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MEMO

Date:	March 22, 2024
To:	Strategic Gaming LLC A1 Construction
From Engineer:	Jared Schippers, Albertson Engineering Inc.
Project:	Silverado Franklin Structural Reinforcement
AEI Project #:	2023-366
RE:	Veranda Structural Assessment & Recommendations

INTRODUCTION & DESIGN LOADS

As requested, Albertson Engineering has reviewed the existing veranda framing at the Silverado Franklin in Deadwood, SD. The existing framing general consists of the following:

- 9-ply 1-3/4" x 11-7/8" laminated veneer lumber (LVL) at each post location.
- 2x12 in-fill framing perpendicular to the LVL beams.
- Posts at the front of the veranda consist of varying wood posts inside of the decorative wrap.

The structural analysis was in part triggered by the need to understand if the weight of new tile pavers could be added to the existing structure. We have performed the structural analysis using the following loads:

Roof Dead Load (pavers excluded):	15psf
Roof Dead Load – New Pavers	25psf maximum
Roof Live Load	100psf
Roof Snow Load	40psf + drift

ANALYSIS RESULTS

LVL Beams

The 9-ply LVL beams are adequate to resist the loads specified above with proper bolted attachment between plies. The existing beams have two rows of 1" bolts every 2'-0"oc. Since the LVL beams are side loaded on either side, the spacing of bolts needs to be every 1'-0"oc. As such, new bolts shall be added (see RECOMMENDATIONS).

2x12 Joists

The condition of the 2x12 joists varies. In addition, the light duty clips used in lieu of joist hangers are inadequate. As such, it was already proposed by the contractor before our engagement to remove and replace the in-filled joists. We agree with that assessment. The new 2x12 joists, per our analysis, shall be spaced 12"oc and shall use a specified joist hanger (see RECOMMENDATIONS).

Front Columns

The existing wood posts are under further investigation and appear to differ in construction. From limited investigative effort to-date, there appears to be an 8x8, (2) 5x6, and (3) 3x12 posts at differing locations. An 8x8 post is adequate but the others need reinforcing. The base and cap connection also still need to be further investigated. As a team, we are still reviewing options for reinforcing.

Due to the historic nature of the column wrap, it is quite costly to remove and replace the entire wrap. As such, we are currently investigating the constructability to only remove the top and bottom of the decorative wrap, slide out the structural post and center portion of wrap, move the salvaged portion of wrap onto new column, and install the new column. Lastly, the top and bottom of wrap would then be replaced.

RECOMMENDATIONS

LVL Beams

Add 2 rows of 5/8" thru bolts between the existing 2 rows of 1" thru bolts. Once completed, rows of bolts will be at 12"oc and will alternate between 1" and 5/8" bolts.

2x12 Joists

New 2x12 joists shall be spaced at 12"oc. We recommend using spruce pine fir #1/#2 or approved equal. Acceptable joist hangers include any of the following Simpson Strong Tie models:

- LU28, LU210, LUS28, LUS210, HU28, HU210

Also, we recommend adding a treated 2x12 ledger board against the building. Attach with (2) 3/8"x5" concrete screw anchors every 2'-0"oc.

Front Columns

As mentioned above, this portion of the project is under further investigation. Reinforcement is required in several locations. We will issue supplemental information on this topic in the near future. This supplemental information will include whether a new post is required as well as baseplate and cap plate details.

CLOSING

Please let us know if you have any questions. Otherwise, we will be issuing supplement instructions for the front columns in the near future.

Sincerely,

Albertson Engineering Inc.

Jared D. Schippers, PE
Principal Engineer
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