

4815 E MERCER WAY,  
MERCER ISLAND, WA 98040

STRUCTURAL CALCULATIONS  
FOR  
OWNER REVISION AND RESPOSNE  
TO CORRECTION COMMENTS



Date Signed: 08-07-2024

2018 International Residential Code  
2018 International Building Code

NEW INTERIOR BEAM.

L= 10'3, TL= 12' ROOF, 6' PLUMB, 3 1/2 x 9 1/2 GLB.

Dear Reviewer,

The following is the response to structural correction comments:

1. Provide framing/detailing/foundation/guards/handrail for each of the proposed stairs

Response: Concrete stair detail is added on Sheet S2.1. No handrail is required for new exterior stairway.

2. Detail (4) isn't cut on plan or referenced from (1) or (2). Please fully specify the detailing so that the cantilever parapets get this detailing.

Response: Section 1/S2.2 and 2/S2.2 is now revised with roof deck guard parapet detailing. Section 4/S2.2 is removed.

I appreciate for your detailed review on the proposed structural design. Should you have additional comment or question that relates to the correction comment response and revised plan drawing, please contact me directly.

Yours respectfully,

Bosco K.W. Cheng, P.E.

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**Wood Beam**

Project File: 4815 E MERCER WAY.ec6

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

Load Combination	Segment Length	Span #	Max Stress Ratios									Moment Values			Shear Values		
			M	V	CD	CM	C <sub>t</sub>	CLx	C <sub>v</sub>	C <sub>fu</sub>	C <sub>i</sub>	C <sub>r</sub>	M	fb	F'b	V	fv
Length = 10.250 ft	1	0.758	0.438	1.15	1.00	1.00	0.98	1.000	1.00	1.00	1.00	8.96	2,042.2	2,695.5	2.96	133.6	304.8
+0.60D					1.00	1.00	0.98	1.000	1.00	1.00	1.00			0.0	0.00	0.0	0.0
Length = 10.250 ft	1	0.135	0.077	1.60	1.00	1.00	0.96	1.000	1.00	1.00	1.00	2.18	497.9	3,692.9	0.72	32.6	424.0

**Overall Maximum Deflections**

Load Combination	Span	Max. "-" Defl	Location in Span	Load Combination	Max. "+" Defl	Location in Span
+D+0.750L+0.750S	1	0.3786	5.162		0.0000	0.000

**Vertical Reactions**

Support notation : Far left is #1

Values in KIPS

Load Combination	Support 1	Support 2
Max Upward from all Load Conditions	3.496	3.496
Max Upward from Load Combinations	3.496	3.496
Max Upward from Load Cases	1.538	1.538
D Only	1.421	1.421
+D+L	2.651	2.651
+D+S	2.958	2.958
+D+0.750L	2.343	2.343
+D+0.750L+0.750S	3.496	3.496
+0.60D	0.852	0.852
L Only	1.230	1.230
S Only	1.538	1.538