

TECHNICAL MEMORANDUM

DATE: December 7, 2016
TO: Jason Rich, Project Manager (King County)
FROM: Craig Buitrago, PE (PMX)
SUBJECT: Preliminary Stormwater Approach
CC: Yammie Ho (PMX); Jenny Bailey (PMX)
PROJECT NUMBER: 554-1521-151 (2C/2T200D)
PROJECT NAME: Lake to Sound Trail Segment C

PURPOSE OF MEMORANDUM

The purpose of this technical memorandum is to identify how the Lake to Sound Trail Segment C (Segment C) project will satisfy the core and special requirements of the 2016 King County Surface Water Design Manual (KCSWDM) primarily focusing on Core Requirements 3 Flow Control and 9 Flow Control BMPs.

PROJECT DESCRIPTION

King County, together with the cities of SeaTac and Burien, the Washington State Department of Transportation (WSDOT), and the Federal Highway Administration (FHWA), is proposing to develop a 2.2-mile-long segment of what will ultimately be the 16-mile-long Lake to Sound Trail. The 2.2-mile segment is referred to as Segment C of the Lake to Sound Trail. Segment C connects to the end of Segment B, extending from the intersection of South Normandy Road and Des Moines Memorial Drive (DMMD), traveling south parallel to 8th Avenue and then following DMMD to South 196th Street and ending on South 200th Street connecting to the Des Moines Creek Park – SeaTac (Lake to Sound Trail Segment C 30% Plan and Profile sheets).

Segment C would provide non-motorized access to recreation and employment centers and complete a link in the Regional Trail System network. The trail is intended to safely accommodate a variety of groups such as bicyclists, pedestrians, runners, wheelchair users, and skaters. Trail design standards will safely accommodate different ages and skill levels within those groups.

Segment C is a variety of 12-foot asphalt pavement with curb, gutter, and 3-foot planter, 12 foot wide asphalt pavement with 2 foot wide shoulders and 1-foot-wide clear zones from the edge of pavement (in accordance with American Association of State Highway and Transportation Officials' (AASHTO) guidelines), or 16-foot wide elevated boardwalk. This project includes:

- Construction of a 12-foot-wide porous asphalt pavement with soft-surface (gravel) shoulders
- Separation of the trail from the adjacent road with a planter strip
- Relocation of above-ground utilities to either the back side of the trail or underground
- Drainage improvements related to the trail and conveyance of stormwater from the adjacent road across the trail
- Retaining walls in some places to reduce the cut-and-fill areas needed for the trail
- A boardwalk section through a wetland

STORMWATER MANAGEMENT REQUIREMENTS

Segment C is divided into seven TDAs, which are the basis for the analysis of stormwater management requirements described herein. This preliminary analysis was conducted following the guidelines provided in the 2016 King County Surface Water Design Manual (2016 KCSWDM). Both the City of SeaTac and the City of Burien are expected to adopt the 2016 King County Surface Water Design Manual with jurisdictional addenda in December 2016.

Based on the 2016 KCSWDM, the project requires full drainage review because it will result in greater than 2,000 square feet of new and replaced impervious surface (Table 1). According to Table 1.1.2.A in the 2016 KCSWDM, full drainage review pertains to the project review of nine core requirements and five special requirements. The core and special requirements are analyzed per TDA, and the details of the preliminary design analysis focused on Core Requirements 3 Flow Control, 5 Water Quality, and 9 Flow Control BMPs. Core Requirement 5 Conveyance System is also addressed, but only enough to identify if new stormwater conveyance systems will be necessary to supplement or replace the existing stormwater conveyance system. The other Core and Special Requirements will be addressed in a Technical Information Report with the final design.

Threshold Discharge Areas

Seven Threshold Discharge Areas (TDAs) have been identified within the project boundaries. TDA locations can be found in the Segment C Plan and Profile plan sheets. The City of SeaTac portion of the trail extends from Station 100+00 at the intersection of South 200 Avenue and the Des Moines Creek Park – SeaTac to Station 192+00 where the trail begins to run alongside Des Moines Memorial Road (TDAs 1-6). The remainder of the trail falls within the City of Burien (TDA 7).

The TDAs are determined by the existing stormwater flow patterns through the proposed trail alignment, the natural discharge locations, and the receiving water up to one-quarter mile downstream from the project site. The project site is defined by the right-of-way boundaries for WSDOT and the local roadways that the trail follows. The following is a brief drainage description of each of the TDAs:

- TDA 1 (Station 100+00 to Station 111+28) – Runoff sheet flows over roadway embankment and grassy vegetation toward the adjacent Port of Seattle property. Runoff continues as sheet flow until reaching Des Moines Creek. The proposed design uses permeable pavement to infiltrate and reduce runoff, and an infiltration trench to infiltrate runoff to meet the Level 1 flow control standard. As South 200 Street drains towards the trail, a conveyance system will be implemented to collect and convey roadway runoff to Des Moines Creek.
- TDA 2 (Station 111+28 to Station 119+80) – Runoff sheet flow from the 18th Avenue South roadway to vegetated embankment and continues over vegetated areas until discharging to Des Moines Creek. The proposed design uses permeable pavement to infiltrate and reduce runoff. Embankment runoff will sheet flow to the east side of the road and continue until discharging into Des Moines Creek.
- TDA 3 (Station 119+80 to Station 131+10) – Runoff drains towards the inside of the 18th Avenue South and South 196th Street road (the west side) ditch, and then flows through a culvert to the east side, finally discharging into the Des Moines Creek. The proposed design uses permeable pavement to infiltrate and reduce runoff. Any runoff that is not infiltrated will follow the existing flow path of the 18th Avenue South and South 196th Street road ditch, and ultimately discharge to Des Moines Creek.
- TDA 4 (Station 131+10 to Station 141+63) – Runoff from South 196th Street road and the vegetated area to the north sheet flow northeast to Wetland C. The proposed design uses permeable pavement to

infiltrate and reduce trail runoff. Any runoff that is not infiltrated will follow the existing drainage pattern, which is to sheet flow to Wetland C.

- TDA 5 (Station 141+63 to Station 165+43) – Runoff from the sidewalks along DMMD drain south east, out of the DMMD corridor through the industrial business park located southeast of South 192nd Street, and flow through a water quality treatment vault facility before ultimately discharging into the Des Moines Creek. The proposed design uses permeable pavement to infiltrate and reduce runoff. Any runoff that is not infiltrated will follow the existing flow path of the DMMD stormwater conveyance system.
- TDA 6 (Station 165+43 to Station 195+02) – Runoff flows over the vegetated areas to Wetland A. Water from Wetlands G and H flow south to Wetland A. Des Moines Creek originates in Wetland A and drains out of Wetland A via an 24-inch diameter culvert near Station 166+30 (offset 26 feet left). The culvert is connected to the conveyance system located in DMMD, east of Wetland A. The proposed design proposes permeable pavement trail where feasible to infiltrate and reduce runoff. Trail runoff will be conveyed to Stormwater Ponds A and B for detention before discharging to Wetland A. The proposed flow control facilities are designed to meet Level 1 flow control standard for TDA 6.
- TDA 7 (Station 195+02 to Station 214+30) – Runoff flows from DMMD to the vegetated conveyance ditch located in the south side of DMMD. The conveyance ditch flows into a 24-inch culvert located in Wetland B at the southwest corner of the S Normandy Road and DMMD intersection. The culvert flows north in the enclosed drainage system located beneath Ambaum Boulevard South, and ultimately discharges to Miller Creek greater than one-quarter mile downstream from the project site. The proposed design uses permeable pavement to infiltrate and reduce runoff. Any runoff that is not infiltrated will follow the existing flow path of the DMMD stormwater conveyance system, which connects to the same 24-inch stormwater pipe that flows north beneath Ambaum Boulevard South and ultimately discharges to Miller Creek.

Core Requirement 3 – Flow Control

Per City of SeaTac Flow Control Applications Map Segment C is located within a basic flow control area. Per Table 1.2.3.A of the 2016 KCSWDM, basic flow control areas apply the Level 1 flow control standard, which matches the proposed 2- and 10-year peak flow runoff rates to the existing 2- and 10-year peak flow runoff rates.

Existing and Proposed Land Use

As previously stated, the flow control requirement will compare the existing conditions to the proposed site conditions. Per the 2016 KCSWDM, existing site conditions are defined as,

those that existing prior to May 1979 (when King County first required flow control facilities) as determined from aerial photographs and, if necessary, knowledge of individuals familiar with the area, unless a drainage plan for land cover changes has been approved by the County since May 1979 as part of a development permit or approval.

Aerial photos from 1936 were found on King County's iMap and confirm that DMMD, South 196th Street, 18th Avenue South, and South 200th Street all existed before 1979. Therefore, the existing impervious areas within the project site are modelled as impervious area. From the aerial photographs, no sidewalks can be seen, however, based on the City of SeaTac GIS stormwater data, it is clear that DMMD (including sidewalk) stormwater runoff from just north of S 190th Street to S 196th Street, is collected a tightline conveyance system that discharges to a stormwater quality treatment facility before ultimately discharging to Des Moines Creek southeast of a commercial business area located between S 196nd Street and S 194th Street. Thus, the sidewalk in these areas is

considered impervious for the existing site conditions. Finally, existing pervious areas within the project site were considered grass cover and either outwash or till soils determined from soil survey, or saturated wetland where the project is located within the wetland in TDA 6. Existing areas are tabulated per TDA in Table 1. The proposed land use areas consist of impervious surfaces (paved trail, permeable pavement trail, gravel shoulders, and elevated boardwalk) and pervious surfaces (planter strip). For purposes of flow control evaluation, permeable pavement areas are considered 50 percent impervious and 50 percent pervious surface. This is explained further in subsequent sections. The proposed areas are tabulated in Table 2 below.

Table 1. TDA Existing Land Use

| TDA | TDA Location | Total Target Surface Area (acre) | Existing Grass Area (acre) | Existing Impervious Area * (acre) | Soil Type |
|-----|----------------------------------|----------------------------------|----------------------------|-----------------------------------|-------------------|
| 1 | Station 100+00 to Station 111+28 | 0.50 | 0.50 | - | Till and Outwash |
| 2 | Station 111+28 to Station 119+80 | 0.39 | 0.10 | 0.29 | Outwash |
| 3 | Station 119+80 to Station 131+10 | 0.52 | - | 0.52 | Outwash |
| 4 | Station 131+10 to Station 141+63 | 0.43 | 0.23 | 0.20 | Outwash |
| 5 | Station 141+63 to Station 165+43 | 1.08 | 0.56 | 0.52 | Till and Outwash |
| 6 | Station 165+43 to Station 195+02 | 0.76 | 0.66** | 0.10 | Saturated Wetland |
| 7 | Station 195+02 to Station 214+30 | 0.87 | 0.50 | 0.37 | Outwash |

*Existing impervious area as shown by 1936 aerials

**Existing Forest and Wetland

Table 2. TDA Proposed Land Use

| TDA | TDA Location | Total Disturbed Surface Area (acre) | Proposed Impervious Area (acre) | Proposed Grass Area (acre) |
|-----|----------------------------------|-------------------------------------|---------------------------------|----------------------------|
| 1 | Station 100+00 to Station 111+28 | 0.50 | 0.25 | 0.25 |
| 2 | Station 111+28 to Station 119+80 | 0.39 | 0.195 | 0.195 |
| 3 | Station 119+80 to Station 131+10 | 0.52 | 0.26 | 0.26 |
| 4 | Station 131+10 to Station 141+63 | 0.43 | 0.215 | 0.215 |
| 5 | Station 141+63 to Station 165+43 | 1.08 | 0.54 | 0.54 |
| 6 | Station 165+43 to Station 195+02 | 0.76 | 0.645 | 0.115 |
| 7 | Station 195+02 to Station 214+30 | 0.87 | 0.435 | 0.435 |

Exceptions to Flow Control Facilities Requirement

An exception to the above-referenced flow control requirement applies to these TDAs. Flow control facility requirements are waived if the difference in the 100-year peak runoff flow rate between the developed site condition and the existing site condition does not exceed 0.15 cubic feet per second (cfs) using the 15-minute time step of the hydrologic model. Each TDA was modeled using the existing conditions and proposed conditions

presented in Tables 1 and 2. Permeable pavement was modeled as 50 percent impervious surface and 50 percent pervious surface for the TDAs in which it is used. TDA 6 goes through Wetlands A, G, and H, which are saturated forest, and the impervious surface of the elevated boardwalk trail will be placed on piles through the wetland to minimize wetland impact. The wetland, being saturated, functions as an impervious surface, so the boardwalk above Wetland A does not count as new impervious surface. Precipitation falling on the elevated boardwalk will sheet flow into Wetland A to maintain the current hydrology of the wetland. Therefore, these areas were excluded from the hydrology model evaluation. Also, the area of the proposed trail located adjacent to the existing stormwater pond from Station 168+02 to 169+67 will flow directly into that pond, and is not included in the target surface area requiring flow control for TDA 6. A separate hydrology model calculation was performed for this short segment (0.06 acres), and the total contributing area will add 0.06 cfs for 100-year peak flow, which is considered negligible for the existing stormwater pond.

MGSFlood is the hydrologic model used to evaluate whether or not the flow control facility requirement is waived or not. MGSFlood calculations show that by using permeable pavement as the flow control BMP, TDAs 2, 3, 4, 5, and 7 meet the exemption from flow control facility requirements. TDAs 1 and 6 will require flow control facilities to achieve the Level 1 flow control standard. Table 3 presents existing and developed 100-year peak flows for each TDA, as modeled by MGSFlood in Climate Region 14. Puget East 36 in MAP.

Table 3. TDA Flow Control Evaluation

| TDA | TDA Location | Existing 100-year peak flow (cfs) | Developed 100-year peak flow (cfs) | Difference in 100-year peak flow (cfs) | Flow Control Facility Exception |
|-----|----------------------------------|-----------------------------------|------------------------------------|--|---------------------------------|
| 1 | Station 100+00 to Station 111+28 | 0.08 | 0.30 | 0.22 | No |
| 2 | Station 111+28 to Station 119+80 | 0.30 | 0.20 | -0.10 | Yes |
| 3 | Station 119+80 to Station 131+10 | 0.53 | 0.27 | -0.26 | Yes |
| 4 | Station 131+10 to Station 141+63 | 0.20 | 0.22 | 0.02 | Yes |
| 5 | Station 141+63 to Station 165+43 | 0.59 | 0.58 | -0.01 | Yes |
| 6 | Station 165+43 to Station 195+02 | 0.12 | 0.69 | 0.57 | No |
| 7 | Station 195+02 to Station 214+30 | 0.38 | 0.44 | 0.06 | Yes |

Flow Control Facilities

TDAs 1 and 6 did not achieve the flow control facility exception because the difference in 100 year peak flow was greater than 0.15 cfs. The following flow control facilities are proposed to meet the Level 1 flow control requirement (match the developed 2- and 10-year peak flows to the existing 2- and 10-year peak flows): Infiltration Trench, Stormwater Pond A and Stormwater Pond B.

TDA 1 – Infiltration Trench

The trail surface in TDA 1 will infiltrate through the permeable pavement, but based on the flow control facility exception evaluation, a flow control facility is required for trail runoff in TDA 1. An underdrain will be installed in the trail shoulder to convey runoff not infiltrated by the permeable pavement. The underdrain will connect to the infiltration trench located in the trail shoulder from Station 103+56 to Station 100+56. The infiltration trench dimensions are provided below, and Table 4 summarizes how the trench meets the Level 1 flow control standard.

- Dimensions: 300 feet long x 3 feet wide x 2 feet deep
- Infiltration Rate: 1 inch per hour

Table 4. TDA 1 Flow Control Evaluation

| Peak Flow Rate | Existing Condition (cfs) | Developed Condition (cfs) |
|----------------|--------------------------|---------------------------|
| 2 year | 0.01 | 0.00 |
| 10-year | 0.02 | 0.00 |

TDA 6 – Stormwater Ponds A and B

As described in the previous section, within TDA 6 the boardwalk segments are not included as target surfaces requiring flow control. Also, the area of the proposed trail located adjacent to the existing stormwater pond from Station 168+02 to 169+67 will flow directly into that pond, and is not included in the target surface area requiring flow control for TDA 6.

To achieve the Level 1 flow control requirement, the design proposes two stormwater detention ponds: one for trail runoff from Station 171+50 to Station 174+65, and a second for trail runoff from Station 178+70 to Station 195+02. Contributing trail runoff to Stormwater Pond A will primarily sheet flow from the trail edge directly into the pond, and underdrains will be used in the trail shoulder for runoff that requires collection and conveyance. Contributing trail runoff to Stormwater Pond B will require conveyance, and the design proposes to use underdrains in the trail shoulder to convey trail runoff to Stormwater Pond B. Stormwater pond dimensions are provided below and Table 5 summarizes how the ponds help TDA 6 meet the Level 1 flow control standard.

- Stormwater Pond A (runoff from Station 171+50 to Station 174+65)
 - Bottom area: 400 square feet
 - Side Slopes: 3H:1V
 - Depth: 3 feet to top of riser, 4 feet to top of berm
 - Outlet structure – Orifice 1: 0.5-inch diameter, Orifice 2: 1.0-inch diameter at 1.0 feet above Orifice 1 elevation
- Stormwater Pond B (runoff from Station 178+70 to Station 195+02)
 - Bottom area: 800 square feet
 - Side Slopes: 3H:1V
 - Depth: 3 feet to top of riser, 4 feet to top of berm
 - Outlet structure – Orifice 1: 0.5-inch diameter, Orifice 2: 1.0-inch diameter at 0.25 feet above Orifice 1 elevation

Table 5. TDA 6 Flow Control Evaluation

| Peak Flow Rate | Existing Condition (cfs) | Developed Condition (cfs) |
|----------------|--------------------------|---------------------------|
| 2 year | 0.04 | 0.04 |
| 10-year | 0.07 | 0.06 |

MGSFlood calculations and detailed land use for TDA 6 are attached.

Core Requirement 4 –Conveyance System

No stormwater conveyance is necessary for the trail with the proposed flow control methodology; however, the project would have some effect on the conveyance of stormwater runoff from DMMD and South 200th Street. The hierarchical approach taken with stormwater conveyance is as follows:

- Where possible, the existing conveyance system will be used.
- If existing catch basins will be affected by the trail, the catch basins will be relocated to the new gutter line.
- If an enclosed drainage system does not exist and a curb will be added, the following will be provided:
 - In areas that appear to drain away from the roadway via side roads or existing conveyance systems, additional conveyance will not be added.
 - In areas where road flooding may occur, a conveyance system will be added.
 - In areas where the trail will fill a roadside ditch, a conveyance system will be added.
- If relocating existing underground utilities is not feasible, then an alternative design approach will be considered for roadway runoff. Utility conflicts were not evaluated in the preliminary design, but will be considered with alternative design approaches in the final design.

The preliminary design uses curbs and gutters to intercept roadway runoff before it travels across the trail. Using the above criteria, the design provides two new conveyance systems (TDA 1 - South 200th Street and TDA 7- DMMD), and other adjustments to the existing conveyance systems in DMMD in TDAs 4 and 5. The new conveyance system along DMMD in TDA 7 will replace the existing ditch and as much existing storm drain as possible to avoid having manhole lids in the trail path. The other adjustments proposed in TDAs 4 and 5 include catch basin/manhole adjustments and replacing solid lids with slip resistant covers where the manhole is in the trail to manhole lids. The preliminary design did not consider the possible need to relocating existing catch basins outside of proposed pedestrian ramp improvements at the intersection of DMMD and South 192nd Street. That would be evaluated in the final design, if necessary.

Core Requirement 8 – Water Quality

Per the City of SeaTac Water Quality Applications Map, Segment C is located within an enhanced basic water quality treatment area. Water quality treatment is required for any TDA within the project site that creates at least 5,000 square feet of new plus replaced pollution generating impervious surface (PGIS).

The proposed non-motorized trail is a non-PGIS surface, therefore, water quality treatment is not required. However, the trail will include replacing existing driveways for access to business parking lots. The driveways will not add greater than 5,000 square feet of PGIS in any TDA, therefore, no water quality is required for this project.

The project will include vacating the existing PGIS roadway of S 196th Street and 18th Avenue S, and replacing it with the non-PGIS trail surface. This will remove existing PGIS from TDAs 2 and 3.

Core Requirement 9 – Flow Control BMPs

All projects are required to implement flow control BMPs by either (1) application of BMPs to maximum extent feasible using lists specific to the project location, size, and impervious coverage; or (2) using a continuous runoff model to demonstrate compliance with the Low Impact Development (LID) Performance Standard.

Demonstrating compliance with the LID Performance Standard using modeling is the required method for projects located outside the Urban Growth Area (UGA) boundary that are on sites 5 acres or larger in size, and is an optional method for all other projects. Segment C is a regional trail and will apply the flow control BMPs requirements for roadway projects within the Urban Growth Area, according to Section 1.2.9.3.2 of the 2016 KCSWDM. The following list provides a brief description of the feasibility of each BMP on the list as it pertains to this project.

1. Full dispersion was evaluated for runoff in all seven TDAs, however, the trail is primarily located adjacent to roadway that already has stormwater conveyance system (TDAs 5) or roadside conveyance ditch (TDAs 2, 3, 4, and 7) conveying runoff to the TDA discharge location. TDA 6 is primarily located within or immediately adjacent to a wetland, where there is not space for full dispersion. Finally, TDA 1 is located immediately adjacent to Port of Seattle property, and there is not enough project right-of-way to provide 100 lineal feet of vegetated flow path, nor are the adjacent vegetated areas sloped at 15% or less.
2. The project evaluated the feasibility of implementing the following four BMPs: full infiltration, limited infiltration, bioretention, and permeable pavements. The project area soils, with the exception of sections in TDA 6 that go through wetland, are mapped as outwash soils. At this time no geotechnical information is available, however, the project evaluated infiltration BMPs as possible options to mitigate the impervious trail surface. Although no geotechnical information is available for the project area soils outside of Wetland A, an infiltration rate of 1 inch per hour was used for the preliminary design because the project area is mapped as outwash soils. Full infiltration and limited infiltration BMPs may be feasible if they were installed in the gravel shoulder, but at this time the design is proposing to use permeable pavement as the flow control BMP for the trail surface. The trail will be made of porous HMA and will satisfy the minimum design requirements in Section C.2.7.1 of the 2016 KCSWDM. Hydrologic model calculations are not required for design of permeable pavement BMPs, and therefore, were not performed using MGSFlood.
3. Permeable pavement was selected to be used as the flow control BMP for the trail surface in all TDAs except in TDA 6; therefore, basic dispersion was evaluated to be applied for areas where permeable pavement is not proposed. TDA 6 is primarily located within or immediately adjacent to a wetland, and due to site constraints of topography, proximity to wetland areas and adjacent properties, basic dispersion is not feasible in areas where the trail will not be a boardwalk because there is not 10 feet of vegetated flow path before reaching private property or wetland at 15% slope or less.
4. The soil moisture holding capacity of new pervious surfaces must be protected in accordance with KCC 16.82.100 (F) and (G). KCC 16.82.100(F) requires that the duff layer or native topsoil be retained to the maximum extent practicable. KCC 16.82.100(G) requires soil amendment to mitigate for lost moisture holding capacity where compaction or removal of some or all of the duff layer or underlying topsoil has occurred. For this project, the pervious side slopes will meet the topsoil requirements of KCC 16.82.100 (F) and (G), such that the replaced topsoil will be a minimum of 8 inches thick, unless in the final design phase the landscape architect can demonstrate that a different thickness will provide conditions equivalent to the soil moisture holding capacity native to the site. The specification for compost for soil amendment would follow what is provided in Reference 11-C of the 2016 KCSWDM. The amendment soil construction would take place between May 1 and October 1.

CONCLUSION

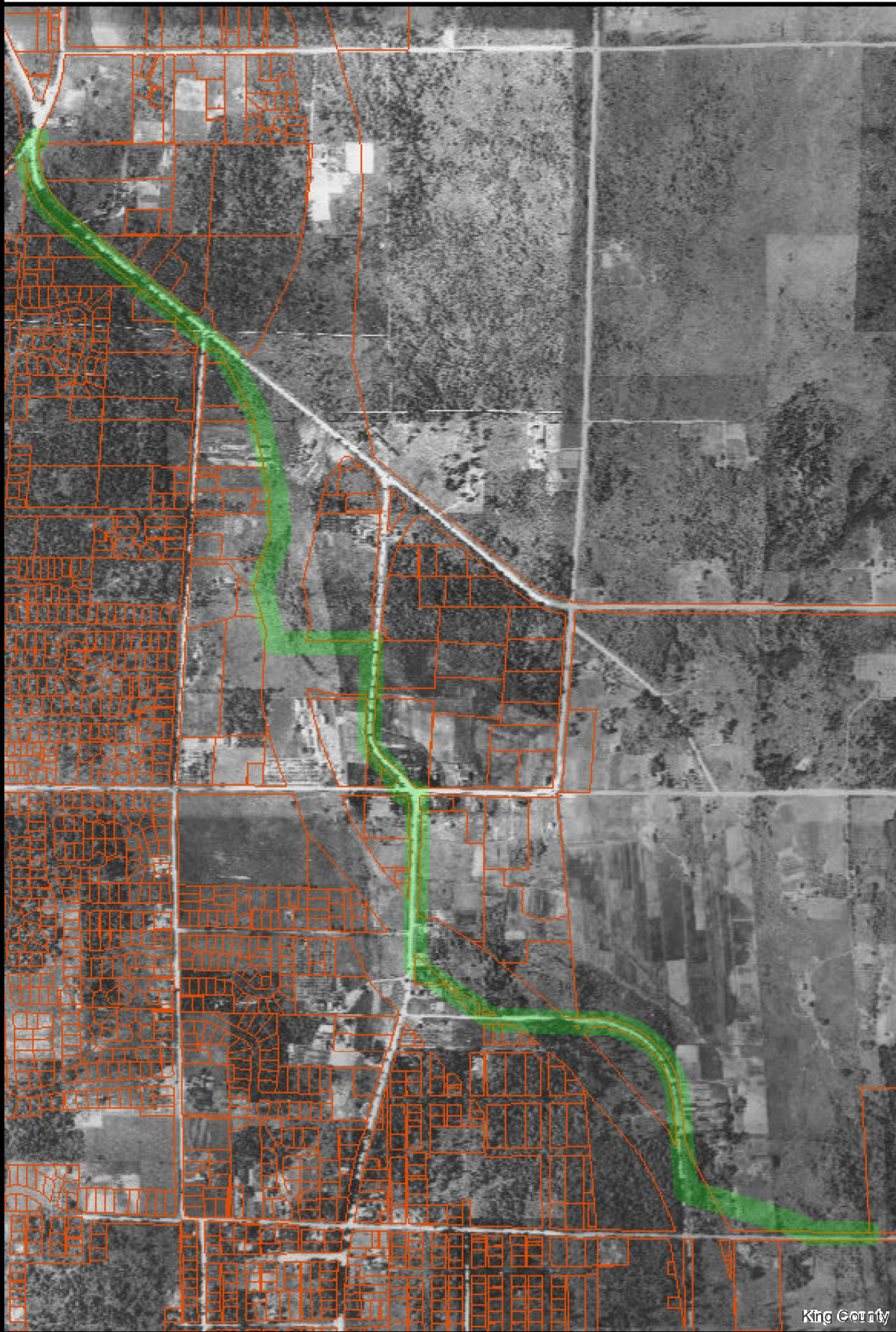
Segment C of the Lake to Sound Trail proposes to use permeable pavement as the flow control BMP to infiltrate trail surface water. TDAs 2, 3, 4, 5, and 7 meet the exemption from flow control facility requirements because the change from the existing land cover to the proposed land cover does not increase the 100-year peak flow of equal to or more than 0.15 cfs, as calculated by MGSFlood using the 15-minute time step. An infiltration trench is proposed in TDA 1 and Stormwater Ponds A and B are proposed in TDA 6 to meet the Level 1 flow control requirement the those two TDAs. The trail is also exempt from water quality treatment because the trail surface is a non-PGIS and the driveway improvements in each TDA do not exceed 5,000 square feet of replaced PGIS.

Once the Cities of SeaTac and Burien and WSDOT review and concur with the drainage analysis, final drainage plans and the Technical Information Report will be drafted.

Attachment A
Maps



Lake to Sound Trail Segment C - 1936 Aerial



Legend

 Parcels

King County

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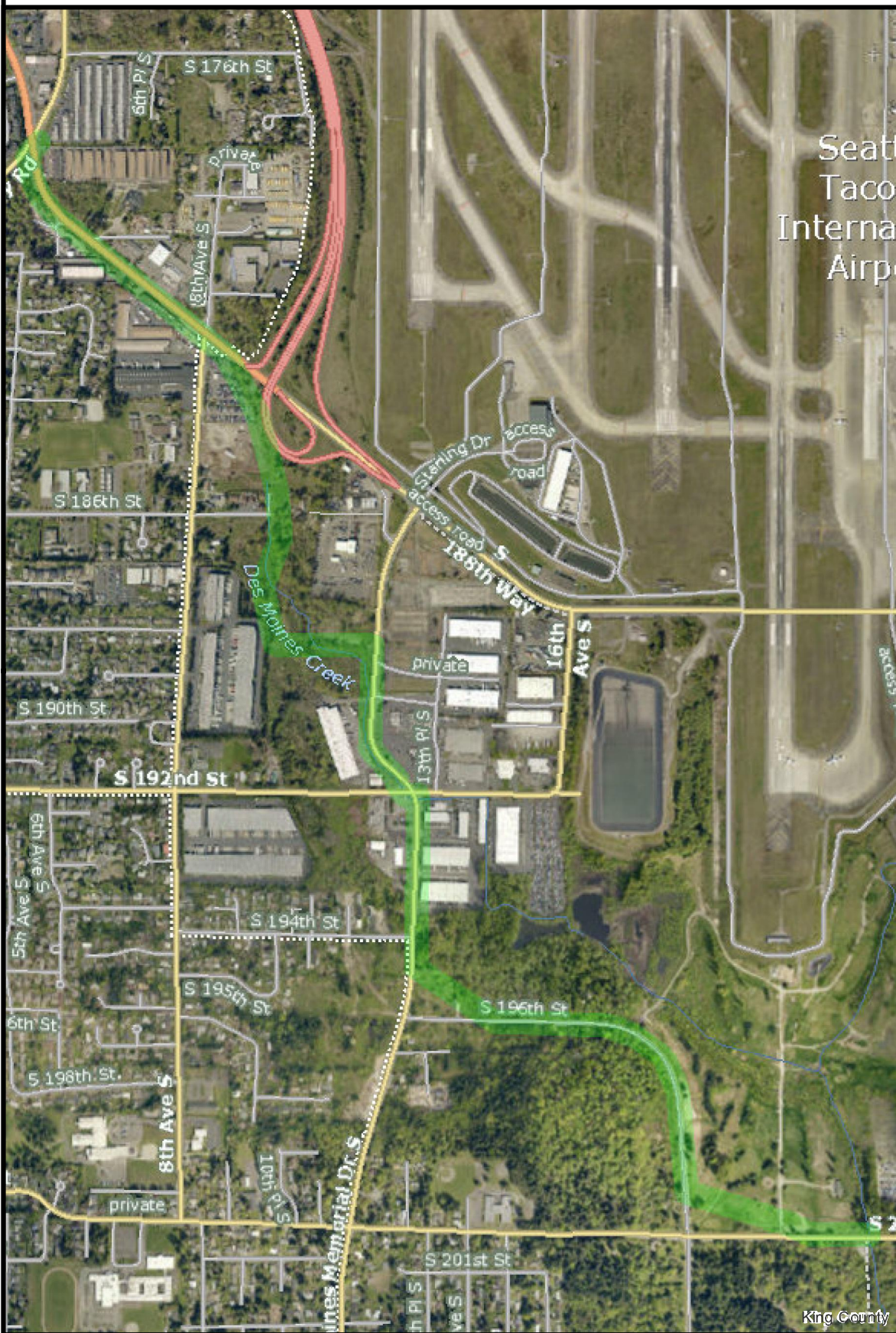
Date: 11/29/2016

Notes: King County iMap



 **King County**
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Lake to Sound Trail Segment C - 2015 Aerial



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Date: 11/29/2016

Notes: King County iMap



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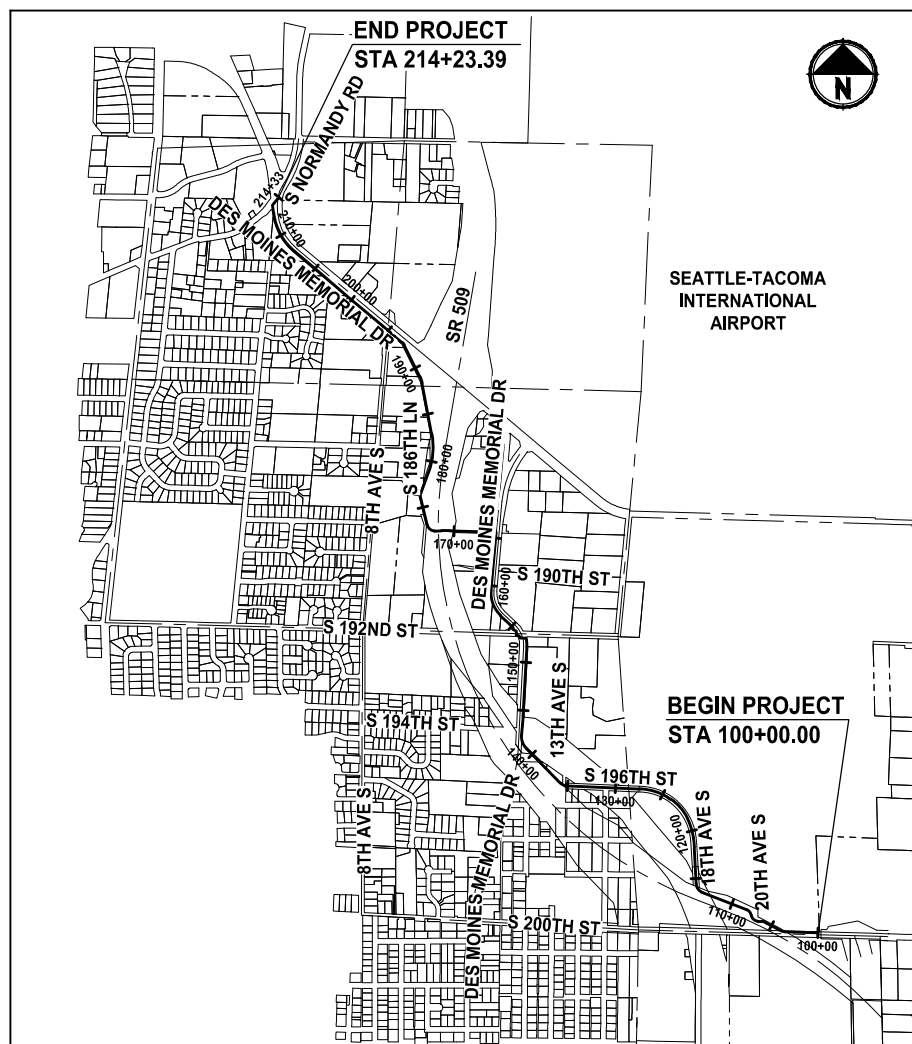
Attachment B
30 Percent Plans



LAKE TO SOUND TRAIL SEGMENT C

FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION
KING COUNTY, WASHINGTON
CONTRACT NO. X / FEDERAL AID# X

| INDEX TO DRAWINGS | | |
|---------------------------------|----------|--------------------------|
| DWG NO. | SHT NO. | SHEET TITLE |
| GENERAL | | |
| 1 | G1 | COVER SHEET |
| 2 | G2 | ABBREVIATIONS AND LEGEND |
| 3 | G3 | SHEET INDEX |
| TYPICAL CROSS SECTIONS | | |
| 4-6 | CS1-CS3 | TYPICAL CROSS SECTIONS |
| TRAIL PLAN & PROFILE | | |
| 7-33 | AL1-AL27 | PLAN AND PROFILE |



VICINITY MAP
NOT TO SCALE

UTILITY CONTACT INFORMATION:

PUGET SOUND ENERGY
(POWER AND GAS)
X
10885 NE 4TH STREET
BELLEVUE, WA 98004
PHONE: X
EMAIL: X

KING COUNTY METRO TRANSIT
DAVID KORTHALS
201 S. JACKSON ST, KSC-TR-0413
SEATTLE, WA 98104
PHONE: (206) 263-0475
EMAIL: David.Korthals@kingcounty.gov

MIDWAY SEWER DISTRICT
BROCK POWELL
3030 S 240TH ST
KENT, WA 98032
PHONE: (206) 824-4960 / (206) 484-1475
EMAIL: brock@midwaysewer.org

LAYOUT: G1
 PATH: U:\PSC\Projects\Clients\1521-KingCo\554-1521-151_L2ST-SegC\985\cs\cadd\Phase_2C\Task_21200C\DWG\
 PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:35:40 PM

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE.
IF NOT, SCALE ACCORDINGLY

FILE NAME
PS1521151P2CT2T2G-01
JOB No.
554-1521-151 P2C T2T200C
DATE
DECEMBER 2016

PRELIMINARY

Parametrix
ENGINEERING · PLANNING · ENVIRONMENTAL SCIENCES

719 2ND AVENUE, SUITE 200 | SEATTLE, WA 98104
P 206.394.3700
WWW.PARAMETRIX.COM

PROJECT NAME
**LAKE TO SOUND TRAIL
SEGMENT C**

FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

COVER SHEET

SHEET NO.
1 OF 33

G1

30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

LAYOUT: G2 PATH: U:\PSO\Projects\Clients\1521-151\151-L2ST-SegC\995\CA\ADD\Phase 2C\Task 21200C\DWG\ PLOTTED BY: purgbut DATE: Wednesday, December 07, 2016 3:36:00 PM

LEGEND

| DESCRIPTION | PROPOSED | EXISTING |
|------------------------------|----------|----------|
| RIGHT OF WAY | | |
| PROPERTY LINE | | |
| FOUND MONUMENTS | | |
| REBAR & CAP | | |
| HUB & TACK | | |
| PK NAIL | | |
| FOUND MAG NAIL | | |
| SET MAG NAIL | | |
| PROPERTY CORNER | | |
| STREAM | | |
| EDGE OF WATER | | |
| WETLAND FLAG | | |
| ORDINARY HIGH WATER MARK | | |
| DITCH | | |
| STORM DRAIN | | |
| CULVERT/STORM DRAIN PIPE | | |
| UNDERDRAIN PIPE | | |
| INFILTRATION TRENCH | | |
| CATCH BASIN, TYPE 1 | | |
| CATCH BASIN, TYPE 2 | | |
| CATCH BASIN W/ SOLID LID | | |
| SANITARY SEWER LINE | | |
| SANITARY SEWER MANHOLE | | |
| SANITARY SEWER VAULT | | |
| CLEANOUT | | |
| CONTOURS MAJOR | | |
| CONTOURS MINOR | | |
| CLEARING AND GRUBBING LIMITS | | |
| FILL LINE | | |
| CUT LINE | | |
| ASPHALT EDGE | | |
| CONCRETE LINE | | |
| CURB AND GUTTER | | |
| EDGE OF PATCH | | |
| EDGEWIRE GRADUAL | | |
| SPLIT RAIL FENCE | | |
| BOARD FENCE | | |
| CHAIN LINK FENCE | | |
| HOG WIRE FENCE | | |
| WOOD GUARDRAIL | | |
| GUY ANCHOR | | |
| POWER POLE WITH LIGHT | | |
| FLOOD LIGHT | | |
| UTILITY POLE | | |
| PP W/ UG DROP | | |
| PP W/ UG DROP & XMFR | | |

LEGEND

| DESCRIPTION | PROPOSED | EXISTING |
|-----------------------------|----------|----------|
| OVERHEAD POWER | | |
| POWER | | |
| POWER VAULT | | |
| POWER TRANSFORMER | | |
| POWER MANHOLE | | |
| POWER HANDHOLE | | |
| POWER CABINET | | |
| POWER RISER | | |
| POWER METER | | |
| SOLID LID J-BOX | | |
| LUMINAIRE | | |
| TELEPHONE VAULT | | |
| TELEPHONE RISER | | |
| TELEPHONE MANHOLE | | |
| TELEPHONE | | |
| TV RISER | | |
| TV | | |
| GAS VALVE | | |
| GAS METER | | |
| GAS | | |
| WATER LINE | | |
| FIRE HYDRANT | | |
| WATER METER | | |
| WATER VALVE | | |
| AREA DRAIN | | |
| ROOF DRAIN | | |
| WATER BLOW OFF VALVE | | |
| WATER POST INDICATOR | | |
| SPRINKLER HEAD ROT=90 | | |
| IRRIGATION CONTROL VALVE | | |
| TRAFFIC SIGNAL POLE W/ LAMP | | |
| TRAFFIC SIGNAL POLE | | |
| TRAFFIC CONTROL LOOP (SQ) | | |
| TRAFFIC CONTROL CABINET | | |
| PEDESTRIAN POLE | | |
| MONITORING WELL | | |
| SURFACE POST | | |
| SIGN | | |
| SKIP LANE LINE | | |
| SOLID LANE LINE | | |
| FOG LINE | | |
| LTO ARROW | | |
| STO ARROW | | |
| RTO ARROW | | |
| MAILBOX | | |
| DECIDUOUS TREE | | |

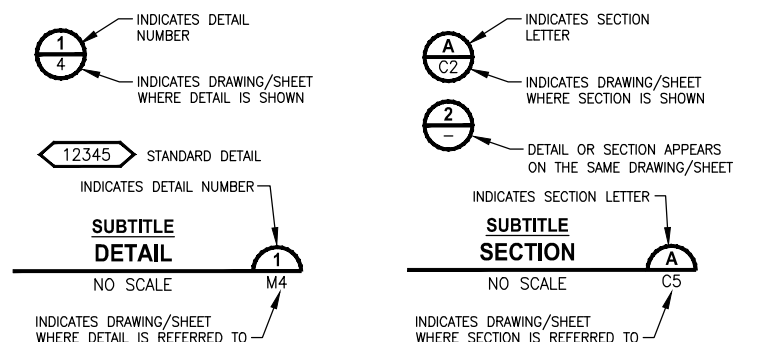
LEGEND

| DESCRIPTION | PROPOSED | EXISTING |
|-------------------------|----------|----------|
| CONIFEROUS TREE | | |
| WETLAND SYMBOL | | |
| WETLAND BOUNDARY | | |
| VEGETATION | | |
| STRUCTURAL EARTH WALL | | |
| RIP RAP | | |
| ROCKERY | | |
| HANDICAPPED SYMBOL | | |
| WHEELCHAIR RAMP | | |
| BUILDING LINE | | |
| CONSTRUCTION CENTERLINE | | |

ABBREVIATIONS:

| | | | |
|-----------|--------------------------------|------------|---|
| ACP | ASPHALT CONCRETE PAVEMENT | N | NORTH, NORTHING |
| BOC | BACK OF CURB | N.I.C. | NOT IN CONTRACT |
| BOW | BOTTOM OF WALL | NST | NOT STEEPER THAN |
| BVCE | BEGIN VERTICAL CURVE ELEVATION | PC | POINT OF CURVE |
| BVCS | BEGIN VERTICAL CURVE STATION | PT | POINT OF TANGENT |
| CB | CATCH BASIN | P/L | PROPERTY LINE |
| C&G | CURB AND GUTTER | PUD | PUBLIC UTILITY DISTRICT |
| C/L | CENTERLINE | PVI | POINT OF VERTICAL INTERSECTION |
| CONC | CONCRETE | REINF | REINFORCED |
| CONST | CONSTRUCTION | ROW or R/W | RIGHT-OF-WAY |
| CMP | CORRUGATED METAL PIPE | SD | STORM DRAIN |
| CP | CONCRETE PIPE | SDMH | STORMWATER MANHOLE |
| CSTC | CRUSHED SURFACING TOP COURSE | SIM | SIMILAR |
| DIA | DIAMETER | SS | SANITARY SEWER |
| DI, DIP | DUCTILE IRON PIPE | ST | STEEL |
| E | EAST, EASTING | STA | STATION |
| EOA | EDGE OF ASPHALT | TEL | TELEPHONE |
| EVCE | END VERTICAL CURB ELEVATION | TESC | TEMPORARY EROSION AND SEDIMENT CONTROL |
| EVCS | END VERTICAL CURB STATION | TOW | TOP OF WALL |
| EOG | EDGE OF GRAVEL | TYP | TYPICAL |
| EOP | EDGE OF PAVEMENT | W | WATER |
| EX, EXIST | EXISTING | WS | WATER SERVICE |
| FOC | FACE OF CURB | WSDOT | WASHINGTON STATE DEPARTMENT OF TRANSPORTATION |
| FL | FLANGE, FLOWLINE | WWM | WELDED WIRE MESH |
| G | GAS | | |
| GB | GRADE BREAK | | |
| HMA | HOT MIX ASPHALT | | |
| IE | INVERT ELEVATION | | |
| LF | LINEAR FEET | | |
| LP | LOW POINT | | |
| LT | LEFT | | |
| ME | MATCH EXISTING | | |
| MIN | MINIMUM | | |
| MON | MONUMENT | | |

DETAIL AND SECTION DESIGNATION



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FILE NAME: PS1521151P2CT2T2G-02
JOB No: 554-1521-151 P2C T2T200C
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PROJECT NAME
**LAKE TO SOUND TRAIL
SEGMENT C**

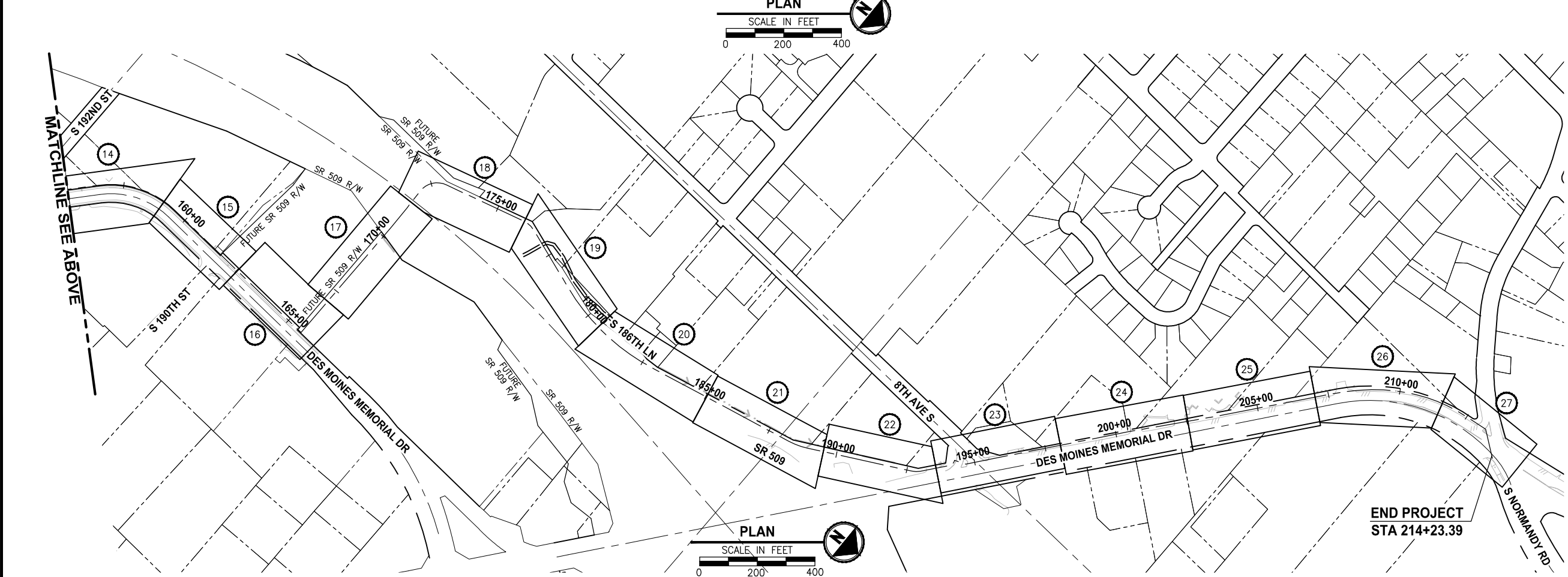
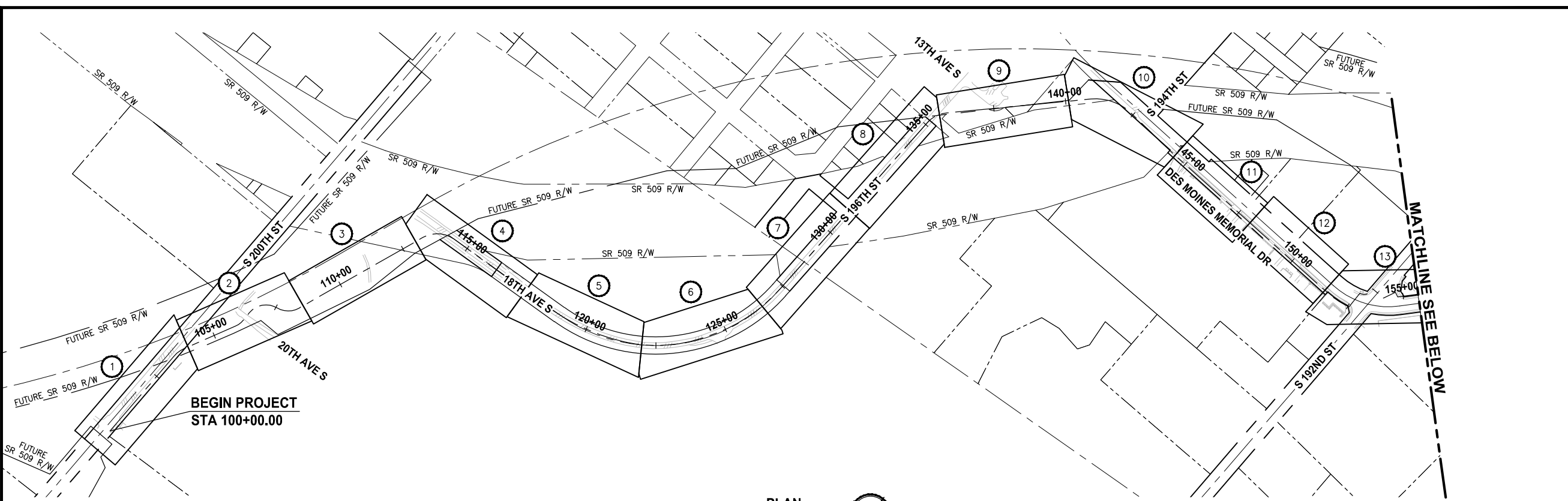
FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

ABBREVIATIONS AND LEGEND

SHEET NO.
2 OF 33

G2

PATH: U:\PSO\Projects\Clients\1521-151\L2ST-SegC\995\ca\CADD\Phase 2C\Task 21200C\DWG_ PLOTTED BY: purganb DATE: Wednesday, December 07, 2016 3:36:38 PM
 LAYOUT: G3



SHEET INDEX TABLE

| (X) | PLAN AND PROFILE |
|-----|------------------|
| 1 | AL1 |
| 2 | AL2 |
| 3 | AL3 |
| 4 | AL4 |
| 5 | AL5 |
| 6 | AL6 |
| 7 | AL7 |
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| 26 | AL26 |
| 27 | AL27 |

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 JOB No.: 554-1521-151 P2C T2T200C
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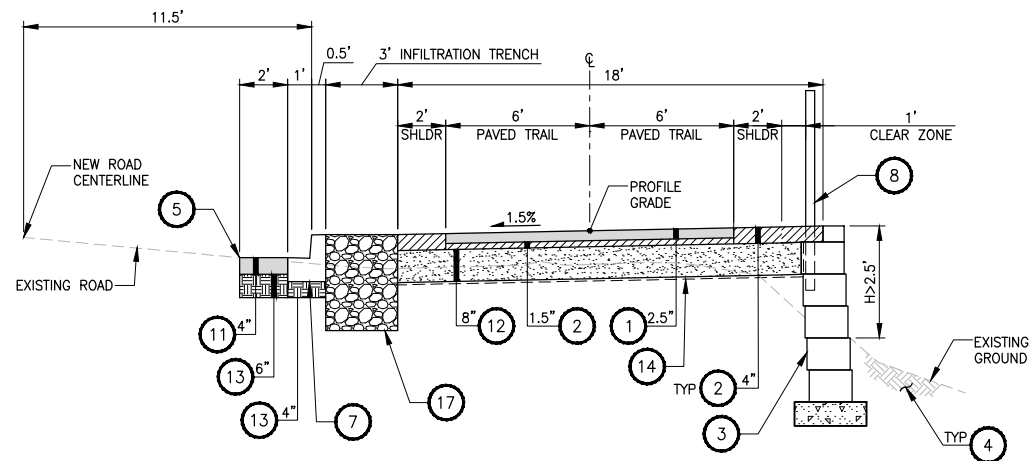
PROJECT NAME
LAKE TO SOUND TRAIL SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION

SHEET INDEX

SHEET NO.
 3 OF 33
G3

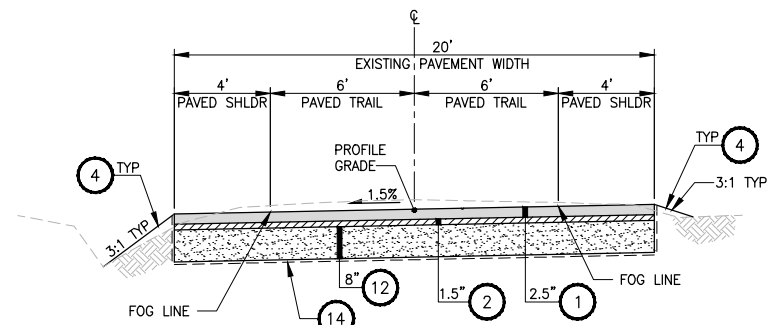
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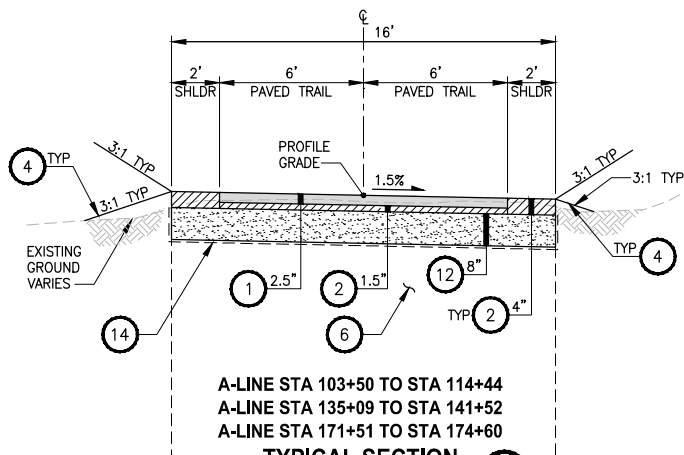
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 TYPICAL SECTION A**

HORIZ: 1"=4'
 VERT: 1"=2'



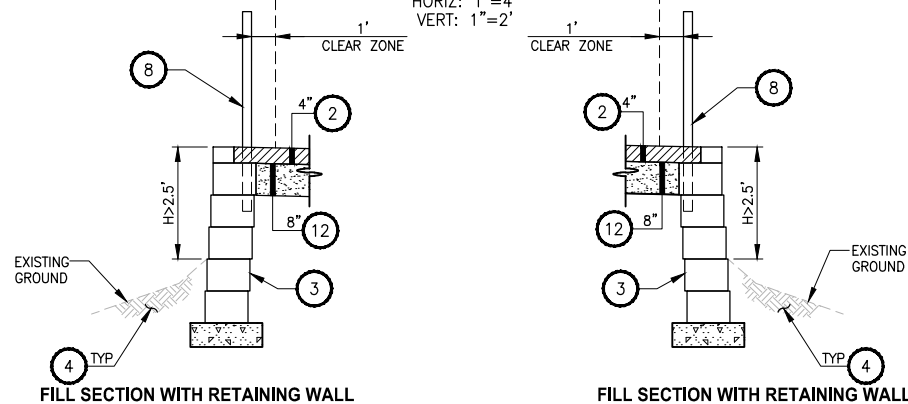
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 TYPICAL SECTION C**

HORIZ: 1"=4'
 VERT: 1"=2'



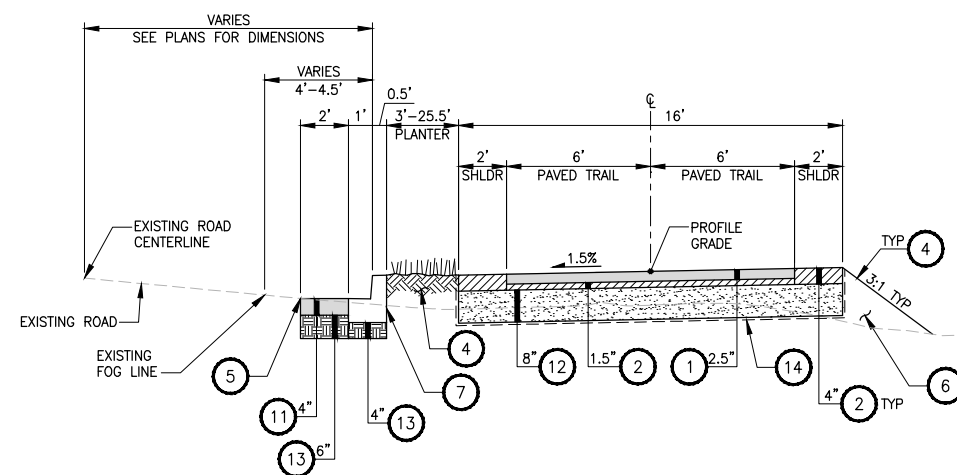
**A-LINE STA 103+50 TO STA 114+44
 A-LINE STA 135+09 TO STA 141+52
 A-LINE STA 171+51 TO STA 174+60
 TYPICAL SECTION B**

HORIZ: 1"=4'
 VERT: 1"=2'



FILL SECTION WITH RETAINING WALL

FILL SECTION WITH RETAINING WALL



**A-LINE STA 141+52 TO STA 144+27
 A-LINE STA 151+61 TO STA 152+41
 TYPICAL SECTION D**

HORIZ: 1"=4'
 VERT: 1"=2'

CONSTRUCTION NOTES:

- 1 POROUS HMA CL 1/2 IN. PG 70-22.
- 2 1/2 IN. HMA AGGREGATE (MODIFIED).
- 3 RETAINING WALL, SEE AL PLANS FOR LOCATIONS. SEE X SHEETS FOR WALL PROFILES. SEE SHEET X FOR DETAILS.
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- 9 ELEVATED STRUCTURE.
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- 11 HMA CL 1/2 IN. PG 64-22.
- 12 PERMEABLE BALLAST.
- 13 CRUSHED SURFACING TOP COURSE.
- 14 CONSTRUCTION GEOTEXTILE FOR SEPARATION MODERATE SURVIVABILITY (SIDE & BOTTOM).
- 15 GRIND AND OVERLAY WITH HMA.
- 16 HMA CL 3/8" PG 64-22.
- 17 INFILTRATION TRENCH.

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FILE NAME: PS1521151P2CT2T2CS-01
 JOB No.: 554-1521-151 P2C T2T200C
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 SEGMENT C**

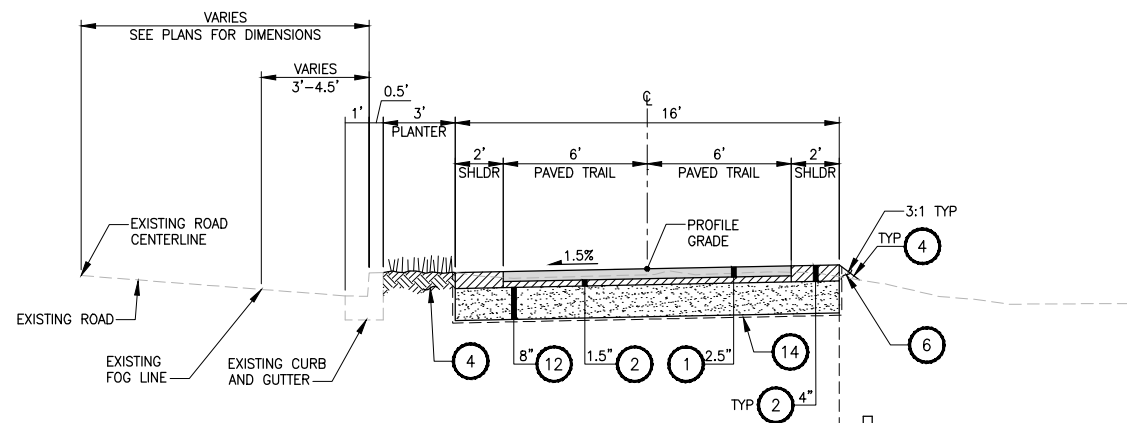
FROM S 200TH ST TO S NORMANDY ROAD /
 DES MOINES MEMORIAL DRIVE INTERSECTION

TYPICAL CROSS SECTIONS

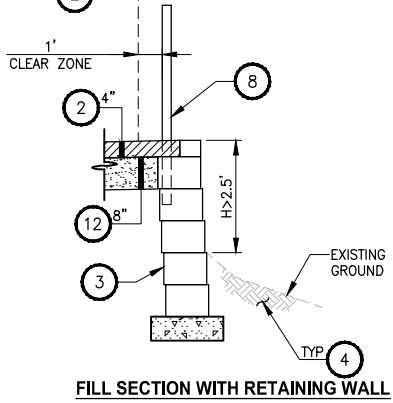
SHEET NO.
 4 OF 33

CS1

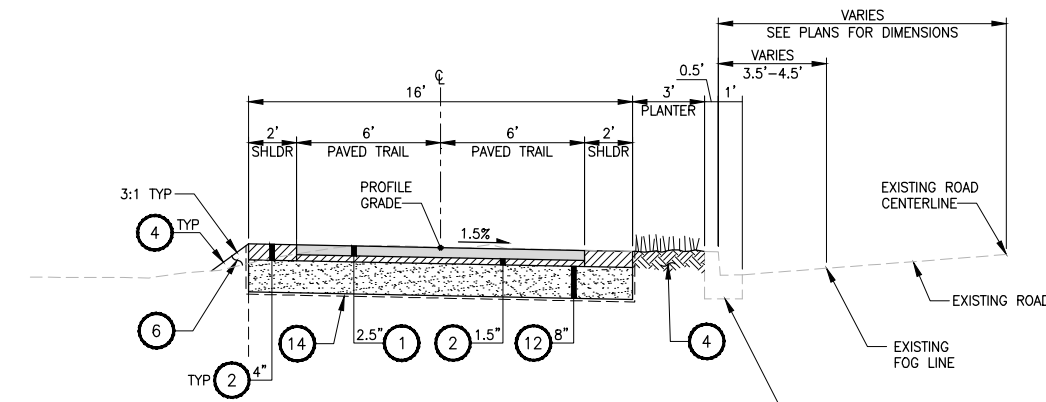
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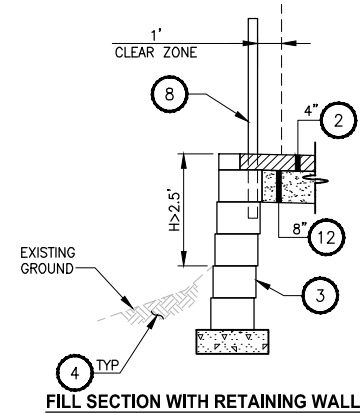
A-LINE STA 144+27 TO STA 151+61
TYPICAL SECTION E
 HORIZ: 1"=4'
 VERT: 1"=2'



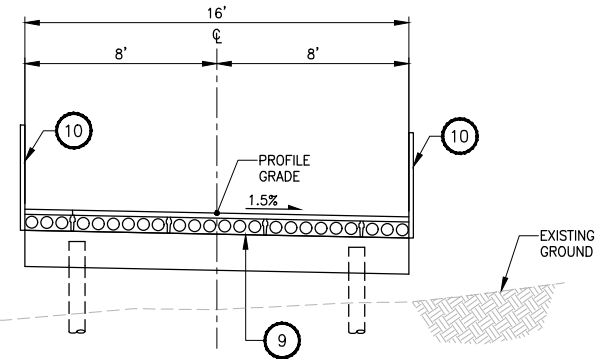
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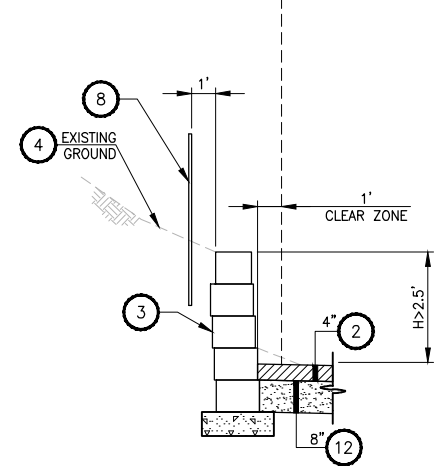
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TYPICAL SECTION F
 HORIZ: 1"=4'
 VERT: 1"=2'



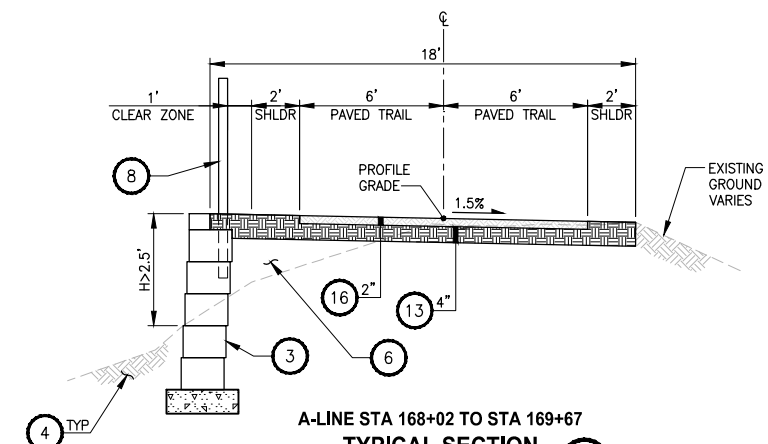
FILL SECTION WITH RETAINING WALL



A-LINE STA 166+15 TO STA 168+02
A-LINE STA 169+67 TO STA 171+51
A-LINE STA 174+60 TO STA 178+70
TYPICAL SECTION G
 HORIZ: 1"=4'
 VERT: 1"=2'



CUT SECTION WITH RETAINING WALL



A-LINE STA 168+02 TO STA 169+67
TYPICAL SECTION H
 HORIZ: 1"=4'
 VERT: 1"=2'

CONSTRUCTION NOTES:

- 1 POROUS HMA CL 1/2 IN. PG 70-22.
- 2 1/2 IN. HMA AGGREGATE (MODIFIED).
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- 17 INFILTRATION TRENCH.

PRELIMINARY

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 JOB No: 554-1521-151 P2C T2T200C
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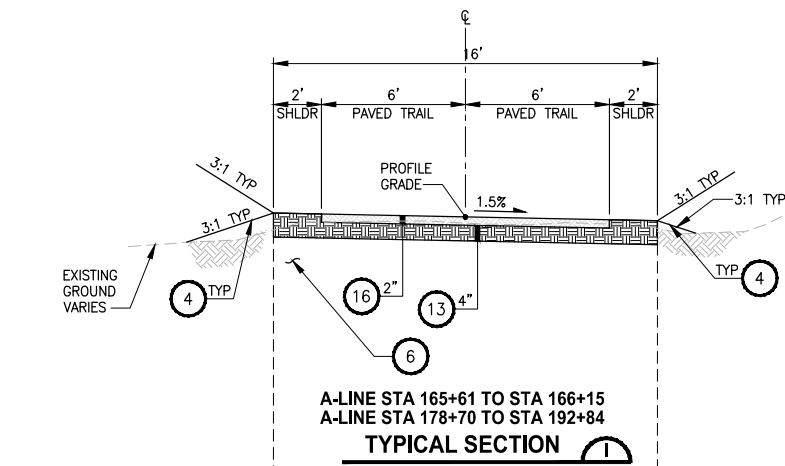
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LAKE TO SOUND TRAIL SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION

TYPICAL CROSS SECTIONS

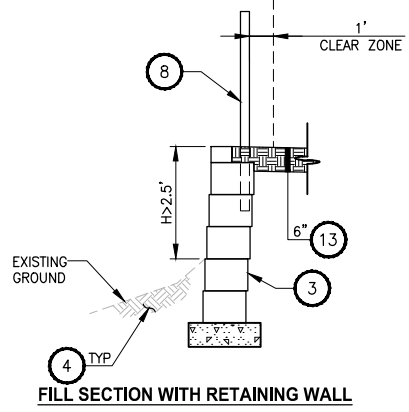
SHEET NO.
 5 OF 33
CS2

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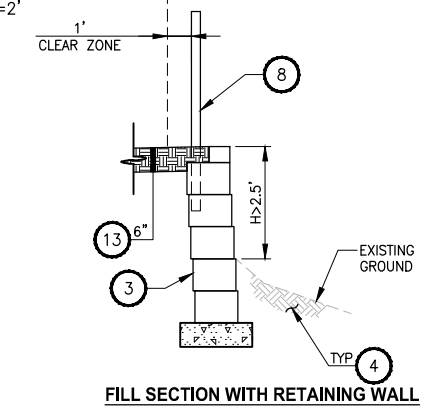
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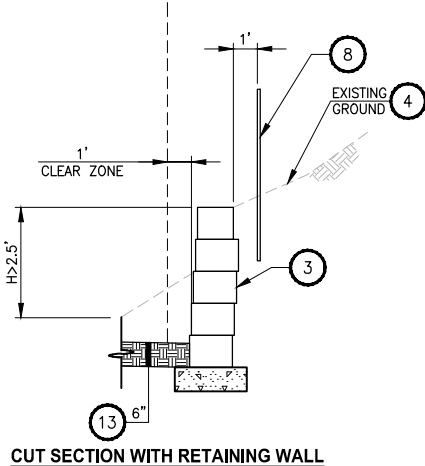
A-LINE STA 165+61 TO STA 166+15
A-LINE STA 178+70 TO STA 192+84
TYPICAL SECTION I
 HORIZ: 1"=4'
 VERT: 1"=2'



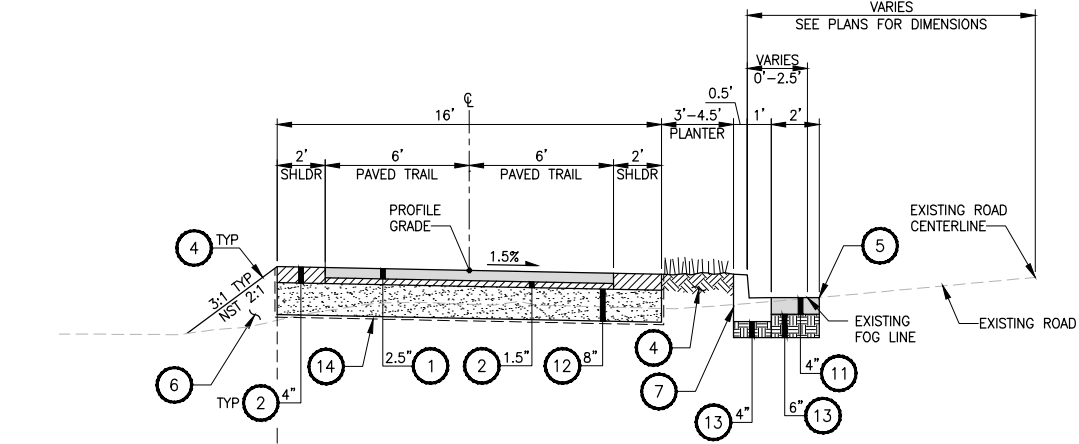
FILL SECTION WITH RETAINING WALL I



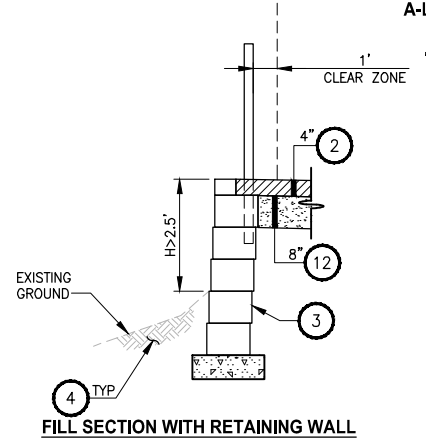
FILL SECTION WITH RETAINING WALL II



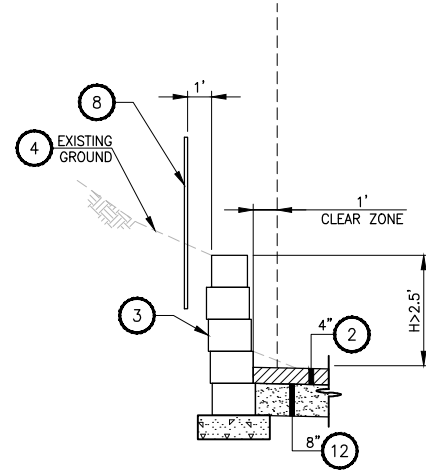
CUT SECTION WITH RETAINING WALL I



A-LINE STA 192+84 TO STA 213+00
TYPICAL SECTION J
 HORIZ: 1"=4'
 VERT: 1"=2'



FILL SECTION WITH RETAINING WALL III



CUT SECTION WITH RETAINING WALL II

CONSTRUCTION NOTES:

- 1 POROUS HMA CL 1/2 IN. PG 70-22.
- 2 1/2 IN. HMA AGGREGATE (MODIFIED).
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 FILE NAME: PS1521151P2CT2T2CS-01
 JOB No.: 554-1521-151 P2C T2T200C
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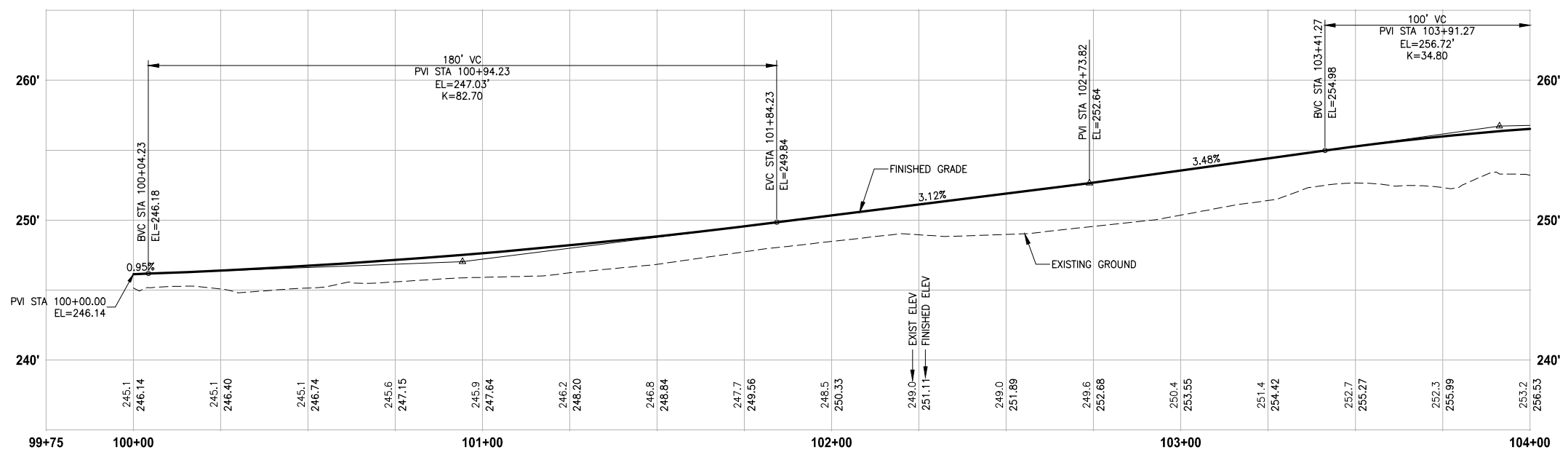
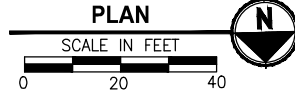
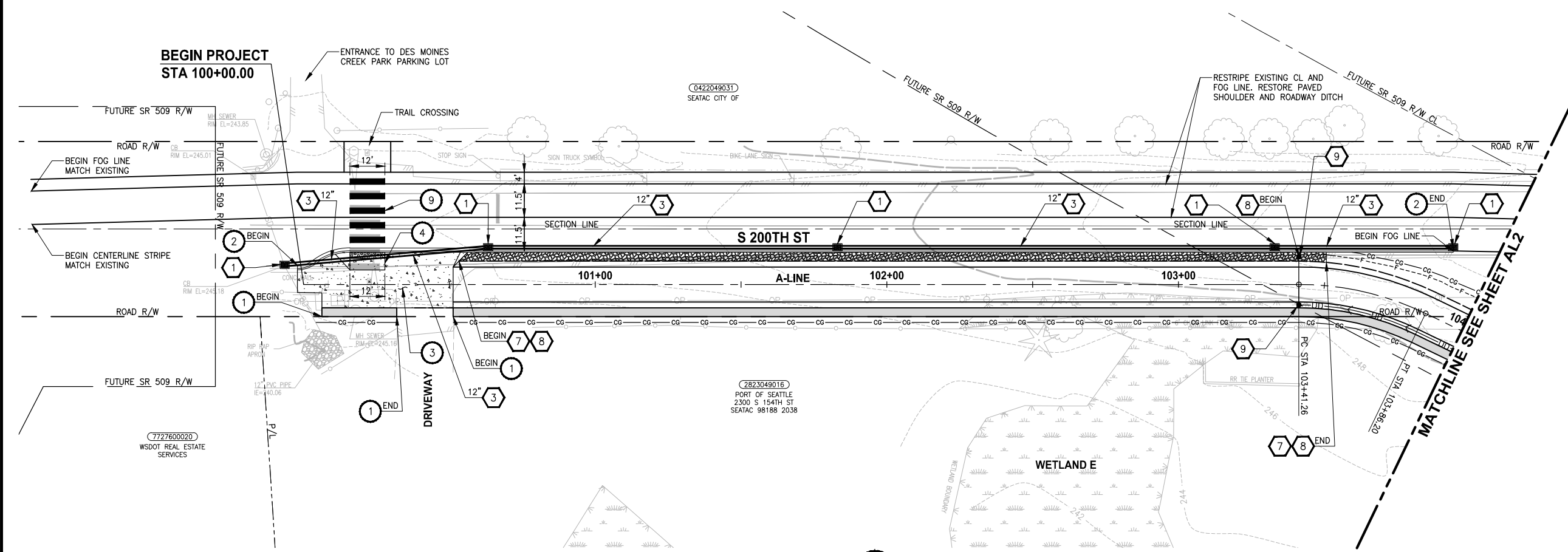
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PROJECT NAME
LAKE TO SOUND TRAIL SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION

TYPICAL CROSS SECTIONS

SHEET NO.
 6 OF 33
CS3

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CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
2. STORMWATER CONVEYANCE SYSTEMS DEPICTED IN THE DRAFT 30 PERCENT PLANS ARE FOR PRELIMINARY DESIGN PURPOSES. STORMWATER CONVEYANCE SYSTEM DESIGN MAY CHANGE DURING FINAL DESIGN IF CONFLICTS WITH EXISTING UTILITIES.
3. PERMEABLE PAVEMENT (POROUS HMA) IS PROPOSED FOR THE PROPOSED TRAIL SURFACE FOR ALL AREAS WHERE INFILTRATION IS LIKELY TO BE FEASIBLE. FURTHER GEOTECHNICAL INVESTIGATION IS REQUIRED TO CONFIRM WHETHER OR NOT THE UNDERLYING SOILS HAVE SUITABLE INFILTRATION RATES TO SUPPORT POROUS HMA. FOR THE DRAFT 30 PERCENT DESIGN PLANS, AREAS ADJACENT TO WETLANDS A, G AND H ARE PROPOSED TO USE CONVENTIONAL HMA UNTIL FURTHER GEOTECHNICAL INVESTIGATION IS PERFORMED TO CONFIRM IF UNDERLYING SOIL TYPES AND GROUNDWATER ELEVATIONS ARE SUITABLE TO INSTALL PERMEABLE PAVEMENT.



30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME: PS1521151P2C12T2AL-01
 JOB No: 584-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

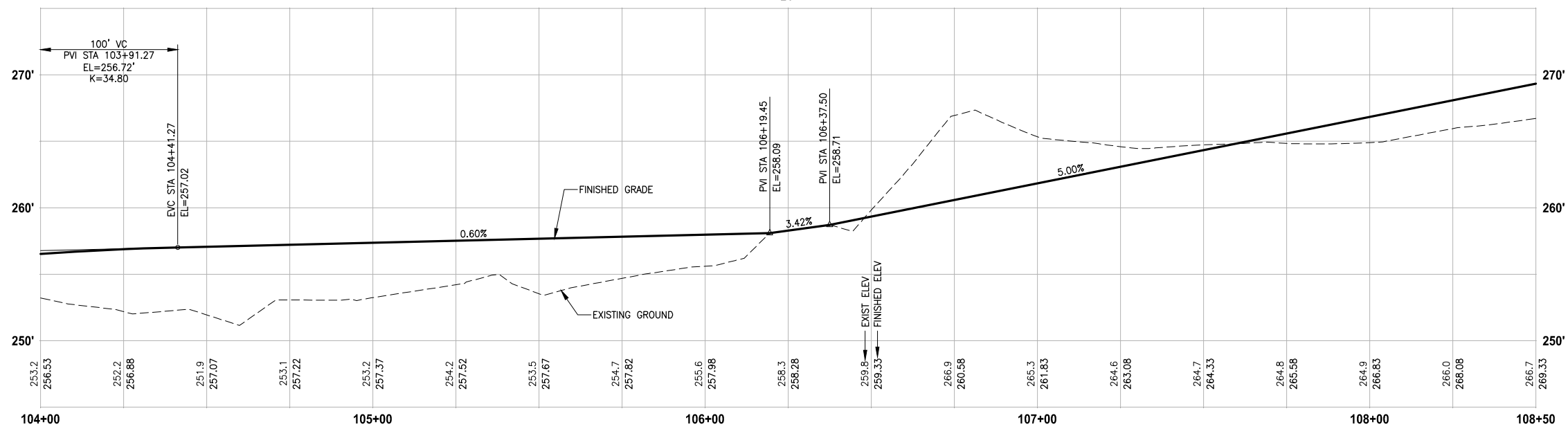
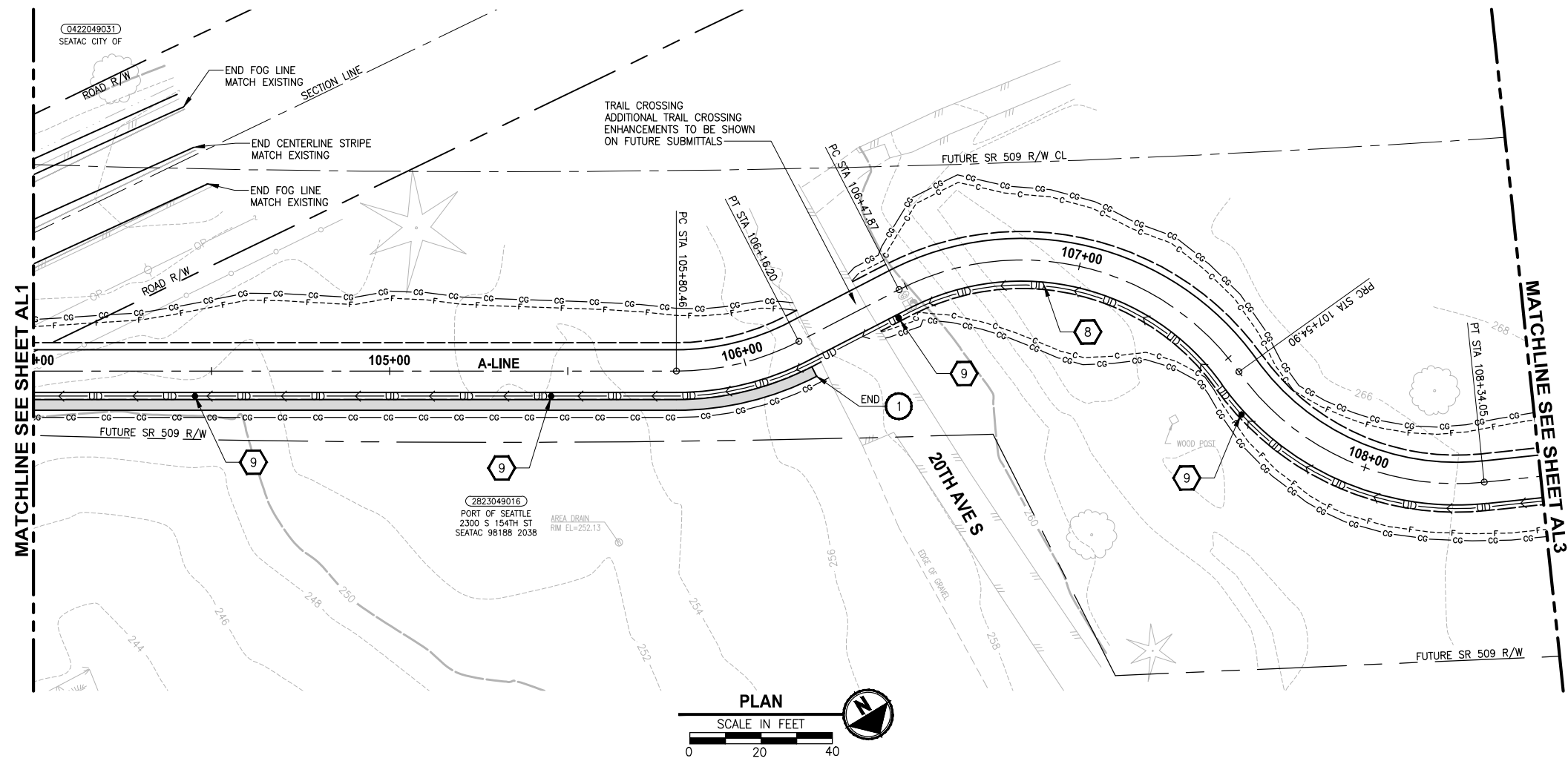
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PROJECT NAME
LAKE TO SOUND TRAIL SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 7 OF 33
AL1

PATH: U:\PSO\Projects\Clients\1521-KingCo\554-1521-151 L2S1-Seq\985Sec\ACADD\Phase 2C\Task 21200C.DWG PLOTTED BY: purganbut DATE: Wednesday, December 07, 2016 3:38:43 PM LAYOUT: AL2



PROFILE

HORIZ: 1"=20'
VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
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LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
FILE NAME: PSI1521151P2CT2T2AL-01
JOB No.: 554-1521-151 P2C T2T200C
DATE: DECEMBER 2016

PRELIMINARY

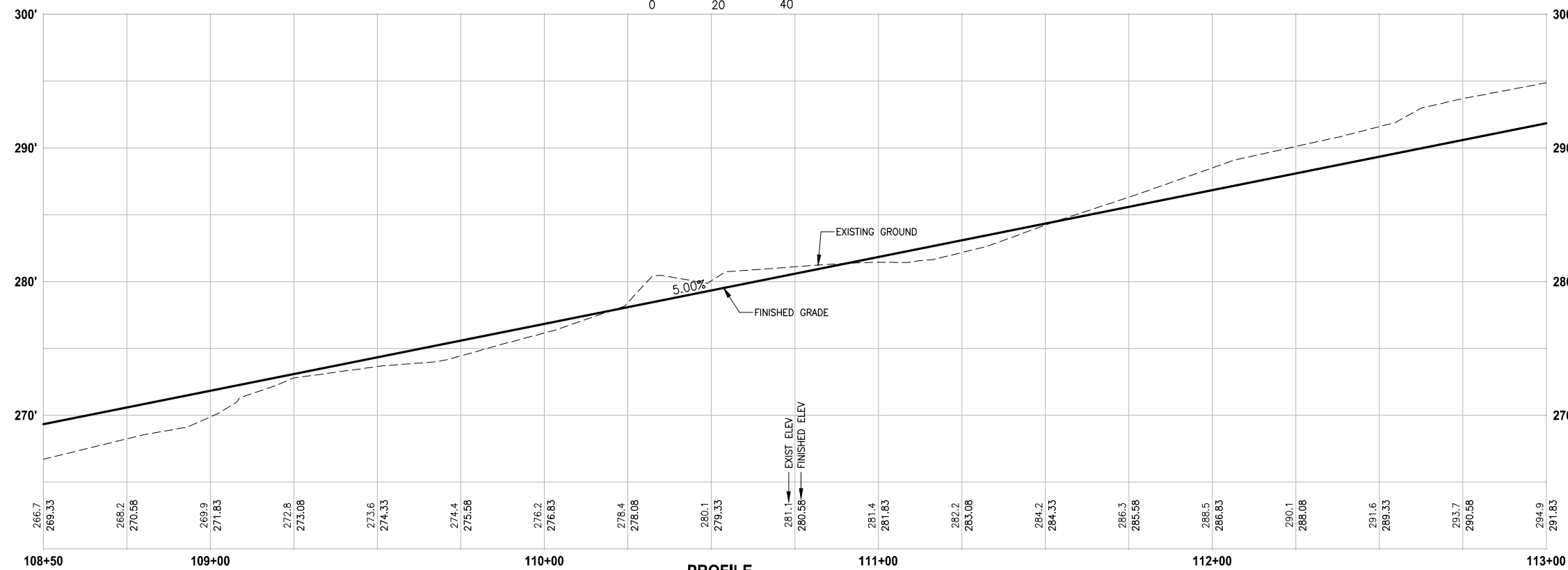
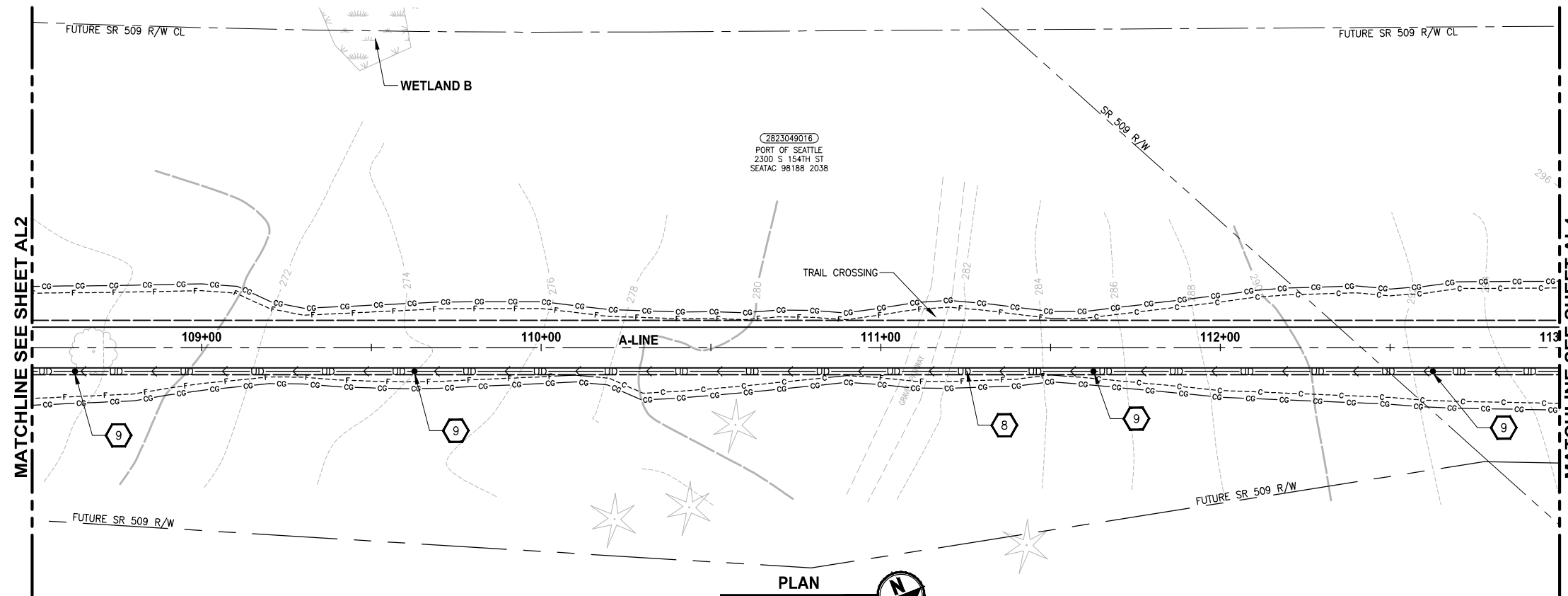
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PROJECT NAME
LAKE TO SOUND TRAIL
SEGMENT C
FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
8 OF 33
AL2

PATH: U:\P50\Projects\Clients\1521-KingCo\554-1521-151 L2S1-Seq\985Sec\CA00\Phase 2C\Task 21200C.DWG PLOTTED BY: purganan DATE: Wednesday, December 07, 2016 3:38:57 PM LAYOUT: AL3



PROFILE
 HORIZ: 1"=20'
 VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
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LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME: PS1521151P2C2T2AL-01
 JOB No.: 554-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

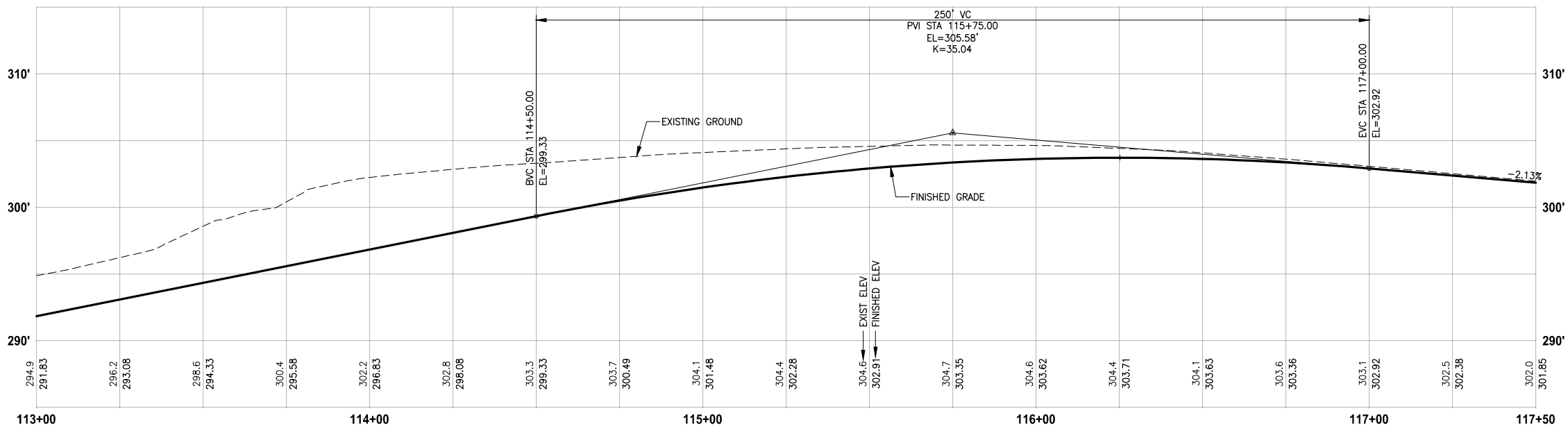
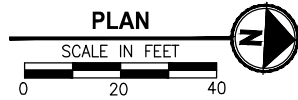
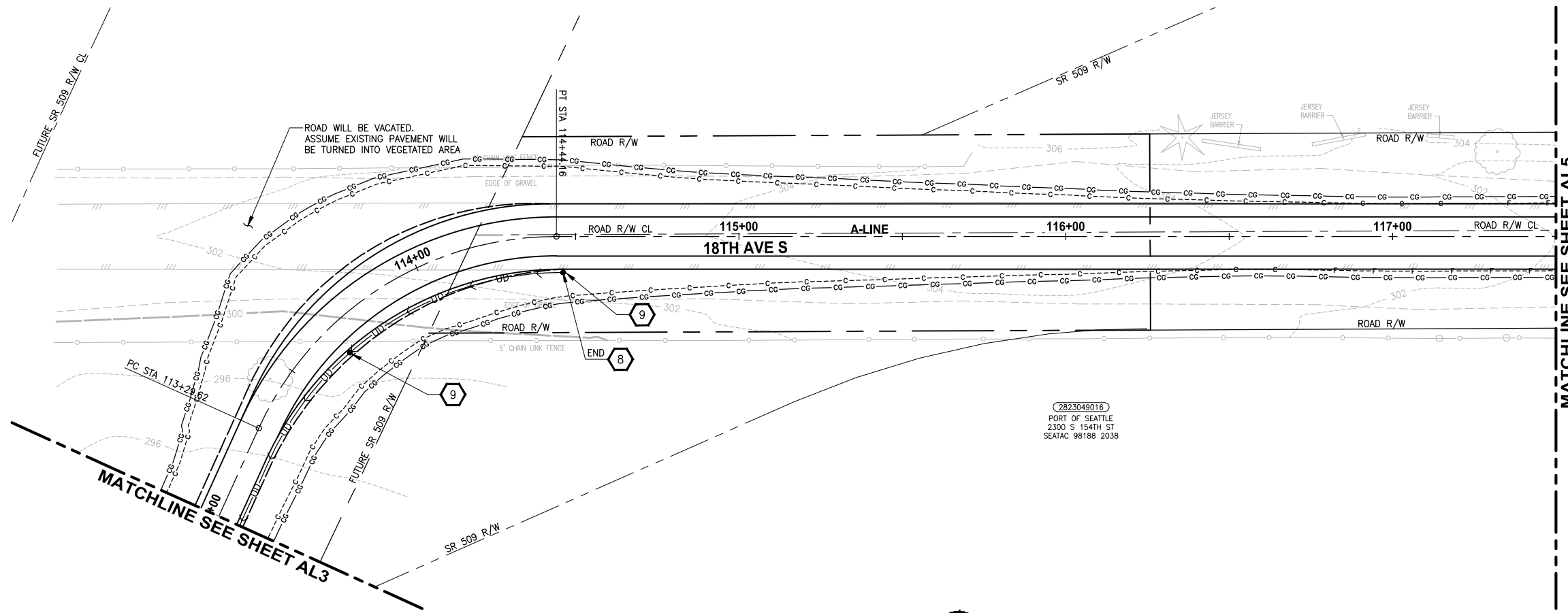
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PROJECT NAME
LAKE TO SOUND TRAIL SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 9 OF 33
AL3

PATH: U:\PSO\Projects\Clients\1521-KingCo\554-1521-151 L2S1-SeqC\985Secs\CADD\Phase 2C\Task 21200C.DWG PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:38:16 PM LAYOUT: AL4



PROFILE

HORIZ: 1"=20'
VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
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LEGEND:

IMPERVIOUS TRAIL SECTION

**30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION**

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

**ONE INCH AT FULL SCALE,
IF NOT, SCALE ACCORDINGLY**

FILE NAME
PS1521151P2C2T2AL-01

JOB No.
554-1521-151 P2C T21200C

DATE
DECEMBER 2016

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PROJECT NAME
**LAKE TO SOUND TRAIL
SEGMENT C**

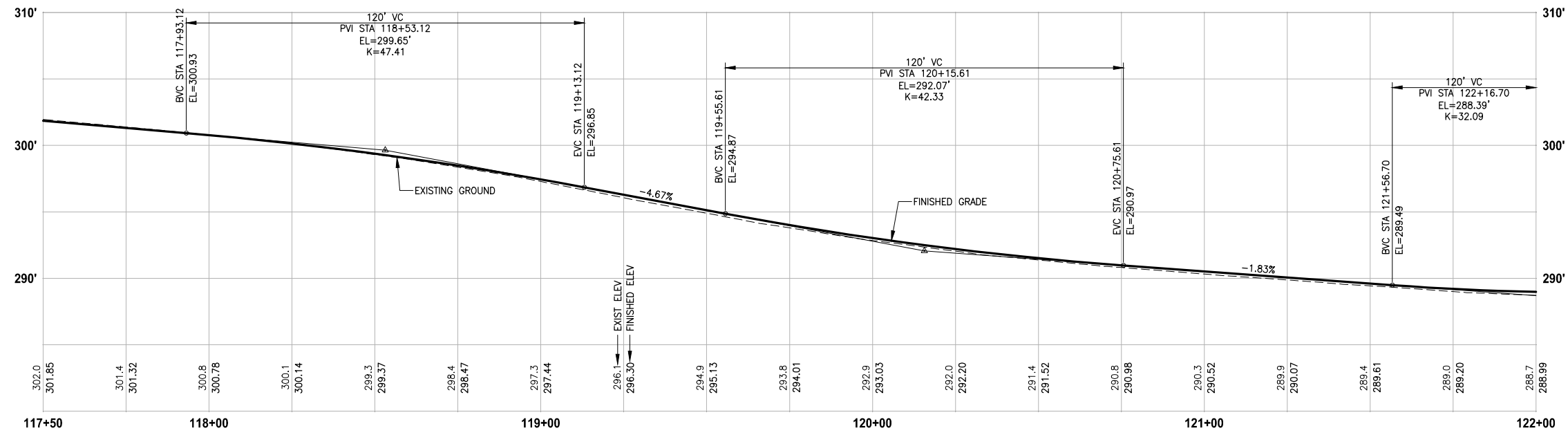
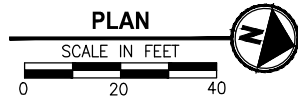
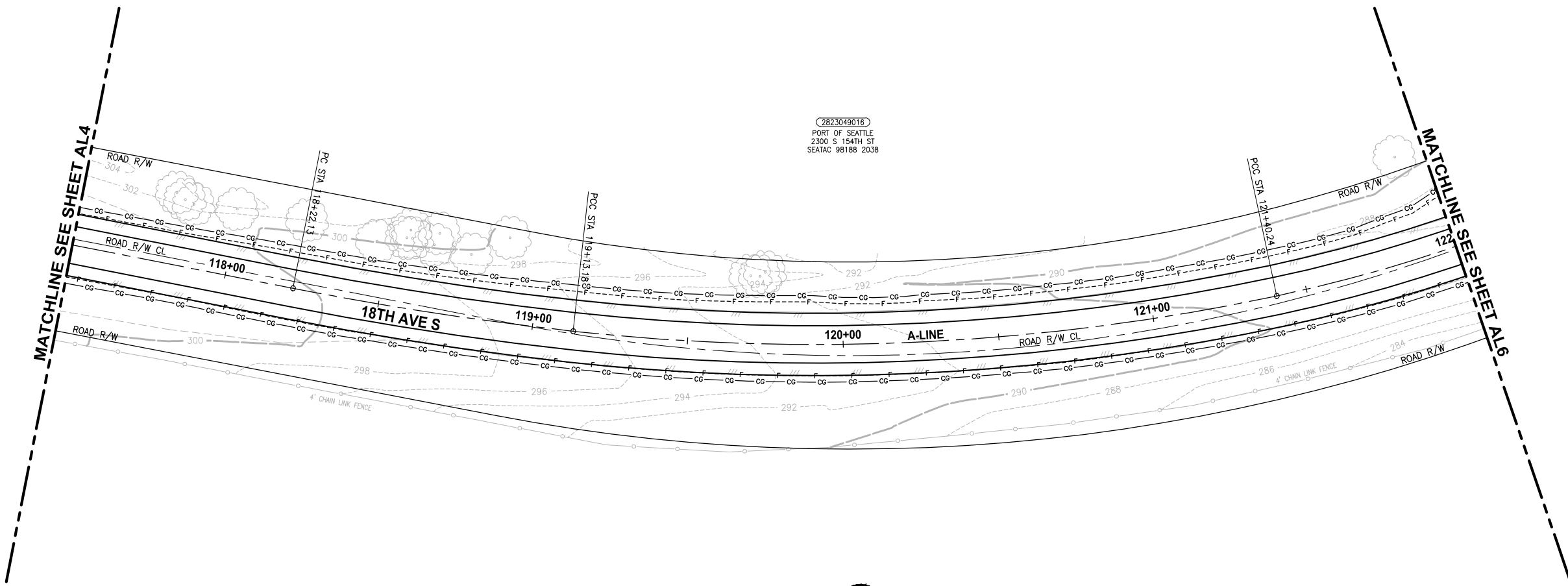
FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
10 OF 33

AL4

PATH: U:\PSO\Projects\Clients\1521-KingCo\554-1521-151 L2S1-Seq\985Vcs\ACADD\Phase 2C\Task 21200C.DWG PLOTTED BY: purganut DATE: Wednesday, December 07, 2016 3:38:34 PM LAYOUT: AL5



PROFILE

HORIZ: 1"=20'
VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
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LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
FILE NAME: PS1521151P2CT2T2AL-01
JOB No: 554-1521-151 P2C T2T200C
DATE: DECEMBER 2016

PRELIMINARY

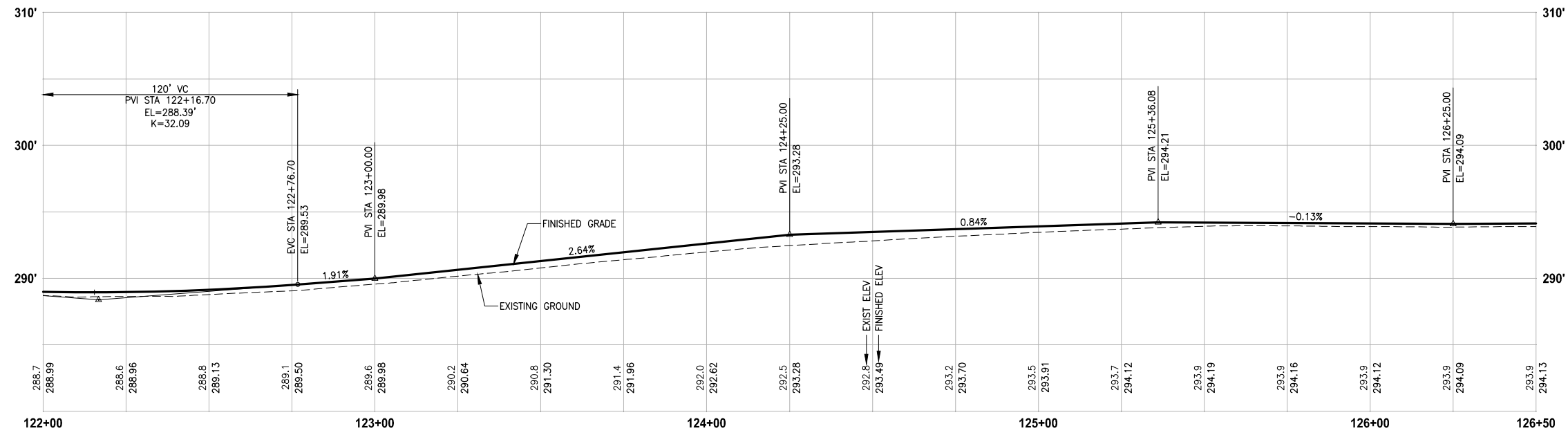
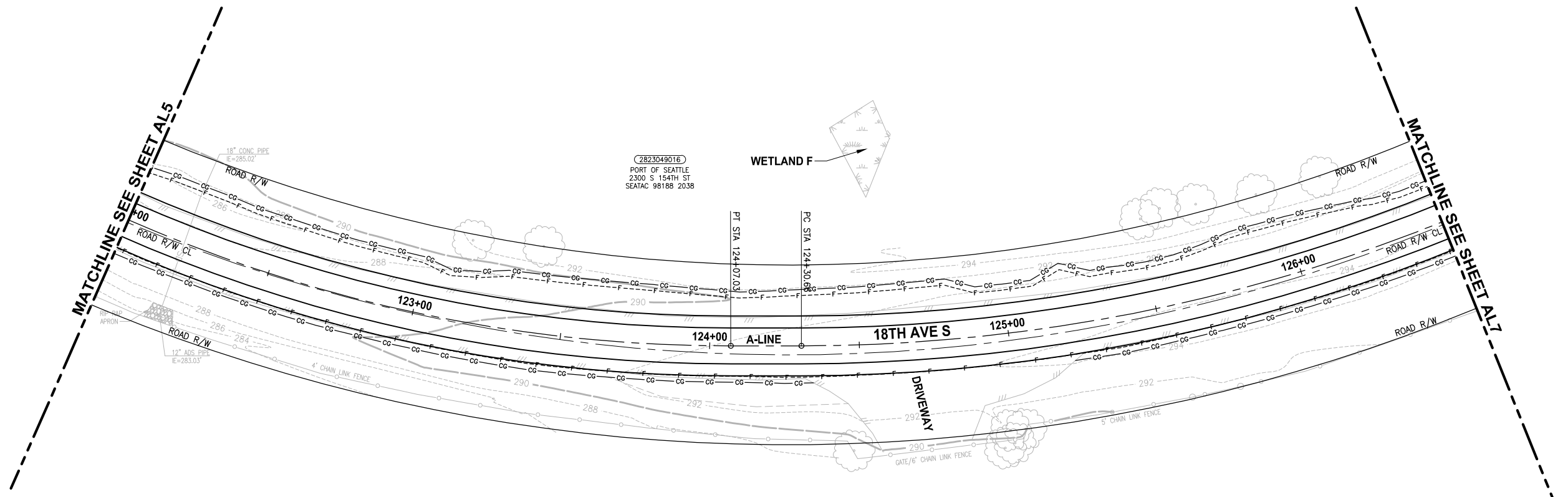
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PROJECT NAME
**LAKE TO SOUND TRAIL
SEGMENT C**
FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
11 OF 33
AL5

PATH: U:\PSO\Projects\Clients\1521-KingCo\554-1521-151 L2S1-Seq\985\985\985\CADD\Phase 2C\Task 21200C.DWG PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:39:56 PM LAYOUT: AL6



PROFILE
HORIZ: 1"=20'
VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
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- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

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- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
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STORMWATER GENERAL NOTES:

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LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY

FILE NAME: PS1521151P2C2T2AL-01
JOB No: 554-1521-151 P2C T2T200C
DATE: DECEMBER 2016

PRELIMINARY

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PROJECT NAME
**LAKE TO SOUND TRAIL
SEGMENT C**

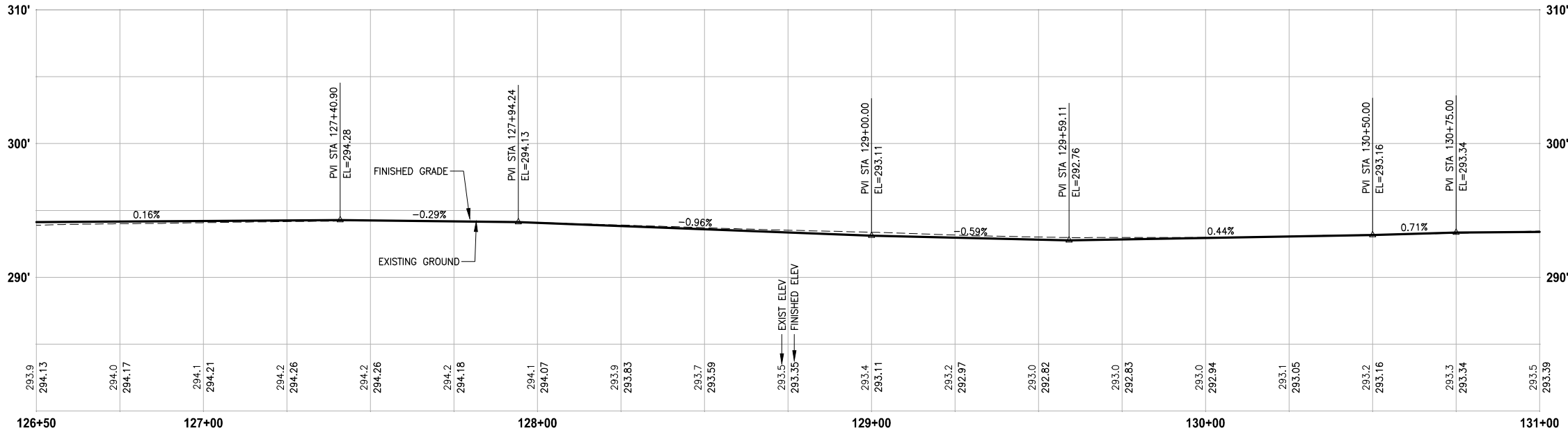
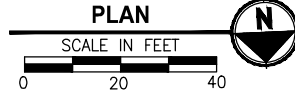
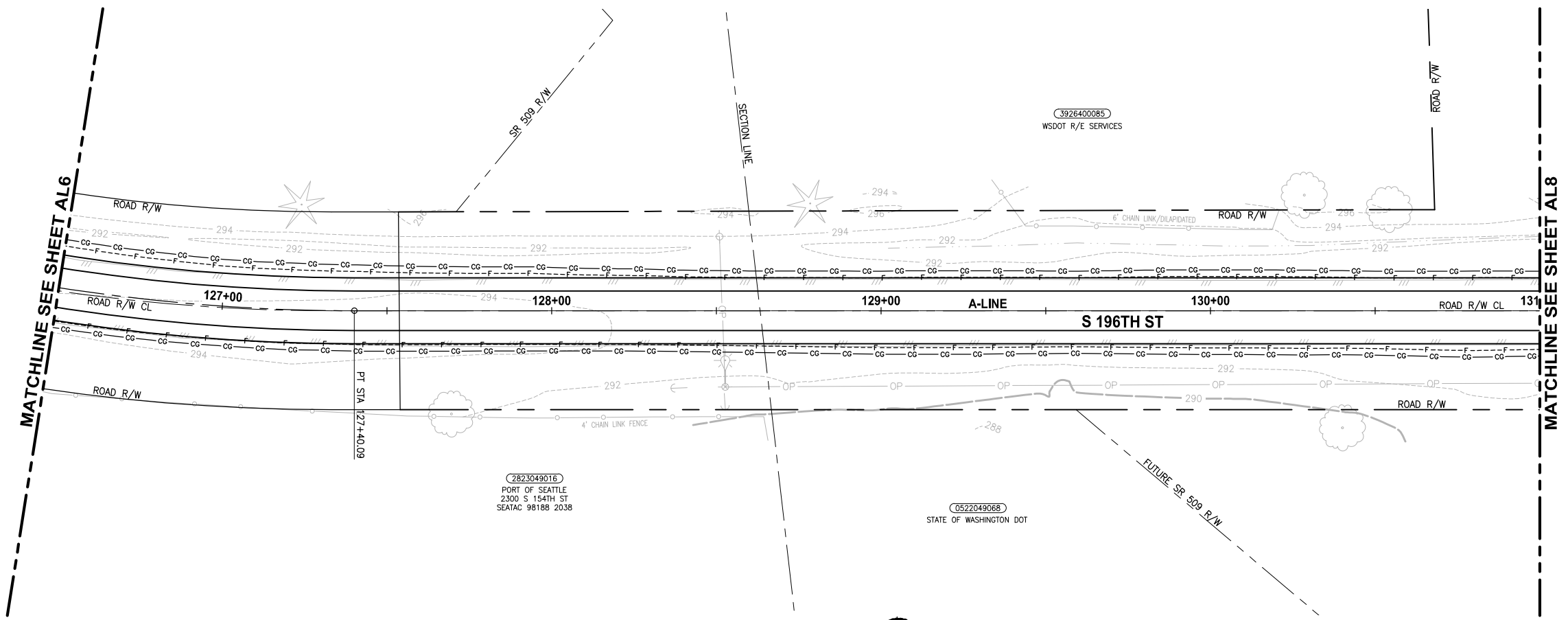
FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
12 OF 33

AL6

PATH: U:\PSO\Projects\Clients\1521-KingCo\554-1521-151 L2S1-Seq\985Sec\CA00\Phase 2C\Task 21200C.DWG PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:40:17 PM LAYOUT: AL7



PROFILE
HORIZ: 1"=20'
VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
2. STORMWATER CONVEYANCE SYSTEMS DEPICTED IN THE DRAFT 30 PERCENT PLANS ARE FOR PRELIMINARY DESIGN PURPOSES. STORMWATER CONVEYANCE SYSTEM DESIGN MAY CHANGE DURING FINAL DESIGN IF CONFLICTS WITH EXISTING UTILITIES.
3. PERMEABLE PAVEMENT (POROUS HMA) IS PROPOSED FOR THE PROPOSED TRAIL SURFACE FOR ALL AREAS WHERE INFILTRATION IS LIKELY TO BE FEASIBLE. FURTHER GEOTECHNICAL INVESTIGATION IS REQUIRED TO CONFIRM WHETHER OR NOT THE UNDERLYING SOILS HAVE SUITABLE INFILTRATION RATES TO SUPPORT POROUS HMA. FOR THE DRAFT 30 PERCENT DESIGN PLANS, AREAS ADJACENT TO WETLANDS A, G AND H ARE PROPOSED TO USE CONVENTIONAL HMA UNTIL FURTHER GEOTECHNICAL INVESTIGATION IS PERFORMED TO CONFIRM IF UNDERLYING SOIL TYPES AND GROUNDWATER ELEVATIONS ARE SUITABLE TO INSTALL PERMEABLE PAVEMENT.

LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
FILE NAME: PS1521151P2CT2T2AL-01
JOB No: 554-1521-151 P2C T2T200C
DATE: DECEMBER 2016

PRELIMINARY

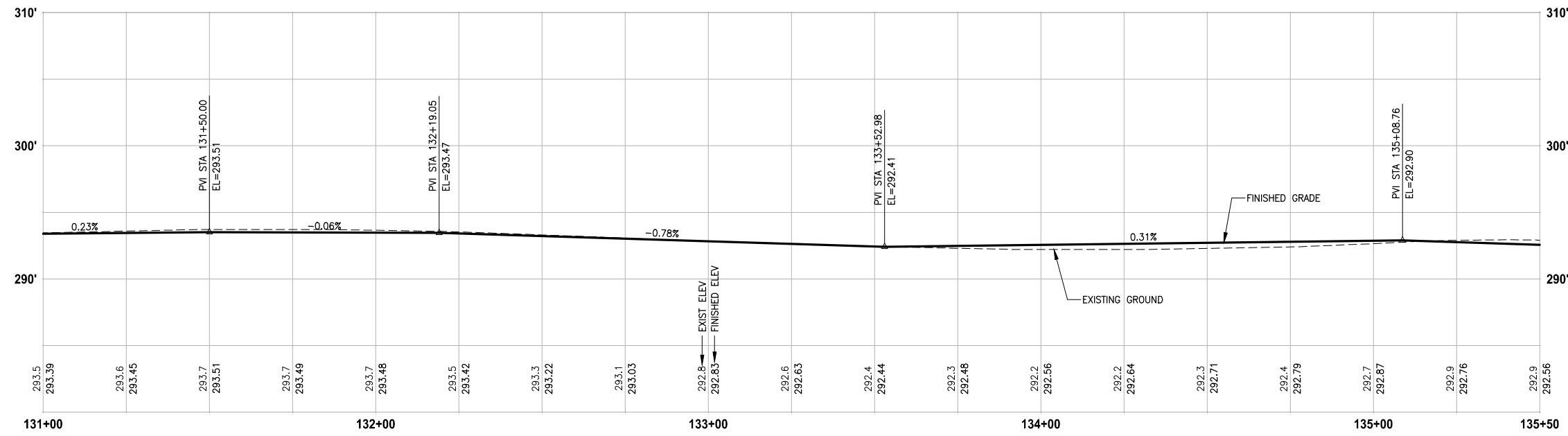
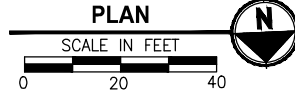
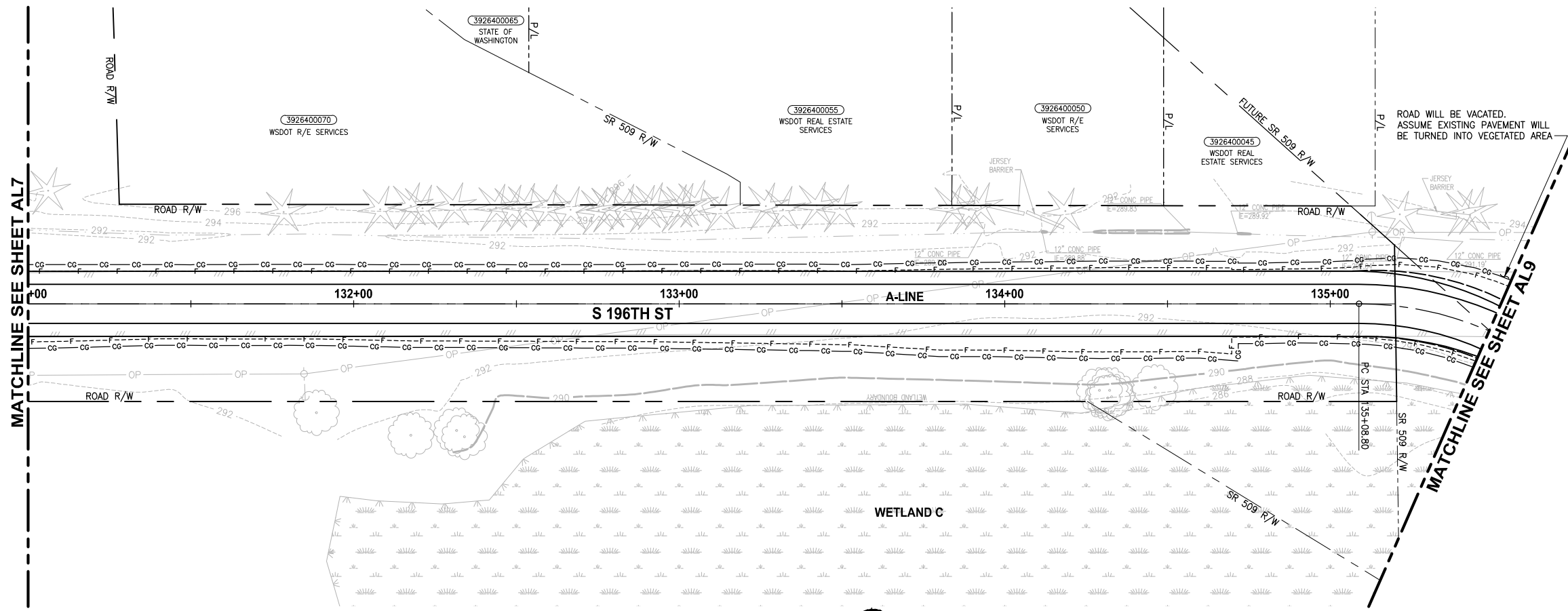
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PROJECT NAME
LAKE TO SOUND TRAIL
SEGMENT C
FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
13 OF 33
AL7

PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151 L2S1-Seq\985Vcs\CA00\Phase 2C\Task 21200C.DWG PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:51:45 PM LAYOUT: AL8



PROFILE
 HORIZ: 1"=20'
 VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
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- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

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LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME: PS1521151P2CT2T2AL-01
 JOB No: 554-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

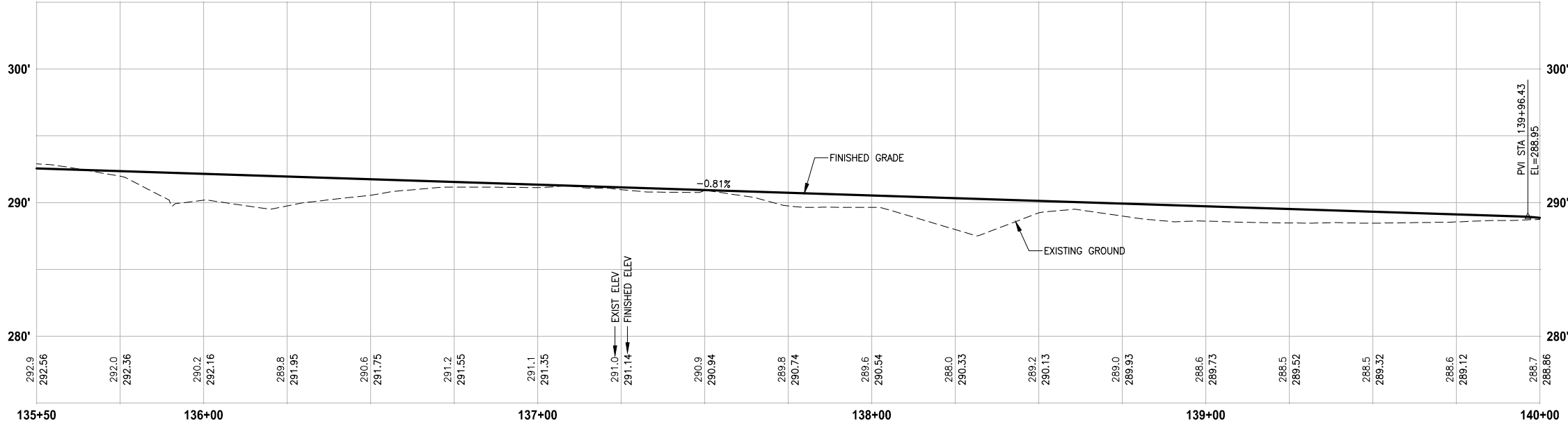
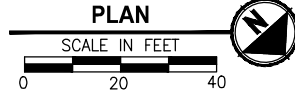
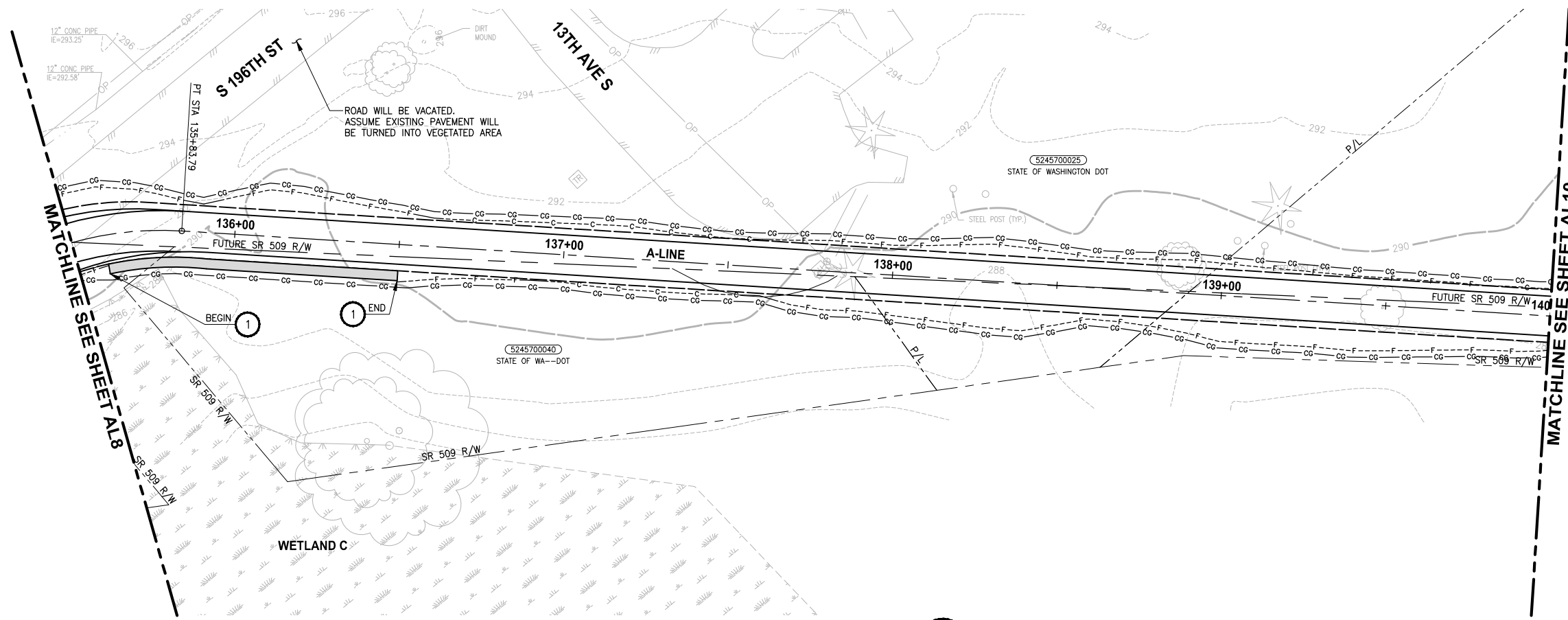
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PROJECT NAME
LAKE TO SOUND TRAIL SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 14 OF 33
AL8

PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151 L2S1-Seq\985Sec\CA000\Phase 2C\Task 21200C.DWG PLOTTED BY: purganb DATE: Wednesday, December 07, 2016 3:52:58 PM LAYOUT: AL9



PROFILE
HORIZ: 1"=20'
VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
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- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

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- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
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STORMWATER GENERAL NOTES:

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LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
FILE NAME: PS1521151P2CT2T2AL-01
JOB No: 524-1521-151 P2C T2T200C
DATE: DECEMBER 2016

PRELIMINARY

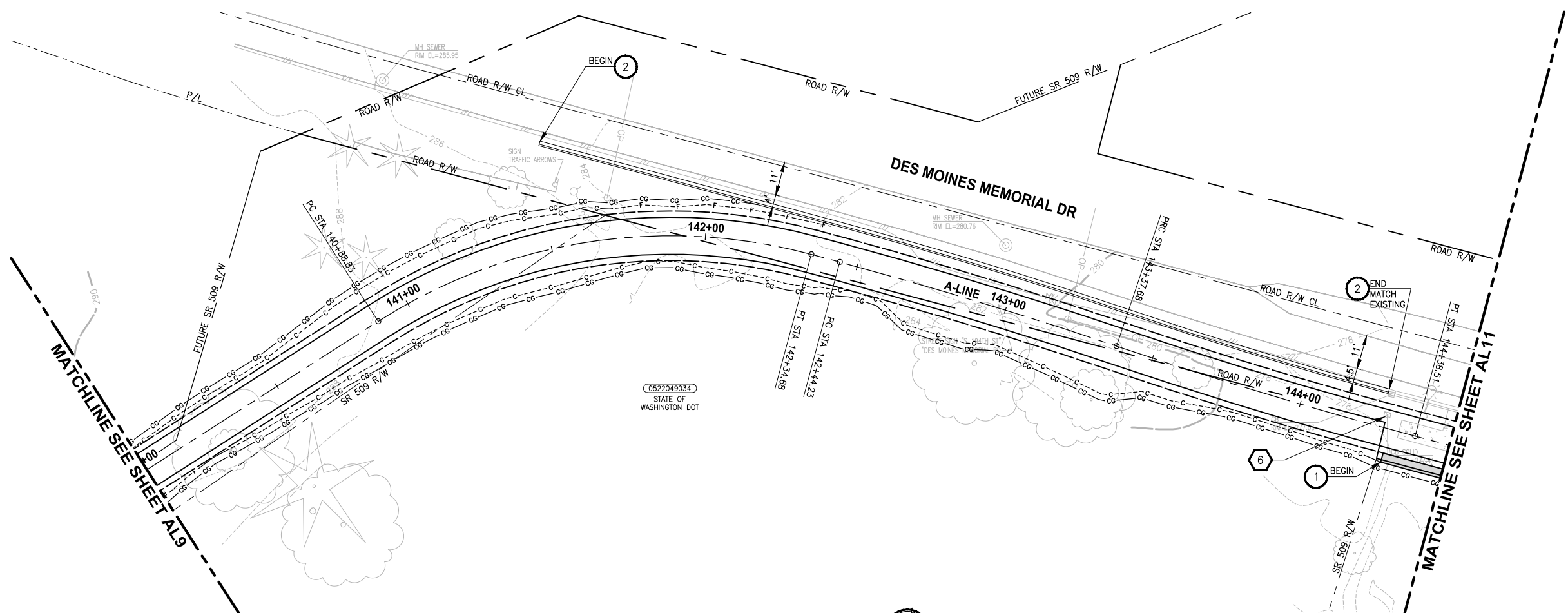
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P 206.394.3700
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PROJECT NAME
LAKE TO SOUND TRAIL
SEGMENT C
FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
15 OF 33
AL9

LAYOUT: AL10
 PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151-L2ST-SegC\995Secs\CADD\Phase 2C\Task 21200C\DWG
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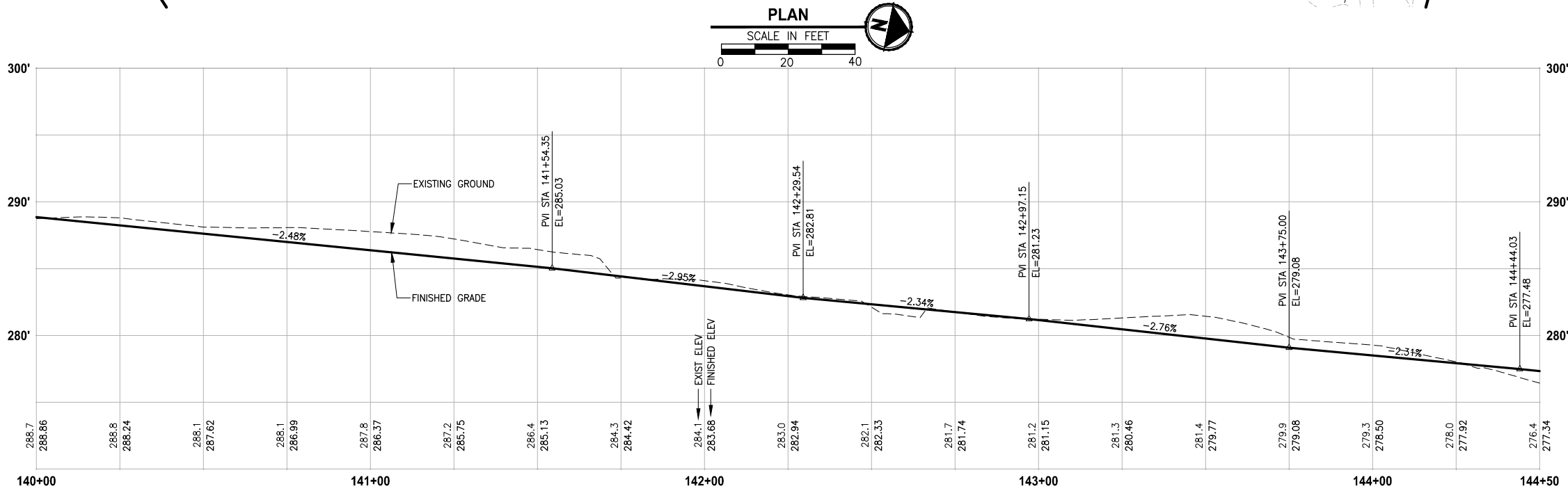
- CIVIL CONSTRUCTION NOTES:**
- 1 INSTALL RETAINING WALL.
 - 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
 - 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
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 - 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

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LEGEND:

IMPERVIOUS TRAIL SECTION



PLAN
SCALE IN FEET
0 20 40

PROFILE
HORIZ: 1"=20'
VERT: 1"=5'

PRELIMINARY

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY

FILE NAME: PS1521151P2C2T2AL-01
 JOB No.: 554-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

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PROJECT NAME
**LAKE TO SOUND TRAIL
 SEGMENT C**

FROM S 200TH ST TO S NORMANDY ROAD /
 DES MOINES MEMORIAL DRIVE INTERSECTION

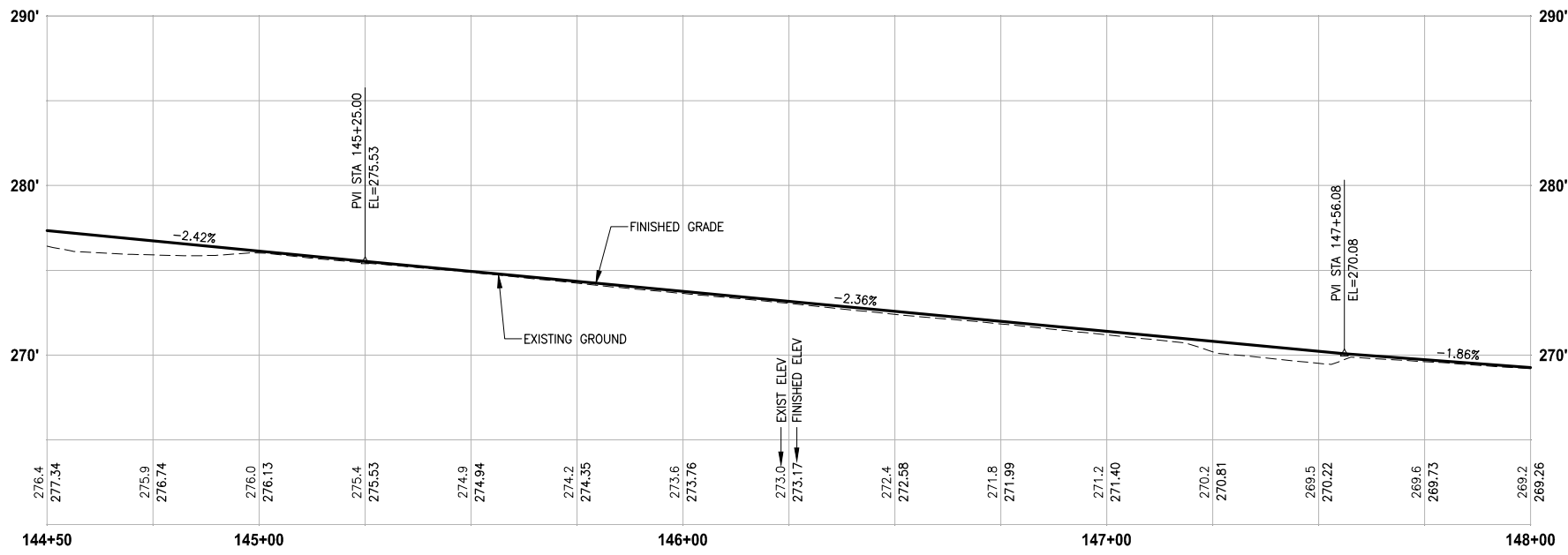
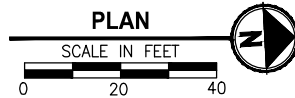
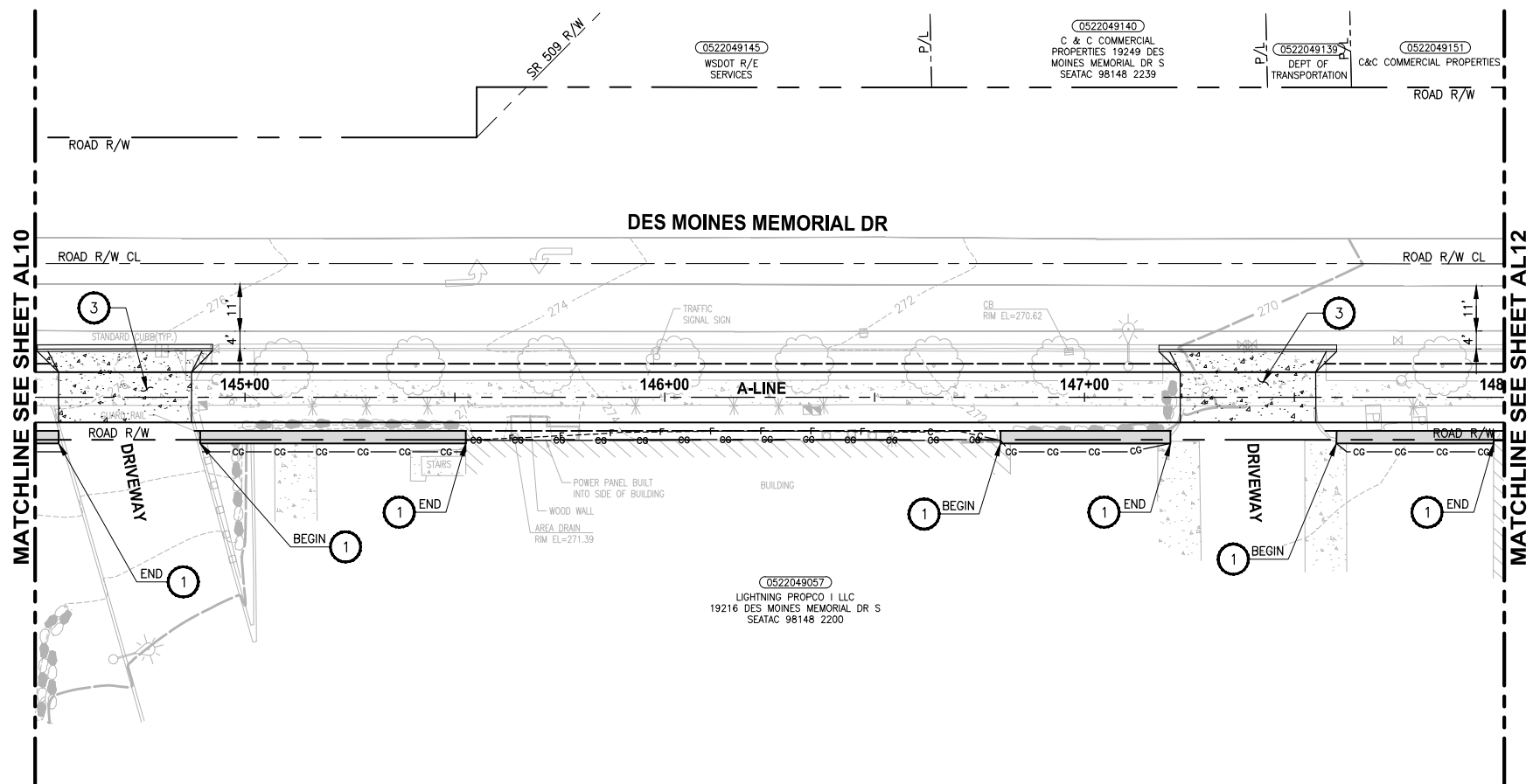
PLAN AND PROFILE

SHEET NO.
16 OF 33

AL10

**30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION**

PATH: U:\PSO\Projects\Clients\1521-KingCo\564-1521-151-L2ST-Seq\99Sees\CADD\Phase 2\Task 212000\DWG PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:41:29 PM LAYOUT: AL11



PROFILE

HORIZ: 1"=20'
VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
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STORMWATER GENERAL NOTES:

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LEGEND:



30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
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 JOB No: 564-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

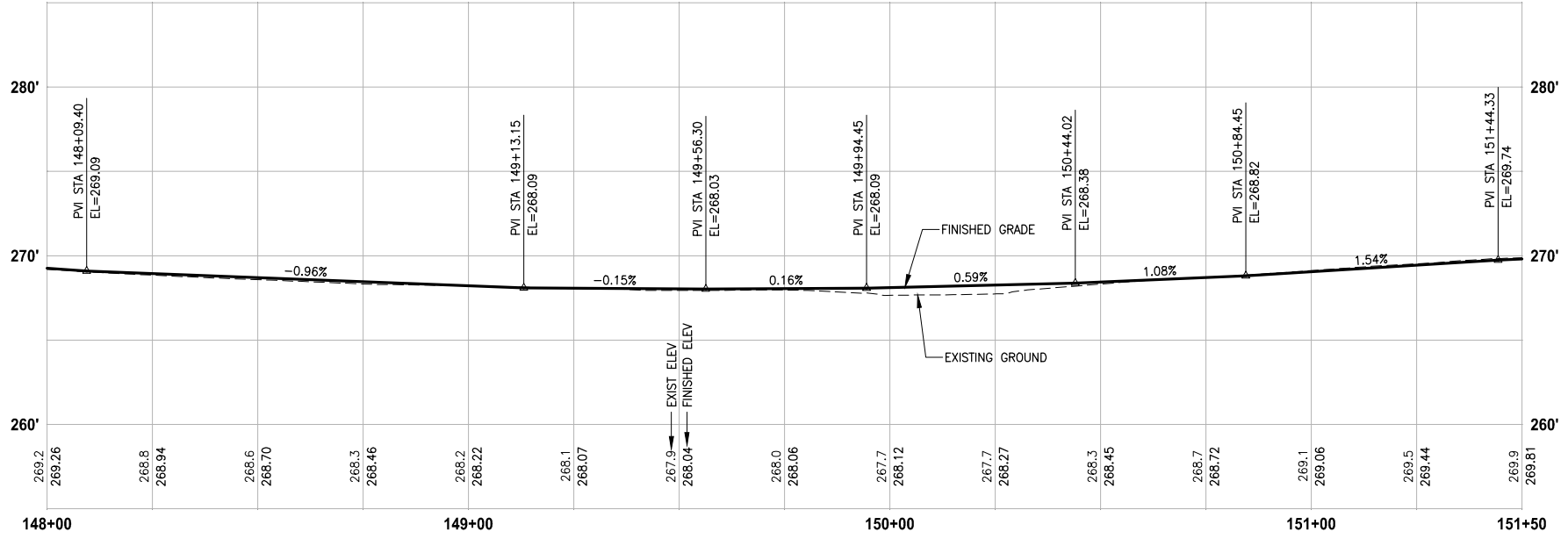
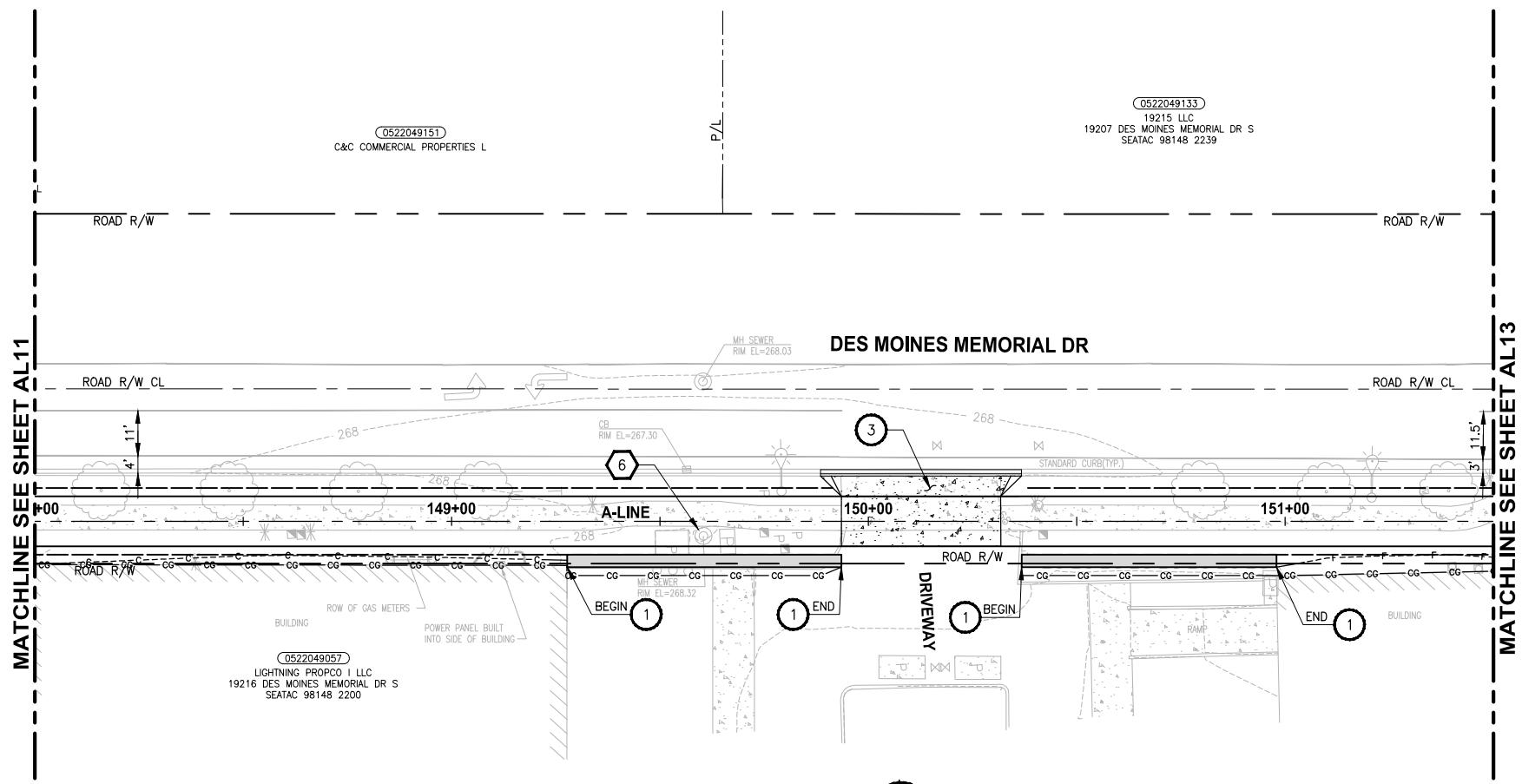
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PROJECT NAME
LAKE TO SOUND TRAIL SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
17 OF 33
AL11

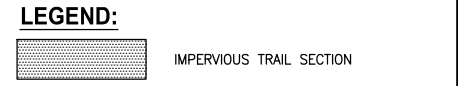
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 PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:41:47 PM



- CIVIL CONSTRUCTION NOTES:**
- 1 INSTALL RETAINING WALL.
 - 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
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| | | | B. PURGANAN |
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 554-1521-151 P2C T2T200C
 DATE
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PRELIMINARY

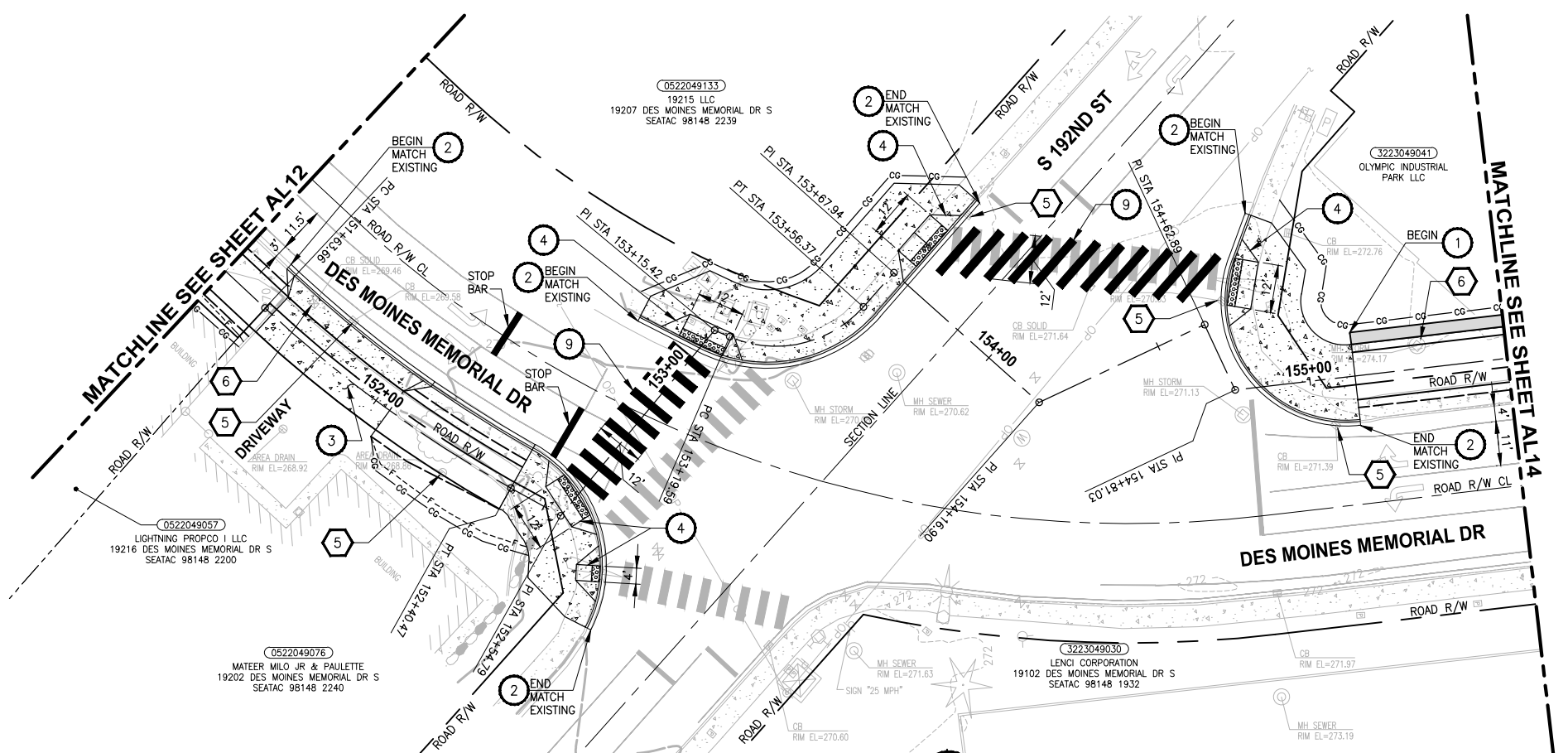
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PROJECT NAME
**LAKE TO SOUND TRAIL
 SEGMENT C**
 FROM S 200TH ST TO S NORMANDY ROAD /
 DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 18 OF 33
AL12

LAYOUT: AL13 PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151-L2ST-SegC\989Sects\CADD\Phase 2C\Task 21200C\DWG PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:42:07 PM



CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

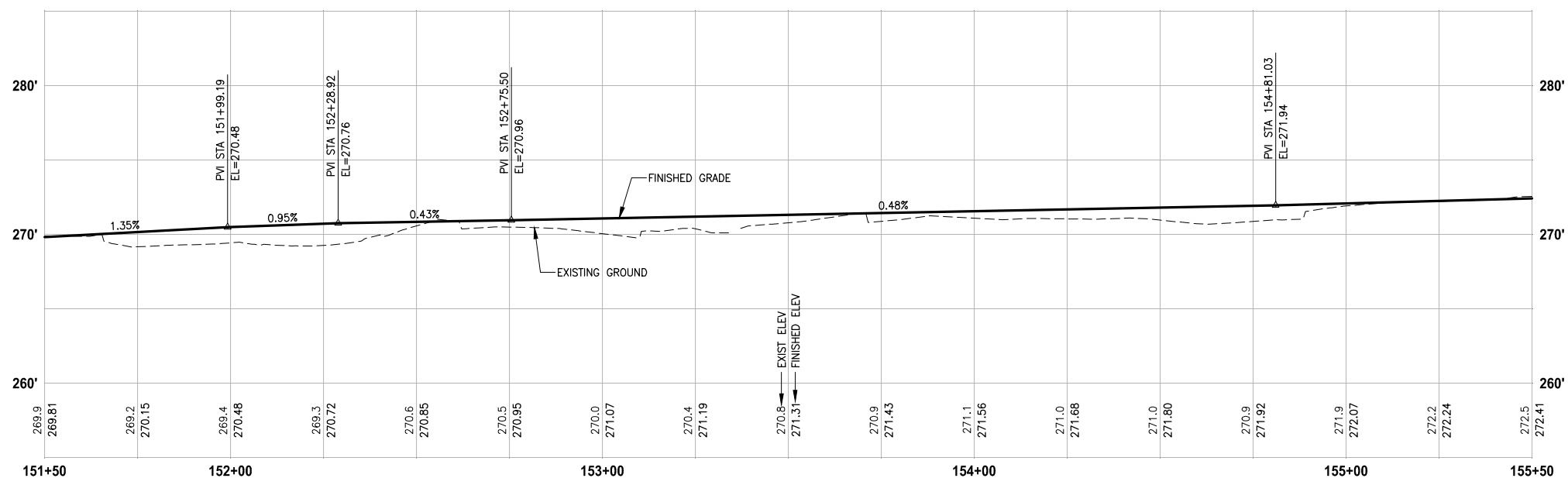
- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
2. STORMWATER CONVEYANCE SYSTEMS DEPICTED IN THE DRAFT 30 PERCENT PLANS ARE FOR PRELIMINARY DESIGN PURPOSES. STORMWATER CONVEYANCE SYSTEM DESIGN MAY CHANGE DURING FINAL DESIGN IF CONFLICTS WITH EXISTING UTILITIES.
3. PERMEABLE PAVEMENT (POROUS HMA) IS PROPOSED FOR THE PROPOSED TRAIL SURFACE FOR ALL AREAS WHERE INFILTRATION IS LIKELY TO BE FEASIBLE. FURTHER GEOTECHNICAL INVESTIGATION IS REQUIRED TO CONFIRM WHETHER OR NOT THE UNDERLYING SOILS HAVE SUITABLE INFILTRATION RATES TO SUPPORT POROUS HMA. FOR THE DRAFT 30 PERCENT DESIGN PLANS, AREAS ADJACENT TO WETLANDS A, G AND H ARE PROPOSED TO USE CONVENTIONAL HMA UNTIL FURTHER GEOTECHNICAL INVESTIGATION IS PERFORMED TO CONFIRM IF UNDERLYING SOIL TYPES AND GROUNDWATER ELEVATIONS ARE SUITABLE TO INSTALL PERMEABLE PAVEMENT.

LEGEND:

IMPERVIOUS TRAIL SECTION



PROFILE

HORIZ: 1"=20'
VERT: 1"=5'

PRELIMINARY

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

| | |
|--|--------------------------|
| ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY | |
| FILE NAME | PS1521151P2C2T2AL-01 |
| JOB No. | 554-1521-151 P2C T2T200C |
| DATE | DECEMBER 2016 |

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PROJECT NAME
**LAKE TO SOUND TRAIL
 SEGMENT C**
 FROM S 200TH ST TO S NORMANDY ROAD /
 DES MOINES MEMORIAL DRIVE INTERSECTION

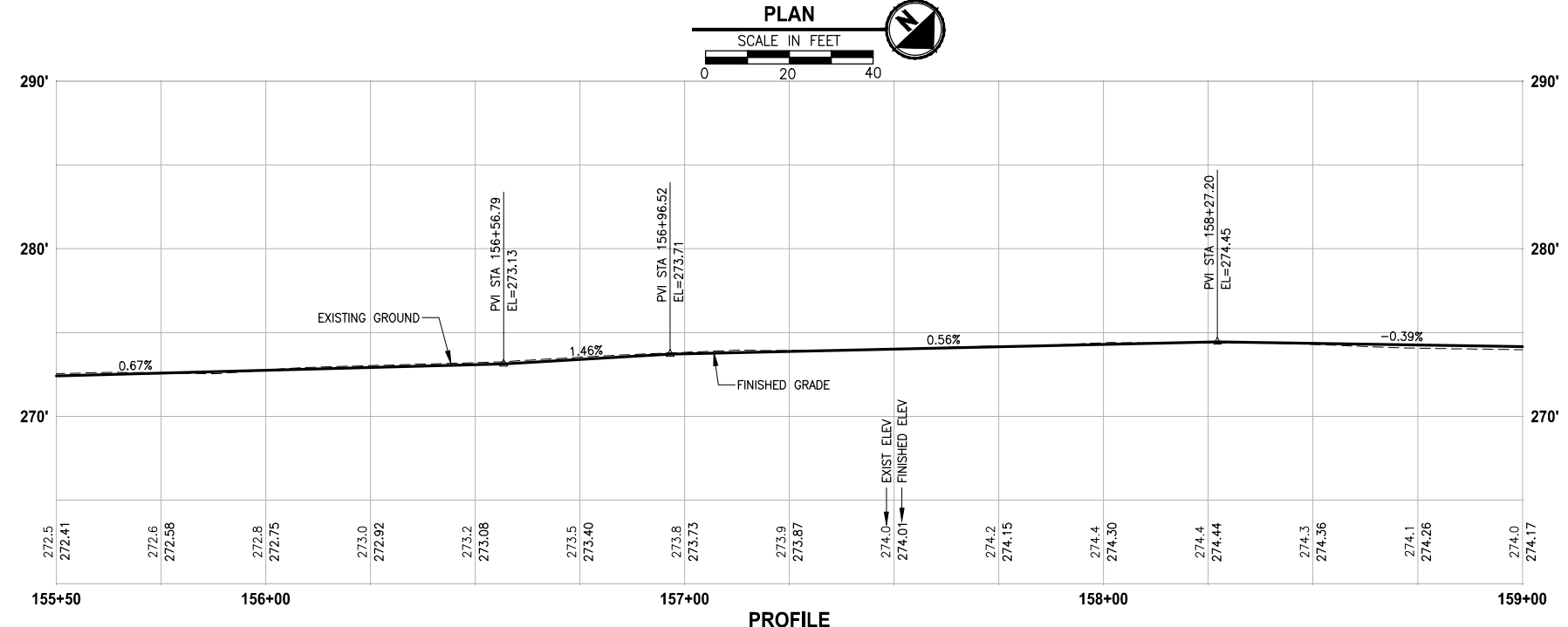
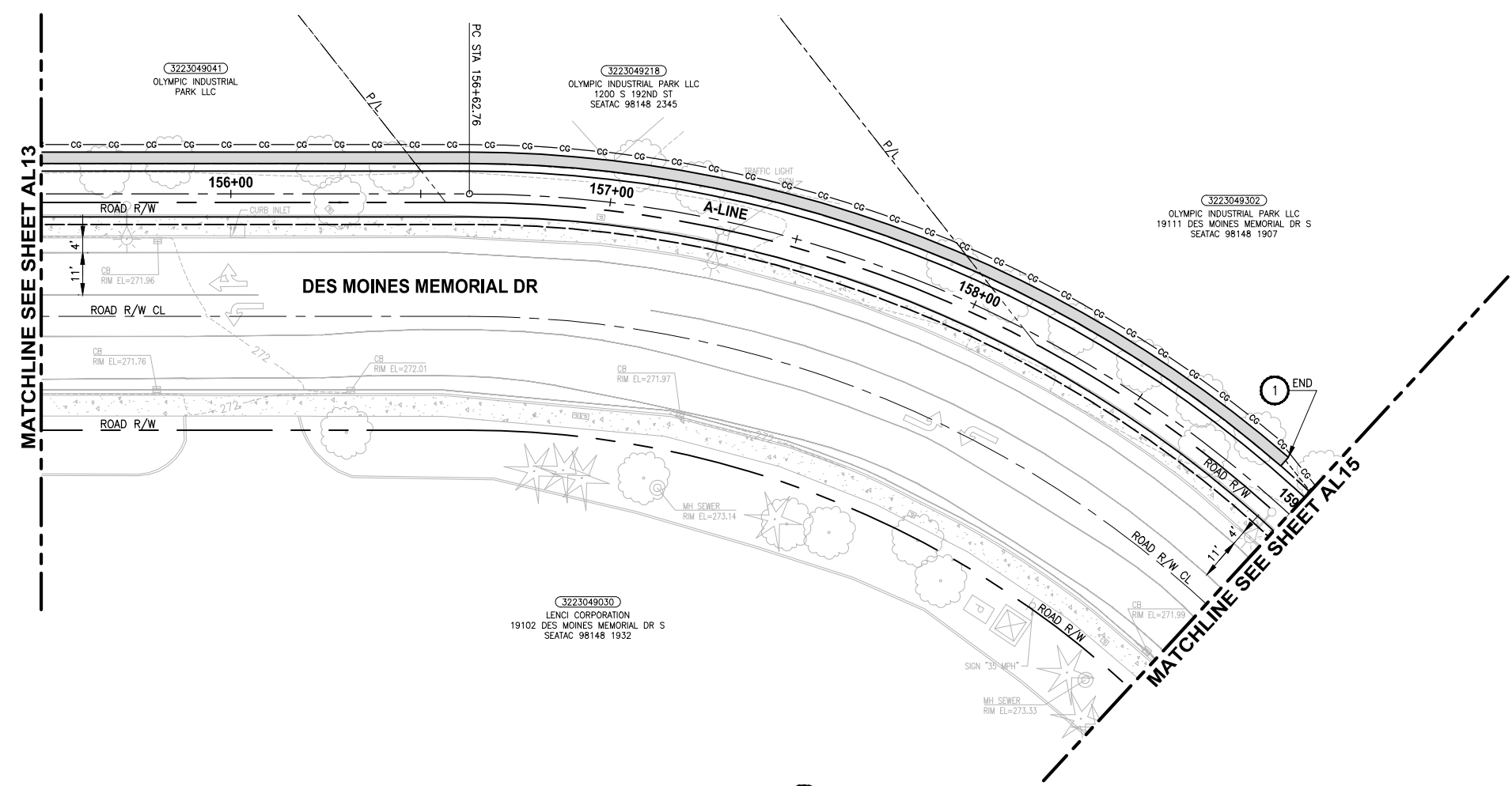
PLAN AND PROFILE

AL13

SHEET NO.
19 OF 33

30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

LAYOUT: AL14
 PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151-L2ST-Seq\995\Secs\CADD\Phase 2C\Task_212000\DWG
 PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:42:24 PM



PROFILE
 HORIZ: 1"=20'
 VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

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- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
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- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
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LEGEND:



30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME: PSI1521151P2CT2T2AL-01
 JOB No: 554-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

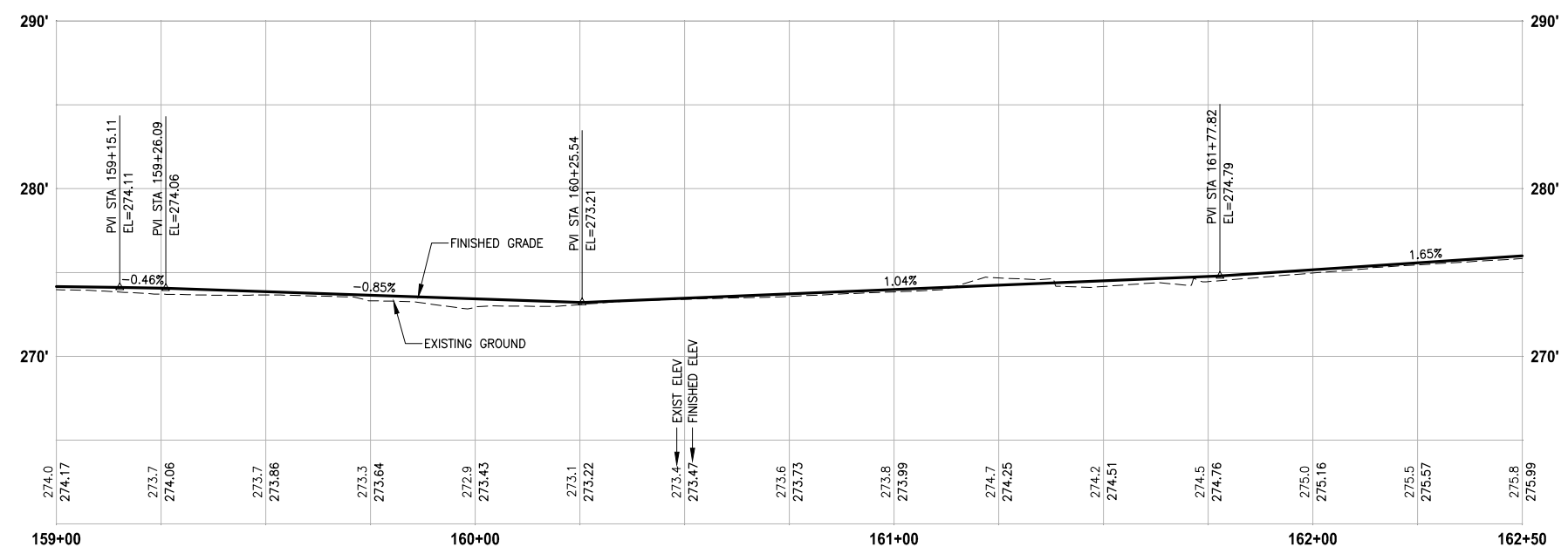
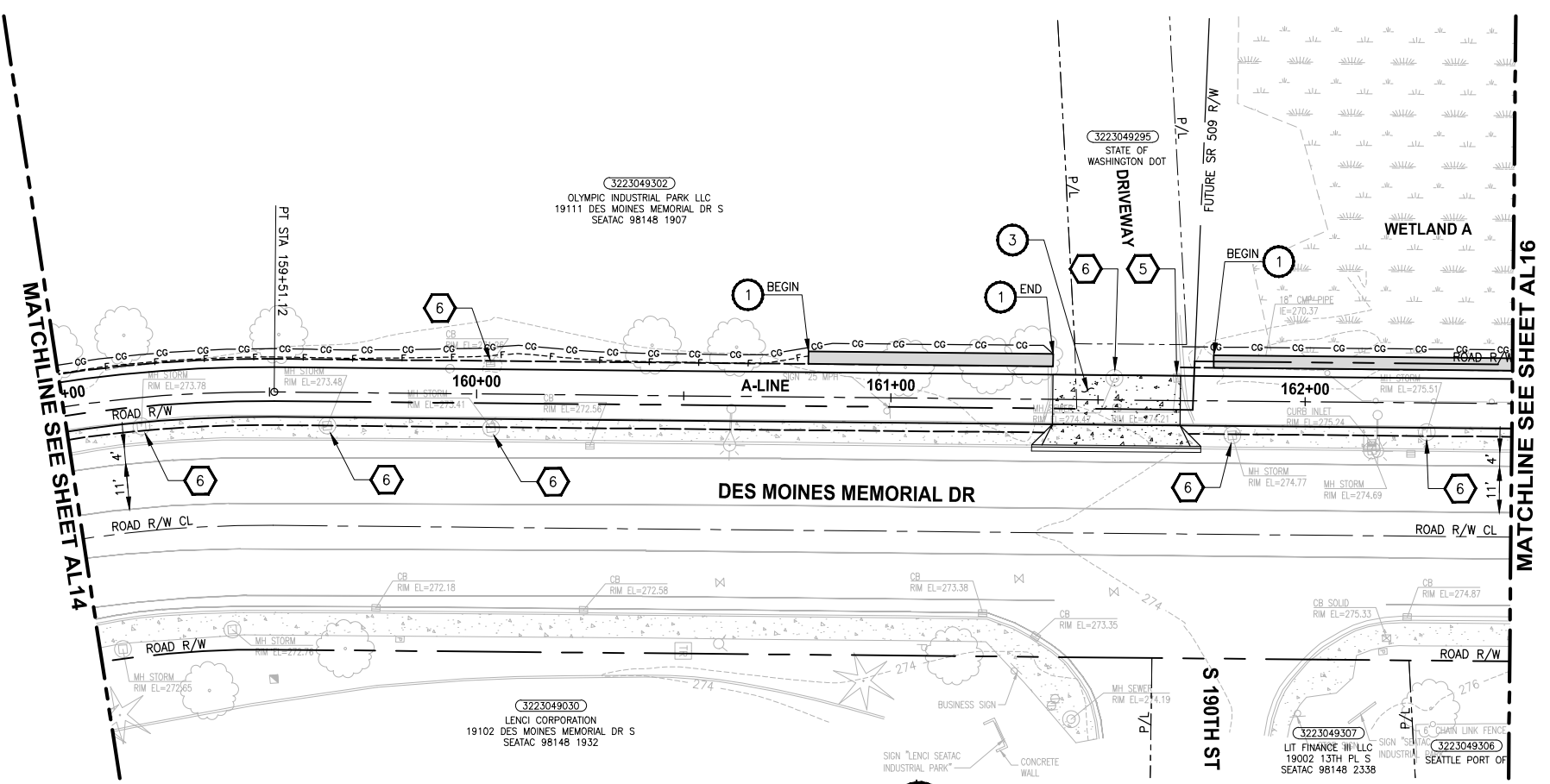
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PROJECT NAME
LAKE TO SOUND TRAIL SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 20 OF 33
AL14

LAYOUT: AL15
 PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151-L2ST-Seq\985Secs\CADD\Phase 2C\Task 21200C\DWG
 PLOTTED BY: purgaban DATE: Wednesday, December 07, 2016 3:42:42 PM



PROFILE
 HORIZ: 1"=20'
 VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
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STORMWATER CONSTRUCTION NOTES:

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STORMWATER GENERAL NOTES:

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LEGEND:



30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME
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 JOB No.
 554-1521-151 P2C T2T200C
 DATE
 DECEMBER 2016

PRELIMINARY

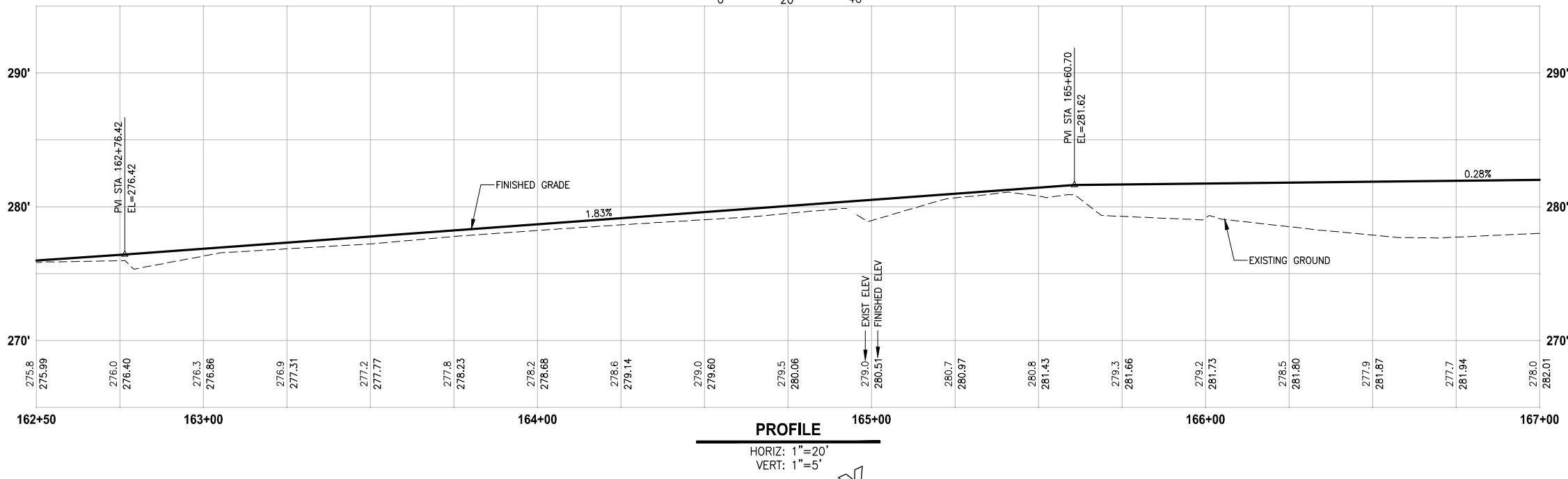
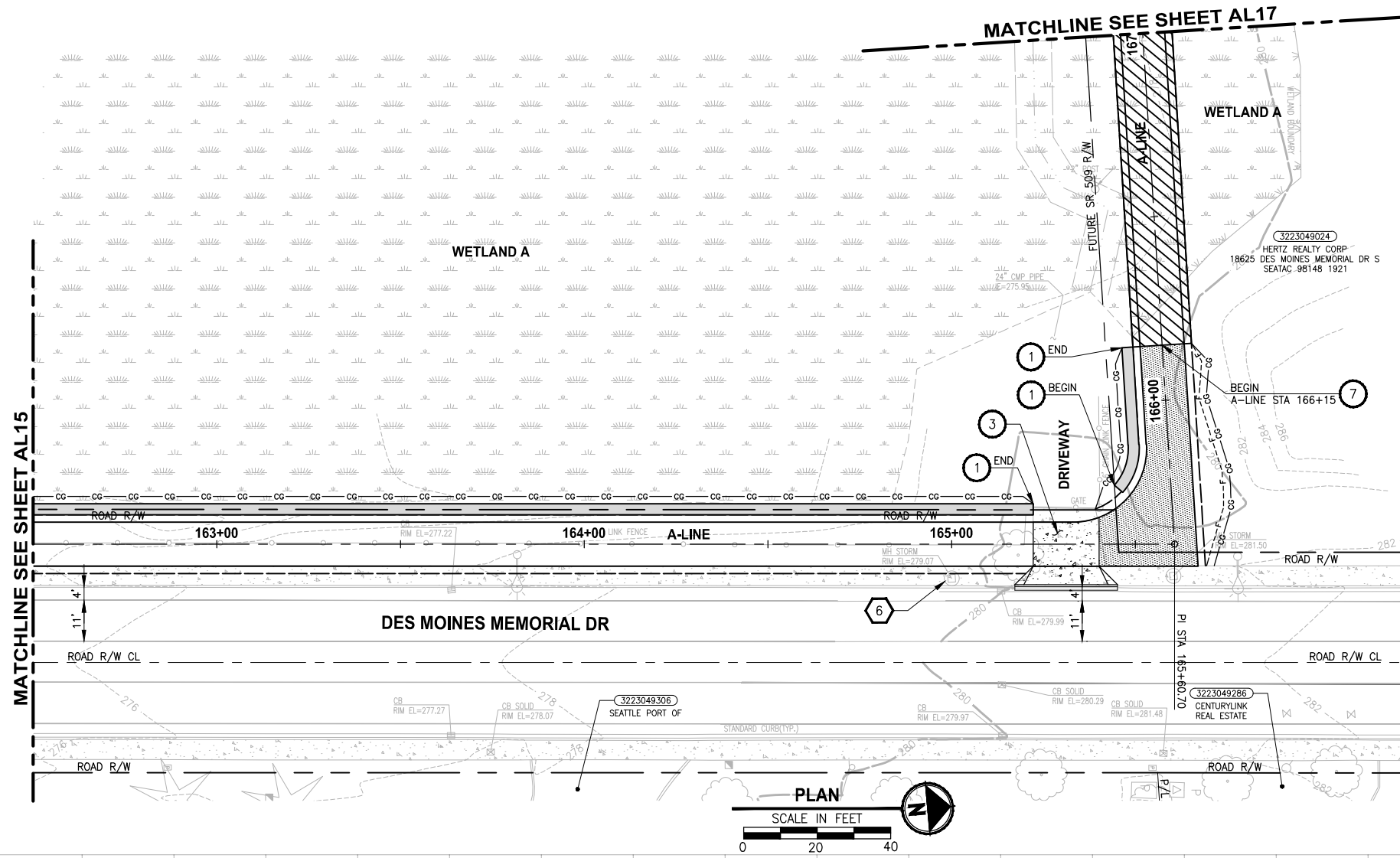
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PROJECT NAME
**LAKE TO SOUND TRAIL
 SEGMENT C**
 FROM S 200TH ST TO S NORMANDY ROAD /
 DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 21 OF 33
AL15

LAYOUT: AL16
 PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151-L2ST-Seq\995Secs\CADD\Phase 2C\Task_21200C\DWG - PLOTTED BY: purgabut DATE: Tuesday, December 05, 2016 7:04:24 PM



CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
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**30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION**

| NO. | REVISIONS | DATE | BY | DESIGNED |
|-----|-----------|------|----|-------------|
| | | | | J. JUN |
| | | | | B. PURGANAN |
| | | | | Y. HO |
| | | | | J. DVORAK |

**ONE INCH AT FULL SCALE,
IF NOT, SCALE ACCORDINGLY**
 FILE NAME
 PSI1521151P2CT2T2AL-01
 JOB No.
 554-1521-151 P2C T2T200C
 DATE
 DECEMBER 2016

PRELIMINARY

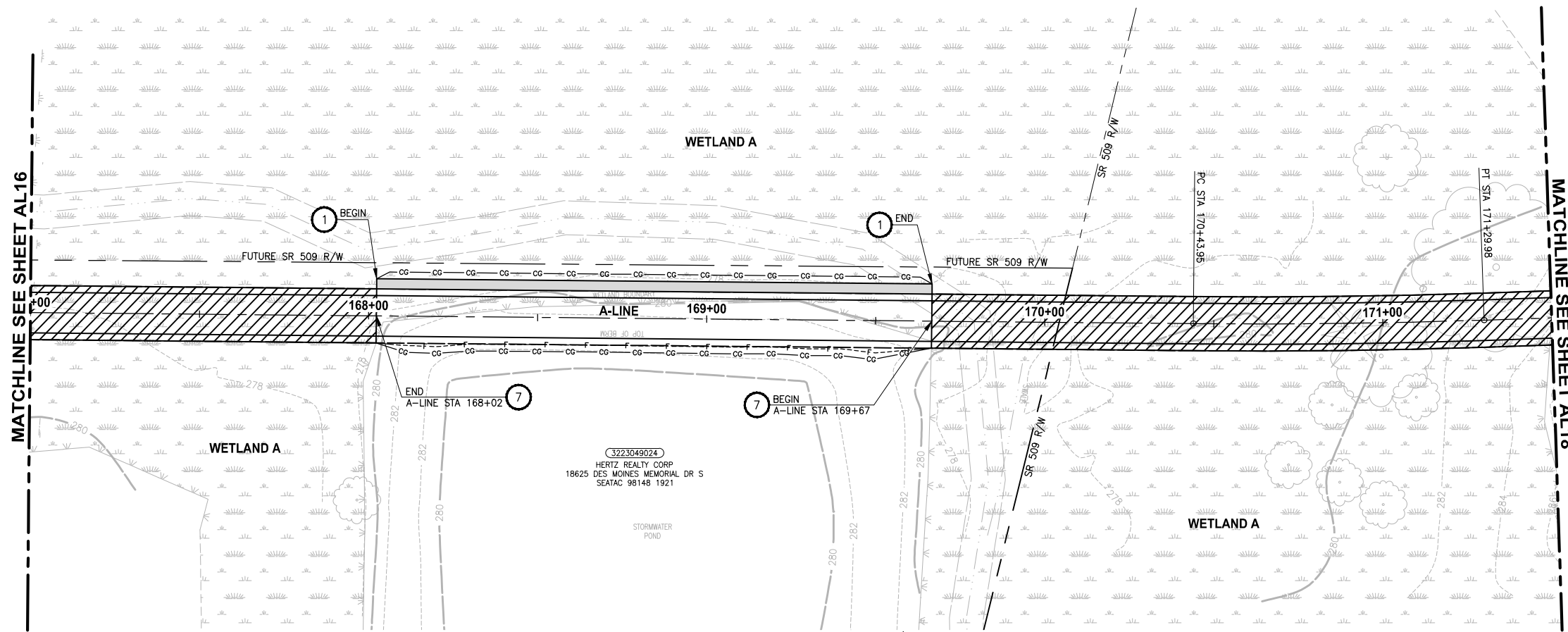
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PROJECT NAME
**LAKE TO SOUND TRAIL
SEGMENT C**
 FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

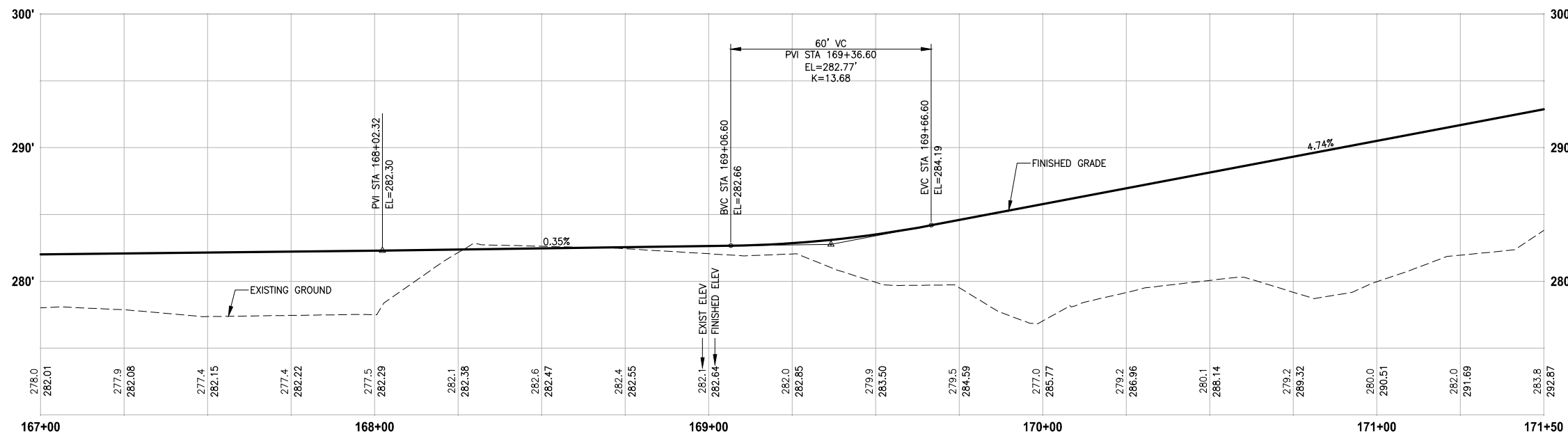
PLAN AND PROFILE

SHEET NO.
 22 OF 33
AL16

PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151_L2ST-SegC\995secs\CADD\Phase 2C\Task_21200C\DWG_PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:43:17 PM LAYOUT: AL17



PLAN
 SCALE IN FEET
 0 20 40



PROFILE

HORIZ: 1"=20'
 VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
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STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
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STORMWATER GENERAL NOTES:

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LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME: PS1521151P2CT2T2AL-01
 JOB No.: 554-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

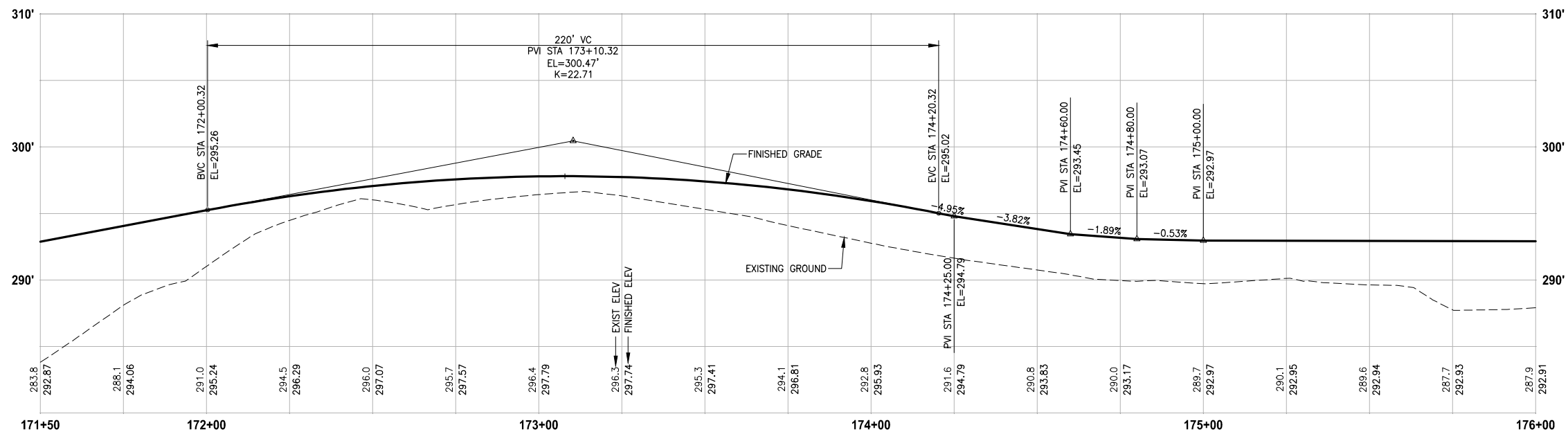
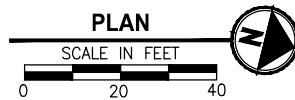
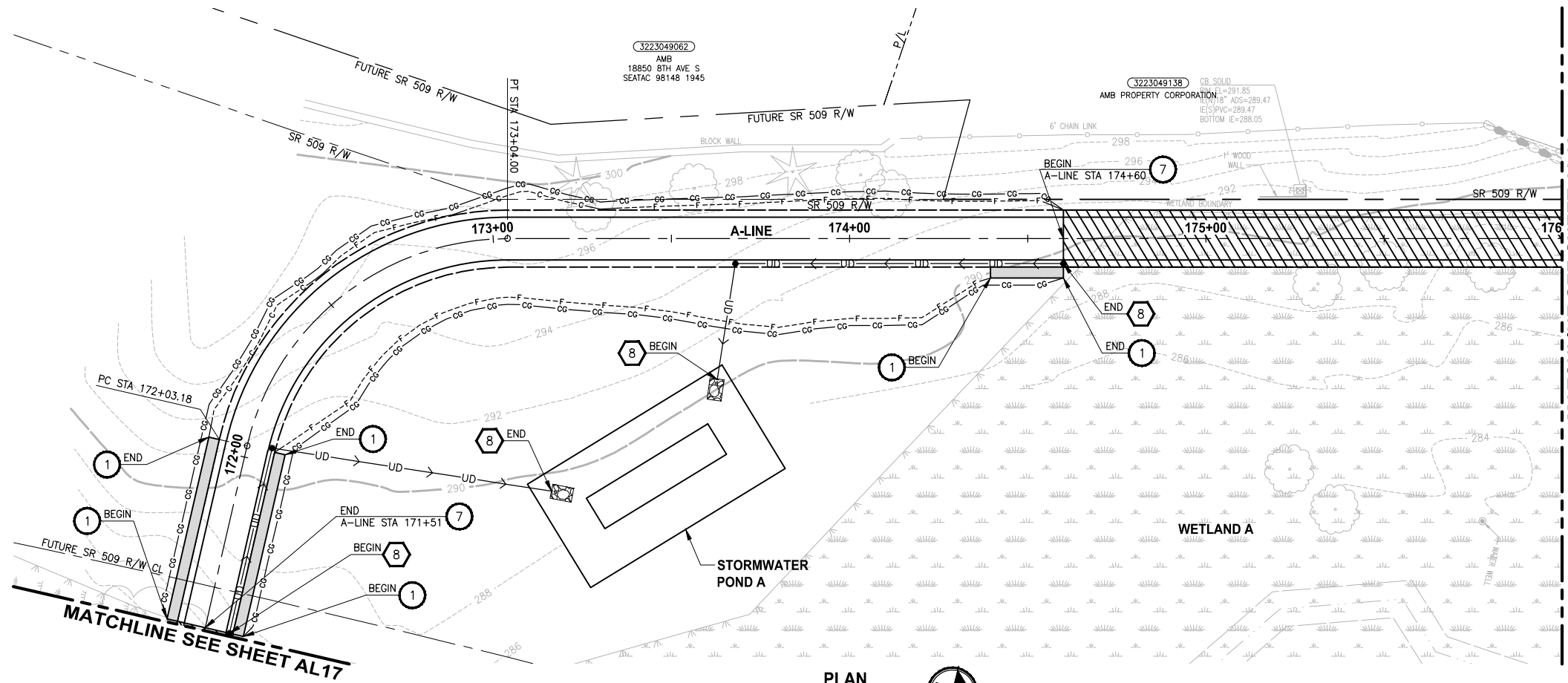
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PROJECT NAME
LAKE TO SOUND TRAIL SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 23 OF 33
AL17

LAYOUT: AL18
 PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151-L2ST-SegC\995Secs\CADD\Phase 2C\Task_21200C\DWG
 PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:43:37 PM



PROFILE

HORIZ: 1"=20'
VERT: 1"=5'

PRELIMINARY

CIVIL CONSTRUCTION NOTES:

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LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
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| | | | J. JUN |
| | | | B. PURGANAN |
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ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY

| | |
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| FILE NAME | PS1521151P2CT2T2AL-01 |
| JOB No. | 554-1521-151 P2C T2T200C |
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PROJECT NAME

**LAKE TO SOUND TRAIL
SEGMENT C**

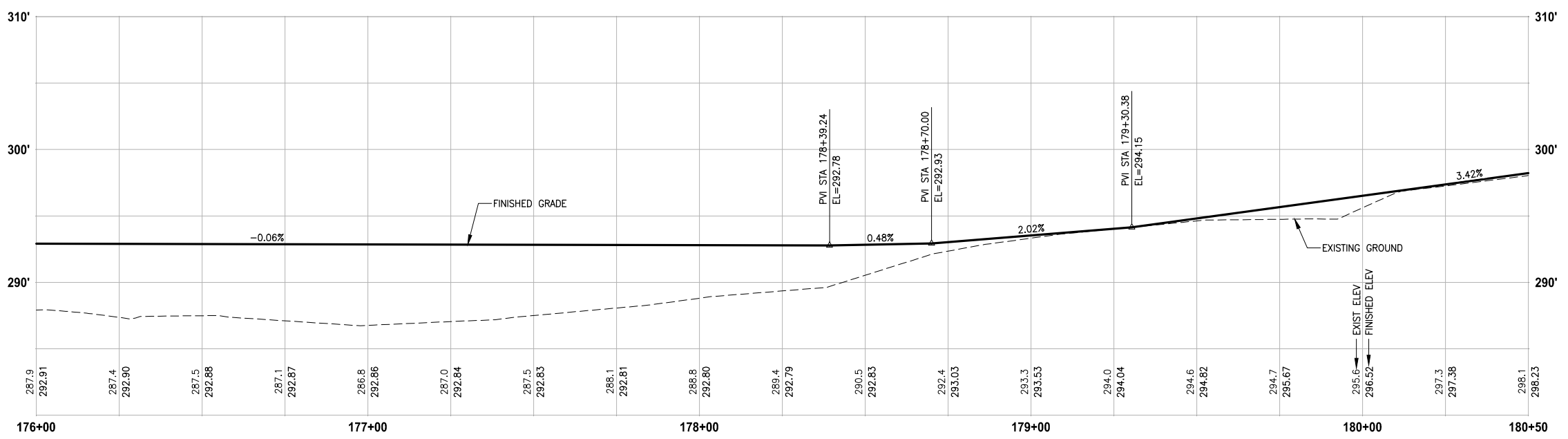
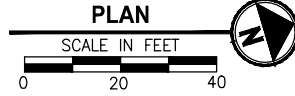
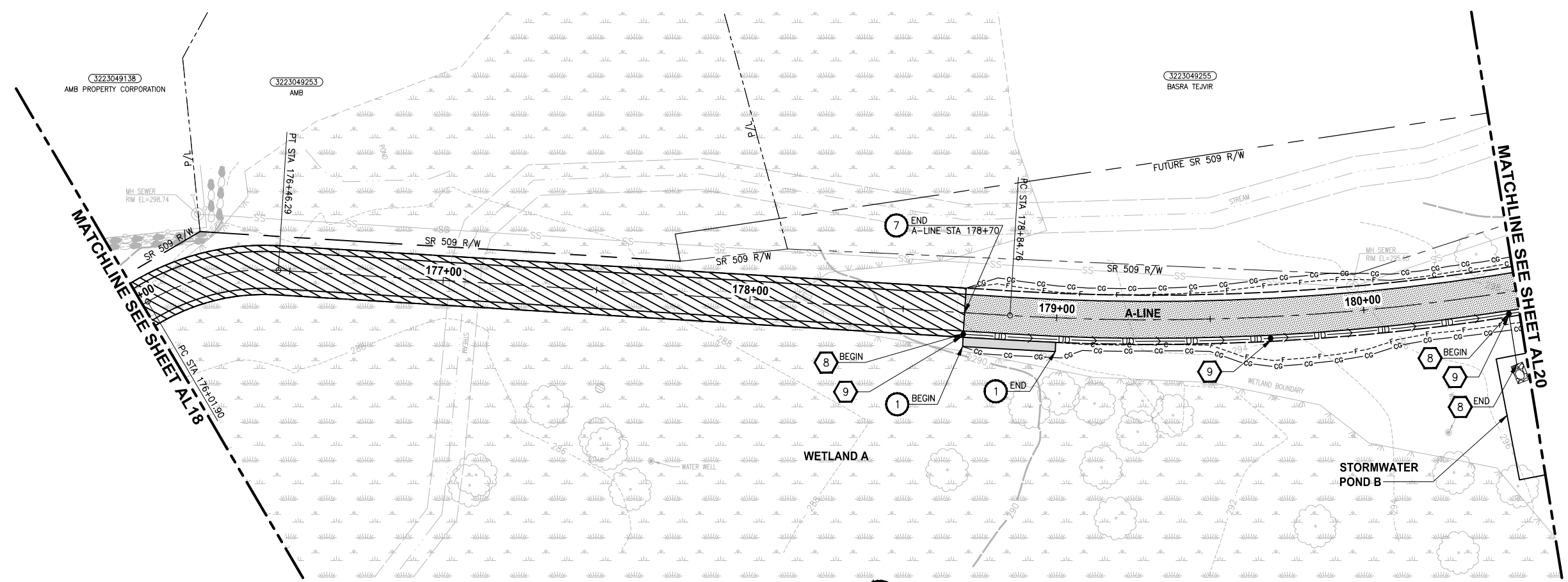
FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
24 OF 33

AL18

LAYOUT: AL19
 PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151-L2ST-SegC\995\SecC\CADD\Phase 2C\Task 21200C\DWG
 PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:43:54 PM



PROFILE

HORIZ: 1"=20'
 VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
2. STORMWATER CONVEYANCE SYSTEMS DEPICTED IN THE DRAFT 30 PERCENT PLANS ARE FOR PRELIMINARY DESIGN PURPOSES. STORMWATER CONVEYANCE SYSTEM DESIGN MAY CHANGE DURING FINAL DESIGN IF CONFLICTS WITH EXISTING UTILITIES.
3. PERMEABLE PAVEMENT (POROUS HMA) IS PROPOSED FOR THE PROPOSED TRAIL SURFACE FOR ALL AREAS WHERE INFILTRATION IS LIKELY TO BE FEASIBLE. FURTHER GEOTECHNICAL INVESTIGATION IS REQUIRED TO CONFIRM WHETHER OR NOT THE UNDERLYING SOILS HAVE SUITABLE INFILTRATION RATES TO SUPPORT POROUS HMA. FOR THE DRAFT 30 PERCENT DESIGN PLANS, AREAS ADJACENT TO WETLANDS A, G AND H ARE PROPOSED TO USE CONVENTIONAL HMA UNTIL FURTHER GEOTECHNICAL INVESTIGATION IS PERFORMED TO CONFIRM IF UNDERLYING SOIL TYPES AND GROUNDWATER ELEVATIONS ARE SUITABLE TO INSTALL PERMEABLE PAVEMENT.

LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME: PS1521151P2C2T2AL-01
 JOB No.: 554-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

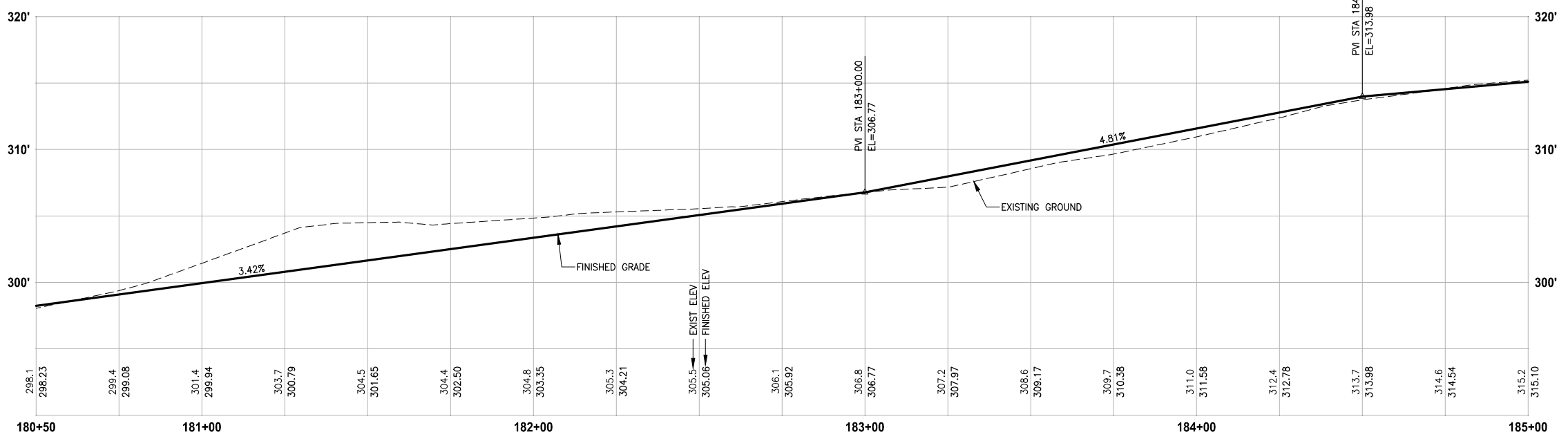
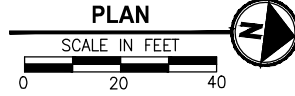
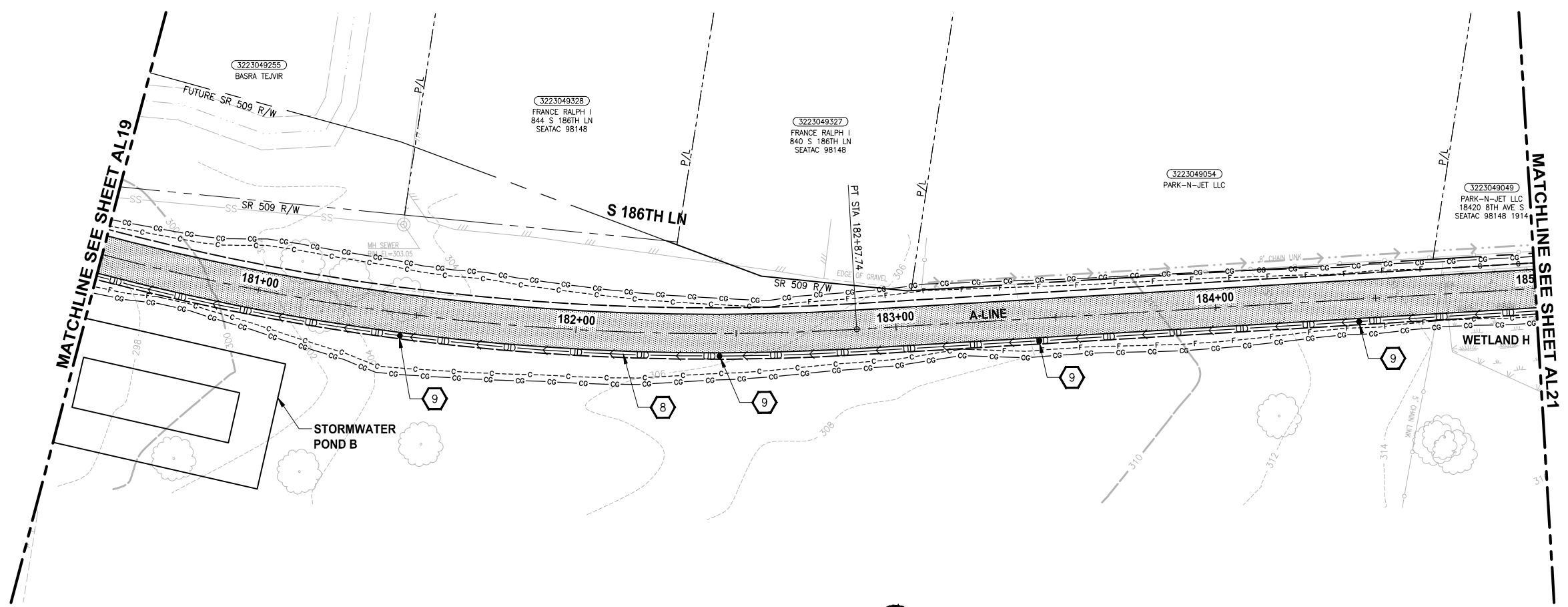
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PROJECT NAME
LAKE TO SOUND TRAIL
SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD /
 DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 25 OF 33
AL19

LAYOUT: AL20 PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151_L2ST-Seq\995Sec\3\ADD\Phase 2C\Task 2T200C\DWG PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:54:43 PM



PROFILE
 HORIZ: 1"=20'
 VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

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LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME: PS1521151P2CT2T2AL-01
 JOB No.: 554-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

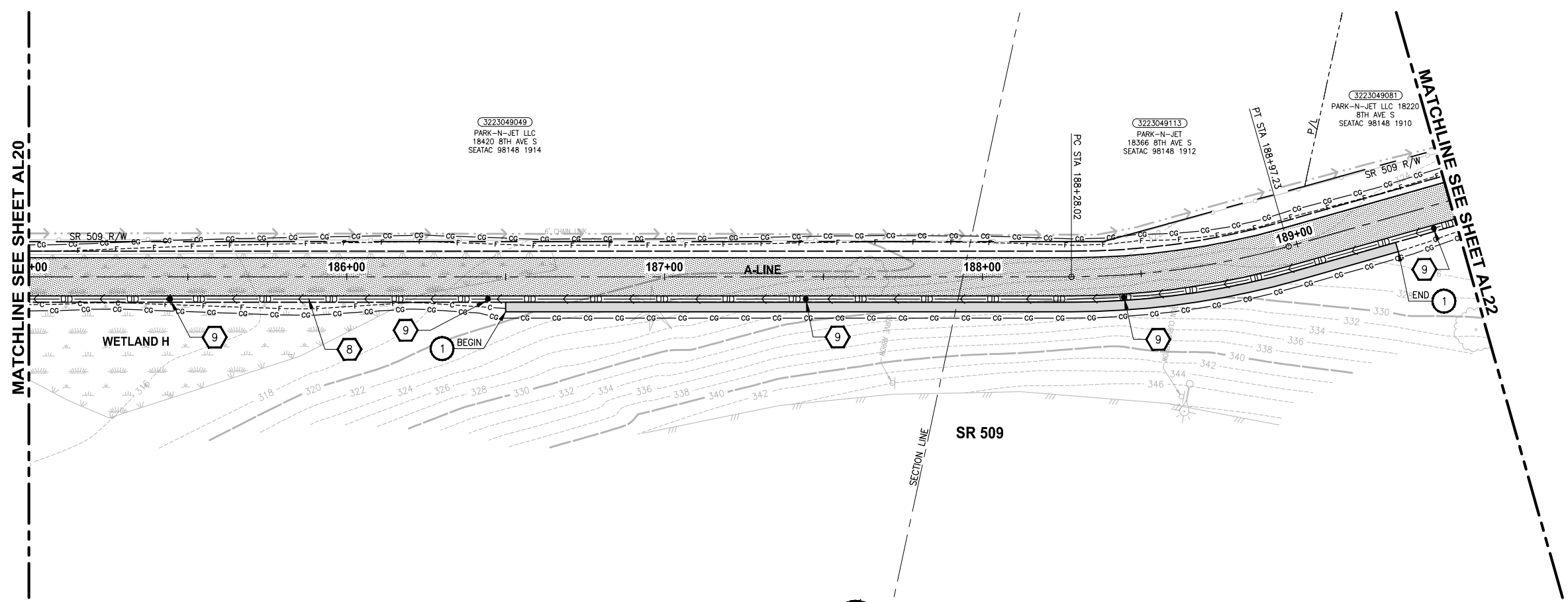
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PROJECT NAME
**LAKE TO SOUND TRAIL
 SEGMENT C**
 FROM S 200TH ST TO S NORMANDY ROAD /
 DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 26 OF 33
AL20

PATH: U:\PSO\Projects\Clients\1521-151 L2ST-SegC\99Sects\CADD\Phase 2C\Task 21200C\DWG PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:44:29 PM
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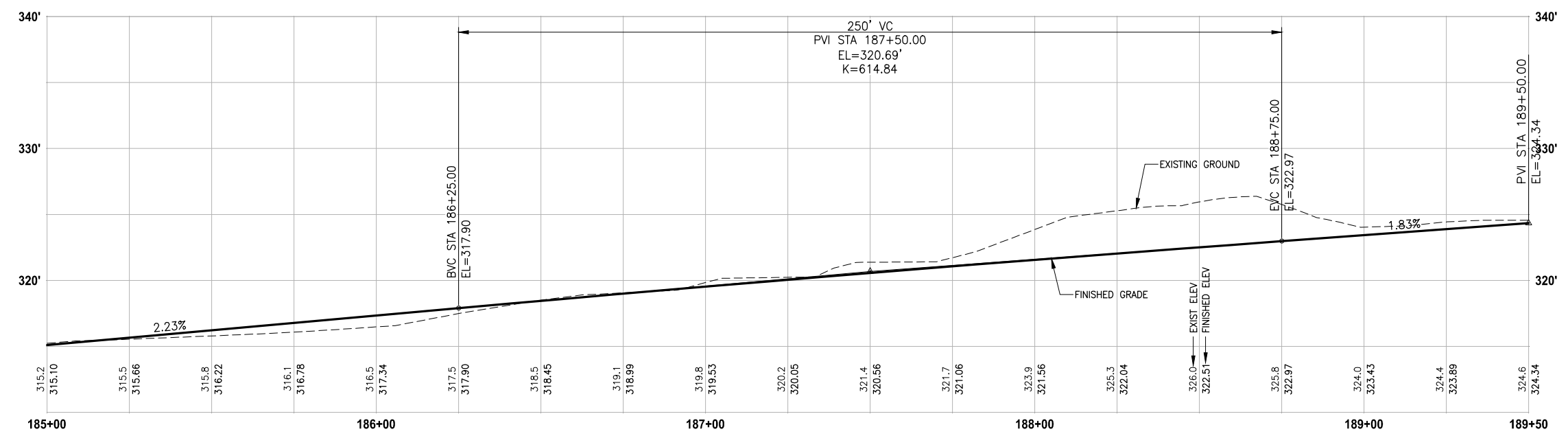


- CIVIL CONSTRUCTION NOTES:**
- 1 INSTALL RETAINING WALL.
 - 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
 - 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
 - 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
 - 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
 - 6 RAISED TRAFFIC ISLAND.
 - 7 ELEVATED STRUCTURE.
 - 8 BUS LANDING PAD.
 - 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

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- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
 - 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
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 - 4 SCHEDULE A CULVERT PIPE.
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 - 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
 - 7 INFILTRATION TRENCH.
 - 8 UNDERDRAIN TRENCH.
 - 9 UNDERDRAIN TRENCH CLEANOUT.
 - 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

- STORMWATER GENERAL NOTES:**
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LEGEND:
 IMPERVIOUS TRAIL SECTION



PROFILE
 HORIZ: 1"=20'
 VERT: 1"=5'

30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME: PS1521151P2CT2T2AL-01
 JOB No.: 554-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

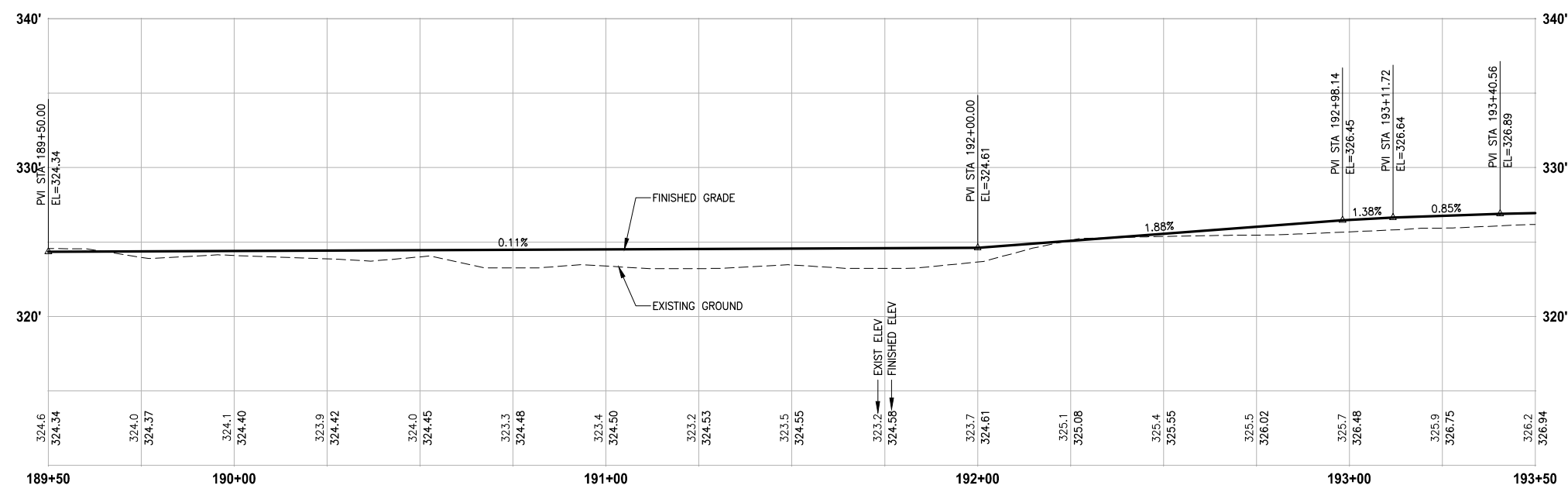
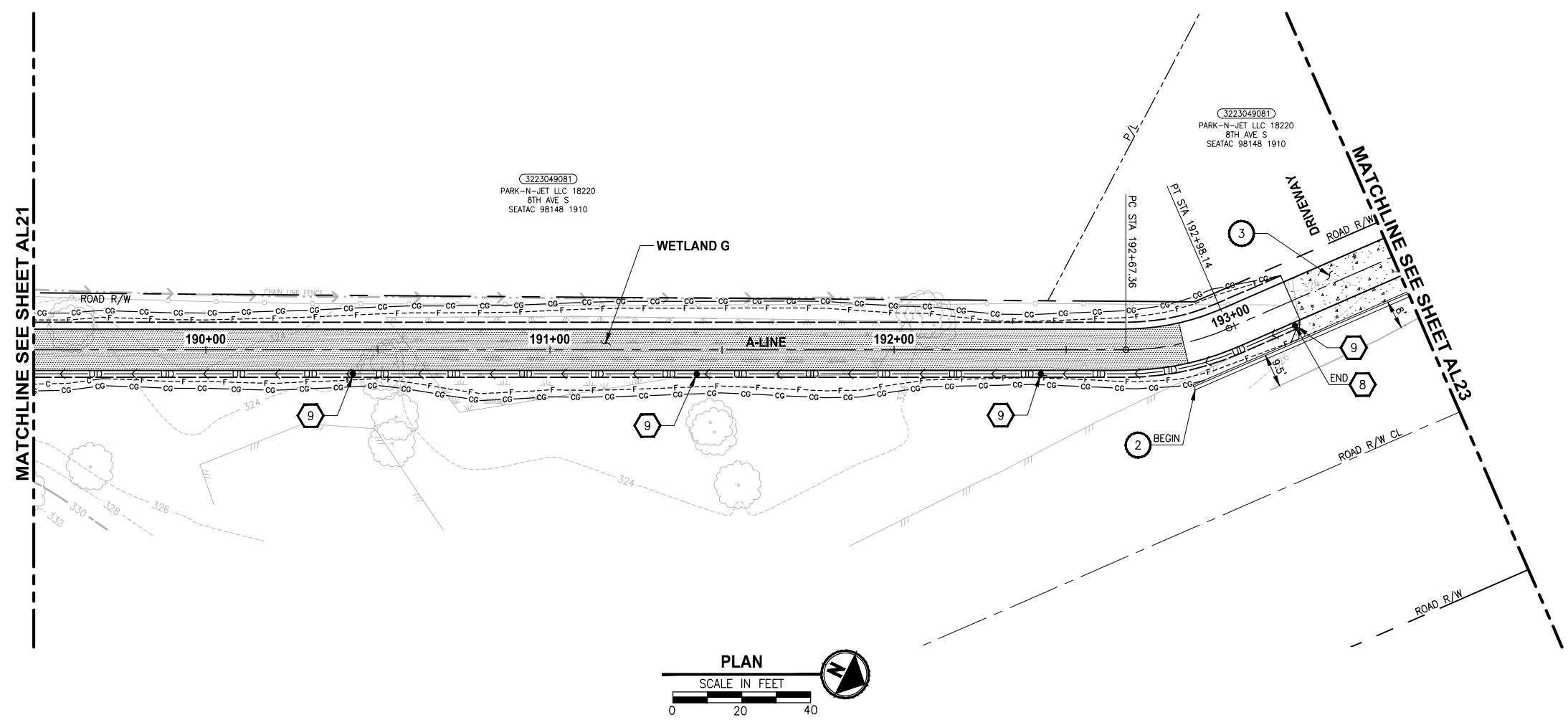
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PROJECT NAME
LAKE TO SOUND TRAIL
SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD /
 DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 27 OF 33
AL21

LAYOUT: AL22 PATH: U:\PS0\Projects\Clients\1521-KingCo\1521-151_L2ST-Seq\995Sec\3ADD\Phase 2C\Task 2T200C\DWG PLOTTED BY: purgabub DATE: Wednesday, December 07, 2016 3:44:52 PM



PROFILE
 HORIZ: 1"=20'
 VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
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STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
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STORMWATER GENERAL NOTES:

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LEGEND:



30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME: PS1521151P2CT2T2AL-01
 JOB No: 584-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

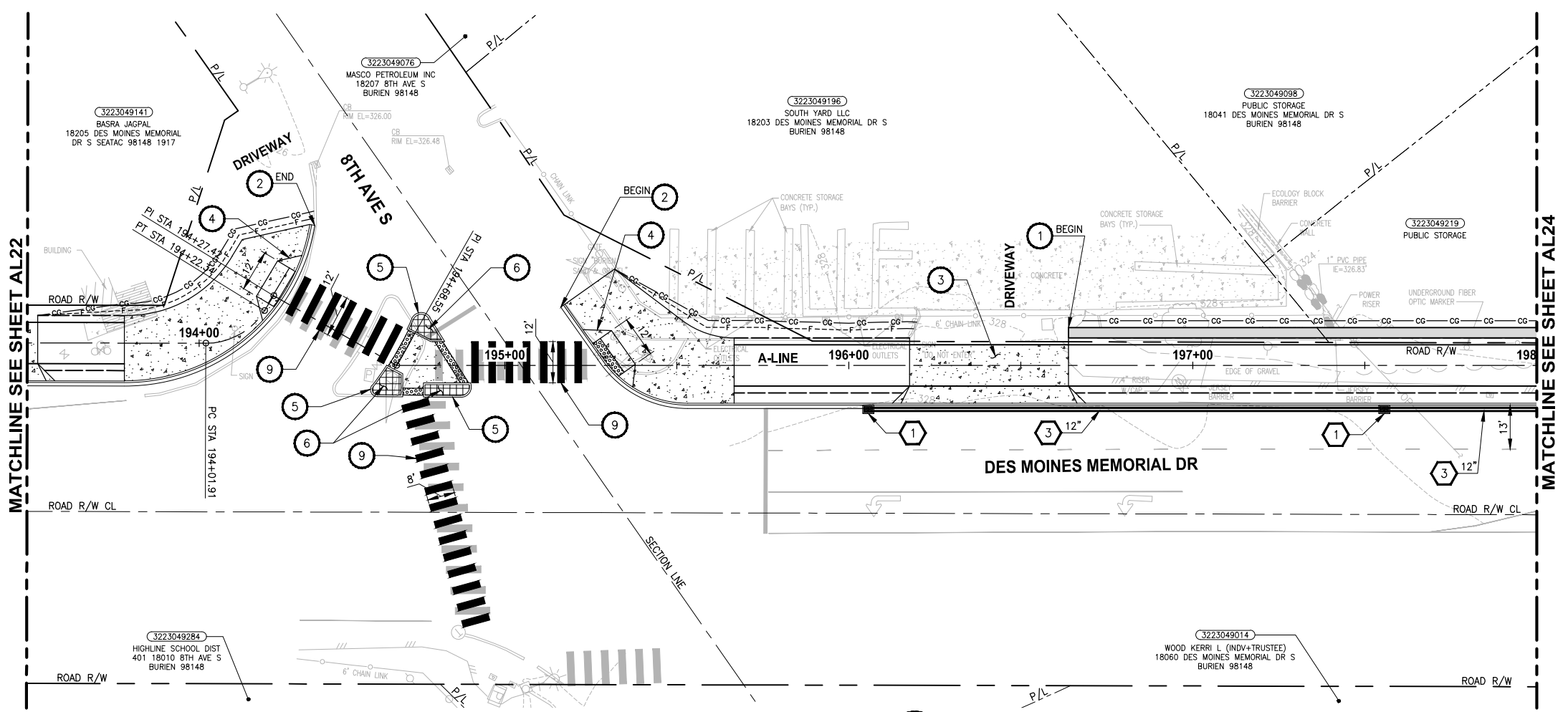
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PROJECT NAME
**LAKE TO SOUND TRAIL
 SEGMENT C**
 FROM S 200TH ST TO S NORMANDY ROAD /
 DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 28 OF 33
AL22

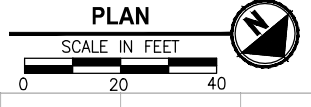
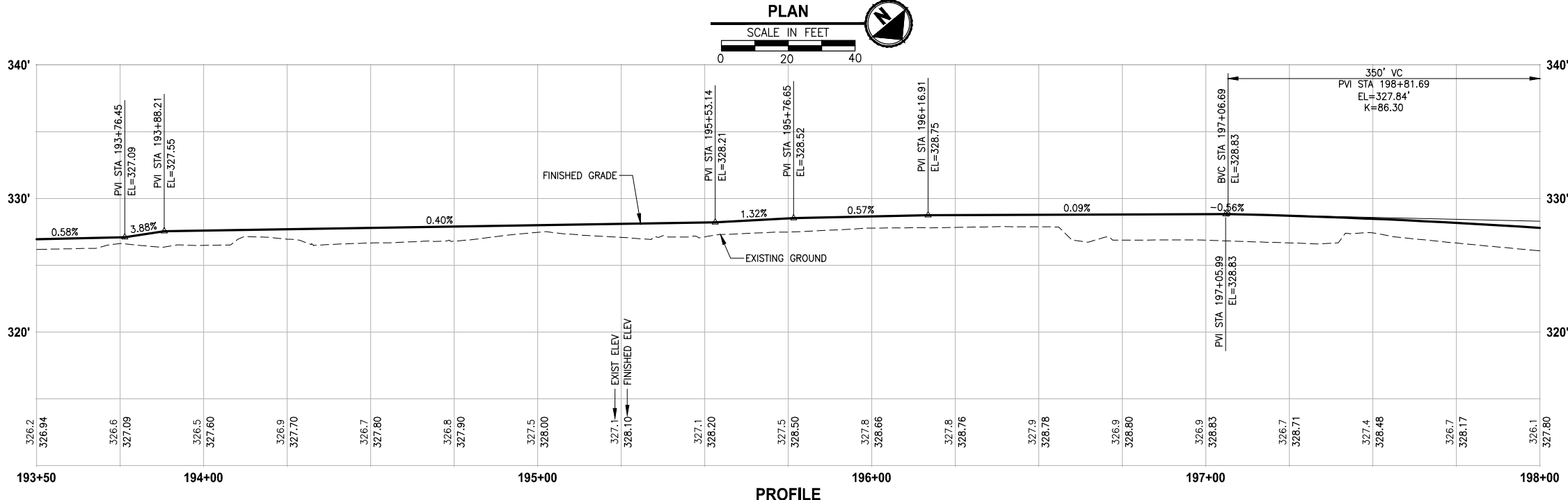
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 PLOTTED BY: purgabub DATE: Wednesday, December 07, 2016 3:45:07 PM



- CIVIL CONSTRUCTION NOTES:**
- 1 INSTALL RETAINING WALL.
 - 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
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**30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION**

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

**ONE INCH AT FULL SCALE,
IF NOT, SCALE ACCORDINGLY**

FILE NAME
PS1521151P2CT2T2AL-01

JOB No.
554-1521-151 P2C T2T200C

DATE
DECEMBER 2016

PRELIMINARY

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P 206.394.3700
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PROJECT NAME
**LAKE TO SOUND TRAIL
SEGMENT C**

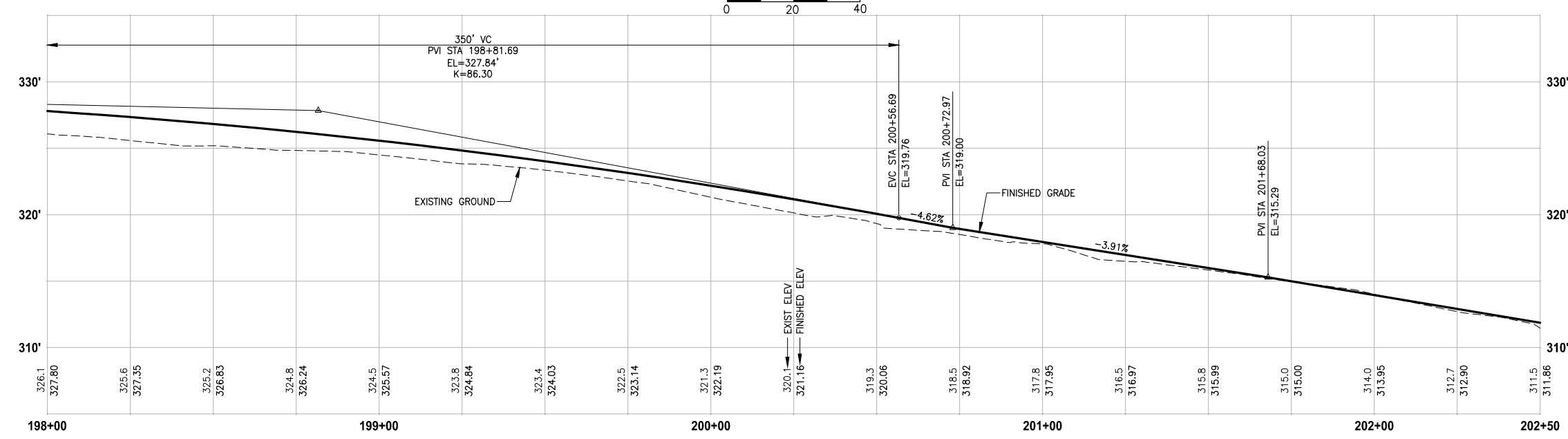
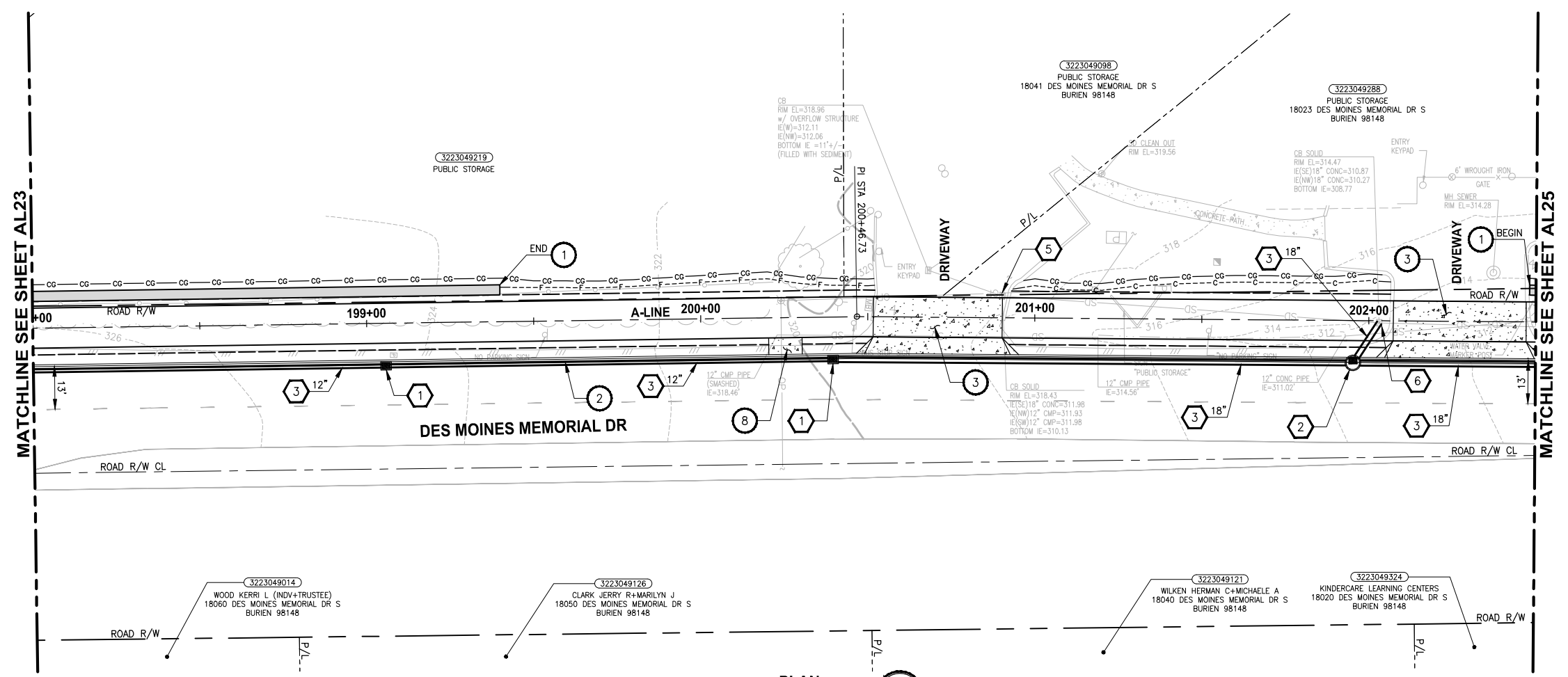
FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
29 OF 33

AL23

LAYOUT: AL24 PATH: U:\PSO\Projects\Clients\1521-KingCo\554-1521-151-L21T-Seq\995\cadd\Phase 2C\Task 2T200C\DWG PLOTTED BY: purgabub DATE: Wednesday, December 07, 2016 3:45:23 PM



CIVIL CONSTRUCTION NOTES:

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- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
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LEGEND:

IMPERVIOUS TRAIL SECTION

30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY

FILE NAME: PSI1521151P2C2T2AL-01
JOB No: 554-1521-151 P2C T2T200C
DATE: DECEMBER 2016

PRELIMINARY

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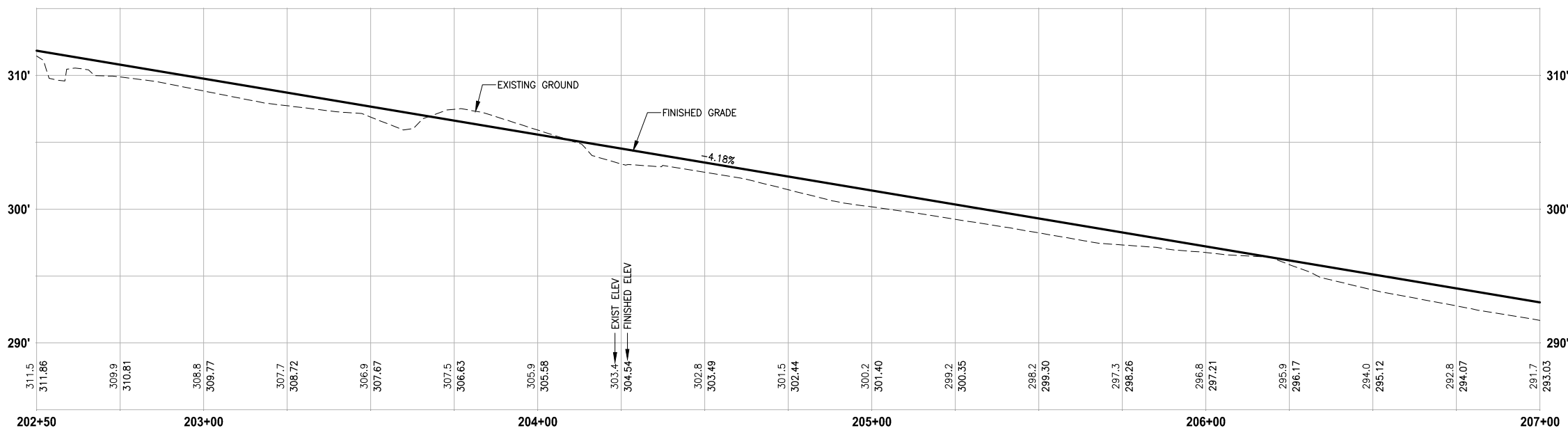
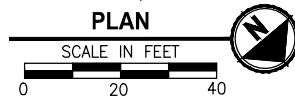
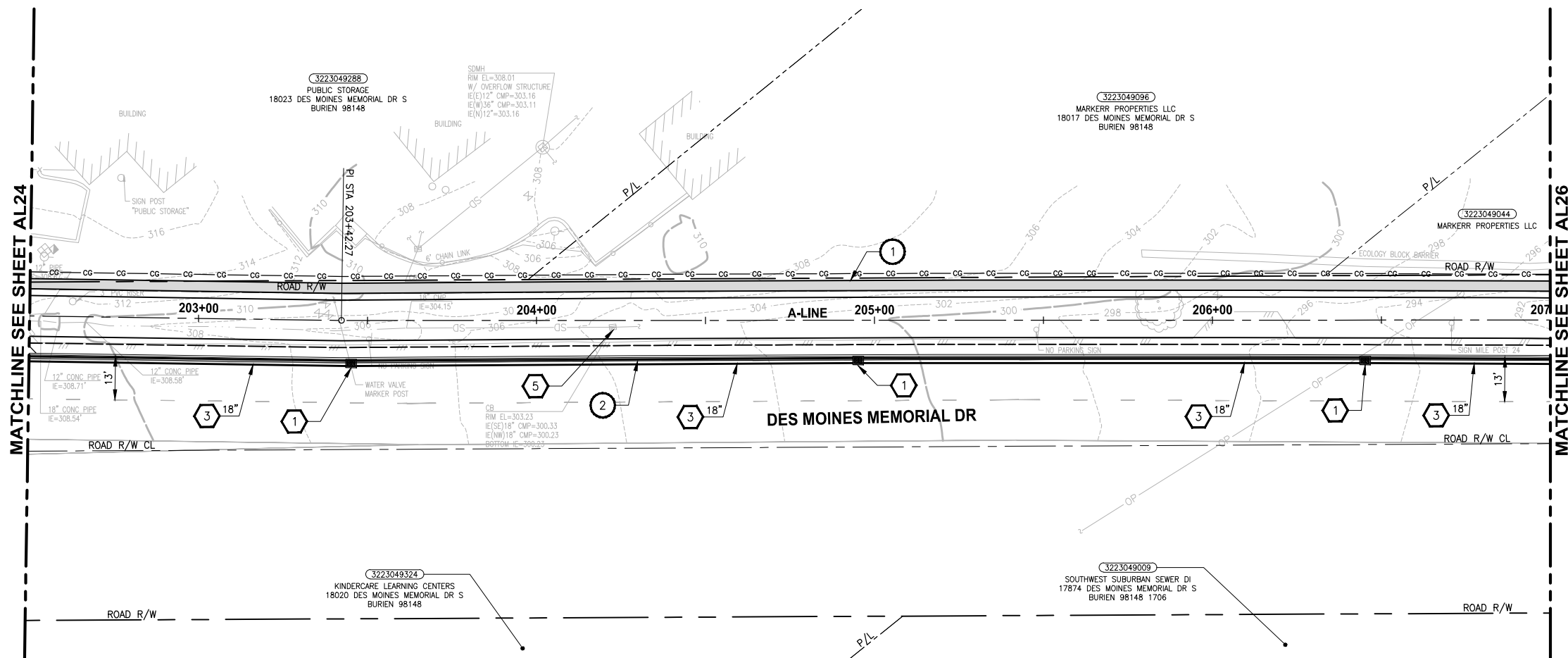
719 2ND AVENUE, SUITE 200 | SEATTLE, WA 98104
P 206.394.3700
WWW.PARAMETRIX.COM

PROJECT NAME
LAKE TO SOUND TRAIL SEGMENT C
FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
30 OF 33
AL24

LAYOUT: AL25
 PATH: U:\PS0\Projects\Clients\1521-KingCo\554-1521-151-L2ST-Seq\995sec\CAADD\Phase 2C\Task 2T200C\DWG
 PLOTTED BY: purgabut DATE: Wednesday, December 07, 2016 3:45:37 PM



PROFILE

HORIZ: 1"=20'
VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
2. STORMWATER CONVEYANCE SYSTEMS DEPICTED IN THE DRAFT 30 PERCENT PLANS ARE FOR PRELIMINARY DESIGN PURPOSES. STORMWATER CONVEYANCE SYSTEM DESIGN MAY CHANGE DURING FINAL DESIGN IF CONFLICTS WITH EXISTING UTILITIES.
3. PERMEABLE PAVEMENT (POROUS HMA) IS PROPOSED FOR THE PROPOSED TRAIL SURFACE FOR ALL AREAS WHERE INFILTRATION IS LIKELY TO BE FEASIBLE. FURTHER GEOTECHNICAL INVESTIGATION IS REQUIRED TO CONFIRM WHETHER OR NOT THE UNDERLYING SOILS HAVE SUITABLE INFILTRATION RATES TO SUPPORT POROUS HMA. FOR THE DRAFT 30 PERCENT DESIGN PLANS, AREAS ADJACENT TO WETLANDS A, G AND H ARE PROPOSED TO USE CONVENTIONAL HMA UNTIL FURTHER GEOTECHNICAL INVESTIGATION IS PERFORMED TO CONFIRM IF UNDERLYING SOIL TYPES AND GROUNDWATER ELEVATIONS ARE SUITABLE TO INSTALL PERMEABLE PAVEMENT.

LEGEND:



30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME: PS1521151P2CT2T2AL-01
 JOB No: 554-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

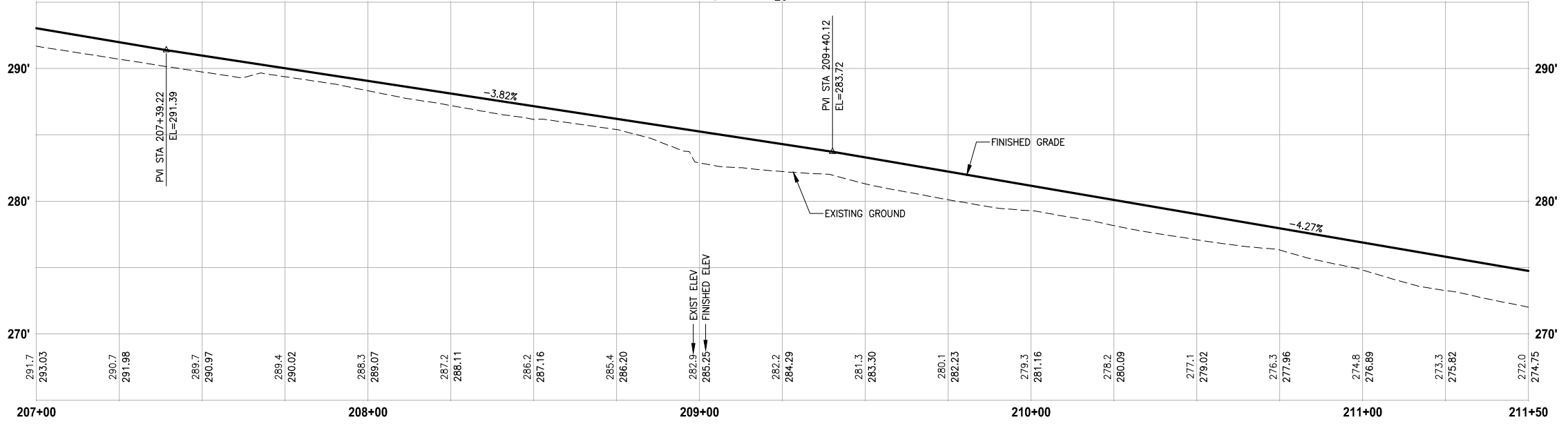
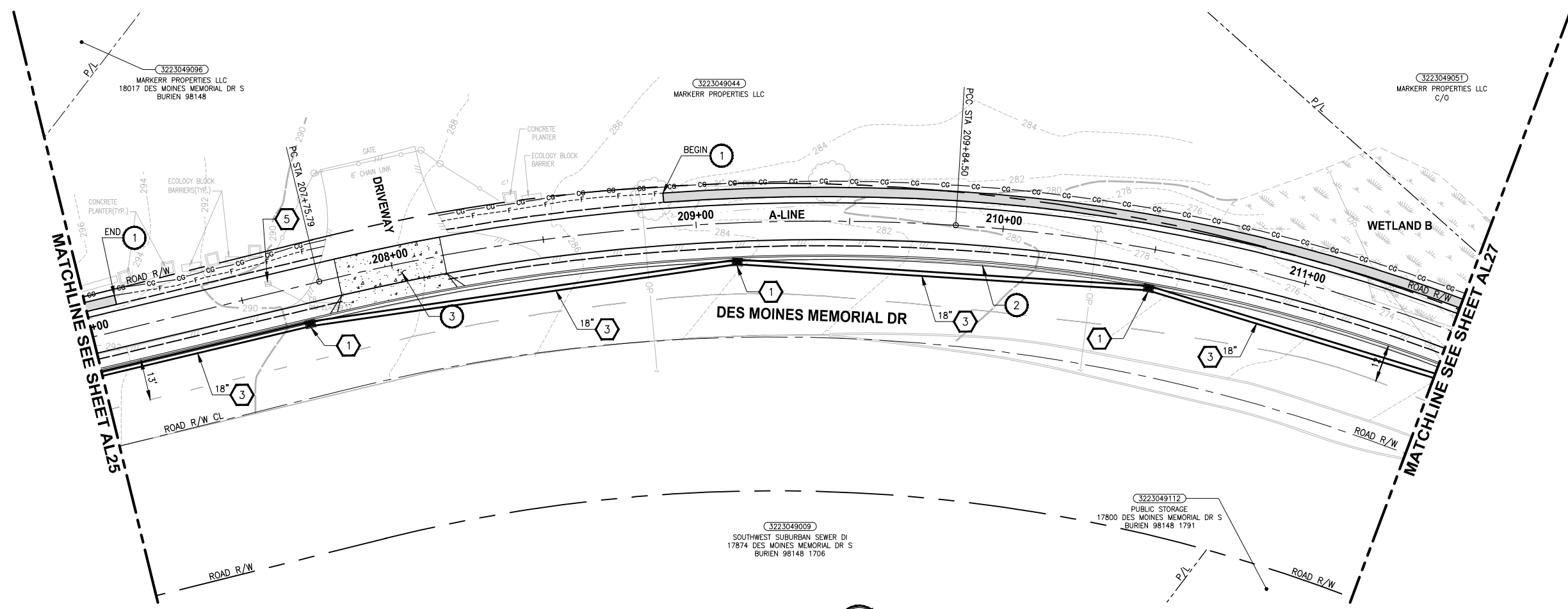
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PROJECT NAME
LAKE TO SOUND TRAIL SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD / DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
31 OF 33
AL25

LAYOUT: AL26 PATH: U:\PSO\Projects\Clients\1521-KingCo\1521-151_L2ST-Seq\1521-151_P2C_T2T200C\DWG PLOTTED BY: purgabot DATE: Wednesday, December 07, 2016 3:45:55 PM



PROFILE
 HORIZ: 1"=20'
 VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

1. INSTALL RETAINING WALL.
2. CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
3. CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
4. PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
5. MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
6. RAISED TRAFFIC ISLAND.
7. ELEVATED STRUCTURE.
8. BUS LANDING PAD.
9. CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

1. CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
2. CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
3. SCHEDULE A STORM SEWER PIPE.
4. SCHEDULE A CULVERT PIPE.
5. ADJUST MANHOLE/CATCH BASIN.
6. ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
7. INFILTRATION TRENCH.
8. UNDERDRAIN TRENCH.
9. UNDERDRAIN TRENCH CLEANOUT.
10. CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
2. STORMWATER CONVEYANCE SYSTEMS DEPICTED IN THE DRAFT 30 PERCENT PLANS ARE FOR PRELIMINARY DESIGN PURPOSES. STORMWATER CONVEYANCE SYSTEM DESIGN MAY CHANGE DURING FINAL DESIGN IF CONFLICTS WITH EXISTING UTILITIES.
3. PERMEABLE PAVEMENT (POROUS HMA) IS PROPOSED FOR THE PROPOSED TRAIL SURFACE FOR ALL AREAS WHERE INFILTRATION IS LIKELY TO BE FEASIBLE. FURTHER GEOTECHNICAL INVESTIGATION IS REQUIRED TO CONFIRM WHETHER OR NOT THE UNDERLYING SOILS HAVE SUITABLE INFILTRATION RATES TO SUPPORT POROUS HMA. FOR THE DRAFT 30 PERCENT DESIGN PLANS, AREAS ADJACENT TO WETLANDS A, G AND H ARE PROPOSED TO USE CONVENTIONAL HMA UNTIL FURTHER GEOTECHNICAL INVESTIGATION IS PERFORMED TO CONFIRM IF UNDERLYING SOIL TYPES AND GROUNDWATER ELEVATIONS ARE SUITABLE TO INSTALL PERMEABLE PAVEMENT.

LEGEND:



30 % REVIEW SUBMITTAL
 NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
 FILE NAME: PS1521151P2CT2T2AL-01
 JOB No: 554-1521-151 P2C T2T200C
 DATE: DECEMBER 2016

PRELIMINARY

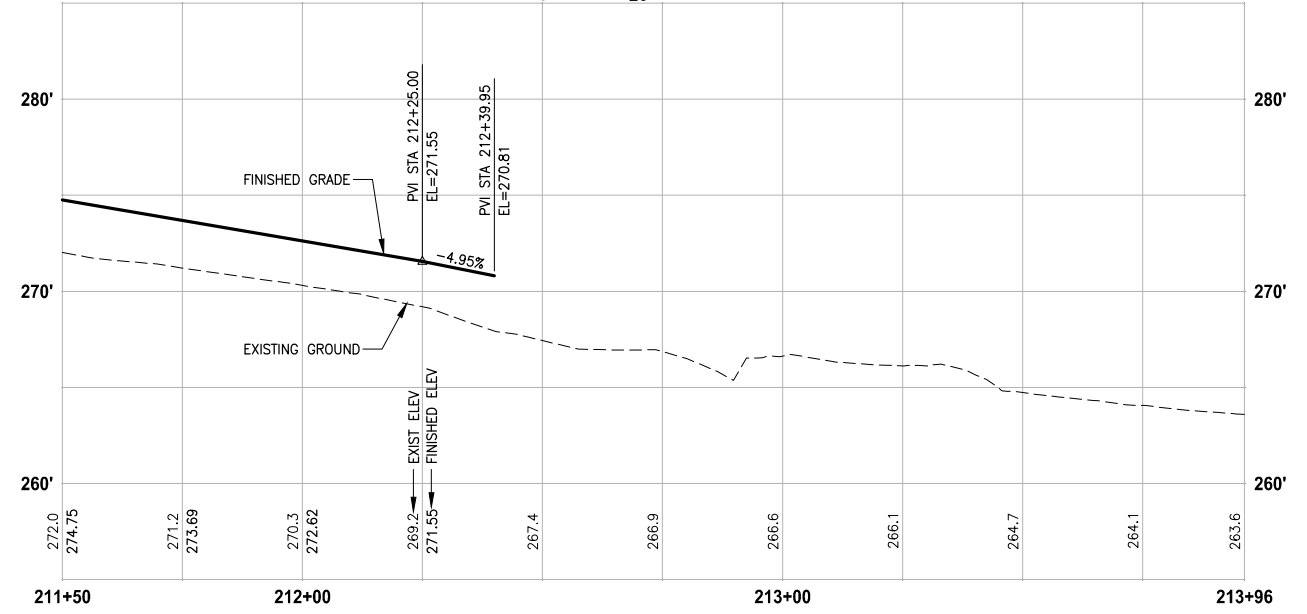
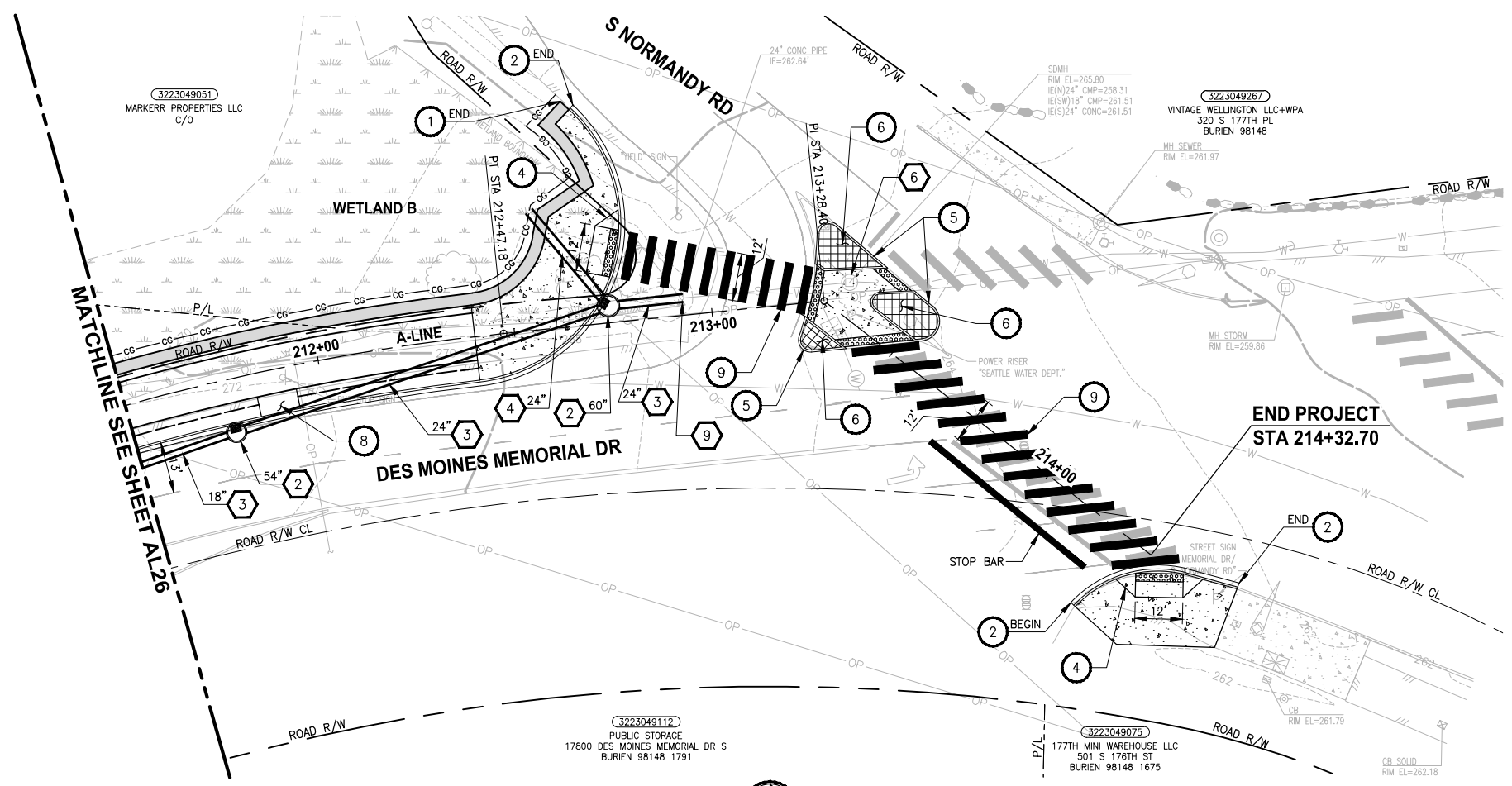
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PROJECT NAME
LAKE TO SOUND TRAIL
SEGMENT C
 FROM S 200TH ST TO S NORMANDY ROAD /
 DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
 32 OF 33
AL26

PATH: U:\PSD\Projects\Clients\1521-151 L2ST-Seq\995\cadd\Phase 2C\Task 21200C\DWG PLOTTED BY: purgabot DATE: Wednesday, December 07, 2016 3:46:13 PM LAYOUT: AL27



PROFILE
HORIZ: 1"=20'
VERT: 1"=5'

CIVIL CONSTRUCTION NOTES:

- 1 INSTALL RETAINING WALL.
- 2 CEMENT CONCRETE CURB AND GUTTER PER WSDOT STD PLAN F-10.12-03.
- 3 CEMENT CONCRETE DRIVEWAY ENTRANCE TYPE 3 PER WSDOT STD PLAN F-80.10-03.
- 4 PERPENDICULAR CURB RAMP PER WSDOT STD PLAN F-40.15-03.
- 5 MOUNTABLE CEMENT CONCRETE TRAFFIC CURB PER WSDOT STD PLAN F-10.12-03.
- 6 RAISED TRAFFIC ISLAND.
- 7 ELEVATED STRUCTURE.
- 8 BUS LANDING PAD.
- 9 CROSSWALK PER WSDOT STD PLAN M-15.10-01.

STORMWATER CONSTRUCTION NOTES:

- 1 CATCH BASIN TYPE 1 PER WSDOT STD PLAN B-5.20-01.
- 2 CATCH BASIN TYPE 2 PER WSDOT STD PLAN B-10.20-01.
- 3 SCHEDULE A STORM SEWER PIPE.
- 4 SCHEDULE A CULVERT PIPE.
- 5 ADJUST MANHOLE/CATCH BASIN.
- 6 ADJUST MANHOLE AND REPLACE WITH SLIP RESISTANT LIDS.
- 7 INFILTRATION TRENCH.
- 8 UNDERDRAIN TRENCH.
- 9 UNDERDRAIN TRENCH CLEANOUT.
- 10 CONCRETE COLLAR FOR CULVERT CONNECTION.

STORMWATER GENERAL NOTES:

1. POTENTIAL LOCATIONS AND APPROXIMATE SIZES FOR STORMWATER PONDS A AND B FOOTPRINTS ARE SHOWN FOR REVIEW. GRADING AND DETAILED CONVEYANCE PIPES WILL BE DESIGNED IN LATER SUBMITTAL.
2. STORMWATER CONVEYANCE SYSTEMS DEPICTED IN THE DRAFT 30 PERCENT PLANS ARE FOR PRELIMINARY DESIGN PURPOSES. STORMWATER CONVEYANCE SYSTEM DESIGN MAY CHANGE DURING FINAL DESIGN IF CONFLICTS WITH EXISTING UTILITIES.
3. PERMEABLE PAVEMENT (POROUS HMA) IS PROPOSED FOR THE PROPOSED TRAIL SURFACE FOR ALL AREAS WHERE INFILTRATION IS LIKELY TO BE FEASIBLE. FURTHER GEOTECHNICAL INVESTIGATION IS REQUIRED TO CONFIRM WHETHER OR NOT THE UNDERLYING SOILS HAVE SUITABLE INFILTRATION RATES TO SUPPORT POROUS HMA. FOR THE DRAFT 30 PERCENT DESIGN PLANS, AREAS ADJACENT TO WETLANDS A, G AND H ARE PROPOSED TO USE CONVENTIONAL HMA UNTIL FURTHER GEOTECHNICAL INVESTIGATION IS PERFORMED TO CONFIRM IF UNDERLYING SOIL TYPES AND GROUNDWATER ELEVATIONS ARE SUITABLE TO INSTALL PERMEABLE PAVEMENT.

LEGEND:



30 % REVIEW SUBMITTAL
NOT FOR CONSTRUCTION

| REVISIONS | DATE | BY | DESIGNED |
|-----------|------|----|-------------|
| | | | J. JUN |
| | | | B. PURGANAN |
| | | | Y. HO |
| | | | J. DVORAK |

ONE INCH AT FULL SCALE, IF NOT, SCALE ACCORDINGLY
FILE NAME: PS1521151P2CT2T2AL-01
JOB No: 554-1521-151 P2C T2T200C
DATE: DECEMBER 2016

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PROJECT NAME
LAKE TO SOUND TRAIL
SEGMENT C
FROM S 200TH ST TO S NORMANDY ROAD /
DES MOINES MEMORIAL DRIVE INTERSECTION

PLAN AND PROFILE

SHEET NO.
33 OF 33
AL27

Attachment C

Calculations



MGS FLOOD PROJECT REPORT

Program Version: MGSFlood 4.38
Program License Number: 200510005
Project Simulation Performed on: 12/02/2016 3:17 PM
Report Generation Date: 12/02/2016 3:45 PM

Input File Name: TDA1.fld
Project Name: L2S Trail Segment C
Analysis Title: TDA 1
Comments:

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 12

Full Period of Record Available used for Routing
Precipitation Station : 96003605 Puget East 36 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961036 Puget East 36 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

***** Default HSPF Parameters Used (Not Modified by User) *****

***** WATERSHED DEFINITION *****

Predevelopment/Post Development Tributary Area Summary

| | | Predeveloped | Post Developed |
|--|-------|--------------|----------------|
| Total Subbasin Area (acres) | 0.500 | 0.500 | |
| Area of Links that Include Precip/Evap (acres) | 0.000 | 0.000 | |
| Total (acres) | 0.500 | 0.500 | |

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
-----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.090
Outwash Forest 0.000

| | |
|-----------------|-------|
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.410 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.000 |

Subbasin Total 0.500

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
 -----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.045
Outwash Forest 0.000
Outwash Pasture 0.000
Outwash Grass 0.205
Wetland 0.000
Green Roof 0.000
User 1 0.000
Impervious 0.250

Subbasin Total 0.500

***** **LINK DATA** *****

-----**SCENARIO: PREDEVELOPED**

Number of Links: 0

***** **LINK DATA** *****

-----**SCENARIO: POSTDEVELOPED**

Number of Links: 0

*******FLOOD FREQUENCY AND DURATION STATISTICS*******

-----**SCENARIO: PREDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

*******Groundwater Recharge Summary*******

Recharge is computed as input to PerInd Groundwater Plus Infiltration in Structures

| Total Predeveloped Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 126.529 |
| Total: | 126.529 |

| Total Post Developed Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 63.264 |
| Total: | 63.264 |

Total Predevelopment Recharge is Greater than Post Developed Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.801 ac-ft/year, Post Developed: 0.400 ac-ft/year

*****Water Quality Facility Data *****

-----SCENARIO: PREDEVELOPED

Number of Links: 0

-----SCENARIO: POSTDEVELOPED

Number of Links: 0

*****Compliance Point Results *****

Scenario Predeveloped Compliance Subbasin: Subbasin 1

Scenario Postdeveloped Compliance Subbasin: Subbasin 1

***** Point of Compliance Flow Frequency Data *****
 Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff | | Postdevelopment Runoff | |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years) | Discharge (cfs) | Tr (Years) | Discharge (cfs) |
| 2-Year | 7.112E-03 | 2-Year | 9.352E-02 |
| 5-Year | 1.417E-02 | 5-Year | 0.122 |
| 10-Year | 2.267E-02 | 10-Year | 0.147 |
| 25-Year | 4.319E-02 | 25-Year | 0.186 |
| 50-Year | 5.052E-02 | 50-Year | 0.230 |
| 100-Year | 8.339E-02 | 100-Year | 0.279 |
| 200-Year | 8.509E-02 | 200-Year | 0.297 |

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

MGS FLOOD PROJECT REPORT

Program Version: MGSFlood 4.38
Program License Number: 200510005
Project Simulation Performed on: 12/02/2016 3:40 PM
Report Generation Date: 12/02/2016 3:43 PM

Input File Name: TDA2.fld
Project Name: L2S Trail Segment C
Analysis Title: TDA 2
Comments:

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 12

Full Period of Record Available used for Routing
Precipitation Station : 96003605 Puget East 36 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961036 Puget East 36 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

***** Default HSPF Parameters Used (Not Modified by User) *****

***** WATERSHED DEFINITION *****

Predevelopment/Post Development Tributary Area Summary

| | | Predeveloped | Post Developed |
|--|-------|--------------|----------------|
| Total Subbasin Area (acres) | 0.390 | 0.390 | |
| Area of Links that Include Precip/Evap (acres) | 0.000 | 0.000 | |
| Total (acres) | 0.390 | 0.390 | |

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
-----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.000
Outwash Forest 0.000

| | |
|-----------------|-------|
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.100 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.290 |

Subbasin Total 0.390

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
 -----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.000
Outwash Forest 0.000
Outwash Pasture 0.000
Outwash Grass 0.195
Wetland 0.000
Green Roof 0.000
User 1 0.000
Impervious 0.195

Subbasin Total 0.390

***** **LINK DATA** *****

-----**SCENARIO: PREDEVELOPED**

Number of Links: 0

***** **LINK DATA** *****

-----**SCENARIO: POSTDEVELOPED**

Number of Links: 0

*******FLOOD FREQUENCY AND DURATION STATISTICS*******

-----**SCENARIO: PREDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

*******Groundwater Recharge Summary*******

Recharge is computed as input to PerInd Groundwater Plus Infiltration in Structures

| Total Predeveloped Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 28.333 |
| Total: | 28.333 |

| Total Post Developed Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 55.250 |
| Total: | 55.250 |

Total Predevelopment Recharge is Less than Post Developed Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.179 ac-ft/year, Post Developed: 0.350 ac-ft/year

*****Water Quality Facility Data *****

-----SCENARIO: PREDEVELOPED

Number of Links: 0

-----SCENARIO: POSTDEVELOPED

Number of Links: 0

*****Compliance Point Results *****

Scenario Predeveloped Compliance Subbasin: Subbasin 1

Scenario Postdeveloped Compliance Subbasin: Subbasin 1

***** Point of Compliance Flow Frequency Data *****
 Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff | | Postdevelopment Runoff | |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years) | Discharge (cfs) | Tr (Years) | Discharge (cfs) |
| 2-Year | 0.103 | 2-Year | 6.943E-02 |
| 5-Year | 0.137 | 5-Year | 9.230E-02 |
| 10-Year | 0.161 | 10-Year | 0.109 |
| 25-Year | 0.195 | 25-Year | 0.138 |
| 50-Year | 0.248 | 50-Year | 0.167 |
| 100-Year | 0.296 | 100-Year | 0.199 |
| 200-Year | 0.318 | 200-Year | 0.214 |

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

MGS FLOOD PROJECT REPORT

Program Version: MGSFlood 4.38
Program License Number: 200510005
Project Simulation Performed on: 12/02/2016 3:43 PM
Report Generation Date: 12/02/2016 3:45 PM

Input File Name: TDA3.fld
Project Name: L2S Trail Segment C
Analysis Title: TDA 3
Comments:

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 12

Full Period of Record Available used for Routing
Precipitation Station : 96003605 Puget East 36 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961036 Puget East 36 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

***** Default HSPF Parameters Used (Not Modified by User) *****

***** WATERSHED DEFINITION *****

Predevelopment/Post Development Tributary Area Summary

| | | Predeveloped | Post Developed |
|--|-------|--------------|----------------|
| Total Subbasin Area (acres) | 0.520 | 0.520 | |
| Area of Links that Include Precip/Evap (acres) | 0.000 | 0.000 | |
| Total (acres) | 0.520 | 0.520 | |

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
-----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.000
Outwash Forest 0.000

| | |
|-----------------|-------|
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.000 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.520 |

Subbasin Total 0.520

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
 -----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.000
Outwash Forest 0.000
Outwash Pasture 0.000
Outwash Grass 0.260
Wetland 0.000
Green Roof 0.000
User 1 0.000
Impervious 0.260

Subbasin Total 0.520

***** **LINK DATA** *****

-----**SCENARIO: PREDEVELOPED**

Number of Links: 0

***** **LINK DATA** *****

-----**SCENARIO: POSTDEVELOPED**

Number of Links: 0

*******FLOOD FREQUENCY AND DURATION STATISTICS*******

-----**SCENARIO: PREDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

*******Groundwater Recharge Summary*******

Recharge is computed as input to PerInd Groundwater Plus Infiltration in Structures

| Total Predeveloped Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 0.000 |
| Total: | 0.000 |

| Total Post Developed Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 73.666 |
| Total: | 73.666 |

Total Predevelopment Recharge is Less than Post Developed Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.000 ac-ft/year, Post Developed: 0.466 ac-ft/year

*****Water Quality Facility Data *****

-----SCENARIO: PREDEVELOPED

Number of Links: 0

-----SCENARIO: POSTDEVELOPED

Number of Links: 0

*****Compliance Point Results *****

Scenario Predeveloped Compliance Subbasin: Subbasin 1

Scenario Postdeveloped Compliance Subbasin: Subbasin 1

***** Point of Compliance Flow Frequency Data *****
 Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff | | Postdevelopment Runoff | |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years) | Discharge (cfs) | Tr (Years) | Discharge (cfs) |
| 2-Year | 0.184 | 2-Year | 9.258E-02 |
| 5-Year | 0.245 | 5-Year | 0.123 |
| 10-Year | 0.289 | 10-Year | 0.145 |
| 25-Year | 0.347 | 25-Year | 0.184 |
| 50-Year | 0.445 | 50-Year | 0.223 |
| 100-Year | 0.531 | 100-Year | 0.266 |
| 200-Year | 0.571 | 200-Year | 0.286 |

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

MGS FLOOD PROJECT REPORT

Program Version: MGSFlood 4.38
Program License Number: 200510005
Project Simulation Performed on: 12/02/2016 3:57 PM
Report Generation Date: 12/02/2016 3:58 PM

Input File Name: TDA4.fld
Project Name: L2S Trail Segment C
Analysis Title: TDA 4
Comments:

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 12

Full Period of Record Available used for Routing
Precipitation Station : 96003605 Puget East 36 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961036 Puget East 36 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

***** Default HSPF Parameters Used (Not Modified by User) *****

***** WATERSHED DEFINITION *****

Predevelopment/Post Development Tributary Area Summary

| | | Predeveloped | Post Developed |
|--|-------|--------------|----------------|
| Total Subbasin Area (acres) | 0.430 | 0.430 | |
| Area of Links that Include Precip/Evap (acres) | 0.000 | 0.000 | |
| Total (acres) | 0.430 | 0.430 | |

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
-----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.000
Outwash Forest 0.000

| | |
|-----------------|-------|
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.230 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.200 |

Subbasin Total 0.430

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
 -----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.000
Outwash Forest 0.000
Outwash Pasture 0.000
Outwash Grass 0.215
Wetland 0.000
Green Roof 0.000
User 1 0.000
Impervious 0.215

Subbasin Total 0.430

***** **LINK DATA** *****

-----**SCENARIO: PREDEVELOPED**

Number of Links: 0

***** **LINK DATA** *****

-----**SCENARIO: POSTDEVELOPED**

Number of Links: 0

*******FLOOD FREQUENCY AND DURATION STATISTICS*******

-----**SCENARIO: PREDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

*******Groundwater Recharge Summary*******

Recharge is computed as input to PerIpd Groundwater Plus Infiltration in Structures

| Total Predeveloped Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 65.166 |
| Total: | 65.166 |

| Total Post Developed Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 60.916 |
| Total: | 60.916 |

Total Predevelopment Recharge is Greater than Post Developed Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.412 ac-ft/year, Post Developed: 0.386 ac-ft/year

*****Water Quality Facility Data *****

-----SCENARIO: PREDEVELOPED

Number of Links: 0

-----SCENARIO: POSTDEVELOPED

Number of Links: 0

*****Compliance Point Results *****

Scenario Predeveloped Compliance Subbasin: Subbasin 1

Scenario Postdeveloped Compliance Subbasin: Subbasin 1

***** Point of Compliance Flow Frequency Data *****
 Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff | | Postdevelopment Runoff | |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years) | Discharge (cfs) | Tr (Years) | Discharge (cfs) |
| 2-Year | 7.122E-02 | 2-Year | 7.655E-02 |
| 5-Year | 9.515E-02 | 5-Year | 0.102 |
| 10-Year | 0.111 | 10-Year | 0.120 |
| 25-Year | 0.145 | 25-Year | 0.152 |
| 50-Year | 0.171 | 50-Year | 0.184 |
| 100-Year | 0.204 | 100-Year | 0.220 |
| 200-Year | 0.220 | 200-Year | 0.236 |

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

MGS FLOOD PROJECT REPORT

Program Version: MGSFlood 4.38
Program License Number: 200510005
Project Simulation Performed on: 12/02/2016 3:59 PM
Report Generation Date: 12/02/2016 3:59 PM

Input File Name: TDA5.fld
Project Name: L2S Trail Segment C
Analysis Title: TDA 5
Comments:

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 12

Full Period of Record Available used for Routing
Precipitation Station : 96003605 Puget East 36 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961036 Puget East 36 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

***** Default HSPF Parameters Used (Not Modified by User) *****

***** WATERSHED DEFINITION *****

Predevelopment/Post Development Tributary Area Summary

| | | Predeveloped | Post Developed |
|--|-------|--------------|----------------|
| Total Subbasin Area (acres) | 1.080 | 1.080 | |
| Area of Links that Include Precip/Evap (acres) | 0.000 | 0.000 | |
| Total (acres) | 1.080 | 1.080 | |

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
-----Area(Acres) -----

| | |
|----------------|-------|
| Till Forest | 0.000 |
| Till Pasture | 0.000 |
| Till Grass | 0.110 |
| Outwash Forest | 0.000 |

| | |
|-----------------|-------|
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.450 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.520 |

Subbasin Total 1.080

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
 -----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.055
Outwash Forest 0.000
Outwash Pasture 0.000
Outwash Grass 0.485
Wetland 0.000
Green Roof 0.000
User 1 0.000
Impervious 0.540

Subbasin Total 1.080

***** **LINK DATA** *****

-----**SCENARIO: PREDEVELOPED**

Number of Links: 0

***** **LINK DATA** *****

-----**SCENARIO: POSTDEVELOPED**

Number of Links: 0

*******FLOOD FREQUENCY AND DURATION STATISTICS*******

-----**SCENARIO: PREDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

*******Groundwater Recharge Summary*******

Recharge is computed as input to PerIpd Groundwater Plus Infiltration in Structures

| Total Predeveloped Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 140.165 |
| Total: | 140.165 |

| Total Post Developed Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 143.748 |
| Total: | 143.748 |

Total Predevelopment Recharge is Less than Post Developed Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.887 ac-ft/year, Post Developed: 0.910 ac-ft/year

*****Water Quality Facility Data *****

-----SCENARIO: PREDEVELOPED

Number of Links: 0

-----SCENARIO: POSTDEVELOPED

Number of Links: 0

*****Compliance Point Results *****

Scenario Predeveloped Compliance Subbasin: Subbasin 1

Scenario Postdeveloped Compliance Subbasin: Subbasin 1

***** Point of Compliance Flow Frequency Data *****
 Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff | | Postdevelopment Runoff | |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years) | Discharge (cfs) | Tr (Years) | Discharge (cfs) |
| 2-Year | 0.196 | 2-Year | 0.198 |
| 5-Year | 0.258 | 5-Year | 0.258 |
| 10-Year | 0.307 | 10-Year | 0.307 |
| 25-Year | 0.393 | 25-Year | 0.395 |
| 50-Year | 0.486 | 50-Year | 0.476 |
| 100-Year | 0.589 | 100-Year | 0.581 |
| 200-Year | 0.625 | 200-Year | 0.620 |

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

MGS FLOOD PROJECT REPORT

Program Version: MGSFlood 4.38
Program License Number: 200510005
Project Simulation Performed on: 12/07/2016 4:43 AM
Report Generation Date: 12/07/2016 4:48 AM

Input File Name: TDA6.fld
Project Name: L2S Trail Segment C
Analysis Title: TDA 6
Comments:

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 12

Full Period of Record Available used for Routing
Precipitation Station : 96003605 Puget East 36 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961036 Puget East 36 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

***** Default HSPF Parameters Used (Not Modified by User) *****

***** WATERSHED DEFINITION *****

Predevelopment/Post Development Tributary Area Summary

| | | Predeveloped | Post Developed |
|--|-------|--------------|----------------|
| Total Subbasin Area (acres) | 0.760 | 0.760 | |
| Area of Links that Include Precip/Evap (acres) | 0.000 | 0.000 | |
| Total (acres) | 0.760 | 0.760 | |

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
-----Area(Acres) -----
Till Forest 0.540
Till Pasture 0.000
Till Grass 0.000
Outwash Forest 0.000

| | |
|-----------------|-------|
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.000 |
| Wetland | 0.120 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.100 |

Subbasin Total 0.760

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
 -----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.055
Outwash Forest 0.000
Outwash Pasture 0.000
Outwash Grass 0.000
Wetland 0.060
Green Roof 0.000
User 1 0.000
Impervious 0.645

Subbasin Total 0.760

***** **LINK DATA** *****

-----**SCENARIO: PREDEVELOPED**

Number of Links: 0

***** **LINK DATA** *****

-----**SCENARIO: POSTDEVELOPED**

Number of Links: 0

*******FLOOD FREQUENCY AND DURATION STATISTICS*******

-----**SCENARIO: PREDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

*******Groundwater Recharge Summary*******

Recharge is computed as input to PerInd Groundwater Plus Infiltration in Structures

| Total Predeveloped Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 105.435 |
| Total: | 105.435 |

| Total Post Developed Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 17.785 |
| Total: | 17.785 |

Total Predevelopment Recharge is Greater than Post Developed Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.667 ac-ft/year, Post Developed: 0.113 ac-ft/year

*****Water Quality Facility Data *****

-----SCENARIO: PREDEVELOPED

Number of Links: 0

-----SCENARIO: POSTDEVELOPED

Number of Links: 0

*****Compliance Point Results *****

Scenario Predeveloped Compliance Subbasin: Subbasin 1

Scenario Postdeveloped Compliance Subbasin: Subbasin 1

***** Point of Compliance Flow Frequency Data *****
 Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff | | Postdevelopment Runoff | |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years) | Discharge (cfs) | Tr (Years) | Discharge (cfs) |
| 2-Year | 4.083E-02 | 2-Year | 0.237 |
| 5-Year | 5.973E-02 | 5-Year | 0.307 |
| 10-Year | 6.776E-02 | 10-Year | 0.369 |
| 25-Year | 0.102 | 25-Year | 0.450 |
| 50-Year | 0.108 | 50-Year | 0.564 |
| 100-Year | 0.121 | 100-Year | 0.687 |
| 200-Year | 0.140 | 200-Year | 0.734 |

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

MGS FLOOD PROJECT REPORT

Program Version: MGSFlood 4.38
Program License Number: 200510005
Project Simulation Performed on: 12/02/2016 4:06 PM
Report Generation Date: 12/02/2016 4:06 PM

Input File Name: TDA7.fld
Project Name: L2S Trail Segment C
Analysis Title: TDA 7
Comments:

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 12

Full Period of Record Available used for Routing
Precipitation Station : 96003605 Puget East 36 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961036 Puget East 36 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

***** Default HSPF Parameters Used (Not Modified by User) *****

***** WATERSHED DEFINITION *****

Predevelopment/Post Development Tributary Area Summary

| | | Predeveloped | Post Developed |
|--|-------|--------------|----------------|
| Total Subbasin Area (acres) | 0.870 | 0.870 | |
| Area of Links that Include Precip/Evap (acres) | 0.000 | 0.000 | |
| Total (acres) | 0.870 | 0.870 | |

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
-----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.000
Outwash Forest 0.000

| | |
|-----------------|-------|
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.500 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.370 |

Subbasin Total 0.870

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
 -----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.000
Outwash Forest 0.000
Outwash Pasture 0.000
Outwash Grass 0.435
Wetland 0.000
Green Roof 0.000
User 1 0.000
Impervious 0.435

Subbasin Total 0.870

***** **LINK DATA** *****

-----**SCENARIO: PREDEVELOPED**

Number of Links: 0

***** **LINK DATA** *****

-----**SCENARIO: POSTDEVELOPED**

Number of Links: 0

*******FLOOD FREQUENCY AND DURATION STATISTICS*******

-----**SCENARIO: PREDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

*******Groundwater Recharge Summary*******

Recharge is computed as input to PerInd Groundwater Plus Infiltration in Structures

| Total Predeveloped Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 141.666 |
| Total: | 141.666 |

| Total Post Developed Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 123.249 |
| Total: | 123.249 |

Total Predevelopment Recharge is Greater than Post Developed Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.897 ac-ft/year, Post Developed: 0.780 ac-ft/year

*****Water Quality Facility Data *****

-----SCENARIO: PREDEVELOPED

Number of Links: 0

-----SCENARIO: POSTDEVELOPED

Number of Links: 0

*****Compliance Point Results *****

Scenario Predeveloped Compliance Subbasin: Subbasin 1

Scenario Postdeveloped Compliance Subbasin: Subbasin 1

***** Point of Compliance Flow Frequency Data *****
 Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff | | Postdevelopment Runoff | |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years) | Discharge (cfs) | Tr (Years) | Discharge (cfs) |
| 2-Year | 0.132 | 2-Year | 0.155 |
| 5-Year | 0.176 | 5-Year | 0.206 |
| 10-Year | 0.206 | 10-Year | 0.242 |
| 25-Year | 0.275 | 25-Year | 0.308 |
| 50-Year | 0.317 | 50-Year | 0.373 |
| 100-Year | 0.378 | 100-Year | 0.444 |
| 200-Year | 0.407 | 200-Year | 0.478 |

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

MGS FLOOD PROJECT REPORT

Program Version: MGSFlood 4.38
Program License Number: 200510005
Project Simulation Performed on: 12/02/2016 4:14 PM
Report Generation Date: 12/02/2016 4:17 PM

Input File Name: TDA1-FC.fld
Project Name: L2S Trail Segment C
Analysis Title: TDA 1
Comments: with Flow Control Facility

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 12

Full Period of Record Available used for Routing
Precipitation Station : 96003605 Puget East 36 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961036 Puget East 36 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

***** Default HSPF Parameters Used (Not Modified by User) *****

***** WATERSHED DEFINITION *****

Predevelopment/Post Development Tributary Area Summary

| | | Predeveloped | Post Developed |
|--|-------|--------------|----------------|
| Total Subbasin Area (acres) | 0.500 | 0.500 | |
| Area of Links that Include Precip/Evap (acres) | 0.000 | 0.000 | |
| Total (acres) | 0.500 | 0.500 | |

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
-----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.090
Outwash Forest 0.000

| | |
|-----------------|-------|
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.410 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.000 |

Subbasin Total 0.500

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
 -----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.045
Outwash Forest 0.000
Outwash Pasture 0.000
Outwash Grass 0.205
Wetland 0.000
Green Roof 0.000
User 1 0.000
Impervious 0.250

Subbasin Total 0.500

***** **LINK DATA** *****

-----**SCENARIO: PREDEVELOPED**

Number of Links: 0

***** **LINK DATA** *****

-----**SCENARIO: POSTDEVELOPED**

Number of Links: 1

Link Name: New Infil Trench Lnk1

Link Type: Infiltration Trench
Downstream Link: None

| | | |
|------------------------------|---|--------------------------------|
| Trench Type | : | Trench on Embankment Sideslope |
| Trench Length (ft) | : | 300.00 |
| Trench Width (ft) | : | 3.00 |
| Trench Depth (ft) | : | 2.00 |
| Trench Bottom Elev (ft) | : | 100.00 |
| Trench Rockfill Porosity (%) | : | 30.00 |

Constant Infiltration Option Used
Infiltration Rate (in/hr): 1.00

*****FLOOD FREQUENCY AND DURATION STATISTICS*****

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 1
 Number of Links: 0

-----SCENARIO: POSTDEVELOPED

Number of Subbasins: 1
 Number of Links: 1

***** Subbasin: Subbasin 1 *****

Flood Frequency Data(cfs)
 (Recurrence Interval Computed Using Gringorten Plotting Position)
 Tr (yrs) Flood Peak (cfs)

| Tr (yrs) | Flood Peak (cfs) |
|----------|------------------|
| 2-Year | 9.352E-02 |
| 5-Year | 0.122 |
| 10-Year | 0.147 |
| 25-Year | 0.186 |
| 50-Year | 0.230 |
| 100-Year | 0.279 |
| 200-Year | 0.297 |

***** Link: New Infiltration Trench Lnk1 ***** Link Inflow Frequency Stats

Flood Frequency Data(cfs)
 (Recurrence Interval Computed Using Gringorten Plotting Position)
 Tr (yrs) Flood Peak (cfs)

| Tr (yrs) | Flood Peak (cfs) |
|----------|------------------|
| 2-Year | 9.352E-02 |
| 5-Year | 0.122 |
| 10-Year | 0.147 |
| 25-Year | 0.186 |
| 50-Year | 0.230 |
| 100-Year | 0.279 |
| 200-Year | 0.297 |

*****Groundwater Recharge Summary*****

Recharge is computed as input to PerInD Groundwater Plus Infiltration in Structures

| Model Element | Total Predeveloped Recharge During Simulation Recharge Amount (ac-ft) |
|----------------------|--|
| Subbasin: Subbasin 1 | 126.529 |
| Total: | 126.529 |

| Model Element | Total Post Developed Recharge During Simulation Recharge Amount (ac-ft) |
|---------------|--|
|---------------|--|

 Subbasin: Subbasin 1 63.264
 Link: New Infil Trench Ln 105.677

 Total: 168.941

Total Predevelopment Recharge is Less than Post Developed
Average Recharge Per Year, (Number of Years= 158)
 Predeveloped: **0.801 ac-ft/year, Post Developed: 1.069 ac-ft/year**

*******Water Quality Facility Data *******

-----**SCENARIO: PREDEVELOPED**

Number of Links: 0

-----**SCENARIO: POSTDEVELOPED**

Number of Links: 1

******* Link: New Infil Trench Lnk1 *******

Infiltration/Filtration Statistics-----

Inflow Volume (ac-ft): 105.76
 Inflow Volume Including PPT-Evap (ac-ft): 105.76
 Total Runoff Infiltrated (ac-ft): 105.68, 99.92%
 Total Runoff Filtered (ac-ft): 0.00, 0.00%
 Primary Outflow To Downstream System (ac-ft): 0.06
 Secondary Outflow To Downstream System (ac-ft): 0.00
 Percent Treated (Infiltrated+Filtered)/Total Volume: 99.92%

*******Compliance Point Results *******

Scenario Predeveloped Compliance Subbasin: Subbasin 1

Scenario Postdeveloped Compliance Link: New Infil Trench Lnk1

***** Point of Compliance Flow Frequency Data *****

Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff | | Postdevelopment Runoff | |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years) | Discharge (cfs) | Tr (Years) | Discharge (cfs) |
| 2-Year | 7.112E-03 | 2-Year | 5.107E-06 |
| 5-Year | 1.417E-02 | 5-Year | 7.843E-06 |
| 10-Year | 2.267E-02 | 10-Year | 1.570E-03 |
| 25-Year | 4.319E-02 | 25-Year | 5.882E-02 |
| 50-Year | 5.052E-02 | 50-Year | 9.076E-02 |
| 100-Year | 8.339E-02 | 100-Year | 0.139 |
| 200-Year | 8.509E-02 | 200-Year | 0.150 |

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

**** LID Duration Performance ****

| | | |
|--|---------|------|
| Excursion at Predeveloped 8%Q2 (Must be Less Than 0%): | -100.0% | PASS |
| Maximum Excursion from 8%Q2 to 50%Q2 (Must be Less Than 0%): | -97.1% | PASS |

MEETS ALL LID DURATION DESIGN CRITERIA: PASS

Attachment C - TDA 6 detailed land use breakdown

| Total Trail Areas within TDA 6 | | | | | | | | | | | | |
|--------------------------------|-------------------|------------------|-------------------|------------------|------------------|------------------|--------------------------|------------------|--------------------------|------------------|-----------------|------------------|
| | Adjacent to TDA 5 | | To existing pond* | | Boardwalk Areas* | | STA 171+51 to STA 174+85 | | STA 178+40 to STA 195+02 | | Total Areas | |
| | Existing (acre) | Developed (acre) | Existing (acre) | Developed (acre) | Existing (acre) | Developed (acre) | Existing (acre) | Developed (acre) | Existing (acre) | Developed (acre) | Existing (acre) | Developed (acre) |
| Till Forest | 0.03 | | 0.06 | | | | 0.11 | | 0.40 | | 0.60 | - |
| Till Grass | | | | | | | | 0.055 | | | - | 0.055 |
| Outwash Forest | | | | | | | | | | | - | - |
| Outwash Grass | | | | | | | | | | | - | - |
| Sat/Wetland | | | | | | | | | 0.12 | 0.06 | 0.12 | 0.06 |
| Impervious | | 0.03 | | 0.06 | 0.28 | 0.28 | | 0.055 | 0.10 | 0.56 | 0.38 | 0.985 |
| Total | 0.03 | 0.03 | 0.06 | 0.06 | 0.28 | 0.28 | 0.11 | 0.11 | 0.62 | 0.62 | 1.10 | 1.10 |

| Target Trail Areas within TDA 6 Considered for Flow Control Evaluation | | | | | | | | | | | | |
|--|-------------------|------------------|--------------------|------------------|-----------------|------------------|--------------------------|------------------|--------------------------|------------------|-----------------|------------------|
| | Adjacent to TDA 5 | | At Hertz pond berm | | Boardwalk Areas | | STA 171+51 to STA 174+85 | | STA 178+40 to STA 195+02 | | Total Areas | |
| | Existing (acre) | Developed (acre) | Existing (acre) | Developed (acre) | Existing (acre) | Developed (acre) | Existing (acre) | Developed (acre) | Existing (acre) | Developed (acre) | Existing (acre) | Developed (acre) |
| Till Forest | 0.03 | - | - | - | - | - | 0.11 | - | 0.40 | - | 0.54 | - |
| Till Grass | - | - | - | - | - | - | - | 0.06 | - | - | - | 0.055 |
| Outwash Forest | - | - | - | - | - | - | - | - | - | - | - | - |
| Outwash Grass | - | - | - | - | - | - | - | - | - | - | - | - |
| Sat/Wetland | - | - | - | - | - | - | - | - | 0.12 | 0.06 | 0.12 | 0.06 |
| Impervious | - | 0.03 | - | - | - | - | - | 0.06 | 0.10 | 0.56 | 0.10 | 0.645 |
| Total | 0.03 | 0.03 | - | - | - | - | 0.11 | 0.11 | 0.62 | 0.62 | 0.76 | 0.76 |

MGS FLOOD PROJECT REPORT

Program Version: MGSFlood 4.38
Program License Number: 200510005
Project Simulation Performed on: 12/07/2016 4:51 AM
Report Generation Date: 12/07/2016 4:54 AM

Input File Name: TDA6-Segments.fld
Project Name: L2S Trail Segment C
Analysis Title: TDA 6
Comments: Area North of Boardwalk 3 drains south to pond A near STA 180+00

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 12

Full Period of Record Available used for Routing
Precipitation Station : 96003605 Puget East 36 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961036 Puget East 36 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

***** Default HSPF Parameters Used (Not Modified by User) *****

***** WATERSHED DEFINITION *****

Predevelopment/Post Development Tributary Area Summary

| | | Predeveloped | Post Developed |
|--|-------|--------------|----------------|
| Total Subbasin Area (acres) | 0.760 | 0.760 | |
| Area of Links that Include Precip/Evap (acres) | 0.000 | 0.000 | |
| Total (acres) | 0.760 | 0.760 | |

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 3

----- Subbasin : STA 178+70 to 195+02 -----
-----Area(Acres) -----

| | |
|----------------|-------|
| Till Forest | 0.400 |
| Till Pasture | 0.000 |
| Till Grass | 0.000 |
| Outwash Forest | 0.000 |

| | |
|-----------------|-------|
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.000 |
| Wetland | 0.120 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.100 |

Subbasin Total 0.620

----- Subbasin : STA 171+50 TO 174+65 -----

| | |
|-----------------|------------------------|
| | -----Area(Acres) ----- |
| Till Forest | 0.110 |
| Till Pasture | 0.000 |
| Till Grass | 0.000 |
| Outwash Forest | 0.000 |
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.000 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.000 |

Subbasin Total 0.110

----- Subbasin : STA 165+43 to 166+17 -----

| | |
|-----------------|------------------------|
| | -----Area(Acres) ----- |
| Till Forest | 0.030 |
| Till Pasture | 0.000 |
| Till Grass | 0.000 |
| Outwash Forest | 0.000 |
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.000 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.000 |

Subbasin Total 0.030

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 3

----- Subbasin : STA 178+70 to 195+02 -----

| | |
|-----------------|------------------------|
| | -----Area(Acres) ----- |
| Till Forest | 0.000 |
| Till Pasture | 0.000 |
| Till Grass | 0.000 |
| Outwash Forest | 0.000 |
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.000 |
| Wetland | 0.060 |
| Green Roof | 0.000 |
| User 1 | 0.000 |

| | |
|----------------|-------|
| Impervious | 0.560 |
| ----- | |
| Subbasin Total | 0.620 |

----- Subbasin : STA 171+50 TO 174+65 -----
 -----Area(Acres) -----

| | |
|-----------------|-------|
| Till Forest | 0.000 |
| Till Pasture | 0.000 |
| Till Grass | 0.055 |
| Outwash Forest | 0.000 |
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.000 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.055 |
| ----- | |
| Subbasin Total | 0.110 |

----- Subbasin : STA 165+43 to 166+17 -----
 -----Area(Acres) -----

| | |
|-----------------|-------|
| Till Forest | 0.000 |
| Till Pasture | 0.000 |
| Till Grass | 0.000 |
| Outwash Forest | 0.000 |
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.000 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.030 |
| ----- | |
| Subbasin Total | 0.030 |

***** LINK DATA *****

-----SCENARIO: PREDEVELOPED

Number of Links: 1

Link Name: New Copy Lnk1

Link Type: Copy

Downstream Link: None

***** LINK DATA *****

-----SCENARIO: POSTDEVELOPED

Number of Links: 3

Link Name: Pond B - STA 180+00

Link Type: Structure

Downstream Link Name: New Copy Lnk3

Prismatic Pond Option Used

Pond Floor Elevation (ft) : 100.00
Riser Crest Elevation (ft) : 103.00
Max Pond Elevation (ft) : 104.00
Storage Depth (ft) : 3.00
Pond Bottom Length (ft) : 40.0
Pond Bottom Width (ft) : 20.0
Pond Side Slopes (ft/ft) : L1= 3.00 L2= 3.00 W1= 3.00 W2= 3.00
Bottom Area (sq-ft) : 800.
Area at Riser Crest El (sq-ft) : 2,204.
(acres) : 0.051
Volume at Riser Crest (cu-ft) : 4,344.
(ac-ft) : 0.100
Area at Max Elevation (sq-ft) : 2816.
(acres) : 0.065
Vol at Max Elevation (cu-ft) : 7,068.
(ac-ft) : 0.162

Massmann Infiltration Option Used

Hydraulic Conductivity (in/hr) : 0.00
Depth to Water Table (ft) : 100.00
Bio-Fouling Potential : Low
Maintenance : Average or Better

Riser Geometry

Riser Structure Type : Circular
Riser Diameter (in) : 24.00
Common Length (ft) : 0.000
Riser Crest Elevation : 103.00 ft

Hydraulic Structure Geometry

Number of Devices: 2

---Device Number 1 ---

Device Type : Circular Orifice
Control Elevation (ft) : 100.00
Diameter (in) : 0.50
Orientation : Horizontal
Elbow : Yes

---Device Number 2 ---

Device Type : Circular Orifice
Control Elevation (ft) : 100.25
Diameter (in) : 1.00
Orientation : Horizontal
Elbow : Yes

Link Name: Pond A - STA 173+00

Link Type: Structure
Downstream Link Name: New Copy Lnk3

Prismatic Pond Option Used

Pond Floor Elevation (ft) : 100.00
Riser Crest Elevation (ft) : 103.00
Max Pond Elevation (ft) : 104.00
Storage Depth (ft) : 3.00
Pond Bottom Length (ft) : 40.0
Pond Bottom Width (ft) : 10.0
Pond Side Slopes (ft/ft) : L1= 3.00 L2= 3.00 W1= 3.00 W2= 3.00
Bottom Area (sq-ft) : 400.
Area at Riser Crest El (sq-ft) : 1,624.
(acres) : 0.037
Volume at Riser Crest (cu-ft) : 2,874.
(ac-ft) : 0.066
Area at Max Elevation (sq-ft) : 2176.
(acres) : 0.050
Vol at Max Elevation (cu-ft) : 4,930.
(ac-ft) : 0.113

Massmann Infiltration Option Used

Hydraulic Conductivity (in/hr) : 0.00
Depth to Water Table (ft) : 100.00
Bio-Fouling Potential : Low
Maintenance : Average or Better

Riser Geometry

Riser Structure Type : Circular
Riser Diameter (in) : 24.00
Common Length (ft) : 0.000
Riser Crest Elevation : 103.00 ft

Hydraulic Structure Geometry

Number of Devices: 2

---Device Number 1---

Device Type : Circular Orifice
Control Elevation (ft) : 100.00
Diameter (in) : 0.50
Orientation : Horizontal
Elbow : Yes

---Device Number 2---

Device Type : Circular Orifice
Control Elevation (ft) : 101.00
Diameter (in) : 1.00
Orientation : Horizontal
Elbow : Yes

Link Name: New Copy Lnk3

Link Type: Copy
Downstream Link: None

*****FLOOD FREQUENCY AND DURATION STATISTICS*****

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 3

Number of Links: 1

***** Subbasin: STA 178+70 to 195+02 *****

Flood Frequency Data(cfs)
(Recurrence Interval Computed Using Gringorten Plotting Position)

| Tr (yrs) | Flood Peak (cfs) |
|----------|------------------|
| 2-Year | 3.980E-02 |
| 5-Year | 5.616E-02 |
| 10-Year | 6.548E-02 |
| 25-Year | 9.453E-02 |
| 50-Year | 0.106 |
| 100-Year | 0.114 |
| 200-Year | 0.126 |

***** Subbasin: STA 171+50 TO 174+65 *****

Flood Frequency Data(cfs)
(Recurrence Interval Computed Using Gringorten Plotting Position)

| Tr (yrs) | Flood Peak (cfs) |
|----------|------------------|
| 2-Year | 1.802E-03 |
| 5-Year | 3.072E-03 |
| 10-Year | 4.213E-03 |
| 25-Year | 5.636E-03 |
| 50-Year | 7.554E-03 |
| 100-Year | 8.264E-03 |
| 200-Year | 1.242E-02 |

***** Subbasin: STA 165+43 to 166+17 *****

Flood Frequency Data(cfs)
(Recurrence Interval Computed Using Gringorten Plotting Position)

| Tr (yrs) | Flood Peak (cfs) |
|----------|------------------|
| 2-Year | 4.914E-04 |
| 5-Year | 8.378E-04 |
| 10-Year | 1.149E-03 |
| 25-Year | 1.537E-03 |
| 50-Year | 2.060E-03 |
| 100-Year | 2.254E-03 |
| 200-Year | 3.388E-03 |

***** Link: New Copy Lnk1 ***** Link Inflow Frequency Stats
Flood Frequency Data(cfs)

(Recurrence Interval Computed Using Gringorten Plotting Position)
Tr (yrs) Flood Peak (cfs)

| ===== | |
|----------|-----------|
| 2-Year | 4.083E-02 |
| 5-Year | 5.973E-02 |
| 10-Year | 6.776E-02 |
| 25-Year | 0.102 |
| 50-Year | 0.108 |
| 100-Year | 0.121 |
| 200-Year | 0.140 |

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 3
Number of Links: 3

******* Subbasin: STA 178+70 to 195+02 *******

Flood Frequency Data(cfs)
(Recurrence Interval Computed Using Gringorten Plotting Position)
Tr (yrs) Flood Peak (cfs)

| ===== | |
|----------|-------|
| 2-Year | 0.202 |
| 5-Year | 0.264 |
| 10-Year | 0.313 |
| 25-Year | 0.376 |
| 50-Year | 0.480 |
| 100-Year | 0.572 |
| 200-Year | 0.614 |

******* Subbasin: STA 171+50 TO 174+65 *******

Flood Frequency Data(cfs)
(Recurrence Interval Computed Using Gringorten Plotting Position)
Tr (yrs) Flood Peak (cfs)

| ===== | |
|----------|-----------|
| 2-Year | 2.374E-02 |
| 5-Year | 3.211E-02 |
| 10-Year | 3.977E-02 |
| 25-Year | 4.910E-02 |
| 50-Year | 7.243E-02 |
| 100-Year | 8.497E-02 |
| 200-Year | 8.710E-02 |

******* Subbasin: STA 165+43 to 166+17 *******

Flood Frequency Data(cfs)
(Recurrence Interval Computed Using Gringorten Plotting Position)
Tr (yrs) Flood Peak (cfs)

| ===== | |
|---------|-----------|
| 2-Year | 1.062E-02 |
| 5-Year | 1.414E-02 |
| 10-Year | 1.670E-02 |

| | |
|----------|-----------|
| 25-Year | 2.003E-02 |
| 50-Year | 2.570E-02 |
| 100-Year | 3.062E-02 |
| 200-Year | 3.291E-02 |

***** Link: Pond B - STA 180+00

***** Link Inflow

Frequency Stats

Flood Frequency Data(cfs)
 (Recurrence Interval Computed Using Gringorten Plotting Position)

| Tr (yrs) | Flood Peak (cfs) |
|----------|------------------|
| 2-Year | 0.202 |
| 5-Year | 0.264 |
| 10-Year | 0.313 |
| 25-Year | 0.376 |
| 50-Year | 0.480 |
| 100-Year | 0.572 |
| 200-Year | 0.614 |

***** Link: Pond B - STA 180+00

***** Link Outflow

1 Frequency Stats

Flood Frequency Data(cfs)
 (Recurrence Interval Computed Using Gringorten Plotting Position)

| Tr (yrs) | Flood Peak (cfs) |
|----------|------------------|
| 2-Year | 3.610E-02 |
| 5-Year | 4.192E-02 |
| 10-Year | 4.496E-02 |
| 25-Year | 5.052E-02 |
| 50-Year | 5.138E-02 |
| 100-Year | 5.172E-02 |
| 200-Year | 0.164 |

***** Link: Pond B - STA 180+00

***** Link WSEL

Stats

WSEL Frequency Data(ft)
 (Recurrence Interval Computed Using Gringorten Plotting Position)

| Tr (yrs) | WSEL Peak (ft) |
|-----------|----------------|
| 1.05-Year | 101.062 |
| 1.11-Year | 101.114 |
| 1.25-Year | 101.233 |
| 2.00-Year | 101.499 |
| 3.33-Year | 101.716 |
| 5-Year | 101.952 |
| 10-Year | 102.214 |
| 25-Year | 102.774 |
| 50-Year | 102.830 |
| 100-Year | 102.865 |

***** Link: Pond A - STA 173+00

***** Link Inflow

Frequency Stats

Flood Frequency Data(cfs)
(Recurrence Interval Computed Using Gringorten Plotting Position)

| Tr (yrs) | Flood Peak (cfs) |
|----------|------------------|
| 2-Year | 2.374E-02 |
| 5-Year | 3.211E-02 |
| 10-Year | 3.977E-02 |
| 25-Year | 4.910E-02 |
| 50-Year | 7.243E-02 |
| 100-Year | 8.497E-02 |
| 200-Year | 8.710E-02 |

***** Link: Pond A - STA 173+00

***** Link Outflow

1 Frequency Stats

Flood Frequency Data(cfs)
(Recurrence Interval Computed Using Gringorten Plotting Position)

| Tr (yrs) | Flood Peak (cfs) |
|----------|------------------|
| 2-Year | 3.975E-03 |
| 5-Year | 4.782E-03 |
| 10-Year | 5.331E-03 |
| 25-Year | 6.003E-03 |
| 50-Year | 6.106E-03 |
| 100-Year | 6.137E-03 |
| 200-Year | 9.992E-03 |

***** Link: Pond A - STA 173+00

***** Link WSEL

Stats

WSEL Frequency Data(ft)
(Recurrence Interval Computed Using Gringorten Plotting Position)

| Tr (yrs) | WSEL Peak (ft) |
|-----------|----------------|
| 1.05-Year | 100.230 |
| 1.11-Year | 100.258 |
| 1.25-Year | 100.301 |
| 2.00-Year | 100.394 |
| 3.33-Year | 100.492 |
| 5-Year | 100.570 |
| 10-Year | 100.709 |
| 25-Year | 100.893 |
| 50-Year | 100.928 |
| 100-Year | 100.938 |

***** Link: New Copy Lnk3 ***** Link Inflow Frequency Stats

Flood Frequency Data(cfs)
(Recurrence Interval Computed Using Gringorten Plotting Position)

| Tr (yrs) | Flood Peak (cfs) |
|----------|------------------|
| 2-Year | 4.399E-02 |
| 5-Year | 5.198E-02 |
| 10-Year | 5.652E-02 |
| 25-Year | 6.411E-02 |
| 50-Year | 6.552E-02 |
| 100-Year | 6.995E-02 |
| 200-Year | 0.185 |

*****Groundwater Recharge Summary*****

Recharge is computed as input to Perlnd Groundwater Plus Infiltration in Structures

| Total Predeveloped Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: STA 178+70 to 195+02 | 84.038 |
| Subbasin: STA 171+50 TO 174+65 | 16.812 |
| Subbasin: STA 165+43 to 166+17 | 4.585 |
| Link: New Copy Lnk1 | 0.000 |
| Total: | 105.435 |

| Total Post Developed Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: STA 178+70 to 195+02 | 11.452 |
| Subbasin: STA 171+50 TO 174+65 | 6.333 |
| Subbasin: STA 165+43 to 166+17 | 0.000 |
| Link: Pond B - STA 180+00 | 0.000 |
| Link: Pond A - STA 173+00 | 0.000 |
| Link: New Copy Lnk3 | 0.000 |
| Total: | 17.785 |

Total Predevelopment Recharge is Greater than Post Developed Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.667 ac-ft/year, Post Developed: 0.113 ac-ft/year

*****Water Quality Facility Data*****

-----SCENARIO: PREDEVELOPED

Number of Links: 1

***** Link: New Copy Lnk1 *****

Infiltration/Filtration Statistics-----
 Inflow Volume (ac-ft): 78.32
 Inflow Volume Including PPT-Evap (ac-ft): 78.32
 Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
 Total Runoff Filtered (ac-ft): 0.00, 0.00%
 Primary Outflow To Downstream System (ac-ft): 78.32

Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

-----**SCENARIO: POSTDEVELOPED**

Number of Links: 3

***** Link: Pond B - STA 180+00

Basic Wet Pond Volume (91% Exceedance): 2314. cu-ft
Computed Large Wet Pond Volume, 1.5*Basic Volume: 3471. cu-ft

Infiltration/Filtration Statistics-----

Inflow Volume (ac-ft): 223.19
Inflow Volume Including PPT-Evap (ac-ft): 223.19
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 223.24
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

***** Link: Pond A - STA 173+00

Basic Wet Pond Volume (91% Exceedance): 279. cu-ft
Computed Large Wet Pond Volume, 1.5*Basic Volume: 418. cu-ft

Infiltration/Filtration Statistics-----

Inflow Volume (ac-ft): 30.36
Inflow Volume Including PPT-Evap (ac-ft): 30.36
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 30.38
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

***** Link: New Copy Lnk3 *****

Infiltration/Filtration Statistics-----

Inflow Volume (ac-ft): 265.45
Inflow Volume Including PPT-Evap (ac-ft): 265.45
Total Runoff Infiltrated (ac-ft): 0.00, 0.00%
Total Runoff Filtered (ac-ft): 0.00, 0.00%
Primary Outflow To Downstream System (ac-ft): 265.45
Secondary Outflow To Downstream System (ac-ft): 0.00
Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

*******Compliance Point Results*******

Scenario Predeveloped Compliance Link: New Copy Lnk1
Scenario Postdeveloped Compliance Link: New Copy Lnk3

*** **Point of Compliance Flow Frequency Data** ***

Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff | | Postdevelopment Runoff | |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years) | Discharge (cfs) | Tr (Years) | Discharge (cfs) |
| 2-Year | 4.083E-02 | 2-Year | 4.399E-02 |
| 5-Year | 5.973E-02 | 5-Year | 5.198E-02 |
| 10-Year | 6.776E-02 | 10-Year | 5.652E-02 |
| 25-Year | 0.102 | 25-Year | 6.411E-02 |
| 50-Year | 0.108 | 50-Year | 6.552E-02 |
| 100-Year | 0.121 | 100-Year | 6.995E-02 |
| 200-Year | 0.140 | 200-Year | 0.185 |

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

MGS FLOOD PROJECT REPORT

Program Version: MGSFlood 4.38
Program License Number: 200510005
Project Simulation Performed on: 12/05/2016 12:28 PM
Report Generation Date: 12/05/2016 12:28 PM

Input File Name: TDA6-ExPondBerm.fld
Project Name: L2S Trail Segment C
Analysis Title: TDA 6
Comments: Trail on South berm of Hertz stormwater pond.

PRECIPITATION INPUT

Computational Time Step (Minutes): 15

Extended Precipitation Time Series Selected
Climatic Region Number: 12

Full Period of Record Available used for Routing
Precipitation Station : 96003605 Puget East 36 in_5min 10/01/1939-10/01/2097
Evaporation Station : 961036 Puget East 36 in MAP
Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1
HSPF Parameter Region Name : USGS Default

***** Default HSPF Parameters Used (Not Modified by User) *****

***** WATERSHED DEFINITION *****

Predevelopment/Post Development Tributary Area Summary

| | | Predeveloped | Post Developed |
|--|-------|--------------|----------------|
| Total Subbasin Area (acres) | 0.060 | 0.060 | |
| Area of Links that Include Precip/Evap (acres) | 0.000 | 0.000 | |
| Total (acres) | 0.060 | 0.060 | |

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
-----Area(Acres) -----
Till Forest 0.060
Till Pasture 0.000
Till Grass 0.000
Outwash Forest 0.000

| | |
|-----------------|-------|
| Outwash Pasture | 0.000 |
| Outwash Grass | 0.000 |
| Wetland | 0.000 |
| Green Roof | 0.000 |
| User 1 | 0.000 |
| Impervious | 0.000 |

Subbasin Total 0.060

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
 -----Area(Acres) -----
Till Forest 0.000
Till Pasture 0.000
Till Grass 0.000
Outwash Forest 0.000
Outwash Pasture 0.000
Outwash Grass 0.000
Wetland 0.000
Green Roof 0.000
User 1 0.000
Impervious 0.060

Subbasin Total 0.060

***** **LINK DATA** *****

-----**SCENARIO: PREDEVELOPED**

Number of Links: 0

***** **LINK DATA** *****

-----**SCENARIO: POSTDEVELOPED**

Number of Links: 0

*******FLOOD FREQUENCY AND DURATION STATISTICS*******

-----**SCENARIO: PREDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

-----**SCENARIO: POSTDEVELOPED**

Number of Subbasins: 1
Number of Links: 0

*******Groundwater Recharge Summary*******

Recharge is computed as input to PerIpd Groundwater Plus Infiltration in Structures

| Total Predeveloped Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 9.170 |
| Total: | 9.170 |

| Total Post Developed Recharge During Simulation | |
|---|-------------------------|
| Model Element | Recharge Amount (ac-ft) |
| Subbasin: Subbasin 1 | 0.000 |
| Total: | 0.000 |

Total Predevelopment Recharge is Greater than Post Developed Average Recharge Per Year, (Number of Years= 158)
Predeveloped: 0.058 ac-ft/year, Post Developed: 0.000 ac-ft/year

*****Water Quality Facility Data *****

-----SCENARIO: PREDEVELOPED

Number of Links: 0

-----SCENARIO: POSTDEVELOPED

Number of Links: 0

*****Compliance Point Results *****

Scenario Predeveloped Compliance Subbasin: Subbasin 1

Scenario Postdeveloped Compliance Subbasin: Subbasin 1

***** Point of Compliance Flow Frequency Data *****
 Recurrence Interval Computed Using Gringorten Plotting Position

| Predevelopment Runoff | | Postdevelopment Runoff | |
|-----------------------|-----------------|------------------------|-----------------|
| Tr (Years) | Discharge (cfs) | Tr (Years) | Discharge (cfs) |
| 2-Year | 9.827E-04 | 2-Year | 2.124E-02 |
| 5-Year | 1.676E-03 | 5-Year | 2.828E-02 |
| 10-Year | 2.298E-03 | 10-Year | 3.340E-02 |
| 25-Year | 3.074E-03 | 25-Year | 4.006E-02 |
| 50-Year | 4.120E-03 | 50-Year | 5.140E-02 |
| 100-Year | 4.507E-03 | 100-Year | 6.124E-02 |
| 200-Year | 6.776E-03 | 200-Year | 6.583E-02 |

** Record too Short to Compute Peak Discharge for These Recurrence Intervals