

**Sound Transit | Downtown Redmond Link Extension
Design-Build Contract No. RTA/CN 0148-18**

**Preliminary Stormwater Report
Alteration of Geological Hazard Areas
City of Redmond**

July 17, 2020

Prepared for:



Prepared by:



REVISION HISTORY

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DOWNTOWN REDMOND LINK EXTENSION

AGHA PRELIMINARY STORMWATER MANGEMENT REPORT

Contract Package R200

This report was prepared under my direct supervision as defined in WAC 196-23-030.



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1.0 PROJECT OVERVIEW

The purpose of this report is to demonstrate project compliance with the City of Redmond's critical areas regulations (Redmond Zoning Code [RZC] Chapter 21.64) in support of the permit application to the City related to the Alteration of Geologic Hazard Areas (AGHA). This report addresses the storm drainage aspects of critical areas regulated under RZC Chapter 21.64.060 regarding geologic hazard areas (GHA).

This stormwater report will focus on the AGHA area within the DRLE alignment along the east side of SR 520 between NE 60th Street and the SR 520 offramp to West Lake Sammamish Parkway (WLSP). The project site area is designated by the Redmond Zoning Code (RZC) Chapter 21.64.060, as a GHA, and the AGHA comprises of approximately 2.7 acres along the slope. Geological Hazard Areas (GHA) are defined as areas susceptible to erosion, sliding, earthquake or other geological events (RZC 21.78)

Guideway Stationing in the project area designated as the GHA runs from approximately East Bound (EB) Station 5050+00 to 5072+00.

A previously comprehensive stormwater report, (R200 Stormwater Management (Drainage) Report Preliminary", dated December 20, 2019), was submitted and outlines and provides additional discussion on the overall project drainage impacts, analysis and methodology followed to satisfy the overall project stormwater requirements.

1.1 DRLE Project Discussion

The Downtown Redmond Link Extension (DRLE) project will expand and bring the regional light rail system into downtown Redmond, Washington. The current design for the DRLE segment consists of a mix of guideway sections using at-grade and elevated track. The DRLE project alignment begins at the Redmond Technology Center and extends north and east along the eastside of the SR 520 freeway using at-grade track generally supported on retained-cut sections that cut into the hillside and pass under existing overpasses. The alignment then turns east with the freeway and transitions to an elevated structure, crossing the Sammamish River and descending into Marymoor Park. The alignment transitions to retained fill and at-grade sections as it reaches the Southeast (SE) Redmond Station. After the station, the light rail alignment turns to the northwest at grade, crosses under SR 520, transitions to an elevated structure over Bear Creek, and continues as an elevated structure following the Redmond Central Connector (RCC) alignment into downtown Redmond terminating at the Downtown Redmond Station located at the north side of Redmond Town Center. See Vicinity Map on **Figure 1-1**, which shows the overall DRLE project with the AGHA area highlighted.



Figure 1-1
Vicinity Map (AGHA)

1.2 Site Area (AGHA)

The AGHA area is located along the segment of track along the eastbound lanes of SR520, north of NE 60th Street. The AGHA designated project area is located along the eastbound (EB) side slopes of SR 520, between NE 60th Street and the SR 520 off ramp to Westlake Sammamish Parkway (WLSK), from approximately EB Station 5050+00 to 5072+00. The guideway travels along the SR 520 EB side slopes as a ballasted track, contained between retaining walls. Near EB Station 5061+00, west of 156th Avenue NE, a new traction power substation (TPSS) will be constructed between the guideway and the street.

The approximate size of the guideway and TPSS improvements within this AGHA area is approximately 2.1 acre, which spans across the AGHA footprint. See project site map of the AGHA area in **Appendix A**. See **Appendix F** for Existing Conditions which indicates flow paths. Runoff from the uphill offsite areas is intercepted along the new wall gutter and routed past the guideway. The offsite area maps are located in **Appendix K**. Additional discussion on the offsite areas is discussed in Section 4.0.

1.3 Scope of Work

The construction work related to the guideway and TPSS within the AGHA area will include: clearing and grubbing, site grading, drainage improvements, utility relocation, minor street improvements, landscaping, and construction of the light rail track, retaining walls, and a traction power substation (TPSS). In addition, for the construction of a temporary haul route, temporary walls will be constructed. Discussion of TESC measures are provided in Section 7.0 of this report. The work associated with the temporary haul routes and temporary walls and barriers associated with this work along this segment will be discussed in more detail under a clear and grade permit (Clear & Grade #4) to the City of Redmond as a separate submittal.

The major storm drainage improvements to be installed within the AGHA include the following:

- Stormwater conveyance systems
- Installation of track underdrain systems
- Permanent Walls, and Wall gutters
- Rock pads
- Drop structures behind walls
- Installation of culvert extension for the Un-named Tributary to Sammamish River

Other major elements to be constructed within this AGHA include the following:

- Track guideway
- Permanent Walls
- TPSS Site

- Temporary Walls*
- Temporary Haul Roads*

*discussed in more detail in Clear and Grade #4 permit submittal

The AGHA area is within the Clear and Grade Permit #4 segment, and the temporary walls and haul roads within the AGHA area are shown and discussed in that project submittal to the City, with additional discussion on TESC BMP's and runoff management during construction.

For this submittal the drainage report does not contain the hydraulic design and calculations for these improvements; this will be included within the submittal of the project drainage report at 60% design for this area; the "Heavy Civil Guideway and Systems" (HCGS) design package.

1.4 Design Criteria and Approach

The AGHA area is located within the City of Redmond and WSDOT ROW. The Design Criteria used for the drainage design within this project is outlined in more detail in the "*Code Basis of Design-Drainage*", submitted under separate cover. This document provides a summary and identifies all the design standards, guidance and City ordinances used in the approach of the design of the stormwater management and conveyance for final design.

Below is a list of the stormwater specific design manuals and City ordinances used in the design or as reference to the stormwater design within this segment of the project.

1. WSDOT Highway Runoff Manual (HRM), M31-16.05 (April 2019)
2. WSDOT Hydraulic Manual (HM), M23-03.06 (April 2019)
3. City of Redmond Stormwater Technical Notebook, Issue 8, April 2019 (Amended June 5, 2019)
4. Department of Ecology, State of Washington, Stormwater Management Manual for Western Washington (2012, Amended Dec 2014).
5. Redmond Municipal Code, Chapter 15.24
6. AREMA Volume 1, 2015, Section 1.4.12
7. Sound Transit Design Criteria Manual Revision 5 (DCM), June 2018

The DRLE project is considered a road-related project because it is a long linear transportation/transit project that runs along a transportation corridor. For water quality design and thresholds, the design approach for the guideway is based upon ST guidance and concurrence with the City, that the guideway is considered a non-pollution generating impervious surface (NPGIS). See additional discussion from City or Redmond on NPGIS and light rail, in Section 2.5.6 of the City's Stormwater Technical Notebook.

1.5 Soils

The section provides some discussion on the existing soils within the AGHA area. The topography and soil conditions within this segment are also discussed in more detail in the

geotechnical report developed specifically for this area: “Geotechnical Report Alteration of Geologic Hazard Areas”, City of Redmond.

1.5.1 Soil Topography

The project site is within the Puget Sound Lowland with upland plateaus and ridges and intervening valley troughs. The south end of the proposed project site, and within the AGHA segment is underlain by dense deposits creating a gently northward-dipping undulating ground surface, and by fill or modified land from the construction of SR520. The mapped soils for the area are also indicated in the Soils figure shown below, **Figure 1-2**. The surficial soil is categorized as Alderwood and Kitsap soil (both Hydrological Group C) per NCRS soil survey, which is classified as “moderately high runoff potential” with low infiltration rates. The NCRS soil survey is included in **Appendix E**.

The Geological Baseline Report (October 4, 2018, Golder) and the Geological Data Report (dated January 16, 2019, Golder) have been provided for use during the preliminary design and contain limited data on the groundwater level and infiltration rates. Additional geological investigation will be performed to obtain more data for infiltration rates and groundwater levels to assist in the final design. The area within the AGHA is not designated as good potential for infiltration.

The Geotechnical Data and Design Report (GDR) presents the geological characterization of the subsurface conditions along the R200 project corridor. The report includes a discussion of the general geologic setting and site history, geologic units along the alignment, and hydrogeological interpretation along the alignment. The geological and subsurface conditions along the alignment were evaluated by reviewing the soil sample obtained from explorations performed for the project, the associate laboratory test results, and the King County Soil Survey.

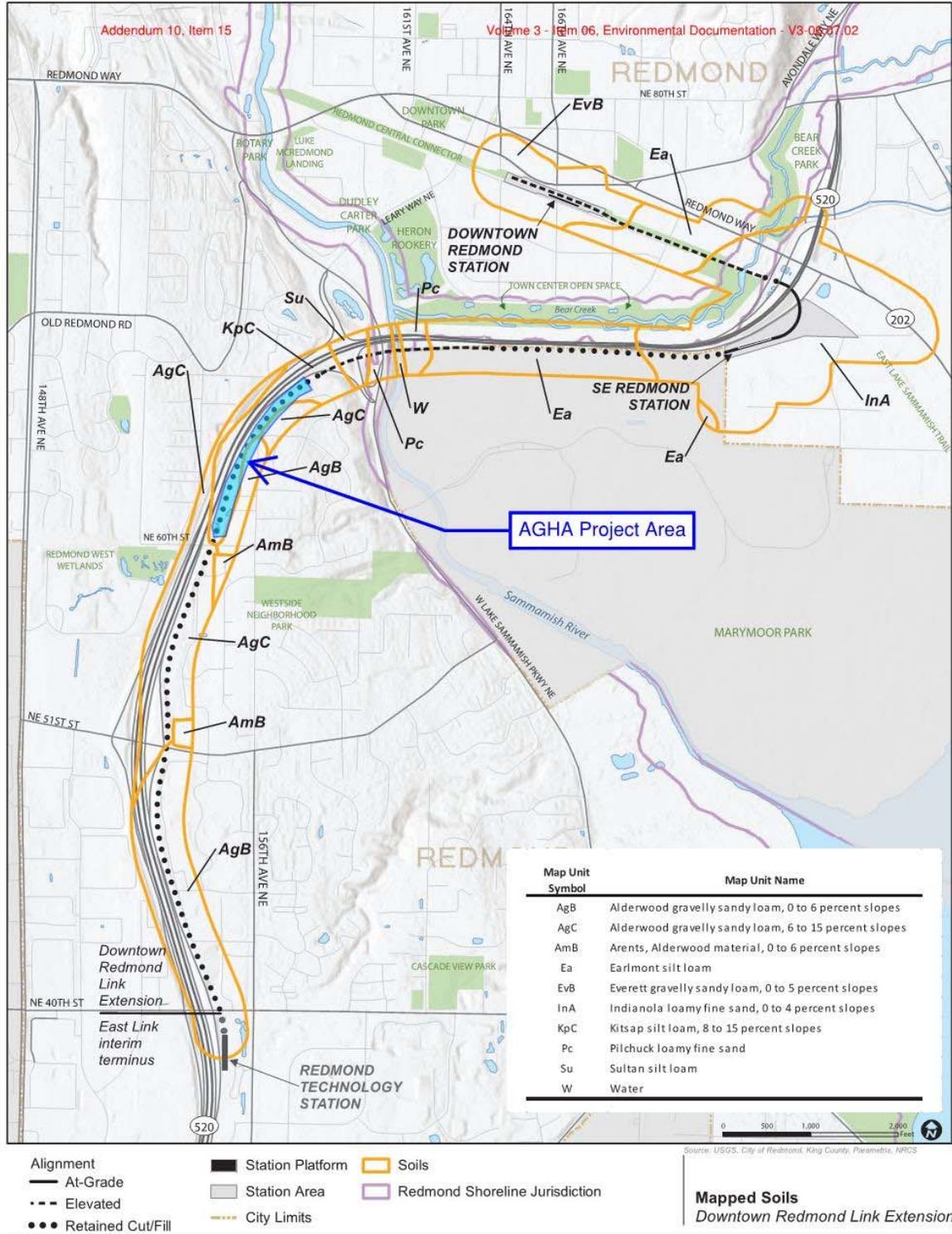


Figure 1-2
R200 Soils (AGHA Area)

1.5.2 Groundwater

The Geotechnical Report developed for the Alteration of Geologic Hazard Area, identifies three borings within this area that groundwater did occur. These groundwater levels varied along the project site, with multiple zones of perched groundwater occurring at different elevations. The depths to groundwater from the surface elevation were between 24-32-feet below the grade in the AGHA area. The excavation for the track will be above these levels and is not expected to encounter groundwater. During construction there is a possibility of perched groundwater may seep out of the hillside below. There is a seepage layer previously identified within this area (Station 5066+00 to 5071+00), is expected to be below the excavation limits and not encountered. A dewatering plan is not anticipated to be required for this segment to manage the groundwater. More information and discussion are provided on groundwater within the Geotechnical Report (April 7, 2020) prepared for the AGHA.

1.5.3 Geological Hazard Area

The segment of steep slopes identified as a potential landslide area along the side slopes of eastbound SR 520, north of NE 60th Street, up to the off-ramp to West Lake Sammamish Parkway. This area is identified on the City of Redmond Landslide Map and it also is indicated on the King County Flood Control District, Map 12-1, Landslide Hazard Areas (2010). Geological hazard areas are susceptible to erosion, sliding, earthquake or other geological events. Per the Redmond code there are three (3) classifications for these areas; erosion hazard, landslide hazard and seismic hazard.

This slope was modified by WSDOT in 1978 during the construction of the *SR 520, 148th Avenue NE to SR 901* project (Contract 1314). The WSDOT project constructed retaining walls along this steep slope and replaced and installed additional horizontal drains to alleviate the hydrostatic pressure behind the walls and alleviate potential for slope failure. The existing drains are a 1-1/2" slotted horizontal pipe that are installed into the slope at approximately at 100-foot centers along the hillside and discharge to the highway ditch along the shoulder. See as-builts in **Appendix J**. Due to the construction within this zone an "Alteration of Geological Hazard Permit" will be submitted to the City of Redmond for approval.

2.0 EXISTING CONDITIONS SUMMARY

This section provides a specific discussion of the existing drainage conditions and predeveloped stormwater runoff conditions within the AGHA area of the project site. Additional descriptions of topography, land use, soils and drainage basins are described in more detail within the TDA description of this report.

2.1 Existing Drainage Conditions

The AGHA area impacted is located along the eastbound side slopes of SR 520, between NE 60th Street and the SR 520 off ramp to WLSP, from approximately EB Station 5050+00 to 5072+00. As discussed within the Geotechnical Report for this area, the topography contains a large portion of steep slopes, some with slopes of 40-percent or steeper, and vertical relief up to approximately 40-feet (see additional discussion in Section 5.2 of “Geotechnical Report Alteration of Geologic Hazard Areas, City of Redmond, January 16, 2020). The cover conditions along the SR 520 EB side slopes is heavily vegetated with trees, grass and brush. There is an existing WSDOT ditch that runs near the base of the slope, outside of the EB shoulder for the majority of the segment, which collects runoff and directs it back to the stormwater trunk that runs within the median of SR 520. Along the north segment, uphill from the off-ramp to WLSP there are existing retaining walls along the hillside, with wall gutters behind. The slope runoff is collected and conveyed to the drainage system along the SR 520 shoulder

The stormwater runoff from the adjacent private properties along the WSDOT ROW, generally flow to the north and down the hillside towards the WSDOT ditch system.

2.1.1 Un-named Tributary to Sammamish River

Beginning, just north of NE 60th Street, there is a natural ravine that conveys stormwater runoff from the south, which flows into an open channel. This open channel is defined as an un-named tributary to Sammamish River and travels with open-flow approximately 160-feet, with an average slope of 8.8-percent and flows into a 30-inch CMP that is conveyed into WSDOT ROW, and into the existing stormwater trunkline that travels in the SR 520 median and discharges into the WSDOT pond located in the north quadrant of the SR520/WLSP interchange. This runoff eventually discharges directly into the Sammamish River.

2.1.2 Existing Horizontal Drains

When WSDOT constructed SR520 along this segment, retaining walls were installed along the EB slopes, and fill material added below the mainline area. Wall gutters were installed behind the retaining walls to collect the uphill surface runoff, and horizontal drains were installed along this segment for additional stability. WSDOT As-builts of the walls and horizontal drains have been provided in **Appendix J**.

2.2 Threshold Discharge Areas

The boundaries of each Threshold Discharge Area (TDA) for the project were determined by the existing drainage flow paths and patterns within the project limits. A TDA is defined as “an on-site area draining to a single natural discharge location or multiple natural discharge locations that combine together ¼ mile downstream, as determined by the flow path”. The AGHA area is within the boundaries of TDA 3. See Appendix which illustrate the AGHA area within project TDA 3 boundary.

2.2.1 TDA 3

TDA 3 (R200-3) is the longest TDA within the project limits and stretches north and east along the SR520 corridor beginning near NE 45th Street and traveling along SR520 EB lanes and across the Sammamish River, along Marymoor Park ending approximately 1,600-feet east of the River near the Soccer Fields. The runoff from within this TDA discharges directly into the Sammamish River, via closed conveyance systems.

The TDA segment within the AGHA area discussed within this report is located between NE 60th Street and the SR 520 off-ramp to WLSP, west of the Sammamish River. The overall TDA (TDA 3) area is discussed within the report to identify the minimum requirements. The existing side slope along this segment have has been determined to have landslide potential and were altered in the late 1970’s by WSDOT during the construction of SR520.

The majority of the TDA runoff is collected along the Eastbound side slopes of SR 520. Runoff along this existing segment sheet flow into several conveyance systems that are directed to the ditch and piped conveyance systems that connect to the SR 520 median trunkline that flows into the WSDOT “horseshoe” retention pond, located north of the SR 520 WB off-ramp at WLSP. This pond outlet crosses under WLSP and direct discharges into the Sammamish River. Additional runoff near the WLSP off-ramp travels down the side slope into the existing ditch that runs along the outside of the ramp. This ditch travels down the ramp is collected in an inlet and routed to a closed drainage system that travels down and across WLSP and discharges directly into the Sammamish River.

Refer to the “R200 Stormwater Management (Drainage) Report”, dated December 20, 2019) for the entire project which include TDA area calculations used in determining Minimum Requirements for this TDA. See Appendix C for TDA map of TDA 3.

3.0 OFF-SITE ANALYSIS REPORT

An offsite analysis (downstream analysis) was performed in accordance with Ecology’s SMMWW and provided in **Appendix I**.

4.0 PERMANENT STORMWATER CONTROL PLAN

The R200 segment of the light rail extension will be constructed along the eastbound side slopes of SR 520, with a majority of the alignment within the SR 520 corridor from NE 40th Street to Redmond Way (SR 202). Within the AGHA defined limits, there will be construction impacts along SR520 and within the City of Redmond. The proposed stormwater plans for the construction of the guideway within this segment are provided in **Appendix G**.

The developed conditions within this segment include the construction an at-grade ballasted track section along the slope, the TPSS site along 156th Avenue NE, extension of the existing culvert that convey an un-named creek below the guideway north of NE 60th Street, and drainage conveyance systems to maintain existing flow patterns.

Design calculations performed supporting the stormwater design will be provided in the next submittal for the DRLE project. Calculation methodologies will be followed as described in the current City of Redmond Stormwater Technical Notebook, Ecology SWMMWW, and WSDOT Hydraulics Manual and HRM. No flow control or water quality is required or proposed within this TDA, see additional discussion in Section 5.0

More discussion on the specific project and drainage improvements are provided below.

4.1 Developed Drainage Conditions

The following sections provide detailed discussion of the proposed drainage improvements related to the project within the AGHA area within TDA 3, including discussion of collection systems, underdrains, flow control and water quality facilities. The proposed guideway alignment will run across the AGHA and the side slopes of the EB shoulders of SR 520. The guideway along this alignment will travel across the Un-named Tributary to Sammamish River north of NE60th Street, and it will run behind the existing retaining walls along the SR 520 shoulder uphill from the WLSP off-ramp.

4.1.1 Guideway drainage

Runoff within the new guideway section will be collected in a track underdrain system that collects the runoff along the outside edges of the WB and EB track. Within this segment a stormwater trunk line for the Sound Transit runoff will be installed below the track underdrain system on the WB side, and this system will periodically collect the track underdrains and will discharge eventually directly into the Sammamish River. At the abutment near the off-ramp to WLSP (near the north limits of the AGHA), just before the guideway goes to an aerial structure, the trunkline is directed out of the guideway footprint, buried within WSDOT ROW crossing two WSDOT ramps and WLSP and discharges to the Sammamish River with a new outfall.

4.1.2 New Retaining Wall drainage

The guideway will cut across the existing terrain and create a barrier with the new retaining walls along some locations to allow the up-gradient offsite stormwater runoff to travel down the slope toward the WSDOT road side ditches. As a result, a wall gutter will be installed behind the new retaining walls on the uphill side as the guideway transverse across the slope. The gutter will collect the stormwater runoff from the vegetated slope and due to the topography, there will be several low points created behind the new retaining wall within the wall gutter. An “External drop” will be installed behind the wall at the wall gutter that is essentially a catch basin with sump and vertical drop pipe behind the wall, then drain horizontally underneath the guideway and discharge on the far side of the guideway. The offsite runoff will discharge either into a ditch or pipe system that flows to the WSDOT ditch, and in some cases along the slope on the other side. This system allows the runoff to continue along the existing flow path. Rock pads will be installed at the drain outlets to dissipate energy.

Along the north segment of the walls, just before the abutment (EB 5071+62) the runoff will be collected in the wall gutter and conveyed into an inlet at the end of the gutter adjacent to the bridge abutment. This runoff will be conveyed to the base of the slope and discharge back into the WSDOT ditch along the off-ramp. This pipe system will be constructed with no joints between the two inlets. The offsite collection areas that travel to each of these low spots and to the wall gutter are shown in **Appendix K**. The table below indicates the estimated peak runoff using (SBUH runoff methodology) from the offsite basins, during the 25-year event.

Offsite Basin ID	Area (AC)	25-year Peak Flow Rates (cfs)
3-2	2.24	1.42
3-3	1.73	1.10
3-4	0.61	0.39
3-5	0.17	0.11
3-6	0.26	0.14
3-7	0.83	0.53
3-8	0.14	0.09
3-9	0.15	0.10

Table 4-1 Offsite Basin Runoff (estimated peak flow)

The retaining walls for the cut section along the hillside for this segment will use an underdrain system at the base of the wall. Groundwater behind the wall will be intercepted by a waterproof membrane and directed to the wall base. Due to the proximity of the guideway and track underdrain system, the wall underdrain system will combine with the track underdrain. The groundwater levels along this segment are well below the track elevation, estimated 24-32-feet lower.

4.1.3 Un-named Tributary of Sammamish River-Crossing

The new guideway will cross the un-named tributary just north of NE 60th Street. Retaining walls will be constructed along both sides to span across the ravine created by the existing creek.

The guideway alignment will cut across the existing culvert entrance, so the culvert will be extended to the east side of the guideway to provide a passage for the stormwater. Due to the existing grades, a new culvert with a concrete headwall and new storm drain pipe will be installed on the west side of the guideway to continue the conveyance along the existing flow path to a WSDOT system which is directed to the WSDOT Median Trunkline. The pipe system will be designed to have adequate hydraulic capacity to convey the water but will not be designed for fish passage. This pipe system eventually discharges into Sammamish River.

4.1.4 Existing Retaining Wall and Horizontal Drains

The existing retaining walls along the SR 520 EB shoulder south of the off-ramp to WLSP, will be maintained, along with the wall gutters behind the wall. The existing horizontal drains will be maintained, and if intercepted during construction will be routed back to drain similar to the existing conditions. These drains were installed over 40-years ago, and it is uncertain how well they still function today. The exact locations of all the horizontal drains is not known.

4.1.5 Traction Power Substation

A new TPSS site is proposed along 156th Avenue NE, east of the guideway near EB Station 5062+00 RT. The TPSS station will have two small buildings, with gravel pad around the TPSS structure and a gravel path down to access point to the guideway and two parking stalls. Runoff from the building roofs sheet flow off to the gravel area around the buildings. This runoff sheet flows with the rest of the site, to the west. There are no footing drains anticipated for the structure. There will be a short retaining wall constructed adjacent to the sidewalk area that travels down to the guideway stair access. This wall is to minimize any regrading of the slope behind the guideway walls. The site runoff is considered Sound Transit runoff and will be graded to flow west towards the guideway and will be collected at an inlet along the path to the stairs and directed into the stormwater trunkline running within the guideway footprint, using a drop type structure behind the wall similar to the structure described above. TPSS site layout has been included in **Appendix G**.

4.1.6 Guideway abutment

Near the end of the AGHA area, the guideway will transition from a ballasted track section to an aerial structure as it spans across the interchange and over the Sammamish River. This abutment will be constructed within the steep slope area. Prior to the aerial track section, the track underdrains will be directed back to the structure that will outlet outside the guideway footprint, and then conveyed under the SR 520 off-ramp and eventually direct discharge into the Sammamish River. Along the eastside of the guideway along the slopes, a new inlet will be placed to collect the remaining runoff within the wall gutter, and it will be conveyed down the slope with a new pipe installed with pipe anchors and will connect to another inlet at the base, above the ditch line to dissipate energy. The outlet pipe will discharge into the existing WSDOT ditch along the outside of the WLSP off-ramp, which flow into a closed conveyance system that

travels to the Sammamish River. This will maintain the existing flow patterns of the offsite runoff.

5.0 DESIGN STANDARDS

The drainage design standards that apply to the project area are determined from local jurisdictions, WSDOT and ST requirements. The R200 project overlaps with the majority of the project running through WSDOT and City of Redmond, with a segment overlapping into King County. The stormwater design standards used for the AGHA area are discussed in more detail in Section 1.0 of this report. The minimum requirements are discussed in more detail in Section 5.0 for City or Redmond and WSDOT compliance.

5.1 Minimum Requirements/Stormwater Management Guidelines

The project Minimum Requirements were evaluated for the entire project per the WSDOT HRM and Ecology SWMMWW and City of Redmond Technical Stormwater Notebook. As a result of guideway placement and alignment, TDA limits crossed WSDOT and City boundaries.

The SWMMWW Minimum Requirements for areas within the City were determined using the Ecology flow charts for new and redevelopment areas for TDA3, as shown on Figures I-2.4.1 and I-2.4.2 in the SWMMWW. These flow charts are provided within **Appendix D**. The charts provided were developed to indicate the specific AGHA area which falls within TDA 3. Minimum Requirements are based upon the entire TDA impacts.

LID is the preferred method of managing stormwater runoff within the City, consistent with Ecology's SWMMWW Minimum Requirement 5. LID was evaluated for the runoff treatment within the entire corridor. Because of the site confinement along the corridor within the AGHA area and along the steep slopes, dispersion was not recommended. Based upon preliminary soil information, infiltration was also not recommended along this AGHA area.

The City of Redmond, Stormwater Technical Notebook, Section 1, provides additional clarifications and requirements in addition to the Ecology Minimum Requirements, which were implemented and followed for this project.

Following the Ecology Flow Charts for the TDA 3, which includes the AGHA area: all Minimum Requirements apply to the new hard surface and converted vegetation areas. Provided below is more detailed discussion on the Minimum Requirements and how they apply in the AGHA area.

5.1.1 Minimum Requirement 1 – Preparation of Stormwater Site Plans (Stormwater Reports)

Construction stormwater pollution prevention planning and stormwater control planning will be implemented by the Contractor. Temporary Erosion and Sediment Control (TESC) Plan will be reviewed by the City and WSDOT Northwest Region Compliance and TESC Group.

A Spill Prevention, Control, and Countermeasures (SPCC) Plan will be developed and submitted to the City, County and WSDOT by the Contractor, and will be part of City and WSDOT's permit conditions for this Utility/Developer work within ROW. In addition, the Contractor will prepare a Construction Stormwater Pollution Prevention Plan (SWPPP) and a Permanent Stormwater Control Plan (PSCP) for the affected areas. The project will comply with the 13 TESC elements of Construction Stormwater Pollution and Prevention as discussed in the Ecology and WSDOT TESC Manual (TESCM) and within the City of Redmond Stormwater Technical Notebook. The Contractor will apply the appropriate best management practices (BMPs) that pertain to the site. See additional TESC discussion in Section 7.0 of this report.

5.1.2 Minimum Requirement 2 – Construction Stormwater Pollution Prevention

To prevent sediment discharges from the site, or pollutant spills, construction stormwater pollution prevention planning and temporary erosion and sediment control will be documented in the TESC plan prepared for this project by the Contractor. TESC is also discussed in Specification Section 01 57 00 of the Project Specifications, with additional specification language provided in WSDOT Standard Specification Section 1.07.15, Temporary Water Pollution/Erosion Control, which discusses requirements for SPCC planning that the Contractor will perform. See additional TESC discussion in Section 7.0 of this report.

5.1.3 Minimum Requirement 3 – Source Control of Pollution

During the construction phase, construction source control BMPs will be applied to all new and replaced impervious surfaces and disturbed areas. The BMP types and facilities will be provided by the Contractor as described in Project Specifications Section 01 57 00. The Contractor will also reference the Ecology, WSDOT HRM and TESCM for criteria on the design of the source control BMPs for the post-construction phase.

Post-construction source control of the highway system will be managed through the operational and structural BMPs discussed in this report and the April 2019 WSDOT *Maintenance Manual*.

5.1.4 Minimum Requirement 4 – Preservation of Natural Drainage Systems (and Outfalls)

The existing drainage system, outfalls and drainage patterns will be maintained and preserved to the extent possible. The drainage improvements constructed as result of the guideway-related construction will maintain the same flow patterns to the receiving water bodies and maintain the existing flow path and discharge locations. The un-named channel that travels through the guideway footprint will be maintained.

A downstream analysis was performed which includes a discussion of downstream capacity. This is provided in Appendix I. Based upon discussion with the City of Redmond and WSDOT there are no known downstream capacity issues.

5.1.5 Minimum Requirement 5 – On-Site Stormwater Management

This DRLE project will employ onsite stormwater management BMPs based upon the thresholds and requirements that encourage infiltration, dispersion and retention of stormwater runoff onsite, to the extent feasible without causing flooding or erosion impacts. LID methods will be used to the extent possible on the DRLE project.

The AGHA area is within TDA 3 and qualifies as flow control exempt in accordance with Minimum Requirement #7 (Flow Control). This area does not have to achieve the LID performance standard, not consider bioretention, rain gardens, permeable pavement and full dispersion. However, the project will still implement the following for the AGHA area

- BMP T5.13 (Post Construction and Soil Quality and Depth) will be applied to all pervious surfaces. The BMP is considered infeasible on till slopes greater than 33-percent.
- BMP T5.10A thru 10B for downspout runoff will be evaluated and implemented for the TPSS shed and structure roof runoff to the extent possible.

See **Appendix D** for Ecology Flow Chart for determining LID MR#5 Requirements.

5.1.6 Minimum Requirement 6 – Runoff Treatment

Based upon the minimum requirements, Runoff treatment is required for all new pollution generating surfaces. Within the AGHA area there is no new pollution generating surfaces created, therefore no water quality treatment is required within this segment of work.

5.1.7 Minimum Requirement 7 – Flow Control

Flow control is not required for the added runoff from within TDA 3 including the AGHA area. The site discharges to a flow control exempt surface water (Sammamish River), as shown in the SMMWW, Table I-E.1. The added impervious area generated from the guideway and TPSS improvements will be collected and conveyed in a new conveyance system to a new direct discharge location into the receiving water body. The runoff previously traveled to the existing WSDOT outfall into the Sammamish River. The existing runoff from the surrounding areas will continue to flow to the existing discharge location to the river. Existing conveyance systems between the development and the receiving body of water, that received additional impervious area will be checked to insure sufficient capacity of added runoff.

5.1.8 Minimum Requirement 8 – Wetlands Protection

This requirement only applies to the project that has stormwater discharge into a wetland either directly or indirectly through a conveyance system. Within the AGHA area, there are no documented wetlands within the segment, and no discharge into a wetland.

5.1.9 Minimum Requirement 9 – Operation and Maintenance

For operations and maintenance requirements and procedures to be followed for the permanent drainage features within the WSDOT and City ROW, see Section 5-5 of the WSDOT HRM the WSDOT *Maintenance Manual* and **Section 7.0** of this report. Operations and Maintenance Agreements between ST, WSDOT and the City of Redmond are under development at the time of this report. A maintenance manual will be developed for this project and will address the items listed within the City of Redmond Technical Stormwater Notebook, Section 2.5.9.

6.0 HYDROLOGIC AND HYDRAULIC DESIGN

The following sections describe the design criteria and guidance used to size and model the drainage systems within the AGHA area, along with brief descriptions of the storm drainage system.

6.1 Conveyance Systems

Storm drainage systems have been designed for full gravity peak flow with a 25-year recurrence for ST and WSDOT system and for the 50-year recurrence level for City of Redmond. Runoff rates were estimated using the rational method, as described in the *WSDOT Hydraulics Manual*, and is consistent with WSDOT, City of Redmond and Sound Transit design approach. The AutoCAD Storm and Sanitary Analysis (SSA) will be used for storm drain sizing, which is based upon Manning's Equation for circular pipes. The design criteria in the *WSDOT Hydraulics Manual* and the *ST Design Criteria Manual* were referenced and checked in the design of the conveyance.

6.2 Rock Outfall Protection

Rock outfall pads to the ditches will be designed per the design criteria and reference WSDOT Hydraulic Manual Table 5-11, and per WSDOT Hydraulic Manual Figure 3-4.7.1

6.3 Flow Control

Based upon the Ecology and WSDOT Flow charts, TDA 3 does not require flow control due to direct discharge into a flow control exempt waters (SMMWW, Table I-E.1, Exempt Surface Water List). Therefore, the AGHA segment does not include any flow control but maintains the existing flow patterns to direct discharge into the Sammamish River.

6.4 Water Quality

Water quality treatment is required for the runoff from pollution-generating impervious surfaces (PGIS) and pollution-generating pervious surfaces (PGPS). Within the AGHA segment, there will not be any new NPGIS or PGPS constructed within this project segment. The ST guideway is classified as NPGIS or non-pollution-generating hard surface (NPGHS). The TPSS site due to nature of infrequent usage, the parking spaces are designated as a NPGIS surface.

7.0 CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

TESC measures will be provided for this project in accordance with the WSDOT TESCM, Ecology's SWMMWW, ST Individual Construction Stormwater Permit and City of Redmond Engineering Standards, as they apply. The 13 Elements of Construction Stormwater Pollution Prevention listed in Chapter II-1.3 of the Ecology SWMMWW will be followed. Source control and runoff conveyance and treatment BMPs will be used. A separate SWPPP will be submitted for construction to the City for compliance and permitting requirements. The Contractor will be responsible for developing and implementing the construction BMPs and inspecting, maintaining, monitoring and reporting as the project continues during construction.

Temporary Erosion Control Best Management Practices (BMPs) will be implemented during construction to minimize the erosion risks. The construction area would be delineated and fenced to minimize disturbance, and only disturbed when required. The TESC plans for this segment are included in the recently submitted: "Clear & Grade Permit #4" to the City of Redmond (June 2020).

7.1 Thirteen Elements of Construction Stormwater Pollution Prevention

All erosion and sediment control measures within the AGHA area shall be governed by the requirements of the City of Redmond and WSDOT per the 2014 Ecology Manual and the WSDOT TESCM. A temporary erosion and sedimentation control plan set was prepared for the recent submittal package and full SWPPP will be provided prior to construction. TESC plans are included in the "Clear & Grade Permit #4" submitted to the City under separate cover.

7.1.1 Element 1: Mark Clearing Limits

Prior to beginning any land disturbing activities including clearing and grading, all the clearing limits, sensitive areas and their buffers, and trees that are to be preserved within the construction area shall be clearly marked, both in the field and on the plans, to prevent damage and offsite impacts. Plastic, metal, or stake wire fence may be used to mark the clearing limits. The duff layer, native top soil, and natural vegetation shall be retained in an undisturbed state to the maximum extent practicable. If it is not practicable to retain the duff layer in place, it should be stockpiled on-site, covered to prevent erosion, and replaced immediately upon completion of the ground disturbing activities. Potential BMP's will include: BMP C101 Preserving Natural Vegetation, BMP C102 Buffer Zones, BMP C103 High Visibility Fence, and BMP C233 Silt Fence.

7.1.2 Element 2: Establish Construction Access

- Construction vehicle access and exit shall be limited to one route, if possible.
- Access points will be stabilized with quarry spalls or crushed rock prior to traffic leaving the construction site to minimize the tracking of sediment onto public roads.

- Wheel wash or tire baths should be utilized, as applicable. If sediment is tracked off site to public roads, they shall be cleaned thoroughly at the end of each day, or more frequently during wet weather, or as necessary to prevent sediment from entering waters of the state. Sediment shall be removed from roads by shoveling or pickup sweeping and shall be transported to a controlled sediment disposal area. Street washing will be allowed only after sediment is removed in this manner. Street wash wastewater shall be controlled by pumping back onsite, or otherwise be prevented from discharging into systems tributary to state surface waters.

7.1.3 Element 3: Control Flow Rates

- Properties and waterways downstream from development site shall be protected from erosion due to increases in the runoff volume, velocity, and peak flow rate of stormwater runoff from the project site, as required by local plan approval authority. Additional downstream analysis is necessary if changes in flows could impair or alter conveyance systems, stream banks, bed sediment or aquatic habitat.
- If necessary, to comply with Minimum Requirement #7, temporary stormwater detention facilities will be constructed as one of the first steps in grading. Detention facilities shall be functional prior to construction of site improvements. For the AGHA area, the runoff is flow control exempt, Capacity of existing conveyance systems will be checked to ensure capacity.

7.1.4 Element 4: Install Sediment Controls

- The stormwater runoff from disturbed areas shall pass through temporary sediment BMPs or other appropriate sediment removal BMPs prior leaving the construction area. Runoff from fully stabilized areas may be discharged without a sediment removal BMP but must meet the flow control performance standard of Element #3. Full stabilization means covered in a manner that will fully prevent soil erosion. WSDOT and City of Redmond will inspect and approve areas stabilized.
- Portable storage tanks, vegetated buffer strips, sediment barriers or filters, dikes, and other BMPs intended to trap sediment onsite shall be constructed as one of the first steps in grading. These BMPs shall be functional before other land disturbing activities take place.
- Earthen structures such as dams, dikes, and diversions shall be seeded and mulched according to the timing indicated in Element #5.
- Additional sediment removal BMPs such as Ecology approved Chitosan-enhanced filtration will be used as needed.

7.1.5 Element 5: Stabilize Soils

- All exposed and unworked soils shall be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrop impact and flowing water, and wind erosion.
- From October 1 through April 30, no soils shall remain exposed and unworked for more than 2 days. From May 1 to September 30, no soils shall remain exposed and unworked for more than 7 days. This condition applies to all soils on site, whether at final grade or not.
- Soils shall be stabilized at the end of the shift before a holiday or weekend if needed based on the weather forecast.

- Applicable practices include, but are not limited to, temporary and permanent seeding, sodding, mulching, plastic covering, soil application of polyacrylamide (PAM), the early application of gravel base on areas to be paved, and dust control.
- Soil stabilization measures selected should be appropriate for the time of year, site conditions, estimated duration of use, and potential water quality impacts downstream.
- Soil stockpiles must be stabilized from erosion, protected with sediment trapping measures, and when possible, be located away from storm drain inlets, waterways and drainage channels.
- Linear construction activities, including right-of-way and easement clearing, roadway development, pipelines, and trenching for utilities, shall be conducted to meet the soil stabilization requirement. Contractors shall install the bedding materials, roadbeds, structures, pipelines, or utilities and re-stabilize the disturbed soils so that: from October 1 through April 30: no soils shall remain exposed and unworked for more than 2 days; and from May 1 to September 30: no soils shall remain exposed and unworked for more than 7 days.

7.1.6 Element 6: Protect Slopes

- Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion.
- Temporary Walls will be required in the AGHA area. Refer to the Geotechnical Report for further discussion. Protection will be provided to minimize erosion and slope instability. Drainage will be provided at the behind and at the toe of the walls to avoid collection of runoff or seepage in-front of temporary walls.
- Consider soil type and its potential for erosion.
- Reduce slope runoff velocities by reducing the continuous length of slope with terracing and diversions, reduce slope steepness, and roughen slope surface.
- Offsite stormwater from up-gradient areas shall be diverted away from slopes and disturbed areas with interceptor dikes and or swales. Offsite stormwater should be managed separately from stormwater generated on the site.
- Stormwater runoff from construction area up-gradient of guideway shall be collected and conveyed by pipe slope drains or protected channels to down-gradient of the slope to prevent erosion. Temporary pipe slope drains shall handle the peak flow from a 10- year, 24-hour event assuming a Type 1A rainfall distribution (as an alternate the 10-year and 25-year, 1-hour flow rates indicated by an approved continuous runoff model, increased by a factor of 1.6, may be used).
- Provide drainage to remove ground water intersecting the slope surface of exposed soil areas.
- Excavated material shall be placed on the uphill side of trenches, consistent with safety and space considerations.
- Check dams shall be placed at regular intervals within channels that are cut down a slope.
- Stabilize soils on slopes, as specified in Element #5.

7.1.7 Element 7: Protect Drain Inlets

- All storm inlets made operable during construction shall be protected so that stormwater runoff shall not enter the conveyance system without first being filtered or treated to remove sediment.
- All approach roads shall be kept clean. All sediment and street wash water shall not be allowed to enter storm drains without prior and adequate treatment unless treatment is provided before the

storm drain discharges to waters of the State.

- Inlets should be inspected weekly at a minimum and daily during storm events. Inlet protection devices should be cleaned or removed and replaced when sediment has filled one-third of the available storage (unless a different standard is specified by the product manufacturer).

7.1.8 Element 8: Stabilize Channels and Outlets

- All temporary onsite conveyance channels shall be designed, constructed and stabilized to prevent erosion from the expected peak 10-minute velocity of flow from a Type 1A, 10- year, 24-hour frequency storm for the developed condition. (see Element 6 for alternate flow rate calculation).
- Stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes and downstream reaches shall be provided at the outlets of all conveyance systems.

7.1.9 Element 9: Control Pollutants

- All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that does not cause contamination of stormwater. Woody debris may be chopped and spread on site.
- Cover, containment, and protection from vandalism shall be provided for all chemicals, liquid products, petroleum products, and non-inert wastes present on the site (see Chapter 173-304 WAC for the definition of inert waste). Onsite fueling tanks shall include secondary containment.
- Maintenance and repair of heavy equipment and vehicles involving oil changes, hydraulic system drain down, solvent and degreasing cleaning operations, fuel tank drain down and removal, and other activities which may result in discharge or spillage of pollutants to the ground or into stormwater runoff must be conducted using spill prevention measures, such as drip pans. Contaminated surfaces shall be cleaned immediately following any discharge or spill incident. Emergency repairs may be performed onsite using temporary plastic placed beneath and, if raining, over the vehicle.
- Wheel wash or tire bath wastewater shall be discharged to a separate onsite treatment system or to the sanitary sewer.
- BMPs shall be used to prevent or treat contamination of stormwater runoff by pH modifying sources. These sources include, but are not limited to, bulk cement, cement kiln dust, fly ash, new concrete washing and curing waters, waste streams generated from concrete grinding and sawing, exposed aggregate processes, and concrete pumping and mixer washout waters. Stormwater discharges shall not cause or contribute to a violation of the water quality standard for pH in the receiving water.
- Construction sites with significant concrete work shall monitor and adjust the pH of stormwater runoff if necessary, to prevent violations of water quality standards.

7.1.10 Element 10: Control Dewatering

- Foundation and trench dewatering water, which has similar characteristics to stormwater runoff at the site, shall be discharged into a controlled conveyance system prior to discharge to a sediment trap or sediment pond. Channels must be stabilized, as specified in Element #8.
- Clean, non-turbid dewatering water, such as well-point ground water, can be discharged to

systems tributary to state surface waters, as specified in Element #8, provided the de-watering flow does not cause erosion or flooding of receiving waters. These clean waters should not be routed through a stormwater sediment pond.

- Highly turbid or otherwise contaminated dewatering water shall be handled separately from stormwater.
- Other disposal options, depending on site constraints, may include: transport off-site in a vehicle, such as a vacuum flush truck, for legal disposal in a manner that does not pollute state waters, or Ecology and City approved onsite chemical treatment or other suitable treatment technologies, or if no other option available use of a sedimentation bag with outfall to a ditch or swale for small volumes of localized dewatering

7.1.11 Element 11: Maintain BMPs

- All temporary and permanent erosion and sediment control BMPs shall be inspected as required per project requirements and NPDES permit, maintained and repaired as needed to assure continued performance of their intended function. All maintenance and repair shall be conducted in accordance with BMP specifications.
- All temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall be removed or stabilized on site. Disturbed soil areas resulting from removal of BMPs or vegetation shall be permanently stabilized

7.1.12 Element 12: Manage the Project

- Phasing of Construction – The DRLE project shall be phased where feasible in order to prevent soil erosion and, to the maximum extent practicable, the transport of sediment from the site during construction. Revegetation of exposed areas and maintenance of that vegetation shall be an integral part of the clearing activities for any phase.
- Clearing and grading activities for developments shall be permitted only if conducted pursuant to an approved site development plan that establishes permitted areas of clearing, grading, cutting, and filling. These permitted clearing and grading areas shall be delineated on the site plans and the development site.
- Seasonal Work Limitations – From October 1 through April 30
- Coordination with Utilities and Other Contractors
- A Certified Erosion and Sediment Control Specialist shall be identified in the Construction SWPPP and shall be on-site or on-call at all times.
- Maintaining an Updated Construction SWPPP: The Construction SWPPP shall be retained on-site or within reasonable access to the site.

7.1.13 Element 13: Protect Low Impact BMPs

- This work segment of the project does not have any existing or proposed Low Impact BMPs within the work zone.

The following above discusses some common BMPs and methods to be used for this project. However, more BMPs are available to be used as listed in the AHJ design standards such as the

TESC Manual from WSDOT, Standard details and specifications from City of Redmond, and the Ecology manual.

8.0 SPECIAL REPORTS OR STUDIES

The following reports and studies have been conducted and prepared or have been referenced in conjunction with this project. These documents have been issued under separate cover and are not attached to this report:

- *Geotechnical Report, Alteration of Geological Hazard Areas, City of Redmond, March 19, 2020*
- Existing WSDOT As-Builts and Drainage Report along SR 520.

9.0 OTHER PERMITS

This section includes a list of other necessary permits and approvals as required by the regulatory agencies that affect the drainage plan or contain more restrictive drainage-related requirements.

This project will follow the City of Redmond permitting process outlined for stormwater improvements within the City. Outside of the AGHA Permit, this project has identified the following stormwater and hydraulic related permits for this project, shown below, but not limited to:

- Shoreline Substantial Development Permit, City of Redmond, King County
- Critical Areas Permit, City of Redmond
- Clearing and Grading Permit, City of Redmond, King County
- Utility Permit, WSDOT
- Hydraulic Project Approval Permit, Washington State Department of Fish & Wildlife
- NPDES Stormwater Permit, Washington State Department of Ecology

10.0 OPERATION AND MAINTENANCE MANUAL

Sound Transit will inspect and maintain those facilities within the Guideway. The City will perform inspection and maintenance of stormwater facilities constructed within City ROW and WSDOT for facilities within WSDOT that convey WSDOT related runoff. ST will perform inspection and maintenance for the following stormwater facilities:

- Facilities handling ST runoff constructed within City, County WSDOT ROW
- Facilities handling ST runoff within parcels owned by ST

- Facilities that solely convey ST runoff (i.e. Guideway)

Maintenance agreements of permanent features are in process and are required per the lease agreement between WSDOT and ST. Agreements will be in place between the City, WSDOT and ST prior to construction. A separate Operations and Maintenance Agreement is being developed between ST, WSDOT and the City of Redmond.

Operations & Maintenance Manuals will be developed or provided as required for any proprietary systems that the agencies would need to maintain. The AGHA area does not contain any non-standard items or structure that require and O&M Manual.

11.0 DECLARATION OF COVENANTS

Covenants are provided to ensure future maintenance and allow access for inspection of the facilities by the local governments. The facilities installed as part of DRLE project will be owned and maintained by Sound Transit, City of Redmond, WSDOT or King County.

12.0 BOND QUANTITIES WORKSHEET

The DRLE project is a Sound Transit design-build project and bond quantities and the financial guarantees for proper construction and operation of the site BMPs will be provided under separate agreements.

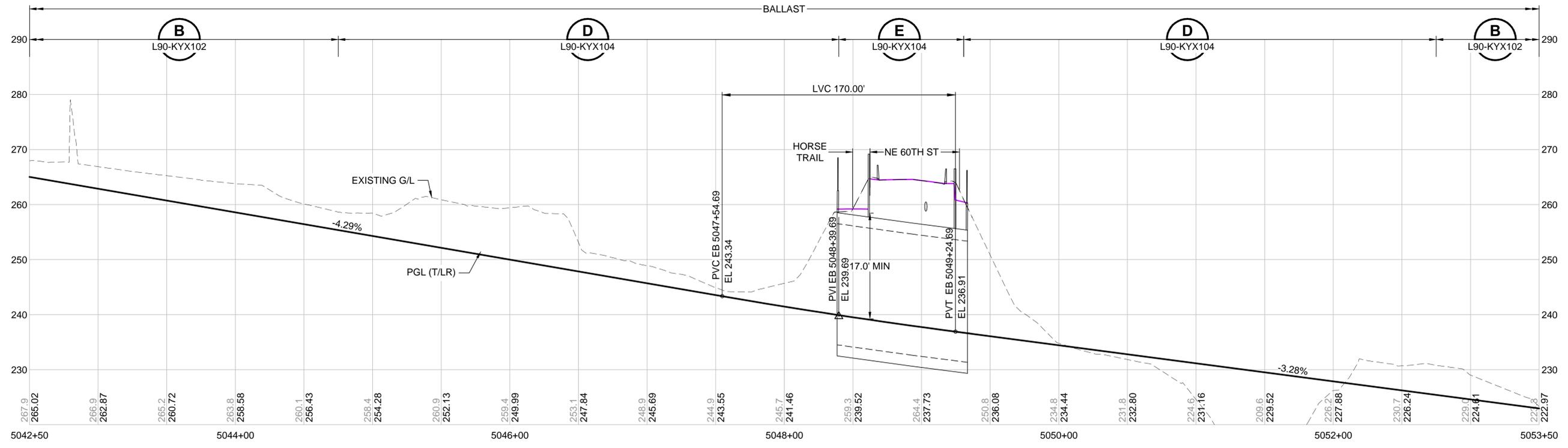
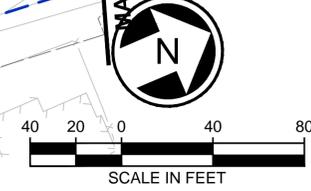
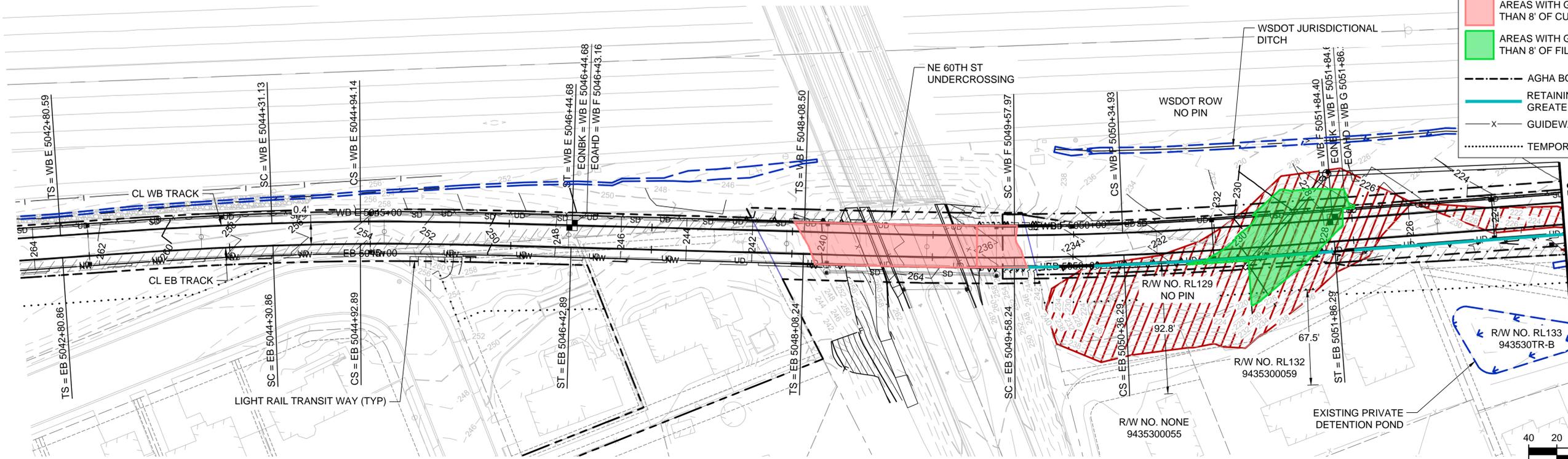
APPENDIX A SITE MAP: GEOLOGICAL HAZARD AREA

This appendix contains the figure that indicate the location of the geological hazard area within the project site.

Xrefs:
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 xDRLE-L90-VRX
 xDRLE-L90-VSF
 xR200-L90g-RPP100
 xR200-L90h-CRP202
 xR200-L90-CRP101
 xR200-AGHA-SLOPE
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 xR200-L90h-KAP100
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 xR200-L90g-CDP101
 xR200-L90h-CDP102
 xR200-L90h-CDP103
 xR200-L90h-SEV113

LEGEND:

-  AREA OF SLOPE (40% OR STEEPER)
TOTAL = 119,269 SF, OR 2.74 ACRES
-  EXISTING STREAM, WETLAND, POND,
OR SURFACE WATER FEATURE
-  AREAS WITH GREATER
THAN 8' OF CUT
-  AREAS WITH GREATER
THAN 8' OF FILL
-  AGHA BOUNDARY
-  RETAINING WALLS
GREATER THAN 8'
-  GUIDEWAY FENCING
-  TEMPORARY CONSTRUCTION ESMT



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REVIEWED BY:	J. SCHELLER
SUBMITTED BY:	A. TISCAREÑO



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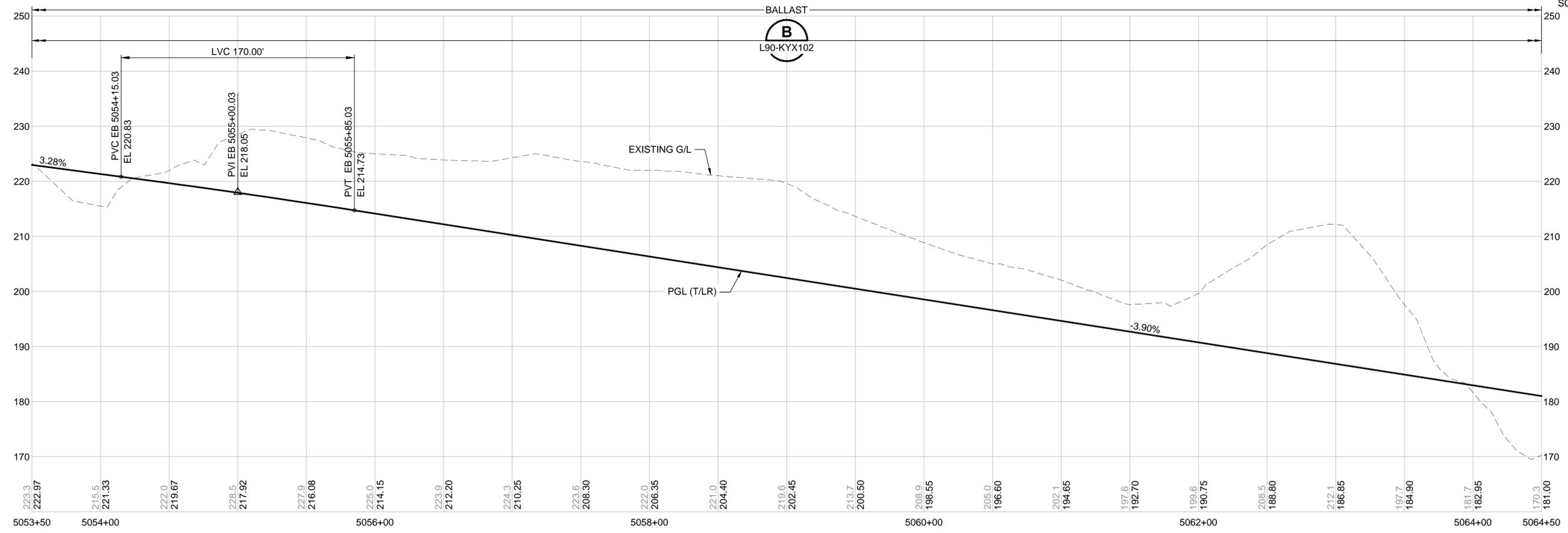
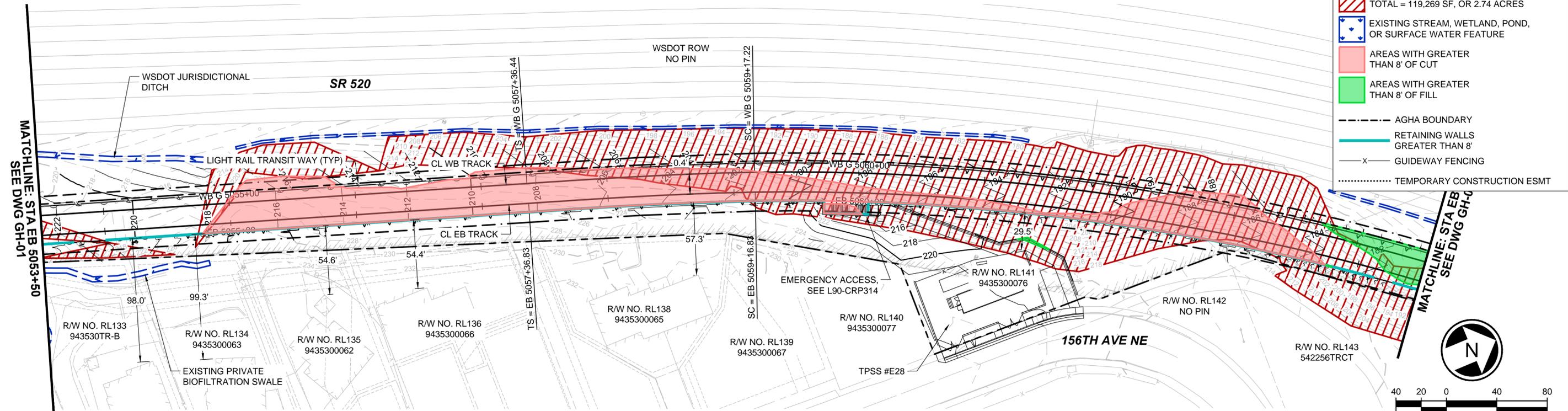
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ALTERATION OF GEOLOGIC HAZARD AREA EXHIBIT

PLAN & EASTBOUND (EB) PROFILE
 EB 5042+50 TO EB 5053+50

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SHEET No.:	REV:

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 xDRLE-L90-VSF
 xR200-L90-CXP101
 MODIFIED_xR200-TB22x4
 XREF_GH
 xR200-AGHA-SLOPE
 xR200-L90h-KAV100
 xR200-L90h-CRP202
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 xR200-L90h-KAP100
 xR200-L90-RHP100
 xR200-L90g-RPP100



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REVIEWED BY:	J. SCHELLER
SUBMITTED BY:	A. TISCAREÑO

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ALTERATION OF GEOLOGIC HAZARD AREA EXHIBIT

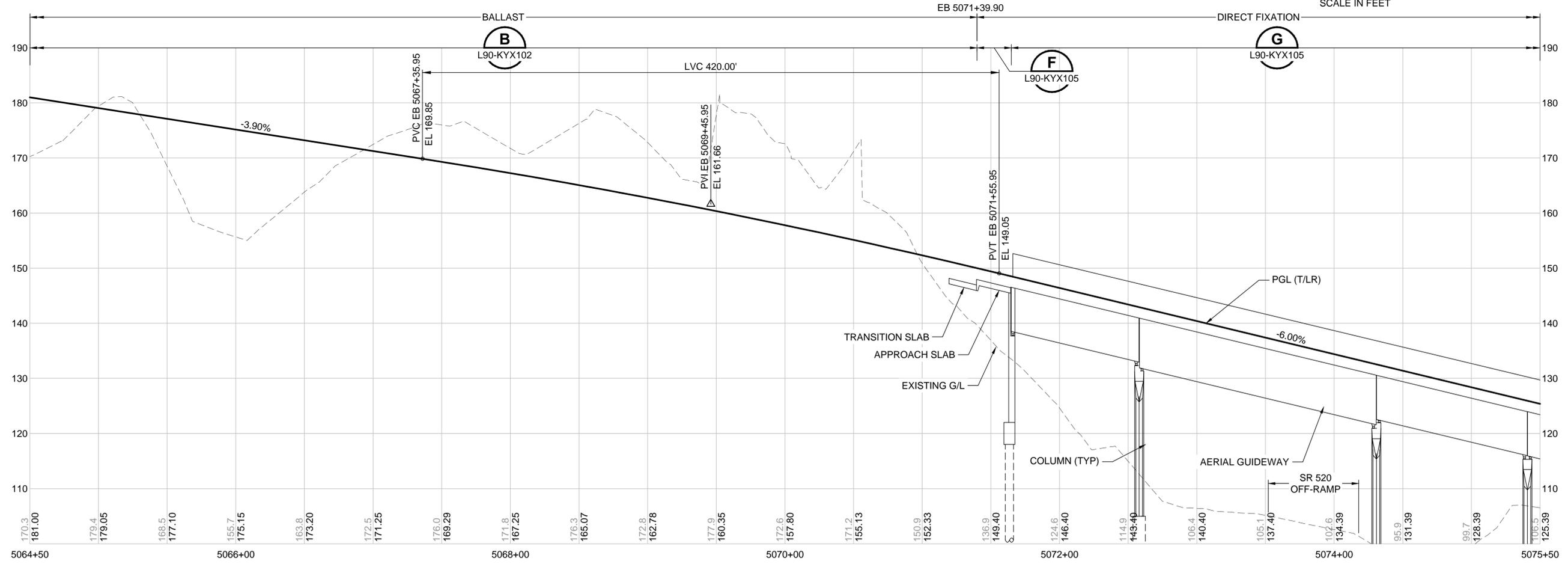
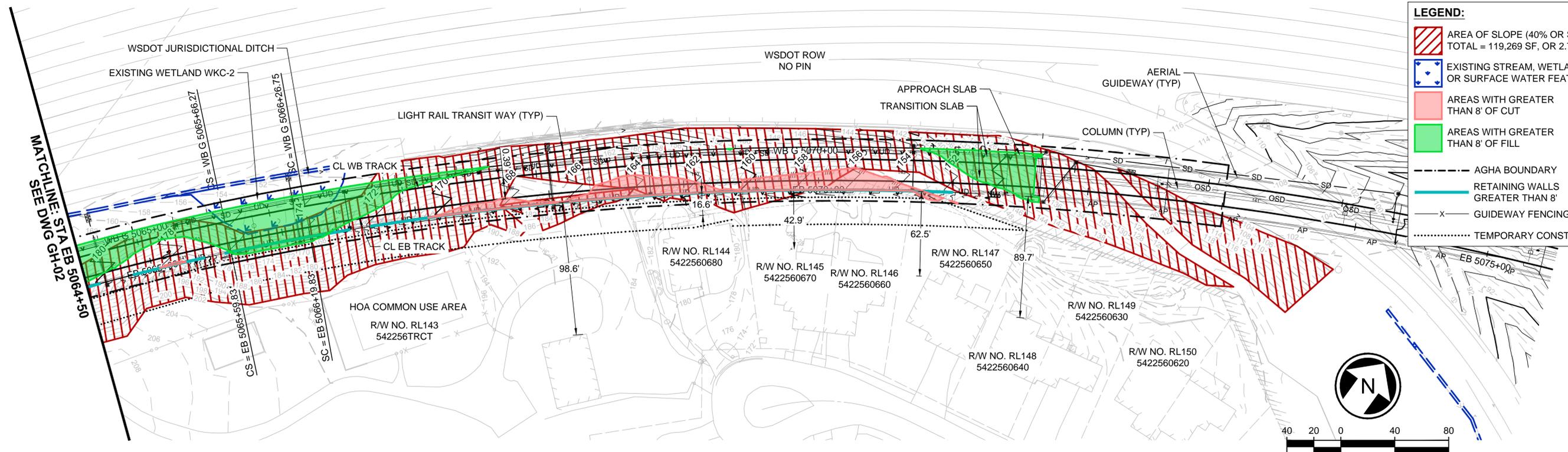
PLAN & EASTBOUND (EB) PROFILE
 EB 5053+50 TO EB 5064+50

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 xDRLE-L90-VRX
 xDRLE-L90-VSF
 xR200-L90-CXP101
 XREF_GH
 MODIFIED_xR200-TB22x
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 xR200-L90-C-KAV100
 xR200-L90-C-SEP100
 xR200-L90-C-SWP100
 xR200-AGHA-SLOPE
 xR200-L90-C-SEV100

LEGEND:

- AREA OF SLOPE (40% OR STEEPER)
TOTAL = 119,269 SF, OR 2.74 ACRES
- EXISTING STREAM, WETLAND, POND,
OR SURFACE WATER FEATURE
- AREAS WITH GREATER
THAN 8' OF CUT
- AREAS WITH GREATER
THAN 8' OF FILL
- AGHA BOUNDARY
- RETAINING WALLS
GREATER THAN 8'
- GUIDEWAY FENCING
- TEMPORARY CONSTRUCTION ESMT



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REVIEWED BY:	J. SCHESSLER
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SUBMITTED BY:	A. TISCAREÑO
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DATE: 07/01/2020	

ALTERATION OF GEOLOGIC HAZARD AREA EXHIBIT

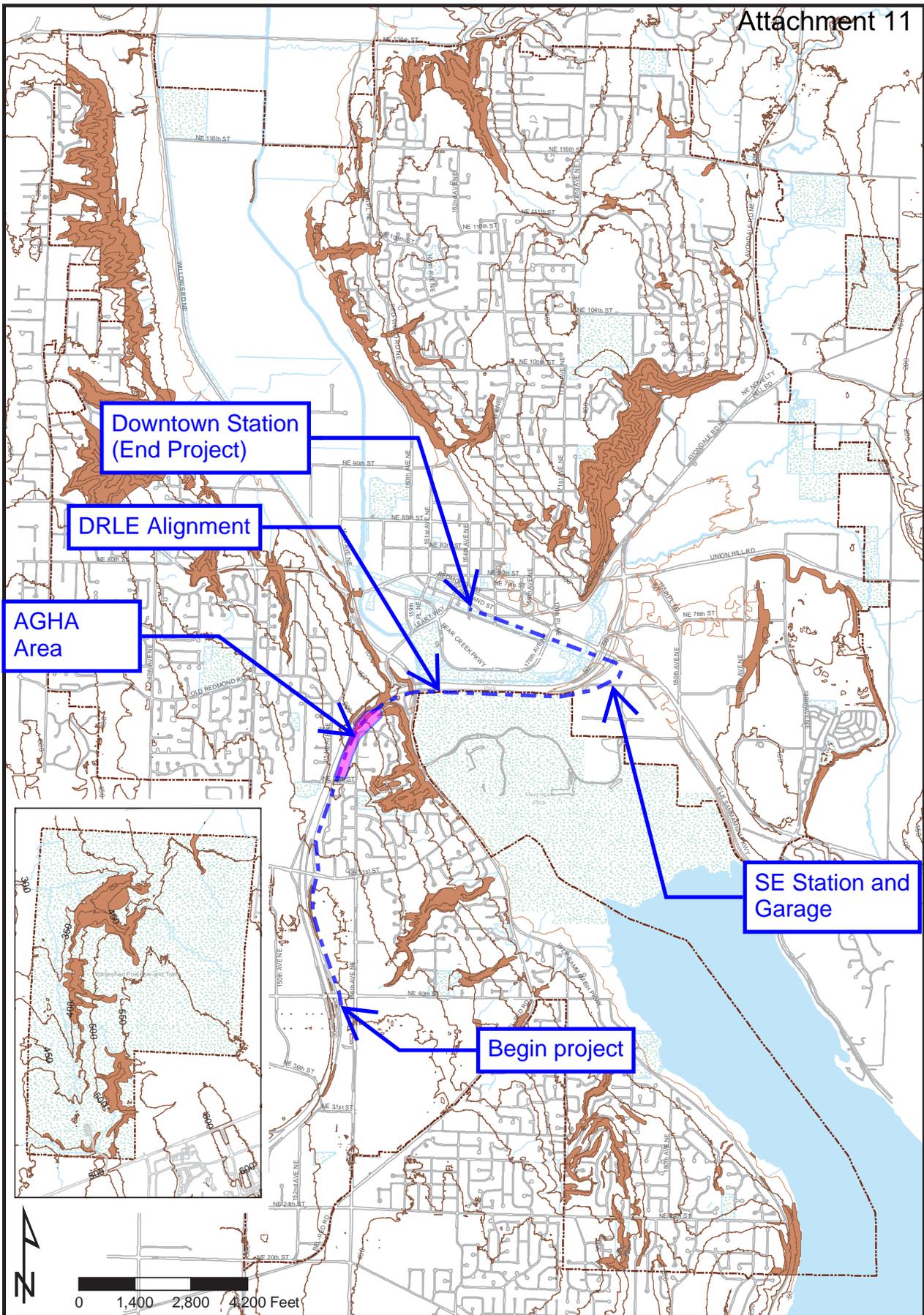
PLAN & EASTBOUND (EB) PROFILE
 EB 5064+50 TO EB 5075+50

DRAWING No.:	GH-03
FACILITY ID:	
SHEET No.:	REV:

APPENDIX B CITY OF REDMOND MAPS

This appendix contains the TDA Boundary Maps for the entire R200 segment

- COR Landslide Hazard Area Map
- COR Erosion Hazard Area



G:\Planning\COMPLAN & DEV GUIDE GRAPHICS\ArcGISMaps\RCDG Rewrite\GIS\Final\Drawings\Map64_7_RZC.mxd



City of Redmond

*Critical Areas Map
Effective: 03/12/2016*

Map 64.7 Landslide Hazards

Legend

- Landslide Hazards Areas
- Contours
- Park

Sources:
City of Redmond GIS Services
King County GIS

Note: This map shall be used as a general guide representing the approximate location of steep slopes, per RZC 21.64.060(A)(1)b.vii. The map does not necessarily ensure the presence or absence of landslide hazards. In the event of a conflict between the map and the criteria of the Critical Areas Ordinance (CAO), the criteria shall prevail. Consult the CAO (RZC 21.64) for reporting requirements.

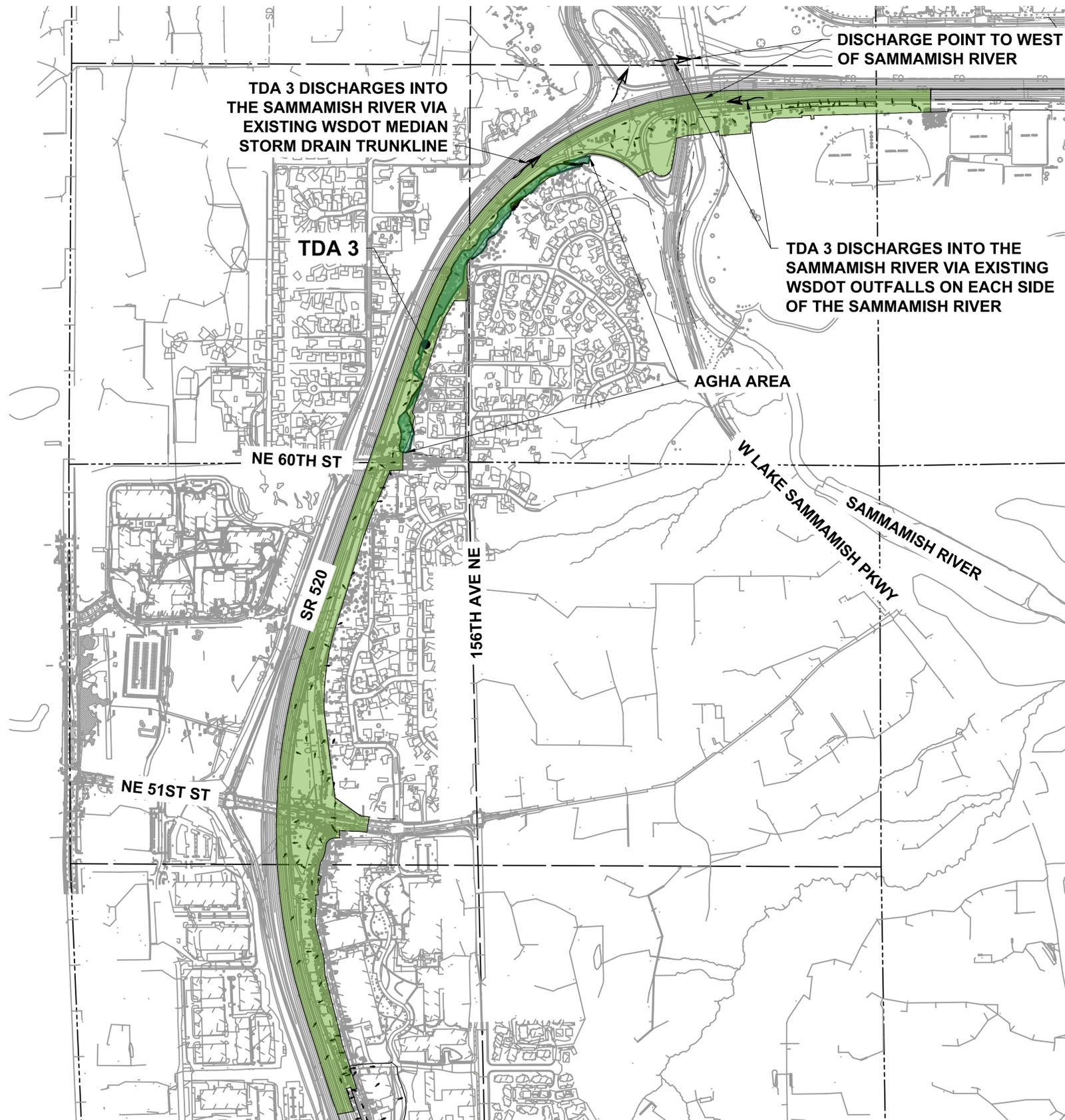
APPENDIX C TDA FIGURES

This appendix contains TDA-specific information pertaining to TDA area

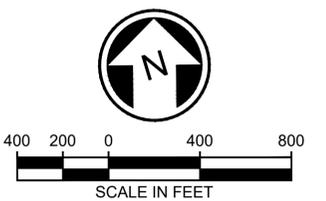
LEGEND:



FLOW DIRECTION



TDA 3 TOTAL AREA = 44.77 ACRES



03/18/20 | 4:38 PM | ERICKSVF C:\PWORKING\JACOBS_BA\ERICKS\WFD\018639\R200_TDA_FIGURES_TDA_3_EXISTING.DWG

<p>..d0187448\Pre 30% Use ONLY - SWK Logo Full Color Firm Names.png</p>	<p>LINE IS 1/2" AT FULL SCALE</p>  <p>SOUNDTRANSIT</p>	<p>SCALE: 1"=400'</p>	<p>DOWNTOWN REDMOND LINK EXTENSION CONTRACT R200</p>	<p>FACILITY ID:</p>
		<p>DESIGNED BY:</p>		<p>TDA 3 EXISTING CONDITIONS MAP</p>
			<p>DRAWN BY: M. ROJAS</p>	
			<p>CONTRACT ID:</p>	<p>01 0</p>

APPENDIX D MINIMUM REQUIREMENTS AND FLOW CHARTS

This appendix contains Ecology Minimum Flow Charts for the following:

- Flow Chart for Determining Requirements for New Development (SMMWW Figure I-2.4.1)
- Flow Chart for Determining Requirements for Redevelopment (SMMWW Figure I-2.4.2)
- Flow Chart for Determining LID MR#5 Requirements (SMMWW Figure I-2.5.1)

Figure I-2.4.1 Flow Chart for Determining Requirements for New Development

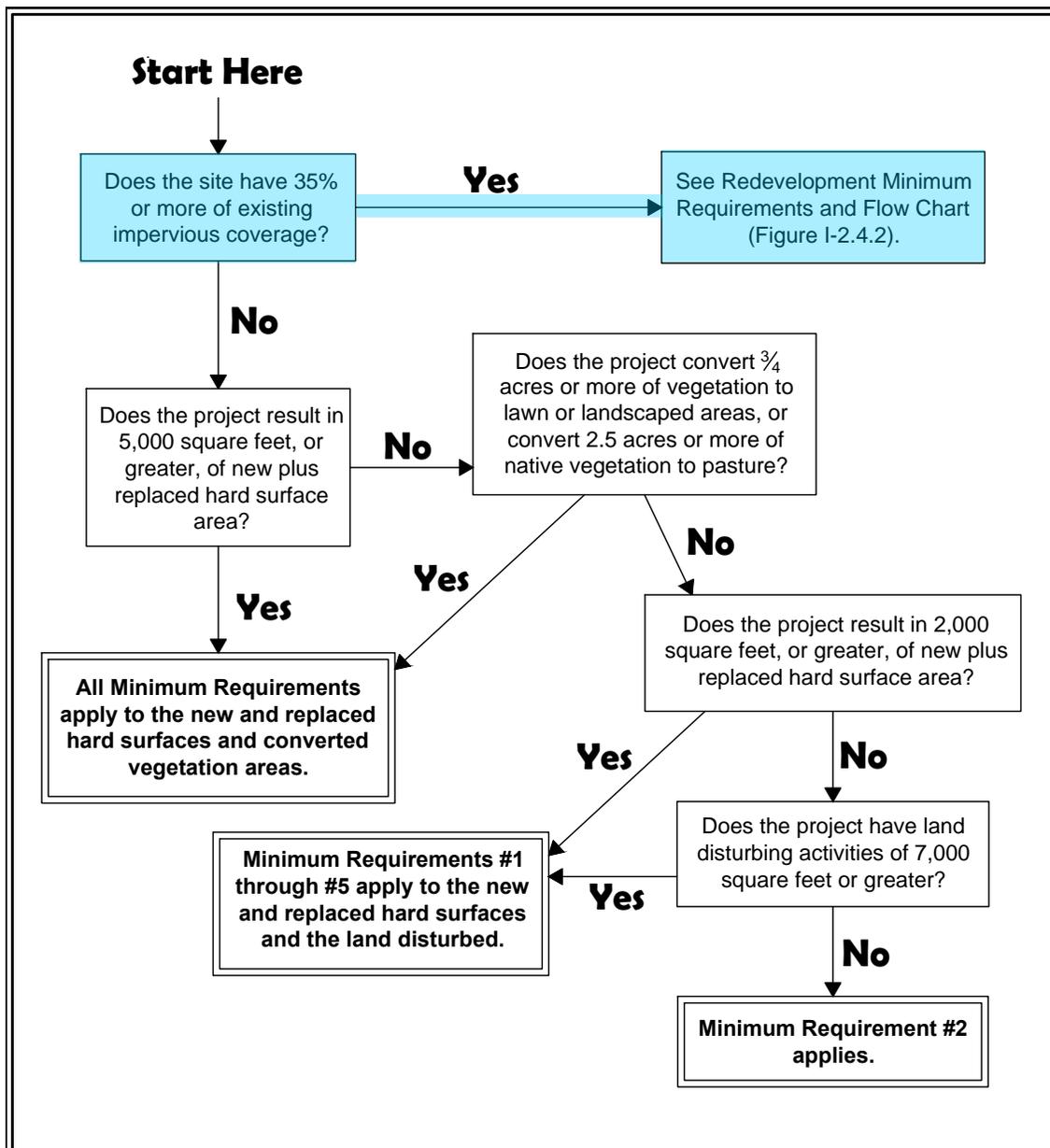


Figure I-2.4.1
Flow Chart for Determining Requirements for New Development

Revised June 2015

Please see <http://www.ecy.wa.gov/copyright.html> for copyright notice including permissions, limitation of liability, and disclaimer.

Figure I-2.4.2 Flow Chart for Determining Requirements for Redevelopment

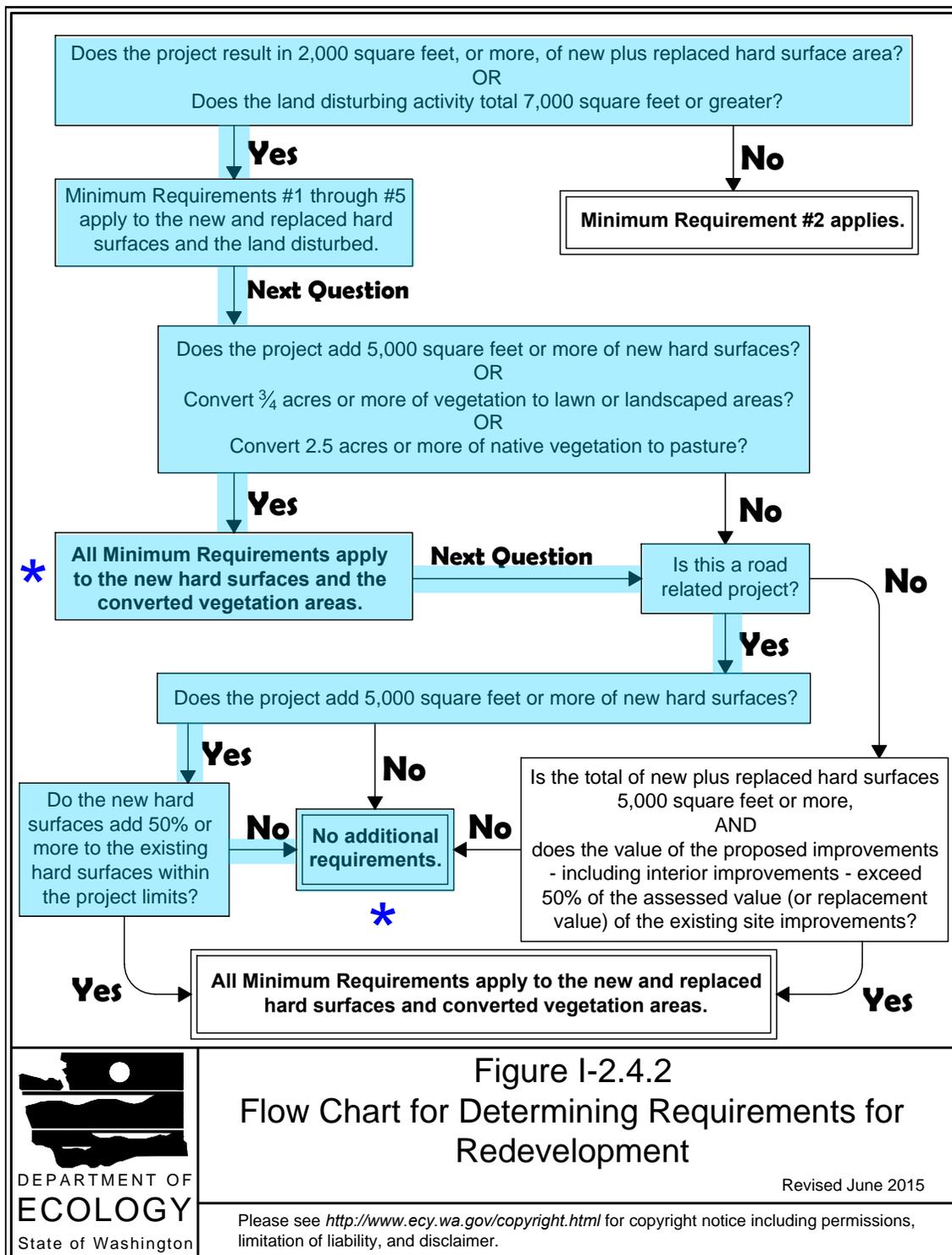
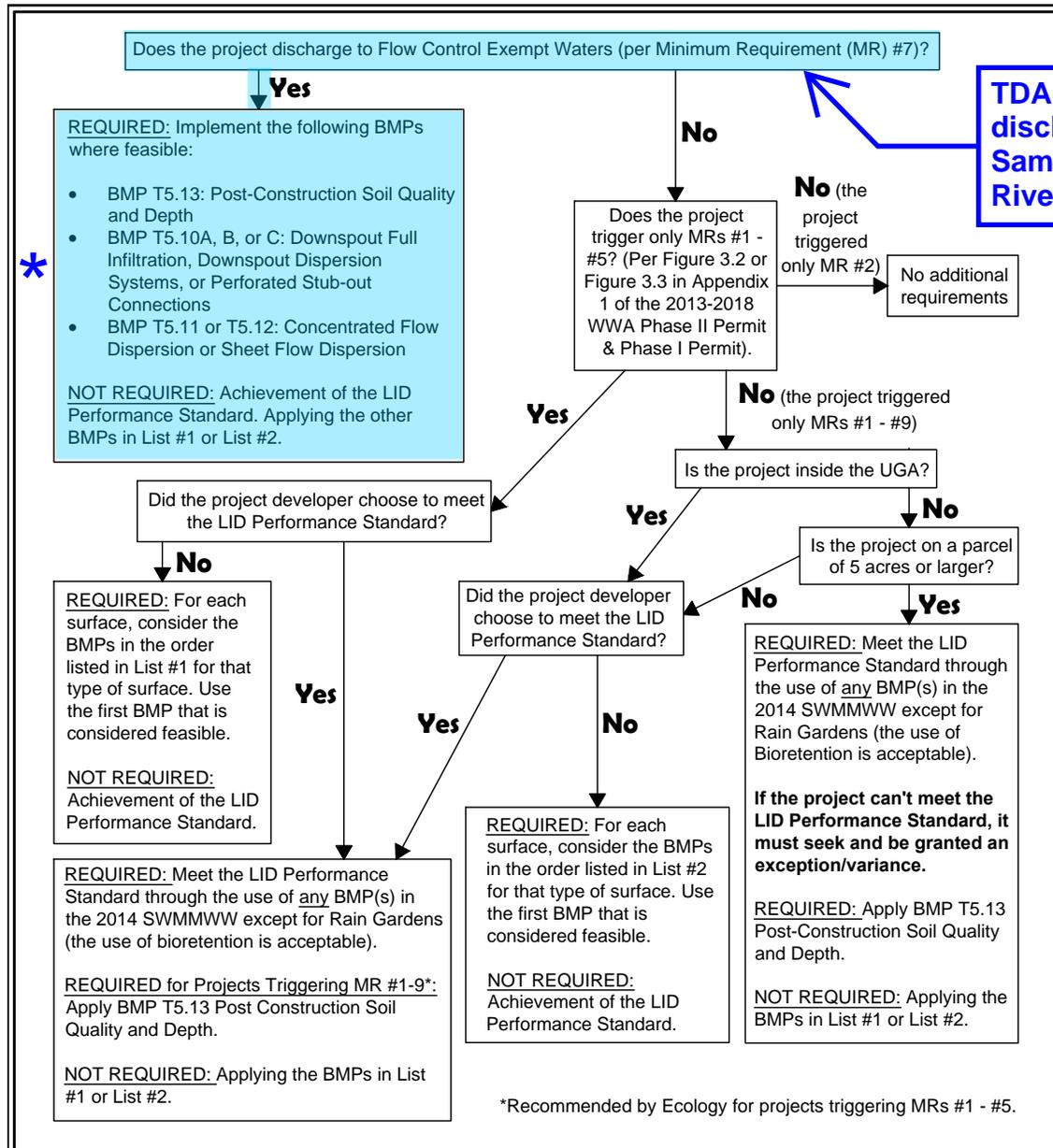


Figure I-2.4.2
Flow Chart for Determining Requirements for Redevelopment

Revised June 2015

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Figure I-2.5.1 Flow Chart for Determining LID MR #5 Requirements



TDA 3 discharges to Sammamish River



Figure I-2.5.1
Flow Chart for Determining LID MR #5
Requirements

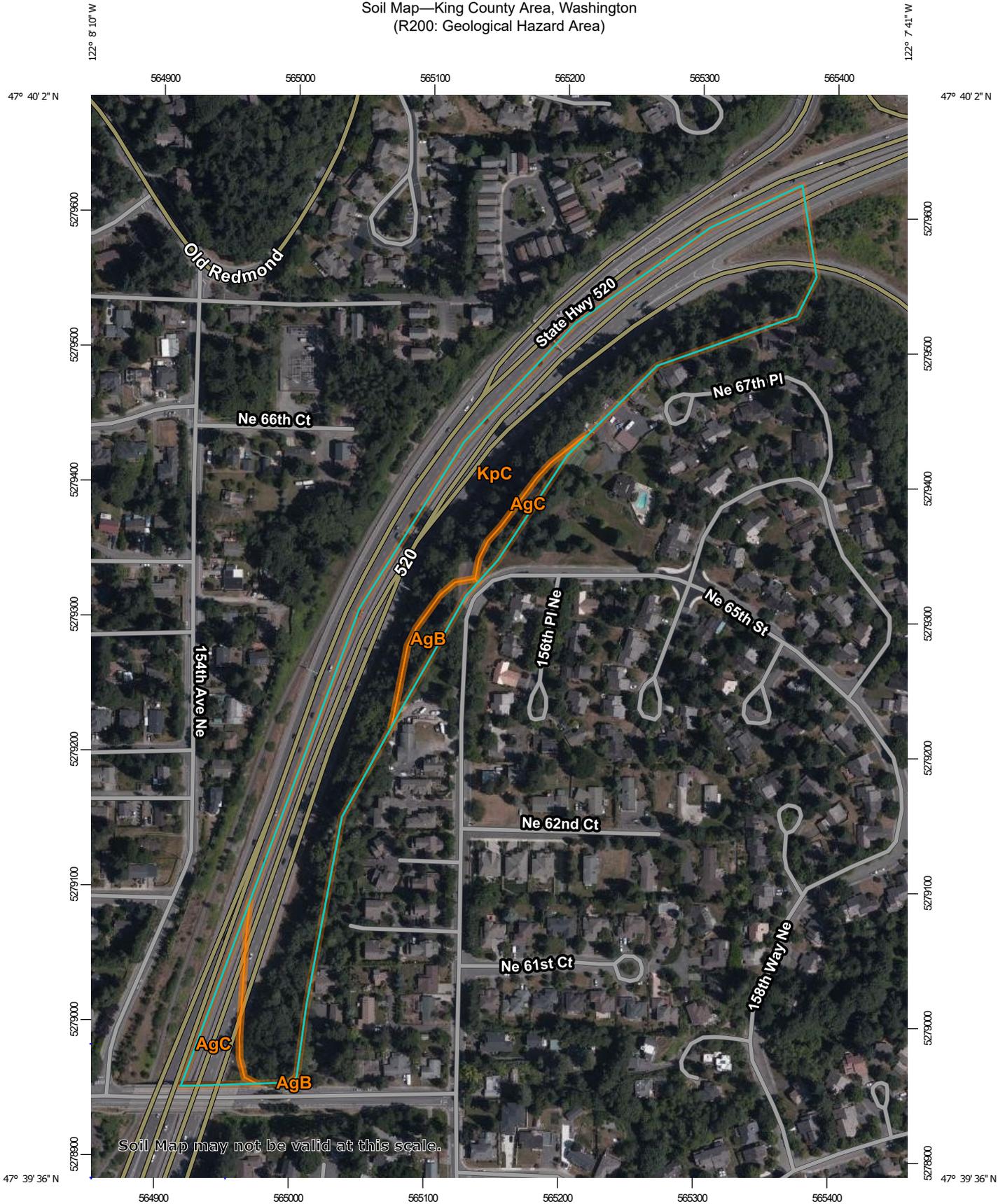
Revised June 2015

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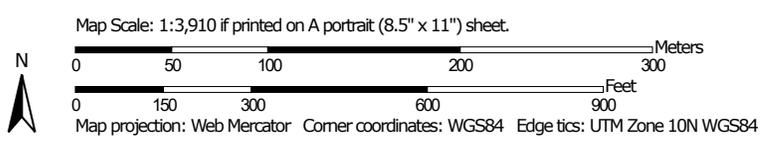
APPENDIX E SOILS

This appendix contains the information from the USGS Soils Map

Soil Map—King County Area, Washington
(R200: Geological Hazard Area)



Soil Map may not be valid at this scale.



Soil Map—King County Area, Washington
(R200: Geological Hazard Area)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.
Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: King County Area, Washington
Survey Area Data: Version 15, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 30, 2019—Jul 1, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

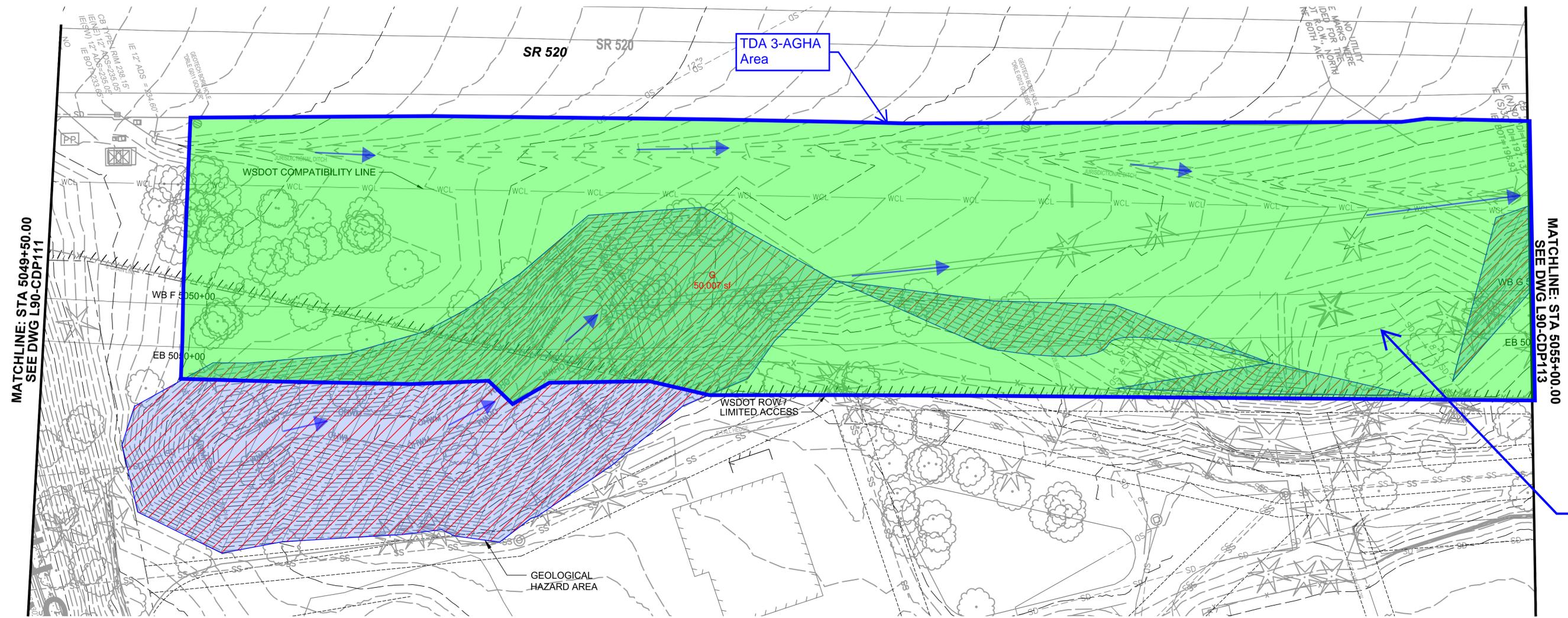
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AgB	Alderwood gravelly sandy loam, 0 to 8 percent slopes	0.4	3.4%
AgC	Alderwood gravelly sandy loam, 8 to 15 percent slopes	1.0	8.1%
KpC	Kitsap silt loam, 8 to 15 percent slopes	11.0	88.6%
Totals for Area of Interest		12.5	100.0%

APPENDIX F EXISTING CONDITIONS

This appendix contains figure that indicate the existing conditions in the AGHA area.

Xrefs:
 xR200-TB22x34
 GB-SEAL-WB33200
 xR200-L90-G2K20
 xDRLE-L90-VRX
 xDRLE-L90-VCN
 xR200-L90-CGF301
 xDRLE-L90-VWC
 xDRLE-GIS-VWC
 xDRLE-GIS-VSF
 xDRLE-GIS-VUT
 xDRLE-L90-VUT
 xR200-L90-CRP100
 xR200-L90-CRP201
 xR200-L90-KAP100
 xR200-L90-SEP100
 xR200-L90-SEP110
 xR200-L90-SWP100
 xR200-L90-SWP200
 xR200-L90-TIP100
 xR200-L90-UCP100
 xR200-L90-UWP100
 xR200-L90-CDP130
 xR200-L90-CM100
 xDRLE-L90-VSF
 xDRLE-STREET-NAMES
 xR200-L90-JOP100
 xR200-L90-RP100
 xR200-L90-CAP100
 xDRLE-GIS-VFP
 xDRLE-L90-VCP
 xR200-L90-JOS100
 xR200-L90-CAP200
 xR200-L90-CGD301
 xR200-L90-CLP100
 xR200-L90-CMD301
 xR200-L90-CMP100
 xR200-L90-CMP201
 xR200-L90-CMS301
 xR200-L90-CRD301
 xR200-L90-CRY301
 xR200-L90-JOP100
 xR200-L90-UCP300
 xR200-L90-TIP101
 xR200-L90-TMP101
 xR200-L90-TSP100
 xR200-L90-LPP100
 xR200-L90-LRP100
 xR200-L90-CDP180
 xR200-L90-CWP100
 xR200-L90-CDP131
 xR200-L90-RP200
 steep_slope_cross



MATCHLINE: STA 5049+50.00
SEE DWG L90-CDP111

MATCHLINE: STA 5055+00.00
SEE DWG L90-CDP113

Cover:
Pervious
(Trees,
Brush, Grass)

01/23/20 | 7:50 AM | ROJASMS
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NOT FOR CONSTRUCTION

DESIGNED BY:
M. ROJAS
 DRAWN BY:
M. ROJAS
 CHECKED BY:
R. CHUNG
 APPROVED BY:
W. HICKEY



REVIEWED BY:
J. SCHEITTLER

SUBMITTED BY:
A. TISCAREÑO

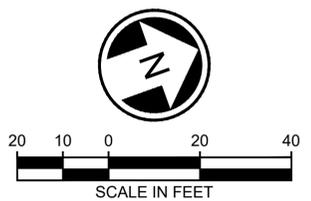
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SCALE:
1" = 20'
 FILENAME:
R200-L90-CDP112
 CONTRACT No.:
RTA/CN 0148-18
 DATE:
12/20/2019

DESIGN PACKAGE:
 PERMIT INFORMATION:

DOWNTOWN REDMOND LINK EXTENSION
CONTRACT R200
 REDMOND TECH CENTER TO DOWNTOWN REDMOND
 CIVIL - DRAINAGE
 DRAINAGE PLAN
 EB STA 5049+50 TO 5055+00

DRAWING No.:
L90-CDP112
 FACILITY ID:
E28
 SHEET No.:
408
 REV:



Xrefs:
 R200-TB22x34
 GB-SEAL-WB33200
 R200-L90-G2K20
 DRLE-L90-VRX
 DRLE-L90-VCN
 R200-L90-CGF301
 DRLE-L90-VWC
 DRLE-GIS-VWC
 DRLE-GIS-VSF
 DRLE-GIS-VUT
 DRLE-L90-VUT
 R200-L90-CRP100
 R200-L90-CRP201
 R200-L90-KAP100
 R200-L90-SEP100
 R200-L90-SEP110
 R200-L90-SFP100
 R200-L90-SWP100
 R200-L90-SWP200
 R200-L90-TIP100
 R200-L90-UCP100
 R200-L90-UWP100
 R200-L90-CDP130
 R200-L90-CM100
 DRLE-L90-VSF
 DRLE-STREET-NAMES
 R200-L90-JOP100
 R200-L90-RP100
 R200-L90-CAP100
 DRLE-GIS-VFP
 R200-L90-VCP
 R200-L90-JOS100
 R200-L90-CAP200
 R200-L90-CGD301
 R200-L90-CLP100
 R200-L90-CMD301
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 R200-L90-CMP201
 R200-L90-CMS501
 R200-L90-CRD301
 R200-L90-CRY301
 R200-L90-EP100
 R200-L90-JCP100
 R200-L90-UCP300
 R200-L90-TIP101
 R200-L90-TMP101
 R200-L90-TSP100
 R200-L90-LRP100
 R200-L90-CDP180
 R200-L90-CWP100
 R200-L90-RPP200
 steep_slope_areas



MATCHLINE: STA 5055+00.00
 SEE DWG L90-CDP112

MATCHLINE: STA 5059+50.00
 SEE DWG L90-CDP114

TDA 3-AGHA Area

geological hazard area

Cover:
 Pervious
 (Trees,
 Brush, Grass)

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DESIGNED BY:
 M. ROJAS
 DRAWN BY:
 M. ROJAS
 CHECKED BY:
 R. CHUNG
 APPROVED BY:
 W. HICKEY



REVIEWED BY:
 J. SCHEITTLER

SUBMITTED BY:
 A. TISCAREÑO

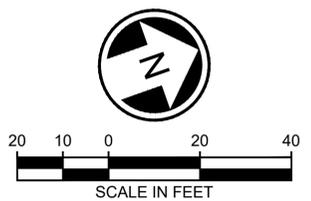
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SCALE:
 1" = 20'
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 CONTRACT No.:
 RTA/CN 0148-18
 DATE:
 12/20/2019

DESIGN PACKAGE:
 PERMIT INFORMATION:

DOWNTOWN REDMOND LINK EXTENSION
CONTRACT R200
 REDMOND TECH CENTER TO DOWNTOWN REDMOND
 CIVIL - DRAINAGE
 DRAINAGE PLAN
 EB STA 5055+00 TO 5059+50

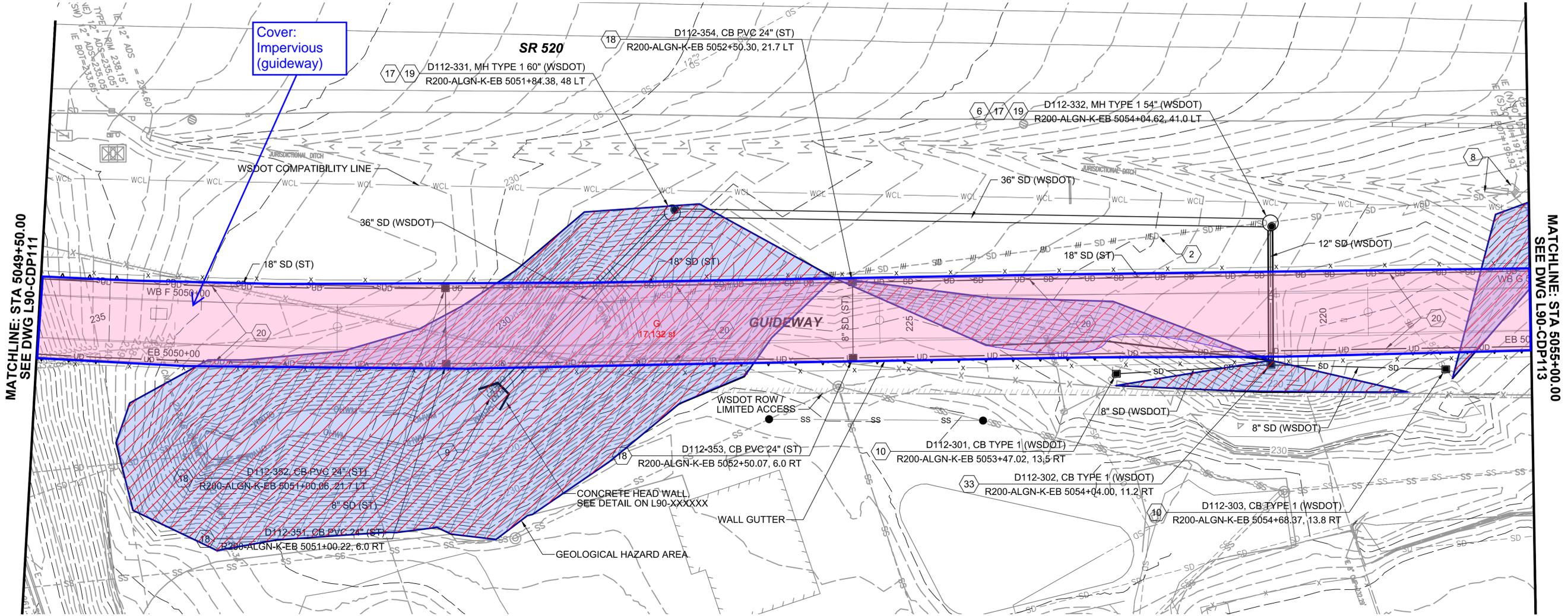
DRAWING No.:
L90-CDP113
 FACILITY ID:
 E28
 SHEET No.:
 409
 REV:



APPENDIX G DEVELOPED CONDITIONS

This appendix contains figure that indicate the proposed conditions in the AGHA area.

Xrefs:
 xR200-TB22x34
 GB-SEAL-WB433200
 xDRLE-L90-VX
 xDRLE-L90-VCN
 xDRLE-L90-WG
 xDRLE-GIS-WG
 xDRLE-GIS-VSF
 xDRLE-GIS-VUT
 xDRLE-L90-VUT
 xR200-L90-C-CDP130
 xR200-L90-CZNI100
 xDRLE-L90-VSF
 xDRLE-STREET-NAMES
 xDRLE-GIS-VFP
 xDRLE-L90-VCP
 xR200-L90-CDP131
 xR200-L90-A-CDP100
 xR200-L90-A-CWP100
 xR200-L90-A-GZK020
 xR200-L90-A-RAE100
 xR200-L90-A-RHP100
 xR200-L90-A-RPP100
 xR200-L90-B-CDP100
 xR200-L90-C-CAP201
 xR200-L90-C-COP201
 xR200-L90-C-CLP100
 xR200-L90-C-CMP100
 xR200-L90-C-CMP201
 xR200-L90-C-CPP100
 xR200-L90-C-CRP100
 xR200-L90-C-CRP201
 xR200-L90-C-EP100
 xR200-L90-C-JOP100
 xR200-L90-C-KAP100
 xR200-L90-C-LMP100
 xR200-L90-C-LPP400
 xR200-L90-C-SEP100
 xR200-L90-C-SEP110
 xR200-L90-C-SEP100
 xR200-L90-C-SWP100
 xR200-L90-C-SWP200
 xR200-L90-C-SWP201
 xR200-L90-C-TIP100
 xR200-L90-C-TSP100
 xR200-L90-C-UCP100
 xR200-L90-C-UWF100
 xR200-L90-CDG101
 xRLE-L90-CLP200
 xR200-L90-A-CAP100
 xR200-AGHA-SLOPE



GENERAL NOTES:

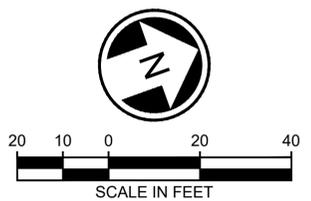
1. FOR STORM DRAINAGE GENERAL NOTES, SEE DWG L90-CDN301.
2. FOR PROJECT KEY PLAN FOR SHEET LAYOUT AT 20 SCALE, SEE GEN-GZK120 THRU GEN-GZK122.
3. FOR ABBREVIATION, SEE DRAWINGS GEN-GZN101 THRU GEN-GZN105.
4. FOR GENERAL SYMBOLS, SEE DRAWINGS GEN-GZN106 AND GEN-GZN107.
5. FOR STORM DRAINAGE ABBREVIATIONS, SYMBOLS AND HATCHES, SEE DWG L90-CDN301.
6. FOR FULL KEY NOTE LIST AND DEFINITIONS, SEE DWG L90-CDN302.

KEY NOTES:

- (2) REMOVE EXISTING DRAINAGE PIPE.
- (6) CONNECT TO EXISTING STORM PIPE.
- (7) CONNECT TO EXISTING DRAINAGE STRUCTURE.
- (8) PROTECT IN PLACE - EXISTING STORM STRUCTURE/PIPE.
- (9) INSTALL ROCK OUTFALL PROTECTION, PER DETAIL X ON DWG L90-CDDXXX.
- (10) INSTALL CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-02.
- (13) INSTALL CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-02.
- (17) INSTALL CIRCULAR FRAME AND COVER PER WSDOT STD PLAN B-30.70-04.
- (18) INSTALL CATCH BASIN-PVC PER WSDOT DETAIL B-10.70-00.
- (19) INSTALL MANHOLE TYPE 1 PER WSDOT STD PLAN B-15.20-01.

KEY NOTES CONTINUED:

- (20) INSTALL UNDERDRAIN ALONG GUIDEWAY, SEE DETAILS PER DWG L90-CDDXXX. UNDERDRAIN 8" DIA, UNLESS NOTED OTHERWISE.
- (33) INSTALL EXTERNAL WALL DROP, PER DETAIL 2 ON DWG L90-CDDXXX.



03/18/20 | 3:11 PM | ROJASMS C:\PWORKING\ACOB.S_B&IROJASMS\0178769\R200-L90-CDP112.DWG

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DESIGNED BY:
M. ROJAS
 DRAWN BY:
M. ROJAS
 CHECKED BY:
R. CHUNG
 APPROVED BY:
W. HICKEY



REVIEWED BY:
J. SCHELLER



SUBMITTED BY:
A. TISCAREÑO



LINE IS 1" AT FULL SCALE

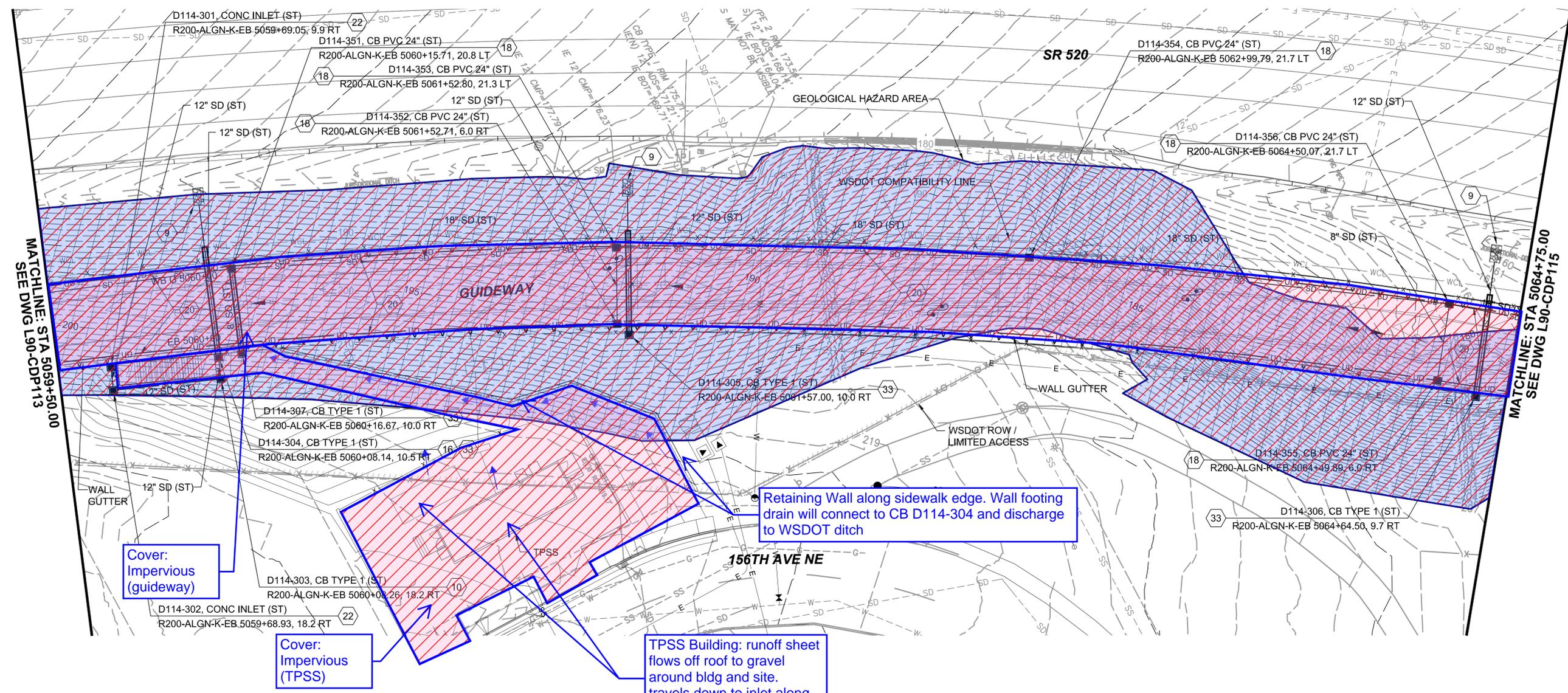
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1" = 20'
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R200-L90-CDP112
 CONTRACT No.:
RTA/CN 0148-18
 DATE:
43983

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 PERMIT INFORMATION:

DOWNTOWN REDMOND LINK EXTENSION
CONTRACT R200
 REDMOND TECH CENTER TO DOWNTOWN REDMOND
 CIVIL - DRAINAGE
 DRAINAGE PLAN
 EB STA 5049+50 TO 5055+00

DRAWING No.:
L90-CDP112
 FACILITY ID:
E28
 SHEET No.:
REV:

Xrefs:
 xR200-TB22x34
 GB-SEAL-WB33200
 xDRLE-L90-VX
 xDRLE-L90-VN
 xDRLE-L90-VG
 xDRLE-GIS-WG
 xDRLE-GIS-VSF
 xDRLE-GIS-VUT
 xDRLE-L90-VUT
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 xDRLE-L90-VSF
 xDRLE-STREET-NAMES
 xDRLE-GIS-VFP
 xDRLE-L90-VCP
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 xR200-L90-A-CWP100
 xR200-L90-A-GZK020
 xR200-L90-A-RAE100.dwg
 xR200-L90-A-RHP100
 xR200-L90-A-RFP100
 xR200-L90-B-CDP100
 xR200-L90-C-CAP201
 xR200-L90-C-COP201
 xR200-L90-C-CLP100
 xR200-L90-C-CMP100
 xR200-L90-C-CMP201
 xR200-L90-C-CRP100
 xR200-L90-C-CRP100
 xR200-L90-C-CRP201
 xR200-L90-C-JEP100
 xR200-L90-C-JOP100
 xR200-L90-C-KAP100
 xR200-L90-C-LMP100
 xR200-L90-C-RP400
 xR200-L90-C-SEP100
 xR200-L90-C-SEP110
 xR200-L90-C-SPI100
 xR200-L90-C-SWP100
 xR200-L90-C-SWP100
 xR200-L90-C-SWP200
 xR200-L90-C-SWP201
 xR200-L90-C-TIP100
 xR200-L90-C-TSP100
 xR200-L90-C-UCP100
 xR200-L90-C-UMP100
 xR200-L90-C-UC101
 xRLE-L90-CLP200
 xR200-L90-A-CAP100
 xR200-AHA-SLOPE



Cover:
Impervious
(guideway)

Cover:
Impervious
(TPSS)

Retaining Wall along sidewalk edge. Wall footing drain will connect to CB D114-304 and discharge to WSDOT ditch

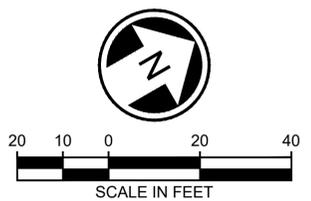
TPSS Building: runoff sheet flows off roof to gravel around bldg and site. travels down to inlet along S/W

GENERAL NOTES:

- FOR STORM DRAINAGE GENERAL NOTES, SEE DWG L90-CDN301.
- FOR PROJECT KEY PLAN FOR SHEET LAYOUT AT 20 SCALE, SEE GEN-GZK120 THRU GEN-GZK122.
- FOR ABBREVIATION, SEE DRAWINGS GEN-GZN101 THRU GEN-GZN105.
- FOR GENERAL SYMBOLS, SEE DRAWINGS GEN-GZN106 AND GEN-GZN107.
- FOR STORM DRAINAGE ABBREVIATIONS, SYMBOLS AND HATCHES, SEE DWG L90-CDN301.
- FOR FULL KEY NOTE LIST AND DEFINITIONS, SEE DWG L90-CDN302.

KEY NOTES:

- (9) INSTALL ROCK OUTFALL PROTECTION, PER DETAIL X ON DWG L90-CDDXXX.
- (10) INSTALL CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-02.
- (11) INSTALL CATCH BASIN TYPE 1L PER WSDOT STD PLAN B-5.40-02.
- (16) INSTALL RECTANGULAR SOLID COVER ON CATCH BASINS AND CONCRETE INLETS, PER WSDOT STD PLAN B-30.20-04.
- (18) INSTALL CATCH BASIN-PVC PER WSDOT DETAIL B-10.70-00.
- (19) INSTALL MANHOLE TYPE 1 PER WSDOT STD PLAN B-15.20-01.
- (20) INSTALL UNDERDRAIN ALONG GUIDEWAY, SEE DETAILS PER DWG L90-CDDXXX. UNDERDRAIN 8" DIA, UNLESS NOTED OTHERWISE.
- (22) INSTALL CONCRETE INLET PER WSDOT STD PLAN B-25.60-02.
- (33) INSTALL EXTERNAL WALL DROP, PER DETAIL 2 ON DWG L90-CDDXXX.



03/18/20 | 5:48 PM | ROJASMS | C:\PWORKING\UACOB.S_B&IROJASMS\0178769\R200-L90-CDP114.DWG

NOT FOR CONSTRUCTION

DESIGNED BY:
M. ROJAS
 DRAWN BY:
M. ROJAS
 CHECKED BY:
R. CHUNG
 APPROVED BY:
W. HICKEY



Jacobs
 REVIEWED BY:
J. SCHELLER

SWK
 Stacy and Witbeck / Kuney
 SUBMITTED BY:
A. TISCAREÑO

SOUNDTRANSIT
 LINE IS 1" AT FULL SCALE

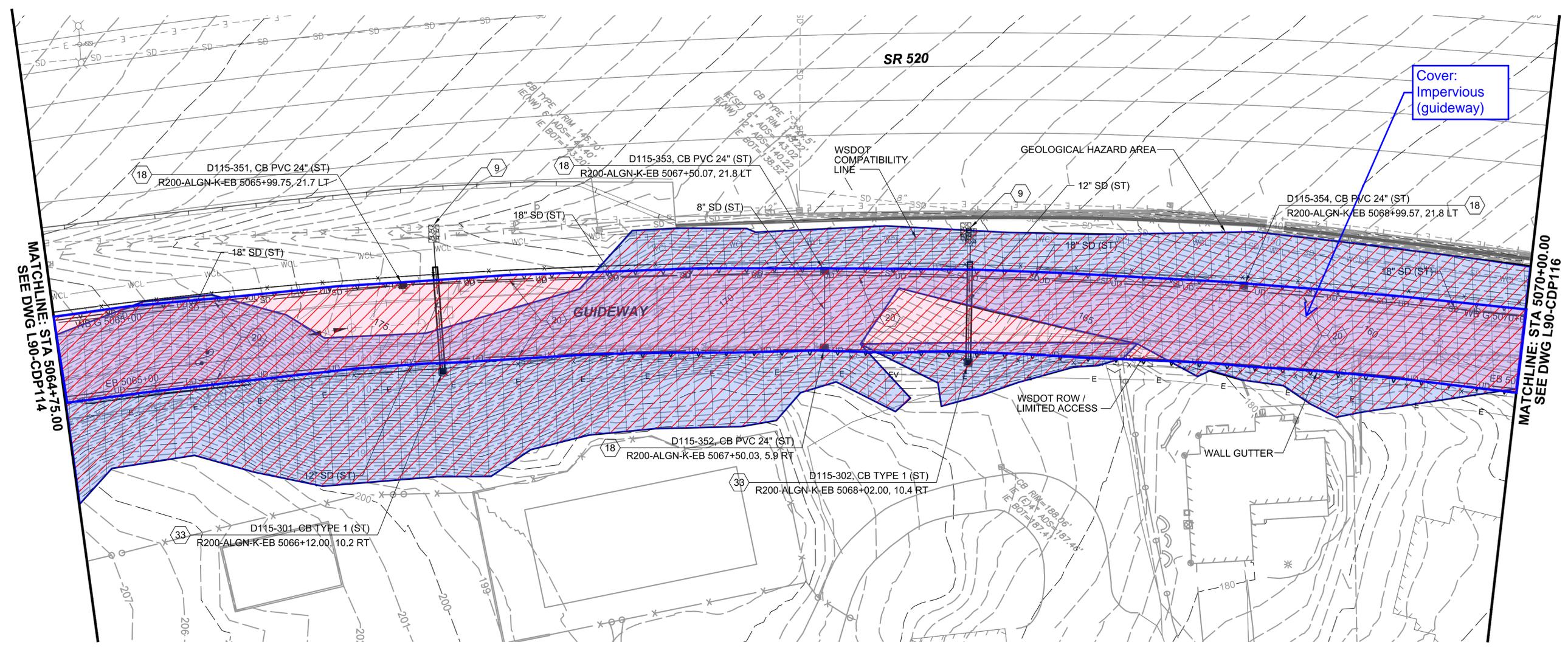
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 CONTRACT No.:
RTA/CN 0148-18
 DATE:
43983

DESIGN PACKAGE:
 PERMIT INFORMATION:

DOWNTOWN REDMOND LINK EXTENSION
CONTRACT R200
 REDMOND TECH CENTER TO DOWNTOWN REDMOND
 CIVIL - DRAINAGE
 DRAINAGE PLAN
 EB STA 5059+50 TO 5064+75

DRAWING No.:
L90-CDP114
 FACILITY ID:
E28
 SHEET No.:
REV:

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 xDRLE-L90-VN
 xDRLE-L90-VG
 xDRLE-GIS-WG
 xDRLE-GIS-VSF
 xDRLE-GIS-VUT
 xDRLE-L90-VUT
 xR200-L90-C-CDP130
 xR200-L90-CZN100
 xDRLE-L90-VSF
 xDRLE-STREET-NAMES
 xDRLE-GIS-VFP
 xDRLE-L90-VCP
 xR200-L90-A-CDP100
 xR200-L90-A-CWP100
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 xR200-L90-C-CMP201
 xR200-L90-C-CRP100
 xR200-L90-C-CRP100
 xR200-L90-C-CRP201
 xR200-L90-C-JEP100
 xR200-L90-C-JOP100
 xR200-L90-C-KAP100
 xR200-L90-C-LMP100
 xR200-L90-C-RFP400
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 xR200-L90-C-SEP110
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 xR200-L90-C-TSP100
 xR200-L90-C-UCP100
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 xR200-AHA-SLOPE

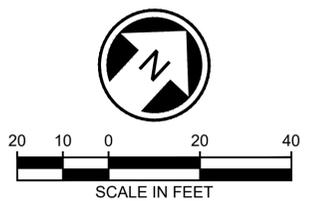


GENERAL NOTES:

1. FOR STORM DRAINAGE GENERAL NOTES, SEE DWG L90-CDN301.
2. FOR PROJECT KEY PLAN FOR SHEET LAYOUT AT 20 SCALE, SEE GEN-GZK120 THRU GEN-GZK122.
3. FOR ABBREVIATION, SEE DRAWINGS GEN-GZN101 THRU GEN-GZN105.
4. FOR GENERAL SYMBOLS, SEE DRAWINGS GEN-GZN106 AND GEN-GZN107.
5. FOR STORM DRAINAGE ABBREVIATIONS, SYMBOLS AND HATCHES, SEE DWG L90-CDN301.
6. FOR FULL KEY NOTE LIST AND DEFINITIONS, SEE DWG L90-CDN302.

KEY NOTES:

- 8) PROTECT IN PLACE - EXISTING STORM STRUCTURE/PIPE.
- 9) INSTALL ROCK OUTFALL PROTECTION, PER DETAIL X ON DWG L90-CDDXXX.
- 10) INSTALL CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-02.
- 18) INSTALL CATCH BASIN-PVC PER WSDOT DETAIL B-10.70-00.
- 20) INSTALL UNDERDRAIN ALONG GUIDEWAY, SEE DETAILS PER DWG L90-CDDXXX. UNDERDRAIN 8" DIA, UNLESS NOTED OTHERWISE.
- 33) INSTALL EXTERNAL WALL DROP, PER DETAIL 2 ON DWG L90-CDDXXX.



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DESIGNED BY:
M. ROJAS
 DRAWN BY:
M. ROJAS
 CHECKED BY:
R. CHUNG
 APPROVED BY:
W. HICKEY



Jacobs
 REVIEWED BY:
J. SCHEITTLER

SWK
 Stacy and Witbeck / Kuney
 SUBMITTED BY:
A. TISCAREÑO

SOUNDTRANSIT
 LINE IS 1" AT FULL SCALE

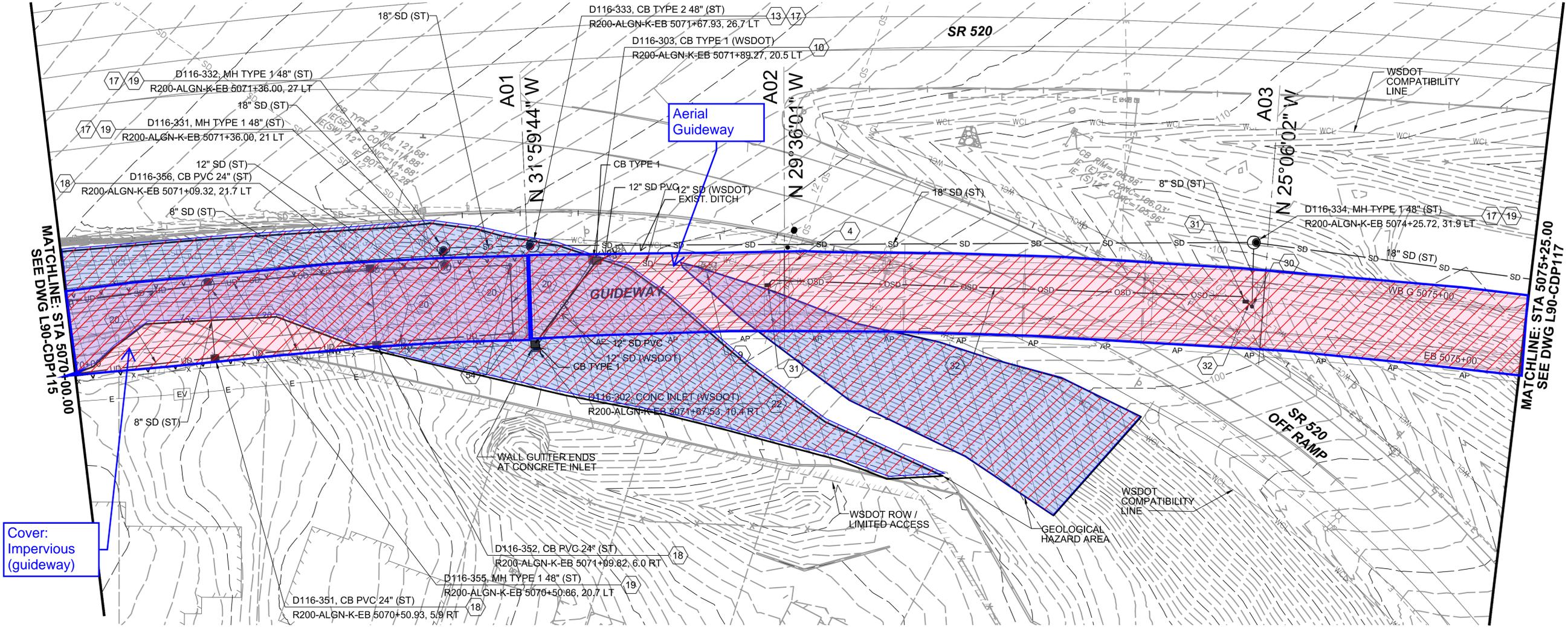
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RTA/CN 0148-18
 DATE:
43983

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 PERMIT INFORMATION:

DOWNTOWN REDMOND LINK EXTENSION
CONTRACT R200
 REDMOND TECH CENTER TO DOWNTOWN REDMOND
 CIVIL - DRAINAGE
 DRAINAGE PLAN
 EB STA 5064+75 TO 5070+00

DRAWING No.:
L90-CDP115
 FACILITY ID:
E28
 SHEET No.:
REV:

Xrefs:
 xR200-TB22x34
 GB-SEAL-WB433200
 xDRLE-L90-VX
 xDRLE-L90-VN
 xDRLE-L90-WG
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 xDRLE-GIS-VSF
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 xR200-L90-C-TSP100
 xR200-L90-C-UCP100
 xR200-L90-C-UMP100
 xR200-L90-C-CPG101
 xRLE-L90-CLP200
 xR200-L90-A-CAP100
 xR200-L90-A-SFP100
 xR200-AGHA-SLOPE



Cover:
 Impervious
 (guideway)

GENERAL NOTES:

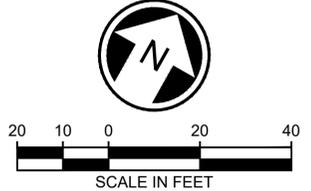
- FOR STORM DRAINAGE GENERAL NOTES, SEE DWG L90-CDN301.
- FOR PROJECT KEY PLAN FOR SHEET LAYOUT AT 20 SCALE, SEE GEN-GZK120 THRU GEN-GZK122.
- FOR ABBREVIATION, SEE DRAWINGS GEN-GZN101 THRU GEN-GZN105.
- FOR GENERAL SYMBOLS, SEE DRAWINGS GEN-GZN106 AND GEN-GZN107.
- FOR STORM DRAINAGE ABBREVIATIONS, SYMBOLS AND HATCHES, SEE DWG L90-CDN301.
- FOR FULL KEY NOTE LIST AND DEFINITIONS, SEE DWG L90-CDN302.

KEY NOTES:

- 4 PLUG AND ABANDON DRAINAGE PIPE.
- 9 INSTALL ROCK OUTFALL PROTECTION, PER DETAIL X ON DWG L90-CDDXXX.
- 10 INSTALL CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-02.
- 13 INSTALL CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-02.
- 17 INSTALL CIRCULAR FRAME AND COVER PER WSDOT STD PLAN B-30.70-04.
- 18 INSTALL CATCH BASIN-PVC PER WSDOT DETAIL B-10.70-00.
- 19 INSTALL MANHOLE TYPE 1 PER WSDOT STD PLAN B-15.20-01.
- 20 INSTALL UNDERDRAIN ALONG GUIDEWAY, SEE DETAILS PER DWG L90-CDDXXX. UNDERDRAIN 8" DIA, UNLESS NOTED OTHERWISE.
- 22 INSTALL CONCRETE INLET PER WSDOT STD PLAN B-25.60-02.

KEY NOTES CONTINUED:

- 30 INSTALL DOWNSPOUT PER DETAIL ON DWG L90-CDDXXX AND CONNECT TO AERIAL/OVERHEAD PIPE ABOVE.
- 31 INSTALL AERIAL GUIDEWAY DRAIN (ST) ON STRUCTURE ABOVE, CONNECT TO DOWNSPOUT OR AERIAL PIPE, AS SHOWN ON PLANS. SEE DWG L90-CDDXXX FOR DETAILS.
- 32 OVERHEAD STORM DRAIN (OSD) SUSPENDED BELOW THE GUIDEWAY. SEE PIPE PROFILES CDVXXX THROUGH CDVXXX. SEE UNDERDECK PIPE SUPPORT DETAILS ON DWGS L90-XXX THRU L90-XXX.
- 54 INSTALL CLEANOUT TO GRADE PER DETAIL ON DWG L90-CDDXXX.



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DESIGNED BY:
M. ROJAS
 DRAWN BY:
M. ROJAS
 CHECKED BY:
R. CHUNG
 APPROVED BY:
W. HICKEY



Jacobs
 REVIEWED BY:
J. SCHELLER

SWK
 Stacy and Witbeck / Kuney
 SUBMITTED BY:
A. TISCAREÑO

SOUNDTRANSIT
 LINE IS 1" AT FULL SCALE

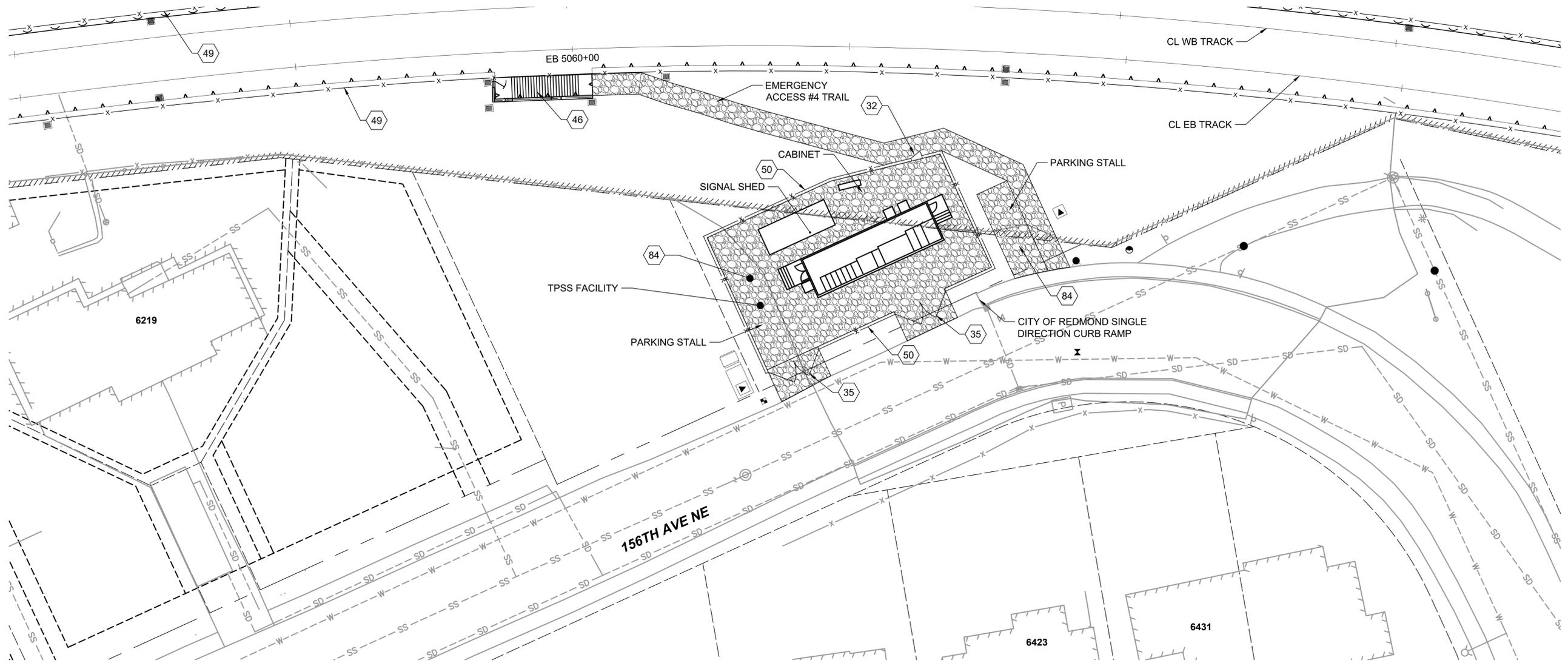
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1" = 20'
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 CONTRACT No.:
RTA/CN 0148-18
 DATE:
43983

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 PERMIT INFORMATION:

DOWNTOWN REDMOND LINK EXTENSION
CONTRACT R200
 REDMOND TECH CENTER TO DOWNTOWN REDMOND
 CIVIL - DRAINAGE
 DRAINAGE PLAN
 EB STA 5070+00 TO 5075+25

DRAWING No.:
L90-CDP116
 FACILITY ID:
E28
 SHEET No.:
REV:

Xrefs:
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 xR200-L90-CDP100
 xR200-L90-CPF100
 xR200-L90-CRP100
 xR200-L90-CRP201
 xR200-L90-GZK020
 xR200-L90-KAP100
 xR200-L90-SEP100
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 xR200-L90-SWP100
 xR200-L90-UCP100
 xR200-L90-UWP100
 xDRLE-GIS-VSF
 xDRLE-GIS-VUT
 xDRLE-L90-VRX
 xDRLE-L90-VSF
 xDRLE-L90-VUT
 xDRLE-L95-VSF
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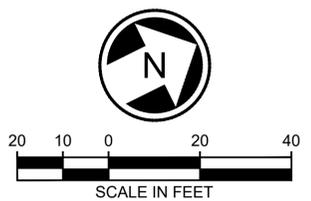
NOTES:
 1 FOR GENERAL NOTES SEE SHEET L90-CRNXXX.

NOTES CONT'D:

KEY NOTES:

- 32 INSTALL 4' WIDE SWING GATE SCREEN WALL, SEE STD-SFDXXX
- 35 INSTALL 20' WIDE SWING GATE SCREEN WALL, SEE STD-SFDXXX
- 46 CONSTRUCT STAIRWAY, SEE DRAWING L90-CPDXXX FOR DETAILS
- 49 INSTALL 8' CHAIN LINK SECURITY FENCE, SEE SWP SERIES
- 50 INSTALL 8' CHAIN LINK SECURITY FENCE, SEE DETAIL X/L90-CRDXXX
- 84 CONSTRUCT GRAVEL SURFACING, SEE DETAIL X/L90-CPDXXX

KEY NOTES CONT'D:



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30% SUBMITTAL

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DESIGNED BY:
Q. AL ALI
 DRAWN BY:
Q. AL ALI
 CHECKED BY:
S. KITTEMAN
 APPROVED BY:
R. LUDWIG



SCALE:
1" = 20'
 FILENAME:
R200-L90-CRP314
 CONTRACT No.:
RTA/CN 0148-18
 DATE:
12/20/2019

DESIGN PACKAGE:
 PERMIT INFORMATION:

DOWNTOWN REDMOND LINK EXTENSION
CONTRACT R200
 REDMOND TECH CENTER TO DOWNTOWN REDMOND
 CIVIL - SITE
 ROADWAY/SITE
 TPSS E-28

DRAWING No.:
L90-CRP314
 FACILITY ID:
E28
 SHEET No.:
338
 REV:

APPENDIX H TESC FIGURES

TESC plans are not included in this appendix; see Clear & Grade Permit #4, dated June 2020, submitted to the City under Separate Cover, for work within the AGHA area.

APPENDIX I DOWNSTREAM ANALYSIS

This appendix contains information regarding the downstream analysis on the AGHA Area within TDA 3.

Sound Transit | Downtown Redmond Link Extension

Offsite Analysis – TDA R200-3 (AGHA Segment)

Location/Site:	SR 520, EB, between NE 60 th Street to off ramp to WSLP; area from EOP, including side slopes to ROW, plus TPSS area off of 156 th Avenue NE
Date (s) Analysis Performed:	9/22/19
Weather Conditions:	Partly cloudy
Drainage Basin:	Sammamish River
Project TDA:	TDA R200-3 (AGHA Area)

Background

A qualitative analysis was performed for the AGHA segment of work that occurs within the TDA for improvements related to the guideway construction along the slopes of SR-520 EB lanes, and improvements for the TPSS along NE 156th Avenue NE. This offsite analysis is for the project segment between NE 60th Street to the SR520 off-ramp to West Lake Sammamish Parkway (WLSP). This segment is within the project TDA 3.

Analysis

As part of the requirements for the development of this site, a downstream analysis was performed on the existing conditions and documentation provided on the observations, noting any existing or potential for: offsite water quality, erosion, slope stability, flooding, erosion, plugged systems, bank erosion or nutrient loading or violations of surface water quality standards or standards for wellhead protection areas.

The analysis extends from the point where stormwater leaves the project limits and continues downstream for at least ¼ mile, where the runoff discharges into the Sammamish River along the west bank near the SR 520 over crossing.

As part of the requirements for this Downstream Analysis Report the following items were reviewed:

Review of Resources

The following resources were reviewed as part of this analysis:

- Aerial photos: review of aerial photography of surrounding areas
- WSDOT As-Builts for SR 520 improvements
- City of Redmond Critical Areas Maps (Landslide, Erosion, Seismic)
- City of Redmond Maps (Shoreline, Stream, Watershed, Wetlands, CARA, Frequently Flooded Areas)
- FEMA Mapping
- Wetland Inventory
- Shoreline Permit (City of Redmond Shoreline Substantial Development Permit Application)
- Limited field access to the site due to topography and access

Inspection of drainage conveyance systems in the Area:

A downstream analysis was performed for this TDA, with limited access to the site location due to WSDOT and private property access and heavy vegetation.

The stormwater runoff generated from within the AGHA impacted area within this TDA is from SR 520 EB side slopes and adjacent properties. Downstream of the project site the stormwater is directed to the Sammamish River along two separate flow paths within the WSDOT ROW.

Along SR 520 the side slope is generally heavily vegetated. The stormwater runoff generally sheet flows down the slope to existing retaining wall then to SR520 roadside ditches or directly to the roadside ditches. Then it runoff combines with SR 520 mainline runoff and is collected in the roadside ditch that runs outside the shoulder. The ditch is periodically directed to the SR 520 median trunkline. At the end limits of the AGHA impacted area within the TDA the runoff is directed into a closed system into the SR 520 median trunkline and into a WSDOT pond located on the north side of the SR520 WB lanes. The stormwater travels through the “horseshoe” pond and is discharged into a closed pipe system that discharges directly into the Sammamish River along the west bank, north of the SR 520 structure crossing the River. We were not able to reach the outfall and visually verify that there are is not plugging, but the surrounding area and upstream pond do not show any evidence of overtopping or flooding. The system from the pond to the project site is closed conveyance system within WSDOT. There is no evidence of capacity or maintenance issues. In discussion with WSDOT, they did not identify any issues with the downstream system.

At the base of the proposed abutment, where the SR 520 off ramp to WLSP begins, there is a ditch along the off-ramp shoulder that travels along the outside edge collecting road and side slope runoff. Inspection of the ditch is vegetated and does not show signs of erosion or capacity issues. The ditch runs between the steep hillside and the roadway. The ditch flows down to a WSDOT inlet within the ditch, and directs it within a closed system, north across the interchange to a system that runs under WLSP and discharges along the west bank into the Sammamish River below the SR 520 structure. This is a separate out than the one listed above. Due to heavy vegetation we were not able to view the pipe outlet. This pipe discharges additional runoff along WLSP. Based upon visual inspection of the surrounding area there are not signs of capacity issues, over-topping or erosion.

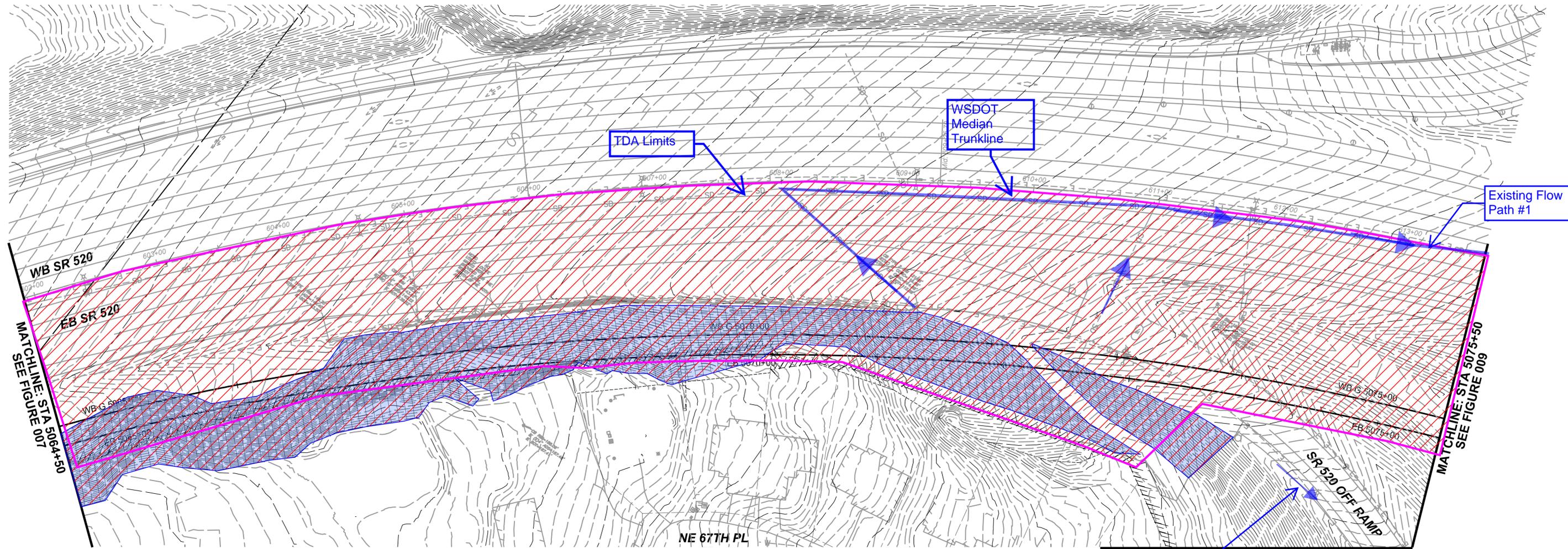
Summary

The existing downstream stormwater systems is owned and maintained by WSDOT. They do do not appear to have capacity or erosion problems. The added runoff within the guideway will be directed to a new closed system that will direct discharge to the Sammamish River into a new permitted outfall. No downstream problems are expected to occur as a result of this project.

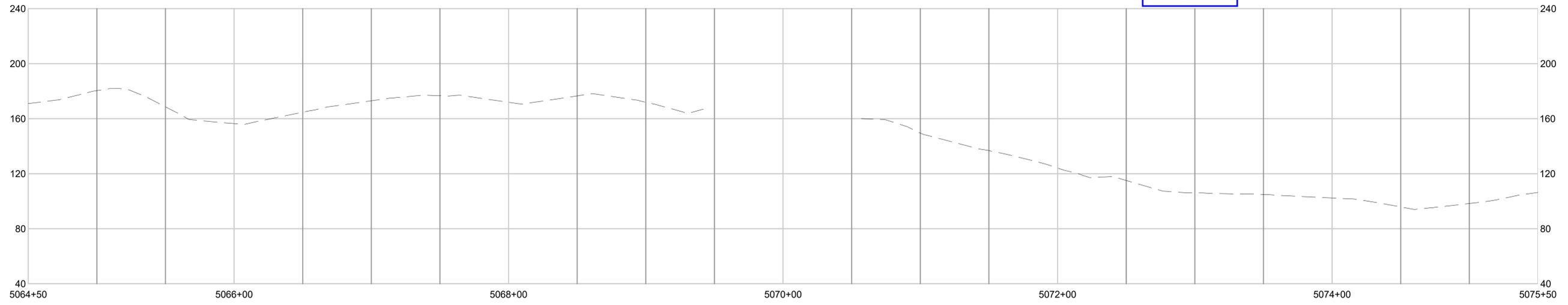
Attachments

Figures of downstream area from the AGHA

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 xDRLE-GIS-VUT
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 xR200-L90-GZK040
 xDRLE-L90-VSF
 xR200-L90-C-JOP100
 xR200-L90-RFP100
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 xDRLE-L90-VRX
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 steep_slope_areas

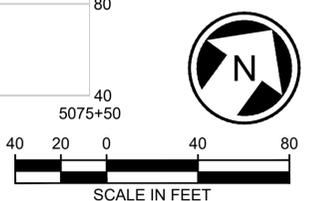


EXISTING LAYOUT
 SCALE: 1" = 40'



EXISTING ELEVATION
 SCALE: 1" = 40'

Existing Flow Path #2
 MATCHLINE: SEE FIGURE 008A



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DESIGNED BY:
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 CHECKED BY:
 APPROVED BY:



REVIEWED BY:

SUBMITTED BY:

LINE IS 1" AT FULL SCALE

SCALE:
 1" = 40'
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 CONTRACT No.:
 RTA/CN 0148-18
 DATE:
 12/20/2019

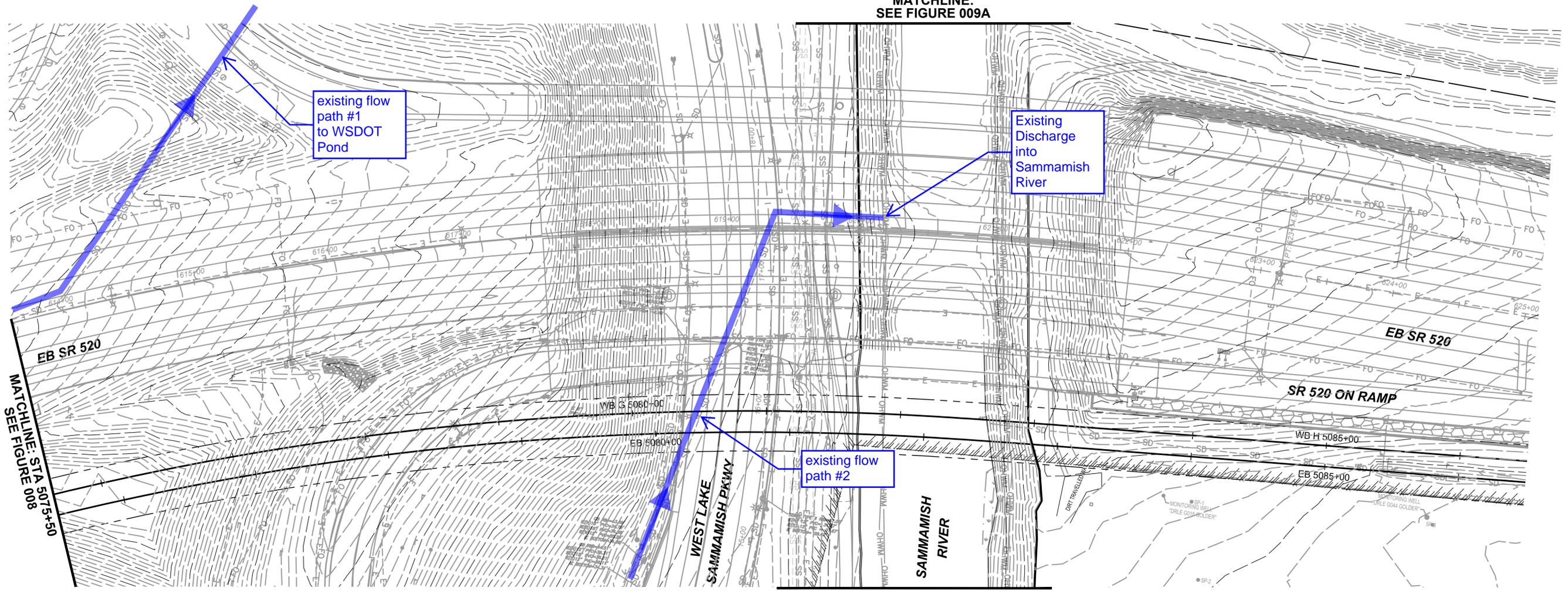
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CONTRACT R200
 REDMOND TECH CENTER TO DOWNTOWN REDMOND
 EXISTING CONDITIONS
 DOWNSTREAM ANALYSIS
 EB STA 5064+50 TO EB STA 5075+50

DRAWING No.:
FIGURE 008
 FACILITY ID:
 E28
 SHEET No.: REV:
 799

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 xDRLE-L90-VUT
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 xR200-L90-SEP100h
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 xR200-L90-A-CRP100
 xR200-L90-C-JOP100
 GB-SEAL-KIT31748
 xDRLE-L90-VRX
 xR200-L90-C-CRP201
 xR200-L90-RPP100
 xR200-L90-C-SWP200
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 xDRLE-L90-VGN

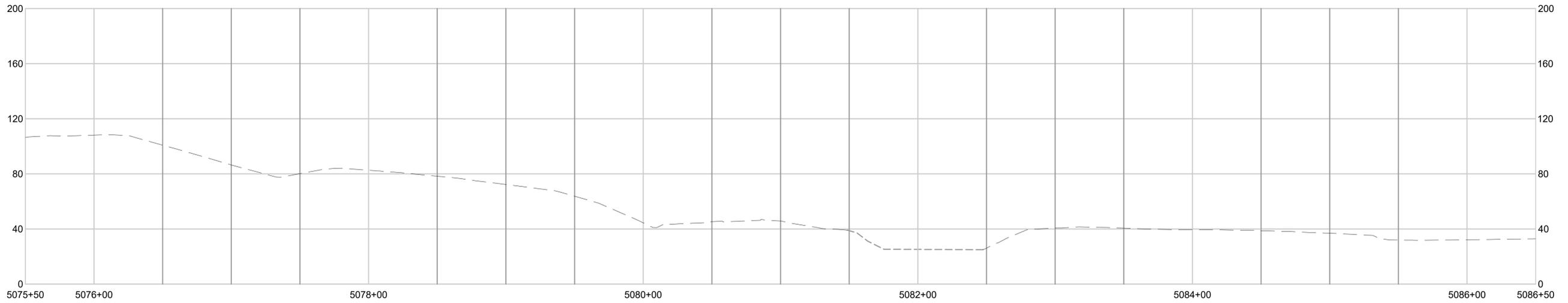
MATCHLINE:
SEE FIGURE 009A



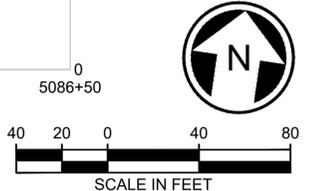
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SEE FIGURE 008

EXISTING LAYOUT
SCALE: 1" = 40'

MATCHLINE:
SEE FIGURE 008A



EXISTING ELEVATION
SCALE: 1" = 40'



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RTA/CN 0148-18
DATE:
12/20/2019

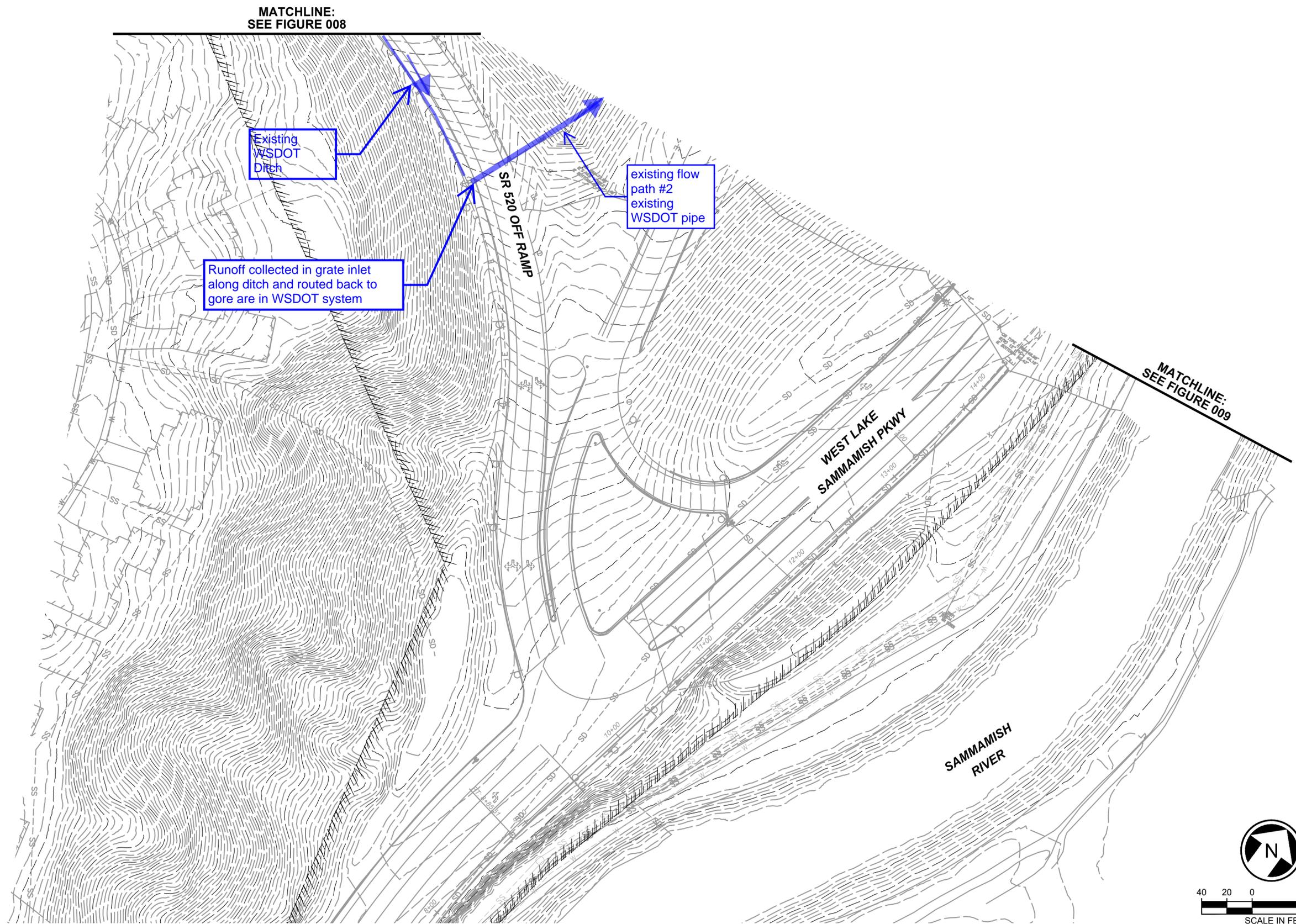
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PERMIT INFORMATION:

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CONTRACT R200
REDMOND TECH CENTER TO DOWNTOWN REDMOND

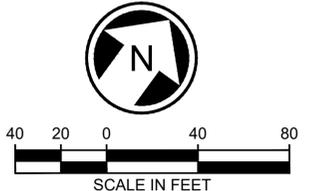
EXISTING CONDITIONS
DOWNSTREAM ANALYSIS
EB STA 5075+50 TO EB STA 5086+50

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FIGURE 009
FACILITY ID:
E28
SHEET No.:
800
REV:

Xrefs:
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 steep_slope_areas



EXISTING LAYOUT
 SCALE: 1" = 40'



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CHECKED BY:	
APPROVED BY:	



REVIEWED BY:

SUBMITTED BY:

LINE IS 1" AT FULL SCALE

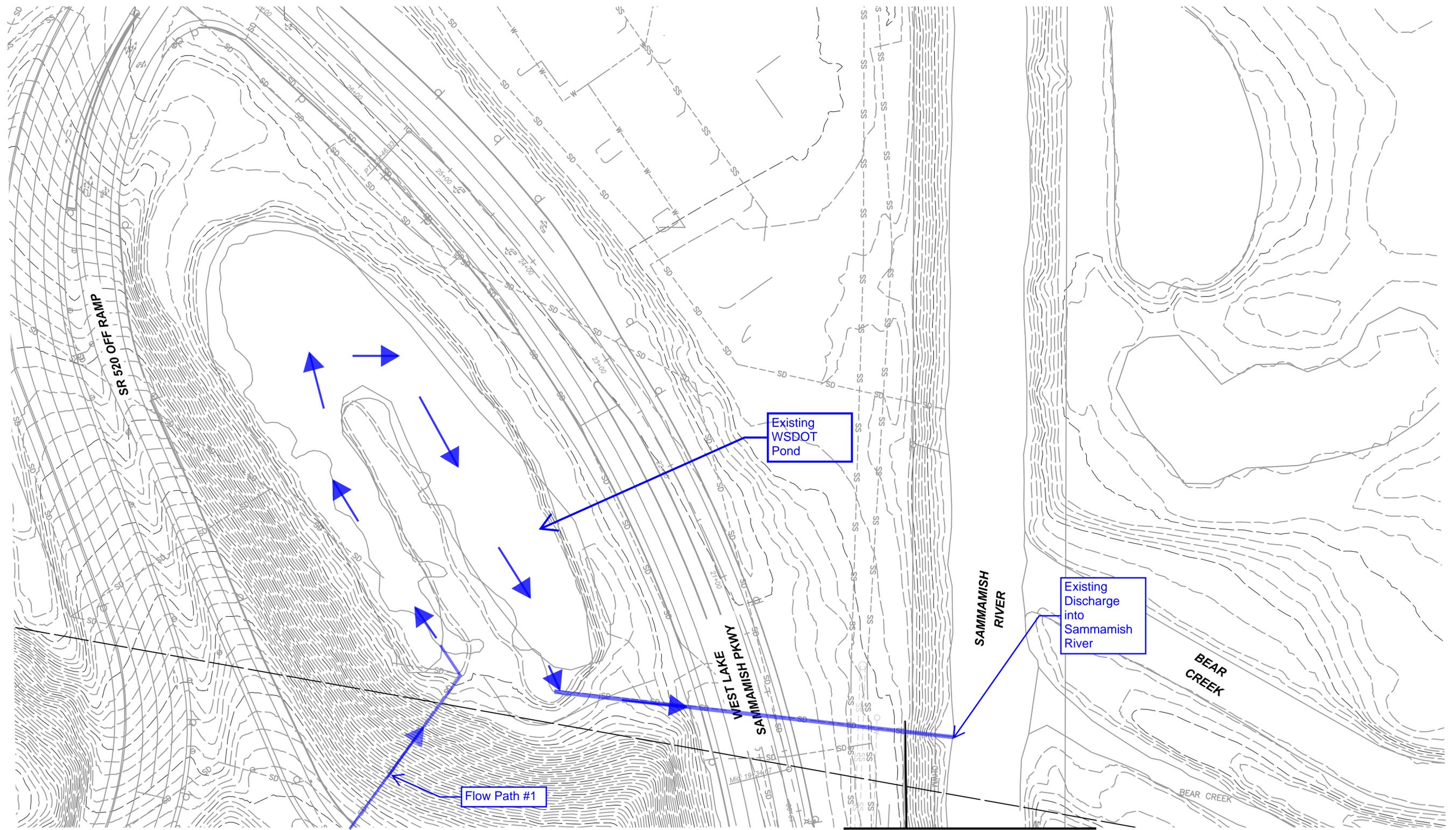
SCALE: 1" = 40'
FILENAME: R200-L90-FIG008A
CONTRACT No.: RTA/CN 0148-18
DATE: 12/20/2019

DESIGN PACKAGE:
PERMIT INFORMATION:

**DOWNTOWN REDMOND LINK EXTENSION
 CONTRACT R200**
 REDMOND TECH CENTER TO DOWNTOWN REDMOND
 EXISTING CONDITIONS
 DOWNSTREAM ANALYSIS
 WEST LAKE SAMMAMISH PKWY OFF RAMP

DRAWING No.:	FIGURE 008A
FACILITY ID:	E28
SHEET No.:	799
REV:	

Xrefs:
 xR200-L90-GZK040
 xR200-TB22x34
 xRLE-L90-VSF
 xR200-L90-A-CRP100
 xDRLE-GIS-VSF
 xDRLE-GIS-VUT
 xDRLE-L90-VUT
 xR200-L90-MAP100
 xR200-L90-SEP100h
 xR200-L90-SEP100
 xR200-L90-A-CRP100
 xR200-L90-C-JOP100
 GB-SEAL-KTF31748
 xDRLE-L90-VRX
 xR200-L90-C-CRP201
 xR200-L90-RPP100
 xR200-L90-C-SWP200
 xR200-L90-SWP100
 xR200-L90-SFP100a
 steep_slope_areas
 dR200-L90-CDP-TDA
 xRLE-L90-VGN



MATCHLINE:
SEE FIGURE 009

EXISTING LAYOUT
SCALE: 1" = 40'

01/24/20 | 8:33 AM | ERICKSWF
 C:\PWORKING\JACOBS_BA\ERICKSWF\NEW DWG FILES\R200-L90-FIG009A.DWG

NOT FOR CONSTRUCTION

DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	



REVIEWED BY:

SUBMITTED BY:

LINE IS 1" AT FULL SCALE

SCALE: 1" = 40'
FILENAME: R200-L90-FIG009A
CONTRACT No.: RTA/CN 0148-18
DATE: 12/20/2019

DESIGN PACKAGE:
PERMIT INFORMATION:

DOWNTOWN REDMOND LINK EXTENSION CONTRACT R200
REDMOND TECH CENTER TO DOWNTOWN REDMOND
EXISTING CONDITIONS DOWNSTREAM ANALYSIS EXISTING POND WEST LAKE SAMMAMISH PKWY

DRAWING No.:	FIGURE 009A
FACILITY ID:	E28
SHEET No.:	800
REV:	

APPENDIX J WSDOT AS-BUILTS

This appendix contains information regarding the WSDOT As-builts along SR520 when the existing retaining walls and horizontal drains were constructed.

Horizontal Drains
(type)
See As-Built details
attached

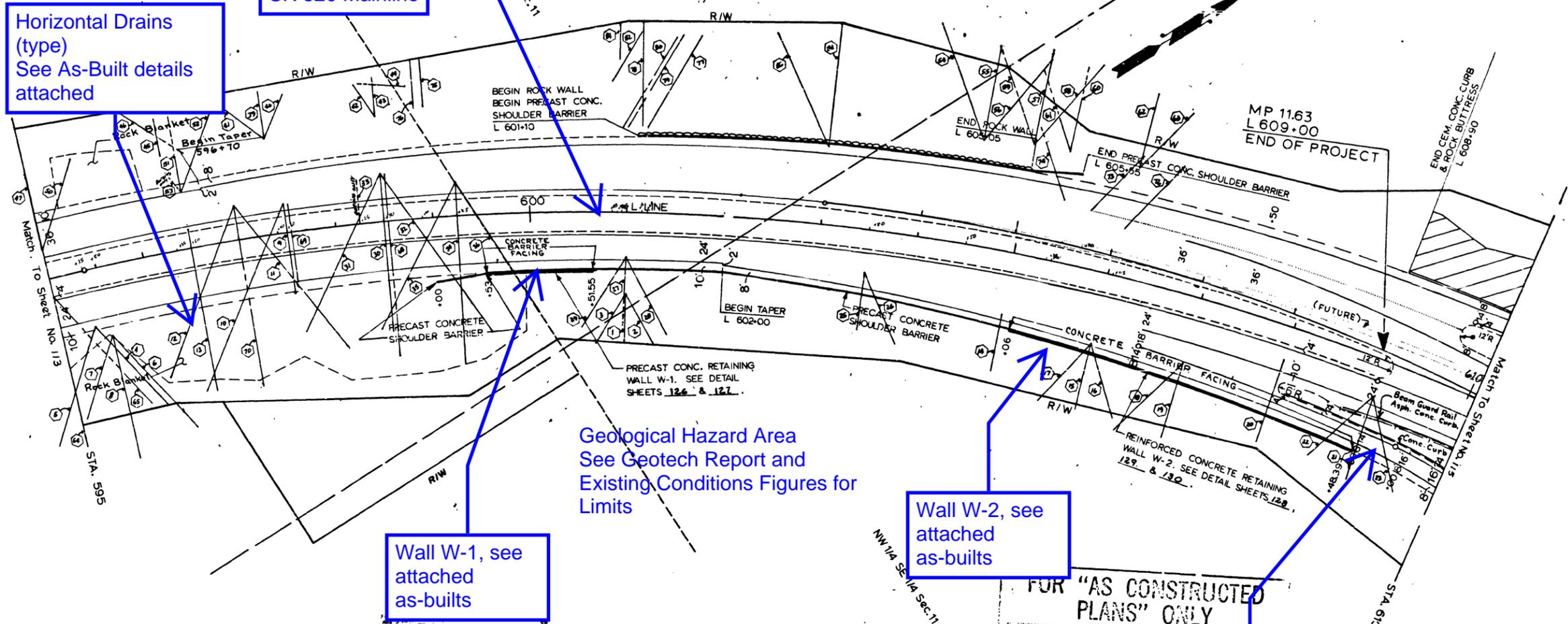
SR 520 Mainline

Geological Hazard Area
See Geotech Report and
Existing Conditions Figures for
Limits

Wall W-1, see
attached
as-builts

Wall W-2, see
attached
as-builts

WSR520
WLSP Off-ramp



REVISION	DATE	BY

DATE	BY
7-13-78	J. KASKA

SR 520
MP 8.75 To MP 11.62
148th Ave. N.E. To SR 901
KING COUNTY
PAVING PLAN
Sheet 11 of 162 Sheets

Proposed Location
and Stationing
Proposed Location
and Stationing
One Foot Bench Mark
Bench Mark



8-16-78	Rev Limits of Shoulder Barrier	R.B.
DATE	REVISIONS	BY

SR 520 MP 8.75 TO MP 11.63
148TH AVENUE N.E. TO SR 901
KING COUNTY
HORIZONTAL DRAIN PLAN
CHANNELIZATION AND PAVING PLAN
WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
OLYMPIA, WASHINGTON
W. A. BULLY SECRETARY



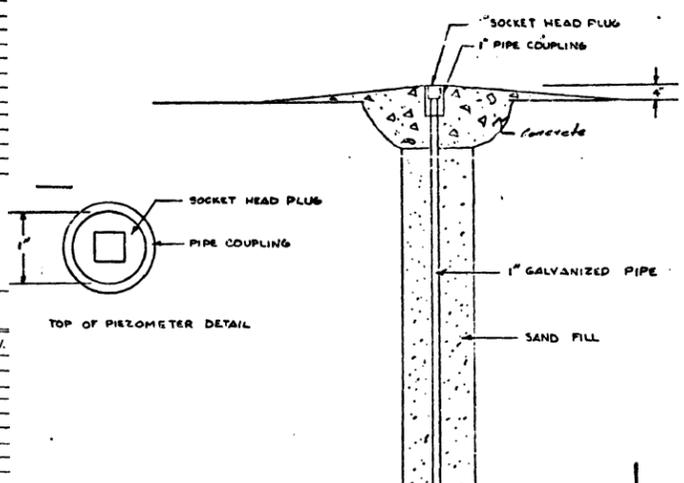
APPROVED July 14, 1978
CONTRACT NUMBER 13/4 SHEET 111 OF 203 SHEETS
67A

SR 520
130

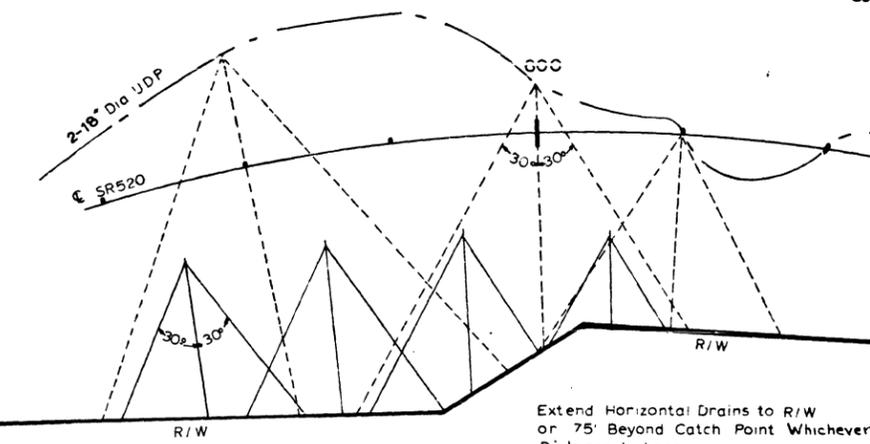
Horizontal Drains Schedule				
Station	to Station	Rt./Lt.	Level	Group Spacing
L593.00	to L601.00	Rt.	Lower	100' Centers
L594.50	to L600.50	Rt.	Upper	100' Centers
L595.60		Lt.	Lower	1 Only
L602.75		Rt.	Lower	1 Only
L602.75		Rt.	Upper	1 Only
L601.00	to L604.00	Lt.	Lower	100' Centers
L601.50	to L604.50	Lt.	Upper	100' Centers
L605.00	to EN 2.50	Rt.	Lower	100' Centers
L604.50	to EN 2.00	Rt.	Upper	100' Centers
L608.25		Lt.	Lower	1 Only
L608.25		Lt.	Upper	1 Only
L608.00	to L611.00	Lt.	Lower	100' Centers
L608.50	to L610.50	Lt.	Lower	100' Centers

Piezometer Schedule				
Station	Dist.	Rt./Lt.	Tip Elev.	Approx. Ground Elev.
L593.30	140	Rt.	185.0	214
L595.35	125	Rt.	173.0	224
L597.70	145	Lt.	178.0	214
L597.80	135	Rt.	165.0	220
L600.20	140	Rt.	148.0	214
L601.80	160	Lt.	149.0	200
L602.60	120	Rt.	134.0	174
L603.80	160	Lt.	137.0	186
L605.80	135	Rt.	117.0	173
L606.20	120	Lt.	125.0	171
L608.40	160	Rt.	153.0	164
L610.10	180	Lt.	104.0	153

APPROXIMATE QUANTITIES		
DESCRIPTION	UNIT	QUANTITY
Boring For Horizontal Drain Pipe	L.F.	20,192
Horizontal Drain Pipe 1 1/2" Dia	L.F.	21,255
Piezometer Observation Well	L.F.	636



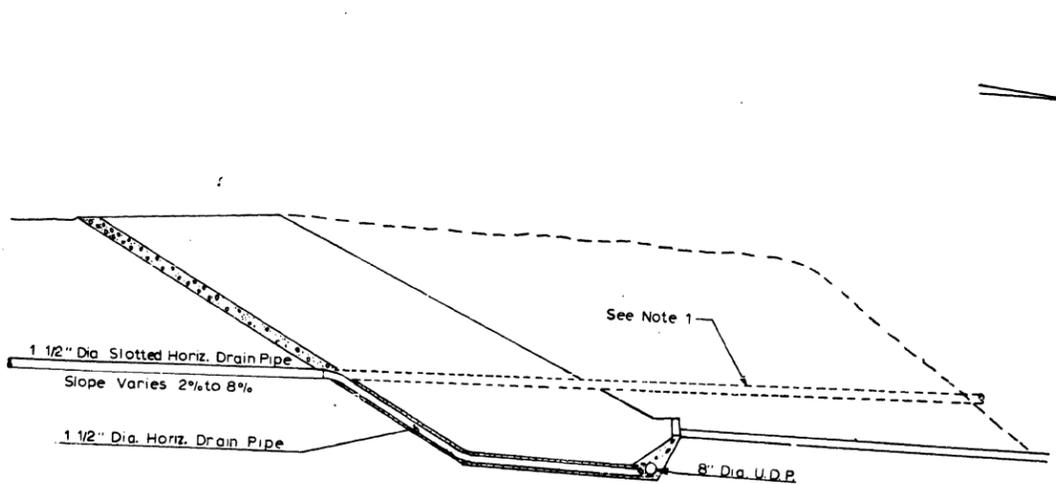
TOP OF PIEZOMETER DETAIL
PIEZOMETER OBSERVATION WELL



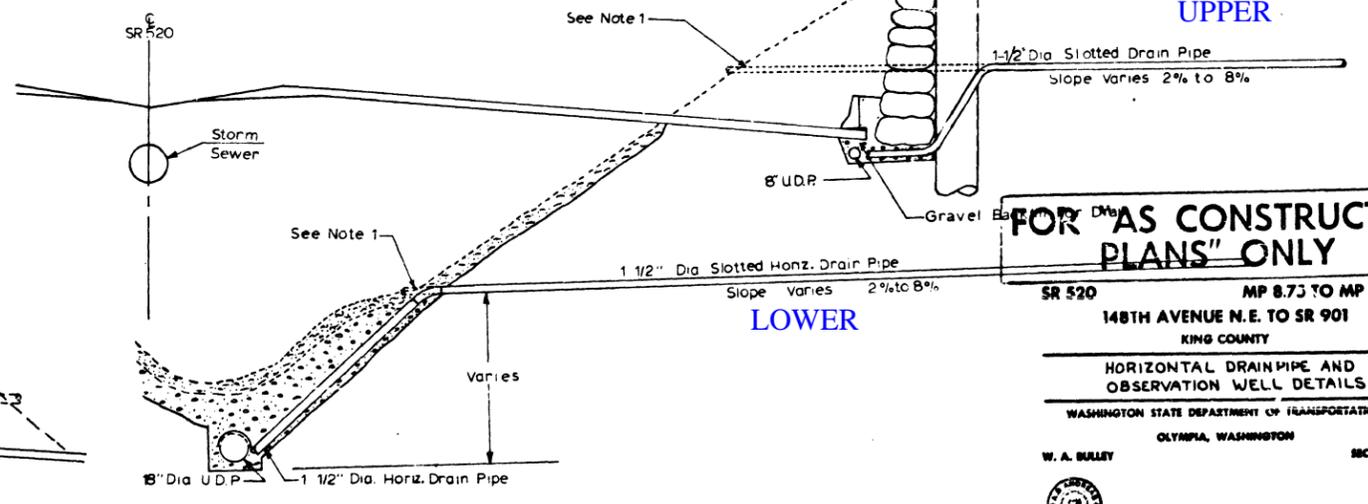
Upper Horizontal Drains
Lower Horizontal Drains

TYPICAL HORIZONTAL DRAINS INSTALLATION DETAIL

Notes:
1. Remove Extra Horizontal Drain Pipe As Required, During Excavation See Special Provisions



ROCK BUTTRESS HORIZONTAL DRAINS OUTFALL DETAIL



CANYON DRAIN ROCK WALL OR CONCRETE RETAINING WALL HORIZONTAL DRAINS OUTFALL DETAIL

FOR "AS CONSTRUCTED PLANS" ONLY

SR 520 MP 8.73 TO MP 11.63
148TH AVENUE N.E. TO SR 901
KING COUNTY

HORIZONTAL DRAINPIPE AND OBSERVATION WELL DETAILS

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
OLYMPIA, WASHINGTON

W. A. BALLEW SECRETARY

APPROVED July 14, 1978
CONTRACT NUMBER 13/4 SHEET 79 OF 203 SHEETS

8-16-78	Added Note	R.B.
DATE	REVISION	BY

DATE: _____
BY: _____
PROJECT NUMBER: _____
SHEET NUMBER: _____

DATE: 8-16-78
BY: R. S. ALLEN
PROJECT NUMBER: 13/4
SHEET NUMBER: 79 OF 203 SHEETS

SR 520 L6118
MP 8.73 to MP 11.63
148th Ave. N.E. to SR 901
King County
Horizontal Drain Pipe
Sheet 79 of 203 sheets

SR 520/30

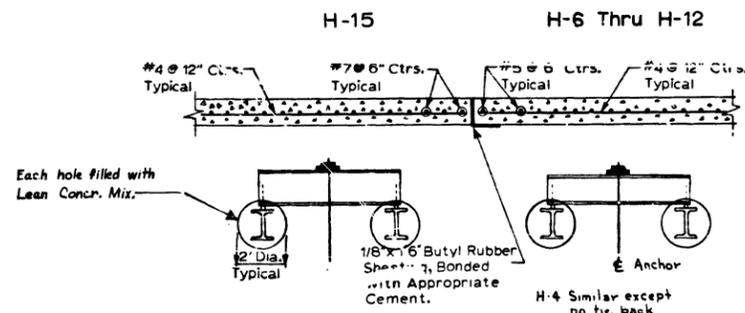
GENERAL NOTES

All material and work shall be in accordance with the requirements of the Standard Specifications and the special provisions.

The concrete in the footing shall be Class B mix. The concrete in the precast wall panels shall be Class B Special. The concrete in the anchor zone shall be the special mix specified in the special provisions. The concrete fill around pilings shall be 1/2 sack mix.

All structural steel shall conform to ASTM A588. All reinforcing bars shall be ASTM A-615, grade 60. All other steel shall be as designated on the plans or within the special provisions.

Unless otherwise shown on the plans, concrete cover measured from the face of the concrete to the face of any reinforcement bar shall be 2 1/2" at bottom of the footing and 1 1/2" at all other locations.



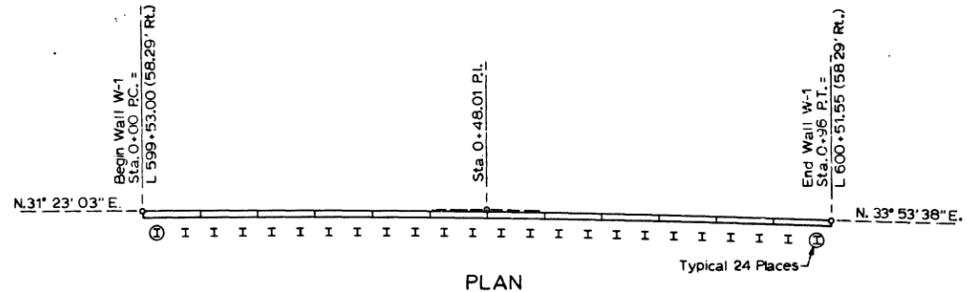
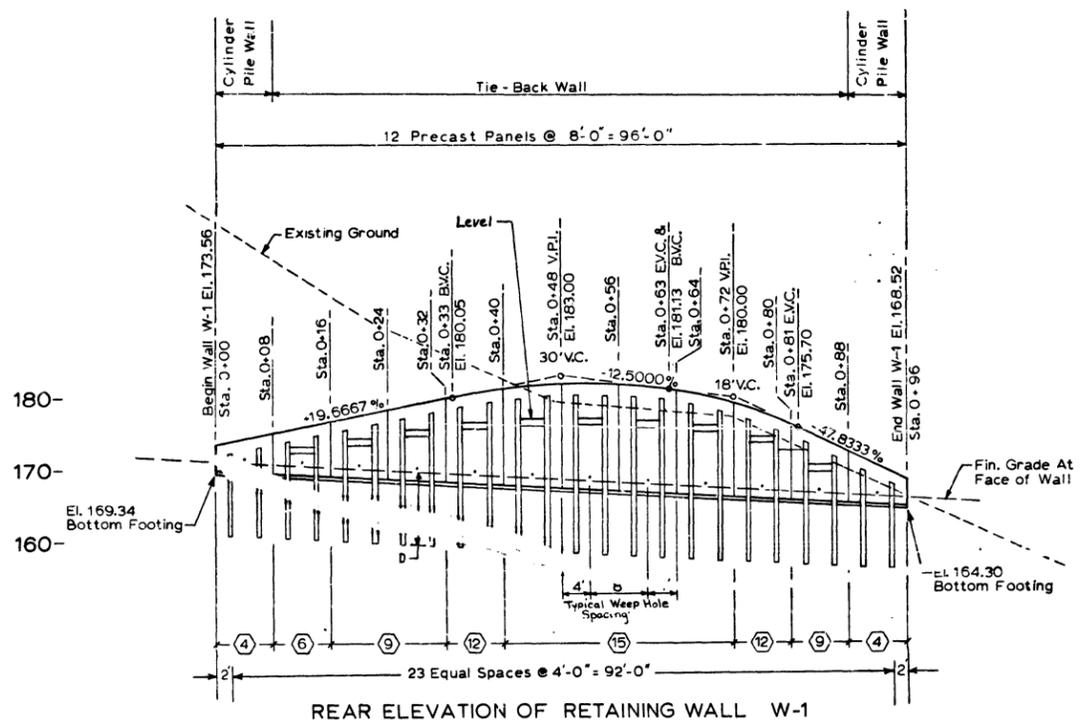
Schedule For Tie-Back Wall
Dimensions are in feet Force Ft is in Kips

H	L	D	T	W	D1	D2	Fr	A	Col. Sec. Reqd.
15	25	10	5	0.75	8.45	4	127	53	WB x 58
12	22	10	4	0.75	6.6	3	82	36	WB x 58
9	19	10	3	0.60	5.15	2.5	41	23	W6 x 2.5
6	16	10	2	0.60	3.75	2	27	15	W6 x 2.5

Schedule For Cylinder Pile Wall

H	L	D	T	W	D1	D2	Fr	A	Col. Sec. Reqd.
4	12.5	10		0.50					W6 x 2.5

* Use the H/3 of the taller column when a short and a tall column are paired.

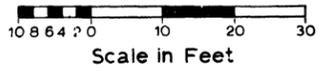


W-1 Wall Data

P.I.	0+48.01
Δ	2' 30" 35" Rt.
R	2191.71'
T	48.01
L	96.00'

LEGEND

⑨ Design Height = H



FOR "AS CONSTRUCTED PLANS" ONLY

SR 520 MP 8.75 TO MP 11.63
148TH AVENUE N.E. TO SR 901
KING COUNTY

RETAINING WALL
PLANS AND DETAILS
WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
OLYMPIA, WASHINGTON

W. A. BULLEY SECRETARY

APPROVED July 14, 1978
CONTRACT NUMBER 1314 SHEET 126 OF 203 SHEETS

9-26-78	Rev. Detail	R.B.
8-16-78	Rev. Detail	R.B.
DATE	REVISION	BY

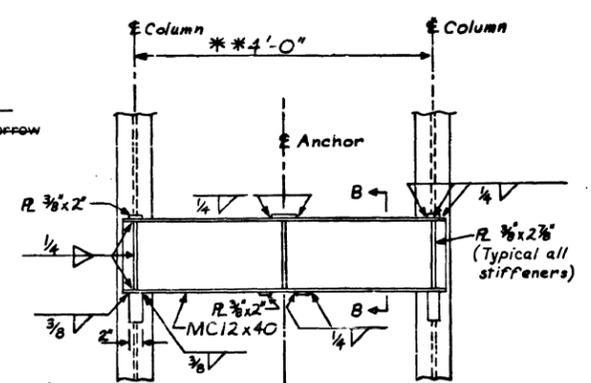
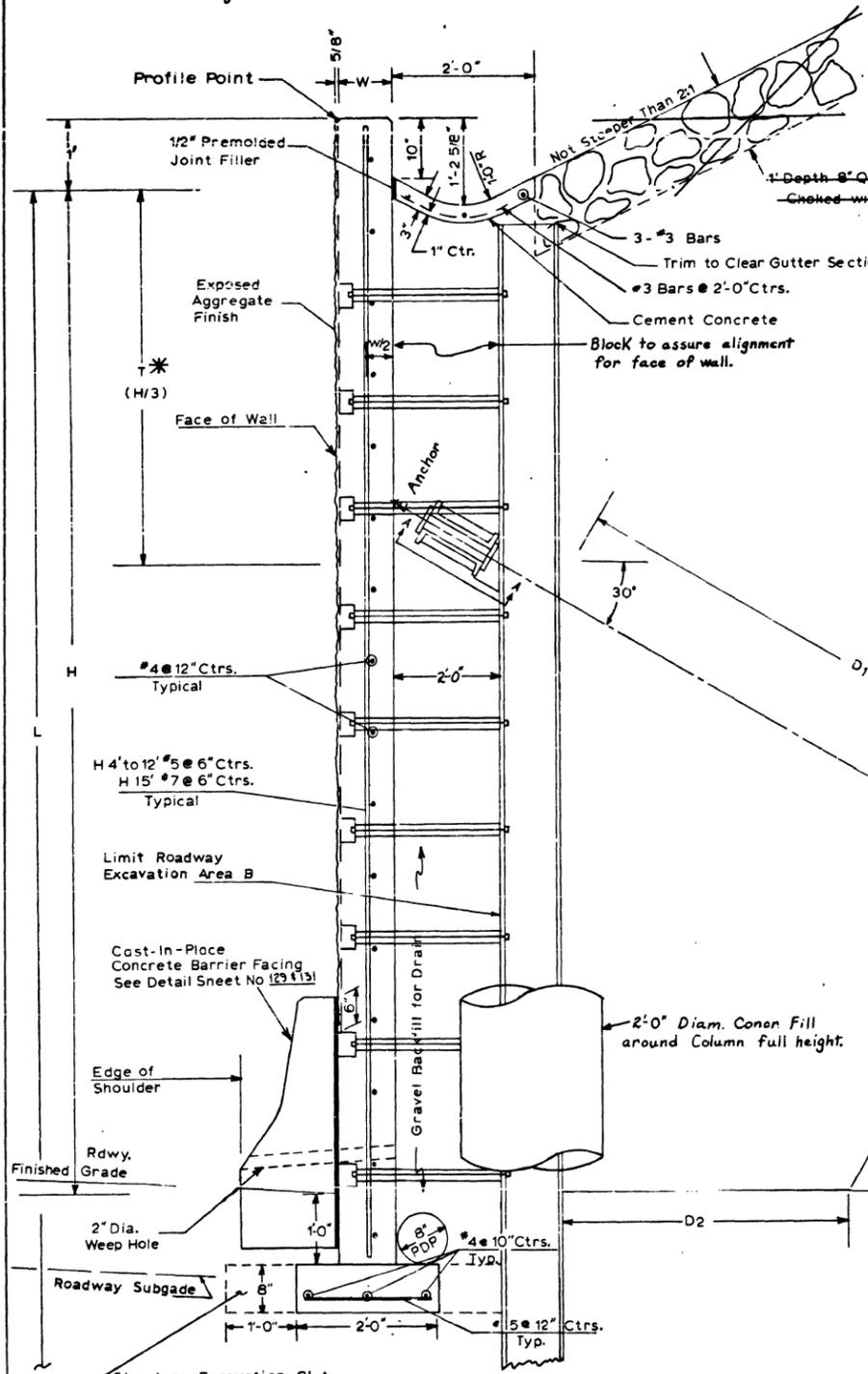
SR 520 L6118
M.P. 8.75 to M.P. 11.63
148th Ave. N.E. to SR 901
KING COUNTY
RETAINING WALL W-1
Sheet 126 of 203 Sheets

SR 520 / 30

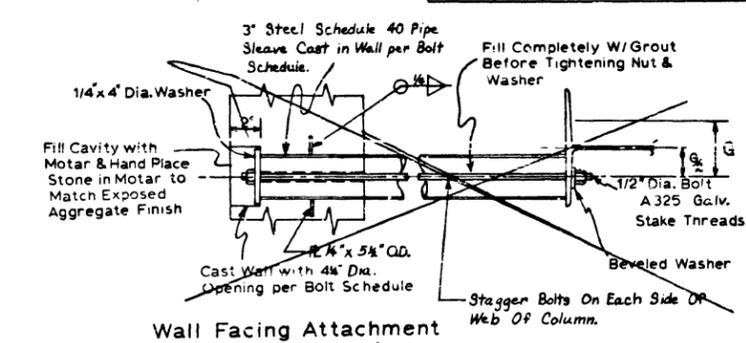
Wall W-1 As-builts

*Use the H/3 of the taller column when a short and a long column are paired.

SECTION NO.	DATE	REVISION NO.	BY
10	WASL		



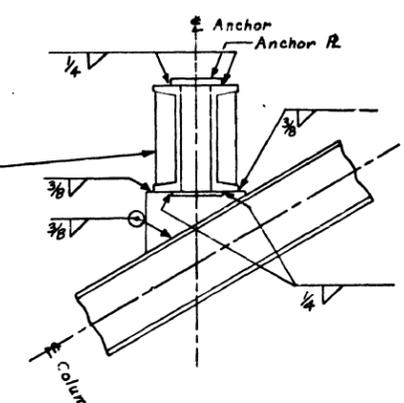
VIEW "A-A"
** Dimension to be field verified prior to fabrication of channel sections. Stiffeners of channel shall be located directly over webs of columns.



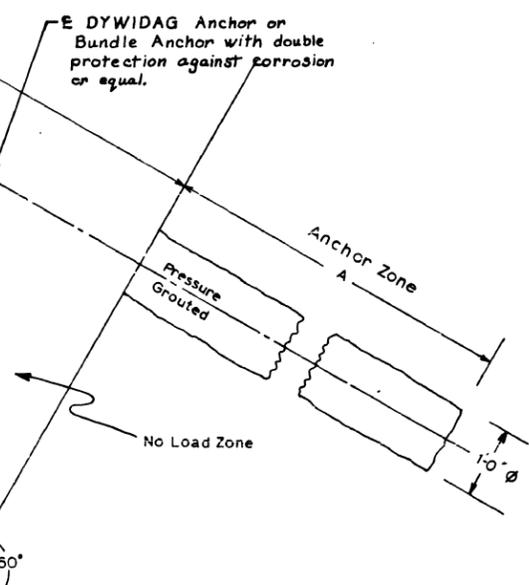
Wall Facing Attachment

Bolt Schedule for Wall Facing Attachment

Wall Design H	Vertical Spacing	G
H-4	2'-6"	3.5"
H-6	2'-6"	3.5"
H-9	2'-0"	3.5"
H-12	2'-0"	5.5"
H-15	1'-6"	5.5"



SECTION "B-B"



WALL W-1

FOR "AS CONSTRUCTED PLANS" ONLY

SR 520 MP 8.75 TO MP 11.63
148TH AVENUE N.E. TO SR 901
KING COUNTY

RETAINING WALL
PLANS AND DETAILS
WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
OLYMPIA, WASHINGTON
W. A. BULLEY SECRETARY

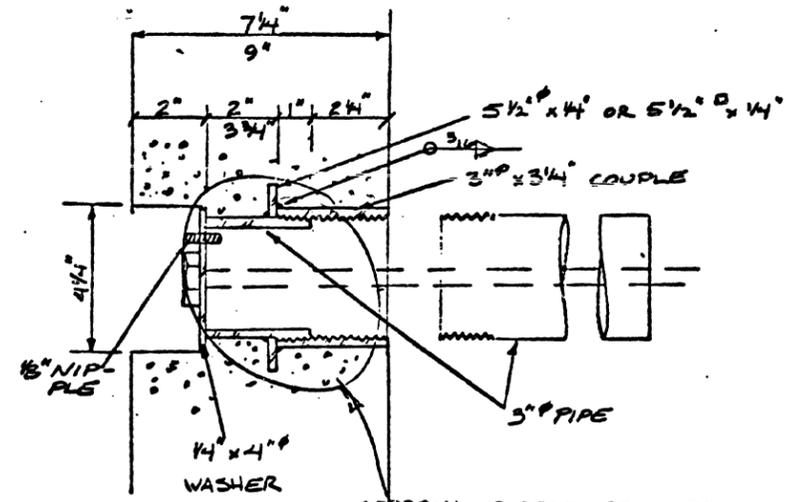


APPROVED July 14, 1978
CONTRACT NUMBER 1314 SHEET 127 OF 203 SHEETS

9 26 78	Rev Detail	R.B.
8 16 78	Added Sheet Ref.	R.B.
DATE	REVISION	BY

SR 520
M.P. 8.75 to M.P. 11.63
148th Ave NE to SR 901
KING COUNTY
RETAINING WALL
Sheet 127 of 203 Sheets

REVISED WALL FACE ATTACHMENT



APPROVAL IS CONTINGENT UPON APPROVAL OF A CHANGE ORDER.

DETA
NO SCALE

STATE OF WASHINGTON
TRANSPORTATION
1900
P. J. [Signature]
ENGINEER



NOTES:

1. HOLES IN EILES WILL BE MADE ACCORDING TO PLANS, AS-BUILT WILL BE MADE AND INSERTS PLACED TO FIT.
2. LUMBER DFGR $F_b = 1250$ PSI
3. DRIVEN PINS BY RAYL ULTIMATE 2050 LBS, 500 LBS WORKING IN 3000 PSI CONCRETE.

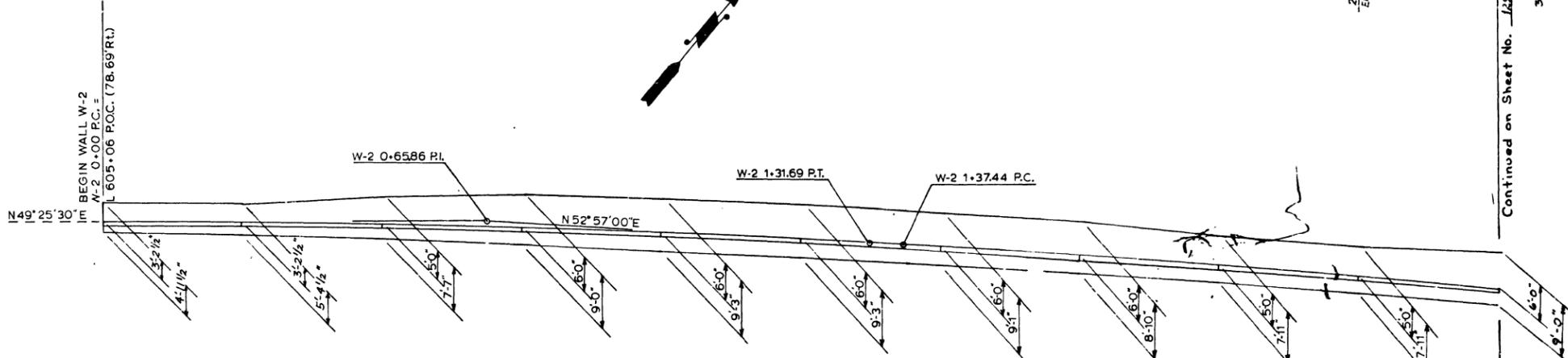
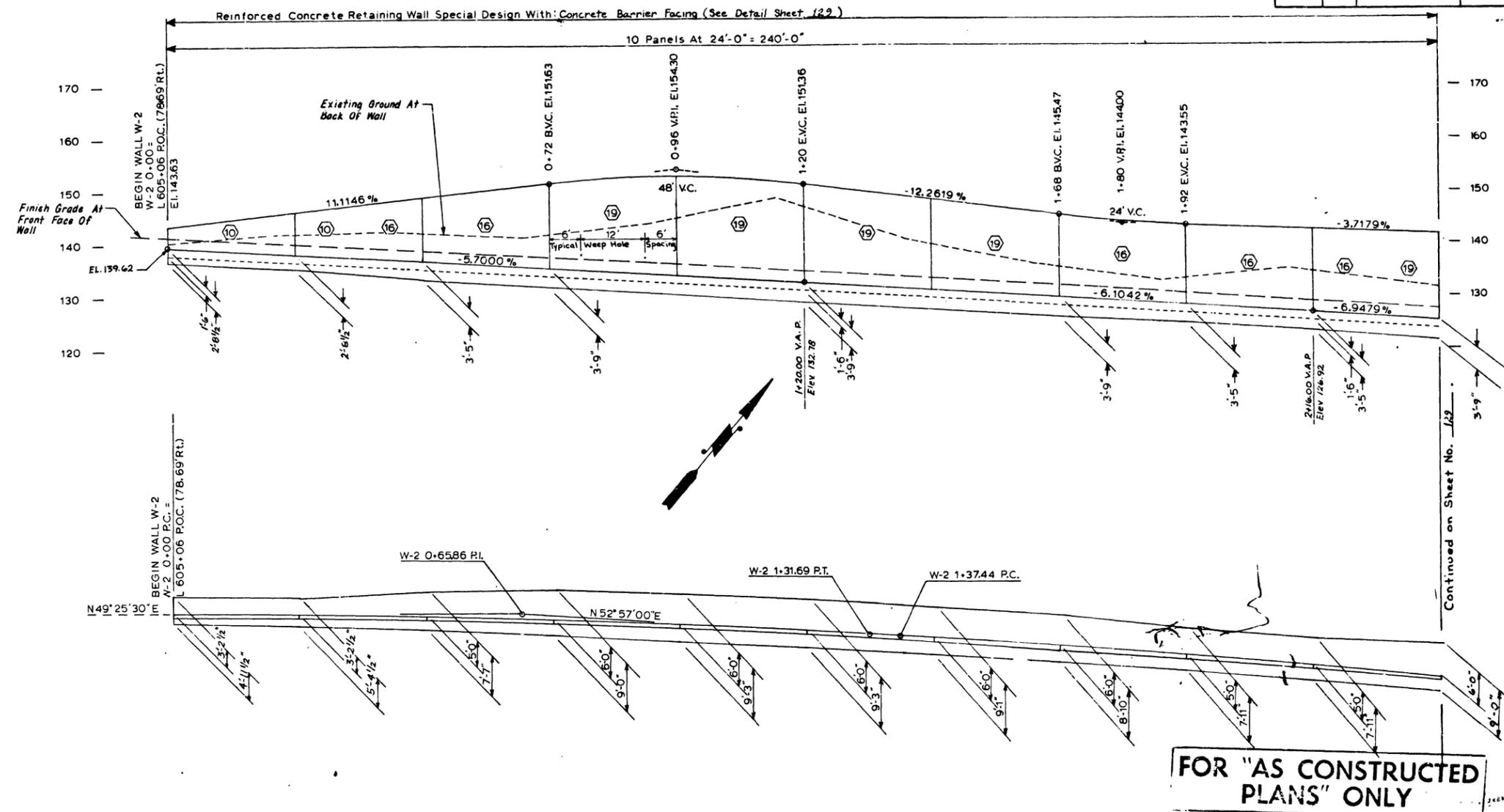
1000 MAXI-LIFT INSERTS (SAFE WORKING LOAD 10000' w 2500 PSI CONC : 8" THK FACE)
ANCHOR INSERTS (DET A)
BURKE INSERTS.

GEN'L **PETER KIEWIT SONS' CO.**
CONTR. 1300 ALOHA ST. - SEATTLE W.A.
PROJECT: ~~2520 CONTRACT 7514~~
ARCH-ENGR:
OWNER: W.S.D.O.T

NO.	REVISION	DATE	BY	DWN:	CHKD:	DATE:	SCALE:	DWG. NO.
				74	DR	4.25		PC-1

Sheet 127 A

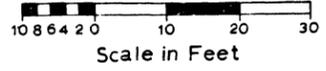
SECTION NO.	STATE	FEDERAL AID PROJECT NO.	SHEET NO.
10	WASH.		



W-2 Wall Data

R.I.	0+65.86
Δ	3° 31' 30" Rt.
R	2140.35'
T	65.86'
L	131.69'

WALL W-2



FOR "AS CONSTRUCTED PLANS" ONLY

SR 520 MP 8.75 TO MP 11.63
 148TH AVENUE N.E. TO SR 901
 KING COUNTY
**RETAINING WALL
 PLANS AND DETAILS**
 WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
 OLYMPIA, WASHINGTON
 W. A. BALLEW SECRETARY



APPROVED July 7, 1978
 SHEET 128 OF 203 SHEETS

8-16-78	Rev Note	J.M.
DATE	REVISION	BY

DATE	BY

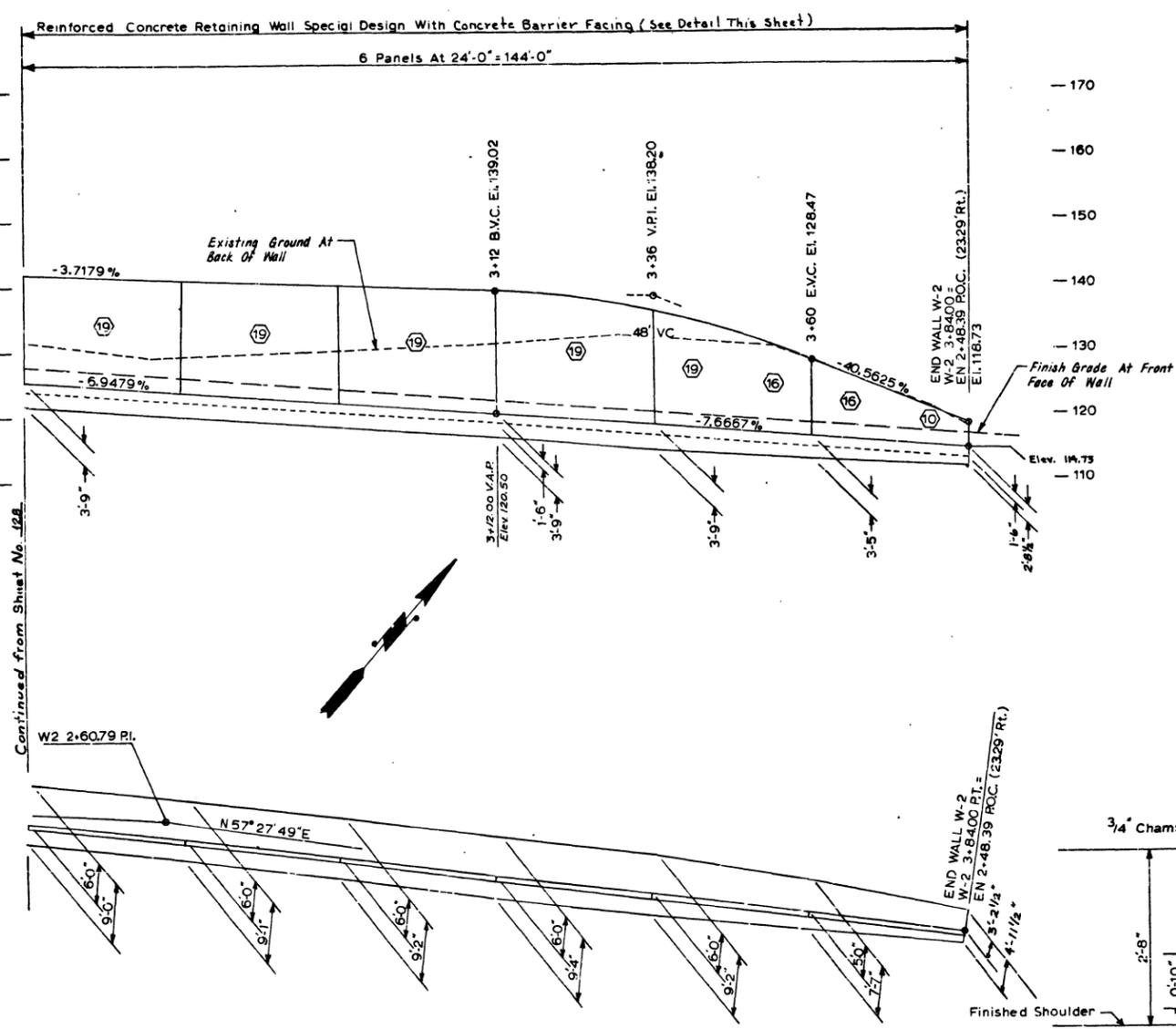
DATE	BY

SR 520
 M.P. 8.75 to M.P. 11.63
 148th Ave. N.E. to SR 901
 KING COUNTY
 RETAINING WALL W-2
 Sheet 128 of 203 Sheets

78 W 144	NO	WASH.	REVISION	DATE
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DATE	BY	REVISION

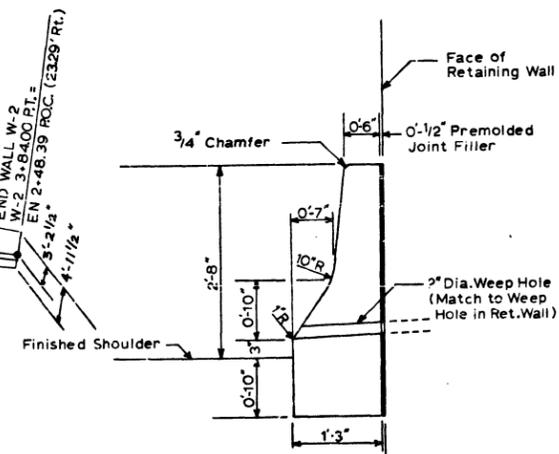
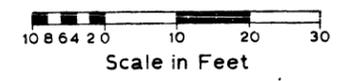
DATE	BY	REVISION



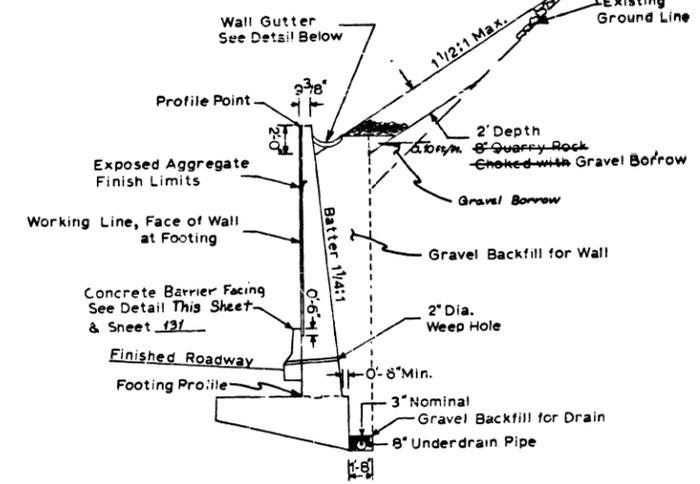
W- 2 Wall Data
 P.I. 2+50.79
 Δ 4° 30' 48" Rt.
 R 3129.93'
 T 123.34'
 L 246.56'



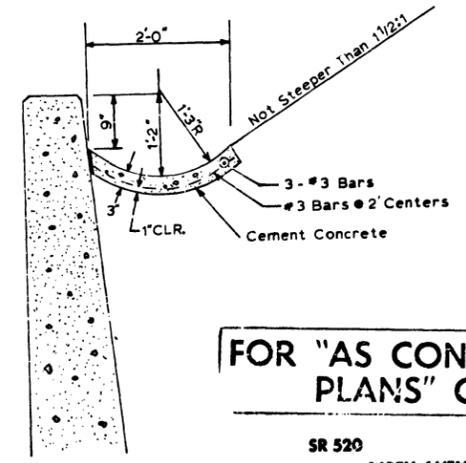
WALL W-2



CONCRETE BARRIER FACING
 See Sheet 131 For More Details.
 Note: Joints in Concrete Barrier Facing Shall Match Joints in Wall. Concrete shall be Class AX. Concrete Barrier Facing will Be Cast-In-Place.



WALL W-2 TYPICAL SECTION



WALL W-2 GUTTER SECTION

FOR "AS CONSTRUCTED PLANS" ONLY

SR 520 MP 8.75 TO MP 11.63
 148TH AVENUE N.E. TO SR 901
 KING COUNTY
RETAINING WALL PLANS AND DETAILS
 WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
 OLYMPIA, WASHINGTON
 W. A. BAILEY SECRETARY
 APPROVED July 12, 1978
 CONTRACT NUMBER 1314 SHEET 129 OF 203 SHEETS

8-16-78	Rev. Detail Notes	R.B.
DATE	REVISION	BY

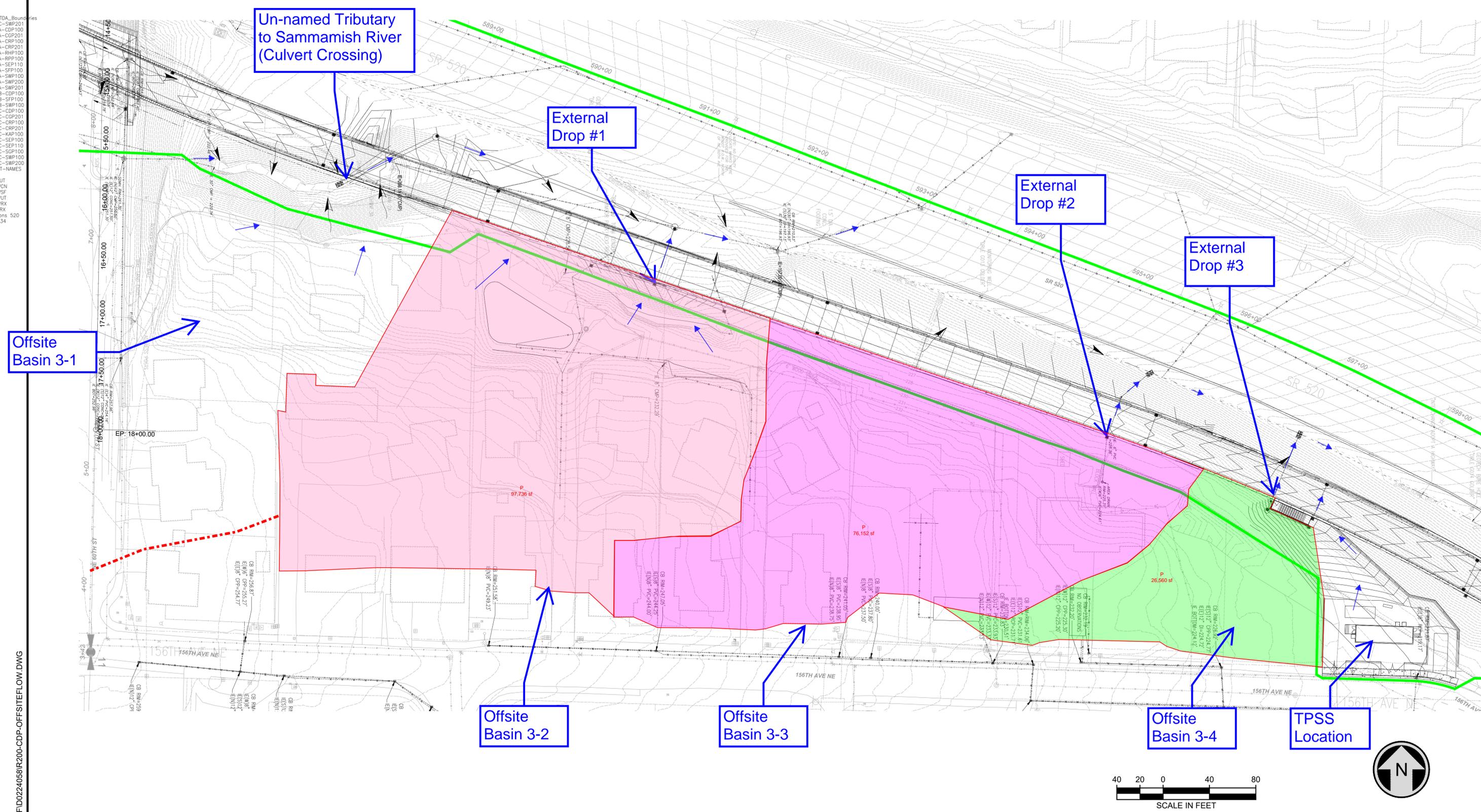
31.2.20
 M.P. 8.75 to M.P. 11.63
 148th Ave. N.E. to SR 901
 K1106
 Sheet 129 of 203 Sheets

12 5/8 / 30

APPENDIX K OFFSITE BASINS

This appendix contains figures that indicate the offsite areas that travel towards the new guideway retaining wall and will be routed under or around

Xrefs:
 DR200-CDP-TDA_Boundaries
 XR200-L90-C-SWP201
 XR200-L90-A-CP100
 XR200-L90-A-CP201
 XR200-L90-A-CRP100
 XR200-L90-A-CRP201
 XR200-L90-A-RP100
 XR200-L90-A-RP100
 XR200-L90-A-SEP110
 XR200-L90-A-SFP100
 XR200-L90-A-SWP100
 XR200-L90-A-SWP200
 XR200-L90-A-SWP201
 XR200-L90-B-CP100
 XR200-L90-B-SFP100
 XR200-L90-B-SWP100
 XR200-L90-B-SWP201
 XR200-L90-C-CP100
 XR200-L90-C-CP201
 XR200-L90-C-CRP100
 XR200-L90-C-CRP201
 XR200-L90-C-KAP100
 XR200-L90-C-SEP100
 XR200-L90-C-SEP110
 XR200-L90-C-SFP100
 XR200-L90-C-SWP100
 XR200-L90-C-SWP200
 XR200-L90-C-SWP201
 XDRL-Street-Names
 xdrle-gis-vst
 xdrle-gis-vut
 xdrle-l90-vcn
 xdrle-l90-vsf
 xdrle-l90-vut
 xdrle-l90-vrx
 xdrle-gis-vrx
 Barrier locations
 XR200-TB2234



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No.	DATE	DSN	CHK	APP	REVISION

DESIGNED BY:
 DRAWN BY:
 CHECKED BY:
 APPROVED BY:

REVIEWED BY:
 SUBMITTED BY:



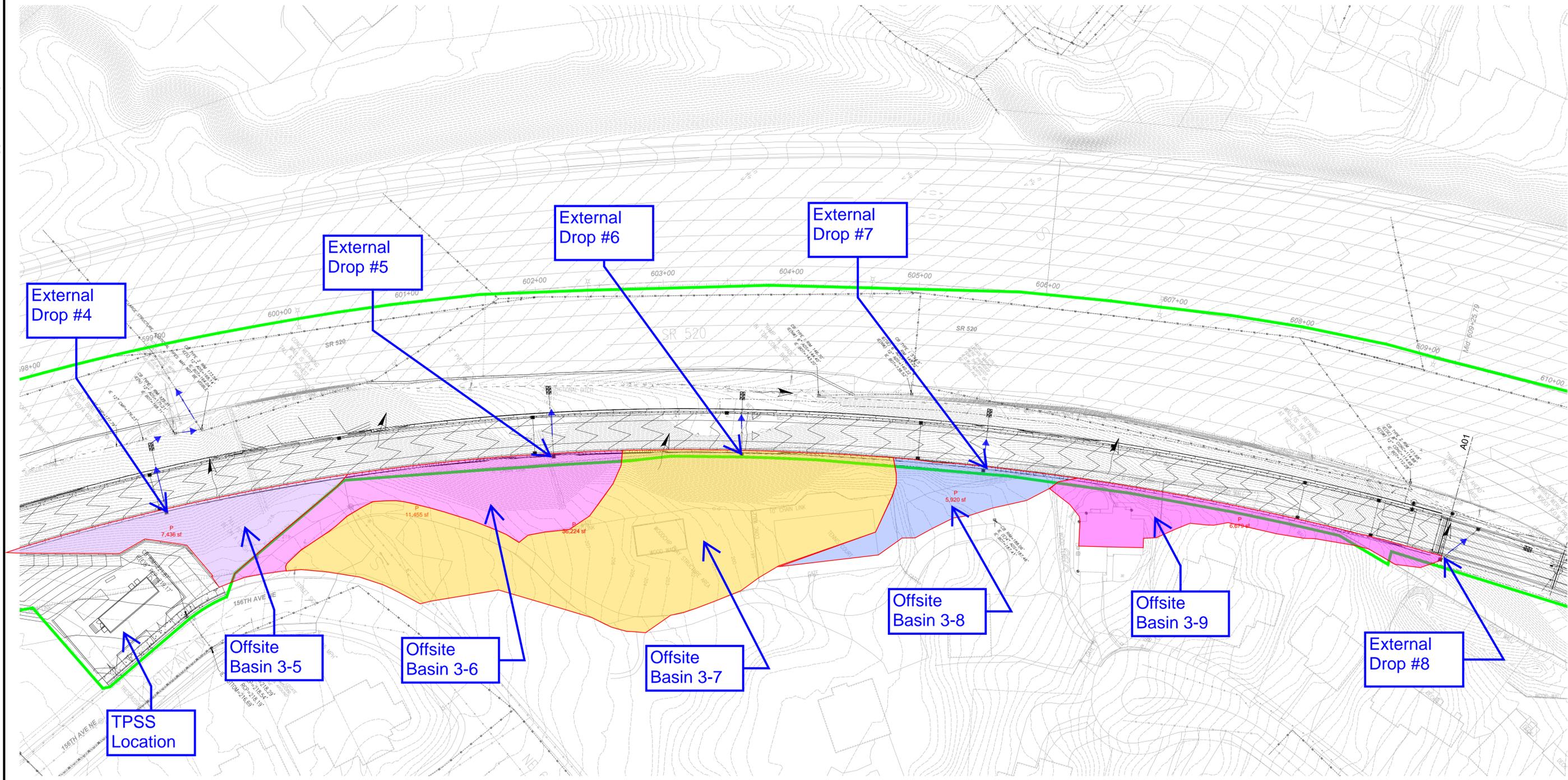
SCALE:
 FILENAME:
 CONTRACT No.:
 DATE:

DESIGN PACKAGE:
 PERMIT INFORMATION:

TDA 3- OFFSITE BASIN FIGURES

DRAWING No.:
 FACILITY ID:
 SHEET No.:
 REV:
 1 OF 2

Xrefs:
 xR200-CDP-TDA_Boundaries
 xR200-L90-C-SWP201
 xR200-L90-A-CDP100
 xR200-L90-A-CDP201
 xR200-L90-A-CRP100
 xR200-L90-A-CRP201
 xR200-L90-A-RPP100
 xR200-L90-A-RPP201
 xR200-L90-A-SFP100
 xR200-L90-A-SFP201
 xR200-L90-A-SWP100
 xR200-L90-A-SWP200
 xR200-L90-A-SWP201
 xR200-L90-B-CDP100
 xR200-L90-B-SFP100
 xR200-L90-B-SFP201
 xR200-L90-B-SWP100
 xR200-L90-B-SWP201
 xR200-L90-C-CDP100
 xR200-L90-C-CDP201
 xR200-L90-C-CRP100
 xR200-L90-C-CRP201
 xR200-L90-C-KAP100
 xR200-L90-C-SEP100
 xR200-L90-C-SEP201
 xR200-L90-C-SFP100
 xR200-L90-C-SFP201
 xR200-L90-C-SWP100
 xR200-L90-C-SWP200
 xR200-L90-C-SWP201
 xDRLE-STREET-NAMES
 xdrle-gis-vrf
 xDRLE-GIS-VUT
 xDRLE-L90-VCN
 xDRLE-L90-VSF
 xDRLE-L90-VUT
 xDRLE-L90-VRX
 xDRLE-GIS-VRX
 Barrier locations 520
 xR200-TB22x34



03/18/20 | 3:33 PM | ERICKSWF | C:\P\WORKING\ACOBBS_B&I\ERICKSWF\ID0224058\R200-CDP-OFFSITEFLOW.DWG

No.	DATE	DSN	CHK	APP	REVISION

DESIGNED BY:
 DRAWN BY:
 CHECKED BY:
 APPROVED BY:

REVIEWED BY:


 SUBMITTED BY:


 LINE IS 1" AT FULL SCALE

SCALE:
 FILENAME:
 R200-CDP-OFFSITEFLOW
 CONTRACT No.:
 DATE:

DESIGN PACKAGE:
 PERMIT INFORMATION:

TDA 3- OFFSITE BASIN FIGURES

DRAWING No.:
 FACILITY ID:
 SHEET No.: 2 OF 2
 REV: