

TECHNICAL MEMORANDUM

DATE: June 10, 2016

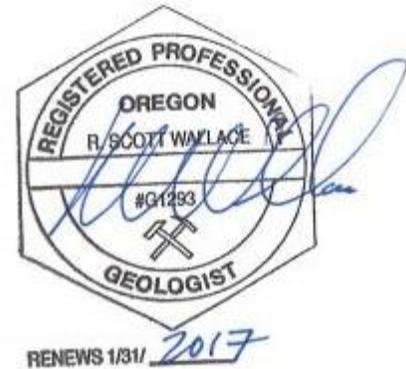
TO: Ralph Giffin, Development Director
The Resort Group
65765 Pronghorn Club Drive
Bend, OR 97701

Cc: Michael Bonn – Ankrom Moisan Architects
Todd Nagele – Froelich Structural Engineers
Samuel Griffin – Griffin Construction

FROM: James A. Parker, P.E., Principal Geotechnical Engineer
R. Scott Wallace, R.G., Principal Geologist

SUBJECT: **Geotechnical Design Review
Huntington Lodge at Pronghorn
Bend, Oregon**

PROJECT: 10675, Task 2



As requested, Wallace Group has reviewed the proposed foundation design, including proposed foundation loads, and this memorandum includes comments and recommendations pertaining to the proposed construction. Wallace Group previously performed a geotechnical investigation for the project and presented our findings in an interim report dated March 7, 2014, and subsequent design level geotechnical report dated May 22, 2014.

Background: The project includes the construction of a hotel (lodge) building with associated parking and stormwater detention. In 2004, utility construction for the Pronghorn Development encountered a subsurface lava tube (cavern) in the proposed hotel building area. The cavern was subsequently explored and mapped by WH Pacific, the project civil engineer at that time. Current plans for the Huntington Lodge project include a portion of the hotel building situated above the cavern. The primary geotechnical concern for the project is support of that portion of the building situated over the cavern. Based on recommendations presented in our geotechnical report, the

roof of the cavern under the planned building footprint was reinforced with a rock-bolt compression system in April and May of 2016. The installation of the rock-bolt system was observed and documented by Wallace Group geotechnical staff.

Proposed Construction: The proposed construction includes a three-story hotel (lodge) building, with a footprint of 20,600 square-feet. The building will reportedly be wood-frame construction over slab-on-grade for the majority of the building and structural floor over crawlspace in the portion situated above the cavern. Based on a review of plans prepared by Ankrom Moisan Architects and Froelich Structural Engineers, we anticipate that building loads will be up to about 30 kips for columns and 5 kips per linear foot for continuous footings. A fireplace with mantle and chimney, and a tentative load of 154 kips is planned for the perimeter of the west-central portion of the building. Reportedly the fireplace/chimney may be reduced in size with a subsequent reduction in foundation load. An outdoor swimming pool and spa are also planned. A review of plans indicates that the pool and spa will be constructed outside of the cavern footprint. The proposed fireplace/mantle/chimney will be constructed above the eastern edge of the cavern. A review of rock-bolt installation logs indicates a cavern roof thickness of approximately 15 to 16 feet in the fireplace area.

Conclusions and Recommendations: Based on a review of the project plans, a phone meeting with the project team on May 26, 2016, email correspondence with members of the project team, and our professional experience, it is our opinion that the project site, including the rock-bolt reinforced lava cavern area, is suitable for the proposed construction and support of the proposed foundation loads. Building foundations should be designed for the recommended maximum allowable bearing pressure of 3,000 pounds per square foot (psf). Footings for the hotel building should be founded on the underlying basalt bedrock, native site soils or properly-compacted structural fill in accordance with our May 22, 2014 geotechnical report. A maximum thickness of 2-feet of properly-compacted structural fill (leveling course) is recommended above the cavern area.

All other recommendations presented in our project geotechnical report remain valid. Wallace Group will provide observation of prepared foundation areas and compaction testing of structural fill during site grading and building construction.

Limitations: Our conclusions and recommendations are based on review of our previous project geotechnical and rock-bolt installation reports, project information provided by the Client and design team, our local knowledge of geology and subsurface conditions in the Pronghorn area, and our professional experience. The Wallace Group makes no other representation, guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

If you have any questions regarding this memorandum, or if we can be of further service, please do not hesitate to contact us at 541.382.4707.