APPENDIX X

DRAFT SECTION 404/10 PERMIT APPLICATION
DRAFT SECTION 404 (b)(1) ANALYSIS
WETLANDS FINDING

JUNEAU ACCESS IMPROVEMENTS
FINAL ENVIRONMENTAL IMPACT STATEMENT

STATE PROJECT NUMBER: 71100
FEDERAL PROJECT NUMBER: STP-000S (131)

Prepared by

Alaska Department of Transportation and Public Facilities
6860 Glacier Highway
Juneau, Alaska 99801-7999

JANUARY 2006

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Culvert Summary – Sheets 73 through 79

ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADT	Average Daily Traffic
AMHS	Alaska Marine Highway System
BMP	Best Management Practices
CFR	Code of Federal Regulations
cy	cubic yard
DOT&PF	Department of Transportation and Public Facilities
EIS	Environmental Impact Statement
EO	Executive Order
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FVF	fast vehicle ferry
ips	inches per second
mph	miles per hour
NHS	National Highway System
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
OHMP	Alaska Dpeartment of National Resources Office of Habitat Management and Permitting
PAR	Preferred Alternative Report
SHPO	State Historic Preservation Officer
SWPPP	Stormwater Pollution Prevention Plan
U.S.	United States
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Impact Statement
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service

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APPENDIX X

PART A

DRAFT SECTION 404/10 PERMIT APPLICATION

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)	OMB APPROVAL NO. 0710-0003 Expires December 31, 2004

The Public burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research and Sanctuaries Act, 33 USC 1413, Section 103. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME Alaska Department of Transportation and Public Facilities	8. AUTHORIZED AGENT'S NAME AND TITLE *(an agent is not required)*
6. APPLICANT'S ADDRESS 6860 Glacier Highway Juneau, AK 99801-7999	9. AGENT'S ADDRESS
7. APPLICANT'S PHONE NOS. W/AREA CODE	10. AGENT'S PHONE NOS. W/AREA CODE
a. Residence b. Business 907-465-1774	a. Residence b. Business

11. STATEMENT OF AUTHORIZATION

I hereby authorize _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____

APPLICANT'S SIGNATURE DATE

NAME, LOCATION AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE *(see instructions)*

Juneau Access Improvements Project

13. NAME OF WATERBODY, IF KNOWN *(if applicable)*	14. PROJECT STREET ADDRESS *(if applicable)*
Lynn Canal, rivers (Antler, Lace & Katzehin), creeks (Sawmill, Slate, Sweeney, Sherman & Yeldagalda), and several unnamed drainages that all flow into Lynn Canal.	
15. LOCATION OF PROJECT Between Juneau and Katzehin in Juneau and Haines Boroughs, Alaska COUNTY STATE	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

Project is on or near the coastline on east side of Lynn Canal from Echo Cove to a point north of the Katzehin River. See attached drawing for more detail.

17. DIRECTIONS TO THE SITE

From downtown Juneau: Take Egan Drive northwest. Continue north approximately 40.5 miles along Highway 7 (Glacier Highway) until it ends at Echo Cove. See attached for Township and Range.

ENG FORM 4345, Jul 97	EDITION OF FEB 94 IS OBSELETE	(Proponent: CECW-OR)

18. Nature of Activity *(Description of project, include all features)*

Construct a 50.5-mile two-lane highway from the end of Glacier Highway at Echo Cove around Berners Bay and along the eastern coast of Lynn Canal to a point north of the Katzehin River delta. Shuttle ferry service to both Skagway and Haines would be provided from a new terminal at Katzehin.

19. Project Purpose *(Describe the reason or purpose of the project, see instructions)*

The purpose of and need for the Juneau Access Improvements Project is to provide improved surface transportation to and from Juneau within the Lynn Canal corridor that will provide the capacity to meet the transportation demand in the corridor, provide flexibility and improve opportunity for travel, reduce travel time between Lynn Canal communities, reduce state costs for transportation in the corridor and reduce user costs for transportation in the corridor (see attached for more detail).

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Discharge of fill material for construction of the highway and Katzehin Ferry Terminal (see attached design sheets and project description), and to sidecast access material from rock excavation.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

The types and volumes of to be placed in all waters of the U.S. are:
613,930 cy of clean shot rock and mineral soil fill for highway;
1.4 million cy of excess shot rock sidecast into Lynn Canal;
70,600 cy of clean shot rock fill for ferry terminal and breakwaters;
40,000 cy of dredged material placed in ferry terminal pad.

22. Surface Area in Acres of Wetlands or Other Waters Filled *(see instructions)*

49.4 Acres Wetland Fill (70.0-acres total wetland impact)

32 Acres Marine Fill

81.4 Acres Total Fill (102-acres total impact to waters of the U.S.)

23. Is Any Portion of the Work Already Complete? Yes ___X___ No _____ IF YES, DESCRIBE THE COMPLETED WORK

The proposed project will incorporate the recently constructed Cascade Point Road. This road was constructed for a separate purpose, but will be incorporated into the proposed project to avoid the impact of having two parallel roads.

24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

See attached Table 2.

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

*Would include but is not restricted to zoning, building and flood plain permits

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT	DATE	SIGNATURE OF AGENT	DATE

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises 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 statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

INTRODUCTION

The Alaska Department of Transportation and Public Facilities (DOT&PF), in cooperation with the Federal Highway Administration (FHWA) proposes to construct a highway from the end of Glacier Highway from Echo Cove along the east side of Lynn Canal to a ferry terminal to be constructed on the north side of the Katzehin River (see below for location information). The impacts and benefits of the proposed project are detailed in the 2006 Juneau Access Improvements Project Final Environmental Impact Statement (EIS) in Chapters 2 and 3, and Chapter 4 in Sections 4.3, 4.7, 4.8, and 4.9.

Project Location

- Township 36 S., Range 63E., Sections 29, 20, 21, 16, 9, 8, 5 and 4
- Township 35 S., Range 63 E., 33, 28, 29, 30, 20 and 19
- Township 35 S., Range 62 E., Sections 25, 24, 35, 32, 36, 35, 34, 33, 28, 29, 20, 19, 18, 7 and 6
- Township 34 S., Range 62 E., Sections 31, 30, and 19
- Township 34 S., Range 61 E., Sections 24, 13, 12 and 1
- Township 33 S., Range 61 E., Sections 36, 25, 24, 13, 14, 11 and 2
- Township 32 S., Range 61 E., Sections 31, 30, 19 and 18
- Township 32 S., Range 60 E., Sections 24, 13, 12 and 1
- Township 31 S., Range 60 E., Section 36, 26, 23, 22, 15, 14, 9 and 10

Project Purpose

The purpose of and need for the proposed project is to provide improved surface transportation to and from Juneau within the Lynn Canal corridor that will provide the capacity to meet transportation demand in the corridor, provide flexibility and improve opportunity for travel, reduce travel times between the communities, reduce state costs for transportation in the corridor, and reduce user costs for transportation in the corridor.

A full discussion of purpose and need for the proposed project is included in Section 1.4 of the Final EIS and in the attached Section 404(b)(1) Analysis.

WORK UNDER THE PROPOSED PROJECT

Approximately 70 acres of wetlands would be impacted with roughly 376,000 cubic yards (cy) of clean material. An additional 32 acres of marine area (subtidal and intertidal) would be filled. Approximately 25.6 acres of fill (237,900 cy) would be placed along the highway alignment and 6.4 acres (110,600 cy) would be filled for construction of the Katzehin Ferry Terminal and breakwater. Approximately 4.4 acres (40,000 cy) would be dredged for the construction of the ferry terminal and breakwater. Also, up to 1.4 million cubic yards of shot rock would be sidecast into Lynn Canal at two locations between Comet and the Katzehin River. Table 1 summarizes wetland and marine impacts for the proposed project and includes references to the associated design drawings. Work for the proposed project is broken into nine geographic segments. These segments are described below. A detail of wetland and marine impacts with wetland classification and identification is included in Sheets 15 through 66 of the attached drawings. The Final EIS (Section 4.3) provides details on impacts to wetlands and other waters of the

United States (U.S.) resulting from the proposed project. The attached Section 404(b)(1) Analysis also discusses impacts to wetlands from the proposed project.

The proposed project alignment will have 586 culvert crossings (see Sheets 73 through 79). In wetland areas, drainage ditches would only be constructed where there would be a cut slope. Ditches would be created by the combination of the cut back slope and the placed road embankment. The steepest possible back slope would be used to minimize wetland disturbance.

Three bridges will require in-water pilings in the Antler, Berners/Lace and Katzehin rivers. The Antler and Berners/Lace river bridges span the riverbanks and no fill would be placed on banks or in the water. The Katzehin River bridge would require work on the south bank, resulting in 2.6 acres (18,400 cy) of fill. No blasting is anticipated in waters of the U.S. All blasting would be controlled to avoid discharge of blasted materials into wetlands adjacent to the project.

The highway would be designed and constructed in phases. The first phase, to be started in 2006, would be from Echo Cove to the south shore of the Antler River (Segment 1), and from the northwest bank of the Lace River to just north of Independence Creek (Segment 5). Other phases would be constructed over the next four to five years as designs are finalized and funding becomes available. Drawings would be submitted to the U.S. Army Corps of Engineers (USACE) with the application, based on final designs for Segments 1 and 5, and preliminary designs for other segments. As final designs are completed for other segments, revised drawings would be submitted to the USACE before construction to determine if permit modifications are necessary. At this time final design for Segments 2, 3, 4, and 7 is anticipated in late 2006, for Segment 6 in early 2007, and for Segments 8 and 9 in mid 2007.

Segment 1 – Echo Cove to Antler River

Segment 1 would be the first section of the proposed project constructed. Segment 1 would impact 5.9 acres (36,530 cy) of palustrine forested and scrub-shrub wetlands for the highway alignment.

Segment 2 – Antler/Gilkey River Bridge

Segment 2 is the bridge crossing over the Antler and Gilkey Rivers. No fill would be included in this segment.

Segment 3 – Peninsula Between Antler/Gilkey Bridge and Berners/Lace River Bridge

Segment 3 is the peninsula of land between the Antler/Gilkey river bridge and the start of the Berners/Lace bridge. In this segment, 2.2 acres (35,400 cy) of palustrine forested wetlands would be impacted.

Segment 4 – Berners/Lace River Bridge

This segment is the bridge over the Berners and Lace Rivers. No fill is included in this segment.

Segment 5 – Berners/Lace River Bridge to North of Independence Creek

The highway alignment would cross palustrine forested wetlands in this segment, impacting 61.7 acres (302,500 cy) of these wetlands.

Segment 6 – Independence Creek to South Shore Katzehin River

This segment runs from the north side of Independence Creek (approximately Station 1568) to the southern shore of the Katzehin River. Intertidal and subtidal fill would equal approximately 24.0 acres (223,500 cy); of which 2.6 acres (18,400 cy) would be filled on the south bank of the Katzehin River. Up to 1.4 million cy of excess rock would be sidecast at two locations; Station 1710 to 1745 and Station 2087 to 2110.

Segment 7 – Katzehin River Bridge

The southern abutment of the bridge would require 2.6 acres of fill (included in Segment 6). No other fill is required for the bridge over the Katzehin River.

Segment 8 – North Shore Katzehin River to Katzehin Ferry Terminal

This segment runs from the north shore of the Katzehin River to the Katzehin Ferry Terminal. All fill associated with this segment would be in unvegetated tidelands and would be approximately 1.6 acres (16,000 cy).

Segment 9 – Katzehin Ferry Terminal

The footprint of the ferry terminal would require filling of 0.2 acres of estuarine emergent wetlands (1,600 cy) and 3.6 acres of unvegetated tideland. The breakwaters would require an additional 2.8 acres of fill, totaling 6.4 acres (109,000 cy). As part of construction, 4.4 acres of marine sediment (40,000 cy) would be dredged and placed within the shot rock fill for the terminal.

OTHER ALTERNATIVES

Alternatives were screened in fall 2003 after the Supplemental Draft EIS scoping process and again in August 2005 after release of the Supplemental Draft EIS. Results of the 2003 and 2005 screening are included in Sections 2.2 and 2.3 of the Final EIS and the attached 404(b)(1) Analysis.

Alternatives Determined Not Reasonable

Some alternatives were found to not be technically or financially feasible, not practical, similar to other alternatives carried through the environmental analysis, and/or they did not meet the purpose of and need for the proposed project and therefore determined not to be reasonable. A detailed discussion of these alternatives and reasons for their elimination from consideration are presented in Section 2.2 of the Final EIS and the attached 404(b)(1) evaluation.

Reasonable Alternatives

Descriptions of the reasonable alternatives considered in addition to the proposed action are included in Section 2.3 of the Final EIS and the attached 404(b)(1) evaluation. Impacts including wetlands and other waters of the U.S. of the reasonable alternatives are detailed in Chapter 4 of the Final EIS.

Table 1
Total Impacts to Wetlands and Other Waters of the U.S.

Segment	Drawing	Classification//Area ID	Impact Acres	Fill Volume (cubic yards)
Segment 1 (10.9 miles)	Sheet 15	PFO/ 115-1, 135-1. 150-1	0.56	1,400
	Sheet 16	PFO/ 165-1, 190-1, 195-1	0.46	1,530
	Sheet 17	PFO/ 235-1 and PSS/340-1	0.92	1,950
	Sheet 19	PFO/ 415-1	2.51	1,400
	Sheets 22	PFO/ 680-2	1.48	30,250
Wetland Total Segment 1			**5.93**	**36530**
Segment 2 (0.5 mile)	Sheet 22-23	Antler/Gilkey Bridge	0.00	
Segment 3 (1.2 miles)	Sheet 23-24	PFO/ 735-4	2.19	35,400
Wetland Total Segment 3			**2.19**	**35,400**
Segment 4 (0.5 mile)	Sheet 25	Berners/Lace Bridge	0.00	
Segment 5 (14.1 miles)	Sheet 25-26	PFO/ 895-1	4.77	23,400
	Sheet 27	PFO/ 910-2	0.57	6,500
	Sheet 27-34	PFO/ 955-2	37.77	150,400
	Sheet 34-37	PFO/ 1185-1	12.24	51,100
	Sheet 37	PFO/1220-1	1.83	17,300
	Sheet 38	PFO/ 1260-1, 1275-1	3.27	32,800
	Sheet 41	PFO/ 1360-1	1.08	16,000
	Sheet 42	PFO/ 1375-1	0.12	5,000
Wetlands Total Segment 5			**61.65**	**302,500**
Segment 6 (21.0 miles)	Sheet 43	Tidelands/ EIT-37	0.47	5,000
	Sheet 43-44	Tidelands/ EIT36	4.57	42,000
	Sheet 46	Tidelands/ EIT-35	0.72	7,200
	Sheet 47	Tidelands/ EIT0-28, EIT-46	1.2	12,100
	Sheet 48-49	Tidelands/ EIT025, EIT024, STN-3	4.79	39,500
	Sheet 50	Tidelands/ EIT-23, STN-4	1.76	13,500
	Sheet 51	Tidelands/ EIT-22	1.08	10,000
	Sheet 53-54	Tidelands/ EIT-21	3.2	34,700
	Sheet 56	Tidelands/ EIT-20, EIT-19	0.93	10,400
	Sheet 57	Tidelands/STN-6 to STN-8	2.58	29,600
	Sheet 58	Tidelands/ EIT-18	.01	100
	Sheet 63	Tidelands/ EIT-14	.09	1,000
	Sheet 64	Tidelands/ EIT-13	2.6	18,400
Tidelands Total Segment 6			**24.00**	**223,500**
Segment 7 (0.5 mile)	Sheet 64-65	Katzehin River bridge	0.00	0.00
Segment 8 (2.0 miles)	Sheet 65-66	Tidelands	1.59	16,000
Tidelands Total Segment 8			**1.59**	**16,000**
Segment 9 (0.1 mile)	Sheet 66	Estuarine emergent	0.20	1,600
	Sheet 66	Tidelands	6.37	109,000
Tidelands Total Segment 9			**6.37**	**109,000**
Wetlands Total Segment 9			**0.20**	**1,600**
Project Wetlands Total			**70.00**	**376030**
Project Tidelands Total			**32.00**	**348500**
Project Total Impacts			**102.00**	**724530**

PFO – Palustrine Forested
PSS – Palustrine Scrub-shrub

ADJACENT LANDOWNERS

A total of 1,808 acres of federally and privately held land would be crossed by the proposed project. A breakdown of landowner and contact information, is included in Table 2.

Table 2
Land Ownership Adjacent to Proposed Project Right-of-Way

Land Owner	Contact Person	Address
U.S. Forest Service	Dennis Bschor, Regional Forester	U.S. Department of Agriculture Forest Service, Alaska Regional Office P.O. Box 21628 Juneau, AK 99802-1628
U.S. Coast Guard	Leslie Deceno	U.S. Coast Guard Maintenance & Logistics Command – Pacific, Realty Section 1301 Clay Street, Suite 700N Oakland, CA 94612-5203
Goldbelt	David Goade, Vice President of Lands	9097 Glacier Highway, Suite 200 Juneau, AK 99801
Coeur Alaska	Tim Arnold, Operations Manager Kensington Mine	Coeur Alaska, Incorporated 3031 Clinton Drive, Suite 202 Juneau, AK 99801-7106
Sealaska	Richard P. Harris, Executive Vice President	Sealaska Corporation One Sealaska Plaza 10th Street Juneau, AK 99801
State of Alaska	Brady Scott National Resource Manager	Alaska Department of Natural Resources Division of Mining, Land, and Water 400 Willoughby Avenue, Suite 400 Juneau, AK 99801

WETLAND IMPACT AVOIDANCE AND MITIGATION PLAN

Federal regulations and guidelines associated with Section 404 of the Clean Water Act require that project proponents eliminate or reduce adverse impacts to waters of the U.S., including wetlands, by taking certain specific steps during project planning. These steps are as follows:

- Design the project to avoid adverse impacts
- Incorporate measures to minimize adverse impacts
- Plan to restore sites that must be temporarily adversely affected by the project
- Compensate for unavoidable adverse impacts through restoration, creation, or in-lieu fee

Project Design – DOT&PF has designed the proposed project, Alternative 2B, to have the least impacts practicable to wetlands and waters of the U.S. as well as to other biological resources (e.g. threatened and endangered species, essential fish habitat, resident fish, wildlife, and bald eagles). The following section describes the reasonable and practicable avoidance and mitigation practices that have been, or would be, implemented as part of the proposed project. A Mitigation Plan for the proposed project is included in Section 5.12 of the Final EIS. Discussion of avoidance and mitigation involving protection of threatened and endangered species and other wildlife are also included in the Mitigation Plan.

Construction – The Alternative 2B highway alignment has been adjusted numerous times to ensure a balance of wetland impacts and impacts to bald eagle nesting trees and other upland habitat. With the current design, all palustrine emergent and all but 0.2 acre of estuarine

emergent wetlands have been avoided. The highway has been adjusted to the greatest extent practicable with topographic constraints and locations of bald eagle nest trees.

The highway would be designed using the minimum width fill footprint necessary to provide a safe and useable road base and have low-profile embankments to limit the fill footprints. DOT&PF would minimize sidecasting by stockpiling material and by raising grades and flattening slopes in non-jurisdictional areas.

Measures would be implemented to ensure water quality standards are maintained during construction and operation and maintenance of the proposed project. These practices include development of an erosion and sediment control plan to avoid water quality impacts to wetlands and other water bodies including essential fish habitat in marine and fresh water and anadromous streams. Resource agencies would be given the opportunity to comment on the plan prior to construction.

In areas requiring fill of water bodies or wetlands, only clean fill material would be used. Silt fences and sediment traps would be used during construction, to keep sediment laden surface water from entering natural drainage basins.

To minimize wetland impacts, embankment heights and side slopes have been designed to reduce the highway footprint across wetlands. Slope limits in wetland areas would be separately identified to ensure workers are aware of wetlands and the need to avoid impacts beyond slope and clearing limits. All construction camps, staging sites, borrow pits, and waste areas would be located in upland areas and stabilized during and after use to avoid water quality impacts to wetlands and other waters of the U.S.

Bridges and Culverts – DOT&PF has designed bridges to reduce in-water impacts including placement of bridge pilings and in-water structures. All anadromous stream crossings except the Antler, Katzehin, and Lace rivers would be clear spanned, with clearances well above the 100-year flood mark. In-water work would be restricted from March 15 through June 15 to avoid impacting out-migrating salmonoids and spawning eulachon. No fill would encroach on the riverbanks except the south shore of the Katzhin River where fill is required for bridge pier construction. Installation techniques would be used to prevent downstream water quality impacts from construction. Flood capacity and channel characteristics of the rivers would not be altered or impacted. The Antler, Katzehin, and Lace rivers would have the fewest number of supports practicable to meet design standards using 130-foot minimal pile spacing.

Culverts would be used to maintain natural surface water flow patterns and would be sized to avoid excessive backwater or outlet erosion (see culvert specification tables on attached sheets). Techniques such as flow diversion around work sites, and working during times of low water would help maintain water quality downstream of work areas. Additional cross culverts would be installed to equalize collected surface water between upslope and downslope (of highway) areas.

Ferry Terminal Construction – The design for the Katzehin Ferry Terminal would include either fish passage gaps or large box culverts to ensure proper fish passage. Dredged materials would be placed within shot rock fill with silt and sediment contained. All fill material placed below high tide lines would be done during low water periods. In-water construction restriction windows from March 15 to June 15 would be implemented to avoid impacts to migrating salmonoids and spawning eulachon.

Wetland and Marine Compensatory Mitigation – Compensatory mitigation for wetland and intertidal area impacts has been developed based on the amount and function of areas

impacted by the proposed project. The proposed project area on the eastern side of Lynn Canal is largely undeveloped and does not contain substantial areas of degraded wetland, intertidal, or subtidal habitat. For this reason, it is not practicable to mitigate project impacts on wetlands or marine habitats through restoration of similar degraded habitat within the project area.

A 100-foot wide wildlife underpass would be constructed at the major bear corridor in the northwest portion of the peninsula between the Lace and Antler rivers as mitigation for impacts to 69.1 acres of palustrine forested wetlands and 0.7 acre of a palustrine scrub-shrub wetland. These types of wetlands are very common in the project area, however, one common function is wildlife habitat. The proposed wildlife underpass would provide a connection from wetland and upland habitat east of the proposed highway to estuarine emergent wetlands west of the highway for several species, particularly bears. This wildlife underpass is estimated to cost $440,000 to construct.

In-lieu fee compensation is proposed for impacts to an estuarine emergent wetlands and unvegetated intertidal and subtidal habitat. For subtidal and intertidal habitat, an in-lieu fee of $24,000 per acre is proposed. These areas provide low to moderate foraging habitat for juvenile and adult fish and marine invertebrates. The highest value and in-lieu fee is for estuarine emergent wetlands at $60,000 per acre. Estuarine emergent wetlands have high wetland function rating for wildlife, riparian support, and regional ecological diversity. This type of wetland habitat is relatively limited on the east side of Lynn Canal, representing only about 5 percent of total wetlands. Based on these assigned values and acres impacted by Alternative 2B, a total of $780,000 is proposed for in-lieu fee compensation. This payment would be used to purchase parcels of land containing high value estuarine wetlands and intertidal habitat in the project vicinity threatened by development and/or fund habitat restoration/enhancement projects. Currently available parcels and projects are being investigated. If no parcels or projects have been agreed to before construction starts, the money would be deposited with a non-government land trust, with stipulations that the funds be used as described above.

Avoidance and Mitigation Deemed Not Practicable

From the 1990's to present, DOT&PF has made many preliminary design changes to the highway alignment and ferry terminal layout to avoid or reduce impacts to wetlands and other waters of the U.S. to the greatest extent practicable. See the attached Draft 404(b)(1) Analysis in Part B for details on avoidance and other mitigation measures determined not practicable.

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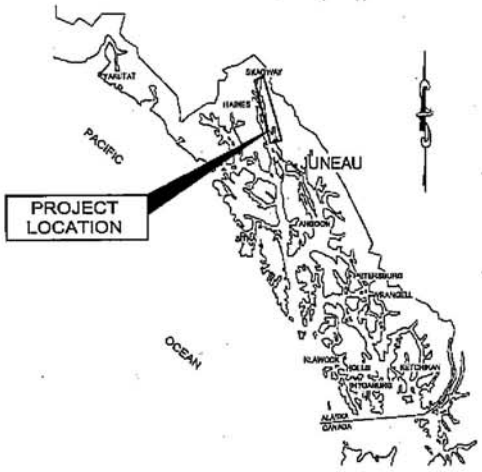
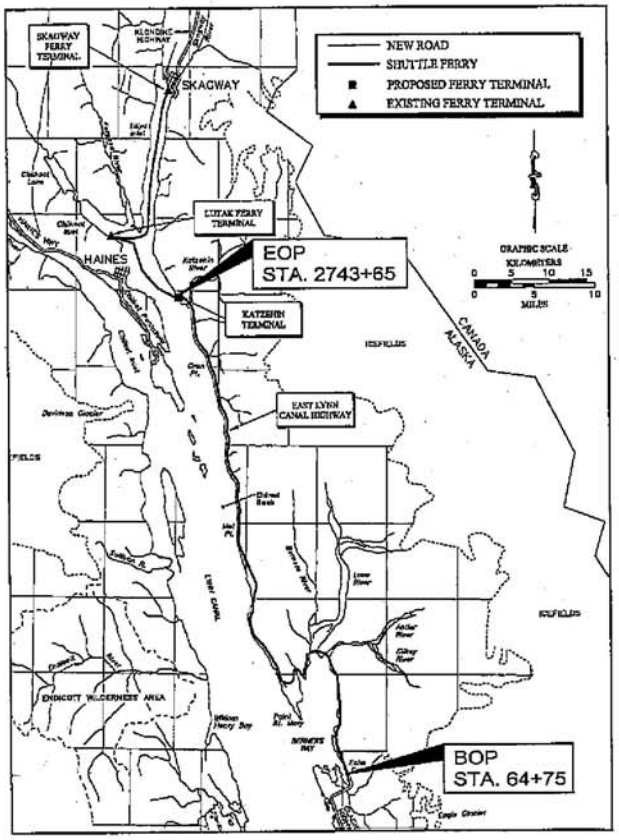


SOUTHEAST ALASKA REGION



PURPOSE OF PROJECT:
PROPOSED ACCESS ROAD

WATER BODIES:
LYNN CANAL AND
BERNER'S BAY

LOCATION AND VICINITY MAPS

ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

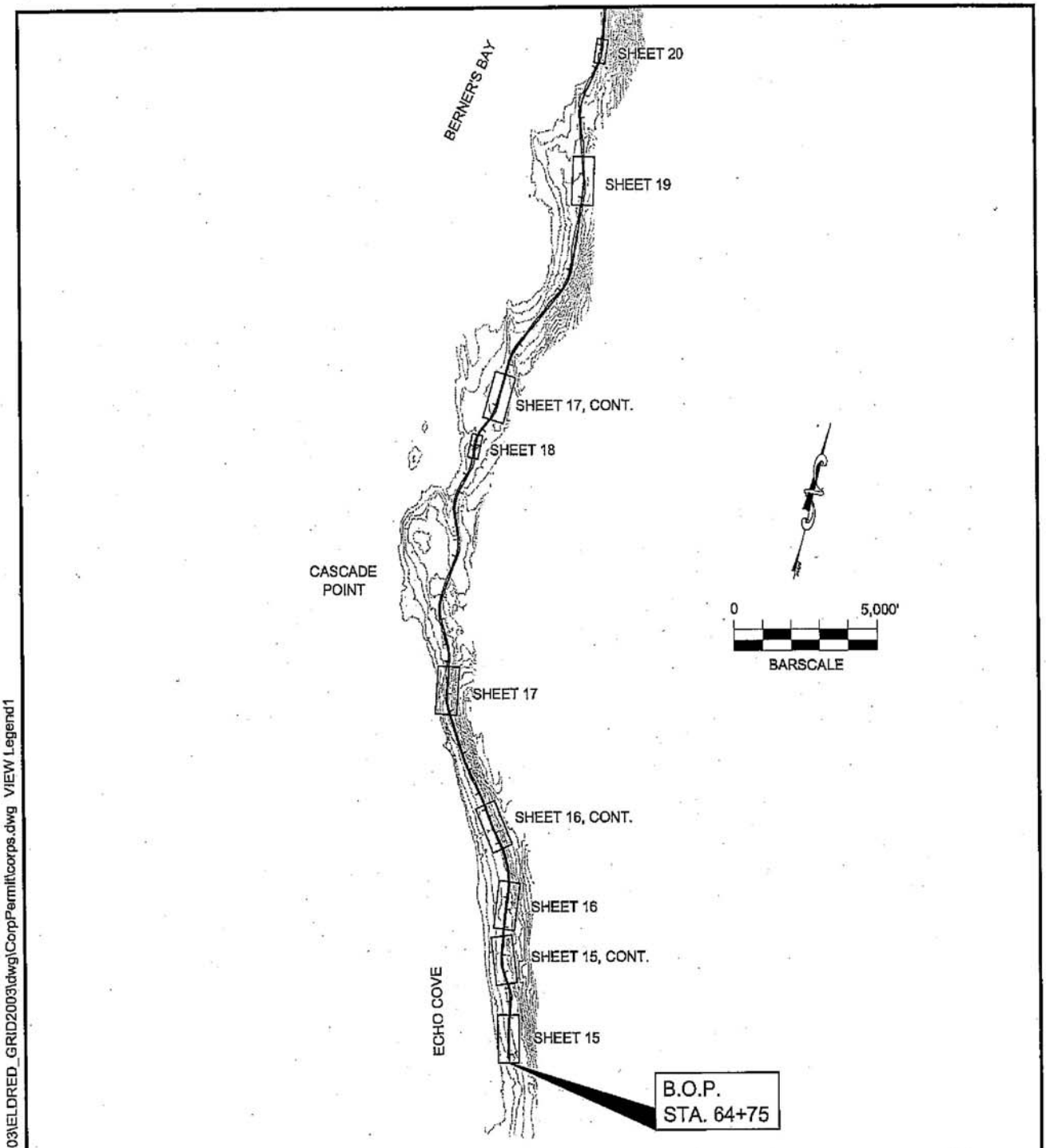
JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 36 SOUTH
RANGE 63 EAST
SECTIONS: 7, 18, 19
C.R.M.

DATE: DECEMBER, 2005 SHEET 1 OF 79

\\DOT\10\20905\JUNEAU_ACCESS_2003\ELDRED_GRID2003\DWG\CORP\PERMIT\CORPCOV.DWG



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. GOLDBELT, INC.
3. SEALASKA, CORP.

WATER BODY:

BERNER'S BAY

Legend

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

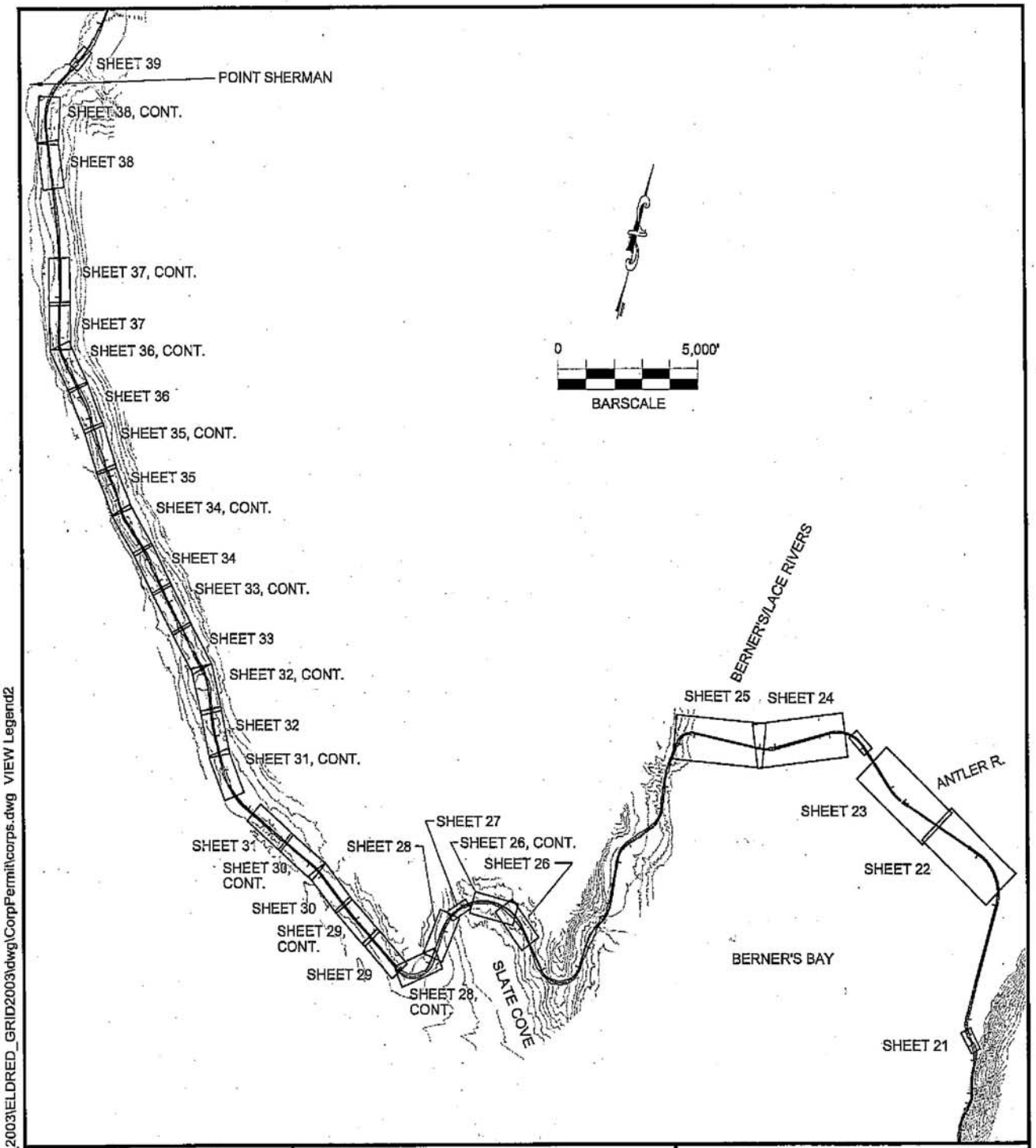
JUNEAU ACCESS
IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 31 SOUTH,
RANGE 60 EAST
SECTION 4,
C.R.M.

DATE: DECEMBER, 2005 SHEET 2 OF 79

DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW Legend1



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL, BERNER'S BAY

Legend

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

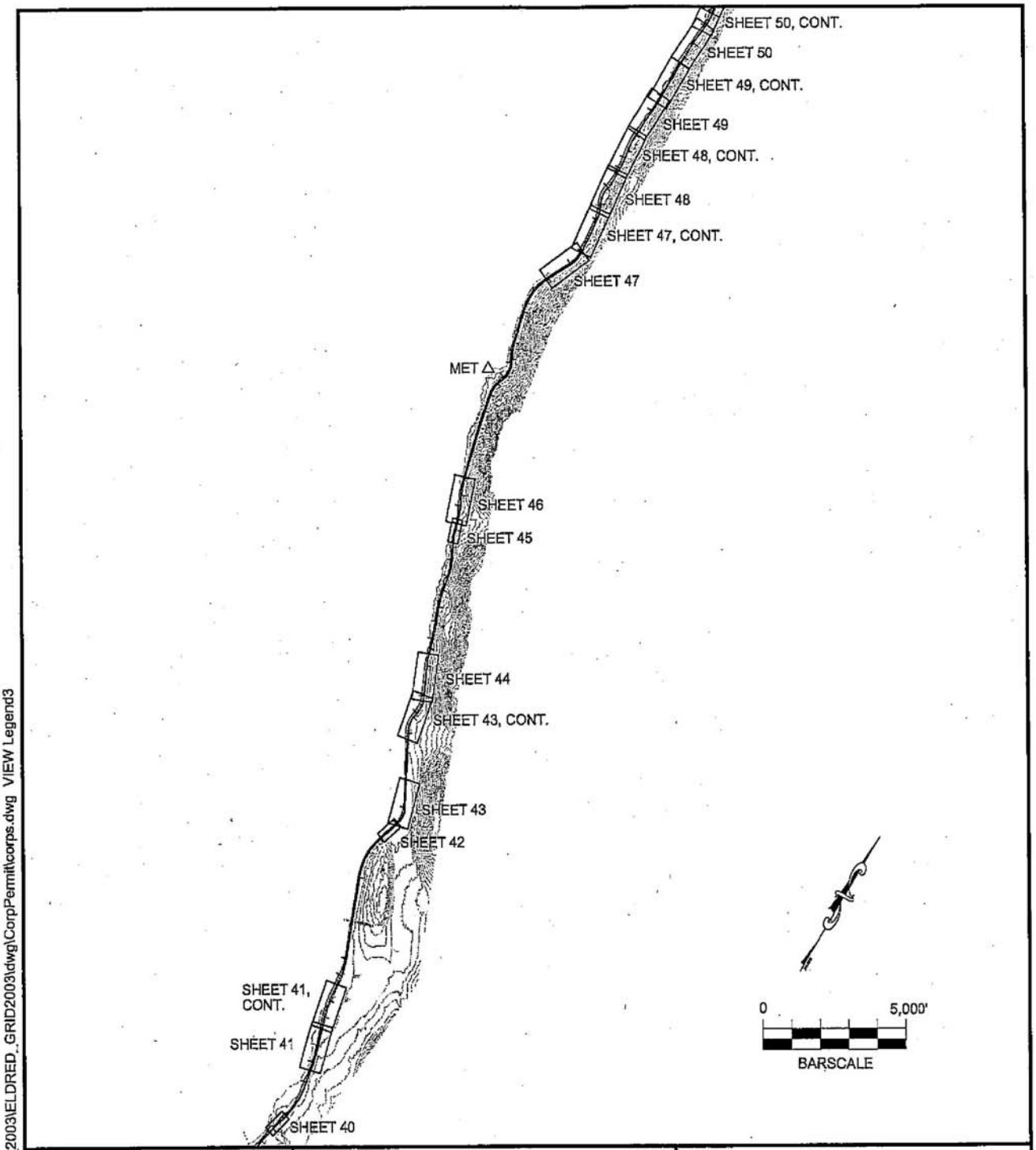
JUNEAU ACCESS
IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 31 SOUTH,
RANGE 60 EAST
SECTION 4,
C.R.M.

DATE: DECEMBER, 2005 SHEET 3 OF 79

DOT\01209005\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW Legend2



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW Legend3

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Legend

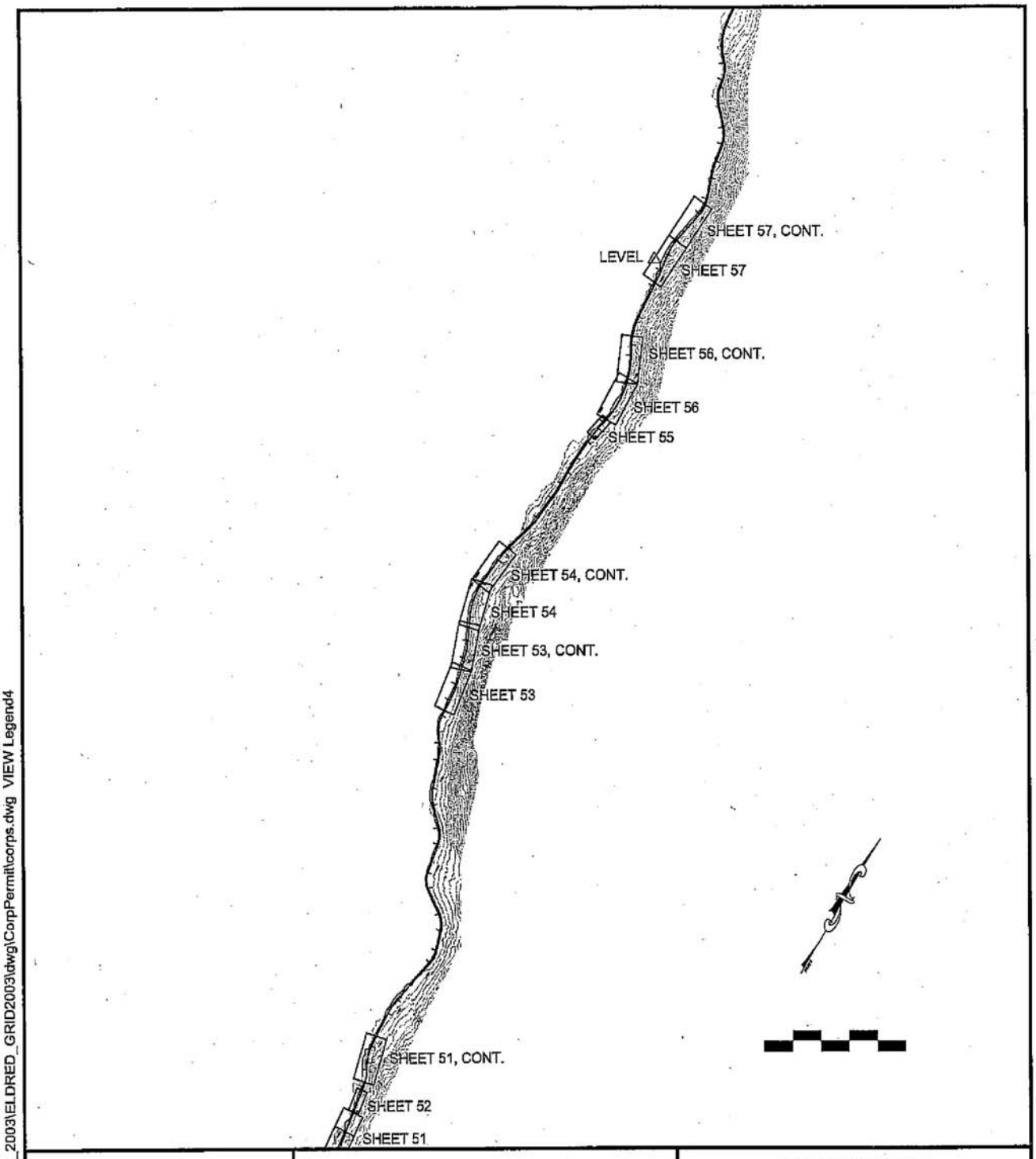
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS
IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 31 SOUTH,
RANGE 60 EAST
SECTION 4,
C.R.M.

DATE: DECEMBER, 2005 SHEET 4 OF 79



DOT1012090S\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW Legend4

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE-
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Legend

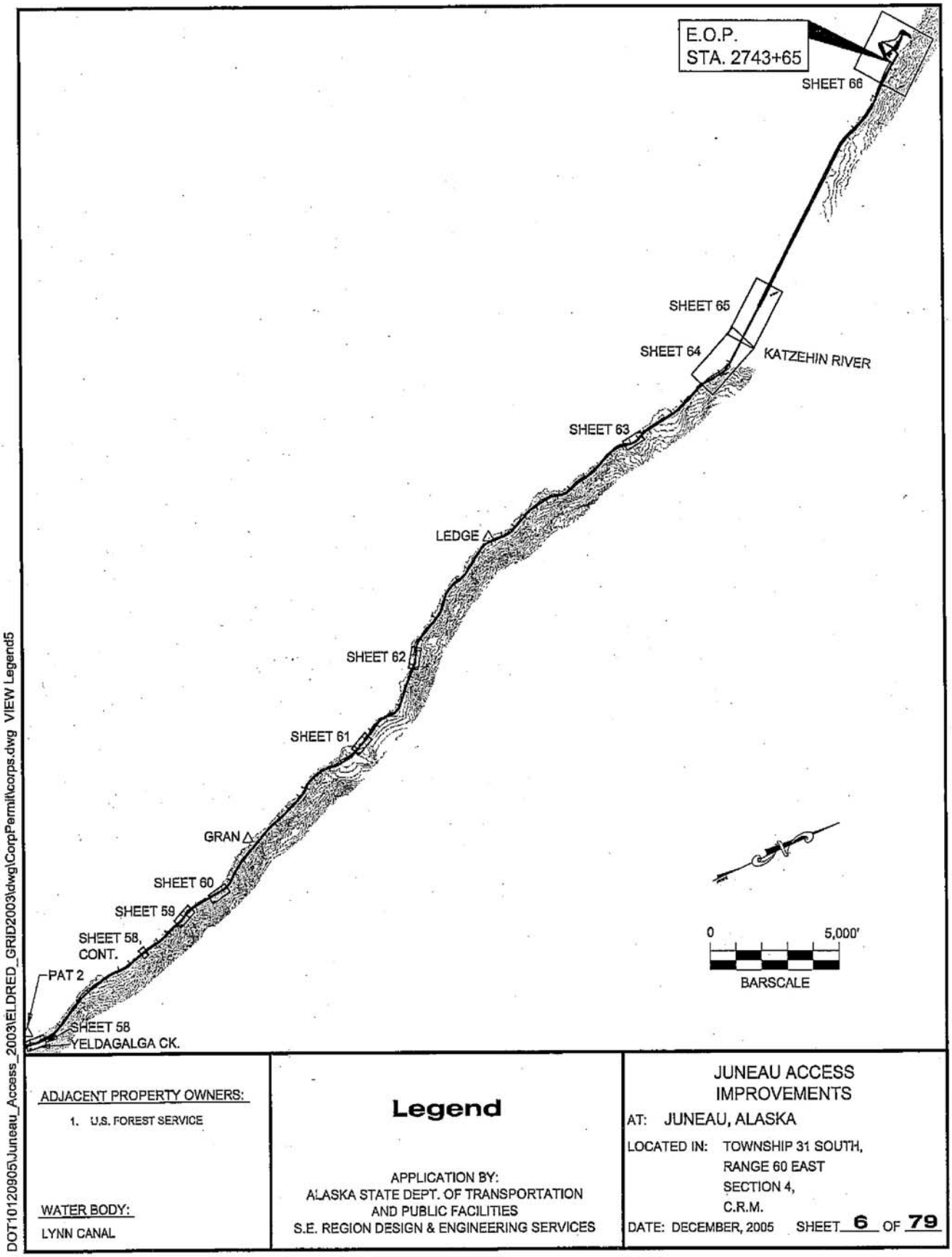
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

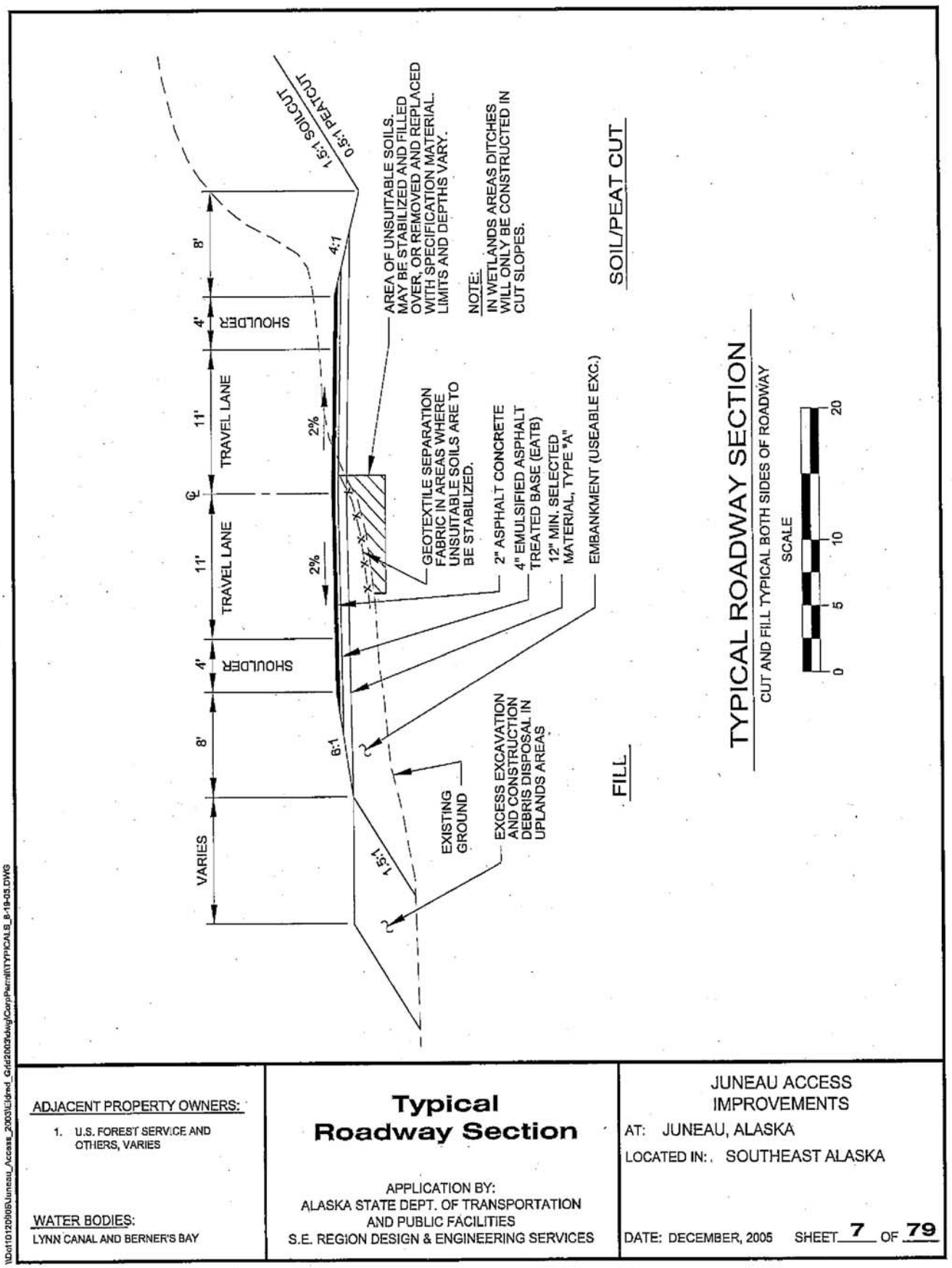
JUNEAU ACCESS
IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 31 SOUTH,
RANGE 60 EAST
SECTION 4,
C.R.M.

DATE: DECEMBER, 2005 SHEET 5 OF 79


E.O.P.
STA. 2743+65
SHEET 66
SHEET 65
SHEET 64
KATZEHIN RIVER
SHEET 63
LEDGE
SHEET 62
SHEET 61
GRAN
SHEET 60
SHEET 59
SHEET 58,
CONT.
PAT 2
SHEET 58
YELDAGALGA CK.
0
5,000'
BARSCALE
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW Legend5
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
LYNN CANAL
Legend
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 31 SOUTH,
RANGE 60 EAST
SECTION 4,
C.R.M.
DATE: DECEMBER, 2005 SHEET 6 OF 79



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS, VARIES

WATER BODIES:
LYNN CANAL AND BERNER'S BAY

Typical Roadway Section

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: SOUTHEAST ALASKA

DATE: DECEMBER, 2005 SHEET 7 OF 79

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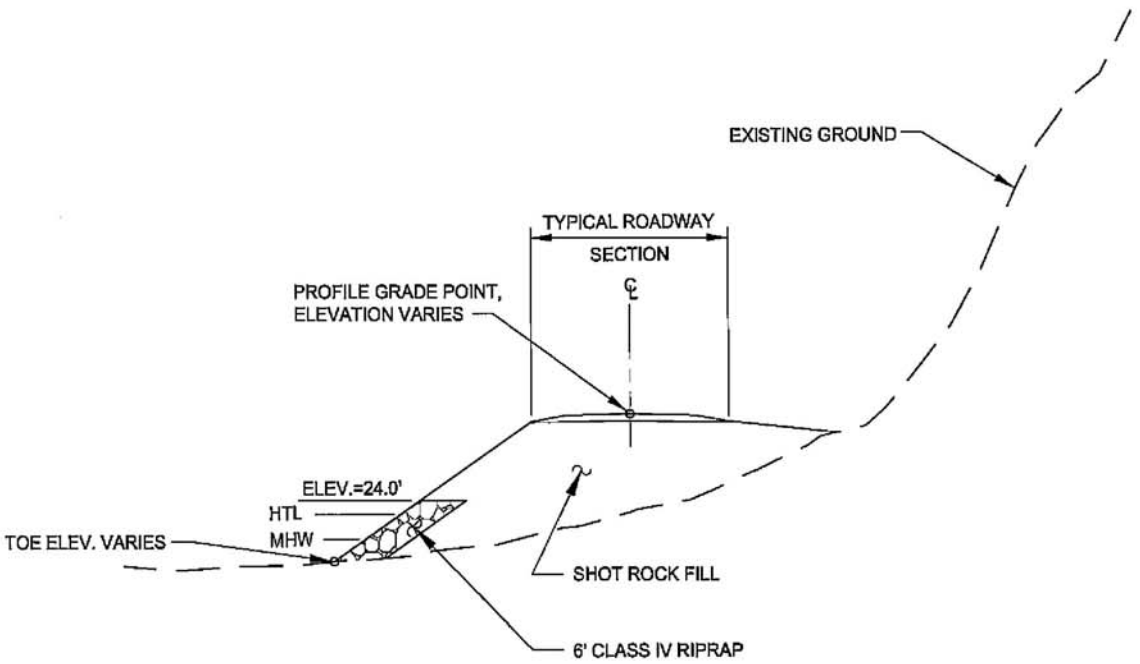


TIDELANDS FILL TYPICAL

NOTE:

FOR ALL DRAWINGS:
HIGH TIDE LINE (HTL) = 21.0'
MEAN HIGH WATER (MHW) = 15.6'
MEAN LOWER LOW WATER (MLLW) = 0.0'

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS, VARIES.

WATER BODIES:

LYNN CANAL

Tidelands Fill Typical

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

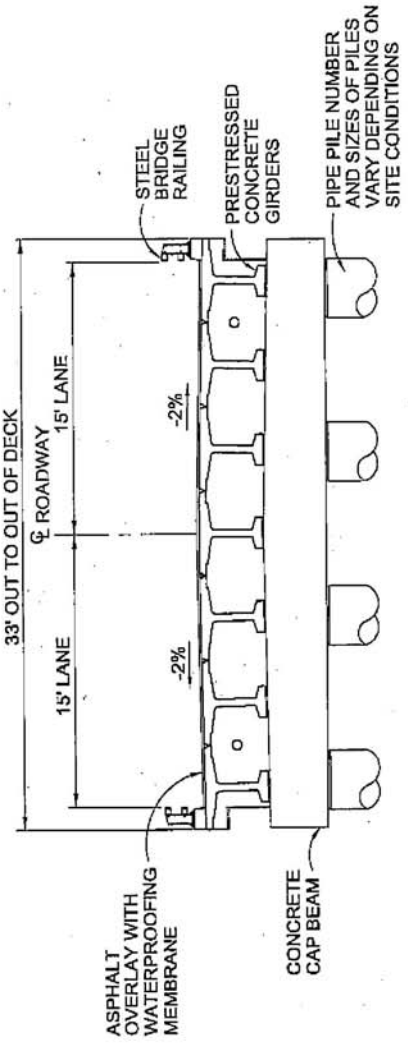
JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: SOUTHEAST ALASKA

DATE: DECEMBER, 2005 SHEET 8 OF 79

\\Dot\01\20905\Juneau_Access_2003\Eldred_Grid2003\dwg\CorpPermit\TYPICALS_8-19-05.DWG



TYPICAL BRIDGE SECTION

SCALE 0 5 10 20

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS, VARIES

WATER BODIES:

LYNN CANAL AND BERNER'S BAY

Typical Bridge Section

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: SOUTHEAST ALASKA

DATE: DECEMBER, 2005 SHEET 9 OF 79

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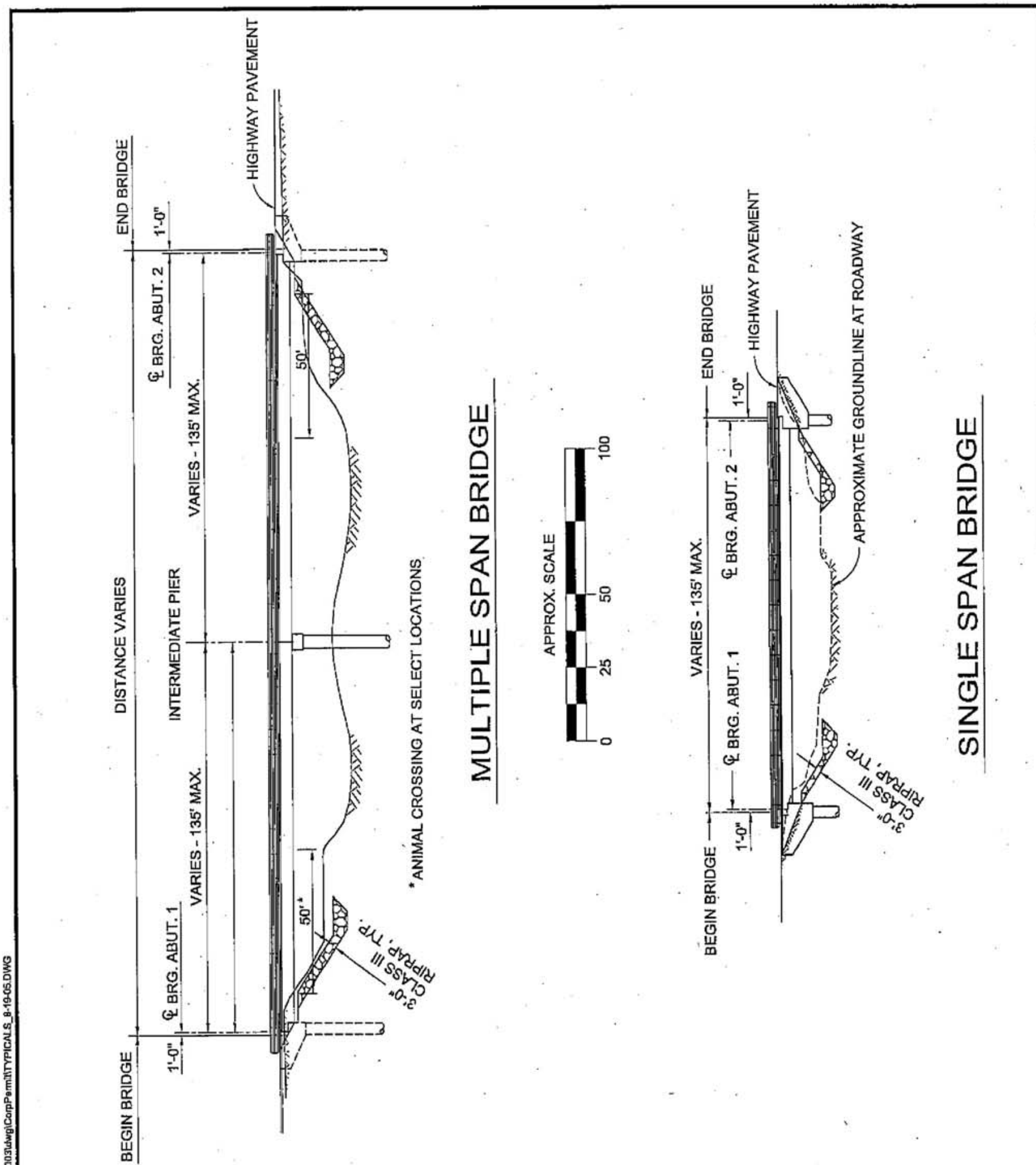

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ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS, VARIES

WATER BODIES:

LYNN CANAL AND BERNER'S BAY

Typical Bridge Section

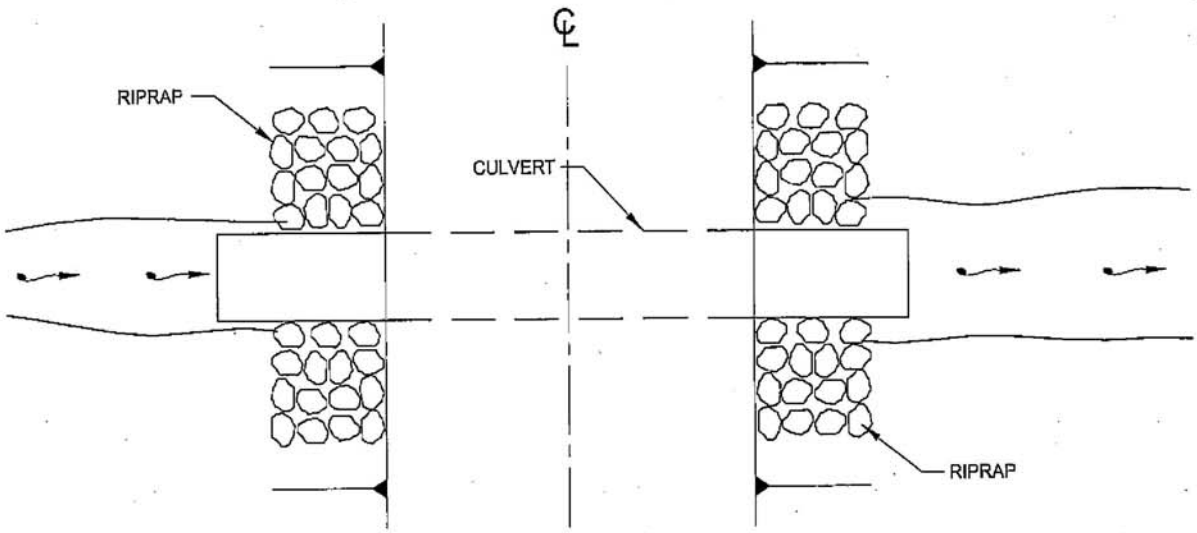
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

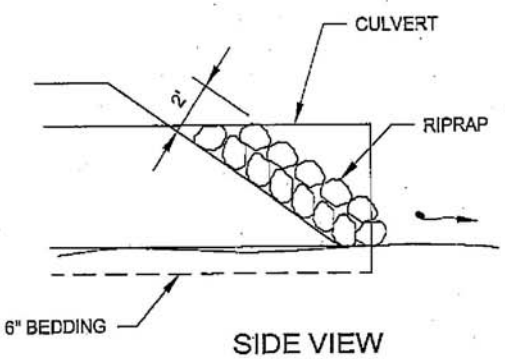
LOCATED IN: SOUTHEAST ALASKA

DATE: DECEMBER, 2005 SHEET 10 OF 79

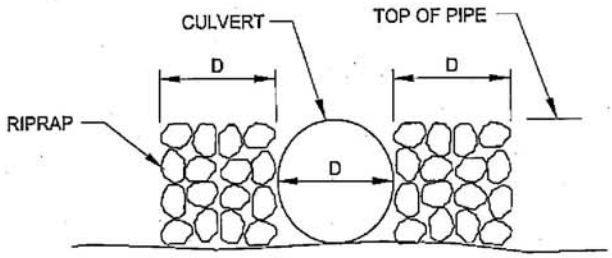


PLAN VIEW

N.T.S.



SIDE VIEW



END VIEW

TYPICAL RIPRAP PLACEMENT

N.T.S.

CULVERT NOTES:

1. PIPE LOCATIONS AS SHOWN ON THE PLAN AND PROFILE SHEETS ARE APPROXIMATE AND MAY BE CHANGED BY THE ENGINEER.
2. PIPE ALIGNMENTS AND GRADIENTS SHALL MATCH THE NATURAL STREAM BEDS.

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS

WATER BODIES:

LYNN CANAL AND BERNER'S BAY

Typical Culvert Details

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: SOUTHEAST ALASKA

DATE: DECEMBER, 2005 SHEET 11 OF 79

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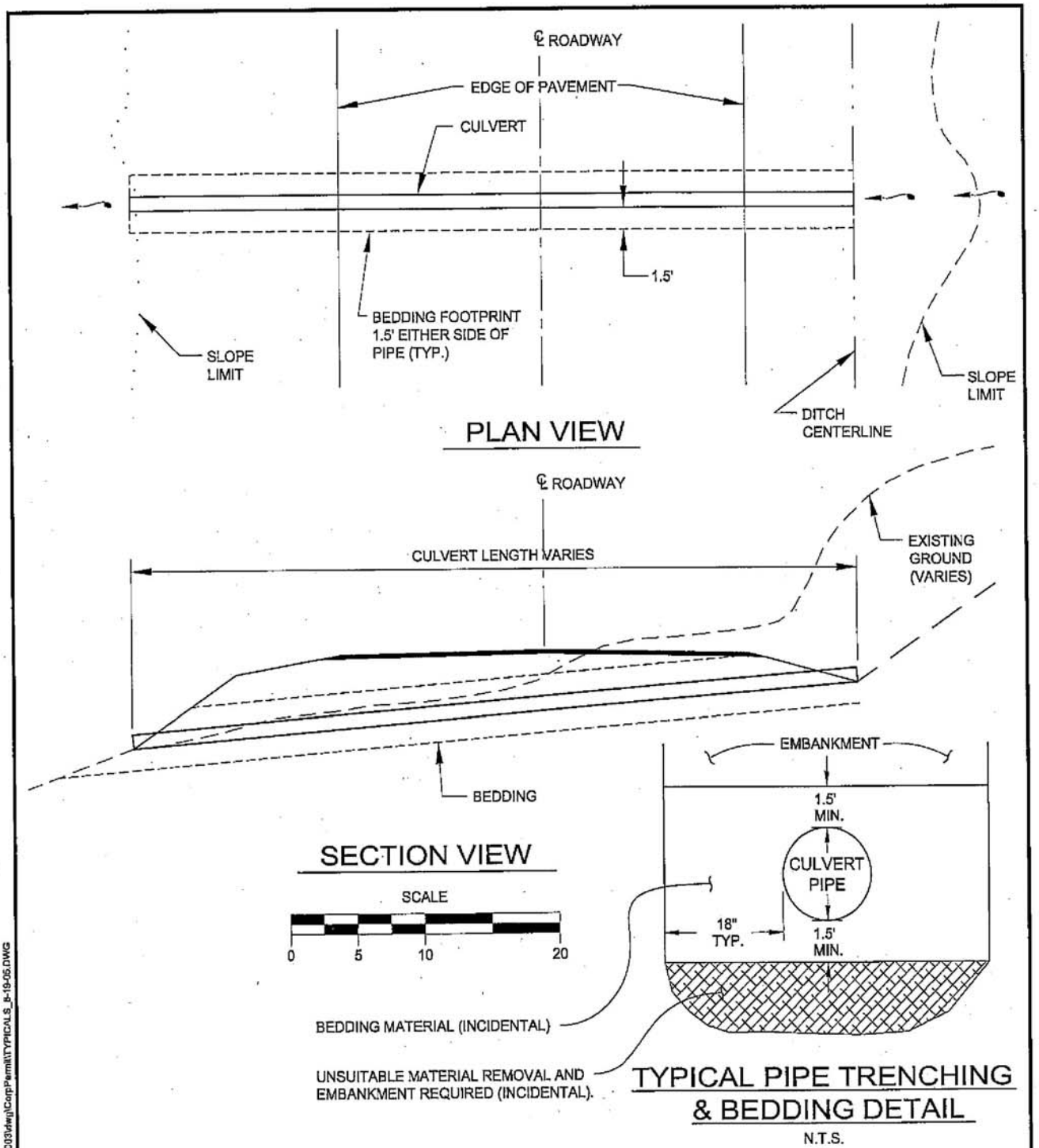

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS, VARIES

WATER BODIES:

LYNN CANAL AND BERNER'S BAY

Typical Roadway Section

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: SOUTHEAST ALASKA

DATE: DECEMBER, 2005 SHEET 12 OF 79

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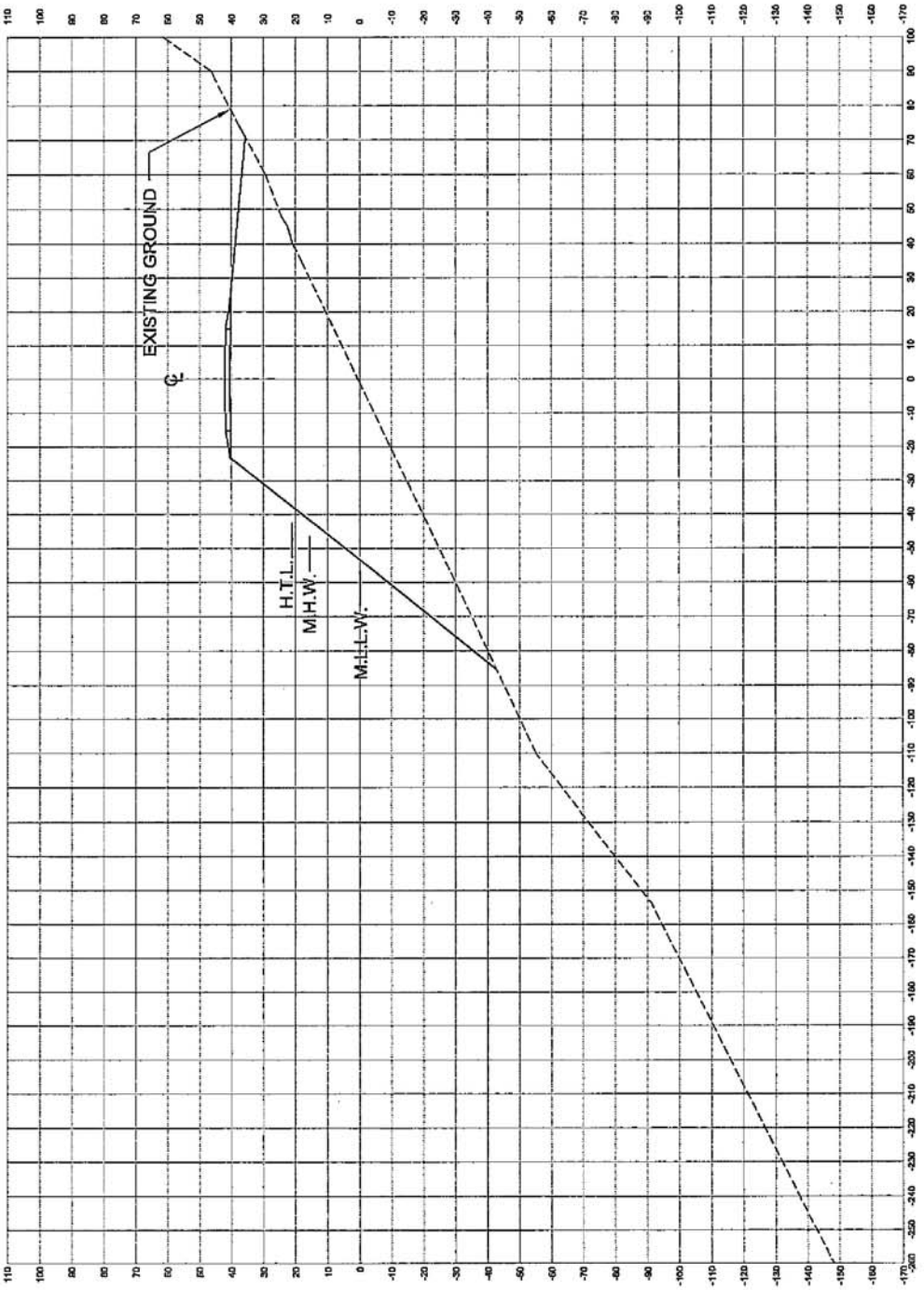

DEEP WATER SIDECAST AREA TYPICAL

STA. 1732+00

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS, VARIES

WATER BODIES:

LYNN CANAL

Deep Water Sidecast Area Typical

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: SOUTHEAST ALASKA

DATE: DECEMBER, 2005 SHEET 13 OF 79

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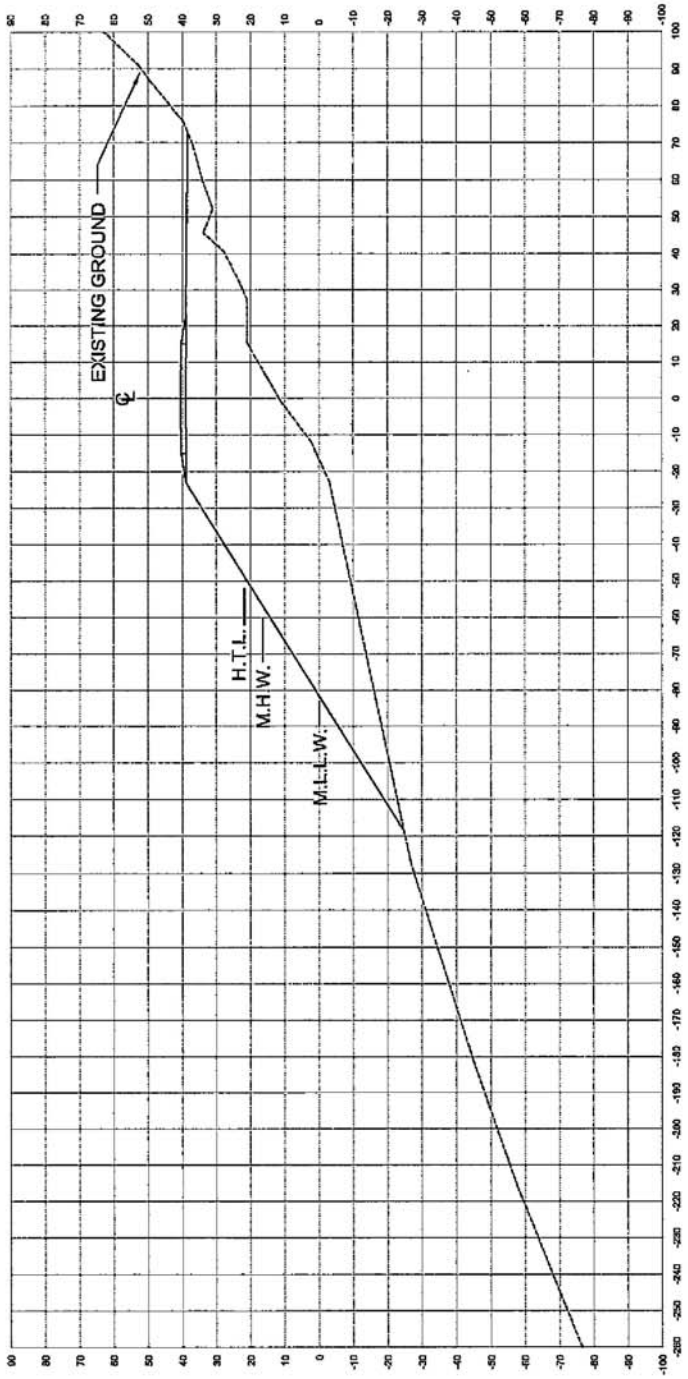

DEEP WATER SIDECAST AREA TYPICAL

STA. 2095+00

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS, VARIES

WATER BODIES:

LYNN CANAL

Deep Water Sidecast Area Typical

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: SOUTHEAST ALASKA

DATE: SEPTEMBER, 2005 SHEET 14 OF 79

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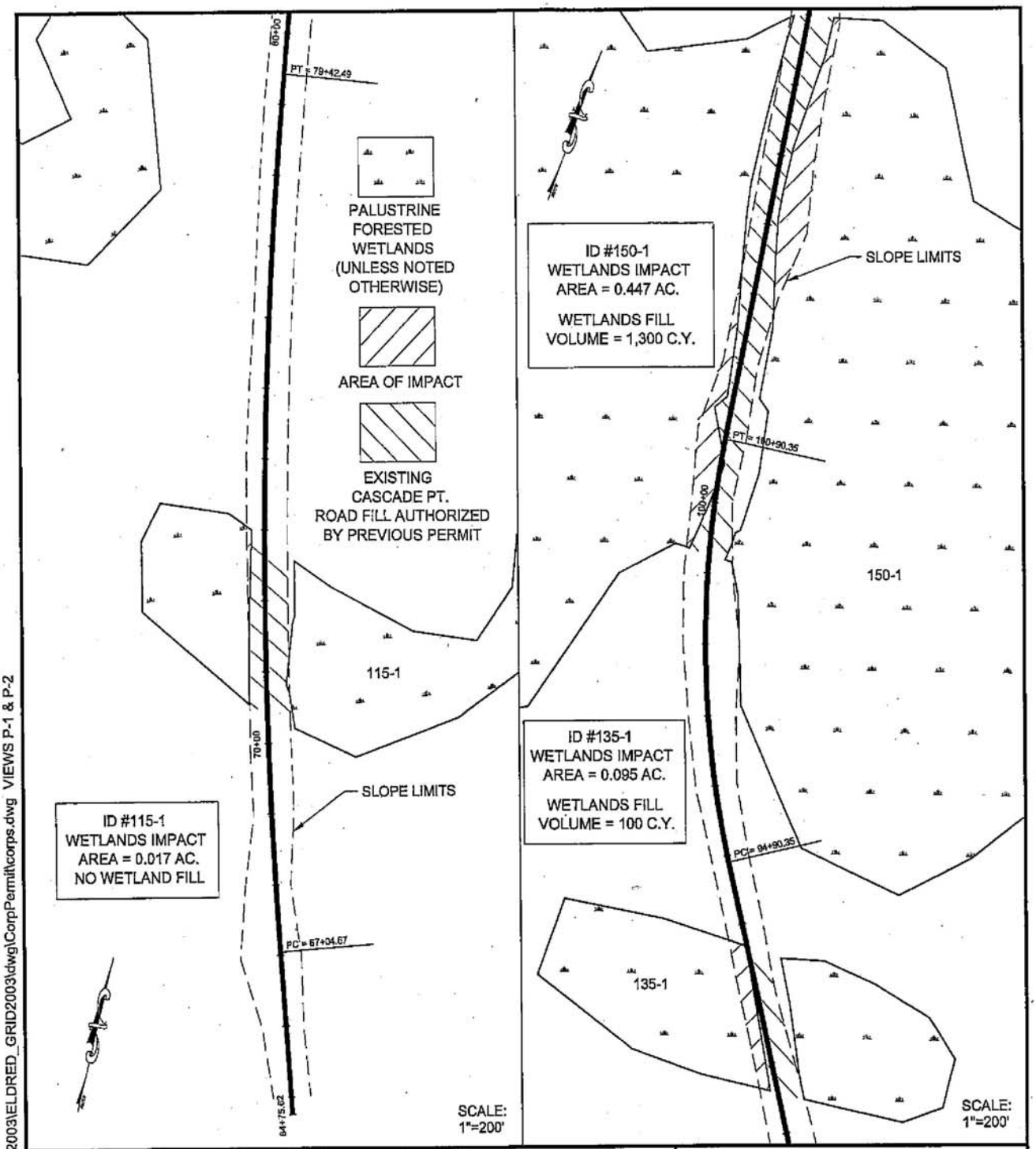


ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. GOLDBELT, INC.

WATER BODY:

BERNER'S BAY

Palustrine Wetlands Areas

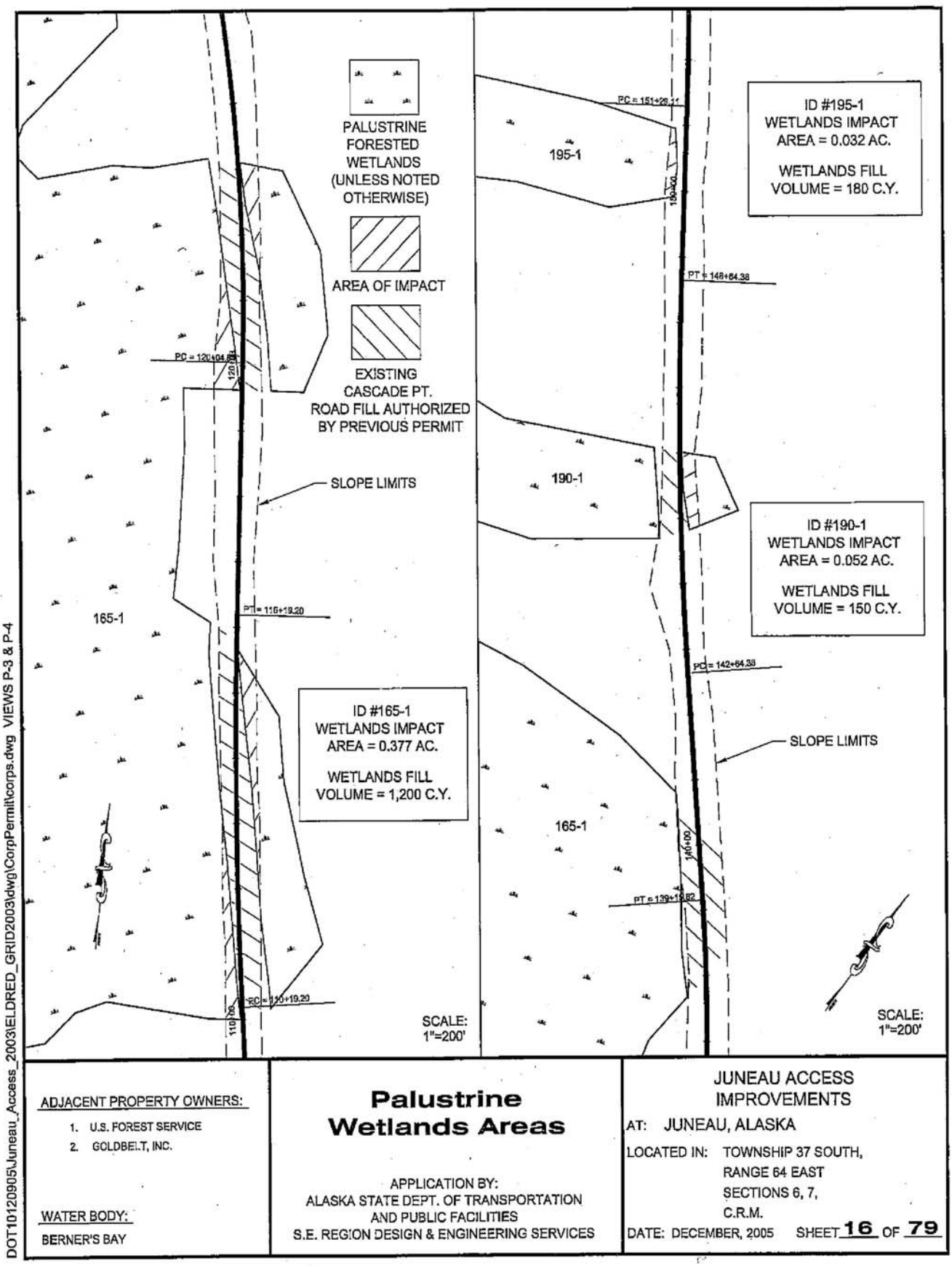
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 37 SOUTH, RANGE 64 EAST SECTIONS 7, 18, C.R.M.

DATE: DECEMBER, 2005 SHEET 15 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-3 & P-4

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. GOLDBELT, INC.

WATER BODY:

BERNER'S BAY

Palustrine Wetlands Areas

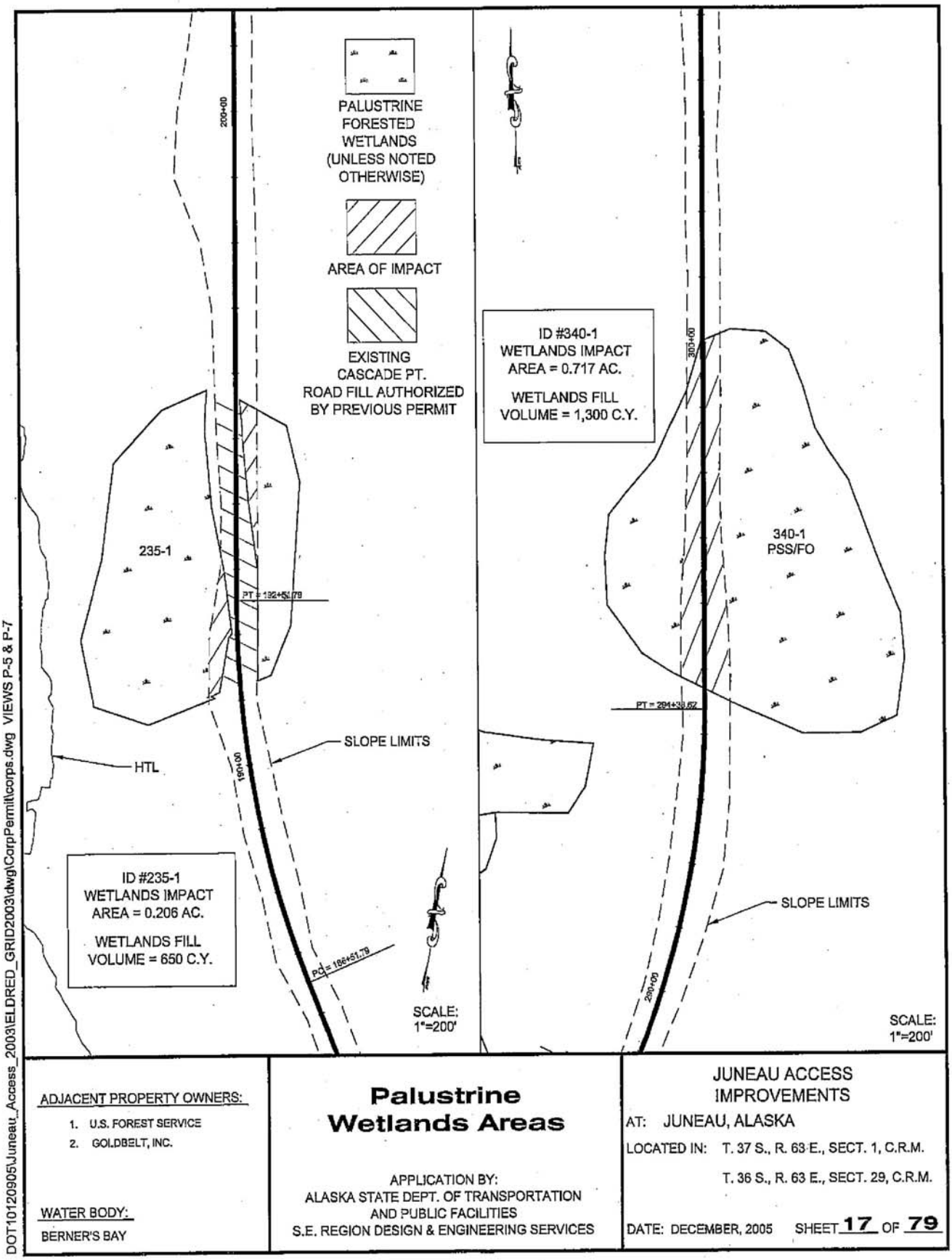
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

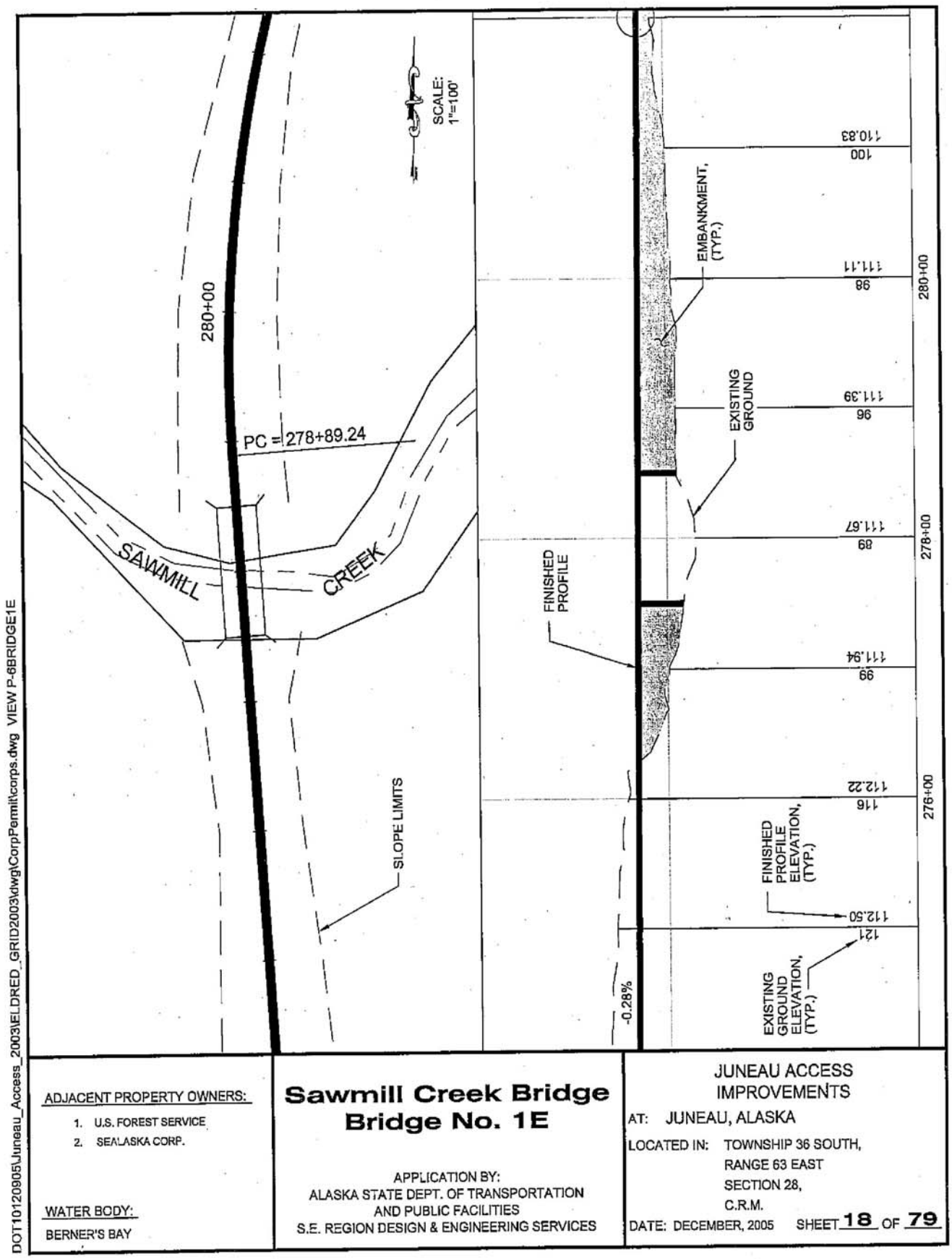
JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 37 SOUTH, RANGE 64 EAST SECTIONS 6, 7, C.R.M.

DATE: DECEMBER, 2005 SHEET 16 OF 79


PALUSTRINE FORESTED WETLANDS (UNLESS NOTED OTHERWISE)
AREA OF IMPACT
EXISTING CASCADE PT. ROAD FILL AUTHORIZED BY PREVIOUS PERMIT
ID #340-1
WETLANDS IMPACT
AREA = 0.717 AC.
WETLANDS FILL
VOLUME = 1,300 C.Y.
ID #235-1
WETLANDS IMPACT
AREA = 0.206 AC.
WETLANDS FILL
VOLUME = 650 C.Y.
235-1
340-1
PSS/FO
HTL
SLOPE LIMITS
SLOPE LIMITS
200+00
190+00
300+00
290+00
SCALE:
1"=200'
SCALE:
1"=200'
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-5 & P-7
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
2. GOLDBELT, INC.
WATER BODY:
BERNER'S BAY
Palustrine Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: T. 37 S., R. 63 E., SECT. 1, C.R.M.
T. 36 S., R. 63 E., SECT. 29, C.R.M.
DATE: DECEMBER, 2005 SHEET 17 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-6BRIDGE1E

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. SEALASKA CORP.

WATER BODY:

BERNER'S BAY

Sawmill Creek Bridge
Bridge No. 1E

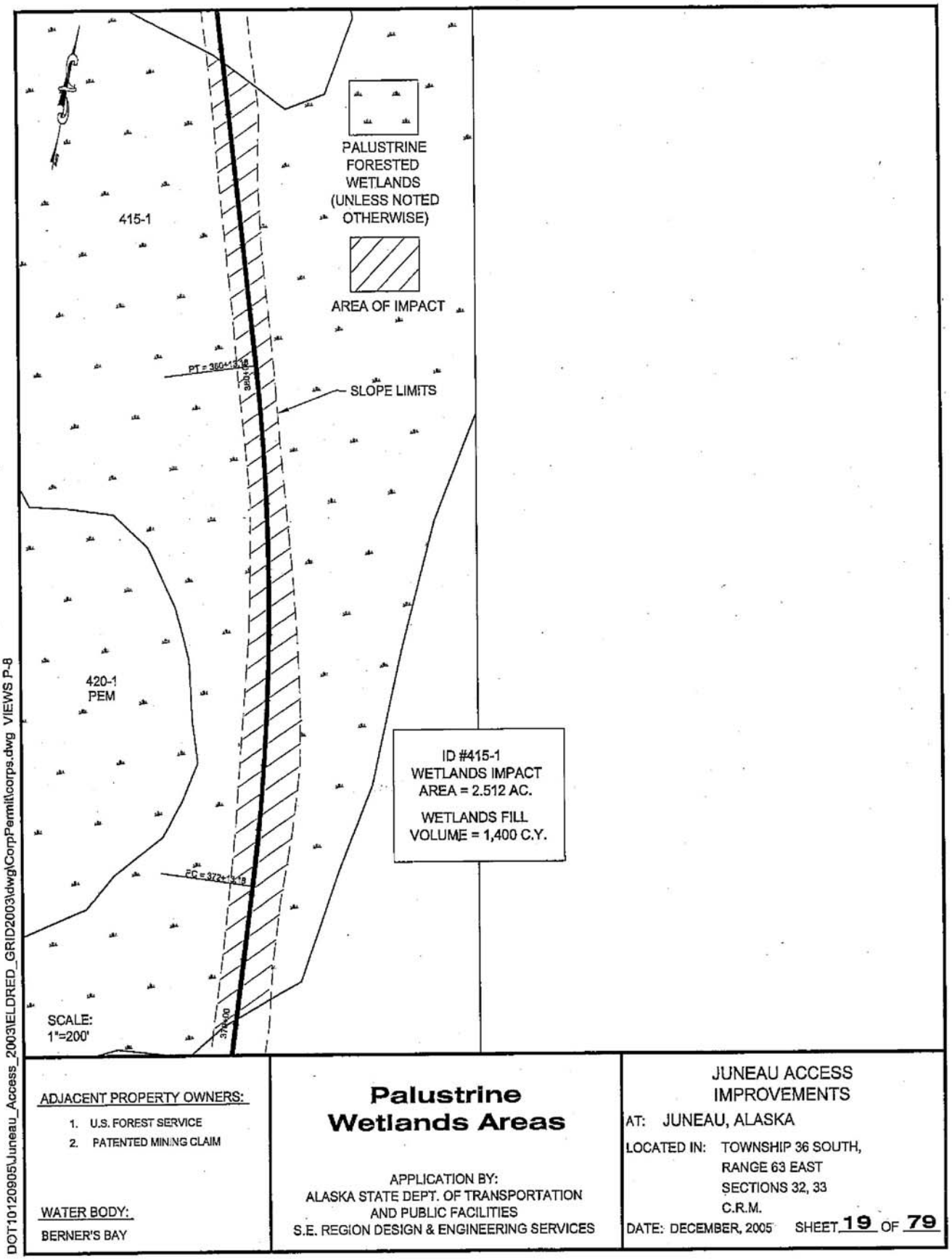
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

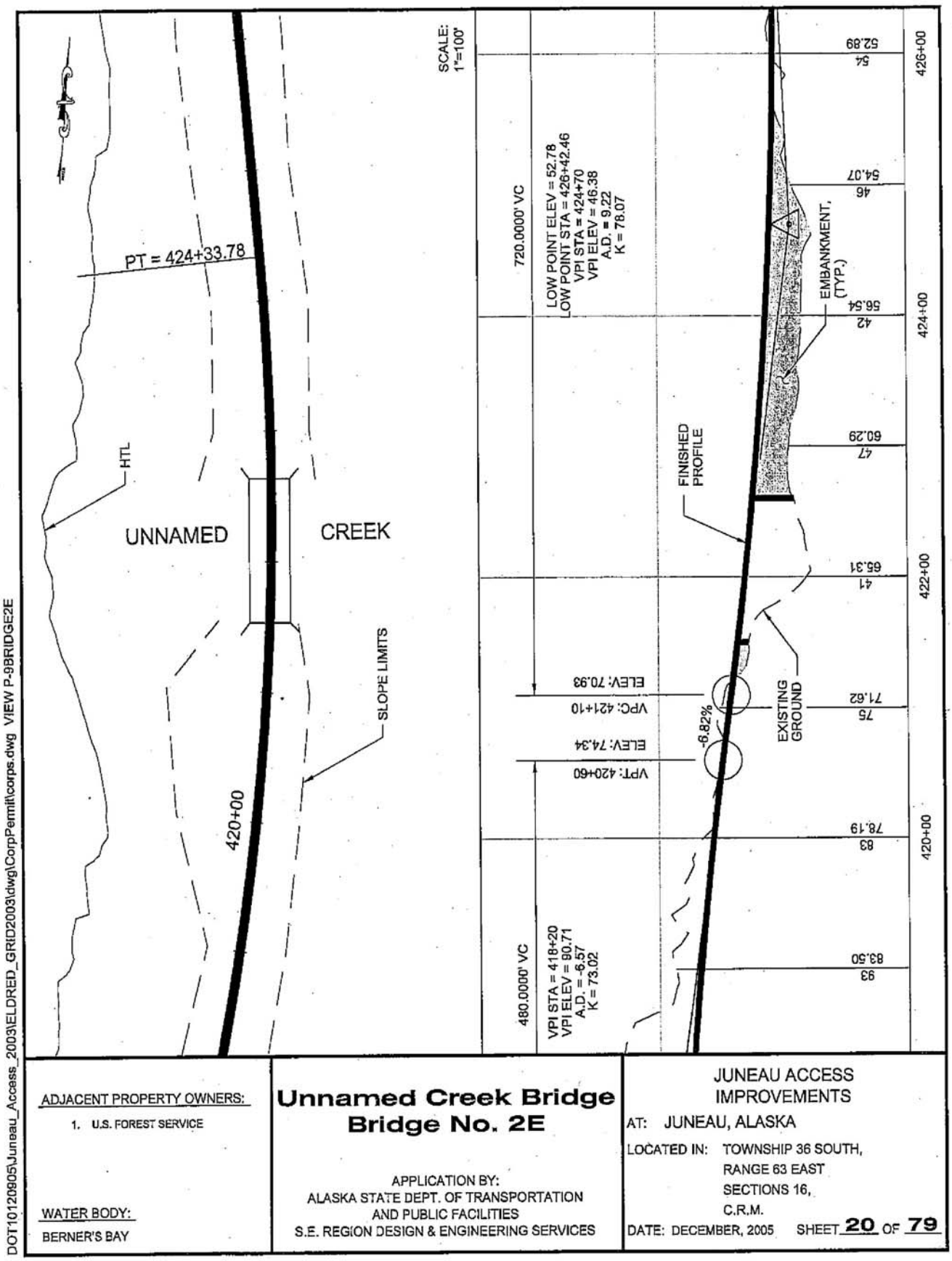
JUNEAU ACCESS
IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 36 SOUTH,
RANGE 63 EAST
SECTION 28,
C.R.M.

DATE: DECEMBER, 2005 SHEET 18 OF 79


PALUSTRINE
FORESTED
WETLANDS
(UNLESS NOTED
OTHERWISE)
AREA OF IMPACT
SLOPE LIMITS
415-1
420-1
PEM
ID #415-1
WETLANDS IMPACT
AREA = 2.512 AC.
WETLANDS FILL
VOLUME = 1,400 C.Y.
SCALE:
1"=200'
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
2. PATENTED MINING CLAIM
WATER BODY:
BERNER'S BAY
Palustrine
Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 36 SOUTH,
RANGE 63 EAST
SECTIONS 32, 33
C.R.M.
DATE: DECEMBER, 2005 SHEET 19 OF 79
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-8



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE

WATER BODY:

BERNER'S BAY

Unnamed Creek Bridge
Bridge No. 2E

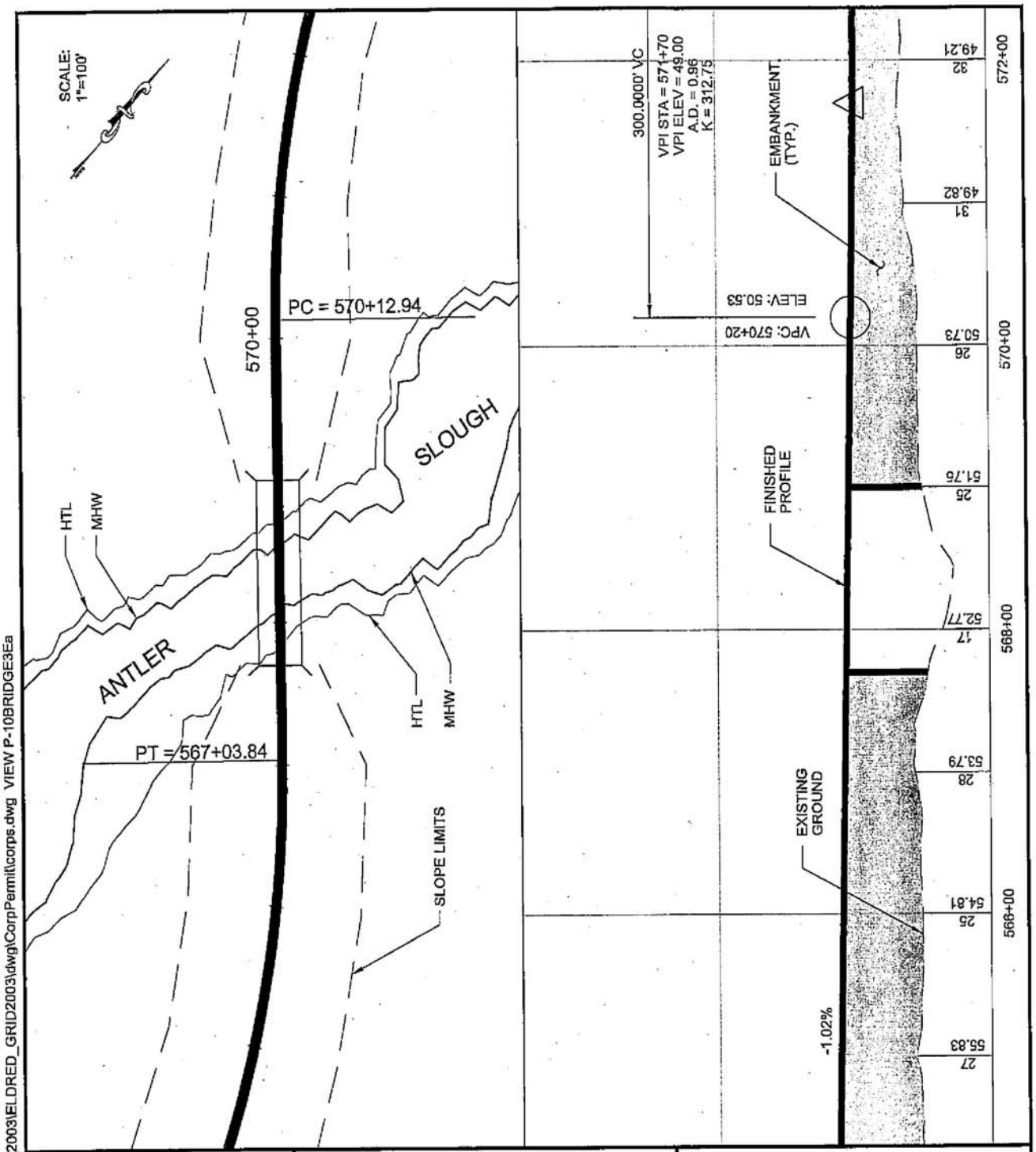
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 36 SOUTH,
RANGE 63 EAST
SECTIONS 16,
C.R.M.

DATE: DECEMBER, 2005 SHEET 20 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-10BRIDGE3Ea

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

BERNER'S BAY

Antler Slough Bridge
Bridge No. 3E

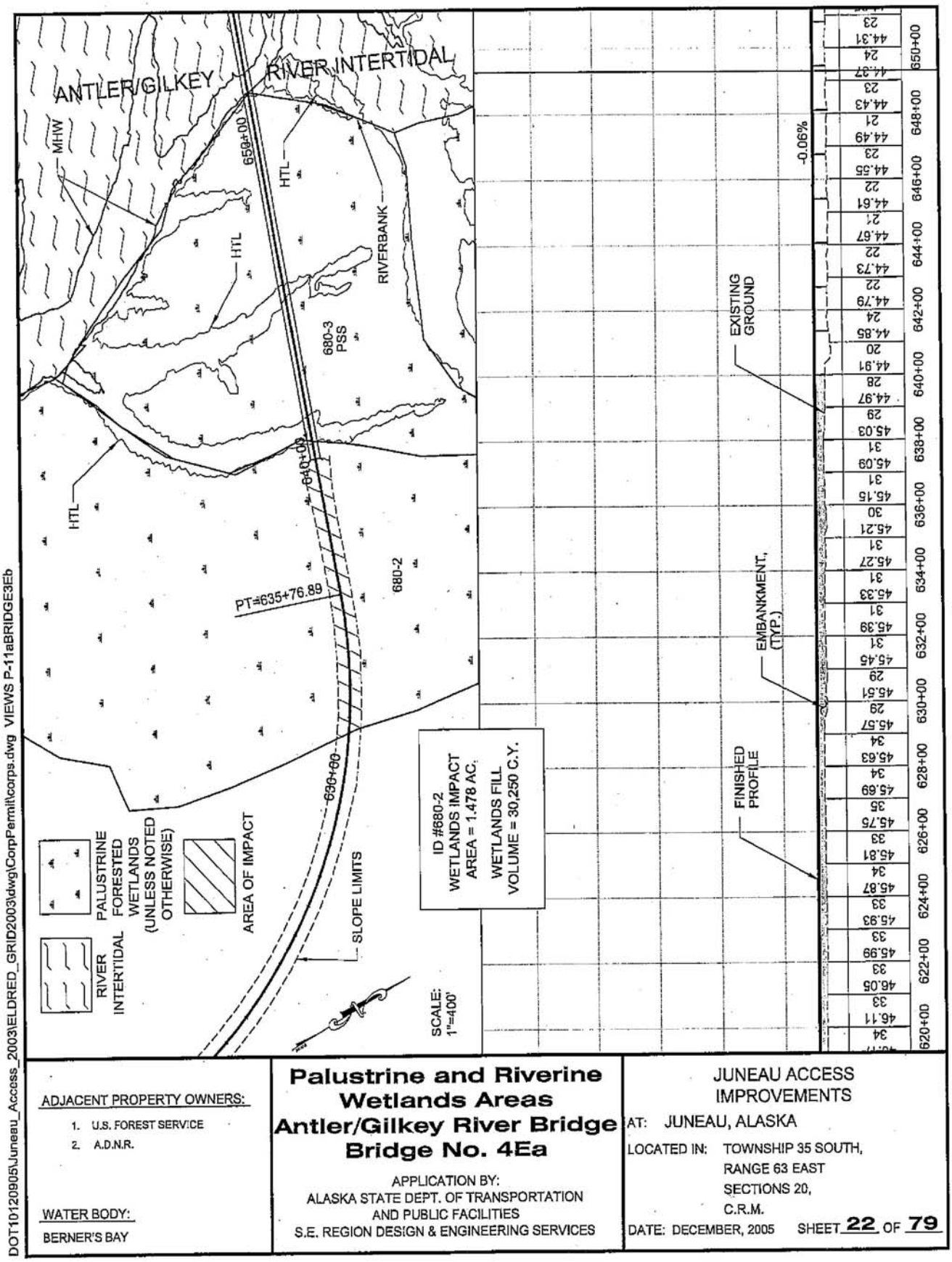
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 63 EAST
SECTION 32,
C.R.M.

DATE: DECEMBER, 2005 SHEET 21 OF 79



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

BERNER'S BAY

Palustrine and Riverine Wetlands Areas
Antler/Gilkey River Bridge
Bridge No. 4Ea

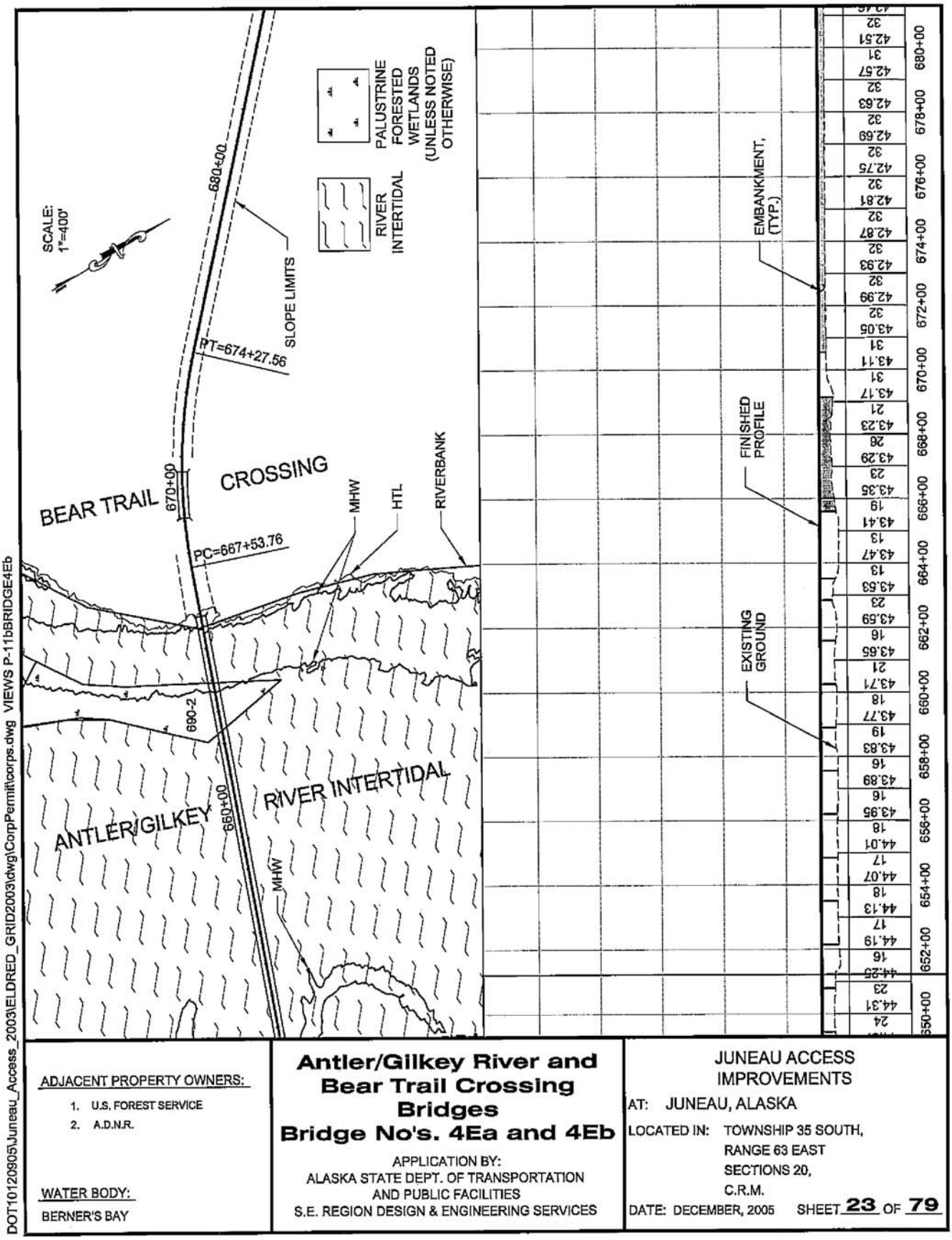
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 35 SOUTH, RANGE 63 EAST SECTIONS 20, C.R.M.

DATE: DECEMBER, 2005 SHEET 22 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-11bBRIDGE4Eb

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

BERNER'S BAY

Antler/Gilkey River and Bear Trail Crossing Bridges
Bridge No's. 4Ea and 4Eb

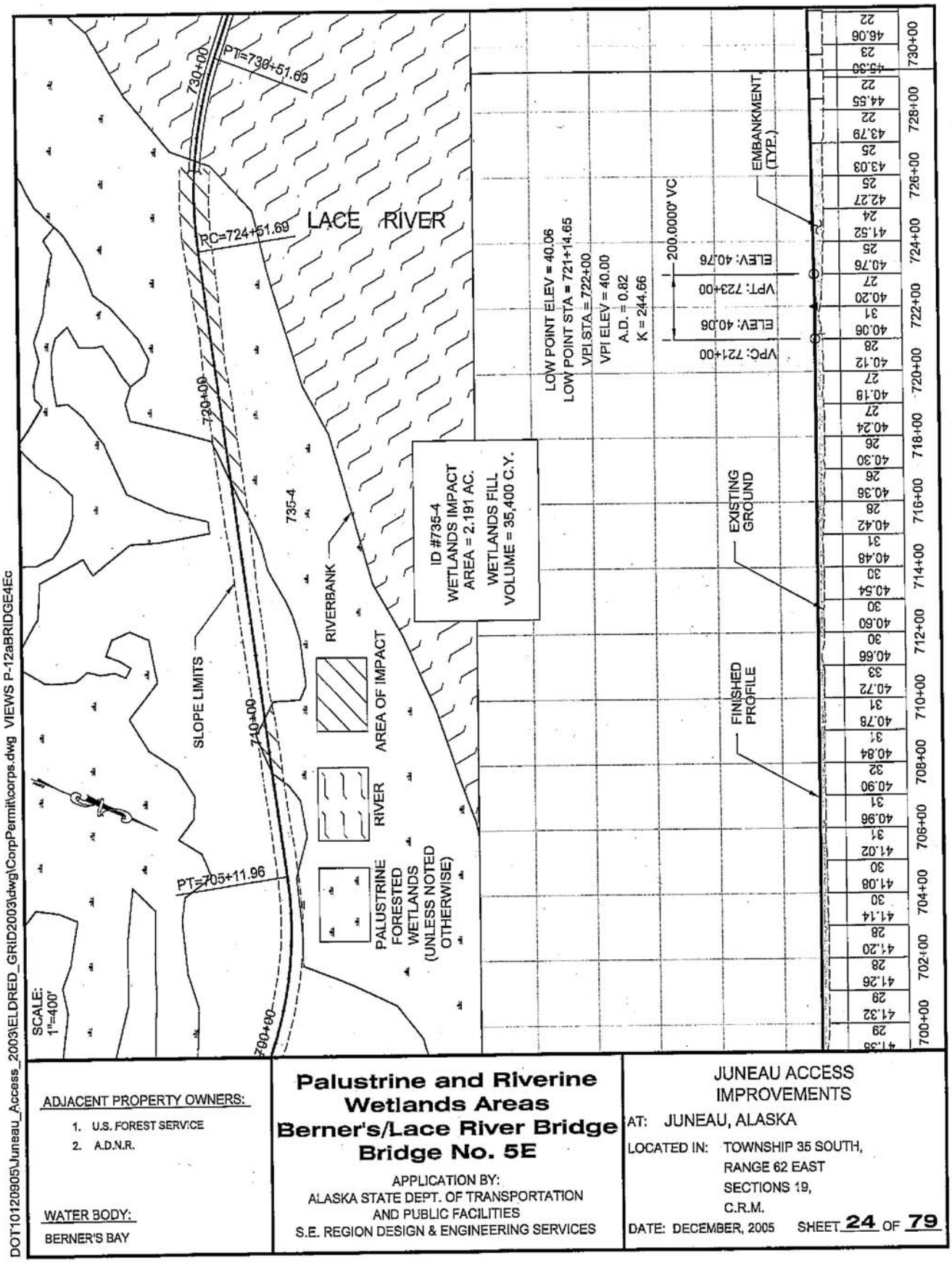
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

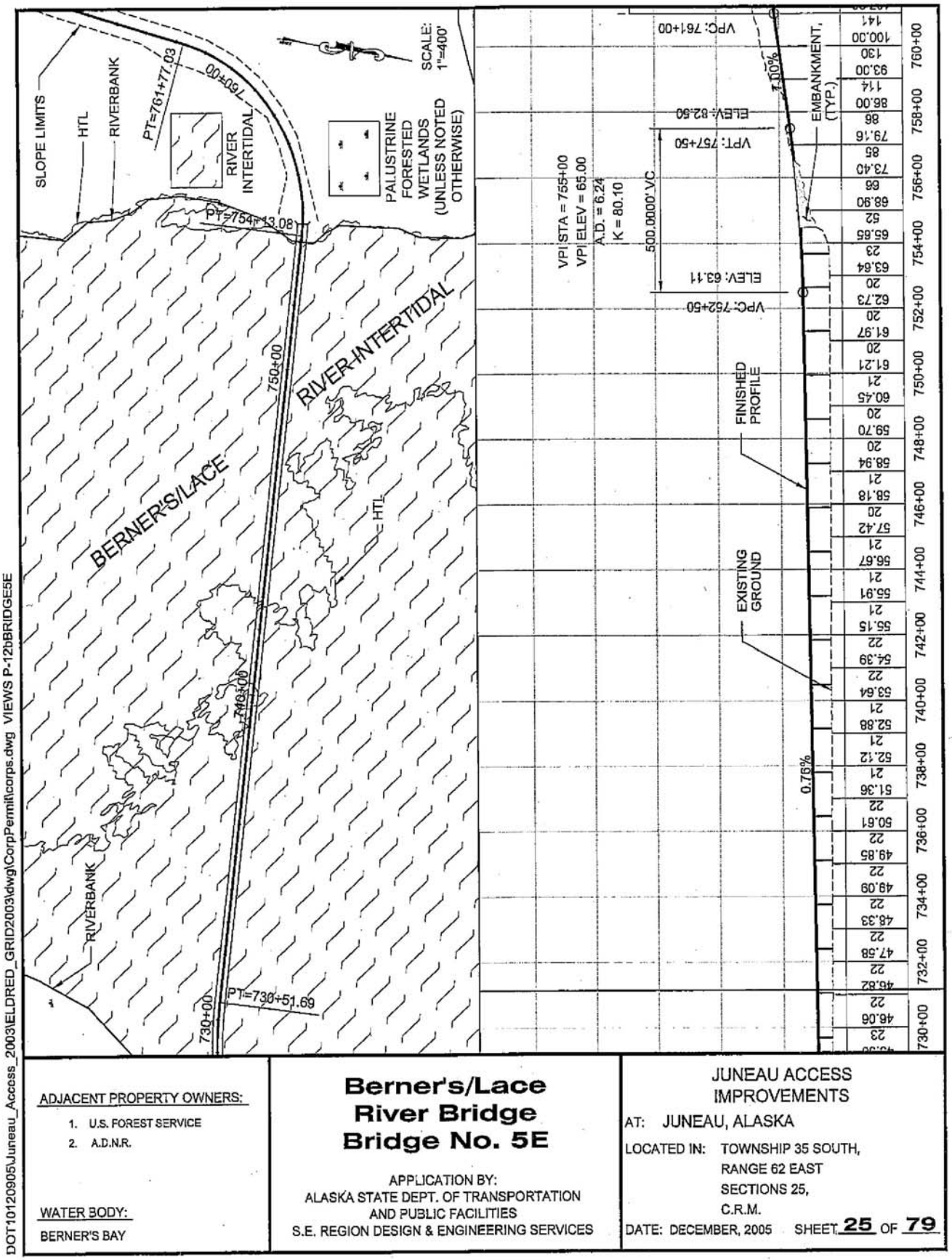
JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 35 SOUTH, RANGE 63 EAST SECTIONS 20, C.R.M.

DATE: DECEMBER, 2005 SHEET 23 OF 79


LACE RIVER
PT=730+51.69
730+00
RC=724+51.69
720+00
735-4
RIVERBANK
ID #735-4
WETLANDS IMPACT
AREA = 2.191 AC.
WETLANDS FILL
VOLUME = 35,400 C.Y.
SLOPE LIMITS
740+00
AREA OF IMPACT
RIVER
PALUSTRINE
FORESTED
WETLANDS
(UNLESS NOTED
OTHERWISE)
PT=705+11.96
700+00
SCALE:
1"=400'
LOW POINT ELEV = 40.06
LOW POINT STA = 721+14.65
VPI STA = 722+00
VPI ELEV = 40.00
A.D. = 0.82
K = 244.66
200.0000' VC
ELEV: 40.76
VPT: 723+00
ELEV: 40.06
VPC: 721+00
EMBANKMENT
(TYP.)
EXISTING
GROUND
FINISHED
PROFILE
730+00
728+00
726+00
724+00
722+00
720+00
718+00
716+00
714+00
712+00
710+00
708+00
706+00
704+00
702+00
700+00
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
2. A.D.N.R.
WATER BODY:
BERNER'S BAY
Palustrine and Riverine Wetlands Areas
Berner's/Lace River Bridge
Bridge No. 5E
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTIONS 19,
C.R.M.
DATE: DECEMBER, 2005
SHEET 24 OF 79
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-12aBRIDGE4Ec



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-12bBRIDGE5E

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

BERNER'S BAY

Berner's/Lace River Bridge Bridge No. 5E

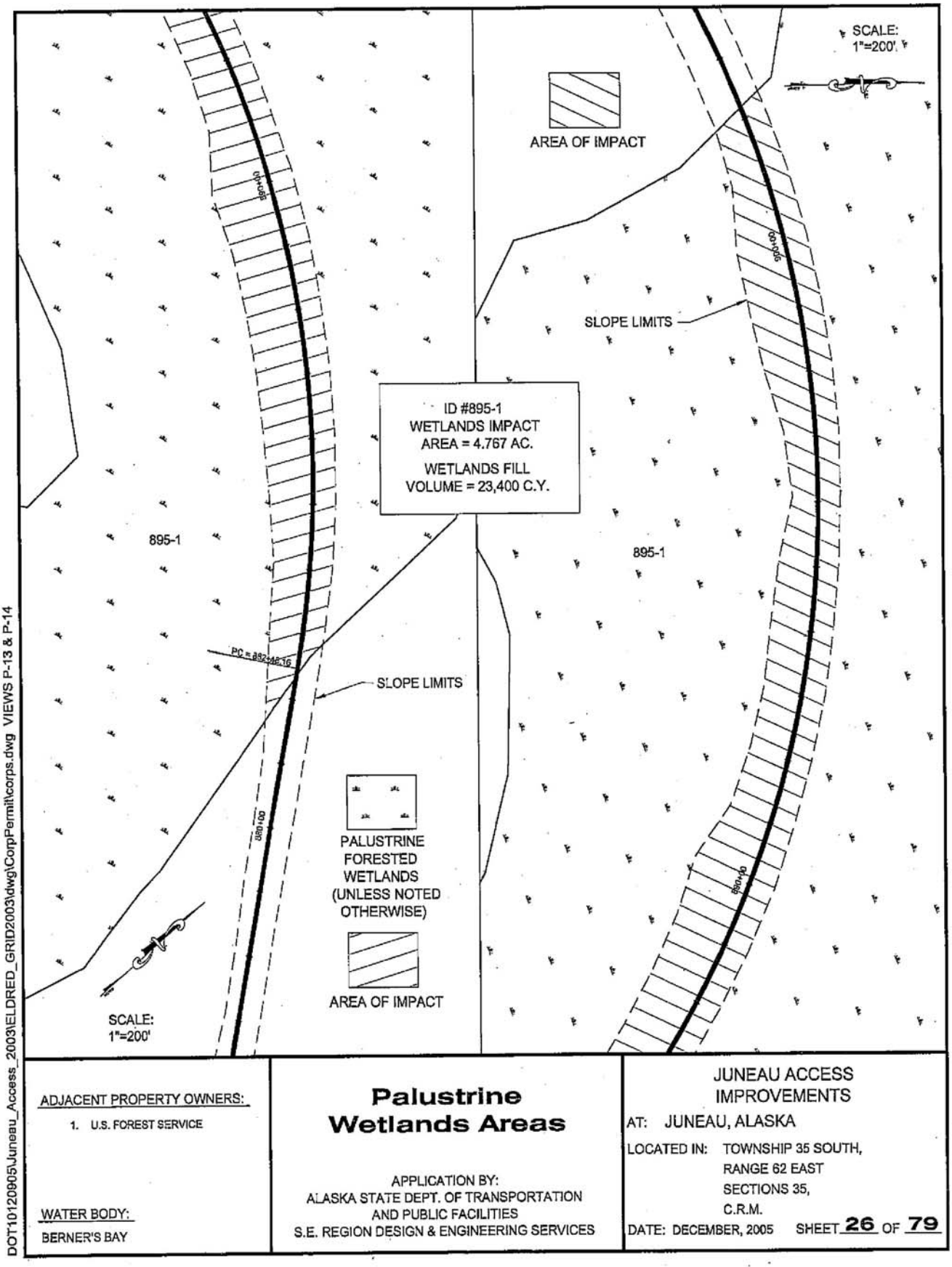
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

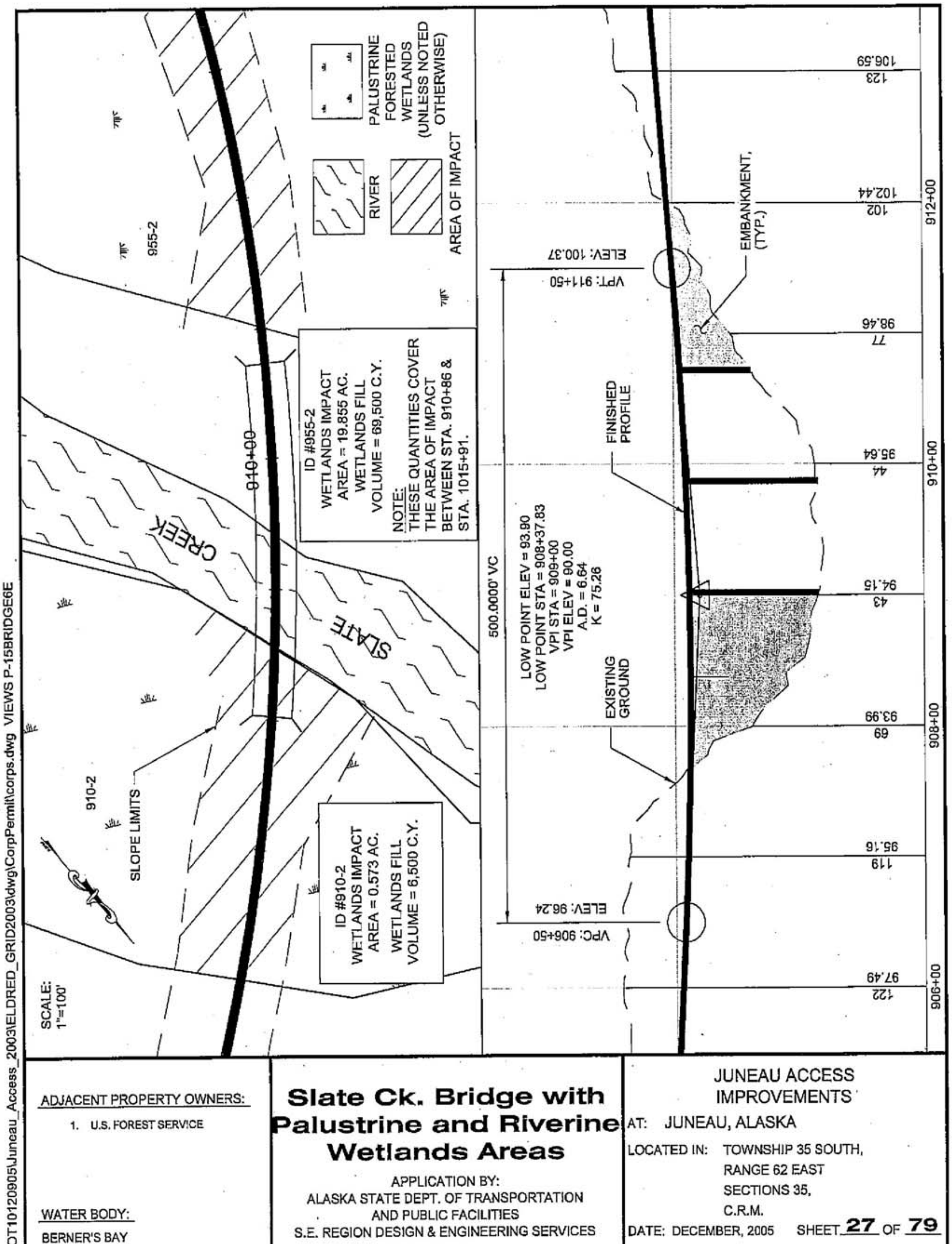
JUNEAU ACCESS IMPROVEMENTS

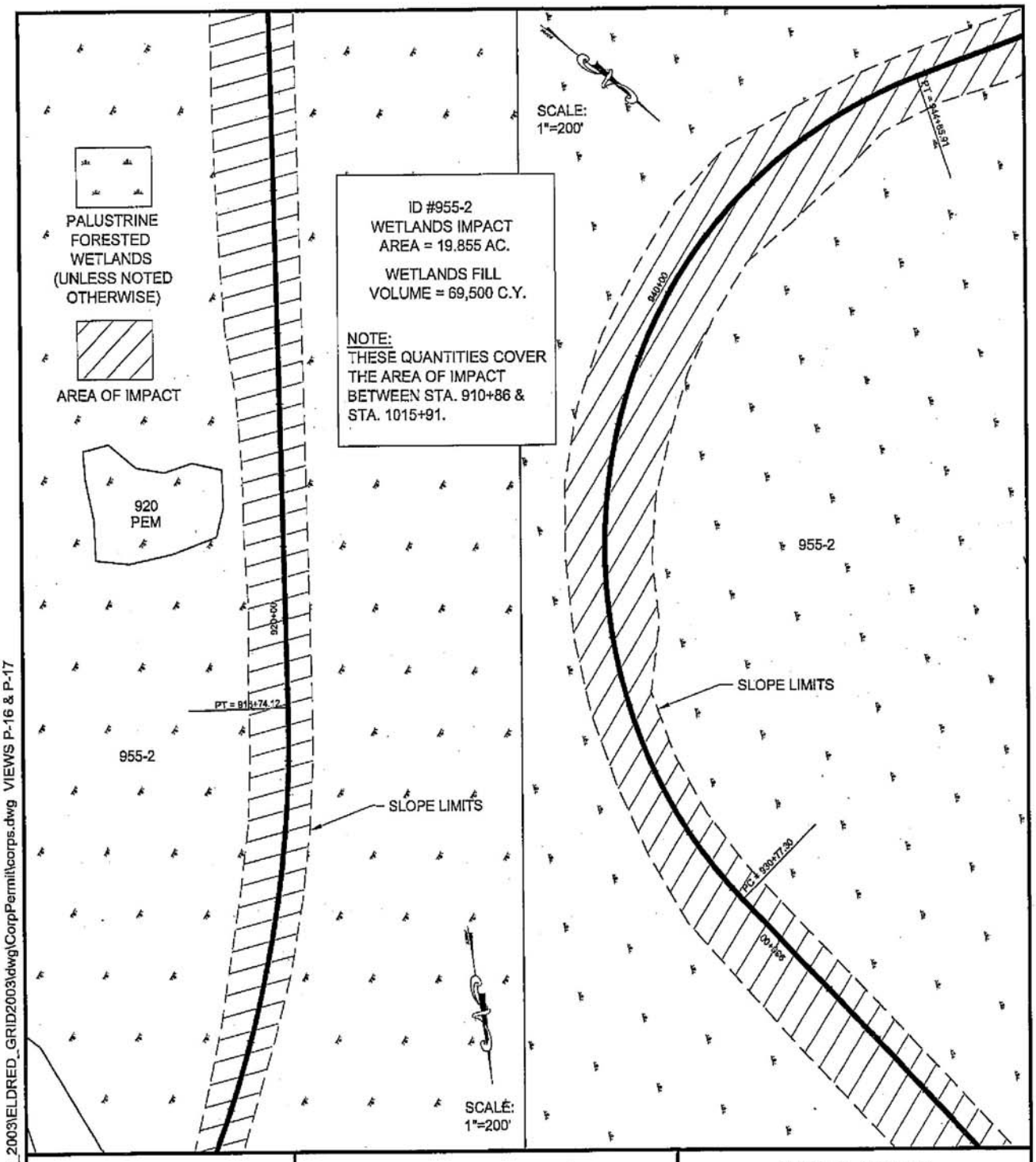
AT: JUNEAU, ALASKA

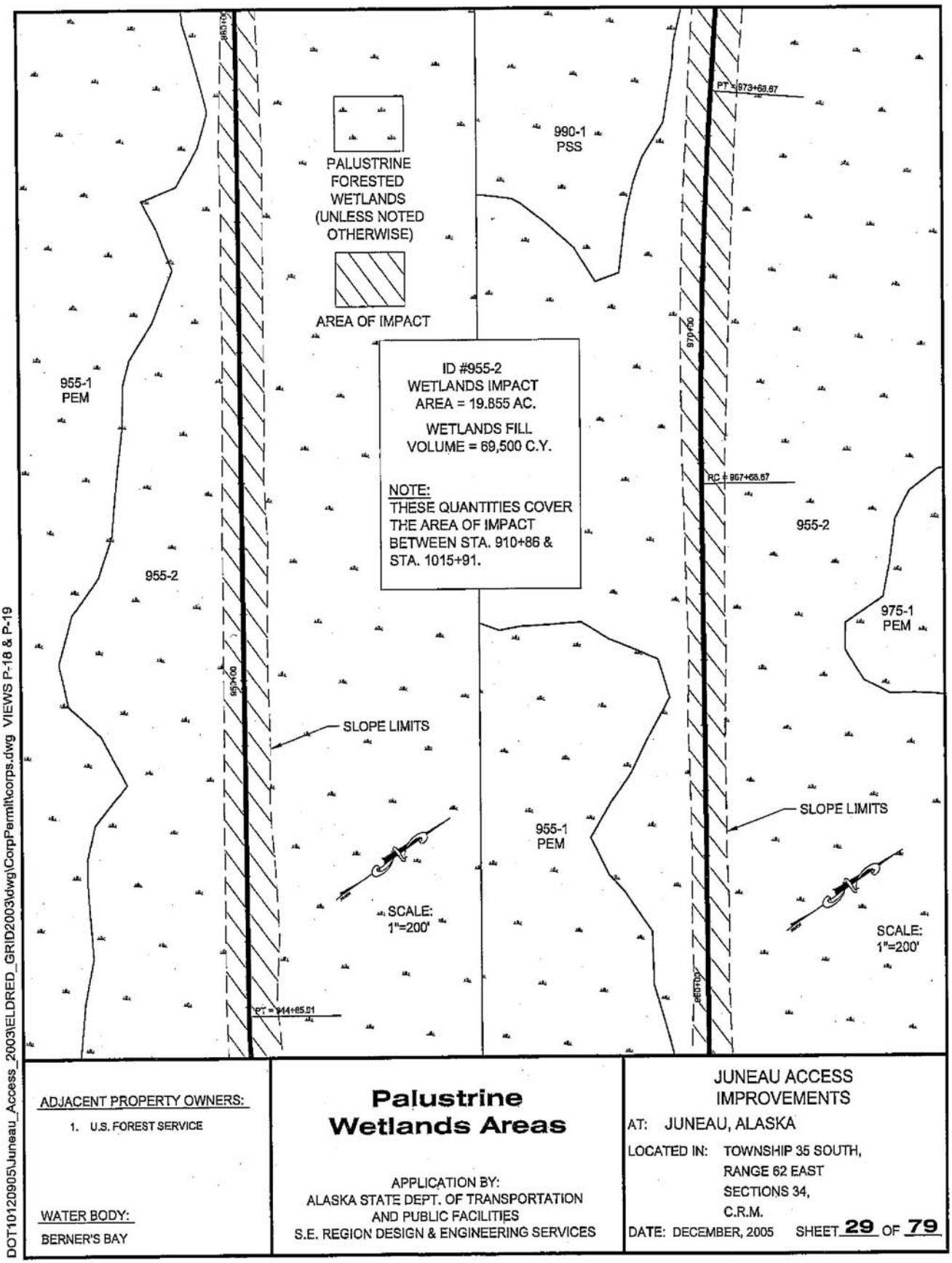
LOCATED IN: TOWNSHIP 35 SOUTH, RANGE 62 EAST SECTIONS 25, C.R.M.

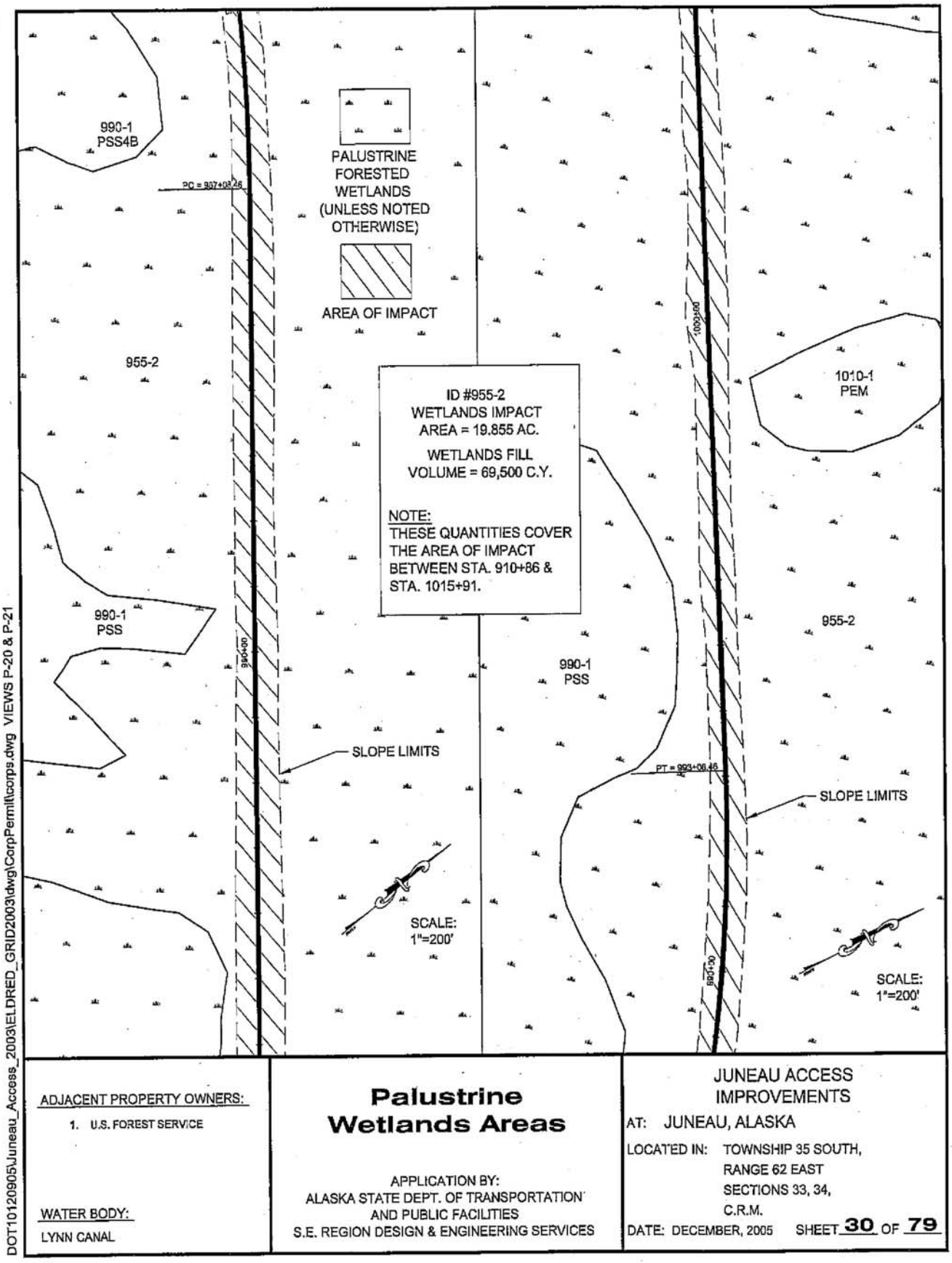
DATE: DECEMBER, 2005 SHEET 25 OF 79

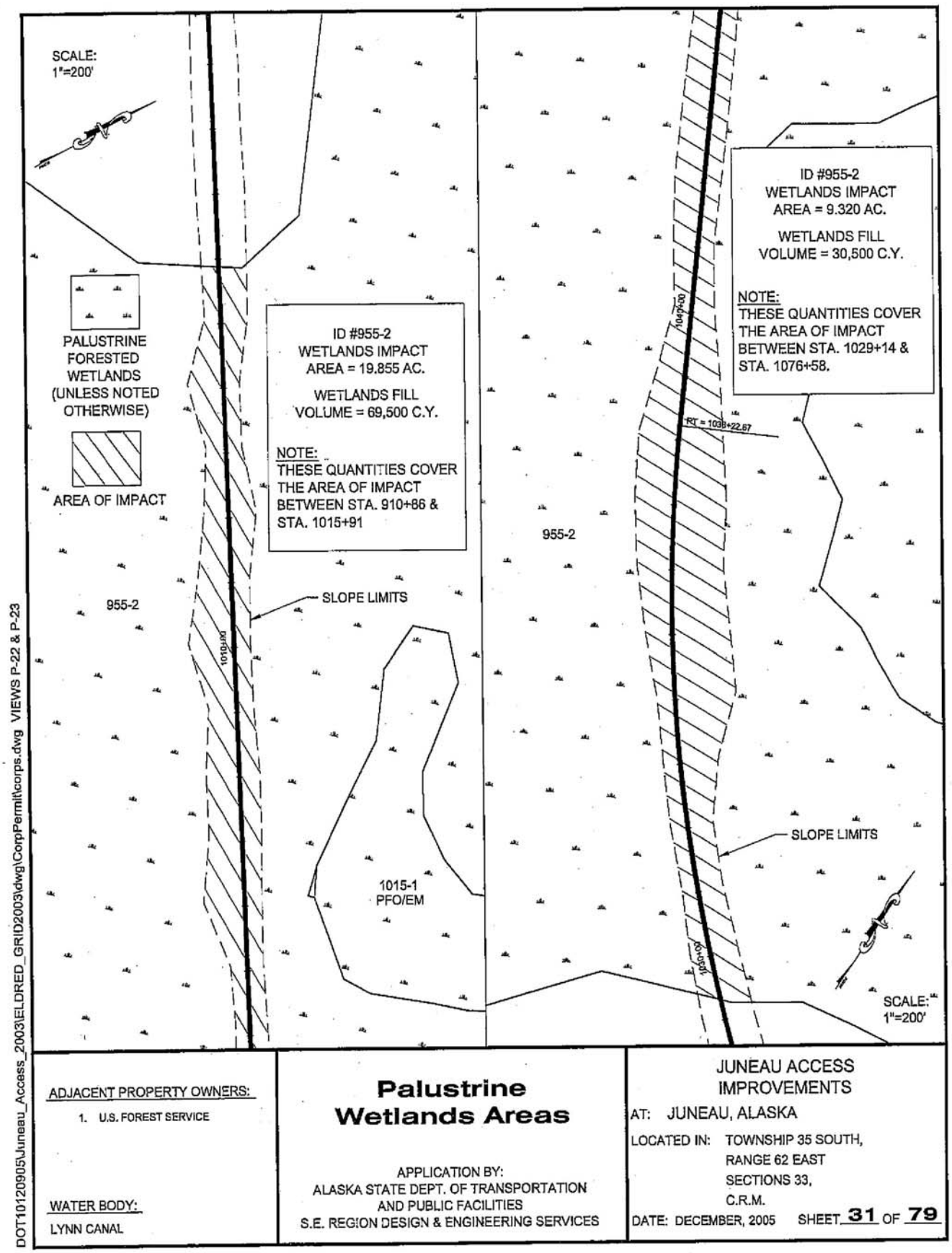

SCALE:
1"=200'
AREA OF IMPACT
SLOPE LIMITS
ID #895-1
WETLANDS IMPACT
AREA = 4.767 AC.
WETLANDS FILL
VOLUME = 23,400 C.Y.
895-1
895-1
PC = 892+16.16
SLOPE LIMITS
PALUSTRINE
FORESTED
WETLANDS
(UNLESS NOTED
OTHERWISE)
AREA OF IMPACT
SCALE:
1"=200'
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
BERNER'S BAY
Palustrine
Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTIONS 35,
C.R.M.
DATE: DECEMBER, 2005 SHEET 26 OF 79
DOT\10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-13 & P-14


DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-15BRIDGE6E
SCALE: 1"=100'
955-2
910-2
SLOPE LIMITS
SLATE CREEK
910+00
RIVER
AREA OF IMPACT
PALUSTRINE FORESTED WETLANDS (UNLESS NOTED OTHERWISE)
ID #955-2
WETLANDS IMPACT AREA = 19.855 AC.
WETLANDS FILL VOLUME = 69,500 C.Y.
NOTE: THESE QUANTITIES COVER THE AREA OF IMPACT BETWEEN STA. 910+86 & STA. 1015+91.
ID #910-2
WETLANDS IMPACT AREA = 0.573 AC.
WETLANDS FILL VOLUME = 6,500 C.Y.
500.0000' VC
LOW POINT ELEV = 93.90
LOW POINT STA = 908+37.83
VPI STA = 909+00
VPI ELEV = 90.00
A.D. = 6.64
K = 75.26
VPT: 911+50
ELEV: 100.37
VPC: 906+50
ELEV: 96.24
FINISHED PROFILE
EXISTING GROUND
EMBANKMENT, (TYP.)
106.59
123
102.44
102
98.46
77
95.64
44
94.15
43
93.99
69
95.16
119
97.49
122
906+00
908+00
910+00
912+00
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
BERNER'S BAY
Slate Ck. Bridge with Palustrine and Riverine Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 35 SOUTH, RANGE 62 EAST SECTIONS 35, C.R.M.
DATE: DECEMBER, 2005
SHEET 27 OF 79


SCALE:
1"=200'
PALUSTRINE
FORESTED
WETLANDS
(UNLESS NOTED
OTHERWISE)
AREA OF IMPACT
ID #955-2
WETLANDS IMPACT
AREA = 19.855 AC.
WETLANDS FILL
VOLUME = 69,500 C.Y.
NOTE:
THESE QUANTITIES COVER
THE AREA OF IMPACT
BETWEEN STA. 910+86 &
STA. 1015+91.
920
PEM
955-2
SLOPE LIMITS
PT = 914+74.12
955-2
SLOPE LIMITS
SCALE:
1"=200'
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
BERNER'S BAY
Palustrine
Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTIONS 34, 35,
C.R.M.
DATE: DECEMBER, 2005 SHEET 28 OF 79
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-16 & P-17


PALUSTRINE FORESTED WETLANDS (UNLESS NOTED OTHERWISE)
AREA OF IMPACT
ID #955-2
WETLANDS IMPACT AREA = 19.855 AC.
WETLANDS FILL VOLUME = 69,500 C.Y.
NOTE:
THESE QUANTITIES COVER THE AREA OF IMPACT BETWEEN STA. 910+86 & STA. 1015+91.
990-1 PSS
955-1 PEM
955-2
955-1 PEM
955-2
975-1 PEM
SLOPE LIMITS
SLOPE LIMITS
SCALE: 1"=200'
SCALE: 1"=200'
PT = 973+68.67
RC = 967+68.67
PT = 914+85.01
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
BERNER'S BAY
Palustrine Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 35 SOUTH, RANGE 62 EAST SECTIONS 34, C.R.M.
DATE: DECEMBER, 2005
SHEET 29 OF 79
DOT\10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-18 & P-19


990-1
PSS4B
PC = 937+08.26
PALUSTRINE
FORESTED
WETLANDS
(UNLESS NOTED
OTHERWISE)
AREA OF IMPACT
955-2
ID #955-2
WETLANDS IMPACT
AREA = 19.855 AC.
WETLANDS FILL
VOLUME = 69,500 C.Y.
NOTE:
THESE QUANTITIES COVER
THE AREA OF IMPACT
BETWEEN STA. 910+86 &
STA. 1015+91.
1010-1
PEM
990-1
PSS
955-2
990-1
PSS
SLOPE LIMITS
PT = 993+06.46
SLOPE LIMITS
SCALE:
1"=200'
SCALE:
1"=200'
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
LYNN CANAL
Palustrine
Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTIONS 33, 34,
C.R.M.
DATE: DECEMBER, 2005
SHEET 30 OF 79
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-20 & P-21



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE

WATER BODY:

LYNN CANAL

Palustrine Wetlands Areas

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

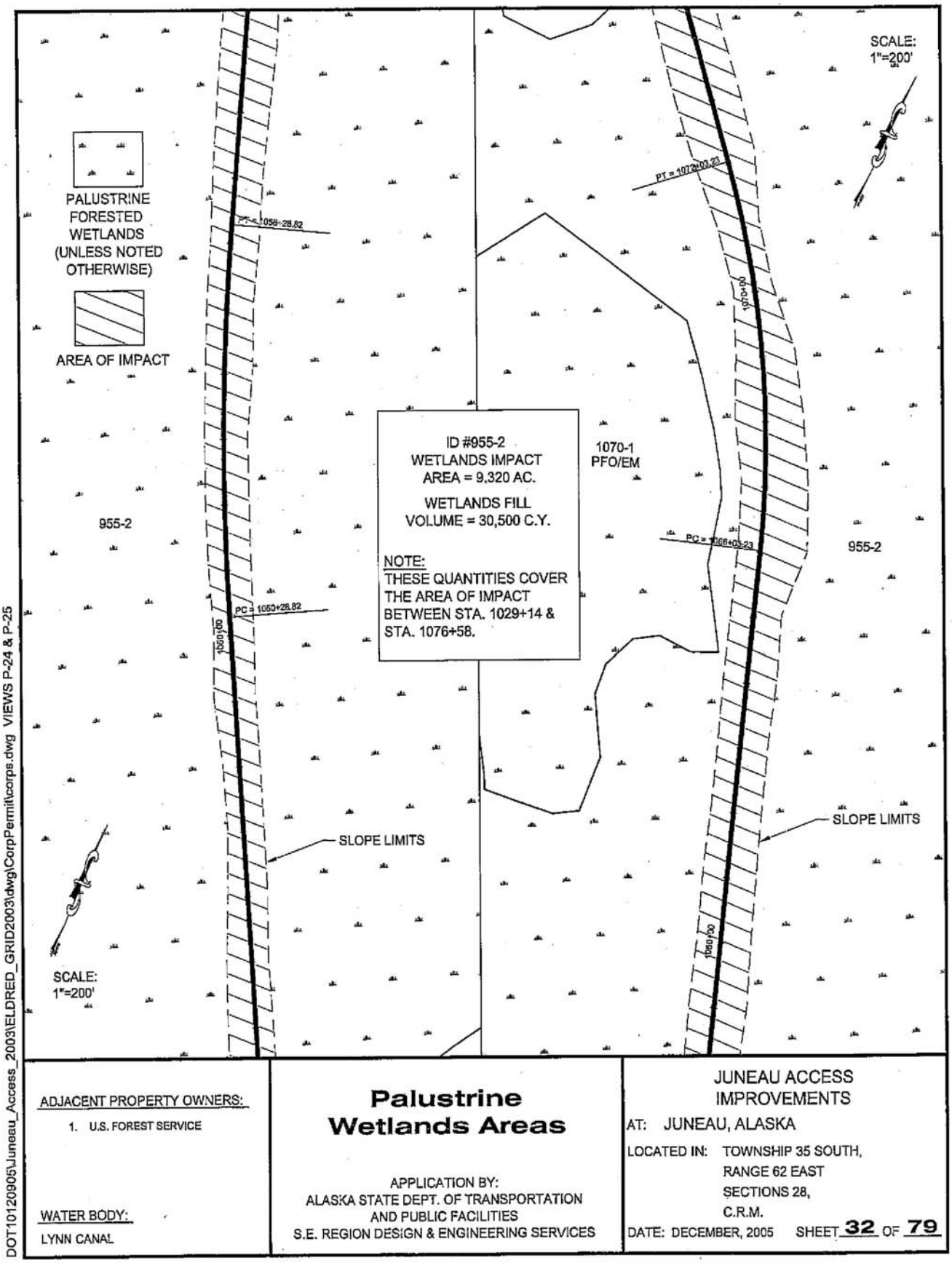
JUNEAU ACCESS
IMPROVEMENTS

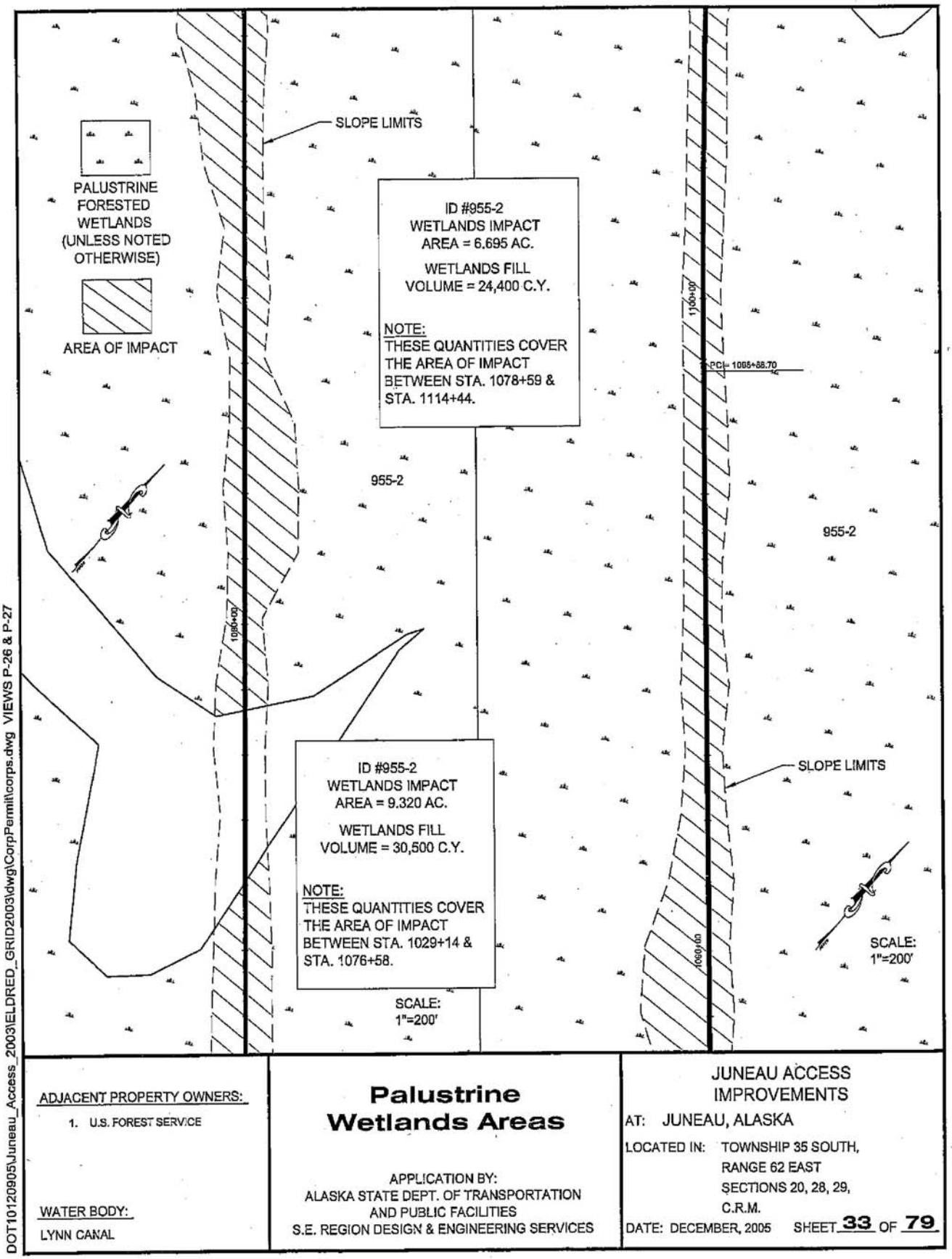
AT: JUNEAU, ALASKA

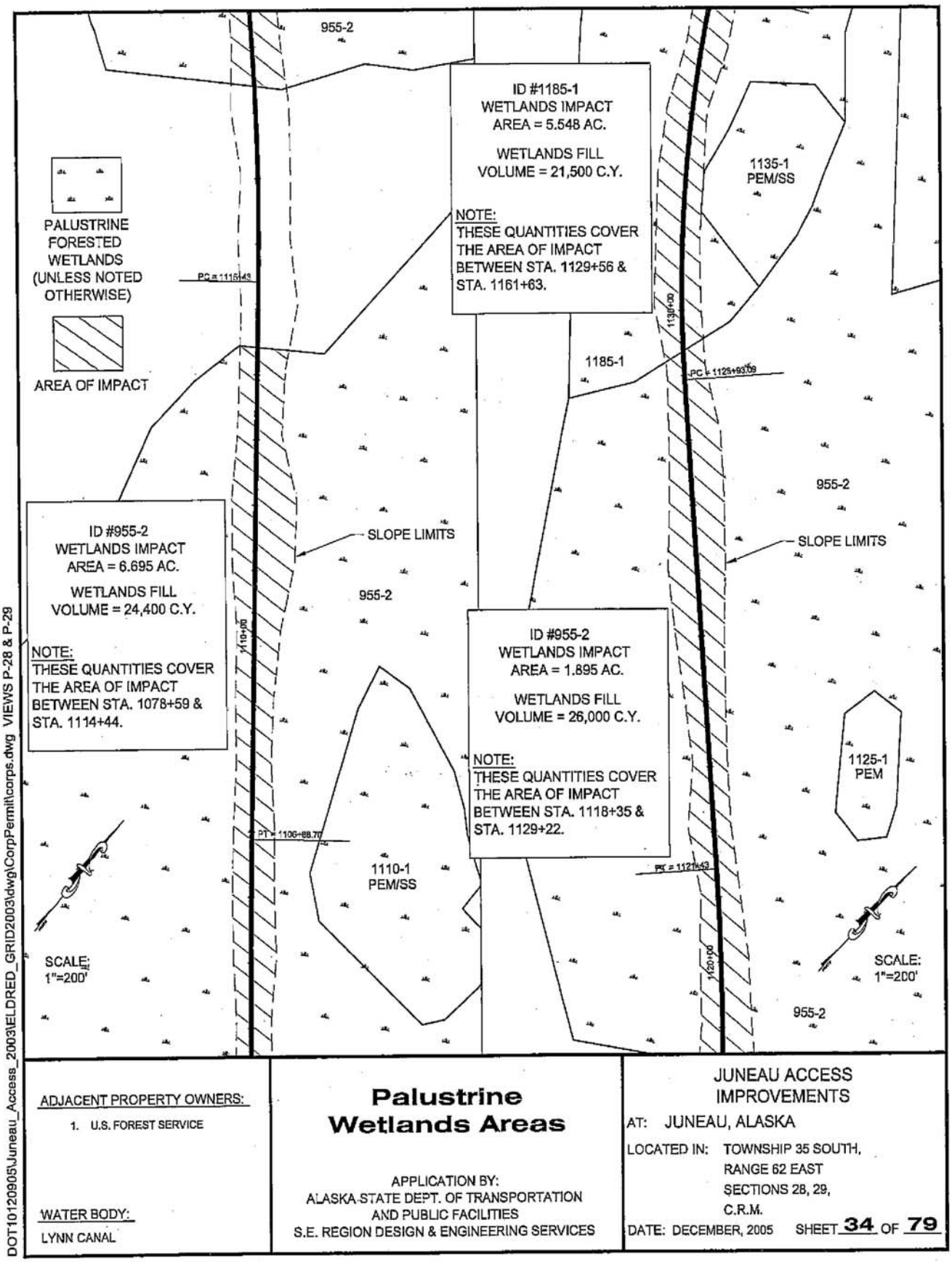
LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTIONS 33,
C.R.M.

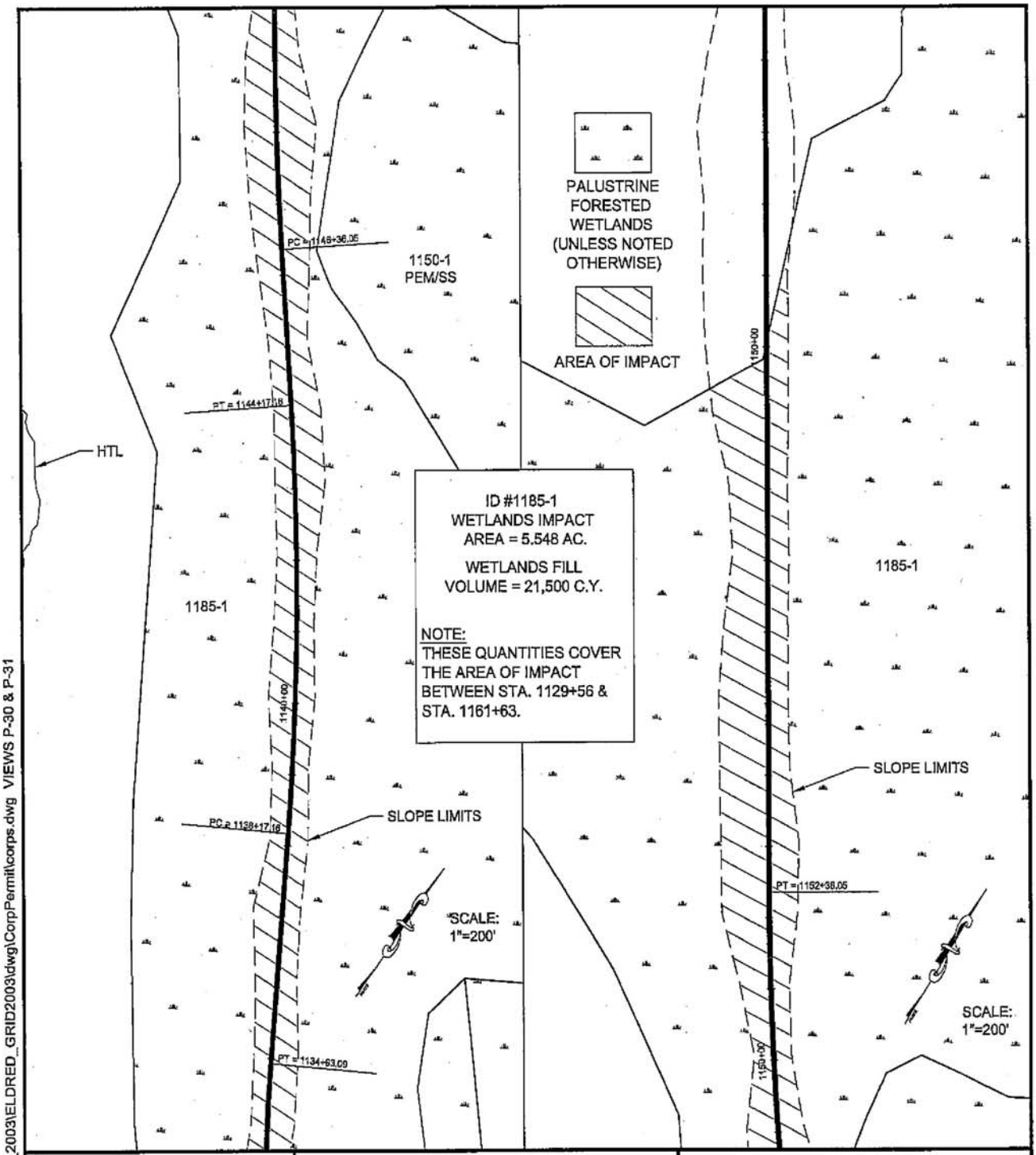
DATE: DECEMBER, 2005 SHEET 31 OF 79

DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-22 & P-23


SCALE:
1"=200'
PALUSTRINE
FORESTED
WETLANDS
(UNLESS NOTED
OTHERWISE)
AREA OF IMPACT
ID #955-2
WETLANDS IMPACT
AREA = 9.320 AC.
WETLANDS FILL
VOLUME = 30,500 C.Y.
NOTE:
THESE QUANTITIES COVER
THE AREA OF IMPACT
BETWEEN STA. 1029+14 &
STA. 1076+58.
1070-1
PFO/EM
955-2
955-2
PT = 1056+28.82
PC = 1050+28.82
PT = 1072+03.23
PC = 1066+03.23
SLOPE LIMITS
SLOPE LIMITS
SCALE:
1"=200'
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
LYNN CANAL
Palustrine
Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTIONS 28,
C.R.M.
DATE: DECEMBER, 2005
SHEET 32 OF 79
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-24 & P-25


SLOPE LIMITS
PALUSTRINE FORESTED WETLANDS (UNLESS NOTED OTHERWISE)
AREA OF IMPACT
ID #955-2
WETLANDS IMPACT
AREA = 6.695 AC.
WETLANDS FILL
VOLUME = 24,400 C.Y.
NOTE:
THESE QUANTITIES COVER THE AREA OF IMPACT BETWEEN STA. 1078+59 & STA. 1114+44.
955-2
1100+00
PCI= 1085+88.70
955-2
ID #955-2
WETLANDS IMPACT
AREA = 9.320 AC.
WETLANDS FILL
VOLUME = 30,500 C.Y.
NOTE:
THESE QUANTITIES COVER THE AREA OF IMPACT BETWEEN STA. 1029+14 & STA. 1076+58.
1080+00
1060+00
SLOPE LIMITS
SCALE:
1"=200'
SCALE:
1"=200'
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
LYNN CANAL
Palustrine Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 35 SOUTH, RANGE 62 EAST SECTIONS 20, 28, 29, C.R.M.
DATE: DECEMBER, 2005
SHEET 33 OF 79
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-26 & P-27


955-2
ID #1185-1
WETLANDS IMPACT
AREA = 5.548 AC.
WETLANDS FILL
VOLUME = 21,500 C.Y.
NOTE:
THESE QUANTITIES COVER THE AREA OF IMPACT BETWEEN STA. 1129+56 & STA. 1161+63.
1135-1
PEM/SS
PALUSTRINE FORESTED WETLANDS (UNLESS NOTED OTHERWISE)
AREA OF IMPACT
PC = 1115+43
1130+00
1185-1
PC = 1125+93.09
955-2
SLOPE LIMITS
ID #955-2
WETLANDS IMPACT
AREA = 6.695 AC.
WETLANDS FILL
VOLUME = 24,400 C.Y.
NOTE:
THESE QUANTITIES COVER THE AREA OF IMPACT BETWEEN STA. 1078+59 & STA. 1114+44.
1110+00
955-2
SLOPE LIMITS
ID #955-2
WETLANDS IMPACT
AREA = 1.895 AC.
WETLANDS FILL
VOLUME = 26,000 C.Y.
NOTE:
THESE QUANTITIES COVER THE AREA OF IMPACT BETWEEN STA. 1118+35 & STA. 1129+22.
1125-1
PEM
PT = 1106+88.70
1110-1
PEM/SS
PC = 1121+43
1120+00
SCALE:
1"=200'
SCALE:
1"=200'
955-2
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
LYNN CANAL
Palustrine
Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTIONS 28, 29,
C.R.M.
DATE: DECEMBER, 2005
SHEET 34 OF 79
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-28 & P-29



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-30 & P-31

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE

WATER BODY:

LYNN CANAL

Palustrine Wetlands Areas

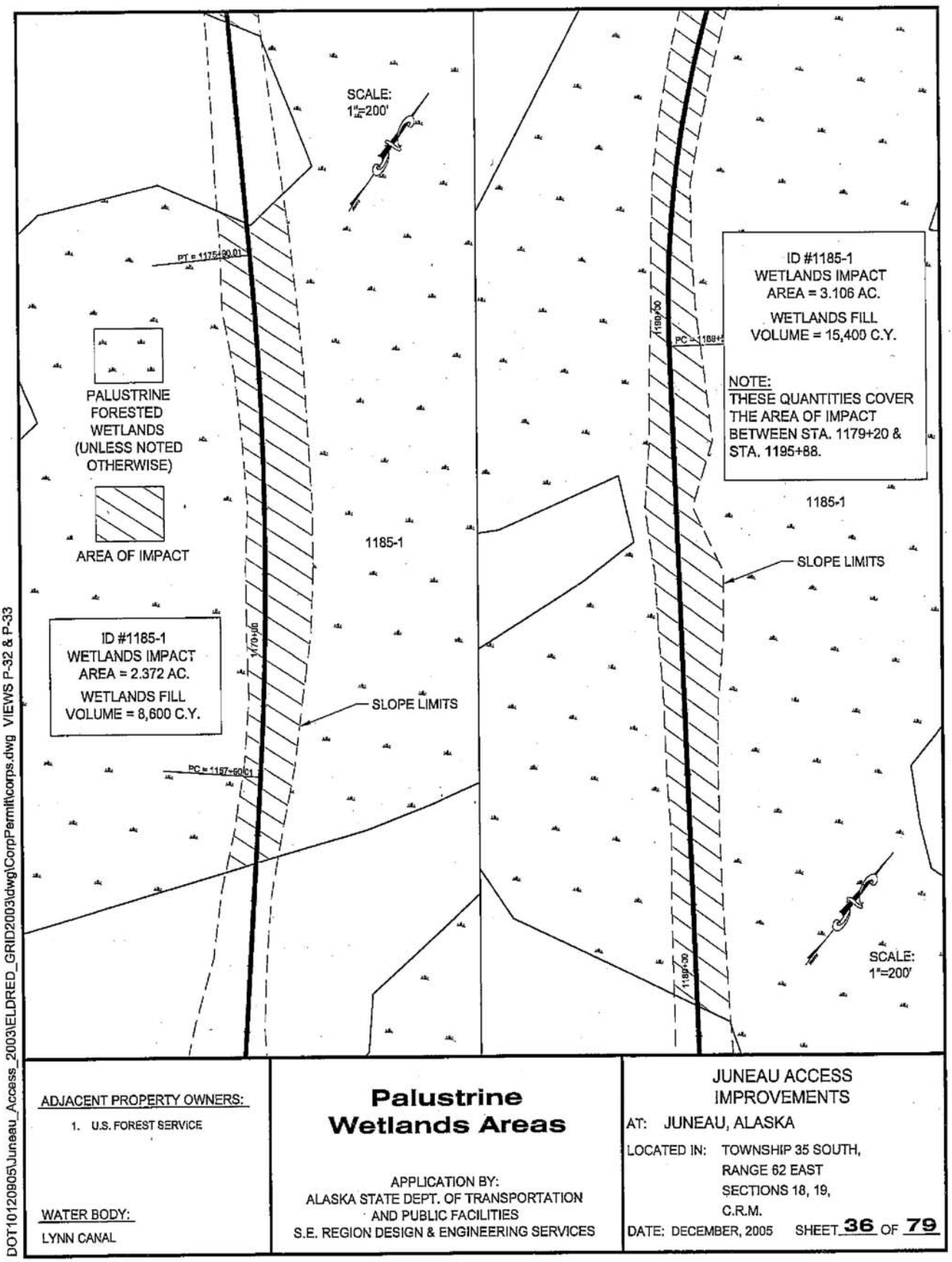
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 35 SOUTH, RANGE 62 EAST SECTIONS 19, 20, C.R.M.

DATE: DECEMBER, 2005 SHEET 35 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-32 & P-33

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE

WATER BODY:

LYNN CANAL

Palustrine Wetlands Areas

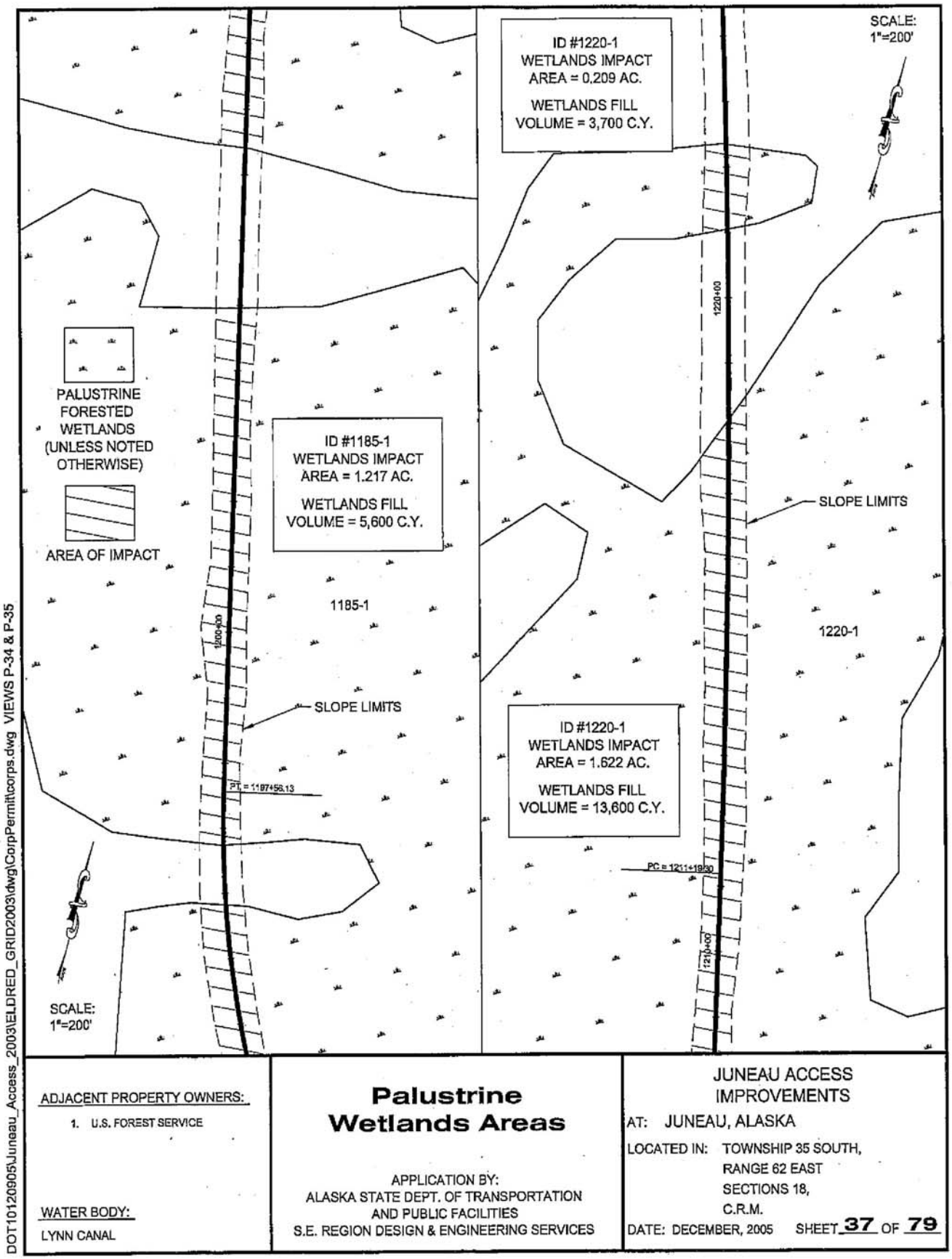
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

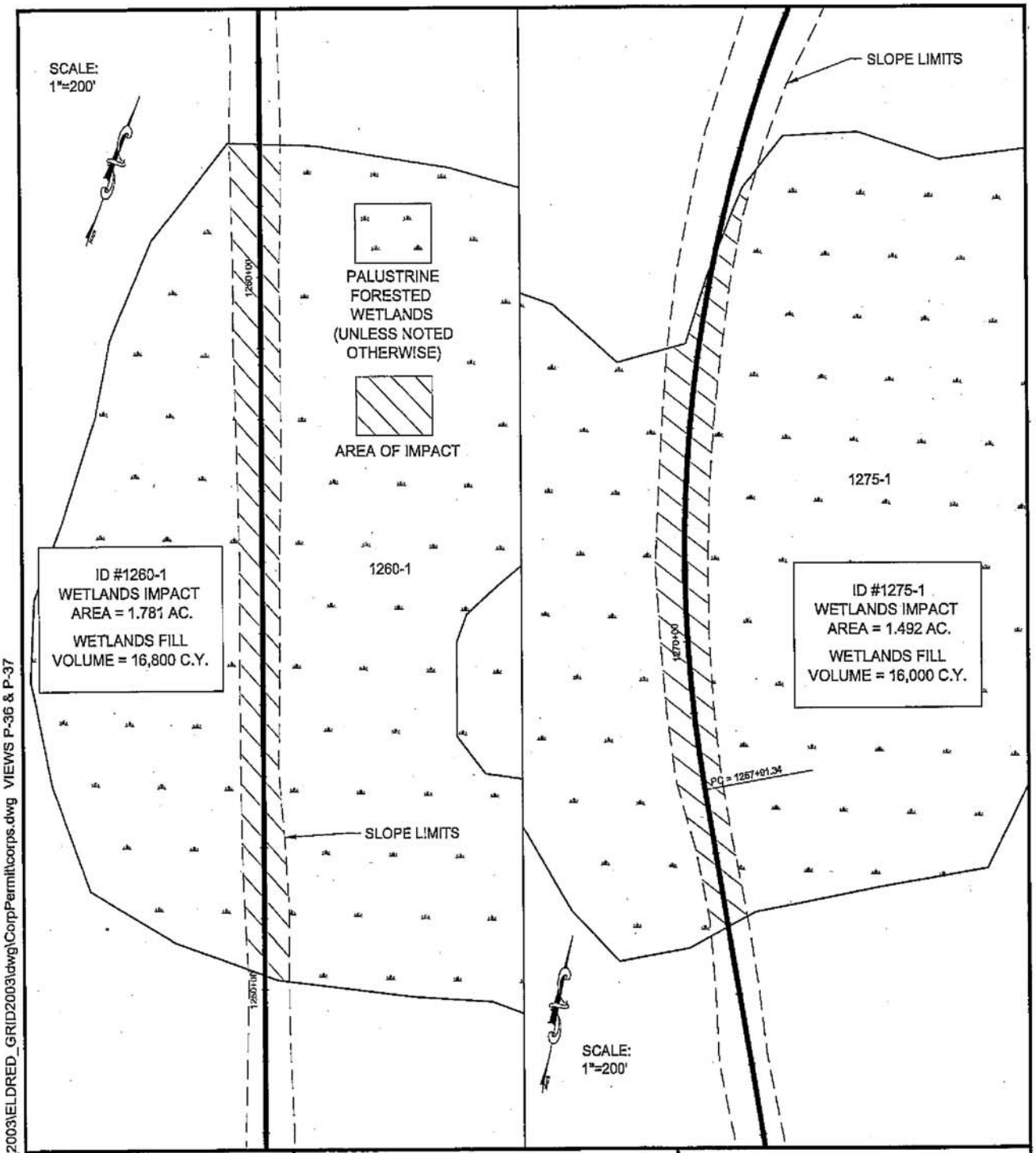
JUNEAU ACCESS
IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTIONS 18, 19,
C.R.M.

DATE: DECEMBER, 2005 SHEET 36 OF 79


ID #1220-1
WETLANDS IMPACT
AREA = 0.209 AC.
WETLANDS FILL
VOLUME = 3,700 C.Y.
SCALE:
1"=200'
PALUSTRINE
FORESTED
WETLANDS
(UNLESS NOTED
OTHERWISE)
AREA OF IMPACT
ID #1185-1
WETLANDS IMPACT
AREA = 1.217 AC.
WETLANDS FILL
VOLUME = 5,600 C.Y.
1185-1
1200+00
SLOPE LIMITS
PT = 1197+56.13
1220+00
SLOPE LIMITS
1220-1
ID #1220-1
WETLANDS IMPACT
AREA = 1.622 AC.
WETLANDS FILL
VOLUME = 13,600 C.Y.
PC = 1211+19.30
1210+00
SCALE:
1"=200'
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
LYNN CANAL
Palustrine
Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTIONS 18,
C.R.M.
DATE: DECEMBER, 2005
SHEET 37 OF 79
DOT10120905\Junaau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-34 & P-35



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE

WATER BODY:

LYNN CANAL

Palustrine Wetlands Areas

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

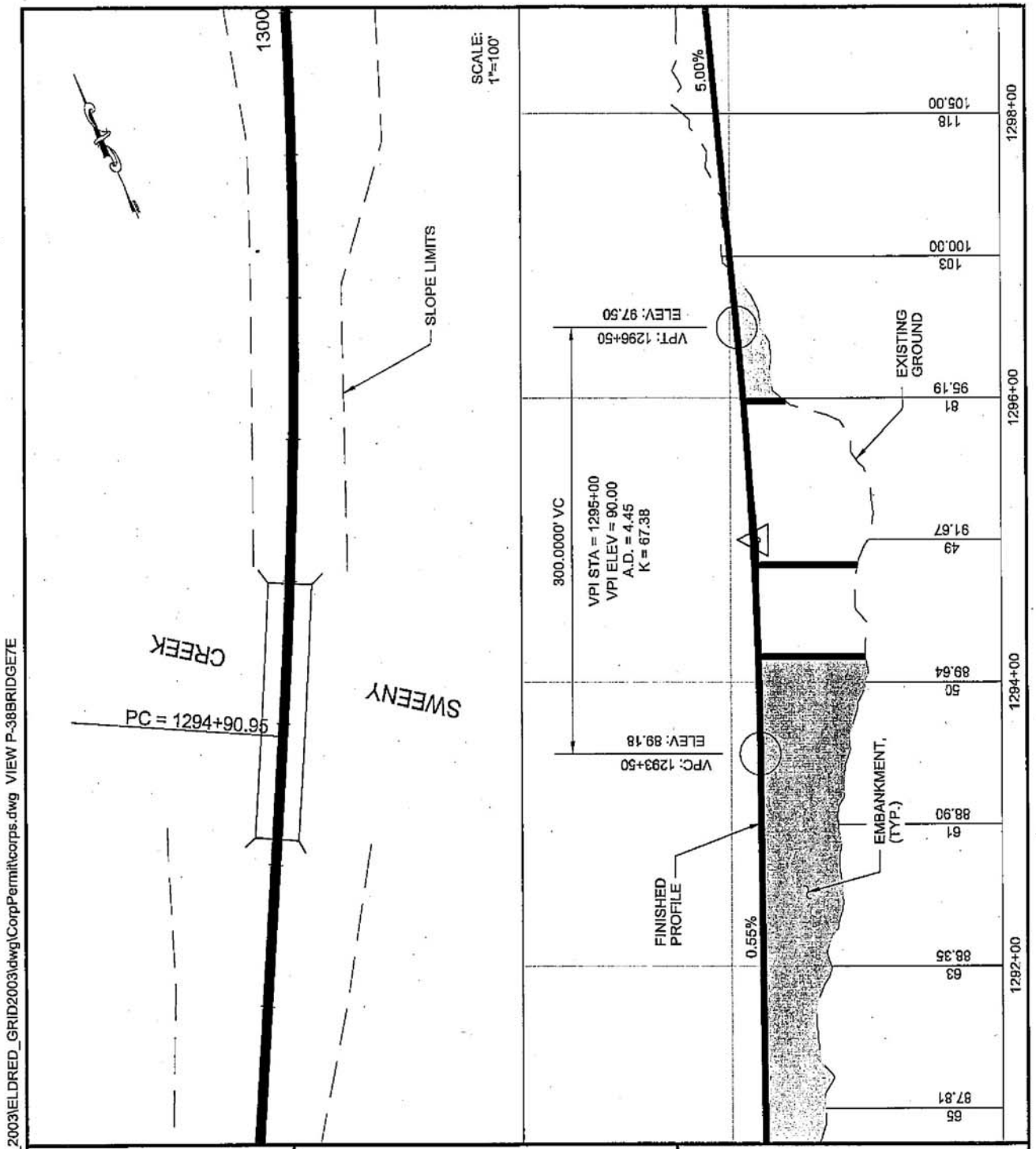
JUNEAU ACCESS
IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTIONS 7,
C.R.M.

DATE: DECEMBER, 2005 SHEET 38 OF 79

DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-36 & P-37



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE

WATER BODY:

LYNN CANAL

Sweeny Creek Bridge
Bridge No. 7E

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

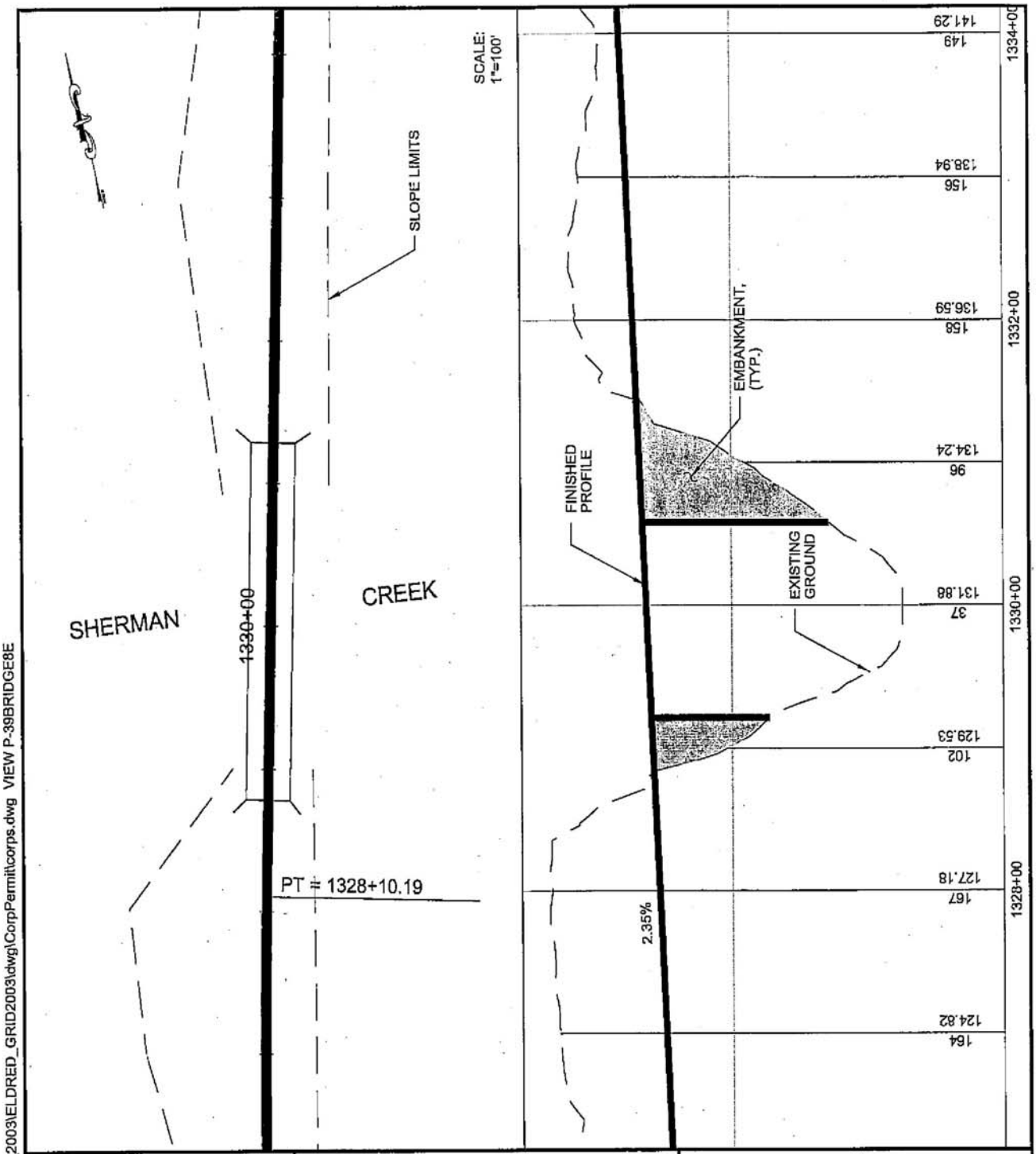
JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTION 6,
C.R.M.

DATE: DECEMBER, 2005 SHEET 39 OF 79

DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-38BRIDGE7E



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-39BRIDGE8E

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE

WATER BODY:

LYNN CANAL

Sherman Creek Bridge
Bridge No. 8E

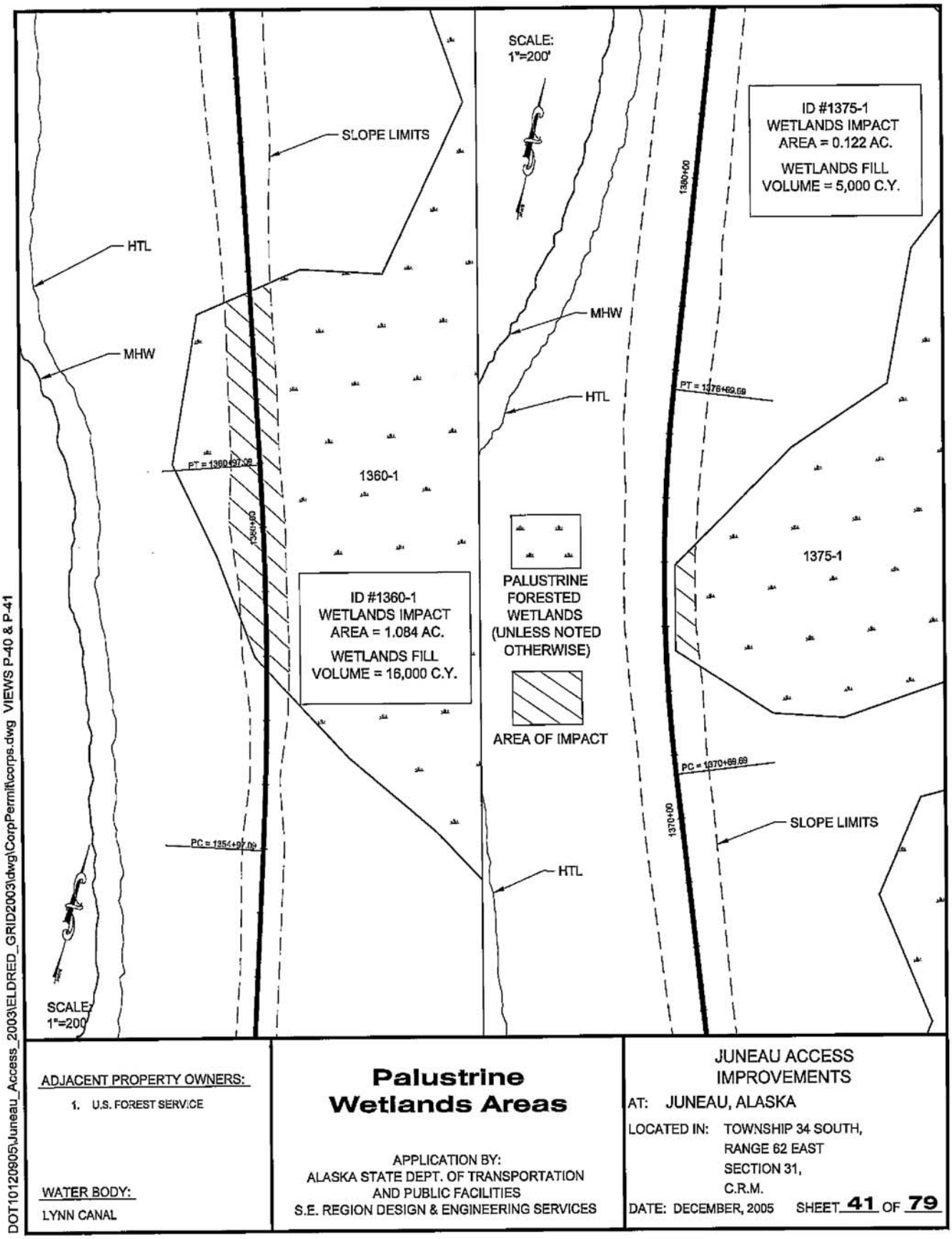
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

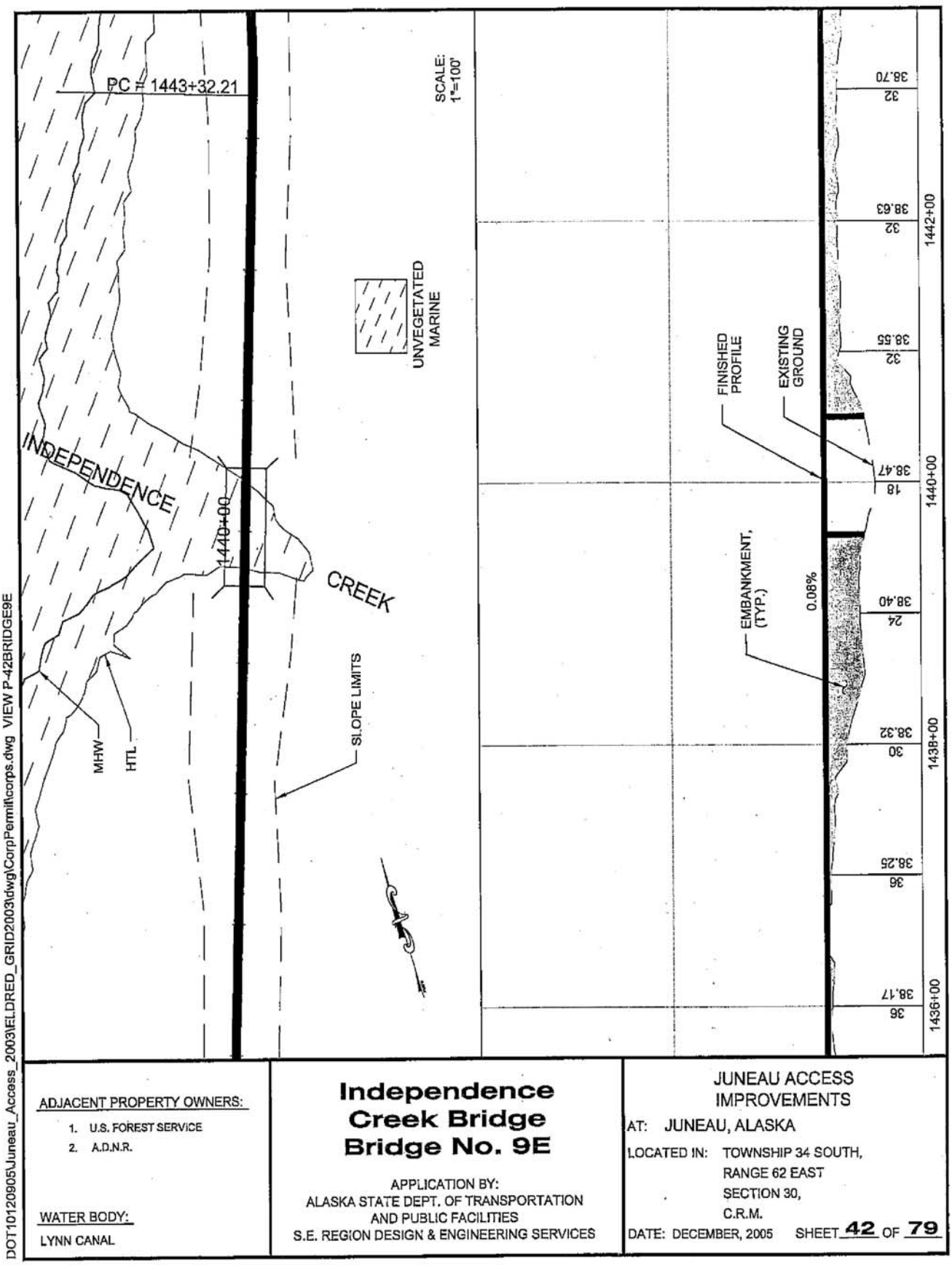
JUNEAU ACCESS IMPROVEMENTS

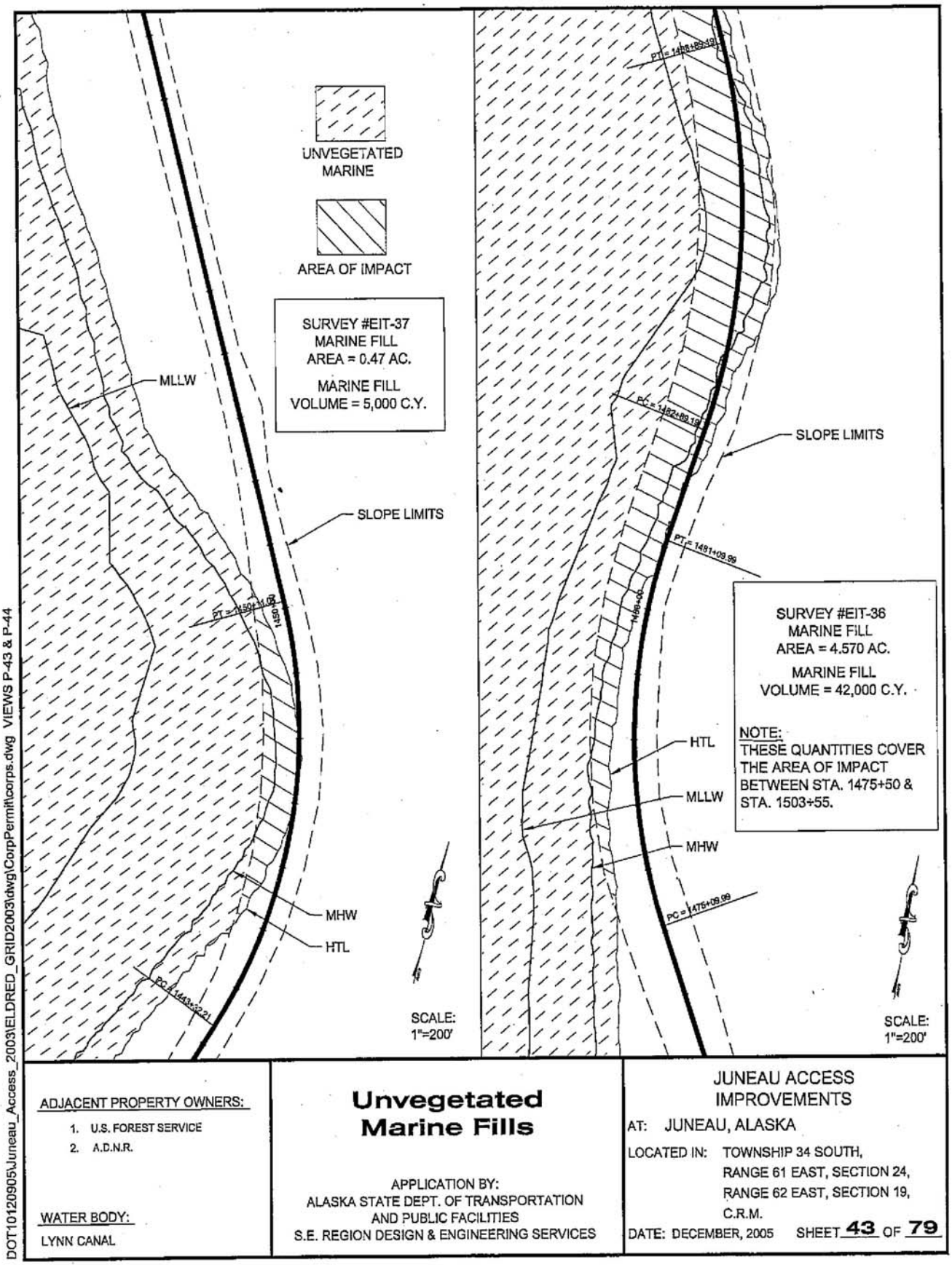
AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 35 SOUTH,
RANGE 62 EAST
SECTION 6,
C.R.M.

DATE: DECEMBER, 2005 SHEET 40 OF 79


SCALE:
1"=200'
SLOPE LIMITS
HTL
MHW
PT = 1360+97.09
1360+00
1360-1
ID #1360-1
WETLANDS IMPACT
AREA = 1.084 AC.
WETLANDS FILL
VOLUME = 16,000 C.Y.
PC = 1354+97.09
SCALE:
1"=200'
ID #1375-1
WETLANDS IMPACT
AREA = 0.122 AC.
WETLANDS FILL
VOLUME = 5,000 C.Y.
1380+00
MHW
HTL
PT = 1376+69.69
1375-1
PALUSTRINE
FORESTED
WETLANDS
(UNLESS NOTED
OTHERWISE)
AREA OF IMPACT
PC = 1370+69.69
1370+00
SLOPE LIMITS
HTL
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-40 & P-41
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
LYNN CANAL
Palustrine
Wetlands Areas
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 34 SOUTH,
RANGE 62 EAST
SECTION 31,
C.R.M.
DATE: DECEMBER, 2005
SHEET 41 OF 79


PC = 1443+32.21
SCALE: 1"=100'
UNVEGETATED MARINE
INDEPENDENCE CREEK
1440+00
MHW
HTL
SLOPE LIMITS
FINISHED PROFILE
EXISTING GROUND
EMBANKMENT, (TYP.)
0.08%
38.70
32
38.63
32
38.55
32
38.47
18
38.40
24
38.32
30
38.25
36
38.17
36
1442+00
1440+00
1438+00
1436+00
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
2. A.D.N.R.
WATER BODY:
LYNN CANAL
Independence Creek Bridge
Bridge No. 9E
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 34 SOUTH, RANGE 62 EAST SECTION 30, C.R.M.
DATE: DECEMBER, 2005
SHEET 42 OF 79
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-42BRIDGE9E



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg ViEWS P-43 & P-44

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unvegetated Marine Fills

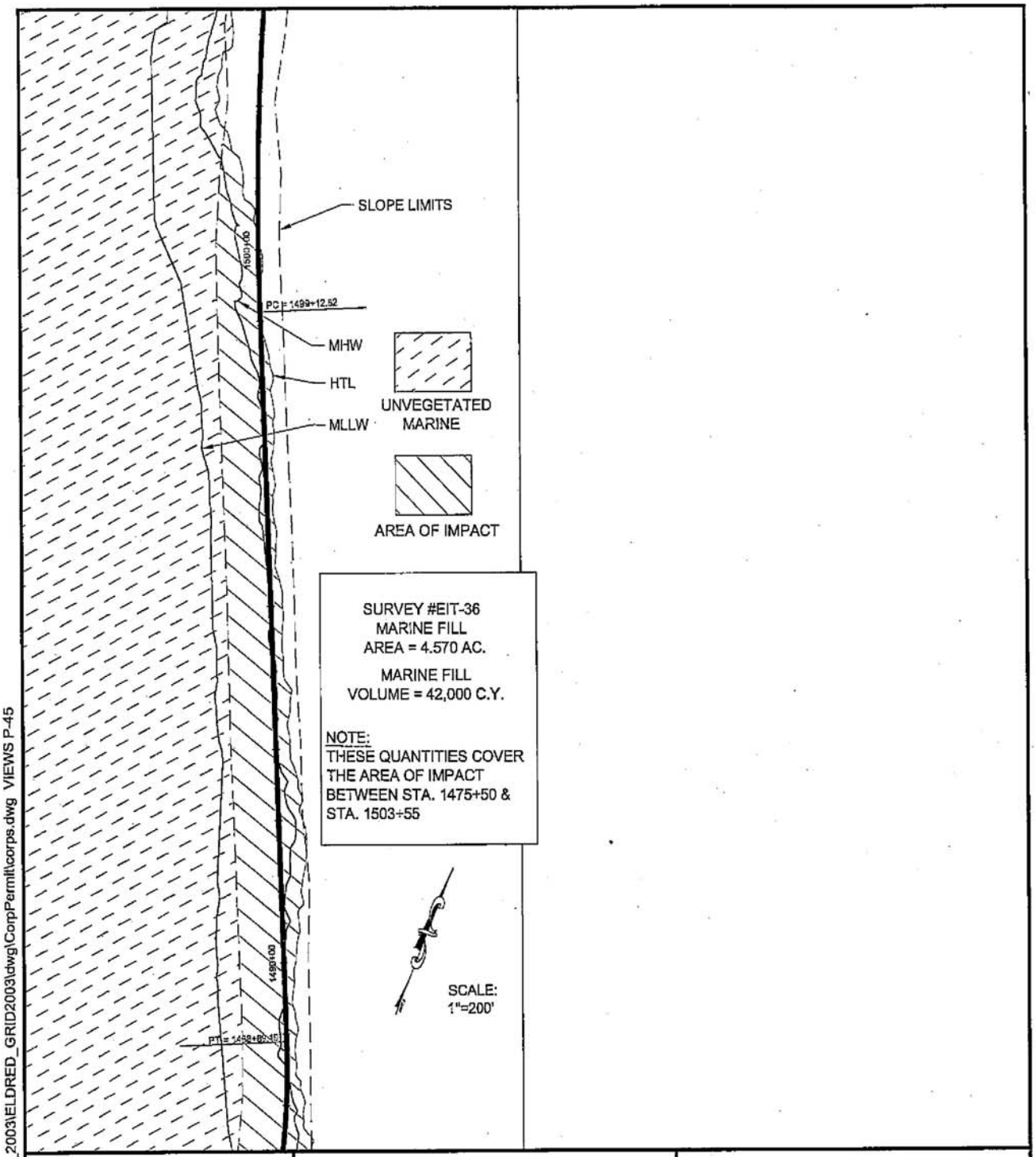
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

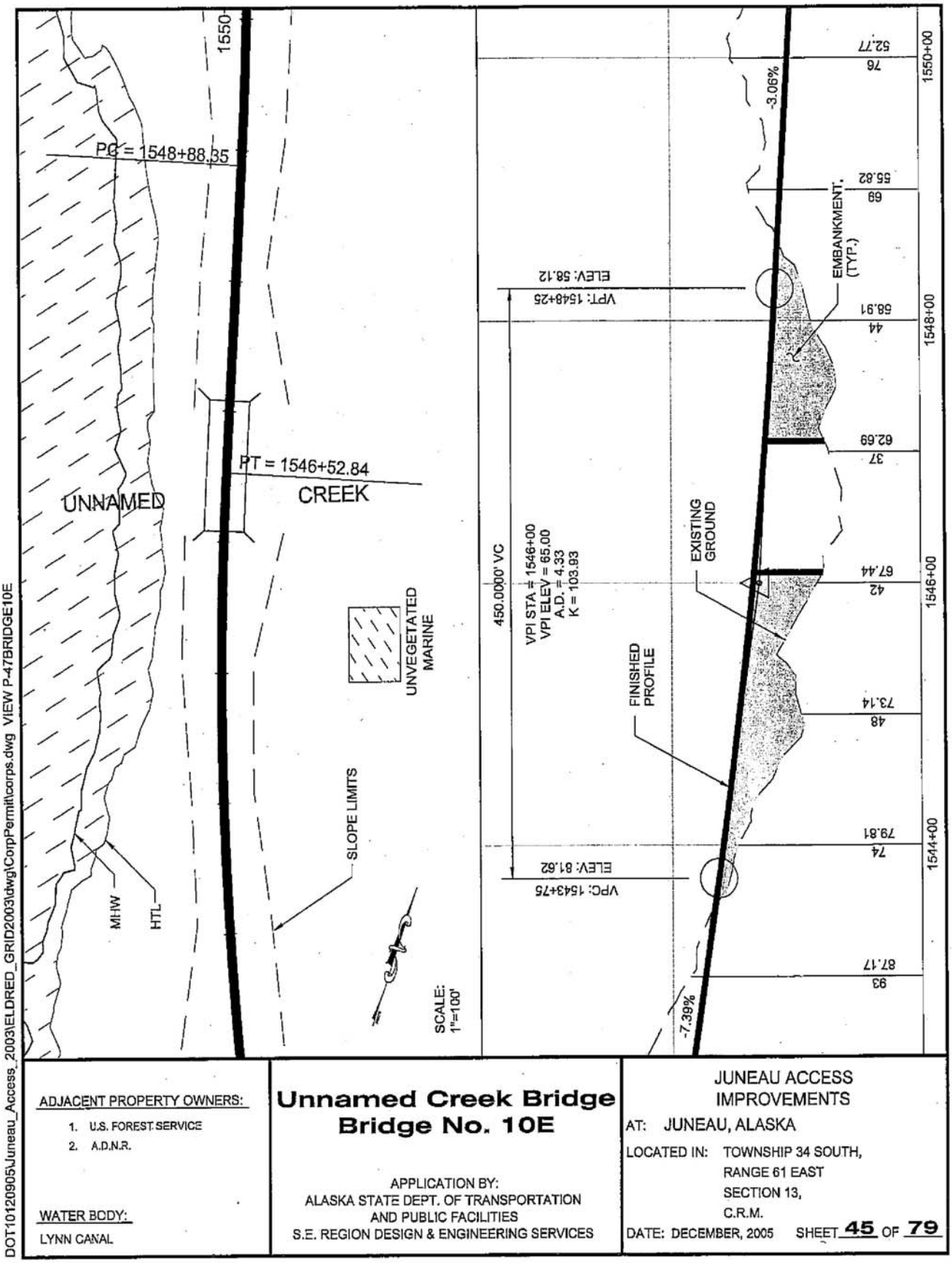
JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 34 SOUTH, RANGE 61 EAST, SECTION 24, RANGE 62 EAST, SECTION 19, C.R.M.

DATE: DECEMBER, 2005 SHEET 43 OF 79


SLOPE LIMITS
PC = 1499+12.52
MHW
HTL
MLLW
UNVEGETATED MARINE
AREA OF IMPACT
SURVEY #EIT-36
MARINE FILL
AREA = 4.570 AC.
MARINE FILL
VOLUME = 42,000 C.Y.
NOTE:
THESE QUANTITIES COVER THE AREA OF IMPACT BETWEEN STA. 1475+50 & STA. 1503+55
SCALE:
1"=200'
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
2. A.D.N.R.
WATER BODY:
LYNN CANAL
Unvegetated Marine Fills
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 34 SOUTH, RANGE 61 EAST SECTION 24, C.R.M.
DATE: DECEMBER, 2005
SHEET 44 OF 79
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-45



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unnamed Creek Bridge
Bridge No. 10E

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

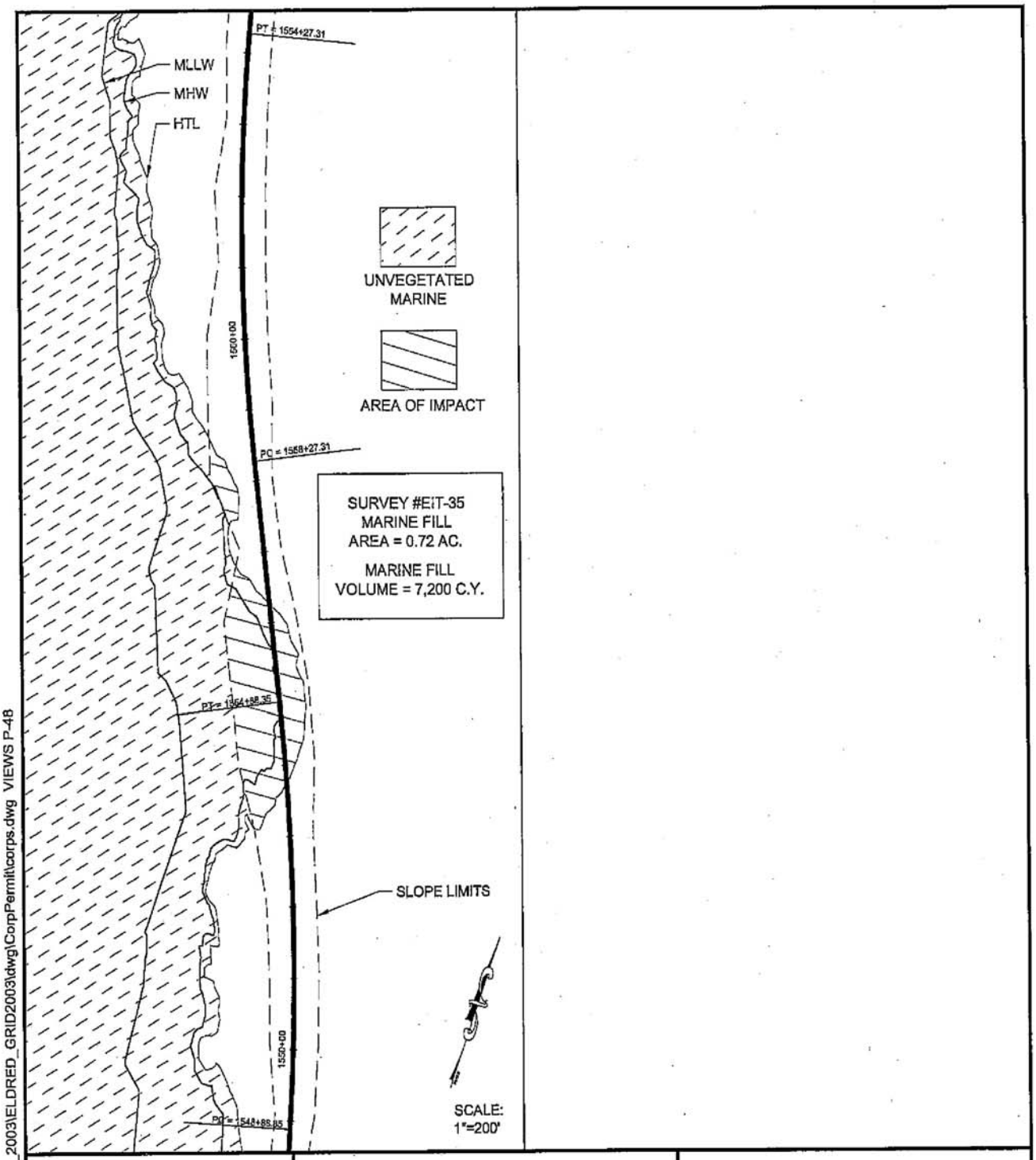
JUNEAU ACCESS
IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 34 SOUTH,
RANGE 61 EAST
SECTION 13,
C.R.M.

DATE: DECEMBER, 2005 SHEET 45 OF 79

DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-47BRIDGE10E



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-48

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unvegetated Marine Fills

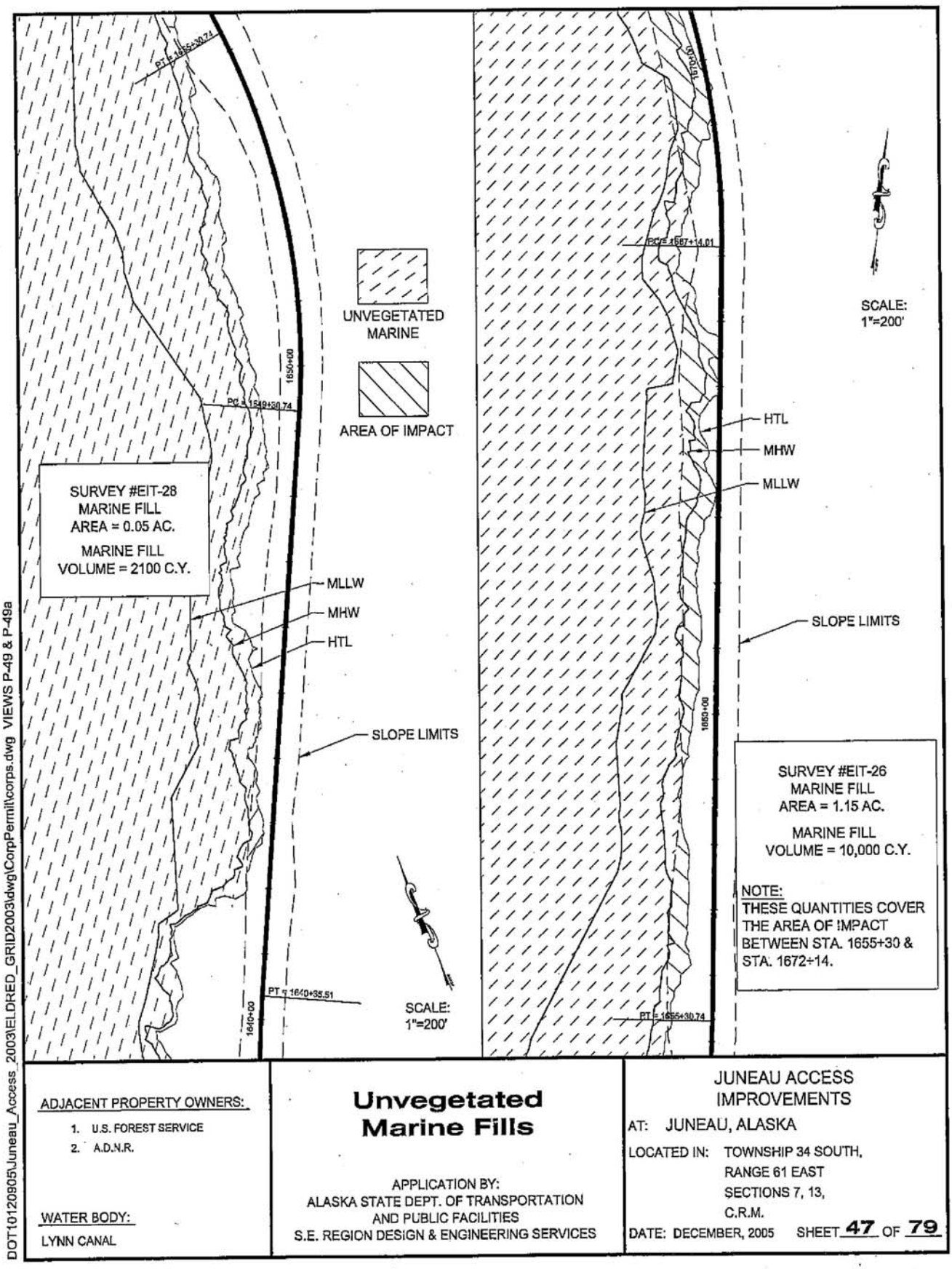
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 34 SOUTH,
RANGE 61 EAST
SECTIONS 7, 13,
C.R.M.

DATE: DECEMBER, 2005 SHEET 46 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-49 & P-49a

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unvegetated Marine Fills

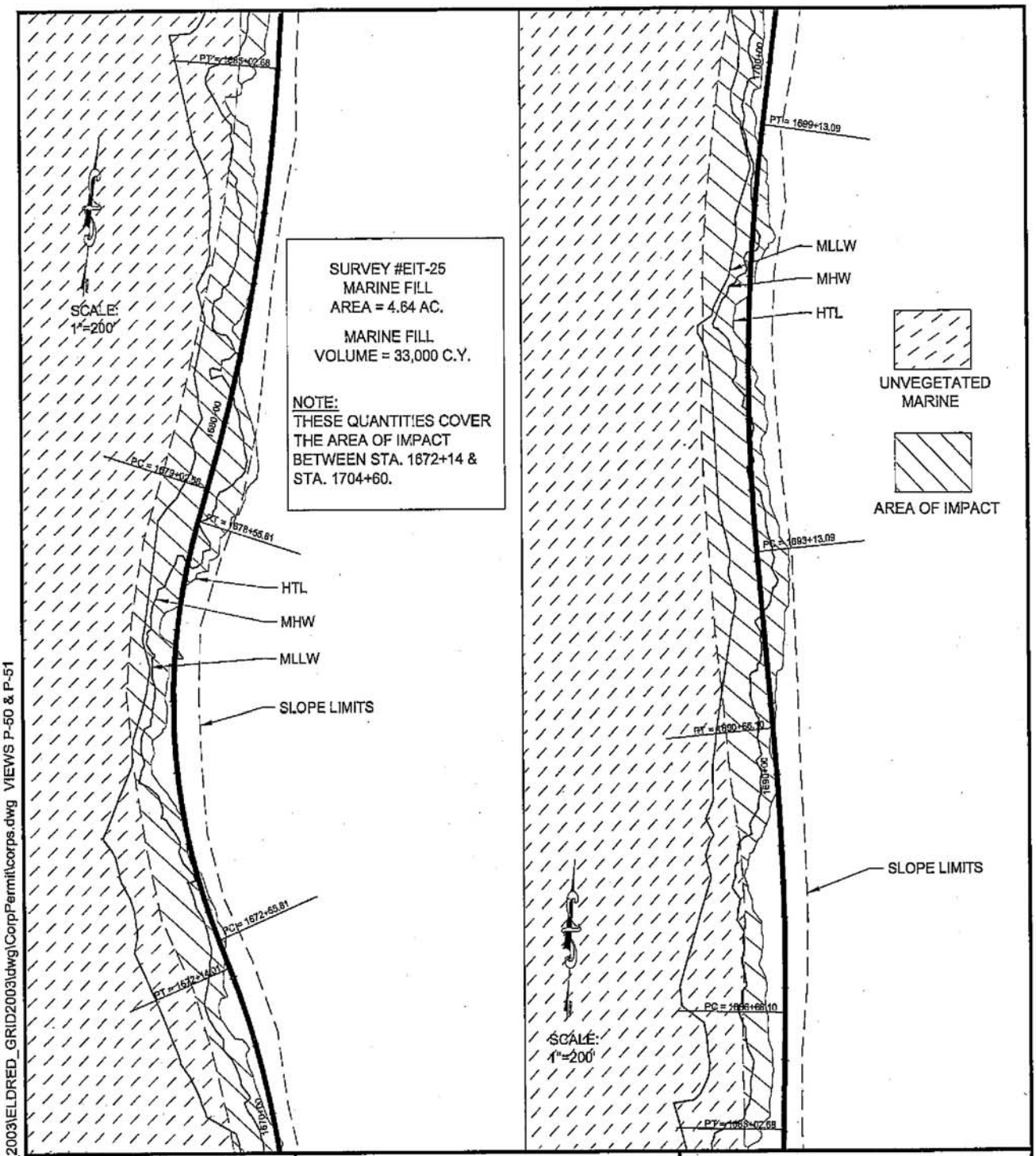
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 34 SOUTH, RANGE 61 EAST SECTIONS 7, 13, C.R.M.

DATE: DECEMBER, 2005 SHEET 47 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-50 & P-51

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unvegetated Marine Fills

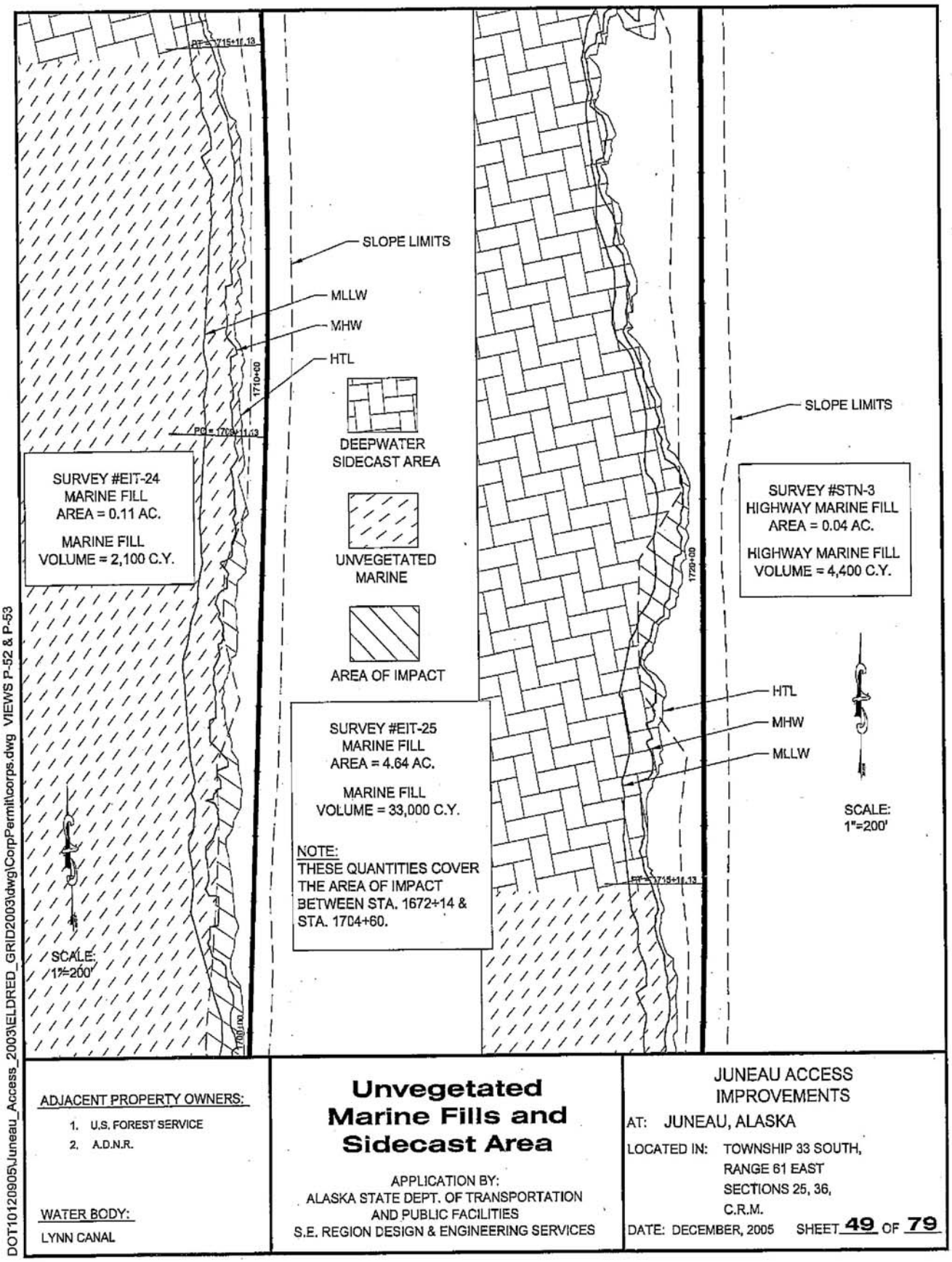
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 33 SOUTH, RANGE 61 EAST SECTION 36, C.R.M.

DATE: DECEMBER, 2005 SHEET 48 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-52 & P-53

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unvegetated Marine Fills and Sidecast Area

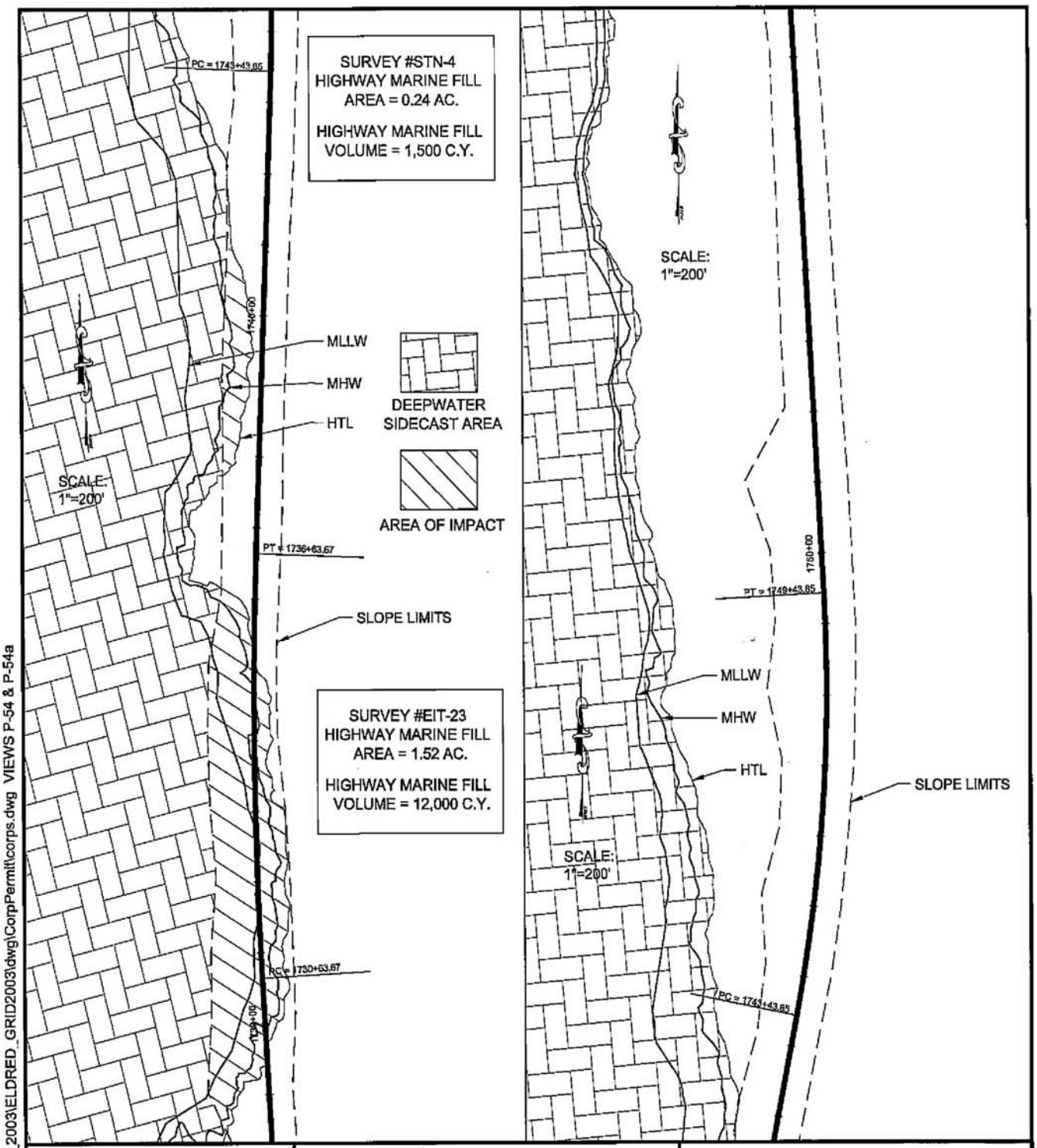
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 33 SOUTH, RANGE 61 EAST SECTIONS 25, 36, C.R.M.

DATE: DECEMBER, 2005 SHEET 49 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-54 & P-54a

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unvegetated Marine Fills and Sidecast Area

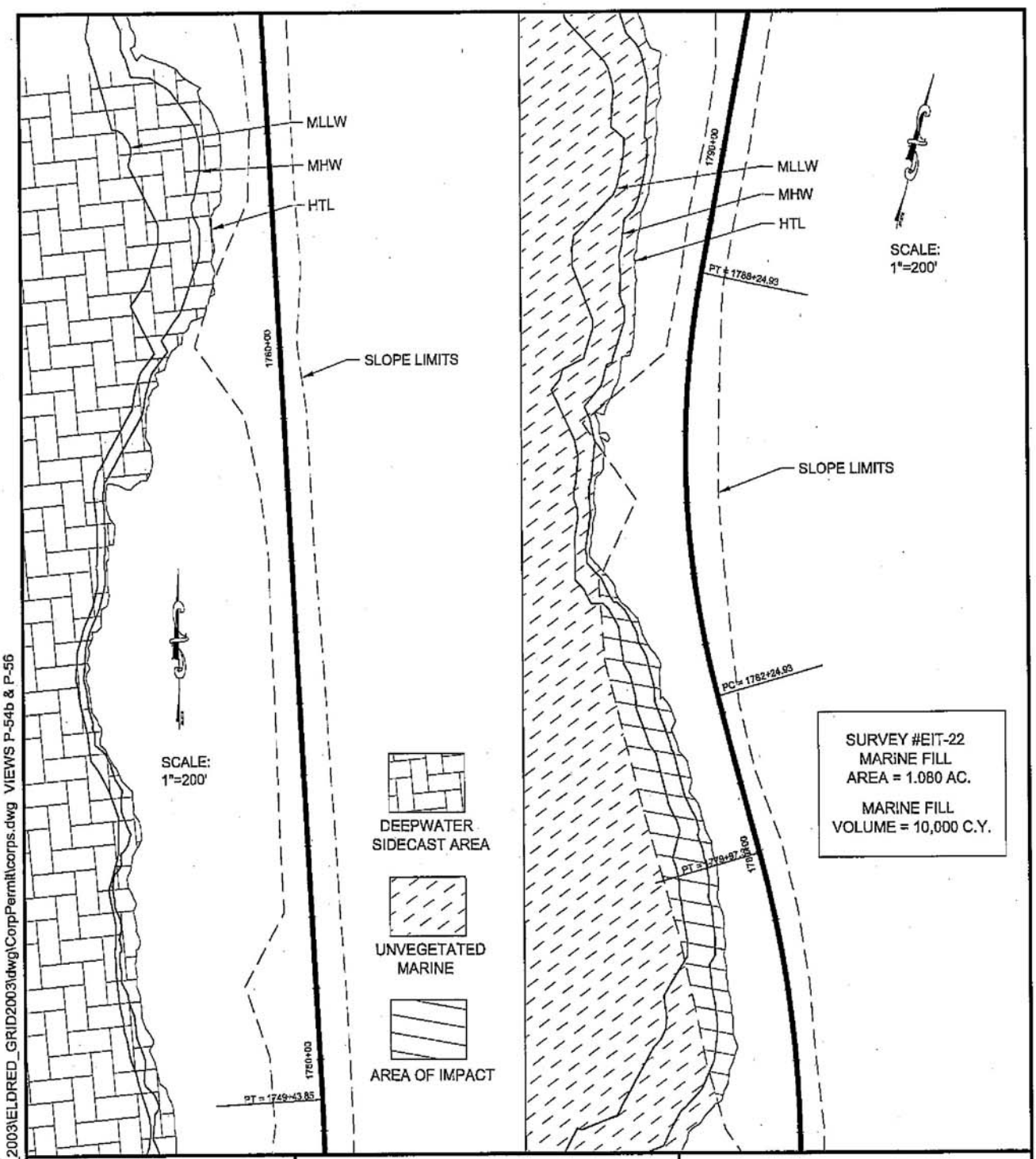
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS
IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 33 SOUTH,
RANGE 61 EAST
SECTIONS 24, 25,
C.R.M.

DATE: DECEMBER, 2005 SHEET 50 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-54b & P-56

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unvegetated Marine Fills and Sidecast Area

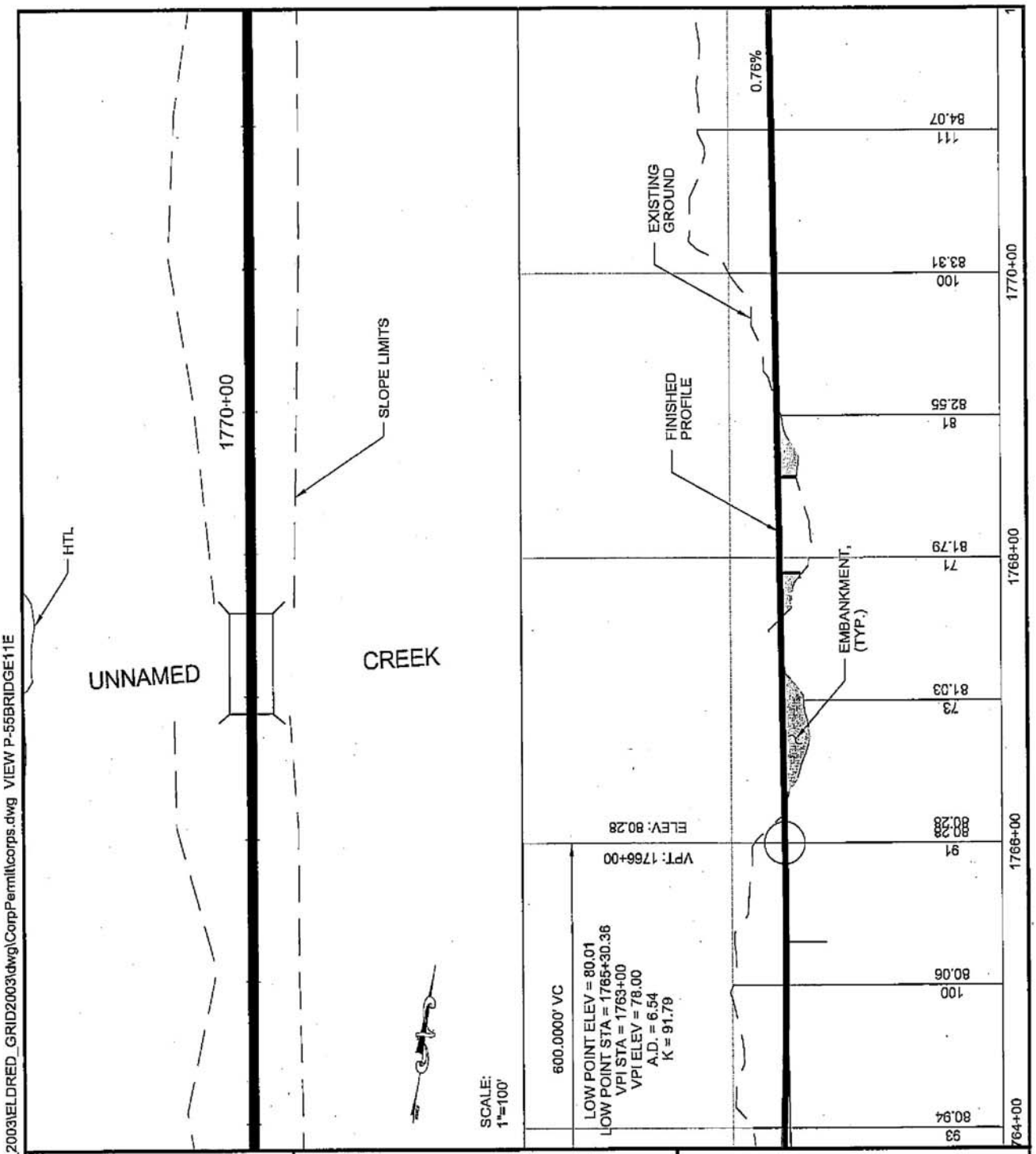
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

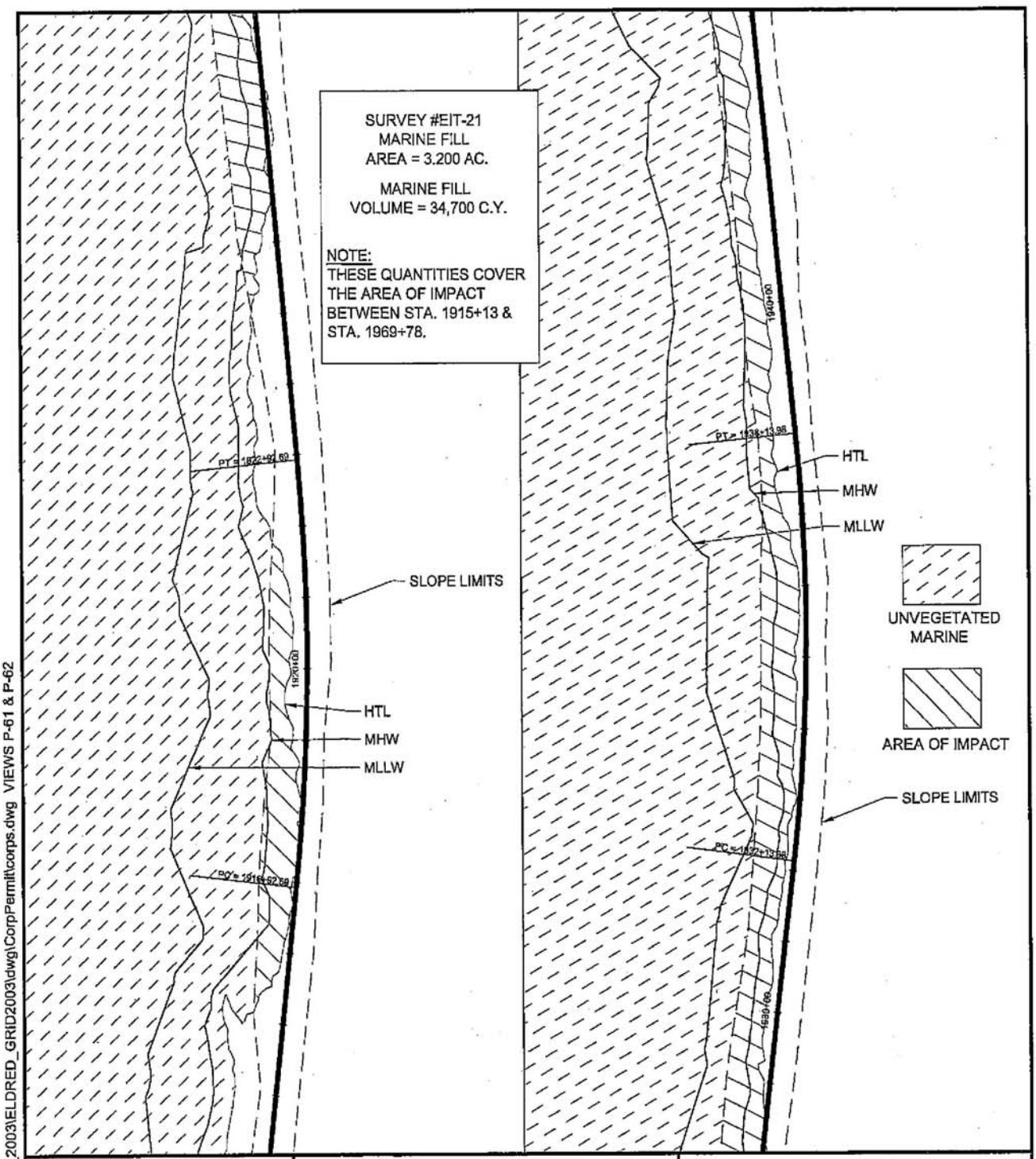
JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 33 SOUTH,
RANGE 61 EAST
SECTIONS 24, 25,
C.R.M.

DATE: DECEMBER, 2005 SHEET 51 OF 79


DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-55BRIDGE11E
HTL
UNNAMED
CREEK
1770+00
SLOPE LIMITS
SCALE: 1"=100'
EXISTING GROUND
FINISHED PROFILE
EMBANKMENT, (TYP.)
0.76%
600.0000' VC
LOW POINT ELEV = 80.01
LOW POINT STA = 1765+30.36
VPI STA = 1763+00
VPI ELEV = 78.00
A.D. = 6.54
K = 91.79
VPT: 1766+00
ELEV: 80.28
84.07
83.31
82.55
81.79
81.03
80.28
80.06
80.94
111
100
81
71
73
91
100
93
1770+00
1768+00
1766+00
1764+00
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
LYNN CANAL
Unnamed Creek Bridge
Bridge No. 11E
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 33 SOUTH,
RANGE 61 EAST
SECTION 25,
C.R.M.
DATE: DECEMBER, 2005
SHEET 52 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-61 & P-62

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unvegetated Marine Fills

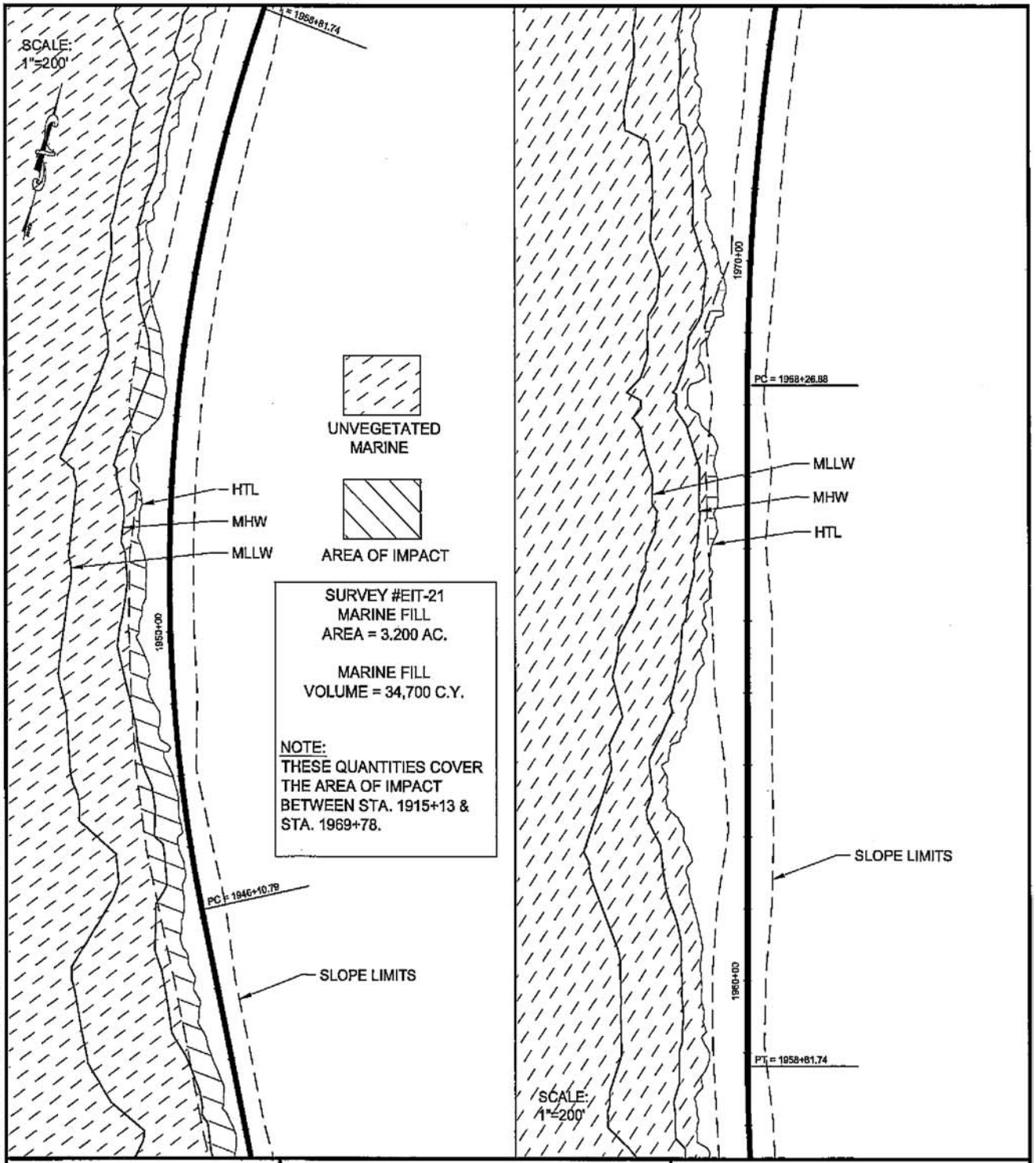
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 33 SOUTH, RANGE 61 EAST SECTION 11, C.R.M.

DATE: DECEMBER, 2005 SHEET 53 OF 79



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:
LYNN CANAL

Unvegetated Marine Fills

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

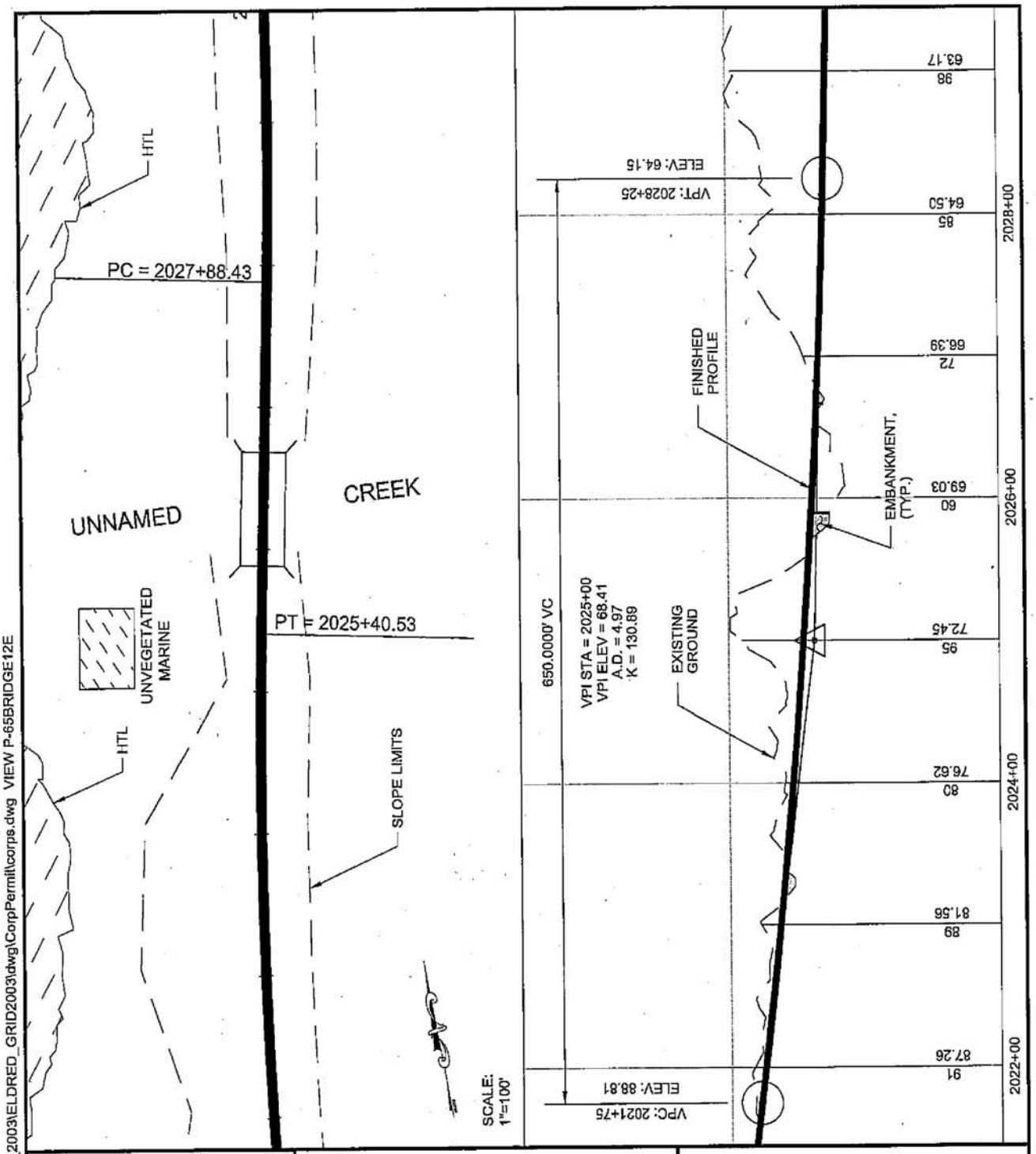
JUNEAU ACCESS
IMPROVEMENTS

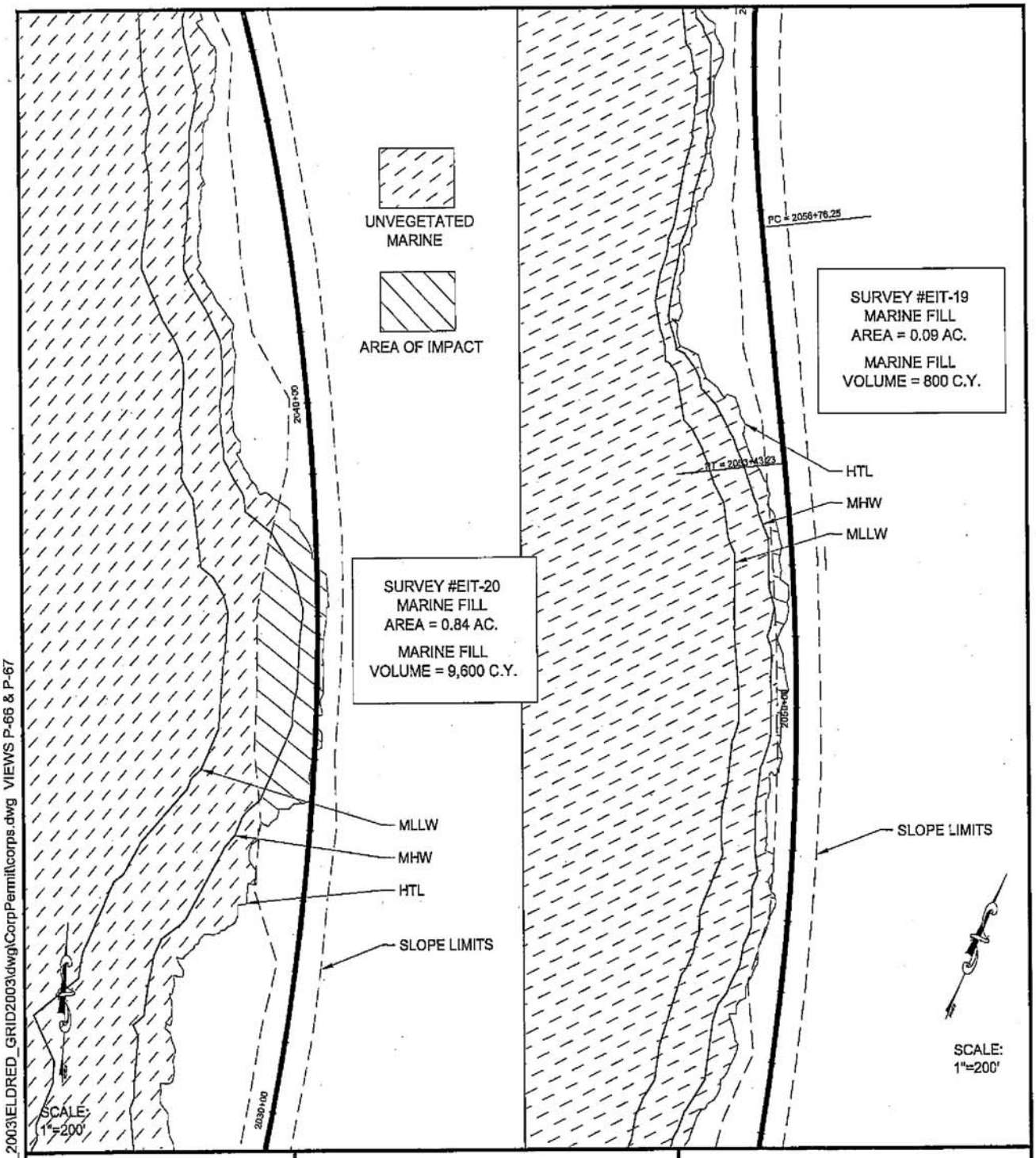
AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 33 SOUTH,
RANGE 61 EAST
SECTION 11,
C.R.M.

DATE: DECEMBER, 2005 SHEET 54 OF 79

DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-63 & P-64


HTL
PC = 2027+88.43
UNNAMED
CREEK
UNVEGETATED MARINE
PT = 2025+40.53
HTL
SLOPE LIMITS
SCALE: 1"=100'
VPT: 2028+25
ELEV: 64.15
VPI STA = 2025+00
VPI ELEV = 68.41
A.D. = 4.97
K = 130.89
650.0000' VC
VPC: 2021+75
ELEV: 88.81
FINISHED PROFILE
EXISTING GROUND
EMBANKMENT, (TYP.)
63.17
98
64.50
85
66.39
72
69.03
60
72.45
95
76.62
80
81.56
89
87.26
91
2028+00
2026+00
2024+00
2022+00
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
LYNN CANAL
Unnamed Creek Bridge
Bridge No. 12E
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 32 SOUTH,
RANGE 61 EAST
SECTION 31,
C.R.M.
DATE: DECEMBER, 2005
SHEET 55 OF 79
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-65BRIDGE12E



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-66 & P-67

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unvegetated Marine Fills

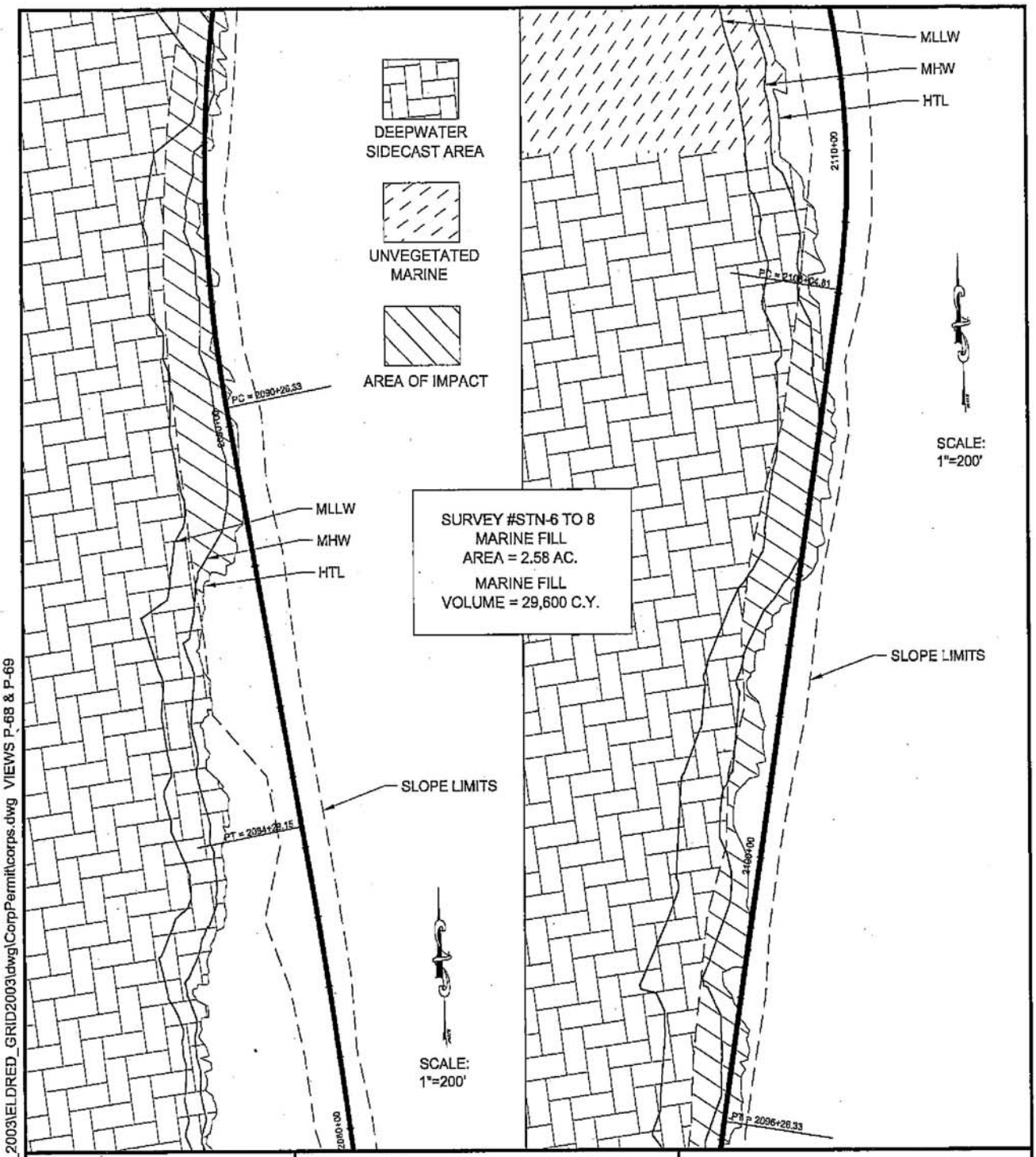
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 32 SOUTH,
RANGE 61 EAST
SECTION 31,
C.R.M.

DATE: DECEMBER, 2005 SHEET 56 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-68 & P-69

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unvegetated Marine Fills and Deep Water Sidecast Area

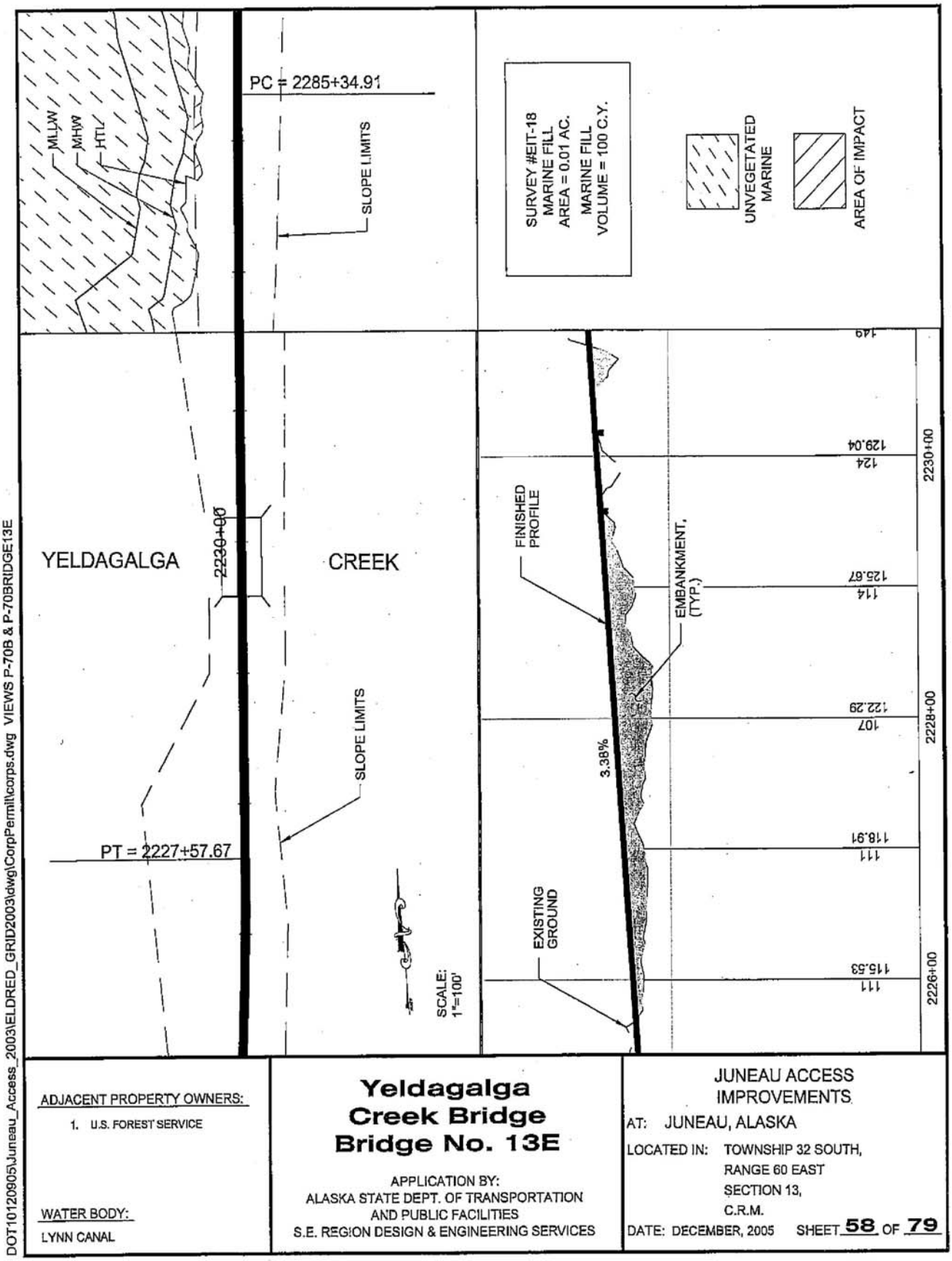
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 32 SOUTH,
RANGE 61 EAST
SECTIONS 30,
C.R.M.

DATE: DECEMBER, 2005 SHEET 57 OF 79



DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEWS P-70B & P-70BRIDGE13E

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE

WATER BODY:

LYNN CANAL

Yeldagalga Creek Bridge Bridge No. 13E

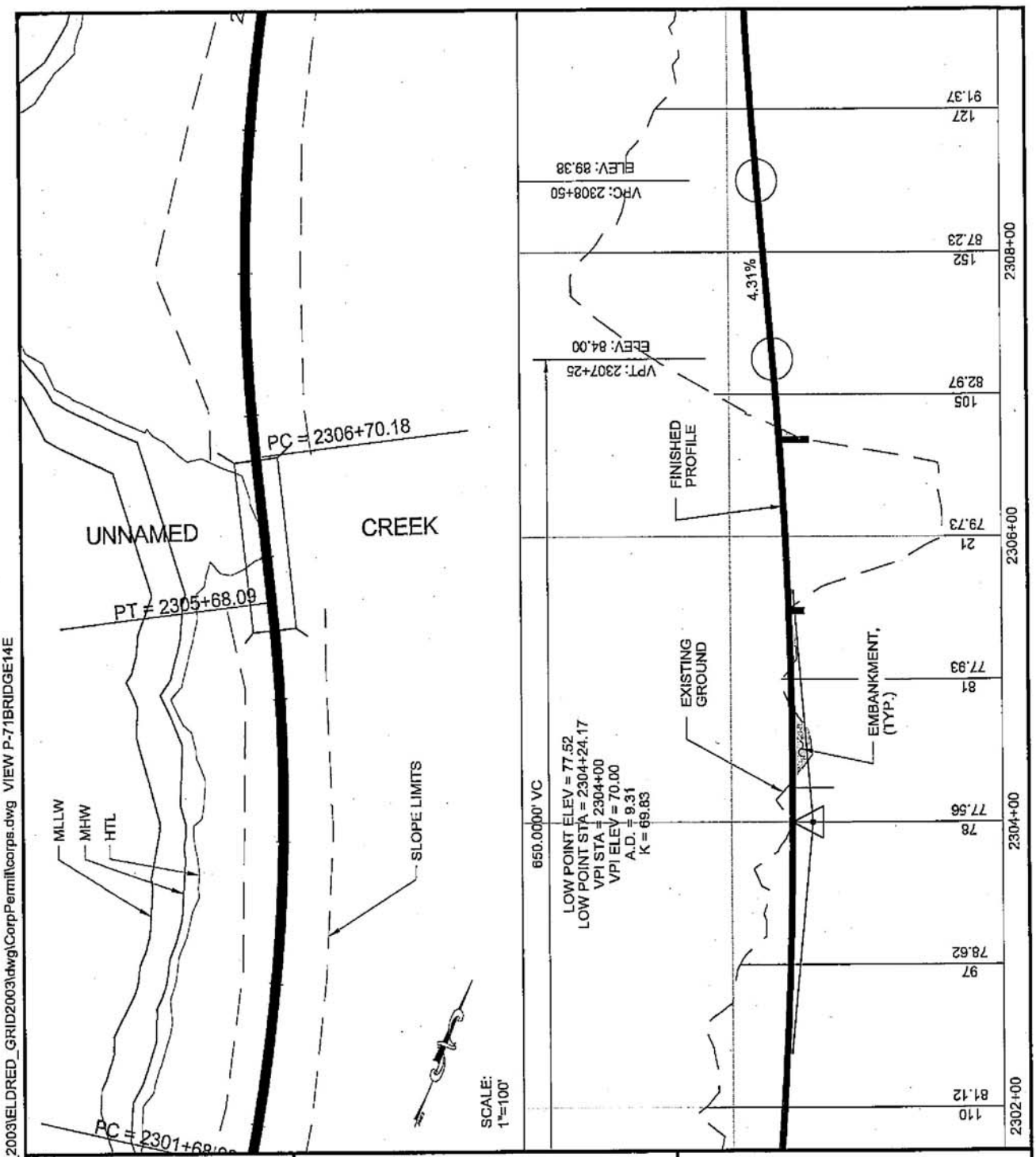
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 32 SOUTH,
RANGE 60 EAST
SECTION 13,
C.R.M.

DATE: DECEMBER, 2005 SHEET 58 OF 79



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE

WATER BODY:

LYNN CANAL

Unnamed Creek Bridge
Bridge No. 14E

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

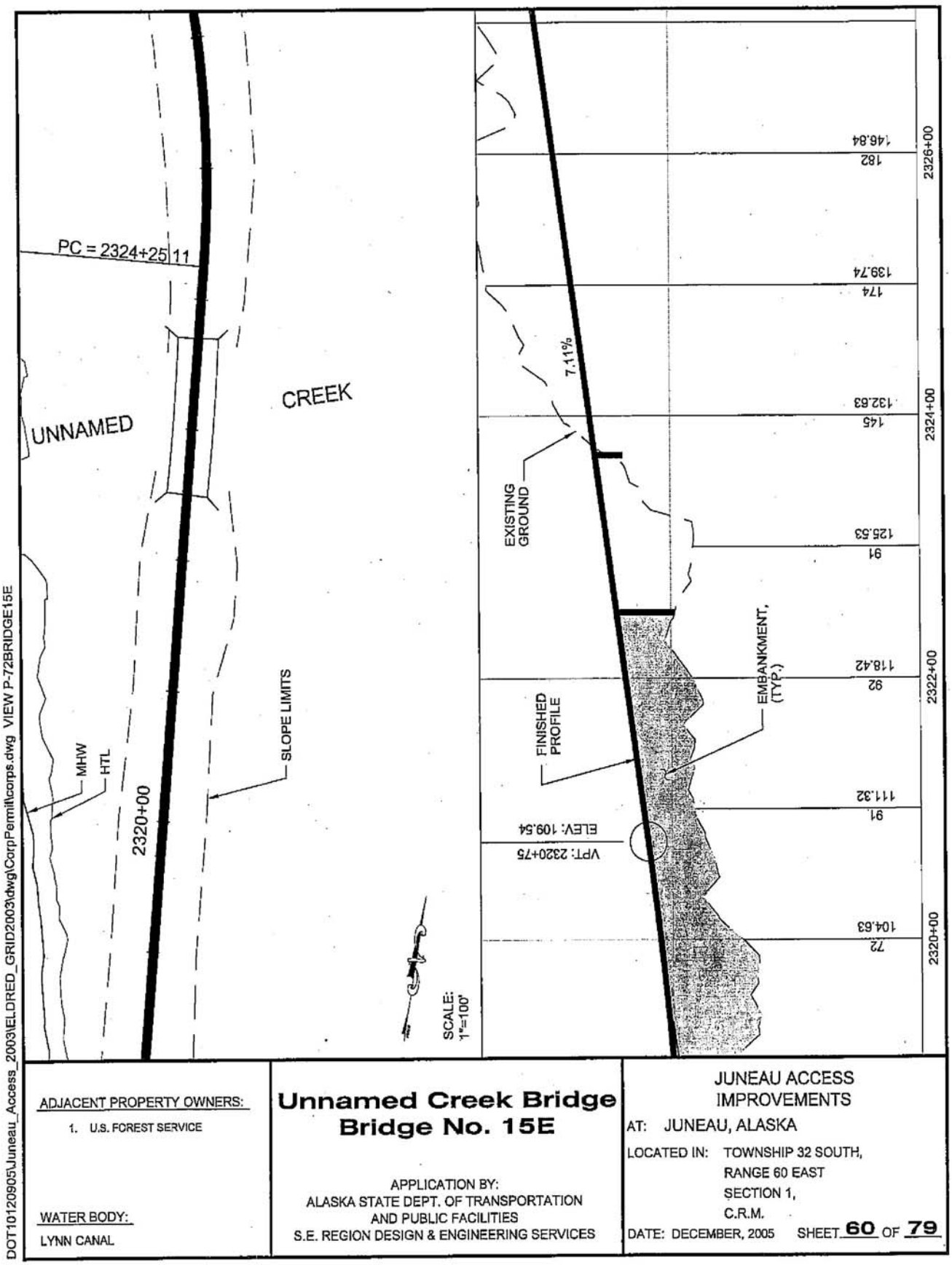
JUNEAU ACCESS IMPROVEMENTS

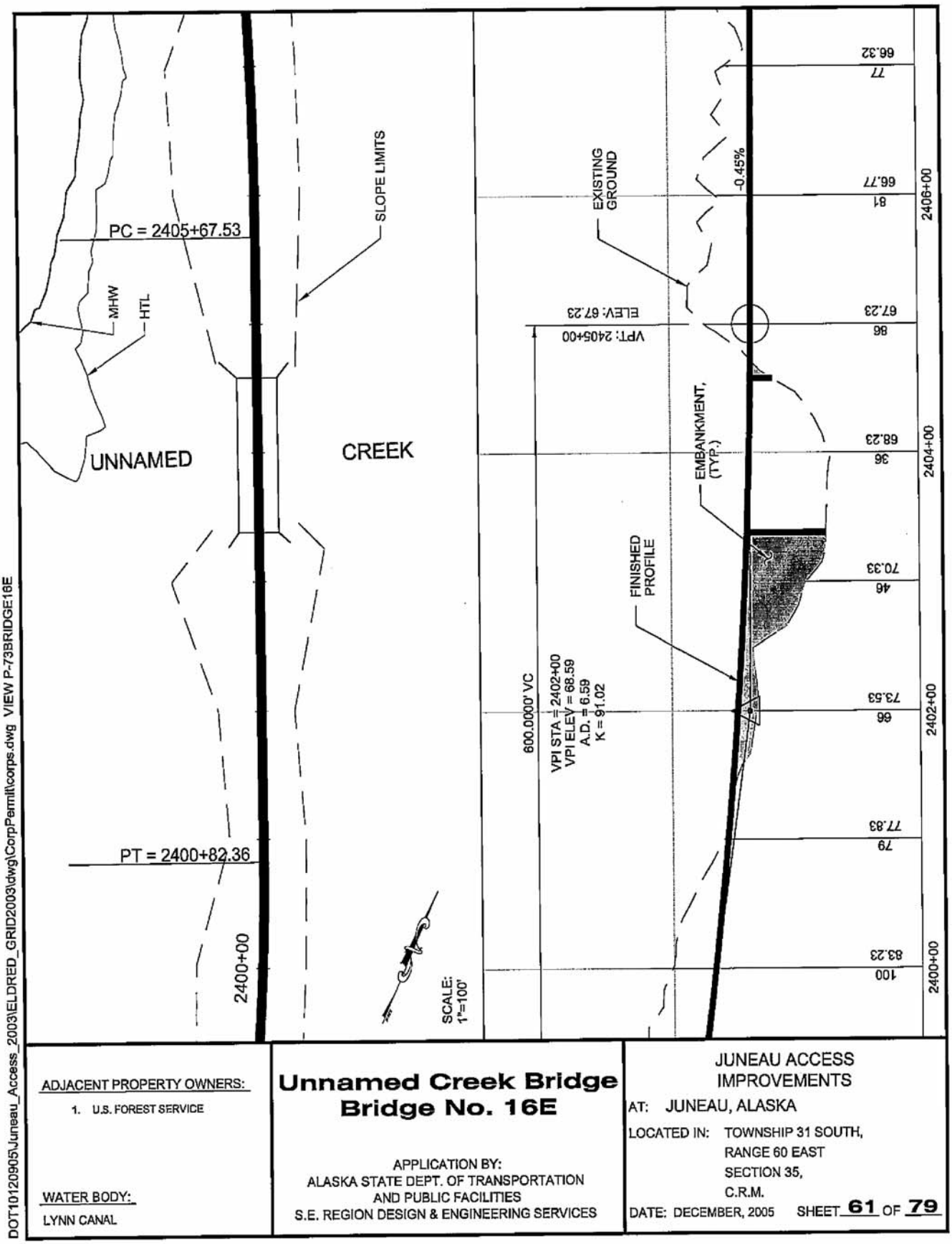
AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 32 SOUTH,
RANGE 60 EAST
SECTION 1,
C.R.M.

DATE: DECEMBER, 2005 SHEET 59 OF 79

DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-71BRIDGE14E


PC = 2324+25.11
UNNAMED
CREEK
MHW
HTL
2320+00
SLOPE LIMITS
SCALE: 1"=100'
7.11%
EXISTING GROUND
FINISHED PROFILE
EMBANKMENT, (TYP.)
VPT: 2320+75
ELEV: 109.54
146.84
182
139.74
174
132.63
145
125.53
91
118.42
92
111.32
91
104.63
72
2326+00
2324+00
2322+00
2320+00
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-72BRIDGE15E
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
WATER BODY:
LYNN CANAL
Unnamed Creek Bridge
Bridge No. 15E
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 32 SOUTH,
RANGE 60 EAST
SECTION 1,
C.R.M.
DATE: DECEMBER, 2005
SHEET 60 OF 79



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE

WATER BODY:

LYNN CANAL

Unnamed Creek Bridge
Bridge No. 16E

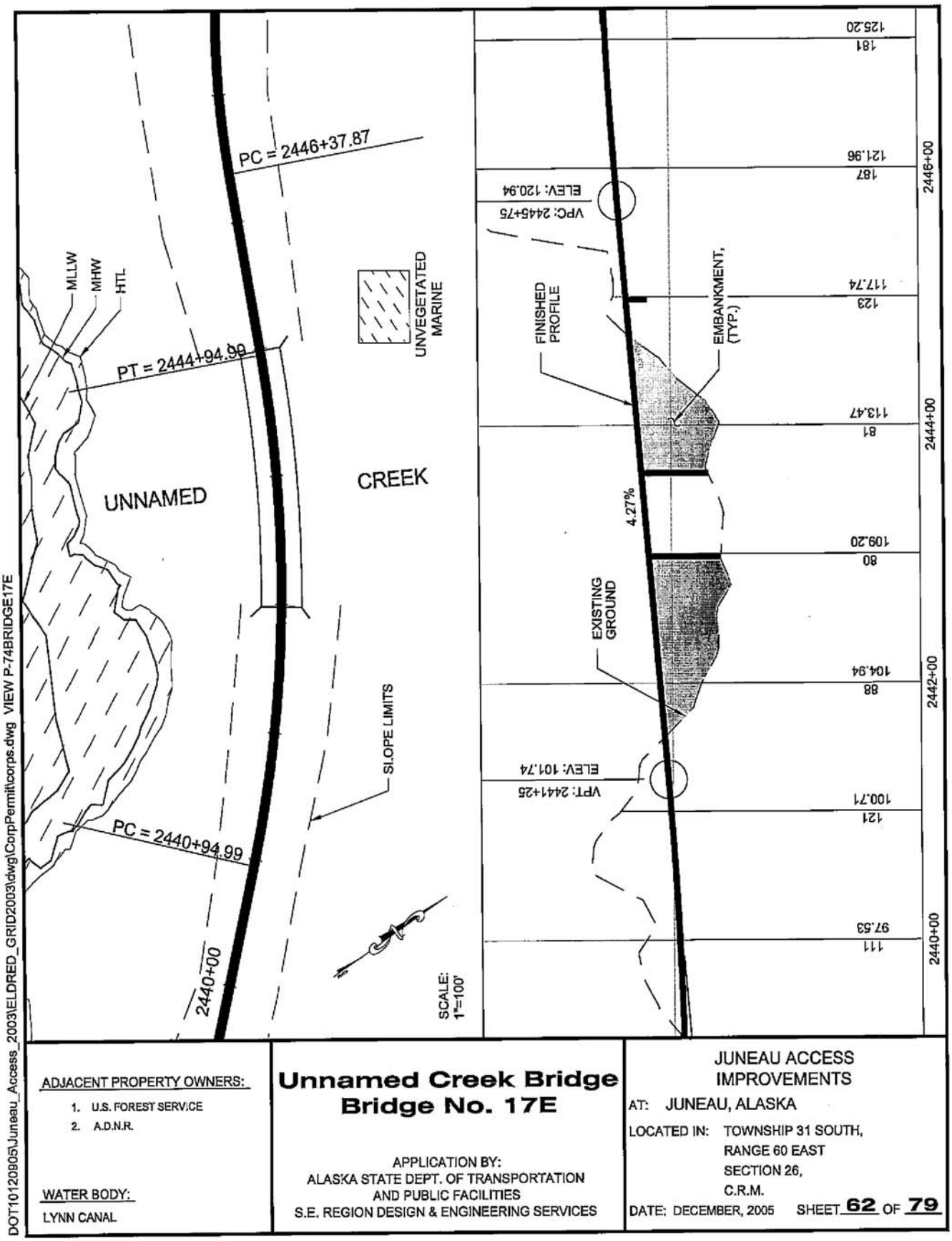
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 31 SOUTH,
RANGE 60 EAST
SECTION 35,
C.R.M.

DATE: DECEMBER, 2005 SHEET 61 OF 79



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Unnamed Creek Bridge
Bridge No. 17E

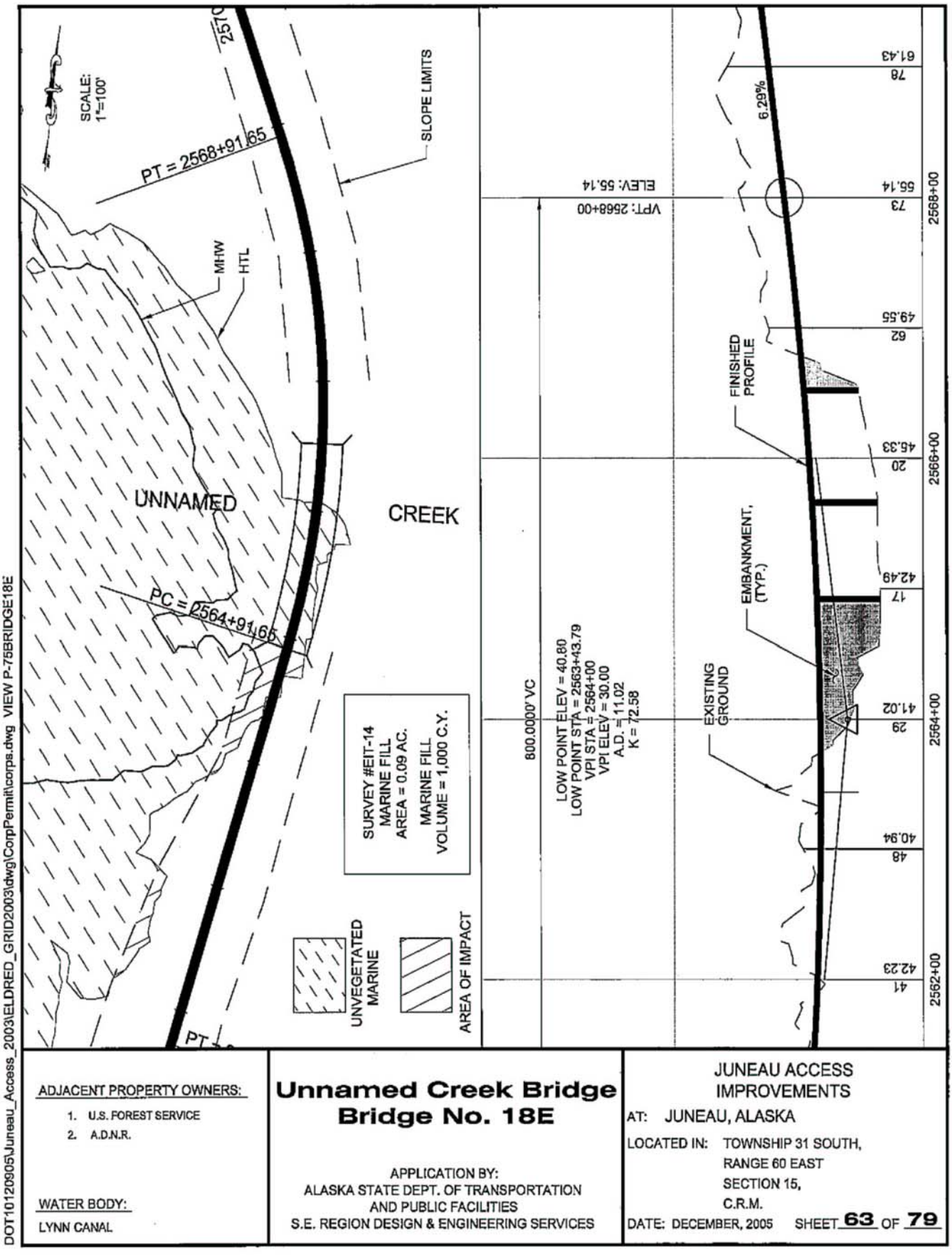
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

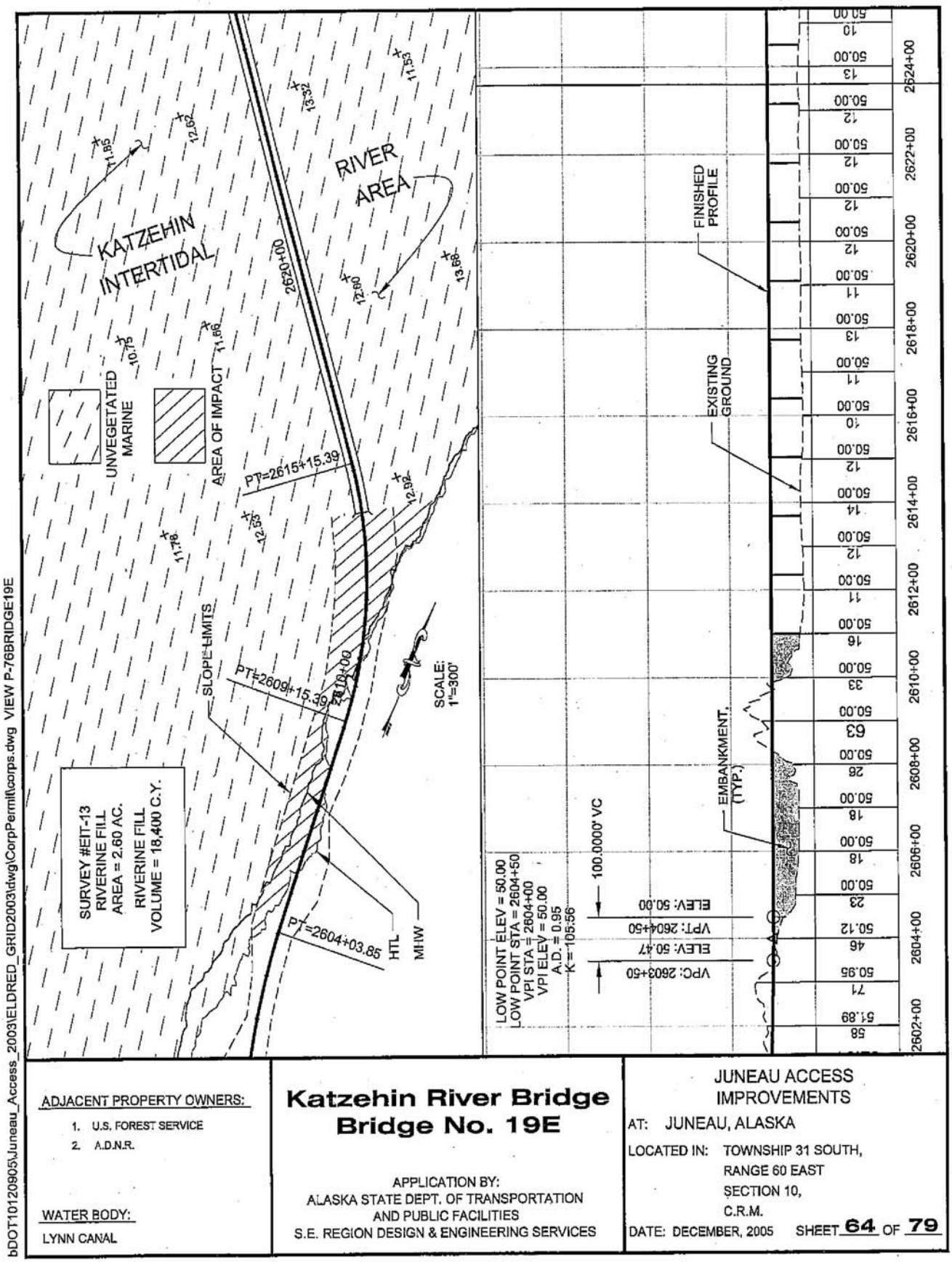
JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 31 SOUTH,
RANGE 60 EAST
SECTION 26,
C.R.M.

DATE: DECEMBER, 2005 SHEET 62 OF 79


SCALE: 1"=100'
PT = 2568+91.65
SLOPE LIMITS
MHW
HTL
UNNAMED
CREEK
PC = 2564+91.65
SURVEY #EIT-14
MARINE FILL
AREA = 0.09 AC.
MARINE FILL
VOLUME = 1,000 C.Y.
UNVEGETATED MARINE
AREA OF IMPACT
VPT: 2568+00
ELEV: 55.14
800.0000' VC
LOW POINT ELEV = 40.80
LOW POINT STA = 2563+43.79
VPI STA = 2564+00
VPI ELEV = 30.00
A.D. = 11.02
K = 72.58
6.29%
FINISHED PROFILE
EMBANKMENT, (TYP.)
EXISTING GROUND
61.43
78
56.14
73
49.55
62
46.33
20
42.49
17
41.02
29
40.94
48
42.23
41
2568+00
2566+00
2564+00
2562+00
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-75BRIDGE18E
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
2. A.D.N.R.
WATER BODY:
LYNN CANAL
Unnamed Creek Bridge
Bridge No. 18E
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 31 SOUTH,
RANGE 60 EAST
SECTION 15,
C.R.M.
DATE: DECEMBER, 2005
SHEET 63 OF 79



ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Katzehin River Bridge
Bridge No. 19E

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

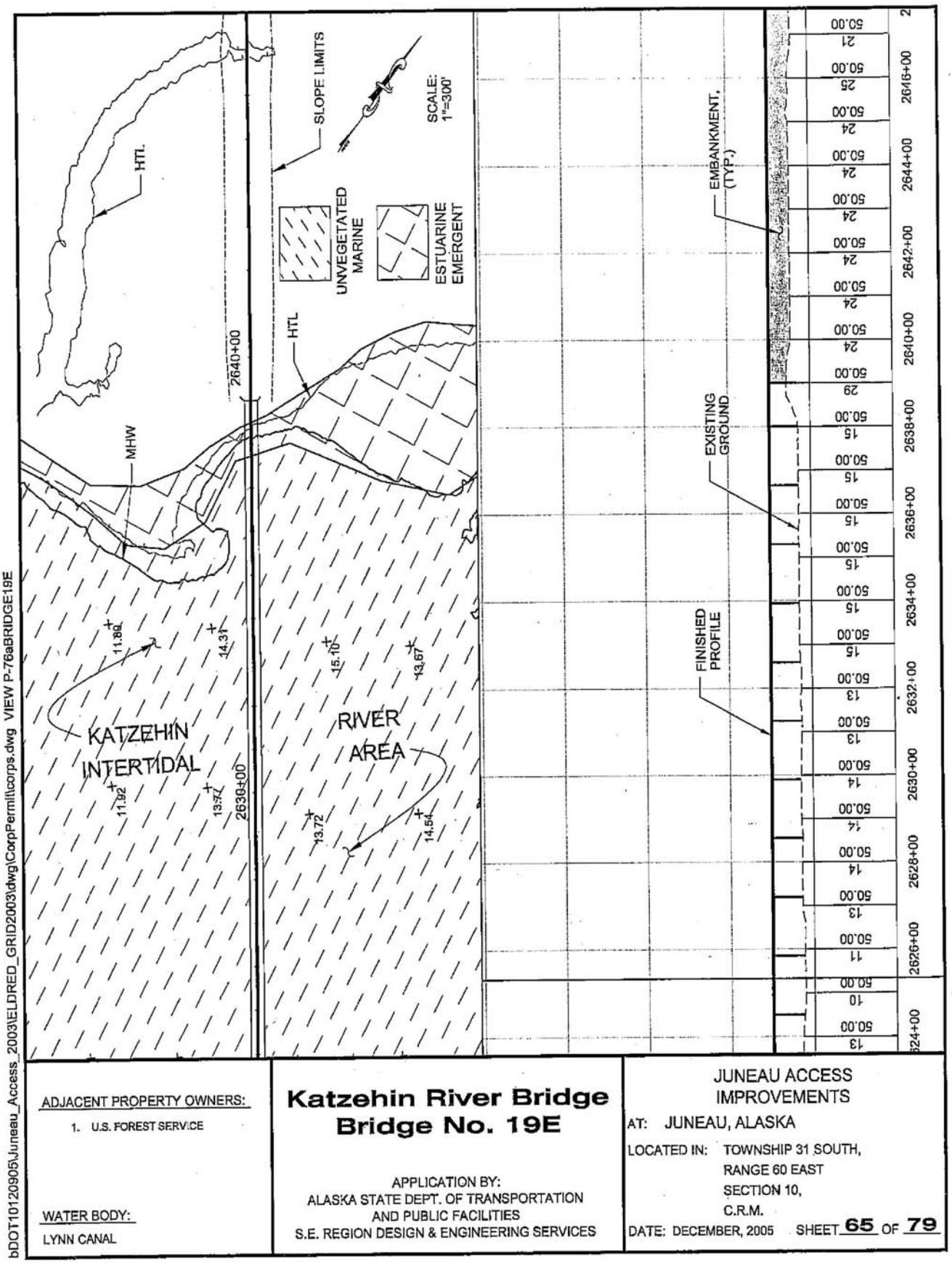
JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 31 SOUTH,
RANGE 60 EAST
SECTION 10,
C.R.M.

DATE: DECEMBER, 2005 SHEET 64 OF 79

bDOT\10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-76BRIDGE19E



bDOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-76aBRIDGE19E

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE

WATER BODY:

LYNN CANAL

Katzehin River Bridge
Bridge No. 19E

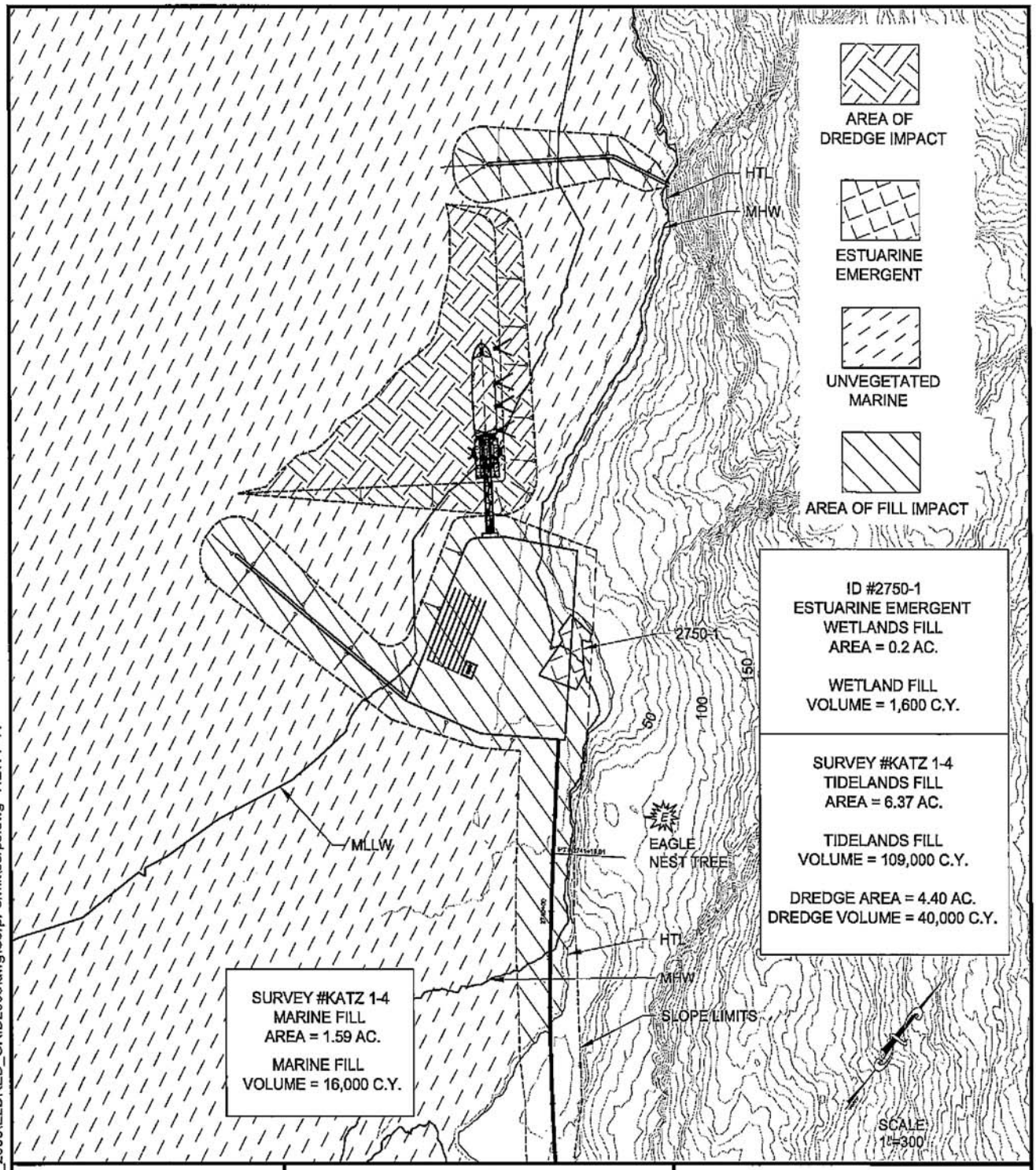
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 31 SOUTH,
RANGE 60 EAST
SECTION 10,
C.R.M.

DATE: DECEMBER, 2005 SHEET 65 OF 79



DOT\10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-77

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE
2. A.D.N.R.

WATER BODY:

LYNN CANAL

Estuarine Emergent and Unvegetated Marine Areas

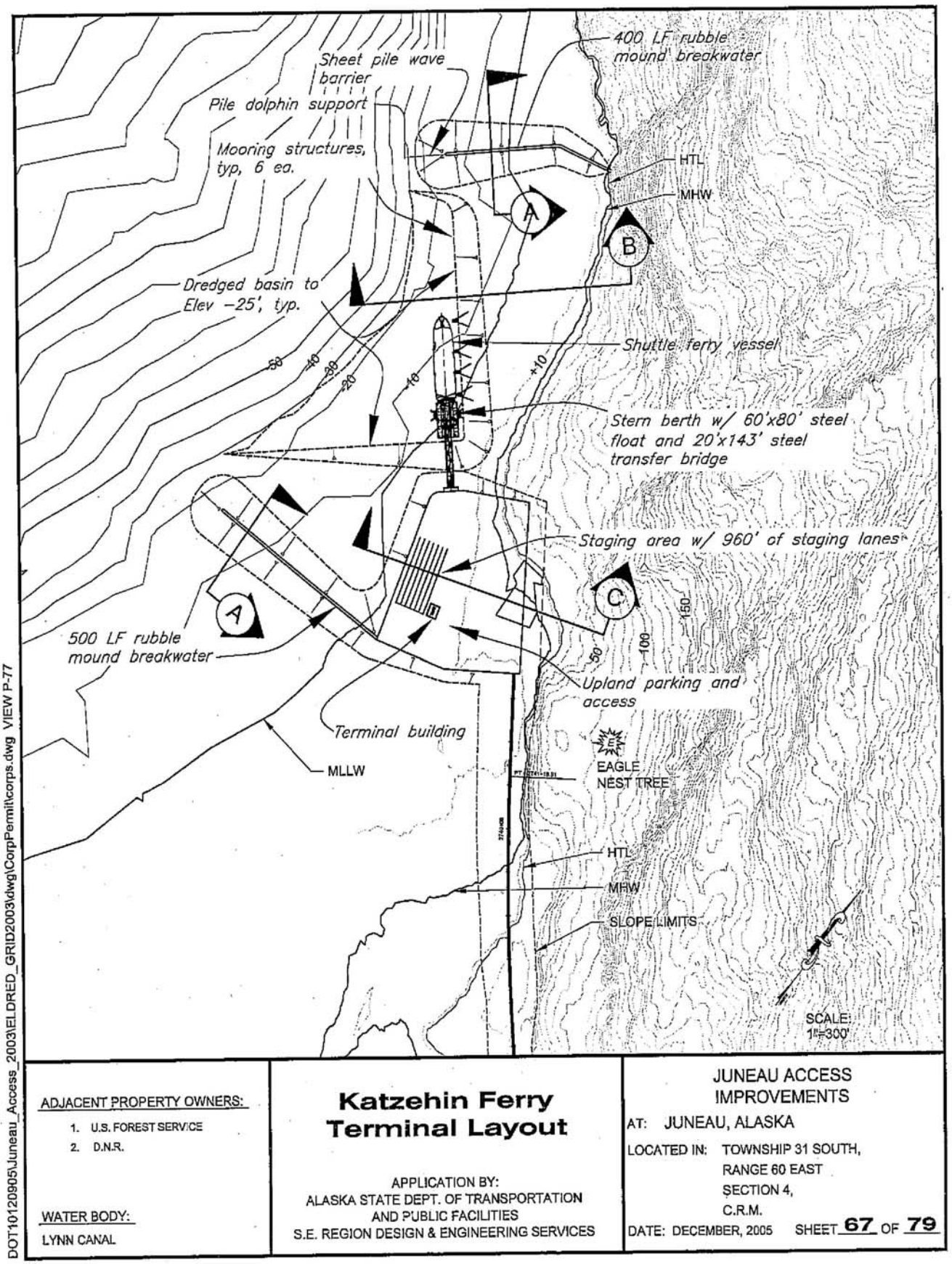
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

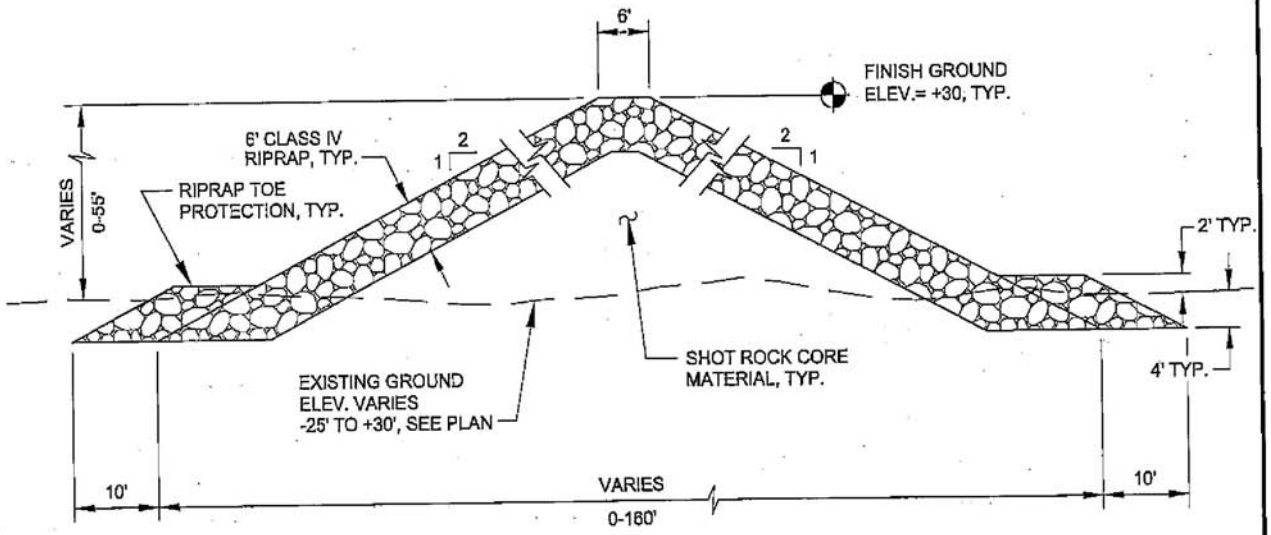
JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

LOCATED IN: TOWNSHIP 31 SOUTH, RANGE 60 EAST SECTION 4, C.R.M.

DATE: DECEMBER, 2005 SHEET 66 OF 79


400 LF rubble mound breakwater
Sheet pile wave barrier
Pile dolphin support
Mooring structures, typ, 6 ea.
HTL
MHW
A
B
Dredged basin to Elev −25', typ.
Shuttle ferry vessel
Stern berth w/ 60'x80' steel float and 20'x143' steel transfer bridge
Staging area w/ 960' of staging lanes
C
500 LF rubble mound breakwater
Upland parking and access
Terminal building
MLLW
EAGLE NEST TREE
HTL
MHW
SLOPE LIMITS
SCALE: 1"=300'
ADJACENT PROPERTY OWNERS:
1. U.S. FOREST SERVICE
2. D.N.R.
WATER BODY:
LYNN CANAL
Katzehin Ferry Terminal Layout
APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES
JUNEAU ACCESS IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: TOWNSHIP 31 SOUTH, RANGE 60 EAST SECTION 4, C.R.M.
DATE: DECEMBER, 2005
SHEET 67 OF 79
DOT10120905\Juneau_Access_2003\ELDRED_GRID2003\dwg\CorpPermit\corps.dwg VIEW P-77



A/XX TYPICAL SECTION
RUBBLE MOUND BREAKWATER

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS, VARIES.

WATER BODIES:
LYNN CANAL

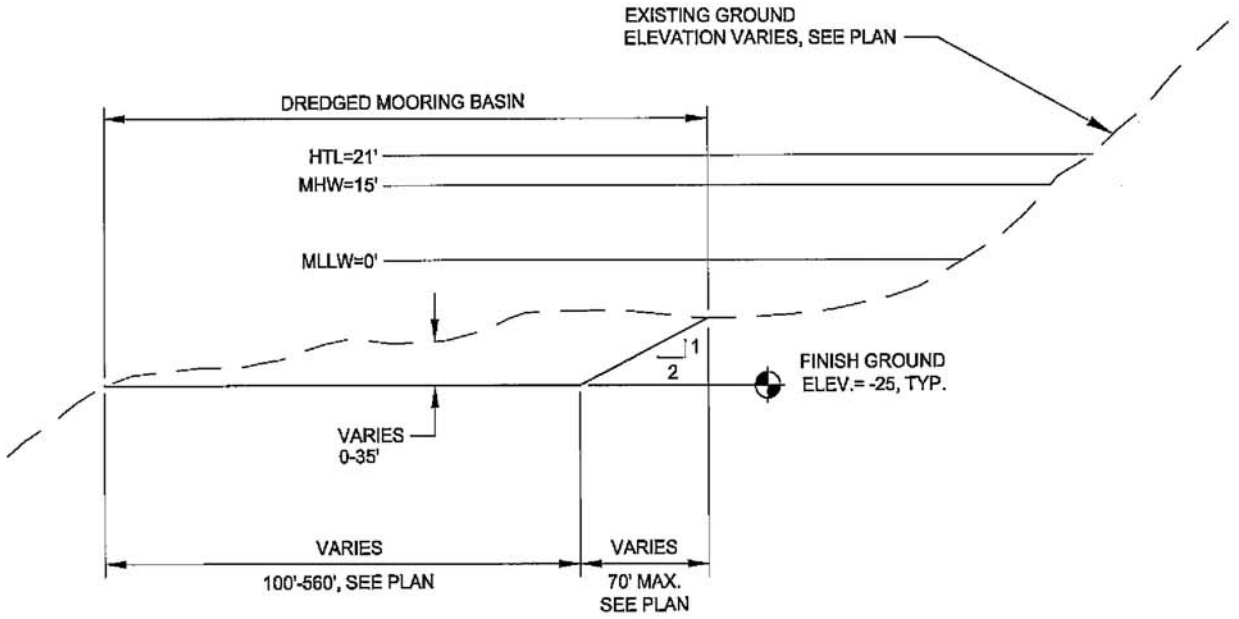
Typical Section

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: SOUTHEAST ALASKA

DATE: DECEMBER, 2005 SHEET 68 OF 79

\\Dot1012986\Juneau_Access_2003\Ehlrad_Grid2003.dwg\CompPermit\TYPICALS_8-19-05.DWG



B/XX TYPICAL SECTION
DREDGED MOORING DECTION

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS, VARIES.

WATER BODIES:
LYNN CANAL

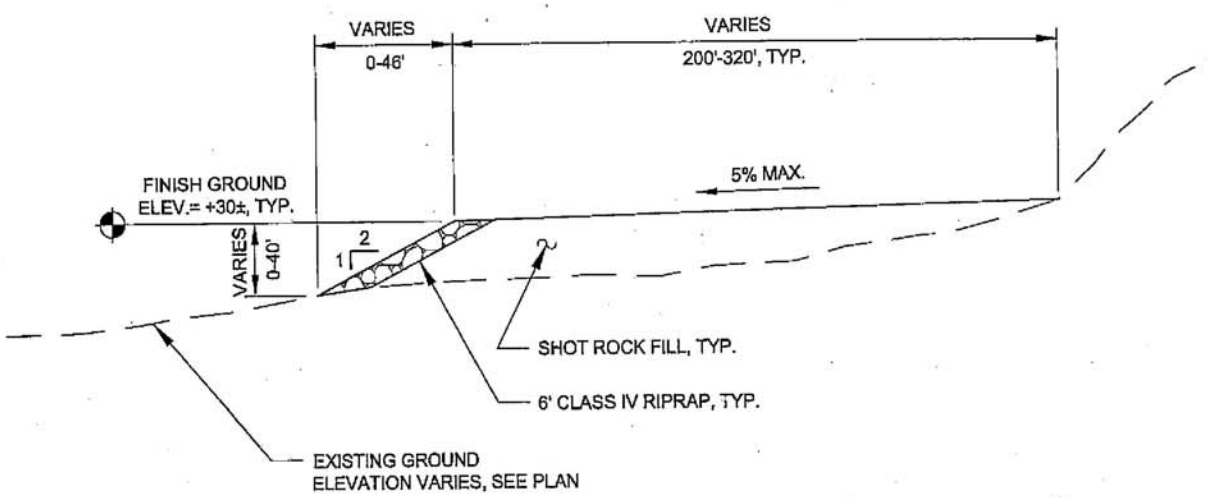
Typical Section

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: SOUTHEAST ALASKA

DATE: DECEMBER, 2005 SHEET 69 OF 79

\\Dot\01\20\05\Juneau_Access_2003\Eldred_Grid2003\dwg\CorpPermit\TYPICAL S_8-19-05.DWG



C
XX

TYPICAL SECTION
UPLAND STAGING AREA FILL

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS, VARIES.

WATER BODIES:
LYNN CANAL

Typical Section

APPLICATION BY:
ALASKA STATE DEPT. OF TRANSPORTATION
AND PUBLIC FACILITIES
S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS
IMPROVEMENTS
AT: JUNEAU, ALASKA
LOCATED IN: SOUTHEAST ALASKA

DATE: DECEMBER, 2005 SHEET 70 OF 79

N:\dot\01120605\Juneau_Access_2003\Final_Grid2003\dwg\Corp\Permit\TYPICALS_8-19-05.DWG

WETLANDS IMPACT AREAS

ID	STATION	TO	STATION	TYPE	FILL IMPACT			EXCAVATION IMPACT		TOTAL IMPACT	
					S.F.	ACRES	VOL. (C.Y.)	S.F.	ACRES	S.F.	ACRES
115-1	70+69		7304	PFO4B	0	0	0	752.80	0.02	752.80	0.02
135-1	91+63		93+83	PFO4B	4118.60	0.09	100	0	0	4118.60	0.09
150-1	99+13		107+05	PFO4B	8892.79	0.20	1300	10591.41	0.24	19484.20	0.45
165-1	110+00		115+67	PFO4B	5240.77	0.12	1000	3575.46	0.08	8816.23	0.20
165-1	119+63		123+10	PFO4B	6095.00	0.14	200	1504.39	0.03	7599.39	0.17
190-1	144+70		146+01	PFO4B	1645.64	0.04	150	635.71	0.01	2281.35	0.05
195-1	149+89		150+97	PFO4B	1407.62	0.03	180	0	0	1407.62	0.03
235-1	191+04		195+59	PFO4B	5589.93	0.13	650	3367.02	0.08	8956.95	0.21
340-1	294+52		300+14	PSS1B/PFO4B	23865.58	0.55	1300	7378.13	0.17	31243.71	0.72
415-1	369+80		385+00	PFO4B	67074.83	1.54	1400	42341.26	0.97	109416.09	2.51
680-2	631+29		640+00	PFO1A	64368.52	1.48	30250	0	0	64368.52	1.48
735-4	703+08		705+21	PFO1A/PSS1A	1077.93	0.02	600	0	0	1077.93	0.02
735-4	708+03		710+44	PFO1A/PSS1A	10112.70	0.23	3800	0	0	10112.70	0.23
735-4	716+21		727+42	PFO1A/PSS1A	84244.62	1.93	31000	0	0	84244.62	1.93
895-1	881+60		902+32	PFO4B	113352.99	2.60	23400	94278.07	2.16	207631.06	4.77
910-2	905+97		908+73	PFO4B	20640.08	0.47	6500	4337.91	0.10	24977.99	0.57
955-2	910+86		1015+91	PFO4B	556758.43	12.78	69500	308113.86	7.07	864872.29	19.85
955-2	1029+14		1076+58	PFO4B	255079.55	5.86	30500	150910.65	3.46	405990.20	9.32
955-2	1078+59		1114+44	PFO4B	187799.93	4.31	24400	103822.04	2.38	291621.97	6.69
955-2	1118+35		1129+22	PFO4B	80895.97	1.86	26000	1662.95	0.04	82558.92	1.90
1185-1	1129+56		1161+63	PFO4B/PSS1B	171655.50	3.94	21500	70033.76	1.61	241689.26	5.55
1185-1	1166+41		1176+78	PFO4B/PSS1B	57913.53	1.33	8600	45427.47	1.04	103341.00	2.37
1185-1	1179+20		1195+88	PFO4B/PSS1B	101728.72	2.34	15400	33578.27	0.77	135306.99	3.11
1185-1	1196+75		1204+98	PFO4B/PSS1B	48449.99	1.11	5600	4579.14	0.11	53029.13	1.22
1220-1	1207+36		1218+50	PFO4B/PSS1B	64100.84	1.47	13600	6571.56	0.15	70672.40	1.62
1220-1	1220+99		1222+29	PFO4B/PSS1B	8728.68	0.20	3700	361.79	0.01	9090.47	0.21
1260-1	1250+11		1261+88	PF04B/PSS4B	76803.66	1.76	16800	790.87	0.02	77594.53	1.78
1275-1	1265+87		1276+80	PFO4B	63007.21	1.45	16000	1990.52	0.05	64997.73	1.49
1360-1	1357+42		1363+80	PFO4B	45114.01	1.04	16000	2120.21	0.05	47234.21	1.08
1375-1	1372+36		1374+29	PFO4B	5329.53	0.12	5000	0	0	5329.53	0.12
2550-1	FERRY TERMINAL			E2EM1N	8916.80	0.20	1600	0	0	8916.80	0.20
				TOTAL FILL IMPACT =		49.36	376030				
								TOTAL EXCAVATION IMPACT =			
										TOTAL IMPACT =	

ADJACENT PROPERTY OWNERS: 1. U.S. FOREST SERVICE AND OTHERS, VARIES	**WETLANDS AND TIDELANDS FILL SUMMARIES** APPLICATION BY: ALASKA STATE DEPT. OF TRANSPORTATION AND PUBLIC FACILITIES S.E. REGION DESIGN & ENGINEERING SERVICES	JUNEAU ACCESS IMPROVEMENTS AT: JUNEAU, ALASKA DATE: DECEMBER, 2005 SHEET 71 OF 79

FILL BELOW HIGH TIDE LINE (21.0')							
STATION	TO	STATION	SURVEY #	FILL S.F.	FILL ACRES	FILL VOL - C.Y.	COMMENTS AND CONSTRAINTS
1444+79		1450+45	EIT-37	20593	0.47	5000	Fill catches at elev. 13.5' at lowest point, eagle trees ahead on line and steep terrain
1475+50		1503+55	EIT-36	199243	4.57	42000	Fill catches at elev. -6.0' at lowest point, 3 - avalanche zones and steep terrain
1553+11		1558+67	EIT-35	31266	0.72	7200	Fill catches at elev. 9.3' at lowest point, eagle tree and very steep terrain
1642+21		1643+84	EIT-28	1975	0.05	2100	Fill catches at elev. 18.8' at lowest point, 2- eagle trees and very steep terrain
1655+30		1672+14	EIT-26	50153	1.15	10000	Fill catches at elev. -4.0' at lowest point, 3 - eagle nests, an avalanche zone and very steep terrain
1672+14		1704+60	EIT-25	202207	4.64	33000	Fill catches at elev. -10.0' - at lowest point, 3 - eagle nests, an avalanche zone and very steep terrain
1705+63		1708+04	EIT-24	4574	0.11	2100	Fill catches at elev. 21.0' at lowest point, avalanche zone and very steep terrain
1719+32		1721+57	STN-3	1903	0.04	4400	Fill catches at elev. -7.0' at lowest point. At the base of very steep terrain
1728+50		1736+13	EIT-23	66131	1.52	12000	Fill catches at elev. -40.0' at lowest point, eagle tree, avalanche zones and very steep terrain
1737+72		1742+14	STN-4	10293	0.24	1500	Fill catches at elev. 14.0 at lowest point, eagle tree, avalanche zones and very steep terrain
1776+48		1784+20	EIT-22	47109	1.08	10000	Fill catches at elev. -25.0' at lowest point, 2-eagle trees, avalanche zone and very steep terrain
1915+13		1969+78	EIT-21	139352	3.20	34700	Fill catches at elev.10.0' at lowest point, 2-eagle trees, 2-avalanche zones and very steep terrain
2033+98		2038+63	EIT-20	36492	0.84	9600	Fill catches at elev. 5.5' at lowest point, 3-avalanche zones and steep terrain
2049+07		2052+84	EIT-19	3742	0.09	800	Fill catches at elev. 15.8' at lowest point, eagle tree, avalanche zone and steep terrain
2087+38		2109+27	STN-6 to 8	112410	2.58	29600	Fill catches at elev. -25.0' at lowest point, eagle tree, avalanche zones and steep terrain
2284+70		2285+46	EIT-18	349	0.01	100	Fill catches at elev. 20'+, Very steep terrain
2562+07		2565+07	EIT-14	4046	0.09	1000	Fill down to elev. 11.4', Very steep terrain. Slight uphill shift and 160' bridge over un-named drainage
2603+74		2614+95	EIT-13	113106	2.60	18400	Katzehin Bridge and approaches, eagle tree and steep terrain. Uphill shift to reduce fill.
2736+92		2743+25	KATZ 1-4	69406	1.59	16000	Fill catches at elev. 8.8' at lowest point, eagle tree, 2-avalanche zones and steep terrain. Uphill shift to reduce fill.
FERRY TERMINAL FILL			KATZ 1-4	166728	3.83	61200	Fill catches at elev. 3.7' (Note: Fill area includes 0.2 acre Esturine Emergent Wetlands)
TOTAL				1114350.38	29.41	300700	
KATZEHIN FERRY TERMINAL BREAKWATER FILL							
				S.F.	ACRES		
			EIT-11/ KATZ 1-4	119388	2.74	49400	
KATZEHIN FERRY TERMINAL DREDGE							
				S.F.	ACRES	VOL.C.Y.	
			KATZ 1-4	191720	4.40	40000	

ADJACENT PROPERTY OWNERS:

1. U.S. FOREST SERVICE AND OTHERS, VARIES

WETLANDS AND TIDELANDS FILL SUMMARIES

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S.E. REGION DESIGN & ENGINEERING SERVICES

JUNEAU ACCESS IMPROVEMENTS

AT: JUNEAU, ALASKA

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CULVERT SUMMARY

STATION	SIZE (IN) 24	36	48	72	DITCH BLOCK	RIPRAP (C.Y.)	BEDDING (C.Y.)	FOOTPRINT (S.F.)	COMMENTS
72+41	26								
73+84	24								
76+70	24								
80+75	26								
83+22	24								
86+69	14								
89+55	26								
94+06	24								
101+63	26								
102+56	52								
103+46				56					
106+28	26								
107+87	24								
109+26	26								
110+21	26								
110+72	20								
112+96	24								
113+98	22								
116+17	24								
116+25	22								
122+27	56								
125+72	54								
129+28	54								
133+40		54							
138+24			60						
141+49	26								
143+75	52								
146+76	56								
150+26	52								
152+79	52								
155+89	22								
159+32	24								
162+81	22								
164+72	52								
168+84	52								
170+43	52								
173+15	54								
176+01	54								
184+28	54								
185+51		15							
191+99	52								
195+97	22								
196+80	54								
204+94	52								
205+89	66								
212+13	20								
220+25				76					
225+50	86								
230+50	52								
242+50			186						
245+50			56						
247+50		64							
250+50	62								
252+50	54								
254+00	90								
257+00	56								
260+00	74								
264+00		94							
271+75		82							
274+00		72							
275+00	54								
281+00			56						
281+75	62								
284+00		58							
285+00		58							
285+50		58							
294+50		70							
299+00	50								
304+00		56							
305+50	56								
307+50	54								
309+00	50								
311+00		60							
316+50		60							
320+50	62								
325+50	78								
332+25			86						
333+50		58							
336+25		56							
340+61	100								
342+50			85						
347+00				74					
350+50	64								
352+00			60						
358+50	60								
359+50	60								
360+50		60							
365+25		60							
366+50		60							

CULVERT SUMMARY

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STATION	SIZE (IN) 24	36	48	72	DITCH BLOCK	RIPRAP (C.Y.)	BEDDING (C.Y.)	FOOTPRINT (S.F.)	COMMENTS
368+00				82					
369+75			80						
372+25	52								
382+75	66								
387+00		70							
391+00	64								
394+00	64								
398+50				104					
402+25	52								
408+00	60								
410+00		78							
411+50		68							
414+50		54							
417+25		78							
434+00	50								
437+50	50								
443+00	50								
450+50		68							
454+50		50							
463+00		50							
467+00		60							
474+00		50							
478+00	50								
482+50	50								
488+00		56							
493+50	50								
494+50		52							
497+50				60					
498+25				60					
501+50	50								
509+00		50							
511+00	50								
518+00		50							
522+00		52							
528+00	50								
532+00	50								
537+00	50								
540+00	50								
544+00	50								
548+00	50								
550+00			56						
553+25	50								
556+50	50								
560+00	50								
565+50				122					
765+50		60							
768+50		60							
771+25				60					
772+25	52								
773+50	52								
774+50	52								
777+50				116					
780+25	52								
780+75	52								
781+75	52								
782+00		60							
783+00	52								
784+50	50								
785+00	52								
786+00	52								
787+00	52								
788+00	50								
792+00	50								
798+00	50								
800+00	50								
803+00	50								
807+50		56							
809+00	52								
810+00	52								
812+00	50								
814+00	52								
815+00	50								
820+00	50								
824+00	50								
828+00	50								
832+75		56							
837+00	122								
840+00		60							
850+50		60							
859+00		60							
868+00		60							
870+00	52								
875+00	56								
879+00		56							
880+00		56							
884+75				56					
885+00			56						
892+25		76							
894+00		76							

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STATION	SIZE (IN) 24	36	48	72	DITCH BLOCK	RIPRAP (C.Y.)	BEDDING (C.Y.)	FOOTPRINT (S.F.)	COMMENTS
895+00		80							
895+00			110						
916+00	52								
933+50	60								
934+50	60								
935+00	56								
948+00	50								
952+00	50								
956+00	50								
960+00	50								
964+00	50								
968+00	50								
972+00	50								
976+00	50								
977+50		56							
980+00	50								
983+00		56							
984+00	50								
988+00	50								
992+00	50								
996+00	50								
1000+00			56						
1005+50				64					
1009+50			56						
1012+00	50								
1013+00	50								
1013+75	50								
1014+25				80					
1015+00		56							
1016+50				60					
1018+00	52								
1022+00	50								
1026+00	50								
1028+00	50								
1030+00	50								
1034+00	50								
1038+00	50								
1042+00	50								
1043+25		64							
1046+50	50								
1047+00	50								
1050+00			56						
1054+00	50								
1056+75	50								
1057+50			56						
1062+75	50								
1066+00	50								
1073+00				82					
1074+25			62						
1075+50	66								
1077+00		60							
1078+00			98						
1084+00	54								
1086+50			58						
1089+00				122					
1090+50			64						
1095+00	56								
1096+50		56							
1099+50	58								
1102+25		56							
1104+00	56								
1107+25	52								
1108+25	54								
1110+00				66					
1113+00	54								
1113+50	54								
1114+75	56								
1115+50	56								
1116+50	56								
1119+50	50								
1124+00	66								
1129+00				82					
1137+00	80								
1141+00	60								
1142+00				60					
1144+50		56							
1153+00		56							
1157+75	54								
1160+75	54								
1162+50	72								
1163+25	54								
1165+50	58								
1167+50		54							
1171+00		54							
1172+50			58						
1176+25	54								
1179+00	66								
1183+50		56							
1187+75				100					

CULVERT SUMMARY

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CULVERT SUMMARY

STATION	SIZE (IN) 24	36	48	72	DITCH BLOCK	RIPRAP (C.Y.)	BEDDING (C.Y.)	FOOTPRINT (S.F.)	COMMENTS
1192+00	54								
1196+00	54								
1196+50		56							
1204+00	54								
1205+25	54								
1206+50		72							
1208+00			70						
1211+50			56						
1216+50	54								
1217+00		66							
1218+50		66							
1219+50	54								
1221+00	62								
1222+50			65						
1224+50	56								
1225+50	56								
1227+00		60							
1228+75			66						
1229+25	64								
1229+75	64								
1230+50		64							
1232+00	56								
1232+75	56								
1233+25	56								
1233+75	56								
1235+00	54								
1235+50	54								
1236+00		56							
1236+50	56								
1237+50		56							
1238+00	54								
1240+00	54								
1244+50	54								
1247+25	54								
1250+00	54								
1252+00		56							
1254+00	54								
1258+00	54								
1260+50		62							
1261+25		66							
1262+80	62								
1264+25	56								
1266+00	54								
1270+00	54								
1274+00	54								
1278+00	54								
1279+50		100							
1281+00	106								
1282+00	106								
1291+00	110								
1297+25	54								
1295+75									
1304+50	54								
1305+50	54								
1306+50	54								
1311+50		56							
1314+00		58							
1318+25		74							
1319+75	54								
1320+25	54								
1322+25	56								
1335+50		72							
1345+00			76						
1353+00	50								
1356+00	56								
1362+00		88							
1378+00				142					
1393+00		130							
1397+00			109						
1393+00		72							
1409+00	54								
1413+00	54								
1417+00	54								
1421+00	58								
1425+00	56								
1429+00	58								
1433+00	56								
1447+00			84						
1453+00			78						
1473+00		99							
1478+00		82							
1482+00		82							
1486+00		108							
1490+00		80							
1494+00		74							
1498+00		72							
1502+00			62						
1506+00	50								
1510+00	50								

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CULVERT SUMMARY

STATION	SIZE (IN) 24	36	48	72	DITCH BLOCK	RIPRAP (C.Y.)	BEDDING (C.Y.)	FOOTPRINT (S.F.)	COMMENTS
1514+00	50								
1518+00	50								
1522+00	50								
1528+00	50								
1537+00	50								
1555+00		56							
1559+00	54								
1563+00	50								
1567+00		54							
1571+00	52								
1579+00	52								
1583+00	50								
1588+00	52								
1591+00	52								
1595+00		66							
1604+00	56								
1608+00	50								
1613+25		60							
1618+00	50								
1624+00	50								
1628+00	50								
1632+00	50								
1635+00	52								
1642+00			70						
1645+00	52								
1649+00	52								
1654+00	52								
1659+00		56							
1662+50			96						
1665+25			100						
1668+00	54								
1676+00	54								
1680+00	60								
1684+00	54								
1688+00			54						
1692+00	60								
1696+00	54								
1700+00	54								
1704+00		60							
1706+00	52								
1712+00	52								
1716+00	52								
1720+00	60								
1729+00	54								
1731+00		84							
1736+00		56							
1739+50		56							
1741+00		56							
1759+00		52							
1761+00		72							
1775+00	54								
1779+00	56								
1783+00	56								
1787+00	54								
1794+00	54								
1798+00	54								
1803+00	56								
1811+00				108					
1815+00	52								
1819+00	52								
1823+00	52								
1827+00	56								
1831+00	52								
1835+00	52								
1839+00	52								
1843+00	52								
1847+00	52								
1851+00	52								
1856+00	50								
1860+00	50								
1864+00	54								
1868+00	54								
1872+00	56								
1876+00	56								
1885+00		56							
1894+00		56							
1898+00	54								
1901+00	54								
1909+00	54								
1915+00	54								
1919+00	54								
1923+00	54								
1927+00	54								
1931+00	54								
1935+00	54								
1939+00	54								
1943+00	54								
1947+00	54								
1951+50		56							

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CULVERT SUMMARY

STATION	SIZE (IN) 24	36	48	72	DITCH BLOCK	RIPRAP (C.Y.)	BEDDING (C.Y.)	FOOTPRINT (S.F.)	COMMENTS
1956+00	54								
1960+00	54								
1964+00	54								
1972+00	50								
1975+00	50								
1980+00	52								
1985+00	50								
1990+00	50								
1993+00	50								
1996+00	50								
2004+00	50								
2007+00	50								
2013+00		56							
2020+61			70						
2033+00		56							
2037+00	56								
2040+00	52								
2042+00		54							
2044+00		54							
2049+00		54							
2053+50			54						
2058+00	52								
2062+00	52								
2066+00	52								
2072+00		52							
2078+00	54								
2082+00	54								
2087+00				56					
2090+00	54								
2094+00	54								
2098+00	54								
2102+00				56					
2106+00	54								
2109+00	54								
2113+00	50								
2117+00	50								
2119+00	50								
2123+00	54								
2127+00			54						
2131+00	52								
2135+00	50								
2140+00	50								
2144+00	52								
2148+00	52								
2152+00	54								
2156+00	52								
2160+00	52								
2165+00	52								
2169+00	50								
2179+00	54								
2183+00	54								
2189+50			56						
2191+25		56							
2198+00	50								
2201+00	50								
2205+00	52								
2209+00	54								
2213+00	52								
2217+00	52								
2221+00	52								
2223+00			54						
2227+00	58								
2237+00			58						
2241+00	52								
2245+00		54							
2252+00	50								
2266+00			56						
2270+00			56						
2274+00	56								
2280+00			56						
2284+00	52								
2288+00	52								
2294+00	52								
2298+00	52								
2302+00	50								
2312+00	50								
2316+00	56								
2319+00	52								
2327+00	52								
2332+00	50								
2344+00		56							
2335+00	50								
2340+00	50								
2344+00	50								
2349+00	52								
2353+00	52								
2355+00	50								
2359+00	50								
2368+00	50								

CULVERT SUMMARY

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CULVERT SUMMARY

STATION	SIZE (IN) 24	36	48	72	DITCH BLOCK	RIPRAP (C.Y.)	BEDDING (C.Y.)	FOOTPRINT (S.F.)	COMMENTS
2374+50			56						
2379+00	50								
2383+00	52								
2387+00	52								
2401+00		56							
2408+00	52								
2412+00	56								
2416+00	50								
2420+00	56								
2424+00	50								
2428+00	56								
2438+00		56							
2448+00		56							
2453+00	52								
2458+00	52								
2463+00		56							
2466+00	50								
2472+00	52								
2481+00		54							
2485+50	52								
2492+00	52								
2497+00	50								
2501+00	50								
2504+00	56								
2511+50		56							
2517+00	52								
2521+00	50								
2531+00	52								
2536+00		56							
2547+00		56							
2553+00	52								
2557+00	52								
2561+00		56							
2572+00	56								
2585+00	50								
2586+00	50								
2590+00	56								
2594+00	56								
2598+00	56								
2602+00	56								
2606+00	56								
2639+00				110					
2647+00				130					
2666+00			118						
2671+50			120						
2680+50			120						
2696+00				120					
2702+00			120						
2710+00			110						
2714+00		110							
2718+00	56								
2722+00		110							
2726+00		86							
2730+00	56								
2734+00		100							
2738+00		130							
2742+00	96								

CULVERT SUMMARY

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APPENDIX X

PART B

DRAFT SECTION 404(b)(1) ANALYSIS

I. INTRODUCTION

The Alaska Department of Transportation and Public Facilities (DOT&PF) and the Federal Highway Administration (FHWA) have evaluated alternatives to improve surface transportation to and from Juneau, Alaska, within the Lynn Canal corridor. The purpose of this Draft 404(b)(1) analysis is to assess the impacts of project alternatives on waters of the United States (U.S.), including wetlands. Federal law requires that projects avoid, minimize, and compensate for wetland impacts to the greatest extent practicable. Under Section 404(b)(1) of 40 Code of Federal Regulations (CFR) Part 230, no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem. This document demonstrates compliance with Section 404(b)(1) guidelines.

Project Purpose

Juneau is the largest community on the North American continent not connected to the continental highway system. Because of its location and lack of highway access, all freight, vehicle, and passenger movement to and from Juneau is by air or sea. The only public surface transportation available to and from Juneau is the Alaska Marine Highway System (AMHS), a state-owned ferry system that provides transportation to many of Southeast Alaska's coastal communities. AMHS service from Juneau connects to the continental highway system in Prince Rupert, British Columbia, and Bellingham, Washington to the south, and in Haines and Skagway to the north. The AMHS is the National Highway System (NHS) link to Juneau, Haines, and Skagway.

The purpose of and need for the Juneau Access Improvements Project is to provide improved surface transportation to and from Juneau within the Lynn Canal corridor that will:

- Provide the capacity to meet transportation demand in the corridor
- Provide flexibility and improve opportunity for travel
- Reduce travel times between the communities
- Reduce state costs for transportation in the corridor
- Reduce user costs for transportation in the corridor

The project purpose and need statement has been subdivided into these five elements for clarity and to help evaluate the ability of project alternatives to meet the overall goal of improving surface transportation to and from Juneau in the Lynn Canal corridor.

The five elements of the project purpose and need statement are interrelated. Convenience and opportunity for travel are important factors in transportation demand, as are travel times and user costs. Transportation improvements to provide increased capacity and opportunity in Lynn Canal affect state and traveler costs. Traveler cost and travel time have a strong effect on demand. Generally, the more expensive the trip and the longer the travel time, the less the actual demand (as opposed to latent demand). Also, reductions in travel time and/or user cost generally increase state cost.

Alternatives

Alternatives were screened in fall 2003 after the Supplemental Draft Environmental Impact Statement (EIS) scoping process and again in August 2005. The alternative screening process used specific criteria to evaluate alternatives and determine the range of reasonable

alternatives. The list of alternatives to be screened was derived from the following Juneau Access Improvements Project documents:

- The 1994 Reconnaissance Engineering Report (DOT&PF, 1994)
- The 1997 Draft EIS (DOT&PF, 1997)
- The 1999 DOT&PF Preferred Alternative Report (PAR) (DOT&PF, 1999)

Alternatives were screened using four standard criteria: cost/technical feasibility and common sense; appropriateness and unnecessary variations; purpose and need; and environmental factors. These criteria used professional judgment, previous analysis, consideration of whether the alternatives, at a minimum, met some elements of the project purpose and need, and potential impacts to the specific social, physical and biological environments.

Alternatives Determined Not Reasonable

After the alternatives were screened against these four criteria, the following alternatives were eliminated from further consideration. Theses alternatives were found to not be technically or financially feasible, not practical, similar to other alternatives carried through the environmental analysis, and/or they did not meet the purpose of and need for the proposed project. A detailed discussion of these alternatives and reasons for their elimination from consideration is in Section 2.2 of the Final EIS.

- Taku River Valley Highway
- Goldbelt – Ferry Shuttle Service from Cascade Point
- Haines/Skagway Intertie
- East Lynn Canal Highway with Bridge to Haines
- East Lynn Canal Rail
- East Lynn Canal Highway to Katzehin with Berners Bay Shuttle Ferry (PAR Proposal 5B)
- East Lynn Canal Highway from Katzehin to Skagway (PAR Proposal 5C)
- East Lynn Canal Highway with Katzehin Terminal (Supplement Draft EIS Alternative 2)
- East Lynn Canal Highway with Berners Bay Shuttle (Supplemental Draft EIS Alternative 2A)
- East Lynn Canal Highway with Shuttle to Haines from Skagway (Supplemental Draft EIS Alternative 2C)
- Original Marine Alternative 4, Options A through D (original marine options presented in the 1997 Draft EIS)

Alternatives Considered Reasonable

The remaining alternatives discussed in this section at least partially met the four evaluation criteria. All reasonable alternatives are economically and technically feasible and meet the common sense test. All of the reasonable alternatives at least partially met three of the five purpose and need elements as defined for screening. None of the reasonable alternatives would result in social, physical or biological impacts substantial enough to consider the alternative not reasonable for analysis in the Final EIS.

Proposed Project

Alternative 2B East Lynn Canal Highway to Katzehin with Shuttles to Haines and Skagway

Following the Supplemental Draft EIS review period, DOT&PF selected Alternative 2B – East Lynn Canal Highway to Katzehin with Shuttles to Haines and Skagway, as the preferred alternative for the project.

Alternative 2B would construct a 50.5-mile highway from the end of Glacier Highway at Echo Cove around Berners Bay to Katzehin, construct a ferry terminal at the end of the new highway north of the Katzehin River delta, and run shuttle ferries to both Skagway and Haines from the Katzehin Ferry Terminal. The Haines to Skagway shuttle service would continue to operate, two new shuttle ferries would be constructed, and the *M/V Aurora* would be part of the three-vessel shuttle system. Mainline ferry service would end at Auke Bay in Juneau. The *M/V Fairweather* would be redeployed on other AMHS routes. The highway from Auke Bay to Katzehin and the shuttle ferry service from Katzehin to Haines and Skagway would become the NHS routes in Lynn Canal. This is the preferred alternative for the proposed project.

The highway would have a 30-foot pavement width, with two 11-foot-wide vehicle lanes and 4-foot shoulders with a minimum design speed of 40 miles per hour (mph). The design would meet American Association of State Highway and Transportation Officials (AASHTO) standards for a rural arterial except for the 4-foot shoulder width, which would be an exception to the 6-foot AASHTO standard.

All anadromous fish streams would be crossed by bridges. Anadromous fish streams that can be crossed with 130-foot or shorter bridges would not be designed with any structure or fill in the stream channel. Anadromous fish streams that require pier supports would have the minimum possible piers using at least 130-foot spacing, placed to reduce impact to the streams. Bridges across streams would also be designed to function as wildlife underpasses. The Lace and Antler rivers would both have 50-foot bridge extensions on each side to serve as wildlife underpasses. At the Katzehin River, an additional 100-foot section would be added to the north side of the bridge to function as a wildlife underpass.

Echo Cove to Antler River

Along the east shore of Berners Bay the highway would generally be located inland from the shore to avoid disturbing trees with eagle nests and filling beach areas. Up to Cascade Point the highway location would utilize the Cascade Point Road, widening and making grade improvements as necessary. The highway would avoid the U.S. Forest Service (USFS) Berners Bay cabin by passing approximately 400 feet uphill of the cabin site. Beyond the cabin, highway construction would involve short stretches of exposed rock cuts, with some cuts up to 200 feet in height.

Head of Berners Bay

The Antler, Gilkey, Lace, and Berners rivers form a large delta at the head of Berners Bay. The bridge over the Antler River would be 2,600 feet in length, and the bridge over the Lace River would be 2,750 feet in length. Both bridges would be constructed with enough clearance to permit air boats, the largest craft currently navigating these rivers, to pass under them.

The highway through this part of Berners Bay would be set back from the shore to avoid the intertidal habitat at the head of the bay, minimize impacts on wetlands, and reduce the length of

the river crossings. This portion of the alignment was designed to minimize impacts to wetland and upland habitats.

Lace River to Comet Landing

The highway from the west side of the Lace River to the beach near Independence Lake would cross a combination of heavily wooded uplands and forested wetlands. From Slate Cove to Point Sherman the highway would move inland to cross Point Saint Mary peninsula and avoid trees containing eagle nests near the shore. This segment would require fill hauled from other sections, as few rock cuts would be required. A combination maintenance station and rest stop would be located at Comet Landing at the existing Kensington mine facilities. Couer Alaska is moving its mine operations to the Jualin Mine area and has agreed to negotiate the use of its Comet facility.

Independence Lake to Katzehin River

North of Comet Landing the highway would be located close to the shore to avoid the trees with eagle nests on the hillsides, to mitigate avalanche zones, and to pass under steep cliffs. At avalanche zones with relatively high hazard indices, including north of Independence Lake and south of Yeldagalga Creek, the highway would be constructed on intertidal area. At all locations where highway construction would be near or below the high-tide line, riprap slope protection would be constructed. Rock cut areas would generate excess material, some of which would be sidecast into Lynn Canal at steep drop-offs.

Near Met Point and Gran Point the highway would be located further uphill to avoid the sea lion haulouts at these areas. The highway would be notched below existing ground level to maintain a natural screen between the haulouts and the roadway. Where this is not possible, screening structures would be constructed.

Katzehin River Area

The highway approach to the Katzehin River would be located close to the shore to avoid the steep cliffs above the high-tide line. Riprap slope protection would be used to protect the highway from erosion. The bridge across the Katzehin River would be 2,500 feet long and set high enough to allow airboats to pass underneath. The highway would pass behind the intertidal flats north of the Katzehin River to the location of the proposed Katzehin Ferry Terminal. This location would provide some southern wave protection, have access to deep water, and offer upland area for construction. Rubble-mound breakwaters would be sited to the north and south of a dredged mooring basin to provide protection from predominate northerly and southerly waves. Dredged material would be incorporated into the fill for terminal parking. The breakwater for the Katzehin Ferry Terminal would be designed with gaps to allow fish passage.

Other Reasonable Alternatives Considered in the Final EIS

Alternative 1, No Action Alternative

The No Action Alternative includes a continuation of mainline AMHS service in Lynn Canal as well as the operation of the fast vehicle ferry (FVF) *M/V Fairweather* between Auke Bay and Haines and Auke Bay and Skagway. The *M/V Aurora* would provide shuttle service between Haines and Skagway, beginning as early as 2005.

Alternative 3, West Lynn Canal Highway

This alternative would extend the Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove in Berners Bay. Ferry terminals would be constructed at Sawmill Cove in Berners Bay and William Henry Bay on the west shore of Lynn Canal, and shuttle ferries would operate between the terminals. A new 38.9-mile highway would be constructed between William Henry Bay and Haines with a bridge across the Chilkat River/Inlet connecting into Mud Bay Road. The highway design features for this alternative would be the same as those described for Alternative 2B in terms of design speed and typical section.

The *M/V Aurora* or similar vessel would operate as a shuttle between Haines and Skagway, but mainline ferry service would end at Auke Bay in Juneau. The *M/V Fairweather* would be redeployed on other AMHS routes. The highway from Auke Bay to Sawmill Cove, the shuttle ferry between Sawmill Cove and William Henry Bay, the highway from William Henry Bay to Haines, and the shuttle ferry from Haines to Skagway would become the NHS routes in Lynn Canal.

Marine Alternatives 4A through 4D

The marine alternatives would all include continued mainline ferry service in Lynn Canal, and the AMHS would continue to be the NHS route from Juneau to Haines and Skagway. These alternatives are based on a minimum of two mainline vessel trips per week, year-round, and Haines/Skagway shuttle service provided by the *M/V Aurora* or similar vessel. The *M/V Fairweather* would no longer operate in Lynn Canal. It would be redeployed to other AMHS routes. All of these alternatives would require construction of a new double-stern berth at Auke Bay.

Alternative 4A, FVF Shuttle Service from Auke Bay

This alternative would construct two fast aluminum catamaran ferries with a minimum speed of 30 knots (34 mph) to provide daily summer service from Auke Bay to Haines and to Skagway. Mainline service from Auke Bay to Haines/Skagway would continue, with two weekly trips estimated for both summer and winter service. The Haines/Skagway shuttle service would continue but the *M/V Fairweather* would no longer operate in Lynn Canal.

Alternative 4B, FVF Shuttle Service from Berners Bay

This alternative would extend Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove in Berners Bay using the same design standards described in Alternative 2B. A ferry terminal would be constructed at Sawmill Cove in Berners Bay. This alternative would utilize two high-speed aluminum catamaran ferries with a minimum speed of 30 knots (34 mph) to provide service from Sawmill Cove to Haines/Skagway in the summer and from Auke Bay to Haines and to Skagway in the winter. Mainline service from Auke Bay to Haines/Skagway would average two trips per week year-round. The Haines/Skagway shuttle service would continue but the *M/V Fairweather* would no longer operate in Lynn Canal.

Alternative 4C, Conventional Monohull Shuttle Service from Auke Bay

This alternative would construct two conventional monohull shuttle ferries to operate from Auke Bay to Haines/Skagway. These shuttles would operate at approximately the same speed as mainline vessels, with a minimum speed of 15 knots (17 mph) but would be dedicated dayboats that would run from Auke Bay to Haines or Skagway and then return. Mainline service from Auke Bay would continue at an average of two trips per week throughout the year. The

Haines/Skagway shuttle service would continue but the *M/V Fairweather* would no longer operate in Lynn Canal.

Alternative 4D, Conventional Monohull Shuttle Service from Berners Bay

This alternative would extend Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove in Berners Bay using the same design standards described for Alternative 2B. A twin-berth ferry terminal would be constructed in Sawmill Cove. Two conventional monohull shuttle ferries with a minimum speed of 15 knots (17 mph) would run from Sawmill Cove Ferry Terminal in summer: one to Haines and one to Skagway. In winter, only one of these shuttle ferries would operate, departing from Auke Bay Ferry Terminal. Mainline service would continue at an average of two roundtrips per week in Lynn Canal year round. The Haines/Skagway shuttle service would continue but the *M/V Fairweather* would no longer operate in Lynn Canal.

Evaluation of Alternatives Including Practicability

This section discusses the environmental impacts of each alternative in the order of least to most impacts to waters of the U.S., including wetlands. This section also evaluates how well the alternatives meet the purpose and need. Each alternative's potential impacts to wetlands and waters of the U.S. are discussed below and summarized in Table 1 along with a discussion of how each alternative meets the five elements of purpose and need. A summary of the ability of each alternative to meet the purpose and need elements is provided in Table 2.

Table 1
Impacts to Wetlands and Waters of the U. S.
for the Reasonable Alternatives

Factors	Alternatives						
	No Action	2B	3	4A	4B	4C	4D
Number Of River/Stream Crossings	0	46	32	0	5	0	5
Number Of Anadromous Streams Crossed	0	9	11	0	1	0	1
Wetland Fill (acres)	0	70.0	26.4	0	1.9	0	1.9
Wetlands Impacted in Berners Bay (acres)	0	20.4	1.9	0	1.9	0	1.9
Wetlands Impacted in William Henry Bay (acres)	0	0	3.3	0	0	0	0
Essential Fish Habitat Impacted (acres)	0	36.4	12.9	0	3.2	0	3.2
Essential Fish Habitat Impacted in Berners Bay Watersheds (acres)	0	0	3.3	0	3.3	0	3.3
Essential Fish Habitat Impacted in William Henry Bay Watersheds (acres)	0	0	0	0	4.8	0	0

Table 2
Comparison of Reasonable Project Alternatives to Purpose and Need

Factors	Alternatives						
	No Action	2B	3	4A	4B	4C	4D
Initial Capital Costs ($ million)	0	$258	$268	$131	$142	$111	$103
30-Year Life Cycle Costs[1] ($ million)	$267	$352	$375	$495	$482	$326	$313
Annual Maintenance and Operations Costs ($ millions)	$10.2	$9.0	$9.2	$16.7	$15.5	$11.7	$11.3
Net Present Value[2] ($ millions)	0	$70	$32	-$56	-$23	-$57	$3
Forecast Demand in 2038 (Annual Average Daily Traffic)	130	670	530	220	170	150	130
Project Summer Capacity to Skagway (vehicles per day)	71	636	408	223	227	149	203
Project Summer Capacity to Haines (vehicles per day)	96	544	1,008	229	284	154	208
Summer Travel Time – Auke Bay to Skagway (hours)	3.8/9.1	3.0	4.2	4.1/9.1	3.8/9.1	6.3/9.1	5.3/9.1
Summer Travel Time – Auke Bay to Haines[3] (hours)	3.5/7.1	2.5	2.9	3.8/7.1	3.5/7.1	6.0-7.1	5.0/7.1
Number of Ferry Round Trips/Week – Auke Bay to Skagway (Summer)	7	42	42	16	16	9	16
Number of Ferry Round Trips/Week – Auke Bay to Haines (Summer)	8	56	84	16	30	9	16
Net State Cost Over 30-Year Analysis Period ($ millions)	$61	$88	$86	$98	$94	$78	$70
State Cost per Vehicle	$51	$15	$19	$50	$39	$57	$39
Total / Out-of-Pocket User Costs – Juneau/Skagway[4]	$237 / $237	$77 / $51	$111 / $85	$261 / $261	$174 / $163	$237 / $237	$160 / $149
Total / Out-of-Pocket User Costs – Juneau/Haines[4]	$180 / $180	$60 / $34	$70 / $45	$198 / $198	$124 / $113	$180 / $180	114 / $103

Notes: [1]Life-cycle costs are the construction, refurbishment, and maintenance costs for a 5-year construction period and a 30-year operation period discounted to 2004 dollars. See the Final EIS Section 4.1.5 for an explanation of life-cycle cost analysis.
[2]Net present value is the sum of the user benefits minus net incremental project costs. User benefits are the reduction in user costs, which consist of travel time, AMHS fares, vehicle costs, and accident costs.
[3]The first number is based on travel on a shuttle ferry and the second number is the mainline ferry travel time.
[4]Total/Out-of-pocket cost for a family of four traveling in 19-foot vehicle. No Action cost is on a mainline ferry; FVF would be 10 percent higher. All other costs are based on the use of shuttle ferries.

Alternative 1, No Action Alternative

The No Action Alternative is the least environmentally damaging of all the alternatives (Table 1). Under this alternative, no new construction would be necessary.

Impacts – The No Action Alternative has no impacts to wetlands or waterways of the U.S. Because there are no direct or indirect impacts to wetlands or waterways of the U.S. under the No Action Alternative, there would be no cumulative impacts to these resources.

Purpose and Need – The No Action Alternative does not meet the purpose of the proposed project. Under current operational plans for the AMHS, the No Action Alternative is expected to provide a maximum capacity of 167 vehicles per day during summer in the Lynn Canal corridor. Forecast demand for the No Action Alternative is 130 annual Average Daily Traffic (ADT) in 2038. Unconstrained travel demand in the Lynn Canal corridor is currently estimated to be 500 annual ADT and is forecast to reach 900 annual ADT by 2038. Therefore, the No Action Alternative would only generate and accommodate about 14 percent of the forecast unconstrained demand in the corridor by 2038.

The No Action Alternative has restrictions on travel opportunity and flexibility in the Lynn Canal corridor. In the summer, there would be eight roundtrips per week between Auke Bay and Haines and seven roundtrips per week between Auke Bay and Skagway. The opportunity to travel would decrease to five roundtrips per week between Auke Bay and Haines or Skagway in the winter.

Travel times between communities in Lynn Canal remain unchanged from current conditions under the No Action Alternative. With a mainline ferry, travel times between Auke Bay and Haines or Skagway would be 7.1 and 9.1 hours, respectively. With a FVF, travel times between Auke Bay and Haines or Skagway would be 3.5 and 3.8 hours, respectively. Even with the time reduction of the FVF, travel between Auke Bay and Haines or Skagway would be about an hour longer than the minimum travel time with Alternative 2B.

The 30-year life cycle cost of the No Action Alternative is estimated to be $267 million, and the net cost to the state over the 30-year study period is estimated to be about $61 million. Annual maintenance and operating costs are about $10.2 million. The No Action Alternative has one of the highest state costs per vehicle ($51) of any of the project alternatives.

The overall lower net cost to the state of the No Action Alternative (when compared to build alternatives) would be the direct result of a lower level of service and higher out-of-pocket costs for travelers. The out-of-pocket costs for a family of four in a 19-foot vehicle would be $237 between Juneau and Skagway and $180 between Juneau and Haines traveling on a conventional monohull ferry, and about 10 percent more for travel on a FVF. While Alternatives 4A through 4C would have out-of-pocket costs similar or higher than the No Action Alternative, Alternatives 2B and 3 would have out-of-pocket travel costs that are less than half of the out-of-pocket costs of the No Action Alternative.

The No Action Alternative is not practicable; under this alternative approximately 85 percent of demand in Lynn Canal would not be accommodated. The small percentage of potential travelers that would actually use the system would incur very high travel costs, and it would require a high cost per vehicle subsidy from the state. Chapter 1 of the Final EIS provides more detail on why the current system does not meet the surface transportation needs in Lynn Canal. The No Action Alternative would result in less service than currently exists.

Alternatives 4A and 4C, Shuttle Service from Auke Bay

Alternative 4A and 4C differ only in the type of ferry that would be used. Alternative 4A would use FVFs while Alternative 4C would use conventional monohull ferries between Auke Bay, Haines, and Skagway. Alternatives 4A and 4C would require construction of a new double-stern berth at the Auke Bay Ferry Terminal.

Impacts – Modification of the Auke Bay terminal would require the removal of pilings, replacement of pilings, and placement of some fill in the bay, resulting in the disturbance of less than one acre of intertidal and subtidal habitat. These alternatives would have no direct or indirect impacts on wetlands or other waters of the U.S. Cumulative impacts from marine habitat loss resulting from Alternatives 4A and 4C in combination with other developments in Auke Bay would not measurably affect fish and invertebrate populations in the bay or in Lynn Canal. There are no cumulative impacts to wetlands or other waters of the U.S. resulting from Alternatives 4A and 4C. Alternative 4A and 4C are more environmentally damaging than the No Action Alternative but less damaging than the other reasonable alternatives.

Purpose and Need – Alternatives 4A and 4C are the build alternatives that least meet the purpose and need elements of the proposed project. Alternatives 4A and 4C would increase summer capacity (relative to the No Action Alternative) to 443 and 303 vehicles/day, respectively. However, forecast demand for these alternatives would remain about the same as for the No Action Alternative in 2038, at 220 annual ADT for Alternative 4A and 150 annual ADT for Alternative 4C. This represents only 24 and 17 percent of the forecast unconstrained demand in the Lynn Canal corridor in 2038.

Alternative 4A would essentially double the number of summer roundtrips/week between Auke Bay and Haines or Skagway (16/week). While this would improve travel opportunity and flexibility relative to the No Action Alternative, it still substantially limits travel in the Lynn Canal corridor. In addition, travel times under Alternative 4A would remain the same or be worse than the travel times for the No Action Alternative.

Alternative 4C would provide essentially no improvement in travel opportunity and flexibility in the Lynn Canal corridor. The number of summer roundtrips per week between Auke Bay and Haines would increase by one and between Auke Bay and Skagway by two. Travel times on mainline ferries would remain the same as the No Action Alternative, but because this alternative would use conventional monohull shuttle ferries, travel times on the shuttle between Auke Bay and Haines or Skagway would be almost twice as long as the No Action Alternative.

Alternatives 4A and 4C would have higher capital and operating costs for the state than the No Action Alternative. Although state revenues from fares would be higher for Alternatives 4A and 4C than for the No Action Alternative, they would not offset the increased cost of these alternatives. The cost per vehicle to the state of Alternative 4A would be essentially the same as the No Action Alternative and cost per vehicle would be higher than the No Action Alternative with Alternative 4C, even though these alternatives would transport a higher volume of traffic than the No Action Alternative. Therefore, the state would pay more for Alternatives 4A and 4C than for the No Action Alternative with little to no improvement in capacity, travel opportunity and flexibility, or travel time.

Out-of-pocket costs for travelers also would not improve with Alternatives 4A and 4C. Cost to the traveler under Alternatives 4A and 4C would be the same as the No Action Alternative when traveling on a mainline ferry. Cost to the traveler under Alternative 4A using a FVF would be about 10 percent higher than the No Action Alternative.

Relative to the No Action Alternative, Alternatives 4A and 4C would provide only small improvements in transportation within the Lynn Canal corridor while increasing state costs and providing no reduction in traveler's costs. These two alternatives do not meet the purpose and need for the proposed project and are therefore not practicable. Furthermore, in addition to not meeting purpose and need, Alternatives 4A and 4C would cost more than the small benefit they provide, another indication that they are not practicable. The 2004 to 2038 net present value of Alternatives 4A and 4C is negative at -$56 million and -$57 million, respectively. Net present value is a method of comparing the total user benefits minus the net costs of an alternative over and above the net cost of the No Action Alternative for a given period of time. Also, Alternative 4A has a 30-year life cycle cost of nearly one half billion dollars, an indication that this alternative is too costly regardless of consideration of who pays and who benefits.

Alternatives 4B and 4D Shuttle Service from Berners Bay

Marine Alternatives 4B and 4D differ only in that Alternative 4B would use FVFs, and Alternative 4D would use conventional monohull ferries. Both alternatives include the construction of a 5.2-mile highway from Echo Cove to Sawmill Cove where a ferry terminal would be constructed. Ferries would run between Sawmill Cove and Haines and Skagway.

Impacts – Most environmental impacts from Alternatives 4B and 4D would occur within the Berners Bay watershed. Construction of the highway would impact 1.9 acres of wetlands: 1.2 acres of palustrine forested wetlands and 0.7 acre of scrub-shrub wetlands. Of this total, 1.2 acres would be impacted by widening the existing road from Cascade Point to Echo Cove. The effects of filling these wetlands include reduced groundwater recharge and groundwater discharge/lateral flow functions, modification of the surface hydrologic control, and a reduction in wildlife habitat function with the loss of forest habitat. The highway would also impact 1.9 acres of other waters of the U.S. (rocky beach) at the proposed ferry terminal site.

The highway alignment has been adjusted several times in order to avoid wetlands to the greatest extent possible. Additional adjustments and modifications to the highway alignment and ferry terminal to further avoid impacts to wetlands and waters of the U.S. are not practicable.

Alternatives 4B and 4D would fill about 2 acres of intertidal and subtidal habitat for a new ferry terminal and dredge about 16,000 cubic yards (cy) of material from 1.2 acres of subtidal habitat for a mooring basin at the terminal. The seabed at the Sawmill Cove Ferry Terminal site consists almost exclusively of muds, sand, and gravels with some bedrock outcrops and occasional cobbles. Gravel content is highest in the intertidal zone and drops off rapidly in the subtidal zone, where sands and muds predominate. Vegetation cover is closely linked to the gravel component; therefore, cover drops off rapidly in the offshore. Video surveys of the site conducted in 2003 and 2004 indicated dense rockweed at the headlands on the north and south sides of the cove to about the zero foot tidal elevation. In the lower intertidal zone, rockweed was interspersed with two kinds of large-blade kelp. While this kelp is sparse, it is persistent and evenly distributed throughout the site. No eelgrass or stalked kelp is present at the site. Crabs use the subtidal and intertidal zones in Sawmill Cove and a variety of fish species have been observed at the site including yellowfin sole, rock sole, gunnels, snake prickleback, sculpin, and Pacific herring. The impact to 3.2 acres of intertidal and subtidal habitat (1.9 acres of fill and 1.3 acres of dredge), the replacement of natural substrates due to terminal construction, and the dredging of approximately 16,000 cy for a mooring basin would alter habitat usage in the disturbed area. Filling would result in the loss of habitat while dredging and ongoing use would substantially reduce habitat value in the dredged areas. The footprint of the ferry terminal would impact approximately 300 feet (0.06 mile) of shoreline at mean lower low

water, which is equivalent to less than two percent of the alongshore herring spawn length (approximately three miles) observed in Berners Bay in 2003.

At the Sawmill Cove Ferry Terminal, turbidity could be increased over ambient conditions for short periods as ferries maneuver into and out of the terminal. Short-term turbidity increases and propeller scour could displace some Pacific herring eggs and larvae in the immediate vicinity of the Sawmill Cove Ferry Terminal. National Marine Fisheries Service (NMFS), U.S. Environmental Protection Agency (USEPA), and Alaska Department of Environmental Conservation Office of Habitat Management and Permitting (OHMP) have expressed concern that a ferry terminal in Sawmill Cove and the resulting increased ferry traffic in Berners Bay could have adverse impacts on the Lynn Canal herring stock. Special measures such as no operation of the terminal during spawning season may be necessary to avoid impacts.

Maintenance and operations of the Sawmill Cove Ferry Terminal could cause temporary disturbance to Steller sea lions and humpback whales in Berners Bay. NMFS has expressed concern that a ferry terminal at Sawmill Cove would have potential adverse direct and indirect effects on these two threatened and endangered species, and indicated that selection of Alternative 4B or 4D would necessitate formal consultation with NMFS under Section 7 of the Endangered Species Act.

Alternatives 4B and 4D in combination with the Slate Cove Marine Terminal for the Kensington Gold Project and Goldbelt's Cascade Point marine terminal would result in filling and dredging of approximately 9 acres of intertidal and subtidal habitat in Berners Bay.

The Cascade Point Marine Terminal in combination with the Sawmill Cove Ferry Terminal under Alternatives 4B and 4D would impact 4.4 percent of the along-shore Pacific herring spawning habitat in Berners Bay, and operation of the terminals would displace some Pacific herring eggs and larvae in the immediate area. NMFS, USEPA and OHMP are also concerned that the cumulative impact on intertidal and subtidal habitat from these projects could have an adverse effect on the Lynn Canal herring stock.

Alternatives 4B and 4D in combination with the Kensington Gold Project and Goldbelt development may alter distribution of juvenile and adult forage fish in Berners Bay, which would pose potential risks to the Steller sea lions and humpback whales that forage in the bay. NMFS has expressed concern that ferry traffic in Berners Bay associated with these alternatives in combination with other reasonably foreseeable actions may adversely affect Steller sea lions and humpback whales and would require formal consultation under Section 7 of the Endangered Species Act to determine whether cumulative impacts would jeopardize the Lynn Canal populations of these species.

Alternatives 4B and 4D would have less environmental impacts in terms of acres of wetlands, marine waters, and upland habitat lost than would Alternative 2B. In terms of importance and quality of aquatic habitat, comments from both the NMFS and USEPA indicated that Alternative 4B and 4D would have greater aquatic impacts than Alternative 2B.

Purpose and Need – Like the marine Alternatives 4A and 4C, Alternatives 4B and 4D provide only a small improvement in transportation in the Lynn Canal corridor. Alternatives 4B and 4D would increase summer capacity relative to the No Action Alternative to 511 and 411 vehicles/day, respectively. At 270 annual ADT, the forecast demand for Alternative 4B in 2038 would only be 140 vehicles more than the No Action Alternative, and forecast demand for Alternative 4D would only be 70 vehicles more than the No Action Alternative (130 annual ADT). This represents only about 30 and 22 percent of the forecast unconstrained demand in the Lynn Canal corridor in 2038.

Travel opportunity and flexibility with Alternatives 4B and 4D would improve relative to the No Action Alternative. The alternatives would slightly more than double the number of ferry roundtrips/week (16) between Auke Bay and Skagway in the summer. Alternative 4B would increase the number of summer roundtrips/week between Auke Bay and Haines to 30, while Alternative 4A would double the roundtrips/week between Auke Bay and Haines (16) relative to the No Action Alternative. Alternatives 4B and 4D would still limit travel in the canal to typically two roundtrips/day, and at most a little over three roundtrips/day. It would be difficult for someone to travel between Juneau and Haines or Skagway and return to their original destination in one day.

Travel times would not improve with Alternatives 4B and 4D relative to the No Action Alternative. Travel times for Alternative 4B would be essentially the same as the No Action Alternative, and travel by shuttle ferry for Alternative 4D would take longer than shuttle ferry travel under the No Action Alternative.

Alternatives 4B and 4D would have higher capital and operating costs for the state than the No Action Alternative. For Alternative 4B, state revenues from fares would be higher than for the No Action Alternative, but would not offset the increased cost of this alternative to the state. Therefore, the state would pay more for Alternative 4B than the No Action Alternative, while individual user costs would be less. The net state cost for Alternative 4D would be about the same as the net state cost of the No Action Alternative because the increased state revenues for this alternative would essentially offset increased state costs relative to the No Action Alternative. Alternatives 4B and 4D would cost the state less per vehicle than the No Action Alternative because of the larger number of vehicles transported and the shorter summer ferry routes involved.

With regards to user costs, total and out-of-pocket costs for travelers would be about 30 to 40 percent less than the No Action Alternative. However, the one-way cost for a family of four with a 15 to 19-foot vehicle would still be over $100 to Haines and $150 or more to Skagway.

Alternatives 4B and 4D would provide a small improvement to capacity and travel flexibility and opportunity in Lynn Canal and a small reduction of travel costs. These alternatives would not improve travel time in the corridor. They would also increase overall state costs, although the state cost per vehicle would be reduced relative to the No Action Alternative. When viewed as a whole, Alternatives 4B and 4D are not practicable because they do not sufficiently meet purpose and need. The 2008 to 2038 net present value of Alternative 4B is -$23 million, indicating that the amount of benefits in travel do not out weight the cost. Alternative 4D has a small positive net present value of $3 million indicating that it has little merit relative to the No Action Alternative. These net present values are further indications that Alternatives 4B and 4D are not practicable. Also, Alternative 4B has a 30-year life cycle cost of $482 million, indicating it is too costly.

Alternative 2B: (Proposed Project) East Lynn Canal Highway with Shuttle Service from Katzehin to Haines and Skagway

Alternative 2B consists of a 50.5-mile highway from Echo Cove to a ferry terminal to the north of the Katzehin River. Shuttle ferries would transport vehicles and passengers between this terminal and Haines and Skagway.

Impacts – Alternative 2B would impact the largest acreage of wetlands and other waters of the U.S. of all the build alternatives, impacting a total of 70 acres of wetlands and 32 acres of marine waters of the U.S. An additional 4.4 acres of subtidal habitat would be impacted by

dredging at the Katzehin Ferry Terminal. Up to 1.4 million cubic yards of rock generated by highway construction would be sidecast in Lynn Canal between Comet and the Katzehin River.

The preliminary alignment for Alternative 2B has been adjusted several times to avoid wetlands and reduce the impacts to wetlands that could not be avoided. All but approximately one acre of the wetlands that would be impacted by Alternative 2B are forested wetlands. The wetland functions and values that would be affected by a highway include a reduction in groundwater recharge and discharge, lateral flow, surface hydrologic control, wildlife habitat functions, and riparian support.

The proposed highway would act as a partial barrier to the flow of shallow groundwater and surface water. Flow of surface water as well as shallow groundwater blocked by the highway embankment that would eventually flow to the surface would be conveyed downgradient by culverts under the highway embankment. Alteration of hydrology because of the highway embankment could result in corresponding changes to the vegetation and over time could affect wetland functions within and outside the highway right-of-way. The extent of this effect would depend on localized hydrologic patterns; however, effects would be minimized through the use of porous fill material and cross-drainage structures.

The Berners Bay region is an ecologically diverse area that supports several species of migratory birds, mammals, and plant species. Alternative 2B would require the fill of 19.7 acres of palustrine forested, and 0.7 acre of palustrine scrub-shrub wetlands in the Berners Bay area from Echo Cove to the Slate Creek drainage. The alignment was adjusted in 2005 to avoid all palustrine emergent wetlands (muskegs and fens).

The salt marsh at the head of Berners Bay and adjacent to the Lace and Berners rivers provides several important ecological functions, including surface hydrologic control, riparian support, and wildlife habitat functions. This wetland is rated very high for wildlife functions based on documented use by waterfowl, bald eagles, and marine mammals. Portions of this wetland provide fish habitat functions, depending on the elevation of the wetland. Regional ecological diversity is rated high, as this wetland receives substantial use by wildlife and this type of wetland is limited in the project study area. The alignment for Alternative 2B was adjusted in 2003 to avoid this wetland and further adjusted in 2005 to provide greater separation between the highway and the salt marsh area. No estuarine wetlands or other intertidal areas within Berners Bay would be impacted by Alternative 2B.

Adjacent to the Antler and Berners rivers and on the west shore of Berners Bay, the proposed alignment for Alternative 2B would fill primarily palustrine forested wetlands. The effects of this action would include modifying the groundwater recharge functions, the discharge/lateral flow functions, the surface hydrologic control functions, and the sediment retention functions of these wetlands. Large areas of similar habitat in the surrounding areas, and adequate ditching and drainage structures, would moderate losses of any of these functions. Wildlife habitat functions would be reduced due to the loss of forest, but an abundance of similar habitat is adjacent to the alignment. Wildlife underpasses would reduce the habitat impacts of the highway.

Beyond the Slate Creek drainage, Alternative 2B would impact approximately 48 acres of wetlands, all of which are palustrine forested wetlands. The alignment was adjusted in 2005 such that no palustrine emergent wetlands would be impacted. The functions affected by Alternative 2B in this area would be the same as those described for the palustrine forested wetlands along Berners Bay. Regional ecological diversity would not be substantially affected by this loss of wetlands, as this habitat type is common and widespread throughout the surrounding area. The proposed alignment avoids all emergent wetlands between Slate Cove and Sherman Point. Approximately 28 acres of the wetlands that would be impacted in this

subregion are the result of a mid-1990s alignment adjustment to avoid bald eagle nest trees. From about five miles north of Point St. Mary to Comet there is a narrow band of uplands along the shore. At the request of resource agencies, the alignment was shifted uphill into forested wetlands in order to avoid the numerous eagle nest trees in the upland area along the shore and to avoid intertidal fills.

From Sherman Point to the Katzehin River, Alternative 2B would affect just over 1 acre of palustrine forested wetland near Independence Lake. This would have little effect on wetland functions and values in the area.

The alignment of Alternative 2B was adjusted in 2005 to avoid filling estuarine emergent wetlands near the Katzehin River crossing and along the upper levels of the large flats on the north side of the delta. This salt marsh habitat on the Katzehin River outwash plain is important in terms of wildlife habitat functions. The current highway alignment and ferry terminal would fill approximately 5 acres of unvegetated intertidal shoreline and a small (0.2 acre), isolated estuarine emergent wetland area north of the Katzehin flats. The breakwaters for the Katzehin terminal would fill 2.7 acres of intertidal and subtidal area.

The highway for Alternative 2B would be constructed using the minimum-width fill footprint necessary for a stable road base in wetland areas. During final engineering design of the selected alternative, DOT&PF would continue to investigate ways to further minimize encroachment on wetlands. A compensatory mitigation plan has been developed to address the wetland losses associated with Alternative 2B which is discussed later in this evaluation.

The highway for Alternative 2B would result in the fill of 25.6 acres of intertidal and subtidal habitat, 24 acres of which are located between Sherman Point and the Katzehin River. About 6.4 acres of unvegetated intertidal and subtidal habitat and 0.2 acre of estuarine emergent wetlands would be filled for the Katzehin Ferry Terminal, including breakwaters.

Placement of in-water fill for highway construction would bury all intertidal and subtidal organisms at the specific fill locations and alter the habitat. Intertidal and subtidal invertebrate species are opportunistic, and the slopes of fill areas would likely be colonized by similar intertidal and subtidal species over a few seasons. However, because the amount and character of the area available for recolonization would be different from the undisturbed intertidal and subtidal zone, recolonization would not restore the community to its original state, reducing its value as foraging habitat for commercial fish species. Because of the small amount of intertidal and subtidal habitat that would be filled by Alternative 2B relative to the total available, this impact would not affect regional populations of any fish or invertebrate species.

Because the Katzehin Ferry Terminal would not be located near the river mouth, it would not interfere with anadromous fish passage in the Katzehin River. The breakwaters at the terminal would be constructed with gaps or large culverts to allow passage of juvenile fish near the shore.

The proposed Katzehin Ferry Terminal site consists of a boulder and cobble beach with a small estuarine emergent wetland. There is a boulder-cobble-gravel substrate in the upper subtidal/lower intertidal zone and a muddy substrate in the lower subtidal zone at this site. Vegetation is present in the shallow intertidal zone, and stalked kelp is present in one part of the lower intertidal zone; however, no seabed vegetation was seen in video imagery of the lower subtidal zone. Due to the steepness of the beach, potential wave exposure, and lack of subtidal vegetation, the proposed Katzehin Ferry Terminal site is less important to commercial fish and crab species than other more protected coves. For this reason, the loss of 6.4 acres of unvegetated intertidal and subtidal habitat and 0.2 acre of estuarine emergent wetland, as well

as dredging impact to 4.4 acres from construction of a new ferry terminal would not measurably alter fish populations in the Katzehin River delta area or Lynn Canal. Operations of this ferry terminal would not impact Pacific salmon, Pacific herring, or eulachon because of the spatial separation of the terminal from the Katzehin River and other areas of Lynn Canal important to these species.

Alternative 2B would have greater environmental impacts than the No Action and marine alternatives.

Purpose and Need – Of all the build alternatives, Alternative 2B best meets the purpose and need for the project. This alternative would increase summer capacity in the Lynn Canal corridor to 1,180 vehicles per day initially, and to 1,276 by 2028. This is the highest capacity of any reasonable alternative. Forecast demand for Alternative 2B in 2038 is estimated to be 670 annual ADT or about 74 percent of the forecast unconstrained demand in the corridor of approximately 900 ADT.

Flexibility and opportunity for travel with Alternative 2B would be limited by the ferry link between Katzehin and Haines or Skagway. However, the opportunity for travel would be increased substantially over the No Action Alternative, with an average of six roundtrips/day (42 roundtrips/week) between Katzehin and Skagway and eight roundtrips/day (56 roundtrips/week) between Katzehin and Haines in the summer. Travel time would be the shortest of all the build alternatives. It would take about 2.5 hours to travel from Auke Bay to Haines and 3 hours to travel from Auke Bay to Skagway under Alternative 2B, making the trip between these points about three times faster than a mainline ferry and about an hour faster than a FVF when including check-in and loading time.

Alternative 2B would have a net state cost over 30 years of $88 million, approximately $27 million more than the No Action Alternative. However, because of the volume of traffic forecast to use this alternative, it would have the lowest cost per vehicle to the state ($15) of any project alternative including the No Action Alternative. Alternative 2B has the lowest 30-year life cycle cost of either of the highway alternatives and a lower life cycle cost than the marine Alternatives 4A and 4B. At $9 million, it also has the lowest annual maintenance and operating costs of all the project alternatives including the No Action Alternative.

Alternative 2B would also have the lowest cost to the traveler of any project alternative. Total cost of travel for a family of four in a 19-foot vehicle between Juneau and Haines or Skagway would be $60 and $77, respectively, with Alternative 2B, or about 33 percent of the cost of travel on a mainline ferry under the No Action Alternative. The total cost of Alternative 2B to the traveler would be approximately 30 percent less than travel on a FVF under the No Action Alternative. Total costs include vehicle depreciation, registration fees, insurance, etc. Out-of-pocket costs, fuel and ferry fares are often the cost that influence travel decisions. Alternative 2B would have out-of-pocket costs ranging from 17 to 21 percent of the No Action Alternative.

Alternative 2B is a practicable alternative; it meets all the purpose and need elements. Furthermore, the substantial improvement in user benefits of Alternative 2B compared to costs in apparent in the net present value of $70 million for this alternative. This is the highest net present value of any of the build alternatives.

Alternative 3, West Lynn Canal Highway

Alternative 3 consists of a 5.2-mile highway from Echo Cove to Sawmill Cove in Berners Bay, new ferry terminals in Sawmill Cove and William Henry Bay, and a 38.9-mile highway from

William Henry Bay to Haines. The highway would include a bridge over the Chilkat River/Inlet that connects to Mud Bay Road.

Impacts – Alternative 3 would result in the loss of 26.4 acres of wetlands and 12.9 acres of other aquatic habitat on the east and west side of Lynn Canal. The preliminary alignment for highway segments of the alternative has been adjusted several times to avoid wetlands and reduce the impacts to wetlands that could not be avoided. About 22 acres, or 83 percent, of the wetlands impacted by Alternative 3 would be forested wetlands. The wetland functions and values that would be affected by a highway include a reduction in groundwater recharge and discharge, lateral flow, surface hydrologic control, wildlife habitat functions, and riparian support.

Alternative 3 would require the fill of 0.7 acre of palustrine scrub-shrub and 1.2 acres of palustrine forested wetlands between Echo Cove and Sawmill Cove. Most of this fill in palustrine forested wetlands would result from widening the existing Cascade Point Road. Impacts to wetland functions would primarily consist of reduction in wildlife habitat and riparian support, and alteration of surface hydrologic control and groundwater discharge functions.

From William Henry Bay to the Davidson Glacier outwash plain, Alternative 3 would impact 18.7 acres of palustrine forested wetlands in five locations. The effects of filling these wetlands would include reduced groundwater recharge and groundwater discharge/lateral flow functions, modification of the surface hydrologic control, and a slight reduction in wildlife habitat function with the loss of forest habitat. One forested wetland north of the Sullivan River is rated high for nutrient transformation/export due to the amount of surface water flowing through it. Alternative 3 would fill a total of 1.9 acres of palustrine emergent wetlands in two locations of this segment. Impacts to functions of these wetlands would affect groundwater discharge and lateral flow.

Most of the small wetlands associated with kettle ponds on the Davidson Glacier outwash plain would be avoided by the proposed Alternative 3 alignment. However, two small isolated emergent wetlands and a small pond with floating vegetation would be partially filled by the highway. These areas are small and would affect approximately 0.4 acre of palustrine emergent wetlands as well as 0.2 acre of palustrine aquatic bed. North of the Davidson River crossing, a 1.1-acre fill would be required across a portion of a newly created beaver pond. Fill of portions of the two isolated emergent wetlands and the pond would primarily reduce the sediment retention functions and the nutrient transformation/export function of these wetlands. Wildlife habitat functions would also be reduced slightly, but these wetlands are quite small and there are many similar wetlands in the area. Fill of a portion of the beaver pond would reduce the wildlife habitat functions of this wetland to a small degree. Impacts to beavers as a result of this fill would be minor.

North of the Davidson Glacier, Alternative 3 would intersect the uphill portion of a small area of palustrine forested wetland. At this location, the highway would reduce the groundwater recharge function, groundwater discharge/lateral flow function, and the surface hydrologic control function of wetlands.

The proposed highway would act as a partial barrier to the flow of shallow groundwater and surface water. The surface water or shallow groundwater blocked by the highway embankment would eventually flow to the surface and be diverted by ditches to culverts under the highway embankment. Alteration of hydrology due to the highway embankment could result in corresponding changes to the vegetation and over time, these changes could affect wetland functions within and outside the highway right-of-way. The extent of this effect would depend on localized hydrologic patterns; however, effects could be minimized with porous fill material and cross-drainage structures.

At two locations, the proposed alignment is forced toward the beach due to steep terrain. In these areas, fill in intertidal habitats includes 0.4 acre of salt marsh and 0.09 acre of beach bar habitat. The salt marsh has high habitat value for fish, migrating waterfowl, and terrestrial animals. However, because of the small area that would be filled by the project, this impact is not likely to have population-level effects on any species. The small area of beach bar fill would result in the loss of some habitat for benthic organisms that form the base of the food web for some commercial fish species but would not have population-level effects on any marine species in Lynn Canal.

While Alternative 3 would impact fewer acres of wetlands and marine waters than Alternative 2B, the impacts are greater in that they are to higher value habitat that is limited in the area. The Sawmill Cove Ferry Terminal for Alternative 3 would have the same impacts on waters of the U.S. in Berners Bay as Alternatives 4B and 4D discussed above. NMFS, USEPA, and OHMP have expressed concern that a ferry terminal in Sawmill Cove and the resulting increased ferry traffic in Berners Bay could have adverse impacts on the Lynn Canal herring stock. Special measures such as no operation of the terminal during spawning season may be necessary to avoid impacts. A three to four week closure, in late April/early May, would make Alternative 3 less practicable.

Maintenance and operations of the Sawmill Cove Ferry Terminal could cause temporary disturbance to Steller sea lions and humpback whales in Berners Bay. NMFS has expressed concern that a ferry terminal at Sawmill Cove would have potential adverse direct and indirect effects on these two threatened and endangered species, and indicated that selection of Alternative 3 would necessitate formal consultation with NMFS under Section 7 of the Endangered Species Act.

The intertidal zone at William Henry Bay is a rich and biologically diverse area. The ferry terminal proposed for this site consists of a sand, gravel, cobble, and boulder beach changing to boulders towards the north, away from the head of the bay. This site exhibits high value as fish habitat. Salmon, sculpins, and other small fish were observed in the intertidal zone and numerous clumps of fish eggs, likely sculpin eggs, were found in crevices and tidal pools in the lower intertidal zone. Crabs were occasionally observed on subtidal underwater camera surveys and flatfish were common throughout the subtidal survey area at depths greater than 23 feet. The proposed terminal site is habitat used for spawning, rearing, and growth to maturity by sculpin and other fish species.

The terminal would cover 800 feet of shoreline, or about 6 percent of the available shoreline in William Henry Bay. The loss of 4.8 acres of the intertidal and subtidal zones at the proposed terminal site would have a small impact to fish and crab species, as similar value intertidal and subtidal fish habitat is extensive in William Henry Bay. Although the character of the terminal substrate would differ from natural habitat, benthic organisms would recolonize it and provide some recovery of the habitat.

Due to its impacts to Berners Bay and William Henry Bay, Alternative 3 is more damaging to the aquatic environment than Alternative 2B. Also, the cumulative impacts for Alternative 3 would be the same as for Alternatives 4B and 4D. Alternative 3 in combination with the Kensington Gold Project and Cascade Point development would disturb marine habitat and increase marine traffic in Berners Bay, possibly resulting in adverse impacts on the Lynn Canal herring stock and forage fish important to Steller seal lions and humpback whales, as well as directly impacting Steller sea lions and humpback whales.

Purpose and Need – Alternative 3 meets many of the elements of purpose and need for the project but not to the same extent as Alternative 2B. Alternative 3 would increase summer

capacity in the Lynn Canal corridor to 1,008 vehicles per day. Forecast demand for Alternative 3 in 2038 is estimated to be 530 annual ADT or about 59 percent of the forecast unconstrained demand in the corridor. In addition to generating and accommodating approximately 20 percent less traffic than Alternative 2B, Alternative 3 would have disproportional impacts to Skagway. Due to the second ferry trip required, Alternative 3 would have less than 50 percent of the Skagway traffic generated under Alternative 2B. This in turn would affect trip frequency.

Flexibility and opportunity for travel with Alternative 3 would be limited by the ferry links between Sawmill Cove and William Henry Bay and Haines and Skagway. However, the opportunity for travel would be increased substantially over the No Action Alternative, with an average of 12 roundtrips/day (84 roundtrips/week) between Sawmill Cove and William Henry Bay and 6 roundtrips/day (42 roundtrips/week) between Haines and Skagway in the summer. Travel time would be longer than for Alternative 2B but it would be an improvement over travel times on mainline ferries under the No Action Alternative. It would take about 2.9 hours to travel from Auke Bay to Haines and 4.2 hours to travel from Auke Bay to Skagway under Alternative 3. Travel to Haines would take about a half hour less than traveling on a FVF under the No Action Alternative. Travel to Skagway would take at least a half hour more than traveling on a FVF under the No Action Alternative due to the required two shuttle links separated by 44 miles of highway.

Alternative 3 would have a net state cost over 30 years of $86 million, approximately $25 million more than the No Action Alternative and $2 million less than Alternative 2B. Because of the volume of traffic forecast to use this alternative, it would have a much low cost per vehicle to the state ($18) than the No Action Alternative ($45), but not as low a cost as Alternative 2B. Alternative 3 has a 30-year life cycle cost of $375 million. At $9.2 million, it has a lower annual maintenance and operating cost than the No Action Alternative.

Travel costs would be higher for Alternative 3 than Alternative 2B because of the longer ferry links; however, it would be substantially less than the No Action Alternative. Total cost of travel for a family of four in a 19-foot vehicle between Juneau and Haines or Skagway would be $70 and $111, respectively. This would be about 39 percent of the cost of travel on a mainline ferry between Juneau and Haines under the No Action Alternative, and 47 percent of the No Action Alternative cost to travel between Juneau and Skagway. The total cost of Alternative 3 to the traveler would 35 to 43 percent of the costs to travel on a FVF under the No Action Alternative. Out-of-pocket costs would range from 23 to 36 percent of the No Action Alternative costs.

The net present value of Alternative 3 for the period from 2008 to 2038 is estimated at $32 million, roughly half the net present value of Alternative 2B. Alternative 3 would provide a substantial improvement in transportation capacity in Lynn Canal relative to the No Action Alternative, but would have less travel demand and higher costs to travelers than Alternative 2B. With its longer travel time and higher user costs to and from Skagway, lower traffic and reduced trip frequency to and from Skagway, higher life cycle costs ($23 million greater than the proposed project), and lower net-present value ($38 million less than the proposed project), Alternative 3 is at best, marginally practicable. Also, as explained above, Alternative 3 would have greater overall adverse impacts to aquatic ecosystems.

Avoidance and Mitigation Measures of Proposed Project

DOT&PF has designed Alternative 2B to avoid and minimize impacts to wetlands and other waters of the U.S. to the maximum extent practicable. The following mitigation plan has been developed for the proposed alternative, Alternative 2B.

Final Design and Construction

The first consideration in mitigation is avoidance. Over the past decade to the present, DOT&PF has made many design changes, including highway alignment and ferry terminal layout changes, to avoid or reduce impacts to habitat, including anadromous streams, wetlands, bald eagle nest trees, sea lion haulouts, and marine waters. Recently, the highway alignment across the Berners/Lace and Antler rivers has been moved upstream as far as practicable to reduce impact to eulachon spawning areas and create greater separation between the highway and estuarine wetlands. Also, several alignment changes were made to avoid all palustrine emergent and all but 0.2 acre of estuarine emergent wetland. The proposed alignment impacts 22.5 fewer acres of wetlands than the 2005 Supplemental Draft EIS alignment. During final engineering design of Segment 6, DOT&PF will investigate additional measures to reduce the amount of material sidecast into subtidal areas. Within wetlands and other sensitive areas, the highway will be designed with a low-profile embankment to limit embankment heights and side slopes so that the fill footprint is minimized. Culverts will be installed in appropriate locations to maintain natural flow patterns for surface water. Roadway swales will be designed to keep surface water within the natural drainage basins. The breakwater for the Katzehin Ferry Terminal will be designed with gaps or culverts to allow fish passage.

All anadromous fish streams will be crossed by bridges. Anadromous fish streams that can be crossed with 130-foot or shorter bridges will not include any structure or fill in the stream channel. Anadromous fish streams that require pier supports will have the minimum possible piers using at least 130-foot spacing, placed to reduce impact to the streams. Bridges across streams will also be designed to function as wildlife underpasses where practicable. The Lace and Antler rivers will both have 50-foot bridge extensions on each side. At the Katzehin River, an additional 100-foot section will be added to the north side of the bridge. These bridge extensions will also reduce impacts to riparian wetlands. Additional wildlife underpasses will be located at the two identified major brown bear migration corridors on the isthmus between the Antler and Lace rivers. The Jualin Mine Tram and the Comet/Bear/Kensington Railroad will also be bridged to avoid impacts to these historic properties.

The roadway within 3,000 feet of Gran Point and Met Point will be designed to include through-cuts and walls to avoid lines of sight between the haulouts and the highway and to discourage human disturbance of sea lions. Prior to beginning construction, NMFS will review and approve final detailed construction plans in these zones, including planned vegetation removal and blasting requirements. This review will include an on-site tour of the area by NMFS. As large of a buffer as possible of undisturbed vegetation will be retained between the highway and the Gran Point and Met Point haulouts. To further protect marine mammals from human disturbance, no boat launches or other boat access points will be included in the project or constructed at a later date. No tidelands permits for boat launches or other boat access will be granted to adjacent landowners unless NMFS concurs that the activities are not likely to adversely effect sea lions.

The highway alignment will be located as far from the existing USFS cabin in Berners Bay as the topography allows with a minimum of 100 feet from mapped use-areas. A handicap-accessible trail will be designed and constructed from the highway parking area to the cabin. To mitigate impacts to remote use areas, DOT&PF will also construct another wilderness cabin in Berners Bay at a location determined in coordination with the USFS. A visitor facility with restrooms will be included in the design of the maintenance facility at Comet. Construction workers transported to the site for work purposes will be prohibited from hunting or trapping on-site before or after their work shift. Any construction workers located at a construction camp would be prohibited from hunting from the construction camp.

Construction Procedures – DOT&PF and the contractor will both file Notices of Intent to use the National Pollution Discharge Elimination System (NPDES) General Permit for stormwater discharge during construction. The construction contractor will be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) that describes the Best Management Practices (BMPs) to be used to avoid water quality impacts. This plan will be made available to Alaska Department of Environmental Conservation (ADEC) for review and comment and approved by DOT&PF before being included in project construction plans. The SWPPP will include procedures for locating and installing silt fences and sediment basins and installation of temporary erosion controls such as mulching and hydroseeding. As required by the General Permit, DOT&PF and the contractor would monitor stormwater discharge from the project and adjust the SWPPP as necessary and maintain records of inspections and any SWPPP changes.

The construction contractor will provide plans for DOT&PF approval for any construction camps. These plans will include procedures to avoid water quality impacts from wastewater discharges and stormwater runoff from the camps. They will also include procedures for handling food, trash, and other potential wildlife attractants. Construction camps, staging sites, borrow pits, and waste areas will be located in upland areas and stabilized during and after use to avoid water quality impacts.

Known archaeological and historical resources in the vicinity of the project will be identified on the construction plans provided to the contractor. Cultural resources within the project limits will be flagged in the field to ensure that equipment operators do not inadvertently damage these resources. Before and after photographs will be provided to the State Historic Preservation Officer (SHPO) for crossings of the Jualin Tram and the Kensington/Comet/Bear Railroad.

Before clearing takes place, DOT&PF will conduct surveys of wolf dens, amphibian breeding ponds, and bald eagle, trumpeter swan, and Queen Charlotte goshawk nests in appropriate habitats. Clearing will be avoided to the extent practicable at the sites of active wolf dens, trumpeter swan nests, Queen Charlotte goshawk nests, or amphibian ponds. Construction in the vicinity of bald eagle nests will be coordinated with the U.S. Fish and Wildlife Service (USFWS) to develop earth moving and blasting plans and to assess the need for nest monitoring during construction. During construction, DOT&PF and USFWS will assess the sufficiency of natural screening between the highway and any eagle nests below the elevation of the road within 330 feet of the edge of the roadway. During construction, DOT&PF and USFWS will evaluate the need to provide support to any nest tree or tree in the vicinity of the nest tree against windthrow.

Staking will be done at the planned outside limits of disturbance prior to construction to ensure that impacts are limited to that area. No grubbing will be done outside of the fill footprint and only the minimum clearing required for safety will be done beyond the toe of slope. During construction, slope limits in wetland areas will be separately identified to ensure that workers are aware of wetlands and the need to avoid impacts beyond the slope and clearing limits.

Only clean mineral soil or rock excavated from construction limits or immediately adjacent to the highway will be used for the highway and Katzehin ferry terminal embankments. No soil will be imported to the project site. Any soil within the project boundaries identified as containing invasive species will not be transported to other areas of the project. Construction equipment will be steam cleaned prior to use on the project to reduce the potential for introducing invasive species.

Rock will be used to stabilize the toes of slopes at ponds and stream crossings. Grass seed will be placed on all slopes containing soil. To the extent practicable, shot rock slopes would be covered with overburden and seeded to reduce their visibility. To protect the integrity of the

natural plant communities, plant species indigenous to the area will be used for vegetating road slopes, except that non-invasive annual grasses may be used to provide initial soil cover. Only seed mixtures certified for purity will be used to seed exposed soils. In moose habitat areas, low-growing grasses and fertilizer will be used to avoid establishment of shrubs that would encourage moose to browse near the highway.

To the extent practicable, beach access points will be chosen to take advantage of existing landings, previously disturbed sites, or locations of planned fill. Additional necessary access points identified during construction will be sited to minimize impacts to habitat and will be restored to pre-existing condition after project completion. No temporary barge landings will be constructed within 3,000 feet of the Gran Point and Met Point haulouts.

Pile driving at the Katzehin ferry terminal and the Antler, Lace, and Katzehin rivers will be done with vibratory hammers to the extent possible. If vibratory hammers cannot be used, NMFS will be provided with an explanation of why they cannot be used before alternative measures are implemented. During construction, helicopters will not operate within 3,000 feet of the Gran Point and Met Point haulouts when occupied by sea lions.

Construction Timing and Monitoring – In-water work for fill placement, dredging, or pile driving will be timed to avoid impacts to spawning and migrating fish species. In-water work at the Antler, Lace, and Katzehin rivers will not occur between March 15 and June 15 to protect out-migrating salmonids and spawning eulachon.

No construction will occur within 330 feet of an eagle nest, and no blasting will occur within 0.5 mile of an eagle nest, during the March 1 to May 31 nest selection period unless agreed to by USFWS. If a nest is active, no construction or blasting will occur within these distances until after August 31, unless the USFWS approves a plan to avoid impacts while operations continue.

No construction will occur in April or May within one mile of identified harbor seal haulouts. Monitoring for marine mammals will be conducted during pile driving at the Katzehin Ferry Terminal and for the Katzehin, Antler, and Lace river bridges. Pile driving will be halted if any marine mammals come within 660 feet (200 meters) of the activity.

No construction will occur within 3,000 feet of Gran or Met Point before a monitoring and construction plan is submitted for review to NMFS. The review will include an on-site tour. Construction at Gran Point will not occur until NMFS reviews the results of construction and monitoring at Met Point. Construction within 1,000 feet of Met Point or 3,000 feet of Gran Point will occur during periods when sea lions are absent, unless authorized by NMFS. Trained observers will be employed to ensure that no sea lions are present during work within 1,000 feet of the haulouts. Monitoring will occur during construction within 3,000 feet of the Gran Point and Met Point haulouts to ensure noise levels above background (45 dBA) or vibration levels above 0.05 inches per second (ips) occur at the haulouts when they are occupied.

If goat monitoring identifies areas where pregnant nannies congregate in late winter or early spring, DOT&PF will coordinate with Alaska Department of Fish and Game (ADF&G) to avoid construction from January through April in those areas to the extent feasible.

In the event that a previously unknown cultural resource is discovered during construction, work in the area will cease. DOT&PF will contact the SHPO and develop an approved plan before proceeding.

Pre- and Post-Construction Monitoring

To facilitate game management after construction of the highway, DOT&PF will fund bear, moose, goat, and wolverine surveys to determine population characteristics. The goat study will be of 4-year duration, and brown bear, moose, and wolverine study of 3-year duration. The brown bear study will include recommendations for a long term monitoring study to determine the effectiveness of wildlife underpasses for this species. DOT&PF will continue to fund aerial surveys of bald eagles for a period of five years following project construction. Also, video monitoring at the Gran Point haulout and aerial and ground monitoring at the Met Point haulout will continue for a period of five years following construction. Annual reports on the Steller sea lion monitoring during and after construction will be provided to NMFS and a final report will be provided to NMFS following completion of the monitoring period.

Maintenance and Operations

Shuttle ferries will have wastewater holding tanks that will discharge to wastewater treatment facilities or wastewater will be treated onboard before discharge. DOT&PF will maintain public restrooms at the Comet maintenance facility. The restrooms at the Katzehin Ferry Terminal will be available to highway users as well as ferry travelers. DOT&PF will also maintain constructed pullouts including collection of refuse from containers supplied at those pullouts. Helicopter operations during avalanche control will minimize activity within a 3,000-foot radius around the Gran Point and Met Point haulouts and will not be conducted within 1,000 feet of the haulouts when occupied. After the highway is open, no tidelands permits for boat launches or other boat access will be granted to adjacent landowners unless NMFS concurs that the activities are not likely to adversely effect sea lions.

Compensatory Mitigation

As discussed previously, Alternative 2B will result in the loss of 70 acres of wetlands and 32 acres of unvegetated intertidal and shallow subtidal habitat. The wetlands affected by the project consist of 69.1 acres of palustrine forested, 0.7 acre of palustrine scrub-shrub, and 0.2 acre of estuarine emergent wetlands.

The eastern side of Lynn Canal where Alternative 2B is located is largely undeveloped and does not contain substantial areas of degraded wetland, intertidal, or subtidal habitat. Therefore, it is not practicable to mitigate project impacts on wetlands and marine habitats by restoring similar degraded habitat within the project area. For this reason, DOT&PF proposes to provide a combination of on-site out-of-kind mitigation and in-lieu fee compensation to mitigate project impacts on wetlands and other waters of the U.S. and unvegetated intertidal and subtidal habitat.

The forested wetlands that would be impacted generally have a moderate to low wildlife habitat function. The principal functions of these wetlands are groundwater discharge, lateral flow, and nutrient transport/export. They are the most common wetland habitat on the east side of Lynn Canal (about 60 percent of total wetlands), covering about 6,720 acres. The scrub-shrub wetland that would be impacted provides low quality wildlife habitat. Its principal functions are sediment retention, groundwater recharge and discharge, and lateral flow. This wetland type covers about 2,133 acres on the east side of Lynn Canal and is the second most common wetland habitat type (about 19 percent) in the region (scrub-shrub wetlands adjacent to fish streams are often important for riparian support; however, the scrub-shrub wetland that would be impacted is not adjacent to a stream). To mitigate for impacts to palustrine wetlands, DOT&PF would construct a wildlife underpass at the identified bear travel corridor in the northwest part of the peninsula between the Lace and Antler rivers. This wildlife underpass,

estimated to cost $440,000, would provide a connection between the habitat east of the highway and the estuarine emergent wetlands west of the highway.

To establish an appropriate level of in-lieu fee compensation for estuarine emergent wetlands and unvegetated intertidal and subtidal habitat, DOT&PF used the in-lieu fee values developed for the Ketchikan Airport West Taxiway Construction project (Federal Aviation Administration [FAA] and DOT&PF, 2002) and the Gravina Access Project (FHWA and DOT&PF, 2004). The Ketchikan Airport project involved the first major use of in-lieu fee by DOT&PF in Southeast Alaska. The evaluation examined mitigation on other projects in Southeast Alaska, wetland values established by the Greatland Trust wetland bank in Anchorage[1], and property values. It also involved substantial coordination among DOT&PF, Alaska Department of Fish and Game (ADF&G), USFWS, NMFS, U.S. Army Corps of Engineers (USACE), and ADEC. DOT&PF and FHWA used the same basis for in-lieu fee compensation on the Gravina Access project.

Greatland Trust assigned a value of $2,800 per acre for low value wetlands and $50,000 per acre for moderate/high value wetlands. Because there are no other functional value-based models in Alaska, DOT&PF adapted the Trust's range of values for several southeast projects. Forested, scrub-shrub and wetland muskegs in areas where these wetland types are abundant have been assigned the $2,800 per acre value. Unvegetated marine intertidal and subtidal areas have been assigned an intermediate value of $20,000 per acre. The highest value of $50,000 per acre has previously been assigned to high value freshwater habitat such as ponds.

To account for increases in real estate costs during the period after the original per acre values were established, and to insure that the in-lieu fee per acre will allow a two to one compensatory ratio when acquiring similar land, the original values were increased by 20 percent for the Juneau Access Improvements Project. Note that this increased per acre value, if applied to the forested and scrub-shrub wetlands impacted would result in an in-lieu fee payment of $235,200. The mitigation proposed would cost more than would an in-lieu fee payment.

Unvegetated intertidal and shallow subtidal habitats affected by Alternative 2B have been assigned a value of $24,000 per acre. These EFH areas impacted by Alternative 2B provide low to moderate foraging habitat for juvenile and adult fish and marine invertebrates.

Estuarine emergent wetlands have been assigned the highest value of $60,000 per acre. The estuarine emergent wetland that will be impacted by Alternative 2B has high wetland function ratings for wildlife habitat, riparian support, regional ecological diversity, and ecological replacement cost. This type of EFH is relatively limited on the east side of Lynn Canal, representing only about 5 percent of all the wetlands in the region and covering a total of about 574 acres.

Based on these acreages and values, DOT&PF will provide a total of $780,000 in-lieu fee compensation for impacts to wetlands and other waters of the U.S. This payment will be used to purchase parcels containing high value wetlands and intertidal habitat in the project vicinity threatened by development and/or to fund habitat restoration/enhancement projects. Currently available parcels and projects are being investigated. Potential preservation parcels include private land within Point Bridget State Park, estuarine wetlands in the Vanderbilt and Switzer Creek intertidal areas (in Juneau), and land adjacent to Sawmill Creek in Haines. Potential restoration/enhancement projects include a Pullen Creek culvert replacement project in Skagway and a Lynn Canal subtidal enhancement project. If no parcels or projects have been agreed to before construction starts, the money would be deposited with a non-governmental land trust with stipulations that the funds be used as described above.

[1] There are no wetland banks in Southeast Alaska.

Avoidance and Mitigation Determined Not Practicable

DOT&PF has considered the following suggested avoidance and mitigation measures and found them to not be practicable.

DOT&PF has adjusted the highway alignment for Alternative 2B several times to reduce impacts to wetlands. The current alignment, including the Katzehin Ferry Terminal, avoids all palustine emergent wetlands, all but 0.2 acre of estuarine emergent and 0.7 acres of palustrine scrub-shrub wetlands, and most riparian wetlands. Further avoidance of forested wetlands is not practicable. Steep terrain and the need to avoid eagle nest trees prevent shifting the alignment further out of wetlands between Echo Cove and Slate Creek. The largest impact to forested wetlands would occur in the area between Slate Creek and Point Sherman. Moving the alignment toward the shore to avoid some of the 48 acres of forested wetlands that would be impacted in this section is not practicable. A shore alignment would avoid approximately 28 acres of forested wetland impact but would impact about 32 additional acres of marine habitat and 11 additional eagle nest tree buffers. The avoidance of beach fringe in this area is supported by resource agencies.

Avoiding fill in wetlands through the use of additional pile supported structures was evaluated in general terms, as no specific additional wetland has been identified as critical to avoid. Pile supported highway is essentially a low, continuous bridge. This type of bridging is included in the proposed action to provide wildlife passage and avoid riparian wetlands at the Antler, Lace and Katzehin rivers. These bridging costs have been estimated at $4,400 per lineal foot of highway. Given that the average fill width in wetland areas would be 80 feet, avoiding an acre of wetland would cost approximately $2.4 million. Therefore the use of pile supported structures to avoid forested wetlands is not practicable.

The proposed Katzehin Ferry Terminal would require filling 1.6 acres of unvegetated intertidal area for the highway approach, filling 3.6 acres of unvegetated intertidal area and an isolated 0.2 acre estuarine emergent wetland for the terminal pad, and filling 2.8 acres of unvegetated intertidal and subtidal area for the breakwaters. Moving the terminal area onto uplands in this location is not practicable because the area behind the proposed terminal is a steep cliff with a narrow ravine running through it. Also, there is an eagle nest tree located approximately 197 feet from the nearest point of disturbance. Moving into the hillside would further encroach on this nest tree. Supporting the approach and terminal pad on a pile, cap and girder structure to avoid 5.4 acres of fill would add approximately $13 million to the cost of the terminal. For these reasons avoiding this fill is not practicable.

DOT&PF has also determined that locating the Katzehin Ferry Terminal south of the Katzehin River is not practicable. While this location would avoid the fill and pilings that would be required in the Katzehin intertidal area for the bridge to the north side of the river outlet, it would necessitate a terminal in an exposed, active deposition area. The only location south of the river that would have depths sufficient (after dredging) for shuttle ferries yet shallow enough to create breakwaters is approximately 1.5 miles south of the river mouth. This location would have very little natural protection from southeast weather and would be subject to freshwater icing in addition to the constant deposition of sediments from the Katzehin River. Soft sediment at the edge of the subtidal flats may not be able to support breakwaters, further complicating the situation. Locating the terminal four miles south of the proposed location would add about one half hour to shuttle cycles, making the turnaround time two hours to Haines and three hours to Skagway. Daily operation would need to be longer to accommodate traffic demand, increasing operating costs by approximately $1.8 million per year in 2004 dollars. This would result in higher user costs. The combination of poor weather location, technical challenges, higher costs

for both the state and travelers, and longer travel times makes this minimization alternative not practicable.

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ACOE Preliminary 404(b)(1) Evaluation Form

II. Evaluation of Compliance with 404(b)(1) Guidelines
[Restrictions on discharge 40 CFR §230.10(a)-(d)]

(An * is marked above the answer that would indicate noncompliance with the guidelines. No * marked signifies the question does not relate to compliance or noncompliance with the guidelines. An "X" simply marks the answer to the question posed.)

a. Alternative Test

		YES	NO
(i)	Is there an available, practicable alternative having less adverse impact on the aquatic ecosystem and without other significant adverse environmental consequences that does not involve a discharge into "waters of the United States" or at other locations within these waters? ***See text of preceding section.***	* ☐	☒
(ii)	If the project is in a special aquatic site and is not water dependent, has the applicant clearly demonstrated that there are no practicable alternative sites available? ***See text of preceding section.***	☒	* ☐

b. Special restrictions. Will the discharge:

(i)	Violate state water quality standards?	* ☐	☒
(ii)	Violate toxic effluent prohibitions or standards (under Section 307 of the Act)?	* ☐	☒
(iii)	Jeopardize endangered and/or threatened species or their critical habitat?	* ☐	☒
(iv)	Violate standards set by the Department of Commerce to protect marine sanctuaries?	* ☐	☒
(v)	Evaluation of the information in the Final EIS indicates that the proposed discharge material meets testing exclusion criteria for the following reason(s)[§230.60]:	☒	* ☐

(x) Based on the above information, the material is not a carrier of contaminants.

(x) The levels of contaminants are substantially similar at the extraction and disposal sites and the discharge is not likely to result in degradation of the disposal site and pollutants will not be transported to less contaminated areas. ***All fill material will be shot rock or excavated mineral soil from previously undisturbed areas.***

( ) Acceptable constraints are available and will be implemented to reduce contaminants to acceptable levels within the disposal site and prevent contaminants from being transported beyond the boundaries of the disposal site. ***Not applicable***

c. Other restrictions. Will the discharge contribute to significant degradation of "waters of the United States" through adverse impacts to:

(i)	Human health or welfare, through pollution of municipal water supplies, fish, shellfish, wildlife and special aquatic sites?	* ☐	☒
(ii)	Life stages of aquatic life and other wildlife dependent on aquatic ecosystems, to include the transfer, concentration, and spread of pollutants or their byproducts outside of the disposal site through biological, physical and/or chemical processes?	* ☐	☒
(iii)	Aquatic system diversity, productivity and stability of the aquatic life and other wildlife or wildlife habitat or loss of the capacity of wetland to assimilate nutrients, purify water or reduce wave energy?	* ☐	☒
(iv)	Recreational, aesthetic and/or economic values?	* ☐	☒

d. Actions to minimize potential adverse impacts (mitigation). Will all appropriate and practicable steps be taken to minimize the potential adverse impacts of the discharge on the aquatic ecosystem? [40 CFR 230.70-77] Checked boxes apply.

(i) Actions considered to minimize the effects of the discharge by site location (§230.70)

1.	Locating and confining the discharge to minimize smothering of organisms	☒
2.	Designing the discharge to avoid a disruption of periodic water inundation patterns.	☒
3.	Selecting a site that has been used previously for dredged material discharges	☐
4.	Selecting a site at which the substrate is composed of material similar to that being discharged, such as discharging sand on sand, mud on mud, etc.	☐
5.	Selecting the disposal site, the discharge point, and the method of discharge to minimize the extent of any plume.	☐
6.	Designing the discharge or dredged or fill material to minimize or prevent the creation of standing bodies of water in areas of normally fluctuation water levels, and minimize or prevent the drainage of areas subject to such fluctuations.	☒

(ii) Actions concerning the material to be discharged (§230.71). Minimizing the effects by treatment of, or placing limitations on the material itself: ***This issue is addressed by limiting discharge materials to shot rock, mineral soil, or dredged marine sediment, and by controlling the location and manner of discharge to contain fine sediments. Numbers 3 and 4 below are not applicable as no liquid or gaseous components will be discharged.***

1.	Disposing of the material in such a manner that physiochemical conditions are maintained and the potency and availability of pollutants are reduced.	☒
2.	Limiting the solid, liquid, and gaseous components of material to be discharged at a particular site ***(The footprint of solid material discharged will be limited).***	☒
3.	Adding treatment substances to the discharge material	☐
4.	Utilizing chemical flocculants to enhance the deposition of suspended particulates in diked disposal areas.	☐

(iii) Actions controlling the effects of the material after discharge (§230.72): ***This issue is addressed by limiting discharge materials to shot rock, mineral soil, or dredged marine sediment, and by controlling the location and manner of discharge to contain fine sediments.***

1.	Selecting a disposal method and/or site where the potential for erosion, slumping or leaching of material into the surrounding aquatic ecosystem will be reduced. ***Erosion and slumping will be controlled.***	☒
2.	Capping in-place contaminated material with clean material or selectively discharging the most contaminated material first to be capped with the remaining material. ***Not applicable.***	☐
3.	Maintaining and containing discharge material properly to prevent point and nonpoint sources of pollution.	☒
4.	Timing the discharge to minimize impacts (e.g., during periods of high water, wind, wave, and/or tidal events)	☒

(iv) Actions affecting the method of fill dispersion (§230.73)

1.	Distributing the dredged material widely in a thin layer at the disposal site ***(dredge material will be placed within shot rock fill).***	☐
2.	Orienting a fill mound to minimize obstruction to the water current, and/or to minimize the size of the mound.	☒
3.	Using silt screens or appropriate methods to confine the suspended particulates.	☒
4.	Making use of water currents to mix, disperse and dilute the discharge. ***Not applicable.***	☐
5.	Minimize water column turbidity by use of a diffuser system. ***Not applicable.***	☐
6.	Selecting sites or managing discharges to confine and minimize the release of suspended particulates to give decreased turbidity levels and to maintain light penetration for organisms. ***Fine sediments will be contained.***	☐
7.	Setting limitations on the amount of material to be discharged per unit of time or volume of receiving water. ***Discharges below the high tide line would occur during low tides.***	☐

(v) Actions related to technology (§230.74):

1.	Use of appropriate equipment and/or machinery in activities related to the discharge	☒
2.	Employing appropriate maintenance and operation on equipment and machinery.	☒
3.	Using machinery and techniques that are especially designed to reduce damage to wetlands.	☒
4.	Designing access roads and channel spanning structures using culverts, open channels, and diversions that will pass both low and high flows, accommodate fluctuating water levels, and maintain circulation and faunal movement.	☒
5.	Employing appropriate machinery and/or methods of material transport	☒

(vi) Actions to minimize impacts to plant and animal populations (§230.75)

1.	Avoiding changes in water current and circulation patterns which would interfere with the movement of animals	☒
2.	Selecting sites or managing discharges to prevent or avoid creating habitat conducive to the development of undesirable predators or species which have a competitive edge ecologically over indigenous plants or animals.	☒
3.	Avoiding sites which have a unique habitat or other similar value	☒
4.	Using planning and construction practices to institute habitat development and restoration to produce a new or modified environmental state of higher ecological value by displacement of some or all of the existing environmental characteristics.	☐
5.	Timing discharge to avoid spawning or migration seasons and other biologically critical time periods.	☒
6.	Avoiding the destruction of remnant natural sites with areas already impacted by development. ***Not applicable***	☐

(vii) Minimization of impacts on human use of the site (§230.76):

1.	Selecting discharge sites and following discharge procedures to prevent or minimize aesthetic impacts.	☒
2.	Selecting disposal sites which are not valuable as natural aquatic areas	☒
3.	Timing the discharge to avoid seasons or periods when human recreational activity associated with the aquatic site is most important	☐
4.	Minimizing disturbance on aesthetic features of an aquatic site or ecosystem	☒
5.	Selecting a disposal site that will not be detrimental or increase incompatible human activity or require the need for frequent dredge or fill maintenance activity in remote fish and/or wildlife areas.	☒
6.	Locating the disposal site outside of the vicinity of a public water supply intake.	☒

(viii) Other actions (§230.77)

1.	Controlling runoff and other discharges from activities which are conducted on the fill	☒
2.	Designing water release [from dams] to accommodate the needs of fish & wildlife. ***Not applicable***	☐
3.	In dredging projects funded by Federal agencies other than the Corps, maintain water quality of the return discharge	☒
4.	Consider the ecosystem that would be lost as well as the environmental benefits of the new ecosystem(s) that would be replacing it.	☐

III. Factual Determinations [40 CFR §230.11]

The determinations of potential short-term effects of the proposed discharges of dredged or fill material on the physical, chemical, and biological components of the aquatic environment included items a – h, below, in making a findings of compliance or non-compliance. There is minimal potential for short-term or long-term significant adverse environmental effects (in light of Subparts C – F) of the proposed discharge as related to:

		YES	NO
a.	Physical substrate determinations.	☒	☐
b.	Water circulation, fluctuation and salinity determinations	☒	☐
c.	Suspended particulate/turbidity determinations	☒	☐
d.	Contaminant determinations	☒	☐
e.	Aquatic ecosystem structure and function determinations	☒	☐
f.	Proposed disposal site determination	☒	☐
g.	Determination of cumulative effects on the aquatic ecosystem	☒	☐
h.	Determination of secondary effects on the aquatic ecosystem	☒	☐

IV. Technical Evaluation Factors [40 CFR §230 Subpart C - F]

Based on FHWA guidance, DOT&PF does not make significance determinations for impacts documented in a FHWA EIS. Therefore, Final EIS section references are provided for each impact category, but no box is marked in this draft analysis other than to indicate a category is not applicable. If necessary, the ACOE will make these determinations when preparing the final determination.

A. Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem [Subpart C]

Chapter & Section References for the Final EIS and/or appendices are included below each item

		Significant	Not Significant	Not Applicable
1.	Substrate:	☐	☐	☐
	Appendix N and addendum; Final EIS Sections 4.3.9.2, 4.3.9.3, 4.3.12, 4.3.13			
2.	Suspended particulates / turbidity	☐	☐	☐
	Appendix N and addendum, K; Final EIS Sections 4.3.9.2, 4.3.9.3			
3.	Water	☐	☐	☐
	Appendix N and addendum, K; Final EIS Sections 4.3.9.2, 4.3.9.3			
4.	Current patterns and water circulation	☐	☐	☐
	Appendix K; Final EIS Sections 4.3.9.2			
5.	Normal water fluctuations / hydroperiod	☐	☐	☐
	Appendix N and addendum, K; Final EIS Sections 4.3.9.2, 4.3.9.3			
6.	Salinity gradients	☐	☐	☐
	No changes to salinity from the project are expected, existing freshwater drainage patterns would not be changed. See Final EIS Sections 4.3.9.3 and 4.3.12; Appendix O Wetlands Technical Report Sections 4.1.1 and 4.3.2; and Appendix K Hydrology and Water Quality Technical Report 4.3.4.2.			

B. Potential Impacts on Biological Characteristics of the Aquatic Ecosystem [Subpart D]

Chapter & Section References for the Final EIS and/or appendices are included below each item

		Significant	Not Significant	Not Applicable
1.	Threatened and/or endangered species	☐	☐	☐
	Appendix S, Q and addendums; Final EIS Sections 4.3.17.1, 4.3.17.2			
2.	Fish, crustaceans, mollusks, and other aquatic organisms in the food web	☐	☐	☐
	Appendix N, O, P, Q, S and addendums; Final EIS Sections 4.3.12, 4.3.13, 4.3.15, 4.3.17			
3.	Other wildlife	☐	☐	☐
	Appendix O, Q, R and addendums; Final EIS Sections 4.3.12, 4.3.14, 4.3.15, 5.12			

C. Potential Impacts on Special Aquatic Site [Subpart E]

Chapter & Section References for the Final EIS and/or appendices are included below each item

		Significant	Not Significant	Not Applicable
1.	Wetlands	☐	☐	☐
	Appendix O and addendum; Final EIS Sections 4.3.12			
2.	Sanctuaries and refuges	☐	☐	☒
	There are none in the project area. See Final EIS Section 6.1 and 6.3.			
3.	Mud flats	☐	☐	☒
	No mud flats in the project area would be affected by the highway or the ferry terminal. See Final EIS Sections 4.3 and 4.12, Appendix N, O, and addendums.			
4.	Vegetated Shallows	☐	☐	☐
	Impacts to vegetated shallows have been avoided except for an isolated 0.2 acre estuarine emergent wetland. Appendix N, O, P, and addendums; Final EIS Sections 4.3.12, 4.3.13.			
5.	Coral reefs	☐	☐	☒
	There are no coral reefs in the project area.			
6.	Riffle and pool complexes	☐	☐	☐
	No fill would be placed in riffle and pool complexes in fish streams because bridges would span these streams.			

D. Potential Effects on Human Use Characteristics [Subpart F]

Chapter & Section References for the Final EIS and/or appendices are included below each item

		Significant	Not Significant	Not Applicable
1.	Effects on municipal and private water supplies	☐	☐	☒
	Project area is outside municipal watersheds and there are no private water supplies in the project area.			
2.	Recreational and Commercial fishing impacts (including subsistence fishing)	☐	☐	☐
	Appendix F, H and addendums; Final EIS Sections 4.3.1, 4.3.5			
3.	Effects on water-related recreation	☐	☐	☐
	Appendix F and addendum; Final EIS Section 4.3.1			
4.	Aesthetics	☐	☐	☐
	Appendix G; Final EIS Section 4.3.3			
5.	Effects on parks, national and historic monuments, National seashores, wilderness areas, research sites, and similar preserves	☐	☐	☐
	Appendix F and addendum, G, Cultural Resources Technical Report; Final EIS Sections 4.3.1, 4.3.4			

V. Evaluation of Dredged or Fill Material [Subpart G]

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material: (checked boxes apply)

1. ☒ Physical characteristics
2. ☐ Hydrography in relation to known or anticipated sources of contaminants ***not applicable***
3. ☐ Results from previous testing of the material or similar material in the vicinity of the project ***Not applicable***
4. ☐ Known, significant sources of persistent pesticides from land runoff or percolation ***not applicable***
5. ☒ Spill records for petroleum products or designated hazardous substances [§311 of the CWA]
6. ☒ Other public records of significant introduction of contaminants from industry, municipalities or other sources.
7. ☒ Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities.

b. An evaluation of the information above indicates that there is reason to believe the proposed dredged or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites. The material meets the testing exclusion criteria:

☒ Yes ☐ No

The proposed fill has been determined to be free of contaminants, based on the known sources of material and limitation to clean shot rock, mineral soil, and dredged sand. The physical characteristics of the fill material are generally well known. With the exception of the area around Comet, there has been no human activity that would be a source of petroleum products, hazardous substances, significant contaminants, or other existing man-made material deposits in the project area having substances which could be released in harmful quantities to the aquatic environment. The Comet area was investigated and the only potential contamination sources would be avoided.

VI. Disposal Site Determination [40 CFR 230.11(f)]

a. The following factors, as appropriate, have been considered in evaluating the disposal site. ***Boxes not marked are not applicable. All dredged material at the Katzehin Ferry Terminal location will be encapsulated within the shot rock fill for the terminal; all fill material placed in water would be clean shot rock generated from road construction. Excess shot rock generated by highway construction will be sidecast onto steep subtidal slopes.***

1. ☒ Depth of water at the disposal site.
2. ☐ Current velocity, direction, and variability at the disposal site
3. ☐ Degree of turbulence
4. ☐ Water column stratification
5. ☐ Discharge vessel speed and direction
6. ☒ Rate of discharge
7. ☒ Dredged material characteristics
8. ☐ Other factors affecting rates and patterns of mixing

b. An evaluation of the appropriate factors in VI, above, indicates that the disposal site and/or size of mixing zone are acceptable:

☒ Yes ☐ No

VII. Actions to Minimize Adverse Effects [40 CFR 230.70, Subpart H]

All appropriate and practicable steps would be taken, through application of recommendation of §230.70 thru §230.77 to ensure minimal adverse effects of the proposed discharge.
☒ Yes ☐ No

Avoidance and Design Mitigation Measures

DOT&PF has designed Alternative 2B to have the least impacts practicable to wetlands and waters of the U.S. as well as to biological (e.g. threatened and endangered species, essential fish habitat, resident fish, wildlife, and bald eagles). Section 5.12 of the Final EIS contains the mitigation plan for the proposed project. Alignment, construction, maintenance and operation avoidance and mitigation measures as well as measures deemed not practicable are included below:

Alignment- The highway alignment for the proposed project has been adjusted numerous times to avoid all palustrine emergent and all but 0.2 acre of esturine emergent wetlands. The highway has been adjusted to the greatest extent practicable with topographic constraints and locations of bald eagle nest trees.

The highway would be designed using the minimum width fill footprint necessary to provide a safe and useable road base and have low-profile embankments to limit the fill footprints. DOT&PF would minimize sidecasting by stockpiling material and by raising grades and flattening slopes in non-jurisdictional areas. Detailed procedures for sidecasting would be identified during final design to minimize impacts.

Extensive means would be taken to ensure water quality standards during construction and operation and maintenance. These practices include development of erosion and sediment control plans to avoid water quality impacts to wetlands and other water bodies including essential fish habitat (EFH) and anadromous streams. Resource agencies would be given the opportunity to comment on the plan prior to construction.

In areas requiring fill of water bodies or wetlands, only clean fill (shot rock or mineral soil) material would be used. Silt fences and sediment traps would be used during construction to keep sediment out of natural drainage basins.

Slope limits in wetland areas would be separately identified to ensure workers are aware of wetlands and the need to avoid impacts beyond slope and clearing limits. All construction camps, staging sites, borrow pits, and waste areas would be located in upland areas and stabilized during and after use to avoid water quality impacts to wetlands and other waters of the U.S.

Bridges and Culverts- DOT&PF has designed bridges and stream crossings to avoid in-water work to the extent practicable. All anadromous stream crossings except the Antler, Katzehin, and Lace rivers would be clear spanned, with clearances well above the 100-year flood mark. Except for the south Katzehin bridge abutment, no fill would encroach on the river banks and fish passage. Flood capacity and channel characteristics of the rivers would not be altered or impacted. The Antler, Katzehin, and Lace rivers would have the fewest number of supports practicable to meet design standards using minimum 130-foot spacing and abutments would be placed above the high-water mark.

All in-water work at anadromous streams would occur between June 1 and March 14 to minimize impacts to fish species. Culverts would be used to maintain natural surface water flow patterns and would be sized to avoid excessive backwater or outlet erosion. Techniques such as flow diversion around work sites, and working during times of low water would help maintain water quality downstream of work areas.

Ferry Operations- All shuttle ferries will have wastewater holding tanks to avoid discharge of contaminants to waters of the U.S.

The design for the Katzehin Ferry Terminal breakwaters would include either fish passage gaps or large box culverts to ensure proper fish passage. In-water construction would not occur from March 15 to June 15 to avoid impacts to migrating anadromous or resident species.

Compensatory Mitigation- Compensatory mitigation for wetland impacts have been developed based on the amount and function of wetlands impacted by the proposed project. A combination of onsite out-of-kind mitigation and in-lieu fee payment for restoration or protection of off-site wetlands is proposed as no on-site areas have been identified by the resource agencies. A wildlife underpass would be constructed in the northwest part of the peninsula between the Lace and Antler rivers to mitigate for impacts to palustrine forested and scrub-shrub wetlands. Compensation is proposed at in-kind $24,000 per acre for unvegetated subtidal and intertidal habitat and $60,000 per acre for estuarine emergent wetlands. Based on acres impacted by Alternative 2B and these assigned values, a total of $780,000 is proposed for in-lieu fee compensation. DOT&PF is working with resource agencies to identify and investigate potential preservation parcels and habitat enhancement projects. If no suitable land or project is identified, payments to a land trust would include a stipulation that the funds be used to preserve or restore similar wetland and marine habitat. See Section I of this analysis, or Section 5.12 of the Final EIS for more detail.

VIII. Findings of Compliance or Non-Compliance [40 CFR 230.12]

a. ☒ The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) Guidelines.

b. ☐ The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) Guidelines with the inclusion of the following conditions:

c. ☐ The proposed disposal site for discharge of dredged or fill material does not comply with the Section 404(b)(1) Guidelines, for the following reasons:

1. ☐ There is a less damaging practicable alternative
2. ☐ The proposed discharge will result in significant degradation of the aquatic ecosystem
3. ☐ The proposed discharge does not include all practicable and/or appropriate measures to minimize potential harm to the aquatic ecosystem.
4. ☐ There does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with these Guidelines.

IX. CONCLUSION

The conclusion of this Draft Section 404(b)(1) Analysis is that the proposed project, Alternative 2B, is the least environmentally damaging practicable alternative for the Juneau Access Improvements project. While Alternative 2B would impact the largest acreage of wetlands and waters of the U.S. of all the reasonable alternatives, those impacts would not have substantial effects on wetland functions and values in the project area or impact the continued viability of commercial fish species in Lynn Canal. Alternatives 4A through 4D would impact substantially fewer acres of wetlands and waters of the U.S.; however, these alternatives are not practicable because they do not sufficiently meet the purpose and need. Construction and operation of a ferry terminal at Sawmill Cove under Alternatives 3, 4B, and 4D, particularly in conjunction with other marine developments in Berners Bay, could have an adverse impact to Pacific herring populations in Lynn Canal, and adverse direct and indirect effects on Steller sea lions and humpback whales. These effects have the potential of creating a greater environmental impact than the loss of wetlands and waters of the U.S. resulting from Alternative 2B.

Alternative 3 may be a marginally practicable alternative, but it is more environmentally damaging than the proposed action. Although it would have lower acreage fills in wetlands and marine waters, the overall impacts to aquatic resources would be greater. While the proposed action would fill 70 acres of wetlands, almost all of these wetlands are forested wetlands in areas where there is a preponderance of this type of wetland and similarly functioning upland forest. Similarly, the 32 acres of marine fill are in Lynn Canal at locations with cobble or sandy beaches. There is a large amount of this type of habitat in Lynn Canal, and high value locations have been avoided. Alternative 2B, the proposed action, would not have any fill or dredge in Berners Bay. No spawning habitat would be directly impacted.

Alternative 3 would fill 1.9 acres and dredge 1.3 acres of herring spawning habitat, and introduce regular marine traffic in Berners Bay. In addition to this impact to herring and the threatened and endangered species that prey on them, Alternative 3 would impact marine spawning habitat in William Henry Bay. Approximately 4.8 acres of intertidal and subtidal habitat in this small bay would be filled, impacting high value crab and fish habitat including sculpin spawning areas. Both USEPA and NMFS have indicated that Alternative 3 would have greater impacts to the aquatic environment than Alternative 2B. Furthermore, NMFS has indicated that Alternative 3 is likely to have adverse impacts on Steller sea lions and humpback whales.

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APPENDIX X

PART C

WETLANDS FINDING

The Federal Highway Administration (FHWA) and Alaska Department of Transportation and Public Facilities (DOT&PF) are pursuing the Juneau Access Improvements Project. Executive Order (EO) 11990, Protection of Wetlands, mandates that federally funded projects are to avoid construction in wetlands unless (1) there is no practicable alternative and (2) the proposed action includes all practicable measures to minimize harm to wetlands. In compliance with EO 11990, the FHWA and DOT&PF have determined that Alternative 2B is the only practicable alternative for the Juneau Access Improvements Project. Information about alternatives and their impacts provided in this finding are summarized from information available in the Juneau Access Improvements Project Environmental Impact Statement (EIS).

PURPOSE AND NEED FOR PROJECT

The purpose of and need for the Juneau Access Improvements Project is to provide improved surface transportation to and from Juneau within the Lynn Canal corridor that will:

- Provide the capacity to meet transportation demand in the corridor
- Provide flexibility and improve opportunity for travel
- Reduce travel times between the communities
- Reduce state costs for transportation in the corridor
- Reduce user costs for transportation in the corridor

The Lynn Canal corridor is the largest bottleneck in Alaska's surface transportation system. Based on traffic growth and volume comparisons, telephone surveys, and traffic forecast analyses, DOT&PF estimates that the demand to travel through the corridor is over six times greater than the number of vehicles currently transported by the Alaska Marine Highway System (AMHS).

The opportunity to travel is restricted in Lynn Canal under the current ferry system. During the summer season, a traveler has a choice of one or two sailings per day. In the winter, a traveler has a choice of approximately four sailings per week. Ferries typically sail below vehicular capacity during winter, but in summer they are at times unable to accommodate all reserved space and standby traffic. Restrictions to opportunity and flexibility to travel combined with long travel times inhibit some residents in the area from traveling. These restrictions also contribute to the perception held by many Alaska residents that the capital is isolated from the rest of the state.

Travel time between the communities by ferry is significantly longer than travel times would be by highway, the most prevalent method of surface transportation outside the Lynn Canal corridor. If a direct highway connection existed, driving from Auke Bay to Haines at a speed of 40 to 50 miles per hour would take about 1.5 to 2 hours. Traveling by highway from Auke Bay to Skagway at a speed of 40 to 50 miles per hour would take between 2 and 2.5 hours. Travel by ferry from Auke Bay to Haines takes 3.5 hours for a fast vehicle ferry (FVF) and 7.1 hours for a mainline ferry. Travel by ferry from Auke Bay to Skagway, including minimum loading time, takes 3.8 hours by FVF and 9.1 hours by mainline ferry.

The cost to operate the AMHS is high in comparison to the cost to operate and maintain Alaska's highways. The AMHS provides about 21.3 million vehicle miles of travel at a state cost (after revenues) of about $40 million each year, or $1.87 per vehicle mile. On state-owned highways, about two billion miles are driven each year. The maintenance budget for state-owned highways is about $70 million per year, which equates to approximately $0.035 per

vehicle mile. Revenues from gas tax receipts and licensing/registration fees are about $65 million, some of which reduces the overall state cost for highway maintenance.

The fares for passage in Lynn Canal on the AMHS are substantially higher than those for other surface transportation modes. A typical family of four in a 19-foot vehicle traveling one way from Juneau to Skagway paid $237 on a mainline vessel and $261 on an FVF in 2004. The fare between Juneau and Haines for the same family was $180 on a mainline ferry and $198 on an FVF. In comparison, if direct highway links existed the total 2004 cost to a vehicle owner would be about $40 from Juneau to Skagway and $35 from Juneau to Haines. The 2004 out-of-pocket cost to a vehicle owner would be about $9 from Juneau to Skagway and $8 from Juneau to Haines.

PREFERRED ALTERNATIVE

The FHWA and DOT&PF preferred alternative, Alternative 2B, would consist of a 50.5-mile two-lane rural highway on the east side of Lynn Canal from the end of Glacier Highway at Echo Cove to north of the Katzehin River delta. A new ferry terminal would be located at the end of highway. Three shuttle ferries in the summer and two in the winter would operate daily between the Katzehin Ferry Terminal and Haines and Skagway.

WETLANDS INVOLVED

There are approximately 11,259 acres of wetlands along the east side of Lynn Canal between the canal shoreline and the step terrain leading to the ice fields located a few miles inland from the shore. Therefore, wetland impacts cannot be completely avoided by the preferred alternative. Alternative 2B would result in filling approximately 70 acres of wetlands, the highest amount of wetland impact of the reasonable alternatives considered for the project. Of this total, 98.7 percent, or 69.1 acres are palustrine forested wetlands, the most common type of wetland in Lynn Canal. Alternative 2B would also fill 0.7 acre of palustrine scrub-shrub and 0.2 acre of estuarine emergent wetland.

ALTERNATIVES CONSIDERED

A total of 18 project alternatives were initially considered for the Juneau Access Improvements Project. All but seven of these alternatives were eliminated from consideration in the Final EIS because they did not meet the purpose and need for the project, they were not economically feasible, or they had specific environmental impacts that made them not reasonable. The remaining seven alternatives included two highway alternatives, four marine alternatives, and the No Action Alternative. The FHWA and DOT&PF have determined that Alternative 2B is the only practicable alternative based on the Juneau Access Improvements Project's purpose and need and environmental factors. The reasons for selecting Alternative 2B are explained further below. Table 1 provides a comparative summary of the reasonable project alternatives.

Table 1
Summary of Estimated Beneficial and Adverse Impacts of Proposed Project Alternatives

Factors	Alternatives						
	No Action	2B	3	4A	4B	4C	4D
Cost Factors							
Initial Capital Costs ($ million)	0	$258	$268	$131	$142	$111	$103
30-Year Life Cycle Costs[1] ($ million)	$267	$352	$375	$495	$482	$326	$313
Annual Maintenance and Operations Costs ($millions)	$10.2	$9.0	$9.2	$16.6	$15.5	$11.6	$11.3
Net Present Value[2] ($ millions)	0	$70	$32	-$56	-$23	-$57	$3
Purpose and Need Factors							
Projected Summer Capacity to Skagway (vehicles per day)	71	636	408	223	227	149	203
Projected Summer Capacity to Haines (vehicles per day)	96	544	1,008	229	284	154	208
Summer Travel Time – Auke Bay to Skagway[3] (hours)	3.8/9.1	3.0	4.2	4.1/9.1	3.8/9.1	6.3/9.1	5.3/9.1
Summer Travel Time – Auke Bay to Haines[3] (hours)	3.5/7.1	2.5	2.9	3.8/7.1	3.5/7.1	6.0/7.1	5.0/7.1
Number of Ferry Round Trips/Week – Auke Bay to Skagway (Summer)	7	42	42	16	16	9	16
Number of Ferry Round Trips/Week – Auke Bay to Haines (Summer)	8	56	84	16	30	9	16
Net State Cost Over 35-Year Analysis Period ($ millions)	$61	$88	$86	$98	$94	$78	$70
Net State Cost per vehicle	$45	$15	$18	$46	$37	$51	$36
Total / Out-of-Pocket User Costs – Juneau/Skagway[4]	$237 / $237	$77 / $51	$111 / $85	$261 / $261	$174 / $163	$237 / $237	$160 / $149
Total / Out-of-Pocket User Costs – Juneau/Haines[4]	$180 / $180	$60 / $34	$70 / $45	$198 / $198	$124 / $113	$180 / $180	114 / $103
Employment and Population Impacts							
Juneau							
New Local Employment (2038)	0	200	70	45	90	0	30
Population Increase (2038)	0	300	100	70	140	0	45
Skagway							
New Local Employment (2038)	0	55	0	10	15	0	0
Population Increase (2038)	0	70	0	10	20	0	0
Haines							
New Local Employment (2038)	0	65	155	15	30	0	15
Population Increase (2038)	0	98	230	25	50	0	25
Natural Resources Impacts							
Number Of River/Stream Crossings	0	46	32	0	5	0	5
Number Of Anadromous Streams Crossed	0	9	11	0	1	0	1
Terrestrial Habitat Losses[5] (acres)	0	428	395	0	27	0	27
Wetland Habitat Losses (acres)	0	70.0	26.4	0	1.9	0	1.9
Essential Fish Habitat Impacted[6]	0	36.4	12.9	0	3.2	0	3.2
Eagle Nests Within 330 Feet	0	49	24	0	0	0	0
Total Eagle Nests Within 0.5 Mile	0	92	50	0	10	0	10

Table 1 (continued)
Summary of Estimated Beneficial and Adverse Impacts of Proposed Project Alternatives

Factors	Alternatives						
	No Action	2B	3	4A	4B	4C	4D
Estimated Percent Reduction in Brown Bear Habitat Capability	0	26	21	0	4	0	4
Estimated Percent Reduction in Black Bear Habitat Capability	0	6	2	0	1	0	1
Estimated Percent Reduction in Marten Habitat Capability	0	32	30	0	7	0	7
Estimated Percent Reduction in Mountain Goat Habitat Capability	0	0.4	1	0	0.1	0	0.1

Notes: [1]Life-cycle costs are the construction, refurbishment, and maintenance costs for a 5-year construction period and a 30-year operation period discounted to 2004 dollars. See the *User Benefits Analysis Technical Report Appendix E* for a detailed explanation of life-cycle cost analysis.
[2]Net present value is the sum of the user benefits minus net incremental project costs. User benefits are the reduction in user costs, which consist of travel time, AMHS fares, vehicle costs, and accident costs. See the *User Benefits Analysis Technical Report Appendix E*
[3]The first number is based on travel on a shuttle ferry and the second number is the mainline ferry travel time.
[4]Total/Out-of-pocket cost for a family of four traveling in 19-foot vehicle. No Action cost is on a mainline ferry; FVF would be 10 percent higher. All other costs are based on the use of shuttle ferries.
[5]Includes wetlands.
[6]Includes impacts from dredging (Alternative 2B 4.4 acres; Alternative 3, 4B, and 4D 1.3 acres).

Purpose and Need Factors

The No Action Alternative does not accomplish any of the purposes of the proposed project. It does not provide the capacity to meet the travel demand in the Lynn Canal corridor, and substantially limits travel opportunity and flexibility. Travel times between communities in Lynn Canal would remain unchanged. The No Action Alternative would have the lowest net state cost over a 30-year period when taking into consideration construction and refurbishment costs, operating costs, and revenues. However, because of the low volume of traffic that would be transported in the corridor under the No Action Alternative, it would have one of the highest state costs per vehicle ($51) of any of the project alternatives. The overall lower net cost to the state of the No Action Alternative would be the direct result of high out-of-pocket costs for travelers.

Alternatives 4A and 4C, which would provide daily summer service between Auke Bay and Haines and Skagway by FVFs (Alternative 4A) or conventional monohull ferries (Alternative 4C), are the build alternatives that least meet the purpose and need elements of the proposed project. These two alternatives would increase summer capacity relative to the No Action Alternative, but forecast demand would remain about the same as for the No Action Alternative. Alternative 4A would improve travel flexibility and opportunity relative to the No Action Alternative, but it would still provide travelers with only 16 roundtrips/week between Auke Bay, Haines, and Skagway in the summer. Alternative 4C would provide essentially no improvement in travel opportunity and flexibility relative to the No Action Alternative. Alternatives 4A and 4C would have higher capital and operating costs for the state than the No Action Alternative. The cost per vehicle to the state of Alternative 4A would be essentially the same as the No Action Alternative and cost per vehicle would be higher than the No Action Alternative with Alternative 4C. Cost to the traveler under Alternatives 4A and 4C would be the same as the No Action

Alternative when traveling on a mainline ferry. Cost to the traveler under Alternative 4A using a FVF would be about 10 percent higher than the No Action Alternative.

Alternatives 4B and 4D would extend Glacier Highway north 5.2 miles from Echo Cove to Sawmill Cove (widening the existing unpaved road to Cascade Point) and provide daily summer service from a Sawmill Cove Terminal to Haines and Skagway by FVFs (Alternative 4B) or conventional monohull ferries (Alternative 4D). Like Alternatives 4A and 4C, Alternatives 4B and 4D would provide only a small improvement in transportation in the Lynn Canal corridor. These two alternatives would only meet about 30 (Alternative 4B) to 22 (Alternative 4D) percent of the forecast unconstrained demand in the Lynn Canal corridor in 2038. Travel opportunity and flexibility with Alternatives 4B and 4D would improve relative to the No Action Alternative, but travel would still be limited to typically two roundtrips/day, and at most a little over three roundtrips/day. It would be difficult for someone to travel between Juneau and Haines or Skagway and return to their original destination in one day. Travel times would not improve with Alternatives 4B and 4D relative to the No Action Alternative. Alternatives 4B and 4D would have higher capital and operating costs for the state than the No Action Alternative, but would cost the state less per vehicle than the No Action Alternative because of the larger number of vehicles transported and the shorter summer ferry routes involved. Total and out-of-pocket costs for travelers would be about 30 to 35 percent less than the No Action Alternative with Alternatives 4B and 4D. The one-way cost for a family of four with a 19-foot vehicle would still be over $100 to Haines and $150 or more to Skagway. Alternative 4B and 4D are not practicable in that they do not sufficiently meet the purpose and need.

Alternative 3 would extend Glacier Highway 5.2 miles from Echo Cove to Sawmill Cove and provide daily shuttle ferry service between new terminals at Sawmill Cove and William Henry Bay on the west side of Lynn Canal. A 38.9-mile long, two-lane rural highway on the west side of the Canal would connect the William Henry Bay Terminal to Haines.

Alternative 3 comes closer to the purpose and need elements of the project than any of the four marine alternatives. It would accommodate about 59 percent of the forecast unconstrained demand in the corridor in 2038. Flexibility and opportunity for travel with Alternative 3 would be limited by the ferry links between Sawmill Cove and William Henry Bay and Haines and Skagway. However, the opportunity for travel would be increased substantially over the No Action Alternative, with an average of 12 roundtrips/day (84 roundtrips/week) between Sawmill Cove and William Henry Bay and 6 roundtrips/day (42 roundtrips/week) between Haines and Skagway in the summer. Travel to Haines on Alternative 3 would take about a half hour less than traveling on a FVF under the No Action Alternative. Travel to Skagway would take at least a half hour more than traveling on a FVF under the No Action Alternative due to the required two shuttle links separated by about 40 miles of highway. Alternative 3 would have a net state cost over 30 years of $86 million, approximately $25 million more than the No Action Alternative. Because of the volume of traffic forecast to use this alternative, it would have a much lower cost per vehicle to the state ($19) than the No Action Alternative ($51). Total cost of travel for a family of four in a 19-foot vehicle between Juneau and Haines or Skagway would be $70 and $111, respectively, with Alternative 3. This would be about 39 percent of the cost of travel on a mainline ferry between Juneau and Haines under the No Action Alternative, and 47 percent of the No Action Alternative cost to travel between Juneau and Skagway. Alternative 3 has elements that make it impracticable, e.g. two ferry links, longer travel time to Skagway and high life cycle costs. Also, it has greater impacts to high value aquatic resources than the preferred alternative.

Of all the build alternatives, Alternative 2B best meets the purpose and need for the project. This alternative would meet about 74 percent of the forecast unconstrained demand in the corridor in 2038. The opportunity for travel would be increased substantially over the No Action

Alternative, with an average of six roundtrips/day (42 roundtrips/week) between Katzehin and Skagway and eight roundtrips/day (56 roundtrips/week) between Katzehin and Haines in the summer. In addition, travel time would be the shortest of all the build alternatives. Alternative 2B would have a net state cost over 30 years of $88 million, approximately $27 million more than the No Action Alternative. However, because of the volume of traffic forecast to use this alternative, it would have the lowest cost per vehicle to the state ($15) of any project alternative including the No Action Alternative. Alternative 2B would also have the lowest cost to the traveler of any project alternative. Total cost of travel for a family of four in a 19-foot vehicle between Juneau and Haines or Skagway would be $60 and $77, respectively, with Alternative 2B, or about 33 percent of the cost of travel on a mainline ferry under the No Action Alternative.

Environmental Factors

All of the project alternatives except Alternatives 4A and 4C would have impacts to wetlands. As indicated above, Alternatives 4A and 4C provide very little improvement in the purpose and need elements of the proposed project relative to the No Action Alternative. While Alternatives 3, 4B, and 4D would have fewer impacts to wetlands than Alternative 2B, these three alternatives would impact Pacific herring spawning habitat and may adversely affect two threatened and endangered species, Steller sea lion and humpback whale, that would not be impacted by Alternative 2B.

At the Sawmill Cove Ferry Terminal under Alternatives 3, 4B, and 4D, turbidity could be increased over ambient conditions for short periods as ferries maneuver into and out of the terminal. Short-term turbidity increases and propeller scour could displace some Pacific herring eggs and larvae in the immediate vicinity of the Sawmill Cove Ferry Terminal. National Marine Fisheries Service (NMFS), United States Environmental Protection Agency (USEPA), and OHMP have expressed concern that a ferry terminal in Sawmill Cove and the resulting increased ferry traffic in Berners Bay could have adverse impacts on the Lynn Canal herring stock. Special measures such as no operation of the terminal during spawning season may be necessary to avoid impacts. These special measures would make Alternative 3 impracticable as the National Highway System link between Juneau, Haines, and Skagway. Alternatives 4B and 4D would only operate out of Berners Bay May through September and would be less effected by this potential restriction.

Maintenance and operations of the Sawmill Cove Ferry Terminal could cause temporary disturbance to Steller sea lions and humpback whales in Berners Bay. NMFS has expressed concern that a ferry terminal at Sawmill Cove would have potential adverse direct and indirect effects on these two threatened and endangered species, and indicated that selection of Alternatives 3, 4B, or 4D would necessitate formal consultation with NMFS under Section 7 of the Endangered Species Act.

MEASURES TO MINIMIZE HARM

Impacts to waters of the U.S., including wetlands, were avoided wherever practicable in the preliminary design phase of the project. Over the past decade to the present, DOT&PF has made many design changes, including highway alignment and ferry terminal layout changes, to avoid or reduce impacts to wetlands. For example, the alignment for Alternative 2B was modified following publication of the Supplemental Draft EIS to avoid all palustrine emergent wetlands and all but 0.2 acre of estuarine emergent wetlands. Impact avoidance included a commitment for bridges over all anadromous streams that could otherwise be placed in culverts. Anadromous fish streams that can be crossed with 130-foot or shorter bridges will not include any structure or fill in the stream channel. Anadromous fish streams that require pier supports will have the minimum possible piers using at least 130-foot spacing, placed to reduce impact to

habitat. During final engineering design of Alternative 2B, DOT&PF will investigate additional measures to reduce potential impacts, including further small alignment changes and changes in the footprint of the roadway. The roadway will be designed with a low-profile embankment to limit embankment heights and side slopes so that the fill footprint is minimized. Culverts will be designed through fill slopes in appropriate locations to maintain natural flow patterns for surface water.

DOT&PF and the contractor will both file Notices of Intent to use the National Pollution Discharge Elimination System (NPDES) General Permit for stormwater discharge during construction. The construction contractor will be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) that describes the Best Management Practices (BMPs) to be used to avoid water quality impacts. This plan will be made available to Alaska department of Environmental Conservation (ADEC) for review and comment and approved by DOT&PF before being included in project construction plans. The SWPPP will include procedures for locating and installing silt fences and sediment basins and installation of temporary erosion controls such as mulching and hydroseeding.

The construction contractor will provide plans for DOT&PF approval for any construction camps. These plans will include procedures to avoid water quality impacts from wastewater discharges and stormwater runoff from the camps. Construction camps and staging sites, and if required borrow pits and waste areas, will be located in upland areas and stabilized during and after use to avoid water quality impacts.

Staking will be done at the planned outside limits of disturbance prior to construction to ensure that impacts are limited to that area. No grubbing will be done outside of the fill footprint and only the minimum clearing required for safety will be done beyond the toe of slope. During construction, slope limits in wetland areas will be separately identified to ensure that workers are aware of wetlands and the need to avoid impacts beyond the slope and clearing limits.

Rock will be used to stabilize the toes of slopes at stream crossings. Grass seed will be placed on any road slope not constructed of shot rock. To protect the integrity of the natural plant communities, plant species indigenous to the area will be used for vegetating road slopes, except that non-invasive annual grasses may be used to provide initial soil cover. Only seed mixtures certified for purity will be used to seed exposed soils.

DOT&PF proposes to provide compensatory mitigation for unavoidable adverse impacts to wetlands. The eastern side of Lynn Canal where Alternative 2B is located is largely undeveloped and does not contain substantial areas of degraded wetland. Therefore, it is not practicable to mitigate project impacts on wetlands by restoring similar degraded habitat within the project area. For this reason, DOT&PF proposes to provide a combination of on-site out-of-kind mitigation and in-lieu fee compensation to mitigate project impacts on wetlands and other waters of the United States (U.S.).

Approximately 70 acres of forested and scrub-shrub wetlands would be impacted by Alternative 2B. The forested wetlands have a moderate to low wildlife habitat function. The principal function of this wetland type is groundwater discharge and lateral flow and nutrient transport/export. It is the most common wetland habitat on the east side of Lynn Canal (about 60 percent of total wetlands), covering about 6,720 acres. Scrub-shrub wetlands also provide moderate to low wildlife habitat function. Their principal function is sediment retention, groundwater recharge and discharge, and lateral flow. This wetland type covers about 2,133 acres on the east side of Lynn Canal and is the second most common wetland habitat type (about 19 percent) in the region. To mitigate for impacts to forested and scrub-shrub wetlands, a wildlife underpass would be constructed on the peninsula between the Antler and Lace rivers.

Mitigation for estuarine emergent wetland and unvegetated intertidal and subtidal habitat would be an in-lieu fee payment. Intertidal and shallow subtidal habitats affected by Alternative 2B have been assigned a value of $24,000 per acre. These areas impacted by Alternative 2B provide low to moderate foraging habitat for juvenile and adult fish and marine invertebrates.

Estuarine emergent wetlands have been assigned the highest value of $60,000 per acre. The estuarine emergent wetland that will be impacted by Alternative 2B has high wetland function ratings for wildlife habitat, riparian support, regional ecological diversity, and ecological replacement cost. This habitat type is relatively limited on the east side of Lynn Canal, representing only about 5 percent of all the wetlands in the region and covering a total of about 574 acres.

Based on these acreages and values, DOT&PF will provide a total of $780,000 in-lieu fee compensation for impacts to wetlands and other waters of the U.S. This payment will be used to purchase parcels containing high value wetlands and intertidal habitat in the project vicinity threatened by development and/or to fund restoration/enhancement projects. Currently available parcels and projects are being investigated. If no parcels or projects have been agreed to before construction starts, the money would be deposited with a non-governmental land trust with stipulations that the funds be used as described above.

ONLY PRACTICABLE ALTERNATIVE FINDING

The FHWA and DOT&PF have determined there is no practicable alternative to the proposed construction in wetlands. No substantial impacts from the proposed action are likely to occur due to the inclusion of avoidance and minimization measures, and the remaining wetland impacts will be offset by compensatory mitigation. Based on these considerations, the proposed action (Alternative 2B) is determined to be in compliance with EO 11990.