



28 February 2022

ZGA Project No. 2537.01

Kevin and Suzette Piper
8429 SE 33rd Place
Mercer Island, Washington 98040

Subject: Supplemental Pin Pile Foundation Considerations
Proposed Additions
8427 SE 33rd Place
Mercer Island, Washington

Dear Mr. and Mrs. Piper:

Our 28 January 2022 geotechnical engineering report includes recommendations for the installation of driven pin piles in association with construction of new foundations for the proposed additions to your single-family residential dwelling. The report includes the conclusion that it would be necessary to conduct a load test in order to determine the axial compressive capacity of the four existing 4-inch diameter pin piles that were installed in 2007 since the Yonemitsu Geological Services (YGS) *Daily Report*, dated 14 August 2007 and attached with this letter, did not specify the type of hammer that was used to install the piles. We recently received from CT Engineering, the project structural engineers, a *Pile Log*, dated 6 September 2007, prepared by McDowell NW Pile King, Inc. (Pile King), the contractor that installed the piles. According to the *Pile Log*, the four existing pin piles that were installed near the southeast portion of the dwelling were installed with a TB425 1,100-pound hydraulic hammer. The piles were driven to refusal, according to the YGS *Daily Report*.

A pile installation data sheet provided by Pile King includes allowable axial compressive capacities for various pile and hammer combinations. The data sheet does not include data for 4-inch piles driven to refusal with the 1,100-pound hydraulic hammer used for the 2007 installation. However, the data sheet does indicate that 4-inch piles driven to refusal with an 850-pound hammer can develop an allowable axial compressive capacity of 20 kips. Consequently, it is our opinion that the existing 4-inch pin piles can be used to support foundations for the proposed addition using an allowable axial compressive capacity of 20 kips. This value incorporates a factor of safety of at least 2. It would not be necessary to complete a load test on one of the existing 4-inch piles unless it is necessary for the piles to support an axial compressive load greater than 20 kips.

We understand that both 2-inch and 3-inch driven pin piles are being considered for support of some of the foundations for the proposed additions. Provided that the piles are installed in accordance with the recommendations presented in our 28 January 2022 geotechnical engineering report, and provided that

a ZGA representative observes installation of the piles and verifies that “refusal” has been achieved. it is our opinion that it would not be necessary to complete load tests on the piles.

CLOSURE

We hope that that this letter meets your current needs. Please do not hesitate to contact the undersigned should you have any questions.


Regards,

Zipper Geo Associates, LLC

Signed 2.28.22

David C. Williams, LG, LEG
Principal Engineering Geologist

  2.28.22

Robert A. Ross, PE
Managing Principal

Signed 2.28.22

Enclosures: McDowell NW Pile King, Inc. *Pile Log*
Yonemitsu Geological Services (YGS) Daily Report, dated 14 August 2007

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Supplemental Pin Pile Foundation Considerations
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Distribution: Addressee (1 pdf)
CT Engineering, Attention: Mr. Ben McCann, PE (1 pdf)
Form Plus Function Architecture: Attention: Ms. Judy Tucker



McDowell NW Pile King, Inc.

PILE LOG

Customer Name:	<u>Kevin Piper</u>
Project Job/Name:	<u>Retaining Wall</u>
Job Address:	<u>8429 SE 33rd PL Mercer ISL</u>
Date Completed:	<u>9-06-07</u>

See Attached Drawing

NOTE*** Piles #1-14 were driven into dense soils, refusal was not reached.**

RETAINING WALL PILE

1	21.0'	11	21.0'
2	21.0'	12	21.0'
3	21.0'	13	16.0'
4	21.0'	14	16.0'
5	21.0'		
6	21.0'		
7	21.0'		
8	21.0'		
9	21.0'		
10	21.0'		

15	19.0'
16	19.0'
17	18.0'
18	18.0'

PILE NEAR THE HOUSE.

Pile Size/Grade:	<u>4" galvanized schedule 40</u>	All pile driven to refusal*
*3 cycles of less than 1" in <u>10</u> seconds using a <u>1100</u> FT/LB hammer <u>TB425</u>		
Installed by:	<u>Sean Nutter</u>	Total LF: <u>358.0'</u>



Date: August 14, 2007

Project: Piper Residence Slide Repair

Equipment In use: Pipe Pile Hammer McDowell

Weather: Sunny and cool

Report Number 2_07-1219-012

Rev# 0706-147

Piper Residence Slide Repair
8427 33rd Place
Mercer Island, Washington.

We were onsite at the request of Robert M. Pride to observe the installation of 4-inch diameter pipe piles for foundation support for addition of to the existing residence. Four scheduled 4-inch pipe piles were driven yesterday. Based on observation of the driving resistance, the piles meet refusal. Pipe pile hammer was set up on the two northern most piles (3 and 4) and were test driven for specifications of refusal. Both piles were driven for 16 seconds with no movement downward on the pipe pile. This exceeds the requirement of 1-inch per 6 seconds of driving. The stick up above ground is presented below:

- Pile 1 - Southern most 3.33 ft above ground 21 foot pipe pile
- Pile 2 - 2.2 feet above ground 21 foot pipe pile
- Pile 3 - 3.5 feet above ground 21 foot pipe pile
- Pile 4 - 2.5 feet above ground 21 foot pipe pile

Conclusions

The installation of the 4-inch pipe piles were installed in accordance with the design specifications presented in construction drawings. All piles were approved;

