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|----------|------------------------------------------------------------------------------|-------|-----------------|
| To: | Scott C. Johnson | From: | George Saunders |
| Company: | Beaverton School District | Date: | July 23, 2015 |
| Address: | District Administration Center 16550 SW Merlo Road Beaverton, OR 97006 | | |

| | |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------|
| cc: | Kurtis Zenner, Mahlum Architects (via email only) Nick Saari, KPFF Consulting Engineers (via email only) Matt Lewis, Cardno (via email only) |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------|

| | |
|--------------|-------------------------------------------|
| GDI Project: | BeavSchool-45-01 |
| RE: | New Beaverton Middle School at Timberland |

| Original File Name | Date | Document Title |
|------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BeavSchool-45-01-122214-geor | 12/22/14 | Report of Geotechnical Engineering Services; New Beaverton Middle School at Timberland; NW 118 th Avenue and NW Stone Mountain Lane; Beaverton, Oregon |

| Addendum Number | Date | Description |
|-----------------|---------|-----------------------------------------------------------------------------|
| 1 | 7/23/15 | Geotechnical Engineering Services - Seismic Peer Review Comments (attached) |

kt

Attachments

One copy submitted (via email only)

Document ID: BeavSchool-45-01-072315-geoat-1.docx

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July 23, 2015

Beaverton School District
District Administration Center
16550 SW Merlo Road
Beaverton, OR 97006

Attention: Mr. Scott C. Johnson

Addendum 1
Seismic Peer Review Comments
New Beaverton Middle School at Timberland
NW 118th Avenue and NW Stone Mountain Lane
Beaverton, Oregon
GeoDesign Project: BeavSchool-45-01

INTRODUCTION

This addendum provides additional geotechnical engineering services, as requested by a third party seismic review of our geotechnical engineering report¹ for the New Beaverton Middle School at Timberland. The approximately 16-acre site is located northeast of the intersection of NW 118th Avenue and NW Stone Mountain Lane.

The third party review of our geotechnical report was completed by Pinnacle Western, Inc. (PWI), a copy of which is presented in Attachment A. The PWI letter requests addition support documentation relative to the inferred geologic model for the site.

ADDITIONAL INFORMATION

As discussed in the "Background" section of our report, GeoDesign has extensive experience on the school site and the surrounding areas of the Timberland development dating back to 2004. Attachment B includes a former site plan for the Timberland area, which shows the location of two past borings (B-4 and B-6) in which basalt or decomposed basalt was encountered at depths of 29 to 39.5 feet below ground surface. On the site plan we have also noted the approximate location of a picture taken at the base of Cedar Creek where basalt is exposed. The associated site plans and referenced boring logs are presented in Attachment B.

¹ GeoDesign, 2014. *Report of Geotechnical Engineering Services; New Beaverton Middle School at Timberland; NW 118th Avenue and NW Stone Mountain Lane; Beaverton, Oregon*, dated December 22, 2014. GeoDesign Project: BeavSchool-45-01

In our opinion, and as stated in our geotechnical report, the refusal encountered in CPT-1 is interpreted to be the depth to weathered basalt rock at the approximate center of the Timberland site.

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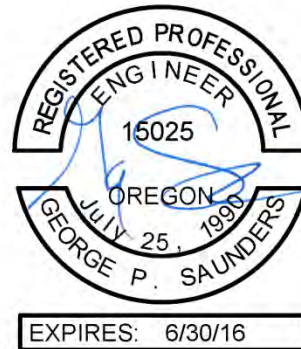
We appreciate the opportunity to submit this addendum. Please contact us if you have questions or require additional information.

Sincerely,

GeoDesign, Inc.



George Saunders, P.E., G.E.
Principal Engineer



cc: Mr. Kurtis Zenner, Mahlum Architects (via email only)
Mr. Nick Saari, KPFF Consulting Engineers (via email only)
Mr. Matt Lewis, Cardno (via email only)

GPS:kt

Attachments

One copy submitted (via email only)

Document ID: BeavSchool-45-01-072315-geoa-1.docx

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ATTACHMENT A

ATTACHMENT A

PWI PEER REVIEW LETTER



10 July 2015

Beaverton School District
16550 SW Merlo Rd.
Beaverton, OR 97003

Attn: R. Ryan Hendricks
Construction Project Coordinator

By Electronic Mail

RE: Code Review—Seismic Site Hazard Report
PWI Project #22128.03
Contract #1600564

Dear Mr. Hendricks

At your request, a representative of Pinnacle Western, Inc. (PWI) has reviewed the Seismic Site Hazard Report prepared by GeoDesign, Inc. dated 22 December 2014 for the proposed Timberland Middle School project. The scope of our review is specified by paragraph 1803.8 of the Oregon Structural Specialty Code (OSSC).

OSSC Requirements for Seismic Site Hazard Report

The minimum content of the Seismic Site Hazard Report is specified by OSSC 1803.7. The PWI review compared compliance of the GeoDesign report with the requirements of the OSSC as follows;

1. The locations of test borings are depicted Figure 2 of the geotechnical report.
2. Descriptions and classifications of materials encountered are presented in Appendix A of the geotechnical report.
3. Elevation of the water table in 2 borings was measured during drilling and is presented in Section 4.3.4 of the geotech report. The water table appears to be perched at the two boring locations. There is no record of a piezometer having been installed. Phreatic elevation measurements appear to have been dynamic, i.e., made during drilling rather than after the phreatic surface had stabilized.
4. A geologic profile of the site extending to bedrock, either measured or estimated is required.

a. The GeoDesign report inferred the geologic profile of the site by interpretation of a single hole, the CPT probe, which hole is located near

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------|-------------|
| Pinnacle Western, Inc. www.pinnaclewestern.com Email: davel@pinnaclewestern.com | 3329 NE Stephens St. Roseburg, OR 97470 | Phone (541) 440-4871 Fax (541) 672-0677 | Page 1 of 3 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------|-------------|

the north edge of the building complex. This location appears to be near the transition from excavated surface to fill surface, i.e., on or close to the natural surface soil. Accordingly, it appears that the shear waves presented are appropriate.

The underlying basalt contact was inferred at elevation +/- 260 from practical refusal of the CPT probe; however, the CPT probe could have also refused advancement on a rock or woody material fragment as encountered in other holes.

- b. Considering that no other test borings were advanced to the bedrock contact, we are unable to conclude that the geologic profile is as interpreted from the CPT test. This test appears to be simply be one point on a line.
 - c. We note that the test borings generally south of the CPT location were terminated in the fill layer, or with shallow penetration into natural surface soil prior to placement of the fill.
 - d. We also note that GeoDesign refers in the geotech report to their substantial past experience with this site. It is possible that other factors not presented in the Seismic Site Hazard report support the inferred geologic profile, such as test borings for other clients or projects, bedrock or soil contacts in nearby excavations, etc.
- 5. An explanation of the regional geologic, tectonic and seismic setting is presented in Appendix C to the geotech report.
 - 6. A literature review of the regional seismic history is presented in Appendix C to the geotech report.
 - 7. Selection criteria for seismic sources and recommendations for a design earthquake are presented in Appendix C to the geotech report.
 - 8. Selection criteria and recommended ground response, including local amplification effects are presented in Appendix C to the geotech report.
 - 9. An evaluation of site-specific seismic hazards is presented in Appendix C to the geotech report.
 - 10. Recommendations for foundation type and design criteria, including expected total and differential settlement, bearing capacity, provisions to mitigate the effects of expansive soils and the effects of adjacent loads are included, as applicable, in section 7.4 of the geotech report.

Questions for Geotech or Factors that Need to be Addressed

We recommend that the geotech be contacted and requested to provide additional support or documentation for the inferred geologic profile.

We otherwise consider the GeoDesign seismic site hazard report to be of good quality and to conform to currently accepted geotechnical engineering practice.

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------|-------------|
| Pinnacle Western, Inc. www.pinnaclewestern.com Email: davel@pinnaclewestern.com | 3329 NE Stephens St. Roseburg, OR 97470 | Phone (541) 440-4871 Fax (541) 672-0677 | Page 2 of 3 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------|-------------|

We appreciate the opportunity to assist you with your project. If we may be of further assistance, please do not hesitate to contact us.

Sincerely,

Pinnacle Western, Inc.



Dave Leonard, P.E., S.E.
Registered Geotechnical Engineer
President

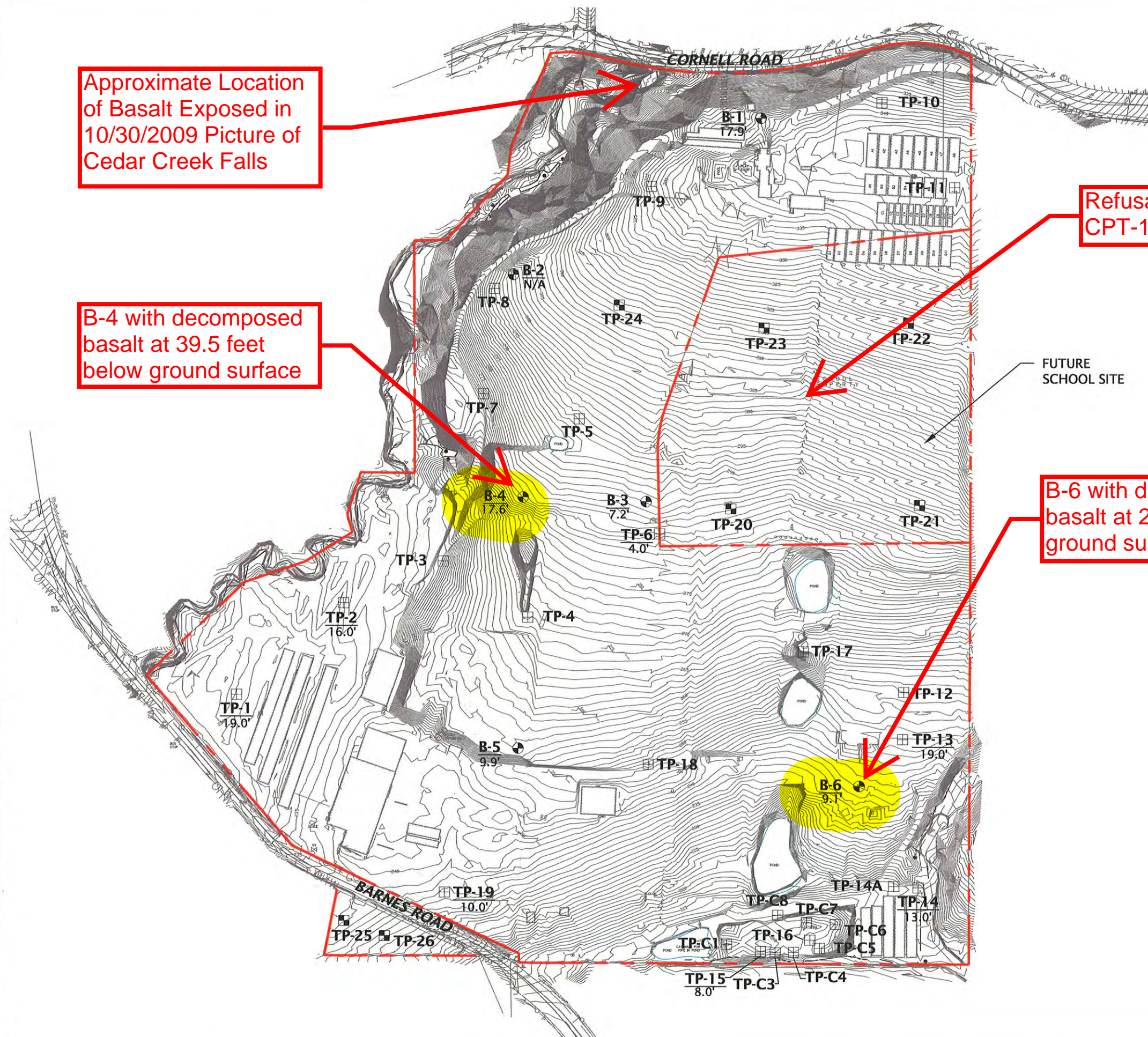


EXPIRES 12-31-16

ATTACHMENT B

ATTACHMENT B

ADDITIONAL SUBSURFACE INFORMATION ASSOCIATED WITH THE TIMBERLAND AREA



Approximate Location
of Basalt Exposed in
10/30/2009 Picture of
Cedar Creek Falls

B-4 with decomposed
basalt at 39.5 feet
below ground surface

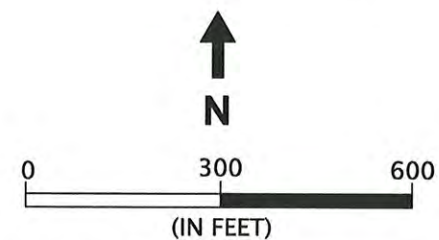
Refusal at 59.4 feet at
CPT-1

B-6 with decomposed
basalt at 29 feet below
ground surface

FUTURE
SCHOOL SITE

EXPLANATION:

- B-1** 17.9' BORING
DEPTH TO GROUNDWATER
- TP-20** TEST PIT
- TP-1** 19.0' TEST PIT (NOVEMBER 2003)
DEPTH TO GROUNDWATER
- PROPERTY BOUNDARY

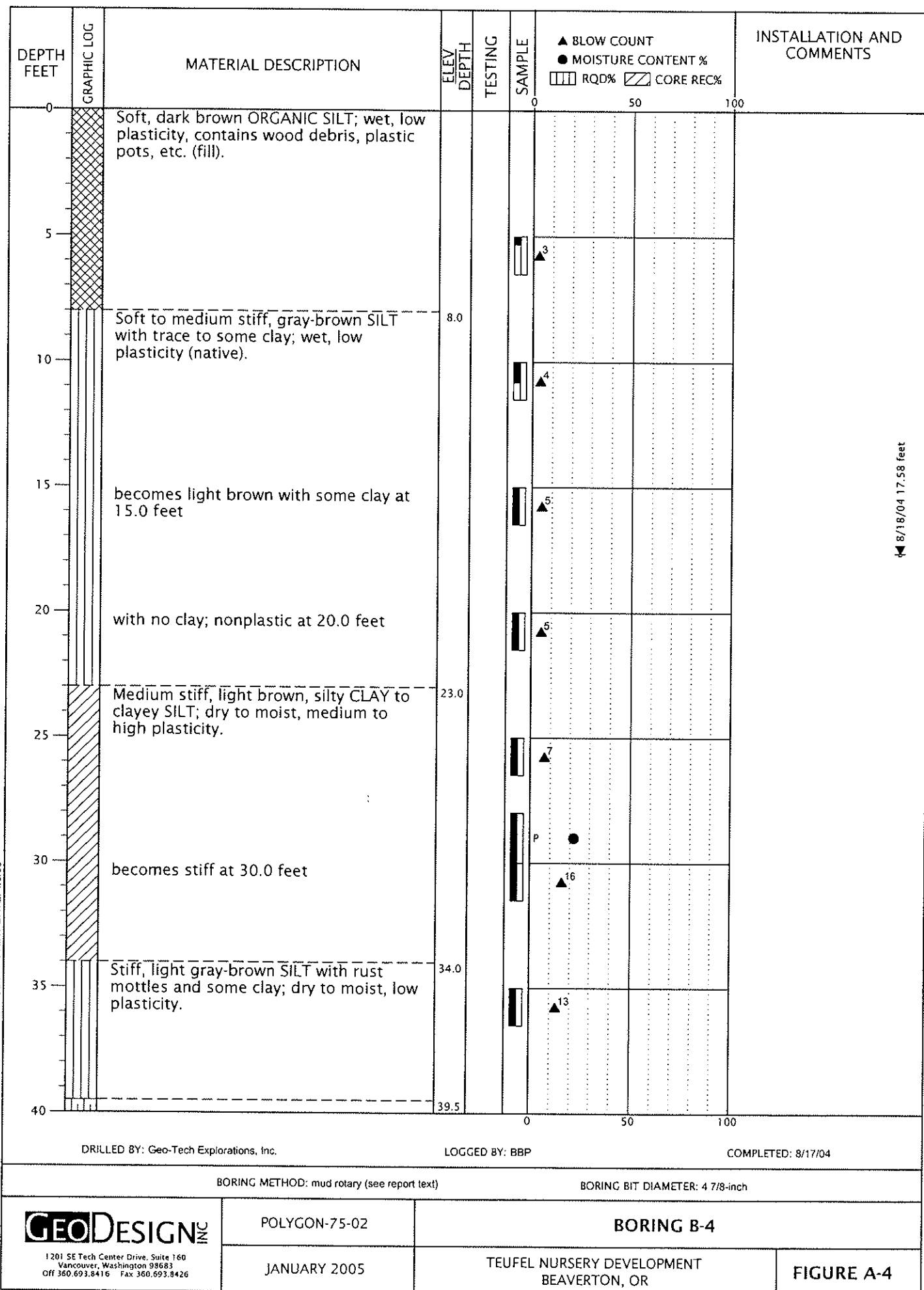


SITE PLAN BASED ON DRAWING
PROVIDED BY POLYGON NORTHWEST
COMPANY



10/30/2009

BORING LOG: POLYGON-75-02-B1-6.GPJ GEODESIGN.GDT PRINT DATE: 1/5/05



BORING LOG: POLYGON-75-02-B1-6.GPJ GEODESIGN.GDT PRINT DATE: 1/5/05

| DEPTH FEET | GRAPHIC LOG | MATERIAL DESCRIPTION | ELEV DEPTH | TESTING | SAMPLE | ▲ BLOW COUNT ● MOISTURE CONTENT % RQD% CORE REC% | INSTALLATION AND COMMENTS |
|---------------|-------------|----------------------------------------------------------------------------------------------------------------------------------|---------------|---------|--------|--------------------------------------------------------|------------------------------|
| 40 | | Extremely soft to very soft (R0-R1), black BASALT with brown mottles; moist, decomposed. Boring completed at 41.0 feet. | 41.0 | | | 5:50/5.5" | |
| 45 | | | | | | | |
| 50 | | | | | | | |
| 55 | | | | | | | |
| 60 | | | | | | | |
| 65 | | | | | | | |
| 70 | | | | | | | |
| 75 | | | | | | | |
| 80 | | | | | | | |

DRILLED BY: Geo-Tech Explorations, Inc.

LOGGED BY: BBP

COMPLETED: 8/17/04

BORING METHOD: mud rotary (see report text)

BORING BIT DIAMETER: 4 7/8-inch

GEODESIGN INC

1201 SE Tech Center Drive, Suite 160
Vancouver, Washington 98683
Off 360.693.8416 Fax 360.693.8426

POLYGON-75-02

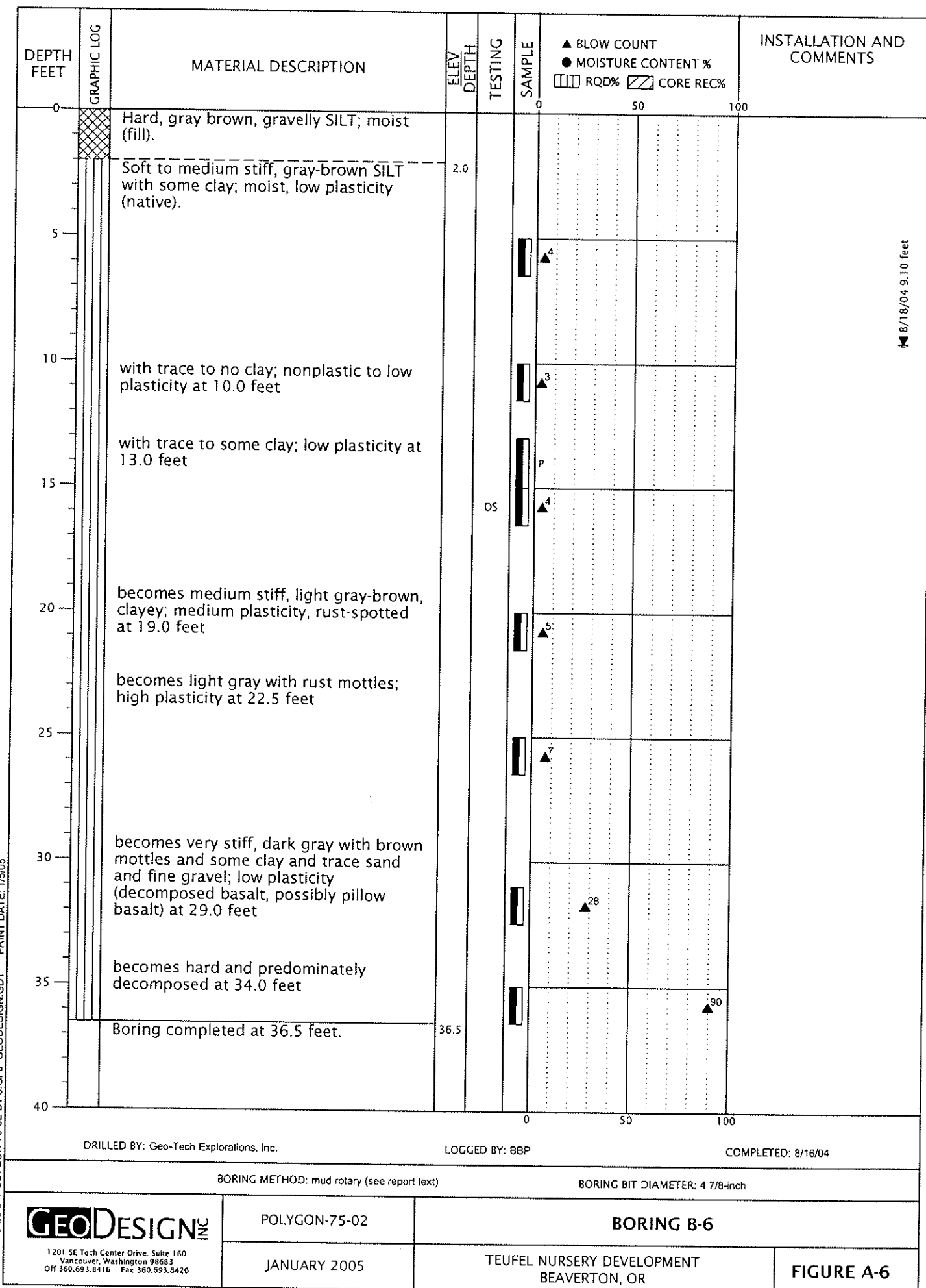
JANUARY 2005

BORING B-4
(continued)

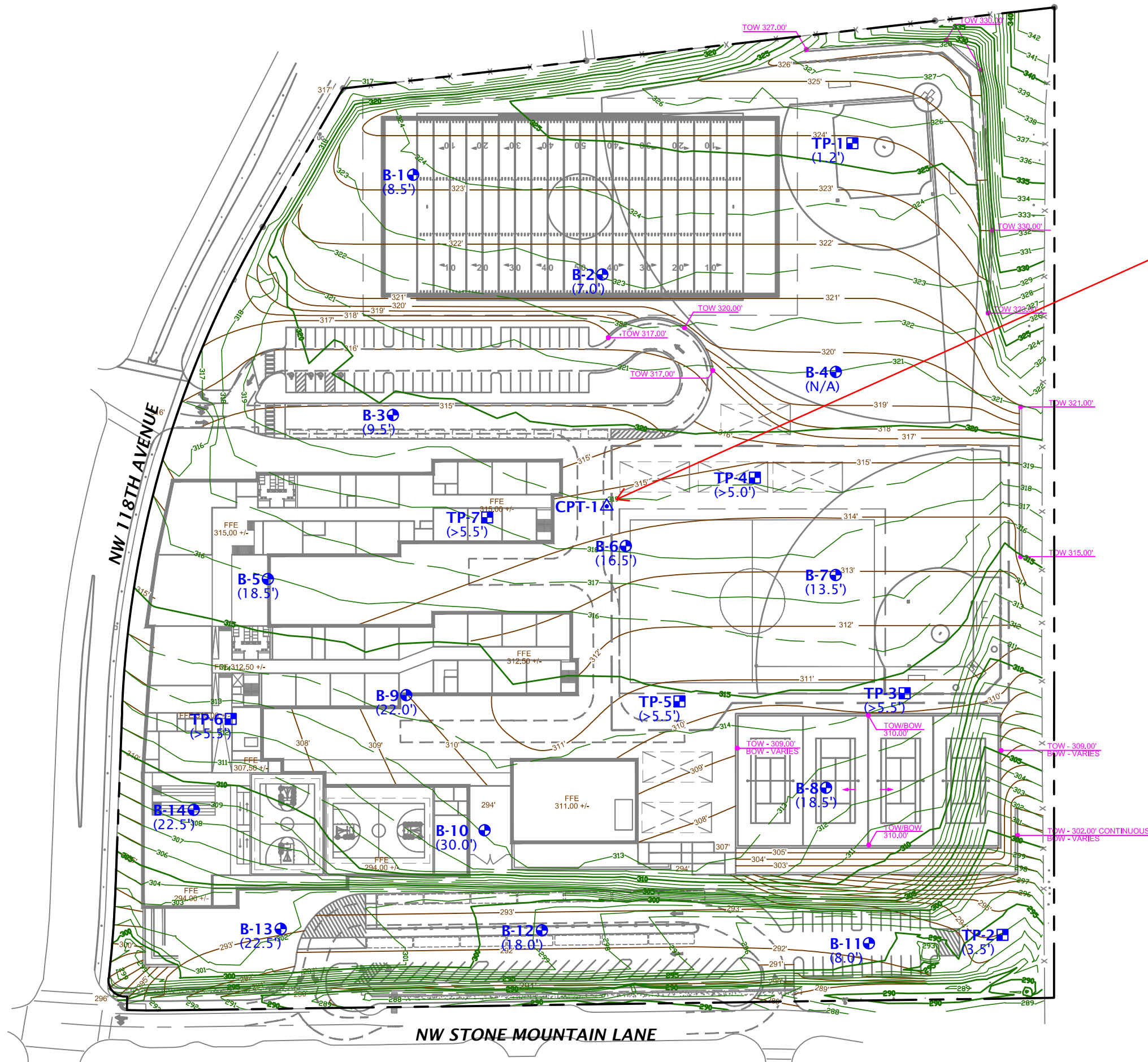
TEUFEL NURSERY DEVELOPMENT
BEAVERTON, OR

FIGURE A-4

BORING LOG: POLYGON-75-02-B1-6.GPJ GEODESIGN.GDT PRINT DATE: 1/5/05



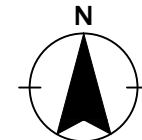
8/18/04 9:10 feet



LEGEND:

- B-1 BORING
- TP-1 (8.5') TEST PIT DEPTH OF FILL
- CPT-1 CONE PENETROMETER PROBE
- N/A NOT APPLICABLE
- EXISTING TOPOGRAPHY
- PROPOSED GRADING CONTOURS

Refusal at 59.4
feet at CPT-1



0 100 200
(SCALE IN FEET)

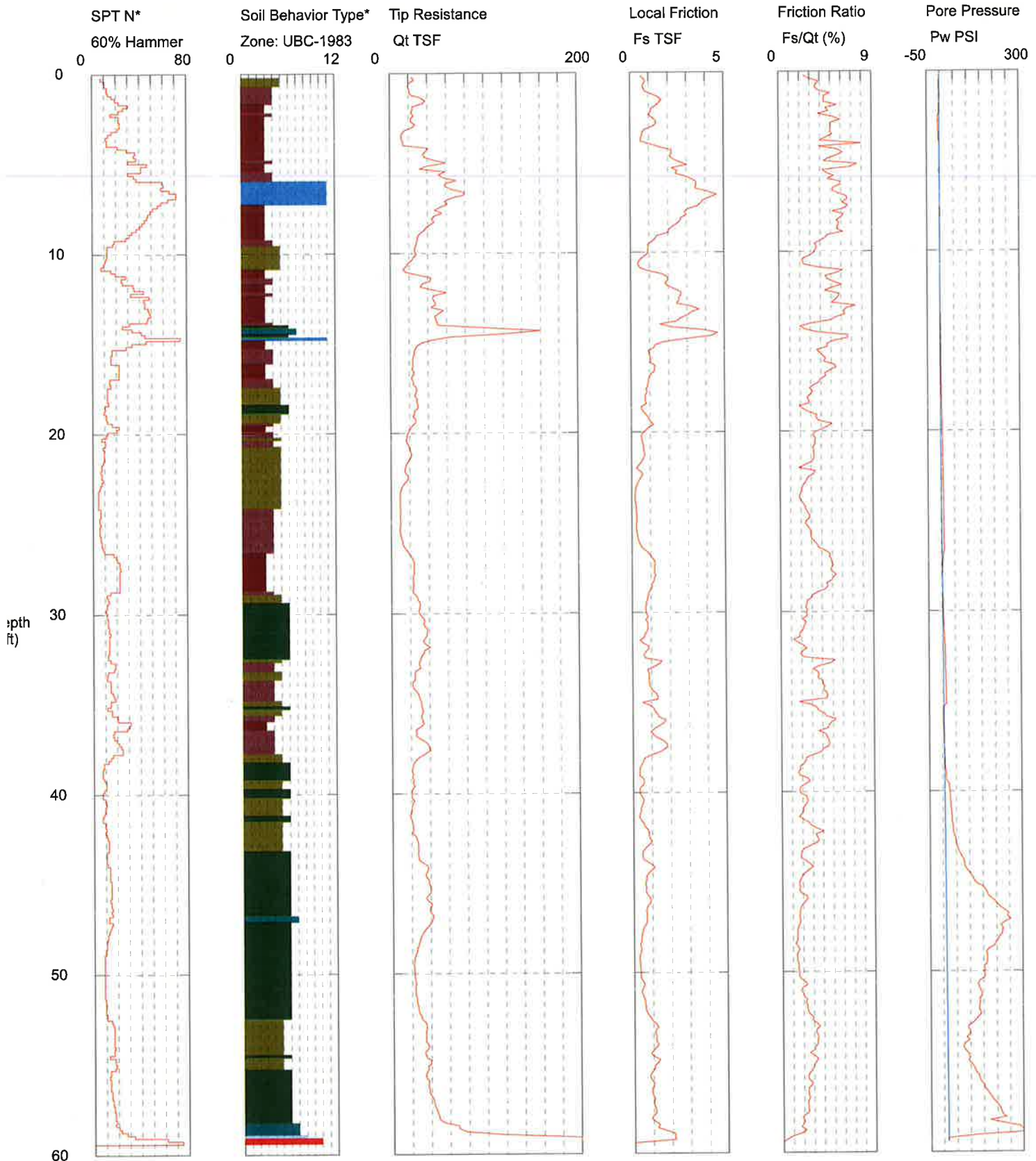
NOTES:

- SITE PLAN BASED ON DRAWING PROVIDED BY CAMERON MCCARTHY, DECEMBER 12, 2014.
- EXISTING TOPOGRAPHY BASED ON HAGEDORN DRAWING DATED FEBRUARY 21, 2011 PROVIDED BY CARDNO.

GeoDesign / CPT-1 / NW 118th & NW Holly Springs Beaverton

Operator: OGE TAJ
Sounding: CPT-1
Cone Used: DSG0736

CPT Date/Time: 11/6/2014 9:48:34 AM
Location: GeoDesign / CPT-1 / NW 118th & Holly Springs Beaverton
Job Number: GeoDesign / CPT-1 / NW 118th & Holly Springs Beave



Maximum Depth = 59.38 feet

Depth Increment = 0.164 feet

- | | | | |
|--------------------------|-----------------------------|----------------------------|--------------------------------|
| 1 sensitive fine grained | 4 silty clay to clay | 7 silty sand to sandy silt | 10 gravelly sand to sand |
| 2 organic material | 5 clayey silt to silty clay | 8 sand to silty sand | 11 very stiff fine grained (*) |
| 3 clay | 6 sandy silt to clayey silt | 9 sand | 12 sand to clayey sand (*) |