



November 1, 2023

Jacob Halverson
City of Mercer Island
9611 SE 36th St
Mercer Island, WA 98040

Project: Madrona Crest Lot 9, 3605 86th Ave SE, Permit # 2306-185

Jacob:

I have reviewed the review correction notice from Kolke Consulting Group, Inc. and have the following responses to the Structural items. Please note that the numbers of my responses correspond to the numbers on the correction sheet.

Structural

General

1. Note 1 in the Shear Wall Schedule 1/S1.1 refers to the size and spacing of intermediate nails. All shear walls have 0.131 panel edge nailing, but this note specifies 0.113 nails for intermediate nailing. Is this really intended? If so, justify shear wall capacities. Your response indicated that Note 1 was revised, but we do not find that it was.

Response: Yes, this is an error, the intermediate nailing has been revised to 0.131" nails, see the revised schedule on S1.1.

2. Where the required nominal unit shear capacity, vs, exceeds 700 plf or nail spacing of 2" or less is specified, 3x framing members and blocking must be provided at adjoining panel edges and nails must be staggered per SDPWS 4.3.7.1, Item 5. Alternatively, (2)2x's can be used where they are fastened together with fasteners designed to transfer the induced shear between members. Apply this requirement to the Shear Wall Schedule. Since you are using Structural 1 sheathing, the nominal unit shear capacity, vs, of SW4 is 860 plf and SW3 is 1100 plf. This does apply to this permit and relates to the capacity, not the assumed value assigned in Shear Wall Schedule 1/S1.1.

Response: The shear wall schedule has been revised to eliminate Struct-I plywood and use min. 7/16". This way the nominal unit shear capacity of SW4 cannot exceed 700 plf. The allowable shears for each shear wall type have been adjusted accordingly. The shear walls along grid 2 on the Main Floor have been revised to SW3 since the allowable design unit shear exceeds 350 plf (700/2.0). Please see the clouds on the Upper Floor Framing plan on sheet S2.1. Note 5 has been added to the Shear Wall Schedule to require either 3x or (2)2x framing members at the abutting panel edge conditions at SW3. See revised schedule on 1/S1.1.

3. Horizontal diaphragm shear forces must be distributed to the vertical resisting elements based on tributary area for flexible diaphragms per SDPWS 4.2.5. Where offsets in reaction lines exceed 5', they should be evaluated as separate reaction lines. Clarification was requested by the engineer. This requirement stems from the limitation in convention construction of offsets of greater than 4' per IBC 2308.6.2 at braced wall lines.

Response: Thank you for the code references.

4. The typical gable-end conditions only provide shear flow connection from the roof sheathing through the H-clips before the wall sheathing is connected to the top chord of the gable end truss. Provide a connection sufficient for lateral load transfer at all shear wall conditions. Address the following:
 - a. Along Grid 5/6 you have noted the actual shear is 110 plf. At this location Details 2 & 3/S3.0 apply. These conditions only have H2.5A Clips at 24" on center. This only provides 55 plf. See also Grid 2.

Response: The shear at details 2 & 3/S3.0 is directly transferred from the blocking to sheathing above the plate line. The H2.5 clips are only present to resist uplift forces.

b. Along Grid C, Detail 1/S3.0 applies which provides H1 Clips at 48" on center. These connections only provide 128 plf. Verify adequacy along Grid C

Response: Detail 1/S3.0 has been revised to indicate H1 clips at 24"oc which will provide an allowable load of 220 plf.

If you have any questions concerning the responses or require additional information, please contact me via e-mail (mike@anneestructural.com) or phone (206-658-5169).

Sincerely,

Michael T. Année, SE
Année Structural Engineering, LLC

