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SITE

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Project #Y052654c

October 18, 2006

To: **Innovation Construction**
Attn.: Mr. Jim Grey
15786 S.W. Upper Boones Ferry Road
Lake Oswego, Oregon 97035

Subject: **Final Summary Report**
Underpinning and Wall Reinforcement
1030 S.W. Rivington Drive
Portland, Oregon

Dear Mr. Grey:

At your request and authorization, we visited the subject site on October 9 and 12, 2006 to observe the foundation excavation and helical pier installations for underpinning and wall reinforcement of the southern perimeter foundation wall at the subject residence. We have also communicated with PLi Systems, the underpinning contractor, regarding pier installations. The purpose of our observations and communications was to determine if the excavation and pier installations were completed in conformance with the recommendations detailed in our March 27, 2006 Geotechnical and Subsurface Investigation for Foundation Repair.

On October 9th we observed the excavation along the exterior southern perimeter foundation wall. The base of the excavation exposed generally soft silty soils along its western approximately two thirds, and hard basalt along its eastern approximately third, east of the easternmost foundation crack. The eastern part of the foundation wall was bearing on hard basalt rock. It is our understanding that the final plans called for underpins along the eastern part of this foundation wall, in additional to the underpins along the western part of the foundation wall as recommended in our report. Because the eastern part of the foundation, east of the easternmost foundation crack, is on hard basalt, we determined that underpinning this part of the foundation was not required.

On October 12th we observed installation of the westernmost helical pier. This pier was installed to a depth of approximately 14 feet below the footing elevation before encountering refusal on hard rock. At your request, we contacted Mr. Peder Golderg with James G. Pierson, Inc, the structural engineer, to discuss the possibility of utilizing fewer piers if all the pier tips were bearing on hard rock. Mr. Golderg informed us that the ultimate structural capacity of each pier was 50 kips, which would provide an allowable capacity of 16.67 kips assuming a factor of safety of 3, allowing a maximum pier spacing of 4' 6". Based on our analysis, the maximum

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bearing capacity of the piers on hard basalt rock would be greater than 50 kips, and therefore Mr. Golderg and our firm determined that a pier spacing of 4' 6" would be acceptable.

On October 18, 2006, PLi Systems provided embedment depth and final torque information for 10 helical piers installed at the site at spacings of 4' 6". Based on our review of this data, and communications with PLi Systems, each pier was installed to depths of 10.5 to 14 feet below the footing elevation and encountered refusal on rock, indicating that each pier achieved a maximum capacity of 50 kips.

Based on our site observations, communications, and review of pier installation data, the helical piers were installed in general conformance with our recommendations. If you have any questions regarding this letter, please call.

Respectfully submitted,

H.G. SCHLICKER AND ASSOCIATES, INC.

Christopher Humphrey, MSc, RG, CEG
Senior Engineering Geologist

CCH:cch