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Joint Aquatic Resources Permit Application (JARPA) and Specific Attachments for Hydraulic Projects Approval
Miller Creek Project

Master Plan Update Improvements
Seattle-Tacoma International Airport

Port of Seattle

Parametrix, Inc.

August 2000

Joint Aquatic Resources Permit Application (JARPA)

AGENCY USE ONLY	
Agency Reference #:	Date Received:
Circulated by: (local govt. or agency)	

JOINT AQUATIC RESOURCES PERMIT APPLICATION FORM (JARPA)

(for use in Washington State)

PLEASE TYPE OR PRINT IN BLACK INK

☐ *I am applying for a Fish Habitat Enhancement Project per requirements of RCW 75.20.350. You must submit a copy of this completed JARPA application form, and the (Fish Habitat Enhancement JARPA Addition) to your local Government Planning Department and Washington Department of Fish & Wildlife Area Habitat Biologist on the same day.*

NOTE: LOCAL GOVERNMENTS – You must submit any comments on these projects to WDFW within 15 working days

Based on the instructions provided, I am sending copies of this application to the following: *(check all that apply)*

- ☐ Local Government for shoreline: ☐ Substantial Development ☐ Conditional Use ☐ Variance ☐ Exemption ☐ Revision ☐ Floodplain Management ☐ Critical Areas Ordinance
- ☒ Washington Department of Fish and Wildlife for HPA (Submit 3 copies to WDFW Region)
- ☐ Washington Department of Ecology for 401 Water Quality Certification Nationwide Permits (to Regional office-Federal Permit Unit)
- ☐ Washington Department of Natural Resources for Aquatic Resources Use Authorization Notification
- ☐ Corps of Engineers for: ☐ Section 404 ☐ Section 10 permit
- ☐ Coast Guard for Section 9 Bridge Permit
- ☐ US Fish & Wildlife Service or National Marine Fisheries Service for Endangered Species Act (ESA) Consultation

SECTION A - Use for all permits covered by this application. Be sure to ALSO complete Section C (Signature Block) for all permit applications.

1. APPLICANT Port of Seattle (Port); Contact Elizabeth Leavitt			
MAILING ADDRESS PO Box 69727, Seattle, WA 98168-0727			
WORK PHONE 206-433-7203	E-MAIL ADDRESS leavitt.e@portseattle.org	~~HOME PHONE~~ PAGER 206-995-9362	FAX # 206-988-5636

If an agent is acting for the applicant during the permit process, complete #2.

2. AUTHORIZED AGENT Parametrix, Inc.; Contact – Paul Fendt			
MAILING ADDRESS 5808 Lake Washington Blvd. NE, Suite 200, Kirkland, WA 98033			
WORK PHONE (425) 822-8880 extension 3404	E-MAIL ADDRESS pfendt@parametrix.com	HOME PHONE	FAX # 425-889-8808

3. RELATIONSHIP OF APPLICANT TO PROPERTY: ☒ OWNER ☐ PURCHASER ☐ LESSEE ☐ OTHER:

4. NAME, ADDRESS, AND PHONE NUMBER OF PROPERTY OWNER(S), IF OTHER THAN APPLICANT:

5. LOCATION (STREET ADDRESS, INCLUDING CITY, COUNTY AND ZIP CODE, WHERE PROPOSED ACTIVITY EXISTS OR WILL OCCUR)
Port of Seattle, Seattle-Tacoma International Airport and vicinity. Because multiple projects are included in this application, the attached document provides the details.

LOCAL GOVERNMENT WITH JURISDICTION (CITY OR COUNTY) City of SeaTac

WATERBODY					TRIBUTARY OF	WRIA #
Miller Creek, Walker Creek, and associated wetlands. See attachment and design sheets for details.					See attached sheets.	9
¼ SECTION See attached	SECTION See attached	TOWNSHIP See attached	RANGE See attached	GOVERNMENT LOT n/a	SHORELINE DESIGNATION n/a	
LATITUDE & LONGITUDE IF KNOWN: See attached					ZONING DESIGNATION See attached	
TAX PARCEL NO: See attached					DNR STREAM TYPE, IF KNOWN See attached	

6. DESCRIBE THE CURRENT USE OF THE PROPERTY, AND STRUCTURES EXISTING ON THE PROPERTY. IF ANY PORTION OF THE PROPOSED ACTIVITY IS ALREADY COMPLETED ON THIS PROPERTY, INDICATE MONTH AND YEAR OF COMPLETION.

See attached sheets.

IS THE PROPERTY AGRICULTURAL LAND? ☐ YES ☒NO ARE YOU A USDA PROGRAM PARTICIPANT? ☐ YES ☒NO

7a. DESCRIBE THE PROPOSED CONSTRUCTION AND/OR FILL WORK FOR THE PROJECT THAT YOU WANT TO BUILD THAT NEEDS AQUATIC PERMITS: COMPLETE PLANS AND SPECIFICATIONS SHOULD BE PROVIDED FOR ALL WORK WATERWARD OF THE ORDINARY HIGH WATER MARK OR LINE, INCLUDING TYPES OF EQUIPMENT TO BE USED. IF APPLYING FOR A SHORELINE PERMIT, DESCRIBE ALL WORK WITHIN AND BEYOND 200 FEET OF THE ORDINARY HIGH WATER MARK. ATTACH A SEPARATE SHEET IF ADDITIONAL SPACE IS NEEDED.

This application is submitted for Seattle-Tacoma International Airport (STIA) Master Plan Update Improvements that may potentially use, divert, obstruct, or change the natural flow or bed of Miller Creek or a tributary to Miller Creek (i.e., Walker Creek). These improvements are described as separate projects in the attached document. The projects are as follows:

- In stream restoration/enhancement projects in Miller Creek.
- Relocation of a segment of Miller Creek.
- Relocation of a sewer line under Miller Creek (an existing sewer line is currently located under Miller Creek)
- Permanent and temporary stormwater discharges to (1) drainage features (e.g., ditches) or wetlands that drain to Miller Creek or Walker Creek; or (2) Miller Creek or Walker Creek.
- Relocation of the 156th Way Bridge.

7b. DESCRIBE THE PURPOSE OF THE PROPOSED WORK AND WHY YOU WANT OR NEED TO PERFORM IT AT THE SITE. PLEASE EXPLAIN ANY SPECIFIC NEEDS THAT HAVE INFLUENCED THE DESIGN.

To compensate for unavoidable project impacts to streams and wetlands resulting from Master Plan Update Improvements, the Port has proposed mitigation that includes relocation of Miller Creek around the footprint of the proposed improvements; enhancement of fisheries habitat in relocated sections of Miller Creek; stormwater management facilities to detain and treat stormwater generated from new facilities and/or impervious surfaces.

The attached document provides additional rationale for each project.

7c. DESCRIBE THE POTENTIAL IMPACTS TO CHARACTERISTIC USES OF THE WATER BODY. THESE USES MAY INCLUDE FISH AND AQUATIC LIFE, WATER QUALITY, WATER SUPPLY, RECREATION, and AESTHETICS. IDENTIFY PROPOSED ACTIONS TO AVOID, MINIMIZE, AND MITIGATE DETRIMENTAL IMPACTS, AND PROVIDE PROPER PROTECTION OF FISH AND AQUATIC LIFE. ATTACH A SEPARATE SHEET IF ADDITIONAL SPACE IS NEEDED.

The potential impacts and proposed actions to avoid, minimize, and mitigate detrimental impacts are provided in the attached document for each project.

PREPARATION OF DRAWINGS: SEE SAMPLE DRAWINGS AND GUIDANCE FOR COMPLETING THE DRAWINGS. *ONE SET OF ORIGINAL OR GOOD QUALITY REPRODUCIBLE DRAWINGS MUST BE ATTACHED.* NOTE: APPLICANTS ARE ENCOURAGED TO SUBMIT PHOTOGRAPHS OF THE PROJECT SITE, BUT THESE DO NOT SUBSTITUTE FOR DRAWINGS. *THE CORPS OF ENGINEERS AND COAST GUARD REQUIRE DRAWINGS ON 8-1/2 X 11 INCH SHEETS. LARGER DRAWINGS MAY BE REQUIRED BY OTHER AGENCIES.*

8. WILL THE PROJECT BE CONSTRUCTED IN STAGES? ☐ YES ☐ NO

PROPOSED STARTING DATE: See attachment.

ESTIMATED DURATION OF ACTIVITY: See attachment.

9. CHECK IF ANY STRUCTURES WILL BE PLACED: See attachment.

☐ WATERWARD OF THE ORDINARY HIGH WATER MARK OR LINE FOR FRESH OR TIDAL WATERS; AND/OR

☐ WATERWARD OF MEAN HIGH WATER LINE IN TIDAL WATERS

10. WILL FILL MATERIAL (ROCK, FILL, BULKHEAD, OR OTHER MATERIAL) BE PLACED: See attachment.

☐ WATERWARD OF THE ORDINARY HIGH WATER MARK OR LINE FOR FRESH WATERS? IF YES, VOLUME (CUBIC YARDS)____/AREA____(ACRES)

☐ WATERWARD OF THE MEAN HIGHER HIGH WATER FOR TIDAL WATERS? IF YES, VOLUME (CUBIC YARDS)____AREA____(ACRES)

11. WILL MATERIAL BE PLACED IN WETLANDS? See attachment.

IF YES:

A. IMPACTED AREA IN ACRES:

B. HAS A DELINEATION BEEN COMPLETED? IF YES, PLEASE SUBMIT WITH APPLICATION. ☐ YES ☐ NO

C. HAS A WETLAND REPORT BEEN PREPARED? IF YES, PLEASE SUBMIT WITH APPLICATION. ☐ YES ☐ NO

D. TYPE AND COMPOSITION OF FILL MATERIAL (E.G., SAND, ETC.):

E. MATERIAL SOURCE:

F. LIST ALL SOIL SERIES (TYPE OF SOIL) LOCATED AT THE PROJECT SITE, & INDICATE IF THEY ARE ON THE COUNTY'S LIST OF HYDRIC SOILS. SOILS INFORMATION CAN BE OBTAINED FROM THE NATURAL RESOURCES CONSERVATION SERVICE (NRCS):

12. WILL PROPOSED ACTIVITY CAUSE FLOODING OR DRAINING OF WETLANDS? See attachment. ☐ YES ☐ NO

IF YES, IMPACTED AREA IS _____ ACRES.

13. WILL EXCAVATION OR DREDGING BE REQUIRED IN WATER OR WETLANDS? See attachment. ☐ YES ☐ NO

IF YES:

A. VOLUME: (CUBIC YARDS) /AREA (ACRES)

B. COMPOSITION OF MATERIAL TO BE REMOVED:

C. DISPOSAL SITE FOR EXCAVATED MATERIAL:

D. METHOD OF DREDGING:

14. HAS THE STATE ENVIRONMENTAL POLICY ACT (SEPA) BEEN COMPLETED? ☒ YES ☐ NO

SEPA LEAD AGENCY: Port of Seattle SEPA DECISION: DNS, MDNS, EIS, ADOPTION, EXEMPTION DECISION DATE (END OF PERIOD): 7-3-97

SUBMIT A COPY OF YOUR SEPA DECISION LETTER TO WDFW AS REQUIRED FOR A COMPLETE APPLICATION. See attached Record of Decision (ROD) from the FAA for Master Plan Projects.

15. LIST OTHER APPLICATIONS, APPROVALS, OR CERTIFICATIONS FROM OTHER FEDERAL, STATE OR LOCAL AGENCIES FOR ANY STRUCTURES, CONSTRUCTION, DISCHARGES, OR OTHER ACTIVITIES DESCRIBED IN THE APPLICATION (I.E., PRELIMINARY PLAT APPROVAL, HEALTH DISTRICT APPROVAL, BUILDING PERMIT, SEPA REVIEW, FEDERAL ENERGY REGULATORY COMMISSION LICENSE (FERC), FOREST PRACTICES APPLICATION, ETC.) ALSO INDICATE WHETHER WORK HAS BEEN COMPLETED AND INDICATE ALL EXISTING WORK ON DRAWINGS.

TYPE OF APPROVAL	ISSUING AGENCY	IDENTIFICATION NO.	DATE OF APPLICATION	DATE APPROVED	COMPLETED?
NEPA/SEPA Environmental Impact Statement	Federal Aviation		January 5 1994	July 3 1997	Yes
Clean Water Act Section 401 and 404	Corps /WA Dept. Ecology	1996-04-02325	December 1996	Pending	No
Endangered Species Act Consultation	NMFS and USFW	NA	NA	Pending	No

16. HAS ANY AGENCY DENIED APPROVAL FOR THE ACTIVITY DESCRIBED HEREIN OR FOR ANY ACTIVITY DIRECTLY RELATED TO THE ACTIVITY DESCRIBED HEREIN? ☐ YES ☒ NO IF YES, EXPLAIN:

SECTION B - Use for Shoreline and Corps of Engineers permits only:

17. TOTAL COST OF PROJECT. THIS MEANS THE FAIR MARKET VALUE OF THE PROJECT, INCLUDING MATERIALS, LABOR, MACHINE RENTALS, ETC.

18. LOCAL GOVERNMENT WITH JURISDICTION:

19. FOR CORPS, COAST GUARD, AND DNR PERMITS, PROVIDE NAMES, ADDRESSES, AND TELEPHONE NUMBERS OF ADJOINING PROPERTY OWNERS, LESSEES, ETC..

PLEASE NOTE: SHORELINE MANAGEMENT COMPLIANCE MAY REQUIRE ADDITIONAL NOTICE — CONSULT YOUR LOCAL GOVERNMENT.

NAME	ADDRESS	PHONE NUMBER

SECTION C - This section MUST be completed for any permit covered by this application

20. APPLICATION IS HEREBY MADE FOR A PERMIT OR PERMITS TO AUTHORIZE THE ACTIVITIES DESCRIBED HEREIN. I CERTIFY THAT I AM FAMILIAR WITH THE INFORMATION CONTAINED IN THIS APPLICATION, AND THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, SUCH INFORMATION IS TRUE, COMPLETE, AND ACCURATE. I FURTHER CERTIFY THAT I POSSESS THE AUTHORITY TO UNDERTAKE THE PROPOSED ACTIVITIES. I HEREBY GRANT TO THE AGENCIES TO WHICH THIS APPLICATION IS MADE, THE RIGHT TO ENTER THE ABOVE-DESCRIBED LOCATION TO INSPECT THE PROPOSED, IN-PROGRESS OR COMPLETED WORK. I AGREE TO START WORK ONLY AFTER ALL NECESSARY PERMITS HAVE BEEN RECEIVED.

SIGNATURE OF APPLICANT OR AUTHORIZED AGENT	DATE
	Aug 14, 2000

I HEREBY DESIGNATE Paul Fenat TO ACT AS MY AGENT IN MATTERS RELATED TO THIS APPLICATION FOR PERMIT(S). I UNDERSTAND THAT IF A FEDERAL PERMIT IS ISSUED, I MUST SIGN THE PERMIT.

SIGNATURE OF APPLICANT	DATE
	8/14/00

SIGNATURE OF LANDOWNER (EXCEPT PUBLIC ENTITY LANDOWNERS, E.G. DNR)	DATE

THIS APPLICATION MUST BE SIGNED BY THE APPLICANT AND THE AGENT, IF AN AUTHORIZED AGENT IS DESIGNATED.

18 U.S.C §1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious, or fraudulent statement or entry, shall be fined not more than $10,000 or imprisoned not more than 5 years or both.

COMPLETED BY LOCAL OFFICIAL

A. Nature of the existing shoreline. (Describe type of shoreline, such as marine, stream, lake, lagoon, marsh, bog, swamp, flood plain, floodway, delta; type of beach, such as accretion, erosion, high bank, low bank, or dike; material such as sand, gravel, mud, clay, rock, riprap; and extent and type of bulkheading, if any:)

B. In the event that any of the proposed buildings or structures will exceed a height of thirty-five feet above the average grade level, indicate the approximate location of and number of residential units, existing and potential, that will have an obstructed view:

C. If the application involves a conditional use or variance, set forth in full that portion of the master program which provides that the proposed use may be a conditional use, or, in the case of a variance, from which the variance is being sought:

These Agencies are Equal Opportunity and Affirmative Action employers.
For special accommodation needs, please contact the appropriate agency in the instructions.

Application for Hydraulic Project Approval

Miller Creek Project-Specific Attachments

Master Plan Update Improvements Seattle-Tacoma International Airport

Prepared for:

Port of Seattle
Seattle-Tacoma International Airport
P.O. Box 69727
Seattle, Washington 98168-0727

Prepared by

Parametrix, Inc.
5808 Lake Washington Blvd. NE, Suite 200
Kirkland, Washington 98033
(425) 822-8880
www.parametrix.com

August 2000
Project No. 553-2912-001

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APPENDICES (UNDER SEPARATE COVER)

1. MILLER CREEK RELOCATION

The relocation of Miller Creek is proposed to compensate for unavoidable impacts associated with Seattle-Tacoma International Airport (STIA) improvements. For information beyond that contained in this document, please refer to the attached *Revised Draft Natural Resource Mitigation Plan* (Parametrix 1999), Sections 4.1.2 and 5.1.1 and the *Implementation Addendum Natural Resource Mitigation Plan* (Parametrix 2000).

1.1 APPLICANT INFORMATION

Please refer to the Joint Aquatic Resources Permit Application (JARPA) form for this information.

1.2 AGENT INFORMATION

Please refer to the JARPA form for this information.

1.3 PROPERTY OWNER RELATIONSHIP

The Port will own the area where the creek will be relocated as part of the proposed Master Plan Update Improvement land acquisition.

1.4 PROPERTY OWNER INFORMATION

Please refer to the JARPA form for this information.

1.5 LOCATION

Approximately 980 ft of Miller Creek, south of Lora Lake, will be realigned and relocated approximately 200 ft west of the existing channel to accommodate relocating S 154th/S 156th St. Relocating the street is a part of the third runway and runway safety area projects for the STIA Master Plan Update Improvement projects. The proposed site for relocating Miller Creek is a broad, flat valley located south of Lora Lake in and adjacent to a farmed field referred to as the Vacca Farm site. Sheet C1 of Appendix A includes a vicinity map, and Appendix A, Sheet C2 shows the existing and proposed locations. This area is within the City of SeaTac, King County, Washington. The project is located in Section 20, T23N, R4E. The tax parcel numbers adjacent to the existing and relocated stream are 202304061, 202304062, 202304064 through 202304066, and 202304068. The project site is located at 122.3 degrees longitude and approximately 47.5 degrees latitude. The zoning designation of project site is currently residential. The lower reaches of Miller Creek support cutthroat trout and coho and chum salmon up to 1st Avenue S and coho salmon and cutthroat trout up to the falls at approximately river mile 3.0.

1.6 CURRENT USE

Miller Creek, from the Miller Creek detention facility outlet to S 156th Way, does not flow in its natural channel; the creek has been dredged and straightened to drain wetlands for farmland reclamation. Topographic conditions, soil types, and seasonally high water tables indicate that this area was historically a wetland. The existing channel currently overflows its banks with at least a 2-year frequency. Frequent flooding is primarily the result of limited channel capacity, in part due to channel slope.

North of S 156th St., Miller Creek is a ditched reach with a silty bottom substrate. Miller Creek is approximately 4 to 10 ft wide and 2 ft deep below the outfall of the Miller Creek detention facility. The bank is lined with large rocks in the upper segments near Lora Lake, and the channel has a very silty substrate. South of S 156th St. Miller Creek meanders in a relatively narrow ravine. Substrate in the creek below S 156th St. consists of areas of sand and gravel with some silt.

1.7 PROJECT DESCRIPTION

1.7.1 Description of Proposed Work

The Miller Creek Relocation project includes relocating a segment of Miller Creek and expanding the existing floodplain. Also, as part of relocating S 154th/S 156th St., an existing sanitary sewer line will need to be relocated under Miller Creek. The following sections describe these projects.

The site plan is provided on Sheet C2 of Appendix A, with details and sections provided on Sheets C3 through C7. The overall goal of this project is to provide a new, longer stream channel with enhanced habitat features compared to the filled channel. Specific goals for the design of the relocated channel are:

Goal 1: The creek continues to provide base flow conveyance.

Goal 2: Minimum flow velocity remains high enough to minimize fine sediment deposition.

Goal 3: The new channel accommodates peak flows up to the 100-year flow with no net reduction of 100-year floodplain storage or floodway conveyance.

Goal 4: The new channel provides improved fish habitat compared to the existing habitat.

Goal 5: The new channel replaces and/or increases riparian habitat function, compared to the existing channel.

Goal 6: The channel does not attract hazard wildlife (such as waterfowl or flocking birds).

Goals are prioritized from the most critical function that the existing channel provides to enhancements that would improve channel habitat.

Approximately 8,500 cy of Miller Creek floodplain will be filled to accommodate the third runway embankment and S 154th/S 156th Street relocation. To compensate for this loss, approximately 9,600 cy of floodplain area will be excavated in the Vacca Farm site and converted from farmed land to a palustrine shrub wetland system.

An existing sanitary sewer line (Appendix A Sheet C2) crosses underneath Miller Creek approximately 80 ft south west of the Miller Creek detention facility outlet. A sanitary sewer line is proposed to be removed and replaced under the new Miller Creek channel approximately 450 ft south of its current location.

1.7.2 Reasons for Proposed Work

The relocation of Miller Creek is proposed to compensate for unavoidable impacts from the Runway Safety Areas and the fill embankment for the third runway. Relocating the creek would increase the channel length to approximately 1,080 ft, creating and enhancing habitat features and substrate that currently are lacking or of low quality in the creek segment that is to be filled.

Relocation of Miller Creek must occur on-site in proximity to the existing channel. The Vacca Farm site is nearly level with only a few feet of grade change from north to south. The proposed channel alignment was designed to take into account the lack of topographic relief on the site. Therefore, the shortest stream relocation will ensure that the maximum channel slope is maintained. This alignment will facilitate meeting design criteria for flow and velocity.

The floodplain excavation will occur to compensate for lost floodplain during the construction of the third runway embankment and relocated S 154th/S 156th St projects.

The sanitary sewer line is to be relocated east of its current location in order to place the conduit line within or near the road right of way for easier maintenance access and to limit contact with the floodplain enhancement/mitigation area.

1.7.3 Potential Impacts and Proposed Actions

Potential impacts to Miller Creek include erosion and sedimentation, interrupted flow, and other water quality issues during construction of the relocated channel segment, floodplain excavation, and sanitary sewer line relocation. If the relocated streambed is not adequately stabilized, erosion may continue beyond construction.

To minimize the impacts, the following actions will be taken:

- The new channel section would connect with the existing Miller Creek channel downstream at the earliest possible point to minimize stream relocation impacts.

- A pre-construction briefing will be held with the contractors, stream biologists, engineers, and Port representatives to ensure that aspects of the stream enhancement plan are properly implemented.

- Erosion and sediment control plans will be implemented at the project sites to meet temporary erosion and sediment control (TESC) standards (Appendix A, Sheets TE1 and TE2). The TESC Best Management Practices (BMPs) will be in place prior to the start of other construction activities. TESC BMPs that will be used include:

  - Silt fences around work areas and staging areas
  - Straw bales at key locations within the project limits
  - A temporary sediment pond at the lowest end of the proposed floodplain grading area
  - Sediment retention (filter fences and sediment basins)

- Instream construction would be limited to fish window as described in the HPA (likely July through September) and completed during the summer low-flow months when risks of erosion are low.

- Clearing and brush removal will be limited to only those work areas in which the Contractor is scheduled to begin work within the following 2 weeks.

- Construction sequencing, as described in Section 1.8.

- Sanitary sewer line conduit will be installed as nearly perpendicular to the stream as possible.

- The conduit will be placed at a sufficient depth during jack and bore operations to avoid disturbance to the streambed.

- Damage to existing vegetation will be limited to construction areas only necessary for work described above.

Fish habitat design standards were developed based on the habitat requirements of cutthroat trout. The planned features include: shading to minimize temperature increases during the summer; higher velocity riffles to maintain oxygen levels and reduce sedimentation; and placement of logs, rocks, or other structures to provide refuge. Native plants will be used to shade Miller Creek; this shading will both enhance the stream habitat and decrease its visibility, thereby reducing the likelihood that birds of prey (e.g., herons, raptors) would use the creek to collect food. Although anadromous salmonids are currently restricted from the proposed impact areas, resident cutthroat trout are present. These criteria are used to provide the highest quality habitat and environmental conditions for fish. Compared to most resident fish species, salmonids are typically very sensitive to environmental conditions such as habitat and water

quality. Salmonid prey, such as aquatic insects, tends to have similar requirements. Therefore, designing the relocated stream to meet the needs of these sensitive species helps ensure that the best possible fish habitat is created.

The Port will execute and file restrictive covenants on the Miller Creek relocation site. The covenant shall prohibit development activity in the buffer areas including clearing, grading, filling, and the construction of any building, structures, or other improvement.

1.8 CONSTRUCTION SCHEDULE

This project is expected to take approximately 15 weeks, beginning in late June 2001 and ending by early October 2001. Many of the construction elements for the stream relocation and the floodplain expansion will likely have to run concurrently to accomplish the work within this schedule.

After award of the contract, the Contractor will provide the Port with any required pre-construction submittals such as qualifications statement, workplans, and construction schedule. Notice to proceed will be given pending review of the pre-construction submittals.

The work will begin with implementation of the TESC plan, described in Section 1.7.3. Next, temporary facilities such as access roads and staging areas will be developed. Once the temporary facilities are in place, the Contractor will likely implement a plan for controlling water during excavation of the floodplain and stream relocation areas. This may include excavating dewatering trenches, French drains, and sumps.

It is anticipated that the construction for the relocated portion of Miller Creek will occur in two phases. Phase 1 would consist of constructing the main portion of the new channel. Phase 2 would consist of completing the tie-ins to the existing stream at each end. A more detailed description of this work as it is expected to occur follows:

1.8.1 Phase 1 Steam Relocation – Main Section

- Clear and grub the site.
- Implement dewatering for new channel construction.
- Fill the drainage ditch and low areas along the new channel alignment with imported clean fill.
- Excavate new channel subgrades (except at tie-in areas).
- Confirm new channel subgrades with field survey.
- Place geotextile over new channel subgrade.

- Install log weirs and quarry spalls.
- Place streambed (spawning) gravel and grade low-flow channel.
- Confirm new channel finish grades.
- Construct new channel banks; install coir fabric-wrapped streambank material.
- Install coir logs and coir mattresses.
- Install instream habitat features in new channel.
- Install channel plantings and bioengineering.
- Remove all debris and structures noted on drawings and specifications (e.g., footbridges, tires, riprap, etc.), in Miller Creek buffer enhancement areas between the new channel and S. 154th Street/S. 156th Way.
- Remove weeds (e.g., grub out blackberry, iris, and reed canarygrass; apply herbicide if appropriate per specifications) and clear brush in Miller Creek buffer enhancement areas.
- Mass and fine grade floodplain.
- Install microtopography/large woody debris (LWD) on floodplain.
- Prepare grading record drawings for new channel (except tie-ins), floodplain, and Miller Creek buffer enhancement area; modify planting plans as needed to match as-built grades and site conditions.

The above construction elements will likely occur over small sections of approximately 100 to 200 ft lengths of the new channel, beginning at the downstream end. Subsequent elements would follow as soon as practicable, creating an overlapping construction sequence.

1.8.2 Phase 2 Stream Relocation – Tie-ins

- Implement fish-protection and erosion control measures for tie-in construction.
- Install sheeting and base-flow stream diversion sumps at tie-in areas.
- Excavate new channel grades at tie-in areas.
- Place geotextile over new channel subgrade at tie-in areas.
- Install transition area log weirs and quarry spalls at tie-in areas.
- Place streambed (spawning) gravel and grade low-flow channel at tie-in areas.

- Confirm new channel finish grades.
- Construct new channel banks.
- Install coir logs and coir mattresses at tie-in areas.
- Install bioengineering.
- Divert water into new channel.
- Place fill in existing channel at tie-in areas.
- Plant channel banks at tie-ins according to the riparian planting plan.

Once the Phase 2 tie-ins have been made, the base flow in Miller Creek will be intermittently introduced to the new channel section to allow the streambed substrate to sort and stabilize. During this time, a collection sump located at the downstream end of the new channel construction will collect any turbid water and convey it to a sediment pond and/or treatment pond associated with embankment construction until the new channel flows clear. Clean water will be discharged to Miller Creek downstream of the project. Landscape plantings along the new channel and the stream buffer may occur as the construction proceeds or follow afterwards.

Once the site is stabilized with respect to erosion, the temporary sediment pond can be decommissioned. The timeframe for site stabilization is uncertain and depends largely on the successful establishment of the landscape plantings in the floodplain and upland areas. The pond decommissioning will involve removing the outlet structure and lower section of the pond containment berm. Other TESC measures will remain in place and be maintained until the entire site has stabilized.

1.9 WATERWARD STRUCTURES

Log weirs and streambed material will be placed in the relocated stream prior to introducing water. Otherwise, no structures will be placed waterward of the ordinary high water mark.

1.10 WATERWARD FILL MATERIAL

Fill material will be placed in the section of Miller Creek that is to be relocated. However, the new section of stream will be constructed and stabilized before water is diverted and the existing streambed is filled.

1.11 MATERIAL IN WETLANDS

No material will be placed in wetlands beyond those noted as impacts in the U.S. Army Corps of Engineers November 13th Public Notice.

1.12 FLOODING OR DRAINING OF WETLANDS

The relocation of Miller Creek will not result in the flooding or draining of wetlands.

1.13 EXCAVATION OR DREDGING

No excavation or dredging will be necessary waterward of the ordinary high water mark. The new section of Miller Creek will be constructed and stabilized before water is diverted into it.

1.14 SEPA REQUIREMENTS

Please refer to the attached Record of Decision (ROD) for this information.

1.15 OTHER APPLICATIONS, APPROVALS, OR CERTIFICATIONS

Please refer to the JARPA form for this information.

1.16 DENIED APPROVALS

Please refer to the JARPA form for this information.

2. INSTREAM ENHANCEMENT PROJECTS

To compensate for unavoidable project impacts to streams and wetlands associated with STIA improvements, the Port has proposed to enhance four sections of Miller Creek and to selectively place LWD throughout the creek. For information beyond that contained in this document, please refer to the attached *Revised Draft Natural Resource Mitigation Plan* (Parametrix 1999), Sections 4.1.6 and 5.2.2.

2.1 APPLICANT INFORMATION

Please refer to the JARPA form for this information.

2.2 AGENT INFORMATION

Please refer to the JARPA form for this information.

2.3 PROPERTY OWNER RELATIONSHIP

The Port will own the instream enhancement sites as part of the proposed Master Plan Update Improvement land acquisition.

2.4 PROPERTY OWNER INFORMATION

Please refer to the JARPA form for this information.

2.5 LOCATION

Sheet C1 in Appendix B shows a project vicinity map and Sheet C2 shows the general area of the four instream enhancement projects in Miller Creek. In this area, Miller Creek generally flows south and southwest toward Puget Sound. The area is in the City of SeaTac, King County, Washington. The projects are located in Sections 20 and 29, T23N, and R4E. The project sites are located at approximately 122.3 degrees longitude, 47.5 degrees latitude. The zoning designation of project sites is currently residential. The lower reaches of Miller Creek support cutthroat trout, coho salmon and chum salmon up to 1st Avenue S and coho salmon and cutthroat trout up to the falls at approximately river mile 3.0.

2.5.1 Enhancement Project 1

Enhancement Project 1 is located between the downstream end of the Miller Creek Relocation project and S 156th St. The tax parcel numbers adjacent to this stretch of Miller Creek are Parcels 202304063, 202304087 through 203204091, 202304100, and 202304101[1].

2.5.2 Enhancement Project 2

Enhancement Project 2 is located along a 70-foot reach of Miller Creek north of S 160th St. The tax parcel number adjacent to this stretch of Miller Creek is 202304211.

2.5.3 Enhancement Project 3

Enhancement Project 3 extends from the scour pool and debris immediately downstream (south) of the culvert at S 160th St. to approximately 380 ft downstream. The tax parcel numbers adjacent to this stretch of Miller Creek are Parcels 292304255, 292304256, 292304258 through 292304260, and 292304276.

2.5.4 Enhancement Project 4

Enhancement Project 4 is located immediately upstream (east) of 8th Ave. S and extends approximately 400 feet upstream. The tax parcel numbers adjacent to this stretch of Miller Creek are Parcels 292304314, 292304316, 292304317, and 292304321.

2.5.5 Woody debris

Woody debris will be placed in Miller Creek at selective locations throughout the area shown on Sheet C7 of Appendix B.

2.6 CURRENT USE

The areas adjacent to these stretches of Miller Creek were residential. However, the Port now owns the mitigation sites as part of the proposed Master Plan Update improvement land acquisition. The current and historical condition of Miller Creek in each of the four enhancement project areas is described below.

2.6.1 Enhancement Project 1

Enhancement Project 1 (Appendix B, Sheet C3) includes approximately 650 ft of Miller Creek and is confined along most of the length by riprap. Historically, this area was a wetland that may

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1 These parcel numbers, as well as all other parcel numbers referenced in this document, are existing parcels that have been or will be acquired by the Port.

have lacked a defined creek bed. Miller Creek was channelized along the eastern edge of this wetland when the land was drained for farmland. A small side channel, draining the western edge of this area, flows into Miller Creek.

The reach is a low-gradient stream, although the valley becomes more confined downstream of the confluence with the side channel. The project site has two distinct areas; upstream of the confluence with the side channel and downstream of the confluence where the valley narrows. Substrate in the upstream reach is composed primarily of silt and fine gravel; however, some coarse gravel exists where riprap has fallen into the channel and created a riffle. Substrate in the side channel and downstream of the confluence consists of fine silt. Five footbridges cross Miller Creek upstream of the confluence, and a fence crosses the channel at the upstream end of the project site. Two footbridges and a fence cross the side channel.

During high flow events, both Miller Creek and the side channel overtop their banks and flood the adjacent wetland. Vegetation within this reach is predominately grass; the site also has several large western redcedar trees and some non-native and invasive species. Downstream of the confluence several large trees are located along the channel; however, the remainder of vegetation is lawn and invasive or exotic species.

2.6.2 Enhancement Project 2

Enhancement Project 2 (Appendix B, Sheet C4) is in a reach of Miller Creek in which a narrow ravine confines the creek and the floodplain. Construction of two weirs has altered the profile of Miller Creek and created a uniform channel with little instream diversity. The downstream weir is approximately 3 ft high and constructed of large rocks; the second weir is constructed of cement and is located approximately 70 ft upstream and is approximately 2 ft high; both weirs are considered a barrier to fish. A footbridge crosses Miller Creek just upstream of the second weir. Miller Creek is confined by riprap on both banks downstream of the first weir and upstream of the second weir.

Between the weirs, riprap lines the left bank, and the right bank is covered with lawn. During storm events a pool forms behind the downstream weir and floods the right bank. An emergent wetland lies adjacent to the left bank of Miller Creek throughout the project area.

Vegetation in the project area is predominately lawn; however, a stand of cottonwood trees is located on the right bank near the downstream weir. The project site is easily accessible on the right bank, while heavy equipment access may be limited by a retaining wall on the left bank.

2.6.3 Enhancement Project 3

Enhancement Project 3 (Appendix B, Sheet C5) is located in an area in which Miller Creek is confined at the upper end of this reach by a narrow ravine. However, the valley widens and an extensive floodplain and wetland are associated with the creek in the lower reaches of this project area.

Tire riprap has been placed along the left bank downstream of a scour pool, below the S 160th St. culvert. The right bank is steep and shows evidence of erosion and downcutting. In the middle of the project site, Miller Creek becomes confined to a narrow channel, the gradient increases to a slope of approximately 0.03 percent, and the velocity increases. At the lower end of the steep reach, Miller Creek has a sharp meander bend that is protected by riprap. Tire riprap lines the right bank of the channel approximately 40 ft upstream of this meander, and several tires are buried in the substrate. A deep scour pool with large cobble substrate has formed on the outside edge of the meander.

Vegetation throughout this reach consists of blackberry, lawn, and a few trees scattered along the banks. Access to the site is limited by a steep right bank immediately downstream of the culvert. The project area is accessible along portions of the left bank.

2.6.4 Enhancement Project 4

Enhancement Project 4 (Appendix B, Sheet C6) is located in an area in which Miller Creek is confined by riprap throughout the project reach. Two rock walls line the creek and a fence spans the channel. The upstream wall, which is located along the left bank, influences the flow pattern of the creek; however, there is evidence of bank erosion downstream of this wall. Miller Creek is channelized by the second wall, which lines both banks. The creek is also confined in the project reach by a bridge and riprap.

Riparian vegetation in the project site includes western redcedar and red alder trees; however, little understory exists, and ground cover is primarily grass, gravel, blackberry, and invasive species. Steep banks at specific locations on the left bank limit site access. Miller Creek is easily accessible in most places along the right bank.

2.7 PROJECT DESCRIPTION

2.7.1 Description of Proposed Work

The following section generally describes the four proposed instream enhancement projects and the primary goals for each project. Refer to the *Implementation Addendum for the Natural Resource Mitigation Plan* (Parametrix 2000) (enclosed in submittal package) for detailed description of construction and post-construction steps necessary to implement the proposed projects.

2.7.1.1 *Project Site 1*

Project Site 1 enhancements are designed for approximately 640 ft of Miller Creek extending from the Miller Creek relocation project to the upstream limit of construction for the S 156th Way bridge (see Section 3.0 below). The proposed enhancements are depicted in Appendix A, Sheet C3 and detailed on Sheets C9 and C10. Landscape planting for this area is shown in Appendix A, Sheet L1. The primary goal of the enhancement features is to create a

geomorphically stable low-gradient stream. Other goals include increasing the frequency of overbank flow for sediment deposition, enhancing instream habitat, and enhancing the side channel.

This project requires removing footbridges, railroad ties, and fences along Miller Creek and placing woody debris in the channel to increase instream habitat complexity and roughness. The site will be replanted with native wetland, riparian, and upland species. Non-native Iris species will be removed from within and near the stream channel during restoration activities.

The entire project site is easily accessible from the east bank by people and heavy equipment. Therefore, construction of instream enhancement features and replanting of riparian vegetation would be unrestricted.

2.7.1.2 *Project Site 2*

Project Site 2 enhancements include removing the two weirs, a footbridge, adding large woody debris, boulders and a gravel cobble mix to the stream and replanting the banks with native wetland and riparian vegetation. The proposed stream and buffer enhancements are depicted in Appendix B, Sheets C4 and L2, and detailed on Sheets C7, C8, C9, and L6. The goal of this project is to enhance instream and riparian habitat along approximately 220 ft of the existing of Miller Creek channel.

The existing rock weirs will be removed to improve fish passage. Substrate will be added to the channel to match existing upstream and downstream slopes. Large woody debris and boulders will be added to the channel to increase roughness and channel complexity. A gravel/cobble mix will be used for substrate in the regraded portions of the channel. Approximately 55 ft of riprap will be removed along the left (east) bank between the weirs and the banks will be stabilized with coir lifts and live stakes. A coir log will be used to stabilize the right (west) bank. Native wetland and riparian vegetation will be planted to provide shade and reduce bank erosion. Non-native Iris species will be removed from within and near the stream channel during restoration activities.

2.7.1.3 *Project Site 3*

Project Site 3 has bank erosion and downcutting upstream of a riprapped meander located approximately 300 ft downstream of the S 160th St. culvert. The proposed enhancements are depicted in Appendix B, Sheets C5 and L3, and detailed on Sheets C7, C8, C9, and L6. Enhancement activities at this site have two primary goals: (1) removing constrictions that channelize flow (i.e. instream tire retaining walls), restoring a more natural channel; and (2) increasing roughness in Miller Creek. Other goals at this site include adding erosion control features along the banks, replanting native riparian and wetland species, removing riprap along both banks, removing a fence along the left bank, and enhancing instream habitat.

All instream tires will be removed throughout this reach including tires along the left bank immediately downstream of the S 160th St. culvert, those on the right bank upstream of the

meander that currently provide erosion control, and those located in the channel. Erosion control measures (e.g., straw mulch, clear plastic cover) and replanting of native vegetation will be used to stabilize the banks where they have been disturbed during construction activities. Upstream of the riprapped meander, LWD and rock will be added to the channel to reduce velocities and dissipate stream energy, which will reduce downcutting and bank erosion, and allow for removal of tires and some large rock riprap that are currently protecting the right bank. The use of LWD along the banks will also enhance fish habitat. Removal of riprap will allow the stream to naturally meander; the site will be regraded to create high-flow benches on the right and left banks that will be planted with native vegetation. Non-native and invasive species (such as Iris) will be replaced at the project site with native riparian species.

2.7.1.4 *Project Site 4*

Project Site 4 enhancements are intended to remove channel constrictions, which are causing bank erosion and scour, and enhance existing instream and riparian habitat. The proposed enhancements are depicted in Appendix B, Sheets C6 and L5, and detailed on Sheets C7, C8, C9, and L6. In addition to instream enhancements, the floodplain and streambanks will be regraded to provide gravel bars and high flow benches. Two rock walls along the left and right streambanks will be removed. Riprap, a bridge, and abutments will also be removed as part of this project.

Removal of the bridge will restore natural channel geomorphology in this reach. Erosion control will be used along the banks as needed during construction (see Appendix B, Sheets TE1 through TE5 for TESC Plans). The entire site will be stabilized after construction.

Removal of the two rock walls in the downstream reaches and regrading of the banks will enhance stream morphology and create more diverse instream habitat with pools and bars. It will also require erosion control along the banks; placement of woody debris will be used to stabilize gravel bars.

Understory riparian vegetation and wetland vegetation will be planted along the right bank within the project area and along the left bank where the site is accessible; vegetation will provide shade and bank stability. Invasive and non-native species (such as Iris) will be removed from the project site. All landscape work will be coordinated with the instream work.

2.7.1.5 *LWD Placement*

LWD placement is depicted on Appendix B, Sheet C7, and details are provided in Appendix B, Sheet C10. The species (typically including western redcedar, Douglas fir, and western hemlock), size, number, and location of LWD will be determined during the final design and field-placed by the project engineer or habitat biologist during construction. LWD will be designed to be stable in the creek; natural anchoring methods, such as partially burying or locating the LWD outside the low-flow channel will be preferred over conventional anchoring methods. The general locations of LWD will vary from site to site depending on the design objective. Much of the LWD placed in Miller Creek will have root wads attached.

Several field investigations of Miller Creek indicate that Miller Creek does not have a significant amount of large woody debris in the project reach. To enhance habitat, it is proposed that key logs (equal to or greater than 18-inches in diameter) be added to the creek. As shown in Appendix B, it is proposed that 100 logs should be added to Miller Creek and that an additional 30 or more logs should be field placed during construction. This would result in the addition of at least 130 logs within the project area at 36 different locations (1 to 3 logs at each location). It was assumed that these logs would promote retention of other wood debris in the creek and formation of log jams, which over time would resemble conditions in an old or second growth forest.

The proposed number of logs (130) is consistent with the TFW methods, which prescribes 1 log per 2 bankfull channel widths (WFP 1997). Based on field measurements the bankfull width of Miller Creek was estimated to be between 13 and 15 ft. The recommended number of logs for the 3,365-ft of instream Miller Creek enhancements would be between 112 and 130.

2.7.2 Reasons for Proposed Work

To compensate for unavoidable project impacts to streams and wetlands, the Port has proposed on- and off-site mitigation. On-site mitigation includes enhancing sections of Miller Creek. The four mitigation sites for proposed instream enhancement were selected based on several criteria. An initial survey of existing conditions was conducted to identify locations where historic residential development was directly impacting Miller Creek. These sites were then evaluated based on the severity and type of impact, such as the loss of habitat complexity, erosion, man-made debris in the channel, and unstable or uniform geomorphology. Opportunity for significant improvement at potential enhancement sites was determined based on benefits to upstream and downstream reaches, access to the site, coordination with buffer revegetation, and potential negative impacts during construction.

Cederholm, C.J., L.G. Dominguez, T.W. Bumstead. 1997. Chapter 8: Rehabilitating Stream Channels and Fish Habitat Using Large Woody Debris. In Fish Habitat Rehabilitation Procedures. Ed. P.A. Slaney and D. Zaldokas. 341 pg.

Keller, E. A, and F.J. Swanson. 1979. Effects of Large Organic Material on Channel Form and Fluvial Processes. Earth Surface Processes, Vol. 4 pp361-380.

Washington Forest Practices. 1997. Board Manual: Standard Methodology for Conducting Watershed Analysis, Under Chapter 222-22 WAC.

2.7.3 Potential Impacts and Proposed Actions

The general enhancements to Miller Creek (e.g., placement of LWD) would require minimal disruption to the existing stream system; however, a temporary increase in sediments entering the creek is expected. Actions proposed to help minimize water quality and stream bank erosion during construction include the following:

- Holding pre-construction briefing with the contractors, stream biologists, engineers, and Port representatives to insure that aspects of the stream enhancement plan are properly implemented.
- Requiring the contractor to comply with all permit conditions and to maintain a copy of all permits on site.
- Implementing erosion and sediment control plans at the project sites to meet TESC standards (Sheets TE1, TE2, TE3, TE4, and TE5 in Appendix B). General erosion and sediment control BMPs would be used at specific sites to prevent damage to creek banks during instream work. Temporary erosion and sediment control BMPs that may be used include:
  - Preventative practices (preservation of existing vegetation; and identification, flagging, and fencing of sensitive areas)
  - Temporary cover practices (temporary seeding, straw mulch, bonded fiber matrices, and clear plastic covering) to provide source control during construction
  - Structural erosion control BMPs (check dams, tire wash, construction road stabilization, dust control, interceptor dike and swale)
  - Sediment retention (filter fences and sediment basins)
- Instream construction would be limited to fish window as described in the HPA (likely July through September) when risks of erosion are low.
- In areas where structures, such as riprap, concrete blocks, and footbridges, are removed from the streambank, banks will be stabilized using geotextile fabric, willow stakes, willow fascines, bio-logs, or other bioengineering techniques.
- Silt curtains will be used to divert flow away from construction areas for such activities as placement of LWD, regrading, or installation of bioengineering or other bank stabilization measures.
- Construction equipment, if required, would have limited access to the site, would operate within areas specified by the project engineer, and would not be allowed to cross the

creek or damage buffer enhancement areas. If access requires crossing wetlands, use of tracked vehicles, balloon tires, or mats will be required to minimize disturbance.

In addition, instream habitat features will be monitored, consistent with the monitoring plan detailed in the *Revised Draft Natural Resource Mitigation Plan* (Parametrix 1999) and permit conditions, to ensure that these features provide the desired habitat, bank stabilization, and that instream LWD is stable. Table 2-1 includes the inspection schedule for monitoring the enhancement projects.

Table 2-1. Monitoring Schedule for Miller Creek Instream Enhancement Projects

Inspect	Frequency	Action Threshold	Action
Habitat Structures	Annually (May), or after flows in excess of the 2-year peak flow	Structure displaced [a] causing erosion	Repair or replace [b] if necessary.
Substrate	Semi-annually (February/August)	Fine sediments (sand or smaller) in riffles	Prepare options for reducing stream bottom width (i.e., using lateral logs or boulders) if sedimentation persists for a second year.
Erosion or Scouring	Annually (May), or after 2-year storm	Bottom sediment gone Excessive streambank erosion causing sloughing Excessive habitat damage	Repair damaged creek bank (using bioengineering, techniques) and enlarge channel if damage recurs in the second year and action is deemed appropriate.
Control Structures	Annually (May), or after 2-year storm	Structural damage or failure Obvious scouring or cavitation	Determine cause and repair
Adverse Flooding	Twice yearly (November/February)	Trapped standing or ponding water Persistent slow drainage	Improve surface drainage paths

[a] A structure can be damaged or displaced and still provide habitat consistent with mitigation goals.

[b] The benefits of repair or replacement would be balanced against the potential impacts.

On completion of construction, the Port will conduct baseline monitoring and complete an as-built report, which will be provided to the permitting agencies. This report will describe as-built conditions, monitoring methods, location of permanent transects, and location of permanent photo points. Beginning 1 year after construction is complete, the Port will conduct regular monitoring at the end of years 1, 2, 3, 5, 7, 9, 10. Monitoring reports will be completed after each monitoring year and describe the results of the monitoring visits, as well as any necessary maintenance or contingency planning. Site conditions will be compared to the base line conditions and to performance standards for each monitoring year.

The Port will execute and file restrictive covenants associated with Miller Creek buffer enhancement area that prohibit buffer area development activities including clearing, grading, and filling, or construction of any building, structure, or other improvement. Therefore, protection of the buffer area will result in the protection of the instream enhancement areas. Acceptable language and conditions of restrictive covenants for the Miller Creek buffer will be negotiated between the Port and regulatory agencies (including U.S. Army Corps of Engineers,

Washington Department of Ecology, Federal Aviation Administration, and U.S. Department of Agriculture-Wildlife Service Division).

2.8 CONSTRUCTION SCHEDULE

The enhancement projects are scheduled to commence in the summer of 2001. Construction will be completed during the fish window as dictated in the HPA (likely July through September). Site preparation and final site clean-up may occur before and after these dates.

2.9 WATERWARD STRUCTURES

LWD, large rocks, and gravel benches will be placed waterward of the ordinary high water mark as shown in the figures in Appendix B. In some areas, existing fill material will be removed and replaced with desirable substrate. No other structures will be constructed waterward of the ordinary high water mark.

2.10 WATERWARD FILL MATERIAL

LWD, large rocks, and gravel benches will be placed waterward of the ordinary high water mark as shown in Appendix B. In some areas, existing fill will be removed and replaced with desirable substrate. No other fill material will be placed waterward of the ordinary high water mark.

2.11 MATERIAL IN WETLANDS

No material will be placed in wetlands beyond those noted as impacts in the U.S. Army Corps of Engineers November 13th Public Notice.

2.12 FLOODING OR DRAINING OF WETLANDS

The enhancement projects will not result in the flooding or draining of wetlands.

2.13 EXCAVATION OR DREDGING

2.13.1 Project Site 1

Project Site 1 will not require any grading.

2.13.2 Project Site 2

Project Site 2 will be regraded by removing two existing weirs. Total volume of material to be excavated waterward of ordinary high water is estimated at approximately 27 cubic yards.

2.13.3 Project Site 3

Project Site 3 will be regraded to create two high-flow benches on the right bank that can be planted with native vegetation. The volume of material to be excavated waterward of the ordinary high water mark is estimated at approximately 18 cubic yards in an area of approximately 0.01-acre. Gravel will be added to form the proposed gravel bars.

2.13.4 Project Site 4

Project Site 4 will be regraded to create high flow benches and gravel bars. The volume of material to be excavated waterward of the ordinary high water mark is estimated at approximately 30 cubic yards in an area of approximately 0.2 acre.

Excavated material will be disposed offsite. No other excavation or dredging is proposed.

2.14 SEPA REQUIREMENTS

Please refer to the attached ROD for this information.

2.15 OTHER APPLICATIONS, APPROVALS, OR CERTIFICATIONS

Please refer to the JARPA form for this information.

2.16 DENIED APPROVALS

Please refer to the JARPA form for this information.

3. SOUTH 156TH WAY BRIDGE RELOCATION

3.1 APPLICANT INFORMATION

Please refer to the JARPA form for this information.

3.2 AGENT INFORMATION

Please refer to the JARPA form for this information.

3.3 PROPERTY OWNER RELATIONSHIP

The Port owns the land in the vicinity of the existing and relocated bridge.

3.4 PROPERTY OWNER INFORMATION

Please refer to the JARPA form for this information.

3.5 LOCATION

The project is located at and near the existing S. 156th Way bridge crossing Miller Creek in Section 20, T23N, and R4E. The project is located within the City of SeaTac. The latitude and longitude of the project sites are located at approximately 47.5 degrees latitude and 122.3 degrees longitude. The project sites are currently located in residential areas and/or City of SeaTac right of way. The lower reaches of Miller Creek support cutthroat trout and coho and chum salmon up to 1st Avenue S, and coho salmon and cutthroat trout up the falls at approximately river mile 3.0.

3.6 CURRENT USE

The current use of the area where the bridge will be relocated consists of road right-of-way for S 156th Way and residential property. Himalayan blackberry is the dominant type of vegetation within the right-of-way, while lawn and ornamental landscaping is dominant within the residential property. After the project is complete the Port will own the residential property adjacent to much of the project site.

3.7 PROJECT DESCRIPTION

3.7.1 Description of Proposed Work

The project involves demolishing the existing S. 156th Way bridge crossing Miller Creek and installing a new bridge adjacent to it to accommodate runway construction and the relocation of S 156th Way/ S 154th St. The project is depicted in Appendix B sheets P1, P2, and P3. Demolition will include removal of the bridge superstructure, removal of the fill behind the existing bridge abutments, and removal of the existing wooden pilings and abutment walls to a depth of two feet below the creek bottom. Once the abutments are removed, the banks of the creek in the disturbed area will be regraded and stabilized with erosion control matting and vegetation. A 10-foot-wide bench for a future path is also proposed to be graded on the west side of the creek. Demolition of the existing bridge will occur after construction of the new bridge immediately to the north. The footings of the new bridge will be located landward of the ordinary high water mark. Existing riprap that protects the western stream bank beneath the new bridge will remain in place to minimize disturbance to the stream.

Also associated with the relocated roadway are two new storm drainage outfalls for roadway runoff. These outfalls are proposed to utilize flow dispersion trenches to dissipate runoff into the creek buffer between 30 and 40 feet from the creek. Biofiltration swales are proposed upstream from these outfalls to provide water quality treatment (Appendix B, Sheet P3). Detention is not proposed upstream from these two outfalls because a nearby detention facility serving runoff from the third runway embankment is being designed to overcompensate for undetained runoff from the S 154th Street/S 156th Way roadway. Table 3-1 shows the flow rates for these two outfalls.

Table 3-1. Peak Runoff Rates from Biofiltration Swale Outfalls North of Miller Creek Bridge

	Peak Rate Runoff (cfs)		
	2-year	10-year	100-year
Biofiltration Swale #1	0.19	0.21	0.39
Biofiltration Swale #2	1.67	2.00	3.72

In addition, a 36-inch water line will be attached to the south side of the bridge. No additional pilings will be required to support the water line; brackets attached to the side of the will be used to support the utility.

3.7.2 Reasons for Proposed Work

Demolition and replacement of the S. 156th Way bridge over Miller Creek is required for the relocation of S. 156th Way and S. 154th Street around the north end of the third runway safety

area. The existing bridge is insufficient in terms of alignment, width, and condition for continued use within the relocated roadway.

3.7.3 Potential Impacts and Proposed Actions

Although construction of the new bridge is expected to result in an improved stream corridor due to the longer bridge span, impacts to fish and aquatic life, water quality, and aesthetics could occur during and following construction. Grading next to the stream to remove the existing bridge abutments will expose soil that could erode into the stream and degrade water quality and fish habitat. The new storm drainage outfalls, if not properly designed and constructed, could also result in streambank erosion.

To avoid impacts during construction of the new bridge, all grading will occur above the ordinary high water mark. To minimize impacts resulting from removal of the existing bridge foundation, the work will occur during periods of low flow (typically July to September). In addition, sand bags or silt curtains will be used to shift stream flows to the opposite side of the channel from where work below ordinary high water is occurring (Appendix B, Sheet P2). To minimize impacts resulting from the two new storm drainage outfalls, gravel-filled flow dispersion trenches will be used to dissipate runoff into the vegetated stream buffer.

3.8 CONSTRUCTION SCHEDULE

Construction of the new bridge (all work above the ordinary high water limit) is scheduled to begin March 2001 and continue for approximately 6 months.

Demolition of the existing bridge (includes work below the ordinary high water limit) is scheduled to begin mid July or August of 2002 and continue for approximately 45 days. Work below the OHWM will correspond to HPA permit conditions.

3.9 WATERWARD STRUCTURES

No new structures will be placed waterward of the ordinary high water mark.

3.10 WATERWARD FILL MATERIAL

No fill material will be placed waterward of the ordinary high water mark.

3.11 MATERIAL IN WETLANDS

No material will be placed in wetlands beyond those noted as impacts in the U.S. Army Corps of Engineers November 13th Public Notice.

3.12 FLOODING OR DRAINING OF WETLANDS

Constructing the S. 154th/S. 156th Street bridge will not result in the flooding or draining of wetlands.

3.13 EXCAVATION OR DREDGING

Approximately 15 cubic yards of earthen abutment backfill will be removed below the ordinary high water limit in order to demolish the existing bridge abutments to a depth 2.0 feet below original ground. Some of the excavated material will be used to re-contour the pits left from abutment removal. It is anticipated that a hydraulic excavator will be used to complete this work.

3.14 SEPA REQUIREMENTS

Please refer to the attached ROD for this information.

3.15 OTHER APPLICATIONS, APPROVALS, OR CERTIFICATIONS

Please refer to the JARPA form for this information.

3.16 DENIED APPROVALS

Please refer to the JARPA form for this information.

4. STORMWATER OUTFALLS

Temporary and permanent stormwater facilities and outfalls will be constructed to mitigate impacts from the construction activities and new, impervious surfaces, respectively. For information beyond that provided in this document, please refer to the attached *Preliminary Comprehensive Stormwater Management Plan* (Parametrix 2000).

4.1 APPLICANT INFORMATION

Please refer to the JARPA form for this information.

4.2 AGENT INFORMATION

Please refer to the JARPA form for this information.

4.3 PROPERTY OWNER RELATIONSHIP

The Port owns the property where the stormwater facilities and outfalls will be located.

4.4 PROPERTY OWNER INFORMATION

Please refer to the JARPA form for this information.

4.5 LOCATION

The detention facilities and outfalls are located within the City of SeaTac, King County, Washington, in Sections 20 and 29, T23N, and R4E. The latitude and longitude of the area is approximately 47.5 and 122.3 degrees, respectively. The locations are shown in Appendix C, Sheet C18. The zoning designation of project sites is currently residential. The lower reaches of Miller support cutthroat trout and coho and chum salmon up to 1st Avenue S, and coho salmon and cutthroat trout up the falls at approximately river mile 3.0. The tax parcel numbers adjacent to each facility are estimated below:

Pond A: Parcel 292304303

Pond B: Parcels 292304496 and 292304497

Pond C: Parcels 202304135 through 202304140, 202304102, 202304103, 202304112, and 202304113.

Pond D: Parcels 292304387 and 292304388

Pond E: Parcel 292304278

Pond F: Parcels 292304413 and 292304439

Pond G: Parcels 202304211, 202304212 and 202304189

TESC Treatment Ponds: Parcels 202304148 and 202304149

4.6 CURRENT USE

The Port now owns the areas where these stormwater facilities and outfalls will be sited. Previously, most of them were residential areas.

4.7 PROJECT DESCRIPTION

4.7.1 Description of Proposed Work

Temporary and permanent erosion and sediment control facilities will be constructed in conjunction with the implementation of Master Plan Update Improvements for STIA. Specifically, eight facilities will be constructed, as shown in Appendix C, Sheets C18 and C109. The pond configurations are subject to change pending the King County Stormwater review. Any changes to the pond locations will occur in non-wetland areas greater than 100-ft from Miller Creek. Details of these facilities are provided in the attached Appendices, as identified in the Table 4-1.

4.7.2 Reasons for Proposed Work

Temporary erosion and sediment control facilities will be constructed to manage runoff from construction of Master Plan Update Improvements for STIA. Permanent facilities will be constructed to manage additional runoff created by new, impervious surfaces.

4.7.3 Potential Impacts and Proposed Actions

The stormwater management facilities are intended to mitigate impacts from implementation of the Port's Master Plan Update Improvements at STIA. The facilities are not constructed within the ordinary high water mark of any state waters. Constructing these facilities and outfalls will not require the use or obstruction of the natural flow of state waters.

Table 4-1. Type of Facility and Outfall Locations with Respect to Receiving Waters

Facility	Type of Facility	Sheets	Outfall Description
Pond A	Temporary	C24, C43	Water will be pumped to Pond G.
Pond B	Temporary	C21, C40, C41	Water will be pumped to Pond F.
Pond C	Temporary	C38	Water will be pumped to TESC Treatment Cells C/G.
	Permanent	C129, C137, C138	Water will be discharged via a new outfall connection into Miller Creek. inside a concrete box culvert under S. 157th Pl.
Pond D	Temporary	C23	Water will be pumped to TESC Treatment Cells D/F.
	Permanent	C114, C115, C133, C134, C134.1	Water will be discharged to Miller Creek from the existing ditch on the east side of 8th Avenue.
Pond E	Temporary	C37, C42	Water will be pumped to Pond G.
Pond F	Temporary	C22	Water will be pumped to TESC Treatment Cells D/F.
	Permanent	C112, C113, C131, C132	Water will be discharged to a large wetland that forms the headwaters of Walker Creek.
Pond G	Temporary	C37	Water will be pumped to TESC Treatment Cells C/G.
	Permanent	C128, C129, C135, C135.1, C136	Water will be discharged to the existing storm drain inlet on the east side of the S. 160th St. crossing of Miller Creek.
TESC Treatment Cells C/G	Temporary	C22, C23, C28, C29, C38	Water will be discharged to Miller Creek through an existing storm sewer pipe along the south side of S. 157th Pl., and through a new pipe constructed under the street that penetrates the wall of the existing box culvert under S. 157th Pl.
TESC Treatment Cells D/F	Temporary	C22, C23, C28, C29, C38	Water will be discharged to the existing ditch on the east side of 8th Pl. S. that drains into the ditch along 8th Ave. S. and on to Miller Creek. Once the Pond D outlet is constructed, the Contractor may choose to outlet to it instead. This would outfall to Miller Creek at the same location.

The potential impacts are limited to the diversion or change in the natural flow of state waters. However, stormwater is being captured, conveyed, detained, and treated upstream of these waters. The treatment and discharge of stormwater is designed to meet water quality standards and maintain predeveloped flows as required by King County Surface Water Design Manual, which meets or exceeds the corresponding requirements of the Washington State Department of Ecology. Specifically, the new facilities in the Miller Creek basin are designed to comply with King County Level 2 Flow Control, which requires the developed discharge durations to match 50 percent of the pre-developed 2-year to the full 50-year peak flow. The *Preliminary Comprehensive Stormwater Management Plan*, prepared by Parametrix, is currently being reviewed by King County for compliance.

4.8 CONSTRUCTION SCHEDULE

The estimated start date and duration for the construction of each facility is described in Table 4-2.

Table 4-2. Estimated Construction Schedule for Stormwater Facilities

Facility	Estimated Construction Start[a]
Pond A	Spring 2001
Pond B	Summer 2002
Pond C	Summer 2000
Pond D	Partial Fall 2000
Pond E	Summer 2002
Pond F	Partial Fall 2000
Pond G	Partial Fall 2000
TESC Treatment Facility	Partial Fall 2000

[a] Construction duration for the ponds are anticipated to take 4 to 6 weeks for each of the individual outlet structures. Temporary ponds will be in place through 2004.

4.9 WATERWARD STRUCTURES

No structures will be placed waterward of the ordinary high water mark of state waters.

4.10 WATERWARD FILL MATERIAL

No fill material will be placed waterward of the ordinary high water mark of state waters.

4.11 MATERIAL IN WETLANDS

No material will be placed in wetlands beyond those noted as impacts in the U.S. Army Corps of Engineers November 13th Public Notice.

4.12 FLOODING OR DRAINING OF WETLANDS

The facilities and outfalls will not flood or drain wetlands.

4.13 EXCAVATION OR DREDGING

No excavation or dredging will occur waterward of the ordinary high water mark of state waters.

4.14 SEPA REQUIREMENTS

Please refer to the attached ROD for this information.

4.15 OTHER APPLICATIONS, APPROVALS, OR CERTIFICATIONS

Please refer to the JARPA form for this information.

4.16 DENIED APPROVALS

Please refer to the JARPA form for this information.

Records of Decision (ROD)

Records of Decision

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U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
NORTHWEST MOUNTAIN REGION
RECORD OF DECISION
FOR THE
MASTER PLAN UPDATE DEVELOPMENT ACTIONS
SEA-TAC INTERNATIONAL AIRPORT

JULY 3, 1997

TABLE OF CONTENTS

I. INTRODUCTION

This Record of Decision (ROD) provides final Federal Aviation Administration (FAA) approval for the Master Plan Update development actions adopted by the Port of Seattle (POS) on August 1, 1996, in POS Commission Resolution # 3212, as amended on May 27, 1997, in POS Commission Resolution No. 3245.

This ROD provides final approval for those agency actions necessary in order to provide FAA support for a new 8500-foot dependent air carrier runway, for a 600 foot southerly extension of runway 16L/34R, for expanded runway safety areas for runways 16R and 16L, and for various landside Master Plan Update improvements scheduled to be completed through the year 2010. The phasing of these various projects is graphically presented on pages 2-22 to 2-23 of the Final Supplemental Environmental Impact Statement [FSEIS], and is also presented in Appendix A of this ROD.

II. BACKGROUND

Over the past decade, the Federal Aviation Administration (FAA) has worked closely with local and regional officials and with the Port of Seattle (POS) aviation planning staff to investigate ways in which to accommodate the increasing passenger and operational activity demands at Seattle-Tacoma International Airport (Sea-Tac). As documented in Chapter I of the Final Environmental Impact Statement (FEIS) and in Chapter 2 of the FSEIS, the present airport runway configuration, with two closely-spaced runways, is currently responsible for significant airside delays, particularly during poor weather conditions, and is forecast to be responsible for increasing such delays in the future. Furthermore, the present design and configuration of airport landside facilities cannot adequately accommodate projected increases in activity without severe landside congestion.

On the regional level, the FAA has worked for a number of years with the local metropolitan planning organization [currently entitled the Puget Sound Regional Council (PSRC)], and with other local planning agencies, to find solutions to the related problems of inadequate capacity and increasing delays which are forecast for Sea-Tac. The FAA participated in the 1989-1992 Flight Plan Study, which recommended a multiple airport system that included a new runway at Sea-Tac. The agency also funded a PSRC study of the feasibility of a major supplemental airport, which concluded on October 27, 1994, with PSRC Resolution # EB-94-01, determining that there were no feasible sites for such a airport, and deciding not to proceed with further such studies on a regional level (See FEIS Appendix B for detailed information on regional alternatives).

On January 5, 1994, the FAA began the public phase of the environmental process involving POS site-specific development proposals, which included a third Sea-Tac runway, by announcing in the Federal Register its intent to prepare an Environmental Impact Statement (EIS), and by requesting scoping comments (59 Fed. Reg. 645). Scoping meetings were held with the general public and with Federal, State and local agencies on February 9 and 10, 1994 (See FEIS Appendix A for detailed information on

this scoping process).

During this same time frame, the POS began its Master Plan Update study, designed to develop recommendations for improvements to Sea-Tac which would reduce existing and forecasted poor weather aircraft operating delay and would accommodate forecasted growth in passengers, cargo, and aircraft operations. The Master Plan Update study process occurred concurrently with the initial environmental studies discussing the impacts of the development actions being proposed.

On April 24, 1995, the FAA published in the Federal Register a Notice of Availability of the Draft Environmental Impact Statement (DEIS) [60 Fed. Reg. 20149]. Public comments were taken on the DEIS from the date of its release until August 3, 1995. During the comment period, two public hearings were held, on June 1, 1995 and June 14, 1995. Final Environmental Impact Statement (FEIS) Appendix T, located in Volumes 5, 6, and 7, contains the transcript from the public hearings, and letters commenting on the DEIS which were received from the public and government agencies. FEIS Volume 4, Appendix R contains responses to the issues presented during the comment period.

The FEIS, approved by the FAA on February 1, 1996, was released to the public on February 9, 1996 (see 61 Fed. Reg. 5056). The FEIS addressed areas of public concern by way of modifications to the DEIS text and specific responses to public comments.

The U.S. Environmental Protection Agency (EPA) published a notice of the availability of the approved FEIS, pursuant to 40 CFR 1506.10 (61 Fed. Reg. 6243) in the Federal Register on February 16, 1996.

Although the FAA did not solicit public comments on the FEIS (on issues other than air quality conformity), several public agencies, community groups, and citizens nevertheless submitted written comments for agency consideration on the FEIS. Appendix A of the Final Supplemental Environmental Impact Statement (FSEIS) responds to substantive agency and public comments on the FEIS, other than those pertaining to air quality conformity.

On July 11, 1996, in Resolution A-96-02, the PSRC General Assembly approved an amendment to the Metropolitan Transportation Plan to include a third runway at Sea-Tac Airport, with specific noise reduction measures based upon the recommendations of an expert Panel.

On August 1, 1996, the Commissioners of the Port of Seattle met to discuss the Master Plan Update proposals discussed in the FEIS. During the course of that meeting, by approving Resolution No. 3212, they adopted and approved a preferred development alternative, and authorized implementation of the first phase of those development actions. To date, due to the superseding events discussed below, no such implementation activity has taken place.

In May of 1996 the FAA Northwest Mountain region became aware of the fiscal year 1996 Terminal Area Forecast (TAF) prepared by the FAA headquarters Office of Policy and Plans. The TAF suggested that the air travel demand forecasts used in the

Master Plan Update may have significantly understated the actual demand currently being experienced at Sea-Tac Airport and likely to be experienced at the airport in the foreseeable future. Over the next six months, a more detailed reexamination of those national forecasts, with more focus upon local conditions, was undertaken by the FAA and the Port of Seattle, together with their consultants. In December 1996, the FAA decided that a Supplemental EIS (SEIS) was necessary in order to reexamine, with public participation, how this anticipated growth might affect the conclusions reached in the February 1996 FEIS.

By Federal Register notice dated December 27, 1996 [61 Fed. Reg. 68327], the FAA published a Notice of Intent to prepare this SEIS. On February 4, 1997, the FAA and the POS released a Draft SEIS to the public. A public notice of availability of the Draft SEIS was published in local newspapers on February 9, 1997, in the Federal Register on February 13, 1997 [62 Fed, Reg. 6831] and by the Environmental Protection Agency [EPA] on February 14, 1997 [62 Fed. Reg. 6969]. A public hearing was held at the Sea-Tac International Airport on March 4, 1997, during which oral comments were taken from approximately 26 members of the public. By the March 31, 1997, close of the public comment period, 85 written public comments on the DSEIS had been received [reprinted at Final SEIS Appendix G]. All substantive oral and written public comments [including those pertaining to air quality conformity] are responded to in Appendix F of the FSEIS.

On May 13, 1997, the FAA signed and released the FSEIS to the public. A public notice of availability of the FEIS was published in local newspapers on May 19, 1997, in the Federal Register on May 21, 1997 [62 Fed. Reg. 27831] and by the Environmental Protection Agency [EPA] on May 23, 1997 [62 Fed. Reg. 28469]. Although not solicited, further public comments (not pertaining to air quality) were received on the FSEIS, which are responded to in Appendix D of this ROD. Public Comments on the FSEIS Air Quality analysis are responded to in Appendix E of this ROD.

On May 27, 1997, the Commissioners of the Port of Seattle met to discuss the Master Plan Update proposals discussed in the FSEIS. During the course of that meeting, by approving Resolution No. 3245, they again adopted and approved a preferred development alternative [as outlined in Appendix A of this ROD], and authorized immediate implementation of the first phase of those development actions.

III. THE PROPOSED AGENCY ACTIONS AND APPROVALS

FEIS page II-42 outlines a variety of actions that will require Federal approval prior to undertaking the proposed development actions. The majority of these actions will require FAA approval. However, the U.S. Army Corps of Engineers, a cooperating agency for the FEIS, will be responsible for permitting processes under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. The necessary FAA actions, determinations and approvals are summarized below.

a. Determination of project eligibility for Federal grant-in-aid funds (49 U.S.C. § 47101, et. Seq.) and Passenger Facility Charge

[PFC] funds (49 U.S.C. § 40117), for land acquisition and relocation (49 CFR Part 24), site preparation, runway, taxiway, runway safety area, and other airfield construction, terminal and related landside development, navigational and landing aids, and environmental mitigation.

b. Conclusions regarding air quality conformance of the proposed facility with applicable air quality standards under the Clean Air Act, as amended. (42 U.S.C. § 7506, Section 176(c)(1)), and 40 CFR Part 93).

c. Approval for relocation/upgrade of the existing airport traffic control tower and various navigational aids (49 U.S.C. § 44502(a)(1)).

d. Decisions to develop air traffic control and airspace management procedures to effect the safe and efficient movement of air traffic to and from the proposed new runway, including the development of a system for the routing of arriving and departing traffic and the design, establishment, and publication of standardized flight operating procedures, including instrument approach procedures and standard instrument departure procedures (49 U.S.C. § 40103(b)).

e. Determinations, through the aeronautical study process, under 14 CFR Part 77, regarding obstructions to navigable airspace (49 U.S.C. § 40103(b) and 40113).

f. Determinations under 14 CFR Part 157 as to whether or not the agency objects to the airport development proposal from an airspace perspective, based upon aeronautical studies (49 U.S.C. § 40113(a)).

g. Determinations under the 49 U.S.C. Sections 47106 and 47107 pertaining to FAA funding of airport development [including approval of a revised airport layout plan (ALP), 49 U.S.C. § 47107(a)(16)], Environmental approval (see 42 U.S.C. §§ 4321-4347, and 40 CFR § 1500-1508), and approvals under various executive orders discussed in the ROD.

h. A certification that the proposed facility is reasonably necessary for use in air commerce or for the national defense (see 49 U.S.C. § 44502(b)).

IV. ALTERNATIVES ANALYSIS

The Master Plan Update Study process identified four broad development needs at Sea-Tac, which formed the basis for the site-specific EIS. These four needs, discussed in detail in FEIS Chapter I and in FSEIS Chapter 2, are summarized as follows:

(1) Improve the poor weather airfield operating capability in a manner that accommodates aircraft activity with an acceptable

level of aircraft delay;

(2) Provide sufficient runway length to accommodate warm weather operations without restricting passenger load factors or payloads for aircraft types operating to the Pacific Rim;

(3) Provide Runway Safety Areas (RSA's) that meet current FAA standards; and

(4) Provide efficient and flexible landside facilities to accommodate future aviation demand.

FEIS Chapter II and FSEIS Chapter 3 discuss in detail the alternatives considered by the FAA and the POS during the EIS study process for each of these four identified needs. For each need, the no action alternative was also considered. A summary of the FAA's consideration of alternatives for each of these needs is set forth below:

(1) Improve the poor weather airfield operating capability in a manner that accommodates aircraft activity with an acceptable level of aircraft delay;

The Puget Sound region of Western Washington is renowned for its poor weather, characterized by frequent precipitation, clouds and fog. Under FAA aircraft separation criteria, the two existing Sea-Tac runways are too close together to permit simultaneous approaches to both runways during much of this poor weather. Under these weather conditions, therefore, there is but one usable approach path for aircraft landing at Sea-Tac. A one runway airport operates much differently from a multiple runway airport in terms of its ability to accommodate aircraft landings during periods of heavy air traffic demand. The FEIS and FSEIS document the current and forecasted aircraft delays resulting from the inadequate spacing of the two existing Sea-Tac runways, and the resulting single approach stream of air traffic during poor weather.

As noted at the beginning of this ROD, the FAA has participated for many years in regional attempts to find a solution to the Sea-Tac delay problem through the development of a replacement or supplemental airport or airports, or the expanded use of existing airports, in the Puget Sound region, in order to reduce the aircraft demand existing at and forecast for Sea-Tac (see FEIS Appendix B). However, for the reasons documented in the EIS and SEIS, the FAA has concluded that these regional solutions are currently not reasonable alternatives to meet the defined need. Likewise, the FAA has considered the reduction and management of demand at Sea-Tac through the use of other modes of transportation, demand and system management alternatives, and the use of additional air traffic and flight technology alternatives, and concluded that these alternatives would not meet the defined need.

As discussed at FEIS I-13 and at FSEIS 3-5 to 3-6, the FAA and the POS have in recent years made a number of procedural and technological improvements at Sea-Tac, which have increased the efficiency of the air traffic flow. However, we have now exhausted all known available and reasonable improvements of this nature. Additional technological and procedural alternatives which have been suggested are not reasonable solutions to the defined need, for the reasons explained at FEIS II-14 through II-18,

and in response to public comments in FEIS Appendix R and in FSEIS Appendix F.

Finally, the FAA has considered the use of delayed or blended alternatives as a means to avoid the immediate construction of a new runway at Sea-Tac. For the reasons discussed in FSEIS pages 3-6 to 3-7, the FAA and the POS have decided that limitations on financial resources, and a refined consideration of the construction process, require extending the runway construction period and delaying the commissioning of the runway until late in the year 2004. It is recognized that this delay will cause significant inconvenience to the traveling public and additional costs to airport users. However, the phasing plan outlined at FSEIS pages 2-22 to 2-23 represents a compromise which balances construction-related financial constraints with the costs associated with rapidly increasing airside delays.

As part of the POS Master Plan Update, an extensive evaluation was undertaken, summarized at FEIS pages II-12-14, to identify the appropriate alignment, spacing and length for a proposed third runway. The FAA worked closely with the POS to develop the assumptions and methodologies during this portion of the alternatives evaluation, which relied upon FAA design standards and the results of recent FAA Capacity Enhancement Plan updates. The FAA believes that this evaluation process was appropriately conducted, and therefore does not consider it necessary, in its independent Federal consideration of alternatives, to undertake a de novo comprehensive alternatives analysis of alignment, spacing, and length issues. The Port of Seattle, as the sponsor and airport operator, has the fundamental role of planning and developing aviation facilities at Sea-Tac.

Considered further in FEIS Chapter IV and in FSEIS Chapter 5, were the reasonably foreseeable environmental consequences of the Do-Nothing/No-Build alternative and the site-specific runway development alternatives. These evaluations concluded that the proposed third runway project would not result in any significant environmental impacts which could not be adequately mitigated [see ROD Section VI and Appendix F for summaries of mitigation].

The Port's decisions, at its August 1, 1996, and May 27, 1997, Commission meetings, to proceed with a third parallel runway spaced at 2500 feet from runway 34R/16L, and 8500 feet in length, are well supported by airspace, engineering, environmental, and financial considerations, as documented in the Master Plan Update and in the FEIS and FSEIS.

Under the Do-Nothing/No-Build alternative, a third runway at Sea-Tac would not be developed now or in the near future. However, Federal adoption of this alternative would fail to alleviate the current and forecast airside delays at Sea-Tac which are documented in the FEIS and FSEIS. Although the FEIS and FSEIS find that, with appropriate mitigation, the POS preferred alternative will have no significant environmental impacts, the Do-Nothing/No-Build Alternative would still be the least environmentally impacting alternative, and thus the Do-Nothing/No-Build alternative is environmentally preferable. However, since it would fail to accomplish the principal purpose and need for the project, this alternative is not supported by the FAA.

In its consideration of alternatives, the FAA has been mindful of its statutory charter to encourage the development of civil aeronautics and safety of air commerce in the United States (49 U.S.C. 40104). We have also considered the congressional policy

declaration that airport construction and improvement projects that increase the capacity of facilities to accommodate passenger and cargo traffic be undertaken to the maximum feasible extent so that safety and efficiency increase and delays decrease (49 U.S.C. 47101(a)(7)).

As a further policy consideration, the construction and operation of the proposed third Sea-Tac runway will alleviate delays and congestion at Sea-Tac International Airport, as extensively documented in the administrative record for this ROD. Although the $587 million cost for property acquisition, runway construction, and environmental mitigation (as specified in the SEIS) is significant by any standard, the annual delay savings from an 8500 foot new runway are expected to be approximately $438 million by the year 2005, and $646 million by the year 2010. ROD Appendix G presents a recent Benefit-Cost Analysis for the third runway project, prepared by the agency's System and Policy Analysis Division at FAA headquarters. That analysis reflects that the total benefit of the proposed runway exceeds the total project cost by a factor of approximately 5, based upon a comparison of present values of benefits and costs. Based upon the Appendix G figures, discounted to present value, it is evident that if the third runway becomes operational by the year 2005, the delay savings will compensate for the runway costs within a two year period.

Although the benefit/cost analysis reflects savings from both airline operation and passenger delays, there are other more qualitative considerations. The FAA and the POS seek to relieve passenger and public inconvenience, and to make travel to and from this region more attractive by reducing travel delay and uncertainty. The FAA therefore concludes that the third runway project is both cost effective, and otherwise worthy of Federal support through the approvals in this ROD.

This support and these approvals do not, however, suggest that an FAA commitment to provide a specific level of financial support for the new runway project has yet been made. Future FAA discretionary funding decisions will be based upon the statutory criteria set forth in 49 U.S.C. § 47115(d), and upon the FAA policy announced in the Federal Register on June 24, 1997 (62 Fed. Reg. 34108), or under subsequent revisions to that agency policy.

After careful consideration of the analysis of the impacts of the various alternatives considered, and of the ability of these alternatives to satisfy the identified purpose and need for this proposal; and after review and consideration of the testimony at the various public hearings, of the comments submitted in response to the circulation of the DEIS, FEIS, DSEIS and FSEIS and of coordination with Federal, state and local agencies; and after considering the policy matters discussed above; the FAA hereby selects the runway alternative adopted and approved for construction by the POS on August 1, 1996, and on May 27, 1997, as the FAA's preferred runway alternative.

(2) Provide sufficient runway length to accommodate warm weather operations without restricting passenger load factors or payloads for aircraft types operating to the Pacific Rim.

The FEIS documents the inability of existing Sea-Tac runways (at 9,425 and 11,900 feet) to service unrestricted warm weather non-stop operations to Pacific Rim destinations. The inability of Sea-Tac to accommodate unrestricted operations to these destinations is expected to result in ever-increasing airline economic losses throughout the planning period (estimated at $1.2 million in the year 2000 and $2 million by the year 2010).

The Master Plan Update determined that a 12,500 foot runway is the minimum length necessary to permit unrestricted B747-200B operations at 76° F. Although consideration was given to meeting this need by extending runway 16R/34L to a length of 12,500 feet, this alternative was rejected as unreasonable due to impacts on wetlands and the expense of roadway relocations, as discussed in the FEIS. Consideration was also given to development of a new third runway with a 12,500 foot length, but this alternative was also rejected due to the extensive disruption of existing development and the expense associated with roadway relocation, as discussed in the FEIS. The FEIS identifies a 600 foot southward extension of Runway 16L/34R as being the most cost effective and least environmentally damaging development alternative. The net cost of this runway extension is estimated at $12,700,000.

With regard to the Delayed/Blended alternatives, although these were considered at FEIS page II-21, they were dismissed from further study and not chosen as the preferred alternative. Although the POS had not earlier identified a preferred development date for this aspect of the Master Plan Update (see FEIS footnote #19, page II-44), the Final SEIS [at page 2-22] states an intent to proceed with this development aspect of the Master Plan Update in the year 2010, when it is anticipated that this development project will become cost-effective (payback period estimated at 11.1 years in year 2000 but reduced to 6.5 years by the year 2010). In order to maintain the integrity of the FEIS environmental process, which requires the consideration of connected, cumulative and similar actions in one document, the FEIS and FSEIS evaluated this runway extension project during this EIS process. Under FAA Order 5050.4A paragraph 102.b., a written environmental reevaluation of this project will likely be required prior to the commencement of construction.

Under the Do-Nothing/No-Build alternative, a runway extension at Sea-Tac would not be developed now or in the foreseeable future. Although the FEIS and FSEIS find that, with appropriate mitigation, the POS preferred alternative will have no significant environmental impacts, the Do-Nothing/No-Build Alternative would still be the least environmentally impacting alternative, and thus the Do-Nothing/No-Build alternative is environmentally preferable. However, since it would fail to accomplish the principal purpose and need for the project, this alternative is not supported by the FAA.

Having considered the policies set forth at 49 U.S.C. sections 40104 and 47101, the ability of the available alternatives to meet the articulated need, and the administrative record which concerns the proposed runway extension, the FAA hereby selects as its preferred alternative the runway extension alternative identified in the FEIS as the POS planning staff's preferred alternative, as adopted by the POS as part of its Master Plan Update and ALP at its August 1, 1996, and on May 27, 1997, meetings.

The FAA's approval of the runway extension project in this ROD signifies that the project meets FAA standards for approval of

the agency actions discussed in Section II of this ROD. It does not, however, signify an FAA commitment to provide financial support for the runway extension, which is a decision which may not be made unless and until the project can be justified under the criteria prescribed by 49 U.S.C. § 47115(d), and under the agency policy announced in the Federal Register on June 24, 1997 (62 Fed. Reg. 34108), or under subsequent revisions to that agency policy.

(3) Provide Runway Safety Areas (RSA's) that meet current FAA standards.

The FEIS documents the fact that existing Sea-Tac runways do not meet current FAA safety design standards, in that three of the four runway ends have RSA's which are of insufficient length to ensure safe operations in the event of aircraft runway overruns [As noted at FEIS I-18 and at FSEIS 4-3, the RSA for runway end 34L was brought into compliance in 1995]. FAA approval of the RSA for runway end 34R was provided in a FAA Record of Decision dated April 18, 1996, notice of which was given through publication of an announcement in several local newspapers [discussed at FSEIS 3-8 and 4-3]. Construction is expected to be completed in late 1997.

For the remaining two RSAs (16R and 16L), consideration was given to the Do-Nothing/No-Build alternative during the EIS process. A literal do nothing approach (See FEIS II-24, footnote #12) was rejected as an unreasonable option early in the process, since it would not address the immediate need to correct a runway design which does not meet current FAA standards. Considered further as part of the detailed analyses of development alternatives 2, 3, and 4, were the No-Build alternative (requiring the establishment of displaced threshold/declared distance procedures for each runway), and the POS preferred alternative, involving the construction of a 1,000 foot RSA for the two remaining runway ends, as well as standard size RSAs on both ends of the new proposed third runway.

Under the Do-Nothing/No-Build alternative, these runway safety area improvements at Sea-Tac would not be developed now or in the near future. Although the FEIS and FSEIS find that, with appropriate mitigation, the POS preferred alternative will have no significant environmental impacts, the Do-Nothing/No-Build Alternative would still be the least environmentally impacting alternative, and thus the Do-Nothing/No-Build alternative is environmentally preferable. However, since it would fail to accomplish the principal purpose and need for the project, this alternative is not supported by the FAA.

As explained at FEIS page II-23, the FAA does not favor the establishment of displaced threshold/declared distance procedures at Sea-Tac, for reasons of safety and efficiency. Accordingly, having considered the policies set forth at 49 U.S.C. sections 40104 and 47101, the ability of the available alternatives to meet the articulated need, and the administrative record which concerns the proposed RSA extensions, the FAA hereby selects as the FAA's preferred alternative the RSA extension alternative adopted by the POS as part of its Master Plan Update and ALP, at its August 1, 1996, and May 27, 1997, meetings.

The FAA's approval of the RSA extension projects in this ROD signifies that the projects meet FAA standards for approval of the agency actions discussed in Section II of this ROD. It does not, however, signify an FAA commitment to provide a specific level of

financial support for the RSA extensions, which is a future decision which will be made under the agency policy announced in the Federal Register on June 24, 1997 (62 Fed. Reg. 34108), or under subsequent revisions to that agency policy.

(4) Provide efficient and flexible landside facilities to accommodate future aviation demand.

The FEIS and FSEIS document the need to incrementally improve existing terminal and other landside facilities at Sea-Tac over the next several decades, in order to alleviate the congestion and passenger inconveniences anticipated to result from regional growth and increased demand for airport services.

During the EIS process, the FAA considered but rejected for further detailed evaluation, the reduction of demand at Sea-Tac landside facilities through the development of a replacement or supplemental airport or airports in the Puget Sound region, through the use of other modes of transportation, or through demand and system management alternatives. For the reasons discussed in the FEIS, the FAA concluded, as it did in the case of the proposed third runway project, that these alternatives were unreasonable.

Although Delayed/Blended alternatives were also rejected in the FEIS as not meeting the need for landside improvements, it should be noted that the POS originally planned to incrementally expand and improve the Sea-Tac landside facilities discussed in the FEIS over the next 25 years, as the need for specific improvements was justified by the rate of increased demand placed upon existing facilities. With the accelerated demand forecast in the FSEIS, the terminal and landside facilities are now needed even sooner than originally forecast in the FEIS, and accordingly, the Delayed/Blended alternative is an even more unreasonable alternative. The current project phasing plans documented at FSEIS pages 2-22 to 2-23 and in Appendix A to this ROD represent earlier timeframes for many of these terminal and landside facilities, in order to accommodate these increased demand forecasts.

Carried forward for detailed evaluation in FEIS Chapter IV, and considered also in FSEIS Chapter 5, were the Do-Nothing/No Build alternative, along with three development alternatives, centered around a central terminal concept, a north unit terminal concept, and a south unit terminal concept. As part of the POS Master Plan Update, an extensive engineering and financial evaluation was undertaken by the POS, to evaluate these proposed landside improvements. The FAA worked closely with the POS to develop the assumptions and methodologies during this portion of the alternatives evaluation. The FAA believes that this evaluation process was appropriately conducted, and therefore does not consider it necessary, in its independent Federal FEIS consideration of alternatives, to undertake a de novo comprehensive alternatives analysis of these landside improvements. The Port of Seattle, as the sponsor and airport operator, has the fundamental role of planning and developing aviation facilities at Sea-Tac. The preferred alternative recommended in the FEIS and FSEIS by the POS's planning staff (the North Unit Terminal concept), is well supported by airspace, engineering, environmental, and financial considerations, as documented in the Master Plan Update and in the FEIS and FSEIS.

Under the Do-Nothing/No-Build alternative, these landside improvements would not be developed now or in the next several

decades. However, Federal approval of this alternative would fail to alleviate the congestion and passenger inconveniences anticipated to result from regional growth and increased demand for airport services. Although the FEIS and FSEIS find that, with appropriate mitigation, the POS preferred alternative will have no significant environmental impacts, the Do-Nothing/No-Build Alternative would still have the fewest developmental impacts. However, the Do-Nothing/No-Build Alternative would not be the environmentally preferable alternative, since it would fail to alleviate the significant environmental impacts associated with increased surface transportation congestion, which the preferred alternative is designed to remedy. Furthermore, since the Do-Nothing/No-Build Alternative would fail to accomplish the principal purpose and need for these landside development projects, this alternative is not supported by the FAA.

Accordingly, having considered the policies set forth at 49 U.S.C. sections 40104 and 47101, the ability of the available alternatives to meet the articulated need, and the administrative record which concerns these landside development projects, the FAA hereby selects as the FAA's preferred alternative the landside development recommended in the FEIS and FSEIS by the POS's planning staff (alternative #3, North Unit Terminal), as adopted as Part of its Master Plan Update and ALP, and as partially approved for immediate construction by the POS at its' August 1, 1996, and May 27, 1997, meetings.

The FAA's approval of these landside expansion and improvement projects in this ROD signifies that these projects meet FAA standards for approval of the agency actions discussed in Section II of this ROD. It does not, however, signify an FAA commitment to provide a specific level of financial support for these projects, which must await future decisions to be made under the criteria prescribed by 49 U.S.C. § 47115(d), and under the agency policy announced in the Federal Register on June 24, 1997 (62 Fed. Reg. 34108), or under subsequent revisions to that agency policy.

V. THE AGENCY FINDINGS

The FAA makes the following determinations for this project, based upon the appropriate information and analysis set forth in the FEIS and FSEIS and upon other portions of the administrative record:

A. The project is consistent with existing plans of public agencies for development of the area surrounding the airport. [49 U.S.C. 47106(a)(1)].

The determination prescribed by this statutory provision is a precondition to agency approval of airport project funding applications. It has been long-standing policy of the FAA to rely heavily upon actions of metropolitan planning organizations (MPOs) in amending regional airport system plans (RASPs) to satisfy the project consistency requirement of 49 U.S.C. 47106(a)(1) [see, e.g., Suburban O'Hare Com'n v Dole, 787 F.2d 186, 199 (7th Cir, 1986)]. Furthermore, both the legislative history and consistent agency interpretations of this statutory provision make it clear that reasonable, rather than absolute consistency with these plans is all that is required.

Under the provisions of both Federal and State Law (see FEIS Appendix S, and FEIS Appendix R, response to comment R-2-1), the Puget Sound Regional Council (PSRC) has been designated as the MPO for the Puget Sound metropolitan area, and given primary responsibility for transportation planning in the region. On April 29, 1993, the PSRC adopted Resolution No. A-93-03 amending the Puget Sound area RASP, to provide for a third runway at Sea-Tac. That resolution stated that a third Sea-Tac runway shall be authorized by April 1, 1996, subject to the following three conditions:

1. Unless shown through an environmental assessment, which will include financial and market feasibility studies, that a supplemental site is feasible and can eliminate the need for the third runway. [By PSRC resolution EB-94-01, dated October 27, 1994, the PSRC determined that a supplemental airport site was not feasible].

2. After demand and system management programs are pursued and achieved or determined not to be feasible, based upon independent evaluation. [By final order dated December 8, 1995, the expert panel appointed by the PSRC to independently evaluate this issue, determined that that demand and system management programs were not feasible].

3. When noise reduction performance objectives are scheduled, pursued and achieved based on independent evaluation and based on measurement of real noise impacts. [By final order dated March 27, 1996, a PSRC expert panel found that the POS had not satisfied this condition. However, on July 11, 1996, in Resolution A-96-02, the PSRC General Assembly approved an amendment to the Metropolitan Transportation Plan to include a third runway at Sea-Tac Airport, with specific noise reduction measures based upon recommendations of the expert panel].

In consideration of the above-described actions of the PSRC in amending the local RASP to authorize the third runway project [more fully described at FSEIS pages 4-1 to 4-2], the FAA is satisfied that 49 U.S.C. 47106(a)(1) has been fully complied with.

With regards to this issue, however, the FAA has also reviewed the substantial documentation in the administrative record demonstrating that throughout the EIS process the POS has shown great concern for the impact of the proposed development actions on surrounding communities, and has attempted to ensure the consistency of its project proposals with the planning efforts of neighboring communities. The administrative record for this Record of Decision includes a detailed chronology of coordination between the POS and neighboring jurisdictions concerning local planning proposals, along with documents describing the extensive public meetings, hearings, and other means by which public participation in project planning was accommodated. Further discussion of consistency of the proposed development projects with public agency planning is summarized at FEIS pages IV.2-7 through IV-2-18, and at FSEIS Chapter 4.

As noted in the referenced text, Sea-Tac Airport lies almost totally within the boundaries of the City of SeaTac. The extent to which City of Sea-Tac regulations apply to Sea-Tac Airport development is unresolved, and the POS is currently involved in a process with the City to resolve this question. Meanwhile the POS has committed itself to participating in the City's land use

planning activities, to address any issues relating to the proposed Sea-Tac Airport development to the extent required.

As discussed at FEIS IV.2-10 through IV.2-16, the cities of Des Moines, Normandy Park, Burien, and Tukwila have each engaged in recent land use planning actions which appear designed to limit airport expansion. These local plans and ordinances establish land use compatibility guidelines with noise levels for residential and other noise-sensitive areas that are substantially more restrictive than those established by the FAA. Some of these local plans and ordinances also establish zoning policies (a prohibition on use of lands acquired by public entities to be used for new commercial activities). These ordinances purport to restrict the use of some lands within these jurisdictions (e.g., for the third runway northern Runway Protection Zone), needed by the POS in order to implement important safety and aircraft operation aspects of its preferred alternative.

It has not yet been decided under Washington state law whether the Master Plan Update proposed development actions would be subject to any of these plans and ordinances adopted by these adjacent cities. Thus there may be little or no inconsistency here. With regard to noise planning, the FAA has considered the fact that implementation of the POS preferred alternative will not result, after mitigation, in any significant increases in noise impacts on lands of these neighboring jurisdictions. To the extent that these adjacent cities impose restrictions on land acquisition by the POS for essential aviation safety and aircraft operation purposes, the FAA believes that such planning policies are inapplicable and invalid under Federal law.

In making its determination under 49 U.S.C. 47106(a)(1), the FAA has considered the fact that each of these local governments has been represented on the PSRC, and has participated as a member of that organization in its decision to authorize the third runway project at Sea-Tac (although some of these local governments may have disagreed, as individual PSRC members, with that ultimate decision). The FAA has also recognized the fact that none of these jurisdictions has regulatory authority over airport operations, since long-established doctrines of Federal preemption preclude these communities from regulating aircraft operations conducted at Sea-Tac.

Furthermore, these local government planning policies, which appear designed to obstruct the proposed Sea-Tac development, appear to be in conflict with provisions of the Washington State Growth Management Act, 1990, such as those found at RCW §§ 36.70A.100 and 36.70A.200, which require these city comprehensive plans to be coordinated with and consistent with regional policy decisions (e.g., the 1995 update of the Vision 2020 Growth and Transportation Strategy. Vision 2020 is the region's long-range growth management, economic, and transportation strategy. The transportation component of Vision 2020 specifically incorporates PSRC Resolution A-93-03 which authorizes the third runway project).

The Growth Management Act also requires these local plans to be coordinated with and to be consistent with King County countywide planning policies and the comprehensive plans of King County and neighboring cities such as Sea-Tac, and prohibits any local comprehensive plan from precluding the siting of essential public facilities such as airports.

Given the FAA determination in this ROD, under appropriate Federal law, that there is a compelling need for the proposed Sea-

Tac improvements, as documented in the FEIS, it is inappropriate for these local communities to attempt to exercise local zoning control in a manner which would conflict with the domestic and international aviation requirements of this airport. If there were to be a conflict between Federal and local policies, the local policies must give way to the Federal policies, under the doctrine of Federal preemption.

B. The interests of the community in or near which the project may be located have been given fair consideration. [49 U.S.C. 47106 (b)(2)]

The determination prescribed by this statutory provision is a precondition to agency approval of airport development project funding applications. The regional planning process over the past decade and the environmental process for this project-specific EIS which began in 1994 and extended to this point of decision, provided numerous opportunities for the expression of and response to issues put forward by communities in and near the project location. Nearby communities and their residents have had the opportunity to express their views during the Draft EIS public comment period, at several public hearings and a congressional hearing, as well as during the comment periods following public issuance of the FEIS, the DSEIS, and the FSEIS,. The FAA's consideration of these community views is set forth in FEIS Appendix R, in FSEIS Appendix F, and in Appendix A of this ROD.

C. The State of Washington has certified in writing that there is reasonable assurance that the project will be located, designed, constructed, and operated in compliance with applicable air and water quality standards [49 U.S.C.§ 47106 (c)(1)(B)].

The determination prescribed by this statutory provision is a precondition to agency approval of airport development project funding applications involving a major runway extension or new runway location.

By letter dated December 20, 1996 [see Appendix B to this ROD], the Washington State Department of Ecology, acting under delegated authority from the Governor of the State of Washington, provided this certification, conditioned upon a number of mitigation measures to be undertaken by the Port of Seattle. Pursuant to general principles of agency and administrative law, and absent evidence that delegation is unauthorized or unlawful as a matter of state law, the FAA has interpreted this statute to permit state chief executive officers to delegate this certification responsibility to lower state officials with appropriate subject matter jurisdiction over state air and water quality [see FAA Order 5050.4A, paragraph 47e.(5)(e)]. As described at FSEIS Appendix F, page F-79, the delegation to the Department of Ecology which occurred in this case was appropriate under Washington State law.

However given the public controversy which has arisen over this delegation, by letter dated June 30, 1997, (see Appendix C to this ROD], the Governor of the State of Washington further certified that the airport project evaluated in the FEIS and FSEIS will be located, designed, constructed and operated so as to comply with applicable air and water quality standards.

D. Effect On Natural Resources [49 U.S.C. § 47106(c)(1)(C)]

Under this statutory provision the FAA may approve funding of a new runway or runway extension having a significant adverse effect on natural resources, only after determining that no possible and prudent alternative to the project exists and that every reasonable step has been taken to minimize the adverse effect.

As documented in the FEIS and FSEIS, for several natural resource impact categories which have established significance levels, the agency finds that, without implementation of the mitigation summarized in Section VI and Appendix F of this ROD, the preferred alternative would have a significantly adverse affect. However, given the inability of other alternatives discussed in the FEIS and FSEIS, to satisfy the purposes and needs for the preferred alternative, we have concluded that no possible and prudent alternative exists to development of the proposed alternatives. As discussed in Section VI and Appendix F of this ROD, and documented throughout the FEIS, FSEIS and the administrative record, every reasonable step has been taken to minimize adverse environmental effects resulting from the project.

As discussed generally in FSEIS Chapters 1 and 2, and more specifically at FSEIS Appendix F, response to comment 2-J, specific airport activity levels and their associated environmental impacts were determined not to be reasonably foreseeable at this time following the year 2010. Accordingly, that year was set as the end of the planning horizon for the revised master plan update proposal evaluated in the FSEIS. However, FSEIS Appendix D did present possible activity levels and their associated environmental impacts for three test cases through the year 2020, based upon an extrapolated quantification of anticipated impacts prior to the year 2010. Although that extrapolated presentation is quite speculative, for the reasons explained in FSEIS Appendix F, the FSEIS does acknowledge that after the year 2010 there will likely be some level of adverse noise and land use impacts resulting from the approval of the preferred development alternatives, when compared to the no action alternative after that date.

Accordingly, in order to consider further mitigation under NEPA, and to address any possible adverse environmental effects resulting from the projects approved in this ROD, the FAA has decided to condition such approval upon the following additional noise and land use mitigation measure:

Following commencement of operations on the new runway, but prior to the year 2010, the POS and the FAA will undertake a further supplemental evaluation of noise and land use impacts anticipated after the year 2010. That supplemental evaluation may be included as part of a future Part 150 study undertaken by the POS. Following completion of that evaluation, if significant additional adverse environmental impacts are found, the Port of Seattle will be required to adopt further noise and land use mitigation measures designed to minimize any significant adverse affects found in that evaluation. This conditional approval will be enforced through a special condition included in future Federal airport grants to the Port of Seattle.

The FAA has reviewed the amount of such additional mitigation which would be required if the maximum additional adverse environmental effects estimated in FSEIS Appendix D should occur. This additional mitigation required would be similar to

mitigation programs that have been implemented by the POS in the past, and are expected to be implemented as mitigation in connection with the projects approved in this ROD. Therefore, the FAA concludes that such additional mitigation is feasible. The POS has indicted that such additional mitigation would be financially feasible if it were to be required, based on this special condition. The FAA also concludes that even if the maximum additional adverse environmental effects estimated in Appendix D should occur, it would still make the decisions set forth in this ROD and would approve the projects, subject to the special condition with respect to additional mitigation.

E. Appropriate action, including the adoption of zoning laws, has been or will be taken to the extent reasonable to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations. [49 U.S.C. § 47107(a)(10)].

The sponsor assurance prescribed by this statutory provision is a precondition to agency approval of airport development project funding applications. In addition to the actions described in section IV.A. of this ROD, the Port of Seattle has worked extensively with local jurisdictions over the past two decades to develop and implement plans and policies to ensure compatible land use in the airport vicinity.

FEIS pages III-2 through III-4 and FSEIS chapter four, describe the current status of zoning and land use planning for lands near the airport. FEIS Appendix C, pages 3-9 outline former and existing noise programs which have been designed to either reduce noise at the source or mitigate the noise received by sensitive land uses in the airport vicinity. As explained in FEIS Chapter IV, sections 1 and 2, and FSEIS Section 5-3, with planned mitigation, development of the Master Plan Update proposals will not result in any increased significant impacts on non-compatible land uses. Based upon the entire administrative record for this ROD, the FAA has concluded that existing and planned noise reduction programs at Sea-Tac provide for appropriate action to ensure compatible land use in the airport vicinity.

F. Clean Air Act, Section 176(c)(1) Conformity Determination regarding Seattle-Tacoma International Airport Master Plan Update Development Actions [42 U.S.C. § 7506(c)].

The determination prescribed by this statutory provision is a precondition for Federal agency support or approval of airport development actions which are projected to exceed the *de minimis* air emission levels prescribed at 40 CFR § 93.153. USEPA regulations more generally governing the conformity determination process are found at 40 CFR Part 93, Subpart B.

In the 1996 FEIS, the FAA made a Draft Conformity Determination on the POS Master Plan Update proposals [FEIS pages IV.9-10 and IV.9-11]. Pursuant to the provisions of the USEPA regulations, the FAA published notice of this draft conformity determination in the Federal Register on February 9, 1996 (61 Fed. Reg. 5055), announced the availability of the draft determination in several local newspapers, and provided notice to appropriate Federal, state and local public agencies. In these notices, the agencies and the general public were invited to review and comment on the draft conformity determination. Through a series of Federal Register notifications, the FAA ultimately extended this comment period until June 6, 1996 (61 Fed. Reg. 27944).

Comments received during this 1996 comment period are presented at FSEIS Appendix B, Attachment D and are addressed at FSEIS Appendix B, Attachment A.

In February 1997, a Revised Draft Conformity Analysis was issued as part of the Draft SEIS, with a 30 day comment period announced in a February 9, 1997, Seattle Times advertisement. On March 7, 1997, the FAA announced an extension of the comment period on this draft analysis until March 31, 1997 [62 Fed. Reg. 10606]. FSEIS Appendix G presents all public and agency comments on the draft SEIS, including those pertaining to air quality issues. FSEIS Appendix F, section six, responds to those comments which concern air quality and conformity issues.

Due to a number of changes in the nature and timing of the Master Plan Update Development Proposals from those originally evaluated in the FEIS, the draft SEIS air quality analysis projected air quality emission levels below the 40 CFR § 93.153 *de minimis* levels.

Several commenters on the draft SEIS air quality and conformity analyses stated that factual errors had been made in those analyses. At the FAA's request, the EIS consultant then performed a detailed quality assurance reevaluation for the data input to the air emissions and dispersion models. This led to a revised air emissions inventory, with several revisions to the specific emission estimates presented in the draft SEIS. However, this quality assurance process confirmed the overall conclusion of the draft SEIS, which projected air quality emission levels below the *de minimis* levels set forth in 40 CFR § 93.153. FSEIS Appendix B details the basis for this conclusion. Accordingly, a formal conformity determination is not legally required under applicable EPA regulations.

ROD Appendix E presents letters dated June 23, 1997, from the United States Environmental Protection Agency, the State of Washington Department of Ecology, and the Puget Sound Air Pollution Control Agency. In their letters, each of these air quality agencies has concurred with the FSEIS analysis conclusion that the *de minimis* thresholds have not been exceeded for general conformity under the Clean Air Act.

However, in order to achieve maximum public disclosure and to address community concerns, the FSEIS nevertheless presents an analysis of air quality impacts utilizing the regulatory structure set forth in the EPA conformity regulations.

The FSEIS Appendix B analysis demonstrates that if the FAA were legally obligated to make a conformity determination for the projects approved in this ROD, the project would not cause or contribute to any new exceedences of air quality standards. As confirmed by the Washington State Department of Ecology, the project conforms to the Washington State Implementation Plan.

As noted above, the Final SEIS, approved on May 13, 1997, included as Appendix B a Final Air Quality Conformity Analysis. At the request of several air quality agencies, the FAA agreed to provide an additional 30 day comment period on the FSEIS air quality analysis, due to the revisions which had been made to that analysis since issuance of the DSEIS. Notice of the availability of

that analysis for public review and comment was published in the Federal Register on May 21, 1997 [62 Fed. Reg. 27830]. Appendix E to this ROD presents the comments received in response to this notice and the agency's response to those comments.

Based upon the air quality information and discussion presented in the FEIS, the FSEIS, and Appendix E of this ROD, and upon other supporting material in the administrative record, the FAA finds that the development actions summarized in ROD Appendix B will not cause air emissions that exceed de minimis thresholds set forth in 40 CFR § 93.153, and conform to the provisions of the Washington State Implementation Plan and the National Ambient Air Quality Standards (AAQS).

Because projects at Sea-Tac Airport are governed by the maintenance area designation, the FSEIS shows that the project will not cause or contribute to any new violations of any of the AAQS in the project area or the metropolitan area. Because the computer modeling predicts that exceedances of the Carbon Monoxide AAQS could occur in the future without the proposed improvements (Do-Nothing/No-Build), consideration was also given to the two non-attainment area principles, and the FSEIS showed that the project will not increase the frequency or severity of any existing violations of any AAQS, and that the project will not delay timely attainment of the AAQS or any required interim emission reduction in the project area.

G. For this project, involving new construction which will directly affect wetlands, there is no practicable alternative to such construction. The proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. [Executive Order 11990, as amended]

This executive order requires all Federal agencies to avoid providing assistance for new construction located in wetlands unless there is no practicable alternative to such construction and all practicable measures to minimize harm to wetlands are included in the action.

FEIS Chapter IV Section 11, and FSEIS Section 5-5 document that the preferred development alternative (North Terminal with 8500 foot runway) selected by the POS from the Master Plan Update study will directly affect approximately 12.23 acres of wetlands. Given the extensive FEIS and FSEIS alternatives analyses (summarized at FEIS IV.11-5 and FSEIS Chapter 3) showing that there are no other reasonable alternative to developing a third runway at Sea-Tac, the FAA additionally concludes that there is no practicable alternative to constructing such a runway, resulting in these wetland impacts, given the purposes and needs documented in the FEIS, consideration of environmental and economic factors, and land use issues.

FEIS Chapter IV, Section 11 and FSEIS Section 5-5, state that for each of the three landside development alternatives, an 8,500 foot runway would result in impacts to slightly more wetlands than would 7,000 foot or 7,500 foot runways. Additional runway length beyond 7,500 feet would require filling additional wetlands. Extending the runway to 8,100 feet requires filling 0.19 additional acres of wetlands, and extension to the full 8,500 feet requires filling a yet additional 0.86 acres. The FEIS and FSEIS demonstrate that these are low quality wetlands. Two of their significant functions, floodwater attenuation and floodwater storage, would be fully mitigated within the airport basin. Additional wetland functions for these wetlands will be mitigated at the Auburn

site as part of the overall wetlands mitigation program.

An important purpose of the additional 600 and 400 feet of runway (to 8,100 or 8,500 feet) beyond the 7,500 foot runway is to provide the maximum air transportation service and efficiency available to the POS and the national air transportation system. Although a 7,500 foot runway provides many of the benefits of a new runway, it does not provide all of the desirable benefits. Alternatives of staggering runway ends or relocating the entire runway are not practicable, because, among other reasons, they would require considerable additional cost and complicate air traffic control procedures. Considering these and other reasons described more fully in Appendix C of this ROD, considering the standards set forth at 40 CFR 230.10(a)(2), and taking into consideration cost, existing air traffic control and aviation technology and logistics, in light of the overall purpose of the runway project, the FAA finds that there is no practicable alternative to the wetland loss associated with an 8500 foot runway.

As noted in FEIS Chapter IV, Section 11, FEIS Appendix P, and FSEIS Section 5-5, the U.S. Army Corps of Engineers (COE) has worked with the FAA and the POS as a cooperating agency to ensure that all practicable measures will be taken to minimize harm to wetlands which will be impacted through development of the preferred alternative, through Best Management Practices during construction and the development of a wetland compensatory mitigation site. Following issuance of this ROD , the COE, in consultation with the Washington State Department of Ecology, will complete its processing of a Section 404 permit, required for the POS to proceed with development impacting wetlands. The project approvals in this ROD and this wetlands determination are expressly conditioned upon permit approval and conditions to be outlined by the U.S. Army Corps of Engineers, and upon the POS accomplishing the wetlands mitigation measures identified in the FEIS, FSEIS, and any COE permit approval.

Although it is generally preferable to attempt to mitigate wetland loss through replacement wetlands in the same watershed [a goal reflected in the local regulations discussed at FSEIS Appendix F, page 127], this is not the case where such replacement would create man-made wetlands adjacent to airport aircraft movement areas. Included at the end of FSEIS Section 5-5 is a reprint of FAA Advisory Circular 150/5200-33, dated May 1, 1997, which states the FAA's strong opposition to wetland mitigation projects located within 10,000 feet of airports serving turbine-powered aircraft [such as SEA-TAC], due to the safety hazard such wetlands present as attractants of wildlife, which significantly increase the risk of bird/aircraft strikes.

The safety standards set forth in this FAA policy statement are recommended for the operators of all public-use airports. Furthermore, for airport sponsors who are the recipients of Federal grant funding, adherence to safety standards set forth in FAA advisory circulars are a requirement of standard grant assurance #34, as acknowledged in paragraph 4-6.a. of Advisory Circular 150/5200-33.

This recent agency policy determination supports the FEIS and FSEIS determinations that the replacement wetlands for the Sea-Tac Master Plan Update development actions should not be located in the vicinity of the airport. Given the limited land area in the Sea-Tac watershed available for wetland replacement, and the hazard associated with the creation of wildlife attractions within 10,000 feet of jet runways, there is no practicable alternative to the replacement of these impacted wetlands outside of the Sea-Tac

watershed.

As detailed in FEIS Appendix P, and FSEIS Section 5-5, a detailed wetland mitigation program has been developed to offset the impacts of the project and to recognize other long-term biological problems. The mitigation plan calls for replacing the filled wetlands on a 47 acre mitigation site located on a 69 acre parcel of land along the Green River in Auburn Washington.

H. For this project, involving a significant encroachment on a floodplain, there is no practicable alternative to the selected development of the preferred alternative. The proposed action conforms to all applicable state and/or local floodplain protection standards. (Executive Order 11988)

This executive order, together with applicable DOT and FAA orders, establish a policy to avoid supporting construction within a 100 year floodplain where practicable, and where avoidance is not practicable, to ensure that the construction design minimizes potential harm to or within the floodplain.

Chapter IV Section 12 of the FEIS explains that, without mitigation, construction and operation of the Master Plan Update preferred alternative could result in significant adverse floodplain impacts in both the Miller and Des Moines Creek basins. The FSEIS analysis does not alter the FEIS analysis, but presents additional information at FSEIS Appendix F, pages 123-124, based on a 1997 POS Stormwater Review Study.

As outlined in the "alternatives" discussion earlier in this ROD and in the FEIS and FSEIS, there is no practicable alternative to the preferred alternative. Development of this alternative achieves the purposes and needs for the projects in the most cost-effective manner with the least impact on the surrounding land uses. As shown in FEIS Appendix P, a mitigation program has been designed which will create an equivalent amount of floodplain so that there would be no net loss of flood storage capacity or increased risk of loss of human life or property damage. This program has been designed to comply with applicable requirements of the permitting agencies, with whom the FAA and the POS have been coordinating in order to ensure that the construction design minimizes potential harm to or within the floodplain. Each of these agencies have agreed with the mitigation plan in concept and the coordination will continue throughout the permitting process.

I. Relocation Assistance [42 U.S.C. § 4601 *et. seq.]*

These statutory provisions, imposed by Title II of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (URA), require that state or local agencies undertaking Federally-assisted projects which cause the involuntarily displacement of persons or businesses, must make available relocation benefits to those persons impacted.

As detailed in FEIS Chapter IV, Sections 6 and 8, the preferred development alternative would displace up to 391 single family, 260 condos/apartments, and 105 businesses. Of the 105 businesses identified by the FEIS, 88 are located in the Runway Protection

Area. While the FAA prefers airport sponsors to have control over the land in the RPZ, exceptions to property ownership can occur as long as the use of the land does not represent a hazard to aircraft operation. The Port has surveyed these property owners and their use.

The FAA will continue to coordinate with the POS concerning the need for acquisition versus the purchase of easements to ensure the appropriate land use control. The FAA will require the POS to provide fair and reasonable relocation payments and assistance payments pursuant to the provisions of the URA. Comparable decent, safe, and sanitary dwellings are available for occupancy on the open market. (See FEIS, pages IV.6-5 to IV.6-7).

J. For any constructive use of lands with significant historic sites, there is no prudent and prudent and feasible alternative to using the land, and the project includes all possible planning to minimize harm resulting from the use. [49 U.S.C. § 303(c)]

FEIS Chapter IV, Section 4, concluded that the Master Plan Update development actions would not involve either the use or constructive use of resources protected by this statutory provision, more commonly referred to as "4(f)" resources.

However the FSEIS, at Section 5-5, pages 8-19, shows that when comparing the no action and the preferred alternative using the updated airport activity forecasts, several structures (one school and three homes) which may be of local historical significance, will experience noise impacts which exceed the Federal standard (a 1.5 DNL increase within the 65 DNL contour).

As discussed at FSEIS Section 5-5, pages 13-14, the FAA questions whether most of these structures are truly of historical significance, despite their designation as such by communities surrounding the airport. The FAA also questions whether these structures will be "constructively used" under the circumstances discussed in the referenced FSEIS text, because there will be no significant degradation of the noise environment of these structures since the time when they were designated as locally significant, and thus there will likely be no significant degradation of their historic or architectural values.

Nevertheless, assuming such "local historical significance" and such a "constructive use", the referenced FSEIS text demonstrates that there is no prudent or feasible alternative to any such constructive use. Furthermore, based upon the acoustical insulation planned for these structures by the POS (discussed at FSEIS Section 6-6, pages 17-19), the FAA concludes that there has been all possible planning to minimize any harm resulting from any such constructive use.

K. There are no disproportionately high and adverse human health or environmental effects from the project on minority or low-income populations. [Executive Order 12898]

Environmental justice concerns were addressed in Chapter IV.6, page IV.6-6 and IV.6-7 of the FEIS, and it was concluded that no minority, age or income group would be disproportionately affected by displacements that would occur as a result of the Preferred Alternative. Individual comments regarding environmental justice were also addressed on page R-102 of FEIS Appendix R. The

FSEIS contained an extensive discussion of environmental justice issues on page F-98 through F-101 in response to comments on this issue. It was concluded that the proposed noise exposure impacts from the Proposed Master Plan Update improvements will not disproportionately affect minority and low-income communities and that the impacts of the higher demand forecasts were not different than those discussed in the FEIS.

L. The FAA has given this proposal the independent and objective evaluation required by the Council on Environmental Quality. [40 CFR 1506.5]

As outlined in the FEIS, there was a lengthy process that led to the ultimate identification of the preferred alternative and appropriate mitigation measures. This process began through the FAA competitive selection of an independent EIS contractor which was financially-disinterested in the project outcome, and continued throughout the NEPA process. The FAA provided input, advice, and expertise throughout the planning and technical analysis, along with an administrative and legal review of the project. From its inception, the FAA has taken a strong leadership role in the environmental evaluation of this project, and has maintained its objectivity.

VI. MITIGATION

In accordance with 40 CFR 1505.3, the FAA will take appropriate steps, through Federal funding grant assurances and conditions, airport layout plan approvals, and contract plans and specifications, to ensure that the following mitigation actions are implemented during project development, and will monitor the implementation of these mitigation actions as necessary to assure that representations made in the FEIS and FSEIS with respect to mitigation are carried out. The approvals contained in this Record of Decision are specifically conditioned upon full implementation of these mitigation measures. These mitigation actions will be made the subject of a special condition included in future Federal airport grants to the POS.

FEIS Chapter V, and Appendix F to this ROD include summaries of the mitigation actions discussed more fully in FEIS Chapter IV and FSEIS Chapter 5, for each environmental impact category. Based upon these discussions, the FAA finds that all practical means to avoid or minimize environmental harm have been adopted, through appropriate mitigation planning. Mitigation measures for those impact categories where mitigation measures are necessary to avoid or minimize significant environmental impacts, as well as identified or adopted monitoring and enforcement programs, are summarized below:

A. Noise and Land Use

As discussed in FEIS Chapter IV, Sections 1 and 2, and FSEIS Chapter 5, Sections 3 and 6, future noise impacts within the study area will be less than current noise exposure due to the continued phase-out of Stage II (noisier) aircraft. However in the future the preferred alternative is expected to still result in greater significant [1.5 DNL within the 65 DNL contour] noise exposure in

comparison to the future do-nothing alternative. [See FSEIS Exhibit 5-6-1 for a graphic comparison of noise exposure for no action alternative and the preferred alternative in the year 2010].

To facilitate continued noise reduction, the following noise and land use mitigation programs now in effect will continue to be implemented.

- **Noise Budget — The goal of the Noise Budget of an all Stage 3 fleet is anticipated to be reached by the year 2001.**
- **Nighttime Limitations Program — limiting the hours of operation for Stage 2 aircraft.**
- **Ground Noise Control — reducing the noise of ground events such as powerback operations, run-ups, and reverse thrust on landing.**
- **Flight Corridorization — maintenance of north flow east turn runway heading flight track by departing jets until reaching altitudes above 4,000 feet.**
- **Flight Track and Noise Monitoring — maintenance of noise level records and flight track location information for identification of deviations and communication with the public and users.**

The FEIS concluded that since relatively few properties were projected to experience significant impacts, and since they already fall within the boundaries of one or more of the POS's existing noise remedy programs designed to mitigate to non-significance airport noise levels, no additional project-related mitigation would be needed, as described at FEIS page IV.2-6,7.

However, the updated airport activity forecasts evaluated in the FSEIS resulted in an increase of noise exposure of approximately 7.69 square miles, and 11 percent more persons [approximately 1,280 persons, in an additional 460 dwelling units) being significantly affected by the preferred alternative in contrast to the do-nothing alternative, by the year 2010.

Furthermore, by the year 2010, a small portion of this area [with approximately 170 newly impacted residents], would be located outside of the POS existing noise remedy boundary [This is graphically shown in FSEIS exhibit 5-6-1]. The POS will be required to modify its mitigation strategy, as described at FSEIS pages 5-6-5 to 5-6-7, and in the following paragraph #4, to include these 170 newly-impacted residents within in its Noise Remedy Program.

To address changes in specific noise conditions, primarily associated with the third parallel runway, the Port will be required to undertake the following specific mitigation actions:

<u>Mitigating Significant Noise Impacts on Public Facilities and Historic Sites</u>: The following nine public facilities or historic sites would experience significant increased noise impacts (i.e. an increase of 1.5 DNL or more) in the year 2010 in comparison to the Do-Nothing alternative:

- **Sea-Tac Occupational Skills Center;**

- **Woodside Elementary School;**
- **Sunnydale Elementary;**
- **Albert Paul House;**
- **Homer Crosby House;**
- **Sunny Terrace Elementary School;**
- **Brunelle Residence;**
- **Coil House;**
- **Bryan House.**

Impacts on the facilities incompatible with noise associated "With Project" will be mitigated by acoustical insulation that would allow their uses to be compatible with increased noise levels. Because of their historic value, the five residences and Sunnydale School (locally significant historic facilities) could require custom treatment to avoid significant alteration of the architectural style. In pursuing sound insulation of these structures, the Port's Noise Remedy Office will work with a historian to preserve such characteristics.

Provide Directional Soundproofing: Residences that were insulated prior to 1992 may need additional directional soundproofing to mitigate noise generated from a new flight path from the operation of the proposed new third runway. To mitigate noise caused by the proposed airport improvements, the Port will conduct audits and sound insulate these facilities if additional insulation is warranted.

Acquisition in the Approach Transitional Area: In recognition of the fact that the standard Runway Protection Zone (RPZ) dimensions do not always provide sufficient buffer to the satisfaction of nearby residents, the FAA has indicated that funding could be available to airport operators acquiring up to 1,250 feet laterally from the runway centerline, and extending 5,000 feet beyond each end of the primary surface. Based on the configuration of current airport land, local streets, and residential development patterns, the approach and transitional area selected for use as a mitigation area includes the standard Runway Protection Zone and a rectangular extension of the RPZ outward another 2,500 feet.

Acquisition would include all residential uses, and any vacant, residentially zoned properties which cannot be compatibly zoned, within selected areas both to the north and the south of the new runway ends. Commercial land uses, which make up most of the eligible area to the south, will not be acquired. Input from the affected residents is necessary to design and initiate an acceptable relocation program. The Port will develop the appropriate implementation program for this action during the forthcoming Sea-Tac Airport FAR Part 150 Update, which the Port anticipates undertaking during 1997. The implementation plan will include coordination with eligible residents concerning their desire to participate and then establish relocation objectives, timing and funding priorities.

Sound insulation of residences affected by 1.5 DNL or greater within 65 DNL noise exposure: About 170 of these homes within 65

DNL would be exposed to 1.5 DNL or higher noise levels as a result of the proposed improvements and are not already subject to the Port's existing Noise Remedy Program. The Port will develop an implementation strategy to sound insulate these 170 additional homes within the 65 DNL noise contours as part of the Part 150 Noise Compatibility Plan study effort. The purpose of delegating finalization of the implementation approach for this action to determination during the Part 150 process is to ensure that consideration is given to the proposed Approach Transition Area acquisition and the relationship of that area to the existing Noise Remedy Program boundary, as well as the westerly expansion of the Noise Remedy Program to accommodate this added insulation.

In Port Resolution No. 3125 dated November 1992, the POS committed to develop and implement a plan to insulate up to 5,000 eligible single family residences in the existing noise remedy program included on the waiting list as of December 31, 1993, before commencing construction of the proposed runway. The remaining eligible single family residences on the waiting list are to be insulated prior to operation of the proposed runway. In addition, the Port has committed to complete insulation of all single-family residences that become eligible for insulation as a result of actions taken based on the site-specific EIS and are on the waiting list as of December 31, 1997, prior to commencing operations of said runway.

Pursuant to PSRC Resolution A-96-02, the POS will be required to conduct a Part 150 study with the goal of assessing needed additional noise abatement and mitigation. This study began late in 1996, and is expected to take several years.

The FAA will consider as required mitigation a standard insulation package for homes that fall both inside and outside the 65 DNL project contours, which are within the POS noise remedy program boundaries, since this was the intent of the PSRC in conditioning its regional approval of the 3rd runway upon the accomplishment of additional noise mitigation measures.

The FAA will continue to support and monitor the POS's existing and future noise programs, in order to ensure that any anticipated significant project noise and land use impacts are fully mitigated by the time the third runway becomes operational.

Finally, for significant project noise impacts which might occur after the year 2010, the FAA will also require a supplemental environmental evaluation and appropriate mitigation, as described in Section V.D. of this ROD.

B. Archaeological, Cultural and Historical Resources

FEIS Chapter IV, Section 3, finds that no known significant archaeological or cultural sites would by physically impaired as a result of the preferred alternative, and that mitigation is therefore not anticipated to be necessary. The FSEIS [Chapter 5, Section 5-6] does not alter that conclusion. ROD Section V.J. addresses the issue of mitigating any noise-based "constructive use" of these resources.

Both the FEIS and the FSEIS state that in the event artifacts are discovered during construction activities, construction in the area

will be halted immediately in order to record the finding, determine its level of significance, and develop appropriate mitigation measures.

As noted in FSEIS Section 5-6, the Sunnydale Elementary School could receive significant increased noise in the future when a comparison is made between noise associated "with project" versus noise associated with the "do nothing" alternative. Because of this noise increase, the agency, through its EIS consultant team, initiated consultation with the Washington Department of Community, Trade and Economic Development, Office of Archeology and Historic Preservation (the State Historic Preservation Officer, or SHPO).

At the time that the FEIS was published in February 1996, a significant change in noise impact to this school associated with the project was not anticipated. However, since that time, through preparation and publication of the FSEIS, the data suggests that noise impacts associated with the higher forecast operations might result in a significant noise impact to this school. The following summarizes the noise impact at Sunnydale Elementary School:

	Do-Nothing	With-Project
Existing	65.8	NA
Year 2000	61.6	61.6
Year 2005	61.7	63.7
Year 2010	62.3	65.1

As is shown in the above noise exposure data, "with-project" will be less than existing or past noise exposure. During earlier years, this school was exposed to even greater noise exposure. The 1984-1985 noise contour indicates that this school was exposed to between 70-75 DNL sound levels during that period (Sea-Tac International Airport Part 150 Study Noise Compatibility Planning, dated February 1985, Exhibit 3-5).

While this site is not currently listed on the National Register of Historic Places, during consultation on the 1996 FEIS, the SHPO indicated that it could be eligible. Because of the change in impacts, a follow-up request concerning eligibility was made of the SHPO. On February 10, 1997, the SHPO stated "It is my opinion that the Sunnydale School is eligible for National Register listing. Information provided indicates that the school has played a significant role in the development of the Burien area, and retains character defining features conveying its historic function as a school". As suggested by the SHPO, a April 14, 1997, letter was forwarded to the Advisory Council on Historic Preservation (ACHP) for the purpose of determining if the ACHP wished to

participate in the development of a Memorandum of Agreement to address mitigation.

Because the school is currently affected by noise above 65 DNL, and could continue to be affected in the future, the POS has proposed to sound insulate this school. Recognizing it's historic context, the FSEIS notes that "Because of their historic value, these facilities [*several homes which the SHPO has since determined not eligible for inclusion on the National Register, and Sunnydale school*] could require custom treatment to avoid significant alteration of the architectural style. In pursuing sound insulation of these structures, the Port's Noise Remedy Office will work with a historian to preserve such characteristics" [*emphasis added*]. The City of Burien Public Hearing Draft Proposed Comprehensive Plan dated April 1997 (page II-96) states "Cedarhurst and Sunnnydale elementary schools will be remodeled to increase capacity to 650 students by the year 2002". The current capacity of Sunnydale is 525 students. Thus, the sound insulation could be done as part of the scheduled remodel and can be conducted to ensure compatibility of the structure relative to its continued use as an educational facility.

On April 14, 1997, at the request of the SHPO, the FAA's EIS historic consultant sent a letter to Ms. Claudia Nissley of the ACHP Western Office of Project Review summarizing this situation and stating: "In response to a request from the SHPO, we are asking if the Advisory Council would like to be involved in the MOA...If I do not hear from you within (30) days after your receipt of this letter, I will assume that you do not wish to participate in the MOA". This letter was addressed to the ACHP Western Office address of record and was not returned to the sender. However, as a courtesy, the consultant contacted the ACHP Western Office in June 1977 to follow up on the letter. As part of this contact, the ACHP verbally indicated that it had not received the letter, but that it would refer the issue to the Washington DC office of ACHP. No response has been received from either the ACHP Western Office or the ACHP Washington DC office as of the date of approval of this ROD.

For the reasons discussed in FEIS section 5-6, the FAA questions whether the consultation procedures under the National Historic Preservation Act apply to the Sunnydale School. Nevertheless, the FAA has attempted to consult with the appropriate agencies. As is noted in the Final Supplemental EIS, relative to the National Historic Preservation Act, this school is the only property arguably affected. The FAA is approving the Master Plan Update project at this time having considered the following:

- The noise impacts that would be experienced at this school would be less than the current noise exposure;
- The noise exposure has not altered the use of this site as a school and is not related to its historic significance;
- Appropriate mitigation has been proposed and will be required by the FAA to address any significant aircraft noise exposure impacts;
- In light of the failure of the ACHP to respond to correspondence concerning this project, the FAA and the POS have initiated additional consultation with the SHPO concerning the development of a Memorandum of Agreement to address sound insulation mitigation.

Consultations have occurred with the SHPO and have been attempted with the ACHP as part of the FAA's comprehensive efforts to involve all appropriate commenters and as a courtesy, the FAA and the POS will continue to work with the appropriate

agencies. In reaching its conclusions relative to the National Historic Preservation Act, the FAA's findings are supported by the FSEIS and ROD evaluation performed relative to DOT Section 4(f).

C. Social and Induced Socio-Economic Impacts

As detailed in FEIS Chapter IV, Section 6, the preferred development alternatives would displace up to 391 single family, 260 condos/apartments, and 105 businesses. Of the 105 businesses identified by the FEIS, 88 are located in the Runway Protection Area. While the FAA prefers airport sponsors to have control the land in the RPZ, exceptions to property ownership can occur as long as the use of the land does not represent a hazard to aircraft operation. The Port has surveyed these property owners and their use and will continue to coordinate with the FAA concerning the need for acquisition versus the purchase of easements to ensure the appropriate land use control. Given the anticipated displacement and relocation of people, the FAA will require the POS to provide fair and reasonable relocation payments and assistance payments pursuant to applicable provisions of 42 U.S.C. § 4601 *et. seq.* and implementing regulations.

D. Air Quality

As noted in ROD section V.C., the Governor of the State of Washington has certified to the FAA after reviewing the FEIS and FSEIS that the project will be located, designed, constructed, and operated in compliance with applicable air quality standards.

In Section V.F. of this ROD air quality conformity under 42 U.S.C. § 7506(c) is discussed, and it is concluded that the project will, although not exceeding the *de* minimis thresholds for general conformity, nevertheless conforms to the Washington State Air Quality Implementation Plan and the National Ambient Air Quality Standards. With no significant air quality impacts, no air quality mitigation is necessary.

FEIS Chapter IV, section 9 and its supporting Appendix D, had included a worst-case intersection "hot spot" analysis of the preferred alternative, which predicted slight potential exceedences of air quality standards for carbon monoxide at two key intersections at the northeast side of the airport, as the year 2010 approached. The FEIS had contemplated future air monitoring and evaluation in order to determine whether specific mitigation of these exceedences would be required.

However, as explained at FSEIS page 5-2-10, project planning of the surface transportation features for those two intersections has since been modified so as to eliminate these modeled potential exceedences, thus avoiding the necessity for future mitigation of this nature. Specifically, the POS will accomplish the following:

- **At the time that the North Unit Terminal is undertaken, the Port will develop additional southbound right turn and northbound left turn capability at the intersection of S. 170th Street at International Blvd., unless shown by then current conditions that these improvements are no longer necessary; and**

- **At the time that the North Employee Parking Lot is undertaken, the Port will develop additional intersection turning capability at the intersection of South 154th Street at 24th Avenue S.**
- **To ensure that construction emissions do not exceed the air conformity de-minimis levels, the Port will ensure that annual construction-related truck haul does not exceed 280,700 two-way trips by Heavy Duty Diesel Vehicles.**
- **To minimize construction related particulate emissions, the Port will implement construction Best Management Practices (BMPs) as noted in Table 5-4-8 in the Final Supplemental EIS.**

E. Water Quality

As noted in ROD section V.C., the Governor of the State of Washington has certified to the FAA after reviewing the FEIS and FSEIS that the project will be located, designed, constructed, and operated in compliance with applicable water quality standards. Furthermore, the approvals in this ROD are expressly conditioned upon the POS accomplishing the water quality mitigation measures identified in the FEIS and FSEIS.

With implementation of the preferred alternative developments, there would be widespread surface area disturbance throughout the study area, which has the potential to significantly affect area hydrology. Absent mitigation, the extensive earthmoving required during project construction has the potential to significantly impact the flow rates and water quality of soil infiltration, surface runoff, and stream flow.

FEIS pages IV.10-16 through IV.10-20 provide an extensive set of mitigation measures designed to avoid or minimize these hydrological impacts. These include a set of stormwater management measures based upon Department of Ecology standards, BMPs (best management practices) required by applicable Federal, state and local laws, policies and design standards, as well as other requirements set forth in existing and additional NPDES permits to be required of the POS.

Specifically, the POS will be required to implement the following water quality and hydrology mitigation:

a. Construction Erosion and Sedimentation Control Plan. Prepare a construction erosion and sedimentation control plan for the construction of the new runway. The plan shall require use of Best Management Practices (BMPs) including but not limited to the following:

- **Erosion control measures such as use of mulching, silt fencing, sediment basins, and check dams that are properly applied, installed, and maintained pursuant to agreements with contractors.**
- **Spill containment areas to capture and contain spills at construction sites and prevent their entry into surface or ground waters. Install proper temporary fuel storage areas and maintenance areas to reduce the potential for spills and contamination.**
- **Phasing of construction activities to minimize the amount of area that is disturbed and exposed at any one time.**

- **Where feasible, use of temporary and permanent terraces for fillslopes and cutslopes to reduce sheet and rill erosion and reduce transport of eroded materials from the construction site.**
- **Install gravel and wheel wash facilities on construction equipment access roads and encourage covering of loads to minimize sediment transport onto nearby roads.**

b. Stormwater Management Plan. Prepare a stormwater management plan for the new runway that includes the following:

- **Detention criteria should be based upon Department of Ecology standards limiting 2-year peak flow rates from the developed portions of the site to 50% of the existing 2-year rate, limiting the developed 10-year rate to the existing 10-year rate, and limiting the developed 100-year flow rate to the existing 100-year rate.**
- **Design stormwater facility outlets to reduce channel scouring, sedimentation and erosion, and improve water quality. Where possible, flow dispersion and outlets compatible with stream mitigation will be incorporated into engineering designs.**
- **Maintain existing and proposed new stormwater facilities. Stormwater management facilities will be maintained according to procedures specified in the operations manuals of the facilities.**

c. NPDES Permit Requirements. Comply with the requirements of the National Pollution Discharge Elimination System permit for the airport dated June 30, 1994, as may be revised from time to time.

FSEIS pages 5-7-4 through 5-7-6 discuss additional mitigation measures relating to groundwater concerns of the Seattle Water Department. Additional related mitigation measures are set forth in a June 20, 1997, agreement between the POS and The City of Seattle Public Utilities Department, pertaining to the proposed North Employee Parking Lot at SEATAC. That agreement is incorporated by reference in this ROD.

F. Wetlands

FEIS Chapter IV, Section 11, documents that the preferred development alternative (North Terminal with 8500 foot runway) will directly affect approximately 10.37 acres of wetlands. FSEIS Section 5-5 modifies this figure to approximately 12.23 acres of wetlands. As noted in FEIS Chapter IV, Section 11, FEIS Appendix P, and FSEIS Chapter 5, section 5-5, the U.S. Army Corps of Engineers (COE) has worked with the FAA and the POS as a cooperating agency to develop a wetland compensatory mitigation site. The mitigation plan calls for replacing the filled wetlands on a 47 acre mitigation site located on a 69 acre parcel of land along the Green River in Auburn Washington. As explained in this ROD at Section V.G., this off-site, out-of-watershed mitigation is consistent with FAA policy, and will be required as a condition of FAA grant assurances associated with Federal funding of the Master Plan Update development projects.

In December 1996, the Port submitted an application to the Army Corps of Engineers for a permit to fill wetlands at Sea-Tac Airport associated with the Master Plan Update improvements in compliance with the Clean Water Act, Section 404. The 404

permit application submitted to the Corps of Engineers includes a completed Joint Aquatic Resources Project Application (JARPA) form, in a report entitled "JARPA Application for Proposed Improvements at Seattle-Tacoma International Airport" dated December 1996. Upon issuance of this ROD, the COE, in consultation with the Washington State Department of Ecology, will complete its processing of a COE Section 404 permit, required for the POS to proceed with development impacting wetlands.

G. Floodplains

Chapter IV Section 12 of the FEIS explains that, without mitigation, construction and operation of the Master Plan Update preferred alternative could result in significant adverse floodplain impacts in both the Miller and Des Moines Creek basins. As shown in FEIS Appendix P, a mitigation program has been designed which will create an equivalent amount of floodplain so that there would be no net loss of flood storage capacity or increased risk of loss of human life or property damage. This program has been designed to comply with applicable requirements of the permitting agencies, with whom the FAA and the POS have been coordinating in order to ensure that the construction design minimizes potential harm to or within the floodplain. Each of these agencies have agreed with the mitigation plan in concept and the coordination will continue throughout the permitting process. The FSEIS does not alter the conclusions or mitigation approach discussed in the FEIS.

H. Surface Transportation

FEIS Chapter IV, Section 15, presented the results of both an initial analysis and a refined analysis of level of service volumes for the preferred alternative, at relevant intersections and freeway ramp junctions in the airport vicinity. The initial analysis indicated a slight and nonsignificant degradation of level of service at only one intersection, not requiring any mitigation.

The FEIS refined analysis of the preferred alternative included two scenarios, one assuming the construction of a SR 509 extension, and one assuming no such extension. This refined analysis showed adverse impacts (defined as a significant degradation in level of service when compared with the do-nothing alternative) at a number of intersections and at one freeway ramp junction, with and without SR 509, requiring a variety of intersection and ramp junction improvements as mitigation.

However, the revised surface transportation analyses presented in the FSEIS reflected changes in the design and timing of the surface transportation components of the Master Plan Update development actions. The FSEIS analysis concluded that no significant adverse changes in Levels of Service would result from the preferred alternative for any of the evaluated intersections and freeway ramp junctions in the airport vicinity during the project planning period. Accordingly, no surface transportation project-related mitigation is required.

I. Plants and Animals

FEIS Chapter IV Section 16 discusses the impacts of the preferred alternative upon vegetation and wildlife communities. Absent

mitigation, the greatest project-related impacts to these resources would result from the degradation of area hydrology, water quality, aquatic habitat and biota of Miller and Des Moines Creeks, due to the realignment and relocation of portions of these waterways.

FEIS pages IV.16-11 through IV.16-15 and FEIS Appendix P discuss these anticipated impacts and planned measures to mitigate these biological impacts. These mitigation measures include a wetlands replacement plan, creek relocation and habitat improvement plans, a stormwater pollution prevention plan, and a spill prevention control and countermeasures plan. These plans are subject to approval of a number of other Federal, state and local agencies, as conditions to issuance of required permits.

The FSEIS presents no additional information which would alter the FEIS conclusions with regard to this mitigation.

J. Services/Utilities

FEIS Chapter IV Section 18 discusses the impacts of the preferred alternative upon public services and utilities serving the immediate airport vicinity. The greatest project-related impacts to these resources would result from relocation or abandonment of fresh water, sanitary sewer, electrical power and telephone pipes and lines which transverse the project area. FEIS page IV.18-7 discusses the required mitigation, which includes POS assuming the cost of these relocations and abandonments. The FSEIS presents no additional information which would alter the FEIS conclusions with regard to this mitigation.

K. Earth

FEIS Chapter IV Section 19 discusses the impacts of the preferred alternative upon the geology, soils and hazard areas in the immediate airport vicinity. The greatest project-related impacts to these resources would result from the extensive clearing, grading, excavation, and fill placement required throughout the project area. FEIS page IV.18-7 discusses mitigation measures, which include the design and implementation of an erosion and sedimentation control plan subject to approval by state and local authorities, and a landscaping plan. The FSEIS presents no additional information which would alter the FEIS conclusions with regard to this mitigation. Specifically, the POS will implement the following earth-related mitigation:

- **The FEIS identifies two seismic hazard areas on the site of the new runway, referred to as "relatively small areas of loose shallow sediment". The Port will remove the sediment and replace it with compacted fill, or other appropriate engineering approach to stabilizing these areas, should be included in the final engineering plans.**

- **Prepare a landscaping plan for the new runway area, including plans for seeding and planting of vegetation to stabilize areas of fill that will not be covered by impervious surface.**

L. Hazardous Substances

FEIS Chapter IV Section 21 discusses the impacts of the preferred alternative associated with hazardous substances. Concerns in this area include the exposure of contaminated soils during excavation activities, release of hazardous substances during underground storage tank removal and building demolition activities associated with facility relocations, and spills of construction-related hazardous materials. FEIS pages IV.21-8,9 discuss mitigation measures, which include the development of a spill pollution, control and countermeasures plan for the transport, storage and handling of hazardous materials, and a hazardous substances management and contingency plan for the removal, storage, transportation and disposal of hazardous wastes. The FSEIS presents no additional information which would alter the FEIS conclusions with regard to this mitigation.

M. Construction

FEIS Chapter IV Section 23 and FEIS Appendix J, discussed the temporary impacts to the environment associated with the construction activities necessary to implement the preferred alternative. These temporary impacts included air, water and noise pollution, social and socio-economic impacts, and the disruption of surface transportation patterns. Since detailed design and construction plans for the proposed projects had not yet been prepared, it was not then possible to identify the specific types of construction equipment or the frequency of its usage. Accordingly, the FEIS discussed a range of construction-related impacts, using worst-case assessments which assume a range of excavation sources and means of transporting fill material.

Under the FEIS worst-case analysis, absent mitigation, the most significant construction-related impacts would be a temporary degradation of the level of service levels on freeways, highways, arterials, and permitted local streets used for truck hauling of fill material through congested areas during peak travel times.

The FEIS construction impacts section discussed mitigation measures, including the development of a construction and earthwork management plan, which will specify hours of operation, haul routes, and similar controls, and would discourage haul activities along extremely congested routes and during extreme roadway congestion periods. This plan would also provide for signalization and other improvements to several intersections in the vicinity of the airport which may be impacted by construction hauling activity.

Additional construction-related mitigation measures include property acquisition to minimize potential social and neighborhood disruption, fill spillage prevention and removing procedures, fugitive dust prevention, and an erosion and sediment control plan.

FSEIS Chapter 5, section 5-4, presents additional information developed since publication of the FEIS, including changes to construction phasing, a lengthening of the runway haul duration, the identification of additional haul routes, and the identification of two temporary interchanges on SR 518 and SR 509. This additional information permitted a refined analysis of possible construction impacts in the FSEIS, and the identification of additional mitigation measures presented at FSEIS Table 5-4-8.

Based on the selected fill hauling plan, the FAA will require the POS to include essential provisions of its construction and earthwork management plan in construction earthwork bid documents as contractual requirements.

VII. DECISION AND ORDER

Although the "No Action" alternatives have fewer developmental impacts than the preferred alternative, they fail to achieve the purposes and needs for these projects. For the reasons summarized earlier in this ROD, and supported by detailed discussion in the FEIS and FSEIS, the FAA has determined that the preferred alternatives are the only possible and prudent alternatives as well as the most practicable.

Having made this determination, the two remaining decision choices available for the FAA are to approve the agency actions necessary for the projects' implementation, or to not approve them. Approval would signify that applicable Federal requirements relating to airport development planning have been met, and would permit the Port of Seattle to proceed with the proposed development and receive Federal funds for eligible items of development. Not approving these agency actions would prevent the Port of Seattle from proceeding with Federally supported development in a timely manner.

I have carefully considered the FAA's goals and objectives in relation to various aeronautical aspects of the proposed master Plan Update development actions discussed in the FEIS, including the purposes and needs to be served by the projects, the alternative means of achieving them, the environmental impacts of these alternatives, the mitigation necessary to preserve and enhance the environment, and the costs and benefits of achieving these purposes and needs in terms of effective and fiscally responsible expenditure of Federal funds.

Based upon the administrative record of this project, I make the certification prescribed by 49 U.S.C. § 44502 (b), that implementation of the preferred alternatives approved in this ROD are reasonably necessary for use in air commerce.

Therefore, under the authority delegated to me by the Administrator of the FAA, I find that the projects summarized in this ROD at Appendix B are reasonably supported, and for those projects I therefore direct that action be taken to carry out the agency actions discussed more fully in Section II of this Record, including:

A. Approval under existing or future FAA criteria of project eligibility for Federal grant-in-aid funds and/or Passenger Facility Charges, including the following elements:

1. Land Acquisition

2. Site Preparation

3. Runway, Taxiway, and Runway Safety Area Construction

4. Terminal and Other Landside Development

5. Certain POS-Installed Navigational Aids

6. Environmental Mitigation

B. Approval of a revised airport layout plan (ALP), based on determinations through the aeronautical study process regarding obstructions to navigable airspace, and that the agency does not object to the airport development proposal from an airspace perspective.

C. Approval for relocation/upgrade of the existing Airport Traffic Control Tower (ATCT), radars, and various navigational aids. I specifically reaffirm, in the context of the policy considerations set forth in this ROD, my April 4, 1997, approval of the SEA-TAC ATCT Siting Study. As demonstrated by that study, a replacement ATCT at SEA-TAC is required immediately, whether or not the other Master Plan Update development actions are approved.

D. The development of air traffic control and airspace management procedures to effect the safe and efficient movement of air traffic to and from the proposed new runway, including the development of a system for the routing of arriving and departing traffic and the design, establishment, and publication of standardized flight operating procedures, including instrument approach procedures and standard instrument departure procedures.

original signed by

July 3, 1997

Lawrence B. Andriesen **Date**
Regional Administrator,
Northwest Mountain Region

RIGHT OF APPEAL

This decision constitutes the Federal approval for the actions identified above and any subsequent actions approving a grant of Federal Funds to the Port of Seattle. Today's action is taken pursuant to 49 U.S.C. Subtitle VII, Parts A and B, and constitutes a Final Order of the Administrator, subject to review by the courts of appeals of the United States in accordance with the provisions of 49 U.S.C. § 46110.

Lawrence B. Andriesen 7-3-97
Lawrence B. Andriesen Date
Regional Administrator,
Northwest Mountain Region

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DB

Joint Aquatic Resources Permit Application (JARPA) and Specific Attachments for Hydraulic Projects Approval Miller Creek Project

Master Plan Update Improvements Seattle-Tacoma International Airport

Port of Seattle

Parametrix, Inc.

August 2000

AR 025182

Port of Seattle
Aviation Division

APPENDIX A

RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT MILLER CREEK RELOCATION

AR 025183

AGENCY REVIEW
NOT FOR CONSTRUCTION

SHEET NO.	SHEET TITLE	SHEET NO.	SHEET TITLE	SHEET NO.	SHEET TITLE
STIA-9805-T1	TITLE SHEET				
STIA-9805-C1	VICINITY MAP, SYMBOLS, NOTES AND ABBREVIATIONS				
STIA-9805-C2	SITE PLAN - NORTH				
STIA-9805-C3	SITE PLAN - SOUTH				
STIA-9805-C4	CHANNEL PROFILE				
STIA-9805-C5	CHANNEL SECTIONS AND DETAILS				
STIA-9805-C6	FLOODPLAIN SECTIONS				
STIA-9805-C7	MISCELLANEOUS SECTIONS AND DETAILS				
STIA-9805-C8	HABITAT LOG PLAN AND DETAILS				
STIA-9805-TE1	TEMPORARY EROSION AND SEDIMENT CONTROL PLAN				
STIA-9805-TE2	TEMPORARY EROSION AND SEDIMENT CONTROL SECTIONS AND DETAILS				
STIA-9805-L1	PLANTING PLAN				
STIA-9805-L2	PLANTING SCHEDULE AND DETAILS				

MAJOR CONTRACT

RECOMMENDED FOR APPROVAL

_____ DATE

_____ DATE

_____ DATE

APPROVED BY

_____

DATE

WORK ORDER NO.	PROJECT NO.
100051	STIA-9805-T1

LOCATION MAP

VICINITY MAP

LEGEND

- CULVERT
- SPOT ELEVATION
- KEY NOTE NUMBER REFERENCE
- SURFACE WATER DITCH
- EXISTING CONTOUR
- PROPOSED CONTOUR
- EXISTING GRADE (SECTION)
- SPAWNING GRAVEL (SECTION)
- CRUSHED SURFACING BASE COURSE (SECTION)
- QUARRY SPALLS
- CONCRETE
- EMBANKMENT
- NATIVE SUBGRADE
- GRAVEL
- PAVEMENT (PLAN)
- SLOPE INDICATOR
- CONTROL POINT
- SILT FENCE
- GEOTEXTILE
- EROSION CONTROL MATTING
- STRAW BALE BARRIER
- EXISTING MONITORING WELL
- CHAIN LINK FENCE
- PRIVATE PROPERTY BOUNDARY
- POINT OF INTERSECTION
- BERM
- CHANNEL CENTERLINE AND STATION
- EXISTING SANITARY SEWER LINE
- PROPOSED SANITARY SEWER LINE
- LIMIT OF CONSTRUCTION (PROJECT)
- SURVEY CONTROL POINT
- LIMIT OF RESTRICTED AREA
- EXISTING STORM DRAIN

GENERAL LEGEND

DRAWING TITLE:

PLAN
SUBTITLE
SUBTITLE
SCALE

SECTION
SUBTITLE
SUBTITLE
SCALE
SECTION NUMBER
SHEET WHERE SECTION TAKEN FROM
MULTIPLE CROSS REFERENCES

DETAIL
SUBTITLE
SUBTITLE
SCALE
DETAIL NUMBER
SHEET WHERE DETAIL TAKEN FROM
MULTIPLE CROSS REFERENCES

ELEVATION
SUBTITLE
SUBTITLE
SCALE
ELEVATION NUMBER
SHEET WHERE ELEVATION TAKEN FROM
MULTIPLE CROSS REFERENCES

REFERENCE SYMBOL:

SECTION NUMBER
SHEET WHERE SECTION IS SHOWN

DETAIL NUMBER
SHEET WHERE DETAIL IS SHOWN

ELEVATION NUMBER
(FOR LONG CUTS)
SHEET WHERE ELEVATION IS SHOWN
(FOR SHORT VIEWS)

AR 025184

GENERAL ABBREVIATIONS

&	AND	N	NORTH/NORTHING
ACP	ASPHALT CONCRETE PAVEMENT	NO.	NUMBER
APPROX.	APPROXIMATE	N.T.S.	NOT TO SCALE
℄	CENTERLINE	O.C.	ON CENTER
CMP	CORRUGATED METAL PIPE	PP	POWER POLE
DIA	DIAMETER	R	RADIUS
E	EAST/EASTING	RCP	REINFORCED CONCRETE PIPE
EL OR ELEV	ELEVATION	S	SOUTH
EXIST	EXISTING	SD	STORM DRAIN
FT	FOOT (FEET)	S.F.	SQUARE FOOT/FEET
GAL	GALLON	SS	SANITARY SEWER
HORIZ/H	HORIZONTAL	STA	STATION
HT.	HEIGHT	TYP	TYPICAL
I.E.	INVERT ELEVATION	W/	WITH
LF	LINEAR FEET/FOOT	WD	WOODY DEBRIS
MAX	MAXIMUM	VERT/V	VERTICAL
MIN	MINIMUM		
MISC	MISCELLANEOUS		

SURVEY CONTROL POINTS

9704–2 = REBAR WITH YELLOW CAP MARKED PMX CONTROL NEAR THE SOUTHEAST CORNER OF LORA LAKE. 11.0' SOUTHERLY OF A DOUBLE TRUNK (12" & 10") ALDER TREE WHICH IS ● THE TOP OF THE BANK & 21.0' NORTHWESTERLY FROM A SANITARY SEWER MANHOLE.

9704–3 = REBAR WITH YELLOW CAP MARKED PMX CONTROL NEAR THE SOUTHWEST CORNER OF LORA LAKE. 6.0' SOUTHERLY OF THE TOP OF BANK & 33.2' WEST SOUTHWEST OF A DOUBLE TRUNK (12" & 12") ALDER TREE.

9704–4 = REBAR WITH YELLOW CAP MARKED PMX CONTROL IN THE NORTHWESTERLY MARGIN OF THE DIRT ROAD THAT RUNS BETWEEN THE PUMPKIN PATCHES, ● THE EASTERLY END OF A BLACKBERRY PATCH, 82' +/– EASTERLY OF THE MOST NORTHWESTERLY CORNER OF A WOODEN STORAGE SHED.

NOTE: SEE C2 FOR SURVEY CONTROL POINT COORDINATES AND ELEVATIONS.

GENERAL NOTES

1. CALL "DIG–SAFE" (1–800–425–5555) PRIOR TO COMMENCING ANY GRADING OR EXCAVATION WORK ON THE SITE.
2. INSTALLATION OF TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE COMPLETED PRIOR TO SITE WORK.

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Kirkland, WA 98033
Ph:(425) 822–8880
"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH: P. FENDT
DESIGNED: J. LEAVITT/K. LUDWA
DRAWN BY: C. COX/P. TOGHER
SCALE: AS SHOWN
DATE: JUNE 2000
CHECKED BY: –
APPROVED BY: P. FENDT

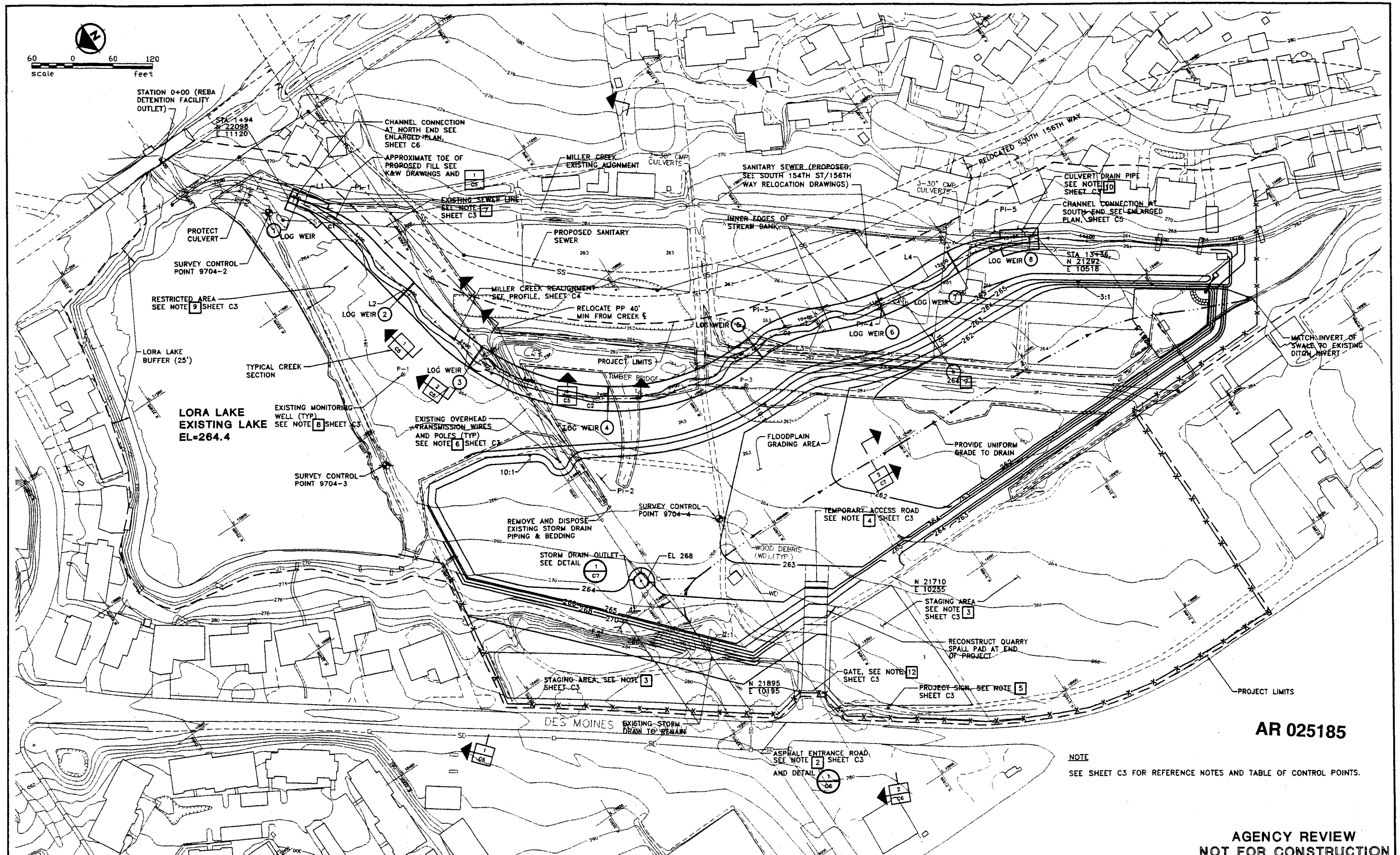
REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT
PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT MILLER CREEK RELOCATION
SHEET TITLE: VICINITY MAP, SYMBOLS, NOTES AND ABBREVIATIONS

WORK ORDER NO. –
CONSULTANT'S NO. 291217C1
PORT OF SEATTLE NO. STIA–9805–C1



AR 025185

NOTE

SEE SHEET C3 FOR REFERENCE NOTES AND TABLE OF CONTROL POINTS.

AGENCY REVIEW
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Kirkland, WA 98033
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PROJECT ENGR./ARCH:	P. FENDT
DESIGNED:	J. ULMAN
DRAWN BY:	C. COX/P. TOGHER
SCALE:	AS SHOWN
DATE:	JUNE 2000
CHECKED BY:	
APPROVED BY:	

REVISIONS

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PROJECT ENGINEER:	
DESIGNER:	
DRAWN BY:	
SCALE:	
DATE:	
CHECKED BY:	
APPROVED BY:	

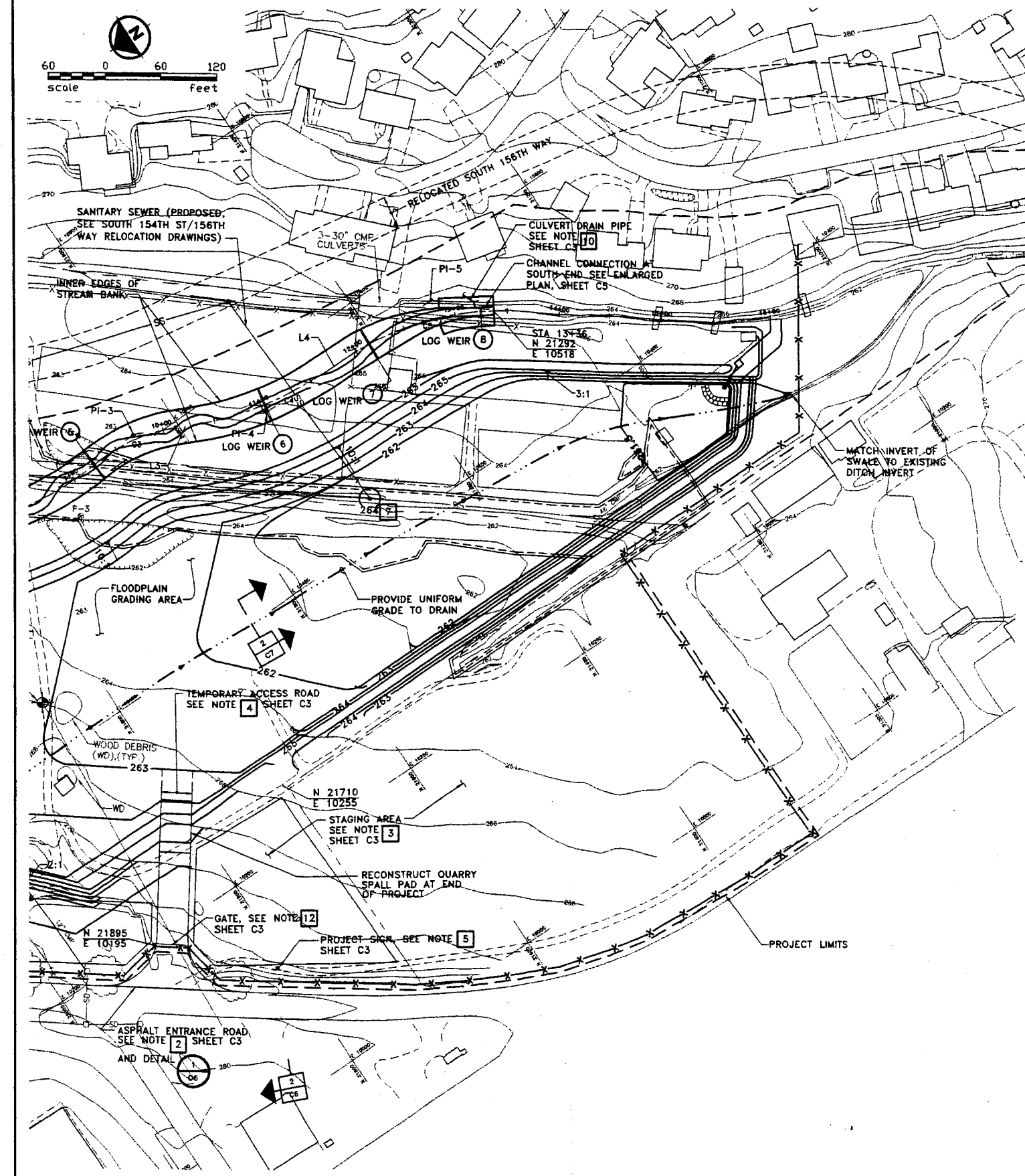
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT MILLER CREEK RELOCATION

SHEET TITLE: **SITE PLAN - NORTH**

WORK ORDER NO.	100051
CONSULTANT'S NO.	291217C2
PORT OF SEATTLE NO.	STIA-9805-C2

156.DWG 291217BA.DWG 91201DE.DWG



AR 025186

NOTES

CURVE TABLE FOR CHANNEL				
PI NUMBER	NORTHING	EASTING		
PI-1	22062	11064		
PI-2	21962	10580		
PI-3	21642	10612		
PI-4	21524	10559		
PI-5	21336	10559		
CURVE NUMBER	STARTING STATION	ENDING STATION	LENGTH	RADIUS
C1	2+14.41	3+06.52	92.10	250
C2	4+74.67	9+29.94	455.27	311
C3	9+29.94	10+13.27	83.33	175
C4	10+31.06	11+66.16	135.16	320
C5	11+84.60	13+40.00	155.40	275

TANGENT TABLE FOR CHANNEL		
TANGENT NUMBER	DISTANCE	BEARING
L1	20.41	S 55°41'27" W
L2	168.16	S 79°12'53" W
L3	17.79	S 24°11'26" W
L4	18.43	S 00°00'00" E

SURVEY CONTROL POINTS			
9704-2	N 22129.25	E 11119.55	ELEV 265.81
9704-3	N 22187.74	E 10753.57	ELEV 266.63
9704-4	N 21857.42	E 10447.77	ELEV 266.25

VERTICAL DATUM: KING COUNTY
HORIZONTAL DATUM: SEA-TAC GRID

NOTES

1. IMPLEMENT TEMPORARY SEDIMENT AND EROSION CONTROL PLANS PRIOR TO BEGINNING ANY SITE WORK. SEE SHEET TE1.
2. PROVIDE PAVED SITE ENTRANCE. MATCH GRADE AT DES MOINES WAY SOUTH. MAINTAIN ASPHALT SURFACE THROUGHOUT ALL PHASES OF THE PROJECT. KEEP ASPHALT SURFACE CLEAN AND FREE OF SEDIMENT AT ALL TIMES USING A VACUUM STREET CLEANING MACHINE. PROVIDE SIGNING AND TRAFFIC CONTROLS PER PROJECT SPECIFICATIONS AND AS REQUIRED FOR PUBLIC SAFETY.
3. STAGING AREAS SHOWN ARE APPROXIMATE. ADDITIONAL STAGING AREAS MAY BE AS REQUESTED AND AS APPROVED BY THE ENGINEER.
4. PROVIDE TEMPORARY CONSTRUCTION ACCESS ROADS TO PERFORM THE WORK. LOCATION OF ACCESS ROADS SHALL BE AS APPROVED BY THE ENGINEER. REMOVE TEMPORARY ACCESS ROADS AT END OF PROJECT.
5. FURNISH AND INSTALL PROJECT SIGN PER SPECIFICATIONS.
6. PROTECT EXISTING POWER POLES. NO EXCAVATION ALLOWED WITHIN 10' OF EXISTING POWER POLES. POWER POLE NEAR CHANNEL STA 5+00 TO BE RELOCATED.
7. PROTECT EXISTING SEWER LINE AND MANHOLES DURING ALL PHASES OF CONSTRUCTION.
8. ABANDON EXISTING MONITORING WELLS PER SPECIFICATIONS.
9. NO CLEARING, VEHICLE OR SELF PROPELLED EQUIPMENT ACCESS, OR DISTURBANCE IN WETLAND ENHANCEMENT AREA.
10. ROUTE CULVERT FROM 154TH STREET BIOSWALE INTO RELOCATED CREEK AT CHANNEL CONNECTION AS DIRECTED BY ENGINEER.
11. PROVIDE TREE PROTECTION IN ALL AREAS NOT LOCATED WITHIN FLOOD PLAIN GRADING AREA OR PROPOSED MILLER CREEK CORRIDOR.
12. PROVIDE 30' DOUBLE SWING CHAIN LINK GATE.
13. IRRIGATION TO BE INSTALLED IN PROJECT AREA (TO BE PROVIDED IN THE NEXT REVIEW SUBMITTAL).

AGENCY REVIEW
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"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH: P. FENDT
DESIGNED: J. ULMAN
DRAWN BY: C. COX/P. TOGHER
SCALE: AS SHOWN
DATE: JUNE 2000
CHECKED BY:
APPROVED BY:

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

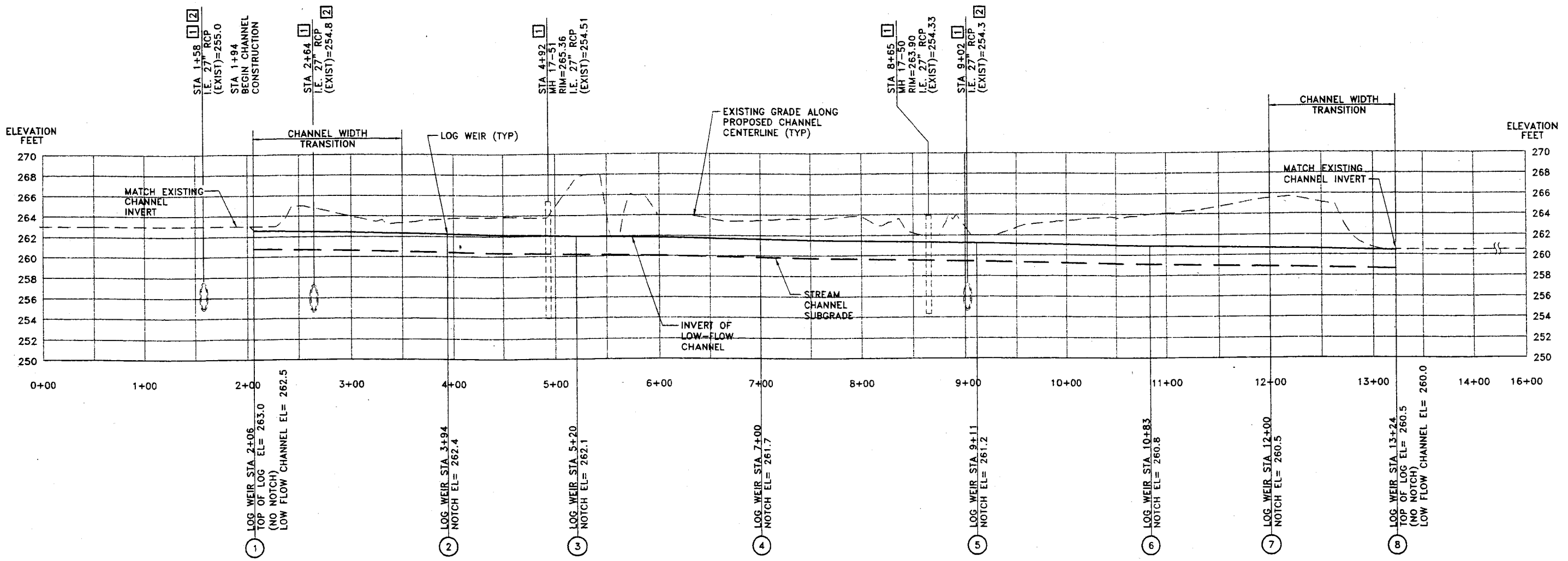
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT
MILLER CREEK RELOCATION

SHEET TITLE: SITE PLAN - SOUTH

WORK ORDER NO. 100051
CONSULTANT'S NO. 291217C3
PORT OF SEATTLE NO. STIA-9805-C3

156.DWG 291217BA.DWG 91201DE.DWG * *



PROFILE

PROPOSED MILLER CREEK CHANNEL
SCALE: H 1"=60' V 1"=5'

NOTES:

[1] PROTECT EXISTING SEWER FROM DAMAGE DURING CONSTRUCTION

[2] INVERT ELEVATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY LOCATION AND ELEVATIONS OF EXISTING SEWER LINES.

AR 025187

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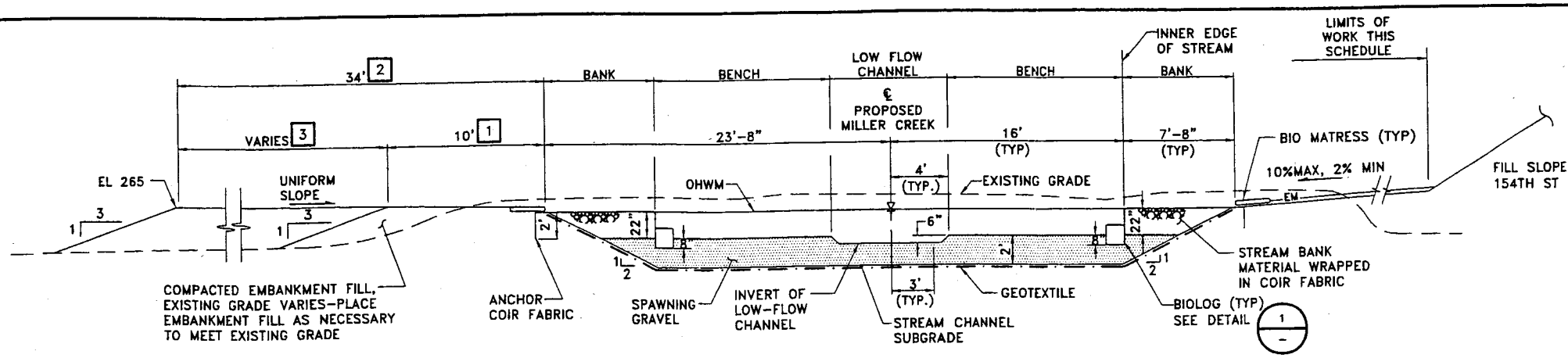
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT
MILLER CREEK RELOCATION

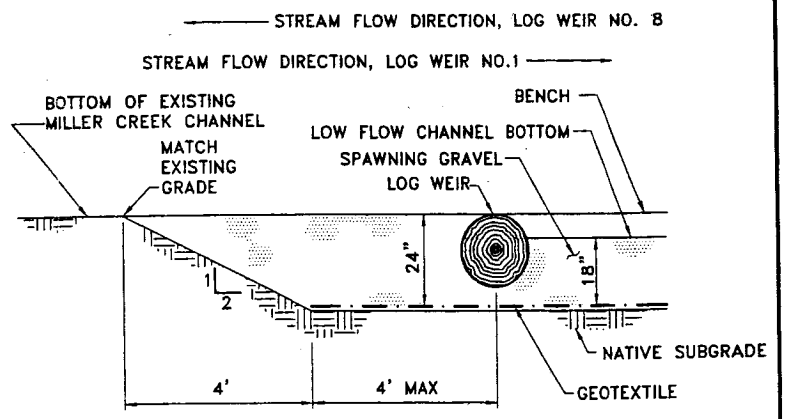
SHEET TITLE: CHANNEL PROFILE

WORK ORDER NO. 100051
CONSULTANT'S NO. 291217C3
PORT OF SEATTLE NO. STIA-9805-C4

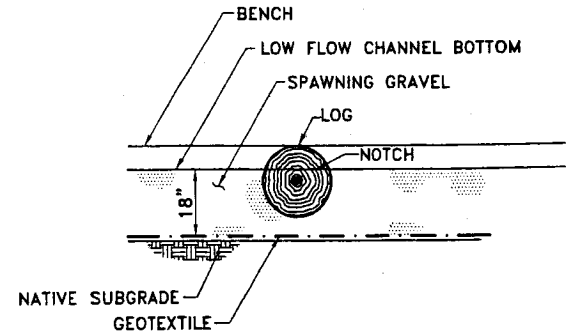


SECTION
STREAM CHANNEL
SCALE 1"=5'
1 / C–2

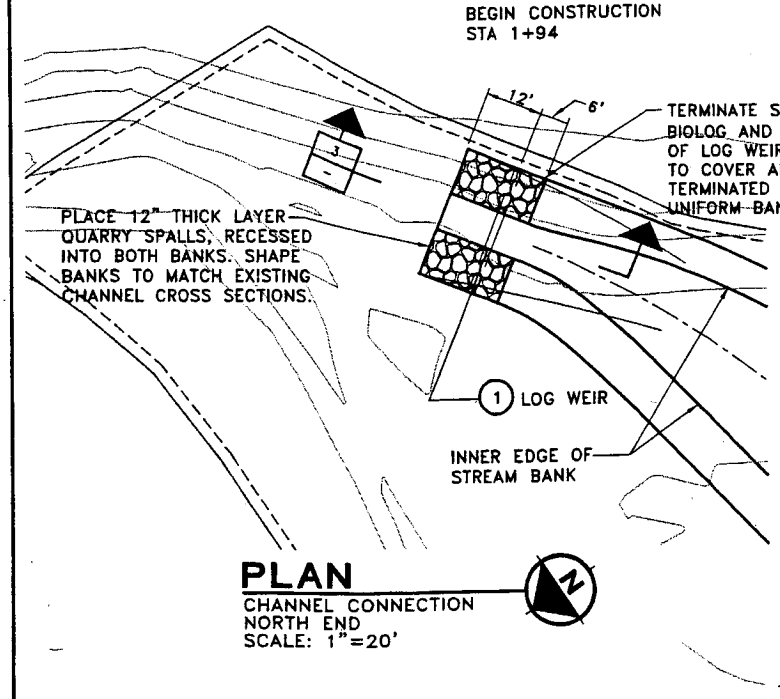
NOTES:
1. STA. 2+00 TO 6+00
2. STA. 7+00 TO 13+00
3. TRANSITION FROM 1 TO 2, STA. 6+00 TO 7+00



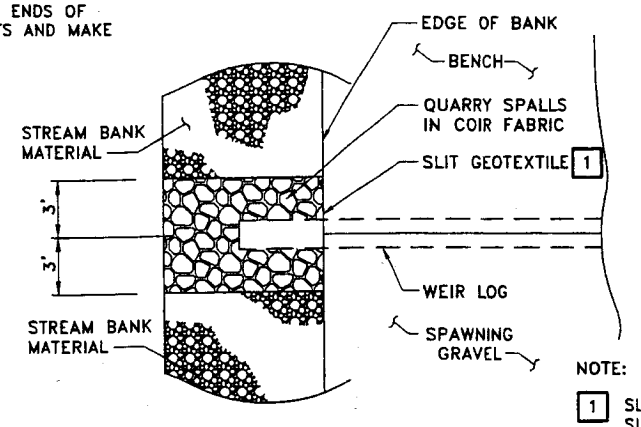
SECTION
CHANNEL END SECTION
AT LOG WEIRS NO.1 & NO.8
SCALE: 1"=2'
3 / –



SECTION
CHANNEL SECTION
AT LOG WEIRS NO. 2–7
SCALE: 1"=2'
4 / –

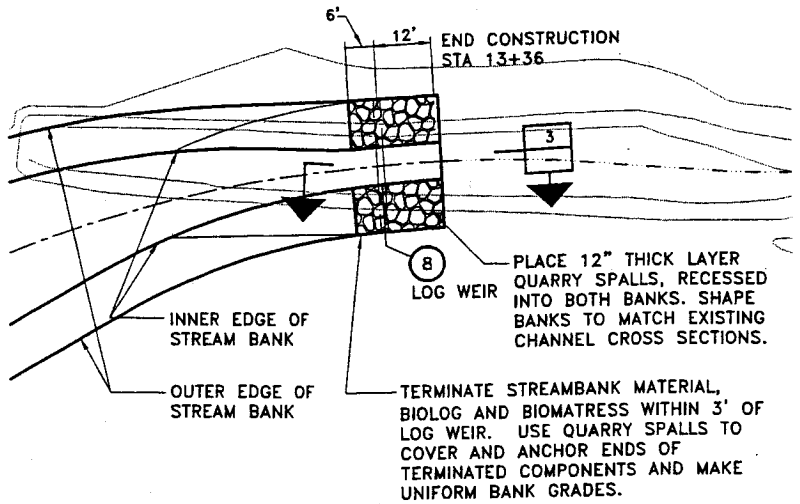


PLAN
CHANNEL CONNECTION
NORTH END
SCALE: 1"=20'

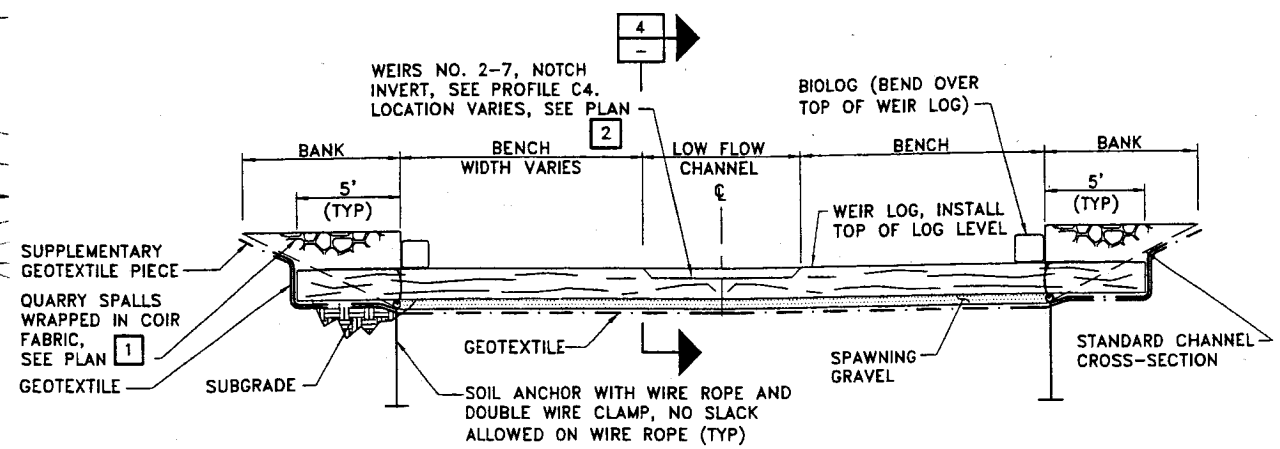


PLAN
SCALE: 1"=5'

NOTE:
1. SLIT GEOTEXTILE AS NEEDED TO INSTALL LOG. PLACE SUPPLEMENTARY GEOTEXTILE AS NEEDED TO PROVIDE 12" MIN OVERLAP, PLACE LOG, AND BACKFILL.

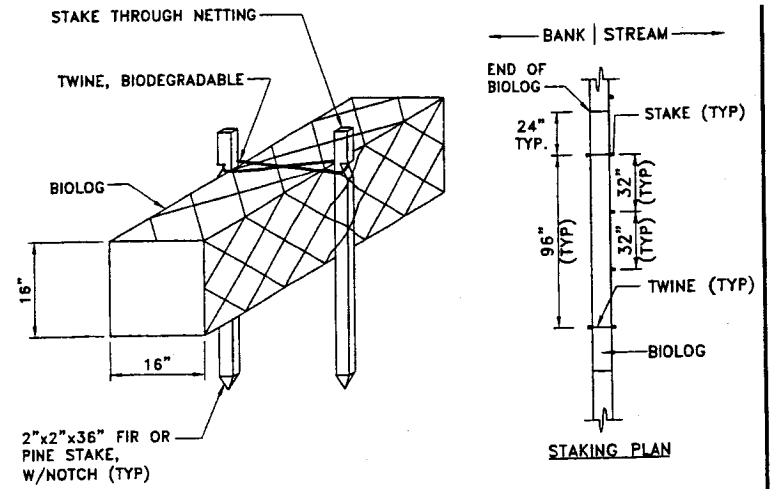


PLAN
CHANNEL CONNECTION
SOUTH END
SCALE: 1"=20'



SECTION
TYPICAL LOG WEIR
SCALE 1"=5'
2 / C–2

LOG WEIR NOTES:
1. COIR FABRIC USED AT LOG WEIRS No. 2–7 ONLY.
2. WEIR NOTCH DEPTH CAN VARY FROM 4" TO 8" AS NEEDED TO PROVIDE LEVEL SURFACE ACROSS NOTCH WIDTH.



DETAIL
BIOLOG STAKING
NTS
1 / –

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PROJECT ENGR./ARCH: P. FENDT
DESIGNED: J. ULMAN
DRAWN BY: C. COX/P. TOGHER
SCALE: AS SHOWN
DATE: JUNE 2000
CHECKED BY:
APPROVED BY:

REVISIONS

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DESIGNED:
DRAWN BY:
SCALED:
DATE:
CHECKED BY:
APPROVED BY:

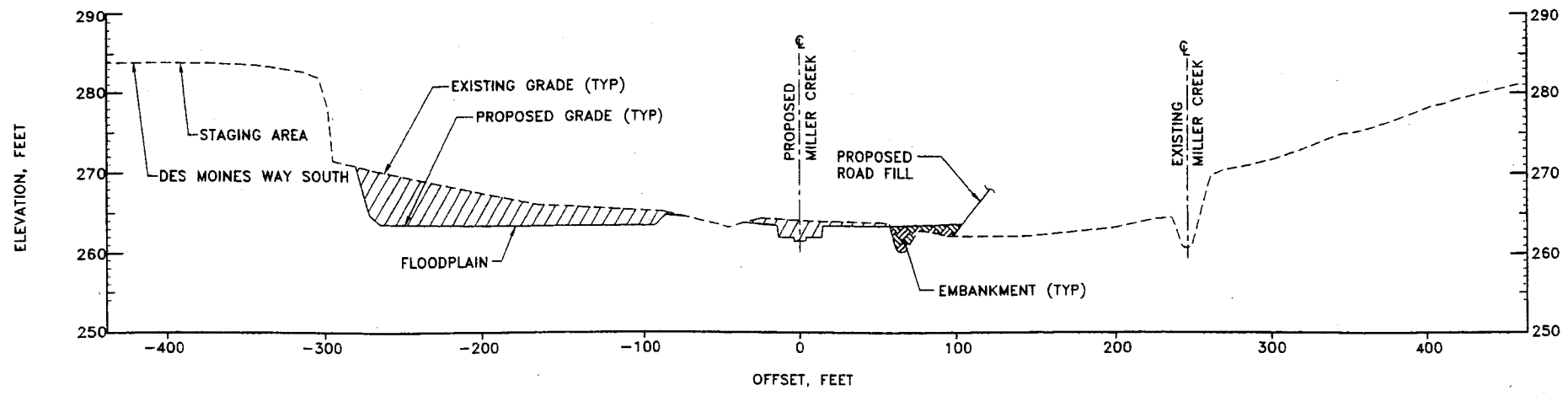
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT
MILLER CREEK RELOCATION

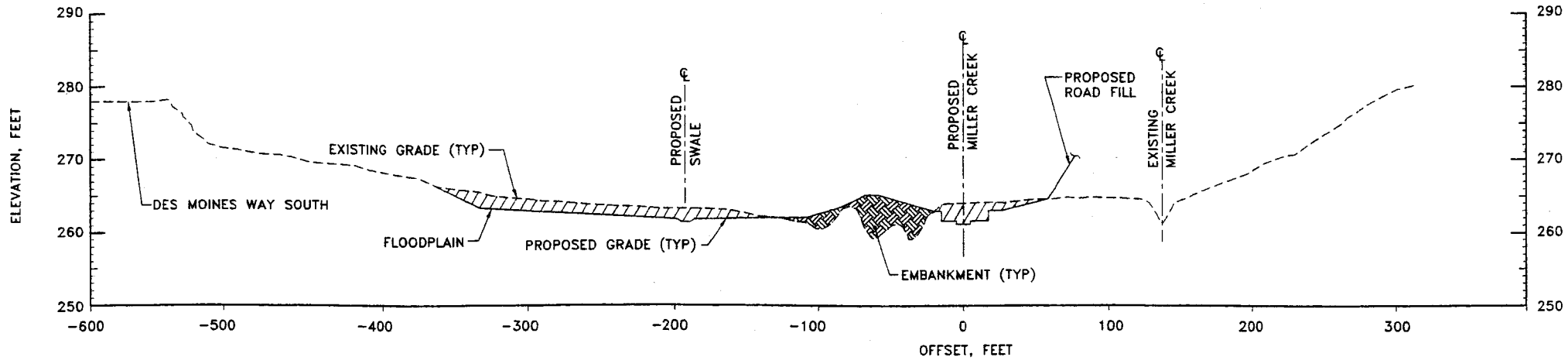
SHEET TITLE: CHANNEL SECTIONS AND DETAILS

WORK ORDER NO. 100051
CONSULTANT'S NO. 291217C4
PORT OF SEATTLE NO. STIA–9805–C5

156.DWG 291217BA.DWG 91201DE.DWG



SECTION 1
PROPOSED CROSS SECTION C2
AT STA 6+50
SCALE: H 1" = 50' V 1" = 10'



SECTION 2
PROPOSED CROSS SECTION C2
AT STA 10+13
SCALE: H 1" = 50' V 1" = 10'

AR 025189

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APPROVED BY:

REVISIONS

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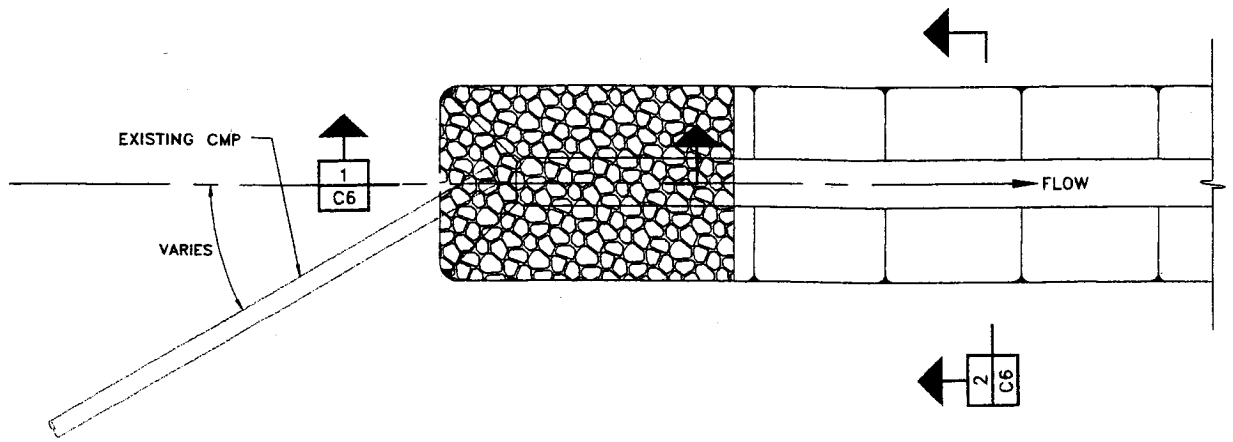
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

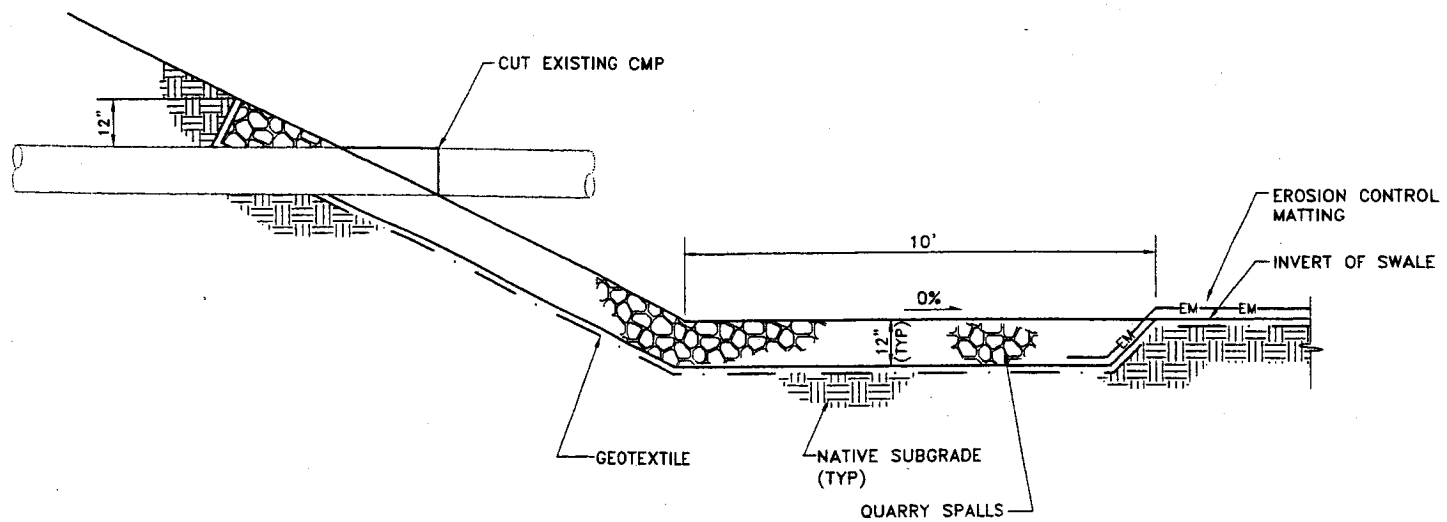
PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT
MILLER CREEK RELOCATION

SHEET TITLE: FLOODPLAIN SECTIONS

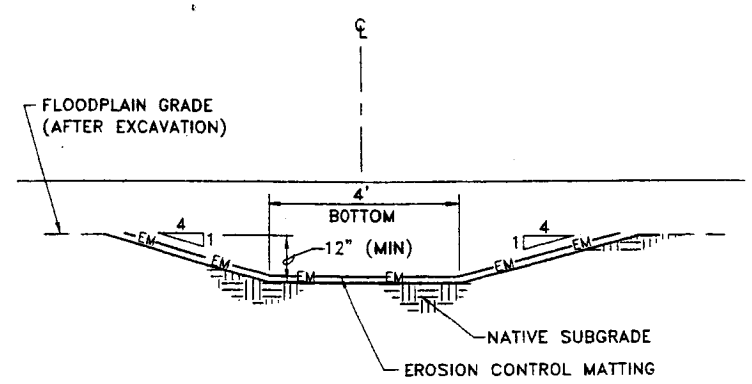
WORK ORDER NO. 100051
CONSULTANT'S NO. 291217C5
PORT OF SEATTLE NO. STIA-9805-C6



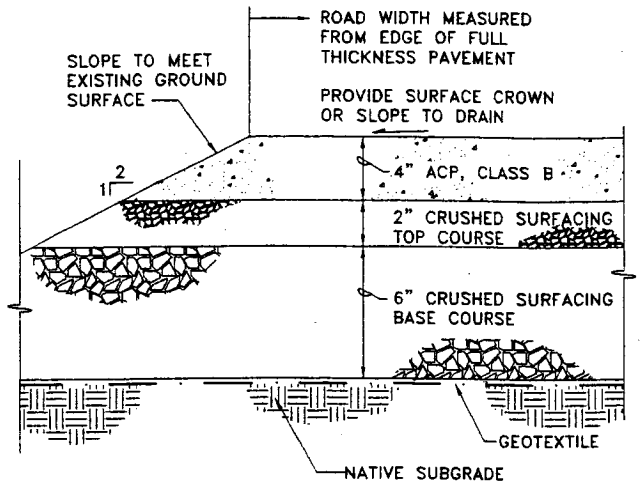
DETAIL
STORM DRAIN OUTLET
N.T.S.
1 / C2



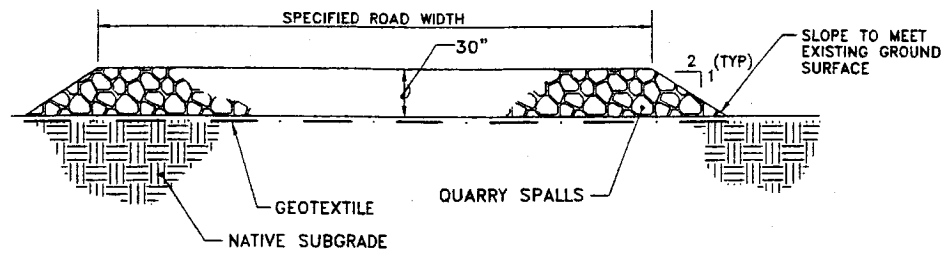
SECTION
STORM DRAIN OUTLET
SCALE: 1"= 2'
1 / –



SECTION
SWALE
SCALE: 1"= 2'
2 / C2
C6, TE1



DETAIL
TEMPORARY ASPHALT ROAD
N.T.S.
2 / TE1



SECTION
QUARRY SPALL PAD
SCALE: 1"=5'
3 / TE1

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DESIGNED: J. ULMAN
DRAWN BY: C. COX/P. TOGHER
SCALE: AS SHOWN
DATE: JUNE 2000
CHECKED BY:
APPROVED BY:

REVISIONS

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PROJECT ENGINEER:
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Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

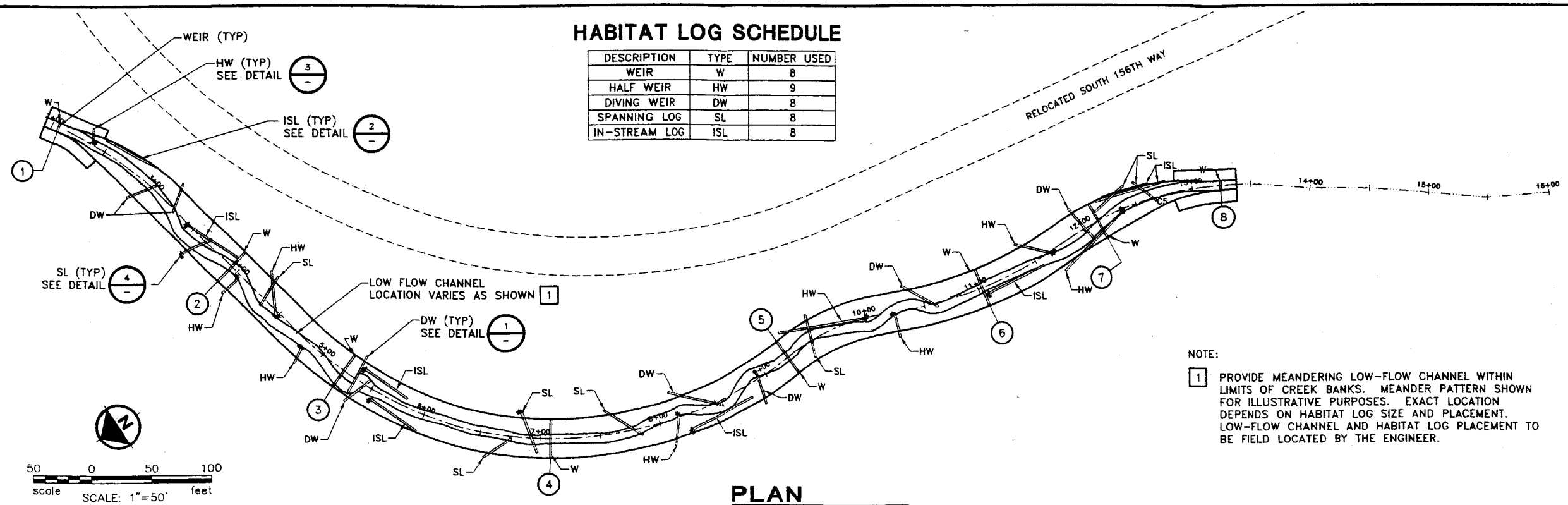
PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT
MILLER CREEK RELOCATION

SHEET TITLE: **MISCELLANEOUS SECTIONS AND DETAILS**

WORK ORDER NO. 100051
CONSULTANT'S NO. 291217C6
PORT OF SEATTLE NO. STIA-9805-C7

HABITAT LOG SCHEDULE

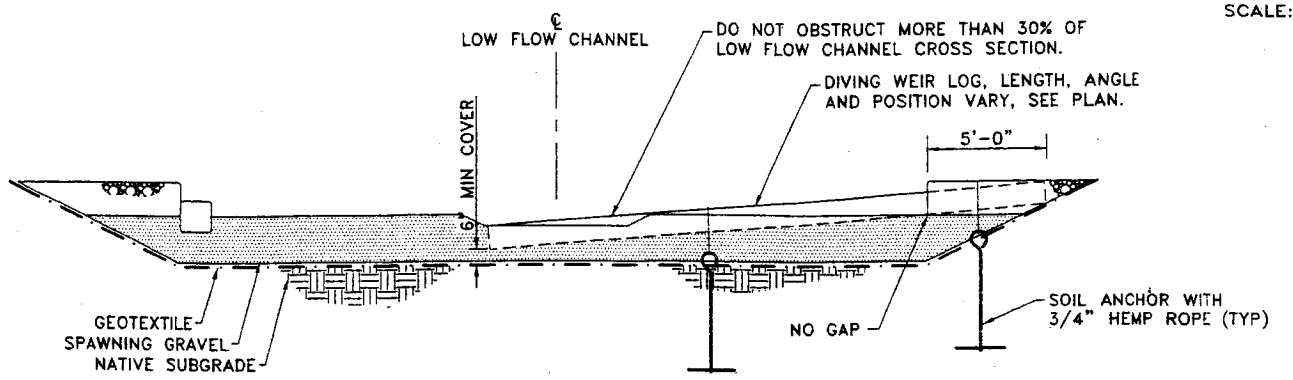
DESCRIPTION	TYPE	NUMBER USED
WEIR	W	8
HALF WEIR	HW	9
DIVING WEIR	DW	8
SPANNING LOG	SL	8
IN-STREAM LOG	ISL	8



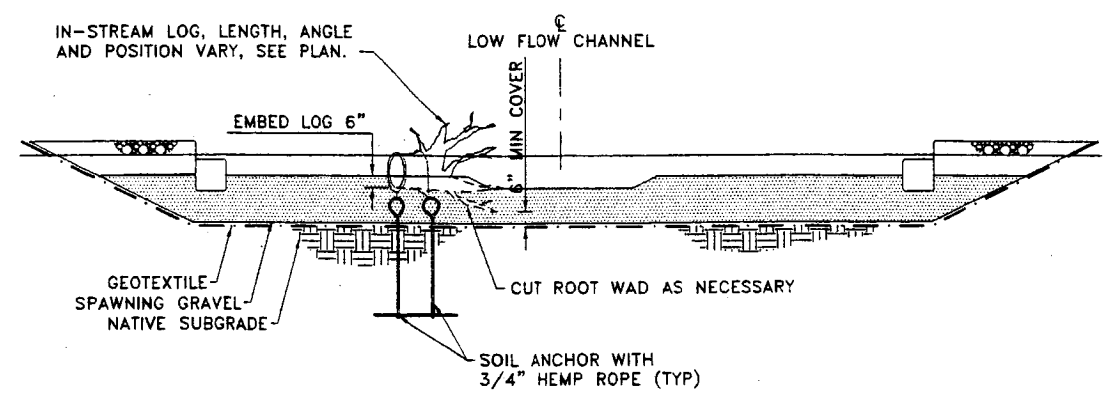
NOTE:

1 PROVIDE MEANDERING LOW-FLOW CHANNEL WITHIN LIMITS OF CREEK BANKS. MEANDER PATTERN SHOWN FOR ILLUSTRATIVE PURPOSES. EXACT LOCATION DEPENDS ON HABITAT LOG SIZE AND PLACEMENT. LOW-FLOW CHANNEL AND HABITAT LOG PLACEMENT TO BE FIELD LOCATED BY THE ENGINEER.

PLAN
HABITAT LOG PLACEMENT
SCALE: 1"=50'

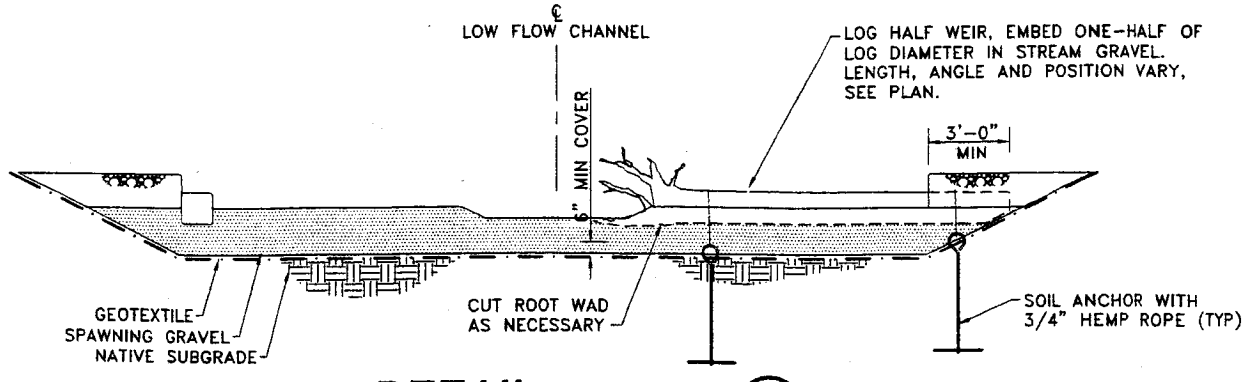


DETAIL 1
DW - DIVING WEIR
N.T.S.

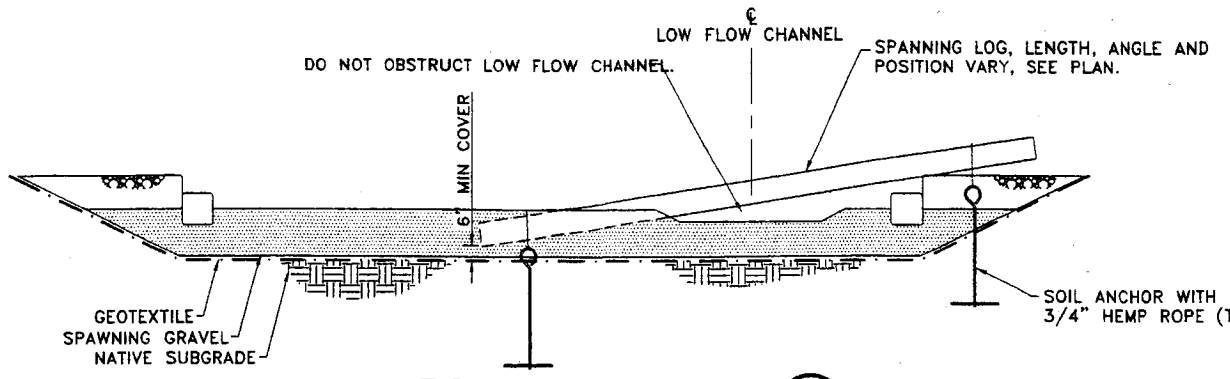


DETAIL 2
ISL - IN STREAM LOG
N.T.S.

AR 025191



DETAIL 3
HW - HALF WEIR
N.T.S.



DETAIL 4
SL - SPANNING LOG
N.T.S.

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Parametrix, Inc.
5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
Ph:(425) 822-8880
"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH: P. FENDT
DESIGNED: J. ULMAN
DRAWN BY: C. COX/P. TOGHER
SCALE: AS SHOWN
DATE: JUNE 2000
CHECKED BY:
APPROVED BY:

REVISIONS

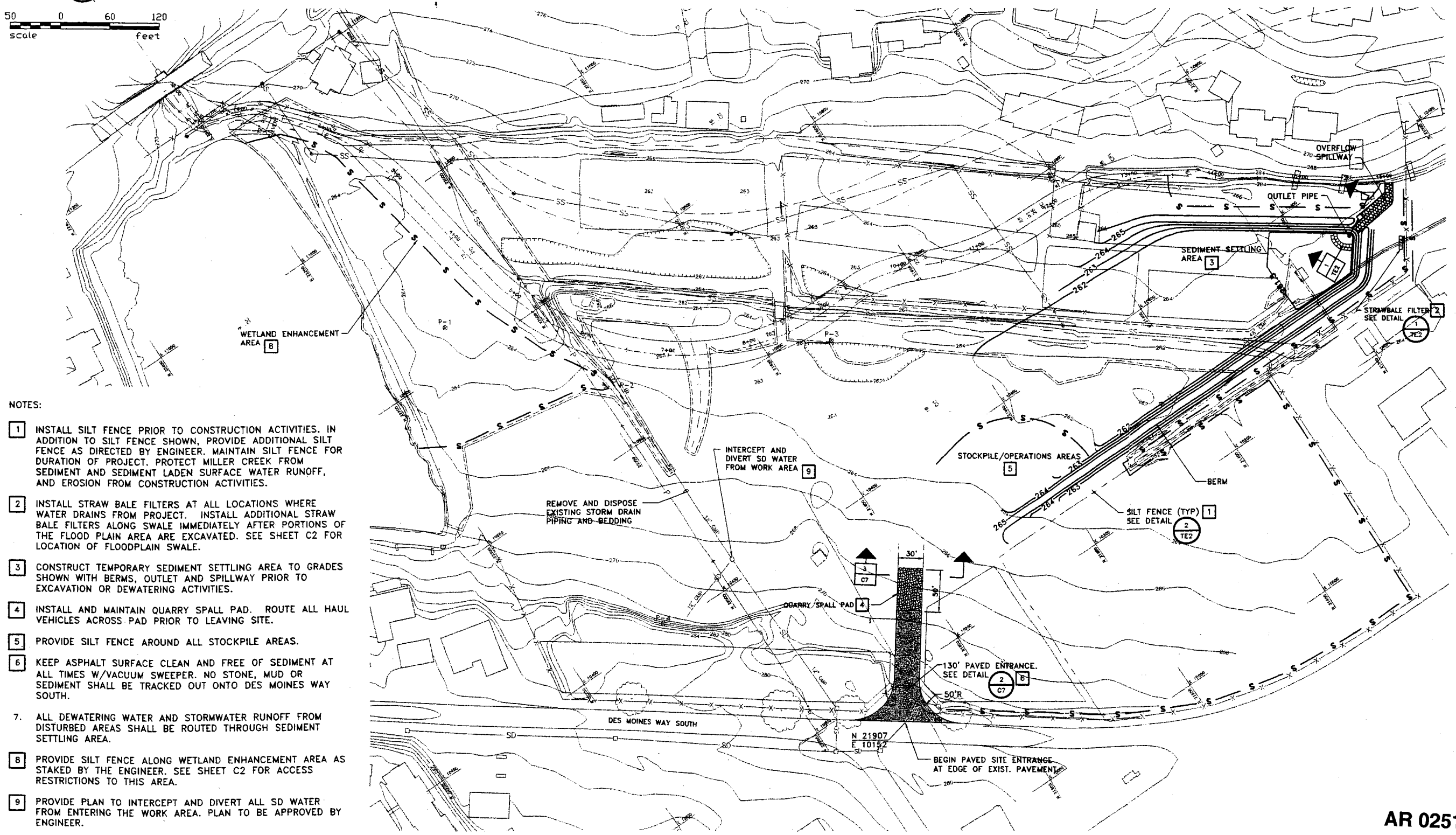
NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT
PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT
MILLER CREEK RELOCATION
SHEET TITLE: HABITAT LOG PLAN AND DETAILS

WORK ORDER NO. 100051
CONSULTANT'S NO. 291217C7
PORT OF SEATTLE NO. STIA-9805-C8

156.DWG 91201DE.DWG



NOTES:

1. INSTALL SILT FENCE PRIOR TO CONSTRUCTION ACTIVITIES. IN ADDITION TO SILT FENCE SHOWN, PROVIDE ADDITIONAL SILT FENCE AS DIRECTED BY ENGINEER. MAINTAIN SILT FENCE FOR DURATION OF PROJECT. PROTECT MILLER CREEK FROM SEDIMENT AND SEDIMENT LADEN SURFACE WATER RUNOFF, AND EROSION FROM CONSTRUCTION ACTIVITIES.

2. INSTALL STRAW BALE FILTERS AT ALL LOCATIONS WHERE WATER DRAINS FROM PROJECT. INSTALL ADDITIONAL STRAW BALE FILTERS ALONG SWALE IMMEDIATELY AFTER PORTIONS OF THE FLOOD PLAIN AREA ARE EXCAVATED. SEE SHEET C2 FOR LOCATION OF FLOODPLAIN SWALE.

3. CONSTRUCT TEMPORARY SEDIMENT SETTLING AREA TO GRADES SHOWN WITH BERMS, OUTLET AND SPILLWAY PRIOR TO EXCAVATION OR DEWATERING ACTIVITIES.

4. INSTALL AND MAINTAIN QUARRY SPALL PAD. ROUTE ALL HAUL VEHICLES ACROSS PAD PRIOR TO LEAVING SITE.

5. PROVIDE SILT FENCE AROUND ALL STOCKPILE AREAS.

6. KEEP ASPHALT SURFACE CLEAN AND FREE OF SEDIMENT AT ALL TIMES W/VACUUM SWEEPER. NO STONE, MUD OR SEDIMENT SHALL BE TRACKED OUT ONTO DES MOINES WAY SOUTH.

7. ALL DEWATERING WATER AND STORMWATER RUNOFF FROM DISTURBED AREAS SHALL BE ROUTED THROUGH SEDIMENT SETTLING AREA.

8. PROVIDE SILT FENCE ALONG WETLAND ENHANCEMENT AREA AS STAKED BY THE ENGINEER. SEE SHEET C2 FOR ACCESS RESTRICTIONS TO THIS AREA.

9. PROVIDE PLAN TO INTERCEPT AND DIVERT ALL SD WATER FROM ENTERING THE WORK AREA. PLAN TO BE APPROVED BY ENGINEER.

10. CONTRACTOR SHALL SUBMIT PLAN FOR SEQUENCING CONSTRUCTION ACTIVITIES TO CONTROL SEDIMENT AND EROSION, OPERATING SEDIMENT SETTLING AREA, DIVERTING MILLER CREEK FLOWS, AND RE-INTRODUCING WATER TO THE NEW PORTION OF MILLER CREEK.

AR 025192

AGENCY REVIEW
NOT FOR CONSTRUCTION

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Ph:(425) 822-8880
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PROJECT ENGR./ARCH:	P. FENDT
DESIGNER:	J. ULMAN
DRAWN BY:	C. COX/P. TOGHER
SCALE:	AS SHOWN
DATE:	JUNE 2000
CHECKED BY:	
APPROVED BY:	

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:	
DESIGNER:	
DRAWN BY:	
SCALE:	
DATE:	
CHECKED BY:	
APPROVED BY:	

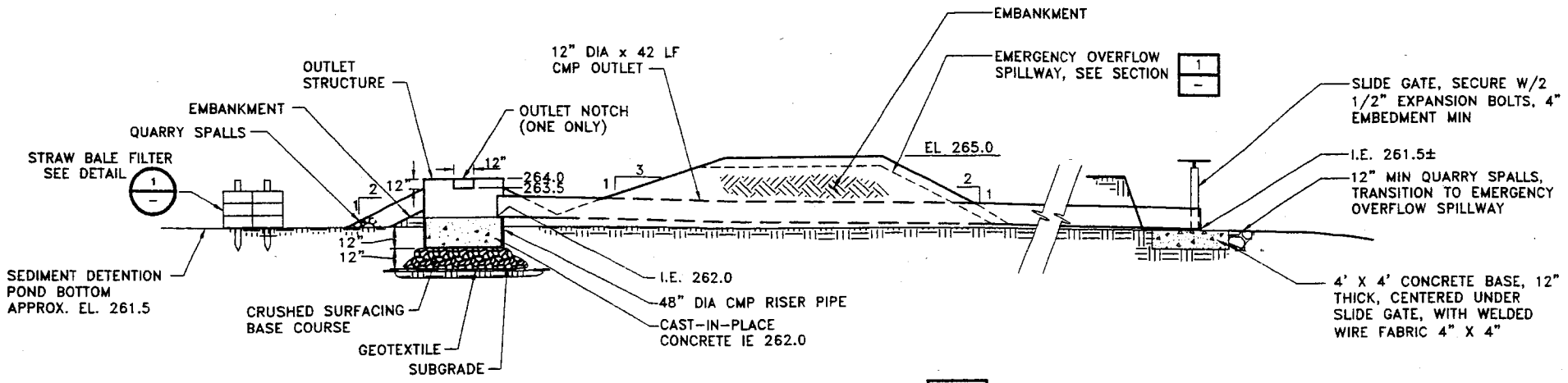
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT
MILLER CREEK RELOCATION

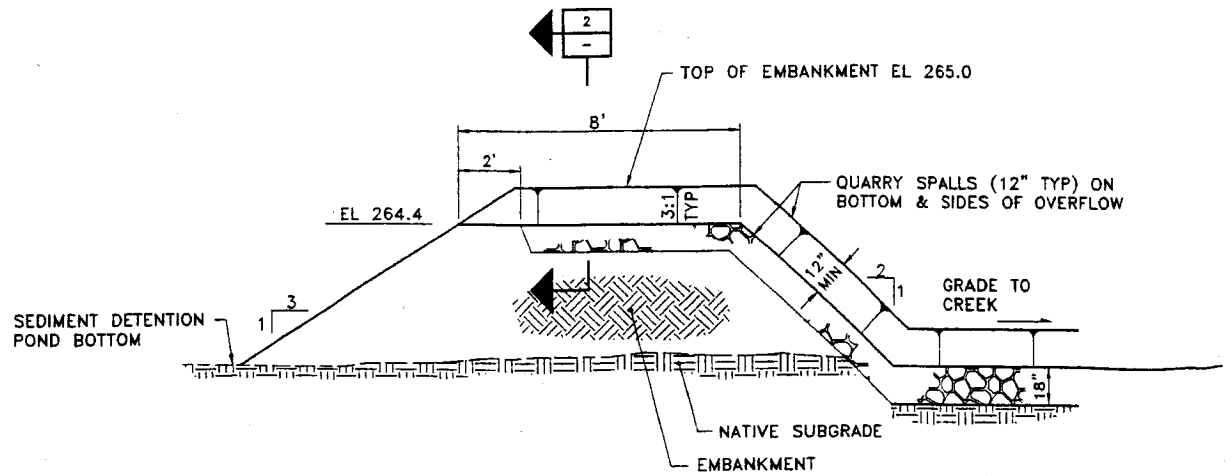
SHEET TITLE: TEMPORARY EROSION AND SEDIMENT CONTROL PLAN

WORK ORDER NO.	100051
CONSULTANT'S NO.	291217TE1
PORT OF SEATTLE NO.	STIA-9805-TE1

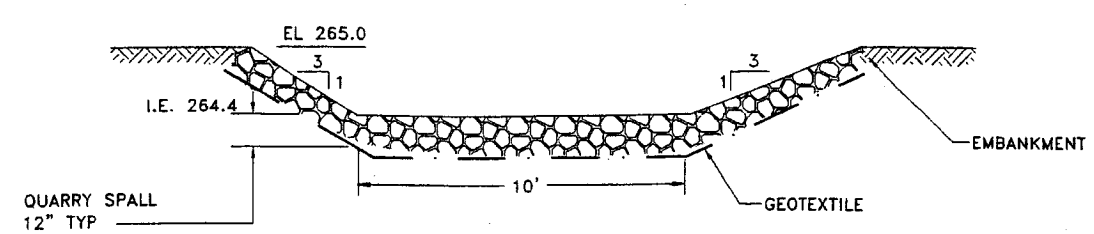
156.DWG 291217RA.DWG 91201DF.DWG * *



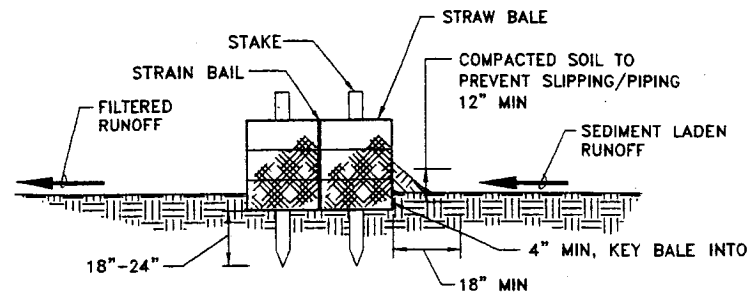
SECTION 1/TE1
TEMPORARY SEDIMENT SETTLING AREA OUTLET AND BERM
SCALE: 1"=4'



SECTION 1/–
EMERGENCY OVERFLOW SPILLWAY
N.T.S.



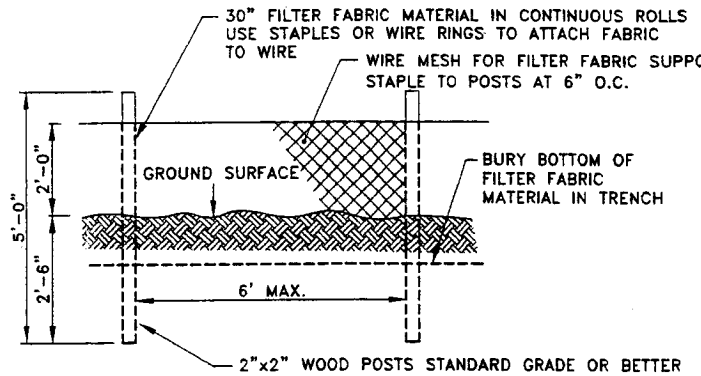
SECTION 2/–
EMERGENCY OVERFLOW SPILLWAY
N.T.S.

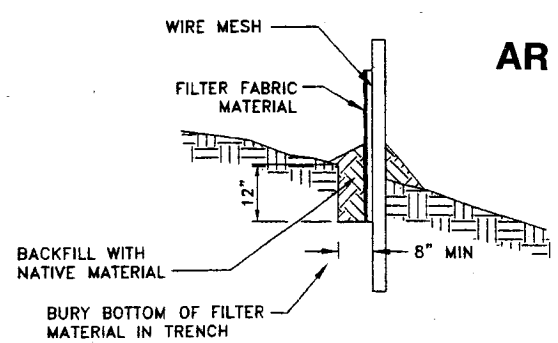


DETAIL 1/–
STRAW BALE FILTER INSTALLATION
N.T.S.

NOTES:

1. PROVIDE TWO ROWS OF STRAW BALES. STAGGER BUTT JOINTS BETWEEN ROWS.
2. STAKES SHALL BE REBAR STEEL PICKETS OR 2"x2" WOOD STAKES, 2 PER BALE. ANGLE FIRST STAKE TOWARDS PREVIOUSLY LAID BALE. PLACE SECOND STAKE VERTICAL ON ADJOINING BALES. TIE STAKES TOGETHER WITH WIRE.
3. INSTALL BALES FULL WIDTH OF SWALE, OR AS DIRECTED BY ENGINEER.





DETAIL 2/TE1
SILT FENCE
N.T.S.

AR 025193

AGENCY REVIEW
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Parametrix, Inc.
5808 Lk. Washington Blvd. NE
Kirkland, WA. 98033
Ph: (425) 822-8880
"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH:	P. FENDT
DESIGNED:	J. ULMAN
DRAWN BY:	C. COX/P. TOGHER
SCALE:	AS SHOWN
DATE:	JUNE 2000
CHECKED BY:	
APPROVED BY:	

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

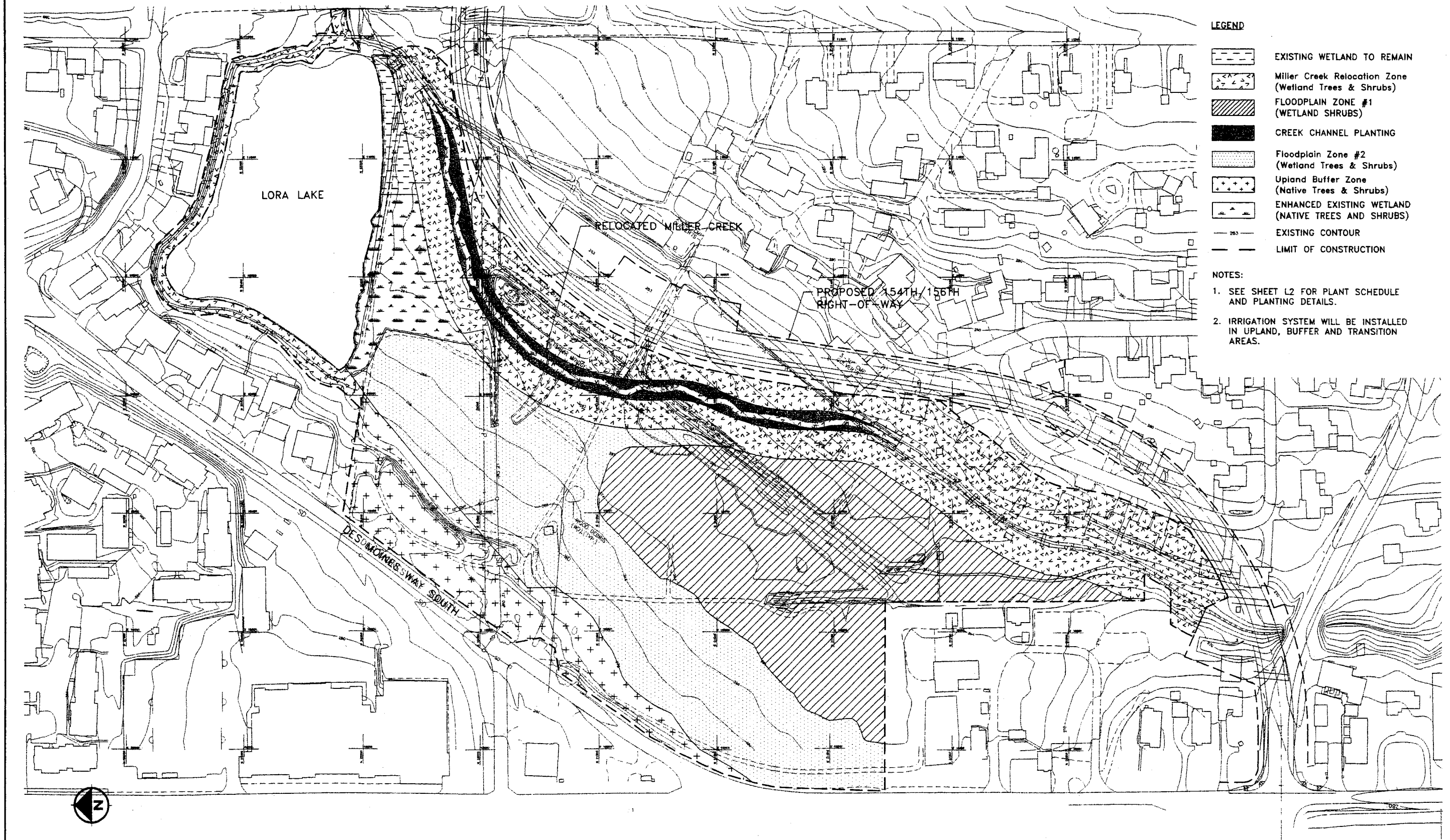
PROJECT ENGINEER:	
DESIGNED:	
DRAWN BY:	
SCALE:	
DATE:	
CHECKED BY:	
APPROVED BY:	

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT
MILLER CREEK RELOCATION

SHEET TITLE: TEMPORARY EROSION AND SEDIMENT CONTROL SECTIONS AND DETAILS

WORK ORDER NO.	100051
CONSULTANT'S NO.	291217TE2
PORT OF SEATTLE NO.	STIA-9805-TE2



LEGEND

- EXISTING WETLAND TO REMAIN
- Miller Creek Relocation Zone (Wetland Trees & Shrubs)
- FLOODPLAIN ZONE #1 (WETLAND SHRUBS)
- CREEK CHANNEL PLANTING
- Floodplain Zone #2 (Wetland Trees & Shrubs)
- Upland Buffer Zone (Native Trees & Shrubs)
- ENHANCED EXISTING WETLAND (NATIVE TREES AND SHRUBS)
- 253 EXISTING CONTOUR
- LIMIT OF CONSTRUCTION

NOTES:

1. SEE SHEET L2 FOR PLANT SCHEDULE AND PLANTING DETAILS.
2. IRRIGATION SYSTEM WILL BE INSTALLED IN UPLAND, BUFFER AND TRANSITION AREAS.

AGENCY REVIEW
NOT FOR CONSTRUCTION

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5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
Ph:(425) 822-8880
"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH: P. FENDT
DESIGNED: M. LOUTHER
DRAWN BY: C. COX/P. TOGHER
SCALE: 1"=80'
DATE: MAY 2000
CHECKED BY: --
APPROVED BY: --

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT
MILLER CREEK RELOCATION

SHEET TITLE: PLANTING PLAN

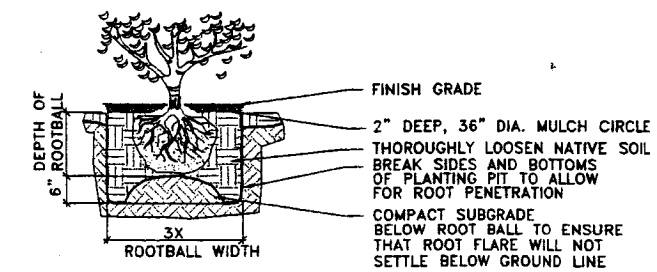
WORK ORDER NO. 100051
CONSULTANT'S NO. 291217L1
PORT OF SEATTLE NO. STIA-9805-L1

AR 025194

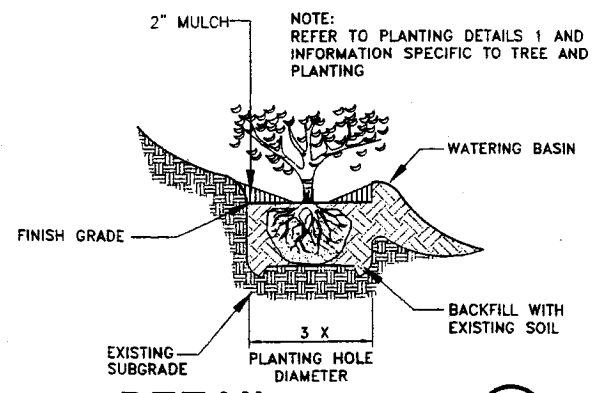
156.DWG 291217R4.DWG

VACCA FARM & MIILER CREEK RELOCATION PLANT SCHEDULE

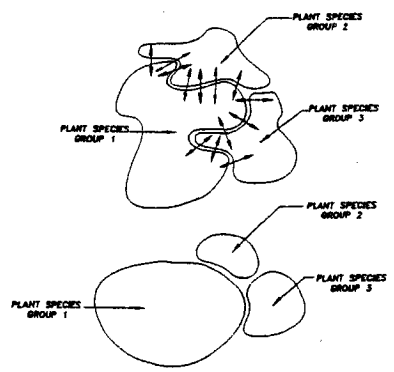
Symbol	Botanical Name	Size	Quantity	Remarks
	MIILER CREEK RELOCATION ZONE			
	Trees			
	Acer macrophyllum / big leaf maple	4'–6' ht.	x	Container or B&B. Rooting to sides and bottom of can or burlap
	Alnus rubra/red alder	2 gal.	x	Container. Typical rooting to sides and bottom of can
	Fraxinus latifolia/Oregon ash	4'–6' ht.	x	Container or B&B. Rooting to sides and bottom of can or burlap
	Populus trichocarpa/black cottonwood	4'–6' ht.	x	" "
	Shrubs Single Species Groups of 3 to 7			
	Acer circinatum/vine maple	2 gal.	x	Container
	Physocarpus capitatus/pacific ninebark	1 gal.	x	Rooting to sides and bottom of can
	Rosa pisocarpa/clustered rose	1 gal.	x	5' OC typical
	Salix lucida spp. lasiandra/Pacific willow	1 gal.	x	
	Salix scouleriana/Scoulers willow	1 gal.	x	
	Salix sitchensis/Sitka willow	1 gal.	x	
	FLOODPLAIN ZONE #1			
	Single Species Groups of 7 to 12			
	Salix lucida spp. lasiandra/Pacific willow	1 gal.	x	Container or B&B
	Salix scouleriana/Scoulers willow	1 gal.	x	Rooting to sides and bottom of can
	Salix sitchensis/Sitka willow	1 gal.	x	5' OC typical
	Spiraea douglasii/hardhack spiraea	1 gal.	x	
	FLOODPLAIN ZONE #2			
	Trees			
	Picea sitchensis/Sitka spruce	3'–4' ht	x	Container. Typical rooting to sides and bottom of can or burlap
	Thuja plicata/western redcedar	3'–4' ht.	x	" "
	Shrubs (Single Species Groups of 3 to 7)			
	Physocarpus capitatus/pacific ninebark	1 gal.	x	Container.
	Salix lucida spp. lasiandra/Pacific willow	1 gal.	x	Rooting to sides and bottom of can.
	Salix scouleriana/Scoulers willow	1 gal.	x	5' OC typical
	Salix sitchensis/Sitka willow	1 gal.	x	
	Spiraea douglasii/hardhack spiraea	1 gal.	x	
	UPLAND BUFFER ZONE			
	Trees			
	Abies grandis / grand fir	4'–6' ht.	x	Container or B&B. Rooting to sides and bottom of can or burlap
	Acer macrophyllum / big leaf maple	4'–6' ht.		" "
	Alnus rubra/red alder	2 gal.	x	Container. Typical rooting to sides and bottom of can or burlap
	Picea sitchensis/Sitka spruce	3'–4' ht	x	Container or B&B. Rooting to sides and bottom of can or burlap
	Populus trichocarpa/black cottonwood	4'–6' ht.	x	" "
	Pseudotsuga menziesii/douglas fir	3'–4' ht.	x	" "
	Pseudotsuga menziesii/douglas fir	3'–4' ht.	x	" "
	Thuja plicata/western redcedar	3'–4' ht.	x	" "
	Tsuga heterophylla/western hemlock	3'–4' ht.	x	" "
	Shrubs - Single Species Groups of 3 to 7			
	Acer circinatum/vine maple	2 gal.	x	Container
	Philadelphus lewisii/mock orange	1 gal.	x	Rooting to sides and bottom of can
	Rosa nutkana/Nootka rose	1 gal.	x	5' OC typical
	Symphoricarpos alba/common snowberry	1 gal.	x	
	ENHANCED EXISTING WETLAND			
	Staked in Field by Engineer			
	Acer circinatum/vine maple	2 gal.	x	Container
	Philadelphus lewisii/mock orange	1 gal.	x	Rooting to sides and bottom of can
	Rosa nutkana/Nootka rose	1 gal.	x	5' OC typical
	Salix lucida spp. lasiandra/Pacific willow	1 gal.	x	To be staked in the field by Engineer
	Salix scouleriana/Scoulers willow	1 gal.	x	
	Salix sitchensis/Sitka willow	1 gal.	x	
	Symphoricarpos alba/common snowberry	1 gal.	x	
	CREEK CHANNEL PLANTING			
	Salix lucida spp. lasiandra/Pacific willow	Live stakes	x	30" on center
	Salix scouleriana/Scoulers willow	"	x	36"–48" ht., 1/2"–1" dia., with a minimum of 10 viable,
	Salix sitchensis/Sitka willow	"	x	undamaged buds on each stake. 3–4 buds shall be below grade.



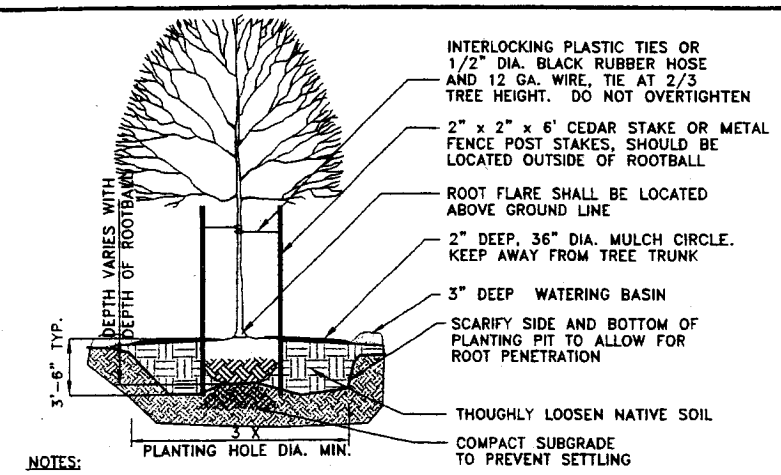
DETAIL SHRUB PLANTING (TYPICAL) — 1 TYP



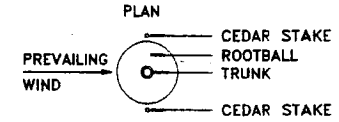
DETAIL PLANTING ON SLOPES N.T.S. — 2 TYP



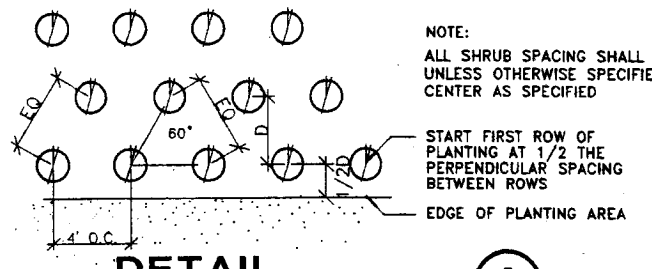
DETAIL SHAPES OF PLANTING MASSES N.T.S. — 3 TYP



NOTES:
1. STAKE ONLY TREES 4' IN HEIGHT OR TALLER
2. CUT ALL TIES AND REMOVE BURLAP FROM UPPER 1/3 OF ROOT BALL
3. REMOVE ALL PLASTIC, WIRE ,AND TWINE
4. PLANT TREES AT 1" HIGHER THAN DEPTH GROWN IN NURSERY.
5. STAKE TREES PERPENDICULAR TO WIND.
6. WATER THOROUGHLY AFTER PLANTING.



DETAIL TREE PLANTING & STAKING (TYPICAL) — 4 TYP



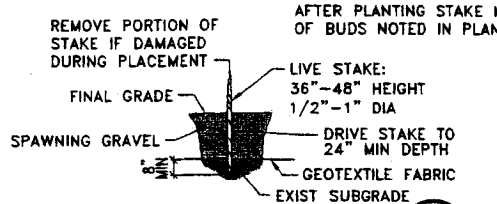
NOTE: ALL SHRUB SPACING SHALL BE EQUIDISTANT UNLESS OTHERWISE SPECIFIED DISTANCE ON CENTER AS SPECIFIED

START FIRST ROW OF PLANTING AT 1/2 THE PERPENDICULAR SPACING BETWEEN ROWS

EDGE OF PLANTING AREA

DETAIL TRIANGULAR SHRUB SPACING (TYPICAL) — 5 TYP

NOTE: AFTER PLANTING STAKE MUST HAVE MIN. NUMBER OF BUDS NOTED IN PLANTING LEGEND



DETAIL LIVE STAKE PLANTING N.T.S. — 6 TYP

NOTES:

1. Plant quantities stated in the planting schedule are for Contractor's convenience only. Contractor is responsible for ensuring plant coverage stated in the plant schedule.
2. For installation of plant material through coir fabric wrap, excavate to reveal wrap cut "x" pattern through wrap, fold & secure under adjacent wrap, install planting as per typical detail.
3. Preserve and protect all trees and shrubs not designated for removal. Provide, erect, and maintain barricades necessary to prevent access to areas within drip lines of existing trees. Allow no vehicular or pedestrian traffic, or stacking and/or storage of construction materials within barricades.
4. For each planting zone Contractor shall lay out a 10,000 s.f. test plot, in which the positions of all plants shall be staked with flags that are color coded to represent specific species. Layout for each zone shall be inspected and approved prior to commencement of planting. Approved staking shall serve as the plant layout standard for the remainder of each zone.
5. Shrub masses shall consist of multiple single–species groups (see detail 3). Contractor shall ensure that these single–species groups have a variety of sizes and shapes, and that shrub masses have a variety of species. See planting schedule for numbers of plants in single–species groups.
6. Hydroseed all planting areas with herbaceous wetland seed mix (see specifications). Re–seed areas that are disturbed by subsequent work.

AR 025195

AGENCY REVIEW NOT FOR CONSTRUCTION

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Parametrix, Inc.
5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
Ph:(425) 822–8880
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PROJECT ENGR./ARCH: P. FENDT
DESIGNED: M. HAPS
DRAWN BY: C. COX/P. TOGHER
SCALE: AS SHOWN
DATE: MAY 2000
CHECKED BY: –
APPROVED BY: –

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT MILLER CREEK RELOCATION

SHEET TITLE: PLANTING SCHEDULE AND DETAILS

WORK ORDER NO. 100051
CONSULTANT'S NO. 291217L2
PORT OF SEATTLE NO. STIA–9805–L2

Port of Seattle
Aviation Division

APPENDIX B

MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS FOR SEATTLE-TACOMA INTERNATIONAL AIRPORT

AGENCY REVIEW
NOT FOR CONSTRUCTION

SHEET NO.	SHEET TITLE
STIA-XXXX-T1	TITLE SHEET
STIA-XXXX-C1	VICINITY MAP, SYMBOLS, NOTES AND ABBREVIATIONS
STIA-XXXX-C2	PROJECT PLAN
STIA-XXXX-C3	INSTREAM PROJECT AREA 1 PLAN
STIA-XXXX-C4	INSTREAM PROJECT AREA 2 PLAN
STIA-XXXX-C5	INSTREAM PROJECT AREA 3 PLAN
STIA-XXXX-C6	INSTREAM PROJECT AREA 4 PLAN
STIA-XXXX-C7	INSTREAM LWD PLACEMENT PLAN
STIA-XXXX-C8	INSTREAM SECTIONS AND PROFILE
STIA-XXXX-C9	INSTREAM DETAILS
STIA-XXXX-C10	LWD DETAILS
STIA-XXXX-C11	STREAM BUFFER AND EMBANKMENT CROSS-SECTION
STIA-XXXX-L1	LANDSCAPE PLAN
STIA-XXXX-L2	LANDSCAPE PLAN
STIA-XXXX-L3	LANDSCAPE PLAN
STIA-XXXX-L4	LANDSCAPE PLAN
STIA-XXXX-L5	LANDSCAPE PLAN
STIA-XXXX-L6	PLANTING SCHEDULE AND DETAILS
STIA-XXXX-TE1	TESC PLAN - PROJECT AREA 1
STIA-XXXX-TE2	TESC PLAN - PROJECT AREA 2
STIA-XXXX-TE3	TESC PLAN - PROJECT AREA 3
STIA-XXXX-TE4	TESC PLAN - PROJECT AREA 4
STIA-XXXX-TE5	TESC DETAILS
STIA-9806-P1	GRADING AT S. 156TH WAY BRIDGE
STIA-9806-P2	BRIDGE REMOVAL AND TEMPORARY EROSION CONTROL PLAN
STIA-9806-P3	BIOFILTRATION SWALE OUTFALLS

SHEET NO.	SHEET TITLE

MAJOR CONTRACT

RECOMMENDED FOR APPROVAL

_____ DATE

_____ DATE

_____ DATE

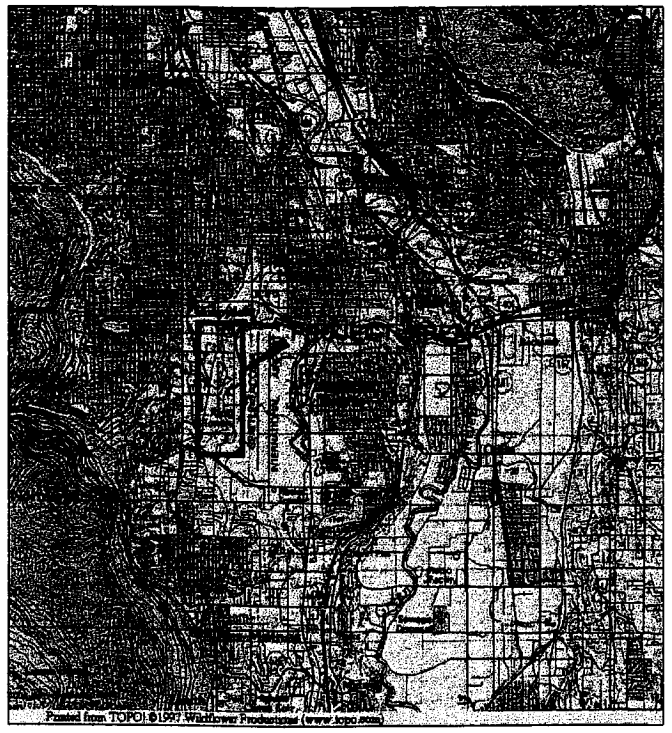
APPROVED BY

_____

DATE

WORK ORDER NO.	PROJECT NO.
WORK ORDER #	291281T1

LOCATION MAP



N

VICINITY MAP

LEGEND

- LARGE WOODY DEBRIS
- EXISTING TREES
- CULVERT
- SUMP
- SPOT ELEVATION (265)
- KEY NOTE NUMBER REFERENCE (1)
- WATER BODY
- WETLAND BOUNDARY
- EXISTING CONTOUR (MAJOR) (265)
- EXISTING CONTOUR (MINOR)
- STREAM CENTERLINE AND STATIONING (7+00)
- PARCEL BOUNDARY
- PARCEL NUMBER (265)
- SILT FENCE
- SILT CURTAIN
- GEOTEXTILE (SECTION)
- CHAIN LINK FENCE
- PROJECT LIMIT
- LIMIT OF 100 FT RIPARIAN BUFFER
- RIPRAP
- SPAWNING GRAVEL (SECTION)
- RIPRAP
- QUARRY SPALLS
- CONCRETE
- EMBANKMENT/PREPARED SUBGRADE
- NATIVE SUBGRADE
- STREAM BANK MATERIAL
- WETLAND AREAS
- LIVE STAKING (EROSION CONTROL)

GENERAL LEGEND

DRAWING TITLE:

PLAN
SUBTITLE
SUBTITLE
SCALE

SECTION
SUBTITLE
SUBTITLE
SCALE
SECTION NUMBER
1
C2
C12,A1
SHEET WHERE SECTION TAKEN FROM
MULTIPLE CROSS REFERENCES

DETAIL
SUBTITLE
SUBTITLE
SCALE
DETAIL NUMBER
2
M1
C12,A1
SHEET WHERE DETAIL TAKEN FROM
MULTIPLE CROSS REFERENCES

ELEVATION
SUBTITLE
SUBTITLE
SCALE
ELEVATION NUMBER
1
E1
C12,A1
SHEET WHERE ELEVATION TAKEN FROM
MULTIPLE CROSS REFERENCES

REFERENCE SYMBOL:

SECTION NUMBER
1
C5
SHEET WHERE SECTION IS SHOWN

DETAIL NUMBER
4
C5
SHEET WHERE DETAIL IS SHOWN

ELEVATION NUMBER
(FOR LONG CUTS)
1
C6
1
C6
1
C5
SHEET WHERE ELEVATION IS SHOWN
(FOR SHORT VIEWS)

GENERAL ABBREVIATIONS

&	AND	NTS	NOT TO SCALE
APPROX	APPROXIMATE	NIC	NOT IN CONTRACT
CB	CATCH BASIN	OC	ON CENTER
C L OR ℄	CENTERLINE	POS	PORT OF SEATTLE
CONC	CONCRETE	RCP	REINFORCED CONCRETE PIPE
CONST	CONSTRUCTION	REQD	REQUIRED
CMP	CORRUGATED METAL PIPE	R/W	RIGHT OF WAY
DIA	DIAMETER	SCH	SCHEDULE
E	EAST/EASTING	SD	STORM DRAIN
EL OR ELEV	ELEVATION	SPEC	SPECIFICATION(S)
EX OR EXIST	EXISTING	SQ	SQUARE
FT	FOOT (FEET)	SF	SQUARE FOOT/FEET
GA	GAUGE	SS	SANITARY SEWER
GAL	GALLON	SY	SQUARE YARD/YARDS
GR	GRADE	STA	STATION
HT	HEIGHT	ST	STREET
HORIZ OR H	HORIZONTAL	STD	STANDARD
IE	INVERT ELEVATION	TEMP	TEMPORARY
LF	LINEAR FEET/FOOT	TYP	TYPICAL
MAX	MAXIMUM	VERT OR V	VERTICAL
MIN	MINIMUM	W/	WITH
MISC	MISCELLANEOUS	WS	WATER SURFACE
N	NORTH/NORTHING	YR	YEAR

AR 025197

AGENCY REVIEW
NOT FOR CONSTRUCTION

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

Parametrix, inc.
5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
Ph:(425) 822-8880
"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH: P. FENDT
DESIGNED: J. LEAVITT/K. LUDWA
DRAWN BY: C. COX/P. TOGHER
SCALE: AS SHOWN
DATE: MAY 2000
CHECKED BY: -
APPROVED BY: P. FENDT

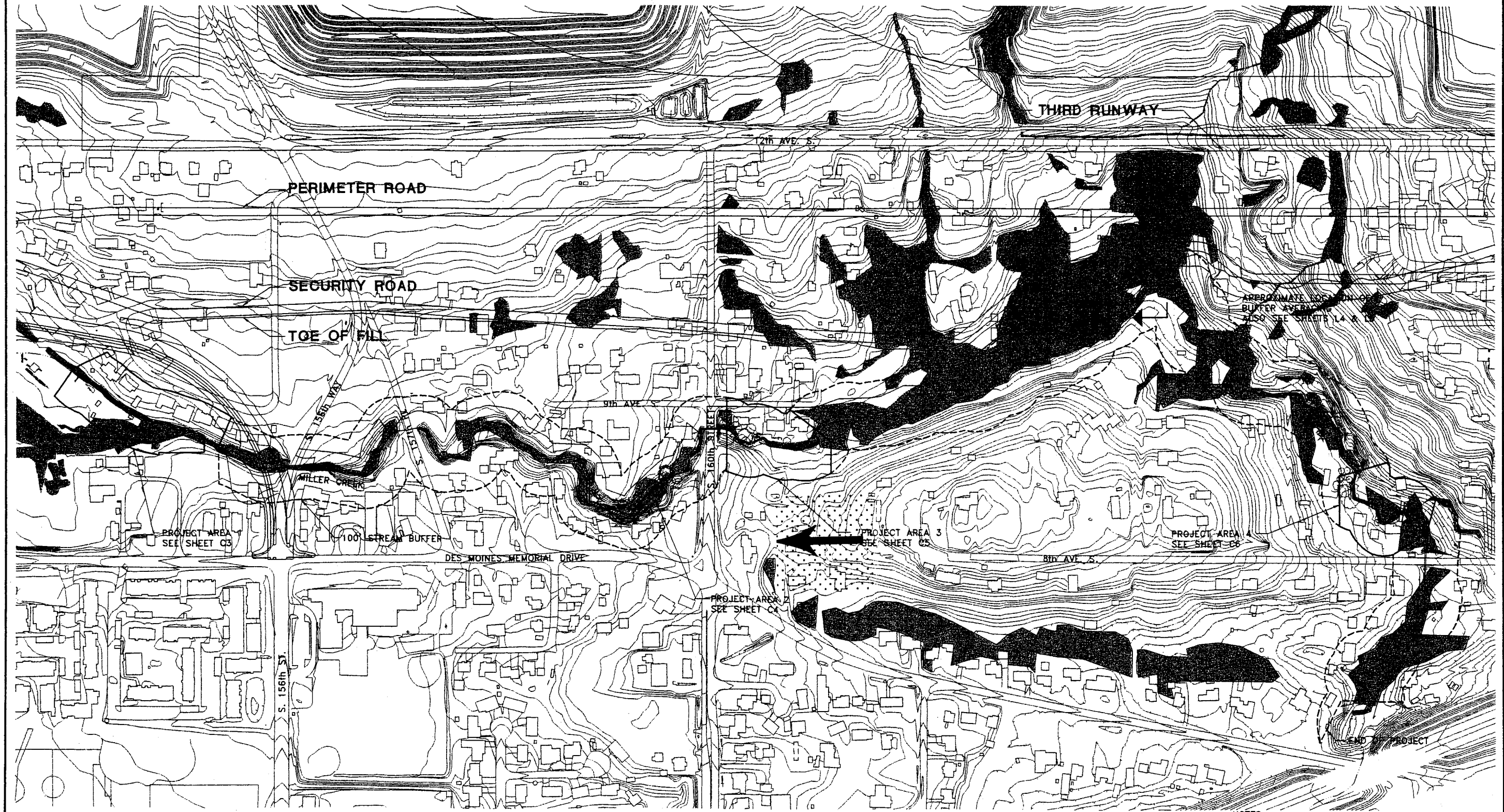
REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNER:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT
PROJECT: MILLER CREEK INSTREAM ENHANCEMENTS
SHEET TITLE: VICINITY MAP, SYMBOLS, NOTES AND ABBREVIATIONS

WORK ORDER NO. -
CONSULTANT'S NO. 291281C1
PORT OF SEATTLE NO. STIA-XXXX-C1



NOTES:

1. ACCESS TO PROJECT SITES BY APPROVAL OF ENGINEER.
2. NO WETLAND DISTURBANCE EXCEPT BY APPROVAL OF ENGINEER.

AGENCY REVIEW
NOT FOR CONSTRUCTION

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5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
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PROJECT ENGR./ARCH:	P. FENDT
DESIGNED:	J. LEAVITT/K. LUDWA
DRAWN BY:	C. COX/P. TOGHER
SCALE:	1"=150'
DATE:	JUNE 2000
CHECKED BY:	--
APPROVED BY:	P. FENDT

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:	
DESIGNED:	
DRAWN BY:	
SCALE:	
DATE:	
CHECKED BY:	
APPROVED BY:	

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

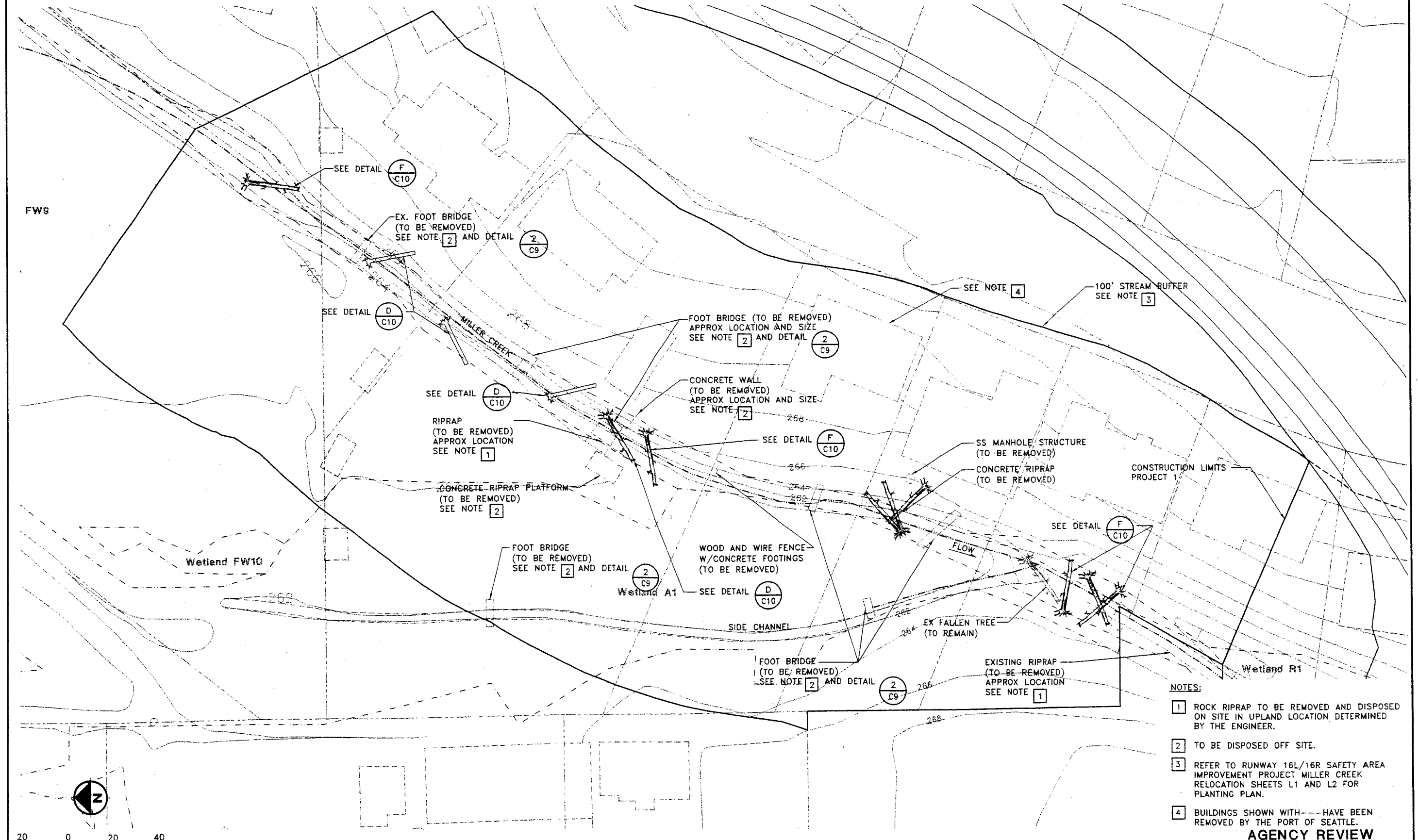
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENT

SHEET TITLE: PROJECT PLAN

WORK ORDER NO.	-
CONSULTANT'S NO.	291281C16
PORT OF SEATTLE NO.	STIA-XXXX-C2

AR 025198

291201BA2 291281DE 291281SV 291201WL *



NOTES:

1. ROCK RIPRAP TO BE REMOVED AND DISPOSED ON SITE IN UPLAND LOCATION DETERMINED BY THE ENGINEER.
2. TO BE DISPOSED OFF SITE.
3. REFER TO RUNWAY 16L/16R SAFETY AREA IMPROVEMENT PROJECT MILLER CREEK RELOCATION SHEETS L1 AND L2 FOR PLANTING PLAN.
4. BUILDINGS SHOWN WITH - - - HAVE BEEN REMOVED BY THE PORT OF SEATTLE.

AGENCY REVIEW
NOT FOR CONSTRUCTION

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5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
Ph: (425) 822-8880
"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH:	P. FENDT
DESIGNED:	J. LEAVITT/K. LUDWA
DRAWN BY:	C. COX/P. TOGHER
SCALE:	1"=20'
DATE:	JUNE 2000
CHECKED BY:	
APPROVED BY:	P. FENDT

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:	
DESIGNER:	
DRAWN BY:	
SCALE:	
DATE:	
CHECKED BY:	
APPROVED BY:	

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

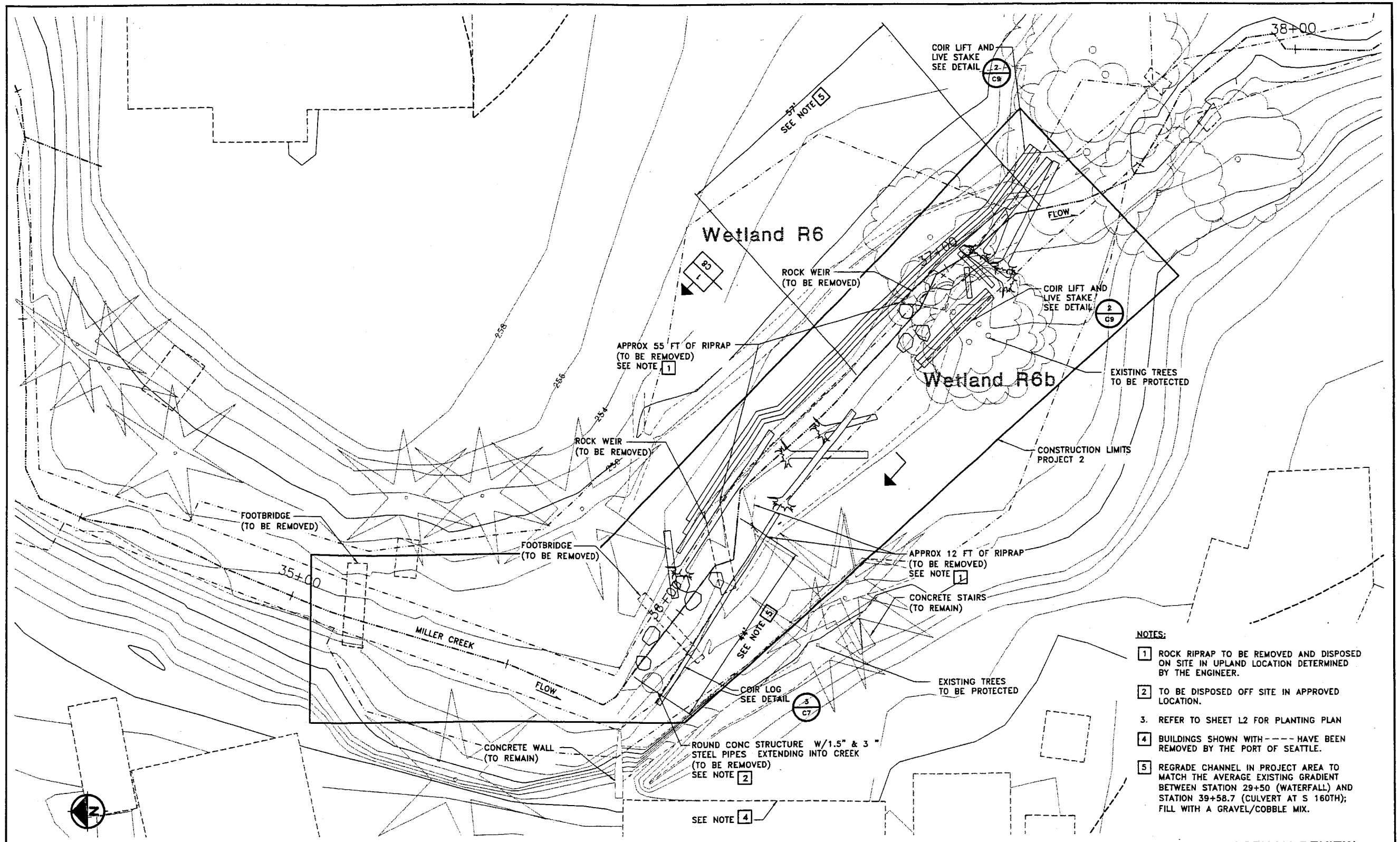
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS

SHEET TITLE: PROJECT AREA 1 PLAN

WORK ORDER NO.	-
CONSULTANT'S NO.	291281C2
PORT OF SEATTLE NO.	STIA-XXXX-C3

291201BA2 291281DE 291281SV 291201WL

AR 025199



NOTES:

1. ROCK RIPRAP TO BE REMOVED AND DISPOSED ON SITE IN UPLAND LOCATION DETERMINED BY THE ENGINEER.
2. TO BE DISPOSED OFF SITE IN APPROVED LOCATION.
3. REFER TO SHEET L2 FOR PLANTING PLAN
4. BUILDINGS SHOWN WITH - - - - HAVE BEEN REMOVED BY THE PORT OF SEATTLE.
5. REGRADE CHANNEL IN PROJECT AREA TO MATCH THE AVERAGE EXISTING GRADIENT BETWEEN STATION 29+50 (WATERFALL) AND STATION 39+58.7 (CULVERT AT S 160TH); FILL WITH A GRAVEL/COBBLE MIX.

AGENCY REVIEW
NOT FOR CONSTRUCTION

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"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH.: P. FENDT
DESIGNED: J. LEAVITT/K. LUDWA
DRAWN BY: C. COX/P. TOGHER
SCALE: 1"=10'
DATE: JUNE 2000
CHECKED BY: --
APPROVED BY: P. FENDT

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

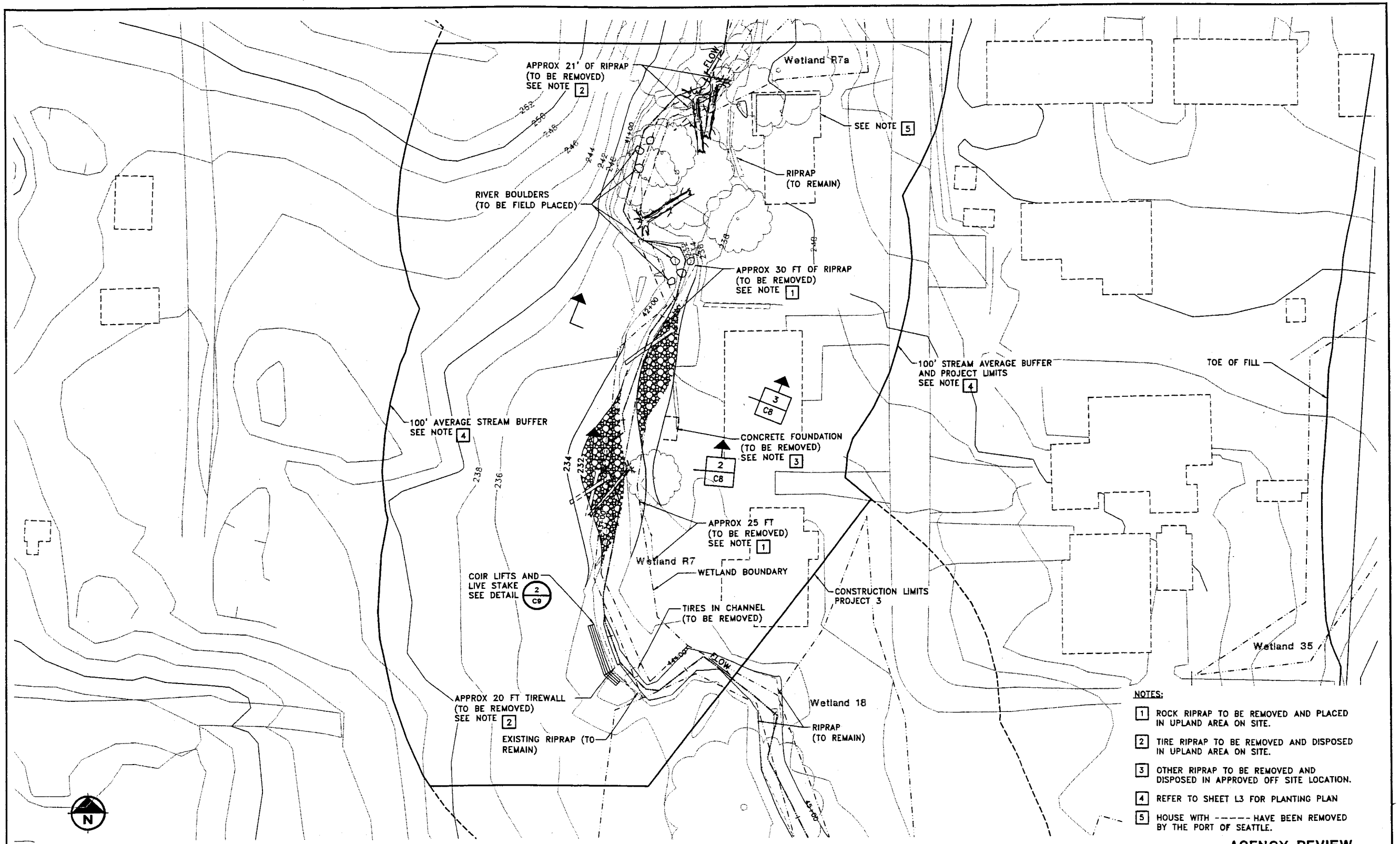
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS

SHEET TITLE: **PROJECT AREA 2 PLAN**

WORK ORDER NO.: --
CONSULTANT'S NO.: 291281C3
PORT OF SEATTLE NO.: STIA-XXXX-C4

291201BA2 291281DE 291281SV 291201WL



NOTES:

1. ROCK RIPRAP TO BE REMOVED AND PLACED IN UPLAND AREA ON SITE.
2. TIRE RIPRAP TO BE REMOVED AND DISPOSED IN UPLAND AREA ON SITE.
3. OTHER RIPRAP TO BE REMOVED AND DISPOSED IN APPROVED OFF SITE LOCATION.
4. REFER TO SHEET L3 FOR PLANTING PLAN
5. HOUSE WITH ------ HAVE BEEN REMOVED BY THE PORT OF SEATTLE.

AGENCY REVIEW
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Kirkland, WA 98033
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"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH: P. FENDT
DESIGNED: J. LEAVITT/K. LUDWA
DRAWN BY: C. COX/P. TOGHER
SCALE: 1"=20'
DATE: JUNE 2000
CHECKED BY: -
APPROVED BY: P. FENDT

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

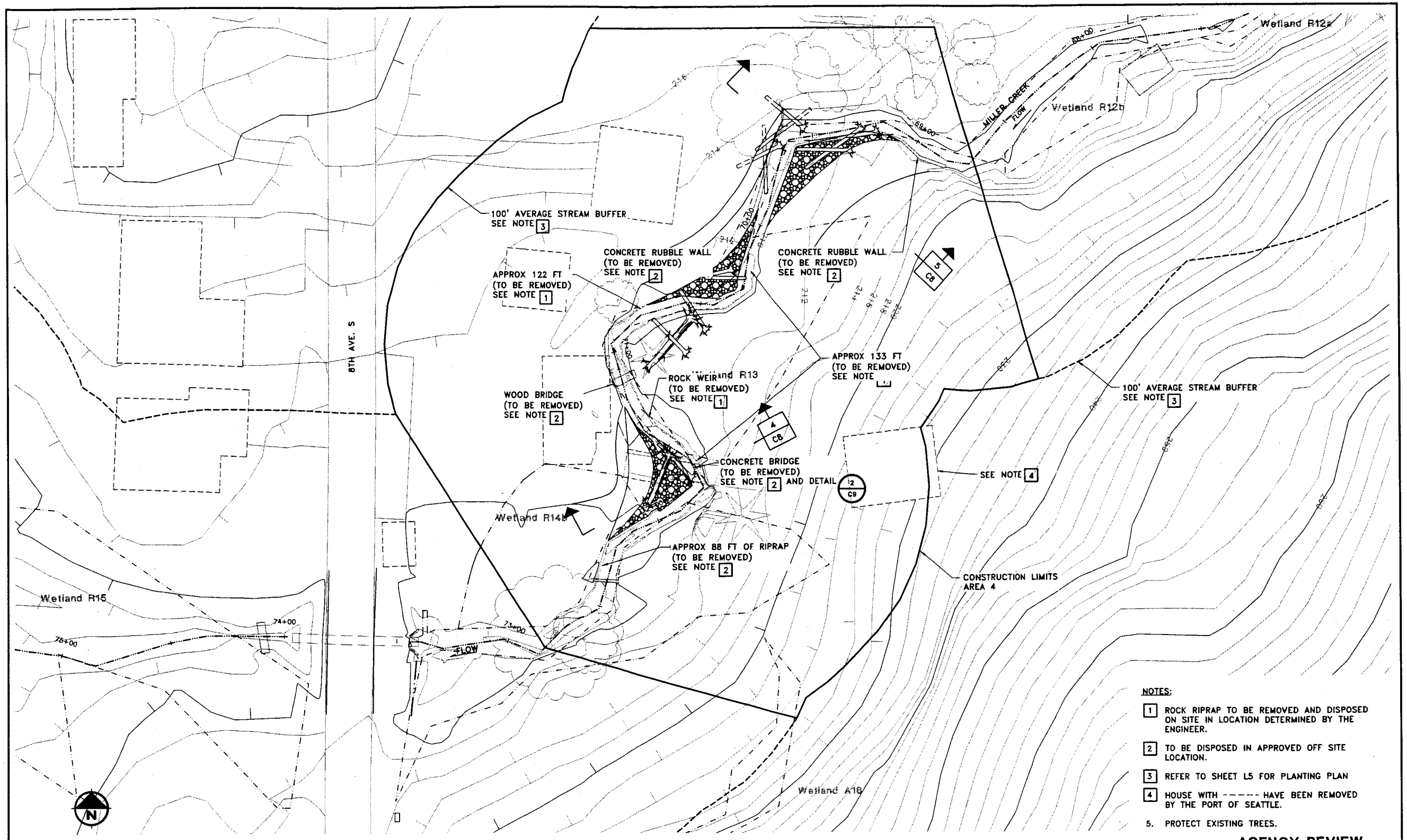
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS
SHEET TITLE: PROJECT AREA 3 PLAN

WORK ORDER NO. -
CONSULTANT'S NO. 291281C4
PORT OF SEATTLE NO. STIA-XXXX-C5

291201BA2 291281DE 291281SV 291201WL

AR 025201



NOTES:

1. ROCK RIPRAP TO BE REMOVED AND DISPOSED ON SITE IN LOCATION DETERMINED BY THE ENGINEER.
2. TO BE DISPOSED IN APPROVED OFF SITE LOCATION.
3. REFER TO SHEET L5 FOR PLANTING PLAN
4. HOUSE WITH ----- HAVE BEEN REMOVED BY THE PORT OF SEATTLE.
5. PROTECT EXISTING TREES.

AGENCY REVIEW
NOT FOR CONSTRUCTION

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Kirkland, WA 98033
Ph:(425) 822-8880
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PROJECT ENGR./ARCH: P. FENDT
DESIGNED: J. LEAVITT/K. LUDWA
DRAWN BY: C. COX/P. TOGHER
SCALE: 1"=20'
DATE: JUNE 2000
CHECKED BY: --
APPROVED BY: P. FENDT

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

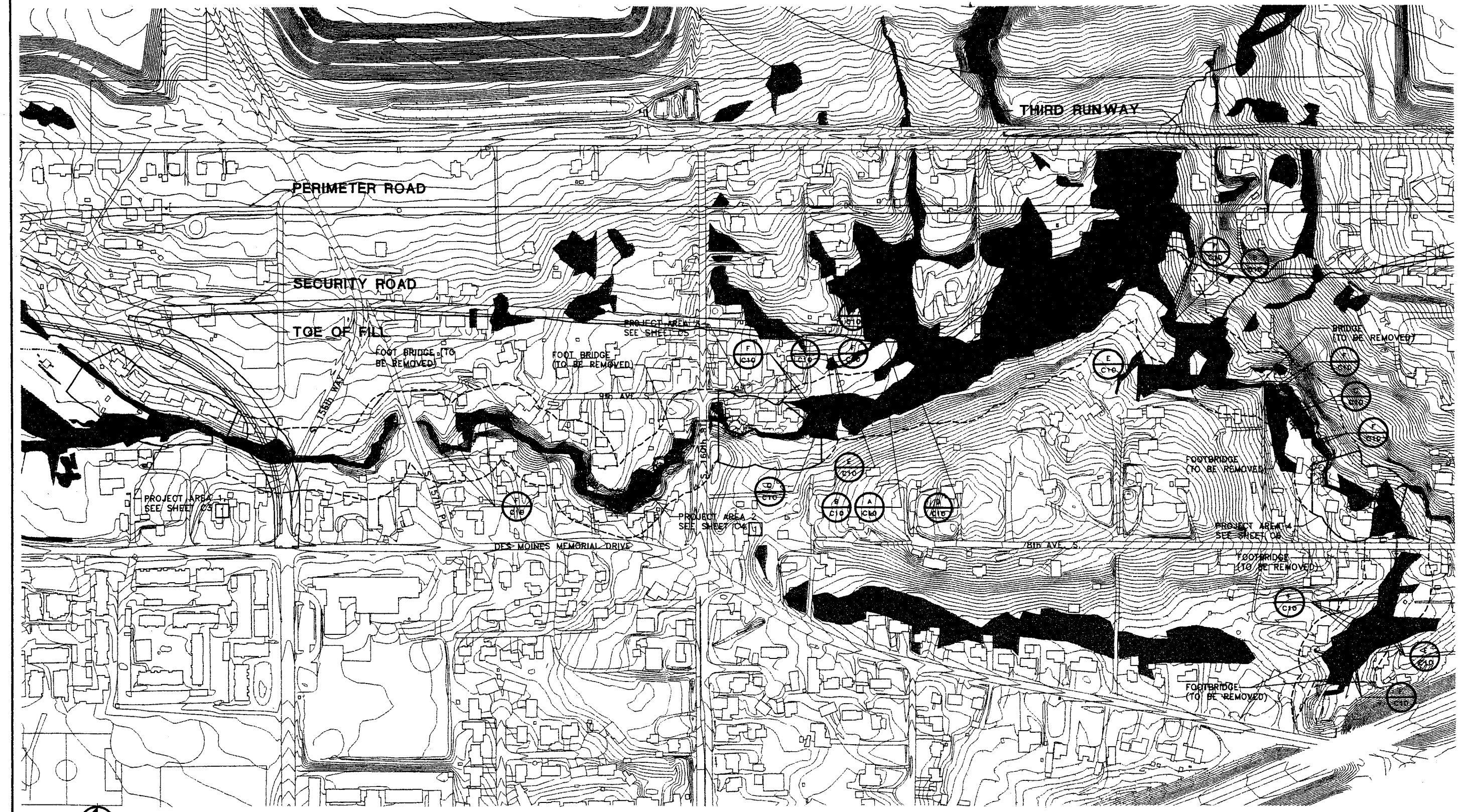
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS
SHEET TITLE: PROJECT AREA 4 PLAN

WORK ORDER NO. --
ESM/BELFAP'S NO. 291281C5
PORT OF SEATTLE NO. STIA-XXXX-C6

291201BA2 291281DE 291281SV 291201WL

AR 025202



150 0 150 300
SCALE FEET

NOTES:
[1] PROJECT AREAS INCLUDE ADDITIONAL BRIDGE REMOVAL AND LWD INSTALLATION.

AGENCY REVIEW
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Ph:(425) 822-8880
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PROJECT ENGR./ARCH:	P. FENDT
DESIGNED:	J. LEAVITT/K. LUDWA
DRAWN BY:	C. COX/P. TOGHER
SCALE:	1"=150'
DATE:	JUNE 2000
CHECKED BY:	--
APPROVED BY:	P. FENDT

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:	
DESIGNED:	
DRAWN BY:	
SCALE:	
DATE:	
CHECKED BY:	
APPROVED BY:	

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

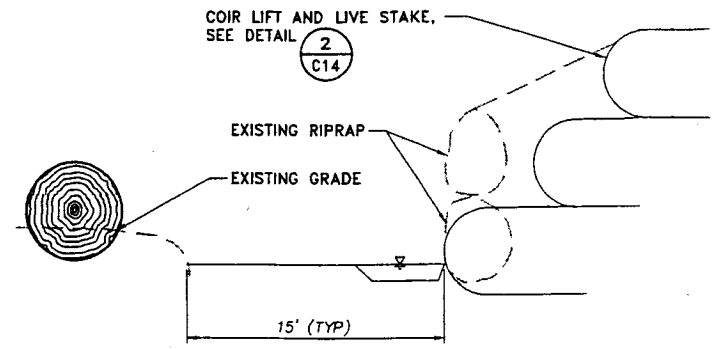
PROJECT: MILLER CREEK INSTREAM BUFFER ENHANCEMENT

SHEET TITLE: INSTREAM LWD PLACEMENT PLAN

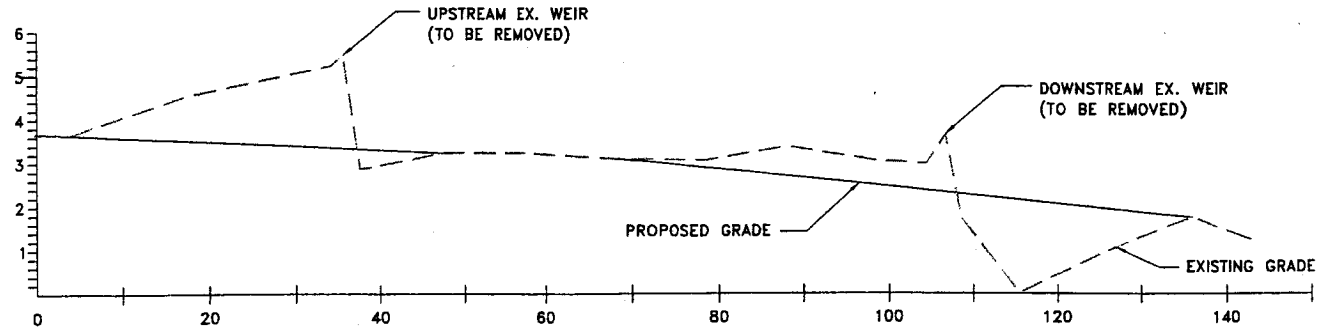
WORK ORDER NO.	-
CONSULTANT'S NO.	291281C15
PORT OF SEATTLE NO.	STIA-XXXX-C7

AR 025203

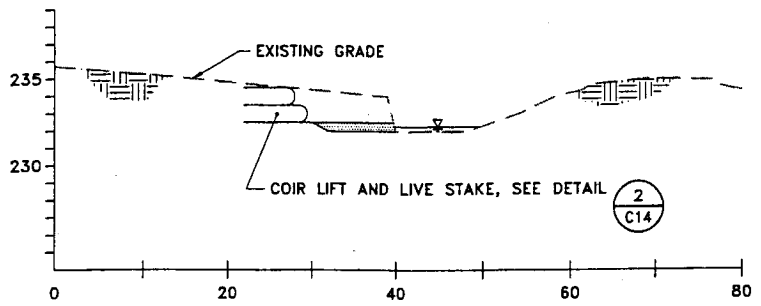
291201RA2 291281DF 291281SV 291201WL



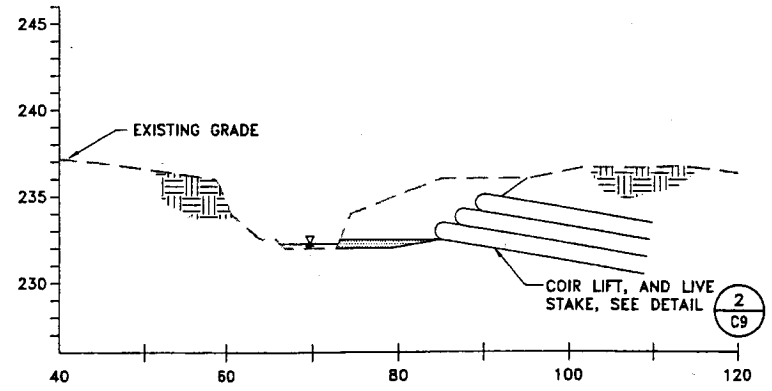
SECTION (TYP) — 1 / C4
HORIZ SCALE: 1"=5'
VERT SCALE: 1"=1'



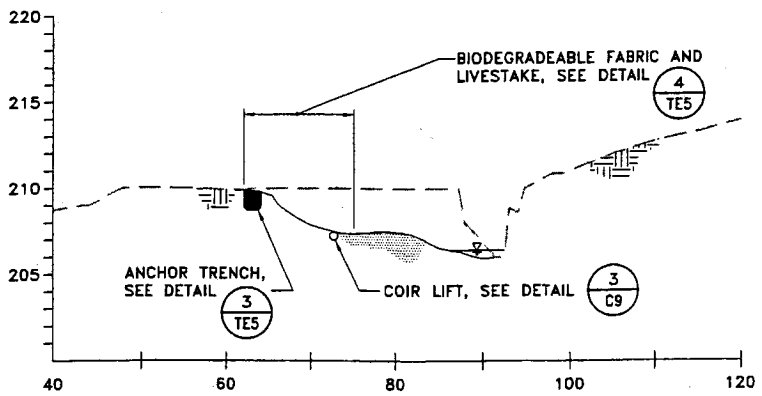
TYPICAL PROFILE PROJECT AREA 2
HORIZ: 1"=10'
VERT: 1"=2'



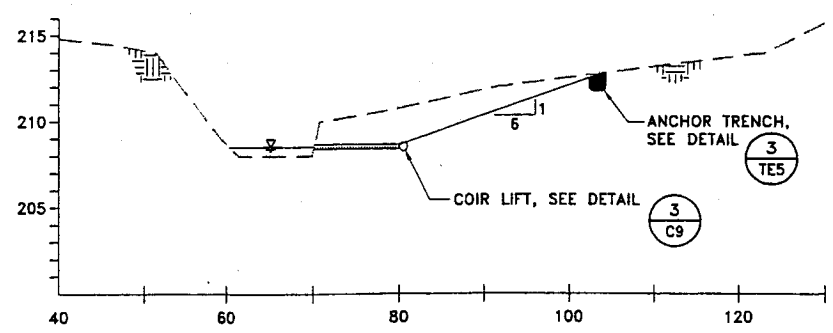
SECTION — 2 / C5
HORIZ SCALE: 1"=10'
VERT SCALE: 1"=5'



SECTION — 3 / C5
HORIZ SCALE: 1"=10'
VERT SCALE: 1"=5'



SECTION — 4 / C6
HORIZ SCALE: 1"=10'
VERT SCALE: 1"=5'



SECTION — 5 / C6
HORIZ SCALE: 1"=10'
VERT SCALE: 1"=5'

AGENCY REVIEW
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5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
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"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH: P. FENDT
DESIGNED: J. LEAVITT/K. LUDWA
DRAWN BY: C. COX/P. TOGHER
SCALE: AS SHOWN
DATE: JUNE 2000
CHECKED BY: --
APPROVED BY: P. FENDT

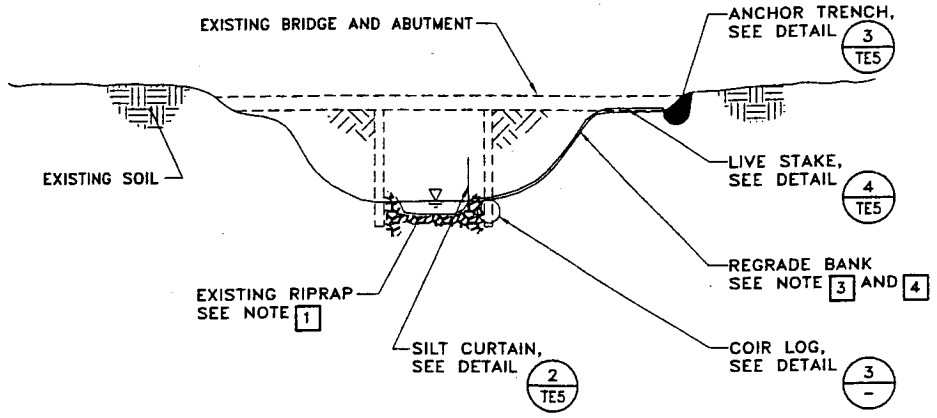
REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS
SHEET TITLE: INSTREAM SECTIONS AND PROFILE

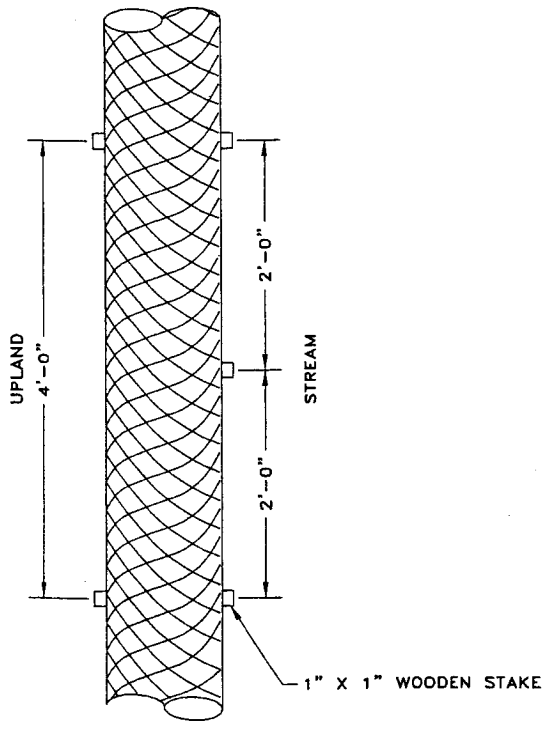
WORK ORDER NO. --
CONSULTANT'S NO. 291281C6
PORT OF SEATTLE NO. STIA-XXXX-C8



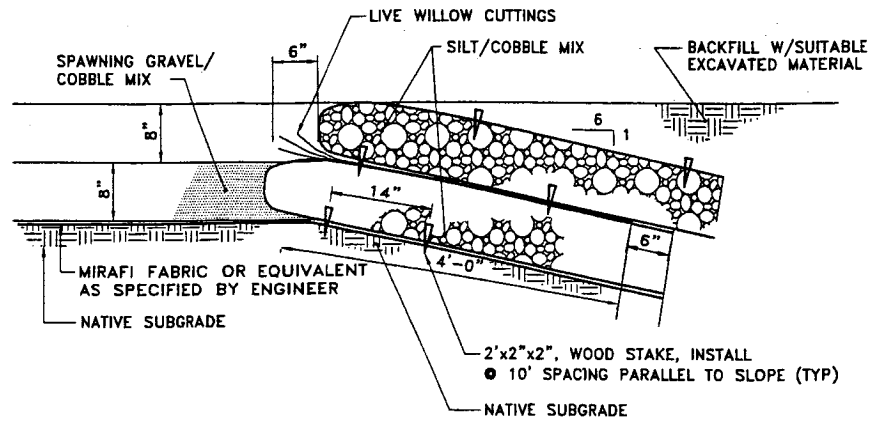
SECTION

CONSTRUCTION SEQUENCE:

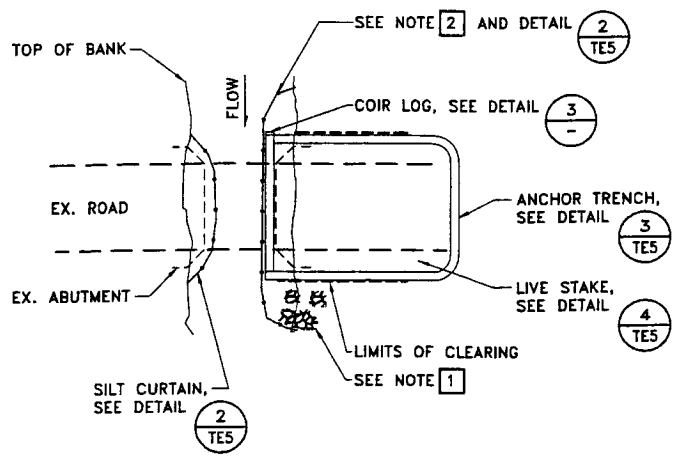
1. REMOVE BRIDGE DECK
2. INSTALL SILT CURTAIN, REMOVE ABUTMENT, AND STABILIZE BANK ON ONE SIDE AT A TIME (UNLESS DIRECTED BY THE ENGINEER)



PLAN

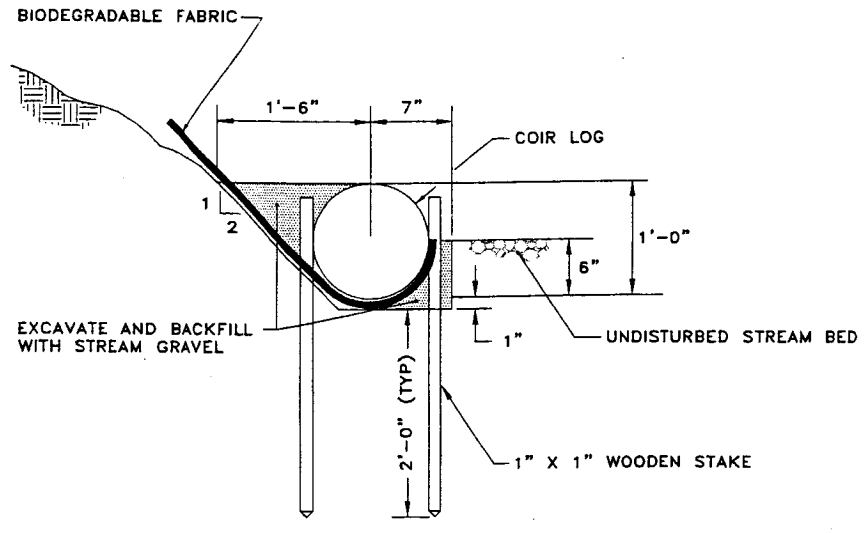


DETAIL 2 / C4, C5, C8
TYPICAL DETAIL
COIR FABRIC LIFTS
N.T.S.



PLAN

DETAIL 2 / C3, C9
TYP BRIDGE W/ ABUTMENT REMOVAL DETAIL
SCALE: 1" = 10'



SECTION

DETAIL 3 / C4, C8
TYPICAL DETAIL
COIR LOG (TYP)
N.T.S.

GENERAL NOTES:

1. REMOVE EXISTING RIPRAP AS DETERMINED BY THE ENGINEER.
2. INSTALL SILT CURTAIN UPSTREAM AND DOWNSTREAM OF CONSTRUCTION.
3. REGRADE BANKS TO MATCH EXISTING UPSTREAM AND DOWNSTREAM CROSS SECTIONS.
4. STABILIZE BANKS WITH EROSION CONTROL MATTING, LIVE STAKES, AND SEEDING.

AGENCY REVIEW
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Kirkland, WA 98033
Ph:(425) 822-8880
"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH: P. FENDT
DESIGNED: J. LEAVITT/K. LUDWA
DRAWN BY: C. COX/P. TOGHER
SCALE: AS SHOWN
DATE: JUNE 2000
CHECKED BY:
APPROVED BY: P. FENDT

REVISIONS

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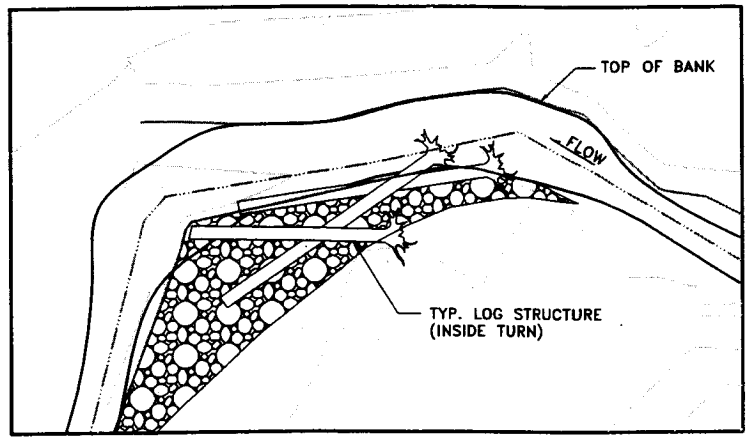
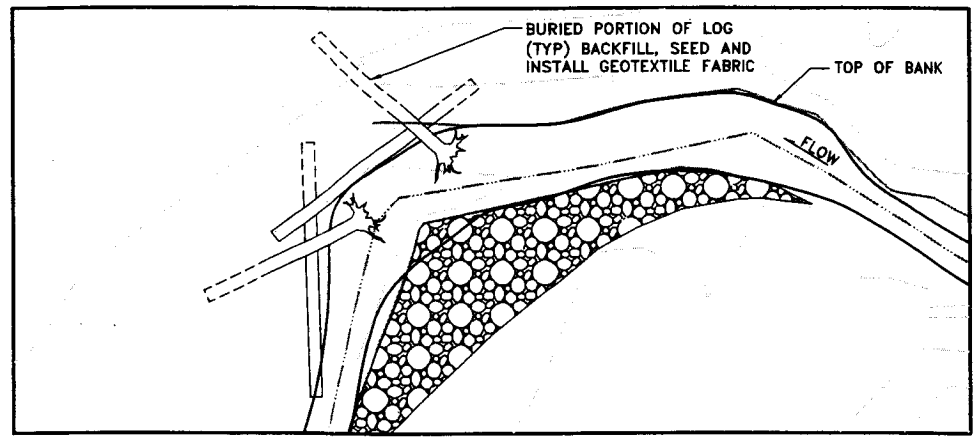
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS
SHEET TITLE: INSTREAM DETAILS

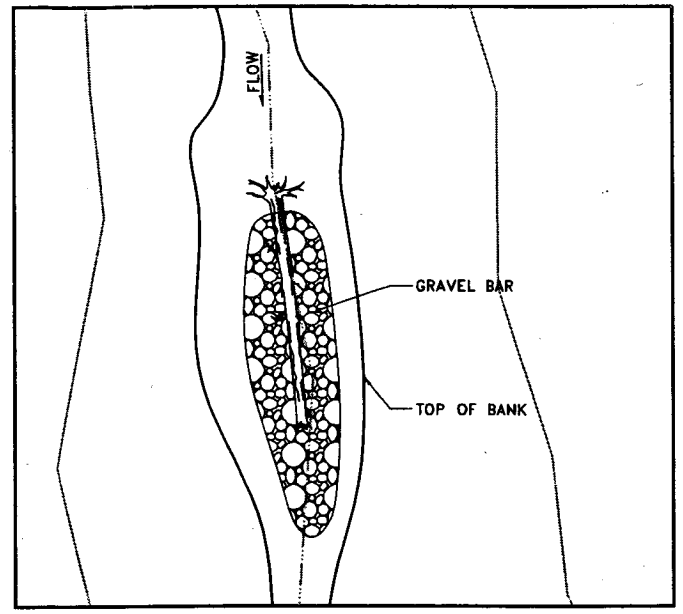
WORK ORDER NO. –
CONSULTANT'S NO. 291281C7
PORT OF SEATTLE NO. STIA-XXXX-C9



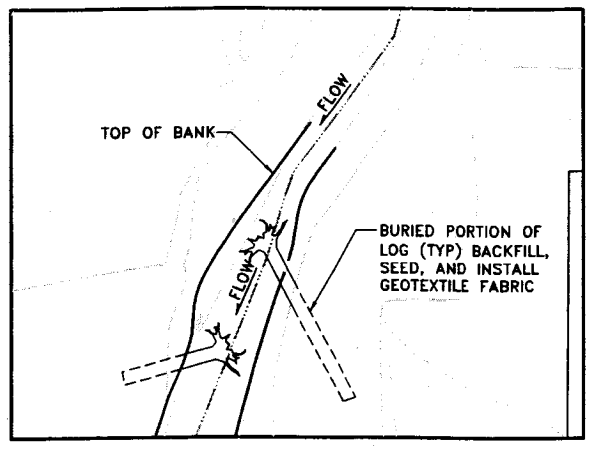
DETAIL A C3, C7
TYPICAL DETAIL
INSIDE TURN LOG STRUCTURE
SCALE 1"=10'



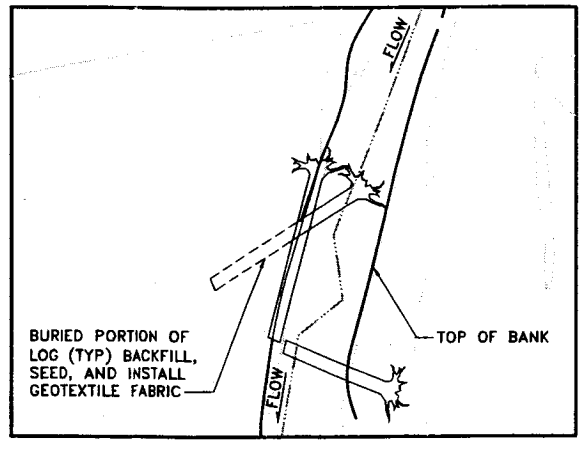
DETAIL B C3, C7
TYPICAL DETAIL
OUTSIDE TURN LOG STRUCTURE
SCALE 1"=10'



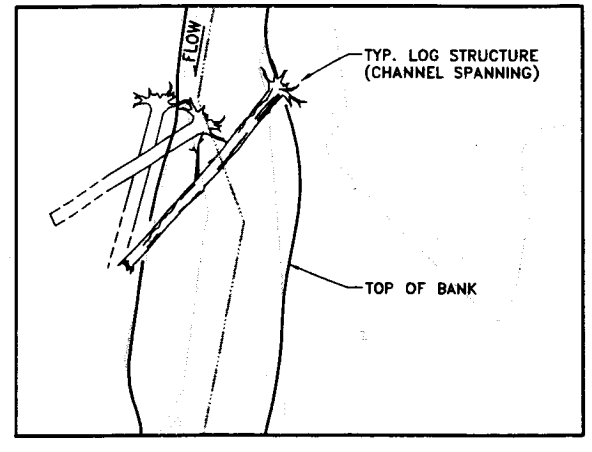
DETAIL C C3, C7
TYPICAL DETAIL
BAR LOG STRUCTURE
SCALE 1"=10'



DETAIL D C3, C7
TYPICAL DETAIL
TURNING LOG STRUCTURE 1
SCALE 1"=10'



DETAIL E C3, C7
TYPICAL DETAIL
TURNING LOG STRUCTURE
SCALE 1"=10'



DETAIL F C3, C7
TYPICAL DETAIL
CHANNEL SPANNING LOG STRUCTURE
SCALE 1"=10'

AGENCY REVIEW
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5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
Ph:(425) 822-8880
"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH: P. FENDT
DESIGNED: J. LEAVITT/K. LUDWA
DRAWN BY: C. COX/P. TOGHER
CHECKED: AS SHOWN
DATE: JUNE 2000
CHECKED BY: -
APPROVED BY: P. FENDT

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

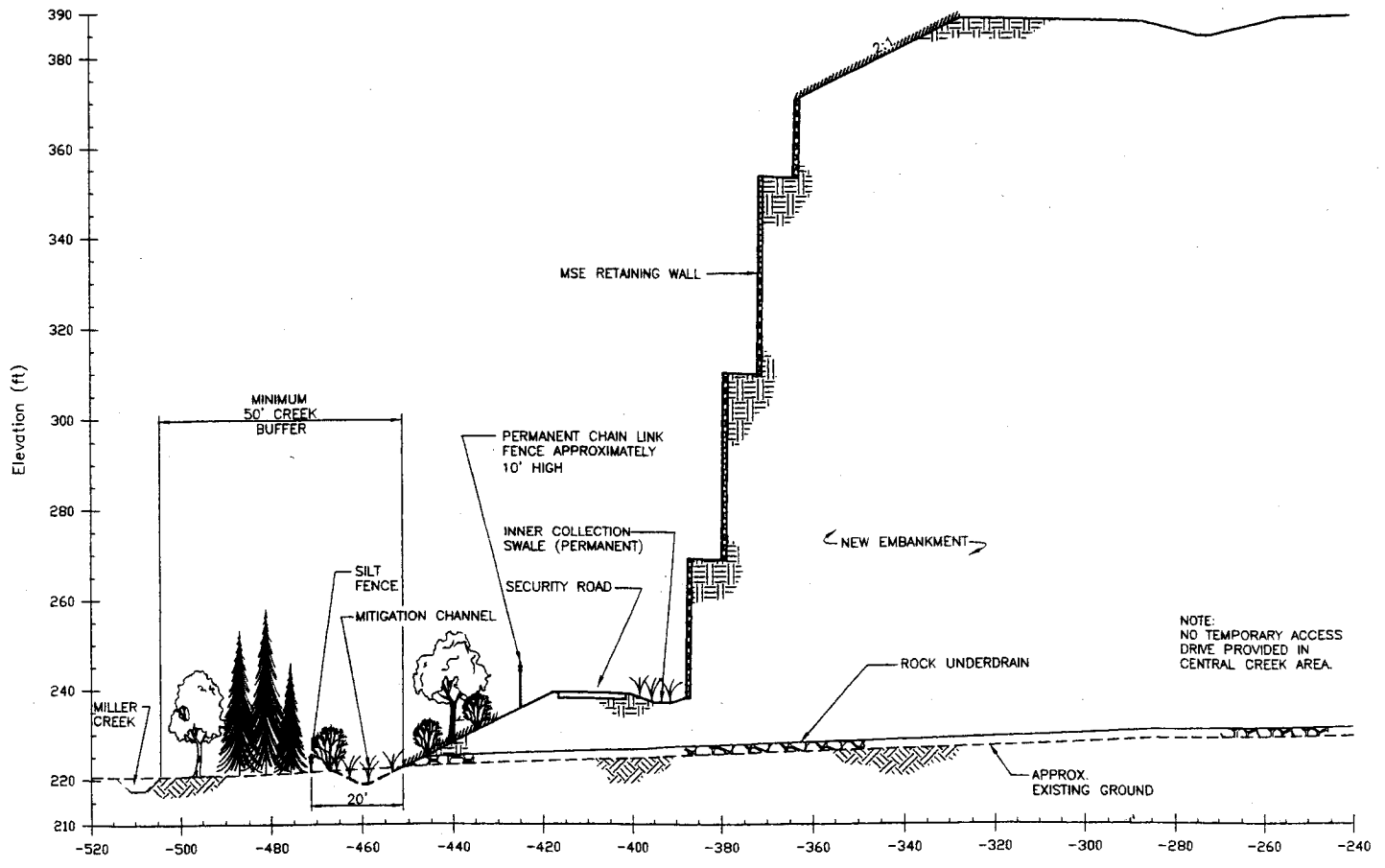
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS
SHEET TITLE: LWD DETAILS

WORK ORDER NO. -
CONSULTANT'S NO. 291281C12
PORT OF SEATTLE NO. STIA-XXXX-C10

291201BA2 291281DE 291281SV 291201WL

AR 025206



SOURCE: HNTB

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Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS

SHEET TITLE: STREAM BUFFER AND EMBANKMENT CROSS-SECTION

WORK ORDER NO.	--
CONSULTANT'S NO.	291281C17
PORT OF SEATTLE NO.	STIA-XXXX-C11

DETENTION POND C

MATCH

S. 156TH WAY

LIMITS OF PROJECT

TOE OF FILL

Wetland R2

S. 157TH PLACE

100' AVERAGE STREAM BUFFER

Wetland R3

Wetland R4

Wetland B4b

PERIMETER ROAD

Wetland A5

Wetland A6

AREA TO BE BUFFER AVERAGED

DETENTION POND (BY OTHERS)

MATCH LINE SEE SHEET L2

142 145 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 133 134 135 136 137 138 139 180 81

SCALE 40 0 40 80 FEET

N

FOR BRIDGE CONSTRUCTION SEE SHEET P2

RELOCATED S. 156th WAY

Wetland R1

AREA TO BE PLANTED AFTER BRIDGE REMOVAL (BY OTHERS)

MATCH

INSET

AR 025208

NOTE:

1. SEE SHEET L6 FOR PLANT SCHEDULE

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"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH:	P. FENDT
DESIGNED:	T. MITCHELL
DRAWN BY:	C. COX/P. TOGHER
SCALE:	1"=40'
DATE:	JUNE 2000
CHECKED BY:	–
APPROVED BY:	P. FENDT

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Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENT

SHEET TITLE: LANDSCAPE PLAN

WORK ORDER NO.	–
CONSULTANT'S NO.	291281L1
PORT OF SEATTLE NO.	STIA-XXXX-L1

MATCH LINE SEE SHEET L1

DES MOINES MEMORIAL DRIVE

Wetland R5b

Wetland R5

APPROXIMATE AREA TO BE BUFFER AVERAGED

Wetland A7

Wetland A8

DETENTION POND G
PERMANENT
(BY OTHERS)

Wetland R6

Wetland R6b

PROJECT LIMITS

Wetland R6

SECURITY ROAD

TOE OF FILL

S. 160TH STREET

Wetland R7a

Wetland 35c

Wetland 35b

Wetland A17a

Wetland 35d

182 178 185 187 183 184 186 188 177 197 200 212 189 193 211 194 196 199 202 216 190 192 198 201 210 191 195 254 255 262 264 263 267

SCALE 40 0 40 80 FEET

MATCH LINE SEE SHEET L3

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Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENT

SHEET TITLE: LANDSCAPE PLAN

WORK ORDER NO. –
CONSULTANT'S NO. 291281L2
PORT OF SEATTLE NO. STIA-XXXX-L2

AR 025209

MATCH LINE SEE SHEET L2

EXISTING VEGETATION TO REMAIN

Wetland R7

Wetland R8

SECURITY ROAD

PERIMETER ROAD

DETENTION POND E
TEMPORARY

TOE OF FILL

Wetland 18

100' AVERAGE STREAM BUFFER

EXISTING VEGETATION TO REMAIN

EXISTING VEGETATION TO REMAIN

EXISTING VEGETATION TO REMAIN

256 261 260 276 277 291 293 295 299 278 265 266 268 279 287 290 289 269 270 271 280 281 282

N

40 0 40 80
SCALE FEET

MATCH LINE SEE SHEET L4

AGENCY REVIEW
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Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENT

SHEET TITLE: LANDSCAPE PLAN

WORK ORDER NO.	-
CONSULTANT'S NO.	291281L3
PORT OF SEATTLE NO.	STIA-XXXX-L3

AR 025210

NOTE:

1 XX ACRES OF INCREASE BUFFER WILL COMPENSATE FOR XX ACRES OF REDUCED BUFFER. (AREAS OF BUFFER AVERAGING SUBJECT TO DESIGN OF STORMWATER PONDS).

MATCH LINE SEE SHEET L3

TOE OF FILL

299

DETENTION POND A
TEMPORARY
(BY OTHERS)

Wetland 37a

Wetland 37b

Wetland 37c

100' AVERAGE STREAM BUFFER

300

SECURITY ROAD

Wetland R17

298

301

12TH AVE. S.

water-a

309

AREAS TO BE BUFFER AVERAGED

EXISTING VEGETATION TO REMAIN

PERIMETER ROAD

Wetland 37a

308

310

EDGE OF THIRD RUNWAY

Wetland R9a

EXISTING VEGETATION TO REMAIN

311

upland

N

40 0 40 80
SCALE FEET

APPROXIMATE LOCATION OF BUFFER AVERAGING 1

302

312

MATCH LINE SEE SHEET L5

AGENCY REVIEW
NOT FOR CONSTRUCTION

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Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENT

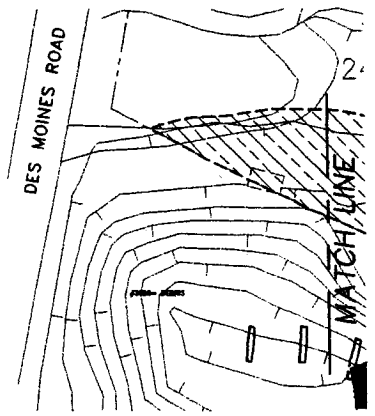
SHEET TITLE: LANDSCAPE PLAN

WORK ORDER NO.	-
CONSULTANT'S NO.	291281L4
PORT OF SEATTLE NO.	STIA-XXXX-L4

AR 025211

NOTES:

1. XX ACRES OF INCREASE BUFFER WILL COMPENSATE FOR XX ACRES OF REDUCED BUFFER. (AREAS OF BUFFER AVERAGING SUBJECT TO DESIGN OF STORMWATER PONDS).
2. SEE SHEET C2 FOR EXTENT OF BUFFER AVERAGING AREA.



MATCH LINE SEE SHEET L4

MATCH LINE SEE INSET

Wetland R9
Wetland R11
314
Wetland R10
Wetland R12a
Wetland R12b
EXISTING VEGETATION TO REMAIN
Wetland R13
Wetland R14b
Wetland R14a
Wetland R15
Wetland R15
Wetland A16
8TH AVE S.
PROJECT LIMITS
312
315
316
243
246
247
244
248
321
322
320
319
318
329
330
253

N

40 0 40 80
SCALE FEET

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Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENT

SHEET TITLE: LANDSCAPE PLAN

WORK ORDER NO.	–
CONSULTANT'S NO.	291281L5
PORT OF SEATTLE NO.	STIA-XXXX-L5

AR 025212

MILLER CREEK BUFFER ENHANCEMENT PLANT SCHEDULE

Symbol	Botanical Name	Size	Quantity*	Remarks
⊕	*Abies grandis* / Grand fir	18"–72" ht.	x	CONTAINER OR B&B. ROOTING TO SIDES AND BOTTOM OF CAN OR BURLAP
⊙	*Acer macrophyllum* / Bigleaf maple	18"–72" ht.	x	" "
⊙	*Picea sitchensis* / Sitka spruce	18"–72" ht.	x	" "
⊙	*Populus trichocarpa* / Black cottonwood	18"–72" ht.	x	" "
⊙	*Thuja plicata* / Western redcedar	18"–72" ht.	x	" "
	MILLER CREEK FLOODPLAIN ZONE **Single Species Groups of 3 to 7**			
	Alnus rubra / Red alder	36"–72" ht.	x	CONTAINER OR B&B. ROOTING TO SIDES AND BOTTOM OF CAN OR BURLAP, 5' O.C. TYP
	Populus trichocarpa / Black cottonwood	36"–72" ht.	x	" "
	Salix hookeriana / Hooker's willow	1 gal.	x	" "
	Salix lucida spp. lasiandra / Pacific willow	1 gal.	x	" "
	Salix scouleriana / Scouler's willow	1 gal.	x	" "
	Salix sitchensis / Sitka willow	1 gal.	x	" "
	Spiraea douglasii / Hardhack spiraea	1 gal.	x	" "
	RIPARIAN AND WETLAND ZONE **Single Species Groups of 7 to 12**			
	Alnus rubra / Red alder	36"–72" ht.	x	CONTAINER OR B&B. ROOTING TO SIDES AND BOTTOM OF CAN OR BURLAP, 5' O.C. TYP
	Fraxinus latifolia / Oregon Ash	36"–72" ht.	x	" "
	Picea sitchensis / Sitka spruce	36"–72" ht.	x	" "
	Populus trichocarpa / Black cottonwood	36"–72" ht.	x	" "
	Thuja plicata / Western redceder	36"–72" ht.	x	" "
	Physocarpus capitatus / Pacific ninebark	1 gal.	x	" "
	Rosa pisocarpa / Clustered rose	1 gal.	x	" "
	Salix lucida spp. lasiandra / Pacific willow	1 gal.	x	" "
	Salix scouleriana / Scouler's willow	1 gal.	x	" "
	Salix sitchensis / Sitka willow	1 gal.	x	" "
	Spiraea douglasii / Hardhack spiraea	1 gal.	x	" "
	UPLAND ZONE #1 **Single Species Groups of 7 to 12**			
	Acer macrophyllum / Bigleaf maple	36"–72" ht.	x	CONTAINER OR B&B. ROOTING TO SIDES AND BOTTOM OF CAN OR BURLAP, 5' O.C. TYP
	Alnus rubra / Red alder	36"–72" ht.	x	" "
	Pseudotsuga menziesii / Douglas fir	36"–72" ht.	x	" "
	Tsuga heterophylla / Western hemlock	36"–72" ht.	x	" "
	Acer circinatum / Vine maple	1 gal.	x	" "
	Rosa pisocarpa / Clustered rose	1 gal.	x	" "
	Salix scouleriana / Scouler's willow	1 gal.	x	" "
	Spiraea douglasii / Hardhack spiraea	1 gal.	x	" "
	UPLAND ZONE #2 **Single Species Groups of 3 to 7**			
	Acer macrophyllum / Bigleaf maple	36"–72" ht.	x	CONTAINER OR B&B. ROOTING TO SIDES AND BOTTOM OF CAN OR BURLAP, 5' O.C. TYP
	Picea sitchensis / Sitka spruce	36"–72" ht.	x	" "
	Pseudotsuga menziesii / Douglas fir	36"–72" ht.	x	" "
	Thuja plicata / Western redcedar	36"–72" ht.	x	" "
	Tsuga heterophylla / Western hemlock	36"–72" ht.	x	" "
	Acer circinatum / Vine maple	1 gal.	x	" "
	Salix scouleriana / Scouler's willow	1 gal.	x	" "
	Spiraea douglasii / Hardhack spiraea	1 gal.	x	" "

Notes:

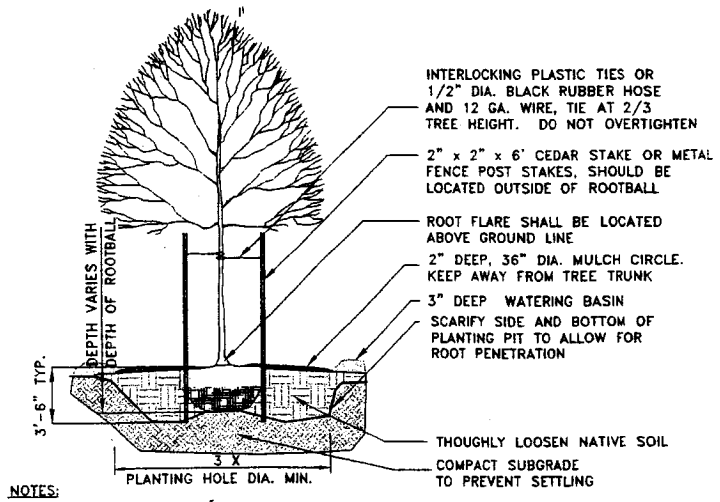
1. Plant quantities stated in the planting schedule are for Contractor's convenience only. Contractor is responsible for ensuring plant coverage stated in the plant schedule.

2. Preserve and protect all trees and shrubs not designated for removal. Provide, erect, and maintain barricades necessary to prevent access to area within driplines of existing trees.

3. For each planting zone Contractor shall lay out a 10,000 s.f. test plot, in which the positions of all plants shall be staked with flags that are color coded to represent specific species. Layout for each zone shall be inspected and approved prior to commencement of planting. Approved staking shall serve as the plant layout standard for the remainder of each zone.

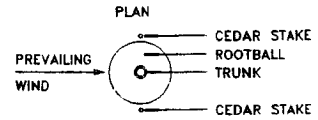
4. Shrub masses shall consist of multiple single-species groups (see detail 6 on sheet L4). Contractor shall ensure that these single-species groups have a variety of sizes and shapes, and that shrub masses have a variety of species. See planting schedule for numbers of plants in single-species groups.

5. Install 36" dia. 2"deep mulch rings around trees and shrubs (except live stake plantings).

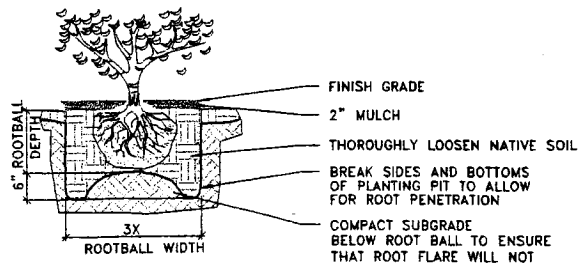


NOTES:

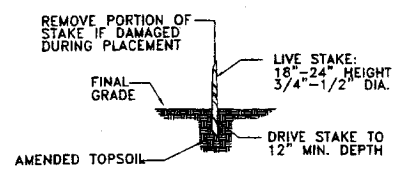
1. STAKE ONLY TREES 4' IN HEIGHT OR TALLER.
2. CUT ALL TIES AND REMOVE BURLAP FROM UPPER 1/3 OF ROOT BALL.
3. REMOVE ALL PLASTIC, WIRE, AND TWINE.
4. PLANT TREES AT 1" HIGHER THAN DEPTH GROWN IN NURSERY.
5. STAKE TREES PERPENDICULAR TO WIND.
6. WATER THOROUGHLY AFTER PLANTING.



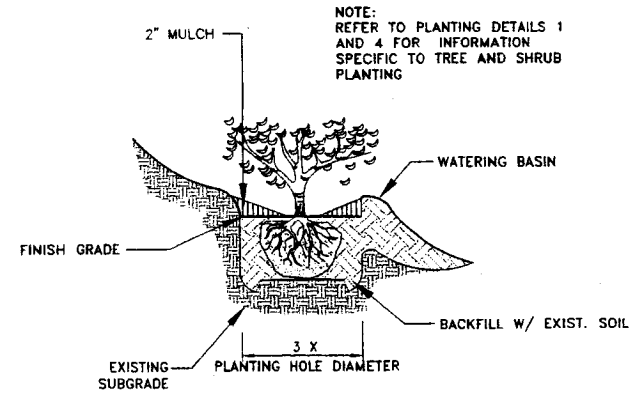
DETAIL TREE PLANTING & STAKING (TYPICAL) — 4 TYP



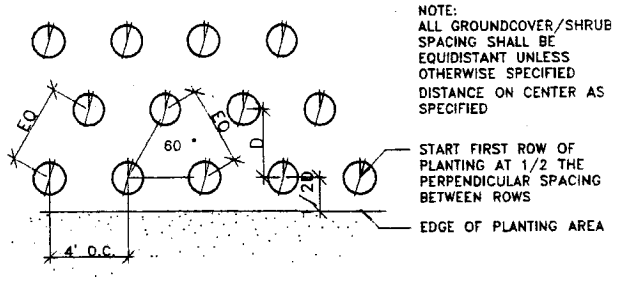
DETAIL SHRUB PLANTING (TYPICAL) — 2 TYP



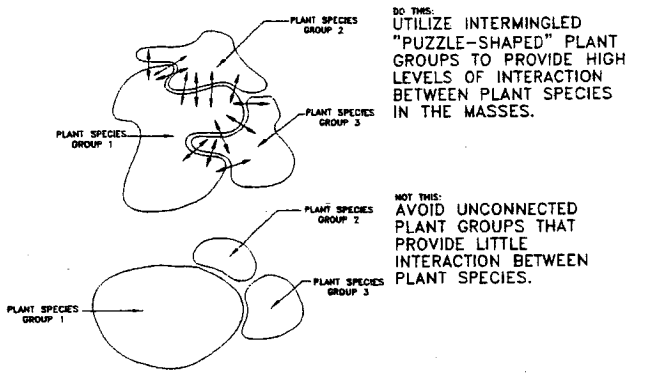
DETAIL LIVE STAKE PLANTING NTS — 3 TYP



DETAIL PLANTING ON SLOPES NTS — 4 TYP



DETAIL TRIANGULAR SHRUB SPACING (TYPICAL) — 5 TYP



DETAIL SHAPES OF PLANTING MASSES NTS — 6 TYP

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DESIGNER: T. MITCHELL
DRAWN BY: C. COX/P. TOGHER
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DATE: MAY 2000
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APPROVED BY: P. FENDT

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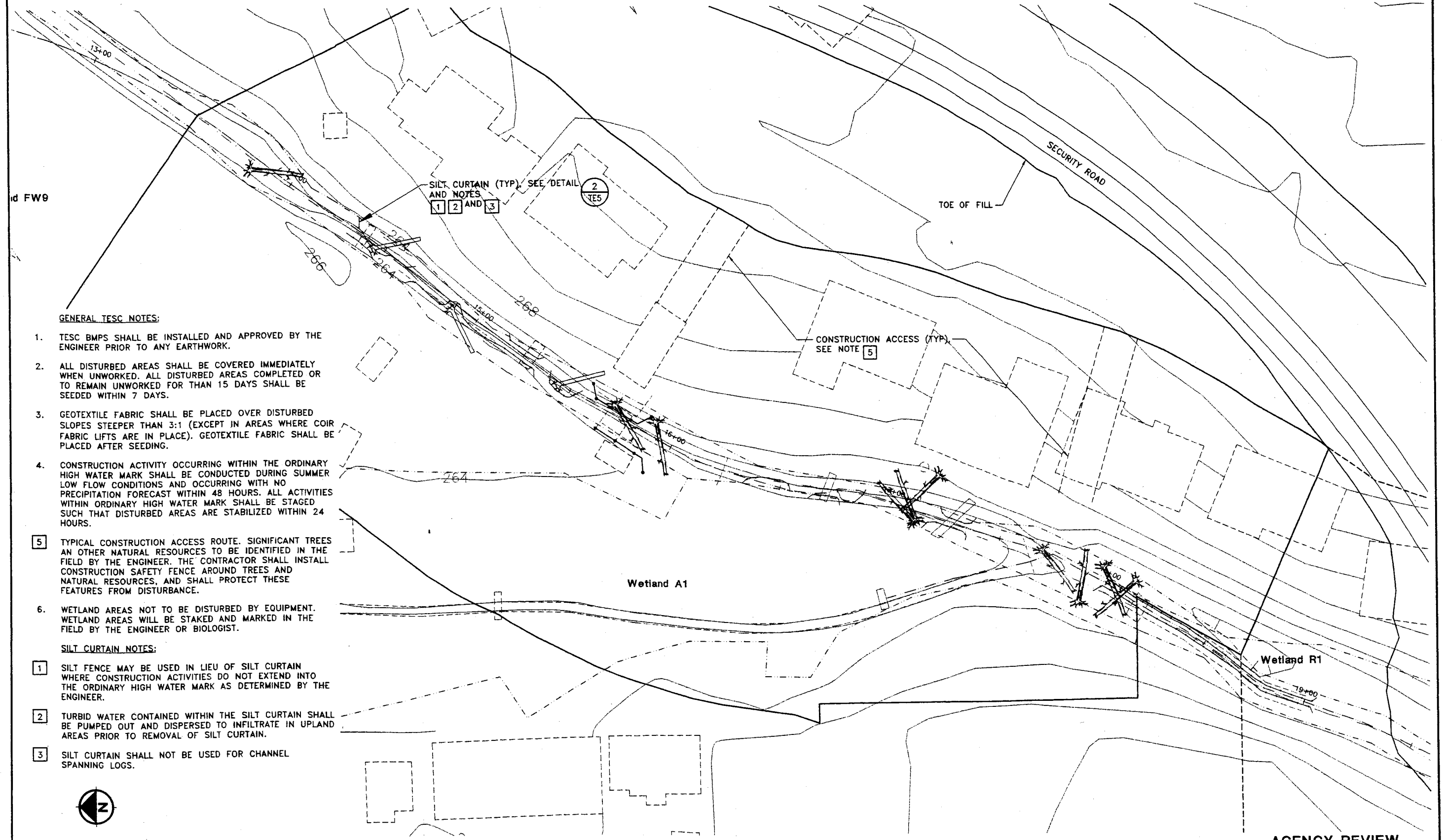
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS

SHEET TITLE: PLANTING SCHEDULE AND DETAILS

WORK ORDER NO. –
CONSULTANT'S NO. 291281L6
PORT OF SEATTLE NO. STIA–XXXX–L6

AR 025213



GENERAL TESC NOTES:

1. TESC BMPS SHALL BE INSTALLED AND APPROVED BY THE ENGINEER PRIOR TO ANY EARTHWORK.
2. ALL DISTURBED AREAS SHALL BE COVERED IMMEDIATELY WHEN UNWORKED. ALL DISTURBED AREAS COMPLETED OR TO REMAIN UNWORKED FOR THAN 15 DAYS SHALL BE SEEDED WITHIN 7 DAYS.
3. GEOTEXTILE FABRIC SHALL BE PLACED OVER DISTURBED SLOPES STEEPER THAN 3:1 (EXCEPT IN AREAS WHERE COIR FABRIC LIFTS ARE IN PLACE). GEOTEXTILE FABRIC SHALL BE PLACED AFTER SEEDING.
4. CONSTRUCTION ACTIVITY OCCURRING WITHIN THE ORDINARY HIGH WATER MARK SHALL BE CONDUCTED DURING SUMMER LOW FLOW CONDITIONS AND OCCURRING WITH NO PRECIPITATION FORECAST WITHIN 48 HOURS. ALL ACTIVITIES WITHIN ORDINARY HIGH WATER MARK SHALL BE STAGED SUCH THAT DISTURBED AREAS ARE STABILIZED WITHIN 24 HOURS.

[5] TYPICAL CONSTRUCTION ACCESS ROUTE. SIGNIFICANT TREES AN OTHER NATURAL RESOURCES TO BE IDENTIFIED IN THE FIELD BY THE ENGINEER. THE CONTRACTOR SHALL INSTALL CONSTRUCTION SAFETY FENCE AROUND TREES AND NATURAL RESOURCES, AND SHALL PROTECT THESE FEATURES FROM DISTURBANCE.

6. WETLAND AREAS NOT TO BE DISTURBED BY EQUIPMENT. WETLAND AREAS WILL BE STAKED AND MARKED IN THE FIELD BY THE ENGINEER OR BIOLOGIST.

SILT CURTAIN NOTES:

[1] SILT FENCE MAY BE USED IN LIEU OF SILT CURTAIN WHERE CONSTRUCTION ACTIVITIES DO NOT EXTEND INTO THE ORDINARY HIGH WATER MARK AS DETERMINED BY THE ENGINEER.

[2] TURBID WATER CONTAINED WITHIN THE SILT CURTAIN SHALL BE PUMPED OUT AND DISPERSED TO INFILTRATE IN UPLAND AREAS PRIOR TO REMOVAL OF SILT CURTAIN.

[3] SILT CURTAIN SHALL NOT BE USED FOR CHANNEL SPANNING LOGS.

N

20 0 20 40
SCALE FEET

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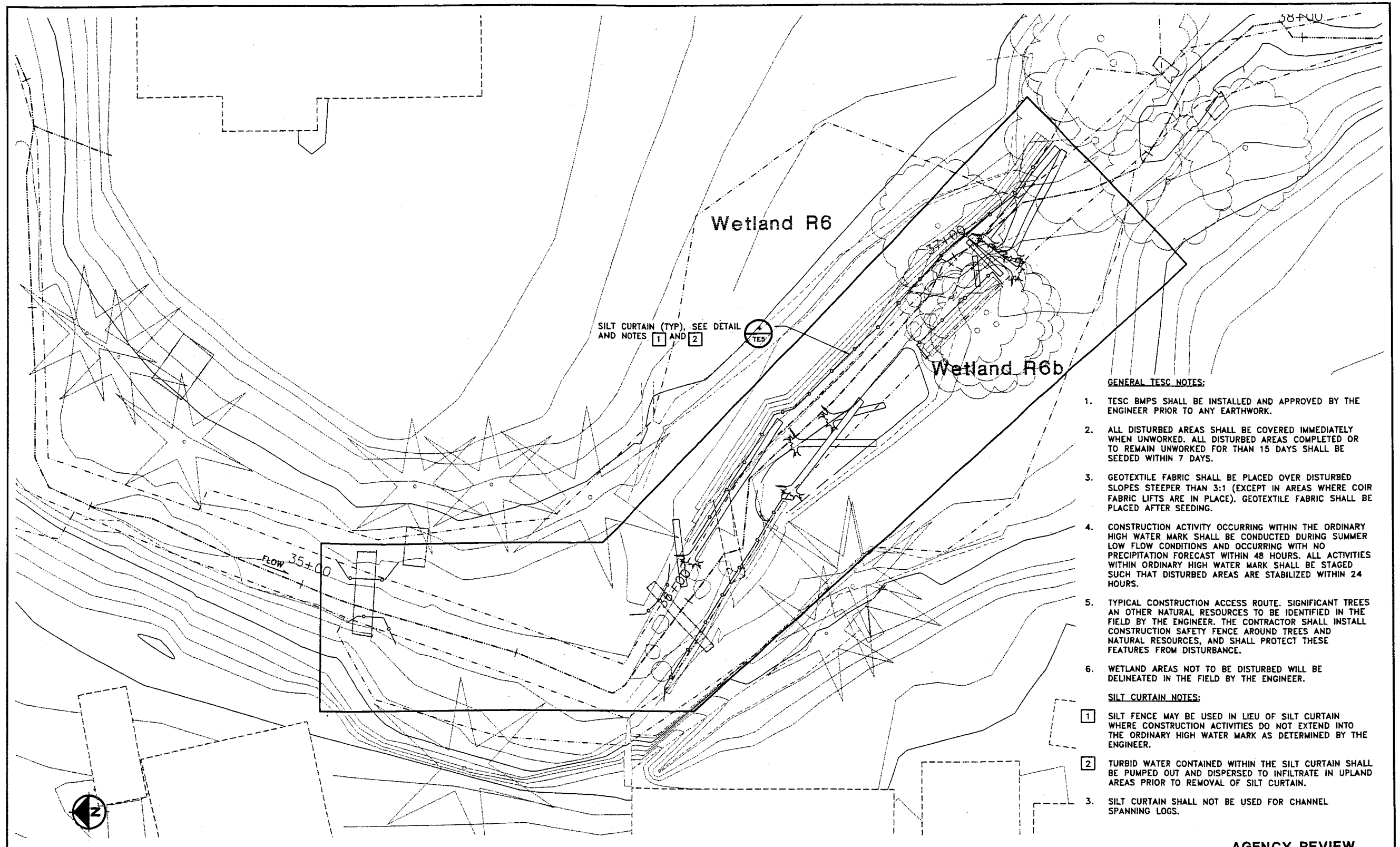
SHEET TITLE: TESC PLAN - PROJECT AREA 1

WORK ORDER NO. -
CONSULTANT'S NO. 291281TE1
PORT OF SEATTLE NO. STIA-XXXX-TE1

AR 025214

291201BA2 291281DE 291281SV 291201WL



GENERAL TESC NOTES:

1. TESC BMPS SHALL BE INSTALLED AND APPROVED BY THE ENGINEER PRIOR TO ANY EARTHWORK.
2. ALL DISTURBED AREAS SHALL BE COVERED IMMEDIATELY WHEN UNWORKED. ALL DISTURBED AREAS COMPLETED OR TO REMAIN UNWORKED FOR THAN 15 DAYS SHALL BE SEEDED WITHIN 7 DAYS.
3. GEOTEXTILE FABRIC SHALL BE PLACED OVER DISTURBED SLOPES STEEPER THAN 3:1 (EXCEPT IN AREAS WHERE COIR FABRIC LIFTS ARE IN PLACE). GEOTEXTILE FABRIC SHALL BE PLACED AFTER SEEDING.
4. CONSTRUCTION ACTIVITY OCCURRING WITHIN THE ORDINARY HIGH WATER MARK SHALL BE CONDUCTED DURING SUMMER LOW FLOW CONDITIONS AND OCCURRING WITH NO PRECIPITATION FORECAST WITHIN 48 HOURS. ALL ACTIVITIES WITHIN ORDINARY HIGH WATER MARK SHALL BE STAGED SUCH THAT DISTURBED AREAS ARE STABILIZED WITHIN 24 HOURS.
5. TYPICAL CONSTRUCTION ACCESS ROUTE. SIGNIFICANT TREES AN OTHER NATURAL RESOURCES TO BE IDENTIFIED IN THE FIELD BY THE ENGINEER. THE CONTRACTOR SHALL INSTALL CONSTRUCTION SAFETY FENCE AROUND TREES AND NATURAL RESOURCES, AND SHALL PROTECT THESE FEATURES FROM DISTURBANCE.
6. WETLAND AREAS NOT TO BE DISTURBED WILL BE DELINEATED IN THE FIELD BY THE ENGINEER.

SILT CURTAIN NOTES:

1. SILT FENCE MAY BE USED IN LIEU OF SILT CURTAIN WHERE CONSTRUCTION ACTIVITIES DO NOT EXTEND INTO THE ORDINARY HIGH WATER MARK AS DETERMINED BY THE ENGINEER.
2. TURBID WATER CONTAINED WITHIN THE SILT CURTAIN SHALL BE PUMPED OUT AND DISPERSED TO INFILTRATE IN UPLAND AREAS PRIOR TO REMOVAL OF SILT CURTAIN.
3. SILT CURTAIN SHALL NOT BE USED FOR CHANNEL SPANNING LOGS.

AGENCY REVIEW
NOT FOR CONSTRUCTION

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

Parametrix, Inc.
5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
Ph:(425) 822-8880
"Quality Service Through Employee Ownership"

PROJECT ENGR./MGR.: P. FENDT
DESIGNED: J. LEAVITT/K. LUDWA
DRAWN BY: C. COX/P. TOGHER
SCALE: 1"=10'
DATE: JUNE 2000
CHECKED BY:
APPROVED BY: P. FENDT

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

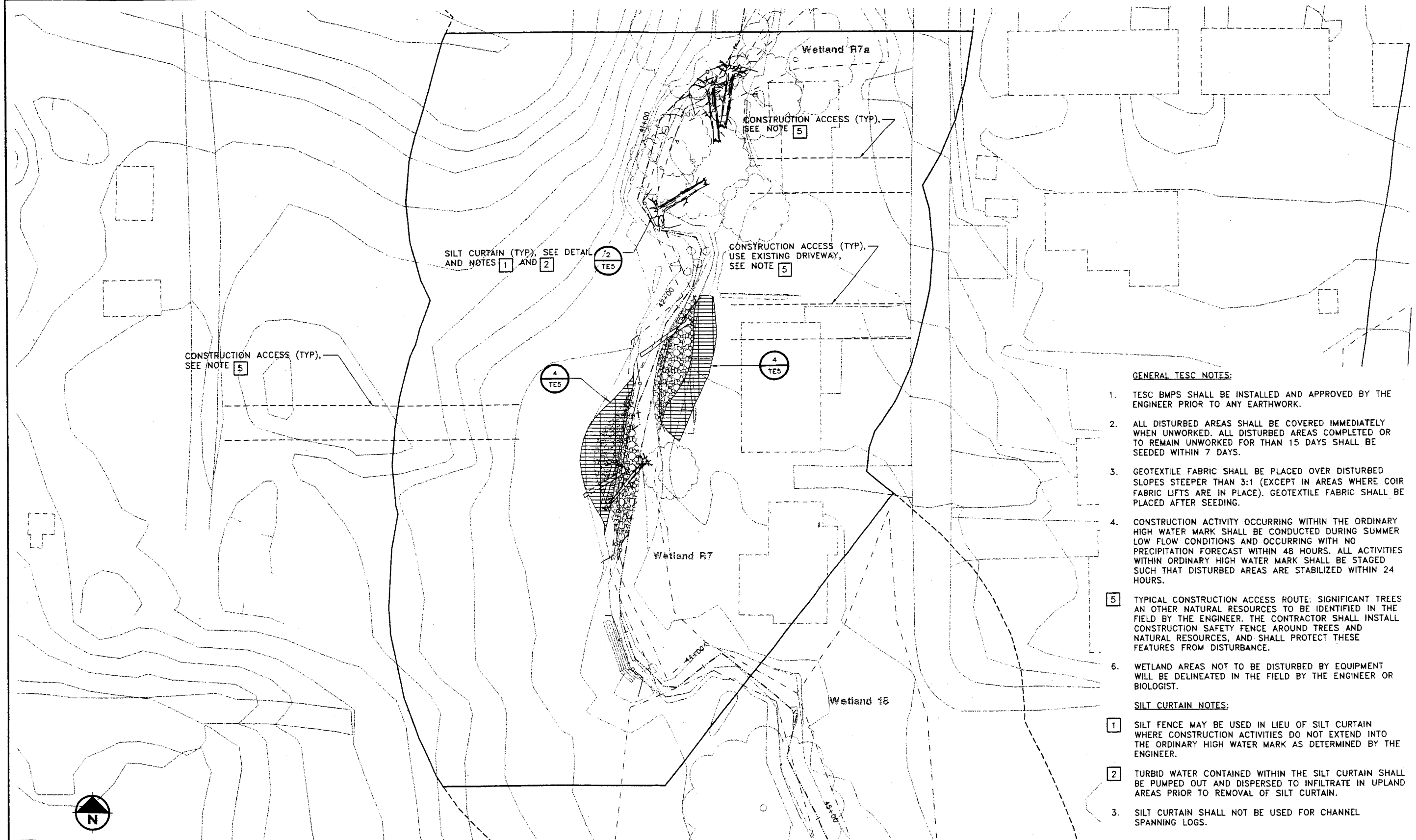
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS
SHEET TITLE: TESC PLAN - PROJECT AREA 2

WORK ORDER NO.: -
CONSULTANT'S NO.: 291281TE2
PORT OF SEATTLE NO.: STIA-XXXX-TE2

291201BA2 291281DE 291281SV 291201WL

AR 025215



GENERAL TESC NOTES:

1. TESC BMPS SHALL BE INSTALLED AND APPROVED BY THE ENGINEER PRIOR TO ANY EARTHWORK.
2. ALL DISTURBED AREAS SHALL BE COVERED IMMEDIATELY WHEN UNWORKED. ALL DISTURBED AREAS COMPLETED OR TO REMAIN UNWORKED FOR THAN 15 DAYS SHALL BE SEEDED WITHIN 7 DAYS.
3. GEOTEXTILE FABRIC SHALL BE PLACED OVER DISTURBED SLOPES STEEPER THAN 3:1 (EXCEPT IN AREAS WHERE COIR FABRIC LIFTS ARE IN PLACE). GEOTEXTILE FABRIC SHALL BE PLACED AFTER SEEDING.
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[5] TYPICAL CONSTRUCTION ACCESS ROUTE. SIGNIFICANT TREES AN OTHER NATURAL RESOURCES TO BE IDENTIFIED IN THE FIELD BY THE ENGINEER. THE CONTRACTOR SHALL INSTALL CONSTRUCTION SAFETY FENCE AROUND TREES AND NATURAL RESOURCES, AND SHALL PROTECT THESE FEATURES FROM DISTURBANCE.

6. WETLAND AREAS NOT TO BE DISTURBED BY EQUIPMENT WILL BE DELINEATED IN THE FIELD BY THE ENGINEER OR BIOLOGIST.

SILT CURTAIN NOTES:

[1] SILT FENCE MAY BE USED IN LIEU OF SILT CURTAIN WHERE CONSTRUCTION ACTIVITIES DO NOT EXTEND INTO THE ORDINARY HIGH WATER MARK AS DETERMINED BY THE ENGINEER.

[2] TURBID WATER CONTAINED WITHIN THE SILT CURTAIN SHALL BE PUMPED OUT AND DISPERSED TO INFILTRATE IN UPLAND AREAS PRIOR TO REMOVAL OF SILT CURTAIN.

3. SILT CURTAIN SHALL NOT BE USED FOR CHANNEL SPANNING LOGS.

AGENCY REVIEW
NOT FOR CONSTRUCTION

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

Parametrix, Inc.
5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
Ph:(425) 822-8880
"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH:	P. FENDT
DESIGNED:	J. LEAVITT/K. LUDWA
DRAWN BY:	C. COX/P. TOGHER
SCALE:	1"=20'
DATE:	JUNE 2000
CHECKED BY:	–
APPROVED BY:	P. FENDT

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:	
DESIGNED:	
DRAWN BY:	
SCALE:	
DATE:	
CHECKED BY:	
APPROVED BY:	

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

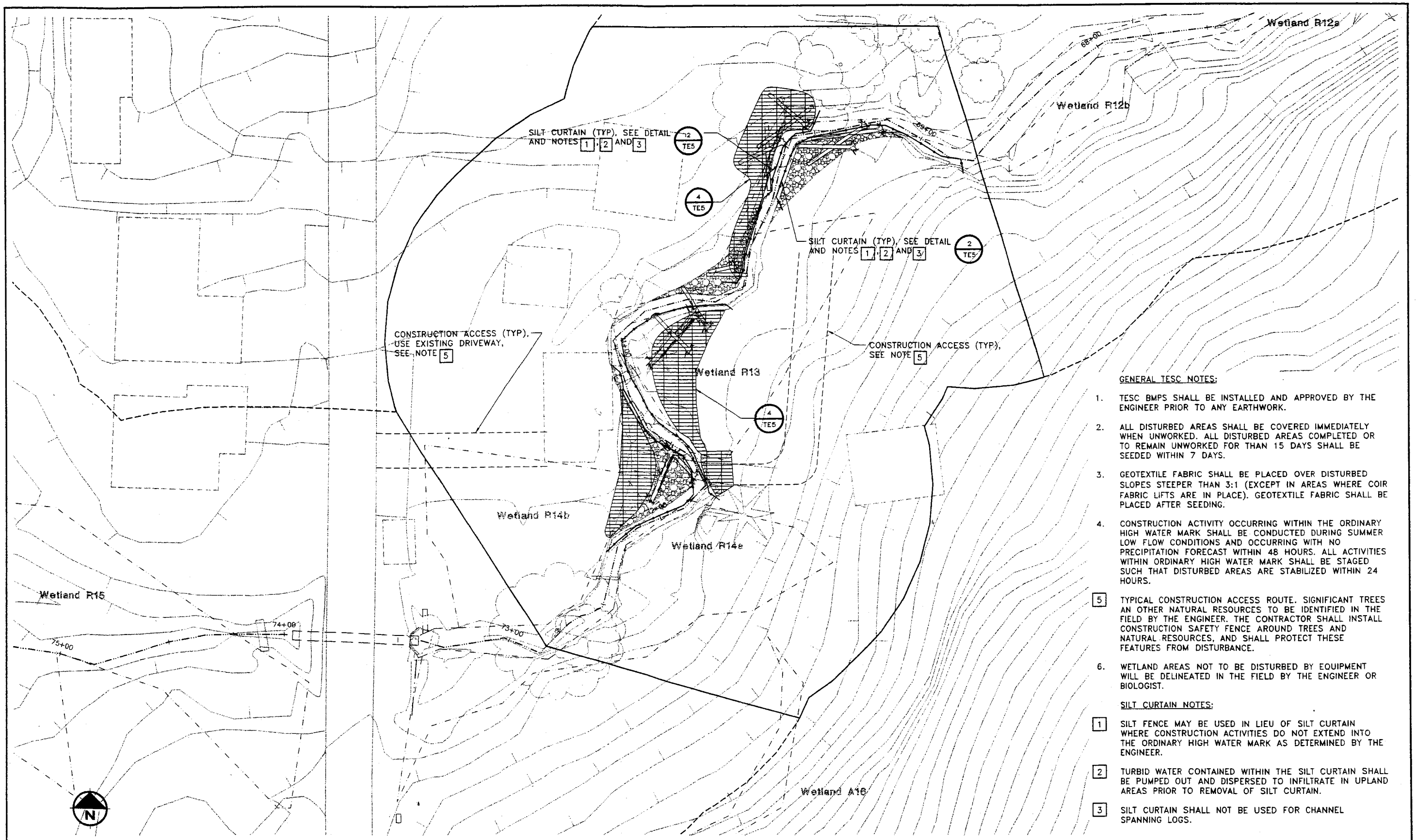
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS

SHEET TITLE: TESC PLAN - PROJECT AREA 3

WORK ORDER NO.	–
CONSULTANT'S NO.	291281TE3
PORT OF SEATTLE NO.	STIA–XXXX–TE3

291201RA2 291281DF 291281SV 291201WI *

AR 025216



GENERAL TESC NOTES:

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AGENCY REVIEW
NOT FOR CONSTRUCTION

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Parametrix, Inc.
5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
Ph:(425) 822-8880
"Quality Service Through Employee Ownership."

PROJECT ENGR./ARCH: P. FENDT
DESIGNER: J. LEAVITT/K. LUDWA
DRAWN BY: C. COX/P. TOGHER
SCALE: 1"=20'
DATE: JUNE 2000
CHECKED BY: --
APPROVED BY: P. FENDT

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNER:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

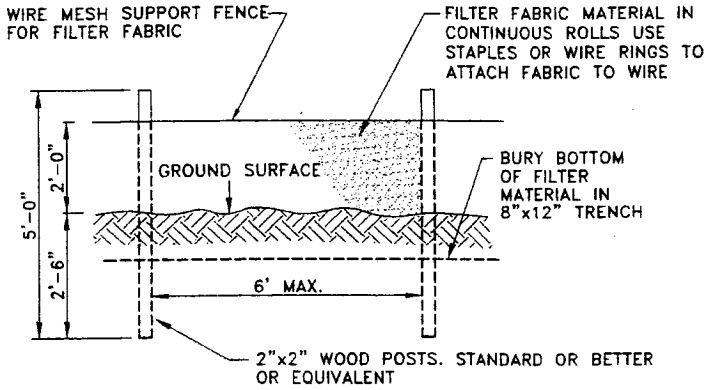
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS

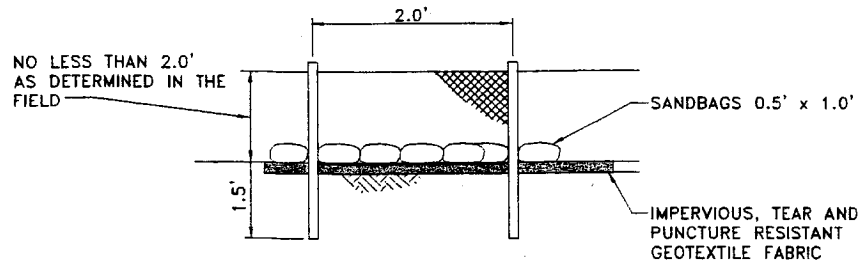
SHEET TITLE: TESC PLAN - PROJECT AREA 4

WORK ORDER NO. –
CONSULTANT'S NO. 291281TE4
PORT OF SEATTLE NO. STIA-XXXX-TE4

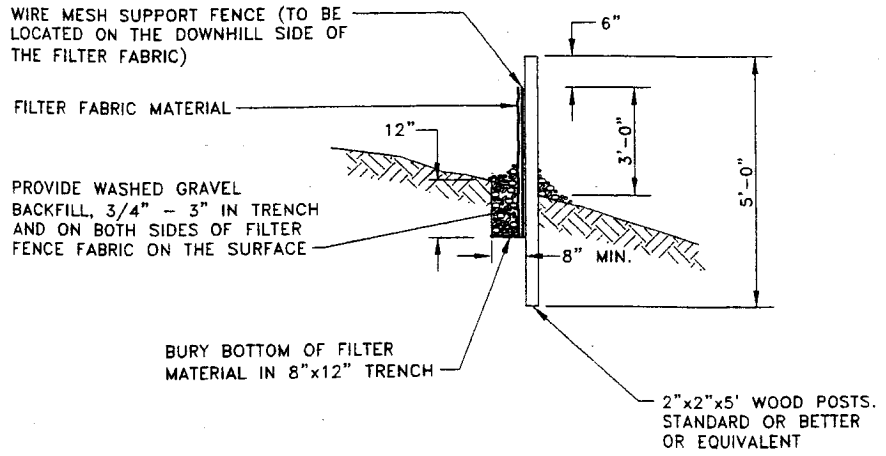
291201BA2 291281DE 291281SV 291201WL

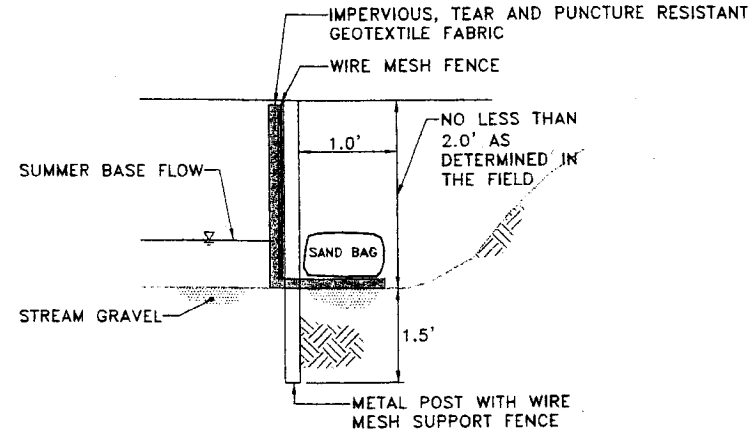
AR 025217



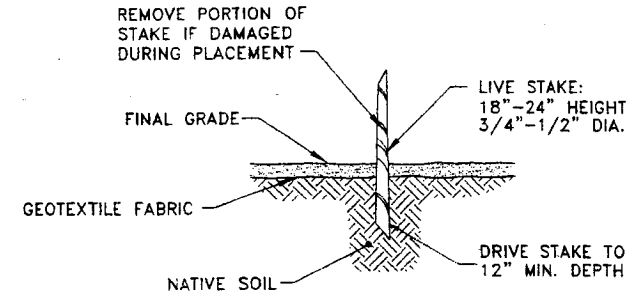


DETAIL





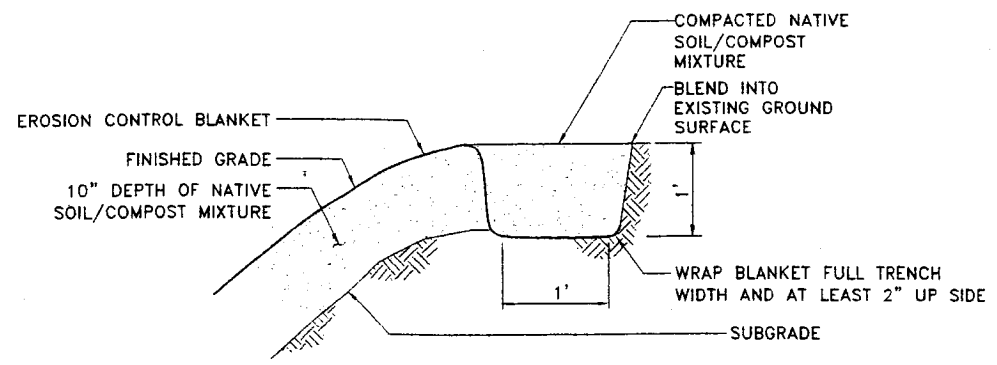
SECTION



DETAIL 1 / TE1, TE2,TE3,TE4
TYPICAL DETAIL
SILT FENCE INSTALLATION
NTS

DETAIL 2 / C9, TE1,TE2,TE3,TE4
TYPICAL DETAIL
SILT CURTAIN INSTALLATION
NTS

DETAIL 4 / C8, C9,TE2,TE3,TE4
TYPICAL DETAIL
LIVE STAKE (TYPICAL)
NTS



DETAIL 3 / C8, C9
TYPICAL DETAIL
ANCHOR TRENCH
NTS

AR 025218

AGENCY REVIEW
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Parametrix, Inc.
5808 Lk. Washington Blvd. NE
Kirkland, WA 98033
Ph:(425) 822-8880
"Quality Service Through Employee Ownership"

PROJECT ENGR./ARCH: P. FENDT
DESIGNER: J. LEAVITT/K. LUDWA
DRAWN BY: C. COX/P. TOGHER
SCALE: AS SHOWN
DATE: JUNE 2000
CHECKED BY: –
APPROVED BY: P. FENDT

REVISIONS

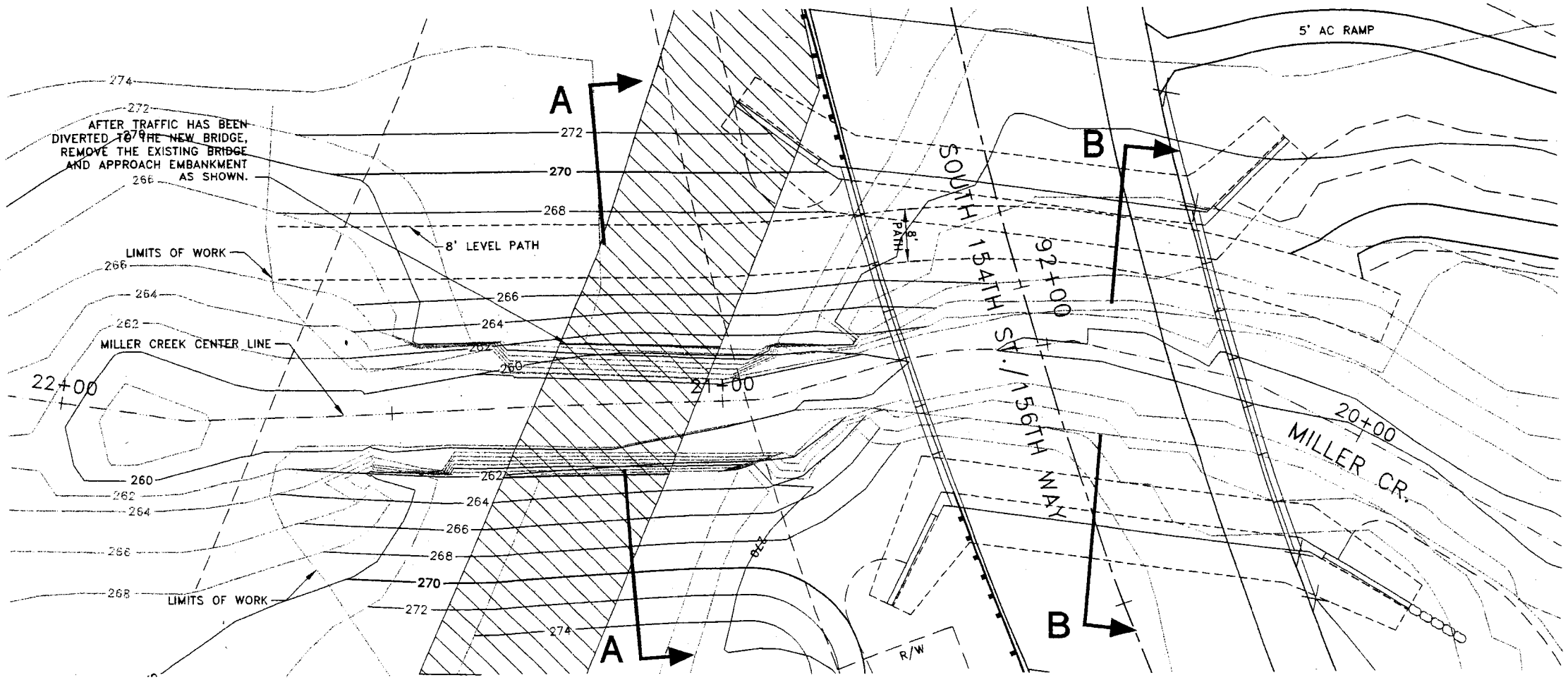
NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNER:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENTS
SHEET TITLE: TESC DETAILS

WORK ORDER NO. –
CONSULTANT'S NO. 291281TE5
PORT OF SEATTLE NO. STIA-XXXX-TE5

291201BA2 291281DE 291281SV 291201WL



MILLER CREEK RECLAMATION

SCALE IN FEET: 10 0 10 20

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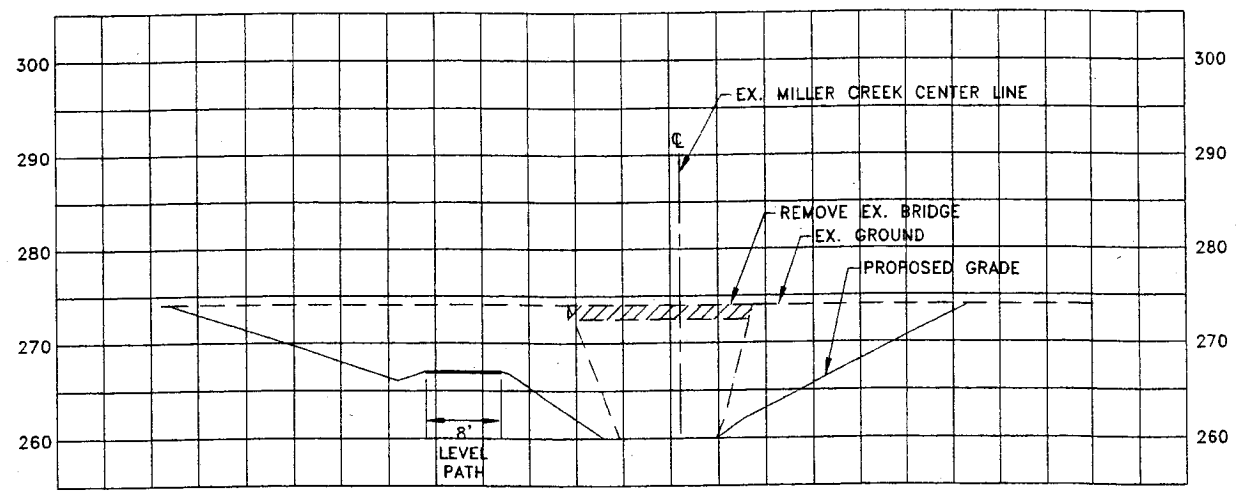
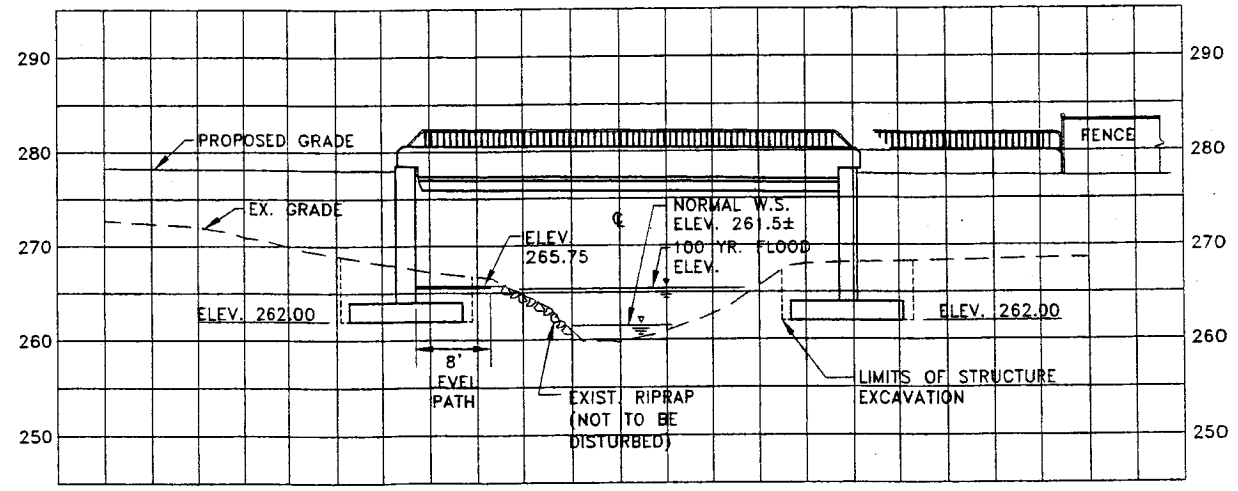
AR 025219



MILLER CREEK CROSS SECTION – A

SCALE IN FEET: 10 0 10 20



MILLER CREEK CROSS SECTION – B

SCALE IN FEET: 10 0 10 20

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

AGENCY REVIEW
NOT FOR CONSTRUCTION

KATO & WARREN INCORPORATED
2003 Western Avenue
555 Market Place One
Seattle, WA 98121
(206)448-4200

PROJECT ENGR./ARCH: –
DESIGNER: –
DRAWN BY: –
SCALE: AS SHOWN
DATE: JUNE 2000
CHECKED BY: –
APPROVED BY: –

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

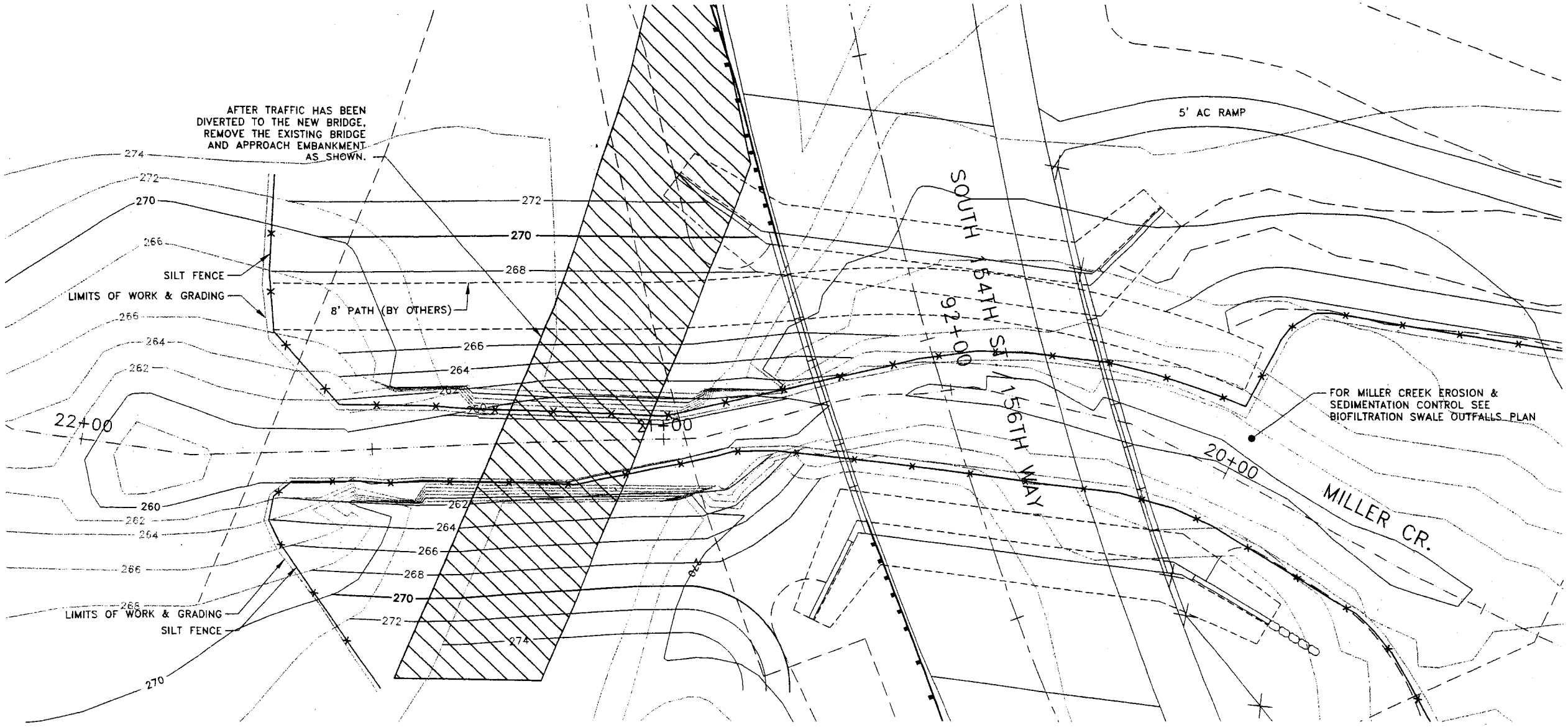
PROJECT ENGINEER:
DESIGNER:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENT

SHEET TITLE: GRADING AT S. 156TH WAY BRIDGE

WORK ORDER NO. C3496
CONSULTANT'S NO. 96-382
PORT OF SEATTLE NO. STIA-9806-P1



BRIDGE REMOVAL & TEMPORARY EROSION CONTROL PLAN

SCALE IN FEET: 10 0 10 20

BRIDGE DEMOLITION SEQUENCE:

1. REMOVE BRIDGE DECK.
2. DIVERT STREAM FLOWS TO WEST SIDE OF CHANNEL WITH SAND BAGS.
3. REMOVE EAST ABUTMENT AND REGRADE PER PLAN. STABILIZE STREAM BANK WITH EROSION CONTROL BLANKET AND REVEGETATE AS PER PLANTING PLAN.
4. DIVERT STREAM FLOWS TO EAST SIDE OF CHANNEL WITH SAND BAGS.
5. REMOVE WEST ABUTMENT AND REGRADE PER PLAN. STABILIZE STREAM BANK WITH EROSION CONTROL BLANKET AND REVEGETATE AS PER PLANTING PLAN.
6. INSTALL UPLAND LANDSCAPING IN ALL DISTURBED AREAS.

AR 025220

AGENCY REVIEW
NOT FOR CONSTRUCTION

KATO & WARREN INCORPORATED
2003 Western Avenue
555 Market Place One
Seattle, WA 98121
(206)448-4200

PROJECT ENGR./ARCH:	–
DESIGNED:	–
DRAWN BY:	–
SCALE:	AS SHOWN
DATE:	JUNE 2000
CHECKED BY:	–
APPROVED BY:	–

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

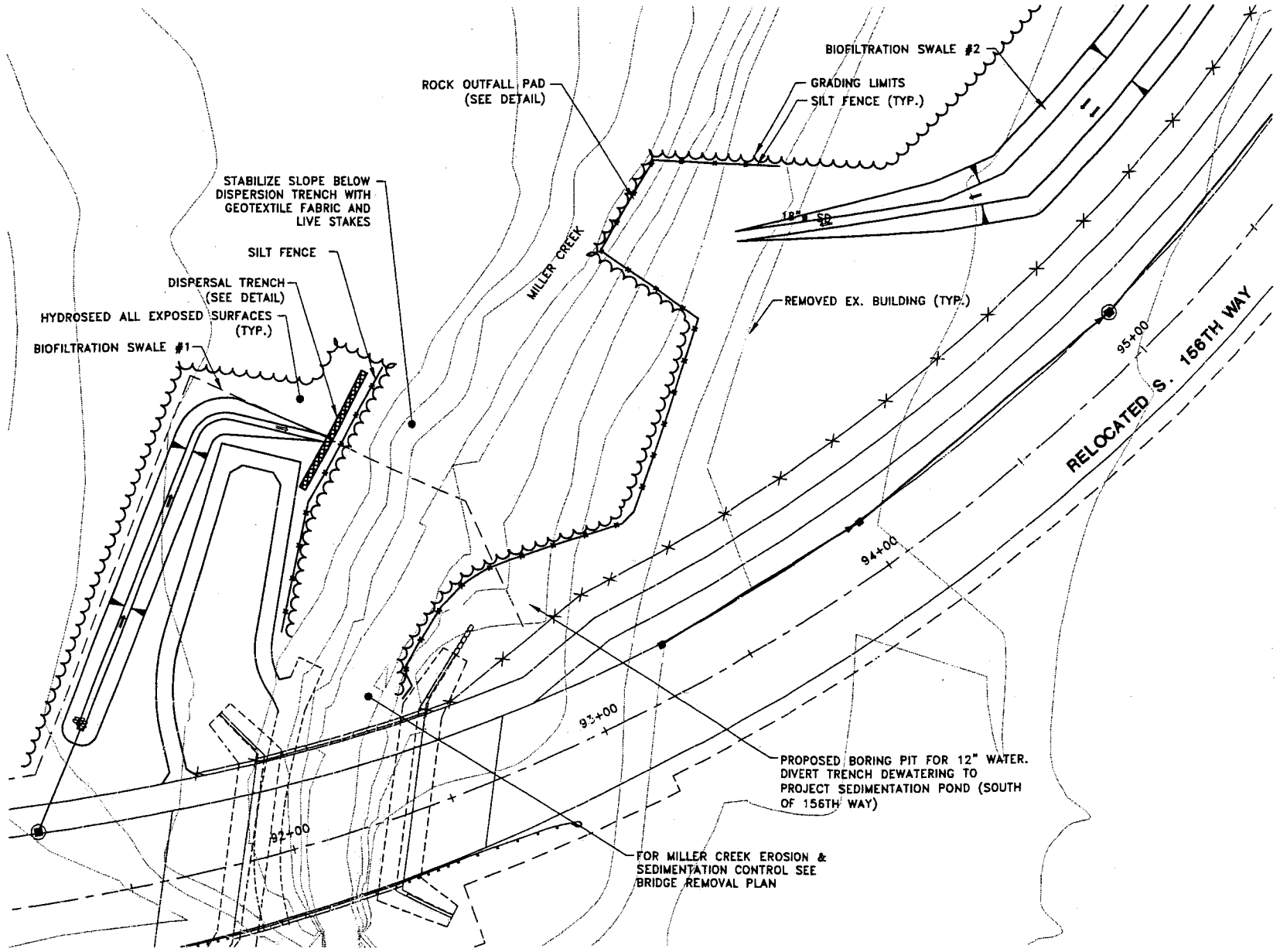
PROJECT ENGINEER:	
DESIGNED:	
DRAWN BY:	
SCALE:	
DATE:	
CHECKED BY:	
APPROVED BY:	

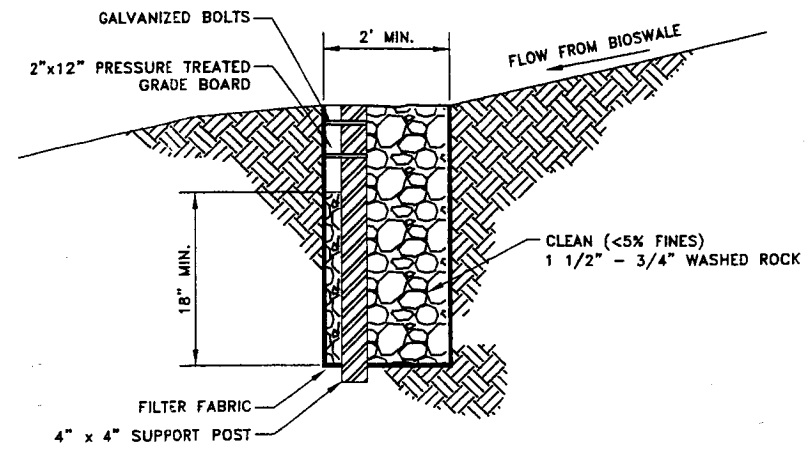
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

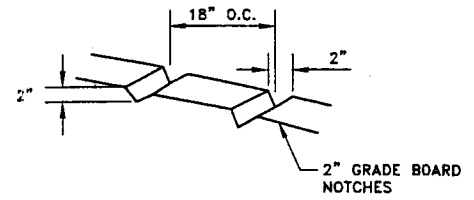
PROJECT: MILLER CREEK INSTREAM AND BUFFER ENHANCEMENT

SHEET TITLE: BRIDGE REMOVAL AND TEMP. EROSION CONTROL PLAN

WORK ORDER NO.	C3496
CONSULTANT'S NO.	96-382
PORT OF SEATTLE NO.	STIA-9806-P2

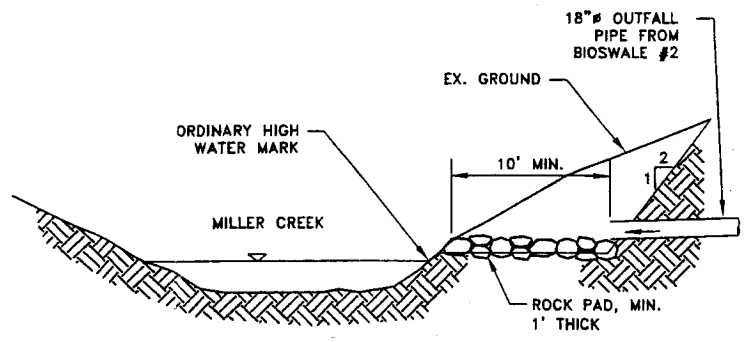






FLOW DISPERSAL TRENCH

N.T.S.



ROCK OUTFALL PAD

N.T.S.

BIOFILTRATION SWALE OUTFALLS

SCALE IN FEET: 20 0 20 40

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AGENCY REVIEW NOT FOR CONSTRUCTION

KATO & WARREN INCORPORATED
2003 Western Avenue
555 Market Place One
Seattle, WA 98121
(206)448-4200

PROJECT ENGR./ARCH:	BSK
DESIGNED:	KRS
DRAWN BY:	KRS/KS
SCALE:	1"=20'
DATE:	AUGUST 2000
CHECKED BY:	BSK
APPROVED BY:	

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:	
DESIGNED:	
DRAWN BY:	
SCALE:	
DATE:	
CHECKED BY:	
APPROVED BY:	

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: RUNWAYS 16L/16R SAFETY AREA IMPROVEMENT PROJECT
SOUTH 154TH STREET/156TH WAY RELOCATION

SHEET TITLE: BIOFILTRATION SWALE OUTFALLS

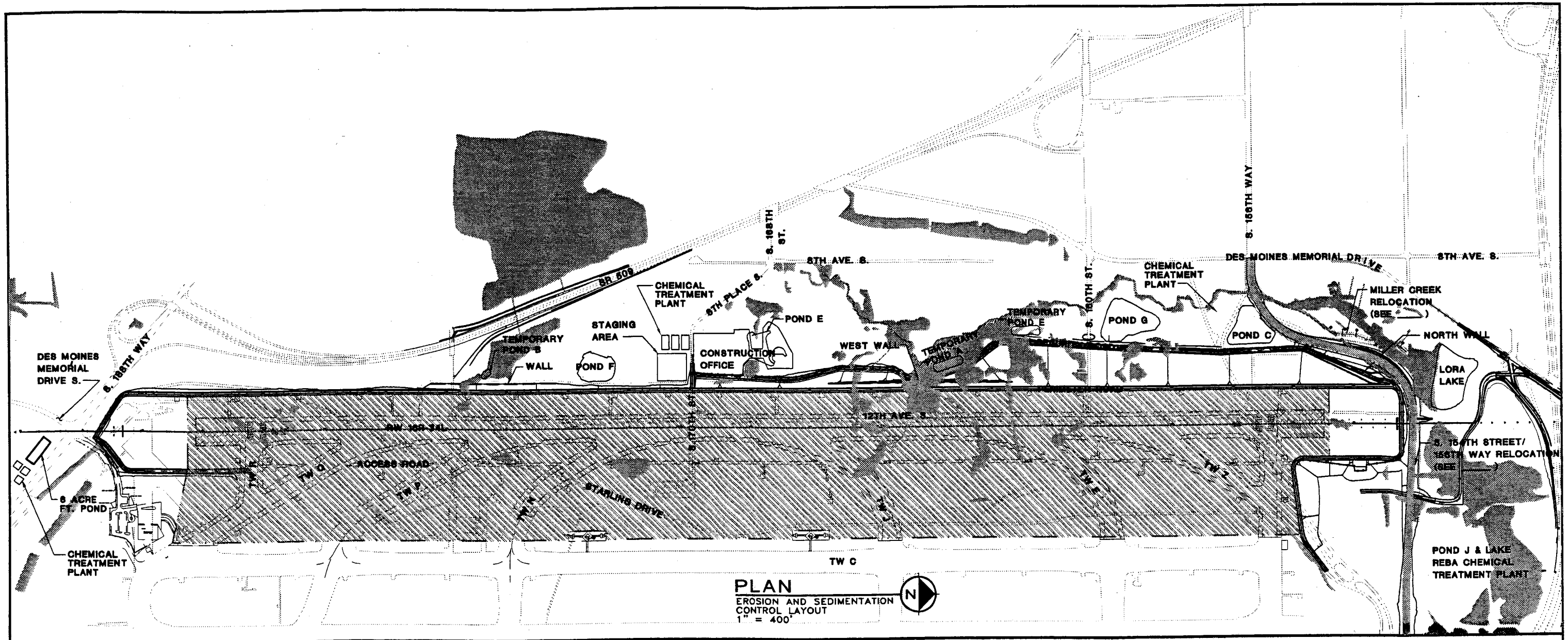
WORK ORDER NO.	C3496
CONSULTANT'S NO.	96-382
PORT OF SEATTLE NO.	STIA-9806-P3

XREFS: 96382\HPA PLANS\ \UTIL\UTILITY.DWG \PLANSET\J_PH1PH2.DWG \1997PRES\MODBASE.DWG \BASEMAP\CONTOUR1.DWG

AR 025221

APPENDIX C

HNTB EMBANKMENT AND DRAINAGE DESIGN DRAWINGS



PLAN
EROSION AND SEDIMENTATION CONTROL LAYOUT
1" = 400'

N

400' 0 400' 800'
SCALE: 1"=400'

NOTE: THIS REVIEW SUBMITTAL SHOWS THE ULTIMATE TESC WITH SOME INTERMEDIATE FEATURES. THE 60% REVIEW WILL SHOW TESC FOR EACH CONSTRUCTION PHASE.

AR 025223

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

HNTB
ARCHITECTS • ENGINEERS • PLANNERS
600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)453-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: G. MATSUSHITA
SCALE: 1" = 400'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

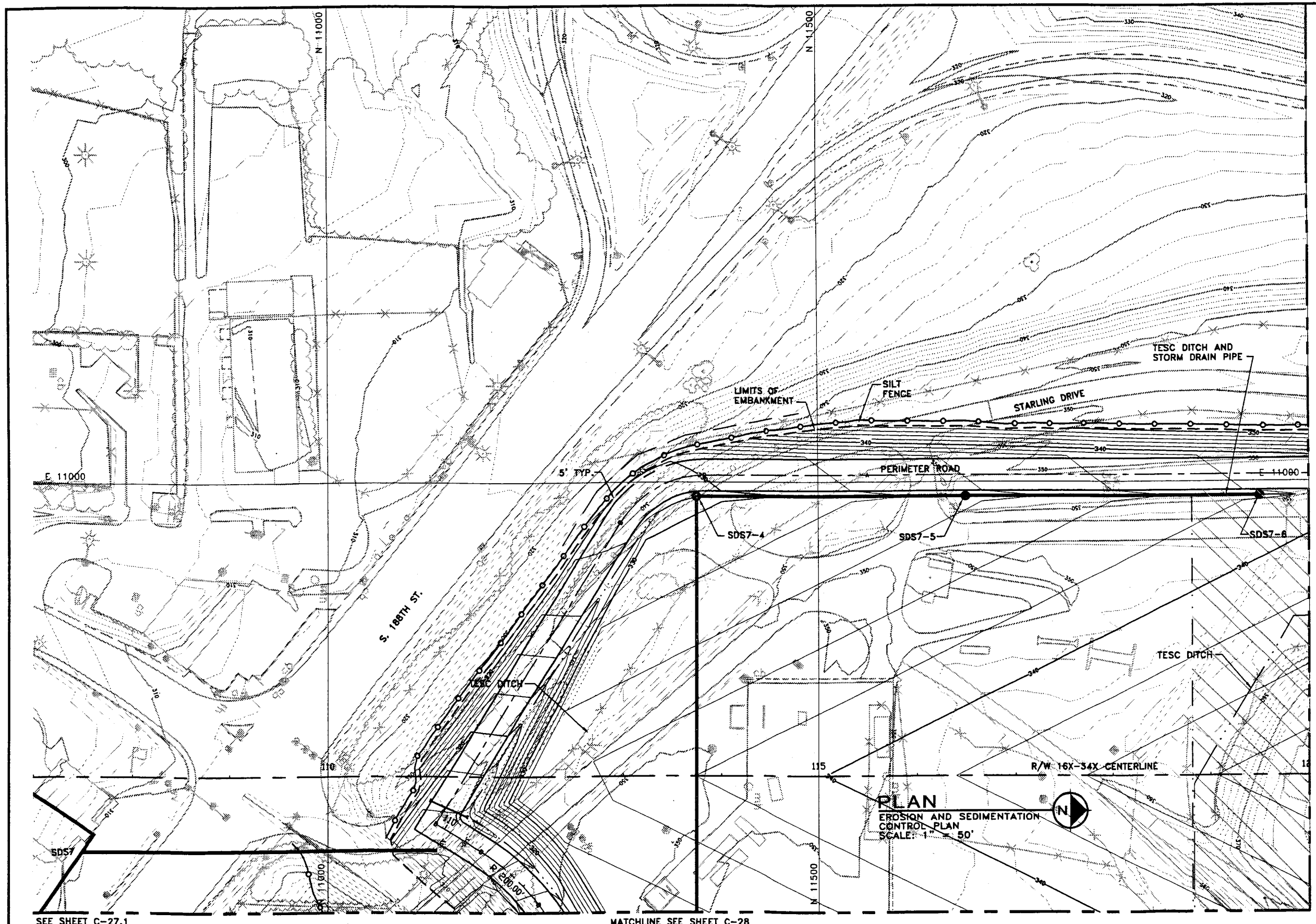
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL LAYOUT

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C18
PORT OF SEATTLE NO. STIA_XXXX_C18



NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

AR 025224

SCALE: 1"=50' (50' 0 50' 100')

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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HNTB
ARCHITECTS • ENGINEERS • PLANNERS
600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

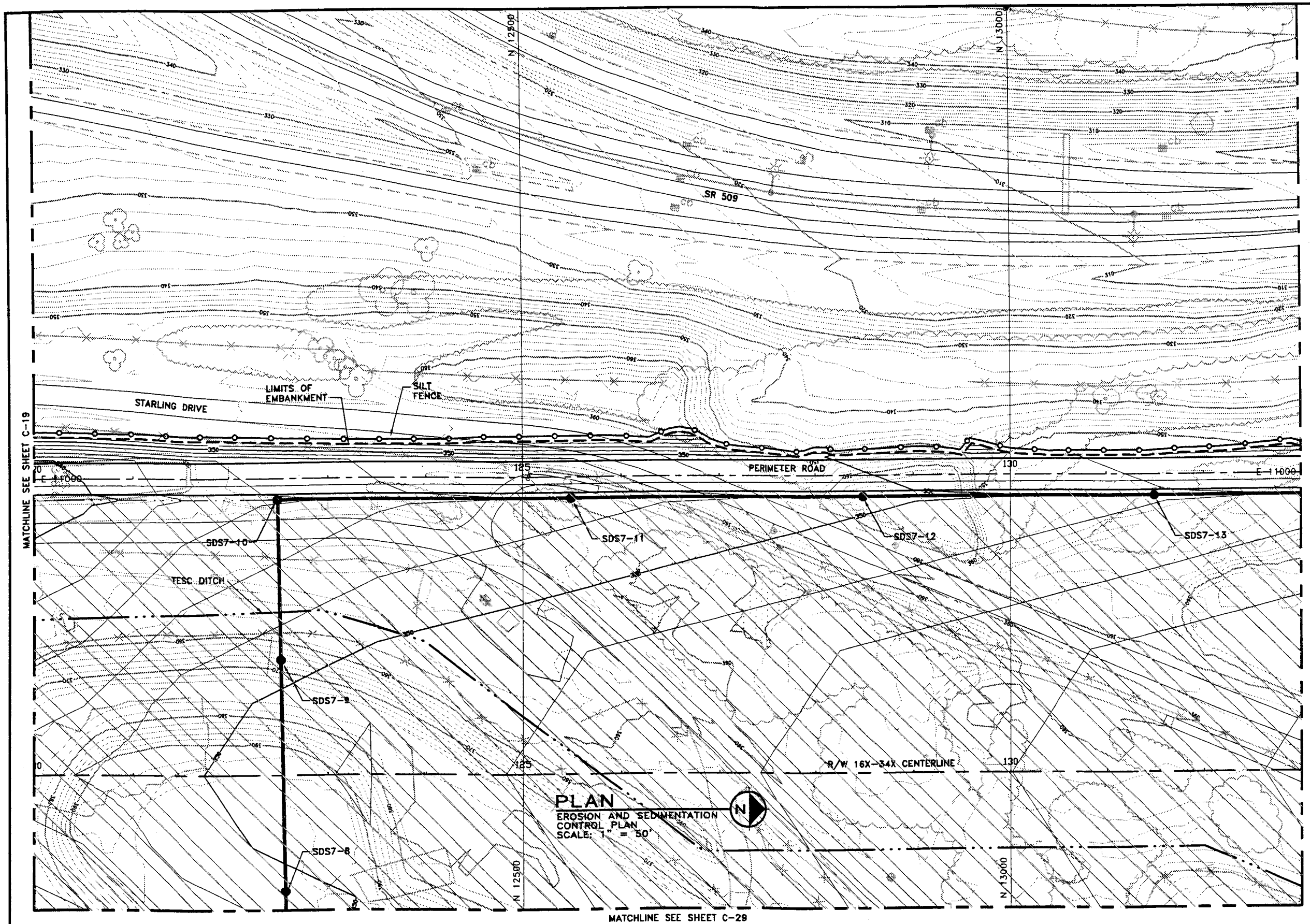
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C19
PORT OF SEATTLE NO. STIA_XXXX_C19



NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025225

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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HNTB
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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3355 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

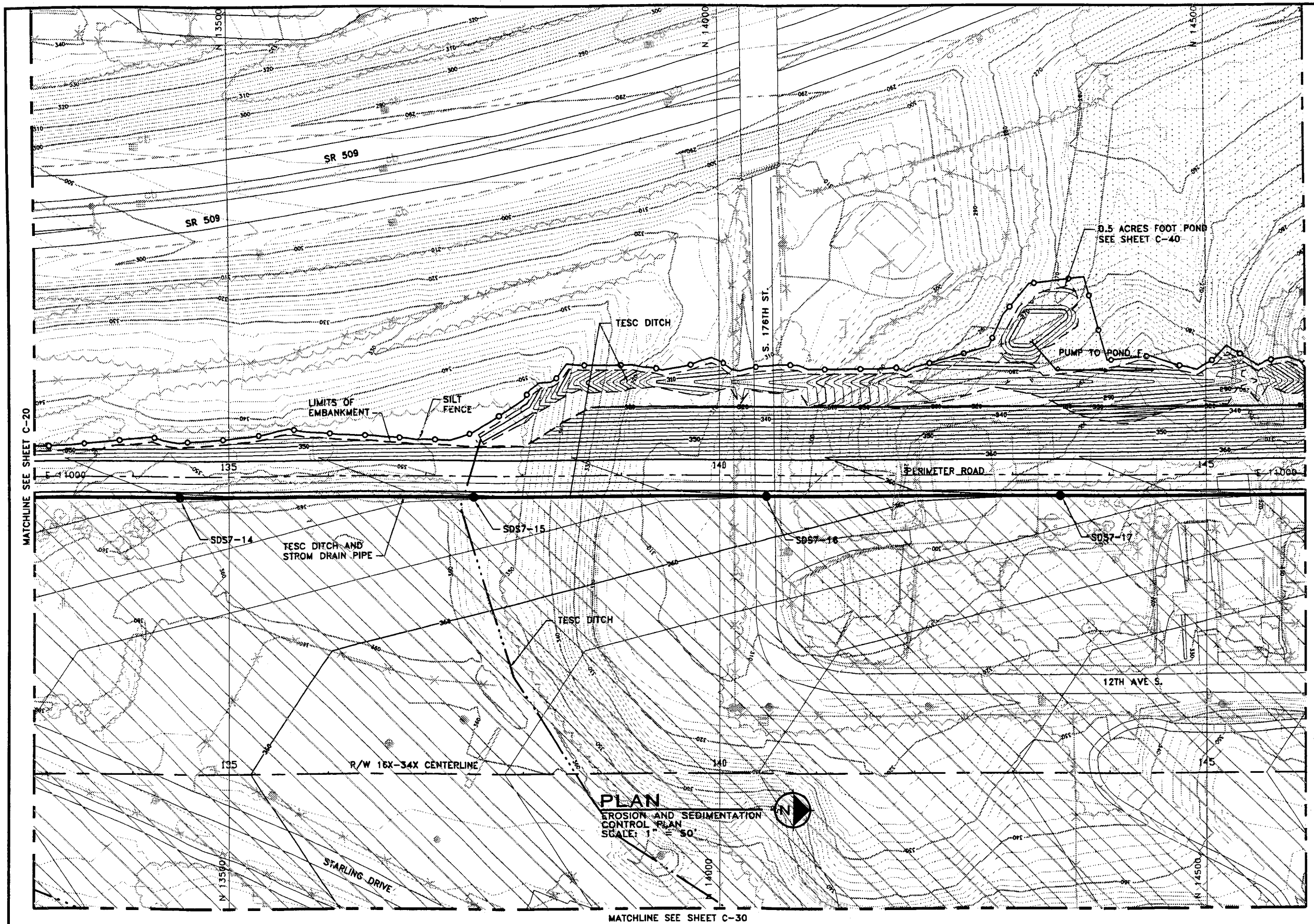
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C20
PORT OF SEATTLE NO. STIA_XXXX_C20



NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025226

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

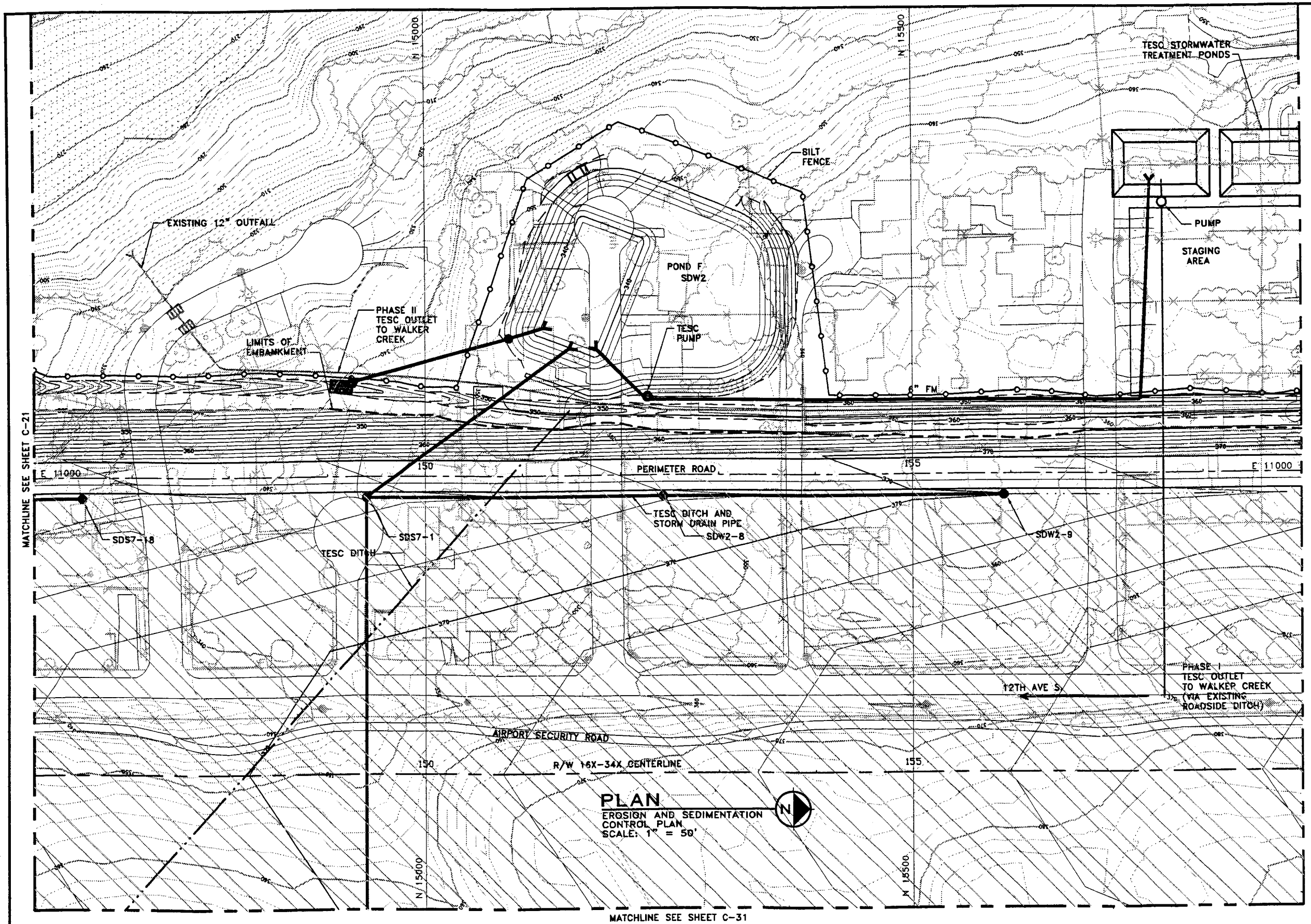
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMETATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C21
PORT OF SEATTLE NO. STIA_XXXX_C21



PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

- STORM DRAIN PIPE
- SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN
- WETLANDS

AR 025227

SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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Bellevue, Washington 98004
(425)455-5555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

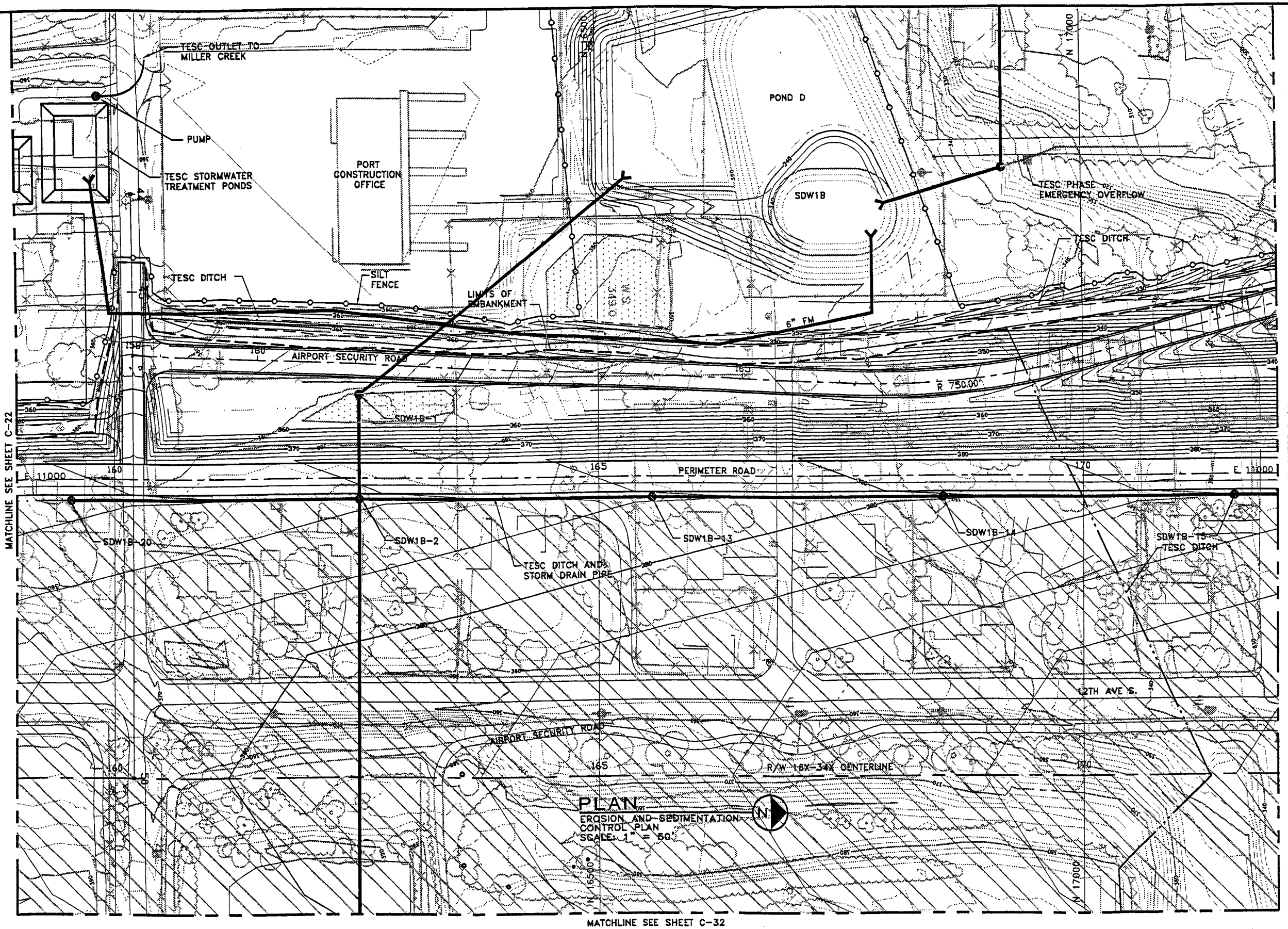
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C22
PORT OF SEATTLE NO. STIA_XXXX_C22



NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025228

SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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PROJECT ENGR./ARCH:	A. BLACK
DESIGNED:	R. ELSLIP
DRAWN BY:	N. HATCHER
SCALE:	1" = 50'
DATE:	
CHECKED BY:	
APPROVED BY:	

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REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D

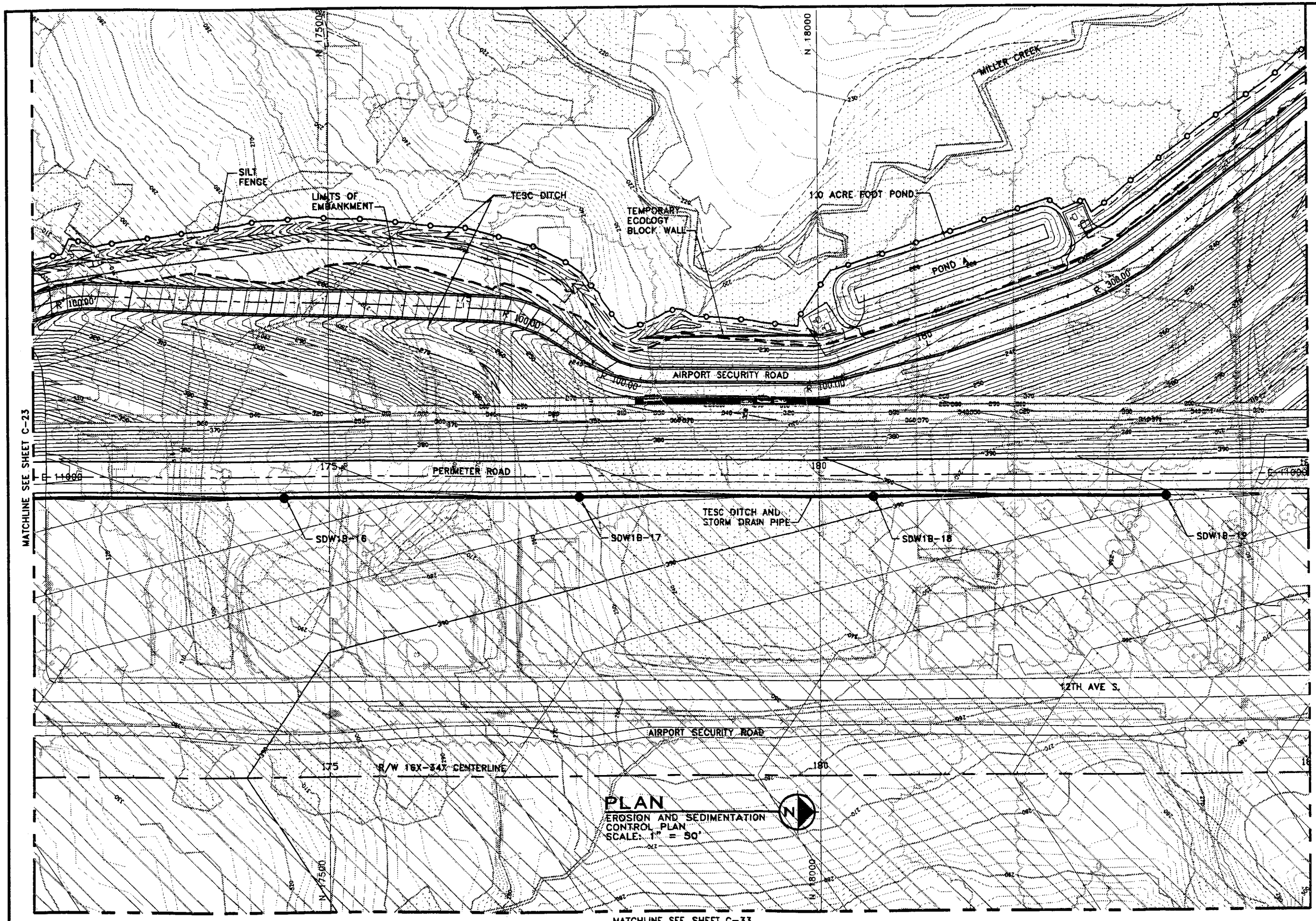
PROJECT ENGINEER:	
DESIGNED:	
DRAWN BY:	
SCALE:	
DATE:	
CHECKED BY:	
APPROVED BY:	

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.	
CONSULTANT'S NO.	20764/BF_C23
PORT OF SEATTLE NO.	STIA_XXXX_C23



PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025229

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

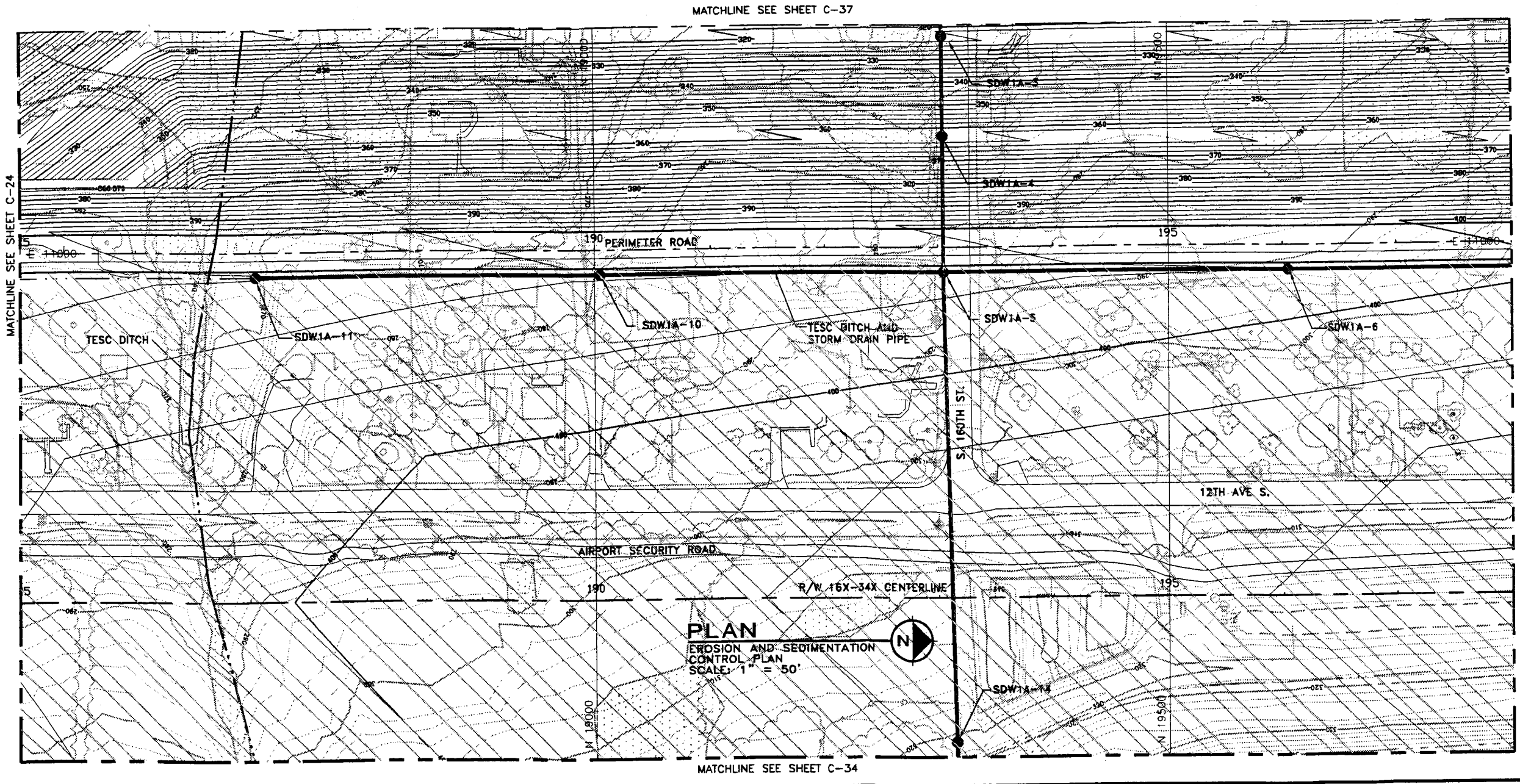
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C24
PORT OF SEATTLE NO. STIA_XXXX_C24

NOTES:



LEGEND:

- STORM DRAIN PIPE
- SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN
- WETLANDS

SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

AR 025230

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PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

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REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

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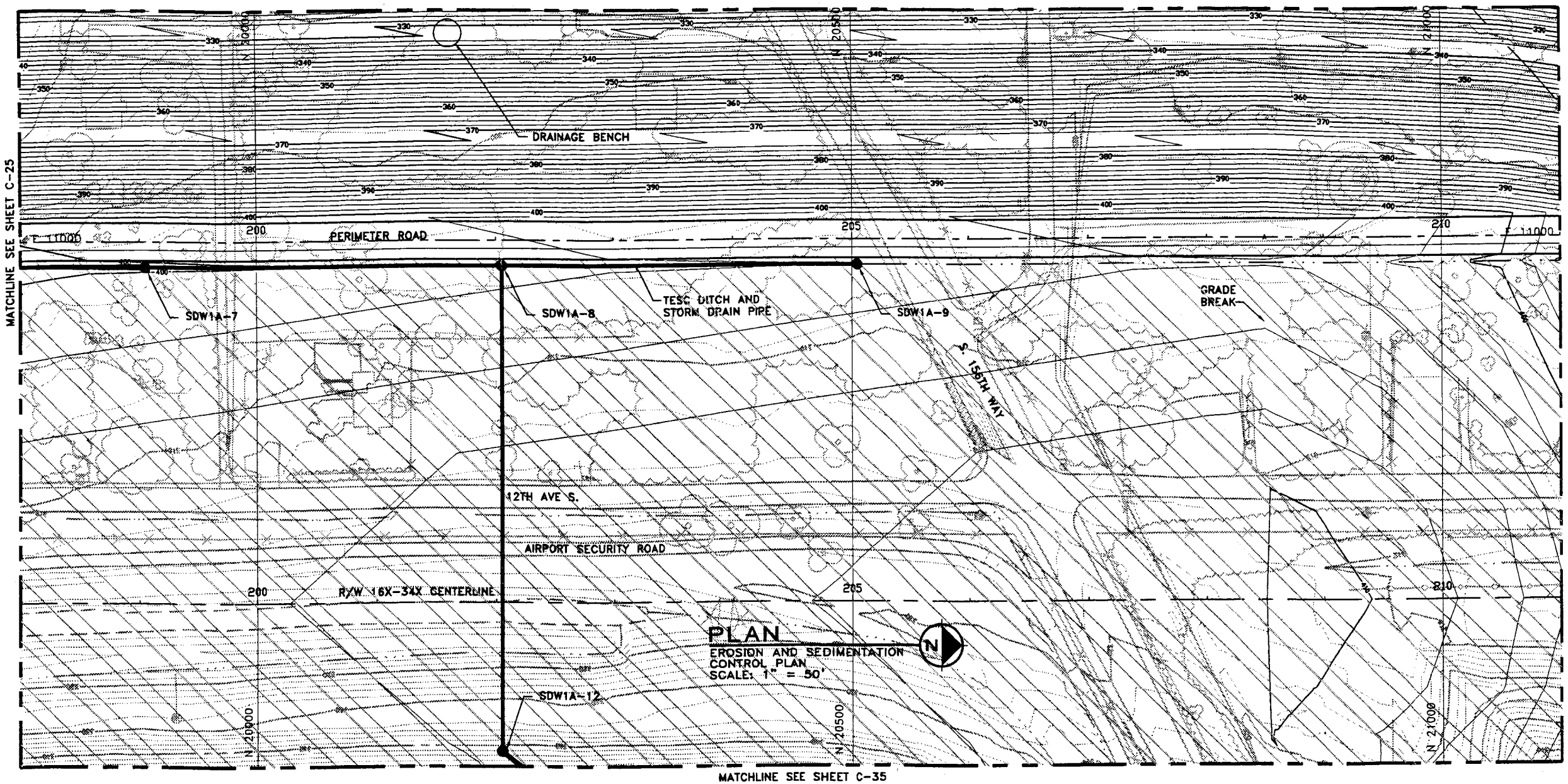
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C25
PORT OF SEATTLE NO. STIA_XXXX_C25

MATCHLINE SEE SHEET C-38



MATCHLINE SEE SHEET C-35

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025231

SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

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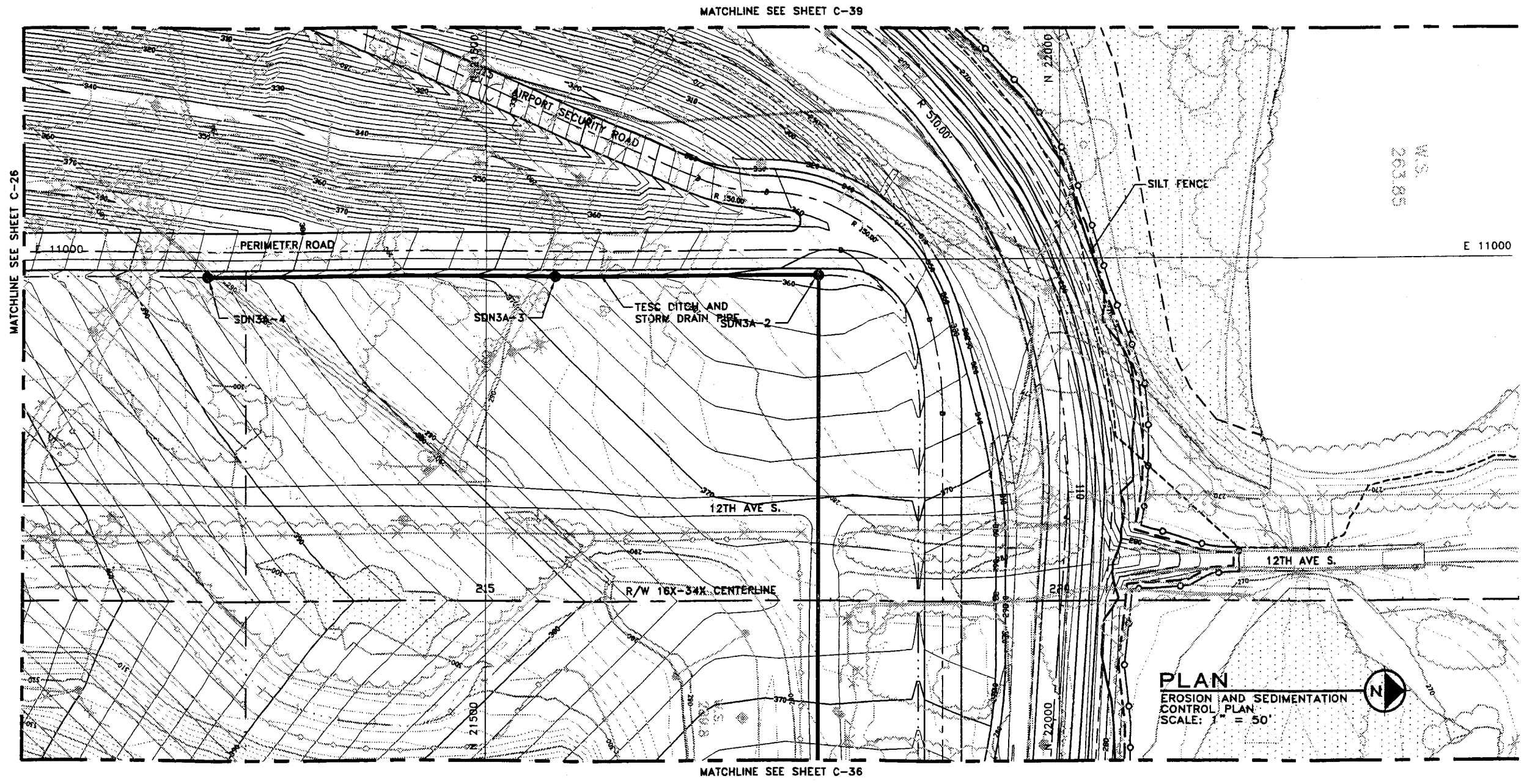
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C26
PORT OF SEATTLE NO. STIA_XXXX_C26

NOTES:



PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

LEGEND:

- STORM DRAIN PIPE
- SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN
- WETLANDS

AR 025232

SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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Bellevue, Washington 98004
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PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

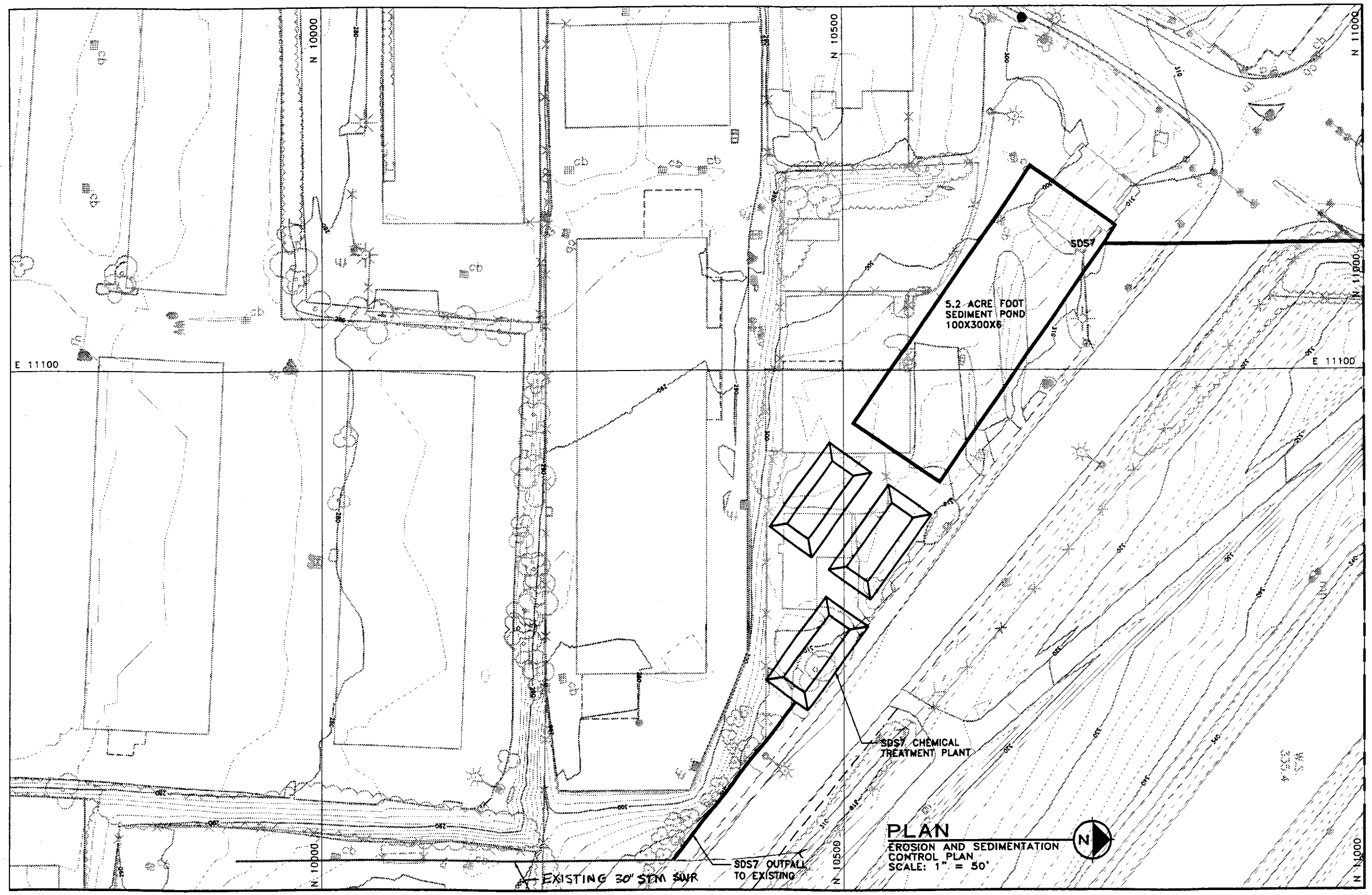
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C27
PORT OF SEATTLE NO. STIA_XXXX_C27



PLAN
EROSION AND SEDIMENTATION
CONTROL PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025233

50' 0 50' 100'
SCALE: 1"=50'

KEY PLAN

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

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PROJECT ENGR./DESIGN: A. BLACK
DESIGNED BY: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

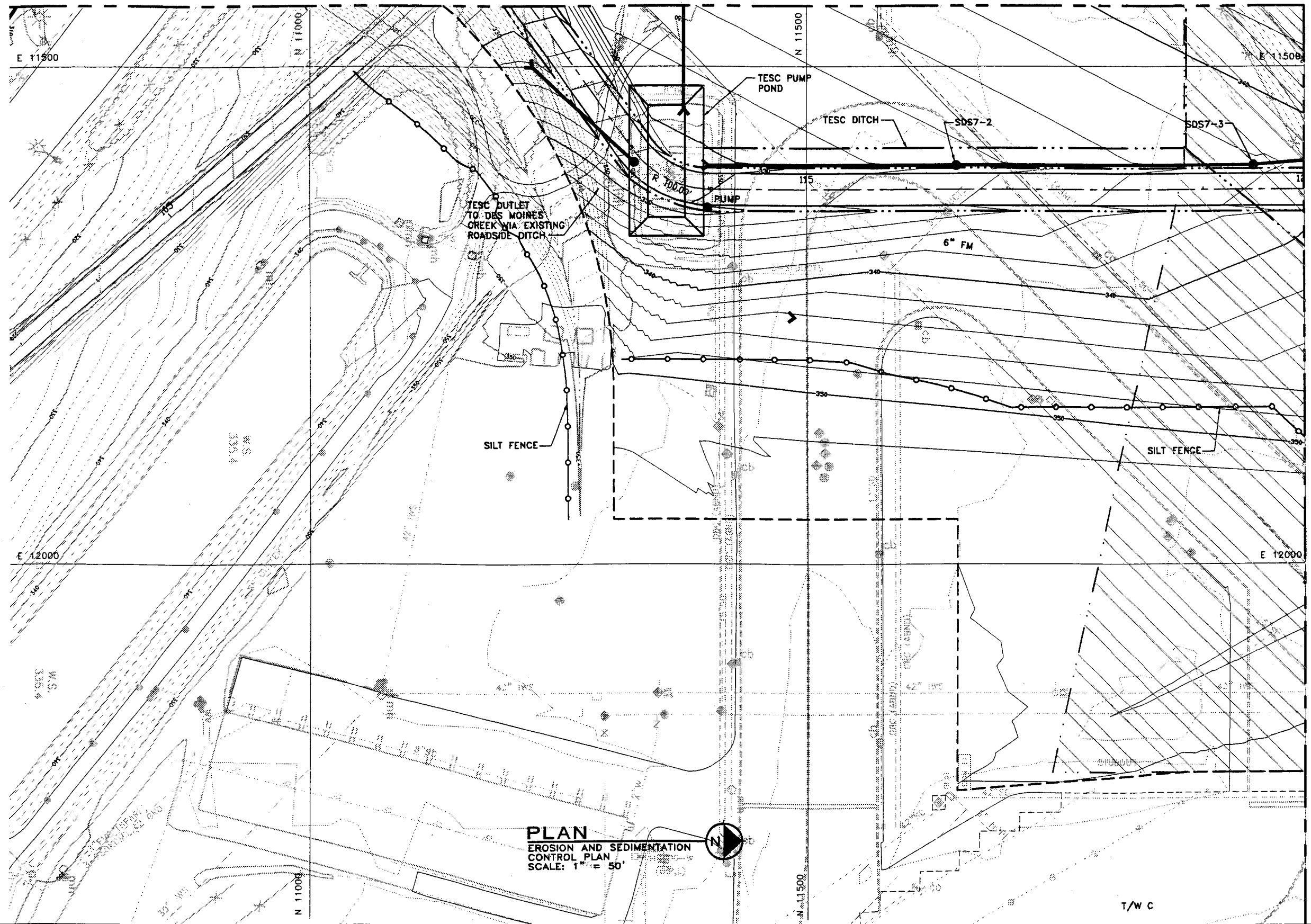
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C27.1
PORT OF SEATTLE NO. STIA_XXXX_C27.1

MATCHLINE SEE SHEET C-19



PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

MATCHLINE SEE SHEET C-29

NOTES:

LEGEND:

- STORM DRAIN PIPE
- SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN
- WETLANDS

AR 025234

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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Bellevue, Washington 98004
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PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C28
PORT OF SEATTLE NO. STIA_XXXX_C28

MATCHLINE SEE SHEET C-20

MATCHLINE SEE SHEET C-28

MATCHLINE SEE SHEET C-30

E 11500

E 12000

N 12500

N 13000

SDS7-7

SDS7-19

SDS7-20

SDS7-21

SDS7-22

SDS7-19A

SDS7-20A

SDS7-22A

SDS7-32

SDS7-33

TESC DITCH

T/W C

CLEANOUT

TYPE 2 CB

CONTROL VALVE

PLAN

EROSION AND SEDIMENTATION CONTROL PLAN

SCALE: 1" = 50'

N

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025235

50' 0 50' 100'

SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)455-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.

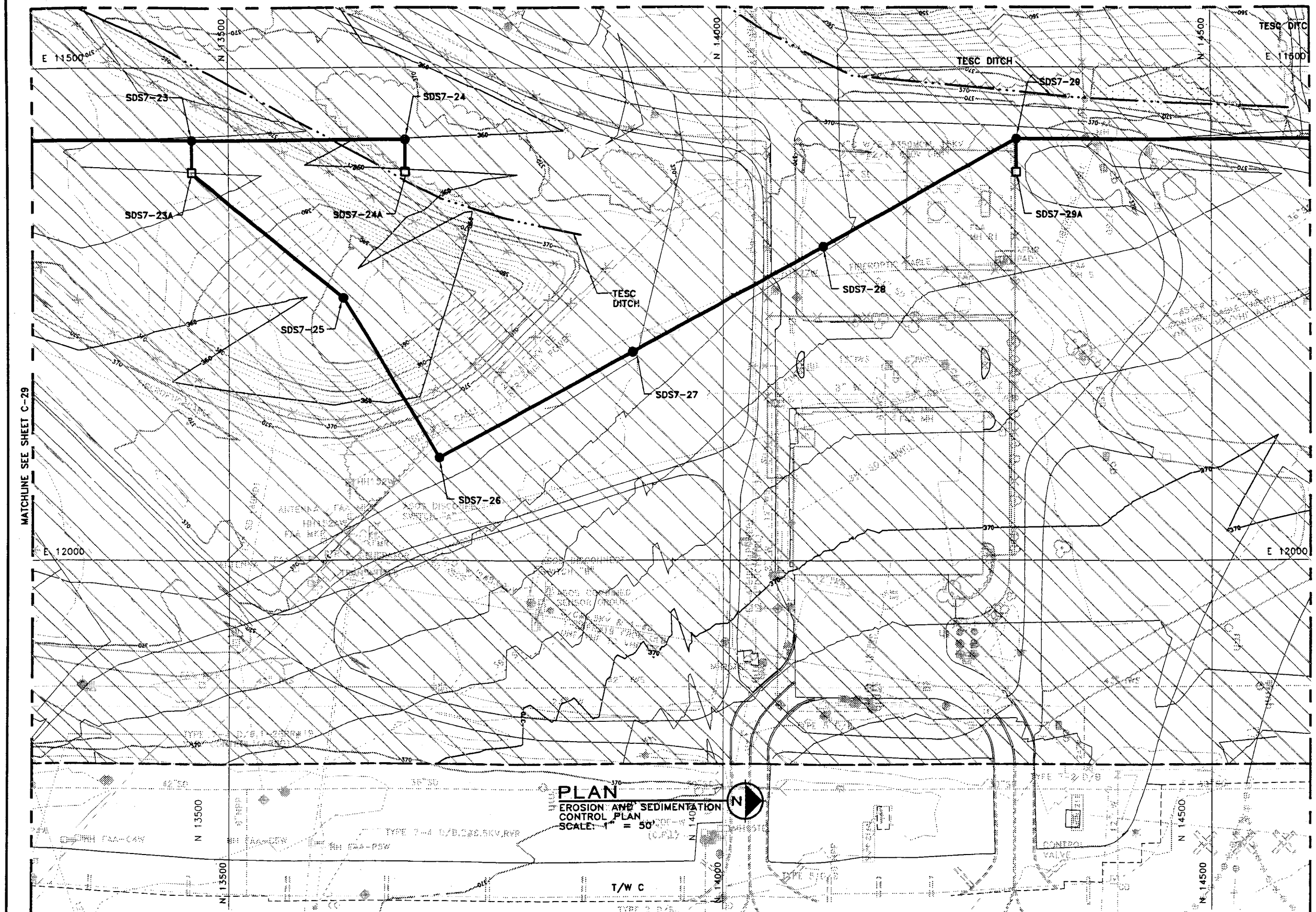
CONSULTANT'S NO. 20764/BF_C29

PORT OF SEATTLE NO. STIA_XXXX_C29

MATCHLINE SEE SHEET C-21

MATCHLINE SEE SHEET C-29

MATCHLINE SEE SHEET C-31



PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025236

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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PROJECT ENGR. / ARCH: A. BLACK
DESIGNER: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNER:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C30
PORT OF SEATTLE NO. STIA_XXXX_C30

MATCHLINE SEE SHEET C-22

MATCHLINE SEE SHEET C-30

MATCHLINE SEE SHEET C-32

E 11500

E 12000

N 15000

N 15500

SDS7-30

SDS7-30A

SDS7-31

SDW2-2

SDW2-3

SDW2-3A

SDW2-4

SDW2-4A

SDW2-6

SDW2-7

AIRPORT PERIMETER ROAD

T/W C

PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025237

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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Bellevue, Washington 98004
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PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
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PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C31

PORT OF SEATTLE NO. STIA_XXXX_C31

MATCHLINE SEE SHEET C-23

MATCHLINE SEE SHEET C-31

MATCHLINE SEE SHEET C-33

E 11500

E 12000

N 16000

N 16500

N 17000

SDW2-5

SDW2-5A

SDW1B-3

SDW1B-3A

SDW1B-4

SDW1B-4A

SDW1B-5

SDW1B-5A

SDW1B-6

SDW1B-6A

TESC DITCH

INLET PROTECTION (TYP.)

AIRPORT PERIMETER ROAD

T/W C

PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

N

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025238

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

HNTB
ARCHITECTS • ENGINEERS • PLANNERS
600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C32

PORT OF SEATTLE NO. STIA_XXXX_C32

MATCHLINE SEE SHEET C-24

MATCHLINE SEE SHEET C-32

MATCHLINE SEE SHEET C-34

E 11500

N 17500

N 18000

SDW1B-7

SDW1B-8

SDW1B-9

SDW1B-10

SDW1B-7A

SDW1B-8A

SDW1B-9A

SDW1B-10A

TESC DITCH

INLET PROTECTION (TYP.)

E 12000

AIRPORT PERIMETER ROAD

T/W C

N 17500

N 18000

PLAN

EROSION AND SEDIMENTATION CONTROL PLAN

SCALE: 1" = 50'

N

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025239

50' 0 50' 100'

SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)455-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C33

PORT OF SEATTLE NO. STIA_XXXX_C33

MATCHLINE SEE SHEET C-25

MATCHLINE SEE SHEET C-33

MATCHLINE SEE SHEET C-35

E 11500

E 12000

N 19000

N 19500

SDW1B-1.1

TESC DITCH

SDW1B-1.1A

SDW1B-12

SDW1A-15

SDW1A-15A

SDW1A-16

SDW1A-16A

INLET PROTECTION (TYP.)

AIRPORT PERIMETER ROAD

CONTROL VALVE

TYPE 3 D/D

TYP SD

T/W C

PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

N

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025240

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C34

PORT OF SEATTLE NO. STIA_XXXX_C34

MATCHLINE SEE SHEET C-26

MATCHLINE SEE SHEET C-34

MATCHLINE SEE SHEET C-36

E 11500

N 20000

N 20500

E 12000

SDW1A-17

SDW1A-17A

SDW1A-13

SDW1A-13A

INLET PROTECTION (TYP.)

AIRPORT PERIMETER ROAD

S. 156TH WAY

PERIMETER ROAD

7-2 D/B SKY WIRE)

TEMPERATURE SENSOR

T/W C

PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025241

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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Bellevue, Washington 98004
(425)455-3553 Fax: (425)455-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C35

PORT OF SEATTLE NO. STIA_XXXX_C35

MATCHLINE SEE SHEET C-27

MATCHLINE SEE SHEET C-35

E 11500

E 12000

N 21500

N 21500

SDN3A-5

SDN3A-6

SDN3A-7

SDN3A-8

SDN3A-9

SDN3A-10

SDN3A-11

SDN3A

PERIMETER ROAD

TESC DITCH

SILT FENCE

SILT FENCE

14TH AVE S.

S. 156TH ST.

AIRPORT SECURITY ROAD

R 500.00'

R 485.00'

R 85.00'

N 22°00'00" E

N 21°50'27" E

PLAN

EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025242

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

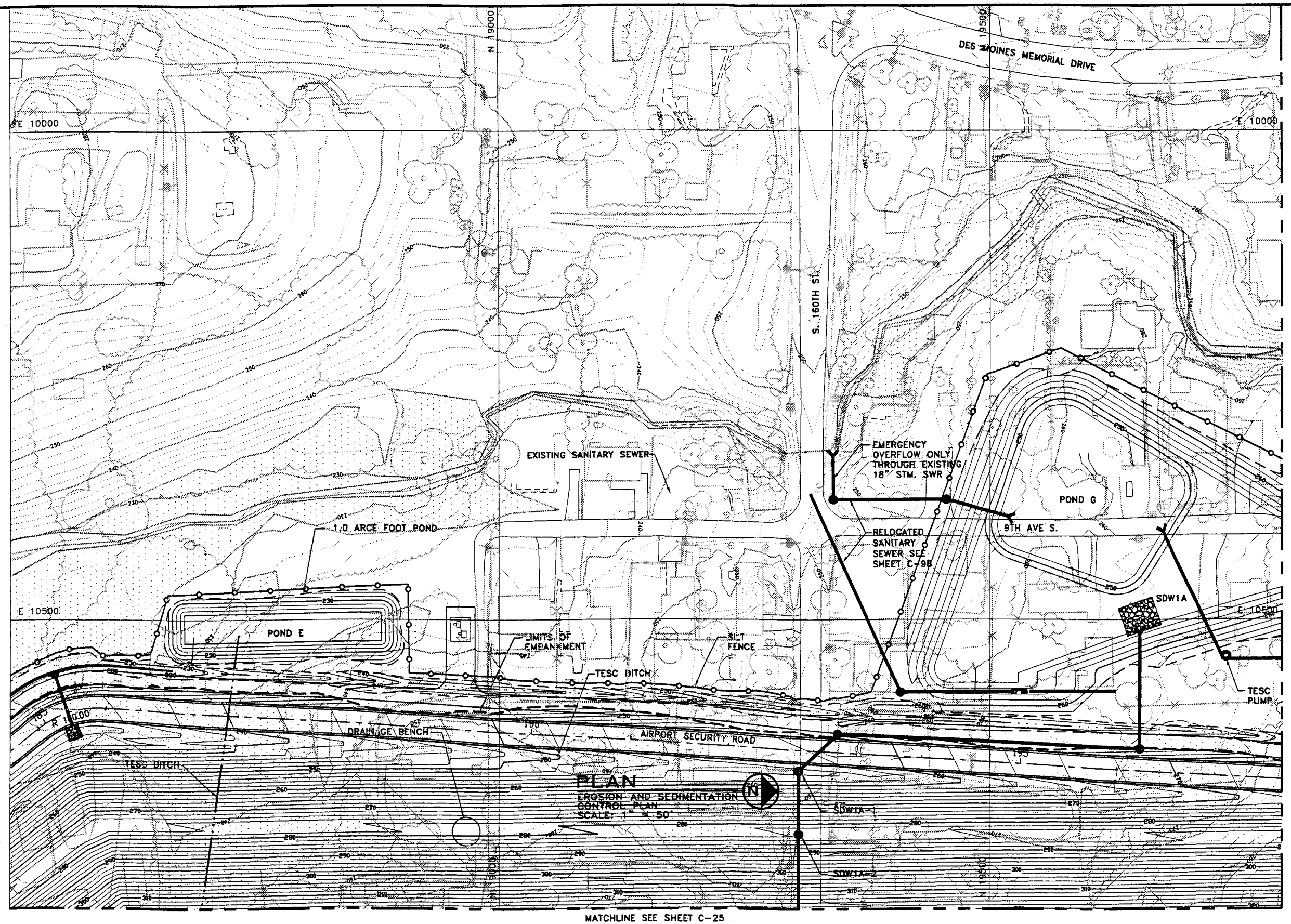
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C36

PORT OF SEATTLE NO. STIA_XXXX_C36



NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025243

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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(425)455-3555 Fax: (425)455-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C37
PORT OF SEATTLE NO. STIA_XXXX_C37

DES MOINES MEMORIAL DRIVE

S. 157TH PL.

S. 156TH ST.

MATCHLINE SEE SHEET C-37

MATCHLINE SEE SHEET C-39

MATCHLINE SEE SHEET C-26

TREATMENT PLANT DISCHARGE (TEMP.) REPLACE EXISTING 12" CMP STM SWR & HALF ROUND DISCHARGE WITH 18" CMP, HALF ROUND PIPE AND ADDITION RIPRAP SLOPE PROTECTION AS NEEDED

SDW.1 CHEMICAL TREATMENT PLANT OUTLET TO EX. 12" STM SWR

EMERGENCY OUTLET THROUGH EX. 12" STM

NEW 24" STM SWR CONNECTION TO EX. 4'x6' CULVERT UNDER S. 157TH PL. FOR EMERGENCY OUTLET OR SECONDARY TESC PLAN OUTLET AS REQUIRED

SILT FENCE

POND C

TESC PUMP

TESC DITCH

SILT FENCE

LIMITS OF EMBANKMENT

AIRPORT SECURITY ROAD

6" FM

R=660.00'

N 20000

N 20500

N 21000

E 10000

E 10500

E 11000

PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025244

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

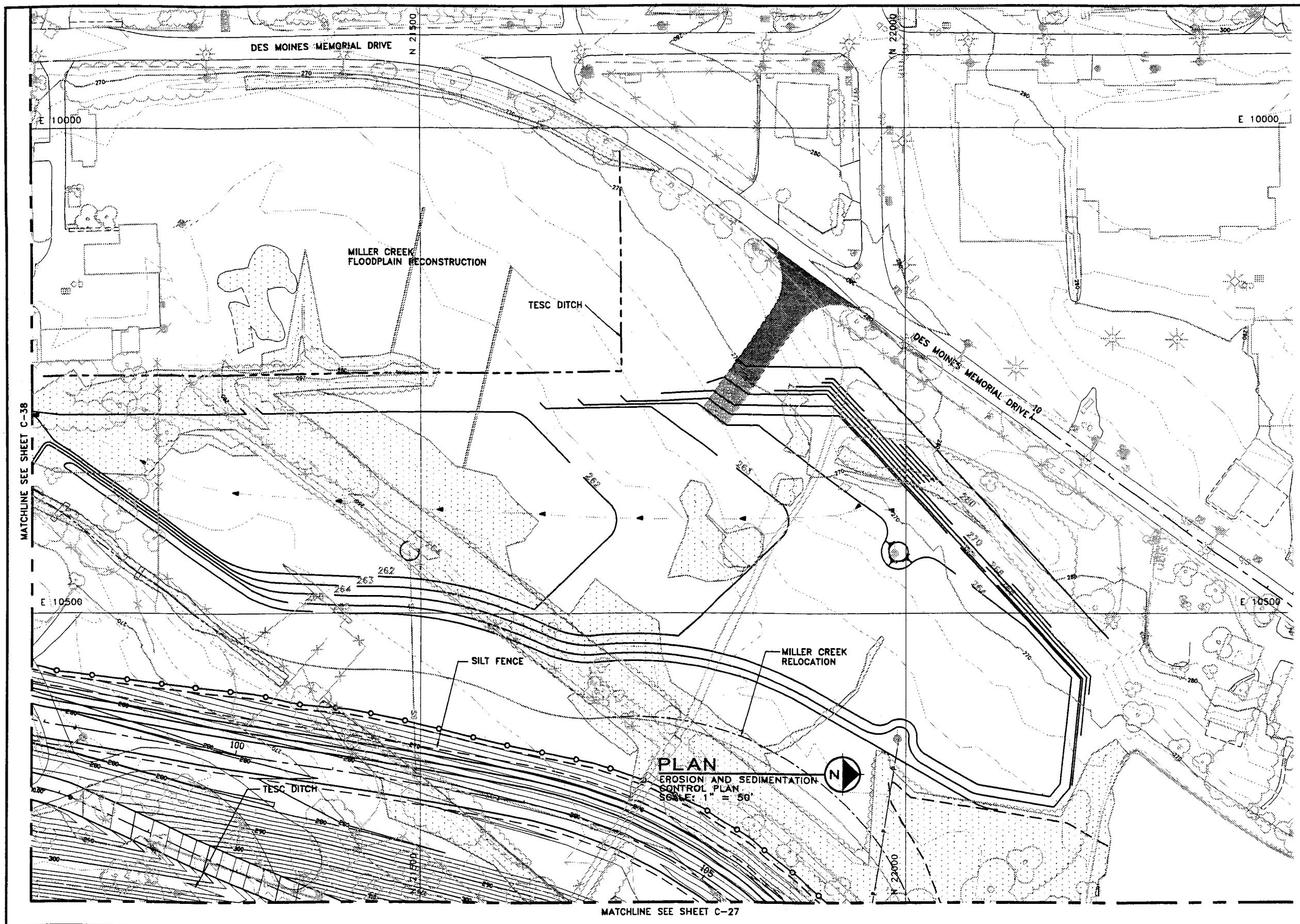
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C38

PORT OF SEATTLE NO. STIA_XXXX_C38



PLAN
EROSION AND SEDIMENTATION CONTROL PLAN
SCALE: 1" = 50'

N

NOTES:

LEGEND:

- STORM DRAIN PIPE
- SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN
- WETLANDS

AR 025245

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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Bellevue, Washington 98004
(425)455-5555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

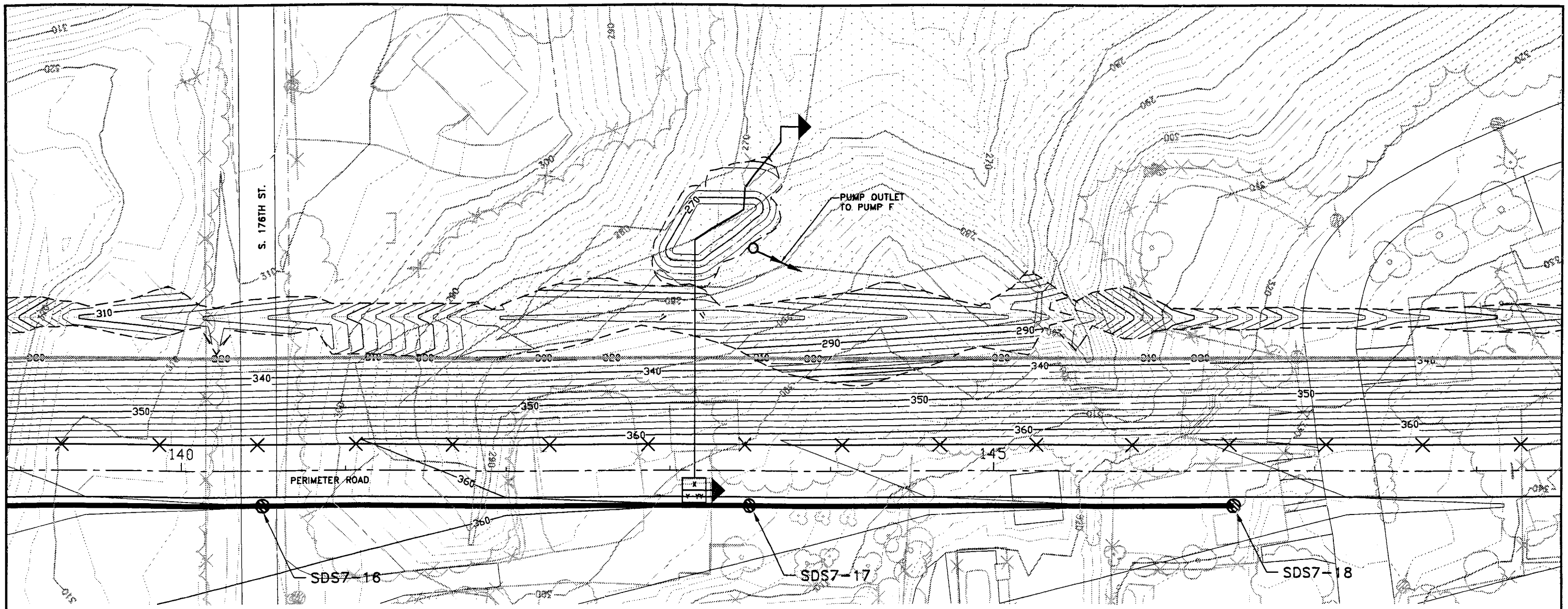
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: EROSION AND SEDIMENTATION CONTROL PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C39
PORT OF SEATTLE NO. STIA_XXXX_C39



LEGEND:

WETLANDS

PLAN
POND B PLAN
SDWA BASIN POND
SCALE: 1" = 30'

AR 025246

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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Bellevue, Washington 98004
(425)453-3555 Fax: (425)453-9179

PROJECT ENGR./MGR: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

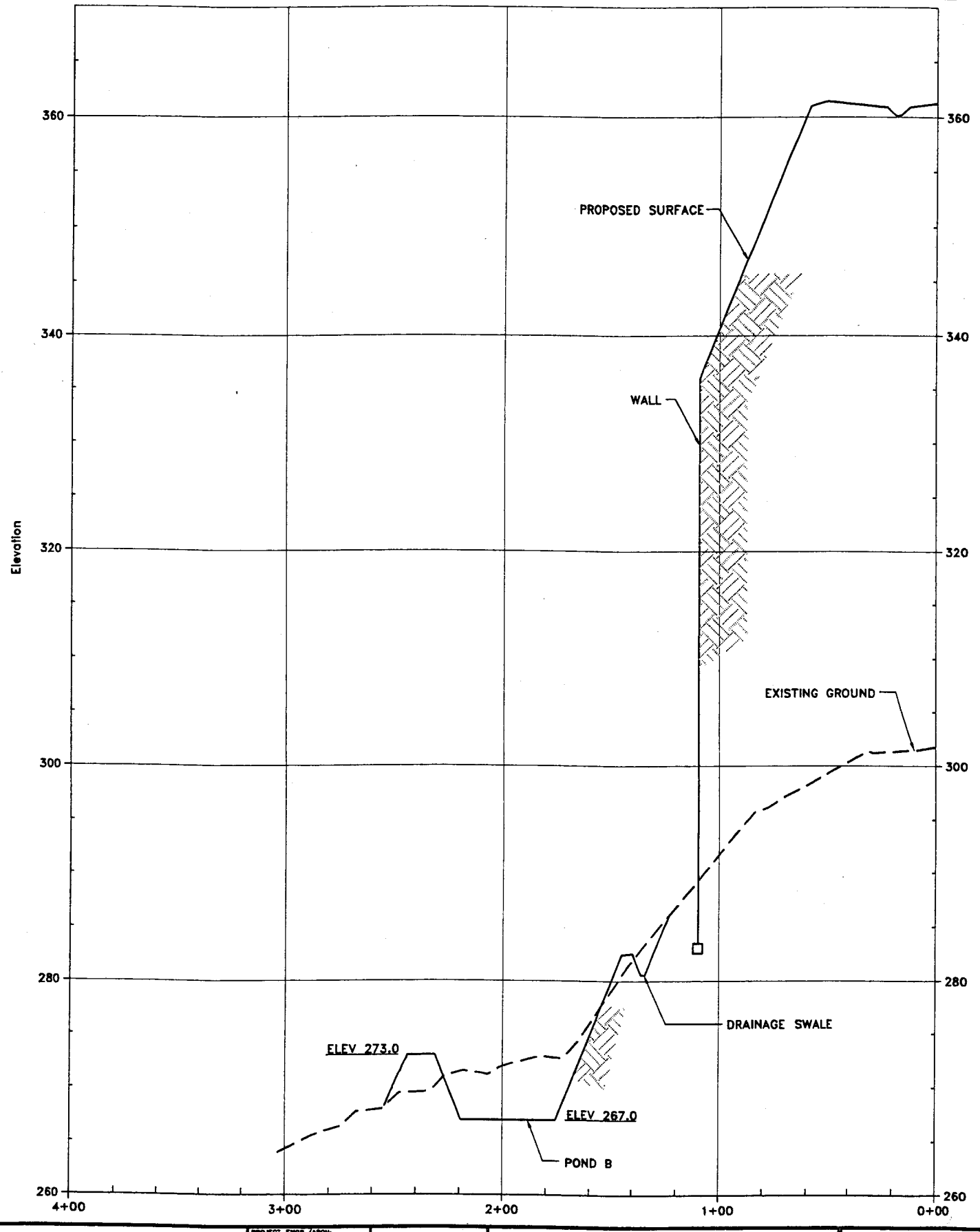
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND B PLAN SDW2 BASIN POND

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C40
PORT OF SEATTLE NO. STIA_XXXX_C40



DETAIL
POND B PROFILE
SDW2
SCALE: 1"=30'

AR 025247

SCALE: 1"=30'

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

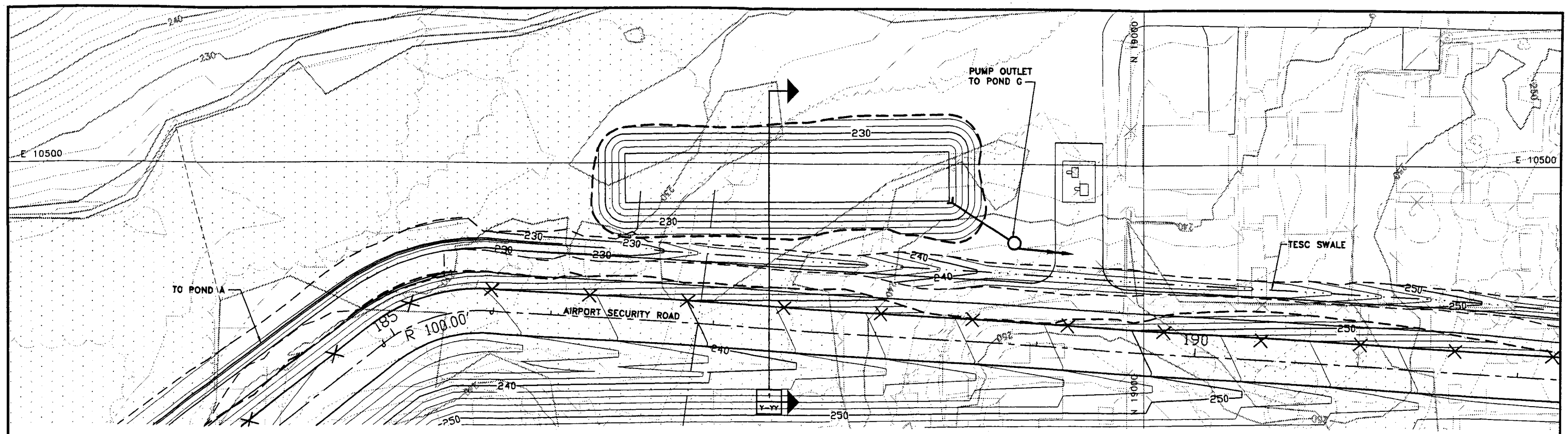
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND B PROFILE SDW2

WORK ORDER NO.

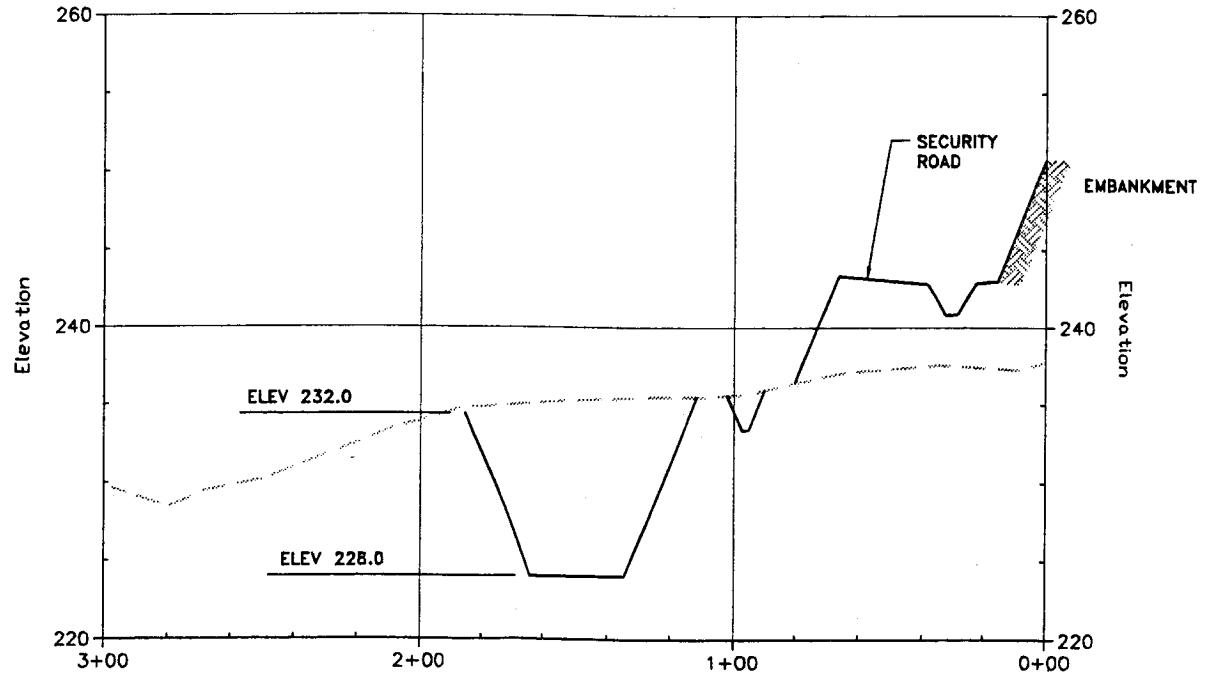
CONSULTANT'S NO. 20764/BF_C41

PORT OF SEATTLE NO. STIA_XXXX_C41



PLAN

POND E
TESC SDW1A BASIN TEMPORARY POND 2
SCALE: 1" = 30'



DETAIL

POND E
TESC SDW1A BASIN TEMPORARY POND 2
SCALE: 1" = 30'

1/42

LEGEND:

WETLANDS

AR 025248

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Bellevue, Washington 98004
(425)455-3355 Fax: (425)455-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

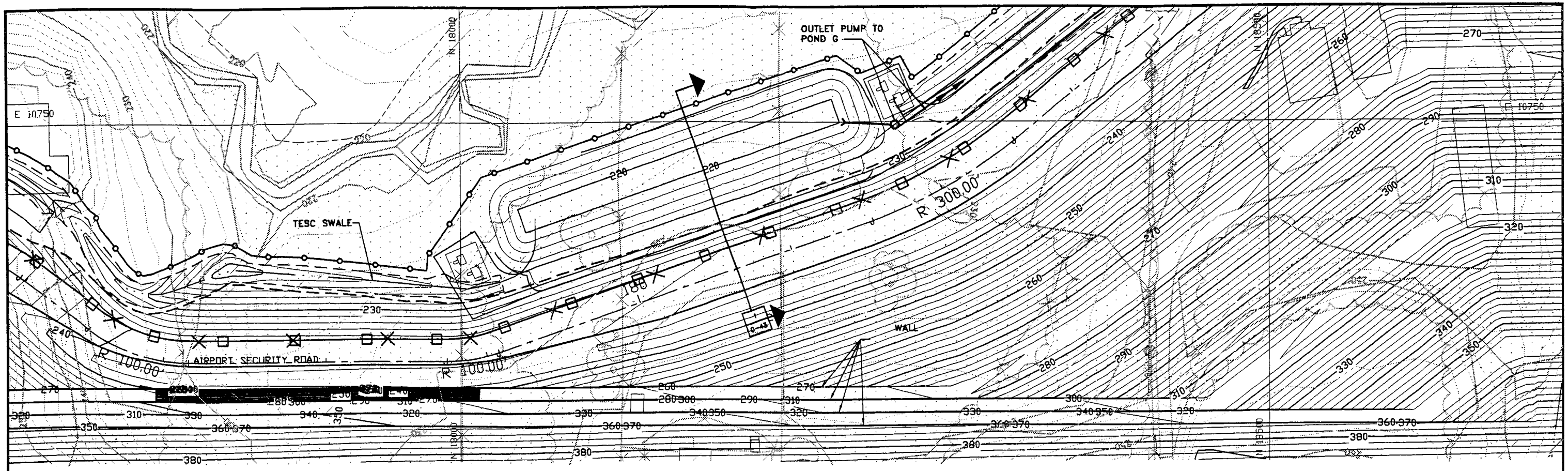
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

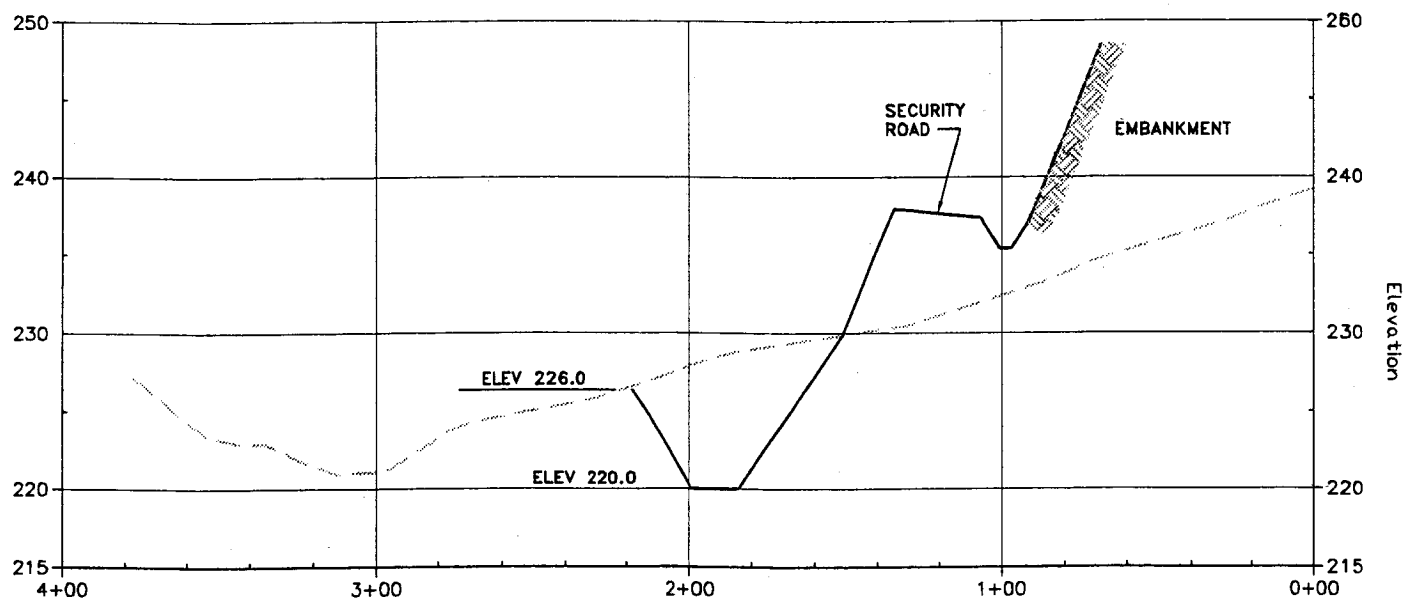
SHEET TITLE: POND E/ TESC SDW1A BASIN TEMPORARY POND 2

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C42
PORT OF SEATTLE NO. STIA_XXXX_C42



PLAN

POND A
TESC SDW-1a BASIN TEMPORARY POND 1
SCALE: 1" = 30'



LEGEND:

WETLANDS

30' 0 30' 60'
SCALE: 1"=30'

DETAIL

POND A
TESC SDW-1a BASIN TEMPORARY POND 1
SCALE: 1" = 30'

AR 025249

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS					REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

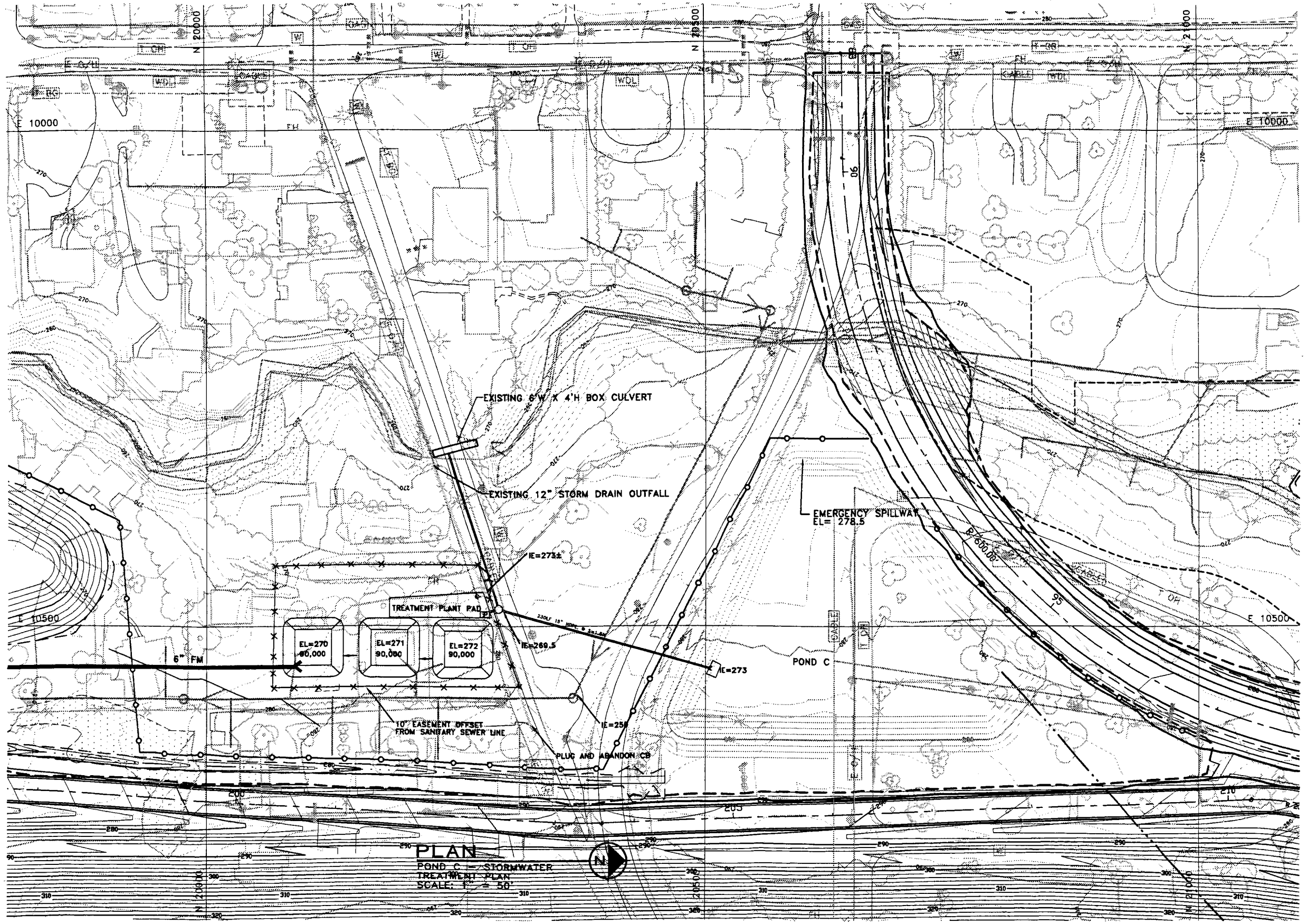
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND A PLAN & PROFILE SDW1A BASIN TEMPORARY POND 1

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C43
PORT OF SEATTLE NO. STIA_XXXX_C43



PLAN
POND C - STORMWATER TREATMENT PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

50' 0 50' 100'
SCALE: 1"=50'

AR 025250

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. NORBERG
DRAWN BY: R. NORBERG
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

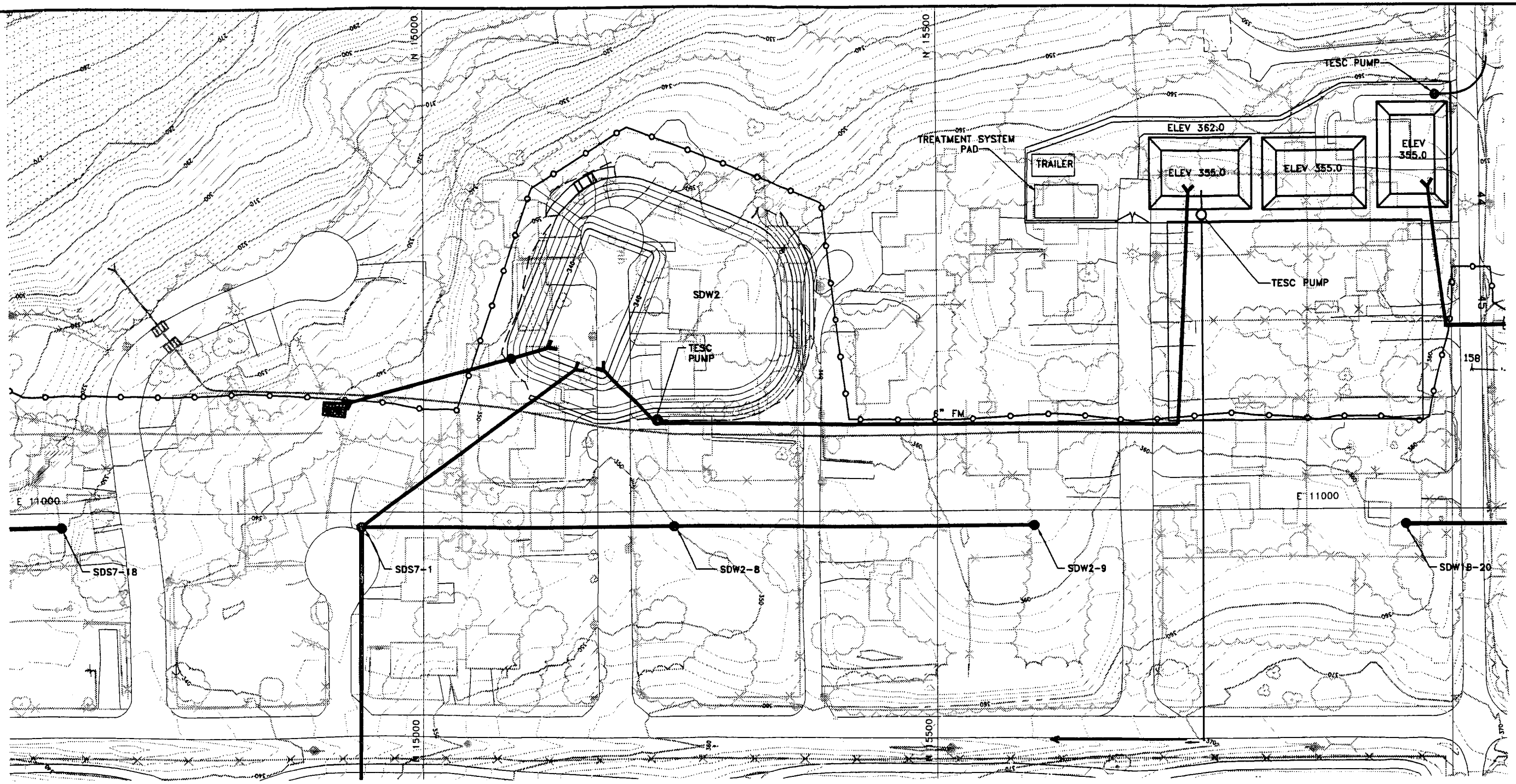
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND C - STORMWATER TREATMENT PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C44
PORT OF SEATTLE NO. STIA_XXXX_C44



NOTES:

PLAN
POND F - STROMWATER TREATMENT PLAN
SCALE: 1" = 50'

LEGEND:

STORM DRAIN PIPE

WETLANDS

50' 0 50' 100'
SCALE: 1"=50'

AR 025251

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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ARCHITECTS • ENGINEERS • PLANNERS
600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)453-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. NORBERG
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

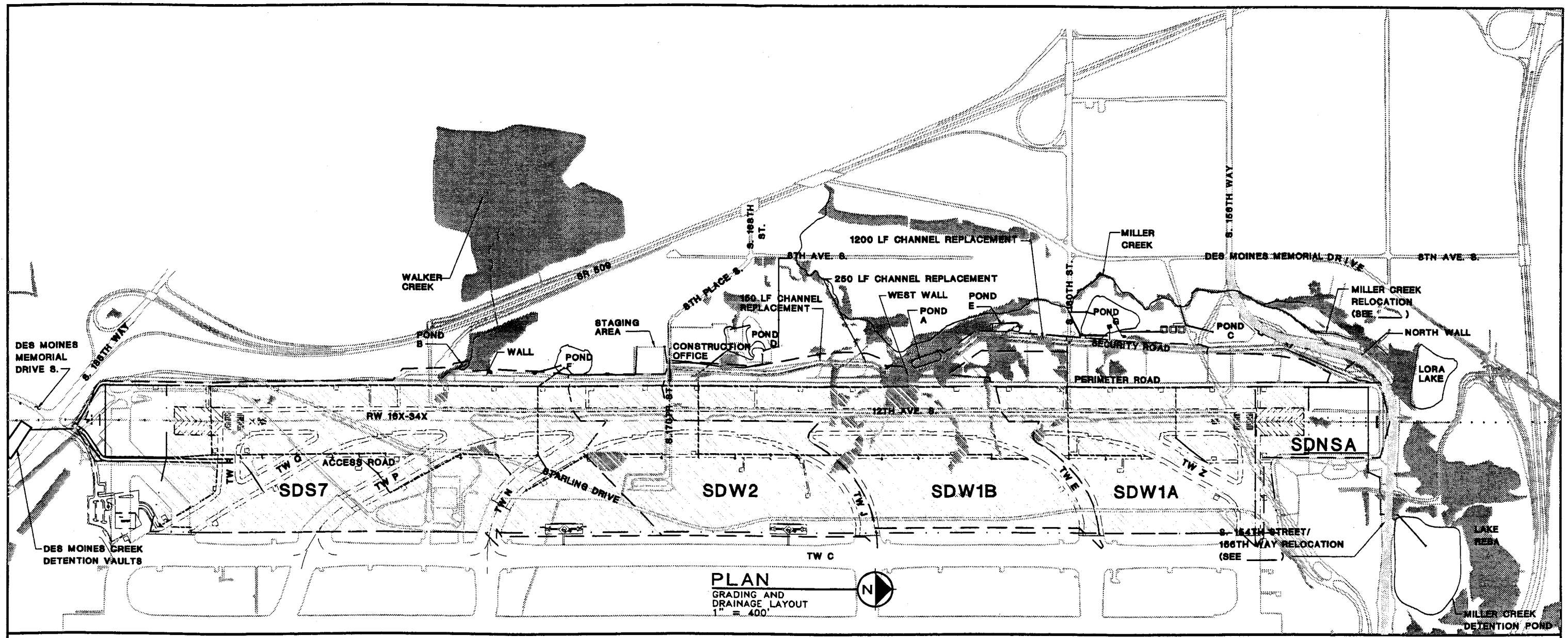
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND F - STORMWATER TREATMENT PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C46
PORT OF SEATTLE NO. STIA_XXXX_C46



PLAN
GRADING AND DRAINAGE LAYOUT
1" = 400'

N

DRAINAGE BASINS

TRIBUTARY	DRAINAGE BASIN	ACREAGE
UPPER MILLER	SDN3A	16
MIDDLE MILLER	SDW1A	67
LOWER MILLER	SDW1B	97
WALKER	SDW2	45
DES MOINES	SDS7	91

400' 0 400' 800'
SCALE: 1"=400'

AR 025252

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: G. MATSUSHITA
SCALE: 1" = 400'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE LAYOUT

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C109
PORT OF SEATTLE NO. STIA_XXXX_C109

PLAN
GRADING AND DRAINAGE PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025253

50' 0 50' 100'
SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)455-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

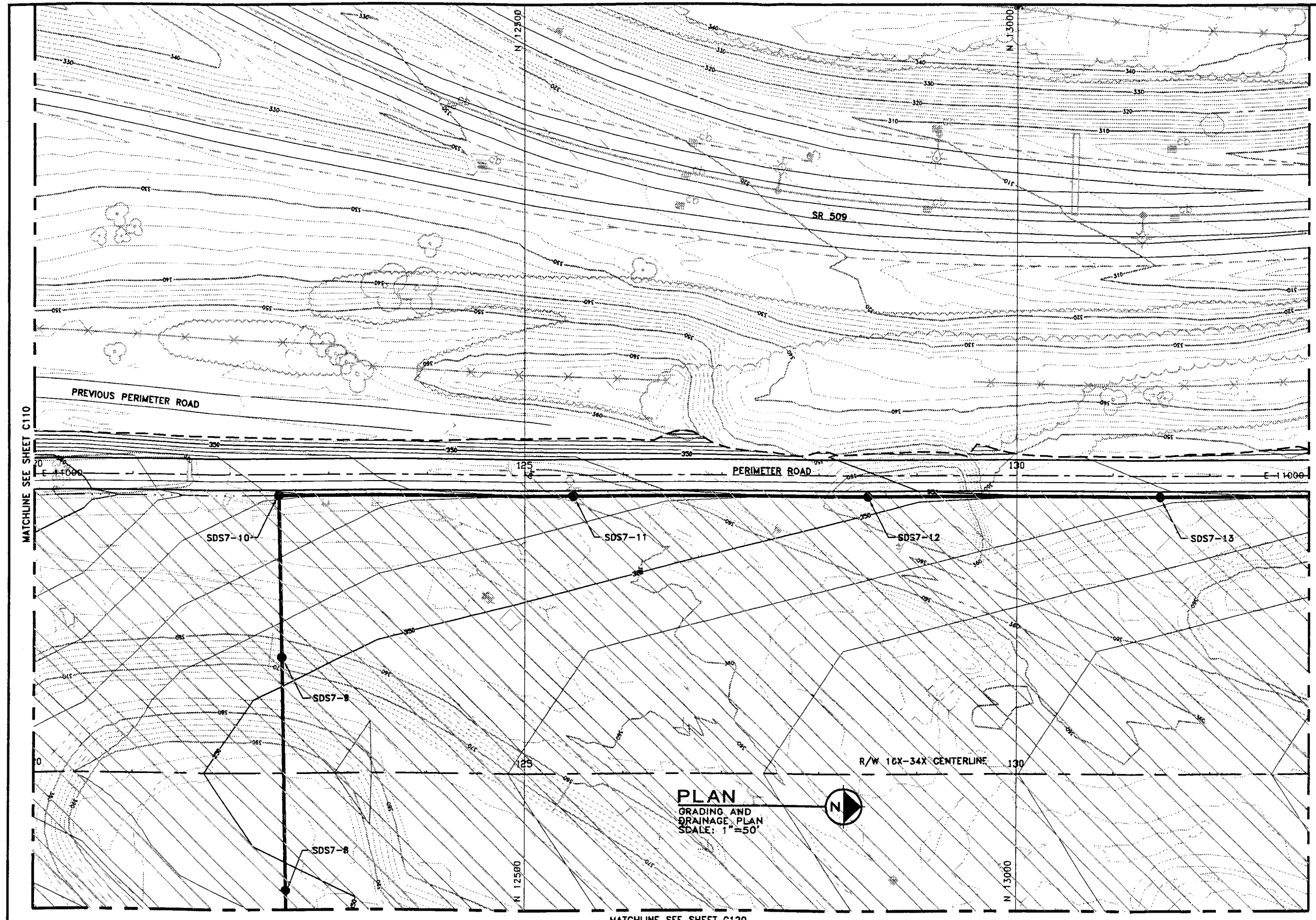
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.
CONSULTANT'S NO.
20764/BF_C110
PORT OF SEATTLE NO.
STIA_XXXX_C110



PLAN
GRADING AND DRAINAGE PLAN
SCALE: 1"=50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025254

50' 0 50' 100'
SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

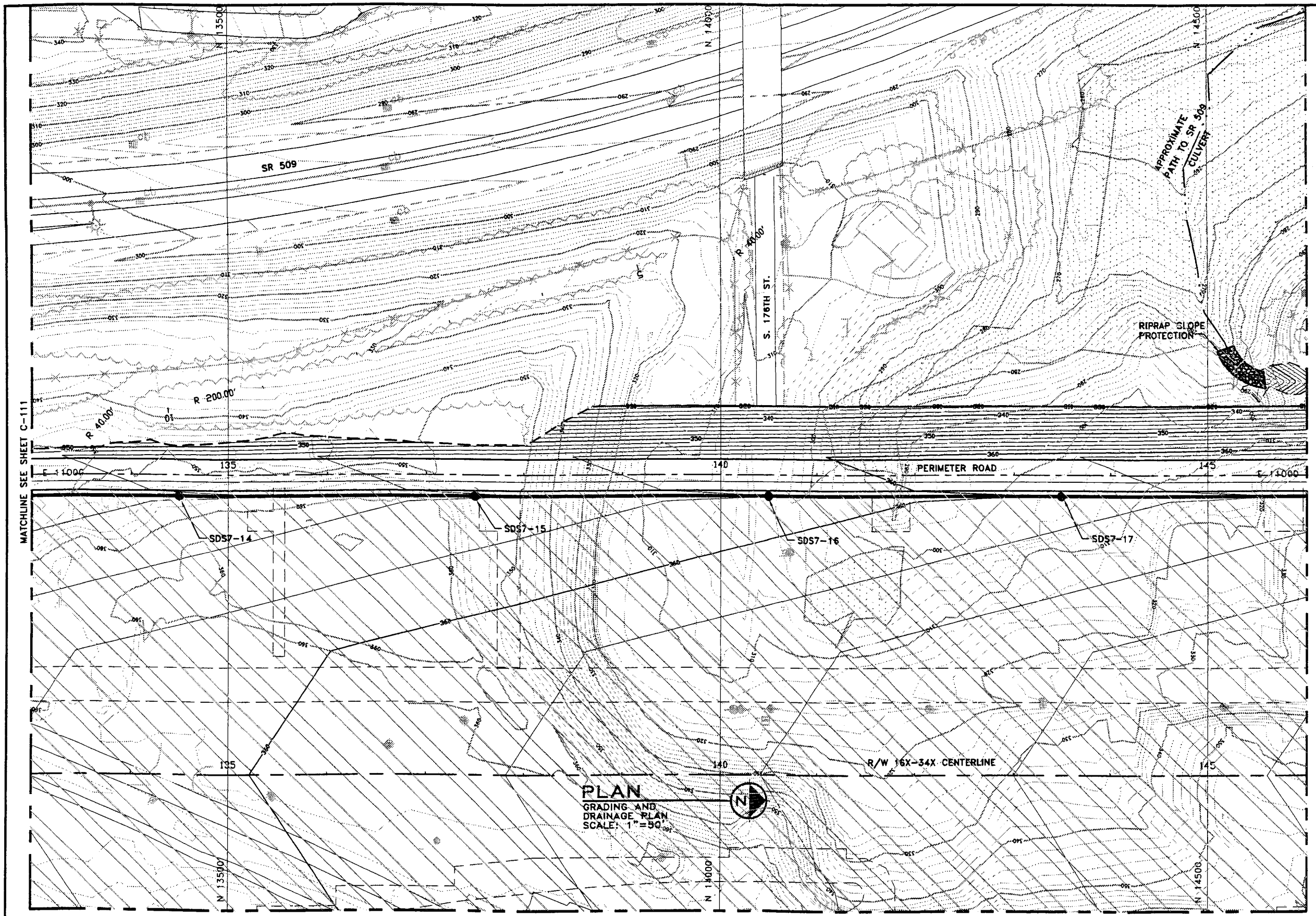
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C111
PORT OF SEATTLE NO. STIA_XXXX_C111



NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025255

50' 0 50' 100'
SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

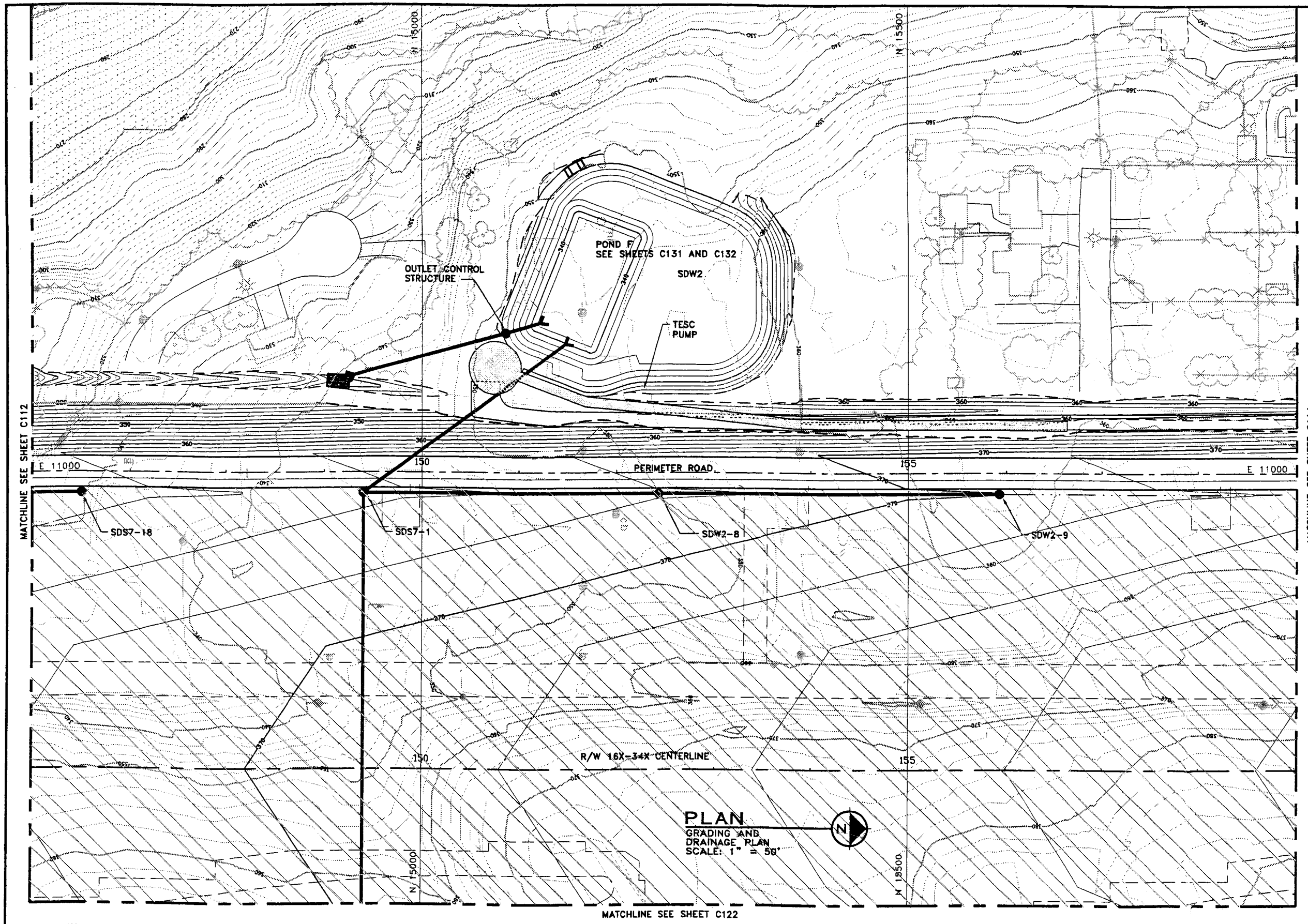
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C112

PORT OF SEATTLE NO. STIA_XXXX_C112



PLAN
GRADING AND DRAINAGE PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

- STORM DRAIN PIPE
- SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN
- WETLANDS

AR 025256

50' 0 50' 100'
SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

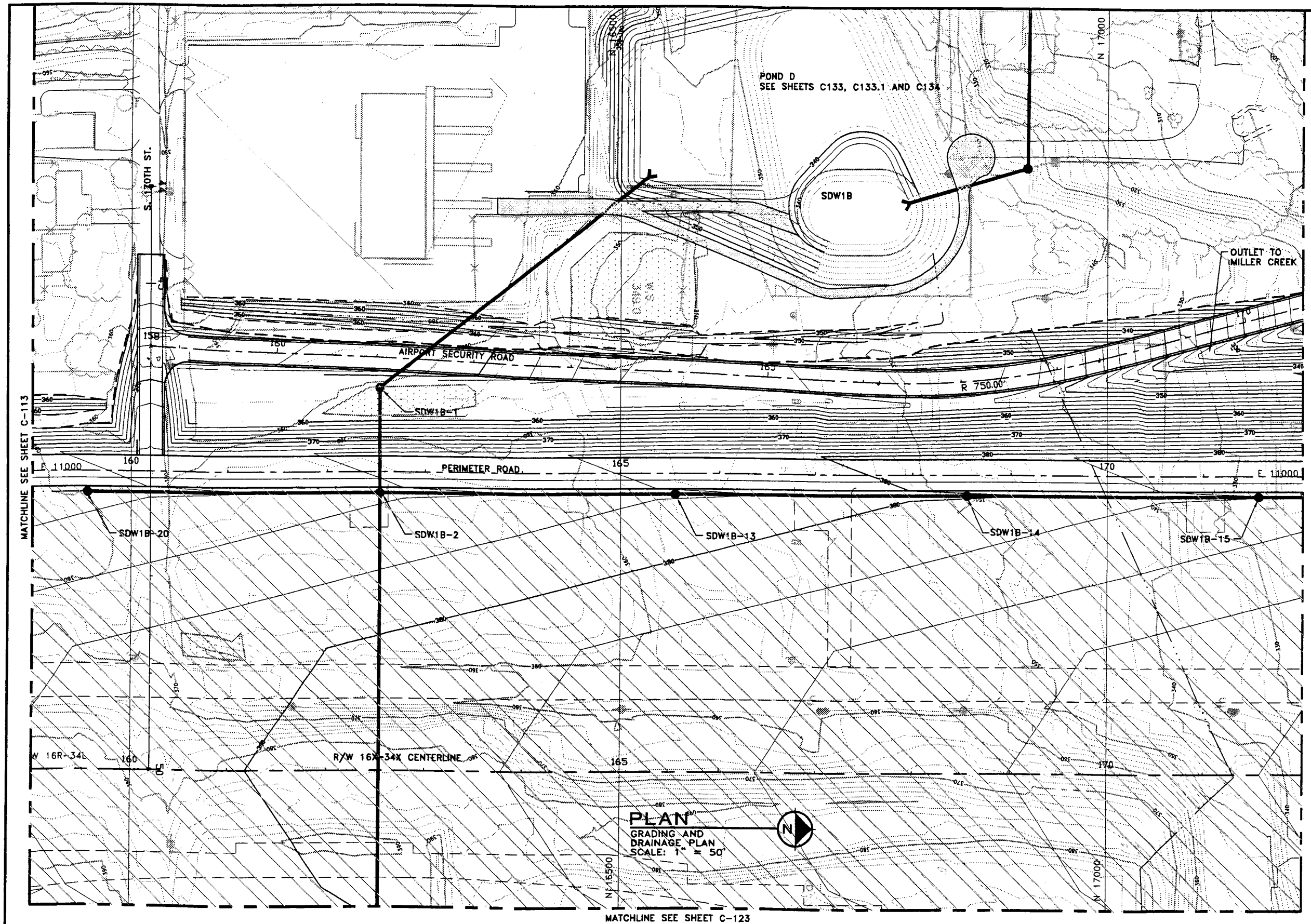
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C113
PORT OF SEATTLE NO. STIA_XXXX_C113



PLAN
GRADING AND DRAINAGE PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

WETLANDS

AR 025257

50' 0 50' 100'
SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

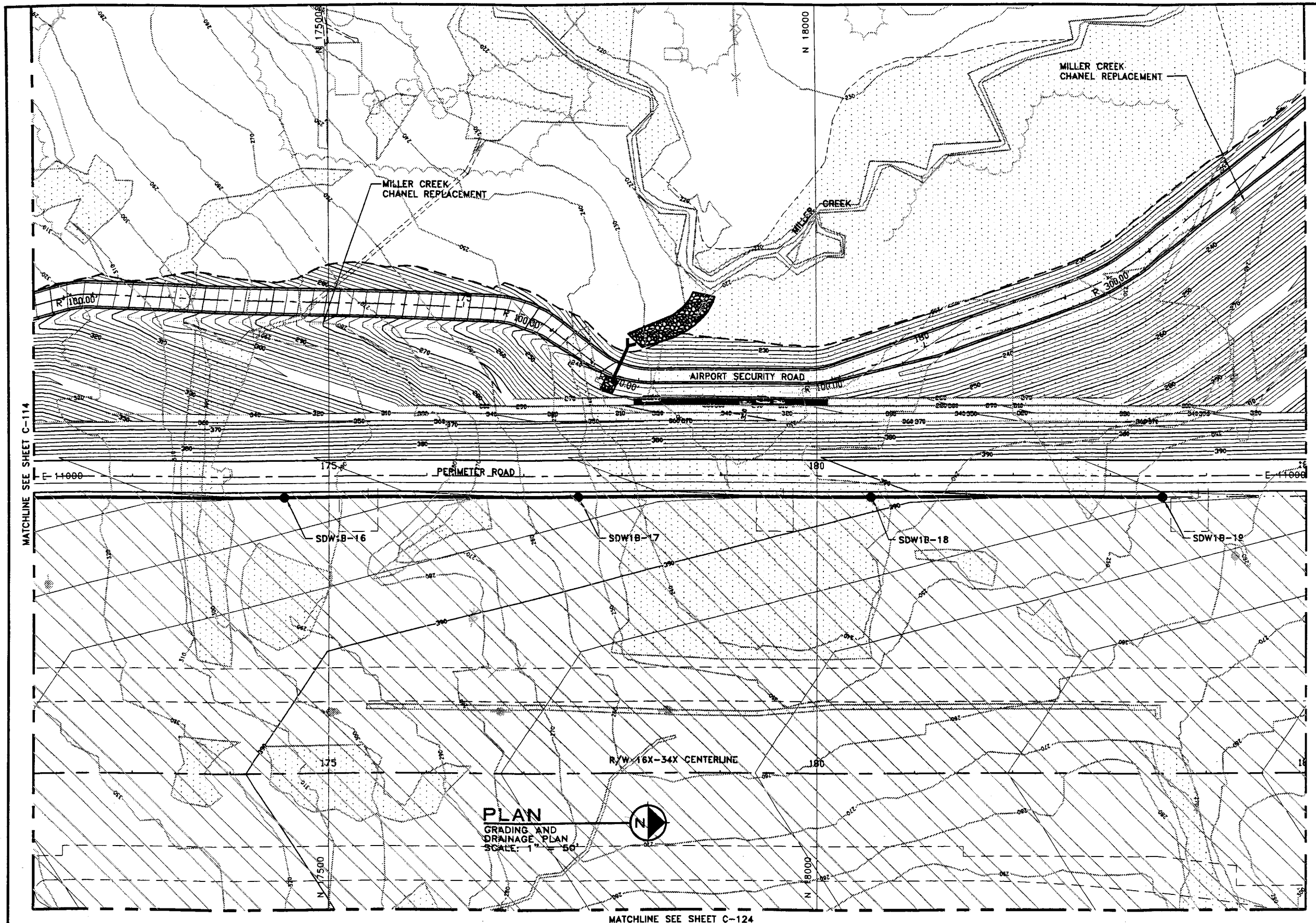
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C114

PORT OF SEATTLE NO. STIA_XXXX_C114



PLAN
GRADING AND DRAINAGE PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

- STORM DRAIN PIPE
- SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN
- WETLANDS

AR 025258

SCALE: 1"=50'
50' 0 50' 100'

KEY PLAN

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./MGR.: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

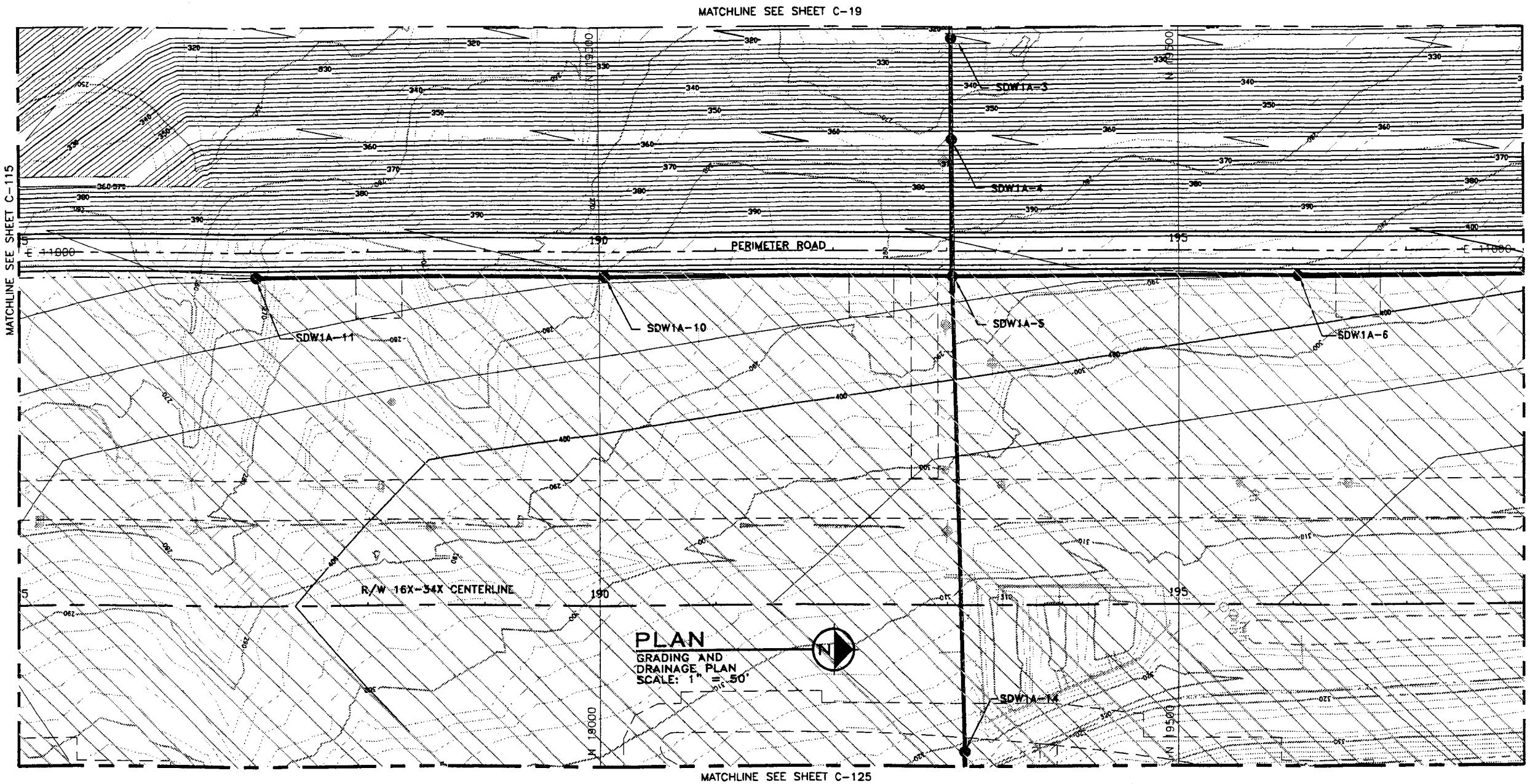
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C115
PORT OF SEATTLE NO. STIA_XXXX_C115

NOTES:



LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025259

50' 0 50' 100'
SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)453-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C116
PORT OF SEATTLE NO. STIA_XXXX_C116

MATCHLINE SEE SHEET C-129

MATCHLINE SEE SHEET C-116

MATCHLINE SEE SHEET C-118

MATCHLINE SEE SHEET C-126

PERIMETER ROAD

SDW1A-7

SDW1A-8

SDW1A-9

SDW1A-12

GRADE BREAK

R/W 16X-34X CENTERLINE

N 21000

N 22050

N 21000

N 20000

N 20500

N 21000

E 11000

200

205

210

220

PLAN
GRADING AND DRAINAGE PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025260

SCALE: 1"=50'
50' 0 50' 100'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

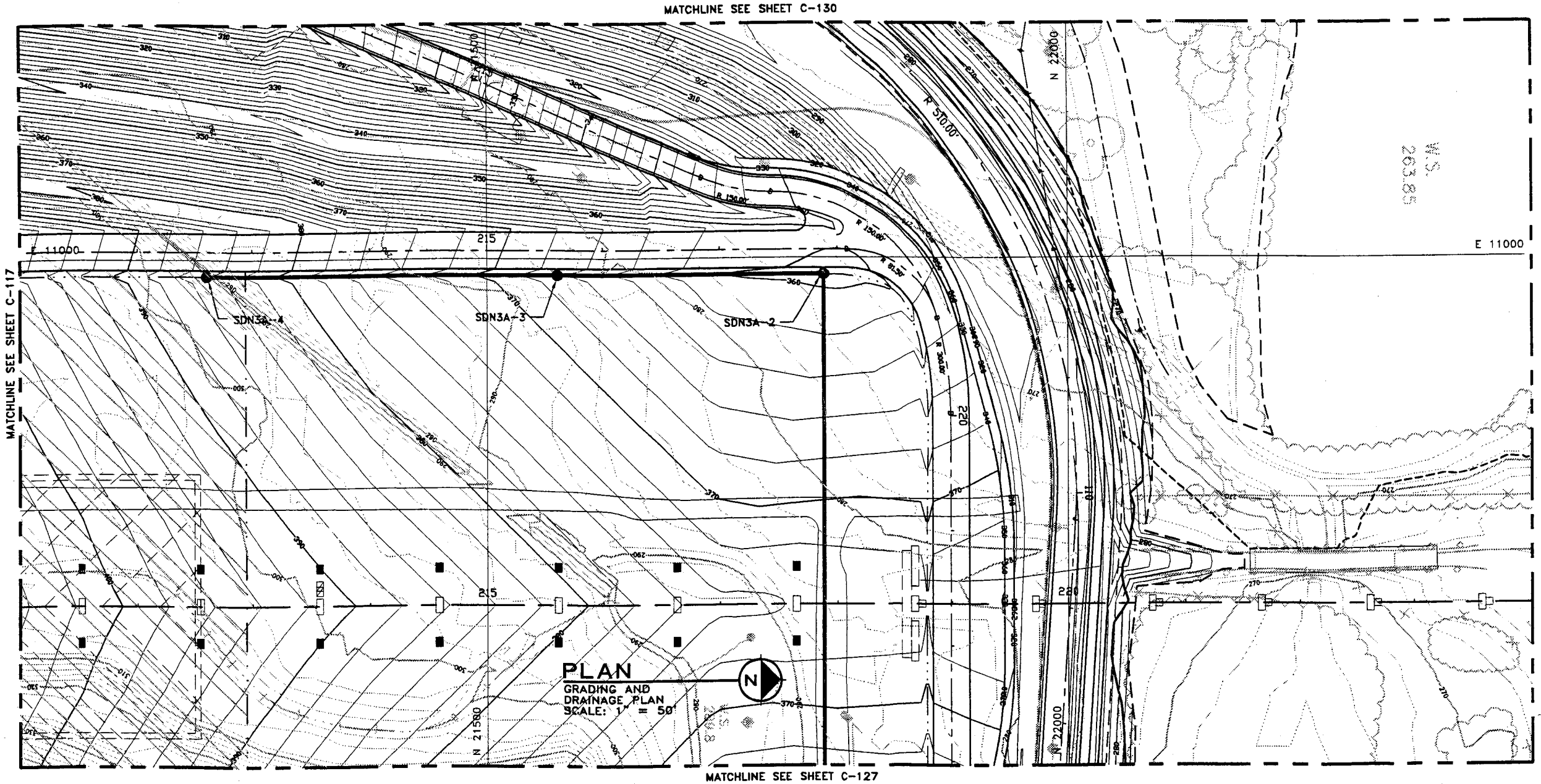
SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C117

PORT OF SEATTLE NO. STIA_XXXX_C117

MATCHLINE SEE SHEET C-130



MATCHLINE SEE SHEET C-117

MATCHLINE SEE SHEET C-127

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025261

50' 0 50' 100'
SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNER:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

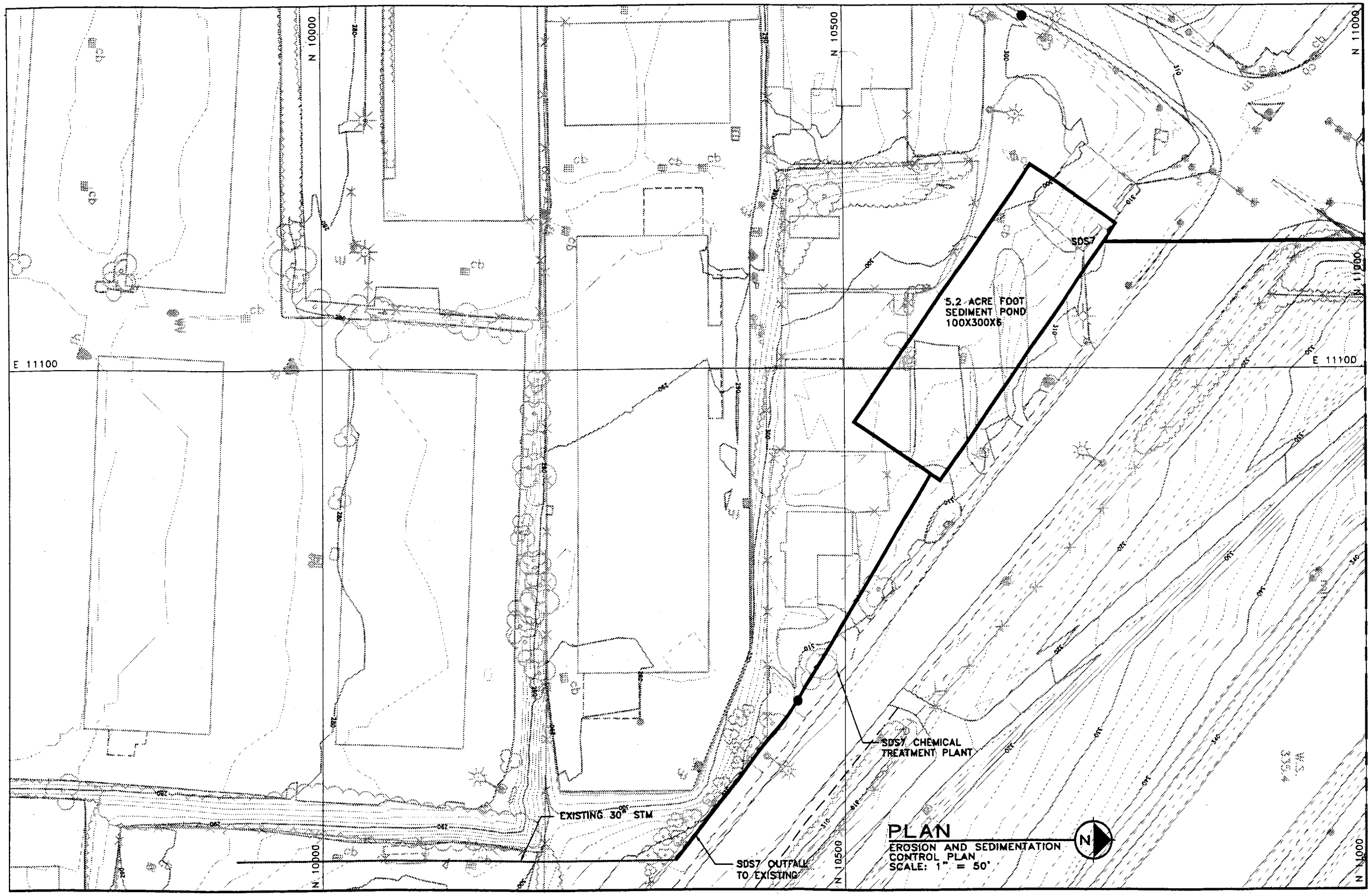
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C118

PORT OF SEATTLE NO. STIA_XXXX_C118



NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

MATCHLINE SEE SHEET C-19 & C-28

AR 025262

50' 0 50' 100'
SCALE: 1"=50'

						C37	C38	C39
C19	C20	C21	C22	C23	C24	C25	C26	C27
C28	C29	C30	C31	C32	C33	C34	C35	C36

KEY PLAN

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PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

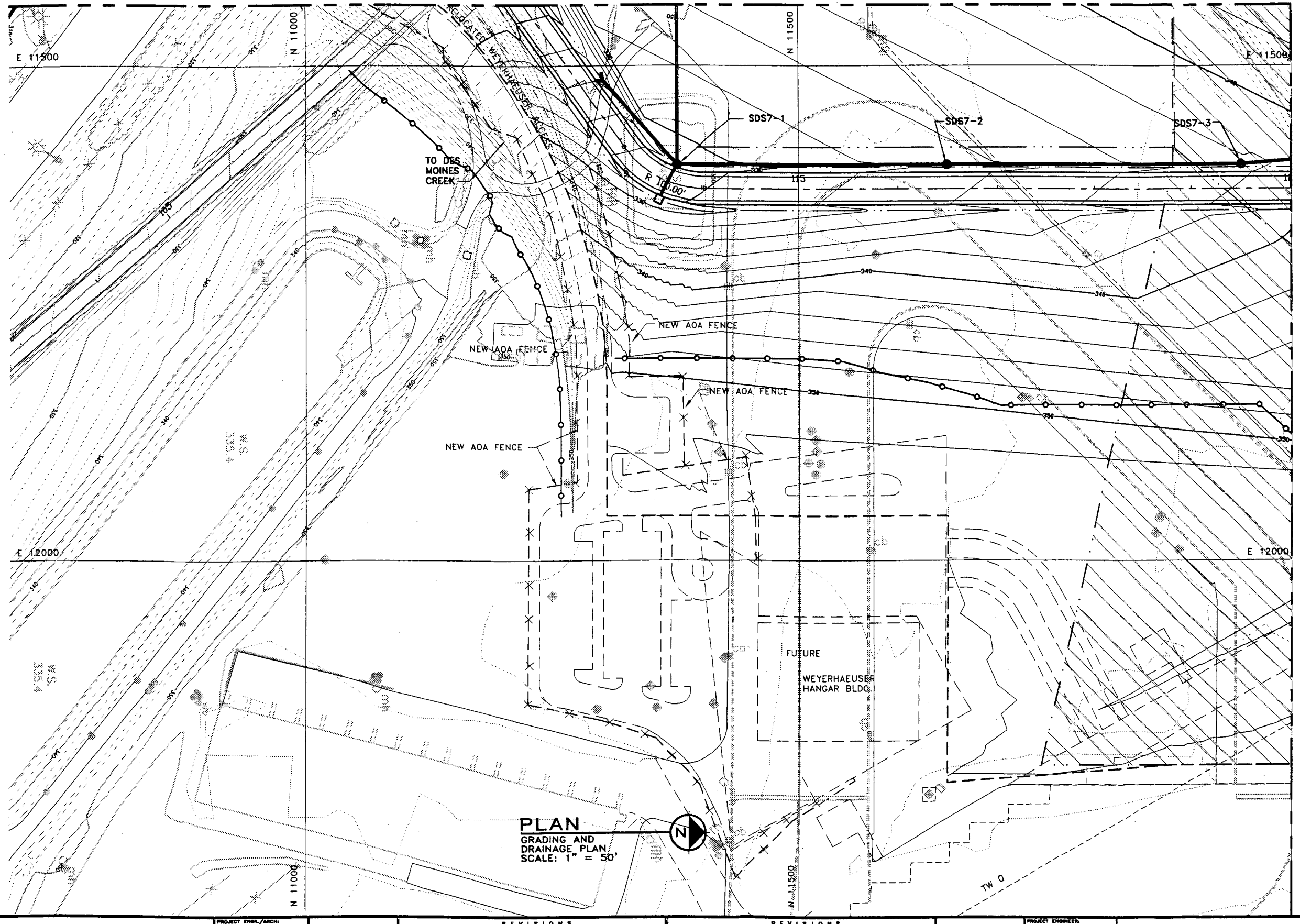
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C118.1
PORT OF SEATTLE NO. STIA_XXXX_C118.1

MATCHLINE SEE SHEET C-110



PLAN
GRADING AND DRAINAGE PLAN
SCALE: 1" = 50'

MATCHLINE SEE SHEET C-120

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025263

50' 0 50' 100'
SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)455-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNER: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNER:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C119

PORT OF SEATTLE NO. STIA_XXXX_C119

MATCHLINE SEE SHEET C-111

MATCHLINE SEE SHEET C-119

MATCHLINE SEE SHEET C-121

E 11500

E 12000

N 12500

N 13000

SDS7-7

SDS7-19

SDS7-20

SDS7-21

SDS7-22

SDS7-19A

SDS7-20A

SDS7-22A

SDS7-32

SDS7-33

ACCESS ROAD

FUEL FARM

FAA HH

MH062A/E

TW R

TW Q

TW O

6 AC. FT. VAULT

42" IWS

42"SD

STUBOUT

CONTROL VALVE

CLEANOUT

TYPE 7-4 D/B, 2#6+6 #6GR (EQUIPMENT PWR) 2#6+6 #6GR (VASI) (USE 5KV WIRES)

TYPE 7-2 D/B, 2#6,5KV, EA.

TYPE 3 D/B (TYP)

TYPE 7-2 D/B (TYP)

EXIST 2#6,5KV

HHP03-A (6 P.I.)

3-#10 #6GR

3-#10 #6GR

PLAN

GRADING AND DRAINAGE PLAN

SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025264

SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

HNTB

ARCHITECTS • ENGINEERS • PLANNERS

600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C120

PORT OF SEATTLE NO. STIA_XXXX_C120

MATCHLINE SEE SHEET C-112

MATCHLINE SEE SHEET C-120

MATCHLINE SEE SHEET C-122

SDS7-23
SDS7-24
SDS7-26
SDS7-29
SDS7-23A
SDS7-24A
SDS7-29A
SDS7-25
SDS7-28
SDS7-27
SDS7-26
ACCESS ROAD
FIBEROPTIC CABLE
TYPE 7-4 D/B
TYPE 2 D/B
TYPE 5 D/B
CONTROL VALVE
FAA MH R1
FAA MH S
XFMR PAD
E 11500
E 12000
N 13500
N 14000
N 14500

PLAN
GRADING AND DRAINAGE PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025265

50' 0 50' 100'
SCALE: 1"=50'

KEY PLAN

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)455-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

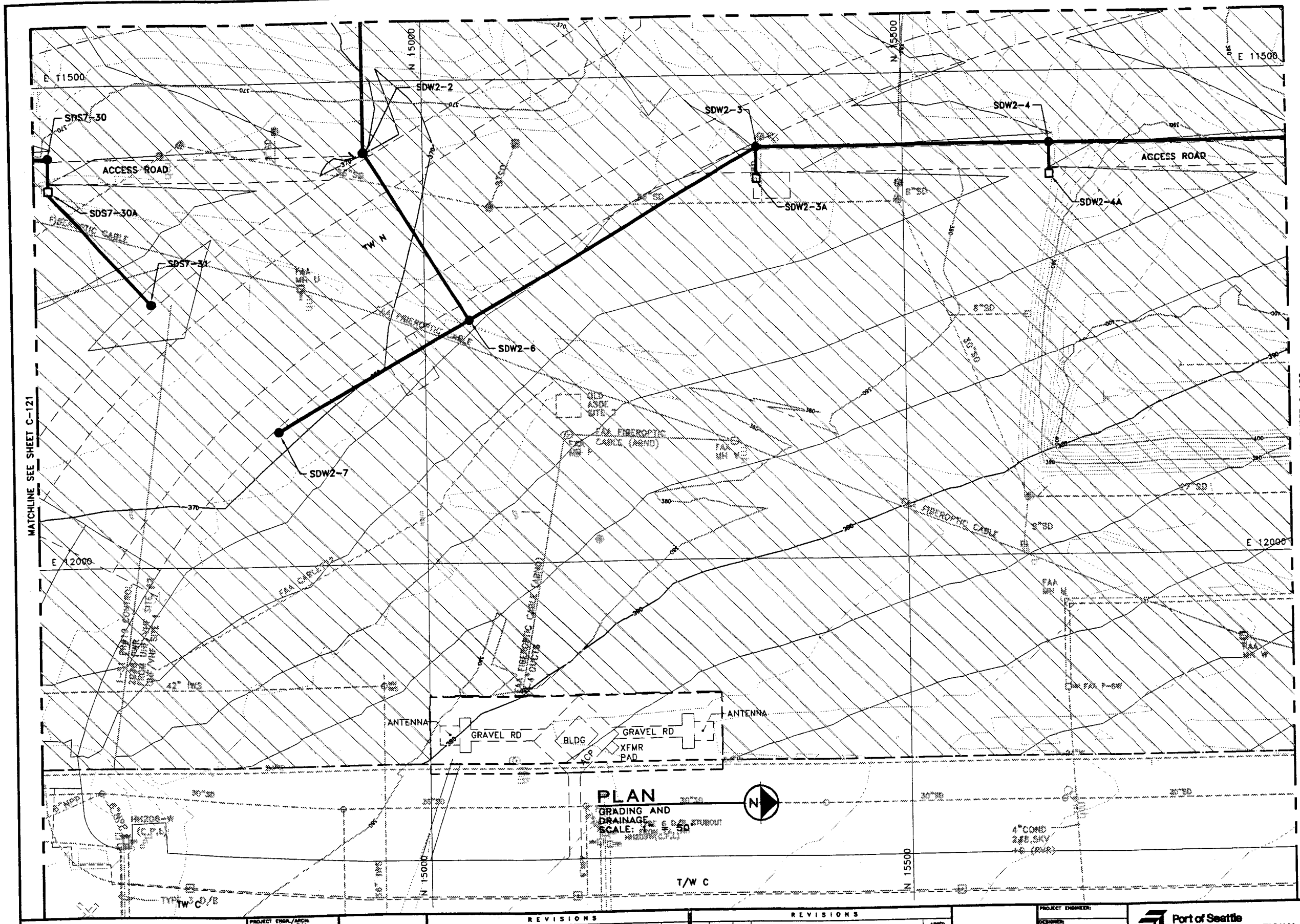
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C121

PORT OF SEATTLE NO. STIA_XXXX_C121



PLAN
GRADING AND DRAINAGE
SCALE: 1" = 50'

LEGEND:

- STORM DRAIN PIPE
- SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN
- WETLANDS

AR 025266

SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3355 Fax: (425)455-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

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REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C122
PORT OF SEATTLE NO. STIA_XXXX_C122

MATCHLINE SEE SHEET C-114

MATCHLINE SEE SHEET C-122

MATCHLINE SEE SHEET C-124

N 16000 N 16500 N 17000

E 11500 E 12000

SDW2-5 SDW1B-3 SDW1B-4 SDW1B-5 SDW1B-6

SDW2-5A SDW1B-3A SDW1B-4A SDW1B-5A SDW1B-6A

ACCESS ROAD

FIBEROPTIC CABLE

FAA MH N FAA MH O FAA MH 150 FAA MH X FAA MH Z

ASR 8

GRAVEL RD BLDG GRAVEL RD XFMR PAD

TW C

PLAN

GRADING AND DRAINAGE PLAN

SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025267

50' 0 50' 100'

SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	118	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C123

PORT OF SEATTLE NO. STIA_XXXX_C123

MATCHLINE SEE SHEET C-115

MATCHLINE SEE SHEET C-123

MATCHLINE SEE SHEET C-125

SDW1B-7

SDW1B-8

SDW1B-9

SDW1B-10

SDW1B-7A

SDW1B-8A

SDW1B-9A

SDW1B-10A

ACCESS ROAD

CONTROL VALVE

21"SD

24"SD

18"SD

24" W

TYPE 3 D/B

TW C

CD

PLAN

GRADING AND DRAINAGE PLAN
SCALE: 1" = 50'

N

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025268

SCALE: 1"=50'
50' 0 50' 100'

KEY PLAN

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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Bellevue, Washington 98004
(425)453-3535 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C124
PORT OF SEATTLE NO. STIA_XXXX_C124

MATCHLINE SEE SHEET C-116

MATCHLINE SEE SHEET C-124

MATCHLINE SEE SHEET C-126

E 11500

E 12000

N 19000

N 19500

N 19000

SDW1B-11

SDW1B-11A

SDW1B-12

ACCESS ROAD

SDW1A-15

SDW1A-15A

SDW1A-16

SDW1A-16A

ACCESS ROAD

JW E

WATER OF SEATTLE

15"SD

18"SD

12"SD

8"WP

6"WP

TYPE 3 TW C D/B

TYPE 1-2 D/B

TEMP RTN

(C,F,I)

PLAN

GRADING AND DRAINAGE PLAN

SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025269

SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)455-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C125

PORT OF SEATTLE NO. STIA_XXXX_C125

MATCHLINE SEE SHEET C-117

MATCHLINE SEE SHEET C-125

MATCHLINE SEE SHEET C-127

SDW1A-17

SDW1A-17A

SDW1A-13

SDW1A-13A

ACCESS ROAD

TW Z

TW C

PERIMETER ROAD

E 11500

N 20000

N 20500

E 12000

ERATURE SENSOR

7-4 D/B

7-2 D/B

5KV WIRE)

18"SD

15"SD

6"SD

12"SD

ANTENNA

ASDE-3 REFLECTOR

SIGN 28B

TYPE 7-2

PLAN

PAVING AND
DRAINAGE PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025270

50' 0 50' 100'
SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C126

PORT OF SEATTLE NO. STIA_XXXX_C126

MATCHLINE SEE SHEET 1-118

MATCHLINE SEE SHEET 1-126

PLAN
GRADING AND DRAINAGE PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

STORM DRAIN PIPE

SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025271

SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (423)453-9179

PROJECT ENGR./ARCH:	A. BLACK
DESIGNED:	R. ELSLIP
DRAWN BY:	N. HATCHER
SCALE:	1" = 50'
DATE:	
CHECKED BY:	
APPROVED BY:	

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

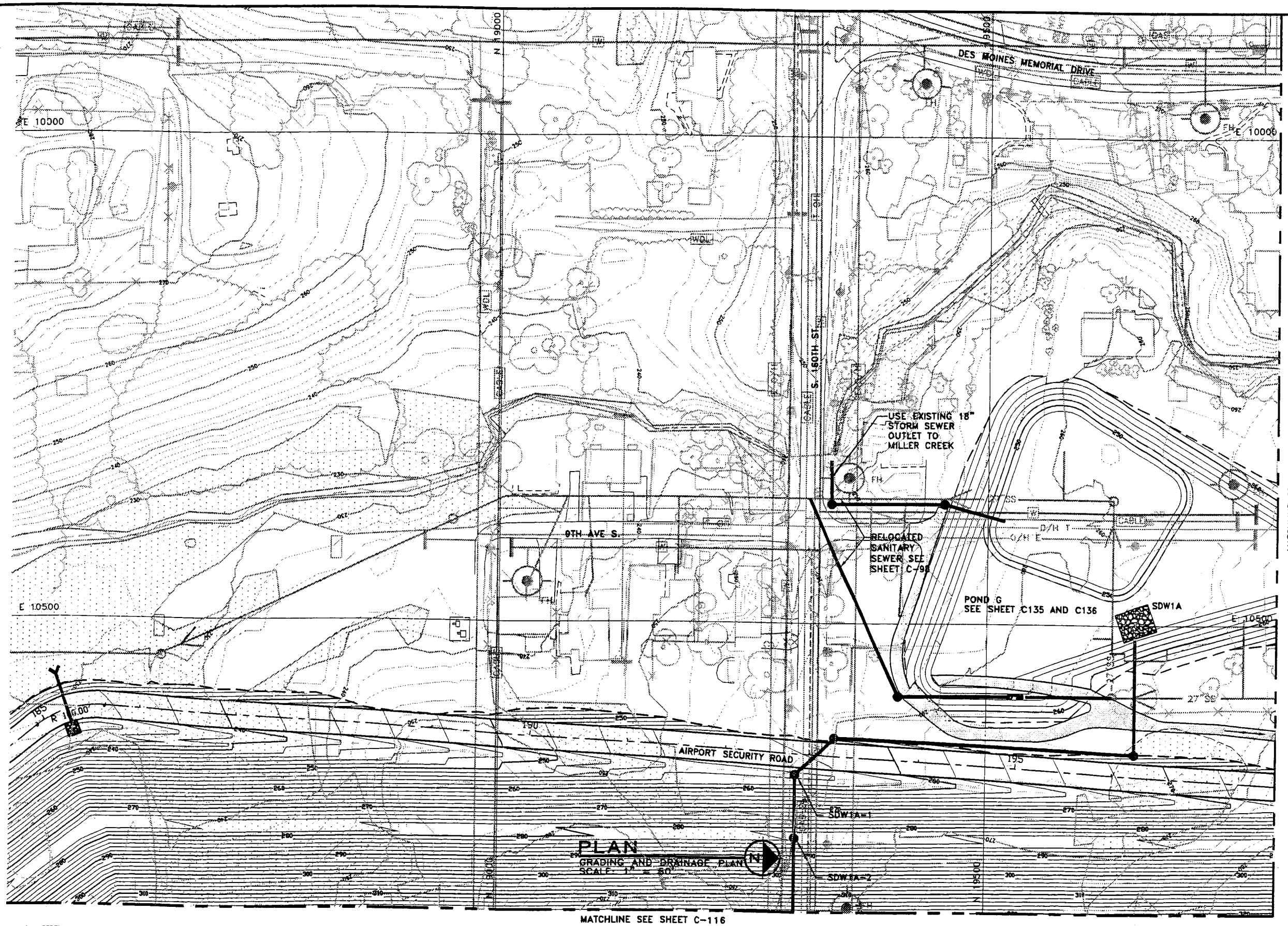
PROJECT ENGINEER:	
DESIGNED:	
DRAWN BY:	
SCALE:	
DATE:	
CHECKED BY:	
APPROVED BY:	

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.	
CONSULTANT'S NO.	20764/BF_C127
PORT OF SEATTLE NO.	STIA_XXXX_C127



NOTES:

LEGEND:

- STORM DRAIN PIPE
- SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN
- WETLANDS

AR 025272

50' 0 50' 100'
SCALE: 1"=50'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

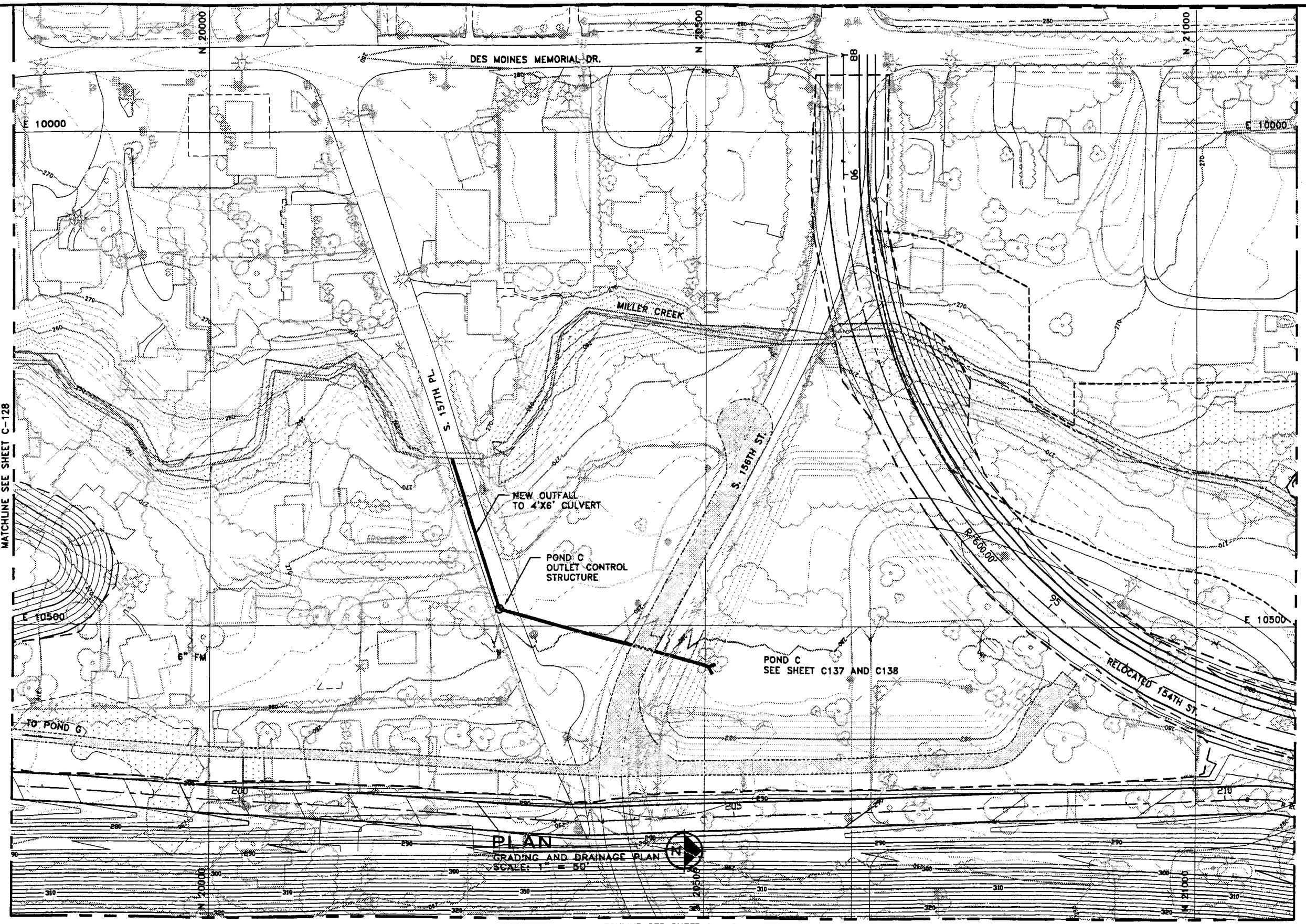
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C128

PORT OF SEATTLE NO. STIA_XXXX_C128



NOTES:

LEGEND:

- STORM DRAIN PIPE
- SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN
- WETLANDS

AR 025273

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(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

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REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

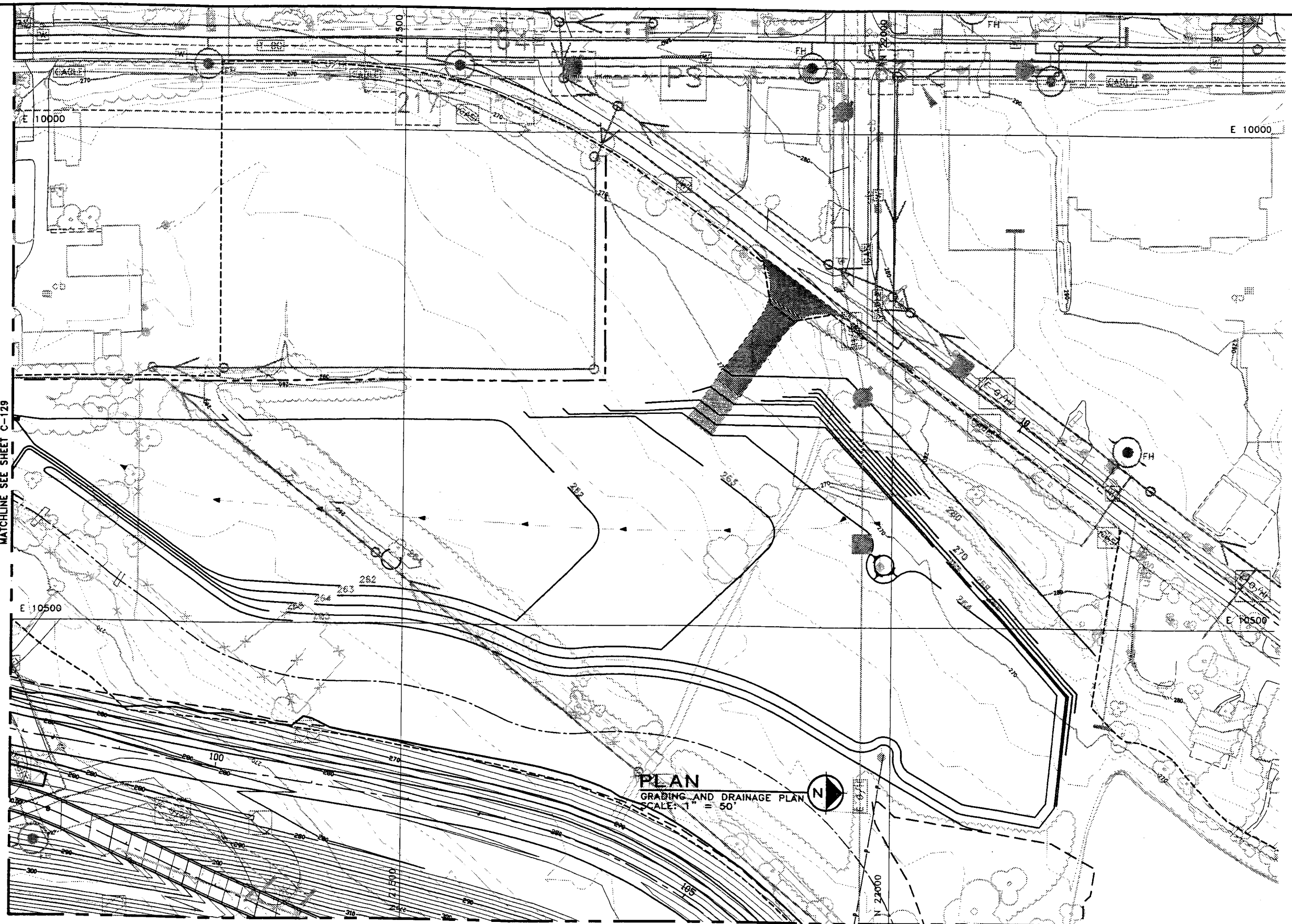
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.

CONSULTANT'S NO. 20764/BF_C129

PORT OF SEATTLE NO. STIA_XXXX_C129



PLAN
GRADING AND DRAINAGE PLAN
SCALE: 1" = 50'

NOTES:

LEGEND:

AR 025274

SCALE: 1"=50'
50' 0 50' 100'

						128	129	130
110	111	112	113	114	115	116	117	118
119	120	121	122	123	124	125	126	127

KEY PLAN

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

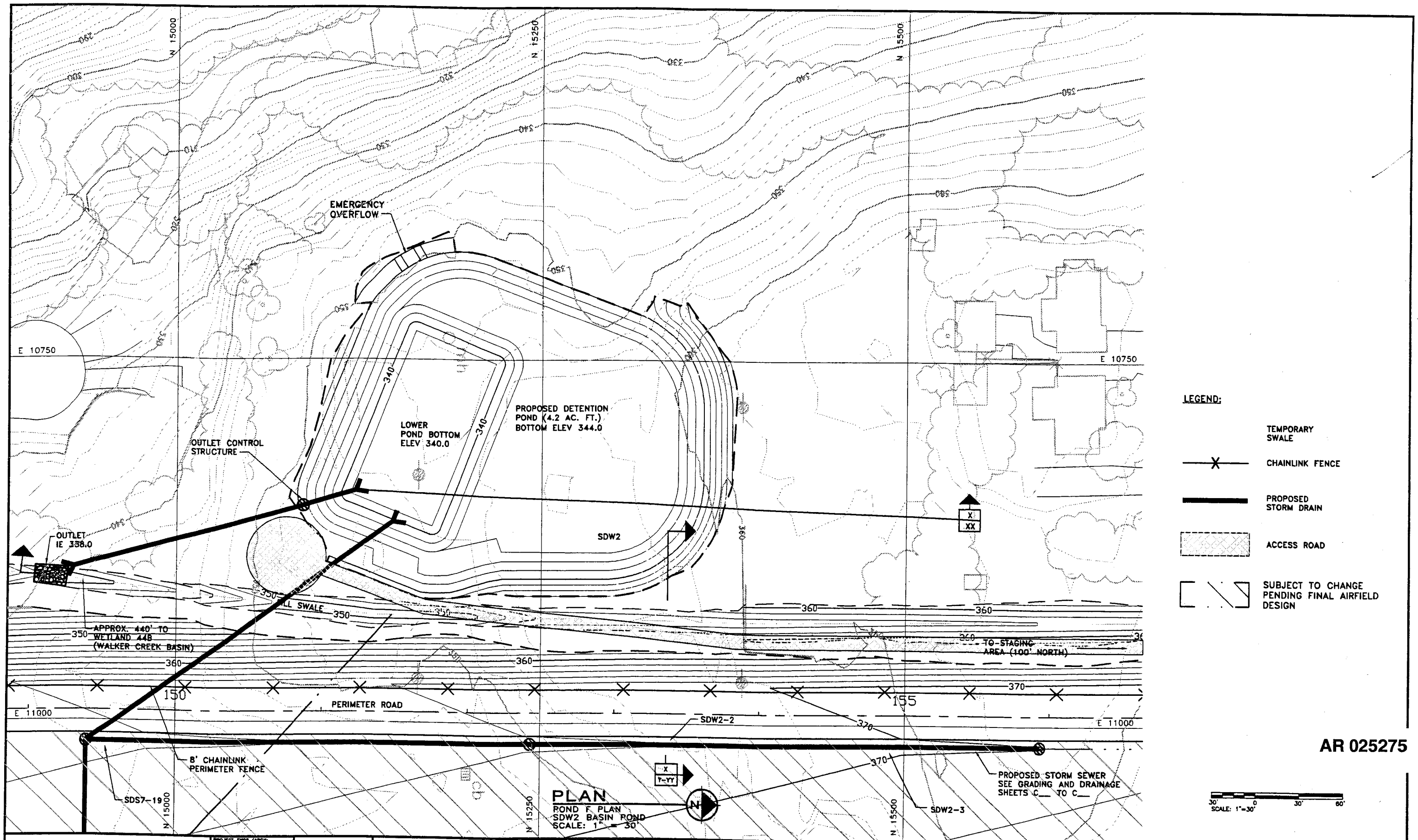
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: GRADING AND DRAINAGE PLAN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C130
PORT OF SEATTLE NO. STIA_XXXX_C130



PLAN
POND F PLAN
SDW2 BASIN POND
SCALE: 1" = 30'

AR 025275

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT MGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

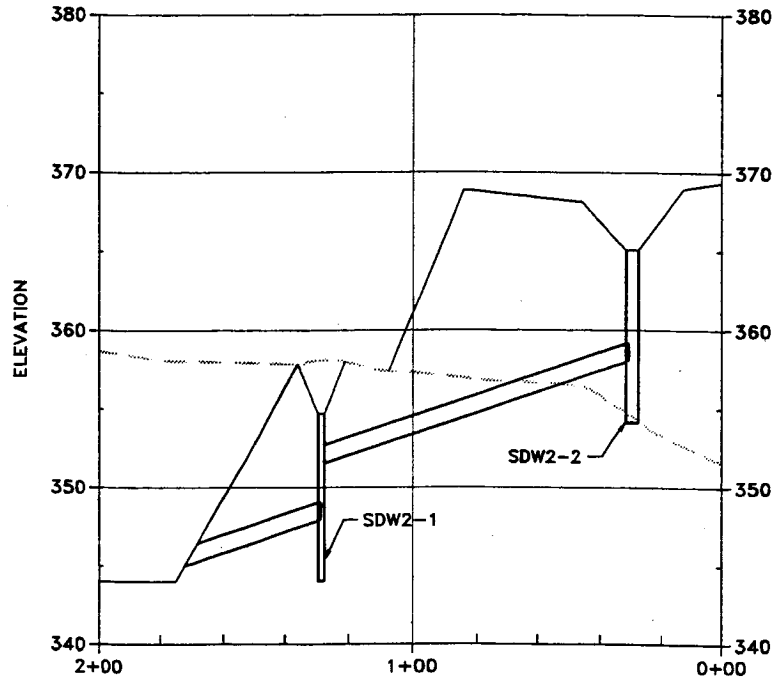
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

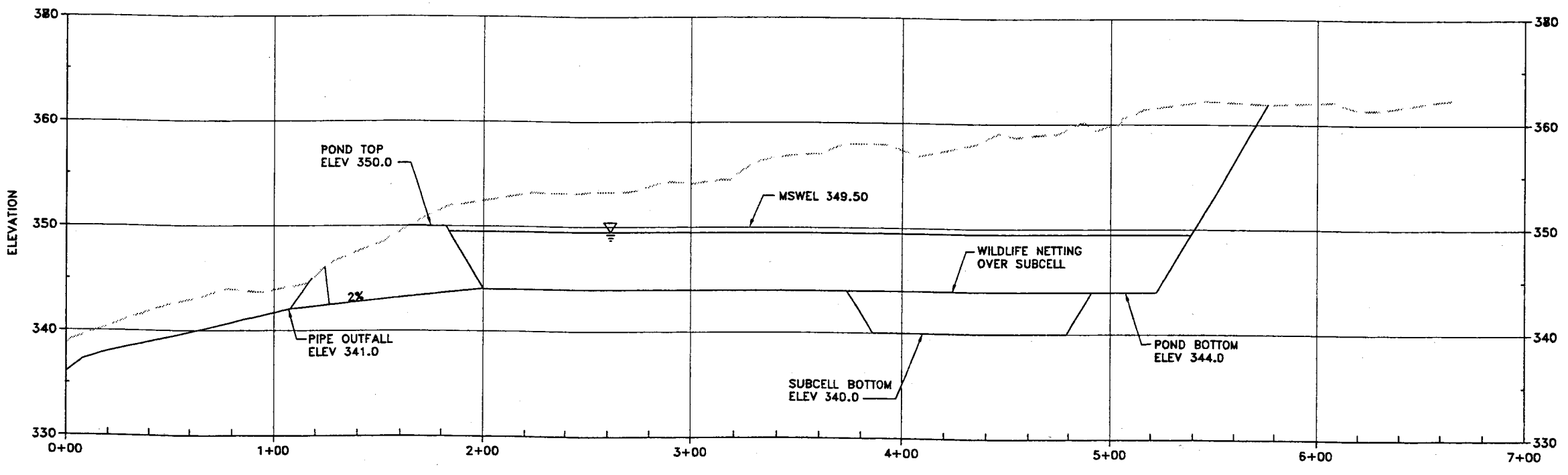
SHEET TITLE: POND F PLAN SDW2 BASIN POND

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C131
PORT OF SEATTLE NO. STIA_XXXX_C131



PROFILE

POND F PROFILE
SDW-2 BASIN POND
SCALE: 1" = 30'



PROFILE

POND F PROFILE
SDW-2 BASIN POND
SCALE: 1" = 30'

AR 025276

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

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600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

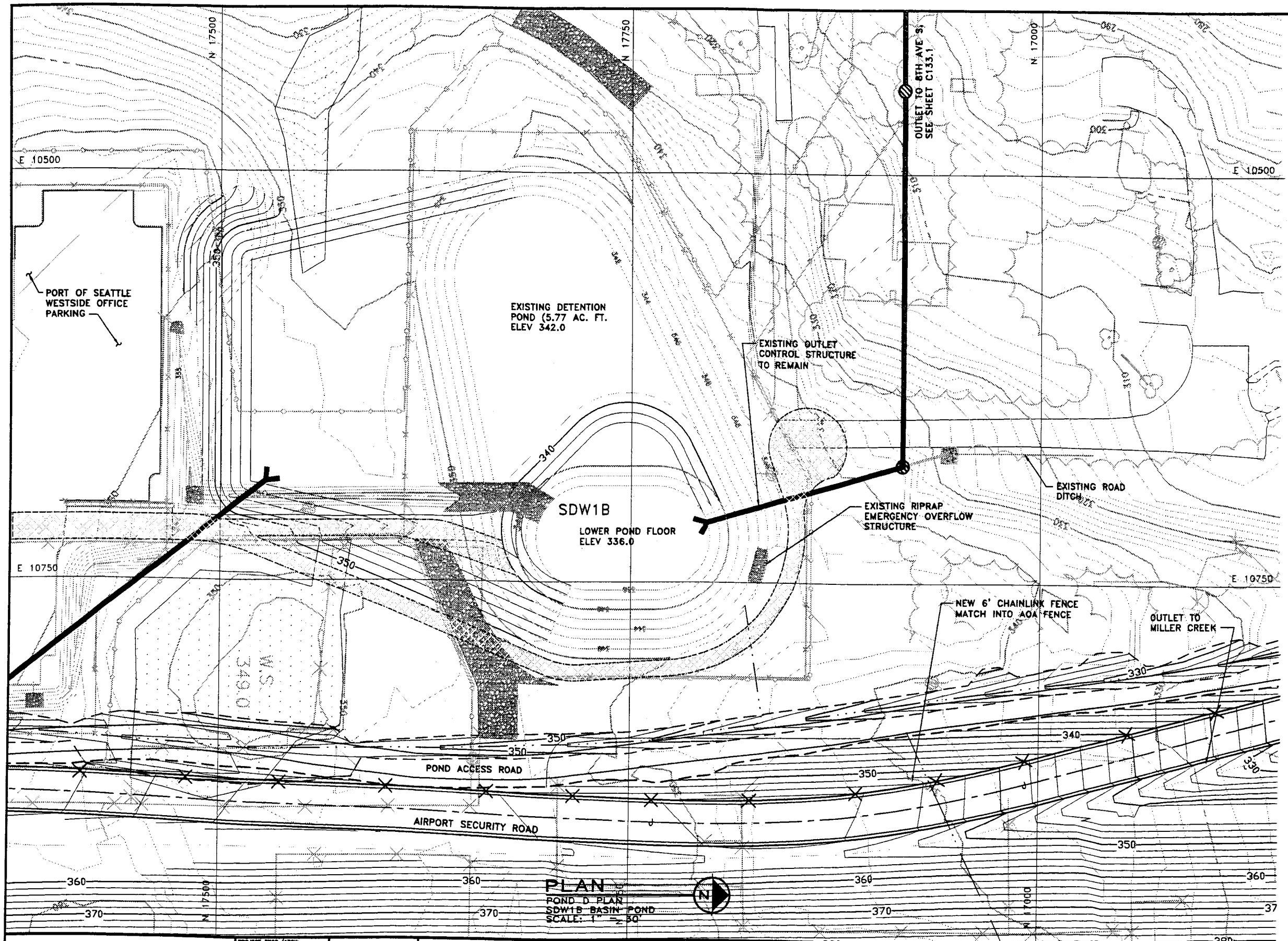
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND F PROFILE SDW2 BASIN POND

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C132
PORT OF SEATTLE NO. STIA_XXXX_C132



PLAN
POND D PLAN
SDW1B BASIN POND
SCALE: 1" = 30'

LEGEND:

- TEMPORARY SWALE
- CHAINLINK FENCE
- PROPOSED STORM DRAIN
- ACCESS ROAD AROUND POND G
- WETLANDS
- FEATURES SHOWN ARE CONCEPTUAL AND SUBJECT TO CHANGE PENDING FINAL AIRFIELD REVIEW

AR 025277

30' 0 30' 60'
SCALE: 1"=30'

CALL 48 HOURS BEFORE YOU DIG 1-800-424-5555

HNTB
ARCHITECTS • ENGINEERS • PLANNERS
600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)453-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

30% SUBMITTAL FOR REVIEW ONLY

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

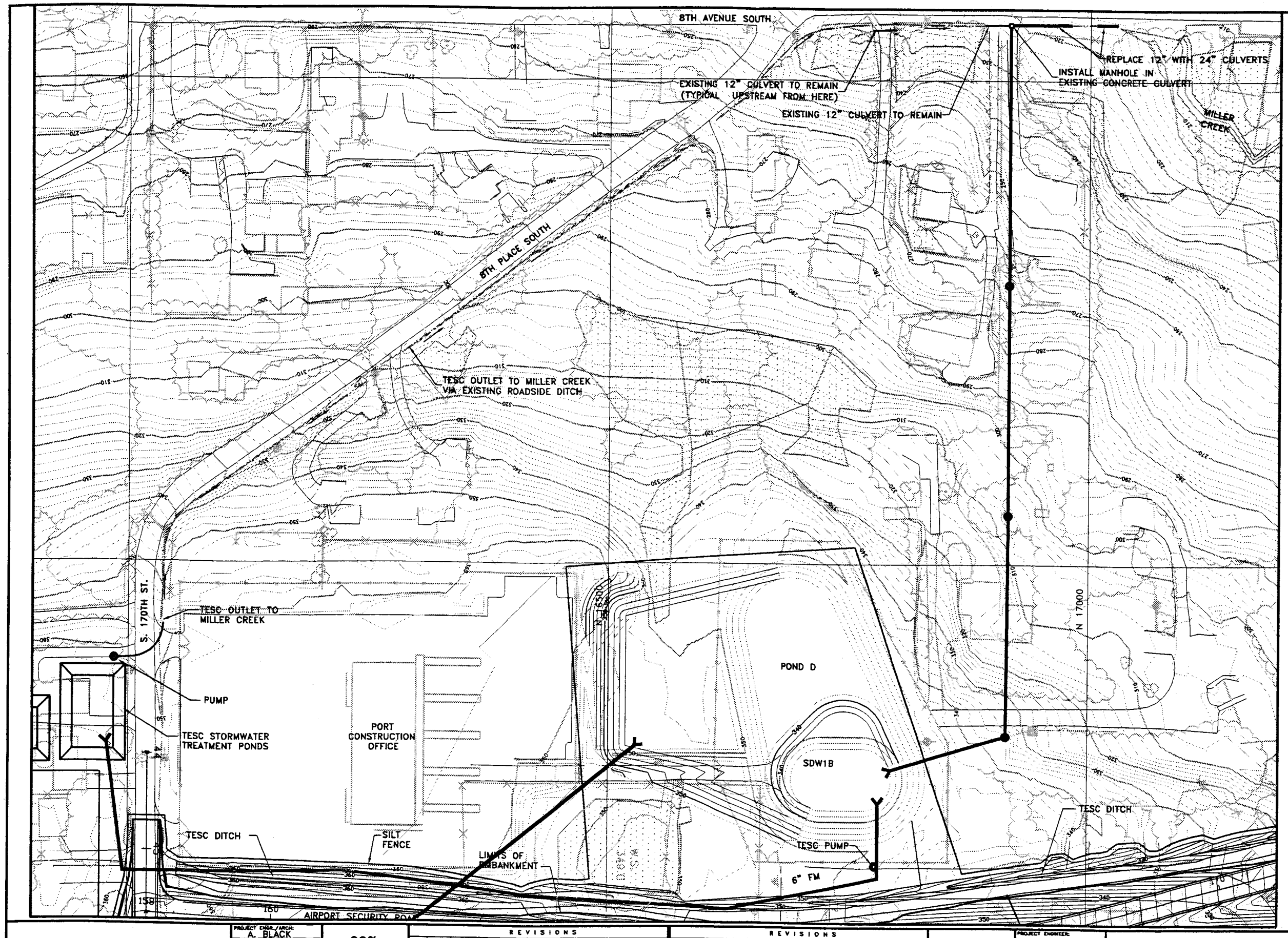
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND D PLAN SDW1B BASIN POND

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C133
PORT OF SEATTLE NO. STIA_XXXX_C133



NOTES:

LEGEND:

STORM DRAIN PIPE

SCALE: 1"=50'

AR 025278

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HNTB
ARCHITECTS • ENGINEERS • PLANNERS
600 108th Avenue N.E., Suite 400
Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

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REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

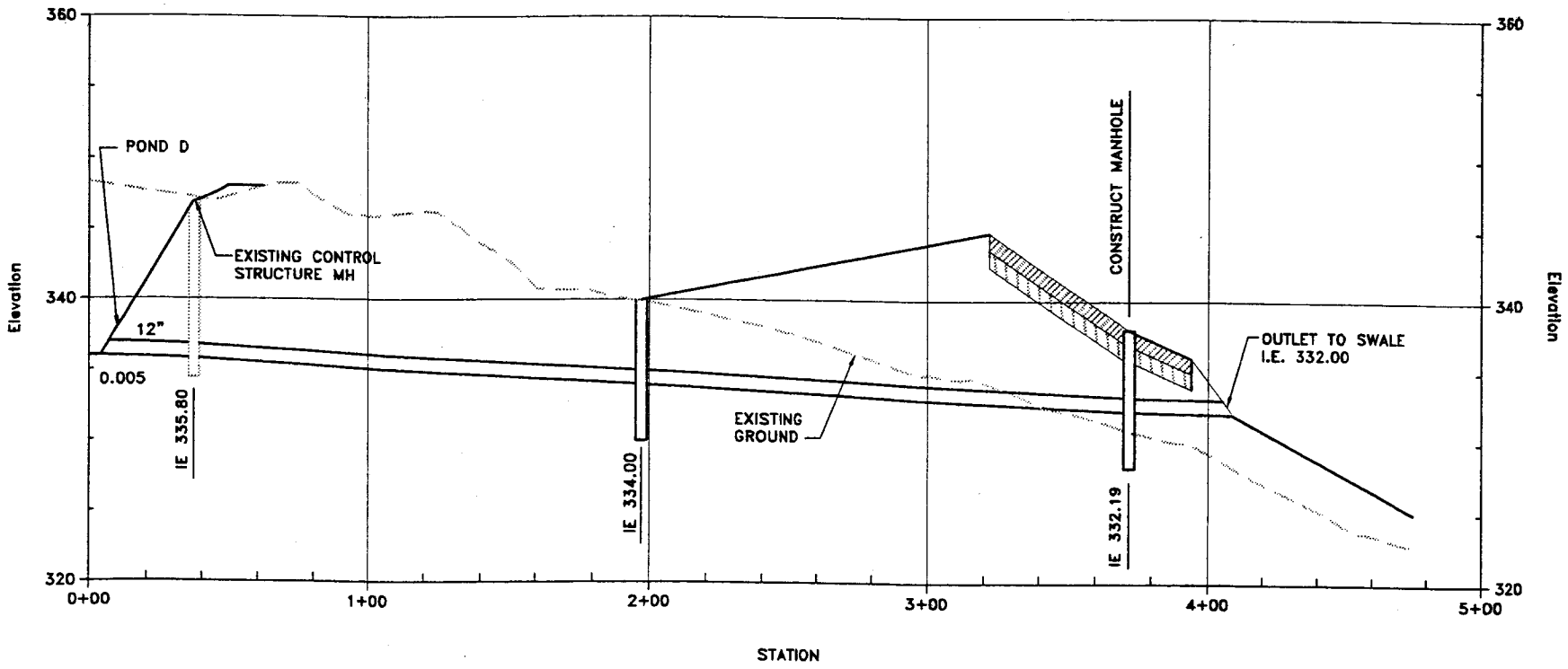
PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND D - OUTLET PLAN

WORK ORDER NO.

CONSULTANT'S NO.: 20764/BF_C133.1

PORT OF SEATTLE NO.: STIA_XXXX_C133.1



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(425)455-3333 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: A. BLACK
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

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REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
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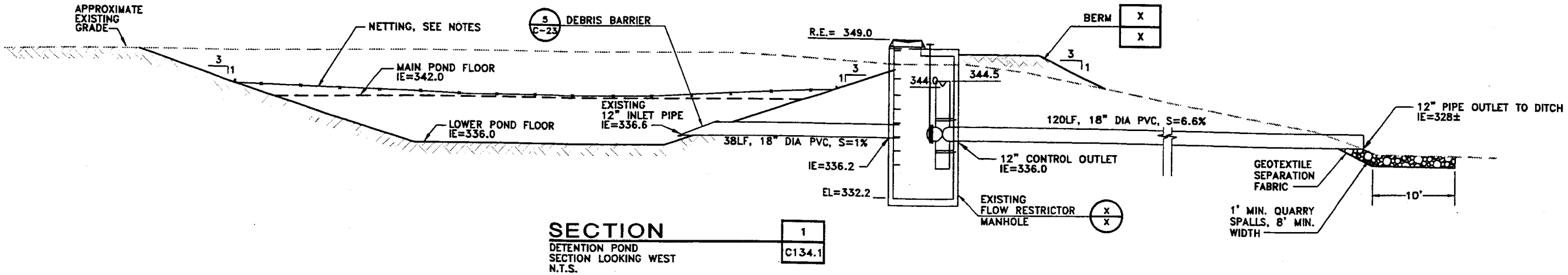
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

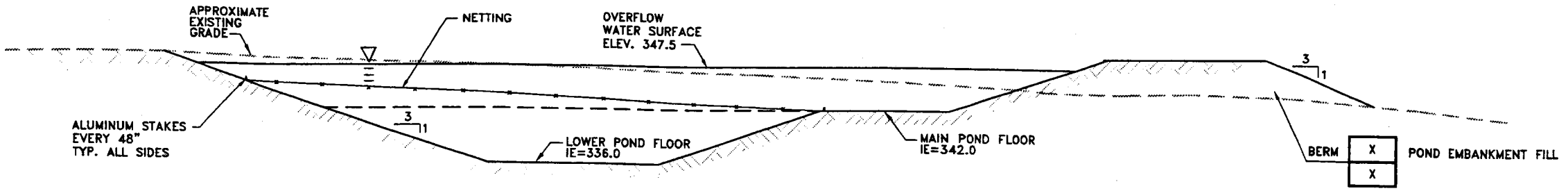
SHEET TITLE: POND D PROFILE
SDW1B BASIN POND

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C134
PORT OF SEATTLE NO. STIA_XXXX_C134



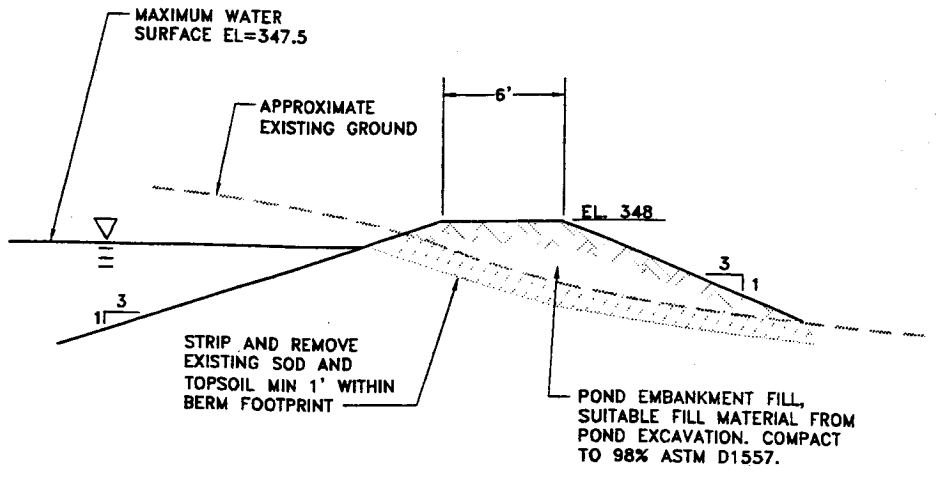
SECTION 1
DETENTION POND
SECTION LOOKING WEST
N.T.S.

C134.1



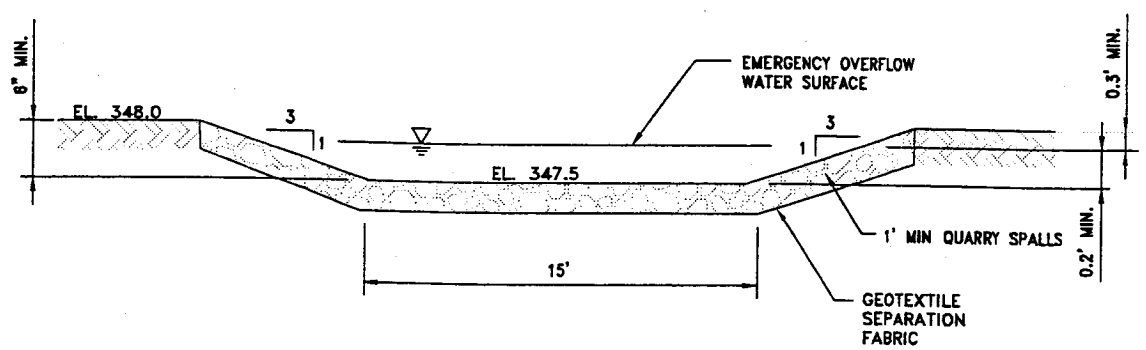
SECTION 2
DETENTION POND
SECTION LOOKING SOUTH
N.T.S

C134.1



SECTION 3
POND BERM
N.T.S.

C134.1



DETAIL 4
OVERFLOW SPILLWAY
N.T.S.

C134.1

SEDIMENTATION POND NOTES:

1. NETTING SHALL BE MANUFACTURED FROM HIGH-STRENGTH NYLON AND COMPLY WITH ANSI A10.11 AND OSHA 1956.5000-SUBPART M. NET SHALL BE MOUNTED TO PERIMETER ROPE WITH FORGED STEEL SNAP HOOKS LASHED INTO PLACE EVERY 48 INCHES. HOOKS SHALL HAVE STAGGARED SPACING ON OPPOSITE SIDES TO ALLOW NETS TO BE CONNECTED TO EACH OTHER. NET SHALL BE PROVIDED WITH LATEX COATING TO PROVIDE LONG TERM ULTRA VIOLET PROTECTION AND ABRASION RESISTANCE. NET MESH SIZE SHALL BE 1 INCH OR SMALLER
2. NETTING SHALL BE SECURED TO THE GROUND WITH ALUMINUM STAKING EVERY 48 INCHES OF THE NET PERIMETER LENGTH. THE STAKES SHALL BE ATTACHED TO THE NET BY THE FORGED STEEL SNAP HOOKS AND STEEL RINGS. STAKE SIZE AND LENGTH SHALL BE AS RECOMMENDED BY THE NETTING MANUFACTURER FOR THE NET DIMENSIONS SHOWN ON THE DRAWINGS.
3. HYDROSEED ALL DISTURBED AREAS AT COMPLETION.

AR 025280

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PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

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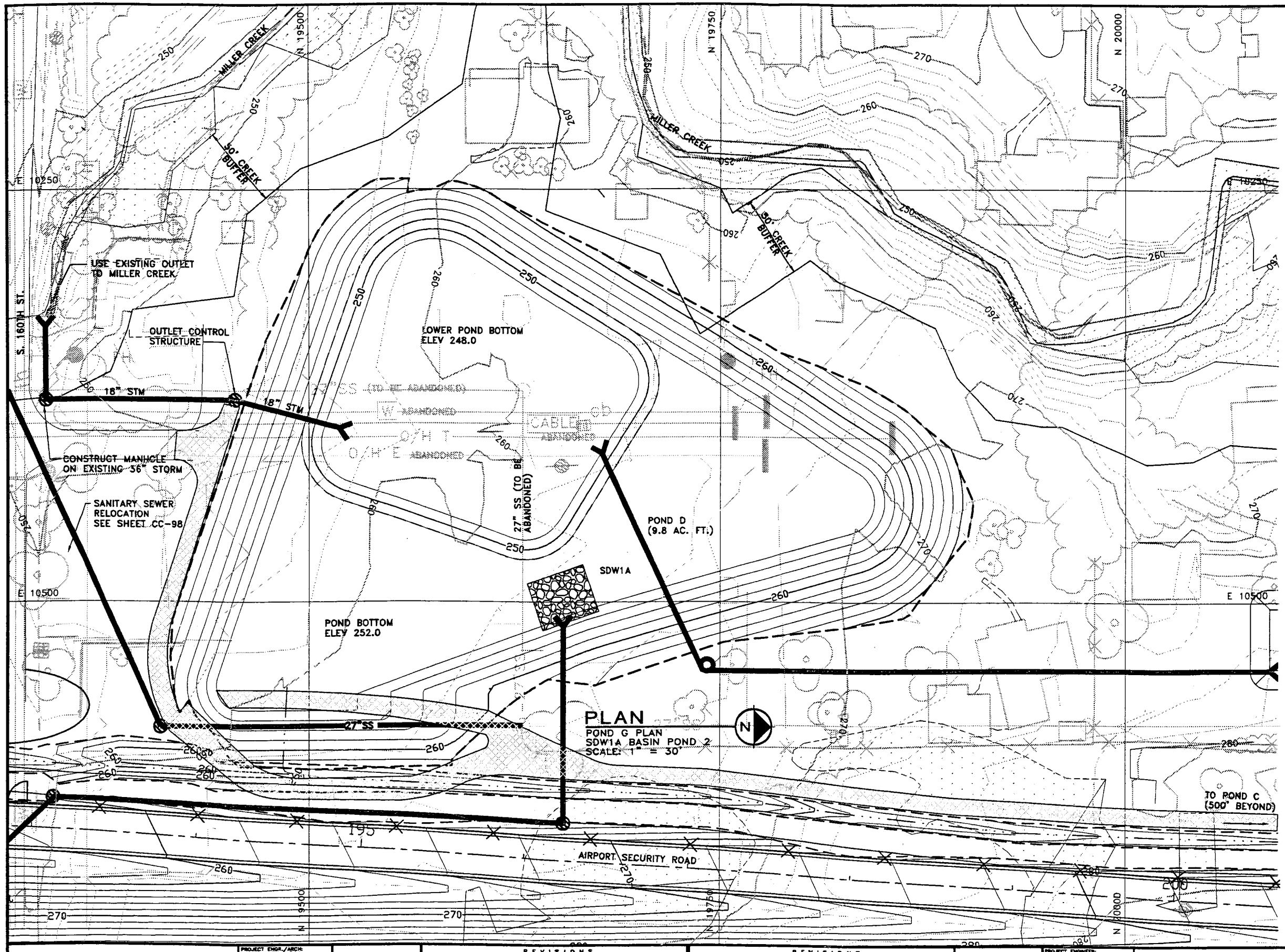
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND D SECTIONS AND DETAILS

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C134.1
PORT OF SEATTLE NO. STIA_XXXX_C134.1



LEGEND:

- CHAINLINK FENCE
- PROPOSED STORM DRAIN
- ACCESS ROAD
- WETLANDS
- SUBJECT TO CHANGE PENDING FINAL AIRFIELD DESIGN

AR 025281

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PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

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REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS

NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
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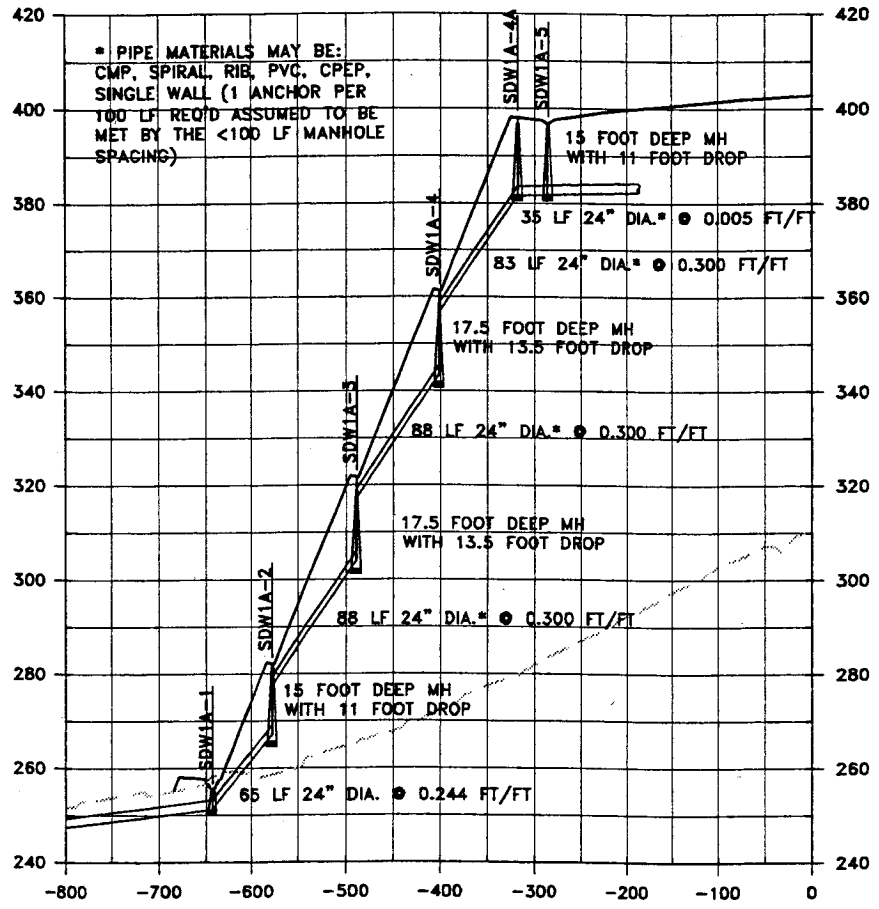
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND G PLAN SDW1A BASIN POND 2

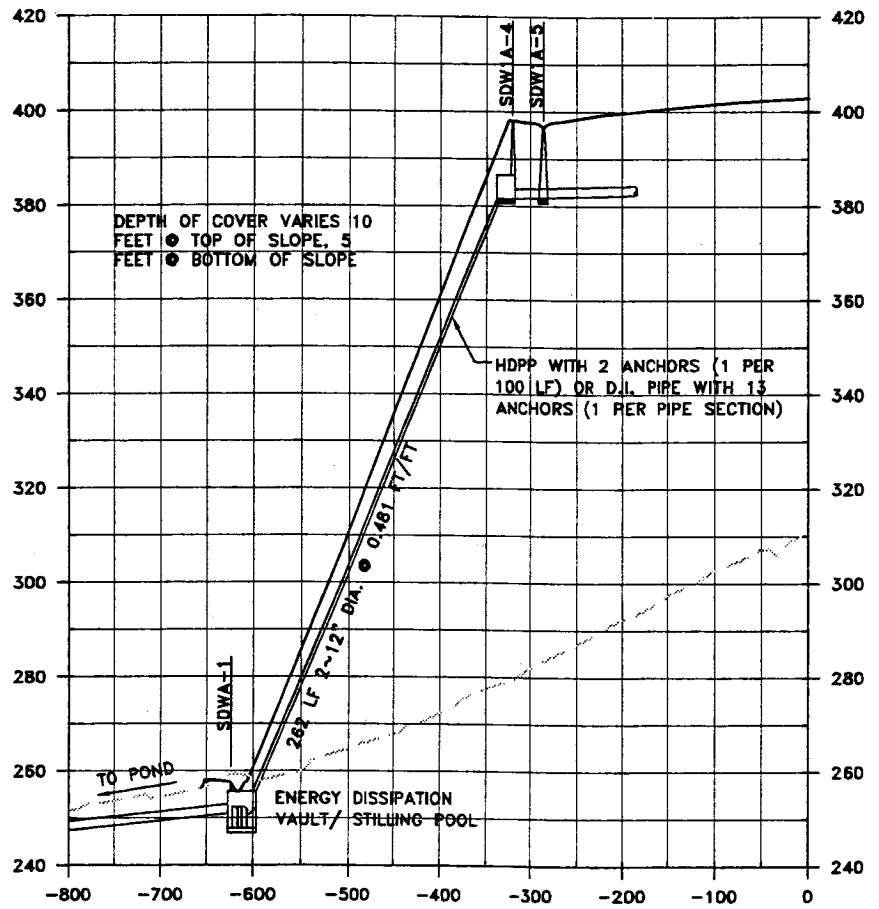
WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C135
PORT OF SEATTLE NO. STIA_XXXX_C135



PIPE DOWN EMBANKMENT WITH BENCHES

PROFILE

POND D – STORM SEWER PROFILE
SDW1A BASIN – OPTION 1
SCALE: 1" = 100'



PIPE DOWN EMBANKMENT WITH OR WITHOUT BENCHES

PROFILE

POND D – STORM SEWER PROFILE
SDW1A BASIN – OPTION 2
SCALE: 1" = 100'

AR 025282

100' 0 100' 200'
SCALE: 1"=100'

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(425)453-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 100'
DATE:
CHECKED BY:
APPROVED BY:

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REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

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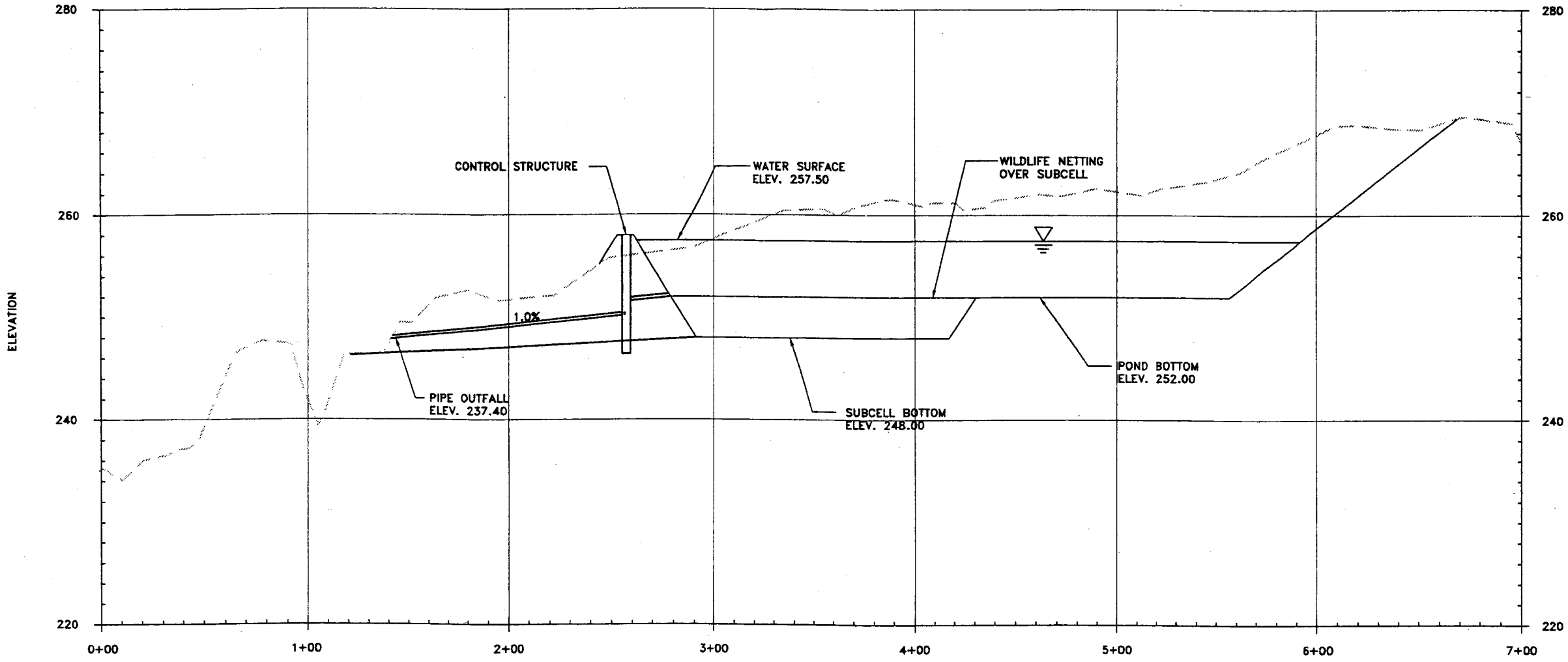
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND G - STORM SEWER PROFILE/SDW1A BASIN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C135.1
PORT OF SEATTLE NO. STIA_XXXX_C135.1



SECTION A-A

PROFILE

POND G PROFILE
SDW1A BASIN POND
SCALE: 1" = 30'

AR 025283

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PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

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REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

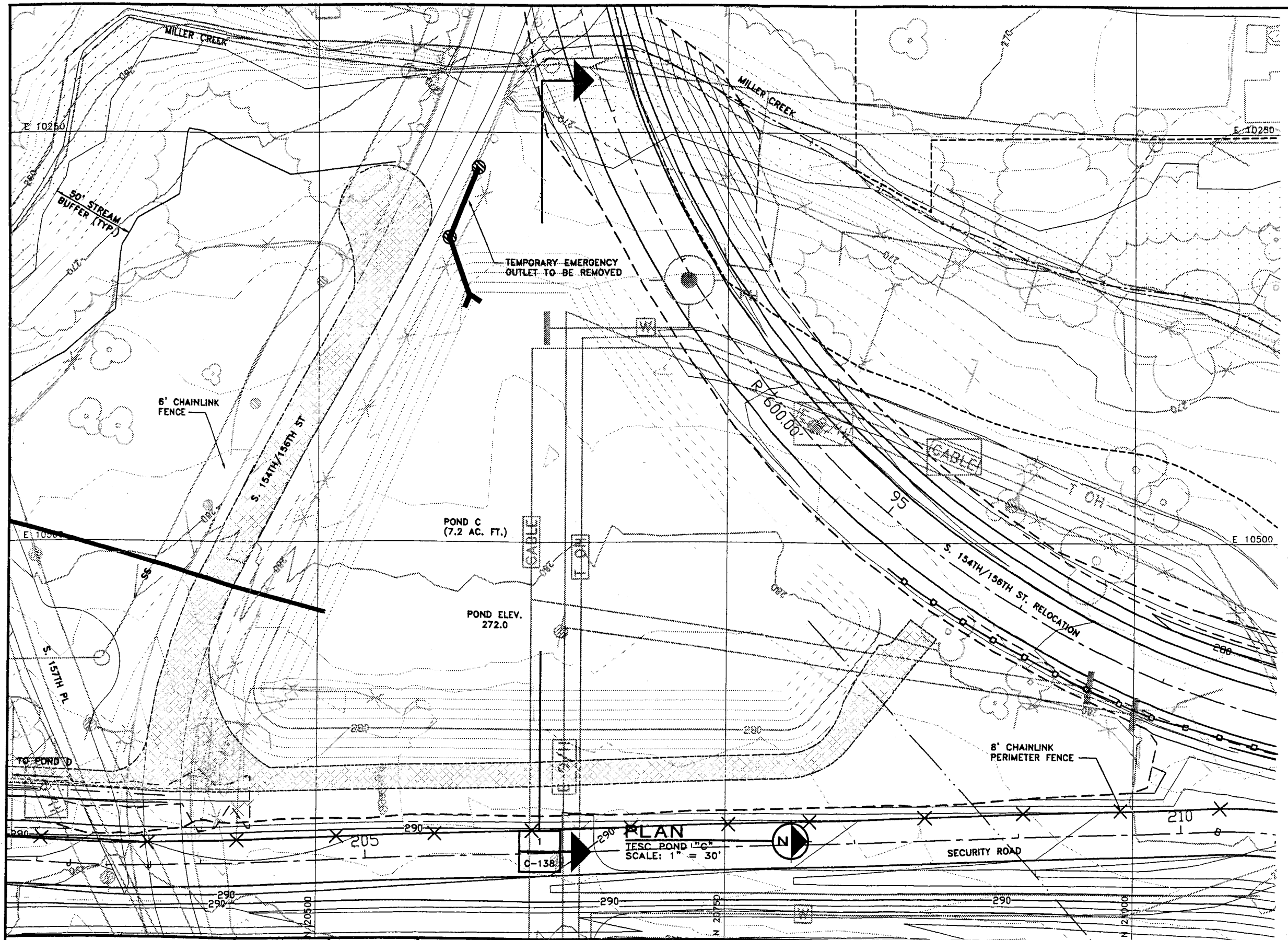
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION
PHASE 4

SHEET TITLE: POND G PROFILE
SDW1A BASIN

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C136
PORT OF SEATTLE NO. STIA_XXXX_C136



NOTES:

1. SEE SHEET C-36 FOR MINIMUM TRAFFIC CONTROL REQUIREMENTS WHILE PREFORMING CONSTRUCTION WITHIN S. 154TH/156TH STREET RIGHT OF WAY.
2. GRAVEL MAINTENANCE ROAD AND MAINTENANCE PAD SHALL BE CONSTRUCTED OF 4" MIN. OF 1 1/4" CRUSHED AGGREGATE SURFACING BASE (WSDOT 9-03.9(3))
3. SEE SHEET C-28 FOR PIPE TRENCH AND BACKFILL DETAILS.

AR 025284

LEGEND:

- ASPHALT PAVEMENT REMOVAL
- CLEARING AND GRUBBING FOR POND
- SILT FENCE (BY OTHERS)
- ROCK CHECK DAM

SCALE: 1"=30'

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Bellevue, Washington 98004
(425)453-3333 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

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REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

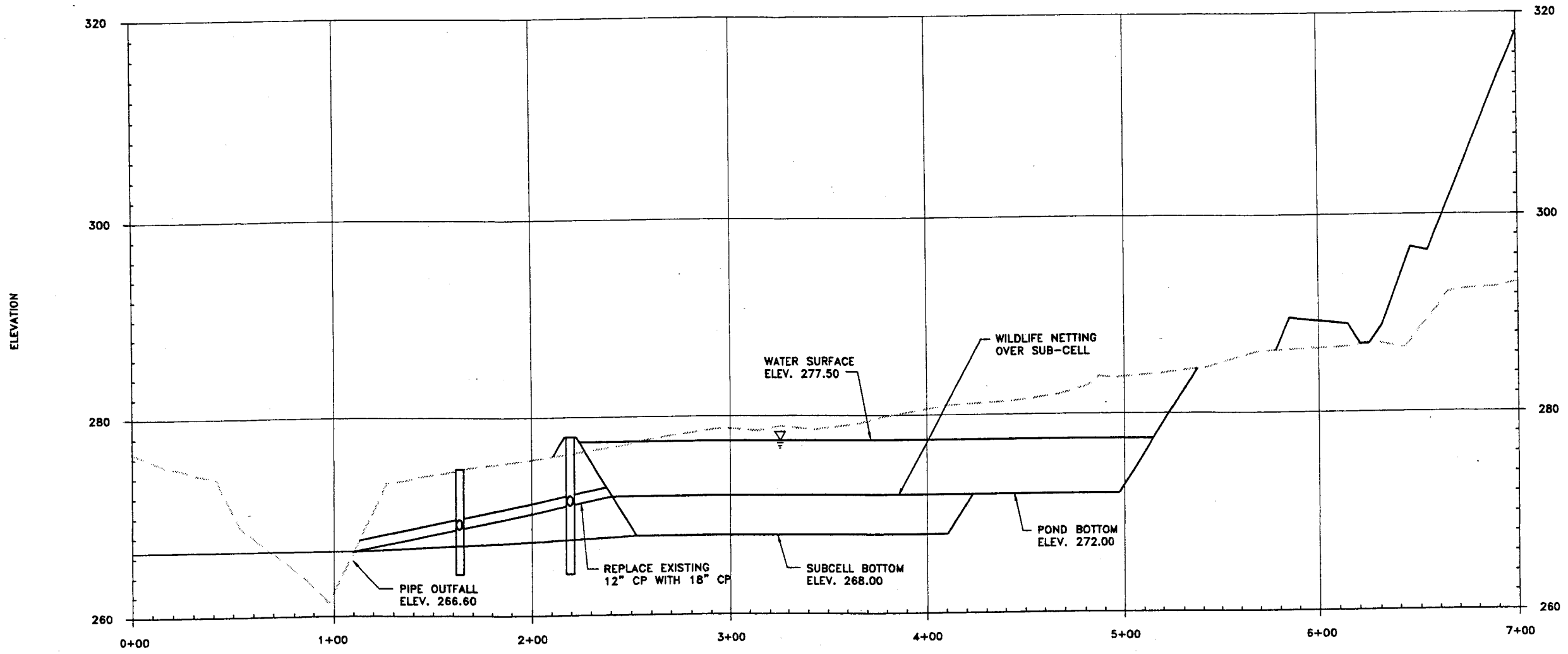
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND C PLAN/EXISTING SDW1A BASIN POND 1

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C137
PORT OF SEATTLE NO. STIA_XXXX_C137



SECTION A-A

AR 025285

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

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Bellevue, Washington 98004
(425)453-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 30'
DATE:
CHECKED BY:
APPROVED BY:

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REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

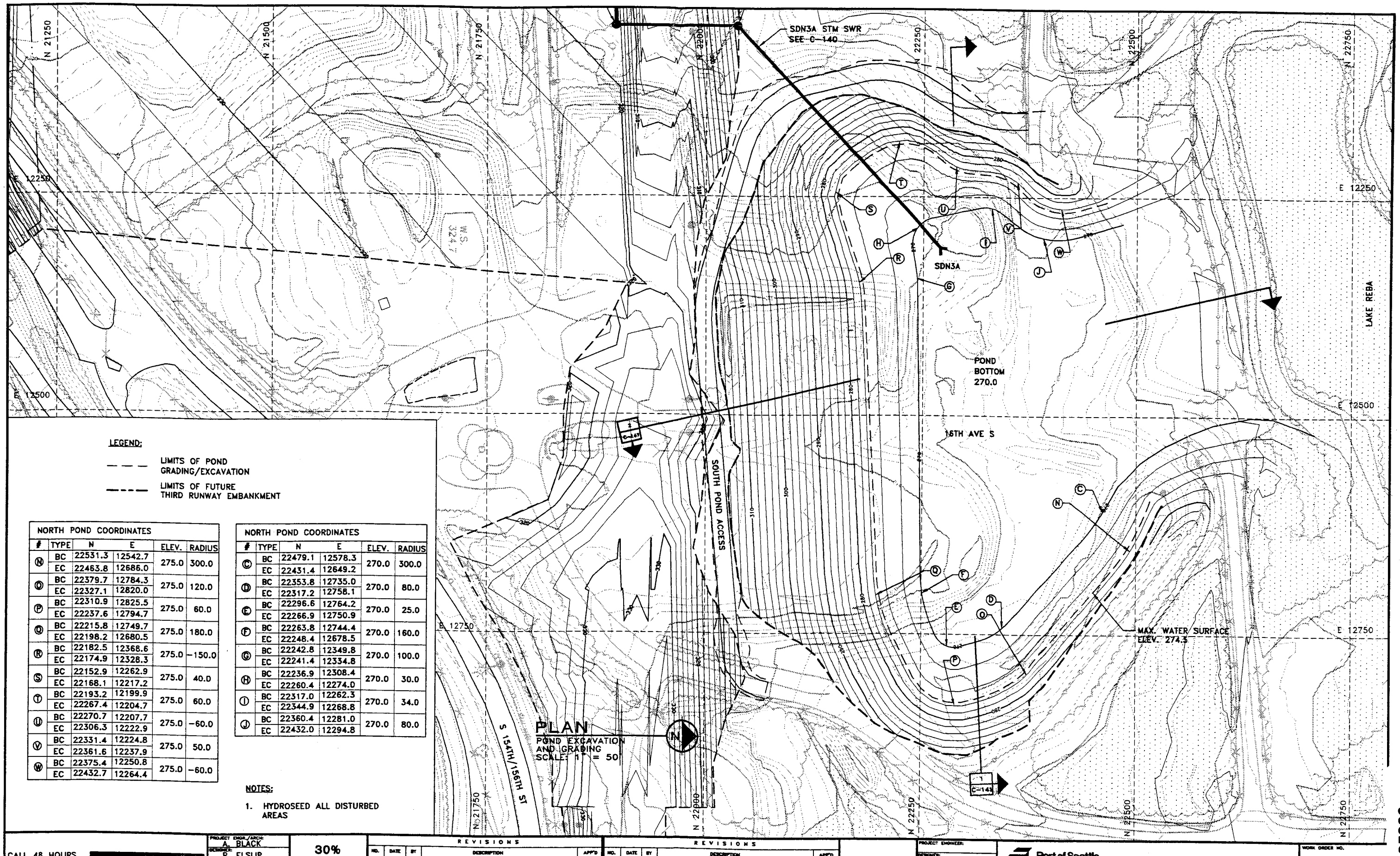
PROJECT ENGINEER:
DESIGNED:
DRAWN BY:
SCALE:
DATE:
CHECKED BY:
APPROVED BY:

Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: **POND C PROFILE SDW1A BASIN POND 1**

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C138
PORT OF SEATTLE NO. STIA_XXXX_C138



LEGEND:

- — — — LIMITS OF POND GRADING/EXCAVATION
- — — — LIMITS OF FUTURE THIRD RUNWAY EMBANKMENT

NORTH POND COORDINATES

#	TYPE	N	E	ELEV.	RADIUS
N	BC	22531.3	12542.7	275.0	300.0
	EC	22463.8	12686.0		
O	BC	22379.7	12784.3	275.0	120.0
	EC	22327.1	12820.0		
P	BC	22310.9	12825.5	275.0	60.0
	EC	22237.6	12794.7		
Q	BC	22215.8	12749.7	275.0	180.0
	EC	22198.2	12680.5		
R	BC	22182.5	12368.6	275.0	-150.0
	EC	22174.9	12328.3		
S	BC	22152.9	12262.9	275.0	40.0
	EC	22168.1	12217.2		
T	BC	22193.2	12199.9	275.0	60.0
	EC	22267.4	12204.7		
U	BC	22270.7	12207.7	275.0	-60.0
	EC	22306.3	12222.9		
V	BC	22331.4	12224.8	275.0	50.0
	EC	22361.6	12237.9		
W	BC	22375.4	12250.8	275.0	-60.0
	EC	22432.7	12264.4		

NORTH POND COORDINATES

#	TYPE	N	E	ELEV.	RADIUS
C	BC	22479.1	12578.3	270.0	300.0
	EC	22431.4	12649.2		
D	BC	22353.8	12735.0	270.0	80.0
	EC	22317.2	12758.1		
E	BC	22296.6	12764.2	270.0	25.0
	EC	22266.9	12750.9		
F	BC	22263.8	12744.4	270.0	160.0
	EC	22248.4	12678.5		
G	BC	22242.8	12349.8	270.0	100.0
	EC	22241.4	12334.8		
H	BC	22236.9	12308.4	270.0	30.0
	EC	22260.4	12274.0		
I	BC	22317.0	12262.3	270.0	34.0
	EC	22344.9	12268.8		
J	BC	22360.4	12281.0	270.0	80.0
	EC	22432.0	12294.8		

NOTES:

1. HYDROSEED ALL DISTURBED AREAS

PLAN
POND EXCAVATION AND GRADING
SCALE: 1" = 50

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Bellevue, Washington 98004
(425)455-3555 Fax: (425)453-9179

PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
DATE:
CHECKED BY:
APPROVED BY:

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REVISIONS				
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REVISIONS				
NO.	DATE	BY	DESCRIPTION	APP'D

PROJECT ENGINEER:
DESIGNED:
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SCALE:
DATE:
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APPROVED BY:

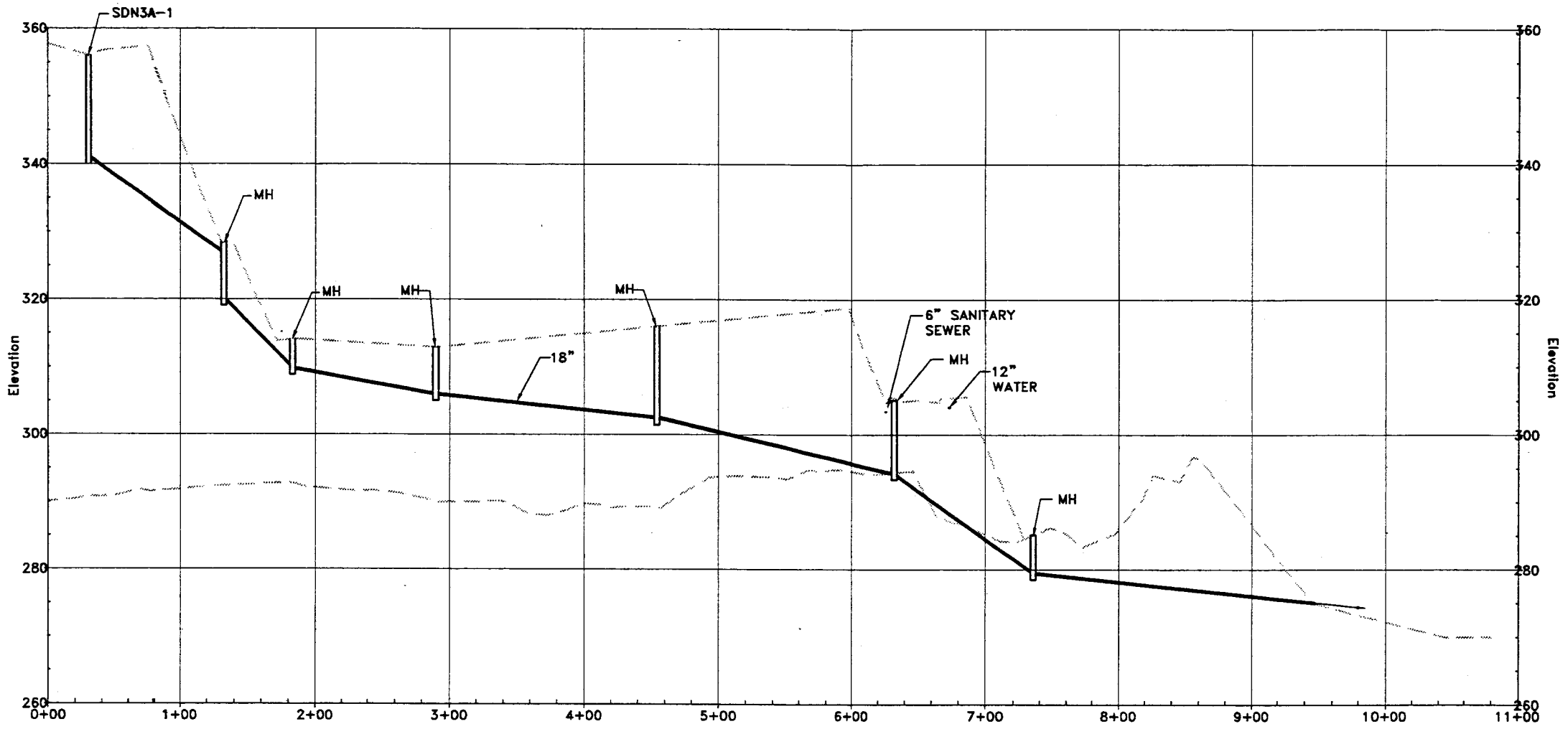
Port of Seattle
SEA-TAC INTERNATIONAL AIRPORT

PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: MILLER CREEK/POND J PLAN SDN3A BASIN POND

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C139
PORT OF SEATTLE NO. STIA_XXXX_C139

AR 025286



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PROJECT ENGR./ARCH: A. BLACK
DESIGNED: R. ELSLIP
DRAWN BY: N. HATCHER
SCALE: 1" = 50'
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PROJECT: THIRD RUNWAY - EMBANKMENT CONSTRUCTION PHASE 4

SHEET TITLE: POND J PROFILE SDN3A

WORK ORDER NO.
CONSULTANT'S NO. 20764/BF_C140
PORT OF SEATTLE NO. STIA_XXXX_C140

FIVE-YEAR PROJECT REPORT

City of Des Moines
Water Quality Monitoring Program

Prepared for

City of Des Moines
Surface Water Management Utility

February 2001

AR 025289

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CONSULTANTS