



February 25, 2021

IQ Homebuilders
Attn: Brett Shelton

Re: 2346 SW Hickory Lane (Lot 742, Eagle Creek)

Vista Structural Engineering, LLC, was asked to address the following rough-in inspection item for the house being built at 2346 SW Hickory Lane:

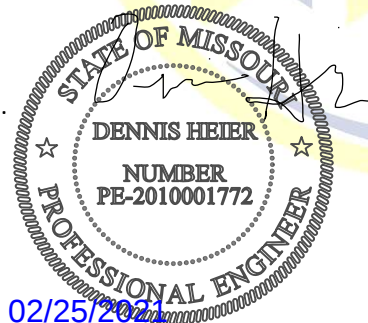
Second story exterior braced wall has been compromised. Bracing method requires the wall to be continuously sheathed with a wood structural panel on all sheathable surfaces with 6" o.c. edge and 12" field fastening. Bedroom 3 where covered patio roof meets second story exterior wall. Provide engineering solution for repair, field repairs are not adequate. *A picture of the area in question is attached on the second page of this report. We are in agreement that for the strength of this wall panel has been compromised by not being nailed to blocking at 6" o.c. at panel edges. However, we have revisited the braced wall calculations that we submitted with the engineered plans to determine if the sheathing on the second floor is still strong enough at the remaining walls to address design wind forces. Based on the attached calculations, we determined that the remaining sheathing on the second floor front and back walls are still significantly stronger than required to resist design wind forces, without any reliance on the wall at the back of bedroom #3. We recommend approval of the sheathing as it is currently installed, without repair.*

Our firm appreciates the opportunity to serve you. If you have any questions or if you need anything further, please feel free to contact us.

Sincerely,

Vista Structural Engineering, LLC

Dennis Heier, P.E.



VISTA STRUCTURAL ENGINEERING, LLC

14718 NW DELIA STREET
PORTLAND, OREGON 97229



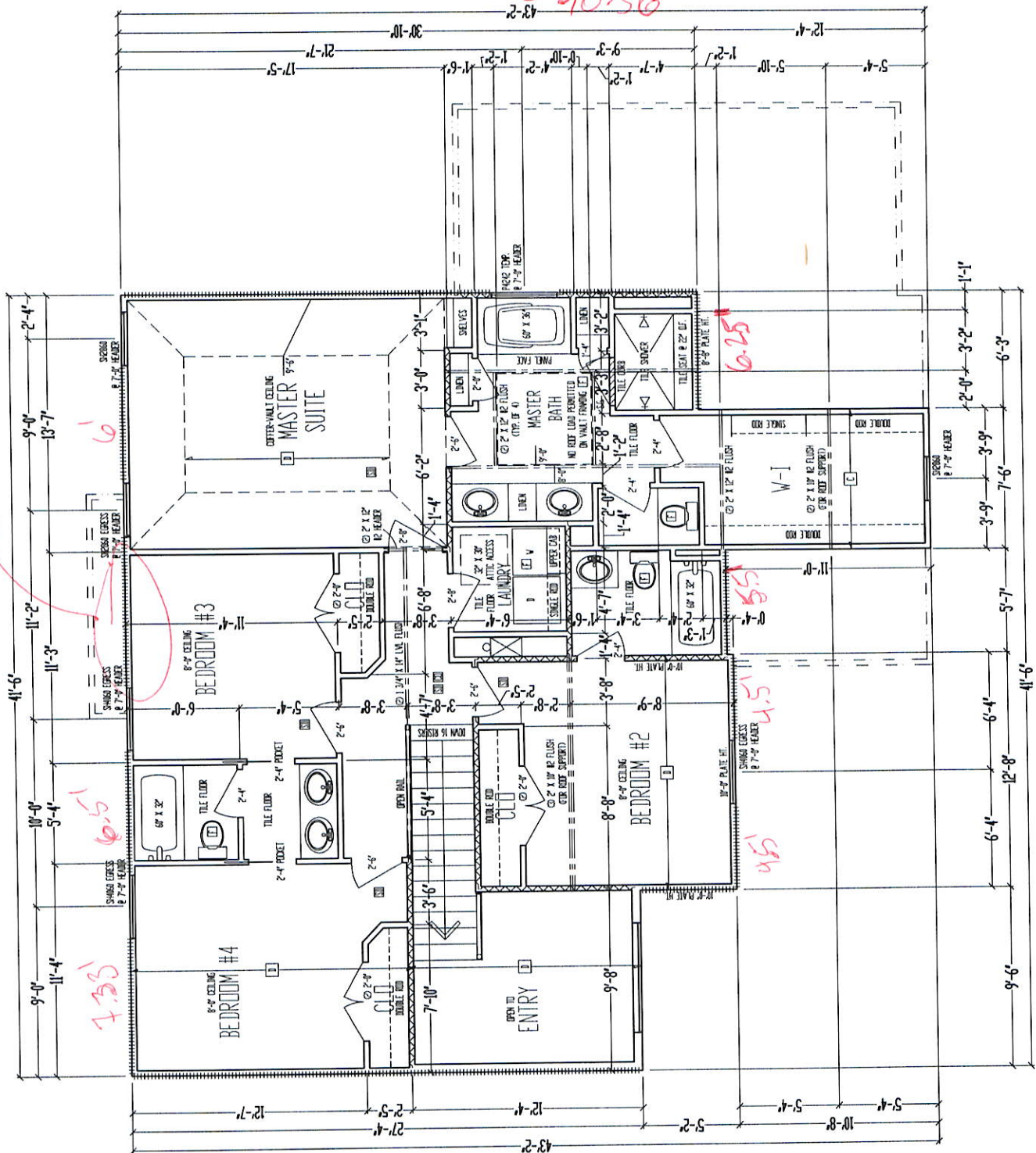
VISTA STRUCTURAL ENGINEERING, LLC

14718 NW DELIA STREET
PORTLAND, OREGON 97229

- 2 -

PHONE: 971.645.0901
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THIS SPREADING
DISPERSED



DESIGN WIND FORCE IN SIDE-TO-SIDE
DIRECTION OF SECOND FLOOR

RESIDENTIAL SEISMIC & WIND ANALYSIS

DETERMINE WEIGHT OF HOUSE:

INPUT		CALCULATED VALUE	
LOCATION	DEAD LOAD (psf)	AREA (ft ²)	WEIGHT (lbs.)
ROOF	10	1881	18810
CEILING	10	1661	16610
SECOND FLOOR	10	1221	12210
FIRST FLOOR	10	1661	16610
WALL LENGTH (ft)		WALL UNIT WT. (psf)	
SECOND FLOOR EXT. WALL DL	169.34	8	10837.76
FIRST FLOOR EXT. WALL DL	193.34	10	19334
DEAD LOAD (psf)		WEIGHT (lbs)	
SECOND FLOOR INT. PARTITION WALL DL	6	1221	7326
FIRST FLOOR INT. PARTITION WALL DL	6	1661	9966

PROJECTED AREAS (WIND DESIGN PER 115 MPH 3-SECOND GUST, EXPOSURE C AND MEAN ROOF HEIGHT <= 30 FT ASSUMED)

FRONT-TO-BACK				SIDE-TO-SIDE			
LOCATION	AREA	LOAD	AREA	LOAD	AREA	LOAD	LOAD
SLOPED ROOF	270	2272	208	1770	208	1770	
VERT. ROOF	25	307	14	174	14	174	
2ND	373.5	4681	388.53	4851	388.53	4851	
1ST	566.5	6963	496.87	6177	496.87	6177	
PRESSURE (PSF) - PER ASCE CH. 6		1ST		2ND		3RD	
SLOPED ROOF		9.7		11.3		12.972	
WALL/VERT. ROOF		14.2		7.7		9.034	
MEAN ROOF HT., h		24		11.3		28.6-1, ASCE7	
ZONE B		ZONE A		ZONE C		ZONE D	

a) If there is a walkout wall to be sheathed, determine tributary wind area and enter here. If no walkout, enter 0 for area.

$q_{z10}=0.00256K_zK_dK_{d1}V^2$ (ASCE7-10 Velocity Pressure)

$q_{z10_ASD}=0.6q_{z10}$ (Design Velocity Pressure for ASD analysis under ASCE7-10 and IRC/IBC 2012)

2ND FLOOR TRIBUTARY WEIGHT

1ST FLOOR TRIBUTARY WEIGHT

S_s (SITE GROUND MOTION - %g - FROM ASCE7 SEISMIC MAP)

F_a (from ASCE7 Table 11.4-1)

S_{DS} ($= 2/3 * S_s * F_a$)

R (from ASCE7 Table 12.2-1)

40838.88
75460.76
12.0%
1.6
0.128
6.5

SEISMIC SHEAR

LOCATION	From ASCE7 (Eq. 12.8-1):	$V (= 1.2 * S_{DS} * W / R)$ (lbs.)
2ND FLOOR		965
1ST FLOOR		1783

Sheathing Location	Min. Sheathing Schedule	Fastening Schedule	Allowable Shear (#/LF)	Code Reference
Exterior (<u>Option #4</u>)	7/16" APA Rated Plywood/OSB or shiplap panel sheathing, or 3/8" shiplap panel sheathing with tighter nail spacing	8d Common Nails w/ 1-3/8" penetration @ 6" O.C. Edges, 12" O.C. Field for 7/16" APA-rated plywood/OSB or shiplap panel sheathing OR @ 4" O.C. Edges, 12" O.C. Field for 3/8" shiplap panel sheathing	220	AF&PA SDPWS Table 4.3A
Exterior (<u>Option #5</u>)	7/16" APA Rated Plywood/OSB or shiplap panel sheathing, or 3/8" shiplap panel sheathing with tighter nail spacing	8d Common Nails w/ 1-3/8" penetration @ 4" O.C. Edges, 12" O.C. Field for 7/16" APA-rated plywood/OSB or shiplap panel sheathing OR @ 3" O.C. Edges, 12" O.C. Field for 3/8" shiplap panel sheathing	320	AF&PA SDPWS Table 4.3A
Exterior (<u>Option #6</u>)	7/16" APA Rated Plywood/OSB or shiplap panel sheathing, or 3/8" shiplap panel sheathing with tighter nail spacing and double studs at each panel edge	8d Common Nails w/ 1-3/8" penetration @ 3" O.C. Edges, 12" O.C. Field	410	AF&PA SDPWS Table 4.3A

STRENGTH OF SHEATHING, WITHOUT WALL AT
BACK OF BEDROOM #3, TO RESIST WIND FORCES

Interior	1/2" Gypsum Board	No. 6 - 1 1/2" Type W or S Screws @ 8" O.C. Edges, 12" O.C. Field	60	per IBC, Table 2306.4.4
Interior	16 Ga. Simpson/USP Type WB Steel X-Brace (or equal)	(3) 16d @ end studs & (1) 8d @ intermediate studs (per manufacturer specifications - see detail on sheet S3)	325	

EXTERIOR SHEATHING OPTION FOR SECOND FLOOR	4	WIDTH OF 1ST STORY (FT.)	51.5	WIDTH OF 2ND STORY (FT.)	41.5
EXTERIOR SHEATHING OPTION FOR FIRST FLOOR	5	DEPTH OF 1ST STORY (FT.)	45.17	DEPTH OF 2ND STORY (FT.)	43.17
		BACK WALL OF GARAGE (FT.)	0		
		GAR. WALL: 1=F-B, 2=S-S	2		

EXTERIOR STRUCTURAL WALL LENGTHS (ft.) & RESISTANCES				WIND	
	FRONT-TO-TO-BACK	RESISTANCE (lbs.)	FRONT-TO-TO-BACK	RESISTANCE (lbs.)	SIDE-TO-SIDE
2ND FLOOR	60	11362	60	23520	40.58
1ST FLOOR	85	12540	85	45220	33

ADDITIONAL RESISTANCE REQUIRED		ANCHOR BOLT SPACING (in.)		16d Nail Spacing req'd at bottom plate (in.)	
SEISMIC	WIND	Diameter (in.)	Value (per NDS)	2nd Floor F-B	34
0	0		944	2nd Floor S-S	41
0	0		115.1	1st Floor F-B	17
0	0		143.9	1st Floor S-S	21

BY EXTERIOR WALLS**				OK?	
TO RESISTANCE	INT'L WALL LENGTH SHEATHED W/ OSB PER TABLE (FT.)	INT. WALL LENGTH SHEATHED W/ OSB (TOTAL LENGTH, ONE SIDE, FT.)	RESISTANCE PROVIDED BY ADDITIONAL METHODS (POUNDS)		
ACES			0	YES	
INT'L			0	YES	
GYP			0	YES	
ANCE CAPAC			0	YES	

2ND FLOOR FRONT-TO-BACK
2ND FLOOR SIDE-TO-SIDE
1ST FLOOR FRONT-TO-BACK
1ST FLOOR SIDE-TO-SIDE

**NOTES: 1) SEE ATTACHED CALCULATIONS FOR PORTAL FRAME OR PERFORATED SHEAR WALL SHEET S1 FOR INTERIOR STEEL X-BRACE INSTALLATION. 3) INTERIOR WALLS SHEATHED WITH 1/2" OSB ON SAME FLOOR (SEE TABLE ABOVE) AND ARE ONLY APPLICABLE FOR LATERAL BRACING ACHIEVED AT EXTERIOR WALLS AND WALLS DIRECTLY ON FOUNDATION.

RESISTANCE REQUIRED IN PORTAL FRAMES OR PERFORATED SHEAR WALLS				OK?	
ADDITIONAL RESISTANCE REQUIRED (POUNDS)	PORTAL FRAMES OR PERFORATED SHEAR WALL RESISTANCE	INT'L WALL LENGTH SHEATHED W/ OSB PER TABLE (FT.)	INT. WALL LENGTH SHEATHED W/ OSB (TOTAL LENGTH, ONE SIDE, FT.)		
0	0			YES	
0	0			YES	
0	0			YES	
0	0			YES	

2ND FLOOR FRONT-TO-BACK
2ND FLOOR SIDE-TO-SIDE
1ST FLOOR FRONT-TO-BACK
1ST FLOOR SIDE-TO-SIDE

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0	0			YES	
0	0			YES	
0	0			YES	
0	0			YES	

2ND FLOOR FRONT-TO-BACK
2ND FLOOR SIDE-TO-SIDE
1ST FLOOR FRONT-TO-BACK
1ST FLOOR SIDE-TO-SIDE

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ADDITIONAL RESISTANCE REQUIRED (POUNDS)	PORTAL FRAMES OR PERFORATED SHEAR WALL RESISTANCE	INT'L WALL LENGTH SHEATHED W/ OSB PER TABLE (FT.)	INT. WALL LENGTH SHEATHED W/ OSB (TOTAL LENGTH, ONE SIDE, FT.)		
0	0			YES	
0	0			YES	
0	0			YES	
0	0			YES	

2ND FLOOR FRONT-TO-BACK
2ND FLOOR SIDE-TO-SIDE
1ST FLOOR FRONT-TO-BACK
1ST FLOOR SIDE-TO-SIDE

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