

Vicinity Map

0 36 72

Scale 1: 435 Feet

TOPOGRAPHIC & BOUNDARY SURVEY

LEGEND

ACU □	AC UNIT	□	INLET (TYPE 1)
□	AREA DRAIN	×	NAIL AS NOTED
ASPH	ASPHALT SURFACE	□	MAILBOX (RESIDENTIAL)
COL □	COLUMN	□	PAVER SURFACE
BLDG	BUILDING	□	POST
CL	CENTERLINE ROW	P	POWER METER
CONC	CONCRETE SURFACE	UP	POWER (UNDERGROUND)
RET	RETAINING WALL	●	REBAR & CAP (SET)
SE	STORM EASEMENT	○	ROCKERY
AE	ACCESS AND UTILITY EASEMENT	SS	SEWER LINE
UE	UTILITY EASEMENT	○	SEWER MANHOLE
DECK	DECK	d	SIGN (AS NOTED)
FL	FENCE LINE (CHAIN LINK)	Q	STORM MANHOLE
FW	FENCE LINE (WOOD)	SD	STORM DRAIN LINE
G	GAS LINE	○	TREE (AS NOTED)
GM	GAS METER	W	WATER LINE
HFL	HEDGE FOLIAGE LINE	WM	WATER METER
MC	MONUMENT IN CASE (FOUND)	ICB	IRRIGATION CONTROL VALVE
○	REBAR AS NOTED (FOUND)	SS	STEEP SLOPE AREA



MATCH LINE - SEE SHEET 1

STEEP SLOPE/BUFFER DISCLAIMER:

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INDEXING INFORMATION	
SW 1/4	NE 1/4
SECTION: 19	
TOWNSHIP: 26N	
RANGE: 05E	
COUNTY: KING	

TOPOGRAPHIC & BOUNDARY SURVEY

PARCEL NO. 4139450570

VERNON RESIDENCE
5410 174TH PL SE
BELLEVUE, WA 98006



Terrane
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JOB NUMBER: 202157
DATE: 01/08/21
DRAFTED BY: IDV-GKD
CHECKED BY: JGM/RLS
SCALE: 1" = 10'

REVISION HISTORY

NO.	DESCRIPTION

SHEET NUMBER

2 OF 2

measure success

March 2, 2022
PanGEO Project No. 22-041

Mr. Keith Vernon
5410 174th Place SE
Bellevue, WA 98006

**Subject: Geotechnical and Critical Area Report
Proposed Addition
5410 – 174th Place SE, Bellevue, WA**

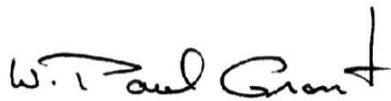
Dear Mr. Vernon:

Attached please find our geotechnical report for the proposed addition to your house in Bellevue, Washington. This report documents the subsurface conditions and presents our geotechnical engineering recommendations for the proposed foundations.

In summary, based on the borings advanced on the north side of the house, the proposed addition area is underlain by 2 to 9 feet of loose topsoil/fill overlying weathered sandstone (Blakeley formation). Use of conventional spread and strip footings to support the new addition will require over excavating at least 2 feet below the footings and compacting the underlying native soil and the replacement fill to a dense and unyielding condition.

We appreciate the opportunity to be of service. Should you have any questions, please do not hesitate to call.

Sincerely,



W. Paul Grant, P.E.
Senior Geotechnical Engineer



Stephen H. Evans, L.E.G.
Senior Engineering Geologist

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 GENERAL	1
2.0 SITE AND PROJECT DESCRIPTION	1
3.0 SUBSURFACE EXPLORATIONS	2
4.0 SITE GEOLOGY AND SUBSURFACE CONDITIONS	3
4.1 SITE GEOLOGY	3
4.2 SOIL CONDITIONS	3
4.3 GROUNDWATER	4
5.0 GEOLOGIC HAZARDS ASSESSMENT	4
5.1 STEEP SLOPE CRITICAL AREA	6
6.0 GEOTECHNICAL RECOMMENDATIONS	7
6.1 SEISMIC DESIGN PARAMETERS	7
6.2 BUILDING AND DECK FOUNDATIONS	7
6.2.1 Lateral Resistance	8
6.2.2 Perimeter Footing Drains	9
6.2.3 Footing Subgrade Preparation	9
6.3 FLOOR SLABS	9
6.4 RETAINING WALL DESIGN PARAMETERS	10
6.4.1 Lateral Earth Parameters	10
6.4.2 Surcharge	10
6.4.3 Lateral Resistance	11
6.4.4 Wall Drainage	11
6.4.5 Wall Backfill	11
6.5 TEMPORARY EXCAVATIONS	12
6.6 PERMANENT CUT AND FILL SLOPES	12
7.0 EARTHWORK CONSIDERATIONS	13
7.1 MATERIAL REUSE	13
7.2 STRUCTURAL FILL AND COMPACTION	13
7.3 WET WEATHER CONSTRUCTION	14
7.4 EROSION CONSIDERATIONS	14
8.0 ADDITIONAL SERVICES	15
9.0 CLOSURE	15
10.0 REFERENCES	18

ATTACHMENTS:

- Figure 1 Vicinity Map
- Figure 2 Site and Exploration Plan

Appendix A Summary Boring Logs

- Figure A-1 Terms and Symbols for Boring and Test Pit Logs
- Figure A-2 Log of Test Boring PG-1
- Figure A-3 Log of Test Boring PG-2
- Figure A-4 Log of Test Boring PG-3

GEOTECHNICAL AND CRITICAL AREA REPORT
PROPOSED ADDITION
5410 – 174TH PLACE SOUTHEAST
BELLEVUE, WASHINGTON

1.0 GENERAL

As requested, PanGEO, Inc. is pleased to present this geotechnical report for the project. This study was performed in general accordance with our mutually agreed scope of services outlined in our proposal dated January 20, 2022, which was subsequently approved by you on the same day. Our scope of services included reviewing readily available geologic and geotechnical data, drilling three test borings, conducting a site reconnaissance, and developing the conclusions and recommendations presented in this report. The primary purpose of this report is to provide recommendations for the proposed improvements.

2.0 SITE AND PROJECT DESCRIPTION

The project site is located at 5410 174th Place SE in the Lakemont neighborhood of Bellevue, Washington (see *Figure 1 – Vicinity Map*). The subject property has an irregular shape with an area of about 11,738 square feet. The property is roughly 165 feet deep by 75 feet wide. The subject property borders 174th Place SE to the south, single-family residences to the east and west, and Lakemont Community Park to the north.

The property is situated on a north facing slope and is occupied by a two-story single-family house with a crawl space, generally situated in the middle to north portion of the property. The site topography generally descends from south to north with a total vertical relief of about 26 feet. Most of the site contains moderate slopes with gradients of about 13 percent; however, a band of steep slope is present along the north property boundary. The finished floor grade of the first floor is roughly 704 feet, and the headroom within the downhill side of the crawlspace is approximately 10 feet.

We understand that you wish to excavate the crawlspace beneath the main living area of the existing house, excluding the garage portion. There will be an addition off the northeast corner of the house at the planned daylight basement and main floor level, and the central portion of the north house wall will be moved north several feet (see *Figure 2 – Site and Exploration Plan*). To accommodate the relocation of the north wall, the existing deck will be demolished, and a new deck constructed at the northwest corner of the house.

Because of the site contains a steep slope critical area, the City of Bellevue requires a Critical Area Report for permitting. Additional discussions regarding relevant land use codes for critical area report are included in this report.

The conclusions and recommendations in this report are based on our understanding of the proposed development, which is in turn based on the project information provided. If the above project description is incorrect, or the project information changes, we should be consulted to review the recommendations contained in this study and make modifications, if needed. In any case PanGEO should be retained to provide a review of the final design to confirm that our geotechnical recommendations have been correctly interpreted and adequately implemented in the construction documents.

3.0 SUBSURFACE EXPLORATIONS

Three test borings (PG-1 to PG-3) were advanced on the property on February 8, 2022. The test borings were advanced to about 8½ to 16 feet deep. The approximate boring locations are shown on the attached *Figure 2 – Site and Exploration Plan*.

The drill rig is owned and operated by CN Drilling and was equipped with 4-inch outside diameter hollow stem augers. Soil samples were obtained from the borings in general at 2½- and 5-foot depth intervals using Standard Penetration Test (SPT) sampling methods in general accordance with ASTM D1586, *Standard Test Method for Penetration Test and Split Barrel Sampling of Soils*, in which the samples are obtained using a 2-inch outside diameter split-spoon sampler. The sampler was driven into the soil a distance of 18 inches below the tip of the augers using a 140-pound weight falling a distance of 30 inches using a rope and cathead. The number of blows required for each 6-inch increment of sampler penetration was recorded. The number of blows required to achieve the last 12 inches of sample penetration is defined as the SPT N-value. The N-value provides an empirical measure of the relative density of cohesionless soil, or the relative consistency of fine-grained soils.

A geologist from PanGEO was present throughout the field exploration program to observe the drilling, assist in sampling, and to document the soil samples obtained from the borings. The soil samples retrieved from the borings were described using the system outlined on Figure A-1 of Appendix A and the summary test boring logs are included as Figures A-2 to A-4 in Appendix A.

4.0 SITE GEOLOGY AND SUBSURFACE CONDITIONS

4.1 SITE GEOLOGY

According to the *Geologic Map of King County, Washington* (Booth, D. B., Troost, K. A., and Wisher, A. P., 2007), the project site is underlain by Blakeley Formation (Map Unit Tb).

Blakeley Formation (Tb) typically consists of Eocene- to Oligocene-aged, well bedded, medium- to coarse-grained, sandstone, siltstone, and conglomerate deposited in a shallow marine setting.

The Blakeley formation typically exhibits low compressibility and high strength characteristics in its undisturbed state. However, near the surface it may be weathered to a loose to medium dense condition.

4.2 SOIL CONDITIONS

In summary, the subsurface conditions encountered in the borings were consistent with the mapped geology, and we generally interpret the soils as topsoil/fill overlying weathered to fresh Blakeley formation.

For a detailed description of the subsurface conditions encountered at each exploration location, please refer to the boring logs provided in Appendix A. The stratigraphic contacts indicated on the boring logs represent the approximate depth to boundaries between soil units. Actual transitions between soil units may be more gradual or occur at different elevations. The descriptions of groundwater conditions and depths are likewise approximate.

The following is a generalized description of the soils encountered in the borings.

UNIT 1: Topsoil/Fill – Below the ground surface each boring encountered crushed rock over loose, dark brown, gravelly silty sand, which we interpret as topsoil or fill. This unit is characterized by its loose condition and organics and is not suitable foundation bearing soil. This unit extended only to a depth of about 1 foot in the area of the addition (PG-1 and PG-2) but was 4½ feet deep in PG-3 near the center of the project.

UNIT 2: Weathered Blakeley Formation – Below Unit 1, each boring encountered completely weathered Blakeley Formation. The weather material consisted of two beds, an upper bed of gray or light brown to dark brown, medium gravel in a fine-

grained matrix that we interpreted as a conglomeratic sandstone. This bed varied in thickness, from 5 feet in PG-1 to 2½ feet in PG-2. Below the conglomeratic sandstone was a bed of loose, light brown, thinly bedded, deeply weathered sandstone. This bed was around 3 ½ feet thick in PG-1 and 2 feet in PG-2. The bed was not encountered in PG-3.

UNIT 3: Blakeley Formation – Below Unit 2, each boring encountered more competent sandstone consisting of light brown, weathered, weak, fine grained sandstone rock with manganese staining. This unit was encountered at a depth of about 10 feet in PG-1 and PG-3, and 5 feet in PG-2. We interpret this unit as the Blakeley formation mapped at the site.

Our subsurface descriptions are based on the conditions encountered at the time of our exploration. Soil conditions between our exploration locations may vary from those encountered. The nature and extent of variations between our exploratory locations may not become evident until construction. If variations do appear, PanGEO should be requested to reevaluate the recommendations in this report and to modify or verify them in writing prior to proceeding with earthwork and construction.

4.3 GROUNDWATER

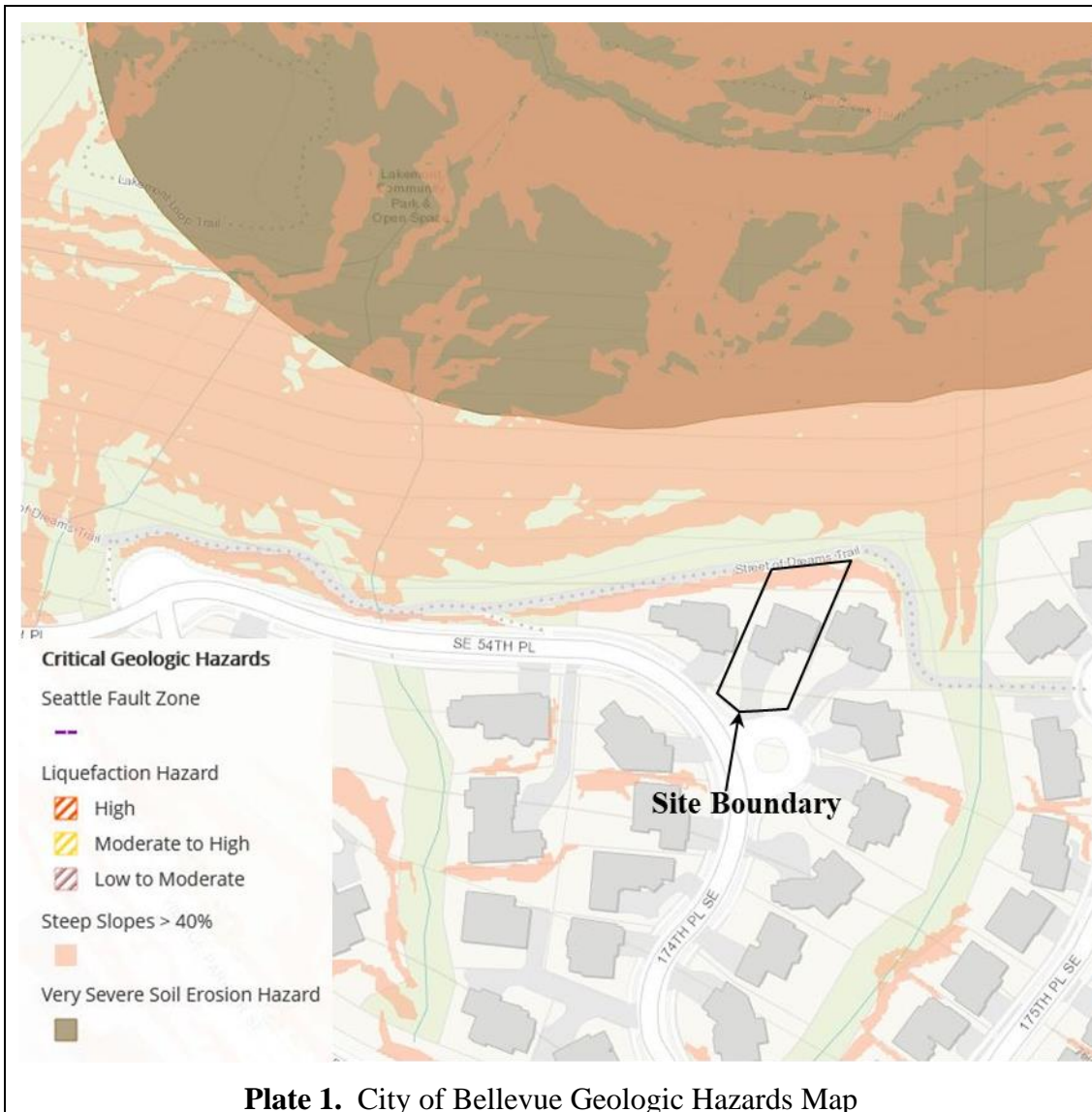
No free groundwater seepage was observed within the test depths during our explorations. The borings were done during the wet season, so the potential for groundwater seepage is low. However, trace amounts of perched groundwater may develop in lenses of more permeable soil within the Blakeley formation or at the contact between weathered and fresh Blakeley formation, especially during periods of precipitation. If perched seepage is encountered in the building excavations, we anticipate the seepage volume will be relatively minor and can likely be controlled with sump pumps.

It should be noted that groundwater levels will fluctuate depending on the season, amount of rainfall, surface water runoff, and other factors. Generally, the water level is higher and seepage rates are greater in the wetter, winter months (typically October through May).

5.0 GEOLOGIC HAZARDS ASSESSMENT

We conducted a geologic hazards assessment for the proposed development as part of our study. The assessment includes an evaluation of Steep Slopes and Erosion Hazards. Based on our review of the City of Bellevue’s Geologic Hazards Map (see Plate 1, next page), a

band of steep slopes (40 percent and greater) is present along the northern property boundary (see also, Figure 2). North of the property boundary is the Lakemont Park, with a 25-foot wide bench on which the Street of Dreams recreational trail is located. Below the bench steep slopes descend to Lewis Creek. The site is not mapped within a liquefaction hazard area, nor is an erosion hazard mapped at the site. The following sections contain our assessment of potential Geologic Hazards and their possible effects on the proposed development.



5.1 STEEP SLOPE CRITICAL AREA

The City of Bellevue defines a Steep Slope Critical Area as follows:

20.25H.120.A.2 Slopes of 40 percent or more that have a rise of at least 10 feet and exceed 1,000 square feet in area.

In general, where Steep Slope critical areas are present, the City requires a top-of-slope buffer of 50 feet, and a 75-foot toe-of-slope structural setback. The buffer and setback from the slope maybe modified based on the results of a critical area study.

Steep Slope Evaluation – Based on the site topographic survey (see attached Figure 2), a band of steep slope that is 40% slope or greater runs along the north property boundary, consistent with the City’s mapping. This band is roughly 16 feet wide with a slope gradient of about 50% and a relief of 8 to 12 feet.

Site Reconnaissance – As part of our study, we conducted site reconnaissance on January 27 and March 1, 2022. During our site reconnaissance, we observed the existing condition of the site and adjacent properties to look for evidence of past or ongoing instability, such as scarps, sloughs, tension cracks, uneven ground surfaces, jackstrawed trees, breaks in vegetation, water features, damage to hard scape features and convergent landforms. We did not observe any obvious evidence of past on site slope instability during our site reconnaissance. Hardscape retaining walls on site were plumb and showed no signs of distress. The Street of Dreams trail, immediately north the property fence, is a paved path. There were no signs of distress, such as cracking or settlement in the path pavement. Probing the soil next to the path with a soil probe indicated that competent bedrock shallowly underlay the path area. The trees below the path were mostly deciduous, with scattered firs. Some had shallowly bowed trunks or were leaning, but many were straight and plumb, including some firs. This suggest that slope movement is localized.

To the best of our knowledge, there are no reported past known historical slides at the site and its immediate vicinity. However, much of the Lakemont Park area below the bench area is mapped in the Washington State Landslide Inventory as pre-historic landslide, with the area below the Street of Dreams Trail mapped as a headscarp. Nonetheless, based on our observations of ground surface features, it is our opinion that the site is globally stable in its current configuration. It is also our opinion that the proposed development will not adversely impact the overall global stability of the subject site and surrounding properties,

provided that the recommendations presented in this report are properly incorporated into the design and construction of the project.

Conclusion – As currently planned, the proposed addition will be constructed outside of the steep slopes. Based on the height of steep slope, the observed slope conditions, and the subsurface soil conditions (Blakeley formation, sandstone), it is our opinion that the proposed addition may be constructed within the steep slope buffer from the top of slope along the north side of the site.

6.0 GEOTECHNICAL RECOMMENDATIONS

6.1 SEISMIC DESIGN PARAMETERS

The seismic design of the building may be accomplished using the 2018 International Building Code (IBC), which specifies a design earthquake having a 2 percent probability of occurrence in 50 years (return interval of 2,475 years). The IBC seismic design parameters are in part based on the site soil conditions and site classifications defined in Chapter 20 of ASCE 7-16. According to Chapter 20 of ASCE 7-16, the site soil should be classified as Site Class C (very dense soil and soft rock).

6.2 BUILDING AND DECK FOUNDATIONS

Based on the subsurface conditions encountered at the site and our understanding of the planned development, it is our opinion the proposed building can be supported on conventional footings. However, our borings indicate that soil conditions, especially weathering depth, are variable in the addition area, so shallow foundations may pose an issue of differential settlement. Ideally, the footings should bear on the competent undisturbed native soils (Blakeley formation, sandstone). However, based on the borings in the proposed addition area, the suitable bearing soils are located about 4 to 10 feet below the ground surface.

We recommend that the foundations of the new addition be over-excavated two feet and replaced with properly compacted structural fill. If the foundation excavation encounters competent rock, further over excavation is not required. Before placement of fill, the exposed subgrade that is not underlain by competent rock should be compacted to a dense and unyielding condition using a jumping jack compactor. Fill should be placed in lifts not exceeding 8 inches in loose thickness, and also compacted to a dense and unyielding

condition. The subgrade should be verified by a geotechnical engineer before placing structural fill. Backfill and compaction should also be verified by a geotechnical engineer.

Loose soil was encountered to a depth of roughly 9 feet in the area of the new deck. If the existing deck in this area has performed well, we recommend that the new deck use the same foundation system as the existing deck. If the deck is supported on spread footings, some future settlement may be experienced, requiring shimming or releveling of the deck.

If the existing deck has experienced significant settlement, we recommend supporting the new deck on 2-inch pin piles installed using an 80-pound jack hammer or 140-pound Rhino hammer with the piles driven to a refusal criteria of 1-inch of penetration in 60 seconds of continuous driving, for at least 3 inches. Piles installed to this criteria should support an allowable load of 3 tons. We anticipate that the piles will penetrate 12 to 15 feet below surface grade.

Exterior footings should be placed at least 18 inches below final exterior grade. Interior footings should be placed at least 12 inches below the top of concrete slabs.

We recommend using a maximum allowable bearing pressure of 2,000 pounds per square foot (psf) for footings bearing on the competent native soils or well compacted structural fill. The recommended allowable soil bearing pressure is for dead plus live loads. The recommended bearing pressure may be increased by one-third for transient loading, such as wind or seismic forces. Continuous and individual spread footings should have minimum widths of 18 and 24 inches, respectively.

Footings designed and constructed in accordance with the above recommendations should experience total settlement of less than one inch and differential settlement of less than ½ inch. Most of the anticipated settlement should occur during construction as dead loads are applied.

6.2.1 Lateral Resistance

Lateral loads on the structure may be resisted by passive earth pressure developed against the embedded portion of the foundation system and by frictional resistance between the bottom of the foundation and the supporting subgrade soils. For footings bearing on the competent native soils or structural fill, a frictional coefficient of 0.35 may be used to evaluate sliding resistance developed between the concrete and the subgrade soil. Passive soil resistance may be calculated using an equivalent fluid weight of 350 pcf, assuming foundations are backfilled with structural fill. The above values include a factor of safety

of 1.5. Unless covered by pavements or slabs, the passive resistance in the upper 12 inches of soil should be neglected.

6.2.2 Perimeter Footing Drains

Footing drains should be installed around the perimeter of the buildings, at or just below the invert of the footings. Under no circumstances should roof downspout drain lines be connected to the footing drain systems. Roof downspouts must be separately tightlined to appropriate discharge locations. Cleanouts should be installed at strategic locations to allow for periodic maintenance of the footing drain and downspout tightline systems.

6.2.3 Footing Subgrade Preparation

All footing subgrades should be in a firm and unyielding condition prior to setting forms and placing reinforcing steel. Any loose or softened soil should be removed from the footing excavations. The adequacy of the footing subgrade soils should be verified by a representative of PanGEO, prior to placing forms or rebar.

It should be noted that the native soils underlying the site are moisture sensitive, and can be easily disturbed when exposed to moisture and construction activities. Efforts should be made to protect the exposed footing subgrade if the footings will be constructed in wet weather conditions. This may include placing a few inches of crushed rock or lean-mix concrete on the exposed footing subgrade prior to placing structural fill, to protect the subgrade.

6.3 FLOOR SLABS

The floor slabs for the proposed building may be constructed using conventional concrete slab-on-grade floor construction. The floor slabs should be supported on competent undisturbed native soils or structural fill placed on undisturbed native soils. Floor slab areas should be compacted to a firm and unyielding condition using a jumping jack compactor. Any over-excavations, if needed, should be backfilled with structural fill.

Interior concrete slab-on-grade floors should be underlain by a capillary break consisting of at least of 4 inches of pea gravel or compacted $\frac{3}{4}$ -inch, clean crushed rock (less than 3 percent fines). The capillary break material should meet the gradational requirements provided in Table 2, below.

Table 2 – Capillary Break Gradation

Sieve Size	Percent Passing
¾-inch	100
No. 4	0 – 10
No. 100	0 – 5
No. 200	0 – 3

The capillary break should be placed on subgrade soils that have been compacted to a dense and unyielding condition.

A minimum 10-mil polyethylene vapor barrier should also be placed directly below the slab. Construction joints should be incorporated into the floor slab to control cracking.

6.4 RETAINING WALL DESIGN PARAMETERS

Retaining walls, where needed, should be designed to resist the lateral earth pressures exerted by the soils behind the wall. Proper drainage provisions should also be provided behind the walls to intercept and remove groundwater that may be present behind the wall. Our geotechnical recommendations for the design and construction of retaining walls are presented below.

6.4.1 Lateral Earth Parameters

Cantilever walls should be designed for an equivalent fluid pressure of 35 pcf for a level backfill condition behind the walls and assuming the walls are free to rotate. If the walls are restrained from free movement at the top, such as basement walls with a floor diaphragm, an equivalent fluid pressure of 45 pcf should be used for a level backfill condition behind the walls. Permanent walls should be designed for an additional uniform lateral pressure of 7H psf for seismic loading, where H corresponds to the height of the buried depth of the wall.

The recommended lateral pressures assume the backfill behind the walls consists of a free draining and properly compacted fill with adequate drainage provisions.

6.4.2 Surcharge

Surcharge loads, where present, should also be included in the design of retaining walls. We recommend that a lateral load coefficient of 0.3 be used to compute the lateral pressure

on the wall face resulting from surcharge loads located within a horizontal distance of one-half the wall height.

6.4.3 Lateral Resistance

Lateral forces from seismic loading and unbalanced lateral earth pressures may be resisted by a combination of passive earth pressures acting against the embedded portions of the foundations and by friction acting on the base of the wall foundation. Passive resistance values may be determined using an equivalent fluid weight of 350 pcf. This value includes a factor of safety of 1.5, assuming the footing is backfilled with structural fill. A friction coefficient of 0.35 may be used to determine the frictional resistance at the base of the footings. The coefficient includes a factor of safety of 1.5.

6.4.4 Wall Drainage

Provisions for wall drainage should consist of a 4-inch diameter perforated drainpipe placed behind and at the base of the wall footings, embedded in 12 to 18 inches of clean crushed rock or pea gravel wrapped with a layer of filter fabric. A minimum 18-inch wide zone of free draining granular soils (i.e. pea gravel or washed rock) is recommended to be placed adjacent to the wall for the full height of the wall. Alternatively, a composite drainage material, such as Miradrain 6000, may be used in lieu of the clean crushed rock or pea gravel. The drainpipe at the base of the wall should be graded to direct water to a suitable outlet.

6.4.5 Wall Backfill

Retaining wall backfill should consist of free draining granular material. The site soils are relatively silty and would not meet the requirements for wall backfill. We recommend importing a free draining granular material, such as Gravel Borrow as defined in Section 9-03.14(1) of the WSDOT *Standard Specifications for Road, Bridge, and Municipal Construction* (WSDOT, 2020). In areas where space is limited between the wall and the face of excavation, pea gravel may be used as backfill without compaction.

Wall backfill should be properly moisture conditioned, placed in loose, horizontal lifts less than 12 inches in thickness, and compacted to a dense and unyielding condition. If density tests will be performed, the test results should show at least 95 percent of the maximum dry density, as determined using test method ASTM D-1557 (Modified Proctor). Within 5 feet of the wall, the backfill should be compacted with hand-operated equipment to at least 90 percent of the maximum dry density.

6.5 TEMPORARY EXCAVATIONS

Temporary excavations up to about 10 feet may be needed for the addition construction. We anticipate the excavations to mainly encounter loose topsoil/fill and weathered Blakeley formation overlying dense and hard native soils (Blakeley formation, sandstone). Equipment access to the site is limited, and we anticipate that all excavations will be accomplished using small equipment. In general, we expect that the site soils can be excavated using a Bobcat mounted excavator or equivalent. We expect that more competent rock material, if encountered, can be excavated using a pneumatic hammer or small Ho-Ram. All temporary excavations should be performed in accordance with Part N of WAC (Washington Administrative Code) 296-155. The contractor is responsible for maintaining safe excavation slopes and/or shoring.

Most of the expected excavations will be beneath the existing house. We assume that the contractor will support the upper floors of the house on temporary shoring during excavation. Based on the subsurface conditions at the site, for planning purposes, it is our opinion that temporary excavations fully weathered rock may be sloped ½H:1V. If competent rock material is encountered, cuts may be steepened with the on-site approval of PanGEO. We anticipate that sufficient space will be available for unsupported open cuts. However, if unsupported open cuts are not feasible, temporary shoring will be needed to support the temporary excavations. PanGEO can provide temporary shoring recommendations, if needed, after the building plans are finalized. Where space may be limited, the use of L-shaped footings may be required to conserve space for the temporary cuts.

The temporary excavations and cut slopes should be re-evaluated in the field during construction based on actual observed soil conditions. In the wet season, cuts may need to be flattened and covered with plastic sheets. Likewise, if more competent materials are encountered, cuts may be steepened at the discretion of the geotechnical engineer. We also recommend that heavy building materials, excavated soil, and vehicular traffic should not be allowed within a distance equal to 1/3 the slope height from the top of any excavation.

6.6 PERMANENT CUT AND FILL SLOPES

We anticipate that permanent cut fill slopes will not be part of this project. However, based on the anticipated soil that will be exposed in the planned excavation, we recommend that

any permanent cut and fill slopes be constructed no steeper than 2H:1V (Horizontal:Vertical).

7.0 EARTHWORK CONSIDERATIONS

7.1 MATERIAL REUSE

The soils underlying the site primarily consist of weathered rock material comprised of silty sand with varying amounts of gravel. These materials are moisture sensitive, and will become disturbed and soft when exposed to inclement weather conditions. We do not recommend reusing the native soils as structural fill. If it is planned to use the native soil in non-structural areas, the excavated soil should be stockpiled and protected with plastic sheeting to prevent it from becoming saturated by precipitation or runoff.

7.2 STRUCTURAL FILL AND COMPACTION

In the context of this report, structural fill is defined as compacted fill placed under footings, concrete stairs and landings, slabs, pavement, or other load-bearing areas. Structural fill should consist of City of Seattle Type 17, WSDOT Section 9-03.9(3) Crushed Surfacing Base Course (WSDOT 2020), or an approved equivalent.

Structural fill should be properly moisture conditioned, placed in loose, horizontal lifts less than 8 inches in loose thickness, and compacted to a dense and unyielding condition. The adequacy of compaction should be verified by a PanGEO representative. Alternatively, a minimum 95 percent maximum density as determined using ASTM D-1557 (Modified Proctor) may be used to determine the adequacy of the compacted fill.

The procedure to achieve proper density of a compacted fill depends on the size and type of compaction equipment, the number of passes, thickness of the lifts being compacted, and certain soil properties. We anticipate that excavations for this project will be constricted, limiting the use of heavy equipment and requiring the use of smaller equipment. Lift thickness may need to be modified and reduced in the field to achieve the required relative compaction.

Generally, loosely compacted soils are a result of poor construction technique or improper moisture content. Soils with high fines contents are particularly susceptible to becoming too wet and coarse-grained materials easily become too dry, for proper compaction. Soils

with a moisture content too high for adequate compaction should be dried as necessary, or moisture conditioned by mixing with drier materials, or other methods.

7.3 WET WEATHER CONSTRUCTION

General recommendations relative to earthwork performed in wet weather or in wet conditions are presented below. The following procedures are best management practices recommended for use in wet weather construction:

- Earthwork should be performed in small areas to minimize subgrade exposure to wet weather. Excavation or the removal of unsuitable soil should be followed promptly by the placement and compaction of clean structural fill. The size and type of construction equipment used may have to be limited to prevent soil disturbance.
- During wet weather, the allowable fines content of the structural fill should be reduced to no more than 5 percent by weight based on the portion passing the 0.75-inch sieve. The fines should be non-plastic.
- The ground surface within the construction area should be graded to promote run-off of surface water and to prevent the ponding of water.
- Geotextile silt fences should be installed at strategic locations around the site to control erosion and the movement of soil.
- Excavation slopes and soils stockpiled on site should be covered with plastic sheeting.

7.4 EROSION CONSIDERATIONS

Surface runoff can be controlled during construction by careful grading practices. Typically, this includes the construction of shallow, upgrade perimeter ditches or low earthen berms in conjunction with silt fences to collect runoff and prevent water from entering excavations or to prevent runoff from the construction area leaving the immediate work site. Temporary erosion control may require the use of hay bales on the downhill side of the project to prevent water from leaving the site and potential storm water detention to trap sand and silt before the water is discharged to a suitable outlet. All collected water should be directed under control to a positive and permanent discharge system.

Permanent control of surface water should be incorporated in the final grading design. Adequate surface gradients and drainage systems should be incorporated into the design such that surface runoff is collected and directed away from the structure to a suitable outlet. Potential issues associated with erosion may also be reduced by establishing vegetation within disturbed areas immediately following grading operations.

8.0 ADDITIONAL SERVICES

To confirm that our recommendations are properly incorporated into the design and construction of the project, PanGEO should be retained to conduct a review of the final project plans and specifications, and perform a field-monitoring program during construction. Specifically, we anticipate that the following construction support services may be needed:

- Review final project plans and specifications;
- Verify implementation of erosion control measures;
- Observe installation of excavation shoring system as needed;
- Observe the stability of any open cut slopes;
- Review optical survey data provided by others to evaluate the performance of the shoring system if required;
- Verify adequacy of foundation and slab subgrades;
- Confirm adequacy of the compaction of structural backfill;
- Observe installation of subsurface drainage provisions, and;
- Other consultation as may be required during construction.

Modifications to our recommendations presented in this report may be necessary, based on the actual conditions encountered during construction.

9.0 CLOSURE

We have prepared this report for Mr. Keith Vernon and the project design team. Recommendations contained in this report are based on a site reconnaissance, a subsurface exploration program, review of pertinent subsurface information, and our understanding of the project. The study was performed using a mutually agreed-upon scope of services.

Variations in soil conditions may exist between the locations of the explorations and the actual conditions underlying the site. The nature and extent of soil variations may not be evident until construction occurs. If any soil conditions are encountered at the site that are different from those described in this report, we should be notified immediately to review the applicability of our recommendations. Additionally, we should also be notified to review the applicability of our recommendations if there are any changes in the project scope.

The scope of our work does not include services related to construction safety precautions. Our recommendations are not intended to direct the contractors' methods, techniques, sequences or procedures, except as specifically described in our report for consideration in design. Additionally, the scope of our services specifically excludes the assessment of environmental characteristics, particularly those involving hazardous substances. We are not mold consultants nor are our recommendations to be interpreted as being preventative of mold development. A mold specialist should be consulted for all mold-related issues.

This report has been prepared for planning and design purposes for specific application to the proposed project in accordance with the generally accepted standards of local practice at the time this report was written. No warranty, express or implied, is made.

This report may be used only by the client and for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both off and on-site), or other factors including advances in our understanding of applied science, may change over time and could materially affect our findings. Therefore, this report should not be relied upon after 24 months from its issuance. PanGEO should be notified if the project is delayed by more than 24 months from the date of this report so that we may review the applicability of our conclusions considering the time lapse.

It is the client's responsibility to see that all parties to this project, including the designer, contractor, subcontractors, etc., are made aware of this report in its entirety. The use of information contained in this report for bidding purposes should be done at the contractor's option and risk. Any party other than the client who wishes to use this report shall notify PanGEO of such intended use and for permission to copy this report. Based on the intended use of the report, PanGEO may require that additional work be performed and that an updated report be reissued. Noncompliance with any of these requirements will release PanGEO from any liability resulting from the use this report.

We appreciate the opportunity to be of service.

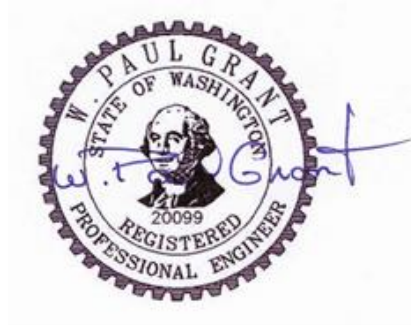
Sincerely,

PanGEO, Inc.



Stephen H. Evans

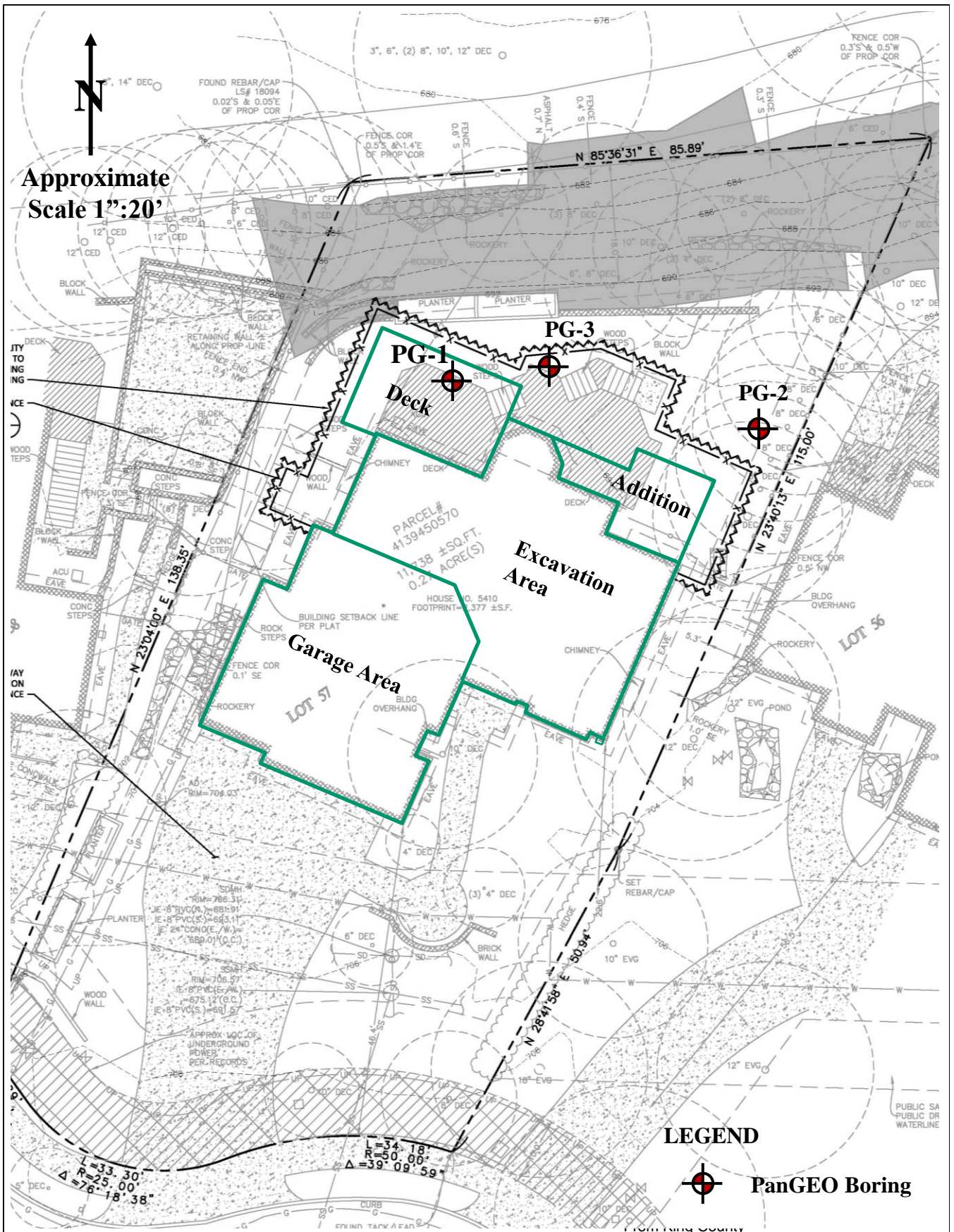
Stephen H. Evans, L.E.G.
Senior Engineering Geologist



W. Paul Grant, P.E.
Senior Geotechnical Engineer

10.0 REFERENCES

- ASTM International (ASTM), *Annual book of standards, Section 04.08 Soil and Rock (I): D420-D5876*: West Conshohocken, Pennsylvania
- International Code Council, 2015, *International Building Code (IBC), 2015*.
- Booth, D. B., Troost, K. A., and Wisner, A. P., 2007, *Geologic Map of King County, Washington – U. S. Geological Survey, scale 1:100,000*.
- United States Geological Survey, *Earthquake Hazards Program, Interpolated Probabilistic Ground Motion for the Conterminous 48 States by Latitude and Longitude, 2008 Data*, accessed via:
<http://earthquake.usgs.gov/designmaps/us/application.php>
- Washington State Department of Transportation (WSDOT), 2020, *Standard Specifications for Road, Bridge and Municipal Construction, M 41-10*.
- Washington Administrative Code (WAC), 2016, *Chapter 296-155. Safety Standards for Construction Work, Part N - Excavation, Trenching, and Shoring*, Olympia, Washington.



	Proposed Addition 5410 174th Place SE Bellevue, Washington	SITE AND EXPLORATION PLAN	
		Project No. 22-041	Figure No. 2

APPENDIX A

SUMMARY BORING LOGS

RELATIVE DENSITY / CONSISTENCY

SAND / GRAVEL			SILT / CLAY		
Density	SPT N-values	Approx. Relative Density (%)	Consistency	SPT N-values	Approx. Undrained Shear Strength (psf)
Very Loose	<4	<15	Very Soft	<2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Med. Dense	10 to 30	35 - 65	Med. Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	>50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	>30	>4000

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		GROUP DESCRIPTIONS	
Gravel 50% or more of the coarse fraction retained on the #4 sieve. Use dual symbols (eg. GP-GM) for 5% to 12% fines.	GRAVEL (<5% fines)		GW: Well-graded GRAVEL
	GRAVEL (>12% fines)		GP: Poorly-graded GRAVEL
Sand 50% or more of the coarse fraction passing the #4 sieve. Use dual symbols (eg. SP-SM) for 5% to 12% fines.	SAND (<5% fines)		GM: Silty GRAVEL
			GC: Clayey GRAVEL
	SAND (>12% fines)		SW: Well-graded SAND
			SP: Poorly-graded SAND
Silt and Clay 50% or more passing #200 sieve	Liquid Limit < 50		SM: Silty SAND
			SC: Clayey SAND
			ML: SILT
	Liquid Limit > 50		CL: Lean CLAY
			OL: Organic SILT or CLAY
			MH: Elastic SILT
Highly Organic Soils			CH: Fat CLAY
			OH: Organic SILT or CLAY
			PT: PEAT

TEST SYMBOLS

for In Situ and Laboratory Tests listed in "Other Tests" column.

- ATT Atterberg Limit Test
- Comp Compaction Tests
- Con Consolidation
- DD Dry Density
- DS Direct Shear
- %F Fines Content
- GS Grain Size
- Perm Permeability
- PP Pocket Penetrometer
- R R-value
- SG Specific Gravity
- TV Torvane
- TXC Triaxial Compression
- UCC Unconfined Compression

SYMBOLS

Sample/In Situ test types and intervals

- 2-inch OD Split Spoon, SPT (140-lb. hammer, 30" drop)
- 3.25-inch OD Split Spoon (300-lb hammer, 30" drop)
- Non-standard penetration test (see boring log for details)
- Thin wall (Shelby) tube
- Grab
- Rock core
- Vane Shear

- Notes:**
- Soil exploration logs contain material descriptions based on visual observation and field tests using a system modified from the Uniform Soil Classification System (USCS). Where necessary laboratory tests have been conducted (as noted in the "Other Tests" column), unit descriptions may include a classification. Please refer to the discussions in the report text for a more complete description of the subsurface conditions.
 - The graphic symbols given above are not inclusive of all symbols that may appear on the borehole logs. Other symbols may be used where field observations indicated mixed soil constituents or dual constituent materials.

DESCRIPTIONS OF SOIL STRUCTURES

Layered: Units of material distinguished by color and/or composition from material units above and below	Fissured: Breaks along defined planes
Laminated: Layers of soil typically 0.05 to 1mm thick, max. 1 cm	Slickensided: Fracture planes that are polished or glossy
Lens: Layer of soil that pinches out laterally	Blocky: Angular soil lumps that resist breakdown
Interlayered: Alternating layers of differing soil material	Disrupted: Soil that is broken and mixed
Pocket: Erratic, discontinuous deposit of limited extent	Scattered: Less than one per foot
Homogeneous: Soil with uniform color and composition throughout	Numerous: More than one per foot
	BCN: Angle between bedding plane and a plane normal to core axis

COMPONENT DEFINITIONS

COMPONENT	SIZE / SIEVE RANGE	COMPONENT	SIZE / SIEVE RANGE
Boulder:	> 12 inches	Sand	
Cobbles:	3 to 12 inches	Coarse Sand:	#4 to #10 sieve (4.5 to 2.0 mm)
Gravel	3 to 3/4 inches	Medium Sand:	#10 to #40 sieve (2.0 to 0.42 mm)
		Fine Sand:	#40 to #200 sieve (0.42 to 0.074 mm)
Coarse Gravel:	3 to 3/4 inches	Silt	0.074 to 0.002 mm
Fine Gravel:	3/4 inches to #4 sieve	Clay	<0.002 mm

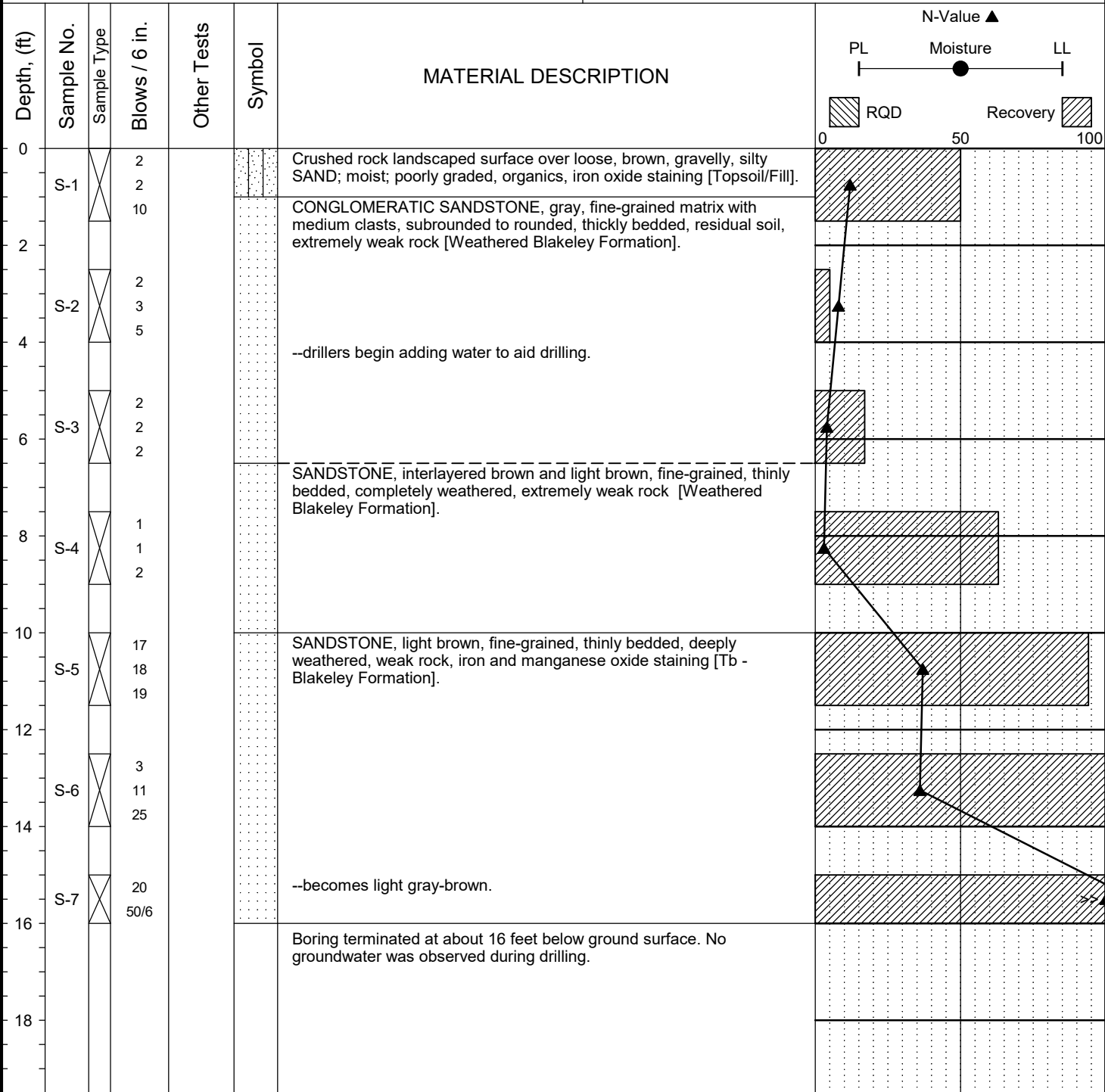
MONITORING WELL

- Groundwater Level at time of drilling (ATD)
- Static Groundwater Level
- Cement / Concrete Seal
- Bentonite grout / seal
- Silica sand backfill
- Slotted tip
- Slough
- Bottom of Boring

MOISTURE CONTENT

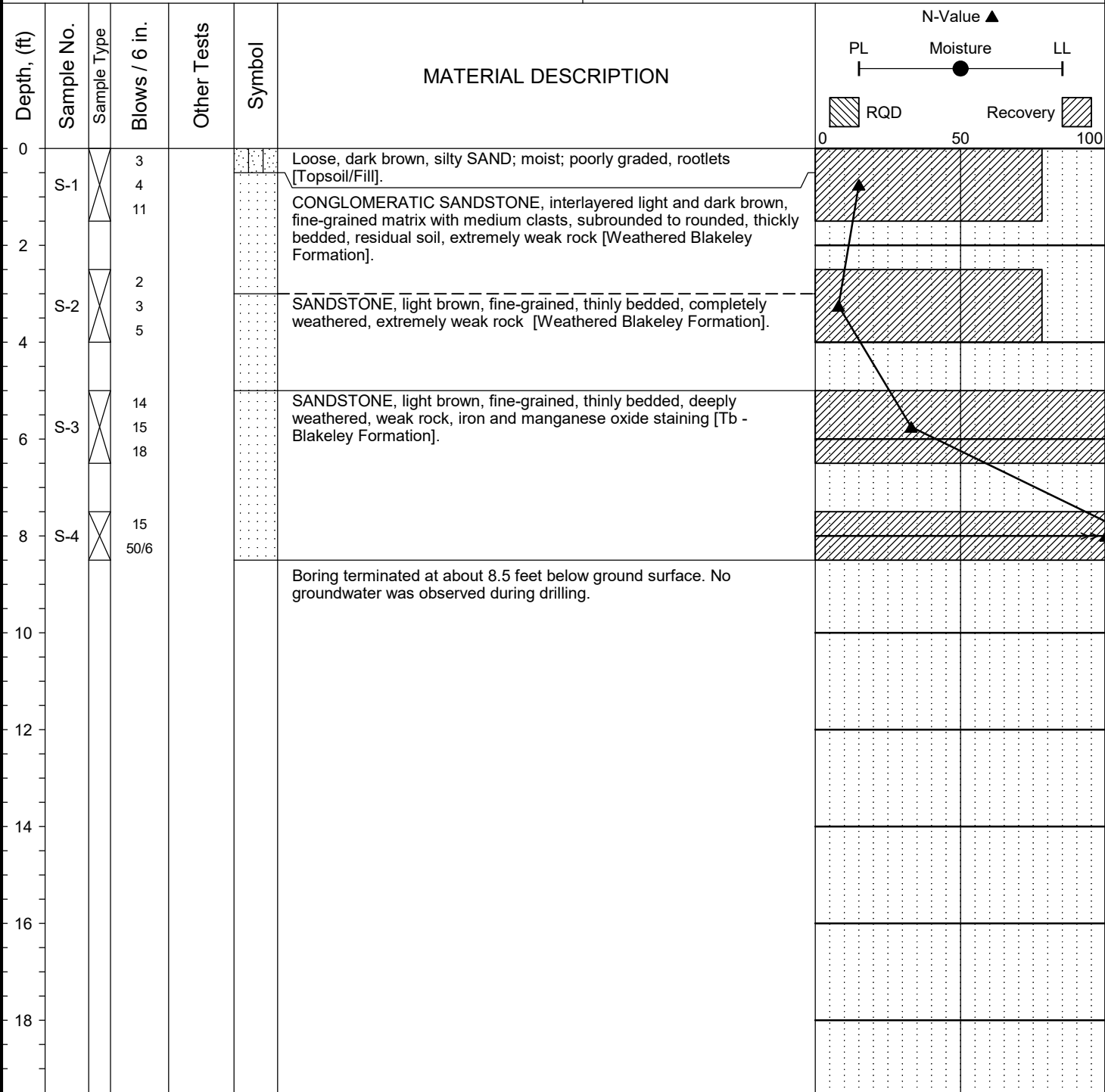
Dry	Dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water

Project:	Proposed Addition	Surface Elevation:	693.0ft
Job Number:	22-041	Top of Casing Elev.:	N/A
Location:	5410 - 174th Place SE, Bellevue, WA	Drilling Method:	HSA
Coordinates:	Northing: 47.55485, Easting: -122.10739	Sampling Method:	SPT



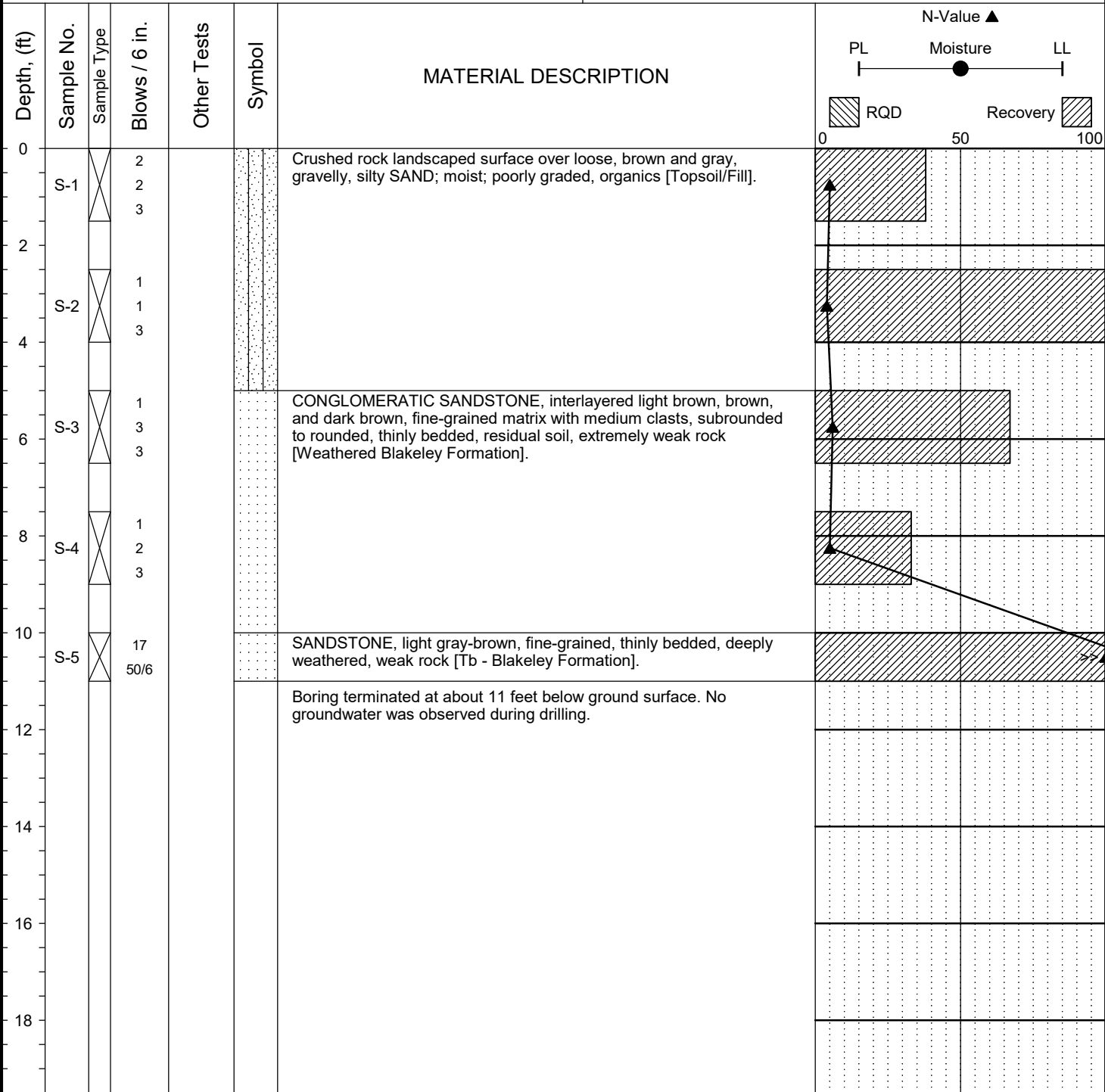
Completion Depth:	16.0ft	Remarks: Boring drilled using an acker portable drill rig. Standard penetration test (SPT) sampler driven with a 140 lb. safety hammer. Hammer operated with a rope and cathead mechanism. Surface elevation estimated from Plan Sheet C2.1 - Temporary Sediment Erosion Control Plan and Details by CG Engineering dated 10/18/2021.
Date Borehole Started:	2/8/22	
Date Borehole Completed:	2/8/22	
Logged By:	B. Weitering	
Drilling Company:	CN Drilling	

Project:	Proposed Addition	Surface Elevation:	694.0ft
Job Number:	22-041	Top of Casing Elev.:	N/A
Location:	5410 - 174th Place SE, Bellevue, WA	Drilling Method:	HSA
Coordinates:	Northing: 47.55485, Easting: -122.10734	Sampling Method:	SPT



Completion Depth:	8.5ft	Remarks: Boring drilled using an acker portable drill rig. Standard penetration test (SPT) sampler driven with a 140 lb. safety hammer. Hammer operated with a rope and cathead mechanism. Surface elevation estimated from Plan Sheet C2.1 - Temporary Sediment Erosion Control Plan and Details by CG Engineering dated 10/18/2021.
Date Borehole Started:	2/8/22	
Date Borehole Completed:	2/8/22	
Logged By:	B. Weitering	
Drilling Company:	CN Drilling	

Project:	Proposed Addition	Surface Elevation:	693.0ft
Job Number:	22-041	Top of Casing Elev.:	N/A
Location:	5410 - 174th Place SE, Bellevue, WA	Drilling Method:	HSA
Coordinates:	Northing: 47.55482, Easting: -122.10724	Sampling Method:	SPT



Completion Depth:	11.0ft	Remarks: Boring drilled using an acker portable drill rig. Standard penetration test (SPT) sampler driven with a 140 lb. safety hammer. Hammer operated with a rope and cathead mechanism. Surface elevation estimated from Plan Sheet C2.1 - Temporary Sediment Erosion Control Plan and Details by CG Engineering dated 10/18/2021.
Date Borehole Started:	2/8/22	
Date Borehole Completed:	2/8/22	
Logged By:	B. Weitering	
Drilling Company:	CN Drilling	

April 8, 2022
PanGEO Project No. 22-041

Mr. Keith Vernon
5410 174th Place SE
Bellevue, WA 98006

**Subject: Response to Geotechnical Review Comments
5410 – 174th Place SE, Bellevue, WA**

Dear Keith,

This letter provides our geotechnical response to the letter from the City of Bellevue titled Important Revision Submittal Information, received April 5, 2022. This document requires a “geotechnical review and opinion of the proposed development in relation to the steep slope discussing the Factors of Safety of the slope in static and dynamic (seismic) case”.

The subject site is shallowly underlain by bedrock at depths of 1 to 5 feet, and all foundations are expected to be located on weathered or fresh bedrock. In addition, our reconnaissance indicated that bedrock immediately underlies the bench area below the subject property, on which the Street of Dreams path is located. This gently sloping bench area is roughly 50 feet wide. In our experience, quantitative slope stability analyses of sites underlain by bedrock typically have Factors of Safety exceeding 2 under both static and seismic loading. In our opinion the planned addition and deck structures will not adversely affect the stability of the natural slopes on and below the site, and the slopes will have Factors of Safety that meet or exceed those required by the City of Bellevue.

Geotechnical Addendum
5410 174th Place SE
Bellevue, Washington
April 8, 2022

We trust that this addendum will meet your needs at this time.

Sincerely,



STEPHEN H. EVANS

Stephen H. Evans

Stephen H. Evans, L.E.
Senior Engineering Geologist

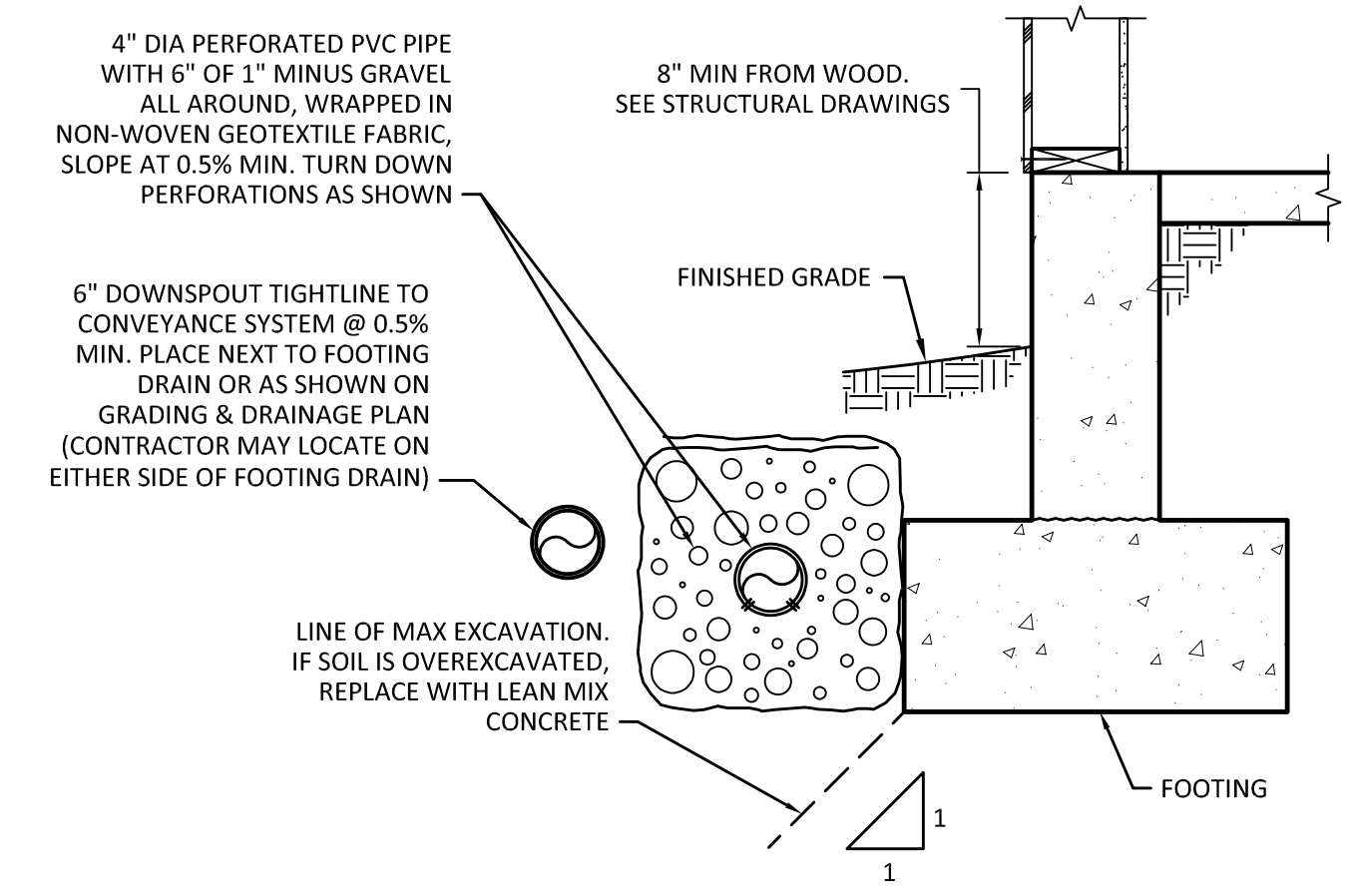
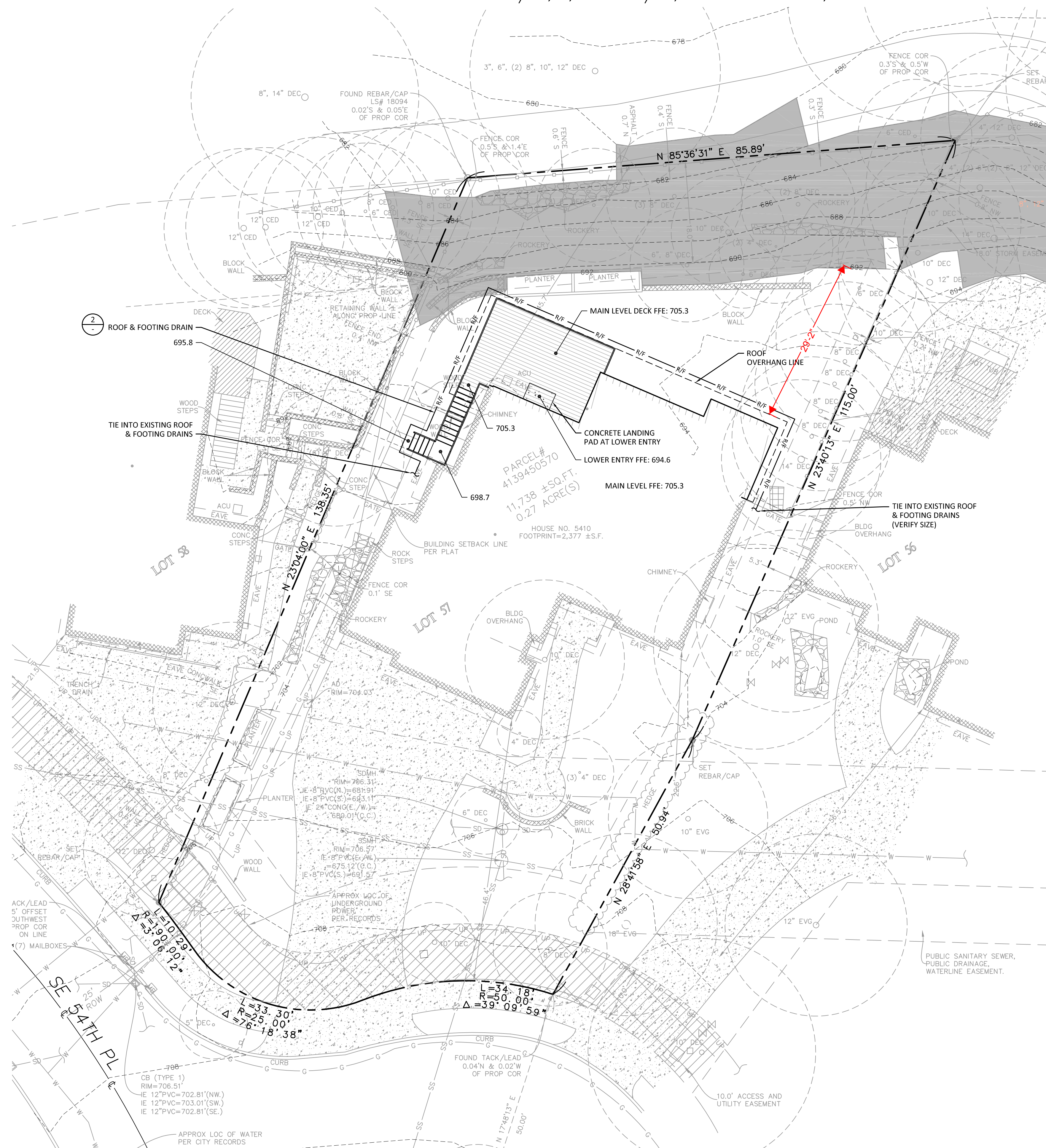


W. Paul Grant, P.E.
Principal Geotechnical Engineer

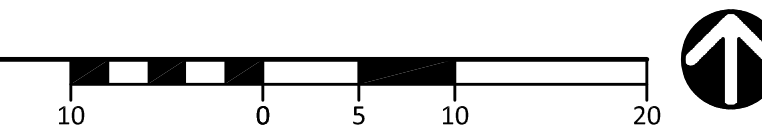


GRADING AND DRAINAGE PLAN NOTES:

- THIS SITE CONTAINS A DESIGNATED STEEP SLOPE CRITICAL AREA.
- ALL DISTURBED AREAS ON AND OFF-SITE SHALL BE COMPOST- AMENDED PER THE REQUIREMENTS OF BMP T5.13 IN THE STORMWATER MANUAL VOLUME V, CHAPTER 5.
- A MINIMUM OF 3' HORIZONTAL SEPARATION AND 1' VERTICAL SEPARATION IS REQUIRED BETWEEN DRY UTILITIES (POWER, GAS, PHONE, CABLE, ETC) AND SEWER, WATER AND STORM, AND A MINIMUM OF 5' HORIZONTAL SEPARATION AND 1' VERTICAL SEPARATION FROM ANY CITY-OWNED LINES.
- NEW/REPLACED IMPERVIOUS SURFACE (INCLUDING ROW): 1,021 SF
 -- NEW/REPLACED ROOF: 968 SF ROOF AREA (INCLUDES OVERHANGS). RUNOFF ROUTED TO PUBLIC STORM SYSTEM THROUGH ROOF DRAINS.
 -- NEW STAIRS: 53 SF RUNOFF ROUTED TO PUBLIC STORM SYSTEM THROUGH ROOF DRAINS.



1 GRADING AND DRAINAGE PLAN
 SCALE: 1" = 10'



2 FOOTING AND ROOF DRAIN SECTION
 SCALE: NTS

MARK	DATE	DESCRIPTION
	10/18/21	PERMIT SUBMITTAL

DESIGN:	SBG
DRAWN:	ATD
CHECK:	JPU
JOB NO:	21376.20
DATE:	10/18/21

VERNON RESIDENCE
 5410 174TH PL SE
 BELLEVUE, WA 98006

**GRADING AND DRAINAGE
 PLAN AND DETAILS**

SHEET:

CRITICAL AREA REPORT

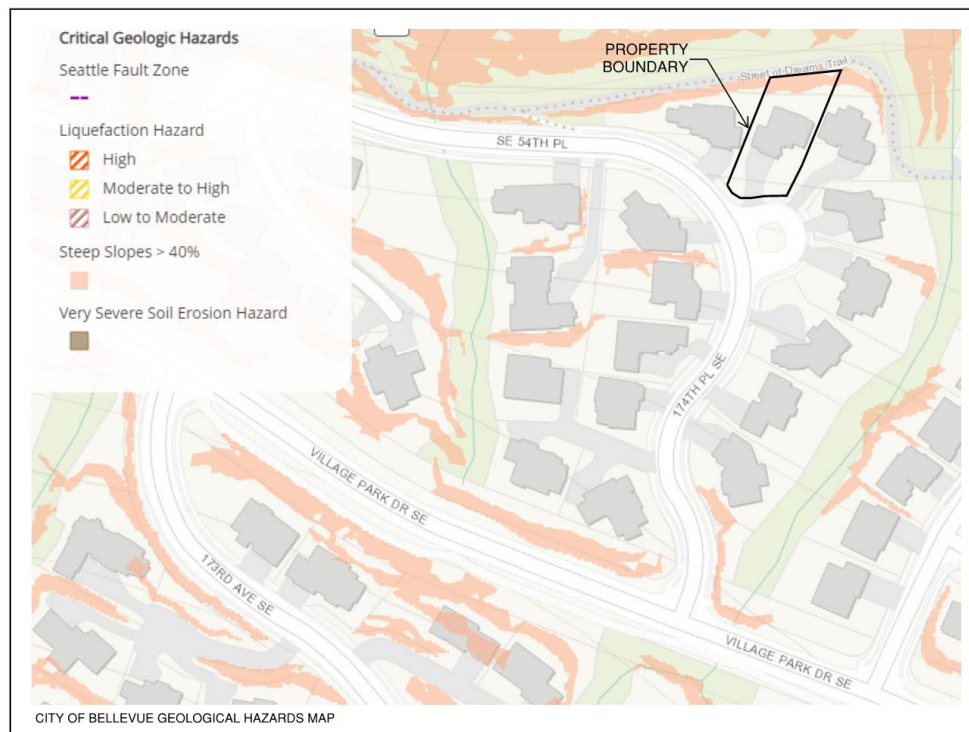
Proposed Vernon Addition
5410 174TH Place SE
Bellevue, WA 98006
May 11, 2022

This Critical Area Report is provided as part of a response to application review for Land Use Permit #22-103219-LO as requested by Jordan Borst, Land Use.

Information below corresponds to LUC 20.25H.250.B Minimum Report Requirements. This report also supplements and references information as provided in the Geotechnical and Critical Area Report completed by PanGEO Inc.

1. *Identification and classification of all critical areas and critical area buffers on the site.*

The only classified Critical Area found on this site is a band of steep slopes (40% and greater) present along the north property line. This band is roughly 16 feet wide with a slope gradient of about 50% and a relief of 8 to 12 feet.



Where Steep Slope critical areas are present, the City of Bellevue requires a top-of-slope buffer of 50 feet and a toe-of-slope structural setback of 75 feet. The property is located at the top of the slope, so the 50 foot top-of slope buffer applies. LUC 20.25H.035. See attached Figure 1 – Steep Slope area, buffer & setback.

2. Identification and characterization of all critical areas and critical area buffers on those properties immediately adjacent to the site.

Adjacent residential properties to the East and West of the site boundary are similarly located along the top of the slope, with a continuation of the steep slope band as seen on the Geological Hazards Map on page 1. The north property line abuts a paved path called The Street of Dreams trail which is bordered on the North by a wooded slope. Per the Geotech report (page 6), there were no signs of distress in the area and no reported past known historical slides at the site or its immediate vicinity.

3. Identification of each regulation or standard of this code proposed to be modified.

The existing residence footprint and attached deck currently encroaches within the property's critical area buffer and critical area structure setback but is excluded per LUC 20.25H.035.B. The proposed addition and attached accessory structure (elevated, permeable deck) is allowable pursuant upon an approved Critical Areas Land Use Permit per LUC 20.25H.055.C.3.n, pursuant to the following limitations:

- a. *The expansion shall be along the existing building line parallel to the edge of the critical area*

Response:

Figure 1 shows a reference line from the existing building, parallel to the edge of the critical area top of slope. The new addition does not encroach beyond this reference line.

- b. *Expansions shall be the minimum necessary to achieve the intended functions of the expansion, but in no event may the footprint expansion within the critical area buffer and critical area structure setback exceed 500 square feet over the life of the structure.*

Response:

The addition footprint does not exceed 500 square feet. It is only 236 square feet.

- c. *Areas of new permanent disturbance and all areas of temporary disturbance within the critical area buffer shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC 20.25H.210.*

Response:

No work or ground disturbance is to be done within the critical area and work within the critical area buffer and critical area structure setback is minimal, with no change to existing grading. The new addition area is all on level ground that is currently covered in artificial turf and gravel. We are not removing any existing trees or landscaping in this area. A mitigation plan is provided, Figure 4.

BOXWOOD

The proposed addition to the home and the deck meets the criteria in LUC 20.25H.055.C.3.n. The proposed addition to the home and deck will be in the top-of-slope buffer on the site, regulated by LUC 20.25H.035.

4. A habitat assessment consistent with the requirements of LUC 20.25H.165

The site is a residential lot with a ground surface of predominately lawn, bare soil gravel, and artificial turf. The front yard (south of the residence) has approximately 1,786 square feet of impervious concrete driveway and walkways, framed by Boxwood hedges. Boxwood hedges also run along the east, south and west property lines both on site and on adjacent properties to the east and west. Trees as located on the site plan consist of maples, birch, fir and cedar. No trees will be removed or disturbed during the proposed construction.

The north portion of the site containing the steep slope area is mostly exposed, bare ground with hardscape retaining walls and rockeries showing no signs of distress. The six trees within the steep slope are mostly deciduous with straight trunks showing no signs of bowing. Adjacent to the steep slope, south of the top-of-slope line, the yard is flat and covered in artificial turf and gravel, with minimal to no plantings. A line of seven deciduous trees flanks the east fence line with bare soil beneath.

Per the Geotech report (page 4), no free groundwater seepage was observed within the test depths during exploration. The borings were done during the wet season, so the potential for groundwater seepage is low. If perched seepage is encountered in the building excavations, it is anticipated that the seepage volume will be relatively minor and can likely be controlled with sump pumps.

Surface runoff will be controlled during construction by careful grading practices. Typically, this includes the construction of shallow, upgrade perimeter ditches or low earthen berms in conjunction with silt fences to collect runoff and prevent

water from entering excavations or to prevent runoff from the construction area leaving the immediate work site. Temporary erosion control may require the use of hay bales on the downhill side of the project to prevent water from leaving the site and potential storm water detention to trap sand and silt before the water is discharged to a suitable outlet. All collected water should be directed under control to a positive and permanent discharge system.

Permanent control of surface water will be incorporated in the final restored grading per the Civil Site Plan, Figure 3. Adequate surface gradients and drainage systems will be incorporated into the design such that surface runoff is collected and directed away from the structure to a suitable outlet. Potential issues associated with erosion may also be reduced by establishing vegetation within disturbed areas immediately following grading operations.

The proposed area of the new addition equaling 236 square feet is to be located outside of the steep slope, on flat yard of existing gravel and turf. Although there is no significant habitat being removed or disturbed in excavation or construction, 300 square feet of mitigation vegetation will be provided to offset the new impervious surface, within the steep slope buffer.

5. *An assessment of the probable cumulative impacts to critical areas resulting from development of the site and the proposed development*

There are no probable cumulative impacts to the steep slope critical area anticipated from the development of the site and proposed addition. The proposed addition will be constructed outside of the steep slopes, and the proposed addition is consistent with surrounding development. Per the Geotech Report (page 6), based on the height of steep slope, the observed slope conditions, and the subsurface soil conditions, it is of the Geotech Engineer's opinion that the proposed addition may be constructed within the steep slope buffer from the top of slope along the north side of the site.

6. *An analysis of the level of protection of critical area functions and values provided by the regulations or standards of this code, compared with the level of protection provided by the proposal.*

The steep slope critical area will not be impacted by the excavation and/or construction of the proposed addition. Recommendations addressing the excavation, foundation and footings, lateral resistance, drainage, and other structural design parameters can be found in the Geotechnical Report (page 7-15).

Erosion Control Plan and Grading and Drainage Plans can be found in the Civil Engineering Drawings, Figure 3.

- 7. A discussion of the performance standards applicable to the critical area and proposed activity pursuant to LUC 20.25H.160, and recommendation for additional or modified performance standards, if any.**

BOXWOOD

No habitat associated with species of local importance will be impacted by this proposed addition. No additional or modified performance standards are necessary.

- 8. A discussion of the mitigation requirements applicable to the proposal pursuant to LUC 20.25H.210, and a recommendation for additional or modified mitigation, if any.**

Mitigation will be provided as outlined in the Mitigation Plan, Figure 4. 300 square feet of vegetation will be added to replace the 236 square feet of new impervious surface. This added vegetation is an enhancement to the existing gravel and turf that is proposed to be removed by the new addition.

- 9. Any additional information required for the specific critical area as specified in the sections of this part addressing that critical area.**

See the Geotechnical and Critical Areas Report by PanGEO for additional information and recommendations.

Critical Area Report
Vernon Addition – 5410 174th Pl. SE Bellevue, WA
22-103219-LO
May 3, 2022

This report was prepared to the best of my knowledge as a supplement to the Geotechnical and Critical Areas Report and addendum completed by PanGEO. Additional information as supplied is based on site observation, photos, drawings and a property survey as provided by a licensed Surveyor.



Attachments:

- Figure 1 Site Plan
- Figure 2 Photos
- Figure 3 Civil Engineering Drawings – Erosion Control Plan & Details, Grading & Drainage Plan & Details
- Figure 4 Mitigation Plan

Thank you,



Karlin Bungartz
Principal, BOXWOOD

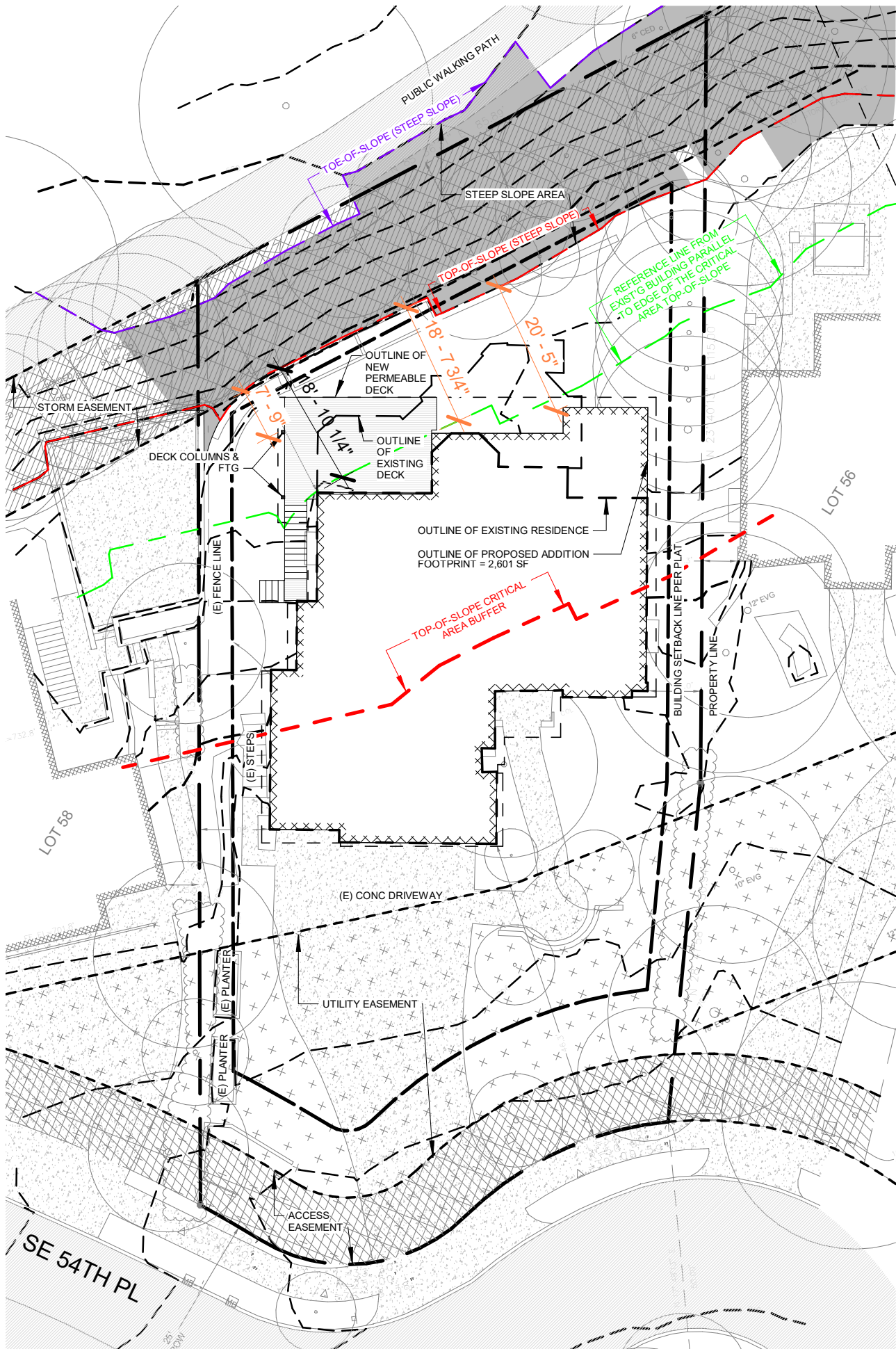


FIGURE 1 - STEEP SLOPE AREA, BUFFER & SETBACK

Figure 2 – Site Photos

Vernon Addition – 5410 174th Pl. SE Bellevue, WA
22-103219-LO



Figure 2 – Site Photos

Vernon Addition – 5410 174th Pl. SE Bellevue, WA
22-103219-LO



Figure 2 – Site Photos

Vernon Addition – 5410 174th Pl. SE Bellevue, WA
22-103219-LO



Vernon Addition – 5410 174th Pl. SE Bellevue, WA
22-103219-LO



Figure 2 – Site Photos

Vernon Addition – 5410 174th Pl. SE Bellevue, WA
22-103219-LO



Figure 2 – Site Photos

Vernon Addition – 5410 174th Pl. SE Bellevue, WA
22-103219-LO



Figure 2 – Site Photos

Vernon Addition – 5410 174th Pl. SE Bellevue, WA
22-103219-LO

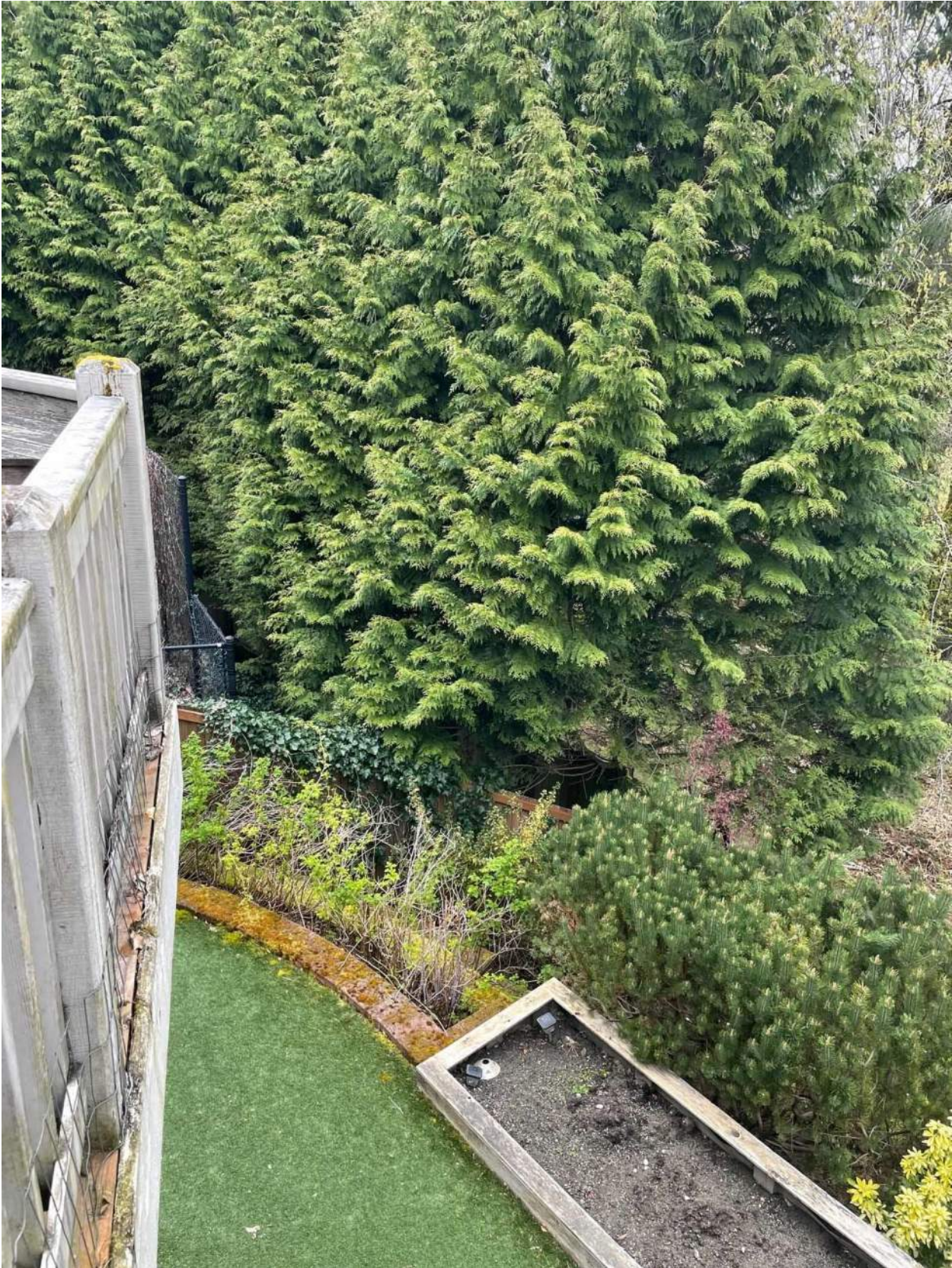
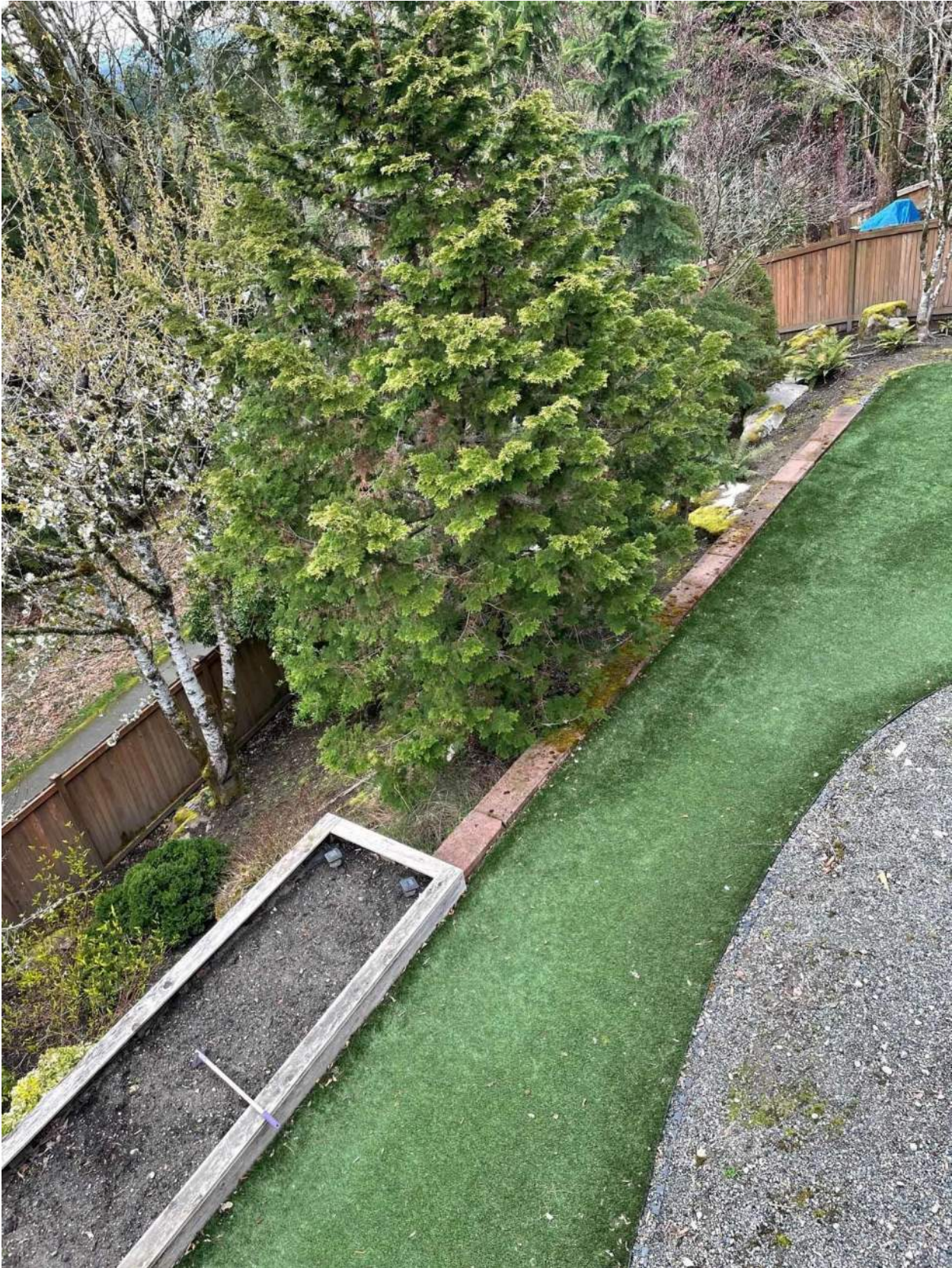


Figure 2 – Site Photos

Vernon Addition – 5410 174th Pl. SE Bellevue, WA
22-103219-LO



VERNON RESIDENCE

5410 174TH PL SE BELLEVUE, WA 98006

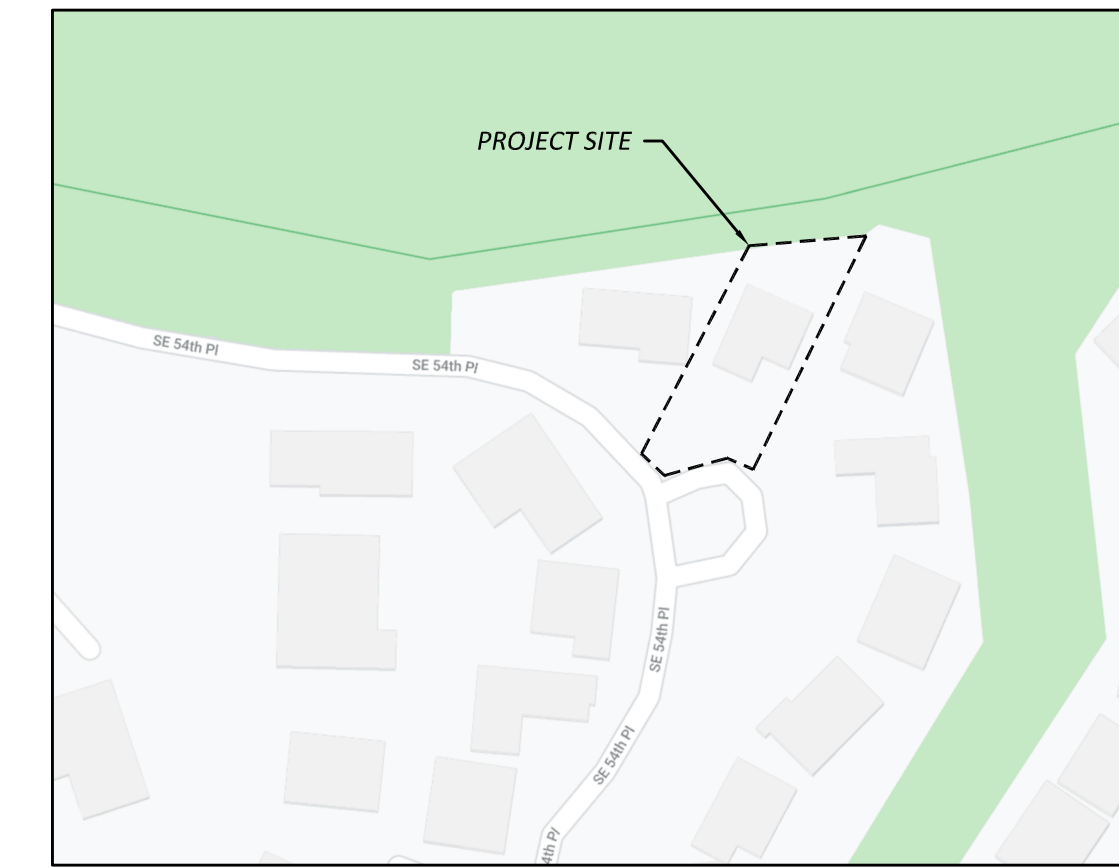
SW 1/4, , NE 1/4, SECTION 19, TOWNSHIP 26 NORTH, RANGE 5 EAST, W.M.

CAUTION!
CALL BEFORE YOU DIG!

BURIED UTILITIES EXIST IN THE AREA AND UTILITY INFORMATION SHOWN MAY NOT BE COMPLETE. CONTACT THE ONE-CALL UTILITY LOCATE SERVICE A MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION

1-800-424-5555

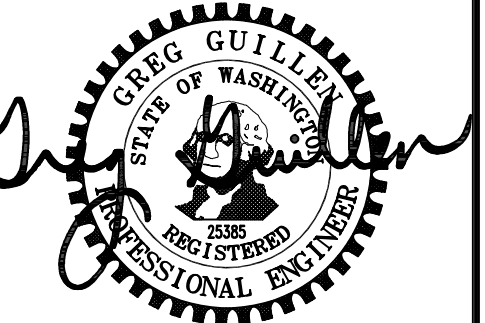
SHEET INDEX	
C1.1	COVER SHEET & GENERAL NOTES
C2.1	TEMPORARY EROSION CONTROL PLAN
C3.1	GRADING & DRAINAGE PLAN



VICINITY MAP
NTS

ENGINEERING

250 4TH AVE. S., SUITE 200
EDMONDS, WASHINGTON 98020
PHONE (425) 778-8500
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10/18/21

OWNER

KEITH VERNON
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BELLEVUE, WA 98006
206.300.1818

CONSULTANTS

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1303 LAKE WASHINGTON BLVD S
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TERRANE
10801 MAIN ST, SUITE 1102
BELLEVUE, WA 98004
425.458.4488
CONTACT: JACOB G MILLER

LEGAL DESCRIPTION

(PER STATUTORY WARRANTY DEED RECORDING# 20050228001520)

LOT 57, LAKEMONT DIV. 5, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 166 OF PLATS, PAGES 15 THROUGH 27, IN KING COUNTY, WASHINGTON.

BASIS OF BEARING

A CHORD BEARING OF N 16°18'09" E BETWEEN FOUND SURVEY MONUMENTS ON CENTERLINE OF SE 54TH PL, CALCULATED PER PLAT.

DATUM

NAVD 88

GENERAL NOTES

GENERAL NOTES:

- ALL WORK SHALL CONFORM TO THE 2018 EDITION OF THE CITY OF BELLEVUE UTILITIES DEPARTMENT ENGINEERING STANDARDS.
- THE CONTRACTOR SHALL USE A VACUUM STREET SWEEPER TO REMOVE DUST AND DEBRIS FROM PAVEMENT AREAS.
- WHEN WORK IS TO OCCUR IN EASEMENTS, THE CONTRACTOR SHALL NOTIFY THE EASEMENT GRANTOR AND CITY'S INSPECTOR IN WRITING A MINIMUM OF 48 HOURS IN ADVANCE OF BEGINNING WORK (NOT INCLUDING WEEKENDS OR HOLIDAYS). FAILURE TO NOTIFY GRANTOR AND THE CITY'S INSPECTOR WILL RESULT IN A STOP WORK ORDER BEING POSTED UNTIL THE MATTER IS RESOLVED TO THE SATISFACTION OF THE UTILITY. A WRITTEN RELEASE FROM THE EASEMENT GRANTOR SHALL BE FURNISHED TO THE CITY'S INSPECTOR PRIOR TO PERMIT SIGN-OFF.
- INSTALL FLOW DIVERSION MEASURES OUTSIDE OF THE CRITICAL ROOT ZONE OF TREES TO BE PROTECTED. AT NO TIME SHALL CONSTRUCTION STORMWATER BE DIRECTED TOWARDS TREES TO BE PROTECTED. CONSTRUCTION STORMWATER SHALL NOT POND WITHIN A TREE'S CRITICAL ROOT ZONE.
- ALL TRENCHES SHALL BE BACKFILLED, COMPACTED, AND PAVEMENT IN PLACE UNPAVED AREAS, PRIOR TO TESTING STORM PIPES FOR ACCEPTANCE.

STORM DRAINAGE GENERAL NOTES:

- STORM PIPE SHALL BE PVC CONFORMING TO ASTM D-3034 SDR 35 (4" - 15") OR ASTM F679 (18" - 27"). BEDDING AND BACKFILL SHALL BE AS SHOWN IN THE STANDARD DETAILS.
- THE FOOTING DRAINAGE SYSTEM AND THE ROOF DOWNSPOUT SYSTEM SHALL NOT BE INTERCONNECTED AND SHALL SEPARATELY CONVEY COLLECTED FLOWS TO THE CONVEYANCE SYSTEM OR TO ON-SITE STORMWATER FACILITIES.
- PRIOR TO FINAL INSPECTION AND ACCEPTANCE OF STORM DRAINAGE WORK, PIPES AND STORM DRAIN STRUCTURES SHALL BE CLEANED AND FLUSHED. ANY OBSTRUCTIONS TO FLOW WITHIN THE STORM DRAIN SYSTEM, (SUCH AS RUBBLE, MORTAR AND WEDGED DEBRIS), SHALL BE REMOVED AT THE NEAREST STRUCTURE. WASH WATER OF ANY SORT SHALL NOT BE DISCHARGED TO THE STORM DRAIN SYSTEM OR SURFACE WATERS.
- ENDS OF EACH STORM DRAIN STUB AT THE PROPERTY LINE SHALL BE CAPPED AND LOCATED WITH AN 8" LONG 2" X 4" BOARD, EMBEDDED TO THE STUB CAP AND EXTENDING AT LEAST 3 FEET ABOVE GRADE, SURFACE WATER ENGINEERING STANDARDS JANUARY 2017 (A04-2) AND MARKED PERMANENTLY "STORM". A COPPER 12 GA. LOCATE WIRE FIRMLY ATTACHED. THE STUB DEPTH SHALL BE INDICATED ON THE MARKER.
- ALL GRATES IN ROADWAYS SHALL BE DUCTILE IRON, BOLT-LOCKING, VANED GRATES PER THE STANDARD DETAILS. STRUCTURES IN TRAFFIC LANES OUTSIDE OF THE CURBLINE WHICH DO NOT COLLECT RUNOFF SHALL BE FITTED WITH ROUND, BOLT-LOCKING SOLID COVERS. OFF-STREET STRUCTURES WHICH DO NOT COLLECT RUNOFF SHALL BE FITTED WITH BOLT-LOCKING SOLID COVERS.
- VEGETATION/LANDSCAPING IN THE DETENTION POND, BIORETENTION FACILITY, VEGETATED ROOF AND/OR DRAINAGE SWALE(S) ARE AN INTEGRAL PART OF THE RUNOFF TREATMENT SYSTEM FOR THE PROJECT. SUCH DRAINAGE FACILITIES WILL NOT BE ACCEPTED UNTIL PLANTINGS ARE ESTABLISHED.
- ALL NEW MANHOLES SHALL HAVE A MINIMUM INSIDE DIAMETER OF 48" AND SHALL CONFORM TO THE STANDARD DETAILS. ALL NEW CATCH BASINS SHALL CONFORM TO THE STANDARD DETAILS.
- SIDE STORM STATIONS ARE REFERENCED FROM NEAREST DOWNSTREAM MANHOLE/ CATCH BASIN.
- ALL TESTING AND CONNECTIONS TO EXISTING MAINS SHALL BE DONE IN THE PRESENCE OF A REPRESENTATIVE OF THE CITY OF BELLEVUE UTILITIES DEPARTMENT.
- ALL PUBLIC STORM DRAINS SHALL BE AIR TESTED AND HAVE A VIDEO INSPECTION PERFORMED PRIOR TO ACCEPTANCE (SEE #23 BELOW). STORM MAIN CONSTRUCTED WITH FLEXIBLE PIPE SHALL BE DEFLECTION TESTED WITH A MANDREL PRIOR TO ACCEPTANCE.
- STORM STUBS SHALL BE TESTED FOR ACCEPTANCE AT THE SAME TIME THE MAIN STORM IS TESTED.
- ALL MANHOLES/ CATCH BASINS IN UNPAVED AREAS SHALL INCLUDE A CONCRETE SEAL AROUND ADJUSTMENT RINGS PER STANDARD DETAILS.
- ALL STORM MAIN EXTENSIONS WITHIN THE PUBLIC RIGHT-OF-WAY OR IN EASEMENTS MUST BE "STAKED" BY A SURVEYOR LICENSED IN WASHINGTON STATE FOR "LINE AND GRADE" AND CUT SHEETS PROVIDED TO THE PROFESSIONAL ENGINEER, PRIOR TO STARTING CONSTRUCTION.
- STORM DRAINAGE MAINLINES, STUBS AND FITTINGS SHALL BE CONSTRUCTED USING THE SAME PIPE MATERIAL AND MANUFACTURER. CONNECTIONS BETWEEN STUBS AND THE MAINLINE WILL BE MADE WITH A TEE FITTING. TEE FITTING SHALL BE FROM SAME MANUFACTURER AS PIPE. CUT-IN CONNECTIONS ARE ONLY ALLOWED WHEN CONNECTING A NEW STUB TO AN EXISTING MAINLINE. MANHOLES, CATCH BASINS AND VAULTS ARE CONSIDERED TO BE PERMIT-REQUIRED CONFINED SPACES. ENTRY INTO THESE SPACES SHALL BE IN ACCORDANCE WITH CHAPTER 296-809 WAC.
- MANHOLES, CATCH BASINS AND VAULTS ARE CONSIDERED TO BE PERMIT-REQUIRED CONFINED SPACES. ENTRY INTO THESE SPACES SHALL BE IN ACCORDANCE WITH CHAPTER 296-809 WAC.
- PLACEMENT OF SURFACE APPURTENANCES (MID LIDS, VALVE LIDS, ETC.) IN TIRE TRACKS OF TRAFFIC LANES SHALL BE AVOIDED WHENEVER POSSIBLE.

- THE CONTRACTOR SHALL PERFORM A VIDEO INSPECTION AND PROVIDE A DVD OF THE STORM PIPE INTERIOR FOR THE CITY'S REVIEW. THE VIDEO SHALL PROVIDE A MINIMUM OF 14 LINES PER MILLIMETER RESOLUTION AND COVER THE ENTIRE LENGTH OF THE APPLICABLE PIPE. THE CAMERA SHALL BE MOVED THROUGH THE PIPE AT A UNIFORM RATE (≤ 30 FT/MIN), STOPPING WHEN NECESSARY TO ENSURE PROPER DOCUMENTATION OF THE PIPE CONDITION. THE VIDEO SHALL BE TAKEN AFTER INSTALLATION AND CLEANING TO INSURE THAT NO DEFECTS EXIST. THE PROJECT WILL NOT BE ACCEPTED UNTIL ALL DEFECTS HAVE BEEN REPAIRED.
- CLEARLY LABEL PUBLIC AND PRIVATE SYSTEMS ON THE PLANS. PRIVATE SYSTEMS SHALL BE MARKED "PRIVATE" AND SHALL BE MAINTAINED BY THE PROPERTY OWNER(S).
- ALL CONCRETE STRUCTURES (VAULTS, CATCH BASINS, MANHOLES, OIL/WATER SEPARATORS, ETC.) SHALL BE VACUUM TESTED.
- MANHOLES, CATCH BASINS AND INLETS IN EASEMENTS SHALL BE CONSTRUCTED TO PROVIDE A STABLE, LEVEL GRADE FOR A MINIMUM RADIUS OF 2.5 FEET AROUND THE CENTER OF THE ACCESS OPENING TO ACCOMMODATE CONFINED SPACE ENTRY EQUIPMENT.
- TOPS OF MANHOLES/ CATCH BASINS WITHIN PUBLIC RIGHT-OF-WAY SHALL NOT BE ADJUSTED TO FINAL GRADE UNTIL AFTER PAVING.
- CONTRACTOR SHALL ADJUST ALL MANHOLE/ CATCH BASIN RIMS TO FLUSH WITH FINAL FINISHED GRADES, UNLESS OTHERWISE SHOWN.
- CONTRACTOR SHALL INSTALL, AT ALL CONNECTIONS TO EXISTING DOWNSTREAM MANHOLES/CATCH BASINS, SCREENS OR PLUGS TO PREVENT FOREIGN MATERIALS FROM ENTERING EXISTING STORM DRAINAGE SYSTEM. SCREENS OR PLUGS SHALL REMAIN IN PLACE THROUGHOUT THE DURATION OF THE CONSTRUCTION AND SHALL BE REMOVED ALONG WITH COLLECTED DEBRIS AT THE TIME OF FINAL INSPECTION AND IN THE PRESENCE OF A REPRESENTATIVE OF THE CITY OF BELLEVUE UTILITIES DEPARTMENT.
- BEFORE COMMENCEMENT OF TRENCHING, THE CONTRACTOR SHALL PROVIDE FILTER FABRIC FOR ALL DOWNHILL STORM DRAIN INLETS AND CATCH BASINS, WHICH WILL RECEIVE RUNOFF FROM THE PROJECT SITE. THE CONTRACTOR SHALL PERIODICALLY INSPECT THE CONDITION OF ALL FILTER FABRIC AND REPLACE AS NECESSARY.
- MINIMUM COVER OVER STORM DRAINAGE PIPE SHALL BE 2 FEET, UNLESS OTHERWISE SHOWN.
- REDIRECT SHEET FLOW, BLOCK DRAIN INLETS AND/OR CURB OPENINGS IN PAVEMENT AND INSTALL FLOW DIVERSION MEASURES TO PREVENT CONSTRUCTION SILT LADEN RUNOFF AND DEBRIS FROM ENTERING EXCAVATIONS AND FINISH SURFACES FOR BIORETENTION FACILITIES AND PERMEABLE PAVEMENTS.
- WHERE AMENDED SOILS, BIORETENTION FACILITIES, AND PERMEABLE PAVEMENTS ARE INSTALLED, THESE AREAS SHALL BE PROTECTED AT ALL TIMES FROM BEING OVER-COMPACTED. IF AREAS BECOME COMPACTED, REMEDIATE AND TILL SOIL IN ACCORDANCE WITH THE CITY'S PROJECT REPRESENTATIVE'S REQUIREMENTS AT NO ADDITIONAL COST IN ORDER TO RESTORE THE SYSTEM'S ABILITY TO INFILTRATE.

UTILITY NOTES:

- THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN HEREON HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD THEREFORE BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE EXCAVATOR TO INDEPENDENTLY VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS SHOWN, AND TO FURTHER DISCOVER AND AVOID ANY OTHER UTILITIES NOT SHOWN HERE ON WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN. IMMEDIATELY NOTIFY THE RESPONSIBLE PROFESSIONAL ENGINEER IF A CONFLICT EXISTS.
- CALL 1-800-424-5555, OR 8-1-1, 72 HOURS BEFORE CONSTRUCTION FOR UTILITY LOCATES.
- THE CONTRACTOR SHALL MAINTAIN A MINIMUM OF FIVE FEET (5') HORIZONTAL SEPARATION BETWEEN ALL WATER AND STORM DRAINAGE LINES. ANY CONFLICT SHALL BE REPORTED TO THE UTILITY AND THE PROFESSIONAL ENGINEER PRIOR TO CONSTRUCTION.
- AVOID CROSSING WATER OR SEWER MAINS AT HIGHLY ACUTE ANGLES. THE SMALLEST ANGLE MEASURE BETWEEN UTILITIES SHOULD BE 45 DEGREES.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT NO CONFLICTS EXIST BETWEEN STORM DRAINAGE LINES AND PROPOSED OR EXISTING UTILITIES PRIOR TO CONSTRUCTION.
- AT POINTS WHERE EXISTING THRUST BLOCKING IS FOUND, MINIMUM CLEARANCE BETWEEN CONCRETE BLOCKING AND OTHER BURIED UTILITIES OR STRUCTURES SHALL BE 5 FEET.
- WHERE A NEW UTILITY LINE CROSSES BELOW AN EXISTING AC MAIN, THE AC PIPE SHALL BE REPLACED WITH DI PIPE TO 3 FEET PAST EACH SIDE OF THE TRENCH AS SHOWN ON STANDARD DETAIL W-8. ALTERNATIVELY, WHERE DIRECTED BY THE UTILITY, THE TRENCH SHALL BE BACKFILLED WITH CONTROLLED DENSITY FILL (CDF, AKA FLOWABLE FILL) FROM BOTTOM OF TRENCH TO BOTTOM OF AC MAIN.

EROSION CONTROL NOTES:

- PROVIDE AND MAINTAIN TEMPORARY SEDIMENTATION COLLECTION FACILITIES TO ENSURE THAT SEDIMENT OR OTHER HAZARDOUS MATERIALS DO NOT ENTER THE STORM DRAINAGE SYSTEM IN ACCORDANCE WITH THE SITES APPROVED CSWPPP.
- FOR ALL CONSTRUCTION DURING THE RAINY SEASON, DOWNHILL BASINS AND INLETS MUST BE PROTECTED WITH CATCH BASIN INSERTS. SIMPLY PLACING FILTER FABRIC UNDER THE GRATE IS NOT ACCEPTABLE.

RESTORATION NOTES:

- SURFACE RESTORATION OF EXISTING ASPHALT PAVEMENT SHALL BE AS REQUIRED BY THE RIGHT-OF-WAY USE PERMIT.
- THE CONTRACTOR SHALL RESTORE THE RIGHT-OF-WAY AND EXISTING PUBLIC STORM DRAINAGE EASEMENT(S) AFTER CONSTRUCTION TO A CONDITION EQUAL OR BETTER THAN CONDITION PRIOR TO ENTRY. THE CONTRACTOR SHALL FURNISH A SIGNED RELEASE FROM ALL AFFECTED PROPERTY OWNERS AFTER RESTORATION HAS BEEN COMPLETED.

RECOMMENDED CONSTRUCTION SEQUENCE:

- HOLD THE PRE-CONSTRUCTION MEETING.
- POST SIGN WITH NAME AND PHONE NUMBER OF CSWPP/ESC SUPERVISOR (MAY BE CONSOLIDATED WITH THE REQUIRED NOTICE OF CONSTRUCTION SIGN).
- FLAG OR FENCE CLEARING LIMITS.
- INSTALL CATCH BASIN PROTECTION, IF REQUIRED. INSTALL FLOW CONTROL BMP AREA PROTECTION, IF REQUIRED.
- GRADE AND INSTALL CONSTRUCTION ENTRANCE(S), IF REQUIRED.
- INSTALL PERIMETER PROTECTION (SILT FENCE, BRUSH BARRIER, ETC.).
- CONSTRUCT SURFACE WATER CONTROLS (INTERCEPTOR DIKES, PIPE SLOPE DRAINS, ETC.) SIMULTANEOUSLY WITH CLEARING AND GRADING FOR PROJECT DEVELOPMENT. CONSTRUCT SWPPS IN ANTICIPATION OF SCHEDULED CONSTRUCTION ACTIVITY (E.G., CONCRETE-RELATED PH MEASURES FOR UTILITY, VAULT OR ROADWAY CONSTRUCTION).
- MAINTAIN EROSION CONTROL AND SWPPS MEASURES IN ACCORDANCE WITH CITY OF BELLEVUE STANDARDS AND MANUFACTURER'S RECOMMENDATIONS.
- RELOCATE EROSION CONTROL AND SWPPS MEASURES, OR INSTALL NEW MEASURES SO THAT AS SITE CONDITIONS CHANGE, THE EROSION AND SEDIMENT CONTROL AND POLLUTANT PROTECTION IS ALWAYS IN ACCORDANCE WITH THE KING COUNTY CONSTRUCTION STORMWATER POLLUTION PREVENTION STANDARDS.
- COVER ALL AREAS THAT WILL BE UNWORKED FOR MORE THAN SEVEN DAYS DURING THE DRY SEASON OR TWO DAYS DURING THE WET SEASON WITH STRAW, WOOD FIBER MULCH, COMPOST, PLASTIC SHEETING, OR EQUIVALENT.
- STABILIZE ALL AREAS WITHIN SEVEN DAYS OF REACHING FINAL GRADE.
- SEED, SOO, STABILIZE, OR COVER ANY AREAS TO REMAIN UNWORKED FOR MORE THAN 30 DAYS.
- UPON COMPLETION OF THE PROJECT, STABILIZE ALL DISTURBED AREAS AND REMOVE BMPS IF APPROPRIATE.

LEGEND			ABBREVIATIONS	
DESCRIPTION	EXISTING	PROPOSED	ABBREVIATIONS	ABBREVIATIONS
PROPERTY LINE	---	---	ABN	ABANDONED
ADJACENT PROPERTY LINE	---	---	BLDG	BUILDING
CENTERLINE	---	---	BOW	BOTTOM OF WALL
CLEARING LIMITS	---	---	CL	CENTERLINE
SILT FENCE	--- X --- X ---	--- X --- X ---	CB	CATCH BASIN
CONTOUR LINE	--- 100 ---	--- 100 ---	CMP	CORRUGATED METAL PIPE
FENCE	--- □ --- □ ---	--- □ --- □ ---	CO	CLEANOUT
SANITARY SEWER LINE	--- SS --- SS ---	--- SS --- SS ---	CONC	CONCRETE
MANHOLE	--- (M) ---	--- (M) ---	CONST	CONSTRUCTION
STORM DRAIN MAIN	--- SD --- SD ---	--- SD --- SD ---	CP	CONCRETE PIPE
STORM DRAIN PIPE	--- SD --- SD ---	--- SD --- SD ---	CU YD	CUBIC YARD
ROOF DRAIN	--- R --- R ---	--- R --- R ---	DDCA	DOUBLE DETECTOR CHECK VALVE ASSEMBLY
FOOTING DRAIN	--- F --- F ---	--- F --- F ---	DI	DUCTILE IRON PIPE
PRESSURE LINE	--- P --- P ---	--- P --- P ---	DIA	DIAMETER
CATCH BASIN (TYPE 1)	---	---	DIP	DUCTILE IRON PIPE
CATCH BASIN (TYPE 2)	---	---	EA	EACH
CLEANOUT	---	---	EJ	EXPANSION JOINT
CLEANOUT AND WYE	---	---	ELEV	ELEVATION
GRADE BREAK	---	---	EOP	EDGE OF PAVEMENT
SURFACE SWALE	---	---	EX	EXISTING
DRAINAGE ARROW	---	---	FDC	FIRE DEPT. CONNECTION
WATER LINE	--- WA --- WA ---	--- WA --- WA ---	FFE	FINISHED FLOOR ELEVATION
WATER METER	---	---	FH	FIRE HYDRANT
FIRE HYDRANT	---	---	FL	FLANGE
FDC	---	---	FT	FEET/FOOT
PIV	---	---	GV	GATE VALVE
GATE VALVE	---	---	HP	HIGH POINT
TEE	---	---	HT	HEIGHT
90° BEND	---	---	ID	INSIDE DIAMETER
THRUST BLOCKING	---	---	IE	INVERT ELEVATION
CAP	---	---	L	LENGTH/LINE
CONCRETE PAVEMENT	---	---	LCPE	LINED CORRUGATED POLYETHYLENE PIPE
ASPHALT PAVEMENT	---	---	LF	LINEAL FOOT
CRUSHED SURFACING	---	---	LP	LOW POINT
ROCKERY	---	---	LT	LEFT
SPOT ELEVATION	--- 20.0 ---	--- 20.0 ---	MAX	MAXIMUM
TELEPHONE LINE	--- T --- T ---	--- T --- T ---	MECH	MECHANICAL
POWER LINE	--- E --- E ---	--- E --- E ---	MH	MANHOLE
GAS LINE	--- G --- G ---	--- G --- G ---		
SIGN	---	---		

MARK	DATE	DESCRIPTION	PERMIT SUBMITTAL	
			DATE	DESCRIPTION
	10/18/21			

DESIGN:	SBG
DRAWN:	ATD
CHECK:	JPU
JOB NO:	21376.20
DATE:	10/18/21

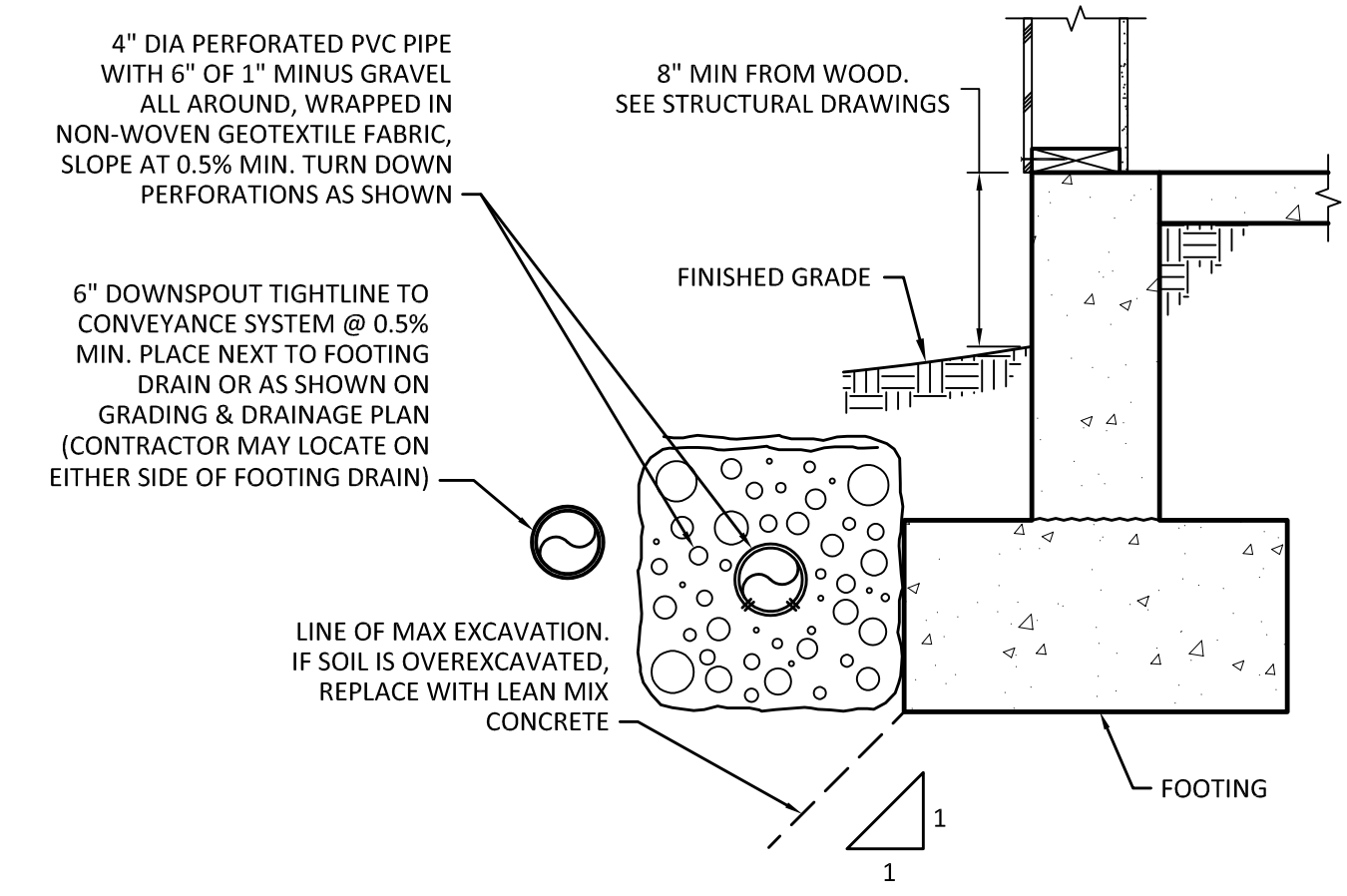
VERNON RESIDENCE
 5410 174TH PL SE
 BELLEVUE, WA 98006
 COVER SHEET AND
 GENERAL NOTES

SHEET:
C1.1

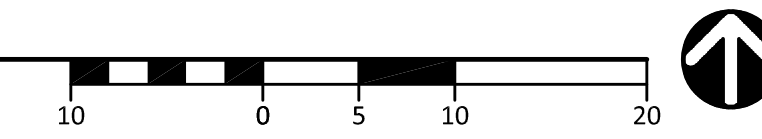


GRADING AND DRAINAGE PLAN NOTES:

1. THIS SITE CONTAINS A DESIGNATED STEEP SLOPE CRITICAL AREA.
2. ALL DISTURBED AREAS ON AND OFF-SITE SHALL BE COMPOST- AMENDED PER THE REQUIREMENTS OF BMP T5.13 IN THE STORMWATER MANUAL VOLUME V, CHAPTER 5.
3. A MINIMUM OF 3' HORIZONTAL SEPARATION AND 1' VERTICAL SEPARATION IS REQUIRED BETWEEN DRY UTILITIES (POWER, GAS, PHONE, CABLE, ETC) AND SEWER, WATER AND STORM, AND A MINIMUM OF 5' HORIZONTAL SEPARATION AND 1' VERTICAL SEPARATION FROM ANY CITY-OWNED LINES.
4. NEW/REPLACED IMPERVIOUS SURFACE (INCLUDING ROW): 1,021 SF
 -- NEW/REPLACED ROOF: 968 SF ROOF AREA (INCLUDES OVERHANGS). RUNOFF ROUTED TO PUBLIC STORM SYSTEM THROUGH ROOF DRAINS.
 -- NEW STAIRS: 53 SF RUNOFF ROUTED TO PUBLIC STORM SYSTEM THROUGH ROOF DRAINS.



1 GRADING AND DRAINAGE PLAN
 SCALE: 1" = 10'



2 FOOTING AND ROOF DRAIN SECTION
 SCALE: NTS

MARK	DATE	DESCRIPTION
	10/18/21	PERMIT SUBMITTAL

DESIGN:	SBG
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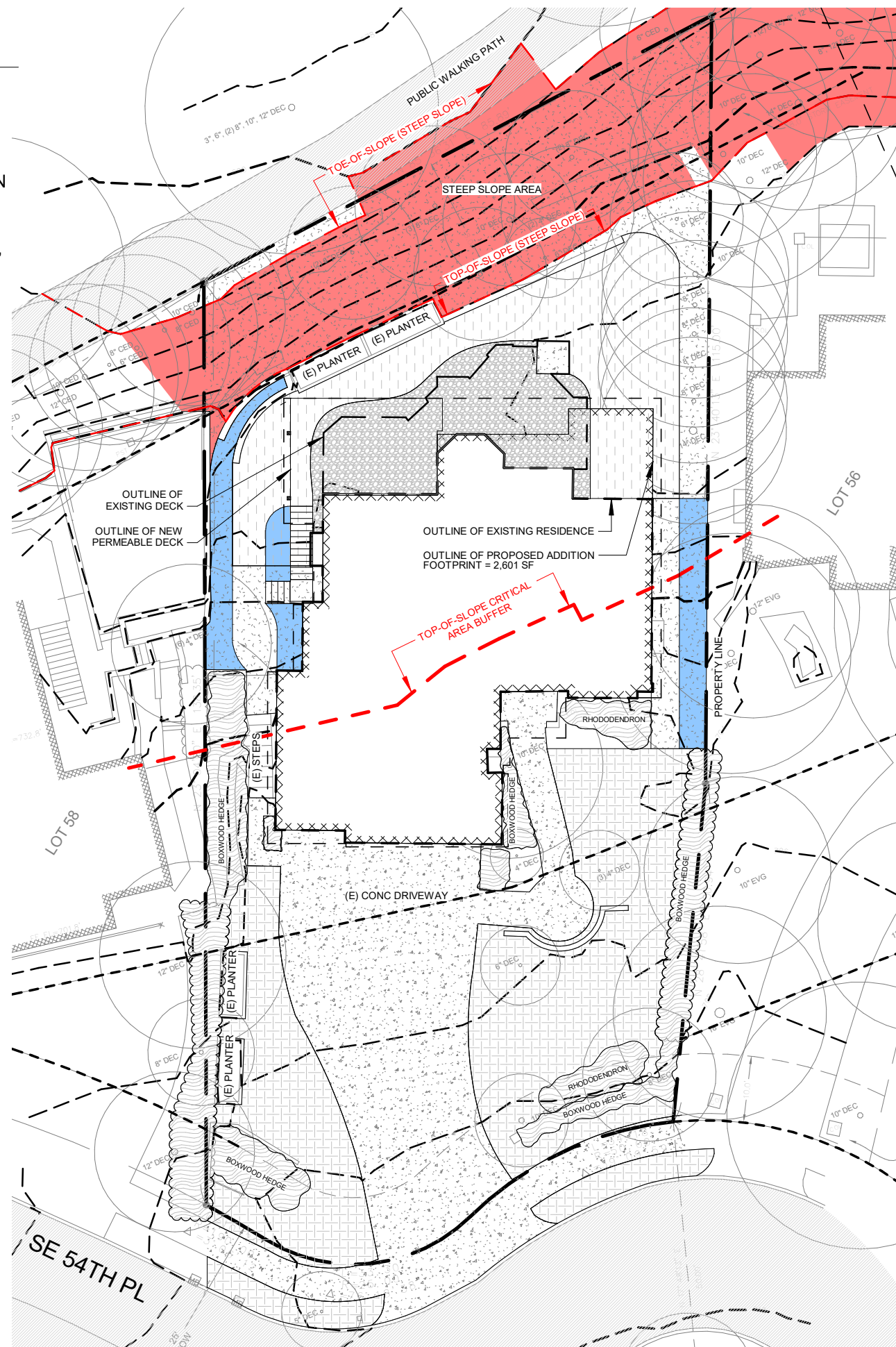
VERNON RESIDENCE
 5410 174TH PL SE
 BELLEVUE, WA 98006

**GRADING AND DRAINAGE
 PLAN AND DETAILS**

SHEET:

LEGEND

- STEEP SLOPE CRITICAL AREA
- PROPOSED MITIGATION LANDSCAPING AREA
- CONCRETE DRIVEWAY, WALKWAYS & PADS
- ARTIFICIAL TURF
- BARE SOIL, MINIMAL PLANTINGS
- GRAVEL
- LAWN
- SHRUBS



LOT COVERAGE

EXISTING FOOTPRINT = 2,365 SF
 PROPOSED ADDITION FOOTPRINT = 2,601 SF

NEW IMPERVIOUS AREA TO BE MITIGATED = 236 SF
 PROPOSED NEW MITIGATION AREA = 300 SF

MITIGATION NOTES

1. NO GRADING TO BE REVISED WITH PROPOSED ADDITION. TEMPORARY EXCAVATED AREAS OF CONSTRUCTION TO BE RESTORED TO ORIGINAL GRADE ELEVATIONS POST CONSTRUCTION.
2. THE PROPOSED AREA OF THE NEW ADDITION EQUALING 236 SF IS TO BE LOCATED OUTSIDE OF THE STEEP SLOPE, ON FLAT YARD OF EXISTING GRAVEL AND ARTIFICIAL TURF. TO OFFSET/REPLACE THE 236 SF OF NEW IMPERVIOUS SURFACE, OWNER TO PROVIDE 300 SF OF NEW MITIGATION LANDSCAPING INCLUDING PLANT MATERIAL OF SHRUBS AND GROUNDCOVER WITHIN THE TOP-OF-SLOPE CRITICAL AREA BUFFER AND SIDE YARDS. THIS NEW LANDSCAPING IS AN ENHANCEMENT TO THE ORIGINAL GRAVEL AND ARTIFICIAL TURF THAT CURRENTLY EXISTS.
3. SEE CIVIL DRAWINGS C2.1 TEMPORARY EROSION CONTROL PLAN AND DETAILS AND C3.1 GRADING AND DRAINAGE PLAN AND DETAILS FOR MORE INFORMATION ON PROPER SITE PREPARATION AND PROTECTION.
4. REFER TO CRITICAL AREA REPORT, ADDENDUM AND SUPPLEMENT FOR MORE INFORMATION ON RECOMMENDATIONS FOR BUILDING WITHIN THE CRITICAL AREA BUFFER.

FIGURE 4 - MITIGATION PLAN