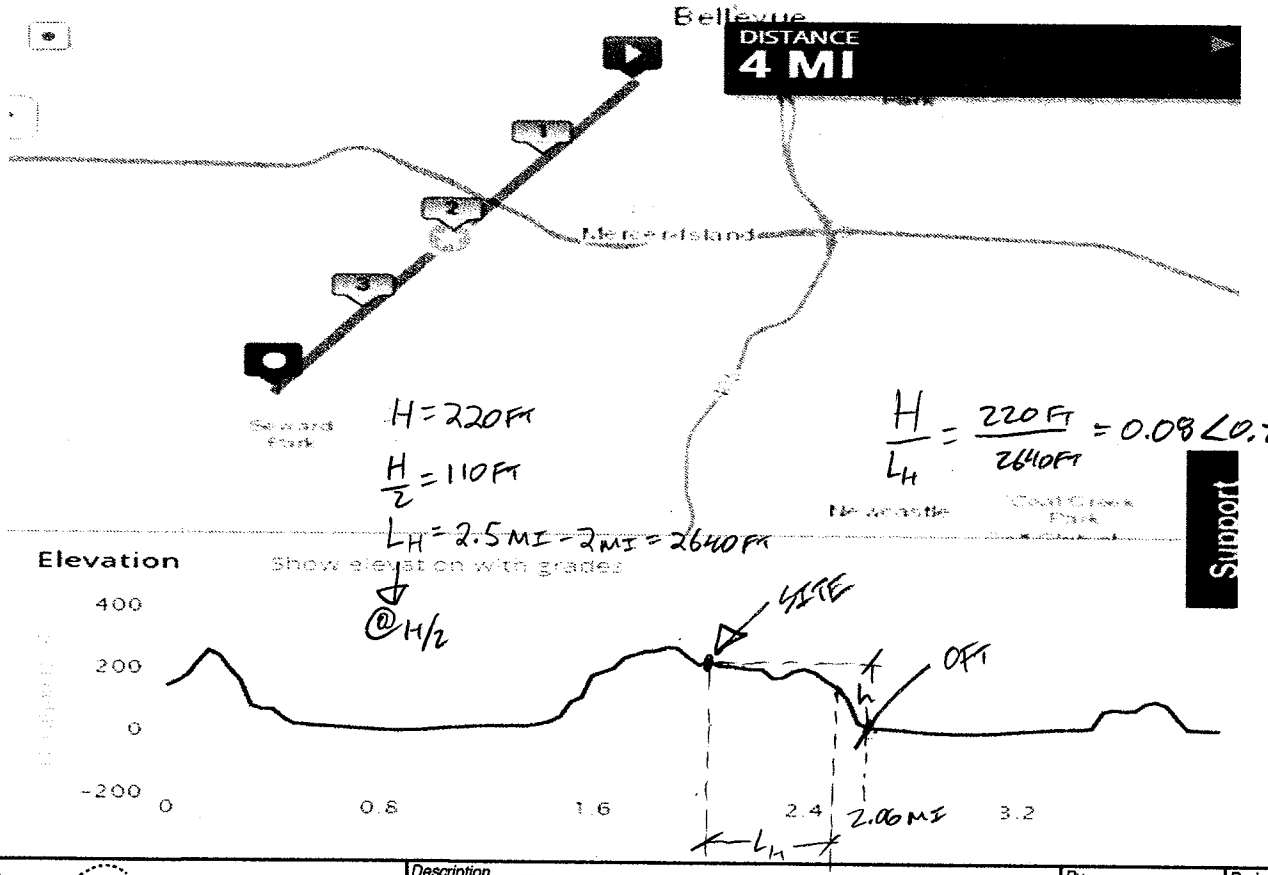
F_{ROOF} = 26.6PSF 35.8 Ft^2 + 17.7PSF · 39 SFt^2 = 7944 LB





SIDESWAY ENGINEERING	Description: WIND ANALYSIS	By: JMD	Project No.: 18041.01
		Date: 4/26/18	
	Project: GHEEMA RESIDENCE	Checked: CB	Sheet No.: 6
		Date: 5/2/18	





$H = 220FT$

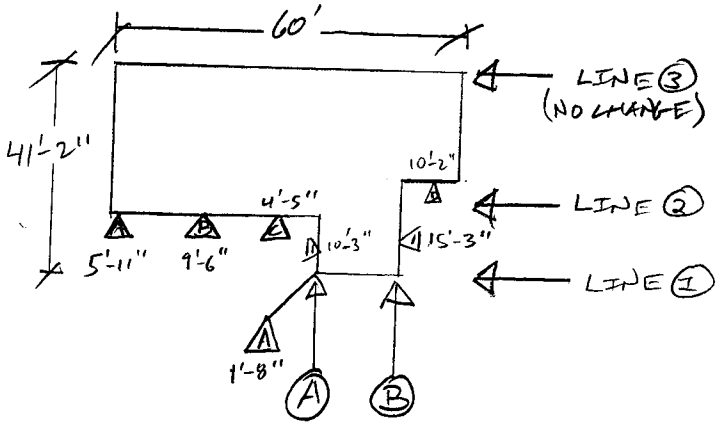
$\frac{H}{2} = 110FT$

$L_H = 2.5MI - 2MI = 2640FT$

$\frac{H}{L_H} = \frac{220FT}{2640FT} = 0.08 < 0.2 \therefore k_{zt} = 1$

SIDE SWAY ENGINEERING	Description: Topography-Kzt Determination	By: JMD	Project No.: 180411.01
		Date: 04/24/18	
	Project: Cheema Residence	Checked: CB	Sheet No.: 7
		Date: 5/2/18	

LATERAL LOAD DISTRIBUTION



LINE ①:

$$EQ = \frac{3990^{Lb}}{1993 Ft^2} \cdot 233 Ft^2 = 467^{Lb}$$

$$WIND = \frac{4776^{Lb}}{41.2'} \cdot 6.4' = 742^{Lb}$$

LINE ②:

$$EQ = \frac{3990^{Lb}}{1993 Ft^2} \cdot 997 Ft^2 = 1996^{Lb}$$

$$WIND = \frac{4776^{Lb}}{41.2'} \cdot 20.6' = 2388^{Lb}$$

LINE ③:

$$EQ = \frac{3990^{Lb}}{1993 Ft^2} \cdot 763 Ft^2 = 1528^{Lb}$$

$$WIND = \frac{4776^{Lb}}{41.2'} \cdot 14.2' = 1646^{Lb}$$

} NO CHANGE IN LATERAL LOAD TO THIS WALL LINE ∴ CONSIDER ACCEPTABLE PER IEBC

LINE (A) = LINE (B) $= 134 Ft^2 \cdot 17.7 PSF \cdot 0.6 \cdot \frac{1}{2} = 712^{Lb}/LINE$ WIND

↑ FRONT OF GARAGE AREA

$$278 Ft^2 \cdot [15 PSF_{ROOF} + 5 PSF_{WALL}] \cdot 0.143 \cdot 0.7 \cdot \frac{1}{2} = 56^{Lb}/LINE \text{ EQ}$$

SIDE SWAY ENGINEERING	Description: LATERAL LOAD DISTRIBUTION	By: JMD	Project No.: 18041.01
		Date: 4/26/18	
	Project: CHEEMA RESIDENCE	Checked: CB	Sheet No.: 8
		Date: 5/2/18	

Shear Line#	A
Lw (ft)	10.25
W to Line (Lb)	712
E to Line (Lb)	560
SW Ht (ft)	8
Wall Wt (psf)	8
Rf/Fl wt (psf)	15
Dist. to HD (ft)	0.25
Wind U.S. plf	69.5
EQ U.S. plf	54.6
SDS	0.928
SW Needed	SW6

Shear Line#	B
Lw (ft)	15.25
W to Line (Lb)	712
E to Line (Lb)	560
SW Ht (ft)	8
Wall Wt (psf)	8
Rf/Fl wt (psf)	15
Dist. to HD (ft)	0.25
Wind U.S. plf	46.7
EQ U.S. plf	36.7
SW Needed	SW6

Line A

SW#	Trib	Length	Gross (W)	Gross (EQ)	(0.6*DL)	(.6-.14sds)DL	ULFA (W)	Net (W)	ULFA (EQ)	Net (EQ)
1	11	10.25	569.60	448.00	704.175	551.7		-134.6		-103.7
1						Holdown Req'd SW 1	None			

Line B

#	Trib	Length	Gross (W)	Gross (EQ)	(0.6*DL)	(.6-.14sds)DL	ULFA (W)	Net (W)	ULFA (EQ)	Net (EQ)
1	11	15.25	379.73	298.67	1047.675	820.8		-667.9		-522.2
1						Holdown Req'd SW 1	None			

SIDE SWAY ENGINEERING

Description: Shear Wall Design		By: JMD	Project No.: 18041.01
Roof LVL		Date: 4/26/2018	
Project: Cheema		Checked: CB	Sheet No.: 9
		Date: 5/2/18	

Shear Line#	1	Shear Line#	2
Lw (ft)	0	Lw (ft)	30.02
W to Line (Lb)	742	W to Line (Lb)	2388
E to Line (Lb)	467	E to Line (Lb)	1996
SW Ht (ft)	8	SW Ht (ft)	8
Wall Wt (psf)	8	Wall Wt (psf)	8
Rf/Fl wt (psf)	15	Rf/Fl wt (psf)	15
Dist. to HD (ft)	0.25	Dist. to HD (ft)	0.25
Wind U.S. plf	#DIV/0!	Wind U.S. plf	79.5
EQ U.S. plf	#DIV/0!	EQ U.S. plf	66.5
SDS	0.928		
SW Needed	Portal Frame	SW Needed	SW6

Line 1

Use APA Rated Portal Frame. See next page for design criteria.

Line 2

#	Trib	Length	Gross (W)	Gross (EQ)	(0.6*DL)	(.6-.14sds)DL	ULFA (W)	Net (W)	ULFA (EQ)	Net (EQ)
A	15	5.9	664.53	555.45	511.53	400.8		153.00		154.68
A					Holdown Req'd SW A		Negligible			
B	15	9.5	653.58	546.29	823.65	645.3		-170.07		-99.01
B					Holdown Req'd SW B		None			
C	15	4.42	674.53	563.80	383.214	300.2		291.31		263.57
C					Holdown Req'd SW C		Negligible			
D	15	10.2	652.37	545.28	884.34	692.9		-231.97		-147.57
D					Holdown Req'd SW D		NONE			

CONSIDER EXISTING SHEATHING ON HOUSE ADEQUATE & NO HOLDOWNS ARE REQ'D

SIDE SWAY ENGINEERING

Description: Shear Wall Design		By: JMD	Project No.: 18041.01
Roof LVL		Date: 4/26/2018	
Project: Cheema		Checked: UB	Sheet No.: 10
		Date: 5/2/18	

Minimum Width (in.)	Maximum Height (ft)	Allowable Design (ASD) Values per Frame Segment		
		Shear[e,f] (lbf)	Deflection (in.)	Load Factor
16	8	850	0.33	3.09
	10	625	0.44	2.97
24	8	1,675	0.38	2.88
	10	1,125	0.51	3.42

Foundation for Wind or Seismic Loading[a,b,c,d]

(a) Design values are based on the use of Douglas-fir or Southern pine framing. For other species of framing, multiply the above shear design value by the specific gravity adjustment factor = [1 - (0.5 - SG)], where SG = specific gravity of the actual framing. This adjustment shall not be greater than 1.0.

(b) For construction as shown in Figure 1.

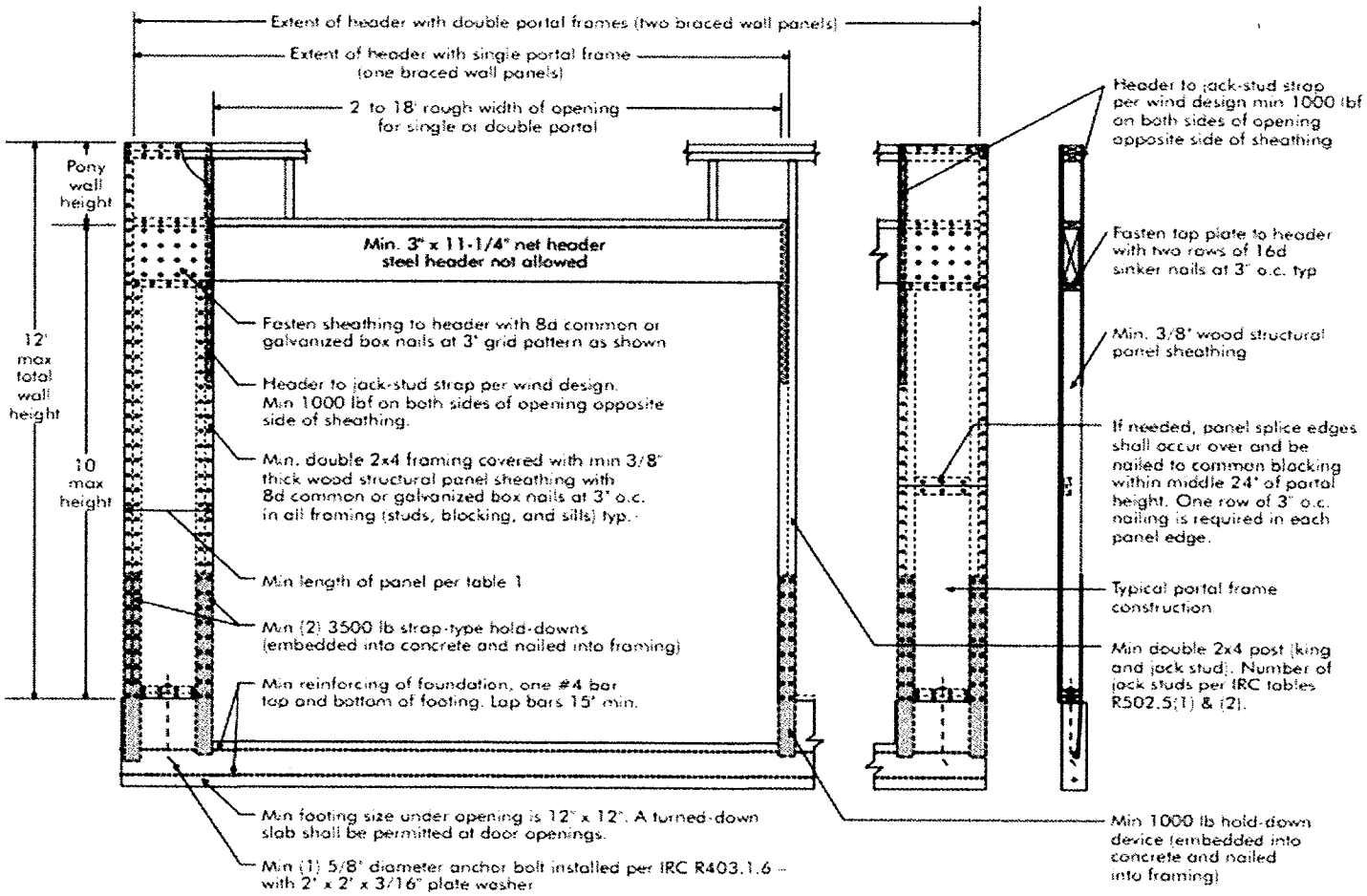
(c) Values are for a single portal-frame segment (one vertical leg and a portion of the header). For multiple portal-frame segments, the allowable shear design values are permitted to be multiplied by the number of frame segments (e.g., two = 2x, three = 3x, etc.).

(d) Interpolation of design values for heights between 8 and 10 feet, and for portal widths between 16 and 24 inches, is permitted.

(e) The allowable shear design value is permitted to be multiplied by a factor of 1.4 for wind design.

(f) If story drift is not a design consideration, the tabulated design shear values are permitted to be multiplied by a factor of 1.15. This factor is permitted to be used cumulatively with the wind-design adjustment factor in Footnote (e) above.

Figure 1. Construction Details for APA Portal-Frame Design with Hold Downs



SIDE SWAY ENGINEERING	Description: APA Rated Portal Frame Design Criteria	By: JMD Date: 4/26/2018	Project No.: 18041.01
	Project: Cheema	Checked: UB Date: 5/2/18	Sheet No.: 11

SHEAR WALL SCHEDULE

TYPE	APA-RATED SHEATHING	MIN FRAMING AT ADJOINING PANEL EDGES	NAILING AT PANEL EDGES	RIM JOIST OR BLOCK CONN TO TOP PLATE	SILL PLATE NAILING TO RIM/BLKG BELOW	SILL PLATE ANCHOR BOLT TO SLAB OR FOUNDATION	FOUNDATION SILL PLATE SIZE	SHEAR CAPACITY (PLF)
SW6	15/32" ONE SIDE	2x STUD AND BLKG	0.131"Ø x 2 1/2" @ 6" OC	LTP4 OR A35 @ 26" OC	0.131"Ø x 3 1/4" @ 6.5" OC	5/8"Ø AB @ 5'-8" OC OR 1/2"Ø AB @ 3'-10" OC	2x	242

NOTES:

1. REFER TO THE SHEAR WALL DETAIL IN THE TYPICAL WOOD FRAMING DETAILS.
2. THE VALUES IN THIS TABLE ARE BASED ON HF GRADE STUDS AND HF GRADE PLATES & RIM/BLOCKING.
3. NAILS AT ADJOINING PANEL EDGES SHALL BE STAGGERED EACH SIDE OF THE COMMON JOINT.
4. INTERMEDIATE FRAMING TO BE WITH 2x MINIMUM MEMBERS. FIELD NAILING 12" OC MAXIMUM.
5. AT ALL SILL PLATE ANCHOR BOLTS IN 2x6 WALLS, INSTALL 3 GA x 3" x 4 1/2" PLATE WASHERS WITH THE EDGE OF PLATE WASHER WITHIN 1/2" OF SHEATHED EDGE. FOR 2x4 STUD WALLS, INSTALL 3 GA. x 3" x 3" PLATE WASHERS.
6. PROVIDE A MINIMUM OF 7" EMBEDMENT FOR AB INTO FOUNDATION OR STEM WALL.
7. 7/16" SHEATHING MAY BE USED IN PLACE OF 15/32" SHEATHING PROVIDED ALL STUDS ARE SPACED 16" OC OR PANELS ARE APPLIED WITH LONG DIMENSION ACROSS STUDS.