DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT
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.	09-113852-LO
Project Name/Address:	Muntean Kelsey Creek Bank Stabilization 444 129th Ave NE
Planner:	Kevin LeClair
Phone Number:	425-452-2928

Minimum Comment Period: **July 9, 2009**

Materials included in this Notice:

- ☒ Blue Bulletin
- ☒ Checklist
- ☒ Vicinity Map
- ☒ Plans
- ☐ Other:

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: IOAN MUNTEAN

Proponent:

REVIEWED
By Kevin LeClair at 1:17 pm, Jun 16, 2009

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

Address: 444 129TH PL. NE Bellevue WA 98005

Phone: 425 454 1936

Proposal Title: Bank stabilization

Proposal Location: Bank of the creek on 444 129TH PL. NE
(Street address and nearest cross street or intersection) Provide a legal description if available.

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: residential property with steep slope
2. Acreage of site: .27 acres
3. Number of dwelling units/buildings to be demolished: 0
4. Number of dwelling units/buildings to be constructed: 0
5. Square footage of buildings to be demolished: 0
6. Square footage of buildings to be constructed: 0
7. Quantity of earth movement (in cubic yards): 1,000 yards
8. Proposed land use: residential
9. Design features, including building height, number of stories and proposed exterior materials:
10. Other four terraces rockery and blocks wall

First course of tiered wall is 4-6' rockery. 2nd, 3rd, and 4th tiers are planned to be precast concrete landscape blocks.

RECEIVED
MAY 21 2009
PERMIT PROCESSING

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

06.01.09 — 09.30.09

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

yes by planting plan

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

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.

No

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.

N/A

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

Clearing and Grading Permit required from City of Bellevue.

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

N/A

☐ 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)?

30%

The slope to be stabilized is reater than 40% slope.

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.

clay

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

N/A

The bank is eroding currently. Surficial slumping can be observed at the site of the proposed stabilization.

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

The bank is being proposed for stabilization with rockery and precast concrete blocks in a tiered, stepped-back configuration, with native planting on the terraces.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Erosion is highly probably as a result of construction. BMPs for sediment and erosion control must be followed and will be required by the City of Bellevue.

N/A

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

N/A

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

N/A

TESCs required by City of Bellevue for work near sensitive features and aquatic resources. Dewatering and fish exclusion may be required.

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.

N/A

Expected short term impacts to air quality associated with equipment required to construct stabilization measures.

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

N/A

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

N/A

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

appropriate, state what stream or river it flows into.

West Tributary of Kelsey Creek flows adjacent to the project. It flows into Kelsey Creek and then into Lake Washington.

(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.

yes

(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

Applicant is estimating 1000 yards of material to construct terraced walls.

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

N/A

As planned, diversion of the stream is not required.

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

N/A

Yes. Floodplain of West Tributary of Kelsey Creek.

(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.

NO

b. Ground

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

yes

(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

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.

N/A

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

NO

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

N/A

4. Plants

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

- ☐ deciduous tree: alder, maple, aspen, other
- ☐ evergreen tree: fir, cedar, pine, other
- ☒ shrubs
- ☒ 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

Plants on the site are primarily invasive species and grasses. There are several significant trees in the vicinity, but not in the immediate project area.

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

weeds

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

N/A

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

yes

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

West Tributary of Kelsey Creek is known to support fish populations. Specifically; sockeye, coho, chinook, and cutthroat trout are all known to spawn in the Kelsey basin.

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

NO

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

NO

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.

NO

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

NO

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

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.

N/A

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

N/A

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

N/A

REVIEWED
By Kevin LeClair at 1:35 pm, Jun 16, 2009

b. Noise

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

equipment operation

(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

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

NO

8. Land and Shoreline Use

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

N/A

Residential Land Use at property and those adjacent.

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

N/A

c. Describe any structures on the site.

N/A

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

NO

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

Zoned R-3.5

slopes

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

N/A

Comp. Plan Designation
Residential Medium Density

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

N/A

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

NO

The site is in the Critical Areas Overlay District due to the presence of the West Tributary of Kelsey Creek.

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

4

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

6

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

N/A

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

N/A

9. Housing

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

N/A

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

N/A

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

N/A

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?

N/A

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

N/A

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

N/A

11. Light and Glare

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

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

c. What existing off-site sources of light or glare may affect your proposal?

N O

d. Proposed measures to reduce or control light or glare impacts, if any:

N/A

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

N/A

b. Would the proposed project displace any existing recreational uses? If so, describe.

N/A

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

N/A

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.

N/A

b. Generally describe any landmarks or evidence of historic, archeological, scientific, or cultural importance known to be on or next to the site.

N/A

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

N/A

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.

N/A

b. Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?

N/A

c. How many parking spaces would be completed project have? How many would the project eliminate?

N/A

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).

N/A

e. Will the project use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

N/A

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

N/A

g. Proposed measures to reduce or control transportation impacts, if any:

N/A

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.

N/A

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

N/A

16. Utilities

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

N/A

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.

N/A

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..... 05/21/09

REVIEWED
By Kevin LeClair at 1:41 pm, Jun 16, 2009

LIU & ASSOCIATES, INC.

Geotechnical Engineering | Engineering Geology | Earth Science

April 16, 2009

Mr. Ioan Muntean
444 – 129th Place NE
Bellevue, WA 98005

Dear Mr. Muntean:

Subject: Creek Bank Stabilization
Ioan Muntean Residence
444 – 129th Place NE
Bellevue, Washington
L&A Job No. 8A073

INTRODUCTION

We have completed a geotechnical investigation for stabilization of the banks of the creek flowing through your property, located at the above address in Bellevue, Washington. The general location of this property is shown on Plate 1 – Vicinity Map, attached hereto. We understand that the west bank of the creek has been eroded through many years and that it has to be stabilized in order to protect your property. The east bank of the creek has experienced minimal erosion, but needs to be protected as well. Also, a foot bridge crossing the creek had been washed out by previous flooding of the creek and we understand that it is your wish to restore this bridge for access from the west side to the east side of the creek. The purpose of this investigation is to characterize the soil conditions in the area of the bank and shore west of the creek and to provide recommendations for stabilization of the creek banks and the shore west of the creek.

19213 Kenlake Place NE · Kenmore, Washington 98028
Phone (425) 483-9134 · Fax (425) 486-2746

SITE CONDITIONS

Surface Conditions

The subject residence site is situated near the bottom of a steep, easterly-declining slope. Within the site, the ground generally slopes very gently from its west boundary down to about the front of the house. It then descends very steeply from there to about the rear of the house, before sloping moderately down towards the creek then rising moderately steeply up the east bank towards the east side of the creek.

Geologic and Soil Conditions

The surficial soil units at and in the vicinity of the residence site, in a sequence from top to bottom, are consisted of Vashon Till (Q_{vt}), Advance Outwash (Q_{va}) and Transitional Beds (Q_{tb}). The Vashon till soil unit was plowed under glacial ice during the most recent glacial period as it advanced over an eroded, irregular surface of older formations and sediments. The till soils over the top two to four feet are normally weathered to a medium-dense state, and is moderately permeable and compressible. The underlying fresh till soils, having been over-ridden and consolidated by 3,000 to 5,000 feet of ice, are a very-dense mixture of unsorted clay, silt sand, gravel and scattered cobble and boulder, often referred to as "hard pan". The fresh till deposits are practically impervious. They have a shear strength comparable to that of low-grade concrete, and are capable of remaining stable in steep natural or cut slopes for a long time. If remaining undisturbed and well-drained, the fresh till soils can provide excellent foundation support with little settlement expected.

The advance outwash soil unit is composed of proglacial fluvial and lacustrine deposits laid down by slow-moving meltwater streams from the advancing but distant Vashon glacier. It generally

consists of light-brown to lignt-gray, well-sorted, fine-to-medium-grained sand, with occasional lenses of thin silt or coarse sand and gravel layers. In confined situation, the advance outwash soils are generally in dense to very-dense state and are quite stable. They, however, can be subjected easily to rainwash erosion and gullying, and may gradually loosen up, sough off and redeposit to a loose state if they are exposed on steep slopes devoid of vegetation cover.

The transitional beds soil unit, normally underlying the advance outwash deposits, is composed of glacial and non-glacial deposits consisting of massive, thick or thin beds and laminae of gray to dark-gray, fine sandy to clayey silt. Having been over-ridden by Vashon glacier, the transitional beds sediments are very-stiff to hard, with extremely low permeability, in their native undisturbed state. Where exposed, the upper few inches to a couple of feet of the transitional beds soil unit may be weathered to soft to loose state. In the wet winter months, the surficial soils of the transitional beds exposed on slopes can be quickly saturated and result in heavy runoff during rainstorms. Where the transitional beds soil unit is exposed on hillsides, springs of groundwater seepage may exist. The volume of groundwater and seepage pressure can increase substantially during the wet winter months and may erode and cause subsequent slumping of the sandy deposits in and above the seepage zone.

The residence site is situated near the valley of a local rolling hilly terrain. The surficial soil unit at the site, therefore, is most likely composed of transitional beds deposits. Also, the creek bed is most likely cutting into the practically impervious transitional beds soil unit and, thereby, forms the creek. We understand that a French drain was installed a few years ago down to about 12 feet deep along the front of the house to intercept and drain away surface and ground water flowing

towards the house and that a blue-gray, hard, clayey silt deposit, appeared to be of the transitional beds soil unit, was encountered by the trench of the French drain.

We manually pushed a steel T-bar into the ground along the downhill side of the wood deck abutting the rear of the house and in the backyard to get an indication of the density or consistency of the surficial soils. The probe bar could penetrate no more than 18 inches deep, indicating the creek bank is most likely formed in very-stiff to hard transitional beds deposits at relatively shallow depth, overlain by a layer of weathered soils.

Groundwater Condition

The thin weathered soils mantling the site are of moderate permeability and can allow some storm runoff to seep through, while the transitional beds deposits underlying the site at shallow depth are of extremely low permeability and would perch water infiltrating into the ground. The near-surface perched groundwater would flow on the surface of the underlying transitional beds deposit. Where this transitional beds soil unit is exposed or near the surface of the slope above the creek, groundwater seepage out of the slope would occur during and after prolonged heavy rainstorms. Progressive groundwater seepage may cause soil erosion and sloughing on the slope.

RECOMMEMNDATIONS

General

The creek flow during high water stage will continue to cut into and erode the west bank of the creek. It is our opinion that the west bank and the shore above the creek should be stabilized as soon as possible to protect the property. We recommend that the west bank and shore of the creek be stabilized with rockery walls lining the creek banks and with precast concrete block walls

stepping up the west shore, in compliance with the "Soft Stabilization Measures" of Bellevue Land Use Code.

The rockery wall lining the west bank of the creek will mostly be 3.5 to 4.5 feet tall, but will be up to about 6.5 feet tall at its north end where the most severe erosion of the creek bank has occurred. The rockery wall lining the east bank of the creek will be about 2 feet tall. The precast concrete block walls stepping up the west shore will each be about 1.0 to 3.5 feet tall and occasionally reach 4.0 feet tall. Due to the sensitive nature of the creek banks and shore, we recommend that the proposed creek banks and shore stabilization work be carried out and completed during the dryer period from April 1 to October 31 of the year.

ROCKERY WALLS

General

Although a rockery wall can provide some degree of retention capability, its main function is to serve as a protective facing to retard weathering and erosion process to the earth bank behind the rockery wall. To achieve a satisfactory rockery wall, the earth bank behind the rockery wall must be stable by itself on a long-term basis. Also, the rockery wall should be constructed in a proper way to keep the earth bank stable over long term.

The creek banks and west shore appear to be formed in very-stiff to hard transitional beds deposits. It is our opinion that the nearly vertical creek banks cut into these deposits can maintain long-term stability if they are lined by properly constructed rockery walls. Our design of the rockery walls for creek stabilization is shown on Plates 2 and 3.

Rockery Material and Construction

Rock material for rockery construction should be hard, sound, durable and free of cracks, fissures, joints, air holes and other defects. Rock material to be used for facial stones of the rockery walls should be inspected and approved by a geotechnical engineer prior to rockery construction. The construction of the rockery walls should be in compliance with the Standard Rockery Construction Guidelines published by Associated Rockery Contractors.

Subgrade and Keyway Trench Preparation

Construction should start immediately following completion of the cut banks and keyway trenches. The keyway trenches should be cut down to very-stiff to hard, transitional beds soils capable of rendering an allowable bearing capacity of at least 3,000 psf. The keyway trenches should be at least 18 inches deep below the finish grade in front of the rockery walls and should be free of loose disturbed soils or standing water prior to rockery construction. The keyway trenches should be wide enough such that the heel of the cut behind the keyway trench would be at least 12 inches from the back of the base-course facial stones. The bottom of the keyway trenches and the cut banks above the trenches should be lined with a layer of non-woven filter fabric to keep soils from being washed out by creek flow surging in and out of the rockery walls.

Groundwater Drainage Control

A drain line should be laid in the keyway trenches behind the base-course facial stones to collect and drain away groundwater flowing toward the rockery walls. The drain lines should consist of a 6-inch-minimum, perforated, rigid, PVC pipe wrapped in a layer of non-woven filter fabric sock. The bottom of the keyway trenches and the drain lines should have sufficient slope (0.5 percent

minimum) to generate flow by gravity. Water collected in the drain lines should be tightlined to discharge into the creek.

Facial Stones

Facial stones of the rockery walls should be sufficiently large and as nearly rectangular as possible. Facial stones should be stacked tightly against one another to minimize the voids between the stones. Excessive openings between facial stones should be chinked with smaller rock from behind. The rockery walls should be constructed such that facial stones of each successive course would stagger over and firmly supported on stones of the previous course. The facial stones of the rockery walls should be tilted back at a batter no steeper than 6V:1H.

Drain Course

A drain rock course, consisting of 2-to-4-inch rock spalls, should be placed between the facial stones and the earth bank of the rockery walls in lifts as each course of the facial stones is completed. The horizontal thickness of the drain rock course should be at least 12 inches thick horizontally. The purpose of the drain rock courses is to retain soils in place while allow groundwater to flow into the drain lines.

PRECAST CONCRETE BLOCK WALLS

General

The three tiers of precast concrete block walls, each not more than 4 feet tall, to be constructed on the slope above the west bank of the creek may be constructed with 8-inch-high by 16-inch-wide by 12-inch-deep Manor blocks interlocked with a lip on their back sides, or with 8-inch-high by 18-inch-wide by 12-inch-deep Keystone blocks with the layers of blocks interconnected with

Teflon pins. These block walls not more than 4 feet tall may be constructed without having the wall backfill reinforced with geogrid mesh. Our design of these precast concrete block walls is shown on Plates 2 and 3. Each tier of walls should be set back a horizontal distance from the back of the tier below at least equal to the height of the lower-tier wall.

Subgrade and Keyway Trench Preparation

The keyway trenches for the concrete block walls should be excavated and prepared in the same way as recommended for the rockery walls above. The bottom of the keyway trenches should be excavated into firm bearing soils and the exposed soils in keyway trenches should be compacted to a non-yielding state with a suitable mechanical compactor. The bottom of the keyway trenches and the cut banks above should be lined with a layer of non-woven filter fabric. A minimum 6-inch layer of compacted 7/8-inch crushed rock base should be placed over the filter fabric lined subgrade soils. The bottom-course blocks should then be placed on this layer of crushed rock base, and the bottom-course blocks should be embedded at least 8 inches below the adjacent finish grade.

Groundwater Drainage Control

A drain line should be placed in the keyway trenches behind the base-course blocks to collect and drain away groundwater flowing towards the block walls. The drain lines should consist of a minimum 4-inch, perforated, rigid, PVC pipe, fitted with a non-woven filter fabric sock. The bottom of the keyway trenches and the drain lines should have sufficient slope (0.5% minimum) to generate flow by gravity. Water collected in the drain lines should be tightlined into a catch basin before being released into the creek.

A vertical drainage blanket, consisting of clean 7/8-inch crushed rock and at least 12-inches thick horizontally, should be placed against the back of the block walls. The remaining wall backfill may consist of structural fill. The vertical drainage blankets should be hydraulically connected to the drain lines at the base of the walls.

Structural Fill

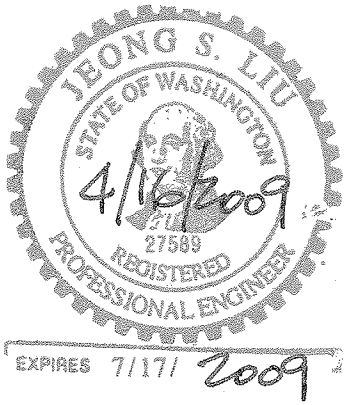
Structural fill should be used to backfill the concrete block walls beyond the drainage blankets. Structural fill should consist of clean granular soils free of organics, debris and other deleterious substances, with particles no larger than three inches. Structural fill should have a moisture content within one percent of the optimum moisture content of the structural fill soils at the time of placement. The optimum moisture content is the water content in soils that enables the soils to be compacted to the highest dry density for a given compaction effort. Onsite soils meeting the above requirements may be used as structural fill. Imported material to be used as structural fill should be clean, free-draining, granular soils containing no more than 10% by weight finer than No. 200 sieve based on the fraction of the material passing the No. 4 sieve, with particles no larger than 3 inches. Structural fill should be placed in lifts no more than 10 inches thick in loose state, with each lift compacted with a vibratory mechanical compacted to at least 92% of the maximum dry density determined by ASTM D1557 (Modified Proctor method).

EROSION CONTROL

Disturbed areas devoid of vegetation cover should be landscaped, seeded or vegetated as soon as possible for protection against erosion. The seeded and vegetated areas should be covered with clear plastic sheets, securely weighted down with sandbags, until the vegetation is fully established.

CLOSURE

We are pleased to be of service to you on this project. Please feel free to call us if you have any questions regarding this report or need further consultation.



Yours very truly,
LIU & ASSOCIATES, INC.

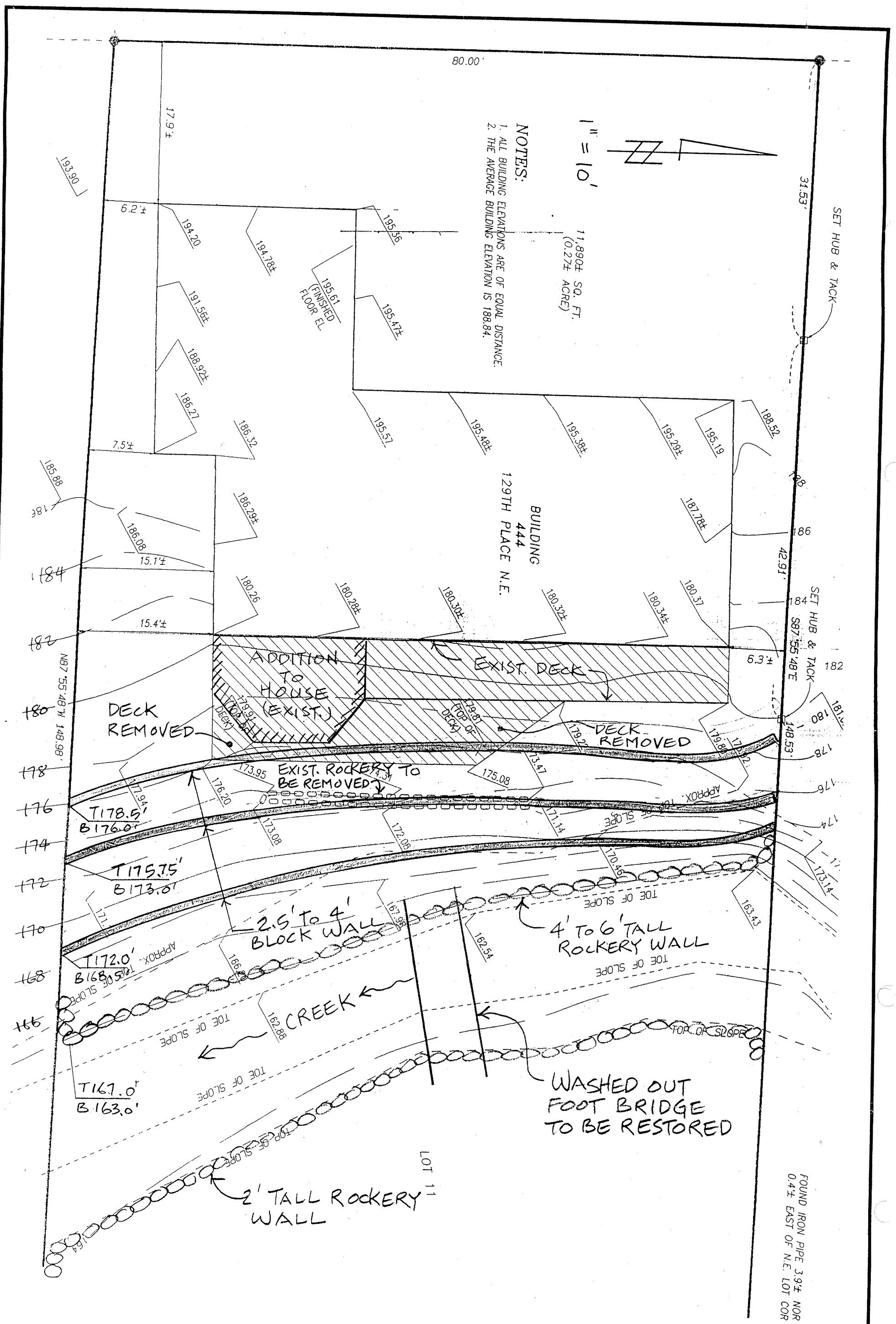
J. S. (Julian) Liu, Ph.D., P.E.
Consulting Geotechnical Engineer

Three plates attached

Muntean Planting Plan

Creekside Slope **Scale: 1/2"= 1'-0"** **Doug Rice, Landscape Design**

Code	Name	Common Name	Qty	Size
Trees				
AC	Acer cercinatum	Vine Maple	2	4'-6'
Shrubs				
CS	Cornus stolonifera	Red Twigged Dogwood	9	6'-8'
MA	Mahonia aquifolium	Tall Oregon Grape	5	3 gal
MN	Mahonia nervosa	Low Oregon Grape	4	1 gal
RS	Ribes sanguineum	Red Flowering Currant.	4	3 gal
TBR	Taxus baccata 'Repanens'	Spreading English Yew	1	5 gal
VSB	Viburnum tinus 'Spring Bouquet'	Vib. Spring Bouquet	3	3 gal
VTM	Viburnum tomentosum 'Maresii'	Double File Viburnum	3	3 gal
Ground Covers & Rockery Plants				
FG	Hakonechloa macra "Aureola"	Japanese Forest Grass	7	1 gal
PT	Pachysandra terminalis	Pachysandra	30	6"
SF	Polystichum munitum	Sword Fern	5	1 gal



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SITE AND CREEK BANK STABILIZATION PLAN
IOAN MUNTEAN RESIDENCE
444 - 129TH PLACE NE
BELLEVUE, WASHINGTON

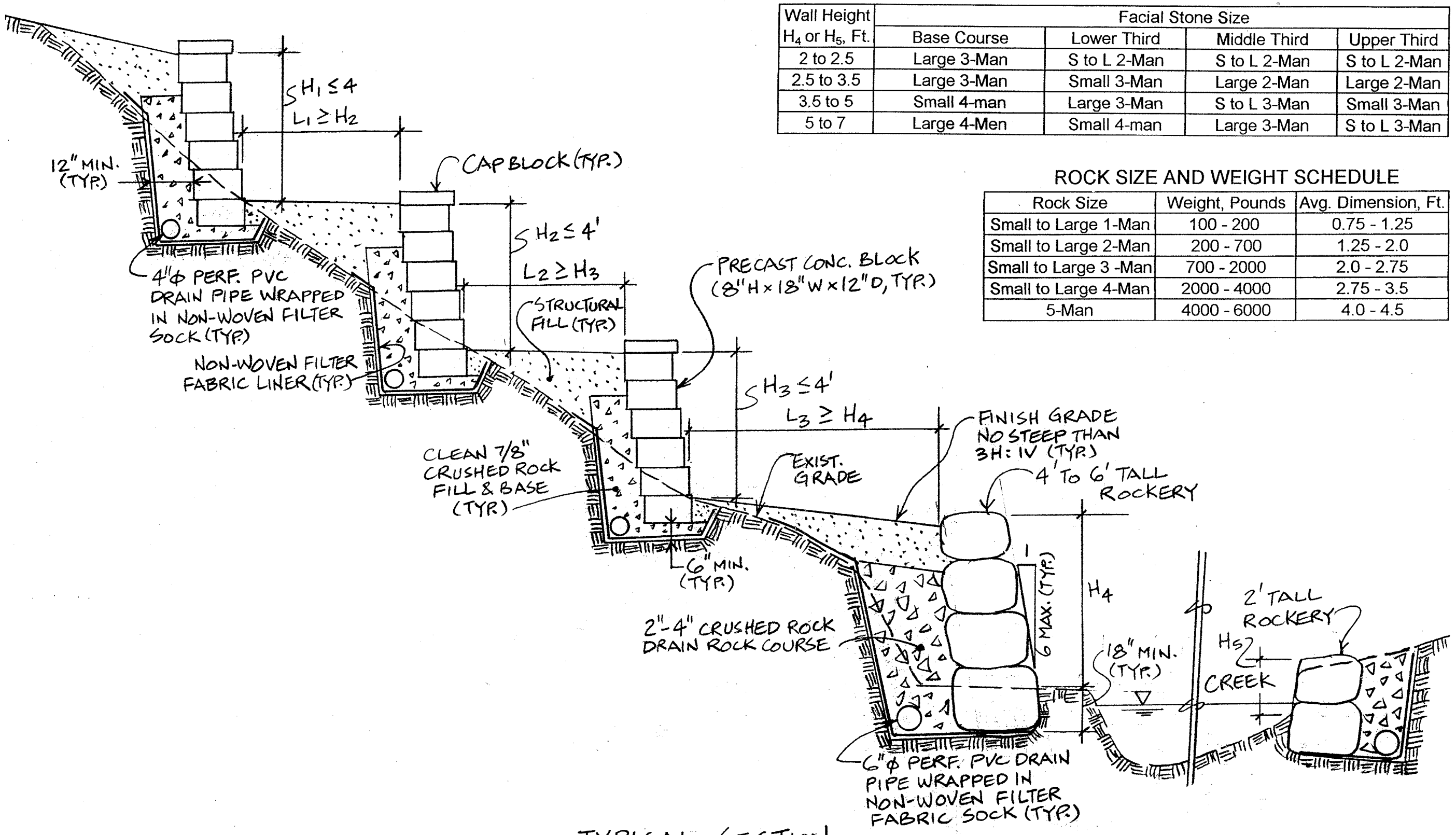
JOB NO. 8A073	DATE 7/11/2008	PLATE 2

ROCKERY FACIAL STONE SCHEDULE

Wall Height H_4 or H_5, Ft.	Facial Stone Size			
	Base Course	Lower Third	Middle Third	Upper Third
2 to 2.5	Large 3-Man	S to L 2-Man	S to L 2-Man	S to L 2-Man
2.5 to 3.5	Large 3-Man	Small 3-Man	Large 2-Man	Large 2-Man
3.5 to 5	Small 4-man	Large 3-Man	S to L 3-Man	Small 3-Man
5 to 7	Large 4-Men	Small 4-man	Large 3-Man	S to L 3-Man

ROCK SIZE AND WEIGHT SCHEDULE

Rock Size	Weight, Pounds	Avg. Dimension, Ft.
Small to Large 1-Man	100 - 200	0.75 - 1.25
Small to Large 2-Man	200 - 700	1.25 - 2.0
Small to Large 3 -Man	700 - 2000	2.0 - 2.75
Small to Large 4-Man	2000 - 4000	2.75 - 3.5
5-Man	4000 - 6000	4.0 - 4.5



TYPICAL SECTION

N.T.S.

TYPICAL SECTION - CREEK BANK STABILIZATION
IOAN MUNTEAN RESIDENCE
444 - 129TH PLACE NE
BELLEVUE, WASHINGTON
JOB NO. 8A073 DATE 4/16/2009 PLATE 3

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