DEVELOPMENT SERVICES
ENVIRONMENTAL COORDINATOR
450 110th Ave NE., P.O. BOX 90012
BELLEVUE, WA 98009-9012

OPTIONAL DETERMINATION OF NON-SIGNIFICANCE (DNS) NOTICE MATERIALS

The attached materials are being sent to you pursuant to the requirements for the Optional DNS Process (WAC 197-11-355). A DNS on the attached proposal is likely. This may be the only opportunity to comment on environmental impacts of the proposal. Mitigation measures from standard codes will apply. Project review may require mitigation regardless of whether an EIS is prepared. A copy of the subsequent threshold determination for this proposal may be obtained upon request.

File No.	11-115142-LO
Project Name/Address:	Century Link Slide Repair 158 W Lake Sammamish Parkway SE
Planner:	Reilly Pittman
Phone Number:	425-452-4350
Minimum Comment Period:	**September 8, 2011**

Materials included in this Notice:

- ☒ Blue Bulletin
- ☒ Checklist
- ☒ Vicinity Map
- ☒ Plans
- ☒ Other: Geotech Report

Vicinity Map of Qwest Slide Repair at West Lake Sammamish Parkway SE.

City of Bellevue Application for Critical Areas Land Use Permit

PROJECT NARRATIVE

1.0 INTRODUCTION

On December 19, 2010, a landslide occurred on a fill embankment on the east side of West Lake Sammamish Parkway SE in Bellevue, Washington. The landslide occurred during or following a significant precipitation event that appears to have saturated the embankment, which resulted in a combination of a sudden sloughing of saturated fill material and debris, and erosion associated with surface or subsurface water flowing down the slope. The slide occurred on a Qwest Communications, Inc. (Qwest) easement located on a residential parcel at 158 West Lake Sammamish Parkway SE; the landslide also affected the single-family residence at 204 West Lake Sammamish Parkway SE. Qwest owns and maintains communication equipment that is located in cabinets founded on concrete slabs at the top of the slope within the easement where the landslide occurred. Qwest acquired emergency permits (Bellevue Permit Nos. 10-129569 TJ and 11-111042 TJ) to repair and temporarily stabilize the Qwest cabinets and ~~&~~ equipment ~~damaged~~ endangered by the landslide.

In order to remediate the slope failure, Qwest proposes to install ~~a~~ rock ~~buttress~~ fill and an underdrain to intercept groundwater and tightline to an infiltration trench in the low point of the property. This approach would re-establish the lost portion of the embankment, and provide stabilization support to the remaining fill embankment.

Work would be conducted within a Steep Slope Geologic Hazard Area that is regulated by the City of Bellevue. The project narrative below is being submitted as part of the Critical Areas Land Use Permit application to remediate the slope failure.

2.0 PROJECT DESCRIPTION

1. A description of the project site, including landscape features, existing development, and site history as applicable.

The project site encompasses portions of single-family residences located at 158 and 204 West Lake Sammamish Parkway SE (King County Parcel Nos. 3625059153 and 3625059009, respectively). The Qwest easement is located on parcel 3625059153.

In the vicinity of the project area, West Lake Sammamish Parkway SE is constructed along a bench in the topography that appears to have been created by placing fill on the downslope (east) side of the roadway alignment. The fill embankment for the road appears to have been extended further to the east in the vicinity of the slide area to create a relatively level area just off the roadway shoulder. The fill embankment consists of loosely-placed sand with variable silt and gravel content that is 10 to 17.5 feet deep. Glacial till underlies the fill layer. Qwest's communication equipment is located in cabinets founded on concrete slabs on south side of the level area. The level area at the top of the fill embankment is at about elevation 87 to 88 feet. The northern portion of this level area has been landscaped with grass and fenced off.

The Steep Slope Geologic Hazard Area encompasses the fill embankment where the slide occurred, which slopes down to the east/southeast at an inclination of 1-1/2H:1V to 2H:1V . Vegetation on the sloped portion of the remaining embankment consists of blackberry, shrubs and coniferous and deciduous trees. The toe of the fill embankment is located at about elevation 70 feet where the slope becomes much more gradual as it continues to descend down towards Lake Sammamish; grasses are predominant at the toe and downslope of the fill embankment.

The width of the landslide is up to 30 feet, and extends back into the level fill area approximately 20 to 25 feet from the inferred location of the embankment ~~crest .~~crest. The vertical height of the slide feature is up to approximately 17 feet. Single-family houses on Parcels 362505193 and 3625059009 are approximately 100 feet east and upslope and 245 feet east and downslope, respectively, of the landslide area.

2. A description of how the design constitutes the minimum necessary impact to the critical area.

The total ground disturbance occupies the minimum area to restore the slope and downslope area impacted by the slide. The disturbed area also includes the minimum area required to access the project with construction equipment. The slide remediation design restores the ground contours to approximately original grade before the slide occurred. The revegetation has been designed to tie into existing vegetation and provide ground cover over all disturbed ground requiring stabilization. The slide area and work area is shown on the plans.

3. A description of why there is no feasible alternative with less impact to the critical area, critical area buffer, or critical area structure setback.

The slide ~~that~~ occurred in a critical area (steep slope)~~,~~ due to rainfall and resulting soil saturation. Further the slope appears to have been over steepened and the soils were unconsolidated when originally constructed. The repair method chosen involves the least area to stabilize the remaining slope and protect the equipment. Other options such as structural retaining walls, larger fill with flatter slopes, and exposed rock buttressing would impact substantially more area and would not be as conducive to replanting and restoring habitat.

4. A description of alternatives considered and why the alternative selected is preferred.

~~HDR considered~~HDR considered a number of landslide remediation options including the following:

- Structural concrete retaining wall
- Rock retaining wall
- Mechanically Stabilized Earth (MSE) wall
- Exposed rock embankment stabilization
- Additional embankment fill with flatter slopes and revegetation.

- Rock embankment fill with underdrain at toe and soil covering and matting to support revegetation.

The last option was selected for the following reasons:

- Stability of slope was improved to acceptable factor of safety in the area of the Qwest equipment without increasing foot print.
- Improving drainage increases soil strength of the remaining fill embankment soils thereby improving stability.
- Allows replanting with plant materials sensitive to the critical area.
- Restores screening which is important for neighbors.
- Most cost-effective solution.

5. A summary of how the proposal meets each of the decision criteria contained in Land Use Code Section 20.30P.

Per Section 20.30P.140 of the Bellevue Land Use Code, the Director may approve or approve with modifications an application for a Critical Areas Land Use Permit if:

A. The proposal obtains all other permits required by the Land Use Code;

The proposed project would require a Clearing and Grading Permit and Right-of-Way Use Permit. The Clearing and Grading Permit would be submitted concurrently with the Critical Areas Land Use Permit. A revision will be filed for the existing Right-of-Way Permit for this project (Permit #11-111042 TJ).

B. The proposal utilizes to the maximum extent possible the best available construction, design and development techniques which result in the least impact on the critical area and critical area buffer;

HDR evaluated several remediation options to stabilize the slope. Based on ~~this analysis~~this analysis, remediation that includes ~~a~~ rock ~~buttress~~ fill and drainage improvements would be effective in increasing the strength of the embankment materials. The rock ~~buttress~~ fill would be designed to be limited to the area of slope failure, and would be site-graded to blend in to topography of the adjoining hillslopes. In addition, the use of the rock ~~buttress~~fill would allow the creation of a surface over which topsoil would be spread and replanted with native vegetation.

C. The proposal incorporates the performance standards of Part 20.25H LUC to the maximum extent applicable;

The proposed project is defined as a "Stabilization Measure", and is thus subject to applicable performance standards for stabilization measures (Section 20.25H.055.C.3.m) and landslide hazards and steep slopes (Section 20.25H.125):

- Performance Standards for Stabilization Measures (20.25H.055.C.3.m)

"i. When Allowed. New or enlarged stabilization measures shall be allowed only to protect existing primary structures and infrastructure, or in connection with uses and development allowed pursuant to subsection B of this section. Stabilization measures shall be allowed only where avoidance measures are not technically feasible."

The primary intent of the proposed project is to protect existing Qwest communication equipment within the Qwest easement from future embankment failures such as the one that occurred in December 2010. The project would also rectify damaged grassy areas on the two residential parcels on which the failure occurred.

ii. Type of Stabilization Measure Used. Where a stabilization measure is allowed, soft stabilization measures shall be used, unless the applicant demonstrates that soft stabilization measures are not technically feasible. An applicant asserting that soft stabilization measures are not technically feasible shall provide the information relating to each of the factors set forth in subsection C.3.m.iii.(D) of this section for a determination of technical feasibility by the Director. Only after a determination that soft stabilization measures are not technically feasible shall hard stabilization measures be permitted.

The proposed slope stabilization would utilize the following soft stabilization measures :

- Installation of a quarry spall ~~buttress~~ fill to improve drainage on the steep slope and prevent future failures. The ~~buttress~~ fill would be ~~field~~ graded to blend in to the adjacent existing hillsides.
- Installation of erosion control blanket (matting) to stabilize surficial topsoil layer until adequate vegetation is established
- Installation of a suite of native trees and shrubs per the Steep Slope Planting guidelines in the City of Bellevue (no date) *Critical Areas Handbook*

- 20.25H.125 Performance standards for Landslide Hazards and Steep Slopes.

In addition to generally applicable performance standards set forth in LUC 20.25H.055 and 20.25H.065, development within a landslide hazard or steep slope critical area or the critical area buffers of such hazards shall incorporate the following additional performance standards in design of the development, as applicable. The requirement for long-term slope stability shall exclude designs that require regular and periodic maintenance to maintain their level of function.

A. Structures and improvements shall minimize alterations to the natural contour of the slope, and foundations shall be tiered where possible to conform to existing topography;

The proposed rock and soil ~~buttress~~fill would be field-graded to match existing slopes on either side of the landslide area. Care would be taken during site preparation to remove only very loose surficial soils disturbed by the landslide and not further excavate into undisturbed slope soils.

B. *Structures and improvements shall be located to preserve the most critical portion of the site and its natural landforms and vegetation;*

The proposed ~~buttress~~fill and drainage improvement features have been designed to rectify the slope failure area. The footprint of the project would not alter adjoining steep slopes unaffected by the slope failure.

C. *The proposed development shall not result in greater risk or a need for increased buffers on neighboring properties;*

The intent of the proposed project is to reduce the risk of future fill embankment failures such as occurred in December. Thus, the project would likely reduce future failures in the restored portion of the steep slope hazard area.

D. *The use of retaining walls that allow the maintenance of existing natural slope area is preferred over graded artificial slopes where graded slopes would result in increased disturbance as compared to use of retaining wall;*

The proposed project would re-establish the lost portion of a fill embankment using ~~a~~ rock ~~buttress~~fill. The rock ~~buttress~~fill is preferable to a retaining wall since it would address drainage issues responsible for the failure of the fill embankment. The rock ~~buttress~~fill would not extend beyond the area of the slope failure. No other portion of the steep slope hazard area would be disturbed by the project.

E. *Development shall be designed to minimize impervious surfaces within the critical area and critical area buffer;*

The proposed project would not create new impervious surfaces. The proposed temporary stabilized construction access road would be removed and hydroseeded upon completion of the project.

F. *Where change in grade outside the building footprint is necessary, the site retention system should be stepped and regrading should be designed to minimize topographic modification. On slopes in excess of 40 percent, grading for yard area may be disallowed where inconsistent with this criteria;*

The proposed project would not require changes in grade outside of the slope failure area.

G. *Building foundation walls shall be utilized as retaining walls rather than rockeries or retaining structures built separately and away from the building wherever feasible. Freestanding retaining devices are only permitted when they cannot be designed as structural elements of the building foundation;*

The proposed project would not create new building foundation walls or freestanding retaining devices.

H. On slopes in excess of 40 percent, use of pole-type construction which conforms to the existing topography is required where feasible. If pole-type construction is not technically feasible, the structure must be tiered to conform to the existing topography and to minimize topographic modification;

Since ~~T~~there are no structures proposed for the project, ~~proposed project would not utilize~~ pole-type construction would not be required.

I. On slopes in excess of 40 percent, piled deck support structures are required where technically feasible for parking or garages over fill-based construction types; and

The proposed project would not create parking or garages.

J. Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC 20.25H.210. (Ord. 5680, 6-26-06, § 3)

See Attachment 3 for the proposed restoration plan for the Steep Slope Geologic Hazard Area.

D. The proposal will be served by adequate public facilities including streets, fire protection, and utilities;

The proposed project does not require new public facility services.

E. The proposal includes a mitigation or restoration plan consistent with the requirements of LUC 20.25H.210; except that a proposal to modify or remove vegetation pursuant to an approved Vegetation Management Plan under LUC 20.25H.055.C.3.i shall not require a mitigation or restoration plan; and

The proposed steep slope restoration and monitoring plan is in Attachment 3 of this submittal.

F. The proposal complies with other applicable requirements of this code. (Ord. 5683, 6-26-06, § 27)

The proposed project would comply with applicable sections ~~of requirements~~ of the Bellevue Land Use Code.

6. A summary of how the proposal meets each of the criteria and performance standards contained in Land Use Code Section 20.25H associated with the critical area you are modifying.

Project compliance with the criteria and performance standards for slope stabilization and work in a geologic hazard area are detailed in bullet point 5C, above.

7. A summary of how the proposal meets each of the criteria contained in Land Use Code Section 20.25H.230 as required for applications proposing a modification through the use the Critical Areas Report process.

The proposed project would not require a modification through the Critical Areas Report Process.

Literature Cited

City of Bellevue. No Date. Critical Areas Handbook. http://www.bellevuewa.gov/pdf/Development%20Services/ca_handbook.pdf

GeoEngineers, Inc. 2011. West Lake Sammamish Parkway Landslide Remediation. January 11, 2011 report to HDR Engineering, Inc.

SEPA Checklist Annotated by Reilly Pittman on 8/17/2011

ATTACHMENT 4

City of Bellevue Submittal Requirements | **27a**

ENVIRONMENTAL CHECKLIST

4/18/02

If you need assistance in completing the checklist or have any questions regarding the environmental review process, please visit or call the Permit Center (425-452-6864) between 8 a.m. and 4 p.m., Monday through Friday (Wednesday, 10 to 4). Our TTY number is 425-452-4636.

BACKGROUND INFORMATION

Property Owner: (1) Robert Allen; (2) Dennis and Mary Ann Schober

Proponent: Qwest Communications, Inc.

Century Link has replaced Qwest as the proponent

Contact Person: Dennis Libadia
(If different from the owner. All questions and correspondence will be directed to the individual listed.)

Address: 23315 66th Avenue South Kent, WA 98032

Phone: 253-372-5360 email: Dennis.Libadia@qwest.com

Proposal Title: Qwest Slide Repair at West Lake Sammamish Parkway SE

Proposal Location: 158 West Lake Sammamish Parkway SE, Bellevue, WA 98008 (King Co. Parcel #3625059153) and 204 West Lake Sammamish Parkway SE, Bellevue, WA 98008 (King Co. Parecel #3625059009)
(Street address and nearest cross street or intersection) Provide a legal description if available.
The parcels are located south of the intersection of NE 2nd Pl and West Lake Sammamish Parkway SE.
Please attach an 8 ½" x 11" vicinity map that accurately locates the proposal site.

Give an accurate, brief description of the proposal's scope and nature:

1. General description: In order to repair a fill slope that failed in December 2010, Qwest proposes to install rock fill and an underdrain on the failed slope to intercept groundwater and tightline to an infiltration trench in the low point of the property. The remaining landslide area would be regraded, and all disturbed areas would be revegetated.
2. Acreage of site: The project area totals approximately 10,200 square feet.
3. Number of dwelling units/buildings to be demolished: NONE
4. Number of dwelling units/buildings to be constructed: NONE
5. Square footage of buildings to be demolished: NONE
6. Square footage of buildings to be constructed: NONE
7. Quantity of earth movement (in cubic yards): Excavation: 30 CY Fill: 200 CY
8. Proposed land use: Slope stabilization measures
9. Design features, including building height, number of stories and proposed exterior materials:
   No structures will be built.
10. Other

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Estimated date of completion of the proposal or timing of phasing:

Construction would occur in summer 2011, and will take two to three weeks to complete. This project will not require phasing.

Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

None are known at this time.

List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

- Geotechnical Engineering Services - West Lake Sammamish Parkway Landslide Remediation. GeoEngineers Inc. January 2011.
- Critical Areas Land Use Permit Project Narrative. HDR. June 2011.
- Critical Areas Land Use Permit Steep Slope Restoration Plan. HDR. June 2011.

Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. List dates applied for and file numbers, if known.

There are no known applications pending for governmental approvals of other proposals within or directly affecting the properties covered by this proposal.

List any government approvals or permits that will be needed for your proposal, if known. If permits have been applied for, list application date and file numbers, if known.

- City of Bellevue Clearing and Grading Permit
- City of Bellevue Critical Areas Land Use Permit
- City of Bellevue Right-of-Way Use Permit Revision

Please provide one or more of the following exhibits, if applicable to your proposal.
(Please check appropriate box(es) for exhibits submitted with your proposal):

☐ Land Use Reclassification (rezone) Map of existing and proposed zoning

☐ Preliminary Plat or Planned Unit Development
Preliminary plat map

☒ Clearing & Grading Permit
Plan of existing and proposed grading
Development plans

☐ Building Permit (or Design Review)
Site plan
Clearing & grading plan

☐ Shoreline Management Permit
Site plan

A. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site: ☐ Flat ☐ Rolling ☐ Hilly ☒ Steep slopes ☐ Mountains ☐ Other

b. What is the steepest slope on the site (approximate percent slope)?
The steepest slope is approximately 67%, located at the slide scarp.

c. What general types of soil are found on the site (for example, clay, sand, gravel, peat, and muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

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The project site is mapped as Alderwood gravelly sandy loam, 6 to 15 percent slopes. The fill embankment consists of loosely-placed sand with variable silt and gravel content that is 10 to 17.5 feet deep (GeoEngineers 2011). Glacial till underlies the fill layer. There is no prime farmland on the project properties.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

On December 19, 2010, a landslide occurred on the fill embankment within the project area, during or following a significant precipitation event that appears to have saturated the embankment, which resulted in a combination of a sudden sloughing of saturated fill material and debris, and erosion associated with surface or subsurface water flowing down the slope.

e. Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.

Approximately 30 CY of excavation would be required to remove loose soils where the proposed underdrain and rock fill would be located, and to dispose of slide debris. Approximately 200 CY of quarry spalls, crushed rock, topsoil, and gravel backfill would imported to the site for installation of the rock fill and underdrain. The fill also includes temporary fill for the two temporary stabilized construction access points.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe. Erosion could occur during clearing, rock fill and underdrain installation and final grading. The construction duration will be short, resulting in brief exposure to erosion conditions. Erosion control measures mentioned in 1.h would be implemented to minimize impacts.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

The project would result in no net change in impervious surfaces.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Erosion and sediment control measures would include, but not be limited to: (1) clearly demarcating the limits of construction; (2) protecting trees during construction (3) stabilizing construction entrances; (4) installing silt fences around the perimeter of the clearing limits; (5) conducting earthwork activities during dry summer months; (6) permanent hydroseeding of disturbed areas; (7) use of erosion control matting on the repaired steep slope; (8) installing topsoil; and (9) installing woody plant material on the repaired steep slope.

2. AIR

a. What types of emissions to the air would result from the proposal (i.e. dust, automobile odors, and industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.

Temporary air quality impacts may occur during construction due to fugitive dust emissions caused by clearing, excavation, uncovered stockpiles, and any other construction. Fugitive dust has the potential to be of greater concern during dry, warm weather conditions when wind and construction equipment create more dust. Localized increases in exhaust emissions from equipment and vehicle operation would occur during construction; however, emissions would not likely be great enough to noticeably affect air quality. No air emissions are expected from the completed project.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

None are known.

c. Proposed measures to reduce or control emissions or other impacts to the air, if any:

The Puget Sound Clean Air Agency (PSCAA) governs activities affecting air quality in King County. As required by the PSCAA regulations, emissions would be controlled by using reasonable available control technologies (PSCAA 2008). Fugitive dust impacts associated with construction of the proposed project are not anticipated to be significant. Construction contractors would comply with the regulatory requirements and implement appropriate measures as necessary. Vehicular emissions associated with construction of the project are anticipated to be short term in nature. Measures to minimize vehicular emissions would include: (1) Requiring contractors to use best available control technologies; (2) Proper vehicle maintenance; (3) Minimizing vehicle and equipment idling. There would be no emissions associated with the completed project.

3. WATER

a. Surface

(1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If

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appropriate, state what stream or river it flows into.

There are no surface water bodies within the immediate vicinity of the project site. The nearest waterbody is an unnamed tributary to Lake Sammamish, located approximately 170 feet north of the project site.

(2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If Yes, please describe and attach available plans.

Earthwork would occur approximately 170 feet south and downslope of the tributary located north of the project site. See the Construction Drawings for details.

(3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No fill or dredge material would be placed or removed from any waters.

(4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

The proposed project would not require surface water withdrawals or diversions.

(5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No.

(6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

Neither the construction phase nor the completed project would involve discharges of waste materials to surface waters.

b. Ground

(1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description.

Ground water would not be withdrawn and water would not be discharged to ground water.

(2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals...; agricultural; etc.) Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste materials would be generated or discharged into the ground.

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c. Water Runoff (Including storm water)

(1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

Clearing, grading, and installation of the underdrain and rock fill would result in a minor, temporary loss of vegetative cover and compaction of surface soils that may temporarily increase the quantity of surface water runoff from precipitation events and alter its direction of flow during construction. Erosion control measures would be applied during construction as noted in B.1.h. The completed project would not increase stormwater runoff.

(2) Could waste materials enter ground or surface waters? If so, generally describe.

No waste materials are anticipated to enter the ground or surface waters during the construction phase nor the completed project.

d. Proposed measures to reduce or control surface, ground, and runoff water impacts, if any:

Measures to reduce or control surface, ground, and runoff water may include the following: (1) Minimize area of disturbance to the amount necessary for construction of project features; (2) stabilize exposed soils immediately following construction; (3) implement ESC measures to address erosion control during and after construction.

4. Plants

a. Check or circle types of vegetation found on the site:

- [x] deciduous tree: alder, maple, aspen, other
- [x] evergreen tree: fir, cedar, pine, other
- [x] shrubs
- [x] grass
- [ ] pasture
- [ ] crop or grain
- [ ] wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other
- [ ] water plants: water lily, eelgrass, milfoil, other
- [ ] other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Up to 4,000 square feet of grass and herbaceous vegetation and up to 1,500 square feet of Himalayan blackberry would be removed during construciton.

c. List threatened or endangered species known to be on or near the site.

According to a review of the Washington Department of Natural Resources Natural Heritage Program, "Sections that Contain Natural Heritage Features, Current as of November 5, 2010" list (WDNR 2010), there are no documented threatened or endangered plant species on or near the project site. Additionally, during field reviews, no rare plants or rare plant communities were observed on or near the project site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

Upon completion of construction and grading activities, the repaired steep slope would be planted with native trees and shrubs per the recommendations of City of Bellevue (no date). The remaining disturbed areas would be permanently hydroseeded with a seed mix specified by Washington Department of Ecology (2005).

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5. ANIMALS

a. Check or circle any birds and animals which have been observed on or near the site or are known to be on or near the site:

☒ Birds: hawk, heron, eagle, songbirds, other:

☒ Mammals: deer, bear, elk, beaver, other:

☐ Fish: bass, salmon, trout, herring, shellfish, other:

b. List any threatened or endangered species known to be on or near the site.

No threatened or endangered species are known to be on or near the site (City of Bellevue 2009a).

c. Is the site part of a migration route? If so, explain.

The project site lies within the Pacific Flyway, one of four major north-south migration routes in the Americas for migratory birds. There are no other local migration routes in the area (City of Bellevue 2009a).

d. Proposed measures to preserve or enhance wildlife, if any:

The repaired slope would be replanted with native trees and shrubs to restore wildlife habitat functions on the slope.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy need? Describe whether it will be used for heating, manufacturing, etc.

The completed project would not require an external source of energy to operate.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The project does not involve building structures that would block access to sunlight on adjacent properties.

c. What kinds of energy conservation features are included in the plans of the proposal? List other proposed measures to reduce or control energy impacts, if any:

No energy conservation features are included as part of this project.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

No environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill or hazardous waste would result from this project. Some risk of spills/leakage from equipment would exist during construction but would not be greater than normally associated with construction activities.

(1) Describe special emergency services that might be required.

None would be required.

(2) Proposed measures to reduce or control environmental health hazards, if any.

To protect against hazardous substance spills from routine equipment operation and maintenance activities during construction, the contractor would be required to provide an emergency response plan and know proper hazardous materials storage, handling, and emergency procedures, including proper spill notification and response requirements (SPCC Plan).

b. Noise

(1) What types of noise exist in the area which may affect your project (for example, traffic, equipment, operation, other)?

Existing noise in the area would not affect the project during construction or when it is completed.

(2) What types and levels of noise would be created by or associated with the project on a short-term or long-term basis (for example, traffic, construction, operation, other)? Indicate what hours noise would come from the site. Construction activities would generate short-term, temporary noise impacts caused primarily by equipment operation associated with installation of the underdrain and rock fill and other grading-related activities. While the impact would be temporary, construction activities would be noticeable. In general, the City of Bellevue allows noise from construction operations in residential areas from 7 a.m. to 6 p.m. on weekdays, and 9 a.m. to 6 p.m. on Saturdays that are non-holidays. Noise from construction is generally prohibited on Sundays and State-recognized holidays (City of Bellevue 2010). It is anticipated that construction would occur during approved hours. **Noise regulated by BCC 9.18**

(3) Proposed measures to reduce or control noise impacts, if any:

Because construction noise levels would be variable, contractors would be required to implement the measures to minimize disruption and inconvenience caused by construction activities that include, but are not limited to: (1) Ensuring the adequacy of sound-control devices that are at least as effective as those on the original equipment. No equipment would have unmuffled exhaust. (2) Minimizing idling time of equipment and vehicle operation. (3) Operating equipment only during approved hours. (3) Shutting off idling equipment. (4) Notifying adjacent residences in advance of construction work. Measures would not be required for the completed project.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

The project site and adjacent properties are residential. Qwest has an easement (King Co. #199607261210) on the property located at 158 West Lake Sammamish Parkway SE.

b. Has the site been used for agriculture? If so, describe.

No.

c. Describe any structures on the site.

A residential driveway adjoins the south side of the project area. Single-family houses are located at least 90 feet from the project area.

d. Will any structures be demolished? If so, what?

No.

e. What is the current zoning classification of the site?

Both properties are zoned as Residential, 2.5 dwelling units per acre (City of Bellevue 2011)

f. What is the current comprehensive plan designation of the site?

Both properties are designated as Single-family, moderate density (City of Bellevue 2009b)

g. If applicable, what is the current shoreline master program designation of the site?

The project site is not within a Shoreline Jurisdiction.

h. Has any part of the site been classified as an "environmentally sensitive" area? If so, specify.

The area where the slope failure occurred is classified as a Steep Slope Geologic Hazard Area.

I. Approximately how many people would reside or work in the completed project?

None.

j. Approximately how many people would the completed project displace?

None.

k. Proposed measures to avoid or reduce displacement impacts, if any:

No measures are proposed.

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i. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposed project is compatible with existing land uses since the project would protect existing Qwest communication equipment within the Qwest easement from future embankment failures such as the one that occurred in December 2010. The project would also rectify damaged grassy areas on the two residential parcels on which the failure occurred.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any:

No measures are proposed for this project.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

No structures are proposed for this project.

b. What views in the immediate vicinity would be altered or obstructed?

Views from residences on the project parcels would not be altered or obstructed by the proposed project.

c. Proposed measures to reduce or control aesthetic impacts, if any:

No measures are proposed for this project.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Construction activities are anticipated to occur during daylight.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

The completed project would not produce additional light or glare.

c. What existing off-site sources of light or glare may affect your proposal?
There are no off-site sources of light or glare that would affect the project.

d. Proposed measures to reduce or control light or glare impacts, if any:
No measures are proposed for this project.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?
There are no public recreational opportunities in the immediate vicinity of the project area.

b. Would the proposed project displace any existing recreational uses? If so, describe.
No.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
No measures are proposed for this project.

13. Historic and Cultural Preservation

a. Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe. A review of the Washington Information Systems for Architectural and Archaeological Records Data (WISAARD; WDAHP 2011) did not show any registered historical sites or inventoried sites within or next to the project area.

b. Generally describe any landmarks or evidence of historic, archeological, scientific, or cultural importance known to be on or next to the site.
None are known.

c. Proposed measures to reduce or control impacts, if any: Should evidence of cultural remains, either historic or prehistoric, be encountered during excavation, work in the immediate areas would be suspended, and the find would be and examined documented by a professional archaeologist. Decisions regarding appropriate mitigation and further action would be made at that time, including coordination with appropriate tribal, local, and state authorities.

14. Transportation

a. Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.
The site adjoins the east right-of-way boundary of West Lake Sammamish Parkway SE. There is a pull-out near the Qwest easement where temporary construction access will be constructed.

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?
King County Metro provides limited-service transit on West Lake Sammamish Parkway SE. The nearest stop is 0.2 miles NE of the project site.

c. How many parking spaces would be completed project have? How many would the project eliminate?
There would be no creation or elimination of parking spaces for this project.

d. Will the proposal require any new roads or streets, or improvements to existing roads or streets, not Including driveways? If so, generally describe (indicate whether public or private).
No.

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.
No.

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f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.

No new daily vehicular trips would be generated by the project. Maintenance trips may occur periodically.

g. Proposed measures to reduce or control transportation impacts, if any: The following measures would be employed to mitigate impacts to transportation along West Lake Sammamish Parkway SE during the slope repair: (1) Conducting all traffic control in accordance with local jurisdictional requirements; (2) organizing and timing work for low traffic times to minimize impacts; (3) providing traffic control to maintain local and emergency vehicle access; (4) where necessary, coordinating construction activities with adjoining residences for access prior to construction.

15. Public Services

a. Would the project result in an increased need for the public services (for example: fire protection, police protection, health care, schools, other)? If so, generally describe.

The project would not result in an increased need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

The following measures would be employed to mitigate impacts to public services during construction: (1) Conducting all traffic control in accordance with local jurisdictional requirements; (2) providing traffic control to maintain local and emergency vehicle access; (3) organizing and time work for low traffic times to minimize impacts.

16. Utilities

a. Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.

Fiber optic telecommunications cables

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

No new utilities are proposed for the project. The location of existing underground utilities will be verified by the contractor prior to construction to avoid potential damage to the utilities.

Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature.....

Date Submitted.....8-17-2011

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Geotechnical Engineering Services

West Lake Sammamish Parkway
Landslide Remediation
Bellevue, Washington

for
HDR, Inc.

January 11, 2011

GeoEngineers
Earth Science + Technology

Geotechnical Engineering Services

West Lake Sammamish Parkway
Landslide Remediation
Bellevue, Washington

for
HDR, Inc.

January 11, 2011

GeoEngineers

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425.861.6000

30 YEARS 2010

Geotechnical Engineering Services

West Lake Sammamish Parkway
Landslide Remediation
Bellevue, Washington

File No. 8015-029-00

January 11, 2011

Prepared for:

HDR, Inc.
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Attention: Michael P. Blanchette, PE

Prepared by:

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Senior Engineer

Matthew W. Smith, PE
Associate

KGO:MWS:nlu

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INTRODUCTION

This report presents the results of GeoEngineers' geotechnical engineering services for the West Lake Sammamish Parkway Landslide Remediation project. The landslide occurred near 158 West Lake Sammamish Parkway SE in Bellevue, Washington. The slide occurred on the east side of the road and impacted two properties downslope of the roadway alignment. The site is shown relative to surrounding physical features on the Vicinity Map (Figure 1) and the Site Plan (Figure 2).

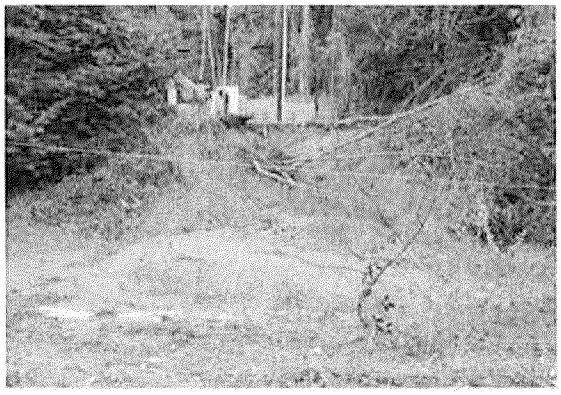
The purpose of this report is to provide geotechnical engineering conclusions and recommendations for the remediation of the landslide feature. Our geotechnical engineering services have been completed in general accordance with the Services Agreement dated December 17, 2010. Our scope of work includes:

- Completing two geotechnical explorations and associated laboratory testing of soil samples;
- Developing remediation options and geotechnical recommendations to reconstruct the slope;
- Completing engineering analysis to evaluate the stability of the slope in its reconstructed condition such that necessary permits can be obtained to complete the remediation
- Preparing this report.

LANDSLIDE DESCRIPTION

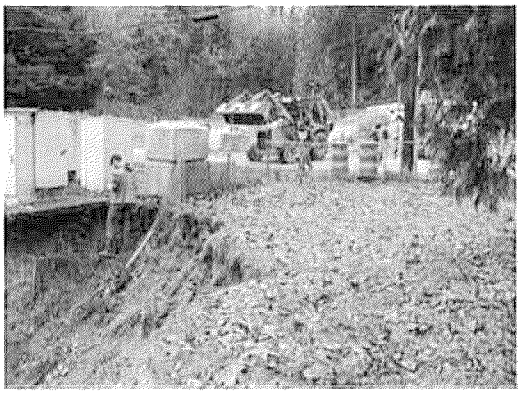
GeoEngineers' understanding of the landslide that occurred along West Lake Sammamish Parkway is based on discussions with Michael Blanchette with HDR and our observations during a site visit on December 15, 2010. The scarp of the landslide is located approximately 30 feet southeast of the shoulder of West Lake Sammamish Parkway, which extends along a northeast to southwest alignment in this area. The area east of the paved shoulder of the roadway, where the landslide occurred, consists of a level fill embankment that is fenced and vegetated with grass. Qwest Communications owns communication equipment that is located in cabinets founded on concrete slabs at the top of the slope.

The existing fill embankment, where the landslide occurred, slopes down to the southeast at an inclination of approximately 1½H:1V (horizontal to vertical) to 2H:1V. The width of the landslide is on the order of 30 feet. The landslide extends back into the level fill area approximately 20 to 25 feet from the inferred location of the embankment crest. The vertical height of the slide feature is up to about 17 feet. A site plan showing topographic information of the landslide feature and its location relative to existing physical features is shown on Figure 2.



Landslide feature looking northwest from below.

The landslide and erosion likely began on the sloped portion of the embankment and then propagated in a north northwest direction into the level area towards the roadway alignment. A portion of one of Qwest's concrete equipment pads was undermined by the landslide and erosion resulting in a loss of support for the eastern corner of the slab.



Level area at the top of the slope that also contains Qwest equipment.

The majority of the scarp portion of the landslide feature is located on the property with an address of 158 West Lake Sammamish Parkway SE. The majority of the accumulated material that was deposited at the toe of the embankment is located on the property with an address of 204 West Lake Sammamish Parkway SE. The scarp feature and the accumulated debris as well as the property lines for the two addresses are shown on the Site Plan, Figure 2.

FIELD EXPLORATIONS AND LABORATORY TESTING

Field Explorations

The subsurface conditions at the site were evaluated by drilling two borings, B-1 and B-2, to depths of approximately 20½ and 25½ feet, respectively. Boring B-1 was drilled at the top of the embankment above the scarp and B-2 was drilled at the toe of the landslide/erosion feature. The approximate locations of the explorations are shown on the Site Plan, Figure 2. Descriptions of the field exploration program and the boring logs are presented in Appendix A.

Laboratory Testing

Soil samples were obtained during drilling and were taken to GeoEngineers' laboratory for further evaluation. Selected samples were tested for the determination of the grain size distribution and moisture content. A description of the laboratory testing and the test results are presented in Appendix B.

SITE CONDITIONS

Geology

Geologic conditions in the site vicinity were evaluated by reviewing the Geologic Map of the Issaquah 7.5' Quadrangle (USGS, 2006). The geologic map indicates the near surface soils consist of fan deposits associated with several drainage features that extend up the slope to the west. The fan deposits are described as consisting of poorly sorted silt, sand, gravel, cobbles and boulders that were deposited in a fluvial environment entering Lake Sammamish. The geologic map also indicates that the fan deposits are underlain by glacially consolidated soils of the Vashon and pre-Vashon periods.

While not specifically identified on the geologic map, it is apparent that fill has been placed along the West Lake Sammamish Parkway alignment to construct the road. The relatively flat area to the east of the existing roadway shoulder also appears to be constructed by placing a fill embankment over the soils described above.

Surface Conditions

The landslide occurred along the east side of West Lake Sammamish Parkway. The topography of the area slopes down towards Lake Sammamish. West Lake Sammamish Parkway is constructed along a bench in the topography that appears to be created by placing fill on the downslope (east) side of the roadway alignment.

The fill embankment for the road appears to have been extended further to the east in the vicinity of the slide area to create a relatively level area just off the roadway shoulder. The northern portion of this level area has been landscaped with grass and fenced off. Communication equipment in cabinets founded on concrete slabs is located on south side of the level area.

The level area at the top of the fill embankment is at about Elevation 87 to 88 feet. The embankment slopes down to the east at an inclination of 1½H:1V to 2H:1V. Vegetation on the sloped portion of the embankment consists of blackberry, shrubs and coniferous and deciduous trees. The toe of the fill embankment is located at about Elevation 70 feet where the slope becomes much more gradual as it continues to descend down towards Lake Sammamish.

Subsurface Soil Conditions

GeoEngineers' understanding of the subsurface conditions is based on our review of existing geologic information and the results of two borings (B-1 and B-2) drilled as part of this study. The approximate locations of the explorations are presented in the Site Plan, Figure 2.

The subsurface soil conditions generally consist of fill and/or alluvium overlying competent glacially consolidated soils. Interpreted subsurface conditions are presented in Cross Section A-A' (Figures 3). It is difficult to distinguish between loose fill and loose alluvial soils that are likely present within the surficial layer of loose granular material observed in the borings. The engineering properties of the fill and/or alluvium are essentially the same; therefore, for the purposes of this report we will call the unit fill.

The fill generally consists of loose sand with variable silt and gravel content. The thickness of fill encountered in the explorations completed for this study ranged from 10½ to 17 feet, with the thickest area of fill found in boring B-2, located at the base of the landslide feature. The glacially consolidated soils observed in the borings below the fill consist of very dense silty sand and gravel (glacial till).

Groundwater Conditions

Measurements of groundwater in the borings indicate the site groundwater level at the time of drilling was at about Elevation 77½ and 70½ feet in borings B-1 and B-2. Groundwater levels are anticipated to vary throughout the year as a function of precipitation, season and other factors.

CONCLUSIONS AND RECOMMENDATIONS

Landslide Event

Landslide debris at the base of the slope.

The landslide occurred during or following a significant precipitation event in the Bellevue area that appears to have saturated the fill embankment and resulted in the observed failure. Based on the deltaic fan of material at the toe of the landslide feature, the slide mass was either saturated and essentially experienced a flow failure or there were also some erosional processes that occurred in conjunction with the slide that spread the material out. More likely than not, the slide feature resulted from a combination of sloughing of saturated fill material and erosion associated with surface or subsurface water flowing down the slope. The source of the water that saturated the fill soils likely was a combination of precipitation and surface water runoff as well as subsurface groundwater seepage.

We noted several points of groundwater seepage within the lower portion of the existing slope to the west of the landslide/erosion feature during our site visit to complete the geotechnical explorations. The daily precipitation totals for the week prior to our site visit to complete the explorations were generally low, ranging from no precipitation up to 0.14 inches with an average of 0.06 inches per day. Even with the relatively low precipitation totals, there were several seeps observed indicating that subsurface movement of water in the hillside may have been a factor in it becoming saturated.

There were two storm events the week prior to the occurrence of the landslide. Between December 7, 2010 and December 9, 2010, approximately 2.2 inches of precipitation was measured in the area. December 10, 2010 was a relatively dry day. The second more significant storm event occurred on December 11, 2010 and December 12, 2010. During the second storm event, approximately 3.6 inches of precipitation were measured in the area. The second storm event contained periods of significant rainfall that led to flooding in the Puget Sound region.

It is likely that the volume and flow of subsurface seepage within the hillside during the storm event will be greater than what we observed during our explorations on the December 22, 2010. The saturation of the relatively loose fill embankment material may have resulted in a mobilization of the material and a flow failure. As described above, it is likely that erosional processes also occurred in conjunction with the sloughing of saturated fill soils. The flow of surface or subsurface water through the slide feature likely carried additional material down the slope and contributed to the deltaic deposit at the base of the slope.

Remediation Options

We evaluated remediation options including constructing a retaining wall to stabilize the slope and building a rock buttress to reconstruct the slope and support the level area immediately upslope of the slide. Based on our site reconnaissance, geotechnical borings and engineering analysis, it is

our opinion that the landslide resulted from saturated material essentially flowing down the hill and/or being eroded as opposed to a rotational or translational landslide where a block of soil material moved on a weak plane. Therefore, it is our opinion that remediation options should be focused on increasing the drainage and strength of the embankment materials and not on resisting slope movements associated with a weak soil layer. Therefore, while it would be possible to complete the remediation with a retaining wall, in our opinion, a rock buttress and drainage improvements would be more cost-effective.

Based on the geotechnical explorations and our observations in the field, the existing fill embankment appears to be constructed of loosely placed fill that was not adequately compacted. The intent of the remediation option is to improve drainage, re-establish the lost portion of the level area and embankment slope as well as provide some stabilization support to the fill embankment in the immediate vicinity of the remediation. This remediation option is not intended to stabilize the entire hillside but rather reduce the potential for future slides near the Qwest communication equipment.

We recommend the remediation option consist of a rock buttress that will allow the slope to be reconstructed and provide support to the level area and pad-mounted equipment directly upslope of the slide feature. Improving the subsurface drainage along the slope with the addition of the rock buttress will reduce the potential for further landslides in the immediate vicinity of the buttress.

Rock Buttress

The rock buttress should incorporate drainage improvements that will intercept subsurface groundwater flows and tightline the captured groundwater conveying it to a suitable discharge point. The drainage improvements will reduce the extent to which the fill embankment in the immediate vicinity of the communication equipment can become saturated and experience failures similar to the current conditions observed on site. The rock buttress constructed of quarry spalls will provide better support to the pad-mounted equipment compared to the previous loose embankment fill.

A conceptual plan showing the approximate location of the proposed buttress and some general details about subsurface drainage improvements are shown on Figures 4 through 6. The rock buttress should be constructed of quarry spalls that can be compacted during the placement process to provide support to the existing hillside. The actual dimensions of the rock buttress and the location of the shear key and drainage improvements will be detailed by HDR who is completing the remediation design. The attached figures are only intended to convey general concepts and are not intended to be used to obtain permits or complete the construction.

We understand because this landslide occurred in a sensitive area as defined by the City of Bellevue, it will be necessary to re-establish vegetation on the slope following the repair. Therefore, we have recommended the outer foot of the rock buttress consist of 1¼-minus crushed rock that can be used to choke the upper portion of the quarry spalls and create a surface over which top soil can be spread to facilitate vegetation growth.

It is important to note that portions of the proposed remediation slopes will be relatively steep (up to 1½H:1V), as we are trying to match the existing slopes to the northeast of the slide area. The slopes to the southwest of the slide area are flatter. Field grading of the quarry spall rock buttress will be required to blend it into the adjacent existing hillsides.

It will be necessary to install means to stabilize the surficial topsoil layer following placement until adequate vegetation is established. This may include jute fabric, coconut fiber mats or other suitable erosion control measures to maintain the topsoil on the slopes. The erosion control measures will need to be fairly robust because of the steep nature of the slopes. It may be possible to go with a less robust system if the proposed slope can be flattened.

Support of Communication Equipment

The landslide undermined one of the concrete pads supporting the communication equipment. In order to restore support below the undermined concrete pad and to reduce the potential for future settlement, it is recommended that controlled density fill (CDF) be placed below the undermined concrete pad. In order to place the CDF without the material flowing into the rock buttress, a plywood form may be required. Also, it may be necessary to core through the concrete pad in order to place the CDF and adequately fill the voids below the concrete pad with CDF.

Stability Analysis

The global stability of the rock buttress was evaluated with the computer software program Slope/W. The results of this analysis indicated an adequate factor of safety for the post-construction condition. The soil properties assumed for the analysis, the critical failure surface and the estimated factor of safety are shown on Figure 7. We evaluated both circular and block failure mechanisms for the proposed rock buttress. The case with the minimum factor of safety is presented in Figure 7.

Earthwork

Site Preparation

Prior to placement of the quarry spalls, the fallen trees, vegetation and root wads that are located on and within the slide mass in the area where the rock buttress will be constructed should be removed. It may be necessary to remove other trees immediately adjacent to the slide feature if they present a safety risk during the construction activities. Very loose (sloughed) soils should also be removed from within the slide area. It is important to note that only the very loose surficial landslide disturbed soils should be removed. The contractor will need to be careful not to initiate further landsliding by excavating too far into the existing slope soils.

We recommend that GeoEngineers be present during the site preparation phase to assist the contractor in identifying deleterious materials and very loose soils that should be removed prior to construction of the rock buttress. We will also monitor the stability of the slope and advise on any modifications to the procedures that may be appropriate for the prevailing conditions.

Erosion and Sedimentation Control

Potential sources or causes of erosion and sedimentation depend upon construction methods, slope length and gradient, amount of soil exposed and/or disturbed, soil type, construction

sequencing, and weather. Implementing an erosion and sedimentation control plan will reduce the project impact on erosion-prone areas and nearby sensitive areas. The plan should be designed in accordance with applicable regulatory standards. The plan should incorporate basic planning principles including:

- Scheduling grading and construction to reduce soil exposure.
- Retaining existing vegetation whenever feasible.
- Revegetating or mulching denuded areas.
- Directing runoff away from denuded areas.
- Reducing the length and steepness of slopes with exposed soil.
- Decreasing runoff velocities.
- Preparing drainage ways and outlets to handle concentrated to increased runoff.
- Confining sediment to the project site.
- Utilizing turbidity curtains and sand bag barriers at inlets or other areas that drain directly into Lake Sammamish.
- Inspecting and maintaining control measures frequently.

In addition, we recommend that sloped surfaces in exposed or disturbed soil be restored so that surface runoff does not become channeled. Some sloughing and raveling of the topsoil covered buttress slope or exposed or disturbed soil adjacent to the repair should be expected.

Temporary erosion protection should be used and maintained in areas with exposed or disturbed soils to help reduce transport of sediment to adjacent areas and receiving waters. Turbidity curtains should be installed downslope of the work area during the excavation and fill phases of the remediation project. Permanent erosion protection should be provided by re-establishing vegetation using hydroseeding or landscape planting, as appropriate.

Until the permanent erosion protection is established and the site is stabilized, site observation should be performed by qualified personnel to evaluate the effectiveness of the erosion control measures and provide recommendations to repair and/or modify them as appropriate. Provisions for modifications to the erosion control system based on monitoring observations should be included in the erosion and sedimentation control plan.

Structural Fill

Fill placed to construct the rock buttress and placed around drainage improvements is considered structural fill for the purposes of this report and are described below:

- Rock buttress material should consist of 2-inch to 8-inch quarry spalls as described in Section 9-13 of the 2010 WSDOT Standard Specifications.
- Structural fill within the outer foot of the rock buttress should consist of 1¼-inch minus crushed rock. This material will serve as a transition between the larger quarry spalls and the anticipated topsoil to be placed over the buttress.
- Structural fill placed around the subsurface drainage improvements should consist of gravel backfill for drains as described in Section 9-03.12(4) of the 2010 WSDOT Standard Specifications.

Structural Fill Placement and Compaction Criteria

The quarry spalls should be placed in level lifts not exceeding 12 inches in thickness from the bottom of the landslide feature to the top. The loose lifts should be compacted with the bucket of the excavator. The purpose of the compaction effort is to lock the quarry spalls together and reduce the potential for settlement.

Quarry spalls placed adjacent to the sides or bottom of the existing fill embankment material should be compacted into the adjacent soils with the bucket of the excavator. The compaction of the quarry spalls into the surrounding soils will reduce the potential that a weak plane would develop at the base or sides of the buttress material.

It may be difficult to place and compact a 1-foot thick layer of 1¼-inch minus crushed rock along the outside of the proposed rock buttress. In order to achieve uniform compaction within this layer, we recommend the slope be overbuilt and subsequently cut back to expose properly compacted crushed rock.

Temporary Slopes

We recommend that temporary slopes established during the construction of the buttress be inclined no steeper than 1½H:1V. Flatter slopes may be necessary if seepage is present on the face of the cut slopes or if localized sloughing occurs. For open cuts at the site, we recommend that:

- No traffic, construction equipment, stockpiles or building supplies be allowed at the top of the cut slopes within a distance of at least 5 feet from the top of the cut;
- Exposed soil along the temporary slopes be protected from surface erosion by using waterproof tarps or plastic sheeting;
- Construction activities be scheduled so that the length of time the temporary cut is left open is reduced to the extent practicable;
- Erosion control measures be implemented as appropriate such that runoff from the site is reduced to the extent practicable;
- Surface water be diverted away from the slope; and
- The general condition of the slopes be observed periodically by the geotechnical engineer to confirm adequate stability.

Because the contractor has control of the construction operations, the contractor should be made responsible for the stability of cut slopes, as well as the safety of the excavation. Shoring and temporary slopes must conform to applicable local, state and federal safety regulations.

Permanent Soil Slopes

We recommend that permanent slopes constructed of quarry spalls be inclined no steeper than 1½H:1V. The edges of the proposed rock buttress should be graded to match the existing slopes on either side of the slide area.

To reduce erosion, newly constructed slopes should be planted or hydroseeded shortly after completion of grading. Until the vegetation is established, some sloughing and raveling of the

slopes should be expected. This may require localized repairs and reseeding. Temporary covering, such as jute fabric, coconut fiber mats or other suitable erosion control measures should be to protect the slopes during periods of rainfall.

LIMITATIONS

We have prepared this report for Qwest Communications, HDR and their authorized agents and regulatory agencies for the West Lake Sammamish Landslide Remediation project in Bellevue, Washington.

Our services were provided to remediate a landslide feature that occurred on sloping ground. Our recommendations are intended to improve the overall stability of the site and to reduce the potential for future property damage related to earth movements, drainage or erosion. Qualified engineering and construction practices can help mitigate the risks inherent in construction on slopes, although those risks cannot be eliminated completely. Favorable performance of structures in the near term is useful information for anticipating future performance, but it cannot predict or imply a certainty of long-term performance, especially under conditions of adverse weather or seismic activity.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering in this area at the time this report was prepared. The conclusions, recommendations, and opinions presented in this report are based on our professional knowledge, judgment and experience. No warranty or other conditions, express or implied, should be understood.

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

Please refer to the appendix titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.

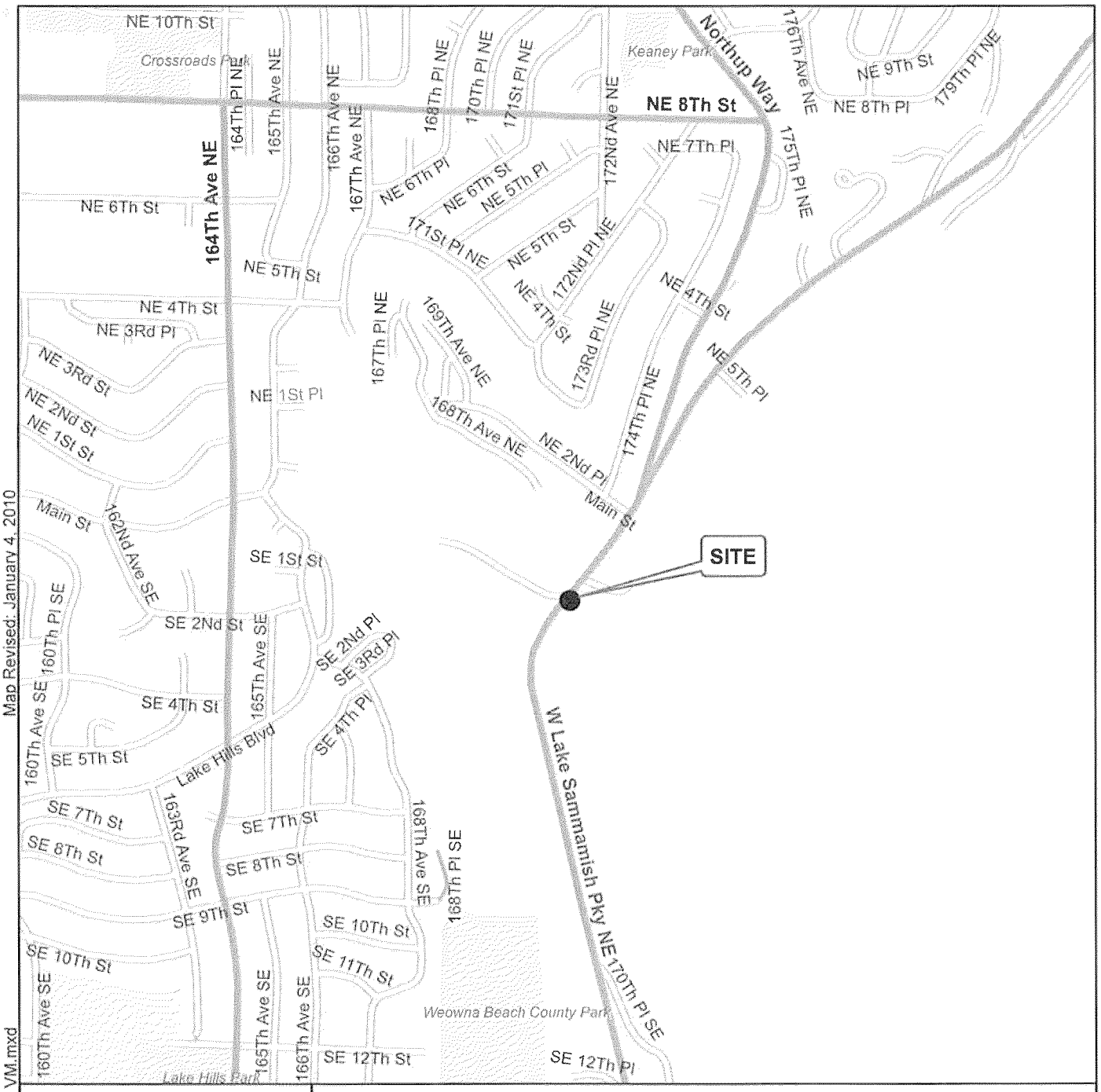
REFERENCES

United States Geologic Survey, Booth, et. al, Geologic Map of the Issaquah 7.5' Quadrangle, King County, Washington, 2006,

Washington State Department of Transportation, 2010, "Standard Specifications for Road, Bridge and Municipal Construction."

FIGURES

GEOENGINEERS



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. can not 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.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps, Street Maps 2005

Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

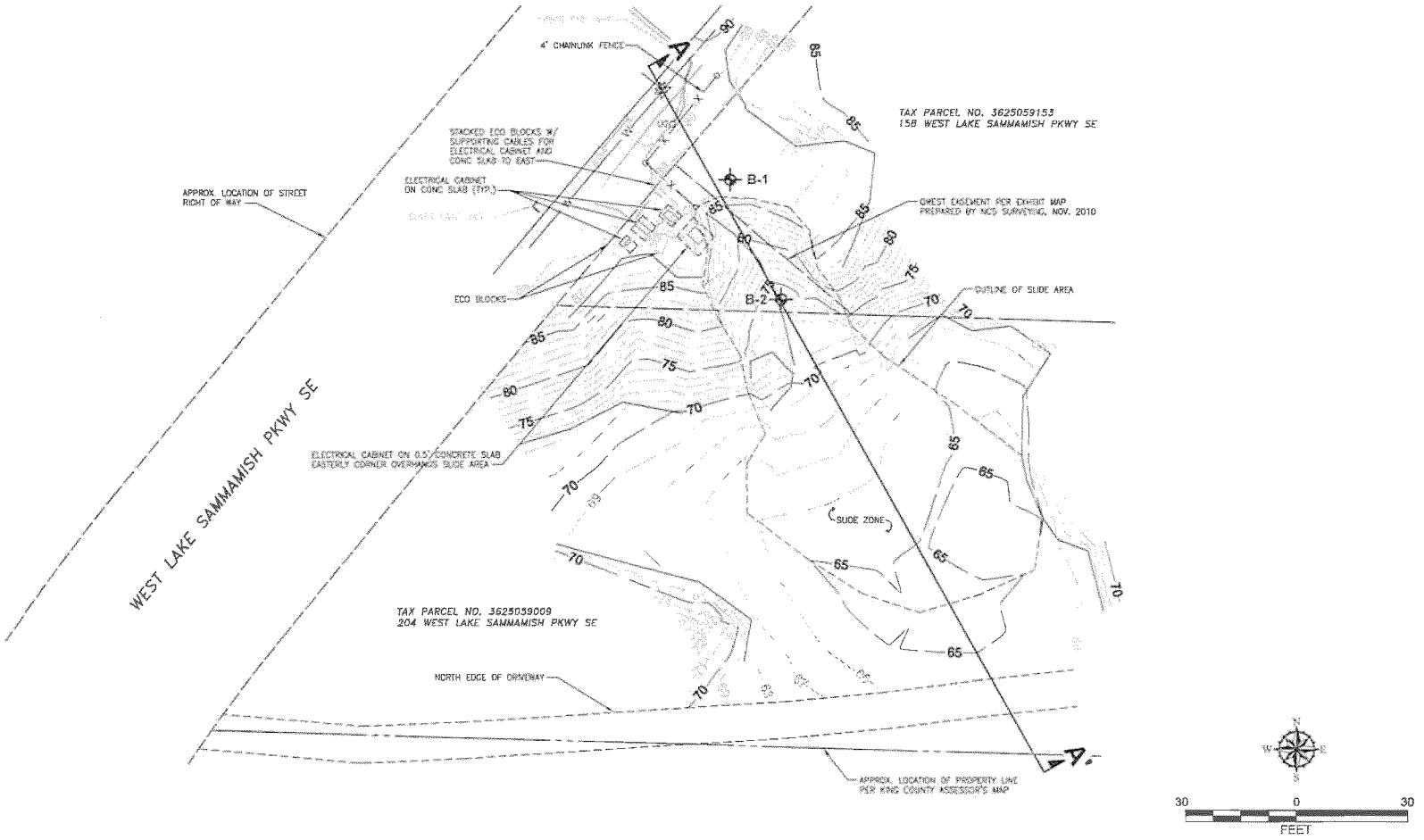
Vicinity Map

West Lake Sammamish Parkway
Landslide Remediation
Bellevue, Washington

GeoEngineers

Figure 1

Map Revised: January 4, 2010
Path: P:\8\80150291GIS\0801502900_F1_VM.mxd
Office: RED



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Reference: Base survey CAD file "10-085_Slide Mapping-exploded contours-pts.dwg" provided by HDR, Inc. on December 30, 2010.

Legend

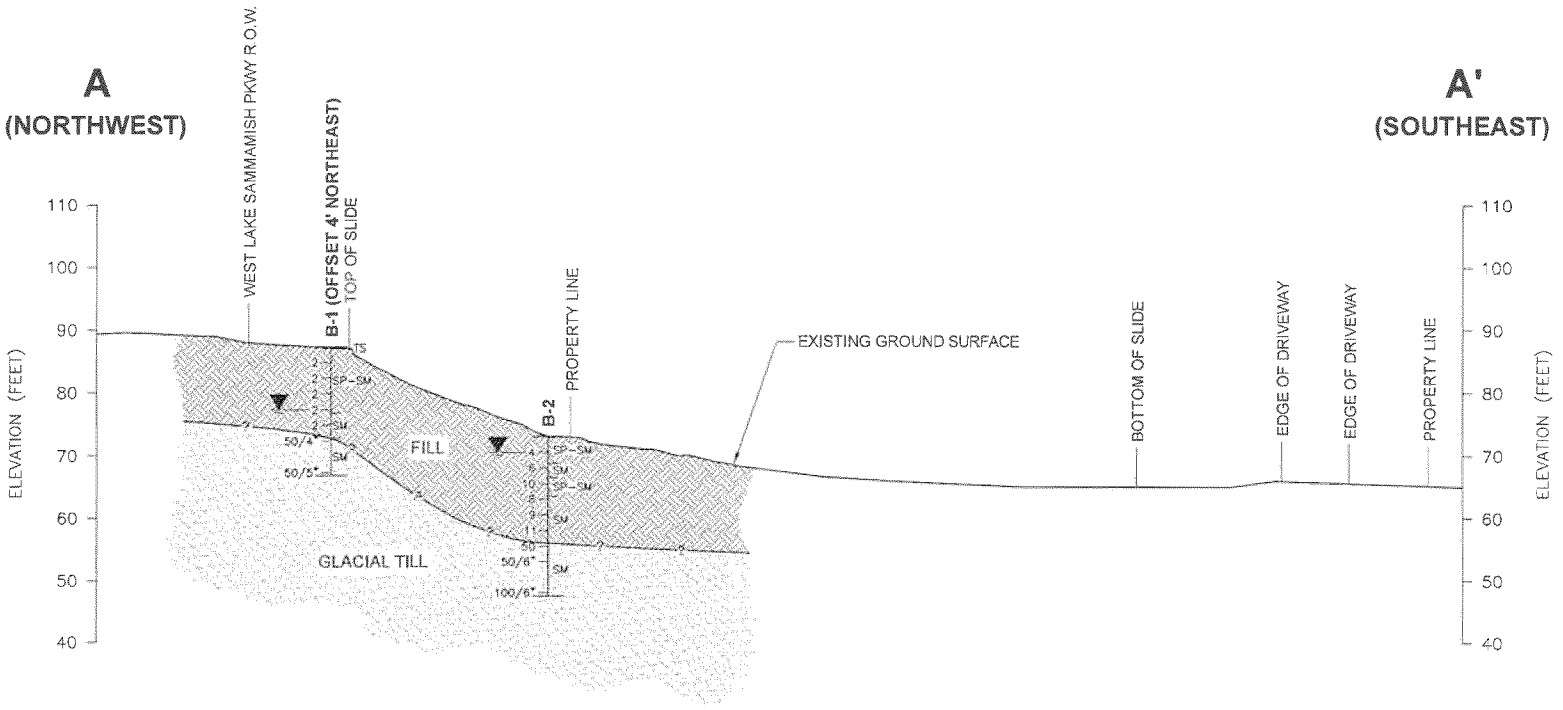
B-1 — Boring by GeoEngineers

A — A' — Cross-Section Location (See Figure 3)

Site Plan

West Lake Sammamish Parkway
Landslide Remediation
Bellevue, Washington

GeoEngineers | Figure 2



HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 20'
VERTICAL EXAGGERATION: 1X

20 0 20
FEET

Legend

- B-1 — Boring
- ? — Inferred Soil Contact
- Groundwater Level Observed During Drilling
- SM — Soil Classification
- 25 — Blow Count
- Fill
- Glacial Till

Notes

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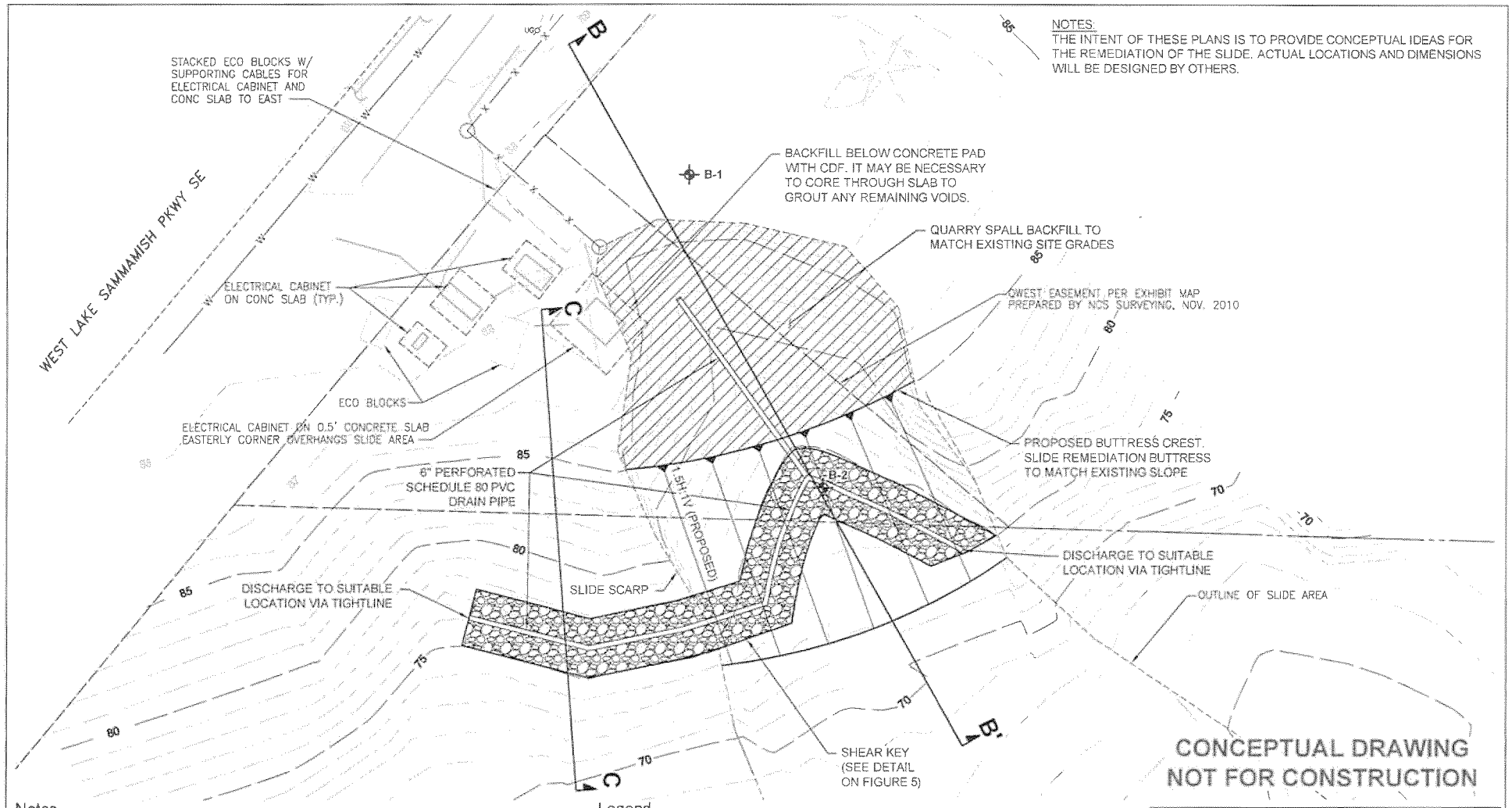
Cross-Section A-A'

West Lake Sammamish Parkway
Landslide Remediation
Bellevue, Washington

GeoEngineers

Figure 3



CONCEPTUAL DRAWING
NOT FOR CONSTRUCTION

Notes

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Legend

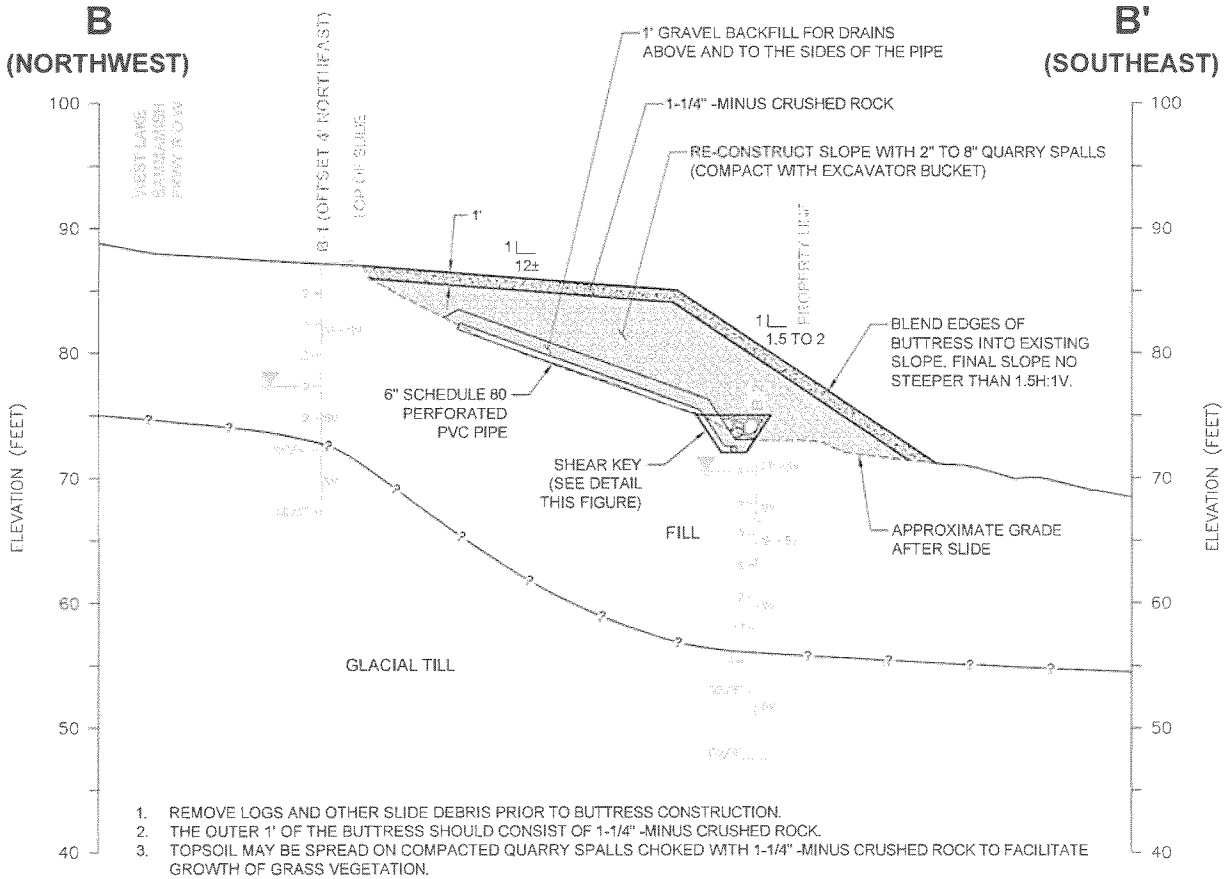
B-1 — Boring by GeoEngineers

B B' — Cross-Section B-B' Location (See Figure 5)

C C' — Cross-Section C-C' Location (See Figure 6)

10 0 10
FEET

Remediation Plan	
West Lake Sammamish Parkway Landslide Remediation Bellevue, Washington	
GeoEngineers	Figure 4

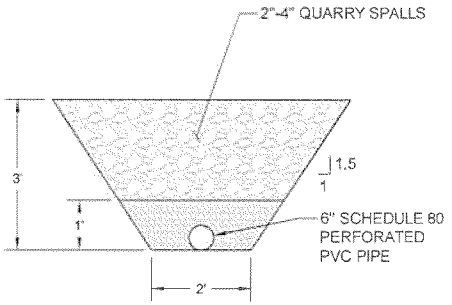


1. REMOVE LOGS AND OTHER SLIDE DEBRIS PRIOR TO BUTTRESS CONSTRUCTION.
2. THE OUTER 1' OF THE BUTTRESS SHOULD CONSIST OF 1-1/4" -MINUS CRUSHED ROCK.
3. TOPSOIL MAY BE SPREAD ON COMPACTED QUARRY SPALLS CHOKED WITH 1-1/4" -MINUS CRUSHED ROCK TO FACILITATE GROWTH OF GRASS VEGETATION.
4. CONSTRUCTION OBSERVATION SHOULD BE PROVIDED DURING CONSTRUCTION OF THE BUTTRESS BY GEOENGINEERS.

CROSS-SECTION B-B'

HORIZONTAL SCALE: 1"= 10'
VERTICAL SCALE: 1"= 10'
VERTICAL EXAGGERATION: 1X

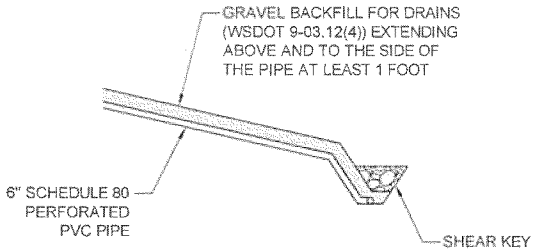
10 0 10
FEET



1. TIE IN LONGITUDINAL DRAIN THAT EXTENDS UP INTO SLIDE AREA TO THE DRAIN PIPE WITHIN THE SHEAR KEY.
2. CARE SHOULD BE TAKEN DURING CONSTRUCTION OF SHEAR KEY AND BUTTRESS TO AVOID DAMAGING THE DRAIN PIPE.

SHEAR KEY DETAIL

N.T.S.



1. GRADE BACKFILL AROUND DRAIN PIPE SUCH THAT ADEQUATE SLOPE IS PROVIDED WITHIN THE PIPE FOR DRAINAGE.
2. INTERCEPTED GROUNDWATER SHOULD BE TIGHTLINED TO SUITABLE DISCHARGE LOCATION.

SHEAR KEY DETAIL

N.T.S.

Notes

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Reference: Base survey CAD file "10-085_Slide Mapping-exploded contours-pts.dwg" provided by HDR, Inc. on December 30, 2010.

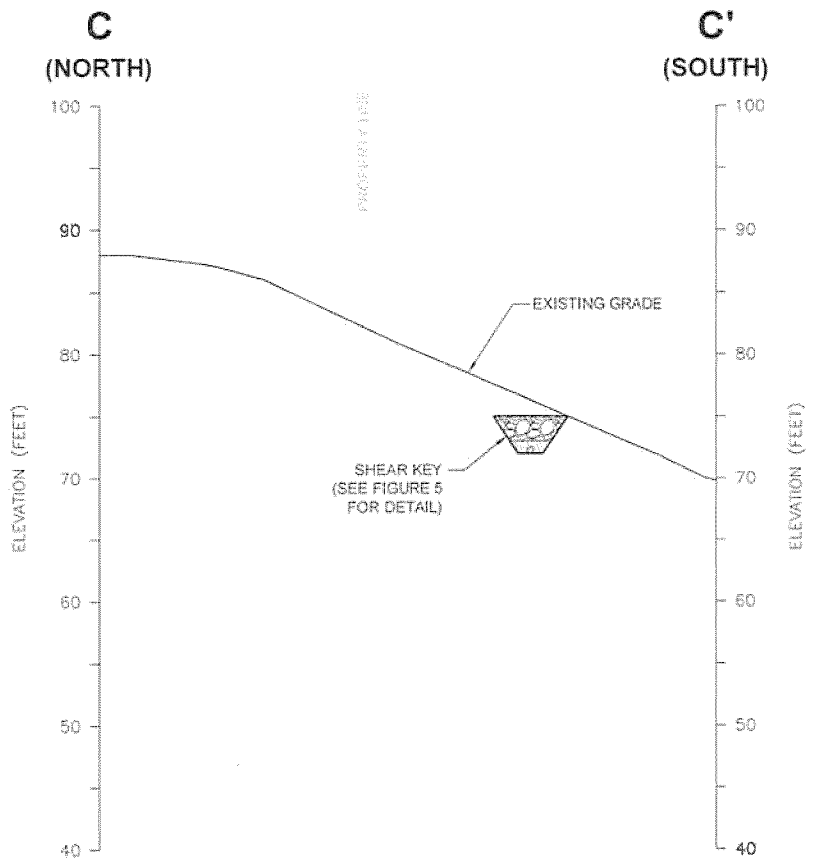
CONCEPTUAL DRAWING
NOT FOR CONSTRUCTION

Typical Slide Remediation Details

West Lake Sammamish Parkway
Landslide Remediation
Bellevue, Washington

GeoEngineers

Figure 5



CROSS-SECTION C-C'

HORIZONTAL SCALE: 1"= 10'
VERTICAL SCALE: 1"= 10'
VERTICAL EXAGGERATION: 1X

10 0 10
FEET

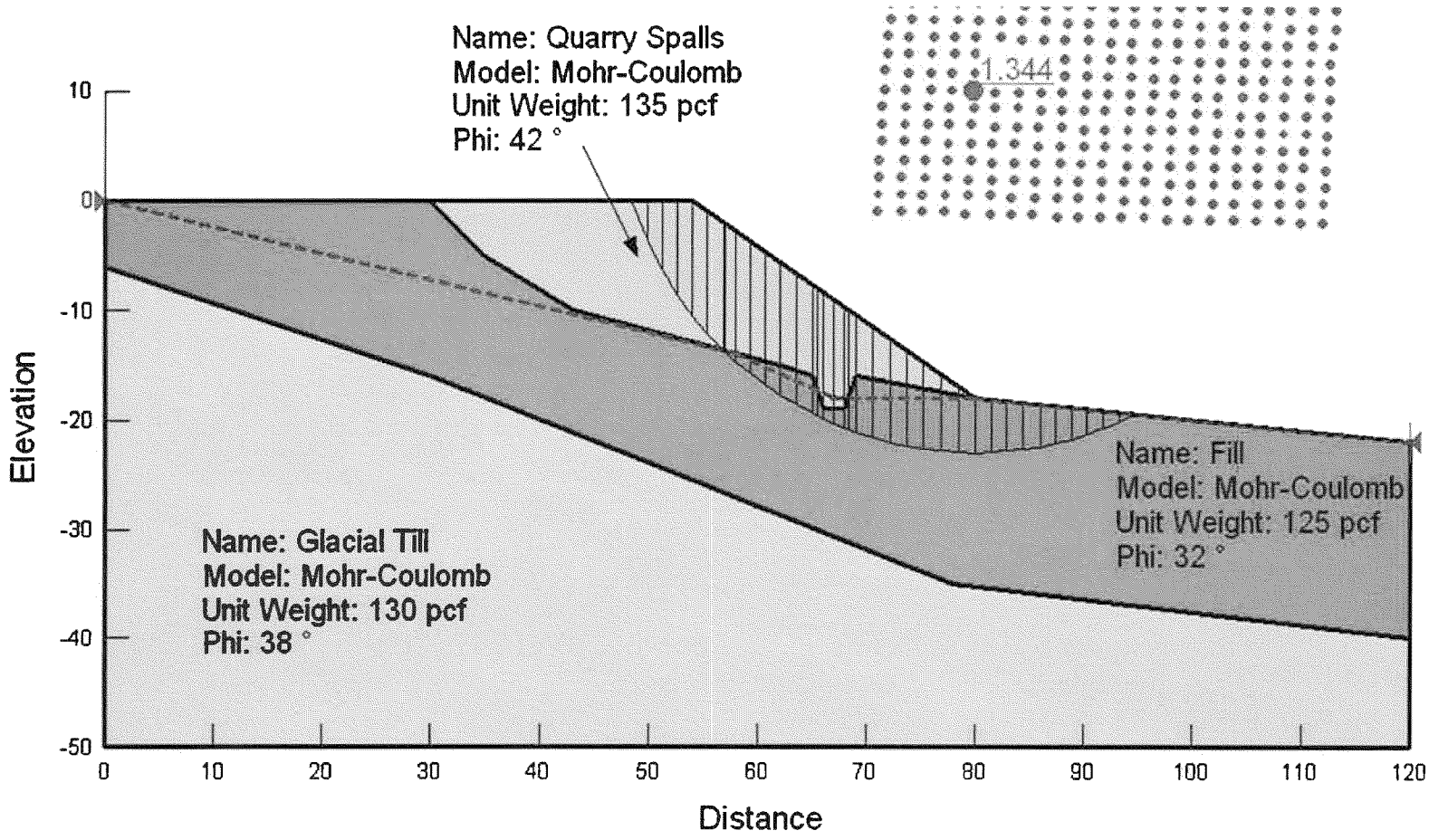
Notes

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: Base survey CAD file "10-085_Slide Mapping-exploded contours-pts.dwg" provided by HDR, Inc. on December 30, 2010.

CONCEPTUAL DRAWING
NOT FOR CONSTRUCTION

Cross-Section C-C'	
West Lake Sammamish Parkway Landslide Remediation Bellevue, Washington	
GeoEngineers	Figure 6



Global Slope Stability

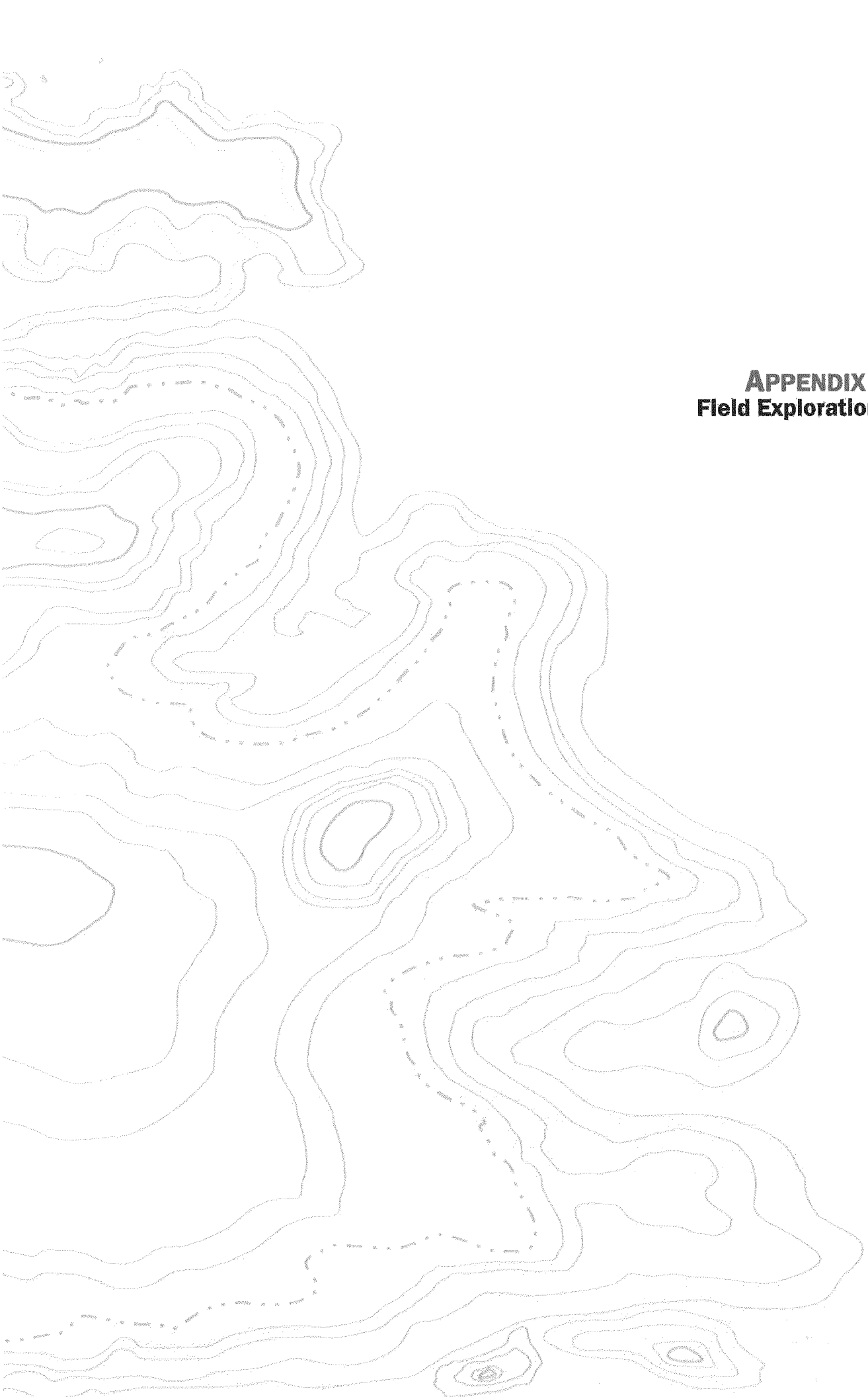
West Lake Sammamish Parkway
Landslide Remediation
Bellevue, Washington

GeoEngineers | **Figure 7**

Reference: GEO-SLOPE International, Ltd., GeoStudio 2007 Version 7.17

APPENDICES

GeoEngineers



APPENDIX A
Field Explorations

APPENDIX A
FIELD EXPLORATIONS

General

Subsurface conditions were explored at the site by drilling two borings (B-1 and B-2). The borings were completed to depths of 20½ and 25½ feet below the existing ground surface, respectively. The borings were completed by Geologic Drill Exploration Inc. on December 22, 2010.

The locations and elevations of the explorations were surveyed by Inca Engineers. The exploration locations are shown on the Site Plan, Figure 2.

Borings

Borings were completed using track-mounted, continuous-flight, hollow-stem auger drilling equipment. The borings were continuously monitored by a geotechnical engineer from our firm who examined and classified the soils encountered, obtained representative soil samples, observed groundwater conditions and prepared a detailed log of each exploration.

The soils encountered in the borings were generally sampled at 2½- and 5-foot vertical intervals with a 2-inch outside diameter split-barrel standard penetration test (SPT) sampler. The disturbed samples were obtained by driving the sampler 18 inches into the soil with a 140-pound hammer free-falling 30 inches. The number of blows required for each 6 inches of penetration was recorded. The blow count ("N-value") of the soil was calculated as the number of blows required for the final 12 inches of penetration. This resistance, or N-value, provides a measure of the relative density of granular soils and the relative consistency of cohesive soils. Where very dense soil conditions precluded driving the full 18 inches, the penetration resistance for the partial penetration was entered on the logs. The blow counts are shown on the boring logs at the respective sample depths.

Soils encountered in the borings were visually classified in general accordance with the classification system described in Figure A-1. A key to the boring log symbols is also presented in Figure A-1. The logs of the borings are presented in Figures A-2 and A-3. The boring logs are based on our interpretation of the field and laboratory data and indicate the various types of soils and groundwater conditions encountered. The logs also indicate the depths at which these soils or their characteristics change, although the change may actually be gradual. If the change occurred between samples, it was interpreted. The densities noted on the boring logs are based on the blow count data obtained in the borings and judgment based on the conditions encountered.

Observations of groundwater conditions were made during drilling. The groundwater conditions encountered during drilling are presented on the boring logs. Groundwater conditions observed during drilling represent a short-term condition and may or may not be representative of the long-term groundwater conditions at the site. Groundwater conditions observed during drilling should be considered approximate.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
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
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% RETAINED ON NO. 200 SIEVE	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS
				SP	POORLY-GRADED SANDS, GRAVELLY SAND
	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	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
MORE THAN 50% PASSING NO. 200 SIEVE	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

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
	CC	Cement Concrete
	AC	Asphalt Concrete
	CR	Crushed Rock/ Quarry Spalls
	TS	Topsoil/ Forest Duff/Sod

- Measured groundwater level in exploration, well, or piezometer
- Groundwater observed at time of exploration
- Perched water observed at time of exploration
- Measured free product in well or piezometer

Graphic Log Contact

- Distinct contact between soil strata or geologic units
- Approximate location of soil strata change within a geologic soil unit

Material Description Contact

- Distinct contact between soil strata or geologic units
- Approximate location of soil strata change within a geologic soil unit

Sampler Symbol Descriptions

- 2.4-inch I.D. split barrel
- Standard Penetration Test (SPT)
- Shelby tube
- Piston
- Direct-Push
- Bulk or grab

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

A "P" indicates sampler pushed using the weight of the drill rig.

Laboratory / Field Tests

%F	Percent fines
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
OC	Organic content
PM	Permeability or hydraulic conductivity
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen
NT	Not Tested

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

KEY TO EXPLORATION LOGS

GeoEngineers

FIGURE A-1

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
12/22/2010	12/22/2010	20.5	BPD / KGO	Geologic Drill	HSA

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
87.7	140 (lbs) / 30 (in) Drop	Bobcat M152 Track Rig

Easting (X) / Northing (Y)	System Datum	Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
1324968.35 / 224391.05		12/22/2010	10.0	77.7

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)	REMARKS
85	0	18	2		1			TS	Sod			
								SP-SM	Grayish brown fine to medium sand with silt and occasional gravel (very loose, moist) (fill)			
	5	12	2		2							
80		14	2		3					11		SA
	10	0	2		4	▽		SM	Gray silty fine to medium sand with trace fine roots (very loose, wet)			
75		4	2		5							
	15	8	50/4"		6			SM	Brownish gray silty fine to medium sand with gravel (very dense, moist to wet) (glacial till)			
70												
	20	5	50/5"		7							

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Log of Boring B-1

GeoEngineers

Project: West Lake Sammamish Parkway Landslide Remediation
Project Location: Bellevue, Washington
Project Number: 8015-029-00

Figure A-2
Sheet 1 of 1

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
12/22/2010	12/22/2010	25.5	BPD / KGO	Geologic Drill	HSA

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
73.0	140 (lbs) / 30 (in) Drop	Bobcat M152 Track Rig

Easting (X) / Northing (Y)	System Datum	Groundwater Date Measured	Depth to Water (ft)	Elevation (ft)
1324982.28 / 224358.75		12/22/2010	2.5	70.5

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content, %	Dry Density, (pcf)	REMARKS
70	0	16	4		1	▽		SP-SM	Gray and brown fine to medium sand with silt and gravel (very loose to loose, wet) (fill)	17		SA
	5	8	6		2			SM	Gray silty fine to medium sand (loose, wet)			
65		2	10		3			SP-SM	Brown fine to medium sand with silt (loose to medium dense, moist to wet)			
	10	3	8		4	▽		SM	Gray silty fine to medium sand with clumps of silt (loose, wet)			
60		0	9		5							
	15	0	11		6							
55		6	50		7			SM	Grayish brown silty fine to medium sand with gravel (very dense, moist to wet) (glacial till)			
	20	6	50/6"		8				Becomes moist			
50												
	25	6	100/6"		9							

Log of Boring B-2

GeoEngineers

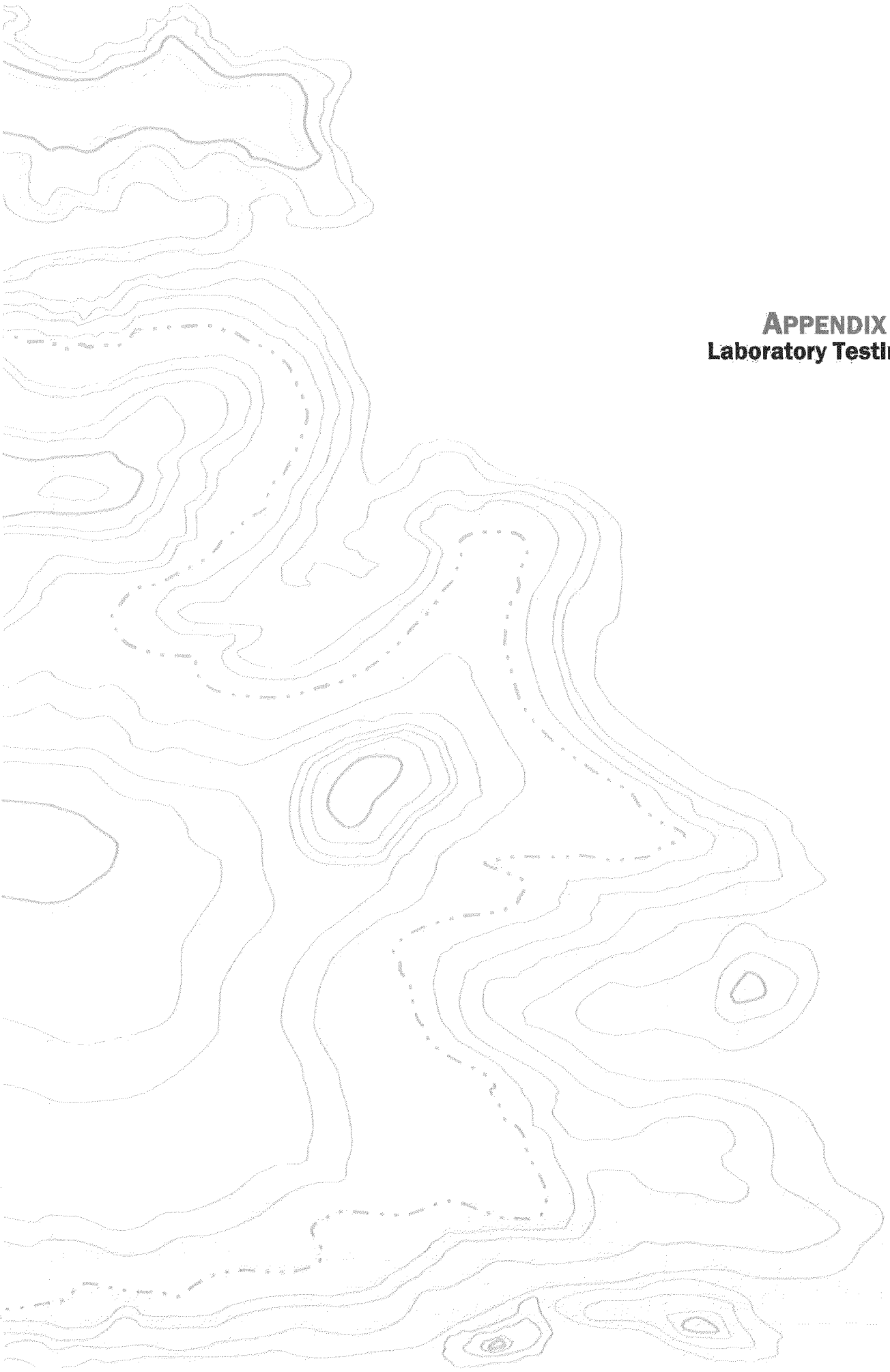
Project: West Lake Sammamish Parkway Landslide Remediation

Project Location: Bellevue, Washington

Project Number: 8015-029-00

Figure A-3

Sheet 1 of 1



APPENDIX B
Laboratory Testing

APPENDIX B
LABORATORY TESTING

General

Soil samples obtained from the explorations were transported to GeoEngineers' laboratory and evaluated to confirm or modify field classifications, as well as to evaluate engineering properties of the soil samples. Representative samples were selected for laboratory testing to determine the moisture content and grain size distributions (sieve analyses). The tests were performed in general accordance with test methods of ASTM International (ASTM) or other applicable procedures.

The sieve analyses test results are presented in Figure B-1. The results of the moisture content determinations are presented at the respective sample depths on the exploration logs in Appendix A.

Moisture Content

Moisture content tests were completed in general accordance with ASTM D 2216 for representative samples obtained from the explorations. The results of these tests are presented on the exploration logs in Appendix A at the depths at which the samples were obtained.

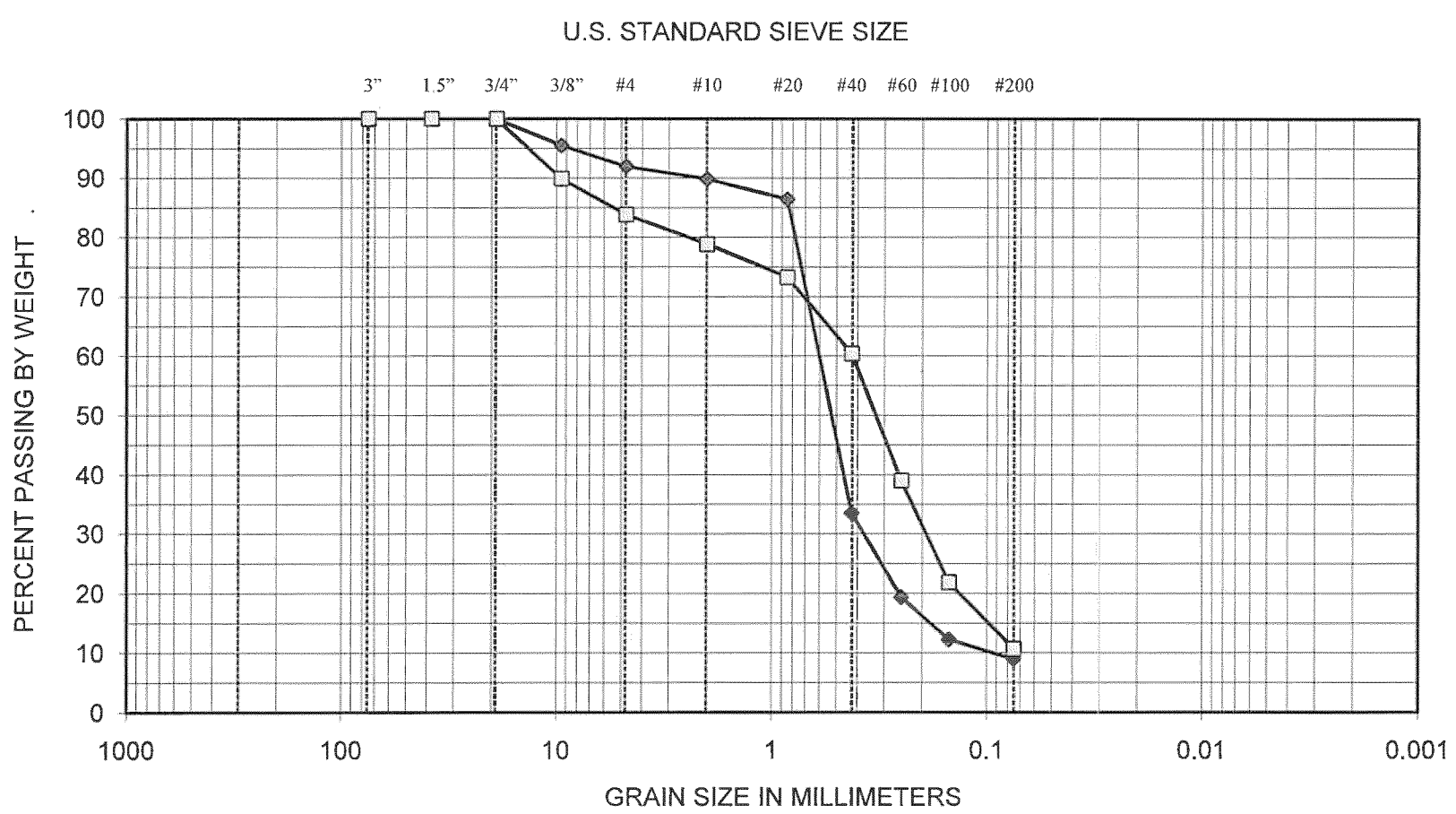
Sieve Analyses

Sieve analyses were performed on selected samples in general accordance with ASTM D 422. The wet sieve analysis method was used to determine the percentage of soil greater than the U.S. No. 200 mesh sieve. The results of the sieve analyses were plotted and classified in general accordance with the Unified Soil Classification System and are presented in Figure B-1.

GEOENGINEERS

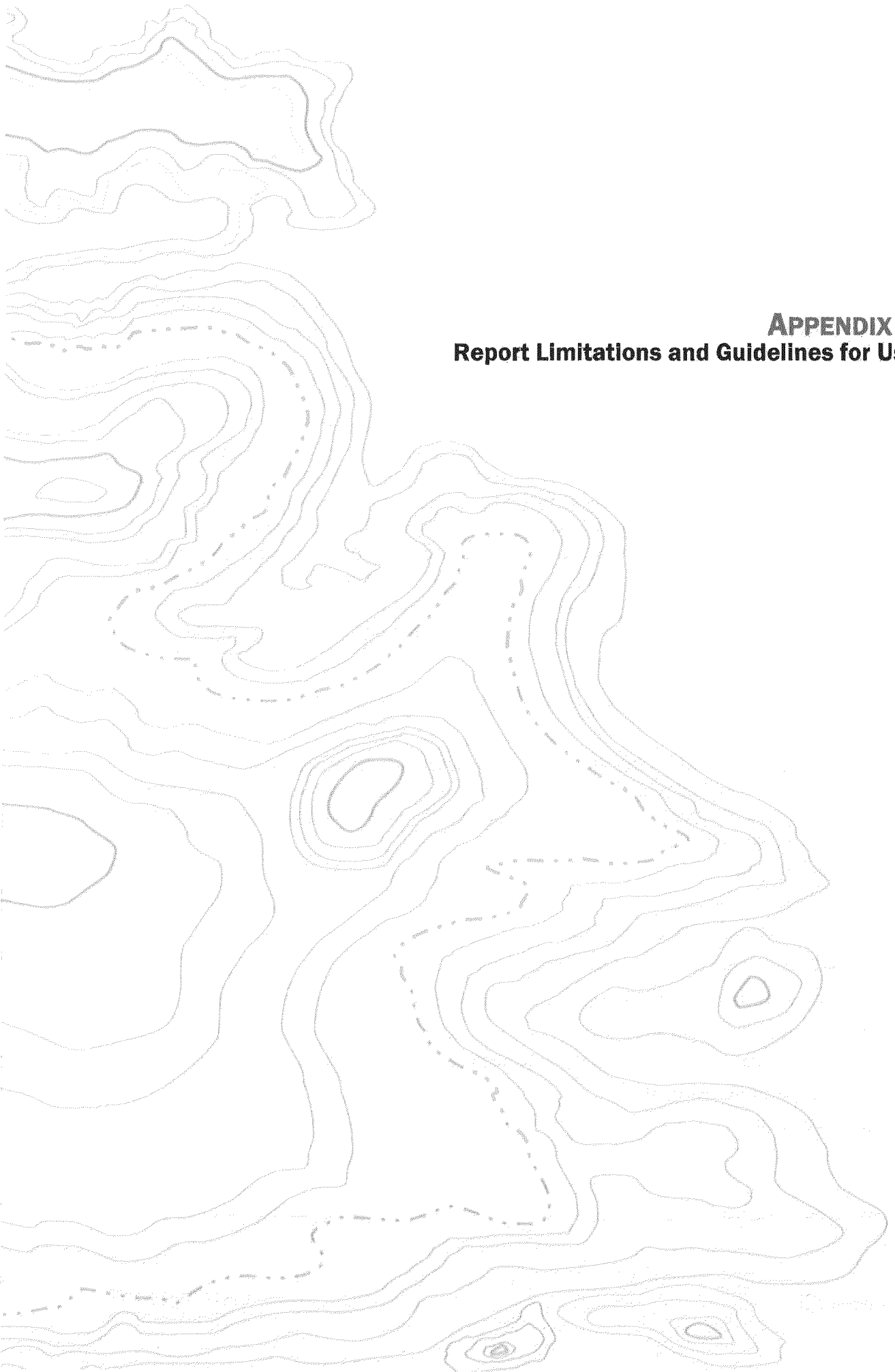
SIEVE ANALYSIS RESULTS

FIGURE B-1



BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	

SYMBOL	EXPLORATION NUMBER	DEPTH (ft)	SOIL CLASSIFICATION
◆	B-1	7.5	Grayish brown fine to medium sand with silt and occasional gravel (SP-SM)
□	B-2	2.5	Gray and brown fine to medium sand with silt and gravel (SP-SM)



APPENDIX C
Report Limitations and Guidelines for Use

APPENDIX C
REPORT LIMITATIONS AND GUIDELINES FOR USE[1]

This appendix provides information to help you manage your risks with respect to the use of this report.

Geotechnical Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of HDR, Inc. and other project team members for the West Lake Sammamish Parkway Landslide Remediation project. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Because each geotechnical or geologic study is unique, each geotechnical engineering or geologic report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Geologic Report Is Based on a Unique Set of Project-specific Factors

This report has been prepared for the West Lake Sammamish Landslide Remediation project in Bellevue, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

For example, changes that can affect the applicability of this report include those that affect:

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

---

[1] Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org .

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

Most Geotechnical and Geologic Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Engineering Report Recommendations Are Not Final

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring, testing and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not earthwork activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team after submitting the report. Also retain GeoEngineers to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

Give Contractors a Complete Report and Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

Contractors Are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

Geotechnical, Geologic and Environmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

Biological Pollutants

GeoEngineers' Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants and no conclusions or inferences should be drawn regarding Biological Pollutants, as they may relate to this project. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts.

If Client desires these specialized services, they should be obtained from a consultant who offers services in this specialized field.

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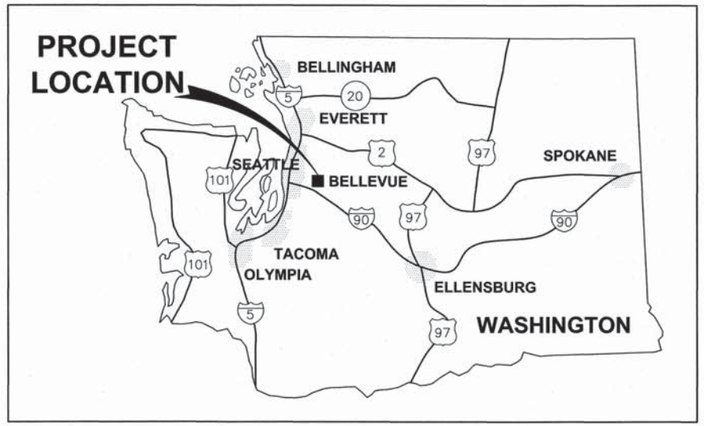
GeoEngineers



PROJECT LOCATION MAP
SCALE: NOT TO SCALE

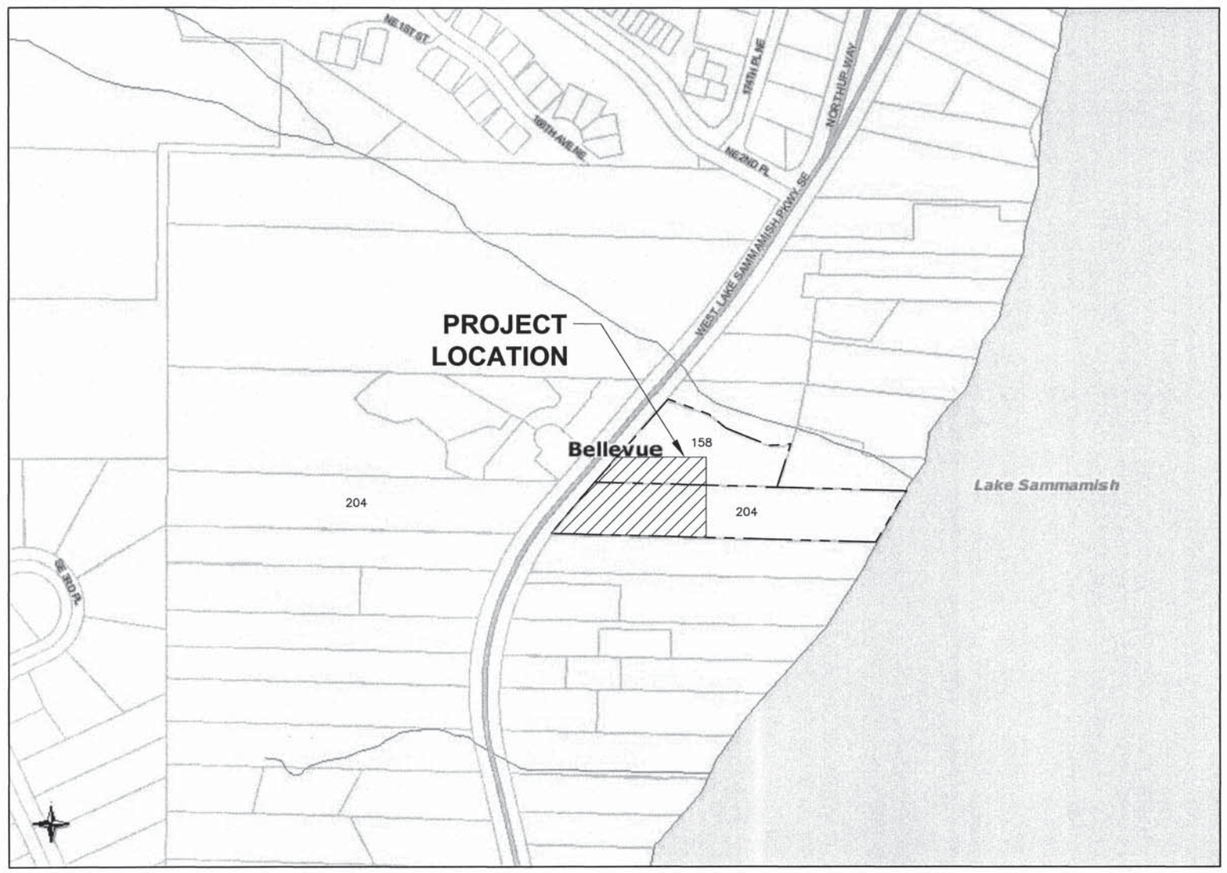
Qwest℠

Contract Drawings For

QWEST Slide Repair at West Lake Sammamish Parkway S.E.

HDR

HDR Engineering, Inc.
500 108th Avenue NE
Suite 1200
Bellevue, WA 98004-5549
(425) 450-6200, X6338
Contact: Mike Blanchette, PE



VICINITY MAP
SCALE: NOT TO SCALE

QWEST Job No. 01W2R4B

HDR Project No.
000000000154268

Seattle, Washington
June 2011

INDEX OF DRAWINGS

SITE PLAN SYMBOLOGY

SYMBOL OR LINETYPE	DESCRIPTION
20	MAJOR CONTOURS AND LABELS
	MINOR CONTOURS
	PROFILE FINAL GRADE SURFACE
	PROFILE EXISTING GRADE SURFACE
MH	MANHOLE
PZ	PIEZOMETER
CB	STORM DRAIN CATCH BASIN
UV	UTILITY VAULT
PP	POWER POLE
TP	TELEPHONE POLE
FH	FIRE HYDRANT
YH–X	YARD HYDRANT
75.5	EXISTING SPOT ELEVATION
75.8	FINISHED SPOT ELEVATION
	HORIZONTAL CP–X, CONTROL POINT
	BENCHMARK
TH–"X"	IDENTIFICATION AND APPROXIMATE LOCATION OF SOIL TEST HOLE
	DOWNGUY

NOTES:

1. UTILITIES THAT ARE SUSPENDED ABOVE GRADE ARE DESIGNATED BY THE PREFIX "OH".

UGT	TELEPHONE LINE
UGT	TELEPHONE LINE, EXISTING
UGE	ELECTRIC LINE
UGE	ELECTRIC LINE, EXISTING
OHE	OVERHEAD ELECTRIC LINE, EXISTING
SD	STORM DRAIN LINE, EXISTING
F	FIBER OPTIC
C	COMMUNICATION
	PIPELINE
	LARGE PIPELINE
	DRAINAGE FLOW
	NATURAL WATERWAY, DIRECTION OF FLOW
	STREAM BUFFER
X	FIELD FENCE
	PROPERTY LINE
	RIGHT–OF–WAY LINE
	CENTERLINE
	SILT FENCE
	CONSTRUCTION FENCE
	EASEMENT
	CLEARING LIMITS
OHW	ORDINARY HIGH WATER

GENERAL SYMBOLOGY

SYMBOL OR LINETYPE	DESCRIPTION
	GRASSED UPLAND – SEED MIX A
	GRAVEL BACKFILL FOR DRAINS
	EROSION CONTROL BLANKET OR MATT
	CONCRETE
	CONSTRUCTION ENTRANCE
	ASPHALT OVERLAY
	TOPSOIL
	1–1/4" MINUS CRUSHED ROCK
	2"–4" QUARRY SPALLS
	SHRUBS AND BUSHES
	TREE DRIP LINE
	CONIFER TREE
	DECIDUOUS TREE
PCF	PLASTIC CONSTRUCTION FENCE
PD	PIPE SLOPE DRAIN
MU	STRAW MULCHING
IS	INTERCEPTOR DIKE AND/OR SWALE

PLAN
1/4" = 1'–0"

ARROW INDICATES DIRECTION OF PLAN NORTH

SECTION LETTER

FLAG INDICATES DIRECTION OF SECTION CUT

X / XXX

* DRAWING WHERE SECTION VIEW IS LOCATED

SECTION CUT MARKER

SECTION
3/8" = 1'–0"

SECTION LETTER

X / XXX

* DRAWING WHERE SECTION VIEW IS FIRST CUT

DETAIL NUMBER

X / XXX

* DRAWING WHERE DETAIL IS LOCATED

DETAIL MARKER

DETAIL
3" = 1'–0"

DETAIL NUMBER

X / –

REPRESENTATIVE LOCATION OF DETAIL

* IF PLAN AND SECTION, OR DETAIL CALL–OUT AND DETAIL ARE SHOWN ON SAME DRAWING, DRAWING NUMBER IS REPLACED BY A LINE (–).

GENERAL CONSTRUCTION SEQUENCE

FOLLOWING THE RECEIPT OF THE NOTICE TO PROCEED, THE GENERAL CONSTRUCTION SEQUENCE ENVISIONED FOR THIS PROJECT IS AS FOLLOWS:

1. FINALIZE WORK PLAN AND SUBMITTALS.
2. MOBILIZE EQUIPMENT AND MATERIALS TO PROJECT SITE.
3. SURVEY AND LAYOUT CLEARING LIMITS.
4. CONFIRM EXISTING UTILITY LOCATIONS
5. INSTALL ALL REQUIRED ESC MEASURES – SILT FENCE, ETC.
6. REMOVE LOGS AND OTHER SLIDE DEBRIS PRIOR TO BUTTRESS CONSTRUCTION.
7. REMOVE ORGANICS AND LOOSE SOILS FROM SLIDE AREA.
8. INSTALL UNDERDRAIN AND INFILTRATION TRENCH.
9. BACKFILL SLIDE AREA WITH QUARRY SPALLS AND CRUSHED ROCK AND UNDER SLAB.
10. SPREAD TOP SOIL EVENLY TO MATCH GRADES.
11. PLACE MATTING ON SLOPE.
12. INSTALL HYDROSEED AND PLANTINGS.
13. AFTER SOIL IS STABILIZED REMOVE ESC MEASURES.

SURVEY CONTROL NOTES

1. VERTICAL DATUM IS NAVD 1988.
2. HORIZONTAL DATUM IS WASHINGTON STATE PLANE COORDINATE SYSTEM, NORTH ZONE (1983/91).
3. CONTROL MONUMENTS:

POINT NAME	NORTHING	EASTING	ELEVATION	DESCRIPTION
1084	224356.99	1324921.17	87.28	CONTROL POINT EXISTING ROW STAKING
1129	224355.94	1324960.61	82.89	CONTROL POINT EXISTING ROW STAKING
1232	224395.31	1324953.58	87.79	CONTROL POINT EXISTING ROW STAKING

NOTES:

ALL RECORD UTILITIES ARE ON "–RECD–LIN," "–RECD–SYM," AND "–RECD–TXT" LAYERS.

THE APPROXIMATE RIGHT–OF–WAY LINES WERE DEVIVED FROM KING COUNTY ASSESSORS MAPS.

CLEARING AND GRADING STANDARD NOTES

1. ALL CLEARING & GRADING CONSTRUCTION MUST BE IN ACCORDANCE WITH CITY OF BELLEVUE (COB) CLEARING & GRADING CODE, CLEARING & GRADING EROSION CONTROL STANDARD DETAILS (EC–1 THROUGH EC–23), DEVELOPMENT STANDARDS, LAND USE CODE, UNIFORM BUILDING CODE, PERMIT CONDITIONS, AND ALL OTHER APPLICABLE CODES, ORDINANCES, AND STANDARDS. THE DESIGN ELEMENTS WITHIN THESE PLANS HAVE BEEN REVIEWED ACCORDING TO THESE REQUIREMENTS. ANY VARIANCE FROM ADOPTED EROSION CONTROL STANDARDS IS NOT ALLOWED UNLESS SPECIFICALLY APPROVED BY THE CITY OF BELLEVUE DEPARTMENT OF PLANNING & COMMUNITY DEVELOPMENT (PCD) PRIOR TO CONSTRUCTION.

   IT SHALL BE THE SOLE RESPONSIBILITY OF THE APPLICANT AND THE PROFESSIONAL CIVIL ENGINEER TO CORRECT ANY ERROR, OMISSION, OR VARIATION FROM THE ABOVE REQUIREMENTS FOUND IN THESE PLANS. ALL CORRECTIONS SHALL BE AT NO ADDITIONAL COST OR LIABILITY TO THE COB. ALL DETAILS FOR STRUCTURAL WALLS, ROCKERIES OVER FOUR FEET IN HEIGHT, GEOGRID REINFORCED ROCKERIES AND GEOGRID REINFORCED MODULAR BLOCK WALLS, MUST BE STAMPED BY A PROFESSIONAL ENGINEER.

2. A COPY OF THE APPROVED PLANS MUST BE ON–SITE DURING CONSTRUCTION. THE APPLICANT IS RESPONSIBLE FOR OBTAINING ANY OTHER REQUIRED OR RELATED PERMITS PRIOR TO BEGINNING CONSTRUCTION.

3. ALL LOCATIONS OF EXISTING UTILITIES HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD, THEREFORE, BE CONSIDERED ONLY APPROXIMATE AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO INDEPENDENTLY VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS AND TO DISCOVER AND AVOID ANY OTHER UTILITIES NOT SHOWN WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN.

4. THE AREA TO BE CLEARED AND GRADED MUST FLAGGED BY THE CONTRACTOR AND APPROVED BY THE CLEARING AND GRADING INSPECTOR PRIOR TO BEGINNING ANY WORK ON THE SITE.

5. A REINFORCED SILT FENCE MUST BE INSTALLED IN ACCORDANCE WITH COB EC–5 AND SHALL BE LOCATED AS SHOWN ON THE APPROVED PLANS OR PER THE CLEARING AND GRADING INSPECTOR, ALONG SLOPE CONTOURS AND DOWN SLOPE FROM THE BUILDING SITE.

6. A HARD–SURFACE CONSTRUCTION ACCESS PAD IS REQUIRED PER CLEARING & GRADING STANDARD DETAIL EC–1 OR EC–2. THIS PAD MUST REMAIN IN PLACE UNTIL PAVING IS INSTALLED.

7. CLEARING SHALL BE LIMITED TO THE AREAS WITHIN THE APPROVED DISTURBANCE LIMITS. EXPOSED SOILS MUST BE COVERED AT THE END OF EACH WORKING DAY WHEN WORKING FROM OCTOBER 1ST THROUGH APRIL 30TH. FROM MAY 1ST THROUGH SEPTEMBER 30TH, EXPOSED SOILS MUST BE COVERED AT THE END OF EACH CONSTRUCTION WEEK AND ALSO AT THE THREAT OF RAIN.

8. ANY EXCAVATED MATERIAL REMOVED FROM THE CONSTRUCTION SITE AND DEPOSITED ON PROPERTY WITHIN THE CITY LIMITS MUST BE DONE IN COMPLIANCE WITH A VALID CLEARING & GRADING PERMIT. LOCATIONS FOR THE MOBILIZATION AREA AND STOCKPILED MATERIAL MUST BE APPROVED BY THE CLEARING AND GRADING INSPECTOR AT LEAST 24 HOURS IN ADVANCE OF ANY STOCKPILING.

9. TO REDUCE THE POTENTIAL FOR EROSION OF EXPOSED SOILS, OR WHEN RAINY SEASON CONSTRUCTION IS PERMITTED, THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPS) ARE REQUIRED:
   - PRESERVE NATURAL VEGETATION FOR AS LONG AS POSSIBLE OR AS REQUIRED BY THE CLEARING AND GRADING INSPECTOR.
   - PROTECT EXPOSED SOIL USING PLASTIC (EC–14), EROSION CONTROL BLANKETS, STRAW OR MULCH (COB GUIDE TO MULCH MATERIALS, RATES, AND USE CHART), OR AS DIRECTED BY THE CLEARING AND GRADING INSPECTOR.
   - INSTALL CATCH BASIN INSERTS AS REQUIRED BY THE CLEARING AND GRADING INSPECTOR OR PERMIT CONDITIONS OF APPROVAL.
   - INSTALL A TEMPORARY SEDIMENT POND, A SERIES OF SEDIMENTATION TANKS, TEMPORARY FILTER VAULTS, OR OTHER SEDIMENT CONTROL FACILITIES. INSTALLATION OF EXPOSED AGGREGATE SURFACES REQUIRES A SEPARATE EFFLUENT COLLECTION POND ONSITE.

10. FINAL SITE GRADING MUST DIRECT DRAINAGE AWAY FROM ALL BUILDING STRUCTURES AT A MINIMUM 2% SLOPE, PER THE UNIFORM BUILDING CODE.

11. THE CONTRACTOR MUST MAINTAIN A SWEEPER ON SITE DURING EARTHWORK AND IMMEDIATELY REMOVE SOIL THAT HAS BEEN TRACKED ONTO PAVED AREAS AS RESULT OF CONSTRUCTION.

12. A PUBLIC INFORMATION SIGN LISTING 24–HOUR EMERGENCY PHONE NUMBERS FOR THE CITY AND THE CONTRACTOR MAY BE PROVIDED TO THE APPLICANT AT THE TIME THE CLEARING AND GRADING PERMIT IS ISSUED. THE APPLICANT MUST POST THE SIGN AT THE PROJECT SITE IN FULL VIEW OF THE PUBLIC AND THE CONTRACTORS, AND IT MUST REMAIN POSTED UNTIL FINAL SIGN–OFF BY THE CLEARING AND GRADING INSPECTOR.

13. TURBIDITY MONITORING MAY BE REQUIRED AS A CONDITION OF CLEARING AND GRADING PERMIT APPROVAL. IF REQUIRED, TURBIDITY MONITORING MUST BE PERFORMED IN ACCORDANCE WITH THE APPROVED TURBIDITY MONITORING PLAN AND AS DIRECTED BY THE CLEARING AND GRADING INSPECTOR. MONITORING MUST CONTINUE DURING SITE (EARTHWORK) CONSTRUCTION UNTIL THE FINAL SIGN–OFF BY THE CLEARING AND GRADING INSPECTOR.

14. ANY PROJECT THAT IS SUBJECT TO RAINY SEASON RESTRICTIONS WILL NOT BE ALLOWED TO PERFORM CLEARING AND GRADING ACTIVITIES WITHOUT WRITTEN APPROVAL FROM THE PCD DIRECTOR. THE RAINY SEASON EXTENDS FROM NOVEMBER 1ST THROUGH APRIL 30TH, AS DEFINED IN SECTION 23.76.093A OF THE CLEARING AND GRADING CODE.

GENERAL NOTES:

1. THIS IS A STANDARD DRAWING SHOWING COMMON SYMBOLOGY. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE–EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH DRAWING FOR USAGE.

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	M. BLANCHETTE
DESIGNED	B. SHAHA
DRAWN	M. NAGAMATSU
CHECKED	T. LARSON
PROJECT NUMBER	000000000154268

MICHAEL P. BLANCHETTE — STATE OF WASHINGTON — 21707 — REGISTERED PROFESSIONAL ENGINEER — 6/1/11

Qwest

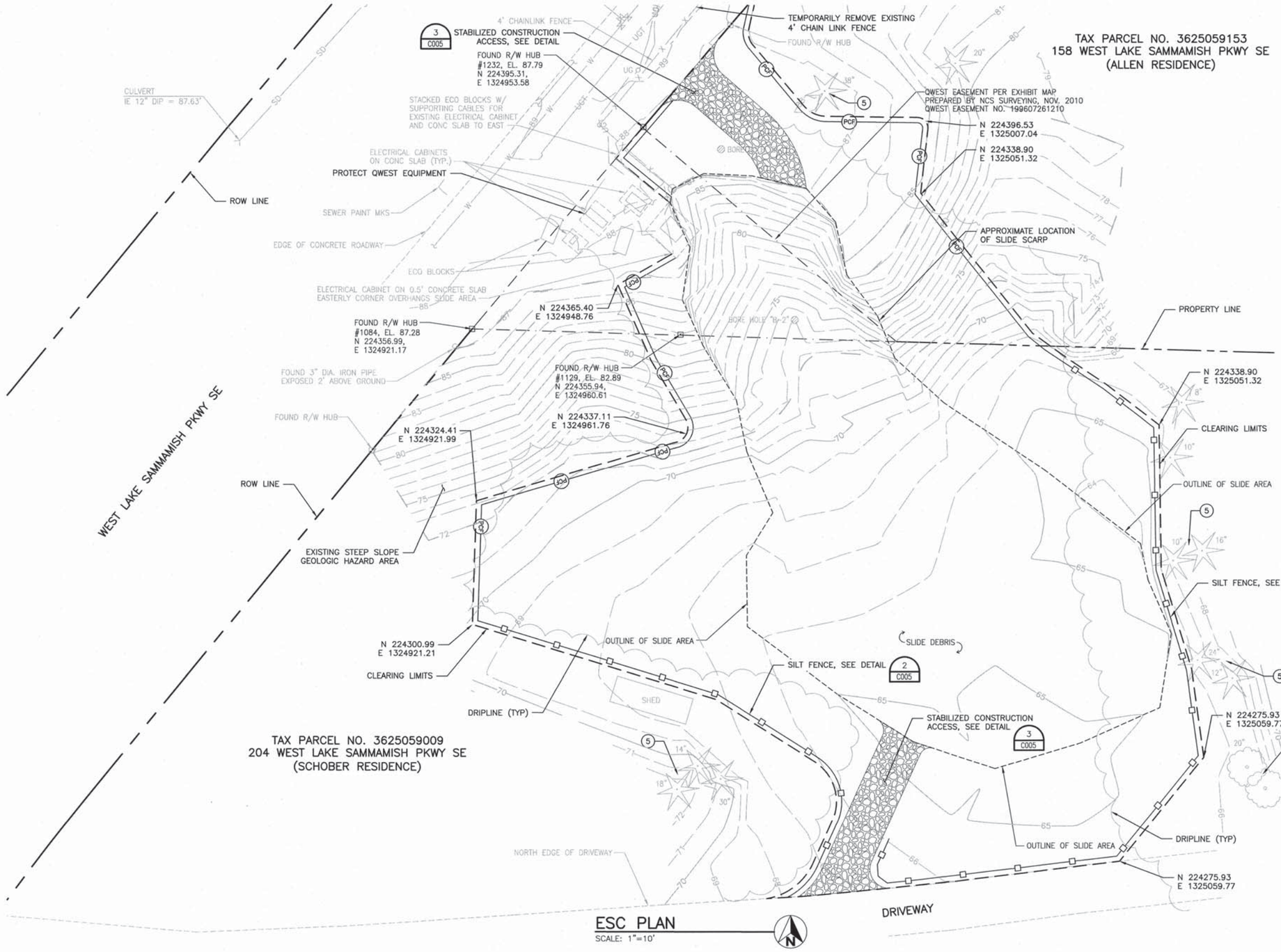
QWEST - WEST LAKE SAMMAMISH SLIDE REPAIR

LEGEND, GENERAL AND SURVEY CONTROL NOTES

0 1" 2"

FILENAME	00G002.dwg
SCALE	NTS

SHEET G002



ESC PLAN
SCALE: 1"=10'

ESC NOTES:

1. SEE DRAWING 00G002 FOR CLEARING AND GRADING STANDARD NOTES AND RECOMMENDED CONSTRUCTION SEQUENCE.
2. CLEARING LIMIT SHALL FOLLOW ROAD RIGHT-OF-WAY OR PROPERTY LINE UNLESS SHOWN OTHERWISE.
3. STABILIZE FILL SLOPES WITH STRAW MULCH.
4. ALL SLOPES NOT PROTECTED BY EROSION CONTROL MATTING SHALL BE STABILIZED WITH STRAW MULCH.
5. PROTECT EXISTING TREES FROM DAMAGE. AVOID LAND DISTURBANCE WITHIN THE DRIPLINE SHOWN.
6. SILT FENCES SHALL REMAIN IN PLACE UNTIL RESTORATION IS COMPLETE.

1"=10'-0" SCALE IN FEET 10 0 10 20

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
–	–	–

PROJECT MANAGER	M. BLANCHETTE
DESIGNED	B. SHAHA
DRAWN	M. NAGAMATSU
CHECKED	T. LARSON
PROJECT NUMBER	000000000154268

MICHAEL P. BLANCHETTE STATE OF WASHINGTON 21787 REGISTERED PROFESSIONAL ENGINEER 6/1/14

Qwest

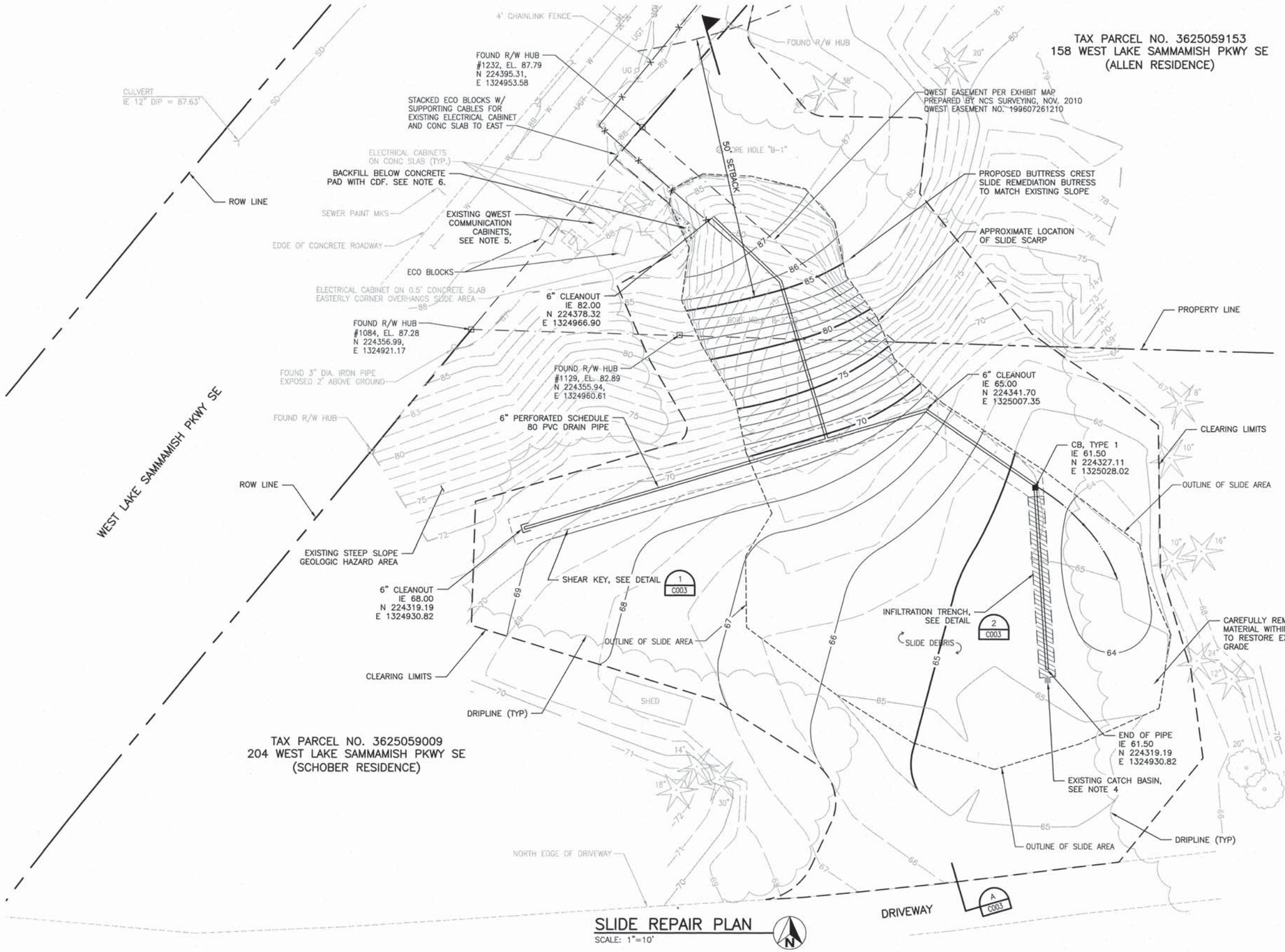
QWEST - WEST LAKE SAMMAMISH SLIDE REPAIR

ESC PLAN/BOUNDARY AND TOPOGRAPHIC SURVEY

0 1" 2"

FILENAME	01C001.dwg
SCALE	1"=10'

SHEET C001



SLIDE REPAIR PLAN
SCALE: 1"=10'

GENERAL NOTES:

1. UTILITY INFORMATION SHOWN HAS BEEN OBTAINED FROM AVAILABLE RECORDS. THE ACTUAL LOCATIONS MAY DIFFER CONTRACTOR TO VERIFY ALL UTILITY LOCATIONS. ANY UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED BY CONTRACTOR.
2. CONTRACTOR SHALL POTHOLE UG UTILITIES AT CROSSINGS SHOWN ON PLANS PRIOR TO START OF WORK.
3. REMOVE LOGS AND OTHER SLIDE DEBRIS PRIOR TO FILLING AND GRADING.
4. LOCATE EXISTING CATCH BASIN AND CLEAN. NOTIFY ENGINEER FOR POSSIBLE CONNECTION TO UNDER DRAIN.
5. PROTECT QWEST EQUIPMENT DURING CONSTRUCTION. DO NOT DISTURB TEMPORARY BRACING OF CABINETS. QWEST WILL REMOVE BRACING AFTER SLOPE STABILIZATION IS COMPLETED.
6. BACKFILL UNDERMINED SLAB WITH CDF BACKFILL BETWEEN QUARRY SPALLS AND SLAB TO PROVIDE FIRM SUPPORT. IT MAY BE NECESSARY TO CORE THROUGH SLAB TO GROUT ANY REMAINING VOIDS. NOTIFY QWEST BEFORE PERFORMING ANY WORK ON CONCRETE SLAB.

1"=10'-0" SCALE IN FEET (10 0 10 20)

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
–	–	–

PROJECT MANAGER	M. BLANCHETTE
DESIGNED	B. SHAHA
DRAWN	M. NAGAMATSU
CHECKED	T. LARSON
PROJECT NUMBER	000000000154268

MICHAEL P. BLANCHETTE STATE OF WASHINGTON 21787 REGISTERED PROFESSIONAL ENGINEER 6/1/11

Qwest

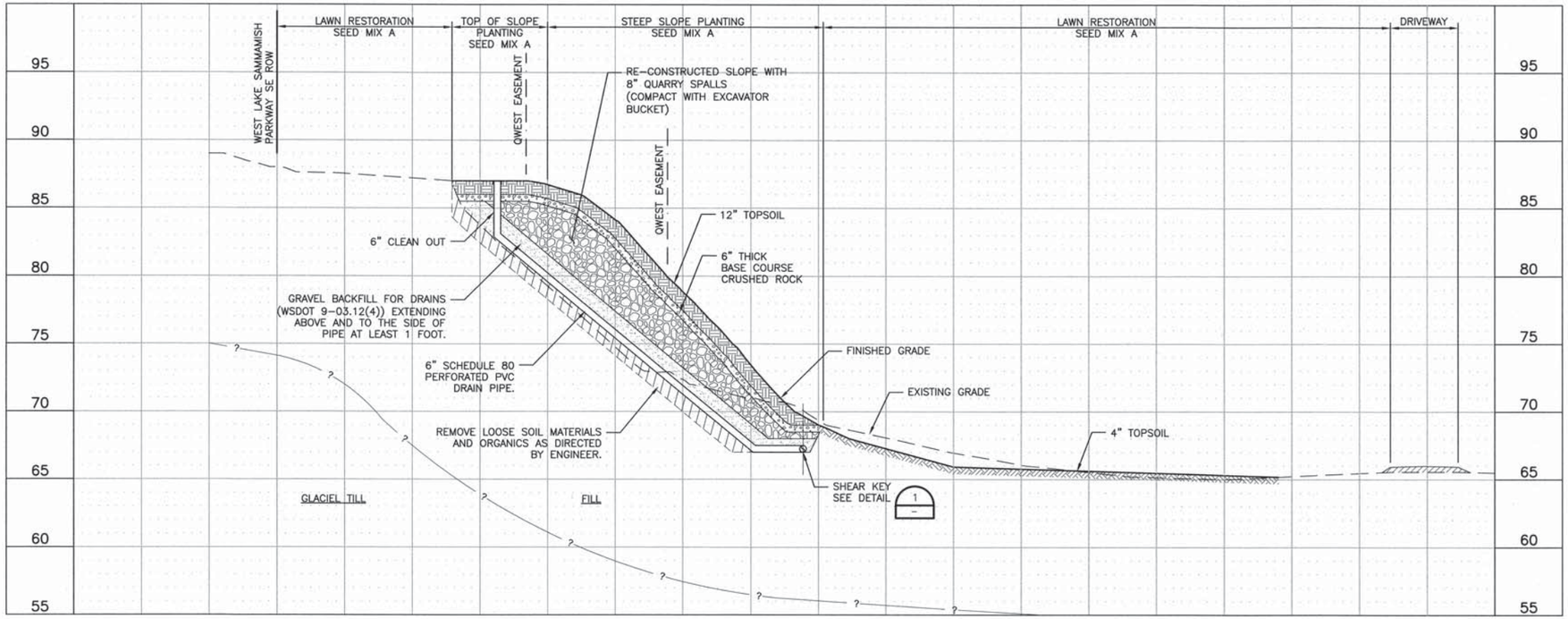
QWEST - WEST LAKE SAMMAMISH SLIDE REPAIR

GRADING PLAN

0 1" 2"

FILENAME	01C002.dwg
SCALE	1"=10'

SHEET **C002**

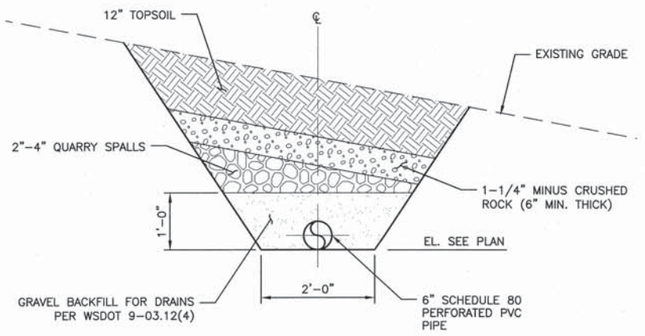


CROSS-SECTION A-A

SLIDE REPAIR SECTION

SCALE: H:1"=10', V:1"=5'

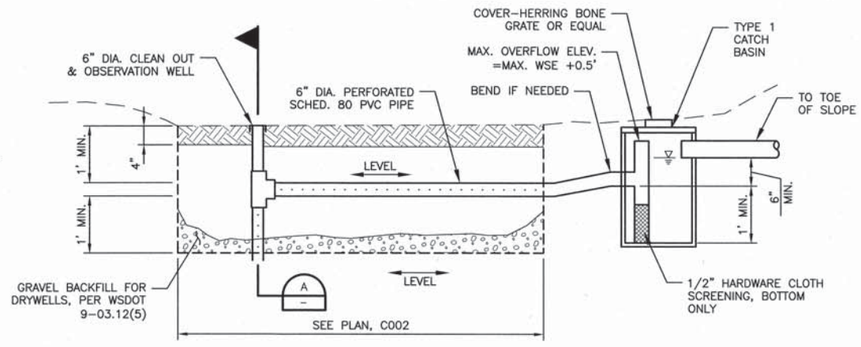
A C002



SHEAR KEY DETAIL

SCALE: 3/4"=1'-0"

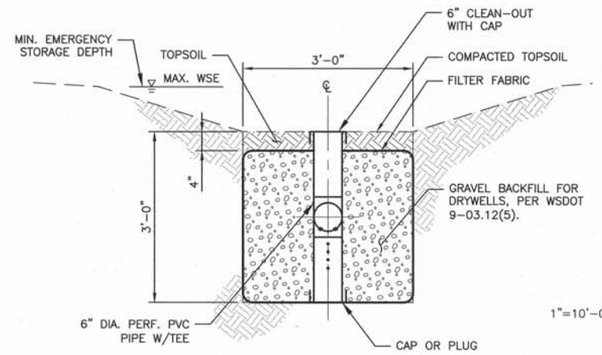
1 C002



INFILTRATION TRENCH DETAIL

SCALE: 3/4"=1'-0"

2 C002



INFILTRATION TRENCH SECTION

SCALE: 3/4"=1'-0"

A -

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

GENERAL NOTES:

1. REMOVE LOOSE SATURATED SOILS AND ORGANICS PRIOR TO PLACING UNDERDRAIN AND ROCK FILL. GRADE AND COMPACT SURFACE WITH BACKHOE BUCKET.
2. UNDERDRAIN SHALL BE BEDDED AND BACKFILLED IN GRAVEL BACKFILL FOR DRAINS PER WSDOT 9-03.12(4). BACKFILL SHALL EXTEND ABOVE AND TO THE SIDE TO THE PIPE ATE LEAST 12-INCHES.
3. UNDERDRAIN PIPE SHALL BE 6-INCH PERFORATED SCHEDULE 80 PER WSDOT 9-05.2(6).
4. QUARRY SPALLS SHALL BE 8" MAXIMUM PER QUARRY SPALLS PER WSDOT 9-13.6. QUARRY SPALLS SHALL BE PLACED AND COMPACTED WITH EXCAVATOR BUCKET WORKING FROM BASE OF SLOPE UPHILL.
5. CRUSHED ROCK CAP FOR QUARRY SPALLS SHALL BE CRUSHED SURFACING BASE COURSE PER WSDOT 9-03.9(3).
6. FILTER FABRIC FOR INFILTRATION TRENCH SHALL BE A GEOTEXTILE FABRIC, CLASS B, NONWOVEN, MODERATE SURVIVABILITY PER WSOT 9-33.2(1).
7. WASHED ROCK FOR INFILTRATION TRENCH SHALL BE GRAVEL BACKFILL FOR DRYWELLS PER WSDOT 9-03.12(5).

HDR Engineering, Inc.

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-	-	-

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PROJECT NUMBER	000000000154268

MICHAEL P. BLANCHETTE STATE OF WASHINGTON 21747 REGISTERED PROFESSIONAL ENGINEER 4/1/11

Qwest

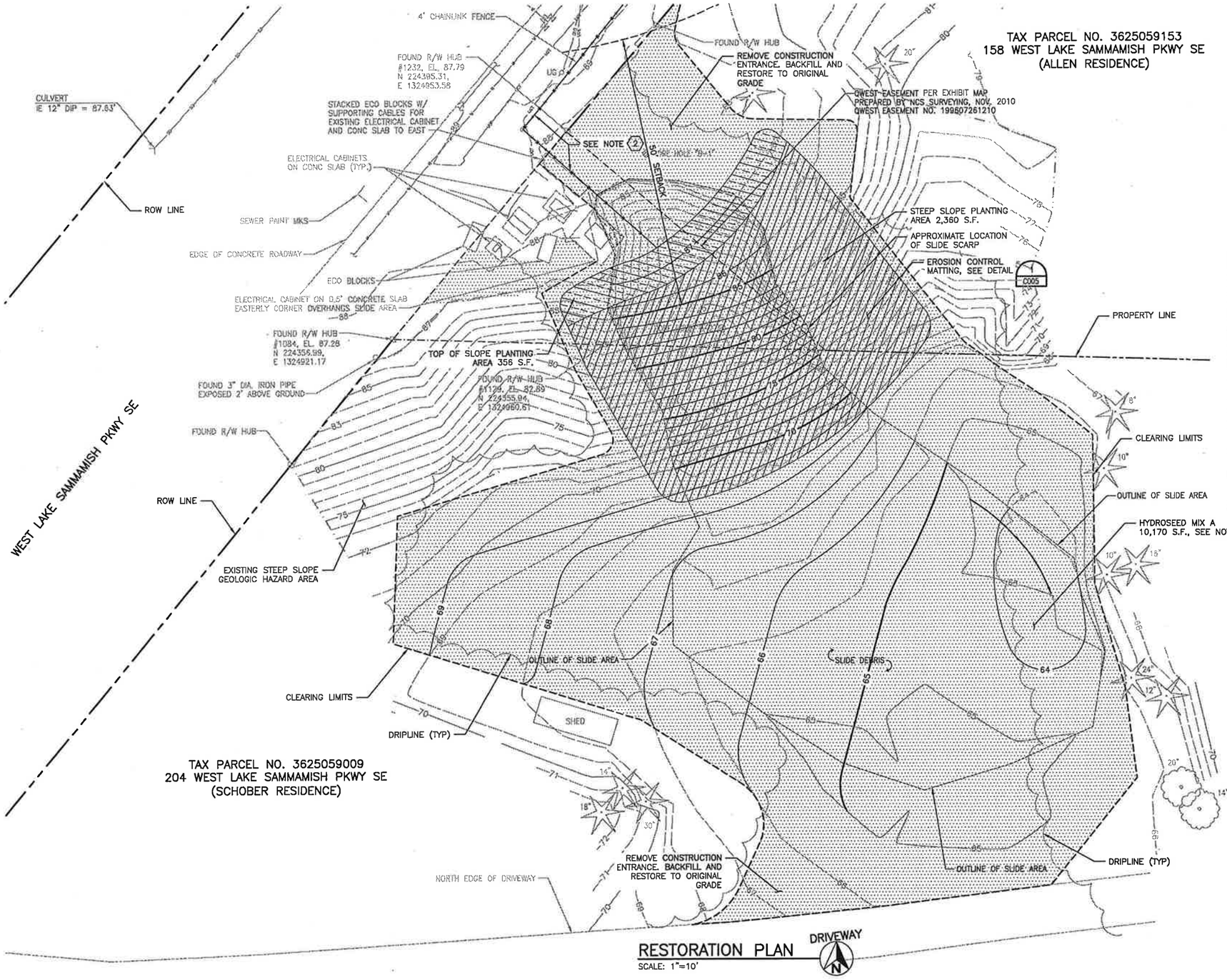
QWEST - WEST LAKE SAMMAMISH SLIDE REPAIR

SECTION AND DETAILS

0 1" 2"

FILENAME	01C003.dwg
SCALE	VARIES

SHEET **C003**



TAX PARCEL NO. 3625059153
158 WEST LAKE SAMMAMISH PKWY SE
(ALLEN RESIDENCE)

RESTORATION NOTES:

1. SEE DRAWING C005 FOR SEEDING AND STEEP SLOPE PLANTING NOTES AND DETAILS.
2. REPLACE 3'–0" CHAIN LINK FENCE.
3. PRIOR TO PLANTING AND SEEDING, SURFACE SHALL BE COMPACTED, GRADED SMOOTH, AND FREE DRAINING. NOTIFY QWEST FOR INSPECTION OF SURFACE PRIOR TO PLANTING.

RESTORATION LEGEND:

- GRASS
- STEEP SLOPE PLANTING AREA
- TOP OF SLOPE PLANTING AREA

PLANT SCHEDULE:

Planting Type	Common Name	Scientific Name	Symbol	Spacing	Min. Size	Quantity
Top of Slope						
Planting Area	Dougals-fir	*Pseudotsuga menzesii*	DF	9' O.C.	5 gallon / 4ft. ht.	3
356 s.f.	Red alder	*Alnus rubra*	RA	9' O.C	2 gallon	2
Steep Slope						
Planting Area	Red alder	*Alnus rubra*	RA	15' O.C	2 gallon	9
2360 s.f.	Oceanspray	*Holodiscus discolor*	OS	4' O.C.	2 gallon	37
	Redflowering currant	*Ribes sanguineum*	RC	4' O.C.	2 gallon	37
	Snowberry	*Symphoricarpos albus*	SN	4' O.C.	2 gallon	37
	Mock orange	*Philadelphus lewisii*	MO	4' O.C.	2 gallon	37
Hydroseed				% Weight	% Purity	% Germination
Mix A -	Dwarf tall fescue	*Festuca arundinacea*		45	98	90
Low-Growing Turf	Dwarf perennial rye	*Lolium perenne*		30	98	90
Seed Mix	Red fescue	*Festuca rubra*		20	98	90
0.23 acres	Colonial bentgrass	*Agrostis tenuis*		5	98	90

*Upland seed mix to be applied at 120lbs/acre

1"=10'–0" SCALE IN FEET (10 0 10 20)

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

RESTORATION PLAN

SCALE: 1"=10'

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
–	–	–

PROJECT MANAGER	M. BLANCHETTE
DESIGNED	B. SHAHA
DRAWN	M. NAGAMATSU
CHECKED	T. LARSON
PROJECT NUMBER	000000000154268

MICHAEL P. BLANCHETTE STATE OF WASHINGTON 21787 REGISTERED PROFESSIONAL ENGINEER 6/6/11

Qwest

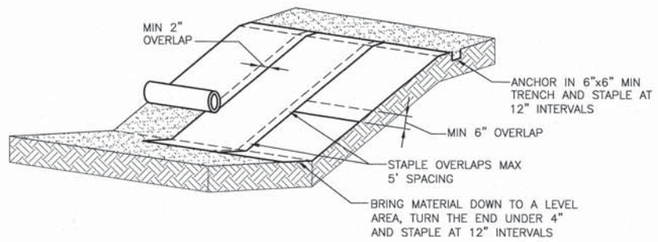
QWEST - WEST LAKE SAMMAMISH SLIDE REPAIR

RESTORATION PLAN

0 1" 2"

FILENAME	01C004.dwg
SCALE	1"=10'

SHEET C004



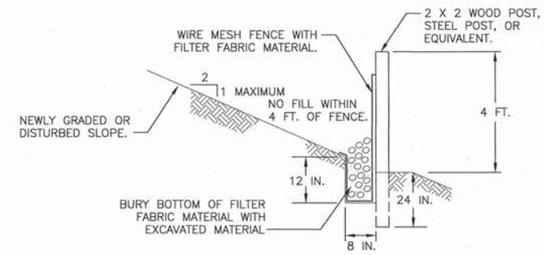
GENERAL NOTES:

1. SLOPE SURFACE SHALL BE SMOOTH BEFORE PLACEMENT FOR PROPER SOIL CONTACT.
2. STAPLING PATTERN AS PER MFR'S RECOMMENDATIONS.
3. DO NOT STRETCH BLANKETS/MATTINGS TIGHT, ALLOW THE ROLLS TO MOLD TO ANY IRREGULARITIES.
4. IF THERE IS A BERM AT THE TOP OF THE SLOPE, ANCHOR UPSLOPE OF THE BERM.
5. LIME, FERTILIZE AND SEED BEFORE INSTALLATION. PLANTING OF SHRUBS, TREES, ETC SHOULD OCCUR AFTER INSTALLATION.

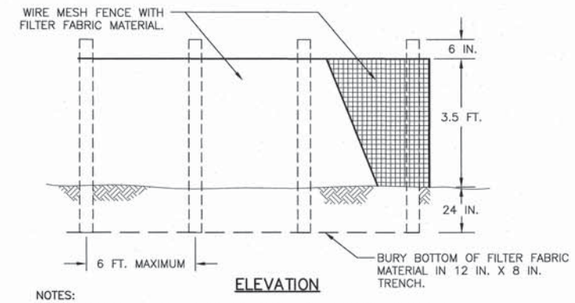
SLOPE INSTALLATION EROSION CONTROL MATTING

SCALE: NTS

1 VARIES



TYPICAL CROSS-SECTION



ELEVATION

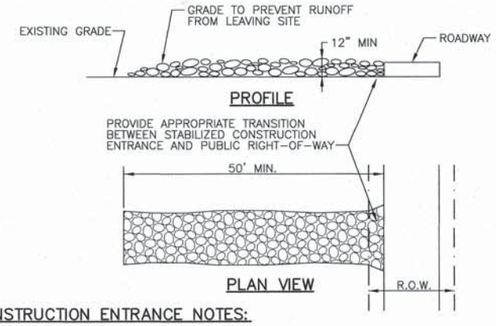
NOTES:

1. FENCE SHALL NOT BE INSTALLED ON SLOPES STEEPER THAN 2 : 1.
2. JOINTS IN FILTER FABRIC SHALL BE OVERLAPPED 6 INCHES AT POST.
3. USE STAPLES, WIRE RINGS, OR EQUIVALENT TO ATTACH FABRIC TO WIRE FENCE.
4. REMOVE SEDIMENT WHEN IT REACHES 1/3 FENCE HEIGHT.

SILT FENCE

SCALE: NTS

2 VARIES



PROFILE

PLAN VIEW

CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE: 3" – 5" OPEN GRADED ROCK.
2. LENGTH: AS REQUIRED TO BE EFFECTIVE BUT NOT LESS THAN 50 FEET.
3. THICKNESS: NOT LESS THAN 12 INCHES.
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS, 10' MINIMUM.
5. WASHING: WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN PER DETAIL 5, THIS SHEET. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE, AS CONDITIONS DEMAND, AND REPAIR AND CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENTS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.
8. LOCATION: THE EXACT LOCATION OF CONSTRUCTION ENTRANCE INSTALLATION SHALL BE DETERMINED IN THE FIELD ACCORDING TO EXISTING SITE CONDITIONS.

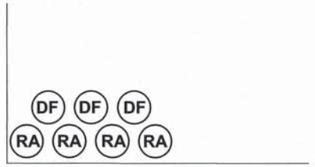
STABILIZED CONSTRUCTION ENTRANCE DETAIL

SCALE: NTS

3 VARIES

PLANTING NOTES:

1. PLANTING OF CONTAINERIZED MATERIAL IS TO OCCUR DURING THE COOL SEASON MONTHS (OCT 1–MARCH 31). OTHER PLANTING TIMES MUST HAVE PRIOR AUTHORIZATION FROM THE ENGINEER. HYDROSEEDING SHALL OCCUR FROM APRIL 1 THROUGH JUNE 30 OR FROM SEPTEMBER 1 THROUGH OCTOBER 1. SEEDING THAT OCCURS BETWEEN JULY 1 AND AUGUST 30 WILL REQUIRE IRRIGATION UNTIL 75 PERCENT GRASS COVER IS ESTABLISHED. SEEDING THAT OCCURS BETWEEN OCTOBER 1 AND MARCH 30 WILL REQUIRE A MULCH OR PLASTIC COVER UNTIL 75 PERCENT GRASS COVER IS ESTABLISHED.
2. SELECTED PLANTS, PLANTING AND SEEDING ACTIVITIES SHALL CONFORM WITH THE CODE OF STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN. PLANT MATERIALS TO BE USED WILL BE NATIVE TO THE PACIFIC NORTHWEST.
3. NURSERY GROWN PLANTS SHALL BE PLUGS OR CONTAINERIZED, SOUND, HEALTHY, VIGOROUS PLANTS, FREE OF DEFECTS, DISEASE AND INFESTATION. THE ENGINEER WILL REVIEW PLANT MATERIAL PRIOR TO PLANTING TO VERIFY CONFORMANCE TO THE PLANT SCHEDULE AND TO PLANT CHARACTERISTICS AND RESERVES THE RIGHT TO REQUIRE REPLACEMENT OR SUBSTITUTION OF PLANTS THAT ARE DEEMED UNSUITABLE.
4. PURCHASE SEED IN ACCORDANCE WITH THE PURE LIVE SEED SPECIFICATIONS FOR SEED MIXES. USE SEED WITHIN 12 MONTHS OF TESTING. SEEDS WILL BE CERTIFIED TO BE FREE OF NOXIOUS WEEDS.
5. TACKIFIER AND MULCH WILL BE INCORPORATED INTO THE HYDROSEED MIXTURE.
6. PLANT MATERIAL LAYOUT STACKING TO BE COMPLETED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION OF PLANTS. PLANT MATERIAL MAY NOT BE INSTALLED PRIOR TO THE WRITTEN VERIFICATION AND APPROVAL OF THE ENGINEER.
7. PLANTS TO BE DUG, PACKED, TRANSPORTED AND HANDLED WITH CARE TO ENSURE PROTECTION FROM INJURY. STORE PLANTS IN THE MANNER NECESSARY TO ACCOMMODATE THEIR HORTICULTURAL REQUIREMENTS. HEEL–IN PLANTS IF NECESSARY TO KEEP THEM FROM DRYING OUT. KEEP PLANTS SATURATED AND SHADED UNTIL THE ACTUAL TIME OF INSTALLATION. DO NOT LET THEM SIT IN THE SUN OR DRY OUT DURING PLANTING.
8. EXCAVATE PLANT PITS WITH VERTICAL SIDES AND INSTALL PLANTS AS SHOWN ON PLANTING DETAIL 5. BACKFILL WITH TOPSOIL. INCORPORATE GRANULAR POLYMER PELLETS INTO THE PLANTING SOIL PER MANUFACTURERS' SPECIFICATIONS FOR MOISTURE RETENTION. ALL CONTAINERIZED PLANT MATERIAL SHALL BE WATERED ON THE SAME DAY AS PLANTED UNTIL THE BACKFILL SOIL AROUND THE ROOTS OF EACH PLANT IS THOROUGHLY SATURATED. NO MORE PLANTS SHALL BE PLANTED ON ANY DAY THAN CAN BE WATERED ON THAT DAY.
9. ALL PLANT MATERIAL TO BE WARRANTED TO REMAIN ALIVE AND HEALTHY FOR A PERIOD OF ONE YEAR AFTER COMPLETION AND FINAL WRITTEN ACCEPTANCE OF PLANTING. DEAD OR UNHEALTHY PLANTS TO BE REPLACED PER PLANS AND SPECIFICATIONS AND AS DIRECTED BY QWEST.

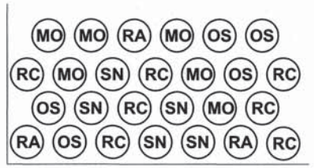


TOP OF SLOPE PLANTING AREA

TYPICAL PLANT LAYOUT

SCALE: NTS

4 VARIES

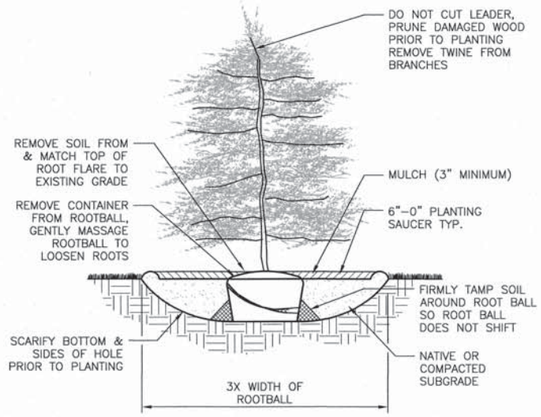


STEEP SLOPE PLANTING AREA

TYPICAL PLANT LAYOUT

SCALE: NTS

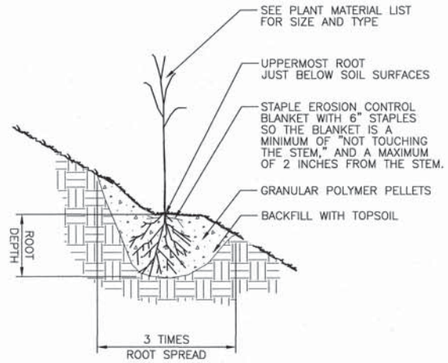
5 VARIES



EVERGREEN TREE PLANTING DETAIL

SCALE: NTS

6 VARIES



SLOPE PLANTING TYPICAL DETAIL

SCALE: NTS

7 VARIES

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION

PROJECT MANAGER	M. BLANCHETTE
DESIGNED	B. SHAHA
DRAWN	M. NAGAMATSU
CHECKED	T. LARSON
PROJECT NUMBER	000000000154268

MICHAEL P. BLANCHETTE STATE OF WASHINGTON 21767 REGISTERED PROFESSIONAL ENGINEER 6/1/11

Qwest

QWEST - WEST LAKE SAMMAMISH SLIDE REPAIR

STANDARD DETAILS/LANDSCAPE PLANTING PLAN AND NOTES

0 1" 2"

FILENAME	01C005.dwg
SCALE	NTS

SHEET C005

City of Bellevue Application for Critical Areas Land Use Permit

STEEP SLOPE RESTORATION PLAN

1.0 INTRODUCTION

On December 19, 2010, a landslide occurred on a fill embankment on the east side of West Lake Sammamish Parkway SE in Bellevue, Washington. The landslide occurred during or following a significant precipitation event that appears to have saturated the embankment, which resulted in a combination of a sudden sloughing of saturated fill material and debris and erosion associated with surface or subsurface water flowing down the slope. The slide occurred on a Qwest Communications, Inc. (Qwest) easement located on a residential parcel at 158 West Lake Sammamish Parkway SE; the landslide also affected the single-family residence at 204 West Lake Sammamish Parkway SE. Qwest owns and maintains communication equipment that is located in cabinets founded on concrete slabs at the top of the slope within the easement where the landslide occurred. Qwest acquired emergency permits (Bellevue Permit Nos. 10-129569 TJ and 11-111042 TJ) to repair and temporarily stabilize the Qwest cabinets and equipment endangered by the landslide.

In order to remediate the slope failure, Qwest proposes to install rock fill and an underdrain to intercept groundwater and tightline to an infiltration trench in the low point of the property. This approach would re-establish the lost portion of the embankment, and provide stabilization support to the remaining fill embankment.

The restoration plan below is being submitted as part of the Critical Areas Land Use Permit application to permanently stabilize the failed slope, which is regulated as a Steep Slope Geologic Hazard Area by the City of Bellevue.

2.0 PROPOSED RESTORATION PLAN

The proposed placement of the rock fill, drainage improvements, and erosion control measures would provide for improved stability of the remaining fill embankment where the slope failure occurred. The proposed restoration plan below would also increase the habitat value and stability of the remediated steep slope area by establishing native woody vegetation.

Approximately 2,360 square feet of restored steep slope would be planted with native shrub and tree species suitable for the site conditions. Table 1 describes the species, size, spacing, and quantities proposed for installation in the steep slope hazard area. Please see Sheet C004 the attached Project Plans for the location of the steep slope planting area.

Table 1. Steep Slope Planting Area Plant Schedule

Common Name	Scientific Name	Min. Size	Spacing (feet on Center)	Quantity
Red alder	*Alnus rubra*	2 gallon	15’	9
Oceanspray	*Holodiscus discolor*	2 gallon	4’	37
Redflowering currant	*Ribes sanguineum*	2 gallon	4’	37
Snowberry	*Symphoricarpos albus*	2 gallon	4’	37
Mock orange	*Mahonia aquifolium*	2 gallon	4’	37

3.0 GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

The goals of the restoration plan are to control erosion and increase habitat on the restored steep slope. When evaluated against monitoring data, performance standards are used to determine the relative success of the steep slope hazard area restoration project in achieving these goals. The following minimum performance standards are proposed for the Project.

Goal 1: Control Erosion

Objectives:

1A. Install erosion control measures on site (silt fencing, straw mulching, coir fabric or equivalent).

Performance Standards:

1A1. Inspect site during construction to ensure erosion control measures are installed.

1A2. Continue inspections to ensure that TESC maintenance specifications are being observed.

1A3. Provide as-built of remediated area to document TESC measures.

1A4. Inspect site after construction to ensure erosion control blanket has been installed as specified.

1A5. Monitor site during long-term vegetation monitoring for signs of erosion, channelization, and/or increased sedimentation.

Goal 2: Increase Habitat Functions on Restored Steep Slope

Objective:

2A. Replant restored steep slope with native tree and shrub vegetation that will mature rapidly to provide cover and add wildlife habitat functions.

Performance Standards:

2A1. The project engineer shall supervise the installation of plantings, and confirm that plants have been installed per the approved restoration plan.

2A2. Monitor plants to ensure appropriate survival rates.

- Areas shall meet the performance standards for native shrubs as noted below:
  - Year 1: 100 percent survival of planted stock.
  - Years 2 through 3: minimum of 80 percent survival of planted stock.
  - Desirable native volunteers may be included in plant counts.

4.0 MONITORING PLAN

The restored steep slope would be monitored to demonstrate compliance with applicable permits and to confirm that restoration of the sensitive area has been complete. The monitoring phase of the Project is expected to consist of iterative and corrective measures, such as removing invasive species, and is expected to occur up until a point when native species of trees and shrubs that were installed dominate the area. This goal would be initiated by careful

plant selection, established by monitoring for plant health and survival, and then ensured by documentation of progress.

Monitoring would continue at the restored steep slope for a minimum of 3 years after construction or until the City of Bellevue (City) concurs that site conditions have returned to a naturalized state. Mitigation goals would be considered achieved when the Project team and City agree that plants have become well established and can be expected to survive and self-maintain the area. The exact length of time required for monitoring of the Project is determined both through regulatory requirements and by the growth of the plants themselves. If the area becomes covered with native plants, and there are no foreseeable issues from invasive plants, human disturbance, or erosion, monitoring would become unnecessary. If performance standards are not met in Year 3, monitoring would occur again in Year 4. If third-year performance standards are not met in Year 4, monitoring would occur in Year 5 to provide final documentation of mitigation site conditions.

The monitoring period would commence from the month that the installation is approved. Overview photos would be taken from the same vantage points each year to document overall appearance of the mitigation area before, during, and after construction. Survivorship would be defined as fully healthy and thriving (see below). Monitoring field visits would take place during the growing season of each monitoring year. A monitoring memo would be submitted to the City by the end of each calendar year.

The monitoring memo would include the following components:

1. A description of the site and the monitoring schedule
2. A discussion of the restoration objectives
3. A discussion of the methods used
4. A results section with a summary of plant survivorship and an evaluation of the site with regard to the performance standards
5. Conclusion, including management recommendations, and maintenance and contingency measures if necessary
6. Site photographs

A summary of plant survivorship would list the number and vigor of the planted shrubs. Plants would be considered “dead” when more than 50% of the plant is decadent. The monitoring memo would also list other factors that could affect survival and eventual dominance of the planted material, such as animal herbivory, insect infestation, human disturbance, inadequate growing conditions, disease or other factors. Other site conditions such as areas of bare earth, new or continued erosion, etc., would be noted as appropriate.

5.0 CONTINGENCY PLAN

Information from the annual monitoring effort would be used to identify the need for maintenance or corrective action. If problems are encountered during monitoring, the first step would be to identify the reason for the problem, then to implement an appropriate corrective or maintenance action. These actions would be documented in annual monitoring reports. Contingency measures are provided listed in Table 2.

Table 2. Contingency Measures

Problem	Contingency Measures
Site does not meet plant survivorship requirements	• Evaluate reasons for mortality (e.g. poor soil conditions, insufficient moisture, incorrect planting, browsing by wildlife, vandalism). • Address cause for mortality and replant to exceed survivorship requirements (contractor is responsible for replacing plant materials that die in the first year). • Provide protective measures (e.g. rodent fencing, deer repellent, weeding, etc.), if appropriate. • Initiate or modify irrigation practices, if necessary.
Over-competition by invasive species (more than 30% cover in the mitigation area)	• Evaluate predominant invasive species in the restoration areas • Initiate invasive species control protocols appropriate to species type, conditions of infestation area (wetland or buffer), and level of infestation (e.g., herbicide application, mowing, etc.)
Evidence of erosion on site	• Repair erosion control measures, if necessary. • Add/replace mulch to reduce erosion. • Add additional plant materials, if necessary.