April 27, 2017

Tahoe Donner Association
Attn: Forrest Huisman
11509 Northwoods Boulevard
Truckee, CA 96161

RE: Report of Feasibility Study
Modifications of the Downhill Ski Lodge

At your request Linchpin Structural Engineering, Inc. (Linchpin) completed our review of the proposed modifications at the Downhill Ski Lodge. This report presents our understanding of the proposed work and discussion of its structural impact.

Background

We understand that the TDA Downhill Ski Lodge was originally constructed in 1971. Circa 1985, the lodge was expanded; the expansion included a large space on the south side of the existing lodge (towards the ski slope) that included a roof-deck abutting the slope with the rental shop below it.

We understand that the Association is now considering options regarding the downhill ski lodge including remodel and replacement. One of the concepts for remodel would have a large section of low roof that currently covers just the lower level at the northeast removed and replaced with second story dining space.

Linchpin was asked to coordinate with reports from Todd Mather Architect as well as reference the accessibility report. We understand from those two sources that in addition to the work involved with replacing the roof, second floor openings will be required to include a second stair and elevator.

We also understand that an overall reuse of the building, may require floor plan revisions to improve guest flow and functionality.

Reference

Linchpin previously prepared a report regarding the Downhill Ski Lodge Roof-Deck. When considering the reuse/remodel of the Lodge, consideration should be given to the conditions and recommendations noted in that report.

Discussion

Obviously, there are many considerations regarding the reuse and remodel of the Lodge. Structurally, modifications are feasible, but there are significant implications with some of the propositions. It should be noted, that, in general, new work affecting old work requires upgrade of the affected elements, per code.

Below are discussions for the several considerations described above:

NORTHEAST UPPER LEVEL ADDITION

- The existing first story roof at this area will need to be removed.
- We anticipate that the existing first story roof support structure will be adequate to support the new second floor framing.
- New second story walls will need to be constructed and supported. These are likely able to be supported the new floor.
- The new second story roof will need to be supported. Its support will depend on its configuration. Regardless, a complete load path will be required and will most likely be new. The load path will consist of elements such as bearing walls, posts, beams, and foundations. The work will impact the offices/spaces at the lower level, particularly the installation of foundations.
- The new addition will need to be braced for lateral loads like wind and earthquakes. This will likely be achieved using shearwalls. These new shearwalls will need to have complete load path to the earth. This will require new (or retrofit of existing) lower level elements, including shearwalls and foundations. As stated, foundation work will significantly impact the lower level, during the work.

ELEVATOR AND STAIR OPENINGS

- Openings in the floor interrupt floor capacity for both vertical and lateral loads.
- For vertical loads, the openings will require heading-out the gap and supporting the stairs. Theses supplemental supports will need to extend to the nearest vertical support elements (walls and/or beams), so there will be significant impact adjacent the proposed openings.
- The floors work as diaphragms (transferring in-plane forces to shearwalls). Openings in the diaphragms need to be detailed to transfer in-plane forces around the gap. This may require removal of floor finishes above and ceiling finishes below in the vicinity of openings.

MODIFICATIONS TO FLOOR PLANS

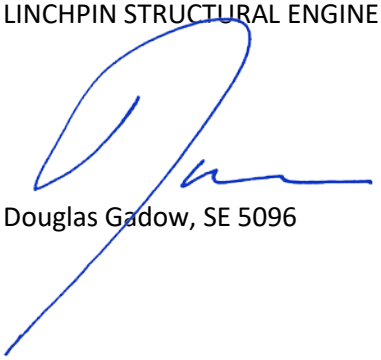
- There are numerous locations within the building where structure passes through the lowest level. If they are desired to be moved, new supports will need to be designed. New supports require not only beams and headers, posts, but also new foundations.
- There are abundant interior shearwalls within the lower level. These shearwalls were already modified for the 1985 addition. Further modification may exceed available capacity of wood bracing elements, requiring steel or concrete. Regardless of the retrofit system, whether high-capacity wood, steel, or concrete shearwalls, foundation work will be likely if there is significant reduction of existing shearwalls.

Closing

This letter evaluates the significance of several conceptual modifications to the Downhill Ski Lodge. We hope our discussion provides some useful insights.

Very truly yours,

LINCHPIN STRUCTURAL ENGINEERING, INC.



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