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Lake House — Corrections Response Letter

Building Plan Reviewer: **City of Mercer Island**

Response to:	2012-200 Lorenzini Remodel 3R
Dated:	July 19, 2021
Permit #:	2012-200
Project address:	3310 97th Ave SE Mercer Island, WA 98040

Monday, July 26, 2021

Please find the following responses to the correction notice.

Nonstructural/Energy

1. Mechanical ventilation will not technically be a separate permit. Please correct the note on Sheet A2.02.

   Response:
   See updated note in sheet A2.02.

2. Details 16/S4.1 and 17 & 18/S4.2 show insulation above the roof sheathing. This does not appear to coordinate with the Roof Type R7 above the garage. Please clarify intent or revise the structural details to coordinate with your design.

   Response:
   - See A4.02 for updated garage roof section.
   - The structural details are revised to coordinate with the roof types, see updates in 16/S4.1 and 17&18/S4.2.
   - Refer to architecture drawings for roof insulations.

I.L. GROSS
STRUCTURAL ENGINEERS

PROJECT MEMORANDUM

Date: July 23, 2021

To: Bob Swain
Robert Edson Swain Architects
Seattle, WA

From: Mark Speidel, P.E., S.E.
I.L. Gross Structural Engineers, LLC

Re: *Lorenzini Remodel (Lake House) at 3310 97th Ave SE Permit No. 2012-200*

I am writing this letter in response to the structural items posed in the correction letter by Crystal Kolke of Kolke Consulting Group, Inc. on behalf of the City of Mercer Island in her review letter, dated July 19, 2021.

Structural

1. Section 1/A4.02 shows the roof sheathing dropped along Grid 2.5 at the roof over the garage. Detail 17/S4.2 is cut at this location on the Roof Framing Plan, and it specifically does not show a drop in the roof level. Resolve discrepancy.

   Detail 16/S4.1, 17/S4.2, and 18/S4.2 have been revised to show the updated roof assemblies and match the architectural plans.

2. For resistance to seismic loads, wood-frame diaphragm in open-front structures must meet the requirement in SDPWS 4.2.5.2. Please refer us to specific pages in the calculations that evaluates this condition as we are unable to locate them.

   The open front end of the west wing has been evaluated to meet the requirements of SDPWS 4.2.5.2. Specifically, the roof structure is designed with a blocked diaphragm at the roof which was evaluated using a rigid diaphragm analysis to accurately distribute the loads in the diaphragm including the torsional effects created by the open front at the garage doors. The main floor shear walls in this wing were designed for the resulting loads. A copy of the rotational analysis of the diaphragm and shear wall calculations are attached to this letter.

3. Detail 16/S4.2 is cut on the Roof Framing Plan at the east end of the central high roof. This detail does not exist. Please cut a detail at the east perimeter of the central high roof to show uplift connectors.

   Detail 16/S4.2 has been corrected to print on sheet S4.2 correctly.

4. Cut a detail on the Main Floor Framing Plan, Sheet S2.1, showing shear flow

connection into the Type X & the west segment of the Type AA shear walls.

Shear wall 'X' at Grid G lands on the existing concrete wall at the lower floor. Detail 22/S4.2 and 7/S3.2 have been cut at this location to clarify the framing.

Shear Wall 'AA' is located at grid 6 adjacent to the exercise room. Detail 5/S4.1 is already referenced at this location.

There is no shear transfer needed between these two shear walls. Shear wall 'K' is the nearest main floor shear wall above wall 'AA', but it's loads are directly transferred to the walls below (see details on S5.1). I am unsure what your concern is in this question.

5. Due to the shear in the Type O shear wall, it appears a drag member will need to be provided on the Main Floor Framing Plan, Sheet S2.1. Please evaluate and detail.

   Shear Wall 'O' is designed for 2.73k of force delivered through the floor diaphragm over its 6' length, resulting in a load of 455plf. The floor diaphragm capacity is 680plf (850plf x phi=0.8), so no additional collector beam is required. Detail 9/S4.1 is correctly cut at this location.

6. The Type V shear wall has HDU11 holdowns into the top of the CMU wall at the fireplace as shown in plan on Sheet S2.1 and detailed in Detail 26/S3.2. The calculations show an uplift force of 15.9k, which exceeds the capacity of the HDU11 holdowns. Resolve discrepancy. Additionally, clarify post size to meet minimum size requirement per the Simpson Catalog.

   The uplift for Shear Wall V in the SW spreadsheet was being incorrectly calculating the overturning moment (due to how the height of the loads from the high and low roof elevations were entered), and has been corrected on the attached spreadsheet. Also, the HDU11 holdown capacity for the LRFD shear wall loads has been increased above the ASD capacity published by Simpson to account for the different load and duration values used.

   The stud packs at the ends of SW-V have been clarified to be 2x6 studs to meet the requirements for the HDU11

I trust that this letter, along with the updated plans and attached calculations is sufficient for your current needs on this project. As always, please let me know if you need anything else or have any additional questions.

Mark Speidel, P.E., S.E.
I.L. Gross Structural Engineers, LLC

Cc: Lakehouse file *Memo By: Mark Speidel*