

January 17, 2020

Madrona Bay Real Estate Investments, LLC
424 West Bakerview Road, Suite 109
Bellingham, Washington 98226

Attention: Morgan Bartlett, Jr.

Subject: Letter Report
Geologically Hazardous Area Site Assessment
Proposed CityView Suites Development
Bellingham, Washington
File No. 22191-002-00

INTRODUCTION AND BACKGROUND

This letter report presents the results of GeoEngineers' geologically hazardous areas site assessment for the proposed CityView development located at the northeast quadrant of the Nevada Street and Consolidation Avenue intersection in Bellingham, Washington. We previously completed a Soil Conditions and Preliminary Findings Memorandum dated April 9, 2013 and a Geologically Hazardous Area Site Assessment report dated April 29, 2013 for a previous development proposal. A geotechnical engineering report for the project will be completed at a future date as the project goes to design. Our geotechnical services for this new geologically hazardous area site assessment letter report were completed in general accordance with our Services Agreement dated August 16, 2019.

We have attached several figures from GR Architecture (GR) dated January 14, 2020 presenting site conditions and the proposed project: (a) Sheet dr1.1 is the Site Plan showing the proposed apartment building, parking areas, stormwater vault, drainage on the north side of the site, and the steep slope (greater than 40 percent) located along Puget Street; (b) Figure dr1.2 is the Preliminary Site Sections showing a generalized cross section view of the grading, which includes some fill placed on the west side of the site.

As part of the overall project permitting process, the City of Bellingham (City) requires a geologically hazardous area site assessment report for the project. The purpose of our services is to evaluate the presence of geologic hazards and impacts of the project including any necessary mitigation strategies in accordance with the City of Bellingham Critical Area Ordinance (CAO), Bellingham Municipal Code (BMC) 16.55.410 – 16.55.460. The site surface and subsurface conditions are described in our previously referenced memorandum and are duplicated here for clarity. Figure 2 showing our test pits from our previous memorandum is included as a figure; the test pit logs are included in Appendix A.



GEOLOGICALLY HAZARDOUS AREAS

Geologically hazardous areas are designated by the City CAO as referenced above. In addition to providing the definition of, and criteria for, geologically hazardous areas in the CAO, the City has developed a Geologic Hazard Areas Map Folio identifying these areas in their database. The CAO requires that a qualified professional assess the geologic hazards based on review of available information and field studies, evaluate the specific project proposal with respect to relationship and impact on the hazard area and adjacent sites if appropriate, provide minimum buffers and setbacks, and provide mitigation strategies where appropriate for specific geologic hazards.

The relevant geologically hazardous areas include erosion, landslide, and seismic hazards. Coal mine hazards have not been identified in the area of the site, and therefore will not be addressed further in this letter.

- **Erosion Hazard Areas** - Erosion hazard areas are defined by the CAO as areas prone to soil erosion and the conditions are listed in the ordinance. The soils mapping by the Soils Conservation Service (SCS) indicates that the site is urban land. The slope on the eastern margin of the site is identified as an erosion hazard in the City Geologic Hazard Areas Map Folio. Additionally, an erosion hazard would exist if soils are disturbed during the earthwork phase of construction.
- **Landslide Hazard Areas** - Landslide hazard areas are defined by the CAO as those susceptible to landslides and/or subsidence that could include movement of soil, fill materials, rock or other geologic strata, and areas meeting specific criteria as defined in the ordinance. The soils mapping by the SCS does not indicate any landslide hazards for the area within the urban land. The eastern slope is identified as a landslide hazard in the City Geologic Hazard Areas Map Folio.
- **Seismic Hazard Areas** - Seismic hazard areas are defined by the CAO as those areas subject to severe risk of damage as a result of earthquake-induced ground shaking, slope failure, settlement, soil liquefaction, lateral spreading, or surface rupture. The site is identified as a high response to shaking in the seismic hazard in the City Geologic Hazard Areas Map Folio.

Potential impacts and mitigation strategies for these hazards are discussed in the subsequent “Geologic Hazards and Mitigation” section of this report.

SITE CONDITIONS

We previously performed research regarding site conditions, a reconnaissance of the site and vicinity, and completed seven test pits at the site to determine subsurface conditions across the site.

Geology

The site is in an area mapped with glacial drift soils, which may have had some ice contact loading. Bedrock is also mapped in the nearby area and it is our experience that the glacial drift mantles the bedrock in the project vicinity.

Surface Conditions

The 11-acre site has a typical slope of 20 to 22½ percent downward to the west. This is flatter than the steep slope criterion per the CAO. However, a thin band of steep slopes greater than 40 percent is located along the east margin of the site and extends into the Puget Street right-of-way (ROW) as shown in attached Sheet dr1.1. Based on our observations, this steep slope is a result of former grading to construct Puget Street and likely consists of fill soils.

The site is heavily forested with mature and young conifer and deciduous trees with thick understory vegetation. An east to west trending stormwater drainage is located in the northern portion of the property. The stormwater in this area enters the site from a culvert that crosses the Puget Street ROW. An area on the north side of the site includes wetlands and buffers.

Groundwater seeps were also observed at the ground surface in the eastern end of the Consolidation Avenue ROW to the south of the site, and also in the southwest portion of the site.

Field Observations of Geologically Hazardous Area

No significant evidence of slope instability was observed on the slopes at this site. The critical slope is covered with thick growths of understory vegetation including blackberry brambles. Natural groundwater springs are mapped at the site in the City Geologic Hazard Areas Map Folio, which likely correspond to the drainage areas and wetlands mapped as shown in the attached GR Sheet dr1.1.

Subsurface Explorations

We completed seven test pits ranging from 8 to 12½ feet below the ground surface (bgs) on December 13 and 14, 2012. A summary of the soil units encountered is provided below.

- The forest duff/topsoil thickness was observed to vary between about 1 and 2 feet across the site. The forest duff/topsoil horizon will be variable across the site because of the relative mature forested condition.
- Below the forest duff/topsoil, we observed an upper zone of soft to medium stiff silt with varying sand and gravel content/loose silty sand interpreted to be a weathered zone of the glacial drift. The weathered zone generally extended to approximate depths of 3½ to 4 feet bgs across the site, with the exception of test pit TP-4 where it extended to an approximate depth of 6½ feet, and TP-3 where fill was encountered.
- In test pit TP-3, fill soils consisting of soft grading to medium stiff sandy silt with varying gravel and cobble content extended to approximately 7½ feet bgs. The fill soils may be associated with previous grading for Puget Street. Loose wet silty sand was encountered in test pit TP-3 from approximate depths of 7½ to 11½ feet bgs, which is also likely representative of the weathered zone of the glacial drift.
- Non-weathered glacial drift was encountered in the site explorations below the weathered zone. The unit generally comprised of stiff sandy silt but includes some sand layers. The glacial drift graded to very stiff to hard at approximate depths ranging from 4 to 5 feet bgs in test pits TP-1, TP-2, TP-6, and TP-7, and approximately 7 feet in TP-5 and 9 feet in TP-4. We did not observe this transition in TP-3 because of the depth of fill.

- Weathered sandstone bedrock was encountered at approximately 9 feet bgs in test pit TP-2. Native hard silt with rock-like concretions was encountered approximately 5 feet bgs in test pit TP-6 and may be transitioning to siltstone.
- No explorations were completed within the steep slope area identified because of the thick vegetation and limited access. Test pit TP-3 encountered fill, which could be material associated with the Puget Street construction. The fill consisted of soft to medium stiff silt with sand and occasional gravel.

Groundwater

Perched groundwater seepage was encountered at variable depths in several test pits. It typically occurs within sandier zones of the glacial drift. Seepage observed in TP-1 through TP-3 may be resulting from the stormwater drainage that discharges onto the site. Seepage was also encountered in TP-7. Groundwater is expected to vary with precipitation, season, and other factors.

Rapid groundwater seepage and caving soils were observed in the silty sand unit in test pit TP-3 from approximately 7 to 11 feet bgs. This unit consists of sand to silty sand with variable gravel content and is typically loose to medium dense, but also includes some dense soil.

CONCLUSIONS AND RECOMMENDATIONS

The proposed site layout and grading are shown in the attached GR figures. Based on our site evaluation, review of the City CAO, and our review of the proposed site development, we conclude that the proposed development is located outside of any influence from the steep slope geologically hazardous area, and the erosion and seismic geologic hazards can be mitigated with appropriate design and construction practices. The report sections below present a discussion of each potential hazard and recommendations for mitigation.

Geologic Hazards and Mitigation

Erosion Hazard Considerations

As currently envisioned, the proposed development will require cut and fill slopes and retaining walls. The slopes will be configured at 2H:1V (horizontal:vertical) or flatter, which will be stable at the site. Any disturbed slopes will be re-vegetated to provide resistance to erosion on these surfaces. Accordingly, in our opinion the constructed project will maintain or reduce the overall soil erosion potential.

The primary erosion hazard at the site is from temporary conditions created during construction. Significant excavation of existing materials and placement of fill materials will occur. In our opinion, provided typical erosion and sedimentation controls are implemented during construction, the project construction will not present a significant erosion hazard. Stormwater should be prevented from flowing across disturbed areas and not directed toward the slopes during construction. Temporary erosion control measures should be used during construction depending on the weather, location, soil/rock type, and other factors. Temporary erosion protection (e.g., straw, plastic, or rolled erosion control products [RECPs]) may be necessary to reduce sediment transport until vegetation is established or permanent surfacing applied. Appropriate best management practices (BMPs) have been incorporated into the temporary erosion and sediment control plan (TESCP) by the civil engineer for the project. All finished

slopes should be protected and/or vegetated before the rainy season. During construction, the contractor would be subject to Department of Ecology regulations, which require performance based testing of turbidity at all discharge points. Proper construction practices and monitoring procedures will manage the risks to the standard of practice.

Landslide Hazard Considerations

The hazard identified is the steep slope along the east margin of the site, which consists of fill from the Puget Street ROW. The proposed site development will maintain an offset of at least 140 feet from the steep slope, which exceeds the 50-foot buffer per BMC 16.55460 A.1.a. Therefore, impacts to the steep slope identified are not anticipated.

The design and specific retaining wall systems are not identified at this time. The retaining walls will be engineered walls and designed with geotechnical support will be submitted with the final project documents. The walls will be designed for internal stability and global stability and, therefore, mitigate the risk of landslide hazard.

Lower site retaining walls without significant surcharge can be designed as gravity walls without reinforcement. Taller fill walls can be designed as cast-in-place concrete or non-structure walls are well suited to geogrid reinforced, mechanically stabilized earth walls (MSE). Surcharges from parking, buildings and other considerations will be incorporated as appropriate.

Seismic Hazard Considerations

SITE SEISMICITY AND GROUND SHAKING

As is the case for all of Puget Sound, the site is subject to ground shaking during a design earthquake. The site is underlain by glacial soils and bedrock at shallow depths. A Site Class D can be used in accordance with International Building Code (IBC).

The project will be designed using the 2018 IBC. The code incorporates design procedures to mitigate the risk of ground shaking. No known faults are located in the site vicinity; therefore, the site has a very low risk of ground fault rupture. The site is underlain by soils considered to have a low susceptibility to liquefaction. We conclude that no additional mitigation for seismic considerations is necessary.

LIMITATIONS

We have prepared this letter report for use by Madrona Bay Real Estate Investments, LLC and members of the design team for use in design of the Proposed CityView Development in Bellingham, Washington.

Our services were provided to assist in the permitting of planned structures and field improvements to be located near geologically hazardous areas. Within the limitations of scope, schedule and budget, our services have been accomplished in accordance with generally accepted geotechnical practices followed in this area at the time this letter was prepared. No warranty or other conditions, express or implied, should be understood.

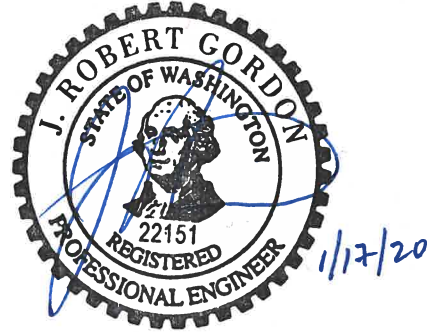
We appreciate the opportunity to provide these services. Please call if you have any questions or require additional information.

Sincerely,
GeoEngineers, Inc.



J. Robert Gordon, PE
Principal

AJH:JRG:tt



Attachments:

GR Sheet dr1.1. Site Plan (with 40%+ slopes identified)

GR Sheet dr1.2. Cross Sections

GeoEngineers Figure 2 (from April 9, 2013 Memorandum showing test pit locations)

Appendix A: Previous Explorations 2013

One copy submitted electronically

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

SITE DEVELOPMENT:
TOTAL SITE: 485,694 SF = 11.15 ACRES
PROPOSED: 249,401 SF 51.4%
UNDISTURBED: 236,291 SF 48.6%

COMMON USABLE AREA:
REQUIRED CUA: 196 DU x 250' = 26,500 SF
EXTERIOR CUA 40,600 SF
INTERIOR CUA 3,500 SF
TOTAL UA: 44,100 SF

PARKING: LOTS A-F:
REQUIRED: 106x2: 212 / 318 = 66
ACTUAL: LOTS A-F: 249 / 318 = 183
ACCESSIBLE: 1
VAN: 2
EVCS (20%): 50
EVCS (5%): 13
BICYCLE SPACES:
249 x 10% = 25

PRELIMINARY
NOT FOR
CONSTRUCTION

NORTH
ARCHITECTURAL NORTH
SITE PLAN
1"=40'

Design Review
CityView Apartments
4413 Consolidation Avenue
Bellingham, Washington

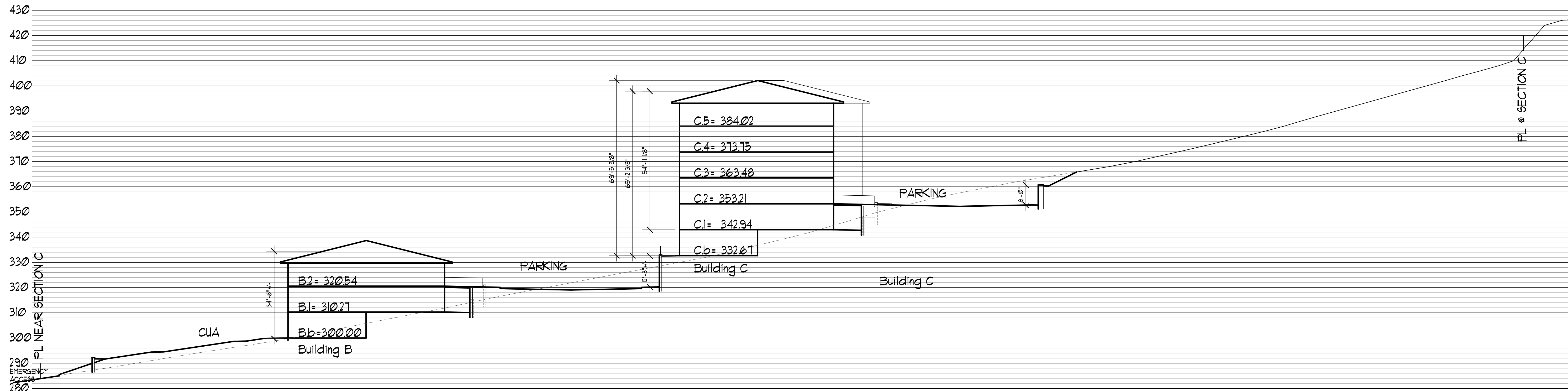
ISSUED FOR: DATE:
PDC RFI Submittal 1/14/20

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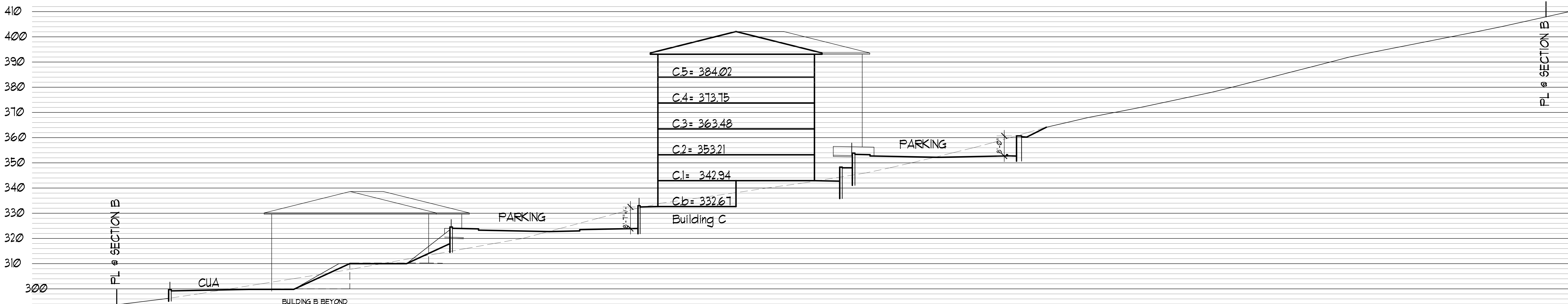
Existing Site w/
Proposed
Buildings &
Improvements
Scheme K5
DRAWING TITLE
COPYRIGHT 2020 G+R architecture
DRAWING NUMBER

dr1.1

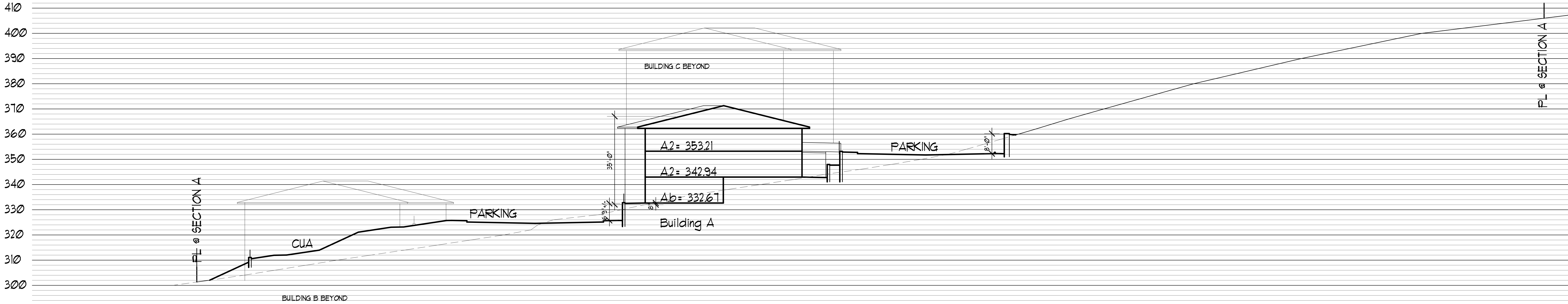




SITE SECTION C: BUILDINGS B & C: Scheme K4
1"=20'



SITE SECTION B: BUILDING C: Scheme K4
1"=20'



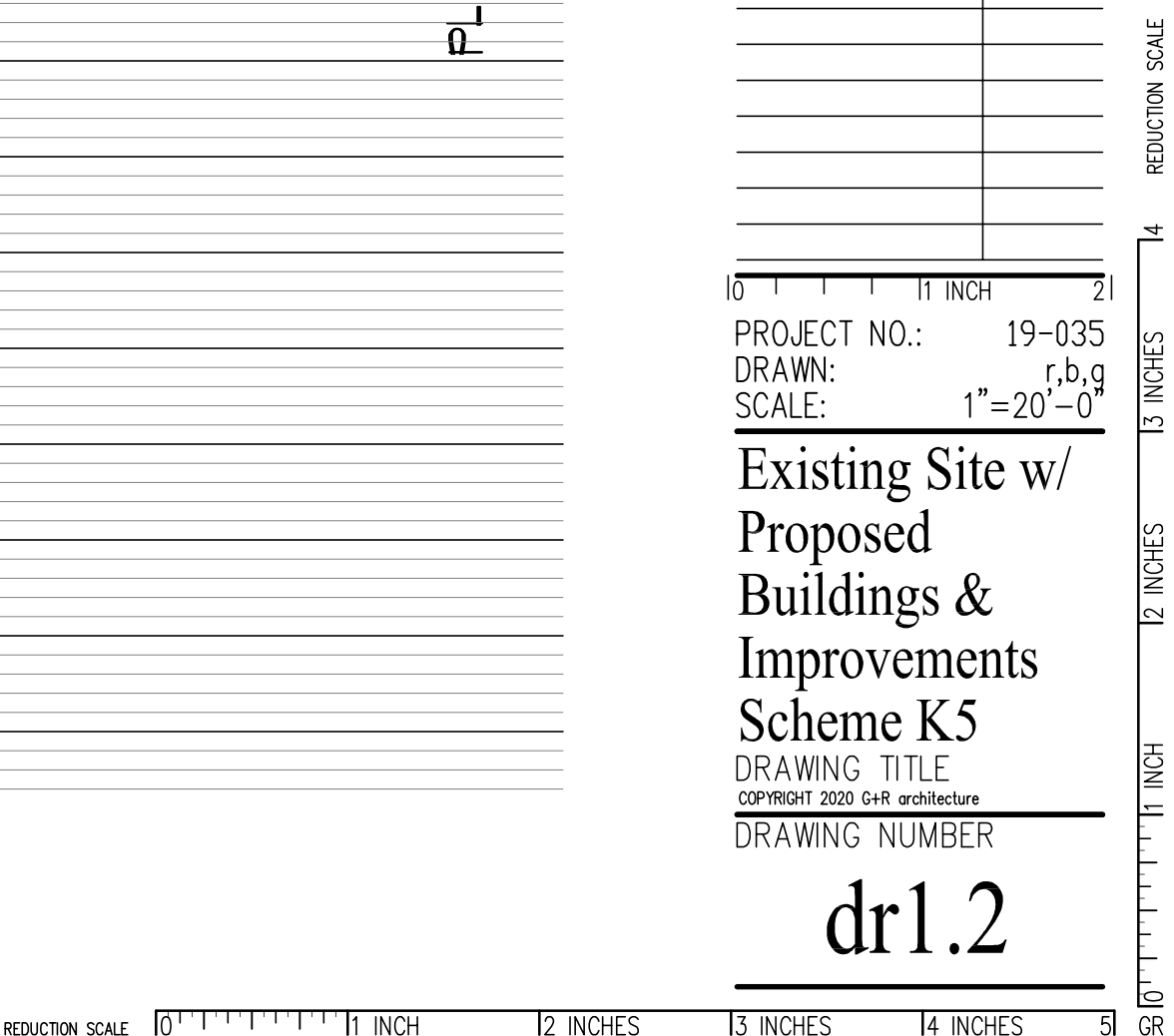
SITE SECTION A: BUILDING A: Scheme K4
1"=20'

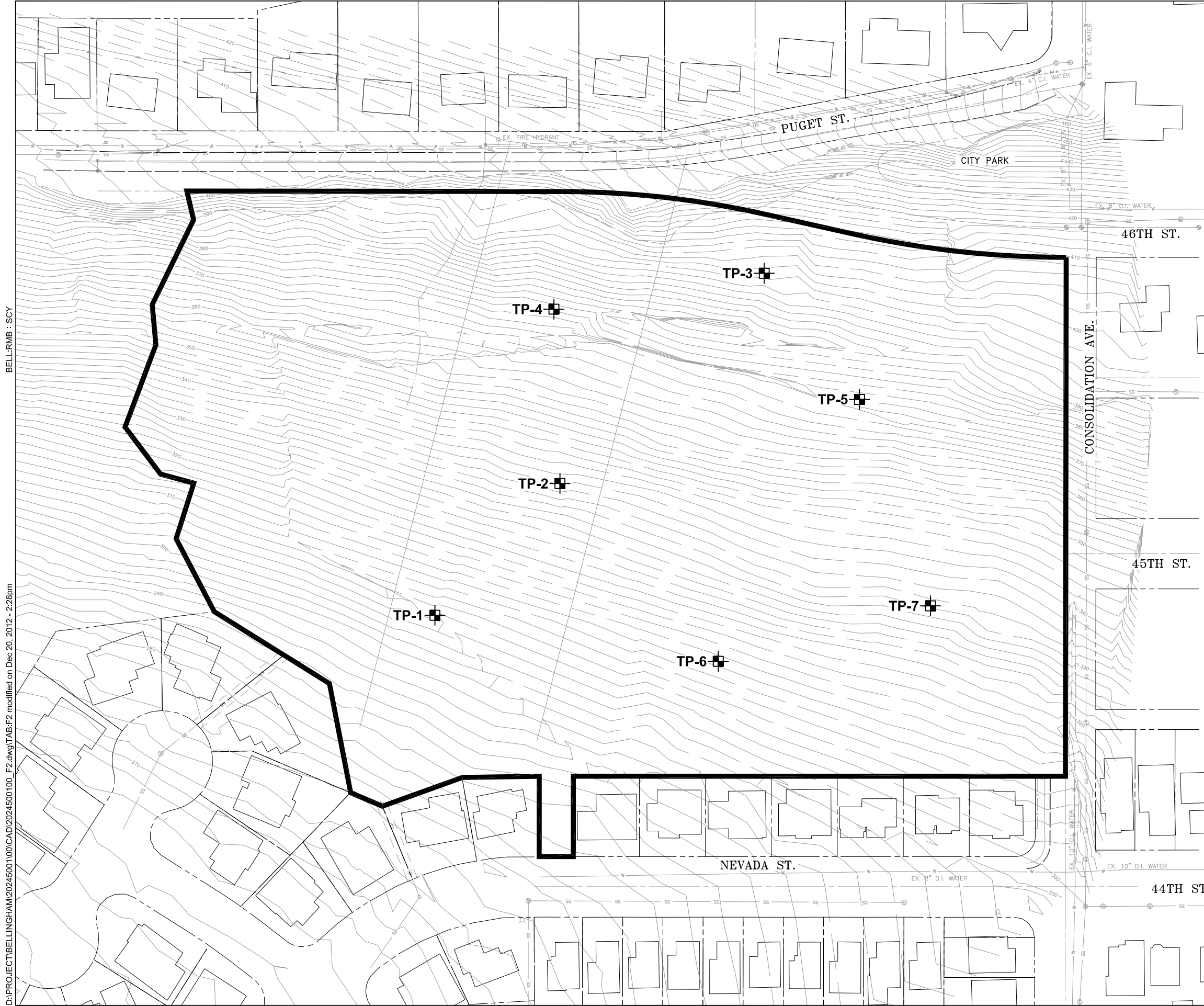
ISSUED FOR:	DATE:
PDC RFI Submittal	1/14/20

PROJECT NO.: 19-035
DRAWN: r.b.g.
SCALE: 1"=20'-0"

Existing Site w/
Proposed
Buildings &
Improvements
Scheme K5
DRAWING TITLE
COPYRIGHT 2020 G+R architecture
DRAWING NUMBER

dr1.2

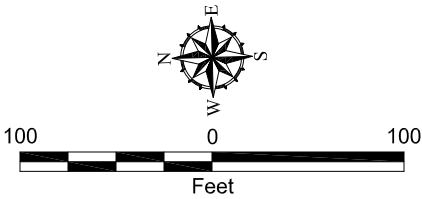




BELL:RMB : SCY

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Legend
TP-1 Test pit number and approximate location



Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.
GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Drawing provided by Ronald T. Jepson & Assoc.

Site and Exploration Plan	
University Ridge Development Bellingham, Washington	
	Figure 2

APPENDIX A

Previous Explorations 2013



SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS		
			GRAPH	LETTER			
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES		
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES		
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES		
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES		
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS		
				SP	POORLY-GRADED SANDS, GRAVELLY SAND		
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES		
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES		
		FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
						CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
	OL				ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS		
			CH	INORGANIC CLAYS OF HIGH PLASTICITY			
			OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY			
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS		

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Date Excavated: 12/13/2012

Logged By: RMB

Equipment: John Deere EX 135

Total Depth (ft) 10.0

Elevation (feet)	Depth (feet)	SAMPLE		Graphic Log	Group Classification	Encountered Water	MATERIAL DESCRIPTION	Moisture Content, %	REMARKS
		Testing Sample	Sample Name Testing						
303	1				TS		Forest duff and topsoil		Slow groundwater seepage observed at 2½ and 4 feet
302	2		1		ML		Gray, tan and rust brown silt with sand, occasional gravel, cobbles and sand lenses (medium stiff to stiff, moist) (weathered glacial drift)	22	
301	3								
300	4		2					18	
					ML		Gray and tan silt with sand, occasional gravel and cobbles (very stiff, moist) (glacial drift)		
299	5		3					19	
					ML		Gray and tan silt with fine sand lenses, occasional gravel and cobbles (hard, moist)		
298	6								
297	7		4		ML		Gray sandy silt with sand lenses, occasional gravel and cobbles (hard, moist)	11	
296	8								
295	9								
294	10		5				Boulder encountered		
							Test pit completed at 10 feet No caving observed Disturbed soil samples obtained at 2, 4, 5, 7, and 10 feet		

Note: See Figure A-1 for explanation of symbols.

Log of Test Pit TP-1



Project: University Ridge Student Apartment Development
 Project Location: Bellingham, Washington
 Project Number: 20245-001-00

Figure A-2
 Sheet 1 of 1

Date Excavated: 12/13/2012
 Equipment: John Deere EX 135

Logged By: RMB
 Total Depth (ft) 10.0

Elevation (feet)	Depth (feet)	SAMPLE		Graphic Log	Group Classification	Encountered Water	MATERIAL DESCRIPTION	Moisture Content, %	REMARKS
		Testing Sample	Sample Name Testing						
337	1	X	1		TS		Forest duff and topsoil		
336	2				ML		Brown sandy silt with occasional charcoal fragments and rootlets (medium stiff, moist) (weathered glacial drift)	13	
335	3	X	2				Becomes stiff	14	Slow groundwater seepage observed at 3 feet
334	4				ML		Brown sandy silt with sand lenses, occasional gravel and cobbles (very stiff, moist) (glacial drift)		
333	5	X	3					11	
332	6								
331	7	X	4		SM		Brown silty fine to medium sand with occasional gravel (medium dense, moist) (decomposed sandstone)	13	
330	8						Sandstone concretions encountered		
329	9	X	5		SNDSTN		Brown weathered sandstone bedrock		
328	10						Test pit completed at 10 feet No caving observed Disturbed soil samples obtained at 1½, 3½, 5, 7½ and 9½ feet		

Note: See Figure A-1 for explanation of symbols.

Log of Test Pit TP-2



Project: University Ridge Student Apartment Development
 Project Location: Bellingham, Washington
 Project Number: 20245-001-00

Figure A-3
 Sheet 1 of 1

Date Excavated: 12/13/2012

Logged By: RMB

Equipment: John Deere EX 135

Total Depth (ft) 12.0

Elevation (feet)	Depth (feet)	SAMPLE		Graphic Log	Group Classification	Encountered Water	MATERIAL DESCRIPTION	Moisture Content, %	REMARKS
		Testing Sample	Sample Name Testing						
395	1	X	1		TS		Forest duff and topsoil		
394	2				ML		Dark brown silt with sand, occasional gravel and rootlets (soft, moist) (fill)	31	
393	3	X	2		ML		Brown sandy silt with occasional gravel (soft to medium stiff, moist) (fill)	16	
392	4								
391	5	X	3		ML		Brown, tan and gray sandy silt with sand lenses, gravel and cobbles (soft to medium stiff, moist) (fill)	19	
390	6								
389	7								
388	8	X	4		SM		Brown silty fine to medium sand (loose, wet) (weathered glacial drift)	25	
387	9								
386	10								
385	11	X	5						
384	12				ML		Tan silt (stiff, moist) (glacial drift)	21	
Test pit completed at 12 feet Moderate caving observed from 7 to 11 feet Disturbed soil samples obtained at 1½, 3, 5, 8½ and 11½ feet									

Note: See Figure A-1 for explanation of symbols.

Log of Test Pit TP-3



Project: University Ridge Student Apartment Development
 Project Location: Bellingham, Washington
 Project Number: 20245-001-00

Figure A-4
 Sheet 1 of 1

Date Excavated: 12/13/2012

Logged By: RMB

Equipment: John Deere EX 135

Total Depth (ft) 11.0

Elevation (feet)	Depth (feet)	SAMPLE		Graphic Log	Group Classification	Encountered Water	MATERIAL DESCRIPTION	Moisture Content, %	REMARKS
		Testing Sample	Sample Name Testing						
375	1	X	1		TS		Forest duff and topsoil	17	
374	2	X	2		ML		Brown sandy silt with gravel and cobbles (soft, moist) (weathered glacial drift)	11	
373	3				ML		Brown sandy silt with gravel, cobbles, and sand lenses (medium stiff, moist)		
372	4								
371	5				SM		Brown silty fine to medium sand with occasional gravel (loose, moist)	22	
370	6	X	3						
369	7	X	4		ML		Brown sandy silt with gravel, cobbles and occasional boulders (very stiff, moist) (glacial drift)	15	
368	8								
367	9	X	5						
366	10				ML		Brown sandy silt with occasional cobbles and boulders (very stiff to hard)	13	
365	11	X	6						

Test pit completed at 11 feet
 No groundwater seepage observed
 No caving observed
 Disturbed soil samples obtained at 1½, 2½, 6, 7½, 9 and 11 feet

Note: See Figure A-1 for explanation of symbols.

Log of Test Pit TP-4



Project: University Ridge Student Apartment Development
 Project Location: Bellingham, Washington
 Project Number: 20245-001-00

Figure A-5
 Sheet 1 of 1

Date Excavated: 12/13/2012

Logged By: RMB

Equipment: John Deere EX 135

Total Depth (ft) 12.0

Elevation (feet)	Depth (feet)	SAMPLE		Graphic Log	Group Classification	Encountered Water	MATERIAL DESCRIPTION	Moisture Content, %	REMARKS
		Testing Sample	Sample Name Testing						
373	1				TS		Forest duff and topsoil		
372	2	X	1		ML		Brown sandy silt with occasional gravel (medium stiff, moist) (weathered glacial drift)	12	
371	3								
370	4	X	2		ML		Brown sandy silt with gravel and occasional cobbles (very stiff, moist) (glacial drift)	15	
369	5								
368	6								
367	7	X	3						
366	8				ML		Becomes hard	18	
365	9								
364	10								
363	11								
362	12	X	4				Moist to wet sand layer observed from 10 to 11 feet		
Test pit completed at 12 feet No groundwater seepage observed No caving observed Disturbed soil samples obtained at 2, 4, 7 and 12 feet									

Note: See Figure A-1 for explanation of symbols.

Log of Test Pit TP-5



Project: University Ridge Student Apartment Development
Project Location: Bellingham, Washington
Project Number: 20245-001-00

Figure A-6
Sheet 1 of 1

Date Excavated: 12/14/2012

Logged By: RMB

Equipment: John Deere EX 135

Total Depth (ft) 8.0

Elevation (feet)	Depth (feet)	SAMPLE		Graphic Log	Group Classification	Encountered Water	MATERIAL DESCRIPTION	Moisture Content, %	REMARKS
		Testing Sample	Sample Name Testing						
309	1	X	1		TS		Forest duff and topsoil		
308	2	X	2		SM		Dark brown silty fine to medium sand with gravel (loose, moist) (weathered glacial drift)	15	
307	3				ML		Tan silt with sand and occasional gravel (soft, moist)	25	
306	4	X	3					19	
305	5	X	4		ML		Tan silt with sand and occasional gravel (very stiff, moist) (glacial drift)	13	
304	6						Concretions encountered at 5 feet, blocky, hard		
303	7	X	5		ML		Tan silt with rounded, hard concretions (hard, moist)	14	
302	8	X	6				With soft coal-like lenses	14	
Test pit completed at 8 feet No groundwater seepage observed No caving observed Disturbed soil samples obtained at 1½, 2½, 4, 5, 7 and 8 feet									

Note: See Figure A-1 for explanation of symbols.

Log of Test Pit TP-6



Project: University Ridge Student Apartment Development
 Project Location: Bellingham, Washington
 Project Number: 20245-001-00

Figure A-7
 Sheet 1 of 1

Date Excavated: 12/14/2012

Logged By: RMB

Equipment: John Deere EX 135

Total Depth (ft) 10.0

Elevation (feet)	Depth (feet)	SAMPLE		Graphic Log	Group Classification	Encountered Water	MATERIAL DESCRIPTION	Moisture Content, %	REMARKS
		Testing Sample	Sample Name Testing						
331	1				TS		Forest duff and topsoil		
330	2	X	1		SM		Brown silty fine to medium sand with gravel (loose, moist to wet) (weathered glacial drift)	11	Slow groundwater seepage observed from 0 to 1½ feet and at 4 feet
329	3	X	2		ML		Tan, gray and reddish brown sandy silt with sand lenses and occasional gravel (medium stiff, moist)	24	
328	4	X	3		ML		Brown sandy silt with occasional gravel and cobbles (hard, moist) (glacial drift)	13	
327	5								
326	6								
325	7	X	4					12	
324	8								
323	9								
322	10	X	5					12	
Test pit completed at 10 feet No caving observed Disturbed soil samples obtained at 2, 3½, 4½, 7 and 10 feet									

Note: See Figure A-1 for explanation of symbols.

Log of Test Pit TP-7



Project: University Ridge Student Apartment Development
 Project Location: Bellingham, Washington
 Project Number: 20245-001-00

Figure A-8
 Sheet 1 of 1