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# CITY OF MERCER ISLAND

## COMMUNITY PLANNING & DEVELOPMENT

9611 SE 36TH STREET | MERCER ISLAND, WA 98040

PHONE: 206.275.7605 | [www.mercergov.org](http://www.mercergov.org)



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## STAFF REPORT

### CAO23-011 CRITICAL AREA REVIEW 2

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<b>Project No.:</b>	CAO23-011
<b>Description:</b>	A request for a Critical Area Review 2 for the demolition of an existing single-family residence and construction of a new approx. 4,000 square foot single-family residence on a property located within mapped geologically hazardous areas.
<b>Applicant / Owner:</b>	Jeffrey Almeter / Dorothy Strand
<b>Site Address:</b>	6950 SE Maker St, Mercer Island, WA 98040; Identified by King County Assessor tax parcel number 935090-0620.
<b>Zoning District:</b>	Single Family Residential (R-8.4)
<b>Staff Contact:</b>	Molly McGuire, Planner <a href="mailto:molly.mcguire@mercerisland.gov">molly.mcguire@mercerisland.gov</a> / (206) 275-7712
<b>Exhibits:</b>	<ol style="list-style-type: none"><li>1. Development Application, received by the City of Mercer Island on July 3, 2023</li><li>2. Revised Development Plan Set, August 29, 2023</li><li>3. Project Narrative, received July 4, 2023</li><li>4. Hazard Report, generated August 9, 2023</li><li>5. Geotechnical Engineering Study and Critical Areas Study prepared by Geotech Consultants, Inc., dated March 21, 2022 and received July 3, 2023</li><li>6. Review of Revised Plans Letter Addendum prepared by Geotech Consultants, Inc., dated June 6, 2023 and received July 3, 2023</li><li>7. Review of Planting Plan prepared by Superior NW Enterprises, dated February 14, 2023</li><li>8. Review of Retaining Wall Plan Impacts prepared by Superior NW Enterprises, dated August 24, 2023</li><li>9. City of Mercer Island Arborist Approval, received October 2, 2023</li><li>10. City of Mercer Island Geotech Approval, received July 10, 2023</li><li>11. City of Mercer Island Geotech Review Letter, received September 22, 2023</li><li>12. Critical Areas Disclosure and Notice on Title, received August 23, 2023 via email</li><li>13. City of Mercer Island CAO23-011 SUB1 Review Letter, sent August 18, 2023</li><li>14. Public Comments Received</li></ol>

- 14.1 Pamela Faulkner and Brigid Stackpool, received August 3, 2023 via email
  - 14.2 Dan Grove, received August 9 via email
  - 14.3 Jim Mattison, received August 9 via email
  - 14.4 Martin Snoey, received August 9 via email
  - 14.5 Dan Grove, received August 31, 2023 via email
  - 14.6 Martin Snoey, received August 31, 2023 via email
15. Applicant Response to Public Comments

**INTRODUCTION**

**I. Project Description**

The applicant has requested approval of a Critical Area Review 2 for the demolition of an existing single-family residence and construction of a new approx. 4,000 square foot single-family residence on a property located within mapped geologically hazardous areas.

The proposal consists of the following components:

- 1. A request to demolish the existing single-family residence and construct a new single-family residence subject to the standards of Mercer Island City Code (MICC) 19.07.160 Geologically hazardous areas.

**II. Site Description and Context**

- 1. The proposed activity is to occur at 6950 SE Maker St, Mercer Island, WA 98040. The property is designated Single Family Residential (zoned R-8.4). Adjacent properties are within the R-8.4 zone and contain residential uses. The subject property contains potential slide, steep slope, erosion, and seismic geologically hazardous areas.

**III. Terms Used in this Staff Report**

Term:	Refers to, unless otherwise specified:
Applicant	Jeffrey Almeter
Proposed development	Critical area review 2 for the construction of a single-family residence
Subject property	6950 SE Maker St, Mercer Island, WA 98040
City	City of Mercer Island
MICC	Mercer Island City Code
Code Official	Community Planning and Development Director City of Mercer Island or a duly authorized designee

1.

**Findings of Fact & Conclusions of Law**

**IV. Application Procedure**

- 1. The application for a Critical Area Review 2 was received by the City of Mercer Island on July 3, 2023. The application was determined to be complete on July 6, 2023.
- 2. Under MICC 19.15.030, Table A, applications for Critical Area Review 2 Permits must undergo Type III review. Type III reviews require notice of application (discussed below). A notice of



decision is issued once the project review is complete.

3. The City of Mercer Island provided public notice of application for this Critical Area Review 2 Permit, as set forth in MICC 19.15.090. The comment period for the public notice period lasted for 30 days, from July 10, 2023 to August 10, 2023. The following methods were used for the public notice of application:
  - 1) A mailing sent to neighboring property owners within 300 feet of the subject parcel.
  - 2) A sign posted on the subject parcel.
  - 3) A posting in the City of Mercer Island's weekly permit bulletin.
4. Six (6) public comments were received during and after the public comment period (**Exhibits 14.1 – 14.6**). The applicant provided written responses to the public comments (**Exhibit 15**).

#### **V. State Environmental Policy Act (SEPA)**

The proposal is categorically exempt from SEPA pursuant to WAC 197-11-800(1)(a).

#### **VI. Consistency with the Critical Areas Code and Land Development Code**

1. MICC 19.07.070(A) requires the applicant to disclose to the city the presence of critical areas on the development proposal site and any mapped or identifiable critical areas within the distance equal to the largest potential required buffer applicable to the development proposal on the development proposal site.
  - a. (B) The owner of any property containing critical areas and/or buffers on which a development proposal is submitted, except a public right-of-way or the site of a permanent public facility, shall file a notice approved by the city with the records and elections division of King County. The notice shall inform the public of the presence of critical areas, buffers and/or mitigation sites on the property, of the application of the city's critical areas code to the property and that limitations on actions in or affecting such critical areas and/or buffers may exist. The notice shall run with the land in perpetuity.
  - b. (C) The applicant shall submit proof to the city that the notice has been recorded prior to approval of a development proposal for the property or, in the case of subdivisions, short subdivisions, and binding site plans, at or before recording of the final subdivision, short subdivision, or binding site plan.
  - c. (D) Notices on title may be removed or amended, whichever is applicable, at a property owner's request, after approval by the city if it is documented that the information contained in an existing notice is no longer accurate because a critical area has changed, for example, in its type or location, or if the notice is proposed to be replaced with a notice containing updated information.

**Staff Analysis:** The applicant has provided a draft Notice on Title for Disclosure of Critical Areas (**Exhibit 12**). The Notice shall be recorded with King County prior to approval of the development proposal for the property, associated building permit number 2207-019, as included in the Conditions of Approval; therefore, this requirement is met.

2. MICC 19.07.090 describes the purpose and procedures by which the city will review and authorize development and verify consistency with this chapter.
  - a. Critical Area Review 2. The purpose of a critical area review 2 is to review critical area studies and mitigation plans in support of proposed buffer averaging and reduction of wetland and watercourse buffers.

- b. Review timing and sequence.
  - A. When development and/or activity within a wetland, watercourse, fish and wildlife habitat conservation area or buffer associated with these critical area types is proposed, a critical area review 2 is required to be reviewed and approved prior to construction authorization.
  - B. When development and/or activity is proposed on a site containing only geologically hazardous areas, an application has the option of either:
    - i. Applying for a critical area review 2 in advance of construction permits, using the procedures required for a Type III land use review; or
    - ii. Requesting consolidation of the review of geologically hazardous areas together with construction permit review.
  - C. When development and/or activity is proposed on a site containing geologically hazardous areas and on or more of the critical area types listed in subsection (B)(2)(a) of this section or the associated buffer of one of those critical areas, a critical area review 2 reviewing all critical areas is required to be reviewed and approved prior to construction authorization, using the procedures required for a Type III land use review.

**Staff Analysis:** The development is proposed on a site containing only geologically hazardous areas (**Exhibit 4**). The applicant applied for a critical area review 2 in advance of construction permits; therefore, the review timing and sequence requirements for this permit have been met.

- 3. MICC 19.07.100 lists requirements for mitigation sequencing. An applicant for a development proposal or activity shall implement the following sequential measures, listed below in order of preference, to avoid, minimize, and mitigate impacts to environmentally critical areas and associated buffers. Applicants shall document how each measure has been addressed before considering and incorporating the next measure in the sequence:
  - a. Avoiding the impact altogether by not taking a certain action or parts of an action. The applicant shall consider reasonable, affirmative steps and make best efforts to avoid critical area impacts. However, avoidance shall not be construed to mean mandatory withdrawal or denial of the development proposal or activity if the proposal or activity is an allowed, permitted, or conditional use in this title. In determining the extent to which the proposal should be redesigned to avoid the impact, the code official may consider the purpose, effectiveness, engineering feasibility, commercial availability of technology, best management practices, safety and cost of the proposal and identified changes to the proposal. Development proposals should seek to avoid, minimize and mitigate overall impacts based on the functions and values of all of the relevant critical areas and based on the recommendations of a critical area study. If impacts cannot be avoided through redesign, use of a setback deviation pursuant to section 19.06.110(C), or because of site conditions or project requirements, the applicant shall then proceed with the sequence of steps in subsections B through E of this section;
  - b. Minimizing impacts by limiting the degree or magnitude of the action and its implementation, using a setback deviation pursuant to section 19.06.110(C), using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;
  - c. Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
  - d. Reducing or eliminating the impact over time by preservation and maintenance operations

during the life of the action;

- e. Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or
- f. Monitoring the impact and taking appropriate corrective measures to maintain the integrity of compensating measures.

**Staff Analysis:** The applicant submitted a geotechnical engineering study and critical area study (**Exhibit 5**) that determines that the impact could not be avoided as the whole property is located within geologically hazardous areas. The study finds that, provided the recommendations in the study are followed, the planned alterations will render the development as safe as if it were not located in a geologically hazardous area and will not adversely impact critical areas on adjacent properties. The applicant also submitted a letter documenting geotechnical review of the revised plans (**Exhibit 6**) which states that the plans have incorporated the recommendations for shoring, foundations, and permanent stability; therefore, mitigation sequence subsection B has been demonstrated to be met.

- 4. MICC 19.07.110 lists requirements for a critical area study. A critical area study is required when a development proposal will result in an alteration to one or more critical area buffers or when required to determine the potential impact to a critical area. The critical area study may be waived or modified if the applicant demonstrates that the development proposal will not have an impact on the critical area or its buffer in a manner contrary to the purposes and requirements of this chapter.

**Staff Analysis:** The applicant submitted a geotechnical engineering study and critical area study (**Exhibit 5**) that addresses all of the requirements for a critical area study in MICC 19.07.110; therefore, this requirement is met.

- 5. MICC 19.07.160 lists standards for development on sites containing geologically hazardous areas.
  - A. Geologically hazardous areas are lands that are susceptible to erosion, landslides, seismic events, or other factors as identified by WAC 365-190-120. These areas may not be suited for development activities because they may pose a threat to public health and safety. Areas susceptible to one or more of the following types of hazards shall be designated as geologically hazardous areas: landslide hazard areas, seismic hazard areas, and erosion hazard areas.

**Staff Analysis:** The subject property contains landslide, seismic, and erosion hazard areas (**Exhibit 4**). A geotechnical engineering study and critical area study was submitted showing that the proposed development has incorporated all geotechnical recommendations so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe.

- B. Alteration within geologically hazardous areas or associated buffers is required to meet the standards in this section, unless the scope of work is exempt pursuant to section 19.07.120, exemptions, or a critical area review 1 approval has been obtained pursuant to section 19.07.090(A).
  - 1. When an alteration within a landslide hazard area, seismic hazard area or buffer associated with those hazards is proposed, the applicant must submit a critical area study concluding that the proposal can effectively mitigate risks of the hazard. The study

shall recommend appropriate design and development measures to mitigate such hazards. The code official may waive the requirement for a critical area study and the requirements of subsections (B)(2) and (B)(3) of this section when he or she determines that the proposed development is minor in nature and will not increase the risk of landslide, erosion, or harm from seismic activity, or that the development site does not meet the definition of a geologically hazardous area.

**Staff Analysis:** The applicant submitted a geotechnical engineering study and critical area study (**Exhibit 5**) and plan review addendum (**Exhibit 6**) that states that the proposed development incorporates all recommendations to render the site safe and will not increase the risk of landslide, erosion, or harm from seismic activity. The geotechnical engineering study and critical area study were reviewed and approved by the City of Mercer Island's third-party geotechnical reviewer Michele Lorilla, PE (**Exhibits 10, 11**); therefore, this requirement is met.

2. Alteration of landslide hazard areas and seismic hazard areas and associated buffers may occur if the critical area study documents find that the proposed alteration:
  - a. Will not adversely impact other critical areas;
  - b. Will not adversely impact the subject property or adjacent properties;
  - c. Will mitigate impacts to the geologically hazardous area consistent with best available science to the maximum extent reasonably possible such that the site is determined to be safe; and
  - d. Includes the landscaping of all disturbed areas outside of building footprints and installation of hardscape prior to final inspection.

**Staff Analysis:** The geotechnical engineering study and critical area study (**Exhibit 5**) and plan review addendum (**Exhibit 6**) state that the proposed development has been designed so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe; therefore, this requirement is met.

3. Alteration of landslide hazard areas, seismic hazard areas and associated buffers may occur if the conditions listed in subsection (B)(2) of this section are satisfied and the geotechnical professional provides a statement of risk matching one of the following:
  - a. An evaluation of site-specific subsurface conditions demonstrates that the proposed development is not located in a landslide hazard area or seismic hazard area;
  - b. The landslide hazard area or seismic hazard area will be modified or the development has been designed so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe;
  - c. Construction practices are proposed for the alteration that would render the development as safe as if it were not located in a geologically hazardous area and do not adversely impact adjacent properties; or
  - d. The development is so minor as not to pose a threat to the public health, safety and welfare.

**Staff Analysis:** The geotechnical engineering study and critical area study (**Exhibit 5**) and plan review addendum (**Exhibit 6**) state that the proposed development has been designed so that the risk to the site and adjacent property is eliminated or mitigated

such that the site is determined to be safe; therefore, this requirement is met.

- C. Development is allowed within landslide hazard areas and associated buffers, when the following standards are met:
1. A critical area study shall be required for any alteration of a landslide hazard area or associated buffer;
  2. Buffers shall be applied as follows. When more than one condition applies to a site, the largest buffer shall be applied:
    - a. Buffer widths shall be equal to the height of a steep slope, but not more than 75 feet, and applied to the top and toe of slopes;
    - b. Shallow landslide hazard areas shall have minimum 25-foot buffers applied in all directions; and
    - c. Deep-seated landslide hazard areas shall have 75-foot buffers applied in all directions.

**Staff Analysis:** The geotechnical engineering study and critical area study (**Exhibit 5**) and plan review addendum (**Exhibit 6**) state that the proposed development has been designed so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe. The geotechnical engineering study and critical area study were reviewed and approved by the City of Mercer Island's third-party geotechnical reviewer Michele Lorilla, PE (**Exhibits 10, 11**); therefore, this requirement is met.

- D. When development is proposed within a seismic hazard area:
1. A critical area study shall be required and shall include an evaluation by a qualified professional for seismic engineering and design, a determination of the magnitude of seismic settling that could occur during a seismic event, and a demonstration that the risk associated with the proposed alteration is within acceptable limits or that appropriate construction methods are provided to mitigate the risk of seismic settlement such that there will be no significant impact to life, health, safety, and property.
  2. Seismic hazard areas shall be identified by a qualified professional who references and interprets information in the U.S. Geological Survey Active Faults Database, performs on-site evaluations, or applies other techniques according to best available science.
  3. When development is proposed on a site with an active fault, the follow provisions shall apply:
    - a. A 50-foot minimum buffer shall be applied from latest Quaternary, Holocene, or historical fault rupture traces as identified by the United States Geological Survey or Washington Geological Survey map databases or by site investigations by licensed geologic professionals with specialized knowledge of fault trenching studies; or
    - b. Mitigation sequencing shall be incorporated into the development proposal as recommended based on geotechnical analysis by a qualified professional to prevent increased risk of harm to life and/or property.

**Staff Analysis:** The geotechnical engineering study and critical area study (**Exhibit 5**) and plan review addendum (**Exhibit 6**) state that the proposed development has been designed so that the risk to the site and adjacent property is eliminated or mitigated such that the site is

determined to be safe. The critical area study contains mitigation sequencing that minimizes the impact to the hazard area. The geotechnical engineering study and critical area study were reviewed and approved by the City of Mercer Island's third-party geotechnical reviewer Michele Lorilla, PE (**Exhibits 10, 11**); therefore, this requirement is met.

E. When development is proposed within an erosion hazard area:

1. All development proposals shall demonstrate compliance with chapter 15.09, storm water management program.
2. No development or activity within an erosion hazard area may create a net increase in geological instability on or off site.

**Staff Analysis:** The geotechnical engineering study and critical area study (**Exhibit 5**) and plan review addendum (**Exhibit 6**) state that the proposed development has been designed so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe. The proposed development was reviewed and approved by Engineering under the associated Building Permit (2207-019) for compliance with chapter 15.09, storm water management program and the City of Mercer Island's third-party geotechnical reviewer Michele Lorilla, PE (**Exhibits 10, 11**); therefore, this requirement is met.

#### CONDITIONS OF APPROVAL

1. The project proposal shall be in substantial conformance with **Exhibit 2** and all applicable development standards contained within Mercer Island City Code (MICC) Chapter 19.07.
2. The applicant is responsible for documenting any required changes in the project proposal due to conditions imposed by any applicable local, state and federal government agencies.
3. The Disclosure and Notice on Title in **Exhibit 12** shall be recorded with the King County Recorder's Office prior to approval of the development proposal for the property.
4. Construction or substantial progress toward construction of a development for which a permit has been granted must be undertaken within three years after the approval of the permit or the permit shall terminate. The code official shall determine if substantial progress has been made.

#### DEVELOPMENT REGULATION COMPLIANCE – DISCLOSURE

1. The applicant is responsible for obtaining any required permits or approvals from the appropriate Local, State, and Federal Agencies.
2. All required permits must be obtained prior to the commencement of construction.

## DECISION

Based upon the above noted Findings of Fact and Conclusions of Law, Critical Area Review 2 Permit application CAO23-011, as depicted in **Exhibit 2**, is hereby **APPROVED**. This decision is final, unless appealed in writing consistent with adopted appeal procedures, MICC 19.15.130(A), and all other applicable appeal regulations.

Approved this 9<sup>th</sup> day of October, 2023



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*Molly McGuire*  
**Planner**  
**Community Planning & Development**  
**City of Mercer Island**

# CITY OF MERCER ISLAND

## COMMUNITY PLANNING & DEVELOPMENT

9611 SE 36TH STREET | MERCER ISLAND, WA 98040

PHONE: 206.275.7605 | [www.mercerisland.gov](http://www.mercerisland.gov)



### CITY USE ONLY

PROJECT#	RECEIPT #	FEE

Date Received:

Received By:

### DEVELOPMENT APPLICATION

STREET ADDRESS/LOCATION 6950 SE MAKER ST		ZONE R-8.4
COUNTY ASSESSOR PARCEL #'S 935090-0620		PARCEL SIZE (SQ. FT.) 8,750
PROPERTY OWNER (required) DOROTHY STRAND	ADDRESS (required) 6950 SE MAKER ST MERCER ISLAND	CELL/OFFICE (required) 425.802.1455 E-MAIL (required) kcra2005@yahoo.com
PROJECT CONTACT NAME JEFFREY ALMETER	ADDRESS 9506 13th Ave NW SEATTLE, WA 98117	CELL/OFFICE 303.903.1783 E-MAIL JEFFREY.ALMETER@GMAIL.COM
TENANT NAME	ADDRESS	CELL PHONE  E-MAIL

**DECLARATION:** I HEREBY STATE THAT I AM THE OWNER OF THE SUBJECT PROPERTY OR I HAVE BEEN AUTHORIZED BY THE OWNER(S) OF THE SUBJECT PROPERTY TO REPRESENT THIS APPLICATION, AND THAT THE INFORMATION FURNISHED BY ME IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE.

  
SIGNATURE

2 JULY 2023

DATE

**PROPOSED APPLICATION(S) AND CLEAR DESCRIPTION OF PROPOSAL** (PLEASE USE ADDITIONAL PAPER IF NEEDED):

CRITICAL AREA REVIEW 2 FOR DEMO / REBUILD OF NEW SINGLE FAMILY RESIDENCE AND ATTACHED ADU.

CURRENTLY IN REVIEW UNDER PERMITS 2207-019, ADU23-006

ATTACH RESPONSE TO DECISION CRITERIA IF APPLICABLE

**CHECK TYPE OF LAND USE APPROVAL REQUESTED:**

CRITICAL AREAS	ENVIRONMENTAL REVIEW (SEPA)	SUBDIVISION
<input type="checkbox"/> Critical Area Review 1	<input type="checkbox"/> SEPA Review	<input type="checkbox"/> Short Plat- Preliminary
<input checked="" type="checkbox"/> Critical Area Review 2	<input type="checkbox"/> Environmental Impact Statement	<input type="checkbox"/> Short Plat- Alteration
		<input type="checkbox"/> Short Plat- Final Plat
DESIGN REVIEW		<input type="checkbox"/> Long Plat- Preliminary
<input type="checkbox"/> Design Review – Signs	LEGISLATIVE	<input type="checkbox"/> Long Plat- Alteration
<input type="checkbox"/> Design Review – Code Official	<input type="checkbox"/> Code Amendment	<input type="checkbox"/> Long Plat- Final Plat
<input type="checkbox"/> Design Commission Study Session	<input type="checkbox"/> Comprehensive Plan Docket Application	<input type="checkbox"/> Lot Line Revision
<input type="checkbox"/> Design Commission Review – Exterior Alteration	<input type="checkbox"/> Comprehensive Plan Application (If Docketed)	
<input type="checkbox"/> Design Commission Review – Major New Construction	<input type="checkbox"/> Rezone	
	OTHER LAND USE	
	<input type="checkbox"/> Accessory Dwelling Unit	
	<input type="checkbox"/> Code Interpretation Request	
DEVIATIONS	<input type="checkbox"/> Conditional Use (CUP)	WIRELESS COMMUNICATION FACILITIES
<input type="checkbox"/> Deviations to Antenna Standards – Code Official	<input type="checkbox"/> Noise Exception Type I - IV	<input type="checkbox"/> New Wireless Communication Facility
<input type="checkbox"/> Deviations to Antenna Standards – Design Commission	<input type="checkbox"/> Other Permit/Services Not Listed	<input type="checkbox"/> Wireless Communications Facilities- 6409 Exemption
<input type="checkbox"/> Public Agency Exception	SHORELINE MANAGEMENT	<input type="checkbox"/> Small Cell Deployment
<input type="checkbox"/> Reasonable Use Exception	<input type="checkbox"/> Shoreline Exemption	<input type="checkbox"/> Height Variance
<input type="checkbox"/> Variance	<input type="checkbox"/> Shoreline Substantial Development Permit	
<input type="checkbox"/> Seasonal Development Limitation Waiver – Wet Season Construction Approval	<input type="checkbox"/> Shoreline Variance	
	<input type="checkbox"/> Shoreline Conditional Use Permit	
	<input type="checkbox"/> Shoreline Permit Revision	



# ABBREVIATIONS:

ABV	ABOVE
AFF	ABOVE FINISHED FLOOR
BLW	BELOW
BOT	BOTTOM
BOW	BOTTOM OF WALL
CAB	CABINET
CL	CENTERLINE
CONC	CONCRETE
CONT	CONTINUOUS
CP	CENTERPOINT
DET	DETAIL
DIAM	DIAMETER
DIM	DIMENSION
DR	DOOR
DS	DOWNSPOUT
D/W	DISHWASHER
EA	EACH
EK	EXISTING
EXT	EXTERIOR
FOC	FACE OF CONCRETE
FOW	FACE OF WALL
FN GRDE	FINISHED GRADE
FNDN	FOUNDATION
FLR	FLOOR
FR	FIREPLACE
GA	GAUGE
GWB	GYPSUM WALL BOARD
HB	HOSE BIBB
HGT	HEIGHT
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIOR
LV	LOW VOLTAGE
MTL	METAL
MFR	MANUFACTURER
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NFC	NOT FOR CONSTRUCTION
OC	ON CENTER
PL	PROPERTY LINE
RAD	RADIUS
RE	REFER TO
SIM	SIMILAR
TBD	TO BE DETERMINED
TG	TEMPERED GLASS
T&G	TONGUE & GROOVE
TOW	TOP OF WALL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERIF	VERIFY IN FIELD
WD	WOOD
WDW	WINDOW

# DUTY OF COOPERATION:

RELEASE + ACCEPTANCE OF THESE DOCUMENTS INDICATES COOPERATION AMONG THE OWNER, THE CONTRACTOR, + JEFFREY ALMETER. ANY ERRORS, OMISSIONS, OR DISCREPANCIES DISCOVERED BY THE USE OF THESE DOCUMENTS SHALL BE REPORTED IMMEDIATELY TO JEFFREY ALMETER. FAILURE TO DO SO SHALL RELIEVE JEFFREY ALMETER FROM ANY RESPONSIBILITY OF THE CONSEQUENCES.

ANY DEVIATIONS FROM THESE DOCUMENTS WITHOUT THE CONSENT OF JEFFREY ALMETER IS UNAUTHORIZED. FAILURE TO OBSERVE THESE PROCEDURES SHALL RELIEVE JEFFREY ALMETER OF RESPONSIBILITY FOR ALL CONSEQUENCES ARISING OUT OF SUCH ACTIONS.

# PLAN LEGEND:

	EXISTING WALL TO REMAIN
	NEW FULL-HEIGHT WALL
	NEW FULL-HEIGHT CONCRETE WALL
	PARTIAL-HEIGHT WALL
	PROPERTY LINE
	BUILDING / STRUCTURE ABOVE
	BUILDING / STRUCTURE BELOW
	CENTERLINE
	AREA OF DRAWING REVISION
	ELEVATION MARKER
	SECTION MARKER

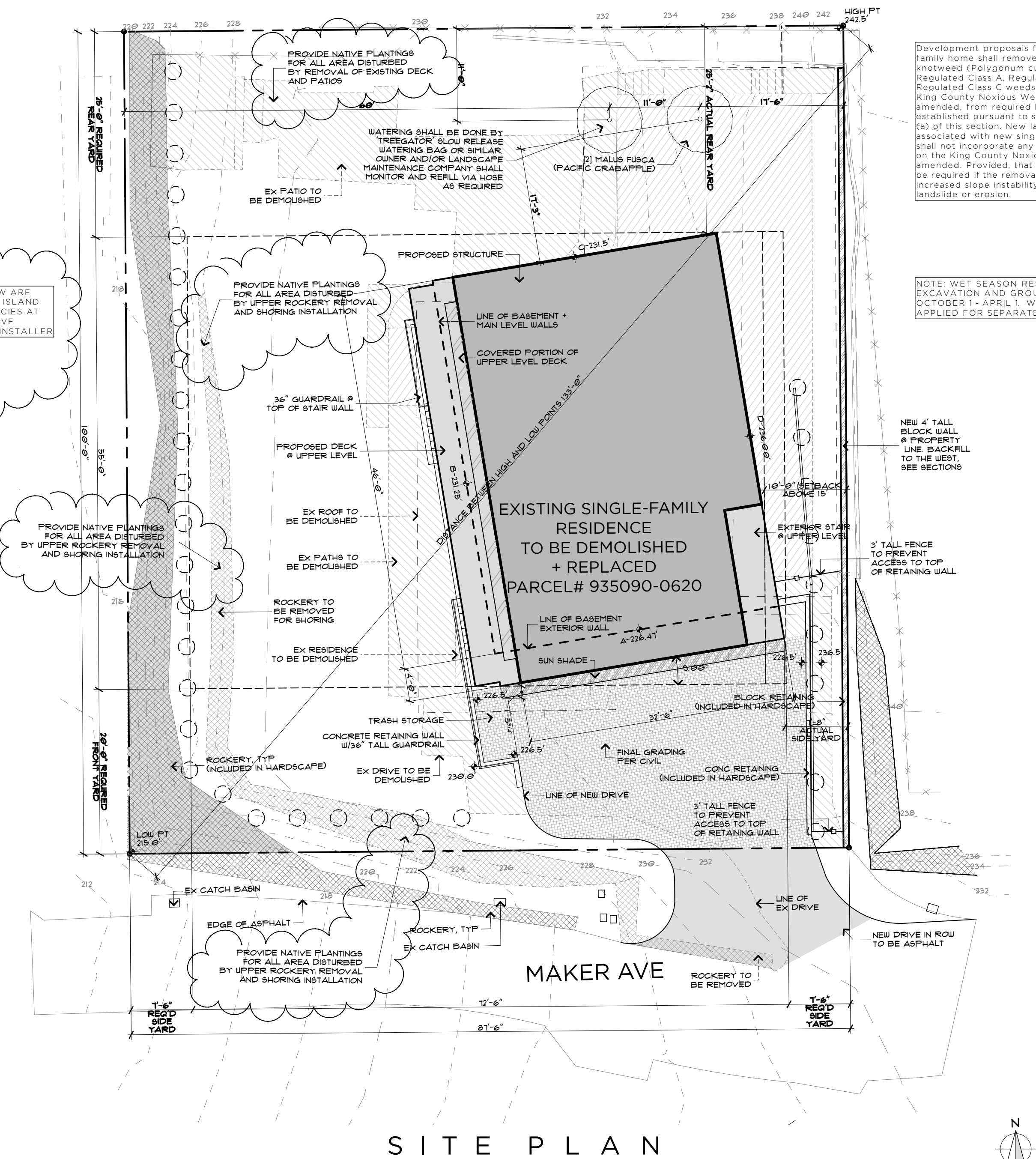
# GENERAL NOTES:

- DO NOT SCALE DRAWINGS.
- THIS PROJECT SHALL COMPLY WITH ALL GOVERNING REGULATIONS, ORDINANCES, BUILDING CODES, OR COVENANTS OF THE AREA IN WHICH IT IS BUILT.
- APPROVAL BY AN INSPECTOR DOES NOT CONSTITUTE AUTHORITY TO DEVIATE FROM THE DRAWINGS OR SPECIFICATIONS.
- THE CONTRACTOR SHALL SCHEDULE WALK-THROUGHS AT EACH OF BELOW NOTED INTERVALS.
  - PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
  - PRIOR TO THE COMMENCEMENT OF ALL MECHANICAL + ELECTRICAL WORK.
- PROVIDE ALL NECESSARY BARRICADES, WARNING SIGNS, + DEVICES TO PROTECT PUBLIC + CONSTRUCTION PERSONNEL DURING CONSTRUCTION.
- MAINTAIN ALL REQUIRED ACCESS + EGRESS DURING CONSTRUCTION.

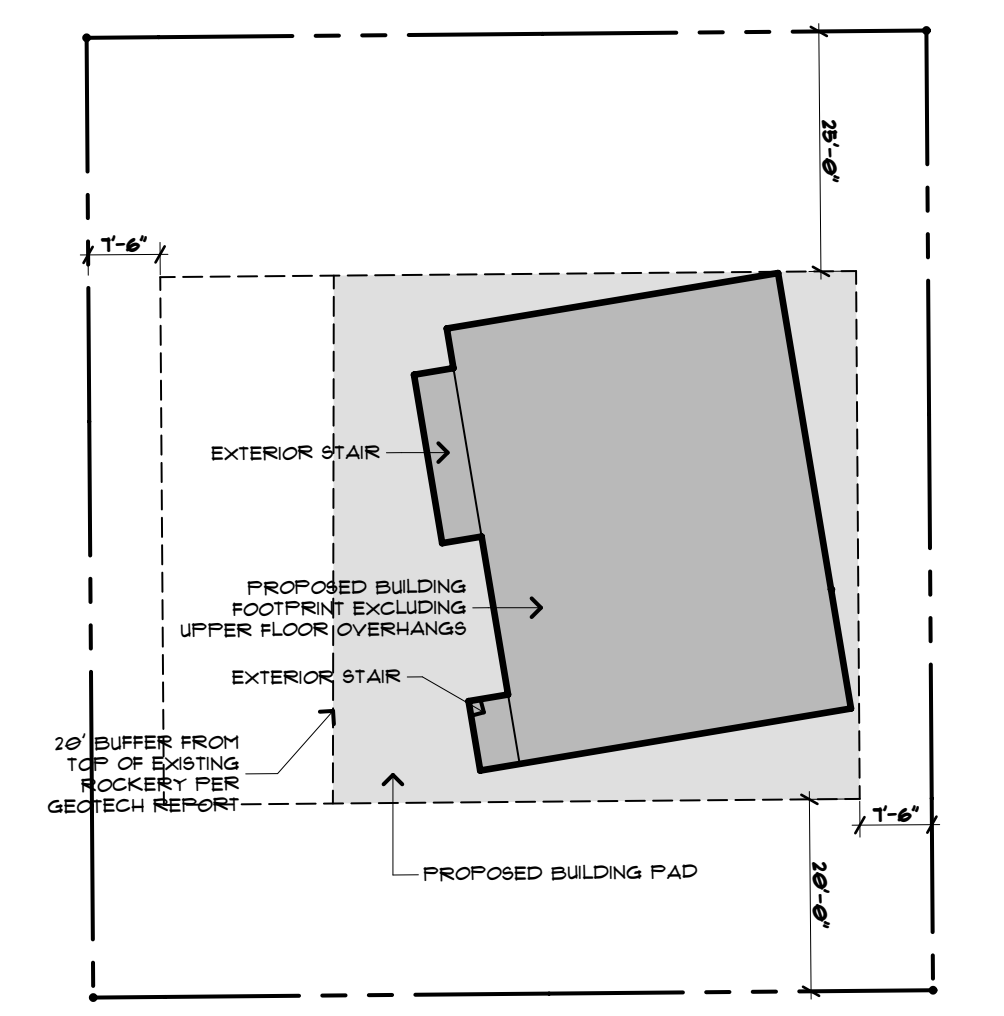
- NOTE: NATIVE PLANTING OPTIONS LISTED BELOW ARE FROM A LIST GENERATED BY 'PROTECT MERCER ISLAND PARKS' WEBSITE. CONSULTATION FOR BEST SPECIES AT THIS LOCATION AND INSTALLATION OF ALL NATIVE PLANTINGS SHALL BE BY A LOCAL LANDSCAPE INSTALLER.
- Baldhip rose
  - Beaked hazelnut/Filbert
  - Big leaf maple
  - Birch
  - Black cottonwood
  - Bracken fern
  - Douglas Or
  - False Solomon's seal
  - Grand Or
  - Horsetail
  - Indian plum
  - Large-leaved avens
  - Low Oregon grape
  - Nootka rose
  - Orange trumpet honeysuckle
  - Oregon ash
  - Red alder
  - Red towering currant
  - Red twig dogwood
  - Rush
  - Salal
  - Salmonberry
  - Shore pine
  - Siberian miner's lettuce
  - Snowberry
  - Sword fern
  - Tall Oregon grape
  - Thimbleberry
  - Trailing blackberry
  - Trillium
  - Vine maple
  - Western red cedar
  - Willow

# MERCER RESIDENCE

## 6950 SE MAKER ST, MERCER ISLAND, WA 98040



SITE PLAN  
SCALE: 1" = 10'



BLDG PAD  
SCALE: 1" = 20'

# LOT COVERAGE / IMPERVIOUS CALCS:

LOT AREA	8,750 FT <sup>2</sup>
MAXIMUM ALLOWABLE IMPERVIOUS COVERAGE:	(35%) 3,062.50 FT <sup>2</sup>
LOT SLOPE CALCULATION:	20.1% SLOPE
HIGH POINT 242.5	
LOW POINT 215.0	
HORIZONTAL DISTANCE 133'	
EXISTING ROOF IMPERVIOUS SURFACE:	3,010 FT <sup>2</sup>
EXISTING DRIVES + WALKS IMPERVIOUS SURFACE:	1,970 FT <sup>2</sup>
EXISTING IMPERVIOUS:	4,980 FT <sup>2</sup>
EXISTING IMPERVIOUS TO BE REMOVED:	4,980 FT <sup>2</sup>
EXISTING IMPERVIOUS SURFACE TO REMAIN:	0 FT <sup>2</sup>
PROPOSED STRUCTURE IMPERVIOUS (INC UPPER DECK):	1,897 FT <sup>2</sup>
PROPOSED DRIVES IMPERVIOUS:	802 FT <sup>2</sup>
PROPOSED HARDSCAPE:	82 FT <sup>2</sup>
TOTAL PROPOSED IMPERVIOUS:	2,781 FT <sup>2</sup>
TOTAL IMPERVIOUS SURFACE UPON COMPLETION:	<b>(31.8%) 2,781 FT<sup>2</sup></b>
PROPOSED LANDSCAPE AREA (REMAINDER OF LOT (68.2%):	5,969 FT <sup>2</sup>
EXCEPT AREAS OF EXISTING ROCKERY:	

# HARDSCAPE CALCULATIONS:

LOT AREA	8,750 FT <sup>2</sup>
MAXIMUM ALLOWABLE HARDSCAPE AREA:	(9%) 787.5 FT <sup>2</sup>
EXISTING ROCKERY AT WESTERN PROPERTY:	496 FT <sup>2</sup>
PROPOSED TRASH AREA, STEPS ON GRADE AT SW CORNER, STEPS ON GRADE AT NW CORNER, PATH BETWEEN STEPS (INCLUDING RETAINING WALLS):	91 FT <sup>2</sup>
PROPOSED CONCRETE RETAINING AT DRIVEWAY:	17 FT <sup>2</sup>
PROPOSED BLOCK WALL AT EAST PROPERTY:	63 FT <sup>2</sup>
TOTAL PROPOSED HARDSCAPE:	<b>(7.6%) 667 FT<sup>2</sup></b>

# FLOOR AREAS:

LOT AREA:	8,750 FT <sup>2</sup>
MAXIMUM ALLOWABLE GFA:	(40%) 3,500 FT <sup>2</sup>
ADDITIONAL GFA FOR ADU:	(5%) 437.5 FT <sup>2</sup>
TOTAL ALLOWABLE GFA W/ ADU:	(45%) 3,937.5 FT <sup>2</sup>
MAIN RESIDENCE BASEMENT GFA:	(528 FT <sup>2</sup> )
(INCLUDES STAIRS TO MAIN LEVEL, 81 FT <sup>2</sup> )	
ELEVATOR SHAFT @ BASEMENT ONLY:	[20 FT <sup>2</sup> ]
GARAGE GFA:	[476 FT <sup>2</sup> ]
BASEMENT ADU GFA:	[586 FT <sup>2</sup> ]
BASEMENT SUBTOTAL:	[1,610 FT <sup>2</sup> ]
(937.5 FT <sup>2</sup> EXCLUDED SEE BELOW):	
FIRST FLOOR GFA:	[649 FT <sup>2</sup> ]
(EXCLUDE STAIR PER 19.02.020.D.2.c):	
(EXCLUDE ELEVATOR SHAFT):	[20 FT <sup>2</sup> ]
SECOND FLOOR GFA:	[1,529 FT <sup>2</sup> ]
(EXCLUDE ELEVATOR SHAFT):	[20 FT <sup>2</sup> ]
SECOND FLOOR COVERED DECK GFA:	[66 FT <sup>2</sup> ]
TOTAL GROSS FLOOR AREA:	(44.7%) 3,916 FT <sup>2</sup>

# BASEMENT FLOOR EXCLUSION CALCS:

WALL SEGMENT	LENGTH	COVERAGE %	RESULT
A	35'	0%	0'
B	46'	59.37%	27'-3"
C	35'	60.42%	21'-1"
D	46'	100%	46'-0"
TOTALS	162'		94'-4"

1,610 FT<sup>2</sup> X 58.23% = 937.5 FT<sup>2</sup> EXCLUDED  
1,610 FT<sup>2</sup> - 937.5 FT<sup>2</sup> = 672.5 FT<sup>2</sup>

# AVERAGE BUILDING ELEVATION CALCS:

SEGMENT "A" ELEVATION:	226.47'
SEGMENT "A" LENGTH:	35'
SEGMENT "A" ELEVATION x LENGTH:	7,926.45 FT <sup>2</sup>
SEGMENT "B" ELEVATION:	231.25'
SEGMENT "B" LENGTH:	46'
SEGMENT "B" ELEVATION x LENGTH:	10,637.5 FT <sup>2</sup>
SEGMENT "C" ELEVATION:	231.50'
SEGMENT "C" LENGTH:	35'
SEGMENT "C" ELEVATION x LENGTH:	8,102.50 FT <sup>2</sup>
SEGMENT "D" ELEVATION:	236.00'
SEGMENT "D" LENGTH:	46'
SEGMENT "D" ELEVATION x LENGTH:	10,856.00 FT <sup>2</sup>
TOTAL OF AGGREGATE ELEVATION:	37,522.45'
TOTAL OF SEGMENT LENGTHS:	162'
AVERAGE BUILDING ELEVATION:	231.62'

# PROJECT INFO:

PROJECT ADDRESS:  
6950 SE MAKER ST  
MERCER ISLAND, WA 98040

SCOPE OF WORK:  
NEW SINGLE FAMILY RESIDENCE

ZONE:  
R-8.4

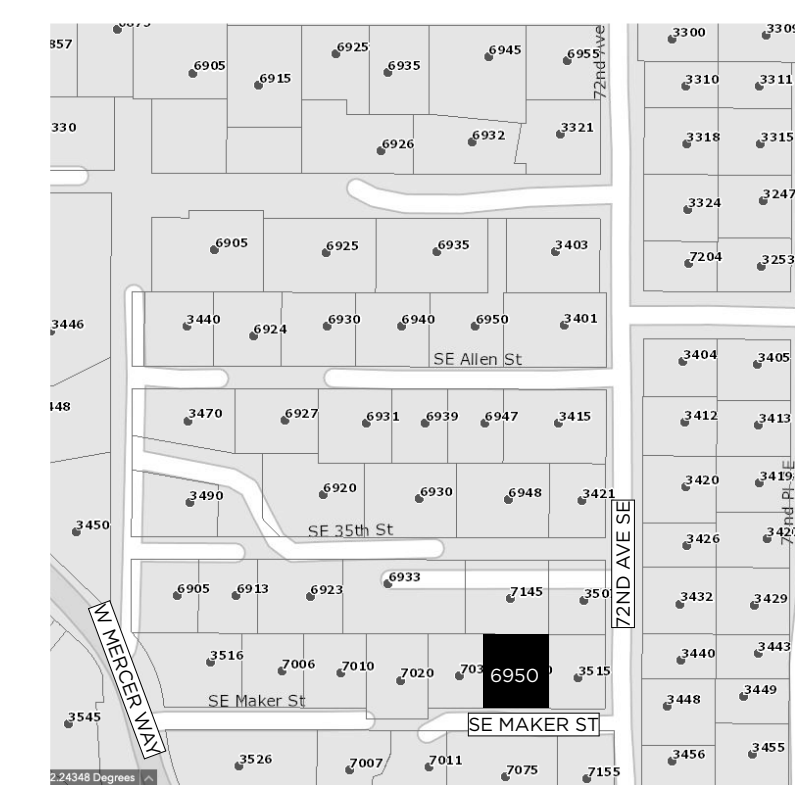
LEGAL DESCRIPTION:  
WHITE BROS 1ST TO EAST SEATTLE 46-47-48 & W/ 42 OF 49. BLOCK 3, LOT 46 TO 49

ACCESSOR'S PARCEL NUMBER:  
935090-0620

BUILDING CODE + OCCUPANCY:  
2018 IRC, IBC, IFC, WSEC. 2018 IMC, IFGC, UPC WILL BE DEFERRED PERMITS BY INDIVIDUAL TRADES  
R-3 SINGLE FAMILY RESIDENTIAL (RESIDENCE)  
U STORAGE (GARAGE, STORAGE)

TYPE OF CONSTRUCTION:  
TYPE-VB SPRINKLERED - NFPA 13D  
PROVIDE MONITORED 'CHAPER 29' NFPA 72 FIRE ALARM SYSTEM

# VICINITY MAP:



# PROJECT TEAM:

CLIENT:  
MERCER RESIDENCE  
6950 SE MAKER ST  
MERCER ISLAND, WA 98040

ARCHITECT / APPLICANT:  
JEFFREY ALMETER  
9506 15TH AVE NW  
SEATTLE, WA 98117  
303.903.7783

SURVEYOR:  
TERRANE  
10801 MAIN STREET SUITE 102  
BELLEVUE, WA 98004  
425.458.4488

GEOTECHNICAL ENGINEER:  
GEOTECH CONSULTANTS - ADAM MOYER  
2401 10TH AVE E  
SEATTLE, WA 98102  
425.747.5618

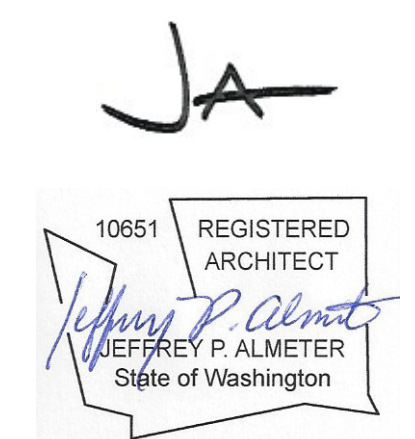
CIVIL ENGINEER:  
GOLDSMITH ENGINEERING - MARK BARBER  
11400 SE 8TH ST, SUITE 450  
BELLEVUE, WA 98004  
425.462.1080

STRUCTURAL ENGINEER:  
DS ENGINEERING - DON SHIN  
3111 14TH PLACE SE  
MILL CREEK, WA 98012  
425.338.4776

CONTRACTOR:  
TBD

# SHEET INDEX:

A10	PROJECT INFORMATION
A11	ENERGY FORMS
	SURVEY
S#1	SHORING PLAN AND SECTIONS
S#2	SHORING NOTES + DETAILS
S#3	PERMANENT SHORING PLAN
C-1	TESS PLAN
C-2	GRADING + DRAINAGE - UTILITY PLAN
C-3	PROFILES AND SECTIONS
C-4	DETAILS AND NOTES
A2.0	BASEMENT FLOOR PLAN
A2.1	FIRST FLOOR PLAN
A2.2	SECOND FLOOR PLAN
A2.3	ROOF PLAN
A3.1	BUILDING ELEVATIONS
A3.2	BUILDING SECTIONS
S10	GENERAL STRUCTURAL NOTES + DETAILS
S11	SECTIONS + DETAILS
S12	SECTIONS + DETAILS (1)
S2.0	FOUNDATION + FIRST FLOOR FRAMING PLANS
S2.2	SECOND FLOOR + ROOF FRAMING PLANS



MERCER RESIDENCE  
6950 SE MAKER ST  
MERCER ISLAND, WA

PROJECT INFORMATION

RELEASE  
21 MARCH 2022  
PERMIT CORRECTIONS  
20 FEBRUARY 2023  
PERMIT CORRECTIONS  
2 JUNE 2023



**LEGAL DESCRIPTION**

(PER PERSONAL REPRESENTATIVE DEED RECORDING# 20210415002461)  
 LOTS 46, 47, 48 AND THE WEST ONE-HALF OF LOT 49 IN BLOCK 3 OF WHITE BROTHERS FIRST ADDITION TO EAST SEATTLE, AS PER PLAT RECORDED IN VOLUME 4 OF PLATS, PAGE 100, RECORDS OF KING COUNTY AUDITOR;  
 SITUATE IN THE CITY OF MERCER ISLAND, COUNTY OF KING, STATE OF WASHINGTON.

**BASIS OF BEARINGS**

HELD N 88°48'41" W BETWEEN MONUMENTS FOUND ON THE CENTERLINE OF SE 32ND ST PER GPS OBSERVATIONS, NAD83/2011 WASHINGTON STATE PLANE, NORTH ZONE.

**REFERENCES**

R1. RECORD OF SURVEY, VOL. 133, PG. 28.  
 R2. RECORD OF SURVEY, VOL. 7, PG. 171.  
 R3. PLAT OF WHITE & NOBLES FIRST ADD., REC. NO. 1889050232489, RECORDS OF KING COUNTY, WASHINGTON.

**VERTICAL DATUM**

NAVD88, PER GPS OBSERVATIONS.

**SURVEYOR'S NOTES**

1. THE TOPOGRAPHIC SURVEY SHOWN HEREON WAS PERFORMED IN MAY OF 2021. THE FIELD DATA WAS COLLECTED AND RECORDED ON MAGNETIC MEDIA THROUGH AN ELECTRONIC THEODOLITE. THE DATA FILE IS ARCHIVED ON DISC OR CD. WRITTEN FIELD NOTES MAY NOT EXIST. CONTOURS ARE SHOWN FOR CONVENIENCE ONLY. DESIGN SHOULD RELY ON SPOT ELEVATIONS.
2. ALL MONUMENTS SHOWN HEREON WERE LOCATED DURING THE COURSE OF THIS SURVEY UNLESS OTHERWISE NOTED.
3. THE TYPES AND LOCATIONS OF ANY UTILITIES SHOWN ON THIS DRAWING ARE BASED ON INFORMATION PROVIDED TO US, BY OTHERS OR GENERAL INFORMATION READILY AVAILABLE IN THE PUBLIC DOMAIN INCLUDING, AS APPLICABLE, IDENTIFYING MARKINGS PLACED BY UTILITY LOCATE SERVICES AND OBSERVED BY TERRANE IN THE FIELD. AS SUCH, THE UTILITY INFORMATION SHOWN ON THESE DRAWINGS ARE FOR INFORMATIONAL PURPOSES ONLY AND SHOULD NOT BE RELIED ON FOR DESIGN OR CONSTRUCTION PURPOSES; TERRANE IS NOT RESPONSIBLE OR LIABLE FOR THE ACCURACY OR COMPLETENESS OF THIS UTILITY INFORMATION. FOR THE ACCURATE LOCATION AND TYPE OF UTILITIES NECESSARY FOR DESIGN AND CONSTRUCTION, PLEASE CONTACT THE SITE OWNER AND THE LOCAL UTILITY LOCATE SERVICE (800-424-5555).
4. SUBJECT PROPERTY TAX PARCEL NO. 9350900620.
5. SUBJECT PROPERTY AREA PER THIS SURVEY IS 8,750± S.F. (0.20 ACRES)
6. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE REPORT, EASEMENTS AND OTHER ENCUMBRANCES MAY EXIST THAT ARE NOT SHOWN HEREON.
7. FIELD DATA FOR THIS SURVEY WAS OBTAINED BY DIRECT FIELD MEASUREMENTS WITH A CALIBRATED ELECTRONIC 5-SECOND TOTAL STATION AND/OR SURVEY GRADE GPS OBSERVATIONS. ALL ANGULAR AND LINEAR RELATIONSHIPS ARE ACCURATE AND MEET THE STANDARDS SET BY WAC 332-130-090.

**LEGEND**

	AREA DRAIN		NAIL AS NOTED
	ASPHALT SURFACE		PAVER SURFACE
	BUILDING		POWER METER
	CENTERLINE ROW		POWER (OVERHEAD)
	COLUMN		ROCKERY
	CONCRETE SURFACE		SEWER LINE
	RETAINING WALL		SEWER MANHOLE
	DECK		STORM DRAIN LINE
	FENCE LINE (WOOD)		SEWER CLEANOUT
	GAS METER		TREE (AS NOTED)
	INLET (TYPE 1)		WATER LINE
	MONUMENT IN CASE (FOUND)		WATER METER
	MONUMENT (SURFACE, FOUND)		WATER VALVE

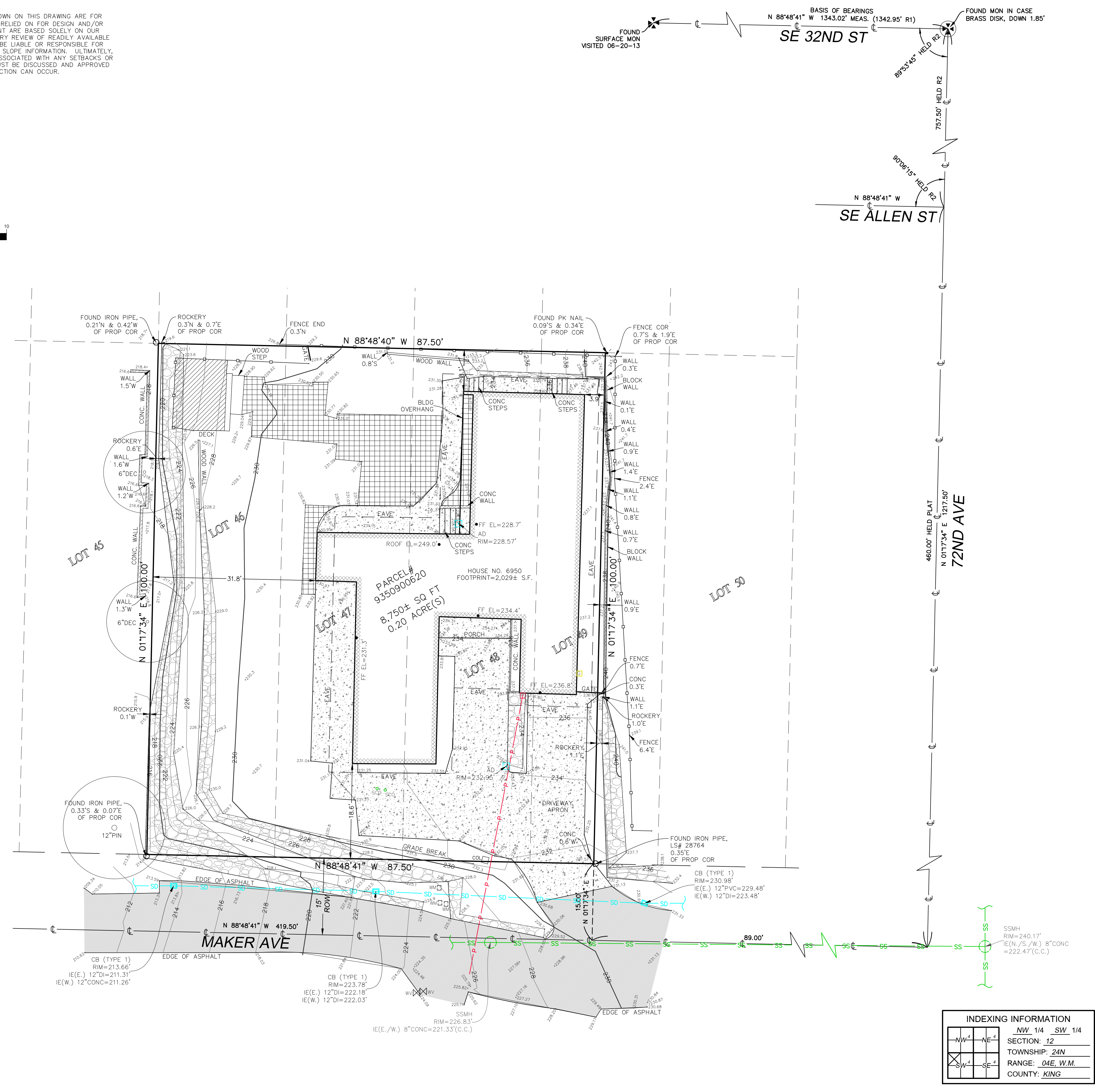
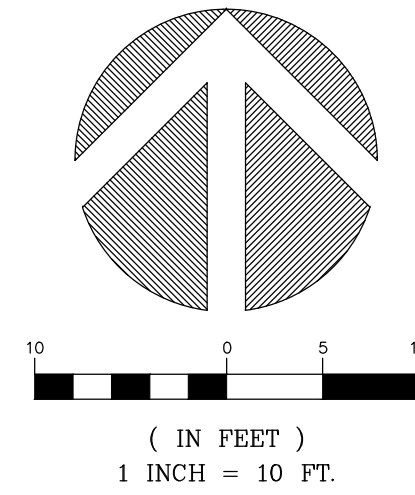
**VICINITY MAP**  
N.T.S.



**TOPOGRAPHIC & BOUNDARY SURVEY**

**STEEP SLOPE/BUFFER DISCLAIMER:**

THE LOCATION AND EXTENT OF STEEP SLOPES SHOWN ON THIS DRAWING ARE FOR INFORMATIONAL PURPOSES ONLY AND CANNOT BE RELIED ON FOR DESIGN AND/OR CONSTRUCTION. THE PITCH, LOCATION, AND EXTENT ARE BASED SOLELY ON OUR GENERAL OBSERVATIONS ON SITE AND OUR CURSORY REVIEW OF READILY AVAILABLE PUBLIC DOCUMENTS; AS SUCH, TERRANE CANNOT BE LIABLE OR RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF ANY STEEP SLOPE INFORMATION. ULTIMATELY, THE LIMITS AND EXTENT OF ANY STEEP SLOPES ASSOCIATED WITH ANY SETBACKS OR OTHER DESIGN OR CONSTRUCTION PARAMETERS MUST BE DISCUSSED AND APPROVED BY THE REVIEWING AGENCY BEFORE ANY CONSTRUCTION CAN OCCUR.

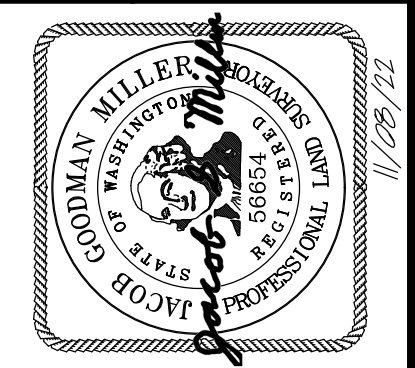


**INDEXING INFORMATION**

NW	1/4	SW	1/4
SECTION:	12		
TOWNSHIP:	24N		
RANGE:	04E, W.M.		
COUNTY:	KING		

**measure success**

**TOPOGRAPHIC & BOUNDARY SURVEY**  
 PARCEL NO. 9350900620  
**STRAND RESIDENCE**  
 6950 SE MAKER STREET  
 MERCER ISLAND, WA 98040



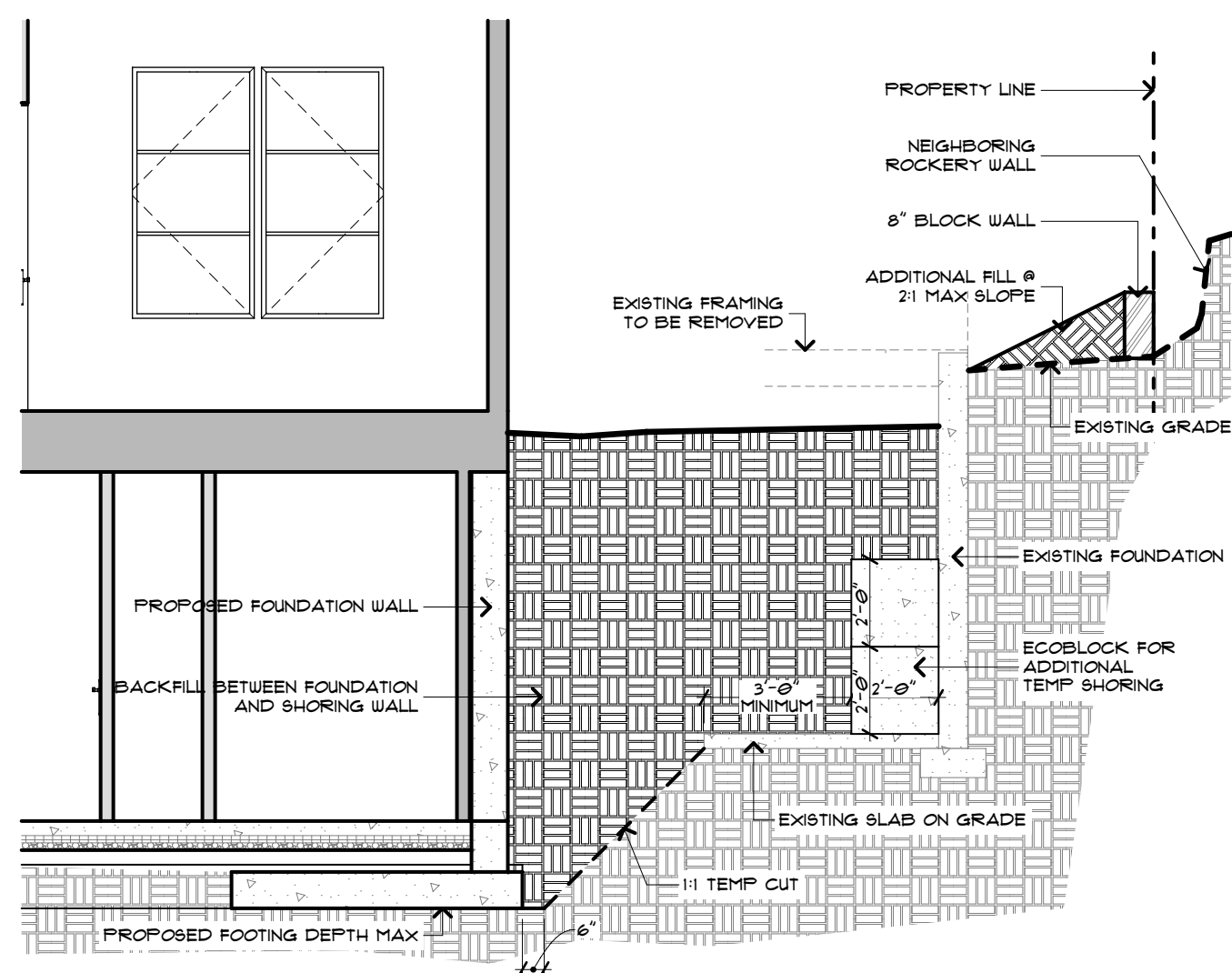
**Terrane**  
 10801 Main Street, Suite 102, Bellevue, WA 98004  
 phone 425.458.4488 support@terrane.net  
 www.terrane.net

**JOB NUMBER:** 210007  
**DATE:** 05/27/2021  
**DRAFTED BY:** RSN  
**CHECKED BY:** TBR / JGM  
**SCALE:** 1" = 10'  
**REVISION HISTORY**

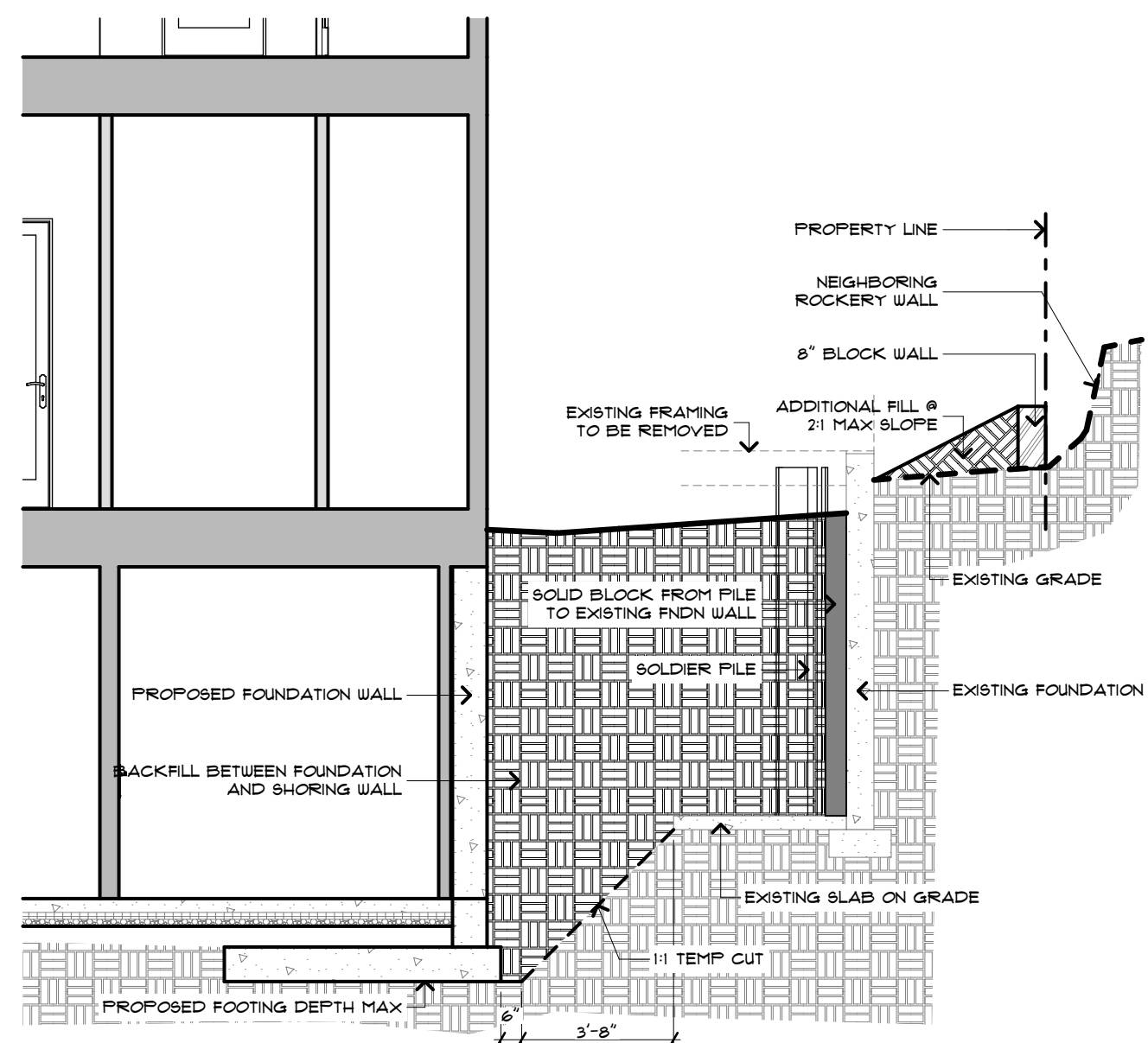
DATE	DESCRIPTION
11/8/22	ADD CATCH BASIN

**SHEET NUMBER**  
1 OF 1

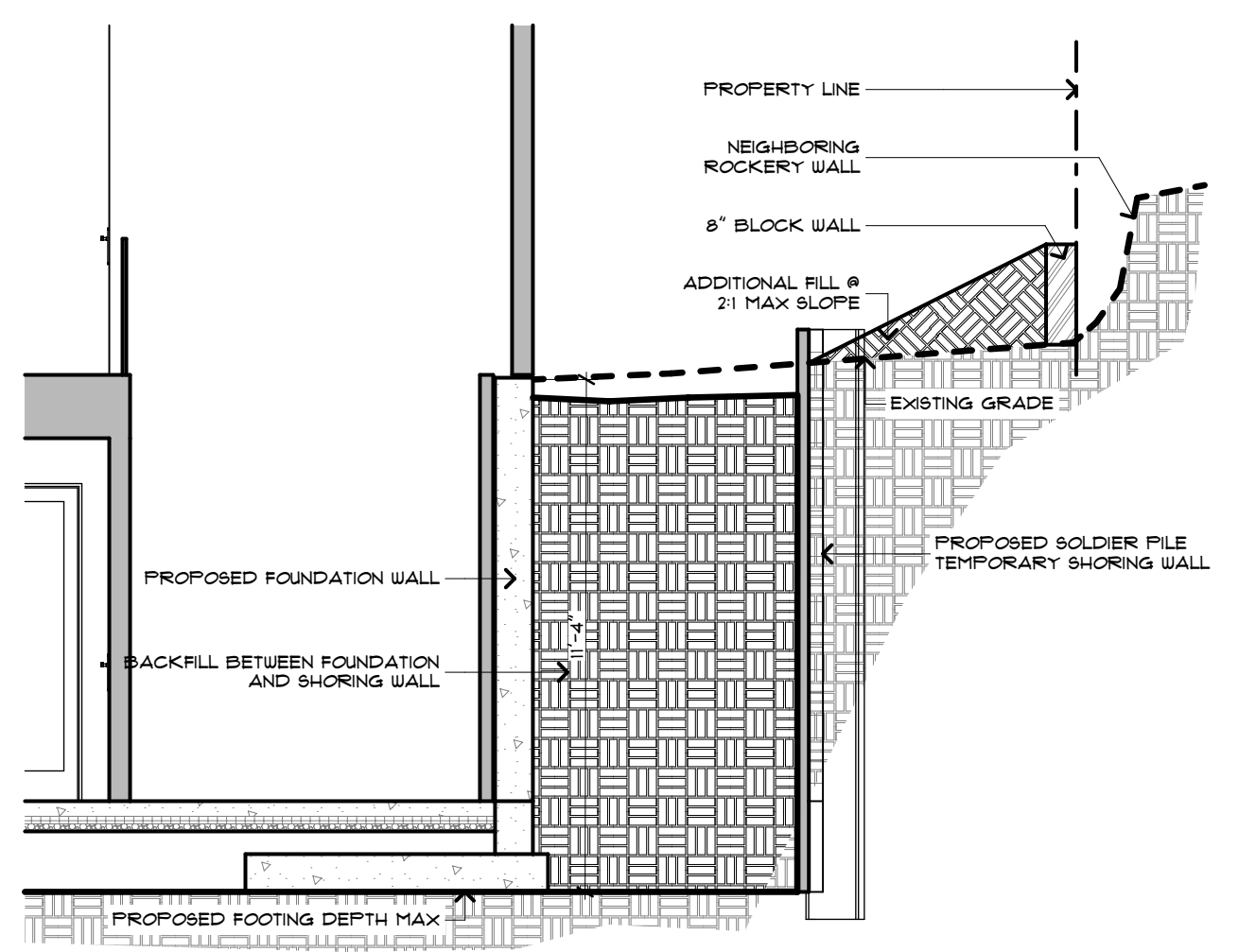




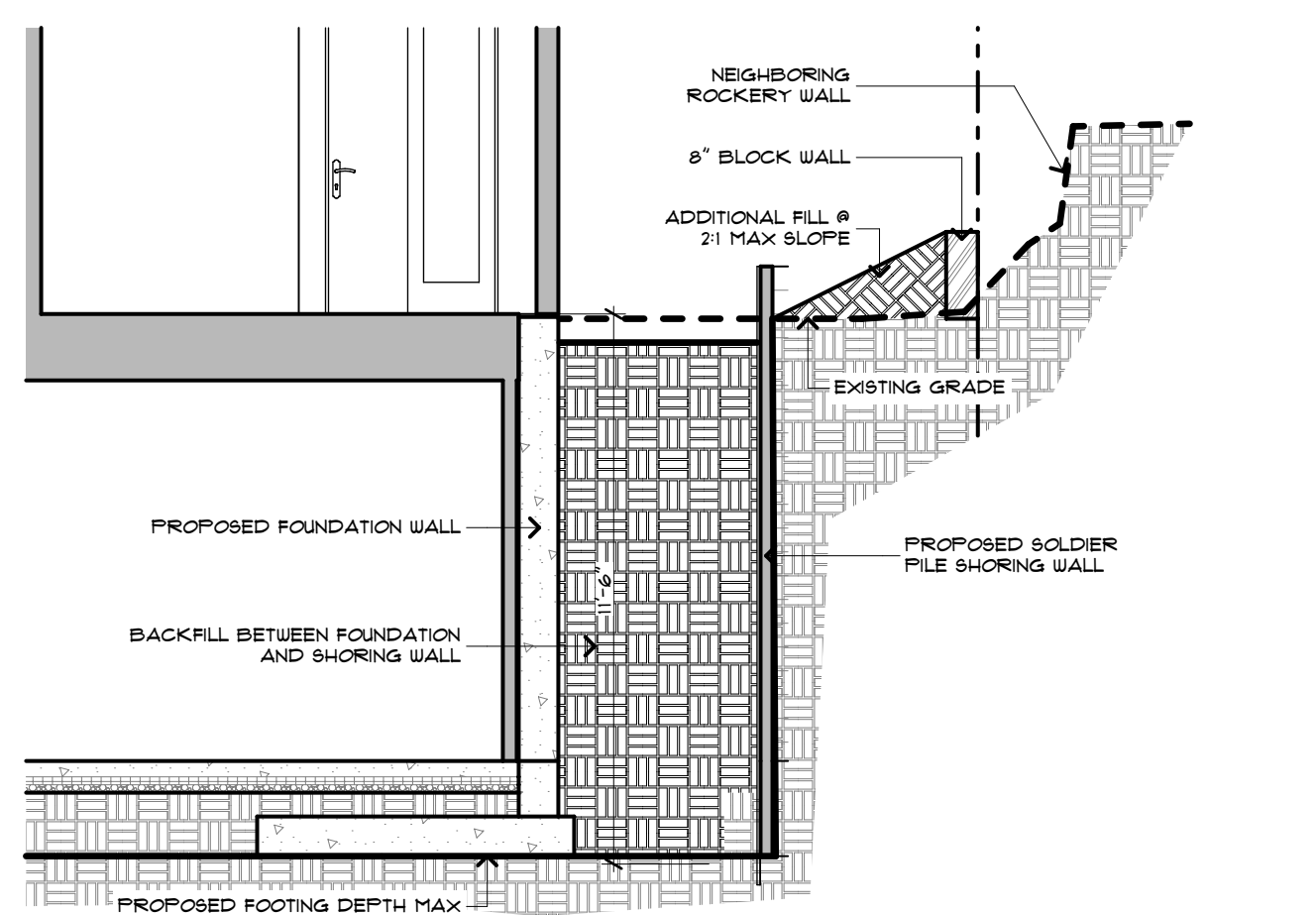
SECTION SH4 4  
SCALE: 1/4" = 1'-0"



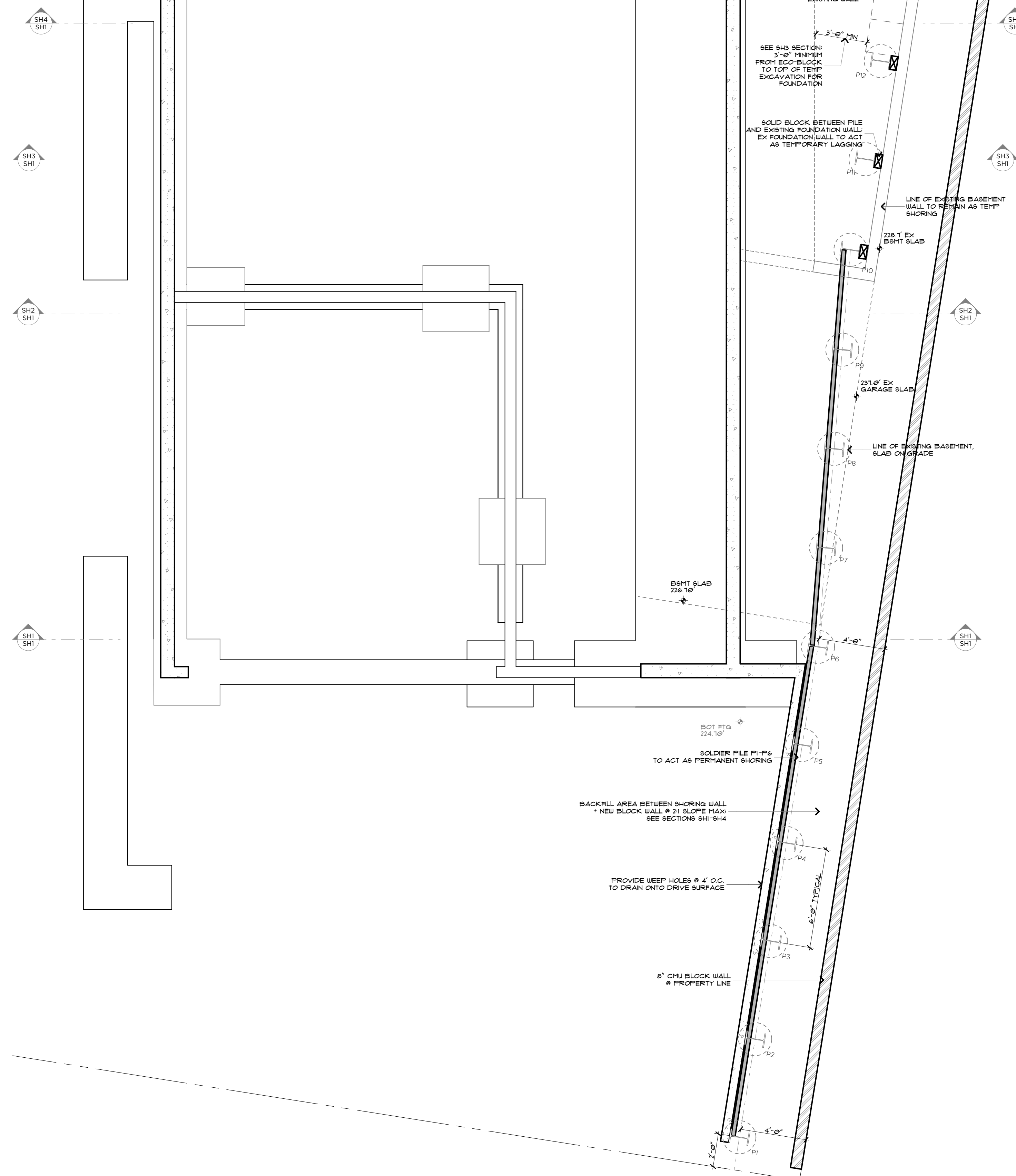
SECTION SH3 3  
SCALE: 1/4" = 1'-0"



SECTION SH2 2  
SCALE: 1/4" = 1'-0"



SECTION SH1 1  
SCALE: 1/4" = 1'-0"



TEMPORARY SHORING PLAN  
SCALE: 1/4" = 1'-0"

JA  
10651 REGISTERED ARCHITECT  
Jeffrey P. Almeter  
Jeffrey P. Almeter  
State of Washington

MERCER RESIDENCE  
6950 SE MAKER ST MERCER ISLAND, WA

SHORING PLANS  
AND SECTIONS

RELEASE  
17 FEB 2023  
PERMIT CORRECTIONS  
20 FEBRUARY 2023  
PERMIT CORRECTIONS  
2 JUNE 2023

SH1  
MAKER AVE  
REVISED 2/20/23



# General Structural Notes

The Following Apply Unless Noted Otherwise on the Drawings

## Criteria

- CODE REQUIREMENTS: ALL DESIGN AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE, 2018 EDITION.
- REFERENCE DOCUMENTS:
  - TOPOGRAPHIC AND BOUNDARY SURVEY BY Terrane DATED May 27, 2021
  - REPORT ON GEOTECHNICAL INVESTIGATION BY Geotech Consultants, INC, DATED MARCH 21 2022, (Proj #JN-22007)
- DESIGN LOADS: THE SOIL PRESSURE INDICATED ON THE SOIL PRESSURE DIAGRAMS WHERE USED FOR DESIGN.
- SOILS INSPECTION: INSPECTION BY THE SOILS ENGINEER SHALL BE PERFORMED FOR PILE PLACEMENT. ALL PREPARED SOIL BEARING SURFACES SHALL BE INSPECTED BY THE SOILS ENGINEER PRIOR TO PLACEMENT OF PILE. SOIL COMPACTION SHALL BE SUPERVISED/TESTED BY THE GEOTECHNICAL ENGINEER.
- SPECIAL INSPECTION: SPECIAL INSPECTION OF THE FOLLOWING TYPES OF CONSTRUCTION SHALL BE PROVIDED IN ACCORDANCE WITH SECTIONS 110 AND 1701 OF THE INTERNATIONAL BUILDING CODE AND THE PROJECT SPECIFICATIONS BY A QUALIFIED TESTING AGENCY DESIGNATED BY THE ARCHITECT, AND RETAINED BY THE BUILDING OWNER. THE ARCHITECT, STRUCTURAL ENGINEER, AND BUILDING DEPARTMENT SHALL BE FURNISHED WITH COPIES OF ALL INSPECTION AND TEST RESULTS.

-STRUCTURAL STEEL FABRICATION AND ERECTION (INCLUDING FIELD WELDING AND HIGH-STRENGTH FIELD BOLTING)

- UTILITY LOCATION: THE SHORING CONTRACTOR SHALL DETERMINE THE LOCATION OF ALL ADJACENT UNDERGROUND UTILITIES PRIOR TO DRILLING PILE HOLES OR CUTTING OR DIGGING IN STREETS OR ALLEYS. THE UTILITIES INFORMATION SHOWN ON THE PLANS MAY BE NOT COMPLETE.
- SPECIAL CONDITIONS: CONTRACTOR SHALL VERIFY ALL DIMENSIONS OF EXISTING STRUCTURES IN THE FIELD AND SHALL NOTIFY THE ENGINEER OF ALL FIELD CHANGES PRIOR TO FABRICATION AND INSTALLATION.
- SOILS: SEE REPORT OF GEOTECHNICAL INVESTIGATION FOR MORE COMPLETE INFORMATION, INCLUDING RECOMMENDATIONS FOR SHORING IN GENERAL, SHORING MONITORING, EXCAVATION, LAGGING, AND DRAINAGE.
- SAWN LUMBER: SAWN LUMBER SHALL CONFORM TO "GRADING AND DRESSING RULES," WEST COAST LUMBER INSPECTION BUREAU (WCLIB), LATEST EDITION. LUMBER SHALL BE THE SPECIES AND GRADE NOTED IN THE LAGGING TABLE.

TIMBER LAGGING SHALL BE PRESSURE TREATED WITH WATERBORNE PRESERVATIVES IN ACCORDANCE WITH AWPB STANDARD U1 AND SHALL MEET A USE CATEGORY OF UC4B OR BETTER. LAGGING SHALL BE 4X10 UNLESS OTHERWISE NOTED ON DRAWINGS.

- STEEL SPECIFICATIONS: DESIGN, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE FOLLOWING SPECIFICATIONS:

- STRUCTURAL STEEL: AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS—ALLOWABLE STRESS DESIGN.
- WELDING: AWS D1.1 (AWS PREQUALIFIED JOINT DETAILS USE 1/4" MINIMUM WELDS UNLESS NOTED OTHERWISE).
- WELDER CERTIFICATION: WASHINGTON ASSOCIATION OF BUILDING OFFICIALS (WABO).vv

- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:

TYPE OF MEMBER	ASTM SPECIFICATION	Fy
WIDE FLANGE	A992	50 KSI
PIPE	A53	35 KSI
PLATES, SHAPES, ANGLES, AND RODS	A36	36 KSI
STRUCTURAL BOLTS	A325-N	
WOOD CONNECTION BOLTS	A307	
WELDING ELECTRODES	E70XX	

## Concrete

- CONCRETE: CONCRETE WORK SHALL CONFORM TO ALL REQUIREMENTS OF CHAPTER 19 OF THE 2018 IBC. CONCRETE STRENGTHS SHALL BE VERIFIED BY STANDARD CYLINDER TESTS, UNLESS APPROVED OTHERWISE. REQUIRED ULTIMATE COMPRESSIVE STRENGTH OF STRUCTURAL GROUT SHALL BE REACHED BY 7 DAYS FOR TIEBACKS AND 28 DAYS FOR PILES.

f <sub>c</sub> (psi)	Minimum Cement Per Cubic Yard	Max. Water Per 94 LB Cement	Use
-----	1-1/2 Sacks	-----	Pile lean concrete
3,000	6 Sacks (PILING)	6 Gallons	Pile struct. grout

CONCRETE WALL SHALL ATTAIN A 28-DAY STRENGTH OF f<sub>c</sub>=3,000 PSI

AS AN ALTERNATIVE TO THE ABOVE, THE CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGNS FOR APPROVAL TWO WEEKS PRIOR TO PLACING ANY CONCRETE. THE ALTERNATE MIX DESIGN WILL BE REVIEWED FOR CONFORMANCE TO ACI 318 Ch. 5 WITH SBC REVISIONS.

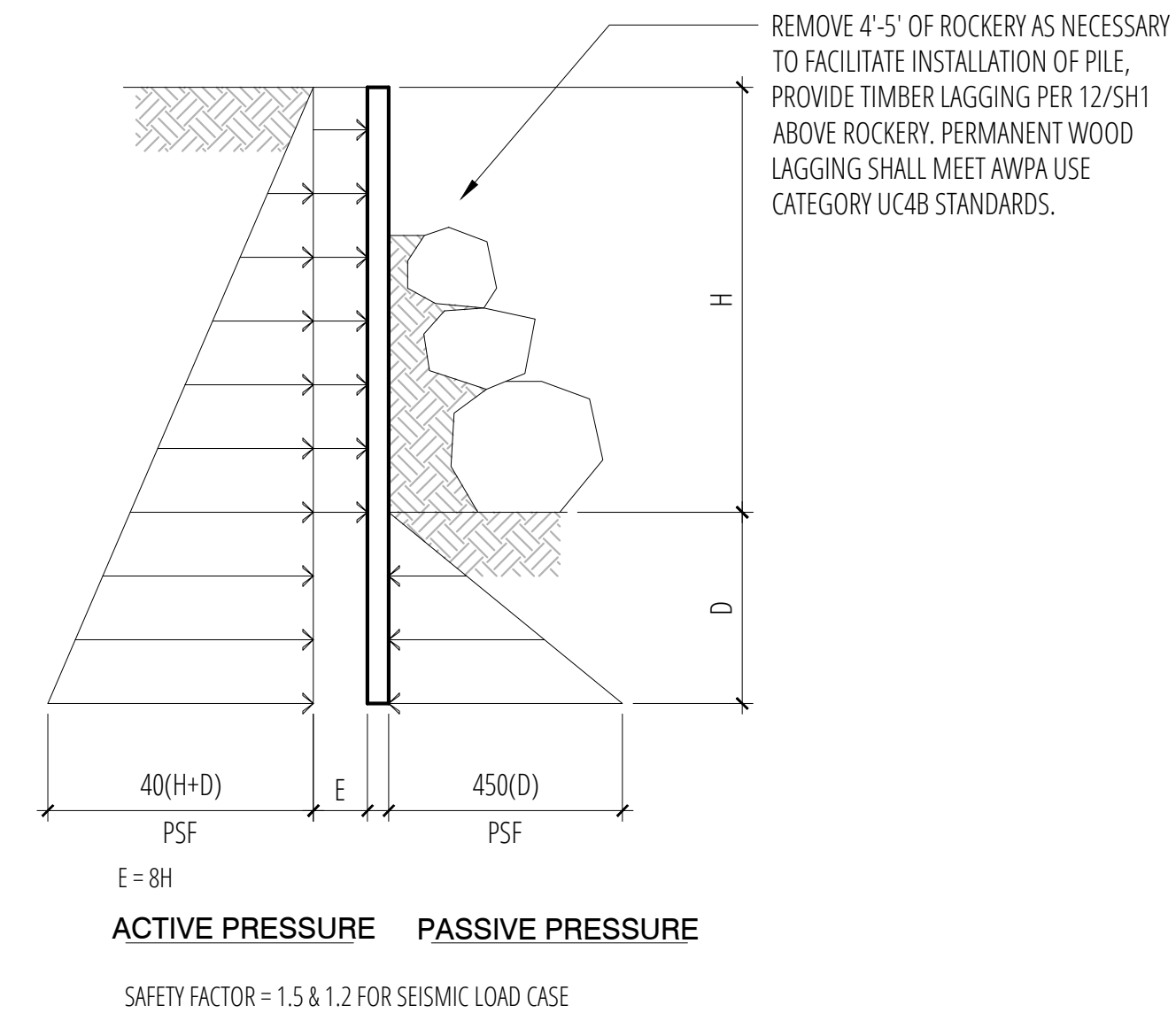
- ALL CONCRETE WITH SURFACES EXPOSED TO WEATHER OR STANDING WATER SHALL BE AIR-ENTRAINED WITH AN AIR-ENTRAINING AGENT CONFORMING TO ASTM C260, C494, AND C618. TOTAL AIR CONTENT FOR FROST-RESISTANT CONCRETE SHALL BE IN ACCORDANCE WITH TABLE ACI 318 TABLE 4.2.1 MODERATE EXPOSURE.
- REINFORCING STEEL SHALL CONFORM TO ASTM A615 (INCLUDING SUPPLEMENT S1), GRADE 60, f<sub>y</sub>=60,000 PSI. EXCEPTIONS: ANY BARS SPECIFICALLY SO NOTED ON THE DRAWINGS SHALL BE GRADE 40, f<sub>y</sub>=40,000 PSI. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185. SPIRAL REINFORCEMENT SHALL BE PLAIN WIRE CONFORMING TO ASTM A615, GRADE 60, f<sub>y</sub>=60,000 PSI.

## Pipe and Lagging Construction

- DEMOLITION: SHORING AND SOIL EXCAVATION SHALL BE DONE SIMULTANEOUSLY.
- VERIFICATION: DIMENSIONS AND LOCATION OF EXISTING STRUCTURES SHALL BE VERIFIED PRIOR TO FABRICATION AND INSTALLATION OF ANY STRUCTURAL MEMBER. NOTIFY ENGINEER ABOUT ANY DISCREPANCIES PRIOR TO FABRICATION.
- STEEL PILE PLACEMENT TOLERANCES:
  - 1" INSIDE PERPENDICULAR TO SHORING WALL.
  - 1" OUTSIDE PERPENDICULAR TO SHORING WALL.
  - 3" LATERALLY.
- LAGGING: TIMBER LAGGING SHALL BE INSTALLED IN ALL AREAS. VOIDS BETWEEN LAGGING AND SOIL SHALL BE BACKFILLED PER THE GEOTECHNICAL ENGINEERS RECOMMENDATIONS. DRAINAGE BEHIND THE WALL MUST BE MAINTAINED. IT IS CONTRACTOR'S RESPONSIBILITY TO LIMIT THE AMOUNT OF EXPOSED SOIL WITHOUT LAGGING TO AVOID LOSS OF SOIL. MAXIMUM HEIGHT OF 4 FEET IS RECOMMENDED. SPECIAL CARE SHOULD BE TAKEN TO AVOID GROUND LOSS DURING EXCAVATION.
- SHORING MONITORING: A SYSTEMATIC PROGRAM OF OBSERVATION SHALL BE CONDUCTED DURING THE PROJECT EXECUTION TO DETERMINE THE EFFECT OF CONSTRUCTION ON ADJACENT FACILITIES AND STRUCTURES IN ORDER TO PROTECT THEM FROM DAMAGE. REFER TO REPORT OF GEOTECHNICAL INVESTIGATION FOR RECOMMENDATIONS. FIELD DATA AND MEASUREMENTS ARE TO BE SUBMITTED TO STRUCTURAL AND GEOTECHNICAL ENGINEER FOR REVIEW.

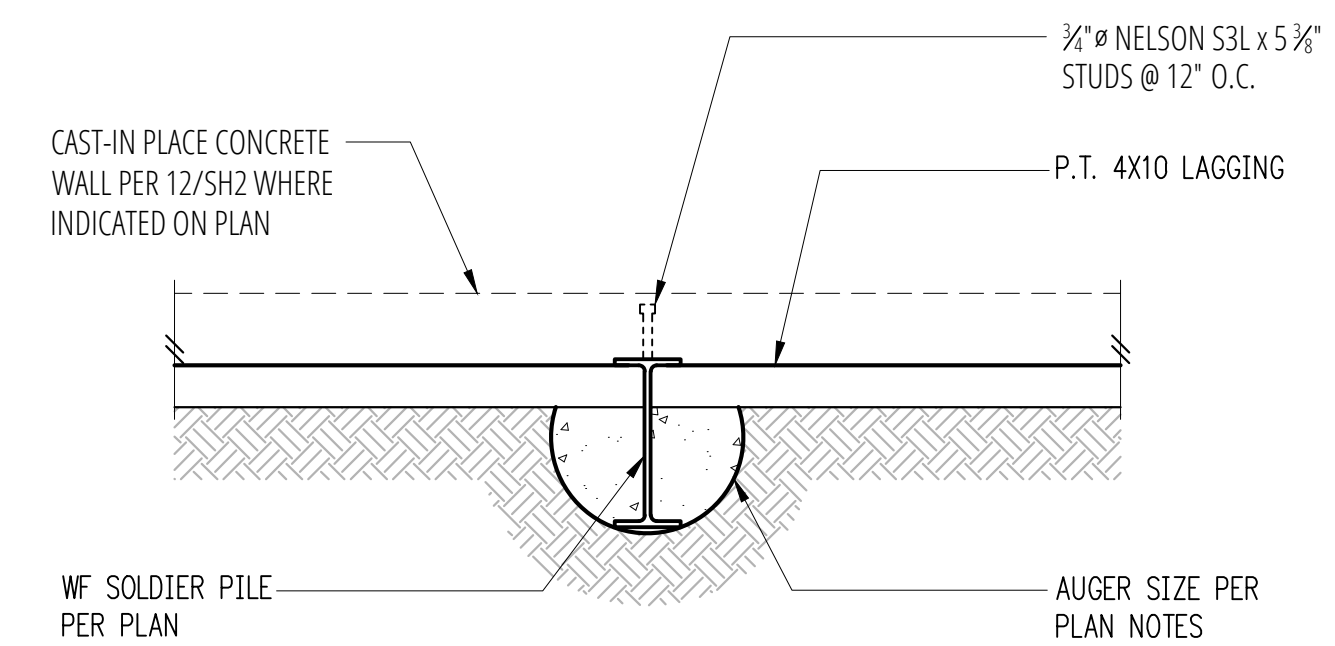
MONITORING PLAN SHALL INCLUDE THE FOLLOWING:

- THE TOP OF EVERY OTHER PILE SHALL BE MONITORED.
- MULTIPLE REFERENCE POINTS SHOULD BE ESTABLISHED SUFFICIENTLY FAR AWAY FROM THE SHORING TO ACT AS CONTROL POINTS FOR THE MONITORING PLAN
- ESTABLISH A BASELINE READING OF MONITORING POINTS ON THE GROUND SURFACE AND SETTLEMENT-SENSITIVE STRUCTURES BEHIND THE SHORING WALL ALIGNMENT PRIOR TO EXCAVATION AND INSTALLATION OF THE SHORING SYSTEMS.
- A LICENSED SURVEYOR MUST DO THE SURVEYING AT LEAST ONCE A WEEK.
- SURVEY FREQUENCY CAN BE DECREASED AFTER THE SHORING SYSTEM HAS BEEN INSTALLED AND EXCAVATION IS COMPLETE IF THE DATA INDICATES LITTLE OR NO ADDITIONAL MOVEMENT. SURVEYING MUST CONTINUE UNTIL THE PERMANENT STRUCTURE IS COMPLETE UP TO THE TOP OF THE SHORING WALL. THE SURVEY FREQUENCY WILL BE DETERMINED BY THE GEOTECHNICAL ENGINEER AFTER REVIEW AND APPROVAL BY THE CITY OF MERCER ISLAND BUILDING OFFICIAL (COMBO)
- THE GEOTECHNICAL ENGINEER SHALL REVIEW SURVEY DATA AND PROVIDE AN EVALUATION OF WALL PERFORMANCE ALONG WITH SURVEY DATA TO COMBO ON AT LEAST A WEEKLY BASIS. IMMEDIATELY AND DIRECTLY, NOTIFY COMBO IF ANY UNUSUAL OR SIGNIFICANTLY INCREASED MOVEMENT OCCURS.
- IMMEDIATELY AND DIRECTLY NOTIFY THE GEOTECHNICAL AND STRUCTURAL ENGINEERS, IF 0.5 INCHES OF MOVEMENT OCCURS BETWEEN TWO CONSECUTIVE READINGS AND WHEN TOTAL MOVEMENTS REACH 0.5 INCH. AT THAT AMOUNT OF MOVEMENT, THE ENGINEERS AND DESIGNERS SHALL DETERMINE THE CAUSE OF DISPLACEMENT AND DEVELOP REMEDIAL MEASURES SUFFICIENT TO LIMIT TOTAL WALL MOVEMENTS TO WHAT HAS BEEN DEFINED AS ACCEPTABLE BY THE DESIGN TEAM.



3 West Stabilization Wall Loading Diagram  
SCALE: 3/4"=1'-0"

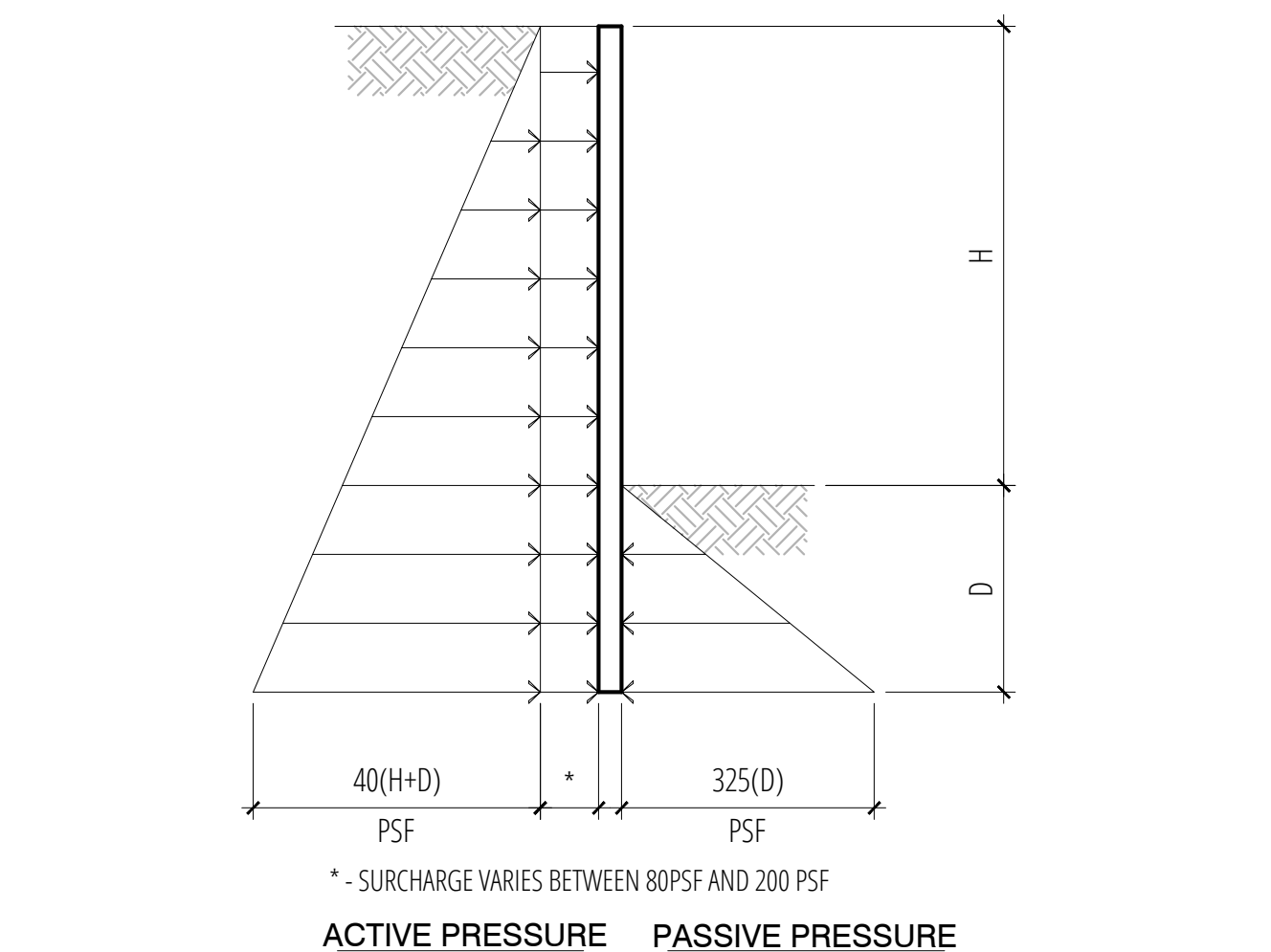
4 SCALE: 3/4"=1'-0"



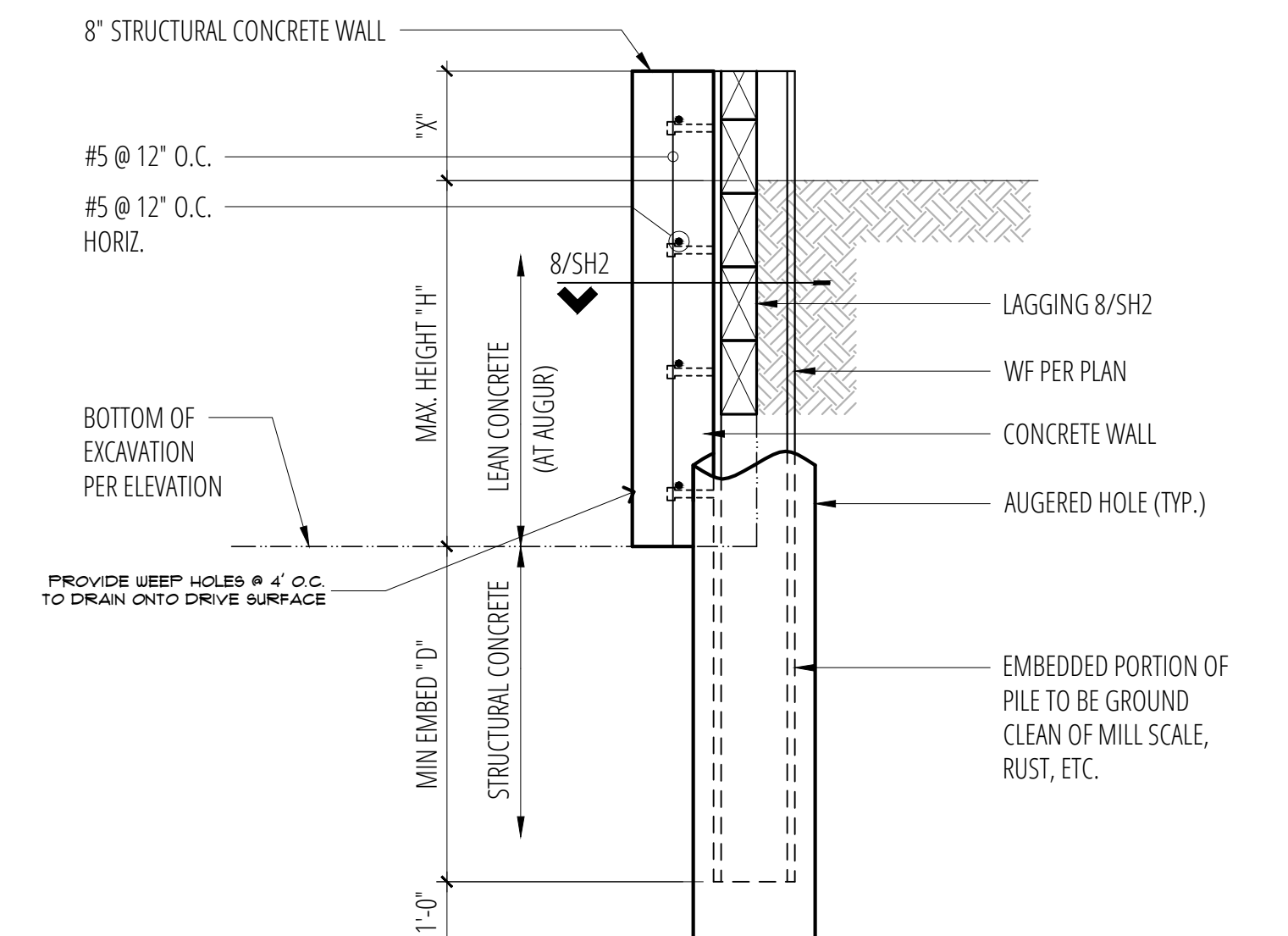
8 Typical Pile Plan  
SCALE: 3/4"=1'-0"

Pile Mark	Auger Dia.	Wide Flange	Max. Height H (ft.)	Min Embed D (ft.)	Min. X (ft.) Above Top of Excavation	Type
P1	24"	W16x100	11'-6"	20'-0"	1'-0"	Cantilever
P2	24"	W16x100	11'-6"	20'-0"	1'-0"	Cantilever
P3	24"	W16x100	11'-6"	20'-0"	1'-0"	Cantilever
P4	24"	W16x100	11'-6"	20'-0"	1'-0"	Cantilever
P5	24"	W16x100	11'-6"	20'-0"	1'-0"	Cantilever
P6	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P7	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P8	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P9	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P10	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P11	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P12	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P13-P37	24"	W12x40	10'-0"	12'-0"	0'-0"	Cantilever

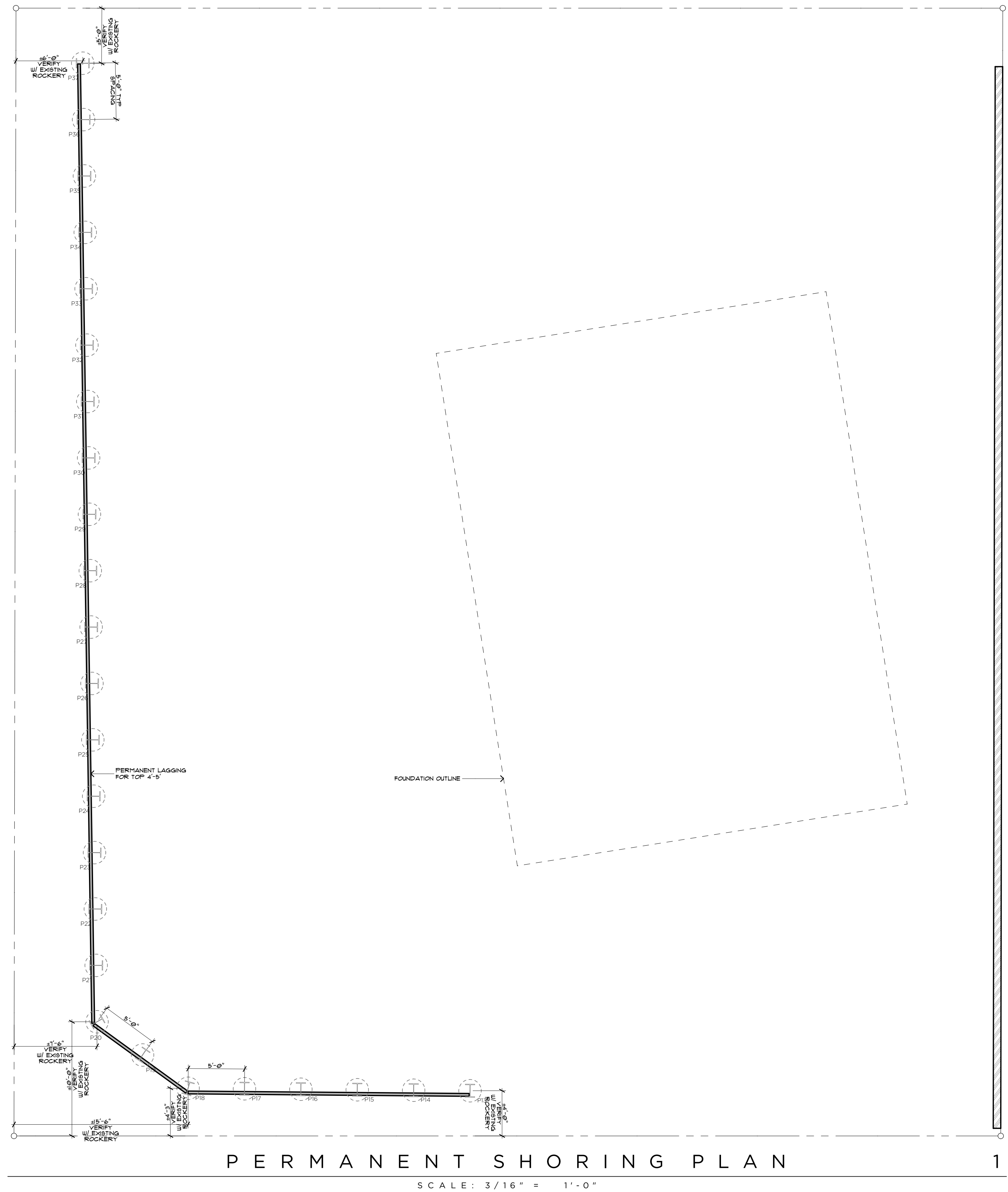
7 Pile Schedule  
SCALE:



11 Pile Loading Diagram  
SCALE: 3/4"=1'-0"



12 Cantilever Pile  
SCALE: 3/4"=1'-0"



MERCER RESIDENCE  
6950 SE MAKER ST MERCER ISLAND, WA

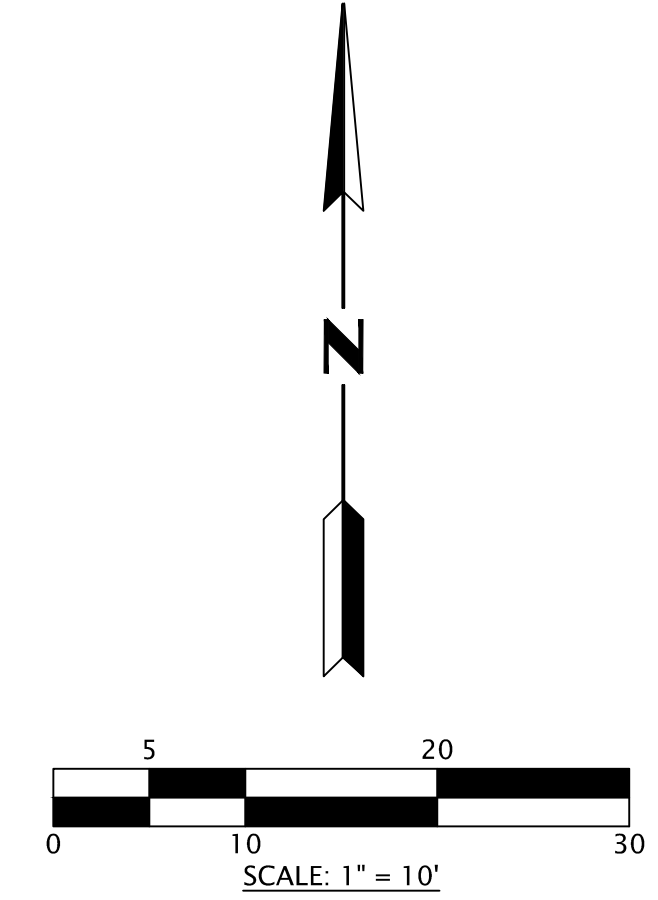
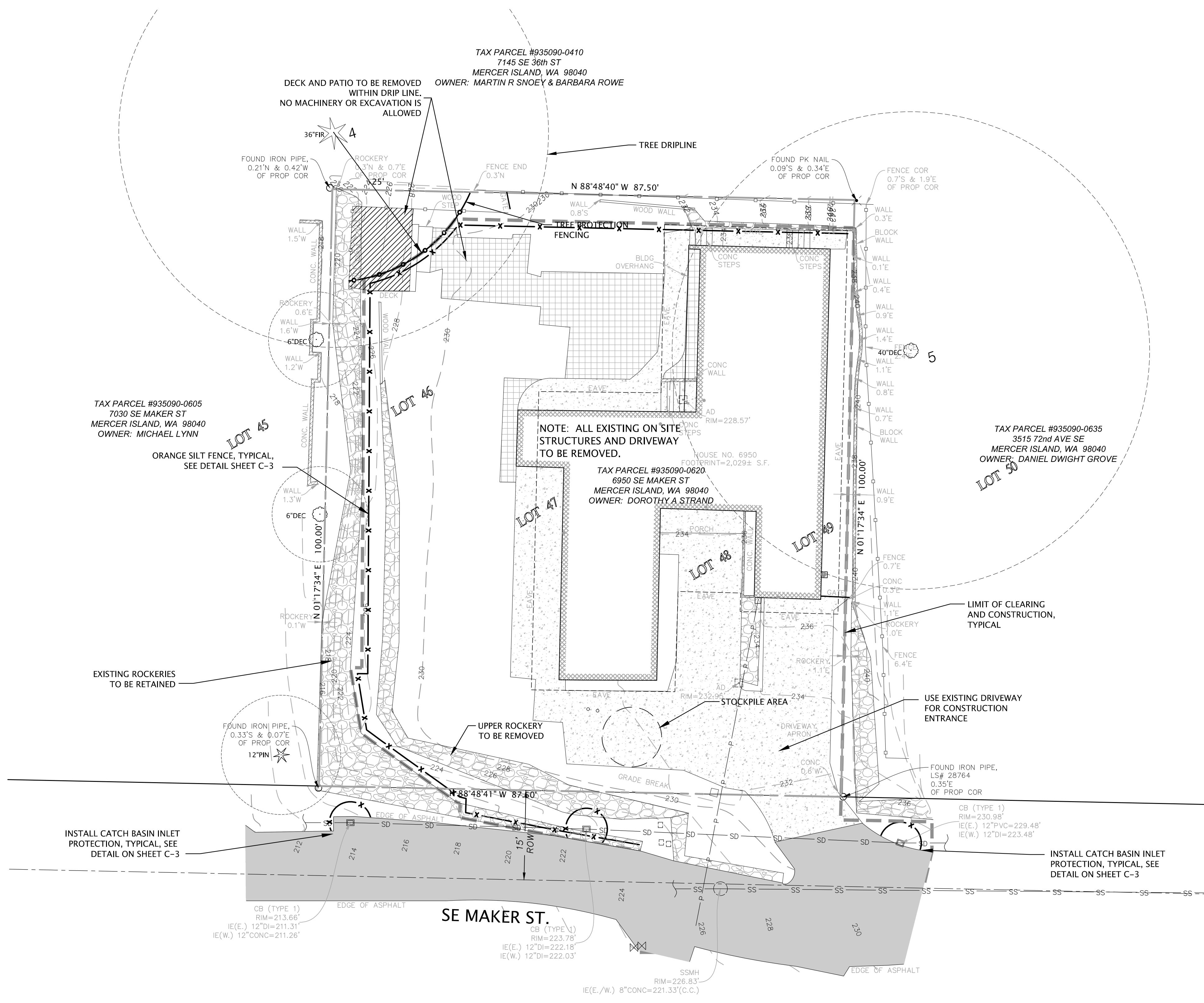
PERMANENT SHORING PLAN

RELEASE  
PERMIT CORRECTIONS  
2 JUNE 2023

SH3  
MAKER AVE  
APPROVED 8/20/23



NW ¼, SW ¼ SECTION 12, TOWNSHIP 24 N, RANGE 4 E, W.M.  
CITY OF MERCER ISLAND, KING COUNTY, WASHINGTON



- LEGEND**
- AREA DRAIN
  - ASPHALT SURFACE
  - BUILDING
  - CENTERLINE ROW
  - COLUMN
  - CONCRETE SURFACE
  - RETAINING WALL
  - DECK
  - FENCE LINE (WOOD)
  - GAS METER
  - INLET (TYPE 1)
  - MONUMENT IN CASE (FOUND)
  - MONUMENT (SURFACE, FOUND)
  - NAIL AS NOTED
  - PAVER SURFACE
  - POWER METER
  - POWER (OVERHEAD)
  - ROCKERY
  - SEWER LINE
  - SEWER MANHOLE
  - SEWER CLEANOUT
  - SEWER (AS NOTED)
  - WATER LINE
  - WATER METER
  - WATER VALVE

- LEGEND (EROSION)**
- EXISTING CONTOUR LINE
  - PROPOSED CONTOUR LINE
  - PROPOSED SILT FENCE
  - PROPOSED LIMIT OF CONSTRUCTION
  - PROPOSED CATCH BASIN INSERT
  - EXISTING TREE TO BE RETAINED
  - EXISTING TREE TO BE REMOVED
  - TREE PROTECTION

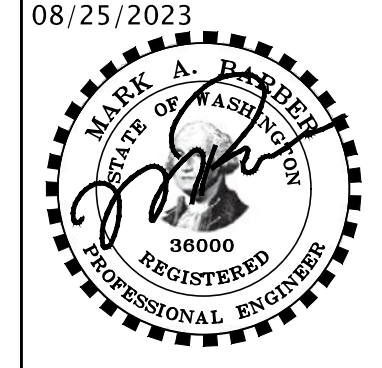
**SURVEY NOTE**  
EXISTING SURVEY INFORMATION SHOWN HEREON IS BASED ON SURVEY BY TERRANE SURVEYING & MAPPING, AND ELECTRONIC DRAWING FILES AS PROVIDED ON 03/25/2022. SURVEY INFORMATION HAS NOT BEEN FIELD VERIFIED BY GOLDSMITH.

Digitally signed by Mark Barber  
Date: 2023.08.25  
14:01:35-07'00'



**GOLDSMITH**  
LAND DEVELOPMENT SERVICES  
11400 SE 8th St, Suite 450, Bellevue, WA 98004 | PO Box 3565, Bellevue, WA 98009  
T 425-462-1080 www.goldsmithengineering.com

PLOTTED:	2023/08/25 13:20	Eoregon
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FIELD BOOK:		
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DOROTHY STRAND  
TESC PLAN FOR STRAND PROPERTY  
6950 SE MAKER ST., CITY OF MERCER ISLAND KING COUNTY, WASHINGTON

JOB NO. 22038  
SHEET  
**C-1**

L:\2023\22038\3 DEVELOPMENT\CAD\HOST DRAWINGS\BUILDING PERMIT\22038R01.DWG



NW ¼, SW ¼ SECTION 12, TOWNSHIP 24 N, RANGE 4 E, W.M.  
CITY OF MERCER ISLAND, KING COUNTY, WASHINGTON

NOTES

- DEMOLISH EXISTING HOUSE, PATIO, DECK, WALKWAY, WALL AND DRIVEWAY PRIOR TO PROPOSED CONSTRUCTION.
- SITE AREA: 8,750 SF (0.20 AC)
- IMPERVIOUS CALCULATIONS:  
ON-SITE  
HOUSE = 1,888 SF  
CONCRETE DRIVEWAY = 804 SF  
DECK = 61 SF  
STAIRS = 13 SF  
RETAINING WALLS = 49 SF  
NEW AND REPLACED SUBTOTAL = 2,815 SF  
EX. ROCKERY / WALL = 736 SF  
TOTAL IMPERVIOUS = 3,537 SF (40% OF LOT AREA)  
OFF-SITE  
ASPHALT DRIVEWAY = 485 SF  
TOTAL PROJECT IMPERVIOUS = 4,022 SF
- EARTHWORK QUANTITY:  
CUT = 662.75 CY  
FILL = 19.92 CY
- ROOF DRAIN PIPES SHALL MEET MATERIAL STANDARDS FOR SDR35 FOR PVC PIPE AND N-12 FOR SMOOTH-BORE HDPE PIPE.
- FOOTING DRAIN PIPES SHALL MEET MATERIAL STANDARDS FOR D2729 FOR PVC, WITH THE PERFORATIONS DIRECTED DOWNWARD.
- CONTRACTOR SHALL COMPLY WITH THE CITY OF MERCER ISLAND "STORM DRAINAGE REQUIREMENTS" FOR ALL NEW CONSTRUCTION OF DRAINAGE SYSTEM IMPROVEMENTS, INCLUDING ROOF DRAINS, FOOTING DRAINS, AND DRIVEWAY/PARKING AREA DRAINS.
- CONTRACTOR TO COORDINATE EXACT LOCATION OF THE NEW METER WITH THE CITY'S WATER DEPARTMENT DURING CONSTRUCTION.
- THE TV INSPECTION OF THE EXISTING SIDE SEWER TO THE CITY SEWER MAIN ON SE MAKER ST IS REQUIRED PRIOR TO ANY WORK RELATED TO THE SIDE SEWER. IF THE RESULT OF THE TV INSPECTION IS NOT IN SATISFACTORY CONDITION, AS DETERMINED BY THE CITY OF MERCER ISLAND INSPECTOR, THE REPLACEMENT OF THE EXISTING SIDE SEWER IS REQUIRED.

LEGEND (DEVELOPED)

- PROPOSED CONCRETE
- PROPOSED ASPHALT PAVEMENT
- TRENCH RESTORATION
- PROPOSED WALL TO BE REMOVED
- PROPOSED SANITARY SIDE SEWER
- PROPOSED SANITARY SIDE SEWER CLEANOUT
- PROPOSED WATER SERVICE LINE
- PROPOSED WATER METER
- PROPOSED YARD DRAIN
- PROPOSED ROOF DRAIN PIPE
- PROPOSED ROOF DRAIN CLEANOUT
- PROPOSED FOOTING DRAIN PIPE
- PROPOSED FOOTING DRAIN PIPE
- PROPOSED CONTOUR LINE
- PROPOSED CATCH BASIN, TYPE I

FIRE PROTECTION NOTES:

- FIRE SPRINKLER REQUIRED
- BUILDER AND FIRE PROTECTION DESIGNER TO CONFIRM METER AND WATER SERVICE SIZE PRIOR TO CONSTRUCTION OF WATER SERVICE

SURVEY NOTE

EXISTING SURVEY INFORMATION SHOWN HEREON IS BASED ON SURVEY BY TERRANE SURVEYING & MAPPING, AND ELECTRONIC DRAWING FILES AS PROVIDED ON 03/25/2022. SURVEY INFORMATION HAS NOT BEEN FIELD VERIFIED BY GOLDSMITH.

TEMPORARY SHORING

TEMPORARY SHORING SHALL BE INSTALLED AT THE DIRECTION OF THE PROJECT GEOTECHNICAL ENGINEER.

SOIL AMENDMENT NOTE

STOCKPILE AND COMPOST AMENDED DISTURBED LANDSCAPED AREAS PER CITY OF MERCER ISLAND POST-CONSTRUCTION SOIL MANAGEMENT  
TOP SOIL LAYER SHALL HAVE A MINIMUM DEPTH OF 8" AND A ORGANIC CONTENT OF 5% IN TURF AREAS AND 10% IN PLANTER BEDS. SUBSOIL BELOW TOP SOIL LAYER SHALL BE SCARIFIED TO A DEPTH OF 4" BELOW TOPSOIL LAYER. PLANTER BEDS SHALL BE MULCH WITH 2" OF ORGANIC MATERIAL.  
THE LAWN AND LANDSCAPE AREAS ARE REQUIRED TO PROVIDE POST-CONSTRUCTION SOIL QUALITY AND DEPTH IN ACCORDANCE WITH BMP T5.13. THE PROJECT CIVIL ENGINEER MUST PROVIDE A LETTER OF CERTIFICATION TO ENSURE THAT THE LAWN AND LANDSCAPE AREAS ARE MEETING THE POST-CONSTRUCTION SOIL QUALITY AND DEPTH REQUIREMENTS SPECIFIED ON THE APPROVED PLAN SET PRIOR TO FINAL INSPECTION OF THE PROJECT.



**STORM & ROOF DRAINAGE SYSTEM STRUCTURE TABLE**

NAME	TYPE	VERTICAL	I.E. IN / OUT
CB # 1	TYPE 1, EXISTING	RIM = 213.66	12" SD D.I. IN (E) = 211.31 12" CONC. D.I. OUT (W) = 211.26
CB # 2	TYPE 1, EXISTING TIE INTO	RIM = 223.78	12" EX. SD D.I. IN (E) = 222.18 6" SD PVC IN (N) = 222.03 12" SD D.I. OUT (W) = 222.03
CB # 3	TYPE 1, W/ OIL & WATER SPERATOR	RIM = 230.77	4" RD PVC IN (N) = 224.90 4" TRENCH RD PCV IN (E) = 224.90 6" SD PVC OUT (S) = 224.90
TRENCH DRAIN	TRENCH DRAIN	RIM = 226.44	4" TRENCH RD PCV OUT (W) = 225.60
X-CB	TYPE I CB	RIM = 230.98	12" PVC IN (E) = 229.48 12" EX. SD D.I. OUT (W) = 229.48
YD # 1	YARD DRAIN	RIM = 230.68	4" RD PVC IN (E) = 227.25 4" RD PVC OUT (S) = 227.25
YD # 2	YARD DRAIN	RIM = 233.08	4" RD PVC IN (S) = 230.57 4" RD PVC OUT (W) = 230.57

**STORM & ROOF DRAINAGE SYSTEM PIPE TABLE**

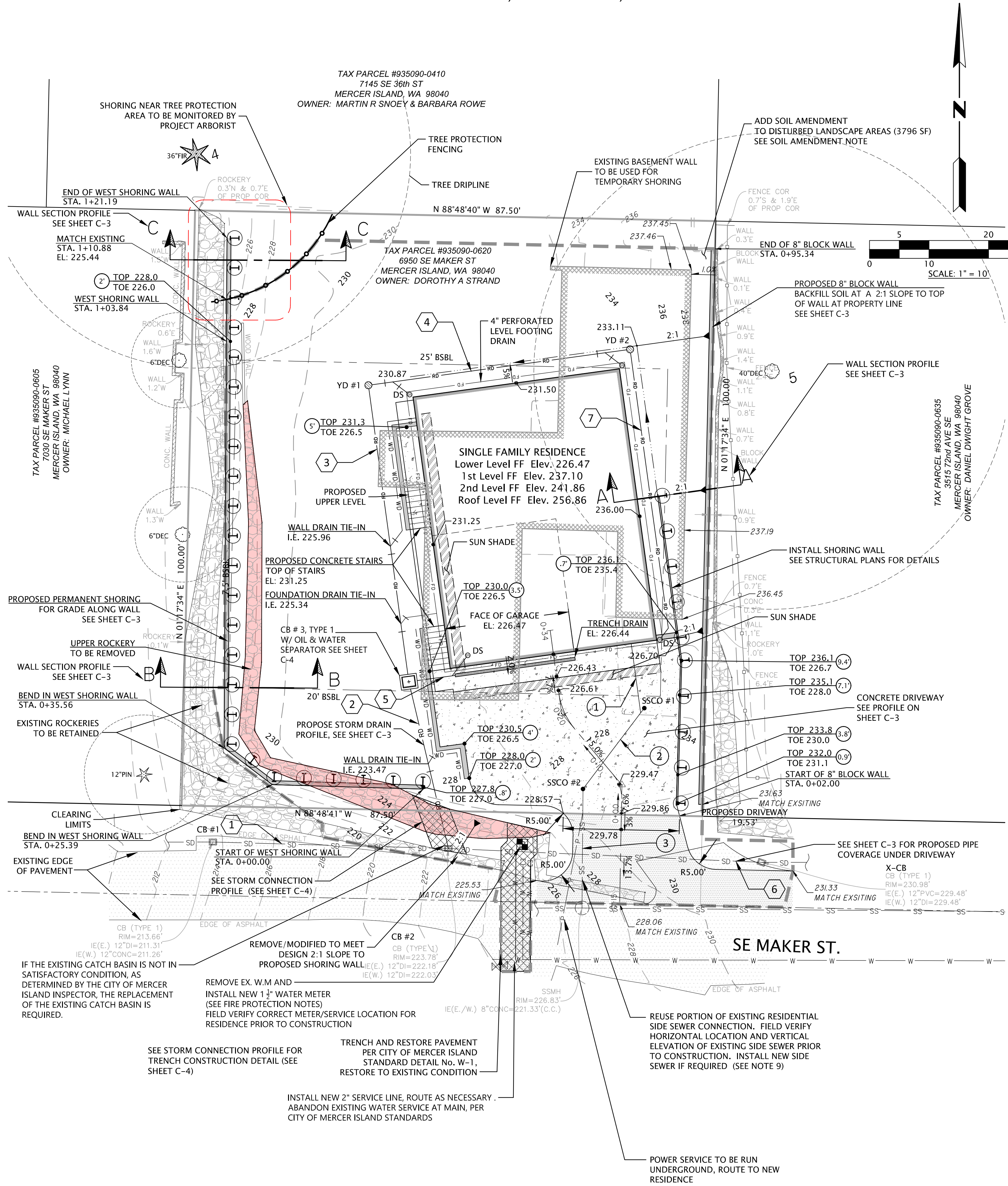
PIPE	SIZE	LENGTH	PIPE INFORMATION
1	12"	40 LF	SD D.I. @ 27.09%
2	6"	29 LF	SD PVC @ 9.97%
3	4"	50 LF	RD PVC @ 4.68%
4	4"	44 LF	RD PVC @ 7.46%
5	4"	8 LF	TRENCH RD PCV @ 8.91%
6	12"	53 LF	EX. SD D.I. @ 13.87%
7	4"	47 LF	RD PVC @ 5.75%

**SANITARY SEWER SYSTEM STRUCTURE TABLE**

NAME	TYPE	VERTICAL	I.E. IN / OUT
EX-SSMH # 1	SSMH, EXISTING	RIM = 226.83	6" PVC IN (N) = 221.91 8" D.I. IN (E) = 221.33 8" D.I. OUT (W) = 221.33
HOUSE	LOWER LEVEL FF	RIM = 226.47	6" PVC OUT (S) = 222.86
SSCO # 1	CLEAN OUT W/ TRAFFIC RATED LID	RIM = 227.93	6" PVC IN (N) = 222.63 6" PVC OUT (SW) = 222.63
SSCO # 2	CLEAN OUT W/ TRAFFIC RATED LID	RIM = 228.70	6" PVC IN (NE) = 222.31 6" PVC OUT (S) = 222.31

**SANITARY SEWER SYSTEM PIPE TABLE**

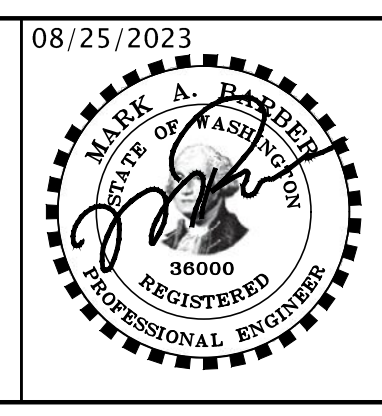
PIPE	SIZE	LENGTH	PIPE INFORMATION
1	6"	12 LF	PVC @ 2.00%
2	6"	16 LF	PVC @ 2.00%
3	6"	20 LF	PVC @ 2.00%



**GOLDSMITH**  
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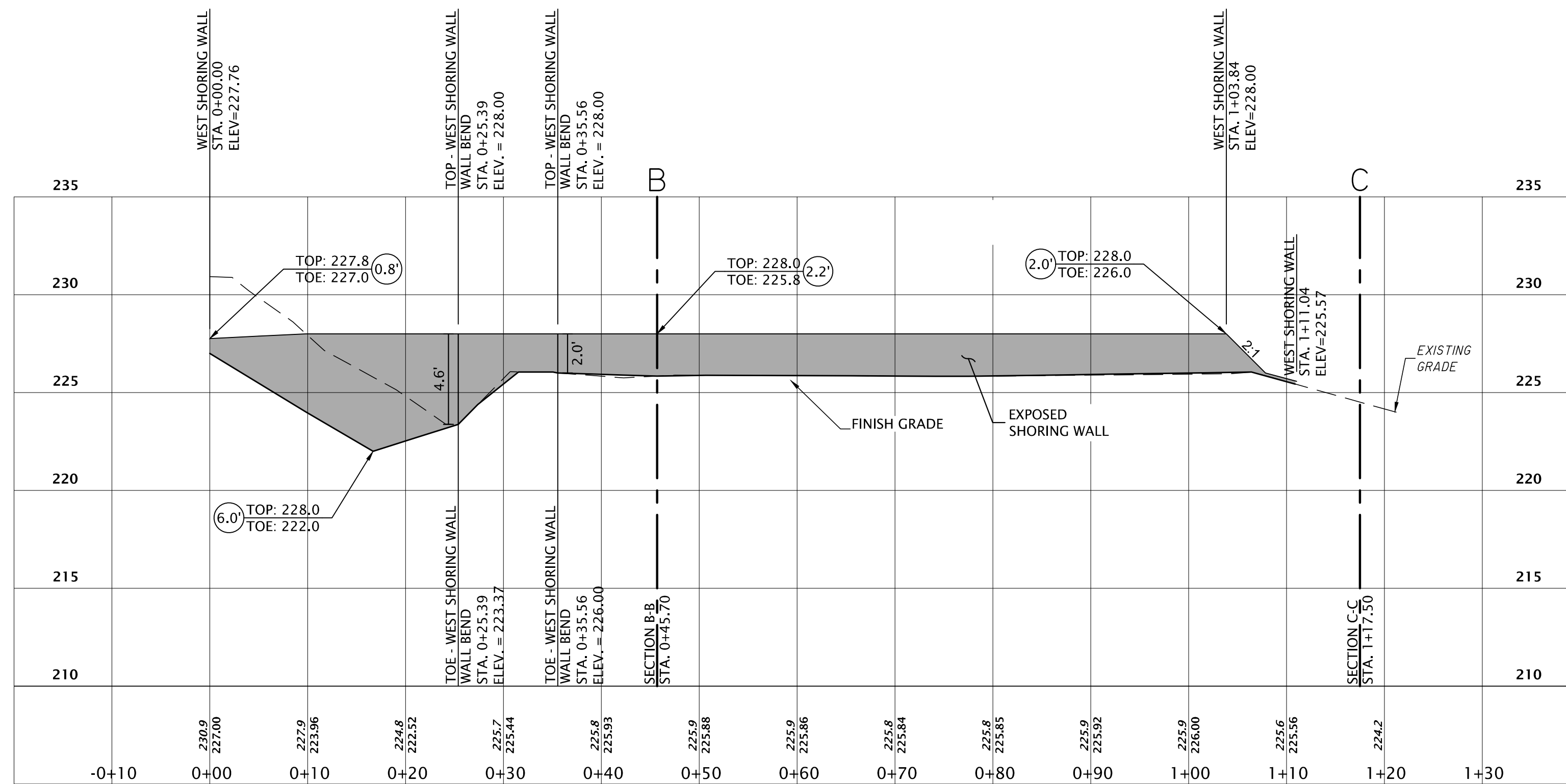
08/25/2023  
DOROTHY STRAND  
GRADING, DRAINAGE AND UTILITY PLAN  
FOR  
STRAND PROPERTY  
6950 SE MAKER ST., CITY OF MERCER ISLAND  
KING COUNTY, WASHINGTON



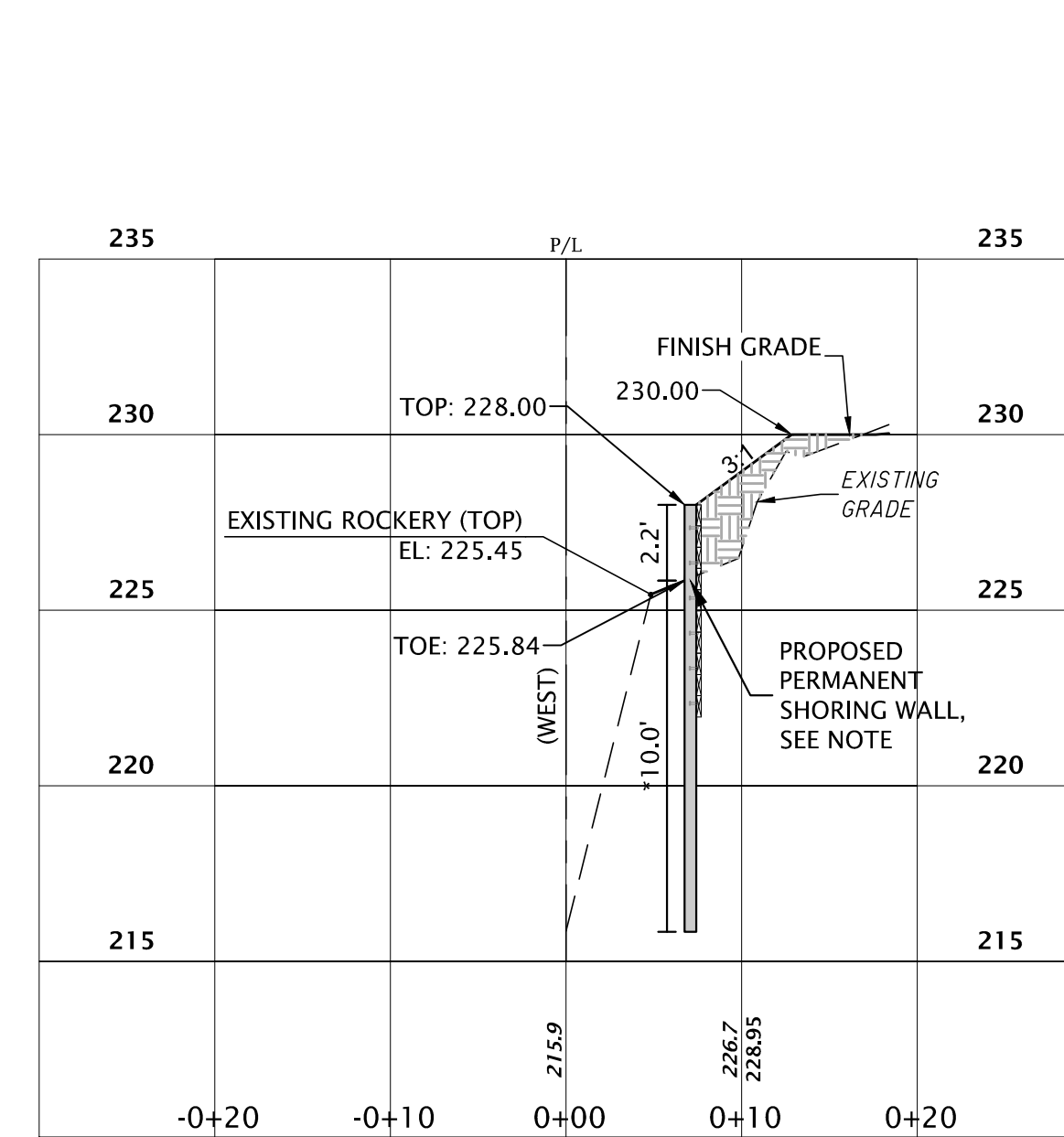
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**C-2**



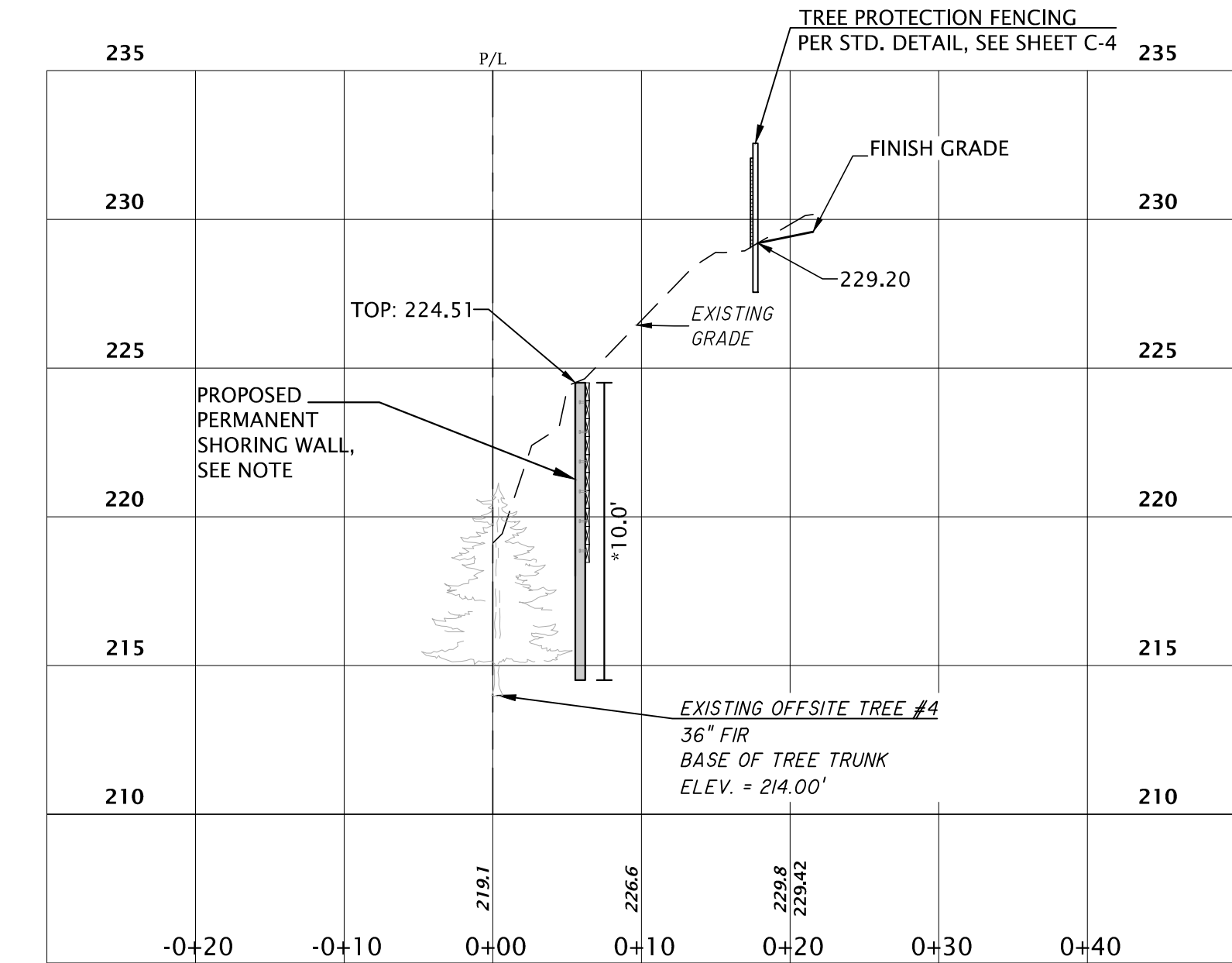
NW ¼, SW ¼ SECTION 12, TOWNSHIP 24 N, RANGE 4 E, W.M.  
CITY OF MERCER ISLAND, KING COUNTY, WASHINGTON



**WEST SHORING WALL PROFILE**  
STA. -0+10.00 TO STA. 1+30.00  
1" = 10.00' HORIZ.  
1" = 5.00' VERT.

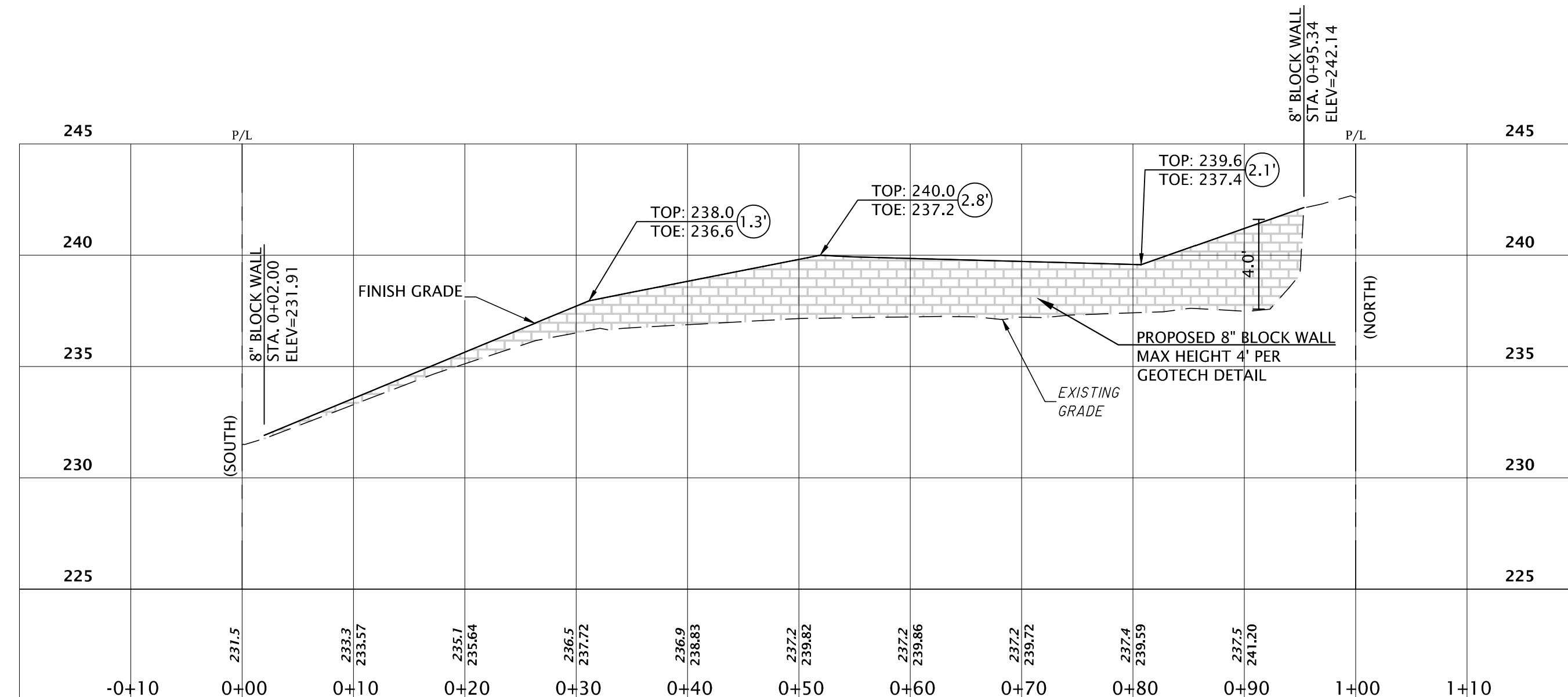


**WEST SHORING WALL SECTION B-B PROFILE**  
STA. -0+20.00 TO STA. 0+20.00  
1" = 10.00' HORIZ.  
1" = 5.00' VERT.

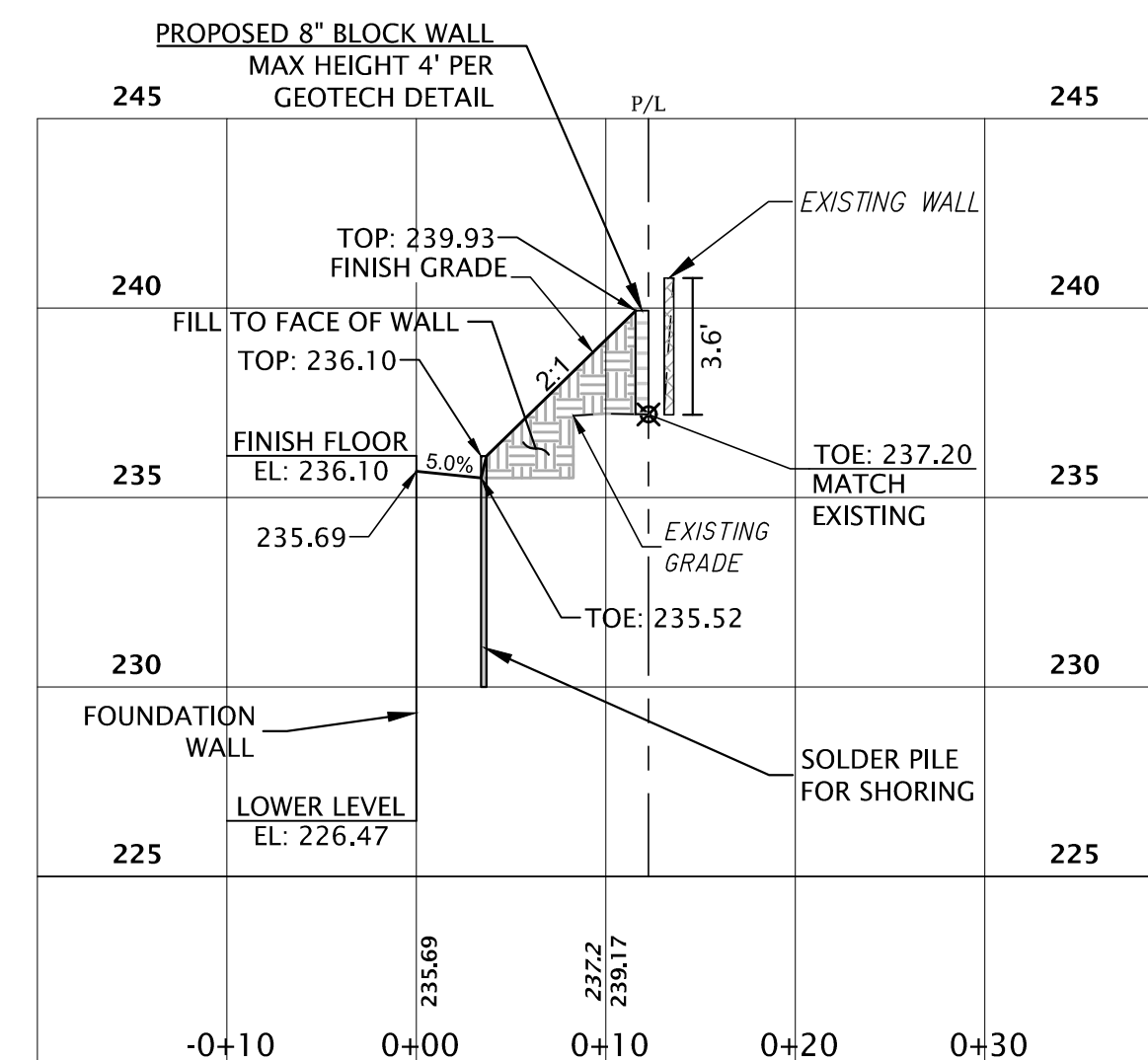


**WEST SHORING WALL SECTION C-C PROFILE**  
STA. -0+20.00 TO STA. 0+40.00  
1" = 10.00' HORIZ.  
1" = 5.00' VERT.

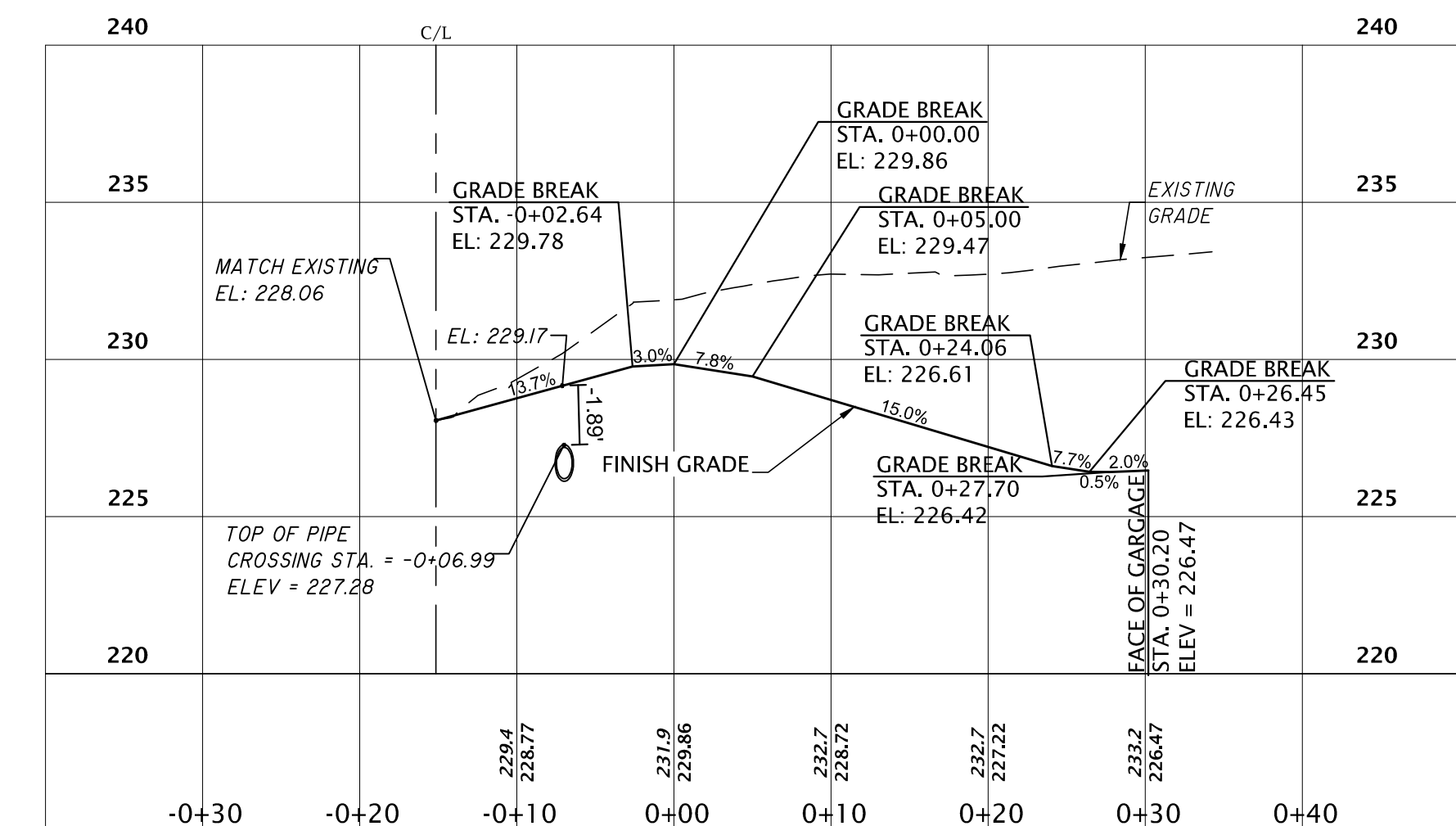
**PERMANENT SHORING WALL NOTES:**  
\*MINIMUM EMBED WALL DEPTH = 10 FEET  
REFERENCE PERMANENT SHORING PLANS



**EAST PROPERTY LINE PROFILE**  
STA. -0+10.00 TO STA. 1+10.00  
1" = 10.00' HORIZ.  
1" = 5.00' VERT.



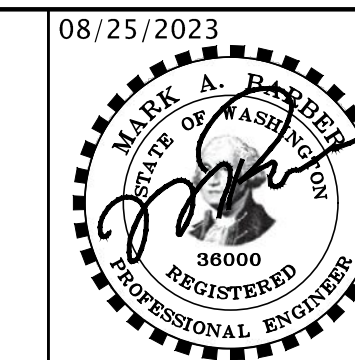
**WALL SECTION A-A PROFILE**  
STA. -0+10.00 TO STA. 0+30.00  
1" = 10.00' HORIZ.  
1" = 5.00' VERT.



**PROPOSE DRIVEWAY PROFILE**  
STA. -0+30.00 TO STA. 0+40.00  
1" = 10.00' HORIZ.  
1" = 5.00' VERT.



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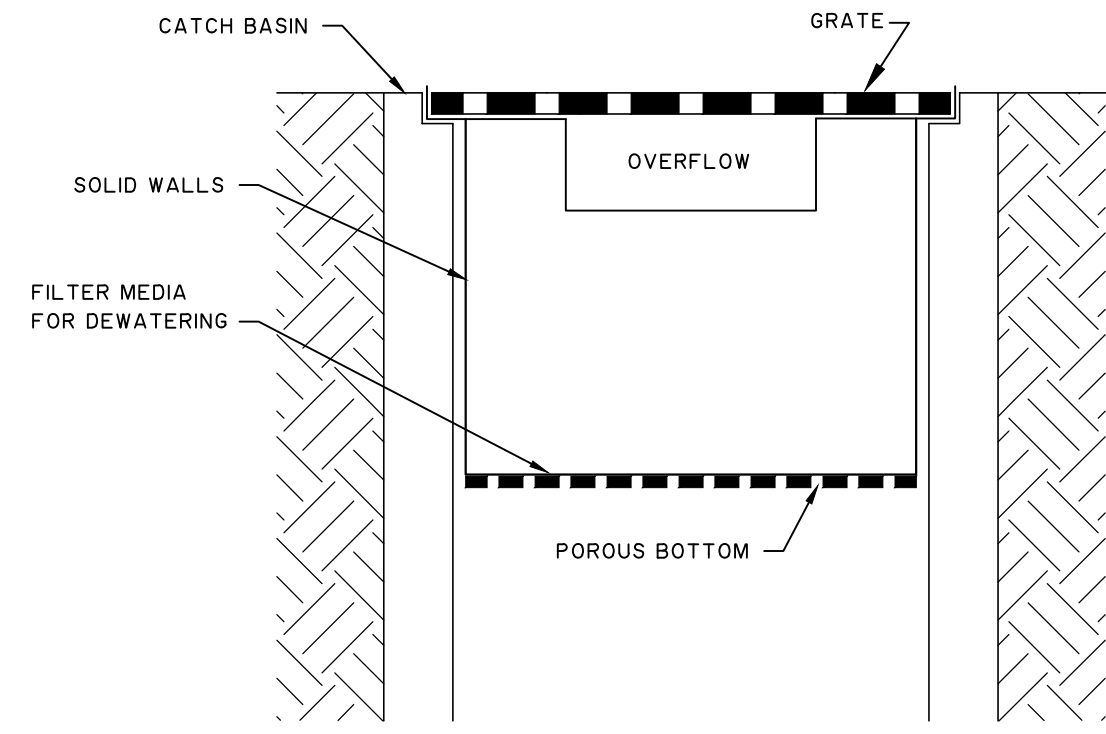
08/25/2023  
DOROTHY STRAND  
DRIVEWAY AND WALL PROFILES/SECTIONS  
FOR  
STRAND PROPERTY  
6950 SE MAKER ST., CITY OF MERCER ISLAND  
KING COUNTY, WASHINGTON

JOB NO. 22038  
SHEET

**C-3**



NW ¼, SW ¼ SECTION 12, TOWNSHIP 24 N, RANGE 4 E, W.M.  
CITY OF MERCER ISLAND, KING COUNTY, WASHINGTON



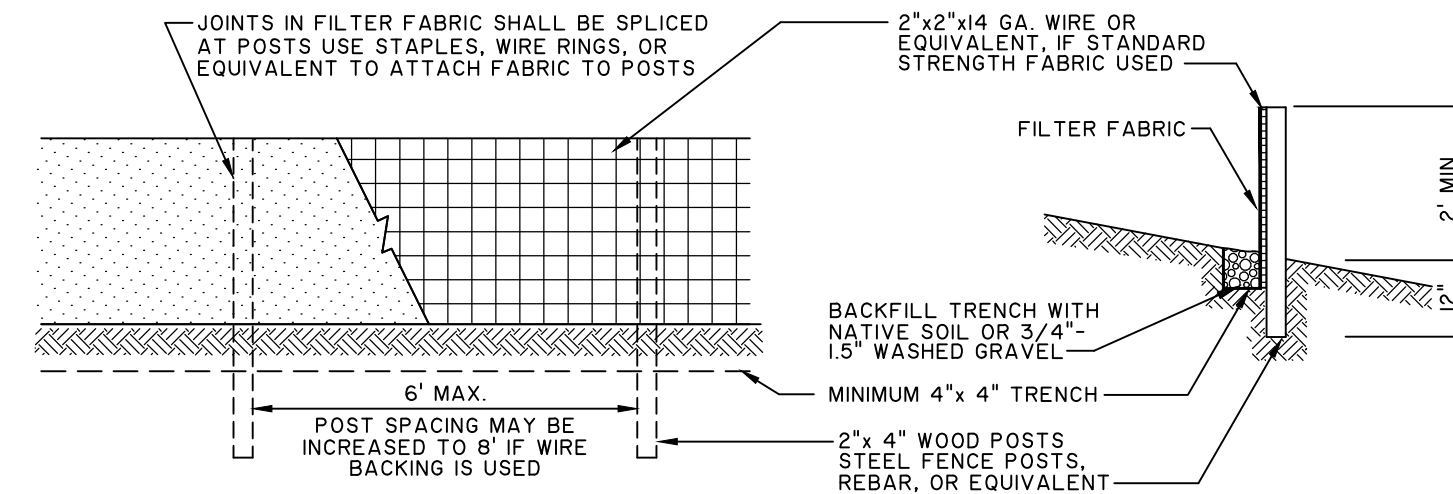
NOTE: THIS DETAIL IS ONLY SCHEMATIC. ANY INSERT IS ALLOWED THAT HAS A MIN. 0.5 C.F. OF STORAGE, THE MEANS TO DEWATER THE STORED SEDIMENT, AN OVERFLOW, AND CAN BE EASILY MAINTAINED.

**MAINTENANCE STANDARDS**

1. ANY ACCUMULATED SEDIMENT ON OR AROUND THE FILTER FABRIC PROTECTION SHALL BE REMOVED IMMEDIATELY. SEDIMENT SHALL NOT BE REMOVED WITH WATER, AN ALL SEDIMENT MUST BE DISPOSED OF AS FILL ON-SITE OR HAULED OFF-SITE.
2. ANY SEDIMENT IN THE CATCH BASIN INSERT SHALL BE REMOVED WHEN THE SEDIMENT HAS FILLED ONE-THIRD OF THE AVAILABLE STORAGE. THE FILTER MEDIA FOR THE INSERT SHALL BE CLEANED OR REPLACED AT LEAST MONTHLY.
3. REGULAR MAINTENANCE IS CRITICAL FOR BOTH FORMS OF CATCH BASIN PROTECTION. UNLIKE MANY FORMS OF PROTECTION THAT FAIL GRADUALLY, CATCH BASIN PROTECTION WILL FAIL SUDDENLY AND COMPLETELY IF NOT MAINTAINED PROPERLY.

**CATCH BASIN INSERT DETAIL**

NTS



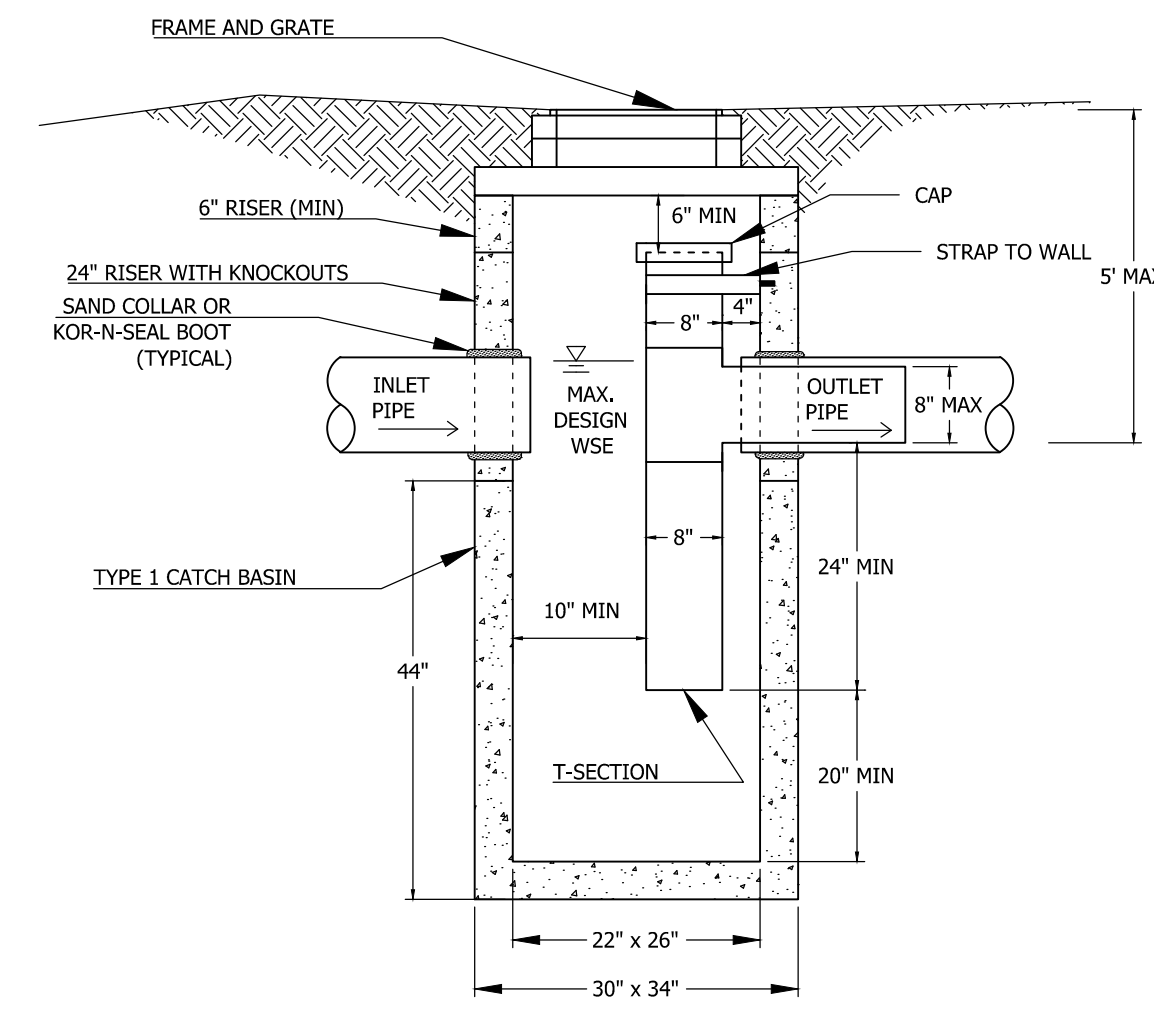
NOTE: FILTER FABRIC FENCES SHALL BE INSTALLED ALONG CONTOUR WHENEVER POSSIBLE.

**MAINTENANCE STANDARDS**

1. ANY DAMAGE SHALL BE REPAIRED IMMEDIATELY.
2. IF CONCENTRATED FLOWS ARE EVIDENT UPHILL OF THE FENCE, THEY MUST BE INTERCEPTED AND CONVEYED TO A SEDIMENT TRAP OR POND.
3. IT IS IMPORTANT TO CHECK THE UPHILL SIDE OF THE FENCE FOR SIGNS OF THE FENCE CLOGGING AND ACTING AS A BARRIER TO FLOW AND THEN CAUSING CHANNELIZATION OF FLOWS PARALLELED TO THE FENCE. IF THIS OCCURS, REPLACE THE FENCE AND/OR REMOVE THE TRAPPED SEDIMENT.
4. SEDIMENT MUST BE REMOVED WHEN THE SEDIMENT IS 6" HIGH.
5. IF THE FILTER FABRIC HAS DETERIORATED DUE TO ULTRAVIOLET BREAKDOWN, IT SHALL BE REPLACED.

**SILT FENCE**

NTS



**NOTES**

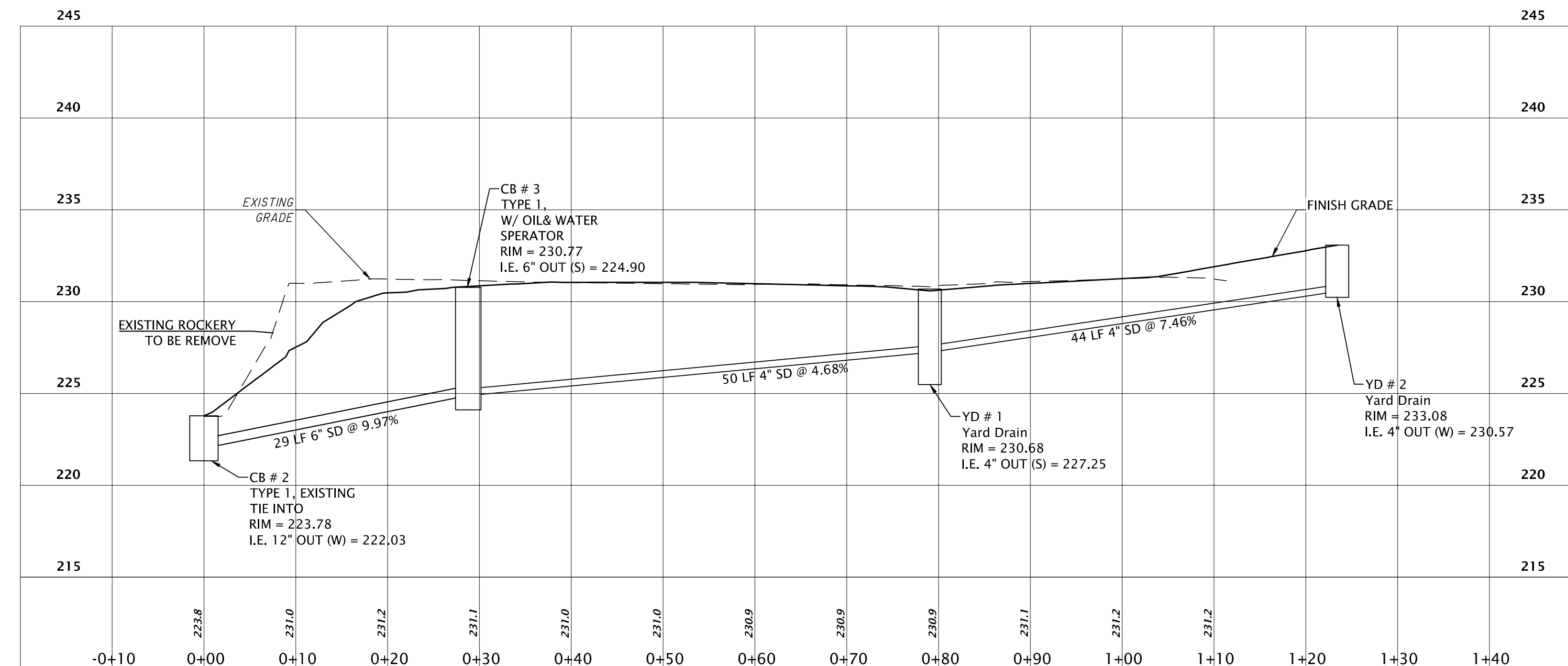
1. MAX. OUTLET PIPE DIAMETER IS 8 INCHES. VERTICAL RISER SECTION SHALL BE ALIGNED PLUMB VERTICALLY. HORIZONTAL RISER SECTION SHALL MATCH OUTLET PIPE SLOPE.
2. ALL METAL PARTS AND SURFACES MUST BE CORROSION RESISTANT. STEEL HARDWARE SHALL BE GALVANIZED. PIPES SHALL BE PVC. COMPLETE CORROSION PROTECTION MUST BE ASSURED.
3. APPLY NON-SHRINK GROUT TO INSIDE AND OUTSIDE OF ALL JOINTS, RINGS, RISERS AND FRAMES.
4. SLIP SMOOTH-BORE HORIZONTAL LEG OF FLOW CONTROL TEE INSIDE CARRIER PIPE.
5. NO FLOW CONTROL JOINT OUTSIDE OF STRUCTURE.

**CB TYPE 1 W/ OIL & WATER SEPARATOR**

NTS

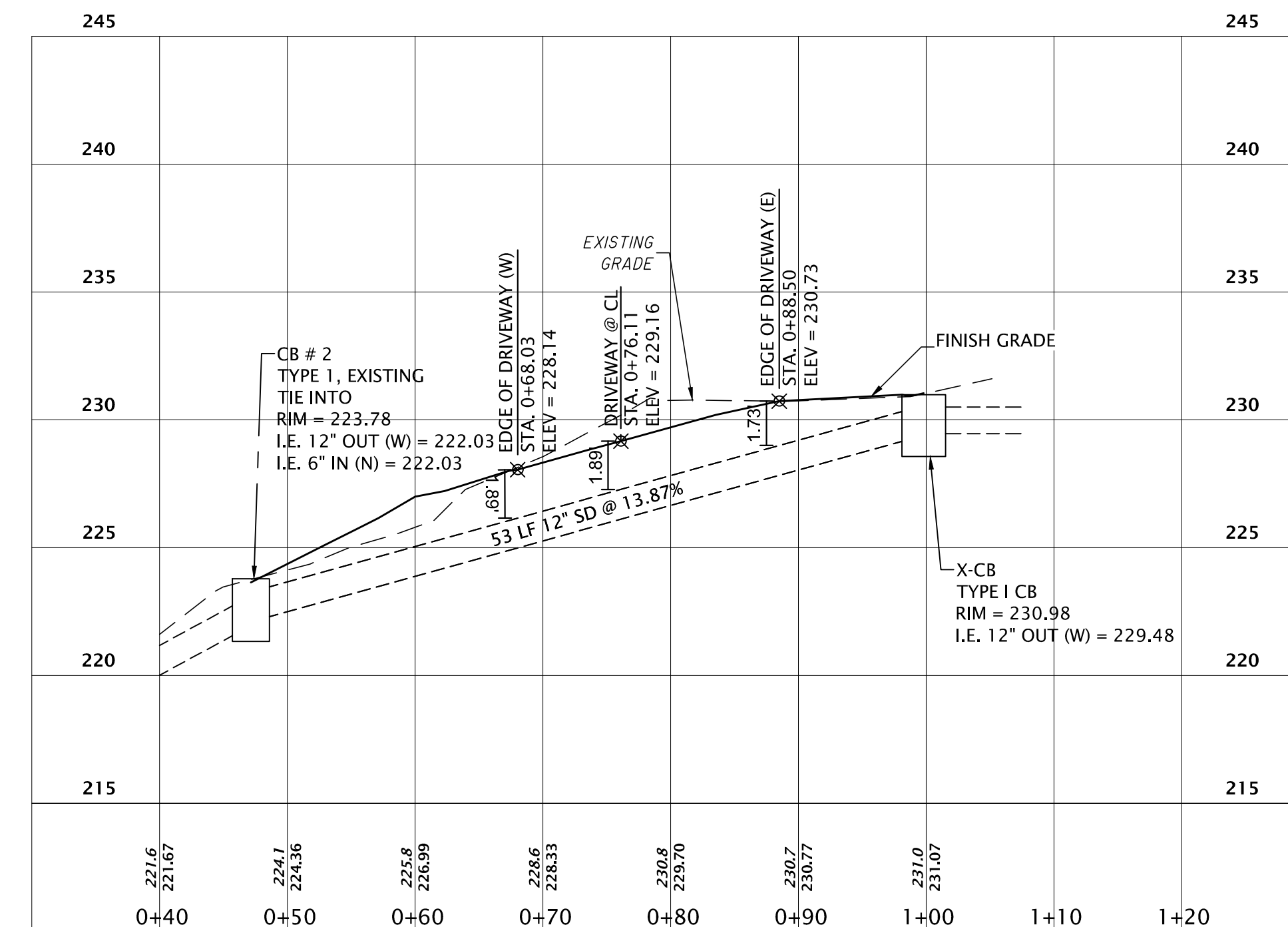
**STANDARD TESC PLAN NOTES:**

1. APPROVAL OF THIS EROSION/SEDIMENTATION CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G. SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).
2. THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
3. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE APPLICANT/CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
4. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO INSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.
5. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
6. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
7. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 48 HOURS FOLLOWING A MAJOR STORM EVENT.
8. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A TRAPPED CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM SYSTEM.
9. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.



**PROPOSE RESIDENTIAL STORM DRAIN CONNECTION PROFILE**

STA. -0+10.00 TO STA. 1+40.00  
1" = 10.00' HORIZ.  
1" = 5.00' VERT.



**EXISTING SE MARKER ST. STORM PROFILE**

STA. 0+40.00 TO STA. 1+20.00  
1" = 10.00' HORIZ.  
1" = 5.00' VERT.



# CRITICAL AREA REVIEW 2 NARRATIVE

2 July 2023

**To**

Molly McGuire – Planner, City of Mercer Island

Ryan Harriman – Planning Manager, City of Mercer Island

**For the Project**

Strand RESIDENCE – 2207-019, ADU23-006

6950 MAKER ST

MERCER ISLAND, WA 98040

Molly and Ryan,

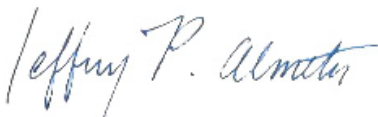
This Critical Area Review 2 submittal is in response to the request on June 23 as part of a round of permit corrections for the proposed single-family residence under permit 2207-019. We are providing the Geotech Report which includes a Critical Area Study that was submitted during the initial permit review process for 2207-019 and has been reviewed as part of that process so there should be a good deal of familiarity with the information it contains. Much of what it outlined below is already understood by much, if not all, of the review staff for this lot.

The proposed design of the house and subsequent revisions to the structure along with additional site work has been coordinated and in compliance with the Geotech Report as well as the City's Geotech Consultant reviews and requests. More specifically the siting of the structure, both location on the lot (away from the West side) as well as relation to bearing soils (lower level at bearing soil depth) conforms to the guidelines outlined in the Geotech Report / Critical Area Study. The addition of a shoring wall near the West side of the lot is in response to the City's Geotech Consultant request to stabilize or replace the existing legally-nonconforming rockery on the western side of the lot to mitigate the hazard. Our initial proposal was, as previously noted, located within the footprint area of the existing construction to minimize / eliminate any impact on that existing legally-nonconforming rockery. In consultation with the project contractor, stabilization was determined to be preferred. The proposed shoring has also been reviewed by both the project Geotech and the City Geotech and has been accepted as a viable solution to mitigate the hazard of the existing legally-nonconforming rockery.

The remaining 2 comments for permit 2206-019 we understand will be addressed separately as part of that permit review process, however if combining any of the information would be helpful please let us know.

Please let me know if there are any questions or if I can clarify anything further.

Thank you for your time,



Jeffrey Almeter





# City of Mercer Island Property Hazard Report

Site Address: 6950 SE MAKER ST

Parcel #: 9350900620

Report Generated on August 9, 2023

## Potential Slide:



## Steep Slope:



## Erosion:



## Seismic:



## Wind Exposure:



## Wind Speed Up Values

1.0 1.3 1.6 1.9



These maps are for the use of City of Mercer Island staff for the purposes of permit application evaluation. It provides a general assessment of known or suspect hazard areas for which the City will require site and project specific evaluation by a Washington State licensed engineer, geologist or engineering geologist prior to issuing a site for development. All areas have not specifically evaluated for hazards and there may be locations that are not correctly represented on these maps. It is the responsibility of the property owners and map users to evaluate risk associated with their proposed development. No site-specific assessment of risk is implied or otherwise indicated by the City of Mercer Island by these maps.

March 21, 2022

JN 22007

Dorothy Strand  
6950 Southeast Maker Street  
Mercer Island, Washington 98040  
via email: [kcra2005@yahoo.com](mailto:kcra2005@yahoo.com)

Subject: **Transmittal Letter – Geotechnical Engineering Study and Critical Area Study**  
Proposed New Residence  
6950 Southeast Maker Street  
Mercer Island, Washington

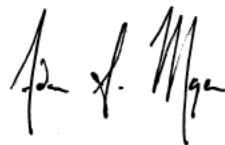
Dear Ms. Strand:

Attached to this transmittal letter is our geotechnical engineering report and Critical Area Study related to geologic hazards for the proposed new residence to be constructed on your property in Mercer Island. The scope of our services consisted of exploring site surface and subsurface conditions, and then developing this report to provide recommendations for general earthwork, stormwater infiltration considerations, critical area (geologically hazardous area) considerations, and design considerations for foundations, retaining walls, subsurface drainage, and temporary excavations/shoring. This work was authorized by your acceptance of our proposal, P-11052, dated December 16, 2021.

The attached report contains a discussion of the study and our recommendations. Please contact us if there are any questions regarding this report, or for further assistance during the design and construction phases of this project.

Respectfully submitted,

GEOTECH CONSULTANTS, INC.



Adam S. Moyer  
Geotechnical Engineer

cc: **Jeffrey Almeter**  
via email: [jeffrey.almeter@gmail.com](mailto:jeffrey.almeter@gmail.com)

ASM/MRM:kg

**GEOTECHNICAL ENGINEERING STUDY AND CRITICAL AREA STUDY**  
**Proposed New Residence**  
**6950 Southeast Maker Street**  
**Mercer Island, Washington**

This report presents the findings and recommendations of our geotechnical engineering study and Critical Area Study for the proposed new residence to be constructed in Mercer Island. The scope of the Critical Area Study is intended to satisfy the requirements of the recently-adopted section 19.07.110 of the Mercer Island City Code (MICC), which applies to Critical Area Studies.

Development of the property is in the planning stage, and detailed plans were not available at the time of this study. We were provided with a preliminary site plan of the proposed new residence and a topographic map of the subject site. Based on these plans and conversations with Jeffrey Almeter, Architect, we understand that the existing house will be demolished, and a new residence will be constructed near the center of the property in generally the same location as the existing structure. We understand the new residence will have two floors over a basement; the proposed basement will have a finished floor near the existing house's basement slab elevation of 228 feet, or several feet below the existing western yard grade. We anticipate a bottom-of-excavation on the order of 11 feet beneath the ground surface along the eastern side of the existing house. Building setbacks of at least 25, 7.5, 20, and 37 feet are proposed from the and northern, eastern, southern, and western property lines, respectively.

If the scope of the project changes from what we have described above, we should be provided with revised plans in order to determine if modifications to the recommendations and conclusions of this report are warranted.

**SITE CONDITIONS**

***SURFACE***

The Vicinity Map, Plate 1, illustrates the general location of the site in Mercer Island. The rectangular-shaped subject site has 87.5 feet of frontage along the northern side of Southeast Maker Street, and has a depth of 100 feet in the north-south direction. A one-story house covers the central and northeastern portions of the property. The western half of the house has a finished floor elevation of 231.3 feet, near the surrounding ground surface, while the northeastern wing overlies a shallow basement with a finished floor elevation of 228.7 feet. An attached one-car garage extends south from the eastern wing, and has a floor slab elevation of 236.8 feet. A relatively flat yard and patio area are located west and north of the house, with an elevation of 228 to 231 feet. This flat yard area appears to have been created by placing loose fill soils over the original ground surface during the original site development, which was confirmed by test borings conducted for our study (this is discussed further in subsequent sections of this report).

The western edge of the flat yard is bordered by a short 2- to 3-foot rockery that sits above a 9- to 10-foot-tall rockery, where the grade drops to the west. Based on the provided topographic survey of the site, the toe of its stepped rockery system is generally located along the western property line. The rockery "wraps around" the subject site's southwestern corner, and straddles the western three-quarters of the southern property line. As Southeast Maker Street rises to the east along the property, the rockery decreases in height until its termination where the subject site's concrete

driveway connects to the right-of-way in the southeast corner of the property. The rockery is its tallest in the southwest corner of the property, with a maximum height of 15.5 feet.

The ground surface rises to the east around the perimeter of the existing house, to an elevation of 236 to 237 feet between the house and the eastern property line. The yard of the eastern adjacent property is elevated above the subject site. A 4- to 5-foot-tall modular block wall borders the eastern property line (on the neighbor's property) alongside length of the existing house, where the grade rises to the yard on the eastern adjacent property; south of the existing house, the block wall transitions into a 5- to 7-foot-tall rockery, which extends the southeast corner of the subject site. Furthermore, offset approximately 5 feet east and upslope of the northern half of the block wall along the eastern property line, is a 5- to 7-foot-tall rockery that rises to the neighbor's level yard to the east. The rockery and block wall located on the eastern property likely were also constructed to retain fill placed to level that neighboring lot.

The City of Mercer Island's GIS tool maps the subject site within several geologic hazard areas. The majority of the site is mapped to lie within a seismic hazard area, and the entire property is mapped within both a potential landslide hazard area and an erosion hazard area. We did not observe any indications of recent slope instability on or around the site during our recent visit to the property. The mapped geologic hazard areas and their relation to the project are discussed in more detail in subsequent sections of this report.

## ***SUBSURFACE***

The subsurface conditions were explored by drilling three test borings and excavating two test holes at the approximate locations shown on the Site Exploration Plan, Plate 2. Our exploration program was based on the proposed construction, anticipated subsurface conditions and those encountered during exploration, and the scope of work outlined in our proposal.

The test borings were drilled on February 4, 2022 using a track-mounted, hollow-stem auger drill. Samples were taken at approximate 2.5- to 5-foot intervals with a standard penetration sampler. This split-spoon sampler, which has a 2-inch outside diameter, is driven into the soil with a 140-pound hammer falling 30 inches. The number of blows required to advance the sampler a given distance is an indication of the soil density or consistency. A geotechnical engineer from our staff observed the drilling process, logged the test borings, and obtained representative samples of the soil encountered. The Test Boring Logs are attached as Plates 3 through 5.

A geotechnical engineer from our firm excavated the test holes on February 4, 2022 with hand auger equipment. The Test Hole Logs are attached to the end of this report as Plate 6.

### **Soil Conditions**

The subsurface explorations conducted for the project encountered native soils consisting of slightly gravelly, silty sand that became dense to very dense. The dense to very dense soil is glacially-compressed, and is termed glacial till. However, the borings found 5.5 to 11 feet of loose, silty sand fill beneath the relatively flat yard covering the western side of the property.

Test Boring 1 was conducted in the northern end of the western yard and encountered 5.5 feet of loose silty sand fill soils overlying the remnant topsoil layer. Beneath the buried topsoil layer, native loose to medium-dense silty clayey sand with gravel was revealed; the

silty clayey sand became dense to very dense (glacial till) below a depth of 10 feet. The test boring was terminated at a depth of 19.4 feet due to refusal in the very dense glacial till. A thin sand layer was encountered within the glacial till from 15 to 17 feet.

Test Boring 2 was conducted in the southwest corner of the property, relatively close to the top of the approximately 12- to 13-foot-tall, tiered rockeries that border the property's western property line. Approximately 11 feet of loose silty sand fill soils were encountered over the remnant topsoil and overlying medium-dense silty clayey sand. The native soils became very dense (glacial till) below 15 feet and extended to the maximum-explored depth of 21.5 feet.

Test Boring 3, located in the southeast corner of the property, encountered a thin layer of loose fill beneath the existing driveway. Native, medium-dense silty clayey sand was encountered beneath the fill, and became dense to very dense (glacial till) 5 feet beneath the ground surface.

The hand-excavated test holes were conducted at the base of the adjacent eastern modular wall and rockery. Test Hole 1 was conducted near the toe of the neighbor's rockery. Medium-dense, native, silty clayey sand was encountered 2.8 feet beneath the ground surface, or near the base of the adjacent rockery. Test Hole 2 was conducted near the northern end of the subject site's eastern property line and along the toe of the 4- to 5-foot-tall modular block wall that rises to the east on the neighbor's property. Loose silty sand fill soils extended 12 inches beneath the ground surface, overlying loose native silty sand. Loose to medium-dense gravelly sand was revealed below 3.2 feet. The test hole was terminated at 4 feet due to refusal in the gravelly soils. Based on the observed conditions, we expect that both the modular wall and rockery were originally constructed to retain fill placed to level the adjacent eastern property.

No obstructions were revealed by our explorations. However, debris, buried utilities, and old foundation and slab elements are commonly encountered on sites that have had previous development. Although our explorations did not encounter cobbles or boulders, they are often found in soils that have been deposited by glaciers or fast-moving water.

### **Groundwater Conditions**

No groundwater seepage was observed in our subsurface explorations. The test borings and test holes were left open for only a short time period. It should be noted that groundwater levels vary seasonally with rainfall and other factors. It is common to encounter at least localized groundwater perched on top of the impervious glacial till following extended wet weather.

The stratification lines on the logs represent the approximate boundaries between soil types at the exploration locations. The actual transition between soil types may be gradual, and subsurface conditions can vary between exploration locations. The logs provide specific subsurface information only at the locations tested. If a transition in soil type occurred between samples in the borings, the depth of the transition was interpreted. The relative densities and moisture descriptions indicated on the test boring and test hole logs are interpretive descriptions based on the conditions observed during drilling and excavation.

### **CRITICAL AREA STUDY (MICC 19.07)**

**Seismic Hazard and Potential Landslide Hazard Areas:** The western three-quarters of the subject site is located within a mapped Seismic Hazard Area and the entire subject site is located within a Potential Landslide Hazard area. Both geologic hazard areas cover much of the general vicinity to the north, south, and west to Lake Washington. As previously discussed, the core of the subject site consists of dense, glacially compressed, silty sand (glacial till) that has a low potential for deep-seated landslides. No recent large-scale movement has been documented in this area. The proposed new residence will be supported on foundations bearing directly on the dense glacial till soils which are not liquefiable due to their dense nature and the absence of near-surface groundwater. This mitigates the Seismic Hazard.

Mitigation measures for the Potential Landslide Hazard are discussed in the following section.

**Steep Slope Hazard Areas:** Based on the provided topographic map of the subject site, the tiered rockery along the western edge of the site has an inclination of at least 40 percent over a horizontal distance of 30 feet (which the City of Mercer Island code defines as a Steep Slope). This steep slope area was created by filling, likely when the lot was originally developed. This was a common practice at the time, as evidenced by the modular wall and rockery that also retain fill place for the eastern lot. A Steep Slope is a qualification as a Landslide Hazard Area under the Mercer Island Code. The grade drops approximately 14.5 feet over 30 horizontal feet (for an inclination of 49 percent), rising from the toe of the western rockery. Both the existing development, and the proposed new residence will be located approximately 19 to 20 feet from the top of the western manmade steep slope (rockery), or within the prescriptive minimum 25-foot buffer for Shallow-Seated Landslide Hazard Areas that extends from the top of a steep slope.

The test borings conducted for this project found dense glacial till not susceptible to deep-seated movement underlies the subject site. However, as discussed above, the western end of the site and the western steep slope appears to consist of loose fill soils. We understand the proposed project will not disturb the approximate 20-foot setback between the existing house (and new residence) and the top of the western adjacent steep slope.

We conducted a slope stability analysis of the western steep slope using the modeling program Slope/W developed by GeoStudio. Based on this analysis (attached to the end of this report for reference), a potential deep-seated slope failure that reaches the western edge of the proposed residence has static and seismic safety factors greater than 1.5 and 1.2, respectively. The modelled failures occur in the loose upper soils above the competent glacial till.

As further discussed in this report, the proposed new residence will be supported on foundations bearing directly on the dense underlying glacial till, which are not susceptible to deep-seated movement. The western perimeter of the foundation wall of the residence should be designed as a retaining wall to retain the slab subgrade soils beneath the residence. Furthermore, we recommend that no filling above the existing grade occurs west of the new residence, in order to avoid decreasing the stability of the filled area further. No new structures (including patios or decks) should be constructed west of the new residence, and no staging of materials for the construction of the residence should occur west of the residence footprint. Therefore, it is our opinion that no additional buffers or setbacks are required from the steep slope, provided the recommendations presented in this report are followed. The recommendations presented in the report are intended to prevent adverse impacts to the stability of the slope on the site and the neighboring properties, and to protect the planned development from damage in the event of potential shallow soil movement on the steep slope.



Based on our analyses, and observations, the rockeries placed in front of the fill on the west side of the lot are not engineered to properly retain the loose soils. As a result, there currently exists a risk that the fill and rockeries could shift or fail in the future. This would most likely occur during wet conditions or a large earthquake. Providing stability for these non-engineered rockeries would require the installation of a properly-designed stabilization wall embedded into the underlying glacial till. If the western yard area remains undisturbed, the planned development will not increase the risk of future slope movement. Further recommendations to prevent adverse impacts to stability of both the western rockeries and the adjacent eastern walls/rockery are discussed below in the **General** section.

**Erosion Hazard Areas:** The site also meets the City of Mercer Island's criteria for an Erosion Hazard Area. The temporary erosion control measures needed during the site development will depend heavily on the weather conditions that are encountered during the site work. One of the most important considerations, particularly during wet weather, is to immediately cover any bare soil areas to prevent accumulated water or runoff from the work area from becoming silty in the first place. A wire-backed silt fence bedded in compost, not native soil or sand, should be erected as close as possible to the planned work area, and the existing vegetation between the silt fence and the top of the steep slope be left in place. Rocked construction access and staging areas should be established wherever trucks will have to drive off of pavement, in order reduce the amount of soil or mud carried off the property by trucks and equipment. Covering the base of the excavation with a layer of clean gravel or rock is also prudent to reduce the amount of mud and silty water generated. Cut slopes and soil stockpiles should be covered with plastic during wet weather. Soil stockpiles should be minimized. Following rough grading, it may be necessary to mulch or hydroseed bare areas that will not be immediately covered with landscaping or an impervious surface.

**Buffers and Mitigation:** Under MICC 19.07.160(C), a prescriptive buffer of 25 feet is indicated from all sides of a shallow landslide-hazard area. The recommendations presented in this report are intended to protect the planned construction, which will be located within the footprint of the existing house, which is set back approximately 20 feet from the top of the rockery that defines the top of the steep slope along the western perimeter of the property.

As noted above, the entire subject site lies within a mapped Potential Landslide Hazard Area and the prescriptive buffer would encompass the entire residence footprint and the planned development area.

No buffer is required by the MICC for an Erosion Hazard Area.

**Recommended Buffer:** In order to prevent adverse impacts to the stability or erosion potential on, and near, the steep slope, we recommend that no filling or substantial disturbance (such as clearing, utility installation, or construction staging) occur within 20 feet of the existing western rockery without the review of the project geotechnical engineer.

We recognize that the planned development will occur within the prescriptive critical area buffers. The recommendations presented in this geotechnical report are intended to allow the project to be constructed in the proposed configuration without adverse impacts to critical areas on the site or the neighboring properties. The geotechnical recommendations associated with foundations and erosion control will mitigate any potential hazards to critical areas on the site.

**Statement of Risk:** In order to satisfy the City of Mercer Island's requirements, a statement of risk is needed. As such, we make the following statement:

*Provided the recommendations in this report are followed, it is our professional opinion that the recommendations presented in this report for the planned alterations will render the development as safe as if it were not located in a geologically hazardous area, and will not adversely impact critical areas on adjacent properties.*

## **CONCLUSIONS AND RECOMMENDATIONS**

### **GENERAL**

*THIS SECTION CONTAINS A SUMMARY OF OUR STUDY AND FINDINGS FOR THE PURPOSES OF A GENERAL OVERVIEW ONLY. MORE SPECIFIC RECOMMENDATIONS AND CONCLUSIONS ARE CONTAINED IN THE REMAINDER OF THIS REPORT. ANY PARTY RELYING ON THIS REPORT SHOULD READ THE ENTIRE DOCUMENT.*

The subsurface explorations conducted for this study encountered dense glacial till beneath the subject site. On the eastern, upslope side of the property, the dense glacial till was revealed approximately 5 feet beneath the ground surface; however, the two test borings conducted west of the existing house footprint encountered 5.5 to 11 feet of loose fill soils overlying the native silty sands below. The dense glacial till was encountered 10 to 15 feet below the flat western yard, increasing in depth to the west. It appears fill soils were placed over the original sloping ground surface when the site was first developed, to create the flat western yard and the rockery along the property's western perimeter was constructed to "retain" these fill loose soils. This is discussed further below.

Based on the provided plans, the proposed new residence will be constructed within the existing development's footprint, and will not extend any farther west than the existing house. Based on our subsurface explorations, the dense glacial till rises to the east and is located within several feet of the ground surface beneath both the existing house and proposed residence footprints. We understand the new residence will overlie a basement with a finished floor elevation near 228 feet, or several feet beneath the existing ground surface. Therefore, we believe the new residence can be constructed on conventional footings bearing directly on the dense glacial till, which is not susceptible to slope instability. However, several feet of overexcavation may still be necessary beneath the western perimeter of the new residence's foundation to reach the competent glacial till soils below. No structural fill should be placed between the glacial till and the new footings. This western foundation wall will also need to be designed to retain the loose soils located upslope of the foundation wall and beneath the new residence.

We observed no signs of slope instability of the western perimeter rockery (steep slope) during our site visits. However, due to the loose nature of the upper fill soils behind the rockery, it would only be considered moderately stable, and likely has a current factor of safety of 1.0 or slightly higher with regards to slope stability. As previously discussed, based on our slope stability analysis, a potential deep-seated slope failure that reaches the western edge of the proposed residence has static and seismic safety factors greater than 1.5 and 1.2, respectively. The recommendations presented in this report to support the residence directly on the underlying glacial till soils, and for the foundations to retain the soils beneath the residence, are intended to prevent the proposed development from being impacted by the potential future movement of the loose upper soils on the western half of the site (which are outside of the proposed development area). Furthermore, the new building loads applied directly to the dense glacial till soils will not impact the stability of the loose upper soils that comprise the western steep slope. However, due to the moderately-stable condition of the existing western rockery, that area could be affected by future soil movement. It is

impossible to accurately assess the extent of such future movement, which could range in size from simple shifting of the rockeries to more extensive movement or failure of the fill and rockeries. As discussed above, the planned construction of the new house can be undertaken without increasing this risk, but an extensive slope stabilization system would be necessary to prevent future movement of the fill and western rockeries. We recommend that the area west of the existing residence not be disturbed as part of the proposed development. This means no fill should be placed west of the existing/new residence and the area should also not be used for construction staging. Disturbance of this western area should be limited to the minimum necessary for landscaping. A sprinkler system should not be installed for the western yard, due to the potential for leakage in the underground piping, which could trigger a failure. All collected stormwater should be directed away from the western slope and to the stormwater collection system.

The excavation for the upslope eastern half of the proposed residence will be an important geotechnical consideration for the project where the grade rises to the east onto the neighboring property. A 4- to 5-foot-tall block wall is located on the eastern adjacent property along the shared property line with the subject site. Furthermore, offset approximately 5 feet east and upslope of the northern half of the block wall, is a 5- to 7-foot-tall rockery that rises to the upper level of the neighbor's yard to the east. The test hole we conducted along the toe of the block wall indicates the wall is constructed on loose fill and native soils. We understand the new residence will be constructed inside (west) of the existing house's eastern foundation wall and the new finished floor will generally match that of the existing basement near slab near elevation 228 feet. However, to prevent the excavation for the proposed residence from undermining the neighboring retaining wall and rockery, no un-shoring excavation should extend below the existing grade along the east side of the site. It may be feasible to use the existing eastern basement foundation wall for temporary shoring; however, we anticipate the existing wall will require structural bracing. This will need to be evaluated and designed by the project structural engineer. Alternatively, temporary shoring in the form of cantilevered soldier piles will be required along the eastern perimeter of the proposed excavation.

Additionally, the long-term stability of the eastern tiered block retaining wall and rockery is questionable. The tiered block wall and rockery along the eastern property line are likely at least partially retaining loose fill soils placed to create the eastern neighbor's flat yard. Therefore, we also recommend the space between the eastern perimeter foundation wall of new residence and the face of the existing block wall along the property line be filled with structural fill to provide stability to the toe of the tiered walls along the eastern property line.

The glacial till soils underlying the site are essentially impervious. Any water that percolates through the upper sand soils will become perched above the impervious underlying glacial till and migrate downslope in the direction of the steep slope on the western end of the property. This could reduce the stability of that slope. Therefore, it is our opinion that onsite dispersion or concentrated infiltration of collected stormwater is not appropriate for the subject site. All collected stormwater should be tightlined to an approved off-site stormwater discharge system.

All, or the vast majority, of the excavated soil will be unsuitable for reuse on the site. The native soils and upper un-engineered fill soils are silty in nature and thus are very difficult to adequately recompact due to their moisture sensitivity. As a result, we expect that excavated soils will be hauled off the site, and imported granular fill will be needed for the project. No fill soils should be stockpiled in the western yard area.

The above section entitled **Erosion Hazard Areas** covers typical temporary erosion control measures that would be prudent. In preventing erosion control problems on any site, it is most

important that any disturbed soil areas be immediately protected. This requires diligence and frequent communication on the part of the general contractor and earthwork subcontractor. As with all construction projects undertaken during potentially wet conditions, it is important that the contractor's on-site personnel are familiar with erosion control measures and that they monitor their performance on a regular basis. It is also appropriate for them to take immediate action to correct any erosion control problems that may develop, without waiting for input from the geotechnical engineer or representatives of the City.

The drainage and/or waterproofing recommendations presented in this report are intended only to prevent active seepage from flowing through concrete walls or slabs. Even in the absence of active seepage into and beneath structures, water vapor can migrate through walls, slabs, and floors from the surrounding soil, and can even be transmitted from slabs and foundation walls due to the concrete curing process. Water vapor also results from occupant uses, such as cooking, cleaning, and bathing. Excessive water vapor trapped within structures can result in a variety of undesirable conditions, including, but not limited to, moisture problems with flooring systems, excessively moist air within occupied areas, and the growth of molds, fungi, and other biological organisms that may be harmful to the health of the occupants. The designer or architect must consider the potential vapor sources and likely occupant uses, and provide sufficient ventilation, either passive or mechanical, to prevent a build up of excessive water vapor within the planned structure.

As with any project that involves demolition of existing site buildings and/or extensive excavation and shoring, there is a potential risk of movement on surrounding properties. This can potentially translate into noticeable damage of surrounding on-grade elements, such as foundations and slabs. However, the demolition, shoring, and/or excavation work could just translate into *perceived* damage on adjacent properties. Unfortunately, it is becoming more and more common for adjacent property owners to make unsubstantiated damage claims on new projects that occur close to their developed lots. Therefore, we recommend making an extensive photographic and visual survey of the project vicinity, prior to demolition activities, installing shoring, and/or commencing with the excavation. This documents the condition of buildings, pavements, and utilities in the immediate vicinity of the site in order to avoid, and protect the owner from, unsubstantiated damage claims by surrounding property owners. Additionally, any adjacent structures should be monitored during demolition and construction to detect soil movements. To monitor their performance, we recommend establishing a series of survey reference points to measure any horizontal deflections of the shoring system. Control points should be established at a distance well away from the walls and slopes, and deflections from the reference points should be measured throughout construction by survey methods.

Geotech Consultants, Inc. should be allowed to review the final development plans to verify that the recommendations presented in this report are adequately addressed in the design. Such a plan review would be additional work beyond the current scope of work for this study, and it may include revisions to our recommendations to accommodate site, development, and geotechnical constraints that become more evident during the review process.

We recommend including this report, in its entirety, in the project contract documents. This report should also be provided to any future property owners so they will be aware of our findings and recommendations.

## **SEISMIC CONSIDERATIONS**

In accordance with the International Building Code (IBC), the site class within 100 feet of the ground surface is best represented by Site Class Type D (Stiff Soil). As noted in the USGS website, the mapped spectral acceleration value for a 0.2 second ( $S_s$ ) and 1.0 second period ( $S_1$ ) equals 1.41g and 0.49g, respectively.

The IBC and ASCE 7 require that the potential for liquefaction (soil strength loss) during an earthquake be evaluated for the peak ground acceleration of the Maximum Considered Earthquake (MCE), which has a probability of occurring once in 2,475 years (2 percent probability of occurring in a 50-year period). The MCE peak ground acceleration adjusted for site class effects ( $F_{PGA}$ ) equals 0.67g. The soils beneath the site are not susceptible to seismic liquefaction under the ground motions of the MCE because of their dense nature and the absence of a defined near-surface water table.

Sections 1803.5 of the IBC and 11.8 of ASCE 7 require that other seismic-related geotechnical design parameters (seismic surcharge for retaining wall design and slope stability) include the potential effects of the Design Earthquake. The peak ground acceleration for the Design Earthquake is defined in Section 11.2 of ASCE 7 as two-thirds (2/3) of the MCE peak ground acceleration, or 0.44g.

## **CONVENTIONAL FOUNDATIONS**

The proposed residence can be supported on conventional continuous and spread footings bearing on undisturbed, dense to very dense glacial till. We recommend that continuous and individual spread footings have minimum widths of 12 and 16 inches, respectively. Exterior footings should also be bottomed at least 18 inches below the lowest adjacent finish ground surface for protection against frost and erosion. The local building codes should be reviewed to determine if different footing widths or embedment depths are required. Footing subgrades must be cleaned of loose or disturbed soil prior to pouring concrete. Depending upon site and equipment constraints, this may require removing the disturbed soil by hand.

Thickened slabs are sometimes included in the design to support interior walls. It is important to remember that thickened slab areas support building loads, just like conventional footings do. For this reason, the subgrade below thickened slabs must be prepared in the same way as for conventional footings. All unsuitable soils have to be removed and any structural fill compacted in accordance with the recommendations of this report. We recommend against the use of thickened slabs for most projects, particularly single-family residential, as it is difficult to ensure that the subgrades have been appropriately prepared. Also, the compacted slab fill has to be protected from disturbance by the earthwork, foundation, and utility contractors.

An allowable bearing pressure of 3,000 pounds per square foot (psf) is appropriate for footings supported on dense to very dense glacial till. A one-third increase in this design bearing pressure may be used when considering short-term wind or seismic loads. For the above design criteria, it is anticipated that the total post-construction settlement of footings founded on competent native soil, will be about one inch, with differential settlements on the order of one half-inch in a distance of 50 feet along a continuous footing with a uniform load.

Lateral loads due to wind or seismic forces may be resisted by friction between the foundation and the bearing soil, or by passive earth pressure acting on the vertical, embedded portions of the

foundation. For the latter condition, the foundation must be either poured directly against relatively level, undisturbed soil or be surrounded by level, well-compacted fill. We recommend using the following ultimate values for the foundation's resistance to lateral loading:

PARAMETER	ULTIMATE VALUE
Coefficient of Friction	0.50
Passive Earth Pressure	300 pcf

Where: pcf is Pounds per Cubic Foot, and Passive Earth Pressure is computed using the Equivalent Fluid Density.

If the ground in front of a foundation is loose or sloping, the passive earth pressure given above will not be appropriate. The above ultimate values for passive earth pressure and coefficient of friction do not include a safety factor.

### **FOUNDATION AND RETAINING WALLS**

Retaining walls backfilled on only one side should be designed to resist the lateral earth pressures imposed by the soil they retain. The following recommended parameters are for walls that restrain level backfill:

PARAMETER	VALUE
Active Earth Pressure *	
- Level Backfill	35 pcf
- Eastern Foundation Wall With Adjacent Upslope Walls	55 pcf
Passive Earth Pressure	300 pcf
Coefficient of Friction	0.50
Soil Unit Weight	130 pcf

Where: pcf is Pounds per Cubic Foot, and Active and Passive Earth Pressures are computed using the Equivalent Fluid Pressures.

\* For a restrained wall that cannot deflect at least 0.002 times its height, a uniform lateral pressure equal to 10 psf times the height of the wall should be added to the above active equivalent fluid pressure. This applies only to walls with level backfill.

The design values given above do not include the effects of any hydrostatic pressures behind the walls and assume that no surcharges, such as those caused by slopes, vehicles, or adjacent foundations will be exerted on the walls. If these conditions exist, those pressures should be added to the above lateral soil pressures. Where sloping backfill is desired behind the walls, we will need to be given the wall dimensions and the slope of the backfill in order to provide the appropriate design earth pressures. The surcharge due to traffic loads behind a wall can typically be accounted for by adding a uniform pressure equal to 2 feet multiplied by the above active fluid density. Heavy construction equipment should not be operated behind retaining and foundation walls within a distance equal to the height of a wall, unless the walls are designed for the additional lateral pressures resulting from the equipment.

The values given above are to be used to design only permanent foundation and retaining walls that are to be backfilled, such as conventional walls constructed of reinforced concrete or masonry. It is not appropriate to use the above earth pressures and soil unit weight to back-calculate soil strength parameters for design of other types of retaining walls, such as soldier pile, reinforced earth, modular or soil nail walls. We can assist with design of these types of walls, if desired.

The passive pressure given is appropriate only for a shear key poured directly against undisturbed native soil, or for the depth of level, well-compacted fill placed in front of a retaining or foundation wall. The values for friction and passive resistance are ultimate values and do not include a safety factor. Restrained wall soil parameters should be utilized the wall and reinforcing design for a distance of 1.5 times the wall height from corners or bends in the walls, or from other points of restraint. This is intended to reduce the amount of cracking that can occur where a wall is restrained by a corner.

### **Wall Pressures Due to Seismic Forces**

Per IBC Section 1803.5.12, a seismic surcharge load need only be considered in the design of walls over 6 feet in height. A seismic surcharge load would be imposed by adding a uniform lateral pressure to the above-recommended active pressure. The recommended seismic surcharge pressure for this project is  $9H$  pounds per square foot (psf), where  $H$  is the design retention height of the wall. Using this increased pressure, the safety factor against sliding and overturning can be reduced to 1.2 for the seismic analysis.

### **Retaining Wall Backfill and Waterproofing**

Backfill placed behind retaining or foundation walls should be coarse, free-draining structural fill containing no organics. This backfill should contain no more than 5 percent silt or clay particles and have no gravel greater than 4 inches in diameter. The percentage of particles passing the No. 4 sieve should be between 25 and 70 percent. Drainage composite similar to Miradrain 6000 should be placed against the backfilled retaining walls. The drainage composites should be hydraulically connected to the foundation drain system. Free-draining backfill should be used for the entire width of the backfill where seepage is encountered. For increased protection, drainage composites should be placed along cut slope faces, and the walls should be backfilled entirely with free-draining soil. The later section entitled ***Drainage Considerations*** should also be reviewed for recommendations related to subsurface drainage behind foundation and retaining walls.

The purpose of these backfill requirements is to ensure that the design criteria for a retaining wall are not exceeded because of a build-up of hydrostatic pressure behind the wall. Also, subsurface drainage systems are not intended to handle large volumes of water from surface runoff. The top 12 to 18 inches of the backfill should consist of a compacted, relatively impermeable soil or topsoil, or the surface should be paved. The ground surface must also slope away from backfilled walls at one to 2 percent to reduce the potential for surface water to percolate into the backfill.

Water percolating through pervious surfaces (pavers, gravel, permeable pavement, etc.) must also be prevented from flowing toward walls or into the backfill zone. Foundation drainage and waterproofing systems are not intended to handle large volumes of infiltrated water. The compacted subgrade below pervious surfaces and any associated drainage layer should therefore be sloped away. Alternatively, a membrane and subsurface collection system could be provided below a pervious surface.

It is critical that the wall backfill be placed in lifts and be properly compacted, in order for the above-recommended design earth pressures to be appropriate. The recommended wall design criteria assume that the backfill will be well-compacted in lifts no thicker than 12 inches. The compaction of backfill near the walls should be accomplished with hand-operated equipment to prevent the walls from being overloaded by the higher soil forces that occur during compaction. The section entitled **General Earthwork and Structural Fill** contains additional recommendations regarding the placement and compaction of structural fill behind retaining and foundation walls.

The above recommendations are not intended to waterproof below-grade walls, or to prevent the formation of mold, mildew or fungi in interior spaces. Over time, the performance of subsurface drainage systems can degrade, subsurface groundwater flow patterns can change, and utilities can break or develop leaks. Therefore, waterproofing should be provided where future seepage through the walls is not acceptable. This typically includes limiting cold-joints and wall penetrations, and using bentonite panels or membranes on the outside of the walls. There are a variety of different waterproofing materials and systems, which should be installed by an experienced contractor familiar with the anticipated construction and subsurface conditions. Applying a thin coat of asphalt emulsion to the outside face of a wall is not considered waterproofing, and will only help to reduce moisture generated from water vapor or capillary action from seeping through the concrete. As with any project, adequate ventilation of basement and crawl space areas is important to prevent a buildup of water vapor that is commonly transmitted through concrete walls from the surrounding soil, even when seepage is not present. This is appropriate even when waterproofing is applied to the outside of foundation and retaining walls. We recommend that you contact an experienced envelope consultant if detailed recommendations or specifications related to waterproofing design, or minimizing the potential for infestations of mold and mildew are desired.

The **General**, **Slabs-On-Grade**, and **Drainage Considerations** sections should be reviewed for additional recommendations related to the control of groundwater and excess water vapor for the anticipated construction.

## **SLABS-ON-GRADE**

The building floors can be constructed as slabs-on-grade atop non-organic native soil, or on structural fill. The subgrade soil must be in a firm, non-yielding condition at the time of slab construction or underslab fill placement. Any soft areas encountered should be excavated and replaced with select, imported structural fill.

Even where the exposed soils appear dry, water vapor will tend to naturally migrate upward through the soil to the new constructed space above it. This can affect moisture-sensitive flooring, cause imperfections or damage to the slab, or simply allow excessive water vapor into the space above the slab. All interior slabs-on-grade should be underlain by a capillary break drainage layer consisting of a minimum 4-inch thickness of clean gravel or crushed rock that has a fines content (percent passing the No. 200 sieve) of less than 3 percent and a sand content (percent passing the No. 4 sieve) of no more than 10 percent. Pea gravel or crushed rock are typically used for this layer.

As noted by the American Concrete Institute (ACI) in the *Guides for Concrete Floor and Slab Structures*, proper moisture protection is desirable immediately below any on-grade slab that will be covered by tile, wood, carpet, impermeable floor coverings, or any moisture-sensitive equipment or



products. ACI recommends a minimum 10-mil thickness vapor retarder for better durability and long term performance than is provided by 6-mil plastic sheeting that has historically been used. A vapor retarder is defined as a material with a permeance of less than 0.3 perms, as determined by ASTM E 96. It is possible that concrete admixtures may meet this specification, although the manufacturers of the admixtures should be consulted. Where vapor retarders are used under slabs, their edges should overlap by at least 6 inches and be sealed with adhesive tape. The sheeting should extend to the foundation walls for maximum vapor protection.

If no potential for vapor passage through the slab is desired, a vapor *barrier* should be used. A vapor barrier, as defined by ACI, is a product with a water transmission rate of 0.01 perms when tested in accordance with ASTM E 96. Reinforced membranes having sealed overlaps can meet this requirement.

We recommend that the contractor, the project materials engineer, and the owner discuss these issues and review recent ACI literature and ASTM E-1643 for installation guidelines and guidance on the use of the protection/blotter material.

The **General, Permanent Foundation and Retaining Walls**, and **Drainage Considerations** sections should be reviewed for additional recommendations related to the control of groundwater and excess water vapor for the anticipated construction.

### **EXCAVATIONS AND SLOPES**

Temporary excavation slopes should not exceed the limits specified in local, state, and national government safety regulations. Also, temporary cuts should be planned to provide a minimum 2 to 3 feet of space for construction of foundations, walls, and drainage. Temporary cuts to a maximum overall depth of about 4 feet may be attempted vertically in unsaturated soil, if there are no indications of slope instability. However, vertical cuts should not be made near property boundaries, or existing utilities and structures. Unless approved by the geotechnical engineer of record, it is important that vertical cuts not be made at the base of sloped cuts. Based upon Washington Administrative Code (WAC) 296, Part N, the loose near-surface soils beneath the subject site would generally be classified as Type C. Therefore, temporary cut slopes greater than 4 feet in height should not be excavated at an inclination steeper than 1.5:1 (Horizontal:Vertical), extending continuously between the top and the bottom of a cut. However, as noted above, no temporary cut slopes should be made in front of the eastern wall and rockery without the use of temporary shoring.

The above-recommended temporary slope inclinations are based on the conditions exposed in our explorations, and on what has been successful at other sites with similar soil conditions. It is possible that variations in soil and groundwater conditions will require modifications to the inclination at which temporary slopes can stand. Temporary cuts are those that will remain unsupported for a relatively short duration to allow for the construction of foundations, retaining walls, or utilities. Temporary cut slopes should be protected with plastic sheeting during wet weather. It is also important that surface runoff be directed away from the top of temporary slope cuts. Cut slopes should also be backfilled or retained as soon as possible to reduce the potential for instability. Please note that sand or loose soil can cave suddenly and without warning. Excavation, foundation, and utility contractors should be made especially aware of this potential danger. These recommendations may need to be modified if the area near the potential cuts has been disturbed in the past by utility installation, or if settlement-sensitive utilities are located nearby.

All permanent cuts into existing soil should be inclined no steeper than 2.5:1 (H:V), provided these cuts are not made below existing settlement-sensitive elements, such as the eastern wall and rockery.

Water should not be allowed to flow uncontrolled over the top of any temporary or permanent slope. All permanently exposed slopes should be seeded with an appropriate species of vegetation to reduce erosion and improve the stability of the surficial layer of soil.

Any disturbance to the existing slope outside of the building limits may reduce the stability of the slope. Damage to the existing vegetation and ground should be minimized, and any disturbed areas should be revegetated as soon as possible. Soil from the excavation should not be placed on the slope, and this may require the off-site disposal of any surplus soil.

### **TEMPORARY CANTILEVERED SOLDIER PILE SHORING**

Cantilevered soldier pile systems have proven to be an efficient and economical method for providing excavation shoring where the depth of excavation is less than approximately 15 feet. A safety factor of 1.2 should be included in the design of the temporary shoring.

#### **Soldier Pile Installation**

Soldier pile walls would be constructed after making planned cut slopes, and prior to commencing the mass excavation, by setting steel H-beams in a drilled hole and grouting the space between the beam and the soil with concrete for the entire height of the drilled hole. The shoring contractor should be prepared to case the holes or use the slurry method if caving soil is encountered. Excessive ground loss in the drilled holes must be avoided to reduce the potential for settlement on adjacent properties. If water is present in a hole at the time the soldier pile is poured, concrete must be tremied to the bottom of the hole.

If shoring is installed close to the face of the existing eastern wall/rockery, the maximum center-to-center spacing of the soldier piles should be limited to 6 feet. This reduces the potential for soil caving during the excavation and placement of lagging between the piles.

As excavation proceeds downward, the space between the piles should be lagged with timber, and any voids behind the timbers should be filled with pea gravel, or a slurry comprised of sand and fly ash. Treated lagging is usually required for permanent walls, while untreated lagging can often be utilized for temporary shoring walls. Temporary vertical cuts will be necessary between the soldier piles for the lagging placement. The prompt and careful installation of lagging is important, particularly in loose or caving soil, to maintain the integrity of the excavation and provide safer working conditions. Additionally, care must be taken by the excavator to remove no more soil between the soldier piles than is necessary to install the lagging. Caving or overexcavation during lagging placement could result in loss of ground on neighboring properties. Timber lagging should be designed for an applied lateral pressure of 30 percent of the design wall pressure, if the pile spacing is less than three pile diameters. For larger pile spacings, the lagging should be designed for 50 percent of the design load.

### **Soldier Pile Wall Design**

Temporary soldier pile shoring that is cantilevered and that has a level backslope should be designed for an active soil pressure equal to that pressure exerted by an equivalent fluid with a unit weight of 40 pounds per cubic foot (pcf).

Shoring walls along the eastern perimeter of the development along the toe of the neighboring tiered walls/rockeries should be designed to include a surcharge for these elements. This surcharge will depend on the proximity of the shoring to the eastern property line.

Additional cut slopes above the shoring walls will exert surcharge pressures. Traffic surcharges can typically be accounted for by increasing the effective height of the shoring wall by 2 feet. We can review the initial shoring design to verify our preliminary surcharge considerations are still appropriate for the design layout.

It is important that the shoring design provides sufficient working room to drill and install the soldier piles, without needing to make unsafe, excessively steep temporary cuts. Cut slopes should be planned to intersect the backside of the drilled holes, not the back of the lagging.

Lateral movement of the soldier piles below the excavation level will be resisted by an ultimate passive soil pressure equal to that pressure exerted by a fluid with a density of 450 pcf. A reduction factor is included in this passive pressure to account for strain compatibility in regards to pile deflection. For permanent walls, we recommend a minimum factor of safety of 1.5 be applied to overturning and sliding calculations when using this ultimate value (temporary installations may use a factor of safety of 1.2). This soil pressure is valid only for a level excavation in front of the soldier pile; it acts on two times the grouted pile diameter. Cut slopes made in front of shoring walls significantly decrease the passive resistance. This includes temporary cuts necessary to install internal braces or rakers. The minimum embedment below the floor of the excavation for cantilever soldier piles should be equal to the height of the "stick-up." A typical cantilevered soldier pile shoring detail was attached to this report as Plate 7.

### **EXCAVATION AND SHORING MONITORING**

As with any shoring system, there is a potential risk of greater-than-anticipated movement of the shoring and the ground outside of the excavation. This can translate into noticeable damage of surrounding on-grade elements, such as foundations and slabs. Therefore, we recommend making an extensive photographic and visual survey of the project vicinity, prior to demolition activities, installing shoring or commencing excavation. This documents the condition of buildings, pavements, and utilities in the immediate vicinity of the site in order to avoid, and protect the owner from, unsubstantiated damage claims by surrounding property owners.

Additionally, the shoring walls and any adjacent foundations should be monitored during construction to detect soil movements. To monitor their performance, we recommend establishing a series of survey reference points to measure any horizontal deflections of the shoring system. Control points should be established at a distance well away from the walls and slopes, and deflections from the reference points should be measured throughout construction by survey methods. At least every other soldier pile should be monitored by taking readings at the top of the pile. Additionally, benchmarks installed on the surrounding buildings should be monitored for at least vertical movement. We suggest taking the readings at least once a week, until it is established

that no deflections are occurring. The initial readings for this monitoring should be taken before starting any demolition or excavation on the site.

### **DRAINAGE CONSIDERATIONS**

We anticipate that permanent foundation walls may be constructed against the shoring walls. Where this occurs, a plastic-backed drainage composite, such as Miradrain, Battledrain, or similar, should be placed against the entire surface of the shoring prior to pouring the foundation wall. Weep pipes located no more than 6 feet on-center should be connected to the drainage composite and poured into the foundation walls or the perimeter footing. A footing drain installed along the inside of the perimeter footing will be used to collect and carry the water discharged by the weep pipes to the storm system. Isolated zones of moisture or seepage can still reach the permanent wall where groundwater finds leaks or joints in the drainage composite. This is often an acceptable risk in unoccupied below-grade spaces, such as parking garages. However, formal waterproofing is typically necessary in areas where wet conditions at the face of the permanent wall will not be tolerable. If this is a concern, the permanent drainage and waterproofing system should be designed by a specialty consultant familiar with the expected subsurface conditions and proposed construction. Plate 8 presents typical considerations for foundation drains at shoring walls.

Footing drains placed inside the building, outside of the building, or behind backfilled walls should consist of 4-inch, perforated PVC pipe surrounded by at least 6 inches of 1-inch-minus, washed rock wrapped in a non-woven, geotextile filter fabric (Mirafi 140N, Supac 4NP, or similar material). At its highest point, a perforated pipe invert should be at least 6 inches below the level of a crawl space or the bottom of a floor slab, and it should be sloped slightly for drainage. All roof and surface water drains must be kept separate from the foundation drain system.

Footing drains outside of the building should be used where: (1) crawl spaces or basements will be below a structure; (2) a slab is below the outside grade; or, (3) the outside grade does not slope downward from a building. A typical footing drain detail is attached to this report as Plate 9. Clean-outs should be provided for potential future flushing or cleaning of footing drains.

As a minimum, a vapor retarder, as defined in the **Slabs-On-Grade** section, should be provided in any crawl space area to limit the transmission of water vapor from the underlying soils. Crawl space grades are sometimes left near the elevation of the bottom of the footings. As a result, an outlet drain is recommended for all crawl spaces to prevent an accumulation of any water that may bypass the footing drains. Providing a few inches of free draining gravel underneath the vapor retarder is also prudent to limit the potential for seepage to build up on top of the vapor retarder.

No groundwater was observed during our field work. If seepage is encountered in an excavation, it should be drained from the site by directing it through drainage ditches, perforated pipe, or French drains, or by pumping it from sumps interconnected by shallow connector trenches at the bottom of the excavation.

The excavation and site should be graded so that surface water is directed off the site and away from the tops of slopes. Water should not be allowed to stand in any area where foundations, slabs, or pavements are to be constructed. Final site grading in areas adjacent to a building should slope away at least one to 2 percent, except where the area is paved. Surface drains should be provided where necessary to prevent ponding of water behind foundation or retaining walls. A discussion of grading and drainage related to pervious surfaces near walls and structures is contained in the **Foundation and Retaining Walls** section.

## **GENERAL EARTHWORK AND STRUCTURAL FILL**

All building and pavement areas should be stripped of surface vegetation, topsoil, organic soil, and other deleterious material. It is important that existing foundations be removed before site development. The stripped or removed materials should not be mixed with any materials to be used as structural fill, but they could be used in non-structural areas, such as landscape beds.

Structural fill is defined as any fill, including utility backfill, placed under, or close to, a building, or in other areas where the underlying soil needs to support loads. All structural fill should be placed in horizontal lifts with a moisture content at, or near, the optimum moisture content. The optimum moisture content is that moisture content that results in the greatest compacted dry density. The moisture content of fill is very important and must be closely controlled during the filling and compaction process.

The allowable thickness of the fill lift will depend on the material type selected, the compaction equipment used, and the number of passes made to compact the lift. The loose lift thickness should not exceed 12 inches, but should be thinner if small, hand-operated compactors are used. We recommend testing structural fill as it is placed. If the fill is not sufficiently compacted, it should be recompacted before another lift is placed. This eliminates the need to remove the fill to achieve the required compaction. The following table presents recommended levels of relative compaction for compacted fill:

<b>LOCATION OF FILL PLACEMENT</b>	<b>MINIMUM RELATIVE COMPACTION</b>
Beneath slabs or walkways	95%
Filled slopes and behind retaining walls	90%
Beneath pavements	95% for upper 12 inches of subgrade; 90% below that level

**Where: Minimum Relative Compaction is the ratio, expressed in percentages, of the compacted dry density to the maximum dry density, as determined in accordance with ASTM Test Designation D 1557-91 (Modified Proctor).**

Structural fill that will be placed in wet weather should consist of a coarse, granular soil with a silt or clay content of no more than 5 percent. The percentage of particles passing the No. 200 sieve should be measured from that portion of soil passing the three-quarter-inch sieve.

## **LIMITATIONS**

The conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our exploration and assume that the soil and groundwater conditions encountered in the test borings and test holes are representative of subsurface conditions on the site. If the subsurface conditions encountered during construction are significantly different from those observed in our explorations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary. Unanticipated conditions are commonly encountered on construction sites and cannot be fully anticipated by merely taking samples in test borings and test holes. Subsurface conditions can also vary between exploration locations. Such unexpected conditions frequently require making additional expenditures to attain a

properly constructed project. It is recommended that the owner consider providing a contingency fund to accommodate such potential extra costs and risks. This is a standard recommendation for all projects.

The recommendations presented in this report are directed toward the protection of only the proposed residence from damage due to slope movement. Predicting the future behavior of steep slopes and the potential effects of development on their stability is an inexact and imperfect science that is currently based mostly on the past behavior of slopes with similar characteristics. This is especially true for un-engineered structures that retain fill soils, which exist to the west and east of the planned development area. Landslides and soil movement can occur on steep slopes before, during, or after the development of property. The owner of any property containing, or located close to steep slopes must ultimately accept the possibility that some slope movement could occur, resulting in possible loss of ground or damage to the facilities around the proposed building residence.

This report has been prepared for the exclusive use of Dorothy Strand and her representatives, for specific application to this project and site. Our conclusions and recommendations are professional opinions derived in accordance with our understanding of current local standards of practice, and within the scope of our services. No warranty is expressed or implied. The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in our report for consideration in design. Our services also do not include assessing or minimizing the potential for biological hazards, such as mold, bacteria, mildew and fungi in either the existing or proposed site development.

### **ADDITIONAL SERVICES**

In addition to reviewing the final plans, Geotech Consultants, Inc. should be retained to provide geotechnical consultation, testing, and observation services during construction. This is to confirm that subsurface conditions are consistent with those indicated by our exploration, to evaluate whether earthwork and foundation construction activities comply with the general intent of the recommendations presented in this report, and to provide suggestions for design changes in the event subsurface conditions differ from those anticipated prior to the start of construction. However, our work would not include the supervision or direction of the actual work of the contractor and its employees or agents. Also, job and site safety, and dimensional measurements, will be the responsibility of the contractor.

During the construction phase, we will provide geotechnical observation and testing services when requested by you or your representatives. Please be aware that we can only document site work we actually observe. It is still the responsibility of your contractor or on-site construction team to verify that our recommendations are being followed, whether we are present at the site or not.

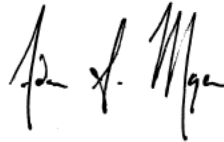
The following plates are attached to complete this report:

Plate 1	Vicinity Map
Plate 2	Site Exploration Plan
Plates 3 - 5	Test Boring Logs
Plate 6	Test Hole Logs
Plate 7	Cantilevered Soldier Pile Shoring
Plate 8	Typical Shoring Drain Detail
Plate 9	Typical Footing Drain Detail
Attachment	Slope Stability Analysis

We appreciate the opportunity to be of service on this project. Please contact us if you have any questions, or if we can be of further assistance.

Respectfully submitted,

GEOTECH CONSULTANTS, INC.



Adam S. Moyer  
Geotechnical Engineer



3/21/2022

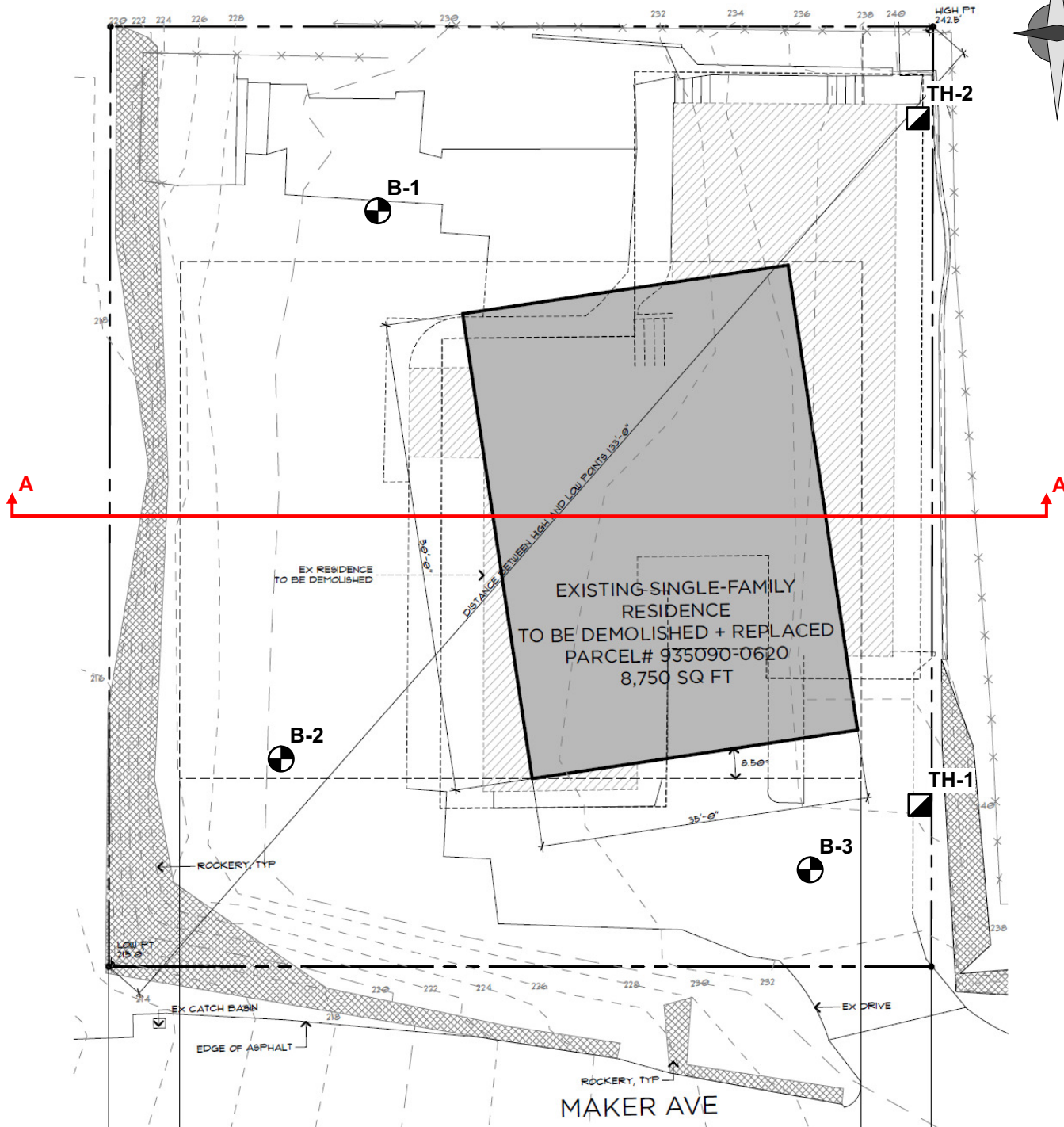
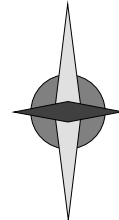
Marc R. McGinnis, P.E.  
Principal

ASM/MRM:kg








**NORTH**



**Legend:**

-  Test Boring Location
-  Test Hole Location
-  Slope Stability Analysis Cross Section



**SITE EXPLORATION PLAN**  
 6950 Southeast Maker Street  
 Mercer Island, Washington

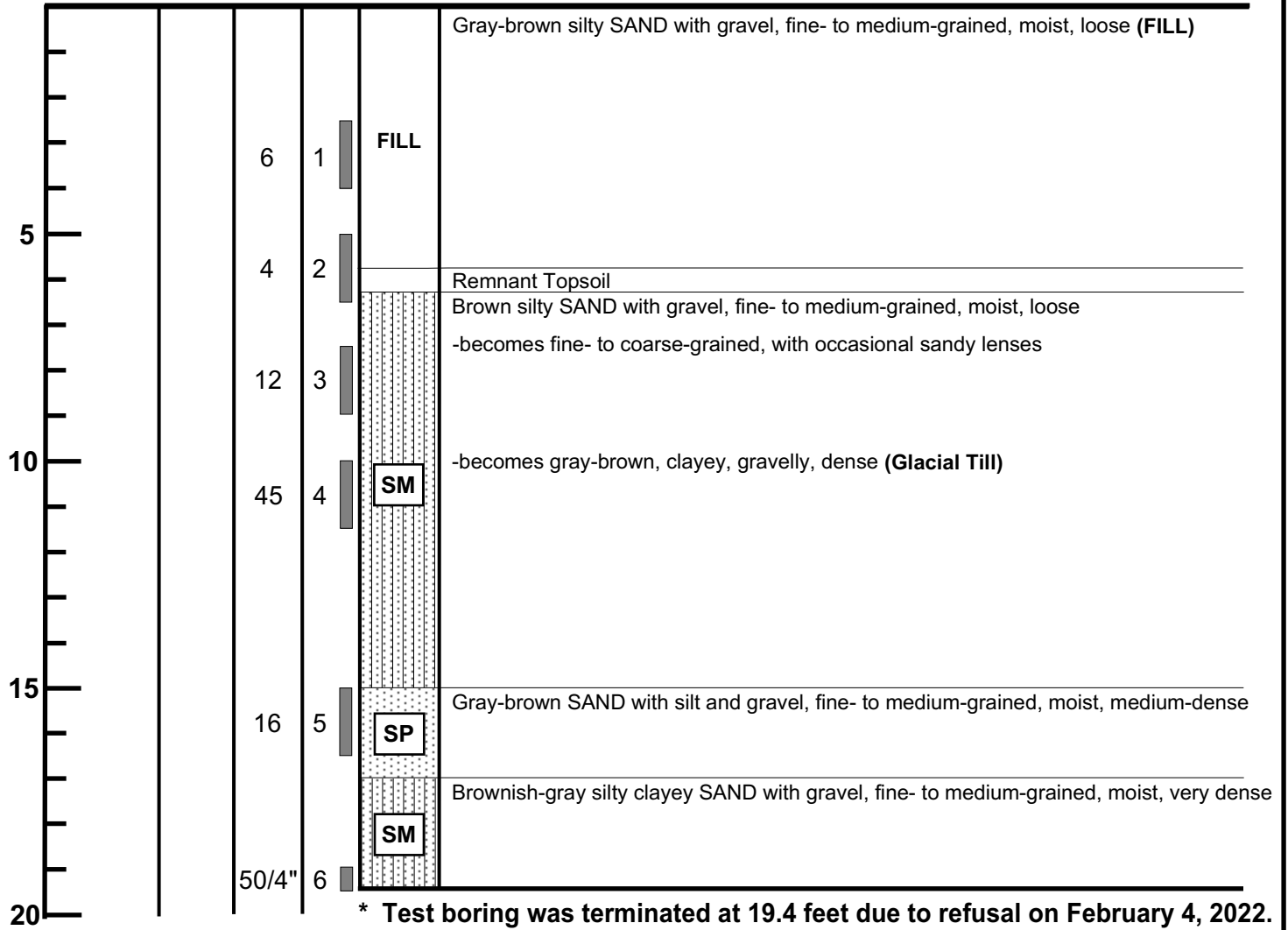
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# BORING 1

Depth (ft.)  
Moisture  
Water  
Table  
Blows  
per Foot  
Sample  
USCS

Description

Elevation ±231 feet



\* Test boring was terminated at 19.4 feet due to refusal on February 4, 2022.  
\* No groundwater was encountered during drilling.



## TEST BORING LOG

6950 Southeast Maker Street  
Mercer Island, Washington

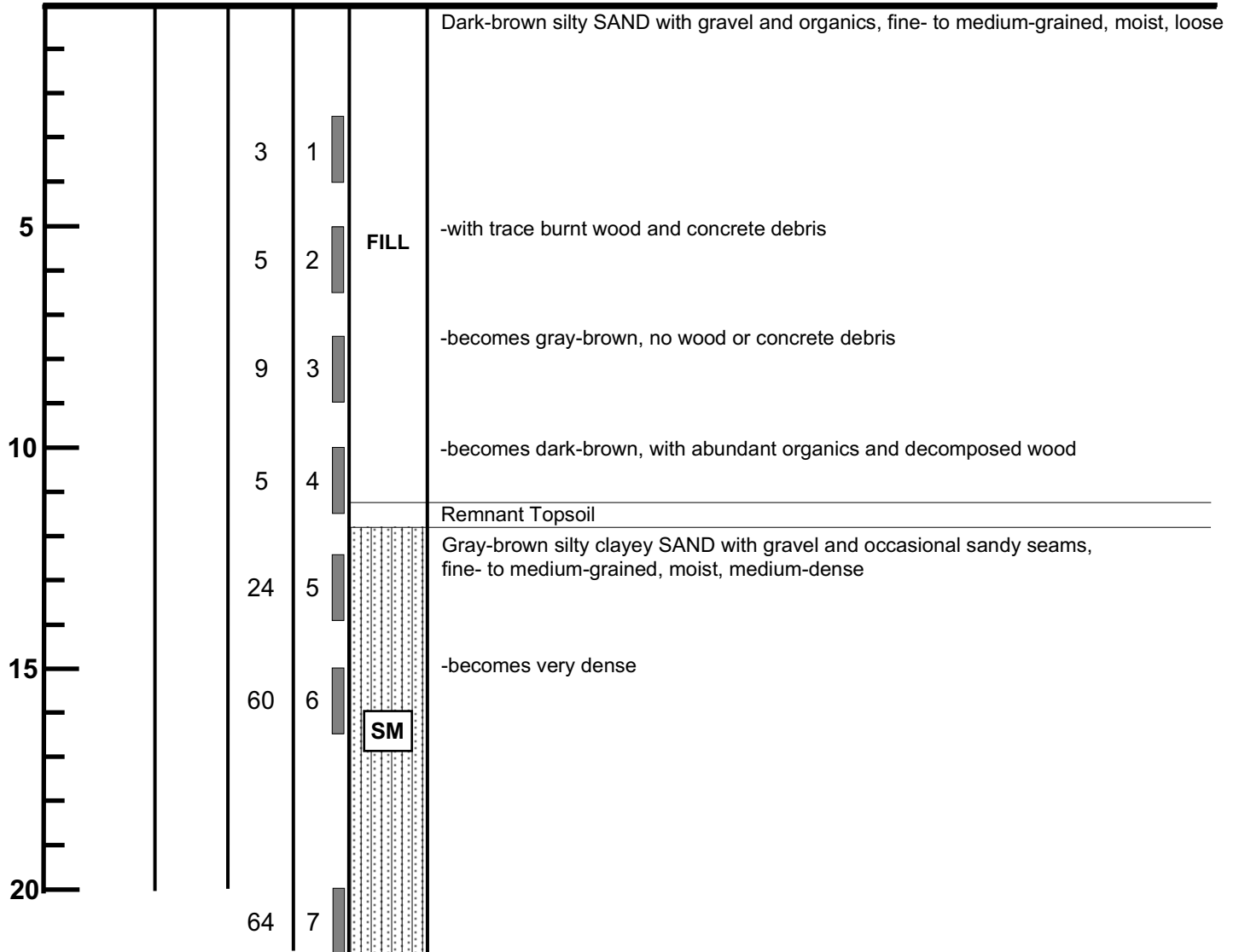
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# BORING 2

Depth (ft.)  
Moisture  
Water  
Table  
Blows  
per Foot  
Sample  
USCS

Description

Elevation ±230 feet



\* Test boring was terminated at 21.5 feet due to refusal on February 4, 2022.  
\* No groundwater was encountered during drilling.



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## TEST BORING LOG

6950 Southeast Maker Street  
Mercer Island, Washington

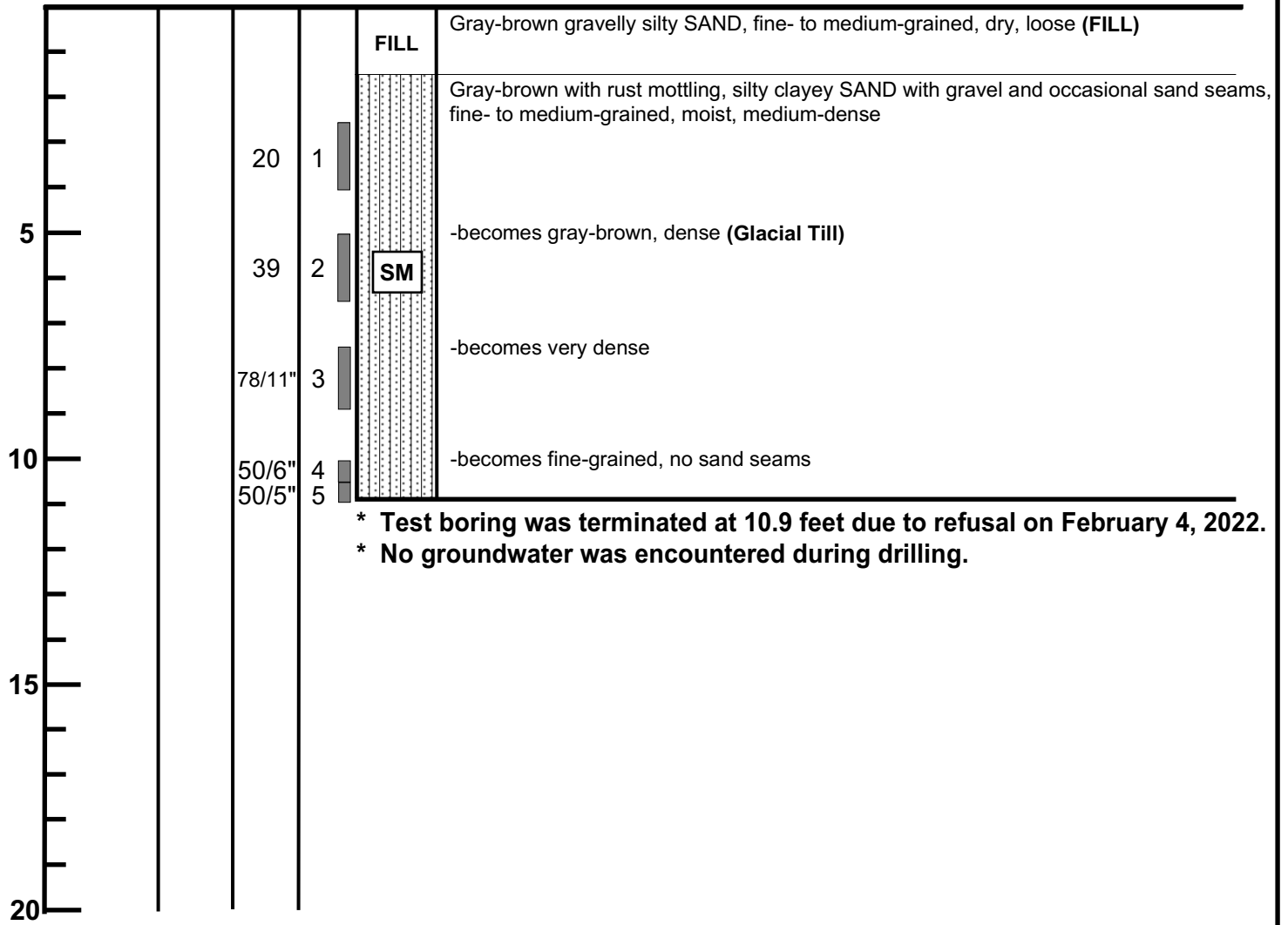
Job No: 22007	Date: Mar. 2022	Logged by: ASM	Plate: 4
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# BORING 3

Depth (ft.)  
Moisture  
Water  
Table  
Blows  
per Foot  
Sample  
USCS

Description

Elevation ±233 feet



\* Test boring was terminated at 10.9 feet due to refusal on February 4, 2022.  
\* No groundwater was encountered during drilling.



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## TEST BORING LOG

6950 Southeast Maker Street  
Mercer Island, Washington

Job No: 22007	Date: Mar. 2022	Logged by: ASM	Plate: 5
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## TEST HOLE 1

Depth (feet)	Soil Description
0.0 – 1.5	Topsoil
1.5 – 2.8	Gray-brown silty clayey SAND with gravel, fine- to medium-grained, moist, loose <b>(FILL)</b>
2.8 – 3.0	Gray-brown silty clayey SAND with gravel, fine- to medium-grained, moist, medium-dense <b>[SM]</b>

Test Hole was terminated at 3.0 feet on February 4, 2022.  
No groundwater seepage was encountered in the test hole.

## TEST HOLE 2

Depth (feet)	Soil Description
0.0 – 1.0	Gray-brown silty SAND with gravel, fine- to medium-grained, moist, loose <b>(FILL)</b>
1.0 – 3.2	Rust-brown silty SAND with gravel, fine- to medium-grained, moist, loose <b>[SM]</b> - at 3 feet; becomes gray-brown
3.2 – 4.0	Gray-brown gravelly SAND with silt, fine- to coarse-grained, moist, loose to medium-dense <b>[SW]</b>

Test Hole was terminated at 4.0 feet due to refusal on gravels on February 4, 2022.  
No groundwater seepage was encountered in the test hole.

**\*NOTE** – Letters in brackets [ ] denote the USCS soil classification.



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## HAND BORING LOGS

6950 Southeast Maker Street  
Mercer Island, Washington

Job No:

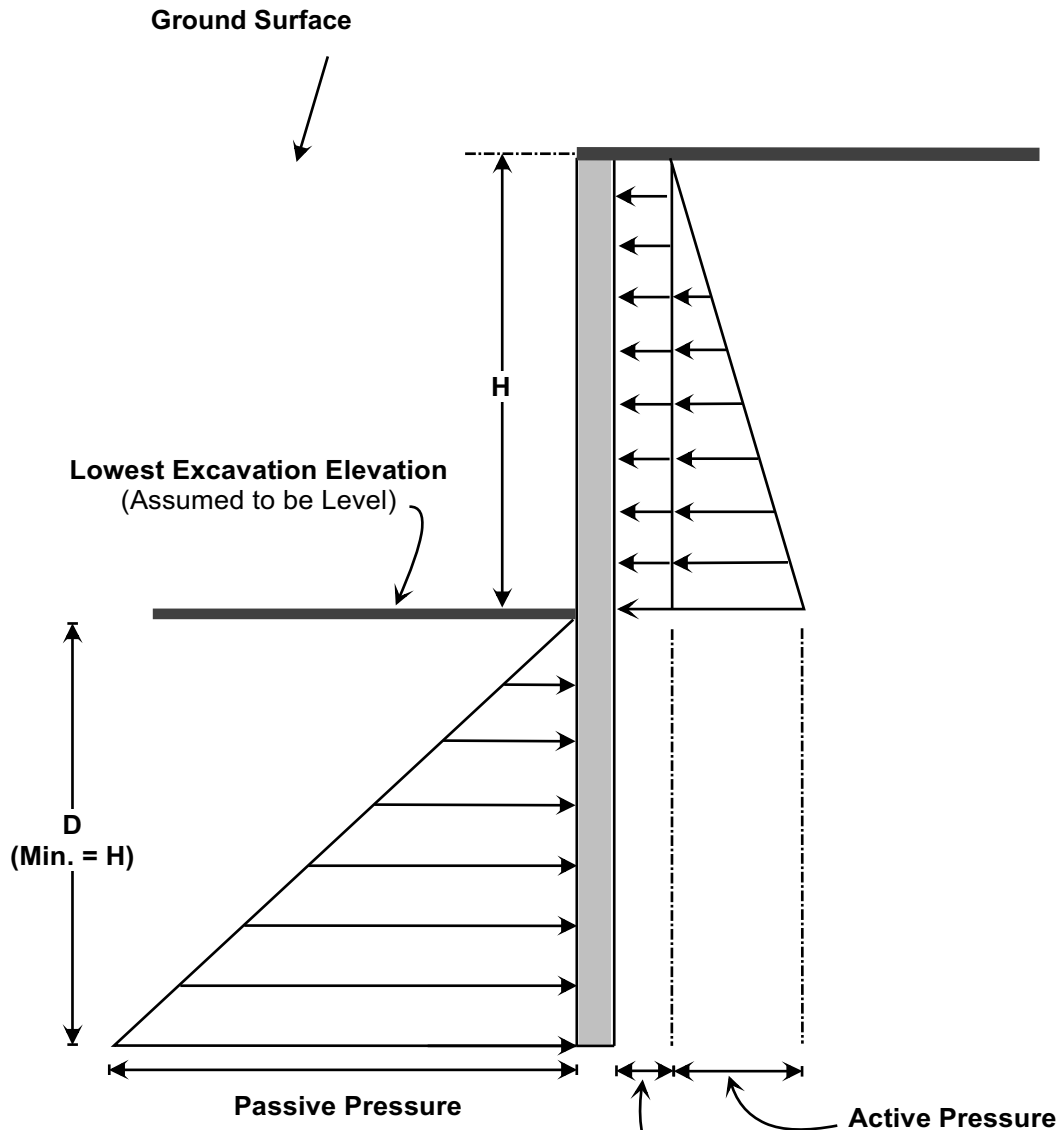
22007

Date:

Mar. 2022

Plate:

6



**Notes:**

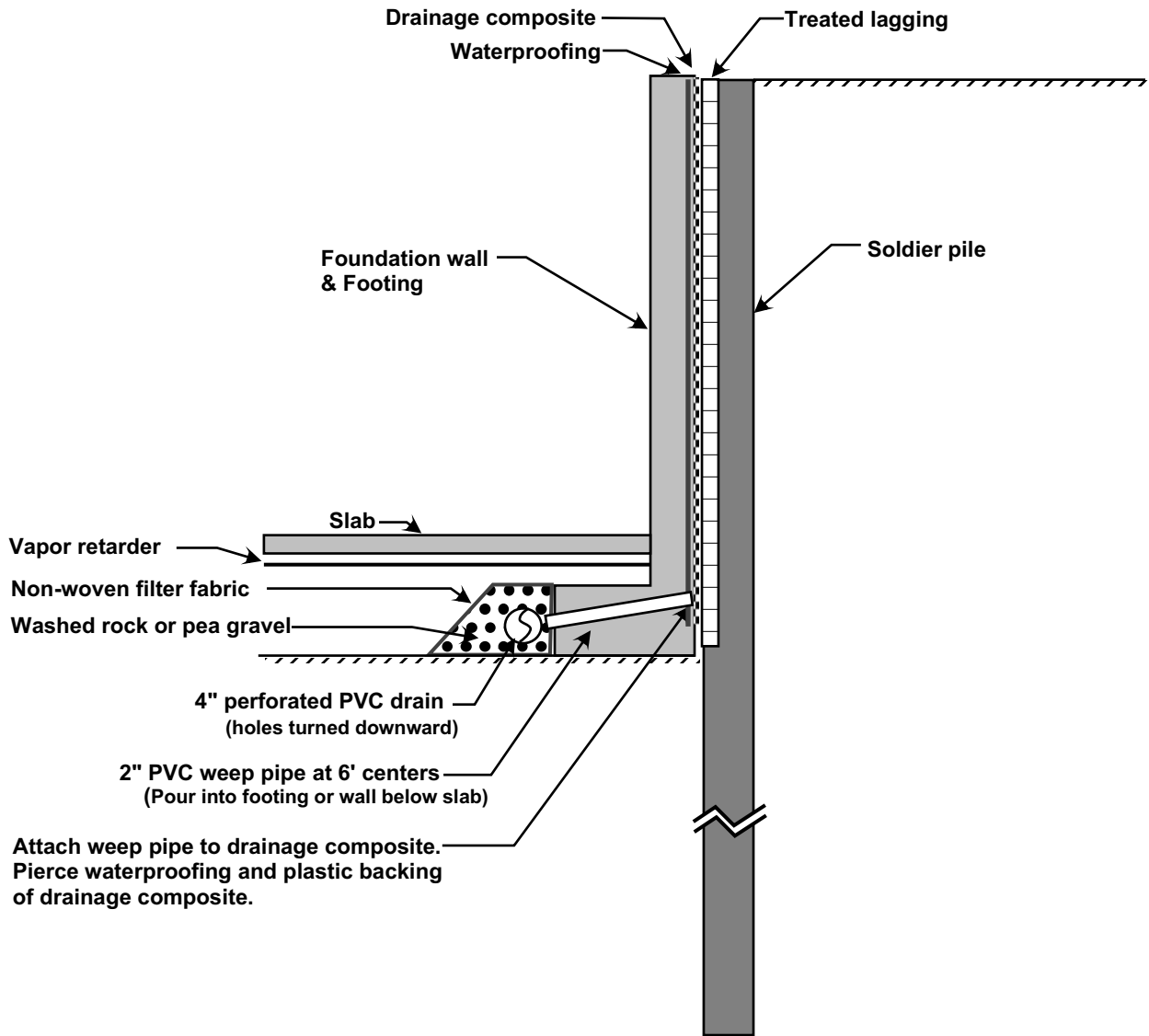
- (1) The report should be referenced for specifics regarding design and installation.
- (2) Active pressures act over the pile spacing.
- (3) Passive pressures act over twice the grouted soldier pile diameter or the pile spacing, whichever is smaller.
- (4) It is assumed that no hydrostatic pressures act on the back of the shoring walls.
- (5) Cut slopes or adjacent structures positioned above or behind shoring will exert additional pressures on the shoring wall.

**Surcharge Pressure From Adjacent Slope, Retaining Walls/Rockeries, and/or traffic as applicable.**



**CANTILEVERED SOLDIER PILE SHORING**  
6950 Southeast Maker Street  
Mercer Island, Washington

Job No: 22007	Date: Mar. 2022	Plate: 7
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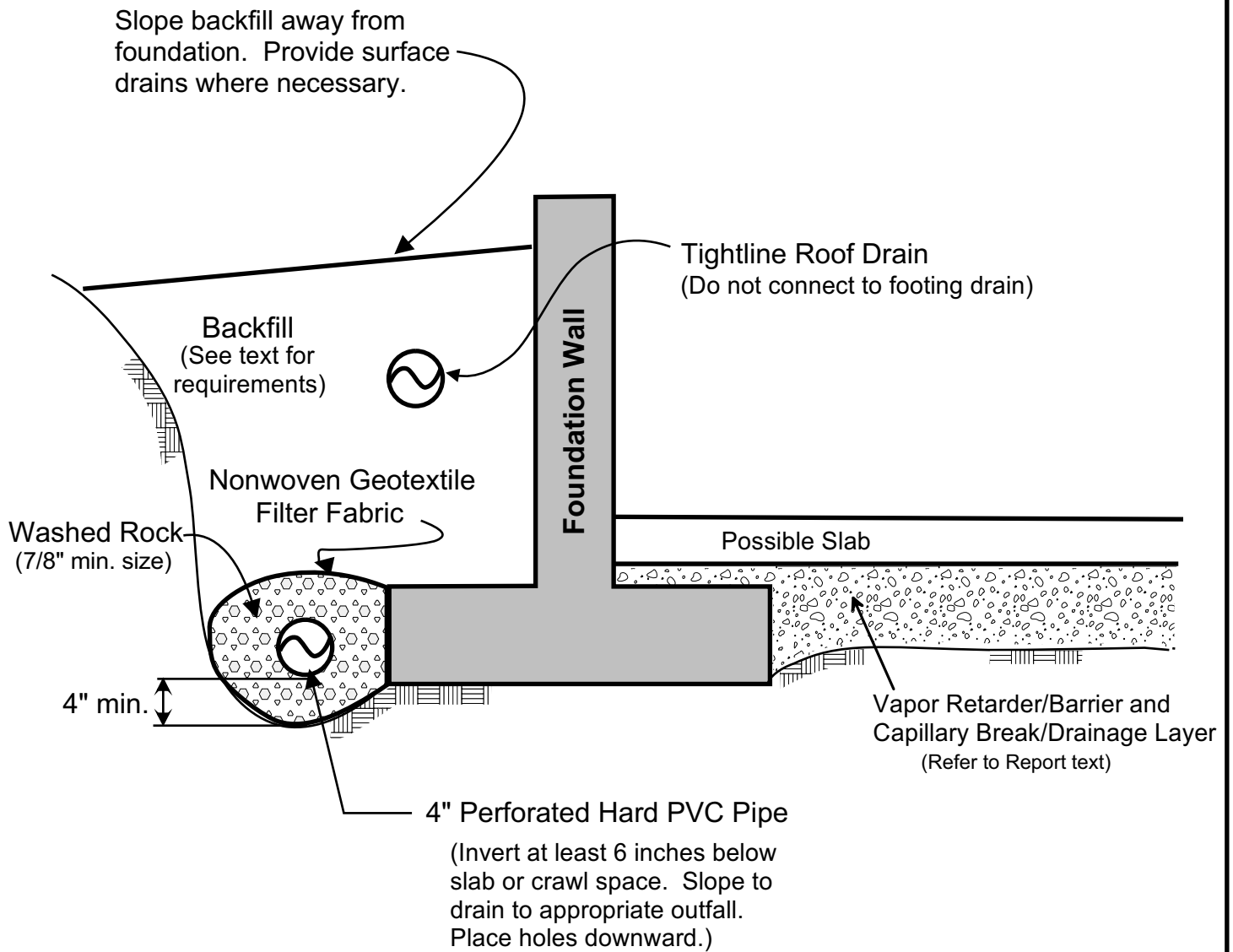


Note - Refer to the report for additional considerations related to drainage and waterproofing.



**SHORING DRAIN DETAIL**  
6950 Southeast Maker Street  
Mercer Island, Washington

Job No: 22007	Date: Mar. 2022	Plate: 8
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**NOTES:**

- (1) In crawl spaces, provide an outlet drain to prevent buildup of water that bypasses the perimeter footing drains.
- (2) Refer to report text for additional drainage, waterproofing, and slab considerations.



**FOOTING DRAIN DETAIL**  
6950 Southeast Maker Street  
Mercer Island, Washington

Job No: 22007	Date: Mar. 2022	Plate: 9
------------------	--------------------	-------------



# 22007 - Strand

## Cross Section A - A

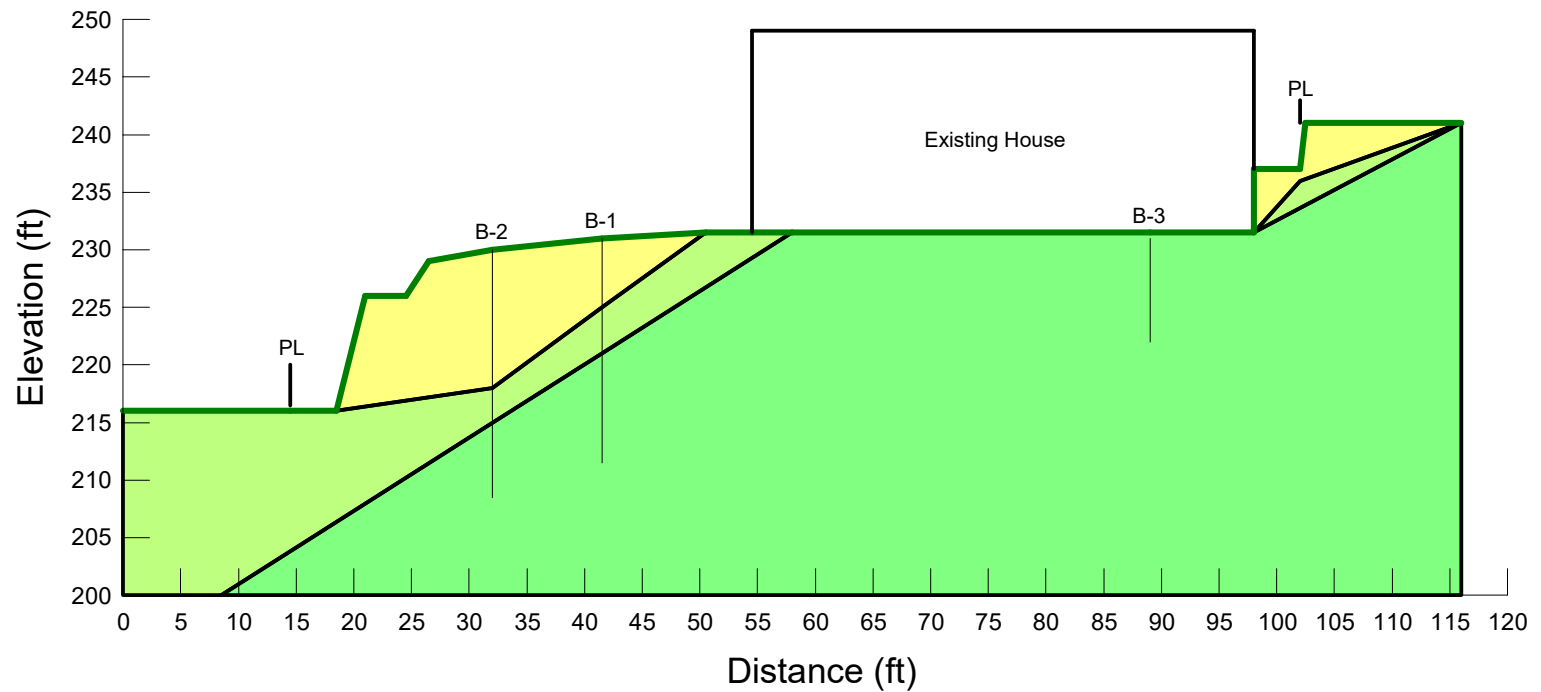
**Materials**

- Loose FILL
- Medium-Dense Silty SAND
- Dense GLACIAL TILL

Name: Loose FILL  
Unit Weight: 120 pcf  
Cohesion: 0 psf  
Phi: 30 °

Name: Medium-Dense Silty SAND  
Unit Weight: 125 pcf  
Cohesion: 0 psf  
Phi: 34 °

Name: Dense GLACIAL TILL  
Unit Weight: 140 pcf  
Cohesion: 100 psf  
Phi: 40 °



# 22007 - Strand

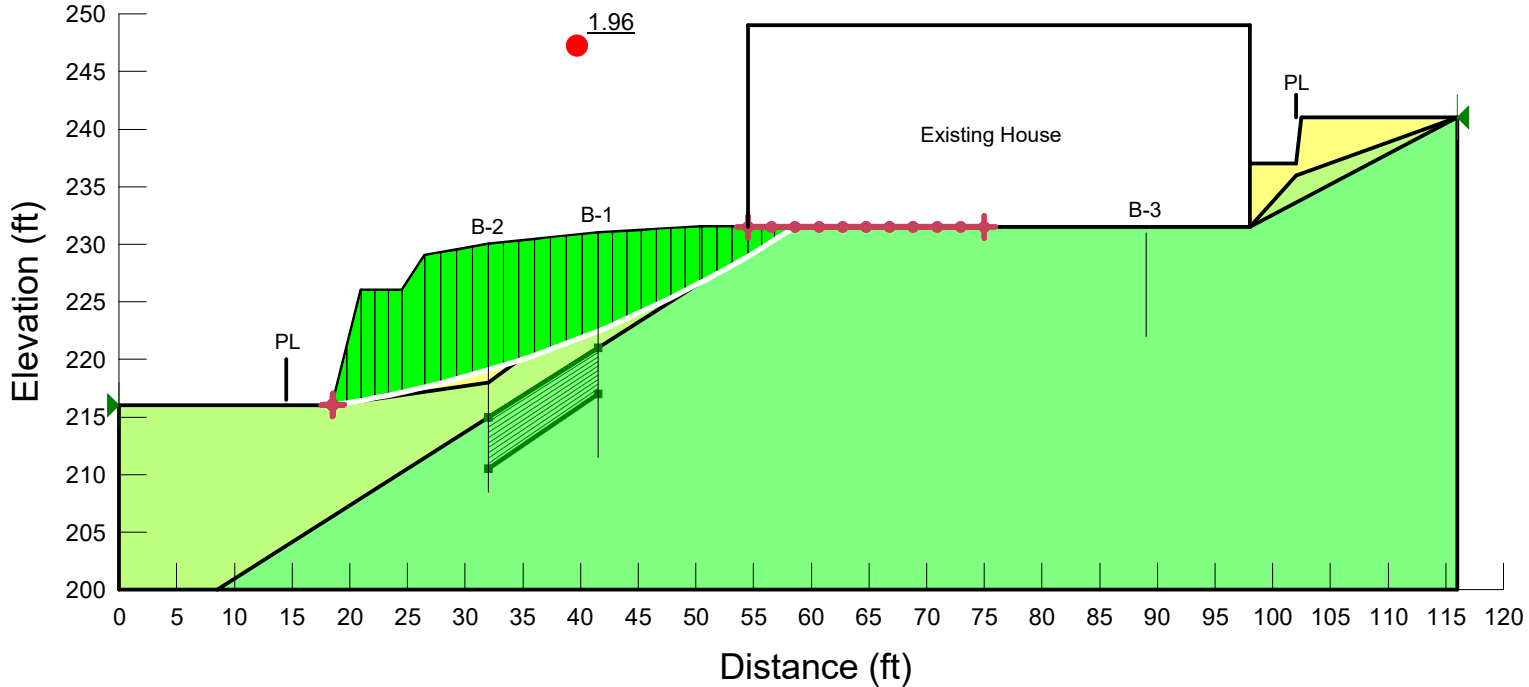
## Static

Materials	
<span style="display:inline-block; width:15px; height:15px; background-color:yellow; border:1px solid black;"></span>	Loose FILL
<span style="display:inline-block; width:15px; height:15px; background-color:lightgreen; border:1px solid black;"></span>	Medium-Dense Silty SAND
<span style="display:inline-block; width:15px; height:15px; background-color:limegreen; border:1px solid black;"></span>	Dense GLACIAL TILL

Name: Loose FILL  
 Unit Weight: 120 pcf  
 Cohesion: 0 psf  
 Phi: 30 °

Name: Medium-Dense Silty SAND  
 Unit Weight: 125 pcf  
 Cohesion: 0 psf  
 Phi: 34 °

Name: Dense GLACIAL TILL  
 Unit Weight: 140 pcf  
 Cohesion: 100 psf  
 Phi: 40 °



# Static

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## File Information

File Version: 8.15

Title: 22007 Slope Stability Analysis

Created By: Adam Moyer

Last Edited By: Adam Moyer

Revision Number: 19

Date: 2/21/2022

Time: 1:46:57 PM

Tool Version: 8.15.6.13446

File Name: 22007 Slope Stability Analysis - Strand.gsz

Directory: C:\Users\AdamM\Geotech Consultants\Shared Documents - Documents\2022 Jobs\22007 Strand (MRM)\

Last Solved Date: 2/21/2022

Last Solved Time: 1:47:00 PM

## Project Settings

Length(L) Units: Feet

Time(t) Units: Seconds

Force(F) Units: Pounds

Pressure(p) Units: psf

Strength Units: psf

Unit Weight of Water: 62.4 pcf

View: 2D

Element Thickness: 1

## Analysis Settings

### Static

Kind: SLOPE/W

Method: Morgenstern-Price

Settings

Side Function

Interslice force function option: Half-Sine

PWP Conditions Source: (none)

Slip Surface

Direction of movement: Right to Left

Use Passive Mode: No

Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1

Resisting Side Maximum Convex Angle: 1 °

Driving Side Maximum Convex Angle: 5 °

Optimize Critical Slip Surface Location: [No](#)

Tension Crack

Tension Crack Option: [\(none\)](#)

F of S Distribution

F of S Calculation Option: [Constant](#)

Advanced

Number of Slices: [30](#)

F of S Tolerance: [0.001](#)

Minimum Slip Surface Depth: [0.1 ft](#)

Search Method: [Root Finder](#)

Tolerable difference between starting and converged F of S: [3](#)

Maximum iterations to calculate converged lambda: [20](#)

Max Absolute Lambda: [2](#)

## Materials

### Loose FILL

Model: [Mohr-Coulomb](#)

Unit Weight: [120 pcf](#)

Cohesion': [0 psf](#)

Phi': [30 °](#)

Phi-B: [0 °](#)

### Medium-Dense Silty SAND

Model: [Mohr-Coulomb](#)

Unit Weight: [125 pcf](#)

Cohesion': [0 psf](#)

Phi': [34 °](#)

Phi-B: [0 °](#)

### Dense GLACIAL TILL

Model: [Mohr-Coulomb](#)

Unit Weight: [140 pcf](#)

Cohesion': [100 psf](#)

Phi': [40 °](#)

Phi-B: [0 °](#)

## Slip Surface Entry and Exit

Left Projection: [Range](#)

Left-Zone Left Coordinate: [\(18.5, 216\) ft](#)

Left-Zone Right Coordinate: [\(18.52409, 216.09635\) ft](#)

Left-Zone Increment: [10](#)

Right Projection: [Range](#)

Right-Zone Left Coordinate: [\(54.5, 231.5\) ft](#)

Right-Zone Right Coordinate: [\(75, 231.5\) ft](#)

Right-Zone Increment: [10](#)

Radius Increments: 10

## Slip Surface Limits

Left Coordinate: (0, 216) ft

Right Coordinate: (116, 241) ft

## Points

	X (ft)	Y (ft)
Point 1	0	216
Point 2	14.5	216
Point 3	18.5	216
Point 4	21	226
Point 5	24.5	226
Point 6	26.5	229
Point 7	32	230
Point 8	41.5	231
Point 9	54.5	231.5
Point 10	89	231.5
Point 11	98	231.5
Point 12	98	237
Point 13	102	237
Point 14	102.5	241
Point 15	116	241
Point 16	0	200
Point 17	116	200
Point 18	41.5	225
Point 19	41.5	221
Point 20	41.5	211.5
Point 21	32	218
Point 22	32	215
Point 23	32	208.5
Point 24	89	228
Point 25	89	222
Point 26	50.5	231.5
Point 27	8.5	200
Point 28	58	231.5
Point 29	102	236

## Regions

	Material	Points	Area (ft <sup>2</sup> )
Region 1	Loose FILL	3,4,5,6,7,8,26,18,21	243.75
Region 2	Medium-Dense Silty SAND	1,16,27,22,19,28,9,26,18,21,3,2	439.88
Region 3	Dense GLACIAL TILL	27,22,19,28,10,11,15,17	2,692.9
Region 4	Loose FILL	11,12,13,14,15,29	47

Region 5	Medium-Dense Silty SAND	11,29,15	21.5
----------	-------------------------	----------	------

## Current Slip Surface

Slip Surface: 24

F of S: 1.96

Volume: 299.85379 ft<sup>3</sup>

Weight: 36,328.752 lbs

Resisting Moment: 2,337,459.4 lbs-ft

Activating Moment: 1,193,750.5 lbs-ft

Resisting Force: 21,342.102 lbs

Activating Force: 10,899.49 lbs

F of S Rank (Analysis): 1 of 1,331 slip surfaces

F of S Rank (Query): 1 of 1,331 slip surfaces

Exit: (18.5, 216) ft

Entry: (58.6, 231.5) ft

Radius: 102.6123 ft

Center: (2.3753023, 317.33744) ft




## Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	19.125	216.10341	0	275.4314	159.02039	0
Slice 2	20.375	216.31818	0	826.53313	477.19913	0
Slice 3	21.583333	216.54071	0	1,090.2522	629.45742	0
Slice 4	22.75	216.77005	0	1,065.331	615.06911	0
Slice 5	23.916667	217.01348	0	1,037.2777	598.87254	0
Slice 6	25.5	217.37006	0	1,164.5122	672.33146	0
Slice 7	27.1875	217.77271	0	1,296.1973	748.35986	0
Slice 8	28.5625	218.12551	0	1,276.3126	736.87941	0
Slice 9	29.9375	218.49869	0	1,252.3514	723.0454	0
Slice 10	31.3125	218.89249	0	1,224.7447	707.10667	0
Slice 11	32.6504	219.29542	0	1,189.4182	686.71092	0
Slice 12	33.951199	219.70661	0	1,147.1327	662.29737	0
Slice 13	35.291439	220.15061	0	1,103.87	744.56968	0
Slice 14	36.671119	220.62889	0	1,057.7084	713.43329	0
Slice 15	38.050799	221.12933	0	1,009.7027	681.0531	0
Slice 16	39.43048	221.65228	0	960.27525	647.71384	0
Slice 17	40.81016	222.19812	0	909.77919	613.65381	0
Slice 18	42.131406	222.74217	0	857.46396	578.36674	0
Slice						

19	43.394218	223.2829	0	803.57102	542.01549	0
Slice 20	44.65703	223.84381	0	749.33631	505.43373	0
Slice 21	45.919842	224.42528	0	694.75797	468.62017	0
Slice 22	47.182654	225.02768	0	639.76934	431.52987	0
Slice 23	48.445466	225.65144	0	584.24149	394.07586	0
Slice 24	49.708278	226.29698	0	527.98643	356.13134	0
Slice 25	50.419842	226.66773	0	473.00619	396.89932	100
Slice 26	51.166667	227.07055	0	431.44994	362.02949	100
Slice 27	52.5	227.80413	0	355.43915	298.24886	100
Slice 28	53.833333	228.5638	0	277.54412	232.88717	100
Slice 29	55.083333	229.29947	0	202.59002	169.99321	100
Slice 30	56.25	230.00858	0	130.48333	109.48851	100
Slice 31	57.416667	230.73921	0	56.091374	47.066251	100
Slice 32	58.3	231.30499	0	-3.909711	-3.2806371	100

# 22007 - Strand

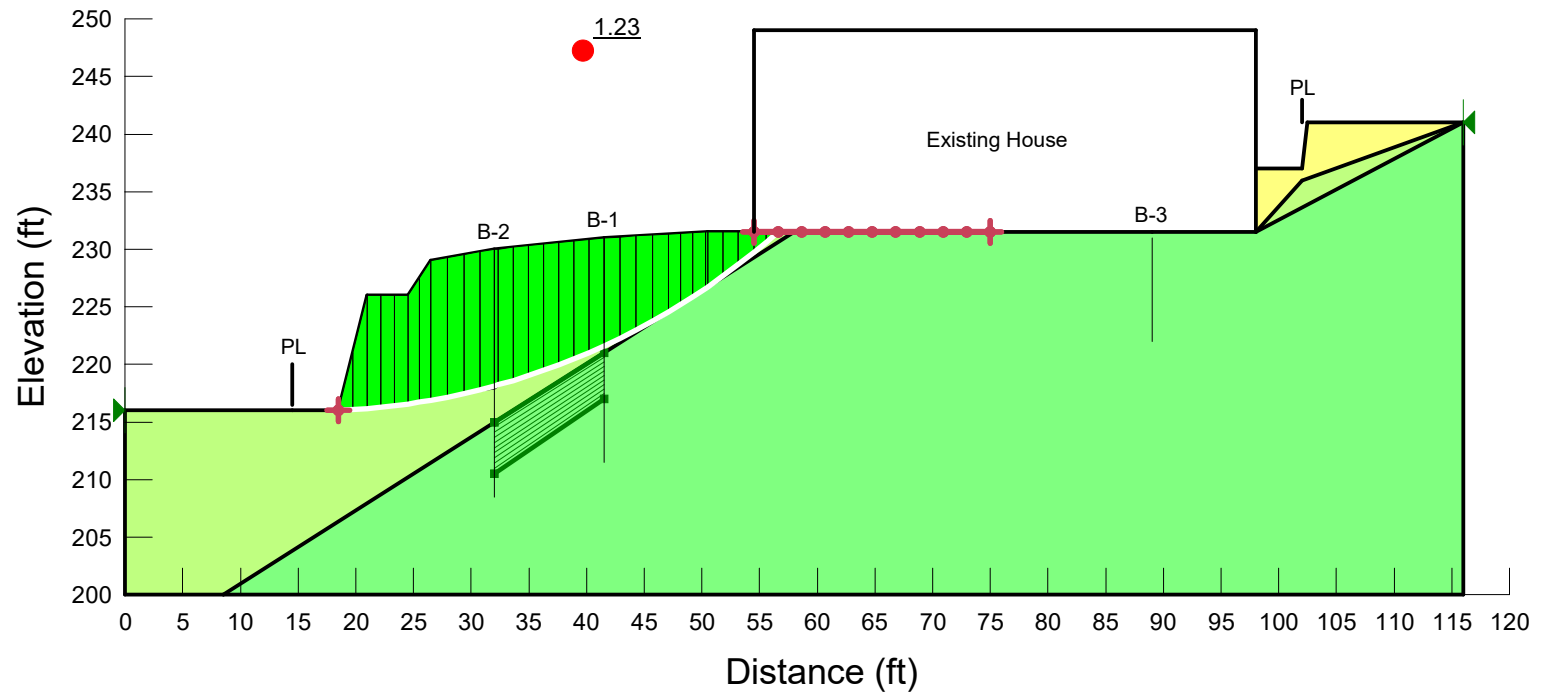
## Seismic

Materials	
	Loose FILL
	Medium-Dense Silty SAND
	Dense GLACIAL TILL

Name: Loose FILL  
Unit Weight: 120 pcf  
Cohesion: 0 psf  
Phi: 30 °

Name: Medium-Dense Silty SAND  
Unit Weight: 125 pcf  
Cohesion: 0 psf  
Phi: 34 °

Name: Dense GLACIAL TILL  
Unit Weight: 140 pcf  
Cohesion: 100 psf  
Phi: 40 °





# Seismic

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## File Information

File Version: 8.15

Title: 22007 Slope Stability Analysis

Created By: Adam Moyer

Last Edited By: Adam Moyer

Revision Number: 19

Date: 2/21/2022

Time: 1:46:57 PM

Tool Version: 8.15.6.13446

File Name: 22007 Slope Stability Analysis - Strand.gsz

Directory: C:\Users\AdamM\Geotech Consultants\Shared Documents - Documents\2022 Jobs\22007 Strand (MRM)\

Last Solved Date: 2/21/2022

Last Solved Time: 1:47:00 PM

## Project Settings

Length(L) Units: Feet

Time(t) Units: Seconds

Force(F) Units: Pounds

Pressure(p) Units: psf

Strength Units: psf

Unit Weight of Water: 62.4 pcf

View: 2D

Element Thickness: 1

## Analysis Settings

### Seismic

Kind: SLOPE/W

Method: Morgenstern-Price

Settings

Side Function

Interslice force function option: Half-Sine

PWP Conditions Source: (none)

Slip Surface

Direction of movement: Right to Left

Use Passive Mode: No

Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1

Resisting Side Maximum Convex Angle: 1 °

Driving Side Maximum Convex Angle: 5 °

Optimize Critical Slip Surface Location: [No](#)

Tension Crack

Tension Crack Option: [\(none\)](#)

F of S Distribution

F of S Calculation Option: [Constant](#)

Advanced

Number of Slices: [30](#)

F of S Tolerance: [0.001](#)

Minimum Slip Surface Depth: [0.1 ft](#)

Search Method: [Root Finder](#)

Tolerable difference between starting and converged F of S: [3](#)

Maximum iterations to calculate converged lambda: [20](#)

Max Absolute Lambda: [2](#)

## Materials

### Loose FILL

Model: [Mohr-Coulomb](#)

Unit Weight: [120 pcf](#)

Cohesion': [0 psf](#)

Phi': [30 °](#)

Phi-B: [0 °](#)

### Medium-Dense Silty SAND

Model: [Mohr-Coulomb](#)

Unit Weight: [125 pcf](#)

Cohesion': [0 psf](#)

Phi': [34 °](#)

Phi-B: [0 °](#)

### Dense GLACIAL TILL

Model: [Mohr-Coulomb](#)

Unit Weight: [140 pcf](#)

Cohesion': [100 psf](#)

Phi': [40 °](#)

Phi-B: [0 °](#)

## Slip Surface Entry and Exit

Left Projection: [Point](#)

Left Coordinate: [\(18.5, 216\) ft](#)

Left-Zone Increment: [10](#)

Right Projection: [Range](#)

Right-Zone Left Coordinate: [\(54.53757, 231.5\) ft](#)

Right-Zone Right Coordinate: [\(75, 231.5\) ft](#)

Right-Zone Increment: [10](#)

Radius Increments: [10](#)

## Slip Surface Limits

Left Coordinate: (0, 216) ft

Right Coordinate: (116, 241) ft

## Seismic Coefficients

Horz Seismic Coef.: 0.222

## Points

	X (ft)	Y (ft)
Point 1	0	216
Point 2	14.5	216
Point 3	18.5	216
Point 4	21	226
Point 5	24.5	226
Point 6	26.5	229
Point 7	32	230
Point 8	41.5	231
Point 9	54.5	231.5
Point 10	89	231.5
Point 11	98	231.5
Point 12	98	237
Point 13	102	237
Point 14	102.5	241
Point 15	116	241
Point 16	0	200
Point 17	116	200
Point 18	41.5	225
Point 19	41.5	221
Point 20	41.5	211.5
Point 21	32	218
Point 22	32	215
Point 23	32	208.5
Point 24	89	228
Point 25	89	222
Point 26	50.5	231.5
Point 27	8.5	200
Point 28	58	231.5
Point 29	102	236

## Regions

	Material	Points	Area (ft <sup>2</sup> )
Region 1	Loose FILL	3,4,5,6,7,8,26,18,21	243.75

Region 2	Medium-Dense Silty SAND	1,16,27,22,19,28,9,26,18,21,3,2	439.88
Region 3	Dense GLACIAL TILL	27,22,19,28,10,11,15,17	2,692.9
Region 4	Loose FILL	11,12,13,14,15,29	47
Region 5	Medium-Dense Silty SAND	11,29,15	21.5

## Current Slip Surface

Slip Surface: 12

F of S: 1.23

Volume: 316.23566 ft<sup>3</sup>

Weight: 38,312.206 lbs

Resisting Moment: 1,460,811.4 lbs-ft

Activating Moment: 1,185,378.3 lbs-ft

Resisting Force: 22,434.365 lbs

Activating Force: 18,200.037 lbs

F of S Rank (Analysis): 1 of 121 slip surfaces

F of S Rank (Query): 1 of 121 slip surfaces

Exit: (18.5, 216) ft

Entry: (56.583813, 231.5) ft

Radius: 61.562432 ft

Center: (15.66695, 277.49721) ft

## Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	19.125	216.03516	0	297.44707	200.63058	0
Slice 2	20.375	216.11827	0	920.0776	620.60018	0
Slice 3	21.583333	216.22253	0	1,265.6401	853.68504	0
Slice 4	22.75	216.34642	0	1,303.3711	879.13487	0
Slice 5	23.916667	216.49288	0	1,328.3884	896.00931	0
Slice 6	25	216.64845	0	1,431.1496	965.32257	0
Slice 7	26	216.81028	0	1,611.5313	1,086.9916	0
Slice 8	27.214275	217.03182	0	1,689.6469	1,139.6812	0
Slice 9	28.642826	217.32225	0	1,652.1352	1,114.3792	0
Slice 10	30.071376	217.64819	0	1,578.6195	1,064.7923	0
Slice 11	31.392826	217.98053	0	1,370.3014	791.14387	0
Slice 12	32.153589	218.18365	0	1,306.8878	754.53203	0
Slice 13	32.963808	218.41859	0	1,337.4386	902.11376	0
Slice 14	34.277069	218.81909	0	1,214.6832	819.31415	0
Slice 15	35.590329	219.25195	0	1,093.1573	737.34389	0
Slice 16	36.903589	219.7179	0	978.40141	659.94008	0
Slice	38.216849	220.21775	0	874.04223	589.54892	0

17						
Slice 18	39.53011	220.75238	0	781.91321	527.40712	0
Slice 19	40.84337	221.32281	0	702.39132	473.76893	0
Slice 20	42.201864	221.9524	0	629.99919	424.93982	0
Slice 21	43.605592	222.64518	0	564.58096	380.81466	0
Slice 22	45.00932	223.38325	0	509.06649	343.36968	0
Slice 23	46.413047	224.16847	0	460.90006	310.88102	0
Slice 24	47.644227	224.8949	0	443.96458	372.53052	100
Slice 25	48.70286	225.55332	0	391.57545	328.57082	100
Slice 26	49.761492	226.24205	0	339.84478	285.16363	100
Slice 27	50.395404	226.66561	0	315.01226	212.47846	0
Slice 28	51.166667	227.20768	0	285.59675	192.63744	0
Slice 29	52.5	228.17615	0	230.61702	155.55314	0
Slice 30	53.833333	229.20085	0	167.93785	113.27551	0
Slice 31	55.020953	230.16079	0	103.26115	69.650524	0
Slice 32	56.06286	231.04695	0	36.563357	24.662296	0

June 6, 2023

JN 22007

Dorothy Strand  
6950 Southeast Maker Street  
Mercer Island, Washington 98040  
via email: [kcra2005@yahoo.com](mailto:kcra2005@yahoo.com)

Subject: **Review of Revised Plans**  
Proposed New Residence  
6950 Southeast Maker Street  
Mercer Island, Washington

Dear Ms. Strand:

As required by the City of Mercer Island, we have completed a review of the geotechnical aspects of the revised plans for your proposed new residence. This revision to the plans addresses not only stabilization of the filled rockery on the west side of the site, but also providing protection for your residence in the event of future movement of the filled modular wall located on your eastern neighbor's lot.

Following discussions with you and your project team, partial removal of the western rockery combined with the installation of closely-spaced soldier piles behind the remaining portion of the rockery was chosen as the method to stabilize the fill located on the western portion of your property. This method substantially reduces the amount of site disturbance and earthwork, while providing stability for the filled rockery in the event of the Maximum Considered Earthquake (MCE). The design recommendations for this stabilization system are presented in our May 8, 2023 *Slope Stability Update*, which is attached for reference.

During this process, we were informed that it would not be possible to obtain permission to place fill against the eastern neighbor's filled modular block wall. We had previously recommended placing this fill buttress against the wall, as the wall was obviously not reinforced with geogrids, and would be inadequate to withstand a large earthquake. After discussing alternatives with your project team, it was decided to build a sloping fill up to the eastern property line, with a wall constructed at the property line to retain the fill within the site boundaries. This bermed fill will serve to absorb the impact from a potential future failure of the eastern neighbor's modular block wall.

**Review of Plans:**

We have been provided with the revised plans, which include the architectural plans (Jeffrey Almeter; June 2, 2023), shoring plans (Jeffrey Almeter and Buker Engineering; June 2, 2023), civil plans (Goldsmith Land Development Services; June 2, 2023), and the structural drawings (DS Engineering; February 2, 2023).

The shoring (SH) drawings correctly depict the partial removal of the existing western rockery, combined with the installation of closely-spaced soldier piles immediately behind the remaining lower portion of the rockery. The remaining lower approximately 5 feet of the rockery will no longer have to resist any lateral soil load, as this will be accomplished by the stabilization piles. This

system incorporates our recommendations to provide stability for the existing fill located on the west side of the lot.

The Site Plan and sections on SH1, as well as sheets C-2 and C-3, properly illustrate the fill berm and modular block wall to be constructed as protection against a potential failure of the eastern neighbor's modular block wall.

Where the new storm outfall pipe will extend to S.E. Maker Street, the existing rockery will be removed, and the ground will be lowered and regraded to a sloping condition between the end of the stabilization wall and the new driveway.

The plans that we reviewed have incorporated our recommendations for shoring, foundations, and permanent stability.

**Statement of Risk:** In order to satisfy the City of Mercer Island's requirements, a statement of risk is needed. As such, we make the following statement:

The landslide hazard area or seismic hazard area will be modified or the development has been designed so that the risk to the site and adjacent property is eliminated or mitigated such that the site is determined to be safe;

Please contact us if you have any questions regarding this letter.

Respectfully submitted,

GEOTECH CONSULTANTS, INC.



6/6/2023

Marc R. McGinnis, P.E.  
Principal

Attachment: May 8, 2023 Slope Stability Update

cc: **Jeffrey Almeter**  
via email: [jeffrey.almeter@gmail.com](mailto:jeffrey.almeter@gmail.com)

MRM:kg

May 8, 2023

JN 22007

Dorothy Strand  
6950 Southeast Maker Street  
Mercer Island, Washington 98040  
via email: [kcra2005@yahoo.com](mailto:kcra2005@yahoo.com)

Subject: **Slope Stability Update**  
Proposed New Residence  
6950 S.E. Maker Street  
Mercer Island, Washington

Dear Ms. Strand:

As a part of the 2207-019-SUB1-PLANS REVIEW by City of Mercer Island, their geotechnical third-party reviewer made the following comment:

The geotechnical engineering report indicates "...due to the loose nature of the upper fill soils behind the rockery, it would only be considered moderately stable, and likely has a current factor of safety of 1.0 or slightly higher with regards to slope stability." Indicate how this hazard is being mitigated (MICC 19.07.160).

As we discussed in our previous response to this comment, the rockery in question existed before development of the adjacent western property. The planned redevelopment of your lot with a new home would not adversely impact the stability of this filled rockery, and may actually improve its stability slightly by collecting all runoff from impervious surfaces and discharging it to the storm sewer.

No mitigation of this potential hazard was included in the neighboring construction. It is likely that excavation for that house would have extended into the influence zone of that rockery, and the front entry and entry walk were placed close to the base of the rockery.

Following our meeting with City of Mercer Island staff, we understand that they are interpreting Mercer Island Code to require that the risk of potential future failure of the old filled rockery located along the western side of your lot is to be mitigated for the planned redevelopment of your property. The most likely cause of any potential future movement of the filled rockery would be a moderate to large earthquake.

With you and your design team, we have discussed several different methods to provide stability of the fill behind the western rockery under both static and seismic (Maximum Considered Earthquake with a 2% chance of occurring in 50 years) conditions. Based on these discussions, and our review of the site conditions for equipment and truck access, it appears most practical to install a line of closely-spaced stabilization piles immediately behind the western rockery. These piles would retain the loose fill soils behind the rockery and provide stability for the fill in the event of an earthquake. In conjunction with the construction of this stabilization wall, the uppermost 4 to 5 feet of the existing rockery would be removed. This will create a level bench for the installation of the drilled piles. The upper 4 to 5 feet of the stabilization piles would then be lagged and backfilled to restore the ground surface elevation in the western yard area.



Based on our previous stability assessments, a theoretical failure could have extended through the toe of the existing rockery in the event of the low probability Maximum Considered Earthquake. The stabilization piles should be designed to resist active and seismic earth pressures to that depth, with passive soil pressure in the competent glacial till resisting the lateral earth loads below that depth.

The following section has design recommendations for the stabilization wall consisting of closely-spaced soldier piles.

### **STABILIZATION WALL**

The stabilization wall should consist of closely spaced, drilled soldier piles spaced no further apart than 3 feet edge-to-edge. The soil within the stabilization zone will arch between the piles if a failure does in fact occur on the eastern slope. The piles could be installed by drilling them to depth. It is likely that a debris barrier, potentially consisting of plywood spanning between metal posts, with need to be installed along the western side of the work area to prevent drill spoils from falling onto the neighboring property.

There will be no need for a subsurface drain behind the stabilization wall. Any small amounts of groundwater that currently travel laterally below the ground surface will pass between the piles.

The stabilization wall should be designed for an active soil pressure equal to that pressure exerted by an equivalent fluid with a unit weight of 40 pounds per cubic foot (pcf) if it retains level soil. A seismic surcharge of 8H pounds per square foot (psf) should be applied also. In this case H is the effective design retention height, which extends to the base of the existing rockery. An ultimate (no safety factor included) passive soil pressure equal to that pressure exerted by a fluid with a density of 450 pcf will resist the lateral movement of the piles below the stabilization depth. This passive resistance can be assumed to act over twice the width of the wide-flange beams. Typically, a safety factor of 1.5 is applied to the ultimate passive resistance for static conditions, and 1.1 to 1.2 for seismic loading conditions.

Please contact us if you have any questions regarding this letter.

Respectfully submitted,  
GEOTECH CONSULTANTS, INC.



5/8/2023

Marc R. McGinnis, P.E.  
Principal

Attachments:

- Slope Stability Analyses

cc: **Jeffrey Almeter** - via email: [jeffrey.almeter@gmail.com](mailto:jeffrey.almeter@gmail.com)

# 22007 - Strand

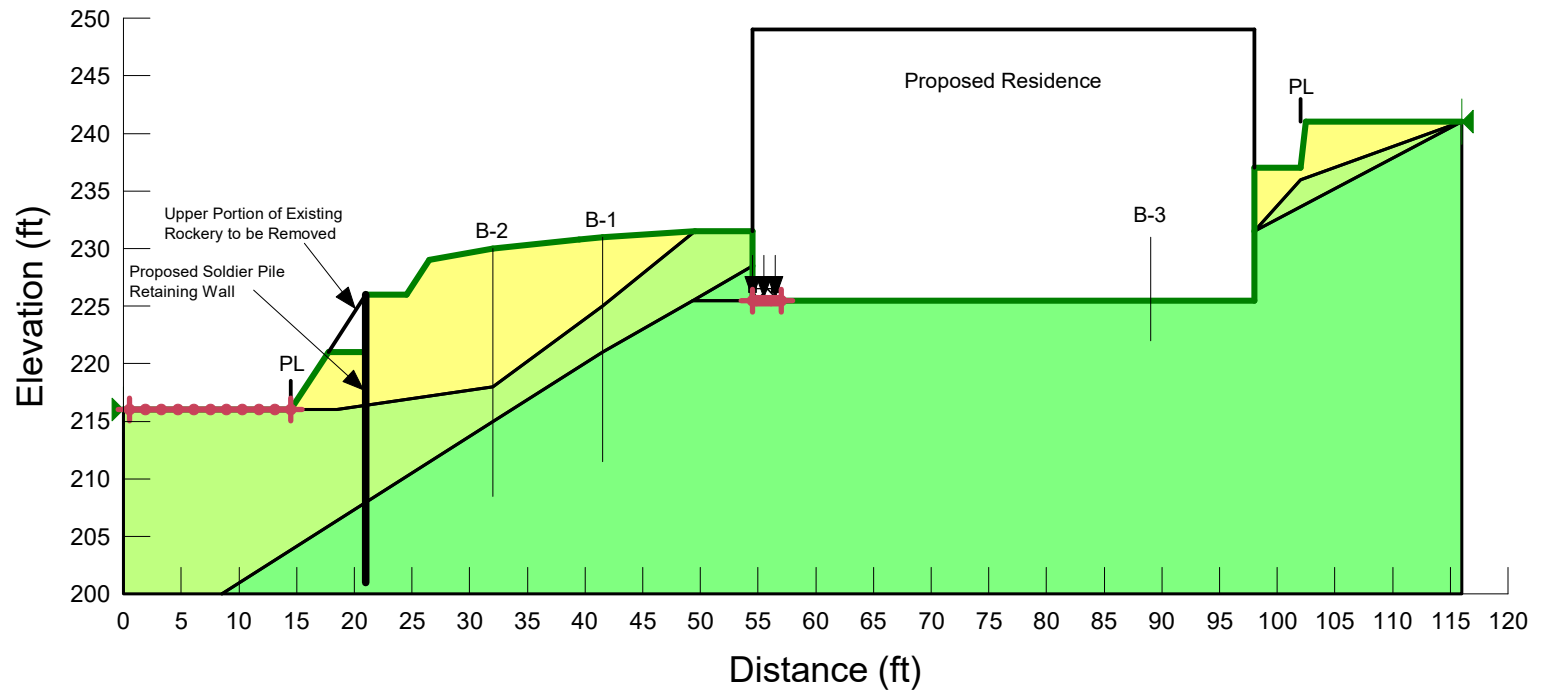
## Cross Section

Materials	
<span style="display:inline-block; width:15px; height:15px; background-color:yellow; border:1px solid black;"></span>	Loose FILL
<span style="display:inline-block; width:15px; height:15px; background-color:lightgreen; border:1px solid black;"></span>	Medium-Dense Silty SAND
<span style="display:inline-block; width:15px; height:15px; background-color:limegreen; border:1px solid black;"></span>	Dense GLACIAL TILL

Name: Loose FILL  
 Unit Weight: 120 pcf  
 Cohesion: 0 psf  
 Phi: 30 °

Name: Medium-Dense Silty SAND  
 Unit Weight: 125 pcf  
 Cohesion: 0 psf  
 Phi: 34 °

Name: Dense GLACIAL TILL  
 Unit Weight: 140 pcf  
 Cohesion: 100 psf  
 Phi: 40 °



# 22007 - Strand

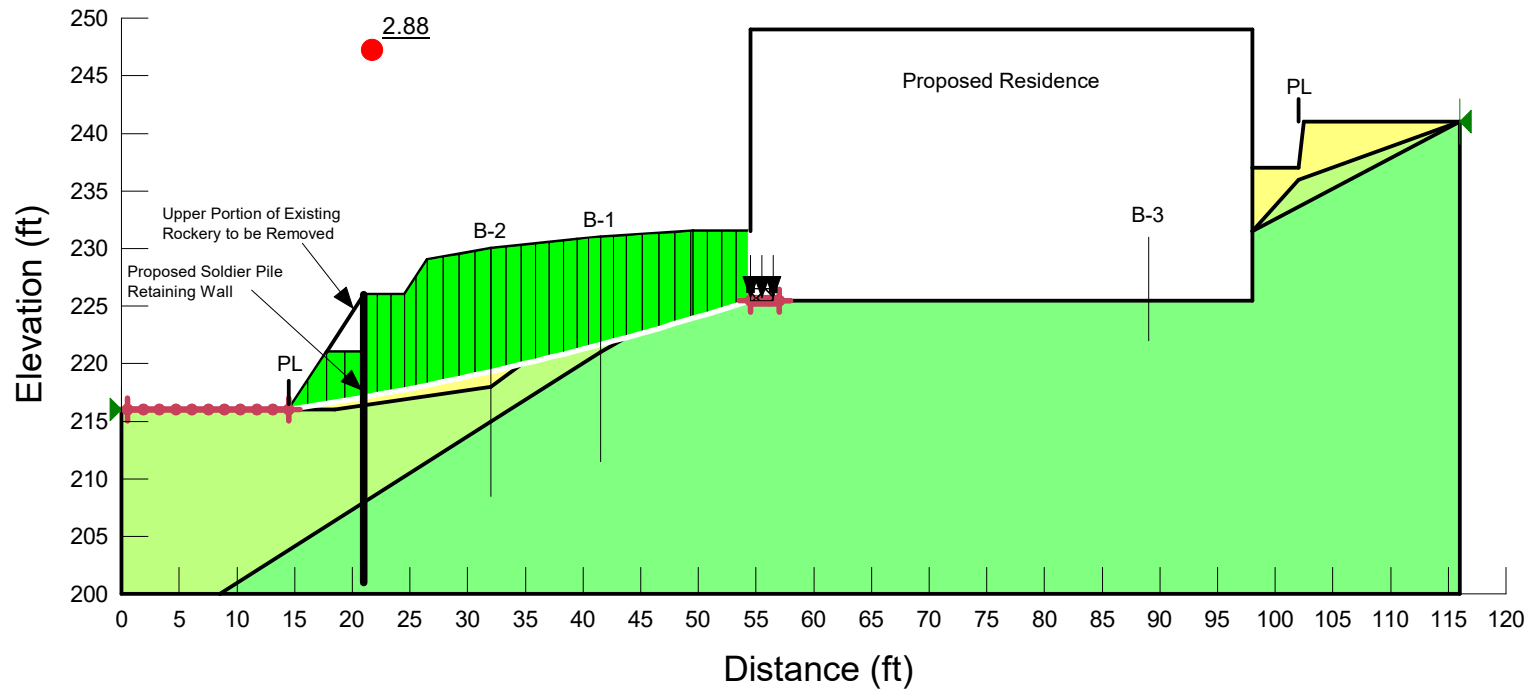
## Static

Materials	
<span style="display:inline-block; width:15px; height:15px; background-color:yellow; border:1px solid black;"></span>	Loose FILL
<span style="display:inline-block; width:15px; height:15px; background-color:lightgreen; border:1px solid black;"></span>	Medium-Dense Silty SAND
<span style="display:inline-block; width:15px; height:15px; background-color:limegreen; border:1px solid black;"></span>	Dense GLACIAL TILL

Name: Loose FILL  
 Unit Weight: 120 pcf  
 Cohesion: 0 psf  
 Phi: 30 °

Name: Medium-Dense Silty SAND  
 Unit Weight: 125 pcf  
 Cohesion: 0 psf  
 Phi: 34 °

Name: Dense GLACIAL TILL  
 Unit Weight: 140 pcf  
 Cohesion: 100 psf  
 Phi: 40 °



# Static

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## File Information

File Version: 8.15

Title: 22007 Slope Stability Analysis

Created By: Adam Moyer

Last Edited By: Adam Moyer

Revision Number: 64

Date: 5/3/2023

Time: 6:17:03 PM

Tool Version: 8.15.6.13446

File Name: 22007 Slope Stability Analysis - Strand (Soldier Piles).gsz

Directory: C:\Users\AdamM\Geotech Consultants\Shared Documents - Documents\2022 Jobs\22007 Strand (MRM)\

Last Solved Date: 5/3/2023

Last Solved Time: 6:17:05 PM

## Project Settings

Length(L) Units: Feet

Time(t) Units: Seconds

Force(F) Units: Pounds

Pressure(p) Units: psf

Strength Units: psf

Unit Weight of Water: 62.4 pcf

View: 2D

Element Thickness: 1

## Analysis Settings

### Static

Kind: SLOPE/W

Method: Morgenstern-Price

Settings

Side Function

Interslice force function option: Half-Sine

PWP Conditions Source: (none)

Slip Surface

Direction of movement: Right to Left

Use Passive Mode: No

Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1

Resisting Side Maximum Convex Angle: 1 °

Driving Side Maximum Convex Angle: 5 °

Optimize Critical Slip Surface Location: [No](#)

Tension Crack

Tension Crack Option: [\(none\)](#)

F of S Distribution

F of S Calculation Option: [Constant](#)

Advanced

Number of Slices: [30](#)

F of S Tolerance: [0.001](#)

Minimum Slip Surface Depth: [0.1 ft](#)

Search Method: [Root Finder](#)

Tolerable difference between starting and converged F of S: [3](#)

Maximum iterations to calculate converged lambda: [20](#)

Max Absolute Lambda: [2](#)

## Materials

### Loose FILL

Model: [Mohr-Coulomb](#)

Unit Weight: [120 pcf](#)

Cohesion': [0 psf](#)

Phi': [30 °](#)

Phi-B: [0 °](#)

### Medium-Dense Silty SAND

Model: [Mohr-Coulomb](#)

Unit Weight: [125 pcf](#)

Cohesion': [0 psf](#)

Phi': [34 °](#)

Phi-B: [0 °](#)

### Dense GLACIAL TILL

Model: [Mohr-Coulomb](#)

Unit Weight: [140 pcf](#)

Cohesion': [100 psf](#)

Phi': [40 °](#)

Phi-B: [0 °](#)

## Slip Surface Entry and Exit

Left Projection: [Range](#)

Left-Zone Left Coordinate: [\(0.5, 216\) ft](#)

Left-Zone Right Coordinate: [\(14.5, 216\) ft](#)

Left-Zone Increment: [10](#)

Right Projection: [Range](#)

Right-Zone Left Coordinate: [\(54.5, 225.5\) ft](#)

Right-Zone Right Coordinate: [\(57, 225.5\) ft](#)

Right-Zone Increment: [10](#)

Radius Increments: 10

## Slip Surface Limits

Left Coordinate: (0, 216) ft

Right Coordinate: (116, 241) ft

## Surcharge Loads

### Surcharge Load 1

Surcharge (Unit Weight): 3,000 pcf

Direction: Vertical

#### Coordinates

	X (ft)	Y (ft)
	54.5	226.5
	56.5	226.5

## Points

	X (ft)	Y (ft)
Point 1	0	216
Point 2	14.5	216
Point 3	18.5	216
Point 4	21	226
Point 5	24.5	226
Point 6	26.5	229
Point 7	32	230
Point 8	41.5	231
Point 9	54.5	231.5
Point 10	89	231.5
Point 11	98	231.5
Point 12	98	237
Point 13	102	237
Point 14	102.5	241
Point 15	116	241
Point 16	0	200
Point 17	116	200
Point 18	41.5	225
Point 19	41.5	221
Point 20	41.5	211.5
Point 21	32	218
Point 22	32	215
Point 23	32	208.5
Point 24	89	228
Point 25	89	222

Point 26	8.5	200
Point 27	102	236
Point 28	54.5	225.5
Point 29	49.35714	225.5
Point 30	98	225.5
Point 31	49.5	231.5
Point 32	54.5	228.5
Point 33	39.5	230.78947
Point 34	39.5	226
Point 35	24.5	221
Point 36	17.75	221
Point 37	21	221

## Regions

	Material	Points	Area (ft <sup>2</sup> )
Region 1	Dense GLACIAL TILL	26,22,19,29,28,30,11,15,17	2,422.8
Region 2	Loose FILL	11,12,13,14,15,27	47
Region 3	Medium-Dense Silty SAND	11,27,15	21.5
Region 4	Medium-Dense Silty SAND	1,16,26,22,19,29,32,9,31,18,21,3,2	444.46
Region 5	Dense GLACIAL TILL	29,28,32	7.7143
Region 6	Loose FILL	2,36,37,4,5,6,7,33,8,31,18,21,3	252.62

## Current Slip Surface

Slip Surface: 1,211

F of S: 2.88

Volume: 326.12155 ft<sup>3</sup>

Weight: 39,826.943 lbs

Resisting Moment: 7,039,834.2 lbs-ft

Activating Moment: 2,442,671.4 lbs-ft

Resisting Force: 26,195.096 lbs

Activating Force: 9,086.373 lbs

F of S Rank (Analysis): 1 of 1,331 slip surfaces

F of S Rank (Query): 1 of 1,331 slip surfaces

Exit: (14.5, 216) ft

Entry: (54.5, 225.5) ft

Radius: 260.50867 ft

Center: (-25.508672, 473.41809) ft

## Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	15.3125	216.12891	0	130.3198	75.24017	0
Slice 2	16.9375	216.392	0	389.65597	224.96798	0
Slice 3	18.5625	216.66564	0	502.09014	289.88188	0
Slice 4	20.1875	216.94987	0	468.40576	270.43419	0
Slice 5	21.583333	217.20186	0	1,016.9121	587.11447	0

Slice 6	22.75	217.41904	0	990.97995	572.14254	0
Slice 7	23.916667	217.64172	0	964.57018	556.89485	0
Slice 8	25	217.85326	0	1,026.1775	592.46385	0
Slice 9	26	218.05293	0	1,175.7195	678.80196	0
Slice 10	27.1875	218.29579	0	1,248.0613	720.56852	0
Slice 11	28.5625	218.58367	0	1,243.1162	717.71349	0
Slice 12	29.9375	218.8793	0	1,237.3377	714.37727	0
Slice 13	31.3125	219.18272	0	1,230.6767	710.53152	0
Slice 14	32.66155	219.48792	0	1,217.4169	702.87598	0
Slice 15	33.984649	219.79465	0	1,197.5562	691.4094	0
Slice 16	35.252924	220.09536	0	1,166.3245	786.69579	0
Slice 17	36.466374	220.38949	0	1,149.4162	775.29099	0
Slice 18	37.679825	220.6898	0	1,131.7434	763.37059	0
Slice 19	38.893275	220.99629	0	1,113.2802	750.91698	0
Slice 20	40	221.281	0	1,095.7635	739.10185	0
Slice 21	41	221.54293	0	1,079.3145	728.00684	0
Slice 22	42.059146	221.82512	0	1,058.7441	714.13192	0
Slice 23	43.177438	222.12812	0	1,033.9776	697.4267	0
Slice 24	44.439154	222.47679	0	978.55527	821.10536	100
Slice 25	45.844293	222.87271	0	952.63834	799.35848	100
Slice 26	47.249432	223.27715	0	925.64169	776.7056	100
Slice 27	48.654571	223.69015	0	897.53754	753.12342	100
Slice 28	49.42857	223.92025	0	881.7284	739.85797	100
Slice 29	50.125	224.13133	0	860.41948	721.97767	100
Slice 30	51.375	224.51401	0	820.33679	688.3443	100
Slice 31	52.625	224.90357	0	779.3911	653.98678	100
Slice 32	53.875	225.30004	0	737.58834	618.9101	100



# 22007 - Strand

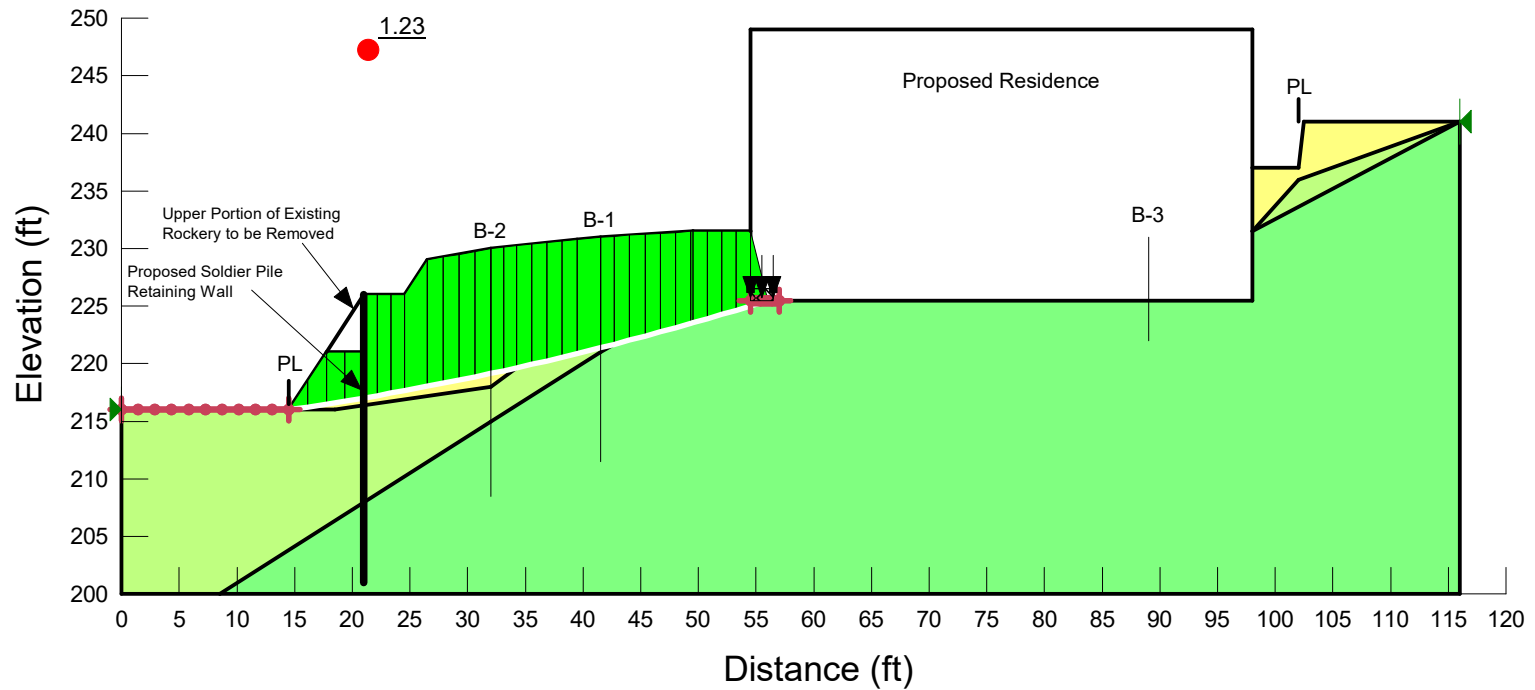
## Seismic

Materials	
<span style="display:inline-block; width:15px; height:15px; background-color:yellow; border:1px solid black;"></span>	Loose FILL
<span style="display:inline-block; width:15px; height:15px; background-color:lightgreen; border:1px solid black;"></span>	Medium-Dense Silty SAND
<span style="display:inline-block; width:15px; height:15px; background-color:limegreen; border:1px solid black;"></span>	Dense GLACIAL TILL

Name: Loose FILL  
 Unit Weight: 120 pcf  
 Cohesion: 0 psf  
 Phi: 30 °

Name: Medium-Dense Silty SAND  
 Unit Weight: 125 pcf  
 Cohesion: 0 psf  
 Phi: 34 °

Name: Dense GLACIAL TILL  
 Unit Weight: 140 pcf  
 Cohesion: 100 psf  
 Phi: 40 °



# Seismic

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## File Information

File Version: 8.15

Title: 22007 Slope Stability Analysis

Created By: Adam Moyer

Last Edited By: Adam Moyer

Revision Number: 64

Date: 5/3/2023

Time: 6:17:03 PM

Tool Version: 8.15.6.13446

File Name: 22007 Slope Stability Analysis - Strand (Soldier Piles).gsz

Directory: C:\Users\AdamM\Geotech Consultants\Shared Documents - Documents\2022 Jobs\22007 Strand (MRM)\

Last Solved Date: 5/3/2023

Last Solved Time: 6:17:07 PM

## Project Settings

Length(L) Units: Feet

Time(t) Units: Seconds

Force(F) Units: Pounds

Pressure(p) Units: psf

Strength Units: psf

Unit Weight of Water: 62.4 pcf

View: 2D

Element Thickness: 1

## Analysis Settings

### Seismic

Kind: SLOPE/W

Method: Morgenstern-Price

Settings

Side Function

Interslice force function option: Half-Sine

PWP Conditions Source: (none)

Slip Surface

Direction of movement: Right to Left

Use Passive Mode: No

Slip Surface Option: Entry and Exit

Critical slip surfaces saved: 1

Resisting Side Maximum Convex Angle: 1 °

Driving Side Maximum Convex Angle: 5 °

Optimize Critical Slip Surface Location: [No](#)

Tension Crack

Tension Crack Option: [\(none\)](#)

F of S Distribution

F of S Calculation Option: [Constant](#)

Advanced

Number of Slices: [30](#)

F of S Tolerance: [0.001](#)

Minimum Slip Surface Depth: [0.1 ft](#)

Search Method: [Root Finder](#)

Tolerable difference between starting and converged F of S: [3](#)

Maximum iterations to calculate converged lambda: [20](#)

Max Absolute Lambda: [2](#)

## Materials

### Loose FILL

Model: [Mohr-Coulomb](#)

Unit Weight: [120 pcf](#)

Cohesion': [0 psf](#)

Phi': [30 °](#)

Phi-B: [0 °](#)

### Medium-Dense Silty SAND

Model: [Mohr-Coulomb](#)

Unit Weight: [125 pcf](#)

Cohesion': [0 psf](#)

Phi': [34 °](#)

Phi-B: [0 °](#)

### Dense GLACIAL TILL

Model: [Mohr-Coulomb](#)

Unit Weight: [140 pcf](#)

Cohesion': [100 psf](#)

Phi': [40 °](#)

Phi-B: [0 °](#)

## Slip Surface Entry and Exit

Left Projection: [Range](#)

Left-Zone Left Coordinate: [\(0, 216\) ft](#)

Left-Zone Right Coordinate: [\(14.5, 216\) ft](#)

Left-Zone Increment: [10](#)

Right Projection: [Range](#)

Right-Zone Left Coordinate: [\(54.53697, 225.5\) ft](#)

Right-Zone Right Coordinate: [\(57, 225.5\) ft](#)

Right-Zone Increment: [10](#)

Radius Increments: 20

## Slip Surface Limits

Left Coordinate: (0, 216) ft

Right Coordinate: (116, 241) ft

## Surcharge Loads

### Surcharge Load 1

Surcharge (Unit Weight): 3,000 pcf

Direction: Vertical

#### Coordinates

	X (ft)	Y (ft)
	54.5	226.5
	56.5	226.5

## Seismic Coefficients

Horz Seismic Coef.: 0.333

## Points

	X (ft)	Y (ft)
Point 1	0	216
Point 2	14.5	216
Point 3	18.5	216
Point 4	21	226
Point 5	24.5	226
Point 6	26.5	229
Point 7	32	230
Point 8	41.5	231
Point 9	54.5	231.5
Point 10	89	231.5
Point 11	98	231.5
Point 12	98	237
Point 13	102	237
Point 14	102.5	241
Point 15	116	241
Point 16	0	200
Point 17	116	200
Point 18	41.5	225
Point 19	41.5	221
Point 20	41.5	211.5
Point 21	32	218

Point 22	32	215
Point 23	32	208.5
Point 24	89	228
Point 25	89	222
Point 26	8.5	200
Point 27	102	236
Point 28	54.5	225.5
Point 29	49.35714	225.5
Point 30	98	225.5
Point 31	49.5	231.5
Point 32	54.5	228.5
Point 33	39.5	230.78947
Point 34	39.5	226
Point 35	24.5	221
Point 36	17.75	221
Point 37	21	221

## Regions

	Material	Points	Area (ft <sup>2</sup> )
Region 1	Dense GLACIAL TILL	26,22,19,29,28,30,11,15,17	2,422.8
Region 2	Loose FILL	11,12,13,14,15,27	47
Region 3	Medium-Dense Silty SAND	11,27,15	21.5
Region 4	Medium-Dense Silty SAND	1,16,26,22,19,29,32,9,31,18,21,3,2	444.46
Region 5	Dense GLACIAL TILL	29,28,32	7.7143
Region 6	Loose FILL	2,36,37,4,5,6,7,33,8,31,18,21,3	252.62

## Current Slip Surface

Slip Surface: 2,437

F of S: 1.23

Volume: 335.14206 ft<sup>3</sup>

Weight: 41,016.233 lbs

Resisting Moment: 7,816,151.8 lbs-ft

Activating Moment: 6,329,166.7 lbs-ft

Resisting Force: 28,364.767 lbs

Activating Force: 22,978.623 lbs

F of S Rank (Analysis): 1 of 2,541 slip surfaces

F of S Rank (Query): 1 of 2,541 slip surfaces

Exit: (14.5, 216) ft

Entry: (56.014788, 225.5) ft

Radius: 267.59565 ft

Center: (-24.245383, 480.77581) ft

## Slip Slices

	X (ft)	Y (ft)	PWP (psf)	Base Normal Stress (psf)	Frictional Strength (psf)	Cohesive Strength (psf)
Slice 1	15.3125	216.12144	0	127.61968	73.681258	0

Slice 2	16.9375	216.36944	0	385.93709	222.82088	0
Slice 3	18.5625	216.62767	0	506.05186	292.16918	0
Slice 4	20.1875	216.89615	0	483.92787	279.39589	0
Slice 5	21.583333	217.13436	0	1,048.034	605.08273	0
Slice 6	22.75	217.33983	0	1,038.0148	599.29813	0
Slice 7	23.916667	217.55062	0	1,026.7199	592.77699	0
Slice 8	25.5	217.84655	0	1,187.6527	685.69161	0
Slice 9	27.1875	218.1704	0	1,361.8933	786.28945	0
Slice 10	28.5625	218.44344	0	1,370.9793	791.5353	0
Slice 11	29.9375	218.72399	0	1,375.1612	793.94967	0
Slice 12	31.3125	219.01206	0	1,374.473	793.55233	0
Slice 13	32.559552	219.27953	0	1,364.6292	787.86903	0
Slice 14	33.678655	219.52514	0	1,346.7008	777.51808	0
Slice 15	34.89593	219.79825	0	1,186.7347	800.46263	0
Slice 16	36.211379	220.09985	0	1,162.6433	784.21278	0
Slice 17	37.526827	220.40843	0	1,138.5167	767.93922	0
Slice 18	38.842276	220.72404	0	1,113.5438	751.09476	0
Slice 19	40.5	221.13296	0	1,078.7191	727.60522	0
Slice 20	42.103438	221.53677	0	1,037.3242	699.68404	0
Slice 21	43.371903	221.86489	0	775.7868	650.96242	100
Slice 22	44.701956	222.2159	0	759.75205	637.50767	100
Slice 23	46.032008	222.57425	0	741.24307	621.97679	100
Slice 24	47.362061	222.93995	0	719.99806	604.15011	100
Slice 25	48.692114	223.31304	0	696.15487	584.14329	100
Slice 26	49.42857	223.52189	0	682.11062	572.35877	100
Slice 27	50.125	223.72318	0	661.96447	555.45414	100
Slice 28	51.375	224.08813	0	623.49376	523.17339	100
Slice 29	52.625	224.45969	0	583.53148	489.64105	100
Slice 30	53.875	224.8379	0	542.25987	455.01006	100
Slice 31	55.257394	225.26434	0	2,310.0591	1,938.3698	100



# Superior NW Enterprises

February 14, 2023

**RE: Review of planting plan for 6950 SE Maker, PN-9350900620**

To Whom It May Concern:

The Mercer Island City arborist requested two trees be planted to replace one which was removed according to Mercer Island City statute. The clients selected a pair of Pacific Crabapples, North American natives, which will offer decent habitat and nice color interest for most of the year.

This species is more tolerant of shade and wet conditions than its European cousins and should thrive in the area selected on the north side of the property. The only caveat is that deer love to browse on the tree so the new plants will have to be well protected to prevent predation from the hungry herd(s) which prowls the Island. Rabbits will chew on the lower bark and epicormic shoots that rise around the base and can gird young trees. Keeping the area clear of weeds and grasses for at least 3' radial will help prevent this kind of damage.

Laying down 3-5" deep of arbormulch around the trees about 4' out from their bases will provide good long term nutrition for the trees while helping to keep the weeds down.

The trees will need supplemental water for at least the first three years. Using watering bags, such as the TreeGator, will simplify the hydration process. The bags 'leak' water at a set rate and can be filled and then left for up to two weeks depending on the size and flow rate. Filling the bags can be done by hose either from a water truck or house spigot.

Please let me know if you have any questions.

Anthony Moran  
ISA Certified Arborist  
Qualified Tree Risk Assessor  
PN-5847A



# Superior NW Enterprises

August 24, 2023

**RE: Review of retaining wall plan for 6950 SE Maker, PN-9350900620**

To Whom It May Concern:

The Mercer Island City arborist requested a close study of the situation with the #4 fir which was described in the original August 2022 TPP as -

4. Douglas fir (*Pseudotsuga menziesii*) 36" DSH (may be less as it appears to have heavy bark), reaches in the neighborhood of 75' tall. It appears to have been topped multiple times and regrown. Exhibits good new growth and color with a full radial canopy down below the halfway point. Base of the tree is 9.5' N of the northwest corner of the subject property. There is a significant drop off in this area of the yard. The plan sheet indicates a negative 12' grade change.

Initially no significant impacts were going to occur near the tree beyond the removal of the existing deck. However a geotech reviewing the proposed plan grew concerned with the exiting rock retaining wall on the west side of the yard. He recommended that a pile and timber retaining system be installed to the east of the existing one. This work will theoretically cross into the CRZ of the big offsite fir.

Based on the plan set drawing shown in Figure 1 the north end of the new wall will terminate 15' out from the base of the tree. This means there is no chance that the work will damage the Structural Root Plate of the tree.

The base of the #4 tree is close to 5' below the level of *the base* of the existing stone wall which ends right at the NW corner post. According to the architect and builder this wall will remain in place and not be disturbed. Only a secondary section of stone that is well outside the theoretical CRZ will be removed to facilitate the installation of the pile wall.

The work plan states that the machinery required for drilling the pile holes will be stationed outside the theoretical CRZ for the tree. This is not absolutely necessary as it is highly unlikely that the fir has any roots present east of the existing wall in the first place. Douglas fir rarely has roots present below 36" due to compaction and oxygenation constraints.

In this specific case the tree is unlikely to have pushed roots around the wall and upslope into the subject property as there is not a resource base present that would have drawn roots into the space. Drilling the line of five 24" diameter holes within the theoretical CRZ would realistically create little functional impact even if the tree did have roots present in the space. They move perpendicularly away from the tree and have exponentially lessor chances of intersecting with any roots that may present.

13110 NE 177<sup>th</sup> Place #304 \* Woodinville, WA 98072 \* 206 930 5724

Anthony@SuperiorNW.com



Installing another wall 4-5' E and nearly 5' higher on the grade will create no significant disturbance for the tree. No excavation will be done to the existing grade. There will be fill work done to level the grade but this will occur over only 6% of the tree's theoretical rooting space. Again, it is highly unlikely that the fir does have roots present in the area.

Out of an abundance of caution an arborist should be onsite during the proposed work.

Please let me know if you have any questions.

Anthony Moran  
ISA Certified Arborist  
PN-5847A

TAX PAI  
71  
MERCER  
OWNER: MARTIN

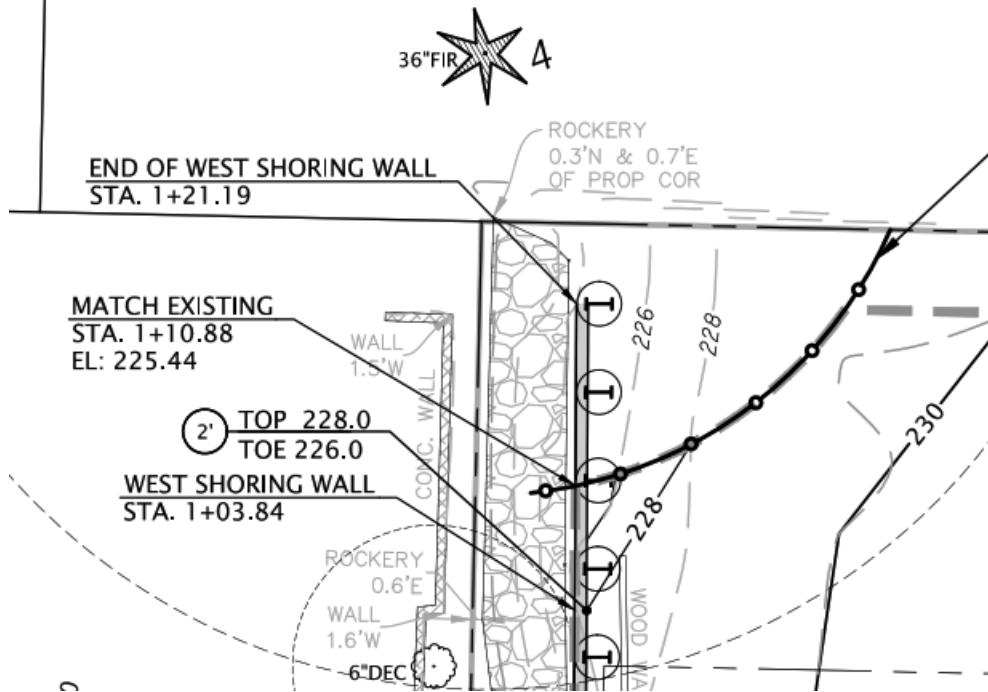


Figure 1. Excerpt from page C-2 of the submitted plan set. The base of the fir is roughly at the 214 grade level. Fir tree rarely if ever have roots deeper than 3' below grade. It is highly unlikely that this tree has any significant root density in the area east (right) of the existing rock wall.

## Molly McGuire

---

**From:** John Kenney  
**Sent:** Monday, October 2, 2023 1:21 PM  
**To:** Molly McGuire  
**Cc:** Michele Lorilla  
**Subject:** RE: 6950 SE Maker 2207-019/CAO23-011

Molly,

I am OK with approving CAO23-011. I have already approved the associated building permit and have no other pending issues.

(Please include the City of Mercer Island project number in the subject line for all permit related correspondence)

**John Kenney, ISA Municipal Specialist #PN-6601AM, Qualified Tree Risk Assessor**

City Arborist

City of Mercer Island - Community Planning & Development

City Hall Operating Hours: City Hall temporarily closed – read more [here](#).

206.275.7713 | [mercerisland.gov/trees](http://mercerisland.gov/trees)

Schedule an inspection: [Inspection Scheduling](#)

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*The City of Mercer Island utilizes a hybrid working environment. Please see the City's [Facility and Program Information](#) page for City Hall and City service hours of operation.*

---

**From:** John Kenney  
**Sent:** Thursday, September 21, 2023 1:27 PM  
**To:** Molly McGuire <molly.mcguire@mercerisland.gov>  
**Cc:** Michele Lorilla <michele.lorilla@MERCERGOV.ORG>  
**Subject:** RE: 6950 SE Maker 2207-019

Molly,

Michele and I talked, and I am OK to approve this. I have updated the CPA and tree permit.

(Please include the City of Mercer Island project number in the subject line for all permit related correspondence)

**John Kenney, ISA Municipal Specialist #PN-6601AM, Qualified Tree Risk Assessor**

City Arborist

City of Mercer Island - Community Planning & Development

City Hall Operating Hours: City Hall temporarily closed – read more [here](#).

206.275.7713 | [mercerisland.gov/trees](http://mercerisland.gov/trees)

Schedule an inspection: [Inspection Scheduling](#)

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**From:** Molly McGuire <[molly.mcguire@mercerisland.gov](mailto:molly.mcguire@mercerisland.gov)>  
**Sent:** Thursday, September 21, 2023 9:28 AM  
**To:** John Kenney <[John.Kenney@mercergov.org](mailto:John.Kenney@mercergov.org)>  
**Cc:** Michele Lorilla <[michele.lorilla@mercergov.org](mailto:michele.lorilla@mercergov.org)>  
**Subject:** RE: 6950 SE Maker

Let me know what comes out of the conversation with Michele. If you need to revise your comments or change your approval I can let Jeffrey know.

Thanks!

**Molly McGuire**

Planner

City of Mercer Island – Community Planning & Development

City Hall Operating Hours: Tuesday – Wednesday – Thursday, 9AM to 4PM

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**From:** John Kenney <[John.Kenney@mercergov.org](mailto:John.Kenney@mercergov.org)>  
**Sent:** Thursday, September 21, 2023 8:19 AM  
**To:** Molly McGuire <[molly.mcguire@mercerisland.gov](mailto:molly.mcguire@mercerisland.gov)>  
**Cc:** Michele Lorilla <[michele.lorilla@mercergov.org](mailto:michele.lorilla@mercergov.org)>  
**Subject:** FW: 6950 SE Maker

Molly, I will be talking with Michele after she reviews the public comments. Not sure how to respond to the below email.

(Please include the City of Mercer Island project number in the subject line for all permit related correspondence)

**John Kenney, ISA Municipal Specialist #PN-6601AM, Qualified Tree Risk Assessor**

City Arborist

City of Mercer Island - Community Planning & Development

City Hall Operating Hours: City Hall temporarily closed – read more [here](#).

206.275.7713 | [mercerisland.gov/trees](http://mercerisland.gov/trees)

Schedule an inspection: [Inspection Scheduling](#)

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**From:** Jeffrey Almeter <[jeffrey.almeter@gmail.com](mailto:jeffrey.almeter@gmail.com)>

**Sent:** Wednesday, September 20, 2023 2:32 PM

**To:** John Kenney <[John.Kenney@mercergov.org](mailto:John.Kenney@mercergov.org)>

**Subject:** 6950 SE Maker

John,

I just wanted to check in on your reviews for this property. Looking at MyBuildingPermit it appears to me that you've approved 2207-019? Does that in turn mean that CAO23-011 is also approved since the comments were the same? I think if you're approved that we're only waiting on Molly's approval, and I've already followed up with her.

Thanks for your time,  
Jeff Almeter

## Molly McGuire

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**From:** Michele Lorilla  
**Sent:** Monday, July 10, 2023 6:11 AM  
**To:** Molly McGuire  
**Subject:** RE: Strand Permit CAO Review

Good morning Molly,

I approved it and added a note in trakit re: any changes in grading or walls submitted in subsequent submittals would require review/approval.

Have a great week!

**Michele Lorilla, P.E.**

Geotechnical Peer Reviewer  
City of Mercer Island – Community Planning & Development  
[www.mercerisland.gov](http://www.mercerisland.gov)

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**From:** Molly McGuire <molly.mcguire@mercerisland.gov>  
**Sent:** Thursday, July 6, 2023 3:37 PM  
**To:** Michele Lorilla <michele.lorilla@mercergov.org>  
**Subject:** Strand Permit CAO Review

Hi Michele,

I just wanted to give you a quick update on this permit. One of the neighbors brought to our attention that the original building permit notice did not include information on the work within the geologically hazardous areas (which is pretty common for the 2022 permits). In response to that, we had the applicant apply for a CAR2 permit. I know that you have signed off on your review – as long as they are not doing more work on the rockery, so if you want to go ahead and sign off the CAR2 (CAO23-011) as a formality, I can update you when they resubmit and we can go from there if you need additional review!

Let me know if you have any questions. Thanks!

**Molly McGuire**

Planner  
City of Mercer Island – Community Planning & Development  
City Hall Operating Hours: Tuesday – Wednesday – Thursday, 9AM to 4PM  
206-275-7712 | [www.mercerisland.gov](http://www.mercerisland.gov)

**\*\*\*City Hall [Closed](#) Until Further Notice.\*\*\***

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September 22, 2023

Molly McGuire  
Planner  
Community Planning and Development (CPD)  
City of Mercer Island

Re: 6950 SE Maker Street  
Mercer Island, Washington  
CAO23-011

The purpose of this letter was to provide any geotechnical engineering related comments on the public comments and applicant responses received for CAO23-011 for the proposed site development at 6950 SE Maker Street.

The public comments included the following:

Dan Grove, 3515 72<sup>nd</sup> Ave SE, comments dated August 9 and August 31, 2023;  
Martin & Barbara Snoey, 7145 SE 35<sup>th</sup> Street, comments dated August 9 and August 31, 2023;  
Jim & Susan Mattison, 7075 SE Maker Street, comments dated August 9; and  
Pamela Faulkner & Brigid Stackpool, 7011 SE Maker Street, comments dated August 10, 2023.

The applicant's response included:

Jeffrey Altimeter comment response memo dated August 23, 2023;  
Superior NW Enterprises, review of retaining wall plan for 6950 SE Maker Street dated August 24, 2023; and  
Jeffrey Altimeter shoring sequencing memo dated August 23, 2023.

It is my opinion that the comments and response to comments documents listed above do not include any specific geotechnical engineering related issues that would result in a reversal of the geotechnical engineering peer review approval currently in place for the building permit # 2207-019 or for CAO23-011 associated with the proposed site development at 6950 SE Maker Street.

Sincerely,

**City of Mercer Island - CPD**



Michele Lorilla, P.E.  
Geotechnical Peer Reviewer



Document Title(s) (or transactions contained herein) Notice of work  
withina critical area

Reference number(s) of documents assigned or released \_\_\_\_\_

Additional reference number of page \_\_\_\_\_ of document(s)

Grantor(s) Name (last, first, middle initial) The Dorothy Ann Strand  
family Trust-

Additional names on page \_\_\_\_\_ of document(s)

Grantee(s) Name (last, first, middle initial) City of Memer Island

Additional names on page \_\_\_\_\_ of document(s)

**Legal description (abbreviated)**

Lot 4649 Block 3 Plat/Section 12 Township 24 Range 4

Additional legal on page \_\_\_\_\_ of document(s)

Lot \_\_\_\_\_ Block \_\_\_\_\_ Plat/Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_

Additional legal on page \_\_\_\_\_ of document(s)

Lot \_\_\_\_\_ Block \_\_\_\_\_ Plat/Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_

Additional legal on page \_\_\_\_\_ of document(s)

Lot \_\_\_\_\_ Block \_\_\_\_\_ Plat/Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_

Additional legal on page \_\_\_\_\_ of document(s)

Assessor's Property Tax Parcel/Account Number(s) 9350900620

**DO NOT WRITE IN MARGINS**

The Auditor/Recorder will rely on the information provided on this form.  
The staff will not read the attached document to verify the accuracy or  
completeness of the indexing information provided herein.

For Permit Number CA023-011

For Parcel Number 9350900620

Street Address 6950 SE maker St, mercer Island WA

This property contains critical areas (e.g. wetlands, streams, geologically hazardous areas, etc.) and/or critical area buffers as defined by the Mercer Island City Code (MICC) 19.07 and regulated by provisions in MICC 19.07.160, MICC 19.07.170, MICC 19.07.180, and/or MICC 19.07.190.

Due to development activity within a critical area and/or associated buffer, a City of Mercer Island Critical Area Study and Mitigation Plan has been required to be prepared and implemented for this property. This mitigation plan may have required some or all of the following: grading, soil amendments, native vegetation planting, watering, habitat feature or structure installation, fencing, signage, performance and/or maintenance bonding, annual maintenance, and annual monitoring reporting to be performed by a qualified professional at the property owner's expense. For further information regarding related requirements and limitations, please contact the City of Mercer Island Planning Division.

This notice shall run with the land and shall not be removed except upon specific written authorization approved by the City of Mercer Island and recorded herein by King County.

I, (print name) The Dorothy Ann Strand Family Trust hereby certify that I am the owner of the above-referenced property.

Owner's Signature \_\_\_\_\_

State of Washington, County of King

SUBSCRIBED AND SWORN TO before me this \_\_\_ day of \_\_\_\_\_, 20\_\_\_.

*Notary Seal*

\_\_\_\_\_  
Notary Public Signature

\_\_\_\_\_  
Notary Public Printed Name

\_\_\_\_\_  
Commission Expiration

Attachments

# LEGAL DESCRIPTION

I, (print name) The Dorothy Ann Strand Family Trust, hereby certify that I am the owner of the above-referenced property.

Owner's Signature \_\_\_\_\_

State of Washington, County of King

SUBSCRIBED AND SWORN TO before me this \_\_\_ day of \_\_\_\_\_, 2\_\_\_.

*Notary Seal*

\_\_\_\_\_  
Notary Public Signature

\_\_\_\_\_  
Notary Public Printed Name

\_\_\_\_\_  
Commission Expiration



**August 18, 2023**

Jeffrey Almeter  
9506 13<sup>th</sup> Ave NW  
Seattle, WA 98117  
Via: Email

RE: **CAO23-011** SUB1 Review Letter; 6950 SE Maker St, Mercer Island, WA 98040

Dear Jeffrey Almeter,

The City of Mercer Island Community Planning and Development Department has completed a review for compliance with the zoning code, Title 19 of the Mercer Island City Code (MICC) for the above Critical Area Review 2 application. The following issues need to be addressed in your resubmission:

Planning:

1. Review and prepare responses to Public Comments received during the public comment period which ran from July 10, 2023 to August 10, 2023. Each topic of concern in every comment should be addressed by a professional qualified to do so.
2. Review and prepare responses to the Planning Review comments published in the plan set linked below. Resubmit the application following the instructions below.
3. Review and prepare responses to the Tree Review comments below. The Tree Review comments below are the same as the Tree Review comments published in the SUB3 building permit plan set. The comments should be addressed in the resubmittals of both permits.
  - a. (For arborist) You are now proposing a shoring wall and associated impacts within the adjacent exceptional tree 4's dripline. This wall was not shown in the first two submissions. Please have the project arborist review this new plan and provide analysis of impacts to the tree according to MICC19.10.080. If the tree would be damaged by this work, a plan to minimize or move the impacts will be provided. Machinery required to build the wall will be discussed as well. This machinery may damage the roots and canopy for instance.

- b. (For Civil) Update C-2 to show limits of disturbance near tree 4 after the arborist provides their analysis and recommendations. The existing rockery is to be removed, update C-2 to call this out and show limits of disturbance. Provide a profile view on C-3 with tree 4 shown at scale. This will help the arborist and reviewers understand impacts to the soil and tree roots.

The City's processing of the Critical Area Review 2 application has been put on hold until these issues are resolved. Pursuant to MICC 19.15.110, all requested information must be submitted within 60 days or a request for extension requested. The deadline for a complete response or request for extension is October 18, 2023. If a complete response is not received or an extension response has been received prior to that date, the application will expire and be canceled for inactivity. No additional notification regarding this deadline or expiration of the application will be provided.

Sincerely,



Molly McGuire, Planner  
City of Mercer Island Community Planning and Development  
[molly.mcguire@mercerisland.gov](mailto:molly.mcguire@mercerisland.gov)  
(206) 275-7712

**Download the Correction Drawing File to Review and Respond to Comments:**

<[https://MlePlan.mercergov.org/adobe/eplan/~CurrentSharedReviews/CAO23-011-SUB1-PLANS-070323\\_review.pdf](https://MlePlan.mercergov.org/adobe/eplan/~CurrentSharedReviews/CAO23-011-SUB1-PLANS-070323_review.pdf)>.

1. To access the file, enter the following credentials into your web browser:

Username: [eguest@mercergov.org](mailto:eguest@mercergov.org)

Password: @mercer123

2. To view comments, download the file to your hard drive and open in an Adobe Reader or Adobe Acrobat.
3. The first time you access this system, you will enter the same credentials two times. Once to open the plan in your web browser, and then again to open the plan in Adobe.

Please note, you can forward this link to your sub-consultants for their review, input, and replies.

**Responding and Resubmitting: [Click for More Detailed Instructions](#)**

1. Reply to all plan review comments within the correction drawing file.

2. Update your drawings, and any necessary supplemental documents or forms.
3. Upload updated drawings to the [Mercer Island Permit Submittal Portal](#).

**Having Trouble? Please Review the Following:**

[Accessing, Reviewing, and Responding to MlePlan Comments](#)

[Troubleshooting MlePlan](#)

[MlePlan Overview](#)

**Thank you for your participation in the MlePlan review process.**

**From:** [P Faulkner](#)  
**To:** [Molly McGuire](#)  
**Cc:** [Brigid Stackpool](#)  
**Subject:** CAR2 Comment Letter #CAO23-011  
**Date:** Thursday, August 3, 2023 8:44:09 AM  
**Attachments:** [StrandProjectCAR2.CommentLetter.StackpoolFaulkner.pdf](#)

---

Hi Molly,  
Attached you will find our comments for the Strand CAR2 project.

Regards,  
Brigid Stackpool and Pamela Faulkner

Attn: Molly McGuire  
Mercer Island Community Planning and Development Department  
RE: Land Use Application CAO23-011 / 6950 SE Maker Street  
August 10, 2023

Dear Ms. McGuire

As we have previously written, we are Brigid Stackpool and Pamela Faulkner, and our address is 7011 S.E. Maker St. We live below and diagonally southwest approx. ~50 feet from the proposed development site at the end of the upper portion of Maker St.

### **Critical/Steep Slope**

We understand the City of Mercer Island has determined the above-mentioned project lies within several Critical Areas which require special consideration. Upon review of the latest submission by the site developer, we have serious concerns about this project moving forward.

Particularly, as downhill neighbors, we are concerned with Ms. Strand's blatant disregard for the impact her illegal cutting of a healthy vegetation and her proposal to drill 24" bore holes into the shallow root system of an exceptional Douglas Fir tree will have on the stability of the western, critical area hillside. Especially, since the tree Ms. Strand illegally cut on the eastern hillside is now showing signs of stress.

As you now are well-aware, the Strand property is located on the uphill portion of an escarpment in a landslide hazard zone on a 40-79% grade slope. You are also now aware that the *original* slope of the proposed development followed the grade of SE Maker St, and a substantial amount of fill dirt and grading was required to create a level building area for the existing building. Demolition and construction on such a steep grade, of a new home of any size, places all neighbors on this street, especially those of us below the site, at risk.

The Department of Natural Resources is very clear that the presence of a previous landslide is one of the "biggest and most obvious factors" determining whether there will be another landslide in that same area. You have already been provided a copy of the 1981 letter describing the failure of the Northwest corner of the rockery within the critical area. Future landslide concerns can be somewhat mitigated by retaining and monitoring the health of vegetation and trees with substantial root structures within the critical area, which will not be the case if Ms. Strand's plan for the critical area is permitted.

Documentation provided by Dan Grove details the timeline of Ms. Strand illegally and without a permit, cutting a healthy and exceptional tree on the eastern slope. That tree is now showing signs of distress. Ms. Strand also illegally removed several trees within the western critical slope area stating that the cutting was done by the previous owner! Now, Ms. Strand's plan is to



**further weaken** the western hillside by boring holes within and thus, weakening the root system of the large Fir tree supporting the northwest corner of the critical area where the rockery failed in 1981.

As the US Forest Service explains:

“Plant roots can help stabilize slopes by anchoring a weak soil mass to fractures in bedrock, by crossing zones of weakness to more stable soil, and by providing long fibrous binders within a weak soil mass. The loss of root strength or increased soil moisture content or both can lower the slope safety factor sufficiently that a moderate storm and associated rise in pore water pressure can result in slope failure.”

Please be aware, in this case, slope failure would also mean the Fir would fail, and due to the height and positioning of it on the hillside, it would fall on the houses below. The risk to neighbors and the stability of the entire hillside makes the developer’s plan to drill pilings into the critical root area of the large Fir tree a ludicrous proposition.

Which now leads us to the rockery... What we know:

- the rockery suffered a failure in 1981.
- the rockery is over 12 feet high in some areas, which violates MICC.
- the southern part of rockery is located on SE Maker St, also exceeding MICC height restrictions.
- the rockery was not permitted when built.

It’s our understanding that per MICC, a tear down and rebuild would require that the rockery on the west side of the property be limited to 6 feet. It would also require lowering and moving the southern wall north by several feet, decreasing the buildable lot size. This seems to severely limit the building area of a new building on the site at all.

Ms. Strand’s removal of critical area vegetation and her cutting of an exceptional tree in violation of city code, is putting us at substantial risk. Additionally, Ms. Strand’s solution to reinforce the rockery by drilling holes in the Fir’s root system will further weaken the critical area slope and does not meet with current MICC. Finally, Ms. Strand’s legal requirement, per MICC, to bring the entire rockery up to code, makes issuing any type of building permit illegal, per MICC, based on her current submission.

Sincerely,  
Brigid Stackpool & Pamela Faulkner

**From:** [Dan Grove](#)  
**To:** [Molly McGuire](#)  
**Subject:** public comments for CAO23-011 / 6950 SE Maker  
**Date:** Wednesday, August 9, 2023 11:37:36 AM  
**Attachments:** [CAR2 Comments - for CAO23-011.pdf](#)  
[6950 Illegally Nonconforming Site - for CAO23-011.pdf](#)

---

Hello Molly-

Please find attached 2 documents that make up my public comments for CAO23-011.

Please add me as a "party of record" for this review.

Finally, could you please acknowledge receipt of these documents?

thank you,  
Dan Grove

Molly McGuire  
Mercer Island Community Planning and Development Department  
RE: Development Proposal Site for Permit CAO23-011 is Illegally Nonconforming  
August 9, 2023

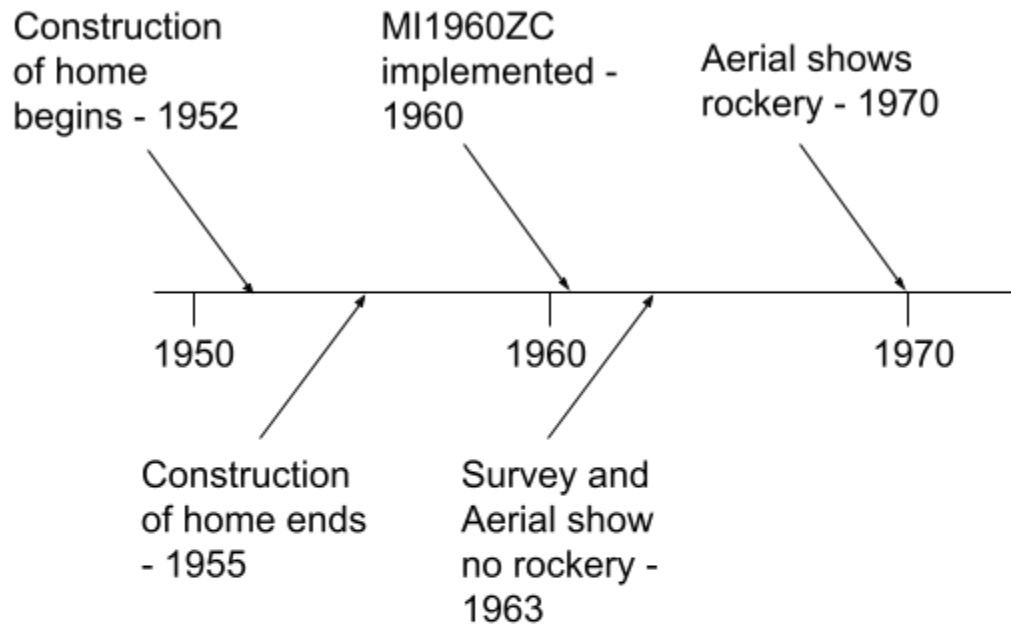
Dear Ms. McGuire:

I'm writing to provide evidence that 6950 SE Maker Street - the Development Proposal Site ("Site") for CAO23-011, is an Illegally Nonconforming Site. MICC 19.01.050(A)(3) states that "Structures, sites and uses that were not in conformance with all applicable code provisions in effect at the time of their creation are illegal and shall be brought into compliance with all applicable provisions of this Code." This regulation is directly relevant to the property at 6950 SE Maker Street, which possesses "structures, sites and uses ... not in conformance" with relevant code in effect at the time of construction. Accordingly, these must be brought into compliance in order for development to proceed.

I submitted an earlier version of this document in connection with Building Permit 2207-019 in support of my request that the City enforce the Critical Area Review 2 requirements. The City has now required a Critical Area Review 2 and directed the Applicant to demonstrate that the rockery is a legally established Structure. The Applicant has provided some responses to questions about the rockery in Building Permit 2207-019. I have updated this document to provide material information on that issue and this submission supersedes my previous submission on this set of issues.

As a preliminary matter, the Applicant is mistaken about the date of the rockery's construction. Accurately identifying the date of the rockery's construction matters to a determination of what regulations apply. The Applicant characterizes the rockery's construction as "most likely to be 1961 or shortly before" ("[Existing Rockery Memo](#)", submitted 7/8/2023 for Building Permit 2207-019). The [Mercer Island 1960 Zoning Code](#) ("MI1960ZC") came into effect September 26, 1960. Thus, in theory, something built "shortly before" 1961 might predate MI1960ZC and thus not be subject to the height requirements described under 1(c) of this memo. The Applicant appears to concede that MI1960ZC generally applies to the rockery (from the Existing Rockery Memo: "With the rockery being installed in 1961 the code in place at the time would have been the City of Mercer Island Zoning code of 1960"). However, this still leaves room for some confusion about the date of the rockery's construction, as noted. Moreover, the Applicant's estimate is simply wrong. Evidence shows that the rockery was built after January 1, 1963, and thus is unquestionably governed by MI1960ZC. The Appendix demonstrates this definitively, and this memo treats the effective date of construction as sometime after January 1, 1963.

Here is a timeline of the Site's history:



In the Existing Rockery Memo, the Applicant fails to acknowledge the ways in which the rockery is an Illegally Nonconforming Structure and offers several theories that can be disproven through careful examination of available evidence. I will take these in turn.

1. The Applicant states that “We also believe that during the period at which this rockery was installed that rockeries would have been considered part of landscaping and not ‘structure’”. This is simply incorrect.

The rockery is a Structure under current MICC, and it was a Structure upon its construction (no earlier than 1963).

MICC 19.16.010 defines Structure as “that which is **built** or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner” (my emphasis). The Uniform Building Codes of [1946](#), [1955](#), and [1958](#) all define Structure identically to MICC 19.16.010. Indeed, the definition has not changed in over 75 years. Consequently, the definition of Structure has not changed and the rockery was a Structure when it was constructed (no earlier than 1963).

The rockery is a retaining wall under current law, and it was a retaining wall immediately upon its construction (no earlier than 1963).

There is consensus on the definition of a retaining wall in all Uniform Building Codes between 1946 and [1967](#) (including 1946, 1955, and 1958 – which were variously in use during this period by King County and/or the City of Mercer Island). A retaining wall is defined in all of these as “any wall used to resist the lateral displacement of any material.” The rockery clearly meets that definition, as it is used to hold back more than 12 feet of fill that was installed after the initial development of the lot. Thus the rockery was considered a retaining wall immediately upon its construction (no earlier than 1963).

MI1960ZC is clear that a retaining wall that contains a fill (the retaining wall in question holds back more than 12 feet of fill) is “built”: MI1960ZC 19.01(4)(g) states that “Where a retaining wall contains a fill, the height of the retaining wall **built** to retain the fill shall...” (my emphasis).

It is clear that the rockery has been both a retaining wall and a Structure throughout its entire existence.

2. The rockery violated numerous codes in effect at the time of its construction. The rockery’s construction must be accurately dated because in some (though not all) instances, the putative violations depend on whether the rockery was built after the effective date of MI1960ZC. As established earlier, the rockery was built after 1963.
  - A. The rockery’s construction violated the Uniform Building Code that had been in effect since 1944. (Per notes from the City of Mercer Island on Building Permit 2207-019 obtained in [Public Records Request 23-247](#): “We determined that mitigation would be required for the rockery due to the fact that it was not constructed with methods that would have been legal at the time with the marginal factor of safety. “). This alone would have made the rockery illegal at the time of its construction.
  - B. The rockery violated zoning codes in effect in King County long before MI1960ZC was enacted in 1960. The rockery illegally encroaches on the SE Maker Street right-of-way, without an encroachment agreement. This alone would have made the rockery illegal at the time of its construction.
  - C. The rockery’s height violated MI1960ZC:
    - a. The rockery was too tall in the front yard. MI1960ZC 16.01.4(g) limited a fill retaining wall in the Required Front Yard to 42 inches in height. Required Front Yard depth in MI1960ZC was 20 feet (identical to today). The retaining wall in the Front Yard is up to 11 feet high.
    - b. The rockery was too tall in the side yard. MI1960ZC 16.01.4(g) limited a fill retaining wall in the Required Side Yard to 72 inches in height. Required Side Yard Depth in the MI1960ZC was 5 feet (which differs from today’s code). The retaining wall in the Side Yard is up to 9 feet high.

3. The Applicant has stated that MI1960ZC did not regulate retaining walls. That is simply inaccurate as a matter of record and easily disproven; see MI1960ZC 16.01.4: "Fences and Retaining Walls:".
4. The site became more nonconforming (and as a result, under MICC 19.01.050(A)(4) lost its Legally Nonconforming status) after 1963 when the rockery's construction included substantially altering the grade of the site by installing large amounts of fill. See Appendix.

## **Consequences**

For the reasons listed above as items 2(a), 2(b), and 2(c), the rockery is an Illegally Nonconforming Structure. An "Illegally Nonconforming Structure" is a Structure that was not in conformance with all applicable code provisions in effect at the time of its creation - as is the case here. Illegally Nonconforming Structures must be brought into compliance with all applicable provisions of the MICC per MICC 19.01.050.

Full compliance is required and mere repairs and maintenance will not suffice. Because the rockery was built illegally, the Ordinary Repairs and Maintenance clause of MICC 19.01.050(B)(1) may not be used to maintain the current Structure's nonconformance. Per MICC 19.01.050(B)(1), ordinary repairs and maintenance are only permitted for Legally Nonconforming Structures, and thus may not be used to mitigate the violations here.

In addition, the Site must be brought into compliance with MICC. The Site likely became Legally Nonconforming in 1960 when the MI1960ZC was enacted. However, subsequent actions taken removed the site's Legally Nonconforming Status under MICC 19.01.050(A)(4). In one pertinent example, when the rockery was unlawfully constructed no earlier than 1963, the Site was made more nonconforming and thus lost Legally Nonconforming Status. Hence the Site is an Illegally Nonconforming Site (a developed building site that did not conform to the applicable code requirements that were in effect regarding site development) and therefore must be brought into conformance with all current code requirements. MICC 19.01.050(A)(3).

Thank you for your careful attention to this matter.

Dan Grove  
3515 72nd Ave SE  
Mercer Island, WA 98040

## Appendix

Figure 1 shows the Site in 1955, before the current rockery was installed.

When this photo was taken, the area directly west of the house (and shown in this photo) had approximately 10' of fill in place (based on the 1963 Survey and 2022 Geotechnical Survey, shown below).

This fill installation was the first of at least 2 major fill installations that occurred on the site over its lifetime.

At the time of this photo, there is an unimproved driving surface immediately south of 6950 (visible in the lower right of the photo). This same driving surface is visible in the 1963 aerial image of the Site shown in Figure 2a.

On September 26, 1960, the site likely became Legally Nonconforming when MI1960ZC was adopted. The reason that the site was nonconforming is that the house extended into the Required Front, Side and Rear Yards as defined by MI1960ZC.

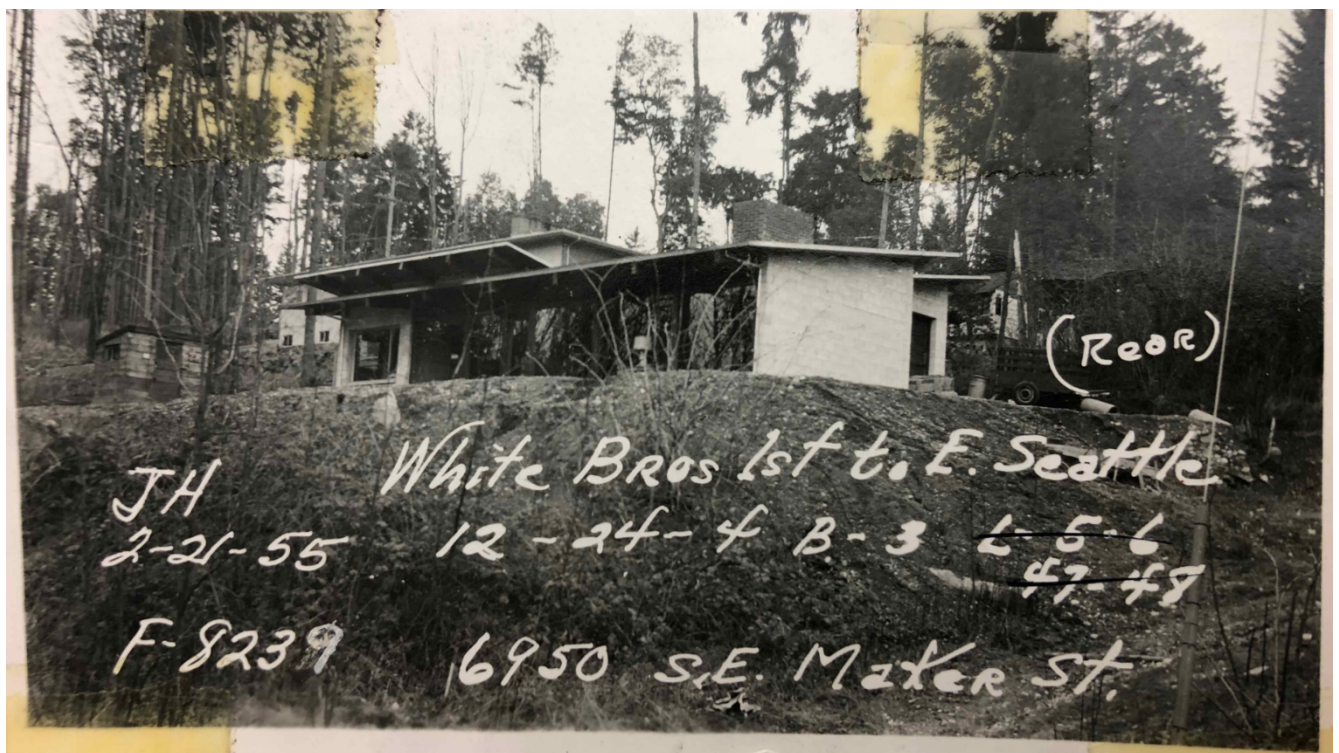


Figure 1. 1955 King County Assessor photo showing same hillside as 1963 Aerial Image in Figure 2b



Figure 2 is taken from a [Mercer Island 1963 survey](#) (dated 1/19/1963) that shows the contours of the Lot and the SE Maker right-of-way after the 6950 house was completed in 1955, but before the rockery was put in place around 6950.

It is important to note that there is no rockery in the SE Maker right-of-way south of 6950, and no rockery on the western boundary of 6950. This is confirmed by the 1963 (dated “Winter 1963” in the Mercer Island GIS) aerial image in Figure 2a.

The 1963 survey and 1963 aerial photograph clearly demonstrate that there was no rockery in place on either the west or south boundaries of the Site. By 1992 (shown in Figure 2b), the rockeries had become clearly visible.

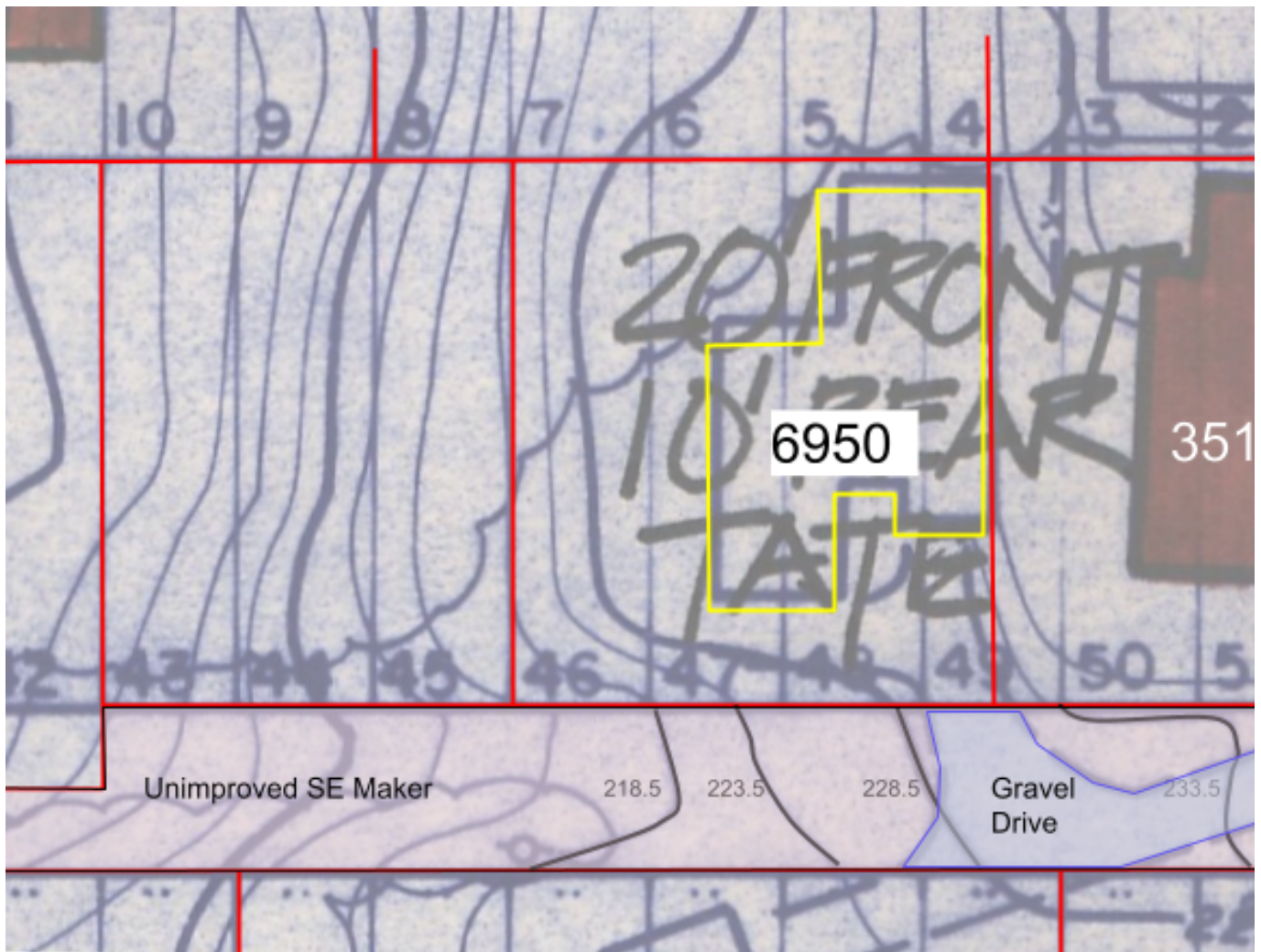


Figure 2. Survey showing original grade of SE Maker Street, 1963. The grade shown for 6950 is already Altered from the Existing Grade.  
("1963 Survey")





Figure 2a. 1963 Aerial Image showing no rockery to the west and no rockery in SE Maker ROW



Figure 2b. For comparison, 1992 Aerial Image showing rockery to the west and rockery in SE Maker ROW

Another survey of SE Maker Street and 6950 SE Maker was done in 2021 (the survey is submitted as part of CAO23-011), as shown in Figure 3. The rockery installed after 1963 significantly altered the grade of the front and side yards of 6950 SE Maker (north and east of the rockery), as a second fill installation was done (to fill in the area behind the rockery, and to increase the grade of the front/side yards).

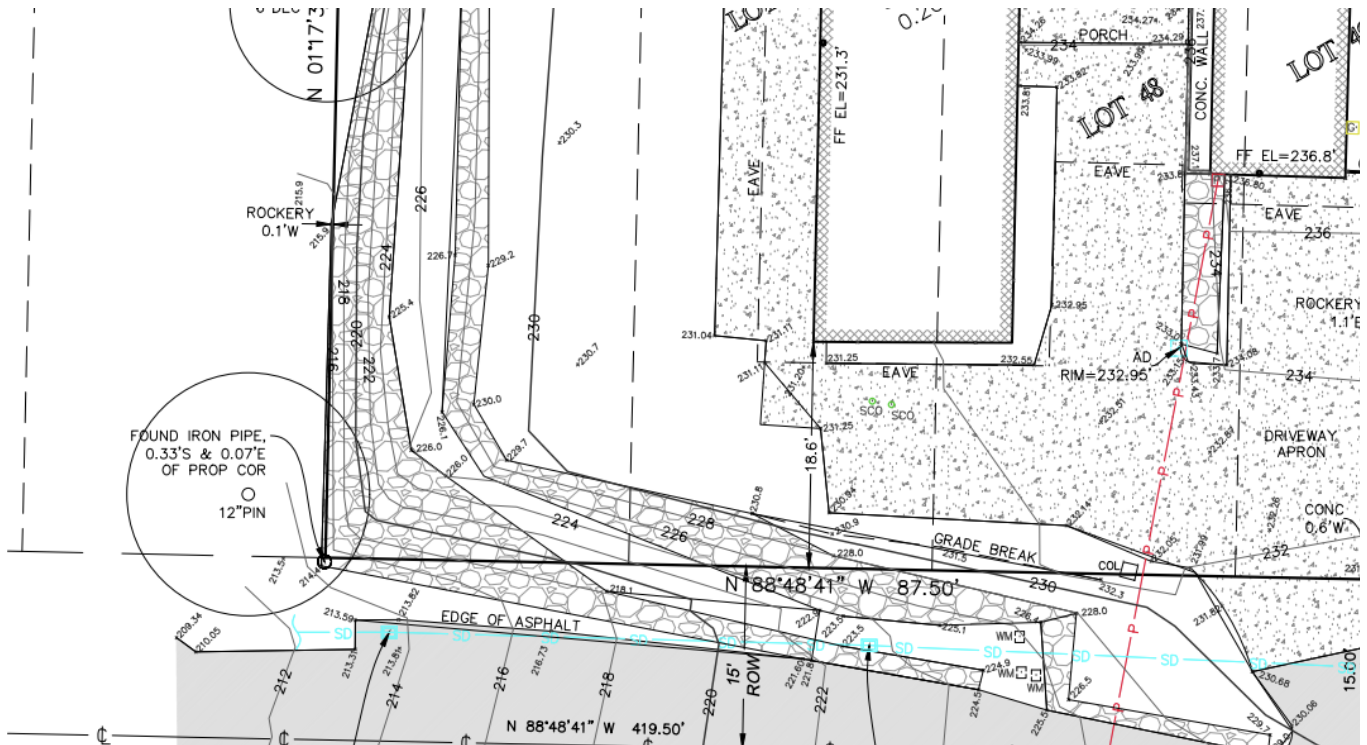
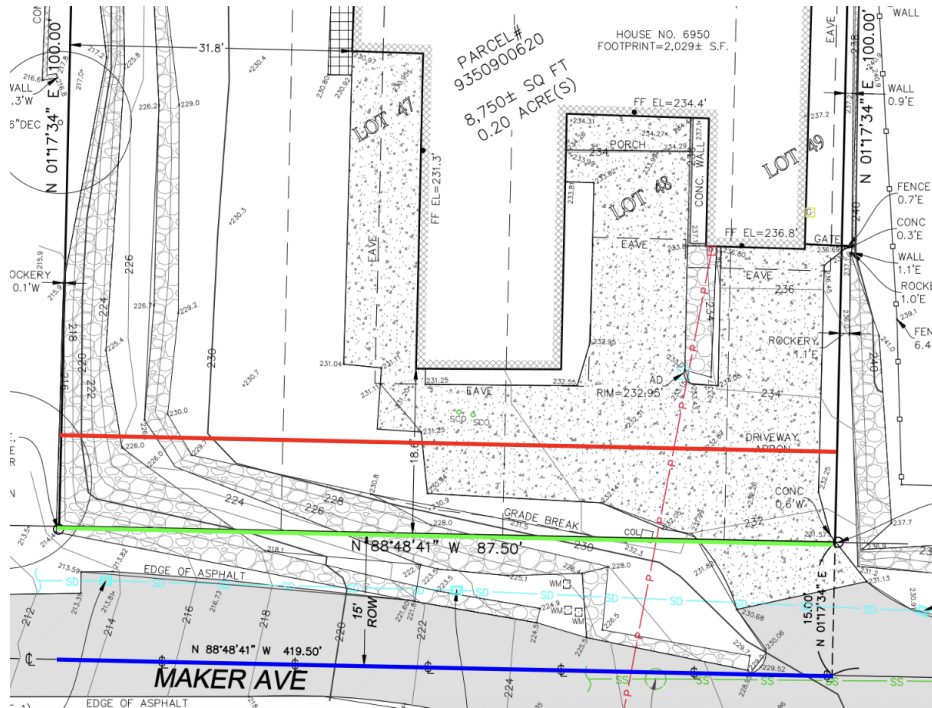


Figure 3. 2021 Survey of 6950 SE Maker and SE Maker Street

A comparison of cross sections (shown in Figure 4) of the 1963 Survey in figure with the 2021 Survey clearly confirms that the rockery was installed between the dates of the two surveys. In these two surveys, 60 years apart:

- The elevation of the Maker Street midline (shown in Blue) differs from 1963 to 2021 by only a few inches (despite the street being paved several times between the two surveys).
- At the south boundary of 6950 (in Green), the rockery that was added is clearly visible - there are up to 4 feet of difference between 1963 and 2021.
- The cross section 10' north of the boundary (in Red) shows that the rockery increased the elevation of the yard by 7.5 feet when comparing 2021 and 1963 elevations.



### Difference in Elevations between 1963 and 2021 on 3 Cross Sections

- 2021-1963 diff @ Maker midline
- 2021-1963 diff @ property line
- 2021-1963 diff @ 10' north of property line

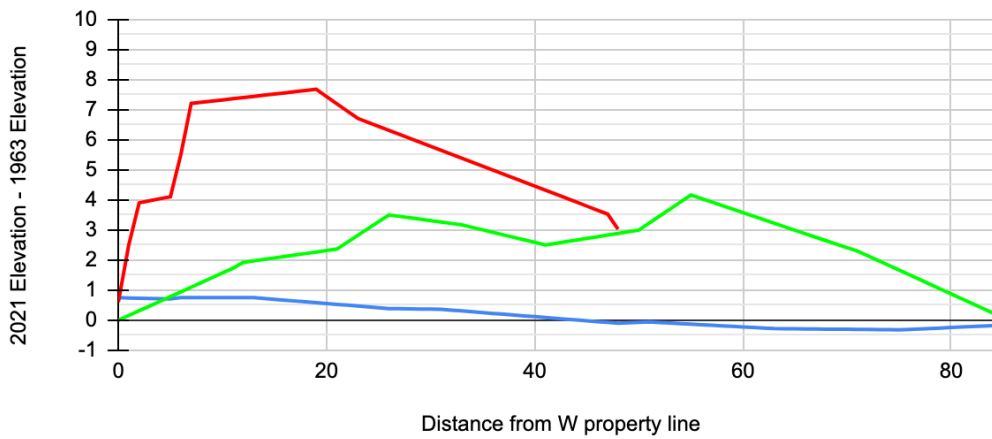


Figure 4. Comparison of cross sections of 1963 and 2021 Survey elevations

## Sources and Methods

Figure 1: 1955 photo of 6950 SE Maker and environs (from Puget Sound Regional Archives)

Figure 2: [January 1963 survey](#) (from Mercer Island GIS)

Figure 2a: 1963 Aerial photograph of 6950 SE Maker (from Mercer Island GIS)

Figure 2b: 1992 Aerial photograph of 6950 SE Maker (from Mercer Island GIS)

Figure 3: [2021 Survey](#) (from 6950 SE Maker Street permit application)

In this document, elevations from the 1963, 1989 and 2004 surveys are normalized from their original NGVD29 elevations to current NAVD88 elevations by adding 3.5 feet to the NGVD29 elevations (for more details, [see this document](#) from the City of Seattle).

Attn: Molly McGuire  
Mercer Island Community Planning and Development Department  
RE: Land Use Application CAO23-011 / 6950 SE Maker Street  
August 9, 2023

Dear Ms. McGuire:

As the City has determined, the entire Development Proposal Site ("Site") for CAO23-011 lies within a variety of Critical Areas. Mercer Island City Code ("MICC") imposes specific requirements on Alterations and Development within Critical Areas. Without complying with these requirements, a Land Use Approval Application in a Critical Area cannot be approved. Part 1 of this document identifies six sets of violations of the Mercer Island Critical Areas Ordinance (MICC 19.07) in connection with CAO23-011.

Furthermore, as shown in the companion submission ("Development Proposal Site for Permit CAO23-011 is Illegally Nonconforming", submitted by Dan Grove on August 9, 2023), unpermitted development inconsistent with the Mercer Island Code in effect at the time of development was carried out on the Site after the Mercer Island 1960 Zoning Code ("MI1960ZC") came into effect. Because of this, MICC 19.15.210(B) requires that the City reject any Land Use Application for this Site that does not include bringing the Site to current MICC. Part 2 of this document shows additional violations of MICC Title 19 that must be addressed in order to satisfy MICC 19.15.210(B) (in addition to the Critical Areas Ordinance violations in Part 1) before this (or any other) Land Use Application can be approved for the Site.

Because of the multiple failures of compliance demonstrated in Parts 1 and 2, MICC prohibits the approval of CAO23-011 in its current form.

# Part 1. CAO23-011 fails to comply with MICC 19.07

## Overview

1. The proposed Alterations adversely impact the adjacent property at 7145 SE 35th St, which violates MICC 19.07.160(B)(2)(b).
2. The Critical Area Study submitted by the Applicant does not cover the last 5 years of non-Exempt actions, and thus violates MICC 19.07.080(G).
3. The Owner carried out unpermitted Tree Removal of an Exceptional Tree in a Critical Area, violating MICC 19.10.020(B)(1) and MICC 19.07.020(B).
4. The Owner carried out unpermitted Tree Removal of an Exceptional Tree in a Critical Area to enable this Development Proposal, violating MICC 19.10.060(A)(3) and MICC 19.07.020(B).
5. The Owner's Unpermitted Non-Exempt Actions already taken to enable this Development Proposal adversely impacted the undersigned's adjacent property, violating MICC 19.07.160(B)(2)(b).
6. The non-Exempt Alterations proposed by this Development Proposal do not include Mitigation Sequencing, as required by MICC 19.07.100.

## Section 1 - Proposed Alterations adversely impact adjacent properties

MICC 19.07.160(B)(2)(b) requires that the proposed Alterations within geologically hazardous areas and associated buffers "Will not adversely impact the subject property or adjacent properties."

CAO23-011 will adversely affect 7145 SE 35th Street, whose Exceptional Fir Tree (Tree #4 in CAO23-011's [Tree Protection Plan](#) ("TPP")) would be irrevocably damaged by the Development Proposal. The Development Proposal proposes to drill multiple large (24" diameter, 12' deep) holes near Tree #4, which is just northwest of the Site. These holes will damage and endanger Tree #4 because they fall within the Critical Root Zone. These large holes within the Critical Root Zone are not mentioned in the TPP. Tree #4 is on a very steep slope (it is in Seismic, Steep Slope, and Landslide Critical Areas). As a result, damage to this tree risks further damage to the adjacent properties.

Because these holes will damage Tree #4 on adjacent property (and create severe risks for the properties adjoining Tree #4), they trigger violation of MICC 19.07.160(B)(2)'s requirement that the proposed Alteration not adversely impact adjacent properties".

With the latest scope of work, it is also possible that the trees on the eastern edge of 7030 SE Maker Street will also be impacted. The TPP dates to August 2022, despite the scope of work's having changed dramatically since then. The Applicant's failure to update the TPP makes it impossible for adjacent properties to assess the risks. At a minimum, the Applicant must update



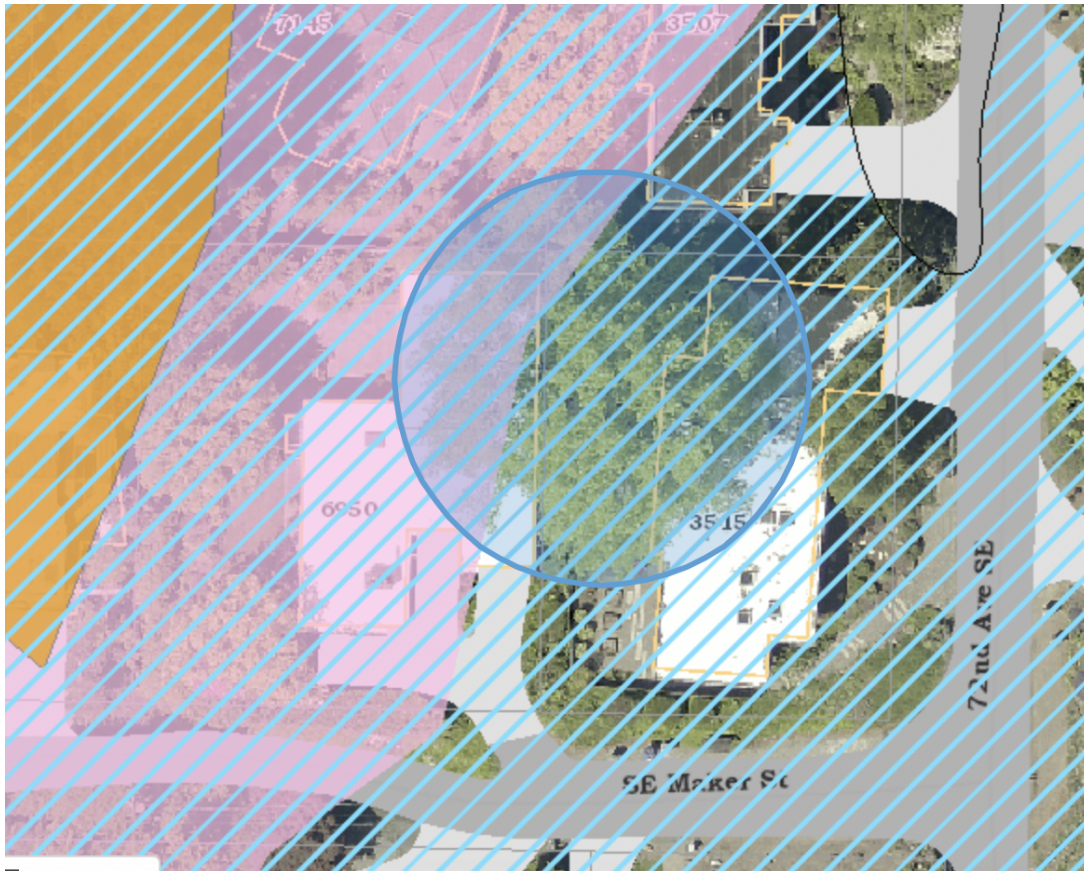
the TPP. Additionally, because the TPP contains inaccuracies and deficiencies as described later in Part 1, it must be corrected.

**Section 2 - The Critical Area Study submitted by the Applicant does not cover the last 5 years of non-Exempt actions, violating MICC 19.07.080(G).**

The Critical Area Study incorrectly excludes non-Exempt actions taken by the Owner in the prior 5 years. The Critical Area Study must include the 5 years prior to the application date (i.e., all non-Exempt actions carried out since July 3, 2018). MICC 19.07.080(G). A correctly scoped Study would have included the Owner's unpermitted Tree Cutting in November 2021.

Tree Cutting is not an Exempt action under MICC 19.07.130. On November 10, 2021, the Owner engaged in a non-Exempt action when she Cut an Exceptional Red Oak Tree (Tree #5 in the TPP, shown below) within Landslide and Seismic Critical Areas, as shown below. Tree #5 is listed in the TPP as a "Red oak (Quercus rubra) easily 40" DSH". MICC 19.16.010 defines a Red Oak with DSH over 30" as Exceptional.

The Critical Area Study must be corrected to include all non-Exempt actions carried out by the Owner since July 3, 2018.





### Section 3 - The Owner carried out unpermitted Tree Removal of an Exceptional Tree

Non-Exempt Tree Removal requires permit approval. MICC 19.10.020(B).

The Owner's conduct with respect to Tree #5 was non-Exempt for three reasons. First, the actions were not merely Pruning, but Cutting that constituted Tree Removal (despite the Owner's claims to the contrary) Second, the tree in question was an Exceptional Tree. Third, the Removal action was carried out within Critical Areas.

Consequently, the Owner's action constituted a non-Exempt Tree Removal which required a permit approval but was conducted without one, in violation of MICC 19.07.020(B).

Actions characterized as Cutting constitute "tree removal" under MICC 19.10.020(B)(3): "For the purposes of this section, **tree removal includes the cutting** or removing directly or indirectly through site grading **of any tree**, or root destruction that will result in a tree ultimately becoming a hazardous tree." (my emphasis).

MICC 19.16.010 defines Cut or Cutting as "The intentional cutting of a tree to the ground (excluding acts of nature), **any practice or act which is likely to result in the death of or significant damage to the tree or any other removal of a part of a tree that does not qualify as pruning**" (my emphasis).

Because the Owner's actions qualify as Cutting, they constituted Tree Removal under the MICC 19.07.020(B), and thus required a removal permit.

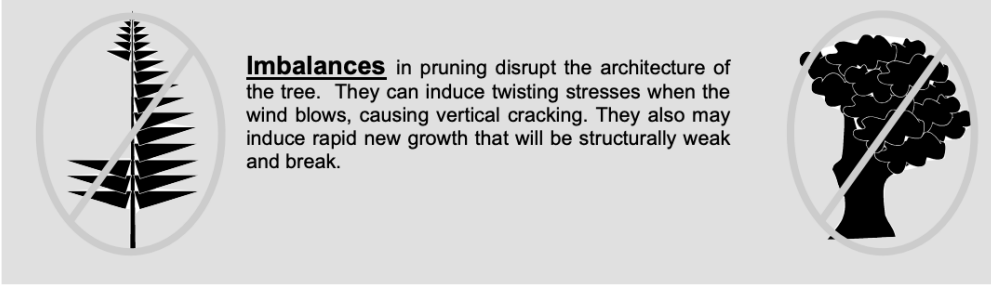
By contrast, MICC 19.16.010 defines Prune or Pruning as "The pruning of a tree through crown thinning, crown cleaning, windowing or crown raising **but not including** crown topping of trees or **any other practice or act which is likely to result in the death of or significant damage to the tree**" (my emphasis).

By its own plain text, the MICC distinguishes between the narrow category of actions that constitute pruning ("crown thinning... cleaning, windowing or raising") and the broader category of actions likely to cause death or significant damage to the tree. [Mercer Island's "Guide to Pruning"](#), excerpted below, offers a way to characterize activities that cause significant damage to trees. It does so in part by defining "Pruning" and "Practices that do not meet city definitions for pruning." An example of the latter practice is defined as "disrupt[ing] the architecture of the tree" and causing "imbalances."

### Improper Pruning Practices

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Some examples of improper pruning are shown below. Practices such as these do not meet city definitions for pruning and may require an application for a permit. A permit will only be granted if code criteria is met.



This City guidance provides further evidence that the Owner's alteration of Tree #5 should be considered not Pruning, but Cutting. The above pictures in the City's guidance display imbalances caused by practices that do not constitute Pruning. Compare the below pictures of the Tree #5, before and after the Owner's actions on November 10, 2021. These pictures mirror the City's examples of practices that fail to qualify as pruning and the harmful imbalances that result. The graphic below illustrates the way the Owner's Tree Removal left the tree unbalanced and damaged.



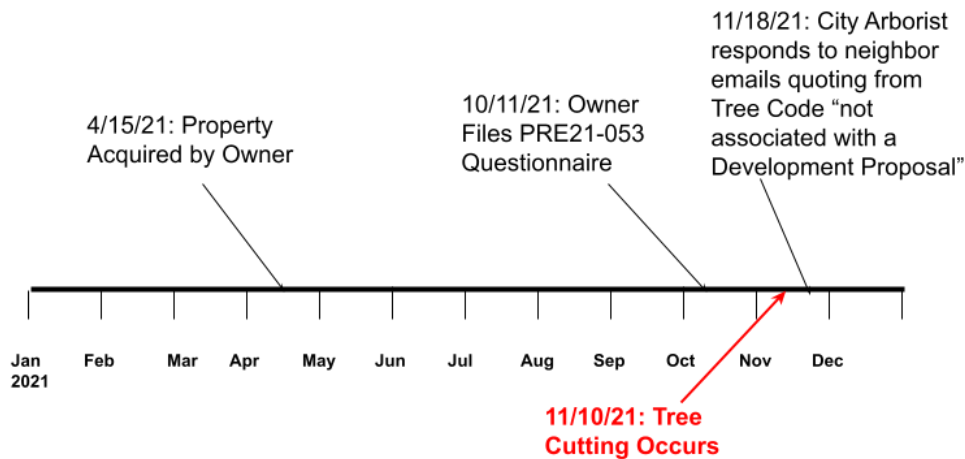


**Section 4 - Unpermitted Tree Removal was performed to enable this Development Proposal.**

The Removal of Tree #5 referenced in Section 3 was carried out without the required removal permit and the record offers evidence of contradictory communications by the Owner regarding her actions and intentions.

Unpermitted Tree Removal of an Exceptional Tree as part of a Development Proposal violates MICC 19.10.060(A)(3).

The timeline below shows that the Tree Removal occurred in direct connection with this Development Proposal, underscoring the need for proper permitting (which did not occur). This timeline further affirms that the Tree Removal was caused by the Owner, contrary to representations made in the TPP submitted by the Applicant.



The purchase of the Site by the Owner closed on **April 15, 2021**.

On **October 11, 2021** the Applicant filed a Site Development Questionnaire with the City as part of PRE21-053 for a 1471 square foot second floor addition. In this filing, the Applicant stated that “no large trees would be removed as a result of this development activity”.

On **November 10, 2021**, the Owner’s agents Cut the Exceptional Tree.

On **November 18, 2021**, in response to questions from neighbors about the severe damage done to the tree, City Arborist John Kenney emailed the following:

“Non-Construction work (MICC 19.10.060) – A tree permit with a simple application is required to cut:

1. Trees 10” in diameter or more, measured at 4-1/2 feet above the ground
2. Exceptional Trees (refer to definitions section at the end of this document).
3. Trees located in a Critical Area (refer to definitions section at the end of this document). “

(Note: the Arborist’s note erroneously referred to MICC 19.10.060 for non-construction work, rather than MICC 19.10.050).

The City Arborist was apparently unaware that the Owner had already submitted a pre-application and was pursuing a Major Single-Family Dwelling project.

To summarize, the Owner conducted an unpermitted non-Exempt Removal of a Tree #5 less than one month after communicating her building intentions to the City’s Planning Department and even one week after the Removal, the City Arborist appeared to lack necessary information about the Owner’s true intentions.

Further muddying the record, the TPP filed in CAO23-011 contains two significant mischaracterizations (in addition to problems of scope discussed above in Section 2). First, the TPP described the Cutting as a mere Pruning; second, it represented, falsely, that the 6950’s prior owners were responsible for this Action.

“Just prior to selling the property they [*the previous owners*]... arranged to have the neighbor’s large tree pruned back from over their roof.”

This is not true. The Tree was Cut, not pruned, and it was Cut by the current Owner (almost 7 months after acquiring the property, as unmistakably demonstrated in the timeline above). This mischaracterization was shown by Jim and Susan Mattison’s comments on Building Permit 2207-019, almost one year ago. The TPP has not been corrected.

The Critical Area Study must be updated to accurately account for this removal of Tree #5 as part of this Development Proposal.

Had the Owner properly followed MICC requirements regarding Tree Removal, she would have been required to obtain a removal permit that was part of a Development Proposal prior to her actions. By proactively engaging in non-permitted Tree Removal, she attempted to circumvent the tree retention requirements that would be imposed on her Development Proposal. The City must hold her to the same standards as those required of all community members. Otherwise, the Owner stands to evade the requirements that would have limited Development Proposal's size and/or location pursuant to MICC 19.10.060(A)(3)'s Tree Retention Rules.

**Section 5. The Owner's Unpermitted Actions Adversely Impacted the undersigned's adjacent property.**

Per the foregoing explanations above (see Section 1), MICC 19.07.160(B)(2)(b) prohibits approval for proposed Alterations to Critical Areas that will adversely impact adjacent property. The Owner's actions constituted an unpermitted Tree Removal (see Section 3). The Owner cut and damaged the undersigned's Tree #5 as part of this Development, and in doing so, adversely impacted the undersigned's property.

Under MICC 19.10.060(A)(3), retention of Tree #5 was required, because none of the criteria under MICC 19.10.060(A)(3)(a)-(c) was met. MICC 19.10.060(A)(4) requires compliance with Tree Retention requirements in the 5 years prior to a Development Proposal being made. As a result, this illegal removal of Tree #5 to enable development of 6950 SE Maker prevents the approval of any Development Proposal at this Site prior to November 10, 2026 (5 years after the removal of Tree #5 was carried out).

The undersigned requests that the City evaluate whether the Owner should face the penalties described in MICC 6.10.050(D)(2) for violating MICC 19.10.060(A)(3) by removing Tree #5 without a permit. The City should also evaluate whether MICC 6.10.050(D)(4) is applicable in light of the "knowingly false information submitted by the property owner, agent, ..." in this application and in Building Permit 2207-019. Recall that the TPP not only represented the Tree Removal as merely "pruning" but also mistakenly attributed it to the property's prior owners. If the TPP's author was unaware of who had ordered the Tree Removal, it was the Owner's and/or the Applicant's responsibility to notate the mistake and correct the record.

The action taken here was egregious, and the fines under MICC 6.10.050(D)(2) are large. The valuation method from the "Council of Landscape and Tree Appraisers" referenced in MICC 19.10.160(B)(1) indicates a current valuation of the tree in the range of \$50,000-\$90,000, which would require a fine in the range of \$150,000 to \$270,000 (without consideration of any additional fines for information being falsely submitted).

In sum, MICC 19.07.160(B)(2)(b) prohibits adverse impact of neighboring properties as part of alteration of Critical Areas. This regulation was violated when Tree #5 on a neighboring property was removed without a permit as part of this Development. Per MICC 19.10.060(A)(4), the City should not approve any Development Proposal on this Site prior to November 10, 2026 (5 years after the removal of Tree #5 was carried out).



## Section 6. The Development Proposal lacks the Required Mitigation Sequencing

Large-scale alteration of Multiple Critical Areas is proposed in CAO23-011. Despite Mitigation Sequencing being required under MICC 19.07.100, no Mitigation Sequencing is proposed.

Mitigation Sequencing is required because changes are proposed to the Critical Areas and Buffers, and those changes are not Modifications of structures legally established prior to January 1, 2005. MICC 19.07.130. Notes from the City in [Public Records Request 23-247](#) show that the City agrees that the rockery was not established legally:

- *“We determined that mitigation would be required for the rockery due to the fact that it was not constructed with methods that would have been legal at the time with the marginal factor of safety. “*
- *“Per MICC 19.01.050(B)(1): Ordinary repairs and maintenance. Ordinary repairs and maintenance of a legally nonconforming structure are permitted. In no event may any repair or maintenance result in the expansion of any existing nonconformity or the creation of any new nonconformity. However, Michele and Don’s original comments stated that the rockery was not constructed using methods that would have been accepted for the factor of safety. Therefore, I don’t think that we can use ordinary repairs and maintenance for the structure to maintain the existing nonconforming height.”*

Lack of Mitigation Sequencing for non-Exempt Alterations violates MICC 19.07.100. Mitigation Sequencing must be included in the CAO23-011.



## Part 2. MICC prohibits approval of this Land Use Application without bringing the Site into compliance with current MICC

### **Section 7 - The Development Proposal violates MICC requirements for retaining wall heights and fill depths in Required Yards**

As demonstrated in the companion submission (“Development Proposal Site for Permit CAO23-011 is Illegally Nonconforming”), the Site’s is Illegally Nonconforming. Illegally Nonconforming Sites must be brought to current MICC. MICC 19.01.050(A)(3).

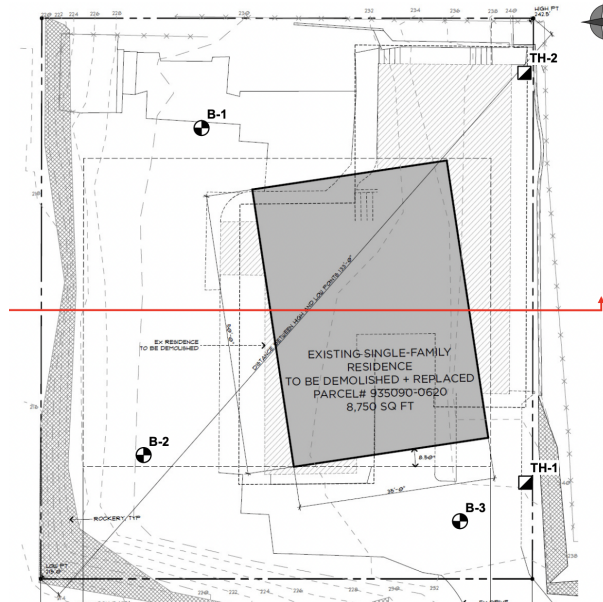
Because the Site must be brought to current MICC, the Development Proposal violates the following MICC requirements:

- 19.02.050(D)(5)(a) - There is at least 11 feet of fill in the Required Front Yard and in the western Required Side Yard (per the [Applicant's 2022 geotechnical survey](#)), exceeding the maximum allowed fill depth of 72 inches anywhere on the Site.

In the diagram below (from the 2022 geotechnical survey), 66 inches of fill was found at Bore Hole B-1 in the Required Rear Yard. Based on the slope of the lot, the amount of fill likely increases to the South and West of B-1.

In the same diagram, at Bore Hole B-2 (which is immediately north of the Required Front Yard), the report stated that “Approximately 11 feet of loose silty sand fill soils were encountered over the remnant topsoil”. Based on the slope of the lot, the amount of fill West and South of B-2 is significantly more than the permitted 72 inches.

19.02.050(D)(5)(a) limits the increase in Finished Grade over Existing Grade due to fill anywhere on a Site to 72 inches. CAO23-011 does not propose bringing the amount of fill into compliance with MICC 19.02.050(D)(5)(a).



- 19.02.050(E)(1)(a)(i) - The proposed combined rockery + retaining wall for the fill slope in the western Required Side Yard and Required Rear Yard exceed the maximum allowed height of 72 inches. The proposed retaining wall in these yards is ~120" (Piles 23 through 37 in the table from SUB3, sheet SH3 below).
- 19.020.050(E)(1)(a)(ii) - The proposed combined rockery + retaining wall for the fill slope in the Required Front Yard exceeds its maximum allowed height of 42 inches. The proposed retaining wall in these yards is ~120" (Piles 13 through 22 in the table from SUB3, sheet SH3 below).

Pile Schedule						
Pile Mark	Auger Dia.	Wide Flange	Max. Height H (ft.)	Min Embed D (ft.)	Min. X (ft.) Above Top of Excavation	Type
P1	24"	W16x100	11'-6"	20'-0"	1'-0"	Cantilever
P2	24"	W16x100	11'-6"	20'-0"	1'-0"	Cantilever
P3	24"	W16x100	11'-6"	20'-0"	1'-0"	Cantilever
P4	24"	W16x100	11'-6"	20'-0"	1'-0"	Cantilever
P5	24"	W16x100	11'-6"	20'-0"	1'-0"	Cantilever
P6	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P7	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P8	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P9	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P10	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P11	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P12	24"	W14x68	11'-6"	15'-0"	1'-0"	Cantilever
P13-P37	24"	W12X40	10'-0"	12'-0"	0'-0"	Cantilever

λ

## 7 Pile Schedule

In order to comply with MICC regulations of retaining walls and fill, several things need to happen:

1. Retaining wall heights containing fill in required yards must be reduced to 42" in the Required Front Yard, and 72" in the Required western Side and Rear Yards. Note that MICC restricts the **combined** height of retaining walls + rockeries in each yard. Therefore the remaining portions of the existing rockery and the new retaining/shoring walls must have their heights combined for comparison with MICC 19.02.050(E)(1)(a)'s requirements.
2. Fill that raised the Finished Grade to more than 72" above the Existing Grade must be removed.



## **Section 8 - Because the Site was Development Inconsistently with the purposes and requirements of MICC Title 19, the City may not approve this Land Use Approval unless the Development Proposal bring the Development Site up to current MICC**

As demonstrated in the companion document titled “Development Proposal Site for Permit CAO23-011 is Illegally Nonconforming”, (August 10, 2023), the existing rockery and Site are Illegally Nonconforming per MICC 19.01.050(A)(3), and must be brought into compliance.

Further, MICC 19.15.210(B) states that “If development inconsistent with the purposes and requirements of this title has occurred on a development proposal site without prior city approval, the city shall not issue any land use review approvals for the development proposal site unless the land use review approval requires that the restoration of the site to a state that complies with the purposes and requirements of this title be addressed.”

The illegal, unpermitted construction of the rockery and the installation of 11+ feet of fill after 1963 is precisely the sort of “development inconsistent with purposes and requirements...” described in MICC 19.15.210(B).

All criteria required by MICC 19.15.210(B) are triggered by this illegal development. As a result, MICC 19.15.210(B) requires that all items in Section 7 of this document be brought to current MICC as part of any Land Use Approval.

## **Conclusion**

CAO23-011 contains a number of violations of Mercer Island’s Critical Areas Ordinance, MICC 19.07, that must be addressed.

In addition, because of prior unpermitted and illegal Development, CAO23-011 cannot be approved without the Site being brought fully up to the current MICC.

There are several actions that the City should take in order to address this large set of issues:

1. Require updates of the TPP and Critical Area Report to address all of the deficiencies noted above.
2. Enforce the 5-year lookback for failure to retain Exceptional Trees, and must not approve a Development Proposal on this Site before November 10, 2026 (5 years after the date of cutting of the Exceptional Tree).
3. Require Mitigation Sequencing for proposed Alterations to the Critical Areas.
4. Ensure that the Development Proposal does not further adversely impact neighboring properties.

5. Reject any Land Use Review in the future for this Development Site unless the Development Proposal under review brings the Site into full compliance with current MICC.

Thank you for your continued close attention to this matter,

Dan Grove  
3515 72nd Ave SE  
Mercer Island

**From:** [jim.mattison.me](mailto:jim.mattison.me)  
**To:** [Molly McGuire](mailto:Molly.McGuire)  
**Cc:** [susan.mattison.me](mailto:susan.mattison.me)  
**Subject:** CAO23-011 Mattison Comments  
**Date:** Wednesday, August 9, 2023 2:39:43 PM  
**Attachments:** [CAO23-011MattisonCommentLtr8.9.23.pdf](#)

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Hello Molly -

Attached are Susan and my comments pertaining to the CAO23-011 application.

Please confirm that you have received our comments

And also add us as a party of record.

Thank you,

Jim Mattison

August 9, 2023

Ms. Molly McGuire  
Planner  
Community Planning and Development City of Mercer Island  
9611 SE 36th Street  
Mercer Island, WA 98040

Re: CAR2 Comments - Permit No. CAO23-011 SUB1 - Strand Residence, 6950 SE Maker Street

Hello Ms. McGuire -

We appreciate the City's effort to notify our neighborhood of the owner's application for the above listed Critical Area Review 2 permit and for providing an opportunity for public comment.

We have reviewed the comments provided to you by our neighbor, Dan Grove dated August 9, 2023. And we have taken a close look at MICC Chapters 19.07 and 19.10 and agree with his assessment that application CAO23-011 should not be approved in its current form.

Additionally, we've also reviewed Dan Grove's other letter to the City dated June 15, 2023 that identifies and substantiates that the proposed site's existing rockery is indeed an illegal non-conforming structure. Our own research and review of existing property surveys and photographic evidence fully support that the proposed site contains a rockery that is illegal and non-conforming. As such we also believe that the City is correct in its interpretation and that the owner must bring the proposed project site into conformance with the current MICC.

We have reviewed the documents related to CAO23-011 SUB1 and have concerns about three major aspects of the proposed site, and they are identified as follows:

- I. West wall shoring stabilization does not comply with MICC 19.02.050
- II. Exceptional tree #4\* - adverse impacts from proposed alterations, MICC Chapter 19.07
- III. Exceptional tree #5\* - cutting violation, MICC Chapter 19.10

\* As identified by Superior NW Enterprises (SNWE) report August 16, 2022

## **I. West Wall Shoring Stabilization**

While we appreciate the City's effort to require that the existing west and south rockeries be stabilized within the proposed site Critical Area, the proposed stabilization shoring design does not meet MICC 19.02.050.D.5(a) pertaining to the *Maximum height in required yard - Fill slopes*.

The Applicant's soils engineer, Geotech Consultants, Inc.(GTI) openly acknowledges and discusses the presence of significant fill materials that make up the western yard area in its four reports spanning 3/21/22 - 6/6/23. Furthermore, fill material is confirmed in the test boring and test hole logs from its 3/21/23 report. Fill depths in the western yard range 5.5 - 11.0 feet at the bore sites and are deeper where the manmade slope begins for the west rockery.

Therefore, the west and south rockeries are retaining **fill slopes**, not cut slopes, and as such, MICC stipulates, *No retaining wall...to the extent used to raise grade and protect a fill slope, shall result in an increase in the finished grade by more than 72 inches at any point.*



The shoring details (sheet/SH2), west wall profile (sheet/C-3), and Terrane survey enabled us to determine that the stabilization wall along the west property line will range in height from 13 feet at the SW property corner to 8.5 feet at the NW corner. This exceeds the maximum 72-inch height allowed in the required side and rear yards and the 42-inch restriction at front yards.

The total stabilization wall height can be established by starting from the rockery toe/surrounding grade at the property line to the top of the stabilization piling (lagging). And in all cases, as stated previously, the height exceeds that allowed by MICC.

With respect to the 20-foot required front yard, the stabilization wall height does not comply with 19.02.050.E.1.(a)(ii) *Front Yards* either. The code says, *Fences, gates, or any combination of retaining walls, rockeries and fences are allowed to a maximum height of 42 inches within required front yards.*

Now that we've discussed how the west stabilization wall does not comply with MICC height restrictions, we want to turn our attention to our concerns about the wall installation encroaching on and damaging the root system of a neighboring exceptional tree and how those alterations have not been mitigated as required in Chapter 19.07.

## **II. Exceptional Tree #4 (47-inch diameter Douglas Fir) - Adverse Construction Activity Impacts**

We are perplexed that the Applicant's design team would advocate drilling 24-inch diameter bored piles through the critical root zone (CRZ) to within 13.5 feet of an Exceptional 47-inch Douglas fir (Tree #4) that resides atop a steep slope that drops precipitously to the west. This steep slope should be seen in person to appreciate. Tree #4 is located on property owned by Martin and Barbara Snoey located at 7145 SE 35th Street which is adjacent to and north of the proposed site.

Martin Snoey recently measured the diameter of Tree #4 and found that Superior NW Enterprises (SNWE) arborist's report was incorrect in its assessment of the DBH at 36 inches. The actual DBH of 47 inches is 31% larger than reported. (The DBH may in fact be even larger if measurements are taken on the downslope side of the tree and then averaged per ISA.)

As it stands now three drilled piles would fall inside the 25-foot tree protection fencing shown on sheet/C-2 and recommended in the report. SNWE stipulates that the fencing is provided to...*ensure that no accidental impact will occur within the potential root zone of the Douglas fir.* This current tree protection zone is insufficient. Given that Tree #4 is much larger than first assessed, the CRZ should be broadened to a 47-foot radius in which case, seven drilled piles would fall within the CRZ.

The impacts of site alteration by excavating and installing drilled piles within this critical area could weaken the root system of Tree #4. A weakened root structure could cause fall-down during a high wind event or precipitate a slow decline in the health of an otherwise robust tree to the point it dies over several years and compromises the stability of this steep slope.

Because the west shoring stabilization wall intrudes on the CRZ, and the critical area study makes no conclusion that the proposed site alteration risk hazard can be effectively mitigated, we believe that CAO23-011 does not comply with 19.07.160.B.1 of MICC, and the City is taking an unnecessary risk approving it in its current form.

### III. Exceptional Tree #5 (40-inch Red Oak) - Mercer Island Tree Code Violation

In our comment letter dated October 4, 2022, we expressed our understanding that Ms. Strand (the owner) violated the Mercer Island Tree Code when she cut her neighbor's 46" Exceptional Red Oak Tree without a tree permit in a Critical Area (also identified as Tree #5 in Anthony Moran, ISA Certified Arborist's, Superior NW Enterprises (SNWE) Pre-Construction Assessment Aug 16, 2022. Note that "cutting" is clearly defined in MICC 19.16.010 as an act that will cause significant damage or death to a tree.

In Dan Grove's August 9, 2023, response to CA023-011, he's succinctly summarized the associated timeline of the owner's Tree #5 cutting in a bar graph. It's very clear that the owner always intended to redevelop her lot, and the tree cutting, not pruning (per Mercer Island's Guide to Pruning), was intentional and associated with her development project.

A month before the tree was cut, October 11, 2021, the applicant stated in the PRE21-053 questionnaire that "no large trees would be removed" for her remodeling project. As concerned neighbors, we immediately alerted the City Arborist when we learned of her plan to cut the Exceptional Tree. The City Arborist indicated that the owner was pruning the tree and had given her guidance per MI Code guidelines, MICC 19.10.050, for Non-Construction work, and took no further action.

However, 6 days after the owner cut, not pruned, the tree, the owner submitted questions for her Pre-Permit application, PRE21-053 for a new three-story house design.

(Note that a second significant tree was also cut down by Ms. Strand without a permit. It is noted on the TPP report as "np". Not present.) The SNWE narrative presumes that Tree #5 and NP were cut down by the original owners. This is incorrect information. For the record, both trees were in the Critical Area and cut by Ms. Strand, and SNWE's assessment report needs to be corrected.

Now we understand that her tree cutting project was Tree Removal - Associated with a Development proposal, MICC 19.10.060, NOT MICC 19.10.050 for Non-Construction Work.

The City of Mercer Island makes it very clear in the "Tree FAQ's" and MICC 19.10.060 that "A Tree permit with full application is required to cut any Large Tree, Exceptional Tree, or tree in a Critical Area as result of construction work." This appears to be a very deliberate action on the applicant's part to skirt the tree permit process.

Because this tree cutting project is associated with a development proposal, we concur with Dan Grove's Land Use Application CA023-011 letter dated 8-10-23 as follows:

1. The Critical Area Review must be updated to account for unpermitted Exceptional Tree cutting and any other non-Exempt actions within the 5-year window outlined in the MICC.
2. The owner avoided the MICC requirements of a development proposal by proceeding with an unpermitted, non-exempt tree cutting that may have limited her project size or location. She did not comply with to the standards required of the MI Community and should be held accountable.
3. The owner's unpermitted actions adversely impacted the neighboring 3515 72<sup>nd</sup> Ave SE property by cutting and severely damaging the health of the Exceptional Red Oak tree on a critical area. We agree that the City must determine whether the owner should face

penalties described in MICC 6.10.050(D)(2) and (D)(4) for violation MICC10.10.060 (A)(3) by removing an Exceptional Tree without a permit.

## Closing Remarks

In addition to the three items listed at the bottom of page 3 that pertain to Exceptional Tree #5, the permit application CAO23-011 should also not be approved at this time for these reasons:

1. The proposed west shoring stabilization wall (which also encompasses a portion of the south property line) does not comply with MICC 19.02.050 and its subsection height restrictions as noted previously.
2. With respect to Exceptional Tree #4 we note that CAO23-011 does not comply with MICC 19.07.160.B.1 as follows:
  - a) An updated assessment should be provided by a certified arborist because the newly proposed west shoring stabilization wall was not in existence at the time of the August 16, 2022, SNWE report.
  - b) Tree #4 DBH should be revised to a minimum of 47 inches.
  - c) The CRZ and tree protection zone radiuses should be lengthened due to a 31% larger DBH.
  - d) Arborist's assessment should examine risk to root and tree health due to drilled piling and excavation activities.
  - e) Tree protection measures should be revised given expanded CRZ. Mitigation measures should be identified for protecting the CRZ from trenching, grading, filling, material handling/storage, and equipment traffic.
  - f) And there should be an assessment of the stabilization wall installation and its potential negative impacts on the tree and long-term risk of erosion and landslide should the tree fail. How will these hazards be mitigated to protect neighboring properties and structures?

Again, we appreciate the opportunity to make comment on this application and request that we be made a party of record.

Sincere Regards,

Jim & Susan Mattison  
7075 SE Maker Street

**From:** [MARTIN SNOEY](#)  
**To:** [Molly McGuire](#)  
**Subject:** Public Written Comments on CAO23-011  
**Date:** Wednesday, August 9, 2023 12:32:18 PM  
**Attachments:** [CAO23-011 \(15 Pages\).pdf](#)

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Hey Molly –

Attached is my 15-page PDF concerning the CAO23-011 Application. There are 2 pages of MI Public Notice, 5 pages of text and 8 pages of exhibits.

Please email me back and confirm receipt of all 15 pages on today's date, 8-9-23. It's a day ahead of the comment period, which means if you didn't receive everything I still have a day to get you the documents.

Also please add all 8 signing MI residents contained in the subject comments to your "parties of record" to preserve our appeal rights.

Thanking you ahead of time for your cooperation.

Martin

Martin Snoey  
7145 SE 35<sup>th</sup> Street  
Mercer Island  
206-409-1946

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**From:** Molly McGuire <molly.mcguire@mercerisland.gov>  
**Sent:** Monday, August 7, 2023 1:11 PM  
**To:** MARTIN SNOEY <MRSnoey@msn.com>  
**Subject:** RE: Meeting on Wednesday, 8-9-23

Hi Martin,

I received your voicemail and thought I would follow-up with you here.

We currently do not have the ability to receive hand-delivered public comments. You may mail them to the city and they will be scanned and emailed to me or you can send them directly to me via email.

Sincerely,

[Molly McGuire](#)

Planner

City of Mercer Island – Community Planning & Development

City Hall Operating Hours: Tuesday – Wednesday – Thursday, 9AM to 4PM

206-275-7712 | [www.mercerisland.gov](http://www.mercerisland.gov)

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The City of Mercer Island utilizes a hybrid working environment. Please see the City's [Facility and Program Information](#) page for City Hall and City service hours of operation.

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**From:** Molly McGuire

**Sent:** Thursday, August 3, 2023 2:34 PM

**To:** MARTIN SNOEY <[MRsnoey@msn.com](mailto:MRsnoey@msn.com)>

**Subject:** RE: Meeting on Wednesday, 8-9-23

Hi Martin,

Unfortunately we are not offering in-person meetings at this time.

If you have general questions regarding application process or city code, I am happy to answer them over phone or email. Otherwise, you will need to direct specific project questions to the applicant in the form of a public comment, which will be sent to the applicant at the end of the public comment period.

I did try to call you back this morning, but was not able to get through.

Sincerely,

[Molly McGuire](#)

Planner

City of Mercer Island – Community Planning & Development

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**From:** MARTIN SNOEY <[MRsnoey@msn.com](mailto:MRsnoey@msn.com)>

**Sent:** Thursday, August 3, 2023 12:45 PM

**To:** Molly McGuire <[molly.mcguire@mercerisland.gov](mailto:molly.mcguire@mercerisland.gov)>

**Subject:** Meeting on Wednesday, 8-9-23

Molly McGuire –

I would like to schedule a short meeting with you on Wednesday, 8-9-23. Please notify me of the time and location (are you in the Community Center?)

The subject requested meeting involves some questions for you concerning Application CAO23-011.

I left a voicemail on your work phone about this request, but never heard back from you.

Thanking you in advance for seeing me, I greatly appreciate it.

Martin Snoey  
7145 SE 35<sup>th</sup> Street  
Mercer Island

206-409-1946

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# CITY OF MERCER ISLAND

## COMMUNITY PLANNING & DEVELOPMENT

9611 SE 36TH STREET | MERCER ISLAND, WA 98040

PHONE: 206.275.7605 | <http://www.mercerisland.gov/>



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## PUBLIC NOTICE OF APPLICATION

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**NOTICE IS HEREBY GIVEN** for the application described below:

**File No.:** CAO23-011

**Permit Type:** Type III

**Description of Request:** A request for the demolition of an existing single-family residence and construction of a new approx. 4,000 square foot single-family residence within mapped geologically hazardous areas.

**Applicant / Owner:** Jeffrey Almeter / Dorothy Strand

**Location of Property:** 6950 SE Maker St, Mercer Island WA 98040  
King County Assessor tax parcel number: 935090-0620

**SEPA Compliance:** The project is exempt from SEPA Review per WAC 197-11-800.

**Project Documents:** <https://mieplan.mercergov.org/public/CAO23-011>

**Written Comments:** **This may be the only opportunity to comment on this proposal.** Written comments on this proposal may be submitted to the City of Mercer Island either by email, in person, or by mail to the City of Mercer Island, 9611 SE 36th Street, Mercer Island, WA 98040-3732. Anyone may comment on the application, receive notice, and request a copy of the decision once made. Only those persons who submit written comments or participate at the public hearing (if a hearing is required) will be parties of record; and only parties of record will have the right to appeal.

**Public Hearing and Public Meeting:** Pursuant to [MICC 19.15.030](#) Tables A and B, a public hearing is not required for Type I-III permits.

**Applicable Development Regulations** Applications for Critical Areas Ordinance Type 2 Review Permits are required to be processed as Type III land use reviews pursuant to Mercer Island City Code (MICC) 19.15.030. Processing requirements for Type III land use reviews are further detailed in MICC 19.15.030. The city's subdivision requirements are contained in [Chapter 19.08 MICC](#).

**Other Associated Permits:** 2207-019

**Environmental Documents:** Copies of all studies and / or environmental documents are available through the above project documents link.



**Application  
Process  
Information:**

Date of Application: July 3, 2023  
Determined to Be Complete: July 6, 2023  
Bulletin Notice: July 10, 2023  
Date Mailed: July 10, 2023  
Date Posted on Site: July 10, 2023  
Comment Period Ends: 5:00PM on August 10, 2023

**Project Contact:**

Molly McGuire, Planner  
[molly.mcguire@mercerisland.gov](mailto:molly.mcguire@mercerisland.gov) | (206) 275-7712



To: Molly McGuire  
Planner  
Community Planning and Development  
Subj: Application CAO23-011  
6950 SE Maker Street  
Date: August 9, 2023

**First Objection (Exceptional Tree)** - Application CAO23-011 should not be approved because it blatantly violates MICC 19.10.005, MICC 19.10.020(B)(3) and MICC 19.10.080 and any and all other MICC codes for the protection of healthy exceptional trees.

MICC 19.10.005 Purpose – states, “Protecting, enhancing, and maintaining trees are key community values.” for Mercer Island. It further states, “...encourage building and site design to minimize tree removal, and ....the retention of trees on Mercer Island.”

MICC 19.10.020(B)(3) Applicability and Permit Required – states, “For the purposes of this section, tree removal includes the cutting or removing directly or indirectly through site grading of any tree, or root destruction that will result in a tree ultimately becoming a hazardous tree.”

MICC 19.10.080 Tree Protection Standards - states, “To ensure long-term viability of trees identified for protection, permit plans and construction activities shall comply with the then-existing best management practices (BMP) — managing trees during construction, published by the International Society of Arboriculture, adopted by reference. The tree protection plan shall be prepared by a qualified arborist and the plan shall be reviewed for adequacy by the city arborist. All minimum required tree protection measures shall be shown on the development plan set and tree replanting/restoration/protection plan.”

The subject tree is known as Tree # 4 in the application. Following are its specifications:

- Douglas Fir
- Estimated by ISA certified arborist as 75’ tall
- Its 47-inch DBH (breast high diameter) was measured 4.5’ above ground level on upper slope side (Exhibit 1).
- It meets criterion for exceptional tree – diameter greater than 2.5 feet.
- Tree # 4 is located 9.5 feet North of NW corner of Strand property, 6950 SE Maker Street
- ISA certified arborist states, tree “exhibits good new growth and color with a full radial canopy.”
- Tree is an anchor on a steep slope in a critical area for landslides, erosion and seismic activity. Landslides and erosion that the city of Mercer Island works so hard to prevent.

The International Society of Arboriculture (ISA) has clear guidelines for calculating the Critical Root Zone (CRZ) for trees. Protecting the CRZ is important because these roots not only provide the nutrients for the tree, but also provide the lateral stability to keep the tree upright.

There are two ways to make the CRZ calculation. The first is to find the drip line on the tree. The second is to determine the DBH per guideline (as done above) and then extend a radius out from the tree equal to one foot per each inch of diameter. Then ISA states to use the greater of these two numbers. According to some arborists, the roots may even extend out farther than the calculated CRZ depending



on nearby competitive trees, soil conditions and age/size of tree. There are no competitive trees south of Tree # 4 and the soil is proven to be soft fill, so it is possible that the roots extend beyond the larger CRZ number.

After establishing the correct CRZ, then the ISA guidelines state that the following examples cannot be inside the CRZ:

- Stockpiling construction materials
- Parking/running vehicles or heavy equipment
- Piling of soil
- Trenching or digging pile holes
- Contaminating soil from washing equipment (especially concrete)

ISA guidelines/rules are inviolate. No shortcuts. No workarounds.

There is no prepared tree protection plan for Tree # 4 in the application.

Exhibit 2 (Drawing C-1 by Goldsmith Land Development Services) shows the 36' Tree Dripline CRZ and the 47' "trunk diameter" CRZ for Tree # 4 per ISA. When referring to tree # 4, Exhibit 2 also clearly states the following, "DECK AND PATIO TO BE REMOVED WITHIN DRIP LINE. NO MACHINERY OR EXCAVATION IS ALLOWED." In other words, an ISA certified arborist or someone in the applicant's group recognized the need to protect the CRZ of Tree # 4.

The City of Mercer Island requested a tree protection plan for trees on neighboring properties. The subsequent report dated 8-16-22 was authored by Anthony Moran, ISA Certified Arborist with Superior NW Enterprises. That report states, "... Critical Root Zone (CRZ) is a radial area extending out from the tree a distance equal to one foot per inch of diameter." "Out of an abundance of caution a section of fence could be set between the north and west property lines at a radial distance of 25' out from the base of the #4 tree. This should ensure that no accidental impact will occur within the potential root zone of the Douglas Fir." While Moran didn't acknowledge the existence of a stabilization wall in his report, nor did he know the actual diameter of tree # 4, he did recognize the ISA need for protecting the CRZ of Tree # 4. It is strongly recommended that the city require another tree protection plan by an ISA certified arborist.

But now look at Exhibit 3, where the applicant wants to construct a 30-35' stabilization (shoring) wall inside the CRZ of Tree # 4. Just to be clear, this stabilization wall will not just impact some niggly little roots, it will totally obliterate a large portion of the roots in the CRZ. Tree # 4 becomes a hazardous tree as shown later in the Third Objection.

Exhibit 4 shows a typical stabilization wall similar to the one for Application CAO23-011. In the photo, note that the wall is well outside the CRZ of the large fir tree in the background.

The stabilization wall with cantilevered soldier piles in the submitted plan has the following approximate general specs:

- 2' diameter, 30' deep hole done with auger
- Holes dug at typical 5' centers resulting in 7 holes in the CRZ of Tree # 4
- Holes filled with soldier pile I-beams



- Lower 20+' then filled with concrete
- Upper 10+' has treated wood lagging placed between the I-beams

This is a violation of ISA standards. No ISA certified arborist would approve of this plan. What's shocking is that it violates the applicant's own drawing.

**SECOND Objection (Critical area)**— Application CAO23-011 should not be approved because it clearly violates MICC 19.07.010(K)(M), MICC 19.07.020(B), MICC 19.07.030(A), MICC 19.07.160(B)(2)(b), MICC 19.07.160(C)(2) and MICC 19.07.160(E)(2) and any and all other MICC codes for the protection of critical areas.

MICC 19.07.010(K)(M) Purpose – states:

“(K) To avoid impact to the critical areas where possible, and, if avoidance is not reasonably possible, minimize impacts to critical areas and buffers to the greatest extent feasible, and mitigate any remaining impacts;

(M) To minimize negative impacts from the built environment on the functions and values of critical areas”

MICC 19.07.020(B) Applicability – states, “(B) The city shall not approve any development proposal or otherwise issue any authorization to alter the condition of any land, water or vegetation or to construct or alter any structure or improvement without first assuring compliance with the requirements of this chapter or determining that this chapter is not applicable to the development.”

MICC 19.07.030(A) Relationship to other regulations – states, “(A) *Interpreting multiple regulations.* If more than one regulation applies to a given property, then the regulation that provides the greatest protection to critical areas shall apply.”

MICC 19.07.160(B)(2)(b) Geologically hazardous areas – states, “(B)(2)(b) Will not adversely impact the subject property or adjacent properties.”

MICC 19.07.160(C)(2) Geologically hazardous areas - *Landslide hazard areas*— states, “(C)(2) Buffers shall be applied as follows. When more than one condition applies to a site, the largest buffer shall be applied:

a. *Steep slopes.* Buffer widths shall be equal to the height of a steep slope, but not more than 75 feet, and applied to the top and toe of slopes;

b. *Shallow landslide hazard areas* shall have minimum 25-foot buffers applied in all directions; and

c. *Deep-seated landslide hazard areas* shall have 75-foot buffers applied in all directions.”

MICC 19.07.160(E)(2) Geologically hazardous areas - *Erosion hazard areas*— states, “(E)(2) No development or activity within an erosion hazard area may create a net increase in geological instability on or off site.”

As shown in Exhibit 5, the stabilization (shoring) wall construction creates massive damage to Tree # 4 inside the CRZ. The result? There can be no doubt that the stabilization wall seriously adversely impacts Tree # 4 on the adjacent property.

As stated earlier, Tree # 4 resides on a steep slope in a critical area for landslides, erosion and seismic activity. The stabilization wall's damage (probably existential damage) to Tree # 4 will result in a



significantly increased likelihood of geological instability (landslides and erosion) on the property off site (adjacent).

The city cannot approve the development proposal (Application CAO23-011) due to non-compliance in the aforementioned paragraphs.

**THIRD Objection (Harm to people and property)** – Application CAO23-011 should not be approved because it dangerously violates MICC 19.01.010 and MICC 19.07.010(F) and any and all other MICC codes for the protection of the health, safety, welfare and property of Mercer Island citizens.

MICC 19.01.010 Purpose – states, “...this Code is to protect and promote health, safety; and the general welfare through the regulation of development within the city of Mercer Island.”

MICC 19.07.010(F) Purpose – states:

“(F) To establish standards for new development that avoid increasing the risk of harm to people, property, and public infrastructure from natural hazards”

Exhibit 6 shows an actual Douglas Fir root system. Note that the root system is shallow and somewhat flat in a horizontal plane, but does extend outward with a large radius. As mentioned earlier, this provides the lateral stability for the tree. In other words, keeps the tree from falling over.

Exhibit 7 is an arborist sketch of a Douglas Fir root system. In technical terms, Exhibit 6 describes how moments (or torque) hold the tree upright and don't allow the tree to fall over. It's clear that the tree must have extended roots for a large moment arm and undamaged roots to maintain the large force vector. For those non-technical readers, here is a layman's example. Person A stands next to Person B, both facing forward. Person A pushes Person B sideways. Person B remains standing by stepping out with the opposite leg to counteract the push. But, if person B were to stand on only one leg, they would fall over with the push from Person A. That's exactly what would happen to a tree if the root system was eliminated or damaged - it would fall over.

During construction of a stabilization wall with cantilevered soldier piles, there will be lots of machinery and equipment involved. Examples are augers, cranes, compactors, backhoes, concrete trucks and welders. One can envision the heavy traffic and stockpiling of construction materials around the site of the stabilization wall. The result is heavy damage to the roots in the CRZ zone. But even worse is the total evisceration of roots around the “Grand Canyon” work pit required to auger the holes, install the lagging and pour the concrete. Even a casual observer can visualize the effect on the CRZ after viewing Exhibit 4.

Exhibit 5 shows best estimates of the massive damage to the roots in the CRZ of Tree # 4. Exhibit 5 also concludes that at a minimum, the stabilization wall would damage and remove about 1/3 of the roots in the CRZ semi-circle facing south towards the stabilization wall.

Two well-known ISA conditions inside the CRZ that lead to windthrow or blowdown of healthy trees are:

- Deep trenching too close to a tree that severs its roots
- Construction activities that cause soil compaction, leading to root death



What does that mean? It means that it is almost guaranteed that the 4-foot diameter, 75-foot tree # 4 will fall over after the roots in its CRZ are gutted/injured during the construction of the stabilization wall. In the worst possible catastrophe, the tree would crush one of 4 houses and, God forbid, it would severely injure or kill the occupants. Exhibit 8 shows the three houses (either existing or proposed new house for 6950) that could be directly hit, and a fourth house (6933) could be hit by a tree domino-effect with other trees falling down the slope.

It's unlikely that the City of Mercer Island will approve this application upon completion of its usual thorough review and due diligence, especially after the review by the city's ISA certified arborist. But if the Application were to be approved, that decision would violate the city's Code to protect and promote health, safety, and the general welfare through the regulation of development within the city of Mercer Island.

**Summary -** There is no doubt that Application CAO23-011 cannot and must not be approved as detailed above in the three written Objections ("Exceptional tree," "Critical area" and "Harm to people and property").

- As proven, there is a blatant violation of MICC 19.10.005, MICC 19.10.020(B)(3) and MICC 19.10.080 and any and all other MICC codes for protection of healthy exceptional trees.
- And as proven, there is a clear violation of MICC 19.07.010(K)(M), MICC 19.07.020(B), MICC 19.07.030(A), MICC 19.07.160(B)(2)(b), MICC 19.07.160(C)(2) and MICC 19.07.160(E)(2) and any and all other MICC codes for the protection of critical areas
- And maybe more importantly, as proven there is a dangerous violation of MICC 19.01.010 and MICC 19.07.010(F) and any and all other MICC codes for the protection of the health, safety, welfare and property of Mercer Island citizens.

We the undersigned Mercer Island residents (alphabetical order) request the city to enforce the Mercer Island laws and codes and NOT approve application CAO23-011. We all request to be made "parties of record."

- |                            |                              |               |
|----------------------------|------------------------------|---------------|
| 1. Manni & Elaine Batra    | 3421 72nd Ave SE             | Mercer Island |
| 2. Dan Grove               | 3515 72 <sup>nd</sup> Ave SE | Mercer Island |
| 3. Todd & Julie Hooper     | 3507 72nd Ave SE             | Mercer Island |
| 4. Virginia Larson         | 6933 SE 35th Street          | Mercer Island |
| 5. Jim & Susan Mattison    | 7075 SE Maker Street         | Mercer Island |
| 6. Lynn Michael            | 7030 SE Maker Street         | Mercer Island |
| 7. Martin & Barbara Snoey  | 7145 SE 35th Street          | Mercer Island |
| 8. Dan & Natalie Veljovich | 3415 72 <sup>nd</sup> Ave SE | Mercer Island |





EXHIBIT 1  
MEASURING THE 47"  
DBH OF EXCEPTIONAL  
TREE # 4







ANY CERTIFIED ARBORIST  
 WOULD NOT ALLOW THE  
 SHORING WALL INSIDE  
 THE 47' "TRUNK DIAMETER"  
 CRITICAL ROOT ZONE (CRZ)  
 FOR TREE # 4

TAX PARCEL #935090-0410  
 7145 SE 36th ST  
 MERCER ISLAND, WA 98040  
 OWNER: MARTIN R SNOEY & BARBARA ROWE

47'  
 "TRUNK"  
 DIAMETER

TREE PROTECTION  
 FENCING  
 36'  
 TREE DRIP LINE

MEASURED DBH  
 OF 47"  
 ONLY 14' TO  
 FIRST PILING

36" FIR  
 A

SHORING IN THIS  
 AREA TO BE MONITORED  
 BY PROJECT ARBORIST

N 88°48'40" W 87.50'

TAX PARCEL #935090-0620  
 6950 SE MAKER ST  
 MERCER ISLAND, WA 98040  
 OWNER: DOROTHY A STRAND

MATCH EXISTING  
 STA. 1+10.88  
 EL: 225.44

WEST SHORING WALL  
 STA. 1+03.84

TAX PARCEL #935090-0605  
 7030 SE MAKER ST  
 MERCER ISLAND, WA 98040  
 OWNER: MICHAEL LYNN

EXHIBIT 3  
 STABILIZATION WALL  
 INSIDE CRITICAL  
 ROOT ZONE (CRZ)

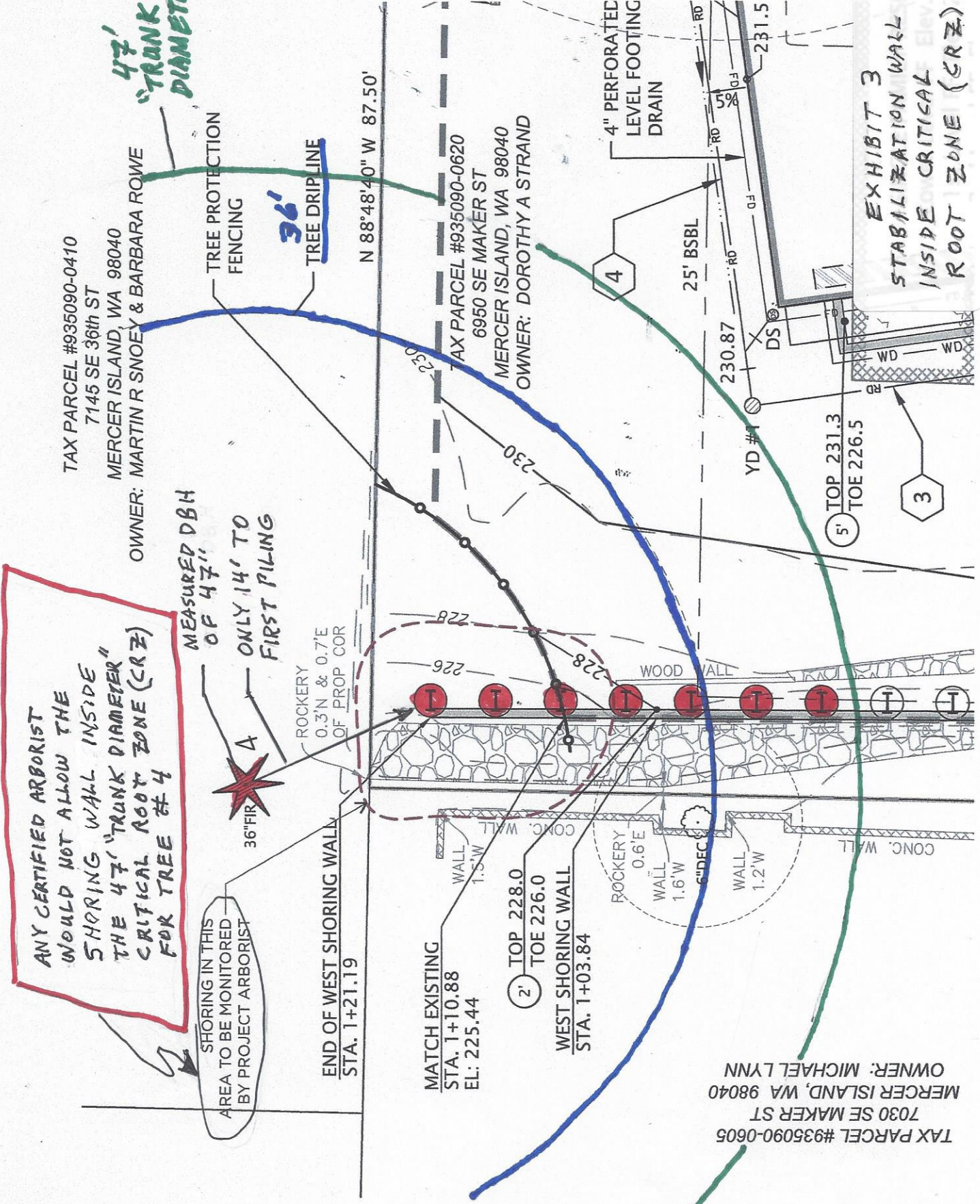








EXHIBIT 4  
TYPICAL STABILIZATION  
WALL WITH CANTILEVERED  
SOLDIER PILES



DRAWING C-2 P. 7

 ROOTS 100% REMOVED FOR STABILIZATION WALL CONSTRUCTION (21%)  
 ROOTS DAMAGED BY CONSTRUCTION EQUIPMENT (9%)  
 TOTAL IS ABOUT 1/3 OF CRZ SEMI-CIRCLE FACING STABILIZATION WALL

TAX PARCEL #935090-0410  
 7145 SE 36th ST  
 MERCER ISLAND, WA 98040  
 OWNER: MARTIN R SNOEY & BARBARA ROWE


CRZ  
 47'  
 "TRUNK DIAMETER"

CRZ  
 36'  
 TREE DRIFLINE

N 88°48'40" W 87.50'

TAX PARCEL #935090-0620  
 6950 SE MAKER ST  
 MERCER ISLAND, WA 98040  
 OWNER: DOROTHY A STRAND

BEST ESTIMATES  
 OF THE MASSIVE  
 DAMAGE TO THE CRZ  
 OF TREE # 4

 4  
 ONLY 14' TO  
 FIRST PILING

END OF WEST SHORING WALL

WALL 1.5'W

WEST SHORING WALL

CONC. WALL

TAX PARCEL #935090-0605  
 7030 SE MAKER ST  
 MERCER ISLAND, WA 98040  
 OWNER: MICHAEL LYNN

EXHIBIT 5  
 AMOUNT OF DAMAGE TO  
 CRZ OF TREE # 4





EXHIBIT 6  
PHOTO OF DOUGLAS FIR  
ROOT SYSTEM



- WHY CRZ IS SO IMPORTANT -
- ROOTS MUST EXTEND FAR FROM TREE (LARGE MOMENT ARM)
  - ROOTS MUST REMAIN UNDAMAGED (LARGE FORCE)

$$M = F \times I$$

M = MOMENT (OR TORQUE)  
 F = FORCE  
 I = MOMENT ARM

- TREE REMAINS STANDING WHEN  $M_1 \leq M_2$
- TREE FALLS OVER WHEN  $M_1 > M_2$

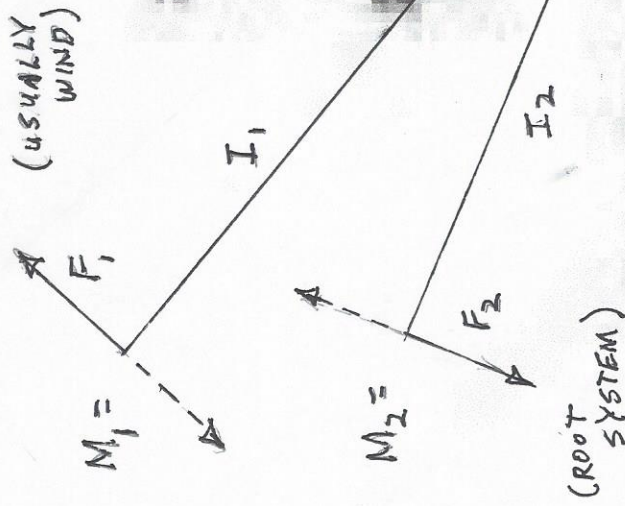


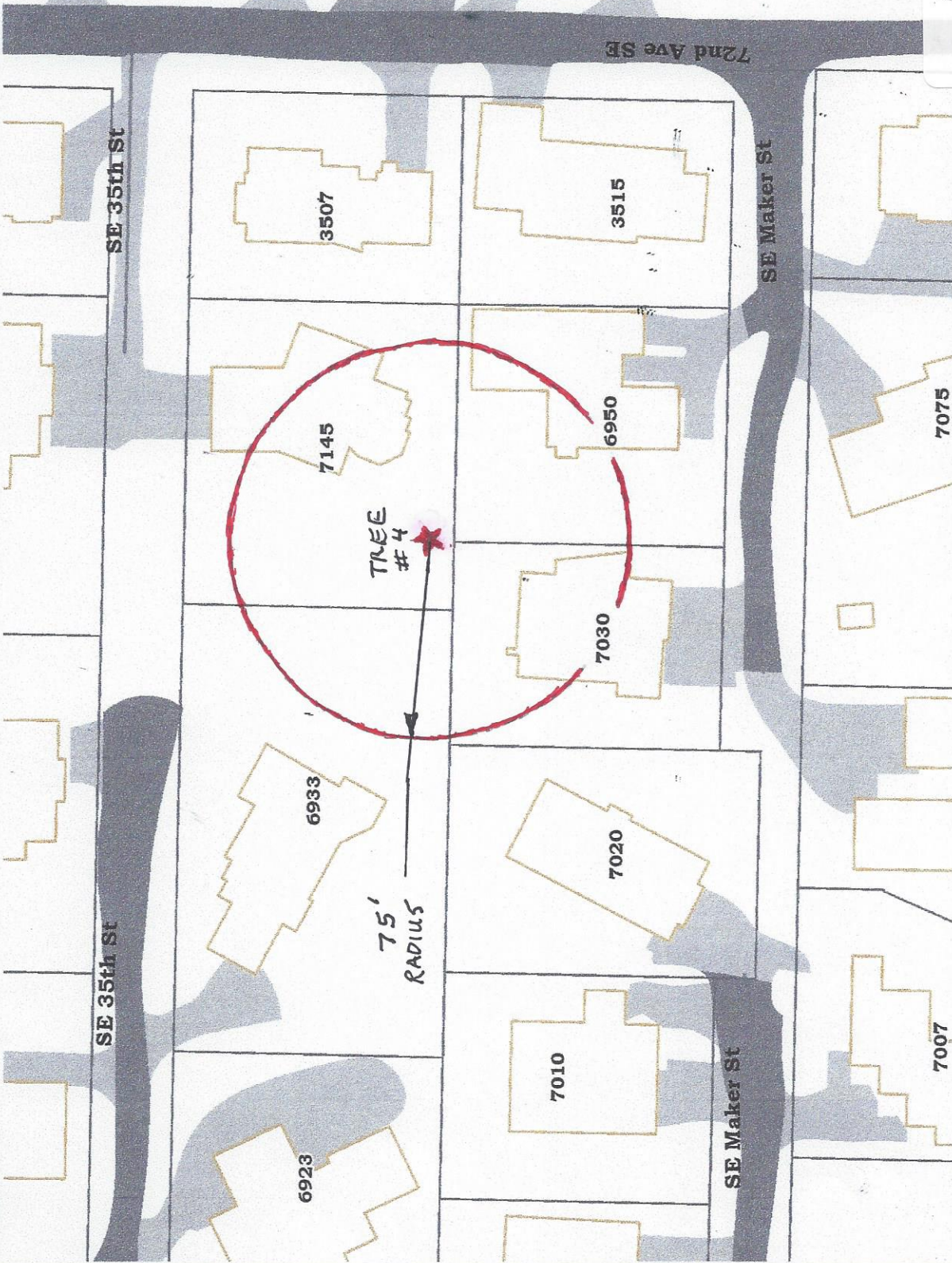
EXHIBIT 7  
 SHAPE AND SIZE OF  
 ROOT SYSTEM AND  
 HOW IT CAN FAIL





### Legend

- Address
- Building
- Property Line
- Docks
- Freeway
- Major Street
- Street
- Paved Driveway
- Paved Road
- Paved Parking Area
- Parks
- Lake Washington



Disclaimer: These maps were developed by the City of Mercer Island and are intended for informational purposes only. These maps are not an accepted legal instrument to establish, record or maintain descriptions for property concerns or boundaries. No representation or warranty with respect to the accuracy or currency of these data is made by the City of Mercer Island or its staff. The City of Mercer Island is not responsible for any errors or omissions in this map or for any consequences arising from the use of the information contained herein. The City of Mercer Island is not responsible for any errors or omissions in this map or for any consequences arising from the use of the information contained herein.



1 inch =  
112,489,927,833,333  
feet

0 56 112 Feet

Map Printed: July 29, 2023

© City of Mercer Island

EXHIBIT 8

HOUSES IMPACTED IF  
TREE FALLS DUE TO  
STABILIZATION WALL DAMAGE



**From:** [Dan Grove](#)  
**To:** [Molly McGuire](#)  
**Subject:** replies to CAO23-011 SUB2 "response memo"  
**Date:** Thursday, August 31, 2023 8:43:47 AM  
**Attachments:** [CAR2 note on response letter.pdf](#)

---

Hello Molly-

Below, please find a note regarding CAO23-011 SUB2 "response memo" from the project's Applicant.

Can you please ensure that these are included in the record?

thank you,  
Dan Grove

Molly McGuire  
Mercer Island Community Planning and Development Department  
RE: CAO23-011 “response memo”  
August 31, 2023

Ms. McGuire:

Below, please find responses to several items addressed to me in the CAO23-011 “[response memo](#)”. I’ve included the Applicant’s responses to my public comments on CAO23-011 in red. Despite the “firmness” of the Applicant’s beliefs, the facts offer a contrary account to several of their responses. There have been multiple rounds of submission across CAO23-011 and Building Permit 2207-019, and at each stage, the Applicant has continued to submit baseless claims about the Site that do not match the historical record (see, for example, prior incorrect claims that the rockery was “[considered landscaping, not structure](#)”, or that “[\[The 1960 Mercer Island\] zoning code does not provide requirements for the construction of retaining walls.](#)”).

Note also that the response memo ignores multiple other failures to comply with MICC 19.07, including:

- The Critical Area Study submitted by the Applicant does not cover the last 5 years of non-Exempt actions, and thus violates MICC 19.07.080(G).
- The non-Exempt Alterations proposed by this Development Proposal do not include Mitigation Sequencing, as required by MICC 19.07.100.
- The Owner’s Unpermitted Non-Exempt Actions already taken to enable this Development Proposal adversely impacted the undersigned’s adjacent property, violating MICC 19.07.160(B)(2)(b).

**Applicant’s First Point:** We firmly stand by our assessment that the evidence of the road shown in the aerial from 1961 is one of the strongest pieces of evidence that this rockery was installed during or prior to that road being graded and would have been done in conjunction with the city of Mercer Island at that time. Therefore it is possible that the rockery along the South side of the property that is within the right of way could very reasonably been (*sic*) installed by the city itself for installation of the roadway. Further review of historical documents shows that in 1965 there was a City Council Meeting wherein D. L. Anderson requested permission to pave a portion of SE Maker street and this request was approved. We firmly believe that the City of Mercer would have taken any potential illegal construction in that vicinity seriously as (*sic*) that time. With the approval of Mr. Anderson’s request we must assume that there were no concerns of illegal installation of rockery.

This bears on the violation of MICC 19.01.050(A)(3). The applicant makes two specific claims here, both of which bear further examination.

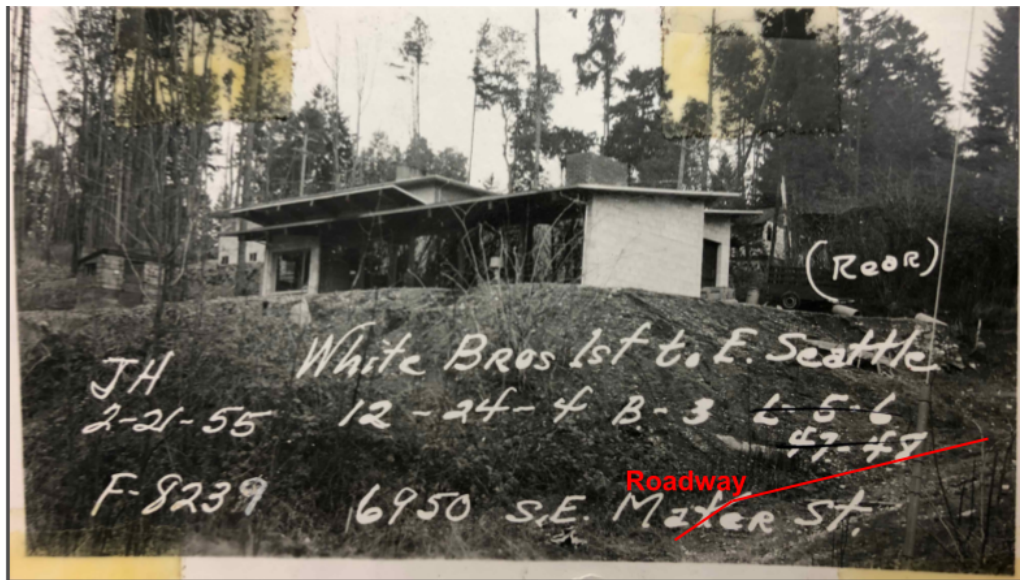
First, the applicant asserts that an aerial image from 1961 shows that the rockery was in place no later than the period in which SE Maker Street was graded. However, the applicant’s claims amount to mere conjecture and fly in the face of the historical record as the City and County

have documented the area. The road visible in the Applicant's 1961 aerial photo was present "sometime during or prior to 1946", and photos from 1955 show the road and 6950 house with no rockery present. As evidence for these factual claims, consider the following.

[This 1968 letter from the City](#) incontrovertibly demonstrates that the road the Applicant refers to was present by 1946.

**The letters have been sent to all adjacent property owners and to date no response has been received by the City. In checking our aerial photographs of the Island, it is apparent from the 1946 aerial photograph that S.E. Maker Street has been opened from 69th Avenue S.E. to 72nd Avenue S.E., sometime during or prior to 1946.**

The 1955 image below of the 6950 house shows the same unimproved road, and shows that the rockery was not in place in 1955.



Other similar photos exist. Consequently, these multiple pieces of evidence directly disprove the Applicant's conjecture that the "rockery was installed during or prior to that road being graded."

Second, and rather remarkably, the Applicant suggests that the City's grant of permission to a different property's owner ([see Mercer Island 1965 Resolution 237](#)) to pave a 12-foot wide strip of SE Maker would translate into affirmative approval of the rockery's unlawful construction.

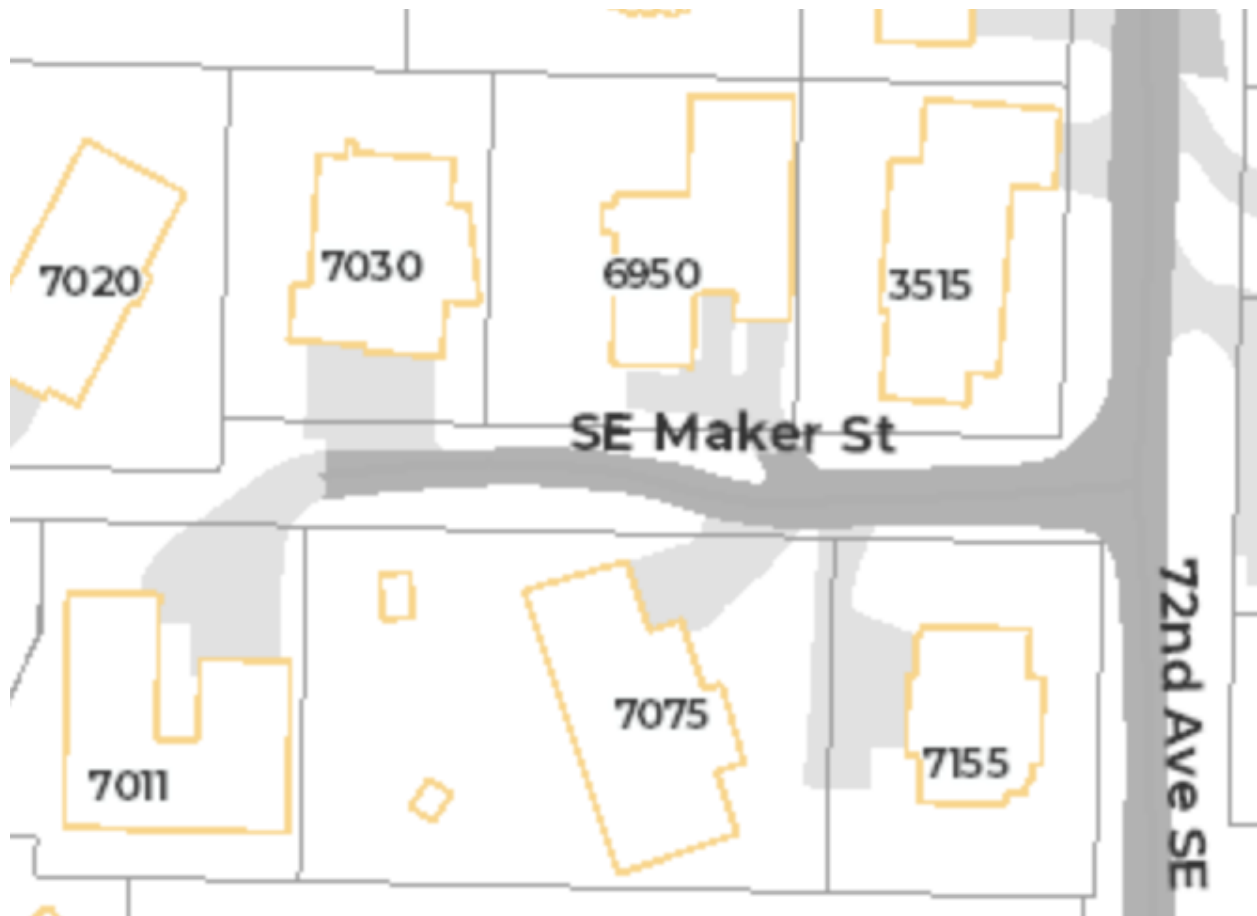
To begin with, there is nothing in the Applicant's newly offered evidence that proves that the rockery existed when the road was paved around 1965, let alone that the City knew of the rockery's existence and unlawful construction and approved of both without saying so.

In a prior submission, I showed that the rockery was not present in 1963. Additional evidence shows that its date of construction was between 1963 and 1970. It is possible that the rockery existed in 1965, or was built around the time that the road was paved in 1965. It is also possible that the road was built with permission and that the rockery's unlawful construction then directly followed, unknown to the City—but that is all conjecture, which is as easy for me to offer as it is for the Applicant.

Perhaps more to the point, it is absurd to imagine that the Council's granting permission to a different property's owner to create a privately-constructed, privately-maintained, 100 foot long, 12 foot wide paved surface in the right of way could be considered equivalent to blessing the illegal construction of a rockery that straddled the public right of way and 6950's lot. The scope of the City's grant gives no sign of broadly waiving other construction requirements; all it permitted was: "the construction of a 12-foot wide asphalt concrete roadway on the existing 30 foot right of way on SE Maker Street." There is hardly an implicit approval of a rockery that violated the Mercer Island Zoning Code at the time.

Note that there were a variety of street vacation requests filed with the City during the 1960's. These vacation resolutions were considered by the council and recorded. No vacation took place here.

As a final note of absurdity in the Applicant's argument, the permission to pave was granted to D.L. Anderson, who was not the owner of the 6950 ([D.L. Anderson was the owner of 7011 SE Maker Street, and was preparing to build a house at 7011](#)) when he requested permission to pave SE Maker from the entrance of 7075 SE Maker to 7011). He would not have been seeking the Council's permission for a rockery for 6950.



Mercer Island Resolution 237 provides no evidence that the rockery existed in any form when the road was paved in 1965. It is unsubstantiated conjecture to assume that “there were no concerns with illegal installation of the rockery”.

That the Applicant has raised these factually unwarranted arguments is simply wasting collective time. In contrast, on August 9, 2023 I presented careful documentation on the following points as part of the CAR2 process:

- A survey demonstrating that no rockery was present on either the west or south sides of the property in 1963.
- Proof that the rockery encroaches on City property without an encroachment agreement.
- Proof that the rockery did not meet the Building Code when it was built.
- Proof that the rockery violated Mercer Island 1960 Zoning Code when it was built.

No evidence contradicting any of these points was provided by the Applicant. The Applicant has provided no evidence that this Site is legally nonconforming, and large amounts of clear evidence proving that it is illegally nonconforming has been entered into the record. As a result, the proposed plan continues to violate MICC 19.01.050(A)(3).



Applicant's Second Point. The impact of the shoring on tree #4 has been addressed above

Given the risk being caused to multiple adjoining properties, I request that a peer review (per MICC 19.10.090(D)) of this work be performed. The pilings proposed within the Critical Root Zone are very large (each is 30 feet deep and 2 feet in diameter, going much deeper than the elevation of the tree in question), which is of great concern.

Applicant's Third Point. As stated above any prior work associated with tree #5 has been reviewed and addressed by city staff as part of other permit reviews.

As discussed in my Public Comment for CAO23-011, there was no permit approval granted for Cutting of tree #5, despite a permit approval's being required. These actions violated MICC 19.10.020(B)(1), 19.07.020(B), 19.10.060(A)(3), and 19.07.160(B)(2)(b).

Applicant's Fourth Point. [omitted]

Applicant's Fifth Point. We disagree that this site is illegal non-conforming [sic] and have previously demonstrated that the site is a Legal non-conforming site, also addressed above

As described above, the "strongest evidence" provided by the Applicant provides no evidence at all that the rockery and fill were installed legally or ratified without documentation. I have provided clear evidence to the contrary. As a result of this illegal alteration of the Site, the entire Development Proposal Site is illegally nonconforming and must be treated as such under current Code. MICC 19.15.210(B) requires that the entire Site be brought up to current MICC as part of any Land Use Approval.

Thank you for your continued attention to these issues.

Dan Grove  
3515 72nd Ave SE  
Mercer Island

**From:** [MARTIN SNOEY](#)  
**To:** [Molly McGuire](#)  
**Subject:** Public Written Comments on CAO23-011 (# 2)  
**Date:** Thursday, August 31, 2023 9:23:22 PM  
**Attachments:** [CAO23-011 \(5 pages\).pdf](#)

---

Hey Molly –

Attached is my 5-page PDF concerning the CAO23-011 Application. There are 3 pages of text and 2 pages of exhibits.

Please email me and confirm receipt of all 5 pages.

Question? Have the August responses to this Application been published on the city's website yet? If so, I can't find them and would appreciate your help in their location.

Thanking you ahead of time for your cooperation.

Martin

Martin Snoey  
7145 SE 35<sup>th</sup> Street  
Mercer Island  
206-409-1946

To: Molly McGuire  
Planner  
Community Planning and Development

From: Martin Snoey

Subj: Application CAO23-011  
6950 SE Maker Street

Date: August 31, 2023

Ref: (1) Snoey 15-page PDF concerning the CAO23-011 Application dated August 9, 2023  
(2) Shoring Sequencing Memo to John Kenney from Jeffrey Almeter dated August 23, 2023  
(3) Superior NW Enterprises Arborist report by Anthony Moran dated August 16, 2023  
(4) Superior NW Enterprises Arborist report by Anthony Moran dated August 24, 2023

Attach: Exhibit 8 from Ref (1)  
Exhibit 5 from Ref (1)

**Objective** - We'd like to believe that the Applicant, the City of Mercer Island and the eight Mercer Island residents that signed Ref (1) all have the same objective. Protect Tree # 4. An objective where Tree # 4 would not ever incur damage in any way, shape or form from the 6950 SE Maker Street development. Such damage could lead to either blowdown in the first wind storm or later blowdown in 2 or 3 or more years. Blowdown of Tree # 4, in the worst possible catastrophe, would crush one of 4 houses and, God forbid, it would severely injure or kill the occupants. Exhibit 8 shows the three houses (either existing or proposed new house for 6950) that could be directly hit, and a fourth house (6933) could be hit by a tree domino-effect with other trees falling down the slope. Suffice it to say, that would lead to inevitable civil litigation and/or criminal prosecution. No one wants that. Eventually someone(s) would be held accountable for any and all consequential injuries and damages.

**Progress** - Exhibit 5 shows best estimates of the massive damage to the roots in the CRZ of Tree # 4. Exhibit 5 also concludes that at a minimum, the stabilization wall would damage and remove about 1/3 of the roots in the CRZ semi-circle facing south towards the stabilization wall.

However, under the leadership of John Kenney, Mercer Island City Arborist (arborist # 1), some of the potential damage to the CRZ of Tree # 4 was mitigated after discussions with Jeffrey Almeter, Applicant Representative. Summarizing Ref (2), there will be no heavy equipment in the dripline CRZ, no rockery will be removed within the dripline CRZ and the wall's wood lagging will only be installed above existing grade (meaning no excavation) within dripline CRZ. These changes will be incorporated into the Plan Set. To avoid confusion, the Tree Protection Fence should be moved out to the Dripline. That's wonderful progress toward the objective.

**Cantilever Piles** - But that still leaves the potential damage by the cantilevered soldier piles located within the dripline CRZ. General specs are:

- 2' diameter, ~ 30' deep hole done with auger
- Holes dug at typical 5' centers resulting in 5 piles within the dripline CRZ of Tree # 4
- Holes filled with soldier pile I-beams
- Lower ~ 20+' then filled with concrete

In our minds, the potential pile damage is not resolved as of yet. In fact, we are not ready to accept the conclusion in Ref (4) by Anthony Moran (arborist # 2) that the piles have zero effect on Tree # 4. Tree # 4



is already in a precarious position on a steep slope in a critical area for landslides and erosion and thus needs all the root structure possible for lateral stability. It can't afford to lose any roots. Also, Douglas Fir trees can adapt their root systems to different conditions and grow roots in different directions to find water and nutrients, as well as to stabilize themselves on a slope. Therefore, it is possible that some fir roots may grow up slope from the tree, while others may grow down slope or sideways. Ergo, it is entirely probable that Tree # 4 has roots in the CRZ where the piles are to be located and those roots would be punched through and damaged regardless of their depth.

In trying to meet the aforementioned Objective, it appears that there are 3 options or maybe more not listed:

- Eliminate the piles within the dripline CRZ
- Reroute the piles to outside the dripline CRZ
- Guarantee by arborists involved that there will be no damage to Tree # 4
- ???

**Independent Arborist (arborist # 3)** – The potential risk and jeopardy to the health, safety, welfare and property of Mercer Island citizens is much too high to treat the pile proposal casually and without more investigation (Exhibit 8). If there ever was a time to err on the side of caution, now is the time. Toward that end, MICC 19.10.090 D (1) (2), states:

*“Peer review and conflict of interest.*

1. The city may require peer review of the tree permit application by a qualified arborist to verify the adequacy of the information and analysis. The applicant shall bear the cost of the peer review.

2. The code official may require the applicant to retain a replacement qualified arborist or may require a peer review where the code official believes a conflict of interest exists. For example, if an otherwise qualified arborist is employed by a tree removal company and prepares the arborist report for a development proposal, a replacement qualified arborist or a peer review may be required.”

We believe arborist # 2 has shown bias to the Applicant's project and thus there is a conflict of interest. By copy of this public response, it is requested that the applicant hire another independent, unbiased arborist # 3 approved by the City of Mercer Island arborist (arborist # 1) to peer review the entire case and circumstances surrounding Tree # 4. Arborist # 1 and arborist # 3 would then determine and sign off on the Applicant's course of action with regard to the cantilever piles proposed for location within the dripline CRZ.

Examples of arborist # 2's questionable, bias comments/actions:

- Gussed/estimated the DBH of Tree # 4 as 36” when in fact the actual measured DBH is 47” (Ref (3))
- Initially set a CRZ of only 25' when Tree # 4 dripline is a 36' CRZ and the calculated CRZ from actual DBH is 47' (Ref (3))
- Didn't follow ISA guidelines for setting CRZ in above 2 actions. (Ref (3))
- Statement, “This means there is no chance that the work will damage the Structural Root Plate of the tree.” Work referred to is the stabilization wall. This is factually incorrect. The stabilization wall is located within the dripline CRZ and Ref (2) made changes to acknowledge this fact. (Ref (4))

- Gussed/estimated topo elevation of Tree # 4 without actually measuring it (Ref (4))
- Statement, “The work plan states that the machinery required for drilling the pile holes will be stationed outside the theoretical CRZ for the tree. This is not absolutely necessary as it is highly unlikely that the fir has any roots present east of the existing wall in the first place. Douglas fir rarely has roots present below 36” due to compaction and oxygenation constraints.” This is factually incorrect. As stated earlier Douglas Fir trees can adapt their root systems and grow upslope, downslope and sideways. That’s why ISA established CRZ, and why Ref (2) made changes to acknowledge this fact. (Ref (4))
- Statement, “Drilling the line of five 24” diameter holes within the theoretical CRZ would realistically create little functional impact even if the tree did have roots present in the space.” The potential risk to health, safety, welfare and property of Mercer Island citizens is much too high to make this statement without any support. Besides it violates ISA guidelines for the protection of a tree’s CRZ. (Ref (4))
- Statement, “...an arborist should be onsite during the proposed work.” This statement makes little sense coming from an arborist. In fact, it is irrelevant as it’s a well-known fact that trenching or drilling has already destroyed the roots, so it’s too late – damage is already done.

**Hotline to Authority** - As many of us who have been around large projects know, not everyone gets “the memo.” With all the contractors and subs running around on the jobsite, people can make mistakes. Not only does all agreements in Ref (2) need to be incorporated in the Plan Set as agreed to, but there also should be a hotline established for anyone to call about problems. Neighbors will be watching this project if/when it begins. Who do they call when they see a concrete truck driving into the CRZ? The Mercer Island police? The Highway Patrol? No, there should be someone in authority available on a hotline phone # posted at the jobsite.

## **Summary –**

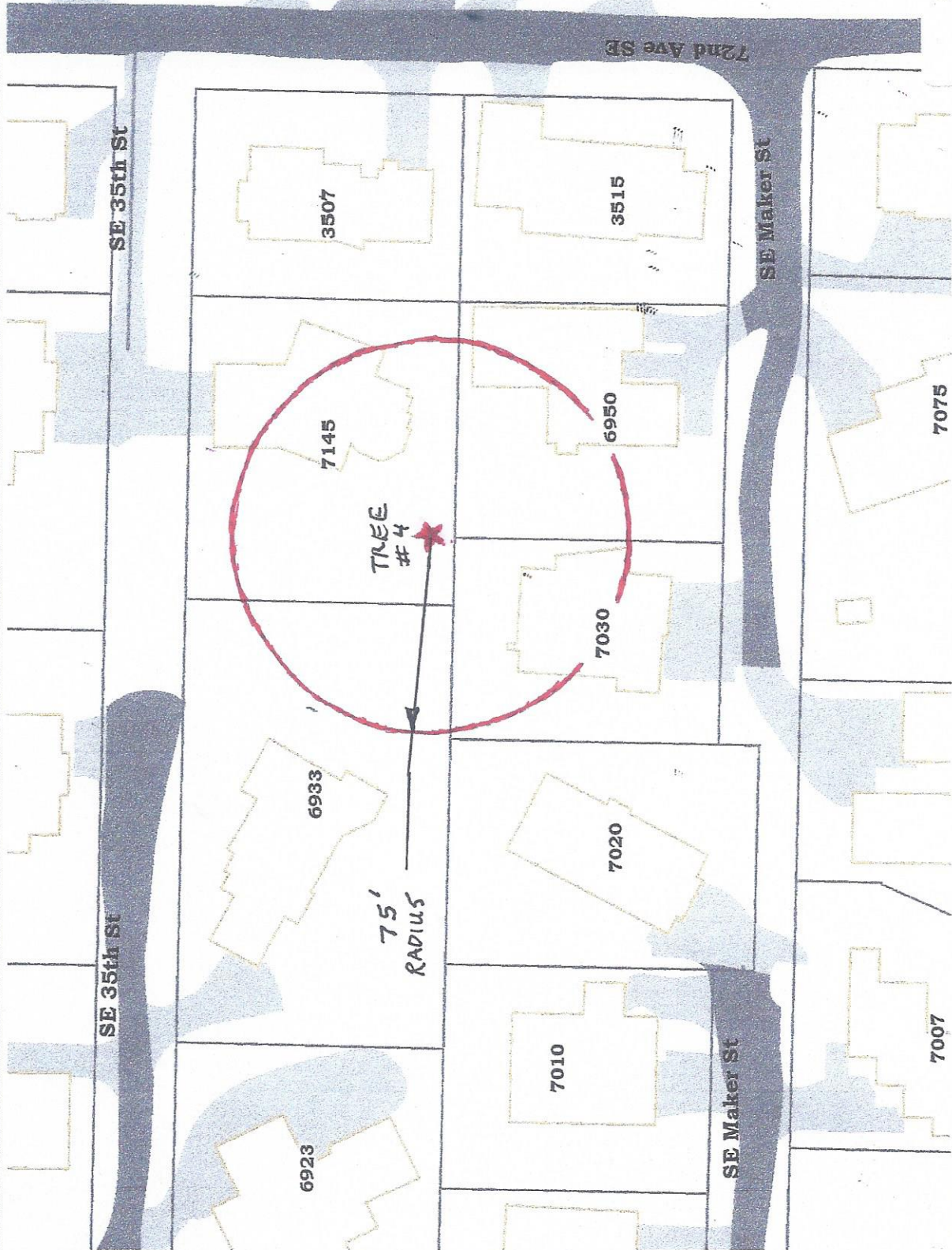
- The Applicant, the City of Mercer Island and the eight Mercer Island residents that signed Ref (1) should all have the same objective. Protect Tree # 4.
- Congratulations to John Kenney and Jeffrey Almeter for agreeing to changes to protect Tree # 4 CRZ. These agreements will be incorporated in the Plan Set.
- The cantilever piles located in the CRZ are still a problem that is not resolved, but there are options for resolution.
- As stated in a MICC code, it is requested that an independent, unbiased arborist review the Tree # 4 case file and along with John Kenney determine the correct, appropriate option for the piles
- If/when the project begins, there should be a hotline available to the public





**Legend**

- Address
- Building
- Property Line
- Docks
- Freeway
- Major Street
- Street
- Paved Driveway
- Paved Road
- Paved Parking Area
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- Lake Washington



**EXHIBIT 8**

**HOUSES IMPACTED IF  
TREE FALLS DUE TO  
STABILIZATION WALL DAMAGE**

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1 inch =  
112.489927833333  
feet



0 56 112 Feet

Map Printed: July 29, 2023

© City of Mercer Island



DRAWING C-2 P. 7

 ROOTS 100% REMOVED FOR STABILIZATION  
 WALL CONSTRUCTION (21%)  
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CONC. WALL

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 7030 SE MAKER ST  
 MERCER ISLAND, WA 98040  
 OWNER: MICHAEL LYNN

EXHIBIT 5  
 AMOUNT OF DAMAGE TO  
 CRZ OF TREE # 4

# Comment Response Memo

23 August 2023

## To

City of Mercer Island – Molly McQuire

## For the Project

Strand Residence Critical Area Review 2 – CAO23-011

6950 Maker St

Mercer Island, WA 98040

## General Description

Below are responses to public comments received during the open comment period. These have been addressed numerically for reference only and not in order of importance or priority.

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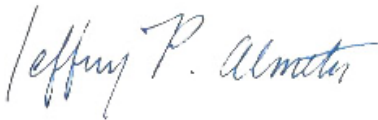
1. Regarding letter from Brigid Stackpool and Pamela Faulkner –  
The proposed work to install shoring is in response to the City of Mercer geotechnical concerns and has designed according to recommendations Geotech Consultants. The final proposal has been reviewed by licensed Civil and Geotechnical engineers as well as a certified arborist to ensure that it meet all requirements of Mercer Island code as part of the permit review process.
2. Regarding the letter from Jim and Susan Mattison -  
I – The proposed West Shoring shall not increase the height of the finished grade by more than 72" from the existing grade elevation at any location. The shoring is solely intend to stabilize the existing conditions.  
II – The impacts of the Shoring on Exceptional tree #4 have been reviewed and responded to by a certified arborist. The full response from the arborist is included in this submittal.  
III – Any work associated with Exceptional tree #5 is not included in this permit and has been reviewed by the city arborist as part of other permits.
3. Regarding the submittal from Martin Snoey -  
As stated above the impact of the Shoring on tree #4 has been reviewed by a certified arborist and is included in this submittal. Part of this review by Anthony Moran is in response to the City of Mercer Island Arborist, John Kenney's review of this permit.
4. Regarding the submittal from Dan Grove -
  1. We firmly stand by our assessment that the evidence of the road shown in the aerial from 1961 is one of the strongest pieces of evidence that this rockery was installed during or prior to that road being graded and would have been done in conjunction with the city of Mercer Island at that time. Therefore it is possible that the rockery along the South side of the property that is within the right of way could very reasonably been installed by the city itself for installation of the roadway. Further review of historical documents shows that in 1965 there was a City Council Meeting wherein D. L. Anderson requested permission to pave a portion of SE Maker street and this request was approved. We firmly believe that the City of Mercer would have taken any potential illegal construction in that vicinity seriously as that time.

With the approval of Mr. Anderson's request we must assume that there were no concerns of illegal installation of rockery.

2. The impact of the shoring on tree #4 has been addressed above
3. As stated above any prior work associated with tree #5 has been reviewed and addressed by city staff as part of other permit reviews.
4. Any and all disturbance to the existing landscaping as part of the proposed work within the critical area shall be mitigated by replanting native plantings to all areas disturbed. Additional information has been added to the plan set as such.
5. We disagree that this site is illegal non-conforming and have previous demonstrated that the site is a Legal non-conforming site, also addressed above.

Please let me know if there are any questions.

Thank you for your time,

A handwritten signature in blue ink that reads "Jeffrey P. Almeter". The signature is written in a cursive style with a large, stylized initial 'J'.

Jeffrey Almeter