Earth Engineering, Inc.
Geotechnical & Environmental Consultants

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3400 SE 196th Ave. Suite 102
Camas, WA 98607

February 25th 2022
G10-0122

Subject: **Geotechnical Engineering Study**
3631 NE Everett Street
Camas, Washington

Hello,

We are pleased to submit our engineering report for the subject site located in Camas, Washington. This report presents the results of our field exploration, selective laboratory tests, field-testing and engineering analyses.

Based on the results of this study, it is our opinion that construction of the proposed residential subdivision is feasible from a geotechnical standpoint, provided recommendations presented in this report are included in the project design.

Earth Engineering Inc. is available to provide construction monitoring and testing services to comply with City of Camas requirements. We appreciate the opportunity to have been of service to you and look forward to working with you in the future. Should you have any questions about the content of this report, or if we can be of further assistance, please call.

Respectfully Submitted,
Earth Engineering, Inc.,

Donald J. Bruno, CEG
Engineering Geologist

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{G10-0122}

INTRODUCTION

General

This report presents the results of the geotechnical engineering study completed by Earth Engineering, Inc. (EEI) for the proposed counseling center located in Camas, Washington. The general location of the site is shown on the *Vicinity Map, Figure 1.* At the time our study was performed, the site and our exploratory locations were approximately as shown on the *Site Plan, Figure 2.*

The purpose of this study was to explore subsurface conditions at the site and based on the conditions encountered, provide geotechnical recommendations for the proposed construction. In addition this report includes infiltration testing for stormwater design, as well as a seismic hazard evaluation.

Project Description

Based on the information that was provided to us by the project civil engineer (SGA) it is our understanding the project will consist of developing the site with a one level building that will provide approximately four thousand (4000) square feet of floor space. The proposed building will most likely be constructed with a wood frame and a suspended floor. Site improvements will include stormwater control, subsurface utilities and an asphalt paved parking area.

Although no specific grading plan was available during the time of our study. The proposed building and parking area will most likely be constructed close to present grade. We anticipate earthwork cuts and fills of one foot or less to achieve the desired design grade.

Structural design loads were not available at the time this report was written. However, based on our experience with similar projects, we anticipate that wall and column loads will be approximately seven hundred and fifty (750) to one thousand five hundred (1500) pounds per lineal foot (maximum dead plus live loads).

If any of the above information is incorrect or changes, we should be consulted to review the recommendations contained in this report. In any case, it is recommended that EEI be provided with civil engineering and structural building plans to perform a general review of the final design for the proposed construction.

SITE CONDITIONS

Surface

The subject site encompasses approximately one-half acre and slopes gently downward from the northeast to the southwest with about a three percent (3%) gradient. Site elevations range from approximately 203 feet (north-northeast) to 194 feet (southwest) above mean sea level.

The site is bordered to the north by an existing residence, to the south by a commercial business, to the east by NE Everett Street and to the west by woodlands, with Lacamas Lake beyond. The property is covered predominantly with pasture grass. Some deciduous trees were observed along the western property line. A gravel driveway extends from Everett Street westward to the central area of the site.

Subsurface

For this study the site was explored by excavating three test pits at the approximate locations shown on the *Site Plan, Figure 2.* Infiltration testing was conducted at the southwest area (lowest elevation) of the site.

In our test pits we encountered approximately four to six inches of topsoil underlain by two and one-half to six feet of firm to hard elastic Silt (MH) and Silt (ML) with gravel and some cobbles. Below the upper layer of silt we encountered medium dense to dense silty Gravel (GM) with cobbles and a trace of boulders to the maximum exploration depth of eight feet below the existing ground surface.

All soil was classified following the Unified Soil Classification System (USCS). A USCS Legend is included as Plate A1. A description of the field exploration methods is included in Appendix A. Please refer to the test pit logs, Plates A2 thru A4, for a more detailed description of the conditions encountered.

Groundwater

Groundwater seepage was encountered in test pit I-1 (elevation 194), at the southwest area of the site, at four feet below the existing ground surface. Groundwater was not encountered at test pits TP-1 (elevation 196) or TP-2 (elevation 197), which were excavated to five and one-half and eight feet, respectively, below the existing ground surface.

Groundwater conditions are not static; fluctuations may be expected in the level and seepage flow depending on the season, amount of rainfall, surface water runoff, and other factors. Generally, the groundwater level is higher and seepage rate is greater in the winter and early spring months (typically October through May).

Infiltration Testing

During February of 2022, infiltration testing was performed at one location at a depth of two feet below the existing ground surface. The approximate location of the infiltration test, I-1 is shown on the *Site Plan, Figure 2*. Soil and groundwater conditions encountered at this location is detailed on the attached infiltration test pit log that is included in Appendix A.

Infiltration testing was conducted in general accordance with the Southwest Washington Storm Water Manual. The Encased Falling Head Test consists of driving a fifteen (15) inch long, six-inch diameter pipe six inches into the exposed ground surface at the bottom of the test pit.

The pipe is filled with water as the soil around the bottom and below the pipe is saturated for several hours. The pipe is filled again and the amount of time required for the water to fall, per inch, for six inches, is recorded. This step is performed a minimum of three times. The test results are averaged and calculated in inches per hour.

It is important to note that this provides a relative indication of the average rate of groundwater infiltration at the site. The rate is dependent on the percentage of fines in the soil (i.e., silt and clay), the degree of soil saturation and the relative density of the in-situ soil. Infiltration rates can vary across the site depending on conditions encountered.

The following table provides the infiltration test results, the soil coefficient of permeability, soil classification and a summary of laboratory test results for soil encountered at the depth of proposed infiltration:

LOCATION	*USCS SOIL TYPE	AASHTO SOIL TYPE	DEPTH (FT.)	MOISTURE CONTENT %	FIELD INFILTRATION RATE	COEFFICIENT OF PERMEABILITY
I-1	MH/ML w/cobbles	A-5 to A-6	2.0	29	> 100 inches per hour	50

* Unified Soil Classification System ** American Association of State Hwy. & Transportation Officials

General Regional Geology

General information about geologic conditions and soil in the vicinity of the site was obtained by reviewing the Geologic Map of Washington-Southwest Quadrant, Washington Division of Geology and Earth Resources, (Geologic Map GM-34, 1987). This map provides general information about geologic units in the Camas, Washington area.

Our review of existing geological information indicates that soils in the vicinity of the subject site were formed from alluvial deposits during the Quaternary Period. Outburst flood deposits from glacial Lake Missoula deposited these sedimentary soils. The material encountered in our test pits consists predominantly of Silt with gravel and cobbles as well as silty Gravel with cobbles and a trace of boulders.

LABORATORY TESTING

Laboratory tests were conducted on representative soil samples to verify or modify the field soil classification of the units encountered, and to evaluate the general physical properties as well as the engineering characteristics of the soils encountered. The following provides information about the testing procedures performed on representative soil samples and the general condition of subsurface soil conditions encountered:

- *Moisture Content (ASTM-D2216-92)* tests were performed on representative samples. The native Silt has a moisture content ranging from twenty-five to twenty-nine percent (25-29%).

Laboratory tests confirm that the upper layer of supportive soil consists of firm to hard Silt with gravel. These soils encountered are sensitive to changes in moisture content. Moisture sensitive soils are discussed in more detail in the Site Preparation and Grading section of this report.

The results of laboratory tests performed on specific samples are provided at the appropriate sample depth on the individual test pit logs. However, it is important to note that some variation of subsurface conditions may exist. Our geotechnical recommendations are based on our interpretation of these test results.

SEISMIC HAZARD EVALUATION

The following provides a seismic hazard evaluation for the subject site. Our evaluation is based on subsurface conditions encountered at the site during the time of our geotechnical study and a review of applicable geologic maps (Washington State Department of Natural Resources, Geologic Map of Washington-Southwest Quadrant, 1987) and the International Building Code (IBC-2015) guidelines.

In general, supportive soil at the subject site consists of firm to hard Silt with some gravel. The geologic map indicates that several fault lines are located across and near the subject site. Soils encountered at the site are classified as a type "D" soil in accordance with "Seismic Design Categories" (IBC 2015, Section 1803.5.12). For more detail regarding soil conditions refer to the test pit logs in Appendix A of this report.

Liquefaction:

Structures are subject to damage from earthquakes due to direct and indirect action. Shaking represents direct action. Indirect action is represented by foundation failures and is typified by liquefaction. Liquefaction occurs when soil loses all shear strength for short periods of time during an earthquake.

Ground shaking of sufficient duration results in the loss of grain to grain contact as well as a rapid increase in pore water pressure. This causes the soil to assume physical properties of a fluid. To have potential for liquefaction a soil must be loose, cohesion-less (generally sands and silts), below the groundwater table (or saturated conditions) and must be subjected to sufficient magnitude and duration of ground shaking. The effects of liquefaction may be large total settlement and/or large differential settlement for structures with foundations in or above the liquefied soil.

Based on the predominance of stiff to hard soil conditions and the absence of a near surface groundwater table at the building area, it is not likely that soil liquefaction would occur at the subject site during a seismic event.

However, as previously discussed, two fault lines are located across and near the subject site. Property located at or near fault lines are more susceptible to seismic activity. The magnitude, duration and depth to the epicenter of an earthquake determine the degree of potential damage to a structure during a seismic event. Recommendations for decreasing the potential for structural damage are discussed in the following sections of this report.

DISCUSSION AND RECOMMENDATIONS

General

Based on the results of our study, it is our opinion the Lacamas Counseling Center building and associated improvements can be developed as planned provided the geotechnical recommendations contained in this report are incorporated into the final design.

The proposed building can be supported on conventional shallow spread footings bearing on compacted structural fill. Supporting the proposed building on homogeneous material will significantly decrease the potential for differential settlement across the foundation area as well as potential damage during a seismic event. Additional support recommendations are provided in the *Foundations & Soil Bearing Capacity* section of this report.

This report has been prepared for specific application to this project only and in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area for the exclusive use of Gilbert-Gecho and their representatives. This report, in its entirety, should be included in the project documents for information to the contractor. No warranty, expressed or implied, is made.

Site Preparation and Grading

The site shall be stripped and cleared of all vegetation, organic matter and any other deleterious material. Stripped material should not be mixed with any soils to be used as fill. Stripped soil could potentially be used for topsoil at landscape areas after removing vegetation and screening out organic matter.

Building & Parking-Entry Areas:

After clearing and grading, the building and pavement areas should be compacted to a dense non-yielding condition with suitable vibratory compaction equipment. This phase of earthwork compaction shall be performed prior to the placement of any structural fill, at the bottom of all foundation excavations and parking-entry areas, before the placement of base rock.

Structural Fill:

Structural fill is defined as any soil placed under a building or any other load bearing-areas. Structural fill placed under footings should be placed in thin horizontal lifts not exceeding eight inches and compacted to a minimum ninety-five percent (95%) of its maximum dry density (Standard Proctor ASTM D698). The fill material should be placed within two to three percent of the optimum moisture content.

Fill under pavements should also be placed in lifts approximately eight inches in thickness, and compacted to a minimum of ninety-two percent (92%) of its maximum dry density (Standard Proctor ASTM D698), except for the top twelve (12) inches which should be compacted to ninety-five percent (95%) of the maximum dry density.

We recommend that any structural fill planned for onsite use, be submitted for approval prior to import. The placement and compaction of structural fill should be observed by a representative from our office to verify that fill has been placed and compacted in accordance with the approved project plans and specifications.

It should be noted that the depth of excavation to competent soil at foundation footings and parking areas could be greater or less than anticipated depending on conditions encountered. Our test pits provide general information about subsurface soil and groundwater conditions.

Wet Weather Construction & Moisture Sensitive Soils:

Field observations and laboratory testing indicates that on site soil encountered in the upper two to six feet consists of moisture sensitive Silt with gravel and some cobbles. As such, in an exposed condition moisture sensitive soil can become disturbed during normal construction activity, especially when in a wet or saturated condition. Once disturbed, in a wet condition, these soils will be unsuitable for support of foundations and pavements.

Therefore, where soil is exposed and will support new construction, care must be taken not to disturb their condition. If disturbed soil conditions develop, the affected soil must be removed and replaced with structural fill. The depth of removal will be dependent on the depth of disturbance developed during construction.

Covering the excavated area with plastic and refraining from excavation activities during rainfall will minimize the disturbance and decrease the potential degradation of supportive soils.

Earthwork grading and foundation construction can be difficult during the wet winter and spring seasons due to the silt content of onsite soil. Based on this condition we suggest that grading and foundation construction be completed during the drier summer and fall seasons.

Foundations & Soil Bearing Capacity

Based on the encountered subsurface soil conditions, preliminary building design criteria, and assuming compliance with the preceding *Site Preparation and Grading* section, the proposed building may be supported on conventional shallow spread footings bearing entirely on compacted structural fill.

We recommend a minimum of eight inches of crushed rock be placed and compacted below all foundation footings. The structural fill should extend at least six inches laterally beyond the sides of the foundations. In addition, we recommend that a structural engineer or seismic engineering firm provide a design for increasing the rigidity of the proposed structure. This typically includes additional reinforcement bars in the concrete foundations and a variety of methods to mitigate structural damage during a seismic event (i.e., metal brackets, strapping, sheathing & additional plate anchors).
Individual spread footings or continuous wall footings providing support for the proposed building may be designed for a maximum allowable bearing value of one thousand five-hundred (1500) pounds per square foot (psf).

Footings for a one level structure should be at least twelve (12) inches in width and should extend to a depth of at least eighteen (18) inches below the lowest adjacent finished sub grade.

These basic allowable bearing values are for dead plus live loads and may be increased one-third for combined dead, live, wind, and seismic forces. It is estimated that total and differential footing settlements for the relatively light building will be approximately one-half and one-quarter inches, respectively.

Lateral loads can be resisted by friction between the foundation and the supporting sub grade or by passive earth pressure acting on the buried portions of the foundation. For the latter, the foundations must be poured "neat" against the existing soil or back filled with a compacted fill meeting the requirements of structural fill.

- Passive Pressure = 300 pcf equivalent fluid weight
- Coefficient of Friction = 0.40

We recommend that all footing excavations be observed by a representative of EEI prior to placing forms or rebar, to verify that sub grade support conditions are as anticipated in this report, and/or provide modifications in the design as required.

Site Drainage

The site should be graded so that surface water is directed off the site. Water should not be allowed to stand in any area where the building or slabs are to be constructed. Loose surfaces should be sealed at the end of each workday by compacting the surface to reduce the potential for moisture infiltration into the soils.

Final site grades should allow for drainage away from the building foundation. The ground should be sloped at a gradient of three percent for a distance of at least ten feet away from the buildings. We recommend that a footing drain be installed around the perimeter of the buildings just below the invert of the footing with a gradient sufficient to initiate flow.

Under no circumstances should the roof down spouts be connected to the footing drain system. We suggest that clean outs be installed at several accessible locations to allow for the periodic maintenance of the footing drain system. Details for the footing drain have been included on *Figure 3, Typical Footing Drain Detail.*

Temporary Excavations

The following information is provided solely as a service to our client. Under no circumstances should this information be interpreted to mean that EEI is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred. In no case should excavation slopes be greater than the limits specified in local, state and federal safety regulations.

Based on the information obtained from our field exploration and laboratory testing, the site soils expected to be encountered in excavations, firm to hard Silt and dense silty Gravel with potential groundwater seepage, would be classified as a Type "C" soil by OSHA guidelines.

Therefore, temporary excavations and cuts greater than four feet in height, should be sloped at an inclination no steeper than 1-1/2H:1V (horizontal:vertical) for type "C" soils. If slopes of this inclination, or flatter, cannot be constructed or if excavations greater than ten feet in depth are required, temporary shoring will be necessary.

Utility Support and Back Fill

Based on the conditions encountered, the soil to be exposed by utility trenches should provide adequate support for utilities. As previously discussed, groundwater was encountered during our site study at a depth of approximately four feet below the surface at the southwest area of the site. Depending on the depth and location of subsurface utilities, groundwater may be encountered during utility construction.

Dewatering and shoring methods during trench excavation procedures may be required if groundwater is encountered. EEI can provide dewatering recommendations and shoring design after we are provided with the final approved civil engineering plans.

Utility trench backfill is a concern in reducing the potential for settlement along utility alignments, particularly in pavement areas. It is also important that each section of utility line be adequately supported in the bedding material. The back fill material should be hand tamped to ensure support is provided around the pipe haunches.

Fill should be carefully placed and hand tamped to about twelve inches above the crown of the pipe before any compaction equipment is used. The remainder of the trench back fill should be placed in lifts having a loose thickness of eight inches and compacted to a dense non yielding condition.

A typical trench backfill section and compaction requirements for load supporting and non-load supporting areas is presented on *Figure 4, Utility Trench Backfill Detail.* Trench back fill may consist of imported granular fill provided the material is approved, placed and compacted near the optimum moisture content.

Imported granular material to be used as backfill should be submitted to our laboratory at least one week prior to construction so that we can provide a laboratory proctor for field density testing.

Pavements

The durability of pavements is related in part to the condition of the underlying sub grade. To provide a properly prepared sub grade for pavements, we recommend the sub grade be treated and prepared as described in the *Site Preparation and Grading* section of this report.

It is possible that some localized areas of soft, wet or unstable sub grade may still exist after this process. Before placement of any base rock, the sub grade should be compacted with suitable compaction equipment. Yielding areas that are identified should be excavated to firm material and replaced with compacted one and one quarter inch-minus clean-crushed rock. The following pavement sections are recommended for the proposed pavement areas:

- Three inches of Asphalt Concrete (AC) over eight inches of compacted Crushed Rock Base (CRB) material or,
- Three inches of Asphalt Concrete (AC) over six inches of compacted Crushed Rock Base (CRB) material, underlain by a geo-grid consisting of Tensar Triax or equivalent.

The geo-grid should be placed directly on the sub grade surface of the roadway prior to placement of base rock. Appropriate geo-textiles have been designed to increase the strength of the sub grade and extend pavement life.

Asphaltic Cement (AC) and Crushed Rock Base (CRB) materials should conform to WSDOT specifications. All base rock should be compacted to at least ninety five percent (95%) of the ASTM D698 laboratory test standard.

Additional Services & Earthwork Monitoring

EEI will be available to provide consultation services related to review of the final design to verify that the recommendations within our purview have been properly interpreted and implemented in the approved construction plans and specifications. A representative from our office will be available to attend a pre-construction meeting to discuss and/or clarify all geotechnical issues related to the proposed project.

In addition, it is suggested that our office be retained to provide geotechnical services during construction to observe compliance with the design concepts and project specifications and to allow design changes in the event subsurface conditions differ from those anticipated. Our construction services would include monitoring and documenting the following:

- Verify that site has been adequately stripped of organic materials.
- Laboratory proctor tests for structural fill materials.
- Observe compaction and provide density testing of structural fill, if needed.
- Observe compaction and provide density testing of utility trench.
- Observe compaction and provide density testing of parking & entry area base rock.
- Observe the condition of exposed bearing soils at the building area.
- Provide footing inspection at building to verify soil bearing capacity.
- Verify the installation of all building and site drainage elements.

LIMITATIONS

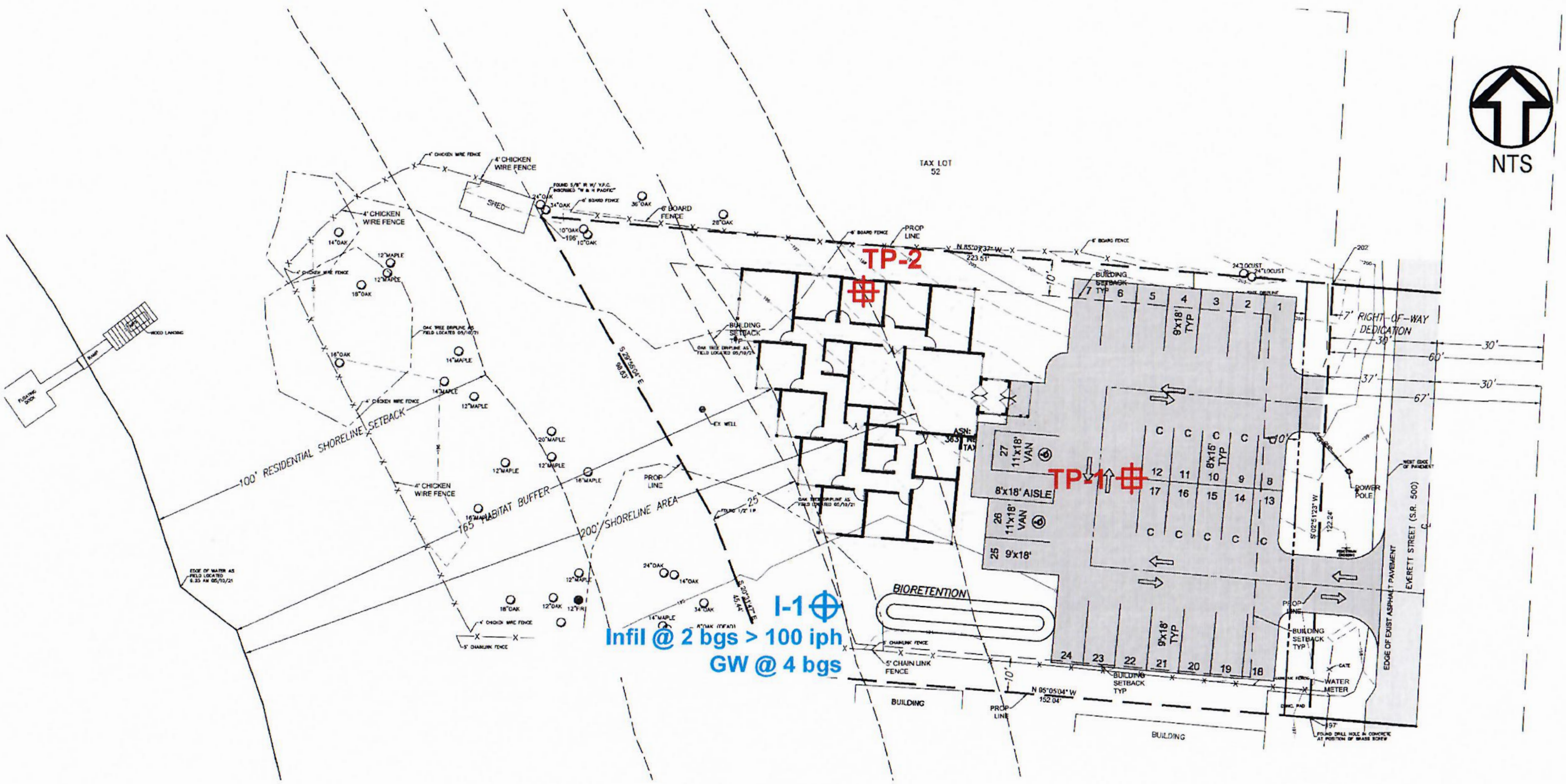
Our recommendations and conclusions are based on the site materials observed, selective laboratory testing, engineering analyses, the design information provided to Earth Engineering, Inc. and our experience as well as engineering judgment. The conclusions and recommendations are professional opinions derived in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area. No warranty is expressed or implied.

The recommendations submitted in this report are based upon the data obtained from the test pit excavations. Soil and groundwater conditions may vary from those encountered. The nature and extent of variations may not become evident until construction. If variations do appear, Earth Engineering Inc. should be requested to reevaluate the recommendations contained in this report and to modify or verify them in writing prior to proceeding with the proposed construction.

VICINITY MAP

Earth Engineering GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: GILBERT-GECHO CONSTRUCTION, INC	DRAWN: CCK
	PROJECT: LACAMAS COUNSELING CENTER 3631 NE EVERETT ST CAMAS, WA	DATE: 2/2022
		FIGURE: 1
		PRO. #: G10-0122

SITE PLAN

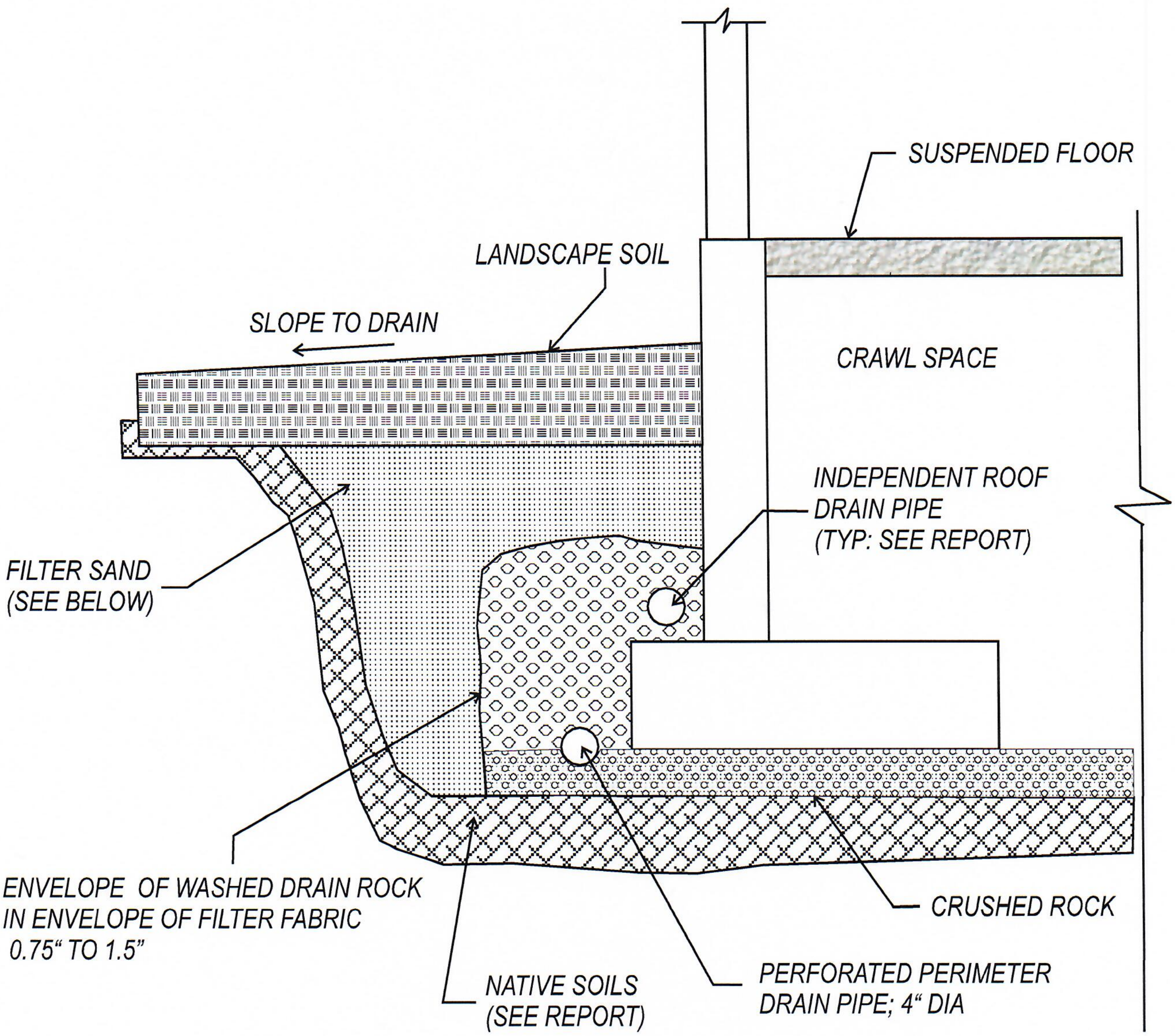


LEGEND

TP-1 ⊞ Approximate Location of Test Pits

I-1 ⊕ Approximate Location of Infiltration Test Pit

Earth Engineering — GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: GILBERT-GECHO CONSTRUCTION, INC	DRAWN: CCK
	PROJECT: LACAMAS COUNSELING CENTER, 3631 NE EVERETT ST, CAMAS, WA	DATE: 2/2022
		FIGURE: 2
		PRO. #: G10-0122



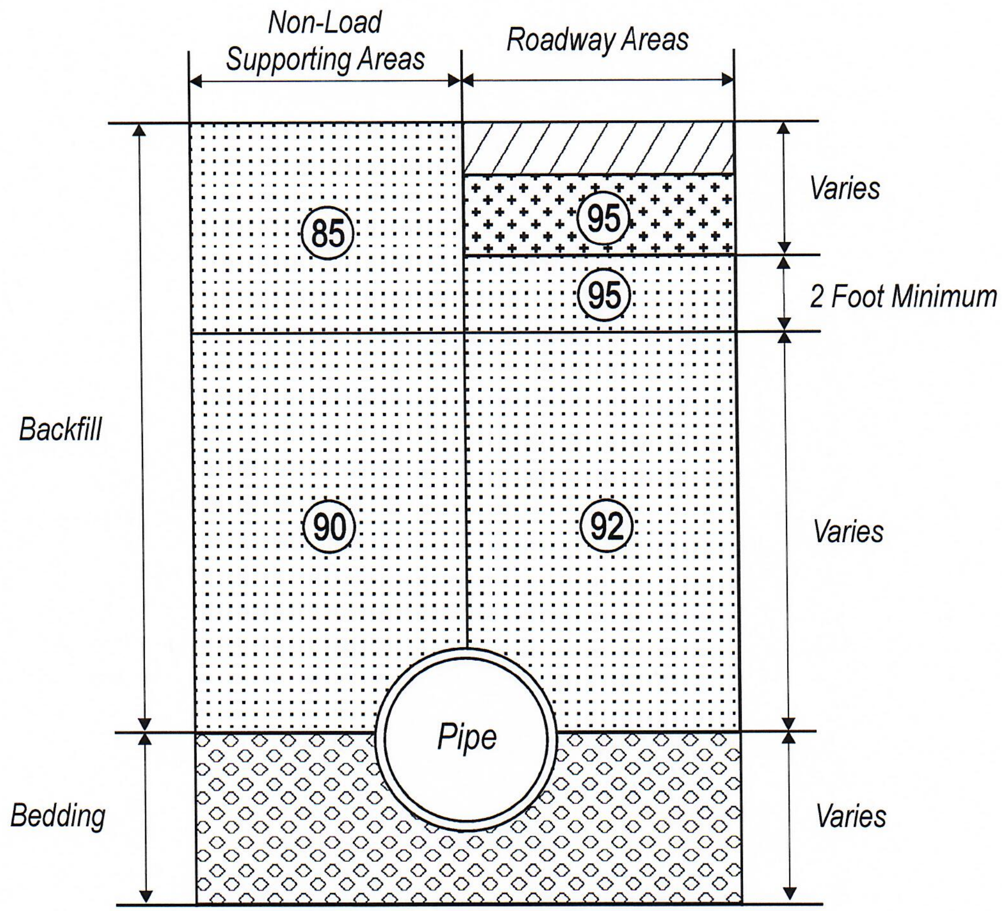
NOTES:

1. FILTER SAND - FINE AGGREGATE FOR PORTLAND CEMENT; SECTION 9=03.1(2)
2. PERFORATED OR SLOTTED RIGID PVC PIPE WITH A POSITIVE DRAINAGE GRADIENT
3. FILTER FABRIC OPTIONAL IF FILTER SAND USED

TYPICAL FOOTING DRAIN DETAIL

Not to Scale

Earth Engineering, Inc. GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT:	GILBERT - GECHO	DRAWN:	DB
	PROJECT:	LACAMAS COUNSELING 3631 NE EVERETT STREET CAMAS, WA	DATE:	02/2022
			FIGURE:	3
			PRO. #:	G10-0122



LEGEND

Asphalt or Concrete Pavement

Roadway Base Material or Base Rock

Backfill: Compacted on-site soil or imported select fill material as described in the site preparation of the general Earthwork Section of the attached report text.

(92) *Minimum percentage of maximum Laboratory Dry Density as determined by ASTM Test method D698 (Standard Proctor),unless otherwise specified in the attached report text.*

Bedding Material: Material type depends on type of pipe and laying conditions. Bedding should conform to the manufacturer's recommendations for the type of pipe selected.

UTILITY TRENCH BACKFILL DETAIL

Not to Scale

Earth Engineering, Inc. GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS	*CLIENT:* GILBERT - GECHO	*DRAWN:* DB
	PROJECT: LACAMAS COUNSELING 3631 NE EVERETT STREET CAMAS, WA	*DATE:* 02/2022
		FIGURE: 4
		PRO. #: G10-0122

APPENDIX A

(FIELD EXPLORATION)

UNIFIED SOIL CLASSIFICATION SYSTEM LEGEND

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTION
Coarse Grained Soils More Than 50% Material Larger Than No 200 Sieve Size	Gravel and Gravelly Soils More Than 50% Coarse Fraction Retained on No 4 Sieve	Clean Gravels (little or no fines)		GW gw	Well-Graded Gravels, Gravel-Sand Mixtures Little or no Fines
				GP gp	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or no Fines
		Gravels with Fines (appreciable amount of fines)		GM gm	Silty Gravels, Gravel-Sand-Silt Mixtures
				GC gc	Clayey Gravels, Gravel-Sand-Clay Mixtures
	Sand and Sandy Soils More Than 50% Coarse Fraction Passing No 4 Sieve	Clean Sand (little or no fines)		SW sw	Well-graded Sands, Gravelly Sands Little or no Fines
				SP sp	Poorly-Graded Sands, Gravelly Sands Little or no Fines
		Sands with Fines (appreciable amount of fines)		SM sm	Silty Sands, Sand-Silt Mixtures
				SC sc	Clayey Sands, Sand-Clay Mixtures
Fine Grained Soils More Than 50% Material Smaller Than No 200 Sieve Size	Silts and Clays	Liquid Limit Less than 50		ML ml	Inorganic Silts and Very Fine Sands, Rock Flour, Silty-Clayey Fine Sands; Clayey Silts w/ slight Plasticity
				CL cl	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean
				OL ol	Organic Silts and Organic Silty Clays of Low Plasticity
	Silts and Clays	Liquid Limit Greater than 50		MH mh	Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Soils
				CH ch	Inorganic Clays of High Plasticity, Fat Clays
				OH oh	Organic Clays of Medium to High Plasticity, Organic Silts
Highly Organic Soils				PT pt	Peat, Humus, Swamp Soils with High Organic Contents

Topsoil		Humus and Duff Layer
Fill		Highly Variable Constituents

Earth Engineering Inc. GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: GILBERT - GECHO	DRAWN: DB
	PROJECT: LACAMAS COUNSELING CENTER 3631 NE EVERETT STREET CAMAS, WA	DATE: 02/2022
		PLATE: A1
		PRO. #: G10-0122

FIELD EXPLORATION

Our field exploration was performed on February 3rd 2022. Subsurface conditions at the site were explored by excavating three test pits. The test pits were excavated to a maximum depth of eight feet below the existing ground surface. The test pits were excavated using a track-hoe.

The test pits were located by pacing from property features. The locations are shown on the Site Plan, Figure 2. Field exploration was monitored by an Earth Engineering, Inc. representative, who classified the soils that we encountered and maintained a log of each test pit, obtained representative samples, and observed pertinent site features. Representative soil samples were placed in closed containers and returned to the laboratory for further examination and testing.

All samples were identified using the Standard Classification of Soils for Engineering Purposes (ASTM D2487-93) in accordance with the Unified Soil Classification System (USCS), which is presented on Plate A1. The test pit logs are presented in Appendix A. The final log represents our interpretations of the field logs and the results of the laboratory tests on field samples.

LOG OF TEST PIT I-1
(Southwest)

ELEVATION: **+/- 194 feet**
EXPLORATORY EQUIPMENT: **TRACK HOE**
DATE: **02/03/2022**

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
0–6	• (2 ft); groundwater (4 ft)	6" Topsoil - Field infiltration rate >100 inches per hour **elastic Silt (MH)** **w/ some cobbles** (Native)		Red Brown	Moist to Saturated	Firm	29	-

Bottom of test pit at 6.0 feet below existing ground surface.
Groundwater seepage was encountered at 4.0 feet.

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CLIENT:	GILBERT - GECHO	DRAWN:	EG
PROJECT:	LACAMAS COUNSELING CENTER 3631 NE EVERETT STREET CAMAS, WA	DATE:	02/2022
		PLATE:	A2
		PRO. #:	G10-0122

LOG OF TEST PIT TP-1

(East Central)

ELEVATION: **+/- 196 feet**

EXPLORATORY EQUIPMENT: **TRACK HOE**

DATE: **02/03/2022**

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
0–2.5	● (at 2)	4" Topsoil **Silt (ML)** (Native)		Brown	Moist	Very Stiff to Hard	27	-
2.5–5.5		**silty Gravel (GM)** **w/cobbles & trace boulders**				Dense		

Bottom of test pit at 5.5 feet below existing ground surface.
No groundwater was encountered.

Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	GILBERT - GECHO	DRAWN:	EG
PROJECT:	LACAMAS COUNSELING CENTER 3631 NE EVERETT STREET CAMAS, WA	DATE:	02/2022
		PLATE:	A3
		PRO. #:	G10-0122

LOG OF TEST PIT TP-2
(Northwest)

ELEVATION: **+/- 197 feet**
EXPLORATORY EQUIPMENT: **TRACK HOE**
DATE: **02/03/2022**

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
0–4	● (at 3 ft)	6" Topsoil **Silt (ML)** w/ gravel & cobbles (Native)		Brown	Moist	Very Stiff	25	-
4–8		**silty Gravel (GM)** w/ cobbles & trace boulders				Medium Dense to Dense		

Bottom of test pit at 8.0 feet below existing ground surface.
No groundwater was encountered.

Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	GILBERT - GECHO
PROJECT:	LACAMAS COUNSELING CENTER 3631 NE EVERETT STREET CAMAS, WA
DRAWN:	EG
DATE:	02/2022
PLATE:	A4
PRO. #:	G10-0122

DISTRIBUTION

{G10-0122}

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