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

OPTIONAL DETERMINATION OF NON-SIGNIFICANCE (DNS) NOTICE MATERIALS

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

File No. 24-111215-LO

Project Name/Address: COBT NE 40th ST Improvements /14080 NE 40th ST, Bellevue, WA 98007

Planner: Jordan Borst
(425) 452-6997
jborst@bellevuewa.gov

Minimum Comment Period: June 13, 2024

Materials included in this Notice:

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

OTHERS TO RECEIVE THIS DOCUMENT:
- ☑ State Department of Fish and Wildlife
- ☑ State Department of Ecology, Shoreline Planner N.W. Region
- ☑ Army Corps of Engineers
- ☑ Attorney General
- ☑ Muckleshoot Indian Tribe

This SEPA Checklist was reviewed and annotated by Jordan Borst on 05/21/2024

Development Services

SEPA Environmental Checklist

The City of Bellevue uses this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions

The checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully and to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions.

You may respond with "Not Applicable" or "Does Not Apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies and reports. Please make complete and accurate answers to these questions to the best of your ability in order to avoid delays. For assistance, see SEPA Checklist Guidance on the Washington State Department of Ecology website.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The city may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Background

1. Name of proposed project, if applicable NE 40th St Improvements - 140 Ave NE to 148 Ave NE
2. Name of applicant Glen Kho
3. Contact person Glen Kho Phone (425) 452-4586
4. Contact person address 450 110th Ave NE, Bellevue, WA 98004
5. Date this checklist was prepared 4/30/2024
6. Agency requesting the checklist City of Bellevue ~~Department of Transportation~~ Development Services

JB, 5/21/2024

7. Proposed timing or schedule (including phasing, if applicable)

Construction is anticipated for early 2025

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

No plans for additional expansion or other activities related to this proposal are in place as this time.

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

There is a Critical Areas Report that has been prepared for this project.

10. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

Does not apply.

11. List any government approvals or permits that will be needed for your proposal, if known.

Clear and Grade Permit
Utility Extension Permit
Right of Way Use Permit
Land Use Permit - Critical Areas Land Use Permit to which this SEPA is a part.

12. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The NE 40th Street Improvements project will construct a new sidewalk and planters, where feasible, along the north side of NE 40th Street from 140th Avenue NE to 145th Ave NE. The project will install curb and gutter, sidewalk, landscaping, irrigation, bike lanes, retaining walls, storm drainage improvements, and ADA compliant ramps. Also a crosswalk will be installed at 142nd Pl NE and NE 40th St will be grinded and overlayed between 140th Ave NE and 148th Ave NE. A portion of these improvements are within a 50-foot buffer of Valley Creek, a fish-bearing (Type F) stream, and a 150-foot buffer of a Category II Wetland.

13. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and the section, township and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

Location: NE 40th St from 140th Ave NE to 148th Ave NE.
Township: T25N
Range: R5E
Section: NW 15 and NW 22
A portion of the project site for which this Critical Areas Land Use Permit and SEPA Checklist is submitted is near 14080 NE 40th ST, Bellevue, WA 98007.

Environmental Elements

Earth

1. General description of the site:
   - ☑ Flat
   - ☑ Rolling
   - ☐ Hilly
   - ☐ Steep Slopes
   - ☐ Mountainous
   - ☐ Other ______

2. What is the steepest slope on the site (approximate percent slope)? 9.5%

3. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

From the information found on the Web Soil Survey website (https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx), the site is comprised of 38.7% AgC (Alderwood gravelly sandy loam, 8 to 15 percents slopes) and 61.3% EvC (Everett very gravelly sandy loam, 8 to 15 percent slopes).

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

There is no indication or history of unstable soils in the immediate vicinity.

5. Describe the purpose, type, total area and approximate quantities and total affected area of any filling, excavation and grading proposed. Indicate the source of the fill.

There is an estimate of 1100 CY of material removed from the site and 900 CY of fill brought to the site for the construction of the new cement concrete sidewalk, curb ramps, planter strip, driveway approaches, driveway restorations, storm improvements, and retaining walls.
Filling, excavation, & grading is regulated by Bellevue City Code (BCC) 23.76

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

Yes, erosion could potentially occur during construction. Erosion BMPs will be employed and inspected during construction in accordance with City standards and the project Construction Stormwter Pollution Prevention Plan (CSWPPP).

Erosion Control is regulated BCC 23.76.

7. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)? 80% mainly within the City ROW.

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

> Erosion and sedimentation will be controlled through the implementation of Best Management Practices (BMPs) as described in the State Department of Ecology's Stormwater Management Manual for the Puget Sound Basin, and according to City of Bellevue clearing and grading requirements, and the project Construction Stormwater Pollution Prevention Plan (CSWPPP). The primary BMP to be used include catch basin inserts and plastic covering. BMP's will be in place prior to beginning any clearing activity.
> Erosion Control is regulated BCC 23.76.

Air

1. What types of emissions to the air would result from the proposal during construction, operation and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

> Project construction activities could generate onsite dust from equipment operation, but these effects are anticipated to be temporary, minor, and largely contained at and within short distances from the proposed project site. Construction equipment and vehicles will generate minor amounts of localized carbon monoxide, and other products of combustion and particulate emissions. These emissions would only slightly degrade local air quality and on a temporary basis.
>
> There will be no change in land use in the vicinity as a result of the project. Thus, in the long term no reduction in air quality is expected.

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

> None.

3. Proposed measures to reduce or control emissions or other impacts to air, if any.

> Best Management Practices will be implemented during construction activities to reduce and control air emissions. These practices may include covering soil stockpiles, sweeping or washing street surfaces, minimizing exposed areas, and using construction machinery equipped with standard mufflers.

Water

1. Surface Water
   a. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

   There is a creek and wetland in the project limits. The creek is called Valley Creek and is within 14080 NE 40th St. The wetland surrounds Valley Creek. There will be a soldier pile wall constructed in the wetland buffer zone. Residential properties' driveways will be disturbed and restored as part of the project.

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

   There will be a soldier pile wall constructed in the wetland buffer zone and near Valley Creek.

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

   There is 0 amount of fill and cut in the wetland area.

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

   The proposal will not require surface water withdrawals or diversions.

   e. Does the proposal lie within a 100-year floodplain? No
   If so, note the location on the site plan.

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

The proposed project does not involve discharge of waste material to surface waters.

2. Ground Water

a. Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No groundwater will be withdrawn and no discharges will occur to groundwater as part of, or as a result of, the project.

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

No waste materials will be discharged to the ground, groundwater, or any part of the project location as a result of the project.

3. Water Runoff (including stormwater)

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

      The project is contained within two threshold discharge areas (TDA).

      The runoff currently flows to the existing storm drainage system. Existing runoff on NE 40th St, east of 140th Ave NE and west of 146th Pl NE, flows toward Valley Creek, which is located within 14080 NE 40th St. Existing runoff one NE 40th St, east of 146th Pl NE, flows east toward Lake Sammamish.

   b. Could waste materials enter ground or surface waters? If so, generally describe.

      Release of waste material from construction activities could potentially occur from accidental fuel leaks or spills, but is not likely. During construction, BMPs for spill prevention, and erosion and sediment control will be implemented.

   c. Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

      The proposal maintains the existing drainage pattern of the site.

Indicate any proposed measures to reduce or control surface, ground and runoff water, and drainage pattern impacts, if any.

None.

Plants

1. Check the types of vegetation found on the site:

   - ☑ deciduous tree: alder, maple, aspen, other ______
   - ☑ evergreen tree: fir, cedar, pine, other ______
   - ☑ shrubs
   - ☑ grass
   - ☐ pasture
   - ☐ crop or grain
   - ☐ orchards, vineyards or other permanent crops
   - ☐ wet soil plants: cattail, buttercup, bulrush, skunk cabbage, other ______
   - ☐ water plants: water lily eelgrass, milfoil, other ______
   - ☐ other types of vegetation ______

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

   There will be removal of some grass, shrubs, and trees.

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

   WDFW's Priority Habitat Species on the Web identifies the following species on or near the site: Coho Salmon, Lake Washington Coho, Chinook Salmon, and Cutthroat Trout.

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

   The project will replace the disturbed landscaping with in kind.

5. List all noxious weeds and invasive species known to be on or near the site.

None.

Animals

1. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. Examples include:

   Birds: ☐hawk, ☐heron, ☐eagle, ☐songbirds, ☐other ____________________

   Mammals: ☐deer, ☐bear, ☐elk, ☐beaver, ☐other ____________________

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

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

   WDFW's Priority Habitat Species on the Web identifies the following species on or near the site: Coho Salmon, Lake Washington Coho, Chinook Salmon, and Cutthroat Trout.

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

   WDFW's Priority Habitat Species on the Web does not identify any migration routes within the project area.

4. Proposed measures to preserve or enhance wildlife, if any.

   Proposed work will maintain habitat conditions for wildlife.

5. List any invasive animal species known to be on or near the site.

None known.

Energy and Natural Resources

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

Fossil fuels will be consumed to operate construction equipment and maintenance vehicles.

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

No.

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

None.

Environmental Health

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

   Potential environmental health hazards could include spills of fuel, oil, lubricants, and solvents used during construction. Spills pose a temporary threat to construction workers and nearby individuals if they become directly exposed, although the likelihood of nearby individuals being exposed is minimal during construction.

   a. Describe any known or possible contamination at the site from present or past uses.

      No potential sources of contamination were identified in the vicinity of the project site.

   b. Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

      None.

   c. Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

      Equipment fuels, oils, and liquids will be on site during construction and will be removed after project completion.

d. Describe special emergency services that might be required.

No special emergency services will be required. PSEG (1-800-424-7734) will be contacted if the contractor hits/damage gas utilities or power lines, and/or smells natural gas from suspected leak.

e. Proposed measures to reduce or control environmental health hazards, if any.

BMPs will be in place to ensure any minor spillage of equipment liquids (fuel, oil, etc.)is properly contained and disposed of. Any spill of materials such as diesel fuel and lubricating oil will be cleaned up immediately. Refueling during construction will be performed away from storm conveyance facilities.

2. Noise

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

Existing noise sources in the area are primarily from vehicular traffic. Noise levels in the project area will not affect the proposed project.

Noise control is regulated by BCC 9.18

b. What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

On a short-term basis, noise will be generated from the construction equipment. Construction hours are typically 7:00 AM to 5:00 PM; however, hours are determined on a project-by-project basis.

Noise control is regulated by BCC 9.18

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

To control noise impacts to adjacent properties, the construction hours are limited to daytime hours and in accordance with City noise ordinances. Additionally, standard mufflers will be used on all construction equipment to reduce noise impacts.

Noise control is regulated by BCC 9.18

Land and Shoreline Uses

1. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

   The current land use of the site is a roadway and single family homes. The proposal will not affect the current land use.

   While the project area is within the City of Bellevue Right-of-Way (ROW), the adjacent properties are residential.

2. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to non-farm or non-forest use?

   No, the project site has not been used as working farmlands or working forest lands.

   a. Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling and harvesting? If so, how?

      No.

3. Describe any structures on the site.

   There are not structures in the right of way and there are single family homes on the adjacent private parcels.

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

None.

Single Family Residential (R-1) & Multi-Family Residential (R-20)

5. What is the current zoning classification of the site? _Single-family

Single Family Low-Density (SF-L) and Public Facility/Multi Family - Medium Density

6. What is the current comprehensive plan designation of the site? Single-family high-density

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

The project site is not within a shoreline management area.

8. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Yes, there is a wetland that surrounds Valley Creek within the 14080 NE 40th St parcel.
Cat. II wetland and Type F stream. Critical Areas are regulated by Land Use Code (LUC) 20.25H

9. Approximately how many people would reside or work in the completed project? None.

10. Approximately how many people would the completed project displace? None.

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

Not applicable.

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

The proposed project will not affect existing or projected land use.

13. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any.

Does not apply. The project is not near agricultural and forest lands of long term commercial significance.

Housing

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

None.

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

None.

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

Not applicable.

Aesthetics

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

Not applicable.

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

None.

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

Not applicable.

Light and Glare

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

None.

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

Not applicable.

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

Not applicable.

4. Proposed measures to reduce or control light and glare impacts, if any.

Not applicable.

Recreation

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

None.

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

Not applicable.

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

Not applicable.

Historic and Cultural Preservation

1. Are there any buildings, structures or sites located on or near the site that are over 45 years old listed in or eligible for listing in national, state or local preservation registers located on or near the site? If so, specifically describe.

The Washington Information System for Architecural and Archaeological Records Data (WISAARD) does not identify any eligible properties in the project area.

2. Are there any landmarks, features or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

There are no known artifacts or areas of cultural importance in or near the project area.

3. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

No significant excavation will be done with the project. Maximum depth of excavation is 5 feet deep. If any archaeological artifact is uncovered or discovered during construction, the State Historical Preservation Officer will be notified immediately. No additional work would be performed on the site until all archaeological investigations are completed.

4. Proposed measures to avoid, minimize or compensate for loss, changes to and disturbance to resources. Please include plans for the above and any permits that may be required.

If any archaeological artifact is uncovered or discovered during construction, the State Historical Preservation Officer will be notified immediately. No additional work would be performed on the site until all archaeological investigations are completed.

Transportation

1. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The project consists of improvements to NE 40th St from 140th Ave NE to 148th Ave NE.

2. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The site is currently served as a school bus stop site. There is no public transit that goes through this site.

3. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

The project will not add or eliminate any parking spaces.

4. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

A new cement concrete sidewalk with a planter strip (where feasible) will also be constructed on the north side of NE 40th St from 140th Ave NE to 145th Ave NE. ADA compliant ramps will be installed throughout the project site. A crosswalk will be installed on the west side of NE 40th St and 142nd Pl NE. Bike lanes and shared use markings will be installed on NE 40th St from 140th Ave NE to 148th Ave NE.

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

The project will not use or occur in the vicinity of any water, rail, or air transportation.

6. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and non-passenger vehicles). What data or transportation models were used to make these estimates?

The completed project is not expected to change the number of vehicle trips in the project area or vicinity.

7. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

The project will not interfere with, affect, or be affected by the movement of agricultural and forest products.

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

A new sidewalk with planter strips (where feasible) will be constructed on NE 40th St from 140th Ave NE to 145th Ave NE. The sidewalk will connect to the existing sidewalk on 145th Ave NE, which will improve pedestrian safety. Traffic calming will be improved by reducing lane widths to 11'.

Public Service

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

   No, the project will not result in an increased need for public services.

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

   None. The project will not result in an increased need for public services.

Utilities

1. Check the utilities currently available at the site:

   - [x] Electricity
   - [x] natural gas
   - [x] water
   - [ ] refuse service
   - [x] telephone
   - [x] sanitary sewer
   - [ ] septic system
   - [ ] other

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

   Existing fire hydrants will be replaced with new fire hydrants. Storm drainage improvements will also be made.

Signature

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

Signature Glen Kho

Name of signee Glen Kho

Position and Agency/Organization Transportation Design Engineer, City of Bellevue

Date Submitted 4/30/2024

NO.	DATE	BY	APPR.	REVISIONS
2	3/3/23	JMD		TOPOGRAPHIC MAPPING ADDED

JMDELANEY 03/09/2023
DRAWN BY DATE

JPWARREN 03/09/2023
CHECKED BY DATE

CITY OF BELLEVUE WASHINGTON
Land Survey Division
Finance & Asset Management

NE 40TH ST SIDEWALK TOPOGRAPHIC SURVEY

(140TH AVE NE TO 145TH AVE NE)

NE 40TH ST SIDEWALK
TOPOGRAPHIC RIGHT OF WAY SURVEY
(140TH AVE NE TO 145TH AVE NE)
S1/2, SE1/4 S15-T25N-R05E, W.M.

PROJECT: 20099
SHEET 1 OF 2

NO.	DATE	BY	APPR.	REVISIONS
1	6/29/22	JMD		ADDED MAPPING FOR CROSSWALK DESIGN @ 142ND PL NE
2	3/3/23	JMD		TOPOGRAPHIC MAPPING ADDED

JMDELANEY 03/09/2023
DRAWN BY DATE

JPWARREN 03/09/2023
CHECKED BY DATE

Land Survey Division
Finance & Asset
Management

NE 40TH ST SIDEWALK
TOPOGRAPHIC SURVEY
(140TH AVE NE TO 145TH AVE NE)

NE 40TH ST SIDEWALK
TOPOGRAPHIC RIGHT OF WAY SURVEY
(140TH AVE NE TO 145TH AVE NE)
S1/2, SE1/4 S15-T25N-R05E, W.M.

PROJECT: 20099

SHEET 2 OF 2

CITY OF BELLEVUE
TRANSPORTATION DEPARTMENT

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

ACTING CITY MANAGER
DIANE CARLSON

MAYOR
LYNNE ROBINSON

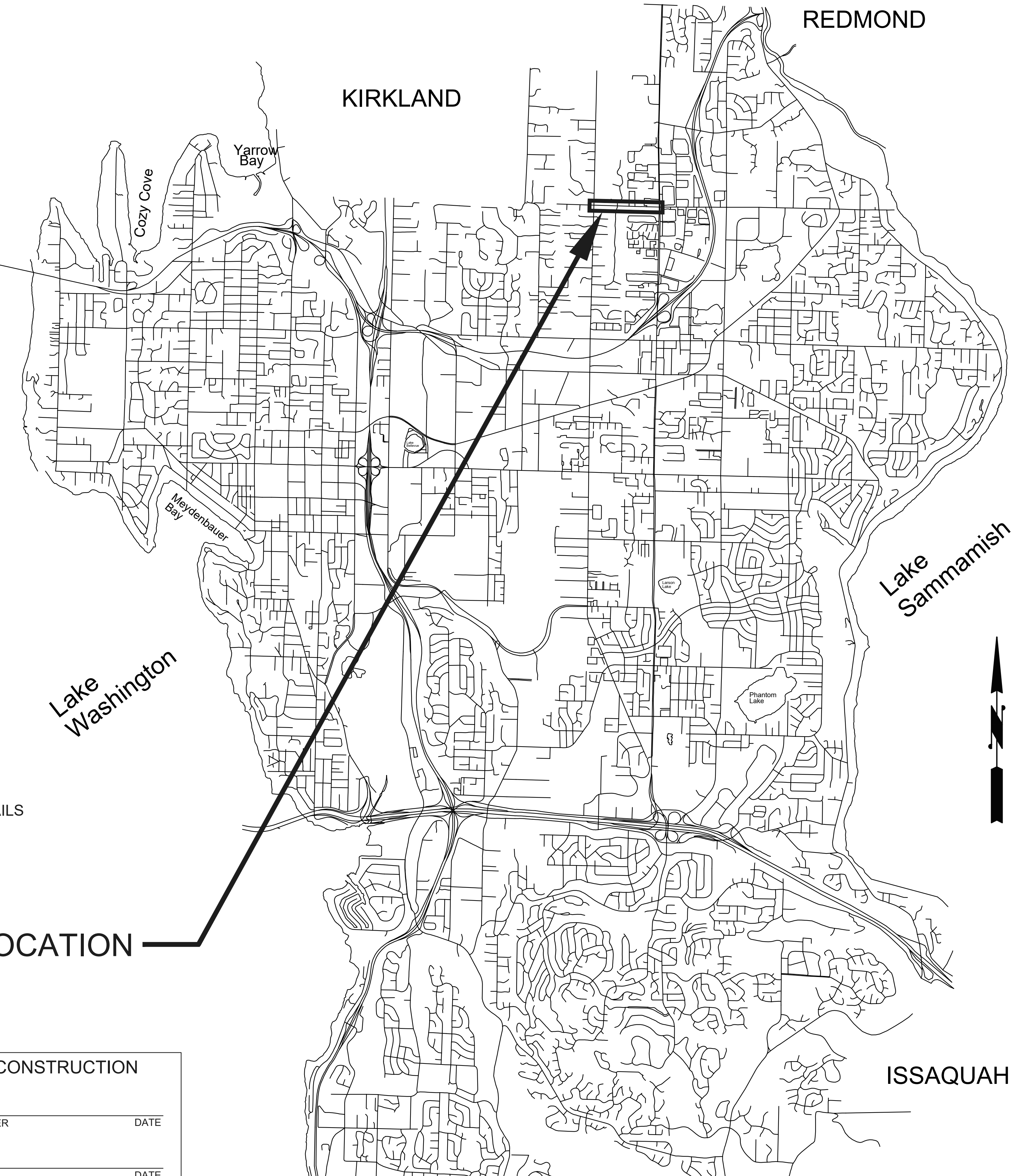
DIRECTOR OF TRANSPORTATION
ANDREW SINGELAKIS

DEPUTY MAYOR
MO MALAKOUTIAN

CITY COUNCIL
DAVE HAMILTON
CONRAD LEE
JARED NIEUWENHUIS
JOHN STOKES
JANICE ZAHN

SCHEDULE OF DRAWINGS

REF. NO.	SHEET	DRAWINGS
-	1	COVER SHEET
GEN01	2	GENERAL NOTES, LEGENDS, AND SYMBOLS
TS01	3	TYPICAL ROADWAY SECTIONS
SP01 - SP05	4 - 8	SITE PREPARATION AND TESC PLAN
UT01 - UT09	9 - 17	UTILITY PLAN AND PROFILES
S01 - S08	18 - 25	WALL PLAN, PROFILE AND DETAILS
CP01 - CP05	26 - 30	CIVIL PLAN
DT01	31	DRIVEWAY, DRIVEWAY APPROACH, MAILBOX STAND, BLOCK WALL AND WOOD FENCE DETAILS
PR01	32	DRIVEWAY AND DRIVEWAY APPROACH PROFILES
CR01	33	CURB RAMP DETAILS
CH01 - CH05	34 - 38	CHANNELIZATION AND SIGNING PLAN
IR01 - IR04	39 - 42	IRRIGATION PLAN AND DETAILS
LA01 - LA04	43 - 46	LANDSCAPING PLAN AND DETAILS
TCP01 - TCPXX	X - X	TRAFFIC CONTROL PLAN (TO BE PROVIDED AT 90%)



PROJECT LOCATION

APPROVED FOR CONSTRUCTION

TRANSPORTATION DESIGN MANAGER DATE

PROJECT MANAGER DATE

C.I.P. NUMBER PW-W/B-76, PW-R-199, PW-M-1, PW-M-2, & NEP-2
BID NUMBER XXXXX

NEIGHBORHOOD LEVY PROJECT

ROADWAY & SURFACE FEATURE LEGEND

EXISTING PROPOSED

- CENTERLINE
- CITY OF BELLEVUE RIGHT-OF-WAY
- PROPERTY LINE
- EASEMENT
- CUT — CUT LINE
- FILL — FILL LINE
- CURB
- X — FENCE
- RETAINING WALL
- GRIND AND OVERLAY
- CONCRETE SIDEWALK / PATH
- WETLAND
- DECIDUOUS TREE
- SHRUB
- CONIFER TREE
- ROCK WALL
- SIGN

SITE PREP & T.E.S.C. LEGEND

- CG — APPROX. CLEAR AND GRUB LIMITS
- EXISTING CONCRETE TO BE REMOVED
- EXISTING ASPHALT TO BE REMOVED

STORM LEGEND

EXISTING PROPOSED

- SD — STORM DRAIN
- STORM DRAIN MANHOLE
- CATCH BASIN TYPE 1
- CATCH BASIN TYPE 2

WATER LEGEND

EXISTING PROPOSED

- W — WATER LINE
- FIRE HYDRANT
- WATER METER
- WATER VALVE

SEWER LEGEND

EXISTING PROPOSED

- SS — SANITARY SEWER
- SANITARY SEWER MANHOLE

JOINT UTILITY LEGEND

EXISTING PROPOSED

- P — POWER
- UTILITY POLE
- P — POWER VAULT
- COM — COMMUNICATION LINE
- UGT — TELEPHONE LINE
- UGTV — CABLE TV LINE
- UGFO — FIBER OPTIC CABLE
- CABLE TELEVISION OR TELEPHONE RISER
- G — GAS LINE
- GAS VALVE

TRAFFIC SIGNAL LEGEND

EXISTING PROPOSED

- CONDUIT
- JUNCTION BOX TYPE 1
- JUNCTION BOX TYPE 2
- CONTROLLER CABINET
- SERVICE CABINET
- LUMINAIRE POLE

TRAFFIC CONTROL LEGEND

- TRAFFIC CONTROL DEVICE
- FLAGGER
- SIGN

CONSTRUCTION NOTES LEGEND

- ## CONSTRUCTION NOTE
- ## SIGN NOTE
- ## DRAINAGE NOTE
- ## WATER NOTE
- ## SEWER NOTE
- ## CHANNELIZATION NOTE
- ## SITE PREPARATION NOTE
- ## TRAIL/SIDEWALK LAYOUT POINT
- R## CURB RETURN DATA POINT

TRAFFIC CONTROL NOTES

1. THE CONTRACTOR SHALL MAINTAIN 10 FOOT MINIMUM TRAVEL LANES.
2. ALTERNATING TWO-WAY TRAFFIC SHALL BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE CITY.
3. TRAFFIC CONTROL PLANS HAVE BEEN PROVIDED FOR USE ON THIS PROJECT. THE CONTRACTOR SHALL SUBMIT PROJECT SPECIFIC TRAFFIC CONTROL PLANS FOR OPERATIONS THAT DIFFER FROM THE PLANS PROVIDED FOR APPROVAL BY THE CITY AT LEAST 14 DAYS PRIOR TO START OF CONSTRUCTION.
4. THE HOURS FOR CONSTRUCTION ACTIVITY, LANE CLOSURES, OR ACTIVITIES THAT IMPEDE OR MAY POTENTIALLY IMPEDE TRAFFIC SHALL BE ESTABLISHED THROUGH THE APPROVAL PROCESS FOR EACH INDIVIDUAL TEMPORARY TRAFFIC CONTROL PLAN FOR EACH SPECIFIC ACTIVITY. THE WORK HOURS SHALL BE AS STATED ON THE TEMPORARY TRAFFIC CONTROL PLAN OR SHALL BE COMMUNICATED BY THE INSPECTOR ASSIGNED TO THE PROJECT. THE HOURS FOR CONSTRUCTION ACTIVITY IN THE RIGHT OF WAY THAT DOES NOT IMPEDE TRAFFIC SHALL BE MONDAY THROUGH FRIDAY, 7:00AM TO 6:00PM.
5. PEDESTRIAN ACCESS SHALL BE MAINTAINED AT ALL TIMES.
6. PEDESTRIAN ACCESS SHALL BE NOT BE IMPEDED. CLOSED TRENCHES, TEMPORARY PAVING SURFACES AND PEDESTRIAN ROUTES SHALL HAVE A STABLE, FIRM AND SLIP RESISTANT WALKING SURFACE MADE EVEN WITH THE SURROUNDING SURFACES. COMPACTED GRAVEL IS NOT CONSIDERED AN ACCEPTABLE WALKING SURFACE.

GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR SHALL POTHOLE ALL POTENTIAL CONFLICTS WITH UTILITIES TO VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF THE EXISTING UTILITIES. POTHOLING INFORMATION OBTAINED DURING DESIGN CAN BE FOUND IN APPENDIX G OF THE PROJECT SPECIFICATIONS.
3. THE CONTRACTOR SHALL MAINTAIN 10 FOOT MINIMUM TRAVEL LANES DURING CONSTRUCTION EXCEPT DURING FINAL PAVEMENT RESTORATION.
4. DRIVEWAY ACCESS MUST BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE AGREED TO BY THE CITY OF BELLEVUE

NE 40TH ST CENTERLINE DATA

STATION	MONUMENT ID	RADIUS	LENGTH	BEARING	DELTA
10+00.0	-				
		-	56.6'	S88° 11' 10"E	-
10+56.6	H0040, V144				
		-	930.6'	S88° 11' 10"E	-
19+87.2	H2762, V582				
		-	1671'	S88° 11' 21"E	-
36+58.2	H0041, V581				
		-	101.3'	S88° 11' 21"E	-
37+60.0	-				

MONUMENT DATA

POINT ID	STA.	OFFSET	NORTHING	EASTING	ELEVATION	DESCRIPTION
H0040, V144	10+56.6	0.0'	238444.245	1315014.607	317.946	NE 40TH ST AND 140TH AVE NE INTERSECTION
H2762, V582	19+87.2	0.0'	238414.780	1315944.739	346.002	NE 40TH ST AND 142ND PL NE INTERSECTION
H0041, V581	36+58.2	0.0'	238361.962	1317614.860	385.080	NE 40TH ST AND 148TH AVE NE INTERSECTION

COORDINATE BASIS

WASHINGTON COORDINATE SYSTEM, NORTH ZONE, NAD 83/1991 (BELNET)

VERTICAL DATUM

NAVD 88 (CITY OF BELLEVUE)

NO.	DATE	BY	APPR.	REVISIONS

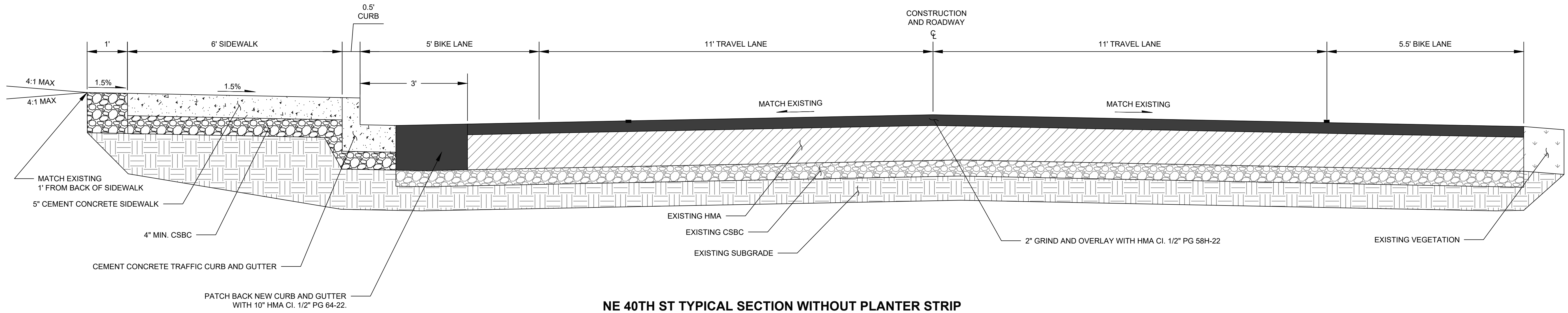
G. KHO 04/24 DESIGNED BY DATE
G. KHO 04/24 DRAWN BY DATE
C. MASEK 04/24 CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

GENERAL NOTES, LEGENDS, AND SYMBOLS

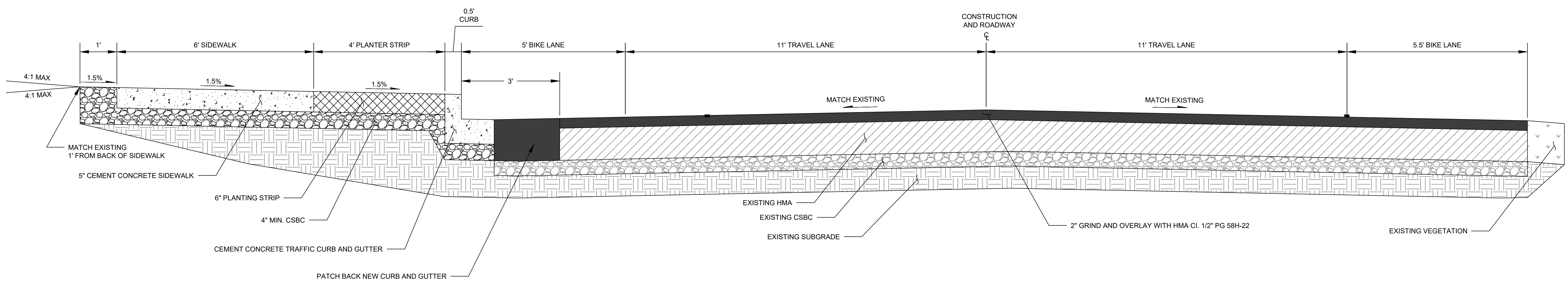
GEN01 SHT 2 OF 46



NE 40TH ST TYPICAL SECTION WITHOUT PLANTER STRIP

FACING EAST

NOT TO SCALE



NE 40TH ST TYPICAL SECTION WITH PLANTER STRIP

FACING EAST

NOT TO SCALE

NO.	DATE	BY	APPR.	REVISIONS

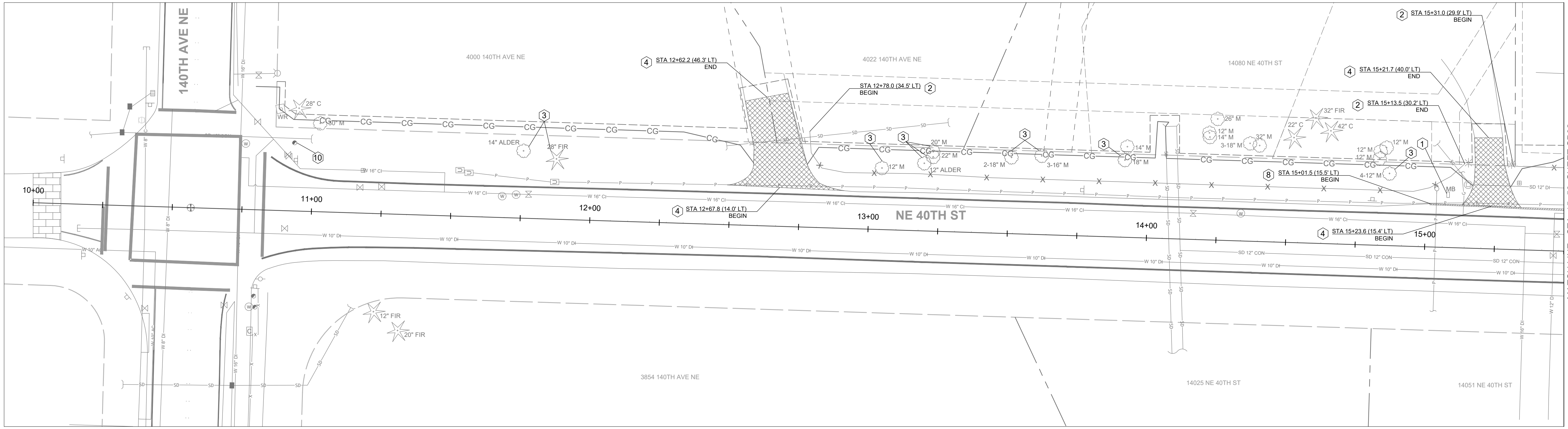
G. KHO	04/24
DESIGNED BY	DATE
G. KHO	04/24
DRAWN BY	DATE
C. MASEK	04/24
CHECKED BY	DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

TYPICAL ROADWAY SECTIONS

TS01 SHT 3 OF 46



SITE PREPARATION GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
2. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE INFORMATION CONTAINED WITHIN AS-BUILT DRAWINGS AND FIELD LOCATES.
3. ALL CONCRETE AND ASPHALT SURFACES TO BE REMOVED SHALL BE SAWCUT.
4. DRIVEWAY ACCESS TO PROPERTIES SHALL BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE CITY.
5. THE CONTRACTOR SHALL SUBMIT A FINAL TESC PLAN AND CSWPPP REFLECTING THE CONTRACTORS OPERATIONS PRIOR TO THE START OF CONSTRUCTION.
6. FOR STORM AND WATER REMOVALS, SEE SHEETS UT01-UT05.

SITE PREPARATION NOTES

1 REMOVE EXISTING MAILBOX STAND. MAINTAIN EXISTING MAILBOX ON TEMPORARY STANDS.
2 REMOVE EXISTING WOODEN FENCE.
3 REMOVE EXISTING TREE AND STUMP.
4 REMOVE EXISTING DRIVEWAY.
10 REMOVE EXISTING WITNESS POST.

LEGEND

REMOVE EXISTING CEMENT CONCRETE PAVEMENT
REMOVE EXISTING ASPHALT CONCRETE PAVEMENT
CITY OF BELLEVUE RIGHT-OF-WAY
—CG— APPROXIMATE CLEAR AND GRUB LIMITS
TEMPORARY CONSTRUCTION EASEMENT LIMITS

SCALE IN FEET
20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

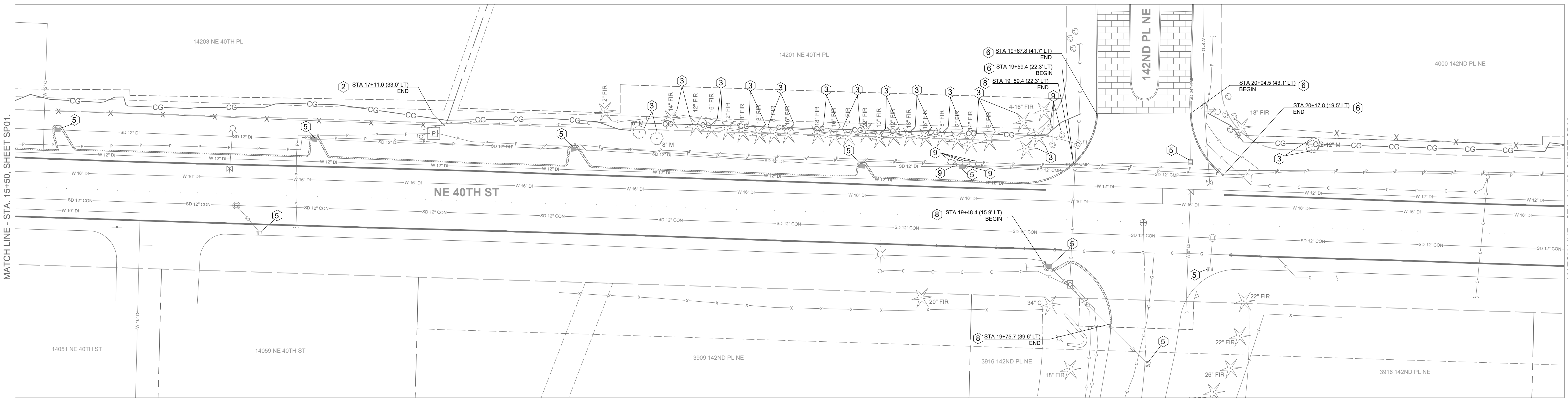
G. KHO 04/24
DESIGNED BY DATE
G. KHO 04/24
DRAWN BY DATE
C. MASEK 04/24
CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

SITE PREPARATION AND TESC PLAN
STA 10+00 TO STA 15+50

SP01 SHT 4 OF 46



SITE PREPARATION GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
2. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE INFORMATION CONTAINED WITHIN AS-BUILT DRAWINGS AND FIELD LOCATES.
3. ALL CONCRETE AND ASPHALT SURFACES TO BE REMOVED SHALL BE SAWCUT.
4. DRIVEWAY ACCESS TO PROPERTIES SHALL BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE CITY.
5. THE CONTRACTOR SHALL SUBMIT A FINAL TESC PLAN AND CSWPPP REFLECTING THE CONTRACTORS OPERATIONS PRIOR TO THE START OF CONSTRUCTION.
6. FOR STORM AND WATER REMOVALS, SEE SHEETS UT01-UT05.

SITE PREPARATION NOTES

2 REMOVE EXISTING WOODEN FENCE.
3 REMOVE EXISTING TREE AND STUMP.
5 PROVIDE AND INSTALL CATCH BASIN INLET PROTECTION PER COB CLEAR AND GRADE BMP C-220.
6 REMOVE EXISTING CEMENT CONCRETE CURB.
8 REMOVE EXISTING ASPHALT CURB.
9 REMOVE EXISTING ROCKS / BOULDERS.

LEGEND

- REMOVE EXISTING CEMENT CONCRETE PAVEMENT
- REMOVE EXISTING ASPHALT CONCRETE PAVEMENT
- CITY OF BELLEVUE RIGHT-OF-WAY
- CG APPROXIMATE CLEAR AND GRUB LIMITS
- TEMPORARY CONSTRUCTION EASEMENT LIMITS

SCALE IN FEET
20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

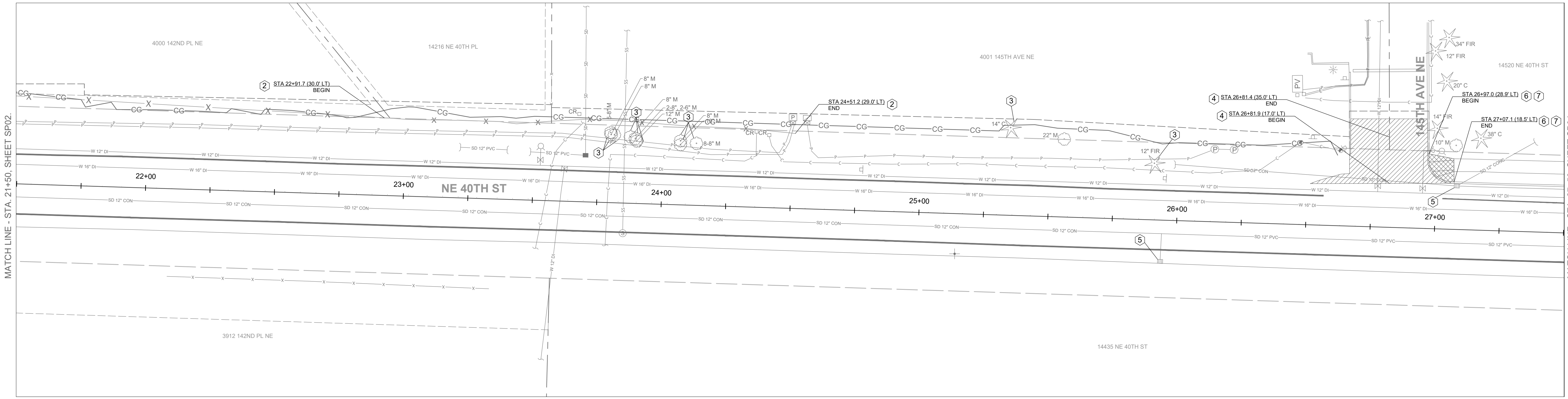
G. KHO 04/24
DESIGNED BY DATE
G. KHO 04/24
DRAWN BY DATE
C. MASEK 04/24
CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

SITE PREPARATION AND TESC PLAN
STA 15+50 TO STA 21+50

SP02 SHT 5 OF 46



SITE PREPARATION GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
2. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE INFORMATION CONTAINED WITHIN AS-BUILT DRAWINGS AND FIELD LOCATES.
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5. THE CONTRACTOR SHALL SUBMIT A FINAL TESC PLAN AND CSWPPP REFLECTING THE CONTRACTORS OPERATIONS PRIOR TO THE START OF CONSTRUCTION.
6. FOR STORM AND WATER REMOVALS, SEE SHEETS UT01-UT05.

SITE PREPARATION NOTES

2 REMOVE EXISTING WOODEN FENCE.
3 REMOVE EXISTING TREE AND STUMP.
4 REMOVE EXISTING DRIVEWAY.
5 PROVIDE AND INSTALL CATCH BASIN INLET PROTECTION PER COB CLEAR AND GRADE BMP C-220.
6 REMOVE EXISTING CEMENT CONCRETE CURB.
7 REMOVE EXISTING CEMENT CONCRETE SIDEWALK.

LEGEND

REMOVE EXISTING CEMENT CONCRETE PAVEMENT
REMOVE EXISTING ASPHALT CONCRETE PAVEMENT
CITY OF BELLEVUE RIGHT-OF-WAY
CG APPROXIMATE CLEAR AND GRUB LIMITS
TEMPORARY CONSTRUCTION EASEMENT LIMITS

SCALE IN FEET
20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

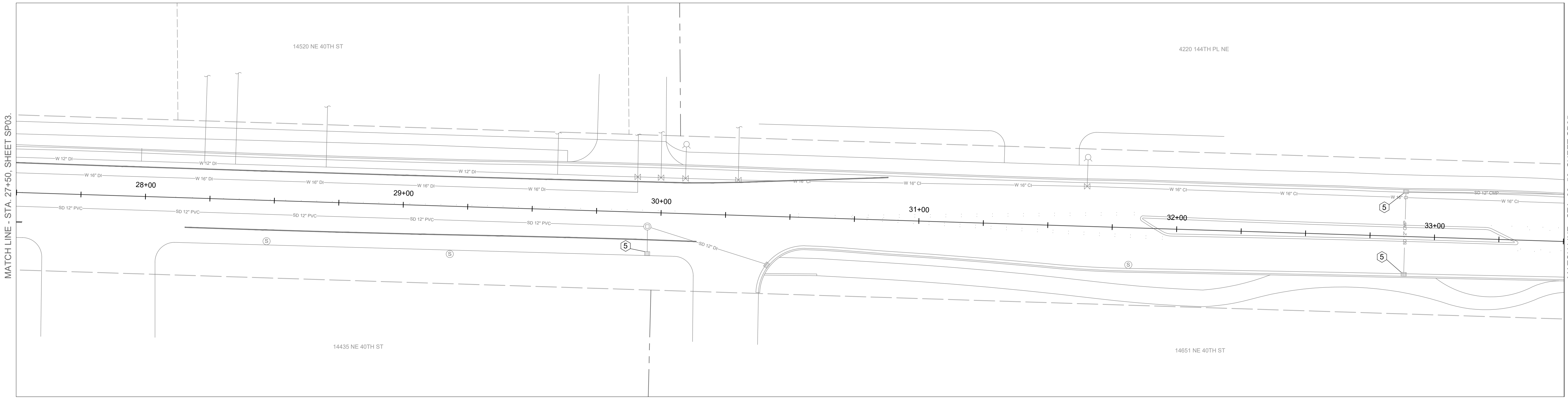
G. KHO 04/24 DESIGNED BY DATE
G. KHO 04/24 DRAWN BY DATE
C. MASEK 04/24 CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

SITE PREPARATION AND TESC PLAN
STA 21+50 TO STA 27+50

SP03 SHT 6 OF 46



SITE PREPARATION GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
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6. FOR STORM AND WATER REMOVALS, SEE SHEETS UT01-UT05.

SITE PREPARATION NOTES

5 PROVIDE AND INSTALL CATCH BASIN INLET PROTECTION PER COB CLEAR AND GRADE BMP C-220.

LEGEND

CITY OF BELLEVUE RIGHT-OF-WAY

SCALE IN FEET

20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

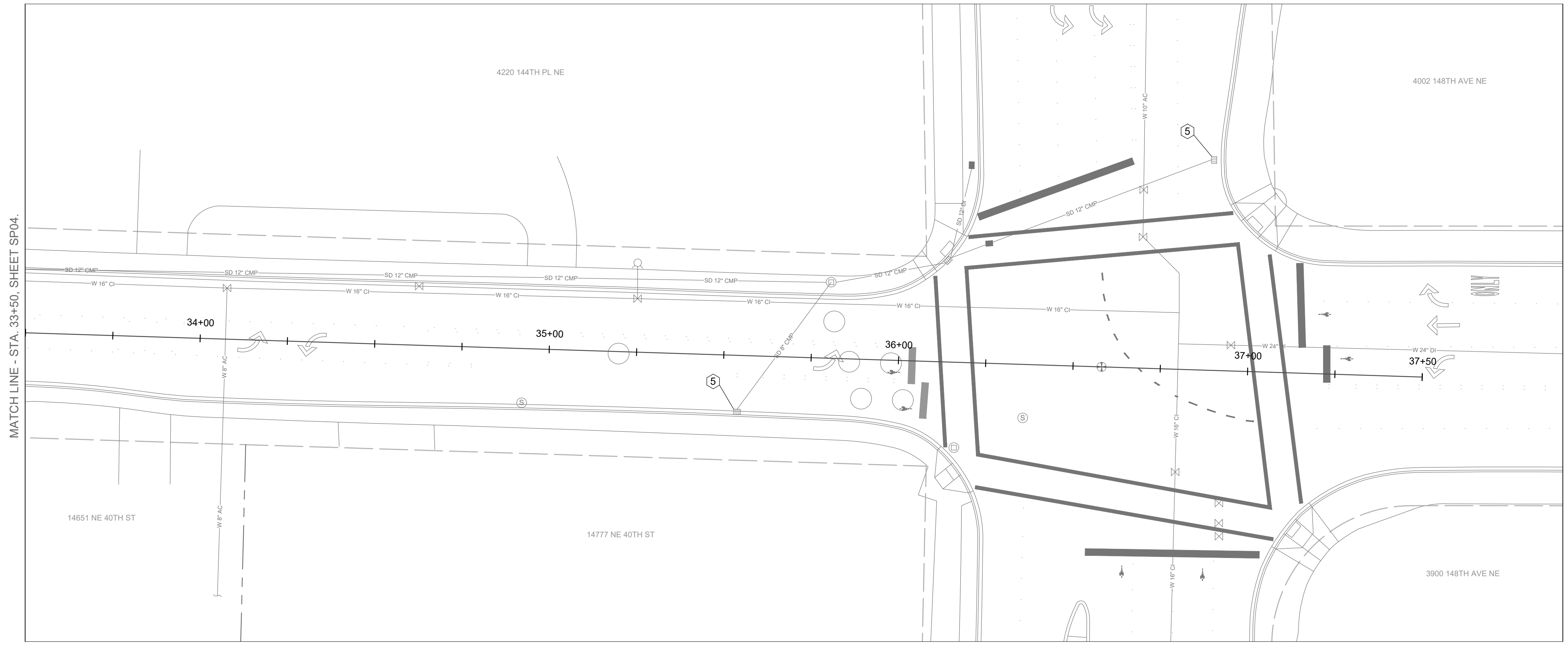
G. KHO 04/24 DESIGNED BY DATE
G. KHO 04/24 DRAWN BY DATE
C. MASEK 04/24 CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

SITE PREPARATION AND TESC PLAN
STA 27+50 TO STA 33+50

SP04 SHT 7 OF 46



SITE PREPARATION GENERAL NOTES

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5. THE CONTRACTOR SHALL SUBMIT A FINAL TESC PLAN AND CSWPPP REFLECTING THE CONTRACTORS OPERATIONS PRIOR TO THE START OF CONSTRUCTION.
6. FOR STORM AND WATER REMOVALS, SEE SHEETS UT01-UT05.

SITE PREPARATION NOTES

5 PROVIDE AND INSTALL CATCH BASIN INLET PROTECTION PER COB CLEAR AND GRADE BMP C-220.

LEGEND

— — CITY OF BELLEVUE RIGHT-OF-WAY

SCALE IN FEET

20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

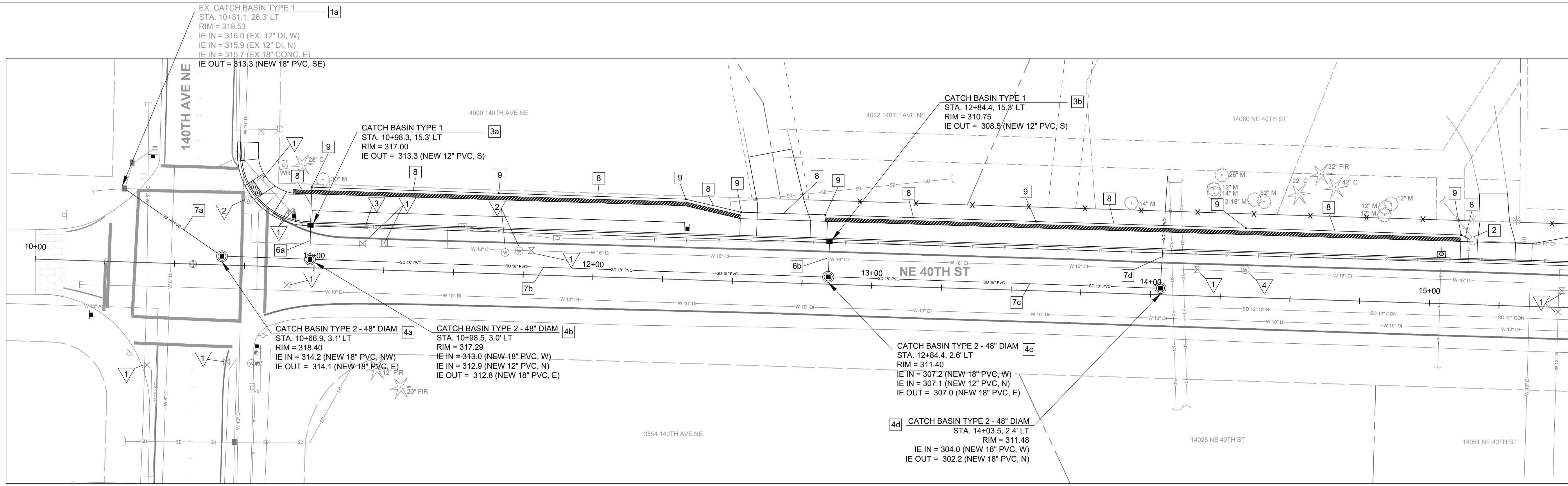
G. KHO 04/24
DESIGNED BY DATE
G. KHO 04/24
DRAWN BY DATE
C. MASEK 04/24
CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

SITE PREPARATION AND TESC PLAN
STA 33+50 TO STA 37+50

SP05 SHT 8 OF 46



GENERAL NOTES

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2. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE INFORMATION CONTAINED WITHIN AS-BUILT DRAWINGS AND FIELD LOCATES.
3. THE CONTRACTOR SHALL MAINTAIN 10 FOOT MINIMUM TRAVEL LANES DURING CONSTRUCTION EXCEPT DURING FINAL PAVEMENT RESTORATION.
4. THE CONTRACTOR SHALL POTHOLE ALL POTENTIAL CONFLICTS WITH UTILITIES TO VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF THE EXISTING UTILITIES. WHERE THE DISTANCE BETWEEN THE UTILITIES IS LESS THAN 6 INCHES, THE CONTRACTOR SHALL PROVIDE AN O.D. X O.D. X 2.5 INCH ETHAFOAM PAD PER THE SPECIAL PROVISIONS SECTION 7-08(2).
5. POTHOLING INFORMATION OBTAINED DURING DESIGN CAN BE FOUND IN APPENDIX F OF THE PROJECT SPECIFICATIONS.
6. FOR PAVEMENT REMOVAL LIMITS, SEE SHEETS SP01 - SP05. FOR PAVEMENT RESTORATION LIMITS, SEE SHEETS CP01 - CP05.

GENERAL WATER NOTES

1. ALL WORK SHALL CONFORM TO THE CURRENT VERSION OF THE CITY OF BELLEVUE UTILITY STANDARDS.
2. ALL PIPE SHALL BE DUCTILE IRON CLASS 52 UNLESS OTHERWISE SHOWN.
3. NEW WATER MAINS SHALL BE TESTED, FLUSHED, AND DISINFECTED BEFORE CONNECTING THE NEW WATER MAIN TO THE EXISTING WATER MAIN. WATER MAINS SHALL BE DISINFECTED PER THE CURRENT VERSION OF AWWA C651-14 AND THE CITY OF BELLEVUE WATER ENGINEERING STANDARDS.
4. ENGINEER SHALL BE PRESENT WHEN WATER SERVICES ARE EXPOSED.

DRAINAGE NOTES

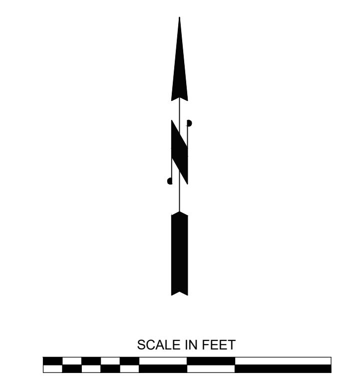
1. ADJUST EXISTING CATCH BASIN TO FINISHED GRADE PER COB STD. DWG. NO. D-23.
2. ADJUST EXISTING DRAIN MANHOLE TO FINISHED GRADE PER COB STD. DWG. NO. D-23.
3. PROVIDE AND INSTALL CATCH BASIN TYPE 1 WITH A LOCKING FRAME AND VANED GRATE PER COB. STD. DWG. NO. D-2, D-6, D-9. ADJUST TO FINISHED GRADE PER COB STD. DWG. NO. D-23.
   a. STA. 10+98.3, 15.3' LT   b. STA. 12+84.4, 15.3' LT
4. PROVIDE AND INSTALL CATCH BASIN TYPE 2 48" DIAM WITH NEW NON-SKID RING AND ROUND SOLID COVER PER COB. STD. DWG. NO. D-4 AND D-21. ADJUST TO FINISHED GRADE PER COB STD. DWG. NO. D-23.
   a. STA. 10+66.9, 3.1' LT   b. STA. 10+98.5, 3.0' LT   c. STA. 12+84.4, 2.6' LT   d. STA. 14+03.5, 2.4' LT
6. PROVIDE AND INSTALL 12" PVC STORM SEWER PIPE PER COB STD. DWG. NO. D-25.
   a. 12 LF   b. 13 LF
7. PROVIDE AND INSTALL 18" PVC STORM SEWER PIPE PER COB STD. DWG. NO. D-25.
   a. 43 LF   b. 32 LF   c. 186 LF   d. 119 LF   e. 40 LF
8. PROVIDE AND INSTALL 6" PVC PERFORATED UNDERDRAIN PIPE.
9. PROVIDE AND INSTALL CLEANOUTS PER COB STD. DWG. NO. D-52.

WATER NOTES

1. ADJUST EXISTING WATER VALVE TO FINISHED GRADE PER COB STD. DWG. NO. W-11.
2. ADJUST EXISTING WATER MANHOLE TO FINISHED GRADE PER COB STD. DWG. NO. RC-250-1.
3. ADJUST EXISTING WATER METER BOX PER COB STD. DWG. NO. W-23.
4. ABANDON EXISTING INLET METER AS SHOWN ON SHEETS UT08-UT09.
5. REMOVE EXISTING FIRE HYDRANT AND EXISTING GATE VALVE AND VALVE BOX.
6. PROVIDE AND INSTALL NEW HYDRANT ASSEMBLY WITH 16" DUCTILE IRON WATER MAIN 16" GATE VALVE AND VALVE BOX PER COB STD. DWG. NO. W-13.
   b. STA. 34+58.0, 25.8' RT   c. STA. 36+81.4, 22.9' RT

WATER SYMBOLS

EXISTING	PROPOSED	
		FIRE HYDRANT
		WATER METER
		WATER VALVE



NO.	DATE	BY	APPR.	REVISIONS

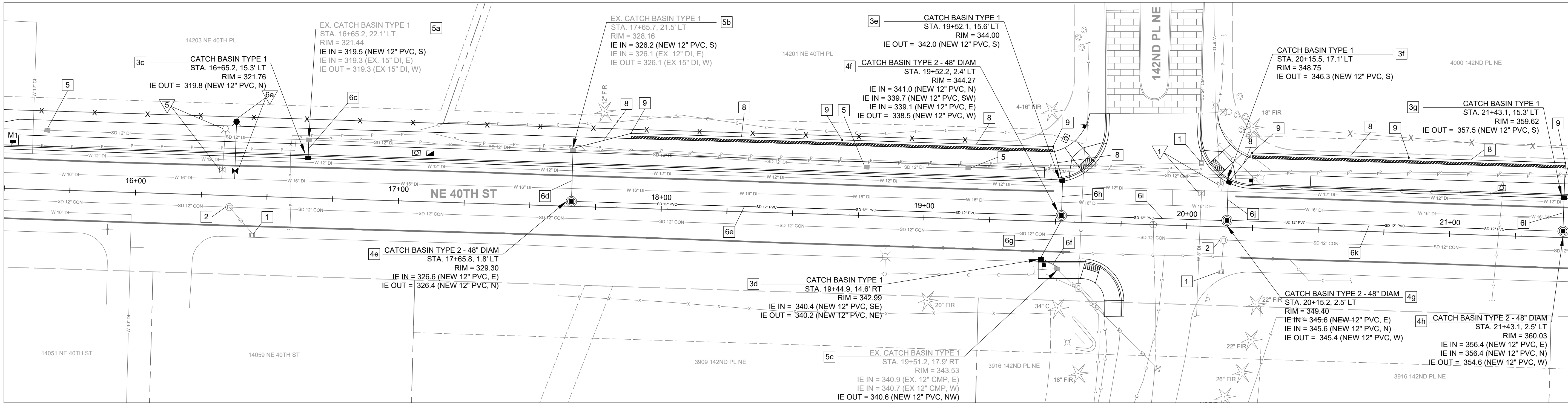
G. KHO DESIGNED BY	04/24 DATE
G. KHO DRAWN BY	04/24 DATE
C. MASEK CHECKED BY	04/24 DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

UTILITY AND DRAINAGE PLAN
STA 10+00 TO STA 15+50

UT01 SHT 9 OF 46



GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
2. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE INFORMATION CONTAINED WITHIN AS-BUILT DRAWINGS AND FIELD LOCATES.
3. THE CONTRACTOR SHALL MAINTAIN 10 FOOT MINIMUM TRAVEL LANES DURING CONSTRUCTION EXCEPT DURING FINAL PAVEMENT RESTORATION.
4. THE CONTRACTOR SHALL POTHOLE ALL POTENTIAL CONFLICTS WITH UTILITIES TO VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF THE EXISTING UTILITIES. WHERE THE DISTANCE BETWEEN THE UTILITIES IS LESS THAN 6 INCHES, THE CONTRACTOR SHALL PROVIDE AN O.D. X O.D. X 2.5 INCH ETHAFOAM PAD PER THE SPECIAL PROVISIONS SECTION 7-08(2).
5. POTHOLING INFORMATION OBTAINED DURING DESIGN CAN BE FOUND IN APPENDIX F OF THE PROJECT SPECIFICATIONS.
6. FOR PAVEMENT REMOVAL LIMITS, SEE SHEETS SP01 - SP05. FOR PAVEMENT RESTORATION LIMITS, SEE SHEETS CP01 - CP05.

GENERAL WATER NOTES

1. ALL WORK SHALL CONFORM TO THE CURRENT VERSION OF THE CITY OF BELLEVUE UTILITY STANDARDS.
2. ALL PIPE SHALL BE DUCTILE IRON CLASS 52 UNLESS OTHERWISE SHOWN.
3. NEW WATER MAINS SHALL BE TESTED, FLUSHED, AND DISINFECTED BEFORE CONNECTING THE NEW WATER MAIN TO THE EXISTING WATER MAIN. WATER MAINS SHALL BE DISINFECTED PER THE CURRENT VERSION OF AWWA C651-14 AND THE CITY OF BELLEVUE WATER ENGINEERING STANDARDS.
4. ENGINEER SHALL BE PRESENT WHEN WATER SERVICES ARE EXPOSED.

DRAINAGE NOTES

1 ADJUST EXISTING CATCH BASIN TO FINISHED GRADE PER COB STD. DWG. NO. D-23.

2 ADJUST EXISTING DRAIN MANHOLE TO FINISHED GRADE PER COB STD. DWG. NO. D-23.

3 PROVIDE AND INSTALL CATCH BASIN TYPE 1 WITH A LOCKING FRAME AND VANED GRATE PER COB. STD. DWG. NO. D-2, D-6, D-9. ADJUST TO FINISHED GRADE PER COB STD. DWG. NO. D-23.
c. STA. 16+65.2, 15.3' LT d. STA. 19+44.9, 14.6' LT e. STA. 19+52.1, 15.6' LT f. STA. 20+15.5, 17.1' LT g. STA. 21+43.1, 15.3' LT

4 PROVIDE AND INSTALL CATCH BASIN TYPE 2 48" DIAM WITH NEW NON-SKID RING AND ROUND SOLID COVER PER COB. STD. DWG. NO. D-4 AND D-21. ADJUST TO FINISHED GRADE PER COB STD. DWG. NO. D-23.
e. STA. 17+65.8, 1.8' LT f. STA. 19+52.2, 2.4' LT g. STA. 20+15.2, 2.5' LT h. STA. 21+43.1, 2.' LT

5 REMOVE EXISTING FRAME AND VANED GRATE. PROVIDE AND INSTALL NEW NON-SKID FRAME AND NON-SKID SOLID COVER PER COB STD. DWG. NO. D-8 AND D-9. ADJUST TO FINISHED GRADE PER COB STD. DWG. NO. D-23.

6 PROVIDE AND INSTALL 12" PVC STORM SEWER PIPE PER COB STD. DWG. NO. D-25.
c. 7 LF d. 20 LF e. 186 LF f. 7 LF g. 19 LF h. 13 LF i. 63 LF j. 15 LF k. 128 LF l. 13 LF

8 PROVIDE AND INSTALL 6" PVC PERFORATED UNDERDRAIN PIPE.

9 PROVIDE AND INSTALL CLEANOUTS PER COB STD. DWG. NO. D-52.

WATER NOTES

1 ADJUST EXISTING WATER VALVE TO FINISHED GRADE PER COB STD. DWG. NO. W-11.

5 REMOVE EXISTING FIRE HYDRANT AND EXISTING GATE VALVE AND VALVE BOX.

6 PROVIDE AND INSTALL NEW HYDRANT ASSEMBLY WITH 16" DUCTILE IRON WATER MAIN 16" GATE VALVE AND VALVE BOX PER COB STD. DWG. NO. W-13.
a. STA. 16+37.5, 27.1' LT

WATER SYMBOLS

EXISTING	PROPOSED	
		FIRE HYDRANT
		WATER METER
		WATER VALVE

SCALE IN FEET
20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

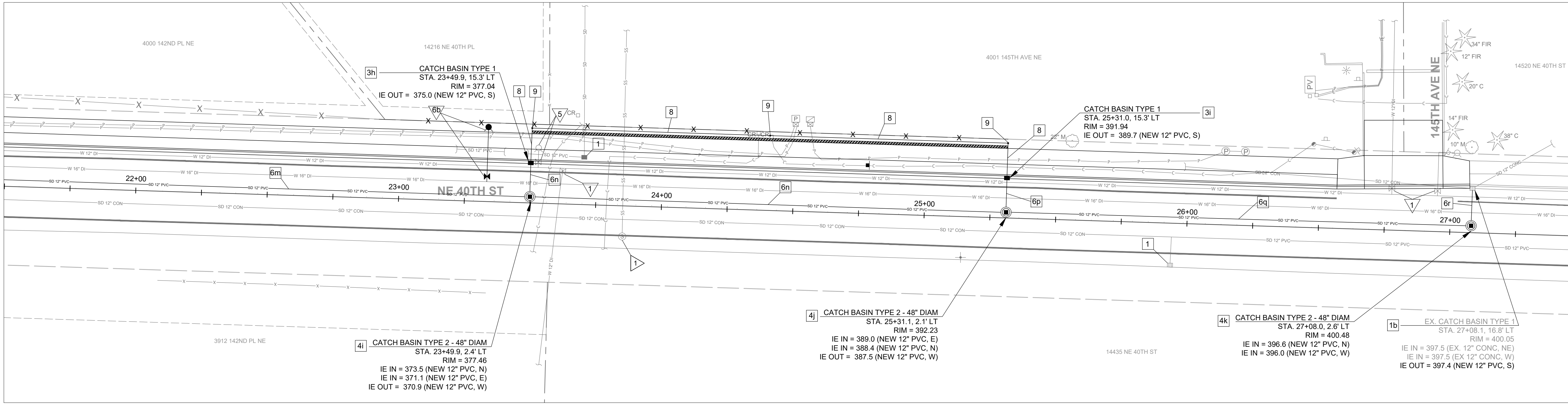
G. KHO	04/24
DESIGNED BY	DATE
G. KHO	04/24
DRAWN BY	DATE
C. MASEK	04/24
CHECKED BY	DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

UTILITY AND DRAINAGE PLAN
STA 15+50 TO STA 21+50

UT02 SHT 10 OF 46



GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
2. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE INFORMATION CONTAINED WITHIN AS-BUILT DRAWINGS AND FIELD LOCATES.
3. THE CONTRACTOR SHALL MAINTAIN 10 FOOT MINIMUM TRAVEL LANES DURING CONSTRUCTION EXCEPT DURING FINAL PAVEMENT RESTORATION.
4. THE CONTRACTOR SHALL POTHOLE ALL POTENTIAL CONFLICTS WITH UTILITIES TO VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF THE EXISTING UTILITIES. WHERE THE DISTANCE BETWEEN THE UTILITIES IS LESS THAN 6 INCHES, THE CONTRACTOR SHALL PROVIDE AN O.D. X O.D. X 2.5 INCH ETHAFOAM PAD PER THE SPECIAL PROVISIONS SECTION 7-08(2).
5. POTHOLING INFORMATION OBTAINED DURING DESIGN CAN BE FOUND IN APPENDIX F OF THE PROJECT SPECIFICATIONS.
6. FOR PAVEMENT REMOVAL LIMITS, SEE SHEETS SP01 - SP05. FOR PAVEMENT RESTORATION LIMITS, SEE SHEETS CP01 - CP05.

GENERAL WATER NOTES

1. ALL WORK SHALL CONFORM TO THE CURRENT VERSION OF THE CITY OF BELLEVUE UTILITY STANDARDS.
2. ALL PIPE SHALL BE DUCTILE IRON CLASS 52 UNLESS OTHERWISE SHOWN.
3. NEW WATER MAINS SHALL BE TESTED, FLUSHED, AND DISINFECTED BEFORE CONNECTING THE NEW WATER MAIN TO THE EXISTING WATER MAIN. WATER MAINS SHALL BE DISINFECTED PER THE CURRENT VERSION OF AWWA C651-14 AND THE CITY OF BELLEVUE WATER ENGINEERING STANDARDS.
4. ENGINEER SHALL BE PRESENT WHEN WATER SERVICES ARE EXPOSED.

DRAINAGE NOTES

1. ADJUST EXISTING CATCH BASIN TO FINISHED GRADE PER COB STD. DWG. NO. D-23.
3. PROVIDE AND INSTALL CATCH BASIN TYPE 1 WITH A LOCKING FRAME AND VANED GRATE PER COB. STD. DWG. NO. D-2, D-6, D-9. ADJUST TO FINISHED GRADE PER COB STD. DWG. NO. D-23.
   h. STA. 23+49.9, 15.3' LT   i. STA. 25+31.0, 15.3' LT
4. PROVIDE AND INSTALL CATCH BASIN TYPE 2 48" DIAM WITH NEW NON-SKID RING AND ROUND SOLID COVER PER COB. STD. DWG. NO. D-4 AND D-21. ADJUST TO FINISHED GRADE PER COB STD. DWG. NO. D-23.
   i. STA. 23+49.9, 2.4' LT   j. STA. 25+31.1, 2.1' LT   k. STA. 27+08.0, 2.6' LT
5. REMOVE EXISTING FRAME AND VANED GRATE. PROVIDE AND INSTALL NEW NON-SKID FRAME AND NON-SKID SOLID COVER PER COB STD. DWG. NO. D-8 AND D-9. ADJUST TO FINISHED GRADE PER COB STD. DWG. NO. D-23.
6. PROVIDE AND INSTALL 12" PVC STORM SEWER PIPE PER COB STD. DWG. NO. D-25.
   m. 207 LF   n. 13 LF   o. 181 LF   p. 13 LF   q. 177 LF   r. 14 LF
8. PROVIDE AND INSTALL 6" PVC PERFORATED UNDERDRAIN PIPE.
9. PROVIDE AND INSTALL CLEANOUTS PER COB STD. DWG. NO. D-52.

WATER NOTES

1. ADJUST EXISTING WATER VALVE TO FINISHED GRADE PER COB STD. DWG. NO. W-11.
5. REMOVE EXISTING FIRE HYDRANT AND EXISTING GATE VALVE AND VALVE BOX.
6. PROVIDE AND INSTALL NEW HYDRANT ASSEMBLY WITH 16" DUCTILE IRON WATER MAIN 16" GATE VALVE AND VALVE BOX PER COB STD. DWG. NO. W-13.
   b. STA. 23+33.4, 27.3' LT

SEWER NOTES

1. ADJUST EXISTING SEWER MANHOLE TO FINISHED GRADE PER COB STD. DWG. NO. S-8.

WATER SYMBOLS

EXISTING	PROPOSED	
		FIRE HYDRANT
		WATER METER
		WATER VALVE

SCALE IN FEET

20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

G. KHO 04/24 DESIGNED BY DATE
G. KHO 04/24 DRAWN BY DATE
C. MASEK 04/24 CHECKED BY DATE

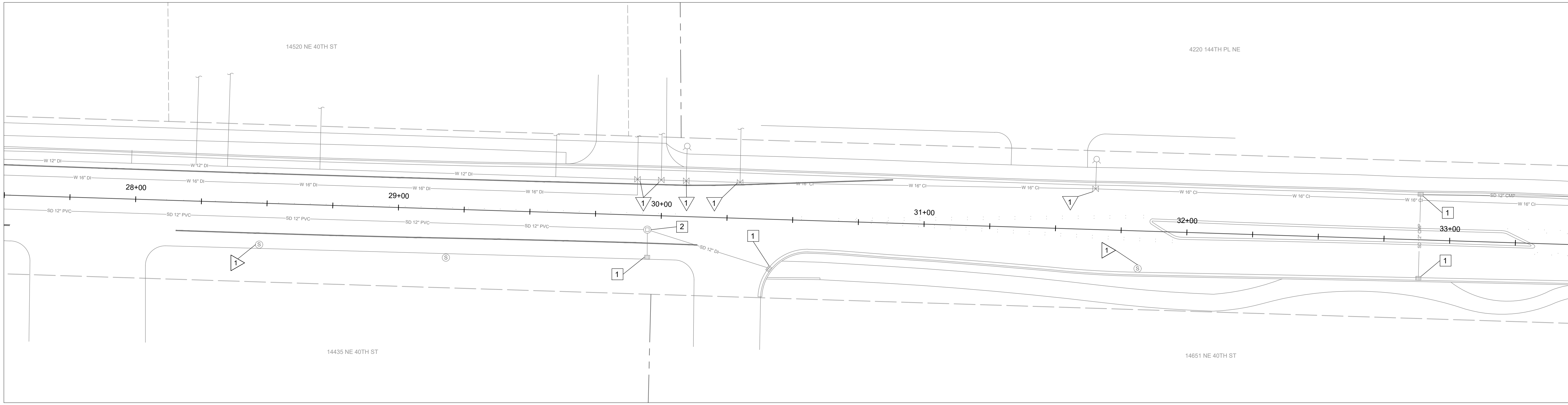
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

UTILITY AND DRAINAGE PLAN
STA 21+50 TO STA 27+50

UT03   SHT 11 OF 46

MATCH LINE - STA. 27+50, SHEET UT03.



MATCH LINE - STA. 33+50, SHEET UT05.

GENERAL NOTES

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DRAINAGE NOTES

1 ADJUST EXISTING CATCH BASIN TO FINISHED GRADE PER COB STD. DWG. NO. D-23.

2 ADJUST EXISTING DRAIN MANHOLE TO FINISHED GRADE PER COB STD. DWG. NO. D-23.

WATER NOTES

1 ADJUST EXISTING WATER VALVE TO FINISHED GRADE PER COB STD. DWG. NO. W-11.

SEWER NOTES

1 ADJUST EXISTING SEWER MANHOLE TO FINISHED GRADE PER COB STD. DWG. NO. S-8.

WATER SYMBOLS

EXISTING	PROPOSED	
		FIRE HYDRANT
		WATER METER
		WATER VALVE

SCALE IN FEET

20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

G. KHO 04/24
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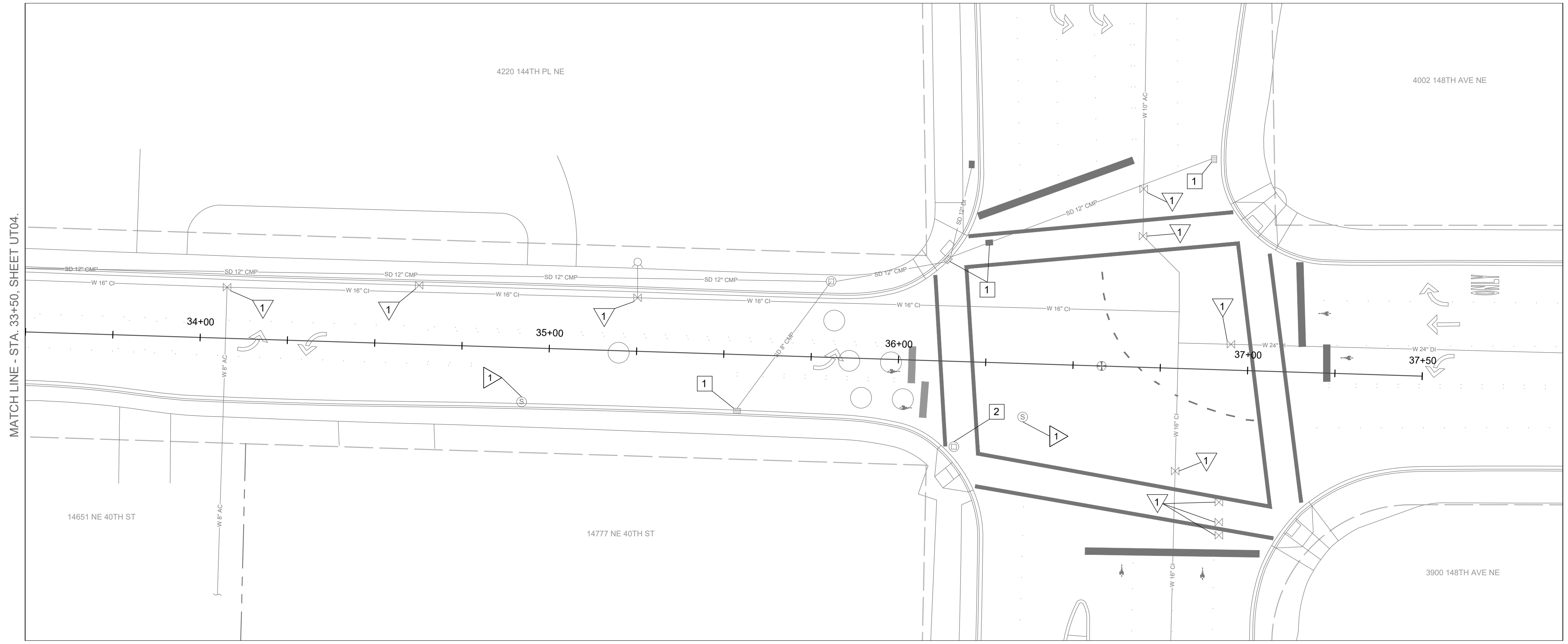
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

UTILITY AND DRAINAGE PLAN
STA 27+50 TO STA 33+50

UT04 SHT 12 OF 46



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DRAINAGE NOTES

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2 ADJUST EXISTING DRAIN MANHOLE TO FINISHED GRADE PER COB STD. DWG. NO. D-23.

WATER NOTES

1 ADJUST EXISTING WATER VALVE TO FINISHED GRADE PER COB STD. DWG. NO. W-11.

SEWER NOTES

1 ADJUST EXISTING SEWER MANHOLE TO FINISHED GRADE PER COB STD. DWG. NO. S-8.

WATER SYMBOLS

EXISTING	PROPOSED	
		FIRE HYDRANT
		WATER METER
		WATER VALVE

SCALE IN FEET

20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

G. KHO 04/24
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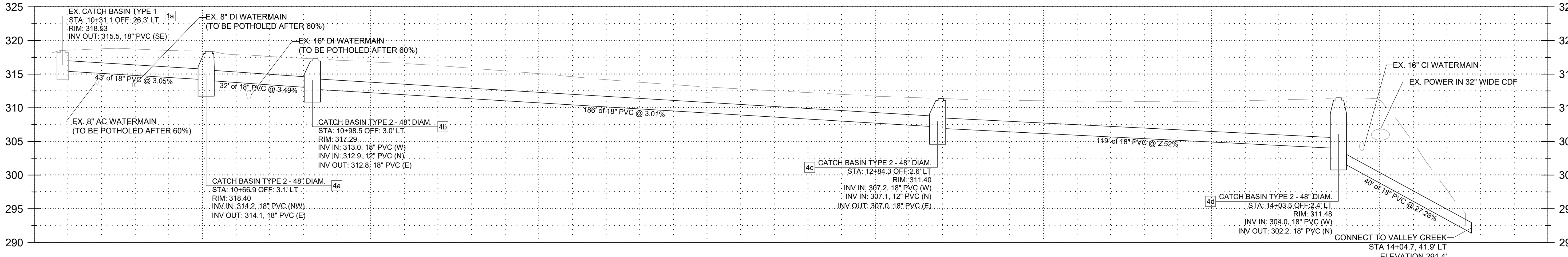
City of Bellevue
Transportation Department

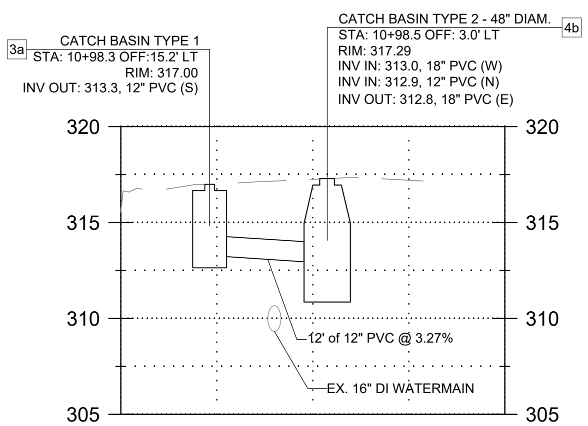
NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

UTILITY AND DRAINAGE PLAN
STA 33+50 TO STA 37+50

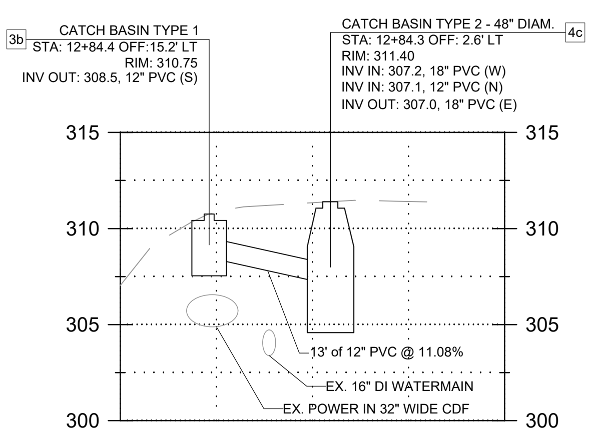
UT05 SHT 13 OF 46



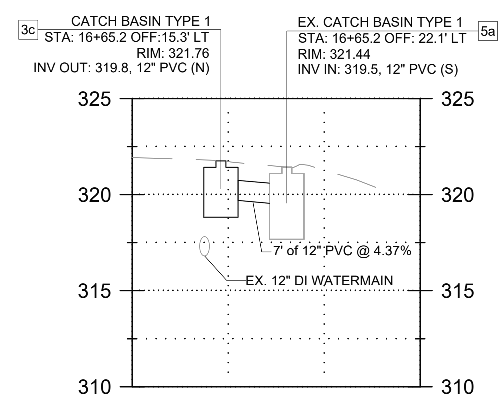
STRUCTURE 1a TO STRUCTURE 4a TO STRUCTURE 4b TO STRUCTURE 4c TO STRUCTURE 4d TO VALLEY CREEK PROFILE



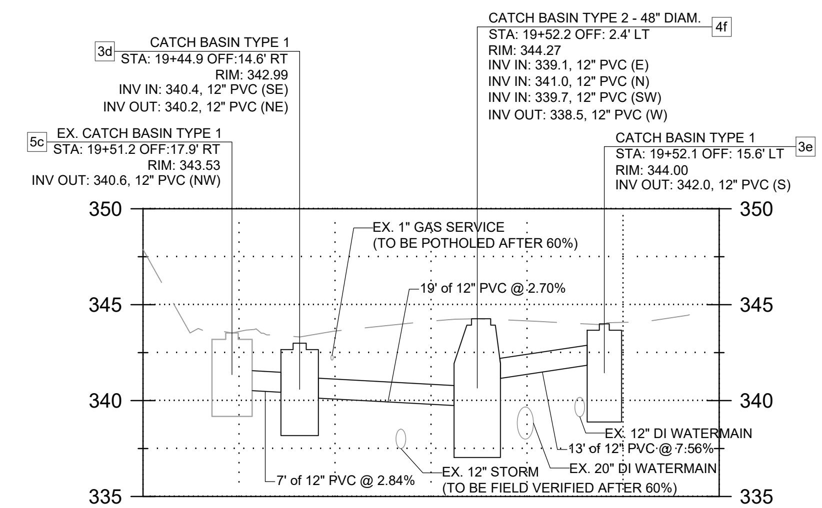
STRUCTURE 3a TO 4b PROFILE



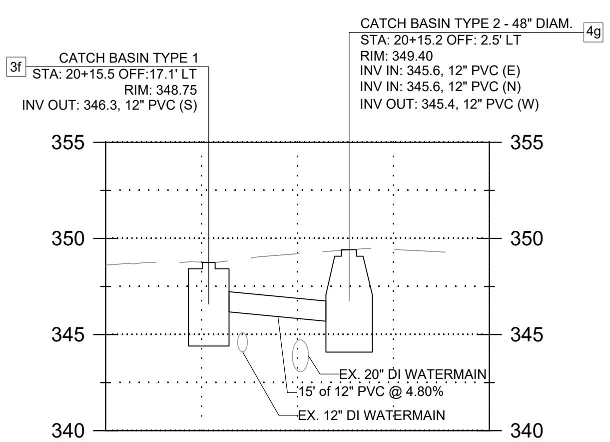
STRUCTURE 3b TO 4c PROFILE



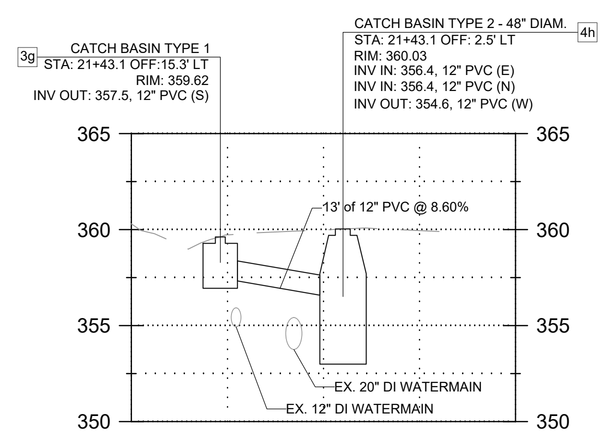
STRUCTURE 3c TO 5a PROFILE



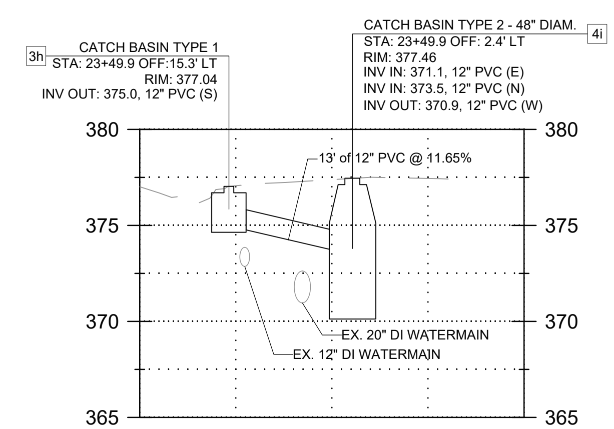
STRUCTURE 5c TO STRUCTURE 3d to STRUCTURE 4f to STRUCTURE 3e PROFILE



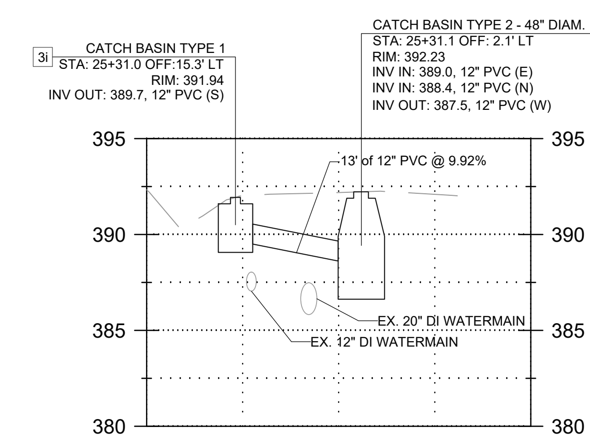
STRUCTURE 3f TO 4g PROFILE



STRUCTURE 3g TO 4h PROFILE



STRUCTURE 3h TO 4i PROFILE



STRUCTURE 3i TO 4j PROFILE

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G. KHO	04/24
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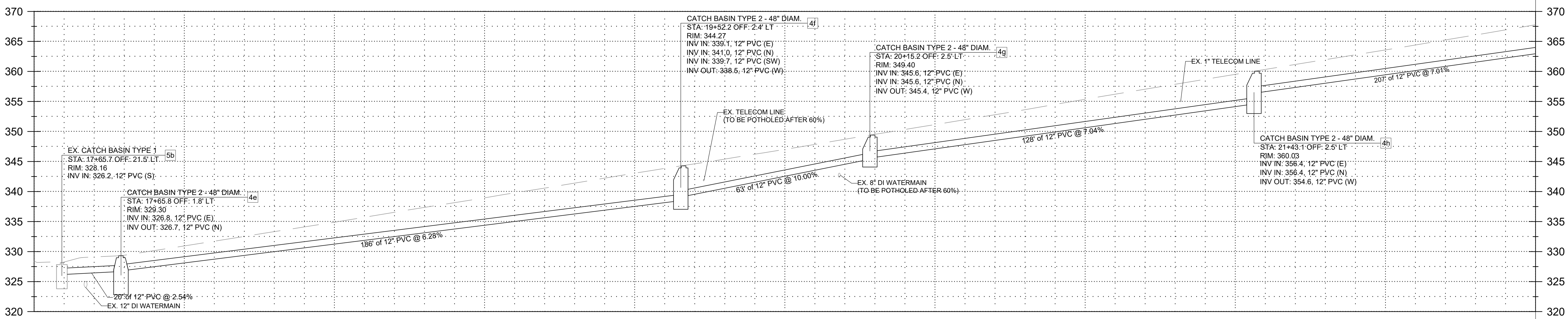
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

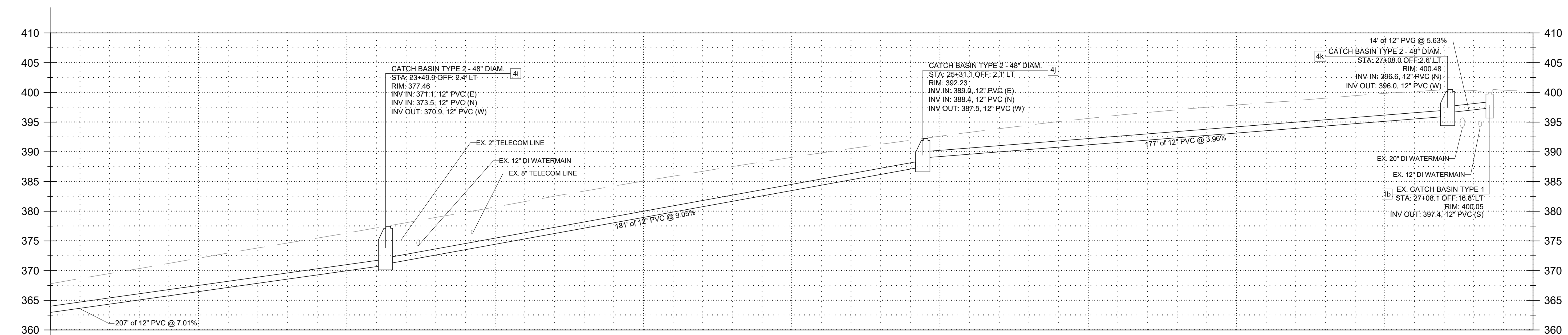
STORM DRAINAGE PROFILES

UT06 SHT 14 OF 46



STRUCTURE 5b TO STRUCTURE 4e TO STRUCTURE 4f TO STRUCTURE 4g TO STRUCTURE 4h

MATCH LINE,
SEE BELOW, THIS SHEET



STRUCTURE 4h TO STRUCTURE 4i TO STRUCTURE 4j TO STRUCTURE 4k TO STRUCTURE 1b

MATCH LINE,
SEE ABOVE, THIS SHEET

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City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

STORM DRAINAGE PROFILES

UT07 SHT 15 OF 46

LEGEND

EXISTING	PROPOSED	DESCRIPTION
2 PORT 3 PORT	2 PORT 3 PORT	FIRE HYDRANT
		WATER METER
		WATER VALVE
FL MJ	FL MJ	11.25° BEND
FL MJ	FL MJ	22.5° BEND
FL MJ	FL MJ	45° BEND
FL MJ	FL MJ	90° BEND
FLxMJ	FLxMJ	FLxMJ ADAPTER
		AIR RELIEF VALVE
		BLOW OFF VALVE
FL FLxMJ MJ	FL FLxMJ MJ	BUTTERFLY VALVE
		CAP AND PLUG
		CHECK VALVE
		COUPLING
		FLANGE
FL FLxMJ MJ	FL FLxMJ MJ	GATE VALVE
		GUARD POST
		HUB
		MECHANICAL JOINT
		WATER MANHOLE
		PLUG VALVE
FL MJ MJxFL MJxPE PExMJ	FL MJ MJxFL MJxPE PExMJ	REDUCER
		REDUCER
		TAPPING TEE AND VALVE
FL MJ MJxFL	FL MJ MJxFL	90° TEE
		THREAD
		THRUST BLOCK
FL MJ	FL MJ	VERTICAL BEND

ABBREVIATIONS

@	AT
AC	ASBESTOS CEMENT
ACP	ASPHALT CONCRETE PAVEMENT
ADJ	ADJUST
APWA	AMERICAN PUBLIC WORKS ASSOCIATION
ATB	ASPHALT TREATED BASE
AV OR AVE	AVENUE
AWWA	AMERICAN WATER WORKS ASSOCIATION
BLVD	BOULEVARD
BM	BENCHMARK
BMP	BEST MANAGEMENT PRACTICE
BO	BLOW OFF
CB	CATCH BASIN
CI	CAST IRON
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
COB	CITY OF BELLEVUE
CONC.	CONCRETE
CPLE	COUPLING
CT.	COURT
CTN	COTTON WOOD
CY	CUBIC YARD
C&G	CURB AND GUTTER
D/W	DRIVEWAY
DI W	DUCTILE IRON WATER
DR.	DRIVE
E	EAST
ECB	EROSION CONTROL BLANKET
ELEV.	ELEVATION
EP	EDGE OF PAVEMENT
ESMT	EASEMENT
EX, EXIST.	EXISTING
EXC	EXCAVATION
FH	FIRE HYDRANT
FL	FLANGE
FT	FOOT
F/L	FOG LINE
GIP	GALVANIZED IRON PIPE
GS	GIANT SEQUOIA
GV	GAS VALVE OR GATE VALVE (WATER MAINS)
HYD	HYDRANT
HYD EXT	HYDRANT EXTENSION
ID OR DIA	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCH
L	LENGTH
LF	LINEAR FEET
MAX	MAXIMUM
MECH	MECHANICAL
MB	MAIL BOX
MIC	MONUMENT IN CASE
MIN	MINIMUM
MH	MANHOLE
MJ	MECHANICAL JOINT
N	NORTH
NIC	NOT IN CONTRACT
NO.	NUMBER
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OHP	OVERHEAD POWER
PAV	PAVEMENT
PL	PROPERTY LINE
PL.	PLACE
PP	POWER POLE
PROP	PROPOSED
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
REM	REMOVE
REPL	REPLACE
ROW	RIGHT-OF-WAY
S	SOUTH OR SLOPE
SD	STORM DRAIN
SF	SQUARE FOOT
SH	SPRINKLER HEAD
SS	SANITARY SEWER
STD	STANDARD
STD SPECS	STANDARD SPECIFICATIONS PREPARED BY WSDOT
STL	STEEL
SY	SQUARE YARD
S/W	SIDEWALK
TBM	TEMPORARY BENCHMARK
TEMP	TEMPORARY
TRANS	TRANSITION
VB	VALVE BOX
V CH	VALVE CHAMBER
W	WEST OR WATER MAIN
WM	WATER METER
WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
WY	WAY
YD	YARD

WATER NOTES:

1. ALL WORK SHALL CONFORM TO THE 2024 CITY OF BELLEVUE (COB) UTILITY ENGINEERING STANDARDS.

2. ALL PIPE SHALL BE DUCTILE IRON CLASS 52 UNLESS OTHERWISE SHOWN.

3. ALL PIPE AND FITTINGS NOT TO BE DISINFECTED IN PLACE PER AWWA C651 SHALL BE SWABBED WITH 1% AVAILABLE CHLORINE SOLUTION PRIOR TO INSTALLATION.

4. THE NEW WATER MAIN SHALL BE CONNECTED TO THE EXISTING SYSTEM ONLY AFTER NEW MAIN IS PRESSURE TESTED, FLUSHED, DISINFECTED AND SATISFACTORY BACTERIOLOGICAL SAMPLE RESULTS ARE OBTAINED AND RECEIVED BY THE CITY INSPECTOR. SEE STANDARD DETAIL W-9.

5. AFTER DISINFECTING THE WATER MAIN, DISPOSE OF CHLORINATED WATER BY DISCHARGING TO THE NEAREST OPERATING SANITARY SEWER.

6. WATER MAIN SHUT-OFF SHALL BE COORDINATED WITH THE WATER OPERATIONS DIVISION FOR PREFERRED TIMING DURING FLOW CONTROL CONDITIONS. WATER MAIN SHUT-OFFS SHALL NOT BE SCHEDULED TO TAKE PLACE ON FRIDAYS, OR ON THE FIVE DAYS BEFORE NOR ONE DAY AFTER A CITY HOLIDAY, UNLESS OTHERWISE APPROVED BY THE UTILITY.

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

8. DEFLECT THE WATER MAIN ABOVE OR BELOW EXISTING UTILITIES AS REQUIRED WITHIN MANUFACTURER'S SPECS TO MAINTAIN 3 FT. MINIMUM COVER AND 12 INCH MINIMUM VERTICAL CLEARANCE BETWEEN UTILITIES UNLESS OTHERWISE SPECIFIED.

9. WRAP ALL DUCTILE IRON PIPE AND ADJACENT VALVES AND FITTINGS WITH 8-MIL. POLYETHYLENE CONFORMING TO AWWA C105.

10. THE WATER MAIN SHALL BE INSTALLED ONLY AFTER THE ROADWAY SUBGRADE IS BACKFILLED, GRADED AND COMPACTED IN CUT AND FILL AREAS.

11. TRENCH BACKFILL AND SURFACE RESTORATION OF EXISTING ASPHALT PAVEMENT SHALL BE AS REQUIRED BY THE RIGHT-OF-WAY USE PERMIT.

12. ALL FITTINGS SHALL BE BLOCKED PER STANDARD DETAILS UNLESS OTHERWISE SPECIFIED.

13. ALL SERVICES SHALL BE 1" x 1" PER STANDARD DETAILS UNLESS OTHERWISE SPECIFIED. ADAPTORS FOR 3/4" METERS SHALL BE USED WHERE APPLICABLE

14. WHEN WORKING WITH ASBESTOS CEMENT PIPE, THE CONTRACTOR IS REQUIRED TO MAINTAIN WORKERS' EXPOSURE TO ASBESTOS MATERIAL AT OR BELOW THE LIMIT PRESCRIBED IN WAC 296-62-07705.

15. CALL 1-800-424-5555, OR 811, 72 HOURS BEFORE CONSTRUCTION FOR UTILITY LOCATIONS.

16. UNIFORM PLUMBING CODE REQUIRES THE INSTALLATION OF PRIVATELY OWNED AND OPERATED PRESSURE REDUCING VALVES WHERE THE OPERATING PRESSURE EXCEEDS 80 PSI.

17. THE CONTRACTOR SHALL USE A VACUUM STREET SWEEPER TO REMOVE DUST AND DEBRIS FROM PAVEMENT AREAS AS DIRECTED BY THE ENGINEER. FLUSHING OF STREETS SHALL NOT BE PERMITTED WITHOUT PRIOR CITY APPROVAL.

18. BEFORE COMMENCEMENT OF TRENCHING, THE CONTRACTOR SHALL PROVIDE CATCH BASIN INSERTS FOR ALL CATCH BASINS THAT WILL RECEIVE RUNOFF FROM THE PROJECT SITE. THE CONTRACTOR SHALL PERIODICALLY INSPECT THE CONDITION OF ALL INSERTS AND REPLACE AS NECESSARY.

19. ABANDONMENT OF EXISTING WATER SERVICES SHALL BE ACCOMPLISHED AS FOLLOWS: (SEE W5-29 ABANDONING FACILITIES FOR OTHER FACILITY ABANDONMENT)
  A. REMOVE EXISTING SERVICE SADDLE FROM WATER MAIN AND REPLACE WITH NEW STAINLESS STEEL REPAIR BAND, ROMAC SS2, FORD SERVICE SADDLE FC101, CC THREADED SADDLE AND A CC THREAD BRASS PLUG, OR APPROVED EQUAL (WILL NOT BE REQUIRED WHEN WATER MAIN IS TO BE ABANDONED.
  B. REMOVE AND DISPOSE OF EXISTING SETTER AND METER BOX.
  C. CAP OR CRIMP (IF COPPER) EXISTING SERVICE LINE TO BE ABANDONED IN PLACE, EACH END.
  D. RETURN EXISTING METER TO THE UTILITY INSPECTOR.

20. WHERE NEW UTILITY LINE CROSSES BELOW AN EXISTING AC MAIN, THE AC PIPE SHALL BE REPLACED WITH DI PIPE TO 3 FEET PAST EACH SIDE OF THE TRENCH AS SHOWN ON STANDARD DETAIL W-8. WRAP DI PIPE AND COUPLINGS WITH 8-MIL POLYETHYLENE CONFORMING TO AWWA C105. ALTERNATIVELY, WHERE DIRECTED BY THE ENGINEER, THE TRENCH SHALL BE BACKFILLED WITH CONTROLLED DENSITY FILL (CDF, AKA FLOWABLE FILL) FROM BOTTOM OF TRENCH TO THE INVERT OF THE AC MAIN.

21. AVOID CROSSING WATER OR SEWER MAINS AT HIGHLY ACUTE ANGLES. THE SMALLEST ANGLE MEASURE BETWEEN UTILITIES SHOULD BE 45 TO 90 DEGREES.

22. WHERE WATER MAIN CROSSES ABOVE OR BELOW SANITARY SEWER, ONE FULL LENGTH OF WATER PIPE SHALL BE CENTERED FOR MAXIMUM JOINT SEPARATION.

23. AT POINTS WHERE EXISTING THRUST BLOCKING IS FOUND, MINIMUM CLEARANCE BETWEEN THE CONCRETE BLOCKING AND OTHER BURIED UTILITIES OR STRUCTURES SHALL BE 5 FEET.

24. WORKERS MUST FOLLOW CONFINED SPACE REGULATIONS AND PROCEDURES WHEN ENTERING OR DOING WORK IN COB OWNED CONFINED SPACES. COMPLETED PERMIT MUST BE GIVEN TO THE UTILITIES INSPECTOR PRIOR TO ENTRY.

25. MANHOLES, CATCH BASINS AND VAULTS ARE CONSIDERED TO BE PERMIT-REQUIRED CONFINED SPACES. ENTRY INTO THESE SPACES SHALL BE IN ACCORDANCE WITH CHAPTER 296-809 WAC.

26. WHEN WORK IS TO OCCUR IN EASEMENTS, THE CONTRACTOR SHALL NOTIFY THE EASEMENT GRANTOR AND BELLEVUE UTILITIES IN WRITING A MINIMUM OF 48 HOURS IN ADVANCE OF BEGINNING WORK (NOT INCLUDING WEEKENDS OR HOLIDAYS). FAILURE TO NOTIFY GRANTOR AND BELLEVUE UTILITIES WILL RESULT IN A STOP WORK ORDER BEING POSTED UNTIL THE MATTER IS RESOLVED TO THE SATISFACTION OF BELLEVUE UTILITIES. A WRITTEN RELEASE FROM THE EASEMENT GRANTOR SHALL BE FURNISHED TO THE UTILITIES INSPECTOR PRIOR TO PERMIT SIGNOFF.

27. THE CONTRACTOR SHALL RESTORE THE RIGHT-OF-WAY AND EXISTING PUBLIC UTILITY EASEMENT(S) AFTER CONSTRUCTION TO A CONDITION EQUAL OR BETTER THAN CONDITION PRIOR TO ENTRY. CONTRACTOR SHALL FURNISH A SIGNED RELEASE FROM ALL AFFECTED PROPERTY OWNERS AFTER RESTORATION HAS BEEN COMPLETED.

60 % DESIGN, NOT FOR CONSTRUCTION

NO.	DATE	BY	APPR.	REVISIONS

D. ROSS 04/2024
DESIGNED BY DATE
J. GODDARD 04/2024
DRAWN BY DATE
J. NICOLLS 04/2024
CHECKED BY DATE

City of Bellevue
Transportation Department

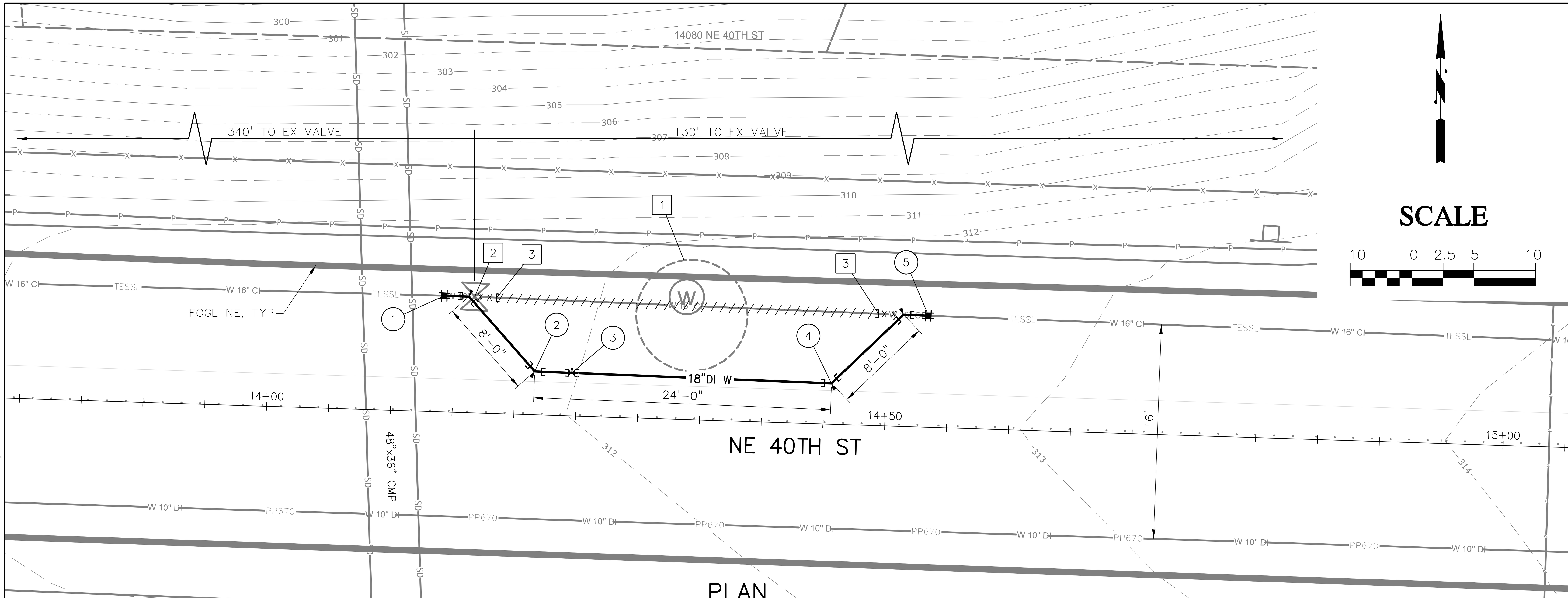
DANIEL E. ROSS
STATE OF WASHINGTON
92217
REGISTERED PROFESSIONAL ENGINEER
05-01-2025

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

INLET METER ABANDONMENT
STA 14+10 TO STA 14+60

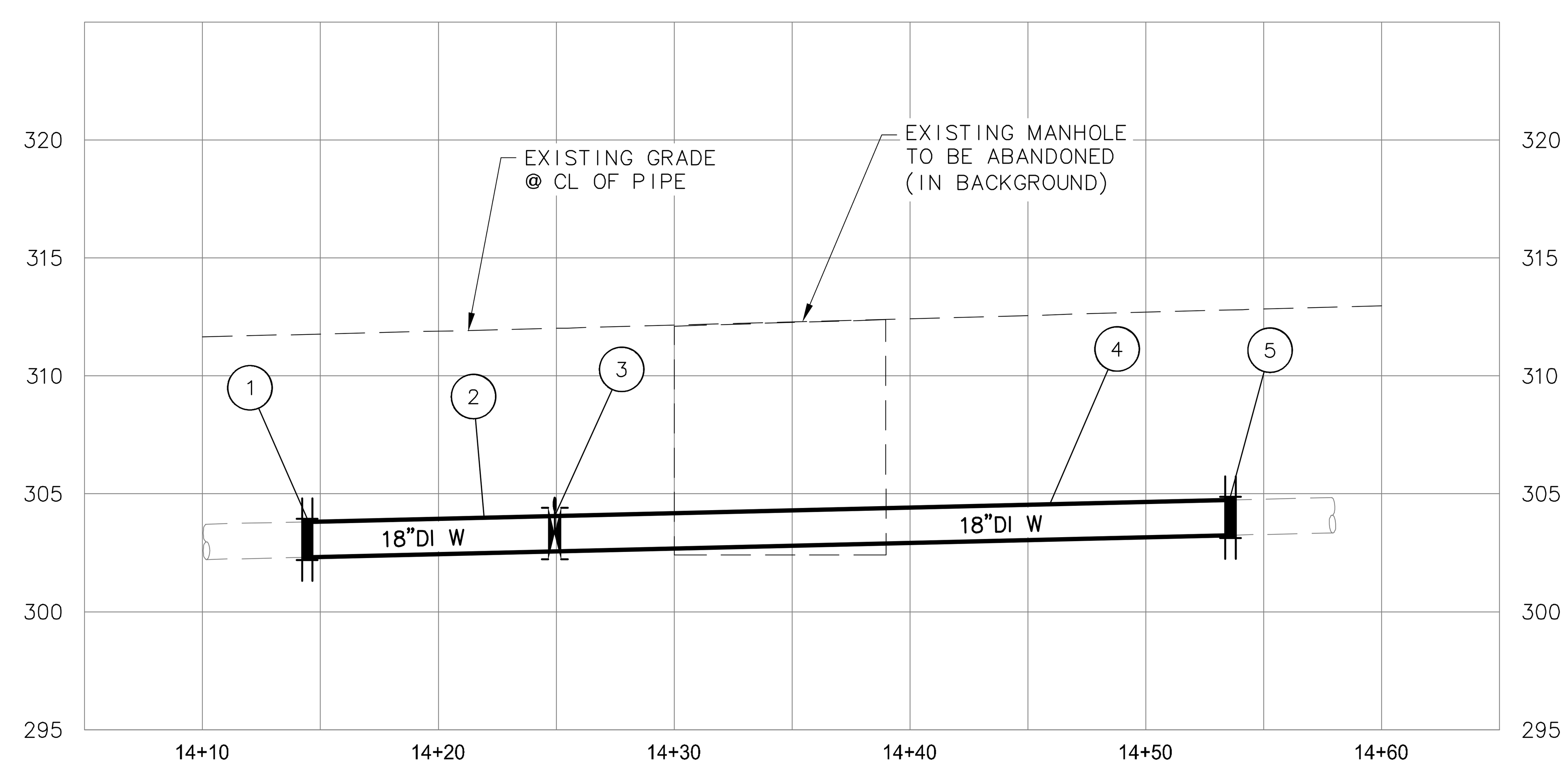
UT08 SHT 16 OF

A:_V-W\Projects\WA\Bellevue\2022\W221592WA.03\12 CADD\12-5 Sheets\UT07.dwg UT08 Plot Date: 4/12/2024 1:44 PM Plotted by: GREG.POSTLEWAITE



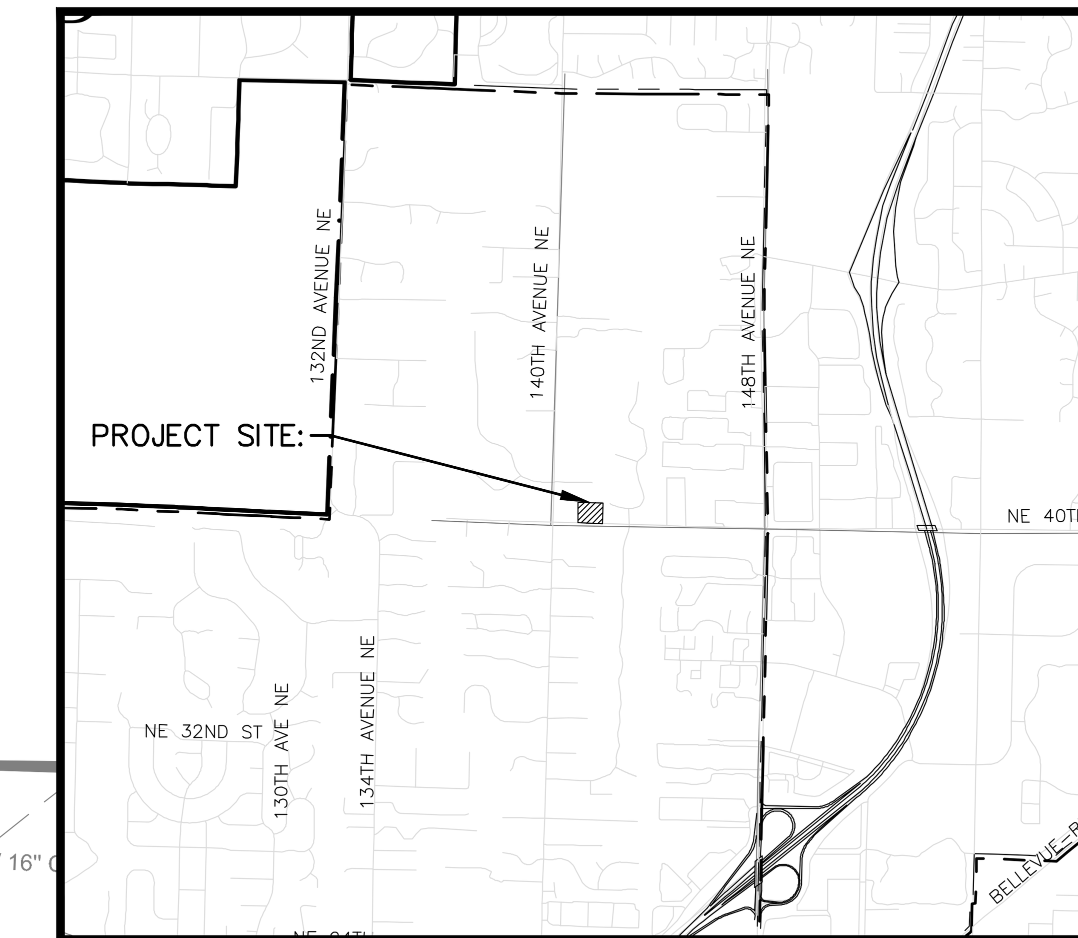
PLAN

SCALE: FULL PRINT 1"=5'
HALF PRINT 1"=10'



PROFILE

SCALE: FULL PRINT 1"=5' H, 1"=5' V
HALF PRINT 1"=10', H, 1"=10' V



VICINITY MAP

DEMOLITION SCHEDULE:

1. ABANDON EX 18" CI/DI AND METER IN PLACE AS FOLLOWS:
   1. REMOVE EX 96" MANHOLE TOP AND WALLS TO MINIMUM DEPTH OF 4 FEET AND TO PROVIDE 12" MINIMUM CLEARANCE FROM NEW PIPE
   2. FRACTURE MH FLOOR TO PROMOTE DRAINAGE
   3. PLUG 4" PVC DRAINPIPE
   4. BACKFILL FULL DEPTH WITH CSTC PER WSDOT 9-.03.9(3)
2. REMOVE EX 18" BFV
3. 1-18" CAP OR PLUG EXISTING PIPE PER COB ENGINEERING STD W5-29.1

PIPE SCHEDULE:

(1) STA 14+14, 9' LT
CONNECT TO EX 18" CI WATER MAIN WITH:
1-18" LONG BODY SLEEVE, MJ
1-18" DI SPOOL, LENGTH TO FIT
1-18" 45° BEND, MJ W/ CONC BLOCKING

(2) STA 14+22, 3' LT
1-18" DI SPOOL, LENGTH TO FIT
1-18" 45° BEND, MJ W/ CONC BLOCKING

(3) STA 14+25, 3' LT
1-18" BFV, MJ

(4) STA 14+46, 3' LT
1-18" 45° BEND, MJ W/ CONC BLOCKING

(5) STA 14+53, 9' LT
CONNECT TO EX 18" CI WATER MAIN WITH:
1-18" LONG BODY SLEEVE, MJ
1-18" DI SPOOL, LENGTH TO FIT
1-18" 45° BEND, MJ W/ CONC BLOCKING

NOTES:

1. ALL WATER PIPE AND FITTINGS TO BE RESTRAINED DUCTILE IRON.
2. BURIED WATER MAIN PIPE MATERIAL SHALL BE PER COB SPECIFICATION 10-01.1 AND COB STANDARD DRAWING W-6.
3. CONCRETE BLOCKING SHALL BE INSTALLED PER COB STANDARD DRAWING W-1.
4. THE TESSL (TOLT EASTSIDE SUPPLY LINE) IS THE MAIN SUPPLY LINE TO NORTH BELLEVUE. SHUTDOWNS SHALL ONLY BE ALLOWED DURING THE MONTHS OF OCTOBER-MAY, INCLUSIVE. COORDINATE AND PERFORM WORK ACCORDINGLY.

60 % DESIGN, NOT FOR CONSTRUCTION

CIP# W-110 SEC 15 TWP 25 RGE 5 UTILITY GRID # J-2

NO.	DATE	BY	APPR.	REVISIONS

D. ROSS 04/2024
DESIGNED BY DATE
J. GODDARD 04/2024
DRAWN BY DATE
J. NICOLLS 04/2024
CHECKED BY DATE

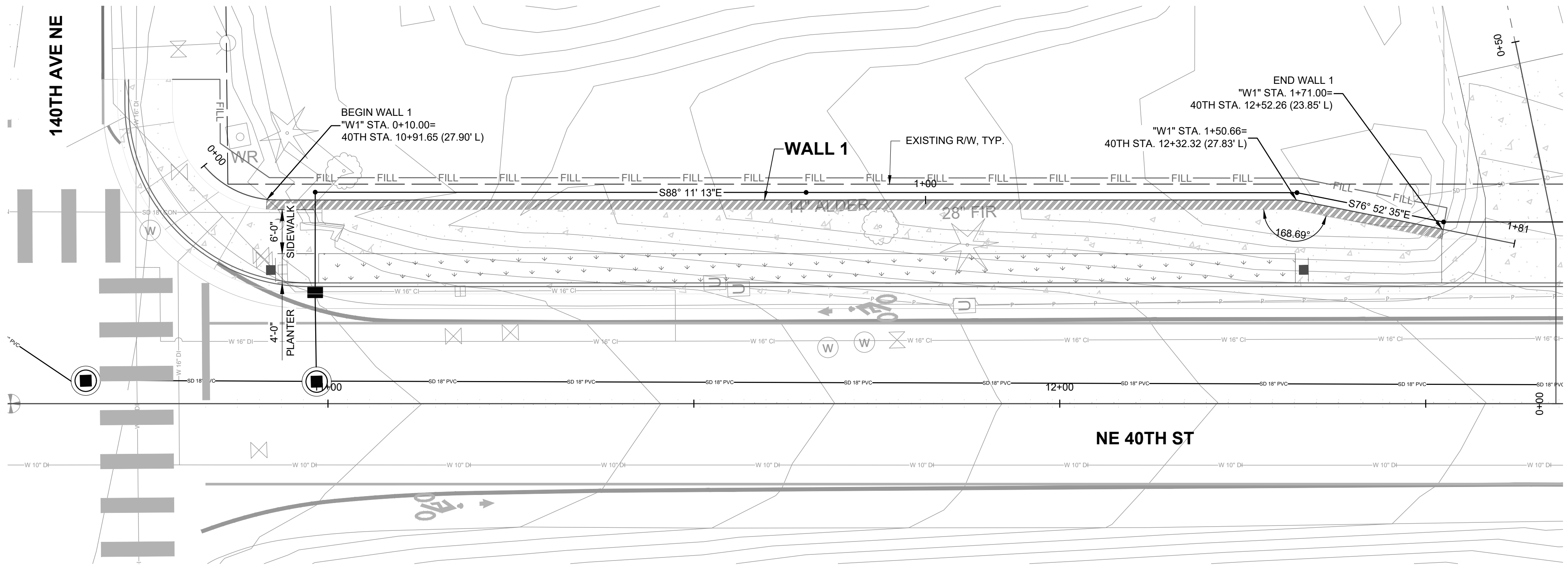
City of Bellevue
Transportation Department

05-01-2025

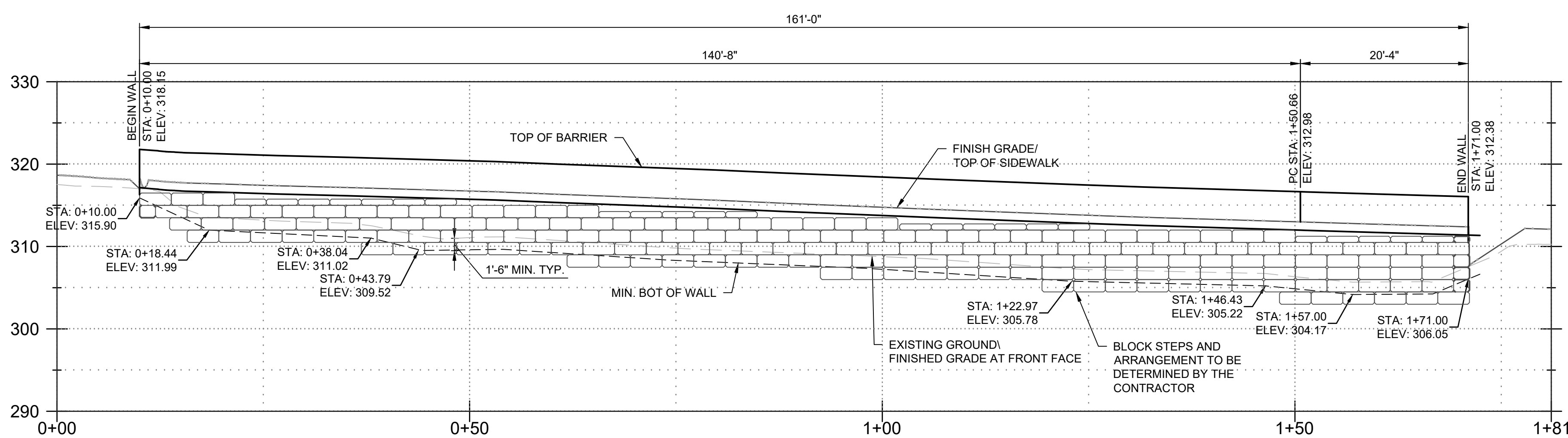
NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

INLET METER ABANDONMENT
STA 14+10 TO STA 14+60
PLAN AND PROFILE

UT09 SHT 17 OF



WALL 1 PLAN



SUMMARY OF QUANTITIES	
MAX. HEIGHT	-
EXPOSED WALL AREA	- SF
TOTAL WALL AREA	1050 SF

WALL 1 PROFILE

GENERAL NOTES:

1. SEE WALL DETAILS, SHEETS S06-S08.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROADS, BRIDGE, AND MUNICIPAL CONSTRUCTION", ENGLISH UNITS, DATED 2024.
3. CONSTRUCTION ACTIVITIES SHALL BE SCHEDULED SO THAT THE LENGTH OF TIME THE TEMPORARY CUT IS LEFT OPEN IS REDUCED TO THE EXTENT PRACTICAL. EXCAVATION SHALL BE LIMITED TO LENGTH OF WALL THAT CAN BE COMPLETED IN ONE DAY'S WORK. TEMPORARY CUTS LEFT OPEN MORE THAN ONE DAY MAY BE ALLOWABLE IF THE CONTRACTOR CAN DEMONSTRATE THE WALL WILL REMAIN STABLE UNTIL CONSTRUCTION IS COMPLETED. .
4. SURFACE WATER SHALL BE DIVERTED AWAY FROM THE EXCAVATION.
5. A QUALIFIED GEOTECHNICAL ENGINEER MUST INSPECT AND APPROVE THE BACKFILL FOR WALL, AND LEVELING PAD SUBGRADE TO ENSURE ADEQUATE BEARING CAPACITY. SUBGRADE SOIL AREAS NOT MEETING THE REQUIRED BEARING STRENGTH SHALL BE REMOVED PER STANDARD SPECIFICATIONS.

REINFORCING STEEL NOTES:

1. UNLESS OTHERWISE SHOWN IN PLANS, MINIMUM CAST-IN-PLACE CONCRETE COVER OVER REINFORCING STEEL SHALL BE AS FOLLOWING:
   - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED EARTH : 3"
   - CONCRETE EXPOSED TO EARTH OR WEATHER : 2"
   - OTHERS : 1½"
2. ALL CONCRETE SHALL BE CLASS 4000, UNLESS NOTED OTHERWISE.
3. ALL EXPOSED CORNERS SHALL HAVE ¾-INCH CHAMFERS, UNLESS NOTED OTHERWISE.
4. CONCRETE SHALL BE PLACED SEPARATELY BETWEEN EXPANSION JOINTS WITH A MINIMUM 24-HOUR PERIOD BEFORE PLACING IN ADJACENT SECTION.

FINISH NOTES:

1. ALL GRAVITY BLOCK WALLS SHALL BE "LEDGESTONE" FINISH BY REDI-ROCK.
2. CAST-IN-PLACE CONCRETE FASCIA SHALL BE FINISHED WITH "ASHLAR STONE" AS PER WSDOT STANDARD SPECIFICATIONS.
3. ALL FINISHED CAST-IN-PLACE, REDI-ROCK, AND PRECAST CONCRETE WALLS SHALL BE PAINTED "WASHINGTON GRAY" AS SPECIFIED IN THE SPECIAL PROVISIONS.

SCALE IN FEET
10 0 5 10 20

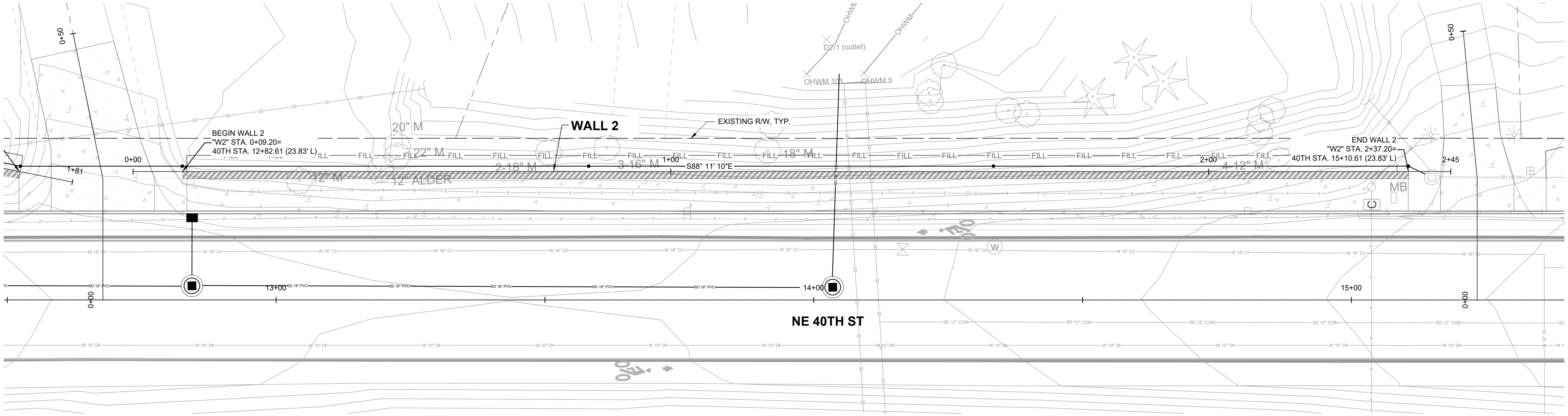
NO.	DATE	BY	APPR.	REVISIONS

C. WOLFE	04/24
DESIGNED BY	DATE
D. ALTENBURG	04/24
DRAWN BY	DATE
J. WARREN	04/24
CHECKED BY	DATE

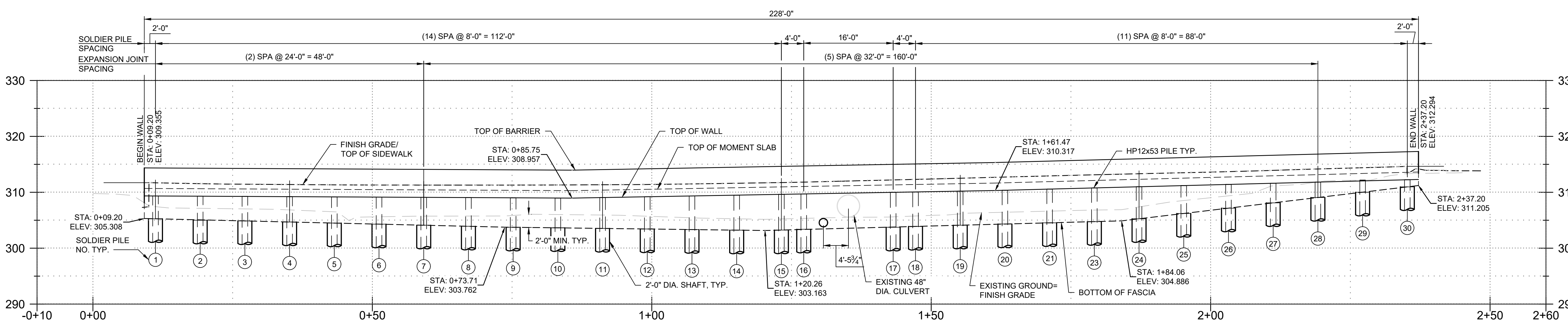
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

WALL PLAN AND PROFILE
WALL #1



WALL 2 PLAN



WALL 2 PROFILE

SUMMARY OF QUANTITIES	
MAX. HEIGHT	6'-9"
EXPOSED WALL AREA	709 SF
TOTAL WALL AREA	988 SF

GENERAL NOTES:

1. SEE WALL DETAILS, SHEETS S06-S08.

SCALE IN FEET 10 0 5 10 20

NO.	DATE	BY	APPR.	REVISIONS

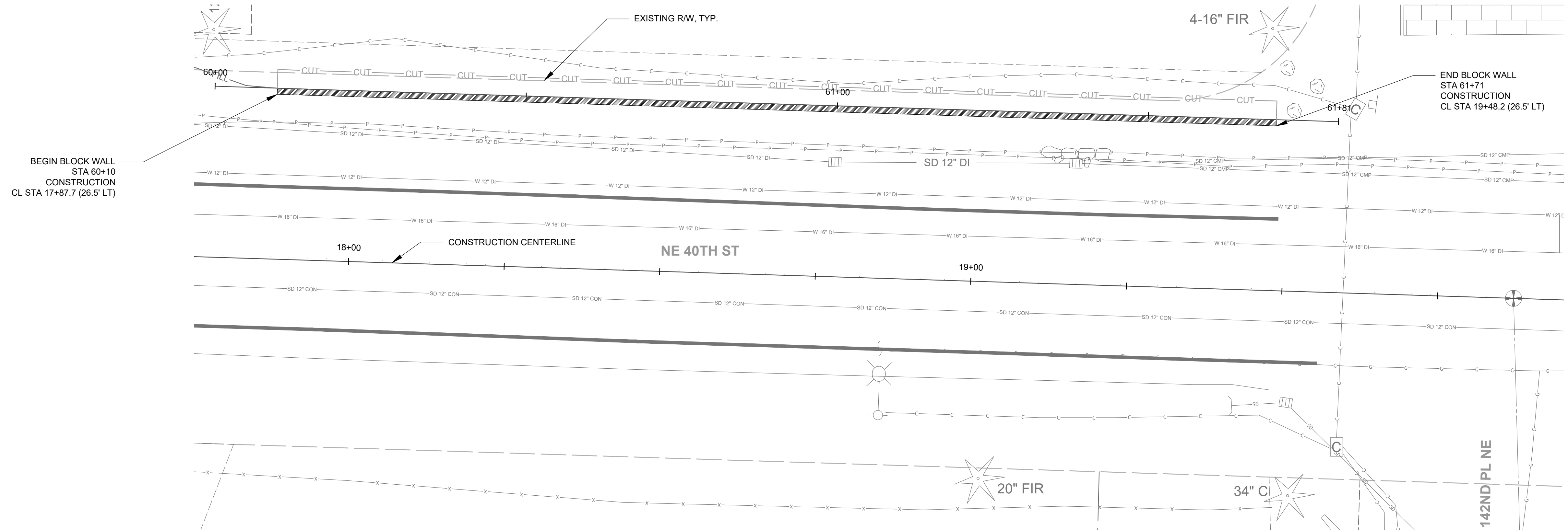
C. WOLFE 04/24 DESIGNED BY DATE
D. ALTENBURG 04/24 DRAWN BY DATE
J. WARREN 04/24 CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

WALL PLAN AND PROFILE
WALL #2

S02 SHT 19 OF 46



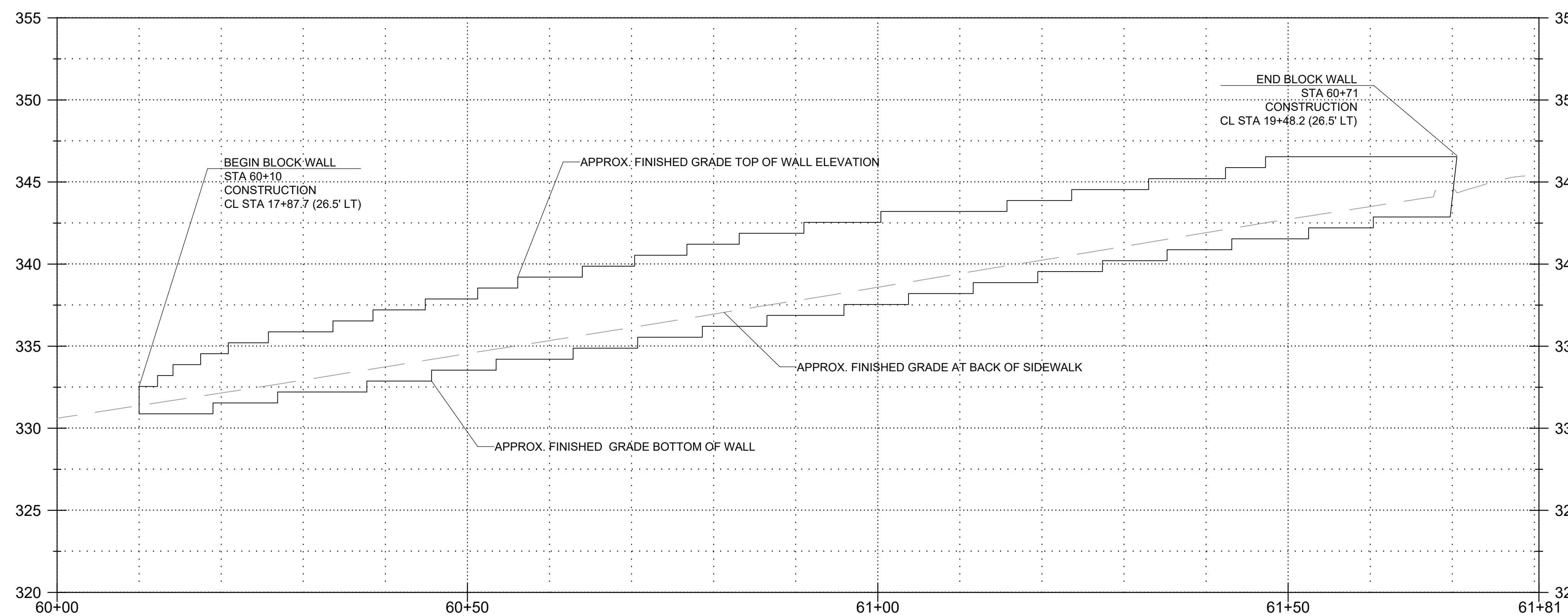
LEGEND

BLOCK WALL

SCALE IN FEET

10 0 5 10 20

WALL 3 BLOCK WALL PLAN



WALL 3 BLOCK WALL PROFILE

NO.	DATE	BY	APPR.	REVISIONS

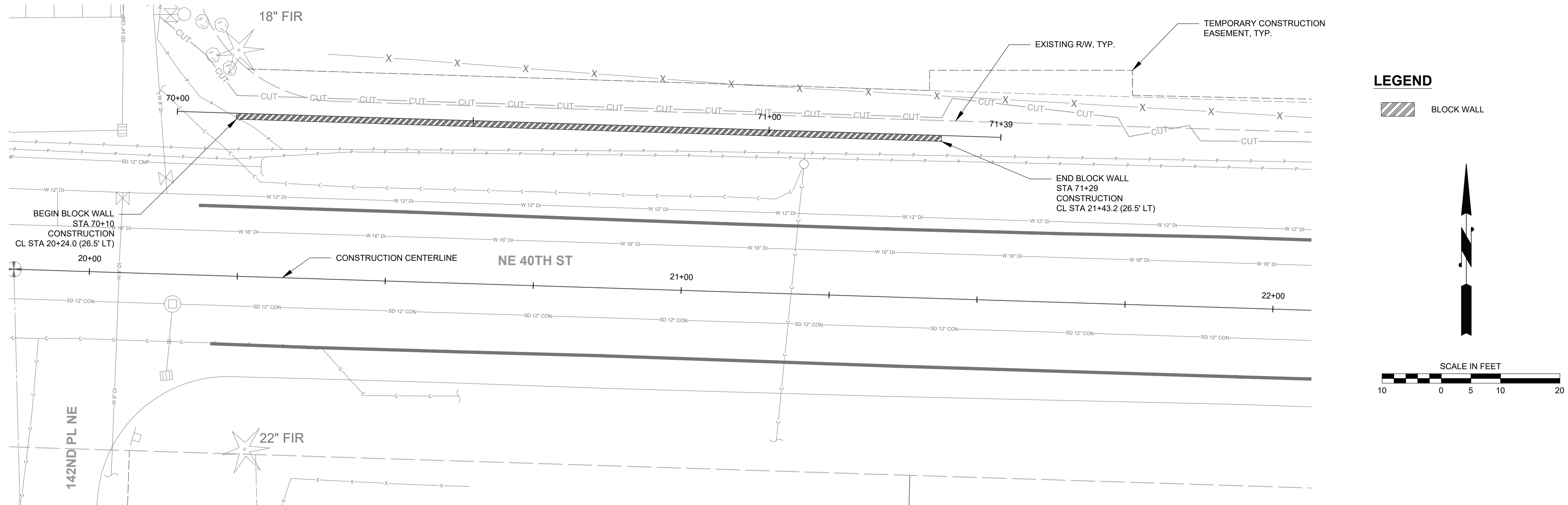
G. KHO 04/24 DESIGNED BY DATE
G. KHO 04/24 DRAWN BY DATE
C. MASEK 04/24 CHECKED BY DATE

City of Bellevue
Transportation Department

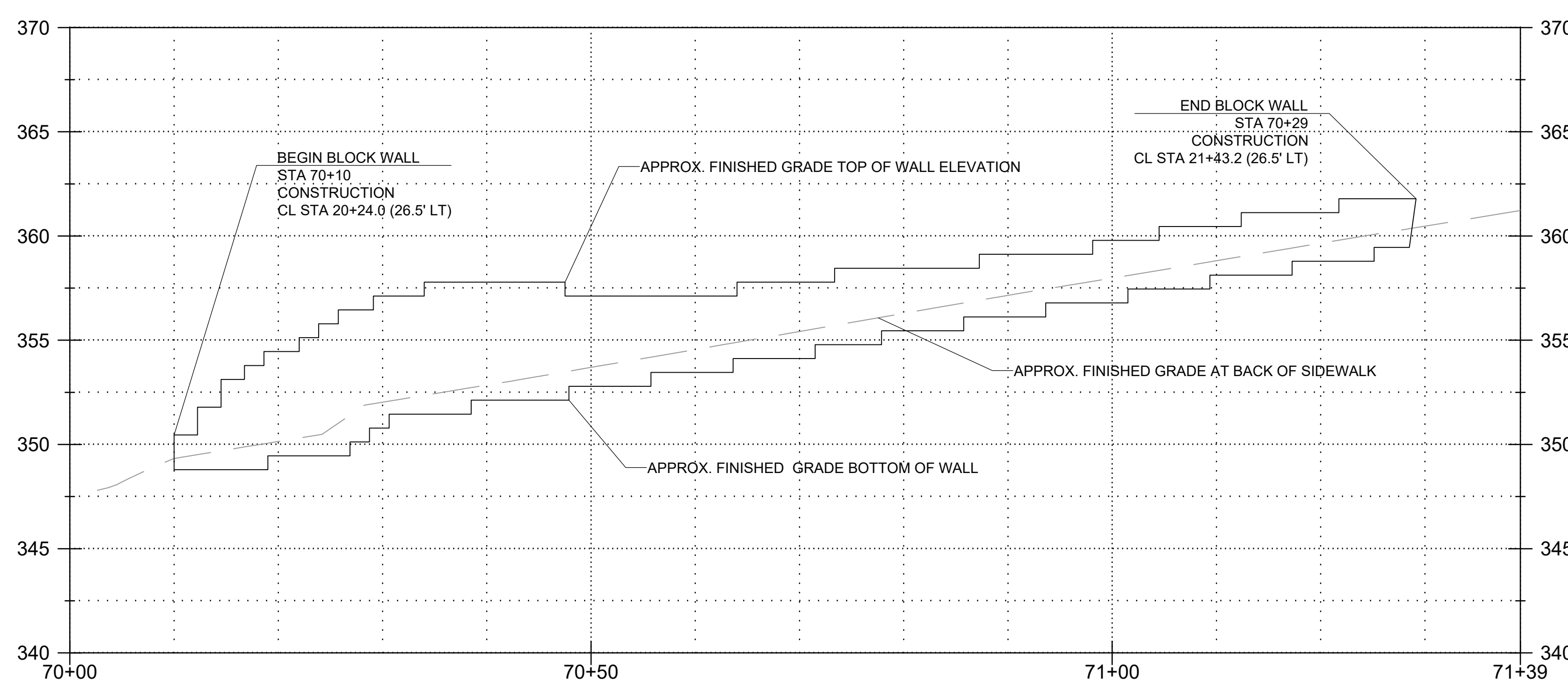
NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

WALL 3 PLAN AND PROFILE

S03 SHT 20 OF 46



WALL 4 BLOCK WALL PLAN



WALL 4 BLOCK WALL PROFILE

NO.	DATE	BY	APPR.	REVISIONS

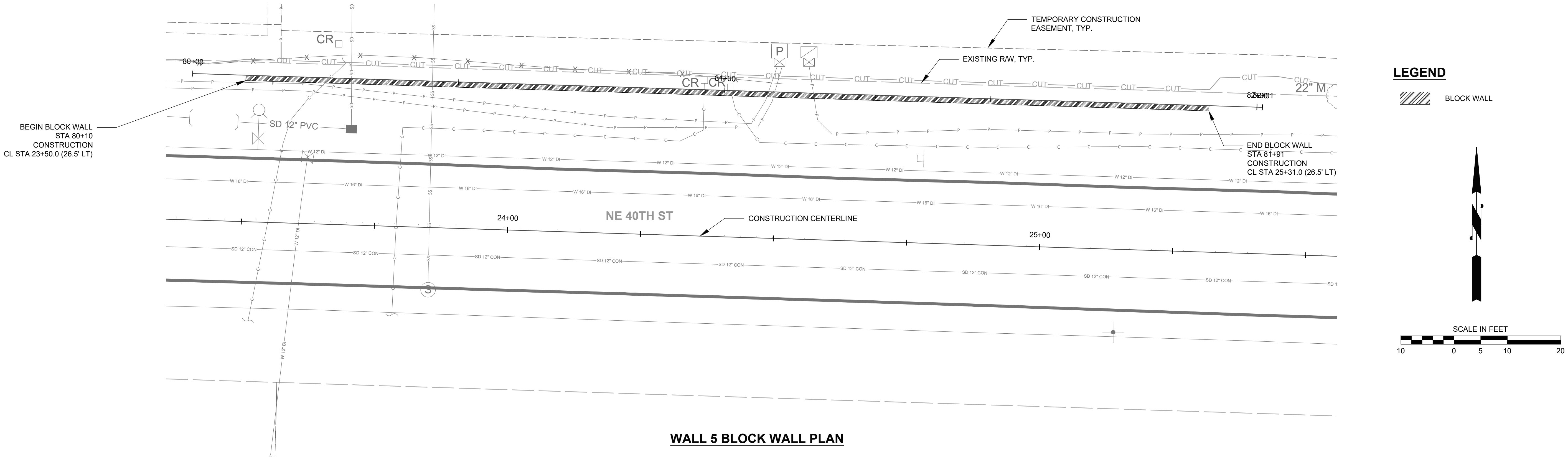
G. KHO 04/24
DESIGNED BY DATE
G. KHO 04/24
DRAWN BY DATE
C. MASEK 04/24
CHECKED BY DATE

City of Bellevue
Transportation Department

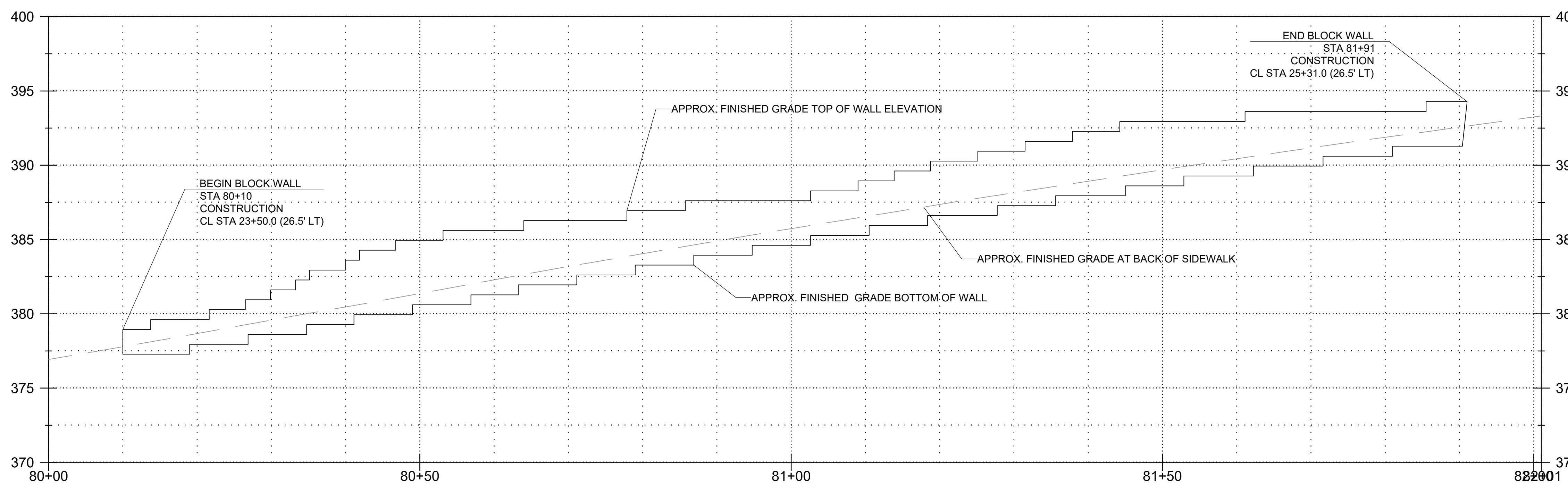
NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

WALL 4 PLAN AND PROFILE

S04 SHT 21 OF 46



WALL 5 BLOCK WALL PLAN



WALL 5 BLOCK WALL PROFILE

NO.	DATE	BY	APPR.	REVISIONS

G. KHO 04/24
DESIGNED BY DATE
G. KHO 04/24
DRAWN BY DATE
C. MASEK 04/24
CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

WALL 5 PLAN AND PROFILE

S05 SHT 22 OF 46

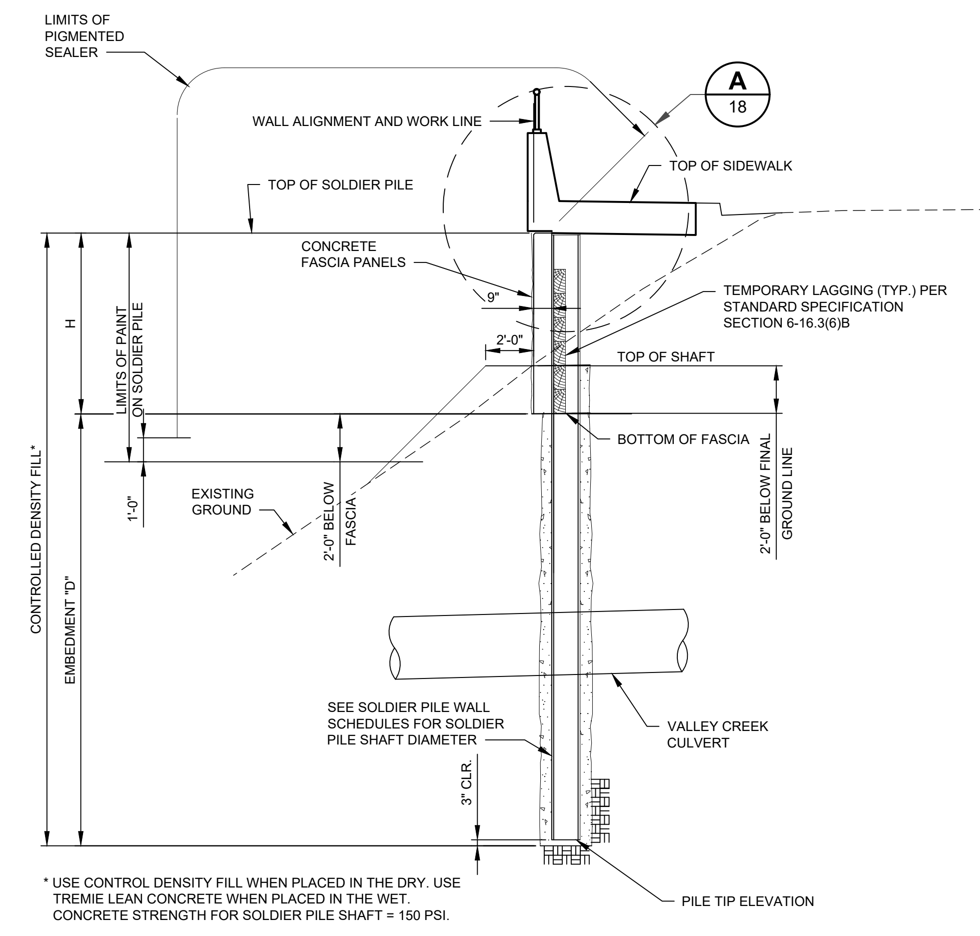
WALL 2 PILE SCHEDULE

PILE NO.	PILE SIZE	DESIGN STA.	WALL STA.	SHAFT DIAMETER	*EMBEDMENT DEPTH
1	HP12 x 53			2'-0"	20'-0"
2	HP12 x 53			2'-0"	20'-0"
3	HP12 x 53			2'-0"	20'-0"
4	HP12 x 53			2'-0"	10'-0"
5	HP12 x 53			2'-0"	20'-0"
6	HP12 x 53			2'-0"	20'-0"
7	HP12 x 53			2'-0"	20'-0"
8	HP12 x 53			2'-0"	20'-0"
9	HP12 x 53			2'-0"	20'-0"
10	HP12 x 53			2'-0"	20'-0"

* BELOW FINISH GRADE

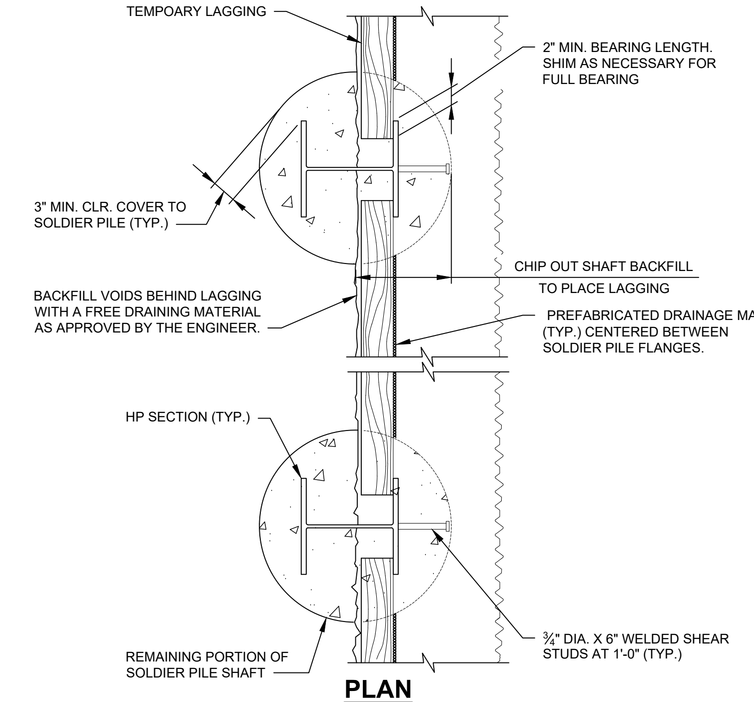
GENERAL NOTES:

1. LAGGING SHALL CONFORM TO STANDARD SPECIFICATION SECTION 6-16.3(6)
2. CONCRETE FASCIA TO BE ASHLAR STONE PATTERN AS PER WSDOT STANDARD SPECIFICATIONS.
3. SUBMIT ENGINEERED FORMWORK DRAWINGS AND CALCULATIONS AS A TYPE 2E WORKING DRAWING. DRAWINGS SHALL INCLUDE FORM LINER LAYOUT FOR REVIEW AND APPROVAL.



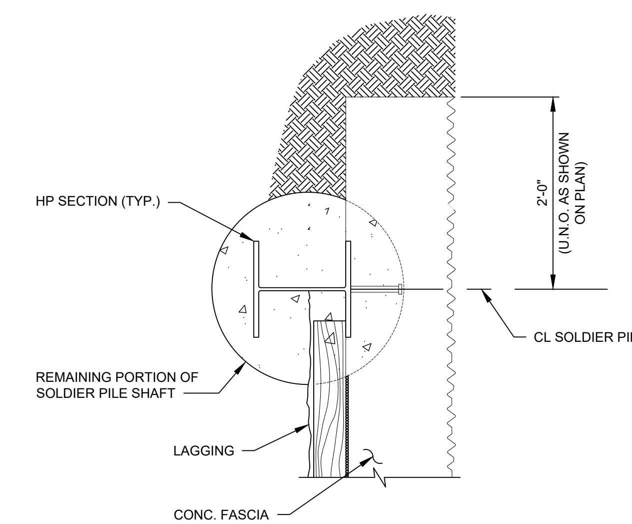
* USE CONTROL DENSITY FILL WHEN PLACED IN THE DRY. USE TREMIE LEAN CONCRETE WHEN PLACED IN THE WET. CONCRETE STRENGTH FOR SOLDIER PILE SHAFT = 150 PSI.

1 - TYPICAL SECTION



PLAN

3 - SOLDIER PILE WALL



PLAN

4 - END OF SOLDIER PILE DETAIL

NO.	DATE	BY	APPR.	REVISIONS

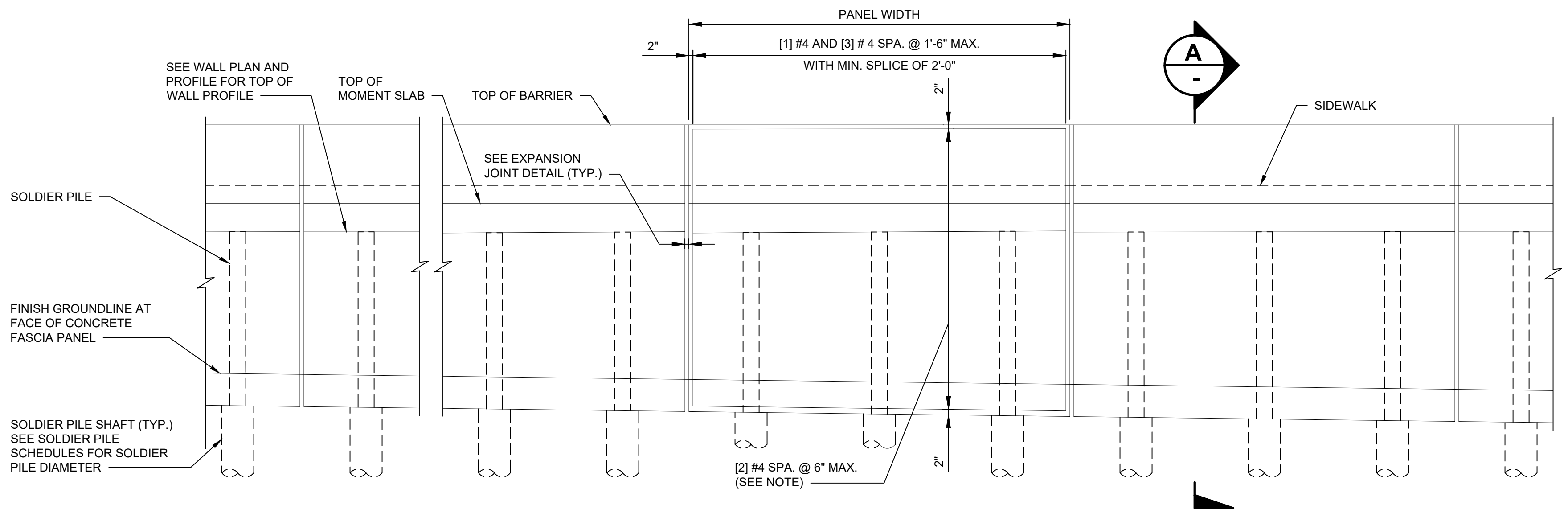
C. WOLFE 04/24 DESIGNED BY DATE
D. ALTENBURG 04/24 DRAWN BY DATE
J. WARREN 04/24 CHECKED BY DATE

City of Bellevue
Transportation Department

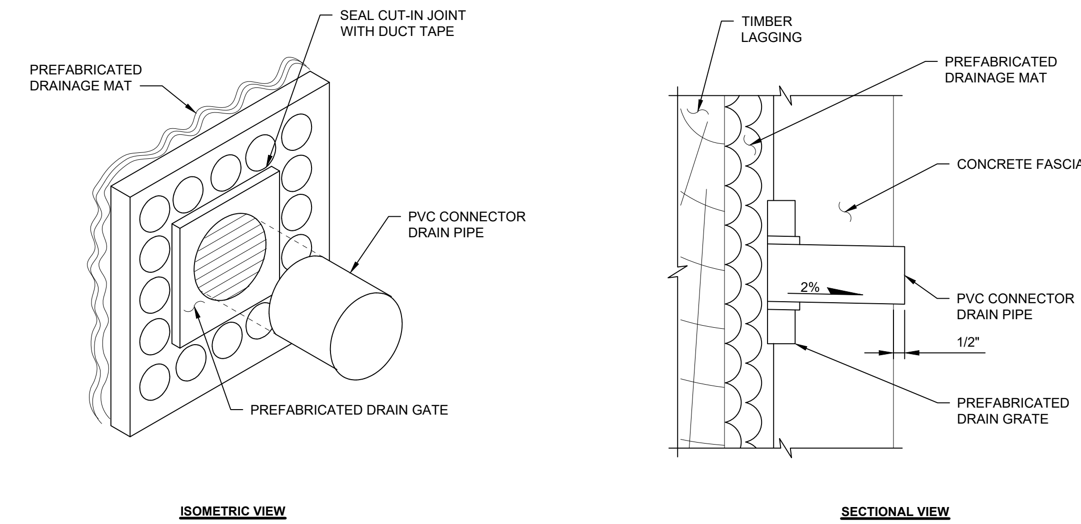
NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

RETAINING WALL DETAILS

S06 SHT 23 OF 46

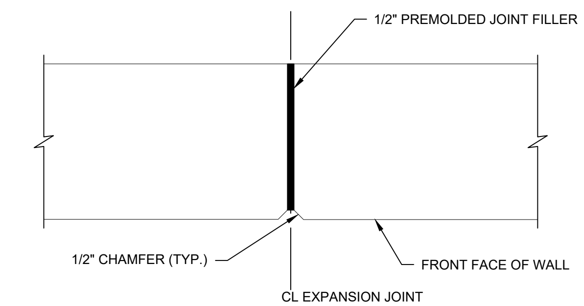


1 - PARTIAL WALL ELEVATION

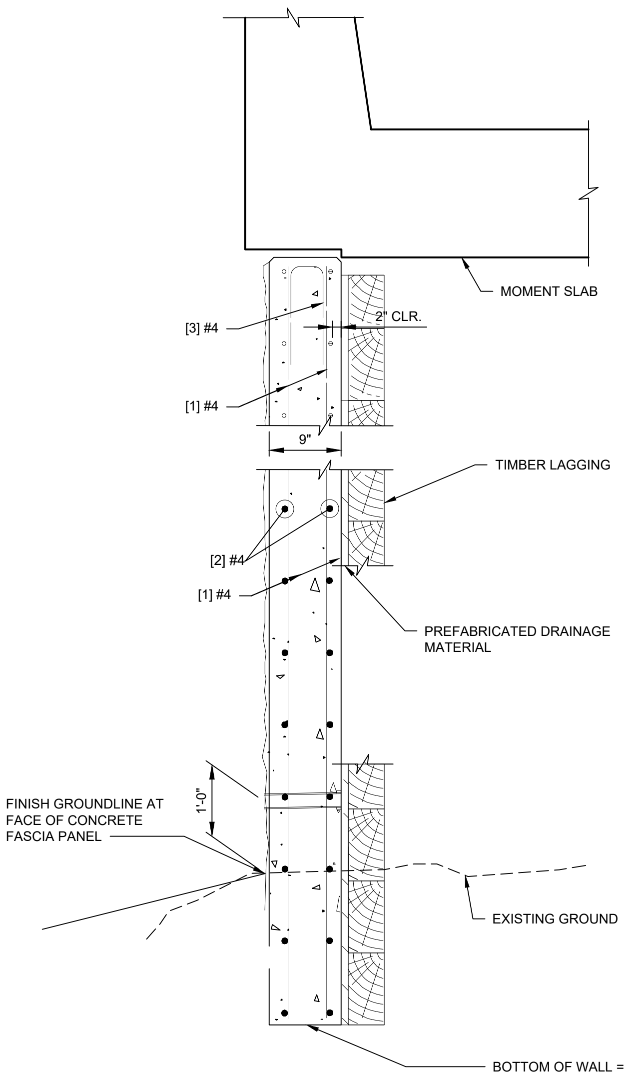


3 - WEEP HOLE DRAINAGE DETAILS

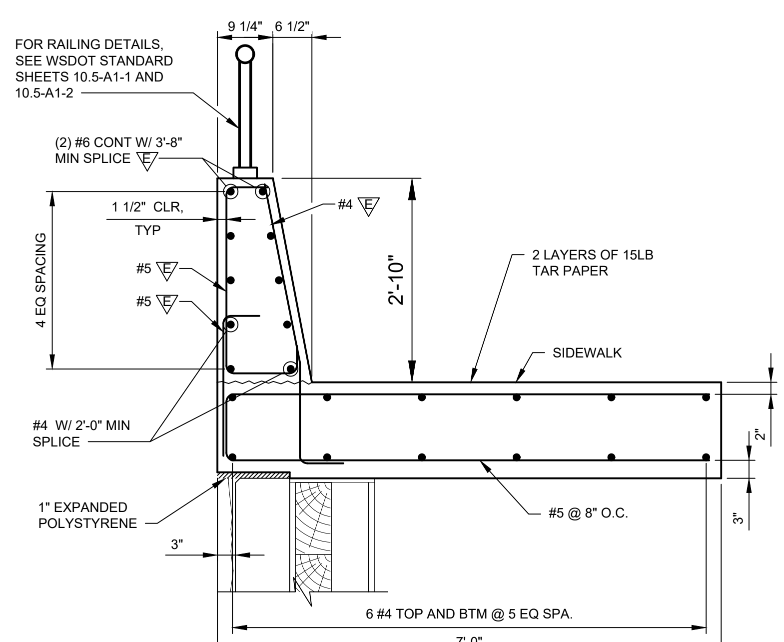
DRAIN GRATE INSTALLATION SHALL NOT DISRUPT PREFABRICATED DRAINAGE MAT



4 - EXPANSION JOINT DETAIL



A - SECTION



1 - PEDESTRIAN BARRIER W/ MOMENT SLAB

NO.	DATE	BY	APPR.	REVISIONS

C. WOLFE 04/24 — DESIGNED BY / DATE
D. ALTENBURG 04/24 — DRAWN BY / DATE
J. WARREN 04/24 — CHECKED BY / DATE

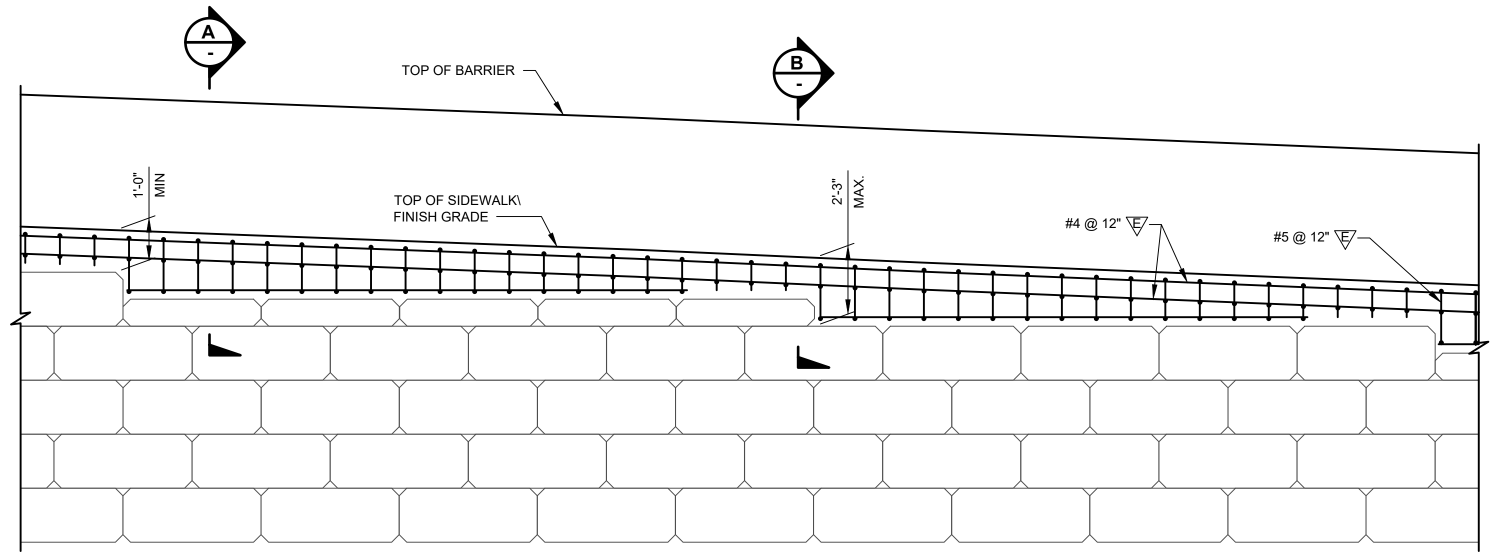
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

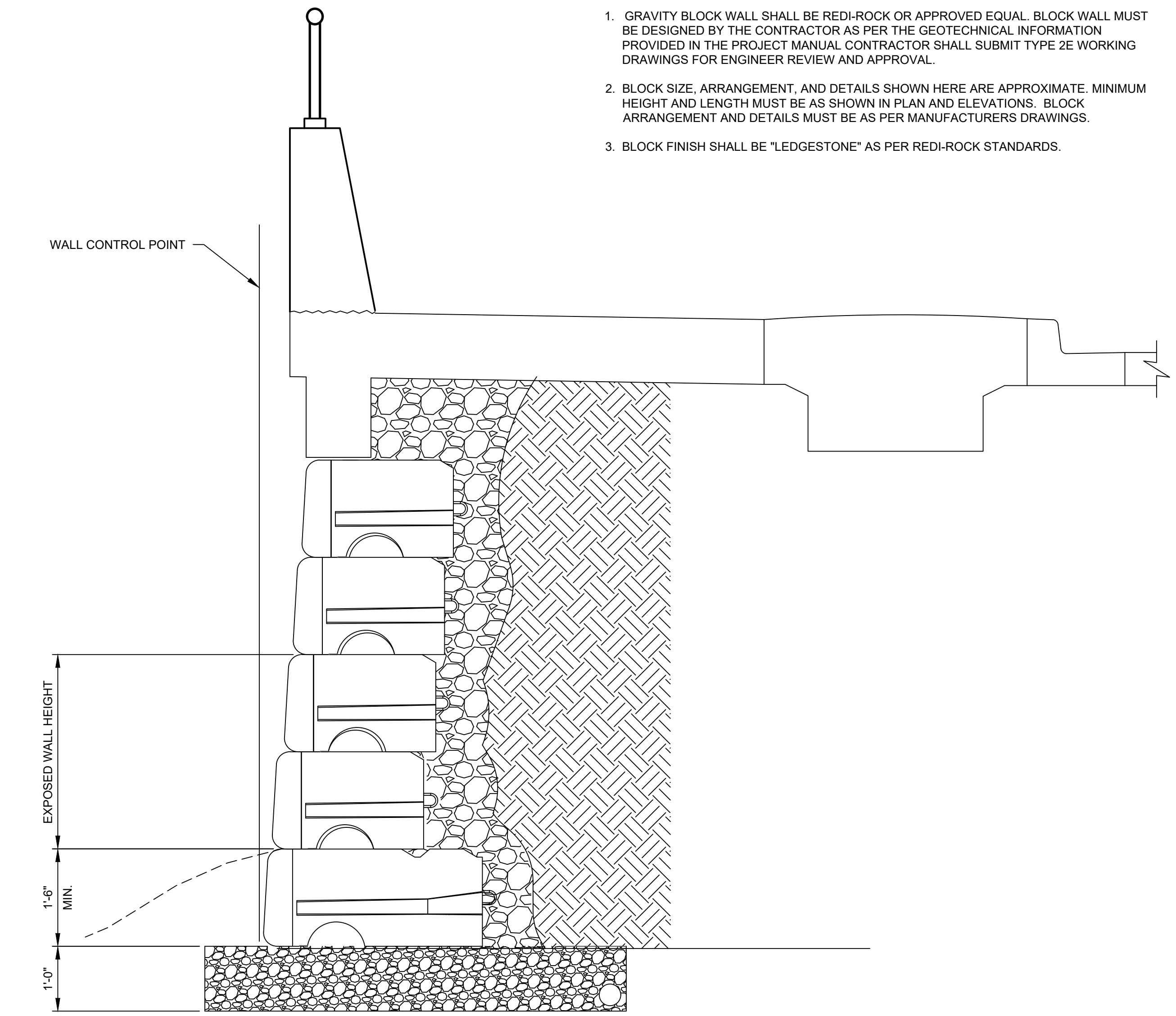
RETAINING WALL DETAILS

S07 SHT 24 OF 46

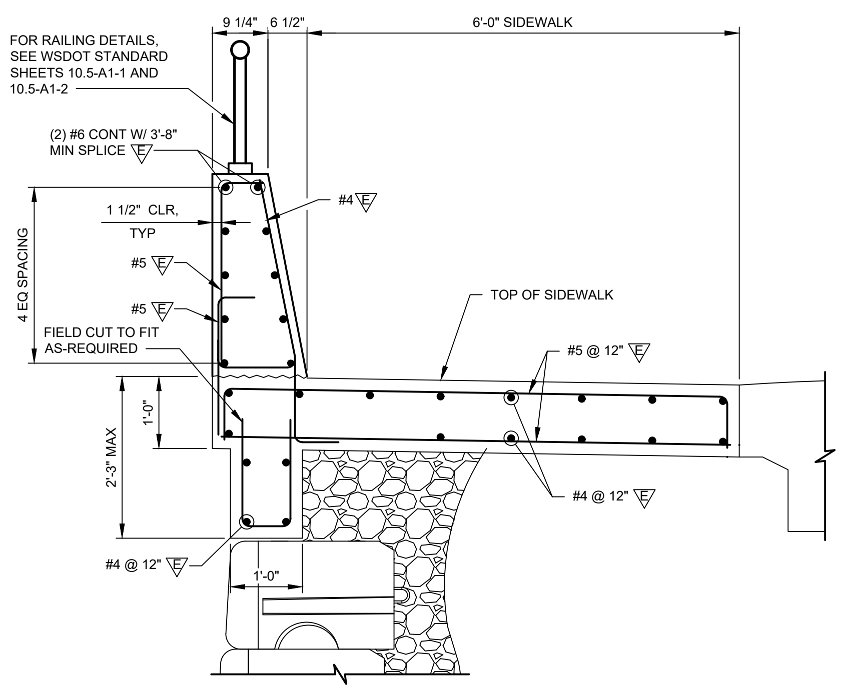
1. GRAVITY BLOCK WALL SHALL BE REDI-ROCK OR APPROVED EQUAL. BLOCK WALL MUST BE DESIGNED BY THE CONTRACTOR AS PER THE GEOTECHNICAL INFORMATION PROVIDED IN THE PROJECT MANUAL CONTRACTOR SHALL SUBMIT TYPE 2E WORKING DRAWINGS FOR ENGINEER REVIEW AND APPROVAL.
2. BLOCK SIZE, ARRANGEMENT, AND DETAILS SHOWN HERE ARE APPROXIMATE. MINIMUM HEIGHT AND LENGTH MUST BE AS SHOWN IN PLAN AND ELEVATIONS. BLOCK ARRANGEMENT AND DETAILS MUST BE AS PER MANUFACTURERS DRAWINGS.
3. BLOCK FINISH SHALL BE "LEDGESTONE" AS PER REDI-ROCK STANDARDS.



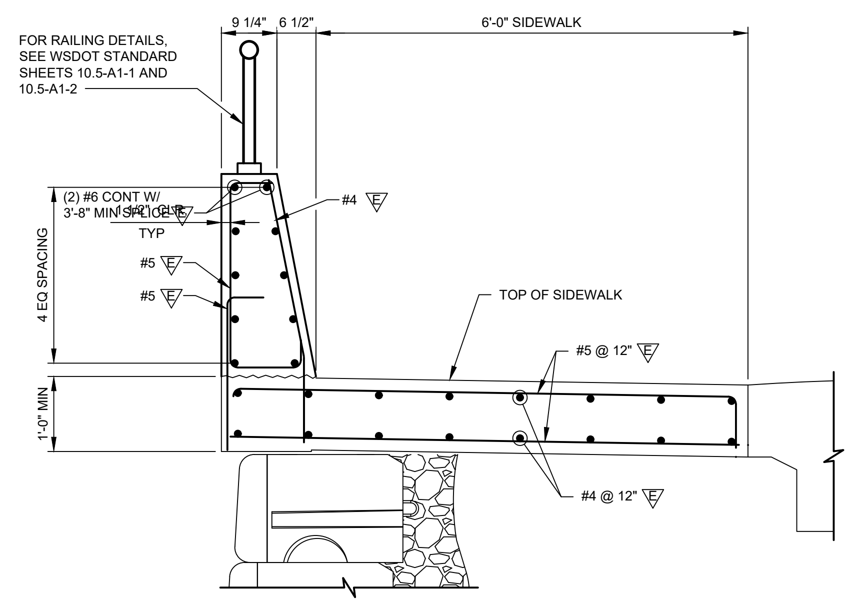
3 GRAVITY BLOCK WALL ELEVATION



2 GRAVITY BLOCK WALL TYPICAL SECTION



A SECTION



B SECTION

NO.	DATE	BY	APPR.	REVISIONS

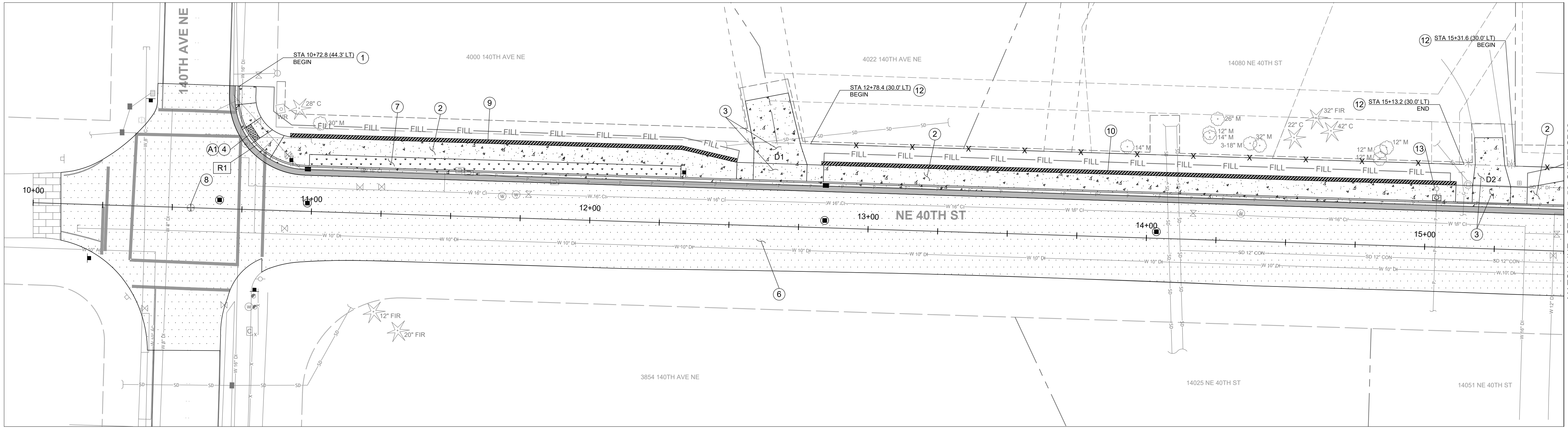
C. WOLFE 04/24
DESIGNED BY DATE
D. ALTENBURG 04/24
DRAWN BY DATE
J. WARREN 04/24
CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

RETAINING WALL DETAILS

S08 SHT 25 OF 46



CONSTRUCTION GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
2. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE INFORMATION CONTAINED WITHIN AS-BUILT DRAWINGS AND FIELD LOCATES.
3. THE CONTRACTOR SHALL MAINTAIN 10 FOOT MINIMUM TRAVEL LANES DURING CONSTRUCTION EXCEPT DURING FINAL PAVEMENT RESTORATION.
4. DRIVEWAY ACCESS SHALL BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE CITY.
5. FOR WATER, STORM, AND SEWER WORK, SEE SHEETS UT01 - UT09.

CONSTRUCTION NOTES

1 CONSTRUCT CEMENT CONCRETE CURB AND GUTTER PER COB STD. DWG. NO. SW-100-1. PATCH BACK CURB AND GUTTER WITH 10" HMA CL. 1/2" PG 58H-22 PER TYPICAL SECTION SHEET TS01.

2 CONSTRUCT CEMENT CONCRETE SIDEWALK PER COB STD. DWG. NO. SW-110-1 AND TYPICAL SECTION SHEET TS01.

3 CONSTRUCT CEMENT CONCRETE DRIVEWAY APPROACH AND DRIVEWAY PER DRIVEWAY SCHEDULE, DETAILS, AND PROFILES SEE SHEETS DT01 AND PR01.

4 CONSTRUCT CEMENT CONCRETE CURB RAMP TYPE PARALLEL A PER DETAIL, SHEET CR01, AND COB STD. DWG. NO. SW-200-1, SW-210-1, AND SW-250-1.

6 GRIND AND OVERLAY 2" OF EXISTING PAVEMENT WITH HMA CL. 1/2" PG 58H-22 PER TYPICAL SECTION SHEET TS01.

7 INSTALL 4' WIDE PLANTER STRIP, SEE SHEETS IR01 - IR04 AND LA01 - LA04.

8 ADJUST MONUMENT CASE TO FINISHED GRADE PER COB STD. DWG. NO. RC-260-1.

9 CONSTRUCT GRAVITY BLOCK WALL PER GRAVITY BLOCK WALL DETAIL, SEE SHEETS S01 - S08.

10 CONSTRUCT SOLDIER PILE WALL PER SOLDIER PILE WALL DETAIL, SEE SHEET S01 - S08.

12 INSTALL NEW WOOD FENCE PER WOOD FENCE DETAIL, SEE SHEET DT01.

13 EXISTING UTILITY POLE TO BE RELOCATED BY OTHERS (PSE).

CURVE DATA

CURVE NO.	PC STATION / OFFSET	PT STATION / OFFSET	RADIUS	LENGTH	DELTA	TANGENT
R1	10+72.3, 40.2' LT	10+97.3, 16.0' LT	25.0	39.27	90°00'00"	25.00

CURB ELEVATION DATA

STATION	CONSTRUCTION CENTERLINE EXISTING ELEVATION	OFFSET TO PROPOSED TOP BACK OF CURB (LT)	PROPOSED TOP BACK OF CURB ELEV. (LT)
10+75	317.91	140TH AVE NE INTERSECTION	
11+00	317.32	16.50	317.47
11+25	316.69	16.50	316.75
11+50	315.81	16.50	315.88
11+75	314.74	16.50	314.86
12+00	313.71	16.50	313.87
12+25	312.90	16.50	313.03
12+50	312.22	16.50	312.33
12+75	311.63	16.50	311.25
13+00	311.24	16.50	311.34
13+25	311.07	16.50	311.19
13+50	311.01	16.50	311.18
13+75	311.08	16.50	311.32
14+00	311.42	16.50	311.70
14+25	312.02	16.50	312.31
14+50	312.70	16.50	312.96
14+75	313.38	16.50	313.54
15+00	314.15	16.50	314.27
15+25	314.99	16.50	314.57
15+50	315.88	16.50	316.10

LEGEND

- NEW CEMENT CONCRETE PAVEMENT
- NEW ASPHALT CONCRETE PAVEMENT
- 2" GRIND AND OVERLAY
- PLANTER STRIP
- RETAINING WALL
- CITY OF BELLEVUE RIGHT-OF-WAY
- FILL — FILL LINE
- TEMPORARY CONSTRUCTION EASEMENT LIMITS

N

SCALE IN FEET

20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

G. KHO 04/24
DESIGNED BY DATE
G. KHO 04/24
DRAWN BY DATE
C. MASEK 04/24
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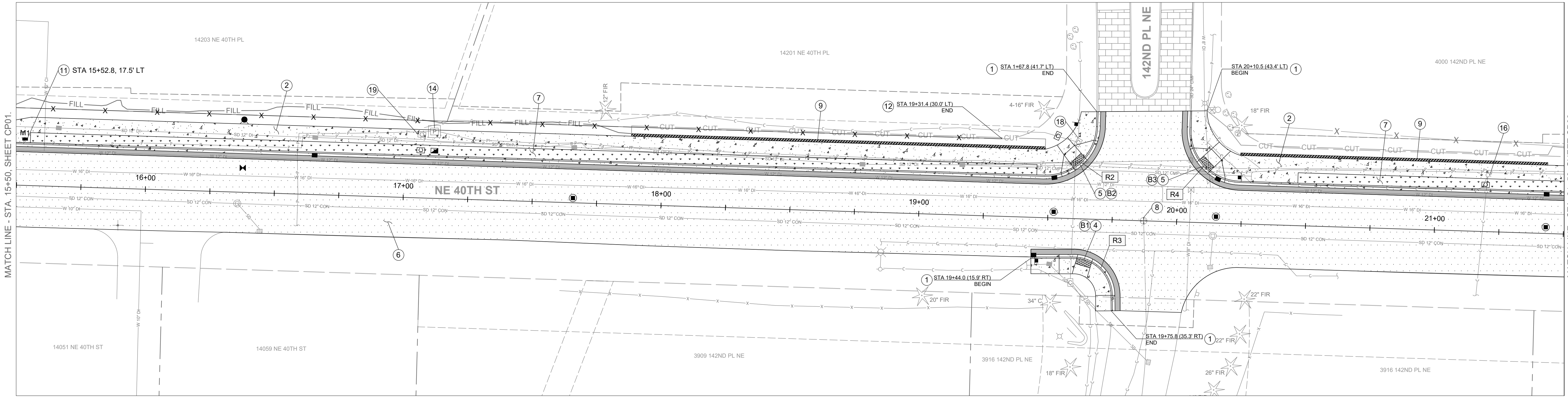
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

CIVIL PLAN
STA 10+00 TO STA 15+50

CP01 SHT 26 OF 46



CONSTRUCTION GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
2. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE INFORMATION CONTAINED WITHIN AS-BUILT DRAWINGS AND FIELD LOCATES.
3. THE CONTRACTOR SHALL MAINTAIN 10 FOOT MINIMUM TRAVEL LANES DURING CONSTRUCTION EXCEPT DURING FINAL PAVEMENT RESTORATION.
4. DRIVEWAY ACCESS SHALL BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE CITY.
5. FOR WATER, STORM, AND SEWER WORK, SEE SHEETS UT01 - UT09.

CONSTRUCTION NOTES

1 CONSTRUCT CEMENT CONCRETE CURB AND GUTTER PER COB STD. DWG. NO. SW-100-1. PATCH BACK CURB AND GUTTER WITH 10" HMA CL. 1/2" PG 58H-22 PER TYPICAL SECTION SHEET TS01.

2 CONSTRUCT CEMENT CONCRETE SIDEWALK PER COB STD. DWG. NO. SW-110-1 AND TYPICAL SECTION SHEET TS01.

4 CONSTRUCT CEMENT CONCRETE CURB RAMP TYPE PARALLEL A PER DETAIL, SHEET CR01, AND COB STD. DWG. NO. SW-200-1, SW-210-1, AND SW-250-1.

5 CONSTRUCT CEMENT CONCRETE CURB RAMP TYPE PERPENDICULAR A PER DETAIL, SHEET CR01, AND COB STD. DWG. NO. SW-200-1, SW-230-1, AND SW-250-1.

6 GRIND AND OVERLAY 2" OF EXISTING PAVEMENT WITH HMA CL. 1/2" PG 58H-22 PER TYPICAL SECTION SHEET TS01.

7 INSTALL 4' WIDE PLANTER STRIP, SEE SHEETS IR01 - IR04 AND LA01 - LA04.

8 ADJUST MONUMENT CASE TO FINISHED GRADE PER COB STD. DWG. NO. RC-260-1.

9 CONSTRUCT GRAVITY BLOCK WALL PER GRAVITY BLOCK WALL DETAIL, SEE SHEETS S01 - S08.

11 CONSTRUCT MAILBOX STAND AND FOUNDATION PER DETAIL, SHEET DT01. TRANSFER MAILBOX FROM OLD SUPPORT TO NEW SUPPORT. DISPOSE OLD MAILBOX STAND.

12 INSTALL NEW WOOD FENCE PER WOOD FENCE DETAIL, SEE SHEET DT01.

14 EXISTING TRANSFORMER TO BE RELOCATED BY OTHERS (PSE).

16 EXISTING UTILITY POLE TO BE RELOCATED BY OTHERS (COMCAST).

18 EXISTING UTILITY VAULT TO BE RELOCATED BY OTHERS (VERIZON).

19 EXISTING TELECOM PEDESTAL TO BE RELOCATED BY OTHERS (VERIZON).

CURVE DATA

CURVE NO.	PC STATION / OFFSET	PT STATION / OFFSET	RADIUS	LENGTH	DELTA	TANGENT
R2	19+48.9, 16.0' LT	19+68.3, 36.0' LT	20.0	31.42	90°00'00"	20.00
R3	19+60.6, 14.9' RT	19+76.0, 29.2' RT	15.0	23.39	90°00'00"	15.00
R4	20+04.0, 35.4' LT	20+24.0, 16.0' LT	20.0	31.42	90°00'00"	20.00

CURB ELEVATION DATA

STATION	CONSTRUCTION CENTERLINE EXISTING ELEVATION	OFFSET TO PROPOSED TOP BACK OF CURB (LT)	PROPOSED TOP BACK OF CURB ELEV. (LT)
15+50	315.88	16.50	316.10
15+75	317.02	16.50	317.28
16+00	318.36	16.50	318.63
16+25	319.65	16.50	319.94
16+50	321.04	16.50	321.31
16+75	322.63	16.50	322.84
17+00	324.36	16.50	324.53
17+25	326.19	16.50	326.34
17+50	328.10	16.50	328.26
17+75	330.04	16.50	330.25
18+00	332.01	16.50	332.18
18+25	333.98	16.50	334.18
18+50	336.01	16.50	336.18
18+75	338.04	16.50	338.22
19+00	340.06	16.50	340.28
19+25	342.09	16.50	342.38
19+50	344.15	16.50	344.33
19+75	346.13	142ND PL NE INTERSECTION	
20+00	348.21	142ND PL NE INTERSECTION	
20+25	350.25	16.50	349.26
20+50	352.31	16.50	352.37
20+75	354.43	16.50	354.49
21+00	356.54	16.50	356.66
21+25	358.60	16.50	358.75
21+50	360.65	16.50	360.81

LEGEND

- NEW CEMENT CONCRETE PAVEMENT
- NEW ASPHALT CONCRETE PAVEMENT
- 2" GRIND AND OVERLAY
- PLANTER STRIP
- RETAINING WALL
- CITY OF BELLEVUE RIGHT-OF-WAY
- FILL — FILL LINE
- CUT — CUT LINE
- TEMPORARY CONSTRUCTION EASEMENT LIMITS

N

SCALE IN FEET

20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

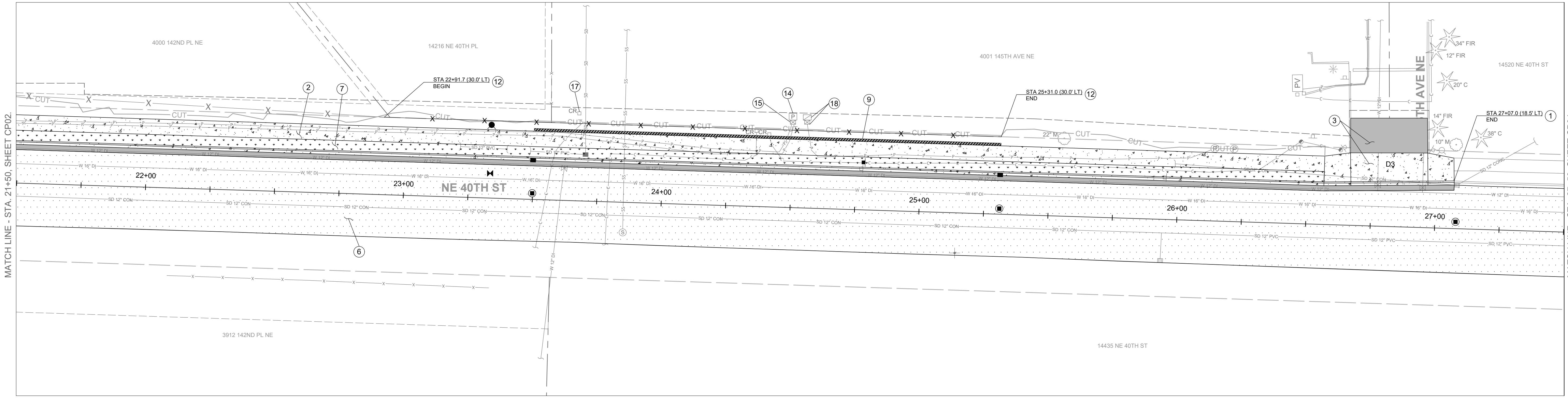
G. KHO 04/24 DESIGNED BY DATE
G. KHO 04/24 DRAWN BY DATE
C. MASEK 04/24 CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

CIVIL PLAN
STA 15+50 TO STA 21+50

CP02 SHT 27 OF 46



CONSTRUCTION GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
2. UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE INFORMATION CONTAINED WITHIN AS-BUILT DRAWINGS AND FIELD LOCATES.
3. THE CONTRACTOR SHALL MAINTAIN 10 FOOT MINIMUM TRAVEL LANES DURING CONSTRUCTION EXCEPT DURING FINAL PAVEMENT RESTORATION.
4. DRIVEWAY ACCESS SHALL BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE CITY.
5. FOR WATER, STORM, AND SEWER WORK, SEE SHEETS UT01 - UT09.

CONSTRUCTION NOTES

1. CONSTRUCT CEMENT CONCRETE CURB AND GUTTER PER COB STD. DWG. NO. SW-100-1. PATCH BACK CURB AND GUTTER WITH 10" HMA CL. 1/2" PG 58H-22 PER TYPICAL SECTION SHEET TS01.
2. CONSTRUCT CEMENT CONCRETE SIDEWALK PER COB STD. DWG. NO. SW-110-1 AND TYPICAL SECTION SHEET TS01.
3. CONSTRUCT CEMENT CONCRETE DRIVEWAY APPROACH AND DRIVEWAY PER DRIVEWAY SCHEDULE, DETAILS, AND PROFILES SEE SHEETS DT01 AND PR01.
6. GRIND AND OVERLAY 2" OF EXISTING PAVEMENT WITH HMA CL. 1/2" PG 58H-22 PER TYPICAL SECTION SHEET TS01.
7. INSTALL 4' WIDE PLANTER STRIP, SEE SHEETS IR01 - IR04 AND LA01 - LA04.
9. CONSTRUCT GRAVITY BLOCK WALL PER GRAVITY BLOCK WALL DETAIL, SEE SHEETS S01 - S08.
12. INSTALL NEW WOOD FENCE PER WOOD FENCE DETAIL, SEE SHEET DT01.
14. EXISTING TRANSFORMER TO BE RELOCATED BY OTHERS (PSE).
15. EXISTING JUNCTION BOX TO BE RELOCATED BY OTHER (PSE).
17. EXISTING TELECOM PEDESTAL TO BE RELOCATED BY OTHERS (COMCAST).
18. EXISTING UTILITY VAULT TO BE RELOCATED BY OTHERS (VERIZON).

CURB ELEVATION DATA

STATION	CONSTRUCTION CENTERLINE EXISTING ELEVATION	OFFSET TO PROPOSED TOP BACK OF CURB (LT)	PROPOSED TOP BACK OF CURB ELEV. (LT)
21+50	360.65	16.50	360.81
21+75	362.69	16.50	362.81
22+00	364.74	16.50	364.83
22+25	366.85	16.50	366.89
22+50	368.98	16.50	369.09
22+75	371.10	16.50	371.25
23+00	373.26	16.50	373.41
23+25	375.35	16.50	375.51
23+50	377.52	16.50	377.64
23+75	379.70	16.50	379.88
24+00	381.93	16.50	382.14
24+25	384.10	16.50	384.33
24+50	386.18	16.50	386.39
24+75	388.19	16.50	388.39
25+00	390.08	16.50	390.29
25+25	391.85	16.50	392.07
25+50	393.49	16.50	393.75
25+75	394.99	16.50	395.27
26+00	396.32	16.50	393.64
26+25	397.46	16.50	397.68
26+50	398.41	16.50	398.59
26+75	399.44	145TH AVE NE INTERSECTION	
27+00	400.28	18.19	400.47

LEGEND

- NEW CEMENT CONCRETE PAVEMENT
- NEW ASPHALT CONCRETE PAVEMENT
- 2" GRIND AND OVERLAY
- PLANTER STRIP
- RETAINING WALL
- CITY OF BELLEVUE RIGHT-OF-WAY
- CUT LINE
- TEMPORARY CONSTRUCTION EASEMENT LIMITS

SCALE IN FEET
20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

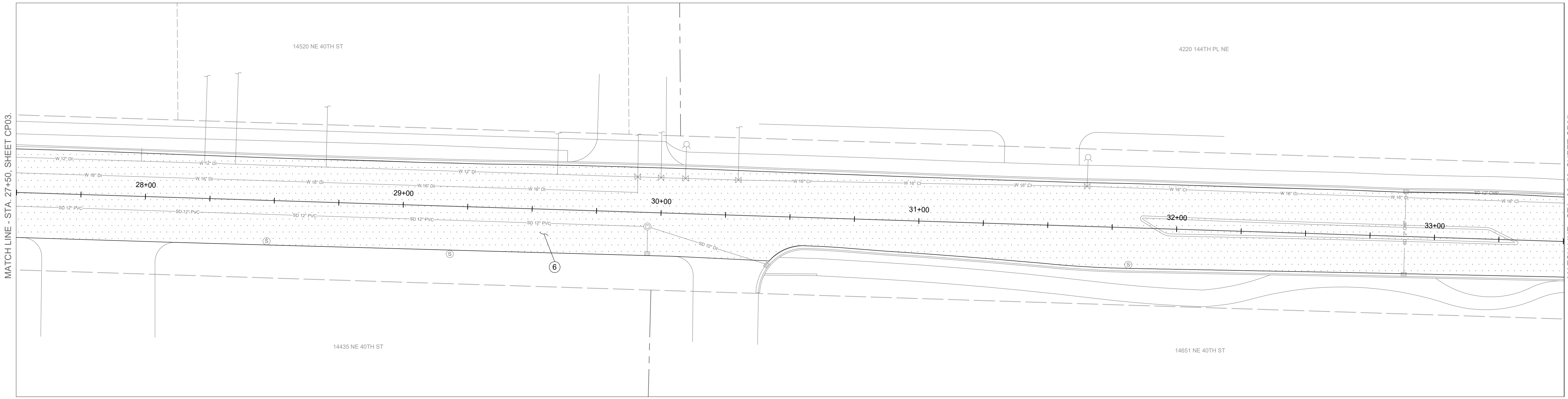
G. KHO 04/24 — DESIGNED BY / DATE
G. KHO 04/24 — DRAWN BY / DATE
C. MASEK 04/24 — CHECKED BY / DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

CIVIL PLAN
STA 21+50 TO STA 27+50

CP03 SHT 28 OF 46



CONSTRUCTION GENERAL NOTES

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5. FOR WATER, STORM, AND SEWER WORK, SEE SHEETS UT01 - UT09.

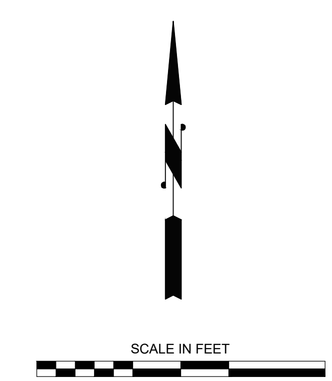
CONSTRUCTION NOTES

6 GRIND AND OVERLAY 2" OF EXISTING PAVEMENT WITH HMA CL. 1/2" PG 58H-22 PER TYPICAL SECTION SHEET TS01.

LEGEND

2" GRIND AND OVERLAY

CITY OF BELLEVUE RIGHT-OF-WAY



NO.	DATE	BY	APPR.	REVISIONS

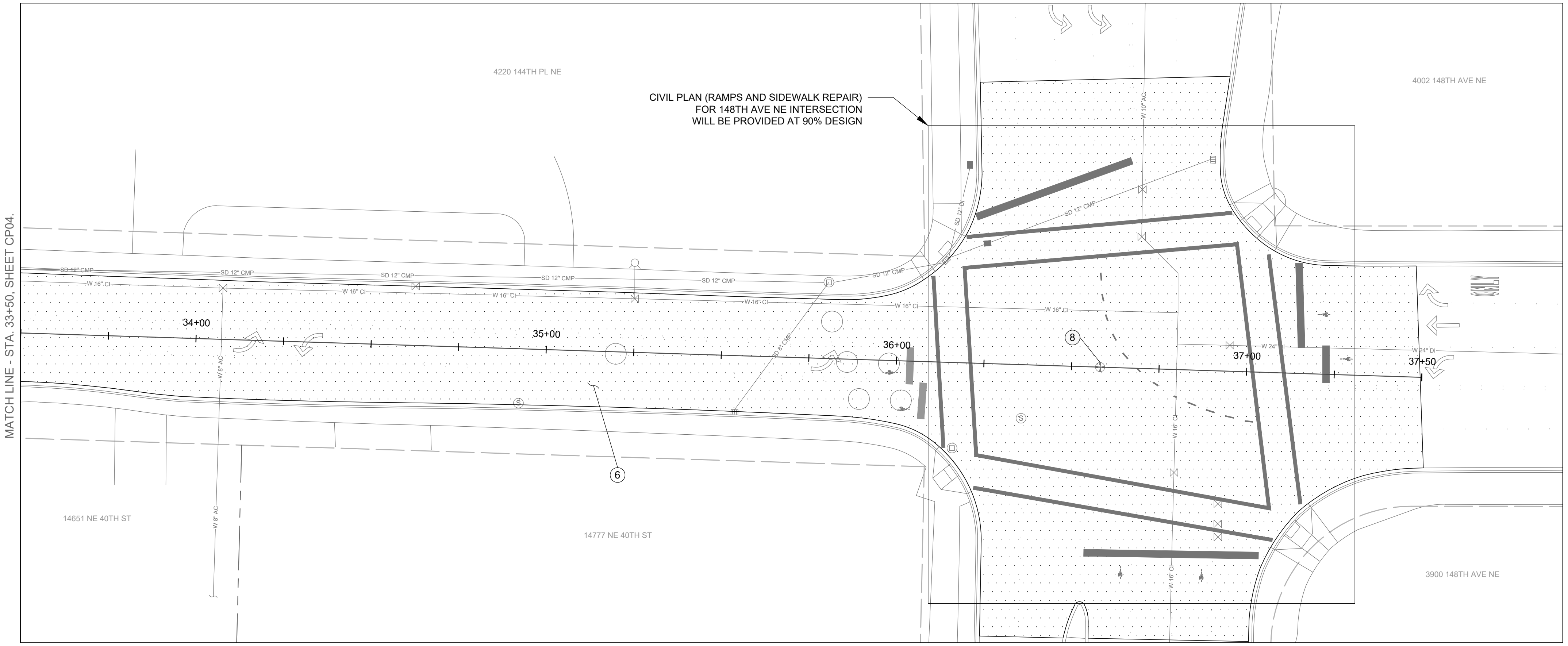
G. KHO 04/24 DESIGNED BY DATE
G. KHO 04/24 DRAWN BY DATE
C. MASEK 04/24 CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

CIVIL PLAN
STA 27+50 TO STA 33+50

CP04 SHT 29 OF 46



CONSTRUCTION GENERAL NOTES

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CONSTRUCTION NOTES

6 GRIND AND OVERLAY 2" OF EXISTING PAVEMENT WITH HMA CL. 1/2" PG 58H-22 PER TYPICAL SECTION SHEET TS01.

8 ADJUST MONUMENT CASE TO FINISHED GRADE PER COB STD. DWG. NO. RC-260-1.

LEGEND

2" GRIND AND OVERLAY

CITY OF BELLEVUE RIGHT-OF-WAY

SCALE IN FEET

20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

G. KHO 04/24
DESIGNED BY DATE
G. KHO 04/24
DRAWN BY DATE
C. MASEK 04/24
CHECKED BY DATE

City of Bellevue
Transportation Department

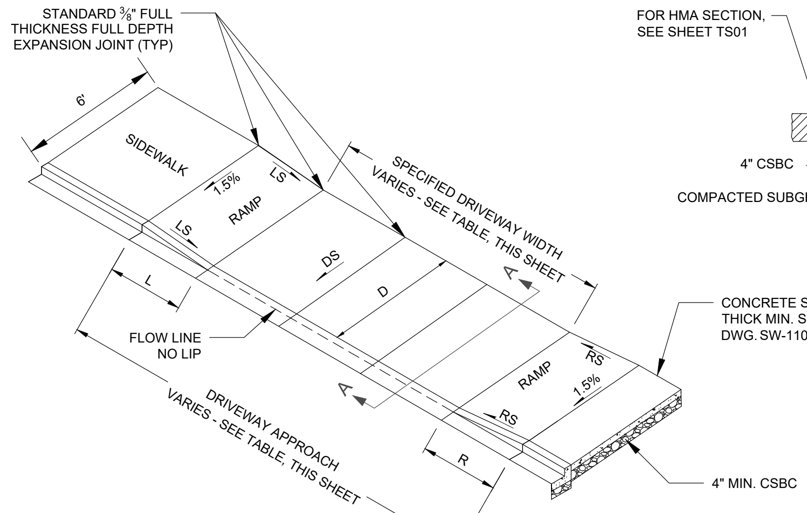
NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

CIVIL PLAN
STA 33+50 TO STA 37+50

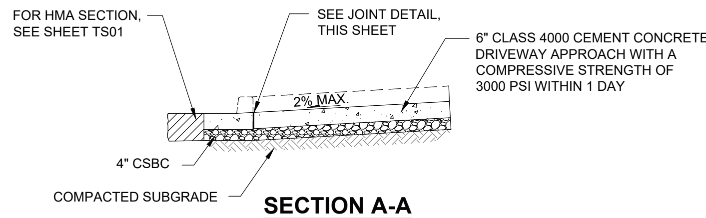
CP05 SHT 30 OF 46

DRIVEWAY SCHEDULE

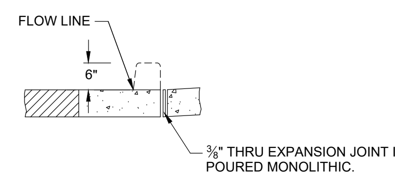
DRIVEWAY ID	STATION	APPROACH WIDTH (FT)	DRIVEWAY WIDTH (FT)	D (FT)	DS	L (FT)	LS	R (FT)	RS	DRIVEWAY MATERIAL
D1	12+68	31.5'	19.0'	6.0'	1.5%	6.0	8.33%	6.0	8.33%	CONCRETE
D2	15+23	25.5'	13.5'	6.0'	1.5%	6.0	8.33%	6.0	8.33%	CONCRETE
D3	26+82	50.0'	30.0'	6.0'	1.5%	10.0	5.00%	10.0	5.00%	ASPHALT



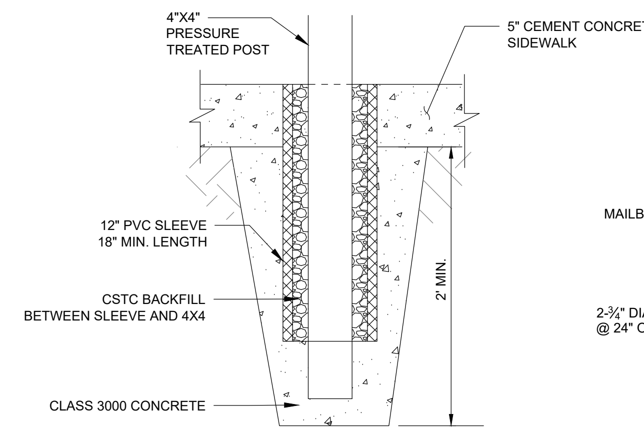
DRIVEWAY APPROACH DETAIL
NOT TO SCALE



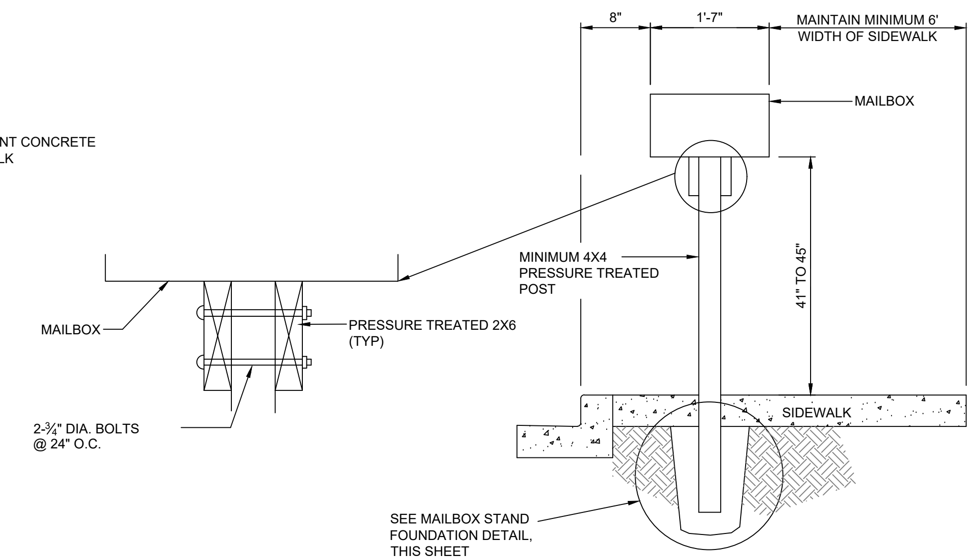
SECTION A-A



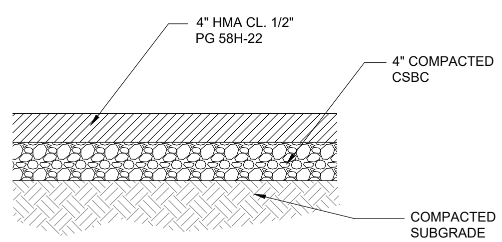
JOINT DETAIL



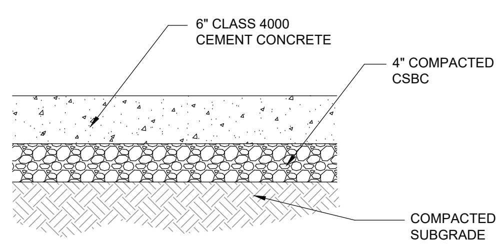
MAILBOX STAND FOUNDATION DETAIL
NOT TO SCALE



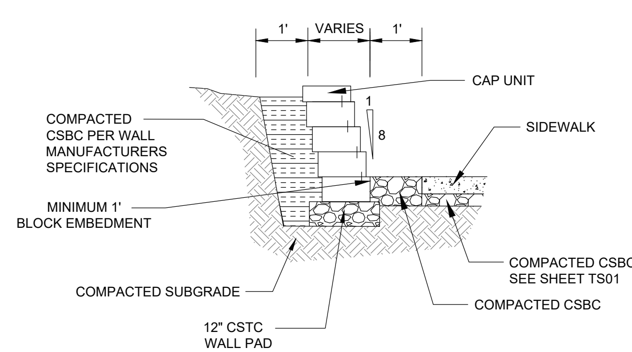
MAILBOX STAND SECTION DETAIL
NOT TO SCALE



TYPICAL ASPHALT DRIVEWAY SECTION
NOT TO SCALE



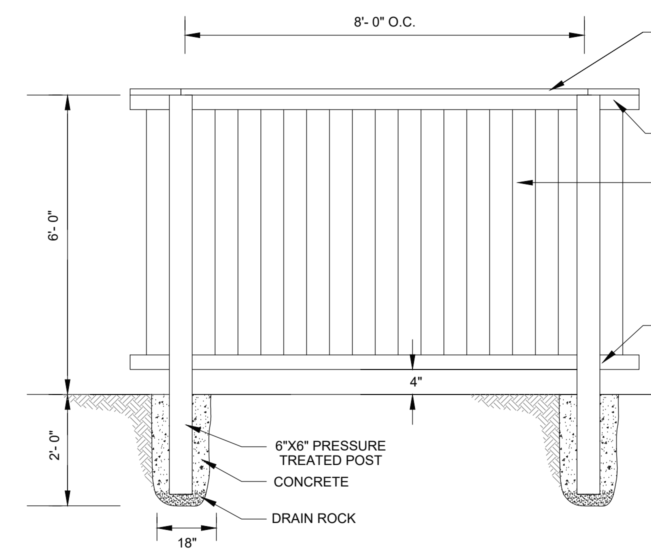
TYPICAL CONCRETE DRIVEWAY SECTION
NOT TO SCALE



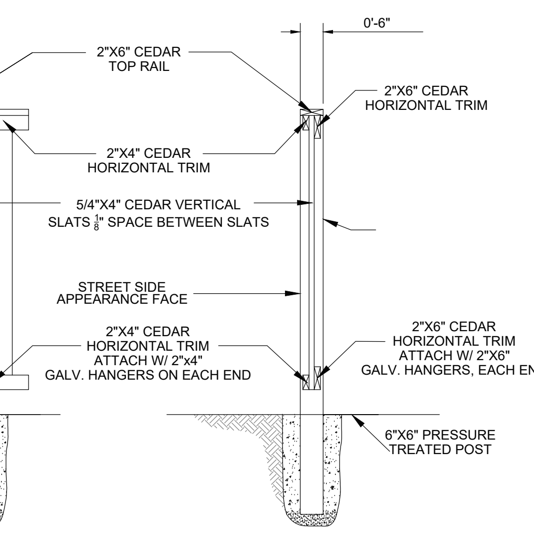
GRAVITY BLOCK WALL DETAIL
NOT TO SCALE

GRAVITY BLOCK WALL NOTES

1. WALL BLOCKS SHALL BE KEYSTONE OR APPROVED EQUAL.
2. ALL WALLS SHALL BE CONSTRUCTED WITH BLOCKS FROM THE SAME MANUFACTURER.
3. EXTERIOR FACE OF BLOCKS SHALL BE STRAIGHT AND HAVE A SPLIT FACE TEXTURE.
4. WALL BLOCKS SHALL BE GREY IN COLOR.



FENCE ELEVATION



FENCE SECTION

WOOD FENCE DETAIL
NOT TO SCALE

FENCE NOTES

1. ALL WOOD TO BE WESTERN RED CEDAR WCLIB GRADE 117A OR APPROVED EQUAL UNLESS OTHERWISE NOTED.
2. FASTEN ALL MATERIALS W/ 10d GALVANIZED COMMON NAILS UNLESS OTHERWISE NOTED.
3. APPEARANCE FACE TOWARDS STREET.

NO.	DATE	BY	APPR.	REVISIONS

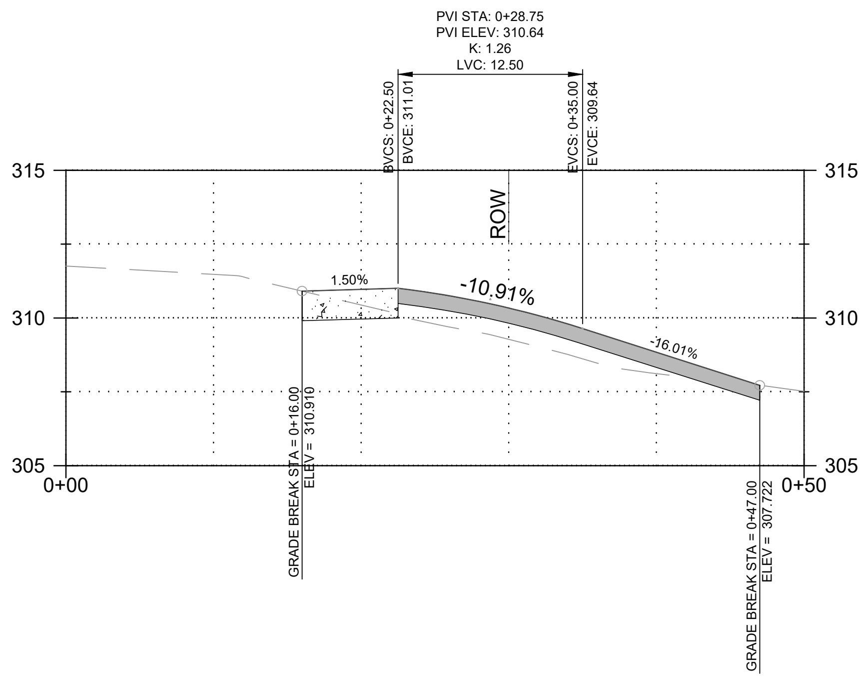
G. KHO 04/24
DESIGNED BY DATE
G. KHO 04/24
DRAWN BY DATE
C. MASEK 04/24
CHECKED BY DATE

City of Bellevue
Transportation Department

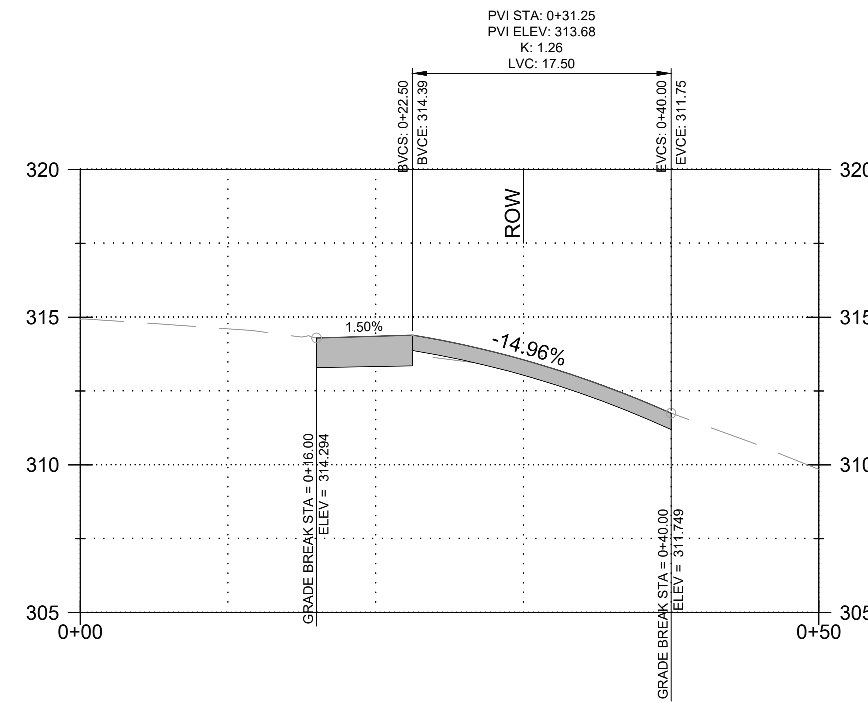
NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

DRIVEWAY, DRIVEWAY APPROACH, MAILBOX STAND, BLOCK WALL, AND WOOD FENCE DETAILS

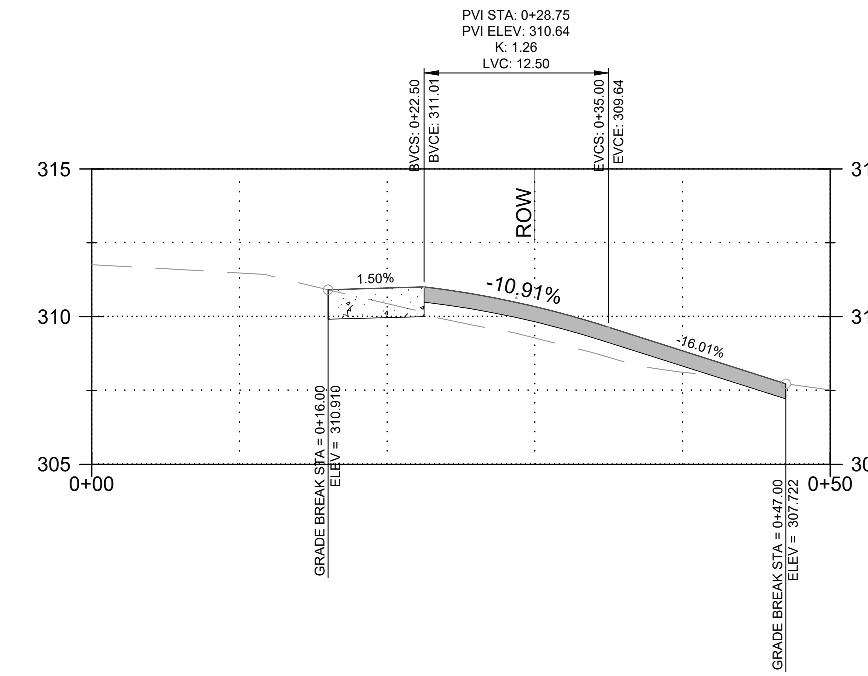
DT01 SHT 31 OF 46



DRIVEWAY AND DRIVEWAY APPROACH PROFILE D1
NE 40TH ST, STA 12+68



DRIVEWAY AND DRIVEWAY APPROACH PROFILE D2
NE 40TH ST, STA 15+23



DRIVEWAY AND DRIVEWAY APPROACH PROFILE D3
NE 40TH ST, STA 26+82

NO.	DATE	BY	APPR.	REVISIONS

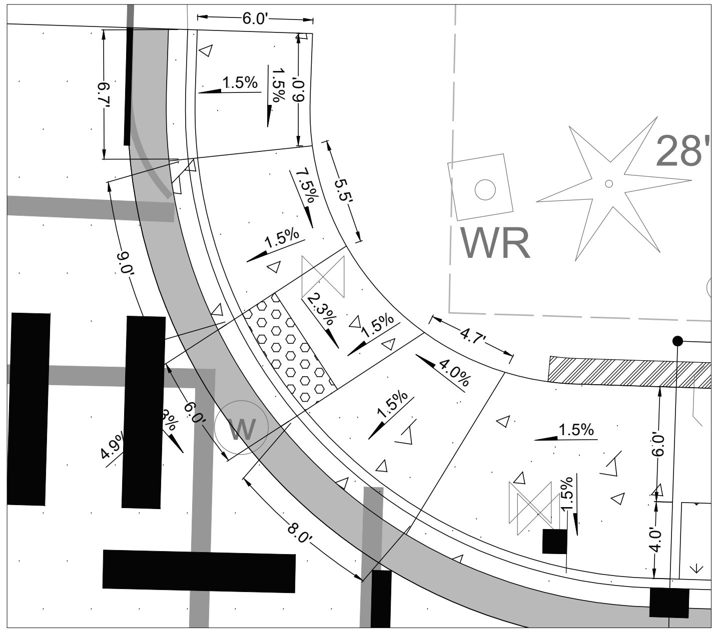
G. KHO	04/24
DESIGNED BY	DATE
G. KHO	04/24
DRAWN BY	DATE
C. MASEK	04/24
CHECKED BY	DATE

CITY OF BELLEVUE WASHINGTON
City of Bellevue
Transportation Department

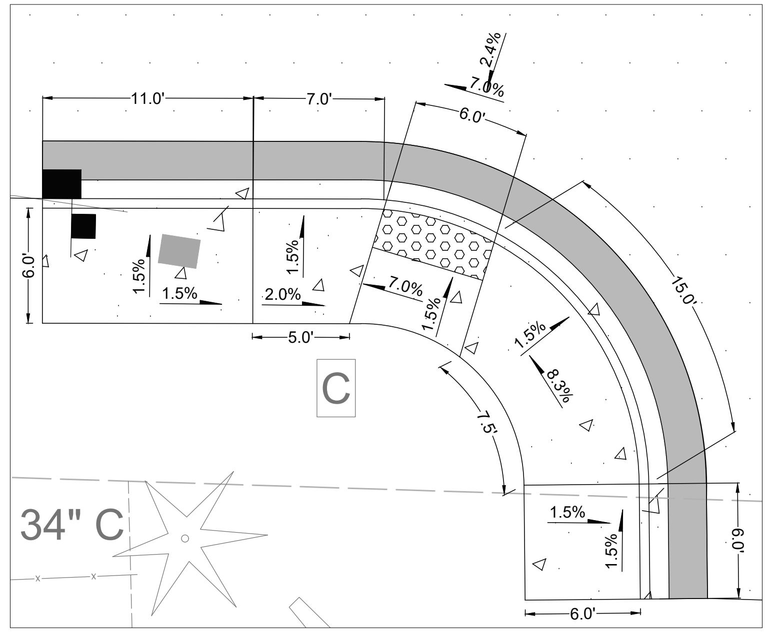
NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

DRIVEWAY AND
DRIVEWAY APPROACH PROFILES

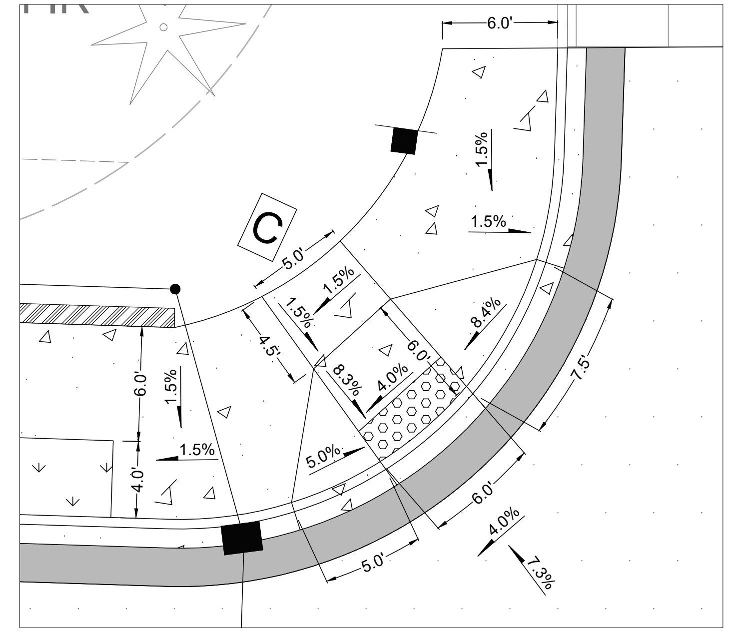
PR01 SHT 32 OF 46



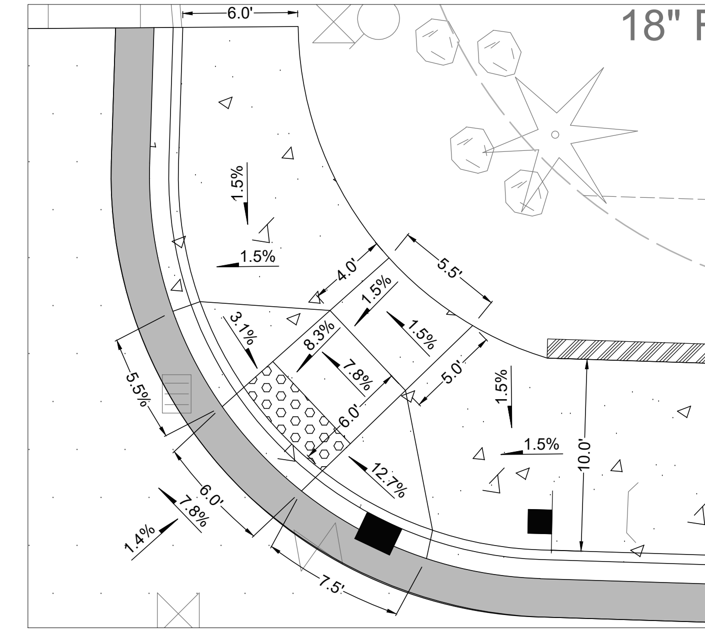
A1 **CURB RAMP DETAIL**
NE CORNER OF NE 40TH ST AND 140TH AVE NE
CENTER OF RAMP STA. 11+73.8, 26.7' LT



B1 **CURB RAMP DETAIL**
SW CORNER OF NE 40TH ST AND 142ND PL NE
CENTER OF RAMP STA. 11+74.6, 17.0' RT

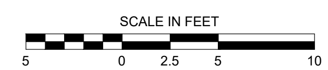


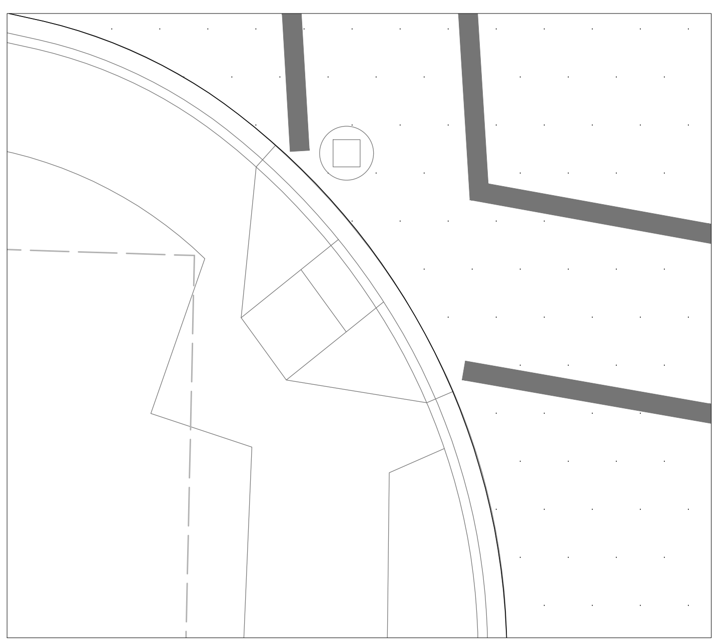
B2 **CURB RAMP DETAIL**
NW CORNER OF NE 40TH ST AND 142ND PL NE
CENTER OF RAMP STA. 12+15.5, 28.5' LT



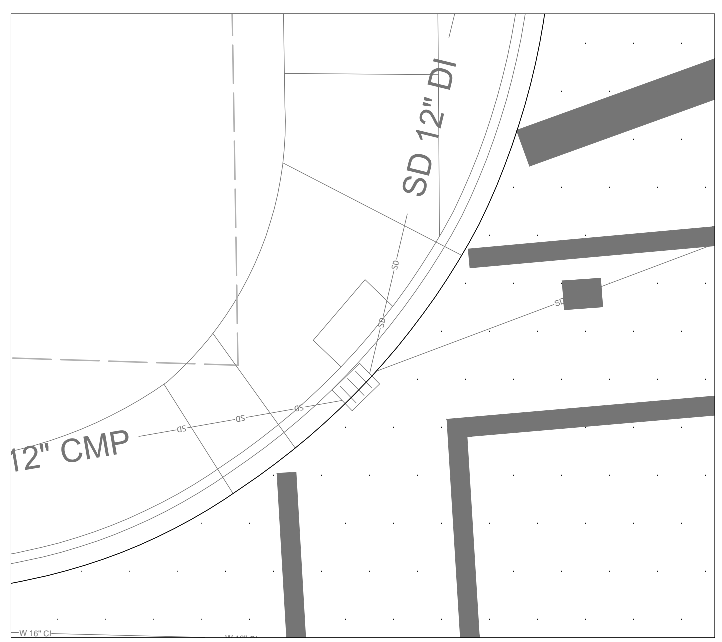
B3 **CURB RAMP DETAIL**
NE CORNER OF NE 40TH ST AND 142ND PL NE
CENTER OF RAMP STA. 13+63.3, 26.3' LT

RAMP DETAILS AT THE INTERSECTION
OF NE 40TH ST AND 148TH AVE NE
WILL BE PROVIDED AT 90% DESIGN

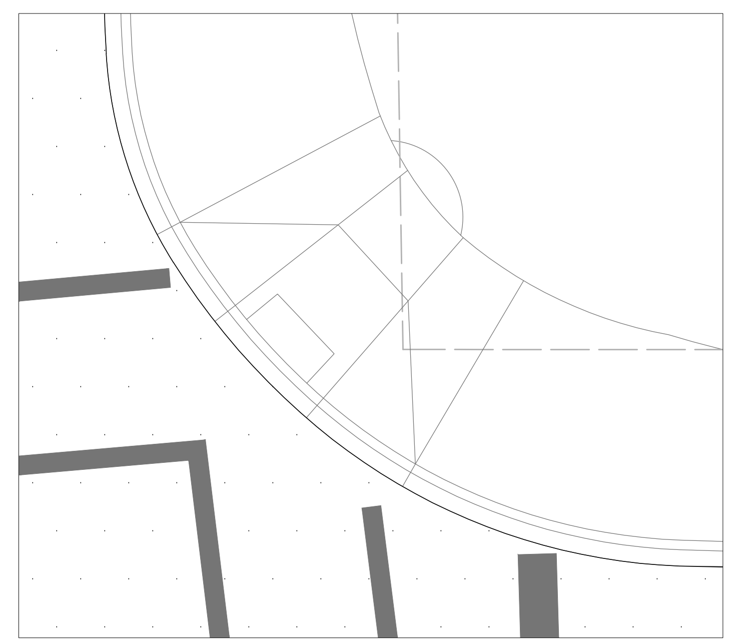




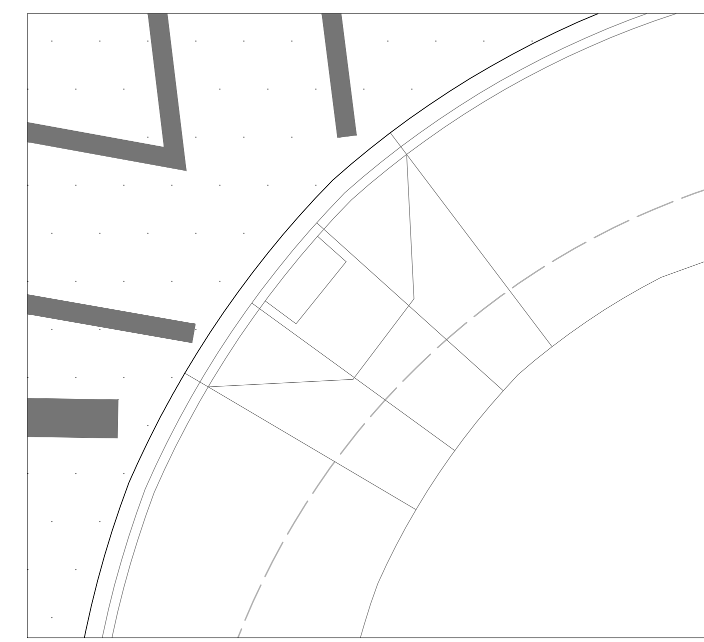
C1 **CURB RAMP DETAIL**
SW CORNER NE 40TH ST AND 148TH AVE NE
CENTER OF RAMP STA. X, OFFSET Y



C2 **CURB RAMP DETAIL**
NW CORNER OF NE 40TH ST AND 148TH AVE NE
CENTER OF RAMP STA. X, OFFSET Y



C3 **CURB RAMP DETAIL**
NE CORNER OF NE 40TH ST AND 148TH AVE NE
CENTER OF RAMP STA. X, OFFSET Y



C4 **CURB RAMP DETAIL**
SE CORNER OF NE 40TH ST AND 148TH AVE NE
CENTER OF RAMP STA. X, OFFSET Y

* DENOTES AN MEF HAS BEEN COMPLETED FOR THIS RAMP

NO.	DATE	BY	APPR.	REVISIONS

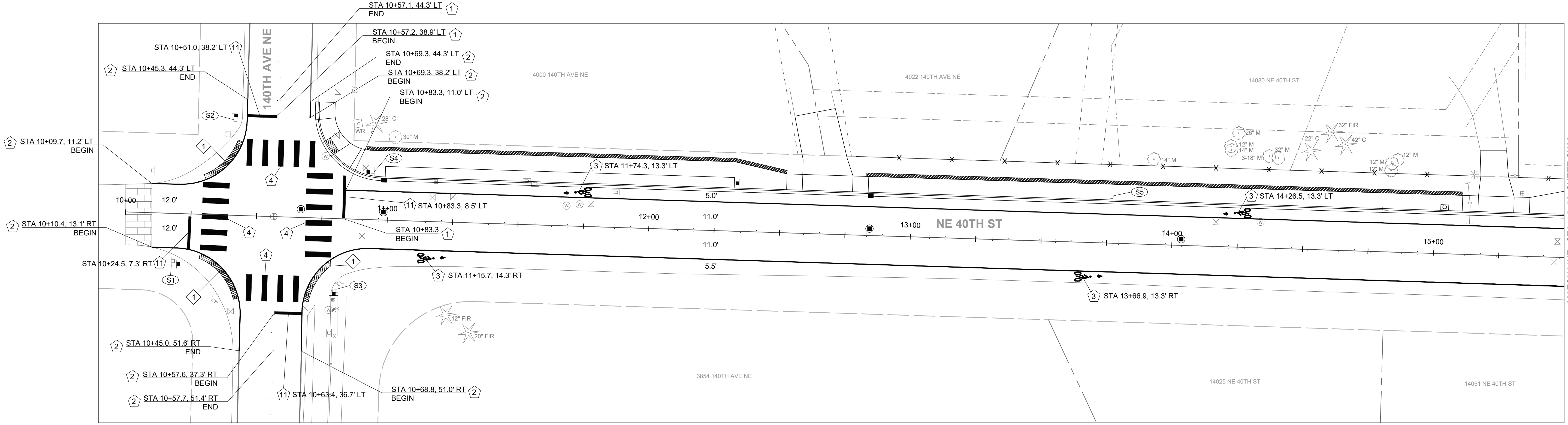
G. KHO 04/24 — DESIGNED BY / DATE
G. KHO 04/24 — DRAWN BY / DATE
C. MASEK 04/24 — CHECKED BY / DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

CURB RAMP DETAILS

CR01 SHT 33 OF 46



GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
2. DRIVEWAY ACCESS TO PROPERTIES SHALL BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE CITY.
3. THE CONTRACTOR SHALL MAINTAIN 10 FOOT MINIMUM TRAVEL LANES.

SIGN NOTES

1. FOR SIGN INSTALLATION DETAILS, SEE COB STD. DWG. SG-100-1 AND SG-110-1.
2. ALL REMOVED SIGNS SHALL REMAIN THE PROPERTY OF THE CITY OF BELLEVUE.
3. ALL SIGNS INSTALLED SHALL BE 7 FEET FROM THE FINISHED GRADE TO THE BOTTOM OF THE SIGN EXCEPT AS NOTED IN THE SIGN SCHEDULE.
4. FOR INSTALLATION OF STREET NAME SIGNS, SEE COB STD. DWG. SG-150-1.

CHANNELIZATION GENERAL NOTES

1. ALL EXISTING RAISED PAVEMENT MARKINGS AND PLASTIC MARKINGS SHALL BE REMOVED IN OVERLAY AREAS.
2. ALL CONFLICTING CHANNELIZATION OUTSIDE OF THE OVERLAY AREA SHALL BE REMOVED.

TRAIL NOTES

1 INSTALL DETECTABLE WARNING SURFACE PER SW-250-1 AND SW-260-1.

CHANNELIZATION NOTES

1 PROVIDE AND INSTALL YELLOW DOUBLE CENTERLINE USING TYPE 1 AND TYPE 2 RPMS PER COB STD. DWG. NO. CH-100-1 AND CH-120-1.

2 INSTALL 6" WIDE WHITE PAINT LINE.

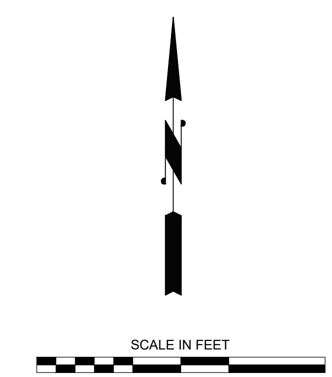
3 PROVIDE AND INSTALL BICYCLE LANE MARKING PER COB STD. DWG. NO. CH-270-1.

4 PROVIDE AND INSTALL PLASTIC CONTINENTAL STYLE CROSSWALK MARKINGS PER COB STD. DWG. NO. CW-100-1.

11 INSTALL 12-INCH WIDE WHITE PAINT STOP BAR.

SIGN SCHEDULE

SIGN NO.	STATION	OFFSET	NEW/EX.	DESIGNATION	SIZE	COLOR	DESCRIPTION	REMARKS
S1	10+18.0	18.2' RT	EX.	R1-1	30X30	RED	STOP SIGN	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 10+20.1, 19.3' RT.
			EX.	R1-4	18x6	RED	ALL WAY	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 10+20.1, 19.3' RT.
S2	10+40.8	37.1' LT	EX.	R1-1	30X30	RED	STOP SIGN	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 10+41.1, 38.8' LT.
			EX.	R1-4	18x6	RED	ALL WAY	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 10+41.1, 38.8' LT.
S3	10+80.6	28.2' RT	EX.	R1-1	30X30	RED	STOP SIGN	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 10+80.4, 29.4' RT.
			EX.	R1-4	18x6	RED	ALL WAY	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 10+80.4, 29.4' RT.
S4	10+94.4	18.4' LT	EX.	R1-1	30X30	RED	STOP SIGN	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 10+92.8, 18.3' LT.
			EX.	R1-4	18x6	RED	ALL WAY	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 10+92.8, 18.3' LT.
S5	13+77.1	16.5' LT	EX.	W3-1	30X30	YELLOW	STOP SIGN AHEAD	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 12+34.0, 18.3' LT.



NO.	DATE	BY	APPR.	REVISIONS

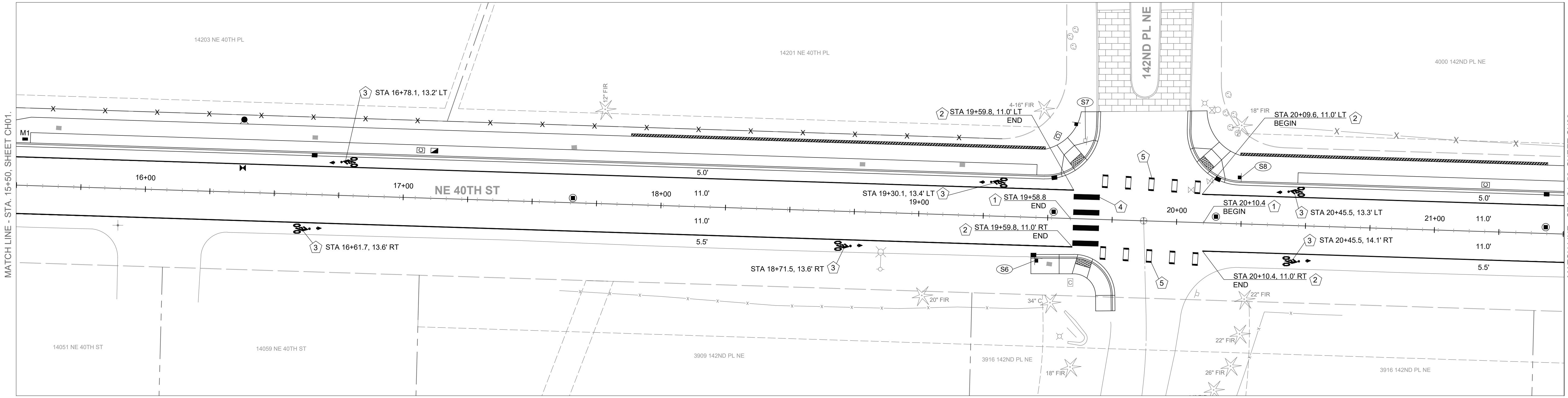
G. KHO 04/24
DESIGNED BY DATE
G. KHO 04/24
DRAWN BY DATE
C. MASEK 04/24
CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

CHANNELIZATION AND SIGNING PLAN
STA 10+00 TO STA 15+50

CH01 SHT 34 OF 46



GENERAL NOTES

1. CALL UTILITIES UNDERGROUND LOCATION CENTER AT 1-800-424-5555 48 HOURS PRIOR TO CONSTRUCTION.
2. DRIVEWAY ACCESS TO PROPERTIES SHALL BE MAINTAINED AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE CITY.
3. THE CONTRACTOR SHALL MAINTAIN 10 FOOT MINIMUM TRAVEL LANES.

SIGN NOTES

1. FOR SIGN INSTALLATION DETAILS, SEE COB STD. DWG. SG-100-1 AND SG-110-1.
2. ALL REMOVED SIGNS SHALL REMAIN THE PROPERTY OF THE CITY OF BELLEVUE.
3. ALL SIGNS INSTALLED SHALL BE 7 FEET FROM THE FINISHED GRADE TO THE BOTTOM OF THE SIGN EXCEPT AS NOTED IN THE SIGN SCHEDULE.
4. FOR INSTALLATION OF STREET NAME SIGNS, SEE COB STD. DWG. SG-150-1.

CHANNELIZATION GENERAL NOTES

1. ALL EXISTING RAISED PAVEMENT MARKINGS AND PLASTIC MARKINGS SHALL BE REMOVED IN OVERLAY AREAS.
2. ALL CONFLICTING CHANNELIZATION OUTSIDE OF THE OVERLAY AREA SHALL BE REMOVED.

CHANNELIZATION NOTES

1. PROVIDE AND INSTALL YELLOW DOUBLE CENTERLINE USING TYPE 1 AND TYPE 2 RPMS PER COB STD. DWG. NO. CH-100-1 AND CH-120-1.
2. INSTALL 6" WIDE WHITE PAINT LINE.
3. PROVIDE AND INSTALL BICYCLE LANE MARKING PER COB STD. DWG. NO. CH-270-1.
4. PROVIDE AND INSTALL PLASTIC CONTINENTAL STYLE CROSSWALK MARKINGS PER COB STD. DWG. NO. CW-100-1.
5. PROVIDE AND INSTALL GREEN BIKE LANE TREATMENT (BICYCLE CROSSING MARKING) PER COB STD. DWG. NO. CH-110-1 AND CH-250-1.

SIGN SCHEDULE

SIGN NO.	STATION	OFFSET	NEW/EX.	DESIGNATION	SIZE	COLOR	DESCRIPTION	REMARKS
S6	19+45.5	16.8' LT	NEW	W11-2	30X30	YELLOW	PEDESTRIAN CROSSING	INSTALL NEW SIGN ON NEW POST AND FOUNDATION AT STA 19+45.5, 16.8' LT.
	19+45.5	16.8' LT	NEW	W16-7P	21X15	YELLOW	DIAGONAL DOWNWARD ARROW	INSTALL NEW SIGN ON NEW POST AND FOUNDATION AT STA 19+45.5, 16.8' LT.
S7	19+64.2	30.3' LT	EX.	R1-1	30X30	RED	STOP SIGN	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 19+60.0, 37.2' LT.
			EX.	SNS	36X9	GREEN	NE 40 ST	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 19+60.0, 37.2' LT.
			EX.	SNS	36X9	GREEN	142 PL NE	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 19+60.0, 37.2' LT.
S8	20+24.5	18.0' LT	NEW	W11-2	30X30	YELLOW	PEDESTRIAN CROSSING	INSTALL NEW SIGN ON NEW POST AND FOUINDATION AT STA 20+24.5, 18.0' LT.
	20+24.5	18.0' LT	NEW	W16-7P	21X15	YELLOW	DIAGONAL DOWNWARD ARROW	INSTALL NEW SIGN ON NEW POST AND FOUINDATION AT STA 20+24.5, 18.0' LT.

NO.	DATE	BY	APPR.	REVISIONS

G. KHO 04/24
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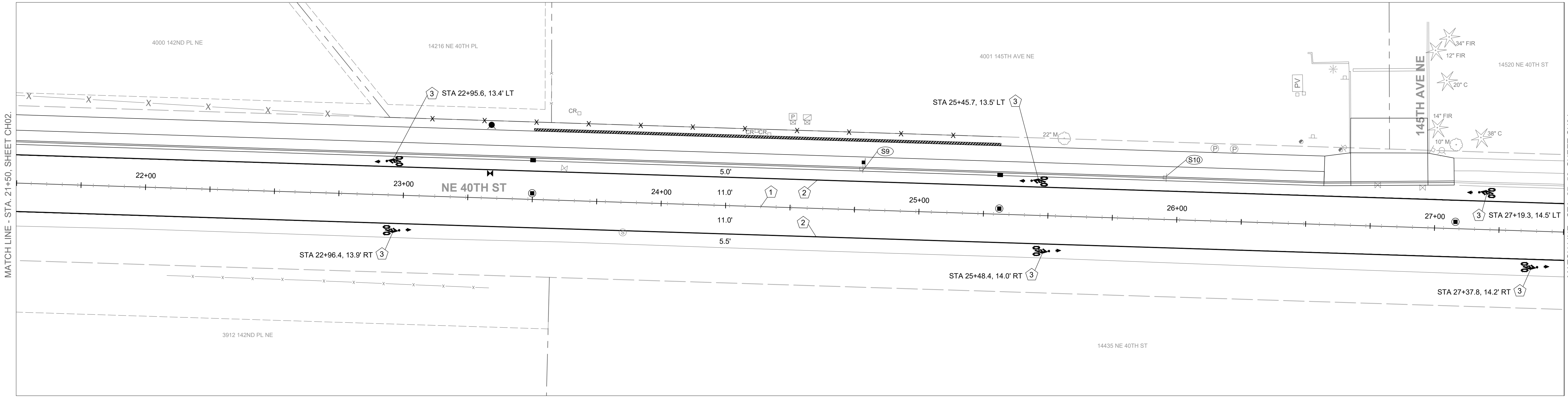
G. KHO 04/24
DRAWN BY DATE
C. MASEK 04/24
CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

CHANNELIZATION AND SIGNING PLAN
STA 15+50 TO STA 21+50

CH02 SHT 35 OF 46



GENERAL NOTES

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SIGN NOTES

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CHANNELIZATION GENERAL NOTES

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CHANNELIZATION NOTES

1 PROVIDE AND INSTALL YELLOW DOUBLE CENTERLINE USING TYPE 1 AND TYPE 2 RPMS PER COB STD. DWG. NO. CH-100-1 AND CH-120-1.

2 INSTALL 6" WIDE WHITE PAINT LINE.

3 PROVIDE AND INSTALL BICYCLE LANE MARKING PER COB STD. DWG. NO. CH-270-1.

SIGN SCHEDULE

SIGN NO.	STATION	OFFSET	NEW/EX.	DESIGNATION	SIZE	COLOR	DESCRIPTION	REMARKS
S9	24+77.8	15.9' LT	EX.	S3-1A	30X30	YELLOW	SCHOOL BUS STOP AHEAD	REMOVE SIGN, POST, AND FOUNDATION. RELOCATE SIGN TO NEW POST AT STA 24+78.6, 18.4' LT.
S10	25+95.5	16.2' LT	EX.	R7-1	12X18	WHITE	NO PARKING ANY TIME	REMOVE SIGN, POST, AND FOUNDATION.

SCALE IN FEET
20 0 10 20 40

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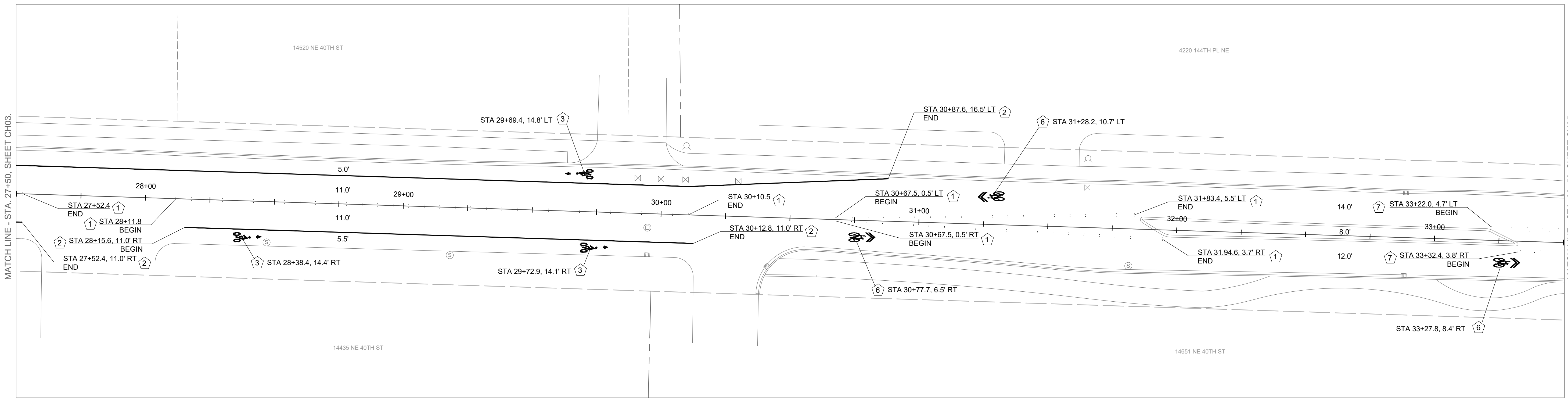
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

CHANNELIZATION AND SIGNING PLAN
STA 21+50 TO STA 27+50

CH03 SHT 36 OF 46



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2. INSTALL 6" WIDE WHITE PAINT LINE.
3. PROVIDE AND INSTALL BICYCLE LANE MARKING PER COB STD. DWG. NO. CH-270-1.
6. PROVIDE AND INSTALL SHARED LANE SYMBOL PER COB STD. DWG. NO. CH-270-1.
7. PROVIDE AND INSTALL TWO WAY LEFT TURN LINE USING TYPE 1 AND TYPE 2 RPMS PER COB STD. DWG. NO. CH-100-1 AND CH-120-1.

SCALE IN FEET
20 0 10 20 40

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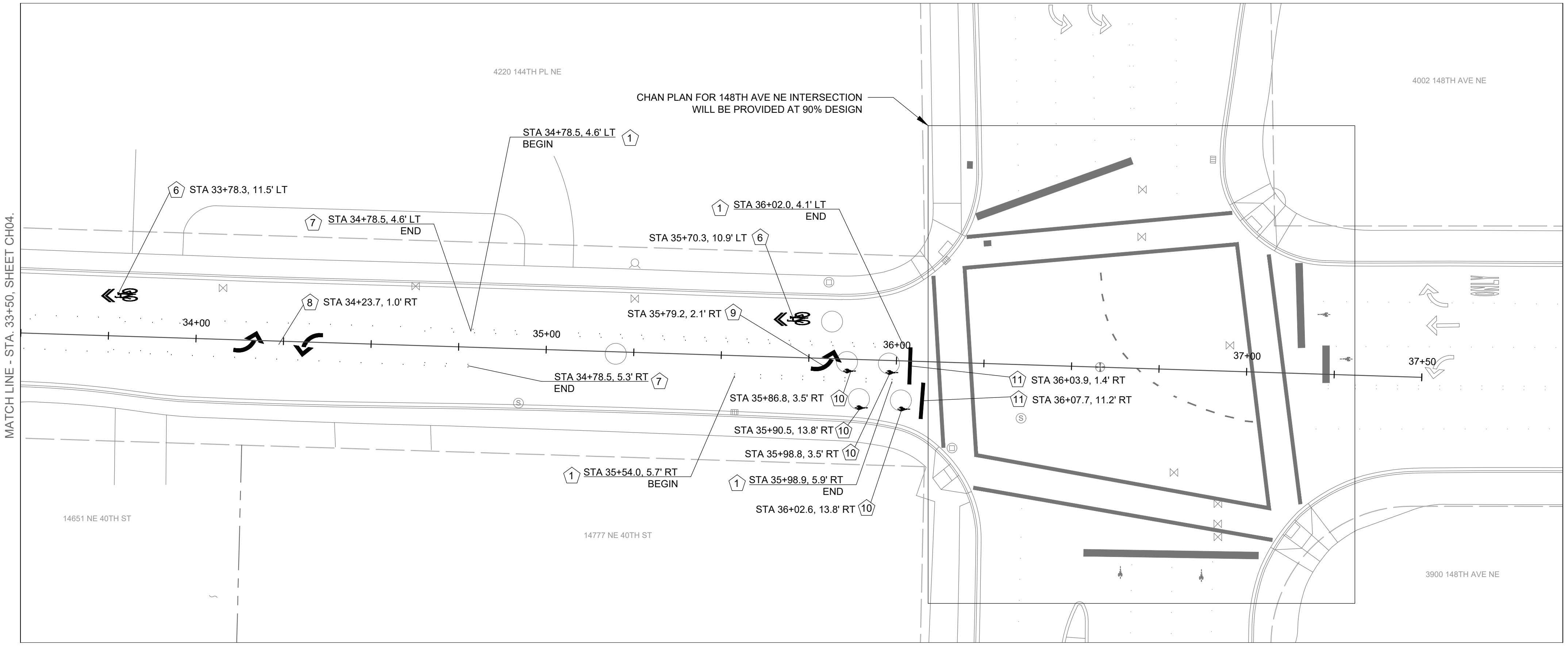
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

CHANNELIZATION AND SIGNING PLAN
STA 27+50 TO STA 33+50

CH04 SHT 37 OF 46



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CHANNELIZATION GENERAL NOTES

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CHANNELIZATION NOTES

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6 PROVIDE AND INSTALL SHARED LANE SYMBOL PER COB STD. DWG. NO. CH-270-1.

7 PROVIDE AND INSTALL TWO WAY LEFT TURN LINE USING TYPE 1 AND TYPE 2 RPMS PER COB STD. DWG. NO. CH-100-1 AND CH-120-1.

8 PROVIDE AND INSTALL TWO WAY LEFT TURN ARROWS PER COB. STD. DWG. CH-170-1.

9 PROVIDE AND INSTALL LEFT TURN ARROW PER COB. STD. DWG. CH-170-1.

10 PROVIDE AND INSTALL BICYCLE DETECTOR MARKING PER COB STD. DWG. NO. CH-270-1.

11 INSTALL 12-INCH WIDE WHITE PAINT STOP BAR.

SCALE IN FEET
20 0 10 20 40

NO.	DATE	BY	APPR.	REVISIONS

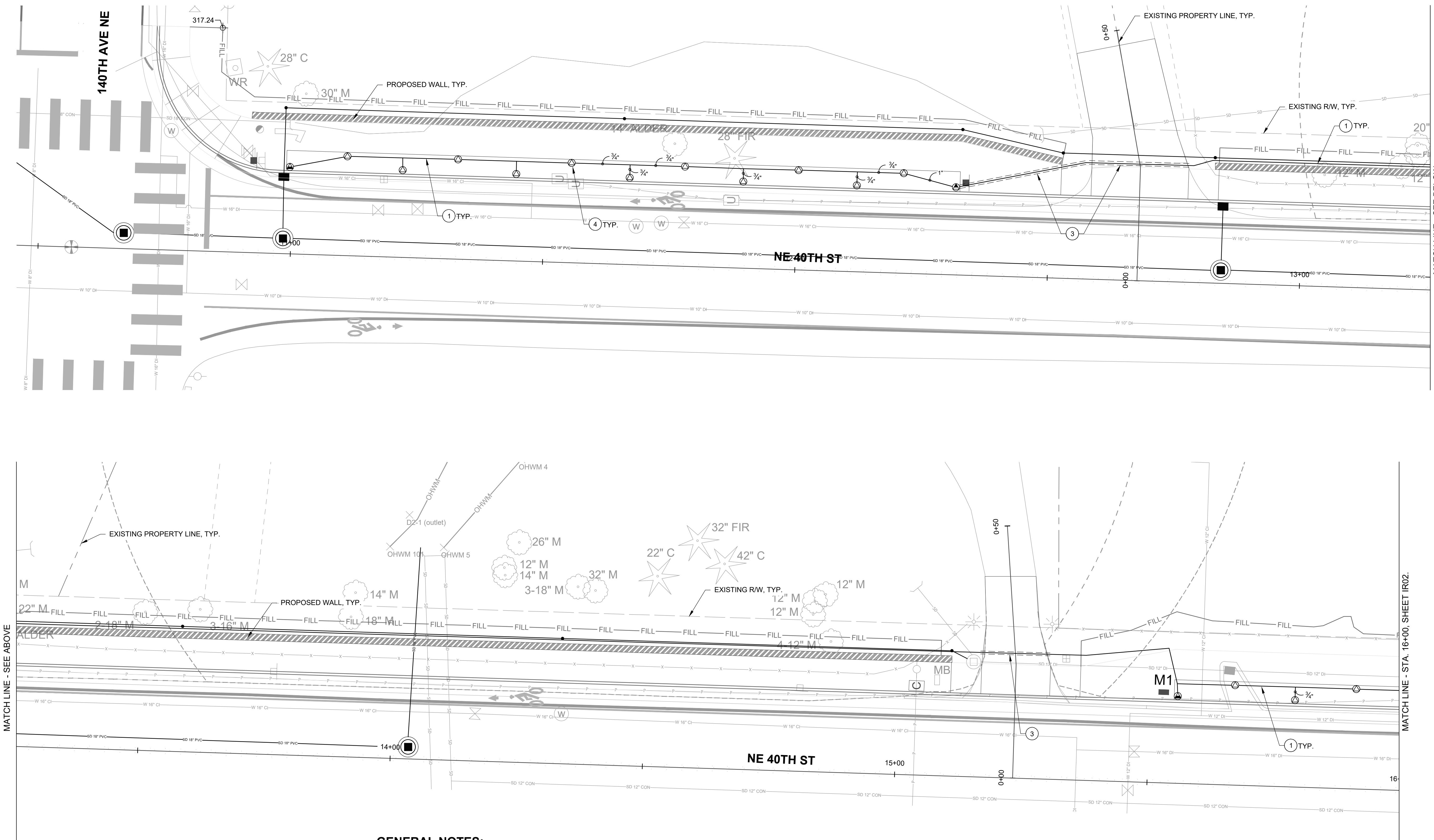
G. KHO	04/24	
DESIGNED BY	DATE	
G. KHO	04/24	
DRAWN BY	DATE	
C. MASEK	04/24	
CHECKED BY	DATE	

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

CHANNELIZATION AND SIGNING PLAN
STA 33+50 TO STA 37+50

CH05 SHT 38 OF 46



CONSTRUCTION NOTES:

1. INSTALL IRRIGATION LATERAL PER TYPICAL TRENCH SECTION COB STD DETAIL PK-IR-13A.
3. SLEEVE IRRIGATION MAINLINE AND/OR LATERAL PER COB STD DETAIL PK-IR-13B.
4. INSTALL SPRAY HEAD AND SWING ARM ASSEMBLY PER COB STD DETAILS PK-IR-10C AND PK-IR-10D.

GENERAL NOTES:

1. SEE IRRIGATION SCHEDULE, SHEET IR04.
2. SEE LANDSCAPE PLAN, SHEETS LA01-LA03.

NO.	DATE	BY	APPR.	REVISIONS

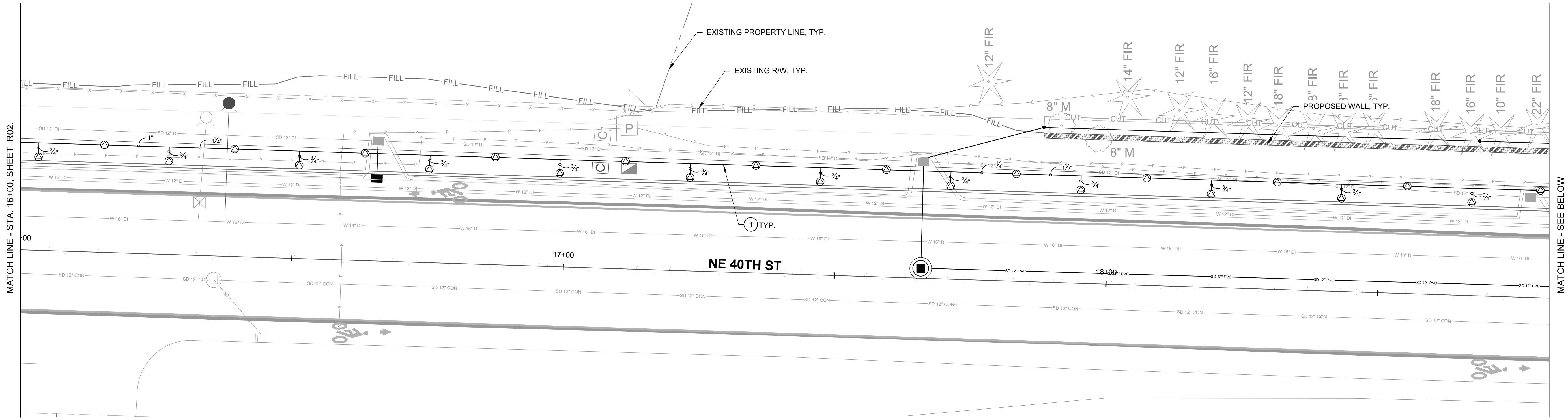
J. GAGE 04/24 — DESIGNED BY / DATE
T. DANISCH 04/24 — DRAWN BY / DATE
R. KOESTER 04/24 — CHECKED BY / DATE

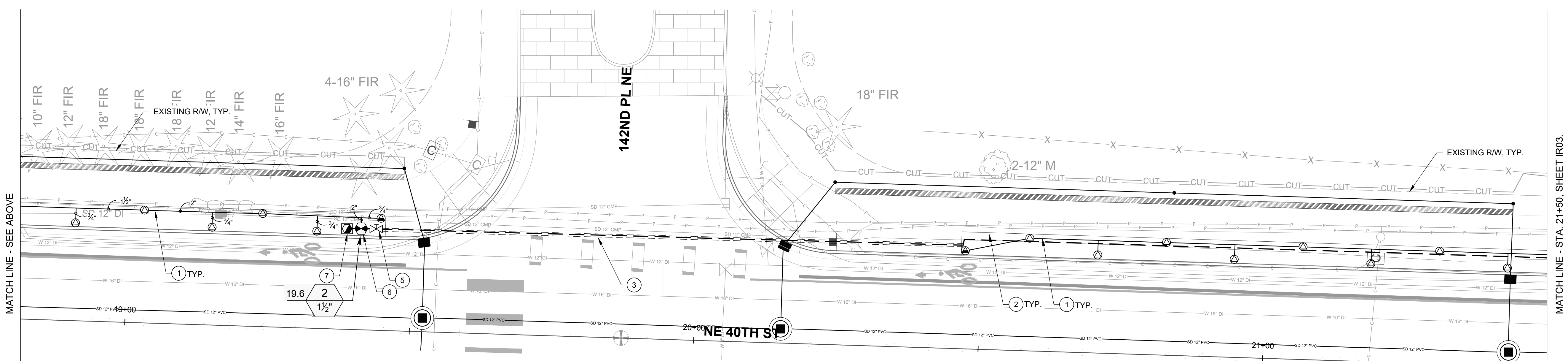
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

IRRIGATION PLAN
STA 10+00 TO STA 16+00

IR01 SHT 39 OF 46



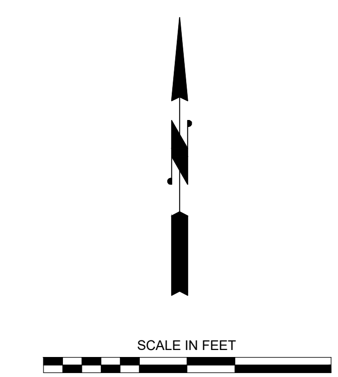


CONSTRUCTION NOTES:

1. INSTALL IRRIGATION LATERAL PER TYPICAL TRENCH SECTION COB STD DETAIL PK-IR-13A.
2. INSTALL IRRIGATION MAINLINE PER TYPICAL TRENCH SECTION COB STD DETAIL PK-IR-13A.
3. SLEEVE IRRIGATION MAINLINE AND/OR LATERAL PER COB STD DETAIL PK-IR-13B.
4. INSTALL SPRAY HEAD AND SWING ARM ASSEMBLY PER COB STD DETAILS PK-IR-10C AND PK-IR-10D.
5. INSTALL ISOLATION BALL VALVE PER COB STD DETAIL PK-IR-07C.
6. INSTALL STANDARD AUTOMATIC CONTROL VALVE ASSEMBLY PER COB STD. DETAIL PK-IR-08A.
7. INSTALL QUICK COUPLER VALVE ASSEMBLY PER COB STD DETAIL PK-IR-11A.

GENERAL NOTES:

1. SEE IRRIGATION SCHEDULE, SHEET IR04.
2. SEE LANDSCAPE PLAN, SHEETS LA01-LA03.



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T. DANISCH 04/24
DRAWN BY DATE
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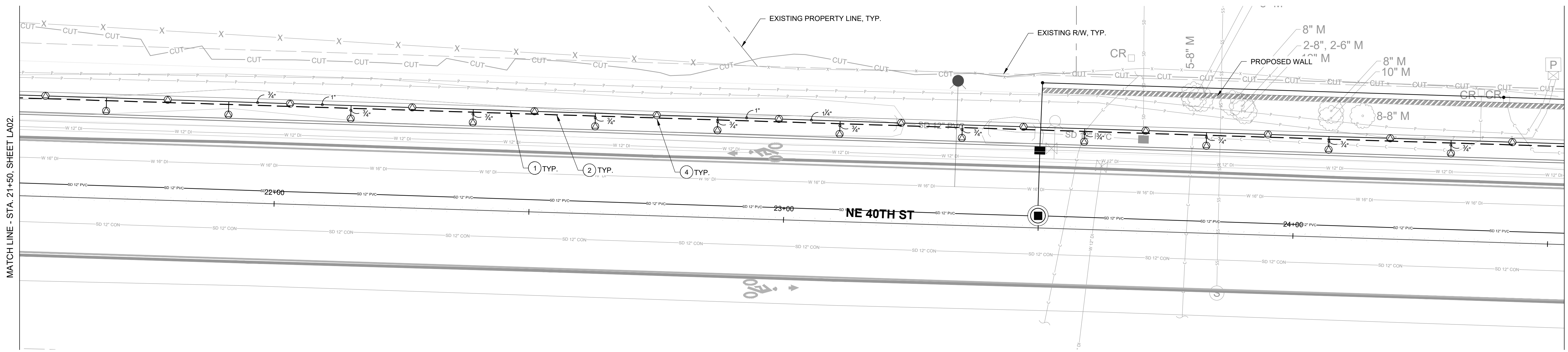
CHECKED BY DATE

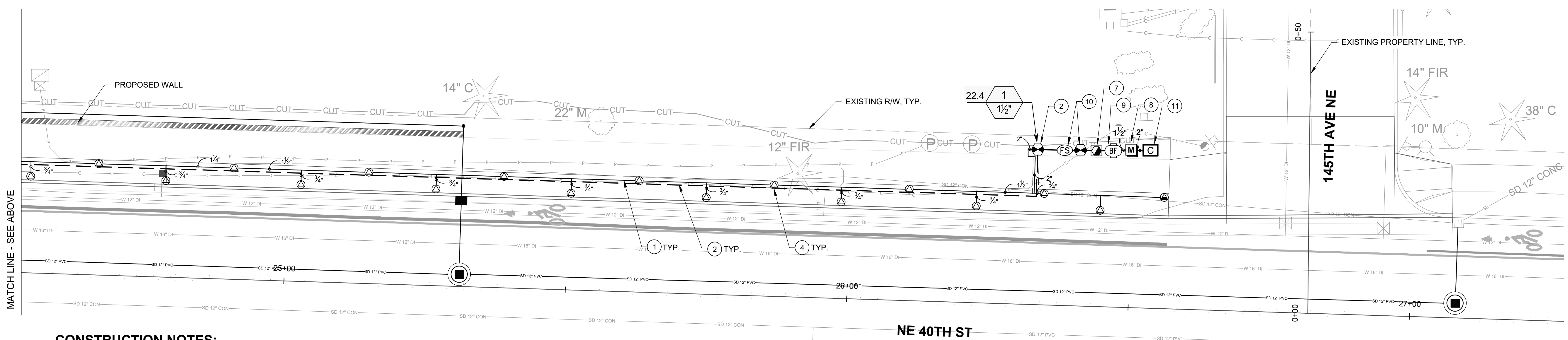
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

IRRIGATION PLAN
STA 16+00 TO STA 21+50

IR02 SHT 40 OF 46





CONSTRUCTION NOTES:

1. INSTALL IRRIGATION LATERAL PER TYPICAL TRENCH SECTION COB STD DETAIL PK-IR-13A.
2. INSTALL IRRIGATION MAINLINE PER TYPICAL TRENCH SECTION COB STD DETAIL PK-IR-13A.
4. INSTALL SPRAY HEAD AND SWING ARM ASSEMBLY PER COB STD DETAILS PK-IR-10C AND PK-IR-10D.
7. INSTALL QUICK COUPLER VALVE ASSEMBLY PER COB STD DETAIL PK-IR-11A.
8. INSTALL 1.5" IRRIGATION METER PER COB STD DETAIL NO. W-27. SEE IRRIGATION - TYPICAL POINT OF CONNECTION SCHEMATIC FOR D.C.V.A IN VALVE BOX COB STD PLAN PK-IR-01D.
9. INSTALL DOUBLE CHECK VALVE ASSEMBLY IN VALVE BOX PER COB STD DETAIL PK-IR-02A AND W-36.
10. INSTALL COMBINED AUTOMATIC CONTROL MASTER VALVE AND FLOW SENSOR ASSEMBLY PER COB STD DETAIL PK-IR-06.
11. INSTALL CONTROLLER IN STAINLESS STEEL ENCLOSURE ON PEDESTAL PER COB STD DETAIL PK-IR-16A. PROVIDE POWER FROM SERVICE CABINET LOCATED AT XX.

GENERAL NOTES:

1. SEE IRRIGATION SCHEDULE, SHEET IR04.
2. SEE LANDSCAPE PLAN, SHEETS LA01-LA03.

SCALE IN FEET
10 0 5 10 20

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City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

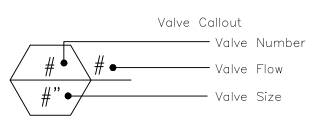
IRRIGATION PLAN
STA 21+50 TO STA 27+00

IR03 SHT 41 OF 46

IRRIGATION SCHEDULE

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY	PSI
LST RST SST	HUNTER MP STRIP PROS-12-PRS40-CV SHRUB ROTATOR, 12" POP-UP WITH FACTORY INSTALLED CHECK VALVE, PRESSURE REGULATED TO 40 PSI, MP ROTATOR NOZZLE. LST=IVORY LEFT STRIP, SST=BROWN SIDE STRIP, RST=COPPER RIGHT STRIP, ON PRS40 BODY.	99	40

SYMBOL	MANUFACTURER/MODEL/DESCRIPTION	QTY
	WEATHERMATIC 8200CR BRASS REMOTE CONTROL VALVE, 1IN. - 3IN., SIZE AS INDICATED.	3
	1" BUCKNER QB5 LRC-10 QUICK COUPLER VALVE	1
BF	ZURN 950XL (2) 1-1/2" DOUBLE CHECK VALVE ASSEMBLY	1
C	RAIN BIRD ESP12LXMEF (2) 12 STATION COMMERCIAL CONTROLLER. PLASTIC WALL MOUNT. FLOW SENSING	1
FS	FLOW SENSOR 1.5" DATA INDUSTRIAL MODEL 228PV FLOW SENSOR	1
M	WATER METER 1-1/2" NEW 1.5" METER	1
	IRRIGATION LATERAL LINE: PVC SCHEDULE 40	1,635 L.F.
	IRRIGATION MAINLINE: PVC SCHEDULE 40	719.0 L.F.
	PIPE SLEEVE: PVC SCHEDULE 40	167.5 L.F.



IRRIGATION NOTES

1. LOCATE AUTOMATIC CONTROL VALVES IN SHRUB/ GROUNDCOVER AREAS AT POINT OF EASY ACCESS. CONTRACTOR SHALL STAKE LOCATIONS FOR POC, SLEEVES, VALVES FOR ENGINEER TO REVIEW & APPROVE PRIOR TO INSTALLATION.
2. ADJUST HEAD LOCATIONS IN THE FIELD TO COMPLY WITH EXISTING SITE CONDITIONS & PLANT MATERIALS TO AVOID SPRAY BLOCKAGE, PROVIDE HEAD TO HEAD COVERAGE, OR TO AVOID CONFLICTS WITH UNDERGROUND UTILITIES, FOUNDATIONS OR OTHER OBSTRUCTIONS.
3. EXISTING STATIC PSI AT IRRIGATION METER IS 65 PSI. INFORMATION PROVIDED BY CITY OF BELLEVUE UTILITIES. PRIOR TO INSTALLATION OF IRRIGATION SYSTEM, CONTRACTOR SHALL FIELD VERIFY EXISTING PSI MATCHES OR EXCEEDS DESIGN WATER PRESSURE PRIOR TO BEGINNING WORK. NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN THE DESIGN PSI & EX PSI PRIOR TO PROCEEDING WITH WORK.
4. COORDINATE IRRIGATION SLEEVING INSTALLATION WITH GENERAL CONTRACTOR.
5. LOCATE IRRIGATION HEADS ACCURATELY PER PLANS. VALVE LOCATIONS, MAINLINE, AND LATERAL LINE ROUTING IS SHOWN SCHEMATICALLY FOR CLARITY. INSTALL ALL PIPE PER COB DETAILS UNLESS OTHERWISE NOTED.
6. CONTRACTOR TO DOCUMENT WORKING ORDER OF EXISTING AUTOMATIC SPRAY IRRIGATION SYSTEM PRIOR TO BEGINNING CONSTRUCTION AND SUBMIT RESULTS TO ENGINEER PRIOR TO BEGINNING WORK. CONTRACTOR SHALL RECONNECT ALL EXISTING IRRIGATION CIRCUITS TO REMAIN AS PART OF EXISTING CONTROLLER AND VALVE RELOCATIONS.
7. WHEN TRENCHING OCCURS AROUND TREES TO REMAIN, THE TREE ROOTS SHALL NOT BE CUT, BUT THE TRENCH SHALL BE TUNNELED UNDER OR AROUND THE ROOTS BY CAREFUL HAND-DIGGING & WITHOUT INJURY TO THE ROOTS.
8. CONTRACTOR SHALL RESTORE ANY EX IRRIGATION TO REMAIN DAMAGED BY CONSTRUCTION ACTIVITIES TO PRE-CONSTRUCTION CONDITIONS.
9. ALIGN VALVE BOXES SQUARE TO EACH OTHER AND WITH EDGE OF ADJACENT CURB OR PAVEMENT. LOCATE VALVE BOXES MIN 12" FROM CURBS, WALLS AND PATHWAYS.
10. CITY OF BELLEVUE STANDARD PARK DETAILS CAN BE FOUND IN THE 2020 ENVIRONMENTAL BEST MANAGEMENT PRACTICES & DESIGN STANDARDS MANUAL PREPARED BY THE CITY OF BELLEVUE PARKS & COMMUNITY SERVICES NATURAL RESOURCE, RESOURCE MANAGEMENT & PLANNING DIVISIONS.

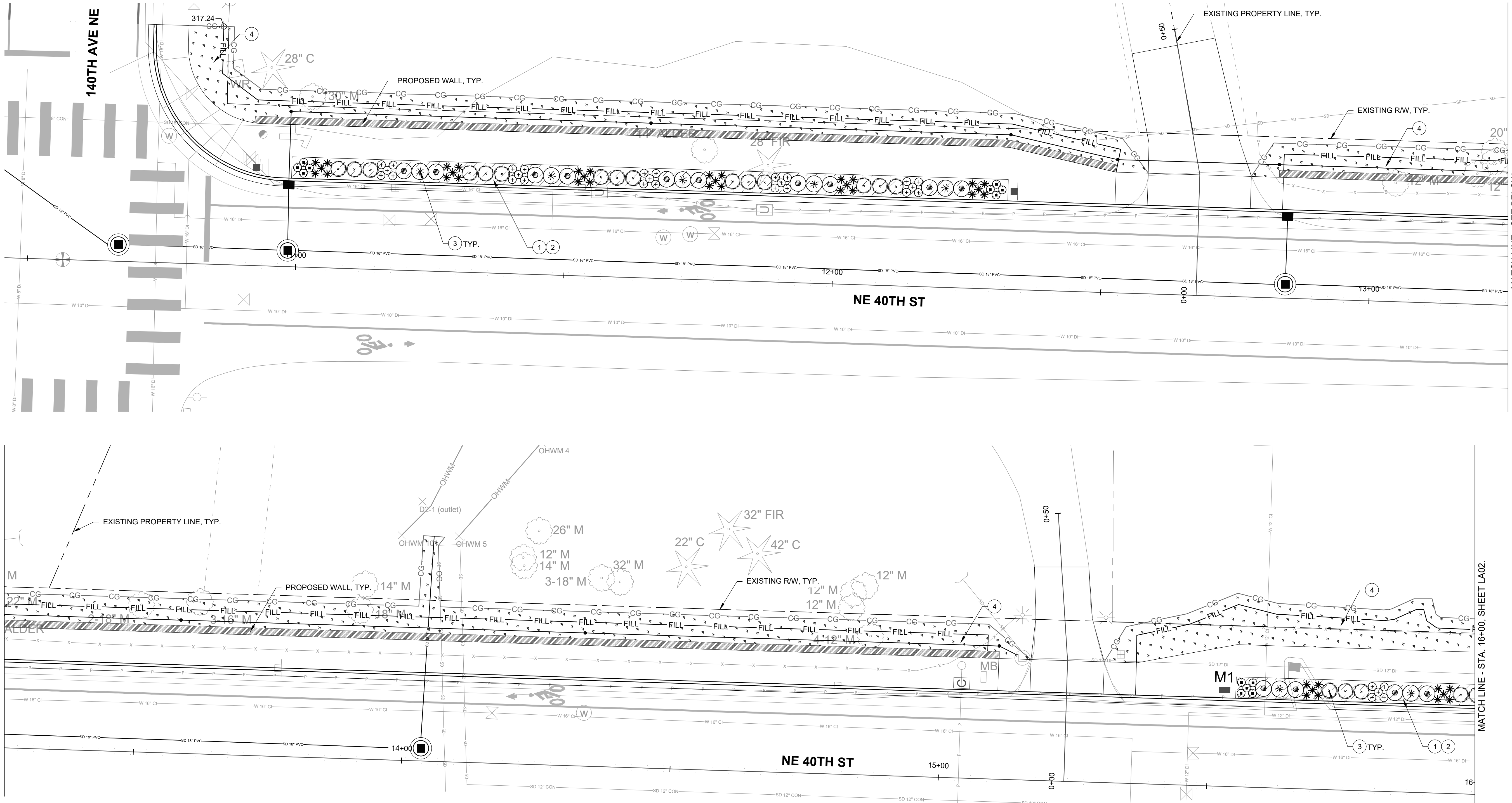
NO.	DATE	BY	APPR.	REVISIONS

J. GAGE	04/24
DESIGNED BY	DATE
T. DANISCH	04/24
DRAWN BY	DATE
R. KOESTER	04/24
CHECKED BY	DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

IRRIGATION DETAILS



LEGEND:

- CUT — CUT LINE
- FILL — FILL LINE
- TURF SEED MIX
- BARK MULCH
- GOLDEN GEM JAPANESE HOLLY
- WESTERN SWORD FERN
- COMPACT OREGON GRAPE
- MOUNT VERNON ENGLISH LAUREL
- LILY TURF
- JAPANESE FOREST GRASS

SCALE IN FEET
10 0 5 10 20

CONSTRUCTION NOTES

1. PREPARE PLANTING SOIL PER TYPE 2 FOR PLANTER STRIPS, COB STD DETAIL PK-IM-06B.
2. GRADE PLANTER STRIPS COB STD. DETAIL PK-IM-06A.
3. INSTALL SHRUBS PER COB STD DETAIL PK-IM-02A.
4. PREPARE TURF PLANTING AREAS PER COB STD DETAIL PK-IM-05A.

GENERAL NOTES:

1. SEE LANDSCAPING DETAILS & SCHEDULES, SHEET LA04.
2. SEE IRRIGATION PLANS, NOTES & SCHEDULES, SHEETS IR01-IR03.

NO.	DATE	BY	APPR.	REVISIONS

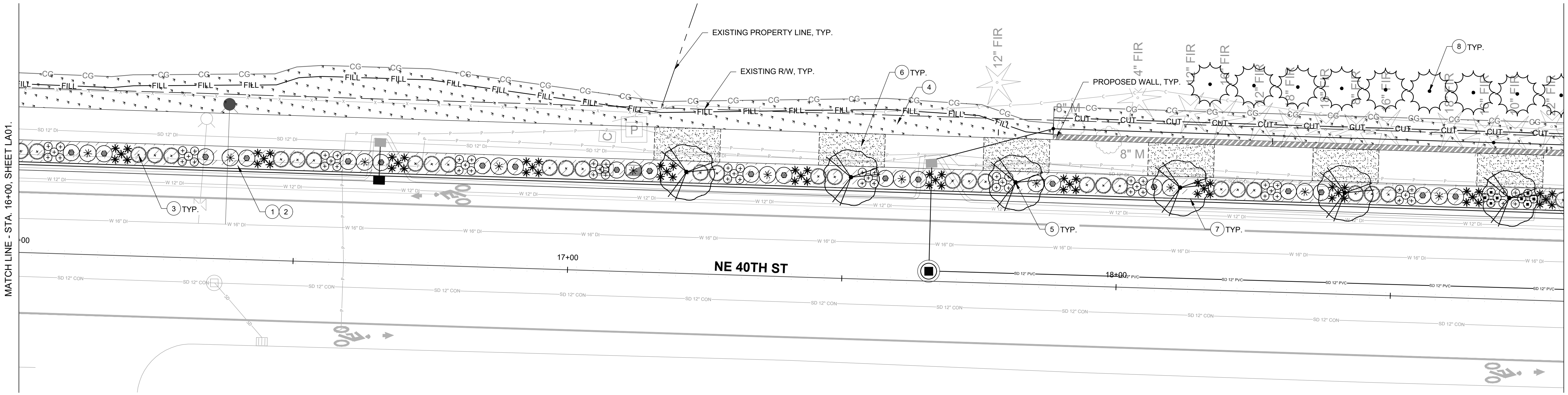
J. GAGE 04/24
DESIGNED BY DATE
T. DANISCH 04/24
DRAWN BY DATE
R. KOESTER 04/24
CHECKED BY DATE

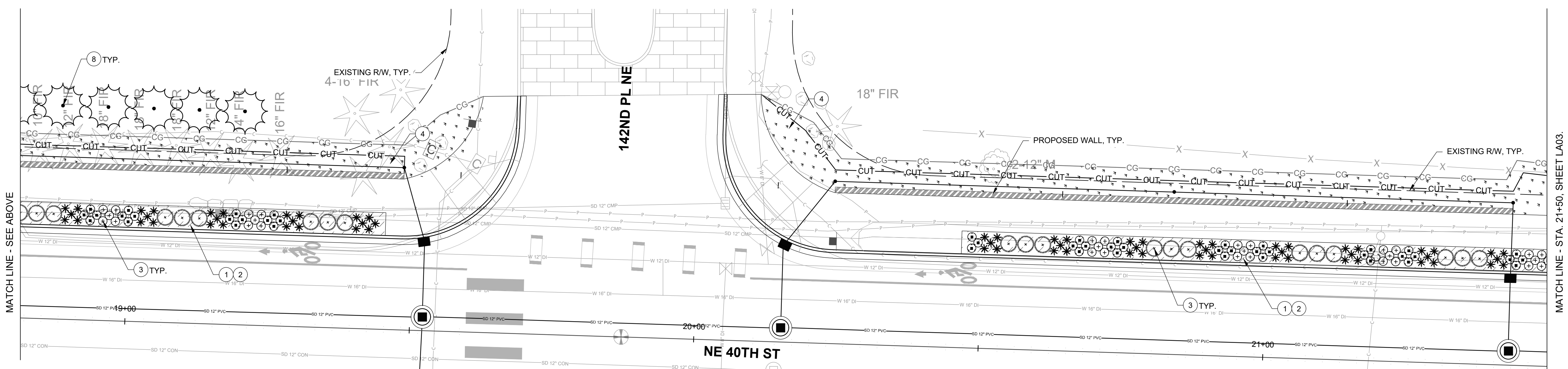
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

LANDSCAPING PLAN
STA 10+00 TO STA 16+00

LA01 SHT 43 OF 46





CONSTRUCTION NOTES

1. PREPARE PLANTING SOIL PER TYPE 2 FOR PLANTER STRIPS, COB STD DETAIL PK-IM-06B.
2. GRADE PLANTER STRIPS COB STD. DETAIL PK-IM-06A.
3. INSTALL SHRUBS PER COB STD DETAIL PK-IM-02A.
4. PREPARE TURF PLANTING AREAS PER COB STD DETAIL PK-IM-05A.
5. INSTALL RIGHT-OF-WAY TREES PER COB STD DETAIL PK-IM-07B.
6. INSTALL STRUCTURAL SOIL PER COB STD DETAIL PK-IM-07E.
7. INSTALL ROOT BARRIER PER COB STD DETAIL PK-IM-07B AND PK-IM-07E.
8. INSTALL TREE PER COB STD DETAIL PK-IM-03A AND PK-IM-03B.

GENERAL NOTES:

1. SEE LANDSCAPING DETAILS & SCHEDULES, SHEET LA04.
2. SEE IRRIGATION PLANS, NOTES & SCHEDULES, SHEETS IR01-IR03.

LEGEND:

- CUT LINE
- FILL LINE
- ROOT BARRIER
- STRUCTURAL SOIL
- TURF SEED MIX
- BARK MULCH
- GOLDEN GEM JAPANESE HOLLY
- WESTERN SWORD FERN
- COMPACT OREGON GRAPE
- MOUNT VERNON ENGLISH LAUREL
- LILY TURF
- JAPANESE FOREST GRASS
- PAPERBARK MAPLE
- INCENSE CEDAR

SCALE IN FEET
10 0 5 10 20

NO.	DATE	BY	APPR.	REVISIONS

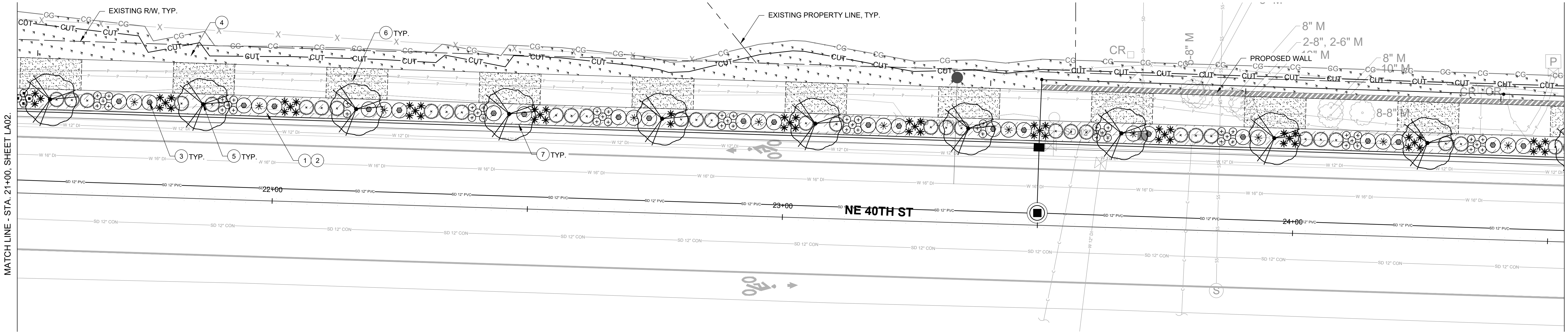
J. GAGE 04/24
DESIGNED BY DATE
T. DANISCH 04/24
DRAWN BY DATE
R. KOESTER 04/24
CHECKED BY DATE

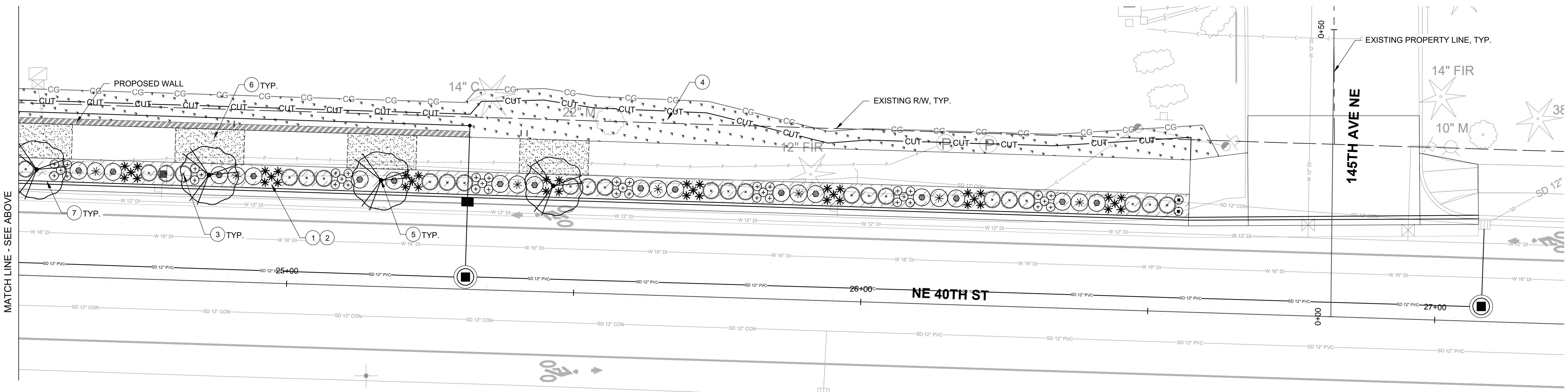
City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

LANDSCAPING PLAN
STA 16+00 TO STA 21+50

LA02 SHT 44 OF 46





LEGEND:

- CUT — CUT LINE
- FILL — FILL LINE
- ROOT BARRIER
- STRUCTURAL SOIL
- TURF SEED MIX
- BARK MULCH
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- MOUNT VERNON ENGLISH LAUREL
- LILY TURF
- JAPANESE FOREST GRASS
- PAPERBARK MAPLE

SCALE IN FEET

10 0 5 10 20

CONSTRUCTION NOTES

1. PREPARE PLANTING SOIL PER TYPE 2 FOR PLANTER STRIPS, COB STD DETAIL PK-IM-06B.
2. GRADE PLANTER STRIPS COB STD. DETAIL PK-IM-06A.
3. INSTALL SHRUBS PER COB STD DETAIL PK-IM-02A.
4. PREPARE TURF PLANTING AREAS PER COB STD DETAIL PK-IM-05A.
5. INSTALL RIGHT-OF-WAY TREES PER COB STD DETAIL PK-IM-07B.
6. INSTALL STRUCTURAL SOIL PER COB STD DETAIL PK-IM-07E.
7. INSTALL ROOT BARRIER PER COB STD DETAIL PK-IM-07B AND PK-IM-07E.

GENERAL NOTES:

1. SEE LANDSCAPING DETAILS & SCHEDULES, SHEET LA04.
2. SEE IRRIGATION PLANS, NOTES & SCHEDULES, SHEETS IR01-IR03.

NO.	DATE	BY	APPR.	REVISIONS

J. GAGE	04/24
DESIGNED BY	DATE
T. DANISCH	04/24
DRAWN BY	DATE
R. KOESTER	04/24
CHECKED BY	DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

LANDSCAPING PLAN
STA 21+50 TO STA 27+00

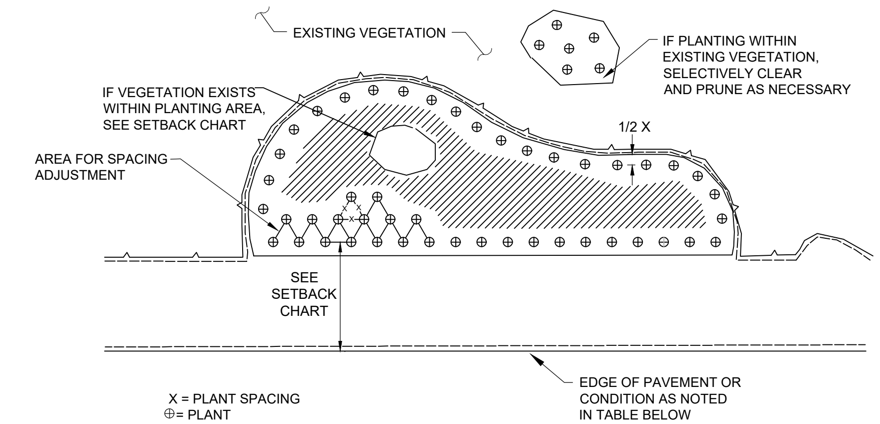
LA03 SHT 45 OF 46

PLANTING SCHEDULE

BOTANICAL NAME	COMMON NAME	SIZE	SPACING	QTY.	REMARKS
TREES					
ACER GRISEUM 'COPPER ROCKET'	COPPER ROCKET PAPERBARK MAPLE	1.5" CAL. MIN.	30' O.C.	20	SINGLE LEADER
CALOCEDRUS DECURRENS	INCENSE CEDAR	B&B, 6' HT. MIN.	8' O.C.	14	SINGLE LEADER
SHRUBS					
ILEX CRENATA 'GOLDEN GEM'	GOLDEN GEM JAPANESE HOLLY	1 GAL., 12" HT. MIN.	18" O.C.	212	FULL, WELL BRANCHED, LAYOUT PER PLAN
MAHONIA AQUIFOLIUM 'COMPACTA'	COMPACT OREGON GRAPE	2 GAL., 12" HT. MIN.	36" O.C.	36	FULL, WELL BRANCHED, LAYOUT PER PLAN
POLYSTICHUM MUNITUM	WESTERN SWORD FERN	2 GAL., 18" HT. MIN.	36" O.C.	72	FULL, WELL BRANCHED, LAYOUT PER PLAN
PRUNUS LAUROCERASUS 'MOUNT VERNON'	MOUNT VERNON ENGLISH LAUREL	3 GAL., 12" HT. MIN.	36" O.C.	129	FULL, WELL BRANCHED, LAYOUT PER PLAN
GRASSES/GROUNDCOVER					
HAKONECHLOA MACRA	JAPANESE FOREST GRASS	1 GAL., 8" HT. MIN.	18" O.C.	265	FULL, LAYOUT PER PLAN
LIRIOPE MUSCARI	LILY TURF	4" POT, 6" HT. MIN.	18" O.C.	73	FULL, LAYOUT PER PLAN
HYDROSEED MIX				0.19 AC	
BARK MULCH					

LANDSCAPE NOTES

1. ENGINEER SHALL REVIEW AND APPROVE SUBGRADES IN PLANTING AREAS PRIOR TO THE COMMENCEMENT OF PLANTING.
2. FINISH GRADES IN PLANTING AREAS SHALL FLOW SMOOTHLY INTO ONE ANOTHER WITH NO ABRUPT TRANSITIONS AND PRODUCE POSITIVE DRAINAGE.
3. FIELD STAKE OR DEMARCATE PLANTING LOCATIONS FOR ENGINEER REVIEW AND APPROVAL PRIOR TO INSTALLATION.
4. TREE LOCATIONS SHOWN ON PLANTING PLAN ARE APPROXIMATE; STAKE ALL TREE LOCATIONS IN THE FIELD FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO PLANTING THE TREES.
5. COORDINATE PLANTING LOCATIONS WITH SPRINKLER HEAD LOCATIONS TO AVOID ANY CONFLICTS.
6. GRASS HYDROSEED MIX SHALL BE PER SPECIAL PROVISIONS.
7. PLANT MATERIAL MUST BE MAINTAINED PER THE APPROVED PLANT ESTABLISHMENT PLAN THROUGH THE ONE (1) YEAR GUARANTEE PERIOD FOR PLANT ESTABLISHMENT, SEE SPECS.
8. UNLESS OTHERWISE NOTED, INSTALLATION OF ALL PLANT MATERIAL SHALL BE PER THE CITY OF BELLEVUE PARKS STANDARD DETAILS. CITY OF BELLEVUE PARKS STANDARD DETAILS CAN BE FOUND IN THE 2020 ENVIRONMENTAL BEST MANAGEMENT PRACTICES & DESIGN STANDARDS MANUAL.



PLANT MATERIAL SETBACK CHART

	WALL	PAVEMENT	EXISTING TREE TRUNK
TREES	8'	10'	15'
SHRUBS		2'	
GROUNDCOVER / SMALL SHRUB		1'	

TYPICAL SETBACKS FOR CENTER OF PLANT MATERIAL UNLESS OTHERWISE DIRECTED BY THE ENGINEER DURING CONSTRUCTION.

1 PLANTING AREA LAYOUT AND SETBACK

NOT TO SCALE

NO.	DATE	BY	APPR.	REVISIONS

J. GAGE 04/24
DESIGNED BY DATE
T. DANISCH 04/24
DRAWN BY DATE
R. KOESTER 04/24
CHECKED BY DATE

City of Bellevue
Transportation Department

NE 40TH ST SIDEWALK
140TH AVE NE TO 148TH AVE NE

LANDSCAPING DETAILS

LA04 SHT 46 OF 46

GEOTECHNICAL REPORT
NE 40TH STREET SIDEWALK –
140TH AVENUE NE TO 148TH AVENUE NE
BELLEVUE, WASHINGTON

HWA PROJECT NO. 2023-195-21

APRIL 5, 2024

PREPARED FOR THE CITY OF BELLEVUE AND DAVID EVANS AND ASSOCIATES, INC.

HWA GEOSCIENCES INC.
DBE/MWBE

April 5, 2024
HWA Project No. 2023-195-21

David Evans and Associates, Inc.
14432 SE Eastgate Way, Suite 400
Bellevue, Washington 98007

Attention: Renee Koester, P.E.

Subject: **GEOTECHNICAL REPORT**
NE 40th Street Sidewalk
140th Avenue NE to 148th Avenue NE
Bellevue, Washington

Ms. Koester:

In accordance with your request, HWA GeoSciences Inc. (HWA) completed a geotechnical engineering investigation in support of the NE 40th St Sidewalk project in Bellevue, Washington. This report presents the results of our field explorations and laboratory testing along with recommendations pertaining to seismic design ground motion parameters, retaining structures, and construction considerations. The attached report summarizes the results of our study and presents our conclusions and recommendations.

We appreciate the opportunity to provide geotechnical engineering services on this project. If you have any questions regarding this report or require additional information or services, please contact the undersigned at your convenience.

Sincerely,

HWA GEOSCIENCES INC.

Ali Sirjani, P.E.
Geotechnical Engineer

Tyler Cartwright, E.I.T.
Geotechnical Engineer

TABLE OF CONTENTS

LIST OF FIGURES (FOLLOWING TEXT)

APPENDICES

GEOTECHNICAL REPORT
NE 40TH STREET SIDEWALK
140TH AVENUE NE TO 148TH AVENUE NE
BELLEVUE, WASHINGTON

1. INTRODUCTION

1.1 GENERAL

This report summarizes the results of a geotechnical engineering investigation performed by HWA GeoSciences Inc. (HWA) for the NE 40th St Sidewalk – 140th Avenue NE to 148th Avenue NE project in Bellevue, Washington. The approximate location of the project site is shown on the Site and Vicinity Map, Figure 1, and on the Site and Exploration Plans, Figures 2A through 2C. Our field work investigation consisted of logging the drilling of three boreholes to evaluate subsurface soil and groundwater conditions. Laboratory tests were conducted on select soil samples obtained from the boreholes to determine relevant engineering properties of the subsurface soils. Engineering analyses were performed to develop the recommendations presented in this report.

1.2 PROJECT UNDERSTANDING

The City of Bellevue NE 40th Street Sidewalk project will provide improvements, primarily along the north side of NE 40th Street, from 140th Avenue NE to 148th Avenue NE, a linear distance of approximately 2,600 linear feet. We understand that the project scope of work consists of the following improvements:

- Sidewalk with planter where feasible on the north side of NE 40th Street from 140th Avenue NE to 145th Avenue NE
- Grind and overlay of NE 40th Street from 140th Avenue NE to 148th Avenue NE
- Bike lanes from 140th Avenue NE to 145th Avenue NE
- ADA compliant curb ramps
- Retaining walls where necessary
- Marked crosswalk at 142nd Place NE
- Storm drainage improvements

2. FIELD INVESTIGATION AND LABORATORY TESTING

2.1 GEOTECHNICAL SUBSURFACE EXPLORATIONS

A geologist from HWA logged the drilling of three geotechnical borings, designated BH-1 through BH-3, to assess subsurface conditions along the alignment. The locations of the explorations are shown on the Site and Exploration Plans, Figures 2A through 2C. The borings were drilled by Geologic Drill Partners of Bellevue, Washington on November 2, 2023, under subcontract to HWA, using a limited access Bobcat track-mounted drill rig employing hollow-stem auger drilling techniques. The boring depths varied from approximately 12 to 28.25 feet below the ground surface (bgs).

In each boring, Standard Penetration Test (SPT) sampling was performed using a 2-inch outside diameter split-spoon sampler driven by a 140-pound hammer raised using rope and cathead system. During the tests, samples were obtained by driving the sampler 18 inches into the soil with the hammer free-falling 30 inches. The number of blows required for each 6-inches of penetration was recorded. If a total of 50 blows was recorded within a single 6-inch interval, the test was terminated, and the blow count was recorded as 50 blows for the number of inches of penetration. This resistance, or N-value, provides an indication of relative density of granular soils and the relative consistency of cohesive soils.

A geologist from HWA logged the explorations and recorded pertinent information, including sample depths, stratigraphy, soil descriptions, and groundwater occurrence. Soil samples obtained from the explorations were classified in the field and representative portions were placed in plastic bags. These soil samples were then taken to our Bothell, Washington, laboratory for further examination and laboratory testing.

The stratigraphic contacts shown on the individual exploration logs represent the approximate boundaries between soil types; actual transitions may be more gradual. The soil and groundwater conditions depicted are only for the specific date and location reported and, therefore, are not necessarily representative of other locations and times. A legend of the terms and symbols used on the exploration logs is presented in Appendix A, Figure A-1. Summary logs of the explorations are presented in Figures A-2 through A-4.

2.2 LABORATORY TESTING

Representative soil samples obtained from the drilled boreholes were taken to the HWA laboratory for further examination and testing. Laboratory tests, as described below, were conducted on selected soil samples to characterize relevant engineering properties of the on-site soils.

Moisture Content of Soil: The moisture content (percent by dry mass) of selected soil samples was determined in accordance with ASTM D 2216. The results are shown at the sampled intervals on the appropriate exploration logs in Appendix A and on the laboratory test reports presented in Appendix B.

Particle Size Analysis of Soils: Selected samples were tested to determine particle size distribution of the material in accordance with ASTM D6913/D7928. The results are summarized on the attached Summary of Material Properties, Figure B-1, and on the Particle-Size Analysis of Soils reports, Figures B-2 through B-5, Appendix B, which also provide information regarding the classification of the samples and the moisture content at the time of testing.

Atterberg Limits of Soils: Selected samples were tested to determine the Atterberg limits of soils in accordance with ASTM D4318. The results are summarized on the attached Summary of Material Properties, Figure B-1, and on the Liquid Limit, Plastic Limit, and Plasticity Index of Soils report, Figure B-6, Appendix B.

3. SITE CONDITIONS

3.1 General Geologic Conditions

The project alignment is located within the Puget Lowland. The Puget Lowland has repeatedly been occupied by a portion of the continental glaciers that developed during the ice ages of the Quaternary period. During at least four periods, portions of the ice sheet advanced south from British Columbia into the lowlands of Western Washington. The southern extent of these glacial advances was near Olympia, Washington. Each major advance included numerous local advances and retreats, and each advance and retreat resulted in its own sequence of erosion and deposition of glacial lacustrine, outwash, till, and drift deposits. Between and following these glacial advances, sediments from the Olympic and Cascade Mountains accumulated in the Puget Lowland.

Specific geologic information along the project alignment was obtained from the 1:24,000-scale *Geologic Map of the Kirkland Quadrangles, Washington* (Minard, 1983). According to the geologic map, the project area is underlain by Fraser-age Vashon till and advance outwash. Till deposits generally consist of an unsorted mixture of clay, silt, sand, pebbles, cobbles, and boulders deposited at the base of an advancing ice sheet. Till deposits are typically dense to very dense, having been consolidated by several thousands of feet of glacial ice and are relatively impermeable. Groundwater often perches above this unit given its density and low permeability. Advance outwash deposits generally consist of clean sands with pebbles, and finer particles (silt and clay) may lie in the deeper portions of the outwash. Outwash deposits are typically dense to very dense, having been consolidated under the same glacial ice as the till.

3.2 Subsurface Soil Conditions

The soils encountered in our borings, below the asphalt pavement, consisted of near surface fill soils overlying alluvium, advance outwash, and transitional beds. Further descriptions of soils encountered in our explorations are presented below in order of deposition, with younger deposits listed first. The exploration logs in Appendix A provide a more detailed description of subsurface conditions observed at specific locations and depths.

Fill: Fill was encountered in each of the borings. In boring BH-1, the fill extended to a depth of about 7.5 feet and consisted of silty sand that became less dense with depth. In boring BH-2, the fill extended to a depth of about 2.5 feet and consisted of medium dense sand with silt and gravel. In boring BH-3, near the existing culvert, the fill was thickest, extending to a depth of about 20 feet, and consisted of medium dense to dense sand and gravel with varying silt content.

Alluvium: Alluvium was encountered in boring BH-3 beneath the fill, likely deposited by Valley Creek, which flows through a culvert below the roadway. The alluvium was approximately 5 feet thick and extended to a depth of about 25 feet. The alluvium typically consisted of medium dense sand with variable silt and gravel content. A 5-inch-thick lens of organic material was encountered within the alluvium at a depth of about 21 feet.

Advance Outwash: Advance outwash was observed in boring BH-1 beneath the fill and in boring BH-3 beneath the alluvium. The depth of the advance outwash extended to the maximum depth explored in both borings (20.5 feet and 28.25 feet, respectively). The outwash deposits consisted of dense to very dense sand with variable silt and gravel content.

Transitional Beds: Transitional beds were encountered in boring BH-2 below the fill. The transitional beds extended to the bottom of the boring, a depth of 12 feet, and typically consisted of very stiff to hard, sandy lean clay. The bottom foot of the transitional beds consisted of very dense, silty sand with gravel.

3.3 Groundwater Conditions

Groundwater was encountered in borings BH-1 and BH-3 at the time of drilling. Groundwater was observed within the advance outwash layer in boring BH-1 at a depth of about 15 feet. Groundwater was observed in boring BH-3 at the contact between fill and alluvium at a depth of about 20 feet. Groundwater in the vicinity of BH-3 is expected to vary with the elevation of the water within Valley Creek in this area. Groundwater was not observed in boring BH-2, which encountered refusal at a depth of 12 feet.

3.4 Geologically Hazardous Areas

HWA has completed an assessment of the geologically hazardous areas along the project alignment. The assessment was completed in general accordance with the requirements of the City of Bellevue Land Use Code (LUC) Chapter VII –*Geologic Hazard Areas*. Bellevue's Code designates four critical areas consisting of landslide hazard, steep slopes, coal mine hazards, and seismic hazard areas. HWA has assessed the project alignment for each of the critical areas, and we have identified an area along the alignment from approximately station 12+75 to 15+00 that include steep slope and seismic hazard critical areas which may be impacted by the proposed improvements.

The identified steep slope critical area and the implications of the proposed improvements is evaluated and discussed under Section 4.3.1 of this report. Our analyses indicate that the proposed improvements will improve the stability of the steep slope area identified along Wall 2 alignment.

The identified seismic hazard critical area and the implications of the proposed improvements is evaluated and discussed under Section 4.2.3 of this report. Our analyses to identify and evaluate seismic hazard areas indicate that the site soils within the alluvial channel of Vally Creek are susceptible to liquefaction induced settlement of 0.5 to 2 inches. We have determined that the proposed improvements do not increase the magnitude of anticipated liquefaction induced settlement.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 General

The following is a summary of our conclusions and geotechnical recommendations based on the results of our investigations, laboratory testing and analyses. Further discussion is presented in subsequent report sections.

- Near surface soils encountered in the explorations primarily consist of fill, comprised of medium dense to dense sand and gravel with varying amounts of silt. Transitional bed soils, consisting of very stiff to hard clay, were encountered below the fill, at a depth of about 2.5 feet, in boring BH-2. The fill extended to a depth of about 7.5 feet in boring BH-1 and a depth of about 20 feet in boring BH-3.

- The fill soils are generally suitable for support of the proposed shallow bearing improvements (sidewalk, curb, gutter, etc.) provided the recommendations presented in this report are incorporated into design and construction. At the location of boring BH-1, fill soils became looser with depth.

- The transitional bed soils in boring BH-2 consist of lean clay and are highly susceptible to moisture. If improvements are planned to bear within these soils, we recommend that these soils be over-excavated about 6 to 12 inches, flowed by placement of a separator geotextile and replacement with granular structural fill.

- Use of infiltration for stormwater design is not recommended for the project given the variability of the subgrade soils along the alignment, in addition to the presence of glacially consolidated and fine-grained soils that could cause groundwater perching and lateral migration.

4.2 SEISMIC DESIGN CONSIDERATIONS

4.2.1 Seismic Design Parameters

Earthquake loading for the project corridor was developed in accordance with the General Procedure provided in Section 3.4 of the *AASHTO Guide Specifications for LRFD Seismic Bridge Design*, 9th Edition, 2020, and the Washington State Department of Transportation (WSDOT) amendments to the AASHTO *Guide Specifications* provided in the *Bridge Design Manual (LRFD)*. For seismic analysis, the Site Class is required to be established and is determined based on the average soil properties in the upper 100 feet below the ground surface. The project alignment is underlain by soils consistent with Site Class C, described as "very dense soil and soft rock."

The design parameters for the design level event (equal to a return period of about 1,000 years) were obtained from the USGS Uniform Hazard Tool website using the U.S. 2014 Dynamic Conterminous edition (v4.2.0), which provides the probabilistic seismic hazard parameters from the *2014 Updates to the National Hazard Maps* (Peterson, et al., 2014). Site coefficients were developed following the site coefficients provided in ASCE 7-16. The recommended seismic coefficients for the design event are provided in Table 1. The spectral acceleration coefficient at 1-second period (S_{D1}) is more than 0.2; therefore, Seismic Design Category D, as given by AASHTO Table 3.5-1 (AASHTO, 2011), should be used for the project.

Table 1.

Seismic Coefficients using AASHTO Guide Specifications, Site Class C Calculated Using USGS Seismic Uniform Hazard Tool

Site Class	Peak Horizontal Bedrock Acceleration PBA, (g)	Spectral Bedrock Acceleration at 0.2 sec S_s, (g)	Spectral Bedrock Acceleration at 1.0 sec S_1, (g)	Site Coefficients			Peak Horizontal Acceleration PGA (A_s), (g)
				F_{pga}	F_a	F_v	
C	0.545	1.277	0.445	1.200	1.200	1.500	0.654

Notes: **7% Probability of Exceedance in 75 years for Latitude 47.6541° and Longitude -122.6802°*
PGA = Peak ground acceleration
F_{PGA} = PGA site coefficient
PBA = Design Seismic Coefficient equal to the mapped PGA adjusted for Site Class effects
S_s = Short period (0.2 second) Mapped Spectral Acceleration
S_1 = 1.0 second period Mapped Spectral Acceleration
S_{DS} = Design Spectral Response Acceleration for short period $=F_a \cdot S_S$
S_{D1} = Design Spectral Response Acceleration for 1-second period $= F_V \cdot S_1$
F_a = Short Period Site Coefficients
F_v = Long Period Site Coefficients

4.2.2 Liquefaction Considerations

Liquefaction is a temporary loss of soil shear strength due to earthquake shaking. Loose to medium dense, saturated cohesionless soils are highly susceptible to earthquake-induced liquefaction; however, recent experience and research has shown that certain silts and low-plasticity clays are also susceptible. Primary factors controlling the development of liquefaction include the intensity and duration of strong ground motions, the characteristics of subsurface soils, in-situ stress conditions and the depth to groundwater. To evaluate the liquefaction susceptibility of the soils along the project alignment, the simplified procedure originally developed by Seed and Idriss (1971), updated by Youd et al 2001, and also by Idriss and Boulanger (2004, 2006) was used.

The simplified procedure is a semi-empirical approach which compares the cyclic shear stress required to initiate liquefaction (CRR) to the cyclic shear stress induced by the design earthquake (CSR). The factor of safety relative to liquefaction is the ratio of the CRR to the CSR; where this ratio is computed to be less than one, the analysis would indicate that liquefaction is likely to occur during the design earthquake. The CRR is primarily dependent on soil density, with the current practice being to base it on the Standard Penetration Test (SPT) N-value, corrected for energy consideration, fines content and earthquake magnitude. CSR is generally determined by the formulation developed by Seed and Idriss (1971) and relates equivalent shear stress caused in the soil at any depth to the effective stress at that depth and the peak ground acceleration at the surface. We have performed our evaluations using the method proposed by Idriss and Boulanger.

Our analysis suggests that the saturated alluvium soils at BH-3 are prone to liquefaction during the design earthquake. We expect that the occurrence of liquefaction during the design earthquake will result in liquefaction-induced settlement and loss of shear strength in the vicinity of boring BH-3 at Valley Creek crossing.

It is our understanding that the City of Bellevue does not have a policy for mitigation of potentially liquefiable soils. Therefore, it is our recommendation that the need for mitigation be determined based on the principle of protecting life safety of the traveling public. Our analyses suggest that the proposed improvements will not result in a threat to life safety of the traveling public under post-liquefaction conditions. Therefore, we do not recommend the project consider the implementation of liquefaction mitigation.

4.2.3 Liquefaction-Induced Settlement

Loose to medium dense sand deposits tend to densify when they are subject to earthquake shaking. For saturated sand deposits, excess pore water pressure builds up during the earthquake excitation, leading to loss of strength or liquefaction. After the shaking stops, excess pore water pressures dissipate toward a zone where water pressure is relatively lower, usually the ground surface. The dissipation is accompanied by a reconsolidation of the loose sand (Ishihara and Yoshimine, 1992). The reconsolidation is manifested at the ground surface as vertical settlement, usually termed as liquefaction-induced settlement or seismic settlement.

The potential for liquefaction-induced settlement was evaluated in the vicinity of boring BH-3. The methodologies used were developed by Yi and Andrus (2010) and Tokimatsu and Seed (1987) and are generally based on the relationship between shear wave velocity, cyclic stress ratio, corrected SPT blow counts, and volumetric strain. Using these methods, liquefaction-induced settlement in this area was estimated to vary from about 0.5 inches to 2 inches. We expect that the liquefaction-induced settlement will be mostly uniform in nature as the liquefaction is expected to occur below a thick non-liquefiable crust. We have determined that the proposed improvements including the proposed widening and construction of Wall 2 do not increase the magnitude of anticipated liquefaction induced settlement.

4.2.4 Post-Liquefaction Residual Shear Strength

Residual shear strength for the liquefiable soils encountered at BH-3 was developed using a weighted average of the results of the Idriss (2007), Olson and Stark (2002), Idriss and Boulanger (2007) and Kramer (2008) relationships. The residual shear strength assigned is a function of the equivalent clean sand SPT value, $(N_1)_{60cs}$, the potential for void redistribution, and the initial effective overburden stress. At locations where $(N_1)_{60cs}$ is less than 10, we assumed void redistribution effects could be significant, which gives an appropriate conservative estimate of residual shear strength. Our analyses indicate that the liquefiable soils possess a residual shear strength equivalent to a friction angle of 18 degrees. This value was used in our post-liquefaction stability analysis for Wall 2.

4.3 RETAINING WALL STRUCTURES

It is our understanding that five retaining walls will be required to accommodate the proposed roadway improvements along the project alignment. These walls will consist of a combination of cut and fill walls varying from approximately 1.5 feet to 10 feet in maximum height. The location and designation of each wall is indicated on the Site and Exploration Plans, Figures 2A through 2C. Wall type selection was based on soil conditions, wall geometry, cost effectiveness, constructability, and right-of-way limits. In general, modular block walls (gravity or reinforced) are desired when possible due to availability, cost-effectiveness, and ease of construction relative to other permanent retaining wall systems. Cast-in-place (CIP) walls are generally known to be more expensive to construct than modular block walls but are often considered due to aesthetic preferences or where right-of-way/work-area restrictions limit the extent of excavation needed to construct reinforced modular block walls. Soldier pile walls can also be considered to further limit the extent of excavation needed and to preserve existing vegetation. Soldier pile walls are also considered where adequate global slope stability cannot be achieved with modular block and/or CIP wall systems. Table 2 presents a summary of the proposed wall location, length, anticipated wall type and maximum height. Further discussion of wall selection approach and recommendations are provided in the following sections of this report.

Table 2. Summary of Proposed Wall Types and Locations

Wall Designation	See Location in Figure	Approximate Wall Length (feet)	Anticipated Wall Type	Wall Application	Max Exposed Height (feet)
Wall 1	Figure 2A	161	Modular Block	FILL	10
Wall 2	Figure 2A	228	Soldier Pile	FILL	9
Wall 3	Figure 2B	161	Modular Block	CUT	5.5
Wall 4	Figure 2B	119	Modular Block	CUT	8
Wall 5	Figure 2C	180	Modular Block	CUT	4.5

4.3.1 Global Slope Stability

Using the computer program SLIDE2 Modeler, we evaluated static and pseudo-static global stability of all proposed walls. Additionally, we evaluated static, pseudo-static, and post-liquefaction slope stability along the identified critical slope discussed in Section 3.4 of this report. Analyses were completed utilizing site topography and wall geometry provided by the City and DEA. The results of our quantitative slope stability analyses are presented in Appendix C.

Given a Modular Block or CIP wall construction with an embedment depth of 1.5 feet, factors of safety for static global stability, in excess of 1.3, the minimum required, were calculated for all walls except Wall 2.

Seismic stability was evaluated using a pseudo-static horizontal acceleration of 0.327g, which is ½ of the peak ground acceleration (PGA) associated with the 1:1033-year design earthquake for this site location. From our analyses, we conclude that, under a design earthquake, a factor of safety for global stability greater than 1.1 will exist for all the walls constructed as Modular Block or CIP wall except Wall 2.

Post-liquefaction stability analyses were completed for retaining Wall 2 where liquefaction is expected to occur. As liquefaction is expected to occur near the end of earthquake shaking, post-liquefaction stability analyses were computed using residual shear strengths for the liquefiable soils and static loading conditions. Our analyses indicate that Wall 2, if constructed as Modular Block or CIP wall, does not meet the minimum required Factor of Safety of 1.1 under post-liquefaction condition.

Hence, with the exception of Wall 2, all the proposed retaining wall structures can be constructed as Modular Block or CIP walls; however, we understand that the design team has selected the use of Modular Block walls based on constructability and cost considerations.

Slope stability was evaluated under existing and proposed conditions within the identified steep slope critical area and Wall 2 alignment. Under the existing conditions, the steep slope associated with this area possesses a static factor of safety of approximately 1, as shown in Figure C-3 of Appendix C. Under pseudo-static loading conditions, the steep slope critical area possesses a factor of safety of 0.56, as shown in Figure C-4 of Appendix C. Under post-liquefaction loading conditions, the steep slope critical area possesses a factor of safety of 0.95, as shown in Figure C-5 of Appendix C. This suggests that the existing steep slope is barely stable under static loading and would be expected to fail as a result of the design earthquake and post-liquefaction conditions.

Based on the results of our global slope stability analyses, we recommend that Wall 2 be constructed as a cantilever soldier pile wall and lagging system with a minimum embedment depth of 5 feet into the dense to very dense advance outwash soils, in order to meet the minimum required global slope stability factors of safety under static, pseudo-static, and post-liquefaction conditions.

Our stability analyses, presented in Appendix C, indicate that construction of the proposed Wall 2 as a soldier pile wall within the identified steep slope critical area will not negatively affect the stability of the remaining critical steep slope at the toe of Wall 2.

4.3.2 Modular Block Walls

As noted above by our global slope stability evaluations, Walls 1, 3, 4, and 5 can be constructed as CIP or modular block walls; however, the design team has selected to use modular block walls. Modular block walls can be constructed as a gravity block system without reinforcement or a Structural Earth (SE) wall system with reinforcing grids. We understand that the proposed modular block walls will consist of a proprietary wall system and that the wall supplier will design the wall for internal stability. The walls should be designed in accordance with *AASHTO Standard Specifications for Highway and Bridges*. We recommend the wall be designed using the parameters presented in Table 3. We understand the design for these walls will be performed using Load and Resistance Factor Design (LRFD). Appropriate AASHTO resistance factors should be used for the design of all retaining walls.

Table 3.
Recommended Design Parameters for Modular Block Walls

Soil Properties	**Reinforced Soil**	**Retained Soil**	**Foundation Soil**
Unit Weight (pcf)	135	130	130
Friction Angle (deg)	36	34	34
Cohesion (psf)	0	0	0
		Strength and Service Limit State	**Extreme Limit State**
Ultimate Bearing Resistance (ksf)		3.0	3.0
Horizontal Seismic Acceleration Coefficient (k_h) (g)		N/A	0.327

It is essential that the walls be designed per specific toe- and back-slope geometry at each wall location. Additionally, vertical and lateral dead loads such as sidewalk, pavement, guard rails, and chain-link fences, and live loads such as vehicular and pedestrian loading should be considered in the design of wall. The modular block walls should be designed to accommodate a differential settlement of 0.5-inch over 100-feet of wall length for static loading. A coefficient of friction of 0.4 times the effective stress at the base of the wall can be used for sliding resistance. We recommend the walls be embedded at least 1.5 feet below the finished grade at the base of the wall.

4.3.2.1 Modular Block Wall Subgrade Preparation

Proper wall subgrade preparation is essential to prevent premature failure of the wall system. Subgrade preparation should include removal of any loose, organic or otherwise unsuitable soils and placement of a minimum 1-foot-thick leveling pad consisting of well-compacted Crushed

Surfacing Base Course (CSBC) or Crushed Surfacing Top Course (CSTC), as specified in Section 9-03.9(3) of the *WSDOT Standard Specifications* (WSDOT, 2024). The leveling pad for SEW walls should extend a minimum of 2 feet in each direction beyond the perimeter of the first row of blocks.

All areas on which the wall will bear should be graded level perpendicular to the wall face and compacted in accordance with Section 2-03.3(14)D of the *WSDOT Standard Specifications* (WSDOT, 2024).

We recommend an HWA geotechnical engineer, or their representative, be present during construction to verify the assumptions made for the foundations of the walls are met.

4.3.2.2 Modular Block Wall Backfill Compaction and Placement

Selection of wall backfill is subject to recommendations provided by the wall manufacturer. In the absence of specific backfill recommendation from the manufacturer, we recommend walls be backfilled with Gravel Backfill for Walls, as specified in Section 9-03.12(2) of *Standard Specifications* (WSDOT, 2024). All wall backfill should be compacted to 95% of the maximum dry density as determined by ASTM D 1557 (modified Proctor). Heavy compaction equipment and large pieces of construction equipment should not operate within about 5 feet of the wall to avoid the buildup of excessive lateral pressures.

Wall backfill will be placed against the excavation required to construct the wall. Fill placement against an existing slope will require terraced cuts as outlined in the WSDOT *Standard Specifications* (WSDOT, 2024) Section 2-03.3(14)B, Embankment Construction.

4.3.2.3 Modular Block Drainage Considerations

Drainage should be provided behind all walls when full hydrostatic pressures are not accounted for in design. At a minimum, drainage should consist of 6-inch diameter, perforated, rigid plastic pipes, bedded and backfilled with Gravel Backfill for Drains, as specified in Section 9-03.12(4) of the *WSDOT Standard Specifications* (WSDOT, 2024). The drain pipe should be sloped to drain and routed to an appropriate discharge location.

4.3.3 Cantilever Soldier Pile Wall

Wall 2 will retain up to 9 feet of fill to widen the roadway for the proposed pedestrian improvements. We recommend this wall be constructed as a cantilevered soldier pile and lagging wall in order to meet the minimum required factor of safety for global stability. For cantilevered soldier pile and lagging wall systems, steel H-piles are generally placed in drilled shafts, spaced at approximately 5- to 8-foot centers. The diameter of the typical soldier pile shaft excavations is on the order of 2 to 3 feet. Once the H-piles are installed, the drilled shafts are filled with concrete or CDF. Typically, conventional concrete is only used to fill the holes below the base of the wall as a structural toe. After pile installation lagging members are placed between the installed H-piles and the wall is backfilled.

4.3.3.1 Solider Pile Wall Design Parameters

The recommended lateral earth pressure diagrams for Wall 2 are shown on Figure 3. It is assumed that the proposed cantilever soldier pile walls will be free to deflect under static loading conditions and, therefore, active lateral earth pressure conditions should be assumed. Active earth pressure conditions are also assumed under extreme loading conditions. For design, passive earth resistance pressure should be assumed to act over two shaft diameters for Strength, Service, and Extreme Limit State design. Active earth pressures are assumed to act over one shaft diameter, below the base of the excavation, and over the width of the lagging for the retained portion of the wall. The passive pressure provided assumes a maximum slope of 1.6H:1V is provided in front of the wall. As noted under Section 4.3.1 of this report, we recommend that soldier pile shafts for Wall 2 be embedded at least 5 feet into the dense to very dense advance outwash soils to achieve the minimum required factor of safety for global slope stability.

4.3.3.2 Solider Pile Wall Lagging

Lagging will likely consist of treated timber (typically 4 x 12 timber beams) but could consist of concrete panels. If timber lagging is used, the addition of concrete facia would extend the life of the wall by reducing the weathering. Lagging should be installed as the excavation proceeds. We recommend that soldier pile lagging be designed to resist the lateral earth pressures presented on Figure 3. Based on results of our exploration, design for the wall lagging should conform to Soil Type 2 as specified in Section 6-16.3(6)A Soil Classification of the WSDOT *Standard Specifications* (WSDOT, 2024). Lagging should extend a minimum of 2 feet below the ground line at the base of the wall. Lagging should not be watertight to prevent the buildup of hydrostatic pressure behind the wall face unless drainage is provided.

4.3.3.3 Solider Pile Wall Construction Considerations

The very loose to medium dense fill, alluvium soils, and buried topsoil are likely to experience caving during shaft construction. Groundwater was also encountered within these deposits. Temporary casing should be used for the proposed shaft excavations.

Portions of the excavations will be advanced through very dense advance outwash soils and hard drilling conditions should be anticipated. Although not encountered in our borings, large cobbles and boulders are known to exist in these glacial deposits. The shaft contractor should be prepared to handle cobbles and boulders.

Soldier pile shaft bottoms should be cleaned to the extent practical using appropriate methods. If water is present in the shaft, concrete should be placed by the tremie method. Temporary casing should be withdrawn such that the level of concrete is maintained above the bottom of the casing at all times and at such elevations to counteract any potential hydrostatic effects associated with groundwater conditions that may be present at the location of the work.

Adequate drainage behind the soldier pile wall is critical for long term performance. We recommend prefabricated geosynthetic drain mats meeting the requirements of the of Section 9-33.2(3) of the *Standard Specifications* (WSDOT, 2024) be placed on the wood lagging before casting the permanent fascia and tight lined into the drainage at the base of the wall as specified per Section 6-16.3(7) of the *Standard Specifications* (WSDOT, 2024). Drainage at the base of the wall should consist of a minimum 6-inch diameter perforated pipe, surrounded in free-draining material meeting the requirements of Section 9-03.12(4) Gravel Backfill for Drains of the *Standard Specifications* (WSDOT, 2024). The drain rock should be wrapped in geotextile filter fabric meeting the requirements of Section 9-33.2(1) Tables 1 and 2 of the *Standard Specifications* (WSDOT, 2024). The drain should slope to a storm drain system or other appropriate outlet.

4.4 STORMWATER MANAGEMENT

The feasibility of using infiltration as part of the stormwater management for this site was evaluated in accordance with the 2019 Stormwater Management Manual for Western Washington. The transitional bed soils, comprised of glacially consolidated clay, encountered in boring BH-2 are highly impermeable and not suitable for infiltration. Also, infiltration of stormwater near the crest of the slopes near Valley Creek in the vicinity of boring BH-3 could result in increased groundwater seepage along the slope and reduce the stability of the proposed slopes. Given the variability of the subgrade soils, in addition to presence of steep slopes along the Valley Creek crossing, we do not recommend stormwater infiltration be utilized along the project alignment.

4.5 GENERAL EARTHWORK

4.5.1 Subgrade Preparation

Subgrade preparation for pavement, sidewalks, ramps, curbs and other improvements founded near surface should begin with the removal of all topsoil, deleterious material, and vegetation to expose dense, competent native soils or adequately compacted fill. A smooth bucket should be used to limit disturbance. We recommend that in areas accessible to construction equipment, the exposed subgrade be proof-rolled under the observation of the geotechnical engineer using a fully-loaded dump truck to identify any areas of loose, pumping, or otherwise unsuitable soils. If such soils are encountered, they should be over-excavated as directed by the geotechnical engineer and replaced with properly compacted structural fill. In areas inaccessible to large equipment, the subgrade soils should be evaluated by the geotechnical engineer using a

T-handled probe. Subgrade soils should be compacted to a dense condition prior to placement of structural fill or construction of improvements.

4.5.2 Structural Fill

Structural fill should consist of relatively clean, free-draining, granular soils free from organic matter or other deleterious materials. Such materials should be less than 4 inches in maximum particle dimension, with less than 10 percent fines (portion passing the U.S. Standard No. 200 sieve). Imported structural fill for areas of over-excavation and for pavement base course should consist of Crushed Surfacing Base Course, as described in Section 9-03.9(3) of the *WSDOT Standard Specifications* (WSDOT, 2024). Structural fill used to raise site grades could consist of CSBC or Gravel Borrow, as specified in Section 9-03.14(1) of the *WSDOT Standard Specifications* (WSDOT, 2024). The fine-grained portion of structural fill soils should be non-plastic.

4.5.3 Compaction

Structural fill soils should be moisture conditioned and compacted to at least 95% of the maximum dry density (MDD) determined by test method ASTM D 1557 (Modified Proctor). Structural fill should be placed and compacted in loose, horizontal lifts of not more than 12 inches in thickness.

At the time of placement, the moisture content of structural fill should be at or near optimum. Achievement of proper density of a compacted fill depends on the size and type of compaction equipment, the number of passes, thickness of the layer being compacted, and soil moisture-density properties. In areas where limited space restricts the use of heavy equipment, smaller equipment can be used, but the soil must be placed in thin enough layers and at the proper moisture content to achieve the required relative compaction. Generally, loosely compacted soils result from poor construction technique and/or improper soil moisture content. Soils with high fines contents are particularly susceptible to becoming too wet and coarse-grained materials easily become too dry for proper compaction.

4.5.4 Temporary Excavations

Maintenance of safe working conditions, including temporary excavation stability is the responsibility of the contractor. All excavations should have adequate safety systems that meet the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW. In accordance with Part N of Washington Administrative Code (WAC) 296-155, all temporary cuts in excess of 4 feet in height must be either sloped or shored prior to entry by personnel. The fill soils encountered in the borings are classified as Type C soils per WAC 296-155 and should be sloped no steeper than 1.5H:1V (horizontal:vertical).

The contractor should monitor the stability of temporary excavations and adjust the slope inclination accordingly. The contractor should be responsible for control of ground and surface water and should employ sloping, slope protection, ditching, sumps, dewatering, and other measures, as necessary, to prevent sloughing of soils.

4.5.5 Wet Weather Earthwork

General recommendations relative to earthwork performed in wet weather or in wet conditions are presented below. These recommendations should be incorporated into the contract specifications.

- Earthwork should be performed as such to minimize exposure to wet weather. Excavation of unsuitable and/or softened soil should be followed promptly by placement and compaction of suitable structural fill. The size and type of construction equipment used may need to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate subgrade soils to minimize subgrade disturbance caused by equipment traffic.

- Any backfill material used in wet weather should consist of clean granular soil with less than 5 percent passing the U.S. No. 200 sieve, based on wet sieving the fraction passing the ¾-inch sieve. The fines should be non-plastic. It should be noted this is an additional restriction on the structural fill materials specified.

- The ground surface within the construction area should be sloped and compacted on completion of each shift by a smooth drum vibratory roller, or equivalent, to promote surface water run-off and to prevent ponding of water. Runoff should be properly collected, tested and treated as necessary in accordance with the approved project Erosion and Sediment Control (ESC) plan.

- No soil should be left uncompacted so it can absorb water. Soils which become too wet for compaction should be removed and replaced with suitable backfill materials.

- Excavation and placement of backfill materials should be monitored by a geotechnical engineer or geologist experienced in wet weather earthwork to determine that the work is being accomplished in accordance with the project specifications and the recommendations contained herein.

5. CONDITIONS AND LIMITATIONS

HWA prepared this report for the City of Bellevue David Evans and Associates for use in the design and construction of this project. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations and may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, HWA should be notified for review of the recommendations of this report, and revision of such if necessary.

HWA recommends it be retained to review the plans and specifications to verify that HWA's recommendations have been interpreted and implemented as intended. Sufficient geotechnical monitoring, testing, and consultation should be provided during construction to confirm the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, HWA attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology in the area at the time the report was prepared. No warranty, express or implied, is made. The scope of HWA's work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous substances in the soil, surface water, or groundwater at this site.

HWA does not practice or consult in the field of safety engineering. HWA does not direct the contractor's operations and cannot be responsible for the safety of personnel other than HWA's own on the site. As such, the safety of others is the responsibility of the contractor(s). The contractor(s) should notify the owner if it is considered that any of the recommended actions presented herein are unsafe.

We appreciate the opportunity to provide geotechnical services on this project. Should you have any questions or comments, or if we may be of further service, please do not hesitate to call.

Sincerely,

HWA GEOSCIENCES INC.

Ali Sirjani, P.E	Tyler Cartwright, E.I.T.
Senior Geotechnical Engineer	Geotechnical Engineer

Bryan Hawkins, P.E
Senior Geotechnical Engineer

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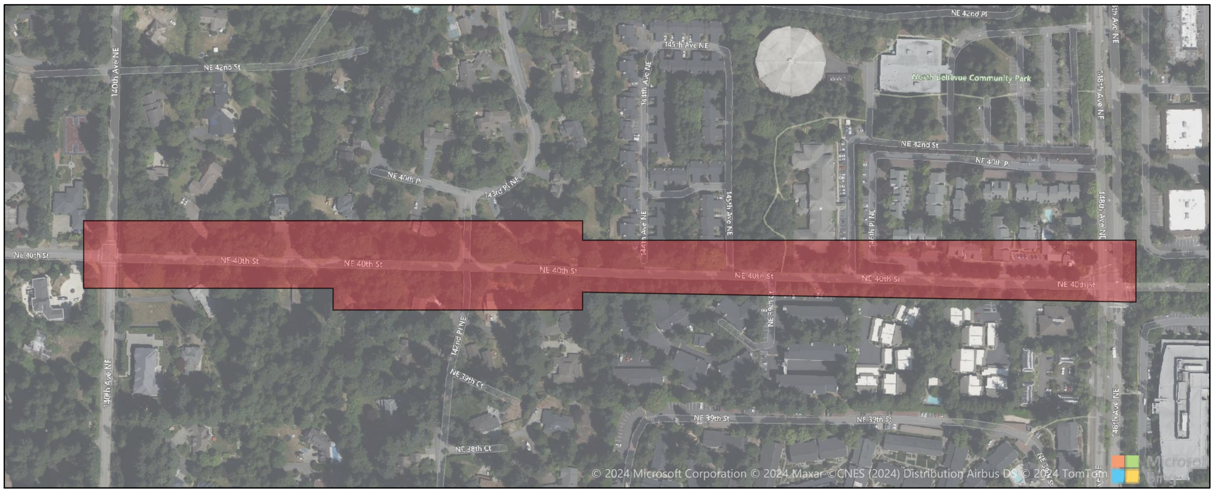
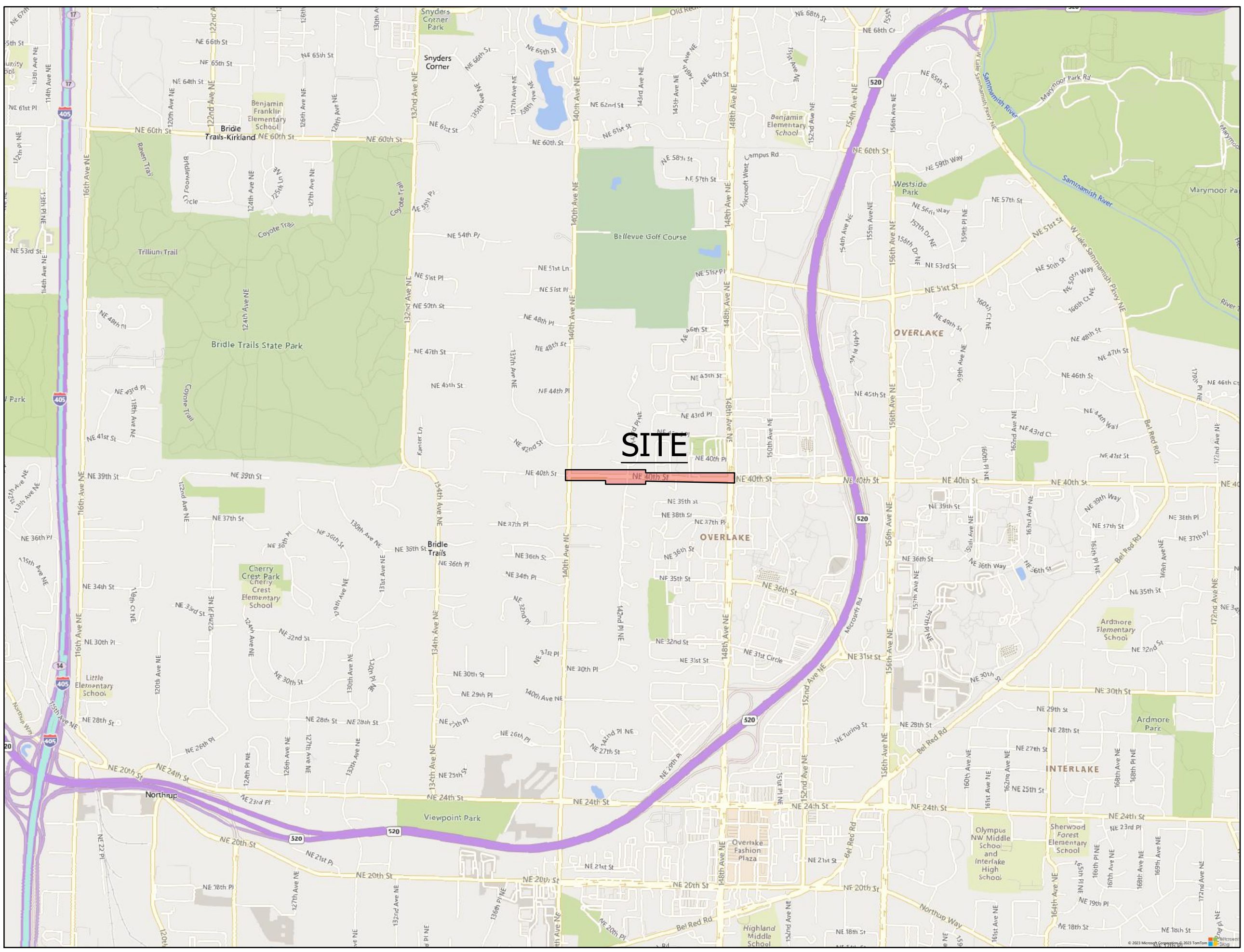


SITE MAP

0 250' 500' 750' 1000'

SCALE: 1" = 500'



VICINITY MAP

0 1500' 3000' 4500' 6000'

SCALE: 1" = 3000'

GEOSCIENCES INC.
DBE/MWBE

SITE AND VICINITY MAP

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.: 1

DRAWN BY: CF | CHECK BY: AS

PROJECT # 2023-195-21

C:\USERS\CFRY\DESKTOP\2023-195-21 NE 40TH ST SIDEWALK\2023-195-21 NE 40TH ST SIDEWALK.DWG <1> Plotted: 4/2/2024 4:25 PM

NE 40TH ST

Scale: 1" = 40'-0"

EXPLORATION LEGEND

BH-3 BOREHOLE DESIGNATION AND APPROXIMATE LOCATION

N

0 20 40 60 80

SCALE: 1" = 40'

HWA GEOSCIENCES INC. DBE/MWBE

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

SITE & EXPLORATION PLAN

DRAWN BY:	FIGURE NO.:
CF	2A
CHECK BY:	PROJECT NO.:
AS	2023-195-21

BASE MAP PROVIDED BY: BING AND DEA 3.12.2024

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NE 40TH ST
Scale: 1" = 40'-0"

EXPLORATION LEGEND

BH-2 BOREHOLE DESIGNATION AND APPROXIMATE LOCATION

0 20 40 60 80
SCALE: 1" = 40'

HWA GEOSCIENCES INC.
DBE/MWBE

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

SITE &
EXPLORATION PLAN

DRAWN BY:	FIGURE NO.:
CF	2B
CHECK BY:	PROJECT NO.:
AS	2023-195-21

BASE MAP PROVIDED BY: BING AND DEA 3.12.2024

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NE 40TH ST

Scale: 1" = 40'-0"

EXPLORATION LEGEND

BH-1 BOREHOLE DESIGNATION AND APPROXIMATE LOCATION

0 20 40 60 80

SCALE: 1" = 40'

HWA GEOSCIENCES INC. DBE/MWBE

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

SITE & EXPLORATION PLAN

DRAWN BY: CF

CHECK BY: AS

FIGURE NO.: 2C

PROJECT NO.: 2023-195-21

BASE MAP PROVIDED BY: BING AND DEA 3.12.2024

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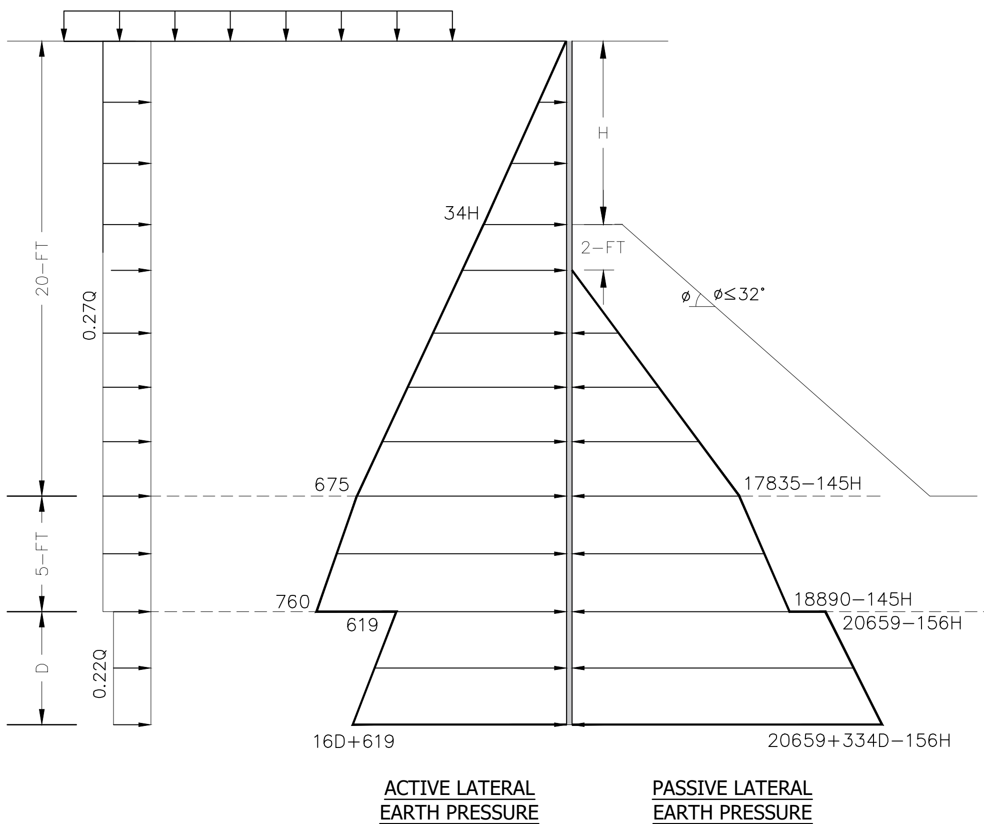
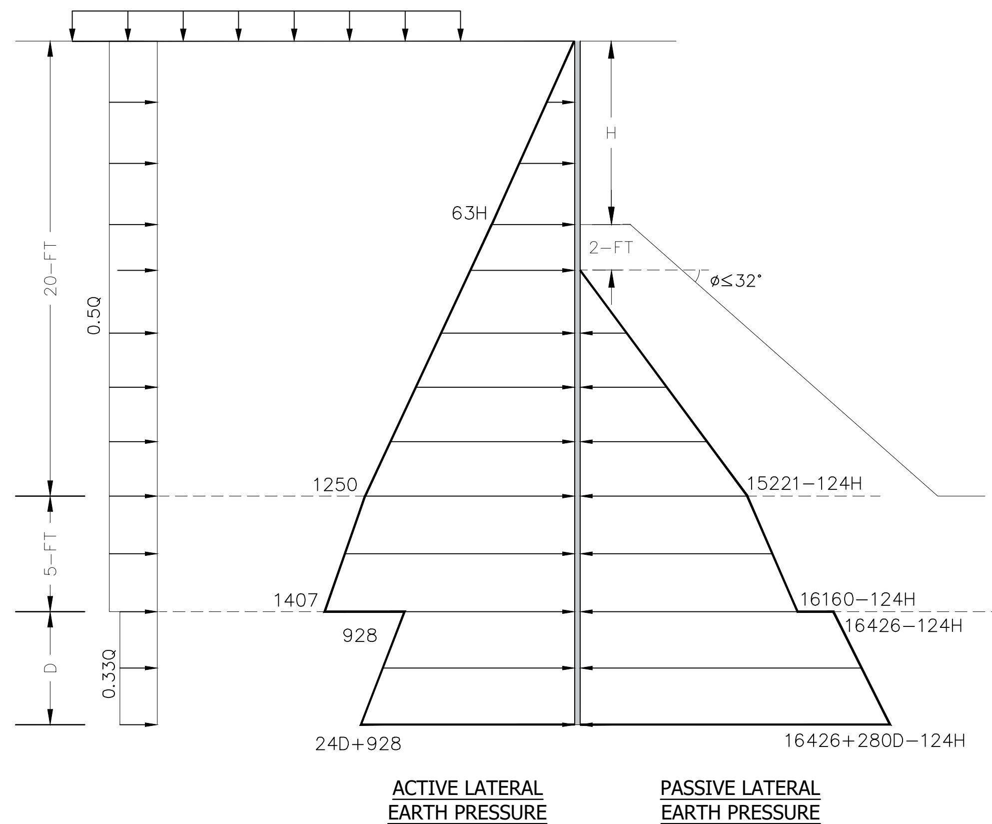
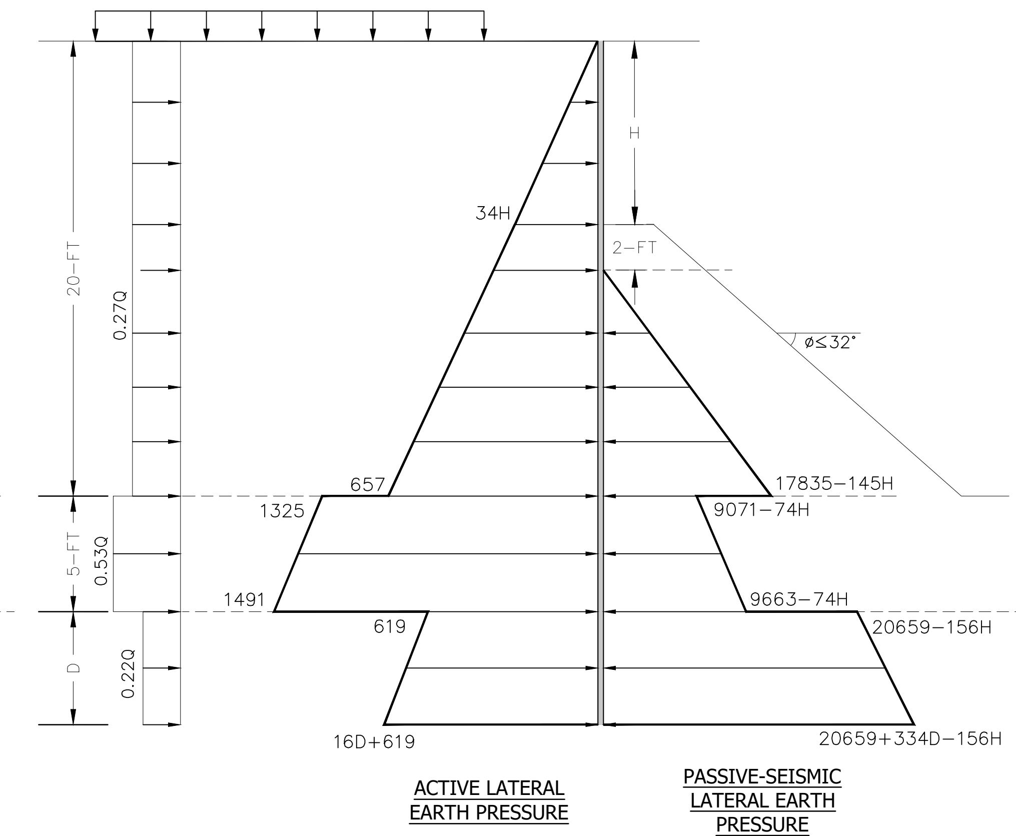


STRENGTH & SERVICE LIMIT STATE (STATIC)



EXTREME (EQ) LIMIT STATE (PSEUDOSTATIC)



EXTREME (EQ) LIMIT STATE (POST-LIQUEFACTION)

GENERAL WALL NOTES:

1. ALL PRESSURES SHOWN ARE IN UNITS OF POUNDS PER SQUARE FOOT (PSF).
2. LATERAL EARTH PRESSURES PROVIDED HEREIN ARE BASED ON ACTIVE EARTH PRESSURES AND SHOULD BE USED FOR THE DESIGN OF THE RETAINING WALLS WHERE THE WALL IS FREE TO DISPLACE LATERALLY AT LEAST 0.001H, WHERE H IS THE RETAINED HEIGHT OF THE WALL.
3. ALL EARTH PRESSURES PROVIDED ARE ULTIMATE (UNFACTORED). THE APPROPRIATE RESISTANCE FACTORS SHOULD BE APPLIED FOR EACH LOAD STATE.
4. PASSIVE EARTH PRESSURES SHOWN ASSUME THAT THE UPPER TWO FEET OF MATERIAL AT THE BASE OF THE WALL DOES NOT CONTRIBUTE TO PASSIVE RESISTANCE.
5. ALL EARTH PRESSURES ASSUMED NO BACK SLOPE.
6. ALL ACTIVE EARTH PRESSURES ACTING ON THE RETAINED PORTION OF THE WALL (ABOVE THE BASE OF THE WALL) SHOULD BE APPLIED ACROSS THE PILE SPACING.
7. ALL ACTIVE EARTH PRESSURES ACTING BELOW THE RETAINED PORTION OF THE WALL (BELOW THE BASE OF THE WALL) SHOULD BE APPLIED OVER ONE PILE SHAFT DIAMETER.

GENERAL STRENGTH AND SERVICE STATE DESIGN:

1. FOR STRENGTH LIMIT STATE DESIGN, A RESISTANCE FACTOR (Φ) OF 0.75 SHOULD BE APPLIED TO THE PASSIVE EARTH PRESSURES SHOWN.
2. FOR SERVICE LIMIT STATE DESIGN, A RESISTANCE FACTOR (Φ) OF 1.0 SHOULD BE APPLIED TO THE PASSIVE EARTH PRESSURES SHOWN.
3. THE SURCHARGE LOAD Q SHOULD BE EQUAL TO FACTORED DEAD AND LIVE LOADS INCLUDING EQUIPMENT, TRAFFIC, ETC.
4. ALL PASSIVE EARTH PRESSURES SHOULD BE APPLIED OVER TWO SHAFT DIAMETERS.

GENERAL EXTREME LIMIT STATE DESIGN - PSEUDOSTATIC AND POST-LIQUEFACTION:

1. LATERAL EARTH PRESSURES PRESENTED UNDER EXTREME (EQ) LIMIT STATE INCLUDE ACTIVE PLUS SEISMIC ON THE RETAINED SIDE AND PASSIVE PLUS SEISMIC ON THE FRONT SIDE OF THE WALL.
2. FOR THE EXTREME LIMIT STATE DESIGN, A RESISTANCE FACTOR (Φ) OF 1.0 SHOULD BE APPLIED TO THE PASSIVE EARTH PRESSURES SHOWN.
3. ALL PASSIVE EARTH PRESSURES SHOULD BE APPLIED OVER TWO SHAFT DIAMETERS.

NOT TO SCALE

HWA GEOSCIENCES INC. DBE/MWBE	NE 40TH ST SIDEWALK BELLEVUE, WASHINGTON	LATERAL EARTH PRESSURES FOR WALL 2	DRAWN BY: CF	FIGURE NO.: 3
			CHECK BY: AS	PROJECT NO.: 2023-195-21

APPENDIX A

FIELD EXPLORATIONS

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N-VALUE

COHESIONLESS SOILS			COHESIVE SOILS		
Density	N (blows/ft)	Approximate Relative Density(%)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	0 - 15	Very Soft	0 to 2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	35 - 65	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	over 30	>4000

USCS SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP DESCRIPTIONS	
Coarse Grained Soils More than 50% Retained on No. 200 Sieve Size	Gravel and Gravelly Soils More than 50% of Coarse Fraction Retained on No. 4 Sieve	Clean Gravel (little or no fines)	GW	Well-graded GRAVEL
			GP	Poorly-graded GRAVEL
		Gravel with Fines (appreciable amount of fines)	GM	Silty GRAVEL
			GC	Clayey GRAVEL
	Sand and Sandy Soils 50% or More of Coarse Fraction Passing No. 4 Sieve	Clean Sand (little or no fines)	SW	Well-graded SAND
			SP	Poorly-graded SAND
		Sand with Fines (appreciable amount of fines)	SM	Silty SAND
			SC	Clayey SAND
Fine Grained Soils 50% or More Passing No. 200 Sieve Size	Silt and Clay	Liquid Limit Less than 50%	ML	SILT
			CL	Lean CLAY
			OL	Organic SILT/Organic CLAY
	Silt and Clay	Liquid Limit 50% or More	MH	Elastic SILT
			CH	Fat CLAY
			OH	Organic SILT/Organic CLAY
Highly Organic Soils			PT	PEAT

TEST SYMBOLS

%F	Percent Fines
AL	Atterberg Limits: PL = Plastic Limit, LL = Liquid Limit
CBR	California Bearing Ratio
CN	Consolidation
DD	Dry Density (pcf)
DS	Direct Shear
GS	Grain Size Distribution
K	Permeability
MD	Moisture/Density Relationship (Proctor)
MR	Resilient Modulus
OC	Organic Content
pH	pH of Soils
PID	Photoionization Device Reading
PP	Pocket Penetrometer (Approx. Comp. Strength, tsf)
Res.	Resistivity
SG	Specific Gravity
CD	Consolidated Drained Triaxial
CU	Consolidated Undrained Triaxial
UU	Unconsolidated Undrained Triaxial
TV	Torvane (Approx. Shear Strength, tsf)
UC	Unconfined Compression

SAMPLE TYPE SYMBOLS

- 2.0" OD Split Spoon (SPT) (140 lb. hammer with 30 in. drop)
- Shelby Tube
- Non-standard Penetration Test (3.0" OD Split Spoon with Brass Rings)
- Small Bag Sample
- Large Bag (Bulk) Sample
- Core Run
- 3-1/4" OD Split Spoon

GROUNDWATER SYMBOLS

- ∇ Groundwater Level (measured at time of drilling)
- ▼ Groundwater Level (measured in well or open hole after water level stabilized)

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5 mm) to No. 200 (0.074 mm)
Coarse sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074mm)

COMPONENT PROPORTIONS

PROPORTION RANGE	DESCRIPTIVE TERMS
< 5%	Clean
5 - 12%	Slightly (Clayey, Silty, Sandy)
12 - 30%	Clayey, Silty, Sandy, Gravelly
30 - 50%	Very (Clayey, Silty, Sandy, Gravelly)

Components are arranged in order of increasing quantities.

NOTES: Soil classifications presented on exploration logs are based on visual and laboratory observation. Soil descriptions are presented in the following general order:

Density/consistency, color, modifier (if any) GROUP NAME, additions to group name (if any), moisture content. Proportion, gradation, and angularity of constituents, additional comments. (GEOLOGIC INTERPRETATION)

Please refer to the discussion in the report text as well as the exploration logs for a more complete description of subsurface conditions.

MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
MOIST	Damp but no visible water.
WET	Visible free water, usually soil is below water table.

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NE 40th Street Sidewalk
Bellevue, Washington

LEGEND OF TERMS AND SYMBOLS USED ON EXPLORATION LOGS

PROJECT NO.: 2023-195 FIGURE: A-1

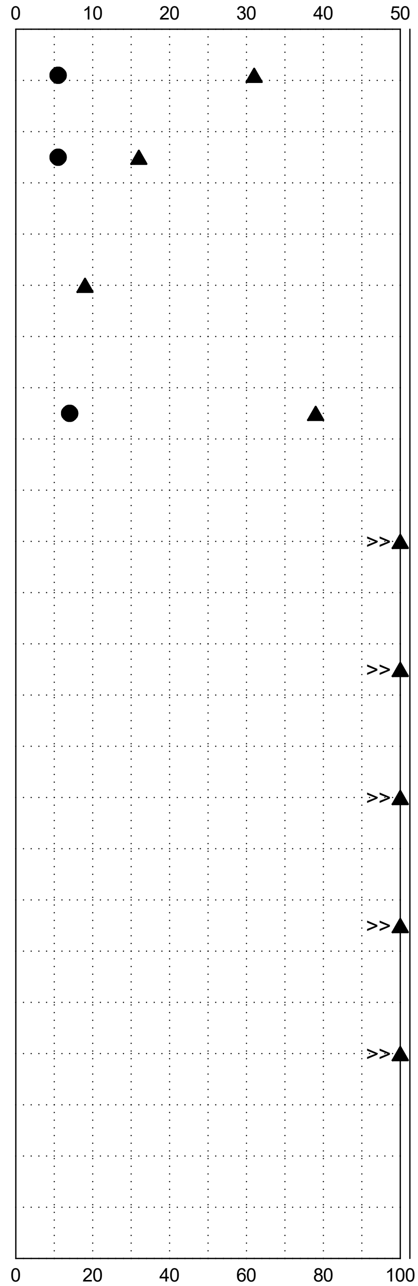
DRILLING COMPANY: Geologic Drill Partners
DRILLING METHOD: MiniBob Tracked Drill Rig, HSA
SAMPLING METHOD: SPT w/Manual Cathead
LOCATION: See Figure 2C

DATE STARTED: 11/2/2023
DATE COMPLETED: 11/2/2023
LOGGED BY: M.A. Benson

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	GROUNDWATER
0		Approximately 0.9 feet of Hot Mix Asphalt. **(HMA)**				
	SM	Dense, olive brown, silty SAND, moist to wet. **(FILL)**	S-1	5-15-16	GS	
		Becomes medium dense and slightly gravelly.	S-2	11-8-8	GS	
5		Becomes loose.	S-3	4-4-5		
	SM	Dense, slightly rust-mottled, olive-brown, silty SAND, moist. **(ADVANCE OUTWASH)**	S-4	15-17-22	GS	
10		Becomes very dense.	S-5	18-22-29		
			S-6	21-33-39		
15		Becomes wet.	S-7	19-27-33		∇
	SP SM	Very dense, slightly rust-mottled olive brown, slightly silty SAND, wet.	S-8	32-37-44		
20	SM	Very dense, very silty SAND, wet.	S-9	50/6"		

BH-1 terminated at 20.5 feet below ground surface (bgs).
Groundwater encountered at about 15 feet bgs during the exploration.
Boring abandoned with 3/8" bentonite chips and surface patched with Aquaphalt cold patch mix.

Standard Penetration Test
(140 lb. weight, 30" drop)
▲ Blows per foot



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

BORING:
BH-1

PROJECT NO.: 2023-195 FIGURE: A-2

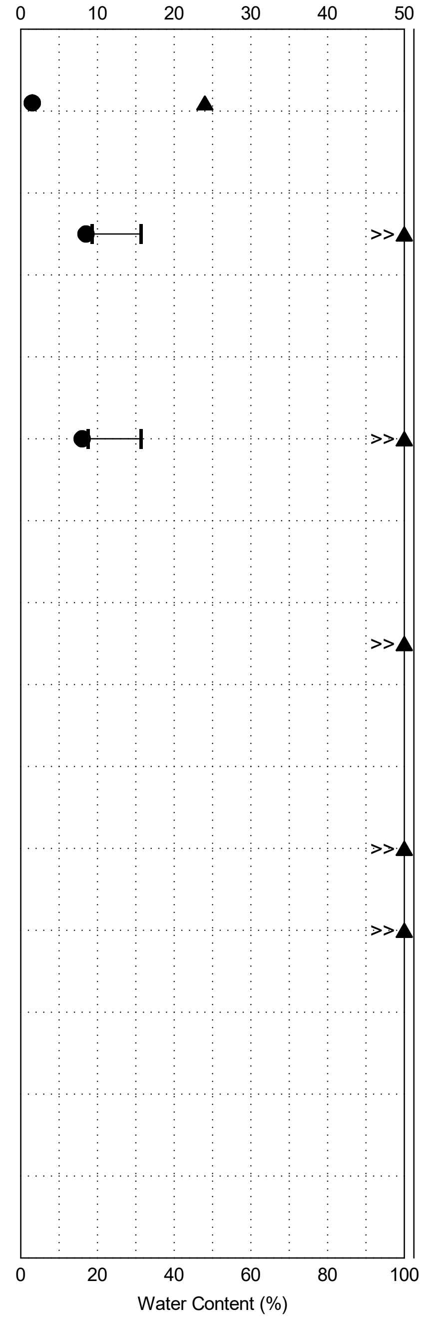
DRILLING COMPANY: Geologic Drill Partners
DRILLING METHOD: MiniBob Tracked Drill Rig, HSA
SAMPLING METHOD: SPT w/Manual Cathead
LOCATION: See Figure 2B

DATE STARTED: 11/2/2023
DATE COMPLETED: 11/2/2023
LOGGED BY: M.A. Benson

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS
0		Approximately 0.9 feet of Hot Mix Asphalt. **(HMA)**			
	SW SM	Medium dense, very dark, grayish-brown, well-graded SAND with silt and gravel, moist. **(FILL)**	S-1	8-11-13	GS
	CL	Very stiff, rust-mottled, light olive-brown, sandy, lean CLAY, moist. Scattered gravel. **(TRANSITIONAL BEDS)**	S-2	12-13-15	AL
5		Hard, olive-brown, sandy, lean CLAY, moist.	S-3	26-38-50/6"	AL
		No recovery.	S-4	50/6"	
10		Hard, olive brown, sandy, lean CLAY, moist.	S-5	28-50/6"	
	SM	Very dense, grayish-brown, very silty SAND, moist. Scattered gravel. Driller reports very hard drilling at 11 feet.	S-6	18-50/6"	
15					

After driving sample S-5, drilling resumed and met refusal at a depth of 100 feet. Sample S-6 was driven at 11 feet and the borehole BH-2 was terminated at 12 feet.
No groundwater was encountered during the exploration.
Boring abandoned with 3/8" bentonite chips and surface patched with Aquaphalt cold patch mix.

Standard Penetration Test
(140 lb. weight, 30" drop)
▲ Blows per foot



ELEVATION (feet)

NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

BORING:
BH-2

PAGE: 1 of 1

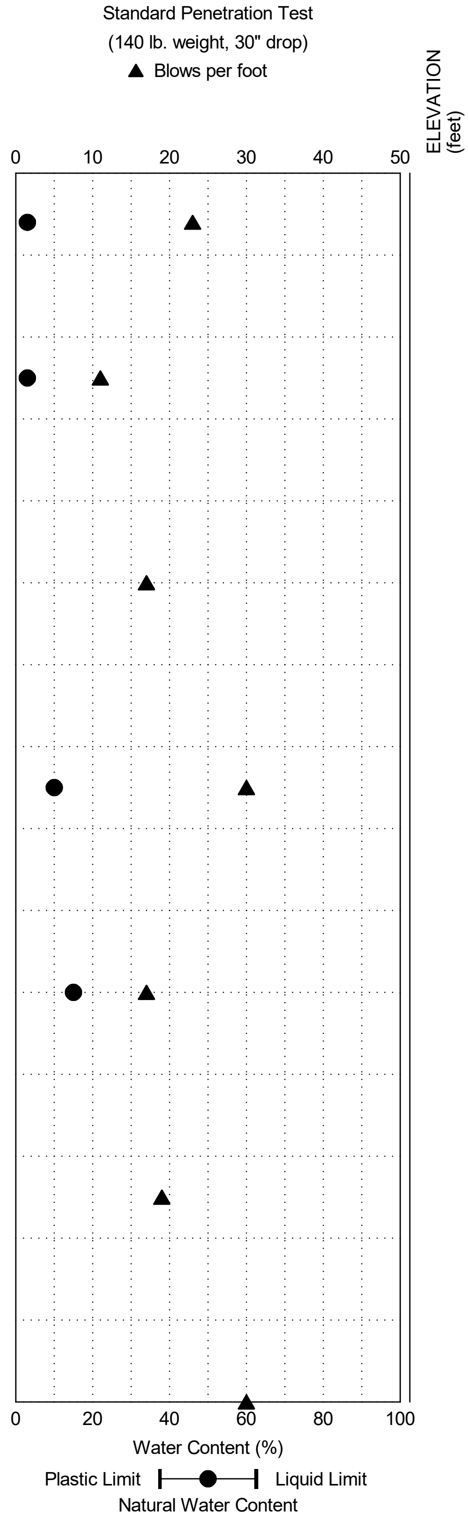
PROJECT NO.: 2023-195

FIGURE: A-3

DRILLING COMPANY: Geologic Drill Partners
DRILLING METHOD: MiniBob Tracked Drill Rig, HSA
SAMPLING METHOD: SPT w/Manual Cathead
LOCATION: See Figure 2A

DATE STARTED: 11/2/2023
DATE COMPLETED: 11/2/2023
LOGGED BY: M.A. Benson

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	GROUNDWATER
0		Approximately 0.6 feet of Hot Mix Asphalt. **(HMA)**				
	SW SM	Medium dense, olive-gray, well-graded SAND with silt and gravel, moist. **(FILL)**	S-1	9-9-14	GS	
	GP GM	Medium dense, olive, poorly graded GRAVEL with silt and sand, moist. Sand subangular.	S-2	5-5-6	GS	
5		Same as previous.	S-3	9-8-9		
	SM	Dense, slightly rust-mottled, light olive-brown, silty SAND, moist.	S-4	15-15-15	GS	
10		Becomes medium dense, dark olive-brown.	S-5	9-4-13	GS	
		Becomes rust-mottled. Grades to very silty, with scattered charcoal.	S-6	5-7-12		
15						



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

BORING:
BH-3

PAGE: 1 of 2

PROJECT NO.: 2023-195

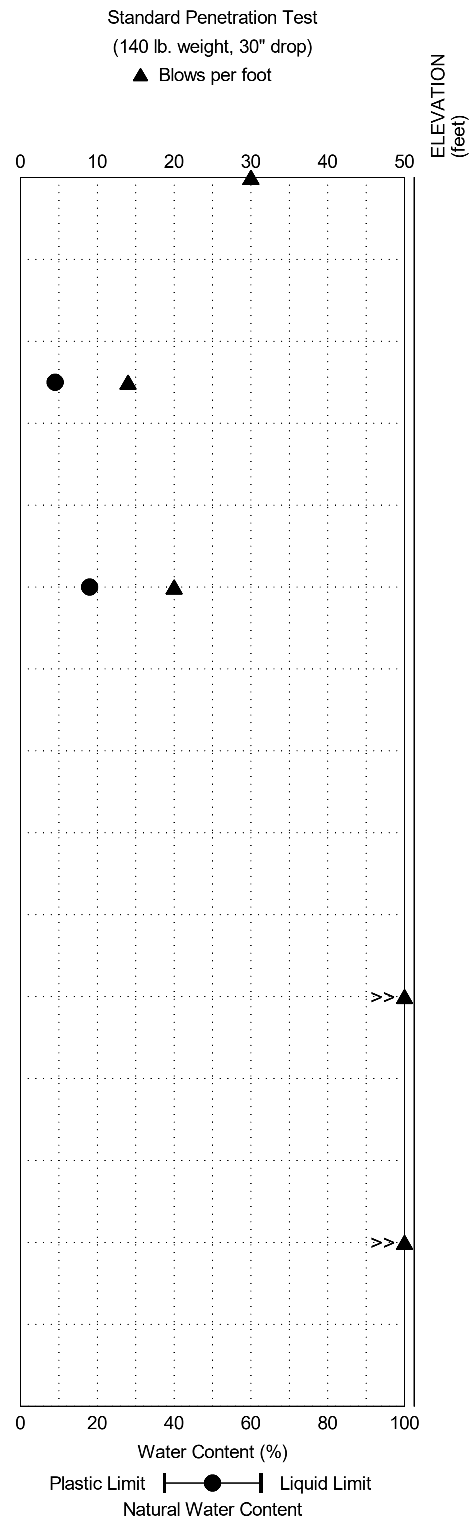
FIGURE: A-4

DRILLING COMPANY: Geologic Drill Partners
DRILLING METHOD: MiniBob Tracked Drill Rig, HSA
SAMPLING METHOD: SPT w/Manual Cathead
LOCATION: See Figure 2A

DATE STARTED: 11/2/2023
DATE COMPLETED: 11/2/2023
LOGGED BY: M.A. Benson

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	GROUNDWATER
15	SP SM	Dense, dark olive brown, slightly silty SAND, moist.	S-7	12-14-16		
	SP	Medium dense, slightly rust-mottled, olive-brown, poorly graded SAND, moist. Scattered gravel.	S-8	8-6-8	GS	
20	SP SM	Medium dense, dark grayish-brown, poorly graded SAND with silt, wet. **(ALLUVIUM)**	S-9a	7-9-11	GS	∇
	OL	Stiff organic silt with wood and fibrous organics. 1-inch-thick gray sand lens in bottom of sampler.	S-9b			
	SM	Medium dense, dark grayish-brown, silty SAND, wet.				
25	SP	Very dense, dark grayish-brown, SAND, wet. **(ADVANCE OUTWASH)**	S-10	50/6"		
		No recovery.	S-11	50/3"		
30						

Auger met refusal at a depth of 28 feet. Sample S-11 was driven at 28 feet and borehole BH-3 terminated at about 28.25 feet below ground surface (bgs).
Groundwater encountered at about 20 feet bgs during the exploration. Boring abandoned with 3/8" bentonite chips and surface patched with Aquaphalt cold patch mix.



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

BORING:
BH-3

PROJECT NO.: 2023-195 FIGURE: A-4

APPENDIX B

LABORATORY TESTING

EXPLORATION DESIGNATION	TOP DEPTH (feet)	BOTTOM DEPTH (feet)	MOISTURE CONTENT (%)	ORGANIC CONTENT (%)	SPECIFIC GRAVITY	ATTERBERG LIMITS (%)			% GRAVEL	% SAND	% FINES	ASTM SOIL CLASSIFICATION	SAMPLE DESCRIPTION
						LL	PL	PI					
BH-1,S-1	0.9	2.4	10.8						14.2	60.4	25.4	SM	Olive-brown, silty SAND
BH-1,S-2	2.5	4.0	10.8						17.5	64.0	18.5	SM	Olive-brown, silty SAND with gravel
BH-1,S-4	7.5	9.0	13.9						5.2	63.8	31.1	SM	Olive, silty SAND
BH-2,S-1	0.9	2.4	2.8						25.8	66.0	8.3	SW-SM	Very dark grayish-brown, well-graded SAND with silt and gravel
BH-2,S-2	2.5	4.0	17.0			31	19	12	2.7	46.2	51.1	CL	Light olive-brown, sandy lean CLAY
BH-2,S-3	5.0	6.5	15.9			31	18	13	1.7	33.7	64.5	CL	Olive, sandy lean CLAY
BH-3,S-1	0.6	2.1	3.0						35.4	54.5	10.1	SW-SM	Olive-gray, well-graded SAND with silt and gravel
BH-3,S-2	2.5	4.0	2.6						47.9	44.6	7.4	GP-GM	Olive, poorly graded GRAVEL with silt and sand
BH-3,S-4	7.5	9.0	10.0						11.4	75.0	13.6	SM	Light olive-brown, silty SAND
BH-3,S-5	10.0	11.5	14.7						11.3	67.0	21.7	SM	Dark olive-brown, silty SAND
BH-3,S-8	17.5	19.0	8.7						7.6	88.0	4.5	SP	Olive-brown, poorly graded SAND
BH-3,S-9a	20.0	21.0	17.5						5.3	85.5	9.2	SP-SM	Dark grayish-brown, poorly graded SAND with silt

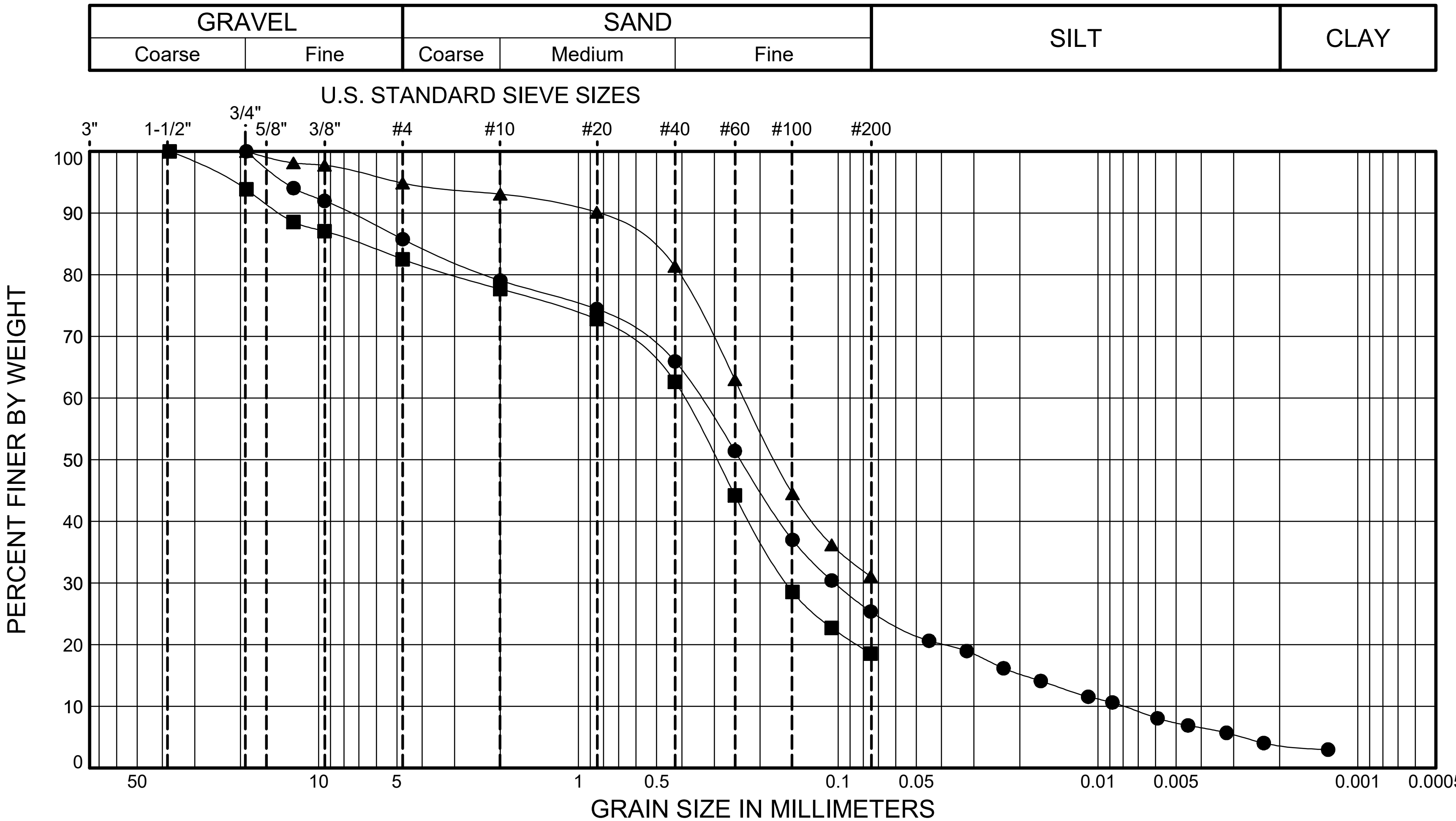
Notes:
1. This table summarizes information presented elsewhere in the report and should be used in conjunction with the report test, other graphs and tables, and the exploration logs.
2. The soil classifications in this table are based on ASTM D2487 and D2488 as applicable.

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

SUMMARY OF
MATERIAL PROPERTIES

PROJECT NO.: 2023-195 FIGURE: B-1



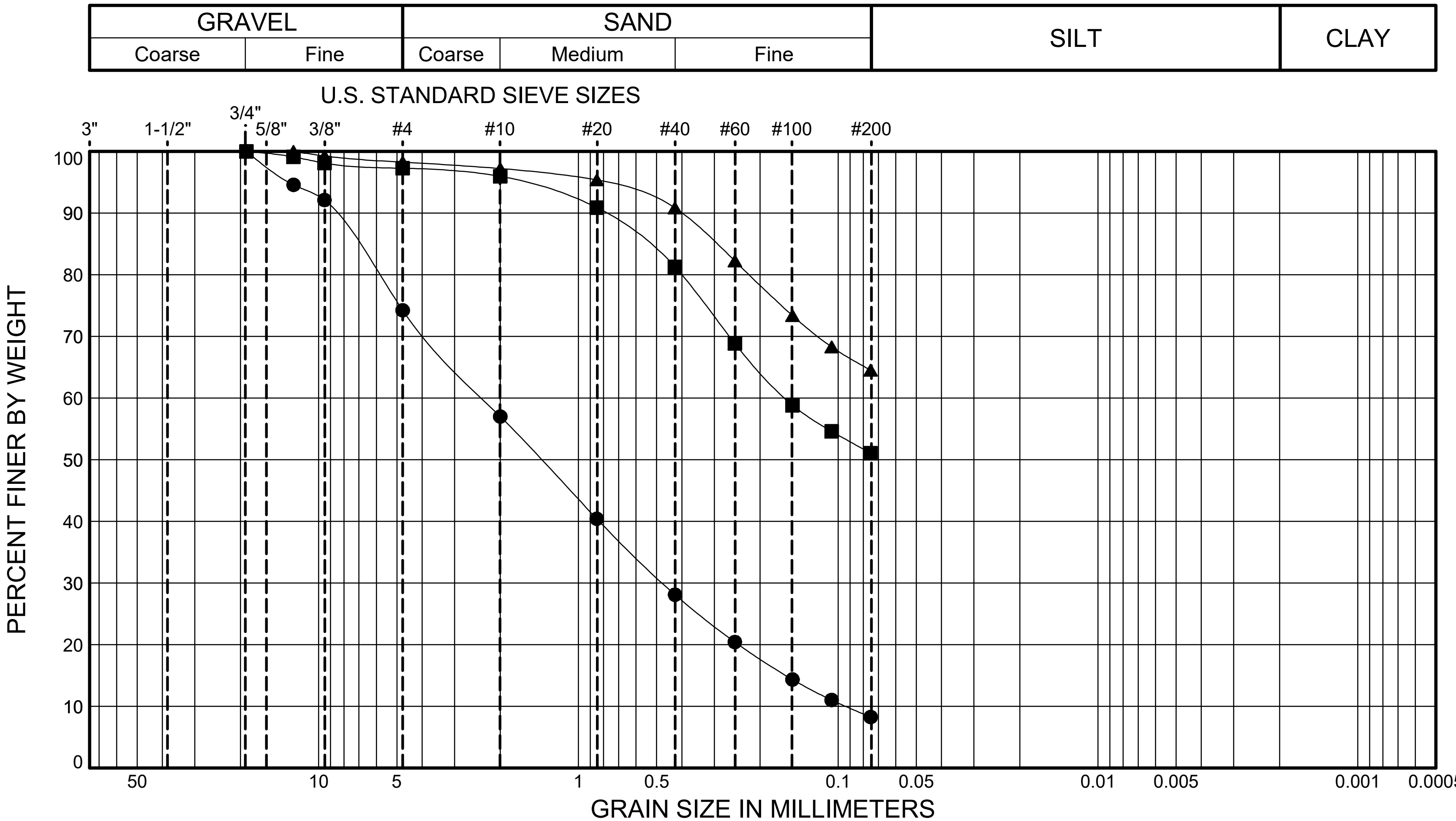
SYMBOL	SAMPLE		DEPTH (ft.)	ASTM SOIL CLASSIFICATION	% MC	LL	PL	PI	Gravel %	Sand %	Silt %	Clay %	Fines %
●	BH-1	S-1	0.9 - 2.4	(SM) Olive-brown, silty SAND	11				14.2	60.4	21.6	3.8	
■	BH-1	S-2	2.5 - 4.0	(SM) Olive-brown, silty SAND with gravel	11				17.5	64.0			18.5
▲	BH-1	S-4	7.5 - 9.0	(SM) Olive, silty SAND	14				5.2	63.8			31.1

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

PARTICLE-SIZE ANALYSIS OF SOILS METHODS ASTM D6913/D7928

PROJECT NO.: 2023-195 FIGURE: B-2



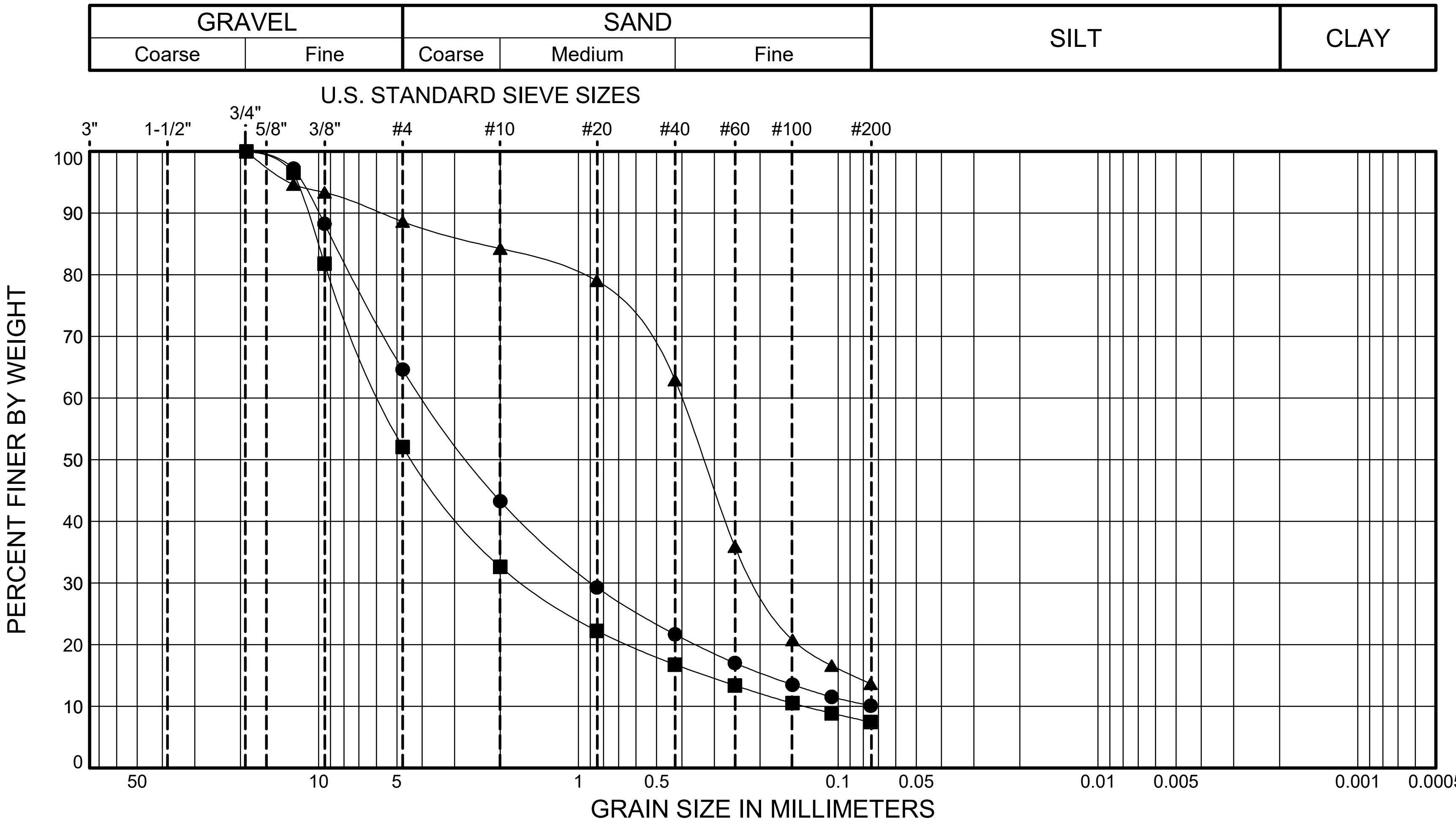
SYMBOL	SAMPLE		DEPTH (ft.)	ASTM SOIL CLASSIFICATION	% MC	LL	PL	PI	Gravel %	Sand %	Silt %	Clay %	Fines %
●	BH-2	S-1	0.9 - 2.4	(SW-SM) Very dark grayish-brown, well-graded SAND with silt and gravel	3				25.8	66.0			8.3
■	BH-2	S-2	2.5 - 4.0	(CL) Light olive-brown, sandy lean CLAY	17	31	19	12	2.7	46.2			51.1
▲	BH-2	S-3	5.0 - 6.5	(CL) Olive, sandy lean CLAY	16	31	18	13	1.7	33.7			64.5

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

PARTICLE-SIZE ANALYSIS
OF SOILS
METHODS ASTM D6913/D7928

PROJECT NO.: 2023-195 FIGURE: B-3



SYMBOL	SAMPLE		DEPTH (ft.)	ASTM SOIL CLASSIFICATION	% MC	LL	PL	PI	Gravel %	Sand %	Silt %	Clay %	Fines %
●	BH-3	S-1	0.6 - 2.1	(SW-SM) Olive-gray, well-graded SAND with silt and gravel	3				35.4	54.5			10.1
■	BH-3	S-2	2.5 - 4.0	(GP-GM) Olive, poorly graded GRAVEL with silt and sand	3				47.9	44.6			7.4
▲	BH-3	S-4	7.5 - 9.0	(SM) Light olive-brown, silty SAND	10				11.4	75.0			13.6

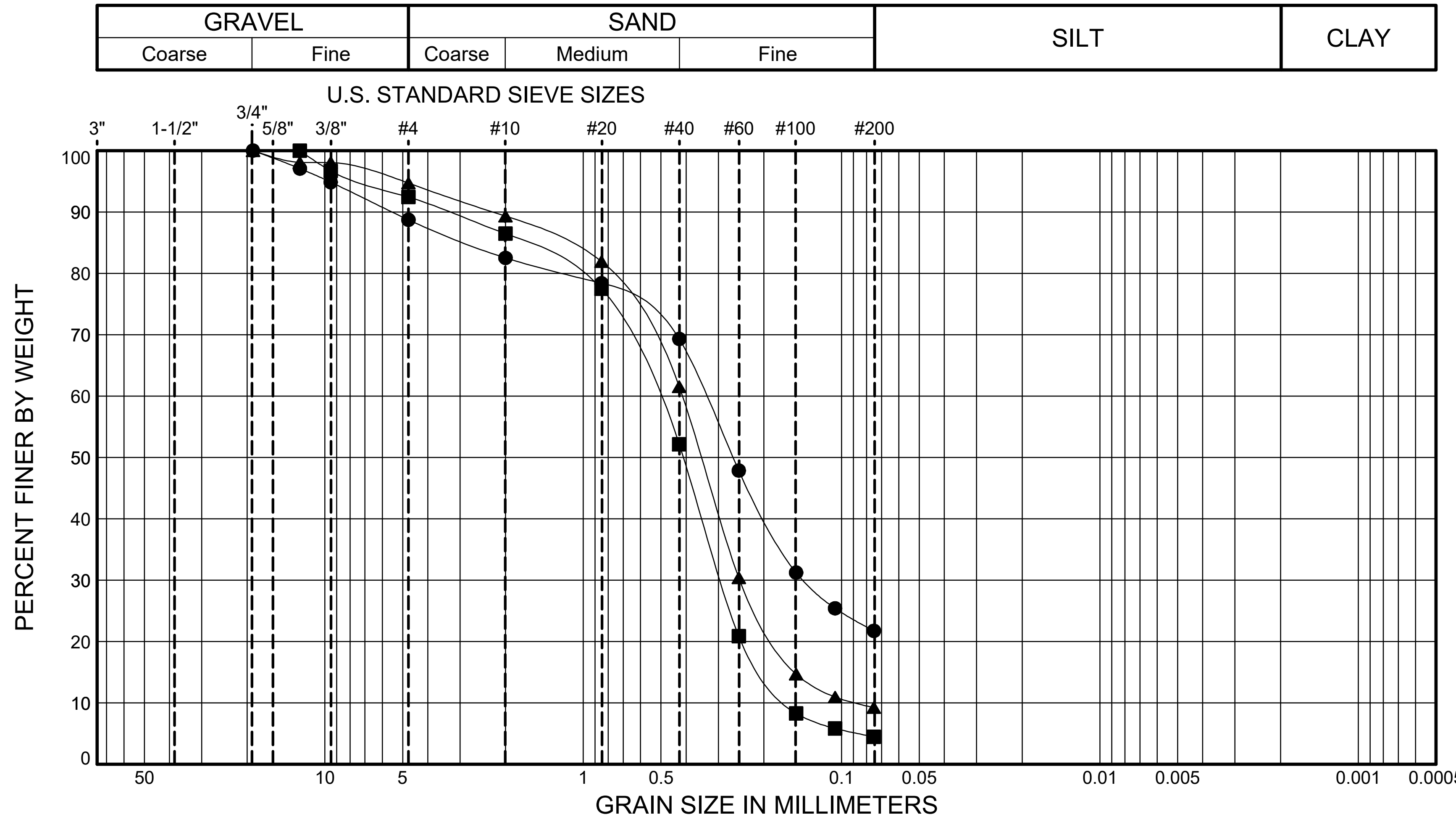
HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

PARTICLE-SIZE ANALYSIS
OF SOILS
METHODS ASTM D6913/D7928

PROJECT NO.: 2023-195 FIGURE: B-4

HWAGRSZ SILT-CLAY PERCENTAGE WITH 7928 2023-195-21.GPJ 12/7/23



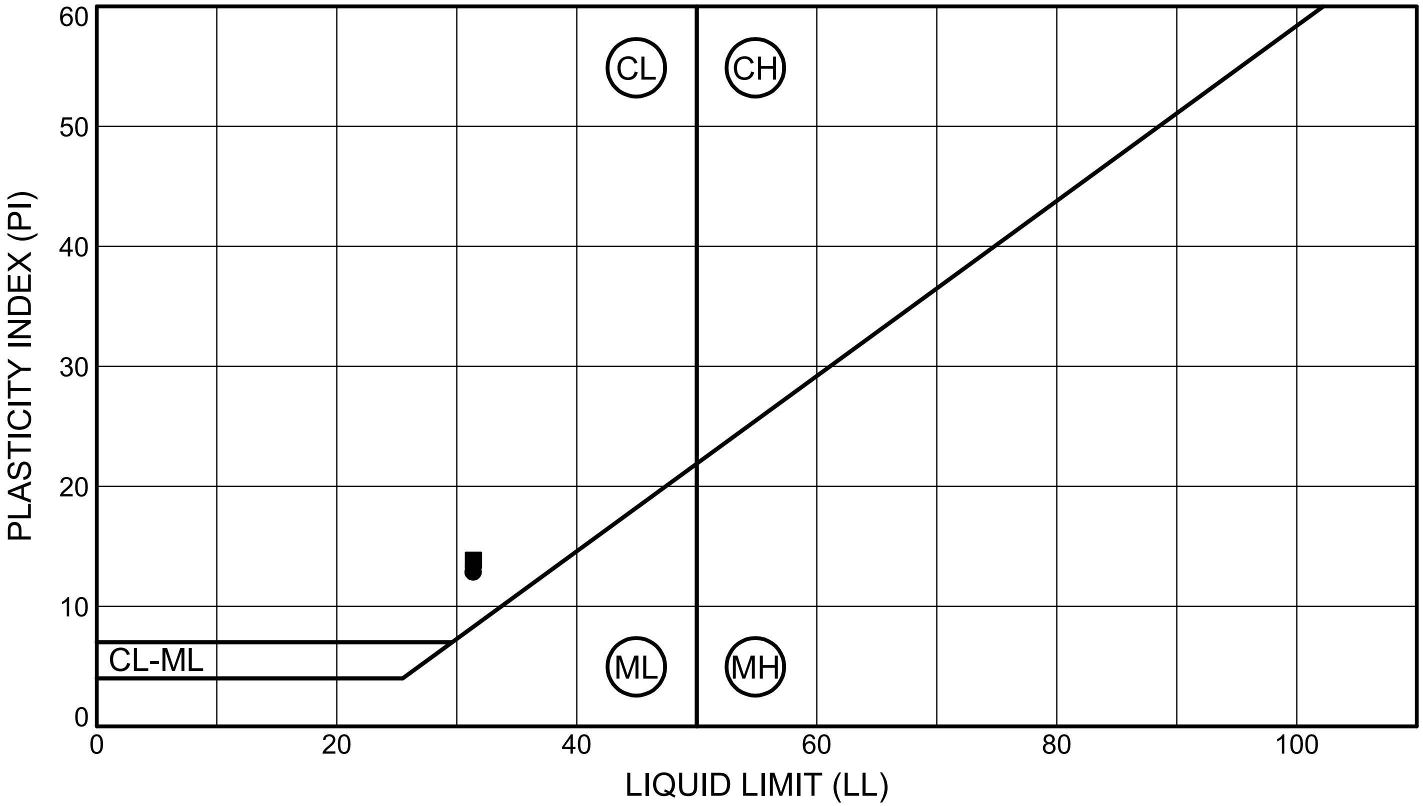
SYMBOL	SAMPLE		DEPTH (ft.)	ASTM SOIL CLASSIFICATION	% MC	LL	PL	PI	Gravel %	Sand %	Silt %	Clay %	Fines %
●	BH-3	S-5	10.0 - 11.5	(SM) Dark olive-brown, silty SAND	15				11.3	67.0			21.7
■	BH-3	S-8	17.5 - 19.0	(SP) Olive-brown, poorly graded SAND	9				7.6	88.0			4.5
▲	BH-3	S-9a	20.0 - 21.0	(SP-SM) Dark grayish-brown, poorly graded SAND with silt	18				5.3	85.5			9.2

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

PARTICLE-SIZE ANALYSIS
OF SOILS
METHODS ASTM D6913/D7928

PROJECT NO.: 2023-195 FIGURE: B-5



SYMBOL	SAMPLE		DEPTH (ft)	CLASSIFICATION	% MC	LL	PL	PI	% Fines
●	BH-2	S-2	2.5 - 4.0	(CL) Light olive-brown, sandy lean CLAY	17	31	19	12	51.1
■	BH-2	S-3	5.0 - 6.5	(CL) Olive, sandy lean CLAY	16	31	18	13	64.5

HWA GEOSCIENCES INC.

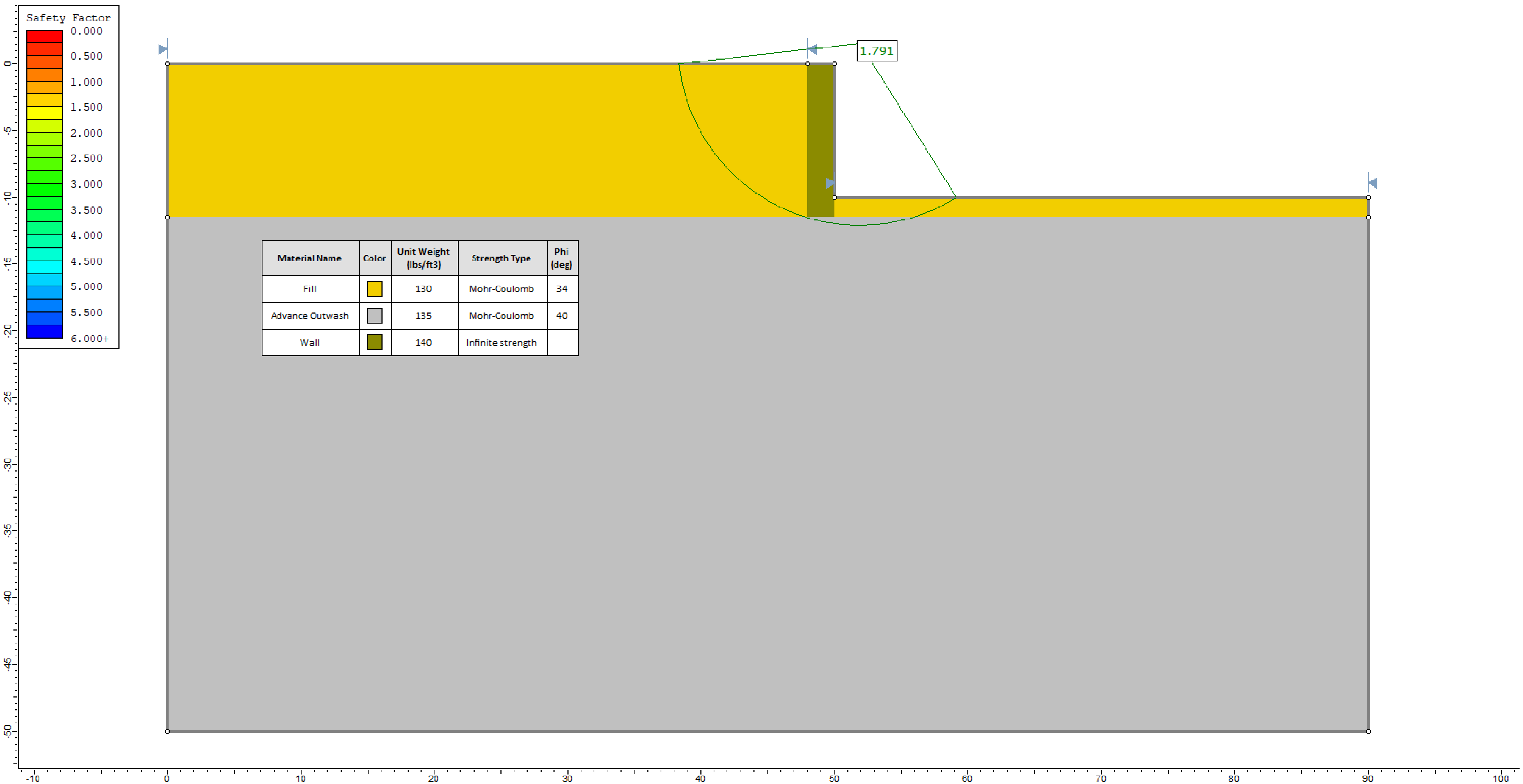
NE 40th Street Sidewalk
Bellevue, Washington

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS METHOD ASTM D4318

PROJECT NO.: 2023-195 FIGURE: B-6

APPENDIX C

GLOBAL SLOPE
STABILITY ANALYSES



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

HWA GEOSCIENCES INC.
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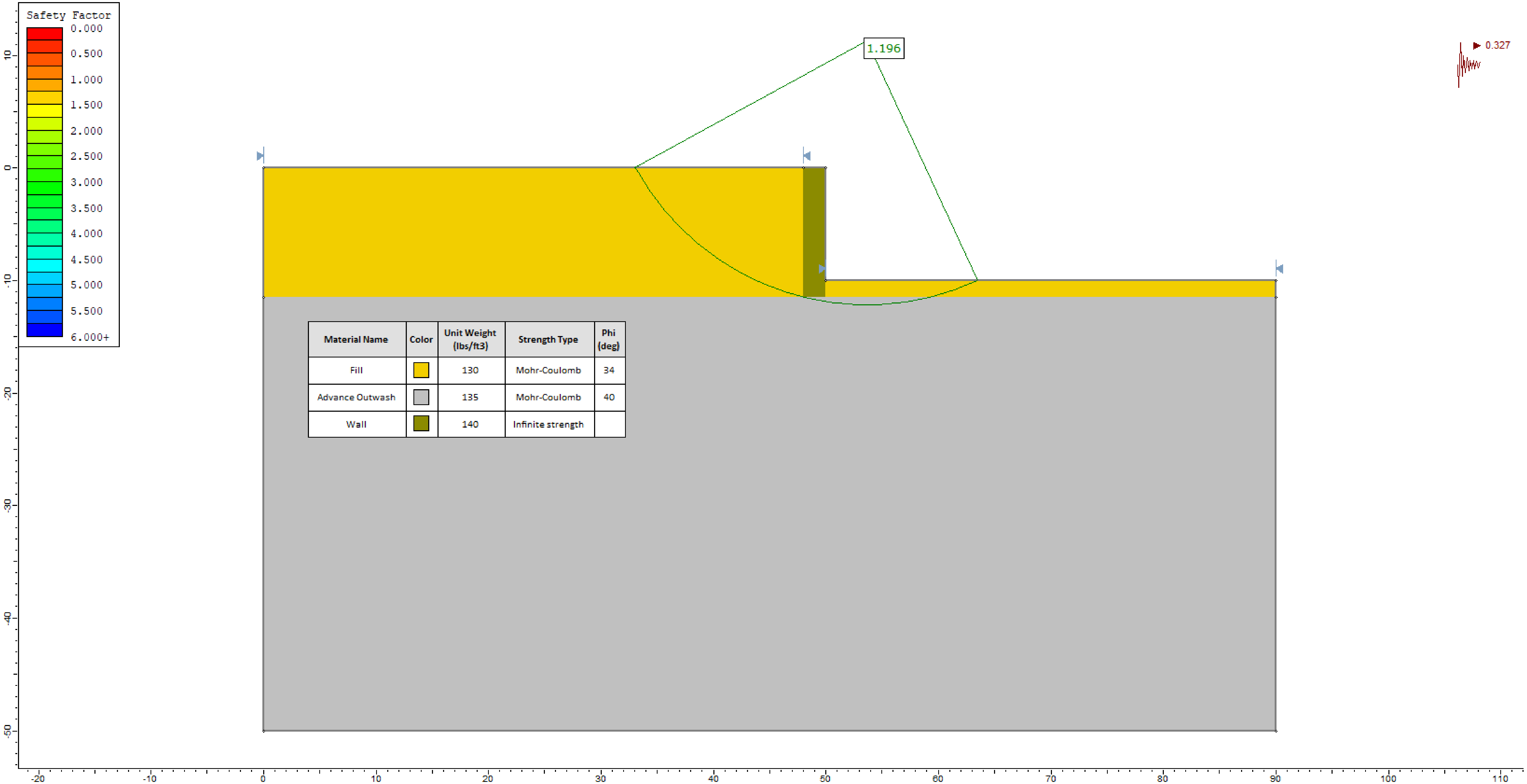
SLOPE STABILITY ANALYSIS
WALL 1 STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-1

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

HWA GEOSCIENCES INC.
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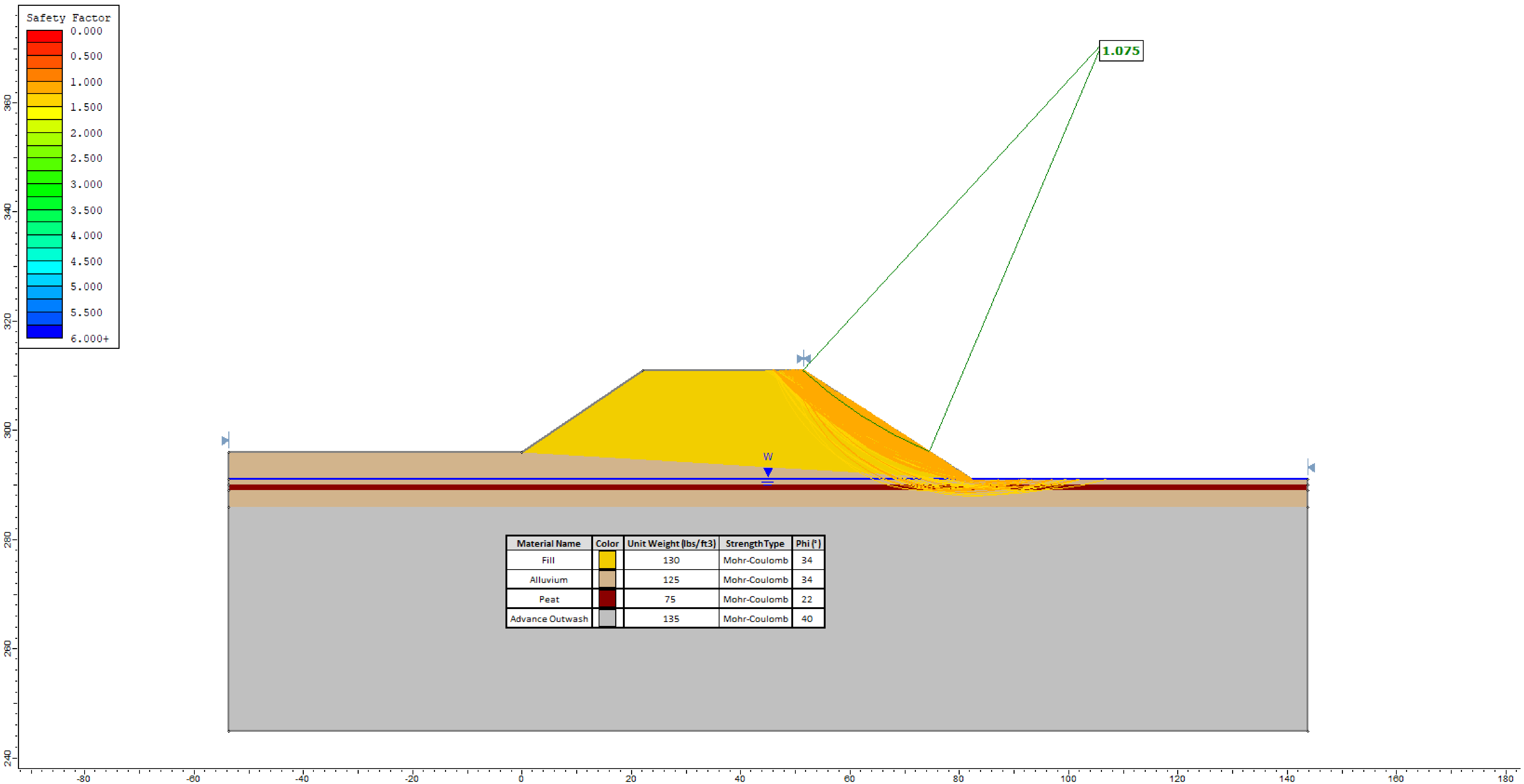
SLOPE STABILITY ANALYSIS
WALL 1 PSEUDO-STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-2

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40

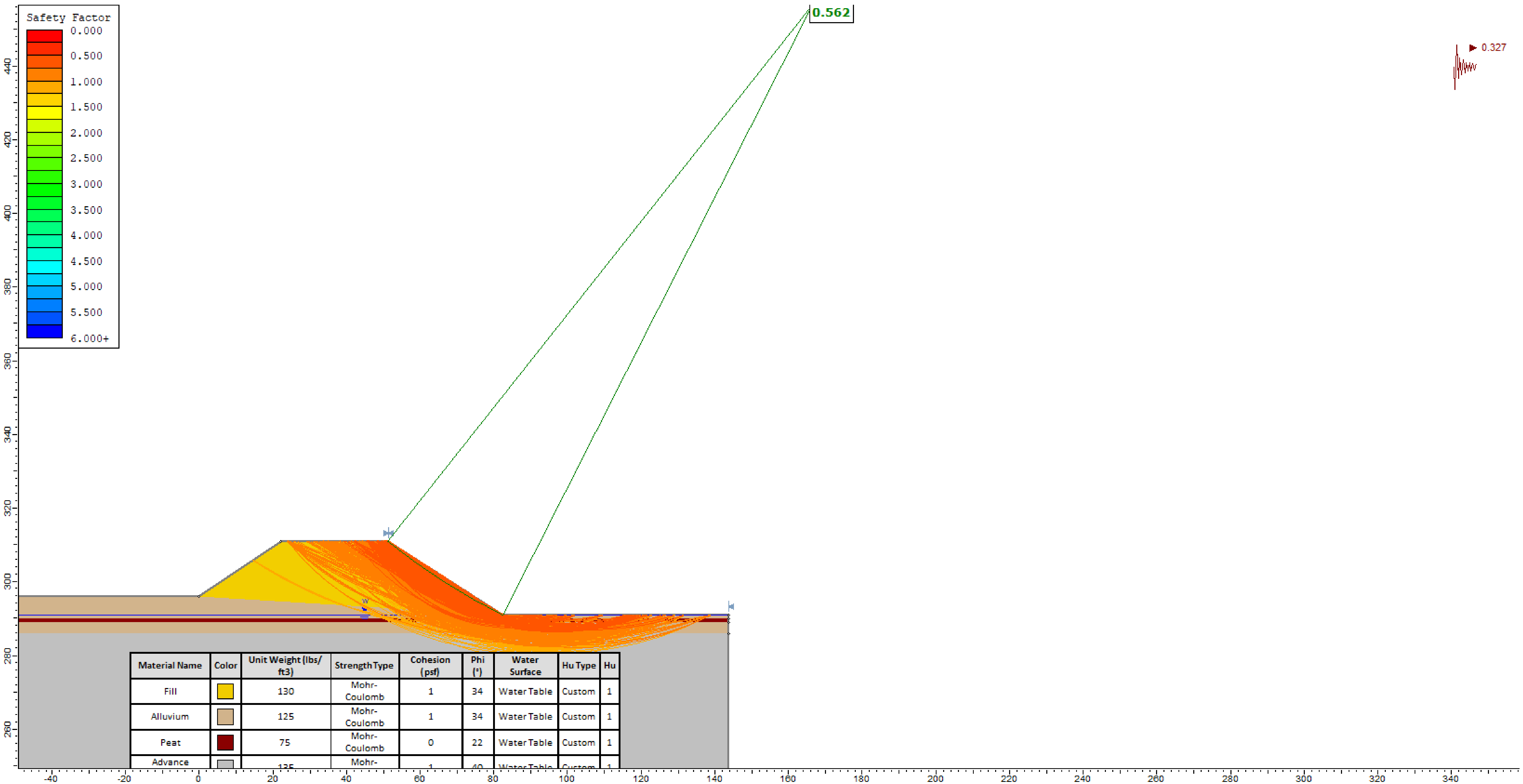
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
EXISTING STEEP SLOPE STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-3

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Water Surface	Hu Type	Hu
Fill		130	Mohr-Coulomb	1	34	Water Table	Custom	1
Alluvium		125	Mohr-Coulomb	1	34	Water Table	Custom	1
Peat		75	Mohr-Coulomb	0	22	Water Table	Custom	1
Advance		125	Mohr-	1	40	Water Table	Custom	1

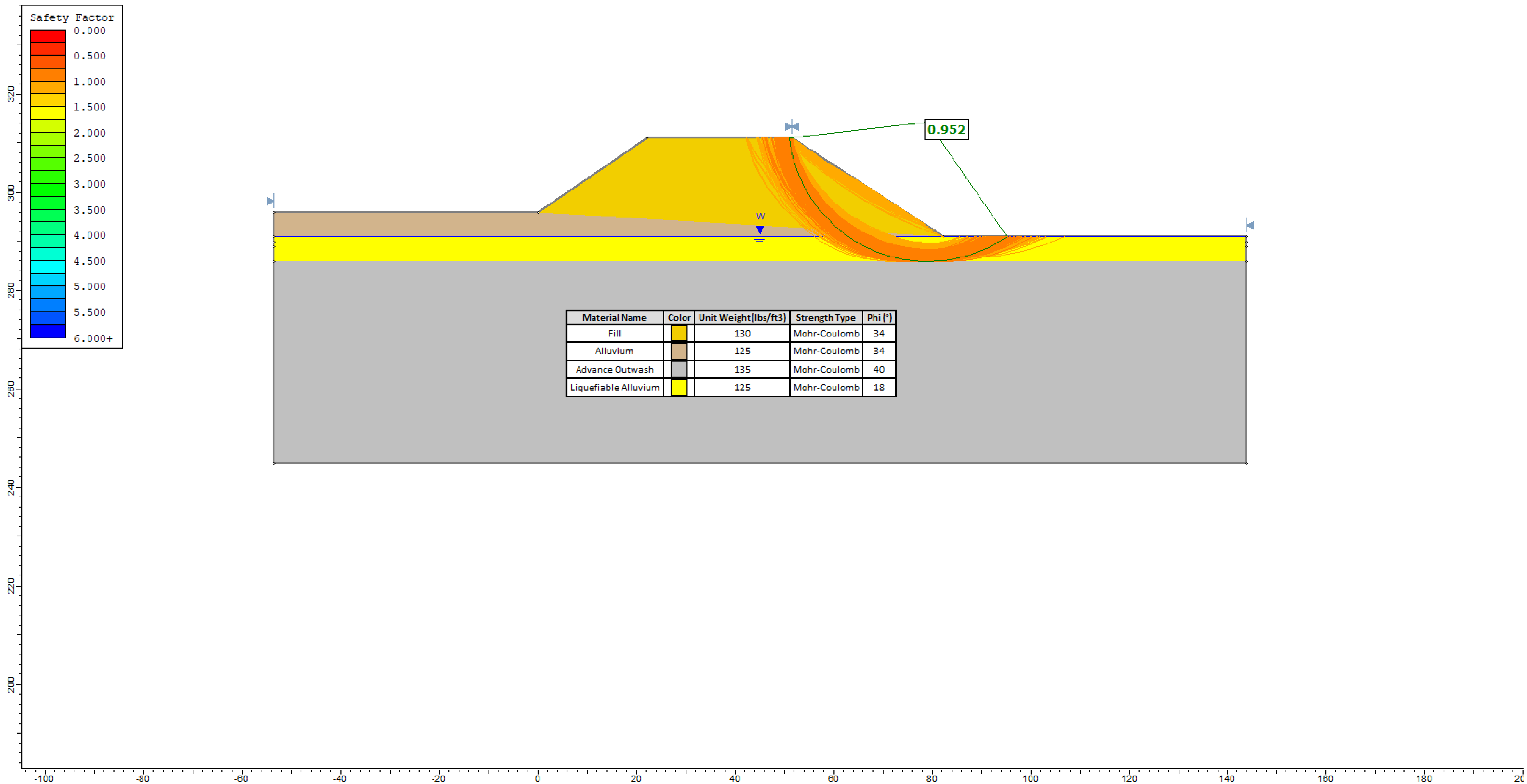
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
EXISTING STEEP SLOPE PSEUDO-STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-4

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Liquefiable Alluvium		125	Mohr-Coulomb	18

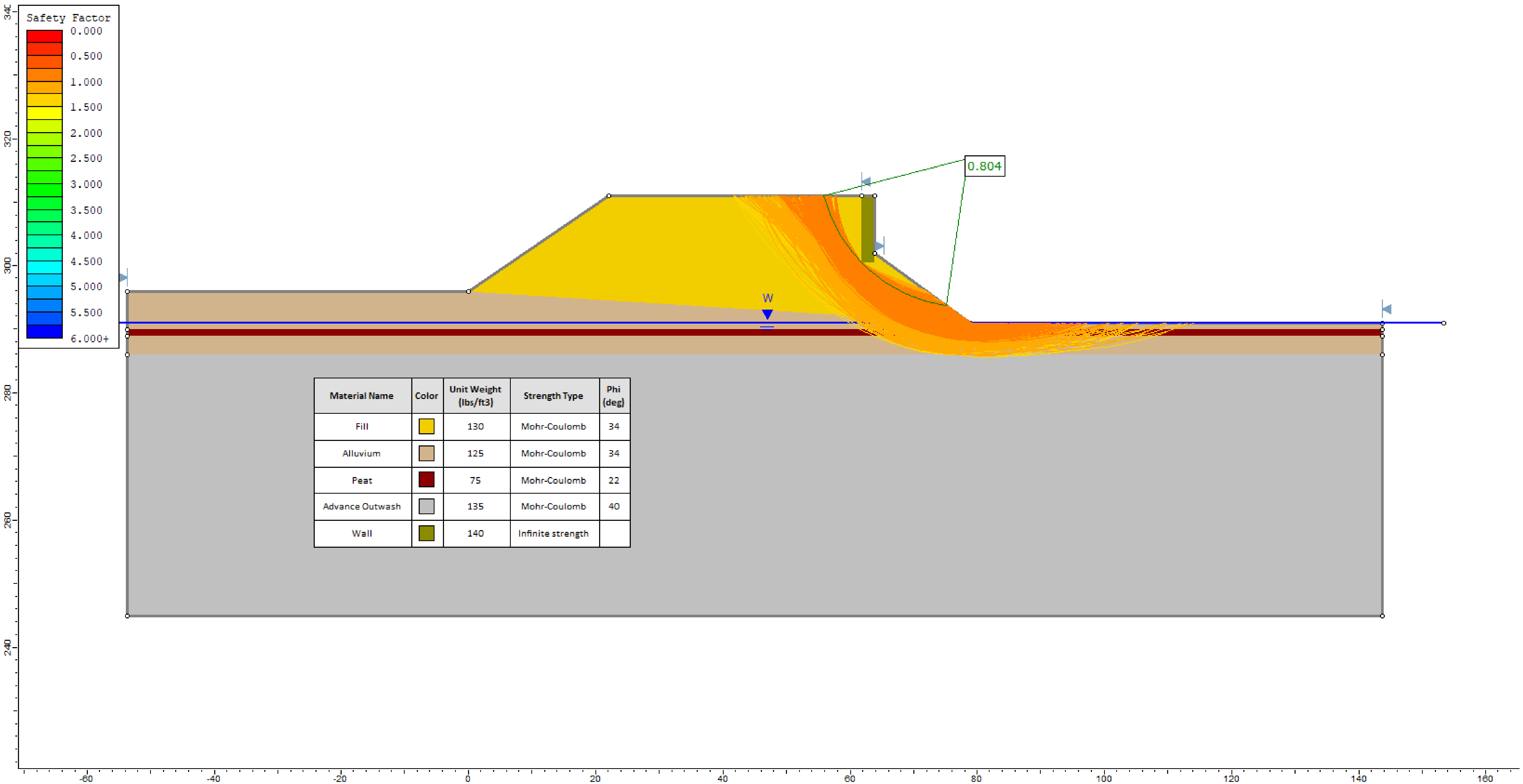
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
EXISTING STEEP SLOPE POST LQ STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-5

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

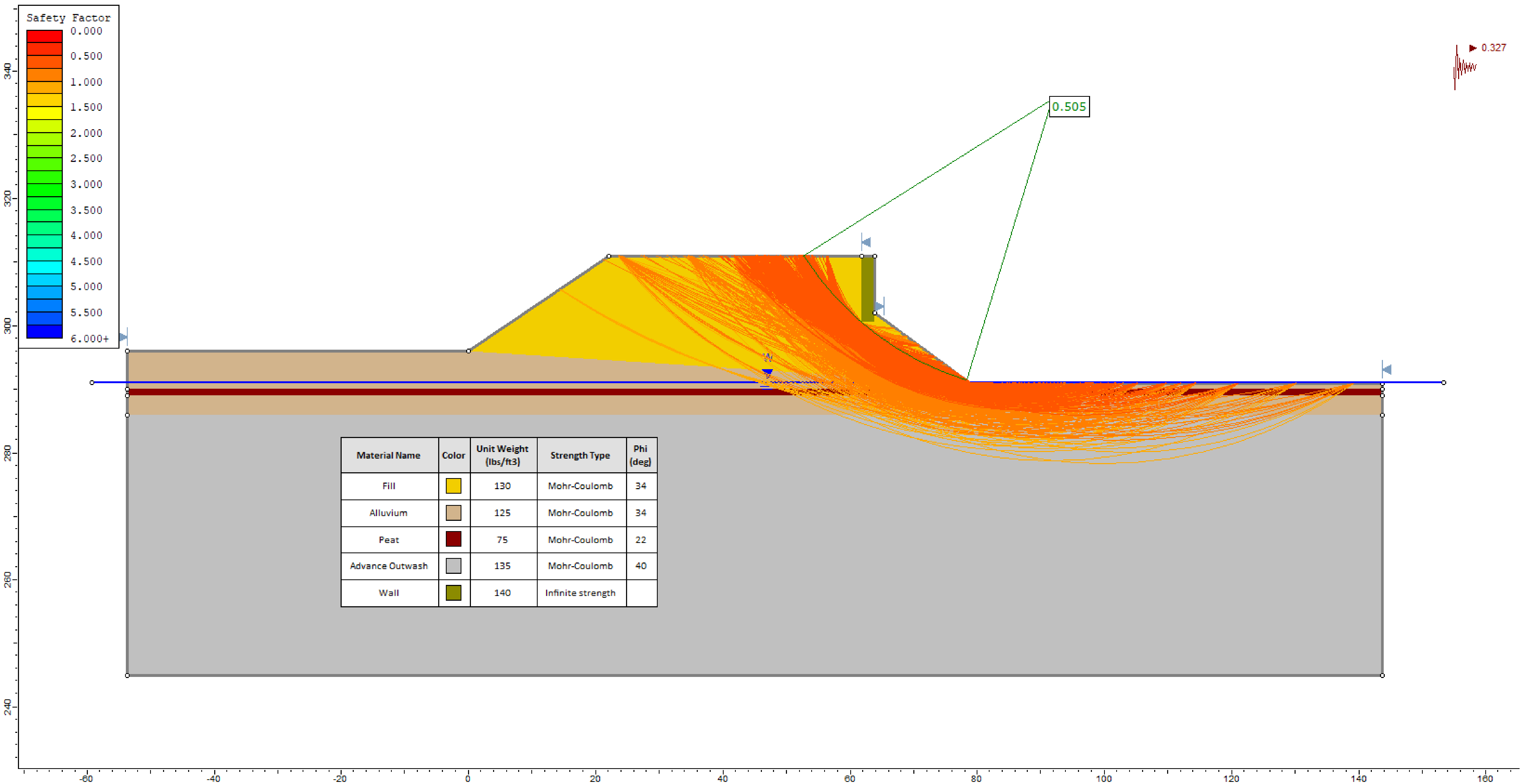
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 STATIC STABILITY – CIP OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-6

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

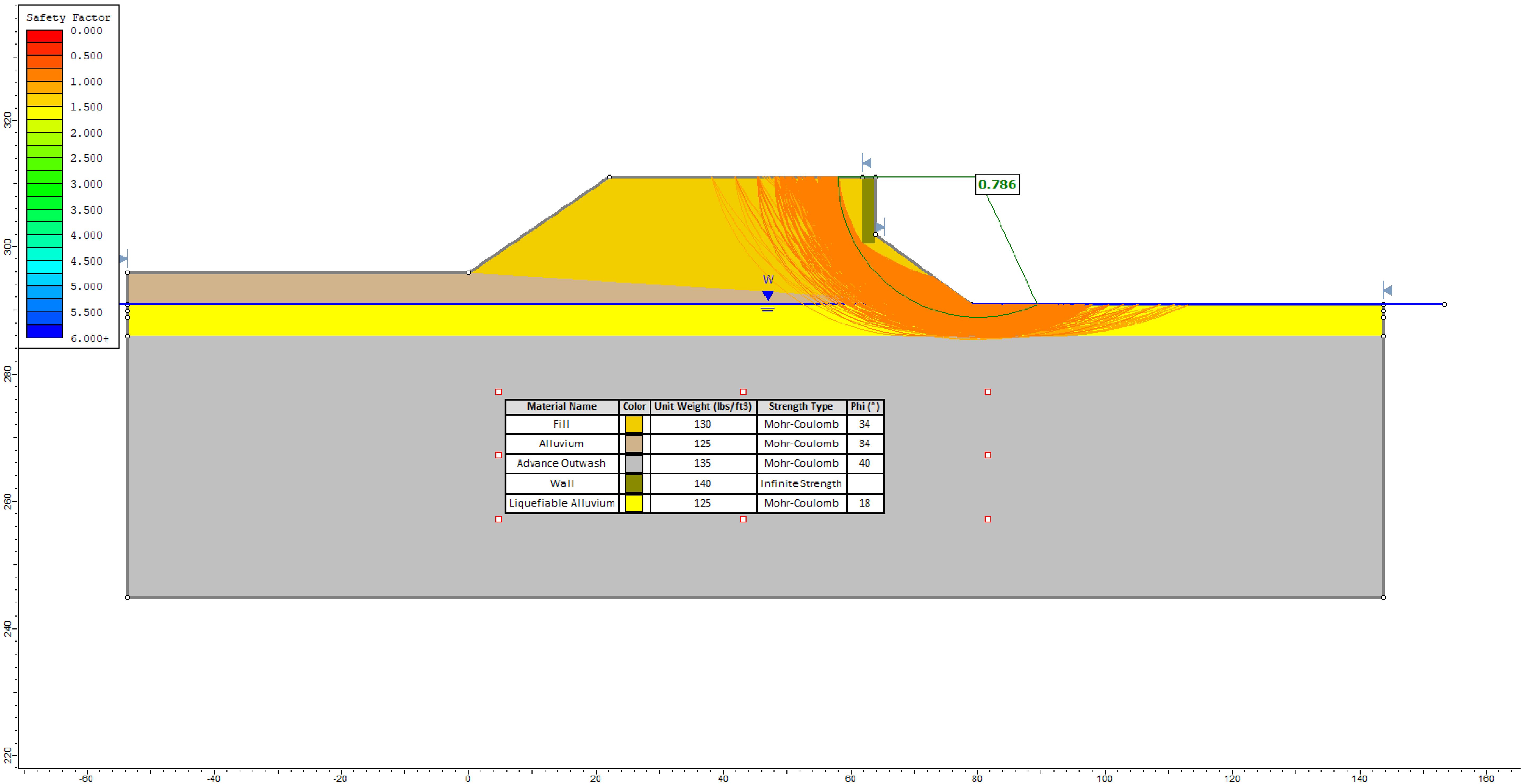
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 PSEUDO-STATIC STABILITY – CIP OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-7

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite Strength	
Liquefiable Alluvium		125	Mohr-Coulomb	18

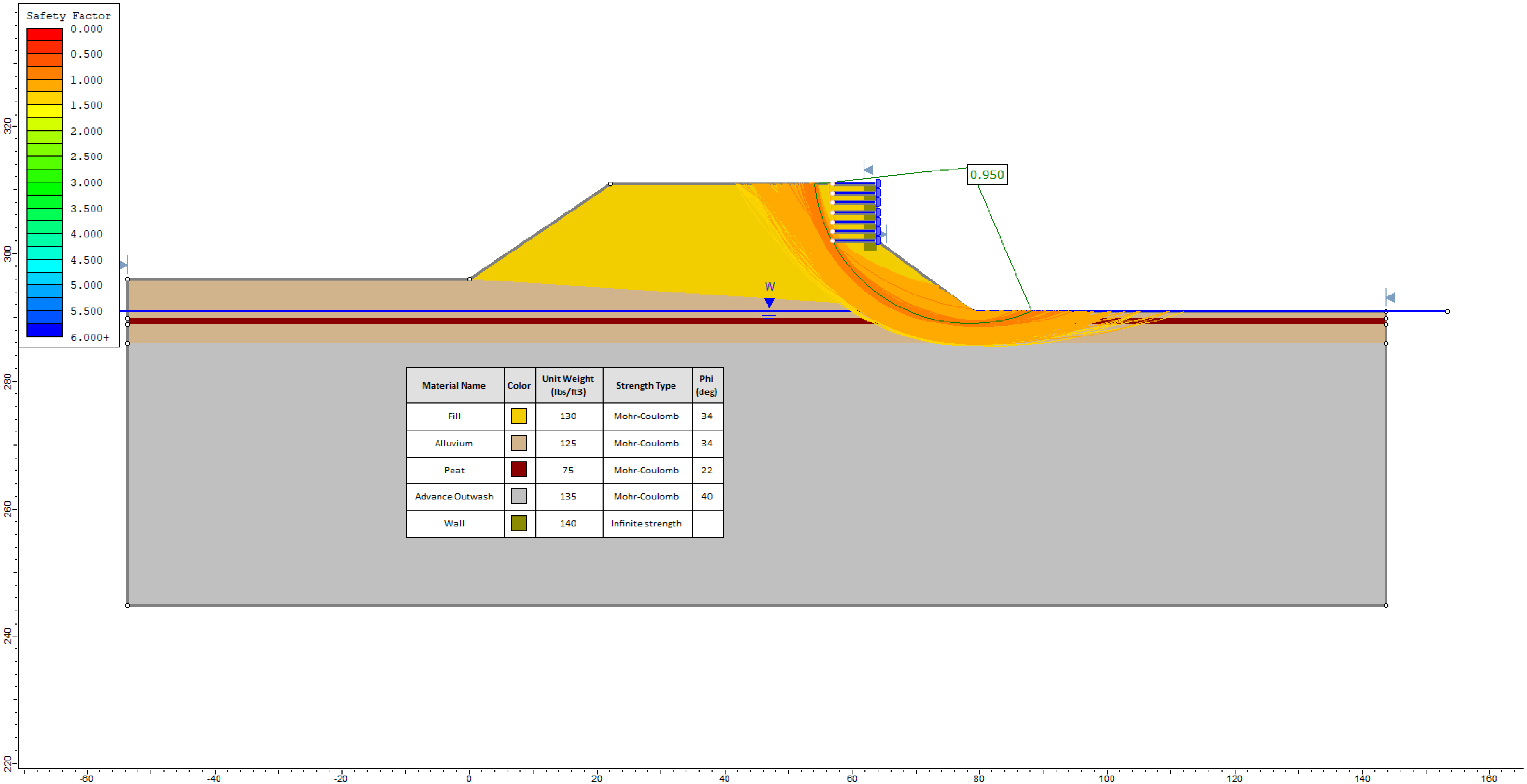
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 POST LQ STABILITY – CIP OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-8

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

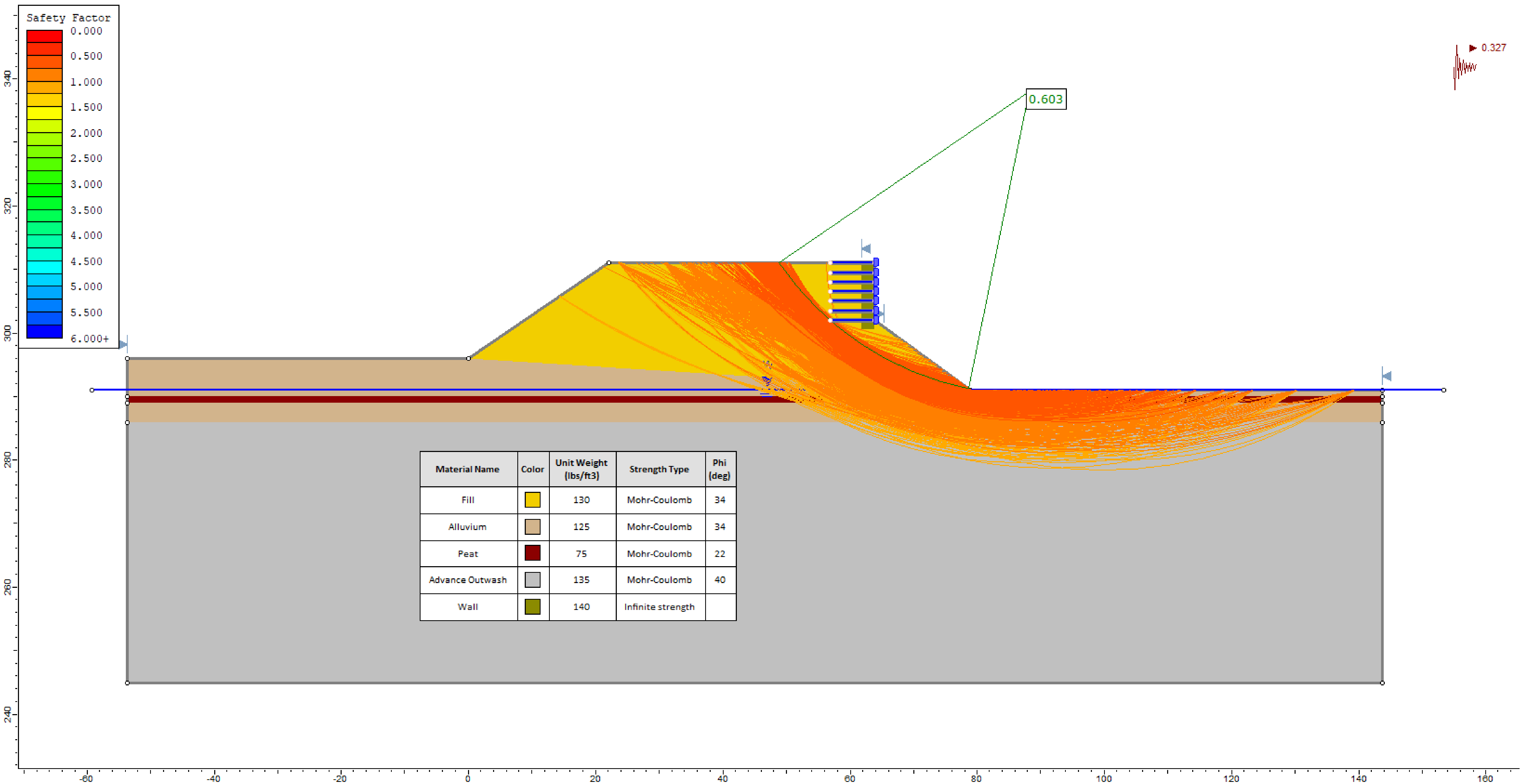
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 STATIC STABILITY – SEW OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-9

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

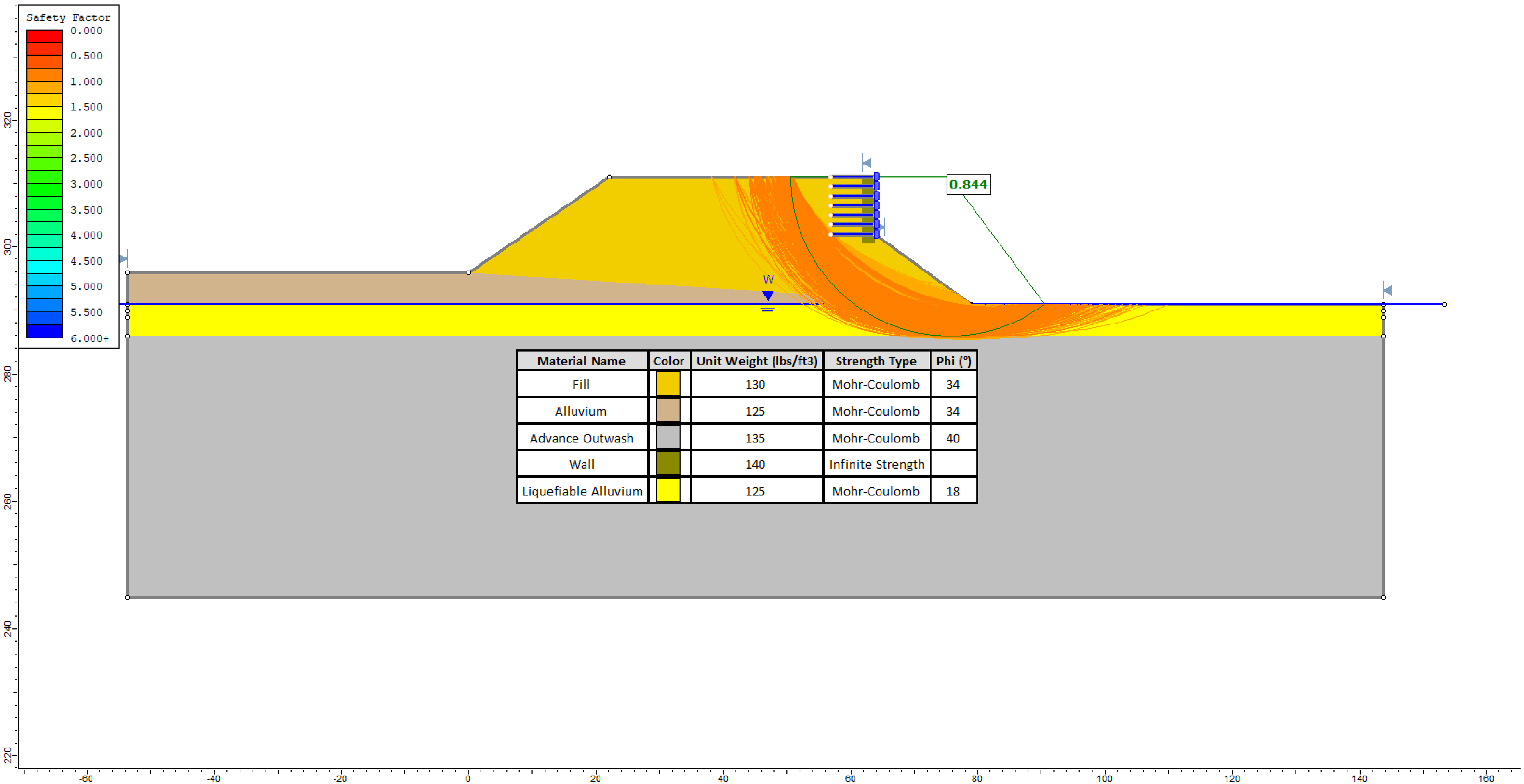
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 PSEUDO-STATIC STABILITY – SEW OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-10

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite Strength	
Liquefiable Alluvium		125	Mohr-Coulomb	18

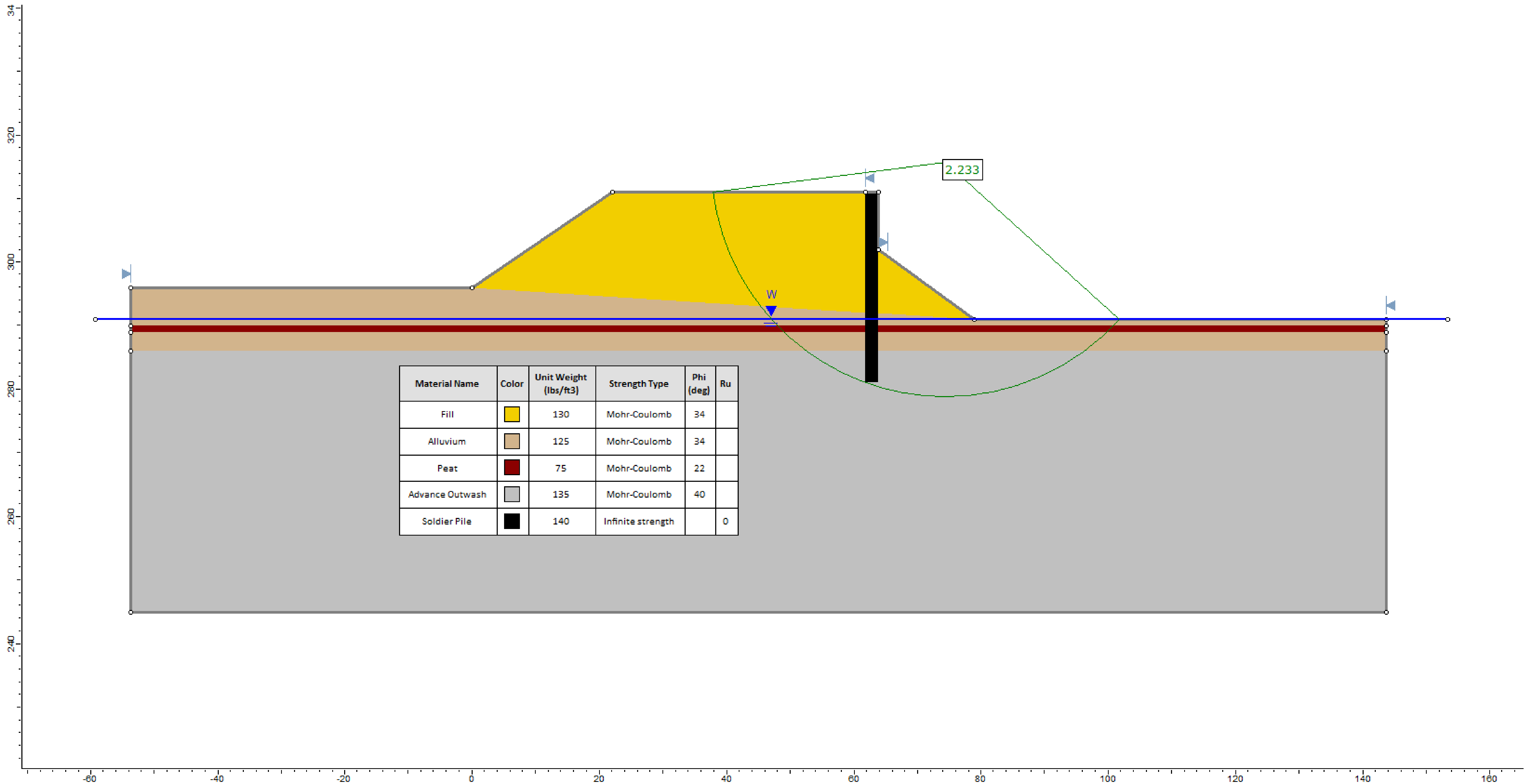
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 POST LQ STABILITY – SEW OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-11

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)	Ru
Fill		130	Mohr-Coulomb	34	
Alluvium		125	Mohr-Coulomb	34	
Peat		75	Mohr-Coulomb	22	
Advance Outwash		135	Mohr-Coulomb	40	
Soldier Pile		140	Infinite strength		0

HWA GEOSCIENCES INC.
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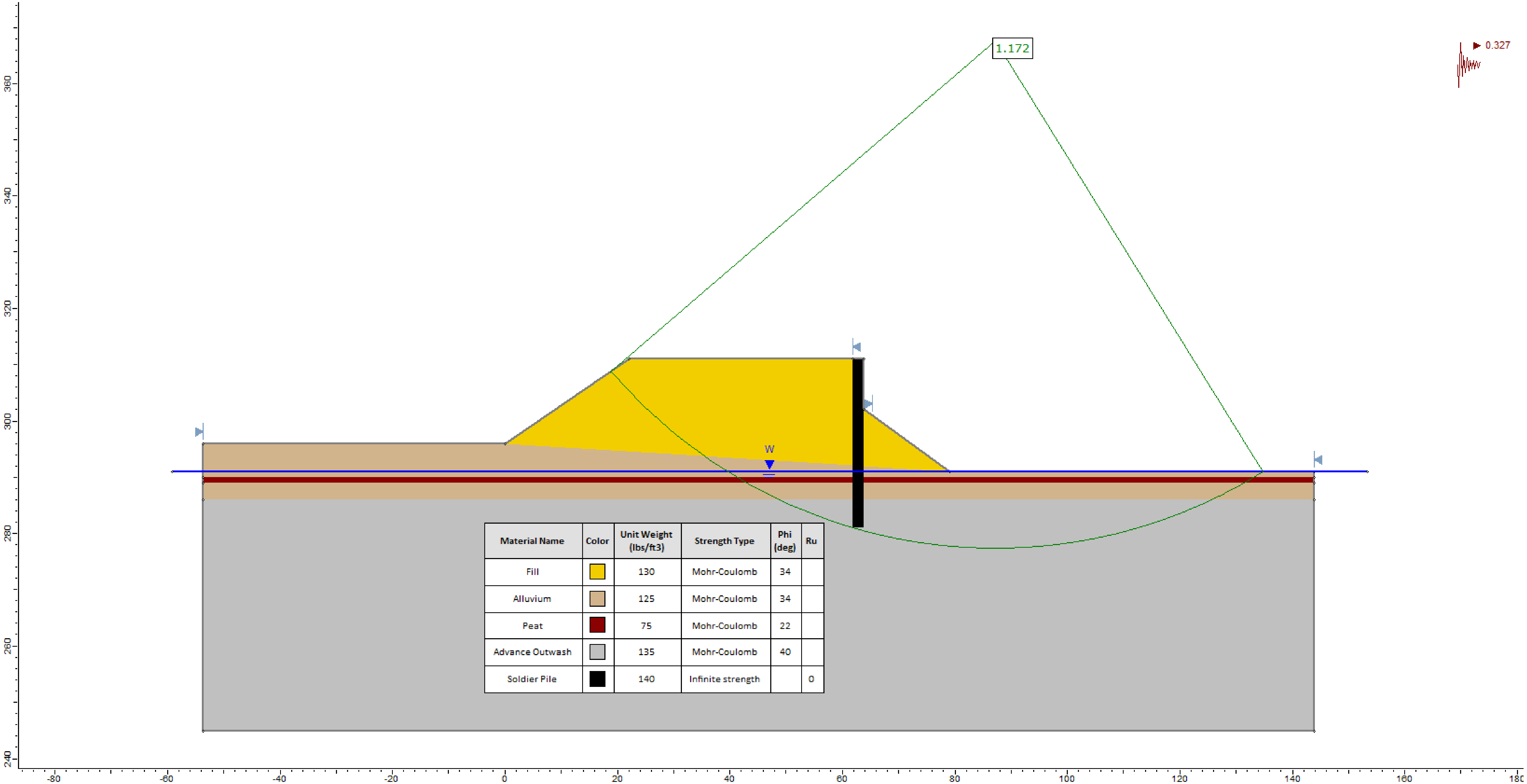
SLOPE STABILITY ANALYSIS
WALL 2 STATIC STABILITY – SOLDIER PILE OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-12

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)	Ru
Fill		130	Mohr-Coulomb	34	
Alluvium		125	Mohr-Coulomb	34	
Peat		75	Mohr-Coulomb	22	
Advance Outwash		135	Mohr-Coulomb	40	
Soldier Pile		140	Infinite strength		0

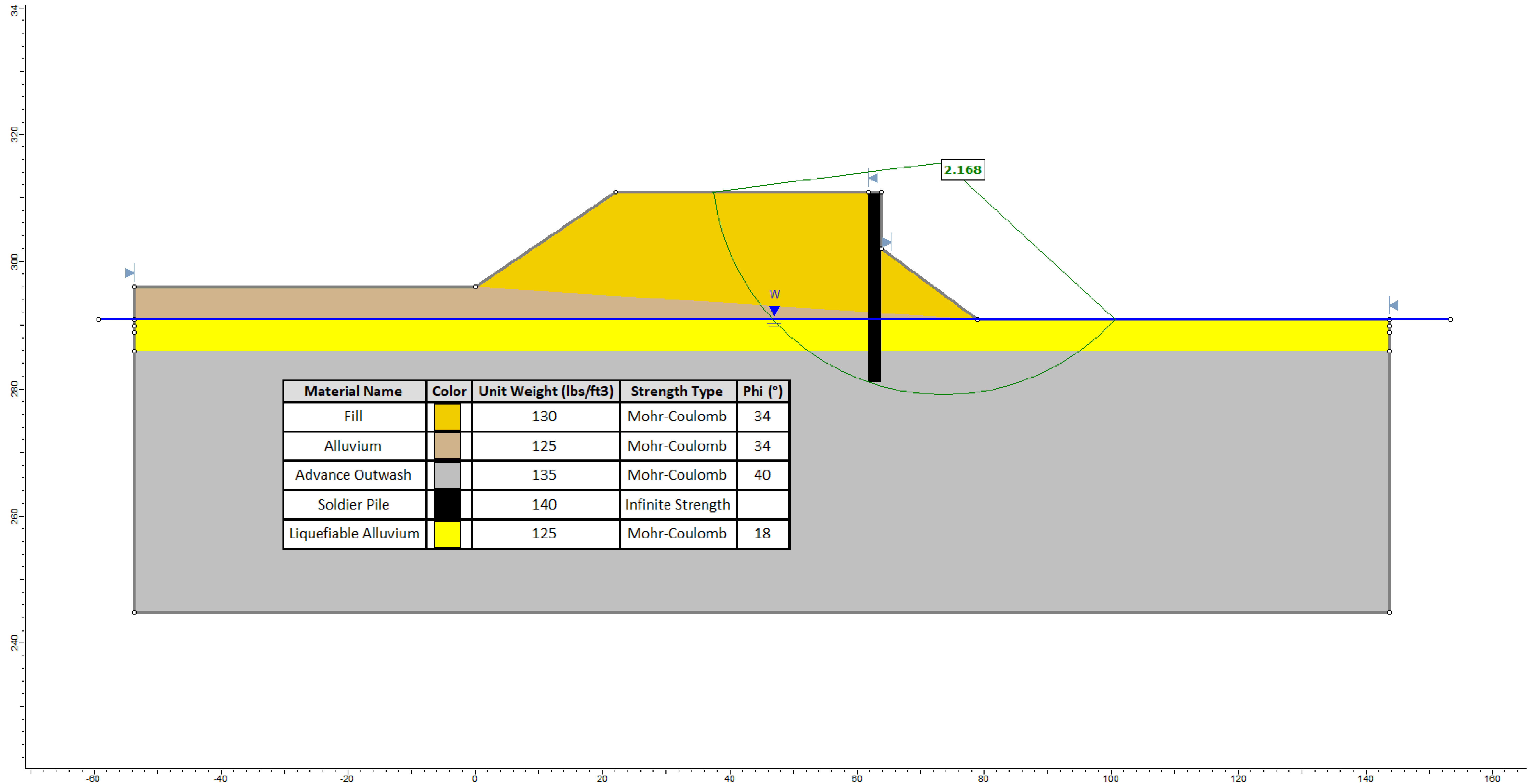
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 PSEUDO-STATIC STABILITY – SOLDIER PILE

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-13

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Soldier Pile		140	Infinite Strength	
Liquefiable Alluvium		125	Mohr-Coulomb	18

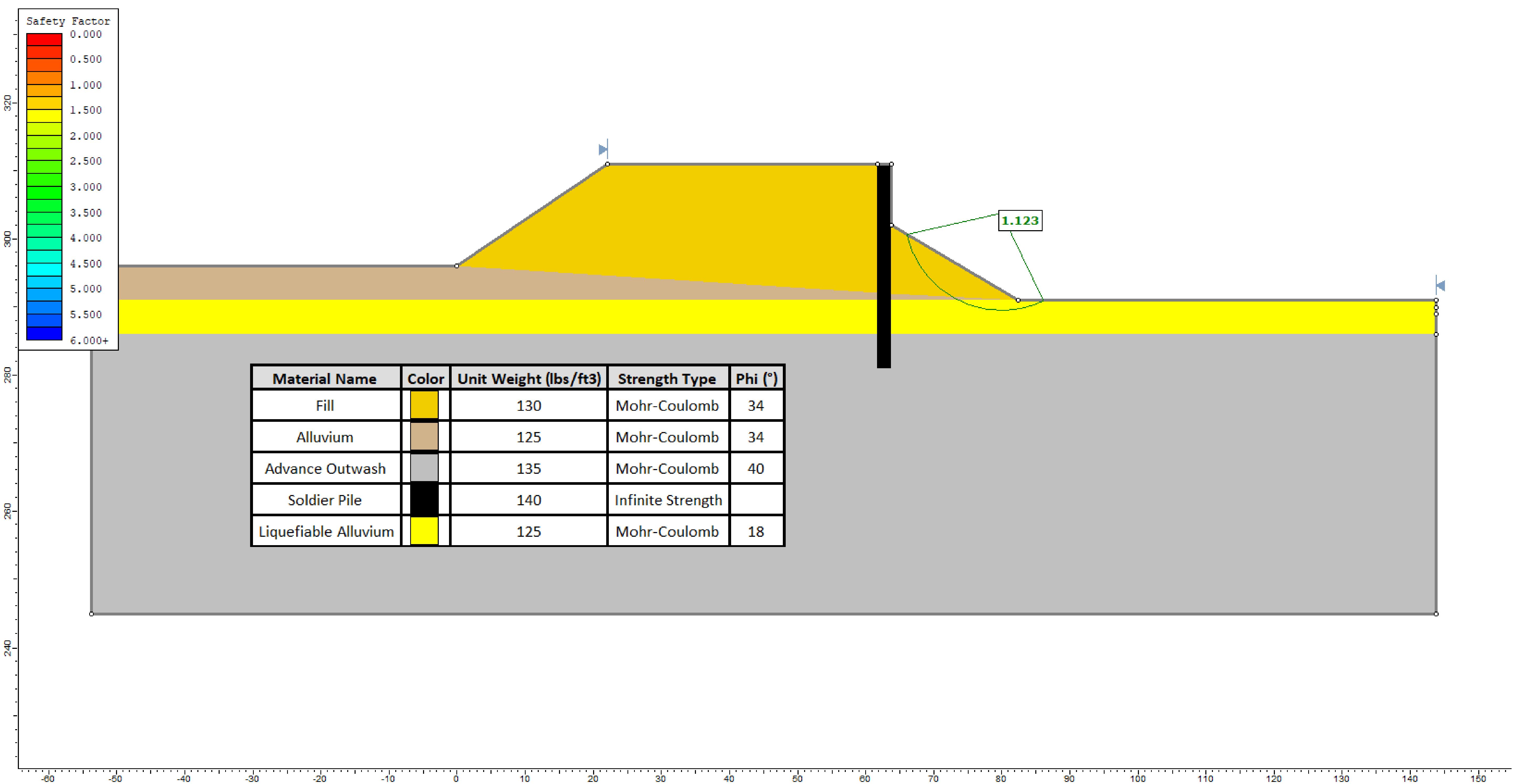
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 POST LQ STABILITY – SOLDIER PILE OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-14

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Soldier Pile		140	Infinite Strength	
Liquefiable Alluvium		125	Mohr-Coulomb	18

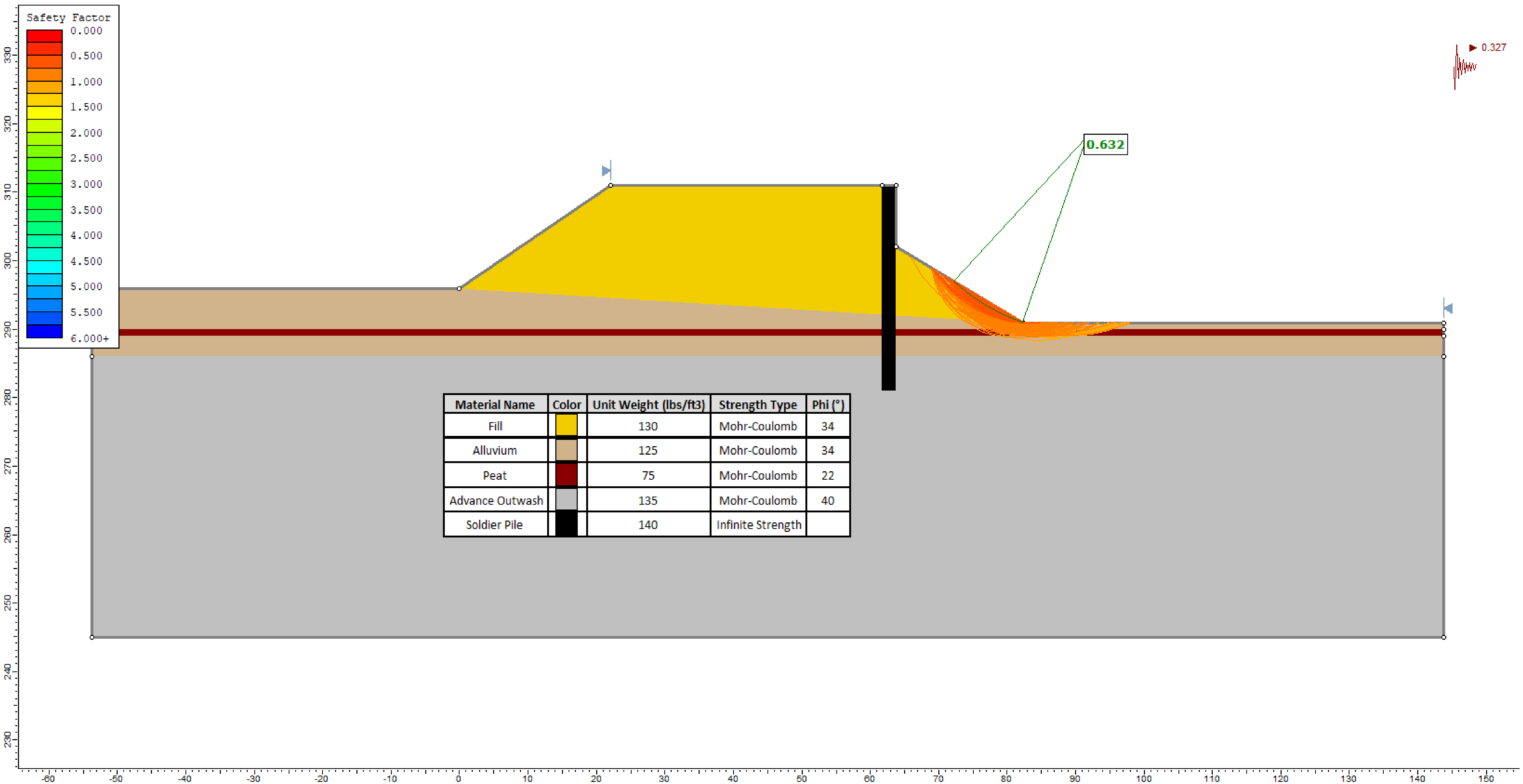
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 TOE SLOPE POST LQ STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-15

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Soldier Pile		140	Infinite Strength	

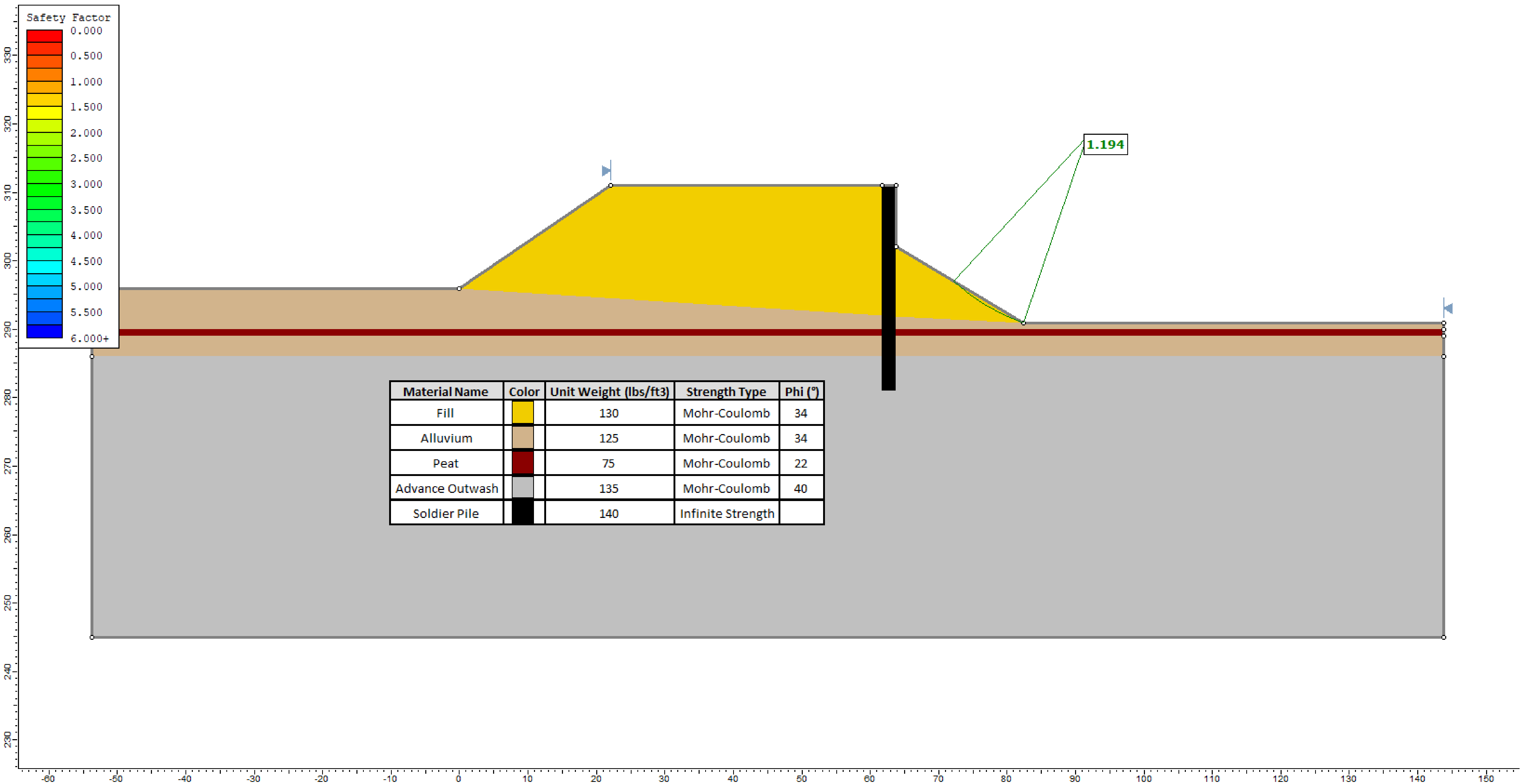
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 TOE SLOPE PSEUDO-STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-16

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Soldier Pile		140	Infinite Strength	

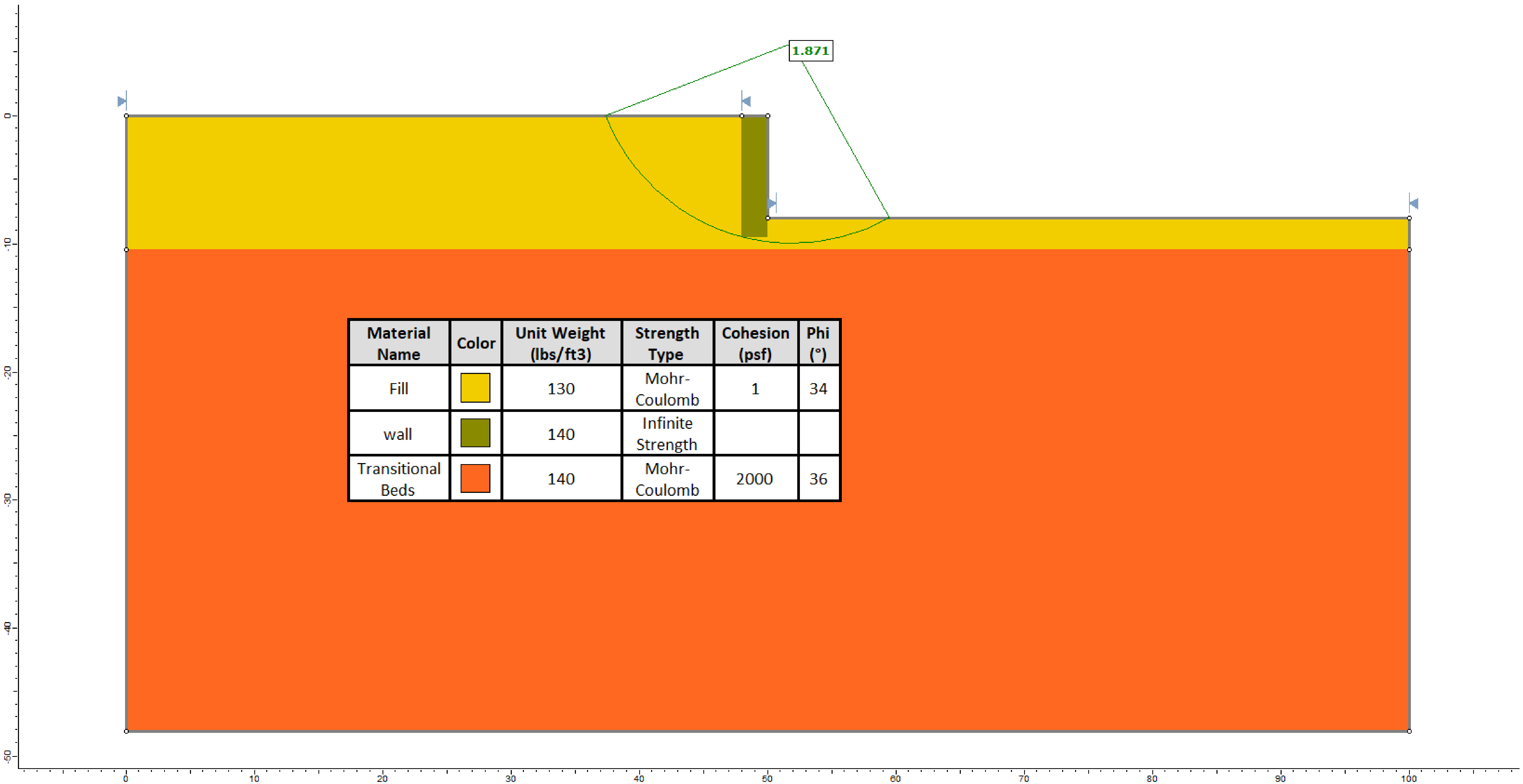
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 TOE SLOPE STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-17

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)
Fill		130	Mohr-Coulomb	1	34
wall		140	Infinite Strength		
Transitional Beds		140	Mohr-Coulomb	2000	36

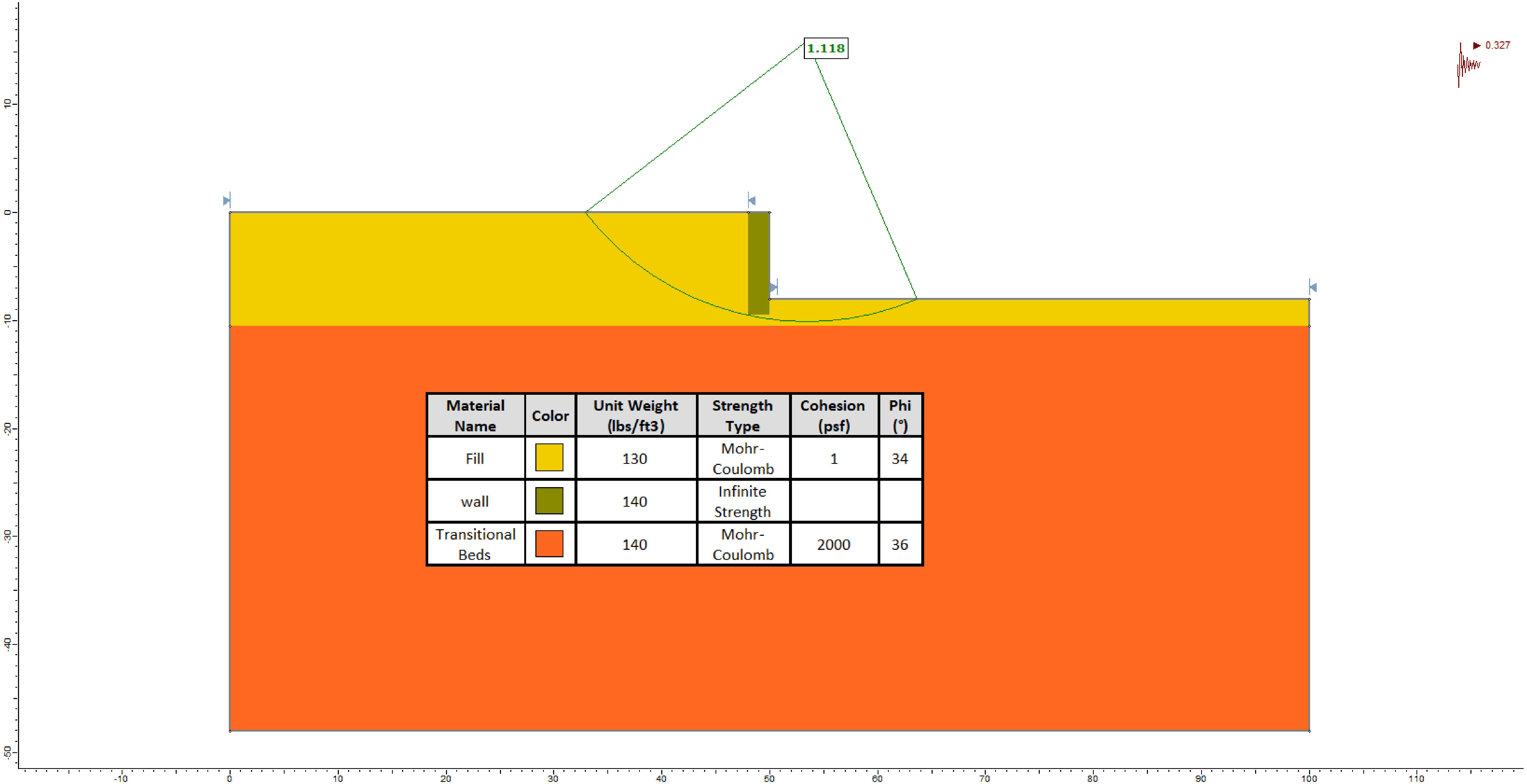
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 3 & 4 STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-18

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)
Fill		130	Mohr-Coulomb	1	34
wall		140	Infinite Strength		
Transitional Beds		140	Mohr-Coulomb	2000	36

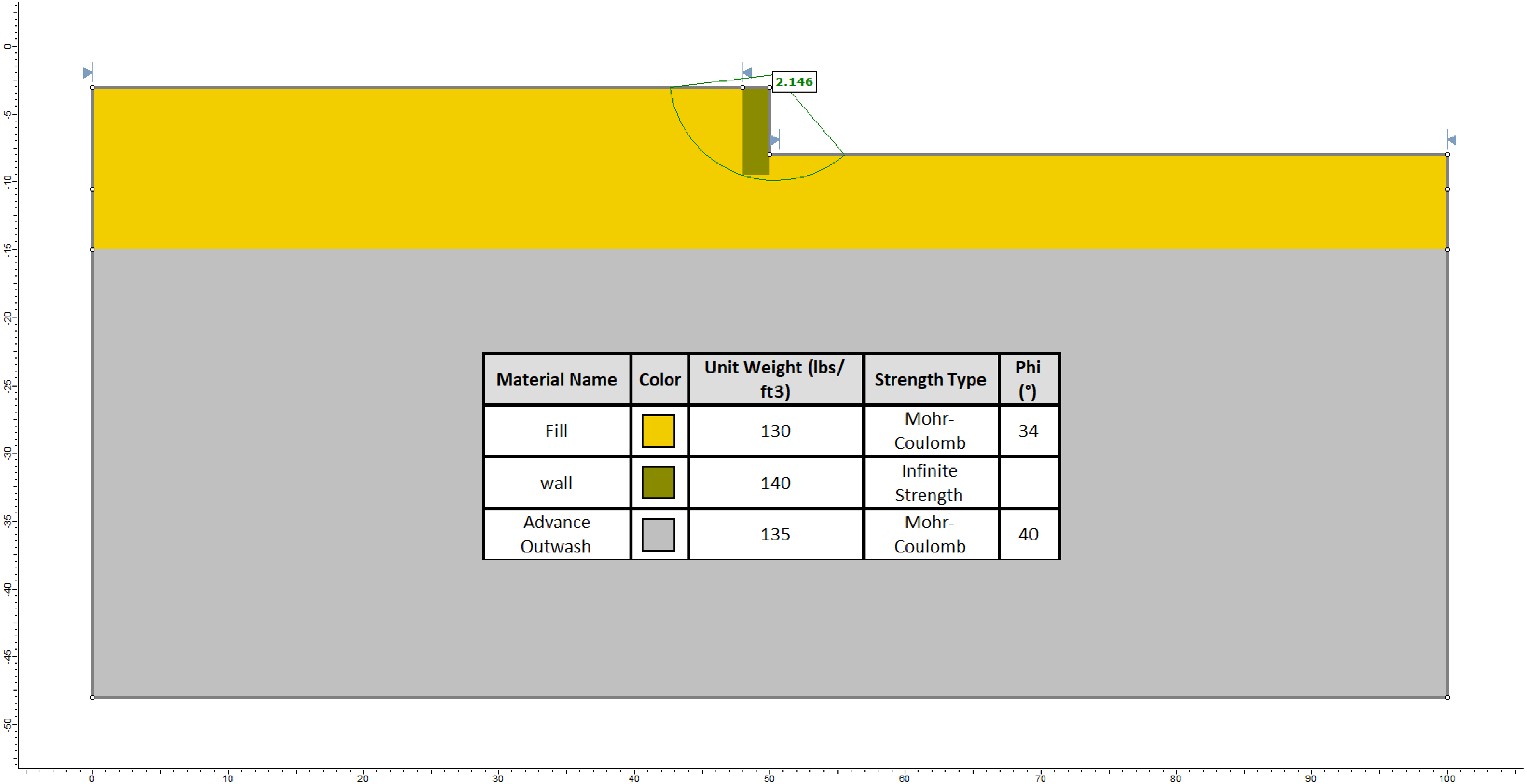
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 3 & 4 PSEUDO-STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-19

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
wall		140	Infinite Strength	
Advance Outwash		135	Mohr-Coulomb	40

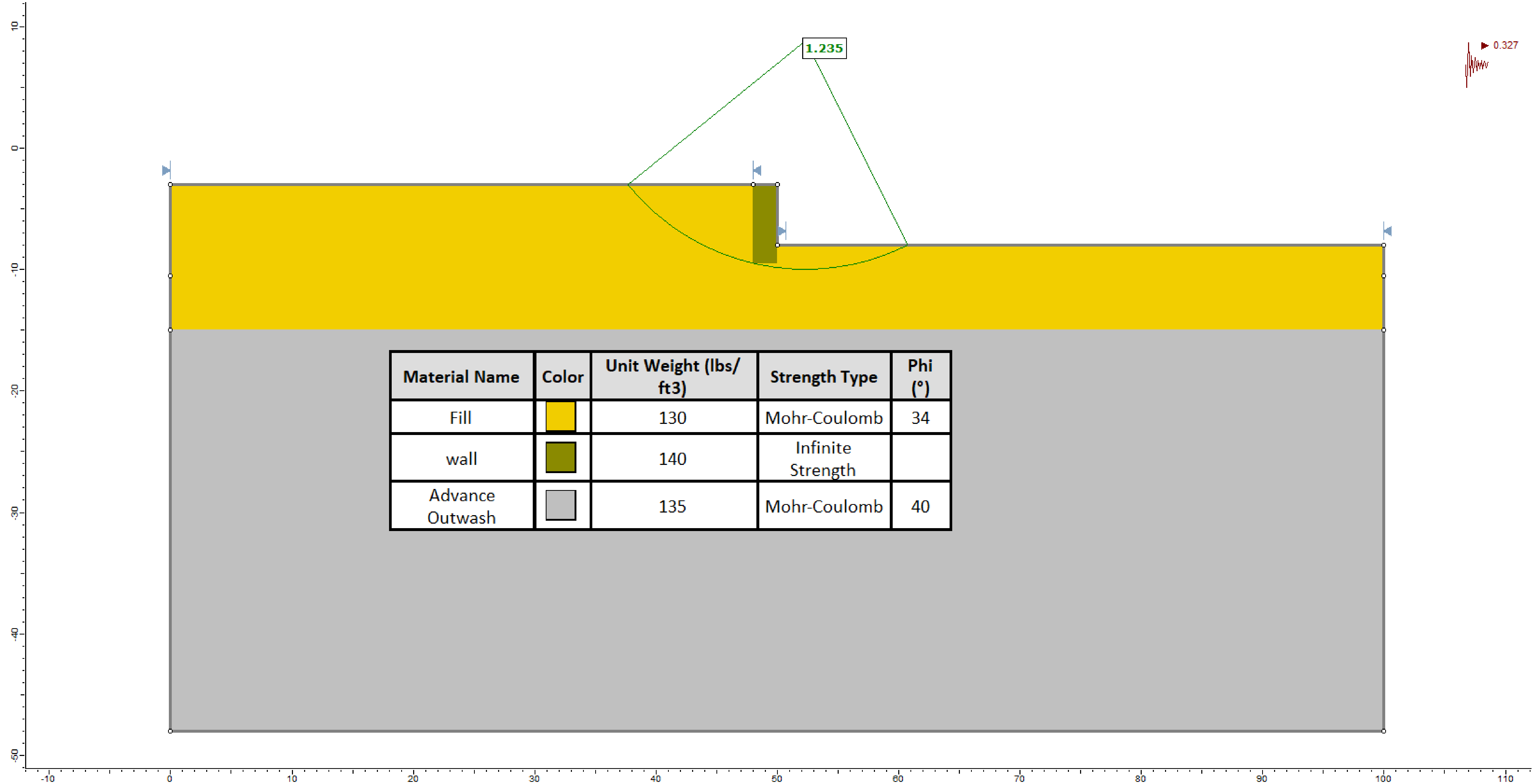
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 5 STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-20

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
wall		140	Infinite Strength	
Advance Outwash		135	Mohr-Coulomb	40

HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 5 PSEUDO-STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-21

PROJECT NO.
2023-195-21

CRITICAL AREAS REPORT

NE 40th Street Sidewalk Project

Bellevue, Washington

Applicant:

City of Bellevue
450 110th Ave NE
Bellevue, Washington 98004

BLVX00004195

Prepared by:

David Evans and Associates, Inc.
14432 SE Eastgate Way, Suite 400
Bellevue, WA 98007

DAVID EVANS AND ASSOCIATES INC.

April 2024

CRITICAL AREAS REPORT

NE 40th Street Sidewalk Project

Bellevue, Washington

Applicant:

City of Bellevue
450 110th Ave NE
Bellevue, Washington 98004

BLVX00004195

Prepared by:

MaKenna Lindberg
Critical Areas Biologist

Reviewed by:

Gray Rand, PWS
Senior Biologist

DAVID EVANS AND ASSOCIATES, INC.
14432 SE Eastgate Way, Suite 400
Bellevue, WA 98007

April 2024

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EXECUTIVE SUMMARY

The NE 40th Street Sidewalk Project consists of constructing a sidewalk with a planter strip along the north side of NE 40th Street from 140th Avenue Northeast to 148th Avenue NE in Bellevue, Washington. The project includes installing curb, gutter, sidewalk, landscaping, irrigation, bike lanes, five retaining walls, storm drainage improvements, Americans with Disabilities Act (ADA) compliant ramps, crosswalk, and grind and overlay. This project is being led by the City of Bellevue, with design and planning support from David Evans and Associates, Inc.

This report identifies key environmental discriminators and constraints, and possible permitting implications related to the study area. Site visits identified one wetland and one stream on or adjacent to the study area. There are also associated buffers, fish and wildlife habitat conservation areas, and steep slopes within the study area. There are no frequently flooded areas, or other geologic hazard areas such as landslide hazard areas, coal mine hazard areas, and seismic hazard areas in the study area.

The project has avoided all temporary and permanent direct impacts to wetlands, and streams, and minimized impacts to associated wetland and stream buffers, and will compensate for unavoidable impacts to associated buffers.

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ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
BCC	Bellevue City Code
BFE	base flood elevation
City	City of Bellevue
CMP	corrugated metal pipe
CWA	Clean Water Act
dbh	diameter at breast height
DEA	David Evans and Associates, Inc.
DNR	Washington State Department of Natural Resources
DP	data plot
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Act
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
FPAMT	Forest Practices Application Mapping Tool
GIS	geographic information system
HGM	hydrogeomorphic
HUC	Hydrologic Unit Code
Inc.	Incorporated
IPaC	Information for Planning and Consulting
LUC	Land Use Code
NE	Northeast
NFHL	National Flood Hazard Layer
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
PEM	palustrine emergent
PGIS	pollutant generating impervious surfaces
PHS	Priority Habitat and Species
PN	parcel number
project	Northeast 40th Street Sidewalk Project
PSS	palustrine scrub-shrub
RCW	Revised Code of Washington
ROW	right-of-way
SR	sea-run
SWS	Society of Wetland Scientists
Type F	Fish bearing waters

U.S.	United States
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WNHP	Washington Natural Heritage Program
WOTUS	Waters of the U.S.
WRIA	Water Resource Inventory Area

1.0 INTRODUCTION

Sources of information used to prepare this report included field visits, a desktop review of critical areas maps, environmental information, demographic and economic information, and geographic information system (GIS) data from the City of Bellevue (City), King County, and state and federal agencies, and other relevant resources. The proposed project would take place along Northeast (NE) 40th Street in Bellevue, Washington. This project area is in Water Resource Inventory Area (WRIA) 8, Cedar-Sammamish, within Section 15 of Township 25 North Range 05 East, Willamette Meridian (Ecology 2024). The properties accessed by NE 40th Street consist of single family and multi-family residences. The project vicinity is displayed in **Figure 1**.

1.1 Project Description

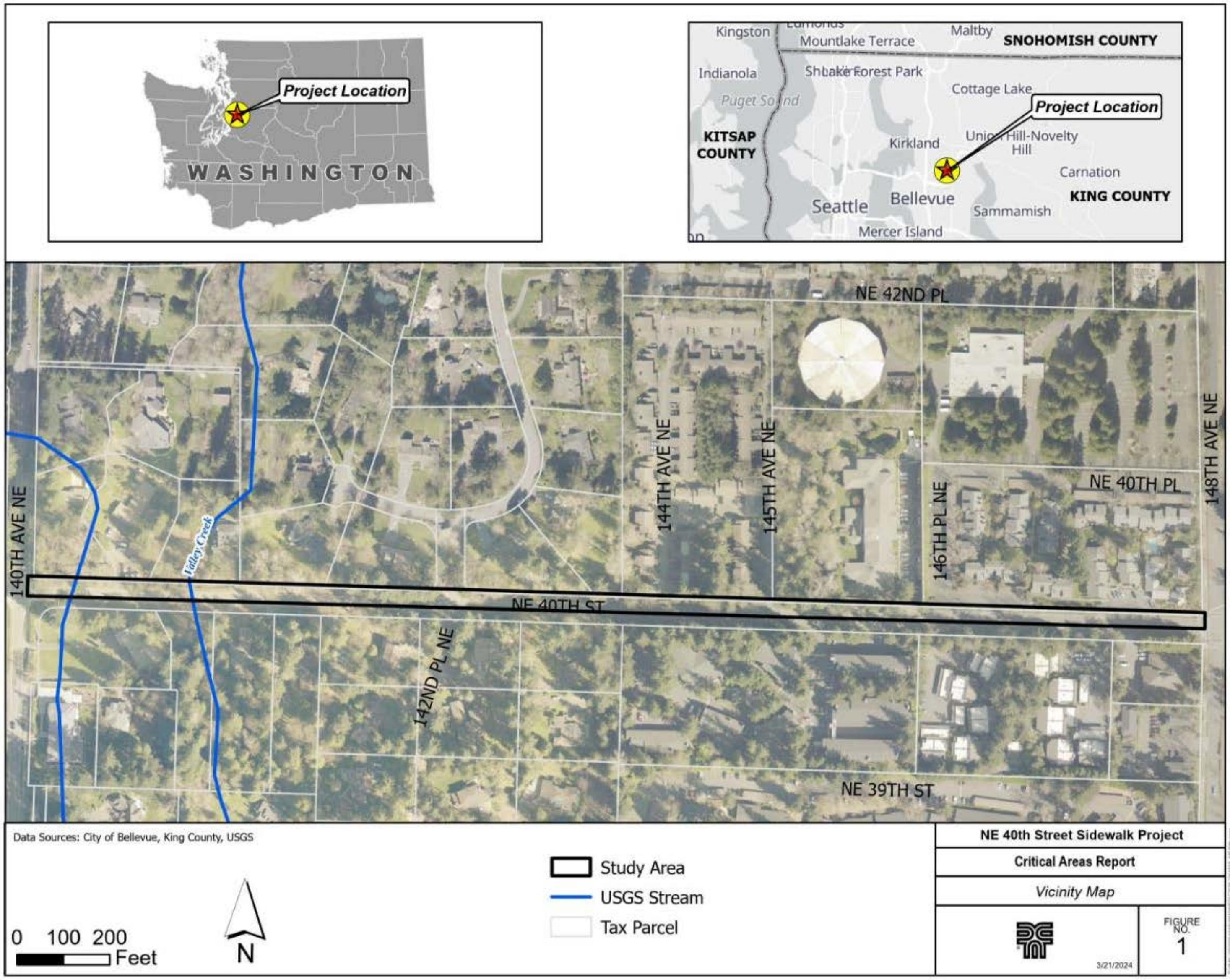
The NE 40th Street Sidewalk Project (project) consists of constructing a sidewalk with a planter strip along the north side of NE 40th Street from 140th Avenue NE to 148th Avenue NE. The project includes installing curb, gutter, sidewalk, landscaping, irrigation, bike lanes, five retaining walls, storm drainage improvements, Americans with Disabilities Act (ADA) compliant ramps, crosswalk, and grind and overlay. David Evans and Associates, Inc. (DEA) was hired to identify critical areas on adjacent properties along the project area. This report describes critical areas identified on site, and potential impacts and mitigation for the proposed project.

1.2 Report Limitations

This report is intended to meet the submittal requirements for streams and wetlands as described in existing critical area ordinances for the City. Critical areas outside of streams and wetlands are described based on readily available public domain data only, including fish and wildlife habitat conservation areas, geologic hazard areas, and frequently flooded areas; information provided does not meet critical area reporting requirements for these latter resources.

The stream and wetland boundaries described herein are the professional opinion of DEA staff based on the circumstances and site conditions at the time of this study, and best available science. Local, state, and federal jurisdictions make final determinations of jurisdictional boundaries.

Figure 1. Vicinity Map



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2.0 METHODOLOGY

2.1 Preliminary Research

Wetlands, streams, and other critical areas within the study area were determined and/or delineated, based on field indicators and resource data. The information reviewed included:

- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) (FEMA 2020);
- National Marine Fisheries Service (NMFS) Status of Endangered Species Act Listings and Critical Habitat Designations for West Coast Salmon & Steelhead (NMFS 2016);
- NMFS Essential Fish Habitat mapper (NMFS 2024);
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2024);
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) web mapper (USFWS 2024a);
- USFWS Information for Planning and Consulting (IPaC) Web Tool (USFWS 2024b);
- Washington State Department of Ecology (Ecology) Water Quality Atlas (Ecology 2024);
- Washington State Department of Fish and Wildlife (WDFW) SalmonScape online database (WDFW 2024a);
- WDFW Priority Habitat and Species (PHS) on the Web and PHS List (WDFW 2024b, WDFW 2008);
- WDFW Washington State Fish Passage map (WDFW 2024c);
- Washington State Department of Natural Resources (DNR) Forest Practices Application Mapping Tool (FPAMT) (DNR 2024a);
- DNR Washington Natural Heritage Program (WNHP) Data Explorer (DNR 2024b);
- King County iMap (King County 2024);
- Bellevue Map Viewer (Bellevue 2024); and
- Google™ Earth Pro Mapping.

2.2 Field Investigation

DEA field staff performed a site visit on November 16, 2023, to assess sensitive areas and site characteristics, delineate wetlands, and assess stream ordinary high water marks (OHWMs). Wetlands were identified using the routine approach described in the Wetland Delineation Manual and the Regional Supplement to the U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Environmental Laboratory 1987, USACE 2010). Wetlands were classified using the USFWS wetland classification system (Cowardin et al. 1979). Plant species were identified according to the revised National Wetland Plant List (USACE 2020) as well as A Field Guide to the Common Wetland Plants of Western Washington & Northwestern Oregon (Cooke 1997), Plants of the Pacific Northwest Coast (Pojar and MacKinnon 1994), and Flora of the Pacific Northwest (Hitchcock and Cronquist 1973).

Wetland boundaries, data plot, and stream OHWM locations were marked with flagging, and then their locations were collected, mapped, and subsequently surveyed. All wetland boundaries, classifications, and assigned buffer widths are subject to verification by the County. Wetlands were then rated using the 2014 update to Ecology's Washington State Wetland Rating System for Western Washington (Hruby 2014).

The OHWM and the mean high water level are defined by the USACE and the Ecology. The USACE defines the OHWM as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." Ecology's guidance defines the OHWM for state waters similarly (Olson and Stockdale 2016). Typical physical characteristics used when making an OHWM determination, to the extent that they can be identified, and are deemed reasonably reliable are as follows (USACE 2005):

- Natural line impressed on the bank
- Shelving changes in the character of soil
- Destruction of terrestrial vegetation
- Presence of litter and debris wracking
- Vegetation matted down, bent, or absent
- Sediment sorting
- Leaf litter disturbed or washed away
- Scour
- Deposition
- Multiple observed flow events
- Bed and banks
- Water staining
- Change in plant community

On December 30, 2022, the Environmental Protection Agency (EPA) and USACE announced the final "Revised Definition of 'Waters of the United States' (WOTUS)" rule. On January 18, 2023, the rule was published in the *Federal Register*, and the rule took effect on March 20, 2023. The agencies developed the 2023 Rule with consideration of the relevant provisions of the Clean Water Act (CWA) and the statute as a whole, relevant Supreme Court case law, and the agencies' technical expertise after more than 45 years of implementing the longstanding pre-2015 "WOTUS" framework.

On May 25, 2023, the U.S. Supreme Court issued a decision affecting the definition of WOTUS in Sackett Et Ux. V Environmental Protection Agency Et Al. While USACE is in receipt of the Supreme Court decision, no formal, revised definition of WOTUS has been issued at the time of this report drafting. The proposed project therefore continues to assume that the onsite wetlands are considered WOTUS. Additionally, these critical areas are likely regulated as natural waters by

Ecology under the Revised Code of Washington (RCW) 90.48. If a future project required direct wetland impacts, authorization from USACE or Ecology would be required.

On August 29, 2023, the EPA and USACE announced a final rule amending the January 2023 definition of “WOTUS.” The amendments conform with the U.S. Supreme Court’s May 25, 2023, decision in the case of Sackett versus Environmental Protection Agency. While EPA’s and USACE’s January 2023 rule defining “WOTUS” was not directly before the Supreme Court, the decision in Sackett made clear that certain aspects of the January 2023 rule are invalid. Therefore, the agencies have amended key components of the regulatory text to conform it to the Supreme Court decision. The final rule provides clarity for protecting our nation’s waters consistent with the Supreme Court’s decision while advancing infrastructure projects, economic opportunities, and agricultural activities. As such, the agencies’ amendments change the parts of the January 2023 definition of “WOTUS” that are invalid under the Sackett decision (EPA 2023).

Two of the most important things the rule did are that the rule removes the “significant nexus test” and revises the “adjacent wetlands” definition. The significant nexus test was a result of the Rapanos Supreme Court Case and allowed the EPA and USACE to evaluate waters (tributaries, ponds etc.) and wetlands, either separately or collectively, by whether they had a “material influence on the chemical, physical or biological integrity of WOTUS”. Without this test, many wetlands will likely be no longer regulated under the CWA unless they qualify as adjacent wetlands. The new adjacent wetlands definition refers to wetlands adjacent to the territorial seas, interstate waters, waters able to carry interstate commerce and their tributaries are regulated under the CWA. Adjacent wetlands must, per the Sackett decision, now have a “continuous surface connection to bodies that qualify as ‘WOTUS’ in their own right, so that there is no clear demarcation between ‘waters’ and ‘wetlands’.” Wetlands now separated from traditionally regulated waters by berms or other obstructions (that are not themselves illegally placed) will likely no longer be regulated. These wetlands can now be considered “isolated” as they are no longer regulated by USACE (SWS 2023).

3.0 REGULATORY REQUIREMENTS

3.1 City of Bellevue Regulations

The City defines critical areas in Bellevue City Code (BCC) chapter 20.25H as described below. Areas with a critical recharging effect on aquifers used for potable water are not designated by the City.

- Wetlands
- Fish and Wildlife Habitat Conservation Areas
    - Streams
    - Habitats Associated with Species of Local Importance
- Geologically Hazardous Areas, including:
    - Landslide Hazard Areas
    - Steep Slopes
    - Coal Mine Hazard Areas
    - Seismic Hazard Areas
- Frequently Flooded Areas

Wetlands

"Wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas to mitigate the conversion of wetlands.

Fish and Wildlife Habitat Conservation Areas

Together, streams, habitats associated with species of local importance, and steep slopes comprise fish and wildlife habitat conservation areas.

Streams

"Stream" means an aquatic area where surface water produces a channel, not including a wholly artificial channel, unless the artificial channel is:

1. Used by salmonids; or
2. Used to convey a stream that occurred naturally before construction of the artificial channel.

Habitats Associated with Species of Local Importance

A habitat assessment is an investigation of the site to evaluate the potential presence or absence of designated species of local importance or habitat for species of local importance.

In addition to the decision criteria of Land Use Code (LUC) 20.30J.135, a species may be designated a species of local importance only if it demonstrates the following characteristics:

1. Local populations of native species are in danger of extirpation based on existing trends:

    a. Local populations of native species that are likely to become endangered; or

    b. Local populations of native species that are vulnerable or declining;

2. The species or habitat has recreation, commercial, game, tribal, or other special value;

3. Long-term persistence of a species is dependent on the protection of the species through the provisions of this part;

4. Protection by other county, state, or federal policies, laws, regulations, or nonregulatory tools is not adequate to prevent degradation of the species or habitat in the City; and

5. Without protection, there is a likelihood that the species or habitat will be diminished over the long term.

Geologically Hazardous Areas

The following geologic hazard areas are hereby designated critical areas subject to the regulations of this part:

Landslide Hazard Area

"Landslide hazard areas" means areas of slopes of 15-percent or more with more than 10-feet of rise, which also display any of the following characteristics:

a. Areas of historic failures, including those areas designated as quaternary slumps, earthflows, mudflows, or landslides.

b. Areas that have shown movement during the Holocene Epoch (past 13,500-years) or that are underlain by landslide deposits.

c. Slopes that are parallel or subparallel to planes of weakness in subsurface materials.

d. Slopes exhibiting geomorphological features indicative of past failures, such as hummocky ground and back-rotated benches on slopes.

e. Areas with seeps indicating a shallow ground water table on or adjacent to the slope face.

f. Areas of potential instability because of rapid stream incision, stream bank erosion, and undercutting by wave action.

Steep Slopes

"Steep slopes" means slopes of 40-percent or more that have a rise of at least 10-feet and exceed 1,000-square-feet in area.

Coal Mine Hazard Areas

"Coal mine hazard areas" means areas designated on the Coal Mine Area Maps or in the City's coal mine area regulations, LUC 20.25H.130, as potentially affected by abandoned coal mines; provided, that compliance with the coal mine area regulations shall constitute compliance with the requirements of this chapter in regard to coal mines.

Seismic Hazard Areas

"Seismic hazard areas" means areas of known faults or Holocene displacement, based on the most up-to-date information, or areas mapped areas of "moderate to high" or "high" hazard liquefaction susceptibility by the Washington Department of Natural Resources Liquefaction Susceptibility Map of King County, Washington, 2004, as amended.

Frequently Flooded Areas

"Frequently flooded areas" shall include:

1. Land Subject to One-Hundred-Year Flood. The land in the floodplain subject to the flood having a one percent chance or greater of being equaled or exceeded in any given year as determined by customary methods of statistical analysis defined in the City of Bellevue Storm and Surface Water Engineering Standards, now or as hereafter amended. Also referred to as the 100-year flood.

2. Areas Identified on the Flood Insurance Rate Map(s). Those areas identified by the Federal Insurance Administrator in a scientific and engineering report entitled "The Flood Insurance Study (FIS) for King County, Washington, and Incorporated Areas," dated August 19, 2020, with an accompanying FIRM(s), dated August 19, 2020, and any revisions thereto. The FIS and accompanying FIRM(s) are hereby adopted by reference, declared part of this Part 20.25H LUC, and are available for public review at the City of Bellevue. The best available information for flood hazard area identification as outlined in subsection A.6 of this section shall be the basis for regulation until a new FIRM is issued that incorporates data utilized under subsection A.6 of this section.

3. Additional Areas. Other areas designated by the Director pursuant to this section shall be considered frequently flooded areas.

4. Designation of Areas of Special Flood Hazard. Flood Insurance Rate Maps are to be used as a guide for the City of Bellevue, project applicants, and/or property owners to identify areas of special flood hazard. Flood Insurance Rate Maps may be continuously updated as areas are reexamined or new areas are identified. Newer and more restrictive information for flood hazard area identification shall be the basis for regulation.

5. Use of Additional Information. The Director may use additional flood information that is more restrictive or detailed than that provided in the Flood Insurance Study to designate frequently flooded areas, including data on channel migration, historical data, high water marks, photographs of past flooding, location of restrictive floodways, maps showing future build-out conditions, maps that show stream habitat areas, or similar information.

6. Flood Elevation Data. When base flood elevation data is not available (A and V zones), the Director shall obtain, review, and reasonably utilize any base flood elevation and floodway data available from a federal, state, or other source, in order to administer provisions for the frequently flooded areas. In areas of special flood hazard where the base flood elevation (BFE) has increased due to remapping efforts, the new BFE will establish the regulatory limit.

Critical area study and report requirements are described in BCC 20.25H Part XII.

Excerpts from the BCC specifically regarding wetlands, streams, and their buffers are included in **Appendix A**.

4.0 RESULTS

4.1 Wetlands

4.1.1 Background Data

The USFWS NWI map (**Figure 2**) shows three riverine systems which flow from north to south under NE 40th Street through the western half of the project area (USFWS 2024a), one of which (Valley Creek) was confirmed by field observations. See Section 4.2.1 for more details. There are no wetlands mapped along Valley Creek, as was identified by field observations. King County confirms the riverine system of Valley Creek and does not map any other wetlands in the study area (King County 2024).

4.1.2 Soils

The geological subsurface at the project site were formed in the Quaternary (Pleistocene) era. These soils consist of outwash clay, silt, sand, gravel, cobbles, and boulders deposited by or originating from continental glaciers. This locally includes peat, nonglacial sediments, modified land, and artificial fill (DNR 2020).

Soils within the study area consist of Group A Everett very gravelly sandy loam, 8 to 15-percent slopes, and Group B Alderwood gravelly sandy loam, 8 to 15-percent slopes (USDA 2024). Soils in the study area are mapped in **Figure 3**.

Group A soils have a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission (USDA 2024).

Group B soils have a moderate infiltration rate when thoroughly wet and have a moderate rate of water transmission. These soils are moderately deep or deep, and are moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture (USDA 2024).

Everett soil is very deep which formed in glacial outwash. Permeability of these soils is rapid. These soils are sourced from mesic Humic Dystroxerepts and are typically found at elevations of 10 to 280-meters (USDA 2024).

Alderwood soil is moderately deep, found over a hardpan, and was formed in glacial till. Permeability of these soils is moderately rapid above the hardpan, and very slow through it. These soils are sourced from mesic Aquic Dystroxerepts and typically found at elevations of 0 to 250-meters (USDA 2024).

Figure 2. NWI Map

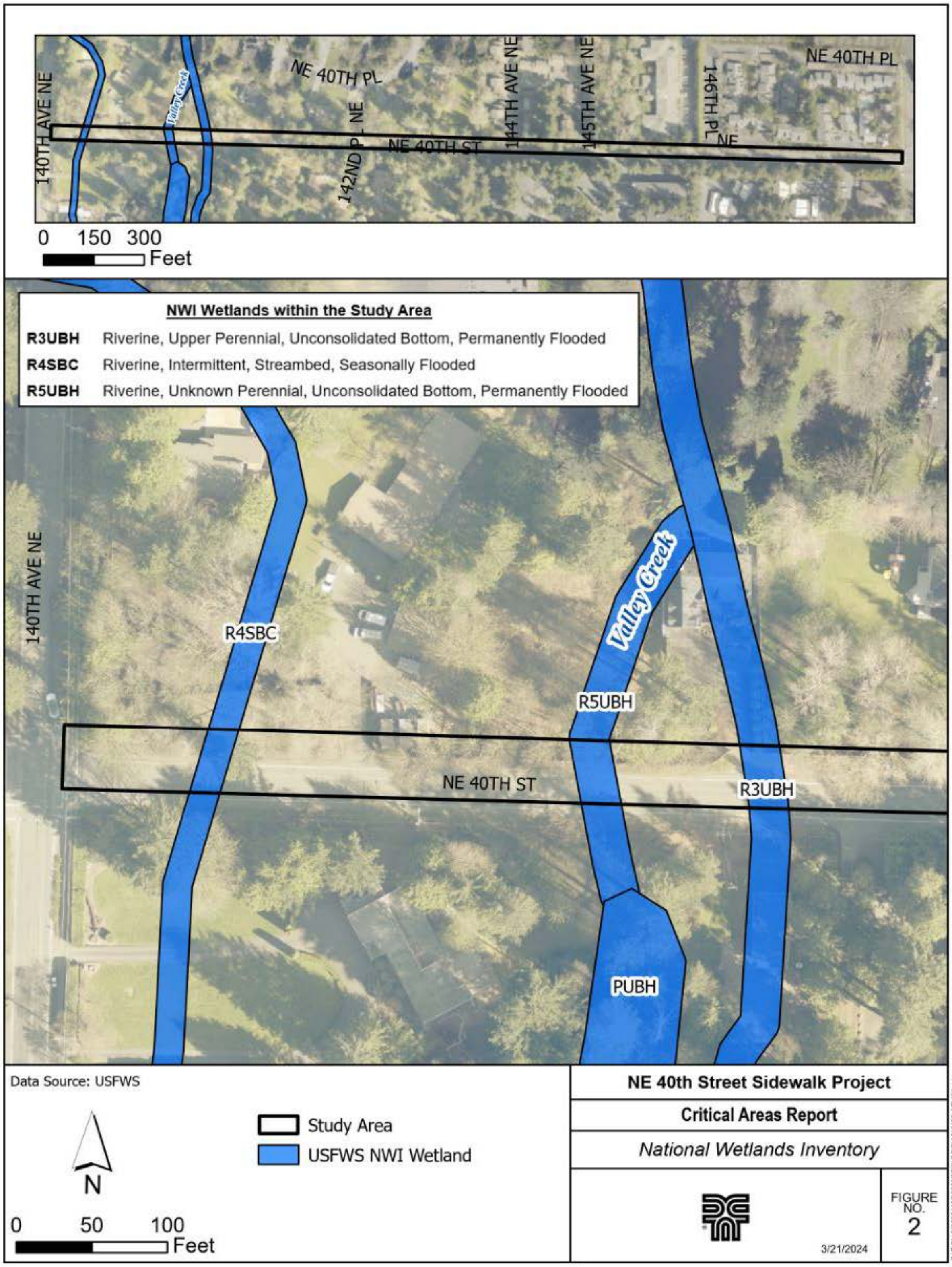

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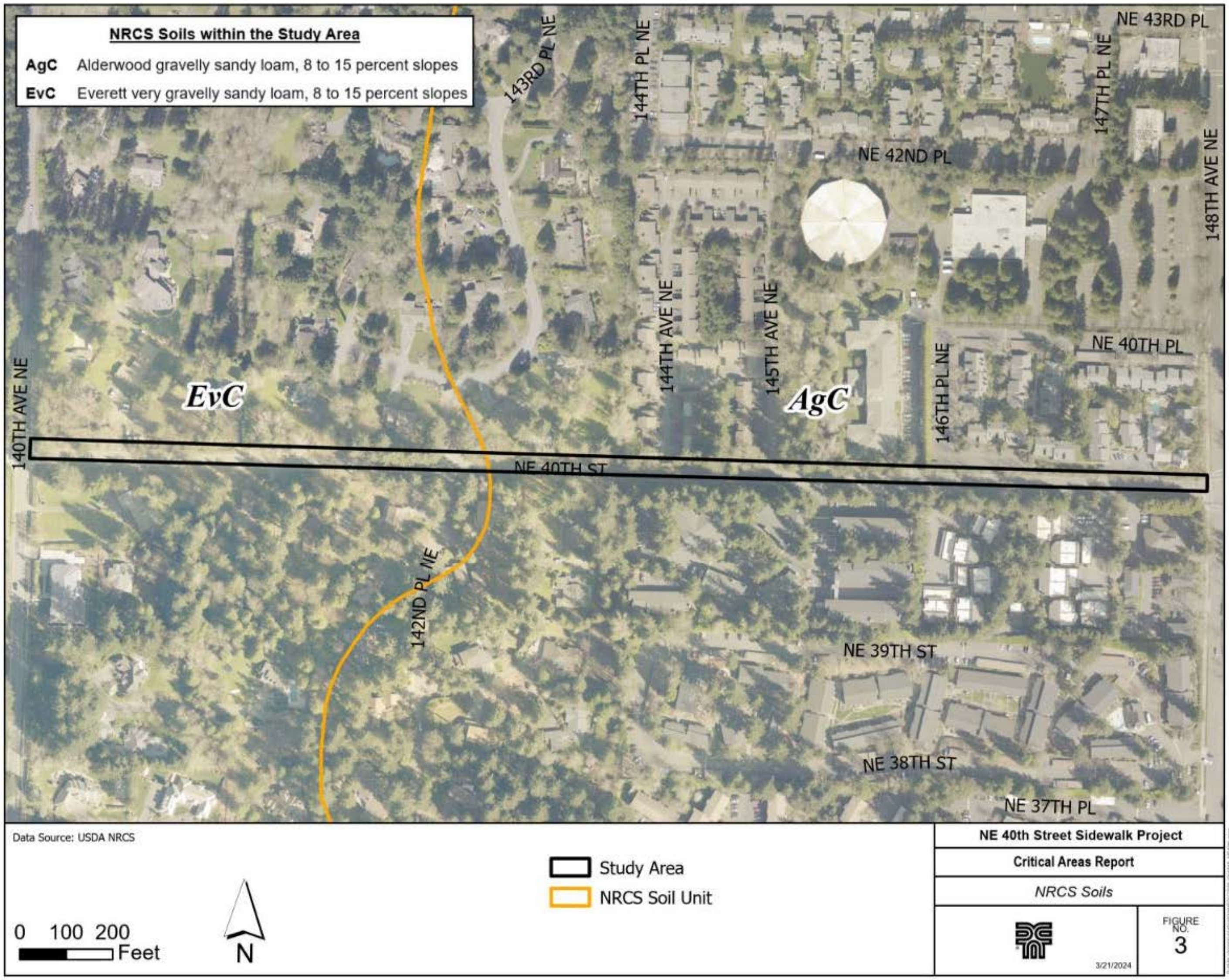
Figure 3. Natural Resources Conservation Service Soil Map



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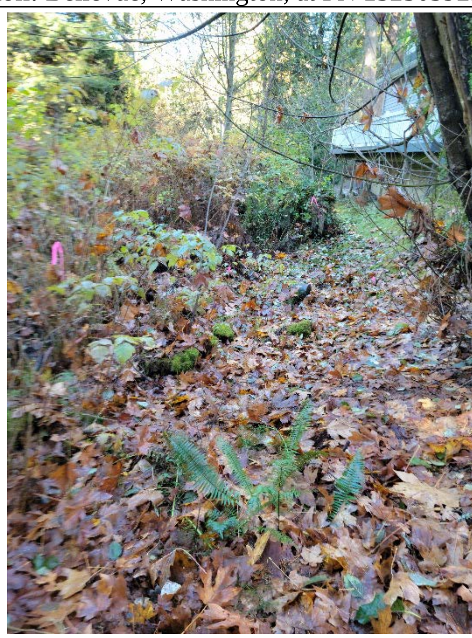
4.1.3 Wetland Field Study

Field investigations identified one wetland unit within the project area. This wetland unit (Wetland W1) is a riverine system which exists on the left bank of Valley Creek on PN 1525059259, which is north, and upstream, of the project area (Hruby 2014). Along the western edge of the wetland is a steep slope with compacted gravel fill material from the single-family home on PN 1525059259. The wetland is primarily palustrine scrub-shrub, with an edge community of palustrine emergent vegetation. The extents of wetland W1 can be viewed in **Figure 4**. Wetland W1 was rated by DEA staff as a Category II wetland with a habitat functions score of 6, which requires a 110-foot buffer per BCC 20.25H.095. Data plots (DPs) were explored in depressional areas along non-jurisdictional ditches in other areas within the project vicinity with no wetland indicator findings. A summary of wetland characteristics is provided in **Table 1**. Wetland delineation data sheets are contained within **Appendix B**. Wetland rating forms are provided in **Appendix C**. Study area photographs are located in **Appendix D**.

Table 1. Wetland Summary Descriptions

WETLAND W1 – INFORMATION SUMMARY	
Location: Bellevue, Washington, at PN 1525059259 (Latitude 47.646337 °North, Longitude -122.151901 °West).	
	
Standing south of Wetland W1, looking north at Wetland W1. Image captured November 16, 2023 by DEA staff.	Standing in Wetland W1, looking southeast. Image captured November 16, 2023 by DEA staff.
WRIA / HUC / Section, Township, Range	8 – Cedar-Sammamish; HUC #171100120400 – Lake Washington-Sammamish River; Section 15, Township 25 North, Range 05 East (Ecology 2024)
WA Ecology Rating	Category II
BCC Wetland Buffer	110-feet
Wetland Size	Approximately 0.03 acres
Cowardin Classifications	PSS, and PEM
HGM Classification	Riverine

Wetland Data Sheet(s)	DP-4			
Upland Data Sheet(s)	DP-5			
Dominant Vegetation	common ladyfern (*Athyrium cyclosorum*), giant horsetail (*Equisetum telmateia*), Robert geranium (*Geranium robertianum*), yellow archangel (*Lamium galeobdolon*), salmonberry (*Rubus spectabilis*)			
Soils	**Soil survey data:** Everett very gravelly sandy loam, 8 to 15 percent slopes (USDA 2024). **Field data:** Hydrogen Sulfide (A4), Loamy Mucky Mineral (F1)			
Hydrology	**Assumed source:** streambank overflow, precipitation, and adjacent area runoff. **Field data:** High Water Table (A2), Saturation (A3), Hydrogen Sulfide Odor (C1), Geomorphic Position (D2), and FAC-Neutral Test (D5)			
Wetland Functions Summary				
Function	**Water Quality**	**Hydrologic**	**Habitat**	
Circle the appropriate ratings				
Site Potential	$\boxed{H}$ M L	H $\boxed{M}$ L	H $\boxed{M}$ L	
Landscape Potential	$\boxed{H}$ M L	$\boxed{H}$ M L	H M $\boxed{L}$	
Value	H M $\boxed{L}$	H $\boxed{M}$ L	$\boxed{H}$ M L	**TOTAL**
Score Based on Ratings	7	7	6	20
General Description and Comments				
Wetland W1 is a riverine wetland along the left streambank of Valley Creek on PN 1525059259. The wetland exists below a steep slope from the single-family home on this parcel. The steep slope consists of compacted gravel fill material. The wetland unit is primarily PSS with an eastern edge of PEM species. Wetland W1 requires a 110-foot buffer.				

Notes:
BCC is the acronym for Bellevue City Code.
DEA is the acronym for David Evans and Associates, Inc.
DP is the acronym for data plot.
HGM is the abbreviation for hydrogeomorphic.
HUC is the acronym for Hydrologic Unit Code.
PEM is the acronym for palustrine emergent.
PN is the acronym for parcel number.
PSS is the acronym for palustrine scrub-shrub.
WRIA is the acronym for Water Resource Area.

4.2 Streams

4.2.1 Background Data

As noted in Section 4.1.1, the USFWS NWI map (**Figure 2**) shows three riverine systems which flow from north to south under NE 40th Street through the western half of the project area (USFWS 2024a). The NWI map partially matches conditions observed in the field, confirming one riverine system (Valley Creek) toward the center, and at the lowest elevation, of the study area. The remaining two riverine systems mapped by NWI were not observed in the field. **Table 2** details the NWI classification for the observed riverine system, as well as other stream characteristics. King County data and City data also map the riverine system of Valley Creek (King County 2024; Bellevue 2024). DNR FPAMT maps two fish-bearing (Type F) streams within the project area, one of which (Valley Creek) was confirmed by field observations (DNR 2024a). BCC 20.25H.075 delegates Type F streams at a developed site a buffer of 50-feet, unless otherwise defined greater by an existing native growth protection easements or native growth protection areas. WDFW maps the culvert, which Valley Creek crosses under NE 40th Street in, as a depth barrier to fish passage (WDFW 2024c; WDFW 2020).

City data maps the location of the western-most NWI mapped riverine system as a storm drainage culvert along the north edge of NE 40th Street flowing west to east under the intersection with 140th Avenue NE. This ditch then carries flow east into the driveway culvert of PN 1525059036, which then drains into a naturally made ditch, and eventually into Valley Creek on PN 1525059253. There are additional ditches and closed storm conveyance systems mapped as flowing east to west along the north edge of NE 40th Street (Bellevue 2024).

Table 2. Stream Summary Table

Stream ID	NWI Classification	Stream Flow	DNR Stream Type	BCC Buffer (feet)
Valley Creek	R5UBH[A]	Permanent	Type F	50[B]

Notes: [A] R5UBH is the acronym for a riverine, upper perennial, unconsolidated bottom, permanently flooded system (USFWS 2019).
[B] Per BCC 20.25H.075, Type F streams at a developed site require a buffer of 50-feet, or the buffer established with the existing native growth protection easements/native growth protection areas, whichever is greater.

Valley Creek has no Ecology Category 5 waterbody listings directly surrounding the boundary of the study area, nor does it have any Total Maximum Daily Limit listings downstream in the Lake Washington-Sammamish River subbasin. Approximately 1.5-linear-miles downstream of the study area where waters from Valley Creek flow into Kelsey Creek, Ecology maps a Category 5 waterbody listing for benthic macroinvertebrate bioassessments (Ecology 2024).

4.2.2 Stream Field Study

Valley Creek was the only stream observed by field observations, which was identified on PN 1525059259. The delineated extents of Valley Creek can be viewed on **Figure 4**. Field observations of the NWI western-most mapped riverine system confirmed City data as it was a ditch which receives flow from a culvert running west to east under NE 140th Avenue at its intersection with NE 40th Street. Other open conveyance systems along the north edge of NE 40th Street mapped by City data were confirmed to be used for storm drainage and not active stream channels (Bellevue 2024).

Valley Creek, a tributary of Kelsey Creek, originates approximately 2-miles upstream from the study area where it flows through highly urbanized areas, receiving roadway runoff, and urban lawn care pollutants such as pesticides, herbicides, fertilizers, and other contaminants before reaching the study area. Relative to the study area, Valley Creek flows through a crushed 36-inch by 48-inch corrugated metal pipe (CMP) culvert with concrete rubble wingwalls under NE 40th Street. Additional information regarding Valley Creek relative to the study area is summarized in **Table 3**.

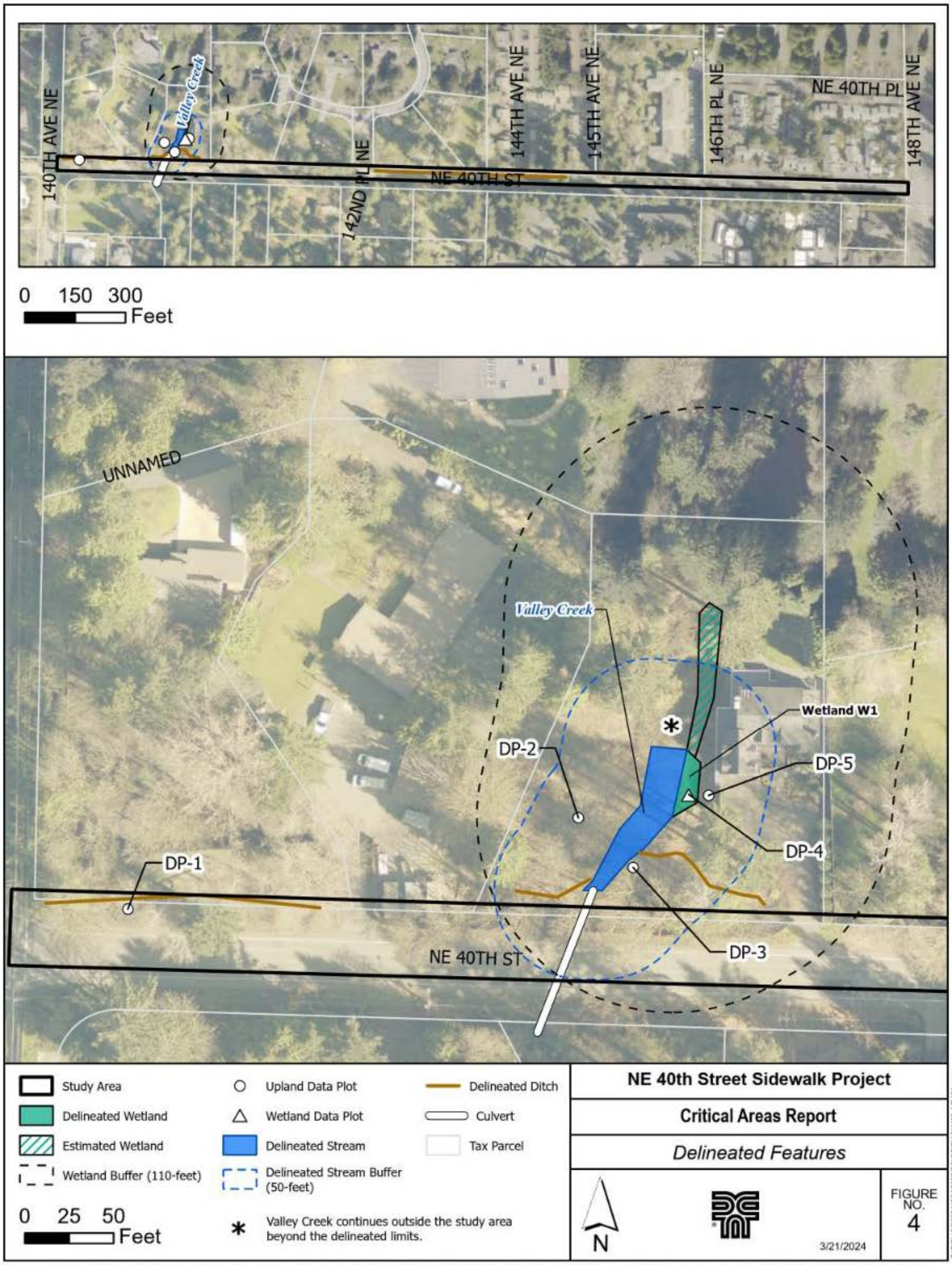
Table 3. Stream Summary Descriptions

Valley Creek – INFORMATION SUMMARY	
Location: Bellevue, Washington, at PN 1525059259 (Latitude 47.861180 °North, Longitude -121.964381 °West).	
	
Standing in Valley Creek, looking upstream (north). Image captured November 16, 2023 by DEA staff.	Standing in Valley Creek, looking downstream (south) at crushed, 36-inch by 48-inch CMP culvert. Image captured November 16, 2023 by DEA staff.
WRIA / HUC / Section, Township, Range	8 – Cedar-Sammamish; HUC #171100120400 – Lake Washington-Sammamish River; Section 15, Township 25 North, Range 05 East (Ecology 2024)
DNR FPAMT mapper	S = Shoreline, **F = Fish**, Np = Non-Fish, NS = Non-fish Seasonal [WAC 222-16-031]; The section of Valley Creek which intersects the project location is classified as a Type F Perennial Stream (DNR 2024a)
WAC Defined Fish Stream	Type F; Type 2 and 3
Documented Fish Use	Documented presence of fall Chinook salmon (*Oncorhynchus tshawytscha*), documented spawning of coho salmon (*Oncorhynchus kisutch*), and gradient accessible for winter steelhead (*Oncorhynchus mykiss*), and sockeye salmon (*Oncorhynchus nerka*) (WDFW 2024a). Other potential species include chum salmon (*Oncorhynchus keta*), SR cutthroat trout (*Oncorhynchus clarkii*), and resident trout (*Oncorhynchus clarkii clarkii*) (WDFW 2024b; WDFW 2024c).
Location of Stream Relative to Study Area	The segment of Valley Creek relative to the study area flows north to south in the west portion of PN 1525059259, and under NE 40th Street at the point of the project area.
Connectivity (where stream flows from/to)	Valley Creek originates approximately 2-miles (10,000-feet) upstream from NE 40th Street where it flows southeast into an unnamed pond, then continues south to the project area, flows through a culvert under NE 40th Street, then continues south into a wetland complex at Kelsey Creek Park. Water then flows into Kelsey Creek which flows west to Mercer Slough, and then south into Lake Washington. From Lake Washington, water then flows north and then west into Lake Union, and eventually to the outlet of Shilshole Bay in the Puget Sound.
Stream Characteristics Relative to Study Area	Stream channel width ranged at approximately 10-feet wide, with slopes of approximately 2-degrees, with bottom consisting primarily of gravel and cobble substrates, and was highly embedded with fine material at the study area.

Riparian/Buffer Condition Relative to Study Area	The OHWM buffer on the right and left banks consisted of red alder (*Alnus rubra*), salmonberry (*Rubus spectabilis*), as well as well-established emergent vegetation including reed canary grass (*Phalaris arundinacea*), giant horsetail (*Equisetum telmateia*), and lamp rush (*Juncus effusus*).
General Description and Comments	
Valley Creek flows through highly urbanized areas from its point of origin to its outlet into Kelsey Creek, and beyond. At its intersection with the project area, Valley Creek flows under NE 40th Street in a squashed 36-inch by 48-inch CMP culvert with concrete rubble wingwalls at the upstream culvert opening. Non-jurisdictional drainage ditches from both left and right streambanks contribute roadway runoff to Valley Creek just upstream of the culvert.	

Notes: CMP is the acronym for corrugated metal pipe.
DEA is the acronym for David Evans and Associates, Inc.
DNR is the abbreviation for Washington State Department of Natural Resources.
FPAMT is the abbreviation for Forest Practices Application Mapping Tool.
HUC is the abbreviation for Hydrologic Unit Code.
NE is the abbreviation for northeast.
PN is the acronym for parcel number.
SR is the acronym for sea-run.
WAC is the acronym for Washington Administrative Code.
WRIA is the abbreviation for Water Resource Area.

Figure 4. Delineated Features



Accuracy Statement: Delineated features were mapped using a Trimble Geo 7x GPS receiver, which received real-time corrections, and differentially corrected using GPS Pathfinder Office software with CORS, SEATTLE (SEAT), WASHINGTON station data. Final map accuracy was submeter, then adjusted using City of Bellevue coordinate corrections.

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Figure 5. Delineated Features

Accuracy Statement: Delineated features were mapped using a Trimble Geo 7x GPS receiver, which received real-time corrections, and differentially corrected using GPS Pathfinder Office software with CORS, SEATTLE (SEAT), WASHINGTON station data. Final map accuracy was submeter, then adjusted using City of Bellevue coordinate corrections.

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4.3 Fish and Wildlife Habitat Conservation Areas and Corridors

Fish and wildlife habitat conservation areas will be associated with the identified wetlands and streams along with federal and state listed species. The USFWS IPaC and NMFS listed species reports are in **Appendix E** (USFWS 2024b, NMFS 2016). The study area is located within the Lake Washington watershed, which is essential fish habitat for coho salmon (*Oncorhynchus kisutch*), which is neither a federal or state listed species, and Chinook salmon (*Oncorhynchus tshawytscha*) (NMFS 2024).

IPaC maps the following endangered, threatened, and candidate species with final critical habitat downstream of, but occurrences potentially within, the study area (USFWS 2024b; USFWS 2024c; WDFW 2008):

- North American wolverine (*Gulo gulo luscus*) which is federally threatened and a state candidate listing;
- marbled murrelet (*Brachyramphus marmoratus*) which is federally threatened and a state endangered listing;
- yellow-billed cuckoo (*Coccyzus americanus*) which is federally threatened and a state candidate listing;
- northwestern pond turtle (*Actinemys marmorata*) which is federally threatened and a state candidate listing;
- bull trout (*Salvelinus confluentus*) which is federally threatened and a state candidate listing; and
- monarch butterfly (*Danaus plexippus*) which is a federal candidate listing and a state candidate listing.

WDFW designated Valley Creek at the study area with designations for the following endangered, threatened or sensitive species (WDFW 2024a; USFWS 2024c; WDFW 2008):

- fall Chinook salmon (*Oncorhynchus tshawytscha*) has documented presence, and is federally threatened;
- winter steelhead salmon (*Oncorhynchus mykiss*) has gradient accessible, and is federally threatened and a state candidate listing; and

Other potential species within the study area which are not federally or state listed, but are culturally significant to the native nations of the Puget Sound include the following (WDFW 2024a; WDFW 2024b; WDFW 2024c):

- coho salmon (*Oncorhynchus kisutch*) which has documented spawning;
- winter steelhead (*Oncorhynchus mykiss*) which has gradient accessible;
- sockeye salmon (*Oncorhynchus nerka*);
- chum salmon (*Oncorhynchus keta*);
- SR cutthroat trout (*Oncorhynchus clarkii*); and
- resident trout (*Oncorhynchus clarkii clarkii*).

The DNR's Rare Plant and Ecosystem Locations WNHP Data Explorer does not map any currently known rare plants or rare and high-quality ecosystems in the study area (DNR 2024b).

4.4 Geologic Hazard Areas

4.4.1 Landslide Hazard Areas

There are no landslide hazard areas mapped in the study area (Bellevue 2024). There are slopes greater than 40-percent within the study area, as detailed in Section 4.4.2.

4.4.2 Steep Slopes

There are slopes greater than 40-percent within the study area where Valley Creek flows through the culvert under NE 40th Street, which meets the definition of steep slope in City of Bellevue LUC 20.25H.120.A.2 (Bellevue 2024). This steep slope spans across the northern edge of NE 40th Street across PN 1525059036 and PN 1525059259. At this steep slope, the road elevation is approximately 15-feet higher than Valley Creek. See **Figure 6**.

4.4.3 Coal Mine Hazard Areas

The study area is located outside of any mine hazard areas (Bellevue 2024; DNR 2020).

4.4.4 Seismic Hazard Areas

The study area is located outside of any seismic hazard areas, and is mapped outside of any known faults or folds (Bellevue 2024; DNR 2020).

4.5 Frequently Flooded Areas

City of Bellevue GIS data and FEMA's National Flood Hazard Layer (NFHL) Viewer resources show no flood hazard areas within the study area limits (Bellevue 2024, FEMA 2020). See **Figure 6**.

Figure 6. Critical Areas

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5.0 IMPACTS

5.1 Effects During Construction

5.1.1 Habitat Effects

The proposed project consists of installing curb, gutter, sidewalk, landscaping, irrigation, bike lanes, five retaining walls, storm drainage improvements, ADA compliant ramps, crosswalk, and grind and overlay from NE 140th to NE 148th. All proposed project actions should occur within the City right-of-way (ROW), well outside of the boundaries of Valley Creek and Wetland W1. No direct impacts to these critical areas are anticipated as the ROW improvements will be constructed at elevations well above the culvert, stream, and wetland elevations. Direct impact to steep slopes are addressed in Section 5.1.2 below.

Valley Creek has a buffer of 50-feet, and Wetland W1 has a buffer of 110-feet, both of which extend into the project limits. Where these critical buffers extend within paved right of way, they are considered interrupted buffers as these areas have previously been disturbed and do not serve as functional habitat of these critical areas. Similarly, any stream or wetland buffers from the south side of NE 40th Street outside the study area would be interrupted at the southern paved edge of the roadway.

Unpaved ROW areas outside of the compacted gravel fill road prism, but within stream and wetland buffers, are proposed for improvements involving regrading, paving and installation of a retaining wall. Retaining Wall 2 is a fill wall that is approximately 320-feet long and has a maximum retained height of approximately 8 feet. This retaining wall would be built within the critical area buffers.

Project actions taken within the unpaved ROW and buffers could have up to 1,200-square-feet of permanent stream buffer impacts, 500-square-feet of temporary stream buffer impacts, 1,750-square-feet of permanent wetland buffer impacts, and 700-square-feet of temporary wetland buffer impacts. Some stream and wetland buffer impact areas overlap. Impacted areas can be viewed in **Figure 7** and are summarized in **Table 4** below.

Table 4. Wetland and Stream Buffer Impacts

Type of Impact	Size (square feet)
Permanent Wetland Buffer	1750
Temporary Wetland Buffer	700
Permanent Stream Buffer	1,200
Temporary Stream Buffer	500
Total Combined Permanent Critical Area Buffer	1,850

These impacts to wetland and stream buffer will remove some trees that currently provide shade and detritus input to Valley Creek. It will also narrow the existing buffer between the stream and NE 40th, reducing the amount of area available to absorb and treat stormwater runoff from the road. Tree impacts are discussed in more detail below.

Outside of wetlands, streams, and critical area buffers, impacts to vegetated areas would involve ROW areas dominated by invasive species (i.e., Himalayan blackberry (*Rubus armeniacus*), English ivy (*Hedera helix*), etc.), and herbaceous species, as well as tree removal along the north edge of NE 40th street. There are several significant trees on private property along the ROW line. For retaining wall excavation anticipated to be at least within 2-feet or closer to the existing trees, an excavation this 30ave30d likely damage the root system and potentially damage the trees' ability to survive long-term. Therefore, it is assumed that the trees be removed and replaced as part of the project.

Therefore, the location of retaining Wall 1 would involve the removal of one red alder (*Alnus rubra*) tree, approximately 12-inches in diameter at breast height (dbh), and one Douglas-fir (*Pseudotsuga menziesii*), approximately 20-inches in dbh. Existing trees at Wall 1 are outside of critical areas and their buffers. The location for retaining Wall 2 would remove eight bigleaf maple (*Acer macrophyllum*) trees in total, ranging from approximately 4 to 20-inches in dbh. Four of these trees fall within critical area buffers. At the location of Wall 3, there are about 17 Douglas-fir trees, approximately 8 to 20-inches in dbh, which would be impacted. Existing trees at Wall 3 are outside of critical areas and their buffers. There are no trees proposed for removal at the location of retaining Wall 4. At the location of Wall 5, there are eight bigleaf maple trees (many are multiple stems growing from a single stump), approximately 4 to 16-inches in dbh, proposed for removal. Existing trees at Wall 5 are outside of critical areas and their buffers. Tree removal details are summarized in **Table 5**. 60-percent design plans can be found in **Appendix G**.

Table 5. Tree Removal Summary

Location (Wall #)	Tree Type		Quantity	Approximate Size / Size Range (inches in dbh)
	Common Name	Scientific Name		
Wall 1	red alder	*Alnus rubra*	1	12
	Douglas-fir	*Pseudotsuga menziesii*	1	20
Wall 2	bigleaf maple	*Acer macrophyllum*	8	4 to 20
Wall 3	Douglas-fir	*Pseudotsuga menziesii*	17	8 to 20
Wall 5	bigleaf maple	*Acer macrophyllum*	8	4 to 16

In summary, four of these trees at Wall 2 fall within stream or wetland buffers, as shown in **Figure 7**.

5.1.2 Impacts to Steep Slopes

There is one area of steep slope within the study area, at the location of proposed retaining Wall 2, which will be impacted (**Figure 6**). The steep slope area is approximately 2,600 square feet in size along the north edge of NE 40th Street. The retaining wall design proposes to fill up to 3 feet north beyond the wall to lessen the slope ratio from 3:1 to 2:1. The steep slope buffer is a standard 50 feet, as defined by BCC 20.25H.120. This steep slope extends to the existing paved ROW and is interrupted beyond that. There Is an estimated 2,200 square feet of direct impacts to steep slopes, and an estimated 834 square feet of steep slope buffer impacts assumed by project efforts. There are up to eight trees within the steep slope which are proposed for removal in order to install the engineered retaining wall. **Figure 7** shows these impacts in relation to the stream and wetland buffers. Destabilization of the slope from tree removal is not a concern since the engineered retaining wall will be installed along the slope to provide slope stability. The combination of the retaining wall structure and the acute slope adjustment will better protect downgradient areas from risks posed from steep slope areas. The geotechnical report for this project confirms that the proposed improvements will improve the stability of the steep slope area identified along Wall 2 alignment (HWA GeoSciences 2024). This geotechnical report is provided in **Appendix H**.

5.2 Effects to Wildlife

Based on the habitat effects discussed above, the proposed project is anticipated to have no impacts on wildlife. Wildlife species using the study area are limited to generalist species that are accustomed to a high level of human activity. No large blocks of intact wildlife habitat are present in the project area. The project affects only previously disturbed areas. Tree removal may have potential impacts on birds which use these spaces for foraging and perching. Wildlife using these areas would be expected to move away during active construction but would return soon after construction was complete. The proposed project would have no detectable effects to habitat fragmentation in an area already highly fragmented.

5.2.1 Threatened and Endangered Species

Species listed by the USFWS as potentially occurring in the study area are listed in **Table 6** below and in **Appendix E**.

See **Appendix F** for narrative documenting compliance with various portions of the City's critical areas code.

Table 6. USFWS and NMFS Listed Species Potentially Occurring in the Study Area

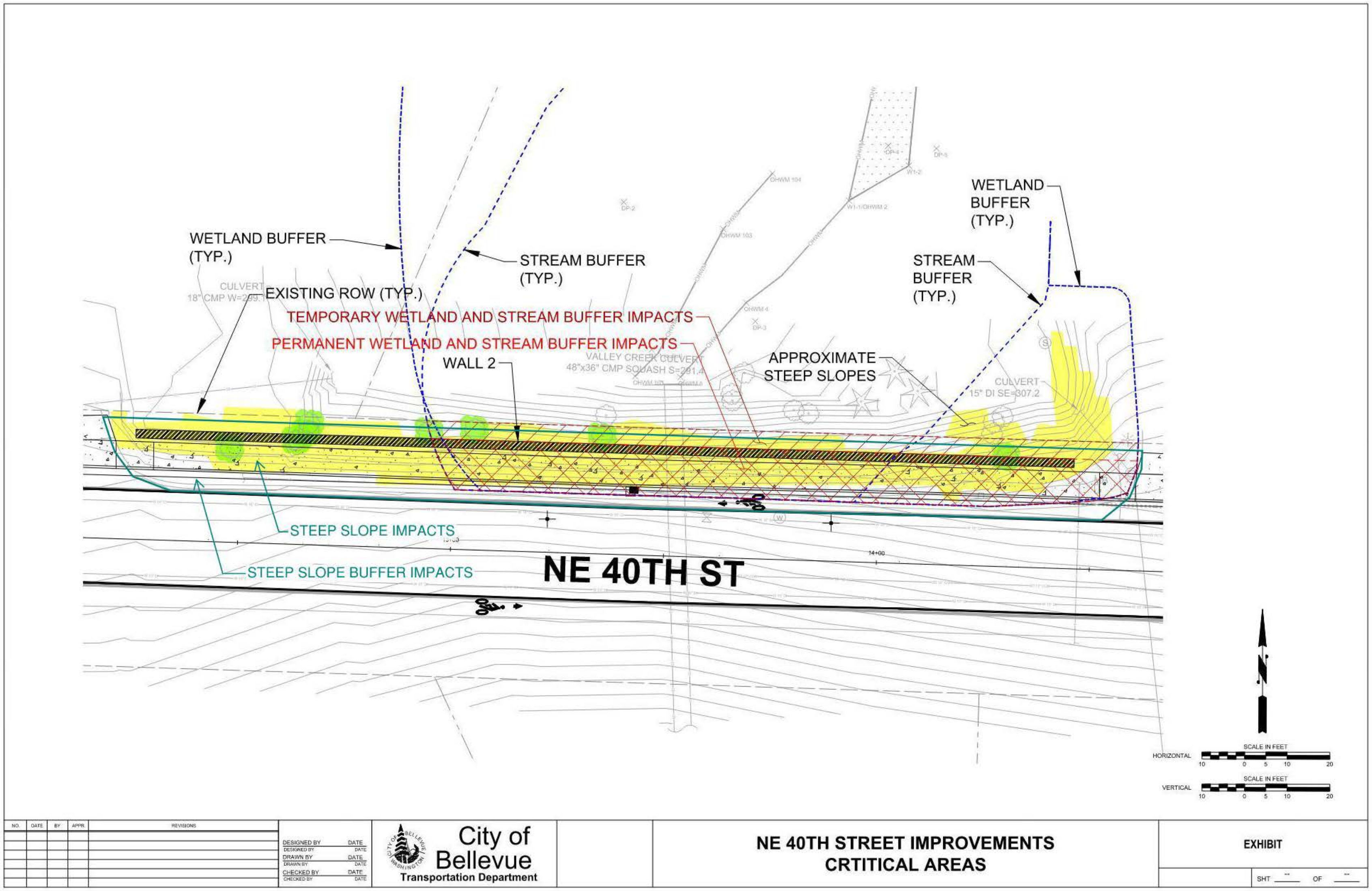
Common Name	Scientific Name	Federal Status (USFWS 2024c)	USFWS or NMFS Listed (USWFS 2024b NMFS 2024; NMFS 2016)	Critical Habitat?	Suitable Habitat Present in Project Area?
North American wolverine	*Gulo gulo luscus*	Threatened	USFWS	No	No
marbled murrelet	*Brachyramphus marmoratus*	Threatened	USFWS	No	No
yellow-billed cuckoo	*Coccyzus americanus*	Threatened	USFWS	No	No
northwestern pond turtle	*Actinemys marmorata*	Threatened	USFWS	No	No
bull trout	*Salvenlinus confluentus*	Threatened	USFWS	No	No
monarch butterfly	*Danaus plexippus*	Candidate	USFWS	No	No
Chinook salmon	*Oncorhynchus tshawytscha*	Threatened	NMFS	No	Yes
steelhead salmon	*Oncorhynchus mykiss*	Threatened	NMFS	No	Yes

None of the USFWS listed species in **Table 6** have been documented in the study area, nor is there any suitable habitat present. North American wolverine populations are limited in Washington state, and they primarily live in higher elevation habitats distant from human populations, whereas the study area is in a lowland urban setting (Lukacs et al. 2020). Marbled murrelets prefer nearshore marine environments in western North America and are closely associated with old growth and mature conifer forests, neither of which is not present in the study area (Desimone 2016). Yellow-billed cuckoo is considered extirpated from Washington, with no documented breeding populations (Wiles et al. 2017). The northwestern pond turtle is a very rare species unlikely to occur in the study area. There are only approximately 800 turtles remaining in Washington with populations at six locations including three sites in Skamania County and one each in Klickitat, Mason and Pierce counties (Hallock et al. 2017). Bull trout habitat includes deep pools in large, cold lakes and reservoirs, as well as cold rivers and large tributary streams with moderate to fast currents and relatively stable stream flow, none of which occur in the study area (WDFW 2015). During the breeding season, monarch butterflies lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.), which is a species that has not been observed in the study area (WDFW 2014). Chinook salmon and steelhead salmon have the potential to occur in Valley Creek within the study area (WDFW 2024a). However, the project does not anticipate any direct impacts to Valley Creek or the culvert of which it passes through under NE 40th Street.

5.3 Operation Impacts

Planned construction activities should not have any operational impacts on critical areas or associated buffers. Down gradient waterbodies can be affected by increased sedimentation, temperature, or contaminants. City ROW improvements would increase the amount of impervious surfaces, as well as a narrow sliver of pollution generating impervious surfaces (PGIS) between the existing edge of the pavement and the new sidewalk. This increased amount of PGIS is estimated to be approximately 4,000 square feet. This area could also include portions of replaced PGIS. Paved and gravel substrate are both considered impervious surfaces in Ecology's Stormwater Management Manual for Western Washington (Ecology 2019). This increase in impervious surfaces from the proposed project could mean a potential increase in occasional contaminant inputs into Valley Creek and waterways down gradient, which could lead to increased contaminant exposure for aquatic species. Proposed stormwater treatment methods are not available at this stage of design. However, if treatment is required, it would be designed according to standards in Ecology's Stormwater Management Manual for Western Washington as well as the current version of Bellevue's Stormwater Management Plan. Stormwater runoff is anticipated to still be directed into catch basins and dispersed into vegetated areas adjacent to the road. Given the high level of existing disturbance, the presumed volume of increased negative water quality effects would likely not be detectable in Valley Creek.

Figure 7: Steep Slope and Crical Area Buffer Impact Areas



6.0 MITIGATION

Mitigation actions typically taken by an applicant or property owner are usually required by City code to occur in the following sequence:

- Avoiding the impact altogether by not taking a certain action or parts of actions;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps, such as project redesign, relocation, or timing, to avoid or reduce impacts;
- Rectifying the impact to the critical area by repairing, rehabilitating, or restoring the affected environment to the conditions existing at the time of the initiation of the project;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and/or
- Compensating for the impact by replacing or providing substitute resources or environments.

The project followed this standard mitigation sequencing during design, to avoid, minimize, and compensate for wetland impacts. Measures include the following:

- Delineation and mapping of all streams and wetlands in the study area that could be affected, so that project design could avoid streams and wetlands where possible;
- Avoided all temporary and permanent direct impacts to wetlands and streams;
- Minimized impacts to associated wetland and stream buffers through use of retaining walls; and
- Will mitigate unavoidable wetland and stream buffer impacts.

Project design will utilize standard best management practices for construction of the project. Temporary impacts are typically minimized through the use of site-specific best management practices such as construction fencing, check dams, silt fence, minimizing removal of vegetation, and conducting work in wet areas during the driest time of year (late summer/early fall).

Various land use permits will be required for the proposed project. In addition to the measures described above, these permits will include a variety of conditions to minimize environmental impacts. Based on the current status of the project having no impacts to critical areas, the following federal, state, and local permits are anticipated, at a minimum:

- Ecology Construction Stormwater General National Pollutant Discharge Elimination System Permit
- City State Environmental Policy Act Approval
- City Grading Permit
- City ROW Permit

Use of a retaining wall (Wall 2) at the location of Valley Creek significantly minimizes the footprint of the proposed project compared to using fill slopes, and allows the project to avoid all direct impacts to Valley Creek and the adjacent wetland, and minimize impacts to their buffers.

Mitigation for unavoidable wetland and stream buffer impacts could include actions such as on-site or off-site buffer enhancement, which could include invasive species removal in the Valley Creek stream buffer and Wetland W1 wetland buffer, which would require coordination with the existing property owners at PN 1525059036 and PN 1525059259, as well installation of native shrubs and trees. These actions could also be undertaken off-site in the same or different drainage system at property owned by the City. On-site buffer mitigation is not possible because the project has no funds to purchase private property for the purposes of mitigation. Off-site buffer mitigation may be possible. While there are no City Parks properties available in the Valley Creek area (Kingham 2024), there may be properties owned by the City Utilities Department that could provide opportunity. We have reached out to the Utilities Department to investigate this, but it will require additional site visits to evaluate properties, and several of the properties are already obligated as mitigation sites. Given the uncertainty and cost associated with identifying off-site properties, as well as the impact to project schedule (target ad date of October 2024), Public Works would prefer to proceed with the mitigation approach described below.

Temporary wetland and stream buffer impacts will be restored on site using native plants – a combination of herbaceous plants, shrubs and trees. Permanent buffer impacts would be offset through purchase of wetland mitigation bank credits from the Keller Farm Mitigation Bank, in the City of Redmond. Keller Farm Mitigation Bank is a 75.2-acre site in WRIA 8, the same WRIA as the project is in. The project is within the bank’s current service area. By contributing credits toward restoration of a wetland within the same WRIA, a watershed approach would be met. The bank’s current ratio for critical area buffer impacts is 0.3:1 (credit required:impact area), and they are charging $25.25 per unit of credit. Thus, the cost for buffer mitigation credit is $25.25 x 0.3 = $7.58/square foot. This equates to $14,023 for 1,850 square feet of critical area buffer impact. The mitigation bank option also has the benefit of providing 1.5 units of buffer mitigation value for every unit of impact at the farm, per Keller Farm development guidelines, which provides a net ecological gain for use of this mitigation option. Finally, use of the mitigation bank eliminates risk associated with potential failure of an additional off-site mitigation site which will require long term monitoring and maintenance.

Stormwater drainage improvements involved with the project may consider incorporating infrastructure (i.e., Contech StormFilter) for improving water quality to help offset added PGIS. To mitigate vegetation and tree removal, the project will include tree replacement, landscaping, and irrigation to restore vegetation.

The result of the mitigation sequencing process is that the project has avoided all temporary and permanent direct impacts to wetlands, and streams, and minimized impacts to associated wetland and stream buffers, and will compensate for unavoidable impacts to associated buffers.

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APPENDICES

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APPENDIX A

Bellevue City Code Excerpts

IV. STREAMS

20.25H.075 Designation of critical area and buffers.

A. Definition of Stream.

An aquatic area where surface water produces a channel, not including a wholly artificial channel, unless the artificial channel is:

1. Used by salmonids; or

2. Used to convey a stream that occurred naturally before construction of the artificial channel.

B. Designation of Streams.

The following streams are hereby designated as critical areas subject to the regulations of this part:

1. "Type S water" means all waters, within their bankfull width, as inventoried as "shorelines of the state" under Chapter 90.58 RCW and the rules promulgated pursuant to Chapter 90.58 RCW including periodically inundated areas of their associated wetlands. As of May 21, 2018, the only known Type S waters are Lower Kelsey Creek and Mercer Slough.

2. "Type F water" means all segments of waters that are not type S waters, and that contain fish or fish habitat, including waters diverted for use by a federal, state, or tribal fish hatchery from the point of diversion for 1,500-feet or the entire tributary if the tributary is highly significant for protection of downstream water quality.

3. "Type N water" means all segments of waters that are not type S or type F waters and that are physically connected to a type S or F waters by an above ground channel system, stream or wetland.

4. "Type O water" means all segments of waters that are not type S, F or N waters and that are not physically connected to type S, F or N waters by an above ground channel system, stream, or wetland.

C. Designation of Stream Critical Area Buffers.

The following critical areas buffers are established:

1. Stream Critical Area Buffers:

a. General – Open Streams (Except West Tributary in the Kelsey Basin).

i. Undeveloped Site. An undeveloped site is a site that contains no primary structure. Open streams on undeveloped sites shall have the following critical area buffers, measured from the top-of-bank:

Type S	100-feet
Type F	100-feet
Type N	50-feet
Type O	25-feet

ii. Developed Site. A developed site is a site that contains a primary structure or any site where the stream and stream buffer have been included within an approved and recorded NGPE or NGPA prior to August 1, 2006. Lots created through subdivision, short subdivision, or the Planned Unit Development process from a developed site shall be considered undeveloped and subject to the requirements of subsection C.1.a.i of this section, except that the lot containing the existing primary structure shall be considered developed. Open streams on developed sites shall have the following critical area buffers, measured from the top-of-bank:

Type S	50-feet or the buffer established with the existing NGPE/NGPA, whichever is greater
Type F	50-feet or the buffer established with the existing NGPE/NGPA, whichever is greater
Type N	25-feet or the buffer established with the existing NGPE/NGPA, whichever is greater
Type O	25-feet or the buffer established with the existing NGPE/NGPA, whichever is greater

b. General – Closed Stream Segments. Regardless of type, closed stream segments shall have no critical area buffer and shall have the structure setback established in subsection D.2.b of this section.

c. West Tributary, Kelsey Basin – Open Streams. Regardless of type, open stream segments of the West Tributary on developed and undeveloped sites shall have a stream critical area buffer of 50-feet, measured from the top-of-bank.

d. Buffer and Setback on Sites with Existing Primary Structure(s). Where a primary structure legally established on a site prior to August 1, 2006, encroaches into the critical area buffer or structure setback established in this section, the critical area buffer and/or structure setback shall be modified to exclude the footprint of the existing primary structure. Expansion of any existing structure into the critical area buffer or critical area structure setback shall be allowed only pursuant to the provisions of LUC 20.25H.055 (single-family primary structures) or LUC 20.25H.230 (all other primary structures).

e. Measurement of Buffer on Eroding Stream Bank. A stream critical area buffer and any applicable structure setback may be measured from a fixed location representing the historic location of the top-of-bank where an applicant demonstrates that:

i. The location of the top-of-bank has changed over time as a result of natural stream processes; and

ii. The applicant provides a delineation of the top-of-bank conducted within the past five years.

f. Buffers Modified Under Prior LUC 20.25H.070.A.2.d. Where the critical area buffer on a site was modified through an approved reach study and restoration plan pursuant to the City’s previous critical areas regulations (prior LUC 20.25H.070.A.2.d), the critical area buffer for that site shall be as determined in that adopted reach study and restoration plan.

2. Buffer Modification. Modifications to the stream critical area buffer may be approved pursuant to this section. Modifications to the stream critical area buffer that do not meet the criteria of this subsection may be considered through a critical areas report, LUC 20.25H.230:

a. Buffer Averaging. Buffer averaging may be allowed if all the following criteria are satisfied. Proposals to average the stream critical area buffer under this subsection shall require a Critical Areas Land Use Permit; provided, that a mitigation or restoration plan is not required for buffer averaging.

i. Buffer averaging may be approved only if the applicant demonstrates that a modification to non-critical area setbacks pursuant to LUC 20.25H.040 would not accommodate the proposed development in a manner consistent with its intended use and function.

ii. Through buffer averaging, the ecological structure and function of the resulting buffer is equivalent to or greater than the structure and function before averaging;

iii. The total buffer area is not reduced;

iv. The buffer area is contiguous;

v. Averaging does not result in any impact to slope stability and does not increase the likelihood of erosion or landslide hazard;

vi. Averaging does not result in a significant adverse impact to habitat associated with species of local importance; and

vii. At no point is the critical area buffer width less than 75-percent of the required buffer dimension.

b. Transportation or Utility Infrastructure. Where a legally established right-of-way, railroad right-of-way or other similar infrastructure of a linear nature crosses a stream critical area buffer, the edge of the improved right-of-way shall be the extent of the buffer, if the part of the critical area buffer on the other side of the right-of-way provides insignificant biological or hydrological function in relation to the portion of the buffer adjacent to the stream

V. WETLANDS

<u>20.25H.095 Designation of critical area and buffers.</u>

A. Definition of Wetland.

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas to mitigate the conversion of wetlands.

B. Delineation of Wetland.

Wetland boundaries shall be delineated consistent with the standards and methods described in the U.S. Army Corps of Engineers 1987 Wetlands Delineation Manual, as amended, and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, as amended.

C. Designation of Critical Area.

The following wetlands are hereby designated as critical areas subject to the requirements of this part. Wetlands are classified into category I, category II, category III and category IV wetlands based on the adopted Washington State Wetland Rating System for Western Washington, Washington State Department of Ecology Publication Number 14-06-029, published in October 2014, as amended.

1. Category I Wetlands. Category I wetlands are those that (a) represent a unique or rare wetland type; or (b) are more sensitive to disturbance than most wetlands; or (c) are relatively undisturbed and contain ecological attributes that are impossible to replace within a human lifetime; or (d) provide a high level of functions.

2. Category II Wetlands. Category II wetlands are difficult, though not impossible, to replace, and provide high levels of some functions. These wetlands occur more commonly than category I wetlands, but still need a relatively high level of protection. Category II wetlands in western Washington include: wetlands scoring between 20 and 22 points (out of 27) on the questions related to the functions present. Wetlands scoring 20 to 22 points were judged to perform most functions relatively well, or performed one group of functions very well and the other two moderately well.

3. Category III Wetlands. Category III wetlands are wetlands with a moderate level of functions (score between 16 and 19 points). Wetlands scoring between 16 and 19 points generally have been disturbed in some ways, and are often less diverse or more isolated from other natural resources in the landscape than category II wetlands.

4. Category IV Wetlands Over 2,500-Square-Feet. Category IV wetlands have the lowest levels of functions (score less than 16 points) and are often heavily disturbed. These are wetlands that we should be able to replace, and in some cases be able to improve. However, experience has shown that replacement cannot be guaranteed in any specific case. These wetlands may provide some important functions, and also need to be protected.

D. Designation of Wetland Critical Area Buffer.

The following critical area buffers are hereby established:

1. Wetland Critical Area Buffer.

a. General.

i. Undeveloped Sites. An undeveloped site is any site where the wetland and wetland buffer have not previously been included within a Native Growth Protection Area (NGPA) or Native Growth Protection Easement (NGPE), regardless of whether the site contains a primary structure. Wetlands on undeveloped sites shall have the following critical area buffers, measured from the wetland boundary:

Category	Wetland Characteristics	Buffer
I	Natural heritage wetlands and bogs – Habitat score 8 – 9	225-feet
	Natural heritage wetlands and bogs – All others	190-feet
	Forested	Based on score for habitat
	Habitat score of 8 – 9	225-feet
	Habitat score of 5 – 7	110-feet
	Habitat score of 3 – 4	75-feet
II	Habitat score of 8 – 9	225-feet
	Habitat score of 5 – 7	110-feet
	Habitat score of 3 – 4	75-feet
III	Habitat score of 8 – 9	225-feet
	Habitat score of 5 – 7	110-feet
	Habitat score of 3 – 4	60-feet
IV over 2,500-square-feet	All	40-feet

ii. Developed Site. Wetlands on developed sites shall be governed by the buffer established within the approved and recorded NGPA or NGPE, or approved Critical Areas Land Use Permit. No additional wetland buffer shall apply.

((1)) Previously Approved NGPE/NGPA. A developed site is any site where the wetland and wetland buffer have been included within an NGPE or NGPA approved and recorded prior to August 1, 2006, or any site abutting an NGPA approved and recorded prior to August 1, 2006, containing the wetland and wetland buffer where such site does not also contain a wetland.

((2)) Previously Approved Critical Areas Land Use Permit. A developed site is any site where the wetland and wetland buffer have been identified within a Critical Areas Land Use Permit approved prior to May 21, 2018.

b. Buffer and Setback on Sites with Existing Development. Where a primary structure legally established on a site prior to August 1, 2006, encroaches into the critical area buffer or structure setback established in this section, the critical area buffer and/or structure setback shall be modified to exclude the footprint of the existing primary structure. Expansion of any existing primary structure into the critical area buffer or critical area structure setback shall be allowed only pursuant to the provisions of LUC 20.25H.055 (single-family primary structures) or LUC 20.25H.230 (all other primary structures).

c. Shoreline Lake-Fringe Wetlands. Category III lake-fringe wetlands 2,500-square-feet or less with habitat scores of 5 or less that are adjacent to a shoreline are exempt from a wetland buffer. Shoreline vegetation conservation standards per Part 20.25E LUC apply.

2. Buffer Modification. Modifications to the wetland critical area buffer may be approved pursuant to this section. Modifications to the wetland critical area buffer that do not meet the criteria of this subsection may be considered through a critical areas report, LUC 20.25H.230:

a. Buffer Averaging. Buffer averaging may be allowed if all the following criteria are satisfied. Proposals to average the wetland critical area buffer under this subsection shall require a Critical Areas Land Use Permit; provided, that a mitigation or restoration plan is not required for buffer averaging.

i. Buffer averaging may be approved only if the applicant demonstrates that a modification to non-critical area setbacks pursuant to LUC 20.25H.040 would not accommodate the proposed development in a manner consistent with its intended use and function;

ii. Through buffer averaging, the ecological structure and function of the resulting buffer is equivalent to or greater than the structure and function before averaging;

iii. The total buffer area is not reduced;

iv. The buffer area is contiguous;

v. Averaging does not result in any impact to slope stability and does not increase the likelihood of erosion or landslide hazard;

vi. Averaging does not result in a significant adverse impact to habitat associated with species of local importance; and

vii. At no point is the critical area buffer width less than 75-percent of the required buffer dimension.

b. Transportation or Utility Infrastructure. Where a legally established right-of-way, railroad right-of-way or other similar infrastructure of a linear nature crosses a wetland critical area buffer, the edge of the improved right-of-way shall be the extent of the buffer, if the part of the critical area buffer on the other side of the right-of-way provides insignificant biological or hydrological function in relation to the portion of the buffer adjacent to the wetland.

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APPENDIX B

USACE Wetland Data Forms and Antecedent Precipitation Tool

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: NE 40th Street City/County: Bellevue/King Sampling Date: 11/16/2023

Applicant/Owner: City of Bellevue State: WA Sampling Point: DP-1

Investigator(s): Gray Rand, PWS; MaKenna Lindberg Section, Township, Range: S15, T25N, R05E

Landform (hillslope, terrace, etc.): Ditch Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): A Lat: 47.646169 Long: -122.152940 Datum: NAD 83

Soil Map Unit Name: Everett very gravelly sandy loam, 8 to 15 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☒
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: DP-1 was dug in a roadside ditch of NE 40th Street, adjacent to the road prism.

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 feet x 30 feet)			
1. *N/A*	N/A	n/a*	-
2.			
3.			
4.			
50% = N/A, 20% = N/A	N/A	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 feet x 10 feet)			
1. *salmonberry (Rubus spectabilis)*	60	yes	FAC
2. *redosier dogwood (Cornus alba)*	20	yes	FACW
3.			
4.			
5.			
50% = 40, 20% = 16	80	= Total Cover	
Herb Stratum (Plot size: 5 feet x 5 feet)			
1. *Robert geranium (Geranium robertianum)*	50	yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = 25, 20% = 10	50	= Total Cover	
Woody Vine Stratum (Plot size: 5 feet x 5 feet)			
1. *N/A*	N/A	n/a*	-
2.			
50% = N/A, 20% = N/A	N/A	= Total Cover	
% Bare Ground in Herb Stratum 50			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	67	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	-	x1 =	-
FACW species	-	x2 =	-
FAC species	-	x3 =	-
FACU species	-	x4 =	-
UPL species	-	x5 =	-
Column Totals:	- (A)		- (B)

Prevalence Index = B/A = -

Hydrophytic Vegetation Indicators:

- ☒ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: Leaf litter covering bare ground.

Project Site: NE 40th Street

SOIL

Sampling Point: DP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/2	100	-	-	-	-	si.lo.	No redox.
12-15+	10YR 3/3	100	-	-	-	-	sa. si. lo.	No redox.

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Much gravel in 0-12 inch layer, likely from road prism fill.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	N/A
Water Table Present?	Yes	☐	No	☒	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	N/A

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks*:* Area around DP-1 recieves runoff directly from culvert and NE 40th roadway.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: NE 40th Street | City/County: Bellevue/King | Sampling Date: 11/16/2023

Applicant/Owner: City of Bellevue | State: WA | Sampling Point: DP-2

Investigator(s): Gray Rand, PWS; MaKenna Lindberg | Section, Township, Range: S15, T25N, R05E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): convex | Slope (%): 2

Subregion (LRR): A | Lat: 47.646349 | Long: -122.152260 | Datum: NAD 83

Soil Map Unit Name: Everett very gravelly sandy loam, 8 to 15 percent slopes | NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are “Normal Circumstances” present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☒
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: DP-2 was dug in uphill area approximately 30 feet from, and 2 feet above, the right bank of Valley Creek.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 feet x 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1. *red alder (Alnus rubra)*	20	yes	FAC
2.			
3.			
4.			
50% = 10, 20% = 4	20	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 feet x 10 feet)			
1. *salmonberry (Rubus spectabilis)*	90	yes	FAC
2.			
3.			
4.			
5.			
50% = 45, 20% = 18	90	= Total Cover	
Herb Stratum (Plot size: 5 feet x 5 feet)			
1. *N/A*	N/A	n/a*	-
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = N/A, 20% = N/A	N/A	= Total Cover	
Woody Vine Stratum (Plot size: 5 feet x 5 feet)			
1. *N/A*	N/A	n/a*	-
2.			
50% = N/A, 20% = N/A	N/A	= Total Cover	
% Bare Ground in Herb Stratum 100			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	-	x1 =	-
FACW species	-	x2 =	-
FAC species	-	x3 =	-
FACU species	-	x4 =	-
UPL species	-	x5 =	-
Column Totals:	- (A)		- (B)

Prevalence Index = B/A = -

Hydrophytic Vegetation Indicators:

- ☒ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks: Leaf litter covering bare ground. Large red alder (*Alnus rubra*) in plot. Bigleaf maple (*Acer macrophyllum*) just outside of plot.

Project Site: NE 40th Street

SOIL

Sampling Point: DP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	100	-	-	-	-	si. lo.	No redox.
3-8	10YR 3/2	100	-	-	-	-	sa. si. lo.	No redox.
8-14+	2.5Y 4/3	98	7.5YR 4/4	2	C	M	sand	Distinct contrast

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Leaf litter on top of 0-3 inch layer. Fibrous roots in 0-8 inch layer.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	N/A
Water Table Present?	Yes ☐	No ☒	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	N/A

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks: Sand and slope would not hold water.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: NE 40th Street City/County: Bellevue/King Sampling Date: 11/16/2023

Applicant/Owner: City of Bellevue State: WA Sampling Point: DP-3

Investigator(s): Gray Rand, PWS; MaKenna Lindberg Section, Township, Range: S15, T25N, R05E

Landform (hillslope, terrace, etc.): Streambank Local relief (concave, convex, none): convex Slope (%): 3

Subregion (LRR): A Lat: 47.646133 Long: -122.152210 Datum: NAD 83

Soil Map Unit Name: Everett very gravelly sandy loam, 8 to 15 percent slopes NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes** ☐ **No** ☒
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: DP-3 was dug in uphill area approximately 4 feet away from the left bank of Valley Creek close to culvert

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 feet x 30 feet)			
1. N/A	N/A	n/a*	-
2.			
3.			
4.			
50% = N/A, 20% = N/A	N/A	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 feet x 10 feet)			
1. salmonberry (Rubus spectabilis)	50	yes	FAC
2. common ladyfern (Athyrium cyclosorum)	25	yes	FACU
3. western swordfern (Polystichum munitum)	25	yes	FACW
4.			
5.			
50% = 50, 20% = 20	100	= Total Cover	
Herb Stratum (Plot size: 5 feet x 5 feet)			
1. field horsetail (Equisetum arvense)	5	yes	FAC
2. Robert geranium (Geranium robertianum)	2	yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = 3.5, 20% = 1.4	7	= Total Cover	
Woody Vine Stratum (Plot size: 5 feet x 5 feet)			
1. trailing blackberry (Rubus ursinus)	2	yes	FACU
2.			
50% = 1, 20% = 0.4	2	= Total Cover	
% Bare Ground in Herb Stratum 90			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	6	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	50	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1 =	0
FACW species	25	x2 =	50
FAC species	55	x3 =	165
FACU species	25	x4 =	100
UPL species	0	x5 =	0
Column Totals:	105 (A)		315 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☒ 3 - Prevalence Index is $\leq$3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: Leaf litter covering bare ground.

Project Site: NE 40th Street

SOIL

Sampling Point: DP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/2	100	-	-	-	-	sa. si. lo..	No redox.
8-13+	2.5Y 3/1	100	-	-	-	-	cl.lo.	No redox.

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: No hydric indicators are met with this soil profile.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches):	N/A
Water Table Present?	Yes ☐	No ☒	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	N/A

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks: Valley Creek may overflow occasionally to elevation of DP-3, but not regularly.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: NE 40th Street City/County: Bellevue/King Sampling Date: 11/16/2023

Applicant/Owner: City of Bellevue State: WA Sampling Point: DP-4

Investigator(s): Gray Rand, PWS; MaKenna Lindberg Section, Township, Range: S15, T25N, R05E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): A Lat: 47.646335 Long: -122.151985 Datum: NAD 83

Soil Map Unit Name: Everett very gravelly sandy loam, 8 to 15 percent slopes NWI classification: PSS/PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes** ☒ **No** ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: DP-3 was dug in uphill area approximately 4 feet away from the left bank of Valley Creek close to culvert

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30 feet x 30 feet)	Absolute % Cover	Dominant Species?	Indicator Status
1. *N/A*	N/A	n/a*	-
2.			
3.			
4.			
50% = N/A, 20% = N/A	N/A	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 feet x 10 feet)			
1. *common ladyfern (Athyrium cyclosorum)*	45	yes	FAC
2. *salmonberry (Rubus spectabilis)*	20	yes	FAC
3.			
4.			
5.			
50% = 32.5, 20% = 13	65	= Total Cover	
Herb Stratum (Plot size: 5 feet x 5 feet)			
1. *yellow archangel (Lamium galeobdolon)*	20	yes	NI
2. *giant horsetail (Equisetum telmateia)*	10	yes	FACW
3. *Robert geranium (Geranium robertianum)*	10	yes	FACU
4. *creeping buttercup (Ranunculus repens)*	5	no	FAC
5. *coastal hedgenettle (Stachys chamissonis)*	5	no	FACW
6.			
7.			
8.			
9.			
10.			
11.			
50% = 25, 20% = 10	50	= Total Cover	
Woody Vine Stratum (Plot size: 5 feet x 5 feet)			
1. *N/A*	N/A	n/a*	-
2.			
50% = N/A, 20% = N/A	N/A	= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	4	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	75	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	-	x1 =	-
FACW species	-	x2 =	-
FAC species	-	x3 =	-
FACU species	-	x4 =	-
UPL species	-	x5 =	-
Column Totals:	- (A)		- (B)

Prevalence Index = B/A = -

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks: Bigleaf maple (*Acer macrophyllum*) just out of plot. Yellow archangel (*Lamium galeobdolon*) was not included in dominance test calculations due to no indicator status.

Project Site: NE 40th Street

SOIL

Sampling Point: DP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/1	100	-	-	-	-	Org. w/ grit	No redox.

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☒ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks: High organic soil feel, with some grit.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	N/A
Water Table Present?	Yes	☒	No	☐	Depth (inches):	0 Inches
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	9 inches

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks: Valley Creek may overflow occasionally to elevation of DP-4, but not regularly.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: NE 40th Street | City/County: Bellevue/King | Sampling Date: 11/16/2023

Applicant/Owner: City of Bellevue | State: WA | Sampling Point: DP-5

Investigator(s): Gray Rand, PWS; MaKenna Lindberg | Section, Township, Range: S15, T25N, R05E

Landform (hillslope, terrace, etc.): Terrace | Local relief (concave, convex, none): convex | Slope (%): 20

Subregion (LRR): A | Lat: 47.646320 | Long: -122.151910 | Datum: NAD 83

Soil Map Unit Name: Everett very gravelly sandy loam, 8 to 15 percent slopes | NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒
Wetland Hydrology Present?	Yes ☐	No ☒
Is the Sampled Area within a Wetland?	**Yes** ☐	**No** ☒

Remarks: DP-5 was dug in uphill area approximately 2 feet above Wetland W1, adjacent to residential home.

VEGETATION – Use scientific names of plants

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 feet x 30 feet)			
1. *N/A*	N/A	n/a*	-
2.			
3.			
4.			
50% = N/A, 20% = N/A	N/A	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 feet x 10 feet)			
1. *N/A*	N/A	n/a*	-
2.			
3.			
4.			
5.			
50% = N/A, 20% = N/A	N/A	= Total Cover	
Herb Stratum (Plot size: 5 feet x 5 feet)			
1. *N/A*	N/A	n/a*	-
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = N/A, 20% = N/A	N/A	= Total Cover	
Woody Vine Stratum (Plot size: 5 feet x 5 feet)			
1. *N/A*	N/A	n/a*	-
2.			
50% = N/A, 20% = N/A	N/A	= Total Cover	
% Bare Ground in Herb Stratum 100			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	N/A	(A)
Total Number of Dominant Species Across All Strata:	N/A	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	N/A	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	-	x1 =	-
FACW species	-	x2 =	-
FAC species	-	x3 =	-
FACU species	-	x4 =	-
UPL species	-	x5 =	-
Column Totals:	- (A)		- (B)

Prevalence Index = B/A = -

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☐ **No** ☒

Remarks: Moss layer covering bare ground.

Project Site: NE 40th Street

SOIL

Sampling Point: DP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100	-	-	-	-	si. cl. lo.	No redox

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): N/A

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Gravel fill slope below retaining wall.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

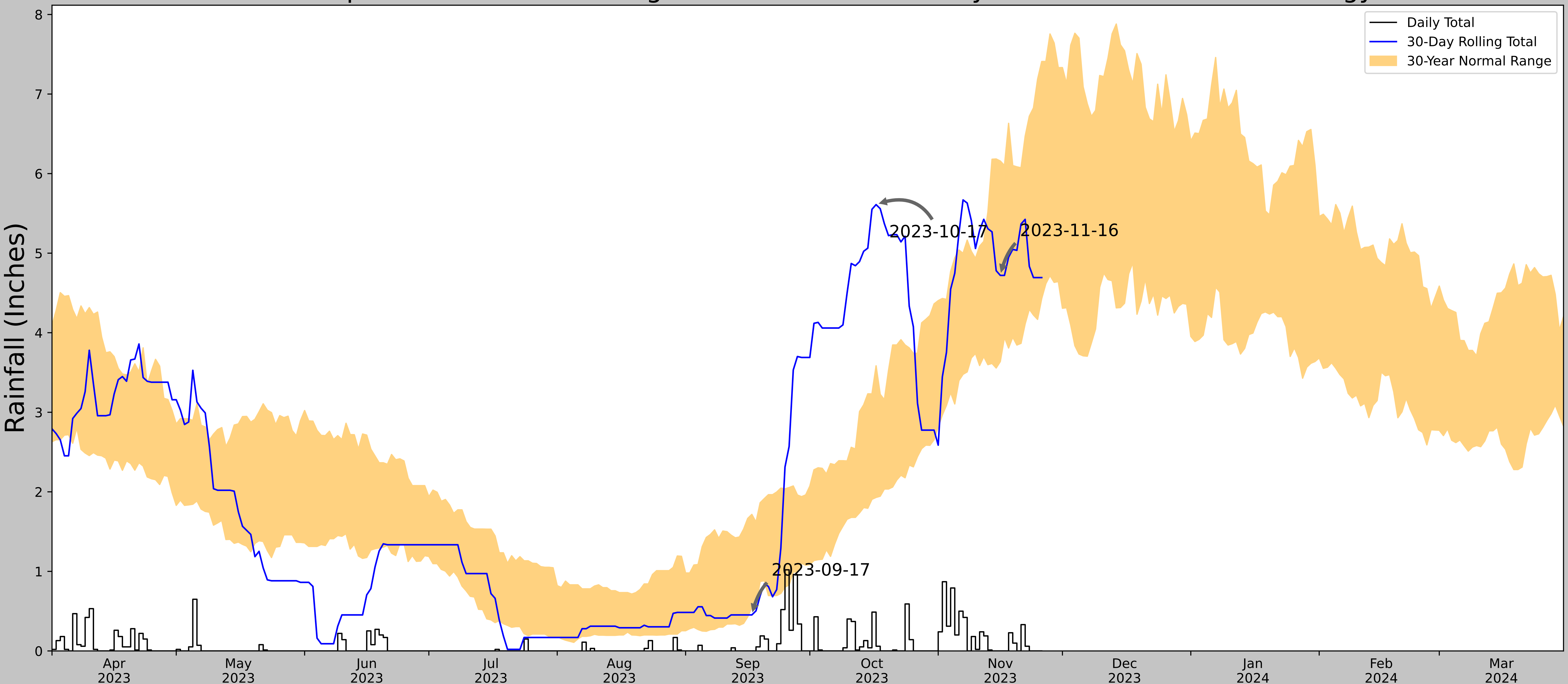
Surface Water Present?	Yes ☐	No ☒	Depth (inches):	N/A
Water Table Present?	Yes ☐	No ☒	Depth (inches):	N/A
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches):	N/A

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: N/A

Remarks: Slope does not permit hydrology indicators from forming.

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	47.646184, -122.151988
Observation Date	2023-11-16
Elevation (ft)	293.805
Drought Index (PDSI)	Severe drought (2023-10)
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-11-16	3.637795	6.157874	4.720473	Normal	2	3	6
2023-10-17	1.929528	3.584252	5.610236	Wet	3	2	6
2023-09-17	0.548425	1.716535	0.452756	Dry	1	1	1
Result							Normal Conditions - 13

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
SEATTLE SAND PT WFO	47.6872, -122.2553	60.039	5.58	233.766	3.816	10916	90
SEATTLE URBAN SITE	47.65, -122.3	19.029	3.306	41.01	1.623	62	0
SEATTLE BOEING FLD	47.5456, -122.3147	24.934	10.167	35.105	4.932	221	0
RENTON MUNI AP	47.495, -122.2144	18.045	13.416	41.994	6.601	54	0
MONROE	47.8453, -121.9944	120.079	16.314	60.04	8.321	98	0
KENT	47.4172, -122.2433	28.871	18.664	31.168	8.981	1	0

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APPENDIX C

Ecology Rating Form and Figures

Wetland name or number: W1

RATING SUMMARY - Western Washington

Name of wetland (or ID#): W1 **Date of site visit:** 11/16/2023
Rated By: MaKenna Lindberg **Trained by Ecology? Yes** [X] **No** [ ] **Date of Training:** 12/08/2022
HGM Class used for rating: Riverine
Wetland has multiple HGM classes? Yes [ ] **No** [X]

NOTE: Form is not complete without the figures requested *(figures can be combined).*
Source of base aerial photo/map:

OVERALL WETLAND CATEGORY: [**Category II**] (based on functions [X] or special characteristics [ ])

1. Category of wetland based on FUNCTIONS

[ ] **Category I** - Total score = 23 - 27
[X] **Category II** - Total score = 20 - 22
[ ] **Category III** - Total score = 16 - 19
[ ] **Category IV** - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
Site Potential	**H**	**M**	**M**	
Landscape Potential	**H**	**H**	**L**	
Value	**L**	**M**	**H**	**Total**
Score Based on Ratings	**7**	**7**	**6**	**20**

Score for each function based on three ratings
(order of ratings is not important)
9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	
Wetland of High Conservation Value	
Bog	
Forested	
Coastal Lagoon	
Interdunal	
None of the above	**Not Applicable**

Wetland name or number: W1

Maps and figures required to answer questions correctly for Western Washington

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	3
Hydroperiods	H 1.2	4
Ponded depressions	R 1.1	5
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	12
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	6
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	7
Map of the contributing basin	R 2.2, R 2.3, R 5.2	8
1km Polygon: Area that extends 1km form entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	9
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	10
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	11

Wetland name or number: W1

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

R 1.0 Does the site have the potential to improve water quality?		
R 1.1 What is the total area of surface depressions within the Riverine wetland that can trap sediments during a flooding event?		
Depressions cover >75% area of wetland	points = 8	
Depressions cover >50% area of wetland	points = 4	
Depressions present but cover <50% area of wetland	points = 2	
No depressions present	points = 0	**Score: 8**
R 1.2 What is the structure of plants in the wetland?		
Trees or shrubs cover >66% area of the wetland	points = 8	
Trees or shrubs cover 33% - 66% of the area of the wetland	points = 6	
Ungrazed, herbaceous plants cover (>6in high) >66% area of the wetland	points = 6	
Ungrazed, herbaceous plants cover (>6in high) 33%-66% of the area of the wetland	points = 3	
Trees, shrubs, and ungrazed herbaceous plants cover <33% area of the wetland	points = 0	**Score: 8**
	Total for R 1:	**16**

Rating of Site Potential [X] **12-16 = H** [ ] **6-11 = M** [ ] **0-5 = L** *Record the rating on the first page*

R 2.0 Does the landscape have the potential to support the water quality function of the site?		
R 2.1 Is the wetland within an incorporated city or within its UGA?		
Yes	points = 2	
No	points = 0	**Score: 2**
R 2.2 Does the contributing basin to the wetland include a UGA or incorporated area?		
Yes	points = 1	
No	points = 0	**Score: 1**
R 2.3 Does at least 10% of the contributing basin contain tilled fields, pastures, or forests that have been clearcut within the last 5 years?		
Yes	points = 1	
No	points = 0	**Score: 0**
R 2.4 Is >10% of the area within 150ft of the wetland in land uses that generate pollutants?		
Yes	points = 1	
No	points = 0	**Score: 1**
R 2.5 Are there other sources of pollutants coming into the wetland that are not listed in question R 2.1-R 2.4?		
Yes	points = 1	
No	points = 0	**Score: 1**
R 2.6 What are the other sources of pollutants coming into the wetland?		
golf course (i.e., pesticides, herbicides, etc.)		
	Total for R 2:	**5**

Rating of Landscape Potential [X] **3-4 = H** [ ] **1-2 = M** [ ] **0 = L** *Record the rating on the first page*

Wetland name or number: W1

R 3.0 Is the water quality improvement provided by the site valuable to society?		
R 3.1 Is the wetland along a stream or river that is on the 303(d) list or on a tributary that drains to one within 1 mi?		
Yes	points = 1	
No	points = 0	**Score: 0**
R 3.2 Is the wetland along a stream or river that has TMDL limits for nutrients, toxics, or pathogens?		
Yes	points = 1	
No	points = 0	**Score: 0**
R 3.3 Has the site been identified in a watershed or local plan as important for maintaining water quality?		
Yes	points = 2	
No	points = 0	**Score: 0**
	Total for R 3:	0

Rating of Value [ ] **2-4 = H** [ ] **1 = M** [X] **0 = L** *Record the rating on the first page*

RIVERINE AND FRESHWATER TIDAL FRINGE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradtion

R 4.0 Does the site have the potential to reduce flooding and erosion?		
R 4.1 What are the characteristics of the overbank storage the wetland provides?		
If the ratio is more than 20	points = 9	
If the ratio is 10-20	points = 6	
If the ratio is 5-<10	points = 4	
If the ratio is 1-<5	points = 2	
If the ratio is < 1	points = 1	**Score: 2**
R 4.2 What are the characteristics of plants that slow down water velocities during floods?		
Forest or shrubs cover >33% of the wetland area OR emergent plants cover >66% of the wetland area	points = 7	
Forest or shrubs cover >10% of the wetland area OR emergent plants cover >33% of the wetland area	points = 4	
Plants do not meet the above criteria	points = 0	**Score: 7**
	Total for R 4:	9

Rating of Site Potential [ ] **12-16 = H** [X] **6-11 = M** [ ] **0-5 = L** *Record the rating on the first page*

Wetland name or number: W1

R 5.0 Does the landscape have the potential to support the hydrologic functions of the site?		
R 5.1 Is the stream or river adjacent to the wetland downcut?		
Yes	points = 0	
No	points = 1	**Score: 1**
R 5.2 Does the up-gradient watershed include a UGA or incorporated area?		
Yes	points = 1	
No	points = 0	**Score: 1**
R 5.3 Is the up-gradient stream or river controlled by dams?		
Yes	points = 0	
No	points = 1	**Score: 1**
	Total for R 5:	**3**

Rating of Landscape Potential [X] **3 = H** [ ] **1-2 = M** [ ] **0 = L** *Record the rating on the first page*

R 6.0 Are the hydrologic functions provided by the site valuable to society?		
R 6.1 What is the distance to the nearest areas downstream that have flooding problems?		
The sub-basin immediately down-gradient of the wetland has flooding problems	points = 2	
Surface flooding problems are in a sub-basin farther down-gradient	points = 1	
No flooding problems anywhere downstream	points = 0	**Score: 1**
R 6.2 Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?		
Yes	points = 2	
No	points = 0	**Score: 0**
	Total for R 6:	**1**

Rating of Value [ ] **2-4 = H** [X] **1 = M** [ ] **0 = L** *Record the rating on the first page*

Wetland name or number: W1

HABITAT FUNCTIONS

These questions apply to wetlands of all HGM classes - Indicators that the site functions to provide important habitat

H 1.0 Does the wetland have the potential to provide habitat for many species?

H 1.1 What is the structure of the plant community?

- [ ] Aquatic Bed
- [x] Emergent
- [x] Scrub-shrub
- [ ] Forested
- [ ] Multiple strata within the Forested class (canopy, sub-canopy, shrubs, herbaceous, moss/ground cover)

4 structures or more	points = 4	
3 structures	points = 2	
2 structures	points = 1	
1 structure	points = 0	
No structures present	points = 0	**Score: 1**

H 1.2 What are the hydroperiods that meet the size thresholds in the wetland?

- [ ] Permanently flooded or inundated
- [x] Seasonally flooded or inundated
- [ ] Occasionally flooded or inundated
- [x] Saturated only
- [x] Permanently flowing stream or river in, or adjacent to, the wetland
- [ ] Seasonally flowing stream in, or adjacent to, the wetland
- [ ] Lake Fringe wetland
- [ ] Freshwater Tidal wetland

4 or more types present	points = 3	
3 types present or Lake Fringe / Freshwater Tidal Fringe	points = 2	
2 types present	points = 1	
1 type present	points = 0	
None present	points = 0	**Score: 2**

H 1.3 What is the richness of the plant species in the wetland?

>19 species	points = 2	
5-19 species	points = 1	
<5 species	points = 0	**Score: 1**

Wetland name or number: W1

H 1.4 What is the interspersion of habitats?		
High	points = 3	
Moderate	points = 2	
Low	points = 1	
None	points = 0	**Score: 2**

H 1.5 What are the special habitat features in the wetland?

- [x] Large, downed, woody debris within the wetland (>4in diameter and 6ft long).
- [ ] Standing snags (dbh >4in) within the wetland
- [ ] Undercut banks are present for at least 6.6ft (2m) and/or overhanging plants extend at least 3.3ft (1m) over open water or a stream (or ditch) in, or contiguous with the wetland, for at least 33ft (10m)
- [ ] Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed)
- [ ] At least 0.25ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians)
- [x] Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 for list of strata)

6 habitats selected	points = 6	
5 habitats selected	points = 5	
4 habitats selected	points = 4	
3 habitats selected	points = 3	
2 habitats selected	points = 2	
1 habitat selected	points = 1	
No habitats selected	points = 0	**Score: 2**
	Total for H 1:	**8**

Rating of Site Potential [ ] **15-18 = H** [X] **7-14 = M** [ ] **0-6 = L** *Record the rating on the first page*

H 2.0 Does the landscape have the potential to support habitat functions of the site?

H 2.1 What is the percentage of accessible habitat within 1km of the wetland?		
>33% of 1km Polygon	points = 3	
20-33% of 1km Polygon	points = 2	
10-19% of 1km Polygon	points = 1	
<10% of 1km Polygon	points = 0	**Score: 0**
H 2.2 What is the percentage of total habitat in a 1km polygon around the wetland?		
Total habitat is >50% of the Polygon	points = 3	
Total habitat is 10-50% of the Polygon and in 1-3 patches	points = 2	
Total habitat is 10-50% of the Polygon and in >3 patches	points = 1	
Total habitat is <10% of the Polygon	points = 0	**Score: 1**

Wetland name or number: W1

H 2.3 What is the land use intensity in the 1km polygon?		
50% of the Polygon is high intensity land use	points = -2	
<50% of the Polygon is high intensity land use	points = 0	**Score:** -2
	Total for H 2:	**-1**

Rating of Landscape Potential [ ] **4-6 = H** [ ] **1-3 = M** [X] **0 = L** *Record the rating on the first page*

H 3.0 Is the habitat provided by the site valuable to society?

H 3.1 Does the site provide habitat for species valued in laws, regulations, or policies?

- [ ] Aspen Stands
- [ ] Biodiversity Areas and Corridors
- [ ] Herbaceous Balds
- [ ] Old-growth/Mature Forests
- [ ] Oregon White Oak
- [x] Riparian
- [ ] Westside Prarie
- [ ] Fresh Deepwater
- [x] Instream
- [ ] Nearshore (Coastal, Open Coast, Puget Sound)
- [ ] Caves
- [ ] Cliffs
- [x] Snags and Logs
- [ ] Talus

The following criteria automatically score 2 points:

- [ ] The wetland provides habitat for Threatened or Endangered species
- [ ] The wetland is mapped as a location for an individual WDFW priority species
- [ ] The wetland is a Wetland of High Conservation Value
- [ ] The wetland has been categorized as an important habitat site in a local plan

The wetland has 3 or more WDFW priority habitats within 100m, or meets the criteria for societal value	points = 2	
The site has 1 or 2 WDFW priority habitats within 100m	points = 1	
The site does not meet any of the criteria for societal value	points = 0	**Score:** 2
	Total for H 3:	**2**

Rating of Value [X] **2 = H** [ ] **1 = M** [ ] **0 = L** *Record the rating on the first page*

Wetland name or number: W1

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

SC 1.0 Estuarine Wetlands

SC 1.1 Does the wetland meet all of the following criteria for Estuarine wetlands?

- [ ] The dominant water regime is tidal
- [x] The wetland is vegetated
- [ ] The water salinity is greater than 0.5 ppt

Yes - Go to SC 1.2

No - Not an Estuarine Wetland **Result: Not an Estuarine Wetland**

SC 1.2 Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151?

Yes - Category I Estuarine Wetland

No - Go to SC 1.3 **Result:**

SC 1.3 Is the wetland unit at least 1ac in size and meets at least two of the following three conditions?

- [ ] The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 10% cover of non-native plant species.
- [ ] At least 75% of the landward edge of the wetland has a 100ft buffer of shrub, forest, or un-grazed or un-mowed grassland
- [ ] The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.

Yes - Category I Estuarine Wetland

No - Category II Estuarine Wetland **Result:**

SC 2.0 Wetlands of High Conservation Value

SC 2.1 Does the wetland overlap with any known or historical rare plant or rare & high-quality ecosystem polygons on the WNHP Data Explorer?

Yes - Category I Wetland of High Conservation Value

No - Go to SC 2.2 **Result: Go to SC 2.2**

SC 2.2 Does the wetland have a rare plant species, rare plant community, or high-quality common plant community that may qualify the site as a WHCV?

Yes - Category I Wetland of High Conservation Value

No - Not a Wetland of High Conservation Value **Result: Not a Wetland of High Conservation Value**

Wetland name or number: W1

SC 3.0 Bogs

SC 3.1 Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16in or more of the first 32in of the soil profile? Yes - Go to SC 3.3 No - Go to SC 3.2	**Result: Go to SC 3.2**
SC 3.2 Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes - Go to SC 3.3 No - Not a Bog Wetland	**Result:**
SC 3.3 Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least 30% cover of plant species listed in the table provided in the instructions? Yes - Category I Bog Wetland No - Go to SC 3.4	**Result:**
SC 3.4 Is an area with peats or mucks forested (>30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann Spruce, or western white pine AND any of the species (or combinations of species) listed in the table found in the instructions provide more than 30% of the cover under the canopy? Yes - Category I Bog Wetland No - Not a Bog Wetland	**Result:**

SC 4.0 Forested Wetlands

SC 4.1 Does the wetland have at least 1 contiguous acre of forest that meets one of the following criteria? ☐ Old-growth forests ☐ Mature forests Yes - Category I Forested Wetland No - Not a Forested Wetland	**Result: Not a Forested Wetland**

Wetland name or number: W1

SC 5.0 Wetlands in Coastal Lagoons

SC 5.1 Coastal Lagoons: Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? ☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or rocks ☐ The depression in which the wetland is located contains ponded water that is saline or brackish (>0.5 ppt) during most of the year in at least a portion of the open water area (measured near the bottom) Yes - Go to SC 5.2 No - Not a Coastal Lagoon Wetland	**Result: Not a Coastal Lagoon Wetland**
SC 5.2 Does the wetland meet all of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species). ☐ At least 75% of the landward edge of the wetland has a 100ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ the wetland is larger than 0.10ac (4350 sqft) Yes - Category I Coastal Lagoon No - Category II Coastal Lagoon	**Result:**

SC 6.0 Interdunal Wetlands

SC 6.1 Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership WBUO)? Yes - Go to SC 6.2 No - Not an Interdunal Wetland	**Result: Not an Interdunal Wetland**
SC 6.2 Is the wetland 1ac or larger in size, or a mosaic that is 1ac or larger in size? Wetland is larger than 1ac in size - Go to SC 6.3 Wetland is a mosaic larger than 1ac is size - Category II Interdunal Wetland No - Go to SC 6.4	**Result:**
SC 6.3 Does the wetland score 8 or 9 points for the habitat functions? Yes - Category I Interdunal Wetland No - Category II Interdunal Wetland	**Result:**
SC 6.4 Is the wetland unit between 0.1ac and 1ac, or in a mosaic of wetlands that is between 0.1ac and 1ac in size? Yes - Category III Interdunal Wetland No - Category IV Interdunal Wetland	**Result:**

Wetland name or number: W1

Category of wetland based on Special Characteristics	
If you answered No for all types, enter "Not Applicable" on Summary Form	**Final Category: Not Applicable**

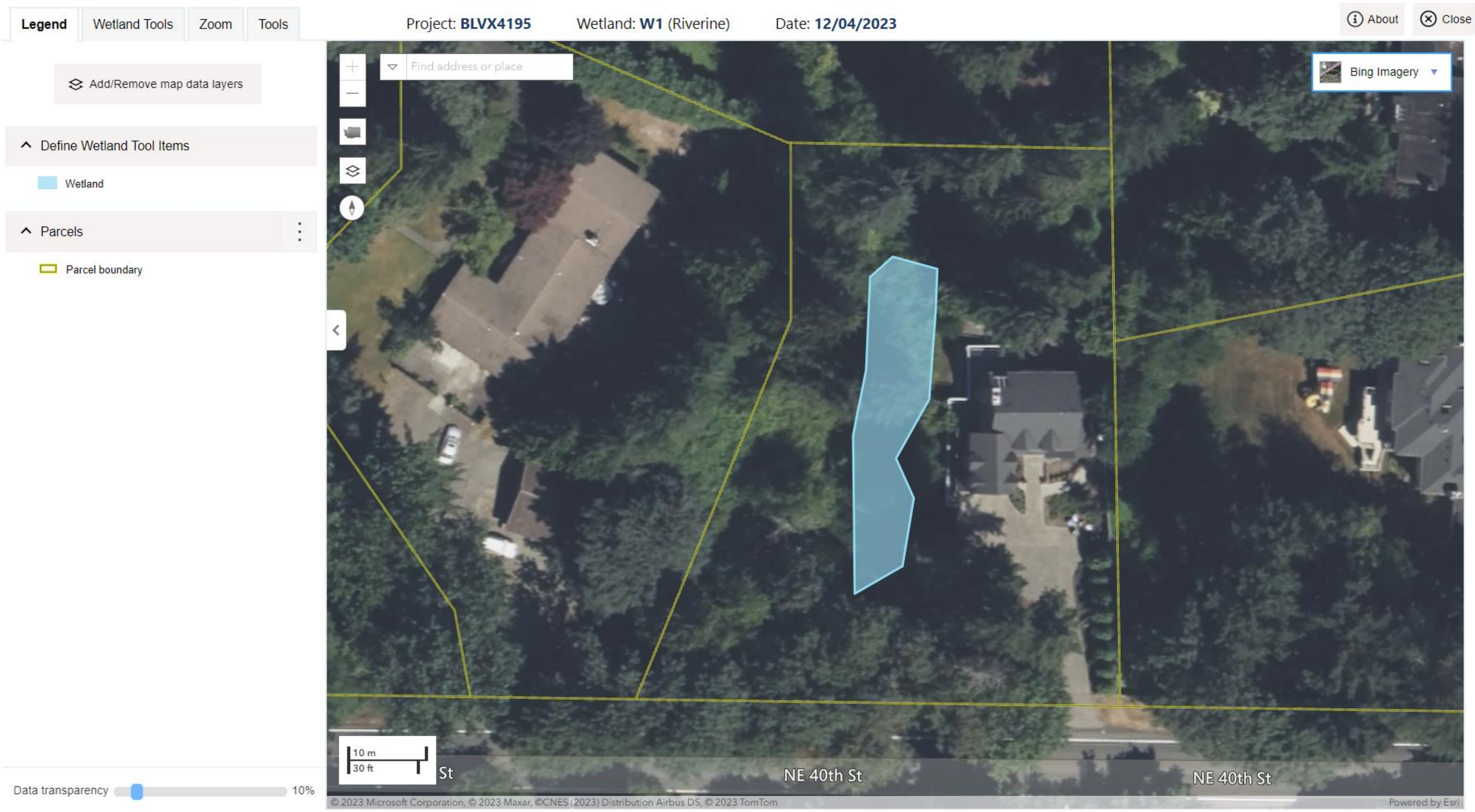

Figure 1: Detail of wetland size and location for wetland W1 (Bing Imagery 2023). The wetland unit is shown in blue. Parcels are shown as the hollow yellow-green polygons. This map was generated by David Evans and Associates (DEA) staff using the Washington State Department of Ecology's (Ecology's) Washington Tool for Online Rating (WATOR) via Secure Access Washington (SAW) on December 4, 2023 (Ecology 2023).

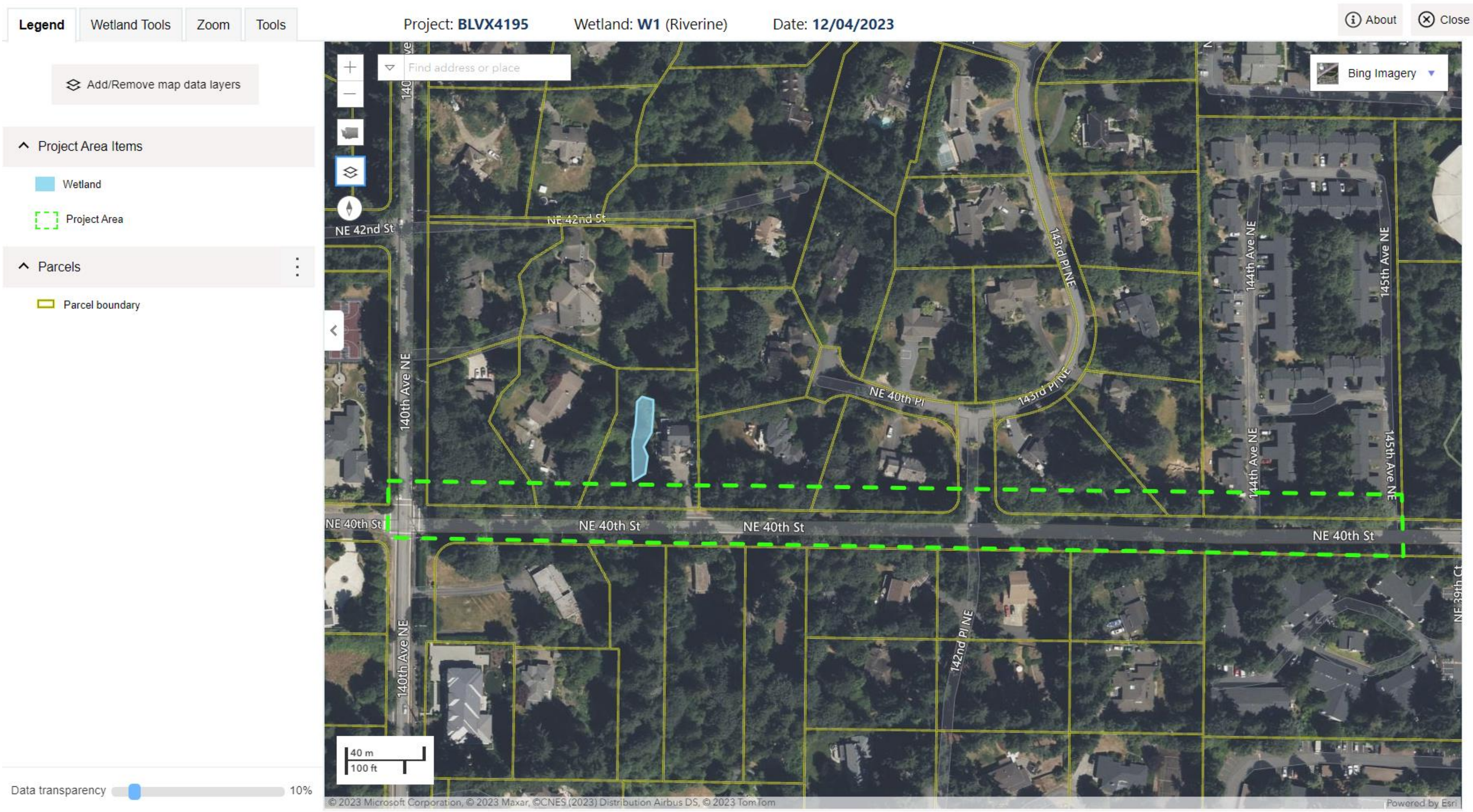

Figure 2: Detail of the location of wetland W1 in relation to the project area (Bing Imagery 2023). The wetland unit is shown in blue. The project area is shown as the dashed green line. Parcels are shown as the hollow yellow-green polygons. This map was generated by DEA staff using Ecology's WATOR via SAW on December 4, 2023 (Ecology 2023).

Figure 3: Detail of Cowardin classes for wetland W1 (Bing Imagery 2023). The wetland unit is shown in blue. Cowardin classes within wetland W1 consist of PSS (light green polygon) and PEM (purple polygon). Parcels are shown as the hollow yellow-green polygons. This map was generated by DEA staff using Ecology's WATOR via SAW on December 4, 2023 (Ecology 2023).

Figure 4: Detail of hydroperiods for wetland W1 (Bing Imagery 2023). The wetland unit is shown as the light blue outline. Hydroperiods within wetland W1 consist of permanent stream (light teal polygon), seasonally flooded (red polygon), and saturated only (blue polygon). Parcels are shown as the hollow yellow-green polygons. This map was generated by DEA staff using Ecology's WATOR via SAW on December 4, 2023 (Ecology 2023).

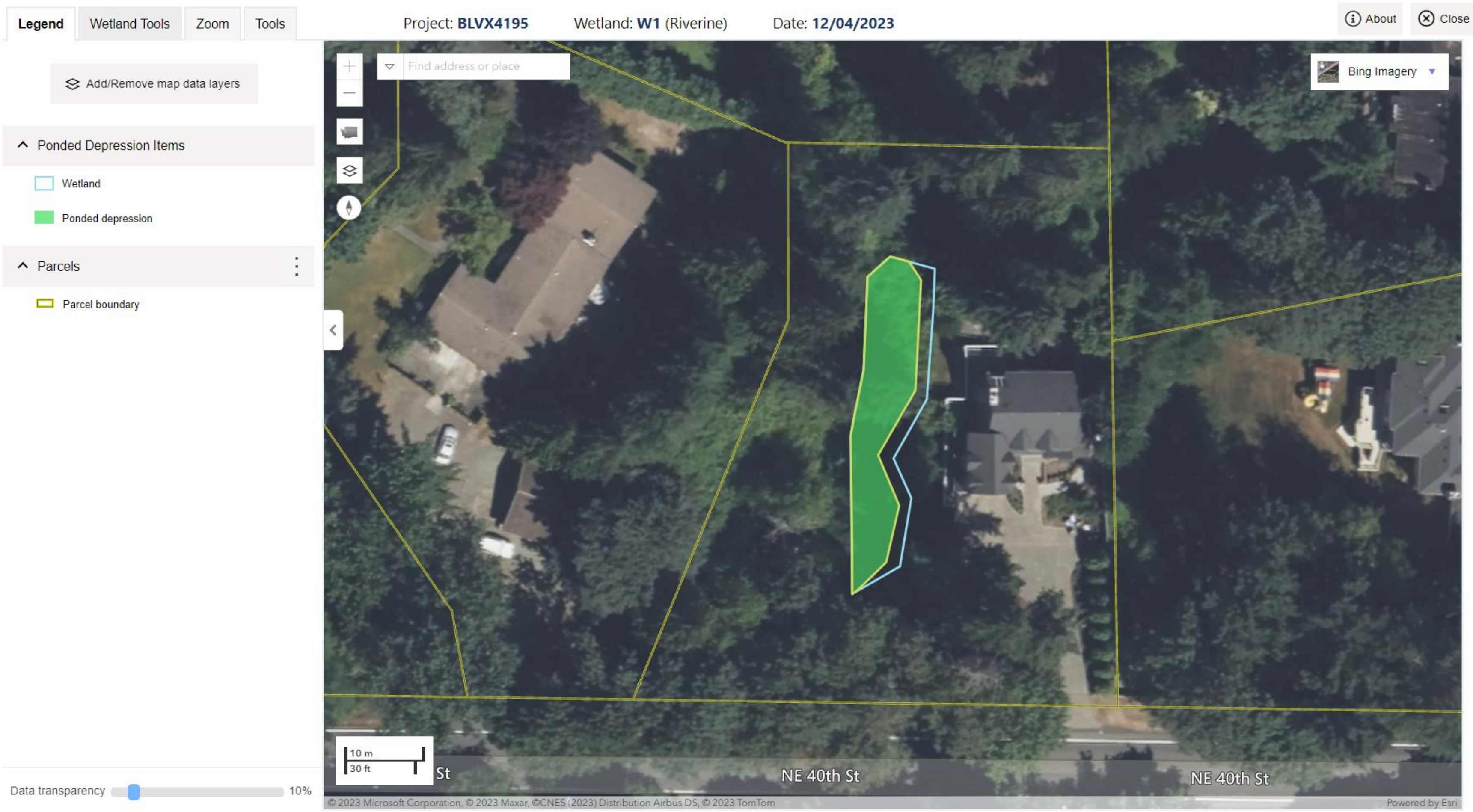

Figure 5: Detail of ponded depressions in wetland W1 (Bing Imagery 2023). The wetland unit is shown in blue. Ponded depressions within wetland W1 are shown as the green polygons. Parcels are shown as the hollow yellow-green polygons. This map was generated by DEA staff using Ecology's WATOR via SAW on December 4, 2023 (Ecology 2023).

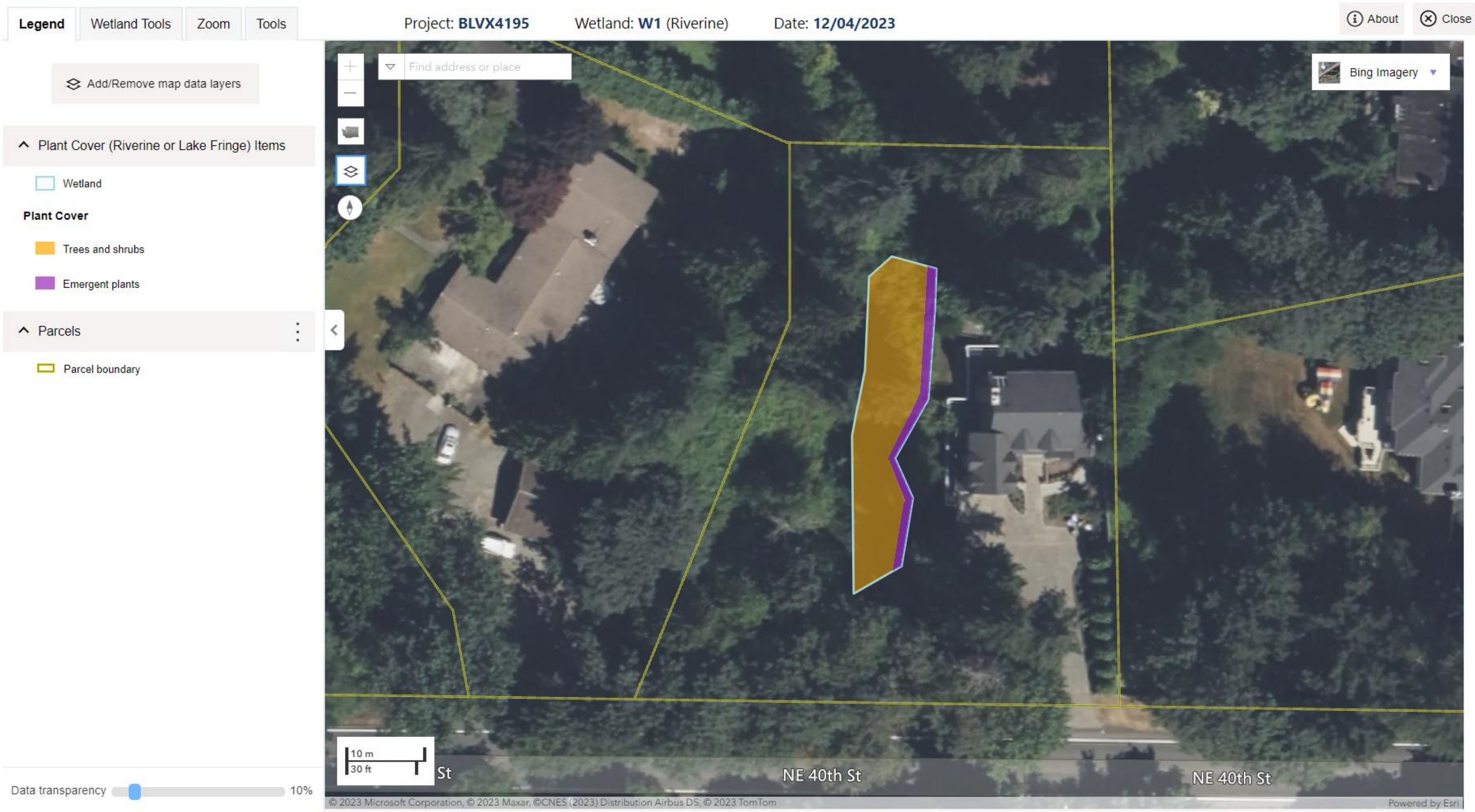

Figure 6: Detail of plant cover within wetland W1 (Bing Imagery 2023). The wetland unit is shown in blue. Trees and shrubs within wetland W1 are shown as the orange polygon. Emergent vegetation within wetland W1 is shown as the purple polygon. The wetland unit is shown as the hollow blue polygon. Parcels are shown as the hollow yellow-green polygons. This map was generated by DEA staff using Ecology's WATOR via SAW on December 4, 2023 (Ecology 2023).

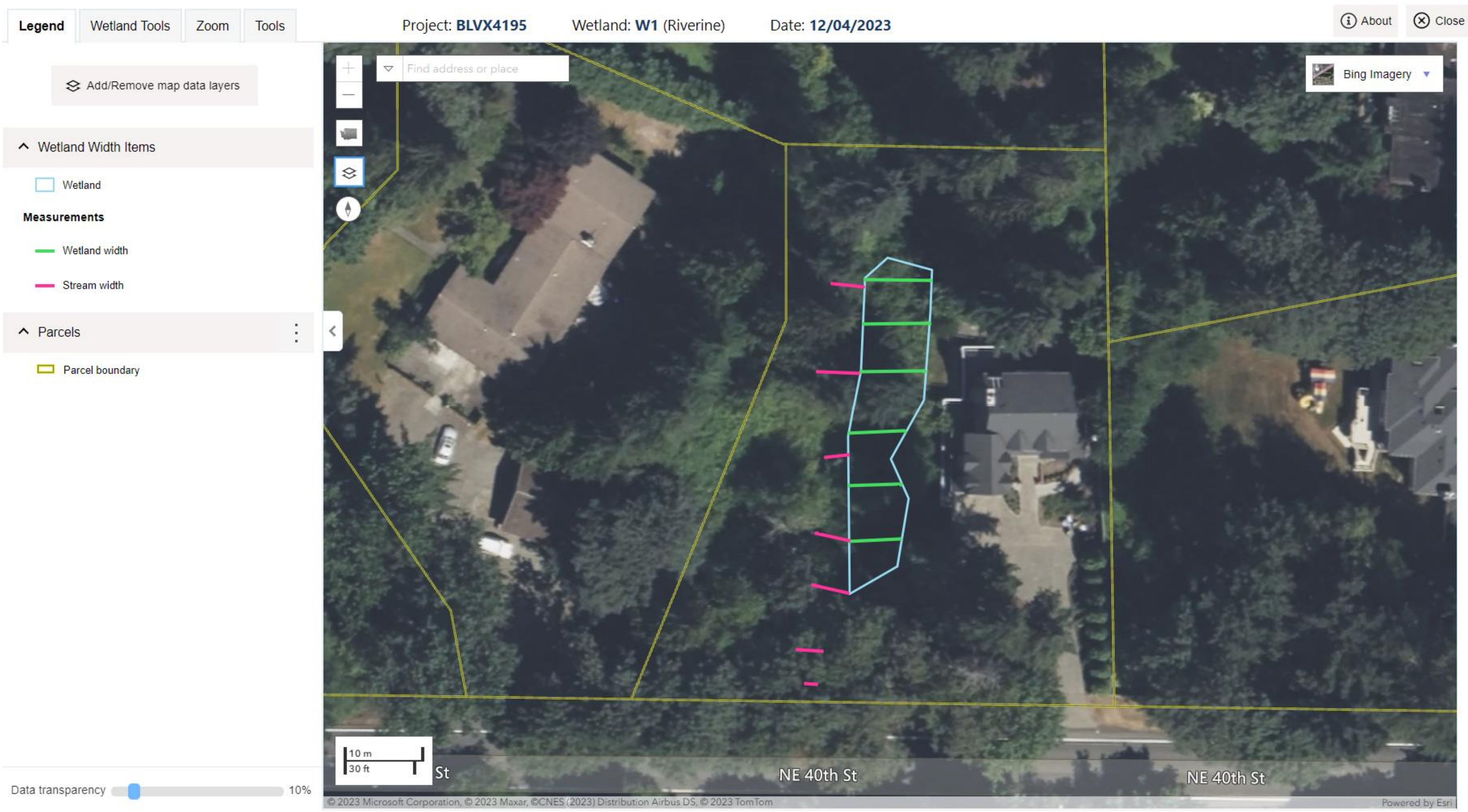

Figure 7: Width of wetland W1 vs. width of stream (Bing Imagery 2023). The wetland unit is shown in blue. The width of wetland W1 is approximately 1:<5 ratio to the width of the adjacent Valley Creek. This map was generated by DEA staff using Ecology's WATOR via SAW on December 4, 2023 (Ecology 2023).

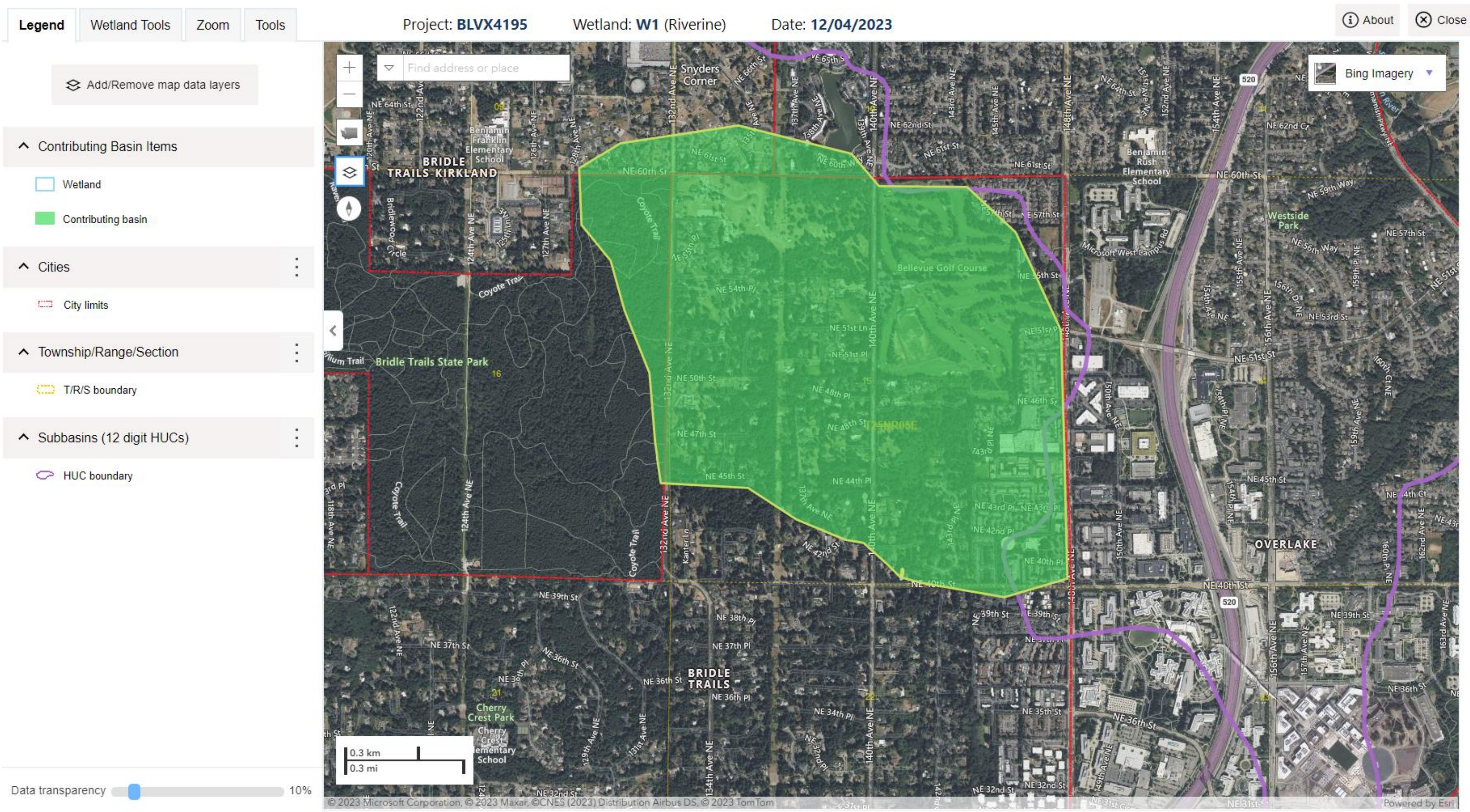

Figure 8: Contributing basin for wetland W1, estimated using an understanding of surrounding geography, mapped contour data, and City of Bellevue (City) stormwater drainage GIS data (Bing Imagery 2023; USGS 2023; City of Bellevue 2022). The wetland unit is shown in blue. The drainage basin is approximately 1.5 square miles, and spans northwest beyond city limits (shown as the dashed red lines). Subbasin boundaries are shown as purple lines. Section, township, and range are shown as the dashed yellow lines. This map was generated by DEA staff using Ecology's WATOR via SAW on December 4, 2023 (Ecology 2023).

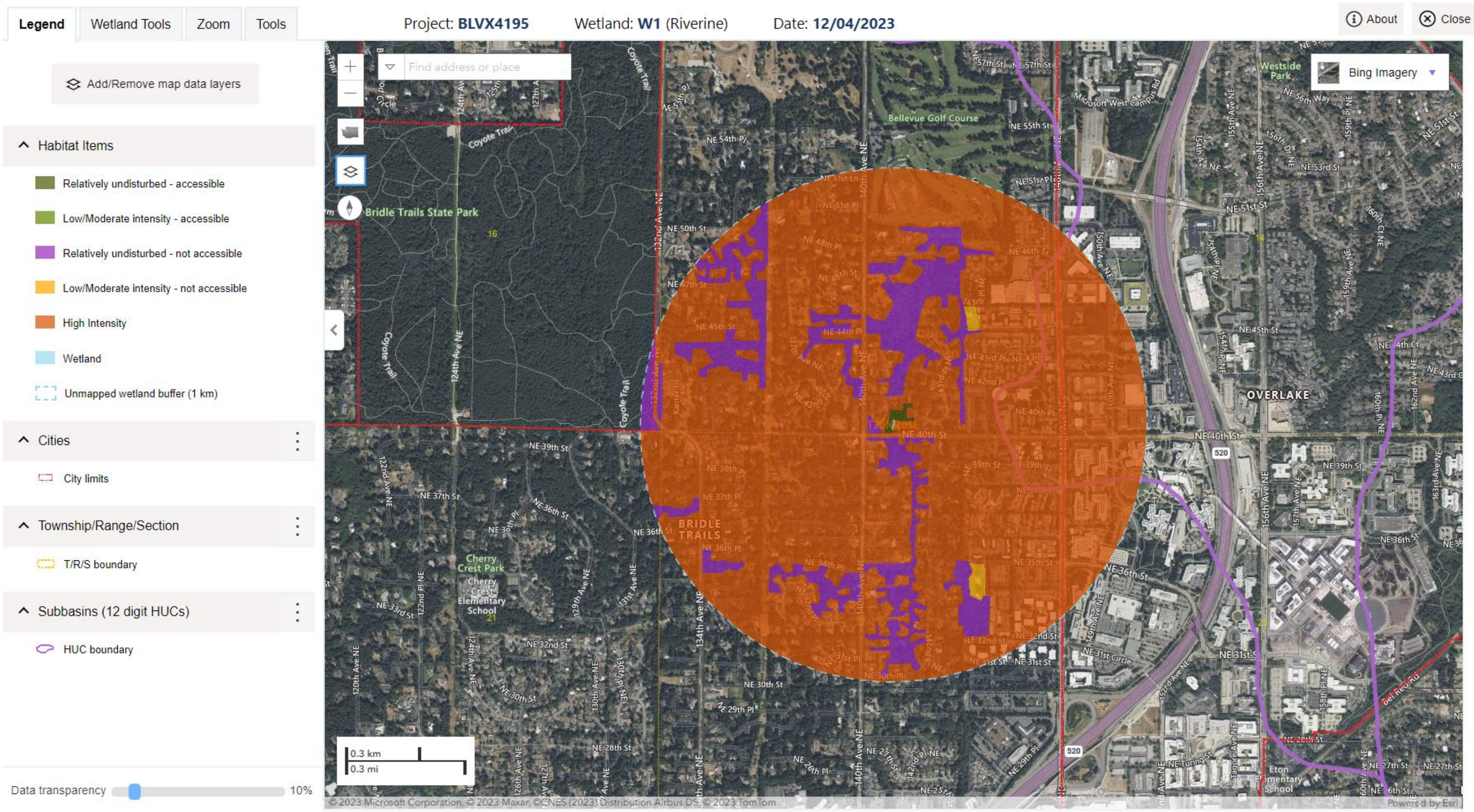

Figure 9: Detail of accessible habitat and land use intensity for 1-kilometer area surrounding wetland W1 (Bing Imagery 2023). The dashed, hollow, light blue polygon dictates the 1-kilometer boundary surrounding wetland W1. The wetland unit is shown in blue. Areas within the 1-kilometer boundary surrounding wetland W1 consist of mostly highly impacted land use (orange polygons), with areas of accessible relatively undisturbed habitat (green polygon) and inaccessible relatively undisturbed habitat (purple polygons). City limits are shown as dashed red lines. Subbasin boundaries are shown as purple lines. Section, township, and range are shown as the dashed yellow lines. This map was generated by DEA staff using Ecology's WATOR via SAW on December 4, 2023 (Ecology 2023).

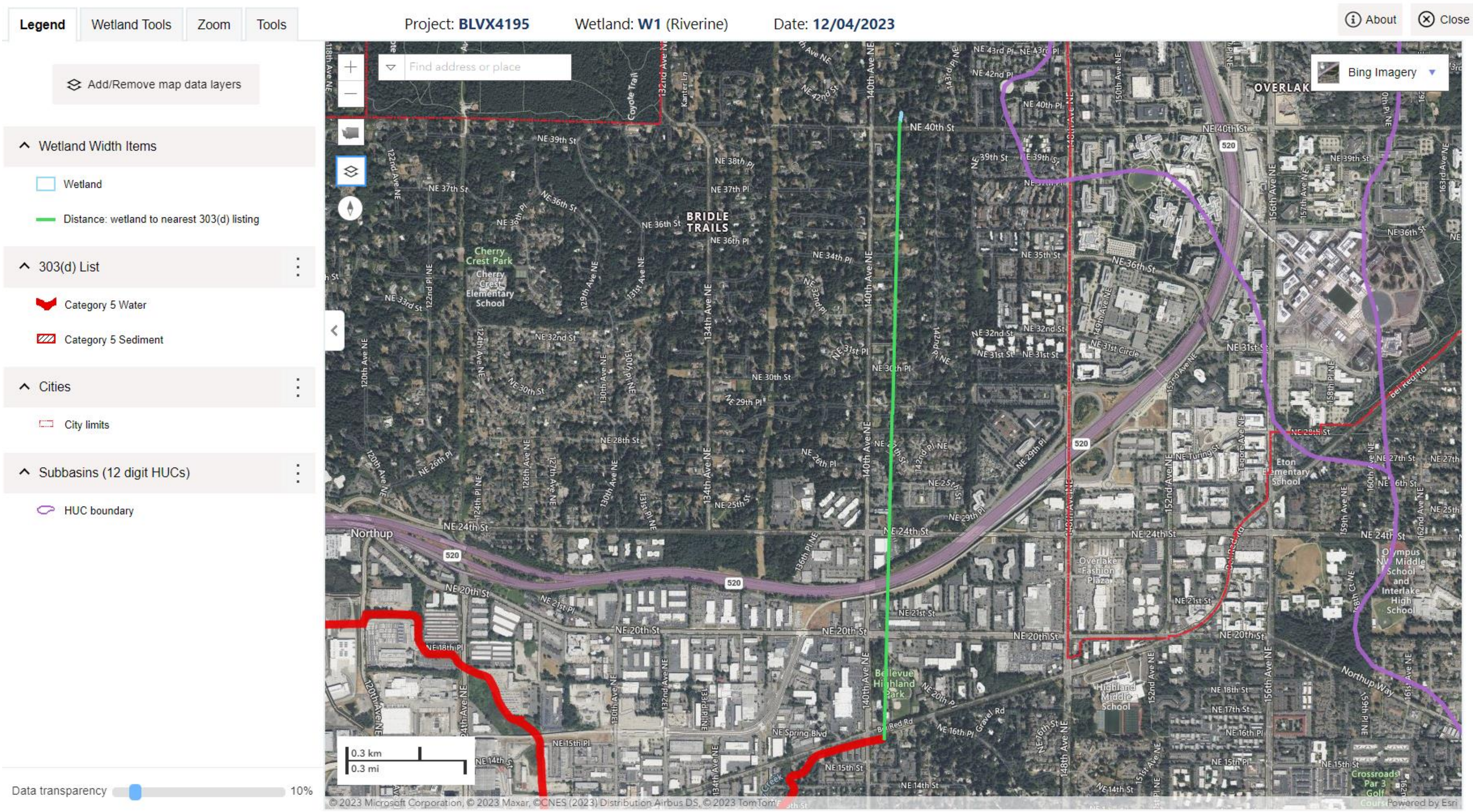

Figure 10: Detail of surrounding 303d listings for wetland W1 (Bing Imagery 2023). The wetland unit is shown in blue. The nearest 303d listed water downstream of wetland W1 was a section of Kelsey Creek, measured an approximate 1.52 linear miles away from the southern-most tip of the wetland. City limits are shown as dashed red lines. Subbasin boundaries are shown as purple lines. This map was generated by DEA staff using Ecology's WATOR via SAW on December 4, 2023 (Ecology 2023).

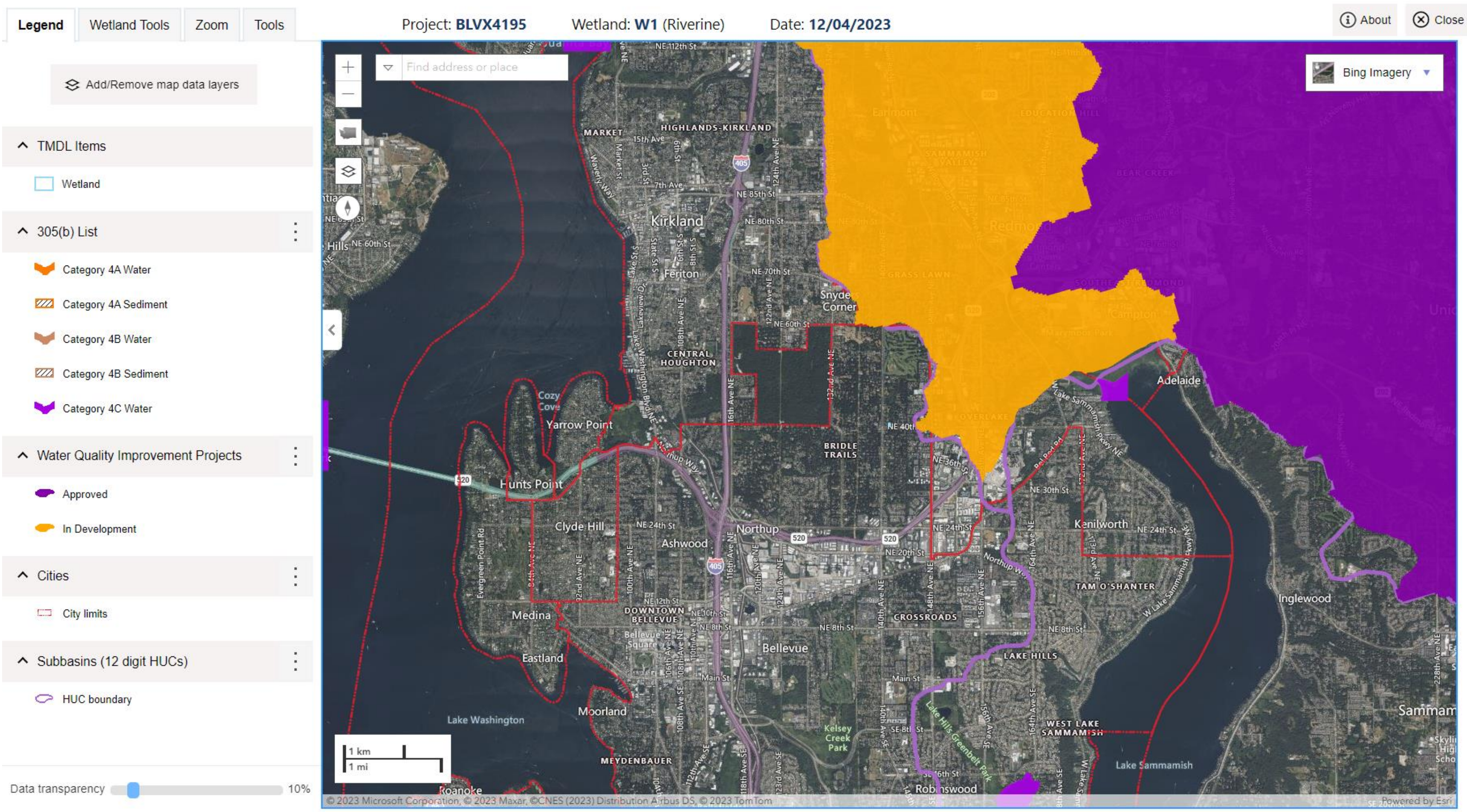

Figure 11: Detail of surrounding water quality projects and TMDLs for wetland W1 (Bing Imagery 2023). The wetland unit is shown in blue. There are no TMDLs located within the same subbasin downgradient of the wetland. Subbasin boundaries are shown as purple lines. This map was generated by DEA staff using Ecology's WATOR via SAW on December 4, 2023 (Ecology 2023).

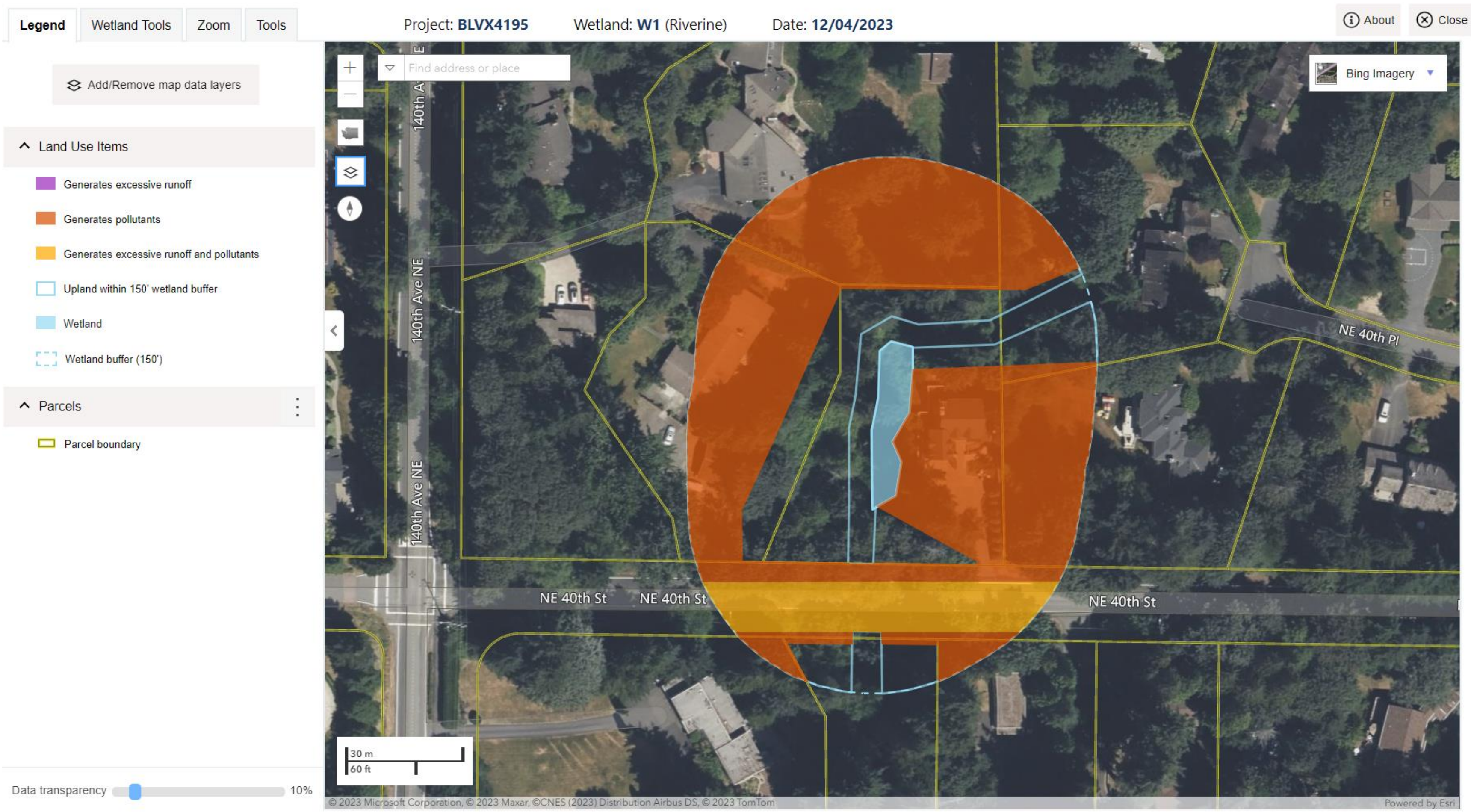

Figure 12: Detail of habitat impacts for a 150-feet buffer surrounding wetland W1 (Bing Imagery 2023). The wetland unit is shown in blue. The dashed, hollow, light blue polygon dictates the 150-feet buffer surrounding wetland W1. Impacts within the upland area of the 150-feet buffer consists of pollutant generating (shown as orange polygons) as well as excessive runoff and pollutant generating (shown as yellow polygons). Non-upland areas are shown as the hollow area west and north adjacent to wetland W1. The remaining area within the polygon separated by the solid blue lines shows non-pollutant and/or runoff generating upland areas. This map was generated by DEA staff using Ecology's WATOR via SAW on December 4, 2023 (Ecology 2023).

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APPENDIX D

Study Area Photographs

Photo 1. Standing on north edge of NE 40th Street at private driveway of parcel number (PN) 1525059253 looking east. Image captured November 16, 2023, by DEA staff.

Photo 2. Standing in channel of Valley Creek on PN 1525059253 looking south at culvert. Image captured November 16, 2023, by DEA staff.

Photo 3. Standing in channel of Valley Creek on PN 1525059253 looking southeast at left streambank of culvert. Image captured November 16, 2023, by DEA staff.

Photo 4. Standing in channel of Valley Creek on PN 1525059253 looking southwest at right streambank of culvert. Image captured November 16, 2023, by DEA staff.

Photo 5. Standing in channel of Valley Creek on PN 1525059253 at culvert looking north at upstream of Valley Creek. Image captured November 16, 2023, by DEA staff.

Photo 6. Standing in channel of Valley Creek on PN 1525059253 at culvert looking northwest at right streambank of Valley Creek. Image captured November 16, 2023, by DEA staff.

Photo 7. Standing in channel of Valley Creek on PN 1525059253 at culvert looking northeast at left streambank of Valley Creek. Image captured November 16, 2023, by DEA staff.

Photo 8. Standing in channel of Valley Creek on PN 1525059253 at culvert looking at stream channel bed material. Image captured November 16, 2023, by DEA staff.

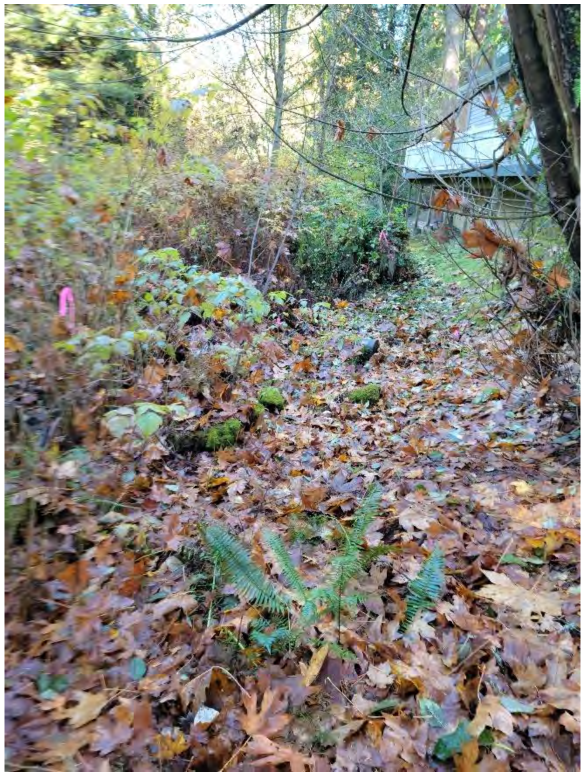

Photo 9. Standing south of Wetland W1 looking north at Wetland W1.
Image captured November 16, 2023, by DEA staff.

Photo 10. Standing in Wetland W1 looking south.
Image captured November 16, 2023, by DEA staff.

Photo 11. Looking west at culvert outlet receiving flow west to east from under NE 40th Street/140th Avenue NE intersection and into ditch at location of Wall 1.
Image captured November 16, 2023, by DEA staff.

Photo 12. Location of Wall 1, standing at intersection of NE 40th street and 140th Avenue NE, looking east at ditch line. Image captured January 24, 2024, by DEA staff.

Photo 13. Looking east at culvert inlet carrying flow west to east from ditch to under private driveway of PN 1525059036 location of Wall 1.
Image captured November 16, 2023, by DEA staff.

Photo 14. Location of Wall 1, standing at private driveway of PN 1525059036, looking west at ditch line. Image captured January 24, 2024, by DEA staff.

Photo 15. Ditch line at location of Wall 1 looking at DP-1.
Image captured November 16, 2023, by DEA staff.

Photo 16. Location of Wall 2, standing on private driveway of PN 1525059036, looking east at backside of NE 40th Street fence toward Valley Creek.
Image captured January 27, 2024, by DEA staff

Photo 17. Location of Wall 2, standing on private driveway of PN 1525059036, looking east at frontside of NE 40th Street fence. Image captured January 27, 2024, by DEA staff.

Photo 18. Location of Wall 2, standing at PN 1525059259 above culvert, looking east at frontside of NE 40th Street fence. Image captured January 27, 2024, by DEA staff. .

Photo 19. Location of Wall 2, standing at PN 1525059259, looking east at marked utilities and frontside of NE 40th Street fence. Image captured November 16, 2023, by DEA staff.

Photo 20. Location of Wall 2, standing at PN 1525059259 above culvert, looking west at frontside of NE 40th Street fence. Image captured January 27, 2024, by DEA staff.

Photo 21. Location of Wall 2, standing on private drive of PN 1525059259, looking west at ditch line and backside of NE 40th Street fence. Image captured January 27, 2024, by DEA staff.

Photo 22. Location of Wall 2, standing on private drive of PN 1525059259, looking southwest at ditch line and backside of NE 40th Street fence toward Valley Creek.
Image captured November 16, 2023, by DEA staff.

Photo 23. Location of Wall 2, standing on PN 1525059259, looking southeast at ditch line which flows into Valley Creek from the left streambank.
Image captured November 16, 2023, by DEA staff.

Photo 24. Location of Wall 3, standing at intersection of NE 40th street and 142nd Place NE, looking west at marked utilities and closed conveyance storm utility along north edge of NE 40th Street. Image captured January 27, 2024, by DEA staff.

Photo 25. Location of Wall 3, standing at intersection of NE 40th street and 142nd Place NE on PN 6137500330, looking west marked utilities and at closed conveyance storm utility along north edge of NE 40th Street. Image captured January 27, 2024, by DEA staff.

Photo 26. Location of Wall 3, standing at PN 6137500330, looking east at marked utility and closed conveyance storm utilities along north edge of NE 40th Street.
Image captured January 27, 2024, by DEA staff.

Photo 27. Location of Wall 4, standing at intersection of NE 40th street and 142nd Place NE at PN 6137500010, looking east at ditch line and frontside of fence line along north edge of NE 40th Street. Image captured January 27, 2024, by DEA staff.

Photo 28. Location of Wall 4, standing on PN 6137500010, looking east at backside of fence line along north edge of NE 40th Street. Image captured January 27, 2024, by DEA staff.

Photo 29. Location of Wall 4, standing on PN 6137500010 toward intersection of NE 40th street and 142nd Place NE, looking west at frontside of fence line along north edge of NE 40th Street. Image captured January 27, 2024, by DEA staff.

Photo 30. Location of Wall 4, standing on PN 6137500010, looking west at backside of fence line along north edge of NE 40th Street. Image captured January 27, 2024, by DEA staff.

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APPENDIX E

USFWS and NMFS Species Lists

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
Phone: (360) 753-9440 Fax: (360) 753-9405

In Reply Refer To: January 29, 2024
Project Code: 2024-0042205
Project Name: BLVX4195 - NE 40th Street

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

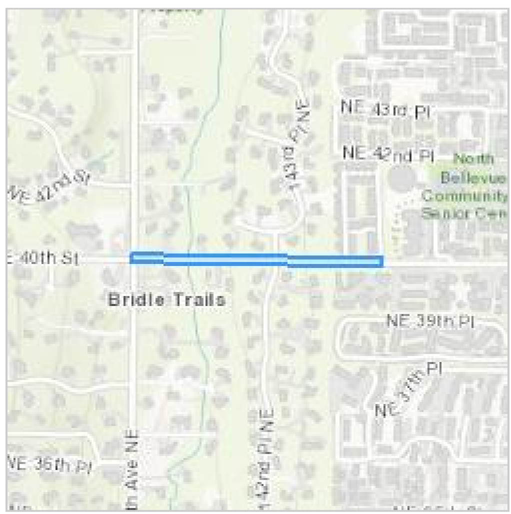
Washington Fish And Wildlife Office
510 Desmond Drive Se, Suite 102
Lacey, WA 98503-1263
(360) 753-9440

PROJECT SUMMARY

Project Code: 2024-0042205
Project Name: BLVX4195 - NE 40th Street
Project Type: Road/Hwy - Maintenance/Modification
Project Description: The City of Bellevue is completing a design to construct a sidewalk with planter strip along the north side of NE 40th Street from 140th Avenue NE to 14500 Block NE. The project includes installing curb, gutter, sidewalk, landscaping, irrigation, bike lanes, retaining walls, storm drainage improvements, ADA compliant ramps, crosswalk, and grind and overlay. David Evans and Associates (Consultant) will support the City's design activities with environmental services, geotechnical services, retaining wall analysis/ design services, and landscaping and irrigation design services.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@47.64603765,-122.15021255478895,14z



Counties: King County, Washington

ENDANGERED SPECIES ACT SPECIES

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Threatened

BIRDS

NAME	STATUS
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

REPTILES

NAME	STATUS
Northwestern Pond Turtle *Actinemys marmorata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

FISHES

NAME	STATUS
Bull Trout *Salvelinus confluentus* Population: U.S.A., coterminous, lower 48 states There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8212	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

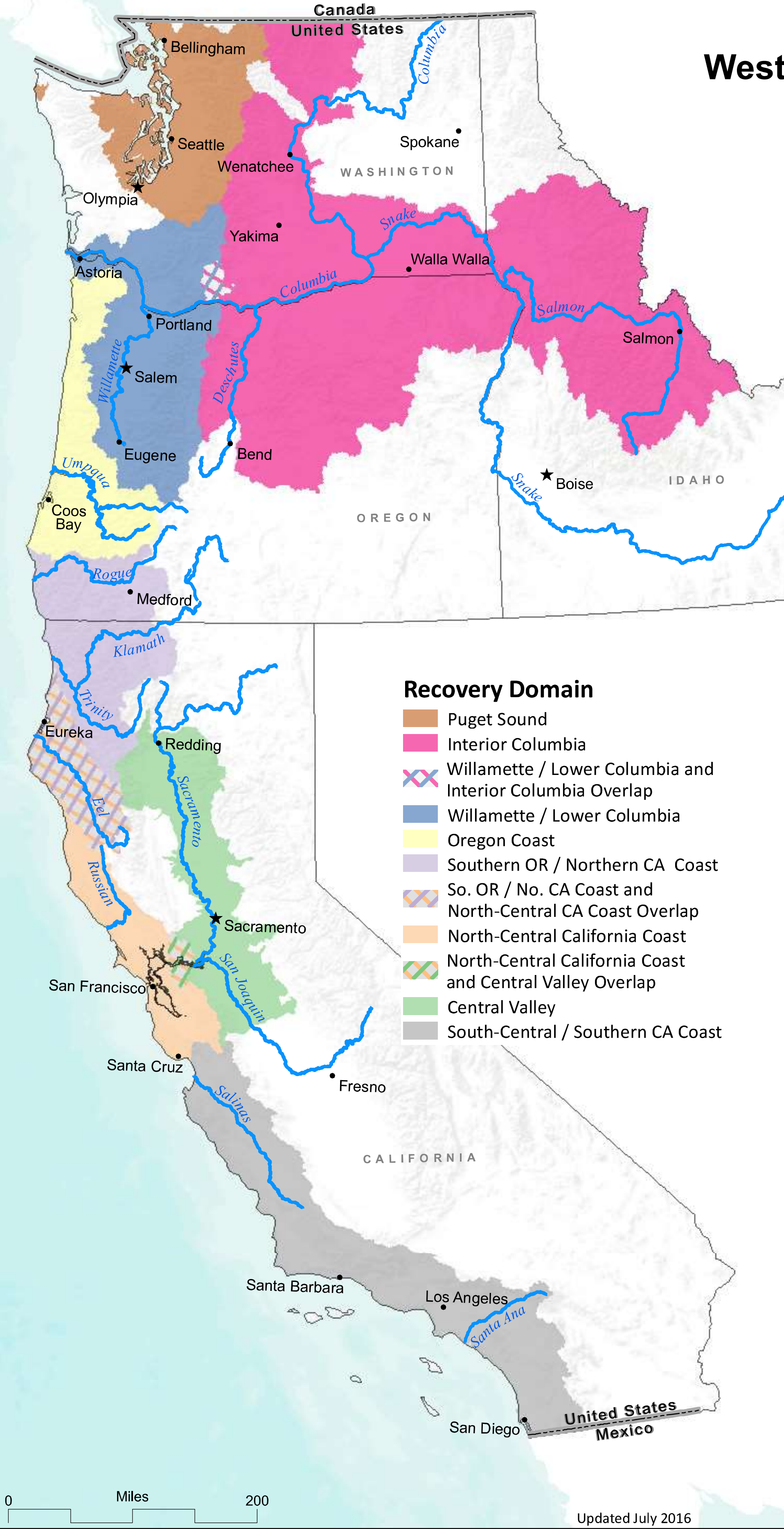
THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: MaKenna Lindberg
Address: 14432 SE Eastgate Way Suite #400
City: Bellevue
State: WA
Zip: 98007
Email makenna.lindberg@deainc.com
Phone: 4255869798

Status of ESA Listings
&
Critical Habitat Designations
for
West Coast Salmon & Steelhead



Evolutionarily Significant Unit / Distinct Population Segment	ESA Status	Date of ESA Listing	Date of CH Designation
Puget Sound Recovery Domain			
Hood Canal Summer-run Chum Salmon	T	3/25/1999	9/2/2005
Ozette Lake Sockeye Salmon	T	3/25/1999	9/2/2005
Puget Sound Chinook Salmon	T	3/24/1999	9/2/2005
Puget Sound Steelhead	T	5/11/2007	2/24/2016
Interior Columbia Recovery Domain			
Middle Columbia River Steelhead	T	3/25/1999 1/5/2006	9/2/2005
Snake River Fall-run Chinook Salmon	T	4/22/1992	12/28/1993
Snake River Spring / Summer-run Chinook Salmon	T	4/22/1992	10/25/1999
Sockeye Salmon	E	11/20/1991	12/28/1993
Snake River Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Upper Columbia River Spring-run Chinook Salmon	E	3/24/1999	9/2/2005
Upper Columbia River Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Willamette / Lower Columbia Recovery Domain			
Columbia River Chum Salmon	T	3/25/1999	9/2/2005
Lower Columbia River Chinook Salmon	T	3/24/1999	9/2/2005
Lower Columbia River Coho Salmon	T	6/28/2005	2/24/2016
Lower Columbia River Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Upper Willamette River Chinook Salmon	T	3/24/1999	9/2/2005
Upper Willamette River Steelhead	T	3/25/1999 1/5/2006	9/2/2005
Oregon Coast Recovery Domain			
Oregon Coast Coho Salmon	T	2/11/2008	2/11/2008
Southern Oregon / Northern California Coast Recovery Domain			
Southern OR / Northern CA Coasts Coho Salmon	T	5/6/1997	5/5/1999
North-Central California Coast Recovery Domain			
California Coastal Chinook Salmon	T	9/16/1999	9/2/2005
Central California Coast Coho Salmon	E	10/31/1996 (T) 6/28/2005 (E) 4/2/2012 (RE)	5/5/1999
Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Northern California Steelhead	T	6/7/2000 1/5/2006	9/2/2005
Central Valley Recovery Domain			
California Central Valley Steelhead	T	3/19/1998 1/5/2006	9/2/2005
Central Valley Spring-run Chinook Salmon	T	9/16/1999	9/2/2005
Sacramento River Winter-run Chinook Salmon	E	11/5/1990 (T) 1/4/1994 (E)	6/16/1993
South-Central / Southern California Coast Recovery Domain			
South-Central California Coast Steelhead	T	8/18/1997 1/5/2006	9/2/2005
Southern California Steelhead	E	8/18/1997 5/1/2002 (RE) 1/5/2006	9/2/2005

ESA = Endangered Species Act, CH = Critical Habitat, RE = Range Extension
E = Endangered, T = Threatened,

Updated July 2016

Critical Habitat Rules Cited

- 2/24/2016 (81 FR 9252) Final Critical Habitat Designation for Puget Sound Steelhead and Lower Columbia River Coho Salmon
- 2/11/2008 (73 FR 7816) Final Critical Habitat Designation for Oregon Coast Coho Salmon
- 9/2/2005 (70 FR 52630) Final Critical Habitat Designation for 12 ESU's of Salmon and Steelhead in WA, OR, and ID
- 9/2/2005 (70 FR 52488) Final Critical Habitat Designation for 7 ESU's of Salmon and Steelhead in CA
- 10/25/1999 (64 FR 57399) Revised Critical Habitat Designation for Snake River Spring/Summer-run Chinook Salmon
- 5/5/1999 (64 FR 24049) Final Critical Habitat Designation for Central CA Coast and Southern OR/Northern CA Coast Coho Salmon
- 12/28/1993 (58 FR 68543) Final Critical Habitat Designation for Snake River Chinook and Sockeye Salmon
- 6/16/1993 (58 FR 33212) Final Critical Habitat Designation for Sacramento River Winter-run Chinook Salmon

ESA Listing Rules Cited

- 4/2/2012 (77 FR 19552) Final Range Extension for Endangered Central California Coast Coho Salmon
- 2/11/2008 (73 FR 7816) Final ESA Listing for Oregon Coast Coho Salmon
- 5/11/2007 (72 FR 26722) Final ESA Listing for Puget Sound Steelhead
- 1/5/2006 (71 FR 5248) Final Listing Determinations for 10 Distinct Population Segments of West Coast Steelhead
- 6/28/2005 (70 FR 37160) Final ESA Listing for 16 ESU's of West Coast Salmon
- 5/1/2002 (67 FR 21586) Range Extension for Endangered Steelhead in Southern California
- 6/7/2000 (65 FR 36074) Final ESA Listing for Northern California Steelhead
- 9/16/1999 (64 FR 50394) Final ESA Listing for Two Chinook Salmon ESUs in California
- 3/25/1999 (64 FR 14508) Final ESA Listing for Hood River Canal Summer-run and Columbia River Chum Salmon
- 3/25/1999 (64 FR 14517) Final ESA Listing for Middle Columbia River and Upper Willamette River Steelhead
- 3/25/1999 (64 FR 14528) Final ESA Listing for Ozette Lake Sockeye Salmon
- 3/24/1999 (64 FR 14308) Final ESA Listing for 4 ESU's of Chinook Salmon
- 3/19/1998 (63 FR 13347) Final ESA Listing for Lower Columbia River and Central Valley Steelhead
- 8/18/1997 (62 FR 43937) Final ESA Listing for 5 ESU's of Steelhead
- 5/6/1997 (62 FR 24588) Final ESA Listing for Southern Oregon / Northern California Coast Coho Salmon
- 10/31/1996 (61 FR 56138) Final ESA Listing for Central California Coast Coho Salmon
- 1/4/1994 (59 FR 222) Final ESA Listing for Sacramento River Winter-run Chinook Salmon
- 4/22/1992 (57 FR 14653) Final ESA Listing for Snake River Spring/summer-run and Snake River Fall Chinook Salmon
- 11/20/1991 (56 FR 58619) Final ESA Listing for Snake River Sockeye Salmon
- 11/5/1990 (55 FR 46515) Final ESA Listing for Sacramento River Winter-run Chinook Salmon

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APPENDIX F

City of Bellevue Land Use Code Compliance

<u>20.25H.055 Uses and development allowed within critical areas – Performance standards.</u>

Per 20.25H.055.C.2, new or expanded facilities and systems are allowed within the critical area or critical area buffer only where no technically feasible alternative with less impact on the critical area or critical area buffer exists. A determination of technically feasible alternatives must consider several factors, including location of existing infrastructure, function and objective of the new or expanded facility or system, and a demonstration that another location outside of the critical areas overlay district cannot achieve the same function or objective. The project must also minimize disturbance and not have a significant adverse impact on overall aquatic area flows. All areas of new or temporary disturbance will be mitigated and/or restored pursuant to a mitigation and restoration plan prepared according to LUC 20.25H.210.

C.2.a. New or expanded facilities and systems are allowed within the critical area or critical area buffer only where no technically feasible alternative with less impact on the critical area or critical area buffer exists. A determination of technically feasible alternatives will consider:

i. The location of existing infrastructure;

The location of the project is necessary to meet the purpose of the project, which is to provide safe pedestrian movement along NE 40th Street.

ii. The function or objective of the proposed new or expanded facility or system;

The proposed project is intended to provide pedestrian system connectivity at the proposed location.

iii. Demonstration that no alternative location or configuration outside of the critical area or critical area buffer achieves the stated function or objective, including construction of new or expanded facilities or systems outside of the critical area;

The project has been located to avoid and minimize impacts to critical areas. Locating the sidewalk on the south side of NE 40th would have the same challenge of working with the buffer of Valley Creek and a documented steep slope. The mapped steep slope area is actually larger on the south side of the street.

iv. Whether the cost of avoiding disturbance is substantially disproportionate as compared to the environmental impact of proposed disturbance; and

Impacts to critical areas and their buffers is unavoidable at this location, therefore the cost of avoiding the impacts is not relevant.

v. The ability of both permanent and temporary disturbance to be mitigated.

Temporary and permanent impacts are able to be mitigated through a combination of onsite and offsite mitigation.

b. If the applicant demonstrates that no technically feasible alternative with less impact on the critical area or critical area buffer exists, then the applicant shall comply with the following:

i. Location and design shall result in the least impacts on the critical area or critical area buffer;

The project has been located and designed to minimize impacts to critical areas while still meeting ADA and other design requirements. For instance, retaining walls are proposed for the entire area where the critical area buffer is crossed. No direct impacts will occur to the stream or wetlands.

ii. Disturbance of the critical area and critical area buffer, including disturbance of vegetation and soils, shall be minimized;

Direct impacts to critical area buffer are limited to the minimum footprint necessary for the sidewalk and retaining wall construction. No planter strip is proposed. Use of the retaining greatly reduces potential impacts compared to a fill slope. Construction of the retaining wall will occur almost entirely from the road, minimizing potential temporary impacts to the buffer.

iii. Disturbance shall not occur in habitat used for salmonid rearing or spawning or by any species of local importance unless no other technically feasible location exists;

Project does not impact habitat used by salmonids or any species of local importance.

iv. Any crossing over of a wetland or stream shall be designed to minimize critical area and critical area buffer coverage and critical area and critical area buffer disturbance, for example by use of bridge, boring, or open cut and perpendicular crossings, and shall be the minimum width necessary to accommodate the intended function or objective; provided, that the Director may require that the facility be designed to accommodate additional facilities where the likelihood of additional facilities exists, and one consolidated corridor would result in fewer impacts to the critical area or critical area buffer than multiple intrusions into the critical area or critical area buffer;

The project does not propose to cross a stream or wetland. The existing culvert of Valley Creek will not be touched.

v. All work shall be consistent with applicable City of Bellevue codes and standards;

All work shall be consistent with City codes and standards.

vi. The facility or system shall not have a significant adverse impact on overall aquatic area flow peaks, duration or volume or flood storage capacity, or hydroperiod;

The project does not significantly affect aquatic flow, duration, volume or hydroperiod. No impacts will occur to the wetland or stream.

vii. Associated parking and other support functions, including, for example, mechanical equipment and maintenance sheds, must be located outside critical area or critical area buffer except where no feasible alternative exists; and

Project has no associated parking or other support facilities. Any temporary storage areas during construction will be located outside critical areas and within previously disturbed areas.

viii. Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC 20.25H.210.

Permanent and temporary impacts are being mitigated through a combination of onsite and offsite measures per City code.

LUC 20.25H.085.A states that mitigation plans for streams and stream critical area buffers shall provide mitigation for impacts to critical area functions and values in the following order of preference:

1. On-site, through replacement of lost critical area buffer;

Project is being entirely conducted within public right-of-way, and involves no purchase of private property, so no on-site replacement or enhancement of buffer is possible.

2. On-site, through enhancement of the functions and values of remaining critical area buffer;

Project is being entirely conducted within public right-of-way, and involves no purchase of private property, so no on-site replacement or enhancement of buffer is possible.

3. Off-site, through replacement or enhancement, in the same sub-drainage basin;

Project has no funds to purchase private property for mitigation. No City-owned Parks property is available in the same drainage basin. Mitigation will occur off-site in either a City of Bellevue specified mitigation location, or the Keller Farm mitigation bank in the City of Redmond.

4. Off-site, through replacement or enhancement, out of the sub-drainage basin but in the same drainage basin.

Project has no funds to purchase private property for mitigation. No City-owned Parks property is available in the same drainage basin. Mitigation will occur off-site in either a City of Bellevue specified mitigation location, or the Keller Farm mitigation bank in the City of Redmond.

5. Mitigation off-site and out of the drainage basin shall be permitted only through a critical areas report.

This critical areas report addresses the proposed mitigation for permanent buffer impacts either through purchase of mitigation bank credits (which would be off-site and out of the drainage basin) or through a City-specified site.

20.25H.100 Performance standards.

Development on sites with a wetland or wetland critical area buffer shall incorporate the following performance standards in design of the development, as applicable:

A. Lights shall be directed away from the wetland.

No lights are proposed as part of the project.

B. Activity that generates noise such as parking lots, generators, and residential uses shall be located away from the wetland, or any noise shall be minimized through use of design and insulation techniques.

Project is not creating noise generating activities.

C. Toxic runoff from new impervious area shall be routed away from the wetlands.

Project proposed a net increase in pollution-generating surface of approximately 4,000 square feet. This area will receive water quality treatment prior to discharge to downstream waters.

D. Treated water may be allowed to enter the wetland critical area buffer.

Acknowledged.

E. The outer edge of the wetland critical area buffer shall be planted with dense vegetation to limit pet or human use.

All remaining buffer areas are being planted per the approved mitigation plan. Human use of the buffer will also be discouraged by lack of access due to the retaining walls and railings. Private fences are present along almost the entire corridor except for driveways.

F. Use of pesticides, insecticides and fertilizers within 150 feet of the edge of the stream buffer shall be in accordance with the City of Bellevue's "Environmental Best Management Practices," now or as hereafter amended.

Acknowledged.

G. All applicable standards of Chapter 24.06 BCC, Storm and Surface Water Utility Code, are met.

Acknowledged.

LUC 20.25H.105.A.2. states that mitigation and monitoring plans for impacts to a wetland buffer shall be acted on by order of preference and in the following locations:

a. On-site, through replacement of lost critical area buffer;

Project is being entirely conducted within public right-of-way, and involves no purchase of private property, so no on-site replacement or enhancement of buffer is possible.

b. On-site, through enhancement of the functions and values of remaining critical area buffer;

Project is being entirely conducted within public right-of-way, and involves no purchase of private property, so no on-site replacement or enhancement of buffer is possible.

c. Off-site, through replacement or enhancement, in the same sub-drainage basin;

Project has no funds to purchase private property for mitigation. No City-owned property is available in the same drainage basin. Mitigation will occur off-site in either a City of Bellevue specified mitigation location, or the Keller Farm mitigation bank in the City of Redmond.

d. Off-site, through replacement or enhancement, out of the sub-drainage basin but in the same drainage basin.

Project has no funds to purchase private property for mitigation. No City-owned property is available in the same drainage basin. Mitigation will occur off-site in either a City of Bellevue specified mitigation location, or the Keller Farm mitigation bank in the City of Redmond.

Geologic Hazard Areas – Development Standards

Development in geologic hazard areas, critical areas, and their buffers and structure setbacks are regulated under LUC 20.25H.120 which defines geologic hazards as landslide hazards, steep slopes, coal mine hazards, and seismic hazards. Only steep slopes were identified within the project area. LUC 20.25H.120.B states geologic hazard buffers may be modified to exclude the footprint of any legally established structure prior to August 1, 2006. Modifications to the geologic hazard buffer and structure setbacks may be considered through submittal of a critical areas report.

Project compliance: Impacts to a mapped steep slope are unavoidable to build the proposed project. Stability concerns are addressed through installation of an engineered retaining wall.

LUC 20.25H.125 outlines the additional performance standards required for landslide areas and steep slopes: "The requirement for long-term slope stability shall include designs that require regular and periodic maintenance to maintain their level of function."

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

Project compliance: The proposed retaining wall has been engineered to maintain slope stability.

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

Project compliance: The proposed impacts are the minimum necessary to install the retaining wall and maintain slope stability.

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

Project compliance: Neighboring properties will not require increased critical area buffers, as the property is already encumbered by a steep slope. The proposed project will not impact neighboring properties.

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

Project compliance: The project is proposing use of a retaining wall in lieu of fill slopes.

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

Project compliance: Minimum impervious surfaces are proposed within the setback buffer and still meet project goal of providing a sidewalk that meet's City standards.

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

Project compliance: No grading for buildings or yard areas is proposed.

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

Project compliance: No buildings are proposed. Freestanding retaining wall minimizes impacts.

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

Project compliance: Proposed retaining wall type is soldier pile wall, which minimizes ROW and property impacts, and allows the project to be future compatible with any potential future fish-passable structure on Valley Creek.

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

Project compliance: This performance standard does not apply because no parking or garages are proposed.

J. Areas of new permanent disturbance and all areas of temporary disturbance shall be mitigated and/or restored pursuant to a mitigation and restoration plan meeting the requirements of LUC 20.25H.210.

Project compliance: Permanent buffer impacts could be offset through either a City of Bellevue specified mitigation location, or through purchase of wetland mitigation bank credits from the Keller Farm Mitigation Bank, in the City of Redmond.

LUC 20.25H.135 outlines additional requirements for mitigation or restoration plans within geologic hazard critical areas:

A. Erosion and Sediment Control Plan: The erosion and sediment control plan shall be prepared in compliance with requirements set forth in Chapter 23.76 BCC, now or as hereafter amended. Such plans shall also include, if not otherwise addressed in Chapter 23.76 BCC, the location and methods of drainage, surface water management, locations and methods of erosion control, a vegetation management and/or replanting plan, and/or other means for maintaining long-term soil stability;

Project compliance: Erosion and sediment control measures will be outlined in the final design plans in accordance with Bellevue City Code (BCC) Chapter 23.76 (Clearing and Grading Code).

LUC 20.25H.140 provides additional provisions to the critical areas report for steep slopes:

A. Limitation on Modification: The provisions for coal mine hazard areas in LUC 20.25H.130 may not be modified through a critical areas report.

Project compliance: No coal mines are located on, or in the vicinity of, the project site. Thus, no modifications are proposed, and this provision does not apply.

B. Area Addressed in Critical Area Report: In addition to the general requirements of LUC 20.25H.230, the following areas shall be addressed in a critical areas report for geologically hazardous areas:

1. Site and Construction Plans. The report shall include a copy of the site plans for the proposal and a topographic survey;

Project compliance: Design plans are in the 60-percent deliverable phase at time of final CAR submittal. They are attached as **Appendix G**.

2. Assessment of Geological Characteristics. The report shall include an assessment of the geologic characteristics of the soils, sediments, and/or rock of the project area and potentially affected adjacent properties, and a review of the site history regarding landslides, erosion, and prior grading. Soils analysis shall be accomplished in accordance with accepted classification systems in use in the region;

Project compliance: A geotechnical report has been documented by HWA GeoSciences and is provided in this document as **Appendix H.**

3. Analysis of Proposal. The report shall contain a hazards analysis including a detailed description of the project, its relationship to the geologic hazard(s), and its potential impact upon the hazard area, the subject property, and affected adjacent properties; and

Project compliance: A geotechnical report has been documented by HWA GeoSciences and is provided in this document as **Appendix H**.

The proposed modifications must also comply with LUC 20.25H.145, which says that modifications to geologic hazard critical areas and critical area buffers are allowed if the Director determines that the project:

A. Will not increase the threat of the geological hazard to adjacent properties over conditions that would exist if the provisions of this part were not modified;

Project compliance: Potential slope stability concerns due to the project construction are offset by use of an engineered retaining wall. Details are provided in the geotechnical report in **Appendix H.**

B. Will not adversely impact other critical areas;

Project compliance: Impacts to the steep slope overlap impacts to wetland and stream buffers, which are discussed in detail in this CAR.

C. Is designed so that the hazard to the project is eliminated or mitigated to a level equal to or less than would exist if the provisions of this part were not modified;

Project compliance: The proposed design will not increase risk of hazards due to installation of an engineered retaining wall.

D. Is certified as safe as designed and under anticipated conditions by a qualified engineer or geologist, licensed in the state of Washington;

Project compliance: A geotechnical report has been documented by HWA GeoSciences and is provided in this document as **Appendix H.**

E. The applicant provides a geotechnical report prepared by a qualified professional demonstrating that modification of the critical area or critical area buffer will have no adverse impacts on stability of any adjacent slopes, and will not impact stability of any existing structures. Geotechnical reporting standards shall comply with requirements developed by the Director in City of Bellevue Submittal Requirements Sheet 25, Geotechnical Report and Stability Analysis Requirements, now or as hereafter amended;

Project compliance: A geotechnical report has been documented by HWA GeoSciences and is provided in this document as **Appendix H**.

F. The proposed modification to the critical area or critical area buffer with any associated mitigation does not significantly impact habitat associated with species of local importance, or such habitat that could reasonably be expected to exist during the anticipated life of the development proposal if the area were regulated under this part.

Project compliance: The proposed project avoids, minimizes, and mitigates impacts to critical areas and habitat associated with species of local importance, as described in other portions of this CAR.

20.25H.255 Critical areas report – Decision criteria.

B. Decision Criteria – Proposals to Reduce Regulated Critical Area Buffer.

The Director may approve, or approve with modifications, a proposal to reduce the regulated critical area buffer on a site where the applicant demonstrates:

1. The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in overall critical area or critical area buffer functions;
2. The proposal includes plans for restoration of degraded critical area or critical area buffer functions which demonstrate a net gain in the most important critical area or critical area buffer functions to the ecosystem in which they exist;

3. The proposal includes a net gain in stormwater quality function by the critical area buffer or by elements of the development proposal outside of the reduced regulated critical area buffer;
4. Adequate resources to ensure completion of any required restoration, mitigation and monitoring efforts;
5. The modifications and performance standards included in the proposal are not detrimental to the functions and values of critical area and critical area buffers off-site; and
6. The resulting development is compatible with other uses and development in the same land use district.

Project compliance: Mitigation will occur off-site in either a City of Bellevue specified mitigation location, or the Keller Farm mitigation bank. For either of these options, a net gain of ecological functions will be achieved for critical areas and critical area buffers. Proposed stormwater treatment methods are not available at this stage of design. However, if treatment is required, it would be designed according to standards in Ecology's Stormwater Management Manual for Western Washington as well as the current version of Bellevue's Stormwater Management Plan. The resulting project will include ROW improvements for activities that take place within the ROW.

APPENDIX G

NE 40th Street Sidewalk Project
60-Percent Design Plans

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CITY OF BELLEVUE TO INSERT FULL PLAN SET AFTER FINAL REVIEW

APPENDIX H

Geotechnical Report for NE 40th Street Sidewalk Project

GEOTECHNICAL REPORT
NE 40TH STREET SIDEWALK – 140TH AVENUE NE TO 148TH AVENUE NE
BELLEVUE, WASHINGTON

HWA PROJECT NO. 2023-195-21

APRIL 5, 2024

PREPARED FOR THE CITY OF BELLEVUE AND DAVID EVANS AND ASSOCIATES, INC.

HWA GEOSCIENCES INC.
DBE/MWBE

April 5, 2024
HWA Project No. 2023-195-21

David Evans and Associates, Inc.
14432 SE Eastgate Way, Suite 400
Bellevue, Washington 98007

Attention: Renee Koester, P.E.

Subject: **GEOTECHNICAL REPORT**
NE 40th Street Sidewalk
140th Avenue NE to 148th Avenue NE
Bellevue, Washington

Ms. Koester:

In accordance with your request, HWA GeoSciences Inc. (HWA) completed a geotechnical engineering investigation in support of the NE 40th St Sidewalk project in Bellevue, Washington. This report presents the results of our field explorations and laboratory testing along with recommendations pertaining to seismic design ground motion parameters, retaining structures, and construction considerations. The attached report summarizes the results of our study and presents our conclusions and recommendations.

We appreciate the opportunity to provide geotechnical engineering services on this project. If you have any questions regarding this report or require additional information or services, please contact the undersigned at your convenience.

Sincerely,

HWA GEOSCIENCES INC.

Ali Sirjani, P.E.
Geotechnical Engineer

Tyler Cartwright, E.I.T.
Geotechnical Engineer

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GEOTECHNICAL REPORT
NE 40TH STREET SIDEWALK
140TH AVENUE NE TO 148TH AVENUE NE
BELLEVUE, WASHINGTON

1. INTRODUCTION

1.1 GENERAL

This report summarizes the results of a geotechnical engineering investigation performed by HWA GeoSciences Inc. (HWA) for the NE 40th St Sidewalk – 140th Avenue NE to 148th Avenue NE project in Bellevue, Washington. The approximate location of the project site is shown on the Site and Vicinity Map, Figure 1, and on the Site and Exploration Plans, Figures 2A through 2C. Our field work investigation consisted of logging the drilling of three boreholes to evaluate subsurface soil and groundwater conditions. Laboratory tests were conducted on select soil samples obtained from the boreholes to determine relevant engineering properties of the subsurface soils. Engineering analyses were performed to develop the recommendations presented in this report.

1.2 PROJECT UNDERSTANDING

The City of Bellevue NE 40th Street Sidewalk project will provide improvements, primarily along the north side of NE 40th Street, from 140th Avenue NE to 148th Avenue NE, a linear distance of approximately 2,600 linear feet. We understand that the project scope of work consists of the following improvements:

- Sidewalk with planter where feasible on the north side of NE 40th Street from 140th Avenue NE to 145th Avenue NE
- Grind and overlay of NE 40th Street from 140th Avenue NE to 148th Avenue NE
- Bike lanes from 140th Avenue NE to 145th Avenue NE
- ADA compliant curb ramps
- Retaining walls where necessary
- Marked crosswalk at 142nd Place NE
- Storm drainage improvements

2. FIELD INVESTIGATION AND LABORATORY TESTING

2.1 GEOTECHNICAL SUBSURFACE EXPLORATIONS

A geologist from HWA logged the drilling of three geotechnical borings, designated BH-1 through BH-3, to assess subsurface conditions along the alignment. The locations of the explorations are shown on the Site and Exploration Plans, Figures 2A through 2C. The borings were drilled by Geologic Drill Partners of Bellevue, Washington on November 2, 2023, under subcontract to HWA, using a limited access Bobcat track-mounted drill rig employing hollow-stem auger drilling techniques. The boring depths varied from approximately 12 to 28.25 feet below the ground surface (bgs).

In each boring, Standard Penetration Test (SPT) sampling was performed using a 2-inch outside diameter split-spoon sampler driven by a 140-pound hammer raised using rope and cathead system. During the tests, samples were obtained by driving the sampler 18 inches into the soil with the hammer free-falling 30 inches. The number of blows required for each 6-inches of penetration was recorded. If a total of 50 blows was recorded within a single 6-inch interval, the test was terminated, and the blow count was recorded as 50 blows for the number of inches of penetration. This resistance, or N-value, provides an indication of relative density of granular soils and the relative consistency of cohesive soils.

A geologist from HWA logged the explorations and recorded pertinent information, including sample depths, stratigraphy, soil descriptions, and groundwater occurrence. Soil samples obtained from the explorations were classified in the field and representative portions were placed in plastic bags. These soil samples were then taken to our Bothell, Washington, laboratory for further examination and laboratory testing.

The stratigraphic contacts shown on the individual exploration logs represent the approximate boundaries between soil types; actual transitions may be more gradual. The soil and groundwater conditions depicted are only for the specific date and location reported and, therefore, are not necessarily representative of other locations and times. A legend of the terms and symbols used on the exploration logs is presented in Appendix A, Figure A-1. Summary logs of the explorations are presented in Figures A-2 through A-4.

2.2 LABORATORY TESTING

Representative soil samples obtained from the drilled boreholes were taken to the HWA laboratory for further examination and testing. Laboratory tests, as described below, were conducted on selected soil samples to characterize relevant engineering properties of the on-site soils.

Moisture Content of Soil: The moisture content (percent by dry mass) of selected soil samples was determined in accordance with ASTM D 2216. The results are shown at the sampled intervals on the appropriate exploration logs in Appendix A and on the laboratory test reports presented in Appendix B.

Particle Size Analysis of Soils: Selected samples were tested to determine particle size distribution of the material in accordance with ASTM D6913/D7928. The results are summarized on the attached Summary of Material Properties, Figure B-1, and on the Particle-Size Analysis of Soils reports, Figures B-2 through B-5, Appendix B, which also provide information regarding the classification of the samples and the moisture content at the time of testing.

Atterberg Limits of Soils: Selected samples were tested to determine the Atterberg limits of soils in accordance with ASTM D4318. The results are summarized on the attached Summary of Material Properties, Figure B-1, and on the Liquid Limit, Plastic Limit, and Plasticity Index of Soils report, Figure B-6, Appendix B.

3. SITE CONDITIONS

3.1 General Geologic Conditions

The project alignment is located within the Puget Lowland. The Puget Lowland has repeatedly been occupied by a portion of the continental glaciers that developed during the ice ages of the Quaternary period. During at least four periods, portions of the ice sheet advanced south from British Columbia into the lowlands of Western Washington. The southern extent of these glacial advances was near Olympia, Washington. Each major advance included numerous local advances and retreats, and each advance and retreat resulted in its own sequence of erosion and deposition of glacial lacustrine, outwash, till, and drift deposits. Between and following these glacial advances, sediments from the Olympic and Cascade Mountains accumulated in the Puget Lowland.

Specific geologic information along the project alignment was obtained from the 1:24,000-scale *Geologic Map of the Kirkland Quadrangles, Washington* (Minard, 1983). According to the geologic map, the project area is underlain by Fraser-age Vashon till and advance outwash. Till deposits generally consist of an unsorted mixture of clay, silt, sand, pebbles, cobbles, and boulders deposited at the base of an advancing ice sheet. Till deposits are typically dense to very dense, having been consolidated by several thousands of feet of glacial ice and are relatively impermeable. Groundwater often perches above this unit given its density and low permeability. Advance outwash deposits generally consist of clean sands with pebbles, and finer particles (silt and clay) may lie in the deeper portions of the outwash. Outwash deposits are typically dense to very dense, having been consolidated under the same glacial ice as the till.

3.2 Subsurface Soil Conditions

The soils encountered in our borings, below the asphalt pavement, consisted of near surface fill soils overlying alluvium, advance outwash, and transitional beds. Further descriptions of soils encountered in our explorations are presented below in order of deposition, with younger deposits listed first. The exploration logs in Appendix A provide a more detailed description of subsurface conditions observed at specific locations and depths.

Fill: Fill was encountered in each of the borings. In boring BH-1, the fill extended to a depth of about 7.5 feet and consisted of silty sand that became less dense with depth. In boring BH-2, the fill extended to a depth of about 2.5 feet and consisted of medium dense sand with silt and gravel. In boring BH-3, near the existing culvert, the fill was thickest, extending to a depth of about 20 feet, and consisted of medium dense to dense sand and gravel with varying silt content.

Alluvium: Alluvium was encountered in boring BH-3 beneath the fill, likely deposited by Valley Creek, which flows through a culvert below the roadway. The alluvium was approximately 5 feet thick and extended to a depth of about 25 feet. The alluvium typically consisted of medium dense sand with variable silt and gravel content. A 5-inch-thick lens of organic material was encountered within the alluvium at a depth of about 21 feet.

Advance Outwash: Advance outwash was observed in boring BH-1 beneath the fill and in boring BH-3 beneath the alluvium. The depth of the advance outwash extended to the maximum depth explored in both borings (20.5 feet and 28.25 feet, respectively). The outwash deposits consisted of dense to very dense sand with variable silt and gravel content.

Transitional Beds: Transitional beds were encountered in boring BH-2 below the fill. The transitional beds extended to the bottom of the boring, a depth of 12 feet, and typically consisted of very stiff to hard, sandy lean clay. The bottom foot of the transitional beds consisted of very dense, silty sand with gravel.

3.3 Groundwater Conditions

Groundwater was encountered in borings BH-1 and BH-3 at the time of drilling. Groundwater was observed within the advance outwash layer in boring BH-1 at a depth of about 15 feet. Groundwater was observed in boring BH-3 at the contact between fill and alluvium at a depth of about 20 feet. Groundwater in the vicinity of BH-3 is expected to vary with the elevation of the water within Valley Creek in this area. Groundwater was not observed in boring BH-2, which encountered refusal at a depth of 12 feet.

3.4 GEOLOGICALLY HAZARDOUS AREAS

HWA has completed an assessment of the geologically hazardous areas along the project alignment. The assessment was completed in general accordance with the requirements of the City of Bellevue Land Use Code (LUC) Chapter VII –*Geologic Hazard Areas*. Bellevue's Code designates four critical areas consisting of landslide hazard, steep slopes, coal mine hazards, and seismic hazard areas. HWA has assessed the project alignment for each of the critical areas, and we have identified an area along the alignment from approximately station 12+75 to 15+00 that include steep slope and seismic hazard critical areas which may be impacted by the proposed improvements.

The identified steep slope critical area and the implications of the proposed improvements is evaluated and discussed under Section 4.3.1 of this report. Our analyses indicate that the proposed improvements will improve the stability of the steep slope area identified along Wall 2 alignment.

The identified seismic hazard critical area and the implications of the proposed improvements is evaluated and discussed under Section 4.2.3 of this report. Our analyses to identify and evaluate seismic hazard areas indicate that the site soils within the alluvial channel of Vally Creek are susceptible to liquefaction induced settlement of 0.5 to 2 inches. We have determined that the proposed improvements do not increase the magnitude of anticipated liquefaction induced settlement.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 GENERAL

The following is a summary of our conclusions and geotechnical recommendations based on the results of our investigations, laboratory testing and analyses. Further discussion is presented in subsequent report sections.

- Near surface soils encountered in the explorations primarily consist of fill, comprised of medium dense to dense sand and gravel with varying amounts of silt. Transitional bed soils, consisting of very stiff to hard clay, were encountered below the fill, at a depth of about 2.5 feet, in boring BH-2. The fill extended to a depth of about 7.5 feet in boring BH-1 and a depth of about 20 feet in boring BH-3.

- The fill soils are generally suitable for support of the proposed shallow bearing improvements (sidewalk, curb, gutter, etc.) provided the recommendations presented in this report are incorporated into design and construction. At the location of boring BH-1, fill soils became looser with depth.

- The transitional bed soils in boring BH-2 consist of lean clay and are highly susceptible to moisture. If improvements are planned to bear within these soils, we recommend that these soils be over-excavated about 6 to 12 inches, flowed by placement of a separator geotextile and replacement with granular structural fill.

- Use of infiltration for stormwater design is not recommended for the project given the variability of the subgrade soils along the alignment, in addition to the presence of glacially consolidated and fine-grained soils that could cause groundwater perching and lateral migration.

4.2 SEISMIC DESIGN CONSIDERATIONS

4.2.1 Seismic Design Parameters

Earthquake loading for the project corridor was developed in accordance with the General Procedure provided in Section 3.4 of the *AASHTO Guide Specifications for LRFD Seismic Bridge Design*, 9th Edition, 2020, and the Washington State Department of Transportation (WSDOT) amendments to the AASHTO *Guide Specifications* provided in the *Bridge Design Manual (LRFD)*. For seismic analysis, the Site Class is required to be established and is determined based on the average soil properties in the upper 100 feet below the ground surface. The project alignment is underlain by soils consistent with Site Class C, described as "very dense soil and soft rock."

The design parameters for the design level event (equal to a return period of about 1,000 years) were obtained from the USGS Uniform Hazard Tool website using the U.S. 2014 Dynamic Conterminous edition (v4.2.0), which provides the probabilistic seismic hazard parameters from the *2014 Updates to the National Hazard Maps* (Peterson, et al., 2014). Site coefficients were developed following the site coefficients provided in ASCE 7-16. The recommended seismic coefficients for the design event are provided in Table 1. The spectral acceleration coefficient at 1-second period (S_{D1}) is more than 0.2; therefore, Seismic Design Category D, as given by AASHTO Table 3.5-1 (AASHTO, 2011), should be used for the project.

Table 1.

Seismic Coefficients using AASHTO Guide Specifications, Site Class C Calculated Using USGS Seismic Uniform Hazard Tool

Site Class	Peak Horizontal Bedrock Acceleration PBA, (g)	Spectral Bedrock Acceleration at 0.2 sec S_s, (g)	Spectral Bedrock Acceleration at 1.0 sec S_1, (g)	Site Coefficients			Peak Horizontal Acceleration PGA (A_s), (g)
				F_{pga}	F_a	F_v	
C	0.545	1.277	0.445	1.200	1.200	1.500	0.654

Notes: **7% Probability of Exceedance in 75 years for Latitude 47.6541° and Longitude -122.6802°*
PGA = Peak ground acceleration
F_{PGA} = PGA site coefficient
PBA = Design Seismic Coefficient equal to the mapped PGA adjusted for Site Class effects
S_s = Short period (0.2 second) Mapped Spectral Acceleration
S_1 = 1.0 second period Mapped Spectral Acceleration
S_{DS} = Design Spectral Response Acceleration for short period =$F_a \cdot S_S$
S_{D1} = Design Spectral Response Acceleration for 1-second period = $F_V \cdot S_1$
F_a = Short Period Site Coefficients
F_v = Long Period Site Coefficients

4.2.2 Liquefaction Considerations

Liquefaction is a temporary loss of soil shear strength due to earthquake shaking. Loose to medium dense, saturated cohesionless soils are highly susceptible to earthquake-induced liquefaction; however, recent experience and research has shown that certain silts and low-plasticity clays are also susceptible. Primary factors controlling the development of liquefaction include the intensity and duration of strong ground motions, the characteristics of subsurface soils, in-situ stress conditions and the depth to groundwater. To evaluate the liquefaction susceptibility of the soils along the project alignment, the simplified procedure originally developed by Seed and Idriss (1971), updated by Youd et al 2001, and also by Idriss and Boulanger (2004, 2006) was used.

The simplified procedure is a semi-empirical approach which compares the cyclic shear stress required to initiate liquefaction (CRR) to the cyclic shear stress induced by the design earthquake (CSR). The factor of safety relative to liquefaction is the ratio of the CRR to the CSR; where this ratio is computed to be less than one, the analysis would indicate that liquefaction is likely to occur during the design earthquake. The CRR is primarily dependent on soil density, with the current practice being to base it on the Standard Penetration Test (SPT) N-value, corrected for energy consideration, fines content and earthquake magnitude. CSR is generally determined by the formulation developed by Seed and Idriss (1971) and relates equivalent shear stress caused in the soil at any depth to the effective stress at that depth and the peak ground acceleration at the surface. We have performed our evaluations using the method proposed by Idriss and Boulanger.

Our analysis suggests that the saturated alluvium soils at BH-3 are prone to liquefaction during the design earthquake. We expect that the occurrence of liquefaction during the design earthquake will result in liquefaction-induced settlement and loss of shear strength in the vicinity of boring BH-3 at Valley Creek crossing.

It is our understanding that the City of Bellevue does not have a policy for mitigation of potentially liquefiable soils. Therefore, it is our recommendation that the need for mitigation be determined based on the principle of protecting life safety of the traveling public. Our analyses suggest that the proposed improvements will not result in a threat to life safety of the traveling public under post-liquefaction conditions. Therefore, we do not recommend the project consider the implementation of liquefaction mitigation.

4.2.3 Liquefaction-Induced Settlement

Loose to medium dense sand deposits tend to densify when they are subject to earthquake shaking. For saturated sand deposits, excess pore water pressure builds up during the earthquake excitation, leading to loss of strength or liquefaction. After the shaking stops, excess pore water pressures dissipate toward a zone where water pressure is relatively lower, usually the ground surface. The dissipation is accompanied by a reconsolidation of the loose sand (Ishihara and Yoshimine, 1992). The reconsolidation is manifested at the ground surface as vertical settlement, usually termed as liquefaction-induced settlement or seismic settlement.

The potential for liquefaction-induced settlement was evaluated in the vicinity of boring BH-3. The methodologies used were developed by Yi and Andrus (2010) and Tokimatsu and Seed (1987) and are generally based on the relationship between shear wave velocity, cyclic stress ratio, corrected SPT blow counts, and volumetric strain. Using these methods, liquefaction-induced settlement in this area was estimated to vary from about 0.5 inches to 2 inches. We expect that the liquefaction-induced settlement will be mostly uniform in nature as the liquefaction is expected to occur below a thick non-liquefiable crust. We have determined that the proposed improvements including the proposed widening and construction of Wall 2 do not increase the magnitude of anticipated liquefaction induced settlement.

4.2.4 Post-Liquefaction Residual Shear Strength

Residual shear strength for the liquefiable soils encountered at BH-3 was developed using a weighted average of the results of the Idriss (2007), Olson and Stark (2002), Idriss and Boulanger (2007) and Kramer (2008) relationships. The residual shear strength assigned is a function of the equivalent clean sand SPT value, $(N_1)_{60cs}$, the potential for void redistribution, and the initial effective overburden stress. At locations where $(N_1)_{60cs}$ is less than 10, we assumed void redistribution effects could be significant, which gives an appropriate conservative estimate of residual shear strength. Our analyses indicate that the liquefiable soils possess a residual shear strength equivalent to a friction angle of 18 degrees. This value was used in our post-liquefaction stability analysis for Wall 2.

4.3 RETAINING WALL STRUCTURES

It is our understanding that five retaining walls will be required to accommodate the proposed roadway improvements along the project alignment. These walls will consist of a combination of cut and fill walls varying from approximately 1.5 feet to 10 feet in maximum height. The location and designation of each wall is indicated on the Site and Exploration Plans, Figures 2A through 2C. Wall type selection was based on soil conditions, wall geometry, cost effectiveness, constructability, and right-of-way limits. In general, modular block walls (gravity or reinforced) are desired when possible due to availability, cost-effectiveness, and ease of construction relative to other permanent retaining wall systems. Cast-in-place (CIP) walls are generally known to be more expensive to construct than modular block walls but are often considered due to aesthetic preferences or where right-of-way/work-area restrictions limit the extent of excavation needed to construct reinforced modular block walls. Soldier pile walls can also be considered to further limit the extent of excavation needed and to preserve existing vegetation. Soldier pile walls are also considered where adequate global slope stability cannot be achieved with modular block and/or CIP wall systems. Table 2 presents a summary of the proposed wall location, length, anticipated wall type and maximum height. Further discussion of wall selection approach and recommendations are provided in the following sections of this report.

Table 2. Summary of Proposed Wall Types and Locations

Wall Designation	See Location in Figure	Approximate Wall Length (feet)	Anticipated Wall Type	Wall Application	Max Exposed Height (feet)
Wall 1	Figure 2A	161	Modular Block	FILL	10
Wall 2	Figure 2A	228	Soldier Pile	FILL	9
Wall 3	Figure 2B	161	Modular Block	CUT	5.5
Wall 4	Figure 2B	119	Modular Block	CUT	8
Wall 5	Figure 2C	180	Modular Block	CUT	4.5

4.3.1 Global Slope Stability

Using the computer program SLIDE2 Modeler, we evaluated static and pseudo-static global stability of all proposed walls. Additionally, we evaluated static, pseudo-static, and post-liquefaction slope stability along the identified critical slope discussed in Section 3.4 of this report. Analyses were completed utilizing site topography and wall geometry provided by the City and DEA. The results of our quantitative slope stability analyses are presented in Appendix C.

Given a Modular Block or CIP wall construction with an embedment depth of 1.5 feet, factors of safety for static global stability, in excess of 1.3, the minimum required, were calculated for all walls except Wall 2.

Seismic stability was evaluated using a pseudo-static horizontal acceleration of 0.327g, which is ½ of the peak ground acceleration (PGA) associated with the 1:1033-year design earthquake for this site location. From our analyses, we conclude that, under a design earthquake, a factor of safety for global stability greater than 1.1 will exist for all the walls constructed as Modular Block or CIP wall except Wall 2.

Post-liquefaction stability analyses were completed for retaining Wall 2 where liquefaction is expected to occur. As liquefaction is expected to occur near the end of earthquake shaking, post-liquefaction stability analyses were computed using residual shear strengths for the liquefiable soils and static loading conditions. Our analyses indicate that Wall 2, if constructed as Modular Block or CIP wall, does not meet the minimum required Factor of Safety of 1.1 under post-liquefaction condition.

Hence, with the exception of Wall 2, all the proposed retaining wall structures can be constructed as Modular Block or CIP walls; however, we understand that the design team has selected the use of Modular Block walls based on constructability and cost considerations.

Slope stability was evaluated under existing and proposed conditions within the identified steep slope critical area and Wall 2 alignment. Under the existing conditions, the steep slope associated with this area possesses a static factor of safety of approximately 1, as shown in Figure C-3 of Appendix C. Under pseudo-static loading conditions, the steep slope critical area possesses a factor of safety of 0.56, as shown in Figure C-4 of Appendix C. Under post-liquefaction loading conditions, the steep slope critical area possesses a factor of safety of 0.95, as shown in Figure C-5 of Appendix C. This suggests that the existing steep slope is barely stable under static loading and would be expected to fail as a result of the design earthquake and post-liquefaction conditions.

Based on the results of our global slope stability analyses, we recommend that Wall 2 be constructed as a cantilever soldier pile wall and lagging system with a minimum embedment depth of 5 feet into the dense to very dense advance outwash soils, in order to meet the minimum required global slope stability factors of safety under static, pseudo-static, and post-liquefaction conditions.

Our stability analyses, presented in Appendix C, indicate that construction of the proposed Wall 2 as a soldier pile wall within the identified steep slope critical area will not negatively affect the stability of the remaining critical steep slope at the toe of Wall 2.

4.3.2 Modular Block Walls

As noted above by our global slope stability evaluations, Walls 1, 3, 4, and 5 can be constructed as CIP or modular block walls; however, the design team has selected to use modular block walls. Modular block walls can be constructed as a gravity block system without reinforcement or a Structural Earth (SE) wall system with reinforcing grids. We understand that the proposed modular block walls will consist of a proprietary wall system and that the wall supplier will design the wall for internal stability. The walls should be designed in accordance with *AASHTO Standard Specifications for Highway and Bridges*. We recommend the wall be designed using the parameters presented in Table 3. We understand the design for these walls will be performed using Load and Resistance Factor Design (LRFD). Appropriate AASHTO resistance factors should be used for the design of all retaining walls.

Table 3.
Recommended Design Parameters for Modular Block Walls

Soil Properties	Reinforced Soil	Retained Soil	Foundation Soil
Unit Weight (pcf)	135	130	130
Friction Angle (deg)	36	34	34
Cohesion (psf)	0	0	0
		Strength and Service Limit State	**Extreme Limit State**
Ultimate Bearing Resistance (ksf)		3.0	3.0
Horizontal Seismic Acceleration Coefficient (k_h) (g)		N/A	0.327

It is essential that the walls be designed per specific toe- and back-slope geometry at each wall location. Additionally, vertical and lateral dead loads such as sidewalk, pavement, guard rails, and chain-link fences, and live loads such as vehicular and pedestrian loading should be considered in the design of wall. The modular block walls should be designed to accommodate a differential settlement of 0.5-inch over 100-feet of wall length for static loading. A coefficient of friction of 0.4 times the effective stress at the base of the wall can be used for sliding resistance. We recommend the walls be embedded at least 1.5 feet below the finished grade at the base of the wall.

4.3.2.1 Modular Block Wall Subgrade Preparation

Proper wall subgrade preparation is essential to prevent premature failure of the wall system. Subgrade preparation should include removal of any loose, organic or otherwise unsuitable soils and placement of a minimum 1-foot-thick leveling pad consisting of well-compacted Crushed

Surfacing Base Course (CSBC) or Crushed Surfacing Top Course (CSTC), as specified in Section 9-03.9(3) of the *WSDOT Standard Specifications* (WSDOT, 2024). The leveling pad for SEW walls should extend a minimum of 2 feet in each direction beyond the perimeter of the first row of blocks.

All areas on which the wall will bear should be graded level perpendicular to the wall face and compacted in accordance with Section 2-03.3(14)D of the *WSDOT Standard Specifications* (WSDOT, 2024).

We recommend an HWA geotechnical engineer, or their representative, be present during construction to verify the assumptions made for the foundations of the walls are met.

4.3.2.2 Modular Block Wall Backfill Compaction and Placement

Selection of wall backfill is subject to recommendations provided by the wall manufacturer. In the absence of specific backfill recommendation from the manufacturer, we recommend walls be backfilled with Gravel Backfill for Walls, as specified in Section 9-03.12(2) of *Standard Specifications* (WSDOT, 2024). All wall backfill should be compacted to 95% of the maximum dry density as determined by ASTM D 1557 (modified Proctor). Heavy compaction equipment and large pieces of construction equipment should not operate within about 5 feet of the wall to avoid the buildup of excessive lateral pressures.

Wall backfill will be placed against the excavation required to construct the wall. Fill placement against an existing slope will require terraced cuts as outlined in the WSDOT *Standard Specifications* (WSDOT, 2024) Section 2-03.3(14)B, Embankment Construction.

4.3.2.3 Modular Block Drainage Considerations

Drainage should be provided behind all walls when full hydrostatic pressures are not accounted for in design. At a minimum, drainage should consist of 6-inch diameter, perforated, rigid plastic pipes, bedded and backfilled with Gravel Backfill for Drains, as specified in Section 9-03.12(4) of the *WSDOT Standard Specifications* (WSDOT, 2024). The drain pipe should be sloped to drain and routed to an appropriate discharge location.

4.3.3 Cantilever Soldier Pile Wall

Wall 2 will retain up to 9 feet of fill to widen the roadway for the proposed pedestrian improvements. We recommend this wall be constructed as a cantilevered soldier pile and lagging wall in order to meet the minimum required factor of safety for global stability. For cantilevered soldier pile and lagging wall systems, steel H-piles are generally placed in drilled shafts, spaced at approximately 5- to 8-foot centers. The diameter of the typical soldier pile shaft excavations is on the order of 2 to 3 feet. Once the H-piles are installed, the drilled shafts are filled with concrete or CDF. Typically, conventional concrete is only used to fill the holes below the base of the wall as a structural toe. After pile installation lagging members are placed between the installed H-piles and the wall is backfilled.

4.3.3.1 Solider Pile Wall Design Parameters

The recommended lateral earth pressure diagrams for Wall 2 are shown on Figure 3. It is assumed that the proposed cantilever soldier pile walls will be free to deflect under static loading conditions and, therefore, active lateral earth pressure conditions should be assumed. Active earth pressure conditions are also assumed under extreme loading conditions. For design, passive earth resistance pressure should be assumed to act over two shaft diameters for Strength, Service, and Extreme Limit State design. Active earth pressures are assumed to act over one shaft diameter, below the base of the excavation, and over the width of the lagging for the retained portion of the wall. The passive pressure provided assumes a maximum slope of 1.6H:1V is provided in front of the wall. As noted under Section 4.3.1 of this report, we recommend that soldier pile shafts for Wall 2 be embedded at least 5 feet into the dense to very dense advance outwash soils to achieve the minimum required factor of safety for global slope stability.

4.3.3.2 Solider Pile Wall Lagging

Lagging will likely consist of treated timber (typically 4 x 12 timber beams) but could consist of concrete panels. If timber lagging is used, the addition of concrete facia would extend the life of the wall by reducing the weathering. Lagging should be installed as the excavation proceeds. We recommend that soldier pile lagging be designed to resist the lateral earth pressures presented on Figure 3. Based on results of our exploration, design for the wall lagging should conform to Soil Type 2 as specified in Section 6-16.3(6)A Soil Classification of the WSDOT *Standard Specifications* (WSDOT, 2024). Lagging should extend a minimum of 2 feet below the ground line at the base of the wall. Lagging should not be watertight to prevent the buildup of hydrostatic pressure behind the wall face unless drainage is provided.

4.3.3.3 Solider Pile Wall Construction Considerations

The very loose to medium dense fill, alluvium soils, and buried topsoil are likely to experience caving during shaft construction. Groundwater was also encountered within these deposits. Temporary casing should be used for the proposed shaft excavations.

Portions of the excavations will be advanced through very dense advance outwash soils and hard drilling conditions should be anticipated. Although not encountered in our borings, large cobbles and boulders are known to exist in these glacial deposits. The shaft contractor should be prepared to handle cobbles and boulders.

Soldier pile shaft bottoms should be cleaned to the extent practical using appropriate methods. If water is present in the shaft, concrete should be placed by the tremie method. Temporary casing should be withdrawn such that the level of concrete is maintained above the bottom of the casing at all times and at such elevations to counteract any potential hydrostatic effects associated with groundwater conditions that may be present at the location of the work.

Adequate drainage behind the soldier pile wall is critical for long term performance. We recommend prefabricated geosynthetic drain mats meeting the requirements of the of Section 9-33.2(3) of the *Standard Specifications* (WSDOT, 2024) be placed on the wood lagging before casting the permanent fascia and tight lined into the drainage at the base of the wall as specified per Section 6-16.3(7) of the *Standard Specifications* (WSDOT, 2024). Drainage at the base of the wall should consist of a minimum 6-inch diameter perforated pipe, surrounded in free-draining material meeting the requirements of Section 9-03.12(4) Gravel Backfill for Drains of the *Standard Specifications* (WSDOT, 2024). The drain rock should be wrapped in geotextile filter fabric meeting the requirements of Section 9-33.2(1) Tables 1 and 2 of the *Standard Specifications* (WSDOT, 2024). The drain should slope to a storm drain system or other appropriate outlet.

4.4 STORMWATER MANAGEMENT

The feasibility of using infiltration as part of the stormwater management for this site was evaluated in accordance with the 2019 Stormwater Management Manual for Western Washington. The transitional bed soils, comprised of glacially consolidated clay, encountered in boring BH-2 are highly impermeable and not suitable for infiltration. Also, infiltration of stormwater near the crest of the slopes near Valley Creek in the vicinity of boring BH-3 could result in increased groundwater seepage along the slope and reduce the stability of the proposed slopes. Given the variability of the subgrade soils, in addition to presence of steep slopes along the Valley Creek crossing, we do not recommend stormwater infiltration be utilized along the project alignment.

4.5 GENERAL EARTHWORK

4.5.1 Subgrade Preparation

Subgrade preparation for pavement, sidewalks, ramps, curbs and other improvements founded near surface should begin with the removal of all topsoil, deleterious material, and vegetation to expose dense, competent native soils or adequately compacted fill. A smooth bucket should be used to limit disturbance. We recommend that in areas accessible to construction equipment, the exposed subgrade be proof-rolled under the observation of the geotechnical engineer using a fully-loaded dump truck to identify any areas of loose, pumping, or otherwise unsuitable soils. If such soils are encountered, they should be over-excavated as directed by the geotechnical engineer and replaced with properly compacted structural fill. In areas inaccessible to large equipment, the subgrade soils should be evaluated by the geotechnical engineer using a

T-handled probe. Subgrade soils should be compacted to a dense condition prior to placement of structural fill or construction of improvements.

4.5.2 Structural Fill

Structural fill should consist of relatively clean, free-draining, granular soils free from organic matter or other deleterious materials. Such materials should be less than 4 inches in maximum particle dimension, with less than 10 percent fines (portion passing the U.S. Standard No. 200 sieve). Imported structural fill for areas of over-excavation and for pavement base course should consist of Crushed Surfacing Base Course, as described in Section 9-03.9(3) of the *WSDOT Standard Specifications* (WSDOT, 2024). Structural fill used to raise site grades could consist of CSBC or Gravel Borrow, as specified in Section 9-03.14(1) of the *WSDOT Standard Specifications* (WSDOT, 2024). The fine-grained portion of structural fill soils should be non-plastic.

4.5.3 Compaction

Structural fill soils should be moisture conditioned and compacted to at least 95% of the maximum dry density (MDD) determined by test method ASTM D 1557 (Modified Proctor). Structural fill should be placed and compacted in loose, horizontal lifts of not more than 12 inches in thickness.

At the time of placement, the moisture content of structural fill should be at or near optimum. Achievement of proper density of a compacted fill depends on the size and type of compaction equipment, the number of passes, thickness of the layer being compacted, and soil moisture-density properties. In areas where limited space restricts the use of heavy equipment, smaller equipment can be used, but the soil must be placed in thin enough layers and at the proper moisture content to achieve the required relative compaction. Generally, loosely compacted soils result from poor construction technique and/or improper soil moisture content. Soils with high fines contents are particularly susceptible to becoming too wet and coarse-grained materials easily become too dry for proper compaction.

4.5.4 Temporary Excavations

Maintenance of safe working conditions, including temporary excavation stability is the responsibility of the contractor. All excavations should have adequate safety systems that meet the requirements of the Washington Industrial Safety and Health Act, Chapter 49.17 RCW. In accordance with Part N of Washington Administrative Code (WAC) 296-155, all temporary cuts in excess of 4 feet in height must be either sloped or shored prior to entry by personnel. The fill soils encountered in the borings are classified as Type C soils per WAC 296-155 and should be sloped no steeper than 1.5H:1V (horizontal:vertical).

The contractor should monitor the stability of temporary excavations and adjust the slope inclination accordingly. The contractor should be responsible for control of ground and surface water and should employ sloping, slope protection, ditching, sumps, dewatering, and other measures, as necessary, to prevent sloughing of soils.

4.5.5 Wet Weather Earthwork

General recommendations relative to earthwork performed in wet weather or in wet conditions are presented below. These recommendations should be incorporated into the contract specifications.

- Earthwork should be performed as such to minimize exposure to wet weather. Excavation of unsuitable and/or softened soil should be followed promptly by placement and compaction of suitable structural fill. The size and type of construction equipment used may need to be limited to prevent soil disturbance. Under some circumstances, it may be necessary to excavate subgrade soils to minimize subgrade disturbance caused by equipment traffic.

- Any backfill material used in wet weather should consist of clean granular soil with less than 5 percent passing the U.S. No. 200 sieve, based on wet sieving the fraction passing the ¾-inch sieve. The fines should be non-plastic. It should be noted this is an additional restriction on the structural fill materials specified.

- The ground surface within the construction area should be sloped and compacted on completion of each shift by a smooth drum vibratory roller, or equivalent, to promote surface water run-off and to prevent ponding of water. Runoff should be properly collected, tested and treated as necessary in accordance with the approved project Erosion and Sediment Control (ESC) plan.

- No soil should be left uncompacted so it can absorb water. Soils which become too wet for compaction should be removed and replaced with suitable backfill materials.

- Excavation and placement of backfill materials should be monitored by a geotechnical engineer or geologist experienced in wet weather earthwork to determine that the work is being accomplished in accordance with the project specifications and the recommendations contained herein.

5. CONDITIONS AND LIMITATIONS

HWA prepared this report for the City of Bellevue David Evans and Associates for use in the design and construction of this project. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. Experience has shown that soil and groundwater conditions can vary significantly over small distances. Inconsistent conditions can occur between explorations and may not be detected by a geotechnical study. If, during future site operations, subsurface conditions are encountered which vary appreciably from those described herein, HWA should be notified for review of the recommendations of this report, and revision of such if necessary.

HWA recommends it be retained to review the plans and specifications to verify that HWA's recommendations have been interpreted and implemented as intended. Sufficient geotechnical monitoring, testing, and consultation should be provided during construction to confirm the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should conditions revealed during construction differ from those anticipated, and to verify that the geotechnical aspects of construction comply with the contract plans and specifications.

Within the limitations of scope, schedule and budget, HWA attempted to execute these services in accordance with generally accepted professional principles and practices in the fields of geotechnical engineering and engineering geology in the area at the time the report was prepared. No warranty, express or implied, is made. The scope of HWA's work did not include environmental assessments or evaluations regarding the presence or absence of wetlands or hazardous substances in the soil, surface water, or groundwater at this site.

HWA does not practice or consult in the field of safety engineering. HWA does not direct the contractor's operations and cannot be responsible for the safety of personnel other than HWA's own on the site. As such, the safety of others is the responsibility of the contractor(s). The contractor(s) should notify the owner if it is considered that any of the recommended actions presented herein are unsafe.

We appreciate the opportunity to provide geotechnical services on this project. Should you have any questions or comments, or if we may be of further service, please do not hesitate to call.

Sincerely,

HWA GEOSCIENCES INC.

Ali Sirjani, P.E
Senior Geotechnical Engineer

Tyler Cartwright, E.I.T.
Geotechnical Engineer

Bryan Hawkins, P.E
Senior Geotechnical Engineer

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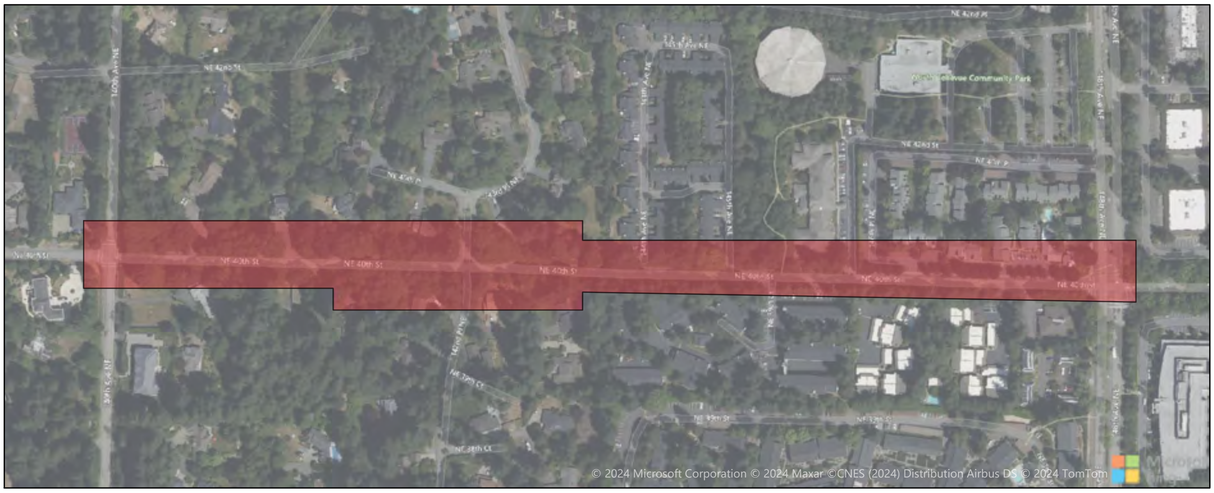
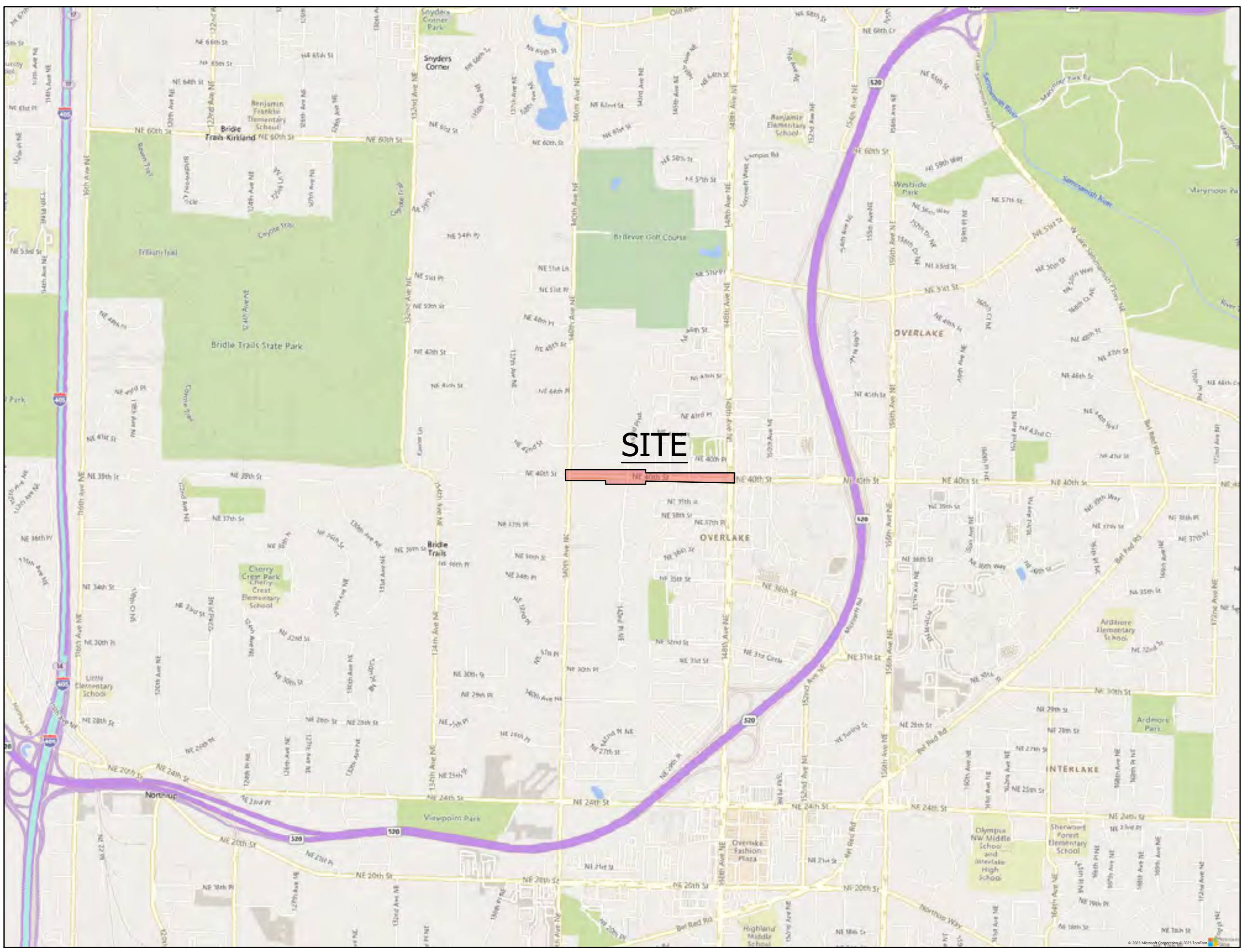


SITE MAP

0 250' 500' 750' 1000'

SCALE: 1" = 500'

N



VICINITY MAP

0 1500' 3000' 4500' 6000'

SCALE: 1" = 3000'

N

HWA GEOSCIENCES INC.
DBE/MWBE

SITE AND VICINITY MAP

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.: 1

DRAWN BY: CF

CHECK BY: AS

PROJECT # 2023-195-21

C:\USERS\CFRY\DESKTOP\2023-195-21 NE 40TH ST SIDEWALK\2023-195-21 NE 40TH ST SIDEWALK.DWG <1> Plotted: 4/2/2024 4:25 PM

NE 40TH ST
Scale: 1" = 40'-0"

EXPLORATION LEGEND

BH-3 BOREHOLE DESIGNATION AND APPROXIMATE LOCATION

0 20 40 60 80
SCALE: 1" = 40'

HWA GEOSCIENCES INC.
DBE/MWBE

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

SITE &
EXPLORATION PLAN

DRAWN BY:	FIGURE NO.:
CF	2A
CHECK BY:	PROJECT NO.:
AS	2023-195-21

BASE MAP PROVIDED BY: BING AND DEA 3.12.2024

C:\USERS\CFRY\DESKTOP\2023-195-21 NE 40TH ST SIDEWALK\2023-195-21 NE 40TH ST SIDEWALK.DWG <2A> Plotted: 3/18/2024 9:25 AM

MATCHLINE SEE 2A

MATCHLINE SEE 2C

NE 40TH ST
Scale: 1" = 40'-0"

EXPLORATION LEGEND

BH-2 ⌖ BOREHOLE DESIGNATION AND APPROXIMATE LOCATION

N

0 20 40 60 80
SCALE: 1" = 40'

HWA GEOSCIENCES INC.
DBE/MWBE

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

SITE &
EXPLORATION PLAN

DRAWN BY:	FIGURE NO.:
CF	2B
CHECK BY:	PROJECT NO.:
AS	2023-195-21

BASE MAP PROVIDED BY: BING AND DEA 3.12.2024

C:\USERS\CFRY\DESKTOP\2023-195-21 NE 40TH ST SIDEWALK\2023-195-21 NE 40TH ST SIDEWALK.DWG <2B> Plotted: 3/18/2024 9:28 AM

NE 40TH ST
Scale: 1" = 40'-0"

EXPLORATION LEGEND

BH-1 BOREHOLE DESIGNATION AND APPROXIMATE LOCATION

0 20 40 60 80
SCALE: 1" = 40'

HWA GEOSCIENCES INC. DBE/MWBE

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

SITE &
EXPLORATION PLAN

DRAWN BY: CF	FIGURE NO.: 2C
CHECK BY: AS	PROJECT NO.: 2023-195-21

BASE MAP PROVIDED BY: BING AND DEA 3.12.2024

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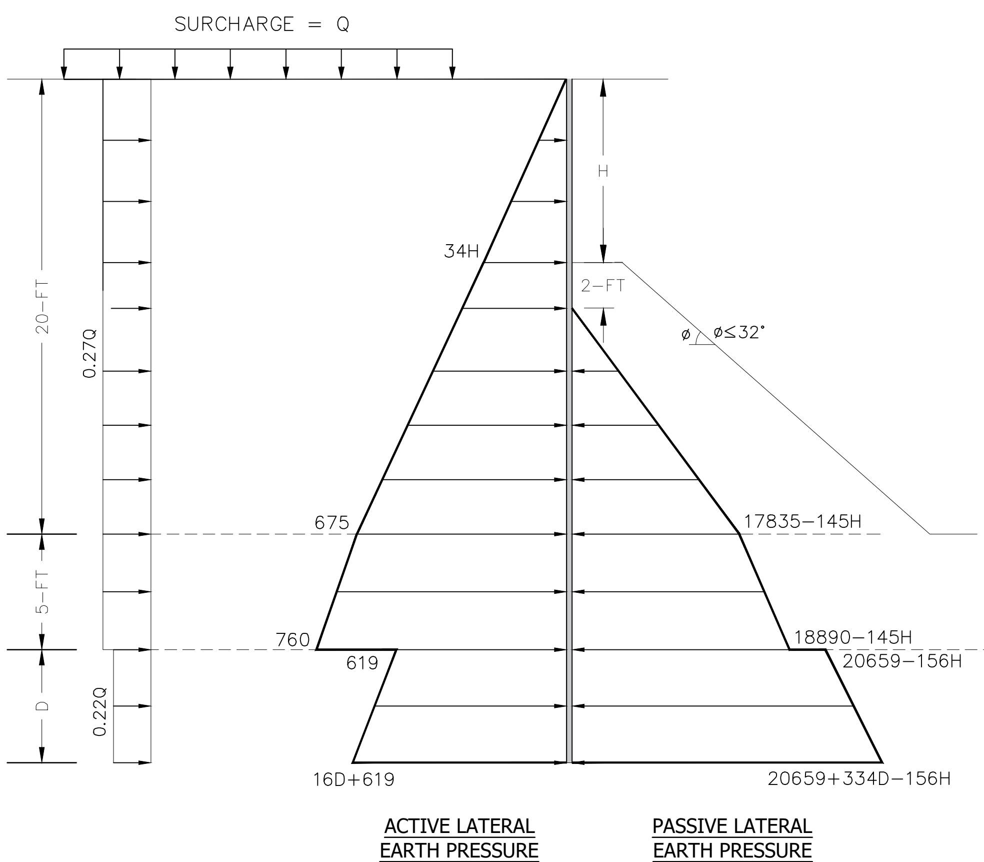
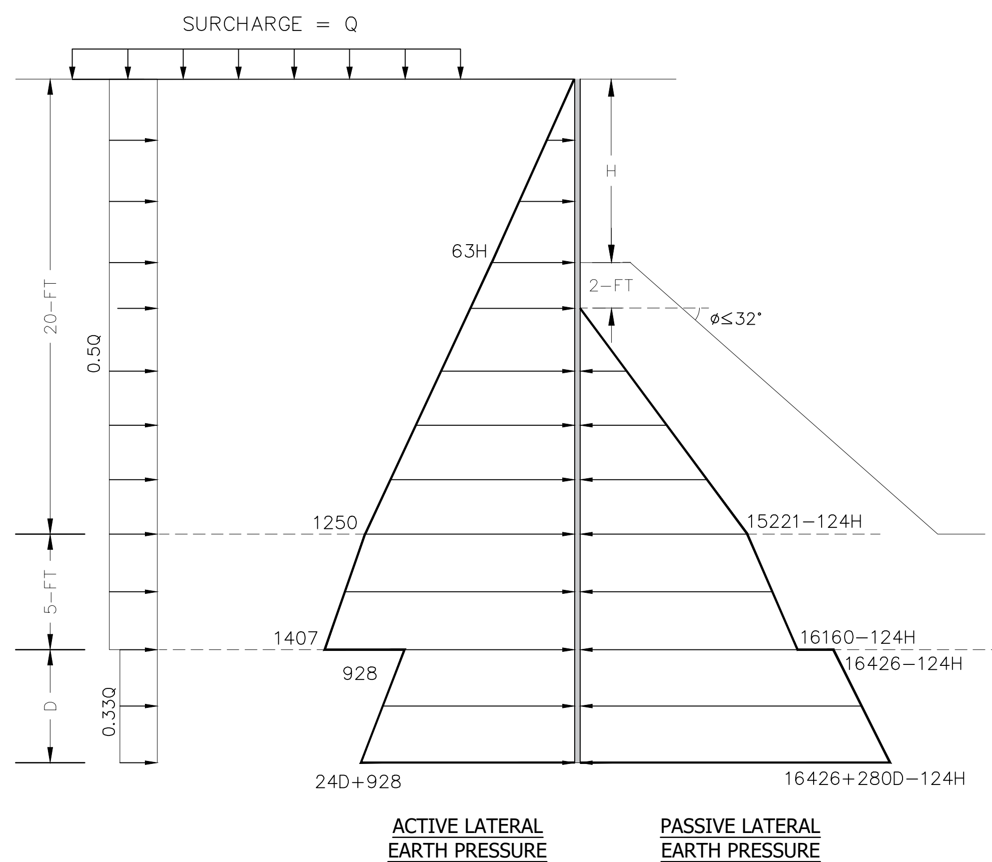
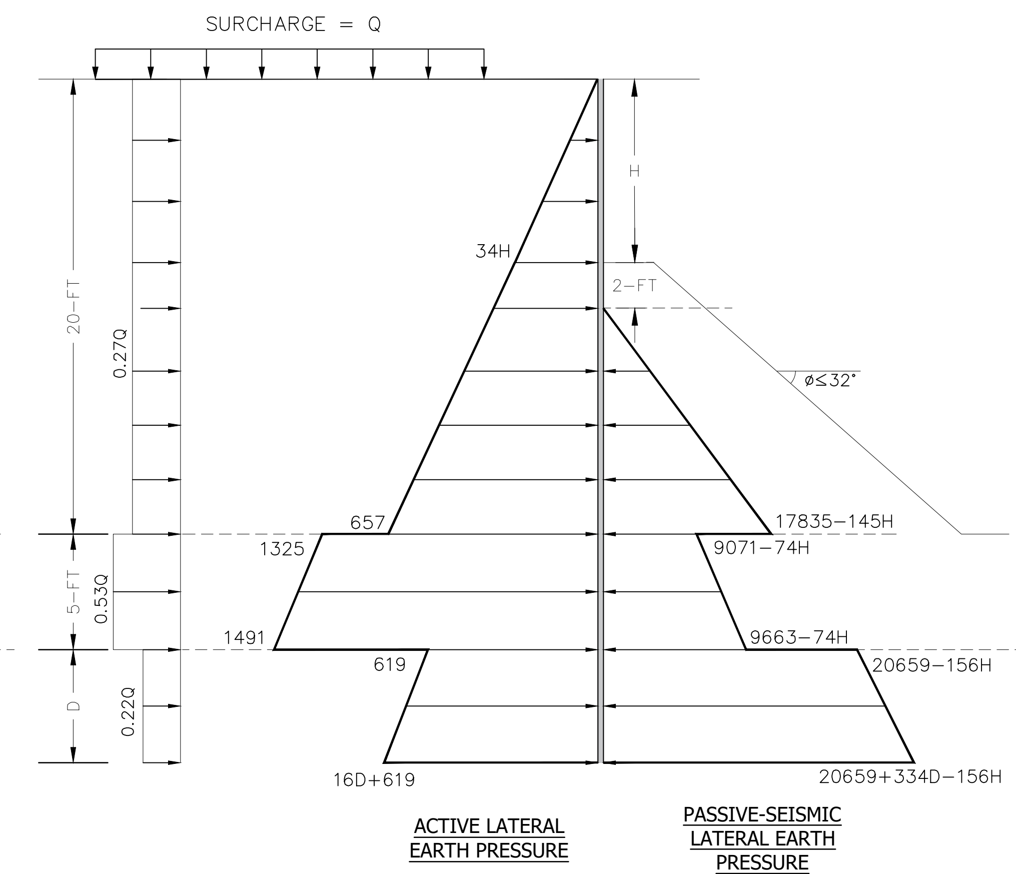


STRENGTH & SERVICE LIMIT STATE (STATIC)



EXTREME (EQ) LIMIT STATE (PSEUDOSTATIC)



EXTREME (EQ) LIMIT STATE (POST-LIQUEFACTION)

GENERAL WALL NOTES:

1. ALL PRESSURES SHOWN ARE IN UNITS OF POUNDS PER SQUARE FOOT (PSF).
2. LATERAL EARTH PRESSURES PROVIDED HEREIN ARE BASED ON ACTIVE EARTH PRESSURES AND SHOULD BE USED FOR THE DESIGN OF THE RETAINING WALLS WHERE THE WALL IS FREE TO DISPLACE LATERALLY AT LEAST 0.001H, WHERE H IS THE RETAINED HEIGHT OF THE WALL.
3. ALL EARTH PRESSURES PROVIDED ARE ULTIMATE (UNFACTORED). THE APPROPRIATE RESISTANCE FACTORS SHOULD BE APPLIED FOR EACH LOAD STATE.
4. PASSIVE EARTH PRESSURES SHOWN ASSUME THAT THE UPPER TWO FEET OF MATERIAL AT THE BASE OF THE WALL DOES NOT CONTRIBUTE TO PASSIVE RESISTANCE.
5. ALL EARTH PRESSURES ASSUMED NO BACK SLOPE.
6. ALL ACTIVE EARTH PRESSURES ACTING ON THE RETAINED PORTION OF THE WALL (ABOVE THE BASE OF THE WALL) SHOULD BE APPLIED ACROSS THE PILE SPACING.
7. ALL ACTIVE EARTH PRESSURES ACTING BELOW THE RETAINED PORTION OF THE WALL (BELOW THE BASE OF THE WALL) SHOULD BE APPLIED OVER ONE PILE SHAFT DIAMETER.

GENERAL STRENGTH AND SERVICE STATE DESIGN:

1. FOR STRENGTH LIMIT STATE DESIGN, A RESISTANCE FACTOR (Φ) OF 0.75 SHOULD BE APPLIED TO THE PASSIVE EARTH PRESSURES SHOWN.
2. FOR SERVICE LIMIT STATE DESIGN, A RESISTANCE FACTOR (Φ) OF 1.0 SHOULD BE APPLIED TO THE PASSIVE EARTH PRESSURES SHOWN.
3. THE SURCHARGE LOAD Q SHOULD BE EQUAL TO FACTORED DEAD AND LIVE LOADS INCLUDING EQUIPMENT, TRAFFIC, ETC.
4. ALL PASSIVE EARTH PRESSURES SHOULD BE APPLIED OVER TWO SHAFT DIAMETERS.

GENERAL EXTREME LIMIT STATE DESIGN - PSEUDOSTATIC AND POST-LIQUEFACTION:

1. LATERAL EARTH PRESSURES PRESENTED UNDER EXTREME (EQ) LIMIT STATE INCLUDE ACTIVE PLUS SEISMIC ON THE RETAINED SIDE AND PASSIVE PLUS SEISMIC ON THE FRONT SIDE OF THE WALL.
2. FOR THE EXTREME LIMIT STATE DESIGN, A RESISTANCE FACTOR (Φ) OF 1.0 SHOULD BE APPLIED TO THE PASSIVE EARTH PRESSURES SHOWN.
3. ALL PASSIVE EARTH PRESSURES SHOULD BE APPLIED OVER TWO SHAFT DIAMETERS.

NOT TO SCALE

HWA GEOSCIENCES INC. DBE/MWBE	NE 40TH ST SIDEWALK BELLEVUE, WASHINGTON	LATERAL EARTH PRESSURES FOR WALL 2	DRAWN BY: CF	FIGURE NO.: 3
			CHECK BY: AS	PROJECT NO.: 2023-195-21

C:\USERS\CFRY\DESKTOP\2023-195-21 NE 40TH ST SIDEWALK\EP DIAGRAMS\2023-195-21 NE 40TH ST SIDEWALK_EP.DWG <3> Plotted: 2/13/2024 8:11 AM

APPENDIX A

FIELD EXPLORATIONS

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N-VALUE

COHESIONLESS SOILS			COHESIVE SOILS		
Density	N (blows/ft)	Approximate Relative Density(%)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	0 - 15	Very Soft	0 to 2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	35 - 65	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	over 30	>4000

USCS SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP DESCRIPTIONS	
Coarse Grained Soils More than 50% Retained on No. 200 Sieve Size	Gravel and Gravelly Soils More than 50% of Coarse Fraction Retained on No. 4 Sieve	Clean Gravel (little or no fines)	GW	Well-graded GRAVEL
			GP	Poorly-graded GRAVEL
		Gravel with Fines (appreciable amount of fines)	GM	Silty GRAVEL
			GC	Clayey GRAVEL
	Sand and Sandy Soils 50% or More of Coarse Fraction Passing No. 4 Sieve	Clean Sand (little or no fines)	SW	Well-graded SAND
			SP	Poorly-graded SAND
		Sand with Fines (appreciable amount of fines)	SM	Silty SAND
			SC	Clayey SAND
Fine Grained Soils 50% or More Passing No. 200 Sieve Size	Silt and Clay	Liquid Limit Less than 50%	ML	SILT
			CL	Lean CLAY
			OL	Organic SILT/Organic CLAY
	Silt and Clay	Liquid Limit 50% or More	MH	Elastic SILT
			CH	Fat CLAY
			OH	Organic SILT/Organic CLAY
Highly Organic Soils			PT	PEAT

TEST SYMBOLS

%F	Percent Fines
AL	Atterberg Limits: PL = Plastic Limit, LL = Liquid Limit
CBR	California Bearing Ratio
CN	Consolidation
DD	Dry Density (pcf)
DS	Direct Shear
GS	Grain Size Distribution
K	Permeability
MD	Moisture/Density Relationship (Proctor)
MR	Resilient Modulus
OC	Organic Content
pH	pH of Soils
PID	Photoionization Device Reading
PP	Pocket Penetrometer (Approx. Comp. Strength, tsf)
Res.	Resistivity
SG	Specific Gravity
CD	Consolidated Drained Triaxial
CU	Consolidated Undrained Triaxial
UU	Unconsolidated Undrained Triaxial
TV	Torvane (Approx. Shear Strength, tsf)
UC	Unconfined Compression

SAMPLE TYPE SYMBOLS

- 2.0" OD Split Spoon (SPT) (140 lb. hammer with 30 in. drop)
- Shelby Tube
- Non-standard Penetration Test (3.0" OD Split Spoon with Brass Rings)
- Small Bag Sample
- Large Bag (Bulk) Sample
- Core Run
- 3-1/4" OD Split Spoon

GROUNDWATER SYMBOLS

- ∇ Groundwater Level (measured at time of drilling)
- ▼ Groundwater Level (measured in well or open hole after water level stabilized)

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5 mm) to No. 200 (0.074 mm)
Coarse sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074mm)

COMPONENT PROPORTIONS

PROPORTION RANGE	DESCRIPTIVE TERMS
< 5%	Clean
5 - 12%	Slightly (Clayey, Silty, Sandy)
12 - 30%	Clayey, Silty, Sandy, Gravelly
30 - 50%	Very (Clayey, Silty, Sandy, Gravelly)
Components are arranged in order of increasing quantities.	

NOTES: Soil classifications presented on exploration logs are based on visual and laboratory observation. Soil descriptions are presented in the following general order:

Density/consistency, color, modifier (if any) GROUP NAME, additions to group name (if any), moisture content. Proportion, gradation, and angularity of constituents, additional comments. (GEOLOGIC INTERPRETATION)

Please refer to the discussion in the report text as well as the exploration logs for a more complete description of subsurface conditions.

MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
MOIST	Damp but no visible water.
WET	Visible free water, usually soil is below water table.

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

LEGEND OF TERMS AND SYMBOLS USED ON EXPLORATION LOGS

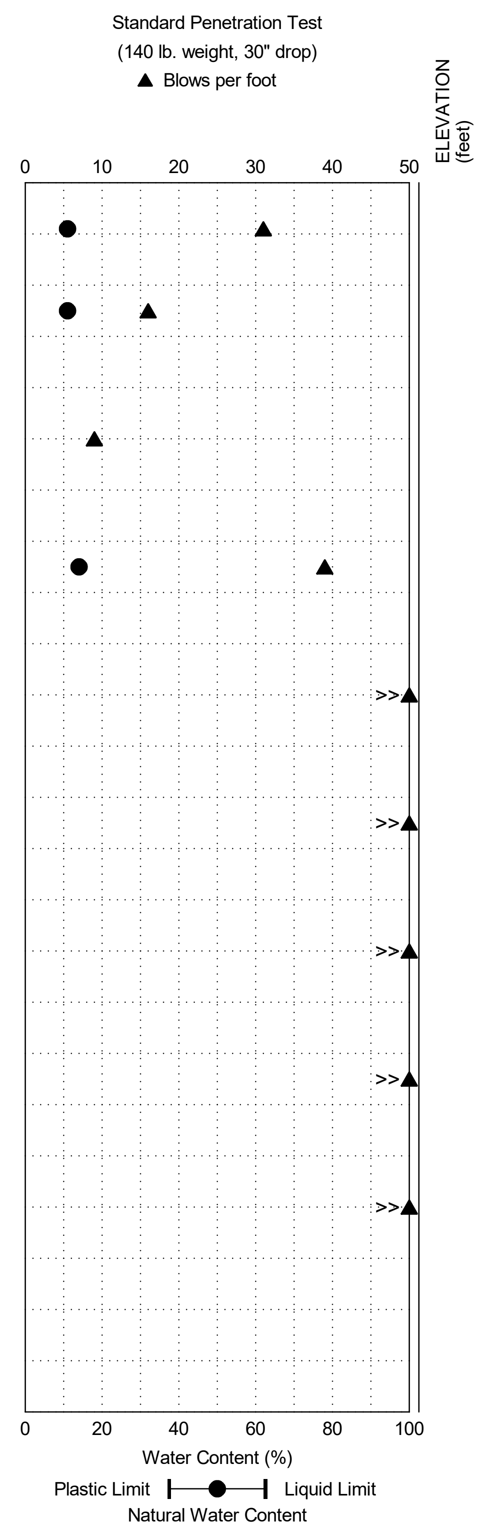
PROJECT NO.: 2023-195 FIGURE: A-1

DRILLING COMPANY: Geologic Drill Partners
DRILLING METHOD: MiniBob Tracked Drill Rig, HSA
SAMPLING METHOD: SPT w/Manual Cathead
LOCATION: See Figure 2C

DATE STARTED: 11/2/2023
DATE COMPLETED: 11/2/2023
LOGGED BY: M.A. Benson

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	GROUNDWATER
0		Approximately 0.9 feet of Hot Mix Asphalt. **(HMA)**				
	SM	Dense, olive brown, silty SAND, moist to wet. **(FILL)**	S-1	5-15-16	GS	
		Becomes medium dense and slightly gravelly.	S-2	11-8-8	GS	
5		Becomes loose.	S-3	4-4-5		
	SM	Dense, slightly rust-mottled, olive-brown, silty SAND, moist. **(ADVANCE OUTWASH)**	S-4	15-17-22	GS	
10		Becomes very dense.	S-5	18-22-29		
			S-6	21-33-39		
15		Becomes wet.	S-7	19-27-33		∇
	SP SM	Very dense, slightly rust-mottled olive brown, slightly silty SAND, wet.	S-8	32-37-44		
20	SM	Very dense, very silty SAND, wet.	S-9	50/6"		

BH-1 terminated at 20.5 feet below ground surface (bgs).
Groundwater encountered at about 15 feet bgs during the exploration.
Boring abandoned with 3/8" bentonite chips and surface patched with Aquaphalt cold patch mix.



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

BORING:
BH-1

PROJECT NO.: 2023-195

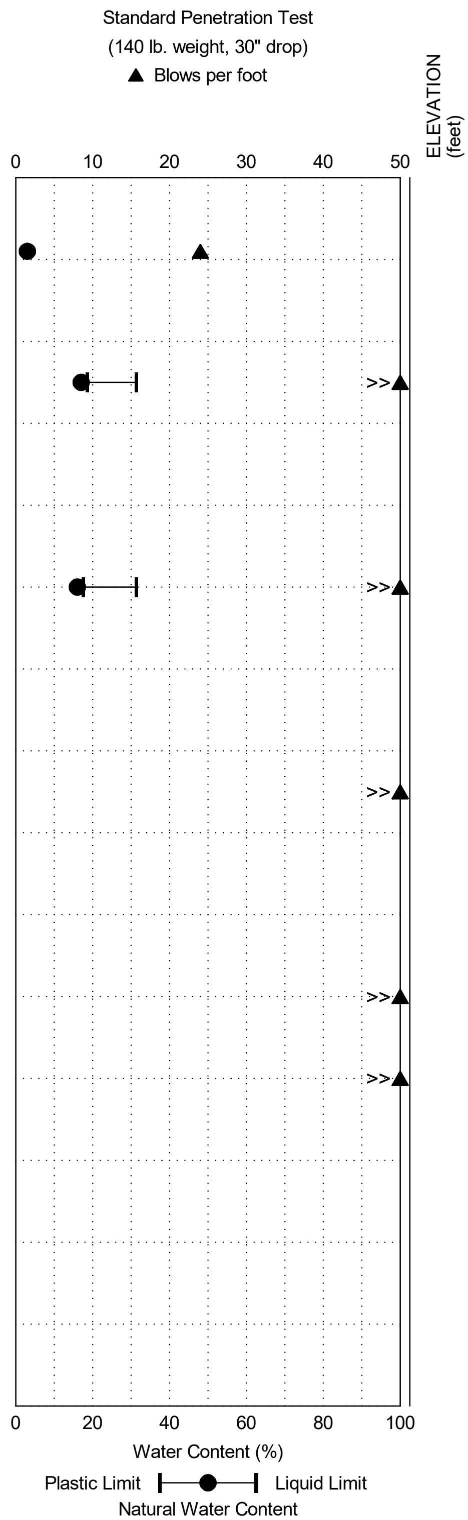
FIGURE: A-2

DRILLING COMPANY: Geologic Drill Partners
DRILLING METHOD: MiniBob Tracked Drill Rig, HSA
SAMPLING METHOD: SPT w/Manual Cathead
LOCATION: See Figure 2B

DATE STARTED: 11/2/2023
DATE COMPLETED: 11/2/2023
LOGGED BY: M.A. Benson

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	GROUNDWATER
0		Approximately 0.9 feet of Hot Mix Asphalt. **(HMA)**				
	SW SM	Medium dense, very dark, grayish-brown, well-graded SAND with silt and gravel, moist. **(FILL)**	S-1	8-11-13	GS	
	CL	Very stiff, rust-mottled, light olive-brown, sandy, lean CLAY, moist. Scattered gravel. **(TRANSITIONAL BEDS)**	S-2	12-13-15	AL	
5		Hard, olive-brown, sandy, lean CLAY, moist.	S-3	26-38-50/6"	AL	
		No recovery.	S-4	50/6"		
10		Hard, olive brown, sandy, lean CLAY, moist.	S-5	28-50/6"		
	SM	Very dense, grayish-brown, very silty SAND, moist. Scattered gravel. Driller reports very hard drilling at 11 feet.	S-6	18-50/6"		
15						

After driving sample S-5, drilling resumed and met refusal at a depth of 100 feet. Sample S-6 was driven at 11 feet and the borehole BH-2 was terminated at 12 feet.
No groundwater was encountered during the exploration.
Boring abandoned with 3/8" bentonite chips and surface patched with Aquaphalt cold patch mix.



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

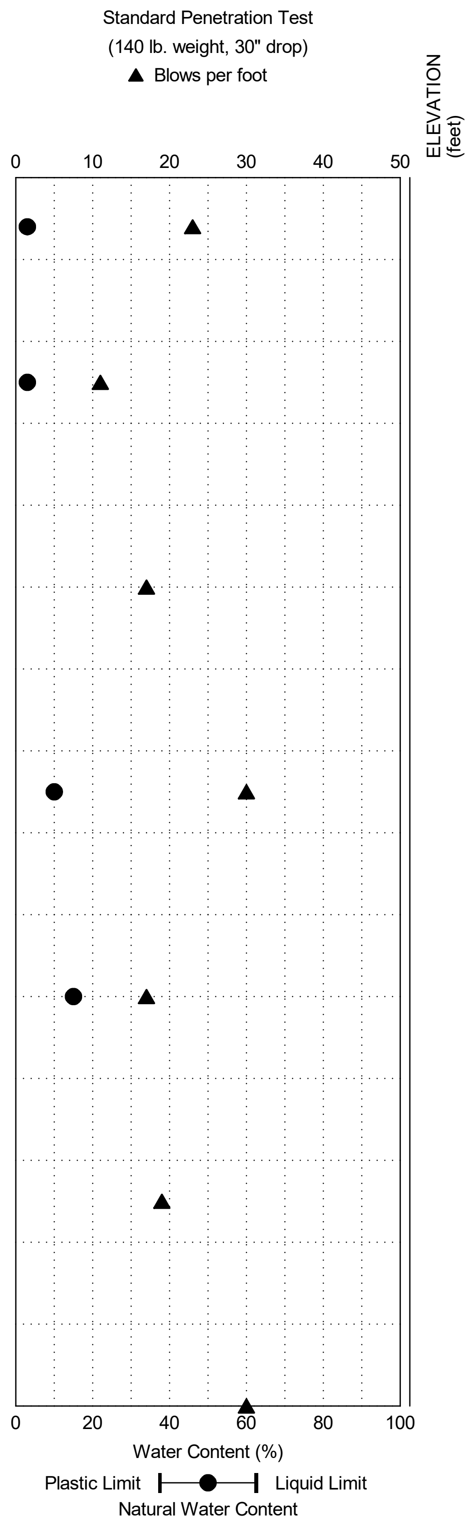
BORING:
BH-2

PROJECT NO.: 2023-195 FIGURE: A-3

DRILLING COMPANY: Geologic Drill Partners
DRILLING METHOD: MiniBob Tracked Drill Rig, HSA
SAMPLING METHOD: SPT w/Manual Cathead
LOCATION: See Figure 2A

DATE STARTED: 11/2/2023
DATE COMPLETED: 11/2/2023
LOGGED BY: M.A. Benson

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	GROUNDWATER
0		Approximately 0.6 feet of Hot Mix Asphalt. **(HMA)**				
	SW SM	Medium dense, olive-gray, well-graded SAND with silt and gravel, moist. **(FILL)**	S-1	9-9-14	GS	
	GP GM	Medium dense, olive, poorly graded GRAVEL with silt and sand, moist. Sand subangular.	S-2	5-5-6	GS	
5		Same as previous.	S-3	9-8-9		
	SM	Dense, slightly rust-mottled, light olive-brown, silty SAND, moist.	S-4	15-15-15	GS	
10		Becomes medium dense, dark olive-brown.	S-5	9-4-13	GS	
		Becomes rust-mottled. Grades to very silty, with scattered charcoal.	S-6	5-7-12		
15						



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

BORING:
BH-3

PROJECT NO.: 2023-195 FIGURE: A-4

DRILLING COMPANY: Geologic Drill Partners
DRILLING METHOD: MiniBob Tracked Drill Rig, HSA
SAMPLING METHOD: SPT w/Manual Cathead
LOCATION: See Figure 2A

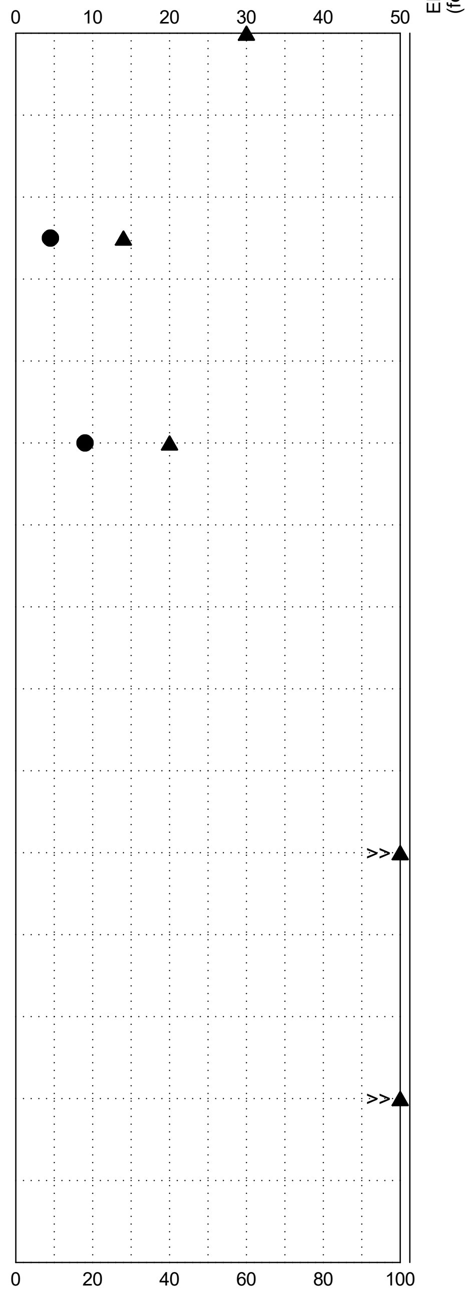
DATE STARTED: 11/2/2023
DATE COMPLETED: 11/2/2023
LOGGED BY: M.A. Benson

DEPTH (feet)	USCS SOIL CLASS	DESCRIPTION	SAMPLE NUMBER	PEN. RESISTANCE (blows/6 inches)	OTHER TESTS	GROUNDWATER
15	SP SM	Dense, dark olive brown, slightly silty SAND, moist.	S-7	12-14-16		
	SP	Medium dense, slightly rust-mottled, olive-brown, poorly graded SAND, moist. Scattered gravel.	S-8	8-6-8	GS	
20	SP SM	Medium dense, dark grayish-brown, poorly graded SAND with silt, wet. **(ALLUVIUM)**	S-9a	7-9-11	GS	▽
	OL	Stiff organic silt with wood and fibrous organics. 1-inch-thick gray sand lens in bottom of sampler.	S-9b			
	SM	Medium dense, dark grayish-brown, silty SAND, wet.				
25	SP	Very dense, dark grayish-brown, SAND, wet. **(ADVANCE OUTWASH)**	S-10	50/6"		
		No recovery.	S-11	50/3"		

Auger met refusal at a depth of 28 feet. Sample S-11 was driven at 28 feet and borehole BH-3 terminated at about 28.25 feet below ground surface (bgs).
Groundwater encountered at about 20 feet bgs during the exploration. Boring abandoned with 3/8" bentonite chips and surface patched with Aquaphalt cold patch mix.

30

Standard Penetration Test
(140 lb. weight, 30" drop)
▲ Blows per foot



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

BORING:
BH-3

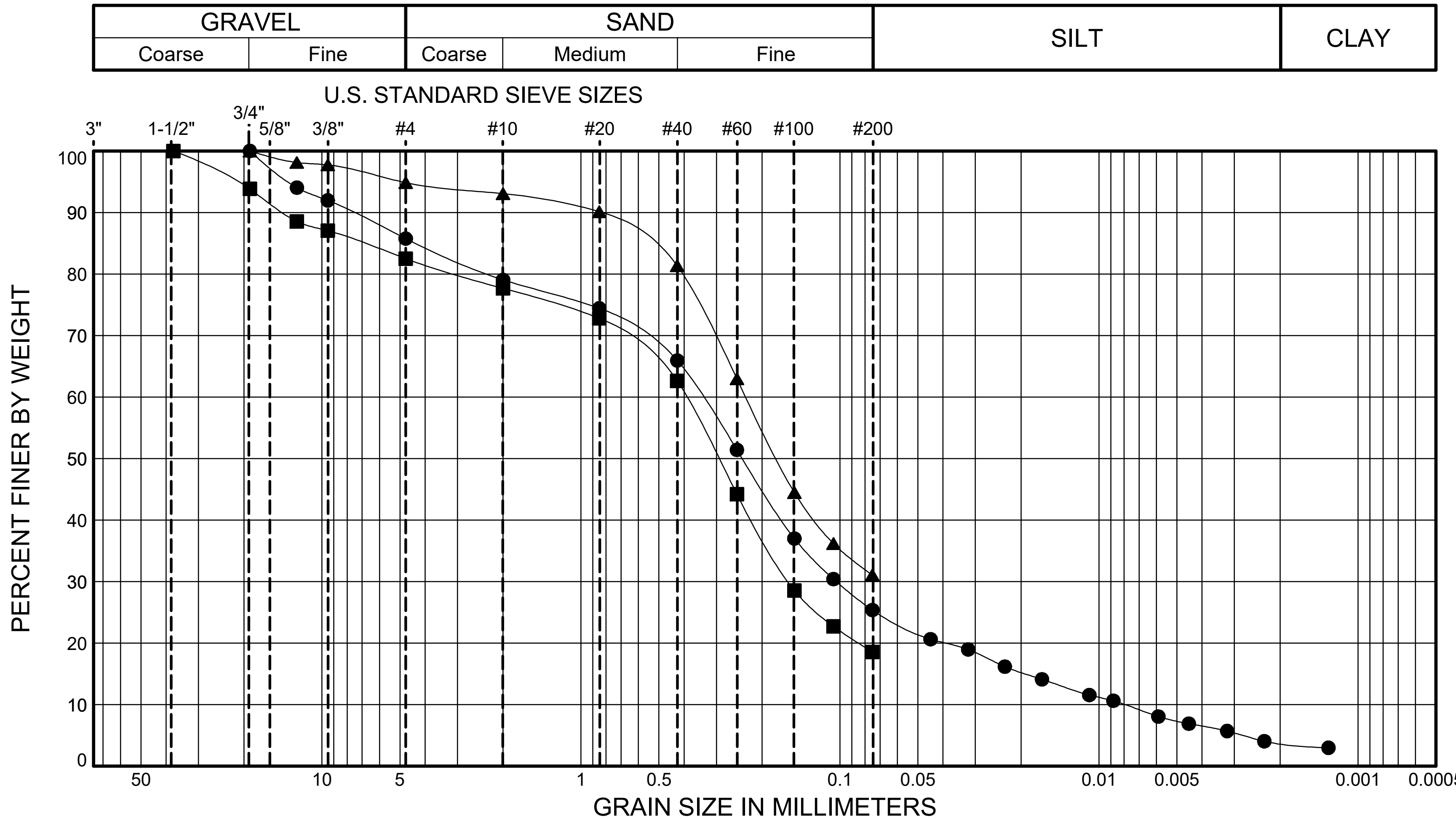
PROJECT NO.: 2023-195
FIGURE: A-4

APPENDIX B

LABORATORY TESTING

EXPLORATION DESIGNATION	TOP DEPTH (feet)	BOTTOM DEPTH (feet)	MOISTURE CONTENT (%)	ORGANIC CONTENT (%)	SPECIFIC GRAVITY	ATTERBERG LIMITS (%) LL	PL	PI	% GRAVEL	% SAND	% FINES	ASTM SOIL CLASSIFICATION	SAMPLE DESCRIPTION
BH-1,S-1	0.9	2.4	10.8						14.2	60.4	25.4	SM	Olive-brown, silty SAND
BH-1,S-2	2.5	4.0	10.8						17.5	64.0	18.5	SM	Olive-brown, silty SAND with gravel
BH-1,S-4	7.5	9.0	13.9						5.2	63.8	31.1	SM	Olive, silty SAND
BH-2,S-1	0.9	2.4	2.8						25.8	66.0	8.3	SW-SM	Very dark grayish-brown, well-graded SAND with silt and gravel
BH-2,S-2	2.5	4.0	17.0			31	19	12	2.7	46.2	51.1	CL	Light olive-brown, sandy lean CLAY
BH-2,S-3	5.0	6.5	15.9			31	18	13	1.7	33.7	64.5	CL	Olive, sandy lean CLAY
BH-3,S-1	0.6	2.1	3.0						35.4	54.5	10.1	SW-SM	Olive-gray, well-graded SAND with silt and gravel
BH-3,S-2	2.5	4.0	2.6						47.9	44.6	7.4	GP-GM	Olive, poorly graded GRAVEL with silt and sand
BH-3,S-4	7.5	9.0	10.0						11.4	75.0	13.6	SM	Light olive-brown, silty SAND
BH-3,S-5	10.0	11.5	14.7						11.3	67.0	21.7	SM	Dark olive-brown, silty SAND
BH-3,S-8	17.5	19.0	8.7						7.6	88.0	4.5	SP	Olive-brown, poorly graded SAND
BH-3,S-9a	20.0	21.0	17.5						5.3	85.5	9.2	SP-SM	Dark grayish-brown, poorly graded SAND with silt

Notes:
1. This table summarizes information presented elsewhere in the report and should be used in conjunction with the report test, other graphs and tables, and the exploration logs.
2. The soil classifications in this table are based on ASTM D2487 and D2488 as applicable.



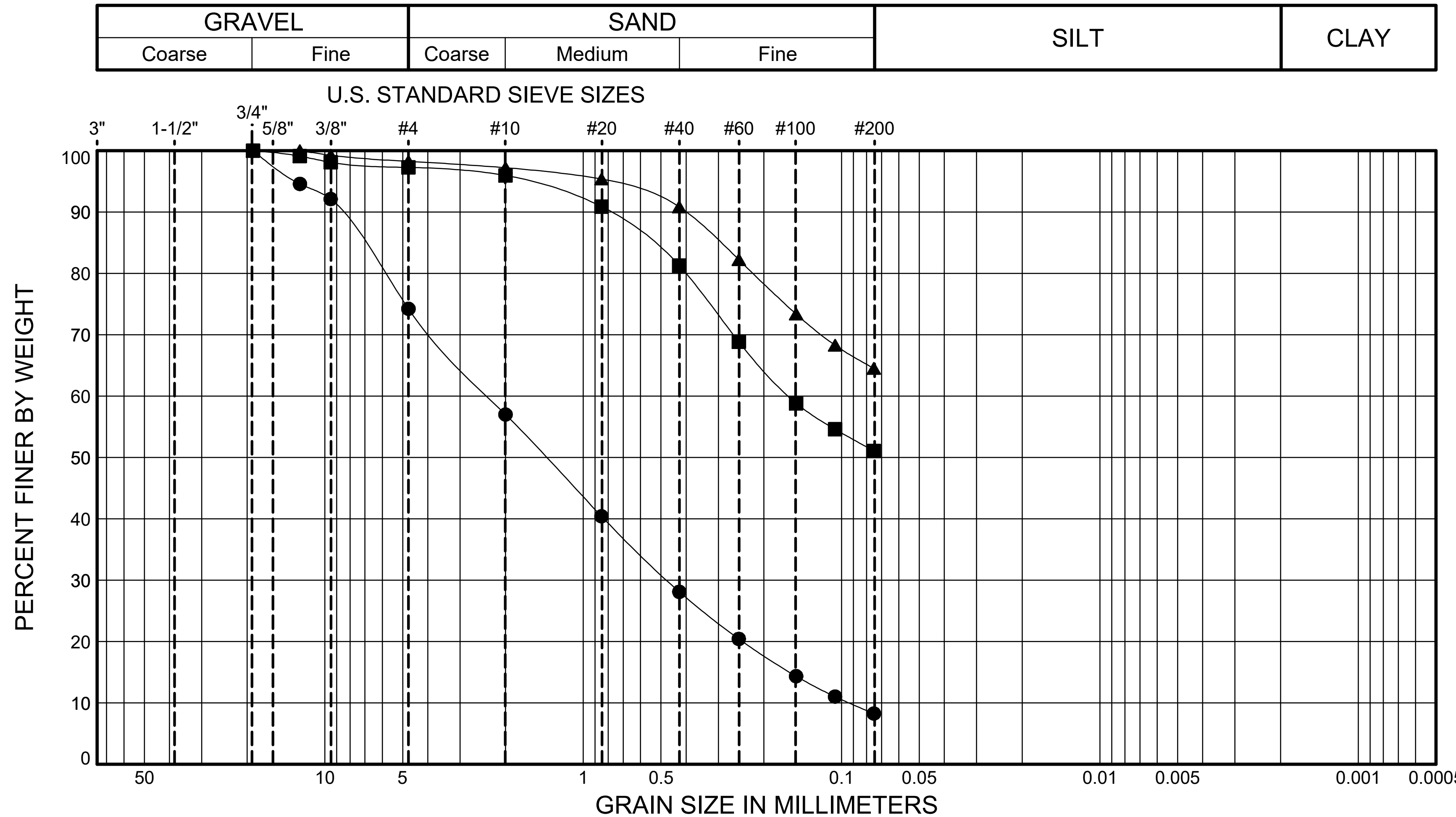
SYMBOL	SAMPLE		DEPTH (ft.)	ASTM SOIL CLASSIFICATION	% MC	LL	PL	PI	Gravel %	Sand %	Silt %	Clay %	Fines %
●	BH-1	S-1	0.9 - 2.4	(SM) Olive-brown, silty SAND	11				14.2	60.4	21.6	3.8	
■	BH-1	S-2	2.5 - 4.0	(SM) Olive-brown, silty SAND with gravel	11				17.5	64.0			18.5
▲	BH-1	S-4	7.5 - 9.0	(SM) Olive, silty SAND	14				5.2	63.8			31.1

GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

PARTICLE-SIZE ANALYSIS OF SOILS METHODS ASTM D6913/D7928

PROJECT NO.: 2023-195 FIGURE: B-2



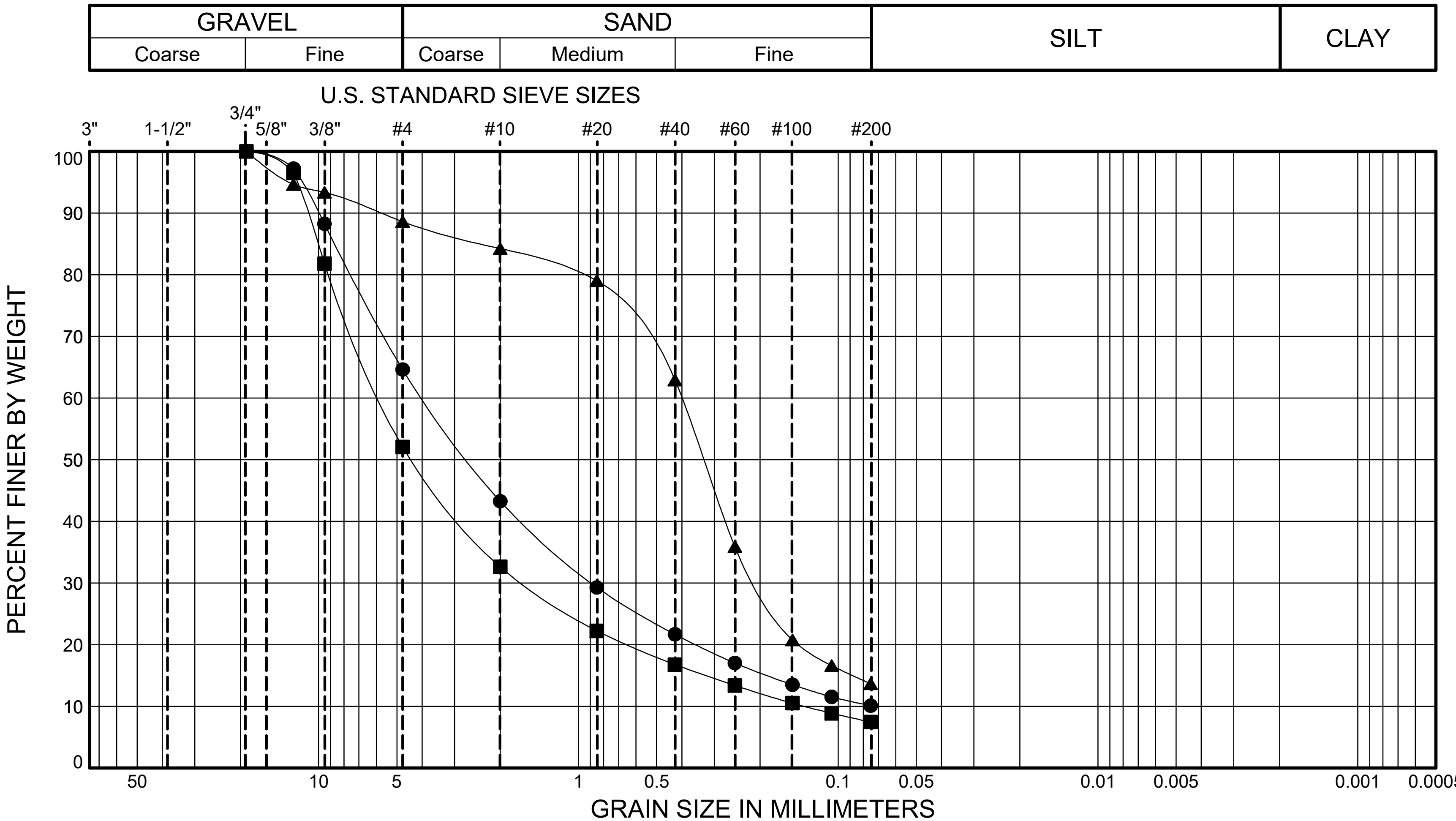
SYMBOL	SAMPLE		DEPTH (ft.)	ASTM SOIL CLASSIFICATION	% MC	LL	PL	PI	Gravel %	Sand %	Silt %	Clay %	Fines %
●	BH-2	S-1	0.9 - 2.4	(SW-SM) Very dark grayish-brown, well-graded SAND with silt and gravel	3				25.8	66.0			8.3
■	BH-2	S-2	2.5 - 4.0	(CL) Light olive-brown, sandy lean CLAY	17	31	19	12	2.7	46.2			51.1
▲	BH-2	S-3	5.0 - 6.5	(CL) Olive, sandy lean CLAY	16	31	18	13	1.7	33.7			64.5

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

PARTICLE-SIZE ANALYSIS OF SOILS METHODS ASTM D6913/D7928

PROJECT NO.: 2023-195 FIGURE: B-3



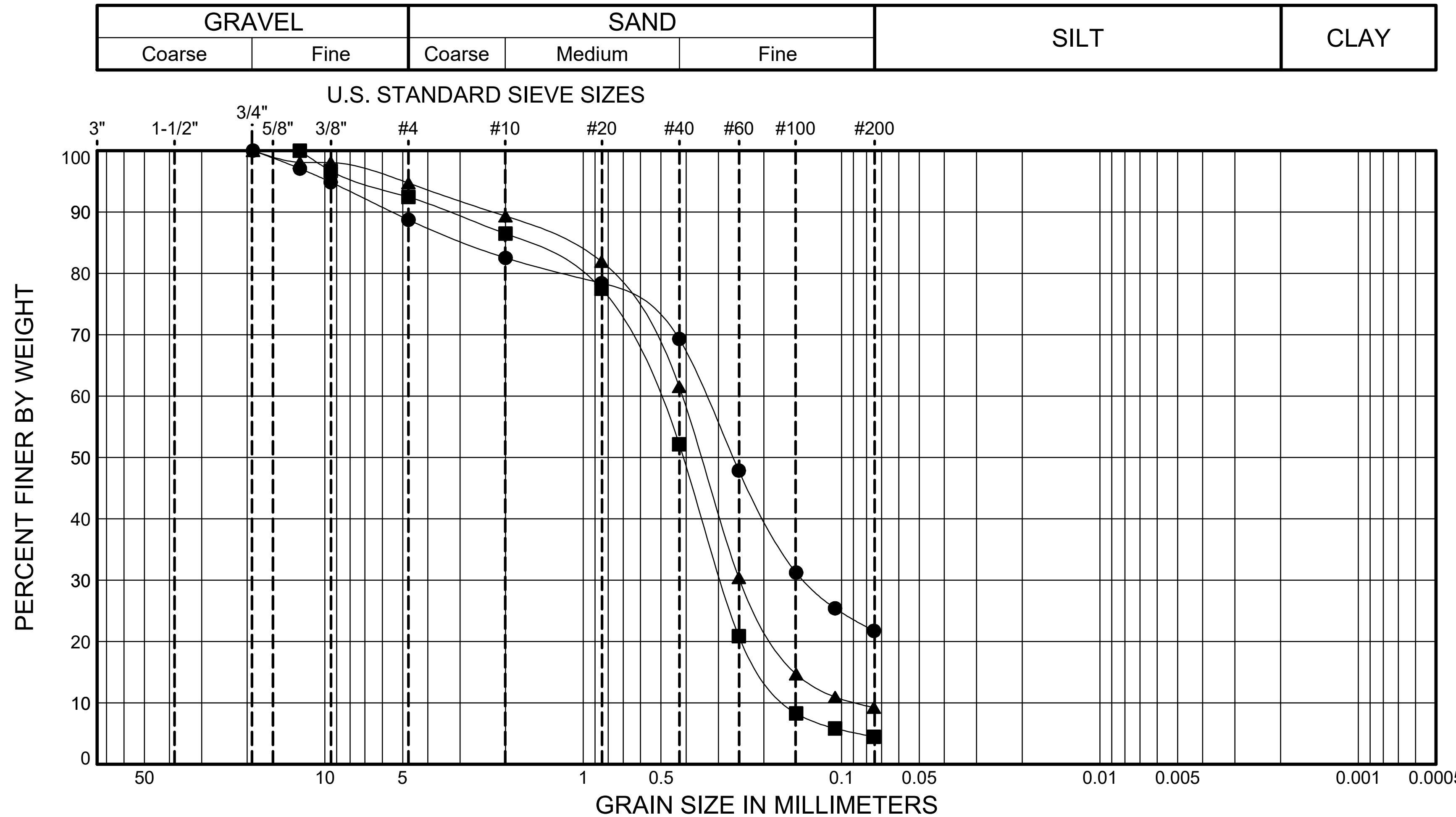
SYMBOL	SAMPLE		DEPTH (ft.)	ASTM SOIL CLASSIFICATION	% MC	LL	PL	PI	Gravel %	Sand %	Silt %	Clay %	Fines %
●	BH-3	S-1	0.6 - 2.1	(SW-SM) Olive-gray, well-graded SAND with silt and gravel	3				35.4	54.5			10.1
■	BH-3	S-2	2.5 - 4.0	(GP-GM) Olive, poorly graded GRAVEL with silt and sand	3				47.9	44.6			7.4
▲	BH-3	S-4	7.5 - 9.0	(SM) Light olive-brown, silty SAND	10				11.4	75.0			13.6

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

PARTICLE-SIZE ANALYSIS
OF SOILS
METHODS ASTM D6913/D7928

PROJECT NO.: 2023-195 FIGURE: B-4



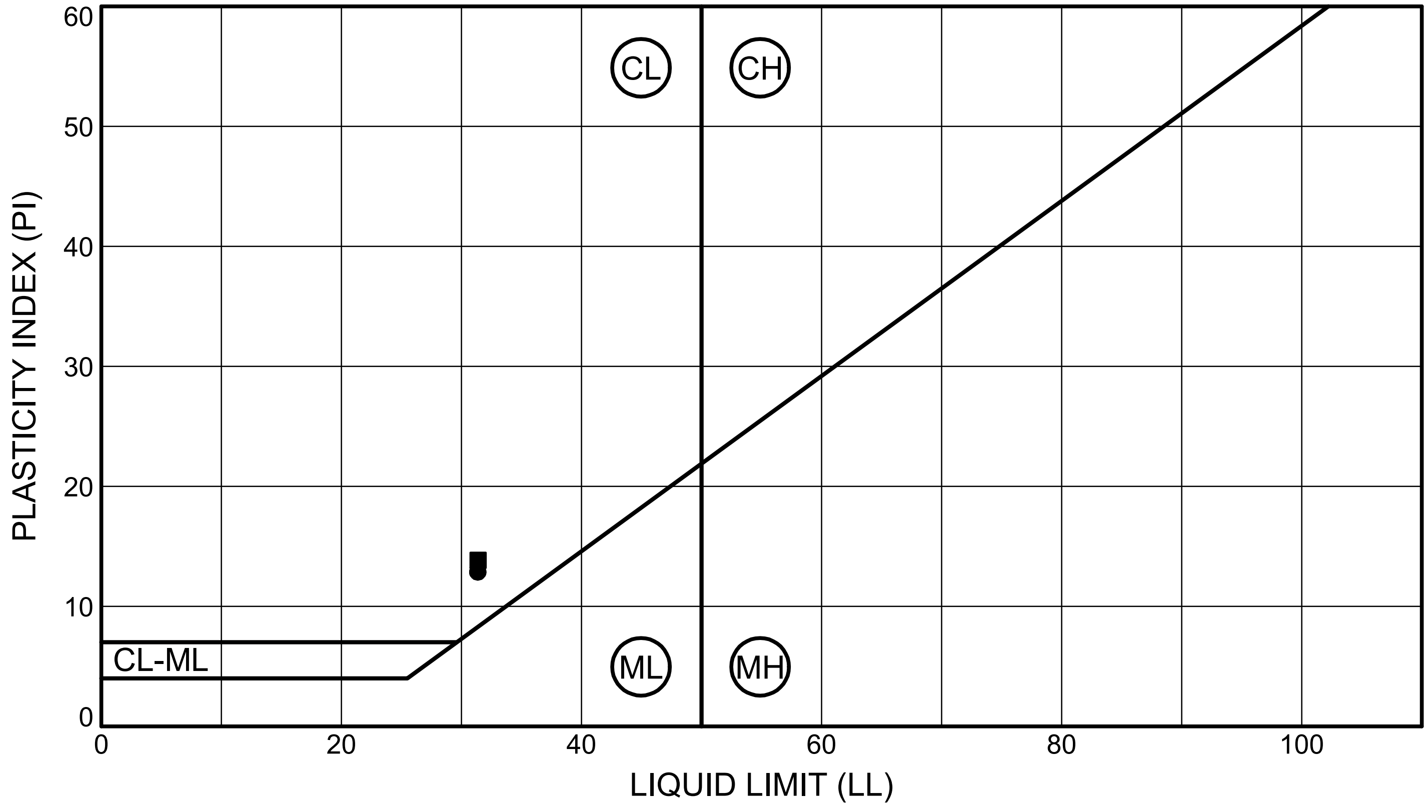
SYMBOL	SAMPLE		DEPTH (ft.)	ASTM SOIL CLASSIFICATION	% MC	LL	PL	PI	Gravel %	Sand %	Silt %	Clay %	Fines %
●	BH-3	S-5	10.0 - 11.5	(SM) Dark olive-brown, silty SAND	15				11.3	67.0			21.7
■	BH-3	S-8	17.5 - 19.0	(SP) Olive-brown, poorly graded SAND	9				7.6	88.0			4.5
▲	BH-3	S-9a	20.0 - 21.0	(SP-SM) Dark grayish-brown, poorly graded SAND with silt	18				5.3	85.5			9.2

HWA GEOSCIENCES INC.

NE 40th Street Sidewalk
Bellevue, Washington

PARTICLE-SIZE ANALYSIS OF SOILS METHODS ASTM D6913/D7928

PROJECT NO.: 2023-195 FIGURE: B-5



SYMBOL	SAMPLE		DEPTH (ft)	CLASSIFICATION	% MC	LL	PL	PI	% Fines
●	BH-2	S-2	2.5 - 4.0	(CL) Light olive-brown, sandy lean CLAY	17	31	19	12	51.1
■	BH-2	S-3	5.0 - 6.5	(CL) Olive, sandy lean CLAY	16	31	18	13	64.5

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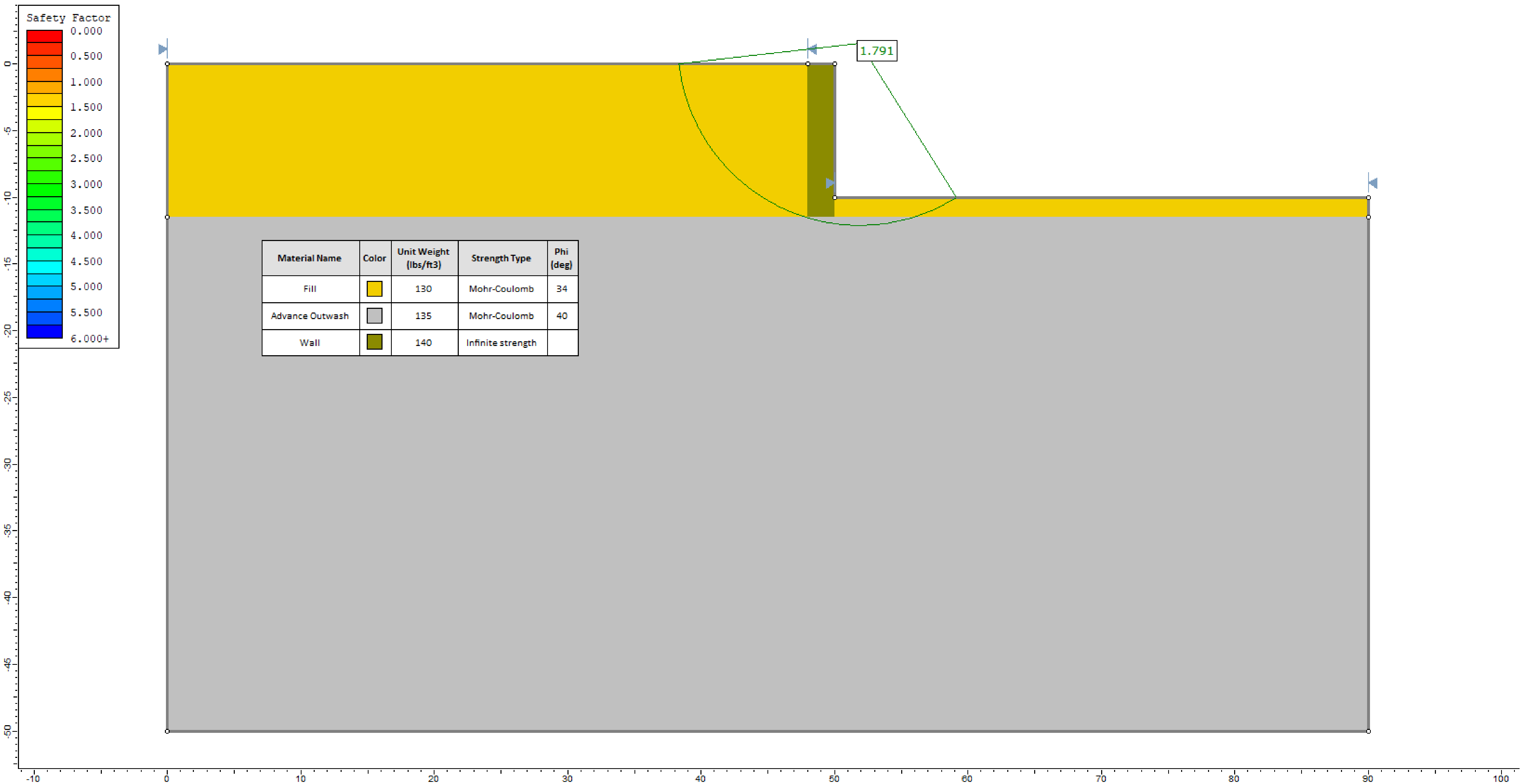
NE 40th Street Sidewalk
Bellevue, Washington

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS METHOD ASTM D4318

PROJECT NO.: 2023-195 FIGURE: B-6

APPENDIX C

GLOBAL SLOPE STABILITY ANALYSES



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

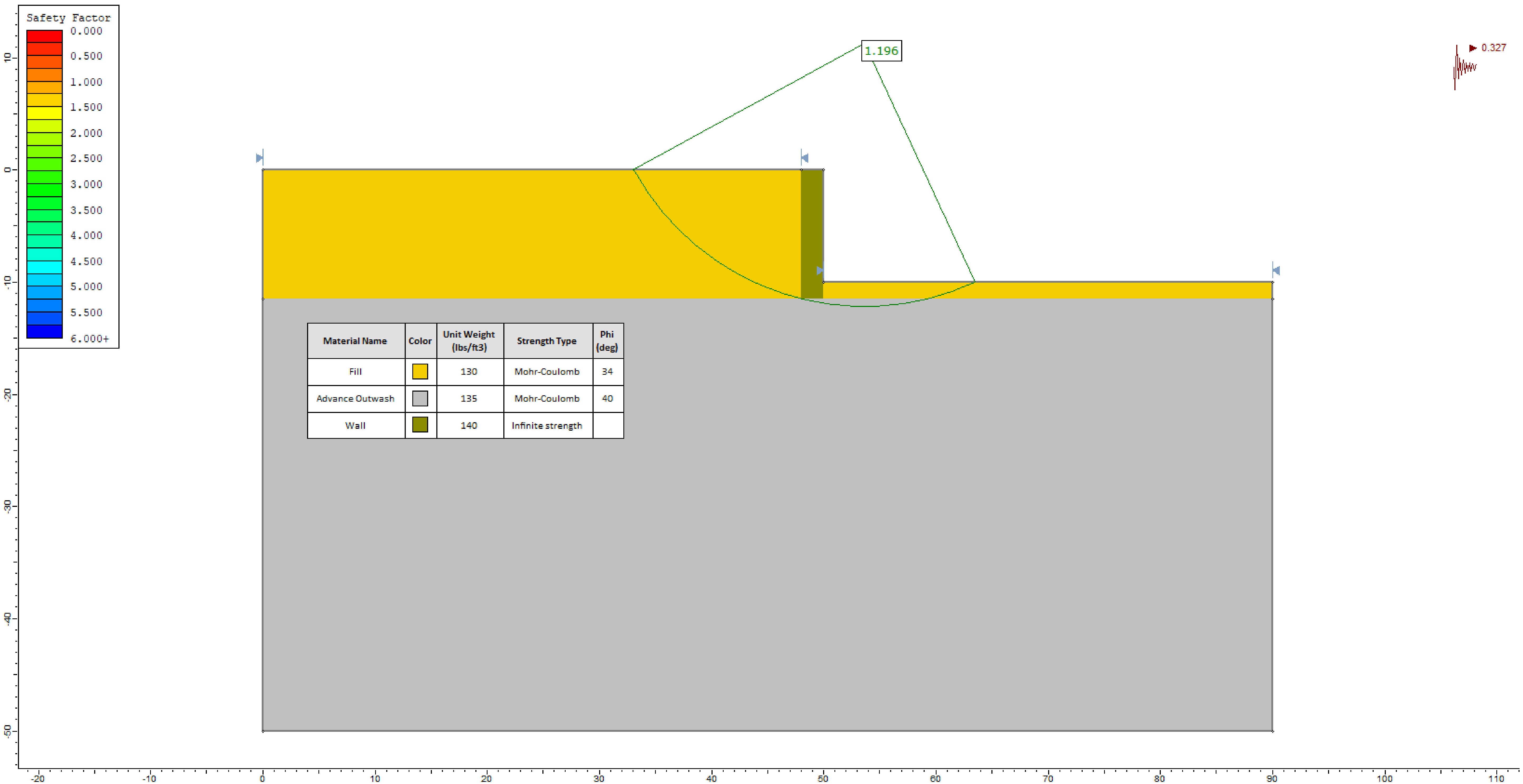
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 1 STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-1

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

HWA GEOSCIENCES INC.
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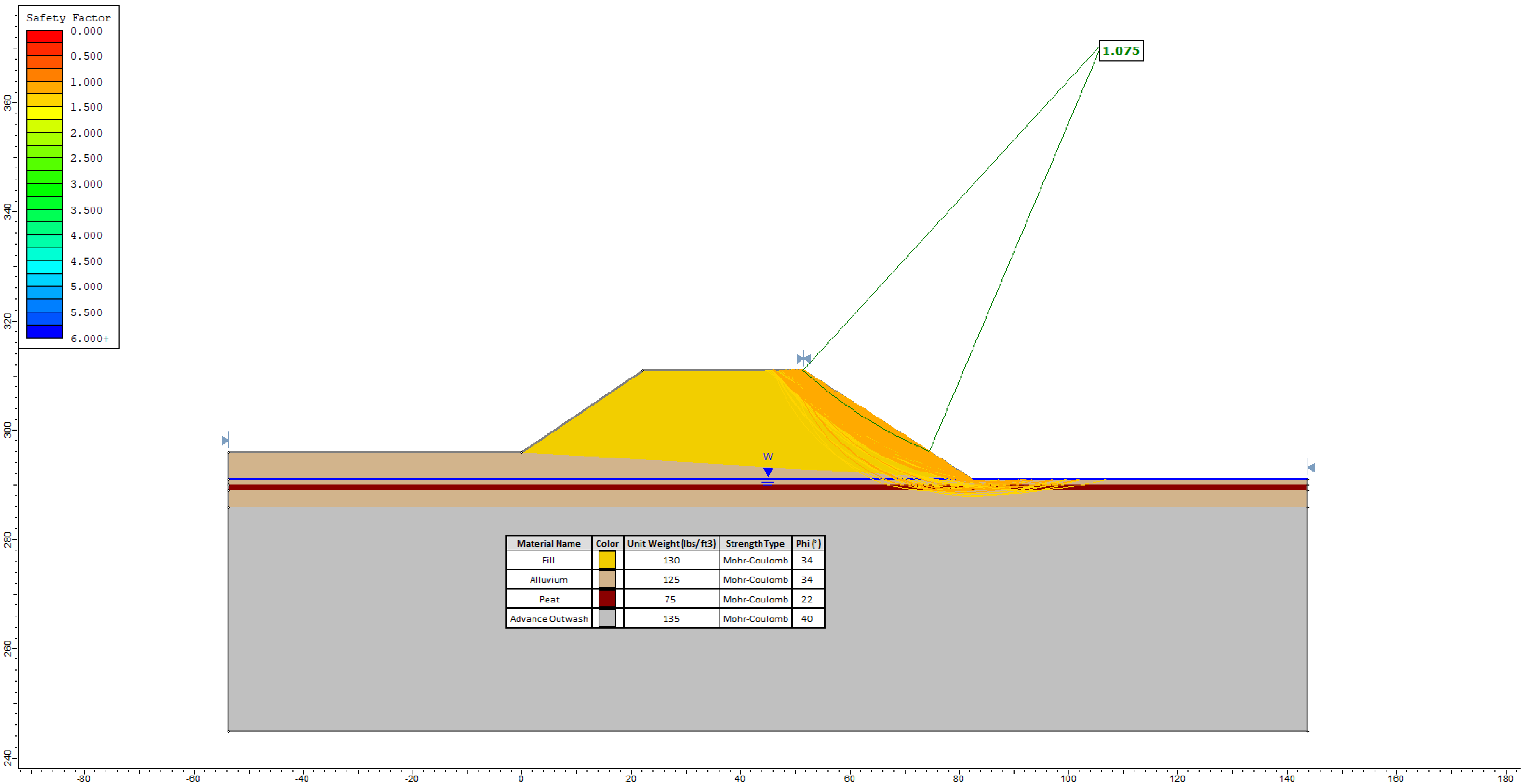
SLOPE STABILITY ANALYSIS
WALL 1 PSEUDO-STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-2

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40

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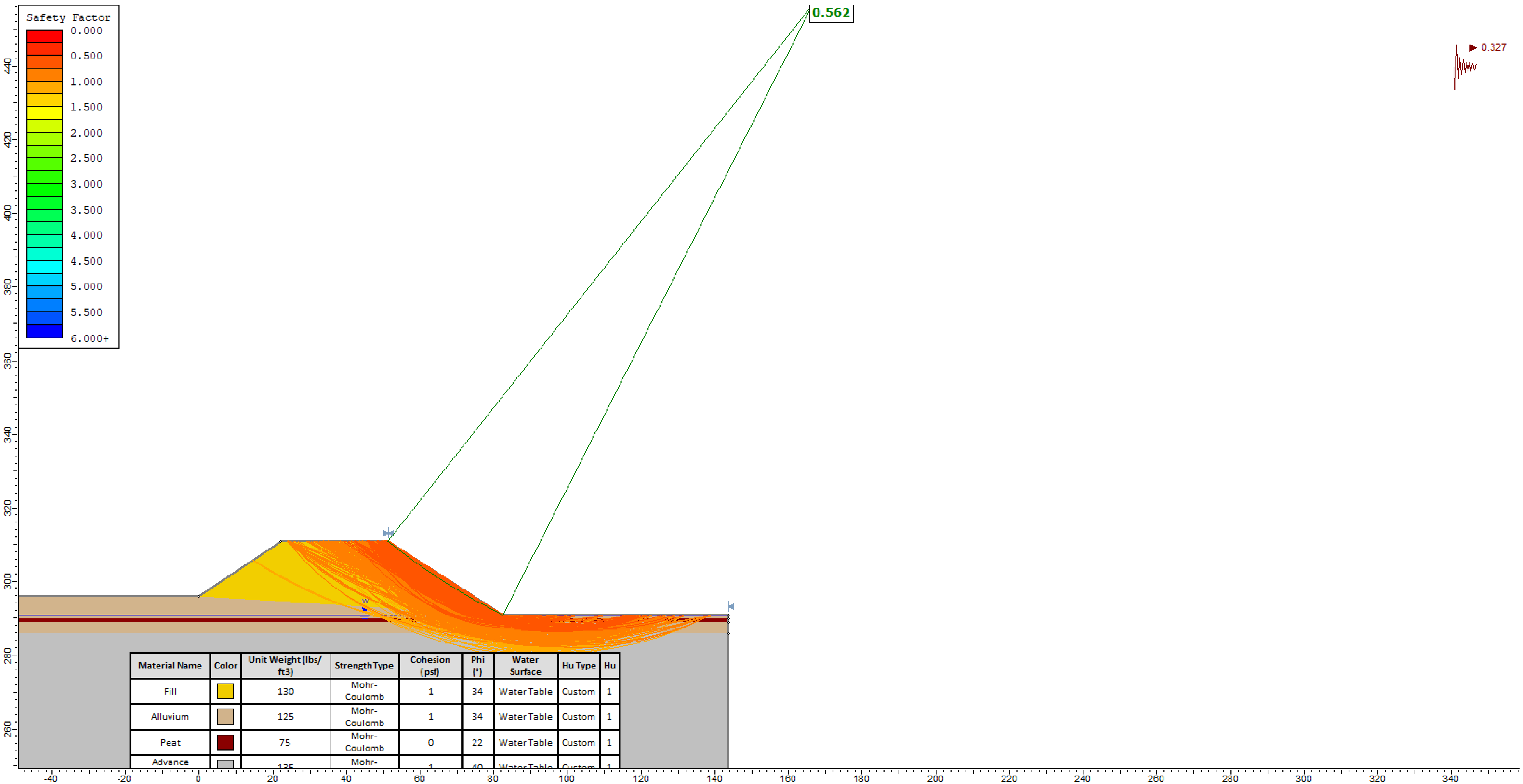
SLOPE STABILITY ANALYSIS
EXISTING STEEP SLOPE STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-3

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Water Surface	Hu Type	Hu
Fill		130	Mohr-Coulomb	1	34	Water Table	Custom	1
Alluvium		125	Mohr-Coulomb	1	34	Water Table	Custom	1
Peat		75	Mohr-Coulomb	0	22	Water Table	Custom	1
Advance		125	Mohr-	1	40	Water Table	Custom	1

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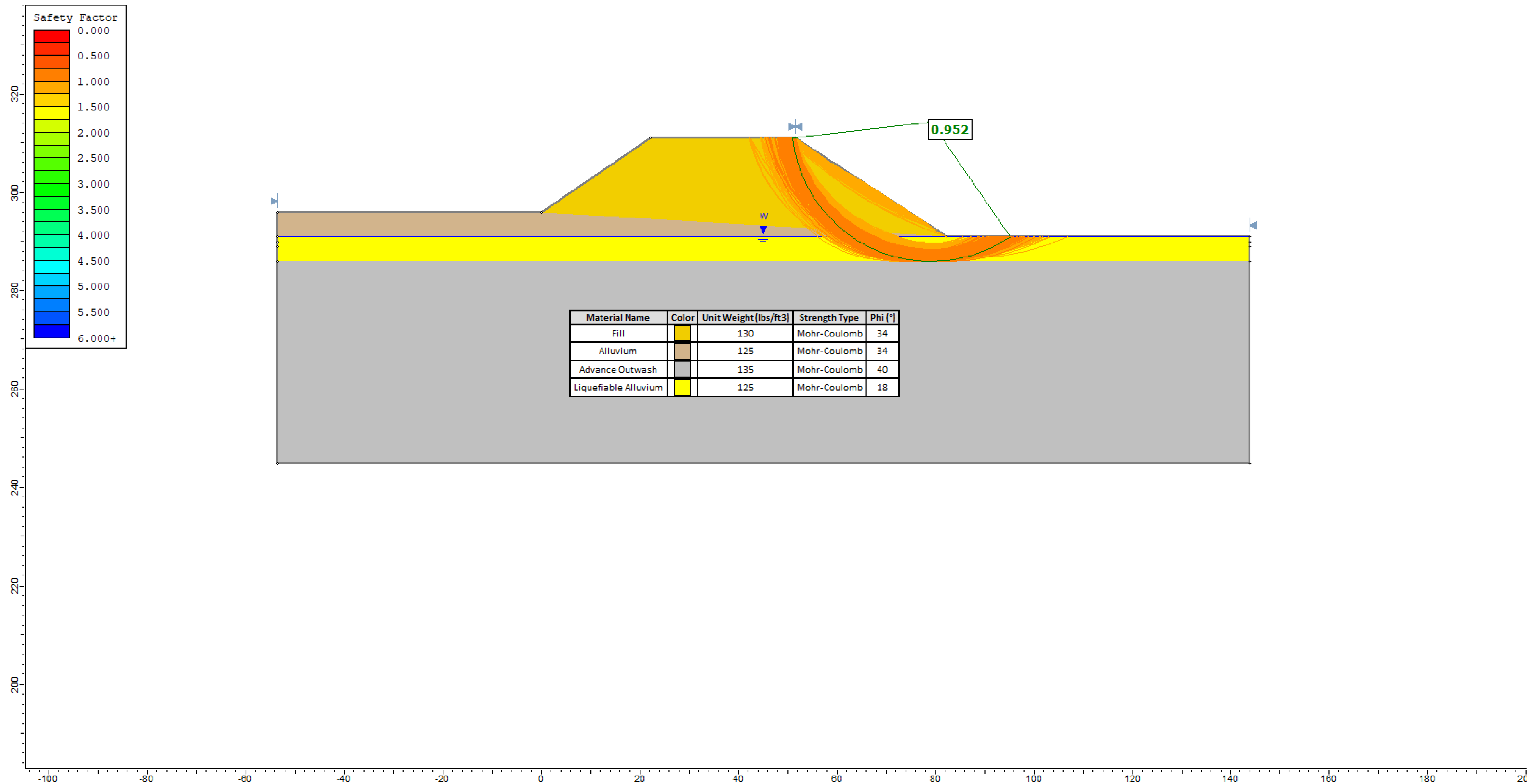
SLOPE STABILITY ANALYSIS
EXISTING STEEP SLOPE PSEUDO-STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-4

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Liquefiable Alluvium		125	Mohr-Coulomb	18

HWA GEOSCIENCES INC.
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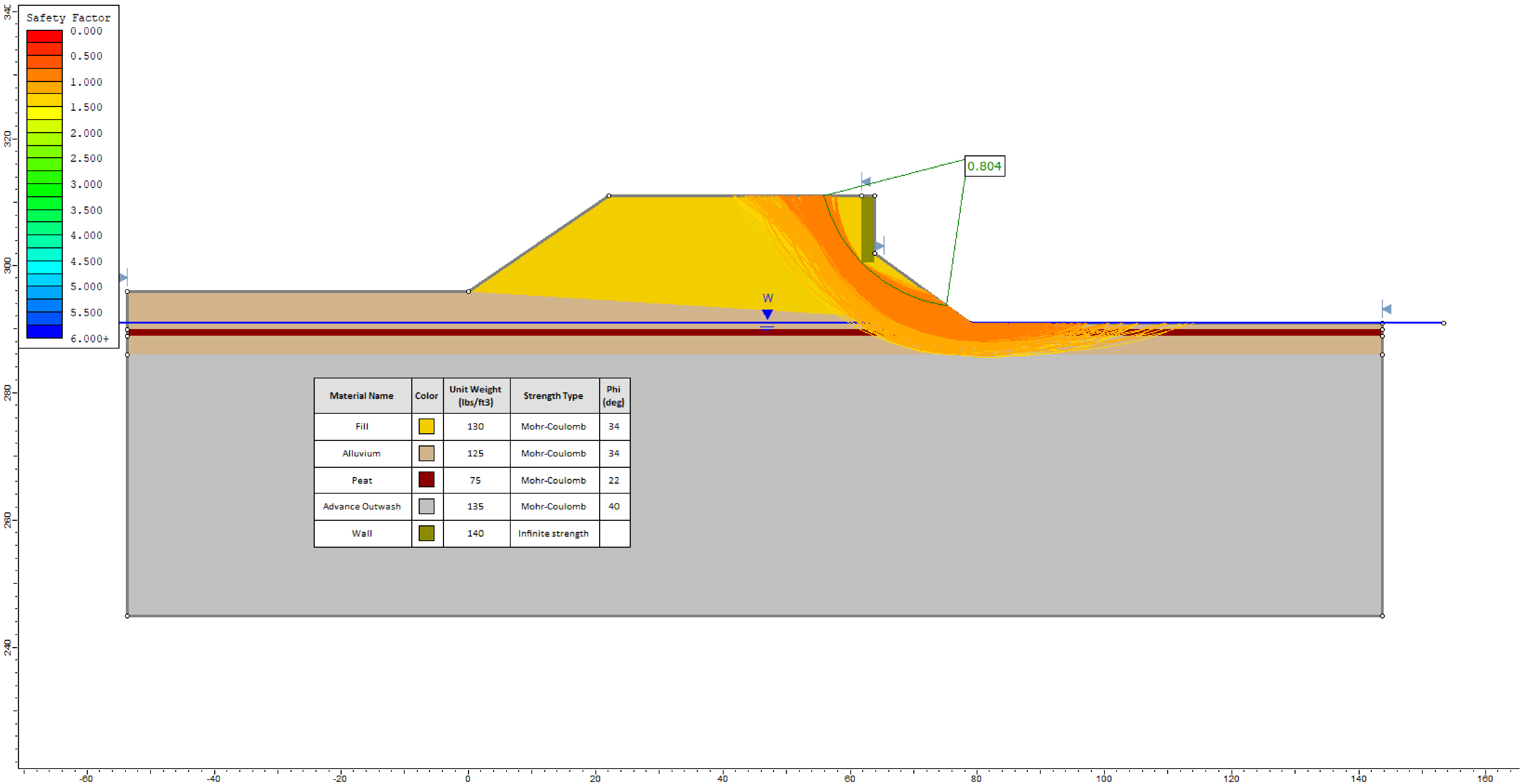
SLOPE STABILITY ANALYSIS
EXISTING STEEP SLOPE POST LQ STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-5

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

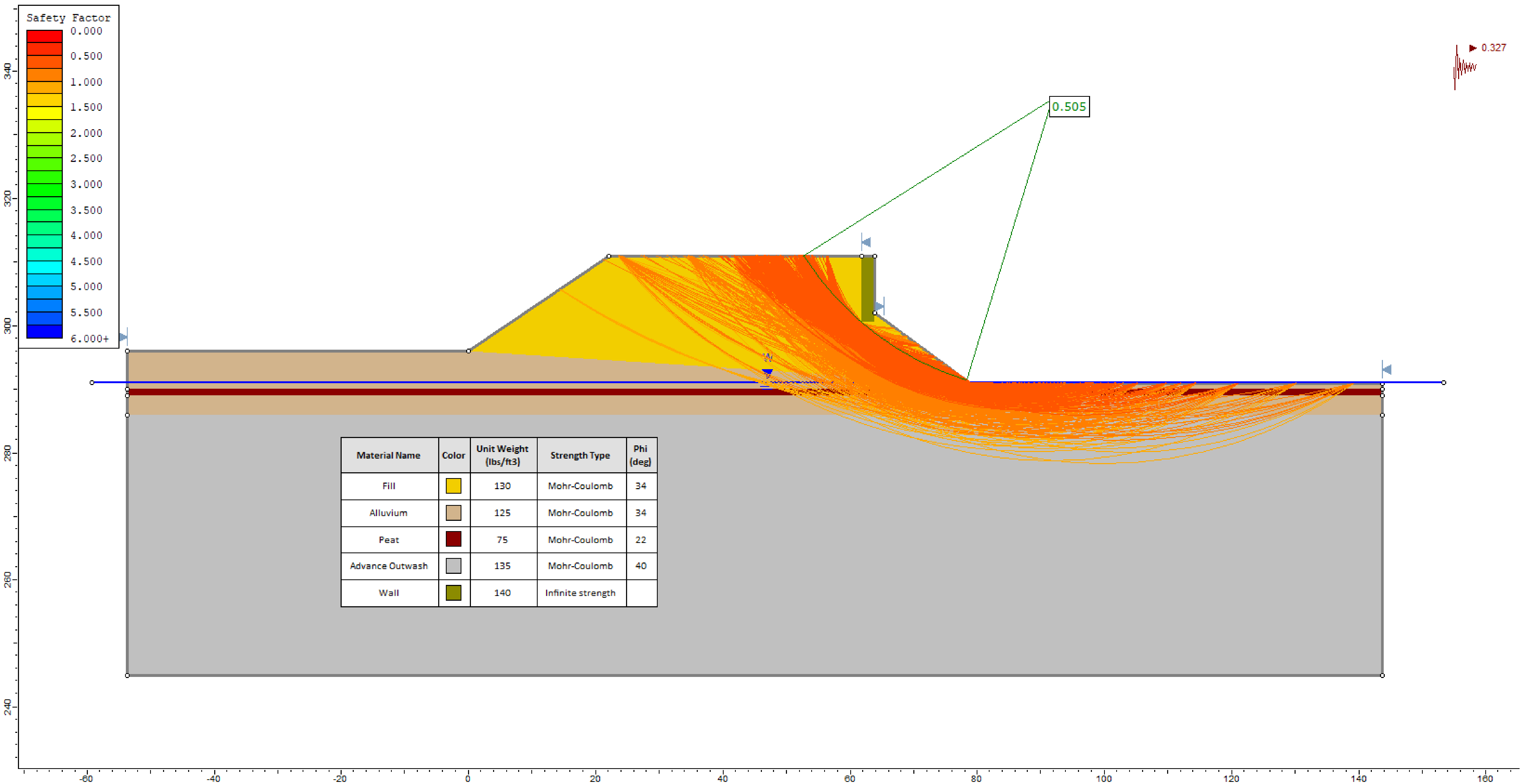
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 STATIC STABILITY – CIP OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-6

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

HWA GEOSCIENCES INC.
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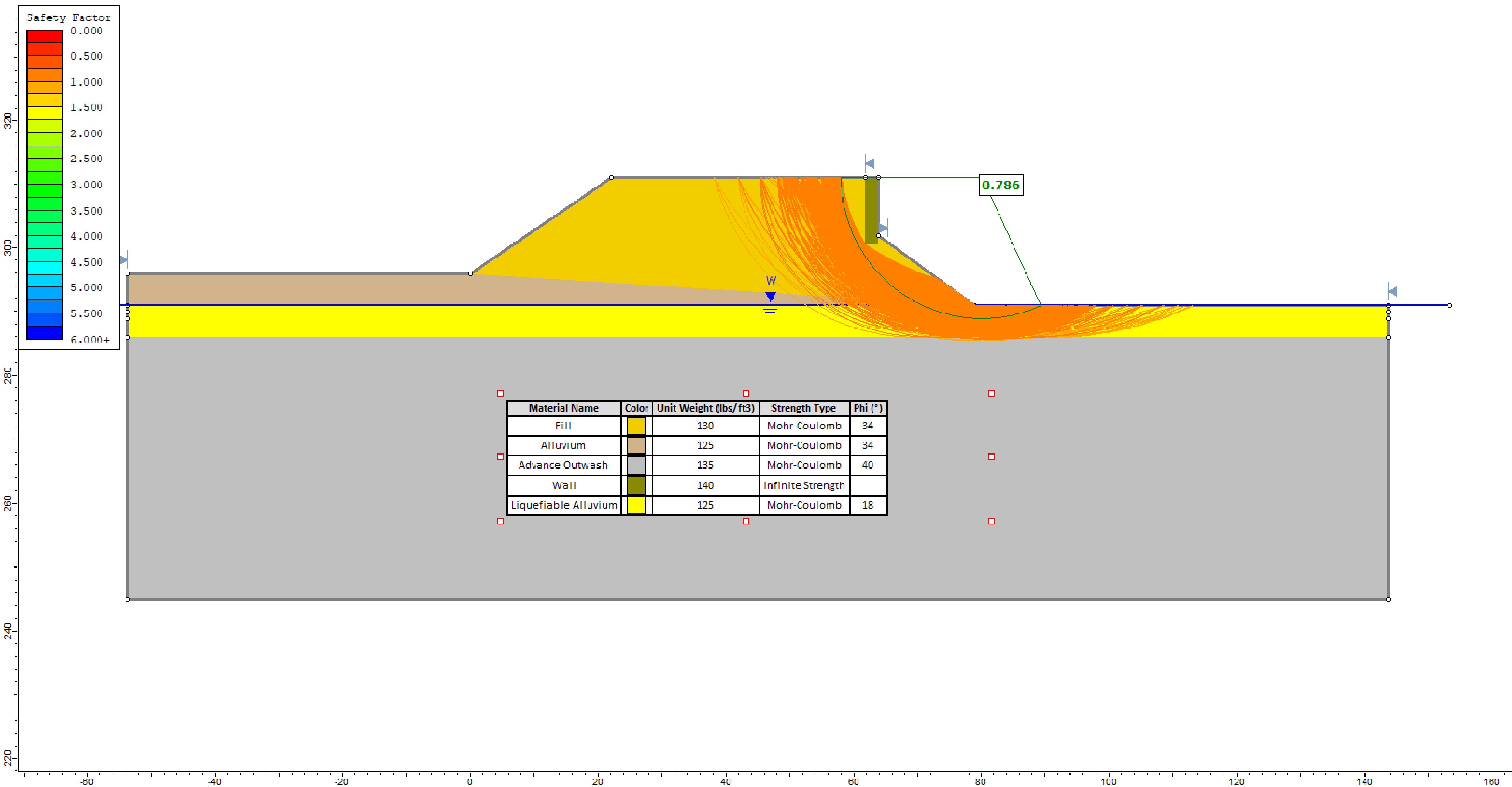
SLOPE STABILITY ANALYSIS
WALL 2 PSEUDO-STATIC STABILITY – CIP OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-7

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite Strength	
Liquefiable Alluvium		125	Mohr-Coulomb	18

GEOSCIENCES INC.
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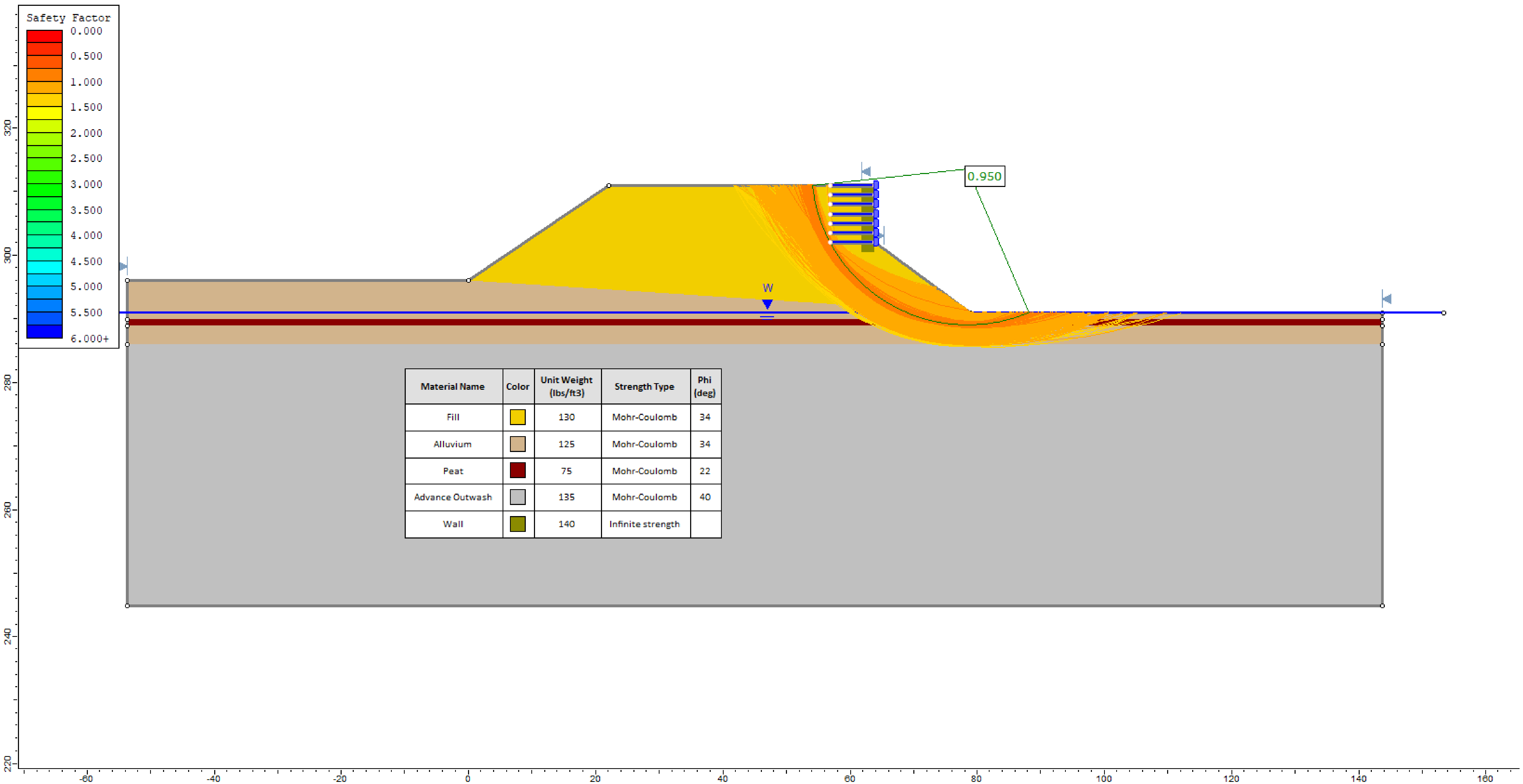
SLOPE STABILITY ANALYSIS
WALL 2 POST LQ STABILITY – CIP OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-8

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

HWA GEOSCIENCES INC.
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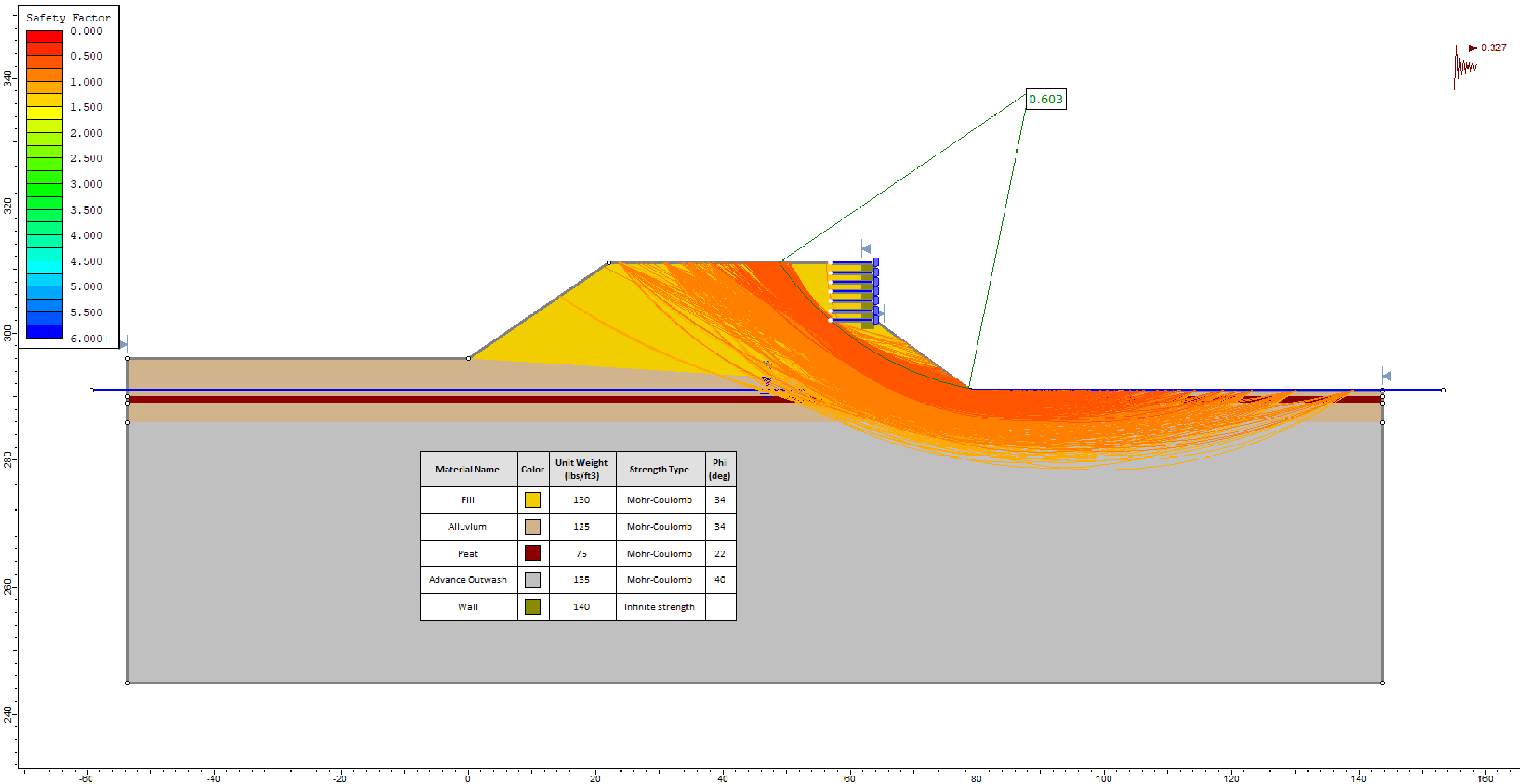
SLOPE STABILITY ANALYSIS
WALL 2 STATIC STABILITY – SEW OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-9

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite strength	

HWA GEOSCIENCES INC.
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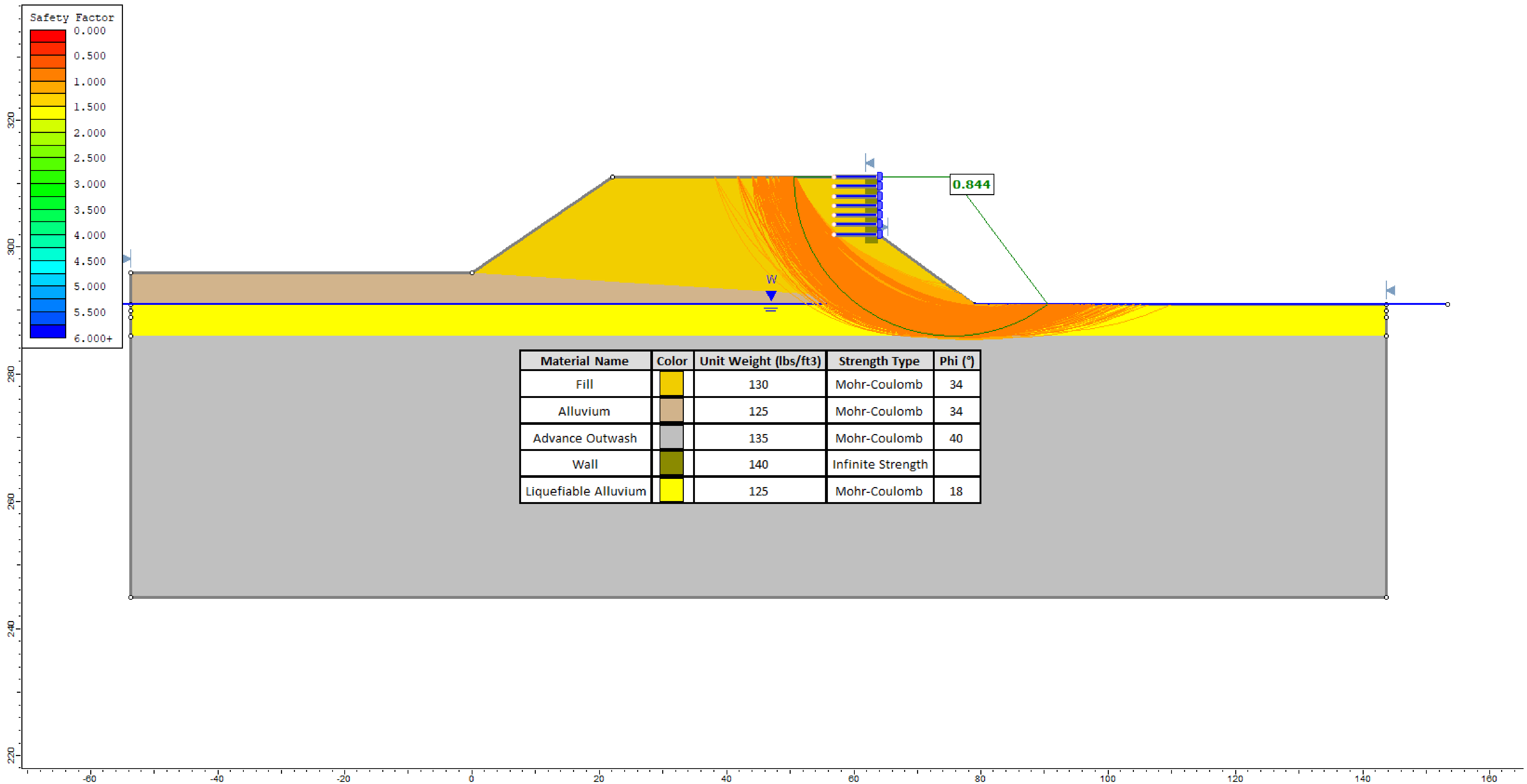
SLOPE STABILITY ANALYSIS
WALL 2 PSEUDO-STATIC STABILITY – SEW OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-10

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Wall		140	Infinite Strength	
Liquefiable Alluvium		125	Mohr-Coulomb	18

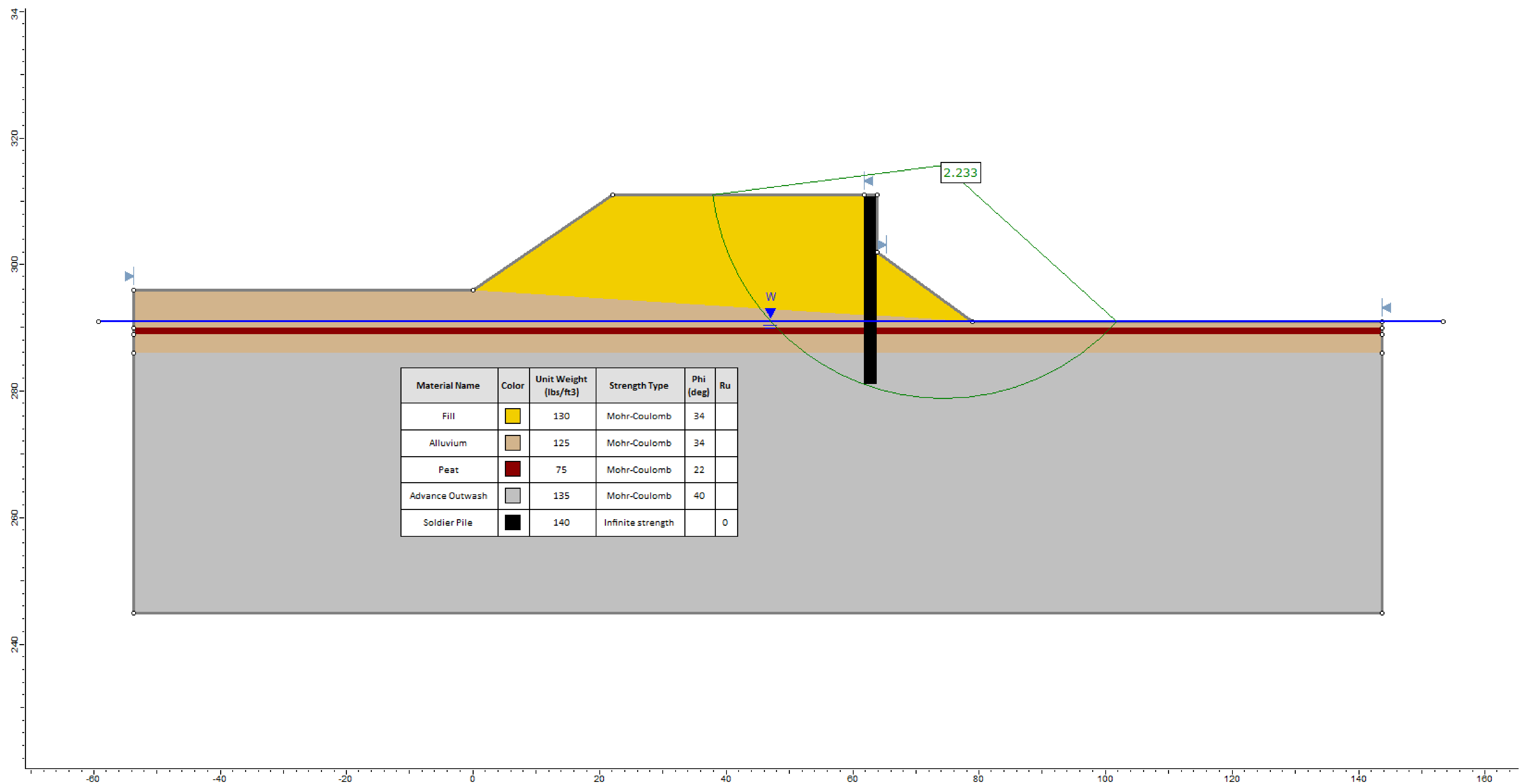
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 POST LQ STABILITY – SEW OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-11

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)	Ru
Fill		130	Mohr-Coulomb	34	
Alluvium		125	Mohr-Coulomb	34	
Peat		75	Mohr-Coulomb	22	
Advance Outwash		135	Mohr-Coulomb	40	
Soldier Pile		140	Infinite strength		0

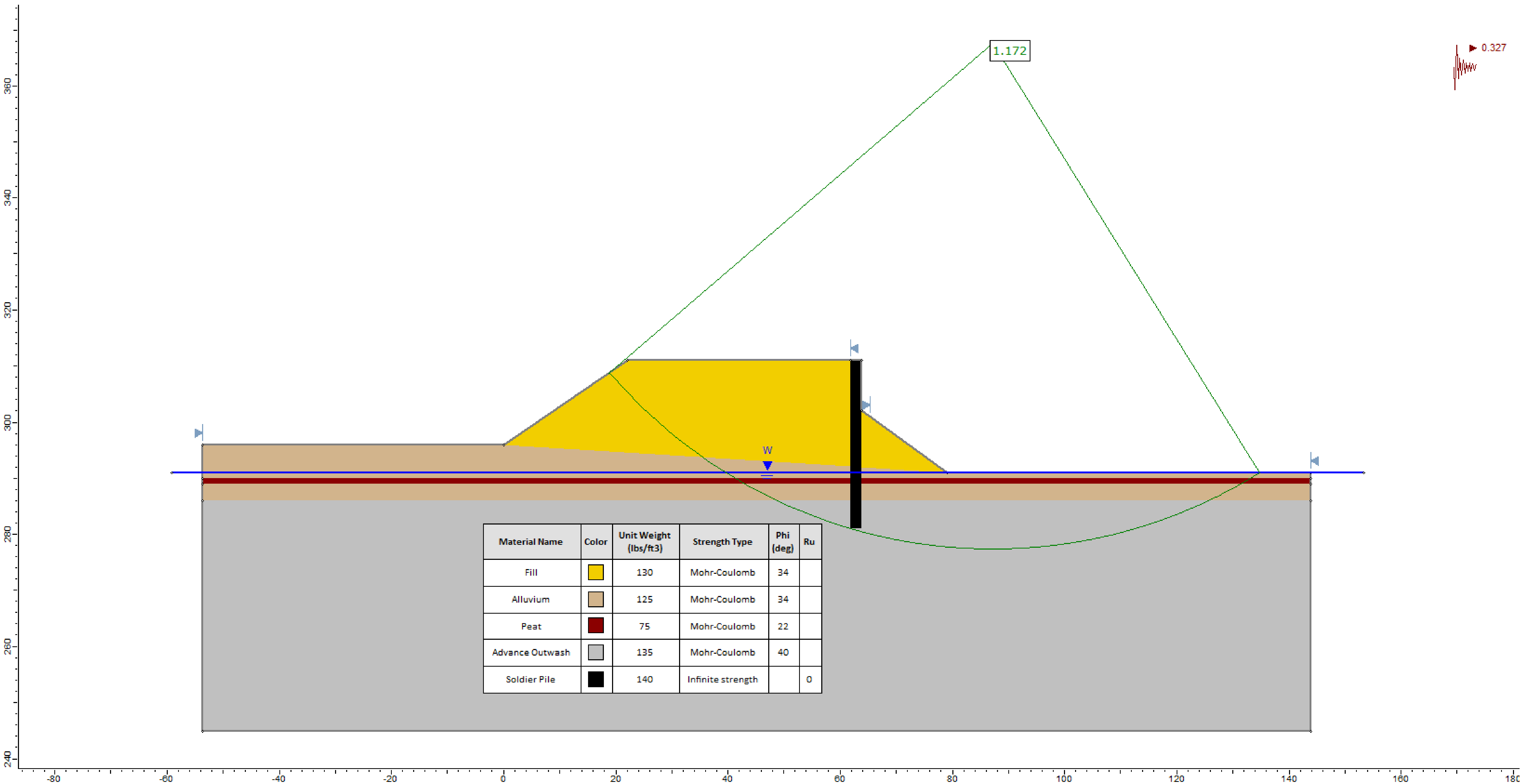
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 STATIC STABILITY – SOLDIER PILE OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-12

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (deg)	Ru
Fill		130	Mohr-Coulomb	34	
Alluvium		125	Mohr-Coulomb	34	
Peat		75	Mohr-Coulomb	22	
Advance Outwash		135	Mohr-Coulomb	40	
Soldier Pile		140	Infinite strength		0

HWA GEOSCIENCES INC.
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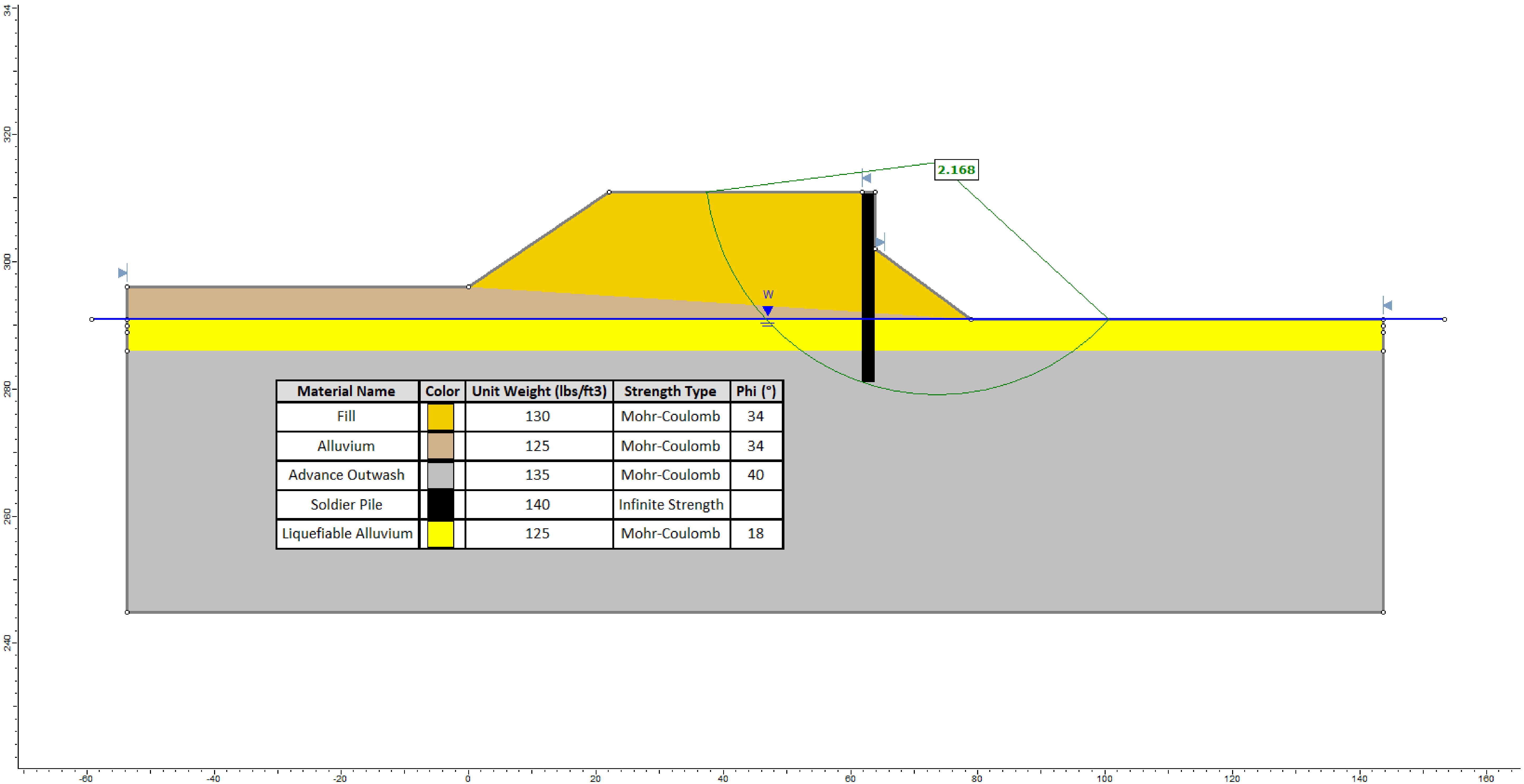
SLOPE STABILITY ANALYSIS
WALL 2 PSEUDO-STATIC STABILITY – SOLDIER PILE

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-13

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Soldier Pile		140	Infinite Strength	
Liquefiable Alluvium		125	Mohr-Coulomb	18

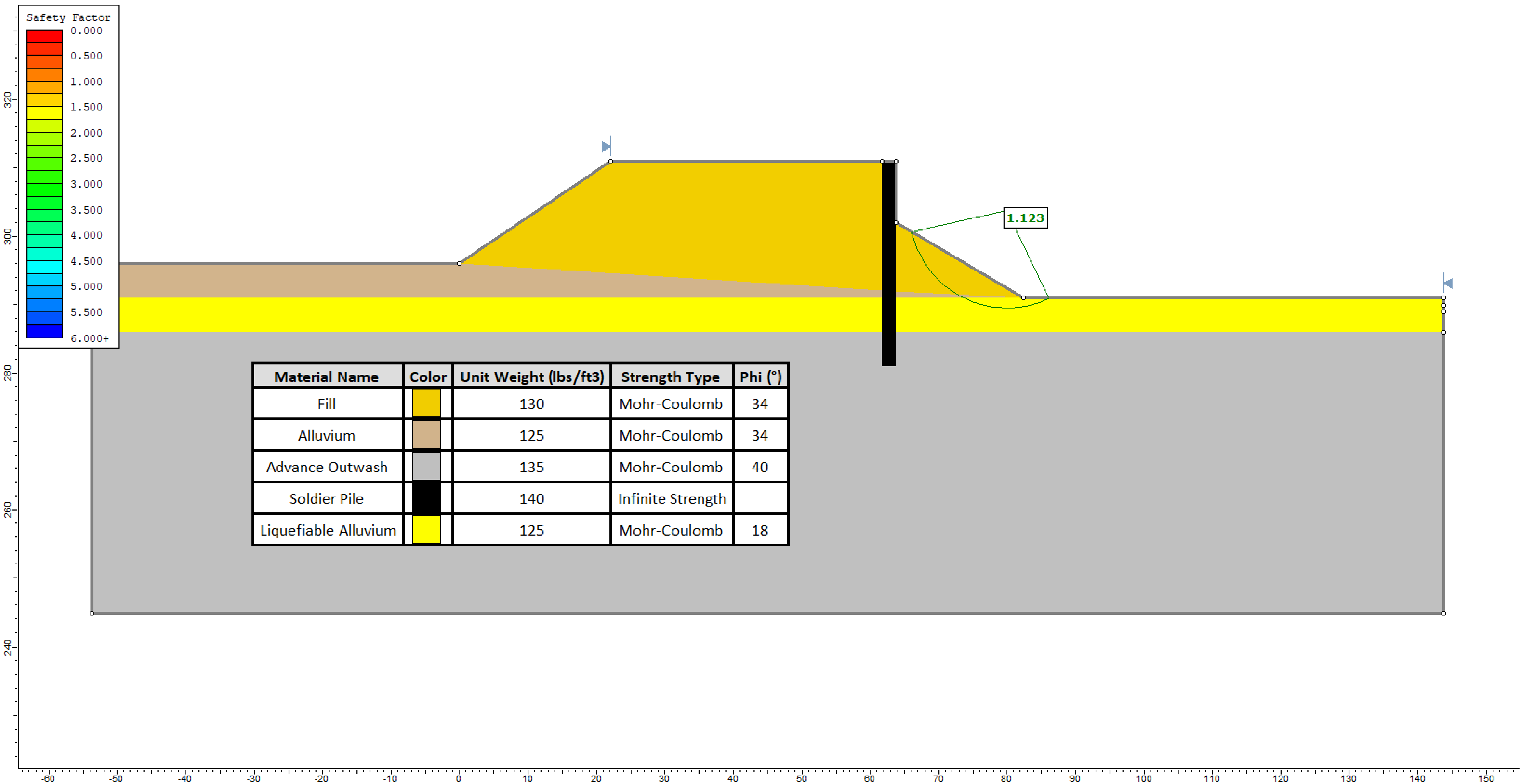
HWA GEOSCIENCES INC.
DBE/MWBE

SLOPE STABILITY ANALYSIS
WALL 2 POST LQ STABILITY – SOLDIER PILE OPTION

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-14

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Advance Outwash		135	Mohr-Coulomb	40
Soldier Pile		140	Infinite Strength	
Liquefiable Alluvium		125	Mohr-Coulomb	18

HWA GEOSCIENCES INC.
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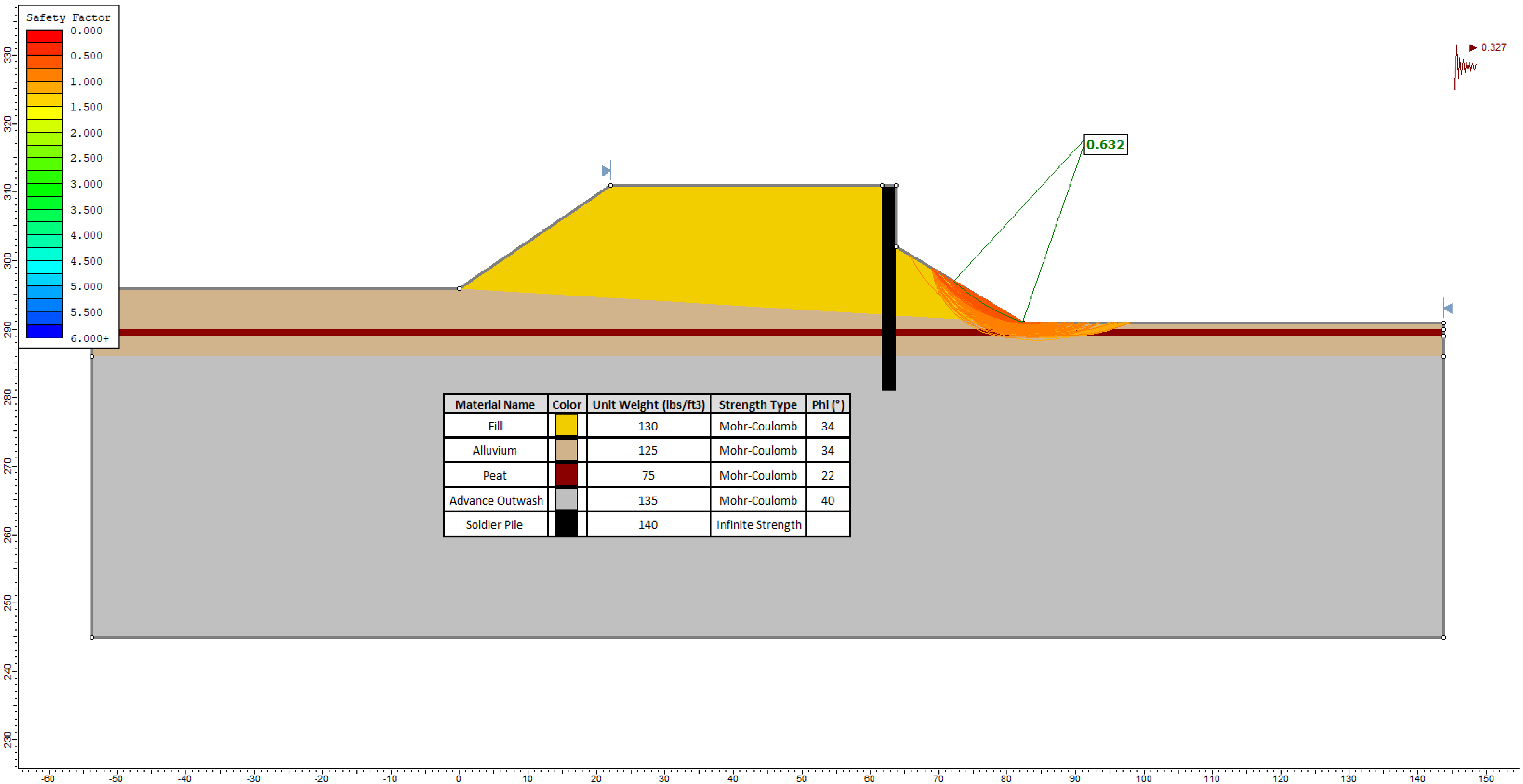
SLOPE STABILITY ANALYSIS
WALL 2 TOE SLOPE POST LQ STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-15

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Soldier Pile		140	Infinite Strength	

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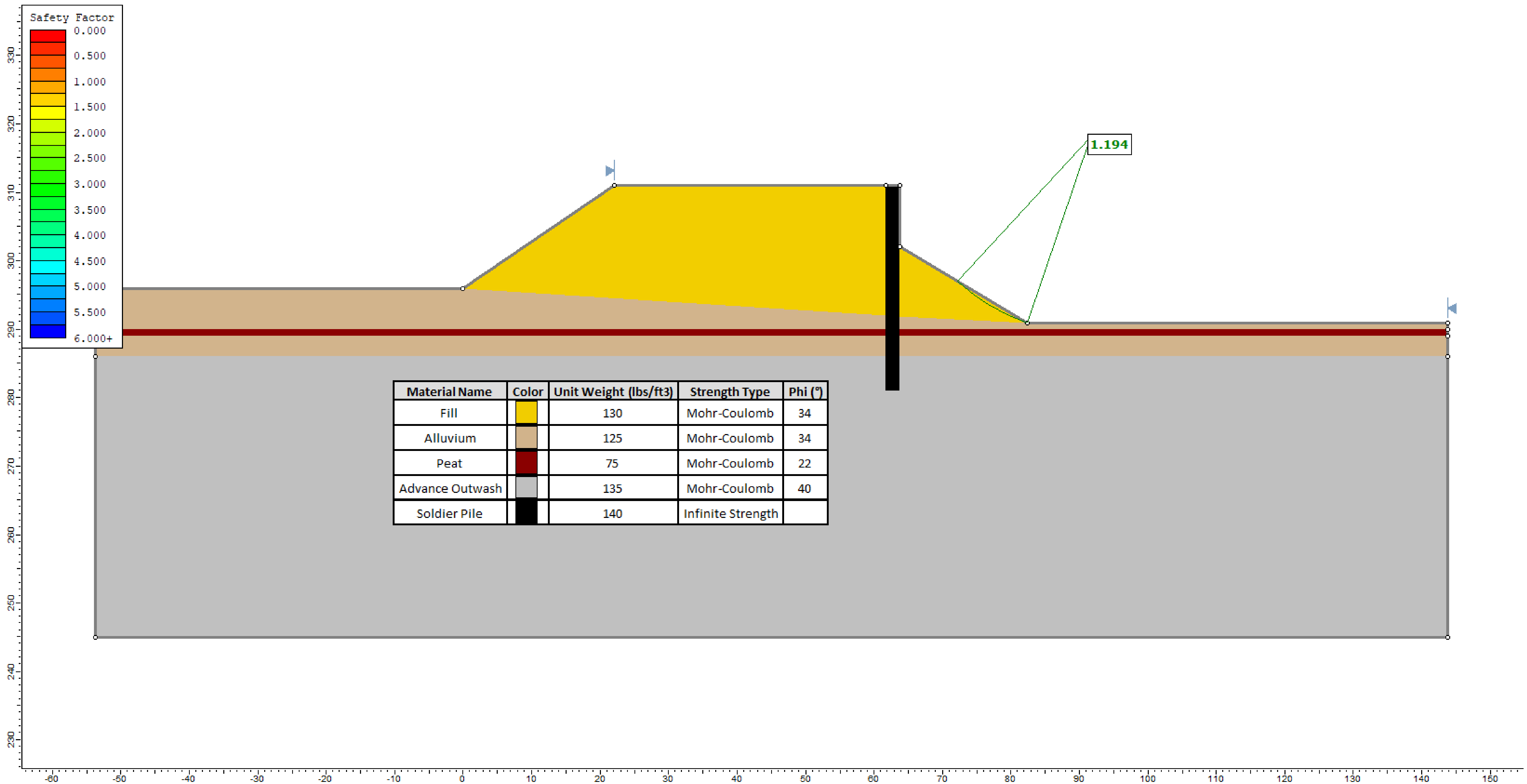
SLOPE STABILITY ANALYSIS
WALL 2 TOE SLOPE PSEUDO-STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-16

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
Alluvium		125	Mohr-Coulomb	34
Peat		75	Mohr-Coulomb	22
Advance Outwash		135	Mohr-Coulomb	40
Soldier Pile		140	Infinite Strength	

HWA GEOSCIENCES INC.
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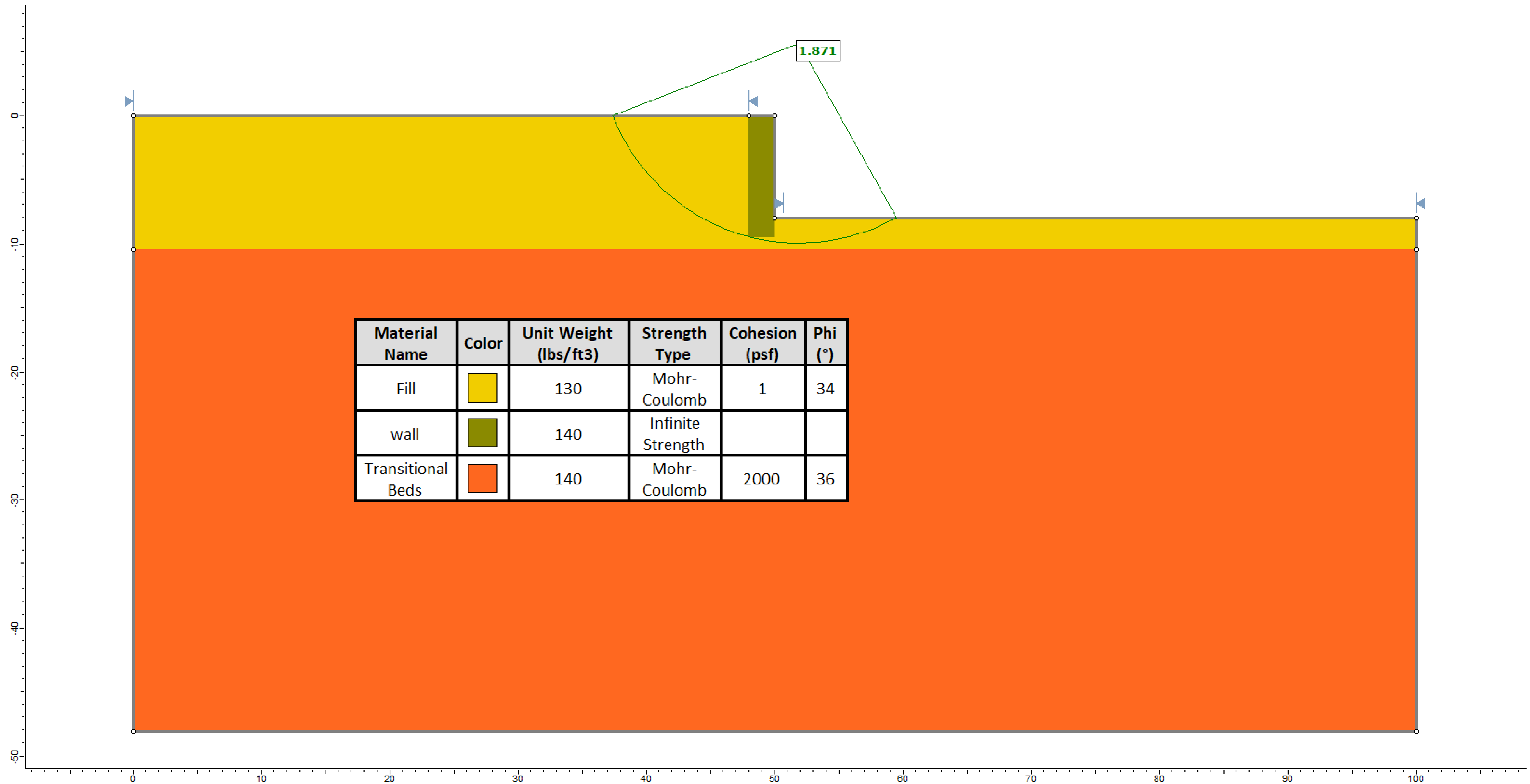
SLOPE STABILITY ANALYSIS
WALL 2 TOE SLOPE STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-17

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)
Fill		130	Mohr-Coulomb	1	34
wall		140	Infinite Strength		
Transitional Beds		140	Mohr-Coulomb	2000	36

HWA GEOSCIENCES INC.
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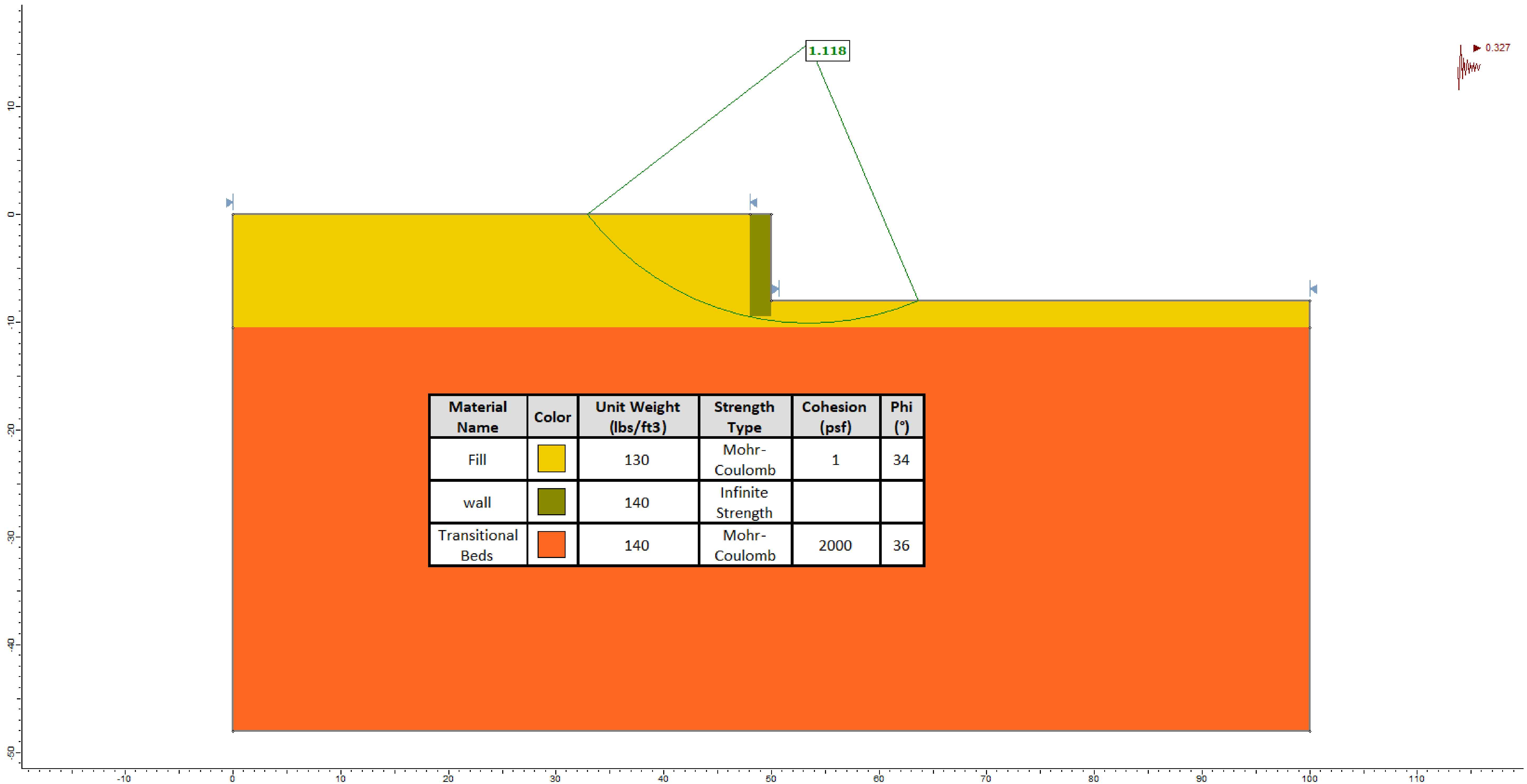
SLOPE STABILITY ANALYSIS
WALL 3 & 4 STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-18

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)
Fill		130	Mohr-Coulomb	1	34
wall		140	Infinite Strength		
Transitional Beds		140	Mohr-Coulomb	2000	36

HWA GEOSCIENCES INC.
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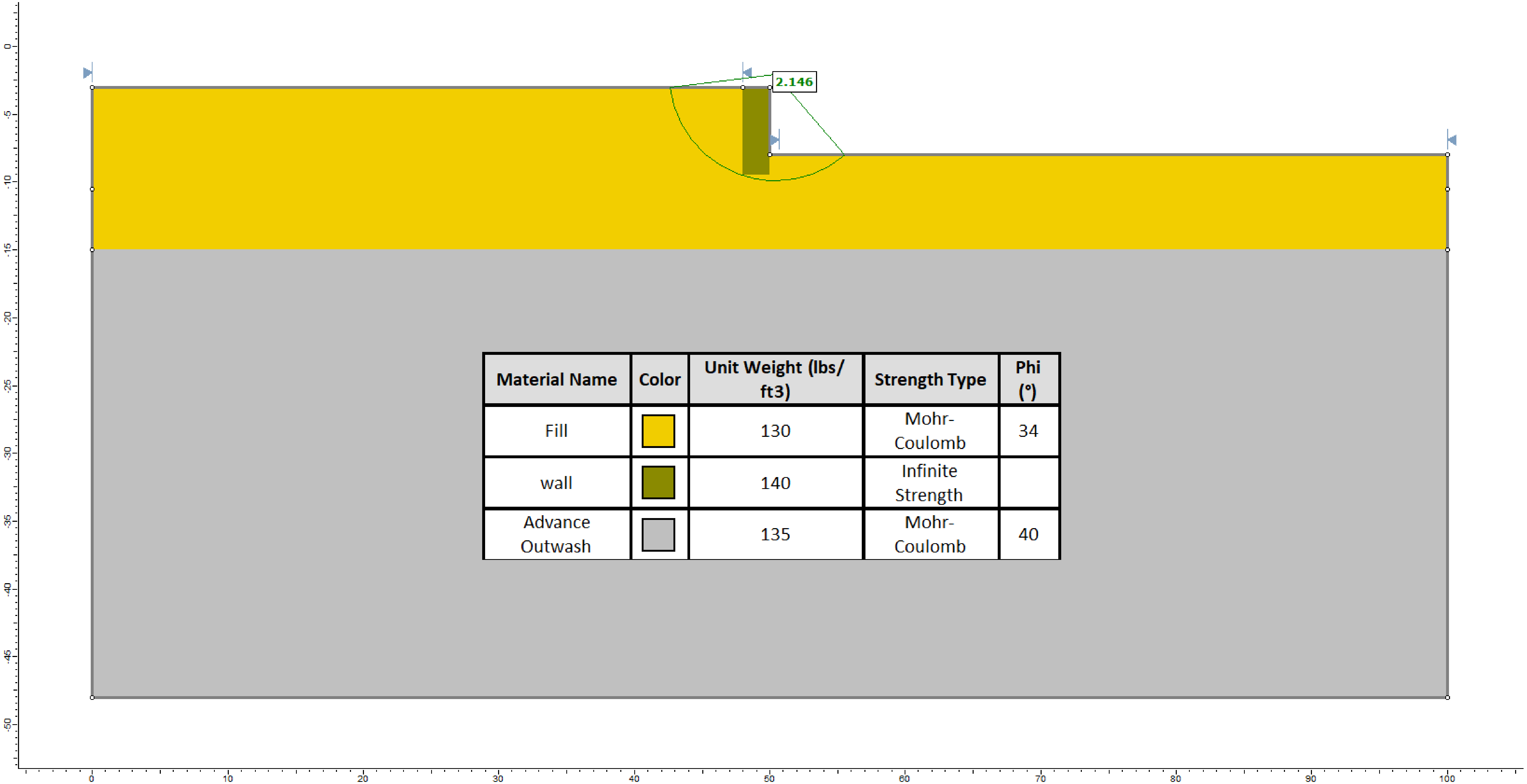
SLOPE STABILITY ANALYSIS
WALL 3 & 4 PSEUDO-STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-19

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
wall		140	Infinite Strength	
Advance Outwash		135	Mohr-Coulomb	40

HWA GEOSCIENCES INC.
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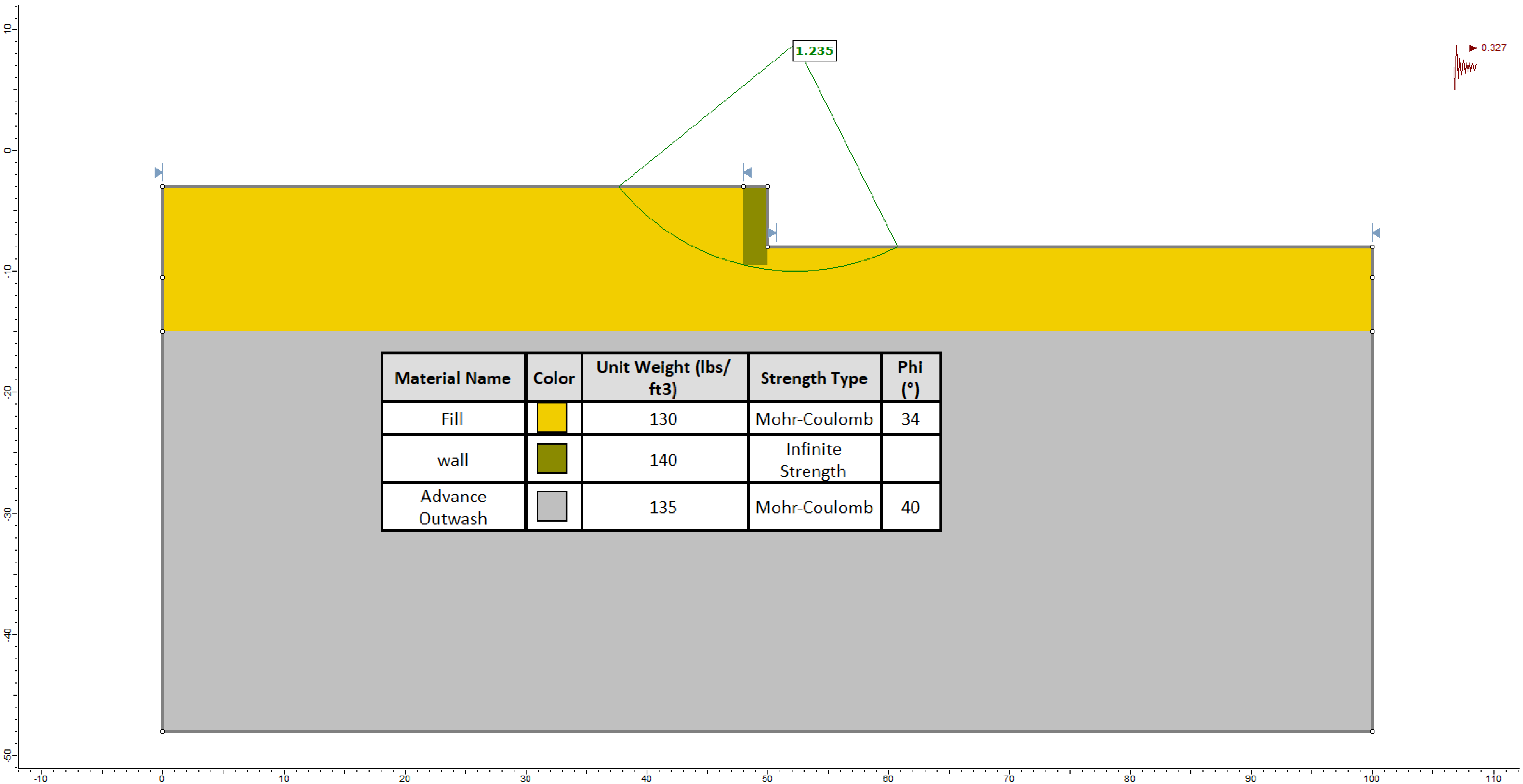
SLOPE STABILITY ANALYSIS
WALL 5 STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-20

PROJECT NO.
2023-195-21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Phi (°)
Fill		130	Mohr-Coulomb	34
wall		140	Infinite Strength	
Advance Outwash		135	Mohr-Coulomb	40

HWA GEOSCIENCES INC.
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SLOPE STABILITY ANALYSIS
WALL 5 PSEUDO-STATIC STABILITY

NE 40TH ST SIDEWALK
BELLEVUE, WASHINGTON

FIGURE NO.
C-21

PROJECT NO.
2023-195-21