Addendum to Appendix D

Technical Alignment Report

Prepared by

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

OCTOBER 2005

TABLE OF CONTENTS

TABLES

ATTACHMENTS

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1.0 INTRODUCTION

In September 2004, the Juneau Access Improvements Project *Technical Alignment Report* (Appendix D) was completed. Since the *Technical Alignment Report* was completed, public comment has been taken on the Juneau Access Improvements Project Supplemental Draft EIS and the public Comment Analysis Report has been completed. This addendum adds supplemental information, in part, to address substantive issues raised in the public comment process.

This addendum outlines changes to the design criteria, updates the alignment discussion where changes have occurred, provides updated bridge summaries, provides updated plan and profile sheets where changes have occurred, updates ferry terminal layouts and cost estimates, updates the Engineer's Estimate, and provides an errata sheet for the original technical report.

This addendum generally reports changes or additional analysis only. The information reported in the 2004 *Technical Alignment Report* still stands unless new information is presented in this addendum.

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2.0 DESIGN STANDARDS

2.1 Highway Design Criteria

Table 2-1, Roadway Design Criteria. Make the following correction:

Criteria Descriptions	Design Criteria
Minimum Allowable Radius of Horizontal Curve – ft	510

Reason: To match 2001 AASHTO.

2.2 Design Exceptions

Replace the table with the following:

AK State National Highway System (NHS) Standard

Criteria Description	AASHTO Standard	Juneau Access Improvements Project
Width of Shoulder	6 Ft.	4 Ft.

Reason: The State of Alaska has adopted the American Association of State Highway and Transportation Officials (AASHTO) Standard as its standard; therefore, these standards are listed together under one column.

Shoulder Widths: AASHTO Standards indicate that a 4-foot-wide usable shoulder should be considered for rural arterials with average daily traffic (ADT) less than 400, that have travel lanes 11 feet wide and Design Speeds from 40 to 55 mph. For ADTs between 400 and 1,500 a 6-foot-wide usable shoulder should be considered.

AASHTO states: "Usable shoulders on arterials should be paved; however, where volumes are low or a narrow section is needed to reduce construction impacts, the paved shoulder may be reduced to 2 feet."

AASHTO also states: "Where bicyclists and pedestrians are to be accommodated on the shoulders, a minimum usable shoulder width of 4 feet should be used."

Department of Transportation and Public Facilities (DOT&PF) has elected to use the 4-foot paved usable shoulder width to minimize construction impacts while still providing for bicyclists and pedestrians.

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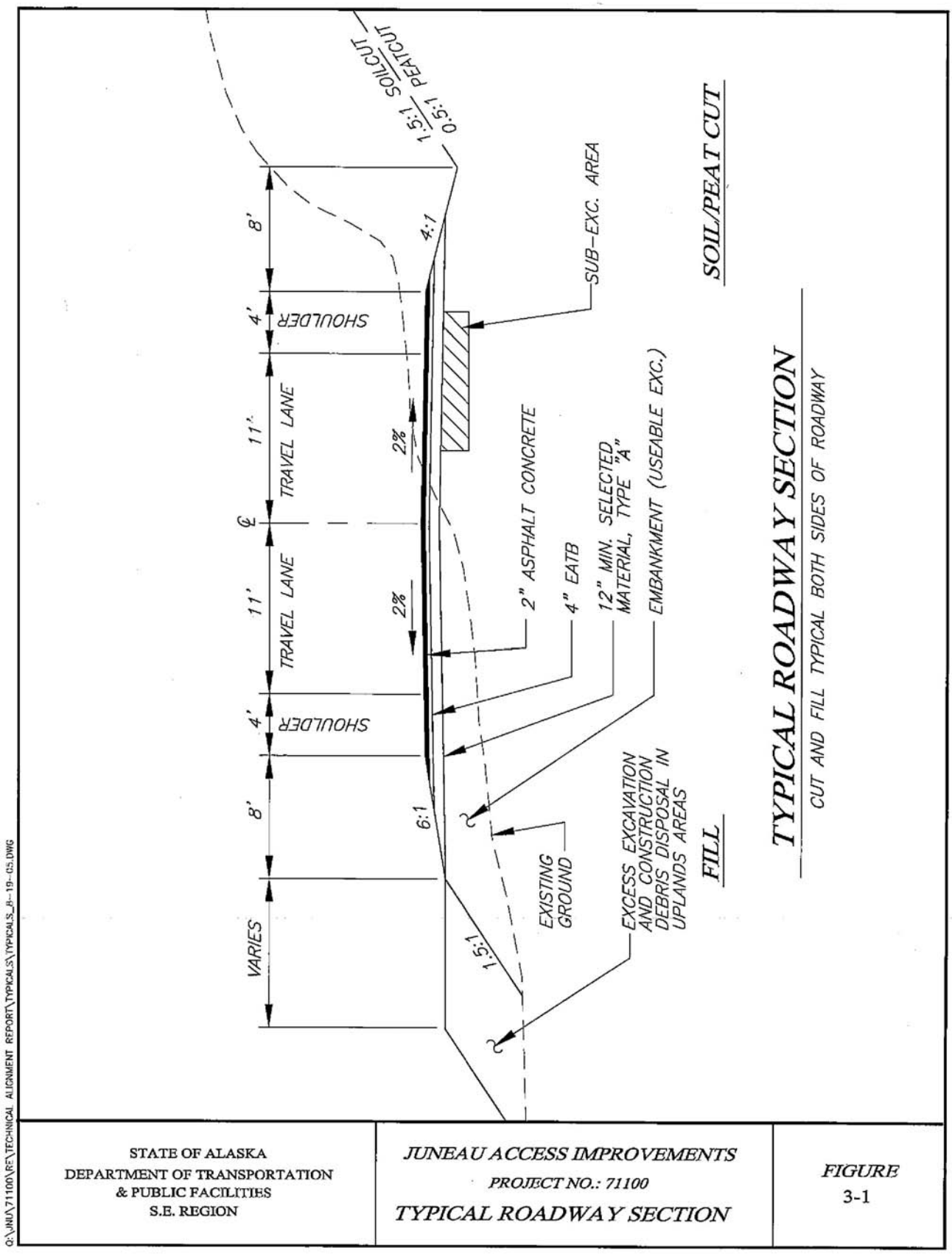
3.0 RECOMMENDED DESIGN

3.1 Typical Sections

The highway typical section has been revised to replace the 6-inch-thick layer of Base Course with a 4-inch-thick layer of Emulsified Asphalt Treated Base (EATB). The EATB will provide a more durable Structural section. The EATB was included in the Supplemental Draft EIS Engineer's Estimates for all alternatives, but was not correctly shown on the typical sections.

The attached Figures 3-1 through 3-6 and 3-8 reflect this change.


TYPICAL ROADWAY SECTION
CUT AND FILL TYPICAL BOTH SIDES OF ROADWAY
SOIL/PEAT CUT
SOILCUT 1.5:1
PEATCUT 0.5:1
SUB-EXC. AREA
8'
SHOULDER
4'
TRAVEL LANE
11'
℄
TRAVEL LANE
11'
SHOULDER
4'
8'
VARIES
4:1
2%
2%
6:1
1.5:1
2" ASPHALT CONCRETE
4" EATB
12" MIN. SELECTED MATERIAL, TYPE "A"
EMBANKMENT (USEABLE EXC.)
EXISTING GROUND
EXCESS EXCAVATION AND CONSTRUCTION DEBRIS DISPOSAL IN UPLANDS AREAS
FILL
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
S.E. REGION
JUNEAU ACCESS IMPROVEMENTS
PROJECT NO.: 71100
TYPICAL ROADWAY SECTION
FIGURE
3-1
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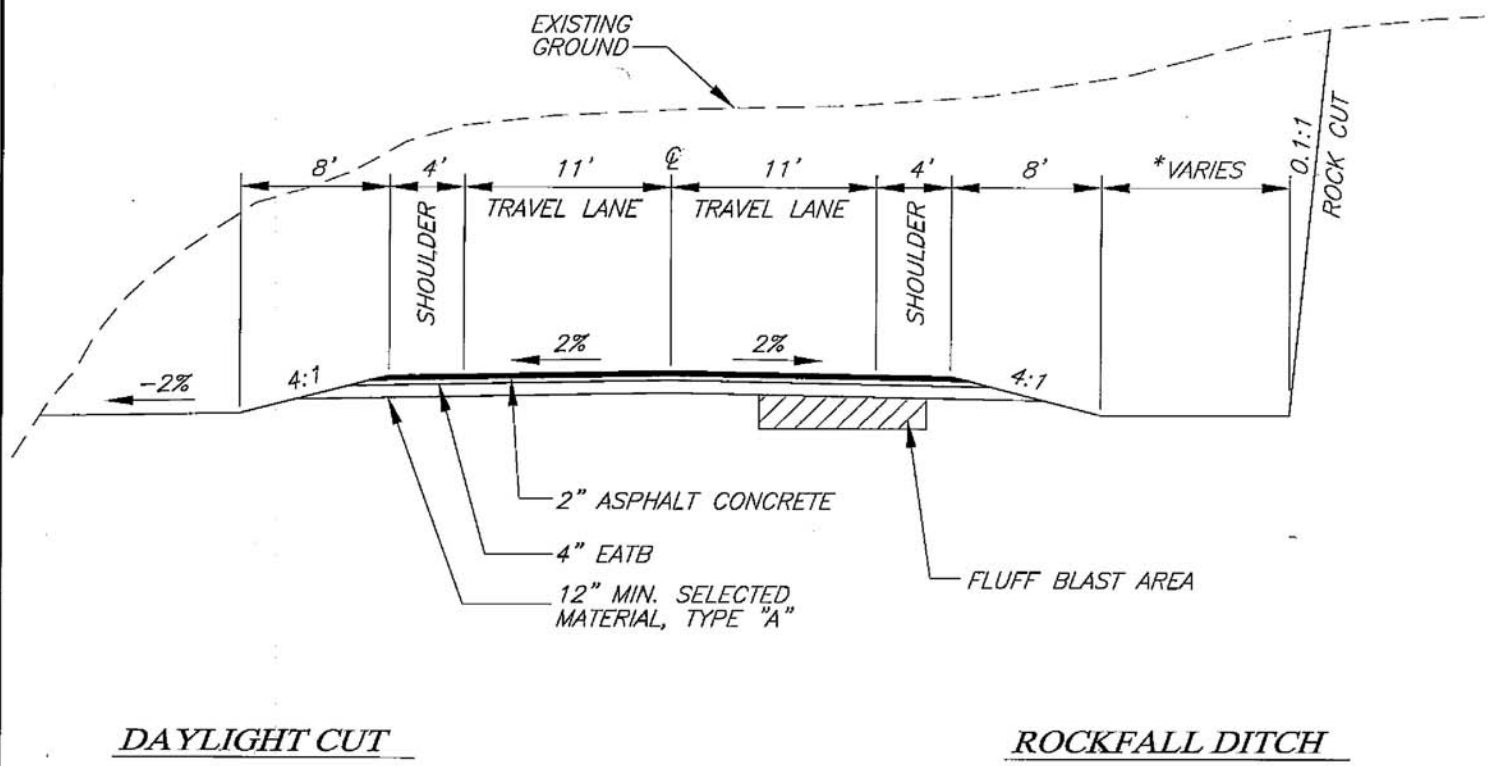

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S.E. REGION

JUNEAU ACCESS IMPROVEMENTS
PROJECT NO.: 71100

TYPICAL SECTION IN ROCK CUTS

FIGURE 3-2

TYPICAL SECTION IN ROCK CUTS

TYPICAL BOTH SIDES OF ROADWAY

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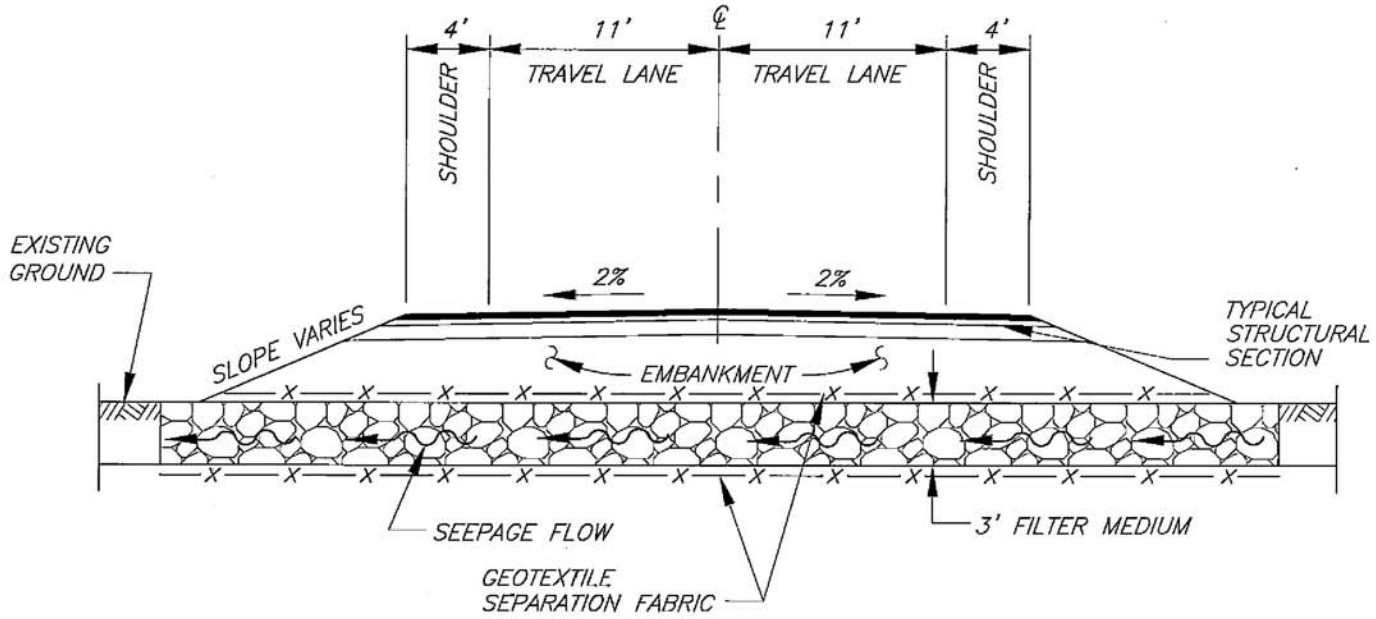
JUNEAU ACCESS IMPROVEMENTS
PROJECT NO.: 71100
TYPICAL ROADWAY SECTION
THROUGH SEEP AREAS

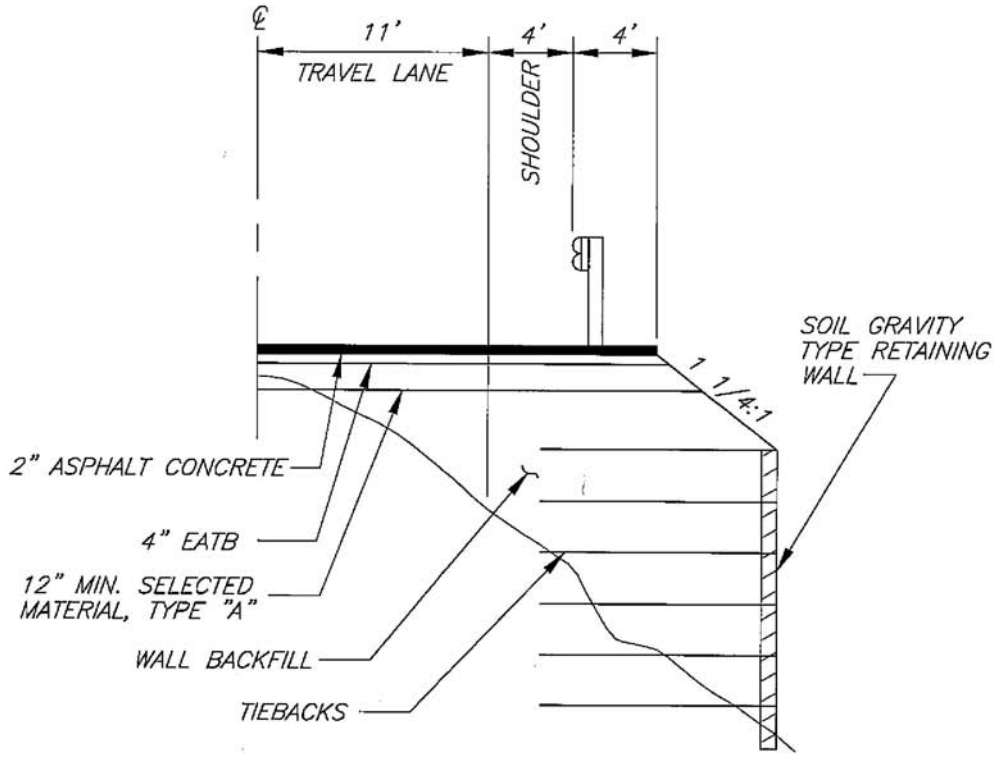
FIGURE
3-3



TYPICAL ROADWAY SECTION THROUGH SEEP AREAS

NOTES:

1. ALL TREES BRUSH AND ORGANIC DEBRIS SHALL BE REMOVED.
2. CLEAN SHOT ROCK, (SCREENED TO A UNIFORM SIZE) SHALL BE USED FOR FILTER MEDIUM.



TYPICAL RETAINING WALL SECTION

WITH RETAINING WALL MODERATE TO STEEP CROSS SLOPE AREA

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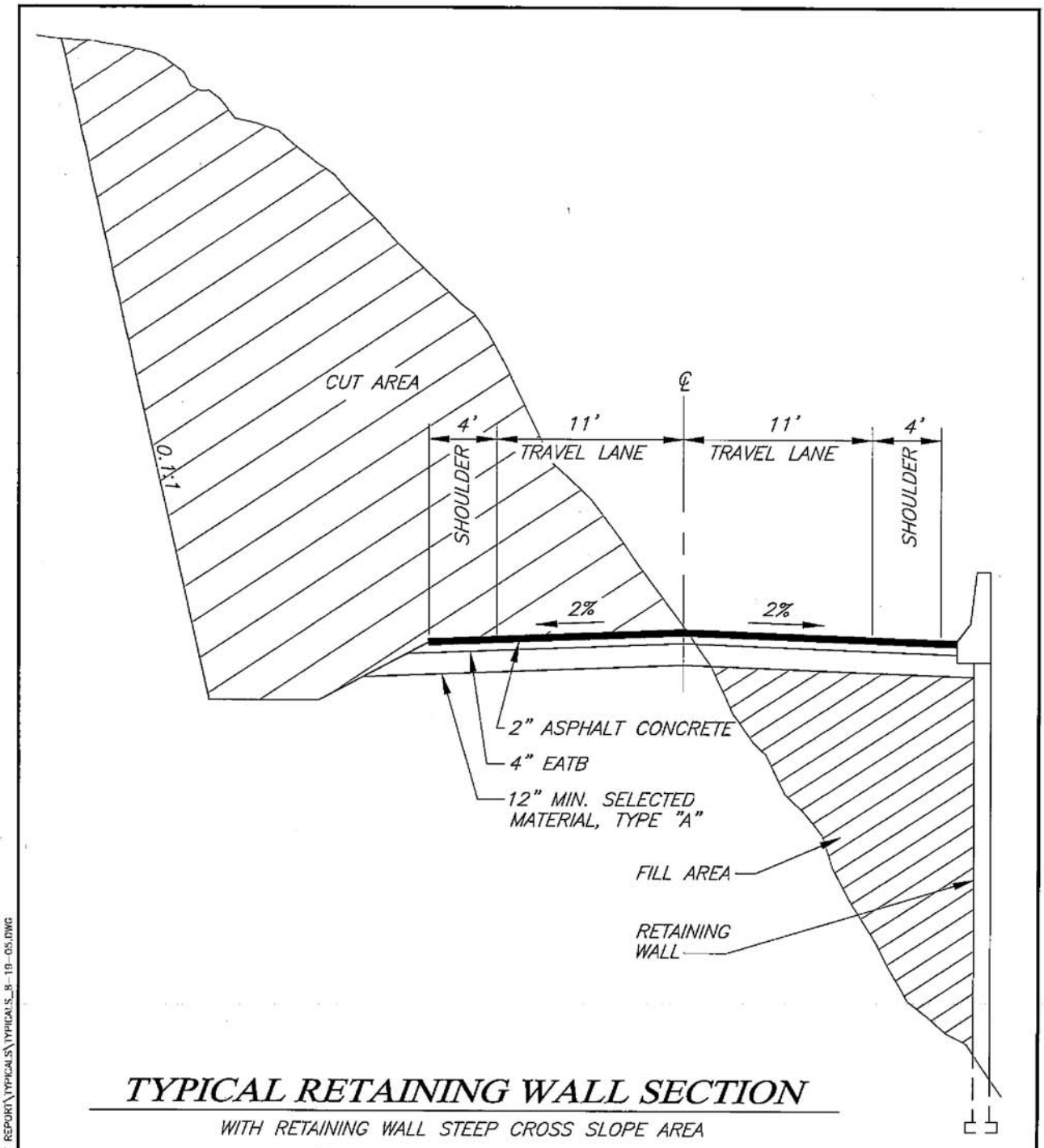
STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES S.E. REGION	*JUNEAU ACCESS IMPROVEMENTS* *PROJECT NO.: 71100* *TYPICAL RETAINING WALL SECTION*	*FIGURE* 3-4



TYPICAL RETAINING WALL SECTION

WITH RETAINING WALL STEEP CROSS SLOPE AREA

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES S.E. REGION	*JUNEAU ACCESS IMPROVEMENTS* *PROJECT NO.: 71100* *TYPICAL RETAINING WALL SECTION*	*FIGURE* 3-5

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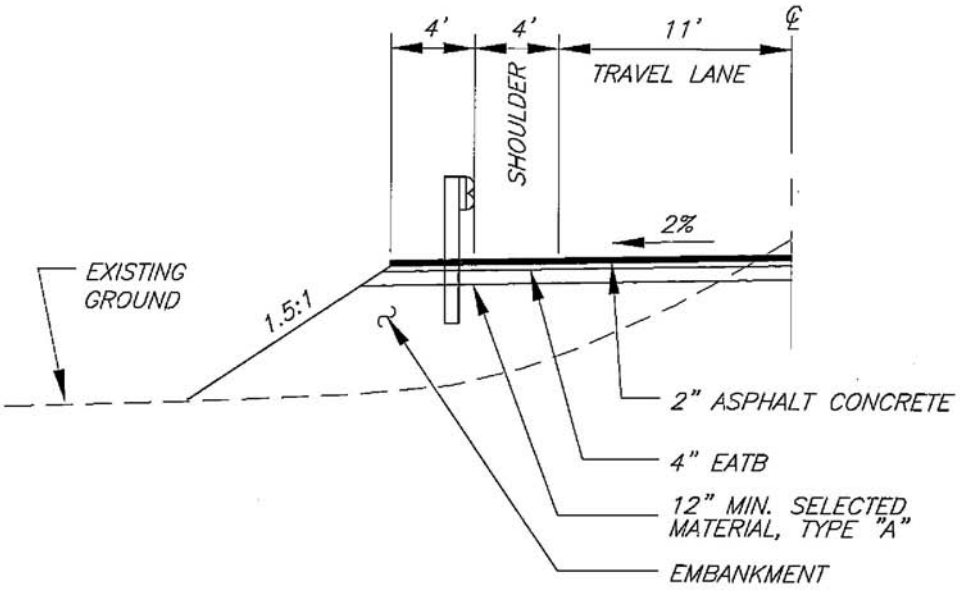

GUARDRAIL TYPICAL

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES S.E. REGION	*JUNEAU ACCESS IMPROVEMENTS* *PROJECT NO.: 71100* *GUARDRAIL TYPICAL SECTION*	*FIGURE* 3-6

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3.2 Alignment Discussion Overview

3.2.1 East Lynn Canal Discussion

Note: The stationing along this route has changed due to the numerous alignment revisions. The most significant change is in the first two segments, where the stationing was backed in from the Berners/Lace River bridge after the Berners Bay Crossing alignment revisions were completed.

Station 64+75 (MP 40.5) to Station 561+00 (MP 49.9) - Echo Cove to Berners Bay Crossing – This segment was shortened to 9.4 miles due to alignment revisions on the Berners Bay Crossing segment.

The alignment was shifted uphill between Station 64+75 and Station 207+00 to straddle the Goldbelt Cascade Point Road alignment footprint. Additional adjustments to the alignment were made between Station 207+00 and Station 410+00 to avoid emergent wetlands and minimize impacts to lower value wetlands, as well as to provide a more perpendicular bridge crossing over Sawmill Creek. The nature of the terrain remains unchanged.

From Station 477+00 forward, the alignment was optimized by making minor downhill shifts where possible, and by following the curvature of the terrain more closely. This downhill adjustment was required at the end of the segment to provide a suitable approach to the first bridge on the Berners Bay Crossing Segment.

By entering the timbered uplands at Station 561+00, 4,100 feet of steep sidehill cuts were eliminated. This reduced the rock excavation quantities and removed the visual impact of large cut backslopes. This new alignment eliminates potential water quality impacts that an uphill alignment could have to the stream in this area.

Revised Plan and Profile Sheets for this segment (Sheets 2-8) are included in Attachment A.

Station 561+00 (MP 49.9) to Station 754+50 (MP 53.6) - Berners Bay Crossing – This segment was lengthened to 3.7 miles as a result of major alignment revisions, the first of which was outlined in the preceding segment description. This revision moved the alignment off of steep slopes onto relatively flat, timbered uplands.

This realignment also provided a more desirable crossing over the anadromous fish stream here by reducing the skew of the bridge in relation to the stream channel. The bridge length remains at 130 feet.

The crossings over the Antler/Gilkey River and the Berners/Lace River were revised to address resource agency concerns. These revisions increased the bridge lengths to 2,600 feet and 2,750 feet, respectively.

Two new bridges were added to span high use bear trails. The first bridge, located at Station 669+08, crosses an Anter/Gilkey River overflow channel and associated bear trail, and has a preliminary length of 146 feet. The second bridge is a 100-foot-long structure that crosses a bear trail near Station 692+50.

Revised Plan and Profile Sheets for this segment (Sheets 8-9) are included in Attachment A.

Station 754+50 (MP 53.6) to Station 1390+00 (MP 65.6) - Berners Bay Crossing to Independence Lake – This 12.0-mile segment was revised at multiple points to minimize or eliminate impacts to wetlands along the segment. The Revised Plan and Profile Sheets (Sheets 9-13) are included in Attachment A.

Station 1390+00 (MP 65.6) to Station 1503+00 (MP 67.7) - Independence Lake North

Station 1503+00 (MP 67.7) to Station 1640+00 (MP 70.3) - Met Point South

Station 1640+00 (MP 70.3) to Station 2150+00 (MP 80.0) - Met Point North to Level Point

Station 2150+00 (MP 80.0) to Station 2610+00 (MP 88.7) - Level Point to Katzehin River – A new eagle nest at Station 2321+59 forced a downhill shift of the alignment at this location.

The alignment was also moved slightly uphill between Station 2574+00 and Station 2610+00 to eliminate marine wetlands impacts in some areas, and minimize them in others.

The Revised Plan and Profile Sheet for this segment (Sheets 25 and 28) are included in Attachment A.

Station 2610+00 (MP 88.7) to Station 2747+00 (MP 91.3) – South Katzehin River to Katzehin Ferry Terminal – The alignment on this segment was shifted to the northeast between Station 2610+00 and Station 2740+00 to eliminate estuarine wetlands impacts between Station 2700+00 and Station 2720+00. This shift required a reorientation of the Katzehin River Bridge. This reorientation, and an adjustment in the bridge abutment location to satisfy resource agency concerns, resulted in the bridge length being increased to 2,500 feet.

Revised Plan and Profile Sheets for this segment (Sheets 28-30) are included in Attachment A.

3.3 Drainage and Bridges

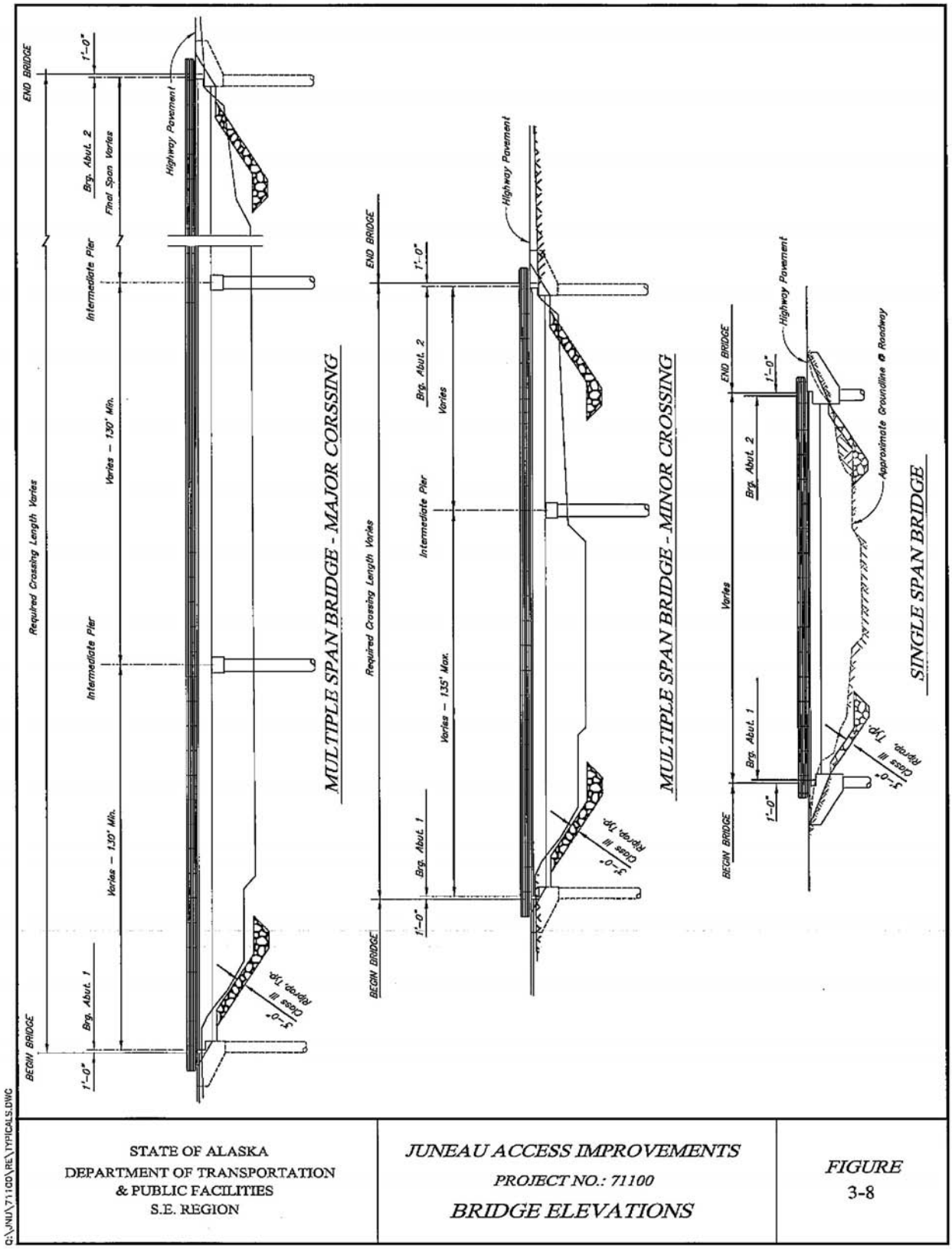
Table 3-1, East Lynn Canal Bridge Summary, has been updated to include the Alternative 2B bridges, the updated Berners Bay and Katzehin River Bridge lengths, and the two Berners Bay Bear Trail Bridges.

Figure 3-8, “Bridge Elevations,” has been updated to distinguish between Multiple Span Bridges for Major and Minor Crossings. Figure 3-7, “Bridge Typical Section,” from the 2004 Supplemental Draft EIS *Appendix O Technical Alignment Report* remained unchanged and is therefore not included in this addendum.

Table 3-1
East Lynn Canal Bridge Summary

Bridge No.	Begin Station	Highway Milepost	Length (ft)	Intermediate Piers	Name
1E	277+50	44.4	100	0	Sawmill Creek (A)
2E	421+53	47.2	110	0	unnamed
3E	567+00	49.9	130	0	unnamed (A)
4Ea	640+00	51.3	2,600	19	Antler/Gilkey Rivers (A)
4Eb	669+08	51.9	146	1	Overflow Channel/Bear Trail
4Ec	692+50	52.3	100	0	Bear Trail
5E	727+00	52.9	2,750	20	Berners/Lace Rivers (A)
6E	908+03	56.4	270	1	Slate Creek (A)
7E	1294+18	63.7	180	1	Sweeny Creek (A)
8E	1328+78	64.3	250	1	Sherman Creek (A)
9E	1439+58	66.4	90	0	Independence Creek (A)
10E	1546+08	68.5	100	0	unnamed
11E	1767+88	72.7	70	0	unnamed
12E	2025+88	77.5	80	0	unnamed
13E	2229+58	81.4	60	0	Yeldagalga Creek
14E	2305+48	82.8	120	0	unnamed
15E	2322+50	83.2	120	0	unnamed
16E	2403+38	84.7	120	0	unnamed
17E	2442+98	85.4	200	1	unnamed
18E	2564+92	87.8	160	1	unnamed
19E	2614+00	88.7	2,500	18	Katzehin River (A)
Total Bridges 21		**Total Length 10,256**			

Note: (A) = Anadromous fish stream


MULTIPLE SPAN BRIDGE - MAJOR CORSSING
MULTIPLE SPAN BRIDGE - MINOR CROSSING
SINGLE SPAN BRIDGE
END BRIDGE
BEGIN BRIDGE
Required Crossing Length Varies
Brg. Abut. 1
Brg. Abut. 2
Intermediate Pier
Final Span Varies
Varies – 130' Min.
Varies – 135' Max.
Highway Pavement
Approximate Groundline @ Roadway
1'-0"
3'-0"
Class III Riprap 1Yp.
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
S.E. REGION
JUNEAU ACCESS IMPROVEMENTS
PROJECT NO.: 71100
BRIDGE ELEVATIONS
FIGURE
3-8
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REVISIONS TO ATTACHMENT A
EAST LYNN CANAL REVISED PLAN AND PROFILE SHEETS

Attachment A has been updated to reflect alignment changes. This alignment incorporates resource agency comments and concerns voiced during the comment period for the Supplemental Draft EIS. It also includes new eagle nest locations and the current highway stationing. Revised Plan and Profile Sheets are included.

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AND PUBLIC FACILITIES

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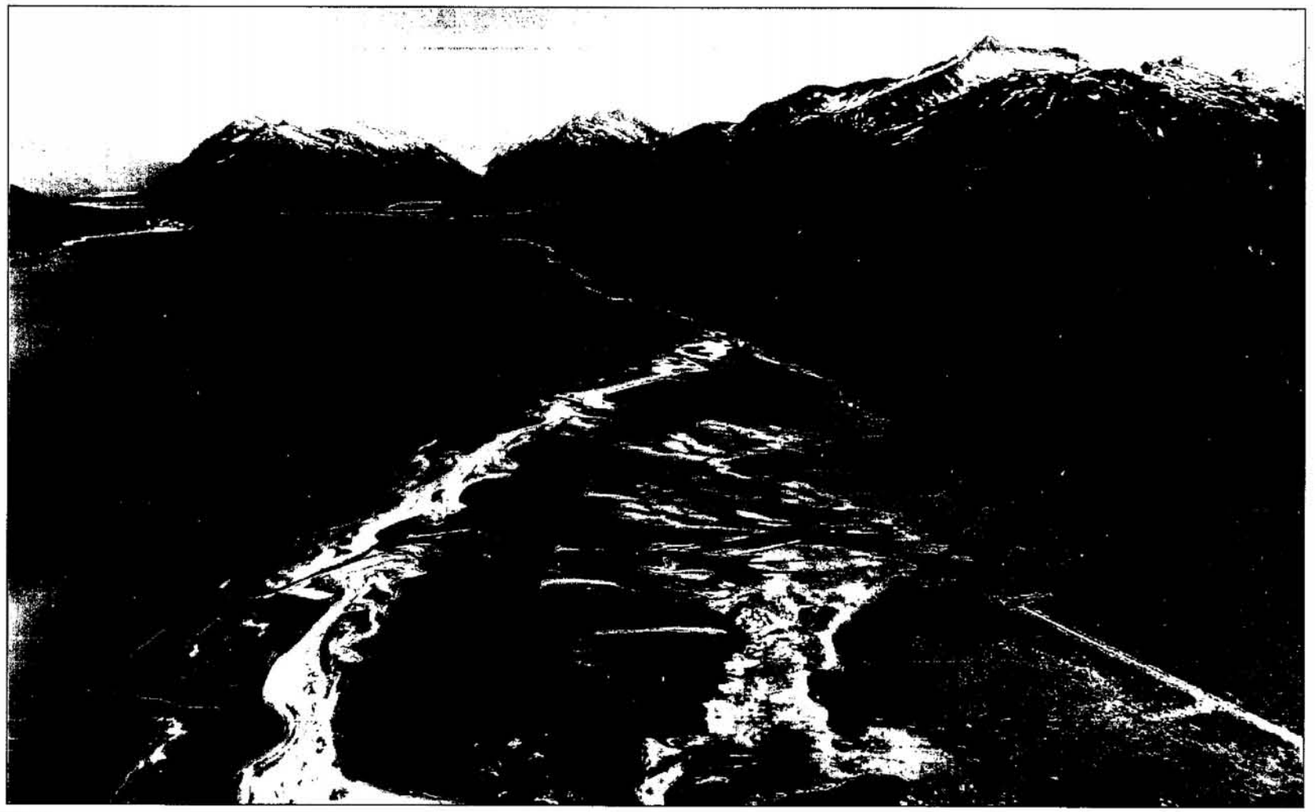
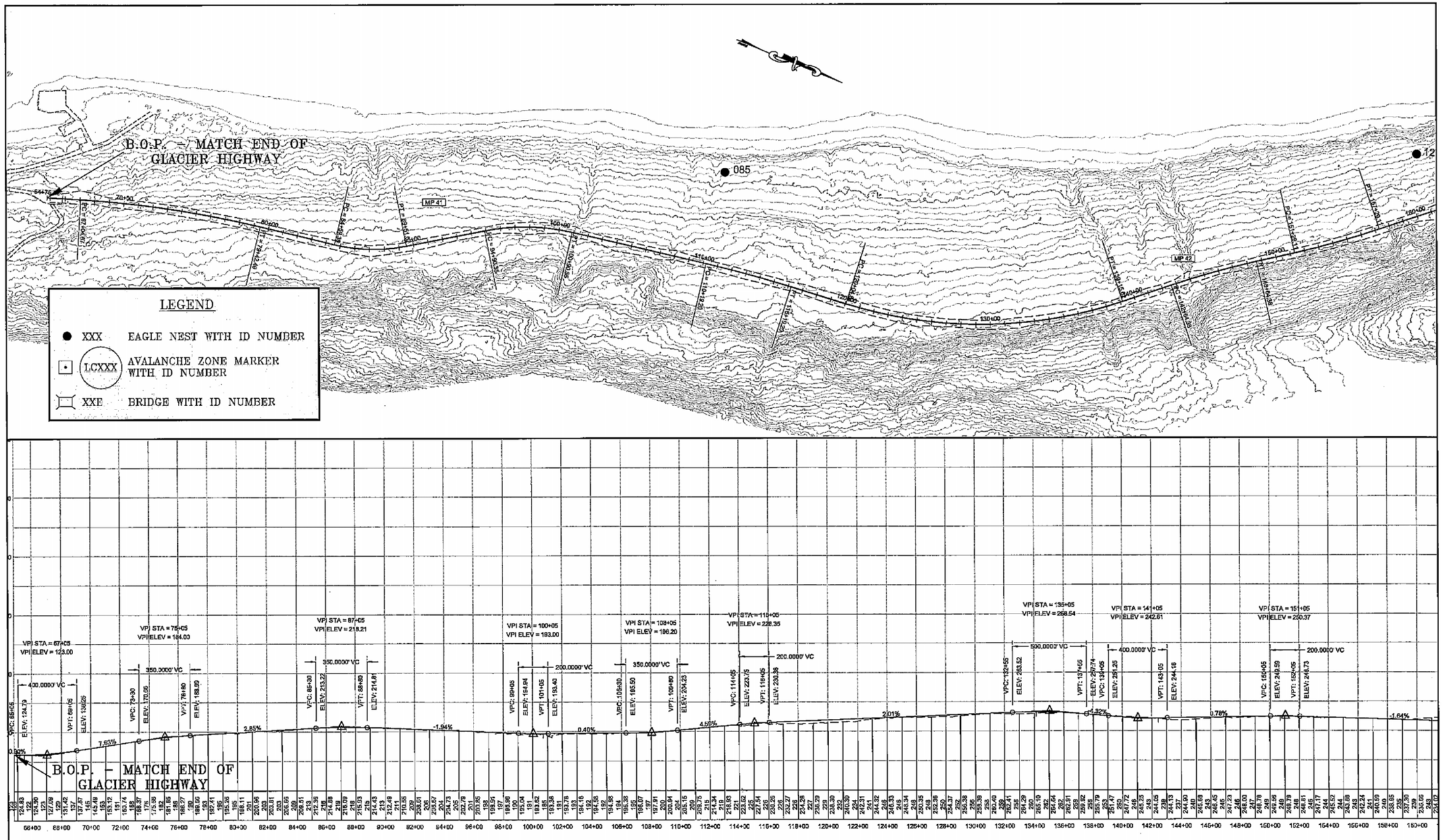
JUNEAU ACCESS IMPROVEMENTS
ECHO COVE TO KATZEHIN FERRY TERMINAL
1"=600' PLANS





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EAST LYNN CANAL
B.O.P TO STA. 161+00

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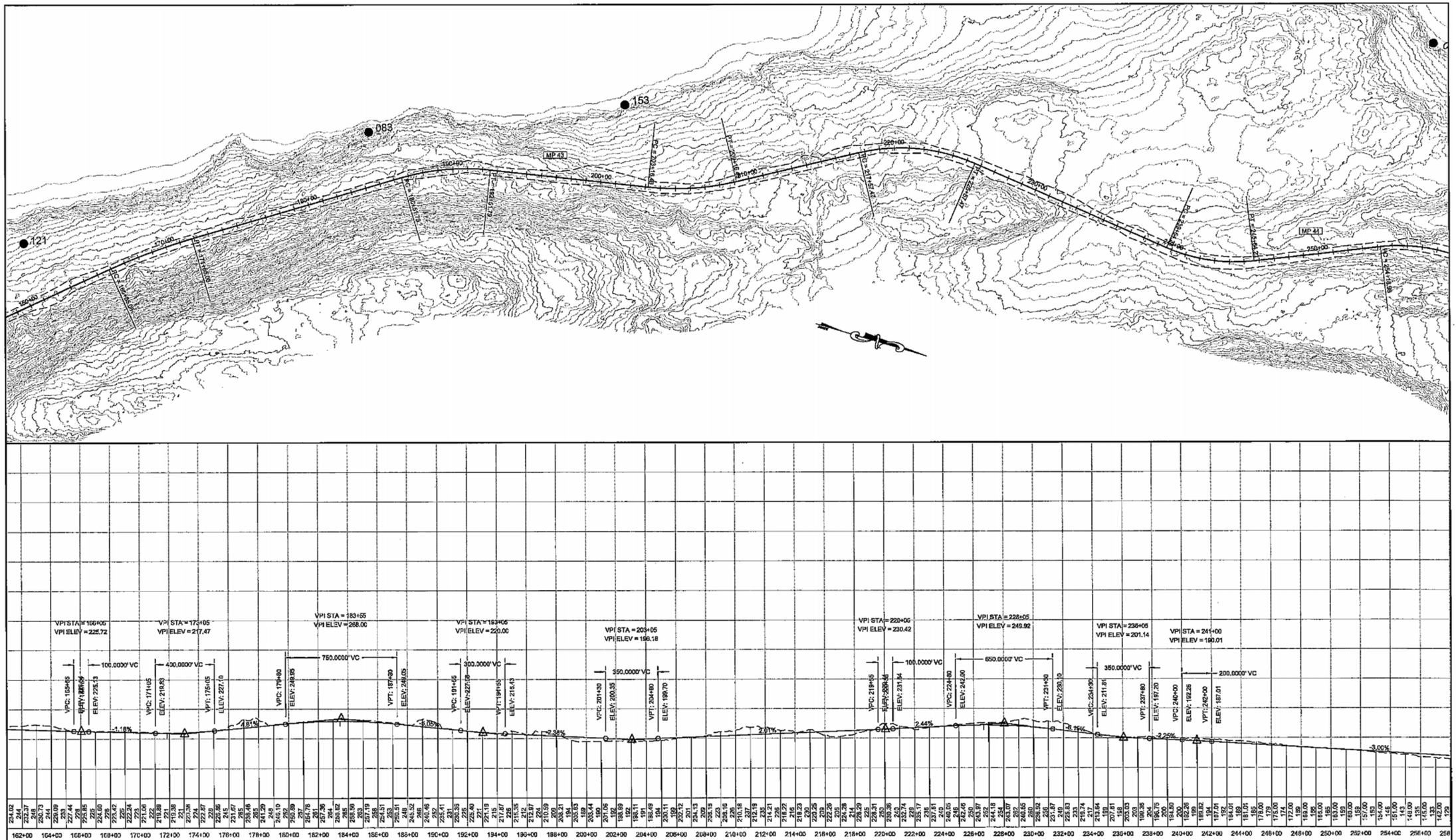

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EAST LYNN CANAL
STA. 161+00 TO STA. 258+00

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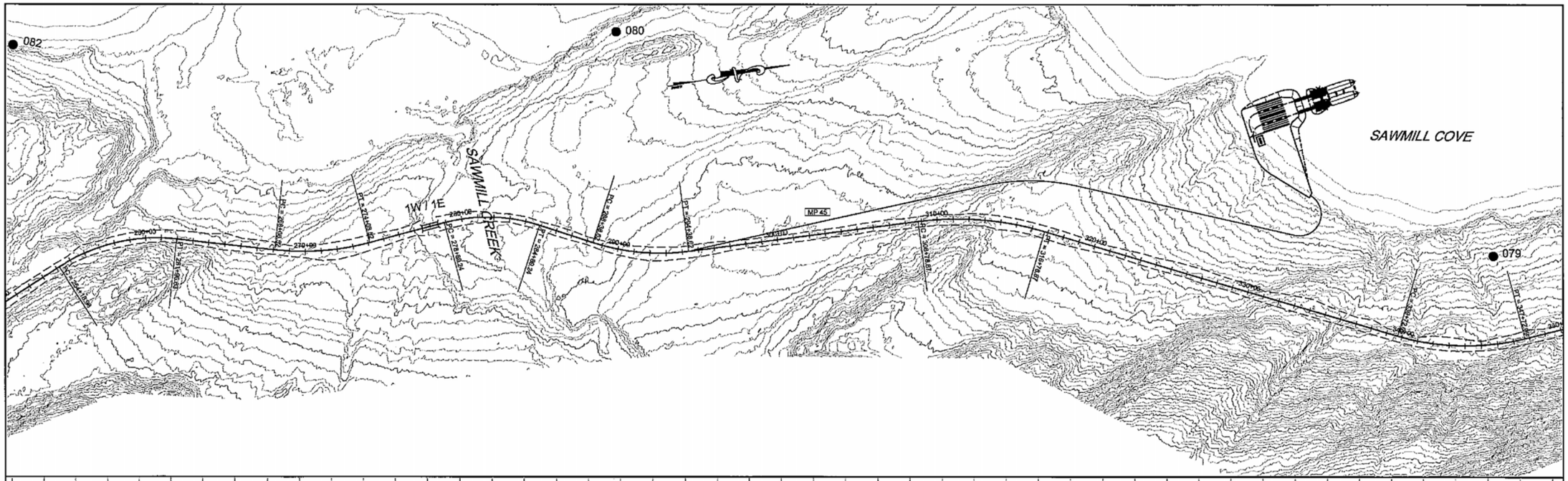

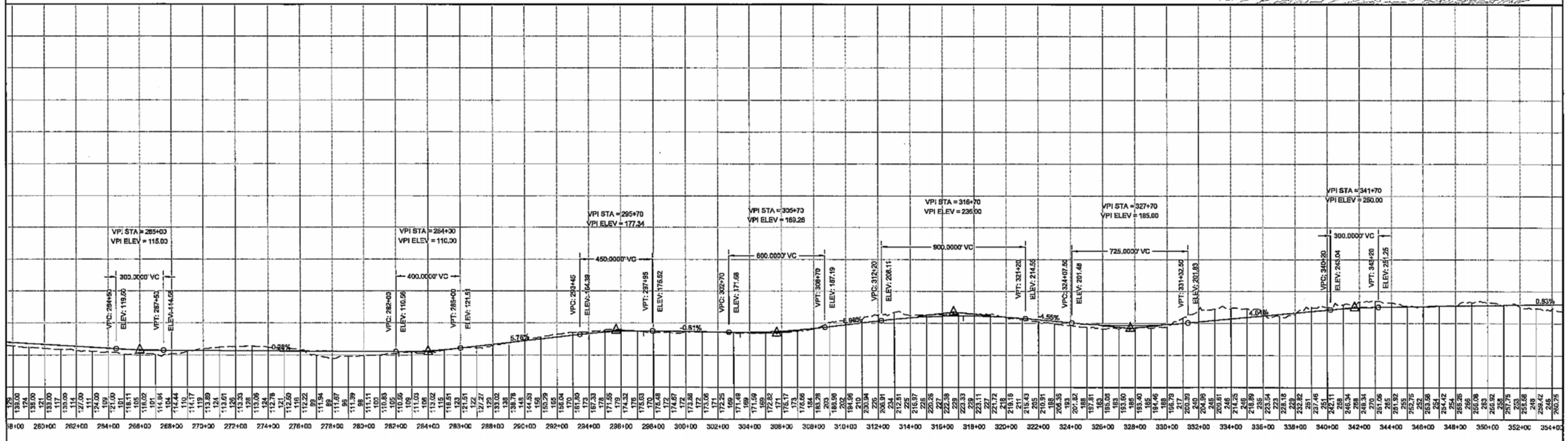

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EAST LYNN CANAL
STA. 258+00 TO STA. 354+00

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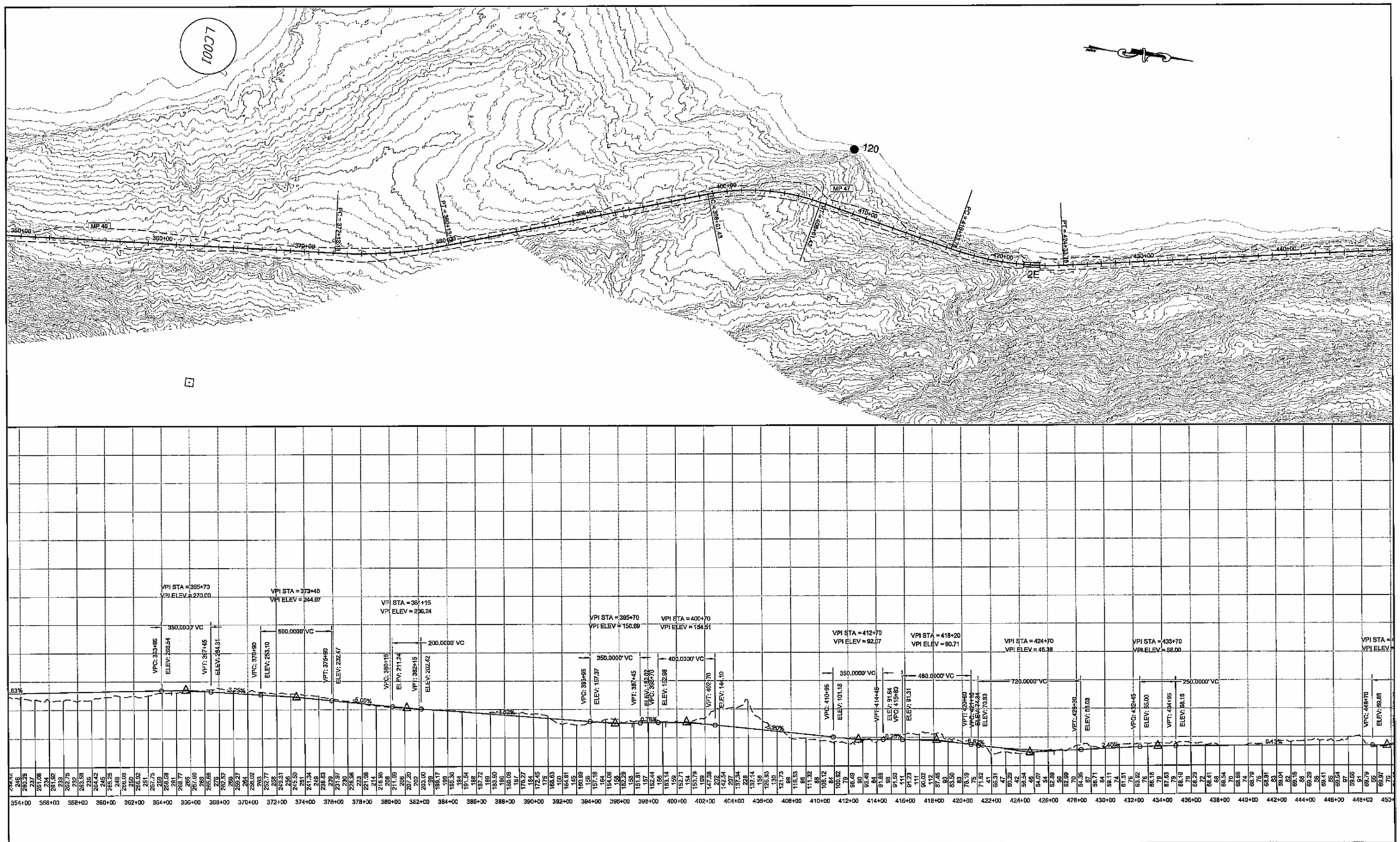

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PROJECT NO. 71100

EAST LYNN CANAL
STA. 354+00 TO STA. 450+00

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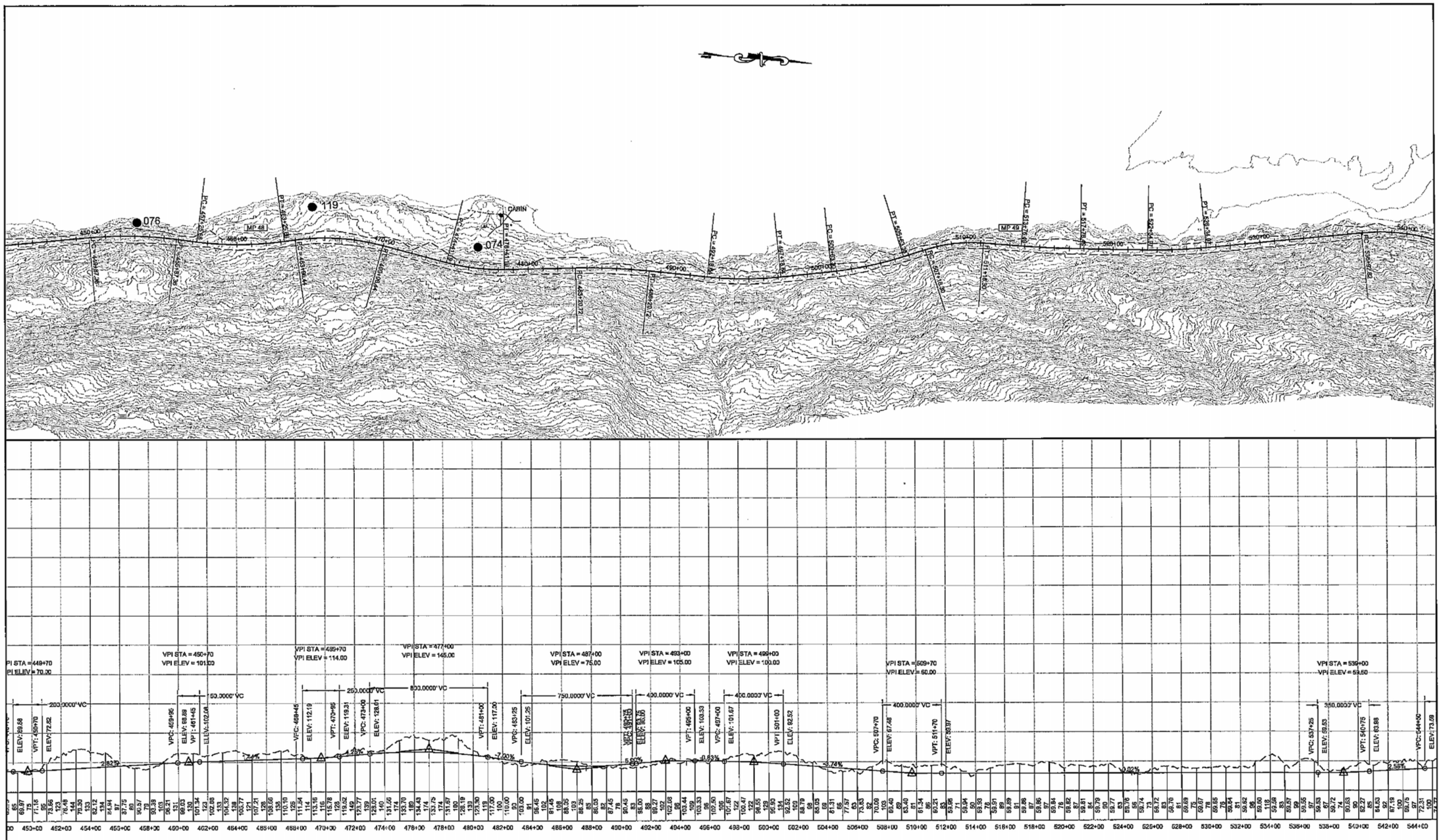

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DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
SOUTHEAST REGION DESIGN & CONSTRUCTION

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PROJECT NO. 71100

EAST LYNN CANAL
STA. 450+00 TO STA. 545+00

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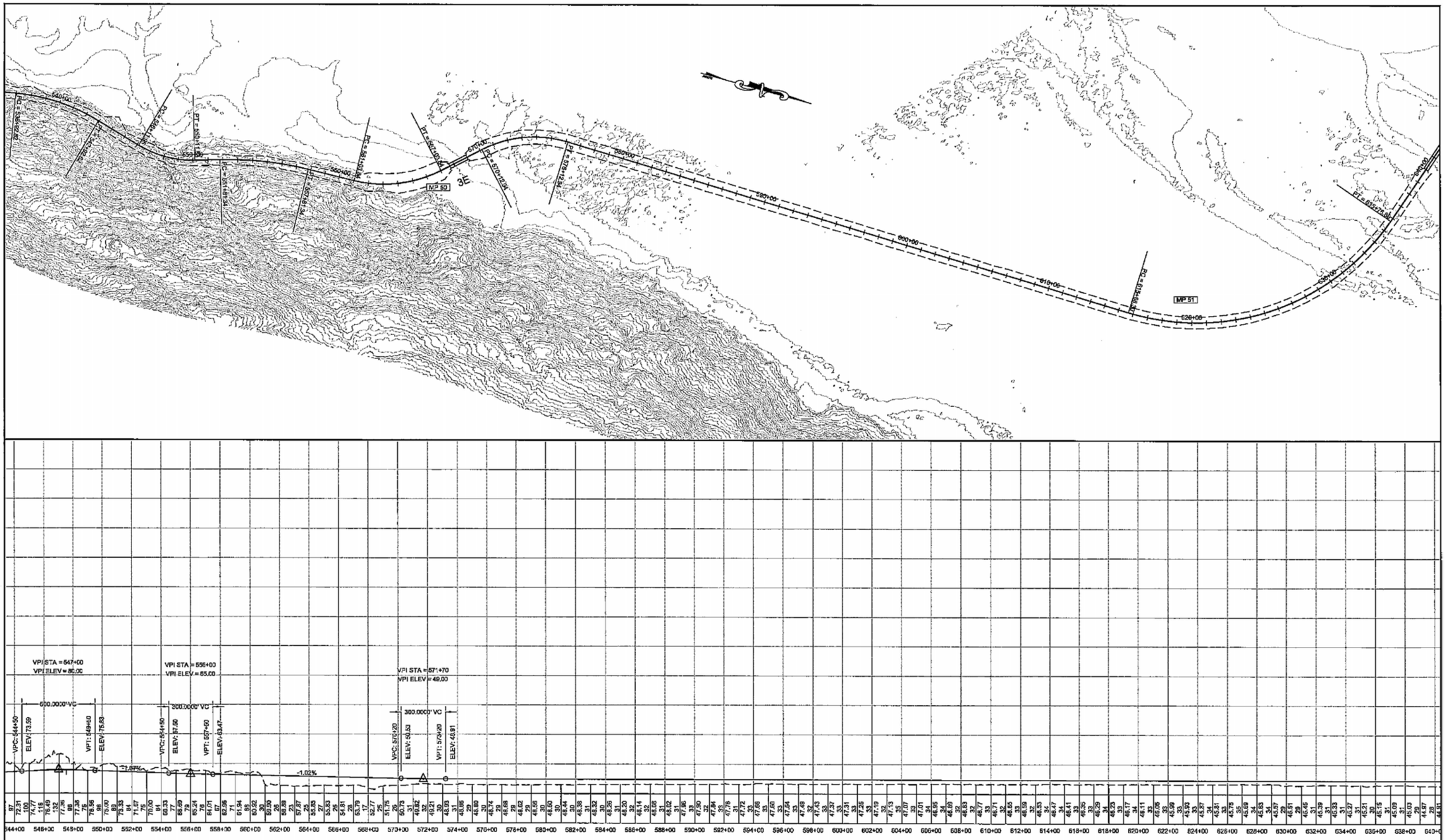

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SOUTHEAST REGION DESIGN & CONSTRUCTION

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EAST LYNN CANAL
STA. 545+00 TO STA. 640+00

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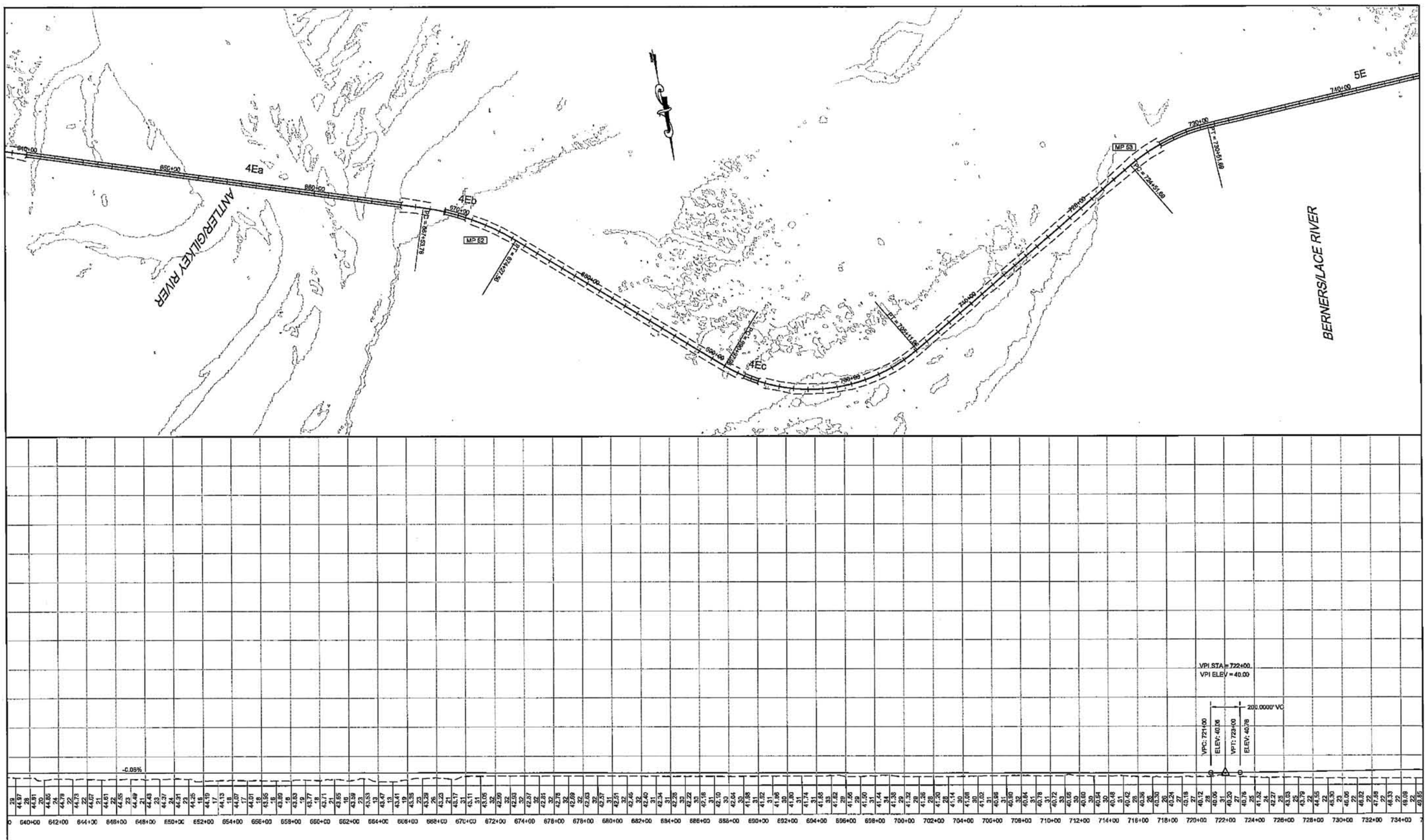

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EAST LYNN CANAL
STA. 640+00 TO STA. 735+00

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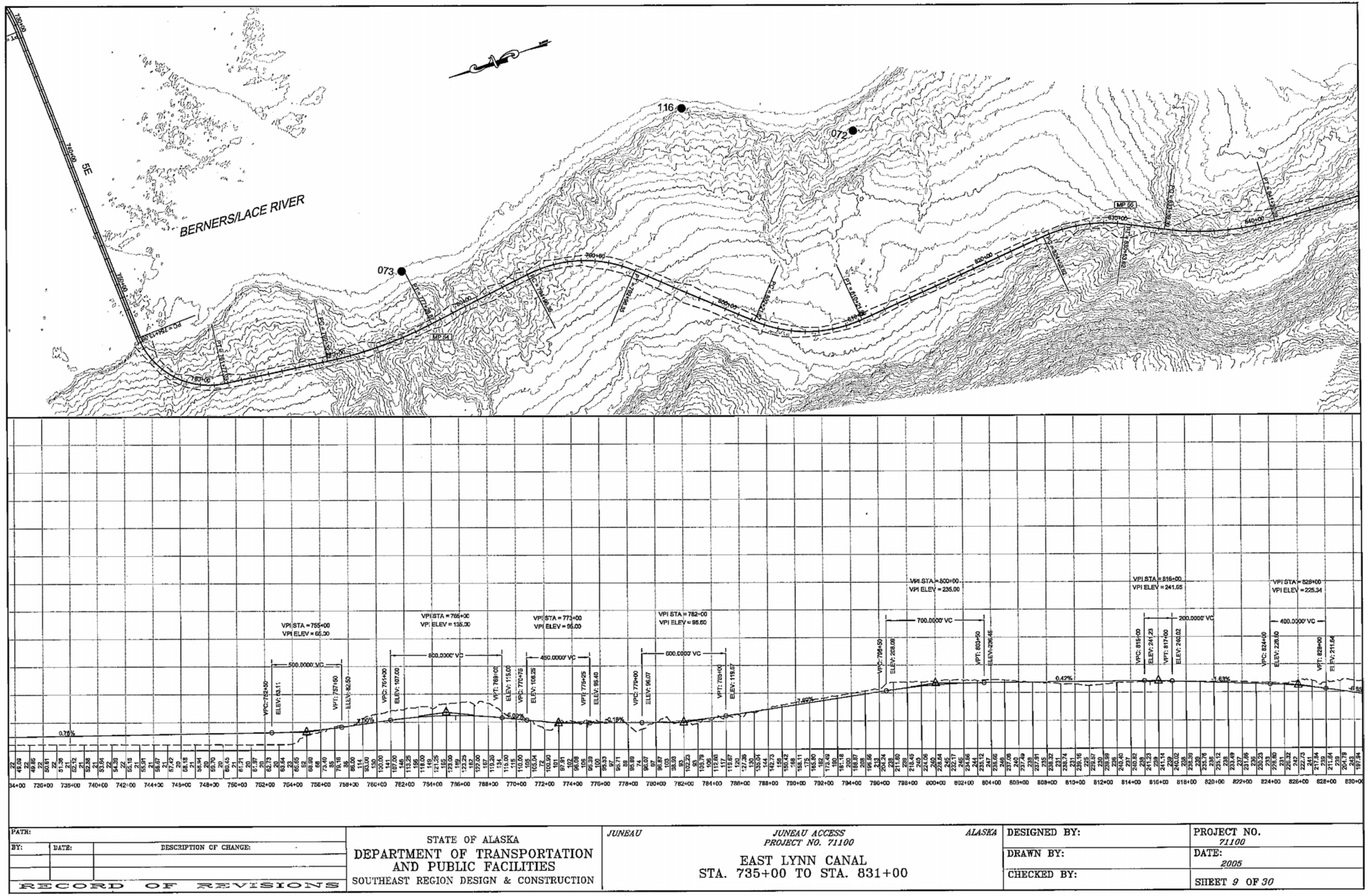

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DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
SOUTHEAST REGION DESIGN & CONSTRUCTION

JUNEAU — *JUNEAU ACCESS* — ALASKA
PROJECT NO. 71100

EAST LYNN CANAL
STA. 735+00 TO STA. 831+00

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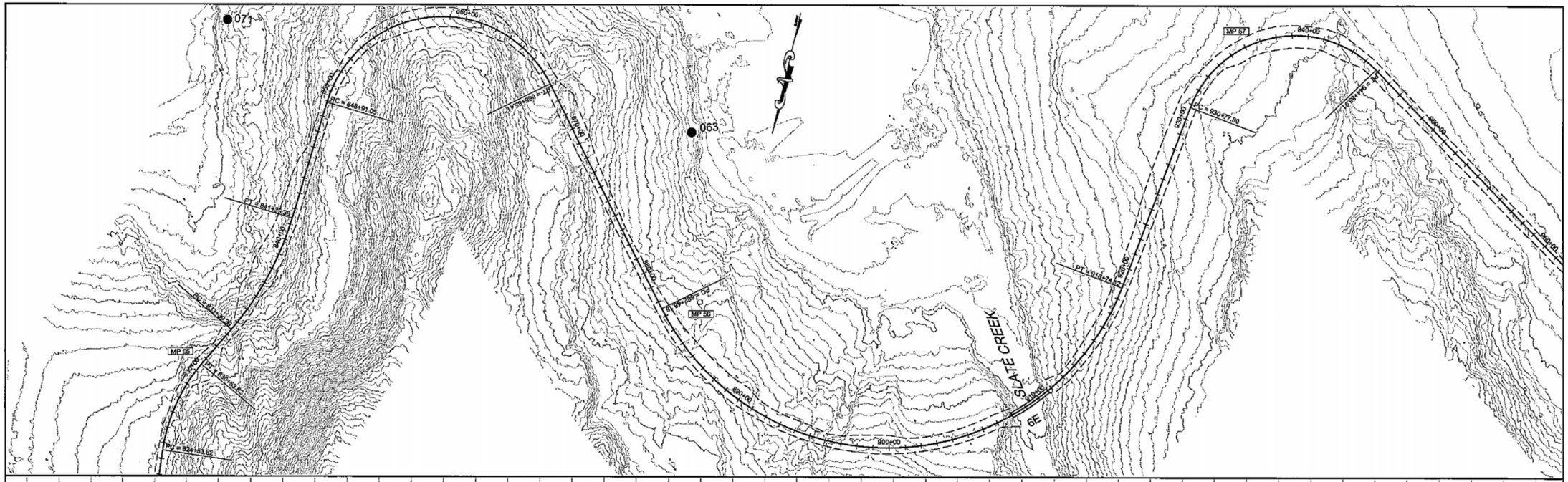

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JUNEAU — *JUNEAU ACCESS PROJECT NO. 71100* — ALASKA

EAST LYNN CANAL
STA. 831+00 TO STA. 925+00

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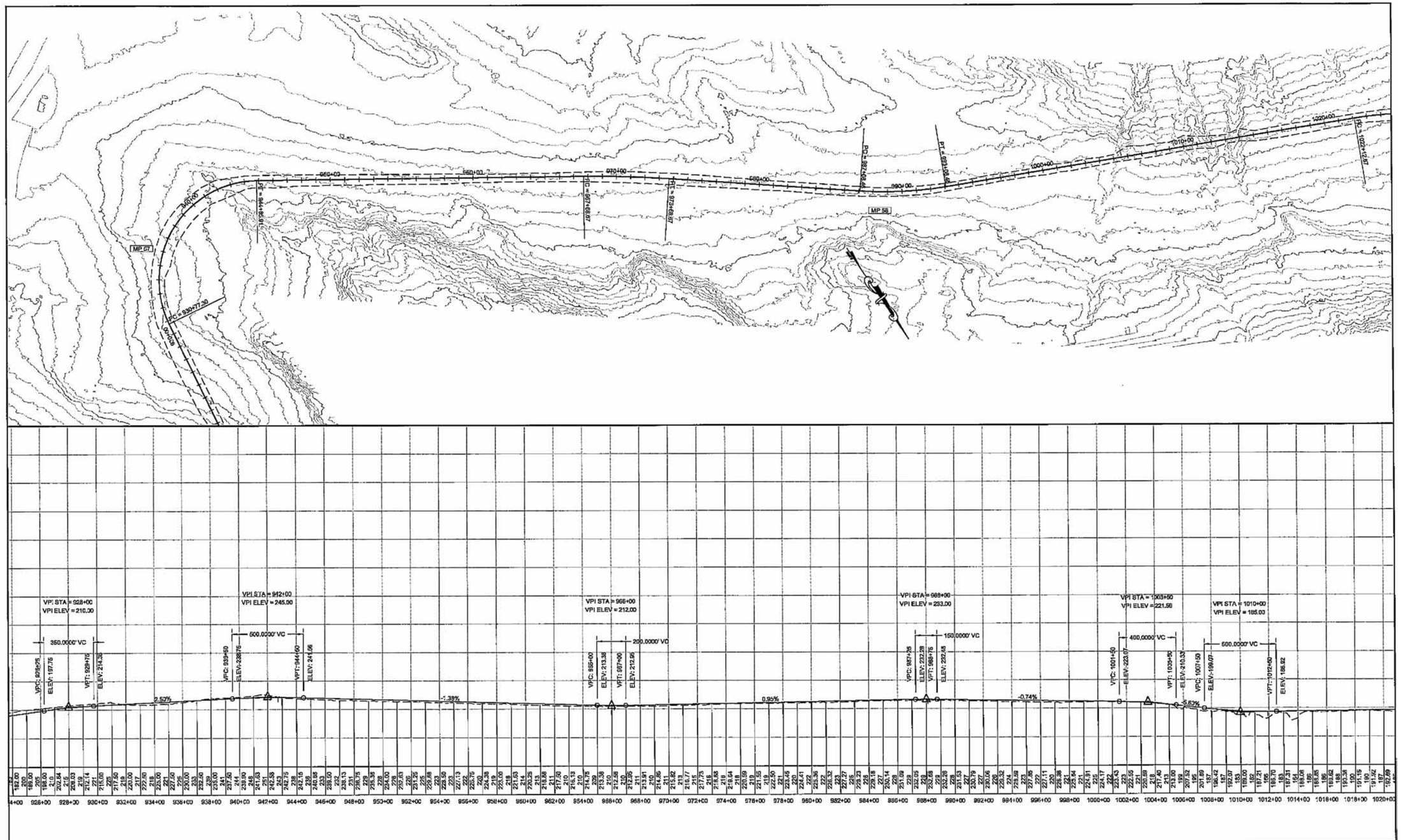

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EAST LYNN CANAL
STA. 925+00 TO STA. 1020+00

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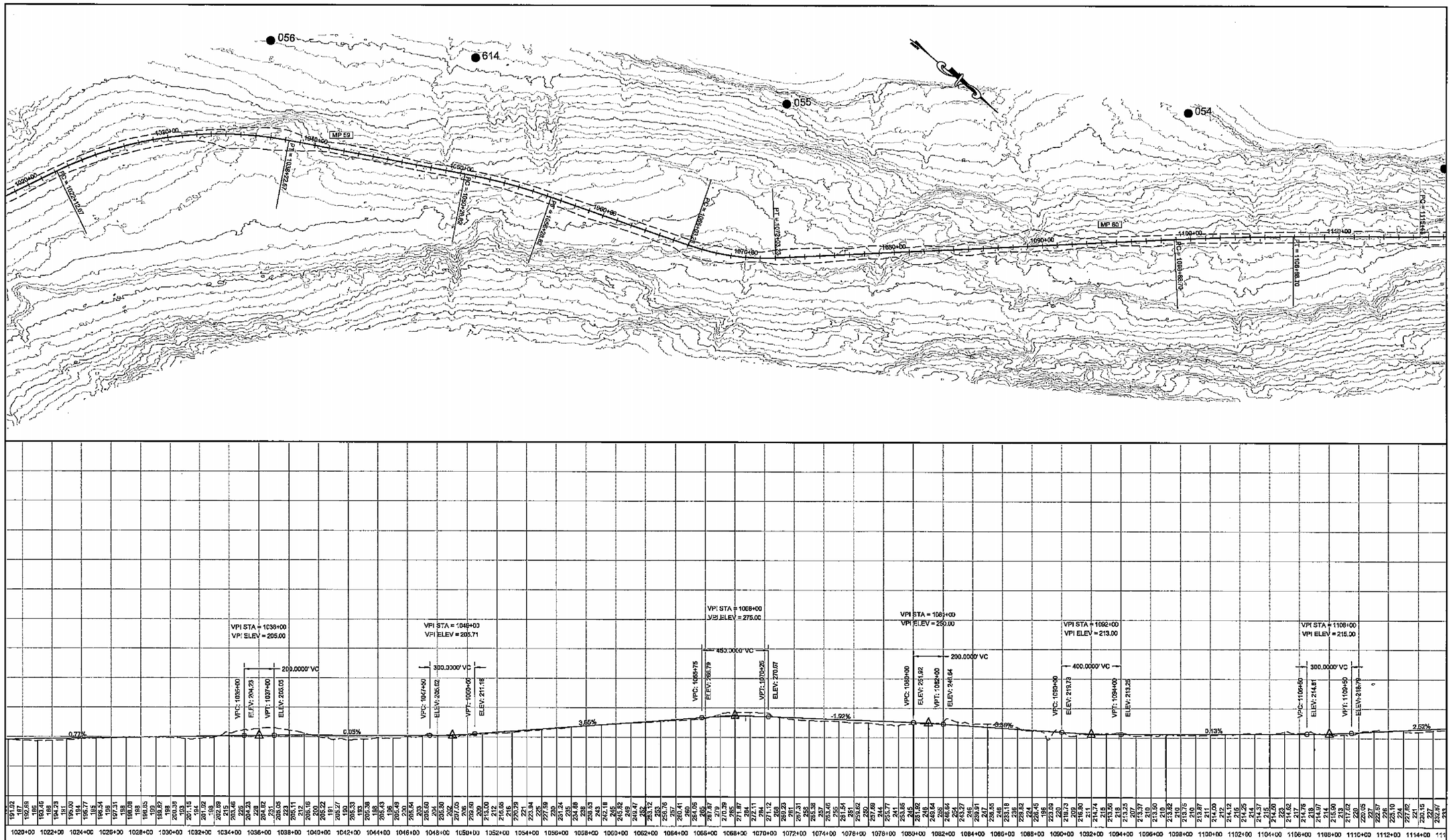

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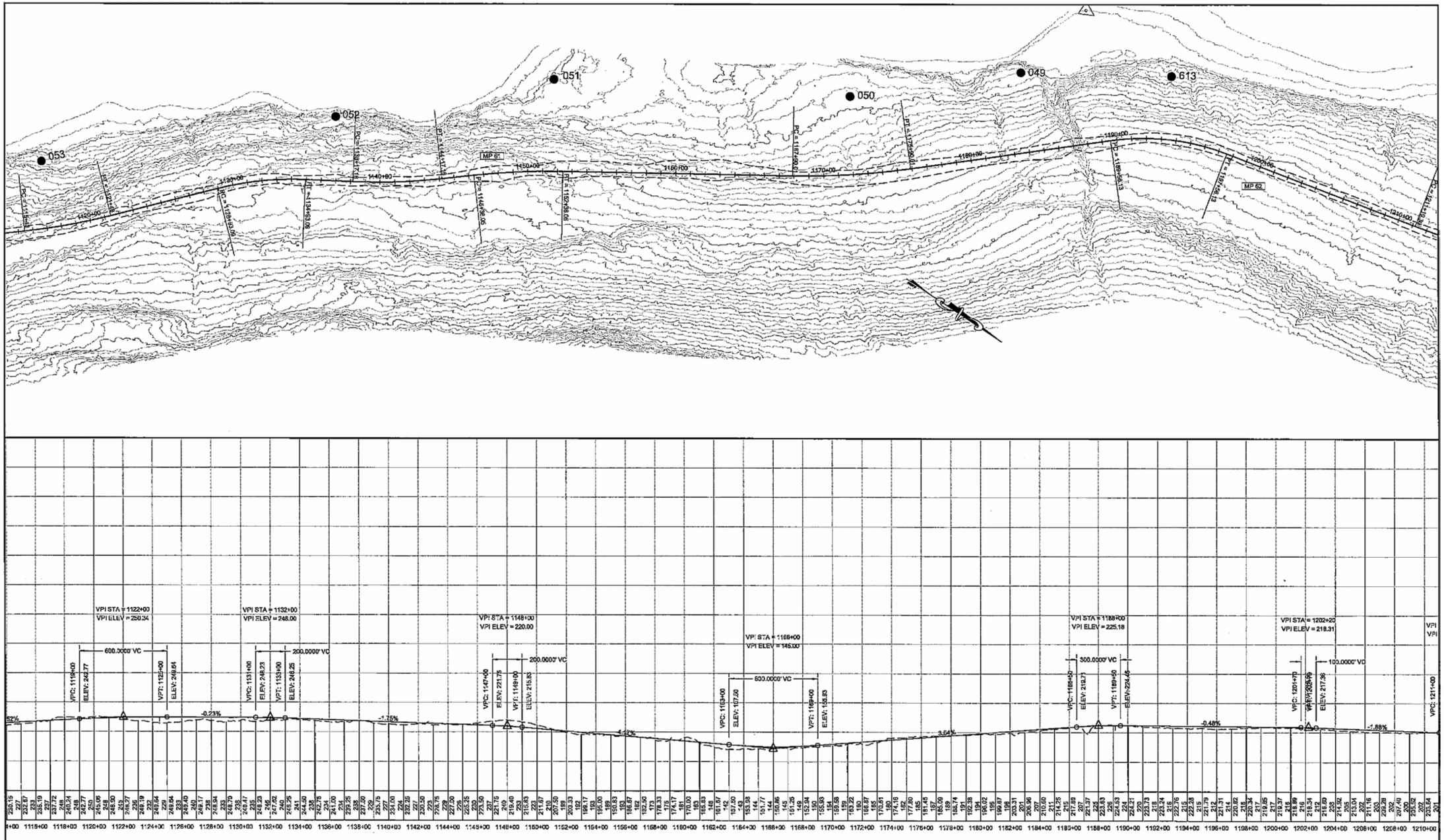
BY:	DATE:	DESCRIPTION OF CHANGE:
RECORD OF REVISIONS		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
SOUTHEAST REGION DESIGN & CONSTRUCTION

JUNEAU — *JUNEAU ACCESS PROJECT NO. 71100* — ALASKA

EAST LYNN CANAL
STA. 1020+00 TO STA. 1115+00

DESIGNED BY:	PROJECT NO. 71100
DRAWN BY:	DATE: 2005
CHECKED BY:	SHEET 12 OF 30



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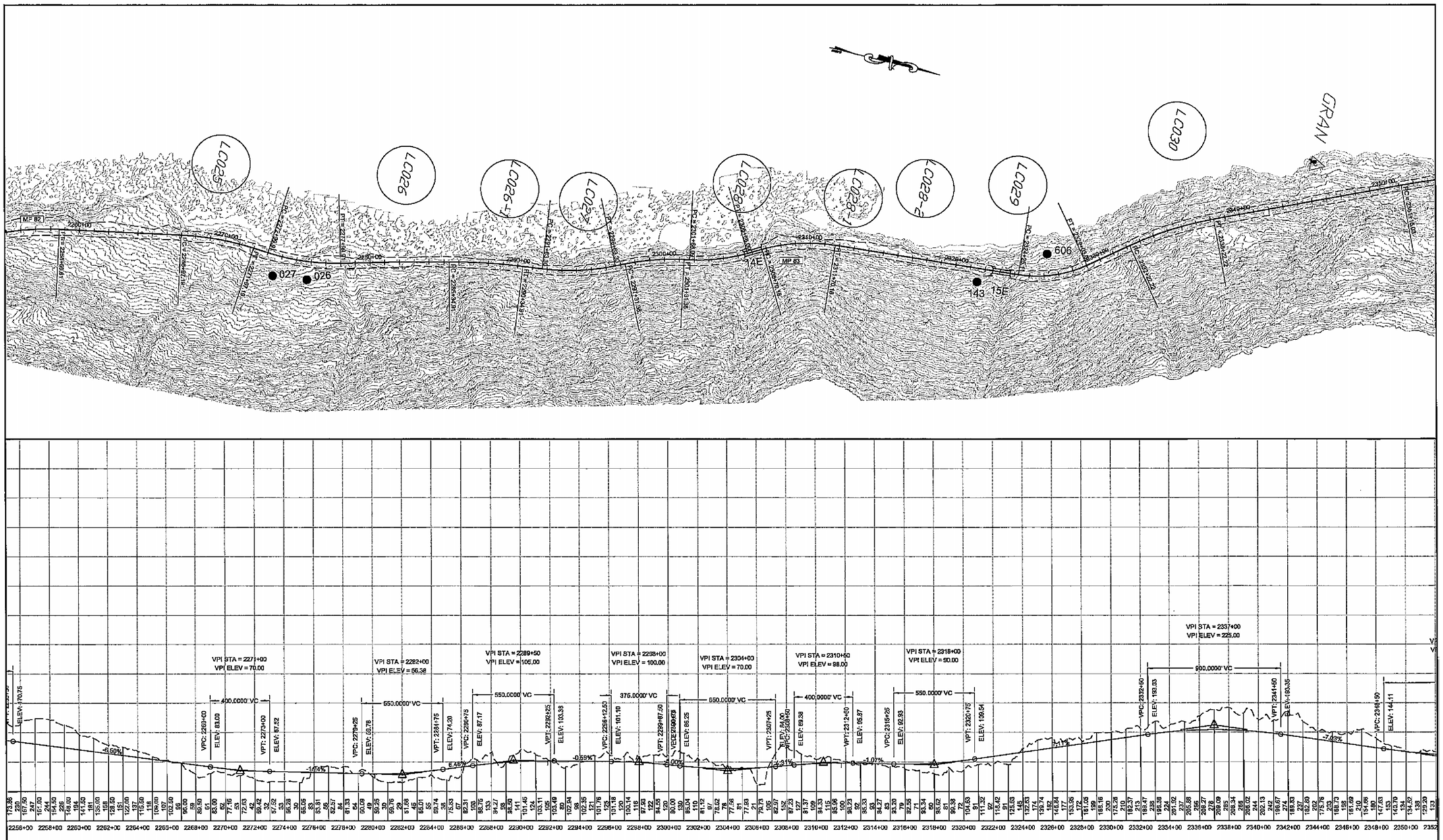
RECORD OF REVISIONS		

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
SOUTHEAST REGION DESIGN & CONSTRUCTION

JUNEAU — JUNEAU ACCESS PROJECT NO. 71100 — ALASKA

EAST LYNN CANAL
STA. 1115+00 TO STA. 1210+00

DESIGNED BY:	PROJECT NO. 71100
DRAWN BY:	DATE: 2005
CHECKED BY:	SHEET 13 OF 30



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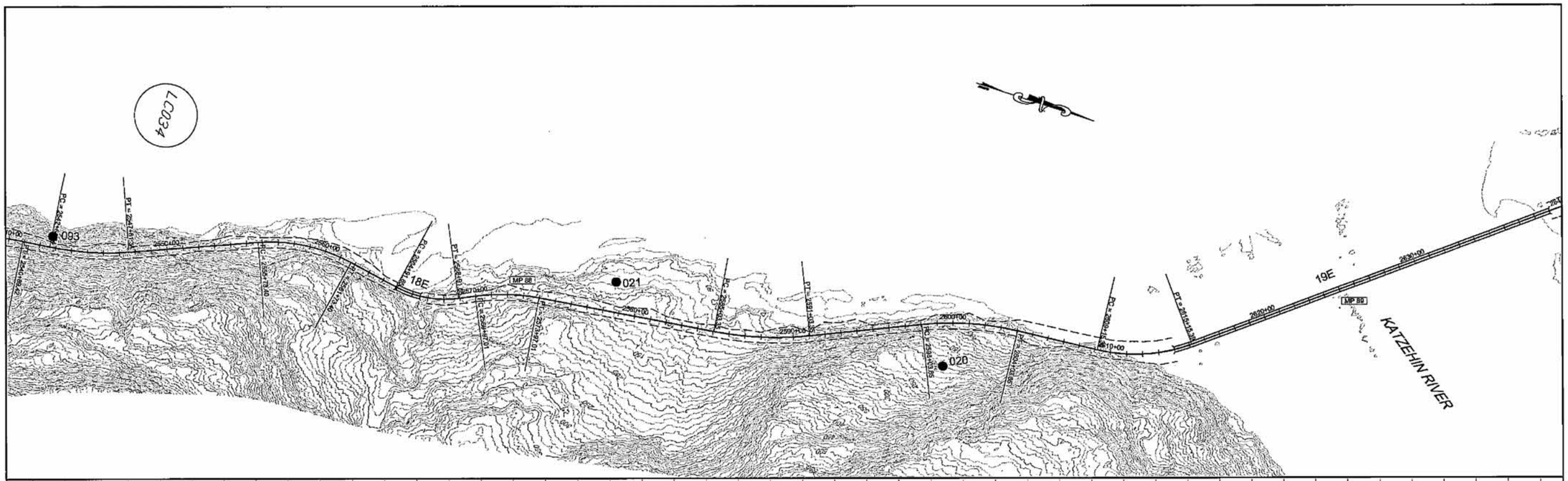
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
SOUTHEAST REGION DESIGN & CONSTRUCTION

JUNEAU — JUNEAU ACCESS PROJECT NO. 71100 — ALASKA

EAST LYNN CANAL
STA. 2256+00 TO STA. 2352+00

DESIGNED BY:	PROJECT NO. 71100
DRAWN BY:	DATE: 2005
CHECKED BY:	SHEET 25 OF 30



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BY:	DATE:	DESCRIPTION OF CHANGE:

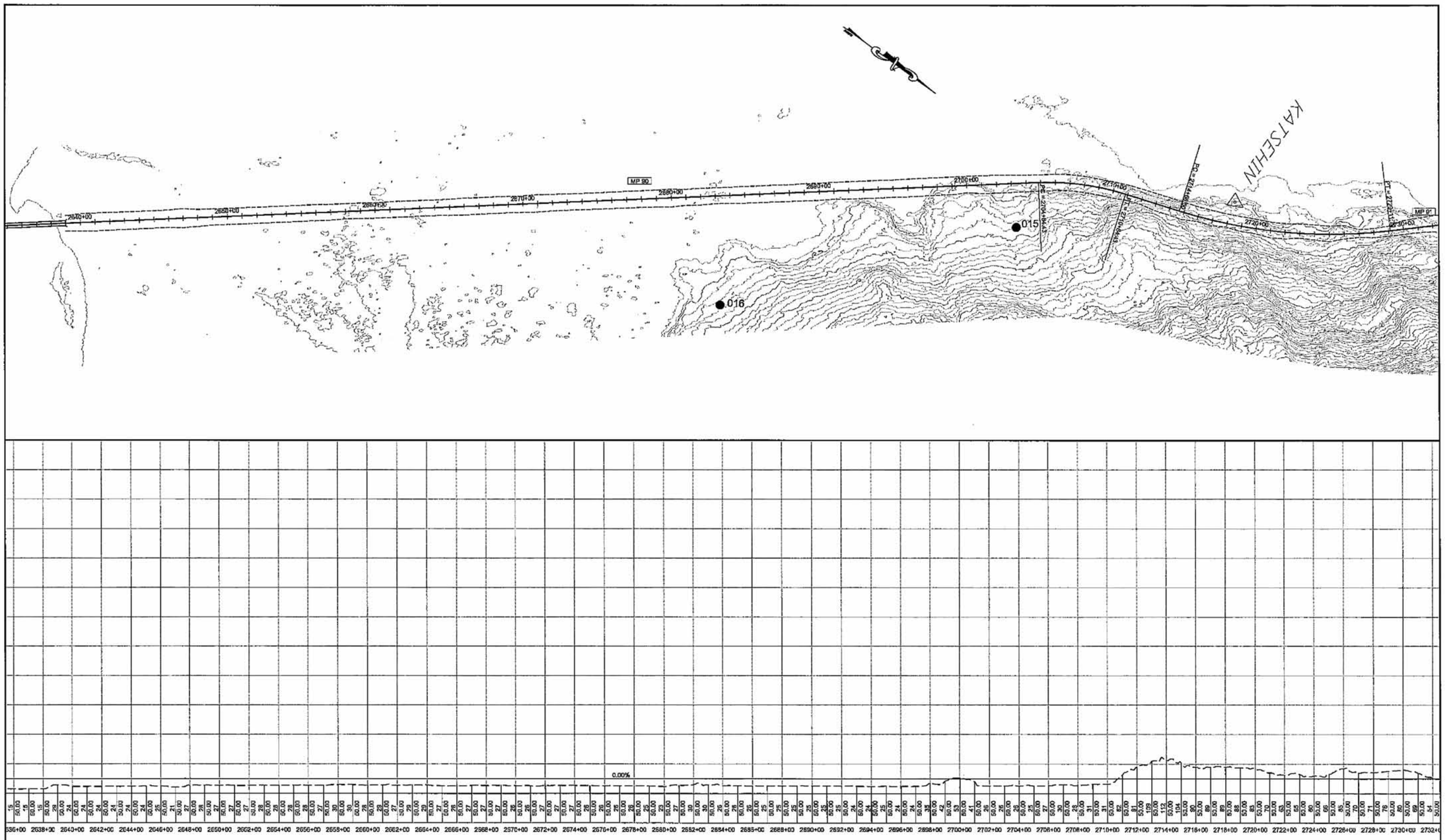
RECORD OF REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
SOUTHEAST REGION DESIGN & CONSTRUCTION

JUNEAU *JUNEAU ACCESS* *ALASKA*
PROJECT NO. 71100

EAST LYNN CANAL
STA. 2542+00 TO STA. 2637+00

DESIGNED BY:	PROJECT NO. *71100*
DRAWN BY:	DATE: *2005*
CHECKED BY:	SHEET *28* OF *30*



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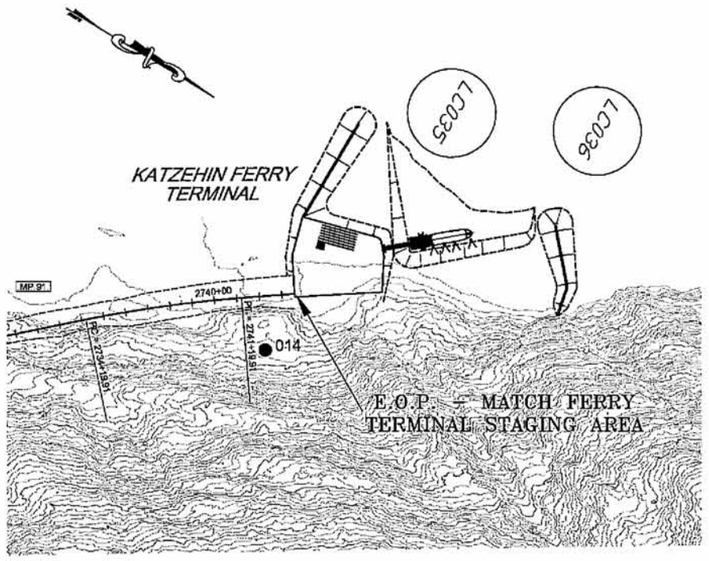
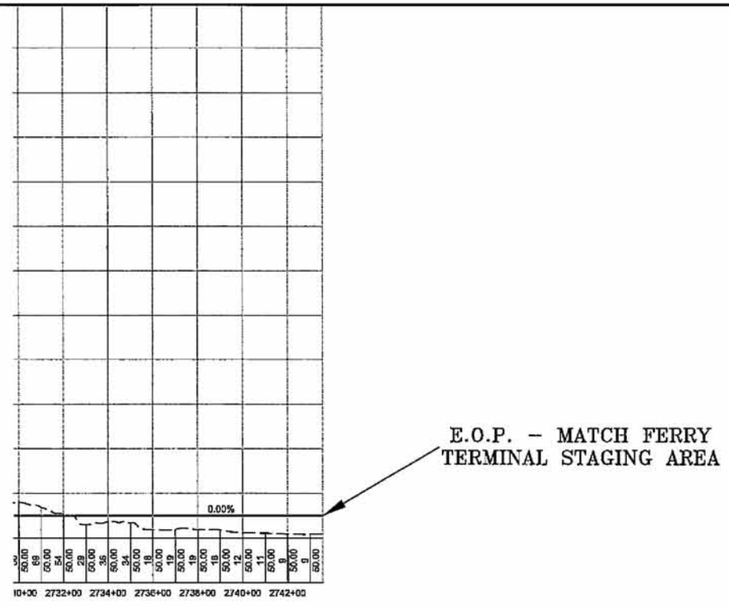
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES
SOUTHEAST REGION DESIGN & CONSTRUCTION

JUNEAU — *JUNEAU ACCESS PROJECT NO. 71100* — ALASKA

EAST LYNN CANAL
STA. 2637+00 TO STA. 2732+00

DESIGNED BY:	PROJECT NO. 71100
DRAWN BY:	DATE: 2005
CHECKED BY:	SHEET 29 OF 30





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RECORD OF REVISIONS

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES
SOUTHEAST REGION DESIGN & CONSTRUCTION

JUNEAU — JUNEAU ACCESS PROJECT NO. 71100 — ALASKA

EAST LYNN CANAL
STA. 2732+00 TO E.O.P.

DESIGNED BY:	PROJECT NO. 71100
DRAWN BY:	DATE: 2005
CHECKED BY:	SHEET 30 OF 30

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REVISIONS TO ATTACHMENT D
MARINE TERMINAL CONCEPTS

Attachment D has been updated to include the latest DOT&PF estimates. All estimates include the current ICAP rate of 4.3 percent. The Auke Bay Ferry Terminal Estimate and Layout reflect the current AMHS terminal concept for Auke Bay (see attached figure). The Sawmill Cove Ferry Terminal estimate has been reduced by the amount of the Access Road construction costs, which are included in the Alternative 2B Highway Cost Estimate. The Sawmill Cove Ferry Terminal and William Henry Bay Ferry Terminal estimates have been updated to include the latest cost estimates for the General Construction items.

Some printed copies of the Supplemental Draft EIS Appendix D Attachment D were missing one or more of Figures 1 through 8. Therefore, all eight figures are reprinted at the end of this attachment.

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SE Region - Marine Engineering

Project Construction Cost Estimate

PROJECT NUMBER: 71100
PROJECT TITLE: Juneau Access Ferry Terminals
DESCRIPTION: Sawmill Cove Ferry Terminal - Twin Stern Berth

Item No.	Item	Units	Unit Price	Quantity	Amount
1	***General***				
	Mobilization/Demobilization	LS	$700,000	1	$700,000
	Temporary Erosion and Pollution Control	CS	$250,000	1	$250,000
	Constr. Surveying by the Contractor	LS	$50,000	1	$50,000
	Construction Camp Facilities	LS	$75,000	1	$75,000
2	***Dredged Mooring Basin***				
	Dredged Mooring Basin (Includes placement as upland fill or disposal)	CY	$8.00	16,000	$128,000
3	***Marine Facilities***				
	Pile Supported Bridge Approach Abutment	EA	$80,000	2	$160,000
	20'x142' Steel Transfer Bridge	EA	$800,000	2	$1,600,000
	50'x80' Steel Bridge Float (w/ Intermediate Ramp, Apron & Fenders)	EA	$1,600,000	2	$3,200,000
	4-Pile Bridge Float Restraint Dolphins	EA	$250,000	3	$750,000
	6-Pile Double Sided Breasting Dolphins	EA	$350,000	4	$1,400,000
	Electrical Power and Lighting System (Terminal)	LS	$300,000	1	$300,000
3	***Upland Improvements (Access/Staging Area)***				
	Embankment (Local Excavation)	CY	$6.00	68,000	$408,000
	Riprap Slope Protection	CY	$40	5,500	$220,000
	12" Aggregate Surface Course (Approx 135,000sf)	CY	$20.00	5,000	$100,000
	Asphalt Concrete Surfacing (2" thick) (Approx 135,000 sf)	Ton	$60.00	1,500	$90,000
	Metal Beam Guardrail	LF	$40	950	$38,000
	Potable Water Supply (Well & Piping)	LS	$200,000	1	$200,000
	Sanitary Sewer (Pkg Treatment Plant/Outfall)	LS	$300,000	1	$300,000
	Diesel Generator System, Bldg & Fuel Storage Tank	LS	$600,000	1	$600,000
	Electrical Power Supply & Area Lighting System	LS	$300,000	1	$300,000
5	***Building Structures***				
	Terminal Building (24'x40')	SF	$450	960.00	$432,000

Item Totals	*$11,301,000*
Estimating & Construction Contingencies @ 10%	$1,130,100
Construction Subtotal	***$12,431,100***
6% Design & Permitting	$745,866
8% Construction Admin	$994,488
4.3% ICAP	$534,537.30
Project Total =	***$14,705,991***

Prepared by: KDM **Date:** 10/05/05
Checked by: JDB **Date:**

SE Region - Marine Engineering

Project Construction Cost Estimate

PROJECT NUMBER: 71100
PROJECT TITLE: Juneau Access Ferry Terminals
DESCRIPTION: Katzehin Ferry Terminal Option 1 (Unprotected)

Item No.	Item	Units	Unit Price	Quantity	Amount
1	***General***				
	Mobilization/Demobilization	LS	$700,000	1	$700,000
	Temporary Erosion and Pollution Control	CS	$200,000	1	$200,000
	Constr. Surveying by the Contractor	LS	$125,000	1	$125,000
	Construction Camp Facilities	LS	$350,000	1	$350,000
2	***Marine Facilities***				
	Pile Supported Bridge Approach Abutment	LS	$100,000	1	$100,000
	20'x150' Steel Transfer Bridge	LS	$900,000	1	$900,000
	Syncro Lift or Counterweight Lift Towers	EA	$1,000,000	2	$2,000,000
	Stern Breasting Dolphins	EA	$325,000	2	$650,000
	5-Pile Breasting Dolphins	EA	$300,000	4	$1,200,000
	Electrical Power and Lighting System (Terminal)	LS	$350,000	1	$350,000
3	***Upland Improvements (Access/Staging Area)***				
	Import Embankment - Borrow (Classified Materials)	CY	$12.00	90,000	$1,080,000
	Riprap Slope Protection (Class IV)	CY	$30	16,500	$495,000
	12" Aggregate Surface Course (Approx 80,500 sf)	CY	$20.00	3,000	$60,000
	Asphalt Concrete Surfacing (2" thick) (Approx 80,500 sf)	Ton	$60.00	1,000	$60,000
	Metal Beam Guardrail	LF	$40	1,200	$48,000
	Potable Water Supply (Well & Piping)	LS	$200,000	1	$200,000
	Sanitary Sewer (Pkg Treatment Plant/Outfall)	LS	$300,000	1	$300,000
	Diesel Generator System, Bldg & Fuel Storage Tank	LS	$600,000	1	$600,000
	Electrical Power Supply & Area Lighting System	LS	$300,000	1	$300,000
4	***Building Structures***				
	Terminal Building	SF	$450	960.00	$432,000

Item Totals	*$10,150,000*
Estimating & Construction Contingencies @ 10%	$1,015,000
Construction Subtotal	***$11,165,000***
8% Design & Permitting	$893,200
8% Construction Admin	$893,200
4.3% ICAP	$480,095
Project Total =	***$13,431,495***

Prepared by: KDM **Date:** 10/29/03
Checked by: **Date:**

SE Region - Marine Engineering

Project Construction Cost Estimate

PROJECT NUMBER: 71100
PROJECT TITLE: Juneau Access Ferry Terminals
DESCRIPTION: Katzehin Ferry Terminal Option 2 (North & South Breakwaters)

Item No.	Item	Units	Unit Price	Quantity	Amount
1	***General***				
	Mobilization/Demobilization	LS	$700,000	1	$700,000
	Temporary Erosion and Pollution Control	CS	$350,000	1	$350,000
	Constr. Surveying by the Contractor	LS	$150,000	1	$150,000
	Construction Camp Facilities	LS	$350,000	1	$350,000
2	***Mooring Basin & Breakwaters***				
	Dredged Mooring Basin	CY	$8.00	40,000	$320,000
	(Includes placement as upland/breakwater fill where usable)				
	North Rubble Mound Breakwater	LF	$1,800	400	$720,000
	North Sheet Pile Wave Barrier	LF	$1,500	110	$165,000
	Protection Dolphin at Wave Barrier End	EA	$200,000	1	$200,000
	South Rubble Mound Breakwater	LF	$1,800	500	$900,000
	Navigational Aids	EA	$10,000	2	$20,000
3	***Marine Facilities***				
	Pile Supported Bridge Approach Abutment	LS	$100,000	1	$100,000
	20'x150' Steel Transfer Bridge	LS	$900,000	1	$900,000
	50'x80' Steel Bridge Float	LS	$1,600,000	1	$1,600,000
	(w/ Intermediate Ramp & Apron)				
	4-Pile Bridge Float Restraint Dolphins	EA	$250,000	2	$500,000
	5-Pile Breasting Dolphins	EA	$300,000	6	$1,800,000
	Electrical Power and Lighting System (Terminal)	LS	$300,000	1	$300,000
3	***Upland Improvements (Access/Staging Area)***				
	Import Embankment - Borrow	CY	$12.00	50,000	$600,000
	(Classified Materials)				
	Riprap Slope Protection (NIC Breakwaters)	CY	$30	6,000	$180,000
	12" Aggregate Surface Course	CY	$20.00	4,000	$80,000
	(Approx 103,000 sf)				
	Asphalt Concrete Surfacing (2" thick)	Ton	$60.00	1,200	$72,000
	(Approx 103,000 sf)				
	Metal Beam Guardrail	LF	$40	850	$34,000
	Potable Water Supply (Well & Piping)	LS	$200,000	1	$200,000
	Sanitary Sewer (Pkg Treatment Plant/Outfall)	LS	$300,000	1	$300,000
	Diesel Generator System, Bldg & Fuel Storage Tank	LS	$600,000	1	$600,000
	Electrical Power Supply & Area Lighting System	LS	$300,000	1	$300,000
4	***Building Structures***				
	Terminal Building (24'x40')	SF	$450	960.00	$432,000

Item Totals	*$11,873,000*
Estimating & Construction Contingencies @ 10%	$1,187,300
Construction Subtotal	***$13,060,300***
8% Design & Permitting	$1,044,824
8% Construction Admin	$1,044,824
4.3% ICAP	$561,592.90
Project Total =	***$15,711,541***

Prepared by: KDM **Date:** 10/05/05
Checked by: JDB **Date:**

SE Region - Marine Engineering

Project Construction Cost Estimate

PROJECT NUMBER: 71100
PROJECT TITLE: Juneau Access Ferry Terminals
DESCRIPTION: Katzehin Mooring Basin - Option 3

Item No.	Item	Units	Unit Price	Quantity	Amount
1	***General***				
	Mobilization/Demobilization	LS	$2,500,000	1	$2,500,000
	Temporary Erosion and Pollution Control	CS	$750,000	1	$750,000
	Constr. Surveying by the Contractor	LS	$225,000	1	$225,000
	Construction Camp Facilities	LS	$650,000	1	$650,000
2	***Mooring Basin & Breakwaters***				
	Dredged Mooring Basin	CY	$4.00	2,400,000	$9,600,000
	(Includes placement as upland/breakwater fill where usable)				
	North Rubble Mound Breakwater	LF	$1,200	2,600	$3,120,000
	South Rubble Mound Breakwater	LF	$1,200	1,500	$1,800,000
	Entrance Channel Markers/Guide Dolphins	EA	$150,000	4	$600,000
	Navigational Aids	EA	$10,000	4	$40,000
3	***Marine Facilities***				
	Pile Supported Bridge Approach Abutment	LS	$100,000	1	$100,000
	20'x150' Steel Transfer Bridge	LS	$900,000	1	$900,000
	50'x80' Steel Bridge Float	LS	$1,600,000	1	$1,600,000
	(w/ Intermediate Ramp & Apron)				
	4-Pile Bridge Float Restraint Dolphins	EA	$250,000	2	$500,000
	5-Pile Breasting Dolphins	EA	$300,000	4	$1,200,000
	Electrical Power and Lighting System (Terminal)	LS	$300,000	1	$300,000
4	***Upland Improvements (Staging Area)***				
	Misc. Import Embankment - Borrow	CY	$12.00	50,000	$600,000
	(Classified Materials)				
	Riprap Slope Protection (Class IV)	CY	$25	4,000	$100,000
	12" Aggregate Surface Course - Grading E	CY	$15.00	21,000	$315,000
	(Approx 600,000 sf)				
	Asphalt Concrete Surfacing (2" thick)	Ton	$60.00	7,000	$420,000
	(Approx 600,000 sf)				
	Metal Beam Guardrail	LF	$40	3,600	$144,000
	Potable Water Supply (Well & Piping)	LS	$200,000	1	$200,000
	Sanitary Sewer (Pkg Treatment Plant/Outfall)	LS	$300,000	1	$300,000
	Diesel Generator System, Bldg & Fuel Storage Tank	LS	$600,000	1	$600,000
	Electrical Power Supply & Area Lighting System	LS	$300,000	1	$300,000
5	***Building Structures***				
	Terminal Building	SF	$450	960.00	$432,000

Item Totals	*$27,296,000*
Estimating & Construction Contingencies @ 10%	$2,729,600
Construction Subtotal	***$30,025,600***
8% Design & Permitting	$2,402,048
8% Construction Admin	$2,402,048
4.3% ICAP	$1,291,100.80
Project Total =	***$36,120,797***

Prepared by: KDM **Date:** 10/29/03
Checked by: **Date:**

SE Region - Marine Engineering

Project Construction Cost Estimate

PROJECT NUMBER: 71100
PROJECT TITLE: Juneau Access Ferry Terminals
DESCRIPTION: William Henry Bay Ferry Terminal - Side Berth w/ Lift Bridge

Item No.	Item	Units	Unit Price	Quantity	Amount
1	***General***				
	Mobilization/Demobilization	LS	$700,000	1	$700,000
	Temporary Erosion and Pollution Control	CS	$25,000	1	$25,000
	Constr. Surveying by the Contractor	LS	$50,000	1	$50,000
	Construction Camp Facilities	LS	$200,000	1	$200,000
2	***Marine Facilities***				
	Pile Supported Bridge Approach Abutment	LS	$80,000	1	$80,000
	24' x 360' Pile Supported Approach Trestle	SF	$225	8,640	$1,944,000
	20'x142' Steel Transfer Bridge	LS	$800,000	1	$800,000
	Bridge Lift Towers & Syncro Lift or Counter Wt	EA	$1,000,000	2	$2,000,000
	5-Pile Breasting Dolphins	EA	$250,000	3	$750,000
	Electrical Power and Lighting System (Terminal)	LS	$425,000	1	$425,000
3	***Upland Improvements (Access/Staging Area)***				
	Clearing & Grubbing	LS	$60,000	1	$60,000
	Embankment (Local Excavation)	CY	$10.00	30,000	$300,000
	Riprap Slope Protection	CY	$40	6,200	$248,000
	12" Aggregate Surface Course (Approx 96,500 sf)	CY	$20.00	3,600	$72,000
	Asphalt Concrete Surfacing (2" thick) (Approx 96,500 sf)	Ton	$65.00	1,200	$78,000
	Metal Beam Guardrail	LF	$45	750	$33,750
	Potable Water Supply (Well & Piping)	LS	$225,000	1	$225,000
	Sanitary Sewer (Pkg Treatment Plant/Outfall)	LS	$325,000	1	$325,000
	Diesel Generator System, Bldg & Fuel Storage Tank	LS	$625,000	1	$625,000
	Electrical Power Supply & Area Lighting System	LS	$350,000	1	$350,000
4	***Building Structures***				
	Terminal Building (24'x40')	SF	$450	960.00	$432,000

Item Totals	*$9,722,750*
Estimating & Construction Contingencies @ 10%	$972,275
Construction Subtotal	***$10,695,025***
8% Design & Permitting	$855,602.00
8% Construction Admin	$855,602
4.3% ICAP	$459,886.08
Project Total =	***$12,866,115***

Prepared by: KDM **Date:** 10/05/05
Checked by: JDB **Date:**

SE Region - Marine Engineering

Project Construction Cost Estimate

PROJECT NUMBER: 71100
PROJECT TITLE: Auke Bay Ultimate Buildout - West Side
DESCRIPTION: Two Stern Berths & One Side Berth
Note: Use approx 75% of total project cost for Juneau Access Project.

Item No.	Item	Unit	Unit Price	Quantity	Amount
	General				
110	Mobilization	LS	$700,000	All Req'd.	$700,000
111(1)	Temporary Erosion and Pollution Control	CS	$25,000	All Req'd.	$25,000
112	Constr. Surveying by the Contractor	LS	$25,000	All Req'd.	$25,000
114	Traffic Maintenance and Control	LS	$12,500	All Req'd.	$12,500
116	Furnish and Maintain Field Office	LS	$25,000	All Req'd.	$25,000
201	Demolition & Removal	LS	$500,000	All Req'd.	$500,000
	Marine Facilities				
302(1)	140' Steel Transfer Bridge w/ Apron	EA	$900,000	2	$1,800,000
302(5a)	4-Pile Stern Float Restraint Dolphins	EA	$185,000	7	$1,295,000
302(5b)	3-Pile Float Restraint Dolphins	EA	$160,000	8	$1,280,000
302(6)	Lead In Stern Dolphin w/ Fender System	EA	$245,000	1	$245,000
302(7)	Berth Seperation Dolphins w/ Fender System	EA	$265,000	1	$265,000
302(8)	60'x200' Mooring Float	SF	$185	12,000	$2,220,000
302(12)	4-Pile, Mooring Float Restraint Dolphins	EA	$175,000	8	$1,400,000
502	Pile Supported Bridge Access Docks (2 ea) Steel Piles / Prestressed Concrete Deck	SF	$180	10,500	$1,890,000
626(1)	Sanitary Sewer Pumpout Piping	LF	$168	600	$100,500
627	Potable Water Supply Piping (Heat Trace, Arctic Pipe)	LF	$125	600	$75,000
680	Fuel Supply Piping (Welded Steel/Corrosion Control Wrapped)	LF	$125	600	$75,000
690	Electrical Power and Lighting System (Terminal)	LS	$500,000	All Req'd	$500,000

Item Totals	*$12,433,000*
Estimating & Construction Contingencies @ 10%	$1,243,300.00
Subtotal	*$13,676,300*
8% Design & Permitting	$1,094,104
8% Construction Admin	$1,094,104
4.3% ICAP	$588,080.90
Project Total =	***$16,452,589***
75% Attributable to Juneau Access =	***$12,339,442***

Prepared by: KDM **Date:** 10/05/05
Checked by: JDB **Date:**

FIGURES

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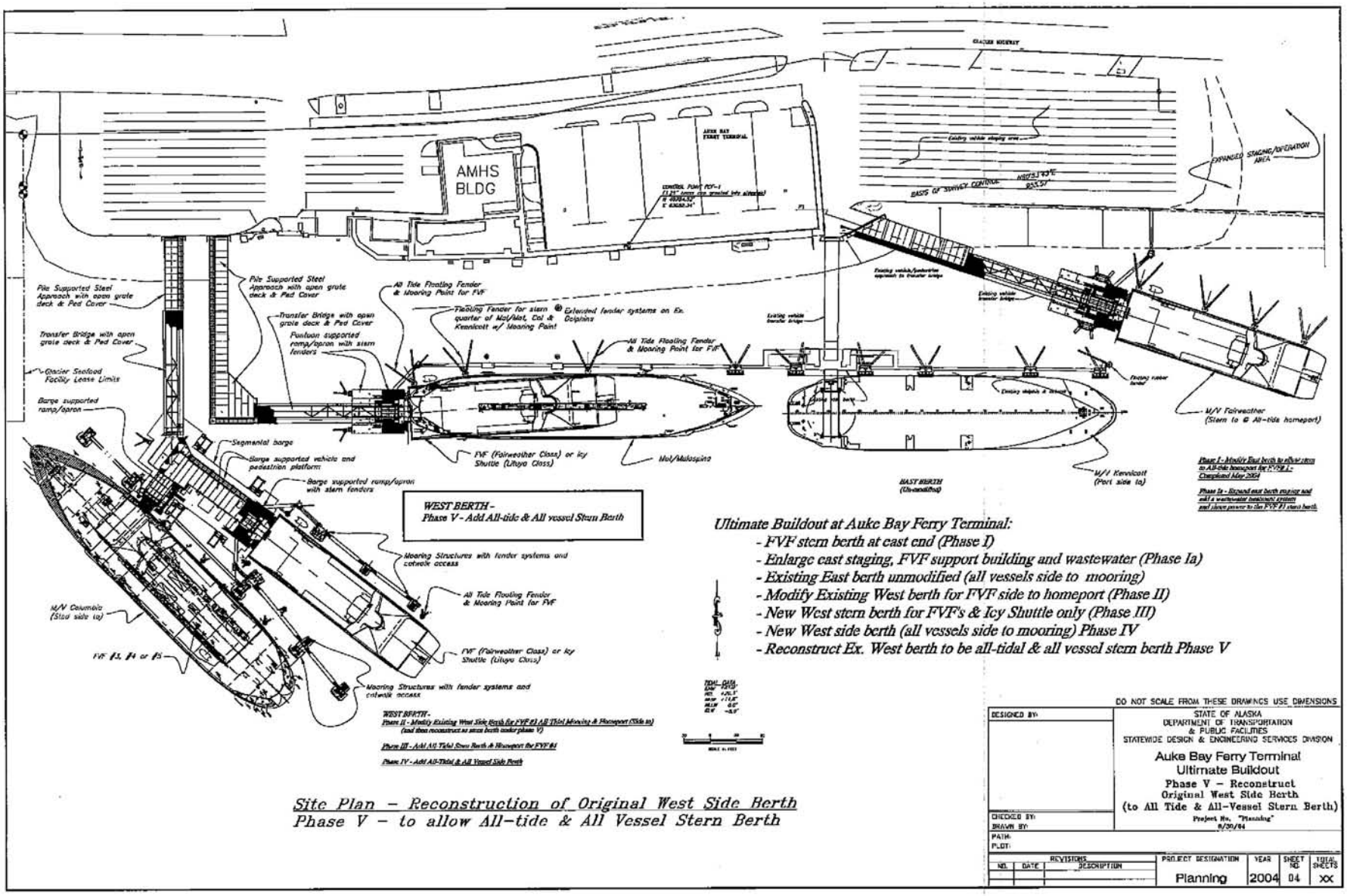
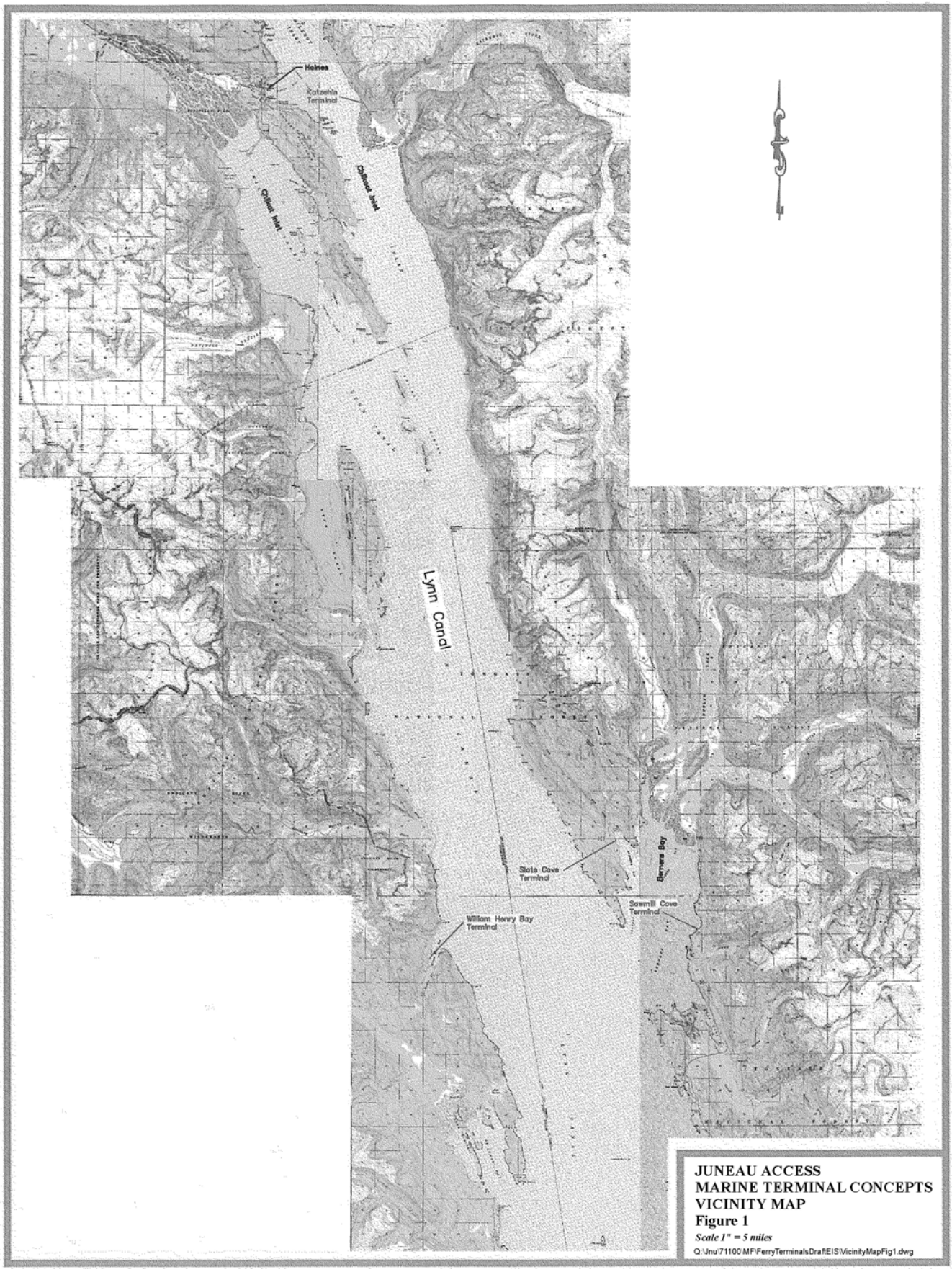


Site Plan – Reconstruction of Original West Side Berth
Phase V – to allow All-tide & All Vessel Stern Berth


Haines
Katzehin Terminal
Chilkoot Inlet
Chilkat Inlet
Lynn Canal
Berners Bay
Slate Cove Terminal
Sawmill Cove Terminal
William Henry Bay Terminal
JUNEAU ACCESS
MARINE TERMINAL CONCEPTS
VICINITY MAP
Figure 1
Scale 1" = 5 miles
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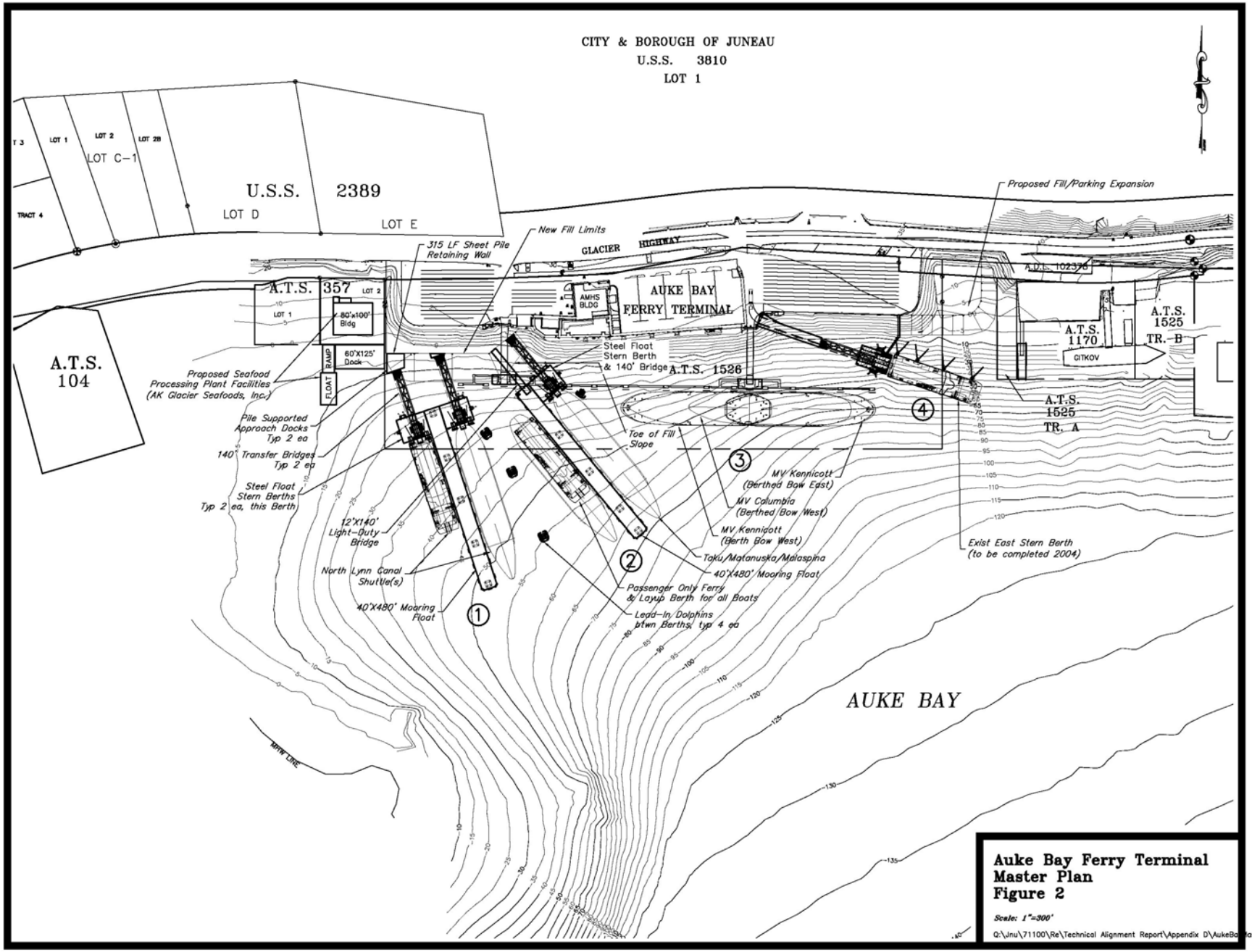
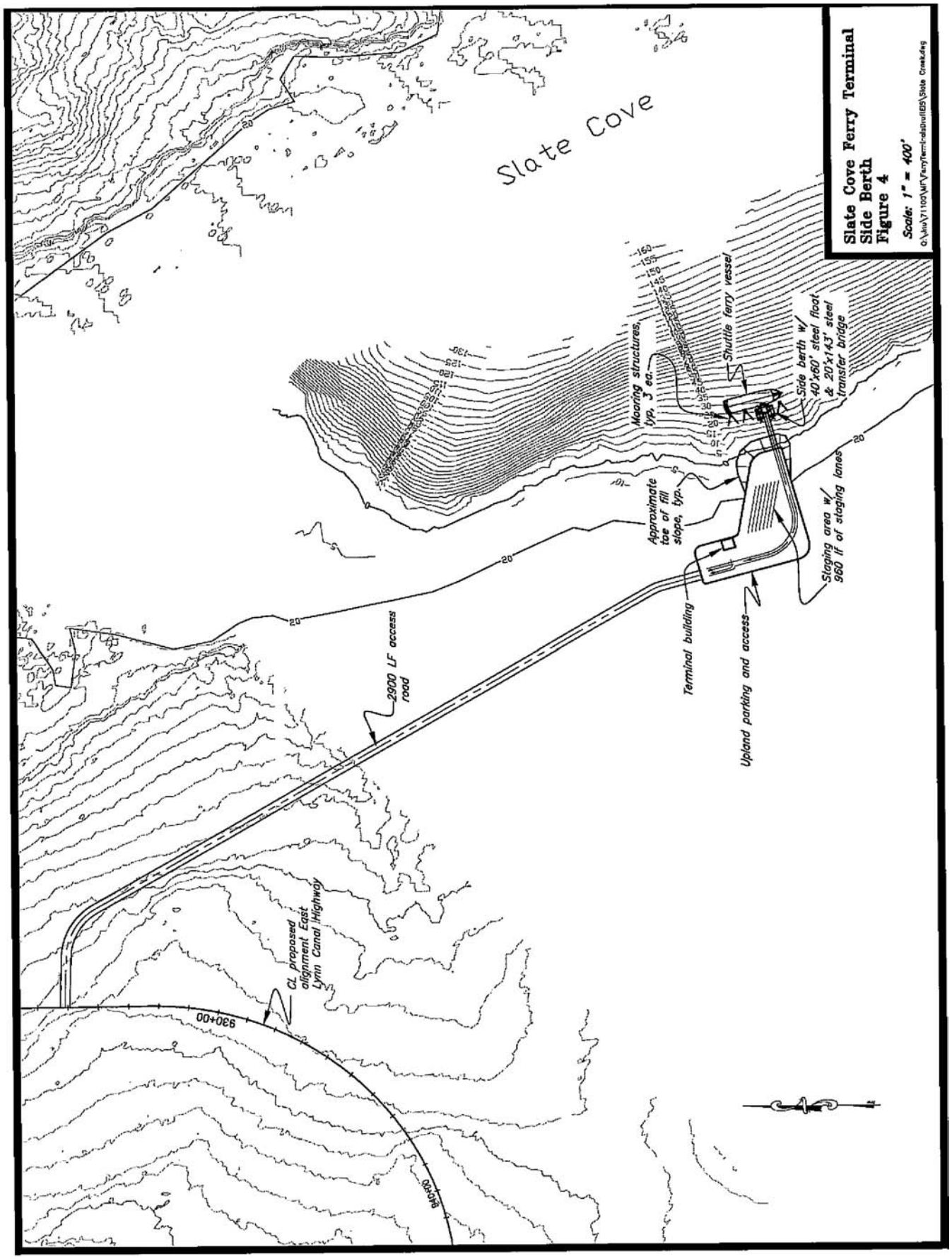

CITY & BOROUGH OF JUNEAU
U.S.S. 3810
LOT 1
U.S.S. 2389
LOT C-1
LOT D
LOT E
LOT 1
LOT 2
LOT 2B
TRACT 4
A.T.S. 104
A.T.S. 357
LOT 1
LOT 2
80'x100' Bldg
60'X125' Dock
RAMP
FLOAT
AMHS BLDG
AUKE BAY FERRY TERMINAL
GLACIER HIGHWAY
315 LF Sheet Pile Retaining Wall
New Fill Limits
Proposed Fill/Parking Expansion
A.D.L. 102378
A.T.S. 1170
GITKOV
A.T.S. 1525 TR. B
A.T.S. 1525 TR. A
A.T.S. 1526
Steel Float Stern Berth & 140' Bridge
Proposed Seafood Processing Plant Facilities (AK Glacier Seafoods, Inc.)
Pile Supported Approach Docks Typ 2 ea
140' Transfer Bridges Typ 2 ea
Steel Float Stern Berths Typ 2 ea, this Berth
12'X140' Light-Duty Bridge
North Lynn Canal Shuttle(s)
40'X480' Mooring Float
Toe of Fill Slope
MV Kennicott (Berthed Bow East)
MV Columbia (Berthed Bow West)
MV Kennicott (Berth Bow West)
Taku/Matanuska/Malaspina
40'X480' Mooring Float
Passenger Only Ferry & Layup Berth for all Boats
Lead-In Dolphins btwn Berths, typ 4 ea
Exist East Stern Berth (to be completed 2004)
AUKE BAY
MHW LINE
1
2
3
4
Auke Bay Ferry Terminal
Master Plan
Figure 2
Scale: 1"=300'
Q:\Jnu\71100\Re\Technical Alignment Report\Appendix D\AukeBayMasterP

Sawmill Cove, Berners Bay
Twin Stern Berth
Figure 3
Scale: 1" = 300'
Q:\jnu\71100\WF\FerryTerminalsDraftEIS\Sawmill Cove.dwg
Berners Bay
360+00
350+00
CL proposed alignment East Lynn Canal Highway
2400 LF access road
Twin stern berth w/ 2-50'x80' steel floats & 2-20'x143' steel transfer bridges
Upland parking and access
Terminal building
Approximate toe of fill slope, typ.
Staging area w/ 1600 LF of staging lanes
Shuttle ferry vessel
Mooring structures, typ. 4 ea.
Dredged Basin, Elev -25'


Slate Cove Ferry Terminal
Side Berth
Figure 4
Scale: 1" = 400'
Slate Cove
Shuttle ferry vessel
Mooring structures, typ. 3 ea.
Side berth w/ 40'x60' steel float & 20'x143' steel transfer bridge
Approximate toe of fill slope, typ.
Staging area w/ 960 lf of staging lanes
Terminal building
Upland parking and access
2900 LF access road
CL proposed alignment East Lynn Canal Highway
930+00
840+00

William Henry Bay
Side Berth
Figure 5
Scale: 1" = 400'
William Henry Bay
Terminal building
24'x210' Approach Trestle
Mooring structures typ 3 ea
Shuttle ferry vessel
Side berth w/ 20'x143' steel transfer bridge and lift system
Approximate toe of fill slope, typ.
Staging area w/ 800' of staging lanes
Upland parking and access
CL proposed alignment West Lynn Canal Highway

Katzehin Ferry Terminal
Stern Berth - Layout 1
Figure 6
Scale: 1" = 400'
Mooring structures, typ, 4 ea.
Shuttle ferry vessel
Stern berth w/ 20'x143' steel transfer bridge and lift system
Upland parking and access
140' steel approach tressel
Approximate toe of fill slope, typ.
Staging area w/ 800 LF of staging lanes
Terminal building
CL proposed alignment East Lynn Canal Highway
2750+00
2740+00
2730+00
Lynn Canal

Katzehin Ferry Terminal
Stern Berth - Layout 2
Figure 7
Scale: 1" = 400'
Q:\Juhu\71100\Re\Technical Alignment Report\Appendix D\Katzeh
CL proposed alignment East Lynn Canal Highway
400 LF rubble mound breakwater
Sheet pile wave barrier
Pile dolphin support
Mooring structures, typ. 6 ea.
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
Upland parking and access
Terminal building
500 LF rubble mound breakwater
2750+00
2740+00
2730+00
2238+00

Katzehin Ferry Terminal
Mooring Basin – Layout 3
Figure 8
Scale: 1" = 400'
D:\Jnu\171100\Rpt\Technical Alignment Report\Appendix D\Katzeh
CL proposed alignment
East Lynn Cannal Highway
2220+00
Upland staging
& parking area,
Elev = +30±
Terminal Bldg.
BT = 2196+24.93
2230+00
2240+00
960 LF vehicle
staging lanes
Pile mooring
structures,
typ. 4 ea
Shuttle ferry
vessel
50'x80' steel float
bridge support
20'x150' steel
transfer bridge
Dredged turning basin
Elev = -25'
1,500 LF rubble
mound breakwater
Approx toe of rubble slope, typ.
2,630 LF rubble
mound breakwater
400' wide dredged
entrance channel
Elev = -25'

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REVISED ATTACHMENT E
ENGINEER'S ESTIMATES

The engineer's estimates for Alternatives 2B, 3, 4B, and 4D have been updated to reflect the current layouts, quantities, and unit prices.

Updated earthwork tables are also provided for Alternatives 2B, 3, 4B, and 4D.

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Engineers Estimate

State of Alaska -- Department of Transportation and Public Facilities -- Southeast Region

Project Name: **Juneau Access**

Project Number: **71100-alt2b_Final**

Item No	Pay Item	Pay Unit	Unit Price	Quantity	Amount
		Basic Bid			
201(1A)	Clearing	Lump Sum	$575,000.00	All Required	$575,000.00
203 (2)	Rock Excavation	Cubic Yard	$6.50	6475600	$42,091,400.00
203 (3)	Unclassified Excavation	Cubic Yard	$2.50	993300	$2,483,250.00
203 (10)	Controlled Blasting	Square Yard	$10.00	594500	$5,945,000.00
301(2)	Crushed Aggregate Base	Cubic Yard	$20.00	10600	$212,000.00
307(3)	EATB	Square Yard	$5.11	858100	$4,384,891.00
401(1)	Asphalt Concrete Pavement	Ton	$23.00	104397	$2,401,131.00
401(2)	Asphalt Cement	Ton	$250.00	6264	$1,566,000.00
501(1)	Bridge Structure	Linear Foot	$4,400.00	10256	$45,126,400.00
602(2)	Structural Plate Pipe	Linear Foot	$600.00	80	$48,000.00
603(17-24)	24-inch pipe	Linear Foot	$45.00	20708	$931,860.00
603(17-36)	36-inch pipe	Linear Foot	$59.50	7862	$467,789.00
603(17-48)	48-Inch Pipe	Linear Foot	$76.50	3600	$275,400.00
603(17-72)	72-Inch Pipe	Linear Foot	$108.00	2304	$248,832.00
606(1)	W-beam guardrail	Linear Foot	$16.00	29266	$468,256.00
606(11)	Terminal End Section	Each	$2,000.00	182	$364,000.00
611(1)	Riprap	Cubic Yard	$6.00	574500	$3,447,000.00
614(1a)	Monumentation with cases	Each	$500.00	370	$185,000.00
615(1)	Standard Sign	Square Foot	$50.00	4000	$200,000.00
618(1)	Seeding	Lump Sum	$80,000.00	All Required	$80,000.00
633(1)	Silt Fence	Linear Foot	$1.00	186000	$186,000.00
637(1)	MSE Wall	Square Foot	$31.00	543790	$16,857,490.00
637(2)	Screening Structure	Lump Sum	$584,000	All Required	$584,000
640 (4)	Worker Meals and Lodging, or Per Diem	Lump Sum	$1,000,000.00	All Required	$1,000,000.00
640(1)	Mobilization and Demobilization	Lump Sum	$10,975,000.00	All Required	$10,975,000.00
641(1)	Erosion and Pollution Control	Contingent Sum	$370,000.00	All Required	$370,000.00

Prepared by **Chuck Hakari** **Date** **09/06/05** **Checked by** **Jack Beedle** **Date** **09/06/05**

Engineers Estimate

State of Alaska -- Department of Transportation and Public Facilities -- Southeast Region

Project Name: **Juneau Access**

Project Number: **71100-alt2b_Final**

Item No	Pay Item	Pay Unit	Unit Price	Quantity	Amount
642(1)	Construction Surveying	Lump Sum	$1,400,000.00	All Required	$1,400,000.00
670 (1)	Painted Pavement Markings	Lump Sum	$177,500.00	All Required	$177,500.00
670 (8)	Recessed Pavement Marker	Each	$25.00	6566	$164,150.00
			Basic Bid	Subtotal:	$143,215,349.00

**********Project Summary**********

Project Subtotal:	$143,215,349.00
Contingencies @ 8.00%	$11,457,227.92
Construction Engineering @ 8.00 %	$12,373,806.15
Construction Subtotal:	$167,046,383.07
4.30 % ICAP	$7,182,994.47
Highway Construction Total	$174,229,377.54
Preliminary Development	$8,000,000.00
Mitigation	$3,000,000.00
Right of Way	$45,000.00
Maintenance Building	$1,000,000.00
Avalanche Control CIP	$2,670,000.00
Highway Sub Total	$189,000,000.00
Terminal Construction	$15,700,000.00
Highway & Terminal Sub Total	$204,700,000.00
Vessel Construction	$53,000,000.00
Project Total	$257,700,000.00

Prepared by Chuck Hakari **Date** 09/06/05 **Checked by** Jack Beedle **Date** 09/06/05

Engineers Estimate

State of Alaska -- Department of Transportation and Public Facilities -- Southeast Region

Project Name: **Juneau Access**

Project Number: **71100-alt3_Final**

Item No	Pay Item	Pay Unit	Unit Price	Quantity	Amount
	Basic Bid				
201(1A)	Clearing	Lump Sum	$530,000.00	All Required	$530,000.00
203 (2)	Rock Excavation	Cubic Yard	$6.50	4060000	$26,390,000.00
203 (3)	Unclassified Excavation	Cubic Yard	$2.50	2118000	$5,295,000.00
203(10)	Controlled Blasting	Square Yard	$10.00	77918	$779,180.00
301(2)	Crushed Aggregate Base	Cubic Yard	$20.00	8943	$178,860.00
307(3)	EATB	Square Yard	$5.11	724383	$3,701,597.13
401(1)	Asphalt Concrete Pavement	Ton	$23.00	90948	$2,091,804.00
401(2)	Asphalt Cement	Ton	$250.00	5460	$1,365,000.00
501(1)	Bridge Structure	Linear Foot	$4,400.00	15885	$69,894,000.00
602(2)	Structural Plate Pipe	Linear Foot	$600.00	2232	$1,339,200.00
603(17-24)	24-inch pipe	Linear Foot	$45.00	14088	$633,960.00
603(17-36)	36-inch pipe	Linear Foot	$59.50	13026	$775,047.00
603(17-48)	48-Inch Pipe	Linear Foot	$76.50	3560	$272,340.00
603(17-72)	72-Inch Pipe	Linear Foot	$108.00	3844	$415,152.00
606(1)	W-beam guardrail	Linear Foot	$16.00	8900	$142,400.00
606(11)	Terminal End Section	Each	$2,000.00	130	$260,000.00
611(1)	Riprap	Cubic Yard	$6.00	164500	$987,000.00
614(1a)	Monumentation with cases	Each	$500.00	208	$104,000.00
615(1)	Standard Sign	Square Foot	$50.00	3400	$170,000.00
618(1)	Seeding	Lump Sum	$200,000.00	All Required	$200,000.00
633(1)	Silt Fence	Linear Foot	$1.00	206000	$206,000.00
637(1)	MSE Wall	Square Foot	$31.00	77446	$2,400,826.00
640 (4)	Worker Meals and Lodging, or Per Diem	Lump Sum	$1,000,000.00	All Required	$1,000,000.00
640(1)	Mobilization and Demobilizaiton	Lump Sum	$9,950,000.00	All Required	$9,950,000.00
641(1)	Erosion and Pollution Control	Contingent Sum	$350,000.00	All Required	$350,000.00

Prepared by **Chuck Hakari** **Date** **09/06/05** **Checked by** **Jack Beedle** **Date** **09/06/05**

Engineers Estimate

State of Alaska -- Department of Transportation and Public Facilities -- Southeast Region

Project Name: **Juneau Access**

Project Number: **71100-alt3_Final**

Item No	Pay Item	Pay Unit	Unit Price	Quantity	Amount
642(1)	Construction Surveying	Lump Sum	$1,300,000.00	All Required	$1,300,000.00
670 (1)	Painted Pavement Markings	Lump Sum	$155,000.00	All Required	$155,000.00
670 (8)	Recessed Pavement Marker	Each	$25.00	4052	$101,300.00
			Basic Bid	Subtotal:	$130,987,666.13

**********Project Summary**********

Project Subtotal:	$131,987,666.13
Contingencies @ 8.00%	$10,479,013.29
Construction Engineering @ 8.00 %	$11,317,334.35
Construction Subtotal:	$152,784,013.77
4.30 % ICAP	$6,569,712.59
Highway Construction Total	$159,353,726.36

Preliminary Development	$8,500,000.00
Mitigation	$3,000,000.00
Right of Way	$1,255,000.00
Maintenance Building	$500,000.00
Avalanche Control CIP	$2,640,000.00
Highway Sub Total	$175,250,000.00
Terminal Construction	$27,600,000.00
Highway & Terminal Sub Total	$202,850,000.00
Vessel Construction	$65,000,000.00
Project Total	$267,850,000.00

Prepared by Chuck Hakari **Date** 09/06/05 **Checked by** Jack Beedle **Date** 09/06/05

Engineers Estimate

State of Alaska -- Department of Transportation and Public Facilities -- Southeast Region

Project Name: **Juneau Access**

Project Number: **71100-alt4b,d_Final**

Item No	Pay Item	Pay Unit	Unit Price	Quantity	Amount
	Basic Bid				
201(1A)	Clearing	Lump Sum	$10,000.00	All Required	$10,000.00
203 (2)	Rock Excavation	Cubic Yard	$6.50	270500	$1,758,250.00
203 (3)	Unclassified Excavation	Cubic Yard	$2.50	270500	$676,250.00
203(10)	Controlled Blasting	Squard Yard	$10.00	15400	$154,000.00
301(2)	Crushed Aggregate Base	Cubic Yard	$20.00	1100	$22,000.00
307(3)	EATB	Square Yard	$5.11	73000	$373,030.00
401(1)	Asphalt Concrete Pavement	Ton	$23.00	8500	$195,500.00
401(2)	Asphalt Cement	Ton	$250.00	510	$127,500.00
501(1)	Bridge Structure	Linear Foot	$4,400.00	100	$440,000.00
603(17-24)	24-inch pipe	Linear Foot	$45.00	2560	$115,200.00
603(17-36)	36-Inch Pipe	Linear Foot	$59.50	908	$54,026.00
603(17-48)	48-inch pipe	Linear Foot	$76.50	444	$33,966.00
603(17-72)	72-Inch Pipe	Linear Foot	$108.00	132	$14,256.00
606 (1)	W-beam guardrail	Linear Foot	$16.00	630	$10,080.00
606(11)	Terminal End Section	Each	$2,000.00	6	$12,000.00
611 (1)	Riprap	Cubic Yard	$6.00	1000	$6,000.00
614(1a)	Monumentation with cases	Each	$500.00	30	$15,000.00
615 (1)	Standard Sign	Square Foot	$50.00	200	$10,000.00
618 (1)	Seeding	Lump Sum	$10,000.00	All Required	$10,000.00
633 (1)	Silt Fence	Linear Foot	$1.00	20000	$20,000.00
637 (1)	MSE Wall	Square Foot	$31.00	350	$10,850.00
640 (1)	Mobilization and Demobilization	Lump Sum	$170,000.00	All Required	$170,000.00
640 (4)	Worker Meals and Lodging, or Per Diem	Lump Sum	$100,000.00	All Required	$100,000.00
641 (1)	Erosion and Pollution Control	Contingent Sum	$20,000.00	All Required	$20,000.00
642 (1)	Construction Surveying	Lump Sum	$20,000.00	All Required	$20,000.00

Prepared by Chuck Hakari **Date:** 09/06/05 **Checked by** Jack Beedle **Date:** 09/06/05

Engineers Estimate

State of Alaska -- Department of Transportation and Public Facilities -- Southeast Region

Project Name: **Juneau Access**

Project Number: **71100-alt4b,d_Final**

Item No	Pay Item	Pay Unit	Unit Price	Quantity	Amount
670 (1)	Painted Pavement Markings	Lump Sum	$25,000.00	All Required	$25,000.00
670 (8)	Recessed Pavement Marker	Each	$25.00	330	$8,250.00
			Basic Bid	Subtotal:	$4,411,158.00

********************************Project Summary*****************************

Project Subtotal:	$4,411,158.00
Contingencies @ 8.00%	$352,892.64
Construction Engineering @ 8.00 %	$381,124.05
Construction Subtotal:	$5,145,174.69
4.30 % ICAP	$221,242.51
Highway Construction Total	$5,366,417.20

Preliminary Development	$200,000.00
Mitigation	$30,000.00
Right of Way	$0.00
Highway Sub Total	$5,600,000.00
Terminal Construction	$27,000,000.00
Highway & Terminal Sub Total	$32,600,000.00
Alternative 4B Vessel Construction	$109,000,000.00
Project Total Alternative 4B	$141,600,000.00
Alternative 4D Vessel Construction	$70,000,000.00
Project Total Alternative 4D	$102,600,000.00

Prepared by Chuck Hakari **Date:** 09/06/05 **Checked by** Jack Beedle **Date:** 09/06/05

East Lynn Canal Alternative 2B

Segment	Total Volume of Excavation	% Rock	Rock Excavation	Unclassified Excavation	Embankment	Processed Materials	Select "A"	Total Volume of Embankment
Echo Cove to Berners Bay Crossing Station 73+14 to Station 560+00	1,330,608	91.00%	1,210,853	119,755	347,949	32,214	81,611	461,774
Berners Bay Crossing Station 560+00 to Station 761+00	1,588	0.00%	0	1,588	472,910	7,680	17,231	497,822
Berners Bay Crossing to Independence Lake Station 761+00 to Station 1390+00	1,158,405	34.00%	393,858	764,547	880,350	38,127	96,385	1,014,862
Independence Lake North Station 1390+00 to Station 1503+00	39,942	95.00%	37,945	1,997	316,990	6,865	17,371	341,226
Met Point South Station 1503+00 to Station 1640+00	667,583	97.00%	647,556	20,027	129,588	8,327	21,074	158,989
Met Point North to Level Point Station 1640+00 to Station 2150+00	1,411,380	98.00%	1,383,152	28,228	1,250,097	31,092	78,797	1,359,985
Level Point to Katzehin River Station 2150+00 to Station 2590+00	2,843,628	98.00%	2,786,755	56,873	410,393	26,547	66,973	503,914
South Katzehin River to Katzehin Point Station 2590+00 to Station 2754+00	15,791	98.00%	15,475	316	820,682	9,040	21,849	851,572
TOTAL	**7,468,925**	**-**	**6,475,594**	**993,331**	**4,628,959**	**159,892**	**401,292**	**5,190,143**

West Lynn Canal Alternative 3

Segment	Total Volume of Excavation	% Rock	Rock Excavation	Unclassified Excavation	Embankment	Processed Materials	Select "A"	Total Volume of Embankment
Echo Cove to Sawmill Cove Station 73+14 to Station 343+00	541,000	50%	270,500	270,500	136,700	21,998	55,748	214,446
William Henry Bay to Endicott River Crossing Station 4025+00 to Station 4293+00	1,161,928	71%	824,969	336,959	290,517	16,072	40,438	347,028
Endicott River Crossing Station 4293+00 to Statoin 4346+00	2,574	56%	1,441	1,133	337,576	2,770	6,508	346,854
Endicott River Crossing to the Sullivan River Crossing Station 4346+00 to Station 4757+00	1,915,360	56%	1,072,602	842,758	650,934	24,682	62,139	737,755
Sullivan River Crossing Station 4757+00 to Station 4910+00	303,553	50%	151,777	151,777	417,444	9,026	22,540	449,010
Sullivan River Crossing North Station 4910+00 to Station 5107+00	397,009	50%	198,505	198,505	160,624	11,992	30,372	202,988
Glacier Point S Base South Station 5107+00 to Station 5412+00	642,449	81%	520,384	122,065	512,754	18,239	45,829	576,822
Davidson Glacier Station 5412+00 to Station 5660+00	122,512	84%	102,910	19,602	494,915	14,767	37,035	546,718
South Chilkat River Station 5660+00 to Station 5970+00	1,091,544	84%	916,897	174,647	547,987	18,473	46,345	612,805
Chilkat River Crossing Station 5970+00 to Station 6078+00	106	100%	106	0	139,978	2,685	2,479	145,142
TOTAL	**5,637,035**	**-**	**4,060,090**	**2,117,945**	**3,552,729**	**140,704**	**349,435**	**4,179,567**

East Lynn Canal Alternative 4B and 4D

Segment	Total Volume of Excavation	% Rock	Rock Excavation	Unclassified Excavation	Embankment	Processed Materials	Select "A"	Total Volume of Embankment
Echo Cove to Sawmill Cove Station 73+14 to Station 343+00	541,000	50.00%	270,500	270,500	136,700	21,998	55,748	214,446
TOTAL	541,000	-	270,500	270,500	136,700	21,998	55,748	214,446

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NEW ATTACHMENT F
ENGINEER'S ESTIMATE – UNIT PRICE ANAYLSIS

This is a new attachment that explains how the unit prices for major items were established.

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Overview

There are several factors that affect the estimated unit bid prices for the Juneau Access Improvements Project:

1. Large quantities will provide economies of scale that will result in unit prices significantly lower than usual Southeast Alaska unit prices.

2. Unlimited use of off-road equipment will result in lower unit prices.

3. Numerous access points from which to construct the project will result in lower unit prices.

4. Barge access points at Slate Cove near the Berner's/Lace and Antler/Gilkey River Crossings and at Katzehin Ferry Terminal near the Katzehin River Crossing allows use of economical over length and overweight components in construction of the major river crossings.

5. Perhaps the most significant factor is that there will be no public access conflicts, which usually slow down construction, during the duration of the project. This will result in lower unit prices for almost every bid item on the project.

   Working around buildings and maintaining traffic flow can impact efficiency, productivity and unit bid prices by 50 percent or more. The Juneau Access Improvements Project will not contend with private vehicle traffic or work in proximity to buildings any time during construction.

The importance of this last factor is demonstrated by the Juneau Cascade Point Road Project. Bid in December 2004 and currently under construction, this 20-foot-wide by 3.2-mile-long project's total price was $810,000 or approximately $250,000 per mile. The project is being constructed in the same area as the Juneau Access Improvements Project and had no private vehicle traffic or buildings to contend with. The Cascade Point Road Project included clearing, culverts, excavation and embankment. It did not include base, pavement, and guardrail. A similar project being built while maintaining traffic control would be expected to cost over $500,000 per mile.

Methodology

Quantities were calculated for each Pay Item for each Juneau Access Improvements Project Alternative. Bid Tabulations for projects bid statewide were reviewed for similar pay items and quantities. Unit prices were adjusted up or down to take into account Juneau Access estimating factors and inflation. The Juneau Access Improvements Project Alternative quantities were multiplied by the established unit price to obtain each pay item's estimated cost.

Inflation

Estimated inflation since the time the similar projects were bid was based on data from the Federal Bureau of Labor Statistics summarized in the following table:

Year Bid	Anchorage CPI	CPI Adjustment Factor	Producer Price Index	PPI Adjustment Factor
1998	146.9	1.135	146.8	1.134
1999	148.4	1.123	148.9	1.118
2000	151.0	1.104	150.7	1.104
2001	155.2	1.074	150.6	1.104
2002	158.2	1.054	151.3	1.100
2003	162.5	1.026	153.6	1.083
2004	166.7	1.000	166.4	1.000

The Anchorage Consumer Price Index (CPI) identifies inflation in the Anchorage area. The Producer Price Index (PPI) is a measure of inflation on national materials and components of construction. The Anchorage CPI and the PPI show a strong correlation in inflation. The PPI was used in this unit price analysis.

In order to obtain the approximate 2004 cost of items bid in a prior year, the unit price was multiplied by the Year Bid PPI Adjustment Factor. As noted in the item narratives the unit prices are set higher than this amount to allow for 2005 prices.

Item 201 (1A) Clearing
Per Lump Sum

This is a lump sum bid item; however, there are approximately 428 vegetated acres for Juneau Access Alternative 2B and 395 vegetated acres for Alternative 3 that will require clearing. According to the Juneau Access Socioeconomic Report there is approximately $400,000 worth of harvestable timber within the Alternative 2B clearing limits and $450,000 worth of harvestable timber within Alternative 3 clearing limits.

The clearing for Juneau Access will be a large quantity of work, completed with large equipment, and include no traffic interruptions.

The following comparison projects were used:

- Project 69844 Juneau Glacier Highway – Indian Point to Point Louisa. Bid April 1998. Work was clearing 35 acres. New alignment full width clearing similar to Juneau Access, however with a much smaller quantity. The minimum amount bid was $1,200 per acre. The average of the 2 low bids was $1,600 per acre.
- Project 52312 Parks Highway – MP 57-67. Bid May 2001. Work was clearing 181 acres. Low bid $809.40 per Acre. Average of 3 low bids $1,079.20.

The Glacier Highway project was 1/13 the size of Juneau Access and the Parks Highway project 40 percent of Juneau Access. Averaging all bids for the two projects results in $1,340 per acre (low bids only average $1,005 per acre). The $1,340 per acre average is 65 percent higher than the 2001 low bid for this work. Efficiencies in the Juneau Access Improvements Project from large quantities, and no public access conflicts, plus the use of a unit price 65 percent higher than the 2001 project will more than offset the PPI inflation of approximately 10.4 percent since 2001.

Based on these projects the Juneau Access clearing bid item was estimated at $1,340 per acre and rounded up to the nearest $5,000 for the lump sum amount. Depending on the right-of-way (ROW) transfer agreement with the USFS the value of timber harvested within the ROW could reduce the bids.

The net effect on the Supplemental Draft EIS Engineer's Estimate for this item is to decrease Alternative 2B by approximately $55,000 and to decrease Alternative 3 by approximately $10,000.

Item 203(2) Rock Excavation
Per Cubic Yard

The estimated quantity of rock excavation for Juneau Access Alternative 2B is 6,475,600 cubic yards. The quantity for Alternative 3 is 4,060,000 cubic yards.

The following comparison projects were used:

- Project 68035 Ketchikan Airport – West Taxiway Construction. Bid August 2002. Item is Borrow Embankment. Work was to drill, shoot, load, haul and embank 600,000 cubic meters (784,770 cubic yards) of rock at the Ketchikan Airport. Shooting and hauling operations were limited by scheduled airlines operations. Low bid $4.95 per cubic yard. Average of 3 low bids $5.46 per cubic yard.

Many DOT & PF projects utilize Item 203(3) Unclassified Excavation, which includes rock as well as common excavation. The rock excavation work under this pay item will not show up in a search of rock excavation Items only. Two large SE Region projects with a significant amount of rock excavation included in the Unclassified Excavation are:

- Project 69844 Juneau Glacier Highway – Indian Point to Point Louisa. Bid April 1998. Work was Unclassified Excavation 339,500 cubic yards of which approximately 50 percent was rock excavation. This work included hauling and embanking. Hauling was performed with street legal trucks. New alignment so traffic control issues were minimal. Some residences nearby. Low bid $3.20 per cubic yard. Average of 3 low bids $3.23 per cubic yard.
- Project 71483 Haines Highway – M.P. 25.5 to Little Boulder Creek. Bid September 1998. Work was Unclassified Excavation 511,700 cubic yards of which approximately 50 percent was rock excavation. This work included hauling and embanking. Widening and realignment with traffic flow maintained during construction. Low bid $1.95 per cubic yard. Average of 3 low bids $3.48 per cubic yard.

There has been only one project recently advertised in SE Region that contained a significant amount of rock excavation as a bid item.

- Project No. 71811 Ketchikan 3rd Avenue Extension. Bid December 1999. Work was rock excavation 151,000 cubic yards. New alignment; extremely close proximity to residential neighborhoods; limitations on fly rock, size of shot, hours of operation, and extensive preblast surveys. Significant penalties for fly rock events. Low bid $11.00 per cubic yard. Average of 3 low bids $11.67 per cubic yard.

The Ketchikan Airport Project was considered the most reasonable basis of estimate for Juneau Access and was confirmed by the other projects listed. The basic unit price of $5.50 per cubic yard (average of 3 low bids) was adjusted to $6.50 per cubic yard to account for additional expense for preparation work on the steeper areas. Haul has been minimized by the allowance of sidecasting and deep water disposal. The Ketchikan Airport project was constructed in 2003 and 2004. Efficiency was reduced approximately 20 percent due to operational limitations from aircraft traffic. Efficiencies in the Juneau Access Improvements Project from the use of large off road equipment, minimal restrictions on work, and no public access conflicts or other work restrictions, plus the inefficiencies included in the Ketchikan Airport project will more than offset the PPI inflation of approximately 10 percent since this project was bid in 2002.

The unit price for rock excavation is increased $.25 per cubic yard over the Supplemental Draft EIS unit price and the quantities for rock excavation are reduced for both Alternative 2B and 3 based on minor alignment changes. The net effect on the Supplemental Draft EIS Engineer's Estimate for this item is to decrease Alternative 2B by approximately $3,165,000 and to increase Alternative 3 by approximately $475,000.

Item 203(3) Unclassified Excavation
Per Cubic Yard

The estimated quantity of Unclassified Excavation (common excavation only, includes no rock) for Juneau Access Improvements Project Alternative 2B is 993,300 cubic yards. The estimated quantity for Alternative 3 is 2,118,000 cubic yards.

The following comparison projects were used:

- Project 52685 Glenn Highway – MP 61-67 Rehabilitation. Bid September 2000. Work was Unclassified Excavation 86,317 cubic meters (112,212 cubic yards). Traffic flow maintained during construction. Low bid $2.28 per cubic yard. Average of 3 low bids $2.42 per cubic yard.
- Project 52921 Palmer-Wasilla Extension. Bid June 2001. Work was Unclassified Excavation 96,722 cubic meters (125,739 cubic yards). Traffic impacts during construction. Low bid $2.18 per cubic yard. Average of 3 low bids $2.60 per cubic yard.
- Project 53989 Parks Highway – MP 37-39. Bid September 2001. Work was Unclassified Excavation 651,570 cubic meters (847,041 cubic yards). Traffic flow maintained during construction. Low bidder $2.47 per cubic yard. Average of 3 low bids $2.29 per cubic yard.

These three projects all include large quantities of work, but lower quantities than Juneau Access. The low bids for these three projects averaged $2.31 per cubic yard. The averages of the 3 low bidders on each project was $2.44 per cubic yard. All of these projects included traffic maintenance impacts. Inflation from the time these projects were bid is more than offset by no public access conflicts. The Juneau Access Unclassified Excavation unit price was conservatively set at $2.50 per cubic yard.

The unit price is the same as used in the Supplemental Draft EIS, however the quantities of Unclassified Excavation are reduced for both Alternative 2B and 3, based on alignment changes. The net effect on the Supplemental Draft EIS Engineer's Estimate is to decease Alternative 2B by approximately $1,150,000 and to decrease Alternative 3 by approximately $215,000.

Item 203(10) Controlled Blasting
Per Square Yard

The estimated quantity of Controlled Blasting for Juneau Access Alternative 2B is 594,500 square yards and the estimated quantity for Alternative 3 is 77,918 square yards.

The work to be completed involves large quantities of work and will be completed without public access conflicts during construction.

The following comparison projects were used:

- Project 71483 Haines Highway – MP 25.5 to Little Boulder Creek. Bid September 1998. Work was Controlled Blasting 63,000 square yard. Work completed while maintaining traffic. Low bidder $10 per square yard. Second low bidder $8 per square yard.
- Project 71874 Haines Highway – Big Boulder Creek to the Border. Bid December 1999. Work was Controlled Blasting 4,500 square yards. Work completed while maintaining traffic. Low bidder $10 per square yard. Second low bidder $20 per square yard. Third low bidder $8 per square yard.

Inflation will be offset by large quantities and primarily by no public access conflicts during construction. Based on these two projects the Juneau Access Controlled Blasting unit price was established as $10 per square yard.

The pay unit for Controlled Blasting was changed from station in the Supplemental Draft EIS to square yard to more accurately account for the height of the rock cut on the estimated cost for this item. The net effect on the Supplemental Draft EIS Engineer's Estimate is to increase Alternative 2B by approximately $2,585,000 and to decrease Alternative 3 by approximately $1,325,000.

Item 307(3) Emulsified Asphalt Treated Base
Per Square Yard

The estimated quantity of EATB for Juneau Access Improvements Project Alternative 2B is 858,100 square yards. The estimated quantity for Alternative 3 is 724,383 square yards.

This work will be completed prior to opening the highway to traffic. No traffic control conflicts combined with a large quantity of work will result in competitive pricing.

The estimate for EATB includes the oil, Portland Cement, Crushed Aggregate Base, and EATB processing. The unit price was established as $5.11 per square yard based on the attached project comparison and price extensions for all work incorporated into this item. Oil prices were based on 2005 construction project unit prices and are included in the unit price of $5.11 per square yard.

The unit price for the EATB is increased $1.36 per square yard over the Supplemental Draft EIS unit price and the quantities are adjusted to account for alignment changes. The net effect on the Supplemental Draft EIS Engineer's Estimate for this item is to increase Alternative 2B by approximately $1,027,000 and to increase Alternative 3 by approximately $1,137,000.

EATB

#	NAME	YEAR	QUANTITY (s.y.)	LOW	2ND	3RD	AVG.
55005	N. KENAI SPUR MP 22.0-29.7	2001	161400	$1.01	$0.63	$1.05	$0.90
55068	SEWARD HWY. RUT AND FROST HEAVE REPAIR	2001	490486	$0.84	$0.84	$0.67	$0.78
55657B	DIAMOND BLVD. AND HOME DRIVE REHAB	2002	32501	$0.70	$0.50		$0.60
56583	KENAI PENINSULA RESURFACING PROGRAM	2004	148000	$1.00	$0.68	$1.00	$0.89
	AVERAGES			**$0.89**			**$0.79**

PORTLAND CEMENT

#	NAME	YEAR	QUANTITY (ton)	LOW	2ND	3RD	AVG.
67948	WRG AIRPORT ACCESS RD/ZIMOVIA HWY	2005	40	$173.60	$150.00	$225.00	$182.87
68096	JNU-GLACIER HWY & TRAILHEAD	2005	315	$150.00	$250.00	$350.00	$250.00
68165	MITKOF HWY COASTAL PATH AND HWY	2005	170	$150.00	$175.00	$250.00	$191.67
	AVERAGES			**$157.87**			**$208.18**

CSS-1

THE UNIT PRICE FOR CSS-1 GENERALLY IS THE SAME A ASPHALT CEMENT. SEE ASPHALTCONC. TAB.

USE **$235.50**

Length of Project	73+15	to	2750+00	267685	ft.		
Length of Bridges				0	ft.		
EATB Length				267685	ft.		
Width of Roadway				30	ft.		
EATB Area				8030550	s.f.	or	892283.3 SY.
CSS-1	$235.50	per ton					
Portland Cement	$157.87	per ton					
Portland Cement Application Rate for 4-inch depth	4.5	lbs./s.y.					
CAB	$20.60	per c.y.					
CSS-1 Application Rate for 4-inch depth	1.7	gal. per s.y.					
CSS-1 Estimating Factor	240	gal. per ton					
CAB per S.Y. 4-inch depth	0.111	c.y.					
Cost per S.Y. for CSS-1	$1.67						
Cost per S.Y. for Portland Cement	$0.36						
EATB Processing per S.Y.	$0.79						
Cost per S.Y. for CAB	$2.29						
Cost per S.Y. of EATB	**$5.11**						
TOTAL COST FOR EATB	**$4,555,594.69**						

Item 401(1) Asphalt Concrete Pavement
Per Ton

The estimated quantity of Asphalt Concrete Pavement for Juneau Access Alternative 2B is 104,397 tons. The estimated quantity for Alternative 3 is 90,948 tons.

It is estimated that this work will be accomplished in large segments, possibly as much as one half the entire project prior to allowing the public on the highway. A large quantity of work combined with no traffic impacts will result in bids significantly lower than normal.

The following comparison projects were used:

- Project 71483 Haines Highway – MP 25.5 to Little Boulder Creek. Bid September 1998. Work was Asphalt Concrete Pavement, Type II, Class B, 16,900 tons. Work completed while maintaining traffic. Low bid $20.00 per ton. Average of 3 low bids $25.38 per ton.
- Project 71874 Haines Highway – Big Boulder Creek to the Border. Bid December 1999. Work was Asphalt Concrete Pavement, Type II, Class B, 17,500 tons. Work completed while maintaining traffic. Low bid $18.00 per ton. Average of 3 low bids $23.33 per ton.
- Project 52312 Parks Highway – MP 57-67. Bid May 2001. Work was Asphalt Concrete, Type II, Class A, 66,256 tons. Work completed while maintaining traffic. Low bid $18.14 per ton. Average of 3 low bids $19.35 per ton.

The Juneau Access Improvements Project is over 5 times as large as the Haines projects, however, the bids verify that economical paving prices have occurred in large projects near the project area. The Parks Highway Project is the closest in size and more recently completed project and was used for the Juneau Access estimates. The Parks Highway Project was bid in 2001. The increase in asphalt cement oil prices is covered under Item 401(2) Asphalt Cement, which uses prices for 2005 construction projects. The Parks Highway Project's average unit price for Asphalt Concrete Pavement was increased by approximately 20 percent to cover increased equipment fuel costs for this equipment intensive item. (Note that the PPI inflation since 2001 was approximately 10.4 percent.) The Juneau Access unit price for Concrete Asphalt Pavement was set at $23.00 per ton based on this comparison.

The unit price for Concrete Asphalt Pavement is decreased $2.00 per ton from the Supplemental Draft EIS unit price and the quantities are adjusted to account for alignment changes. The net effect on the Supplemental Draft EIS Engineer's Estimate for this item is to decrease Alternative 2B by approximately $150,000 and to increase Alternative 3 by approximately $90,000.

Item 401(2) Asphalt Cement
Per Ton

The estimated quantity of Asphalt Cement for Juneau Access Improvements Project Alternative 2B is 6,264 tons. The estimated quantity for Alternative 3 is 5,460 tons.

The work to be completed involves large quantities and will be completed without public access conflicts during construction.

The following comparison projects were used:

- Project 56583 Kenai Peninsula Resurfacing Program. Bid May 2004. Work was Asphalt Cement Grade PG 52-28 1,300 ton. Work completed while maintaining traffic. Low bidder $1 per ton (discounted*). Second and third low bids $230 and $195 per ton.
- Project 56567 North Kenai Spur – MP 22.0-29.7. Bid December 2004. Work was Asphalt Cement Grade PG 52-28 1,400 ton. Work completed while maintaining traffic. Low bid $230. per ton. Second bid $1 per ton (discounted*). Third bid $270 per ton.
- Project 55620 Hope Road Pavement Rehabilitation. Bid September 2004. Work was Asphalt Cement Grade PG 52-28 1,750 ton. Work completed while maintaining traffic. Low bid $222 per ton. Second bid $1 per ton (discounted*). Third bid $220 per ton.

Based on these three recently bid projects, the Juneau Access Asphalt Cement unit price was established as $250 per ton. Inflation is not a factor as bids were for work to be completed in 2005. Savings from no traffic impacts are accounted for in Item 401(1) Asphalt Concrete Pavement. Unit prices increased by approximately 10 percent for extra delivery cost.

The unit price for Asphalt Cement is decreased by $100 per ton from the Supplemental Draft EIS unit price and the quantities are adjusted to account for alignment changes. The net effect on the Supplemental Draft EIS Engineer's Estimate for this item is to decrease Alternative 2B by approximately $570,000 and to decrease Alternative 3 by approximately $315,000.

* discounted means that this unit price bid was not included in setting this item's unit price estimate. These discounted unit prices reflect a bidding strategy instead of a realistic unit price bid.

Item 501(1) Bridge Structure
Per Linear Foot

The estimated quantity of Bridge structure for Juneau Access Improvements Project Alternative 2B is 10,256 linear feet. The estimated quantity for Alternative 3 is 15,885 linear feet.

The Juneau Access bridges will be 33 feet wide and all multi-span bridges will utilize approximately 130-foot-long bulb-tee girders.

To date in Alaska there have not been any projects constructed that have similar quantities and construction logistics. The vicinity of major river crossings along the Juneau Access alignments are accessible by barge which allows the use of overlength and overweight components. And as mentioned previously there will be no public access conflicts.

Two projects were used to establish the unit price for Juneau Access:

- Project 60751 Valdez – Dayville Road. Bid June 2004. Work was bridge replacement. Traffic access was maintained during construction to the Alaska Pipeline terminal and to industrial and recreation sites. Bid unit prices are not comparable because of the traffic delay impacts on construction, however the quantity of bulb-tee girders (100 girders) was sufficient to obtain a comparison for girder fabrication costs. A price quoted to the contractor for girders delivered to the barge in the Seattle area was $32 per square foot. The cost to transport the bulb-tee girders to Lynn Canal, construct the substructure including piling and caps, install the girders, and bridge railing is estimated to be 4 times the girder fabrication cost. This results in a unit price of $128 per square foot or $4,224 per linear foot for the Juneau Access bridges.
- A project completed in 2002 to construct the San Mateo-Hayward Bridge in San Francisco, CA has similarities to the major Juneau Access bridges. The bridge was constructed across a shallow (0 to 15-foot-deep) environmentally sensitive bay. The project was constructed with precast, prestressed bulb-tee girders. The San Mateo-Hayward bridge was 4.6 miles long and 60-foot wide. An adjacent bridge was kept open at all times during construction. This bridge's total in-place cost was $73 per square foot. To adjust this unit price to Juneau Access prices, the $73 per square foot construction cost was increased by 25 percent for quantity, 20 percent for weather and 20 percent for proximity to fabrication facilities. This results in a unit price of approximately $132 per square foot for $4,356 per linear foot.
- Based on these two projects Item 501(1) Bridge Structure was estimated at $4,400 per linear foot or $133 per square foot.

Check for Reasonableness:

The average bridge costs for 2000-2003 from the Federal Highways – Bridge Construction Unit Cost per square foot for Federal–Aid Highways in Alaska was $165 per square foot. This average is compiled from several projects having independent bridges with very little economy of scale. They also required maintaining traffic during construction. It is anticipated that the Berners Bay (5,350 linear feet) and Katzehin River (2,500 linear feet) bridges will experience a much lower unit price because of the quantity. Many of the remaining bridges will bear on rock or roller compacted concrete and will not require a pile foundation. The Juneau Access bridges will also not encounter public access conflicts during construction. Applying a 20 percent savings to the statewide average, which is generated from ease of access to the bridge sites, quantity savings, and no public access conflicts results in unit price of $132 per square foot.

The unit price for Bridge Structure is unchanged from the Supplemental Draft EIS. The quantity increased for Alternative 2B due to alignment changes in the Berners Bay area. The quantity for Alternative 3 is unchanged. The net effect on the Supplemental Draft EIS Engineer's Estimate is to increase Alternative 2B by approximately $5,000,000.

Items 603(17-24), (17-36), (17-48) & (17-72)
24-inch, 36-inch, 48-inch and 72-inch Pipe

For Juneau Access Improvements Project Alternative 2B the estimated quantity of 24-inch pipe is 20,708 linear feet, for 36-inch pipe is 7,862 linear foot, for 48-inch pipe is 3,600 linear feet, and for 72-inch pipe is 2,304 linear feet.

For Alternative 3 the estimated quantity of 24-inch pipe is 14,088 linear feet, for 36-inch pipe is 13,026 linear feet, for 48-inch pipe is 3,560 linear feet, and for 72-inch pipe is 3,844 linear feet.

The effect that not having to contend with traffic conflict issues is demonstrated by two projects recently bid in Juneau that are currently under construction.

- Project 67471 Juneau – Cascade Point Road. Bid December 2004. Work was 24-inch pipe, 2,268 linear feet at $48 per linear foot, 36-inch pipe, 126 linear feet at $70 per linear foot, 48-inch pipe 68 linear feet at $90 per linear foot, and 72-inch pipe, 64 linear feet at $135 per linear foot.
- Project 68097 Juneau – Glacier Highway & Trailhead. Bid January 2005. Work was 24-inch CSP, 80 linear feet at $55 per linear foot, 30-inch CSP, 20 linear feet at $65 per linear foot, 48-inch corrugated aluminum pipe, 34 linear feet at $250 per linear foot, and 72-inch corrugated aluminum pipe, 62 linear feet at $275 per linear foot.

The Cascade Point Road is similar to the Juneau Access project in that there are no traffic control issues. The project is completely blocked off to the public and only accessible to contractor forces. The Glacier Highway project must accommodate 780 ADT with minimum roadway closures. Comparing these two projects for 48-inch and 72-inch pipe with similar quantities reveals that the project with no traffic to contend with and no pipes to dig up is approximately ½ as expensive to build.

For the Juneau Access Improvements Project, the Cascade Point Road Project was used as the basis of the estimate. The bid prices are current, the construction conditions are similar and the unit prices only need to be adjusted for quantity.

Unit prices established for Juneau Access are:

24-inch pipe: $45 per linear foot
36-inch pipe: $59.50 per linear foot
48-inch pipe: $76.50 per linear foot
72-inch pipe: $108 per linear foot

Prices based on $3 per linear foot savings on 24-inch pipe, 15 percent savings on 36-inch and 48-inch pipe and 20 percent savings on 72-inch pipe since quantities are so small compared to Juneau Access for the last 3 items.

The unit prices for 24-inch pipe and 48-inch pipe are increased by approximately 50 percent over the Supplemental Draft EIS unit prices. Bid items are added for 36-inch pipe and 72-inch pipe. All quantities are updated to reflect the current alignments. The net effect on the Supplemental Draft EIS Engineer's Estimate from all 603 pipe items is to increase Alternative 2B by approximately $1,140,000 and to increase Alternative 3 by approximately $905,000.

Item 606(1) W-beam Guardrail
Per Linear Foot

The estimated quantity of W-beam guardrail for Juneau Access Improvements Project Alternative 2B is 29,266 linear feet and for Alternative 3 is 8,900 linear feet.

This work will be completed prior to opening the highway to traffic. Minimum conflicts combined with a large quantity of work will result in significantly lower prices than normal.

The following comparison projects were used:

- Project 71483 Haines Highway – M.P. 25.5 to Little Boulder Creek. Bid September 1998. Work was W-beam guardrail 20,475 linear feet. Work completed while maintaining traffic. Low bid $14 per linear foot. Average of 3 low bids $15.04 per linear foot.
- Project 71874 Haines Highway – Big Boulder Creek to the Border. Bid December 1999. Work was W-beam guardrail 2,662.5 linear feet. Work completed while maintaining traffic. Low bid $12 per linear foot. Average of 3 low bids $14.50 per linear foot.
- Project 56547 Anchorage International Airport Terminal Expansion. Bid June 2003. Work was W-beam guardrail 7,650 linear feet. Work completed while maintaining traffic. Low bid $14 per linear foot. Average of 3 low bids $14.50 per linear foot.
- Project 56571 Old Glenn Highway: Glenn Highway to Plumley Road. Bid April 2004. Work was W-beam guardrail 14,375 linear feet. Work completed while maintaining traffic. Low bid $16.30 per linear foot. Average of 3 low bids $17.77 per linear foot.

Juneau Access will have a much larger quantity than these projects and no traffic control conflicts or delays. Based on these projects a unit price of $16 per linear foot was established for Juneau Access W-beam guardrail.

The unit price for W-beam guardrail is decreased $6 per linear foot from the Supplemental Draft EIS unit price and quantities are adjusted to reflect current alignments and guardrail warrants. The reason for the $6 per linear foot decrease is that the Supplemental Draft EIS unit price included terminal end sections in the unit price for W-beam guardrail. The current estimate has separate bid items for W-beam guardrail and terminal end section. The net effect on the Supplemental Draft EIS Engineer's Estimate is to decrease Alternative 2B by approximately $1,235,000 and to decrease Alternative 3 by approximately $235,000.

Item 611(1) Riprap
Per Cubic Yard

The estimated quantity of riprap for Juneau Access Improvements Project Alternative 2B is 574,500 cubic yards. The estimated quantity for Alternative 3 is 164,500 cubic yards.

The riprap for the Juneau Access Improvements Project will be generated on site from rock excavation. The rock excavation item includes drilling, shooting, and embanking or disposing of the rock and the rock excavation quantity includes the necessary riprap quantities. Therefore the unit price for riprap only needs to include any additional cost for sorting and placing the riprap on the slopes.

Based on their being no public access conflicts during construction and the large quantities, the extra cost for sorting and placing the riprap was set at $6 per cubic yard.

The unit price for riprap is decreased by $ 9 per cubic yard from the Supplemental Draft EIS unit price. The Supplemental Draft EIS Engineer's Estimates did not account for the riprap being generated from rock excavation. The quantities remain unchanged from the Supplemental Draft EIS. The net effect on the Supplemental Draft EIS Engineer's Estimate is to decrease Alternative 2B by approximately $5,170,000 and to decrease Alternative 3 by approximately $1,480,000.

Item 637(1) MSE Wall
Per Square Foot

The estimated quantity of MSE wall for Juneau Access Improvements Project Alternative 2B is 543,790 square feet. The estimated quantity for Alternative 3 is 77,446 square feet.

The work to be completed involves large quantities and will be completed without public access conflicts during construction.

The following comparison projects were used:

- Project 52921 Palmer-Wasilla Extension. Bid June 2001. Work was mechanically stabilized embankment retaining walls 1,640 square meters (17,712 square feet). Work completed while maintaining traffic. Low bidder $30.93 per square foot. Average of 3 low bids $29.14 per square foot.
- Project 53989 Parks Highway – MP 37-39. Bid September 2001. Work was mechanically stabilized embankment retaining walls 2,360 square meters (25,488 square foot). Work completed while maintaining traffic. Low bidder $32.41 per square foot. Average of 3 low bids $30.93 per square foot.
- Project 55264 Glenn Highway – MP 100-109; Caribou Creek. Bid November 2002. Work was mechanically stabilized embankment retaining walls 3,225 square meter (34,830 square feet). Work completed while maintaining traffic. Low bidder $23.15 per square foot. Average of 3 low bids $28.55 per square foot.

Inflation will be offset by large quantities and no public access conflicts during construction. Based on these three projects the Juneau Access MSE wall unit price was established as $31 per square foot.

Two bid items, gabions and reinforced earth wall, in the Supplemental Draft EIS Engineer's Estimate are replaced by one item MSE wall. Quantities are recalculated to reflect current design and alignments. The net effect on the Supplemental Draft EIS Engineer's Estimate is to increase Alternative 2B by approximately $5,632,000 and to decrease Alternative 3 by approximately $1,724,000.

Item 637(2) Screening Structure
Per Lump Sum

This item was not included in the Supplemental Draft EIS Engineer's Estimate. The purpose of the screening structure is to restrict the Gran Point and Met Point Sea Lion Haulouts from access and view. The area to be restricted extends 3,000 feet either side from the main haulout area. The screening structures will consist of sections of rock thru-cuts, sections of concrete barrier with screening fence on top, and sections of 8-foot-high screening fence. For Gran Point there are 3,750 feet of rock thru-cut, 1,300 feet of concrete barrier with screening fence and 950 feet of 8-foot-high screening fence. For Met Point there are 1,200 feet of rock thru-cut, 1,500 feet of concrete barrier with screening fence, 1,800 feet of 8-foot-high screening fence and approximately 1,500 feet where natural screening and restricted access do not require screening.

For rock thru-cuts the cost is included in the rock excavation item. For estimating the cost of concrete barrier with screening fence the barrier is estimated to be a concrete jersey barrier with a 3 to 4-foot-high screening fence on top. For estimating the cost of the 8-foot-high screening fence; the fence is estimated to be an 8-foot-high chain link fence with screening fabric.

The following comparison projects were used:

- Project 67408 Skagway – Klondike Highway jersey barrier. Bid August 2004. Work was lump sum to mobilize and remove 1,000 feet of guardrail and replace with concrete jersey barrier. Work completed while maintaining traffic. Low bid $99,890 lump sum or approximately $100 per linear foot including mobilization and removing guardrail.
- Project 73652 Valdez – Ferry Terminal Improvements. Bid May 2003. Work was 8-foot chain link fence, 1,776 linear feet. Low bid $60 per linear foot. Average of 3 Low bids $60.33 per linear foot.

Based on these two projects the estimated cost for the concrete jersey barrier with 3 to 4-foot-high screening fence is $135 per linear foot ($75 for jersey barrier and $60 for fence). The cost of the 8-foot-high screening fence is estimated at $75 per linear foot including screening fabric. Lump sum estimate is based on 2,800 linear feet of concrete barrier with screening fence and 2,750 linear feet of 8-foot-high screening fence.

The net effect on the Supplemental Draft EIS Engineer's Estimate is to increase Alternative 2B by approximately $584,000.

Item 640(1) Mobilization and Demobilization
Per Lump Sum

There are no quantities associated with mobilization and demobilization. This item covers the cost to move personnel, equipment, supplies and incidentals to and from the project site.

The following comparison projects were used:

- Project 60751 Valdez – Dayville Road Reconstruction. Bid June 2004. Work was mobilization and demobilization per lump sum. Low bid for mobilization and demobilization was $2,619,000 or 8.8 percent of the total bid of $29,643,055.50. Second low bidder was $2,150,000 or 7.3 percent of their total bid of $29,643,598.00.
- Project 68096 Juneau – Glacier Highway and Trailhead. Bid January 2005. Work was mobilization and demobilization per lump sum. Low bid for mobilization and demobilization was $700,000 or 7 percent of their total bid of $9,966,670. Second low bidder was $675,000 or 6.5 percent of their total bid of $10,342,564.

Based on these projects, mobilization and demobilization was set at approximately 7.5 percent of the total engineer's estimate for all bid items.

The net effect on the Supplemental Draft EIS Engineer's Estimate is to decrease Alternative 2B by approximately $1,025,000 and to decrease Alternative 3 by approximately $3,050,000.

Item 640(4) Worker Meals and Lodging, or Per Diem
Lump Sum

This bid item was not included in the Supplemental Draft EIS Engineer's Estimate. This bid item was added to state contracts after October 2004 to comply with Alaska Department of Labor and Workforce Development requirements.

The net effect on the Supplemental Draft EIS Engineer's Estimate is to increase both Alternative 2B and Alternative 3 by approximately $1,000,000.

Item – Highway Contingency

Most of the items included in the engineer's estimate are sufficiently accurate that a contingency is not warranted. The only items that could change based on field geotechnical work are the backslopes in the rock cut areas and the depths of foundation piling at the major river crossings. To cover any overruns due to field changes an 8 percent contingency was applied to the total project estimate. This means that either the rock excavation or the Bridge Structure could overrun by approximately 25 percent and still be within the estimate or that they could both overrun by approximately 12 percent and still be within the estimate.

Item – Construction Engineering

This item covers the cost for state forces to inspect, monitor and document the Contractor's construction activities. This project will not require traffic control monitoring or utility construction inspection. On large projects the Construction Engineering is a lower percent of the Engineer's Estimate than on smaller projects. Construction Engineering at 8 percent was also used in the Supplemental Draft EIS Engineer's Estimate.

Item – 4.3 Percent ICAP

The Indirect Cost Allocation Plan (ICAP) is an overhead rate assessed by DOT&PF, on all capital projects. For State Fiscal Year 2006 the rate for FHWA Highway projects has been set at 4.3 percent. The rate at the time of the Supplemental Draft EIS Engineer's Estimate was 3.55 percent. The net effect on the Supplemental Draft EIS Engineer's Estimate is to increase Alternative 2B by approximately $1,390,000 and to increase Alternative 3 by approximately $945,000.

Item – Preliminary Development

This item is to cover the cost of project development, design and final permitting. The estimated amounts for this item are the same as used in the Supplemental Draft EIS Engineer's Estimate.

Item – Mitigation

This item is to cover the cost to mitigate for the construction impacts of the alternatives. Some of each alternative's mitigation is included in bid items that cover on site mitigation. The mitigation item is to cover off site mitigation or fee in lieu of mitigation. The amounts shown are based on preliminary discussions with resource agencies.

Item – Right of Way

This item is to cover the estimated cost of acquiring right of way to construct each alternative. Amounts shown are the same as used in the Supplemental Draft EIS Engineer's Estimate.

Item – Maintenance Building

This item covers the cost of constructing a Maintenance Station at Comet for Alternative 2B and Equipment and sand storage at William Henry Bay for Alternative 3. Amounts shown are the same as used in the Supplemental Draft EIS Engineer's Estimate. The $500,000 estimate for the William Henry Bay Building is confirmed by the May 2005 bid to construct the Skagway Klondike Highway Storage Building. This 5,000-square-foot building was bid at $482,000 for a similar remote location building. The Comet Maintenance Station is estimated at $1,000,000 to include public restroom facilities.

Item – Avalanche Control CIP

This item is to cover the cost of constructing ammunition storage units, weather stations, and repeaters and to obtain all avalanche maintenance equipment. Costs are taken from the Snow Avalanche Report. Amounts used are the same as used in the Supplemental Draft EIS, however are broken out as an item to allow for easier identification.

Item – Road Assistance

This item was included in the Supplemental Draft EIS Engineer's Estimate. It was to account for the improvements to be constructed by Goldbelt and Coeur on the Cascade Point Road. This item has been deleted since the roadway has been constructed and each alternative's quantities have been reduced by the actual amount of construction that has occurred.

Highway Construction Total

The cumulative effect of new Pay items, different Pay Units, Revised Unit Prices and Quantities and current ICAP, over the Supplemental Draft EIS Engineer's Estimate is to increase the Alternative 2B Highway Construction Total estimate by approximately $5,345,000 and to decrease the Alternative 3 Highway Construction Total estimate by approximately $4,850,000.

Items – Terminal Construction and Vessel Construction

These items are added to the Engineer's Estimate so that each alternative's total estimated cost is provided in one document. For changes from the Supplemental Draft EIS estimates for these items see the updated Terminal Construction Cost Estimates and the Vessel Construction Cost Update.

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NEW ATTACHMENT G
VESSEL CONSTRUCTION COST UPDATE

This is a new attachment that explains how vessel construction costs changed between the Supplemental Draft EIS estimate in January 2004 and the Final EIS estimates in August 2005.

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PO Box 22223
Juneau, AK 99802
907-586-3148

August 29, 2005

Mr. Reuben Yost
Special Projects Manager
SE Region, DOT&PF
Juneau, AK 99801

Subject: JAI Marine Segments CIP Cost Update

Dear Mr. Yost:

At your request, we have examined the difference in cost of vessel construction over the period January 2004 to August 2005 for the purpose of updating the vessel acquisition costs in the 2003 JAI Marine Segments Report.

The time period in question was marked by a large increase in the cost of steel, a minor increase in general economic inflation, and a large increase in the cost of petroleum products.

Over this period the cost of American Bureau of Shipping certified, wheeled and primed, structural steel went from about .25 $ per pound to about .90 $ per pound. In order to accurately account for this increase in raw material cost, we isolated and quantified the amount and cost of steel, as a portion of the total vessel construction cost. Although a normal day-boat ferry contains about 75 percent steel by weight, we calculated that the increase in the total vessel cost, due solely to the increase in price of steel, would have been about 6.2 percent over this period.

Aluminum costs have not increased to the extent of steel costs. Aluminum prices vary with thickness, grade, and availability and are quoted on specific lots. Based on standard size (6'x20') 5086 marine grade aluminum plate, the price of aluminum increased from about 1.65 $ per pound to about 2.23 $ per pound, over the period January 2004 to August 2005. Assuming an average cost of aluminum plates and shapes and assuming high speed aluminum day-boats are about 55 percent aluminum by weight, the increase in total vessel cost due solely to the increase in aluminum cost over this period, was about 2.1 percent.

A general economic inflation factor must be applied to the overall vessel cost because of the increase in cost of manufactured components (like main engines)

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and the increase in cost of services and utilities. Our analysis indicated that most vessel construction costs (other than hull material) increased by a small and somewhat uniform amount. The increase in general economic inflation was measured primarily by Consumer Price Index (CPI) calculations both nationally and in Alaska. National CPI data indicates an overall inflation increase of 5.1 percent for the period January 2004 to August 2005, and was slightly less in Alaska.

Also, we separately investigated average earnings and personal income figures in shipbuilding areas to determine the impact of the cost of labor. Earnings and wages varied, but in general they outpaced the CPI by less than 1 percent. We believe that the 5.1 percent general inflation cost is an accurate measure of the general vessel construction cost increase and should be applied to our 2003 vessel cost calculations.

Based on our analysis, the construction cost for the steel vessels in the JAI Marine Segments Report has increased by 11.1 percent over the time period January 2004 to August 2005. This figure reflects the general inflation cost for all items excluding steel and the increase due to the cost of steel.

Based on our analysis, the construction cost for aluminum high speed vessels in the JAI Marine Segments Report has increased by 6.8 percent over the time period January 2004 to August 2005. This figure reflects the general inflation cost for all items excluding aluminum and the increase due to the cost of aluminum.

Vessel acquisitions costs in the Marine Segments report include a program management cost equal to 20 percent of the vessel construction cost. Based on the fact that a large portion of program costs are also subject to general economic inflation, we believe that the calculation of program management cost should remain at 20 percent of the increased vessel cost.

Our analysis is based on general economic trends and costs and is intended to be applied only to the limited vessel types and sizes in the 2003 Marine Segments Report. This information is being supplied for the purpose of transportation planning. If you need information on a specific route or vessel size/type, we would be happy to provide a more detailed analysis. Please advise us, if you have any questions.

Sincerely,

Patrick Eberhardt, PE
Principal
Coastwise Corporation
(907) 586-3148