Juneau Access Improvements Project
Final Supplemental Environmental Impact Statement

2017 Update to Appendix D Technical Alignment Report

Prepared for:

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

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Table of Contents

Tables

Figures

Attachments

Attachment A: Revised East Lynn Canal Plan and Profile Sheets
Attachment B: Revised West Lynn Canal Plan and Profile Sheets
Attachment C: Revised Highway Maintenance Cost Estimate
Attachment D: Revised Marine Terminal Plans and Cost Update
Attachment E: Revised Road Engineer's Estimate

Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ACF	Alaska Class Ferry
ADT	average daily traffic
AMHS	Alaska Marine Highway System
ATB	Asphalt Treated Base
CIP	Capital Improvement Plan
DOT&PF	Alaska Department of Transportation and Public Facilities
EATB	Emulsified Asphalt Treated Base
EIS	Environmental Impact Statement
FEIS	Final Environmental Impact Statement
JAI	Juneau Access Improvements
MP	Milepost
NEPA	National Environmental Policy Act
NHS	National Highway System
SEIS	Supplemental Environmental Impact Statement

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1. Introduction

In September 2004, the Juneau Access Improvement (JAI) Project-Technical Alignment Report was prepared and included as Appendix D of the JAI Supplemental Draft Environmental Impact Statement (EIS) in January 2005. During development of the JAI 2006 Final EIS, the Alaska Department of Transportation and Public Facilities (DOT&PF) responded to comments on the Supplemental Draft EIS and incorporated new data and new analysis into the project. Changes were made to Alternative 2B, and Alternatives 2, 2A, and 2C were dropped from the range of reasonable alternatives. These revisions required the preparation of an Addendum to Appendix D – Alignment Technical Report, which was included in Appendix W of the 2006 Final EIS.

The 2006 Addendum to Appendix D described changes to the design criteria, updated the alignment discussion where changes occurred, provided updated bridge summaries, provided updated plan and profile sheets where changes occurred, updated ferry terminal layouts and cost estimates, updated the Engineer's Estimate, and provided an errata sheet for the original technical report.

As part of the JAI Project 2014 Draft Supplemental Environmental Impact Statement (SEIS), additional changes and updates to design criteria, plans, and costs have been prepared and are presented in this *2014 Update to Appendix D – Technical Alignment Report*. This Update incorporates and replaces the 2006 Addendum to Appendix D. The information reported in the 2004 Technical Alignment Report Appendix D remains valid unless replaced with new information presented in this Update.

Due to the extent of changes to the Alternative 2B and 3 alignments, new plan and profile sheets are provided, as are new ferry terminal layouts and highway and ferry terminal cost estimates.

1.1 Project Description

As required by the National Environmental Policy Act (NEPA), this technical report considers the following reasonable alternatives.

1.1.1 Alternative 1 – No Action

The No Action Alternative (Alternative 1) includes a continuation of mainline ferry service in Lynn Canal and incorporates two Day Boat Alaska Class Ferries (ACFs). The Alaska Marine Highway System (AMHS) would continue to be the National Highway System (NHS) route from Juneau to Haines and Skagway, and no new roads or ferry terminals would be built. In addition to the Day Boat ACFs, programmed improvements include improved vehicle and passenger staging areas at the Auke Bay and Haines ferry terminals to optimize traffic flow on and off the Day Boat ACFs as well as expansion of the Haines Ferry Terminal to include a new double bow berth to accommodate the Day Boat ACFs. This alternative is based on the most likely AMHS operations in the absence of any capital improvements specific to the JAI Project.

Mainline service would include two round trips per week in the summer and one per week in the winter with Auke Bay-Haines-Skagway-Haines-Auke Bay routing. During the summer, one Day Boat ACF would make one round trip between Auke Bay and Haines six days per week, and one

would make two round trips per day between Haines and Skagway six days per week. The Day Boat ACFs would not sail on the seventh day because the mainliner is on a similar schedule. In the winter, ferry service in Lynn Canal would be provided primarily by the Day Boat ACFs three times per week. The *M/V Malaspina* would no longer operate as a summer day boat in Lynn Canal.

1.1.2 Alternative 1B – Enhanced Service with Existing AMHS Assets

Alternative 1B includes all of the components of Alternative 1, No Action, but focuses on enhancing service using existing AMHS assets without major initial capital expenditures. Similar to Alternative 1, Alternative 1B includes: a continuation of mainline ferry service in Lynn Canal; the AMHS would continue to be the NHS route from Juneau to Haines and Skagway; no new roads or ferry terminals would be built; and in addition to the Day Boat ACFs, programmed improvements include improved vehicle and passenger staging areas at the Auke Bay and Haines ferry terminals to optimize traffic flow on and off the Day Boat ACFs as well as expansion of the Haines Ferry Terminal to include a new double bow berth to accommodate the Day Boat ACFs. Service to other communities would remain the same as the No Action Alternative. Alternative 1B keeps the *M/V Malaspina* in service after the second Day Boat ACF is brought online to provide additional capacity in Lynn Canal. Enhanced services included as part of Alternative 1B are a 20 percent reduction in fares for trips in Lynn Canal and extended hours of operations for the reservation call center.

Mainline service would include two round trips per week in the summer and one per week in the winter with Auke Bay-Haines-Skagway-Haines-Auke Bay routing. During the summer, the *M/V Malaspina* would make one round-trip per day five days per week on a Skagway-Auke Bay-Skagway route. On the sixth day, the *M/V Malaspina* would sail on the Skagway-Auke Bay-Haines-Skagway route, and on the seventh day, it would sail that route in reverse (Skagway-Haines-Auke Bay-Skagway). One Day Boat ACF would make one round trip between Auke Bay and Haines seven days per week. The other Day Boat ACF would make two round-trips per day between Haines and Skagway six days per week; it would not sail on the seventh day because the mainliner would be on a similar schedule. In the winter, ferry service in Lynn Canal would be provided primarily by the Day Boat ACFs three times per week.

1.1.3 Alternative 2B – East Lynn Canal Highway to Katzehin, Shuttles to Haines and Skagway

Alternative 2B would construct the East Lynn Canal Highway (50.8 miles, including 47.9 miles of new highway and upgrade to 2.9 miles of the existing Glacier Highway) from Echo Cove around Berners Bay to a new ferry terminal 2 miles north of the Katzehin River. Ferry service would connect Katzehin to Haines and Skagway. In addition, this alternative includes modifications to the Skagway Ferry Terminal to include a new end berth and construction of a new conventional monohull ferry to operate between Haines and Skagway. Mainline ferry service would end at Auke Bay. This alternative assumes the following improvements will have been made independent of the JAI Project before Alternative 2B would come on-line: two Day Boat ACFs, improved vehicle and passenger staging areas at the Haines Ferry Terminal to optimize traffic flow on and off the Day Boat ACFs, and expansion of the Haines Ferry Terminal to include two new double bow berths.

During the summer months, one Day Boat ACF would make eight round trips per day between Haines and Katzehin, a second Day Boat ACF would make six round trips per day between Skagway and Katzehin, and the Haines-Skagway shuttle ferry would make two trips per day. During the winter, one Day Boat ACF would make six round trips per day between Haines and Katzehin, and a second Day Boat ACF would make four round trips per day between Skagway and Katzehin. The Haines-Skagway shuttle would not operate; travelers going between Haines and Skagway would travel to Katzehin and transfer ferries.

1.1.4 Alternative 3 – West Lynn Canal Highway

Alternative 3 would upgrade/extend the Glacier Highway (5.2 miles, including 2.3 miles of new highway and upgrade to 2.9 miles of the existing Glacier Highway) from Echo Cove to Sawmill Cove in Berners Bay. New ferry terminals would be constructed at Sawmill Cove in Berners Bay and at William Henry Bay on the west shore of Lynn Canal, and the Skagway Ferry Terminal would be modified to include a new end berth. A new 38.9-mile highway would be constructed from the William Henry Bay Ferry Terminal to Haines with a bridge across the Chilkat River/Inlet connecting into Mud Bay Road. A new conventional monohull ferry would be constructed and would operate between Haines and Skagway. Mainline ferry service would end at Auke Bay. This alternative assumes the following improvements will have been made independent of the JAI Project before Alternative 3 would come on-line: two Day Boat ACFs, improved vehicle and passenger staging areas at the Haines Ferry Terminal to optimize traffic flow on and off the Day Boat ACFs, and expansion of the Haines Ferry Terminal to include two new double bow berths.

During the summer, two Day Boat ACFs would make six round-trips per day between Sawmill Cove and William Henry Bay (total of 12 trips each direction), and the Haines-Skagway shuttle ferry would make six round-trips per day. During the winter, one Day Boat ACF would make four round-trips per day between Sawmill Cove and William Henry Bay, and the Haines-Skagway shuttle ferry would make four round-trips per day.

1.1.5 Alternatives 4A through 4D – Marine Alternatives

All four marine alternatives would include continued mainline ferry service in Lynn Canal with a minimum of two trips per week in the summer and one per week in the winter with Auke Bay-Haines-Skagway-Haines-Auke Bay routing. Each marine alternative includes a new conventional monohull shuttle that would make two round trips per day between Haines and Skagway six days a week in the summer and a minimum of three round trips per week between Haines and Skagway in the winter. The AMHS would continue to be the NHS route from Juneau to Haines and Skagway. These alternatives assume the following improvements will have been made independent of the JAI Project before the alternative comes on-line: improved vehicle and passenger staging areas at the Auke Bay and Haines ferry terminals to optimize traffic flow on and off the Day Boat ACFs, and expansion of the Haines Ferry Terminal to include new double bow berths.

1.1.5.1 Alternative 4A – Fast Vehicle Ferry Service from Auke Bay

Alternative 4A would construct two new fast vehicle ferries (FVFs). No new roads would be built for this alternative, and the Auke Bay Ferry Terminal would be expanded to include a new double stern berth. A new conventional monohull ferry would be constructed and would operate

between Haines and Skagway. The *M/V Malaspina* would no longer operate as a summer day boat in Lynn Canal, and the Day Boat ACFs would no longer operate in Lynn Canal. The FVFs would make two round trips between Auke Bay and Haines and two round trips between Auke Bay and Skagway per day in the summer. During the winter, one FVF would make one round trip between Auke Bay and Haines and one round trip between Auke Bay and Skagway each day.

1.1.5.2 Alternative 4B – Fast Vehicle Ferry Service from Berners Bay

Similar to Alternative 4A, Alternative 4B would construct two new FVFs. This alternative would upgrade/extend Glacier Highway (5.2 miles, including 2.3 miles of new highway and 2.9 miles of the existing Glacier Highway) from Echo Cove to Sawmill Cove in Berners Bay, where a new ferry terminal would be constructed. The Auke Bay Ferry Terminal would be expanded to include a new double stern berth. A new conventional monohull ferry would be constructed and would operate between Haines and Skagway. The *M/V Malaspina* would no longer operate as a summer day boat in Lynn Canal, and the Day Boat ACFs would no longer operate in Lynn Canal. In the summer, the FVFs would make two round trips between Sawmill Cove and Haines and two round trips between Sawmill Cove and Skagway per day. During the winter, one FVF would make one round trip between Auke Bay and Haines and one round trip between Auke Bay and Skagway each day.

1.1.5.3 Alternative 4C – Conventional Monohull Service from Auke Bay

Alternative 4C would use Day Boat ACFs to provide additional ferry service in Lynn Canal. No new roads would be built for this alternative. The Auke Bay Ferry Terminal would be expanded to include a new double stern berth, and the Skagway Ferry Terminal would be expanded to include a new bow berth. A new conventional monohull ferry would be constructed and would operate between Haines and Skagway. In the summer, one Day Boat ACF would make one round trip per day between Auke Bay and Haines, and one Day Boat ACF would make one round trip per day between Auke Bay and Skagway. During the winter, one Day Boat ACF would alternate between a round trip to Haines one day and a round trip to Skagway the next day.

1.1.5.4 Alternative 4D – Conventional Monohull Service from Berners Bay

Alternative 4D would use Day Boat ACFs to provide additional ferry service in Lynn Canal. This alternative would upgrade/extend Glacier Highway (5.2 miles, including 2.3 miles of new highway and 2.9 miles of the existing Glacier Highway) from Echo Cove to Sawmill Cove in Berners Bay, where a new ferry terminal would be constructed. The Auke Bay Ferry Terminal would be expanded to include a new double stern berth, and the Skagway Ferry Terminal would be expanded to include a new bow berth. This alternative includes construction of a new conventional monohull ferry that would operate between Haines and Skagway. In the summer, the Day Boat ACFs would make two trips per day between Sawmill Cove and Haines and two trips per day between Sawmill Cove and Skagway. During the winter, a Day Boat ACF would operate from Auke Bay, alternating between a round trip to Haines one day and to Skagway the next day.

2. Design Standards

2.1 Highway Design Criteria

The highway has been designed following the American Association of State Highway and Transportation Officials' (AASHTO's) "A Policy on Geometric Design of Highways and Streets." Over the years AASHTO has updated its design guidance, with the latest update occurring in 2011. Based on this latest update, the following revision is made to Roadway Design Criteria: The minimum Allowable Radius of a Horizontal Curve has been reduced from 510 feet to 485 feet using a design speed of 40 mph.

2.2 Design Exceptions

The following design exception will be required for Alternatives 2B and 3 (see Table 2-1); supporting reasons are quoted from AASHTO:

Table 2-1: Alaska State National Highway System Standard

Criteria Description	AASHTO Standard	Juneau Access Improvements Project
Width of shoulder	6 ft.	4 ft.

The reasons for the exception have remained the same, with slight changes in wording:

- **Reason**: The State of Alaska has adopted the AASHTO Standard as its standard.
- **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. This would apply to Alternatives 4B and 4D. For ADTs between 400 and 1,500, relevant to Alternatives 2B and 3, a 6-foot-wide usable shoulder should be considered.
- **AASHTO states**: "As a minimum, 0.6 m [2 ft] of the shoulder width should be paved to provide for pavement support, wide vehicles, and collision avoidance."
- **AASHTO also states**: "Where bicycles are to be accommodated on the shoulder, a minimum paved width of 1.2 m [4 ft] should be used."

The DOT&PF has elected to use the 4-foot paved usable shoulder width to minimize construction impacts while still providing for bicyclists and pedestrians.

3. Recommended Design

3.1 Typical Sections

The highway typical section has been revised to replace the 4-inch-thick layer of Emulsified Asphalt Treated Base (EATB) with 2 inches of Asphalt Treated Base (ATB) and 4 inches of Aggregate Base Course, Grading D-1. The combined ATB and Base Course will provide a more durable structural section. The ATB and Base Course have been included in the Engineer's Estimates for all alternatives and are shown on the typical sections.

Select material below the base and pavement section has increased from 12 inches to 24 inches where the road is constructed on frost susceptible soils. Providing a non-frost susceptible material below the road base is critical in preserving the integrity of the road structure and will minimize long term maintenance efforts.

The ditch width has increased from 8 feet to 10 feet. The wider ditch width will better accommodate subsurface drainage from the 24-inch select material to the ditch and provide more capacity for drainage and snow storage.

The attached Figure 3-1 through Figure 3-6 reflect this change and provide information on various typical sections.

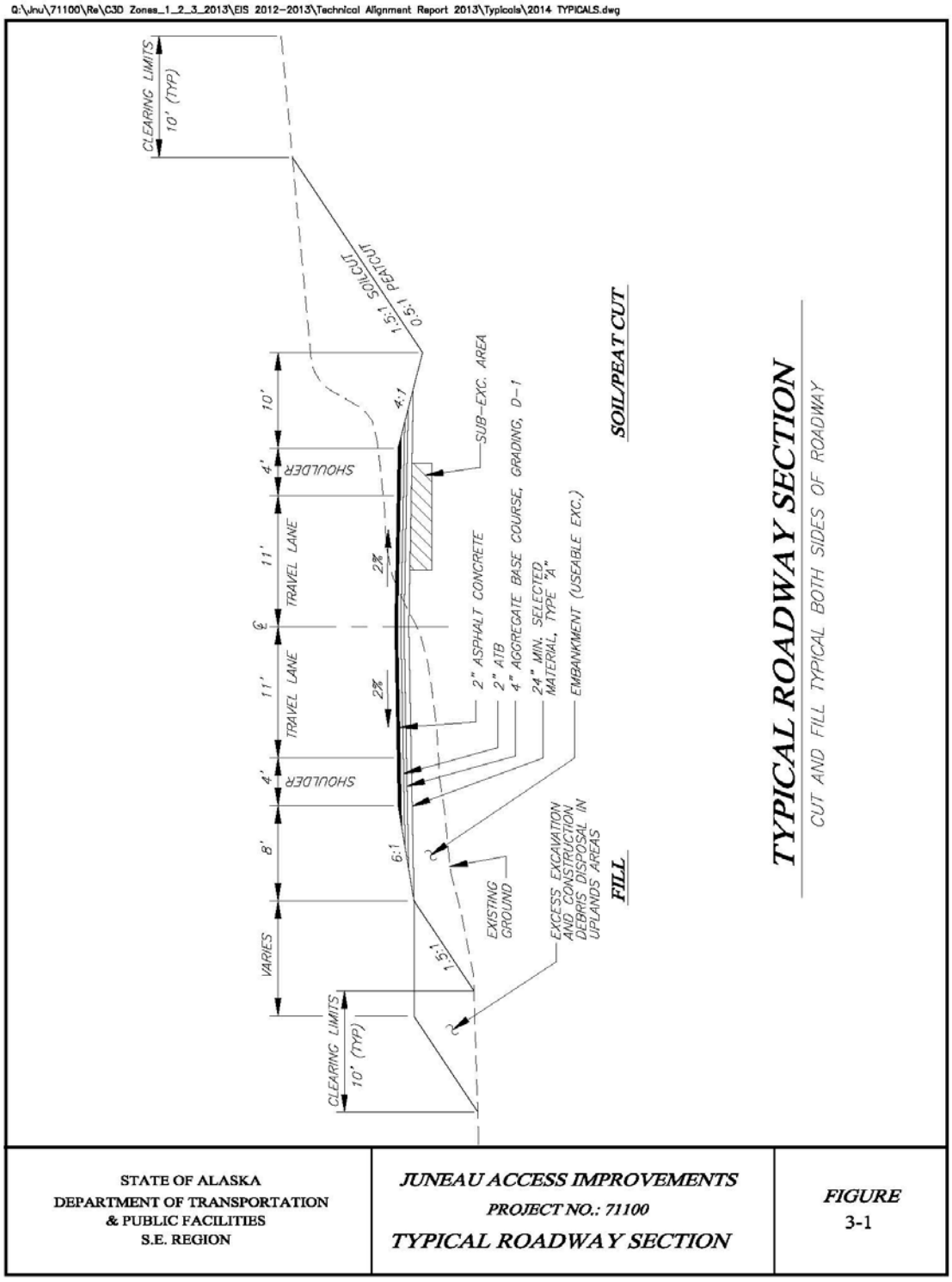

Figure 3-1: Typical Roadway Section

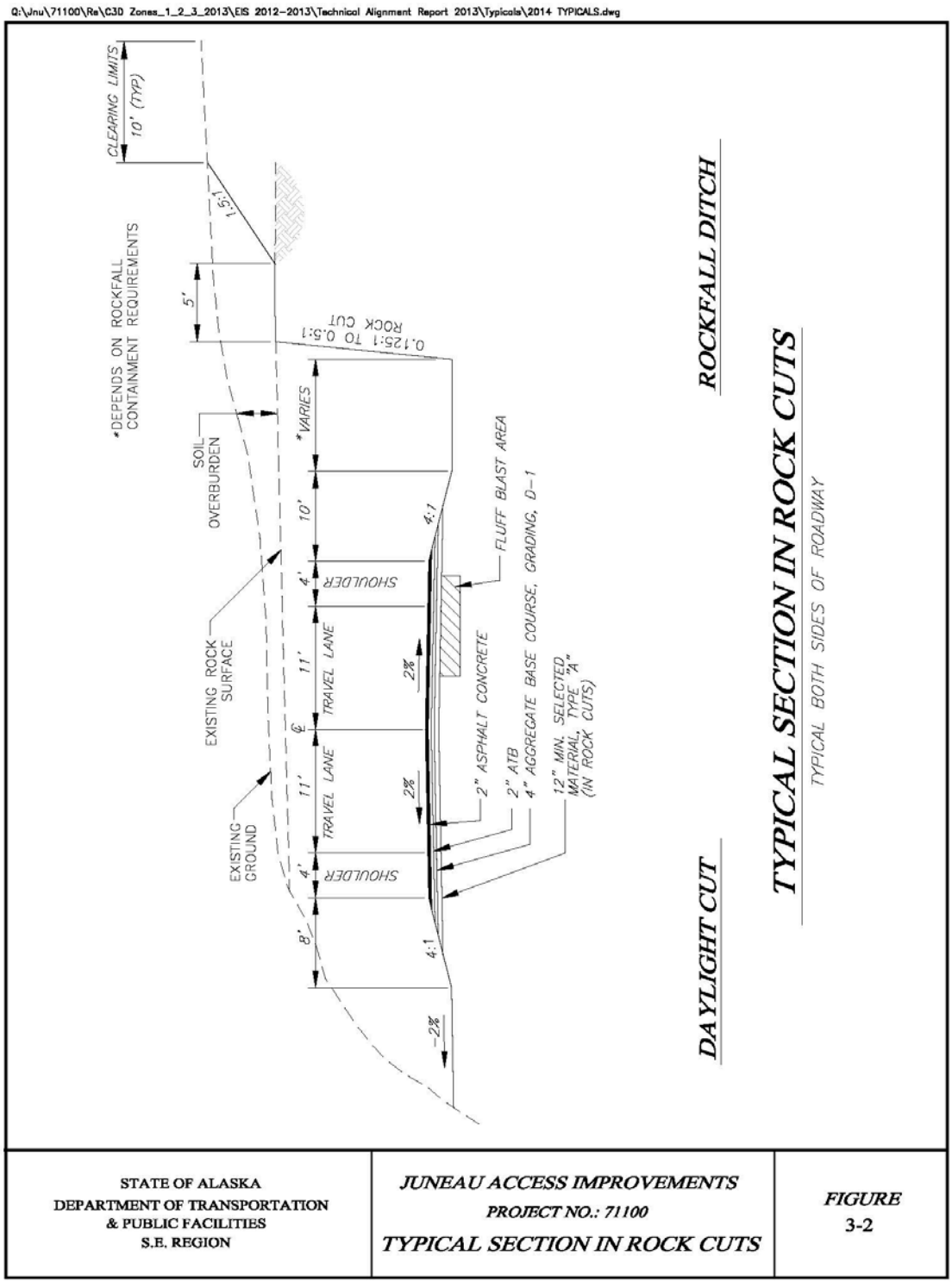

Figure 3-2: Typical Section in Rock Cuts

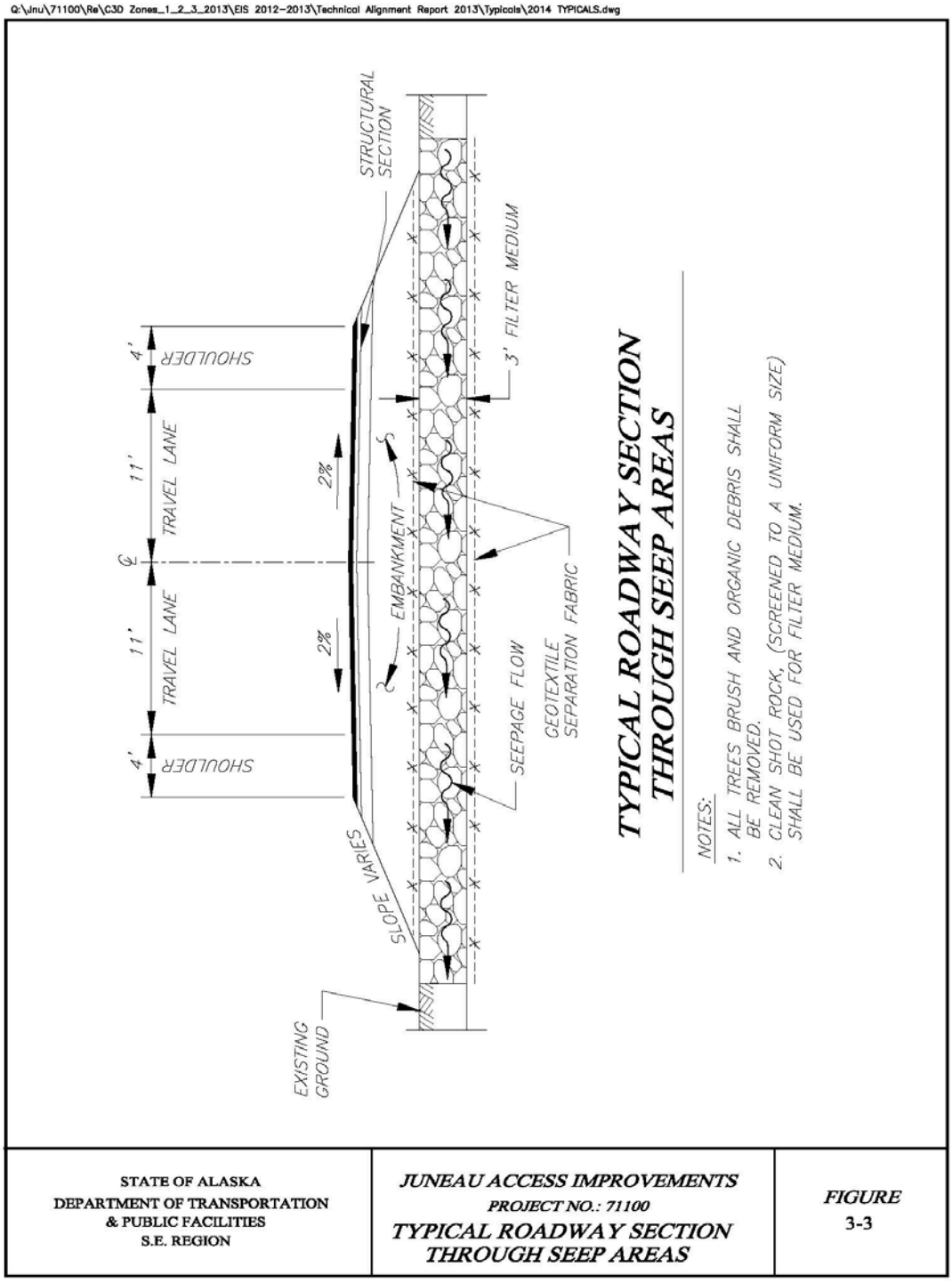

Figure 3-3: Typical Roadway Section through Seep Areas

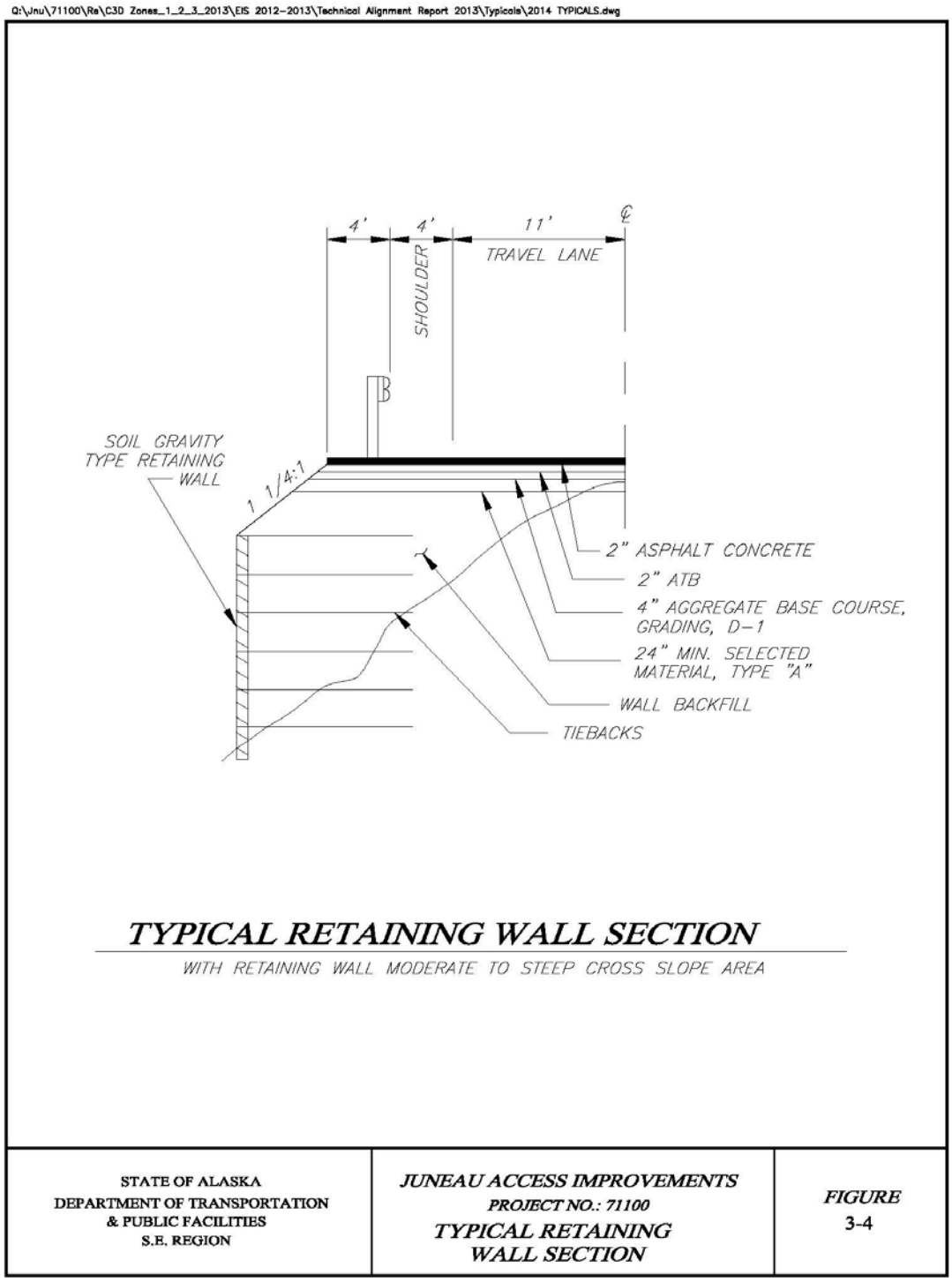

Figure 3-4: Typical Retaining Wall Section (Moderate to Steep)

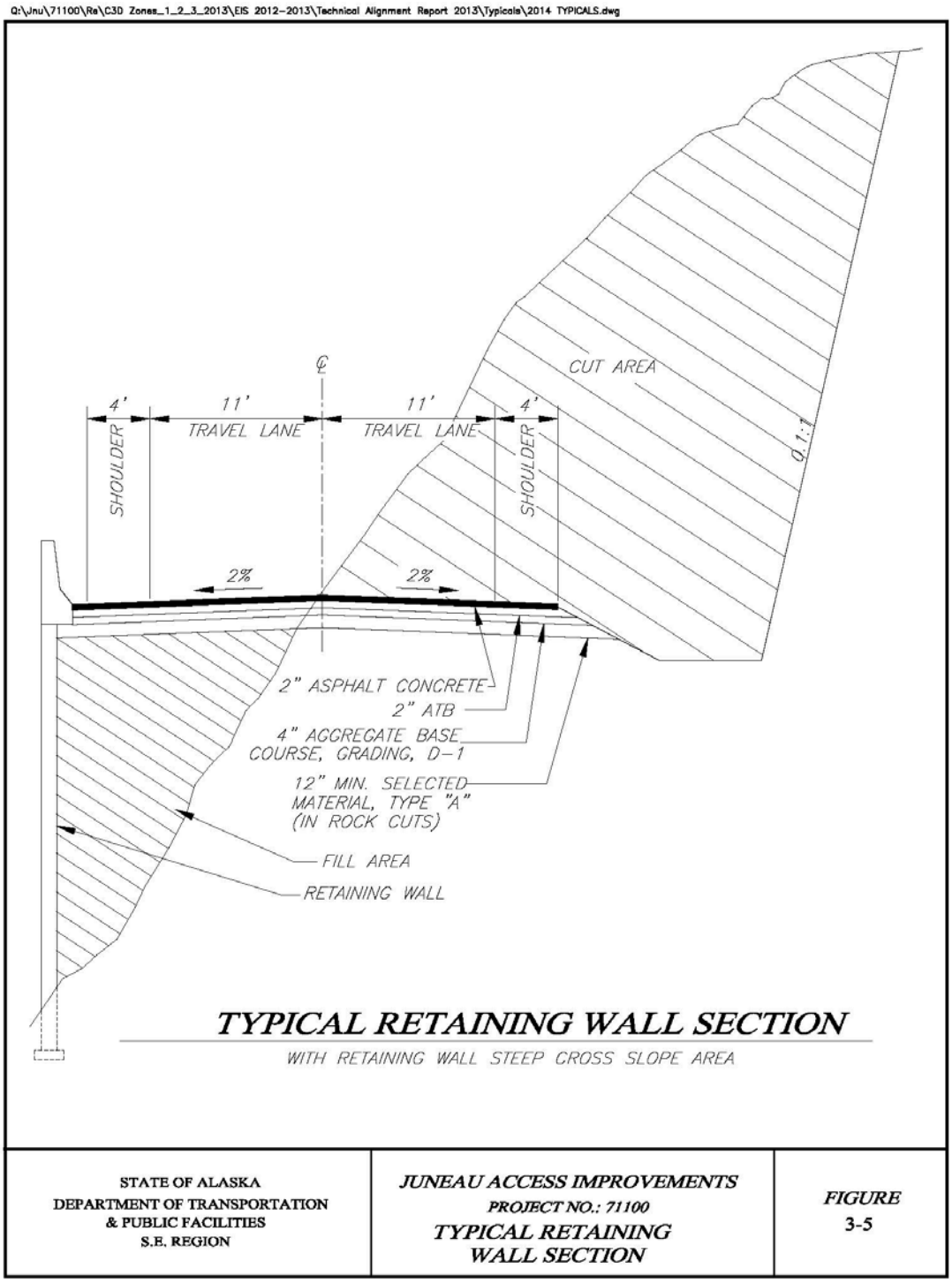

Figure 3-5: Typical Retaining Wall Section (Steep)

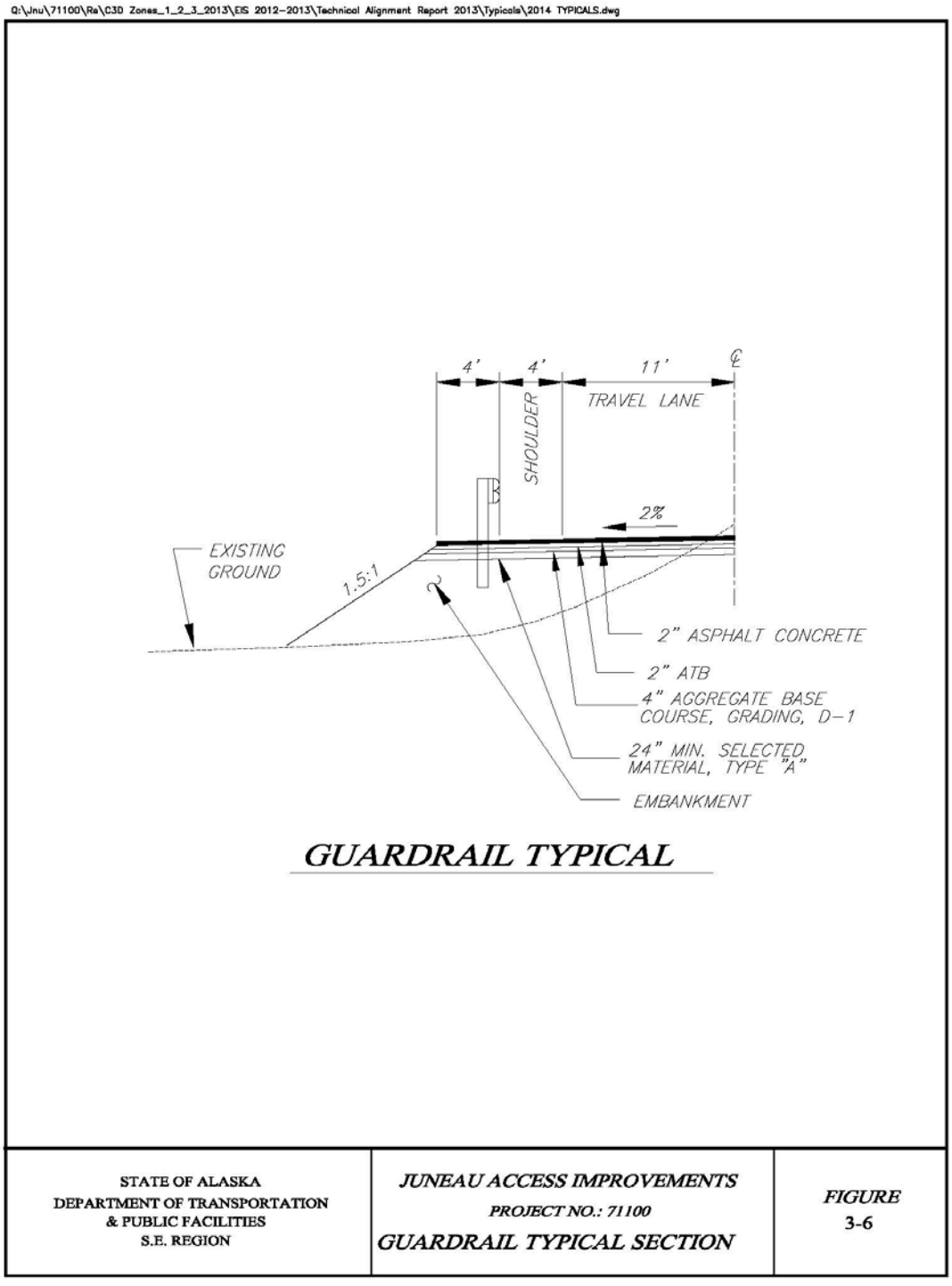

Figure 3-6: Guardrail Typical Section

3.2 Alignment Discussion Overview

3.2.1 East Lynn Canal Discussion

Note: The stationing along this route has changed from the 2006 Final EIS (FEIS) and 2008 Corps of Engineers Permit Alignment due to the numerous alignment revisions. The stationing provided in the discussion reflects stationing on the revised plan sheets in Attachment A.

Station 58+00 (Milepost [MP] 40.5) to Station 562+50 (MP 50.1) – Echo Cove to Berners Bay Crossing – (Plan Sheets 1 - 7) – This segment had minor alignment revisions for better bridge crossings, to minimize wetland impacts, and to avoid eagle nests.

In 2011, the pioneer road from Echo Cove to Cascade Point was reconstructed and widened. The current alignment between Station 64+75 and Station 207+00 will straddle the Goldbelt Cascade Point Road centerline alignment.

The curve at station 255+00 was lengthened to shift the alignment into a rock outcropping in order to generate material. Just beyond this at station 277+00, the crossing of Sawmill Creek was shifted downhill to avoid multiple converging creeks and boggy terrain. The crossing of Boulder Creek at station 393+00 was also shifted to take advantage of a better crossing. Here the alignment was shifted uphill.

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.

Beginning approximate station 410+00 and extending to 520+00 the alignment is shifted uphill to follow geotechnical investigative recommendations, to meet commitments for a minimum 50 foot offset from the water, and to avoid the primary zones (330-foot radius around the nest tree) of eagle nests #076, #119, and #074.

From Station 520+00 forward, the alignment was optimized by making minor downhill shifts where possible, and by following the curvature of the terrain more closely. Two new eagle nests were identified in this area. Nest #294 at station 521+60 Left and nest #292 at station 561+40 Right both required shifting the alignment to avoid the nests. To optimize the first bridge crossing at Berners Bay (Antler Slough) and to reduce shoreline impacts, the alignment was shifted about 500 feet upstream at station 572+00.

Station 562+50 (MP 50.1) to Station 756+50 (MP 53.6) - Berners Bay Crossing – (Plan Sheets 7 - 9) – This segment is largely unchanged but does have some minor alignment revisions to better line up with the bridge crossings. A bridge was added to cross a newly identified anadromous fish stream and avoid riparian wetlands.

Station 756+50 (MP 53.6) to Station 1401+00 (MP 65.8) – Berners Bay Crossing to Independence Lake – (Plan Sheets 9 - 19) – This 12.2-mile segment was revised at multiple points to minimize or eliminate impacts to wetlands, to better avoid eagle nests, to make use of better stream crossings and foundation soils, to avoid steep ravine areas, to minimize cut heights, and to use the existing Jualin Road corridor where feasible.

Station 1401+00 (MP 65.8) to Station 1520+00 (MP 68.1) – Independence Lake North – (Plan Sheets 19 - 20) – The alignment was shifted uphill to decrease the amount of marine fill and for better confined crossings through two debris flows and avalanche chutes.

Station 1520+00 (MP 68.1) to Station 1615+00 (MP 69.9) – Met Point South – (Plan Sheets 20 - 22) – In this segment, the alignment was shifted uphill in a couple areas to avoid boulder debris and to move the bridge crossing 10E to avoid complex channel morphology, debris deposition, and to reduce marine fill. Also two new eagle nests were identified in 2012, nest #236 at station 1521+00 Right and #233 at station 1573+00 Right, causing minor shifts to avoid the nests.

Station 1615+00 (MP 69.9) to Station 2096+00 (MP 79.0) – Met Point North to Level Point – (Plan Sheets 22 - 29) – This segment is characterized by numerous active debris flows and rockfall hazards. Geotechnical investigations identified large areas of steep talus slopes requiring special consideration for crossing. The general recommendation was to avoid cuts through the talus fields. The alignment has been shifted in many locations to provide for better crossings over the mapped debris flows and both horizontal and vertical adjustments for crossing the talus slopes. The majority of alignment shifts have been uphill to minimize these hazards. The original alignment closely followed the beach, therefore the shifts have also resulted in less marine fill. A large heavy-duty bridge was added at station 1735+58 to cross below an unstable talus slope and steep cliff face.

Also, seven new eagle nests were identified in 2012. The new nests and respective locations are; #105 at station 1650+00 Left, #102 at station 1713+00 Left, #149 at station 1714+00 Left, #212 at station 1912+00 Right, #211 at station 1952+00 Right, #033 at station 2014+00 Left, and #157 at station 2098+00 Left.

Station 2096+00 (MP 79.0) to Station 2635+00 (MP 89.2) – Level Point to Katzehin River – (Plan Sheets 29 - 37) – This segment is also characterized by numerous active debris flows and rockfall hazards. The alignment has been shifted either uphill or downhill in many locations to minimize the risks from these hazards. Shifts were also made to move bridge crossings into more favorable terrain. Numerous steep talus slopes present unique construction challenges.

From station 2140+00 to 2203+00, the alignment has predominantly been shifted uphill to minimize the risk from cutting through talus slopes. A better bridge crossing of Yeldagala Creek at station 2245+00 resulted in an uphill shift. The alignment remained shifted uphill to optimize the crossings of many debris flows and rockfall hazards.

A major shift is at Gran Point, station 2357+00, where the alignment now travels through two tunnels to avoid the hazards due to the rock cliffs and to shield the sea lion haulout. The alignment remains uphill to station 2454+00 to avoid very steep and difficult terrain. The first tunnel is located between approximate stations 2363+00 and 2371+00, with a length of 800 feet. The second tunnel is located between approximate stations 2378+00 and 2382+50, with a length of 450 feet.

Another major shift is at station 2540+00 where the alignment follows the contours at the water's edge and places deep water fill from station 2565+50 to 2581+00. The decision was made to shift the alignment into the water to avoid rockfall hazards from the cliffs above.

Between station 2595+00 and 2629+00, the alignment had minor shifts to better fit the terrain and to eliminate marine wetlands impacts.

Three new eagle nests were identified in 2012 within this segment. Nest #157 is at the beginning of this segment but was discussed in the previous segment. Nest #029 is at station 2233+00 Left, #024 is at station 2451+00 Left, and #204 is at station 2501+60 Right.

Station 2635+00 (MP 89.2) to Station 2771+86 (MP 91.8) – South Katzehin River to Katzehin Ferry Terminal – (Plan Sheets 37 - 38) – The Katzehin River Bridge was skewed to minimize exposure to the rockfall hazard along the southern bank of the river and to avoid a slough immediately north of the river. The need for a wildlife undercrossing was identified at station 2704+00 resulting in the need for bridge 20E. Its length is 130 feet.

The alignment on this segment was kept at the base of the mountain between station 2725+00 and the ferry terminal at station 2770+00 to eliminate estuarine wetlands impacts and to avoid eagle nest #196 at station 2740+00 Left. The ferry terminal fill was moved south to avoid the runout of an avalanche path.

3.2.2 West Lynn Canal Discussion

The alignment along the west side of Lynn Canal is mainly unchanged except for minor shifts to avoid new eagle nests identified in 2012; revised plan and profile sheets are included in Attachment B.

Nest #402, station 5675+53 Right, is situated at the top of steep terrain above the beach. The alignment consists of a through cut with steep terrain above making any uphill alignment shift difficult. The profile was raised to increase the distance from the cut limit to the nest.

At station 5745+37, nest #403 and the roadway are on a slight bench with steep slopes both uphill and downhill with very little room for shifting. The nest is situated uphill of the road. The roadway was shifted towards the seaward side to maximize the distance between the road and nest, thereby increasing retaining wall height.

Nest #406, station 5940+00 Right, is over the bank near the beach. The road would be in a through cut at a knob with a bench area both before and after the knob. The profile was raised to lessen the height of cut and to increase the distance between the nest and cut limit.

3.3 Drainage, Structures, and Bridges

Table 3-1, East Lynn Canal Bridge and Structure Summary, has been updated to include the new Alternative 2B bridges, snowsheds, and tunnels. Geotechnical investigation identified numerous new bridge locations due to the need to span active debris flows or other drainages.

Bridges north of station 1300+00 have been divided into 3 classifications; standard, special, and

heavy duty. Standard bridges are planned at crossings that can be spanned using common length concrete girders that are readily available. Special bridges are those that require girder lengths longer than those for standard bridges, require special foundation design, or may require other elements such as curvature. Heavy Duty bridges are those required at special crossings such as avalanche chutes or very difficult crossings. These bridges are required to address various hazards such as avalanche side loading and extreme topographic conditions. Figure 3-7, Bridge Elevations (originally Figure 3-8), was updated to distinguish between multiple span bridges for major and minor crossings.

Table 3-2 (originally Table 3-3) was updated to summarize the avalanche zones along the East Lynn Canal route. Avalanche sheds are anticipated at avalanche path numbers ELC019, ELC020, and ELC021 (paths are identified in Appendix J, *Snow Avalanche Report*, of the Supplemental Draft EIS, October 2004, and the 2014 Update to Appendix J). These paths have a combined width of 1,500 feet at this point, so it is assumed that the final design will include sheds with a total length of approximately 1,500 feet to mitigate for these high hazard avalanche zones. These are identified in Table 3-1.

Table 3-1: East Lynn Canal Bridge and Structure Summary

Bridge No. / Structure ID	Approx. Station	Highway Milepost	Length (ft)	Intermediate Piers	Name
1E	276+72	44.4	128	0	Sawmill Creek (A)
2E	391+98	46.6	128	0	Boulder Creek
3E	572+17	50.0	144	0	unnamed (A)
4Ea	641+86	51.3	2,759	19	Antler/Gilkey Rivers (A)
4Eb	671+09	51.9	128	0	Wildlife Undercrossing
4Ec	694+48	52.3	118	0	Wildlife Undercrossing
4Ed	723+79	52.9	118	0	unnamed
5E	728+39	53.0	2,881	20	Berners/Lace Rivers (A)
6E	921+15	56.7	288	2	Slate Creek (A) (SP)
7E	1306+03	64.0	118	0	Sweeny Creek (A)
8E	1343+71	64.7	60	0	Sherman Creek (A)
9E	1453+18	66.8	144	0	Independence Creek (A)
10E	1561+01	68.8	128	0	unnamed
11E	1669+80	70.9	144	0	unnamed (SP)
12E	1677+80	71.1	144	0	unnamed (HD)
13E	1681+30	71.2	118	0	unnamed
14E	1703+78	71.6	128	0	unnamed (HD)
15E	1735+58	72.2	400	3	(HD)
16E	1784+50	73.1	300	0	unnamed (HD)
17E	1984+00	76.9	160	0	unnamed (SP)
18E	2039+52	77.9	300	0	unnamed (HD)
LC019	2057+00	78.2	800	N/A	Paxton Creek (SS)
LC020	2103+00	79.1	300	N/A	unnamed (SS)
LC021	2116+00	79.3	400	N/A	Kemp Creek (SS)
19E	2244+80	81.8	160	0	Yeldagalga Creek (SP)
20E	2260+80	82.1	128	0	unnamed
21E	2282+00	82.5	128	0	unnamed (HD)
22E	2293+37	82.7	128	0	unnamed (HD)

Bridge No. / Structure ID	Approx. Station	Highway Milepost	Length (ft)	Intermediate Piers	Name
23E	2320+84	83.2	150	0	unnamed (HD)
24E	2337+93	83.5	144	0	unnamed (HD)
Tunnel 1	2367+00	84.1	800	N/A	unnamed (Tunnel)
Tunnel 2	2380+00	84.3	450	N/A	unnamed (Tunnel)
25E	2422+39	85.1	128	0	unnamed
26E	2481+03	86.2	128	0	unnamed (SP)
27E	2589+53	88.3	128	0	unnamed
28Ea	2637+65	89.2	2,590	18	Katzehin River (A)
28Eb	2703+45	90.4	128	0	Wildlife Undercrossing
Total Bridges 32		Total Length 12,563			
Total Snow Sheds 3		Total Length 1,500			
Total Tunnels 2		Total Length 1,250			

(A) = Anadromous fish stream
(SP) = Special Bridge
(HD) = Heavy Duty Bridge
(SS) = Snow Shed
* Bridges not labeled as SP or HD are Standard Bridges

Table 3-2: East Lynn Canal Snow Avalanche Summary

ID	Station	ID	Station
LC001	353+50	LC020	2102+65
LC002	1490+68	LC021	2114+62
LC003	1514+45	LC022	2122+86
LC003-1	1517+42	LC023	2128+85
LC004	1629+60	LC024	2140+96
LC005	1678+60	LC025	2282+59
LC005-1	1692+00	LC026	2294+14
LC006	1704+50	LC026-1	2308+00
LC007	1721+25	LC027	2311+00
LC008	1733+70	LC028	2321+34
LC009	1748+30	LC028-1	2328+33
LC010	1752+82	LC028-2	2331+98
LC011	1757+83	LC029	2338+67
LC012	1786+08	LC030	2350+62
LC013	1827+75	LC031	2389+79
LC014	1849+28	LC031-1	2444+00
LC015	1946+46	LC031-2	2449+00
LC016	1978+00	LC032	2504+83
LC017	2040+93	LC033	2513+79
LC018	2054+01	LC034	2572+96
LC019	2056+95	LC035	2771+78
LC019-1	2086+98		

Source: *Appendix Z Update to Appendix J - Snow Avalanche Report*

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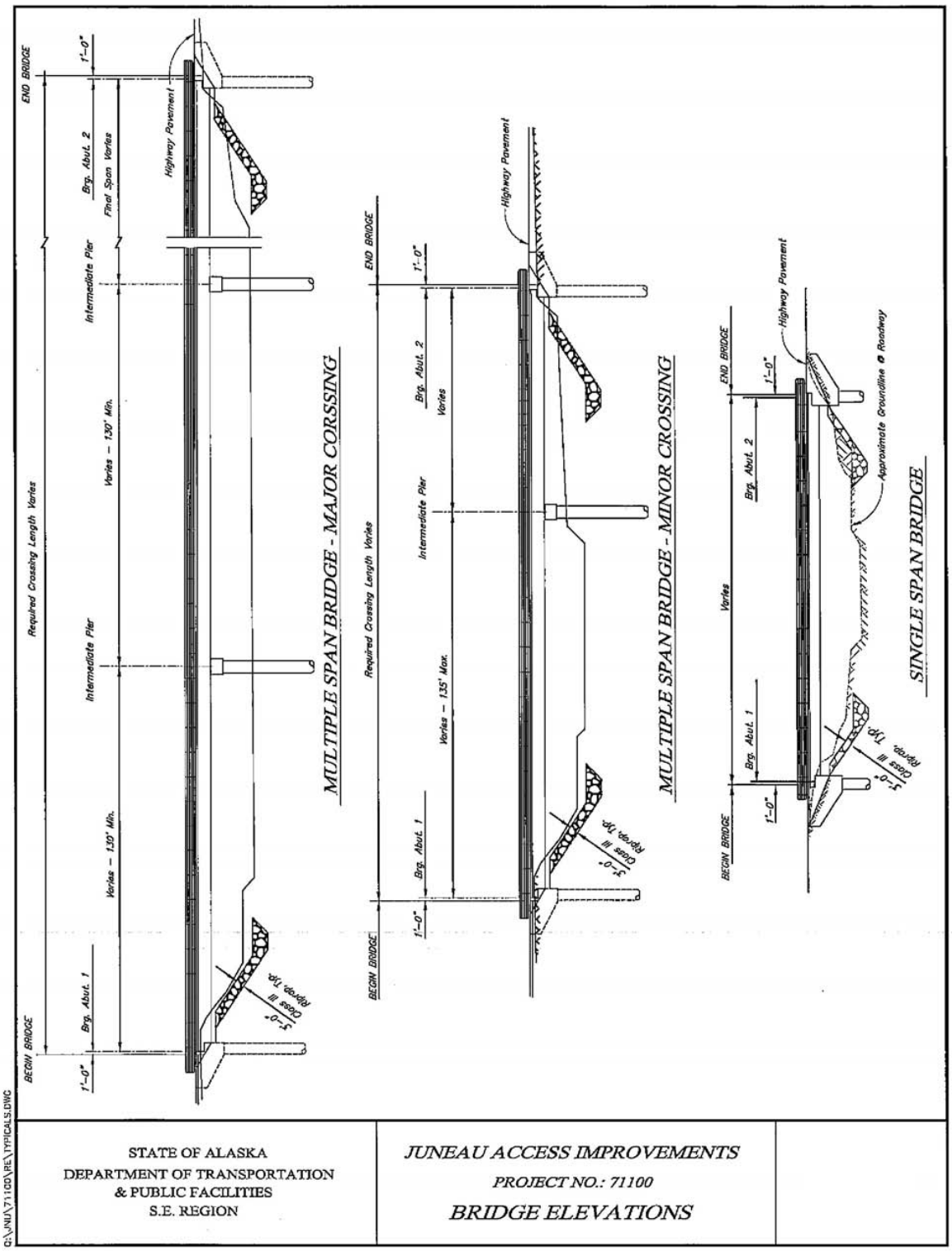

Figure 3-7: Bridge Elevations

3.4 Maintenance and Operational Requirements

Revised highway maintenance cost estimates are included in Attachment C.

3.5 Marine Terminal Plans and Costs

Revised marine terminal plans and cost updates are included in Attachment D.

The ferry terminal facilities proposed at Sawmill Cove, William Henry Bay and Katzehin will be equipped with a heated waiting area and public restrooms. All terminal facilities will be constructed to current ADA accessibility requirements. Heat and electrical service will be provided via generator. Food or lodging services are not contemplated in the proposed development plans. Public telephone facilities are not proposed at any of the terminals.

3.6 Geological Hazard Considerations

3.6.1 Introduction

A total of 112 hazards have been identified along the portion of the current proposed alignment for Alternative 2B between stations 1480+00 and 2770+00 (EOP). These hazards were identified during the Lynn Canal Highway - Phase 1 - Zone 4 Geotechnical Investigation conducted by the Department in 2006. The focus of the Phase I geotechnical investigation of Zone 4 was to conduct preliminary surficial mapping along the 2006 Alignment. This mapping was conducted from the 2006 alignment left to the beach and right 1000 feet. Along with the surficial mapping, preliminary hazard mapping was conducted that emphasized identification of all possible hazards so they could be addressed in the early design phase of the project. All hazards were mapped with low grade GPS and LiDAR-based remote sensing. They were then categorized by the type of hazard, and described using a predetermined list of parameters. Based on the description of the parameters the hazards were all classified using the Geologic Hazard Rating System (GHRS) and ranked using the Hazard Index Number (HIN) (See Appendix G of the Lynn Canal Highway - Phase 1 - Zone 4 Geotechnical Investigation). The GHRS and HIN were both developed by the Department specifically for this project and based on other systems currently used in other states along existing road corridors. The systems used for this project are somewhat unique in that they are used along a proposed road corridor that is currently undeveloped. While identification of the type of hazard is very reliable, the parameters used to develop the GHRS and the HIN values are very preliminary and speculative in nature because there is no maintenance history or ongoing hazard monitoring. It should be expected that as design efforts continue and more field work is completed, many hazards will be downgraded and their extents reduced while some will be upgraded and their extents expanded. It is important to understand that the GHRS and HIN values are not tied to the hazard, but are calculated for the exact location where the alignment crosses the hazard. As the alignment is adjusted so too must the GHRS and HIN values be adjusted. Table 3-3 is a summary of all identified geologic hazards, which includes preliminary mitigation strategies. 33 of the identified hazards in this section of Alternative 2B have been avoided by the current alignment and no mitigation is needed to specifically address these locations.

Although not classified as a geologic hazard to the traveling public, there is the potential for encountering acid-generating rock for Alternatives 2B and 3. On site investigations to date have

not identified acid-generating rock within the limits of Alternatives 2B and 3. Comments received on the Draft SEIS referenced sources that indicated a potential for encountering acid-generating rock for Alternatives 2B and 3. Based on recent experience in Southeast Alaska and reference materials1, the Department concurs that there is a potential for encountering acid-generating rock. Specifically, the potential exists within Alternative 2B between stations 57+00 and 1459+00. Mineralization associated with potential for causing acid rock drainage is described in bedrock units along the Alternative 3 corridor. If identified during design level geotechnical investigations, this rock type will be avoided or a plan will be established for the appropriate use or disposal of the material.

3.6.2 Discussion of Hazards

For this project six different types of hazards were identified; debris flows, hazard rocks, landslides, rockfalls, rockslides, and soil raveling. It should be noted that avalanches were not covered in this investigation and are discussed in the Update to Appendix J – Avalanche Technical Report. Of these hazards the most common and most significant are the debris flows and rockfalls. Mitigating hazards falls into several categories; avoidance, removal, conveyance, stabilization, protection, and maintenance.

3.6.2.1 Debris Flows

The Current Alignment between stations 1480+00 and 2770+00 crosses 43 debris flows. The vast majority of the debris flows are crossed in the active transport zone of the debris flow system which is characterized as highly channelized, steep gradients (10-15%), with a combination of erosion and deposition of levees. Crossing a debris flow in the transport zone is optimal and typically presents the narrowest, best confined area to cross. Ideally the crossing will convey the debris flow event under the road via a bridge or through the road in a specially design culvert structure in such a way as to not impede the flow. This minimizes any deposition of debris material and reduces maintenance.

Where conveyance cannot be reasonably achieved the roadway may be protected with a debris basin constructed on the uphill side of the road and sized to contain the volume of a single design event. Construction of the basins will be limited by the terrain and will require continual maintenance effort to keep the basin cleared of accumulated debris.

3.6.2.2 Rockfall

There are 53 identified rockfall hazards along the Current Alignment between stations 1480+00 and 2770+00.

Mitigation strategies for rockfall hazards include avoidance, removal, stabilization, and protection. Twenty-three of the identified rockfall hazards have been effectively mitigated by avoidance or removal of the rockfall initiation zone by blasting operations required to construct

[1] Bureau of Mines Investigations in the Juneau Mining District, Alaska, 1984-1988, Volume 2.-Detailed Mine, Prospect, and Mineral Occurrence Descriptions, Section C, West Lynn Canal Descriptions.
Wilson, F.H., Hults, C.P., Mull, C.G, and Karl, S.M, comps., 2015, Geologic map of Alaska: U.S. Geological Survey Scientific Investigations Map 3340, pamphlet 196 p., 2 sheets, scale 1:1,584,000, http://dx.doi.org/10.3133/sim3340.
USGS Mineral Resources Program https://minerals.usgs.gov/

the current alignment. The remaining rockfall hazards will be mitigated with stabilization and protection. Stabilization includes hand scaling, special blasting, and rock bolting. Protection includes draped mesh, attenuation fences, barrier fences and widened rockfall catchment ditches (see Figures 3-8 and 3-9). These mitigation measures can be mixed together to provide the optimal mitigation for each individual rockfall hazard as more field work is completed.

The following are "Hazard ID" descriptions used in Table 3-3:

- DF – Debris Flow: Episodic, channelized, gravity driven events that are mixtures of sediment and water. These events can produce a wide range of particle sizes, and create debris flow deposits described in Section 3.2.4.[2] These deposits also have the potential to create thick organic deposits at the beach line.
- RS – Rock Slide: Characterized by large volume events that fail from bedrock outcrops. These events create talus deposits described in Section 3.2.41.
- RF – Rockfall: Detachment of individual rocks or relatively small groups of rocks from a steep rock face. There is generally little or no shear displacement. These events create talus soils described in Section 3.2.41.
- SR – Soil Raveling: Particle by particle failure over time from steep soil slopes. This type of event is common in glacial outwash deposits described in Section 3.2.41.
- LS – Translational Sliding: Slope failure via planar sliding of soils that can include trees and other debris. This type of event is seen in glacial outwash deposits described in Section 3.2.41.
- HR – Hazard Rock: Perched boulders that could become dislodged either during or after construction of the road. These rocks are often mega-boulders.

Table 3-3: Alternative 2B Geologic Hazard Summary and Mitigation Options

Approx. Station 2006 FEIS Alignment	Approx. Station 2012 SEIS Alignment	Hazard ID	Avalanche ID (If Applicable)	Current Alignment Mitigation Condition*	Mitigation Category	Mitigation Strategy
1492+90		DF01	ELC002	PM	Protection/ Conveyance	Catchment basin / Debris flow mitigation structure
1514+50		DF02	ELC003	PM	Conveyance	Debris flow mitigation structure
1517+00		DF03	ELC003-1	PM	Protection/ Conveyance	Catchment basin / Debris flow mitigation structure
1521+80		RS01		EM	Avoidance	Does not impact current alignment
1549+00		RF01		EM	Avoidance	Does not impact current alignment
1553+00		RF02		EM	Avoidance	Does not impact current alignment
1584+50		RF03		EM	Avoidance	Does not impact current alignment

[2] *Final Report – Lynn Canal Highway Phase I Zone 4 Geotechnical Investigation*, 2006

Approx. Station 2006 FEIS Alignment	Approx. Station 2012 SEIS Alignment	Hazard ID	Avalanche ID (If Applicable)	Current Alignment Mitigation Condition*	Mitigation Category	Mitigation Strategy
1605+50		RF04		PM	Protection	Widened rockfall catchment ditch / Attenuation fence
1657+00		RF05		EM	Avoidance	Does not impact current alignment
1668+50		DF04		EM	Conveyance	Bridge 11E
1673+80		DF05		PM	Protection/ Conveyance	Catchment basin / Debris flow mitigation structure
1677+00		DF06	ELC005	EM	Conveyance	Bridge 12E
1701+50	1704+50	DF07	ELC006	EM	Conveyance	Bridge 14E
1719+90		DF08	ELC007	PM	Conveyance/ Protection	Catchment basin / Debris flow mitigation structure
1726+00		RF06 / RF07		U	Protection/ Avoidance	Possible Realignment
		DF09	ELC008	EM	Conveyance	Bridge 15E
1742+50		DF10		PM	Conveyance/ Protection	Catchment basin / Debris flow mitigation structure
1746+40		DF11	ELC009	PM	Conveyance/ Protection	Catchment basin / Debris flow mitigation structure
1751+00		DF12	ELC010	PM	Conveyance/ Protection	Catchment basin / Debris flow mitigation structure
1756+10	1757+50	DF13	ELC011	PM	Protection	Catchment basin
1759+30	1761+00	RF08		PM	Protection	Attenuation fence
1772+50	1773+50	DF14		PM	Conveyance/ Protection	Catchment basin / Debris flow mitigation structure
1782+00	1784+50	DF15		PM	Conveyance	Debris flow mitigation structure
1783+00	1786+00	DF16	ELC012	EM	Conveyance	Bridge 16E
1824+10	1824+00	DF17 / DF18	ELC013	PM	Conveyance/ Protection	Catchment basin / Debris flow mitigation structure
1845+30	1849+00	DF19	ELC014	PM	Protection/ Conveyance	Catchment basin / Debris flow mitigation structure
1852+00	1854+75	DF20		PM	Protection	Catchment basin
1853+30	1856+00	RF10		EM	Avoidance	Does not impact current alignment
1864+80	1867+00	RF11		EM	Avoidance	Does not impact current alignment
1893+30	1895+50	DF21		PM	Conveyance/ Protection	Catchment basin / Debris flow mitigation structure
1915+20	1918+50	RF12		EM	Avoidance	Does not impact current alignment
1931+80	1932+00	RF13		EM	Avoidance	Does not impact current alignment

Approx. Station 2006 FEIS Alignment	Approx. Station 2012 SEIS Alignment	Hazard ID	Avalanche ID (If Applicable)	Current Alignment Mitigation Condition*	Mitigation Category	Mitigation Strategy
1933+70	1934+00	RF14	ELC015	PM	Protection/ Avoidance	Elevated ditch with MSE impact wall
1946+80	1948+00	RF15		PM	Protection/ Avoidance	Elevated ditch with MSE impact wall
1983+30	1984+50	DF22	ELC016	EM	Conveyance	Bridge 17E
2015+00	2015+00	RF16		EM	Avoidance	Does not impact current alignment
2041+20	2040+00	DF23	ELC017	EM	Conveyance	Bridge 18E
2043+40	2042+00	SR01		EM	Avoidance	Does not impact current alignment
2054+40	2054+00	DF24	ELC018	PM	Conveyance/ Protection	Catchment basin / Debris flow mitigation structure
2056+50	2057+00	DF25	ELC019	EM	Conveyance/ Protection	Snowshed
2059+00	2060+00	DF26	ELC019	EM	Conveyance / Protection	Snowshed
2088+00	2089+00	DF27	ELC019-1	PM	Protection	Catchment basin / Barrier Berm
2102+30	2103+00	DF28	ELC020	EM	Protection	Snowshed
2115+00	2116+00	DF29	ELC021	EM	Protection	Snowshed
2123+00	2123+00	DF30	ELC022	PM	Conveyance/ Protection	Catchment basin / Debris flow mitigation structure
2129+00	2129+00	RF17	ELC023	PM	Protection	Widened rockfall catchment ditch / Attenuation fence
2129+40	2129+00	SR02	ELC023	PM	Removal	Removal of hazard / Draped mesh
2134+00	2133+50	RF18		EM	Removal	Removal of hazard
2140+50	2141+00	DF31		PM	Conveyance/ Protection	Catchment basin / Debris flow mitigation structure
2142+70	2142+40	RF19	ELC024	PM	Protection	Widened rockfall catchment ditch / Attenuation fence
2144+60	2144+00	RF20	ELC024	PM	Protection	Widened rockfall catchment ditch / Attenuation fence
2154+00	2154+00	RF21		EM	Avoidance	Does not impact current alignment
2204+00	2205+00	LS01		EM	Avoidance	Does not impact current alignment
2206+60	2206+00	DF32		PM	Conveyance/ Protection	Catchment basin / Debris flow mitigation structure
2219+60	2220+00	LS02		EM	Avoidance	Does not impact current alignment

Approx. Station 2006 FEIS Alignment	Approx. Station 2012 SEIS Alignment	Hazard ID	Avalanche ID (If Applicable)	Current Alignment Mitigation Condition*	Mitigation Category	Mitigation Strategy
2252+50	2251+50	DF33		PM	Conveyance/ Protection	Debris flow mitigation structure or Bridge
2252+50	2252+80	RF22		PM	Protection	Widened rockfall catchment ditch
2254+90	2255+00	RF23		EM	Avoidance	Does not impact current alignment
2258+90	2259+00	RF24		PM	Protection	Widened rockfall catchment ditch
2261+10	2261+50	RS02		EM	Avoidance	Bridge 20E
2263+50	2263+50	SR03		EM	Avoidance	Does not impact current alignment
2283+50	2282+00	DF34	ELC025	PM	Avoidance/ Conveyance / Protection	Bridge 21E / Debris flow mitigation structure
2290+60	2290+00	RF25		EM	Avoidance	Does not impact current alignment
2293+80	2293+50	DF35	ELC026	EM	Conveyance	Bridge 22E
2299+10	2299+25	LS03		PM	Stabilization	Draped mesh
2300+20	2300+00	RF26		PM	Protection/ Stabilization	Widened rockfall catchment ditch / Rock bolting
2303+50	2303+00	RF27	ELC026-1	U	Avoidance/ Protection	Possible Realignment
2311+10	2311+00	DF36	ELC027	EM	Protection	Debris flow shed
2321+20	2322+00	DF37	ELC028	EM	Avoidance	Bridge 23E
2322+10	2322+50	RF28		PM	Stabilization	Widened rockfall catchment ditch / Rock bolting
2328+10	2327+80	RF29	ELC028-1	PM	Protection/ Stabilization	Widened rockfall catchment ditch / Rock bolting
2331+40	2331+40	RF30	ELC028-2	PM	Protection	Widened rockfall catchment ditch / Attenuation fence
2334+70	2334+70	RF31		PM	Protection	Widened rockfall catchment ditch / Attenuation fence
2338+00	2338+00	DF38	ELC029	EM	Conveyance	Bridge 24E
2361+10	2362+00	RF32		EM	Avoidance	Tunnel
2364+20	2365+00	RF33		EM	Avoidance	Tunnel
2374+90	2375+00	HR01		EM	Avoidance	Does not impact current alignment
2379+40	2382+00	HR02		EM	Avoidance	Tunnel

Approx. Station 2006 FEIS Alignment	Approx. Station 2012 SEIS Alignment	Hazard ID	Avalanche ID (If Applicable)	Current Alignment Mitigation Condition*	Mitigation Category	Mitigation Strategy
2382+50	2385+00	RF34		EM	Avoidance	Does not impact current alignment
2388+00	2389+00	RF35	ELC031	EM	Avoidance	Does not impact current alignment
2420+70	2429+00	SR04		EM	Avoidance	Does not impact current alignment
2426+80	2432+00	LS04		EM	Avoidance	Does not impact current alignment
2454+50	2462+00	RF36		PM	Protection	Widened rockfall catchment ditch / Attenuation fence
2456+00	2464+75	LS05		EM	Avoidance	Does not impact current alignment
2459+00	2467+50	DF40		PM	Conveyance	Debris flow mitigation structure
2460+40	2468+50	DF41		EM	Protection	Debris flow shed
2466+10	2475+00	RF37		PM	Protection	Scaling, trim blasting, rock bolting and crest doweling
2473+00	2481+00	RF38		EM	Conveyance	Bridge 26E
2480+30	2489+00	RF39		PM	Protection	Widened rockfall catchment ditch
2484+00	2492+00	RF40		PM	Protection	Attenuation fence
2490+70	2499+00	DF42		EM	Conveyance/ Protection	Debris flow shed
2495+00	2503+00	RF41	ELC032	PM	Protection	Widened rockfall catchment ditch
2499+50	2507+75	RF42	ELC032	PM	Protection	Widened rockfall catchment ditch
2517+80	2526+00	HR03		EM	Avoidance	Does not impact current alignment
2526+00	2534+00	HR04		EM	Avoidance	Does not impact current alignment
2528+00	2536+00	RF43		PM	Protection	Rockfall barrier
2531+00	2539+00	RF44		PM	Protection	Rockfall barrier
2536+10	2544+00	RF45		EM	Avoidance	Does not impact current alignment
2546+70	2556+00	RF46		EM	Avoidance	Does not impact current alignment
2549+80	2559+00	RF47		EM	Avoidance	Rockfall barrier / Scaling and rock bolting
2552+80	2562+50	LS06		EM	Avoidance	Does not impact current alignment

Approx. Station 2006 FEIS Alignment	Approx. Station 2012 SEIS Alignment	Hazard ID	Avalanche ID (If Applicable)	Current Alignment Mitigation Condition*	Mitigation Category	Mitigation Strategy
2554+30	2563+25	HR05		PM	Avoidance/ Removal	Does not impact current alignment / Removal of hazard rock
2556+50	2566+00	RF49		EM	Avoidance	Does not impact current alignment
2557+80	2567+50	RF50		EM	Avoidance	Does not impact current alignment
2559+30	2569+00	RF51		EM	Avoidance	Does not impact current alignment
2561+80	2572+00	LS07		EM	Avoidance	Does not impact current alignment
2563+30	2573+00	DF43	ELC034	PM	Conveyance	Debris flow mitigation structure
2564+70	2575+00	RF52		PM	Protection	Widened rockfall catchment ditch
2618+90	2628+00	RF53		PM	Protection	Widened rockfall catchment ditch

Source: *Final Report – Lynn Canal Highway Phase I Zone 4 Geotechnical Investigation, 2006* and *Update to 2006 Geotechnical Report Appendix G – Geologic Hazard Analysis*

* PM – Partially Mitigated. These hazards have been partially mitigated by incorporating standard engineering techniques to reduce the risk of the hazard.
EM – Effectively Mitigated. These hazards have been effectively mitigated by removing the hazard or by realigning the highway to avoid the hazard. Hazards that are conveyed across the roadway via structures such as bridges and sheds are considered effectively mitigated.
U – Unmitigated. These hazards have no standard engineering techniques to mitigate and may require modification to the current horizontal and/or vertical alignment during final design to partially or effectively mitigate the hazard.

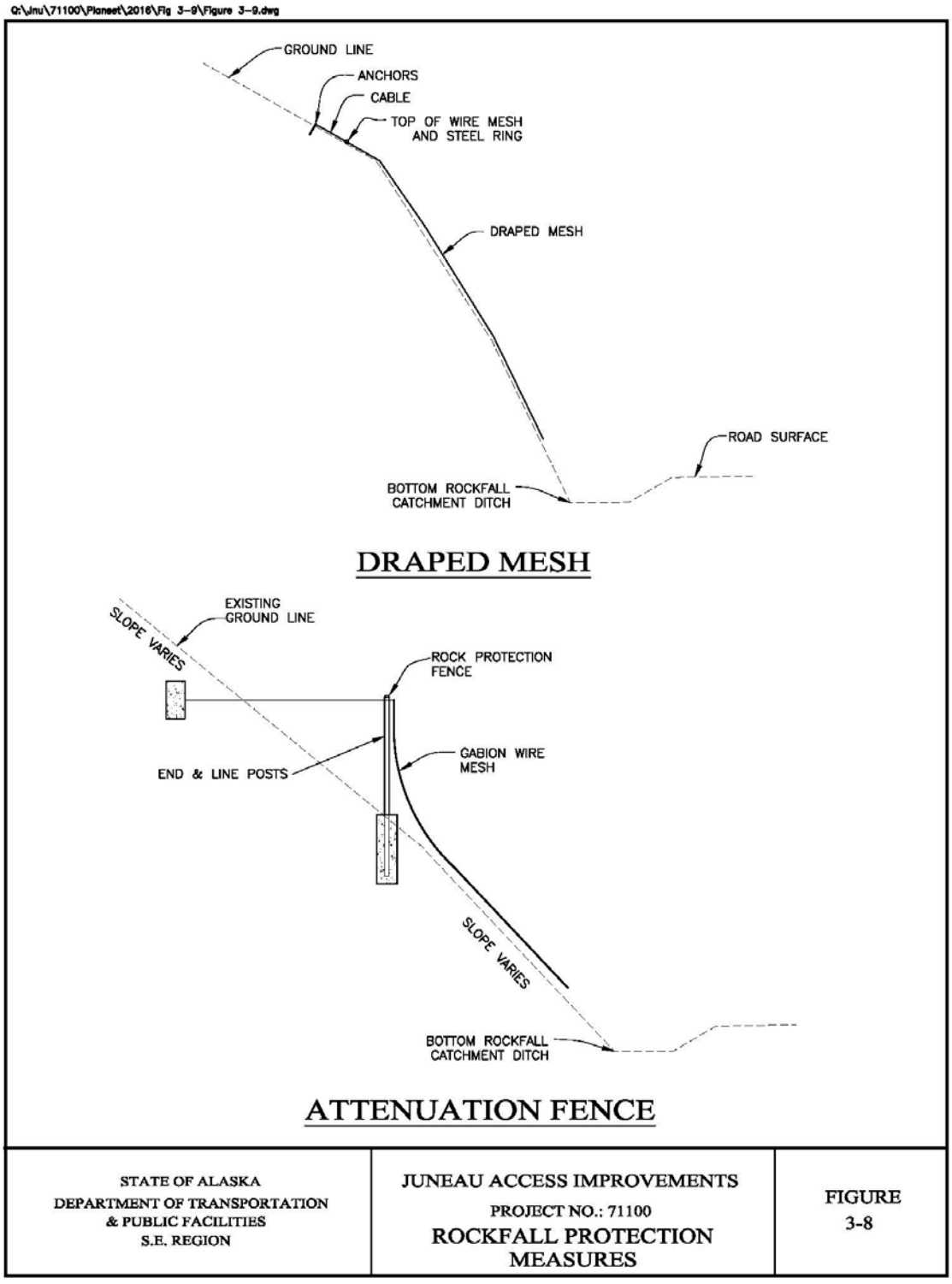

Figure 3-8: Debris Flow Mitigation Structure

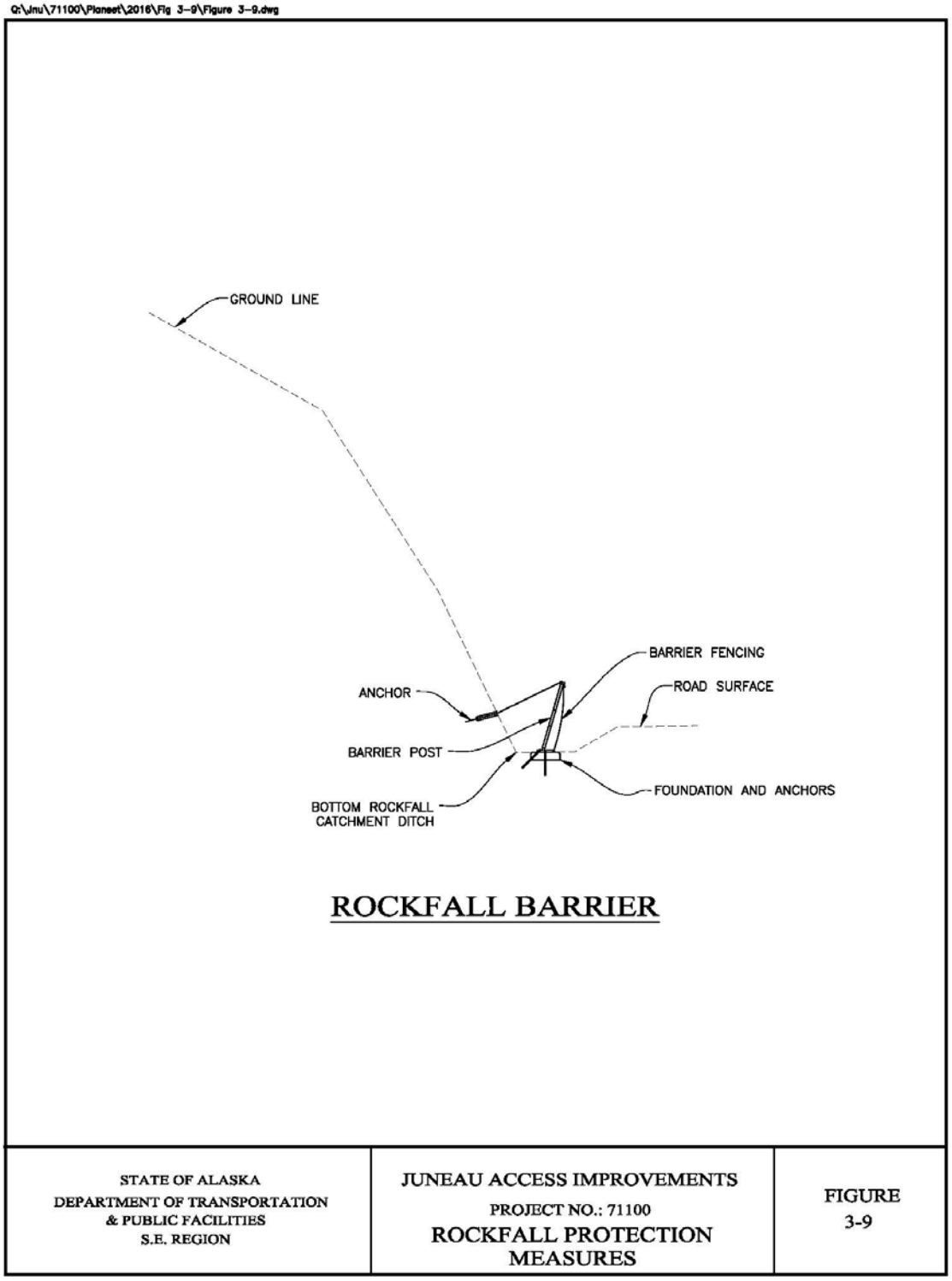

Figure 3-9: Rockfall Mitigation Options

4. Highway Costs

4.1 Engineer's Estimate Discussion

The engineer's estimates for Alternatives 2B, 3, 4B, and 4D highway segments have been updated to reflect current layouts, quantities, and unit prices for construction year 2012; see Attachment E. The estimates for Alternatives 2B and 3 were also updated to include camp costs, which were not included in the original estimates in the 2006 FEIS ~~and~~ but were identified as necessary in the subsequent 2009 cost report. Adjustments have also been made to costs related to preliminary development, mitigation, right of way, maintenance building, and avalanche control Capital Improvement Plan (CIP). Right of way, maintenance building, and avalanche control CIP only apply to Alternatives 2B and 3. The M&O facility estimates are based on costs for similar recently constructed facilities. The Indirect Cost Allocation Plan (ICAP) rate has also increased from 4.66 percent used in the 2009 cost report to 4.79 percent for Alternative 2B and from 4.3 percent used in the 2006 FEIS to 4.79 percent for Alternatives 3, 4B and 4D.

Unit prices were updated to reflect inflation costs from year 2008 to year 2012. The 2009 cost report included unit prices from the 2008 construction year for Alternative 2B only. The inflation rate was obtained by comparing the Construction Cost Indices for years 2008 and 2012 provided by the Washington State Department of Transportation. This resulted in an inflation rate of 8.3% over the 4-year period. The unit prices in the 2009 cost report were updated based on this inflation rate and the resulting unit prices were also applied to Alternatives 3, 4B, and 4D.

Additional field reconnaissance and data on debris flows, avalanche areas, talus fields, and wildlife undercrossings since the 2006 FEIS has increased the number and magnitude of bridges required to pass these areas. These improvements are included in the Alternative 2B estimate and summarized in Table 3-1. Avalanche sheds were also added to this alternative to mitigate high hazard avalanche zones. The estimate for the sheds was based on a comparison with other recently planned and/or constructed snow sheds, including the Snoqualmie Pass area in the State of Washington. The 2013 Update to Appendix J, *Snow Avalanche Report*, Figure 13, provides an estimated cost range for the three snow sheds proposed at avalanche paths ELC019, ELC020 and ELC021. Based on these ranges, the average cost per linear foot for each snow shed is $17,000 per linear foot. Applying an average unit cost of $17 thousand per lineal foot to the three avalanche sheds briefly discussed in Section 3.3 yields a cost of approximately $25.5 million. This cost is included in the updated estimate for Alternative 2B.

The preceding improvements are exclusive to the northern 28-mile segment of Alternative 2B, which was in the Final Design Phase until it was determined a supplemental EIS was required. Given the fact that more detailed information is available for this segment, and additional costs have been identified and included in the estimate, the construction contingency for this segment was reduced from 15 percent to 10 percent in the current estimate. The contingency is still higher than other Alternative 2B segments, in part to address potential higher costs for new bridge crossings at active debris flows. Geotechnical investigation identified locations that may require special design that could result in higher construction costs.

The contingency for all other segments within this alternative remains at 5 percent, which was the original contingency contained within the 2009 cost report.

The construction contingency for the West Lynn Canal portion of Alternative 3 has been set at 30 percent, due to the much more limited data available for this road segment. However, the segment on the east side of Lynn Canal has a construction contingency of 5 percent, which is consistent with the other alternatives that include this segment.

4.2 Engineer's Estimate Discussion – 2016 Update

The engineer's estimates for Alternatives 2B, 3, 4B, and 4D highway segments have been updated to reflect current unit prices for construction year 2016; see Attachment E. The Indirect Cost Allocation Plan (ICAP) rate has also been adjusted to the current rate of 4.65%. The maintenance and operations costs have also been updated to construction year 2016 for each alternative; see Attachment C. Capital costs related to maintenance for roads and avalanche control are reflected in the updated engineer's estimates in Appendix E.

The marine facility costs have been updated to construction year 2016; see Attachment D. The marine facility costs are not reflected in the engineer's estimate in Attachment E, but are included in the Estimate of Alternatives Summary in Table 4-1.

Unit prices were updated to reflect inflation costs from year 2012 to year 2016. The inflation rate was obtained by comparing the Construction Cost Indices (CCI) for years 2012 and 2016 provided by the Washington State Department of Transportation (WSDOT). The latest CCI provided by WSDOT was for year 2015, whereas the earliest was for year 1990. A trendline was developed using the data from years 1990 to 2015 to predict the CCI in year 2016. This resulted in an inflation rate of 16.3% over the 4-year period.

The 2012 engineer's estimate update that was included in the Draft SEIS incorporated several geologic hazard mitigation measures such as debris flow structures and rock-bolt stabilization. Further refinement of the design details for Alternative 2B was completed to address public comments on the Draft SEIS related to geologic hazards. The 2016 engineer's estimate update includes additional pay items that were established for Alternative 2B as a result of the design refinement, which address all geologic hazards identified in the 2006 Geotechnical Report for the portion of highway from Independence Creek to Katzehin River. These items include debris flow sheds, rockfall barriers and rockfall attenuation fences. The number of debris flow mitigation structures was also increased to address areas where structures may be determined necessary during final design. Section 3.6 of this report summarizes geologic hazards that were identified in the geotechnical report and proposed mitigation strategies for each hazard. These added mitigation measures have resulted in an increase to the engineer's estimate for Alternative 2B.

A conservative approach was taken by adding a contingent sum item to the engineer's estimates for Alternatives 2B and 3 to account for the potential of encountering acid-generating rock. If identified during design level geotechnical investigations, this rock type will be avoided or a plan will be established for the appropriate use or disposal of the material. The contingent sum estimate assumes the potential for disposal of approximately 50,000 cubic yards of material at an approved location.

Table 4-1: Estimate of Alternatives Summary

		2014 Draft SEIS	Final SEIS
Alt 1			
Operations			
	AMHS	$15.4	$18.2
	Total	$15.4	$18.2
Alt 1B			
Operations			
	AMHS	$23.8	$26.5
	Total	$23.8	$26.5
Alt. 2B			
Construction:			
	Road	$522.7	$619.5
	Katzehin Terminal	$20.2	$26.4
	Skagway Terminal	$8.6	$9.6
	Shuttle Vessel	$22.3	$24.7
	Total	$573.8	$680.2
Operations:			
	Highway	$2.8	$2.4
	AMHS	$17.6	$18.5
	Total	$20.4	$20.9
Alt. 3			
Construction:			
	Road	$421.6	$487.3
	Sawmill Cove Terminal	$19.0	$21.7
	William Henry Bay Terminal	$17.3	$23.3
	Skagway Terminal	$8.6	$9.6
	Shuttle Vessel	$48.9	$53.7
	Total	$515.4	$595.6
Operations:			
	Highway	$2.3	$2.2
	AMHS	$19.4	$19.9
	Total	$21.7	$22.1
Alt. 4A			
Construction:			
	Auke Bay Terminal	$40.6	$44.1
	Shuttle Vessel	$22.3	$24.7
	(2) Fast Vehicle Ferry	$164.4	$181.4
	Total	$235.9	$250.2

		2014 Draft SEIS	Final SEIS
Operations:			
	AMHS	$33.7	$33.7
	Total	$33.7	$33.7
Alt. 4B			
Construction:			
	Road	$8.0	$10.2
	Auke Bay Terminal	$40.6	$44.1
	Sawmill Cove Terminal	$19.0	$21.7
	Shuttle Vessel	$22.3	$24.7
	(2) Fast Vehicle Ferry	$196.6	$216.9
	Total	$295.1	$317.6
Operations:			
	Highway	$0.05	$0.02
	AMHS	$31.95	$33.23
	Total	$32.00	$33.25
Alt. 4C			
Construction:			
	Auke Bay Terminal	$40.6	$44.1
	Skagway Terminal	$8.6	$9.6
	Shuttle Vessel	$22.3	$24.7
	Total	$71.5	$78.4
Operations:			
	AMHS	$20.0	$22.7
	Total	$20.0	$22.7
Alt. 4D			
Construction:			
	Road	$8.0	$10.2
	Auke Bay Terminal	$40.6	$44.1
	Sawmill Cove Terminal	$19.0	$21.7
	Skagway Terminal	$8.6	$9.6
	Shuttle Vessel	$22.3	$24.7
	Total	$98.5	$110.3
Operations:			
	Highway	$0.05	$0.02
	AMHS	$20.75	$24.20
	Total	$20.80	$24.22

Note: Costs above represented in millions.

Attachment A

Juneau Access Improvements Project

Revised East Lynn Canal Plan and Profile Sheets

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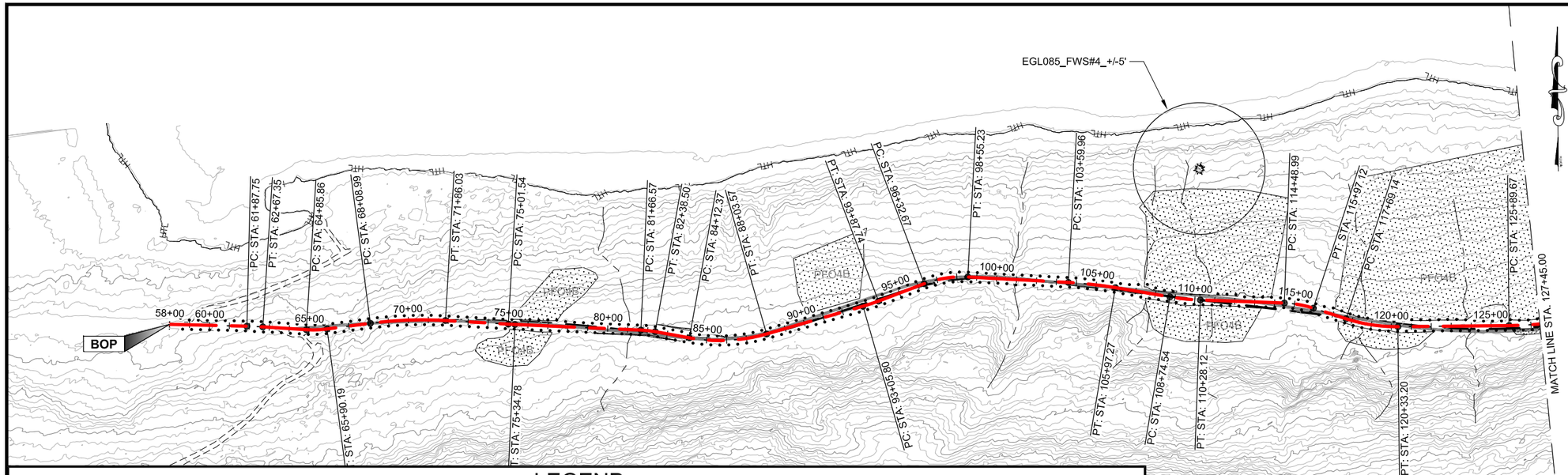


LEGEND

- CURRENT ALIGNMENT
- PROPOSED FILL SLOPE
- PROPOSED CUT SLOPE
- PROPOSED WALL
- 2006 FEIS ALIGNMENT
- 2008 CORP PERMIT ALIGNMENT

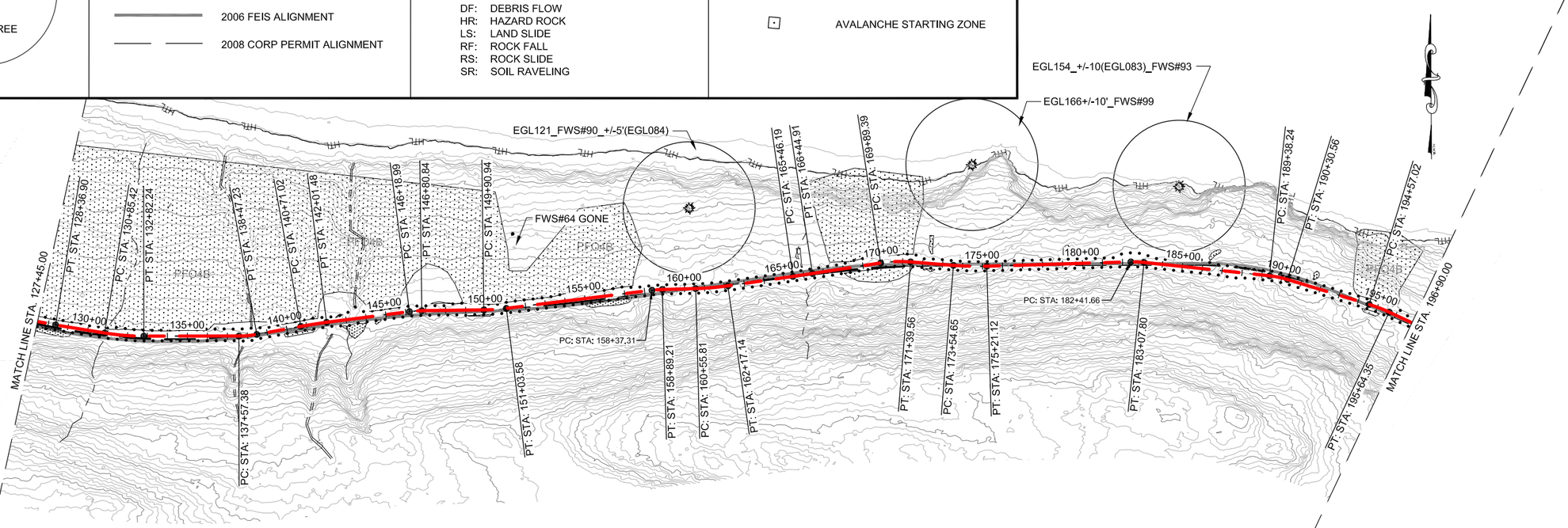
330'
E
EAGLE TREE

- BRIDGES
- WETLAND

GEO HAZARD AREA LEGEND

DF: DEBRIS FLOW
HR: HAZARD ROCK
LS: LAND SLIDE
RF: ROCK FALL
RS: ROCK SLIDE
SR: SOIL RAVELING

- AVALANCHE CHUTE
- AVALANCHE STARTING ZONE



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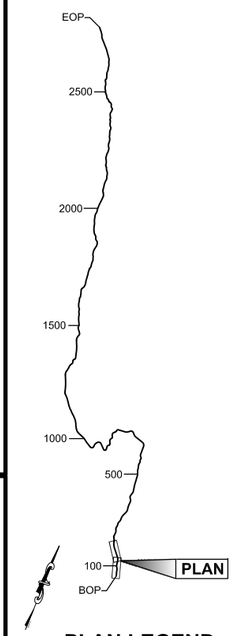

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ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION

CHECKED BY:

DRAFT

DESIGNED BY:

DRAWN BY:

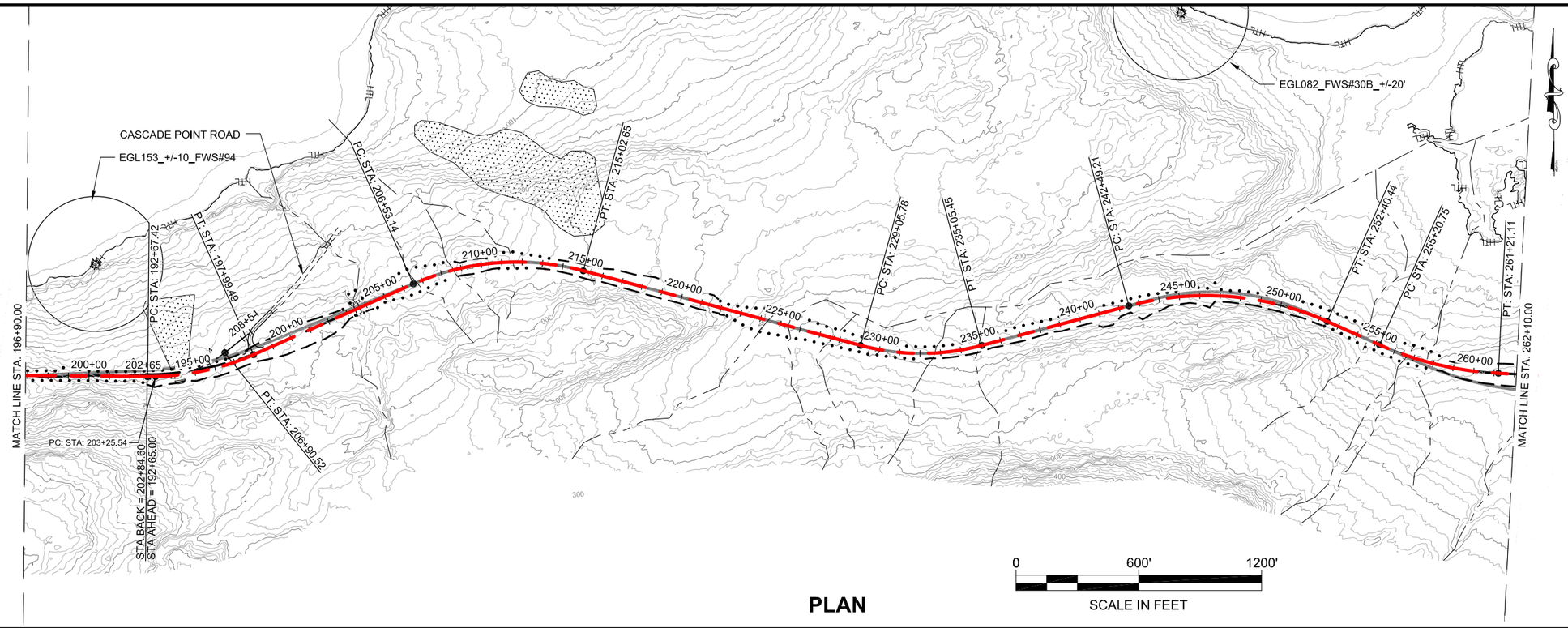
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS PLAN VIEW

PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL1	38



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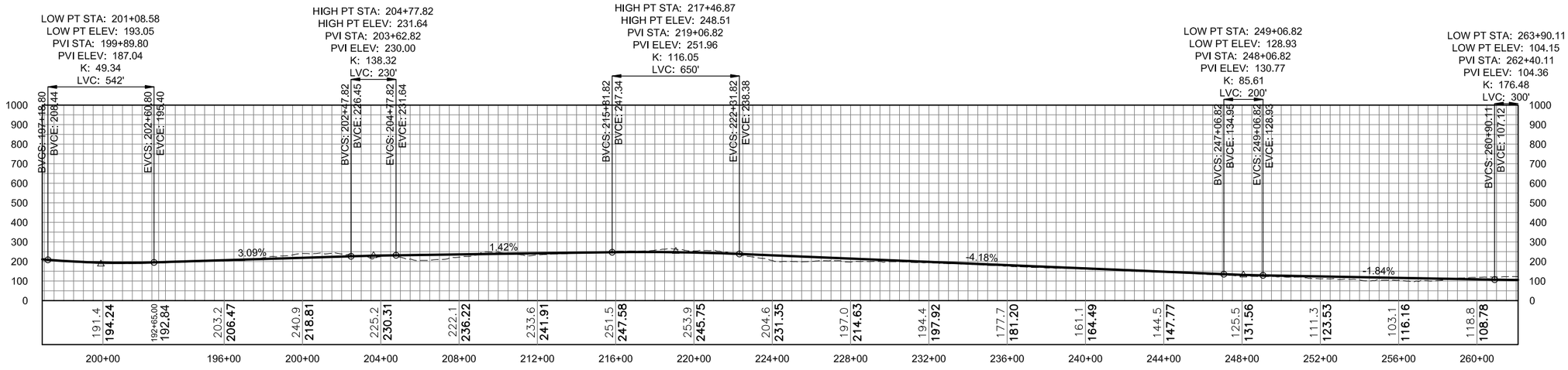

PROFILE

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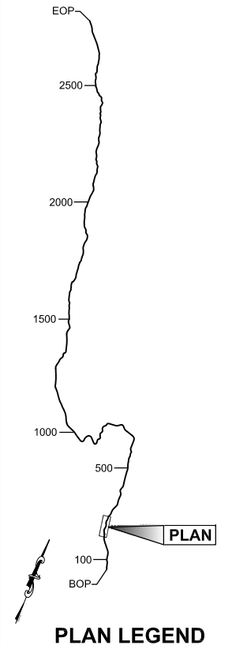

PLAN LEGEND

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DRAFT

DESIGNED BY:

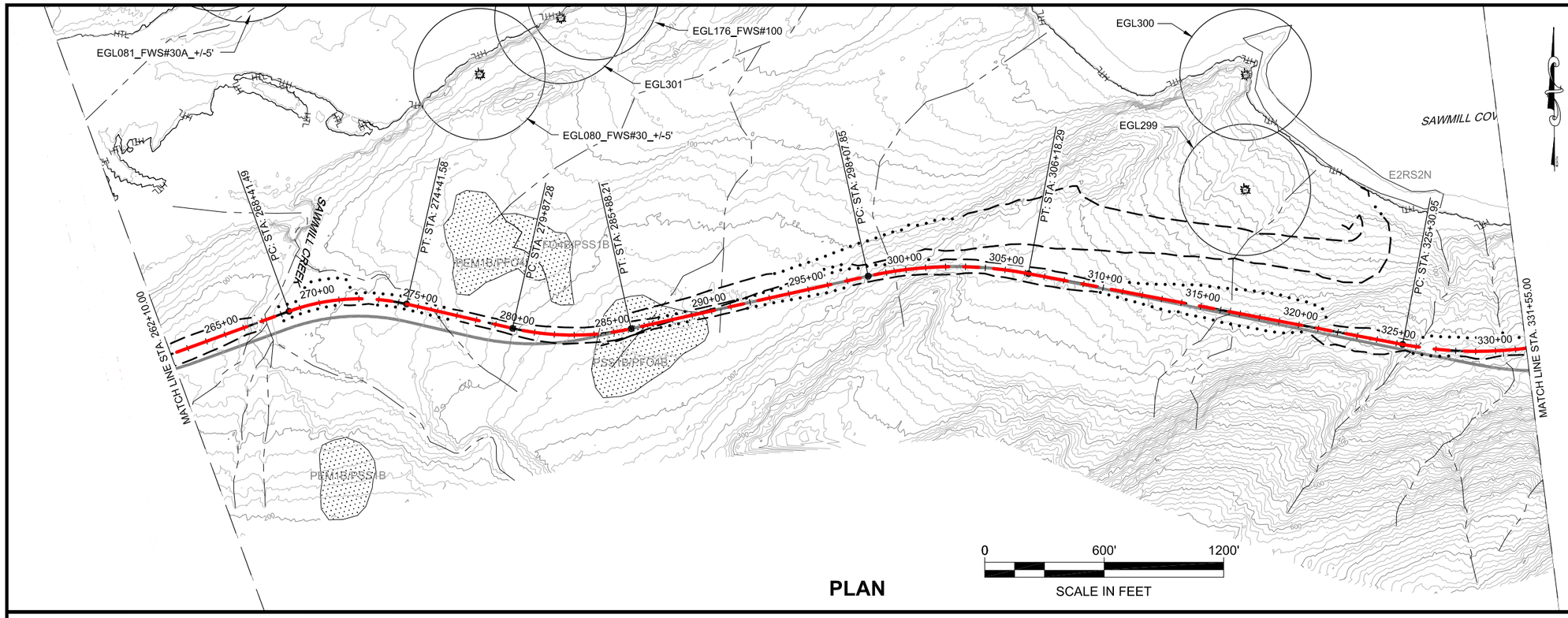
DRAWN BY:

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

JNU-EAST LYNN CANAL HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS PLAN VIEW

PROJECT DESIGNATION	
71100	
STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL2	38



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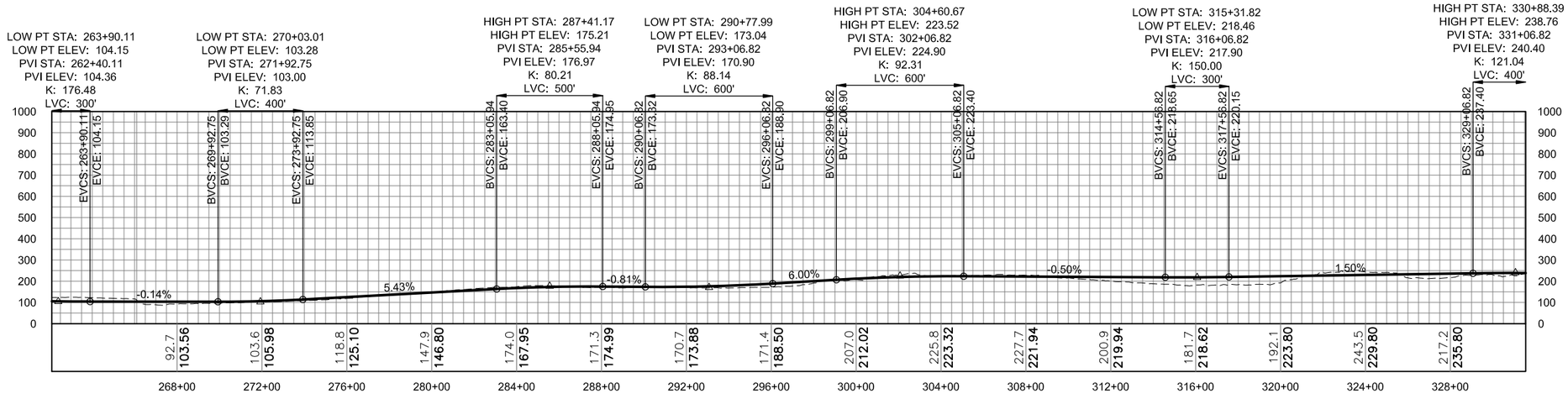

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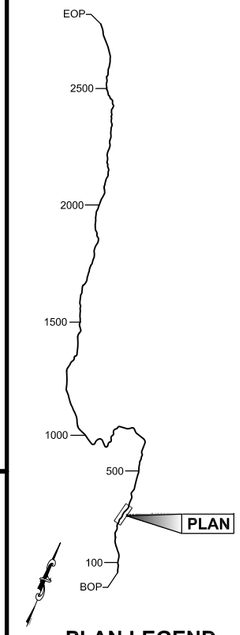

PLAN LEGEND

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& PUBLIC FACILITIES
SOUTHEAST REGION

JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS
PLAN VIEW

PROJECT DESIGNATION	
71100	
STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
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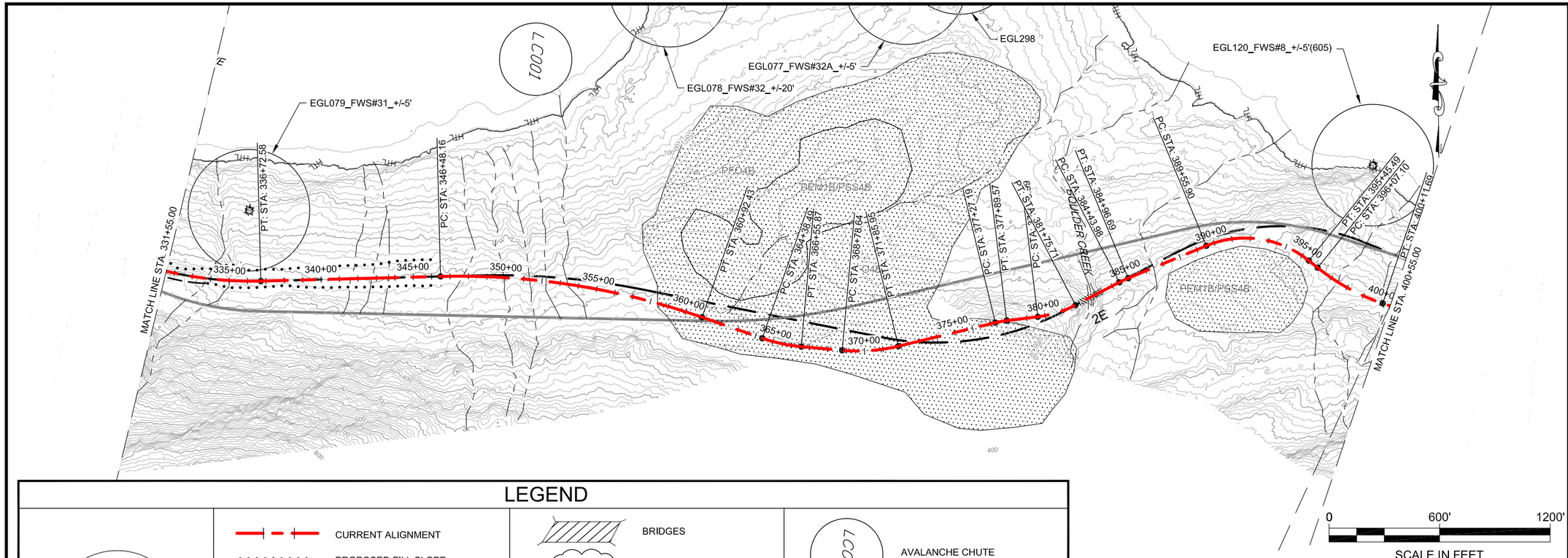

LEGEND

- CURRENT ALIGNMENT
- PROPOSED FILL SLOPE
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330' E EAGLE TREE

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GEO HAZARD AREA LEGEND

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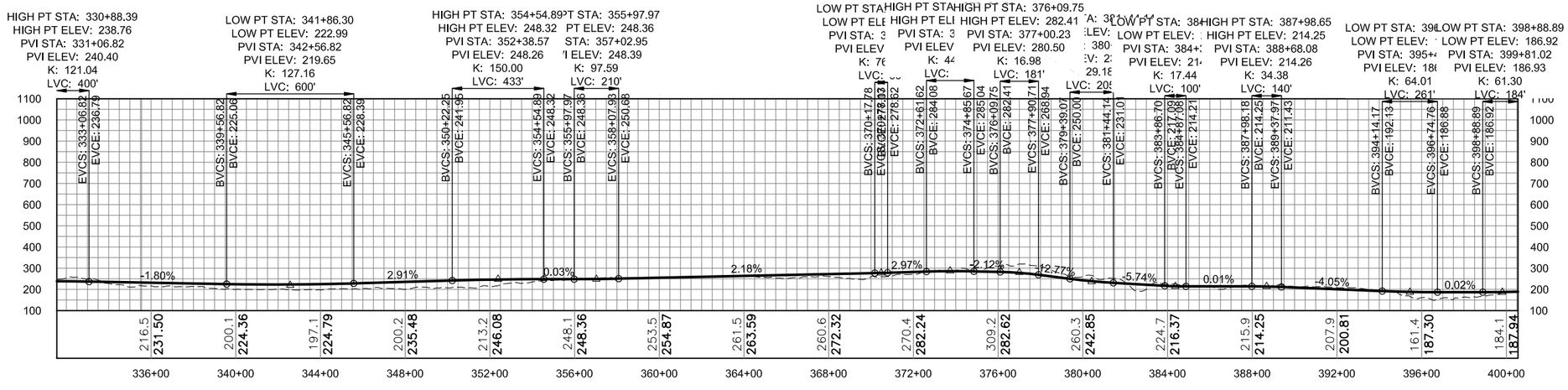

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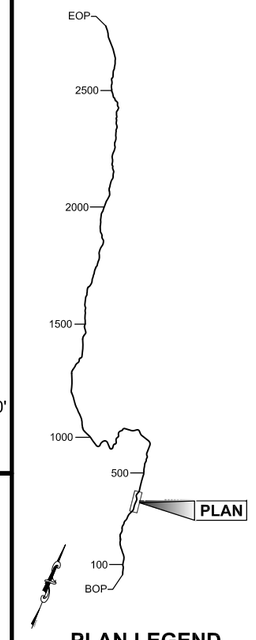

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STATE OF ALASKA
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JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS
PLAN VIEW

PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL4	38

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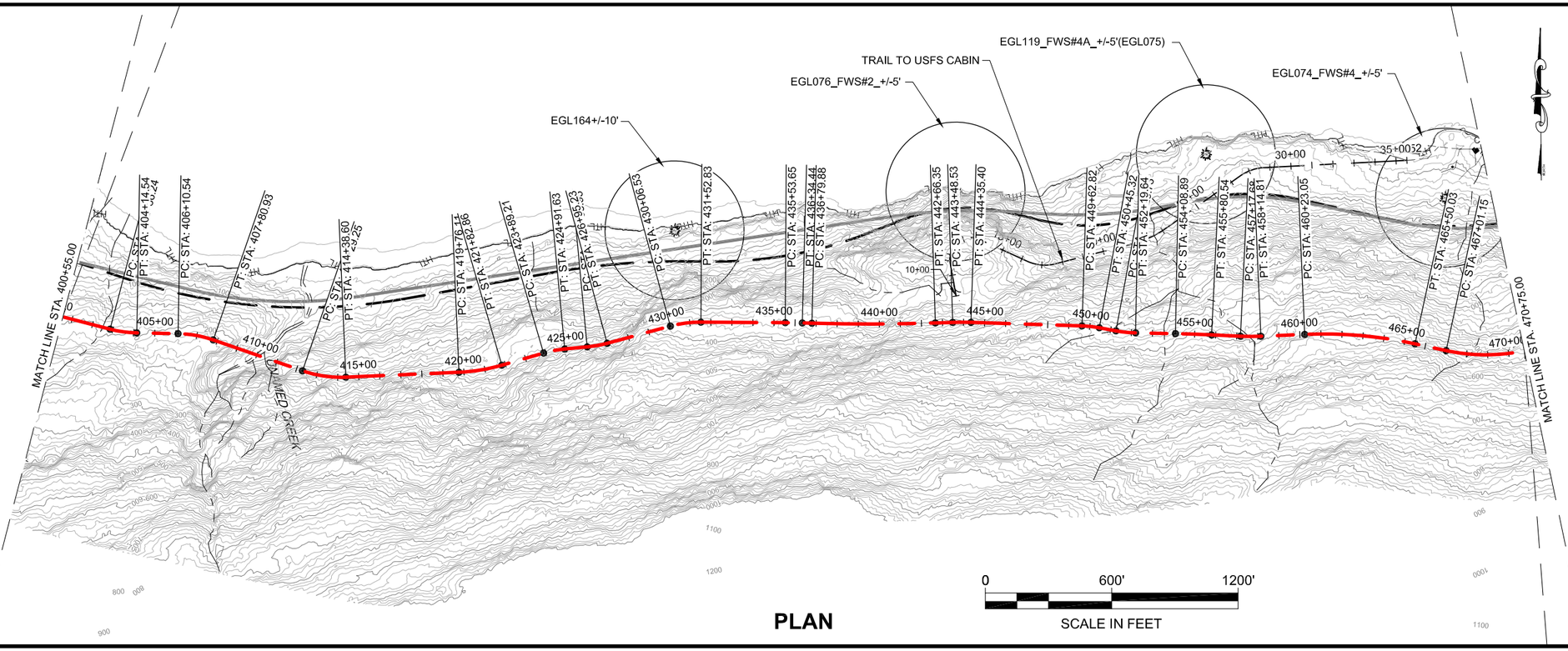

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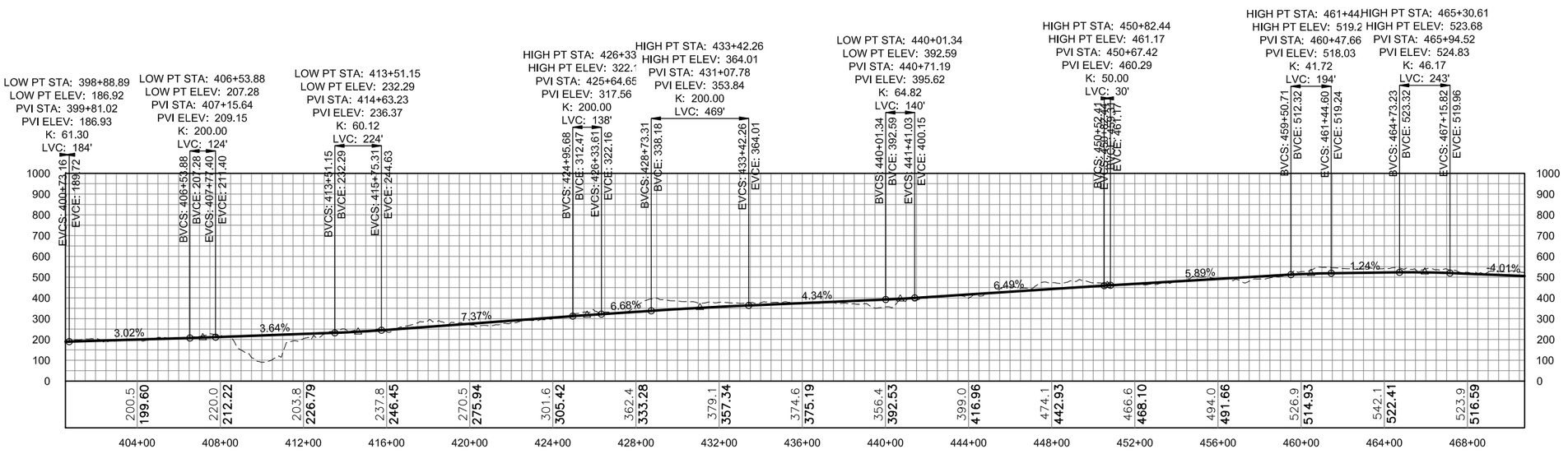

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GEARY, NATE (DOT)

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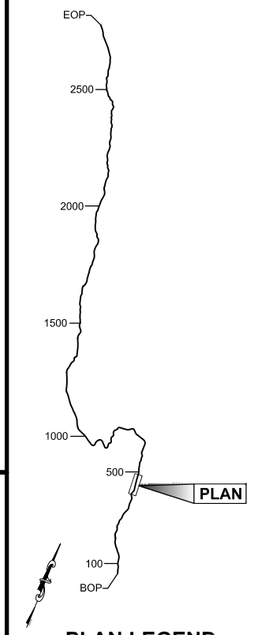

PLAN LEGEND

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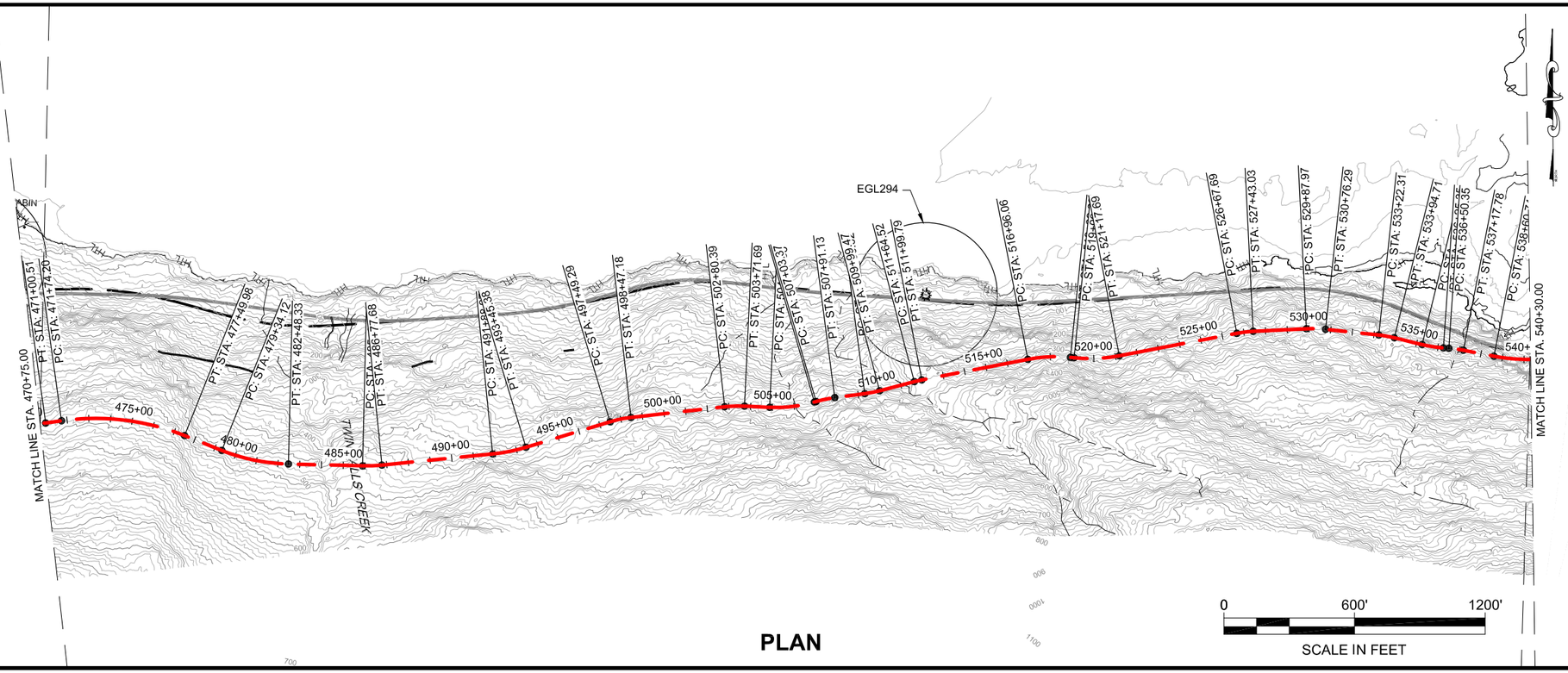
DRAWN BY:

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS
PLAN VIEW

PROJECT DESIGNATION	
71100	
STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL5	38



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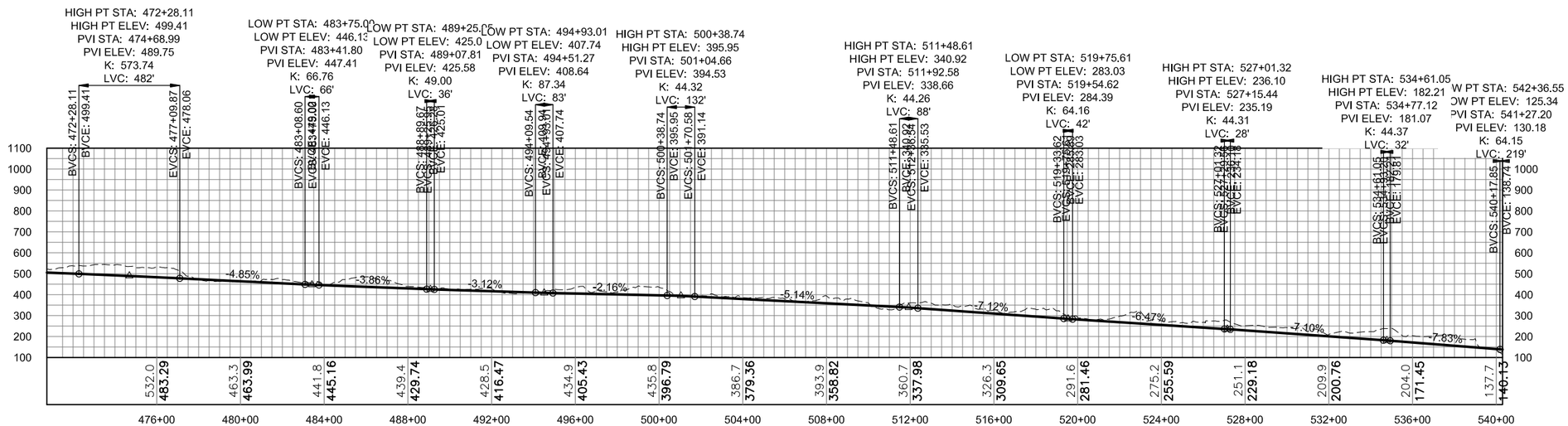

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DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

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GEARY, NATE (DOT)

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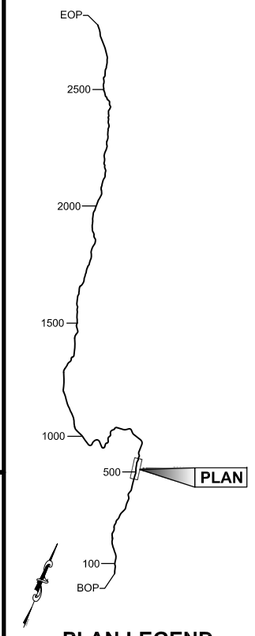

PLAN LEGEND

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DRAFT

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DRAWN BY:

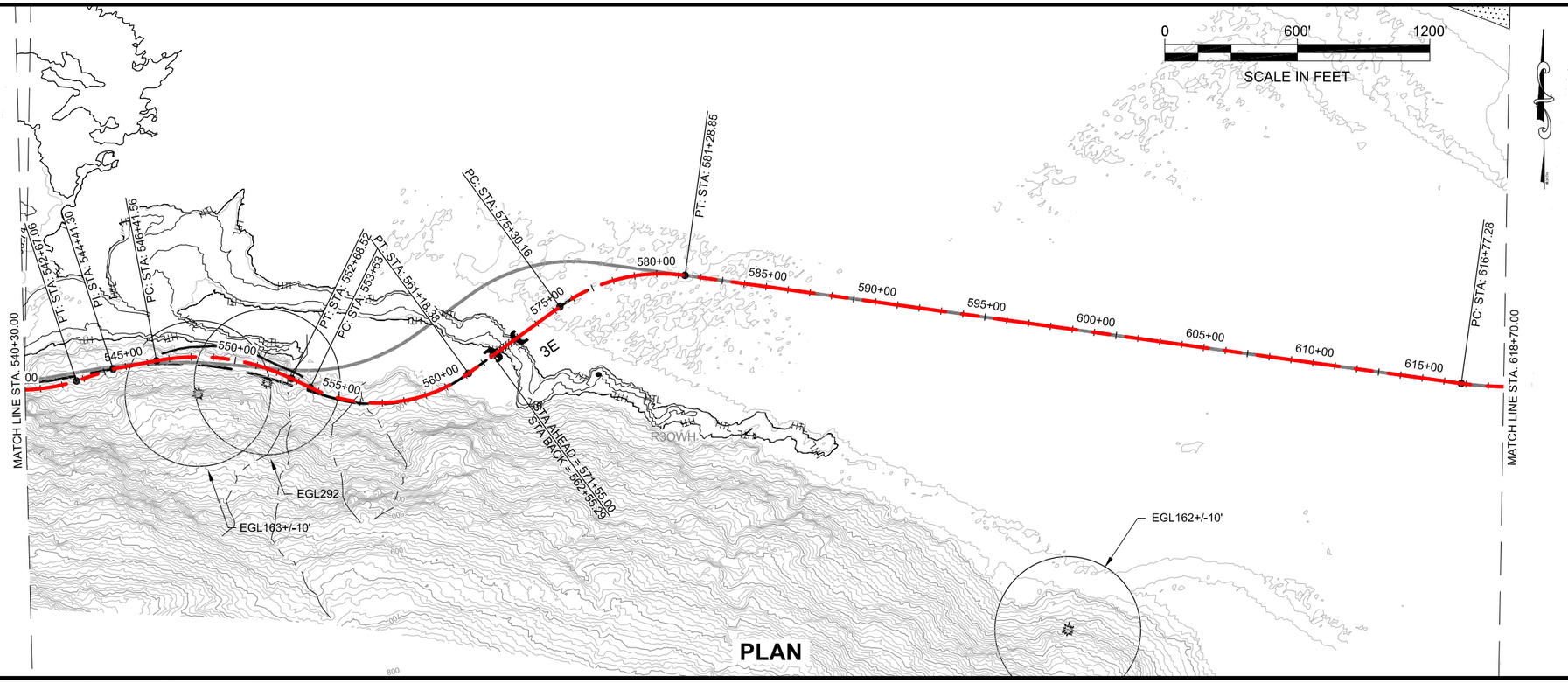
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

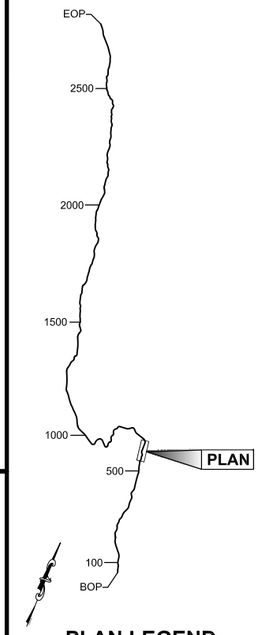
JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS PLAN VIEW

PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL6	38





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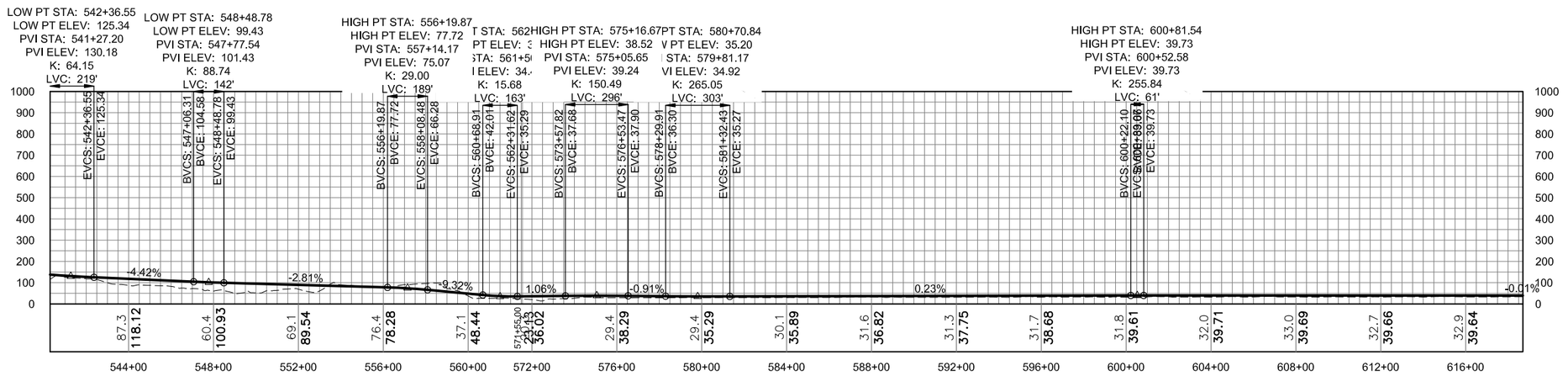

PROFILE

DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

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GEARY, NATE (DOT)

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ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION

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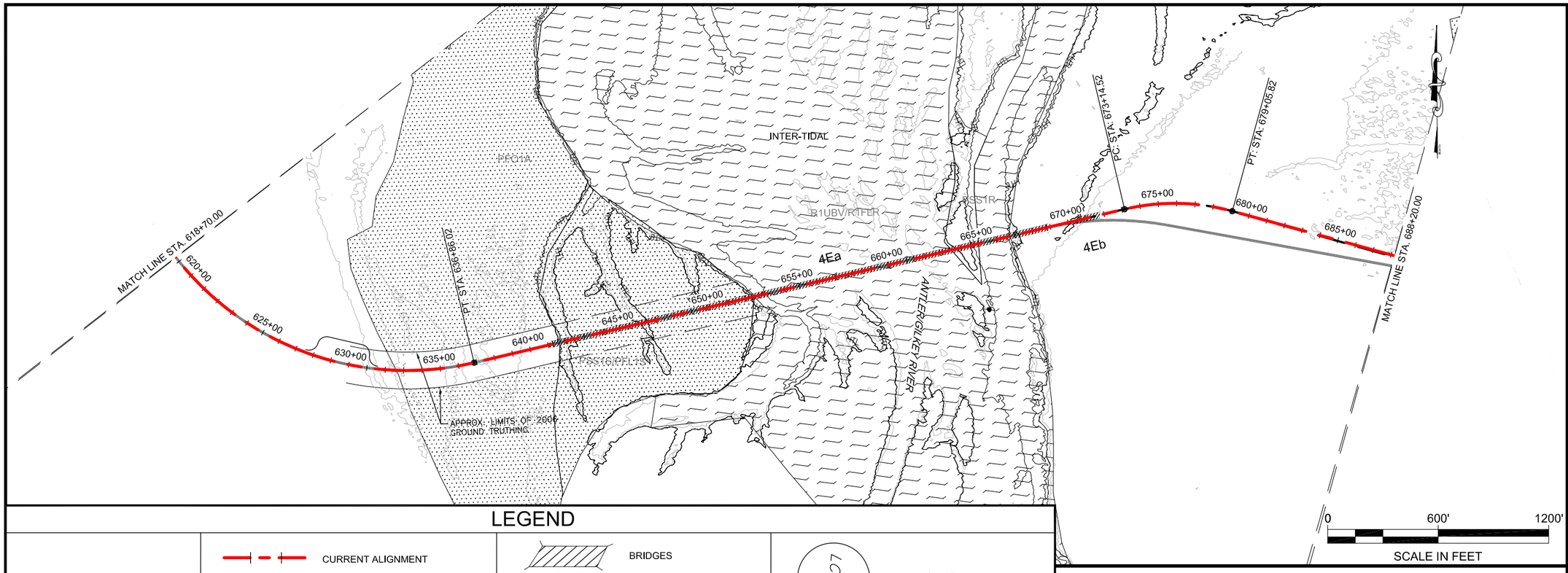
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

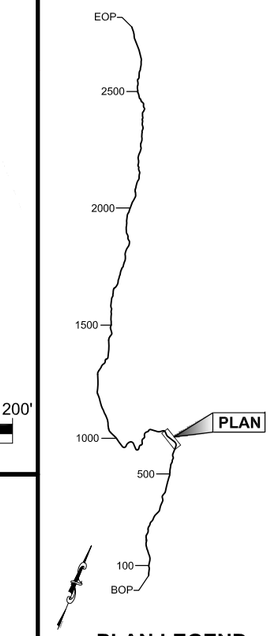
JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS
PLAN VIEW

PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL7	38





PLAN LEGEND

LEGEND

- CURRENT ALIGNMENT
- PROPOSED FILL SLOPE
- PROPOSED CUT SLOPE
- PROPOSED WALL
- 2006 FEIS ALIGNMENT
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330'
E
EAGLE TREE

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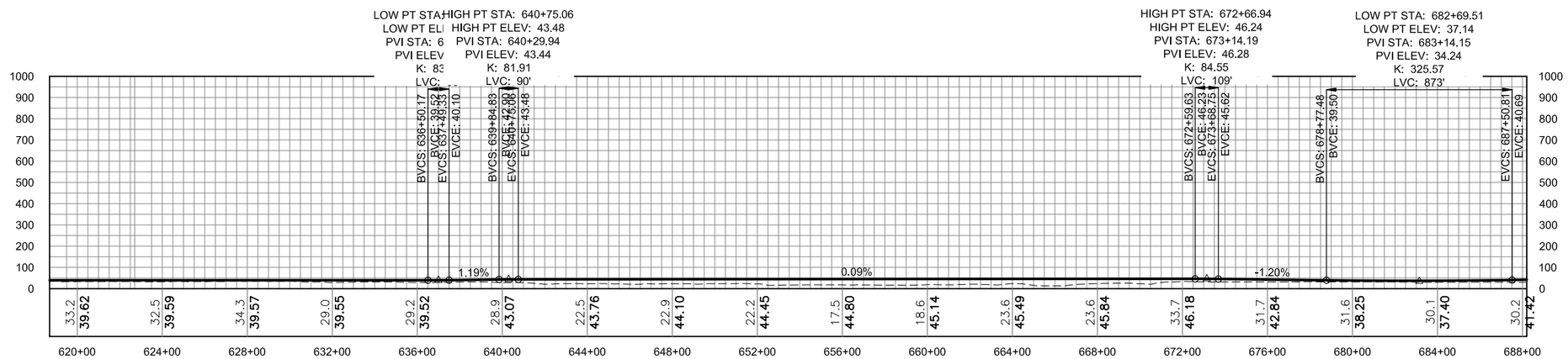

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DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

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ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION

CHECKED BY:

DRAFT

DESIGNED BY:

DRAWN BY:

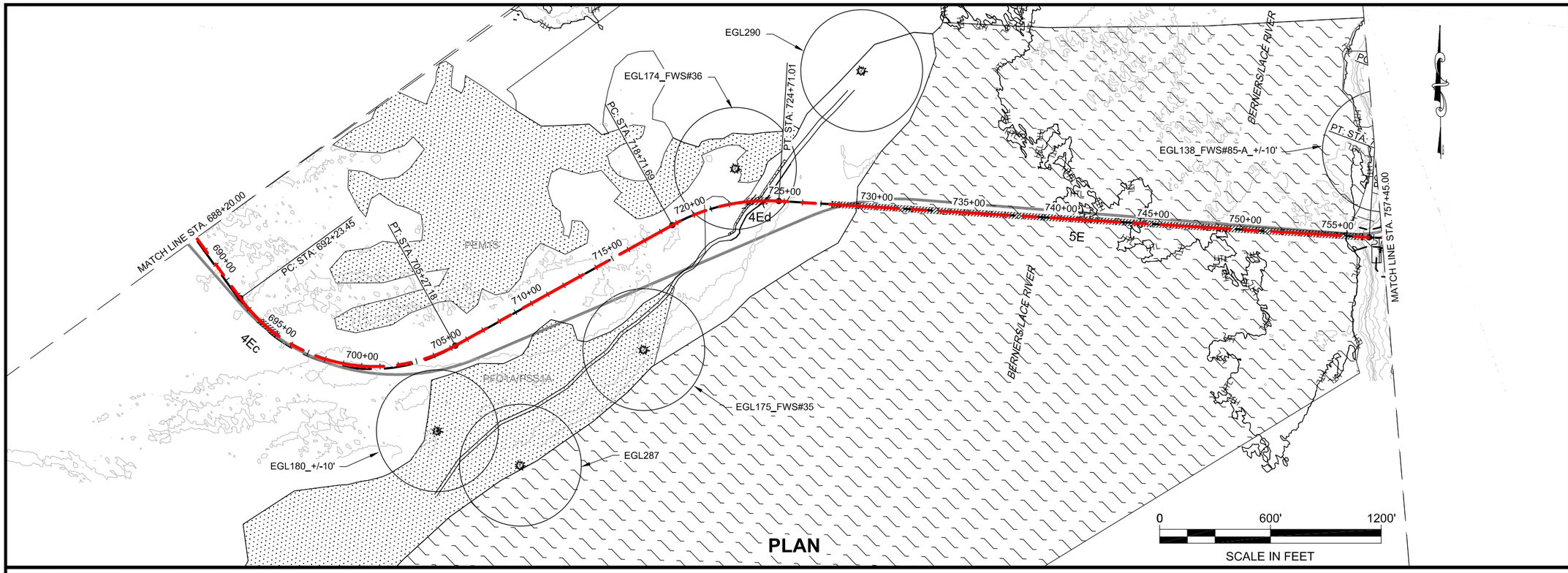
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

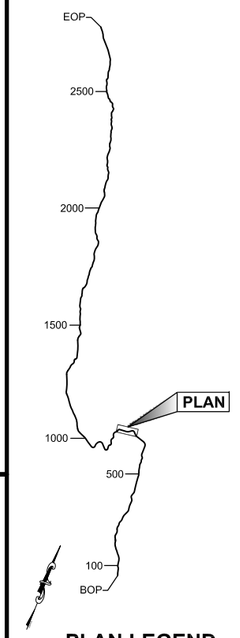
JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS PLAN VIEW

PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL8	38





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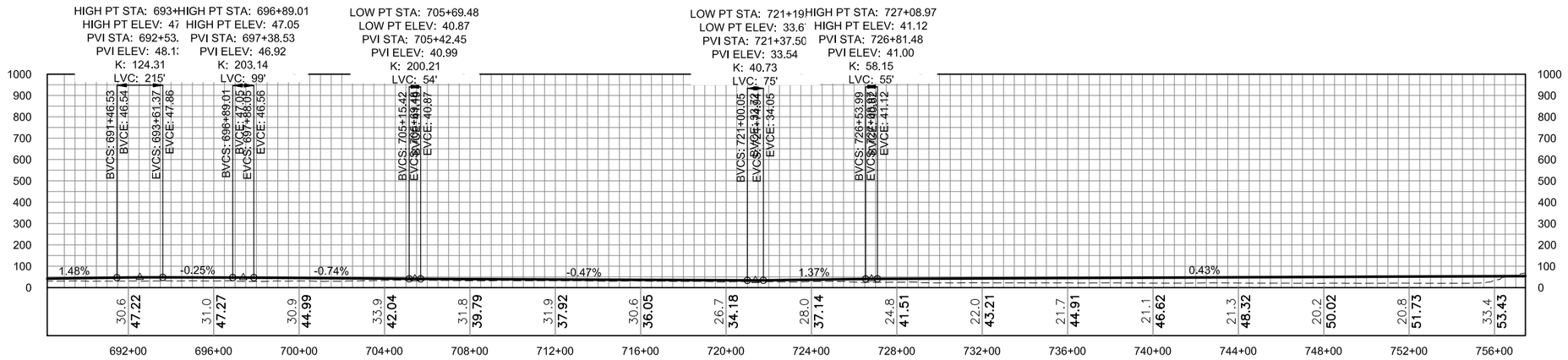

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GEARY, NATE (DOT)

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ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION

CHECKED BY:

DRAFT

DESIGNED BY:

DRAWN BY:

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

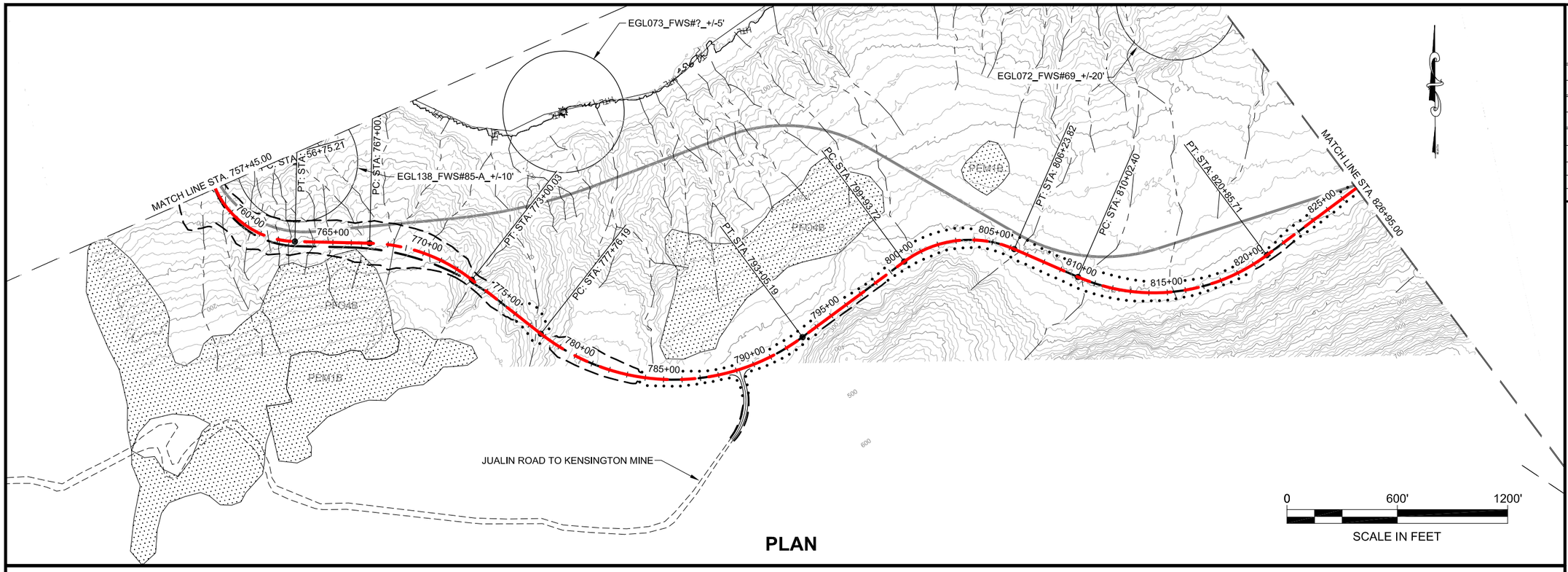
JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS
PLAN VIEW

PROJECT DESIGNATION

71100

STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL9	38



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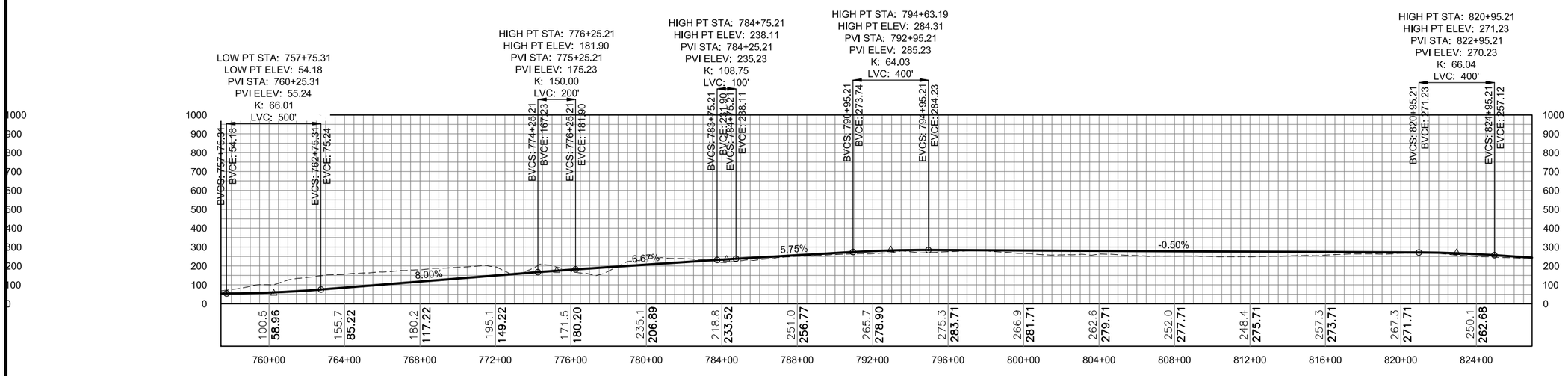

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DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

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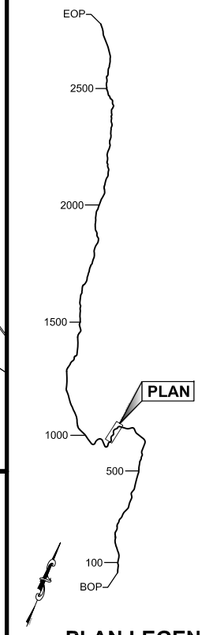

PLAN LEGEND

CHECKED BY:

DRAFT

DESIGNED BY:

DRAWN BY:

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS PLAN VIEW

PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
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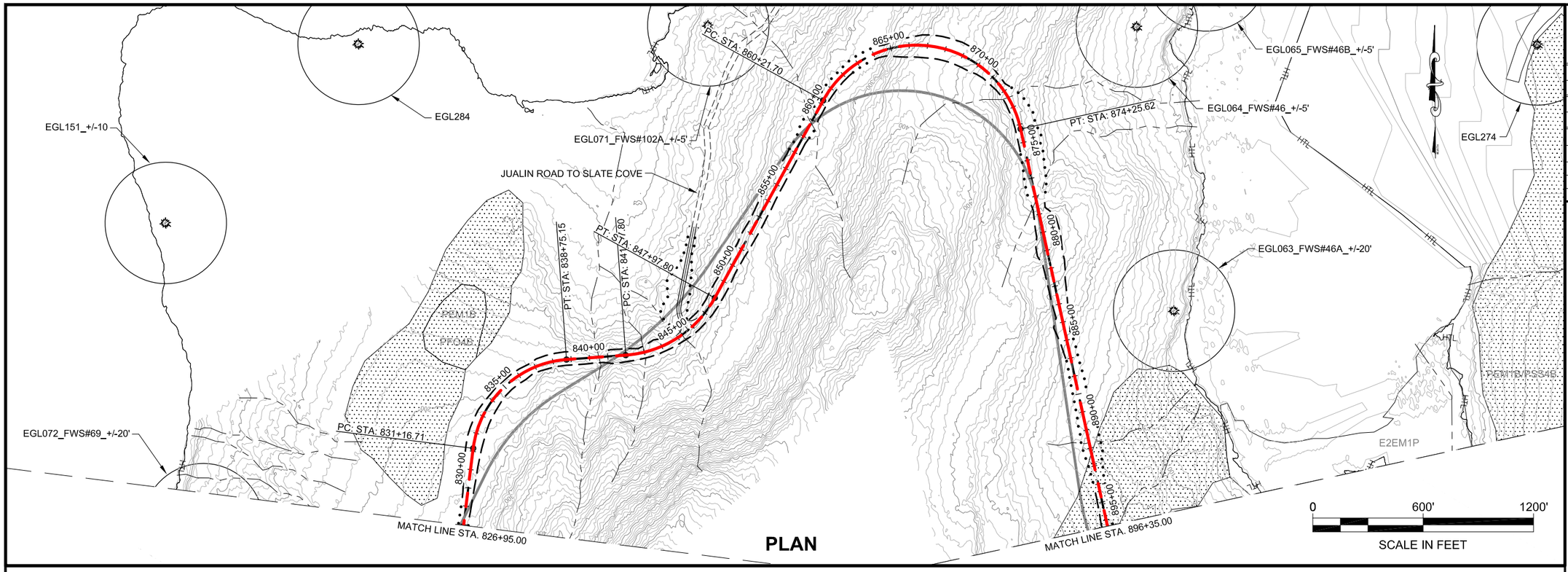
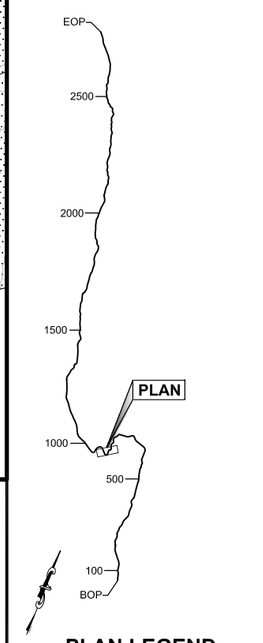


PLAN



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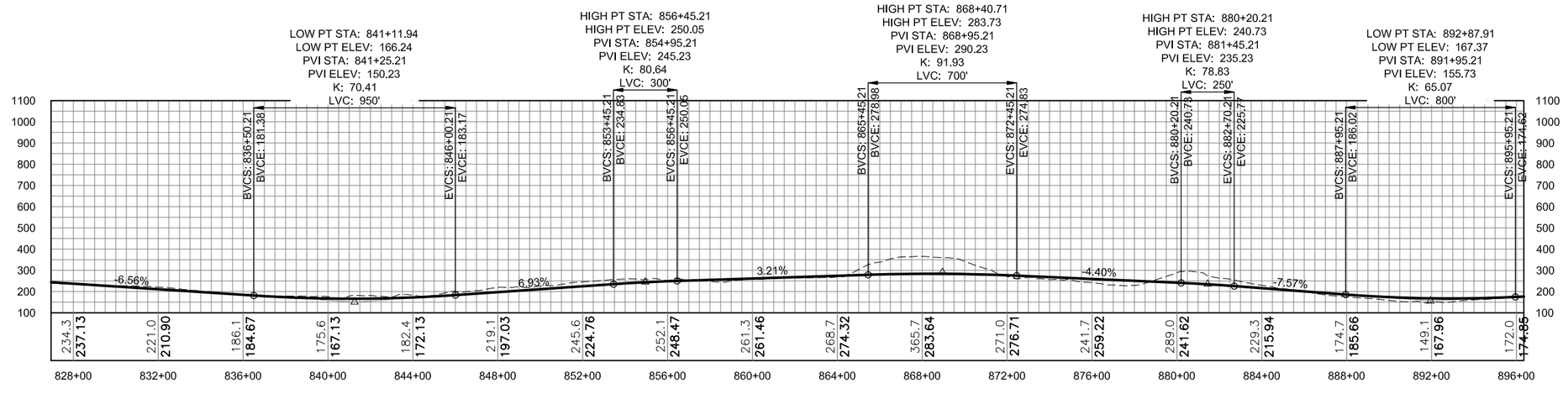


PROFILE

DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

PATH: Q:\JNU\71100\DR\10-2012 EIS DWGS\71100_2013 EIS EAST LYNN PLANS.DWG

GEARY, NATE (DOT)

TAB: EL1 Friday, October 04, 2013 12:44:23 PM

ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION

CHECKED BY:

DRAFT

DESIGNED BY:

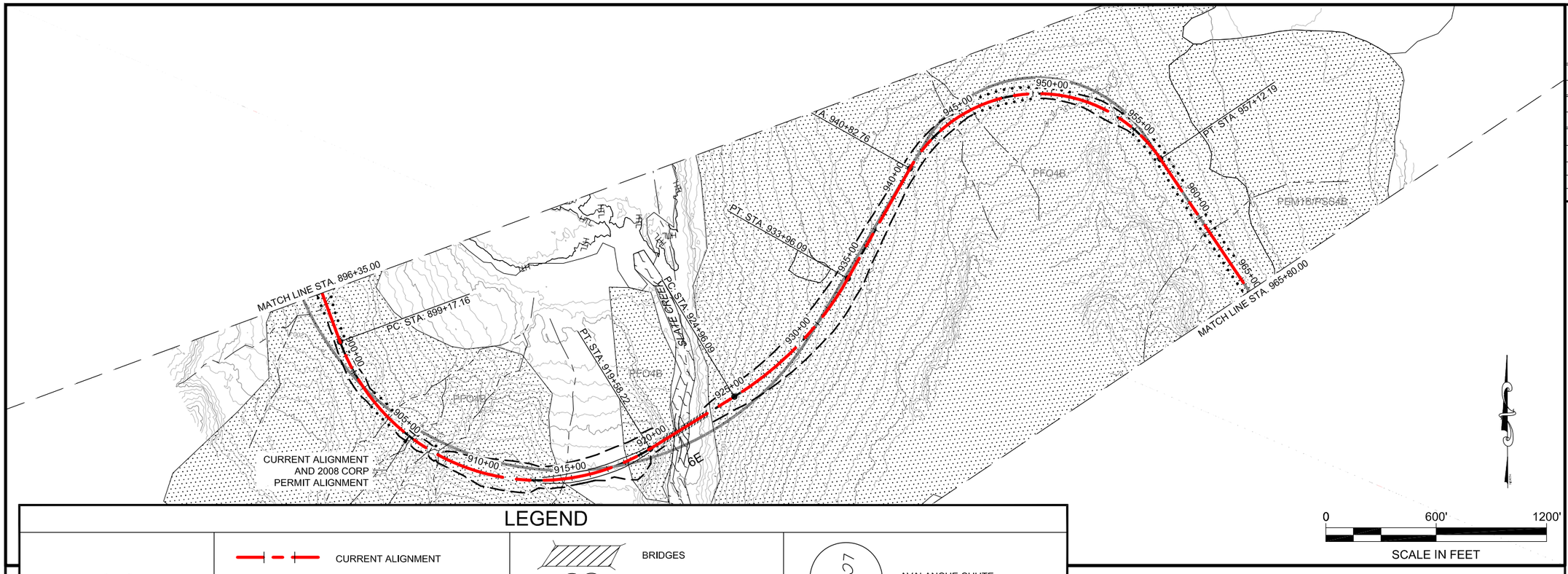
DRAWN BY:

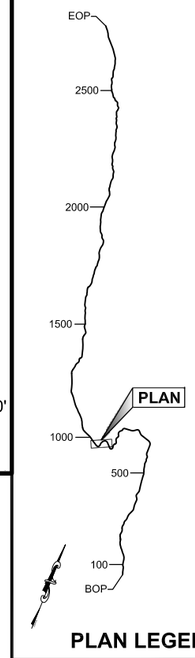
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS
PLAN VIEW

PROJECT DESIGNATION	
71100	
STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL11	38





PLAN LEGEND

LEGEND

- CURRENT ALIGNMENT
- PROPOSED FILL SLOPE
- PROPOSED CUT SLOPE
- PROPOSED WALL
- 2006 FEIS ALIGNMENT
- 2008 CORP PERMIT ALIGNMENT

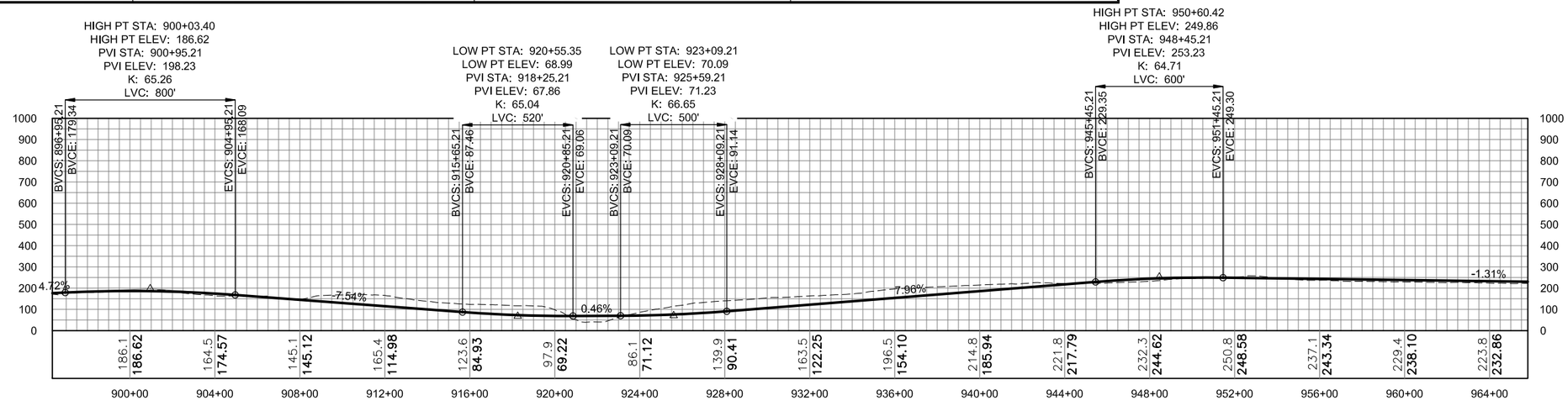
330'
E
EAGLE TREE

- BRIDGES
- WETLAND

GEO HAZARD AREA LEGEND

DF: DEBRIS FLOW
HR: HAZARD ROCK
LS: LAND SLIDE
RF: ROCK FALL
RS: ROCK SLIDE
SR: SOIL RAVELING

- AVALANCHE CHUTE
- AVALANCHE STARTING ZONE



PROFILE

DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

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GEARY, NATE (DOT)
TAB: EL12 Friday, October 04, 2013 12:44:54 PM

ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION

CHECKED BY:

DRAFT

DESIGNED BY:

DRAWN BY:

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

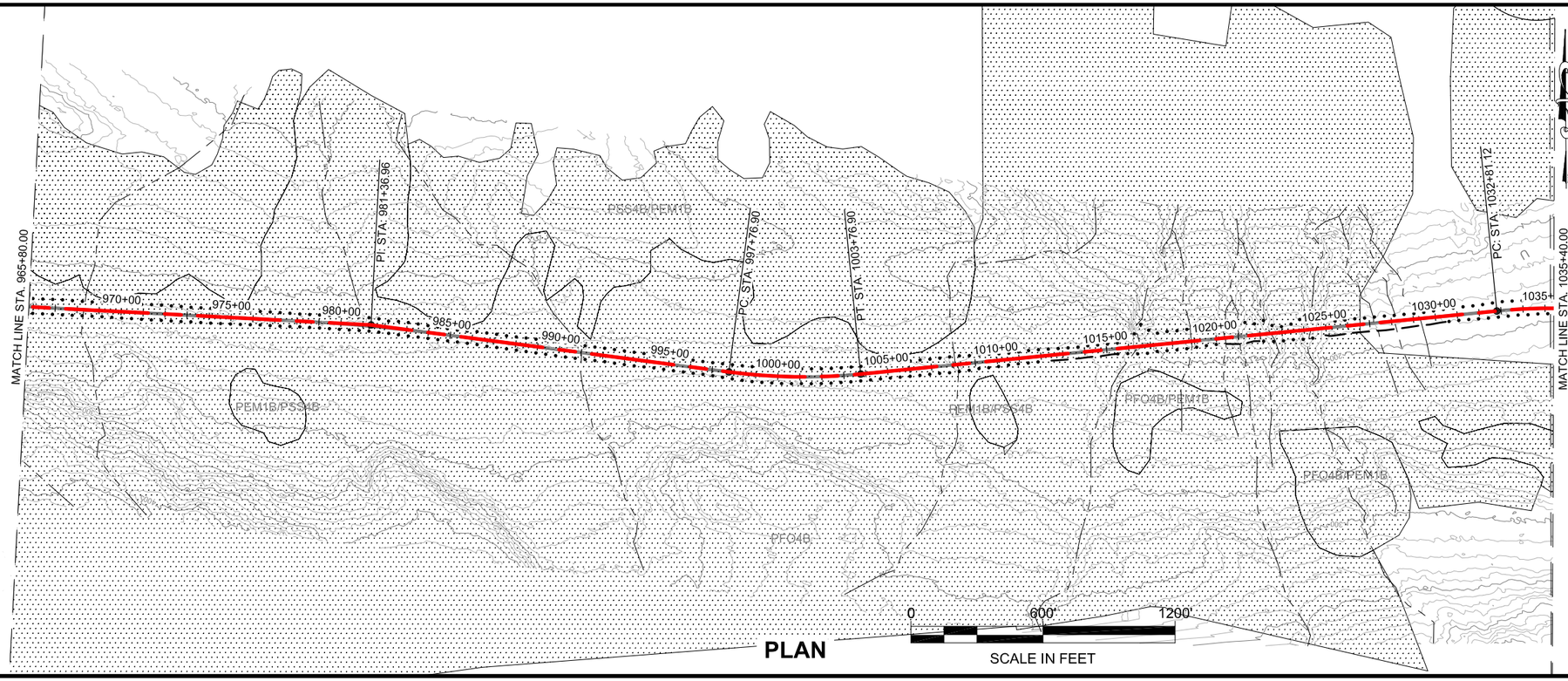
JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS
PLAN VIEW

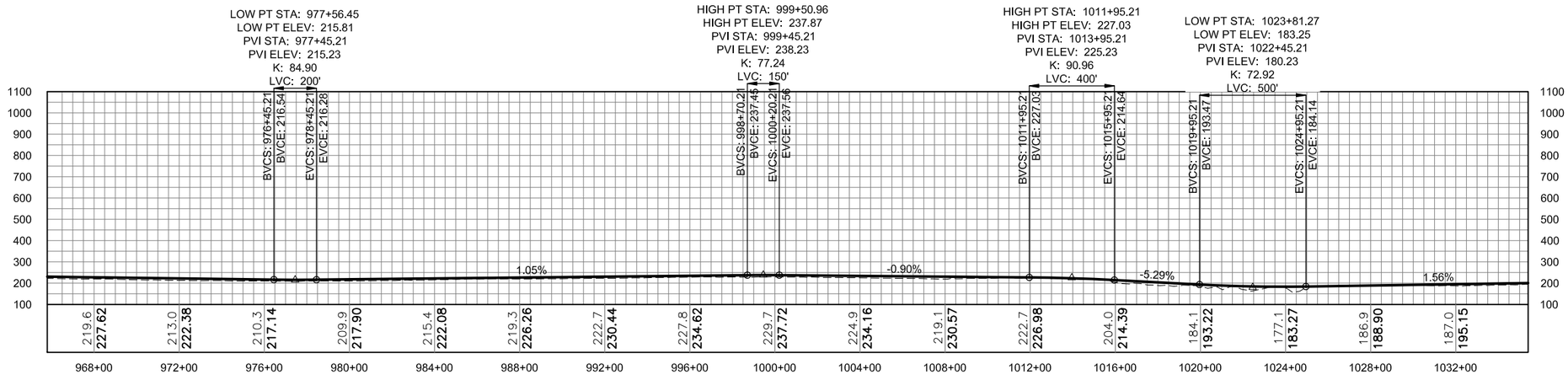
PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013

SHEET NUMBER	TOTAL SHEETS
EL12	38



PLAN



PROFILE

DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

PATH: Q:\JNU\71100\DR\10-2012 EIS DWGS\71100_2013 EIS EAST LYNN PLANS.DWG

GEARY, NATE (DOT)

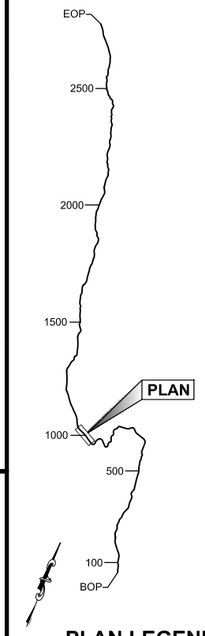
TAB: EL13 Friday, October 04, 2013 12:45:30 PM

ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION



PLAN LEGEND

CHECKED BY:

DRAFT

DESIGNED BY:

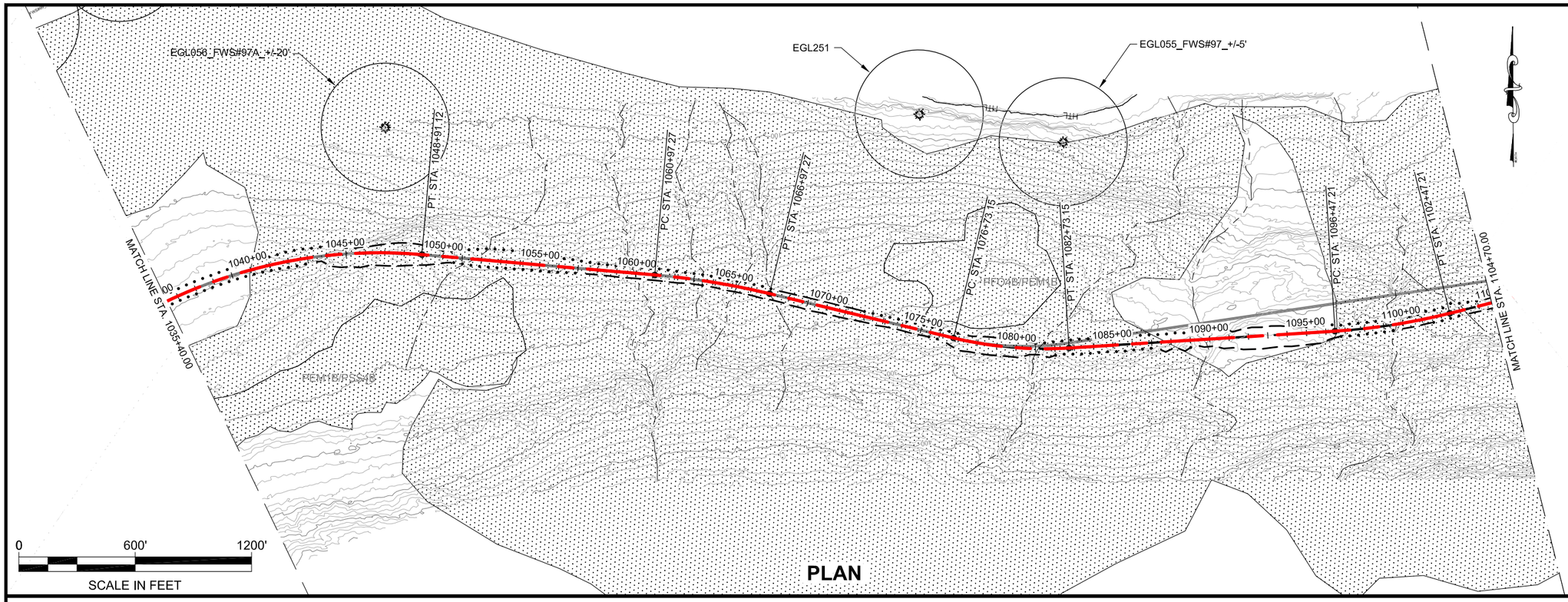
DRAWN BY:

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

JNU-EAST LYNN CANAL HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS PLAN VIEW

PROJECT DESIGNATION	
71100	
STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL13	38



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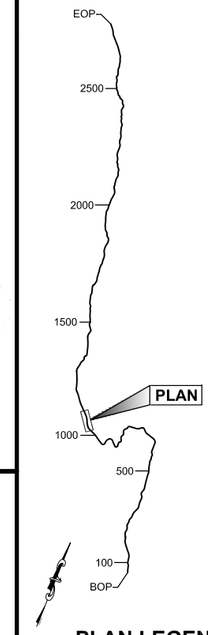
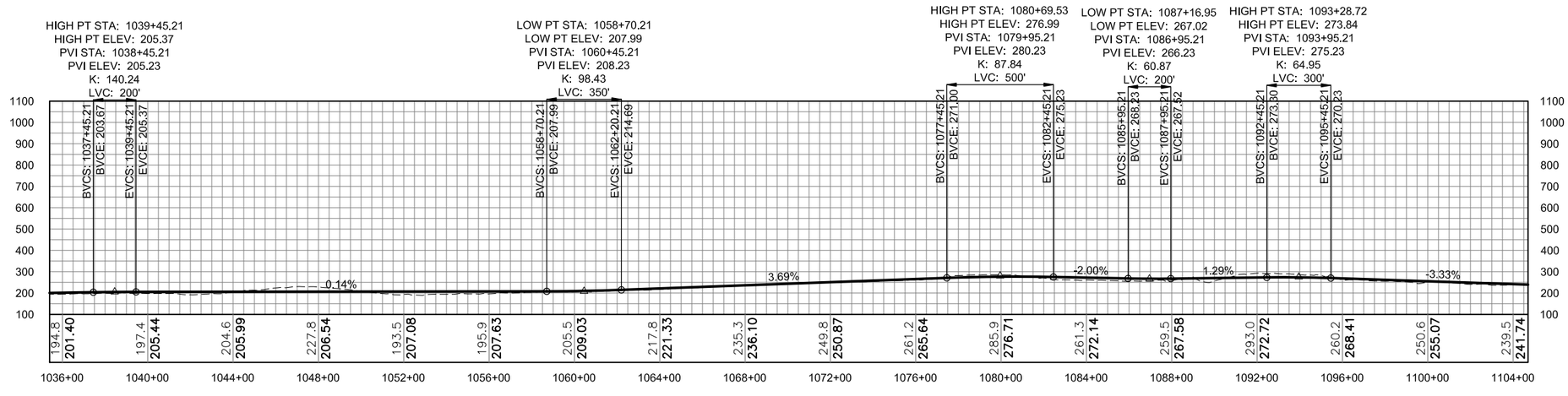


PLAN LEGEND



PROFILE

DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

PATH: Q:\JNU\71100\DR\10-2012 EIS DWGS\71100_2013 EIS EAST LYNN PLANS.DWG

GEARY, NATE (DOT)

TAB: EL14 Friday, October 04, 2013 12:46:01 PM

ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION

CHECKED BY:

DRAFT

DESIGNED BY:

DRAWN BY:

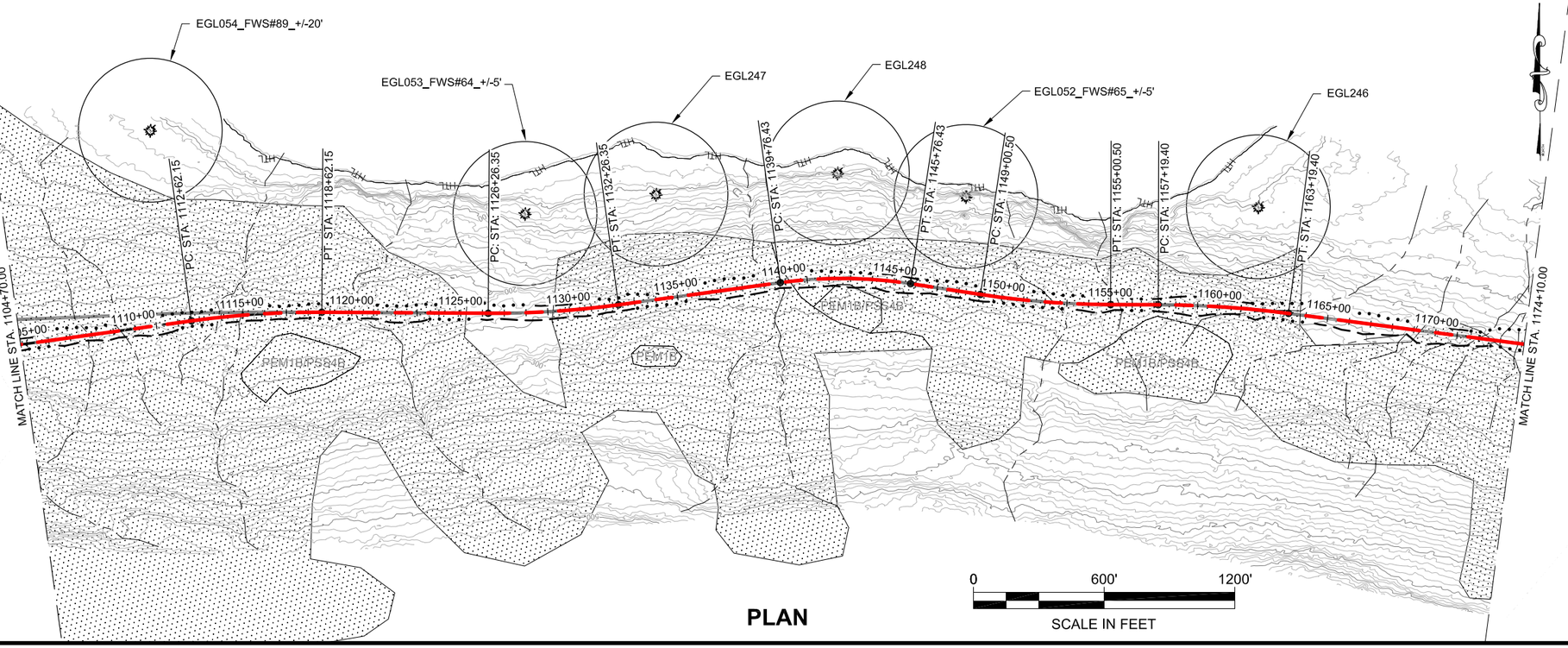
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

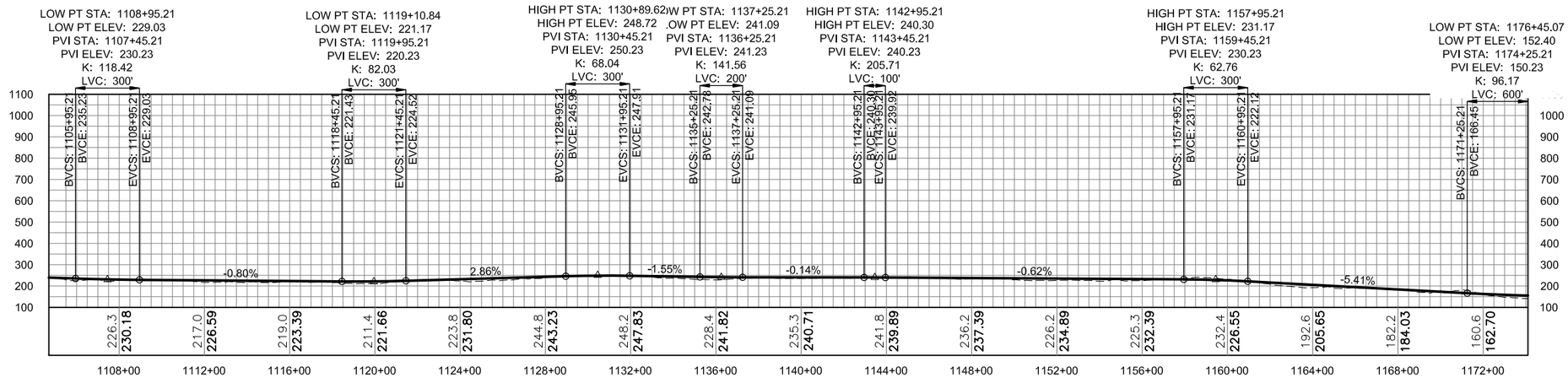
2013 EIS PLAN VIEW

PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL14	38



PLAN



PROFILE

DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

PATH: Q:\JNU\71100\DR\10-2012 EIS DWGS\71100_2013 EIS EAST LYNN PLANS.DWG

GEARY, NATE (DOT)

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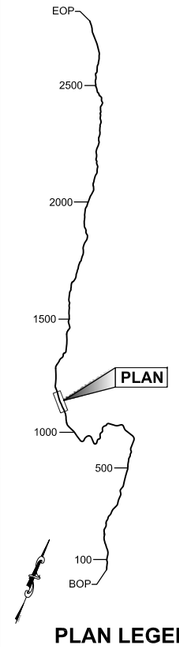
ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION



PLAN LEGEND

CHECKED BY:

DRAFT

DESIGNED BY:

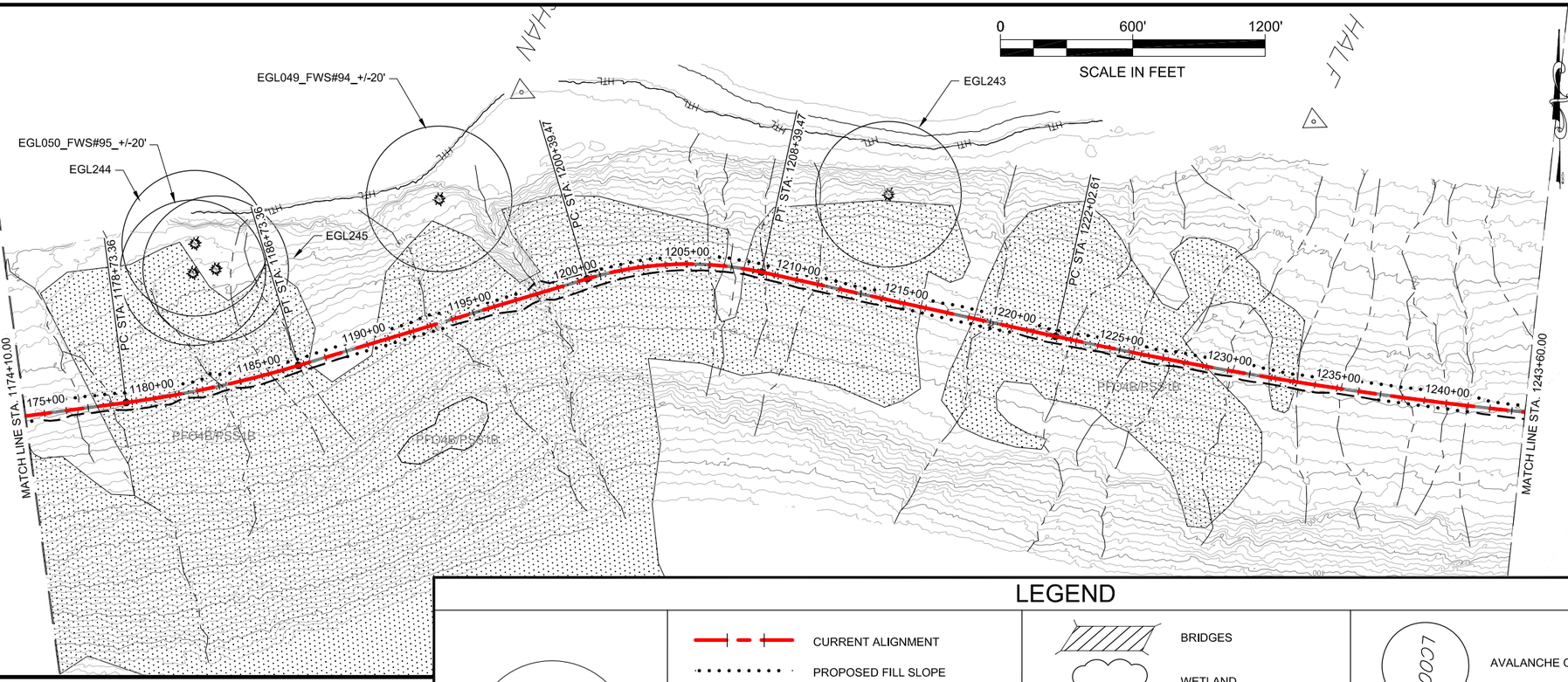
DRAWN BY:

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS
PLAN VIEW

PROJECT DESIGNATION	
71100	
STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL15	38



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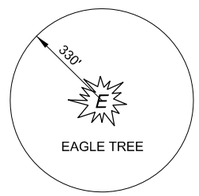


EAGLE TREE

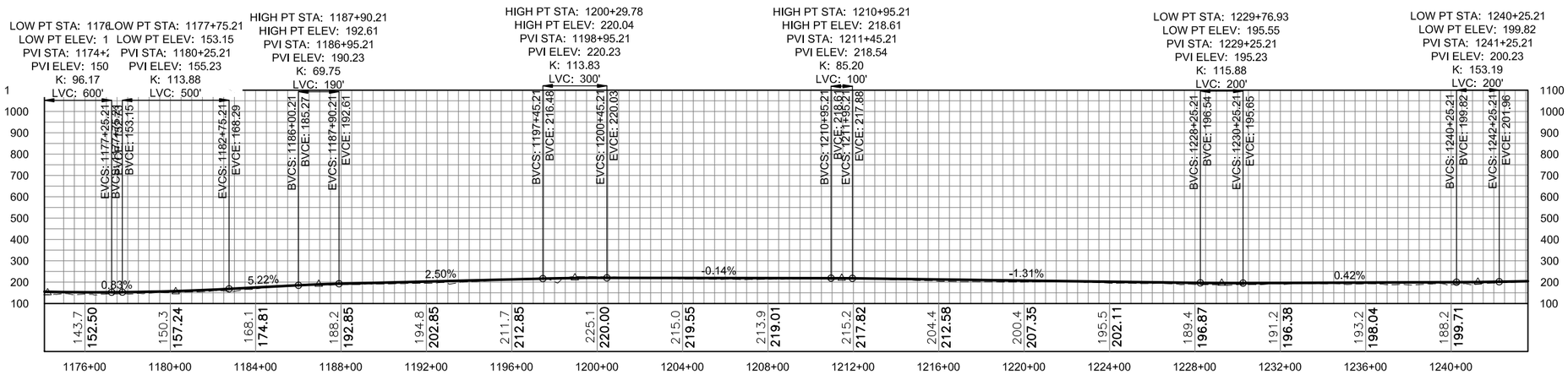
- CURRENT ALIGNMENT
- PROPOSED FILL SLOPE
- PROPOSED CUT SLOPE
- PROPOSED WALL
- 2006 FEIS ALIGNMENT
- 2008 CORP PERMIT ALIGNMENT

- BRIDGES
- WETLAND

GEO HAZARD AREA LEGEND

- DF: DEBRIS FLOW
- HR: HAZARD ROCK
- LS: LAND SLIDE
- RF: ROCK FALL
- RS: ROCK SLIDE
- SR: SOIL RAVELING

- LC001 — AVALANCHE CHUTE
- AVALANCHE STARTING ZONE



PROFILE

DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

PATH: Q:\JNU\71100\DR\10-2012 EIS DWGS\71100_2013 EIS EAST LYNN PLANS.DWG

GEARY, NATE (DOT)

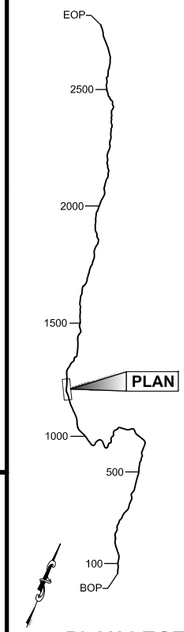
TAB: EL16 Friday, October 04, 2013 12:46:49 PM

ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION



PLAN LEGEND

CHECKED BY:

DRAFT

DESIGNED BY:

DRAWN BY:

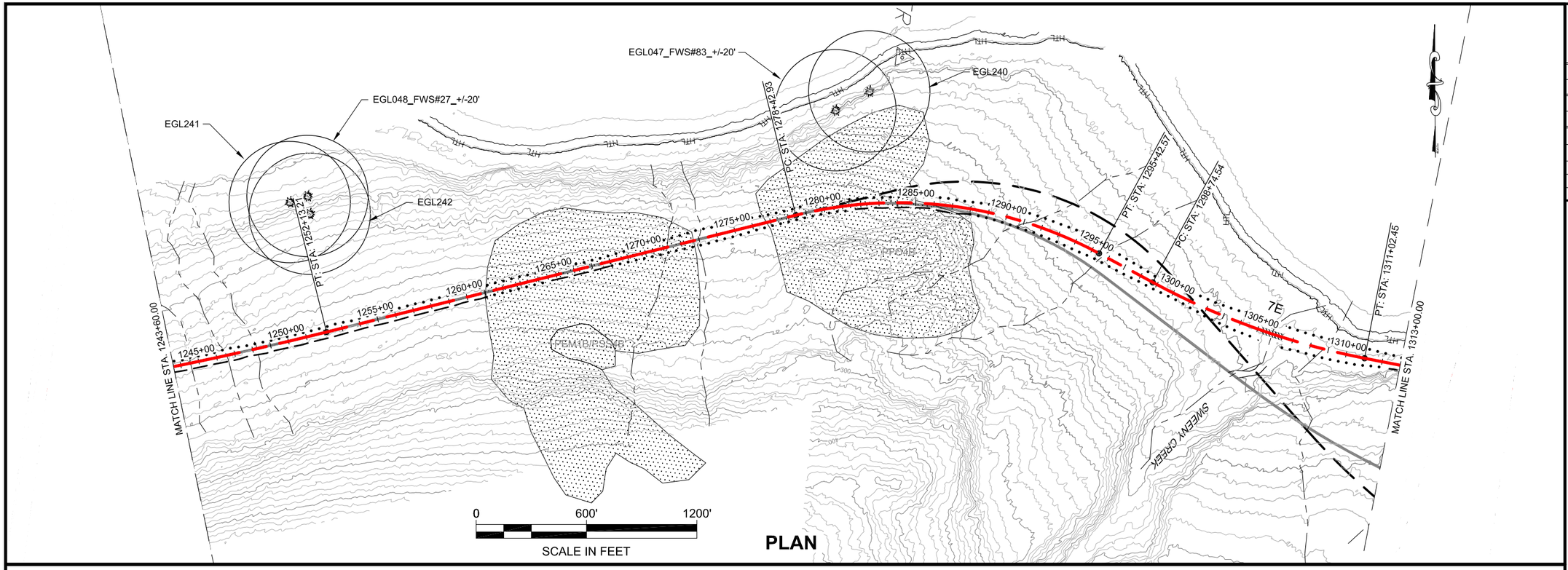
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

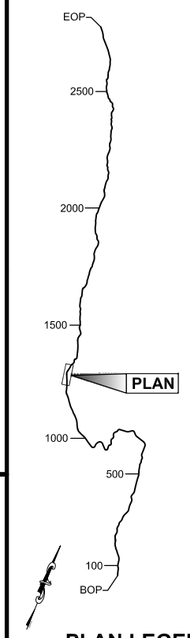
JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS PLAN VIEW

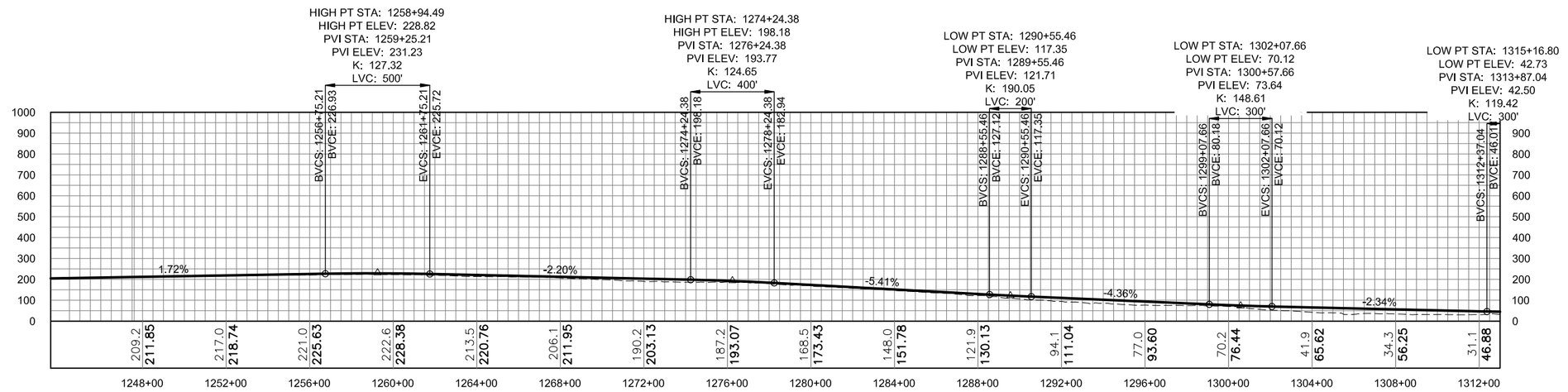
PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL16	38





PLAN LEGEND



PROFILE

DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

PATH: Q:\JNU\71100\DR\10-2012 EIS DWGS\71100_2013 EIS EAST LYNN PLANS.DWG

GEARY, NATE (DOT)

TAB: EL1Friday, October 04, 2013 12:47:19 PM

ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION

CHECKED BY:

DRAFT

DESIGNED BY:

DRAWN BY:

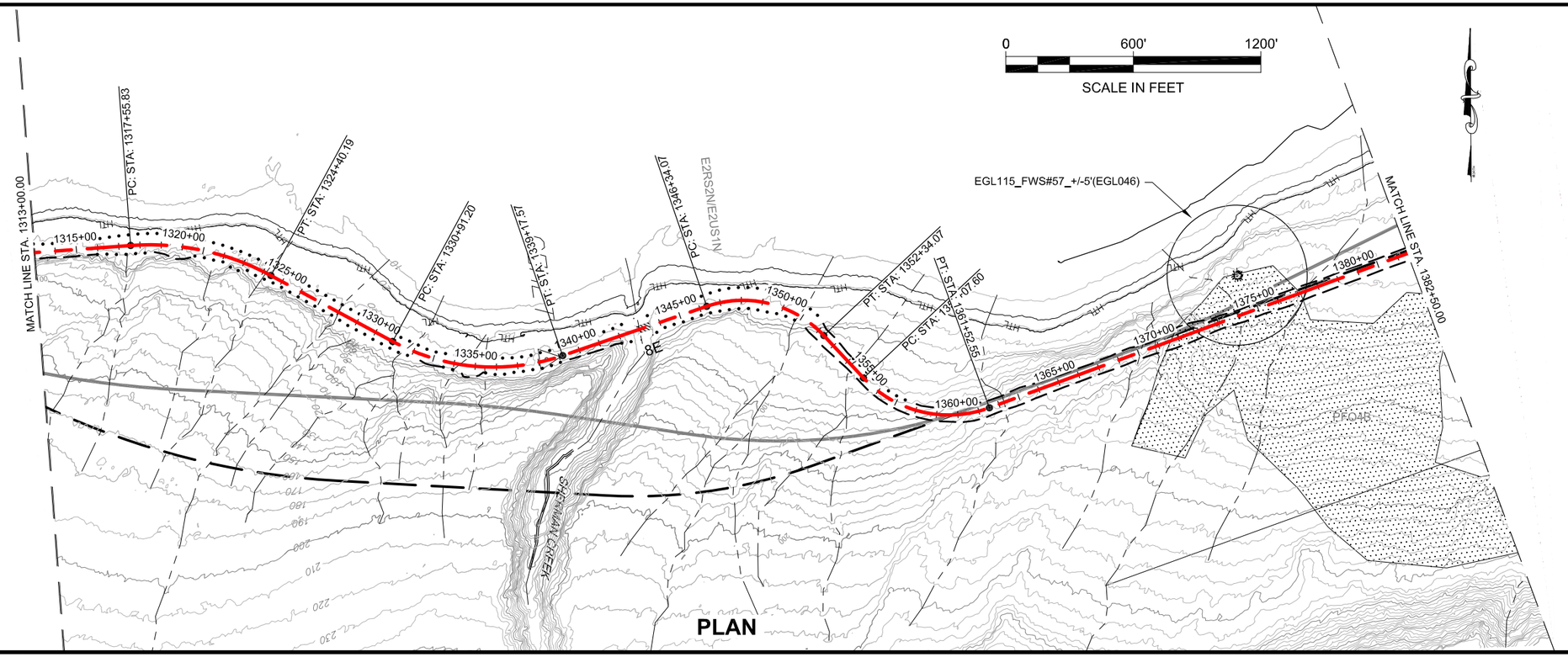
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

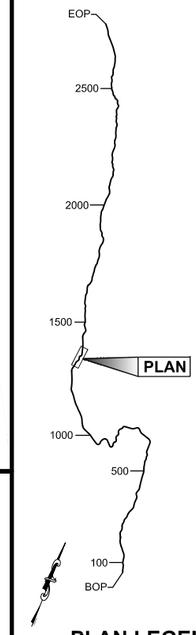
JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS
PLAN VIEW

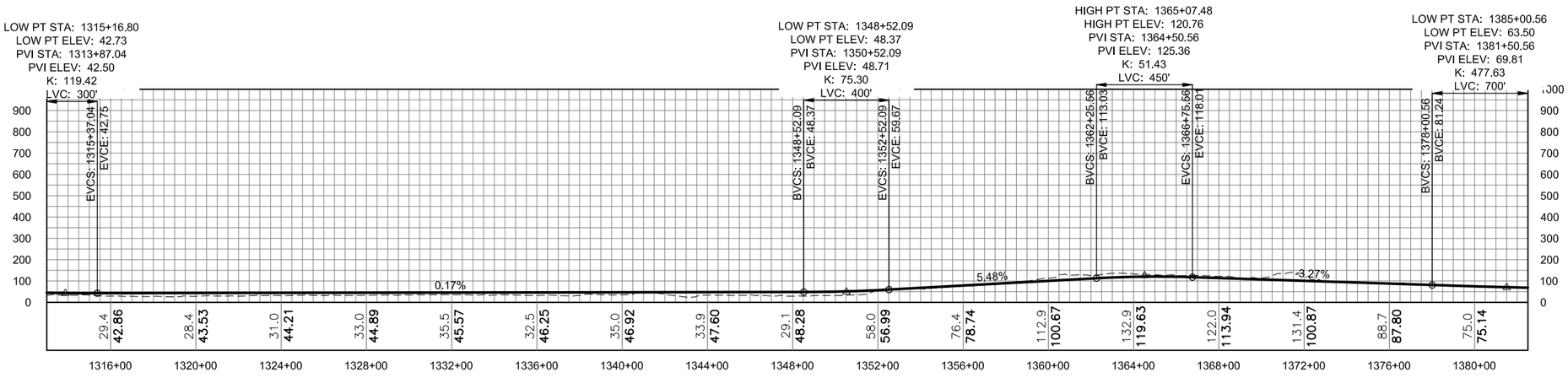
PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL17	38





PLAN LEGEND



PROFILE

DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS

PATH: Q:\JNU\71100\DR\10-2012 EIS DWGS\71100_2013 EIS EAST LYNN PLANS.DWG

GEARY, NATE (DOT)

TAB: EL18 Friday, October 04, 2013 12:47:49 PM

ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION

CHECKED BY:

DRAFT

DESIGNED BY:

DRAWN BY:

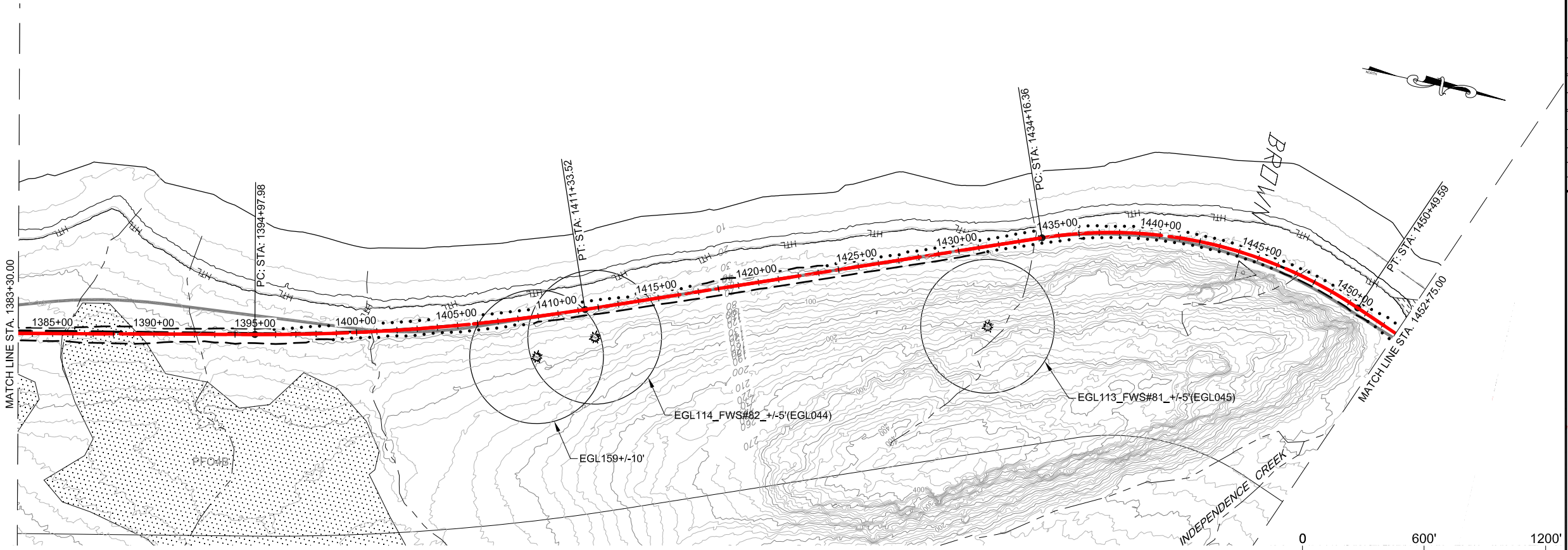
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

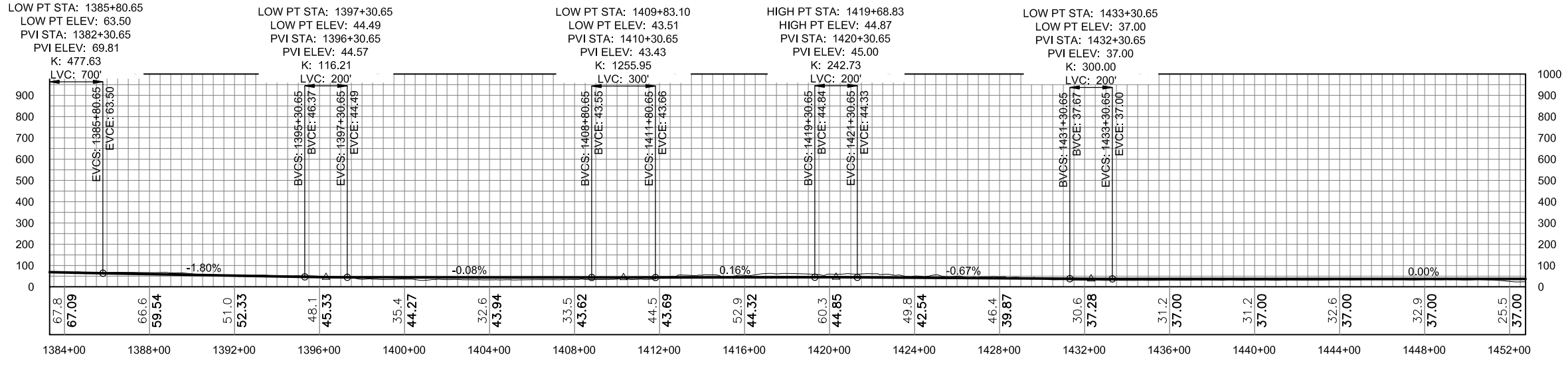
2013 EIS PLAN VIEW

PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013
SHEET NUMBER	TOTAL SHEETS
EL18	38

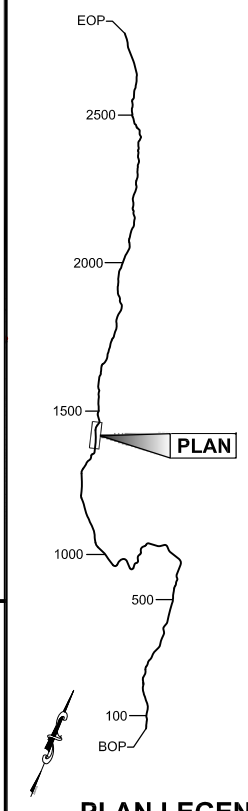


PLAN



PROFILE

DO NOT SCALE FROM THESE DRAWINGS USE DIMENSIONS



PLAN LEGEND

PATH: Q:\JNU\71100\DR\10-2012 EIS DWGS\71100_2013 EIS EAST LYNN PLANS.DWG

GEARY, NATE (DOT)

TAB: EL19 Friday, October 04, 2013 12:48:20 PM

ADDENDUM NUMBER

ATTACHMENT NUMBER

RECORD OF REVISIONS

No.	DATE	DESCRIPTION

CHECKED BY:

DRAFT

DESIGNED BY:

DRAWN BY:

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES
SOUTHEAST REGION

JNU-EAST LYNN CANAL
HIGHWAY, ALTERNATIVE 2B
PROJECT #71100

2013 EIS PLAN VIEW

PROJECT DESIGNATION
71100

STATE	YEAR
ALASKA	2013

SHEET NUMBER	TOTAL SHEETS
EL19	38