Southeast Alaska Mid-Region Access Engineering Technical Memorandum

Prepared for

Federal Highway Administration

Prepared by

Robert Peccia and Associates, Inc.
825 Custer Avenue
Helena, Montana 59604
(406)447-5000
www.rpa-hln.com

CITATION

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List of Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ACV	air-cushion vehicle
ADT	Average Daily Traffic
AMHS	Alaska Marine Highway System
ANILCA	Alaska National Interest Lands Conservation Act
B.C.	British Columbia
DOT&PF	Alaska Department of Transportation and Public Facilities
FHWA	Federal Highway Administration
FR	Forest Road (Tongass National Forest)
IFA	Inter-Island Ferry Authority
LIDAR	light detection and ranging
mph	miles per hour
MRA	mid-region access
MP	milepost
MSE	mechanically stabilized earth
NEPA	National Environmental Policy Act
RPA	Robert Peccia and Associates
SATP	Southeast Alaska Transportation Plan
USGS	United States Geological Survey
WFLHD	Western Federal Lands Highway Division

EXECUTIVE SUMMARY

The 2004 Southeast Alaska Transportation Plan (SATP) and numerous other studies have identified over-land transportation corridors that would connect Southeast Alaska to the continental highway system in British Columbia (B.C.). The potential mid-region access (MRA) transportation corridors connect the communities of Wrangell and Petersburg to the Cassiar Highway via various river drainages contained in the Coast Mountains of Southeast Alaska and western B.C. Traveling from these communities to the continental highway system currently requires a lengthy maritime connection south to Prince Rupert, B.C., or north to Haines or Skagway.

Purpose of the Memorandum

This memorandum contains an engineering and cost study of the following three potential MRA transportation corridors: Bradfield Canal, Stikine River, and Aaron Creek. All three corridors use a combined route along the Iskut River to connect to the Cassiar Highway in B.C. Some alternatives would require short ferry routes to complete the transportation network. The three corridors are shown on Figure ES-1, along with the existing transportation and maritime facilities. The information presented in this report is intended to supplement previous MRA transportation corridor studies and to assist in determining the practicality and potential cost of these corridors.

Two previous MRA corridor studies were especially significant to this memorandum. The 1984 Alaska Department of Transportation and Public Facilities (DOT&PF) report entitled Reconnaissance Study – Stikine River Highway Access proposed preliminary alignments for the Stikine River and Aaron Creek Corridors. The 2005 Bradfield River Road Final Scoping and Pre-NEPA Feasibility Study, completed by the Federal Highway Administration-Western Federal Lands Highway Division (FHWA-WFLHD) contained preliminary alignments for the Bradfield Canal Corridor. These reports are included as Appendices A and B, respectively, and their preliminary alignments are studied in this memorandum.

Corridor Development

Limitations in transportation funding may preclude development of the entire MRA corridor at one time. Completing the corridors using staged construction and temporary travel means would allow portions of the corridor to be built as funding became available to finish the ultimate final access route. Construction of the three MRA corridors would begin at the Cassiar Highway and work down toward Alaska. Both conventional ferries and air-cushion vehicles (ACVs) are proposed to provide temporary connections linking the communities in Southeast Alaska during the staged development of the corridor.

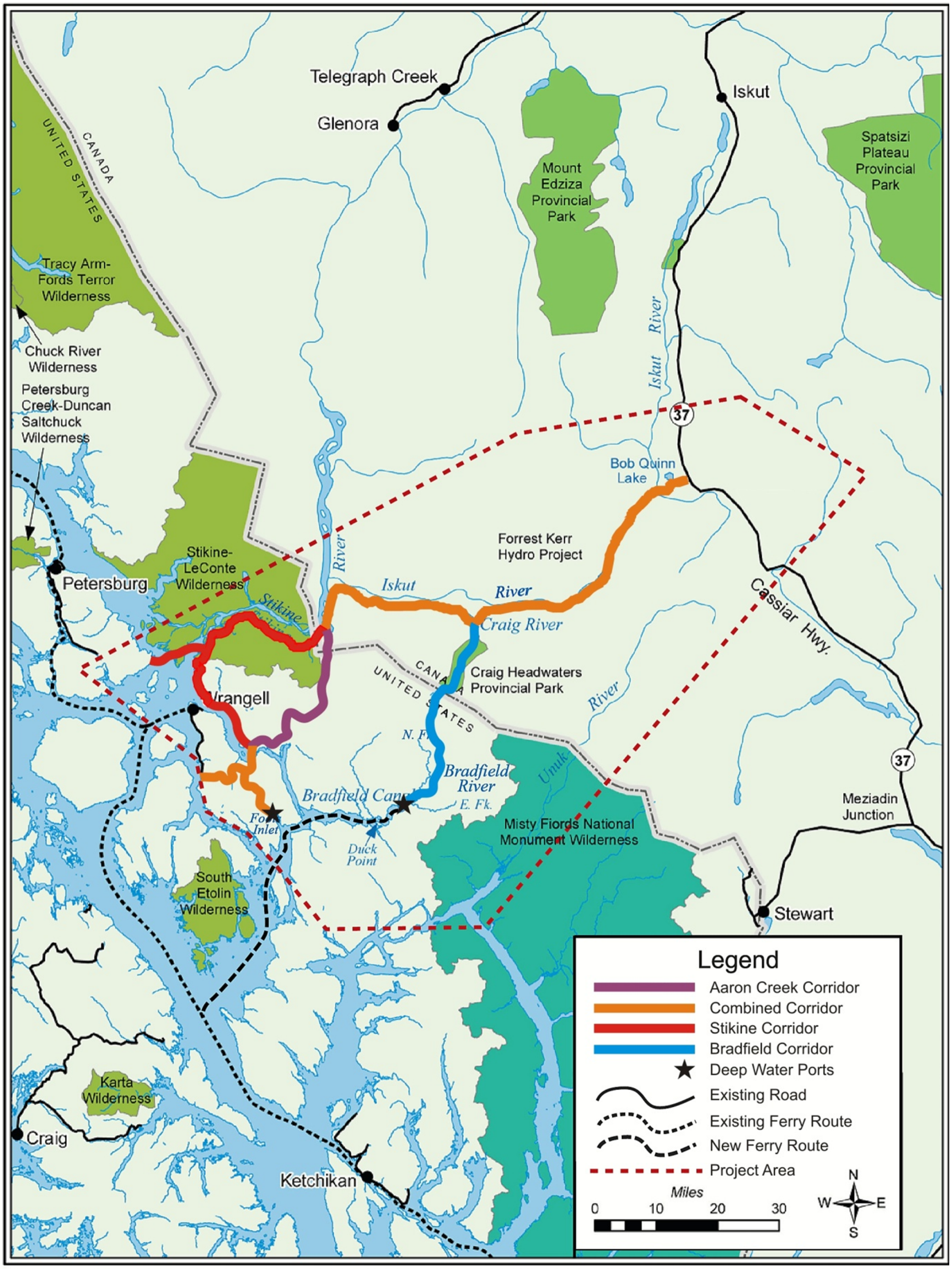

Figure ES-1. Southeast Alaska Mid-Region Access Study Corridors

Bradfield Canal Corridor Design

FHWA completed an in-depth cost feasibility study for the Bradfield Canal Corridor in 2005 entitled Bradfield River Road Final Scoping and Pre-NEPA Feasibility Study (Bradfield River Road Study). Three conceptual alignment options that connected the Bradfield Canal to the International Boundary were proposed for the Bradfield Canal Corridor. The option used for this memorandum is the Kapho Mountain Option, as the Southeast Alaska Mid-Region Access Port and Ferry Terminal Technical Memorandum (Port and Ferry Memorandum) contained a recommendation that a deep-water conventional ferry terminal be located on the Bradfield Canal near Kapho Mountain. The conceptual alignment was not altered as part of this engineering study, but the cost information was updated and modified to represent the potential staged development of the Bradfield Canal Corridor.

Stikine River and Aaron Creek Corridor Design

Preliminary alignments for the Stikine River and Aaron Creek Corridors were proposed as part of the 1984 DOT&PF report, Reconnaissance Study – Stikine River Highway Access. The alignments of that study were used as the basis for the conceptual designs of this project. The alignments included in the conceptual design were for the Iskut River, Stikine River, Aaron Creek, Katete River, Limb Island, and Wrangell Island.

The Stikine River and Aaron Creek Corridor alignments were altered to meet current design standards, match existing ground surveys based on high-resolution color orthophotography, and extend to the conventional and ACV ferry terminals proposed as part of the Port and Ferry Memorandum. The conceptual alignments were broken into numerous segments to facilitate the staged development of each corridor. The conceptual alignments were designed predominantly for new roadway construction, but a number of alignments requiring rehabilitation and paving of existing mining and logging roads were also included to complete the transportation corridors. Full conceptual designs for any alignment across the International Boundary in B.C. were outside the scope of this project. Thus, only horizontal alignments were designed for these alignments. Conceptual design plans were not completed for the B.C. alignments, but the alignments were included in the corridor cost estimates.

Design Typicals

Conceptual designs were completed for four different roadway configurations. The base estimate and initial design were completed for a standard two-lane paved roadway typical section. Later in the development of the memorandum, it became apparent that cost estimates for less extensive roadway configurations would be beneficial in case of potential funding limitations. A one-lane gravel roadway typical section, including turnouts every 1,000 feet, and a phased construction typical section were added to the conceptual design and cost estimates. Phase 1 of the phased construction would involve building the subgrade for a two-lane roadway, but completing only the surfacing for a one-lane gravel roadway. Phase 2 of construction would consist of upgrading Phase 1 to a full two-lane paved roadway when additional funding could be secured.

Cost Estimate Methods

Order-of-magnitude cost estimates were developed using one of three methods: calculated quantities and average bid prices, assumed percentages of total construction cost, or per-mile costs. The cost estimates were based on the methodology developed for the Bradfield River Road Study. The three potential MRA transportation corridors (Bradfield Canal, Stikine River, and Aaron Creek) were divided into individual alignments and segments during the conceptual design process. The alignment segments represented the portion of the alignment to be built with each construction stage. Separate cost estimates were completed for each segment.

The study assumes that the proposed transportation routes would operate year-round. The Southeast Alaska Mid-Region Access Operating and Maintenance Cost Technical Memorandum contained estimates for the upfront and annual costs for operation of the corridors. Only the upfront capital costs of installing permanent roadway operating features were included in the cost estimates of this memorandum. These include port of entry and maintenance facilities, tunnels, utility lines, and ferry terminal facilities. The costs of acquiring and operating conventional or ACV ferries between new and existing terminal facilities have not been estimated.

A preliminary avalanche risk assessment was completed and outlined in the Southeast Alaska Mid-Region Access Preliminary Snow Avalanche Assessment Technical Memorandum. The options available to mitigate avalanche risk are roadway realignment, forecast and control, structural protection, and winter road closures. Any options used to mitigate avalanche risk will have a substantial effect on the overall corridor cost, annual operating costs, usage, and benefit. At this point in the corridor planning process, no avalanche mitigation measures have been included in the cost estimates.

Cost Estimate Support

The Southeast Alaska Mid-Region Access Unit Cost Technical Memorandum (Unit Cost Memorandum) involved a survey of available bid tabulation information in Southeast Alaska to identify projects that could be used to determine the average unit prices, percentages of construction cost, and per-mile costs. The information compiled included recent FHWA-WFLHD projects, DOT&PF projects, and DOT&PF planning reports. All average prices, percentages, and per-mile costs used in the Unit Cost Memorandum were based on the bid tabulations of these projects and adjusted by 3% inflation per year to represent 2009 prices. Special consideration was given to estimated prices and bid tabulations from the DOT&PF Juneau Access Improvements Project. The pricing recommendations made in the Unit Cost Memorandum were incorporated into the cost estimates of this memorandum.

MRA Corridor Cost Estimates

The cost of each stage of construction for the three MRA corridors was established by combining the appropriate segment costs. Each corridor's stage estimates were then combined to determine the ultimate estimated cost of the potential MRA corridor. The estimated costs for the staged development of the Bradfield Canal, Stikine River, and Aaron Creek Corridors are shown in Table ES-1. The costs shown are based on the standard two-lane paved roadway configuration.

Table ES-1. Southeast Alaska Mid-Region Access Corridor Comparison

Corridor	Stage	Length (miles)	ACV Ferry Terminals	Conventional Ferry Terminals	Alaska Cost (Millions)	B.C. Cost (Millions)	Total Cost (Millions)	Cumulative Cost (Millions)
Bradfield Canal	1 (Ultimate)	112	0	2	$425	$345	$770	$770
Total	**-**	**112**	**0**	**2**	**$425**	**$345**	**$770**	**$770**
Stikine River	1	71	3	0	$30	$452	$482	$482
	2	49	0	2	$316	$92	$408	$890
	3	22	0	1	$64	$0	$64	$954
	4	14	0	0	$243	$0	$243	$1,197
	5 (Ultimate)	16	0	0	$89	$0	$89	$1,287
Total	**-**	**173**	**3**	**3**	**$742**	**$545**	**$1,287**	**$1,287**
Aaron Creek	1	71	3	0	$30	$452	$482	$482
	2 (Pass)	55	0	2	$508	$105	$613	$1,095
	2 (Tunnel)	54	0	2	$479	$105	$584	$1,066
	3	10	0	1	$46	$0	$46	$1,113
	4 (Ultimate)	7	0	0	$60	$0	$60	$1,173
Total (Pass)	**-**	**143**	**3**	**3**	**$644**	**$558**	**$1,201**	**$1,201**
Total (Tunnel)	**-**	**143**	**3**	**3**	**$615**	**$558**	**$1,173**	**$1,173**

Note: Estimates include capital costs for road construction, ferry terminal construction, and construction of operating and maintenance facilities. The costs do not include capital costs for conventional or ACV ferries.

1 INTRODUCTION

This memorandum considers three proposed alternatives for a mid-region access (MRA) surface transportation corridor connecting the communities of Wrangell and Petersburg in Southeast Alaska to the continental highway system in British Columbia (B.C.). Traveling from these communities to the highway system currently requires a lengthy ferry trip to either Prince Rupert, B.C., to the south or Haines or Skagway to the north. The three MRA corridors would connect Wrangell and Petersburg to the Cassiar Highway by way of the Bradfield River, Craig River, Stikine River, Aaron Creek, Katete River, and Iskut River valleys. Some alternatives would include short ferry routes to complete the transportation network. Figure 1-1 shows the proposed corridors in addition to the existing roads and ferry routes currently in place.

1.1 Purpose

The purpose of this pre-National Environmental Policy Act (NEPA) preliminary engineering cost technical memorandum is to evaluate the practicality and the preliminary costs of potential MRA roadway alignments. Several previous MRA studies have been undertaken. Many of these studies were cited in the Economic Assessment of the Bradfield/Iskut Transportation Corridor, prepared for the Alaska Department of Community and Economic Development by the McDowell Group. The Alaska Department of Transportation and Public Facilities (DOT&PF) November 1984 report entitled Reconnaissance Study – Stikine River Highway Access (Stikine River Highway Study) identified five conceptual roadway alignments for potential MRA highway corridors. The five corridors connected the communities of Wrangell and Petersburg to the International Boundary through routes along drainages of various rivers and creeks, including the Stikine River, Aaron Creek, Andrew Creek, and Crittenden Creek. All five highway corridors would link to a proposed route through B.C. connecting the Cassiar Highway to Southeast Alaska by means of the Iskut River drainage. The Stikine River Highway Study is provided as Appendix A.

DOT&PF's 2004 Southeast Alaska Transportation Plan (SATP) identified an MRA transportation corridor to connect the communities of Ketchikan, Wrangell, and Petersburg to the Cassiar Highway. The plan proposed extending the Revillagigedo Highway from Ketchikan to the end of the Bradfield Canal. From there, two different routes were considered to connect the end of the Bradfield Canal to the International Boundary: the large river valleys of either the Bradfield or Stikine Rivers. From the International Boundary, a highway corridor along the Iskut River would continue east to the Cassiar Highway. Connection of Wrangell Island to the MRA transportation corridor would be accomplished by extending the Zimovia Highway to a new ferry terminal at Fools Inlet.

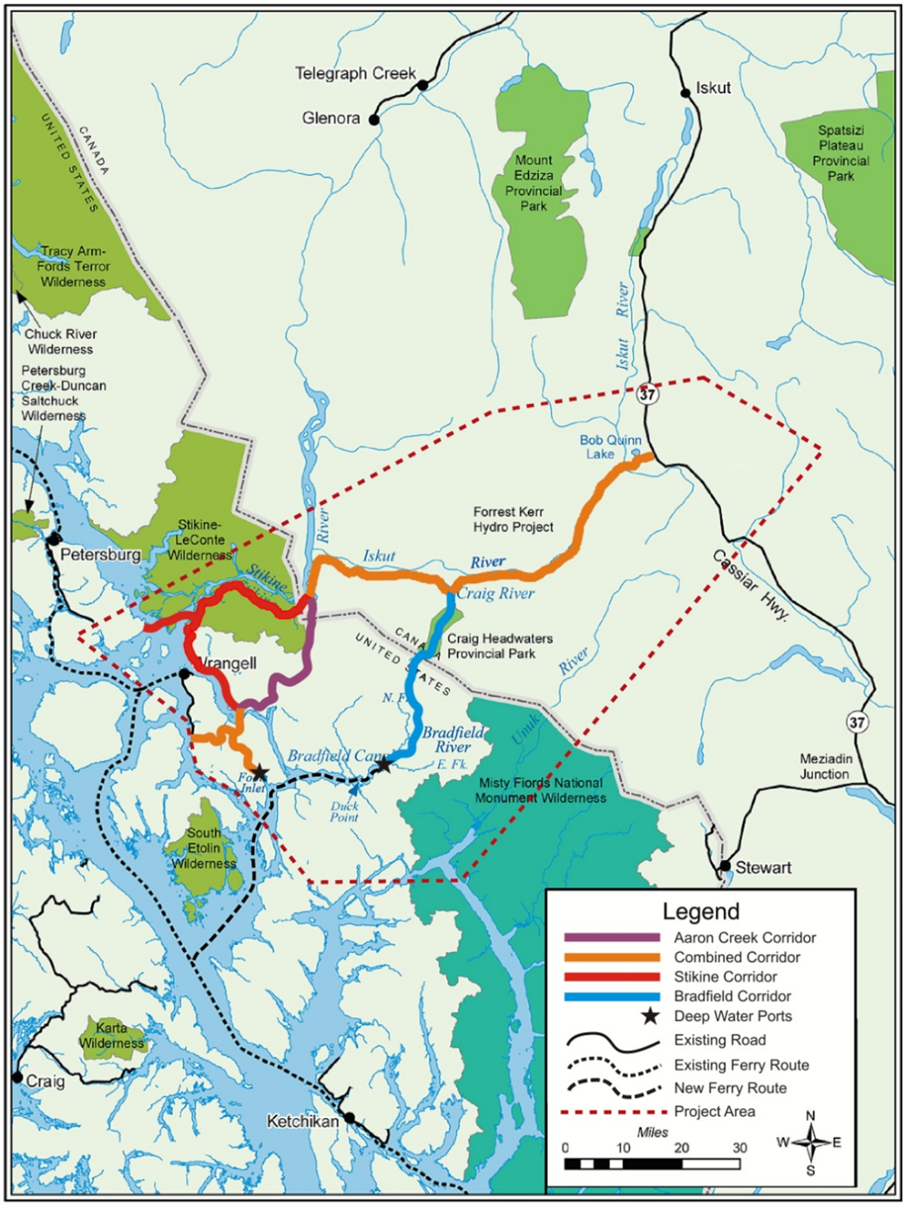

Figure 1-1. Southeast Alaska Mid-Region Access Study Corridors

In January 2005, the Federal Highway Administration-Western Federal Lands Highway Division (FHWA-WFLHD) completed the Bradfield River Road Final Scoping and Pre-NEPA Feasibility Study (Bradfield River Road Study). The Bradfield River Road Study contained quantity-based cost estimates for a land-link transportation route from the end of the Bradfield Canal to the International Boundary. In addition to initial cost estimates for three different conceptual alignment options, the study included preliminary surveying, hydraulic, and geotechnical reviews for the Bradfield Canal Corridor. The Bradfield River Road Study is provided as Appendix B.

This engineering memorandum contains a detailed cost study of the following three potential MRA transportation corridors: Bradfield Canal, Stikine River, and Aaron Creek. The information presented in this report is intended to supplement previous MRA transportation corridor studies and to assist in determining the practicality of using one of these corridors to connect Southeast Alaska to the continental highway system through B.C.

1.2 Study Area

The area considered in the Southeast Alaska Mid-Region Access Project is shown on Figure 1-2. Located along the Coast Mountains within Southeast Alaska and western B.C., the study area spans several thousand square miles and allows for many potential transportation corridors. The area extends to the Stikine-LeConte Wilderness to the north, Wrangell and Petersburg to the west, the Misty Fiords National Monument Wilderness to the south, and the Cassiar Highway (Highway 37) in B.C. to the east. The portion of the study area in Southeast Alaska is within the Tongass National Forest.

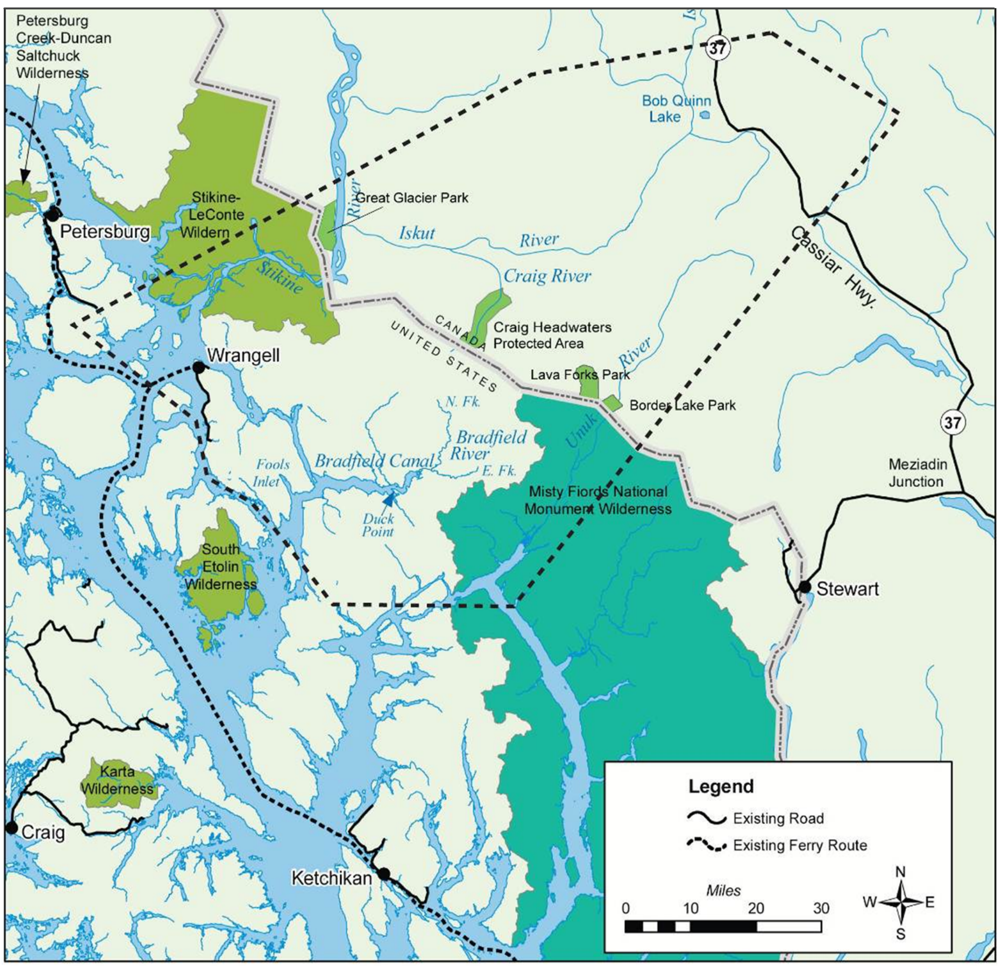

Figure 1-2. Southeast Alaska Mid-Region Access Project Study Area

The area is dominated by glacial activity, both past and present. Heavy glacial erosion has caused many deep river gorges. Several of the rivers within the study area are fed by glacial runoff and continually change course. The study area is subject to a maritime climate, resulting in heavy annual precipitation. Rainfall and snowfall exceeding 100 inches per year are common in the mountains. The potential transportation corridors of the study area are located primarily within the drainages of the Bradfield River, Craig River, Stikine River, Katete River, Iskut River, Unuk River, and Aaron Creek. The Stikine and Iskut River valleys are very wide with steep sidewalls, while the other drainages have much narrower glacial outwashes.

The Iskut and Stikine River valleys are rich in minerals. Historically, they have supported mining and logging operations, although both have been limited by the lack of transportation infrastructure. The area has been the subject of mineral exploration and extraction for many decades. Several of the existing mining and logging roads, both within the Stikine and Iskut River drainages and on Wrangell Island, could potentially be upgraded and altered as part of the MRA transportation corridor. However, the Stikine-LeConte Wilderness Area prohibits road building operations within the Stikine River drainage. Both Congress and the Canadian government would have to approve the activity before a transportation corridor could be pursued along the Stikine River.

1.3 Corridors and Stages

The three potential MRA transportation corridors to be studied are the Bradfield Canal Corridor, the Stikine River Corridor, and the Aaron Creek Corridor. The three proposed corridors are illustrated on Figure 1-1. Limitations in transportation funding may preclude development of the entire chosen corridor at one time. Conceptual plans for staged construction and temporary travel means would allow portions of the corridor to be completed and made functional as funding became available to complete the ultimate final access route. The following section presents all three alternatives, including the potential stages of development. Graphical representations of the alternatives and their associated stages are shown on Figures 1-3 through 1-12. Corridor terminus planning depended on the ferry terminal locations proposed in the Southeast Alaska Mid-Region Access Port and Ferry Terminal Technical Memorandum (Port and Ferry Memorandum).

1.3.1 Bradfield Canal Corridor

The Bradfield Canal Corridor, also known as the Bradfield Corridor with Deep-water Terminal, would include a road from the Cassiar Highway, down the Iskut River to near Bronson Creek, up the Craig River drainage to the Bradfield River, and down the Bradfield River to the Kapho Mountain deep-water conventional ferry terminal proposed near the head of the Bradfield Canal. To complete the connection to the city of Wrangell, a conventional ferry terminal would be built in Fools Inlet on Wrangell Island, and a road would be constructed from the Fools Inlet terminal to the Zimovia Highway.

The completion of the Bradfield Canal Corridor would result in an over-land transportation network connecting the Bradfield Canal to the continental highway system with maritime connections to Wrangell, Petersburg, and Coffman Cove. It is assumed that the ultimate alternative would be built in one stage. The stage would include the elements described below.

Stage 1 (Ultimate)

- The Eskay Creek Mine road would be rehabilitated from the Cassiar Highway southwest to where it diverges from the Iskut River, opposite Forrest Kerr Creek.
- A new road would be built from the existing mine road to the vicinity of the confluence of Bronson Creek and the Iskut River, then south up the Craig River drainage and across the International Boundary, through a tunnel to the North Fork of the Bradfield River, and down the Bradfield River drainage to a new conventional ferry terminal constructed close to Kapho Mountain on Bradfield Canal.
- A conventional ferry terminal would be built on the east side of Fools Inlet at one of several potential deep-water locations, along with a road connecting the terminal to the city of Wrangell. The road would include approximately 4 miles of new road from the ferry terminal north to Tongass National Forest Road (FR) 6270, an existing gravel road presently spanning the island. Also included is rehabilitation of FR 6270 to FR 6265, another existing gravel road on Wrangell Island, and rehabilitation of a portion of FR 6265 across Wrangell Island to the end of the paved Zimovia Highway.
- A shuttle ferry would be acquired and operated to run between the Kapho Mountain terminal and the Fools Inlet terminal. The Inter-Island Ferry Authority (IFA) and the Alaska Marine Highway System (AMHS) mainline ferries would continue to provide conventional ferry service in the vicinity, but would also call at the Fools Inlet terminal.
- Stage 1 (Ultimate) is illustrated on Figure 1-3.

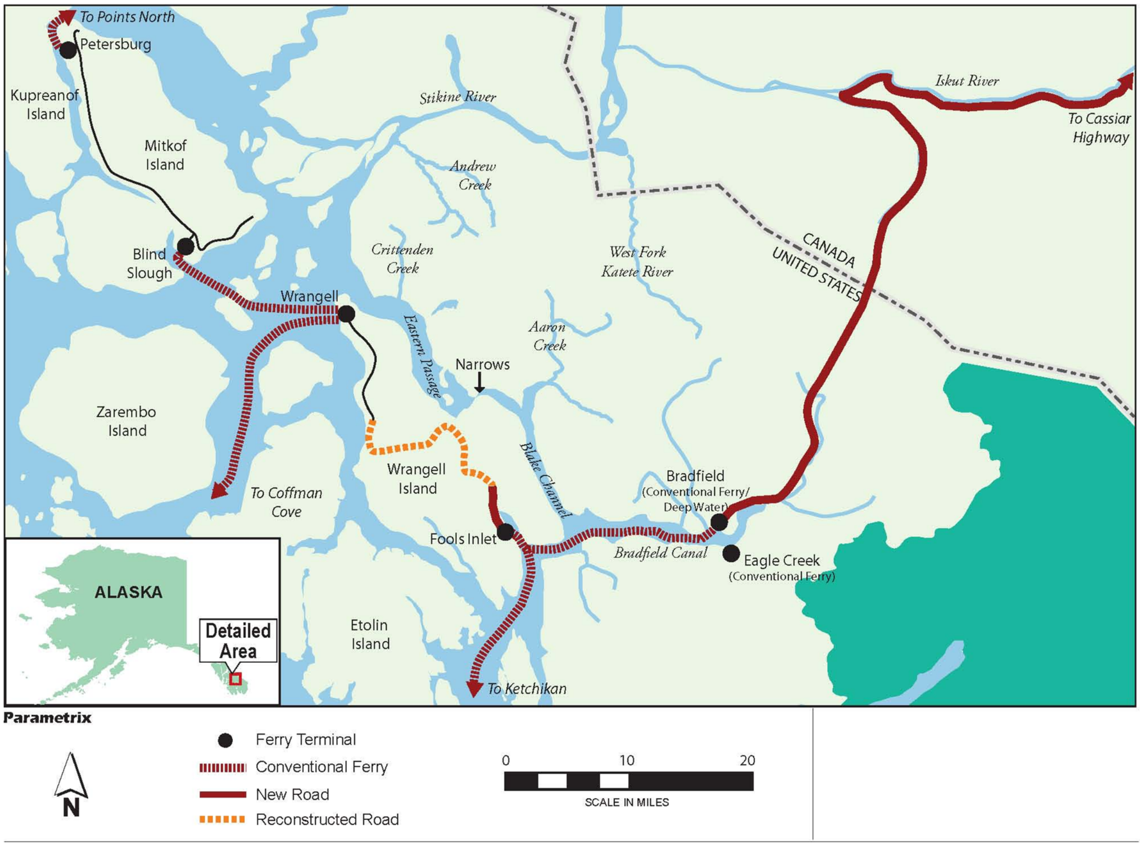

Figure 1-3. Bradfield Canal Corridor (Ultimate)

1.3.2 Stikine River Corridor

Located primarily within the Stikine River drainage, the Stikine River Corridor would connect the Cassiar Highway to the Stikine River via the Iskut River valley and then follow the south side of the Stikine River to where it meets the Eastern Passage. Included in this alternative would be additional road corridors down the Eastern Passage and across Dry Strait that would connect Wrangell and Petersburg, respectively, to the continental highway system. The Stikine River Corridor would include an air-cushion vehicle (ACV) ferry service as an interim measure between Wrangell and Petersburg and a new ACV terminal near the confluence of the Stikine and Iskut Rivers in B.C.

Development of this corridor would likely happen in five stages. The road portion of this route would not be viable unless access was obtained via the Stikine River Corridor under treaties and provisions of the Alaska National Interest Lands Conservation Act (ANILCA), as a portion of the road would be within the Stikine-LeConte Wilderness Area. The stages of the Stikine River Corridor are illustrated on Figures 1-4 through 1-8 and include the elements described below.

1.3.2.1 Stage 1

- The Eskay Creek Mine road would be rehabilitated from the Cassiar Highway southwest to where it diverges from the Iskut River, opposite Forrest Kerr Creek.
- A road would be built from the existing mine road to a suitable ACV ferry terminal site near the confluence of the Iskut and the Stikine Rivers. Three potential terminal sites (North Iskut, South Iskut, and Great Glacier) were identified in the Port and Ferry Memorandum. However, both the Great Glacier and the North Iskut terminals would require an Iskut River road crossing. Therefore, the South Iskut River terminal was used to develop all conceptual designs and cost estimates for this study.
- Three suitable ACV ferry terminals would be built, one at or near Wrangell Airport, one near the end of the Mitkof Highway on the southeastern tip of Mitkof Island, and one at the previously mentioned location on the Iskut River.
- Stage 1 is illustrated on Figure 1-4. It is assumed that these facilities would continue operation until a road was provided to replace the ACV ferry service. The IFA and the AMHS mainline ferries would continue to provide conventional ferry service in the vicinity.

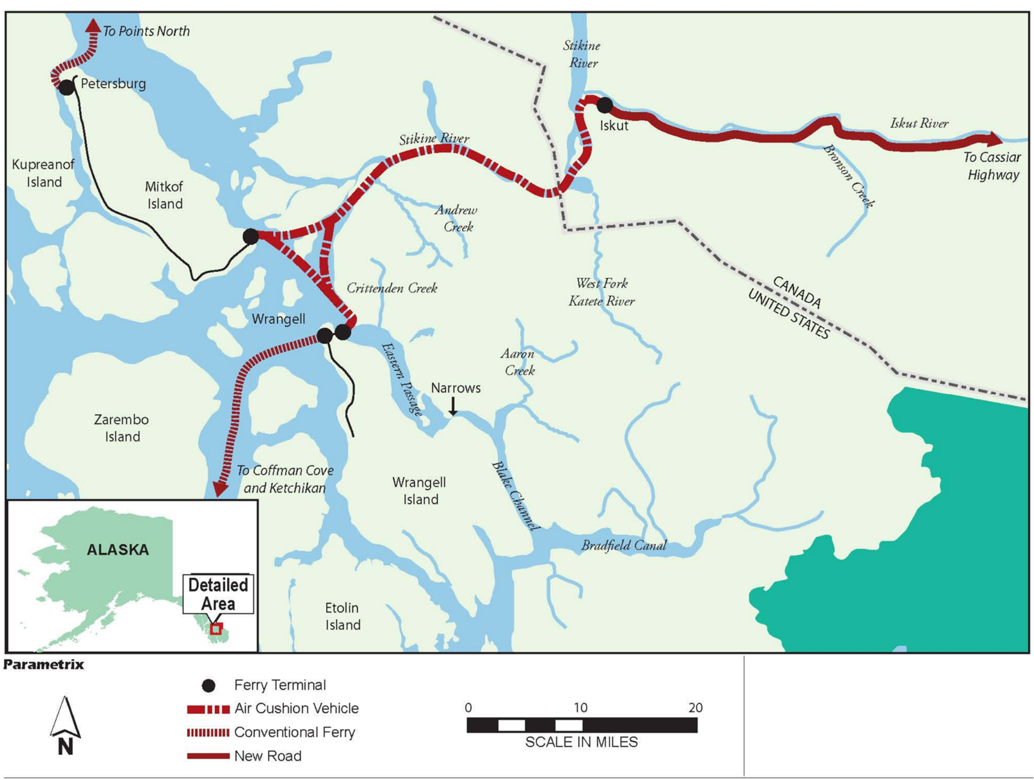

Figure 1-4. Stikine River Corridor, Stage 1

1.3.2.2 Stage 2

- The road from the South Iskut River ACV ferry terminal would be extended east along the south side of the Stikine River to a suitable conventional ferry terminal site across from the Wrangell Airport, near the mouth of Crittenden Creek on the east side of the Eastern Passage.
- Either an opposing conventional ferry terminal would be constructed on Wrangell Island, or upgrades would be made to the existing AMHS ferry terminal. The three potential Wrangell Island conventional ferry terminal options identified in the Port and Ferry Memorandum are Spur Road, Peninsula Street, and the existing AMHS terminal.
- A shuttle ferry would be acquired and placed in service to operate across Eastern Passage between the Crittenden Creek terminal and the Wrangell Island terminal.
- Stage 2 is illustrated on Figure 1-5. AMHS and IFA ferry service would continue operations in the vicinity.

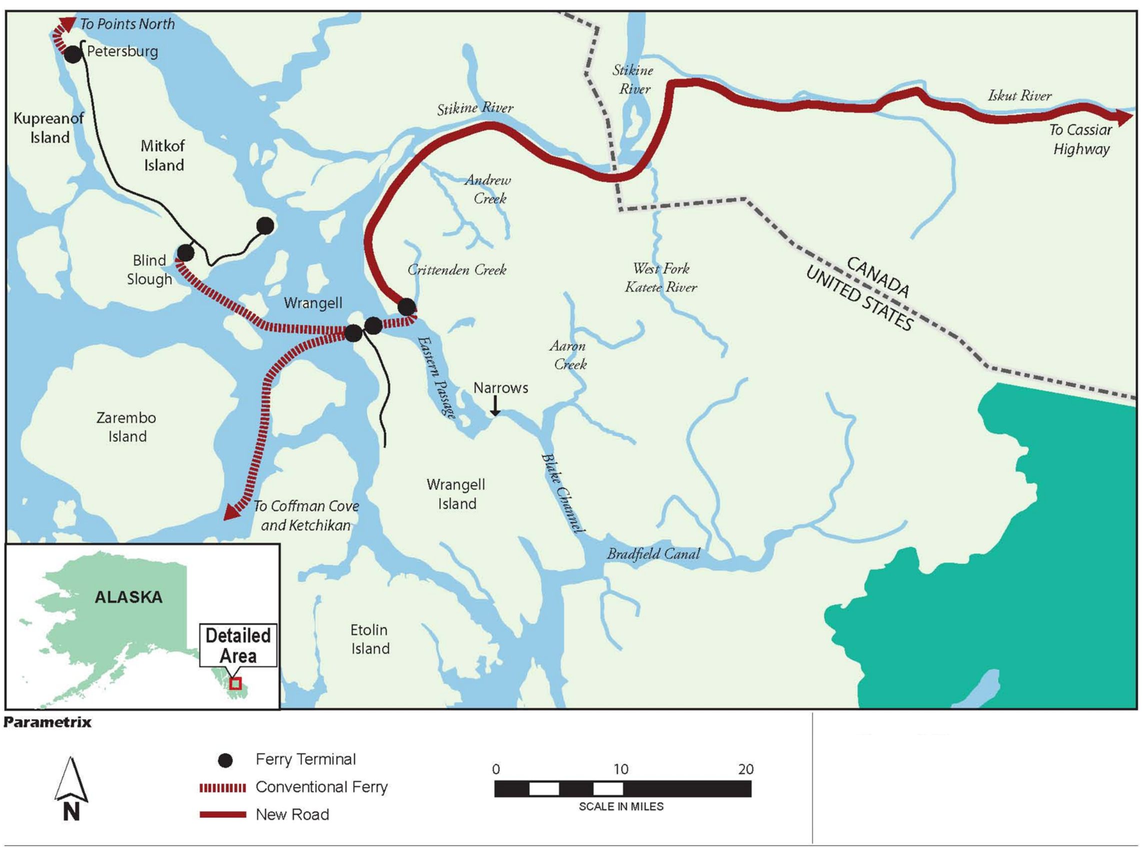

Figure 1-5. Stikine River Corridor, Stage 2

1.3.2.3 Stage 3

- A conventional ferry terminal would be constructed on the east side of Fools Inlet at one of several potential deep-water locations, along with a road connecting the terminal to the city of Wrangell. This stage would include approximately 4 miles of new road from the ferry terminal north to FR 6270. Also included would be rehabilitation of FR 6270 to FR 6265 and rehabilitation of a portion of FR 6265 across Wrangell Island to the end of the paved Zimovia Highway.
- Stage 3 is illustrated on Figure 1-6. IFA and AMHS conventional ferries would continue normal operation in the vicinity, but would also call at the Fools Inlet terminal.

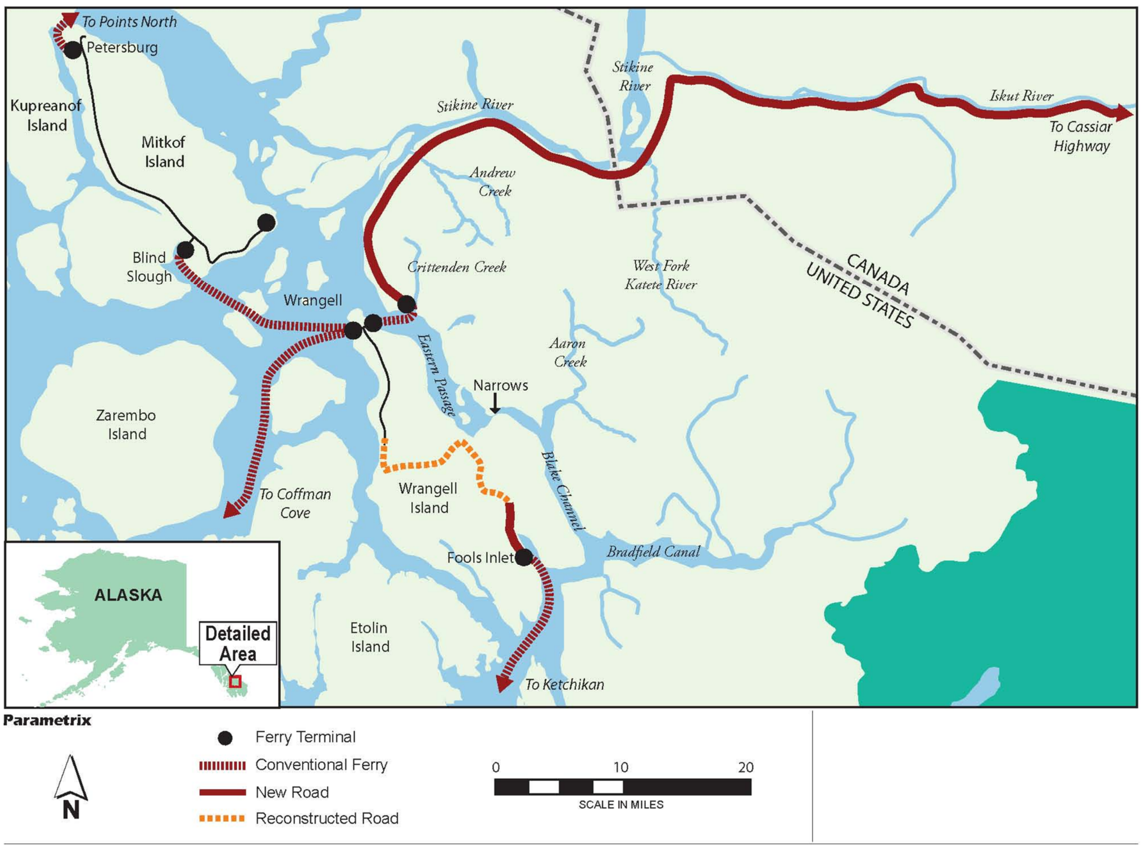

Figure 1-6. Stikine River Corridor, Stage 3

1.3.2.4 Stage 4

- A road would be constructed from the Stage 2 roadway near the mouth of Andrew Creek across the Stikine River, Farm and Dry Islands, and Dry Strait to the end of the Mitkof Highway on Mitkof Island.
- Stage 4 is illustrated on Figure 1-7. Conventional IFA and AMHS ferry services between Wrangell and both Blind Slough and Petersburg would cease with construction of this stage.

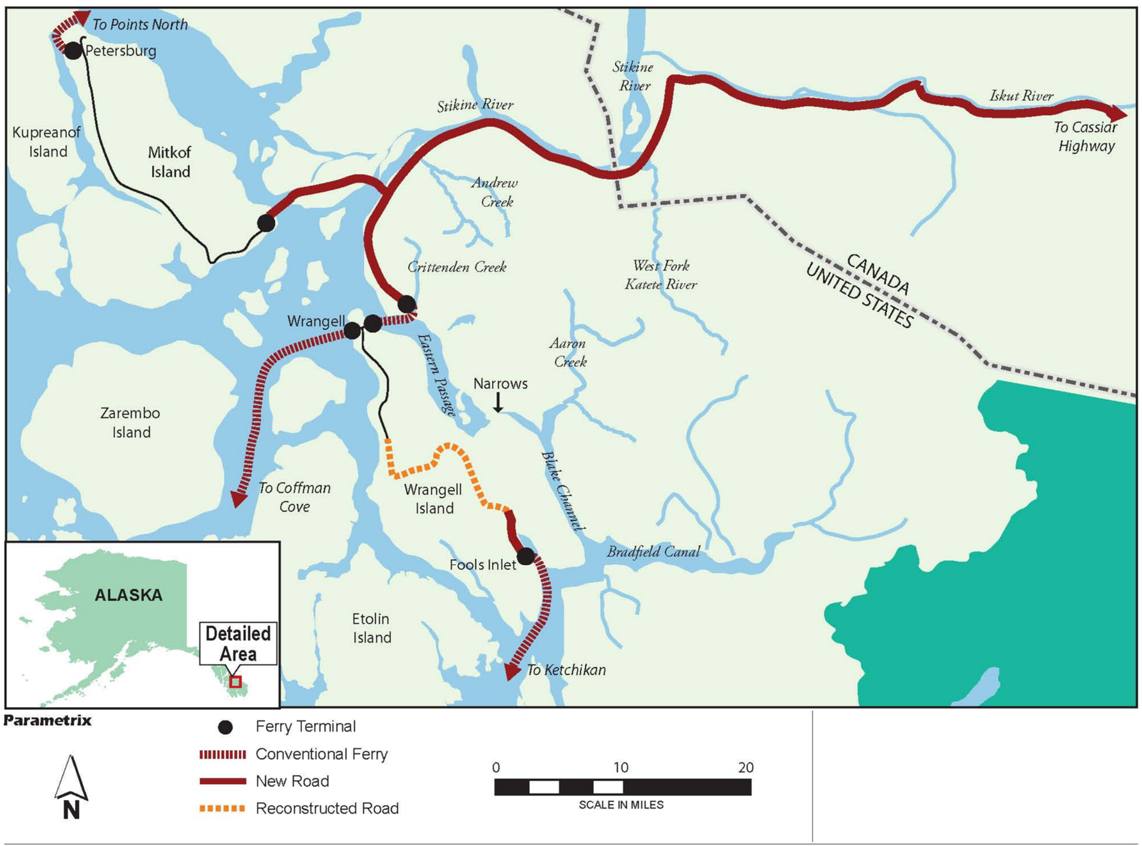

Figure 1-7. Stikine River Corridor, Stage 4

1.3.2.5 Stage 5 (Ultimate)

- The road would be extended from the mouth of Crittenden Creek on the east side of the Eastern Passage to Wrangell Island, including construction of a bridge across The Narrows.
- A road would be constructed from The Narrows to both Wrangell and the Fools Inlet proposed conventional ferry terminal. The road would include approximately 2 miles of new road from The Narrows to FR 6265 near the existing Log Transfer Station. Also included would be rehabilitation of FR 6265 between the Log Transfer Station and the intersection with FR 6270.
- Stage 5 (Ultimate) is illustrated on Figure 1-8. Stage 5 would complete the ultimate Stikine River Corridor, providing an over-land transportation network connecting Wrangell and Petersburg to the continental highway system, with maritime connections to Ketchikan and Coffman Cove.

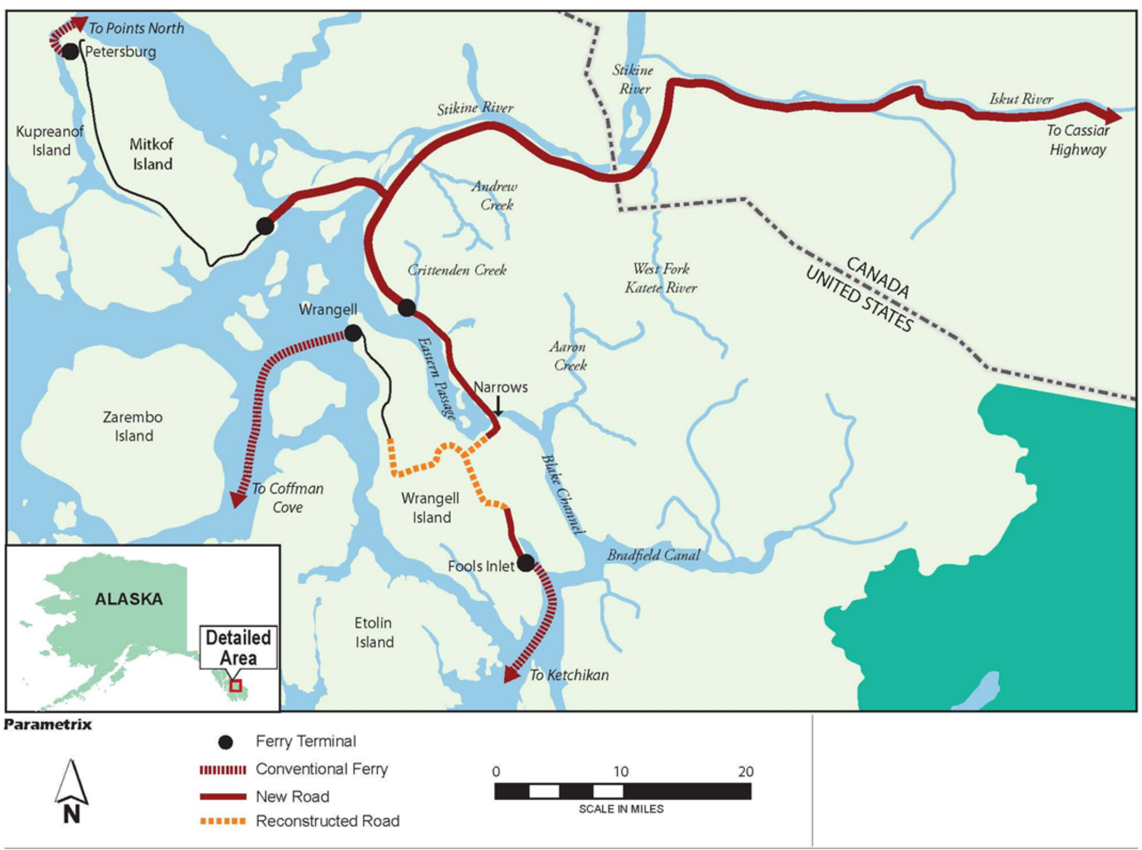

Figure 1-8. Stikine River Corridor, Stage 5 (Ultimate)

1.3.3 Aaron Creek Corridor

The Aaron Creek Corridor would begin at the Cassiar Highway and proceed down the Iskut River valley to the Stikine River, up the West Fork of the Katete River to the Aaron Creek drainage, and down Aaron Creek to the Eastern Passage. Both a pass and a tunnel option were investigated for crossing the mountains separating the Aaron Creek and Katete River drainages. A bridge across the Eastern Passage at The Narrows and a connection across Wrangell Island to the Zimovia Highway would complete the corridor. Like the Stikine River Corridor, this alternative anticipates that an ACV ferry service would provide for early traffic to Alaska from the road along the Iskut River in B.C. Development of this corridor would likely happen in four stages. The stages of the Aaron Creek Corridor are illustrated on Figures 1-9 through 1-12 and include the elements described below.

1.3.3.1 Stage 1

- Stage 1 is illustrated on Figure 1-9 and is identical to Stage 1 of the Stikine River Corridor described previously.

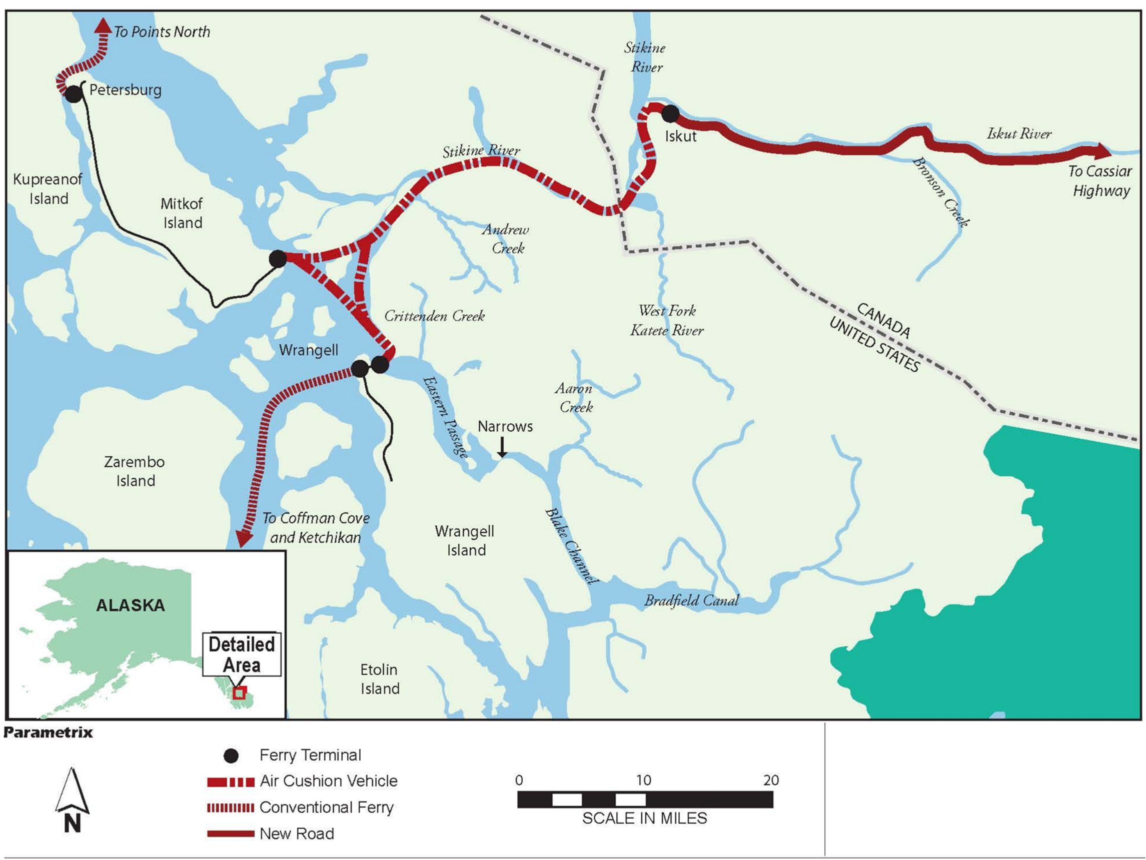

Figure 1-9. Aaron Creek Corridor, Stage 1

1.3.3.2 Stage 2 (Pass/Tunnel)

- A road would be built from the South Iskut River ACV ferry terminal, up the West Fork of the Katete River, across the West Fork Pass via a tunnel or a roadway pass, and down Aaron Creek to a new conventional ferry terminal at Berg Bay. Stage 2 (Pass/Tunnel) is illustrated on Figure 1-10.
- A conventional ferry terminal would be built at the existing Log Transfer Station just west of The Narrows in Blake Channel. Included would be rehabilitation of FR 6265 from the Log Transfer Station to the end of the Zimovia Highway.
- A shuttle ferry would be acquired and would operate between the Berg Bay terminal and the Log Transfer Station terminal. AMHS and IFA ferry service would continue operation in the vicinity.

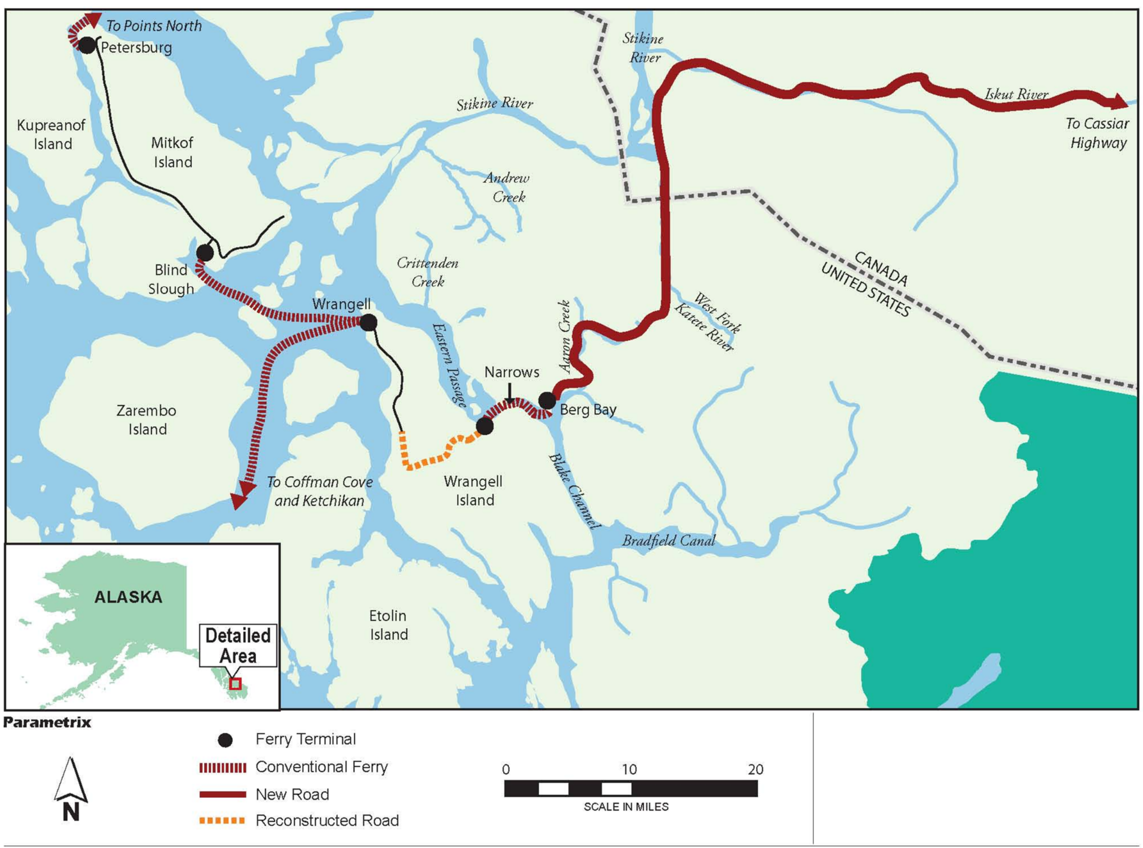

Figure 1-10. Aaron Creek Corridor, Stage 2

1.3.3.3 Stage 3

- A conventional ferry terminal would be built on the east side of Fools Inlet at one of several potential deep-water locations, along with a road to rehabilitated FR 6265. The road would include approximately 4 miles of new road from the ferry terminal north to FR 6270. Also included would be rehabilitation of FR 6270 to the intersection with FR 6265.
- Stage 3 is illustrated on Figure 1-11. IFA and AMHS conventional ferries would continue normal operation in the vicinity, but would also call at the Fools Inlet terminal.

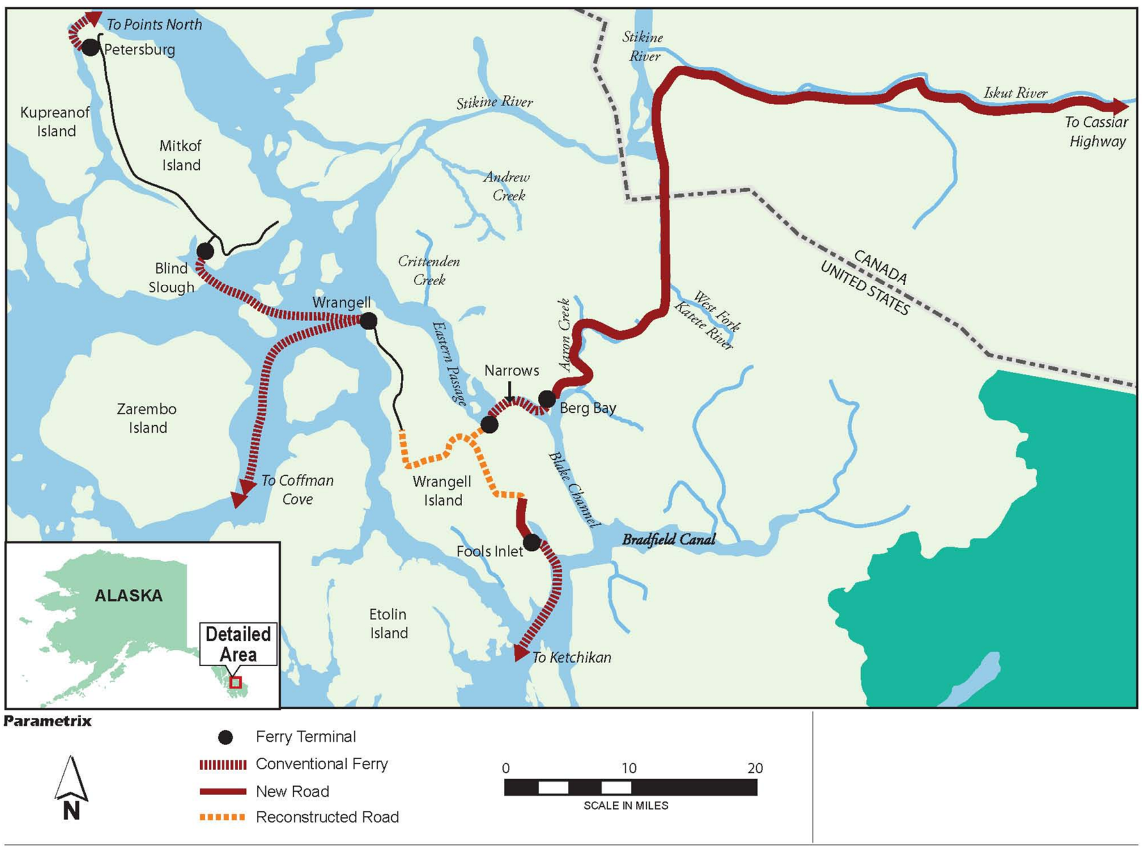

Figure 1-11. Aaron Creek Corridor, Stage 3

1.3.3.4 Stage 4 (Ultimate)

- A road would be built from the Berg Bay conventional ferry terminal to the Log Transfer Station conventional ferry terminal, including a bridge across The Narrows to Wrangell Island.
- Stage 4 (Ultimate) is illustrated on Figure 1-12. This stage represents the ultimate Aaron Creek Corridor and would complete an over-land transportation corridor from Wrangell to the continental highway system, with maritime connections to Ketchikan, Coffman Cove, and Petersburg.

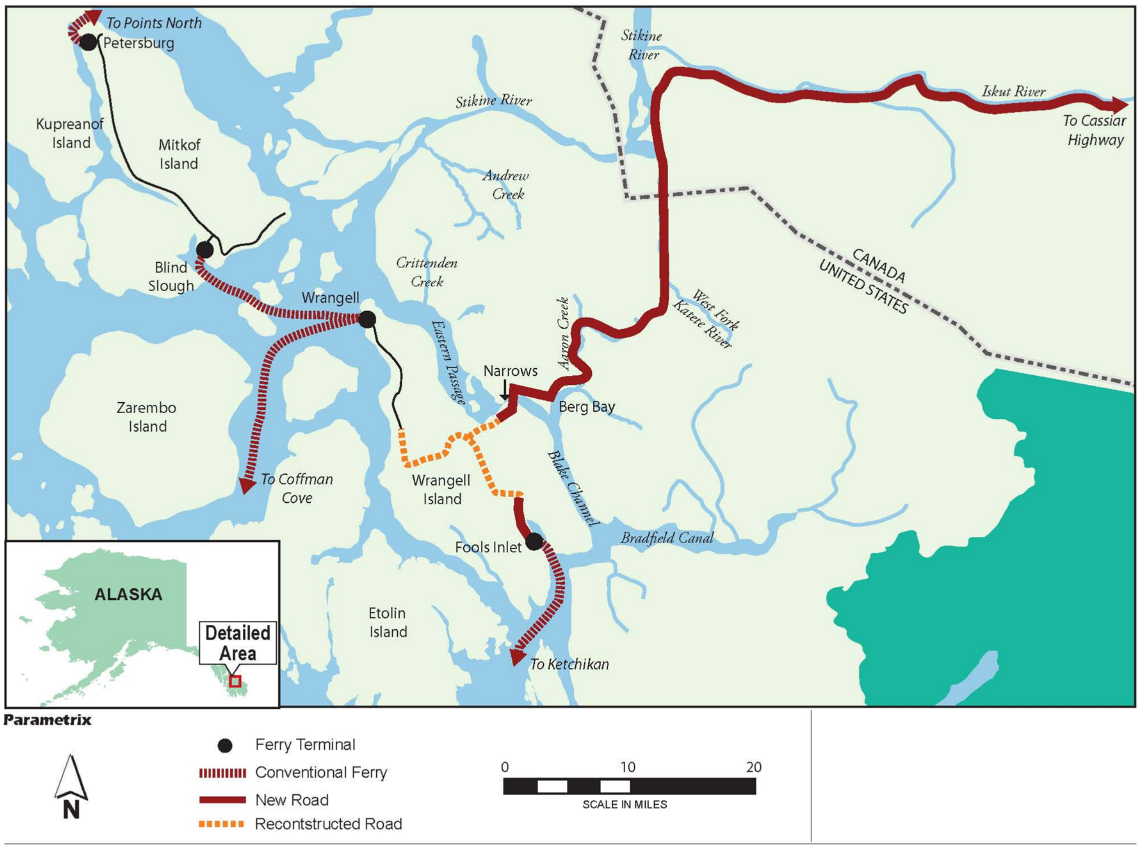

Figure 1-12. Aaron Creek Corridor, Stage 4 (Ultimate)

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2 CONCEPTUAL DESIGN METHODOLOGY

2.1 Introduction

A thorough investigation of previous MRA studies was undertaken to assist in the conceptual design process. Available information regarding the region's terrain, geology, and climate was collected and assessed, and study participants conducted field investigations. These early efforts were used to select preferred corridors and possible terminal locations. A detailed description of design methods and assumptions is included in the following sections.

2.2 Design Process

The focus of the Southeast Alaska MRA Project is on the Bradfield Canal, Stikine River, and Aaron Creek Corridors. The Bradfield Canal Corridor was studied in detail for the Bradfield River Road Study (Appendix B), and the Kapho Mountain conceptual alignment option proposed in that study was used for this project. As for the Stikine River and Aaron Creek Corridors, horizontal alignments were proposed as part of the Stikine River Highway Access Study (Appendix A). The conceptual design process began with plotting the general routes of the Stikine Highway Access Study on United States Geological Survey (USGS) topographic maps. The routes were broken into individual alignments based on the potential stages of each corridor's development. Depending on the alignment, the conceptual design was either for construction of a new roadway or rehabilitation of an existing road. Ground elevation information derived from USGS topographic maps was developed to design initial conceptual alignments and profiles. The topographic-map-derived ground contours were of a relatively low accuracy, with a 50-foot contour interval.

The new roadway construction alignments were revised to meet current design standards and to match the existing ground contours. Design profiles were created to fit the design standards and the existing ground. Cross sections were developed based on the new roadway typical sections. The placement of conceptual design features, notably bridges, large culverts, mechanically stabilized earth (MSE) walls, and rock revetment walls, were based on the USGS topographic maps and existing ground contours. Due to the low accuracy of ground elevation information at this point in the design, the conceptual alignments and profiles were modified until the grading quantities were similar in magnitude to those of the Bradfield River Road Study.

The roadway alignments following existing roads were revised so that the horizontal alignments matched the current layout of the roads, as shown on USGS topographic maps. The horizontal alignments were checked against current design standards and were modified to correct any deficient horizontal curves. The assumption used for the design of these alignments was that the existing roads would be rehabilitated and paved, except where the alignment had to be modified to correct horizontal deficiencies. Under this assumption, the existing roadway prism, including bridges and culverts, would not be substantially altered as part of the road's rehabilitation. Therefore, design profiles and cross sections were not developed for these alignments.

Full conceptual designs for any alignment across the International Boundary in B.C. were outside the scope of this project; thus, only horizontal alignments were designed for these alignments. Design profiles and cross sections were not developed for these alignments, but they were, however, included in the corridor cost estimates of this study.

In September 2007, a preliminary aerial review of the conceptual alignments was conducted by floatplane. The conceptual alignments were subsequently modified to avoid undesirable terrain and any potential design conflict, such as muskeg deposits, identified during the field review. High-resolution aerial photographs of the conceptual alignments were obtained in August 2008. Slight modifications to the conceptual designs, such as shifting culverts to match actual drainage channels, were subsequently completed.

The aerial photographs were used to develop new ground elevation information, resulting in existing ground contours with a 5-foot contour interval. With the much higher level of accuracy provided by the new ground survey, all aspects of the previous conceptual designs (horizontal alignment, design profile, bridges, MSE walls, etc.) could be revised for a better match with the existing ground. The new survey did not, however, accurately depict the existing roads to be rehabilitated. The earlier assumptions about the existing road alignments were thus retained, and design profiles and cross sections were not developed.

The modifications resulting from the new survey information completed the conceptual design process for the alignments contained in the Stikine River and Aaron Creek Corridors. Appendix C has detailed descriptions and conceptual design plans for these alignments. The conceptual plans for the alignments of the Bradfield Canal Corridor can be found in Appendix B. The conceptual alignments and their associated design features, such as bridges, shown in Appendices B and C should be considered approximate. The conceptual designs presented are intended for corridor development only and would have to be refined based on detailed studies once an appropriate transportation corridor was chosen.

2.3 Design Assumptions

Initially, the full build-out typical section for a two-lane paved roadway configuration was developed for cost estimating. A one-lane gravel roadway typical section (including turnouts) was eventually added to the assessment, as funding for the MRA transportation corridor could be limited. To provide further options, a phased construction typical section was also added, with a one-lane gravel roadway built on a subgrade wide enough to support potential future construction of the full two-lane paved section.

Design standards were developed to guide the design of the typical sections, alignments, and profiles. The design standards shown on the following pages were derived from A Policy on Geometric Design of Highways and Streets by the American Association of State Highway and Transportation Officials (AASHTO), and from the Bradfield River Road Study (Appendix B). The standards were based on the proposed roadway being classified as a rural minor collector.

Two-Lane Paved Roadway

- Average Daily Traffic (ADT): below 400 vehicles
- Design Speed: 35 miles per hour (mph)
- Minimum Roadway Width: Two 10-foot lanes, bounded by two 2-foot shoulders
- Cross Slope: 2% crown
- Maximum Grade: 10%; Desirable Maximum Grade: 8%
- Pavement Design: 4 inches asphalt surfacing; 5 inches aggregate base; 8 inches select material
- Maximum Superelevation: 6%
- Minimum Horizontal Curvature: 380 feet

One-Lane Gravel Roadway

- ADT: below 400 vehicles
- Design Speed: 35 mph
- Minimum Roadway Width: One 10-foot lane, bounded by two 2-foot shoulders
- Cross Slope: 2%
- Maximum Grade: 10%; Desirable Maximum Grade: 8%
- Pavement Design: 4 inches aggregate surfacing; 8 inches select material
- Maximum Superelevation: 6%

- Minimum Horizontal Curvature: 380 feet
- One turnout every 1,000 feet
- Turnouts: 200 feet long, 10 feet wide

Phased Construction: Phase 1

- ADT: below 400 vehicles
- Design Speed: 35 mph
- Minimum Roadway Width: One 10-foot lane, bounded by two 2-foot shoulders
- Minimum Subgrade Width: For two 10-foot lanes, bounded by two 2-foot shoulders
- Cross Slope: 2% crown
- Maximum Grade: 10%; Desirable Maximum Grade: 8%
- Pavement Design: 4 inches aggregate surfacing; 8 inches select material
- Maximum Superelevation: 6%
- Minimum Horizontal Curvature: 380 feet
- One turnout every 1,000 feet
- Turnouts: 200 feet long, 10 feet wide

Phased Construction: Phase 2

- ADT: below 400 vehicles
- Design Speed: 35 mph
- Minimum Roadway Width: Two 10-foot lanes, bounded by two 2-foot shoulders
- Cross Slope: 2% crown
- Maximum Grade: 10%; Desirable Maximum Grade: 8%
- Pavement Design: 4 inches asphalt surfacing; 5 inches aggregate base; 8 inches select material
- Maximum Superelevation: 6%
- Minimum Horizontal Curvature: 380 feet

Roadway widths shown above do not include any widening situations, such as for curves or guardrail. A 10% increase in surfacing quantities was built into the cost estimates to account for curve and guardrail widening. The roadway typical sections for each alignment are based on these standards and are shown in Appendix C.

2.4 Field Review

In September 2007, an aerial field review of the conceptual alignments was conducted by floatplane. Personnel from FHWA, DOT&PF, and Robert Peccia and Associates (RPA) participated in the aerial reconnaissance of the Unuk River, Iskut River, Bradfield River, Craig River, Stikine River, Katete River, and Aaron Creek drainages. Problematic terrain the conceptual alignments would have to avoid was identified to be incorporated into the designs. Digital photos taken from the floatplane during the review were embedded with GPS coordinates. Using the embedded coordinates, the photos were georeferenced to the design files and Google Earth™. The placement of conceptual features, such as bridges, was assessed using the photos.

2.5 Color Orthophotography

After being modified based on the 2007 field review observations, the conceptual alignments were provided to an aerial mapping company, Aero-Metric, Inc. High-resolution color orthophotography for the Stikine River and Aaron Creek Corridors was acquired in August 2008. The photographs were the same resolution as the aerial photos of the Bradfield River Road Study (Appendix B). The scale and accuracy of the orthophotography allowed for the extraction of existing ground information. The aerial photographs are shown with the conceptual alignments on the plan and profile sheets of Appendix C.

2.6 Ground Survey Assumptions

The initial conceptual design was developed using existing ground information derived from USGS topographic maps. The ground survey based on the USGS maps was relatively inaccurate, with a contour interval of 50 feet. Existing ground information derived from color orthophotography resulted in ground survey data with a much higher level of accuracy: a 5-foot contour interval. The Bradfield River Road Study (Appendix B) used light detection and ranging (LIDAR) mapping to produce a ground survey with an existing ground contour interval of 3 feet. As a result, the conceptual designs completed for the Stikine River and Aaron Creek Corridors were produced to the same relative level of accuracy as for the Bradfield Canal Corridor. The conceptual designs and corresponding cost estimates can, thus, be directly compared to one another.

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3 CONCEPTUAL ALIGNMENTS

The three potential MRA transportation corridors were divided into the following conceptual roadway alignments to facilitate design and cost estimating: the Iskut River Alignment, the Bradfield Canal Alignment, the South Stikine River Alignment, the Aaron Creek Pass Alignment, the Aaron Creek Tunnel Alignment, the Limb Island Alignment, the Wrangell Island Alignment, and the Fools Inlet Alignment. The alignments were further divided into segments to correlate with development stages for each transportation corridor. These conceptual alignments and their respective segments are shown on Figure 3-1. The conceptual alignments are briefly discussed on the following pages. Appendix C contains detailed descriptions and conceptual design plans for each alignment. The North Stikine River and Unuk River Alignments are briefly discussed below, but they are not assessed in detail in this memorandum.

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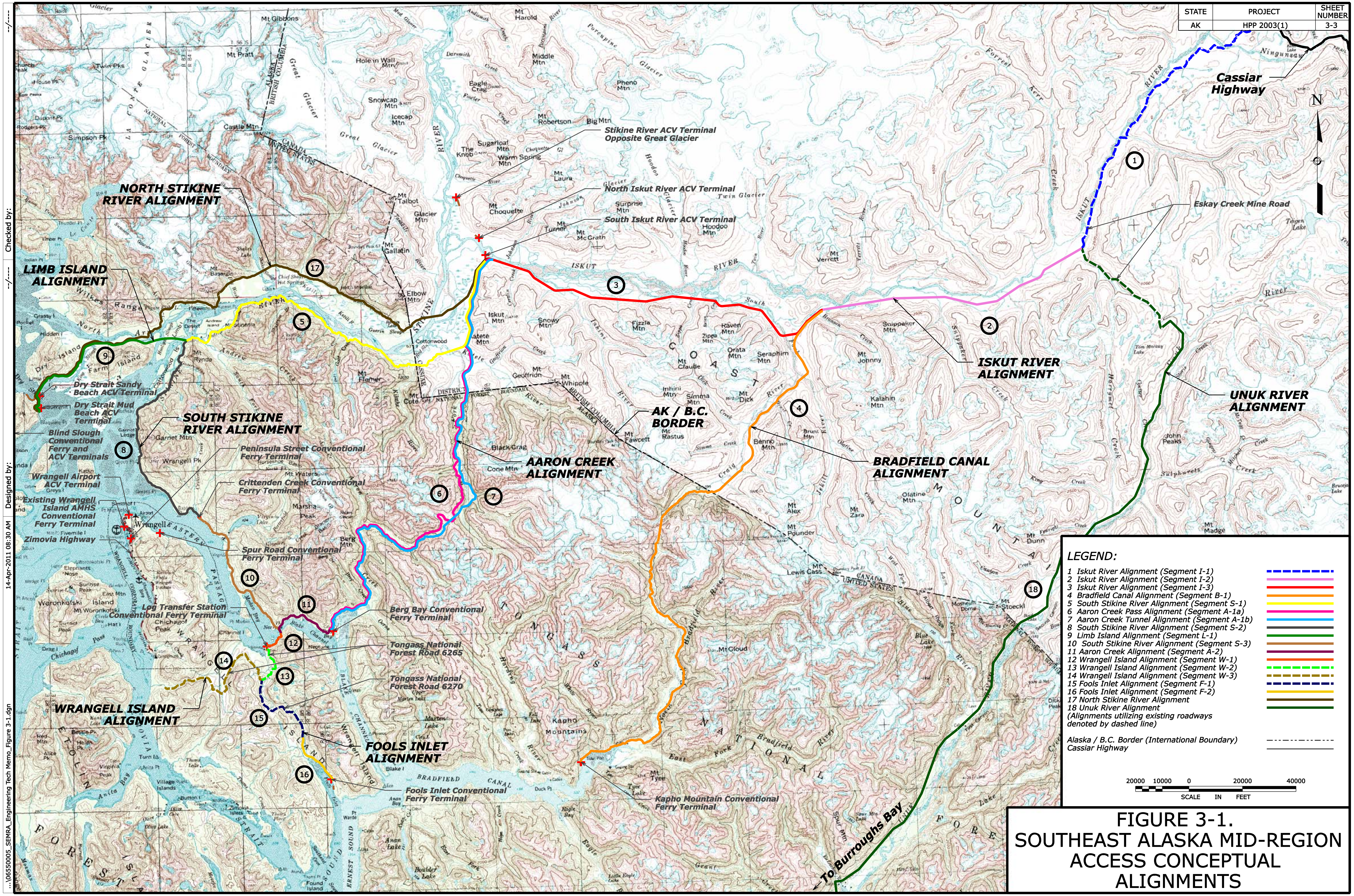

FIGURE 3-1.
SOUTHEAST ALASKA MID-REGION ACCESS CONCEPTUAL ALIGNMENTS

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3.1 Iskut River Alignment

The Iskut River Alignment would begin at the Cassiar Highway near Bob Quinn Lake and would follow the Eskay Creek Mine road along the Iskut River for approximately 24 miles. The two-lane gravel road would have to be rehabilitated and paved to meet design standards. The alignment would depart from the mining road opposite Forest Kerr Creek and would continue down the south side of the Iskut River valley (Figure 3-2) to near Bronson Creek. The alignment would temporarily depart the Iskut River to cross Bronson Creek and the Craig River. After returning to the Iskut River, the alignment would continue along the south side of river to the South Iskut River ACV ferry terminal proposed near the confluence of the Iskut and Stikine Rivers. The alignment would end at the ACV terminal, where it would encounter the beginning of the South Stikine River or Aaron Creek Pass/Tunnel Alignments. The alignment would be divided into three segments due to the staged development of the corridors. The rehabilitation portion of the existing road from the Cassiar Highway to opposite Forest Kerr Creek is known as Segment I-1. Segment I-2 refers to the section from Forrest Kerr Creek to near Bronson Creek. The section between Bronson Creek and the proposed Iskut River ACV ferry terminal is the remaining segment, Segment I-3.

Figure 3-2. Iskut River Valley

3.2 Unuk River Alignment

The Unuk River Corridor was a previously suggested MRA transportation corridor that would connect Southeast Alaska to the continental highway system. Due to environmental concerns, the Unuk River Corridor was deemed impractical. The alignment using the Unuk River Corridor is discussed below and shown on Figure 3-1. It is, however, for information only and is not included in any costing comparisons.

The Unuk River Alignment would begin at the Cassiar Highway in B.C. and follow the Eskay Creek Mine road down the Iskut River to opposite Forest Kerr Creek. The alignment would follow the existing road as it moves along a tributary of the Iskut River southeast toward the Unuk River drainage (Figure 3-3). Nearing the mine, the alignment would drop down into the Unuk River drainage and begin following the river southwest. The alignment would continue along the west side of the Unuk River past the International Boundary to a proposed conventional ferry terminal within Burroughs Bay in Alaska.

Figure 3-3. Unuk River Valley

3.3 Bradfield Canal Alignment

The Bradfield River Road Study (Appendix B) proposed three potential Bradfield Canal Alignments. The Kapho Mountain Option is shown on Figure 3-1, and it is the alignment option considered in this study. The Bradfield Canal Alignment would begin near Bronson Creek in B.C. and parallel the South Fork of the Craig River southwest to the International Boundary. The alignment would continue along the Craig River in Alaska to a pass separating the Craig River and Bradfield River. An 8,200-foot tunnel would take the alignment through the pass and into the Bradfield River drainage. The alignment would then follow the North Fork of the Bradfield River to the southwest until it entered the Bradfield Canal tidal flats (Figure 3-4). After crossing the North Fork, the alignment would traverse the steep slopes of Kapho Mountain before reaching the conceptual Kapho Mountain conventional ferry terminal. Refer to Appendix B for further details on this alignment. The alignment would be completed in one segment, Segment B-1.

Figure 3-4. Bradfield River Delta near Tyee Creek

3.4 South Stikine River Alignment

The South Stikine River Alignment would begin in B.C. at the South Iskut River ACV ferry terminal proposed near the confluence of the Iskut and Stikine Rivers. The alignment would cross the Katete River and parallel the Stikine River along the south side of the valley (Figure 3-5). The alignment would continue west along the south side of the Stikine River until it meets the Eastern Passage. Upon reaching the Eastern Passage, the alignment would turn to the southwest and begin following the Eastern Passage shoreline around Garnet Mountain. Once around Garnet Mountain, the alignment would continue along the Eastern Passage to the proposed conventional ferry terminal near the mouth of Crittenden Creek. From there, the alignment would continue to parallel the coastline of both the Eastern Passage and Madan Bay to The Narrows, where a large bridge would take the alignment across the Eastern Passage to Wrangell Island and the Wrangell Island Alignment. The alignment would be broken into three segments due to the staged development of the corridors. Segment S-1 refers to the section between the South Iskut ACV terminal and Andrew Creek. The section between Andrew Creek, where the Limb Island Alignment would meet the South Stikine River Alignment, and the Crittenden Creek terminal is known as Segment S-2. The remaining section between Crittenden Creek and The Narrows is Segment S-1.

Figure 3-5. South Side of the Stikine River Valley

3.5 North Stikine River Alignment

The North Stikine River Alignment was originally going to be included in this study as an alternate to the South Stikine River Alignment for the Stikine River Corridor. Preliminary design indicated this alignment would, however, be extremely costly to construct. An alignment along the north side of the Stikine River (Figure 3-6) would require numerous complex bridges and substantial subexcavation to mitigate muskeg areas. Moving the alignment to the steep side slopes of the valley would result in costly bench cuts and MSE walls. The design was carried forward until the September 2007 field review, but was discontinued after the field review revealed worse conditions than anticipated. The alignment is presented for information only and is not included in any costing comparisons.

The North Stikine River Alignment would begin at the South Iskut River ACV ferry terminal, cross the Stikine River, and follow the north side of the valley west to the North Arm. The alignment would then cross the North Arm and traverse both Farm Island and Dry Island to Dry Strait. A large bridge would take the alignment across Dry Strait to Mitkof Island and the end of the Mitkof Highway. The North Stikine River Alignment is shown on Figure 3-1.

Figure 3-6. North Side of the Stikine River Valley

3.6 Aaron Creek Pass Alignment

The Aaron Creek Pass Alignment would begin at the South Iskut River ACV ferry terminal proposed near the confluence of the Iskut and Stikine Rivers. From the ACV terminal, the alignment would follow the West Fork of the Katete River south to the West Fork Pass, which separates the West Fork from an unnamed tributary of Aaron Creek. The alignment would traverse up and over the mountain pass. Once beyond the pass, the alignment would drop into the unnamed drainage and follow the creek southwest to its convergence with Aaron Creek. The alignment would cross Aaron Creek, turn south, and continue to the Aaron Creek delta (Figure 3-7) and Blake Channel. After reaching Blake Channel, the alignment would turn southwest and parallel Blake Channel to the conceptual Berg Bay conventional ferry terminal. The alignment would then follow Blake Channel from the proposed terminal to The Narrows, cross The Narrows via a large bridge, and connect with the Wrangell Island Alignment. The alignment would be broken into two segments for staged development. Segment A-1a refers to the section from the South Iskut ACV terminal, over the pass, and down to the Berg Bay terminal. The remainder of the alignment is known as Segment A-2.

Figure 3-7. Aaron Creek Delta

3.7 Aaron Creek Tunnel Alignment

The Aaron Creek Tunnel Alignment would begin at the South Iskut River ACV ferry terminal and follow the same course along the West Fork of the Katete River (Figure 3-8) as the Aaron Creek Pass Alignment. The tunnel alignment would, however, travel through the West Fork Pass by means of a 7,400-foot tunnel. Once through the tunnel, the alignment would drop into the Aaron Creek drainage, meet up with the Aaron Creek Pass Alignment, and continue down the drainage to the Berg Bay conventional ferry terminal. From the proposed terminal, the alignment would follow Blake Channel to The Narrows, cross the channel via a large bridge, and connect to the Wrangell Island Alignment. The alignment would be broken into two segments for staged development. Segment A-1b refers to the section from the South Iskut ACV terminal, through the tunnel, and down to the Berg Bay terminal. The remainder of the alignment, Segment A-2, is identical to the Aaron Creek Pass Alignment and refers to the section between the Berg Bay terminal and The Narrows.

Figure 3-8. West Fork of the Katete River

3.8 Limb Island Alignment

The Limb Island Alignment would connect Mitkof Island and the community of Petersburg with the South Stikine River Alignment via a Stikine River crossing at Limb Island (Figure 3-9). The alignment would begin along the south side of the Stikine River near Andrew Creek and cross the river to Limb Island. The alignment would traverse Limb Island and reach Hooligan Slough, where another bridge would be needed to take the alignment to the north end of Farm Island. After paralleling the North Arm to the west across Farm Island, the alignment would cross King Slough to the south end of Dry Island. Traversing the slopes along Dry Island would bring the alignment to Dry Strait, where a large bridge would take the alignment across the strait to Mitkof Island. A short section of alignment would be needed on Mitkof Island from Dry Strait to the end of the Mitkof Highway. The alignment would be completed in one segment, Segment L-1.

Figure 3-9. Stikine River near Limb Island

3.9 Wrangell Island Alignment

The Wrangell Island Alignment would begin on the southeast side of The Narrows. The alignment would follow the Eastern Passage shoreline southwest to the proposed conventional ferry terminal at the existing Log Transfer Station. The section of roadway between The Narrows and the Log Transfer Station terminal would be new construction. The alignment would then follow the existing FR 6265 (Figure 3-10) west across Wrangell Island to the intersection with FR 6267 and the Zimovia Highway. FR 6265 is an existing two-lane gravel road and would have to be rehabilitated and paved. The alignment would connect the community of Wrangell to The Narrows, where a bridge could connect the island to either the Stikine River Corridor or the Aaron Creek Corridor.

The alignment would be broken into three segments due to the staged development of the corridors. The section of new roadway extending between The Narrows and the Log Transfer Station terminal is known as Segment W-1. Segment W-2 is the section of rehabilitated FR 6265 between the Log Transfer Station terminal and the intersection with the Fools Inlet Alignment. The remaining section of FR 6265 to the Zimovia Highway is known as Segment W-3.

Figure 3-10. Tongass National Forest Road 6265

3.10 Fools Inlet Alignment

The Fools Inlet Alignment would begin at the intersection of FR 6265 and FR 6270 and head south toward Fools Inlet (Figure 3-11). The alignment would follow FR 6270 southeast across Wrangell Island to near Fools Inlet. FR 6270 is a two-lane gravel road and would have to be rehabilitated and paved. Approximately 1 mile from Fools Inlet, FR 6270 turns to the southwest. At this location, the alignment would leave FR 6270 and follow an unnamed drainage to the southeast. After crossing the unnamed drainage, the alignment would parallel the southeast shoreline of Fools Inlet before reaching the proposed Fools Inlet conventional ferry terminal site. The alignment would be broken into two segments due to staged development of the corridors. The section that follows FR 6270 from the intersection with FR 6265 to within 1 mile of Fools Inlet is known as Segment F-1.The remaining section of new roadway between FR 6270 and the Fools Inlet terminal is known as Segment F-2.

Figure 3-11. Fools Inlet

4 COST ESTIMATES

4.1 Cost Estimate Organization

The three potential MRA transportation corridors (Bradfield Canal, Stikine River, and Aaron Creek) were divided into individual alignments and segments during the conceptual design process. The alignment segments correlated to the portion of roadway to be built with each construction stage. To increase usability, a separate cost estimate (using the assumptions described below) was completed for each segment of each alignment. The cost of each stage of construction for the three MRA corridors was established by combining the appropriate segment costs. Each alignment's stage estimates were then combined to determine the ultimate estimated cost of each potential MRA corridor.

Four different typical sections were applied to the proposed alignments:

1. Two-lane paved roadway
2. One-lane gravel roadway
3. Phased construction
   a. Phase 1: one-lane gravel roadway on two-lane subgrade
   b. Phase 2: two-lane paved roadway

Cost estimates were developed for each segment, stage, and transportation corridor. The cost estimates and all associated estimate support can be found in Appendix D. Cost estimate summary tables comparing each stage and corridor have been provided in this report for each roadway configuration.

4.2 Cost Divisions

The order of magnitude cost estimates were structured similar to the methods used to develop the Bradfield River Road Study (Appendix B). The estimates were divided into ten basic divisions of construction consisting of the following bid items:

1.0 Project Requirements

2.0 Earthwork

- 2.1 Erosion Control
- 2.2 Clearing and Grubbing
- 2.3 Roadway Excavation including Haul
- 2.4 Subexcavation

3.0 Utilities and Relocation
- 3.1 Utilities (Power)
- 3.2 Right-of-way and Building Relocation

4.0 Bases and Pavement
- 4.1 4” Asphalt Concrete Pavement
- 4.2 5” Crushed Base
- 4.3 8” Select Material

5.0 Tunnel (including Lighting and Surfacing)

6.0 Structures
- 6.1 Bridge Structures – Low Complexity
- 6.2 Bridge Structures – Medium Complexity
- 6.3 Bridge Structures – High Complexity
- 6.4 Culverts Greater than 10’ in Diameter
- 6.5 Fish Passage Culverts
- 6.6 Revetment Walls (Class V Riprap)
- 6.7 MSE Walls

7.0 Incidental Construction
- 7.1 Wetland Mitigation
- 7.2 Cultural Resource Mitigation
- 7.3 Drainage
- 7.4 Stormwater Management Ponds
- 7.5 Seeding and Landscaping
- 7.6 Staging Area Rehabilitation

8.0 Roadway Finishes
- 8.1 Guard Rail
- 8.2 Roadway Signing
- 8.3 Pavement Striping and Markings

9.0 Port Development
- 9.1 Conventional Ferry Terminal
- 9.2 ACV Ferry Terminal

10.0 Construction Camps

The port development and construction camp cost divisions (9.0 and 10.0) were the only ones not included in the Bradfield River Road Study estimates. Port development is considered essential for completion of the transportation corridors of this study. Contractor camps would be needed for construction due to the remote nature of the study area. The right-of-way cost division (3.2) was only used for the Bradfield Canal Alignment. All other alignments are located entirely within the Tongass National Forest. The estimate spreadsheets and cost division summaries are given in Appendix D.

4.3 Cost Estimate Methodology

The methodology for estimating quantities established in the Bradfield River Road Study (Appendix B) was used for this study. For items that could be calculated, the quantities were either measured from cross sections or topographic maps, or they were generated using GEOPAK™ civil design software. Those quantities were then multiplied by the bid item's average unit price to determine the total estimated cost. Bid items that could not be quantified in the conceptual design process were estimated either by a percentage of the total construction cost or by a per-mile cost.

The average unit prices, percentages, and per-mile costs were initially developed by evaluating bid tabulations from recent FHWA-WFLHD projects. Three different projects for Coffman Cove Road on Prince of Wales Island were the most recent and relevant FHWA roadways constructed within Southeast Alaska. However, these projects only represented project costs in one part of Southeast Alaska, consisted only of reconstructing existing roadways, and did not contain costs for work camps or port development. As a result, it was necessary to find additional pricing support for the cost estimates, preferably projects with new roadway construction, work camps, and port development.

The Southeast Alaska Mid-Region Access Unit Cost Technical Memorandum (Unit Cost Memorandum) involved an extended survey of available bid tabulation information in Alaska to identify additional projects that could be used to refine the pricing information. The Unit Cost Memorandum made new recommendations for the average unit prices, percentages, and per-mile costs anticipated. Those recommendations were incorporated into the cost estimates of this memorandum. Refer to Appendix D for all recommended prices. The following FHWA and DOT&PF projects were included in the Unit Cost Memorandum:

DOT&PF Projects/Reports

- Independent Contractor's Estimate, Zones 1-3, Juneau Access Improvements 2009 FFY Cost Report, Appendix D, 2009.
- AK DOT&PF Engineer's Estimate, Zones 1-5, Juneau Access Improvements 2009 FFY Cost Report, Appendix B, 2009.
- Unit Price Analysis, Juneau Access Improvements Financial Plan, 2007 Annual Update, Attachment B, Updated Engineer's Estimate – Unit Price Analysis, 2007.

- Unit Price Analysis, Juneau Access Improvements Final Environmental Impact Statement, Appendix W - Addendum to Appendix D, Technical Alignment Report, 2006.
- Project 62860, Dalton Highway MP 175 to 197 Rehabilitation, 2009.

FHWA-WFLHD Projects

- AK PFH 44-1(4), Coffman Cove Road, Paving, 2007.
- AK PFH 44-1(2), Coffman Cove Road, Phase 2, 2006.
- AK PFH 44-1(1), Coffman Cove Road, Schedule B, 2003.
- AK PFH 42-1(5), 43-1(6), Control Lake – Thorne Bay Road and North Prince of Wales Road, 2002.
- AK PFH 9-1(9), Big Salt Lake Road, 1999.

As noted in the Unit Cost Analysis, the DOT&PF Juneau Access Improvements Project is likely the most comparable project currently under development within the state of Alaska. The work involved in the Juneau Access Improvements Project closely mirrors the work needed to complete any one of the transportation corridors within this memorandum. A new two-lane, paved roadway will be built that includes complex bridges, sections of tunnel, and new port facilities. The remoteness of the project would require that work camps be set up, and most of the construction materials not generated on-site would have to be barged to the construction site. The average prices based on the Juneau Access Improvements Project reports were given special consideration in the Unit Cost Memorandum.

4.4 Operational Assumptions

The Southeast Alaska MRA Project assumes that the proposed transportation routes would operate year-round. Potential operating costs for the roadways would include snow removal, slide and rockfall clearing, and port of entry operations. The Southeast Alaska Mid-Region Access Operating and Maintenance Cost Technical Memorandum provides estimates for the upfront and annual costs for operation of the transportation corridors. For yearly costs, a cost per lane-mile was established for each alternative based on terrain, weather patterns, location, and other factors. Upfront costs were developed based on the assumed vehicle, equipment, and building needs associated with each corridor. Table 4-1 below summarizes the yearly and upfront costs for each corridor.

Table 4-1. Southeast Alaska MRA Corridors Operating and Maintenance Cost Estimates

Corridor	Length (miles)	Yearly Costs		Upfront Costs
		Total	Cost per Lane-Mile	
Bradfield Canal	**112**	**$2,200,000**	**$9,786**	**$8,380,000**
Stage 1 (Ultimate)	112	$2,200,000	$9,786	$8,380,000
Stikine River	**173**	**$2,750,000**	**$7,960**	**$8,670,000**
Stage 1	71	$1,280,000	$9,032	$2,500,000
Stage 2	49	$820,000	$8,286	$3,375,000
Stage 3	22	$250,000	$5,798	$2,505,000
Stage 4	14	$170,000	$5,907	$290,000
Stage 5 (Ultimate)	16	$230,000	$6,991	$0
Aaron Creek Pass	**143**	**$3,420,000**	**$11,947**	**$8,505,000**
Stage 1	71	$1,280,000	$9,032	$2,500,000
Stage 2	55	$1,930,000	$17,590	$3,500,000
Stage 3	10	$120,000	$5,725	$290,000
Stage 4 (Ultimate)	7	$90,000	$6,494	$2,215,000
Aaron Creek Tunnel	**143**	**$3,500,000**	**$12,278**	**$8,505,000**
Stage 1	71	$1,280,000	$9,032	$2,500,000
Stage 2	54	$2,010,000	$18,522	$3,500,000
Stage 3	10	$120,000	$5,725	$290,000
Stage 4 (Ultimate)	7	$90,000	$6,494	$2,215,000

The order-of-magnitude cost estimates of this study include only the costs of installing permanent roadway operating features. The costs for the tunnel, utility lines, ferry terminal facilities, port of entry facilities, and maintenance facilities have all been included. The upfront operating and maintenance costs listed in Table 4-1 represent the cost of both port of entry and maintenance features. The upfront costs in Table 4-1 were estimated for each stage of corridor development, and they have been included in the estimates as such. The costs for the other permanent roadway features, such as the tunnel and ferry terminal facilities, have been included in the estimates for each roadway segment. Annual costs to operate and maintain these features, including the annual costs for roadway operation from Table 4-1, have not been included in the estimates. The costs of acquiring conventional or ACV ferries to operate between new and existing terminal facilities have also been excluded.

One of the biggest threats to the transportation corridors operating year-round is snow avalanche. A preliminary avalanche risk assessment was completed and is outlined in the document Southeast Alaska Mid-Region Access Preliminary Snow Avalanche Assessment Technical Memorandum. The assessment identified approximately 200 areas that pose an avalanche risk along the proposed corridors. For comparison, there are 134 controlled avalanche paths along 40 miles of the Rogers Pass highway in B.C., and this is generally considered one of the world's largest avalanche control programs. The options available to mitigate avalanche risk are roadway realignment, forecast and control, structural protection, and winter road closures. Any options used to mitigate avalanche risk will have a substantial effect on the overall corridor cost, annual operating costs, usage, and benefit. At this point in the corridor planning process, no avalanche mitigation measures have been included in the cost estimates.

4.5 Port Development Assumptions

The cost of port development would depend largely on individual site topography and construction logistics. It was assumed that a single cost per port terminal should be used for all terminals, both to simplify the cost estimates and to account for the limited knowledge of potential port locations and facilities. The proposed Katzehin conventional ferry terminal that is part of the DOT&PF Juneau Access Improvements Project is estimated to cost $17 million. With this in mind, a recommendation to use an estimate of $15 million per conventional ferry terminal was made in the Unit Cost Memorandum. Based on the research contained in the Southeast Alaska Mid-Region Access Air-Cushion Vehicle Technical Memorandum, costs for an ACV terminal could range from $1 to $10 million. The conservative estimate of $10 million was used for each ACV ferry terminal. Once an appropriate MRA transportation corridor is chosen, detailed studies and conceptual designs will be needed to refine the cost estimates for these terminals.

4.6 Construction Camp Assumptions

The remote nature of the proposed MRA corridors would likely require contractor construction camps to complete the project. The nature and location of the needed construction camps will not become clear until the corridors are much further along in development. Both land-based and water-based floating construction camps are possible and, in fact, both may be necessary. As a result, the construction camp cost item was treated as a percentage of total construction in the cost estimates found in Appendix D. The Unit Cost Memorandum found two DOT&PF projects with construction camps. The camps for the Juneau Access Improvements Project were approximately 11% of the total estimated construction cost and included both land-based and floating camps. The camp for the Dalton Highway project was 4% of the construction cost and represented a land-based camp probably using some existing infrastructure. The recommended percentage was set at an even 10% of construction costs.

4.7 Existing Road Rehabilitation Assumptions

Many of the conceptual alignments follow existing two-lane gravel roads. The rehabilitation of the Eskay Creek Mine along the Iskut River, as well as portions of Tongass National Forest Roads 6265 and 6270 on Wrangell Island, would be necessary for development of all proposed MRA corridors. The 5-foot contours extracted from the high-resolution color orthophotography were not quite accurate enough for suitable representation of the existing roadway prisms. As a result, the design quantities for the segments following these existing roads had to be estimated rather than calculated using cross sections or GEOPAK™ civil design software. A 1-mile stretch of Segment W-3 of the Wrangell Island Alignment, which follows FR 6265 across Wrangell Island, was studied in detail. It was assumed that the existing roadway would be rehabilitated and paved, with only small sections of complete reconstruction needed for the occasional horizontal deficiency. In this scenario, the existing roadway prism, including bridges and culverts, would not be substantially altered. All quantities for this section were estimated based on USGS topographic maps, the existing ground contours, and geometric assumptions. The amounts that resulted were treated as per-mile quantities for a rehabilitated roadway and were applied to all alignments following existing roads.

4.8 One-Lane Roadway Assumptions

The conceptual design and cost estimates for this project were initially completed for a two-lane paved roadway typical section. A one-lane gravel roadway typical section (with turnouts) was added to the design in case funding would preclude the construction of the full two-lane paved roadway. With the reduction in roadway width, the conceptual alignments and design profiles could be redesigned to better fit the new typical section to the existing ground. To keep things simple at this stage in the planning process, it was decided not to complete the redesign. If the one-lane gravel typical section was selected for future corridor development, the conceptual alignments and profiles would have to be refined to account for the reduction in roadway width. Turnouts were not included in the cross sections, as it was assumed that the additional earthwork resulting from not shifting the conceptual alignments and profiles would, conservatively, cover the amount of earthwork required for a 200-foot turnout every 1,000 feet.

The estimate for the one-lane gravel roadway typical section was completed largely by using the same methods developed for the two-lane paved roadway estimate, but was modified to account for the reduced roadway width and the absence of pavement. Bridge areas and culvert lengths were based on the width of a one-lane roadway. Quantities directly impacted by the reduced roadway width, such as MSE walls and guardrail, were reevaluated and decreased. The tunnel estimate was left the same, since it was assumed that a two-lane tunnel would be safer than a one-lane tunnel for the distance involved.

The only substantially different estimating method was for existing road alignments, as the roadways are all currently two-lane gravel roads. Correction of horizontal deficiencies would be needed for the road to meet design standards. Otherwise, the existing roadways would be acceptable. Aside from an estimate of the earthwork needed to realign the roadway in select locations, the only other costs included in the estimate for the existing road alignments were for roadway reconditioning and miscellaneous drainage upgrades. Reconditioning the existing roadway would be necessary to ensure that roadway slopes would meet the design standards. Slight improvements to existing drainage features, such as cleaning out culverts and adding additional culverts in poor drainage areas, were included as a per-mile cost in the estimate.

4.9 Phased Construction Assumptions

Due to the similarity of the phased construction typical section to the two-lane paved roadway configuration, new conceptual alignments, design profiles, and cross sections were not developed. The Phase 1 typical section, or one-lane gravel roadway on a two-lane subgrade, would differ from the two-lane paved roadway estimate only in the surfacing, striping, guardrail, and existing road rehabilitation quantities. The different surfacing quantities were easily estimated using spreadsheets, and striping would not be needed for Phase 1. With the subgrade extended to the full two-lane width, most of the Phase 1 roadway would not need guardrails as the clear zone would be within the subgrade width. However, guardrail quantities were included for select sections of roadway where deviation from the thoroughfare could be disastrous, such as along the West Fork Pass of the Aaron Creek Corridor. As noted above, the roadway alignments along current two-lane gravel roads would only need a few horizontal realignments, drainage upgrades, and roadway reconditioning to meet the one-lane roadway design standards. All other design elements, including culverts and bridges, would be identical to the two-lane paved roadway typical section, as the same subgrade width would be built.

The Phase 2 typical section, or reconditioning of the one-lane gravel roadway and paving of the two-lane subgrade, would result in the two-lane paved roadway typical section. The Phase 2 construction would involve the standard construction elements of mobilization and minor erosion control. Costs for reconditioning the one-lane grade roadway to prepare the two-lane subgrade for paving would also be included. Aside from those items, the only additional construction necessary would be the items not completed during Phase 1: pavement, striping, and guardrail. The volume of asphalt and base course needed to bring the one-lane gravel roadway to a two-lane paved roadway was estimated by using spreadsheets. The striping estimate for Phase 2 is identical to the two-lane paved roadway striping estimate. The guardrails from Phase 1 would be removed, and the needed guardrails for the two-lane paved roadway typical section would be installed.

4.10 British Columbia Alignment Assumptions

The Bradfield Canal Alignment, South Stikine River Alignment, Aaron Creek Pass Alignment, and Aaron Creek Tunnel Alignment all contain sections within B.C. needed to connect the International Boundary to the Iskut River Alignment. The conceptual design for the section of the Bradfield Canal Alignment that follows the Craig River from the International Boundary to where it meets the Iskut River Alignment was outside of the scope of this project and, thus, was estimated on a per-mile basis. The total per-mile cost for the Alaska section of the Bradfield Canal Alignment, excluding the tunnel and port costs, was used for the 17-mile B.C. portion.

The conceptual designs of the South Stikine River Alignment, Aaron Creek Pass Alignment, and Aaron Creek Tunnel Alignment were extended into B.C. so that they met at a single point before following a shared path to the beginning of the Iskut River Alignment. These short sections extend the alignments to a point where the general terrain matches the terrain found along the Iskut River Alignment. Extending the alignments to this meeting point enabled using a single per-mile cost for the new roadway construction portion of the Iskut River Alignment. Full conceptual designs (including design profiles, cross sections, bridges, etc.) were completed for the 4-mile sections from the International Boundary to the meeting point of the alignments in B.C. The cost estimates for these sections were quantity-based similar to all other Alaska alignments. The sections continuing from the meeting point to the Iskut River Alignment were estimated on a per-mile basis. It was decided that the terrain of Segment S-1 of the South Stikine River Alignment best matched the terrain along the Iskut River. The per-mile cost for the Alaska portion of Segment S-1, minus port costs, was applied directly to the remaining B.C. sections.

4.11 Bradfield Canal Alignment Assumptions

The estimate for the Bradfield Canal Alignment (Kapho Mountain Option) from the Bradfield River Road Study (Appendix B) was modified in this study to account for the inflated costs of construction since 2005 and to add the additional cost division items not included in the original estimate. The estimated costs for the B.C. portion of the Bradfield Canal Alignment, the conceptual Kapho Mountain conventional ferry terminal, the contractor construction camps, and the upfront operating expenses were included in the new cost estimate. The quantities for the one-lane gravel and phased construction typical sections had to be estimated, since the conceptual design of this alignment was not a part of the study. The one-lane gravel and phased construction roadway quantities calculated for Segment A-1b of the Aaron Creek Tunnel Alignment were compared to the corresponding two-lane paved roadway quantities for the alignment. Simple ratios developed from this comparison were used to adjust the Bradfield River Road Study quantities to represent the new roadway configurations. See the estimates in Appendix B and Appendix D for more information.

4.12 Iskut River Alignment Assumptions

The full conceptual design of the Iskut River Alignment was not part of the scope of this study. Therefore, the cost of the Iskut River Alignment was estimated on a per-mile basis. The alignment contains a section of rehabilitation (Segment I-1), as well as a stretch that requires new roadway construction (Segments I-2 and I-3). Segment I-1 was estimated using the per-mile cost developed from rehabilitating and paving a similar two-lane road across Wrangell Island (Segment W-3). For Segments I-2 and I-3, the per-mile cost for the Alaska portion of Segment S-1 was used due to the similarity in terrain along the south side of the Stikine River and the south side of the Iskut River. The per-mile costs and estimates for the Iskut River Alignment are shown in Appendix D.

4.13 Summary of Cost Estimates

The estimated costs for the staged development of the Bradfield Canal, Stikine River, and Aaron Creek Corridors are summarized in Tables 4-2 through 4-5. Estimate summaries are presented for each roadway typical section developed in the conceptual design.

- Two-lane paved roadway
- One-lane gravel roadway

Phased construction:

- Phase 1: One-lane gravel roadway on two-lane subgrade
- Phase 2: Two-lane paved roadway

In-depth estimates for each segment and stage of the three MRA transportation corridors, as well as all support for the order-of-magnitude cost estimates, are included in Appendix D.

4.13.1 Two-Lane Paved Roadway

Table 4-2. Southeast Alaska MRA Corridors Summary, Two-Lane Paved

Corridor	Stage	Length (miles)	ACV Ferry Terminals	Conv. Ferry Terminals	AK Cost (Millions)	B.C. Cost (Millions)	Total Cost (Millions)	Cumulative Cost (Millions)
Bradfield Canal	1 (Ultimate)	112	0	2	$425	$345	$770	$770
Total	-	**112**	**0**	**2**	**$425**	**$345**	**$770**	**$770**
Stikine River	1	71	3	0	$30	$452	$482	$482
	2	49	0	2	$316	$92	$408	$890
	3	22	0	1	$64	$0	$64	$954
	4	14	0	0	$243	$0	$243	$1,197
	5 (Ultimate)	16	0	0	$89	$0	$89	$1,287
Total	-	**173**	**3**	**3**	**$742**	**$545**	**$1,287**	**$1,287**
Aaron Creek	1	71	3	0	$30	$452	$482	$482
	2 (Pass)	55	0	2	$508	$105	$613	$1,095
	2 (Tunnel)	54	0	2	$479	$105	$584	$1,066
	3	10	0	1	$46	$0	$46	$1,113
	4 (Ultimate)	7	0	0	$60	$0	$60	$1,173
Total (Pass)	-	**143**	**3**	**3**	**$644**	**$558**	**$1,201**	**$1,201**
Total (Tunnel)	-	**143**	**3**	**3**	**$615**	**$558**	**$1,173**	**$1,173**

Note: Estimates include capital costs for road construction, ferry terminal construction, and construction of operating and maintenance facilities. The costs do not include capital costs for conventional or ACV ferries.

4.13.2 One-Lane Gravel Roadway

Table 4-3. Southeast Alaska MRA Corridors Summary, One-Lane Gravel

Corridor	Stage	Length (miles)	ACV Ferry Terminals	Conv. Ferry Terminals	AK Cost (Millions)	B.C. Cost (Millions)	Total Cost (Millions)	Cumulative Cost (Millions)
Bradfield Canal	1 (Ultimate)	112	0	2	$346	$227	$573	$573
Total	-	**112**	**0**	**2**	**$346**	**$227**	**$573**	**$573**
Stikine River	1	71	3	0	$30	$295	$325	$325
	2	49	0	2	$226	$63	$289	$614
	3	22	0	1	$37	$0	$37	$651
	4	14	0	0	$162	$0	$162	$813
	5 (Ultimate)	16	0	0	$54	$0	$54	$867
Total	-	**173**	**3**	**3**	**$509**	**$358**	**$867**	**$867**
Aaron Creek	1	71	3	0	$30	$295	$325	$325
	2 (Pass)	55	0	2	$352	$71	$422	$747
	2 (Tunnel)	54	0	2	$361	$71	$432	$757
	3	10	0	1	$33	$0	$33	$790
	4 (Ultimate)	7	0	0	$40	$0	$40	$830
Total (Pass)	-	**143**	**3**	**3**	**$454**	**$366**	**$820**	**$820**
Total (Tunnel)	-	**143**	**3**	**3**	**$464**	**$366**	**$830**	**$830**

Note: Estimates include capital costs for road construction, ferry terminal construction, and construction of operating and maintenance facilities. The costs do not include capital costs for conventional or ACV ferries.

4.13.3 Phased Construction: Phase 1

Table 4-4. Southeast Alaska MRA Corridors Summary, Phase 1

Corridor	Stage	Length (miles)	ACV Ferry Terminals	Conv. Ferry Terminals	AK Cost (Millions)	B.C. Cost (Millions)	Total Cost (Millions)	Cumulative Cost (Millions)
Bradfield Canal	1 (Ultimate)	112	0	2	$378	$283	$661	$661
Total	-	**112**	**0**	**2**	**$378**	**$283**	**$661**	**$661**
Stikine River	1	71	3	0	$30	$381	$411	$411
	2	49	0	2	$277	$83	$360	$771
	3	22	0	1	$40	$0	$40	$811
	4	14	0	0	$231	$0	$231	$1,042
	5 (Ultimate)	16	0	0	$74	$0	$74	$1,115
Total	-	**173**	**3**	**3**	**$651**	**$464**	**$1,115**	**$1,115**
Aaron Creek	1	71	3	0	$30	$381	$411	$411
	2 (Pass)	55	0	2	$465	$96	$562	$973
	2 (Tunnel)	54	0	2	$438	$96	$535	$946
	3	10	0	1	$35	$0	$35	$980
	4 (Ultimate)	7	0	0	$54	$0	$54	$1,034
Total (Pass)	-	**143**	**3**	**3**	**$584**	**$477**	**$1,061**	**$1,061**
Total (Tunnel)	-	**143**	**3**	**3**	**$557**	**$477**	**$1,034**	**$1,034**

Note: Estimates include capital costs for road construction, ferry terminal construction, and construction of operating and maintenance facilities. The costs do not include capital costs for conventional or ACV ferries.

4.13.4 Phased Construction: Phase 2

Table 4-5. Southeast Alaska MRA Corridors Summary, Phase 2

Corridor	Stage	Length (miles)	ACV Ferry Terminals	Conv. Ferry Terminals	AK Cost (Millions)	B.C. Cost (Millions)	Total Cost (Millions)	Cumulative Cost (Millions)
Bradfield Canal	1 (Ultimate)	112	0	2	$51	$64	$114	$114
Total	-	**112**	**0**	**2**	**$51**	**$64**	**$114**	**$114**
Stikine River	1	71	3	0	$0	$74	$74	$74
	2	49	0	2	$42	$11	$54	$128
	3	22	0	1	$22	$0	$22	$150
	4	14	0	0	$14	$0	$14	$164
	5 (Ultimate)	16	0	0	$17	$0	$17	$181
Total	-	**173**	**3**	**3**	**$96**	**$85**	**$181**	**$181**
Aaron Creek	1	71	3	0	$0	$74	$74	$74
	2 (Pass)	55	0	2	$45	$10	$56	$130
	2 (Tunnel)	54	0	2	$43	$10	$54	$128
	3	10	0	1	$11	$0	$11	$139
	4 (Ultimate)	7	0	0	$7	$0	$7	$146
Total (Pass)	-	**143**	**3**	**3**	**$63**	**$85**	**$148**	**$148**
Total (Tunnel)	-	**143**	**3**	**3**	**$61**	**$85**	**$146**	**$146**

Note: Estimates include capital costs for road construction, ferry terminal construction, and construction of operating and maintenance facilities. The costs do not include capital costs for conventional or ACV ferries.

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APPENDIX A

Reconnaissance Study – Stikine River Highway Access

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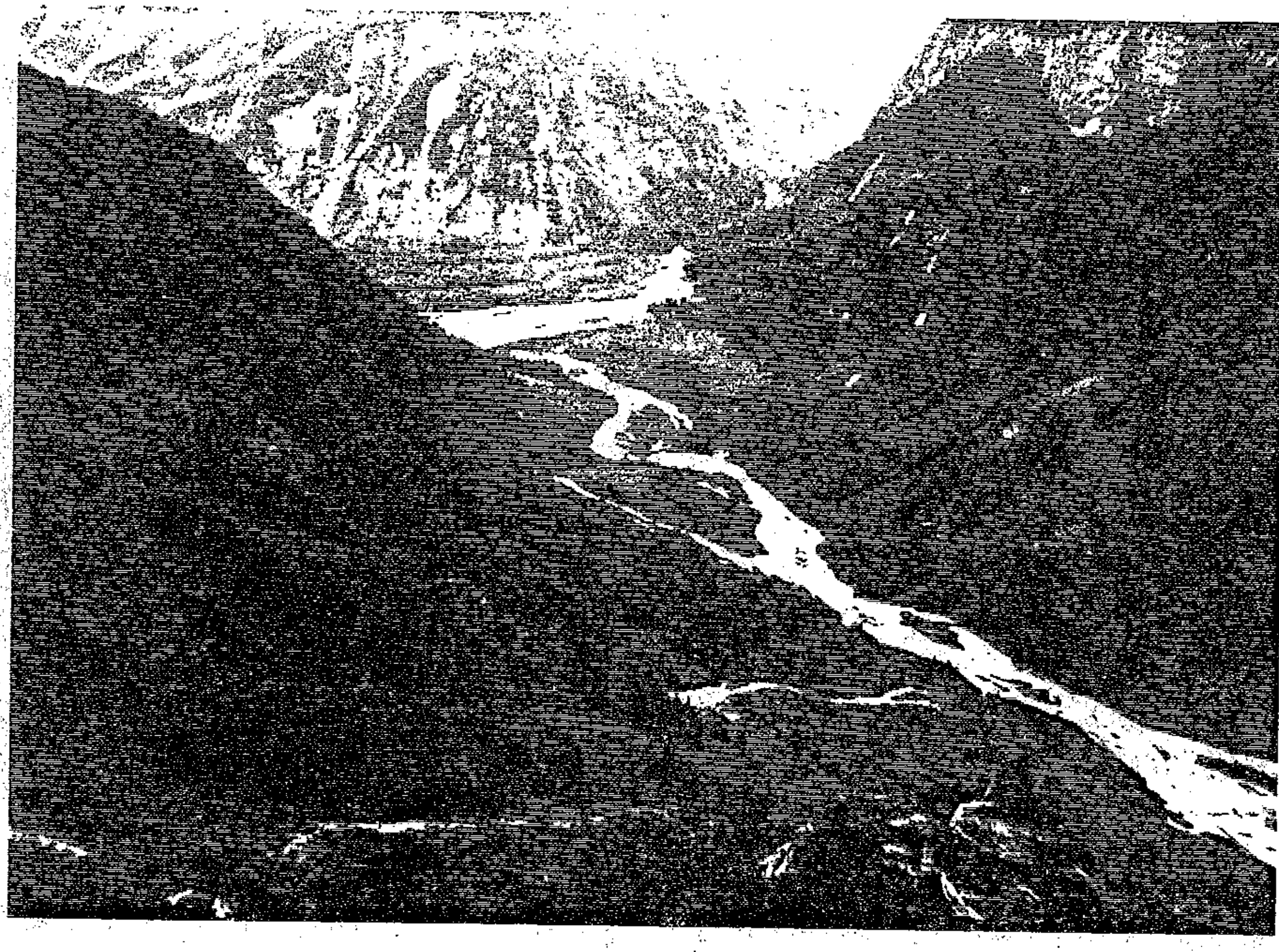
RECONNAISSANCE STUDY

STIKINE HIGHWAY ACCESS

PROJECT NO: A87221

November 1984



PREPARED BY:

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES
SOUTHEAST REGION

RECONNAISSANCE STUDY

STIKINE RIVER HIGHWAY ACCESS

Project Number A87221

PREPARED BY:

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

SOUTHEAST REGION DESIGN

Approved By:

G. Pepper McCallon

G. Pepper McCallon, PE

Concurrence By:

Wallace K Williams 1/21/85

Wallace K. Williams, PE
Chief of Design

D. D. Dieckmeyer 1-21-85

D. D. Dieckmeyer, Director
Design & Construction

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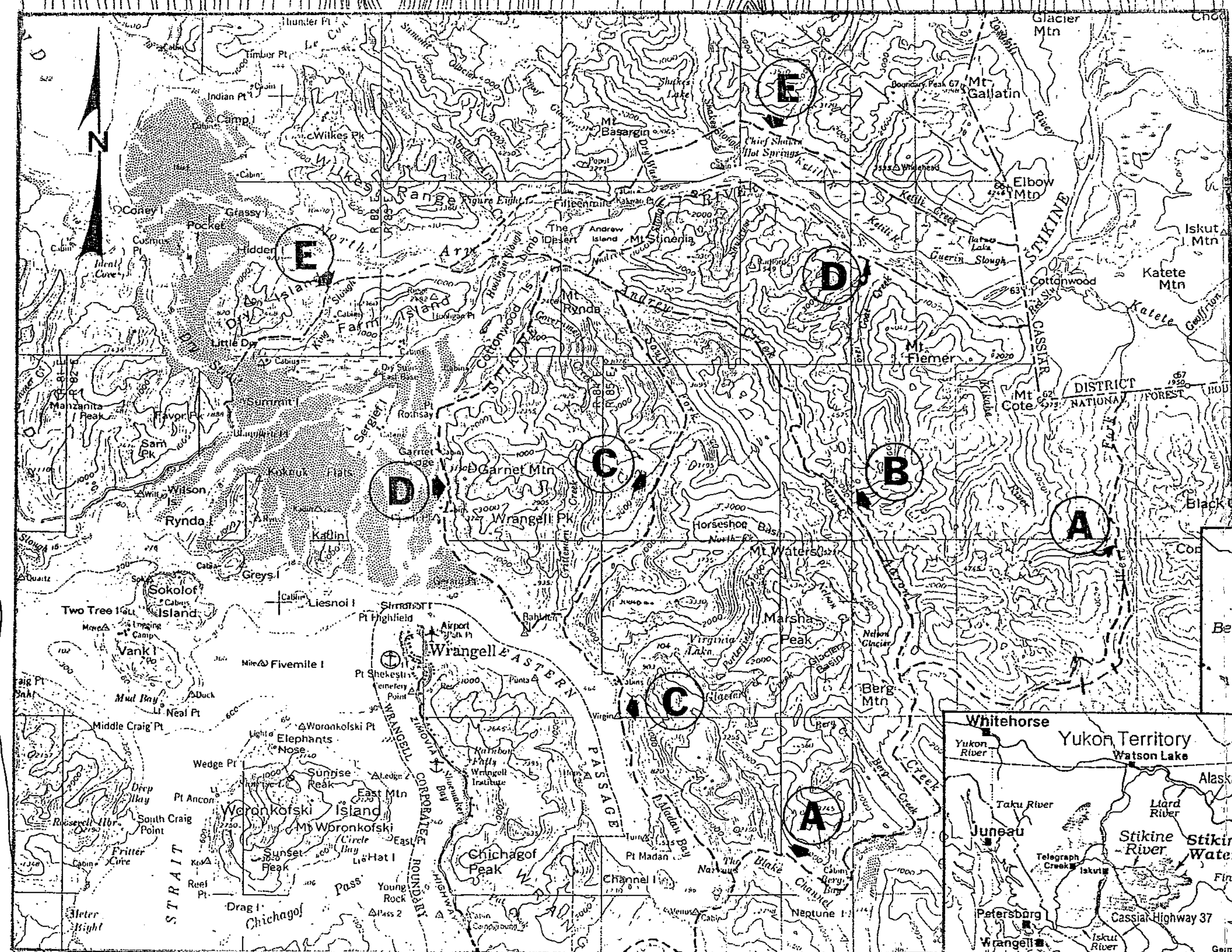
Proj. no. A~87221



Vicinity Map

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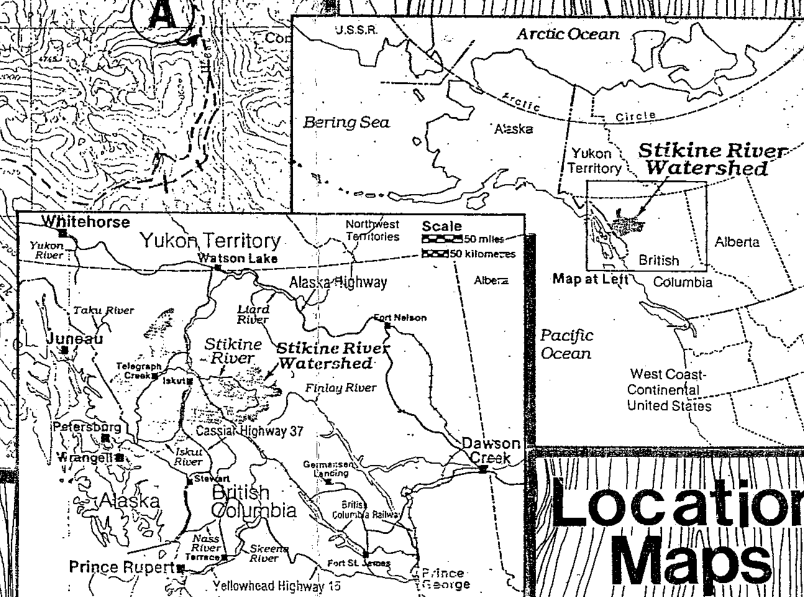


Location Maps

INTRODUCTION

Highway access between the coastal waters of Southeast Alaska and the Canadian northwest has been studied for many years. One of the primary and centrally located corridors for this type of access exists within the Stikine River watershed.

In December of 1980, the United States passed the Alaska National Interest Lands Conservation Act (ANILCA) Public Law 96-487. Within ANILCA a portion of the Tongass National Forest east of Wrangell and Petersburg was designated as the Stikine-LeConte Wilderness Area. With the creation of this wilderness area, four of the five proposed highway routes are now within its boundaries.

The purpose of this study was to re-evaluate all of the proposed routes and provide updated comparative cost estimates. The information that was generated in this study will assist in developing management alternatives should a highway link within this area be deemed necessary and in the best interest of both the United States and Canada.

It should be noted that this study was solely an engineering feasibility study. No attempt was made to conduct an economic evaluation, such as cost benefit or life cycle cost analysis for the project. In addition, environmental issues were not addressed since the United States Forest Service is presently preparing an Environmental Impact Statement for the Stikine-LeConte Wilderness Area, as part of their process in developing a management plan for the area.

SCOPE OF STUDY

The scope of this study consisted of two basic elements. Those being:

1) Field review and evaluation
2) Office analysis

During late July of 1984, a detailed field review and evaluation of the five proposed routes was conducted utilizing a Hughes 500D helicopter. The major components of this field reconnaissance consisted of the following:

1) Terrain analysis
2) Route location (alignment and grade)
3) Structures (short span bridges, long span bridges, and snow sheds)
4) Geophysical hazards (primarily avalanche)

An extensive office review was then conducted utilizing the field data in conjunction with U.S.G.S. topographical maps, high altitude false color infared photography, and low altitude color aerial photography to locate each proposed route. Each route was then classified and segmented into one of the following categories:

1) Reconstruction of existing roads, which applies to already constructed highway facilities in need of upgrading to acceptable highway standards
2) Steep terrain construction, which applies to those areas that have cross slopes generally greater than approximately 45° and would

require substantial full bench excavation in rock or talus to obtain reasonable horizontal and vertical alignment.

3) Moderate terrain construction, which applies to those areas of moderate cross slopes and is conducive to cut and fill construction.

4) Flat terrain construction, which applies to terrain in which overlay construction techniques will predominate.

Structures were evaluated separately and grouped into one of the following categories:

1) Short Span bridges, which have simple designs and span lengths of less than 125 feet.

2) Long Span bridges, are those structures which will require long unsupported spans with high vertical clearances, or structures that need to be capable of withstanding large impact loads (avalanches).

3) Snowshed structures, which are proposed for portions of the routes which are within an avalanche track.

Conceptual construction estimates were then developed for each of the proposed routes, and were based on unit cost per mile for each terrain category. Structures were estimated separately and were based on the surface square foot costs for each structure category. In addition, special cost categories such as tunnel alternates, maintenance and operations costs, snow control, and preliminary engineering etc., which are also incurred during the projects life cycle were also estimated. This resulted in a total project cost to be utilized for comparison purposes.

GENERAL

Location

The reconnaissance study area, discussed in this report, is located in the southeastern or "pandhandle" region of the State of Alaska. It is situated within the Coast Range Mountains, east of Wrangell and Petersburg Alaska, and comprises approximately 550 square miles of the Tongass National Forest.

Site Conditions

The study area, which encompasses the broad Stikine River Valley and the mountains to the southeast, have been heavily glaciated. Typically, the valleys are U-shaped, with steep valley walls and relatively flat valley floors. Within the Stikine River valley, the flood plain can be as wide as 2.5 miles. The mountain valleys located to the Southeast of the Stikine River proper are narrow and rugged with topographical relief in excess of 4500 feet.

The vegetation within this study area consists primarily of heavy stands of spruce and hemlock, with scattered areas of cottonwoods. Generally above elevation 2000 the vegetation begins to thin, becoming more alpine in nature.

The study area is dominated by a maritime climate, common to the gulf coast of Alaska. This climate is noted for relatively mild winters, warm summers and very heavy precipitation. Snowfall along the coast can vary between 72 inches to 103 inches. In the mountains snowfall can exceed 200 inches a year.

Transportation

The study area for the most part is presently roadless. The one exception is a network of logging roads on Wrangell Island to the south of the City of Wrangell, Alaska.

Access into the study area, is either by boat along the Stikine River or by airplane (generally private or chartered floatplanes).

The mountains to the southeast of the Stikine River are accessible, at this time, by fixed or rotor wing aircraft.

Land Status

The study area is located within the Tongass National Forest, and therefore under the management control of the United States Forest Service, (Wrangell Ranger District).

Approximately half of the study area is within the designated Stikine-LeConte Wilderness area, in which wilderness management objectives are maintained, in contrast to multiple use concepts. Specific management alternatives for the Stikine-LeConte Wilderness are presently being developed by the United States Forest Service.

Canadian Route Study

In the Fall of 1978 the British Columbia Ministry of Highways completed a Reconnaissance study between the Cassiar Highway and the United States Border via the Iskut River, a distance of approximately 76 miles. Two basic alternates were evaluated, one on either side of the Iskut Valley. Both routes has common alignments for the first 33 miles west of the Cassiar Highway and the last 9.5 miles as the alignment approaches the United States Border.

The preferred connection with the Alaskan portion of the corridor is on the south side of the Stikine River in the vicinity of Kikahe River (Alternate D) or the West Fork of the Katete River (Alternate A).

ALTERNATIVE ROUTES

For the purposes of alternate route description the proposed routes have been divided into the following segments (See Appendix E):

1) Pat Creek to the Narrows Crossing
2) The Narrows Crossing
3) Alternate Route A
4) West Fork Pass Tunnel Alternate
5) Alternate Route B
6) Alternate Route C
7) Alternate Route D
8) Dry Straits Crossing
9) Alternate Route E
10) Stikine River Crossing at Limb Island

1) Pat Creek to the Narrows Crossing

This segment would begin at Pat Creek which is located approximately 9 miles south of the City of Wrangell, Alaska.

Between Pat Creek and Mile Post (MP) 2 the alignment would parallel Zimovia Straits along an existing two lane logging road. The alignment and grade through this section is considered good.

At MP 2 the logging road becomes single lane and swings to the east. The road then traverses a relatively narrow valley to a pass at MP 5 (Elevation 615 feet). The alignment through this section is fair, although areas of poor alignment exists. Grades are steep in places, but are generally less then 4%.

From MP 5 the logging road traverses the southerly slopes of a broad muskeg valley to MP 14, at which point the logging road has been terminated. It appears that the majority of the muskeg has been avoided by placing the road along the sideslopes of the valley. Alignment and grade can be considered good.

All major streams are crossed by native timber bridges, which would be replaced during any reconstruction effort.

Logging activities in this area have been extensive, with most of the slopes adjacent to the logging road having been clear-cut.

Between MP 14 and MP 16.5 (Narrows Crossing) the proposed route would traverse the heavily timbered slopes adjacent to the Eastern Passage. Side slopes have been classified as moderate. Soil conditions are generally shallow overburden and sediments over bedrock.

2) <u>The Narrows Crossing</u>

At MP 16.5 a major structure is required to cross the Narrows at the north end of Blake Channel. The crossing will require an 1100 foot unsupported span with a minimum of 50 feet vertical clearance for navigational purposes. Field review of both sides of the crossing indicates that the piers for this proposed structure would be founded on bedrock. Midspan support in the narrows was considered to be impractical due to water depths in the channel.

3) Alternate Route A

Beginning on the north side of the Narrows Crossing, Alternate Route A would traverse the heavily timbered slopes adjacent to Blake Channel to MP 4. For the first three miles the cross slopes are moderate, but between MP 3 and MP 4 the terrain becomes relatively flat as the route approaches Berg Bay.

Soil conditions along the moderate terrain is considered to be shallow soils over bedrock, while the flatter terrain encountered near Berg Bay will have generally deeper soils over rock with scattered pockets of muskeg.

Alignment and grade through this area is good. Short span bridge structures will be required for stream crossings at MP 1.2 and MP 1.9.

At MP 4 the route swings to the northeast and enters the tidal flats of Aaron Creek. As proposed, this route would traverse the northerly edge of these flats to Berg Creek at MP 8. Soils between MP 4 and MP 8 will generally be alluvial sands and gravels.

Alignment within this section of the proposed route will be good, with grades generally flat. A short span bridge is required at Berg Creek.

From Berg Creek the route then proceeds northwest along a narrow muskeg valley to MP 10, at which point the road would parallel the heavily timbered western bank of Aaron Creek to MP 13.75. Terrain within this section varies from relatively flat muskeg to fairly steep bedrock areas along Aaron Creek. Soil conditions appear to vary from muskeg, to alluvial gravels, to bedrock.

The alignment between Berg Creek and MP 13.75 is good with grades that are fairly moderate. At MP 13.75 a short span bridge crossing Aarons Creek will be required.

From the Aarons Creek Crossing the proposed alignment trends in an easterly direction, following the north side of an unnamed valley to MP 14.75 at which point the alignment crosses (short span bridge) to the south side of the valley and thence up the valley to MP 18.5. Soils within this portion of the route appears to be shallow soils over bedrock, with scattered areas of muskeg.

The terrain between Aarons Creek and MP 18.5 is considered to be moderate with an area of flat terrain between MP 16.5 and MP 17.5. The proposed alignment is good with moderate grades.

Extensive avalanche areas exist on the north side of the valley between MP 15 and MP 18.5 (See Map No. 3). Field review of these avalanche areas indicate that there will be minimal impact to the route, since the runout areas of these avalanches rarely reach the valley bottom.

From MP 18.5 the route crosses (short span bridge) to the north side of the valley and starts the relatively steep climb to the West Fork Pass at MP 23.6 (Elevation 2300 feet). Between MP 19 and MP 21 the route traverses steep talus and avalanche prone slopes. Although the alignment will be good, grades will be an almost continuous +8%. In order to maintain winter access, snowsheds are proposed for the larger avalanche areas that exist in this area. It is also anticipated that slope stability problems will exist in the steeper talus slopes.

Between MP 21 and MP 22 the alignment swings into a relatively flat untimbered hanging valley before climbing to the top of the West Fork Pass (MP 23). Soil between MP 21 and MP 23 will generally be glacial outwash and moraines, while between MP 22 and MP 23 bedrock will be encountered.

Horizontal alignment in this portion of the route will be fair, while the vertical alignment will be almost flat (MP 21 to MP 22) to +8% (MP 22 to MP 23). Short span bridge structures will be required at MP 18.5 and MP 21.5.

From the West Fork Pass the route trends northward and descends steeply (-8%) to the valley bottom of the West Fork of the Katete River at MP 26 (Elevation 600 feet). The terrain on this portion of the route has a cross slope that is extremely steep. As proposed, the alignment would be a full bench cut in bedrock. Avalanche conditions in this portion of the route are severe. Although snowshed structures are proposed for most of these avalanche chutes, in at least five cases, narrow avalanche gullies would have to be bridged to maintain reasonable horizontal and vertical alignment. These structures are located between MP 23.5 and MP 24.4, and would have to be designed to withstand high avalanche impact loads. Between MP 24.5 and MP 25.5 almost continuous snowshed will be required to maintain winter access.

From MP 26 to MP 29 the route traverses the relatively flat western side of the West Fork of the Katete River. Soils in this portion of the route consist primarily of coarse alluvial gravels. Avalanche conditions are much less severe with only one major chute existing between MP 28.75 and MP 29. This is not to say that impacts from avalanching will not affect this portion of the alignment, since the eastern side of the West Fork valley is an almost continuous avalanche area. The length of the avalanche runouts and the effects of airblast in this area was not determined during this reconnaissance study. Alignment and grade in this portion of the route are good. A short span bridge structure will be required at MP 26.7.

A very deep narrow canyon exists between MP 29 and MP 30.5. The walls of this canyon are in excess of 200 feet high and near vertical. Width of the canyon rarely exceeds 150 feet. It is proposed to construct a full bench in rock to MP 30.5 at which point the West Fork would be bridged (short span structure) to the eastern side of the canyon. Although the alignment will be relatively poor, grades are considered to be good.

From MP 30.5 to the Canadian Border (MP 32.5) the West Fork of the Katete River again widens. The route would follow the relatively flat river bottom on the eastern side. Soils in this area consists primarily of course alluvial gravels. Alignments and grade in this final portion of Alternate A will be good.

4) <u>West Fork Pass Tunnel Alternate</u>

As an alternate to the proposed highway route going over the West Fork Pass, a second alignment with a 1.9 mile tunnel was also investigated. The primary advantage to this alternate is that the major avalanche hazards experienced with the West Pass route is greatly reduced, although not completely eliminated. In addition, there are major improvements not only to the horizontal alignment but to the vertical.

Beginning at MP 18.5 of Alignment A the alternate alignment would traverse the valley bottom to MP 20.7. The alignment would cross an avalanche runout zone at MP 19.4, and skirt another at MP 20.3. Short span bridge structures would be required at MP 19.5 and at MP 20.5. Soil conditions are generally a mixture of alluvial gravels and talus, although muskeg is encountered between MP 20.5 and MP 20.7.

The southwest portal of the proposed tunnel is located at MP 20.7 (Elevation 1,110 feet). As proposed, the tunnel would be driven in a northeast direction at a downgrade of approximately 6% in a fairly competent quartz diorite. Tunnel dimensions would be 36 feet by 30 feet. Review of the aerial photography indicated that a strong northwest lineation exists midway through the tunnel. Although not field checked, this could indicate the presence of a wide shear zone which could produce "bad ground" within the tunnel. It is anticipated that the tunnel would be 80% unlined, and 20% lined and supported.

At MP 22.6 the tunnel daylights into the South Fork of the Katete River valley at an elevation 600 feet (approximately). From the northeast portal the route immediately crosses (short span structure) the South Fork of the Katete River, and then traverses the southwest side of the valley to MP 23.6, at which point the route crosses a wide braided stream and then swings to the north down the South Fork paralleling the River to MP 25.8. Between MP 23.8 and MP 25.8 several large avalanche runout zones are skirted, but major impact to the highway is considered to be minimal.

At MP 25.8 the wide braided river channel of the South Fork is again crossed and rejoins Alternate Route A at MP 26.5.

Alignment and grade are considered to be good between the tunnel portal and MP 25.8. Short span bridge structures will be required at MP 22.6, MP 23.7 and MP 25.9.

Soil condition within the South Fork valley between the Northeast portal and MP 26.7 consists of coarse alluvial gravels.

5) <u>Alternate Route B</u>

Alternate Route B begins at the confluence of Aarons Creek and the unnamed creek that flows from the West Fork Pass. It has a common point with Alternate Route A at MP 13.7.

For the first 7.7 miles Alternate Route B traverses the northeastern side of Aarons Creek to a narrow pass at elevation 2100 feet. For the most part, soils encountered in this section will be primarily alluvial gravels, talus and bedrock. Between MP 0.0 and MP 5 the terrain is considered to be moderate. As the route approaches the pass (MP 5 to MP 7.7) the terrain becomes steep and very rugged. The avalanche hazard (MP 0.0 and MP 7.7) is considered to be very severe with almost continuous avalanche terrain existing on both sides of the valley. Alignment and grades between MP 0.0 and MP 7 are considered to be fair. Between MP 7 and MP 7.7 the alignment is fair but grades could approach +13%.

Bridge structures will be required at MP 2, MP 2.5, MP 3.3, MP 5.9 and MP 7. These will be short span structures crossing relatively narrow mountain streams.

From the pass the proposed alignment descends steeply (-8%) into the Andrews Creek drainage to MP 8.5. Avalanche conditions are still severe in this steep, open alpine terrain. Construction will be primarily in bedrock and talus.

Between MP 8.5 and MP 10 the route continues to descend towards a large mountain lake (Elevation 1230 feet). Terrain in this section is moderate, with shallow soils over bedrock. Some muskeg will be encountered as the alignment approaches the southern shore of the lake. Avalanche conditions still exist within this portion of the route, although somewhat less severe than in the preceding sections. A short span bridge structure will be required at MP 9.6.

In order to minimize the avalanche hazards, and road construction in active talus the western side of the Andrews Creek drainage was selected between MP 10 and MP 17. As the route proceeds down Andrews Creek between MP 10 and MP 13.5 very steep terrain is encountered. Construction will be almost exclusively in rock and grades below 8% will be difficult to obtain. Although the avalanche hazard has been minimized by placing the route on this side of the valley, the route does skirt three runout zones between MP 10.75 and MP 12.

Between MP 13.75 and MP 17 the terrain begins to moderate as the valley becomes wider. Soils encountered will generally be shallow overburden soils overlying bedrock, with scattered isolated muskeg hollows. No avalanche hazard exists on this side of the Andrews Creek valley.

Short span bridge structures will be required at MP 10.75, MP 12.4, MP 13.4, MP 16.2 and MP 16.9.

For the last 1-1/2 miles of Alternate B (MP 17 to MP 18.5) the route traverses the north side of Andrews Creek. Terrain is moderate, with soils being much the same as mentioned previously.

6) Alternate Route C

Alternate Route C begins at the northwest side of the Narrows Crossing. Between the Narrows Crossing and MP 4, the alignment parallels the northeastern shore of Madan Bay. Terrain is this section is moderate and heavily timbered. Soils appears to be relatively shallow over bedrock. Muskeg is present in only a few small areas. Alignment and grade is considered to be good. A short span bridge structure will be required to MP 3.5.

Between MP 4 and MP 10 the alignment parallels the eastern shore of Eastern Passage. The terrain is moderate and heavily timbered. Soil depths are generally deeper than in the previous area and muskeg hollows are more frequent. The horizontal and vertical alignment between the Narrows crossing and MP 10 is considered to be good. A major bridge crossing will be required at the mouth of Mill Creek.

At MP 10 the alignment swings to the northeast and traverses the eastern side of the Crittenden Creek valley, to a narrow pass (Elevation 1200 feet), at MP 18. The terrain varies from flat to moderate. The predominate soil in this area is muskeg. Grades are moderate (less than 4%) and the horizontal alignment is good. Short span bridge structures will be required at MP 11.6 and MP 14.2.

From MP 18 the route descends into the South Fork of Andrews Creek. The route generally follows the western side of the valley to MP 21, at which point the alignment switches to the eastern side to avoid three large avalanche chutes between MP 21 to MP 23, existing on the western flank of the valley. Although avalanche terrain exists on the eastern side of the valley only a few small chutes reach the valley bottom. Soils between the pass (MP 18) and MP 21 is generally muskeg. From MP 21 and MP 23 the soils consists primarily of alluvial sands and gravels mixed with colluvial material derived from the mountain slopes.

From MP 23 the alignment continues to traverse the eastern side of the creek to Andrews Creek proper, at which point Alignment C becomes common with Alternate Alignment B ("B" MP 17.5 = "C" MP 25). Soils are generally muskeg. The alignment between the pass and the mouth of Andrews Creek is good, with grades rarely exceeding 7% (MP 18 to MP 19.8) Major streams crossings between

MP 18 and MP 25 which will require short span bridges are located at MP 19.5, MP 21.4 and MP 24.4.

7) Alternate Route D

Alternate Route D is common with Alternate Route C at "C" MP 10. Between MP 0.0 and MP 5.3 the alignment will traverse relatively flat terrain, paralleling Eastern Passage. Soils within this section appears to be dominated by muskeg. Alignment and grade will be good. A major structure will be required at Crittenden Creek (approximately 500 feet) at MP 1.2. The alignment continues to parallel Eastern Passage to MP 8. Terrain becomes moderate and the slopes are heavily timbered. Soils are generally deeper, with no muskeg. No bridge structure will be required in this section of Route D. Horizontal and vertical alignments will be good.

Between MP 8 and MP 11.5 the terrain becomes quite steep as the route enters the Stikine River proper. The slopes are heavily timbered and soils are generally shallow. The horizontal alignment will be fair, while grades should be good. Short span bridge structures are anticipated at MP 9.8 and MP 11.2.

From MP 11.5 to Government Creek at MP 15.5 the alignment will follow fairly moderate, heavily timbered slopes to the southeast of the Cottonwood Islands. Since this is an area of back sloughs off of the main river, some wet and swampy ground should be anticipated. The horizontal alignment will be good, and the vertical alignment should be nearly flat. Short span bridge structures will be required at MP 13.7 and at Government Creek.

The alignment between Government Creek and the Andrews Creek crossing at MP 19.4 will cross relatively flat terrain. Vegetation consists of heavy alder growth with sparse timber. Soils will be generally river sands and gravels. Both the horizontal and vertical alignment are considered to be good.

A major structure will be required to cross Andrews Creek (approximately 400 feet). From the north abutment of the Andrews Creek crossing, the route continues to traverse relatively flat ground to MP 22, just to south of Andrews Slough. Soils appear to be muskeg and swamp. Horizontal and vertical alignment will be good. Short span bridge structures are anticipated at MP 20.7 and MP 21.5. Three avalanche runout zones exist to the south of the proposed alignment between MP 21.4 and MP 22. These runout zones should have little impact to the route.

Between MP 22 and MP 27.5 the route parallels the main channel of the Stikine River. The terrain is steep and the slopes heavily timbered. Construction through this section will be primarily in rock. An avalanche chute at MP 25.5 should have little impact on the proposed highway. Horizontal alignment will be fair, while the vertical alignment will be good. Short span bridges structures will be required at MP 23.8, MP 26.8 and MP 27.1.

Between MP 27.5 and the Canadian Border at MP 37.5 the route follows the Stikine River along moderate, heavily timbered terrain. Again, much of the construction will be in rock, as in the previous section. Alignment and grade will be good. Numerous short span bridge structures will be required in this section of highway and would be located at MP 29.1, MP 30.3, MP 31.4, MP 32, MP 33.3, MP 34.2, MP 35.8 and MP 37 (Kikahi River).

8) Dry Straits Crossing (Alternate Route E)

Any access from Petersburg into the Stikine River drainage will require the crossing of Dry Straits. In the mid 1960's extensive design work was done on this crossing. As proposed, the crossing would require the construction of approximately one mile of road from the end of the Mitkof Highway to the proposed bridge crossing at MP 1. The long span bridge structure would be approximately 1500 feet long with a minimum vertical clearance of 50 feet for navigational purposes. The bridge would be founded on piles. From the north end of the bridge structure a 3000 foot causeway fill approximately 30 feet in height would be construction to tie into the southwest end of Dry Island at the mouth of King Slough (MP 1.8).

Soil condition along the Dry Straits crossing consist of loose to firm saturated sand. The foundation investigation conducted on this crossing indicated that the saturated sands are susceptible to liquefaction under earthquake loading, thus leaving some questions as to the relative stability of the crossing.

Alignment and grade of the crossing is considered to be good. The only steep grades (-6%) along this crossing is encountered at the north bridge approach fill.

9) Alternate Route E

From the north end of the Dry Straits crossing at MP 1.8, Alternate Route E traverses the south and western side of Dry Island, (next to King Slough) to

MP 7.2. Terrain conditions are flat. Alignment and grade will be good. Soils in this section will be primarily sands and silts.

Between MP 7.2 and MP 9.8 the route will follow the northern side of Farm Island. The soils in this area are probably river sands and silt, with a high water table. The vegetation within this portion of the route consists primarily of cottonwoods and spruce. The horizontal and vertical alignment are good. A short span bridge structure will be required at the King Slough crossing at MP 7.2.

Two avalanche chutes existing between MP 8 and MP 9 will have little impact to the route since the runout zones do not reach the proposed highway alignment.

At MP 9.9 a major side channel of the Stikine River (North Arm) is crossed. A bridge structure of approximately 1100 feet will be required to span this channel. The structure will most likely be founded on piles.

From the North Arm crossing the route parallels the western edge of the Stikine River to North Creek (MP 12.7) at which point the alignment swings towards the flanks of the river valley in the vicinity of Figure Eight Lakes (MP 14). Terrain in this area is relatively flat. Soils will generally consist of river sands and silts and muskeg. Vegetation is relatively sparce. The horizontal and vertical alignments are good. A short span bridge structure will be required at North Creek (MP 12.6).

From MP 14 the route traverses the base of the valley to Kakwan Point at MP 17. Terrain will vary from flat to steep. Soil conditions will consist primarily of talus and rock. The ground in this area will be marginally wet in places. Horizontal alignment will be good, as will the vertical. A series of avalanche chutes will directly impact the proposed alignment. Runout zones of these avalanche chutes appear to extend out onto the valley floor.

From Kakwan Point the route swings to the north and follows the base of the mountains to MP 19, and then turns towards the east to Shakes Slough at MP 21.6. The terrain is considered to be steep since the alignment must stay as close as possible to the base of the mountain to avoid generally wet, swampy ground that exists between the main river and the proposed alignment. Soils encountered along the alignment will be primarily talus and rock. Between MP 21 and Shakes Slough wet swampy ground cannot be avoided. The horizontal and vertical alignment through this section will be generally good.

Avalanche terrain exists between MP 17.5 and MP 20.5, and will impact the proposed alignment. A bridge structure (short span) will be required at MP 19, as will the crossing (long span) at Shakes Slough (MP 21.6).

Between Shakes Slough and MP 25 the route will traverse relatively flat, swampy terrain. Horizontal alignment will be good while the vertical will be nearly flat. A short span bridge structure will be required at MP 24.6. An avalanche chute at MP 23.5 should impact the route only minimally.

Between MP 25 and MP 31.75 the alignment has been moved into the hillside to avoid major drainage problems and extensive swamp that exists to the south of the alignment. Construction of the alignment will require considerable excavation in rock. The majority of the sidestreams can be handled with large diameter culverts, although short span bridges are anticipated at MP 27.3 and MP 29.3. Horizontal and vertical alignment will be good.

Between MP 31.75 and the Canadian Border the route will traverse relatively hilly terrain. Soils should consist of moderately deep soils over bedrock. Horizontal alignment will be good, while the grades will be fair. No bridge structures are anticipated in this section of Route E.

10) Stikine River Crossing at Limb Island

In order to tie the proposed alignment from Petersburg into the alignments proposed on the south side of the Stikine River a major crossing of the river is required. The most logical crossing of the Stikine River in which bridge structures are minimized is at Limb Island.

The proposed alignment begins at "E" MP 9.9 and follows the northern edge of Farm Island to Hooligan Slough (MP 1.9). The terrain through this section is flat and soils consist of river sands and silts. Drainage appears to be poor. Horizontal and vertical alignment is considered to be good.

A 1500 foot long structure is required to cross Hooligan Slough to Limb Island. The structure will be pile founded. Between MP 2.2 to MP 3.5 Limb Island is traversed to the main channel of the Stikine River. The terrain is flat, and soils consist generally of river sands and gravels. Horizontal alignment is good and grades are flat.

The crossing of the Stikine River will require an estimated 1500 foot long structure. Navigational clearances will be required on this structure to allow for river boat traffic. The structure will be founded on piles.

From the southeast abutment of this crossing the route traverses along the south side of the Stikine River to Andrews Creek along a common alignment with Alternate Route D.

AVALANCHE HAZARDS

During this reconnaissance study, an attempt was made to delineate the avalanche-prone terrain present within each of the proposed route corridors (See Map 3 and 4, Appendix E). Avalanches pose the most difficult maintenance problem when attempting to maintain a highway alignment during the winter months, since they have the capability of depositing large volumes of snow and other debris onto a highway in a very short period of time. In addition, the forces generated by an avalanche can destroy most man-made objects, such as bridges. Optimally, a highway alignment should be located in such a way that the avalanche hazards are minimized to the greatest extent possible. If this is not possible then other means of hazard reduction such as artillery/explosive control or snow structures (such as snowsheds) can be employed. As with artillery/explosive control the size of an avalanche is reduced but the frequency can increase threefold. Snow structures, although very effective, are also very expensive to construct.

As a general statement, avalanche conditions exists along all proposed routes. Impacts of these avalanches to the proposed highway facilities varies from slight to very severe.

Alternate Route A

Avalanche prone terrain exists between MP 15 and MP 18. Avalanche conditions have been minimized by locating the alignment on the south side of the valley. It appears from the field review of this area that avalanche runouts rarely reach the valley bottom. If control measures were required, it could be handled by artillery.

From MP 18 to MP 21, avalanches can not be avoided, due to grade requirements in this area. At least four avalanche tracks and runouts are crossed, some as wide as 1000 feet. Snowsheds have been proposed for three of these avalanche tracks.

A second area along this route in which avalanche conditions are considered severe and the alignment is fixed due to grade restrictions, exist between the West Fork Pass and MP 26. Within this area at least eight avalanche tracks are crossed. Some of these tracks are in deep bedrock gullies, while others are on steep open bedrock slopes. Snowsheds structures have been proposed for the open slope type of track, and at this time it is estimated that approximately 1 mile of snowsheds will be required. Avalanche chutes that exist within confined gullies are not conducive to snowsheds. In order to maintain reasonable horizontal and vertical alignment through these sections the gullies would have to be bridged. Bridge structures crossing these gullies would have to be designed in such a manner as to withstand the high impact loads created by the avalanche debris.

Between MP 26 and MP 30 avalanche conditions lessen somewhat and the alignment has been located in such a way that direct impacts to the highway have been minimized. Control measures, if deemed necessary, would consist primarily of artillery control within the starting zones.

West Fork Pass Tunnel Alternate

As mentioned in a previous section of this report, a tunnel alternate was investigated in an attempt to alleviate the severe avalanche conditions that exist along the West Pass Route. Although the tunnel alternate reduces significantly the hazard associated with winter avalanching it does not completely eliminate that hazard.

The alignment leading to the southwest portal of the tunnel is generally located on the valley bottom. Two avalanche runout zones are skirted in this area, and one is crossed. Control of these avalanches and those located on the opposite side of the valley could be controlled with artillery.

From the northeast portal almost all avalanche prone slopes are avoided by locating the alignment away from the avalanches. Impacts to the alignment from avalanching should be minimal, and easily controlled by artillery.

Alternate Route B

Avalanche conditions along Route B is considered to be more severe than any other route reviewed during this study. Between MP 3.5 and MP 10, avalanche conditions exist on both sides of the valley. Due to the size of these avalanches and the narrowness of the valley through this section, it is felt that maintaining a route in the winter time will be next to impossible, even with snow control measures and snowsheds.

Between MP 11 and MP 12 these large avalanche chutes exist on the western side of the valley, and continuous avalanche-prone slopes exist in the eastern side of the valley.

The alignment within this section has been located along the western side of a narrow linear bedrock ridge in the middle of the valley, thus affording some protection from the avalanches existing on both sides of the ridge.

From MP 12 to MP 17 the alignment has been located on the southern side of the valley, away from the continuous avalanche terrain existing on the north side of the valley. Impact of avalanching through this section should be minimal.

Alternate Route C

Avalanche prone slopes along Alternate C exist between MP 20 and MP 23. For the most part the roadway alignment has been located is such a manner as to minimize the effects of avalanching. If it is deemed necessary avalanches could be controlled effectively with artillery.

Alternate Route D

Only two small areas exist along Alternate Route D in which avalanche prone slopes exist. These areas are in the vicinity of MP 22 and MP 25.5. No major impacts to the highway alignment is anticipated.

Alternate Route E

Avalanche terrain exists between MP 14 and MP 20 of Alternate E. It appears almost all of the avalanche chutes will impact the alignment as proposed. Effective control of these avalanches could be accomplished through the use of artillery.

Avalanche chutes on Farm Island (MP 9) and at MP 23.5 should have minimal impact on the proposed alignment, since the runout zones rarely reach the valley bottom.

BASIS OF ESTIMATE

As described in an earlier section of this report conceptual cost estimates for each proposed route were developed based on the following criteria:

1) Roadway costs were based on the unit cost per mile for each terrain category (See Appendix A) and then multiplied by the length of each category present in any given alternate route. Estimated cost per mile for each category are listed below:

Reconstruction:	$ 390,836.00
Steep Terrain:	$ 2,372,636.00
Moderate Terrain:	$ 984,636.00
Flat Terrain:	$ 526,636.00

2) Structure costs were based on the estimated surface square footage for each type of structure. Structures were classified into the following categories:

Long Span Structures:	$ 250.00 per square foot
Short Span Structures:	$ 125.00 per square foot
Snowshed Structures:	$ 250.00 per square foot

3) The basis of estimate for the proposed tunnel was developed from two separate sources. The first source being the proposed water tunnel for the Yukon Taiya project. The Alaska Power Administration (APA) developed estimating curves for various size tunnels in 1970. The appropriate size tunnel was selected from these curves and the unit cost per foot was

indexed up to 1984 dollars, utilizing U.S. Bureau of Reclamation cost index for tunnels. This resulted in a cost of $6,966.00 per linear foot to drive the tunnel, utilizing conventional excavation methods. In order to obtain a comparative estimate to determine the accuracy of the APA cost data the Underground Division of Morrision-Knutson (M-K) was contacted. M-K provided a tunnel estimate of $5,465.00 per foot, and was based on a similar sized tunnel driven at Rogers Pass, British Columbia. These cost estimates were then averaged, resulting in a unit cost per linear foot of $6,230.00.

4) Highway Maintenance costs were based on the unit cost per mile per year for the following categories:

Normal Maintenance (Grading & Drainage):	$12,000.00 per mile
Snow Removal (Below Elevation 500):	$ 6,000.00 per mile
Snow Removal (Above Elevation 500):	$20,000.00 per mile
Avalanche Control:	$20,000.00 per mile

5) Tunnel maintenance and operation costs were estimated by the use of cost data acquired from the Colorado Department of Highway. The State of Colorado maintains and operates the Eisenhower Tunnel located along I-70 west of Denver, Colorado. The twin tunnels are 8,900 feet long, fully ventilated and lighted. The tunnels are fully manned 24 hours a day and have a full compliment of fire/rescue equipment on site. Since this is a high traffic volume tunnel on the Interstate system, the cost data had to be modified to fit the low volume, two lane scenario in the West Fork Pass alternate. It was assumed that the tunnel would be manned, lighted

and fully ventilated. The following are the estimates costs for the maintenance and operation of the tunnel per year.

Personnel:	$270,000.00
Ventilation:	$392,000.00
Lighting:	$ 83,000.00
Subtotal:	$750,000.00
+15% Unforeseen:	$112,500.00
TOTAL:	$862,500.00

It should be noted that Norway had developed tunnel techniques that have substantially reduced the costs of maintenance and operation of low volume roads, without sacrificing safety.

Tunnels in Norway are essentially unlighted and unmanned. Ventilation is accomplished through the use of ventilation pods mounted on the roof of the tunnel to assist the natural air flow within the tunnel. Forced longitudinal ventilation is rarely used. When carbon monoxide levels reach an unsafe level the tunnels are closed till the levels are reduced to an acceptable value.

In addition, preliminary engineering, construction engineering, and construction and maintenance unforeseens were estimated by applying generally acceptable percentages to the construction costs, to result in a total project cost for the design and construction phase of the project.

COST ESTIMATE SUMMARY

1) Pat Creek to the Narrows via Alternate A to the Canadian Border (over West Fork Pass). Total Mileage 50.5:

Preliminary Engineering:	$ 12,530,586.00
Construction Engineering:	$ 25,061,173.00
Unforeseen:	$ 38,555,650.00
Construction:	$ 128,518,834.00
TOTAL COST (1984):	$ 204,666,243.00
Maintenance Cost Per Year:	$ 1,803,100.00

2) Pat Creek to the Narrows via Alternate A to the Canadian Border (Tunnel Alternate). Total Mileage 49.9:

Preliminary Engineering:	$ 14,619,998.00
Construction Engineering:	$ 29,239,996.00
Unforeseen:	$ 44,984,609.00
Construction:	$ 149,948,689.00
TOTAL COST (1984):	$ 238,793,301.00
Maintenance Cost Per Year:	$ 1,560,000.00
Maintenance and Operation of Tunnel per year:	$ 862,500.00

3) Pat Creek to the Narrows via Alternate A to MP 13.7, then via Alternate B to the mouth of Andrews Creek and then via Alternate D to the Canadian Border. Total Mileage 67.9:

Preliminary Engineering:	$ 11,161,971.00
Construction Engineering:	$ 22,323,942.00
Unforeseen:	$ 34,344,526.00
Construction:	$ 114,481,754.00
TOTAL COST (1984):	$ 182,312,193.00
Maintenance Cost Per Year:	$ 2,147,860.00

4) Pat Creek to the Narrows via Alternate C to the mouth of Andrews Creek, and then via Alternate D to the Canadian Border. Total Mileage 61.1:

Preliminary Engineering:	$ 8,526,465.00
Construction Engineering:	$ 17,052,930.00
Unforeseen:	$ 26,235,277.00
Construction:	$ 87,450,932.00
TOTAL COST (1984):	$ 139,265,595.00
Maintenance Cost Per Year:	$ 1,670,240.00

5) Pat Creek to the Narrows, then via Alternate C to Crittenden Creek, and then via Alternate D to the Canadian Border. Total Mileage 65.0:

Preliminary Engineering:	$ 9,536,300.00
Construction Engineering:	$ 19,072,600.00
Unforeseen:	$ 29,342,462.00
Construction:	$ 97,808,206.00
TOTAL COST (1984):	$ 155,759,568.00
Maintenance Cost Per Year:	$ 1,547,000.00

6) End of Mitkof Highway via Alternate E to the Canadian Border. Total Mileage 33.5:

Preliminary Engineering:	$ 9,021,373.00
Construction Engineering:	$ 18,042,746.00
Unforeseen:	$ 27,758,071.00
Construction:	$ 92,526,903.00
TOTAL COST (1984):	$ 147,349,093.00
Maintenance Cost Per Year:	$ 880,800.00

7) End of Mitkof Highway via Alternate E to MP 9.9, and then via the Limb Island Crossing to the mouth of Andrews Creek, and then via Alternate D to the Canadian Border. Total Mileage 34.1:

Preliminary Engineering:	$ 9,472,120.00
Construction Engineering:	$ 18,944,240.00
Unforeseen:	$ 29,144,985.00
Construction:	$ 97,149,951.00
TOTAL COST (1984):	$ 154,711,296.00
Maintenance Cost Per Year:	$ 805,220.00

In addition, pioneer access along each of the proposed routes was also estimated. Access of this type would consist of a single lane (16 feet wide) road with interdivisible turnouts. Long span bridge structures would be built full width, as would the proposed tunnel. Short span bridges were estimated with a half width super structure and a full width substructure, resulting in a 32% reduction in initial cost of these structures. Since pioneer access would be considered seasonal, snow structures etc, were eliminated. Estimates of costs have been included in Appendix C for information purposes only.

Maintenance stations would also have to be constructed along the proposed routes, in order to facilitate maintenance and operations efforts. It is estimated that two stations per route would be required. One station would be located at the Canadian Border while the other would be located midway along the route.

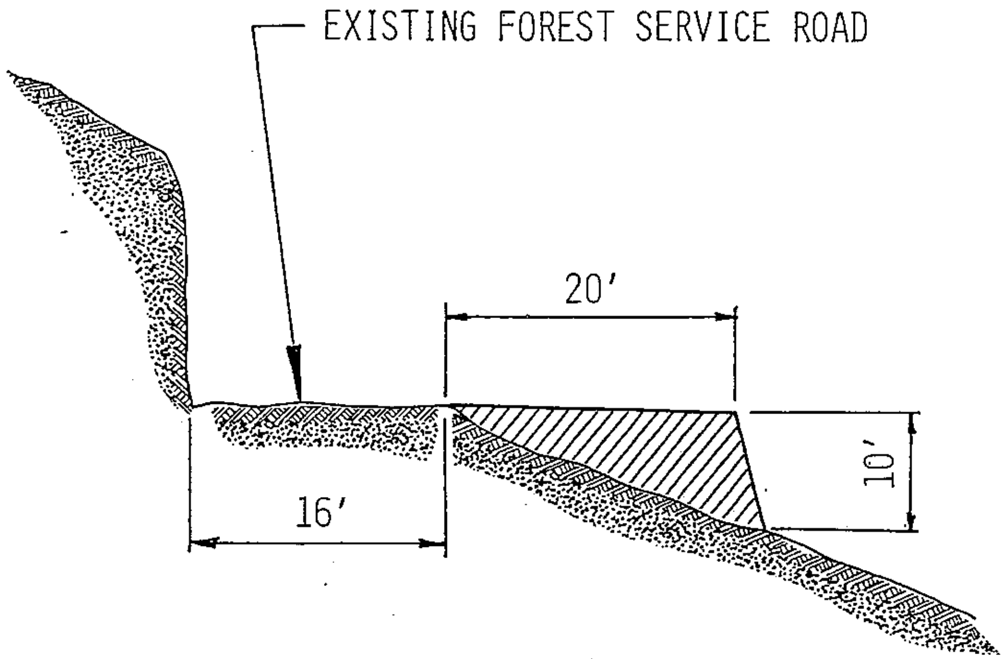
The estimated cost for each of these facilities are as follows:

Shop Facilities:	$ 1,500,000.00
Living Quarters:	500,000.00
Maintenance Equipment:	500,000.00
TOTAL:	$ 2,500,000.00

APPENDIX A

TYPICAL SECTION FOR
CONSTRUCTION CATEGORIES

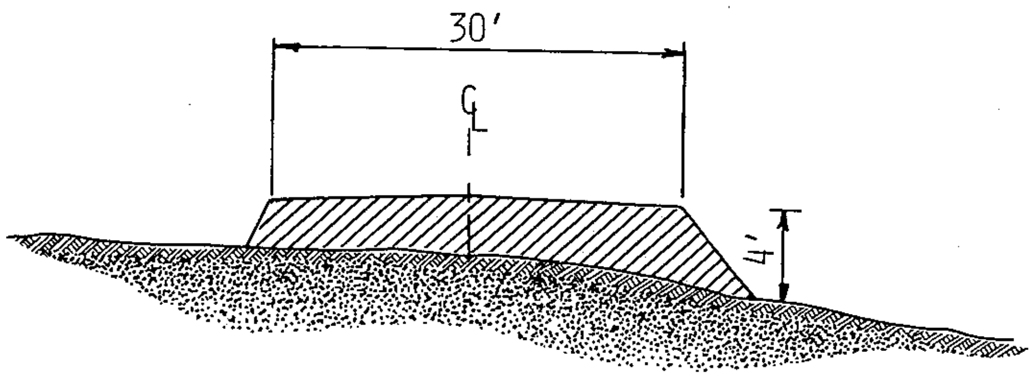
RECONSTRUCTION



BORROW QUANTITY ESTIMATE:

$$\frac{(1/2)(20)(10)(5280)\times 1.8}{27} = 35{,}200 \text{ TONS / MILE}$$

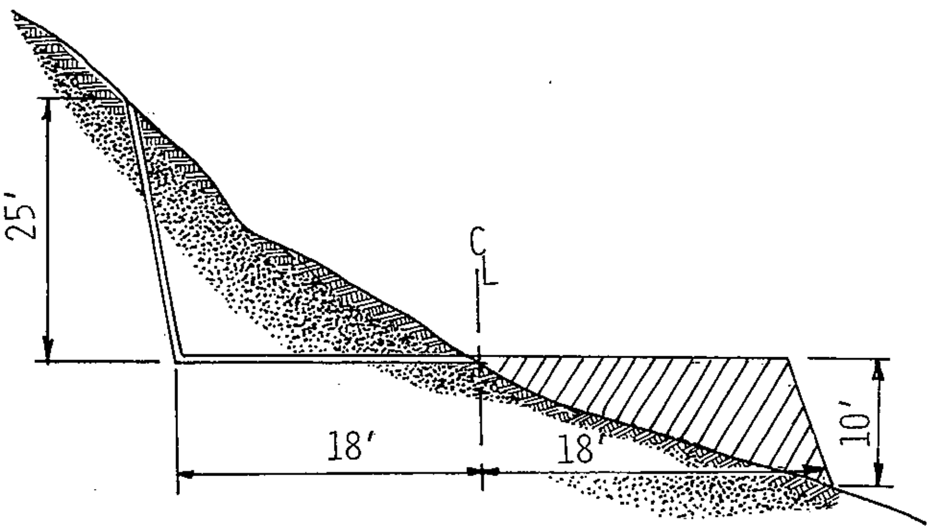
FLAT TERRAIN



BORROW QUANTITY ESTIMATE:

$$\frac{(1/2)(30+46)(4)(5280)}{27} \times 1.8 = 53{,}500 \text{ TONS/MILE}$$

MODERATE TERRAIN



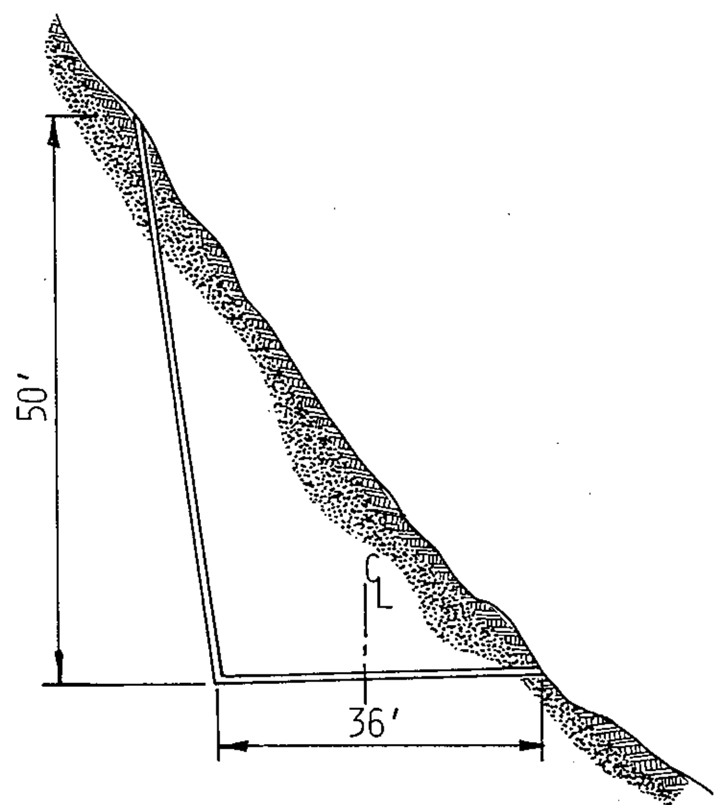
EXCAVATION QUANTITY ESTIMATE:

$$\frac{(1/2)\ (25)\ (18)\ (5280)}{27} = 44{,}000 \text{ CUBIC YARDS/MILE}$$

BORROW QUANTITY ESTIMATE:

$$\frac{(1/2)(10)(18)(5280)}{27} \text{X}1.8 = 32{,}000 \text{ TONS/MILE}$$

STEEP TERRAIN



EXCAVATION QUANTITY ESTIMATE:

$$\frac{(1/2)\ (50)\ (36)\ (5280)}{27} = 176{,}000\ \frac{\text{CUBIC YARDS}}{\text{MILE}}$$

APPENDIX B

ROUTE SEGMENT CONSTRUCTION CATEGORIES

ROUTE SEGMENT	MILEPOST	MILEPOST	CATEGORY	REMARKS
PAT CREEK TO THE NARROWS CROSSING	0	14	RECONSTRUCTION	EXISTING LOGGING ROAD
PAT CREEK TO THE NARROWS CROSSING	14	15	FLAT	BEGIN NEW CONSTRUCTION AT MP 14
PAT CREEK TO THE NARROWS CROSSING	15	16.5	MODERATE	
NARROWS CROSSING	16.5	16.8	BRIDGE	LONG SPAN STRUCTURE
ALTERNATE A	0	3	MODERATE	
ALTERNATE A	3	9.5	FLAT	
ALTERNATE A	9.5	10.8	STEEP	
ALTERNATE A	10.8	12	MODERATE	
ALTERNATE A	12	12.7	STEEP	
ALTERNATE A	12.7	13.8	FLAT	
ALTERNATE A	13.8	16.5	MODERATE	
ALTERNATE A	16.5	17.5	FLAT	
ALTERNATE A	17.5	18.5	MODERATE	
ALTERNATE A	18.5	21	STEEP	TALUS CONSTRUCTION

ROUTE SEGMENT	MILEPOST	MILEPOST	CATEGORY	REMARKS
ALTERNATE A	21	21.5	MODERATE	
ALTERNATE A	21.5	26	STEEP	
ALTERNATE A	26	29	FLAT	
ALTERNATE A	29	30.5	STEEP	
ALTERNATE A	30.5	32.5	FLAT	
ALTERNATE A1	18.5	20.7	FLAT	
ALTERNATE A1	20.7	22.6	TUNNEL	WEST FORK TUNNEL
ALTERNATE A1	22.6	26.8	FLAT	
ALTERNATE B	0	5	MODERATE	
ALTERNATE B	5	8.5	STEEP	
ALTERNATE B	8.5	10	MODERATE	
ALTERNATE B	10	14	STEEP	
ALTERNATE B	14	18.5	MODERATE	
ALTERNATE C	0	12	MODERATE	

ROUTE SEGMENT	MILEPOST	MILEPOST	CATEGORY	REMARKS
ALTERNATE C	12	14	FLAT	GENERALLY MUSKEG
ALTERNATE C	14	21	MODERATE	
ALTERNATE C	21	24.5	FLAT	
ALTERNATE C	24.5	26	MODERATE	
ALTERNATE D	0	5.3	FLAT	
ALTERNATE D	5.3	8	MODERATE	
ALTERNATE D	8	11.5	STEEP	
ALTERNATE D	11.5	15.5	MODERATE	
ALTERNATE D	15.5	22	FLAT	
ALTERNATE D	22	27.25	STEEP	
ALTERNATE D	27.25	37.5	MODERATE	MP 37.5 CANADIAN BORDER
ALTERNATE E	0	1	MODERATE	MPO EQUALS END OF MITKOF HIGHWAY
ALTERNATE E	1	1.75	DRY STRAITS CROSSING	1500 FOOT LONG SPAN STRUCTURE
ALTERNATE E	1.75	15.25	FLAT	

ROUTE SEGMENT	MILEPOST	MILEPOST	CATEGORY	REMARKS
ALTERNATE E	15.25	21	STEEP	
ALTERNATE E	21	25	FLAT	SWAMPY/ WET
ALTERNATE E	25	31.75	STEEP	
ALTERNATE E	31.75	33.25	MODERATE	MP 33.25 CANADIAN BORDER
LIMB ISLAND CROSSING	0	1.9	FLAT	
LIMB ISLAND CROSSING	1.9	2.2	BRIDGE	LONG SPAN STRUCTURE
LIMB ISLAND CROSSING	2.2	3.5	FLAT	
LIMB ISLAND CROSSING	3.5	3.8	BRIDGE	LONG SPAN STRUCTURE
LIMB ISLAND CROSSING	3.8	5.7	FLAT	

APPENDIX C

ROUTE SEGMENT COST ESTIMATES

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

Pat Creek to the Narrows via Alternate A to the Canadian Border (over West Fork Pass)
Total Mileage 50.5

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	11,180,412.00
Construction Engineering	L.S.	Lump Sum	All Req'd	5,534,304.00
Clearing	Acre	10,000.00	374.95	3,749,500.00
Unclassified Excavation	C.Y.	12.00	2,327,600	27,931,200.00
Borrow	Ton	6.00	1,621,400	9,728,400.00
Subbase	Ton	12.00	248,864	2,986,368.00
Beam Type Guard Rail	L.F.	20.00	156,700	3,134,000.00
36 Inch CMP	L.F.	45.00	16,470	741,150.00
48 Inch CMP	L.F.	75.00	8,780	658,500.00
Snow Sheds	S.F.	125.00	273,010	34,125,000.00
Short Span Structures	S.F.	125.00	94,000	11,750,000.00
Long Span Structures	S.F.	250.00	68,000	17,000,000.00
Subtotal			=	128,518,834.00
30% Unforeseen			=	38,555,650.00
15% Engineering			=	25,061,173.00
Construction Total			=	192,135,056.00
+7.5% Preliminary Engineering			=	12,530,586.00
GRAND TOTAL			=	204,666,243.00
Say			=	205,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
OT/PF
OUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

PROJECT NO. A87221

STIMATE OF COST: Maintenance

Pat Creek to the Narrows via Alternate A to the Canadian Border (over West Fork Pass).
Total Mileage 50.5

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Normal Maintenance	Mile	12,000.00	50.5	606,000.00
Low Elevation Snow Removal	Mile	6,000.00	33.5	201,000.00
High Elevation Snow Removal	Mile	20,000.00	17.0	340,000.00
Avalanche Control	Mile	20,000.00	12.0	240,000.00
Subtotal			=	1,387,000.00
+30% Unforeseen			=	416,100.00
Maintenance Total (per year)			=	1,803,100.00

PREPARED BY SML DATE 11/84 CHECKED DRL DATE 11/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

Pat Creek to the Narrows via Alternate A to the Canadian Border (Tunnel Alternate).
Total Mileage 49.9 Miles

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	13,044,689.00
Construction Engineering	L.S.	Lump Sum	All Req'd	6,457,121.00
Clearing	Acre	10,000.00	362.7	3,627,000.00
Unclassified Excavation	C.Y.	12.00	1,095,600	13,147,200.00
Borrow	Ton	6.00	1,878,400	11,270,400.00
Subbase	Ton	12.00	236,544	2,838,528.00
Beam Type Guard Rail	L.F.	20.00	125,200	2,504,000.00
36 Inch CMP	L.F.	45.00	16,320	734,400.00
48 Inch CMP	L.F.	75.00	7,680	576,000.00
Short Span Structures	S.F.	125.00	178,000	22,250,000.00
Long Span Structures	S.F.	250.00	44,000	11,000,000.00
Tunnel	L.F.	6,230.00	10,032	62,499,360.00
Subtotal			=	149,948,698.00
30% Unforeseen			=	44,984,609.00
15% Engineering			=	29,239,996.00
Construction Total			=	224,173,303.00
+7.5% Preliminary Engineering			=	14,619,998.00
GRAND TOTAL			=	238,793,301.00
Say			=	239,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

PROJECT NO. A87221

ESTIMATE OF COST: Maintenance
Pat Creek to the Narrows via Alternate A to the Canadian Border (Tunnel Alternate).
Total Mileage 49.9

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Normal Maintenance	Mile	12,000.00	48.0	576,000.00
Low Elevation Snow Removal	Mile	6,000.00	34.0	204,000.00
High Elevation Snow Removal	Mile	20,000.00	14.0	280,000.00
Avalanche Control	Mile	20,000.00	7.0	140,000.00
Subtotal			=	1,200,000.00
+30% Unforeseen			=	360,000.00
Maintenance Total (per year)			=	1,560,000.00

PREPARED BY SML DATE 11/84 CHECKED DRL DATE 11/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

Pat Creek to the Narrows via Alternate A to MP 13.7, then via Alternate B to the mouth of Andrews Creek, and then via Alternate D to the Canadian Border 67.9 Miles

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	9,959,265.00
Construction Engineering	L.S.	Lump Sum	All Req'd	4,929,837.00
Clearing	Acre	10,000.00	390	3,900,00.00
Unclassified Excavation	C.Y.	12.00	3,841,200	46,094,400.00
Borrow	Ton	6.00	1,968,700	11,812,200.00
Subbase	Ton	12.00	334,611	4,015,332.00
Beam Type Guard Rail	L.F.	20.00	175,032	3,500,640.00
36 Inch CMP	L.F.	45.00	35,849	1,613,205.00
48 Inch CMP	L.F.	75.00	17,925	1,344,375.00
Short Span Structures	S.F.	125.00	130,500	16,312,500.00
Long Span Structures	S.F.	250.00	44,000	11,000,000.00
Subtotal			=	114,481,754.00
30% Unforeseen			=	34,344,526.00
15% Engineering			=	22,323,942.00
Construction Total			=	171,150,222.00
+7.5% Preliminary Engineering			=	11,161,971.00
GRAND TOTAL			=	182,312,193.00
Say			=	182,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

PROJECT NO. A87221

ESTIMATE OF COST: Maintenance
Pat Creek to the Narrows via Alternate A to MP 13.7, then via Alternate B to the mouth of Andrews Creek and then via Alternate D to the Canadian Border. Total Mileage 67.9

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Normal Maintenance	Mile	12,000.00	67.9	814,800.00
Low Elevation Snow Removal	Mile	6,000.00	52.9	317,400.00
High Elevation Snow Removal	Mile	20,000.00	15.0	300,000.00
Avalanche Control	Mile	20,000.00	11.0	220,000.00
Subtotal			=	1,652,200.00
+30% Unforeseen			=	495,660.00
Maintenance Total (per year)			=	2,147,860.00

PREPARED BY SML DATE 11/84 CHECKED DRL DATE 11/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

Pat Creek to the Narrows via Alternate C to the mouth of Andrews Creek and then via Alternate D to the Canadian Border 61.1 Miles

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	7,607,736.00
Construction Engineering	L.S.	Lump Sum	All Req'd	3,765,830.00
Clearing	Acre	10,000.00	363.7	3,637,000.00
Unclassified Excavation	C.Y.	12.00	2,389,200	28,670,400.00
Borrow	Ton	6.00	2,005,650	12,033,900.00
Subbase	Ton	12.00	301,101	3,613,212.00
Beam Type Guard Rail	L.F.	20.00	138,072	2,761,440.00
36 Inch CMP	L.F.	45.00	32,259	1,451,655.00
48 Inch CMP	L.F.	75.00	16,130	1,209,750.00
Short Span Structures	S.F.	125.00	93,600	11,700,000.00
Long Span Structures	S.F.	250.00	44,000	11,000,000.00
Subtotal			=	87,450,923.00
30% Unforeseen			=	26,235,277.00
15% Engineering			=	17,052,930.00
Construction Total			=	130,739,130.00
+7.5% Preliminary Engineering			=	8,526,465.00
GRAND TOTAL			=	139,265,595.00
Say			=	139,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

PROJECT NO. A87221

ESTIMATE OF COST: Maintenance

Pat Creek to the Narrows via Alternate C to the mouth of Andrews Creek, and then via Alternate D to the Canadian Border. Total Mileage 61.6

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Normal Maintenance	Mile	12,000.00	61.1	733,200.00
Low Elevation Snow Removal	Mile	6,000.00	53.6	321,600.00
High Elevation Snow Removal	Mile	20,000.00	7.5	150,000.00
Avalanche Control	Mile	20,000.00	4.0	80,000.00
Subtotal			=	1,284,800.00
+30% Unforeseen			=	385,440.00
Maintenance Total (per year)			=	1,670,240.00

PREPARED BY SML DATE 11/84 CHECKED DRL DATE 11/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

Pat Creek to the Narrows, then via Alternate Route C to Crittenden Creek, and via Alternate Route D to the Canadian Border 65.0 Miles

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	8,508,761.00
Construction Engineering	L.S.	Lump Sum	All Req'd	4,211,838.00
Clearing	Acre	10,000.00	39.57	3,795,000.00
Unclassified Excavation	C.Y.	12.00	2,828,000	34,584,000.00
Borrow	Ton	6.00	2,097,000	12,582,000.00
Subbase	Ton	12.00	320,321	3,843,852.00
Beam Type Guard Rail	L.F.	20.00	147,576	2,951,520.00
36 Inch CMP	L.F.	45.00	34,318	1,544,310.00
48 Inch CMP	L.F.	75.00	17,159	1,286,925.00
Short Span Structures	S.F.	125.00	108,000	13,500,000.00
Long Span Structures	S.F.	250.00	44,000	11,000,000.00
Subtotal			=	97,808,206.00
30% Unforeseen			=	29,342,462.00
15% Engineering			=	19,072,600.00
Construction Total			=	146,223,268.00
+7.5% Preliminary Engineering			=	9,536,300.00
GRAND TOTAL			=	155,759,568.00
Say			=	156,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

PROJECT NO. A87221

ESTIMATE OF COST: Maintenance
Pat Creek to the Narrows, then via Alternate C to Crittenden Creek, and then via Alternate D to the Canadian Border. Total Mileage 65.0

ITEM	UNIT	UNIT PRICE	QUANTITY		AMOUNT
Normal Maintenance	Mile	12,000.00	65		780,000.00
Low Elevation Snow Removal	Mile	6,000.00	65		390,000.00
High Elevation Snow Removal	Mile	20,000.00	--		---.--
Avalanche Control	Mile	20,000.00	1		20,000.00
Subtotal				=	1,190,000.00
+30% Unforeseen				=	357,000.00
Maintenance Total (per year)				=	1,547,000.00

PREPARED BY SML DATE 11/84 CHECKED DRL DATE 11/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

End of Mitkof Highway via Alternate E to the Canadian Border 33.5 Miles

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	8,049,318.00
Construction Engineering	L.S.	Lump Sum	All Req'd	3,984,412.00
Clearing	Acre	10,000.00	188	1,880,000.00
Unclassified Excavation	C.Y.	12.00	2,420,000	29,040,000.00
Borrow	Ton	6.00	1,507,550	9,045,300.00
Subbase	Ton	12.00	163,609	1,963,308.00
Beam Type Guard Rail	L.F.	20.00	86,232	1,724,640.00
36 Inch CMP	L.F.	45.00	17,651	794,295.00
48 Inch CMP	L.F.	75.00	8,826	661,950.00
Short Span Structures	S.F.	125.00	55,800	6,975,000.00
Long Span Structures	S.F.	250.00	108,000	27,000,000.00
Rip Rap	C.Y.	30.00	46,956	1,408,680.00
Subtotal			=	92,526,903.00
30% Unforeseen			=	27,758,071.00
15% Engineering			=	18,042,746.00
Construction Total			=	138,327,720.00
+7.5% Preliminary Engineering			=	9,021,373.00
GRAND TOTAL			=	147,349,093.00
Say			=	147,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

PROJECT NO. A87221

ESTIMATE OF COST: Maintenance
End of Mitkof Highway via Alternate E to the Canadian Border. Total Mileage 33.5

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Normal Maintenance	Mile	12,000.00	33.5	398,400.00
Low Elevation Snow Removal	Mile	6,000.00	33.5	199,200.00
High Elevation Snow Removal	Mile	20,000.00	---	---.--
Avalanche Control	Mile	20,000.00	4	80,000.00
Subtotal			=	677,600.00
+30% Unforeseen			=	203,280.00
Maintenance Total (per year)			=	880,880.00

PREPARED BY SML DATE 11/84 CHECKED DRL DATE 11/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

End of Mitkof Highway via Alternate E to MP 9.9, then via Limb Island Crossing to the mouth of Andrews Creek, then via Alternate D to the Canadian Border
33.3 Miles/0.8 Miles Bridges

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	8,451,497.00
Construction Engineering	L.S.	Lump Sum	All Req'd	4,183,490.00
Clearing	Acre	10,000.00	203.5	2,035,000.00
Unclassified Excavation	C.Y.	12.00	1,544,400	18,532,800.00
Borrow	Ton	6.00	1,710,000	10,260,000.00
Subbase	Ton	12.00	164,102	1,969,224.00
Beam Type Guard Rail	L.F.	20.00	71,184	1,423,680.00
36 Inch CMP	L.F.	45.00	17,704	796,680.00
48 Inch CMP	L.F.	75.00	8,852	663,900.00
Short Span Structures	S.F.	125.00	59,400	7,425,000.00
Long Span Structures	S.F.	250.00	160,000	40,000,000.00
RipRap	C.Y.	30.00	46,956	1,408,680.00
Subtotal			=	97,149,951.00
30% Unforeseen			=	29,144,985.00
15% Engineering			=	18,944,240.00
Construction Total			=	145,239,176.00
+7.5% Preliminary Engineering			=	9,472,120.00
GRAND TOTAL			=	154,711,296.00
Say			=	155,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

PROJECT NO. A87221

ESTIMATE OF COST: Maintenance
End of Mitkof Highway via Alternate E to MP 9.9, and then via the Limb Island Crossing to the mouth of Andrews Creek, and then via Alternate D to the Canadian Border.
Total Mileage 34.1

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Normal Maintenance	Mile	12,000.00	33.3	399,600.00
Low Elevation Snow Removal	Mile	6,000.00	33.3	199,800.00
High Elevation Snow Removal	Mile	20,000.00	---	---.--
Avalanche Control	Mile	20,000.00	1	20,000.00
Subtotal			=	619,400.00
+30% Unforeseen			=	185,820.00
Maintenance Total (per year)			=	805,220.00

PREPARED BY SML DATE 11/84 CHECKED DRL DATE 11/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

Pioneer Access - Pat Creek to the Narrows via Alternate A to the Canadian Border (over West Fork Pass)

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	3,136,489.00
Construction Engineering	L.S.	Lump Sum	All Req'd	1,552,562.00
Clearing	Acre	10,000.00	127.94	1,279,400.00
Unclassified Excavation	C.Y.	12.00	572,220	6,866,640.00
Borrow	Ton	6.00	522,700	3,136,200.00
Subbase	Ton	12.00	98,280	1,179,360.00
Beam Type Guard Rail	L.F.	20.00	85,272	1,705,440.00
36 Inch CMP	L.F.	45.00	11,130	500,850.00
48 Inch CMP	L.F.	75.00	5,580	418,500.00
Short Span Structures	S.F.	85.00	62,100	5,278,500.00
Long Span Structures	S.F.	250.00	44,000	11,000,000.00
Subtotal			=	36,053,941.00
30% Unforeseen			=	10,816,182.00
15% Engineering			=	7,030,519.00
Construction Total			=	53,900,642.00
+7.5% Preliminary Engineering			=	3,515,259.00
GRAND TOTAL			=	57,415,901.00
Say			=	57,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

Pioneer Access - Pat Creek to the Narrows via Alternate A to the Canadian Border (Tunnel Alternate)

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	9,013,090.00
Construction Engineering	L.S.	Lump Sum	All Req'd	4,461,480.00
Clearing	Acre	10,000.00	129.05	1,290,500.00
Unclassified Excavation	C.Y.	12.00	252,680	3,032,160.00
Borrow	Ton	6.00	696,000	4,176,000.00
Subbase	Ton	12.00	90,440	1,085,280.00
Beam Type Guard Rail	L.F.	20.00	46,200	924,000.00
36 Inch CMP	L.F.	45.00	10,230	460,350.00
48 Inch CMP	L.F.	75.00	5,130	384,750.00
Short Span Structures	S.F.	85.00	62,100	5,278,500.00
Long Span Structures	S.F.	250.00	44,000	11,000,000.00
Tunnel	L.F.	6,230.00	10,032	62,499,360.00
Subtotal			=	103,605,470.00
30% Unforeseen			=	31,081,641.00
15% Engineering			=	20,203,067.00
Construction Total			=	154,890,177.00
+7.5% Preliminary Engineering			=	10,101,533.00
GRAND TOTAL			=	164,991,710.00
Say			=	165,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

Pioneer Access - Pat Creek to Narrows via Alternate A to MP 13.7, then via Alternate B to the mouth of Andrews Creek then via Alternate D to the Canadian Border

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	4,321,659.00
Construction Engineering	L.S.	Lump Sum	All Req'd	2,139,221.00
Clearing	Acre	10,000.00	184.9	1,849,000.00
Unclassified Excavation	C.Y.	12.00	917,940	11,015,280.00
Borrow	Ton	6.00	549,380	3,296,280.00
Subbase	Ton	12.00	148,120	1,777,440.00
Beam Type Guard Rail	L.F.	20.00	151,272	3,025,440.00
36 Inch CMP	L.F.	45.00	16,770	754,650.00
48 Inch CMP	L.F.	75.00	8,400	630,000.00
Short Span Structures	S.F.	85.00	116,100	9,868,500.00
Long Span Structures	S.F.	250.00	44,000	11,000,000.00
Subtotal			=	49,677,470.00
30% Unforeseen			=	14,903,241.00
15% Engineering			=	9,687,107.00
Construction Total			=	74,267,818.00
+7.5% Preliminary Engineering			=	4,843,553.00
GRAND TOTAL			=	79,111,371.00
Say			=	79,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

Pioneer Access - Pat Creek to the Narrows via Alternate C to the mouth of Andrews Creek then via Alternate D to the Canadian Border

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	3,363,907.00
Construction Engineering	L.S.	Lump Sum	All Req'd	1,665,134.00
Clearing	Acre	10,000.00	170.03	1,700,300.00
Unclassified Excavation	C.Y.	12.00	510,440	6,125,280.00
Borrow	Ton	6.00	506,640	3,039,840.00
Subbase	Ton	12.00	129,080	1,548,960.00
Beam Type Guard Rail	L.F.	20.00	114,312	2,286,240.00
36 Inch CMP	L.F.	45.00	14,610	657,450.00
48 Inch CMP	L.F.	75.00	7,320	549,000.00
Short Span Structures	S.F.	85.00	79,200	6,732,000.00
Long Span Structures	S.F.	250.00	44,000	11,000,000.00
Subtotal			=	38,668,111.00
30% Unforeseen			=	11,600,433.00
15% Engineering			=	7,540,282.00
Construction Total			=	57,808,826.00
+7.5% Preliminary Engineering			=	3,770,141.00
GRAND TOTAL			=	61,578,967.00
Say			=	62,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

Pioneer Access - Pat Creek to the Narrows, then via Alternate C to Crittenden Creek then via Alternate D to the Canadian Border

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	3,784,247.00
Construction Engineering	L.S.	Lump Sum	All Req'd	1,873,202.00
Clearing	Acre	10,000.00	182.37	1,823,700.00
Unclassified Excavation	C.Y.	12.00	657,8400	7,894,080.00
Borrow	Ton	6.00	617,2200	3,703,320.00
Subbase	Ton	12.00	140,000	1,680,000.00
Beam Type Guard Rail	L.F.	20.00	123,816	2,476,320.00
36 Inch CMP	L.F.	45.00	15,840	712,800.00
48 Inch CMP	L.F.	75.00	7,950	596,250.00
Short Span Structures	S.F.	85.00	93,600	7,956,000.00
Long Span Structures	S.F.	250.00	44,000	11,000,000.00
Subtotal			=	43,499,919.00
30% Unforeseen			=	13,049,976.00
15% Engineering			=	8,482,484.00
Construction Total			=	65,032,379.00
+7.5% Preliminary Engineering			=	4,241,242.00
GRAND TOTAL			=	69,273,621.00
Say			=	69,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

Pioneer Access - End of Mitkof Highway via Alternate E to the Canadian Border

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	5,210,614.00
Construction Engineering	L.S.	Lump Sum	All Req'd	2,579,254.00
Clearing	Acre	10,000.00	116.2	1,162,000.00
Unclassified Excavation	C.Y.	12.00	628,080	7,536,960.00
Borrow	Ton	6.00	1,091,140	6,546,840.00
Subbase	Ton	12.00	92,960	1,115,520.00
Beam Type Guard Rail	L.F.	20.00	86,232	1,724,640.00
36 Inch CMP	L.F.	45.00	10,500	472,500.00
48 Inch CMP	L.F.	75.00	5,280	396,000.00
Short Span Structures	S.F.	85.00	55,800	4,743,000.00
Long Span Structures	S.F.	250.00	108,000	27,000,000.00
Rip Rap	C.Y.	30.00	46,956	1,408,680.00
Subtotal			=	59,896,008.00
30% Unforeseen			=	17,968,802.00
15% Engineering			=	11,679,722.00
Construction Total			=	89,544,532.00
+7.5% Preliminary Engineering			=	5,839,861.00
GRAND TOTAL			=	95,384,393.00
Say			=	95,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

STATE OF ALASKA
DOT/PF
SOUTHEASTERN REGION

SHEET 1 OF 1

PROJECT STIKINE HIGHWAY ACCESS RECON.

ESTIMATE OF COST:

PROJECT NO. A87221

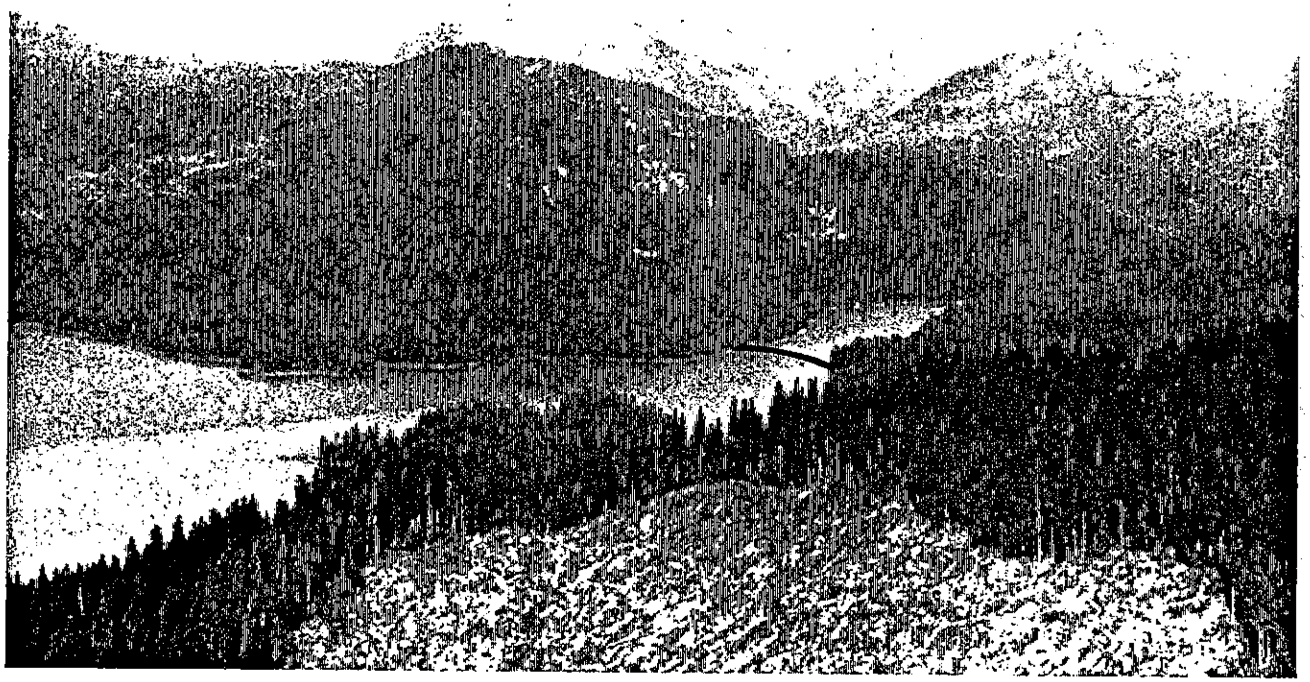
Pioneer Access - End of Mitkof Highway via Alternate E to MP 9.9, then via Limb Island Crossing to the mouth of Andrews Creek then via Alternate D to the Canadian Border

ITEM	UNIT	UNIT PRICE	QUANTITY	AMOUNT
Mobilization	L.S.	Lump Sum	All Req'd	6,205,975.00
Construction Engineering	L.S.	Lump Sum	All Req'd	3,071,958.00
Clearing	Acre	10,000.00	122.13	1,221,300.00
Unclassified Excavation	C.Y.	12.00	360,680	4,328,160.00
Borrow	Ton	6.00	1,106,700	6,640,200.00
Subbase	Ton	12.00	93,240	1,118,880.00
Beam Type Guard Rail	L.F.	20.00	71,184	1,423,680.00
36 Inch CMP	L.F.	45.00	10,530	473,850.00
48 Inch CMP	L.F.	75.00	5,280	396,000.00
Short Span Structures	S.F.	85.00	59,400	5,049,000.00
Long Span Structures	S.F.	250.00	160,000	40,000,000.00
Rip Rap	C.Y.	30.00	46,956	1,408,680.00
Subtotal			=	71,337,683.00
30% Unforeseen			=	21,401,305.00
15% Engineering			=	13,910,848.00
Construction Total			=	106,649,836.00
+7.5% Preliminary Engineering			=	6,955,424.00
GRAND TOTAL			=	113,605,260.00
Say			=	114,000,000.00

PREPARED BY TF DATE 8/14/84 CHECKED DRL DATE 8/24/84

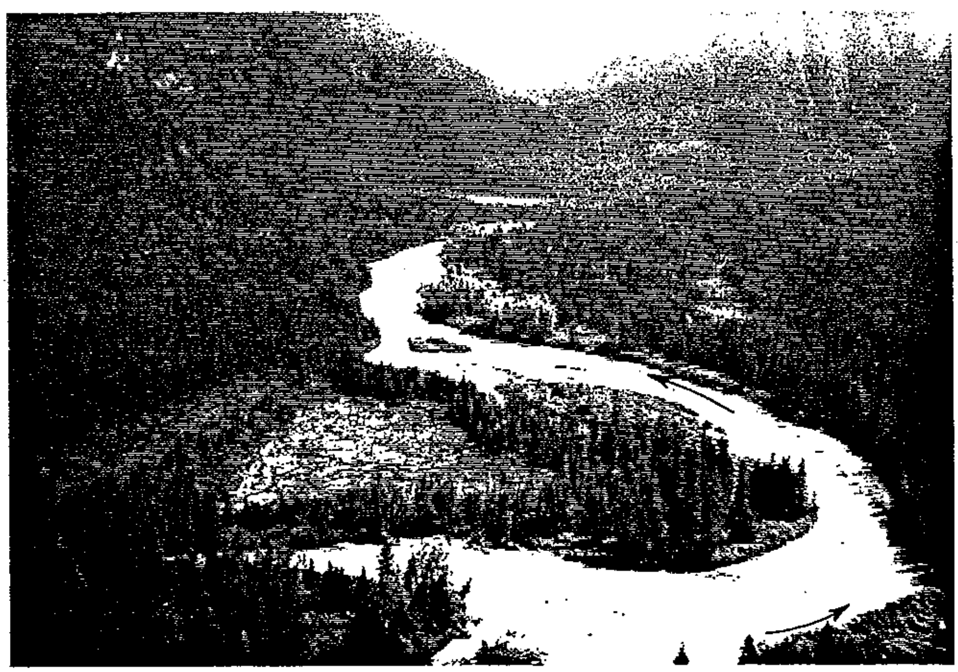
APPENDIX D

SELECTED PICTURES



AERIAL VIEW OF THE NARROWS CROSSING. EASTERN PASSAGE TO THE LEFT. BLAKE CHANNEL TO THE RIGHT.

THE NARROWS CROSSING, LOOKING TOWARDS BLAKE CHANNEL.



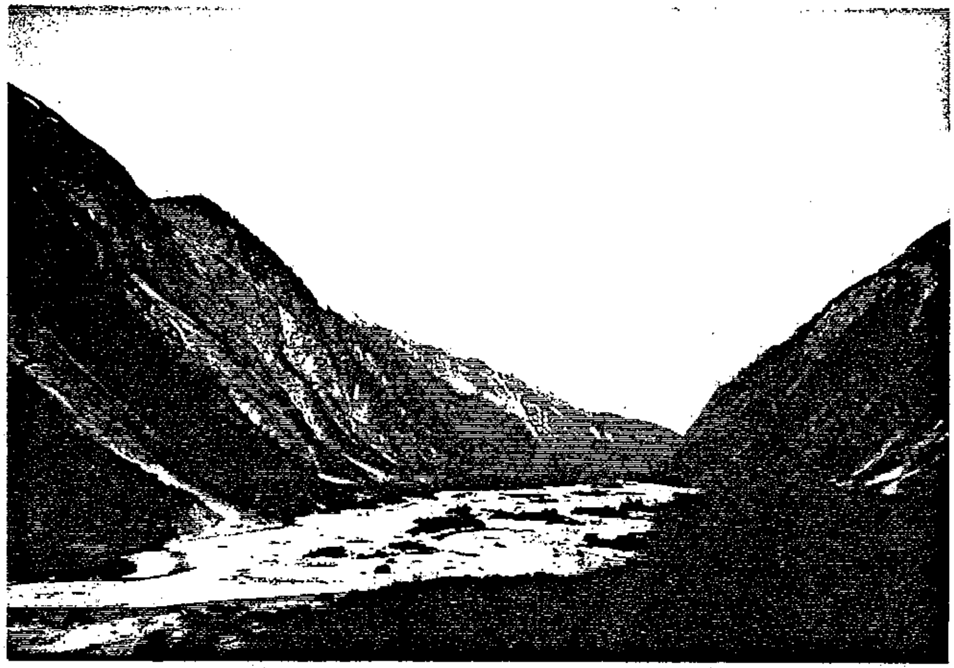
AARONS CREEK VALLEY IN THE VICINITY OF "A" LINE MP 13.75. LOOKING DOWN STREAM.

LOOKING DOWN UNNAMED VALLEY FROM WEST FORK PASS "A" LINE MP 22.5

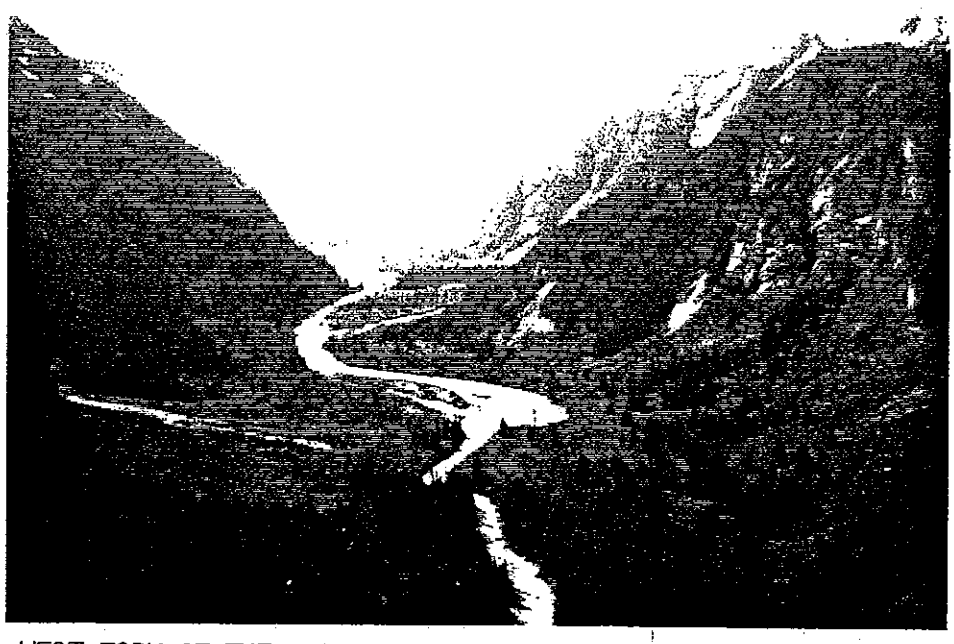
HANGING VALLEY "A" LINE MP 21.5 AS VIEWED FROM THE VICINITY OF "A" LINE MP 22.5.

WEST FORK OF THE KATETE RIVER AS VIEWED FROM THE WEST FORK PASS. CONE MTN. IN BACKGROUND.

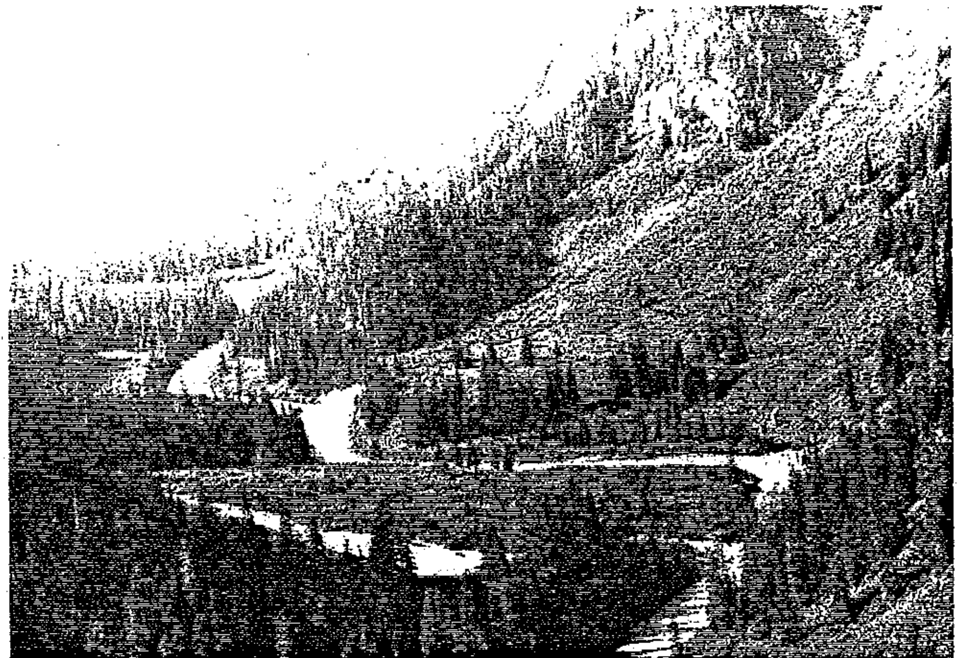
STEEP BEDROCK SLOPES, PRONE TO OPEN SLOPE AVALANCHING IN THE VICINITY OF "A" LINE MP 24.0.



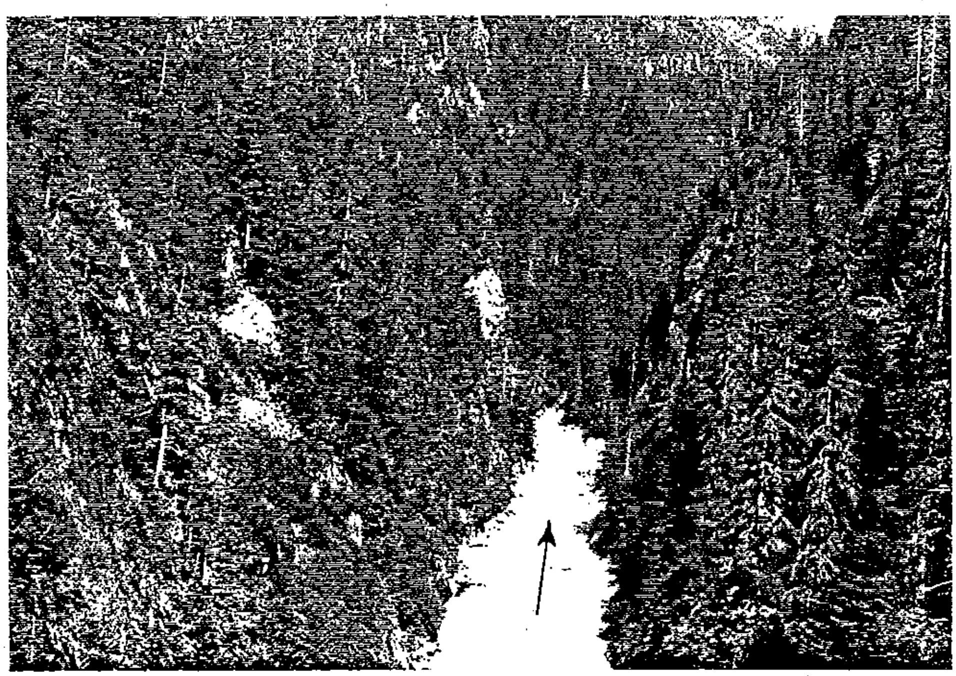
WEST FORK OF THE KATETE RIVER LOOKING DOWNSTREAM FROM "A_1"
LINE MP 23.5.



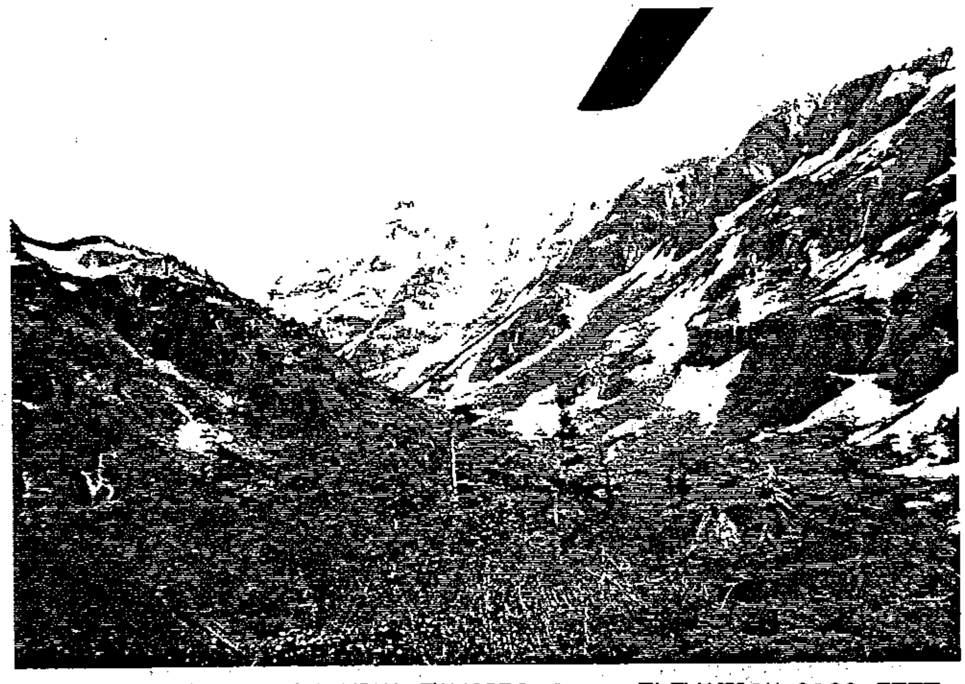
WEST FORK OF THE KATETE RIVER, LOOKING UPSTREAM FROM "A"
LINE MP 29.0.



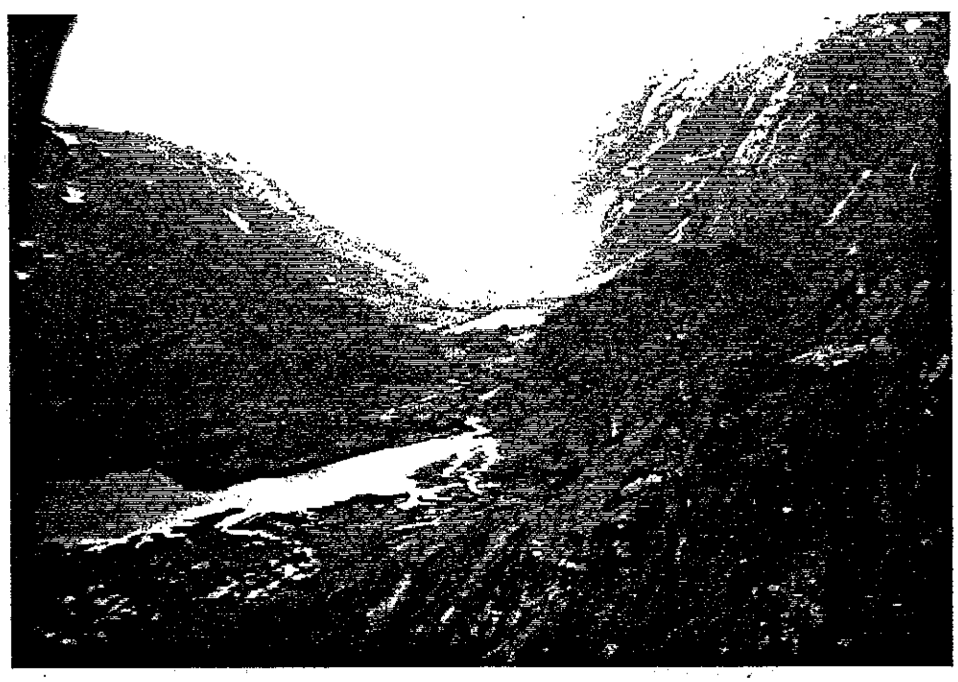
WEST FORK OF THE KATETE RIVER IN THE VICINITY OF "A" LINE MP 29.0.



VIEW OF DEEP NARROW CANYON "A" LINE MP 30.0.

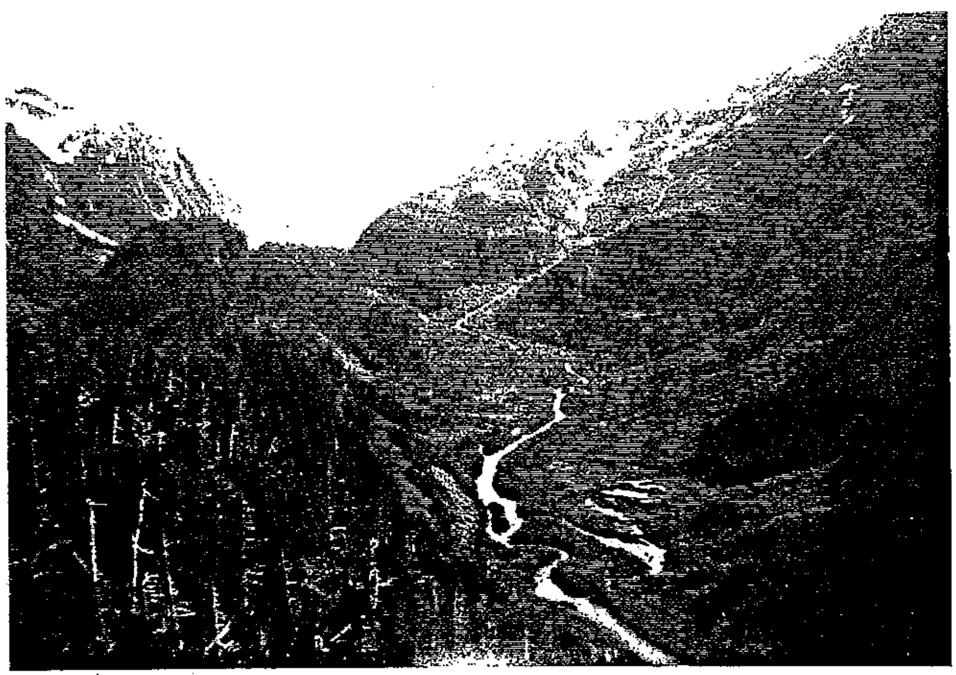


"B" LINE MP 9.0, LOOKING TOWARDS PASS, ELEVATION 2100 FEET.



LARGE MOUNTAIN LAKE "B" LINE MP 10 AS VIEWED FROM MP 8.0.

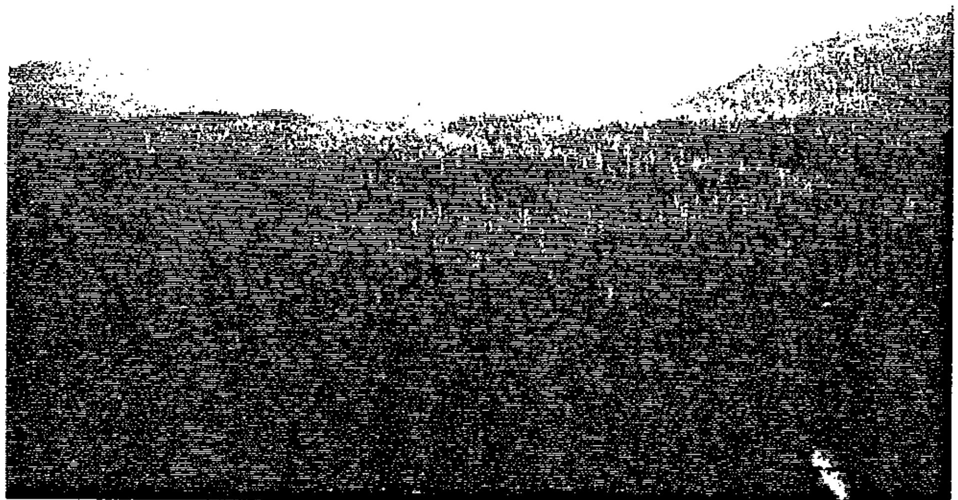
UPPER END OF ANDREWS CREEK VALLEY IN VICINITY OF "B" LINE MP 9.0.



ANDREWS CREEK VALLEY, LOOKING UPSTREAM FROM "B" LINE MP 12.0.

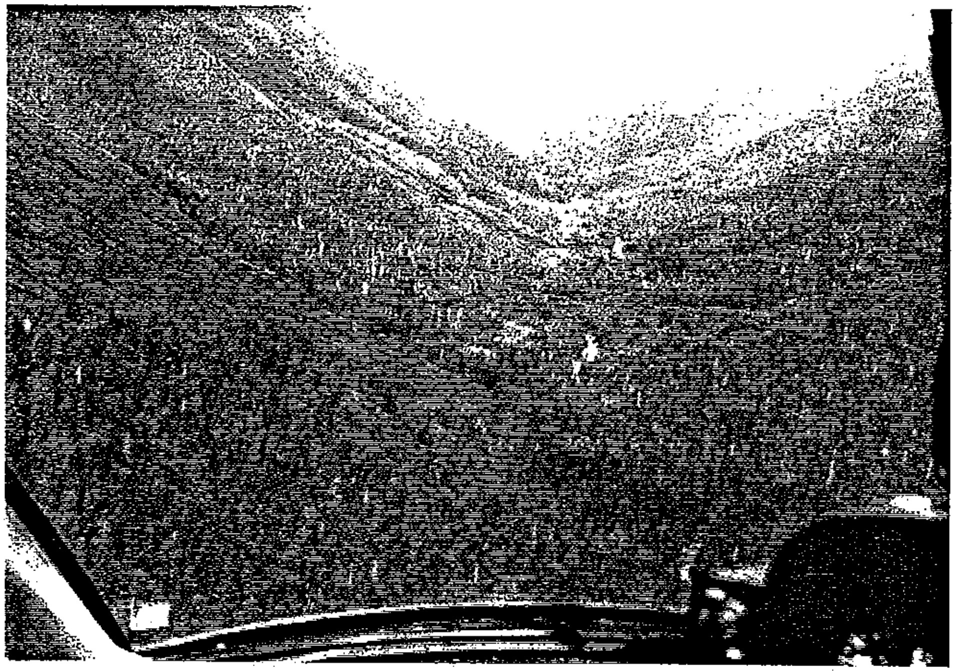
ANDREWS CREEK VALLEY, LOOKING UPSTREAM FROM "B" LINE MP 16.0.

CONFLUENCE OF THE WEST FORK OF ANDREWS CREEK WITH ANDREWS CREEK PROPER IN THE VICINITY OF "B" LINE MP 17.5.

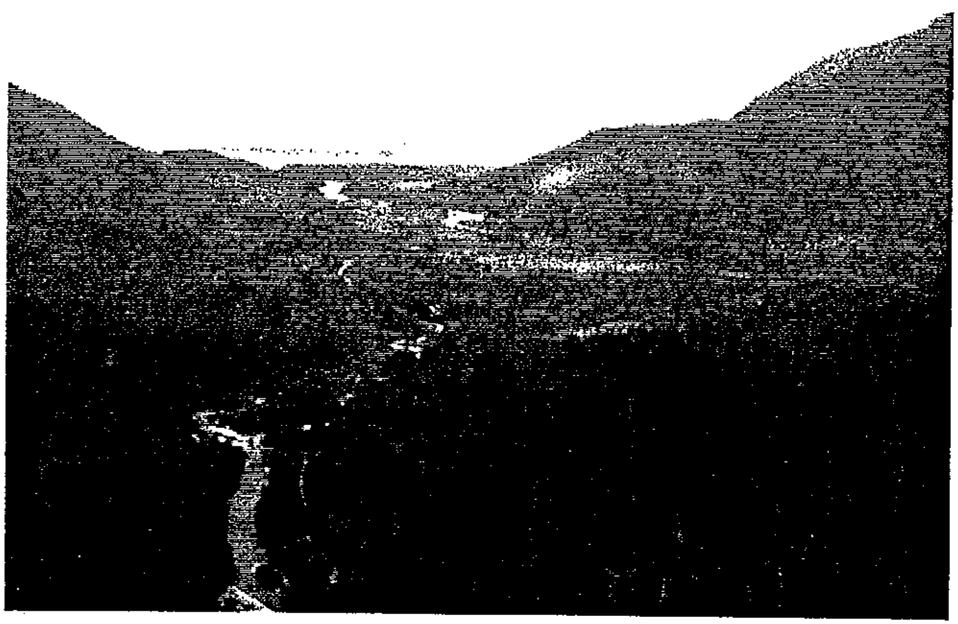


CRITTENDEN CREEK VALLEY AS VIEWED FROM "C" LINE MP 12.0.

LOOKING NORTH INTO PASS (ELEV. 1200 FT) IN THE VICINITY OF "C" LINE MP 17.5.

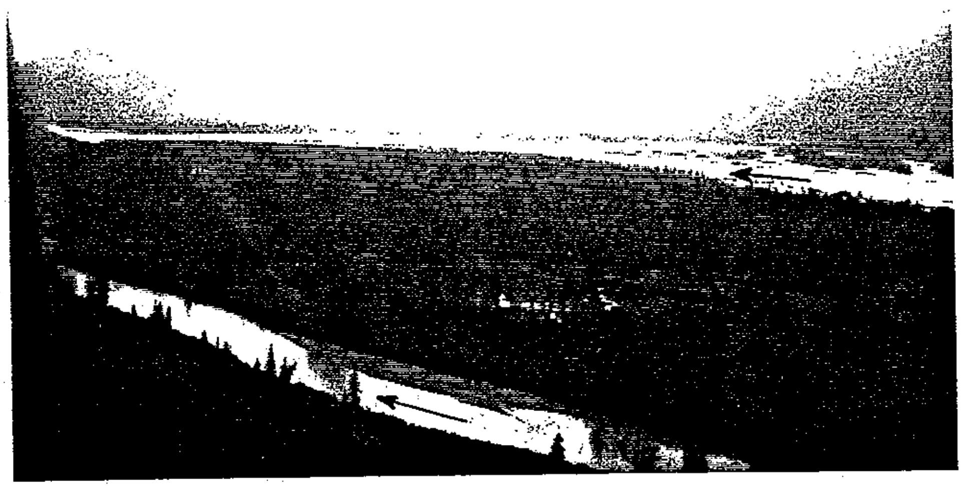


LOOKING DOWNSTREAM INTO THE WEST FORK OF ANDREWS CREEK FROM "C" LINE MP 20.0.

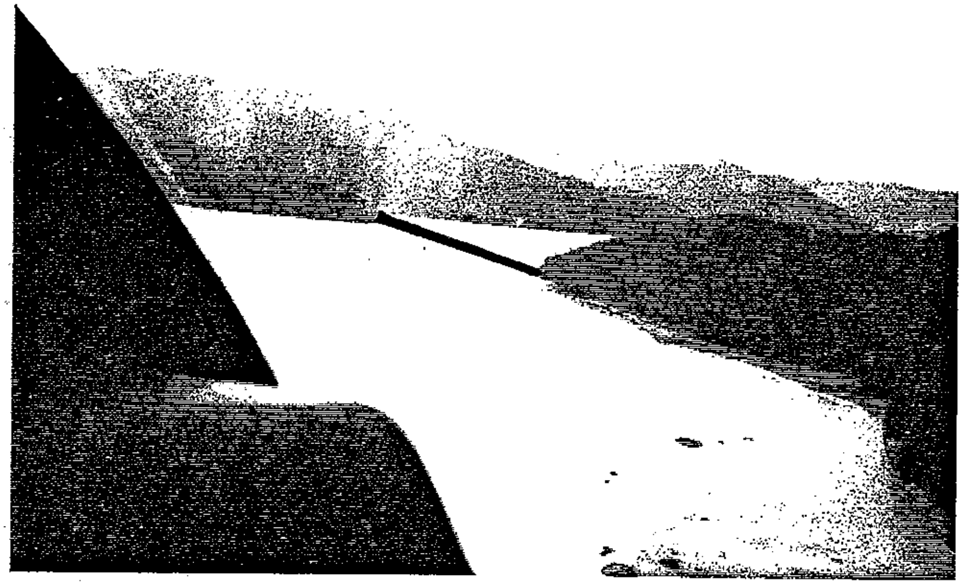


WEST FORK OF ANDREWS CREEK IN THE VICINITY OF "C" LINE MP 22.0.

COTTONWOOD SLOUGH IN THE VICINITY OF "D" LINE MP 16.5.



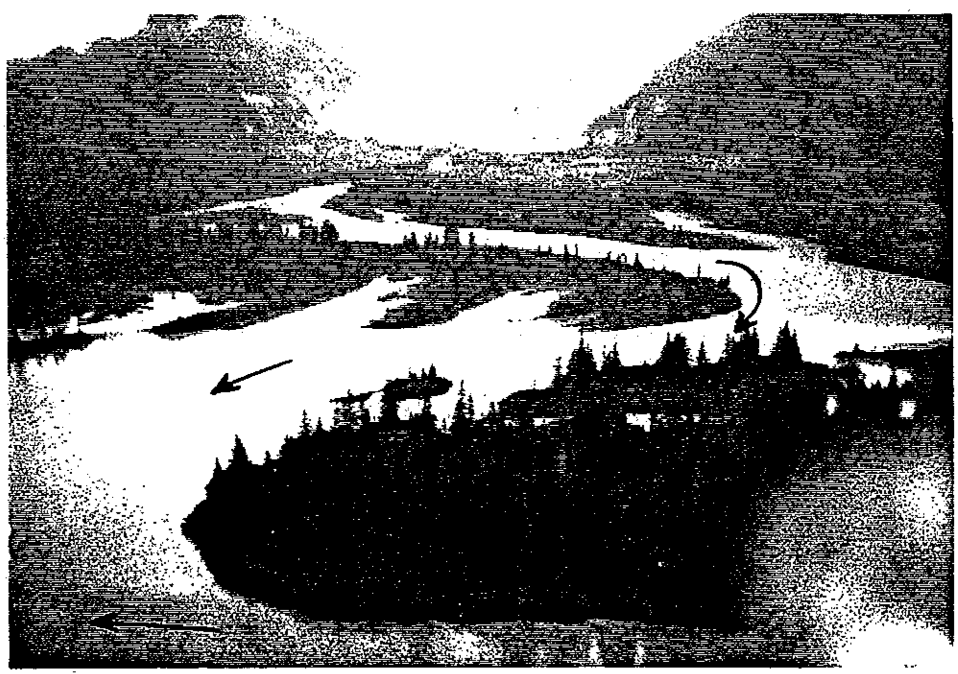
STIKINE RIVER VALLEY AS VIEWED FROM "D" LINE MP 22.0.
ANDREWS ISLAND IN FOREGROUND. FARM ISLAND IN UPPER LEFT.



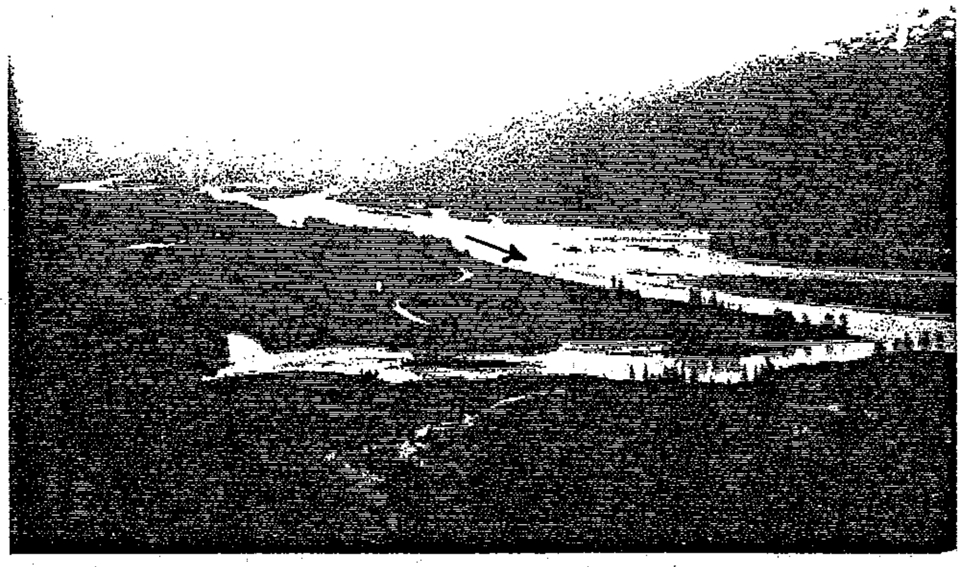
DRY STRAITS CROSSING. DRY ISLAND TO THE RIGHT. KING SLOUGH IN FOREGROUND

KING SLOUGH AS VIEWED FROM "E"LINE MP 8.0. FARM ISLAND TO THE LEFT. DRY ISLAND TO THE RIGHT.

VIEW OF STIKINE RIVER IN VICINITY OF "E" LINE MP 17.0.
KAKWAN PT. TO THE RIGHT.



SHAKES SLOUGH AS VIEWED FROM THE STIKINE RIVER.

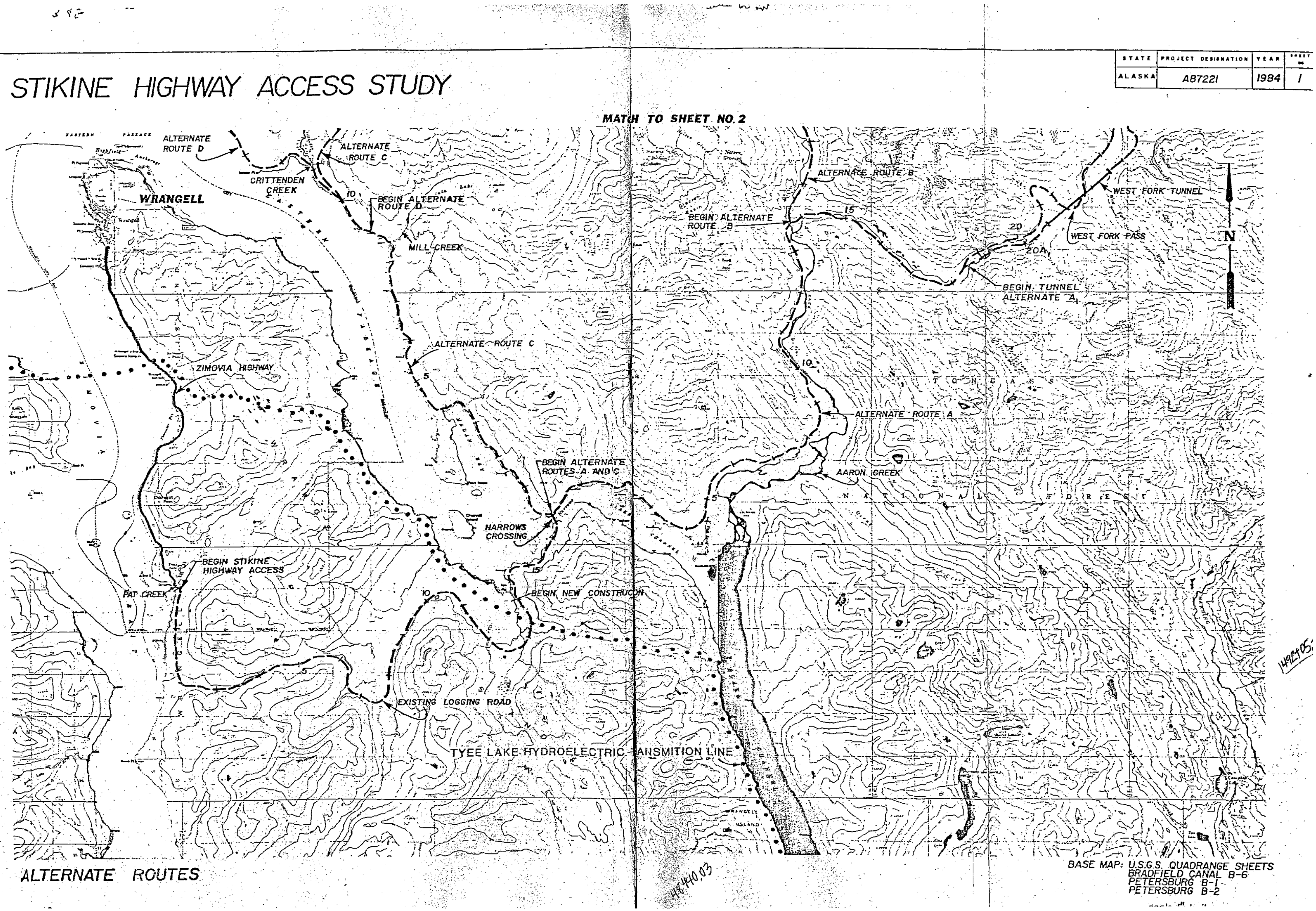


STIKINE RIVER VALLEY, LOOKING UPSTREAM IN THE VICINITY OF HOT SPRING SLOUGH.

STIKINE RIVER VALLEY LOOKING DOWNSTREAM FROM THE U.S. BORDER. BARNES LAKE IN THE CENTER OF PHOTO.

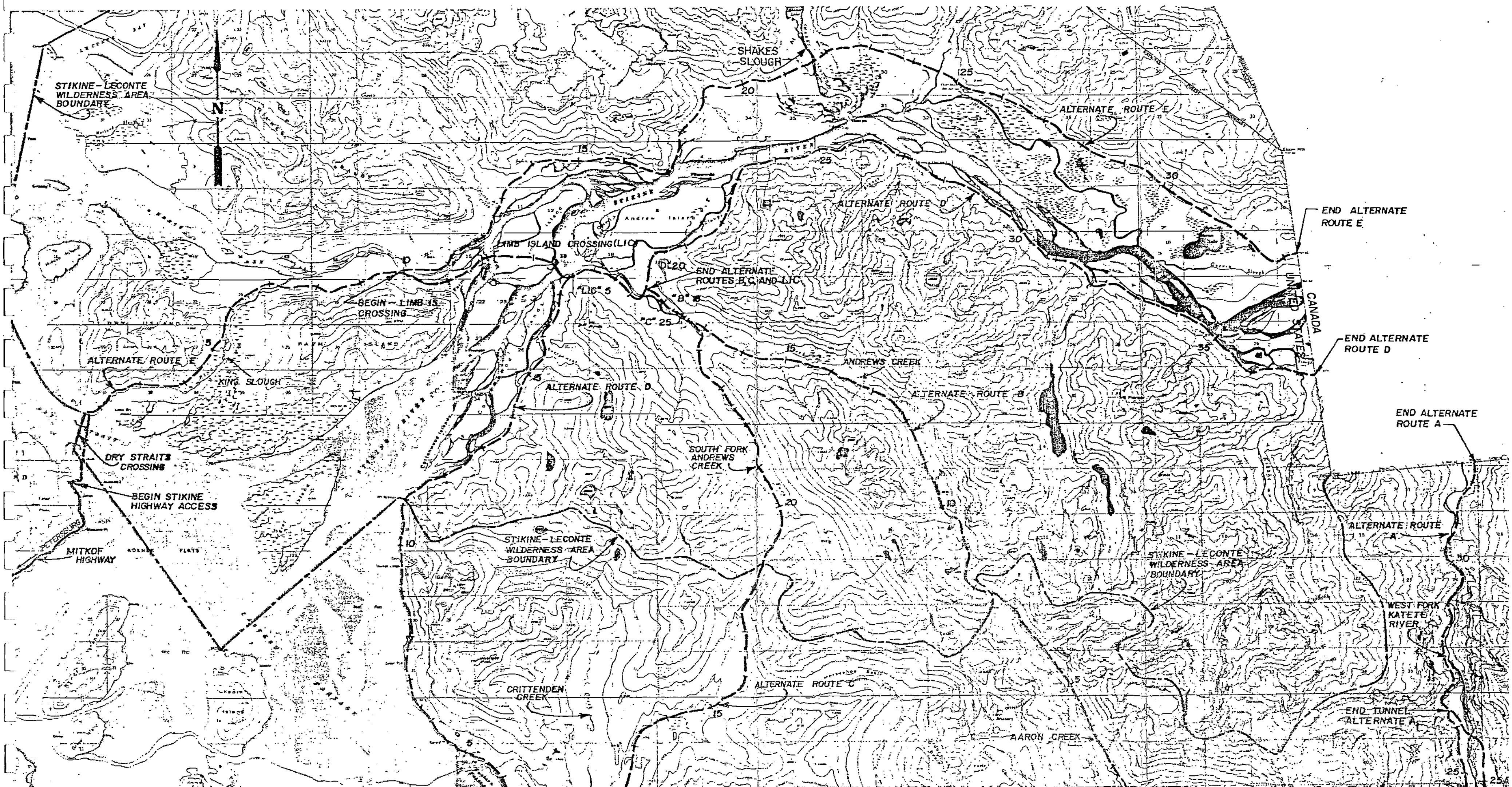
APPENDIX E

MAPS


STIKINE HIGHWAY ACCESS STUDY
STATE | PROJECT DESIGNATION | YEAR | SHEET
ALASKA | A87221 | 1984 | 1
MATCH TO SHEET NO. 2
ALTERNATE ROUTE D
CRITTENDEN CREEK
ALTERNATE ROUTE C
WRANGELL
BEGIN ALTERNATE ROUTE D
MILL CREEK
ALTERNATE ROUTE C
ZIMOVIA HIGHWAY
BEGIN ALTERNATE ROUTES A AND C
NARROWS CROSSING
BEGIN STIKINE HIGHWAY ACCESS
PAT CREEK
BEGIN NEW CONSTRUCION
EXISTING LOGGING ROAD
TYEE LAKE HYDROELECTRIC TRANSMITION LINE
ALTERNATE ROUTE B
BEGIN ALTERNATE ROUTE B
WEST FORK TUNNEL
WEST FORK PASS
BEGIN TUNNEL ALTERNATE A
ALTERNATE ROUTE A
AARON CREEK
N
ALTERNATE ROUTES
BASE MAP: U.S.G.S. QUADRANGE SHEETS
BRADFIELD CANAL B-6
PETERSBURG B-1
PETERSBURG B-2

STIKINE HIGHWAY ACCESS STUDY

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.
ALASKA	A87221	1984	2



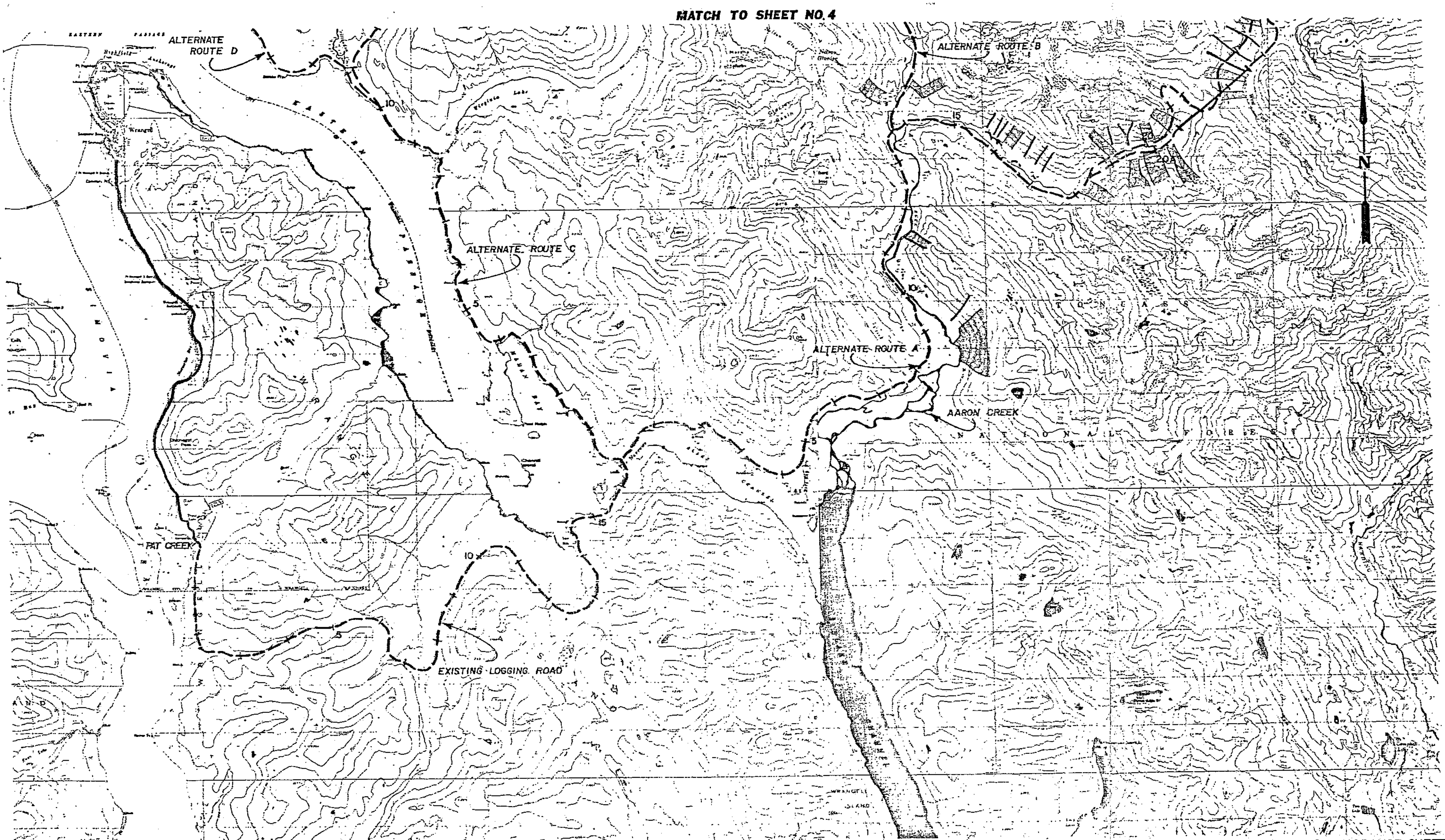
ALTERNATE ROUTES

MATCH TO SHEET NO. 1

BASE MAP: U.S.G.S. QUADRANGLE SHEETS
BRADFIELD CANAL C-6
PETERSBURG C-1
PETERSBURG C-2

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.
ALASKA	A87221	1984	3

STIKINE HIGHWAY ACCESS STUDY

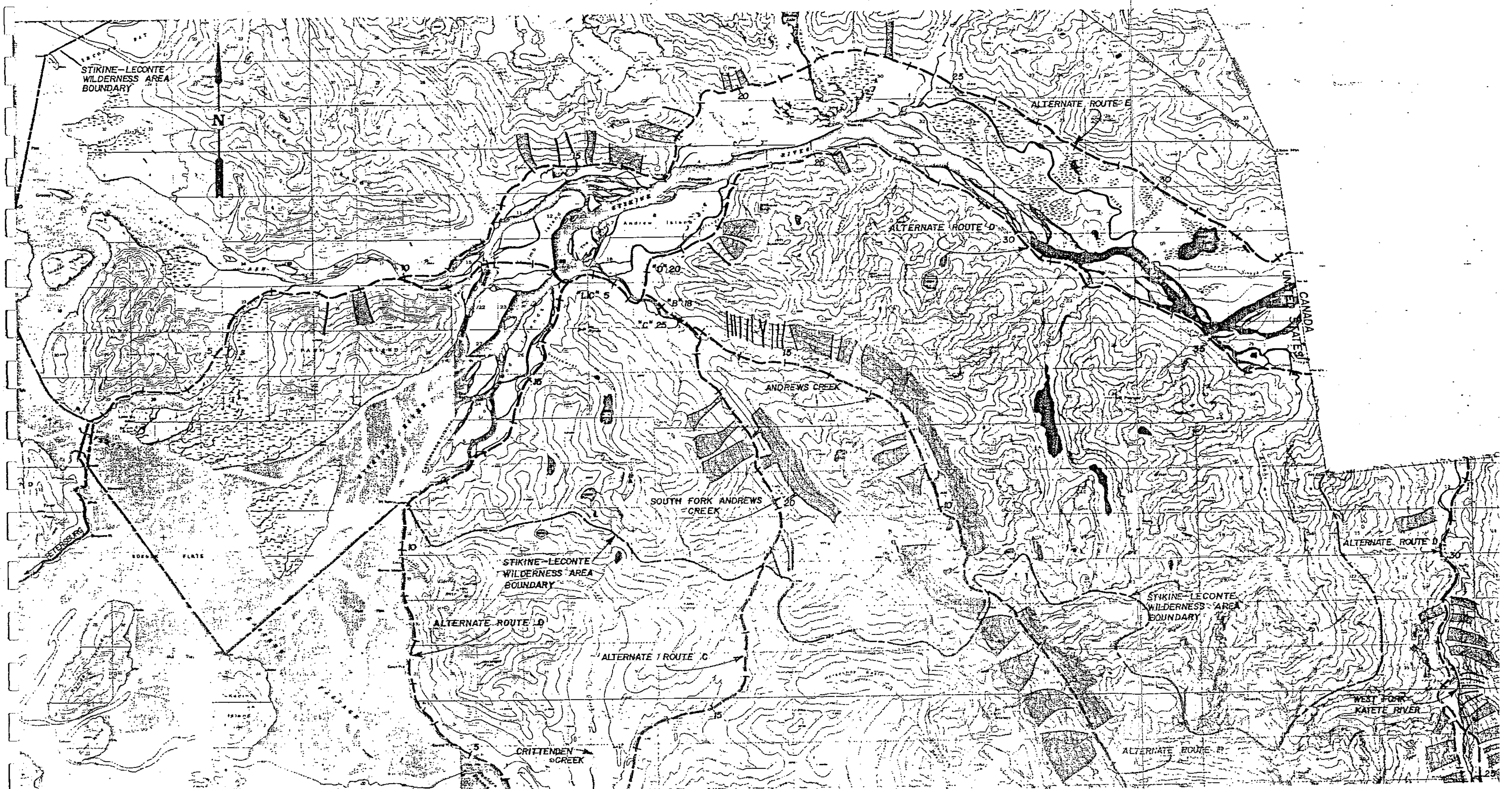


AVALANCHE HAZARDS ALONG ALTERNATE ROUTES

BASE MAP: U.S.G.S. QUADRANGE SHEETS
BRADFIELD CANAL B-6
PETERSBURG B-1
PETERSBURG B-2

STIKINE HIGHWAY ACCESS STUDY

STATE	PROJECT DESIGNATION	YEAR	SHEET No.
ALASKA	A87721	1984	4



AVALANCHE HAZARDS ALONG ALTERNATE ROUTES

MATCH TO SHEET NO. 3

BASE MAP: U.S.G.S. QUADRANGLE SHEETS.
BRADFIEL CANAL C-6
PETERSBURG C-6
PETERSBURG C-2.
scale 1"=1mile

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APPENDIX B

Bradfield River Road Final Scoping and PRE-NEPA Engineering Feasibility Study

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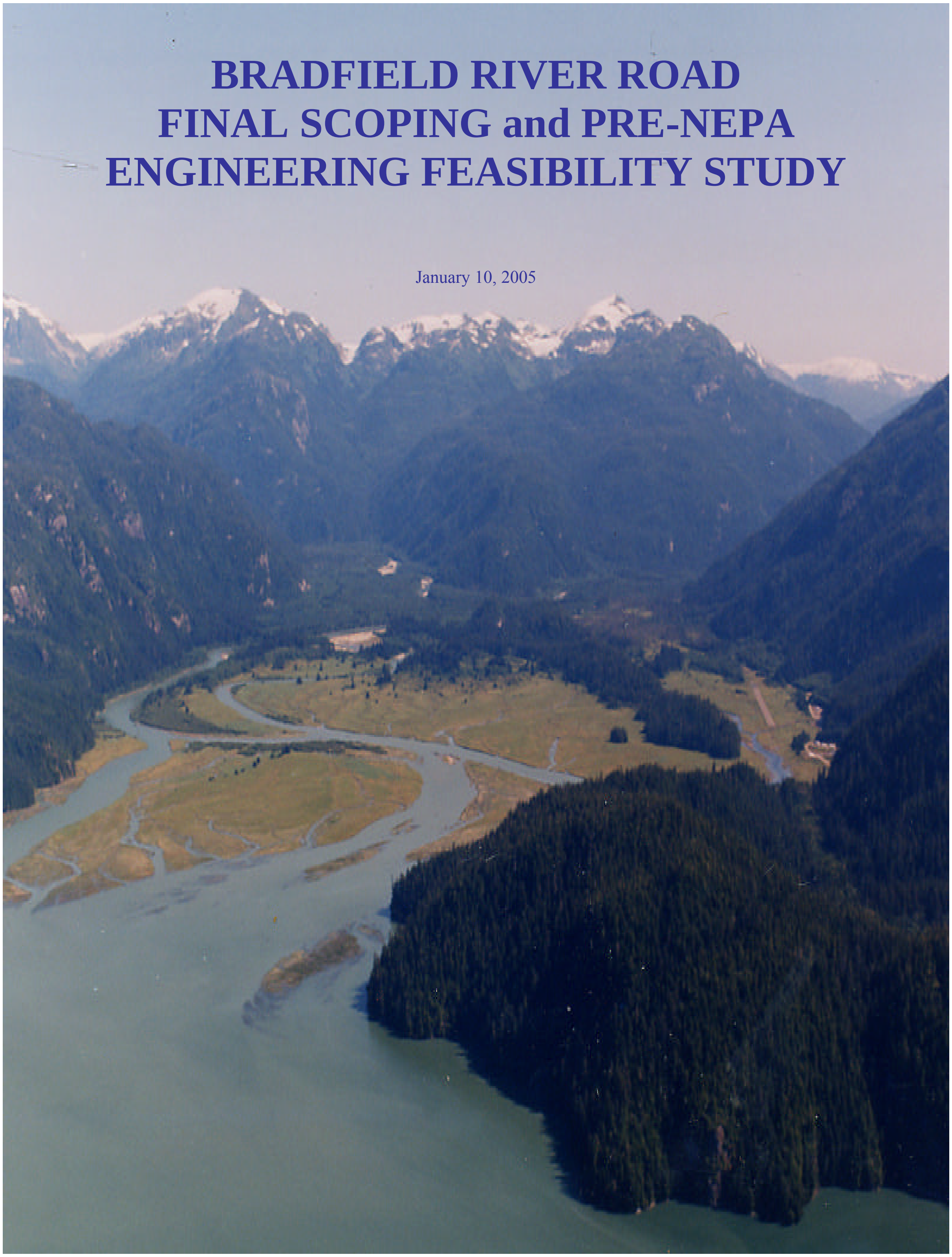
BRADFIELD RIVER ROAD
FINAL SCOPING and PRE-NEPA
ENGINEERING FEASIBILITY STUDY

January 10, 2005



Prepared by:

US DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

Western Federal Lands

Highway Division

610 East 5th Street

Vancouver WA 98661

In cooperation with:

Alaska Department of Transportation and Public Facilities

USDA Forest Service

and

City of Wrangell

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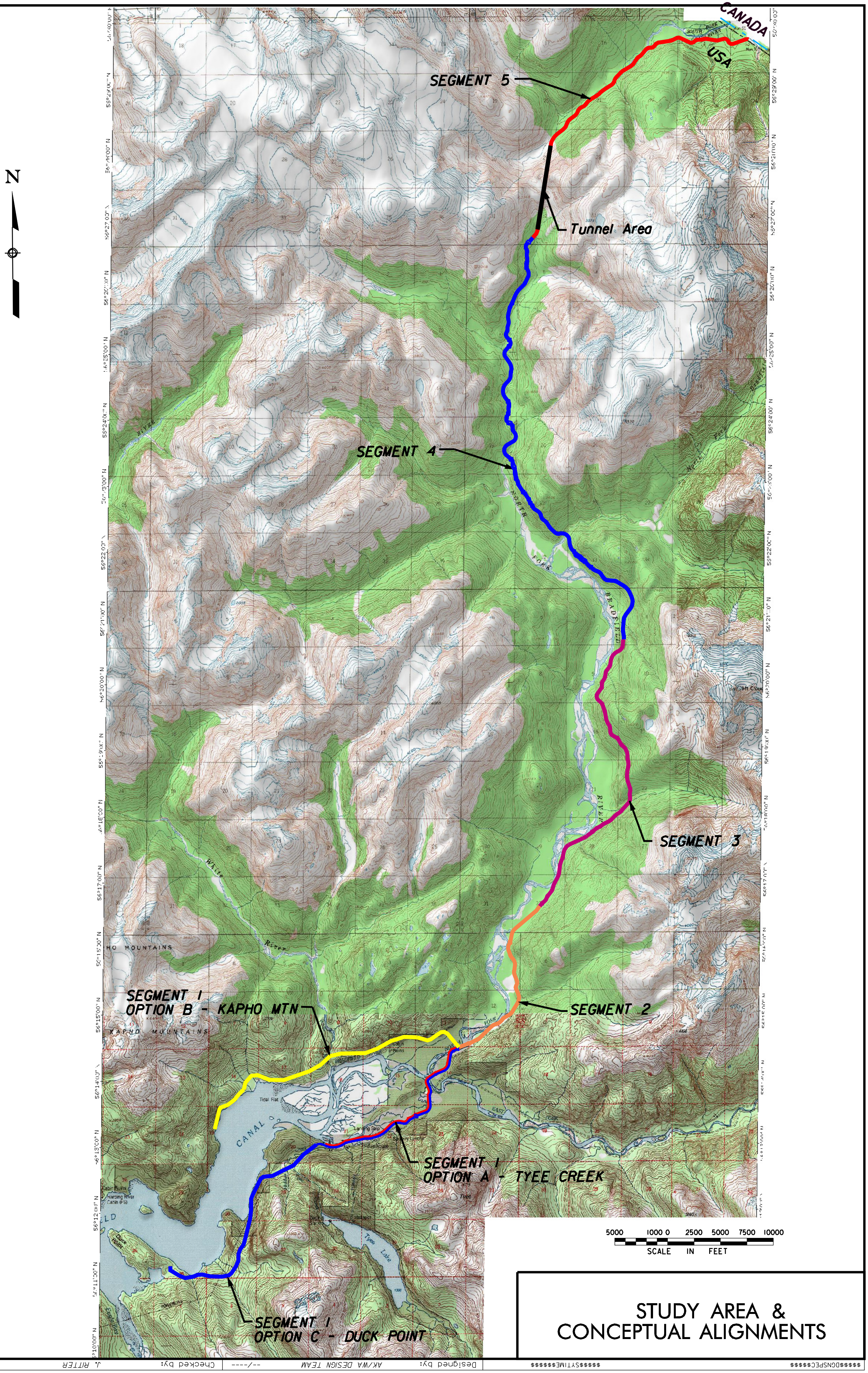


STUDY AREA &
CONCEPTUAL ALIGNMENTS

Western Federal Lands Highway Division (WFLHD) of the Federal Highway Administration, in cooperation with the Alaska Department of Transportation and Public Facilities (ADOT&PF), the U.S. Forest Service, Alaska Region (USFS), and the City of Wrangell, is the lead agency responsible for completion of this pre-NEPA engineering feasibility study. The purpose of the study is to develop a quantity-based estimate of a land link transportation route from the mouth of the Bradfield River to the Canadian border. This publication is a conceptual analysis that examines various route alternatives within the Bradfield Canal, the Bradfield River drainage and the headwaters of the Craig River drainage. Previous studies that examined access from the city of Wrangell to Canada are summarized in the *Economic Assessment of the Bradfield/Iskut Transportation Corridor,* prepared for the Alaska Department of Community and Economic Development by the McDowell Group. Traffic estimates utilized in this report for design purposes were developed in the *Economic Assessment of the Bradfield/Iskut Transportation Corridor* report.

ADOT&PF, in addition to the activities described above, is the designated funding agency and provided High Priority Project funds to WFLHD to administer. The *Southeast Alaska Transportation Plan (SATP) August 2004* generated by ADOT&PF actively supports an alternative for a road connection from Southeast Alaska to the Cassiar Highway in Canada.

The City of Wrangell, in cooperation with WFLHD, was responsible for coordination with the Canadian representatives, local communities, tribal entities, and local interest groups, and all public involvement processes associated with this project. WFLHD was designated in the Project Agreement to be the lead agency contact in securing needed agreements with the International/Canadian Federal Government. This responsibility was assumed by ADOT&PF. ADOT&PF is working with the Canadian regional governments to develop an International Memorandum of Understanding pursuant to the study of an overland transportation link between the State of Alaska and British Columbia.

The USFS's participation included providing necessary USFS clearances/permits and other pertinent information necessary for completion of the scoping study. In addition to attending agency meetings and participating in public information processes where appropriate, the USFS authorized activities and actions on National Forest lands.

Bradfield River Corridor

The transportation route analyzed in this report is divided into five segments for design purposes. The alignments included in this report begin with three alternative options for segment 1 that originate at locations identified by ADOT&PF as starting points for this quantity based estimate. The total length of this transportation route varies between 27.47 miles, 29.09 miles, and 32.20 miles dependent on the option used for segment 1. See Appendix A for project maps and alignment detail sheets for each option and segment. A major component of this conceptual design is the proposed 8000 linear foot tunnel contained in Segment 5, which connects the

Bradfield River drainage with the Craig River drainage. Appendix E contains the entire tunnel feasibility and cost estimate report.

The conceptual cost estimate developed for this study utilized bid tabulations extracted from a recent WFLHD project that were the most comparable in Southeast Alaska and tunnel costs shown in Appendix E. Table 1, Conceptual Cost Estimate Summary, summarizes construction costs along with Engineering services, EIS costs and Design Engineering and Administration estimates. Conceptual project totals ranged from approximately $241 million up to $352 million (2004 dollars). A breakdown of the Cost Estimate Summary is shown in Appendix B.

It is important to note that ADOT&PF has performed an independent review and redesign of the alignment contained in Option 1A. The design comparison completed by ADOT&PF reflects a preliminary cost estimate of $175,532,200, which is a substantial savings to what is shown above. ADOT&PF also recommends that an alternate route along the north side of the river should be investigated for further cost savings and improved location for a ferry terminal. The analysis and recommendations by ADOT&PF illustrate that many other alignments are feasible, all of which will be fully analyzed during the NEPA process.

Introduction

Bradfield River Road project is a Pre-NEPA Feasibility Study of an over-land link from Southeast Alaska to Canada. The study area begins about 25 miles southeast of the City of Wrangell, Alaska, near the head of the Bradfield Canal. The Bradfield Canal is an 18-mile long fjord leading to the mouth of the Bradfield River. From the mouth of the Bradfield River, the proposed road alignment follows the North Fork of the Bradfield River for 23 miles, where it crosses into the South Fork of the Craig River drainage through a proposed 1.5-mile long tunnel, and thereafter follows the Craig River for 4.5 miles to the Canadian border. Project maps are provided in Appendix A. Total project length within the U.S. is approximately 29 miles. A corresponding 35-mile study of a potential link with the Canadian highway system is being coordinated in Canada by the Alaska Department of Transportation and Public Facilities (ADOT&PF).

The Tyee Hydroelectric Project power-generating facility, located near the mouth of the Bradfield River, is the only development in the study area. Currently, the mouth of the Bradfield River is accessible via boat or floatplane along the Bradfield Canal. A gravel landing strip for small, wheeled aircraft is located near the Tyee Hydroelectric Project. A gravel road heads north for about 2.4 miles, from the hydroelectric project to a washed-out log bridge on the East Fork of the Bradfield River. From this crossing, the abandoned logging road continues several miles along the North Fork of the Bradfield River; however, it is nearly obscured by river erosion and vegetation. The Tyee Hydroelectric facility maintains an existing road from the power facility to the washed-out bridge that can be traveled by vehicle; beyond the bridge, ground access is limited to foot, jet boat, or helicopter travel.

The conceptual design and cost estimates were prepared by the Western Federal Lands Highway Division of the Federal Highway Administration (WFLHD) for the Alaskan portion of the road study, from a deep water access near the head of Bradfield Canal to the British Columbia border. The City of Wrangell, working with the assistance of the municipalities of Petersburg, Craig and Ketchikan, is actively seeking the support of Northwest British Columbia communities and businesses, and the British Columbia provincial government. The U.S. Forest Service is also a cooperating agency on this study. Funds were secured for the conceptual engineering assessment and environmental overview phases from High Priority Project Funds Section 1601.

At this time, WFLHD is focusing its study efforts on a two-lane paved roadway, designed to American Association of State Highway and Transportation Officials (AASHTO) standards for rural collectors. Several other studies have looked at other options that included single lane gravel roads, but WFLHD intends to use the rural collector design standards as a benchmark for comparisons of various alternative alignments and design standards. There are currently three different tidewater termini that are included in the study as potential deep-water ports for the proposed ferry terminal at the head of Bradfield Canal (beginning of the project), and their merits and shortcomings will be discussed in the technical narratives.

Purpose of the Pre-NEPA Engineering Feasibility Study

WFLHD of the Federal Highway Administration (FHWA), in agreement with the City of Wrangell, ADOT&PF, and the U.S. Forest Service, Alaska Region (USFS) conducted a Pre-NEPA Engineering Feasibility Study of a transportation corridor in the vicinity of the Bradfield River and Craig River drainages. WFLHD is the lead agency for this engineering study.

The engineering portion of this study included conceptual investigation for the feasibility and associated costs for an overland road access. The following tasks were included in the engineering study:

- Review information in previous reports
- Collect and provide the following preliminary information
  - Conceptual geotechnical overview
  - Conceptual hydraulic overview
  - Conceptual impact analysis overview
  - Conceptual plans of design alternatives
- Conduct the following analyses:
  - Corridor survey and mapping
  - Analysis of proposed tunnel
  - Cost analysis and estimates
- Coordinate the above activities with all involved government entities

The purpose of the study was to identify and evaluate a feasible alternative for a transportation corridor from the Bradfield Canal up the Bradfield River and Craig River drainages to the U.S./Canada border. All alignments were developed at a conceptual level, based on a reconnaissance level of data collection. The data gathered for these conceptual alignments could be utilized in future design studies of this proposed transportation corridor.

Project Study Area

The study area is located within the Tongass National Forest, approximately 60 miles north of Ketchikan, and 25 miles southeast of Wrangell, where Segment 1 Options A, B, & C begin near the mouth of the Bradfield Canal. The study continues 22 miles up the Bradfield River Valley to the proposed tunnel location, and 4.5 miles down the Craig River drainage to the U.S./Canada border. The legal geographic area within which the study area is located is as follows: Township 65 S Range 89 E; Township 65 S Range 90 E; Township 64 S Range 90E, Township 63 S Range 90 E; Township 62 S Range 90 E, all in the Copper River Meridian. Refer to the regional and vicinity maps provided in Appendix A, Sheet A.3.

Design Assumptions

The design standards shown below were derived from “A Policy on Geometric Design of Highways and Streets 2001”, Fourth Edition, by the AASHTO, and from discussions with representatives of ADOT&PF, the City of Wrangell, and USFS.

- Future Average Daily Traffic (ADT) in the year 2010 will not exceed 400
- Design Speed: 35 miles per hour (MPH)
- Minimum Horizontal Clearance: 10-foot (10’0”) lane, bounded by two 2-foot (2’0”) shoulders
- Maximum Grade: 10%; Desirable Maximum Grade: 8%
- Pavement Design: 4 inches (4”) Asphalt Surfacing; 5 inches (5”) Aggregate Base; 8 inches (8”) Select Borrow
- Superelevation: 6%
- Minimum Horizontal Curvature: 380 feet (380’0”)

The conceptual design values were based on AASHTO highway standards for “collectors” in rural areas. Design assumptions for the roadside environment (outside the shoulder edge) do not incorporate additional widths for curve widening, guardrail, intersections and other miscellaneous widening situations. LIDAR information is not precise enough for these determinations and further engineering will be required for the roadside environment.

The conceptual alignment and all analytical conclusions shown in the plan and profile sheets have been identified through orthophotography and LIDAR mapping analysis. No ground proofing was conducted, and further ground analysis will be required to verify all aspects of these conceptual designs.

Operational Assumptions

The study assumes that the Bradfield River Road will be in operation year round. Potential geological hazards identified along the corridor include debris flows and snow avalanches, which could affect year-round operation and necessitate a future detailed hazard risk assessment for these factors. Therefore, conceptual design alignments and grades incorporated only a general assessment of the area.

Based on the identified hazard potential, a road maintenance facility along the Bradfield River corridor will most likely be necessary. The scoping process also identified the potential need for a staffed U.S./Canada border station. Both facilities may be required for the future operation of this transportation corridor, but are outside the scope of this study and are not included in this engineering report.

An electrical utility line will be necessary to power the proposed tunnel and other proposed facilities. This study assumed that the line will originate from the Tyee Hydroelectric Project facility at the head of the Bradfield River Valley and will be trenched alongside the alignment of the proposed road. Installation costs on a per-mile basis have been included in the proposed project cost estimate, but no design has been proposed.

Methodology

WFLHD began the engineering process by reviewing previous studies concerning access along the Bradfield River and Craig River drainages as described Section I, pages 10-11. Based on information in these reports, the project termini were developed and a general alignment was plotted on topographic maps of the area.

Based on topographic maps, a project corridor was developed and mapped by acquiring high-resolution LIDAR and color orthophotography of the proposed project area. GEOPAK Digital Terrain Models (TIN files) based on approximate 3-foot intervals were produced from the LIDAR data.

Utilizing the TIN files, conceptual alignments were then developed throughout the proposed corridor. WFLHD formed a Cross Functional Team (CFT) comprised of a Hydrologist, Geotechnical Engineer, Environmental Specialist, Bridge Engineer, and Road Designer, which conducted a preliminary aerial field review of these conceptual alignments. For design purposes, the proposed corridor was divided into five different segments. Each segment included various alignment alternatives that were field-checked by the CFT. The CFT based its recommendations on the feasibility and estimated costs of construction, environmental concerns, and geological hazards, and used these factors to conceptualize one alignment from which a quantity-based estimate could be developed. Conceptual design plans and cost estimates for the proposed alignment were presented to ADOT&PF, USFS, and the City of Wrangell for review. Feedback received from these three agencies expanded the starting termini to include two additional options and was then incorporated into Segment 1: Option A (original scoped terminus), Tyee Hydro; Option B, Duck Point; and Option C, Kapho Mountain. There is one common proposed alignment for the remaining segments (segments 2 through 5).

Previous Bradfield-Related Studies

The Bradfield Canal region has been the subject of numerous transportation studies over the years. The project was originally proposed as providing a land-based link between Southeast Alaska and the continental road system to support mining activity in British Columbia. Proponents of the road have also pointed to the economic benefits of enabling faster movement of seafood and timber products to market, and the potential benefits of a link with the Canadian power grid. The Bradfield route began to receive serious consideration in the mid to late 1980s as a result of mining activity in the Iskut River area. The area saw a surge of mining activity, much of it supported through Wrangell via aircraft or watercraft. Recognizing the potential economic benefits for Alaska from a road link to the Iskut area, in 1990 the Alaska Legislature passed House Bill 311, authorizing the issuance of revenue bonds for up to $22.3 million for construction of a Bradfield River resource road.[1]

Some previous studies examining the feasibility of constructing a road to the Bradfield Canal include:

[1] "Bradfield Road Status Report", Senator Robin Taylor, July 1992.

- *Bradfield Industrial Road Feasibility Study* prepared by S.C. Jacoby and Associates for the Alaska Department of Transportation and Public Facilities, 1989. The study concluded a mine access road could be built from the Bradfield Canal to the Canadian border for $23 million including the construction of a tunnel. The DOTPF concluded that costs were underestimated by $40 million. In 1997, the DOTPF estimated a one-lane gravel road and tunnel would cost $65 million, but concluded the BC government would not support the road on the Canadian side because a port on Bradfield Canal would compete with the existing ports of Stewart and Prince Rupert.

- *A Benefit Cost Analysis of Transportation Alternatives for the Iskut Valley* prepared by Clayton Resources Ltd. for the British Columbia and Canadian governments, 1989. The study forecast that four proposed BC gold mines might benefit from the road. For two of the mines, a $25 million savings was estimated for a road versus air transport. For the other two mines, a $9 million savings was projected from the avoided cost of building a privately financed road and $9 million savings for reduced exploration costs. The Johnny Mountain and Snip gold mines were short lived and used hovercraft and air transport services from Wrangell. The Eskay Creek mine built part of the Iskut road. The Sulphurets property was never developed.

- *A Benefit/Cost Study for the Proposed Ketchikan/Bradfield/Cassiar Transportation Corridor* prepared by the McDowell Group, Inc. with Peratrovich, Nottingham, & Drage, Inc., Avalon Development Corporation, and BST Associates for the Alaska Department of Commerce and Economic Development, 1994. The study found a benefit cost ratio of 1.24 for a Bradfield pioneer road, and 0.76 for the two-lane highway.

- The US Department of Agriculture and Forest Service in 1998 estimated the cost of a public highway from Ketchikan to the border at $340 million. The Forest Service also estimated the cost of the Canadian portion at $87 million. In March 2003, The USDA Forest Service reviewed a wide range of Southeast Alaska proposed public road and ferry projects. Their estimate for 14 miles of new road and 14 miles of upgrading an existing forest service road from Bradfield to the border was $140 million.

- The *Southeast Alaska Transportation Plan* includes the Bradfield road and various related developments. The plan places traffic on the Bradfield at 100 AADT in 2011 increasing to 130 AADT by 2021, with summer ADT at between 270 and 320 for the same period. The cost of the project is estimated at $257 million for the 28 miles to the border, $58 million for the Fools Inlet Road and ferry terminal, and $16 million for the Fools Inlet ferry (to Bradfield). The study also estimated the cost of the road from Ketchikan to Bradfield at $258 million.

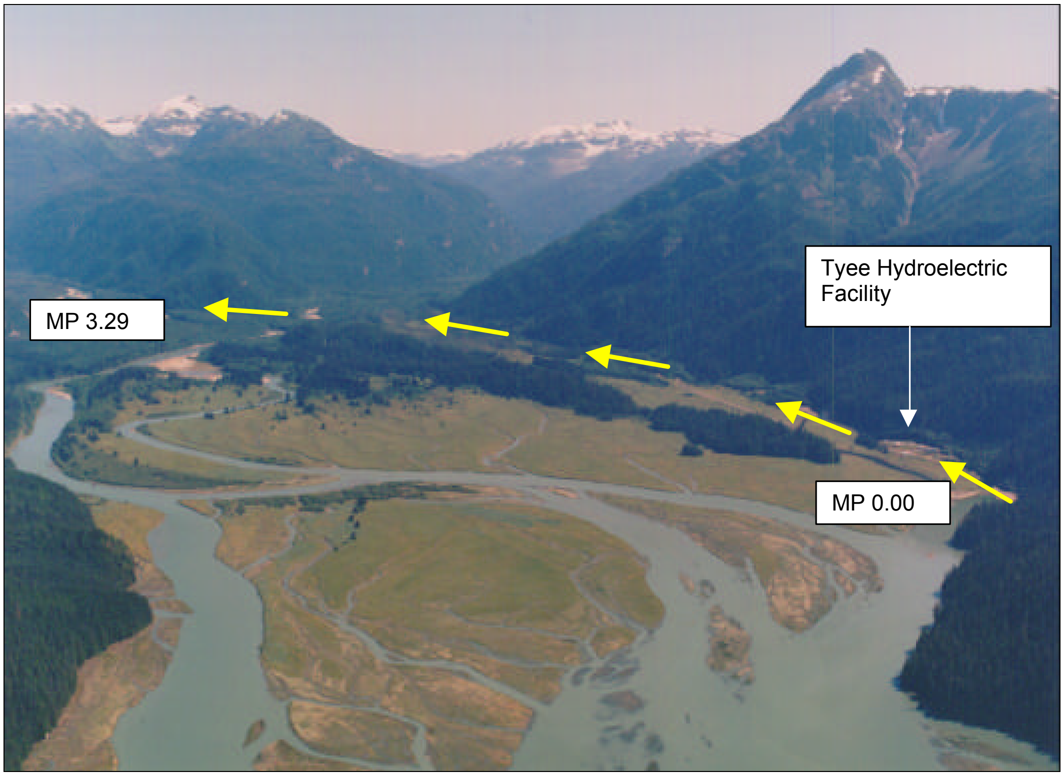
These previous studies provide important guidance in the development of the scope and workplan for the *Economic Assessment of the Bradfield/Iskut Transportation Corridor*. This more comprehensive and updated analysis is essential because of changing economic and political conditions on both sides of the Alaska / BC border.

Segment 1 Option A, Tyee Hydro

This segment begins at the west end of the existing road serving the Tyee Hydroelectric Project facility, where Tyee Creek flows into the Bradfield River. The existing road, currently under the ownership of the State of Alaska is approximately 2.5 miles in length. The road sustains minimal traffic, and appears well maintained. The conceptual alignment follows the existing road through the hydroelectric plant's housing facilities. Prior to reaching the hydroelectric penstock at milepost (MP) 0.36, the conceptual alignment was shifted westerly 200 feet, and parallels the existing road for approximately 2,500 feet. This will allow hydroelectric personnel to access and maintain the penstock facility. Access to the Tyee penstock will need to be evaluated further, and included in the design and cost estimate. At MP 0.61, the alignment crosses the discharge of the penstock and will require either a bridge structure or large culvert, for the purposes of this conceptual study we estimated costs for a bridge structure. The realignment rejoins the existing road at MP 0.80, just prior to the intersection with the Tyee aircraft landing strip. This intersection should also be included in any future final design and cost estimates for the project. The conceptual alignment continues to follow the existing road alignment to MP 2.30. Beyond this point the existing road continues easterly for approximately 1000 feet to a collapsed log stringer bridge. The log abutments are still intact, but aerial observation of this old crossing shows the location to be in the channel migration zone. For this reason, at MP 2.30 the conceptual alignment leaves the existing road and continues northward to MP 2.60, where bedrock is present on both sides of the river and the channel is more confined. At this location (MP 2.60), a crossing was identified that will require an estimated 325-foot bridge structure. All river crossings have been identified through orthophotography and LIDAR mapping, and will require further analysis to verify this as an acceptable bridge location. From MP 2.6, the conceptual alignment then moves eastward to the base of a solid rock bluff, and follows the old logging road alignment at the base of the bluff to the terminus of this segment at MP 3.29.

(See photo next page)

Figure 1. Segment 1, Option A, Tyee Hydro



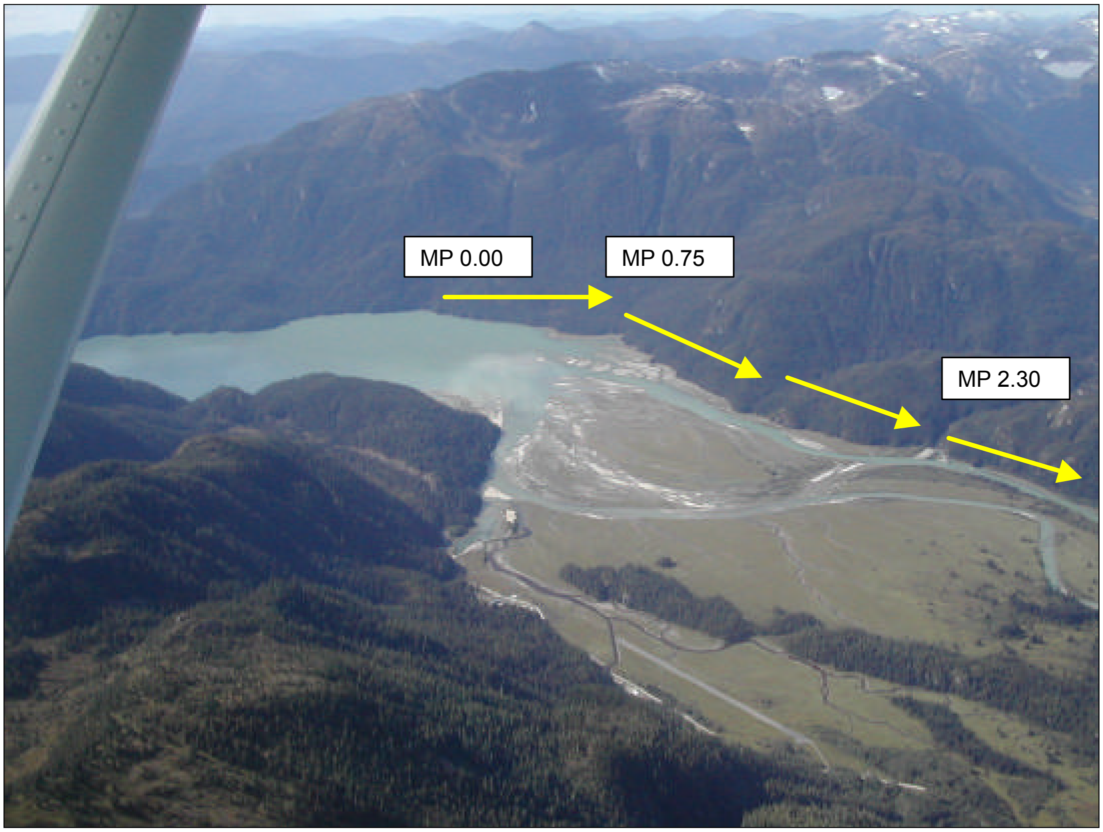
Construction of this segment is anticipated to be moderately difficult. The large, flat flood plains provide for construction staging areas and potential opportunities to utilize excess excavation from the adjacent road segments. This alignment crosses muskeg areas. These crossings will require additional investigation to determine muskeg depth and appropriate stabilization methods.

The CFT designed and evaluated an alignment at MP 3.29 that crossed over to the north side of the North Fork of the Bradfield. However, for this conceptual study, due to the vertical rock slopes on that side of the river and the need for an extensive bridge span, the CFT decided to concentrate design efforts on the southeast side of the North Fork.

Segment 1 Option B, Kapho Mountain

This conceptual alignment begins at a potential location that may provide deep-water access to the north side of the mouth of the Bradfield Canal. It is also the most westerly point that contains current LIDAR data and where a geometric design can begin. For approximately 3.4 miles the alignment is adjacent to the Bradfield River and is generally positioned on steep, rocky side slopes that will require full bench blasting and retaining walls to contain the full roadway width. At MP 0.75 the alignment crosses a confluence of three stream drainages, and will require an estimated two bridge structures approximately 100’ each in length. The alignment continues along the base of the rock cliffs, above the river channel to MP 2.30, where it crosses a large drainage and will require an estimated 225-foot bridge span. The same terrain features continue along the alignment approximately up to MP 3.50. At this point the Bradfield River bends to the southeast as the conceptual road alignment continues toward the northeast, along the base of the mountainside, but includes the additional area to utilize the excess excavation in the conceptual road design. At MP 4.55, the alignment crosses approximately 0.30 miles of muskeg flood plains to milepost 4.85, where the North Fork of the Bradfield River could be crossed. The river crossing is estimated to require a 400-foot bridge to reach the alignment terminus at MP 4.94.

Figure 2. Segment 1, Option B, Kapho Mountain

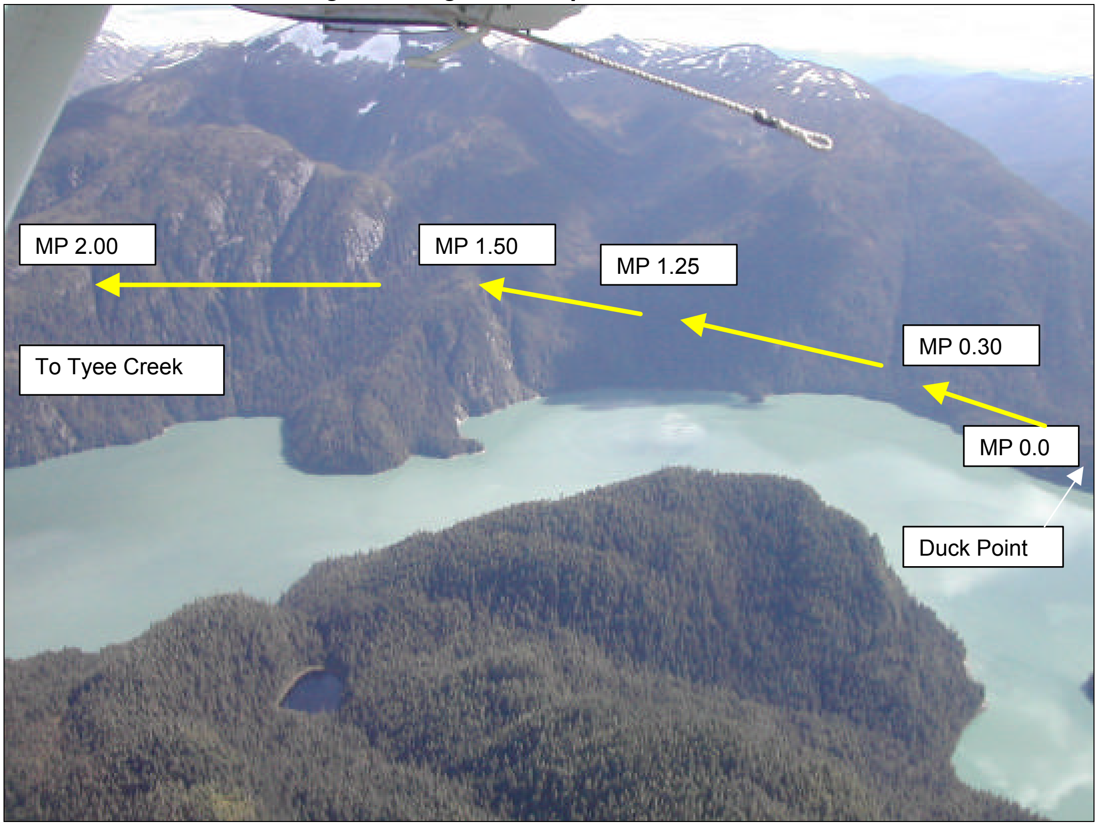


Construction of this segment is anticipated to be very lengthy and difficult. The large, full bench cuts into solid rock will pose considerable challenges for containing the excavation materials during blasting, as well as construction of the long bridge spans. In addition, the first 3.5 miles contain limited opportunities to use the excess excavation, and may require long hauls to place excess excavation and unsuitable materials. The portion of the road between mileposts 3.54 and 4.94 does provide an opportunity to utilize the excess excavation in the roadway, and is adjacent to flat muskeg areas that could be utilized as construction staging areas.

Segment 1 Option C, Duck Point

The alignment from Duck Point to the Tyee Hydroelectric Project facility was located outside the initial scope of this study and was not included in the LIDAR and orthophotography of the project. The conceptual alignment and profile shown on this option is conceptualized from U.S. Geological Survey (USGS) topography maps of the area. All quantities reflected in the cost estimate are estimated on a route-mile cost basis, not on geometric design quantity-based numbers.

Figure 3. Segment 1, Option C, Duck Point



The vertical solid rock cliff face in this area will require extensive analysis to determine if an overland route through this area is possible. Major drainages located at approximately MP 0.30 and MP 1.25 will require significant bridge structures and require further analysis to determine the appropriate length and type of structure. From approximately MP 1.50 to 2.00 there are several deeply incised avalanche chutes cut into the vertical rock cliff face, an alignment crossing horizontally along these chutes would require extensive geotechnical and engineering analysis to determine if an alignment is even feasible. Topography maps indicate the rock cliffs rise to an elevation of approximately 2500' and there does not appear to be an alternative route over the top of mountain.

Assuming an overland route is possible, the large, full bench cuts in solid rock anticipated along the cliff faces will pose considerable challenges to drilling and blasting. Containment of the excavation materials during blasting will also pose significant problems. Long hauls to place excess excavation can be anticipated because the conceptual alignment contains limited opportunities to utilize the materials. Road construction around the solid sheer rock cliffs along the alignment may utilize features such as elevated causeways and retaining walls to limit the high excavation costs.

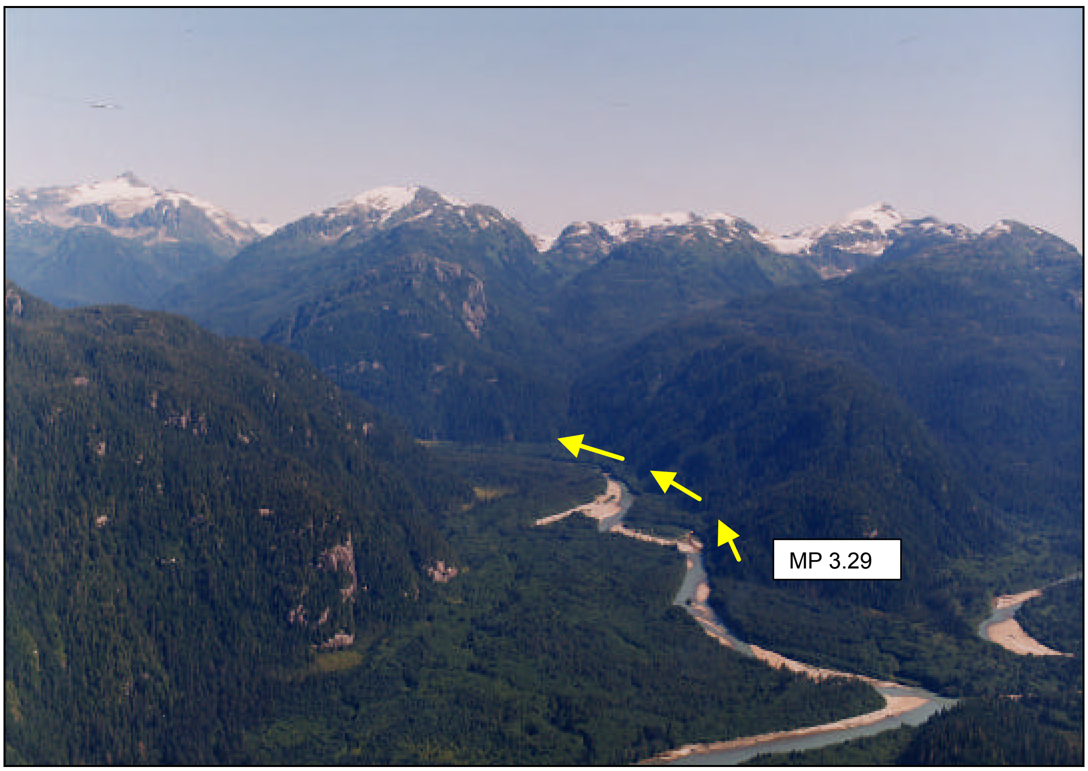
Safety considerations, environmental impacts, and the high cost of an overland route suggest that a tunnel should be studied as an alternative to standard road construction.

Segment 2

This conceptual road alignment begins at the same intersection point as the ending stations from Segment 1 Option A, Option B, and Option C: MP 3.29. This milepost is located just past the confluence of the East and North Forks of the Bradfield River, and marks the end of the tidal influence. Remnants of an abandoned logging road can be seen throughout this segment and in the ensuing segments up to MP 16.00.

This conceptual alignment begins along the base of a steep rocky mountain slope with large cuts and retaining walls on the fill side. At milepost 3.70, the river meanders to the west side of the valley floor and the alignment stays to the east along the base of the mountainside, allowing large fills to be designed in, up to MP 5.75. From milepost 5.75 to 6.00, the river flows against a large rock outcropping, requiring deep cuts and retaining walls. From MP 6.00 to the end of the segment at MP 6.78, the valley floor opens up again, and the road prism can be constructed utilizing fill material.

Figure 4. Segment 2



Revetment walls were proposed at locations to offset the erosion potential of the river while retaining walls were designed to limit the embankment from encroaching into the river. Revetment wall and retaining wall locations were based on cross sections of the alignment and a rough analysis of the stream flow. The conceptual alignment is designed to stay at the base of the surrounding forested mountain slopes, while maintaining a minimum elevation of at least 15 feet above the channel bottom. The now abandoned 14 miles of logging road was laid out in the late 1970's and utilized river borrow as a material source. It has since been washed out in many locations by the changing river channel. The meandering river channel is in a constant state of flux due to the introduction of sediment from the glacial melt and surrounding mountain drainages.

The two areas with large cuts will present some construction issues but construction is expected to be moderately difficult. There are opportunities along this segment to utilize the excess excavation in the road embankment, thereby limiting haul costs.

Segment 3

This segment of alignment begins at MP 6.78, where the river valley has widened out and the river channel has meandered to the west side of the valley. The road alignment continues up the east side of the valley, and is positioned against the toe of the mountain slope. At approximately MP 7.10, the valley narrows and the alignment remains east of the river while maintaining a grade 15 feet above the channel bottom. As the river channel meanders and bends, the conceptual road alignment has been designed to include more revetment walls. Further analysis will be required to determine the appropriate size for the riprap in the revetment walls to ensure embankment stability.

At approximately MP 9.05, the alignment crosses on the west side of a confluence of two streams, which is anticipated to require a 200-foot bridge. The location of this crossing will require further investigation to ensure the bridge is placed in a stable location. At approximately MP 9.50, the river again meanders to the west side of the valley floor, while the road continues along the toe of the east slope. Although the alignment in this area is a considerable distance from the river channel, several overflow channels meander up against the toe of the east slope. Because the river channel is in constant migration, it is necessary to maintain a minimum 15-foot elevation above the channel bottom. Maintaining this grade in steep side slopes requires designing additional Mechanically Stabilized Earth (MSE) walls to contain the fill and prevent encroachment into the overflow channels. From approximately MP 11.10 to MP 11.30, the river channel turns abruptly into the east slope, where steep rock outcrops are located. This situation creates a combination of large cuts in the rock and retaining walls to contain the road embankment. This is an area that will require special consideration and engineering to ensure the road alignment is properly located. From MP 11.30 to the segment terminus at MP 12.33, the alignment continues along the east side of the valley, away from the river channel.

Figure 5. Segment 3

The abandoned logging road is still visible in many areas, meandering thru the floodplain. This segment of proposed new alignment is conceptualized in a more stable location, and is anticipated to require approximately 1.4 million cubic yards of excavation. Further evaluation and engineering should reveal opportunities to reduce the excavation quantities, but the steep side slopes along this segment will keep the costs of road construction high.

Segment 4

Segment 4 of this proposed design alignment begins at MP 12.33, and continues along the east side of the valley floor, while the current river channel is located up against the west side of the valley. At approximately MP 12.75, the alignment crosses a drainage that will require a bridge structure of approximately 200 feet. As noted previously, the bridge lengths are rough estimates generated from the LIDAR survey and orthophotography, and any change in the conceptual alignment will affect the lengths and types of bridge structures. At approximately MP 13.65, the river meanders back up against the easterly slope where the alignment is located, and limits the placement of embankment slopes, thru cuts and retaining walls that are necessary to reduce the footprint of the roadway.

At approximately MP 14.00, the main confluence of the North Fork of the Bradfield River meets another drainage that is also mapped as the North Fork of the Bradfield

River. The alignment continues along the northeastern slopes of the valley, crossing the easterly drainage mapped as the North Fork of the Bradfield River at MP 14.75. This drainage crossing has a narrow steep channel that abruptly fans out into the Bradfield River Valley. The conceptual design anticipates a curved bridge structure approximately 500 feet in length. From MP 16.00 to MP 16.50, the river channel is again located up against the easterly slopes of the valley floor, thereby restricting the placement of embankment slopes. As the river abruptly turns toward the northeast, the channel becomes more restricted and provides opportunity to cross over to the west side of the Bradfield River Valley at approximately MP 16.70, which will require an approximately 350-foot bridge. The slopes of the west side of the valley are also steep and require the use of retaining walls and thru cuts to prevent the footprint of the roadway from encroaching into the river.

One important factor is that at approximately MP 17.40 a sizeable tributary on the east side of the valley continues to release a considerable amount of sediment and boulders. It appears the mass events that created the alluvial fan at the valley floor may have been fairly recent, and this factor directly affected the decision to cross to the west side of the North Fork prior to reaching this location.

At MP 18.96, a 300-foot bridge crossing is necessary, while an additional 170-foot bridge crossing is required at MP 19.30. An alternative alignment that would pass northwest of MP 18.96 and require only one bridge crossing was analyzed, but the slopes in the confined channel were too steep to place a geometric alignment. Upriver of MP 19.30, the alignment continues in a northerly direction and stays on the west side of the valley up to the southern tunnel portal. At MP 20.50, prior to the tunnel portal, the river channel makes an abrupt turn to the east. The drainage area in which the southern portal is located, is broken by ridges and many glacial fed tributaries that will require fairly large culverts along the alignment. The steep grade leading up to the portal was designed at 9.3 percent to limit the amount of excavation; future analysis may be able to further reduce the grade. The terminus of this segment of conceptual road alignment is MP 21.06.

Figure 6. Segment 4, MP 16.20 to MP 19.30

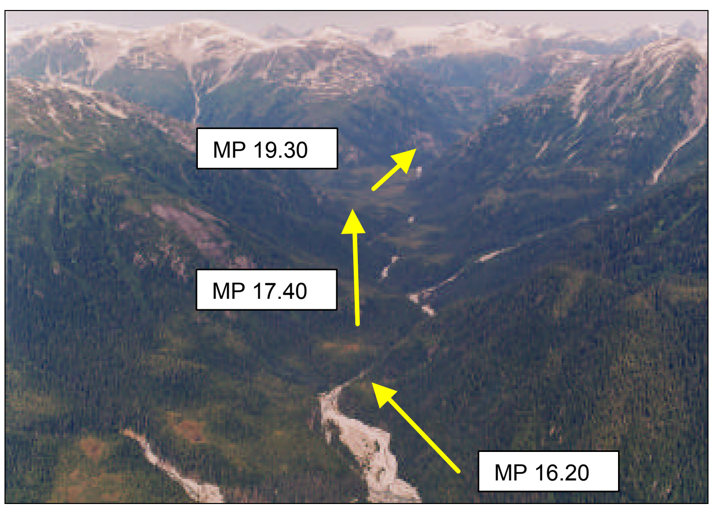
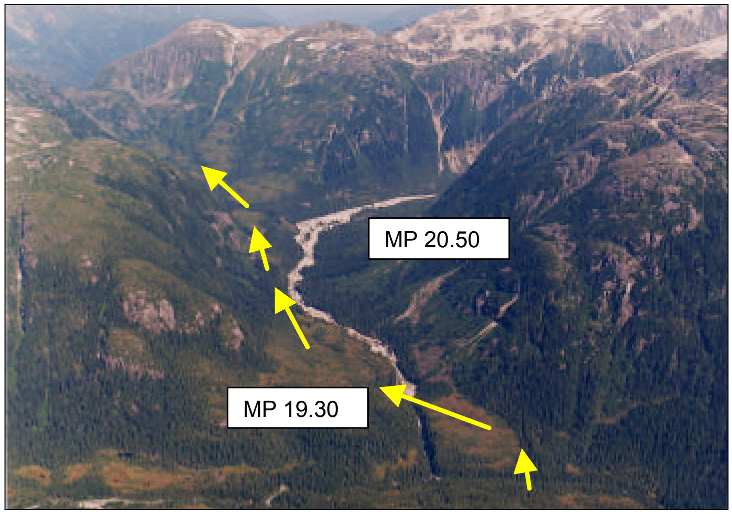


Figure 7. Segment 4, MP 19.30 to MP 20.50

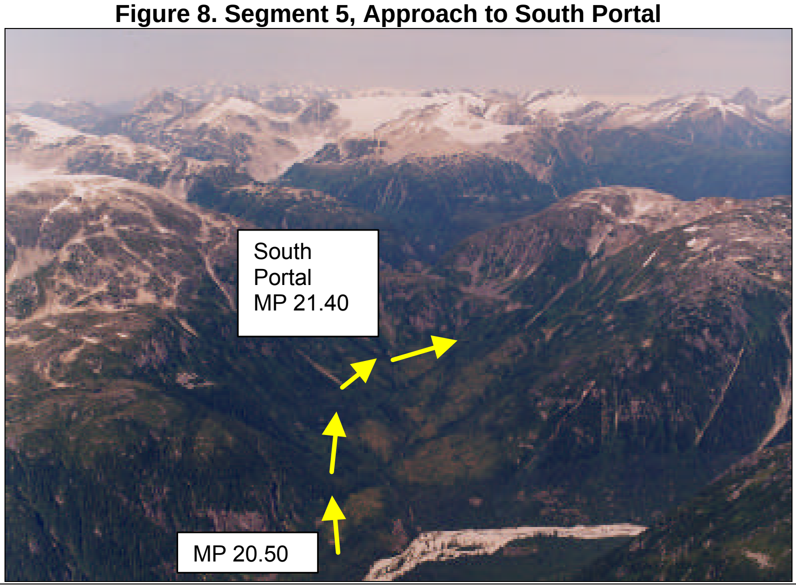


This segment of conceptual alignment contains many challenges for the construction of a transportation corridor. Due to the steep valley slopes, hard granitic rock, and five locations that require bridges, the excavation process will be costly and time consuming. More refined engineering may be able to reduce the excavation quantities but there are limited areas where excess excavation can be used, and some long hauls may be necessary.

Segment 5

From approximately MP 21.06 to MP 21.20, the alignment is located at the confluence of two sizeable drainages that will require large culverts with deep fills to construct the steep 8.3 percent grade up to the proposed southern tunnel portal. Refer to Appendix E for an analysis of the tunnel alignment.

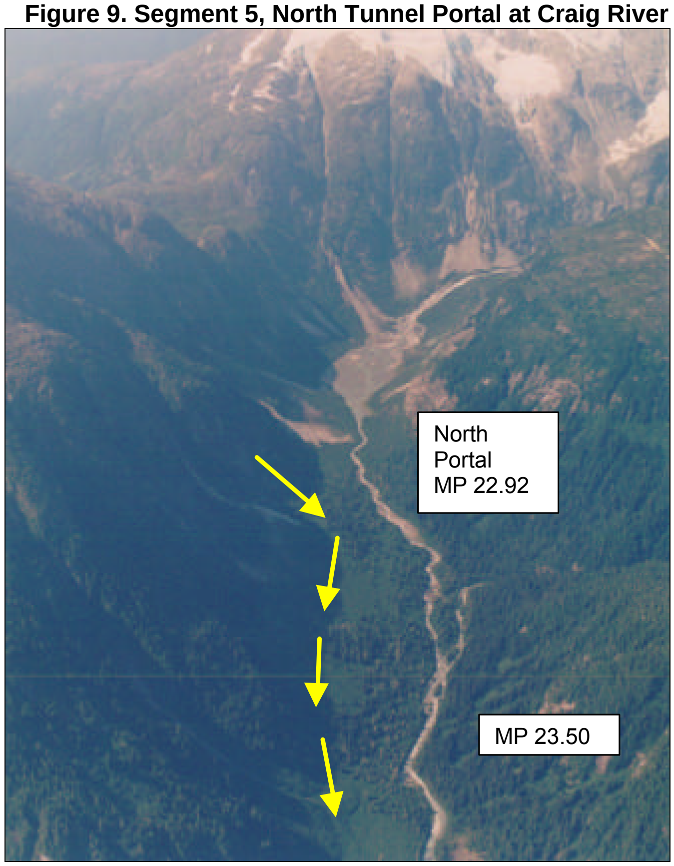
Figure 8. Segment 5, Approach to South Portal



The alignment exiting the northern portal traverses a -5.6 percent grade on large fills. Excavation materials from the tunnel could be utilized in constructing the proposed grade. As the alignment exits the portal, the location was balanced between the head of the Craig River to the west, and the avalanche chutes that come off of the glaciers above the east side of the Craig River Valley. Critical areas at approximately MP 23.75 and MP 24.15 will require further engineering to determine exact alignment.

At approximately MP 24.50, a stream crossing will require an anticipated 185-foot bridge structure. The alignment continues in a northeasterly direction at the toe of the Craig River Valley. At MP 25.20, an overflow channel from the Craig River meanders up against the alignment along the eastern slopes for about 1,000 feet, which requires the alignment to be designed into the mountain slope, and necessitates sizeable thru cuts. The valley floor then opens up, and the river channel veers to the northeast while the alignment follows the toe of the mountain slopes in an easterly direction. At MP 26.05, the river channel again meanders back toward the toe of the slopes, but there is ample room to construct the road alignment utilizing fill material. The alignment continues to approximately MP 26.60, where a drainage will necessitate a 350-foot bridge structure crossing. The drainage is located on the toe of an alluvial fan, and further analysis will be required to ensure that this is the proper crossing location. The road alignment continues in a northeasterly direction to the U.S./Canada border, to the terminus of this segment at MP 27.44.

Figure 9. Segment 5, North Tunnel Portal at Craig River



This segment of road alignment poses several construction challenges as it traverses several alluvial fan areas that will require additional exploration. However, overall the majority of the conceptualized alignment grade utilizes the anticipated excess excavation materials from the tunnel construction. The adjacent slopes appear to provide opportunities to place large amounts of fill material, on which the road can be located. The area of greatest concern is the segment leading up to the southern portal, where construction of large fills and large culverts will be time consuming and costly.

Cost Estimate Summary

The cost summary sheet was based on bid tabulations extracted from WFLHD project AK PFH 44-1(1), Coffman Cove Schedule B. Bid tabulations on the Coffman Cove Project were received in fiscal year 2003. All bid items and unit costs were reviewed by WFLHD field personnel to ensure unit costs were appropriate and applicable. WFLHD CFT also reviewed bid items and unit costs; their input was also taken into consideration in developing the final unit costs reflected in the Conceptual Cost Estimate Summary (see Table 1). Item descriptions, conceptual quantities developed, unit costs and cost estimate background information is shown in Appendix B.

Table 1. Pre-NEPA Conceptual Cost Estimate Summary

	SEGMENT NUMBER							PROJECT TOTALS with OPTIONS		
	Tyee Creek Option	Kapho Mtn. Option	Duck Point Option					SEGMENTS 1A with 2 thru 5	SEGMENTS 1B with 2 thru 5	SEGMENTS 1C with 2 thru 5
	Segment 1			Segment 2	Segment 3	Segment 4	Segment 5			
Work Item Description	Option A	Option B	Option C	2	3	4	5			
LENGTH (Mile)	3.29	4.94	8.02	3.49	5.55	8.73	6.41	27.47	29.12	32.20
DIVISION 1 MOBILIZATION	$692,677	$1,724,615	$6,514,614	$785,008	$1,703,805	$2,581,850	$1,864,121	$7,627,460	$8,659,399	$13,449,397
DIVISION 2 EARTHWORK	$1,075,322	$5,781,332	$53,629,904	$2,166,216	$12,353,989	$8,967,575	$4,878,201	$29,441,303	$34,147,312	$81,995,884
DIVISION 3 UTILITIES & RELOCATIONS	$464,500	$547,000	$701,000	$474,723	$577,277	$736,316	$620,335	$2,873,151	$2,955,651	$3,109,651
DIVISION 4 BASES & PAVEMENT	$786,020	$1,063,780	$1,820,540	$794,220	$1,254,920	$1,944,620	$1,386,940	$6,166,720	$6,444,480	$7,201,240
DIVISION 5 TUNNEL	$0	$0	$0	$0	$0	$0	$75,030,000	$75,030,000	$75,030,000	$75,030,000
DIVISION 6 STRUCTURES	$4,031,500	$10,201,000	$17,162,800	$3,946,000	$3,217,000	$15,735,000	$3,926,000	$30,855,500	$37,025,000	$43,986,800
DIVISION 7 INCIDENTAL CONSTRUCTION	$1,997,725	$2,130,775	$2,383,630	$2,014,931	$2,186,138	$2,190,723	$1,877,676	$10,267,194	$10,400,244	$10,653,099
DIVISION 8 ROADWAY FINISHES	$113,700	$939,000	$283,106	$149,834	$676,366	$996,790	$447,201	$2,383,890	$3,209,190	$2,553,296
SUBTOTAL ROADWAY AND BRIDGE WORK	**$9,161,444**	**$22,387,502**	**$82,495,593**	**$10,330,932**	**$21,969,496**	**$33,152,873**	**$90,030,473**	**$164,645,218**	**$177,871,275**	**$237,979,367**
CONTINGENCIES: 25%	$2,290,361	$5,596,875	$20,623,898	$2,582,733	$5,492,374	$8,288,218	$22,507,618	$41,161,304	$44,467,819	$59,494,842
TOTAL CONSTRUCTION COST	**$11,451,806**	**$27,984,377**	**$103,119,492**	**$12,913,664**	**$27,461,870**	**$41,441,091**	**$112,538,092**	**$205,806,522**	**$222,339,094**	**$297,474,209**
CONSTRUCTION ENGINEERING SERVICES: 8%	$916,144	$2,238,750	$8,249,559	$1,033,093	$2,196,950	$3,315,287	$9,003,047	$16,464,522	$17,787,128	$23,797,937
EIS W/ SUPPORTING ENGINEERING: 5%	$572,590	$1,399,219	$5,155,975	$645,683	$1,373,093	$2,072,055	$1,687,830	$6,351,251	$7,177,880	$10,934,635
DESIGN ENGINEERING & ADMINISTRATION: 8%	$916,144	$2,238,750	$8,249,559	$1,033,093	$2,196,950	$3,315,287	$4,501,247	$11,962,722	$13,285,328	$19,296,137
TOTAL CONSTRUCTION & ENGINEERING	**$13,856,685**	**$33,861,097**	**$124,774,585**	**$15,625,534**	**$33,228,862**	**$50,143,720**	**$127,730,216**	**$240,585,017**	**$260,589,429**	**$351,502,917**
Construction Cost $/Mile	$3,480,792	$5,664,854	$12,857,792	$3,695,476	$4,948,085	$4,748,978	$17,565,691	$7,492,737	$7,635,935	$9,239,055

NOTES:

Segment 5 - EIS and Design Engineering Costs have been proportionately reduced to reflect the lower costs associated with the tunnel. The following formulas have been applied.

EIS - 5% ($112,538,092 Const.Cost - [$75,030,000 Tunnel Cost x 1.25 Contingency Factor]) + (1% x $75,030,000 Tunnel Cost) = $1,687,830

Design - 8% ($112,538,092 Const.Cost - [$75,030,000 Tunnel Cost x 1.25 Contingency Factor]) + (4% x $75,030,000 Tunnel Cost) = $4,501,247

The following bridge crossings have been identified through orthophotography and LIDAR mapping, and will require further analysis to verify the bridge locations and their lengths.

Table 2. Bridge Location Summary

Segment	Beginning Station[1]	Ending Station	Bridge Length	Bridge Area[2]	Complexity[3]		
			(linear feet)	(square feet)	Low	Medium	High
1 Option A	120+20	121+80	160	4,800		X	
1 Option A	224+74	228+00	326	9,780			X
1 Option B	48+70	49+70	100	3,000	X		
1 Option B	54+00	55+00	100	3,000	X		
1 Option B	132+50	134+75	225	6,750		X	
1 Option B	267+00	270+35	335	10,050			X
1 Option C[4]	48+70	49+70	100	3,000	X		
1 Option C[4]	54+00	55+00	100	3,000	X		
1 Option C[4]	266+35	270+35	400	12,000			X
2	344+15	345+80	165	4,950		X	
3	564+00	566+00	200	6,000		X	
4	761+95	763+35	140	4,200	X		
4	867+00	872+00	500	15,000			X
4	970+50	974+00	350	10,500		X	
4	1089+00	1092+00	300	9,000		X	
4	1107+50	1109+20	170	5,100		X	
5	1381+40	1383+25	185	5,550		X	
5	1494+00	1497+50	350	10,500		X	

[1] Stations shown in Table 2 correspond with the design plans in Appendix A.

[2] Deck area is based on average bridge width of 30 feet multiplied by the estimated length.

[3] Complexity is to denote conceptual range of estimated costs that are shown in Appendix A.

[4] Segment 1 Option C was not included in the original scope of the project and the data included in the engineering study is not based on a geometric design. The data included for Segment 1 Option C is based on a conceptual alignment drawn on a topographic map.

Bridge Assumptions

Unit cost for bridge construction - Bridge construction costs at the scoping stage of a project are typically estimated by applying a "per square foot" cost to the total bridge deck area. These costs are based on historic costs of construction and should be adjusted to account for unique features for the project or structure being considered. The average unit cost for bridge construction in Alaska over the ten-year period from 1993 through 2002 is $127/square foot. This figure compares favorably to the average unit price for bridge construction on WFLHD projects ($131/square foot), including projects in a five state region consisting of Alaska, Washington, Oregon, Idaho, and Montana.

Remote location factors - The limited access to the site is the most significant factor affecting costs. As a consequence of location, builders will have additional costs and difficulty getting equipment and materials to the project. For example, critical equipment such as cranes, which are typically only needed for a short time on the project, will have to be brought in repeatedly on an as-needed basis, or mobilized at the start of construction and left on site for a long duration. On less remote construction sites, this equipment is only brought in when it is needed and then sent back after its work is completed, thus minimizing idle time. The cost of repeated mobilization or the cost of long periods of idle time for this equipment would have to be absorbed in the price of construction.

Similarly, all materials for bridge construction will have to be brought in from somewhere else. Unlike road construction, which can make use of on-site material for building embankment and some portion of the pavement structure, all of the materials for the bridges will have to be brought to the site. This includes concrete, reinforcing steel, pre-cast girders, and even timber used to construct forms. Given the total number of bridges to be built, and the remote site, it is likely that a contractor will set up a batch plant to mix concrete. Again, this is a significant cost including purchase, transport, set-up, calibration, and maintenance. Also, the aggregate and cement will have to be brought in from somewhere else. All of these costs add to the unit cost of bridge construction.

Related to these costs are risks that the builder must consider in putting together a bid. Unlike projects build in less remote locations, there is no margin for error in shipping tools, equipment and material to this site. It will not be possible to send a driver back to town to pick up another load of plywood if needed, for example. Emergency shipments or delays in construction add significantly to cost. Most contractors will cover this risk by raising their unit prices to account for the inevitable surprises that occur during construction.

WFLHD has extensive experience in constructing bridges in remote locations. Costs for these projects often run 25-50% higher than bridges built closer to town.

Complexity - We have attempted to create some degree of calibration in the estimate by distinguishing between three levels of complexity. Generally, the level of complexity is driven by the estimated length of bridge. Additionally, we have considered whether the bridge will include in-stream construction, high substructures, or difficult geometry.

Short bridges (under 150 feet long) will generally be possible to construct as single span bridges. In many cases, these will be made with decked bulb-T superstructures, minimizing the amount of on-site concrete construction. These bridges also have the advantage of relatively quick construction. These crossings are categorized as low complexity. We have used a unit cost of $150/square foot for low complexity bridges.

Medium complexity bridges include those that are too long to reasonably construct as single span bridges. These will require more time, materials, and skill to construct the intermediate piers. They will also require cast-in-place concrete decks, rather than using deck bulb-T girders. (Note: it is sometimes practical to construct longer span bridges, up to 200 feet, as single spans. These are beyond the practical span length for deck bulb-T girders, and thus will require cast-in-place concrete decks.) We have used a unit cost of $200 / square foot for medium complexity bridges.

The third class of complexity includes those bridges that appear to involve in-stream work. This is always going to be the most difficult and consequently, most expensive construction. The builder has to construct stream diversion or cofferdams. Access to the intermediate piers and to the far bank will likely require construction of temporary work bridges across the stream. For the short span crossings, this can be a simple structure. For the high complexity bridges, we anticipate that the temporary work bridges will be a significant effort for the builder to construct. We have used a unit cost of $275 / square foot for high complexity bridges.

Bridge size approximation - It should be noted that the topographic data available at this time is limited to aerial survey. Subsurface conditions at the various crossings have not been investigated. Thus, bridge length at this stage is a conceptual length.

Typically, we set bridge length by identifying the edge of stream (generally at the contour break point at the edges of the stream bed), and project up to the finish profile grade at a slope of 1:1.75. This slope, slightly flatter than the natural angle of repose of riprap, provides a stable embankment and prevents loss of roadway embankment at the ends of the bridge.

On several of these crossings we have made some assumptions that using vertical substructure at the abutments can reduce the bridge length. This includes concrete retaining walls, and, where appropriate, MSE walls located on stable ground well above the active stream channel. Our experience has shown that while this technique reduces the length of the bridge superstructure, thus reducing the deck area, there is a false economy in this approach. The vertical abutment structures end up being higher than the surrounding terrain, and require extended wing walls or retaining walls along the edges of the road to contain the embankment until it is back from the edge of the stream channel. Generally, we have found that the cost of the additional substructure at the abutments roughly equals the cost of bridge length saved.

The conceptual design assumes that the foundation of each abutment would be engineered to withstand natural and load-related forces. Construction of engineered abutments is more expensive than the simpler placement of bridge footings, but prepares the bridge for a long service life and is the best way to ensure that it will remain open to traffic even when subjected to extreme events such as floods.

The Bradfield River Road project area is mountainous, with elevations from 0 to 6000 feet (WGS84). The lower elevations are heavily timbered. Large steep-walled glacial valleys (1000 to 3000 feet wide), dynamic river systems, and active alluvial fans dominate the morphology. Glaciers occupy most of the headwater valleys.

Portions of road segment 1 Option A, Option B, and Option C[2] are in marine and tidal-dominated delta plain areas. Segment 1 Option A and Option C, segment 2, and the lower half of road segment 3 parallel an unconfined and meandering river system (see Figure 10 and Appendix C Figures 2 and 3). The upper half of road segment 3, lower half of segment 4, and most of segment 5 parallel unconfined and braided river systems (see Figure 11 and Appendix C Figures 3, 4, 5, and 6). The upper half of road segment 4 parallels a braided river system that is structurally constricted by steep bedrock valley walls (see Appendix C Figures 4 and 5).

Figure 10. Typical glacial valley and unconfined, meandering stream morphology

(See photo next page)

[2] Data for Segment 1 Option C is based on a conceptual alignment drawn on a topographic map; data is not based on a geometric design.

Figure 11. Typical glacial valley and unconfined, braided stream morphology

Based on the conceptual road alignment and field reconnaissance, road construction will involve:

- Tidal area encroachment
- Floodway encroachment
- Channel migration zone encroachment
- Alluvial fan encroachment
- Bridge installation
- Large diameter culvert installation
- Aquatic organism passage culvert installation
- Minor drainage installation

Tidal Area Encroachment

Based on LIDAR aerial photography, USGS topographic mapping, and conceptual road alignment plans, portions of road segments 1 Option A, Option B, and Option C are in marine and tidal delta plain areas (see Appendix C Figures 1 and 2). Possible impacts to the proposed road include tidal inundation and wave-induced erosion.

No National Oceanic and Atmospheric Administration (NOAA) tidal stations are located near the project. The difference between mean high water (MHW) and mean lower low water (MLLW) for tidal stations at Wrangell, Alaska, and Stikine Straight, Alaska, is approximately 8 feet. Review of United States Geological Survey (USGS) topographic mapping and available NOAA regional hindcast data suggests the proposed road is not likely exposed to strong prevailing winds and long fetches that produce intense erosive wave activity. Based on observed field evidence and extrapolation of the available tidal station records, road areas within 15 feet above the MLLW may be subjected to inundation and moderately erosive wave activity.

Set the road profile at least 20 feet above the MLLW. Protect road areas where the embankment is within 15 feet above the MLLW with riprap revetments. Estimated revetment locations are presented in Appendix C Table C-1. Stabilize natural areas that are experiencing erosion and near the proposed road corridor with riprap revetments. Locate retaining wall foundations within the marine and tidal delta plain areas on bedrock. Retaining walls constructed of stone-filled wire-mesh baskets will be subjected to aggressive corrosion in the marine environment. Limit wire-mesh basket use to areas above the MHW and away from ocean spray.

Floodway Encroachment

The river floodway conveys all of the normal stream discharges and most of the flood discharges. An active channel defines it. LIDAR aerial photography, USGS topographic mapping, and conceptual road alignment plans were used to delineate areas that appear to encroach into the river floodway. The revetment symbols in Appendix C Figures 2, 3, and 4 identify anticipated encroachment areas. They are typically located at constriction points, meander bend apexes, and where the river channel has truncated against valley walls.

Figure 12. Floodway encroachment at Segment 2, typical for project

Road embankments that encroach into the floodway will experience erosive shear stresses and frequent flood inundation. Evaluate cost-effect alternatives to floodway encroachments during roadway design. Protect encroachments that cannot be cost-effectively avoided with riprap revetments.

To develop the conceptual level design and cost estimates, set the road profile at least 15 feet above the channel bottom. Revetments are assumed to be 10 feet high and 5 feet thick. A toe and 1(v):2(h) or flatter side slope is critical for stability.

Estimated revetment locations and riprap volumes are presented in Appendix C Table C-1.

MSE retaining walls may be appropriate for areas that have non-erosive bedrock extending at least 15 feet above the channel bottom. Avoid locating MSE retaining walls below the 100-year flood level or on erosive foundation soils.

A large alluvial fan on the opposite side of the river at road segment 4, stations 930 to 960, is forcing the river against the proposed road alignment. The road embankments will likely experience fluctuating riverbed levels, impinging flow, and high shear stress. To develop the conceptual level design and cost estimates, design the road profile here at least 20 feet above the channel bottom.

Channel Migration Zone Encroachment

Within the channel migration zone (CMZ) the river channel freely relocates through migration and avulsion processes. The CMZ is an area that has historically contained active channels, and is likely to contain them in the future. LIDAR aerial photography, USGS topographic mapping, and conceptual road alignment plans were used to delineate areas with low topographic relief, flood scour channels, abandoned channels, and active channels, features that define the CMZ. The unconfined reaches of the river are prone to rapid channel relocation.

The CMZ is shown on Appendix C Figures 2 through 6. Encroachments occur at stream crossings and where the proposed road is confined at the base of steep valley walls. The hydraulic study assumes that floodplain limits approximately coincide with the CMZ and that encroachments into the CMZ, outside of the floodway, do not currently experience deep, fast flowing water that cause erosion. An encroachment into the CMZ will probably experience frequent flood inundation.

Assuming the channel will eventually relocate to flow near or against the road embankment, construct the road profile above the anticipated design flood levels. To develop the conceptual level design and cost estimates, assume the road profile within the CMZ needs to at least 10 feet above the surrounding ground surface. Encroachments are assumed not to initially require scour protection.

Alluvial Fan Encroachment

Alluvial fans are fan-shaped areas at the mouth of steep gradient canyons that experience frequent flooding, stream channel relocation, sediment deposition, and debris flows. The alluvial fans shown on Appendix C Figures 2, 3, 4, and 6 were delineated using LIDAR aerial photography, USGS topographic mapping, and the conceptual road alignment plans.

Encroachments occur across alluvial fans at:

- Segment 1B, Station 120
- Segment 1C, Stations 290, 320, and 360
- Segment 3, Stations 520, 555, 610, and 710
- Segment 4, Stations 760 and 870
- Segment 5, Stations 1360, 1500, 1530

Roads constructed across alluvial fans or at the fan toes will experience frequent flooding and overtopping; sediment and debris deposition within and upstream of drainage structures; and stream channel relocation.

Cross alluvial fans at the apex. When crossing below the apex maintain the road profile above the ground surface. Avoid cuts into alluvial fans; they encourage flooding and debris deposition on the road. Appropriately sized drainage structures placed in topographic low points at the fan perimeters convey discharges during flooding and channel relocations. Riprap placed at the upslope road embankment toe controls erosion from water flowing along the base of the road fill. Constructing the road profile above the fan surface and over sizing the drainage structures extends the service life and reduces the maintenance of the road and drainage structures.

Bridge Installation

Bridge crossings are assumed for all streams with 50-year design peak discharges greater than 1000 cubic feet/minute (cfs). No stream gage station data is available for developing flood frequency analyses. Design peak discharges at the crossing sites were estimated using drainage area, precipitation, lake area, and mean January temperature based regional regression equations (USGS Report 03-4188, 2003). Drainage areas were determined using USGS quadrangle maps. Mean annual rainfall of 180 inches and mean minimum January temperature of 26 degrees Fahrenheit were obtained from mapping in USGS Report 03-4188. Some drainage basins have glacial lakes. Glaciers occupy most of the headwater valleys.

Bridge locations are shown on Appendix C Figures 1 through 6. Figure 13 shows the proposed East Fork Bradfield River crossing. Bridge locations, diameters, and 50-year design peak discharges are presented in Appendix C Table C-2. To develop the conceptual level design and cost estimates, assume spill-through abutments with 1(v):2(h) side slopes and 15-feet minimum clearance between stream bottom and bridge low chord.

Figure 13. Proposed bridge crossing.
Bedrock ridge outcrops at lower right of photo.

Large Diameter Culvert Installation

Large diameter (greater than 10 feet) culvert crossings are assumed for all streams with 50-year design peak discharges between 500 and 1000 cfs. Design peak discharges at the culvert crossing sites were estimated using the approach discussed on page 27, Bridge Installations. Drainage areas with discharges greater than 500 cfs represent the lower limit of what can be easily delineated using available USGS mapping. Because a 10-foot diameter culvert can convey 500 cfs assuming inlet control and a headwater to diameter ratio of approximately one, it was selected as the minimum culvert size to define for the study.

Large diameter culvert locations are shown on Appendix C Figures 1 through 6. Culvert locations, diameters, and 50-year design peak discharges are presented in Appendix C Table C-3. The culverts are generally located on alluvial fans and steep gradient canyon streams, and will likely experience abrasion, frequent sediment slugs, and debris flows. Debris racks or diversion structures may be appropriate for streams that experience extreme debris flow activity. To develop the conceptual level design and cost estimates, assume 15-feet difference between the road profile elevation and stream bottom.

Aquatic Organism Passage Culvert Installation

Anadromous fish species utilize a large portion of the lower basin. The Large Diameter Culvert installations discussed above appear to be on alluvial fans and steep gradient streams; the study assumes aquatic organism passage is not required at these locations. Aquatic organism passage will likely be required at many of the culvert crossings not identified in the study. To develop the conceptual level design and cost estimates, assume three 7-feet diameter culverts designed for aquatic organism passage are needed for the sloughs crossed by road Segment 1 Option A.

Minor Drainage Installation

Minor drainage installation includes culverts with diameters less than 10 feet, cross drain culverts, down drains, ditches, energy dissipaters, and ditch erosion control lining. The study assumes two 48-inch diameter culverts and ten 24-inch diameter cross drain culverts with down drains per road mile. Install riprap ditch lining on ditches steeper than 3 percent and energy dissipaters at all culvert outfalls. To develop the conceptual level design and cost estimates, assume a minor drainage cost of $80,000 per mile.

The culverts are generally located on alluvial fans and steep gradient canyon streams, and will likely experience abrasion, frequent sediment slugs, and debris flows. Aggressive ditch and culvert maintenance will be required.

Additional Studies

The hydraulic study was based on USGS topographic mapping, limited LIDAR aerial photography, low accuracy LIDAR based topography, and conceptual road alignment plans. Tidal area, floodway, CMZ, and alluvial fan delineation is not precise. No hydraulic modeling was performed for estimating flood levels and flow velocities.

As the road design evolves, additional studies are recommended:

- Determine design maximum tidal elevation and minimum road profile elevations for tidal area.
- Verify wave height and wave setup assumptions for marine and tidal areas.
- Complete hydraulic modeling for floodway encroachments and bridge crossings.
- Delineate CMZ and verify minimum road profile assumptions.
- Verify aquatic organism passage requirements.
- Delineate alluvial fans.
- Complete hydraulic design for culverts.
- Evaluate debris flow and sediment slug hazards.

The Environmental Document

The size and scope of the conceptualized project indicates to WFLHD and the cooperating agencies that a National Environmental Policy Act (NEPA) Environmental Impact Statement (EIS) is the appropriate level of documentation.

It may be beneficial to use a separate NEPA document, most likely a Categorical Exclusion to document the rehabilitation of an abandoned forest service logging road as described in X.1.5.4. The temporary road may be utilized to access the Bradfield River valley for resource studies needed to document the EIS.

Based on previous experience with similar projects, it is estimated that a document of the scope of an EIS will cost approximately 5 percent of the total estimated project cost, and require a minimum of five years to complete. It is anticipated that the final EIS will be a "dual" U.S.-Canadian document following a basically NEPA format. The Michigan Department of Transportation (MDOT) has successfully completed such a document in cooperation with the provincial government of Ontario, so WFLHD will consult with the MDOT and the Michigan Division of FHWA for guidance on how to coordinate and prepare such a dual document that satisfies both U.S. and Canadian environmental laws and regulations. The environmental laws of both countries have many similarities in both content and procedure, so "merging" the two documents may be feasible.

Anticipated Environmental Impacts

Because the conceptual road must follow a glacial river valley and stay in relatively close proximity to the stream to achieve a constructible grade at an affordable cost, the most obvious environmental impacts will be related to water: wetlands, fish and their habitat, and water quality. Because of the remote location and its relatively pristine condition (beyond the end of the abandoned Forest Service logging road and clear cuts), wildlife habitat, riparian zones and aesthetics are resources that will also receive more attention from the resource management agencies than they would in more highly disturbed and populated settings.

Conversations with the Alaska Department of Fish and Game (ADF&G) have informed WFLHD that the Bradfield River contains all five species of salmon (Chinook, Coho, Chum, Sockeye and Pink), Steelhead, Cutthroat trout, and Dolly Varden char. The presence of salmon, trout and char designate this river as an anadromous stream. There are relatively narrow mid-summer in-water work windows in such streams that could have a significant effect on the timing of construction for structures in the water, such as riprap revetments, culverts, and bridge piers. Typical in-water work windows extend from July 15 through August 30, and some are even shorter. The ADF&G biologist did inform WFLHD, however, that there is a natural barrier (waterfall) to fish migration at approximately river mile 14 . Upstream of that waterfall, there are no anadromous fish, and hence, fewer fish-related restrictions on in-water work.

The Bradfield River is glacially fed, and, as such, runs visibly cloudy for most of the year. However, water quality regulations will require that background turbidity not be exceeded by more than a fixed percentage of that existing background turbidity. Turbidity will need to be monitored in order to comply with State and Federal water quality standards. It is assumed that Canadian water quality standards are comparable, and will also require monitoring.

It is estimated, by viewing the Bradfield River Valley terrain and extrapolating from previous projects in Southeast Alaska, that approximately 2 acres of wetlands will be impacted for each low elevation road mile constructed. This quantity is conceptual only and will be determined once the project is commenced. These wetland impacts will be concentrated at the lower elevations of the project, within the river floodplain and glacial outwash areas. The higher elevations are predominantly exposed bedrock, talus and glacial scour zones devoid of soil or vegetation. Approximately 75 acres of mostly emergent wetlands (muskeg bogs and fens, and intertidal flats) are estimated to be impacted between the head of Bradfield Canal and the U.S./Canada border. These wetlands will need to be mitigated per the requirements of the U.S. Army Corps of Engineers regulations under Section 404 of the Clean Water Act.

Environmental Access Constraints

Previous documentation (McDowell Group, Inc., 2004) demonstrates that the British Columbia portion of the conceptualized route has access constraints that begin at the headwaters of the Craig River, which since 2000 has been designated as the Craig River Headwaters Park. An area of 18,750 acres (29.3 square miles or 7500 hectares) was established to protect low elevation coastal western hemlock forest and associated ecosystems, including: fisheries values, salmon spawning and rearing habitat; grizzly bear habitat; key areas of grizzly bear/salmon interaction; and high recreational values (remote access).

The existing mineral claims within the protected area boundary, including the existing mining road at Volcano Creek, will be excluded from the protected area until such time as the claims lapse.

In the event that a road request is made, and where a reasonable review determines that no practicable alternative exists outside the protected area, then provincial British Columbia government authorities will make a decision regarding the access request. The decision will be made in consideration of the integrity of the protected area and the need for road access for mineral activities, in accordance with applicable approval processes.

The Craig River area is noted for its fisheries values, its grizzly bear habitat, key areas of grizzly/salmon interaction, and related recreational values (bear viewing opportunities). The Craig River is famous for its salmon fishing, and guides located at Bell II Camp on BC Highway 37 bring sport fishers in by helicopter.

The Lower Iskut Zone also has access constraints. This zone encompasses 30,000 acres (46.9 square miles or 12,000 hectares) of land downstream of the Craig River Headwaters Park to the confluence of the Craig and Iskut Rivers, where the Lower Stikine-Iskut Grizzly/Salmon Management Zone begins. The intent of this zone is to conserve the fisheries and habitat values of the lower Iskut River and to provide management continuity between the Middle Iskut and Lower Stikine-Iskut zones. Commercial timber harvesting is not allowed in the floodplain of the Iskut River. Mainstream road development is allowed only on one side of a valley at any one location, and, wherever possible, all infrastructure development such as aerial power lines must follow existing or planned roads.

It is safe to presume that the Canadian portion of the roadway will require numerous mitigation measures to protect salmon and grizzly bear habitat and aesthetic values, and that Canadian permits will require both timing and total footprint area restrictions as part of those mitigation measures.

Public Involvement

Because of the large area of the conceptual project itself, and even more so because of the region-wide effects of the conceptual project, the public involvement phase of the environmental documentation will be an extensive undertaking. The extent of the involvement occurs in terms of numbers of people that must be notified and allowed to comment, the distance between communities affected, and time and funds that must be invested. A major effort will be required to properly notify such a widely scattered population over such a large land area that a project is being developed, and then afford them their legal right to comment, then compile those comments and incorporate them into the document in accordance with NEPA. The cost of public involvement will be a very significant portion of the total environmental cost for the project.

Introduction

This section presents the results of a literature review of the available geological reports, observations from a helicopter reconnaissance of the conceptual route, and a review of plans and cross-sections of the proposed conceptual alignment. Conceptual design recommendations are based on an evaluation of the geotechnical considerations associated with the proposed route, including the following: muskeg sub excavation, retaining wall needs, cut and fill slope requirements, geological hazards assessment, and preliminary tunnel feasibility and cost estimates. Recommendations are intended for general route feasibility and rough quantity estimating purposes only.

A final design will require geotechnical investigation efforts commensurate with recent FHWA, AKDOT&PF, or USFS reconstruction projects in Southeast Alaska. Limited access to the project site and numerous river crossings may restrict the initial scope of these investigations to activities and observations that can be achieved using hand-operated equipment. Final drilling and test pit investigations would then need to be performed as access is constructed.

Geography

The conceptual road alignment climbs the highly dissected west flank of the Coast Mountains. Steep topography, many swift streams, heavy precipitation, and many alpine glaciers characterize the terrain. Dense forests grow in elevations of 2,500 feet or less, while low-lying alpine grasses, shrubs, and lichens inhabit higher elevations.

The first 2.5 miles of the conceptual route Segment 1 Option A follows the south margin of a broad (1.5-mile wide) tidal flat/river delta, where numerous braided stream channels cut through the silty sand and gravel deposits. Extensive areas of rich, organic surface deposits occur throughout the areas above the tidal influence. Cuts for the existing gravel road indicate that the organic surface deposits average 2-3 feet deep. Above the confluence of the East and North Forks of the Bradfield River, the floodplain narrows to a width of about 0.5 mile. The floodplain remains about this width for the next 15 miles, where the conceptual route generally follows the rugged side hills adjacent to the floodplain. Above MP 16.00, the river gradient increases significantly as the river becomes more confined by the steep terrain. From this point, the conceptual route crosses increasingly steeper, dissected terrain, with correspondingly increasing alignment grades leading to the portal of a proposed 1.5-mile long tunnel that begins at MP 21.40 and crosses through a saddle of massive granitic rock. From the northern tunnel portal, the conceptual alignment contours along the lower flank of a broad U-shaped glacial valley in a northeasterly direction, to the project terminus at the U.S./Canada border.

Geology

Regional geology is characterized as northwest trending, high-grade metamorphic rocks of diverse composition, intruded by plutonic rocks of the Coast Range batholith. Reconnaissance geologic studies of the area are mapped on a broad, regional scale, with little detail in differentiating subunits within the plutonic and metamorphic rocks. Metamorphic units are the dominant rock type along the conceptual alignment, and include gneiss, granulite, and schist. Plutonic rocks are exposed along the crest of the Coast Mountains, and are generally granitic, consisting predominantly of quartz monzonite with quartz diorite dikes. A Bradfield River mineral study identified an intermediate unit of metasedimentary rock along the conceptual alignment.[3] This intermediate unit consists of light gray to white marble and skarn along the contact with the metamorphic and plutonic units, and occurs between the elevations of 500 to 1000 feet.

Glaciation has significantly modified the landscape, forming U-shaped valleys, rounding peaks and ridges, and leaving deep deposits of till. Till deposits are the remnants of receding alpine glaciers, comprised of a mix of both metamorphic and plutonic rocks. Till deposits occur near the mouths of many tributaries of the Bradfield River. The original deposits have been reworked by the river and its tributaries, forming fluvial glacial deposits in the broad floodplain of the North Fork. The tills are predominantly gravel, but range in composition from silty fine sand to boulders, depending on the energy of the depositional environment.

Muskeg deposits, which are comprised of very soft, highly compressible organic materials, are anticipated along the entire conceptual alignment. Muskeg deposits can occur in any location, including steep, timbered hillsides. These deposits typically vary from 1 foot to over 30 feet in depth, and are very irregular and unpredictable over small distances. However, due to the well-developed drainage patterns in the steep terrain, most muskeg deposits will likely be less than 10 feet deep. The most extensive and deepest muskeg deposits are typically found at nearly flat or low lying areas adjacent to streams, as shown in Figure 14 below. Muskeg surfaces are soft and spongy due to the 6- to 12-inch thick sod mat that overlies the very soft, fibrous, organic material below, and groundwater levels that are typically near the surface of the muskeg. Roadway embankments constructed over muskeg deposits will settle, causing warped grades and severe pavement distress. The preferred method for constructing stable roadbeds is to sub excavate the muskeg and replace the excavated material with shot rock fill.

(See photo next page.)

[3] MacKevett, E.M., Jr., 1963, Geology of the North Bradfield River Iron Prospect, Southeastern Alaska, USGS Bulletin 1108-D.

Figure 14. Muskeg deposit at Station 210+50

Evaluation Of The Conceptual Alignment

A conceptual alignment was developed based on topographic information obtained through side-looking radar and aerial photography, with preferred alignments identified during the helicopter reconnaissance. The 30-mile corridor (Segments 1 Option A w/Segments 2-5) was divided into five segments for design and discussion purposes. Geotechnical considerations were evaluated for each segment, and geological hazards (debris flow channels, snow avalanche chutes, and run-out zones) were identified. Refer to Appendix D Table D-2 for hazard locations. Rough estimates of sub excavation and retaining wall quantities were developed, as summarized in Appendix D Table D-1. These evaluations are intended to provide a more accurate appraisal of the feasibility, cost, and potential problems associated with the conceptual alignment. The following sections contain detailed discussions of each segment of the conceptual alignment.

Segment 1, Option A, (Station 88+00 to 261+46)

Station 88+000 to 261+46 - Segment 1 conceptual alignment generally follows the existing gravel road alignment across the southern margin of the tidal flat/floodplain to the confluence of the East and North Forks of the Bradfield River. Silty fine sand and gravel deposits are covered with relatively thin organic soil deposits. Cuts along the existing road indicate the organic surface soil deposits are approximately 2-3 feet thick and consist mostly of forest duff and roots, as shown in Figure 15. Sub excavations are anticipated to remove the organic soils, both in the notch to widen the existing road, and where the proposed alignment deviates from the existing road.

Figure 15. Organic surface soils underlain by silty sand, 700 feet to the left of Station 214+00

The conceptual East Fork bridge crossing was shifted downstream from the washed-out log bridge crossing in order to take advantage of rock outcrops observed at the proposed abutment locations. The rock provides natural scour protection and allows spread footing foundations for the bridge abutments. The conceptual bridge location is shown in Figure 16.

(See photo next page.)

Figure 16. Downstream view of conceptual East Fork bridge crossing at Station 226+00

Segment 1, Option B (Station 10+00 to 270+00)

Station 10+00 to 140+00 – This alternative conceptual alignment is situated along the north shore of the Bradfield Canal, traversing the coastline in a northeasterly direction to the tidal flats at the mouth of the canal. At this point, the conceptual alignment turns east and follows the margins of the tidal flats. The conceptual alignment crosses the base of moderately steep, heavily forested slopes. The terrain is dissected by abundant local draws and ravines separated by rocky ridges, generally oriented perpendicular to the alignment. Proposed cuts through the ridgelines are up to 100 feet high, with 20- to 60-foot deep fills in adjacent draws. Due to the alignment's close proximity to the coastal fringe, extensive retaining walls will be required throughout the fill sections to prevent fill from spilling into the canal. Sub excavations are anticipated to remove soft, compressible soils where the roadway crosses the margins of the tidal influence.

Two of the three conceptualized bridges are located along the tidal flats near the end of the Bradfield Canal. The first two structures span a wide tidal flat near the mouth of the stream near Station 50+00. Two 100-foot structures are conceptualized, along with a 10-foot culvert. Piers will require deep foundations through the soft, compressible tidal flat sediments. The third structure crosses the relatively narrow stream channel at the mouth of the White River at Station 134+00. Abutment foundations for the conceptual 200-foot long structure will likely consist of driven piles in alluvial and glacial deposits at the west abutment, and a spread footing on shallow rock at the east abutment.

Section 140+00 to 190+00 – Tidal flats transition into a wide floodplain of braided stream channels at the mouth of the Bradfield River. Currently, the main channel of the Bradfield River flows along the northern margin of the valley, with the proposed roadway alignment following moderately rolling, well-vegetated terrain along the northern margin of the floodplain. Revetment walls are proposed where the alignment impinges upon the river channel. Minor sub excavations are anticipated where the roadway crosses shallow muskeg and soft alluvial deposits.

Section 190+00 to 270+00 – The proposed alignment turns away from the river and follows the margins of the floodplain to the proposed bridge crossing of the Bradfield River and link to the Option A alignment. The gently rolling to flat terrain is heavily forested and contains abundant muskeg deposits, predominantly along abandoned river channels. Muskeg deposits will require moderately deep sub excavations to remove the compressible organic soils. The proposed bridge crossing the Bradfield River at the end of this segment will most likely require driven pile foundations in the alluvial deposits at the west abutment and a spread footing foundation in shallow rock at the east abutment.

Segment 1, Option C

M.P. 0.00 to 8.02 - This conceptual alignment was outside the original scope of the project and no geotechnical analysis has been conducted.

Segment 2, Station 260+00 to 444+50

Section 260+00 to 340+00 – The conceptual alignment begins in one of the several rock bluffs that abruptly form the margin of the main channel of the Bradfield River, follows the east riverbank, through relatively flat terrain along the margin of the floodplain, and cuts through additional prominent rock points where they impinge upon the river channel. A full-bench rock cut would be required at the beginning of the segment, in order to avoid filling into the main river channel, which flows at the base of the high rock face. As the route transitions out of the full-bench cut from station 273+00 to 279+00, fill-side retaining walls along the river may be required to avoid encroaching on an active braided channel. Anther rock point from station 304+00 to 308+00 would require a full-bench cut up to 60 feet in height.

Conceptualized embankments crossing the floodplain will likely encounter organic surface soils (forest duff and roots), with patches of shallow muskeg of less than 5 feet deep. A standard embankment sub excavation detail that specifies removal of all soft or organic material will be required. For conceptual design purposes, the average depth of the floodplain embankment sub excavation may be estimated at 2 feet below the existing grade. It is advantageous to minimize the embankment height, because the full width of the embankment footprint requires sub excavation.

Section 340+00 to 351+00 – A broad, well-forested alluvial fan intersects the alignment at the mouth of a large U-shaped glacial valley. Materials are likely a mix of glacial and fluvial sandy gravel, cobbles and boulders. The lack of vegetation along the channel suggests that the stream is subject to high seasonal flows or debris discharges.

Section 355+00 to 369+00 – Aerial photos of this section show a poorly drained grassy area devoid of large trees, indicative of a deep muskeg deposit. The conceptual alignment skirts the eastern margin of the muskeg, which avoids the potentially deeper muskeg toward the center of the clearing. Shifting the alignment to the right, into the rocky hillside, would minimize the impacts to the wetland as well as reduce the volume of muskeg sub excavation. Along the current conceptualized alignment, muskeg deposits below the embankments are estimated at 6 to 15 feet deep.

Section 393+00 to 402+00 – The conceptual alignment generally follows a narrow swath of moderately sloping ground between the main river channel and a steep rock face. A fill-side retaining wall averaging 30 feet high, located within the scour zone of the river, is anticipated to minimize encroachment into the river channel. Typically, due to the high probability of losing a wall during a flood event, WFLHD policy discourages construction of high replacement cost retaining structures (which includes walls over 10 feet high) within the river channel.

Section 403+00 to 444+50 – Conceptual embankments crossing the floodplain will generally encounter organic surface soils (forest duff and roots), with a patch of muskeg (estimated at 5 feet deep) between stations 421+00 and 425+00. From station 434+00 on, the conceptual alignment encroaches on the edges of open water channels along the southeast margin of a muskeg deposit. A shift to the right, into a rocky slope, would minimize impacts to the wetland.

Segment 3, Station 444+50 to 737+30

Section 444+50 to 556+00 – The conceptual alignment follows the edge of the margin of the floodplain, crossing the toes of several moderately steep rock slopes which are dissected by deep, geologic structure-controlled gorges cutting perpendicular to the conceptual alignment. This terrain results in a highly irregular ground profile along the centerline, with conceptual rock cuts of up to 100 feet high. Soils are anticipated to be shallow, comprised of organic forest duff and roots overlying the rock, with a patch of muskeg (estimated at 5 feet deep) occurring to the west of the toe of the embankment between stations 455+00 and 457+00. Several retaining walls may be required where the embankments encroach upon the river channel.

Section 556+00 to 567+00 – This segment of the conceptual alignment traverses a broad, fan-shaped glacial outwash deposit at the mouth of a large U-shaped valley. Outwash deposits are anticipated to be 60 to 100 feet deep, based on the adjacent topography, and consist of predominantly granular soils and granitic boulders, according to USGS information. Cuts up to 60 feet high will be required as the roadway crosses this deposit, and conceptualized cut slopes with a ratio of 4:1 (vertical distance:horizontal distance) will need to be adjusted to a slope of 1:1.5. An alignment or grade change may also be required in order for the cut slopes to catch. In addition, the fan-shaped change in vegetation from an older forest at Station 559+00 to a younger forest at Station 564+00 indicates this area is subject to potential geologic hazards from debris flows or snow avalanches.

Section 567+00 to 737+30 – For the most part, the conceptual alignment crosses moderately sloping terrain along the margin of a broad floodplain, at times encroaching on abandoned braided stream channels and crossing intermittent muskeg deposits that are estimated to be less than 5 feet deep. Several fill-side walls may be required to retain the embankments where they spill onto the braided channels; however, specific potential wall locations were not identified because these channels are partially overgrown and abandoned by the main river, which flows on the opposite side of the nearly 1-mile wide floodplain. In some areas, cuts up to 160 feet high will be required through steep, protruding rock bluffs.

Through the section from station 673+00 to 685+00, the conceptual alignment is precariously situated between the active river channel and a steep rock cliff. A retaining wall may be needed to minimize encroachment into the river; otherwise, a full-bench cut approaching 200 feet high will be required to accommodate the roadway.

From Station 705+00 to the end of the segment, the terrain is comprised of gently rolling fluvialglacial deposits. As the conceptual alignment crosses these deposits, required cuts up to 70 feet high are designed as rock cuts at a preliminary slope of 4:1. The depth of rock through this area could vary considerably from station to station; for conceptual design purposes cut slopes over 20 feet high should be designed at an intermediate slope of 1:1, and cuts less than 20 feet should be designed at 1:1.5.

Segment 4, Station 740+00 to 1200+75

Section 740+00 to 750+00 – This segment continues along the right margin of the floodplain, beginning in a transition from gently rolling fluvialglacial deposits, passing through a short-but-steep rock bluff rising adjacent to the floodplain, and continuing onto the flank of a broad alluvial fan / glacial outwash deposit. Rock cuts of up to 150 feet high are proposed where the alignment shifts to a full-bench cut through the bluff to minimize impacts to the floodplain.

Section 750+00 to 768+00 – In this segment, the conceptual alignment crosses a broad, fan-shaped alluvial / glacial outwash deposit at the mouth of a steep canyon, passing approximately halfway between the toe and apex of the fan, and bridging a stream at Station 762+00. The younger vegetation patterns indicate that the entire fan is subject to potential geologic hazards from debris flows and snow avalanches. Conceptualized cuts are up to 40-feet high, with slopes of 4:1. For any design, all cuts through this area should be changed to maximum slopes of 1:1.5 to reflect typical cut slopes in the anticipated granular materials.

Section 768+00 to 808+00 – An extensive marshy area with potentially deep (>10 feet) muskeg deposits occurs between the active Bradfield River channel and the eastern slopes of the valley. The conceptual alignment follows the moderately sloping ground along the eastern margin of the wetlands, minimizing wetland impacts as well as avoiding the potentially deep muskeg deposits. Occasionally, the embankments spill onto the margins of the muskeg deposits; muskeg sub excavation is anticipated in those areas.

Section 808+00 to 840+00 – As conceptualized, the alignment encroaches into the main Bradfield River channel, and requires extensive fill-side retaining walls. For any design, this alignment should be shifted into the moderate-to-steep slopes on the right stream bank, to minimize encroachment. However, even with a shift, extensive fill-side retaining walls may still be required.

Section 855+00 to 873+00 – In this segment, a major tributary stream exits the mouth of a large, glacially carved valley, forming an extensive fluvialglacial fan, estimated to be over 60 feet deep, that spills into the floodplain of the Bradfield River, diverting the flow of the river around the toe of the fan. The conceptual alignment crosses near the head of the fan, requiring a major structure to span the 250-foot wide channel. Aerial photos indicate that a large muskeg deposit occurs adjacent to the conceptualized south abutment approach; however, the conceptualized 10-foot deep through-cut should remove the muskeg thereby stabilizing the roadbed. Cut slopes through this area should be adjusted to maximum slopes of 1:1.5 for any design.

Section 873+00 to 973+00 – Benched into the moderately sloping-to-rolling terrain, the conceptual alignment continues along the eastern margin of the floodplain to the first crossing of the main Bradfield River channel at Station 973+00. Cuts up to 50-feet high are conceptualized, although an anticipated alignment shift out of the active river channel and into the adjacent steep rock bluff between Stations 833+00 to 860+00 will necessitate rock cuts of up to 90 feet high, as well as an extensive fill-side wall. At isolated locations, the embankment spills onto small wetlands with relatively shallow (less than 5-feet deep) muskeg deposits. Several suspected avalanche chutes occur along the steep terrain just east of the conceptual alignment, although this alignment location appears to lie just outside the maximum extent of the run-out zones. At the proposed bridge crossing, a muskeg deposit occurs along the south abutment approach, which is expected to be removed by the conceptualized 10-to-25-foot deep through cut.

Section 975+00 to 1089+00 – In this segment, the wide floodplain narrows abruptly as the river channel transitions into an incised canyon section. The conceptualized alignment is benched into the moderate-to-steep terrain, with rock cuts of up to 120 feet high, along the western slopes of the canyon. Deep tributary stream channels cut across the thickly forested slopes at frequent intervals; many channels are also avalanche chutes. Retaining walls are anticipated where the toes of embankments filling into these tributary channels encroach onto the main river channel.

Vegetation patterns indicate that the conceptual alignment crosses muskeg deposits on several relatively flat terraces. Muskeg depths at these terrace deposits may be relatively deep (5 to 10 feet), as indicated by the poorly defined drainage patterns and large vertical separation from the main river channel. As conceptualized, some deposits will be excavated with cuts; others will require sub excavation.

Section 1090+00 to 1129+00 – Two closely spaced bridges are conceptualized along this segment where the river makes a 90-degree turn along the angular margins of a broad terrace. The Station 1090+00 bridge grade is over 90 feet above the stream, requiring a multi-span structure or, alternatively, MSE wall abutments. Between bridges, the alignment makes a through-cut of up to 50 feet deep across the gently rolling terrace terrain. Vegetation patterns with sparse forest indicate either potential muskeg deposits or shallow rock throughout the terrace. In the absence of significant standing water, shallow rock is most likely. Beyond the bridge at Station 1106+00, the sparse forest vegetation pattern continues. As the majority of the conceptual alignment through this area is a cut, no sub excavation of muskeg is anticipated.

Section 1129+00 to 1199+00 – Continuing along the toe of the western face of the valley, the conceptual alignment increases grade as it begins the ascent toward the southern conceptualized tunnel portal. The conceptual alignment then begins to deviate from the river channel as it climbs through varied terrain ranging from steep rock slopes with abundant avalanche chutes and avalanche run-out zones to rounded rock bluffs, as shown in Figure 17.

Figure 17. View of the glacial valley east of the conceptual alignment from Station 1200+00

Deep, V-shaped chutes, treeless expanses, and tree and rock debris indicate that the avalanche hazard along this portion of the conceptual alignment is very high. Avalanches occur in both confined chutes and over broad release zones. The zones identified from the aerial photos are listed in Appendix D Geological Hazards Table D-2. A more detailed study of avalanche hazard is recommended, as the location and extent of chutes and release zones will have significant impacts on the all-season use of a road in this location. Even if travel is restricted to seasonal use only, removable or avalanche resistant structures will need to be considered for signs and guardrails.

Segment 5, Station 1200+00 to 1538+27

Section 1200+00 to 1221+00 – This segment begins by crossing a wide and deep canyon. The first 300 feet span an active snow avalanche run-out zone. Currently, a conceptualized large, deep embankment with a12-foot culvert will span this canyon. The embankment across this area could be constructed from tunnel excavation spoils. After the canyon, the conceptual alignment crosses rolling terrain with rock knobs and two small muskeg deposits before it enters into the conceptualized south tunnel portal excavation, as shown in Figure 18.

Figure 18. View toward south tunnel portal location from Station 1200+00

Section 1221+00 to 1300+00 (TUNNEL) – The conceptualized tunnel crosses the summit of the Coast Mountains, leaving the Bradfield River drainage and entering the South Fork of the Craig River drainage. Aerial reconnaissance observations indicate that the conceptualized southern portal appears to be situated in massive granitic rock that has been polished into rounded knobs by glaciers. Streams have dissected the rock along linear, structurally controlled joints and fractures that are clearly visible in the aerial photos. These structural features are generally trending parallel and perpendicular to the conceptual tunnel alignment. Additional field investigations should be performed in order to determine the geometric relations of the structural joints and fractures to the conceptual tunnel alignment. The most noticeable structural feature parallels the conceptual tunnel alignment 150 to 200 feet east from the southern portal to Station 1255+00.

From Station 1274+00 to the northern portal of the conceptual tunnel, several deeply incised avalanche chutes cut sub-perpendicular across the conceptual tunnel alignment. These chutes formed in weaker rock zones along the joints and fractures that undoubtedly intercept the conceptual tunnel alignment at depth. Geologic maps indicate the conceptual northern portal is near the contact with the granitic rocks and the metamorphic rocks. The irregular topography and boulder talus debris visible in the aerial photo indicate that the rock conditions at this portal location may be more fractured or sheared along this contact.

Section 1300+00 to 1375+00 – The conceptual northern portal exits on the northwest facing slope of the broad, U-shaped, glacially carved valley of the South Fork of the Craig River. The conceptual alignment follows the river as it flows north and east into Canada. From the conceptual northern portal onward, the stunted vegetation indicates that the conceptual alignment crosses a continuous avalanche run-out zone covering the lower apron of talus deposits along the toe of the steep ridges to the east. Avalanches apparently release in sheet-type masses from the cliffs between the canyons, and also exit through chutes cut into the steep ridges to the east. Fresh deposits on the alluvial fans indicate these areas also produce debris flows.

Section 1375+00 to 1430+00 – As the conceptual alignment descends the east flank of the valley, the terrain transitions from steep, rocky slopes to moderate, densely forested slopes. The conceptual alignment then reaches the river valley and parallels the southeastern stream bank. Preliminary conceptualization indicates that a large embankment section, from Station 1385+00 to Station 1410+00, encroaches into the floodplain. It appears that the impacts to the flood plain could be minimized by shifting the conceptual alignment into the moderately sloped terrain to the right. A steep rock knoll adjacent to the Craig River channel at Station 1418+00 to 1427+00 will require rock cuts up to 140 feet in height.

Section 1430+00 to 1538+27 (Project Terminus) – The Craig River curves to the east as it flows to the U.S./Canada border. The terrain transitions to rolling forested ridges that separate relatively flat, open areas that presumably have moderately deep (less than 5 feet) muskeg deposits. The conceptual alignment generally stays well away from the active river channel as it closely follows the margins of the valley floor.

Conceptual Design Recommendations

Earthwork

General – For design purposes, anticipated materials may be classified into two categories: rock and soils. Soils include glacial outwash, alluvial deposits, muskeg, and forest duff topsoil. With the possible exception of some of the cleaner glacial and alluvial fan deposits, soils will be moisture sensitive, and therefore, unsuitable for embankment construction in the region's wet climate. Soils will generally be easily disturbed and require sub excavation to a depth of 2 feet below sub grade in order to construct a working base of rock borrow for construction equipment support. Roadway embankments constructed over organic deposits will settle, causing warped grades and severe pavement distress. Muskeg and organic surface soils are anticipated to be relatively shallow (less than 5 feet). The method of choice for construction of stable roadbeds is to remove the muskeg and replace the excavated material with shot rock fill. Sub excavation locations and estimated depths are listed in Appendix D, Table D-1.

Where soils can be identified, cut slopes should be designed at a flatter slope to more accurately reflect the quantities of materials anticipated to be removed. Cut slopes in soils are at the highest risk of erosion from the time of completion through the first season of rains, before vegetation can be established. Surface erosion concerns dictate that slopes should be designed to minimize the risk of erosion. Erosion control is generally accomplished during slope design by laying the slope back as flat as is practical and incorporating site specific erosion control details such as the following:

- cut-off drains at the top of slopes
- rock blankets in seepage areas
- rip rap along small drainage channels.

Generally, the recommended cut slope in muskeg, alluvial, and glacial deposits is 1:2, vertical-to -horizontal distance (1V:2H). Maximum cut slopes of up to 1:1.5 may be constructed in dense gravel deposits, provided adequate erosion control measures are incorporated into the design. During construction, cut slope erosion may be further reduced by minimizing the disturbance of the in-situ material along the finished slope surface during excavation. Once wet soils (and especially organic soils) are disturbed during excavation, they behave as thick fluids that tend to flow. Glacial deposits will usually be saturated when excavated.

The stability of natural rock outcrops is generally structurally controlled. Steep faces occur along near-vertical joints and fractures. Natural outcrops are usually at slopes of 4V:1H or steeper, corresponding to the orientation of the primary joints and fractures. For preliminary design purposes, generic cut slopes in rock should be designed at 4V:1H. Rockfall protection may be provided by incorporating standard rockfall ditch designs as described below.

Glaciation and differential weathering produces an undulating rock surface that is covered with variable depths of overburden soils. Rock excavation during previous road construction projects in Southeast Alaska has been subject to quantity adjustments due to highly variable rock surfaces and rock weathering depth. Final design will most likely incorporate compound cut slope recommendations based on conditions encountered during the geotechnical explorations, and extrapolated beyond and between the exploration locations.

Fill slopes will be constructed of rock embankment. Maximum fill slopes of 1:1.5 are recommended. Typically, unsuitable material (organic soils, fine-grained alluvial soils, and excavated topsoil and glacial outwash) is wasted along the outside edge of finished fill slopes and in designated waste areas. Rock encountered throughout the project is anticipated to be suitable for embankment construction. A swell factor of 1.3 for rock excavation from in-place to embankment quantity is recommended.

Retaining Walls – Retaining walls are anticipated where the conceptual roadway embankments encroach into the stream channel. MSE retaining walls would be the most likely choice in this remote area. Reinforcement elements may consist of either welded wire or geogrid. Various wall facings ranging from welded wire to simulated masonry stone are available. Estimated retaining wall locations and wall quantities are provided in Appendix D, Table D-1.

Geological Hazards – Potential geological hazards identified along the conceptual alignment include debris flows and snow avalanches. Debris flows are fast-moving events that usually occur during heavy precipitation and are confined to stream channels of alluvial fans. Avalanches are most active during mid-to-late winter.

Avalanches will impact the road opening, maintenance, guardrail, and stream crossing structures. The risk from a particular hazard depends on the following:

- The type of the hazard
- The size of the hazard
- The frequency of the hazard
- The probability of occurrence
- The resource that the hazard affects

A detailed assessment of the risks associated with these hazards is beyond the scope of this report. Areas subject to debris flow and snow avalanche hazards are listed in Appendix D, Table D-2.

Rockfall Ditches

Rockfall ditch design will significantly impact the volume of rock excavation and the associated cost of this project. Rockfall ditch design recommendations presented in this report are based on the latest design recommendations presented in the Oregon Department of Transportation (ODOT) "Rockfall Catchment Area Design Guide". This design incorporates an economic analysis of ditch width and fore slope to determine the design percent of rocks retained, combined with a graphical analysis to generate a design table of standard ditch widths for a range of cut heights.

The economic analysis, shown in Appendix D, indicates the most effective rockfall design for this project is to design for 90 percent rockfall catchment utilizing a ditch with a 1V:4H fore slope. This catchment criterion was combined with the ODOT design charts to determine the catchment width for a range of cut heights. Rockfall ditch width recommendations are presented in Appendix D, Design Charts.

Geotechnical Investigations

General - The scope of future geotechnical investigations would include surface reconnaissance and subsurface explorations along the proposed alignment to characterize the conditions, define the limits and depths of surface organic soils, identify potential rock borrow and aggregate sources, and provide recommendations for roadbed preparation, cut and fill slope angles, embankment construction, retaining wall design, erosion control, and bridge foundations. Typically, subsurface investigations in Southeast Alaska involve excavating test pits at 100-foot intervals with hydraulic excavators. Highly variable depths of surface soils warrant the closely spaced explorations. Bridge sites and larger cuts will require borings. Helicopter-lifted equipment and crews will be required at the remote bridge locations.

Material Sources – Rocks found along the conceptual alignment will generally be excellent road building materials. Visual observation of the assemblage of different rock types in the gravel near the mouth of the Bradfield River indicate a variety of hard metamorphic gneiss and igneous granitic rock fragments. These rock types should make excellent base and pavement aggregate, whether extracted from gravel deposits or from hard rock outcrops.

Parsons Brinckerhoff, in association with Lachel Felice & Associates, were retained by the Federal Highway Administration – Western Federal Lands Division, to develop a conceptual design and construction cost estimate for the Bradfield Road Tunnel in southeast Alaska.

The Bradfield Road Tunnel is part of a conceptual study for a highway corridor that would connect Wrangell and Ketchikan, Alaska with British Columbia. The study area is east of Wrangell generally paralleling the North Fork of the Bradfield River. The tunnel is located beneath a mountain pass dividing the watershed between the North Fork of the Bradfield River and the South Fork of the Craig River. The tunnel will be approximately 8000 feet in length through mixed metamorphic and igneous rock types.

The remote location, combined with the severe winter weather dictate the necessity for a construction operation supported by on-site self sufficient camp facilities, providing all necessary facilities and services within the tunnel construction contract. In addition to these basic guidelines, there were a set of mutually agreed boundary conditions and assumptions established to govern the development of the conceptual design and cost estimate.

The study was required to address two tunnel options, both a twin tunnel uni-directional configuration, and a single tunnel bi-directional configuration. Due to the relatively long length, it was considered of utmost importance to develop designs and cost estimates that reflected all appropriate regulatory requirements for fire and life safety considerations.

The ventilation strategy for each tunnel option is substantially different. The single tunnel bidirectional traffic option requires removing smoke at the incident site. However, due to the remote location, it is unlikely that there will be a tunnel control center set up with emergency response teams to respond to emergency situations in the tunnel in a timely manner. In order to account for the absence of such emergency response teams, the ventilation system must be considerably oversized to account for this uncertainty.

The twin tunnel unidirectional traffic allows the use of longitudinal ventilation. The primary advantage of this method is that the fire location does not have to be precisely known. The ventilation airflow just stops smoke from spreading upstream. For traffic protection and fire smoke protection, the twin unidirectional tunnels are considered to provide a more satisfactory solution than the bidirectional traffic option.

Considering these project guidelines, the following conceptual construction costs were developed. The costs presented include no portal area earthworks, since these costs are addressed in the highway cost estimate. The costs presented include no contingency value, since the overall project will have a 25% global contingency applied to all construction costs, which will include the tunnel construction costs.

Tunnel Narrative taken from "Bradfield River Road Project Tunnel Feasibility & Cost Estimates Draft Revision 0" by Parsons Brincerhoff in Association with Lachel Felice & Associates, October 15, 2004

Table 3. Estimated Tunnel Cost Consideration

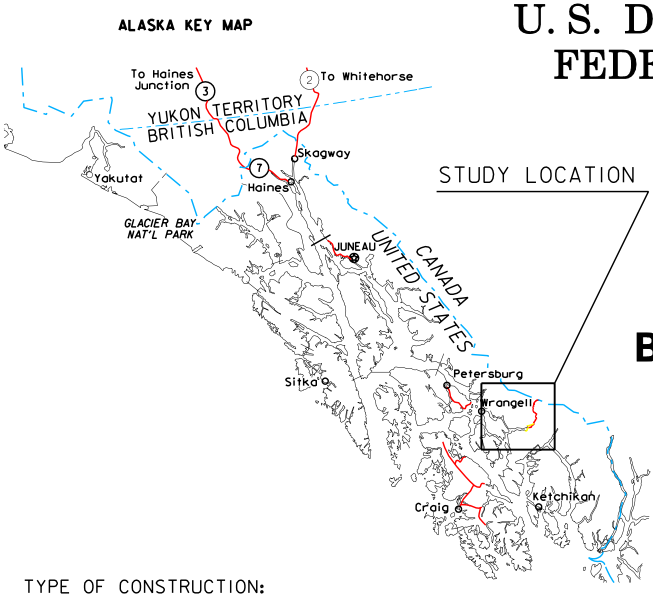
	Option 1 Twin Tunnel	Option 2 Single Tunnel
Total Tunnel Cost w/o Contingency($)	73,200,000	92,400,000
Tunnel Unit Cost w/o Contingency* ($/lf)	9,150	11,550

* Assumes tunnel length of 8000 linear feet

See *"Bradfield River Road Project Tunnel Feasibility & Cost Estimates FINAL REPORT*, November 30, 2004" prepared by Parsons Brinckerhoff in association with Lachel Felice & Associates

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



PLANS FOR PROPOSED STUDY

AK PLD 2003(1)

BRADFIELD RIVER ROAD STUDY

TONGASS NATIONAL FOREST

ALASKA

SEGMENTS 1A with 2 thru 5 – LENGTH 29.44 MILES

SEGMENTS 1B with 2 thru 5 – LENGTH 31.09 MILES

SEGMENTS 1C with 2 thru 5 – LENGTH 34.17 MILES

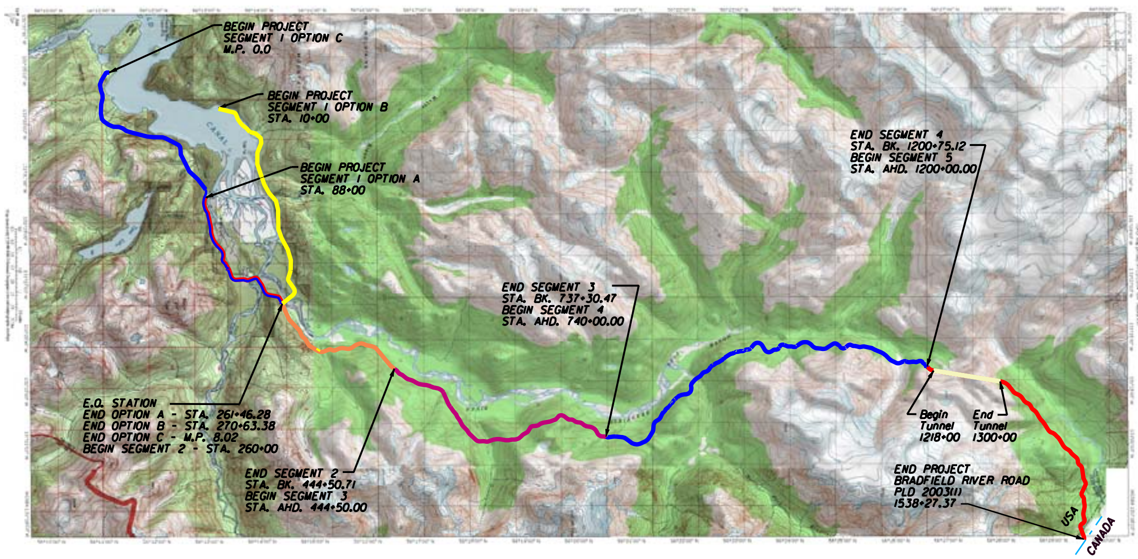
INDEX TO SHEETS

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 29 miles of new alignment, including Geology, Hydraulics, Environment, and Structures.

DESIGN DESIGNATION:

ADT	2004 - 0
ADT	2010 - 400
V	35 mph
e (max)	6%



5000 1000 0 2500 5000 7500 10000

SCALE IN FEET

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

Checked by:

Designed by:

$$$$$SYTIME$$$$$

$$$$$DGNSPEC$$$$$

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	A.2

ABBREVIATIONS

aggregate	agg.
ahead	AHD.
Alaska Marine Highway System	AMHS
alternate	alt.
and	&
and so forth (et cetera)	etc.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transporation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
centerline	℄
continuous	cont.
creek	cr.
Cross Functional Team	CFT
cubic inch(es)	cuin, in^3 or in3
cubic foot (feet)	cuft, ft^3 or ft3
cubic yard(s)	cuyd, yd^3 , C.Y.or yd3
culvert	culv.
curve central angle	Δc
degree	° or deg.
Design Speed	V
diameter	dia., D, or ⌀
east	E
easting coordinate based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elev.
elevation based on on State Plane Coordinates, Alaska, Zone 1, North American Datum of 1988, United States Survey Feet	EL =
embankment	Emb.
equation	EQ.
excavation	Exc.
Federal Highway Administration	FHWA
foot (feet)	′ or ft
GEOPAK Digital Terrain Models	TIN files
inch(es)	″ or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
Light Detection and Ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
miles per hour	mph or MPH
mileposts	MP
minute(s) (angular)	′
minimum	min.
miscellaneious	misc.
mountain(s)	mtn(s).
National	NAT'L
National Forest	NF
National Environmental Policy Act	NEPA
north	N
northing coordinate based on State Plane Coordinates, Alaska, Zone 1, North American Datum 1983 (1992), United States Survey Feet	N=
number	no.
Oregon Department of Transportation	ODOT
pavement	pvmt.
percent	pct. or %
point of curve	PC
point on curve	POC
point of intersection	PI
point on tangent	POT
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
required	reqd.
right	rt. or RT
road	rd.
roadway	rdwy.
second (angular)	″
second (time)	s
section	sec.
Segment 1 Option A	Option 1A
Segment 1 Option B	Option 1B
Segment 1 Option C	Option 1C
slope ratio (vertical:horizontal) ratio of a number of units vertical to number of units horizontal	1:4 2 2
south	S
square	sq
square foot (feet)	sqft, ft or ft2
square yard(s)	sqyd ,yd or yd2
standard	std.
State of Alaska Department of Transporation and Public Facilities	ADOT&PF
station 1+00 = 100 feet	Sta. or STA.
superelevation rate	e
tangent	tan.
tangent distance	T
that is	i.e.
township	T.
typical	typ., TYP
vertical point of intersection	VPI
vertical curve length	VC
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

PLAN SYMBOLS

EXISTING GROUND

EQUATION

MAJOR CULVERTS, GREATER THAN 10 FEET (EXCEPT THOSE LABELED AS FISH PASSAGE)

MILEPOST DESIGNATION BASED ON SEGMENT 1 OPTION A

NORTH ARROW

CONCEPTUAL PROFILE VIEW

PROPOSED BRIDGE

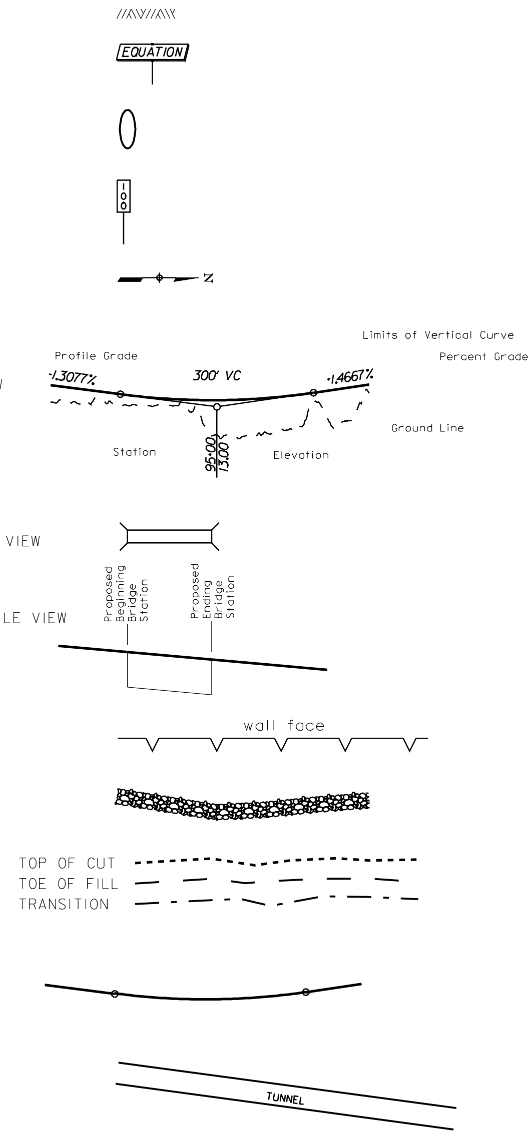
MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

LIMITS OF VERTICAL OR HORIZONTAL CURVATURE

TUNNEL DESIGNATION ON PROFILE



NOTE:

1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.

ABBREVIATIONS and PLAN SYMBOLS

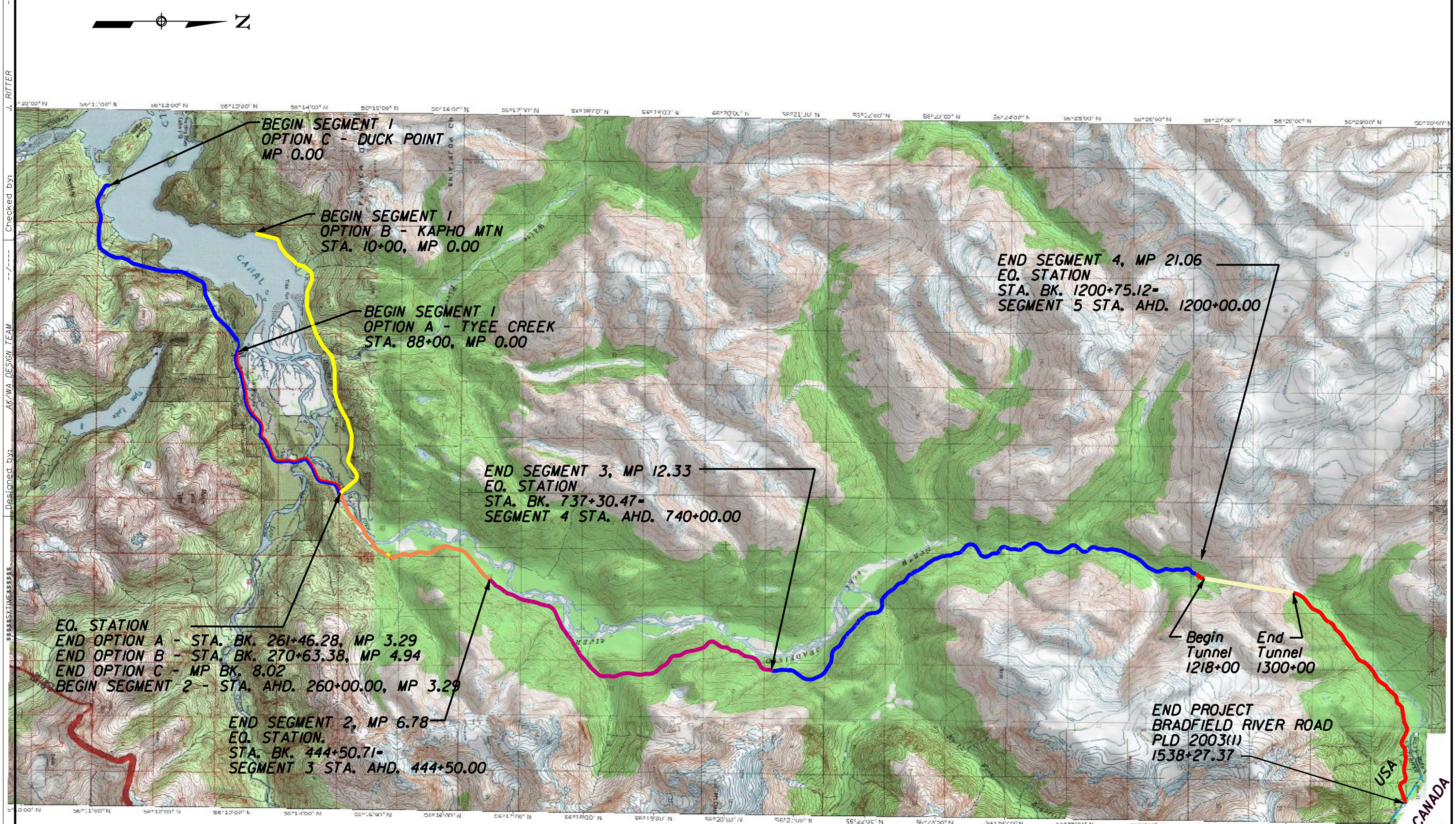
Designed by:

Checked by:

$$$$$SYTIME$$$$$

$$$$$DGNSPEC$$$$$

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	A.3



5000 1000 0 2500 5000 7500 10000
SCALE IN FEET

VICINITY MAP

J. RITTER
Checked by:
AK/WA DESIGN TEAM
Designed by:
$$$$$SYTIME$$$$$
$$$$DGNSPEC$$$$$

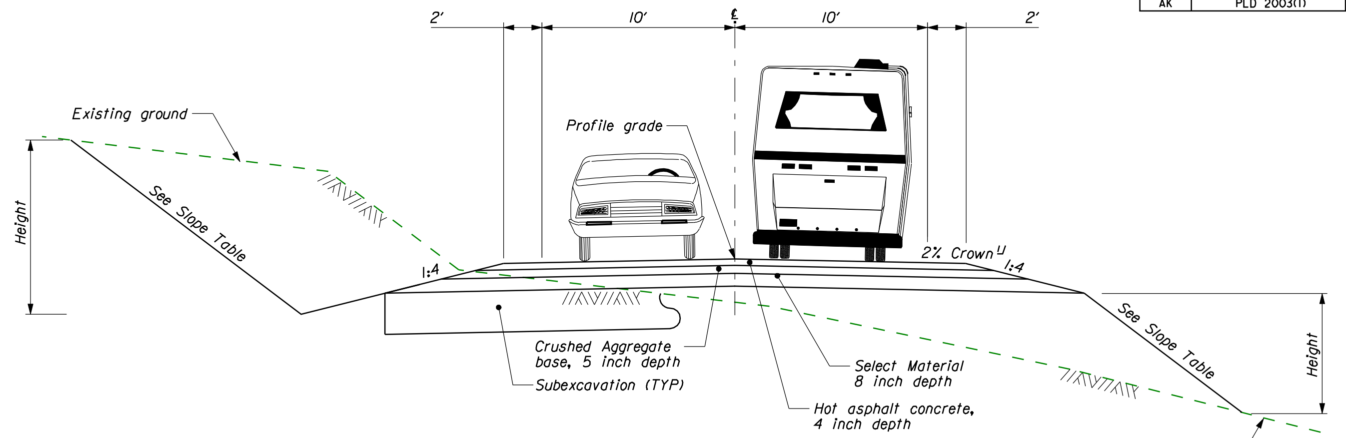
STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	B.1

SLOPE TABLE

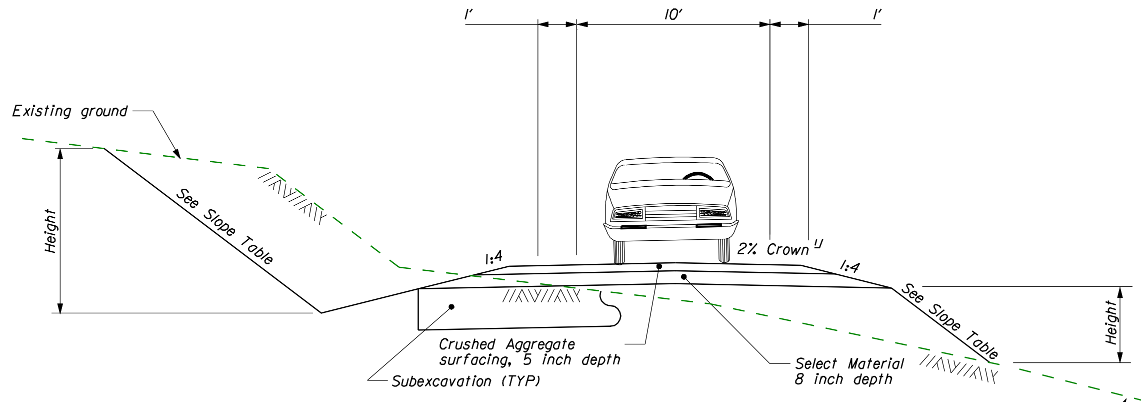
CUT SLOPE		FILL SLOPE	
Height (ft.)	Slope	Height (ft.)	Slope
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

SUBEXCAVATION QUANTITIES

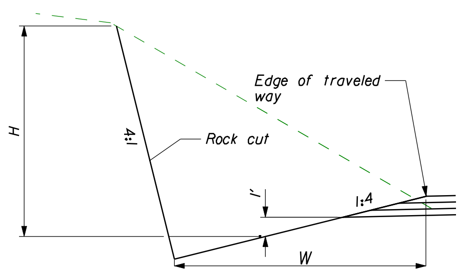
LOCATION	LENGTH (ft.)	Ave. Depth (ft.)	QUANTITY (C.Y.)
Segment 1 Option A			
95+00-98+00	300	2	1100
109+00-210+00	1100	2.5	29000
210+00-222+00	1200	3	5800
228+00-257+00	2900	2	17200
Segment 1 Option B			
218+00-265+00	4700	2	17400
Segment 2			
281+00-304+00	2300	2	15300
308+00-340+00	3200	2	19000
355+00-369+00	1400	10	31000
369+00-382+00	1300	2	6700
403+00-421+00	1800	2	10600
421+00-425+00	400	5	5200
425+00-434+00	900	2	4300
Segment 3			
455+00-457+00	200	5	1100
569+00-582+00	1300	3	17300
598+00-617+00	1900	2	14100
663+00-667+00	400	2	5300
699+00-705+00	600	2	5300
Segment 4			
775+00-777+50	250	5	1400
784+00-788+00	400	5	1500
799+00-805+00	600	10	8900
885+00-889+00	400	3	900
1071+00-1082+00	1100	3	3700
Segment 5			
1208+00-1212+00	400	3	5300
1214+00-1215+50	150	5	1400
1390+00-1418+00	2800	2	18700
1428+00-1440+00	1200	2	4400
1459+00-1463+00	400	5	1500
1466+00-1475+00	900	2	2000
1486+00-1490+00	400	3	2000
1514+00-1521+00	700	5	6500
		TOTAL:	263900



TYPICAL SECTION
BRADFIELD RIVER ROAD



TYPICAL SECTION
SEGMENT 1 OPTION B
ACCESS ROAD TO TYEE FACILITY
(See Sheet D.11)



ROCK FALL
DITCH DETAIL

ROCK FALL DITCH CRITERIA @ 1:4

H (ft.)	W (ft.)
0 - 40	Standard
40 - 60	14
60 - 80	20
80 - 100	24
> 100	28

FOOTNOTE:

1/ Superelevate roadway on curves at the rate e' as indicated on the plan and profile curve data.

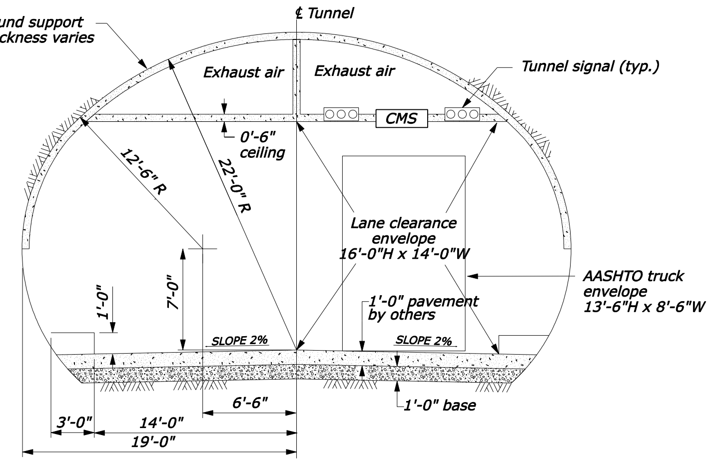
ROADWAY TYPICAL SECTIONS

Designed by: AK/WA DESIGN TEAM 03/2004
Checked by: J. Ritter

$$$$$SYTIME$$$$$

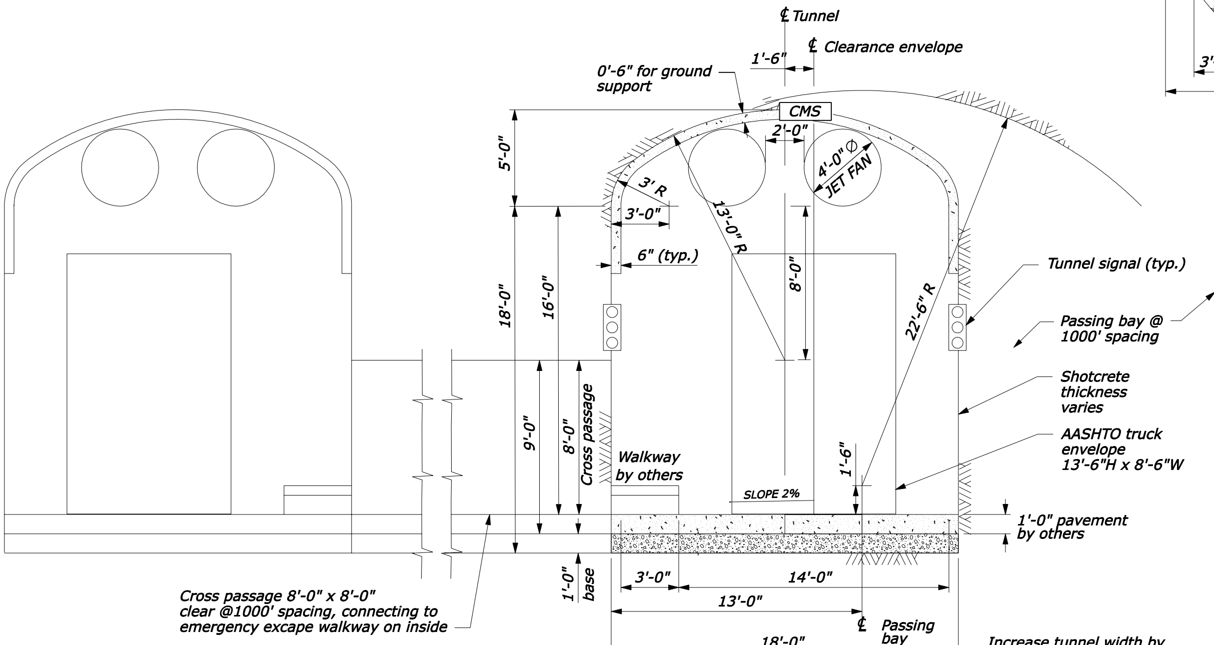
$$$$$DGNSPEC$$$$$

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.2



PORTAL

SINGLE TUNNEL
BI-DIRECTIONAL TRAFFIC



PORTAL

TWIN TUNNEL
UNI-DIRECTIONAL TRAFFIC

Note: Tunnel detail taken from:
Bradfield River Road Project
Tunnel Feasibility & Cost Estimates
FINAL REPORT dated November 30, 2004
By PARSONS BRINKERHOFF

TUNNEL TYPICAL SECTIONS

--/---- Checked by: --/---- Designed by: 10-Jan-2008 03:48 PM ...\FINAL_DRAFT_TUNNEL\Tunnel.dgn

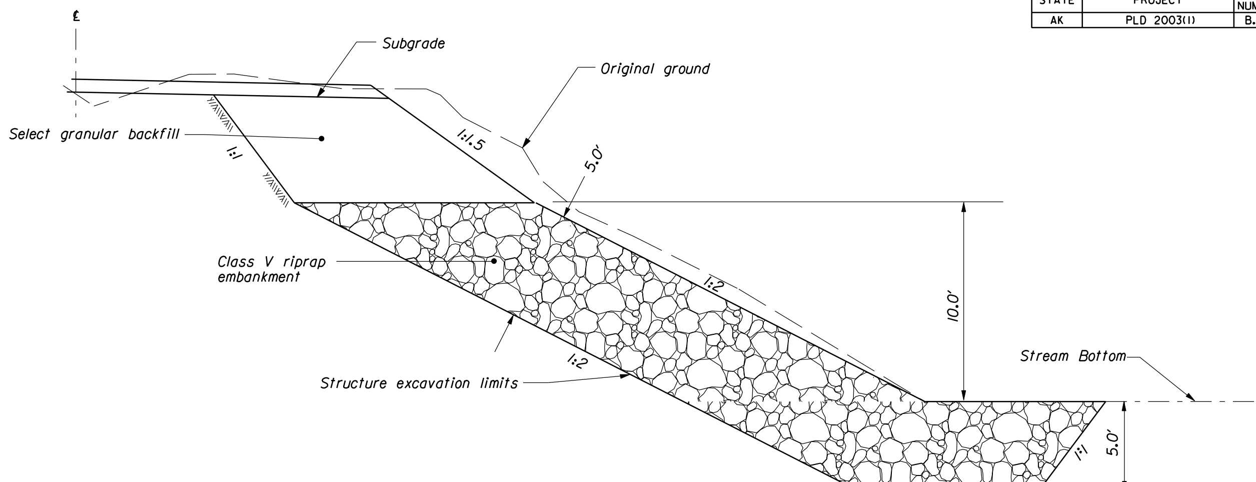
STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	B.3

ESTIMATED REVETMENT QUANTITIES

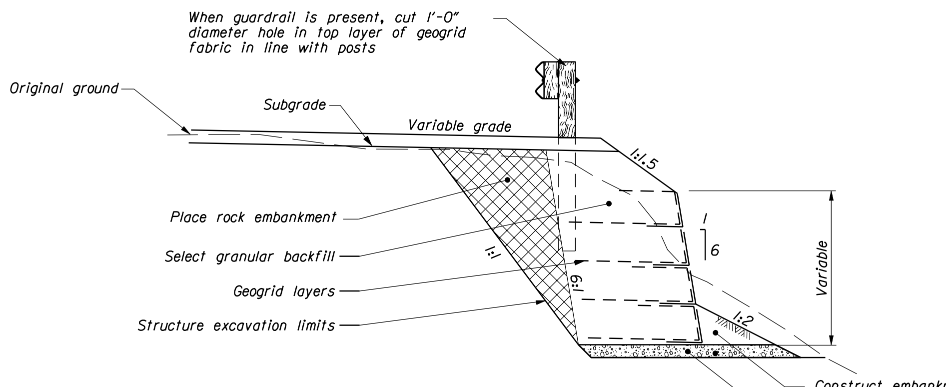
	LOCATION	CLASS V RIPRAP (C.Y.)
Seg. 1 Option A	260+00 to 261+46 Left	1300
Seg. 1 Option B	140+00 TO 160+00 Right	17600
	185+00 TO 190+00 Right	4400
Seg. 2	260+00 to 274+00 Left	12300
	278+00 to 285+00 Left	6100
	301+00 to 328+00 Left	23700
	391+00 to 393+00 Left	1800
Seg. 3	485+00 to 489+00 Left	3500
	491+00 to 494+00 Left	2600
	674+00 to 675+00 Left	900
	677+00 to 679+00 Left	1800
Seg. 4	809+00 to 811+00 Left	1800
	931+00 to 937+00 Left	5200
	944+00 to 960+00 Left	14000
	1006+00 to 1007+00 Right	900
	1013+00 to 1015+00 Right	1800
	1018+00 to 1019+00 Right	900
Seg. 5	1416+00 to 1428+00 Left	10500
	1480+00 to 1485+00 Left	4400
	TOTAL:	**115500**

ESTIMATED MSE WALL QUANTITIES

	LOCATION	GEOGRID (S.F.)	AVERAGE HEIGHT (Ft.)
Seg. 1 Option A		0	
Seg. 1 Option B	11+50 to 13+50 Right	1600	8
	15+50 to 16+50 Right	2400	24
	21+00 to 25+00 Right	8000	20
	27+00 to 32+00 Right	1400	28
	35+00 to 38+00 Right	6600	22
	61+00 to 64+00 Right	3600	12
	66+00 to 69+00 Right	11700	39
	73+00 to 79+00 Right	10800	18
	84+00 to 86+00 Right	4000	20
	93+00 to 98+00 Right	12000	24
	103+00 to 107+00 Right	20400	51
	113+00 to 127+00 Right	39200	28
Seg. 2	274+00 to 278+00 Left	6000	15
	393+00 to 402+00 Left	27000	30
Seg. 3	489+00 to 490+00 Left	2000	20
	498+00 to 500+00 Left	4000	20
	505+50 to 506+50 Left	3000	30
	510+00 to 516+00 Left	18000	30
	526+00 to 531+00 Left	10000	20
	536+00 to 542+00 Left	9000	15
	545+50 to 546+50 Left	500	5
	675+00 TO 677+00 Left	3000	15
Seg. 4	811+00 to 841+00 Left	60000	20
	937+00 to 944+00 Left	10500	15
	976+00 to 978+00 Left	6000	30
	996+00 to 997+00 Right	1200	12



REVETMENT TYPICAL SECTION
Not to Scale



MSE WALL TYPICAL SECTION
Not to Scale

ESTIMATED MSE WALL QUANTITIES

	LOCATION	GEOGRID (S.F.)	AVERAGE HEIGHT (Ft.)
Cont. Seg. 4	1005+00 to 1006+00 Right	3000	30
	1011+00 to 1013+00 Right	4000	20
	1019+00 to 1027+00 Right	16000	20
	1029+00 to 1031+00 Right	8100	27
	1042+00 to 1045+00 Right	5100	17
	1054+00 to 1063+00 Right	28000	28
	1107+50 to 1108+50 Left	3500	35
	1109+00 to 1112+00 Right	14800	37
	TOTAL:	**364400**	

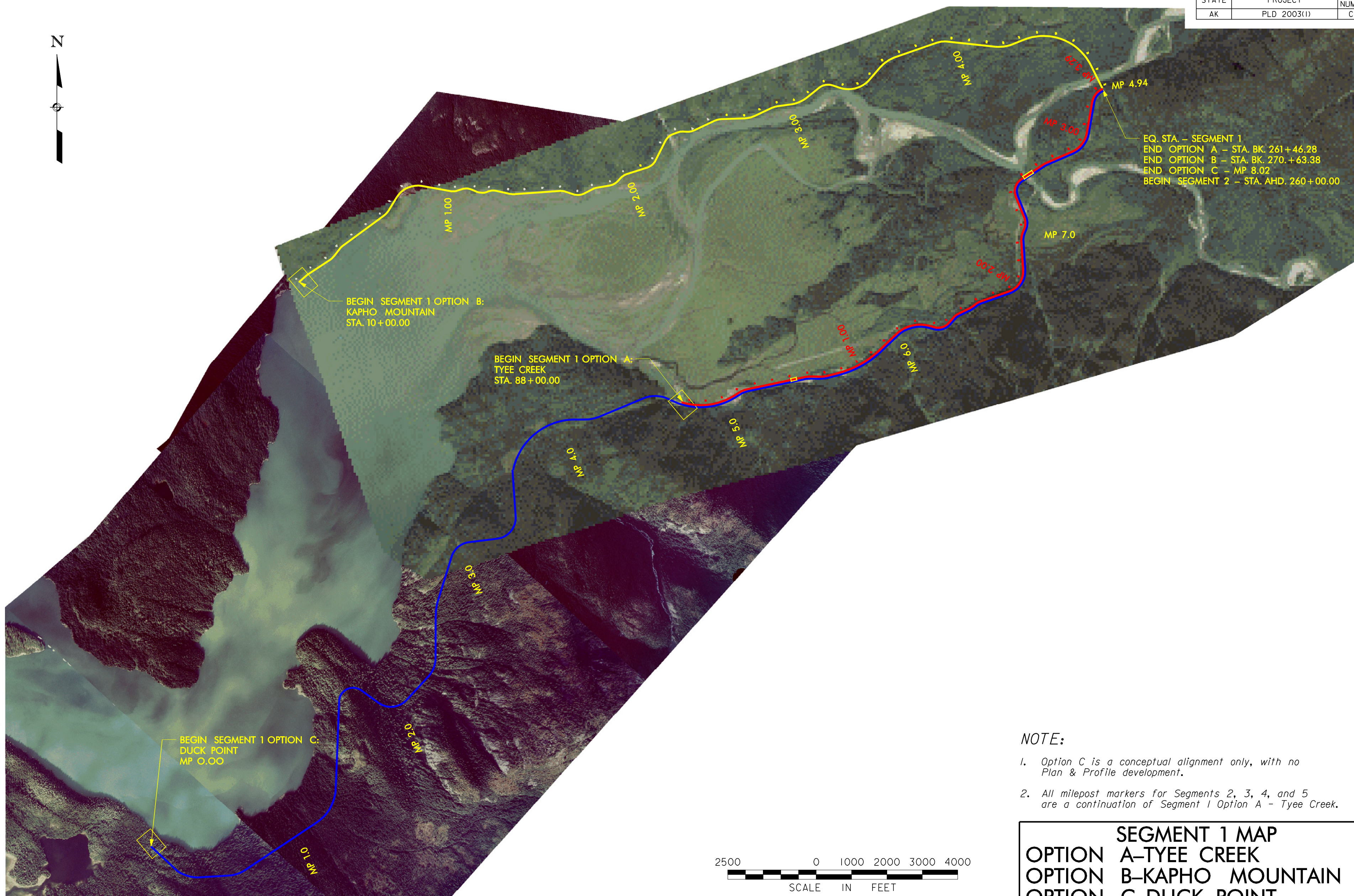
NOTE:

1. Location of revetment wall are also shown in Sections C, D, F, G, H & I
2. Class V riprap gradation rquirements as shown in Table 705-1 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03)

MSE WALL & ROCK REVETMENT TYPICAL SECTIONS

Designed by: AK/WA DESIGN TEAM 05/2002
Checked by: J. Ritter
09/21/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\B.3_new.dgn

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	C.1



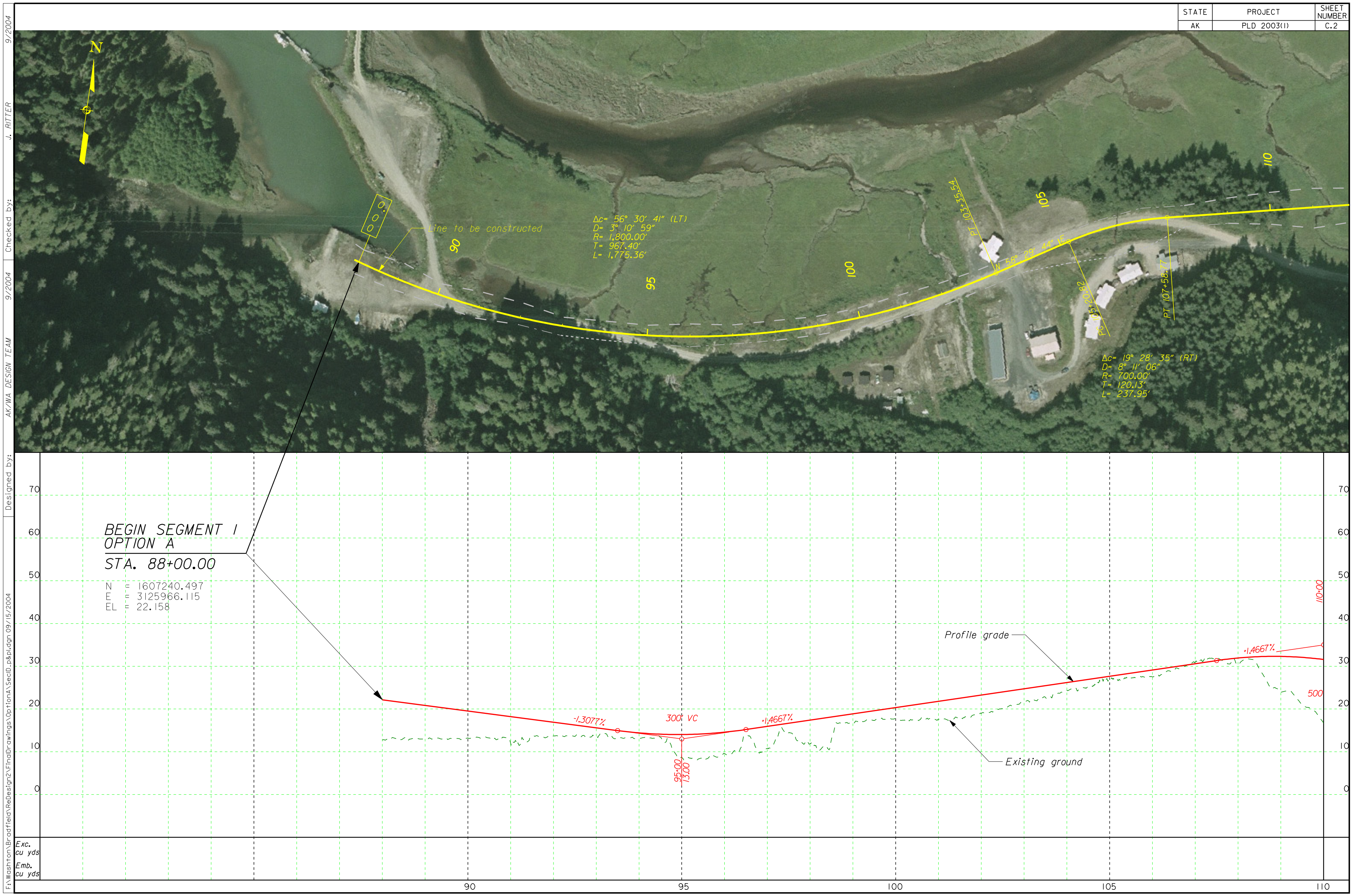
NOTE:

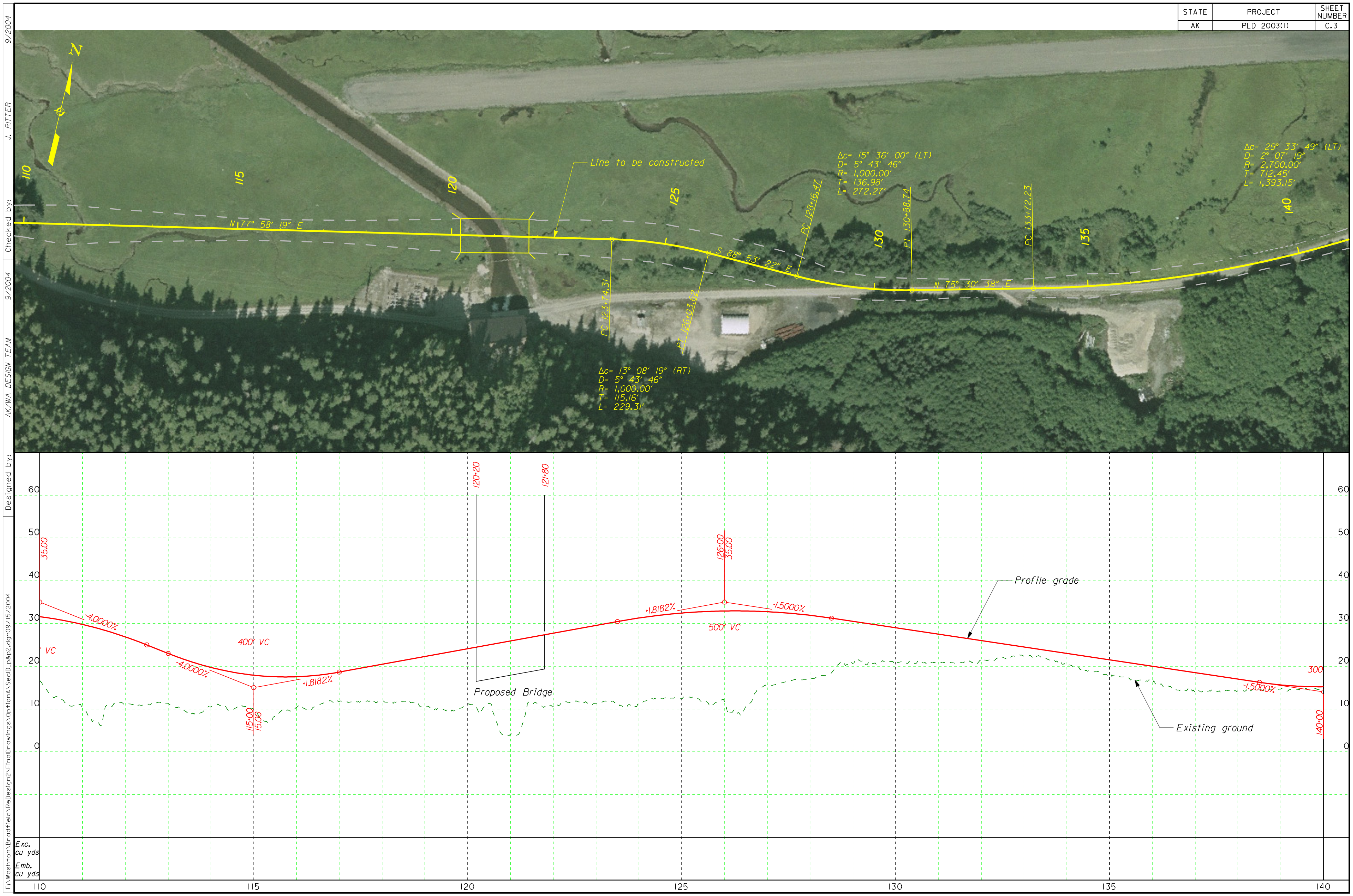
1. *Option C is a conceptual alignment only, with no Plan & Profile development.*

2. *All milepost markers for Segments 2, 3, 4, and 5 are a continuation of Segment I Option A - Tyee Creek.*

SEGMENT 1 MAP
OPTION A–TYEE CREEK
OPTION B–KAPHO MOUNTAIN
OPTION C–DUCK POINT

Designed by: AK/WA DESIGN TEAM 9/2004
Checked by: J. RITTER 9/2004


STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
C.2
N
Line to be constructed
0+00
90
95
100
105
110
Δc= 56° 30' 41" (LT)
D= 3° 10' 59"
R= 1,800.00'
T= 967.40'
L= 1,775.36'
PT 103+35.54
N 58° 29' 44" E
PC 105+20.82
PT 107+58.77
Δc= 19° 28' 35" (RT)
D= 8° 11' 06"
R= 700.00'
T= 120.13'
L= 237.95'
BEGIN SEGMENT 1
OPTION A
STA. 88+00.00
N = 1607240.497
E = 3125966.115
EL = 22.158
-1.3077%
300' VC
+1.4667%
95+00
13.00
Profile grade
Existing ground
+1.4667%
500
110+00
70
60
50
40
30
20
10
0
Exc. cu yds
Emb. cu yds
90
95
100
105
110
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
F:\Washton\Bradfield\ReDesign2\FinalDrawings\OptionA\SecID_p&p.dgn 09/15/2004



STATE
AK
PROJECT
PLD 2003(1)
SHEET NUMBER
C.3
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Option4\SecID_p&p2.dgn09/15/2004
N
Line to be constructed
N 77° 58' 19" E
S 88° 53' 22" E
N 75° 30' 38" E
PC 123+74.31
PT 126+03.62
PC 128+16.47
PT 130+88.74
PC 133+72.23
Δc= 13° 08' 19" (RT)
D= 5° 43' 46"
R= 1,000.00'
T= 115.16'
L= 229.31'
Δc= 15° 36' 00" (LT)
D= 5° 43' 46"
R= 1,000.00'
T= 136.98'
L= 272.27'
Δc= 29° 33' 49" (LT)
D= 2° 07' 19"
R= 2,700.00'
T= 712.45'
L= 1,393.15'
110
115
120
125
130
135
140
120+20
121+80
Proposed Bridge
Profile grade
Existing ground
35.00
-4.0000%
-4.0000%
VC
400' VC
115+00
15.00
+1.8182%
+1.8182%
126+00
35.00
500' VC
-1.5000%
-1.5000%
300
140+00
Exc. cu yds
Emb. cu yds
0
10
20
30
40
50
60

STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
C.4
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
N
140
145
150
155
160
165
170
PT 147+65.39
N 45° 56' 48" E
Line to be constructed
PC 153+63.90
Δc= 60° 18' 04" (RT)
D= 5° 43' 46"
R= 1,000.00'
T= 580.86'
L= 1,052.45'
PT 164+16.35
S 73° 45' 10" E
PC 165+34.13
Δc= 65° 19' 24" (LT)
D= 14° 19' 26"
R= 400.00'
T= 256.42'
L= 456.04'
PT 169+90.17
N 40° 55' 29" E
120.00
14.00
VC
+1.7143%
154+00
38.00
-0.3077%
500' VC
Profile grade
Existing ground
Install 12' pipe culvert
300' VC
-0.3077%
+2.0000%
167+00
34.00
60
50
40
30
20
10
0
Exc. cu yds
Emb. cu yds
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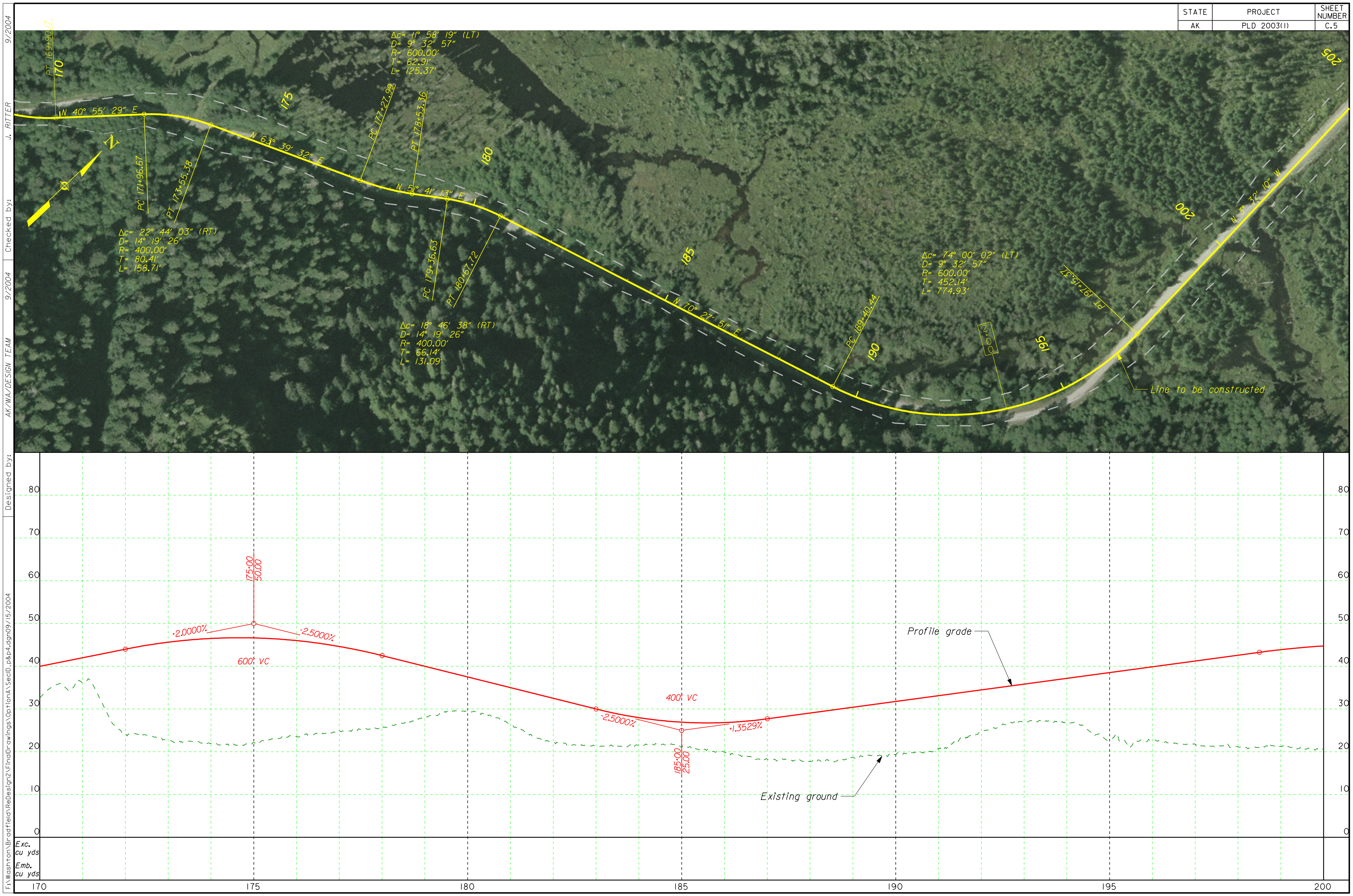
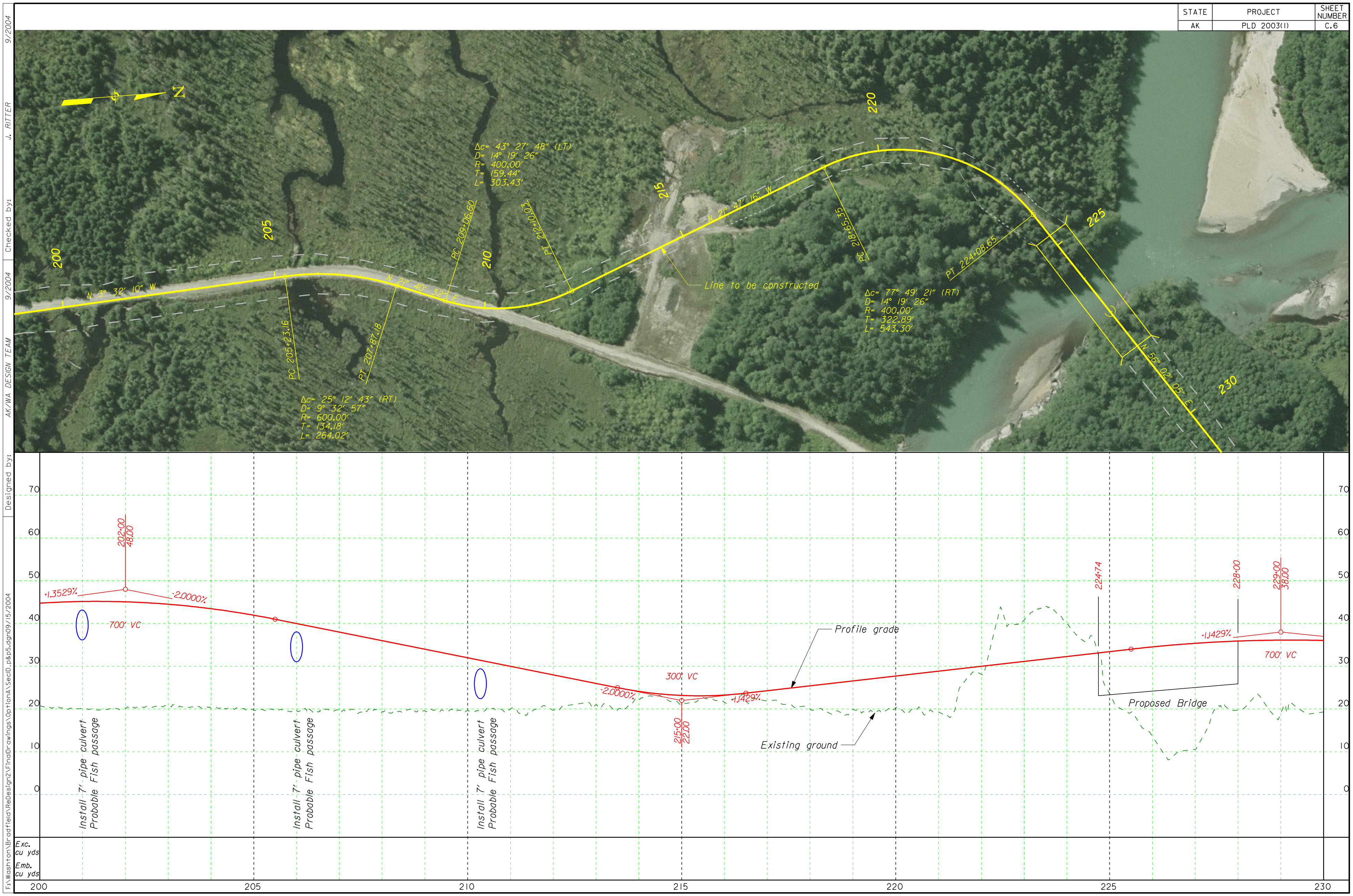
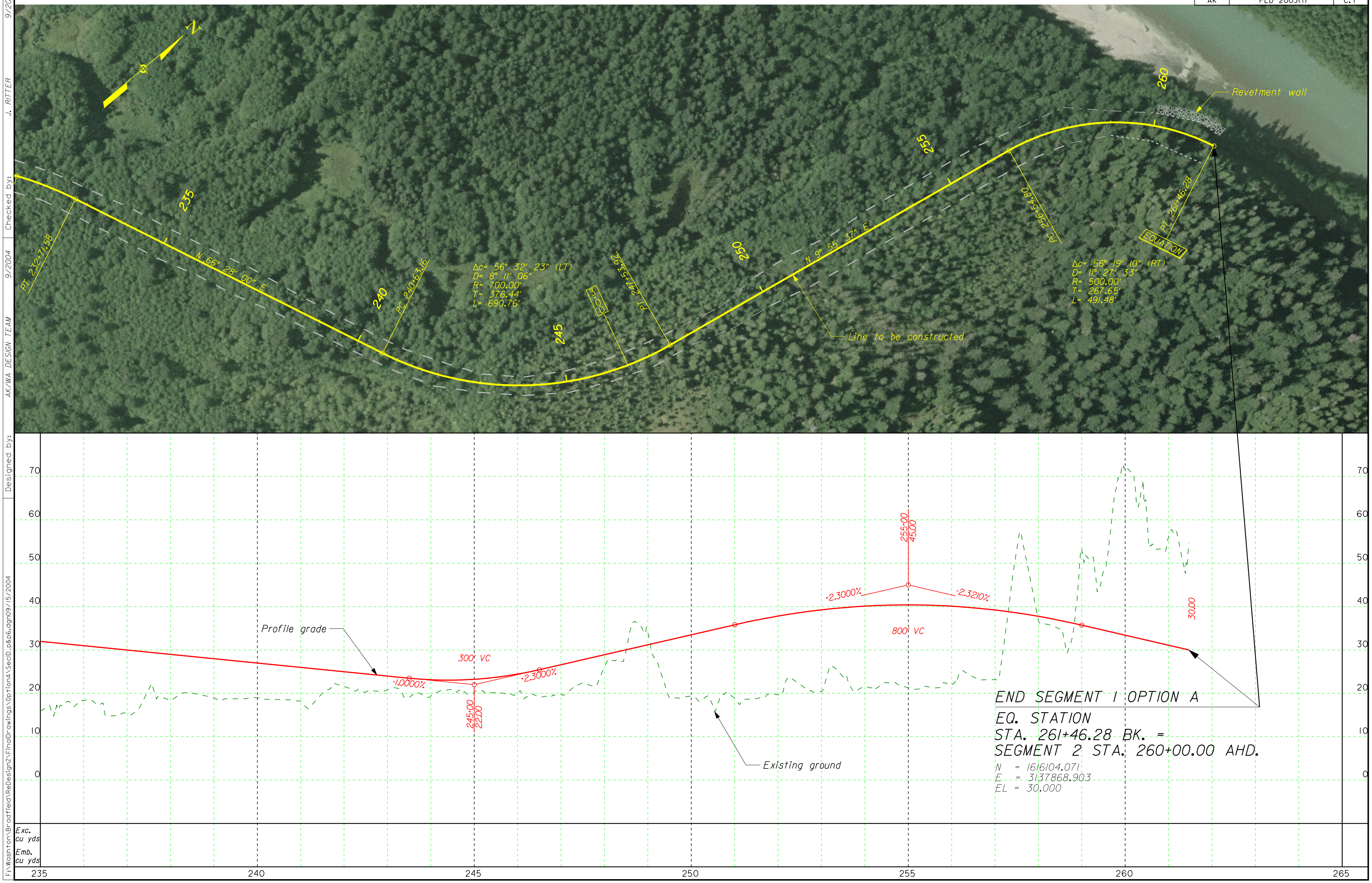

STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
C.5
PT 169+90.17
170
N 40° 55′ 29″ E
175
N 63° 39′ 32″ E
PC 177+27.99
PT 178+53.36
180
N 51° 41′ 13″ E
PC 171+96.67
PT 173+55.38
Δc= 22° 44′ 03″ (RT)
D= 14° 19′ 26″
R= 400.00′
T= 80.41′
L= 158.71′
Δc= 11° 58′ 19″ (LT)
D= 9° 32′ 57″
R= 600.00′
T= 62.91′
L= 125.37′
PC 179+36.63
PT 180+67.72
Δc= 18° 46′ 38″ (RT)
D= 14° 19′ 26″
R= 400.00′
T= 66.14′
L= 131.09′
185
N 70° 27′ 51″ E
PC 189+40.44
190
195
200
205
N 1° 32′ 10″ W
Δc= 74° 00′ 02″ (LT)
D= 9° 32′ 57″
R= 600.00′
T= 452.14′
L= 774.93′
PT 197+15.37
Line to be constructed
175+00
50.00
-2.0000%
-2.5000%
600′ VC
400′ VC
-2.5000%
-1.3529%
185+00
25.00
Profile grade
Existing ground
Exc. cu yds
Emb. cu yds
170
175
180
185
190
195
200
80
70
60
50
40
30
20
10
0
Designed by: AK/WA/DESIGN TEAM 9/2004
Checked by: J. RITTER 9/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\OptionA\SecD_p&p4.dgn09/15/2004



STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	C.6

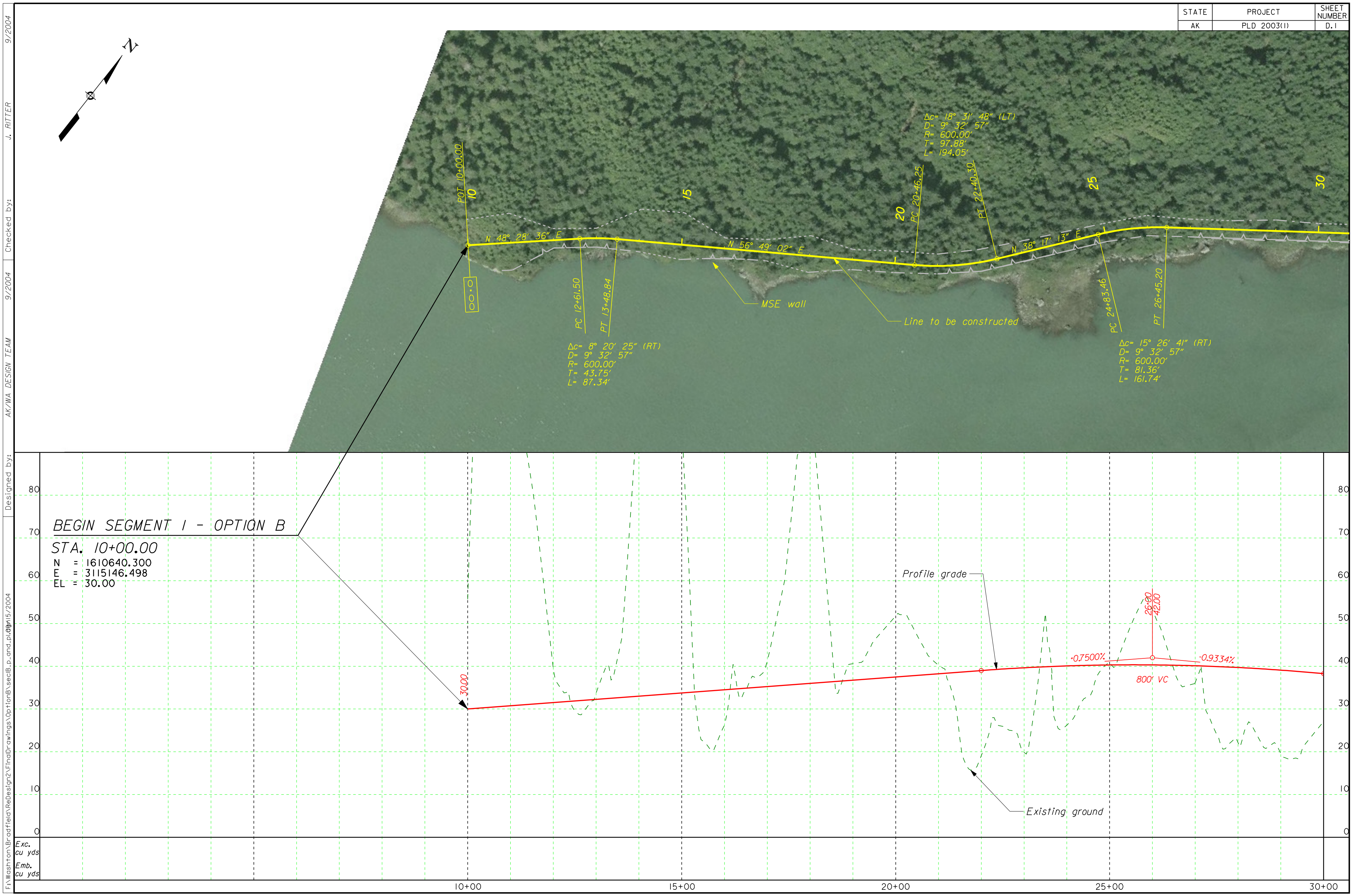
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Option4\Sec1D_p&p5.dgn09/15/2004
N
N 3° 32' 10" W
N 21° 40' 32" E
N 21° 47' 16" W
N 56° 02' 05" E
PC 205+23.16
PT 207+87.18
PC 209+06.60
PT 212+10.03
PC 218+65.35
PT 224+08.65
Δc= 25° 12' 43" (RT)
D= 9° 32' 57"
R= 600.00'
T= 134.18'
L= 264.02'
Δc= 43° 27' 48" (LT)
D= 14° 19' 26"
R= 400.00'
T= 159.44'
L= 303.43'
Δc= 77° 49' 21" (RT)
D= 14° 19' 26"
R= 400.00'
T= 322.89'
L= 543.30'
Line to be constructed
+1.3529%
-2.0000%
202+00
48.00
700' VC
300' VC
215+00
22.00
-2.0000%
+1.1429%
224+74
228+00
229+00
38.00
700' VC
Profile grade
Existing ground
Proposed Bridge
Install 7' pipe culvert
Probable Fish passage
Exc. cu yds
Emb. cu yds

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	C.7

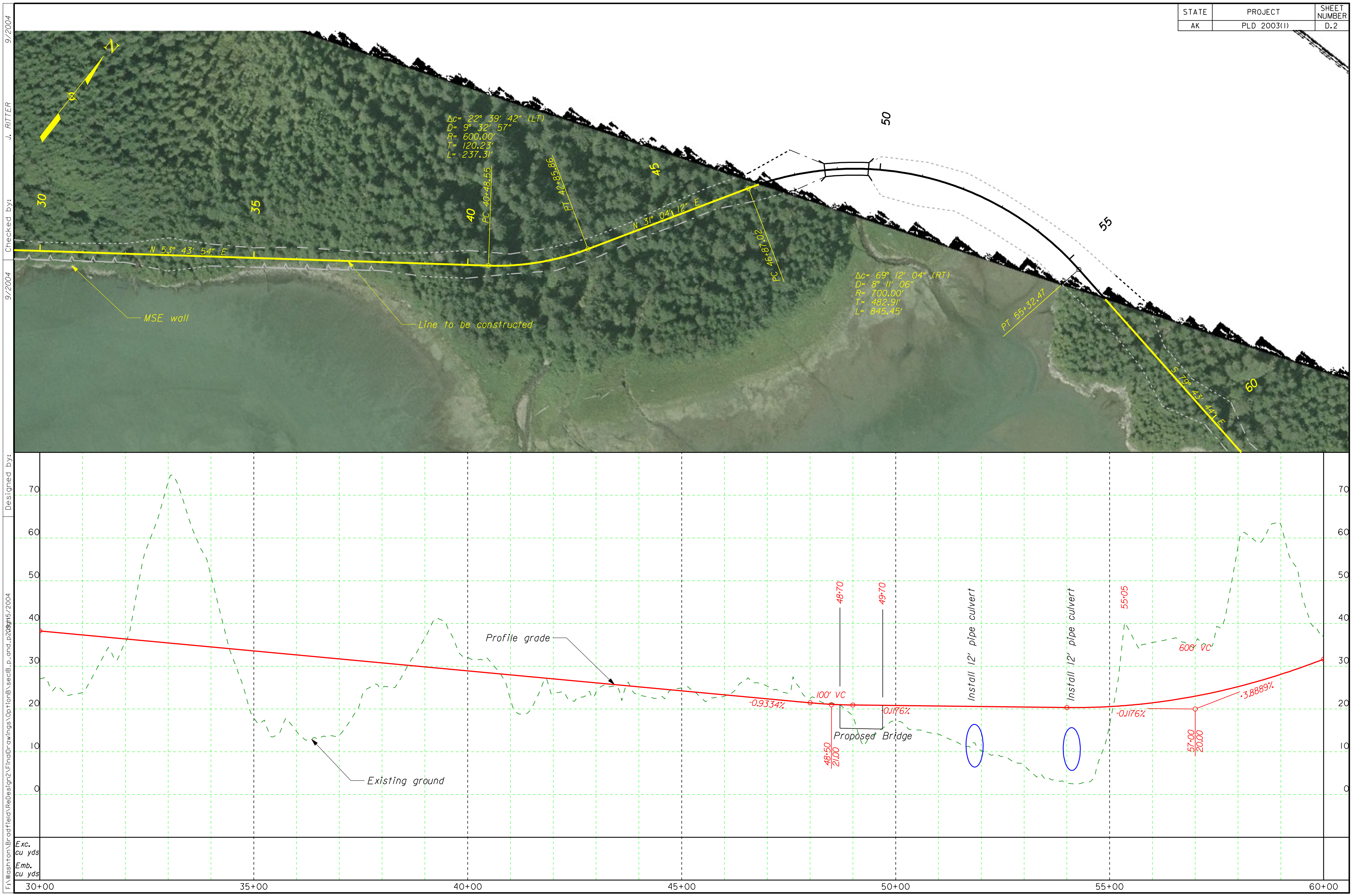


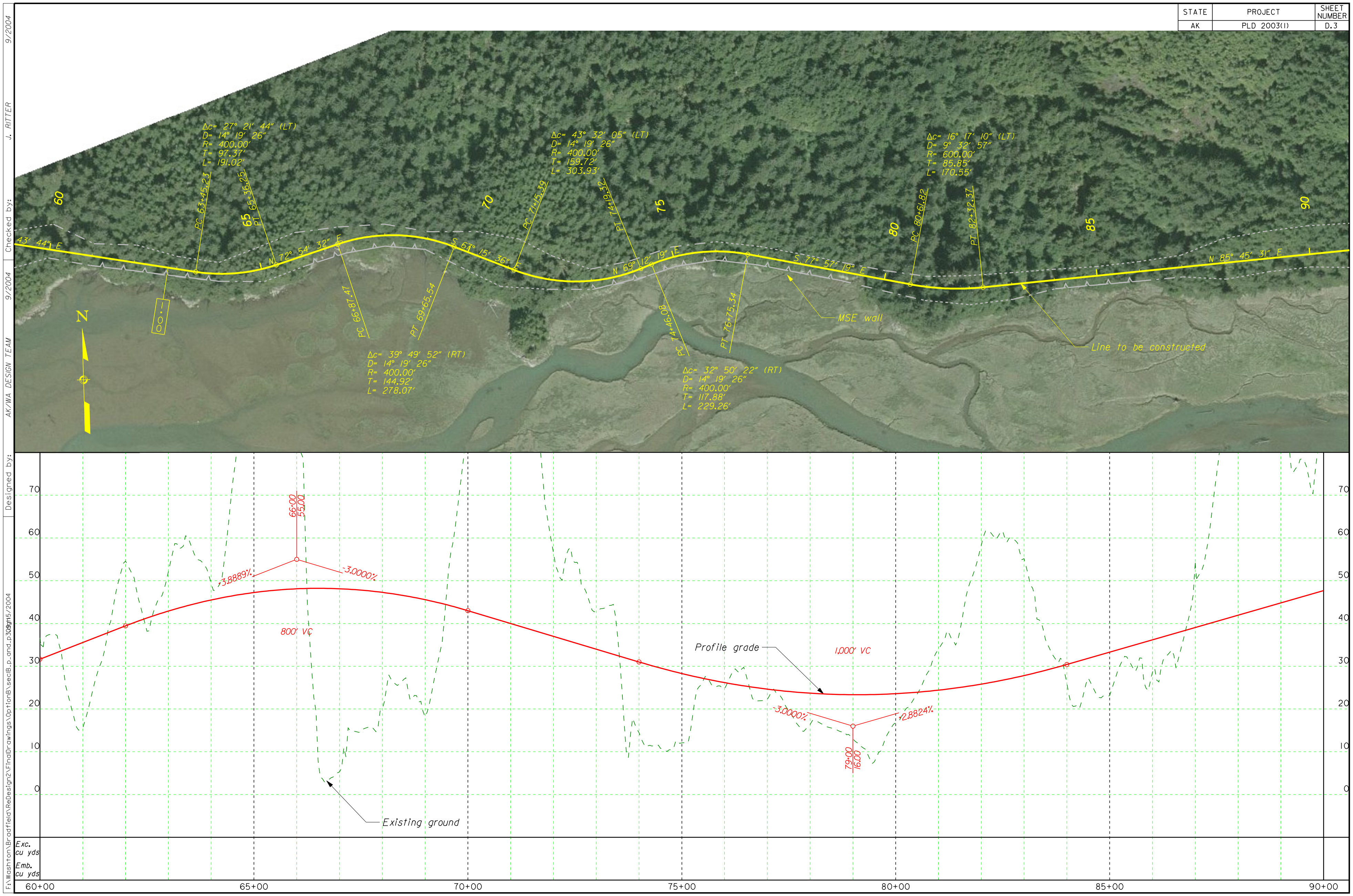
Designed by: AK/WA DESIGN TEAM 9/2004 Checked by: J. RITTER 9/2004

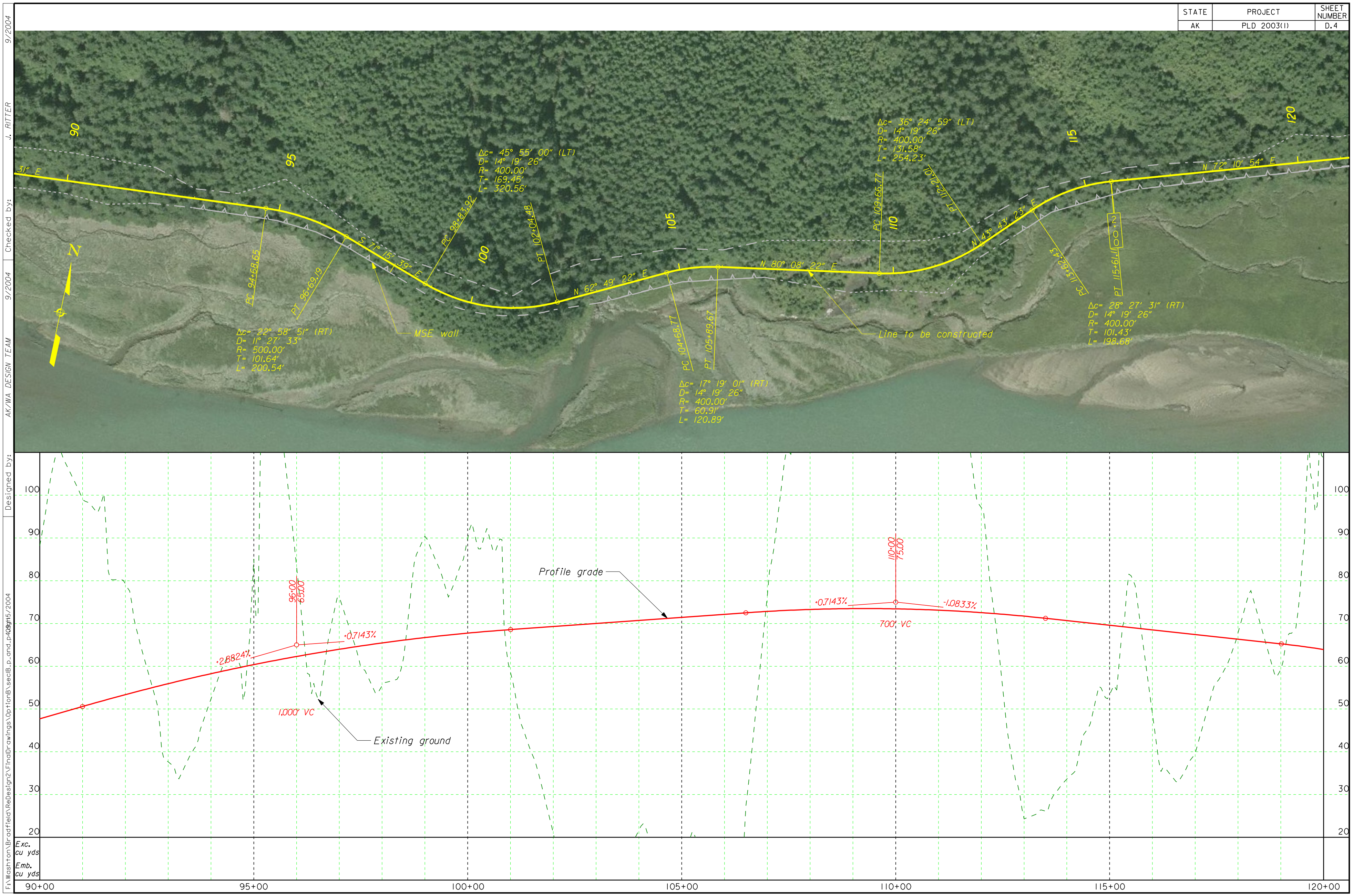
F:\Washton\Bradfield\ReDesign2\FinalDrawings\OptionA\Sec1D_p&p6.dgn09/15/2004

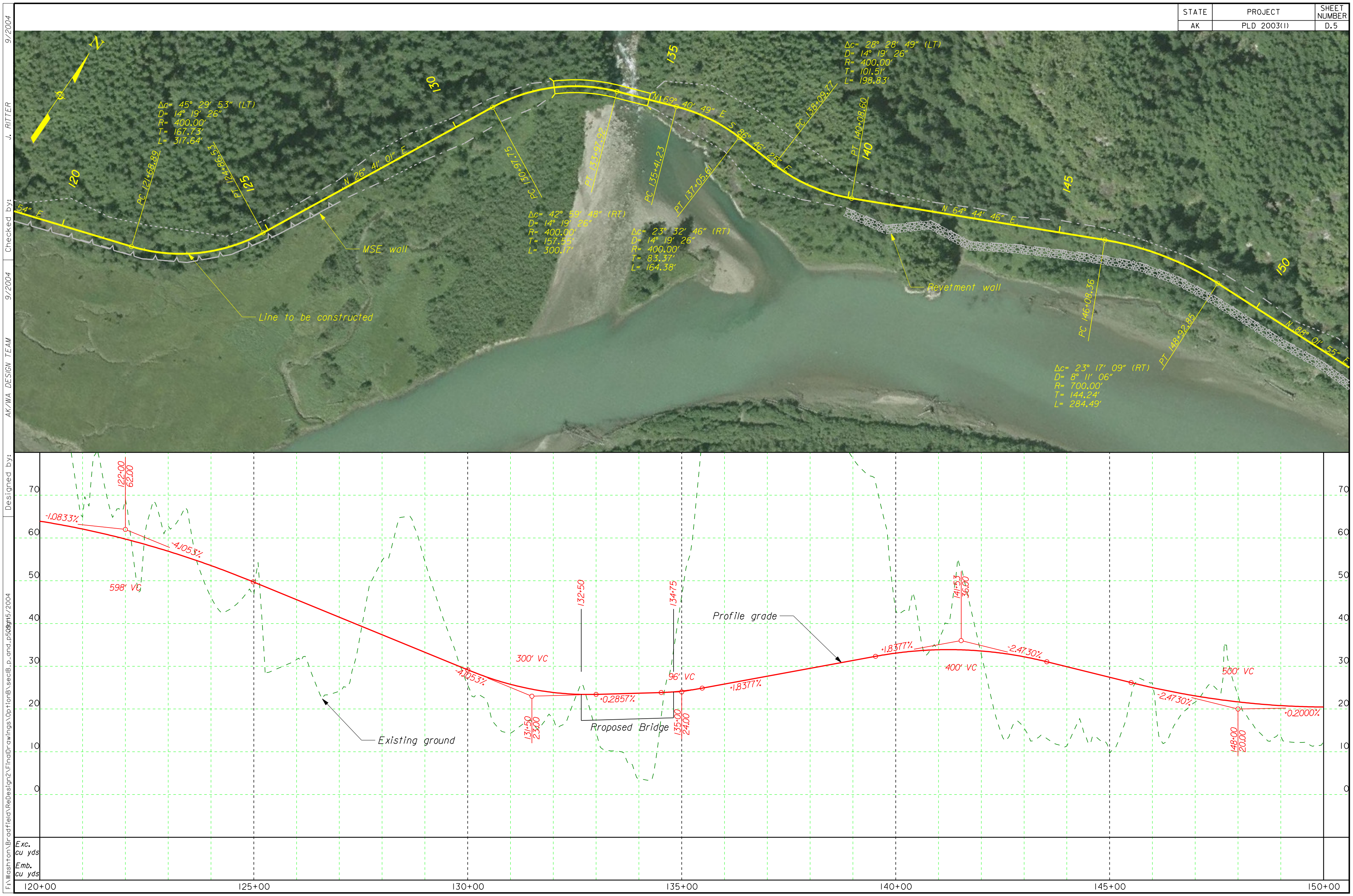


STATE | PROJECT | SHEET NUMBER
AK | PLD 2003(1) | D.1
N
POT 10+00.00
10
15
20
25
30
N 48° 28' 36" E
N 56° 49' 02" E
N 38° 17' 13" E
PC 12+61.50
PT 13+48.84
Δc= 8° 20' 25" (RT)
D= 9° 32' 57"
R= 600.00'
T= 43.75'
L= 87.34'
MSE wall
Line to be constructed
PC 20+46.25
PT 22+40.30
Δc= 18° 31' 48" (LT)
D= 9° 32' 57"
R= 600.00'
T= 97.88'
L= 194.05'
PC 24+83.46
PT 26+45.20
Δc= 15° 26' 41" (RT)
D= 9° 32' 57"
R= 600.00'
T= 81.36'
L= 161.74'
BEGIN SEGMENT 1 - OPTION B
STA. 10+00.00
N = 1610640.300
E = 3115146.498
EL = 30.00
30.00
Profile grade
-0.7500%
-0.9334%
26.00
42.00
800' VC
Existing ground
Exc. cu yds
Emb. cu yds
10+00
15+00
20+00
25+00
30+00
Designed by: AK/WA DESIGN TEAM 9/2004
Checked by: J. RITTER 9/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\OptionB\sec1B_p_and_pl.dgn 9/15/2004

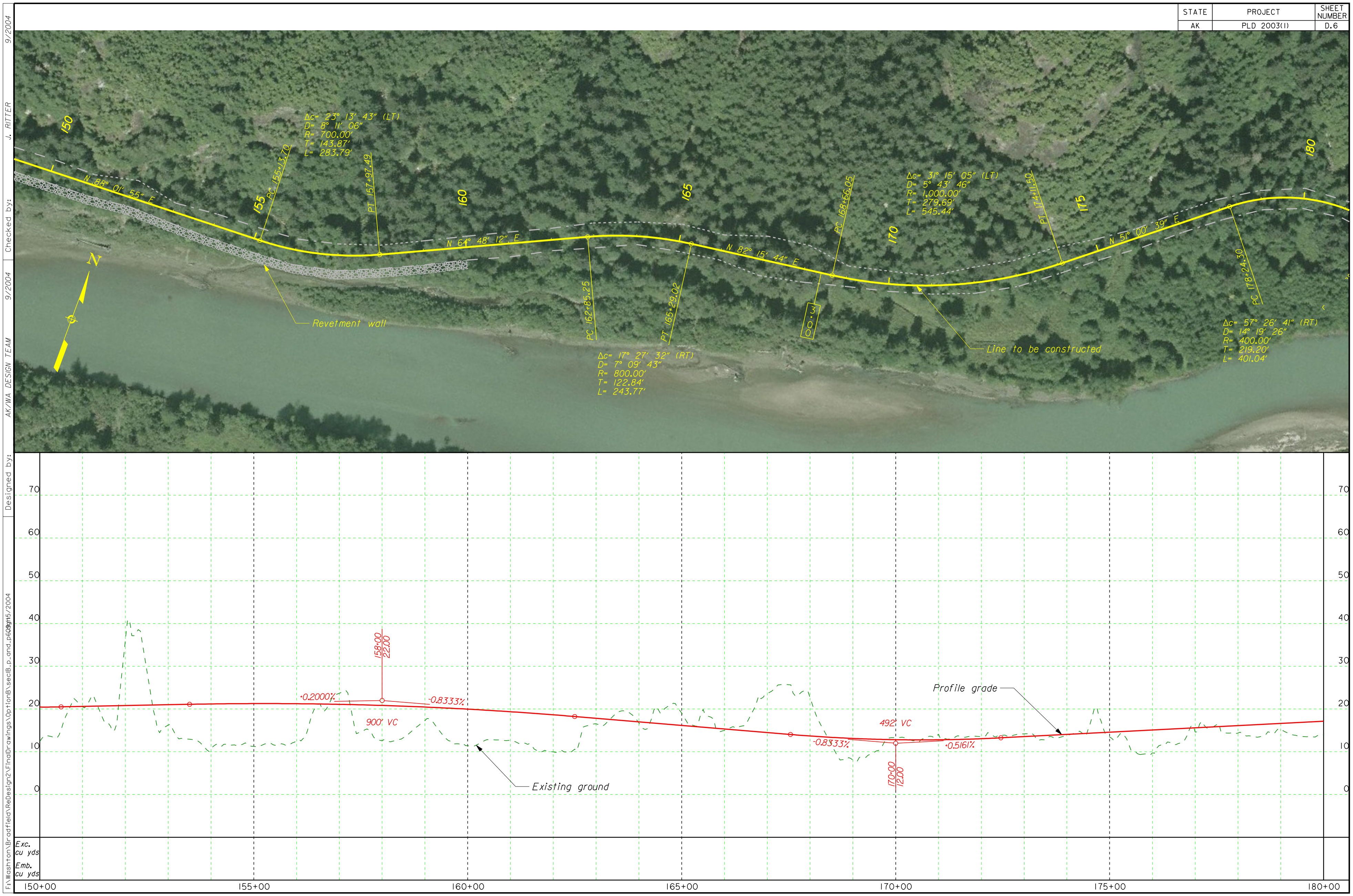

STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
D.2
9/2004
J. RITTER
Checked by:
9/2004
Designed by:
N
Δc= 22° 39' 42" (LT)
D= 9° 32' 57"
R= 600.00'
T= 120.23'
L= 237.31'
PC 40+48.55
PT 42+85.86
N 53° 43' 54" E
N 31° 04' 12" E
PC 46+87.02
Δc= 69° 12' 04" (RT)
D= 8° 11' 06"
R= 700.00'
T= 482.91'
L= 845.45'
PT 55+32.47
S 79° 43' 44" E
MSE wall
Line to be constructed
30
35
40
45
50
55
60
Profile grade
Existing ground
-0.9334%
100' VC
48+70
49+70
48+50
21.00
0.1176%
Proposed Bridge
Install 12' pipe culvert
Install 12' pipe culvert
55+05
600' VC
-0.1176%
57+00
20.00
+3.8889%
70
60
50
40
30
20
10
0
Exc. cu yds
Emb. cu yds
30+00
35+00
40+00
45+00
50+00
55+00
60+00

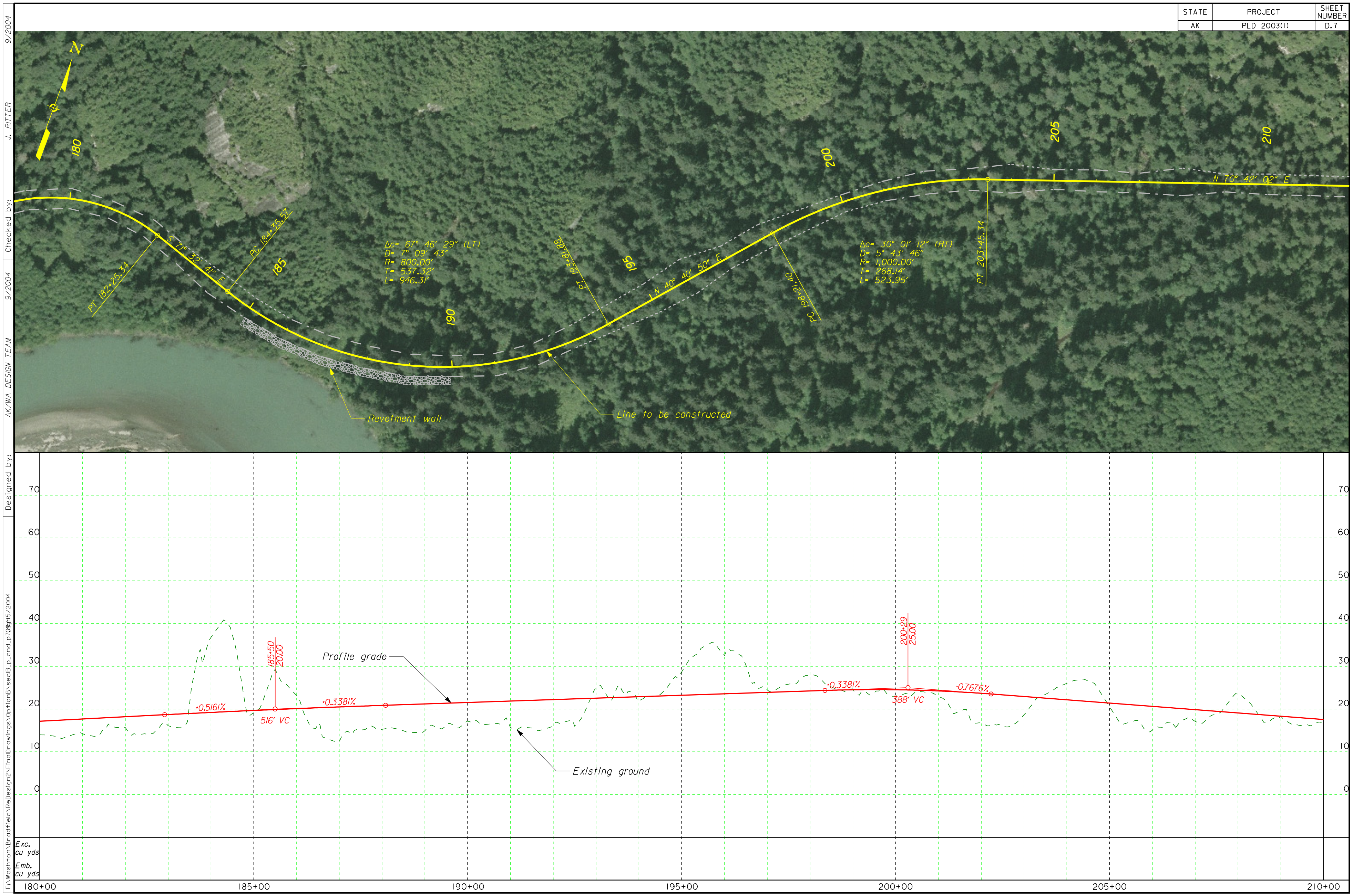

STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
D.3
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
Δc= 27° 21' 44" (LT)
D= 14° 19' 26"
R= 400.00'
T= 97.37'
L= 191.02'
Δc= 43° 32' 05" (LT)
D= 14° 19' 26"
R= 400.00'
T= 159.72'
L= 303.93'
Δc= 16° 17' 10" (LT)
D= 9° 32' 57"
R= 600.00'
T= 85.85'
L= 170.55'
Δc= 39° 49' 52" (RT)
D= 14° 19' 26"
R= 400.00'
T= 144.92'
L= 278.07'
Δc= 32° 50' 22" (RT)
D= 14° 19' 26"
R= 400.00'
T= 117.88'
L= 229.26'
PC 63+45.23
PT 65+36.25
PC 66+87.47
PT 69+65.54
PC 71+15.39
PT 74+19.32
PC 74+46.08
PT 76+75.34
PC 80+61.82
PT 82+32.37
N 72° 54' 32" E
S 67° 15' 36" E
N 69° 12' 19" E
S 77° 57' 19" E
N 85° 45' 31" E
MSE wall
Line to be constructed
N
3.8889%
-3.0000%
66.00
55.00
800' VC
Profile grade
1,000' VC
-3.0000%
+2.8824%
79.00
16.00
Existing ground
Exc. cu yds
Emb. cu yds
60+00
65+00
70+00
75+00
80+00
85+00
90+00


STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
D.4
Δc= 45° 55' 00" (LT)
D= 14° 19' 26"
R= 400.00'
T= 169.45'
L= 320.56'
Δc= 36° 24' 59" (LT)
D= 14° 19' 26"
R= 400.00'
T= 131.58'
L= 254.23'
Δc= 22° 58' 51" (RT)
D= 11° 27' 33"
R= 500.00'
T= 101.64'
L= 200.54'
Δc= 17° 19' 01" (RT)
D= 14° 19' 26"
R= 400.00'
T= 60.91'
L= 120.89'
Δc= 28° 27' 31" (RT)
D= 14° 19' 26"
R= 400.00'
T= 101.43'
L= 198.68'
PC 94+68.65
PT 96+69.19
PC 98+83.92
PT 102+04.48
PC 104+68.77
PT 105+89.67
PC 109+66.77
PT 112+21.01
PC 113+62.43
PT 115+61.10
N 62° 49' 22" E
N 80° 08' 22" E
N 72° 10' 54" E
MSE wall
Line to be constructed
Profile grade
Existing ground
+2.8824%
+0.7143%
-1.0833%
1,000' VC
700' VC
96+00
65.00
110+00
75.00
Exc. cu yds
Emb. cu yds
90+00
95+00
100+00
105+00
110+00
115+00
120+00
AK/WA DESIGN TEAM
9/2004
Checked by:
J. RITTER
Designed by:

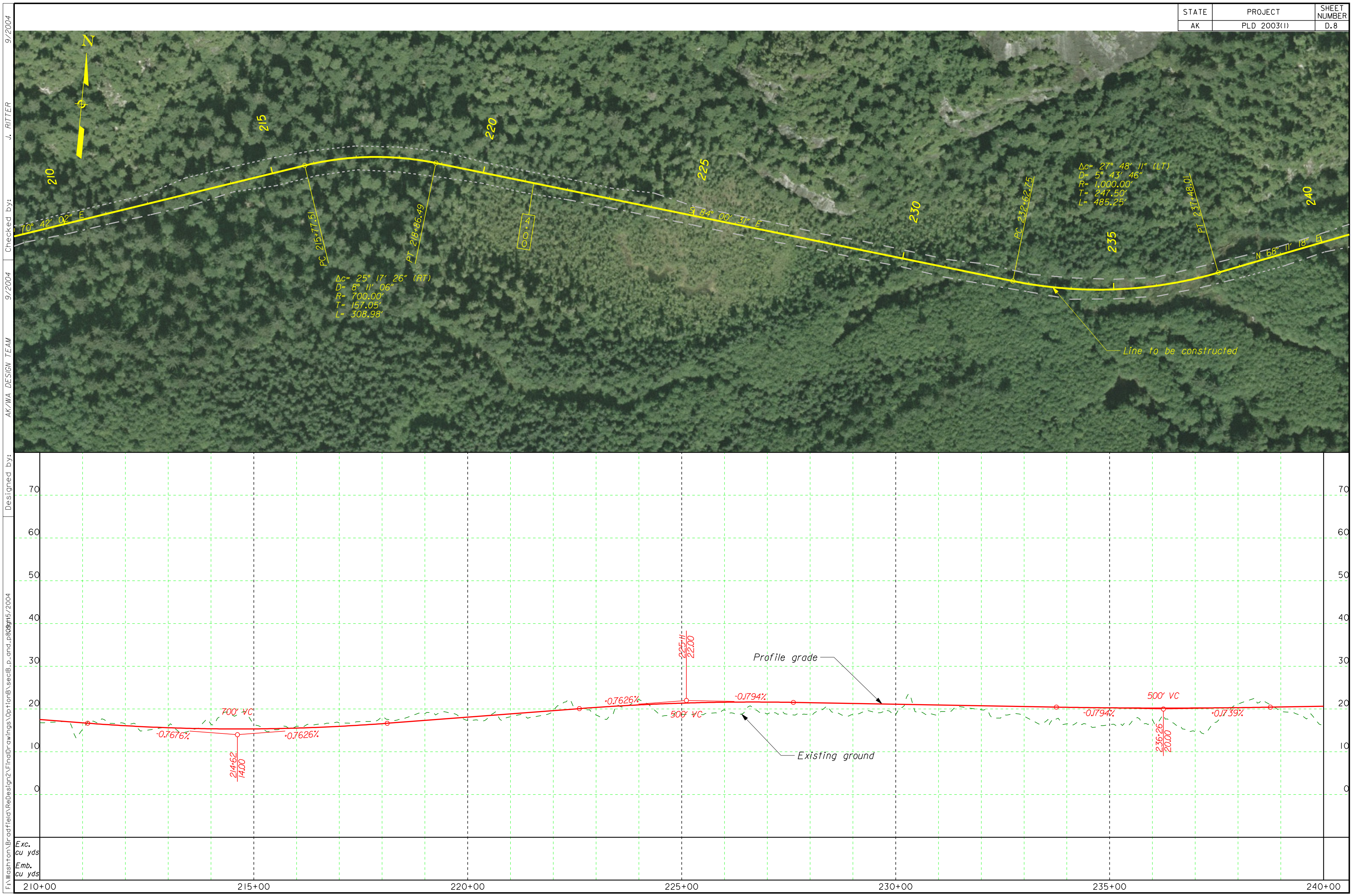


STATE
AK
PROJECT
PLD 2003(1)
SHEET NUMBER
D.5
N
Δc= 45° 29' 53" (LT)
D= 14° 19' 26"
R= 400.00'
T= 167.73'
L= 317.64'
PC 121+68.89
PT 124+86.53
N 26° 41' 01" E
MSE wall
Line to be constructed
PC 130+97.75
PT 133+97.92
Δc= 42° 59' 48" (RT)
D= 14° 19' 26"
R= 400.00'
T= 157.55'
L= 300.17'
PC 135+41.23
PT 137+05.61
Δc= 23° 32' 46" (RT)
D= 14° 19' 26"
R= 400.00'
T= 83.37'
L= 164.38'
N 69° 40' 49" E
S 86° 46' 28" E
PC 138+09.77
PT 140+08.60
Δc= 28° 28' 49" (LT)
D= 14° 19' 26"
R= 400.00'
T= 101.51'
L= 198.83'
N 64° 44' 46" E
Revetment wall
PC 146+08.36
PT 148+92.85
Δc= 23° 17' 09" (RT)
D= 8° 11' 06"
R= 700.00'
T= 144.24'
L= 284.49'
N 86° 01' 55" E
120
125
130
135
140
145
150
122+00
62.00
-1.0833%
-4.1053%
598' VC
132+50
134+75
131+50
23.00
300' VC
-4.1053%
+0.2857%
96' VC
135+00
24.00
+1.8377%
Proposed Bridge
Profile grade
Existing ground
141+53
36.00
+1.8377%
400' VC
-2.4730%
500' VC
-2.4730%
-0.2000%
148+00
20.00
Exc. cu yds
Emb. cu yds
120+00
125+00
130+00
135+00
140+00
145+00
150+00

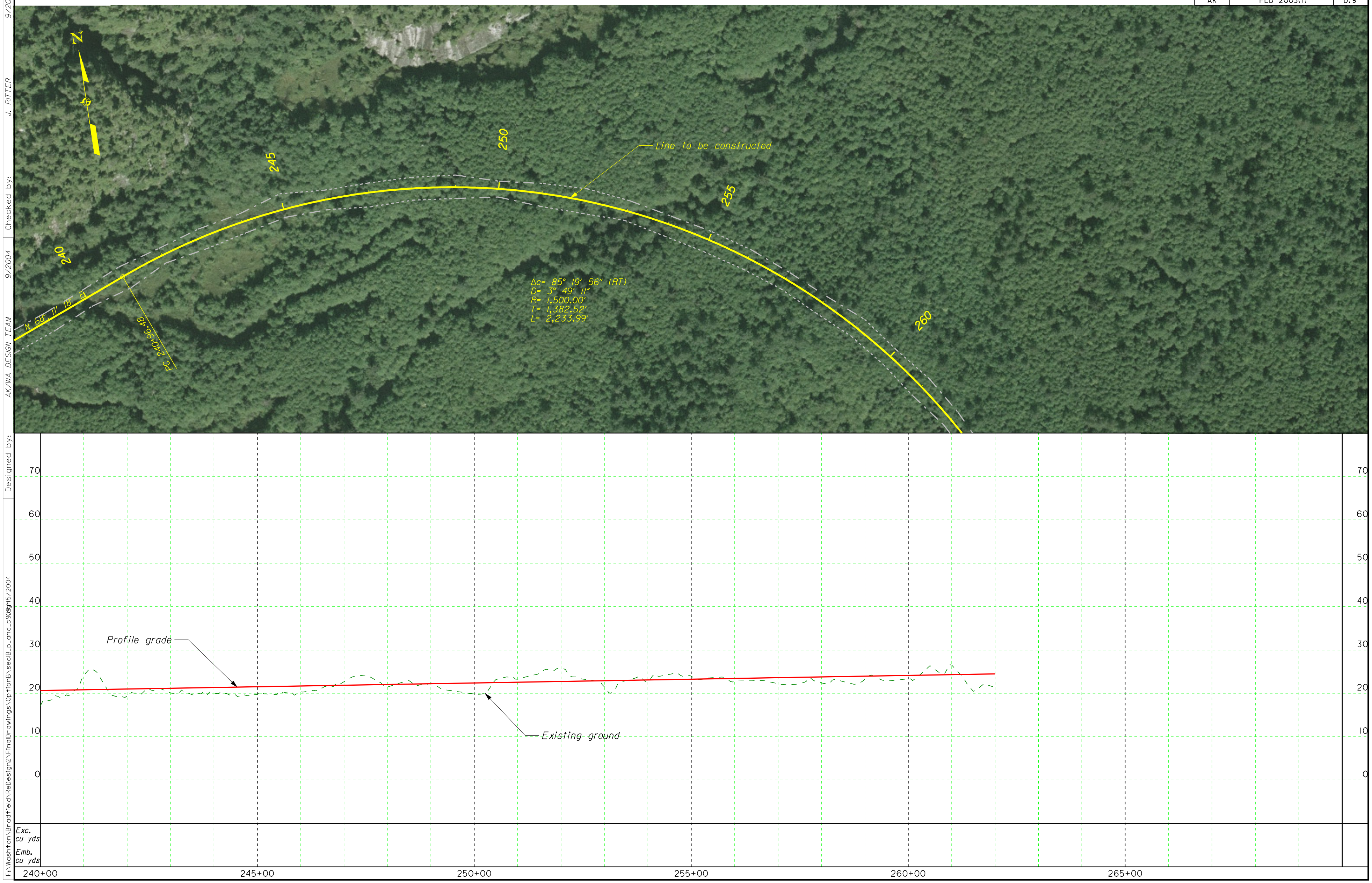

STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
D.6
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
N 88° 01' 55" E
N 64° 48' 12" E
N 82° 15' 44" E
N 51° 00' 39" E
Δc= 23° 13' 43" (LT)
D= 8° 11' 06"
R= 700.00'
T= 143.87'
L= 283.79'
PC 155+13.70
PT 157+97.49
Revetment wall
PC 162+85.25
PT 165+29.02
Δc= 17° 27' 32" (RT)
D= 7° 09' 43"
R= 800.00'
T= 122.84'
L= 243.77'
PC 168+66.05
Δc= 31° 15' 05" (LT)
D= 5° 43' 46"
R= 1,000.00'
T= 279.69'
L= 545.44'
PT 174+11.50
Line to be constructed
PC 178+24.30
Δc= 57° 26' 41" (RT)
D= 14° 19' 26"
R= 400.00'
T= 219.20'
L= 401.04'
150
155
160
165
170
175
180
N
158+00
22.00
+0.2000%
-0.8333%
900' VC
Existing ground
Profile grade
492' VC
-0.8333%
+0.5161%
170+00
12.00
Exc. cu yds
Emb. cu yds
150+00
155+00
160+00
165+00
170+00
175+00
180+00
0
10
20
30
40
50
60
70



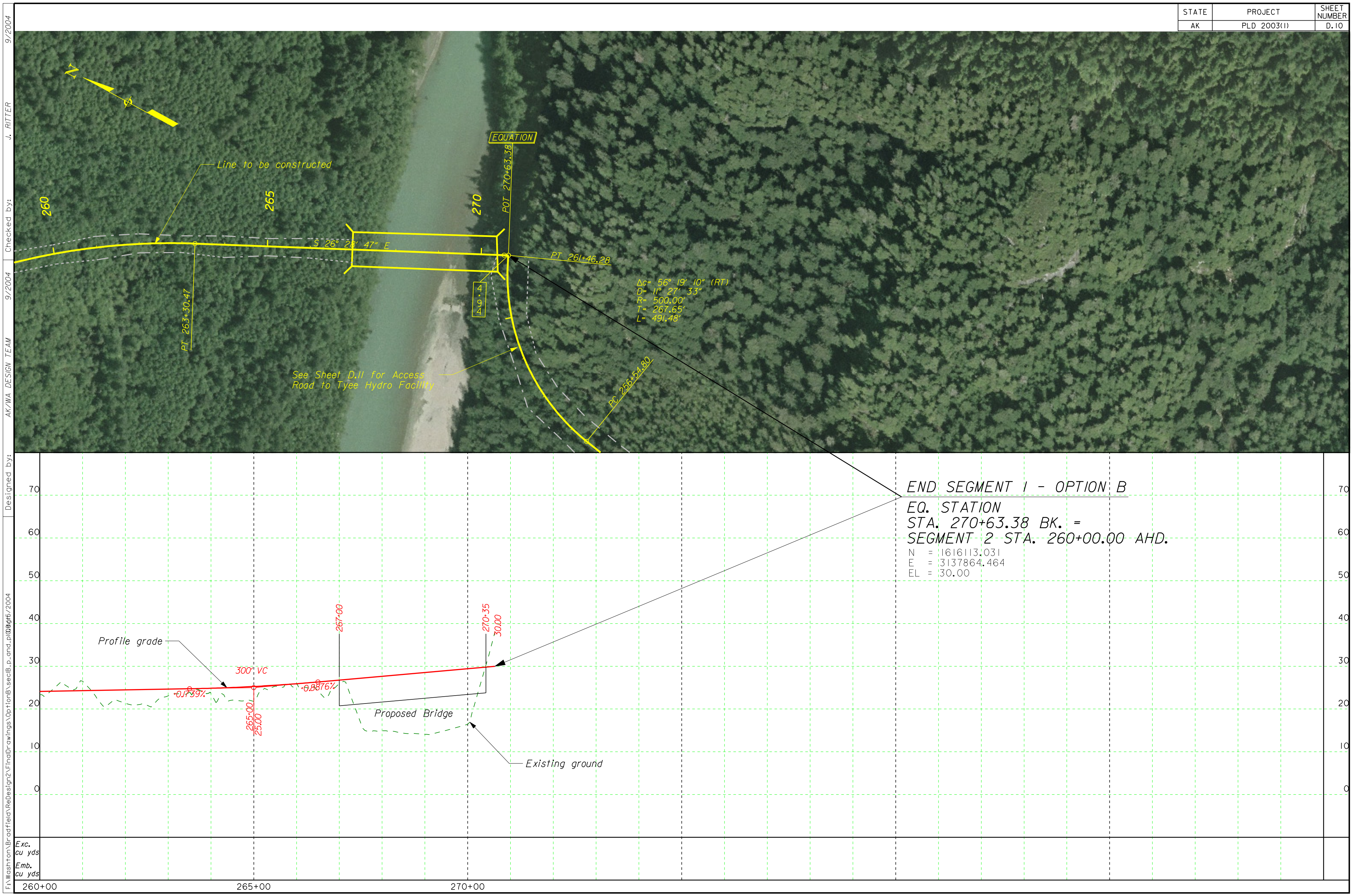
STATE
AK
PROJECT
PLD 2003(1)
SHEET NUMBER
D.7
Designed by: AK/WA DESIGN TEAM 9/2004
Checked by: J. RITTER 9/2004
N
180
185
190
195
200
205
210
PT 182+25.34
S 71° 32' 41" E
PC 184+35.57
Δc= 67° 46' 29" (LT)
D= 7° 09' 43"
R= 800.00'
T= 537.32'
L= 946.31'
PT 193+81.88
N 40° 40' 50" E
PC 198+21.40
Δc= 30° 01' 12" (RT)
D= 5° 43' 46"
R= 1,000.00'
T= 268.14'
L= 523.95'
PT 203+45.34
N 70° 42' 02" E
Revetment wall
Line to be constructed
Profile grade
Existing ground
185+50
20.00
516' VC
-0.5161%
+0.3381%
200+29
25.00
388' VC
+0.3381%
-0.7676%
0
10
20
30
40
50
60
70
Exc. cu yds
Emb. cu yds
180+00
185+00
190+00
195+00
200+00
205+00
210+00


STATE
AK
PROJECT
PLD 2003(1)
SHEET NUMBER
D.8
AK/WA DESIGN TEAM
9/2004
J. RITTER
9/2004
Designed by:
Checked by:
N
210
215
220
225
230
235
240
70° 42' 02" E
PC 215+77.51
PT 218+86.49
Δc= 25° 17' 26" (RT)
D= 8° 11' 06"
R= 700.00'
T= 157.05'
L= 308.98'
S 84° 00' 31" E
PC 232+62.75
PT 237+48.01
Δc= 27° 48' 11" (LT)
D= 5° 43' 46"
R= 1,000.00'
T= 247.50'
L= 485.25'
N 68° 11' 18" E
Line to be constructed
Profile grade
Existing ground
700' VC
-0.7676%
+0.7626%
214+62
14.00
+0.7626%
225+11
22.00
500' VC
-0.1794%
-0.1794%
500' VC
236+26
20.00
+0.1739%
0
10
20
30
40
50
60
70
Exc. cu yds
Emb. cu yds
210+00
215+00
220+00
225+00
230+00
235+00
240+00

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	D.9

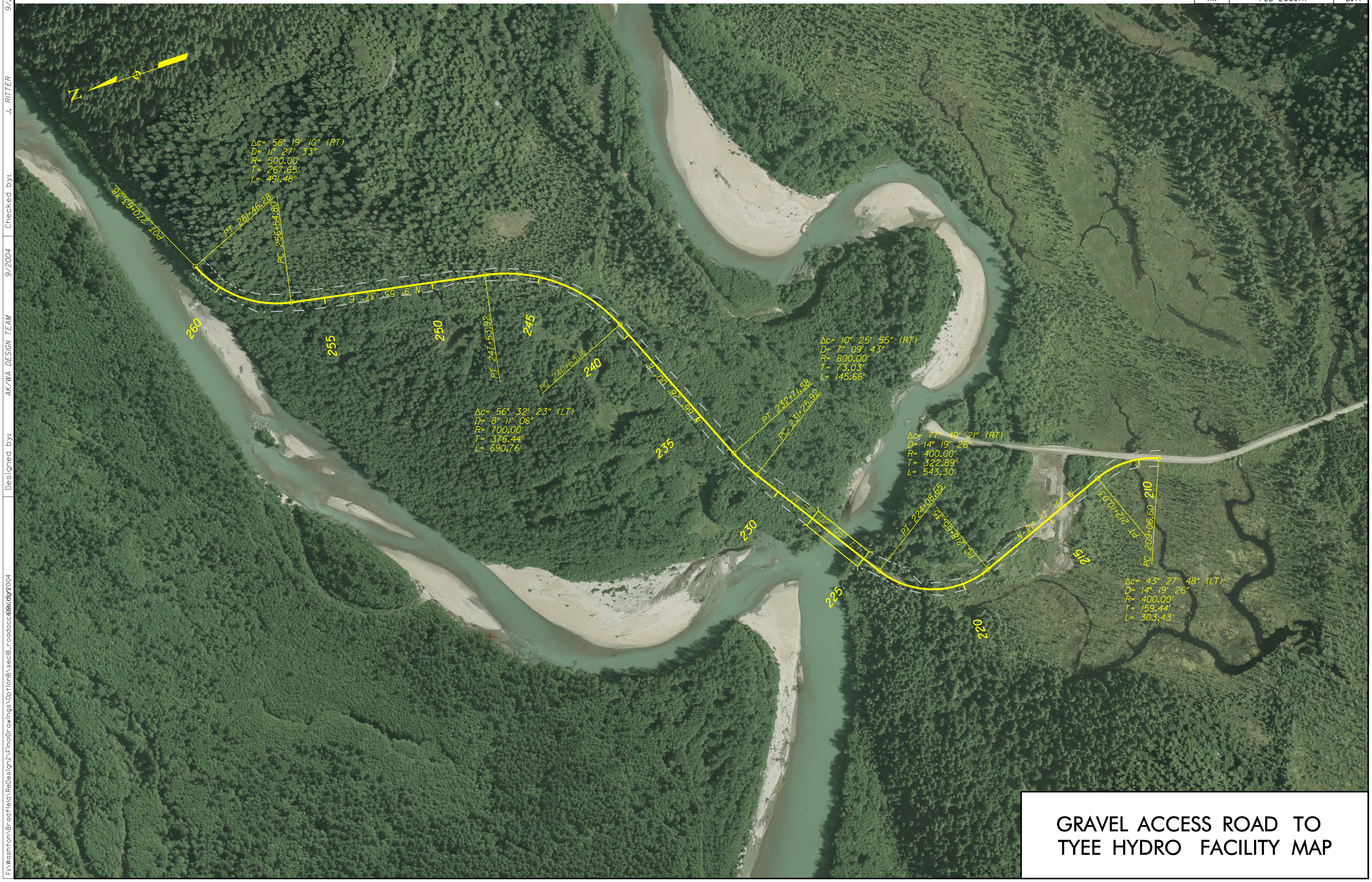


Designed by: AK/WA DESIGN TEAM 9/2004
Checked by: J. RITTER 9/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\OptionB\secB.p_and_p.dgn 5/2004



STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
D.10
N
EQUATION
POT 270+63.38
Line to be constructed
260
265
270
S 26° 28' 47" E
PT 261+46.28
PT 263+30.47
Δc= 56° 19' 10" (RT)
D= 11° 27' 33"
R= 500.00'
T= 267.65'
L= 491.48'
PC 256+54.80
See Sheet D.11 for Access Road to Tyee Hydro Facility
END SEGMENT 1 - OPTION B
EQ. STATION
STA. 270+63.38 BK. =
SEGMENT 2 STA. 260+00.00 AHD.
N = 1616113.031
E = 3137864.464
EL = 30.00
Profile grade
300' VC
-0.1739%
-0.8876%
265+00
25.00
267+00
270+35
30.00
Proposed Bridge
Existing ground
Exc. cu yds
Emb. cu yds
260+00
265+00
270+00
Designed by:
AK/WA DESIGN TEAM
9/2004
Checked by:
J. RITTER
9/2004

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	D.11

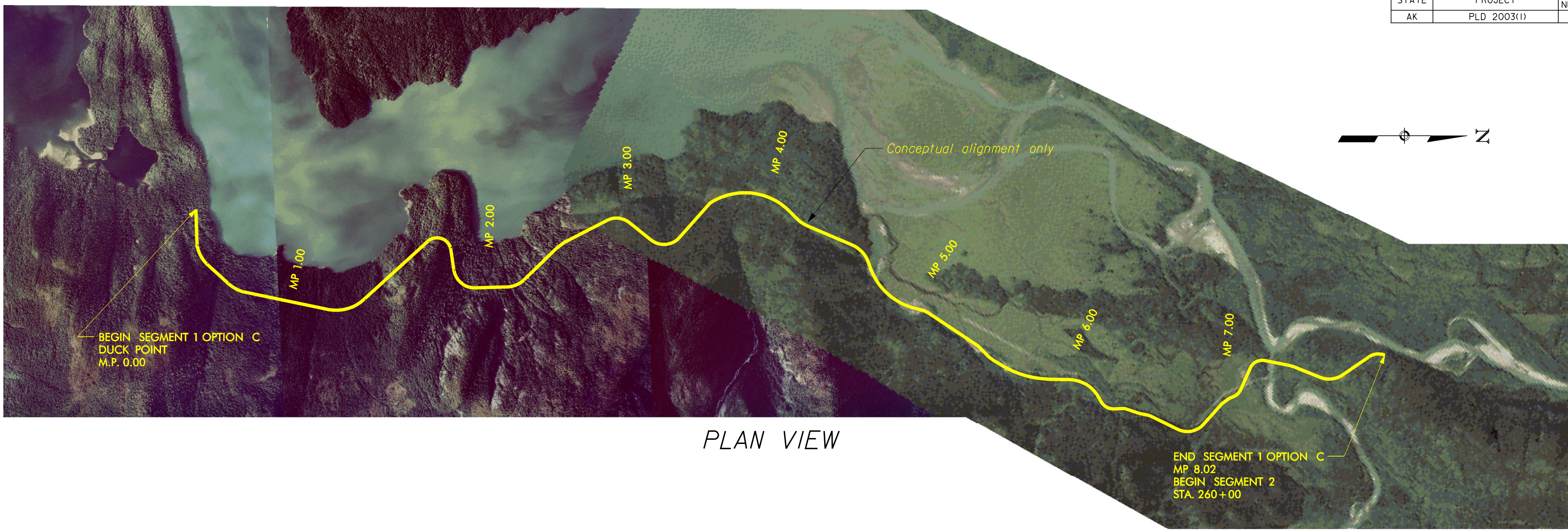


GRAVEL ACCESS ROAD TO TYEE HYDRO FACILITY MAP

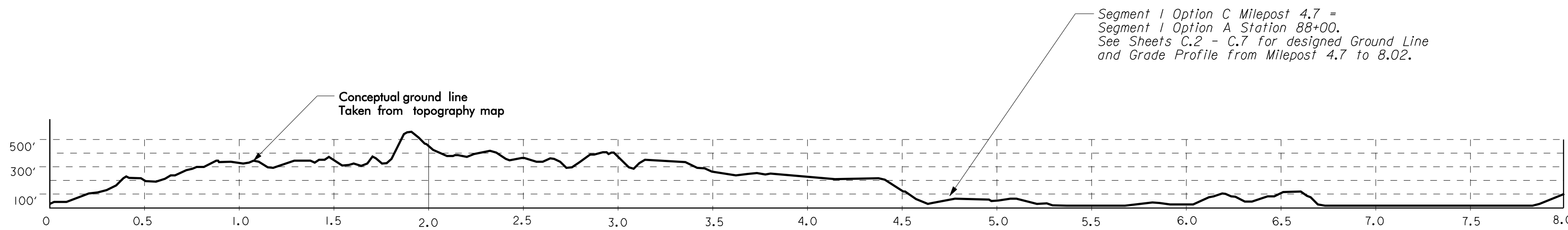
Designed by: AK/WA DESIGN TEAM 9/2004 Checked by: J. RITTER 9/2004

F:\Washton\Bradfield\ReDesign2\FinalDrawings\OptionB\secB.roadacc.dwg 2004

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	E.1



PLAN VIEW



PROFILE VIEW

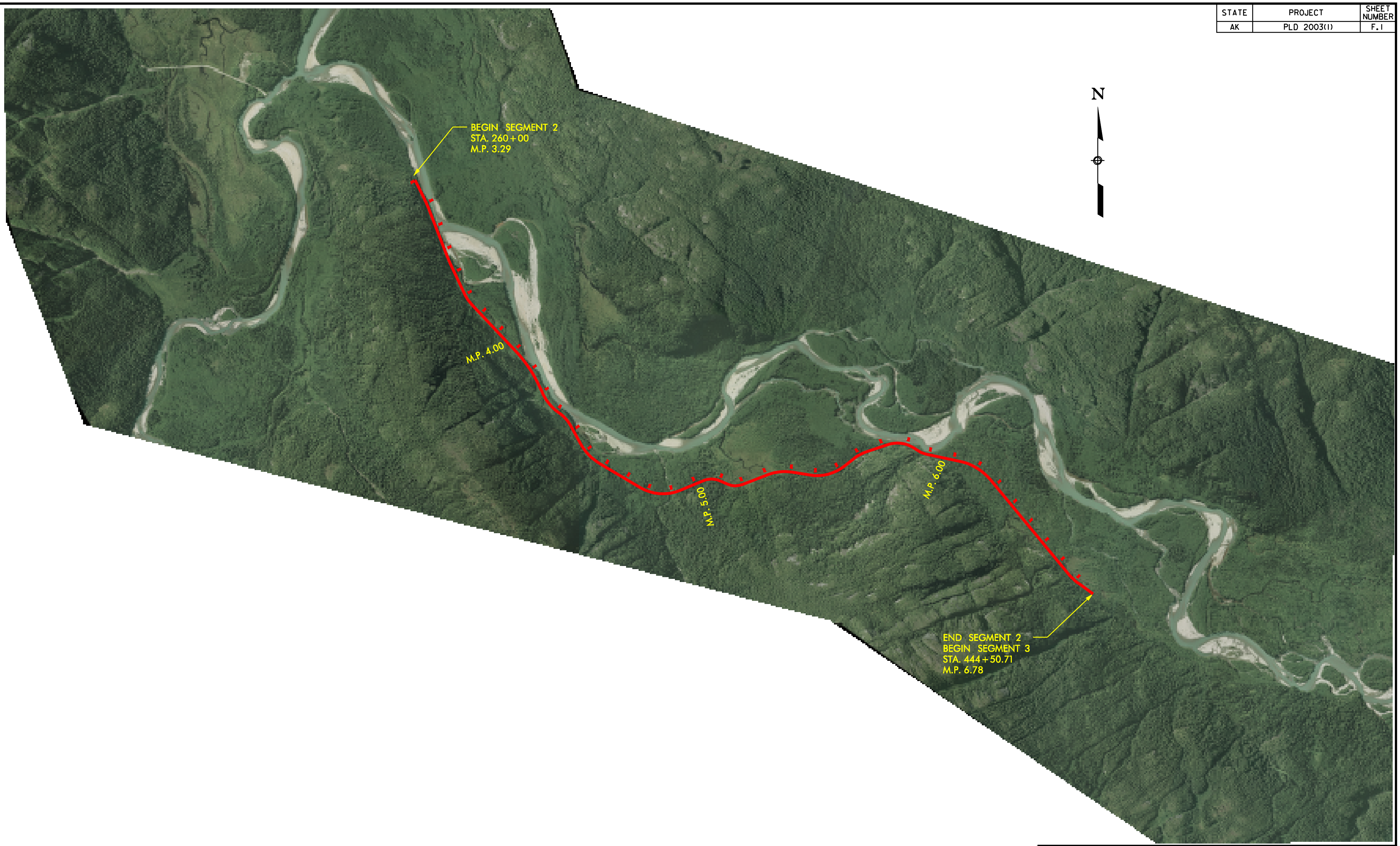
Scale in Miles
0.0 0.25 0.5 0.75 1.0

SEGMENT 1 OPTION C
DUCK POINT
CONCEPTUAL PLAN & PROFILE

Designed by:

Checked by:

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	F.1



NOTE:

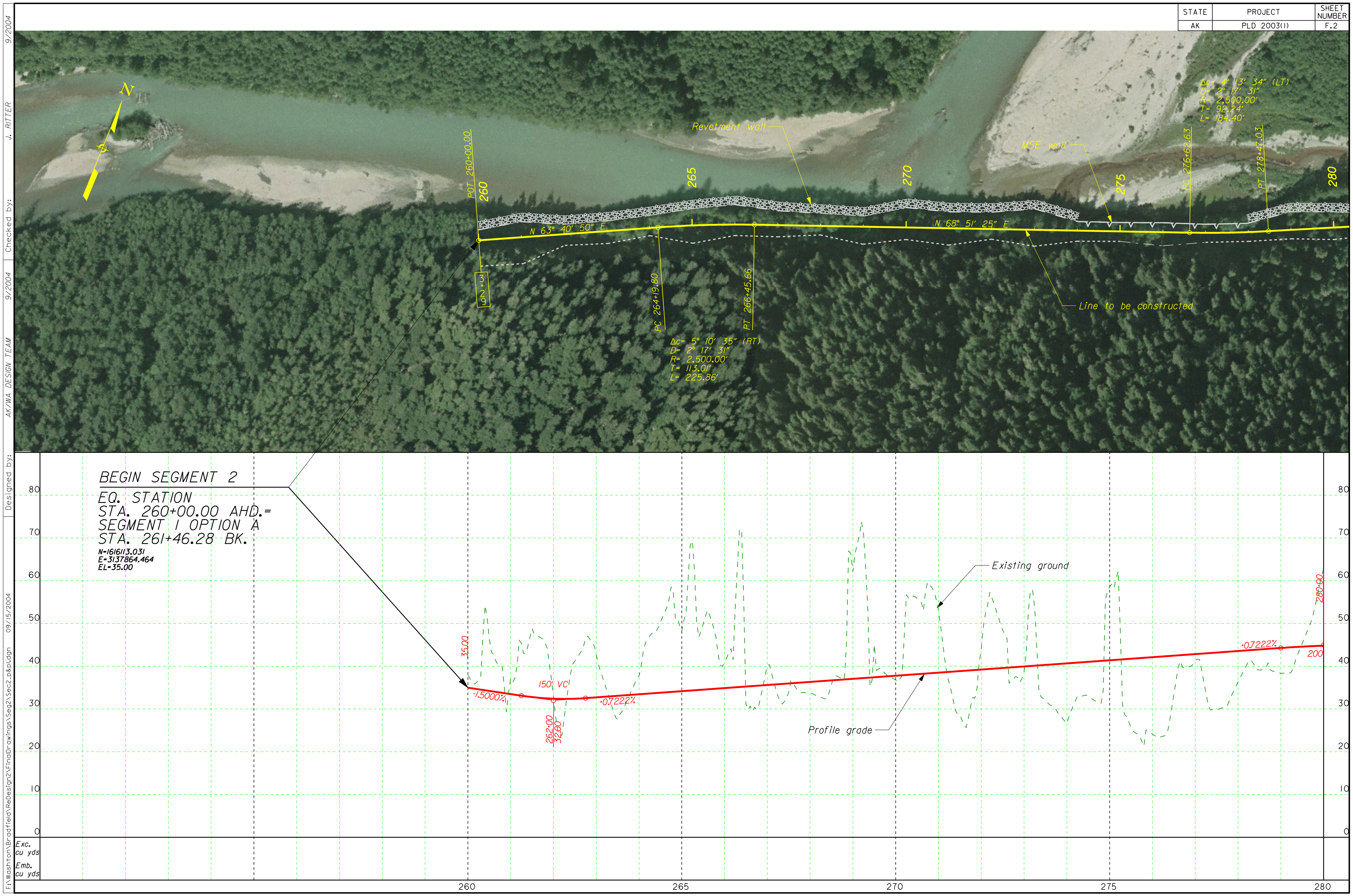
1. Milepost markers are a continuation from Segment 1 Option A-Tyee Creek.

SEGMENT 2 MAP

Designed by: --/---- Checked by: --/----

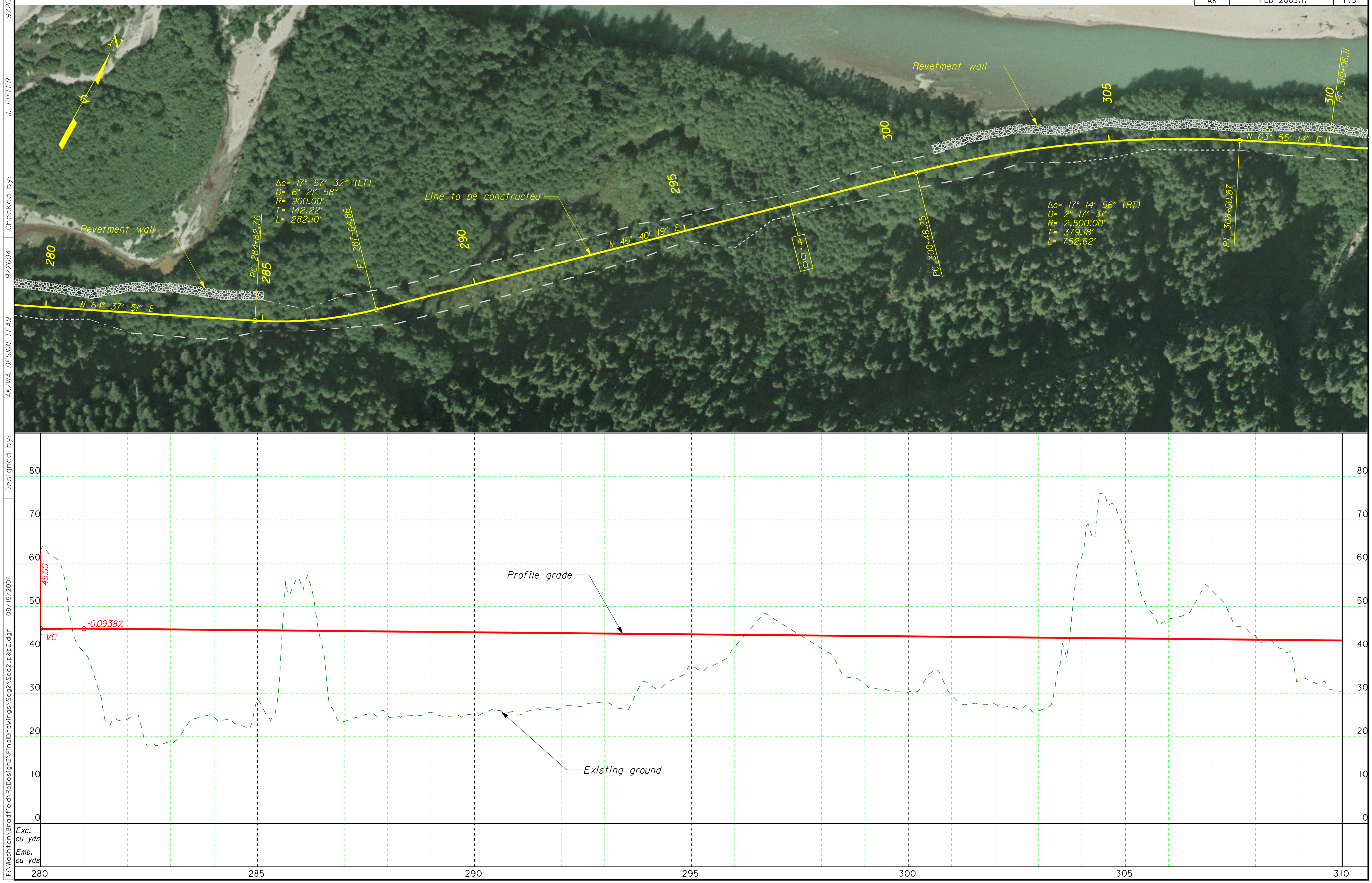
$$$$$$SYTIME$$$$$$

$$$$$$DGNSPEC$$$$$$



STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
F.2
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg2\Sec2_p&pl.dgn
N
Revetment wall
MSE wall
POT 260+00.00
260
265
270
275
280
N 63° 40' 50" E
N 68° 51' 25" E
PC 264+19.80
PT 266+45.66
PC 276+63.63
PT 278+47.03
Δc= 5° 10' 35" (RT)
D= 2° 17' 31"
R= 2,500.00'
T= 113.01'
L= 225.86'
Δc= 4° 13' 34" (LT)
D= 2° 17' 31"
R= 2,500.00'
T= 92.24'
L= 184.40'
Line to be constructed
BEGIN SEGMENT 2
EQ. STATION
STA. 260+00.00 AHD.=
SEGMENT 1 OPTION A
STA. 261+46.28 BK.
N=1616113.031
E=3137864.464
EL=35.00
Existing ground
Profile grade
35.00
-1.5000%
150' VC
262.00
32.00
-0.7222%
-0.7222%
200
280.00
80
70
60
50
40
30
20
10
0
Exc. cu yds
Emb. cu yds
260
265
270
275
280

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	F.3



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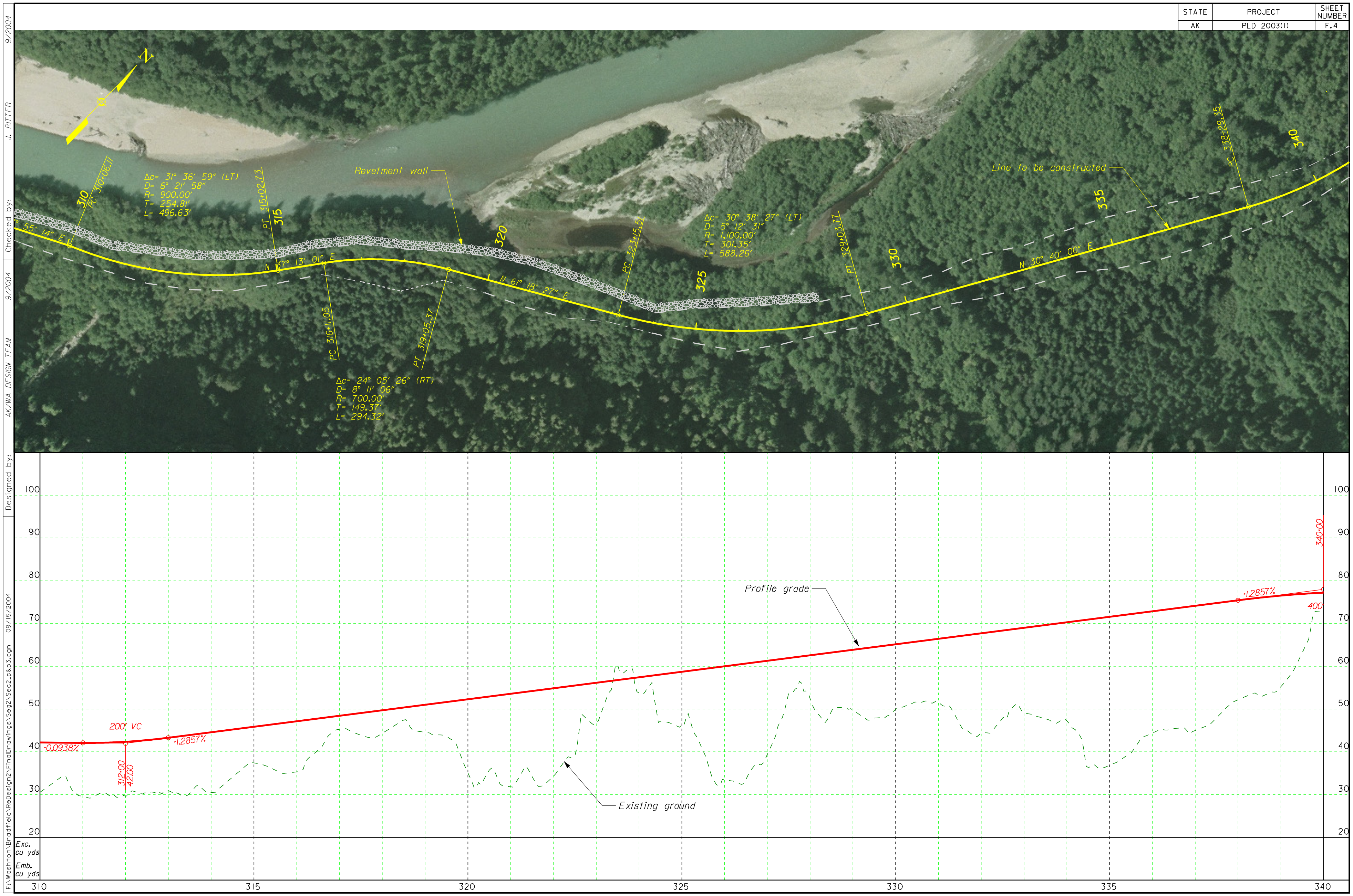
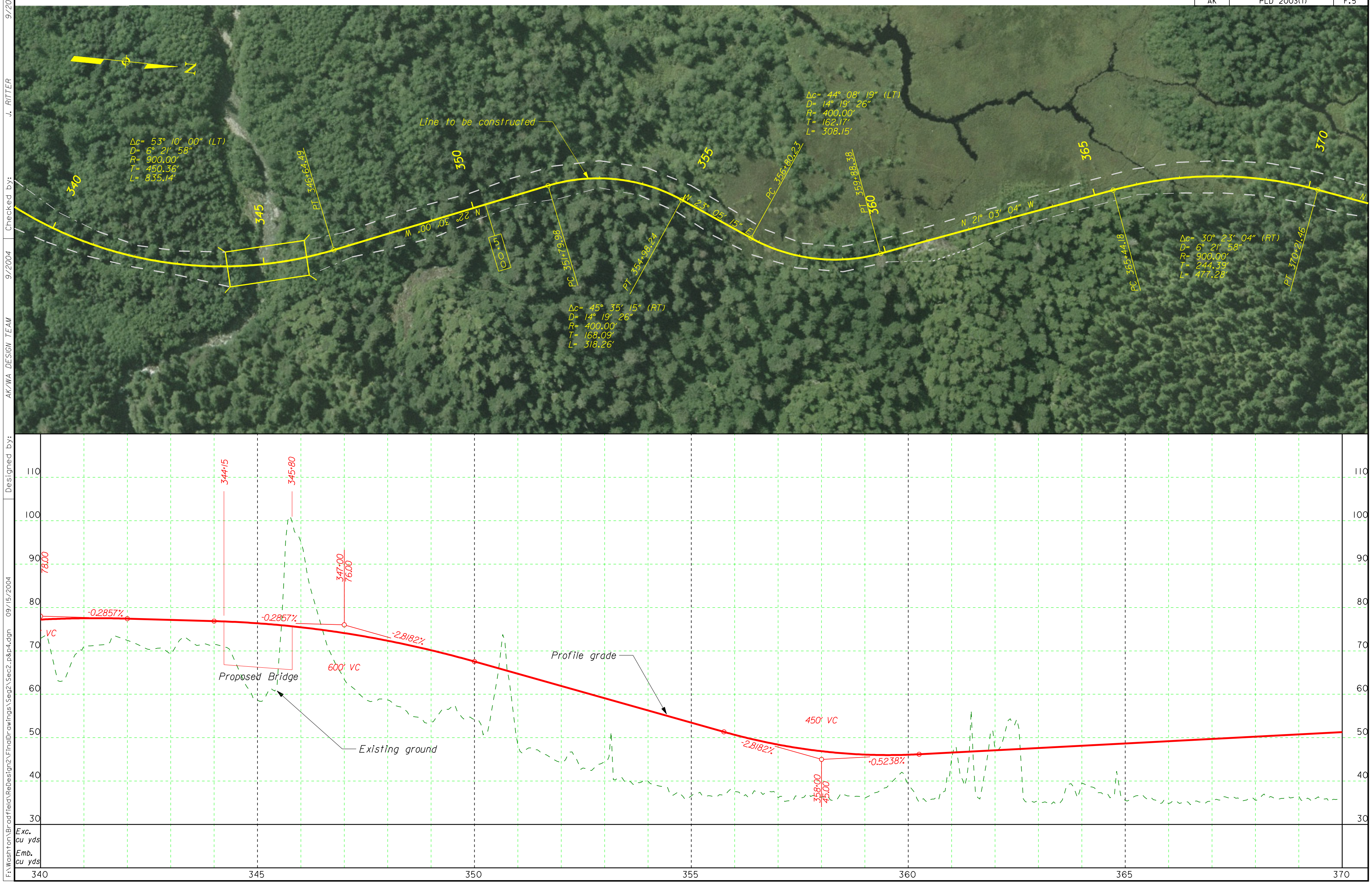


STATE | PROJECT | SHEET NUMBER
AK | PLD 2003(1) | F.4
N
Δc= 31° 36' 59" (LT)
D= 6° 21' 58"
R= 900.00'
T= 254.81'
L= 496.63'
PC 310+06.11
PT 315+02.73
Revetment wall
N 37° 13' 01" E
N 6° 18' 27" E
PC 316+11.05
PT 319+05.37
Δc= 24° 05' 26" (RT)
D= 8° 11' 06"
R= 700.00'
T= 149.37'
L= 294.32'
PC 323+15.51
Δc= 30° 38' 27" (LT)
D= 5° 12' 31"
R= 1,100.00'
T= 301.35'
L= 588.26'
PT 329+03.77
N 30° 40' 00" E
Line to be constructed
PC 338+29.35
310
315
320
325
330
335
340
Profile grade
Existing ground
200' VC
-0.0938%
+1.2857%
+1.2857%
312+00
42.00
340+00
400
Exc. cu yds
Emb. cu yds
20
30
40
50
60
70
80
90
100
AK/WA DESIGN TEAM
9/2004
Checked by:
J. RITTER
9/2004
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg2\Sec2_p&p3.dgn

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	F.5



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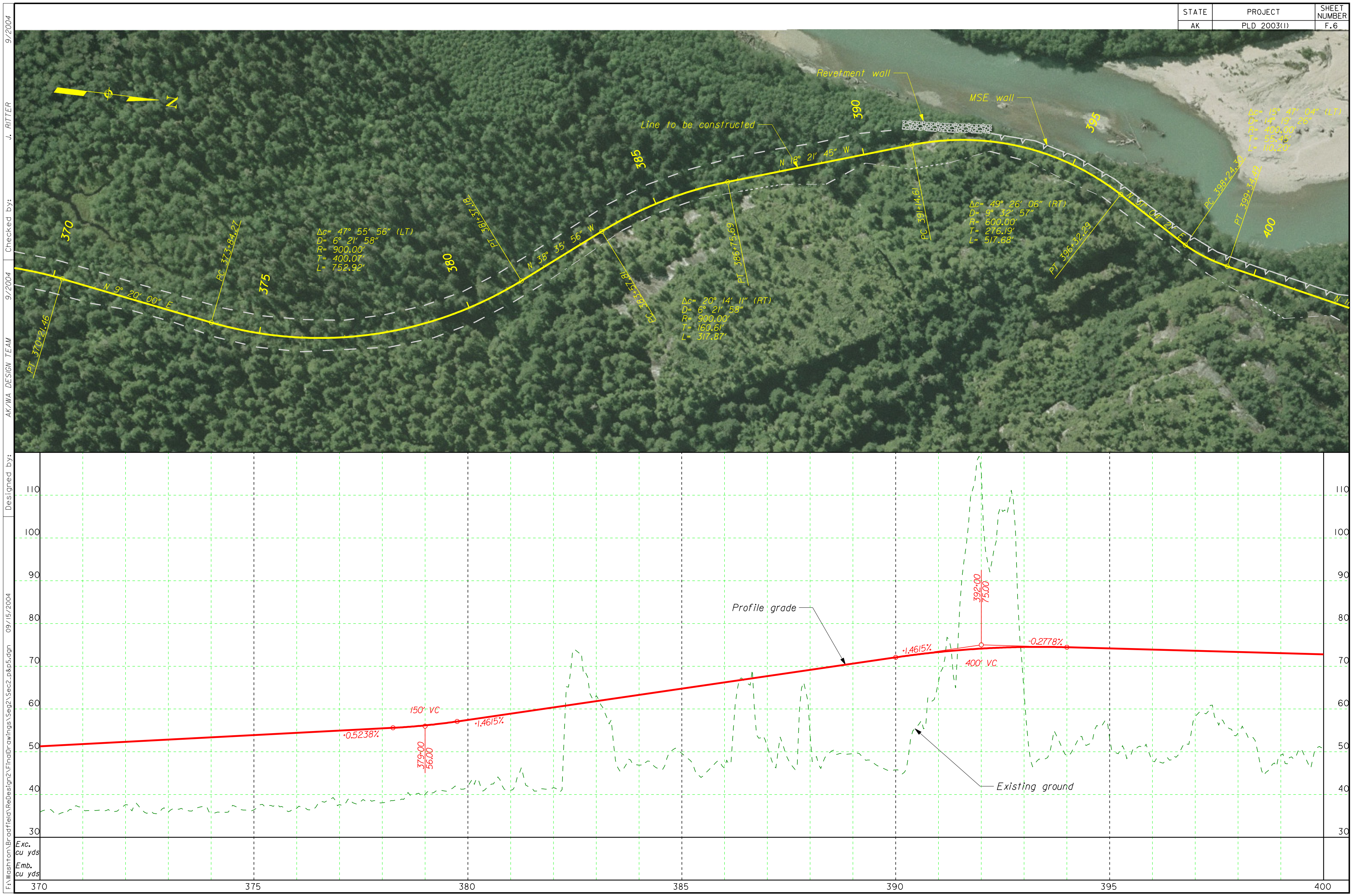
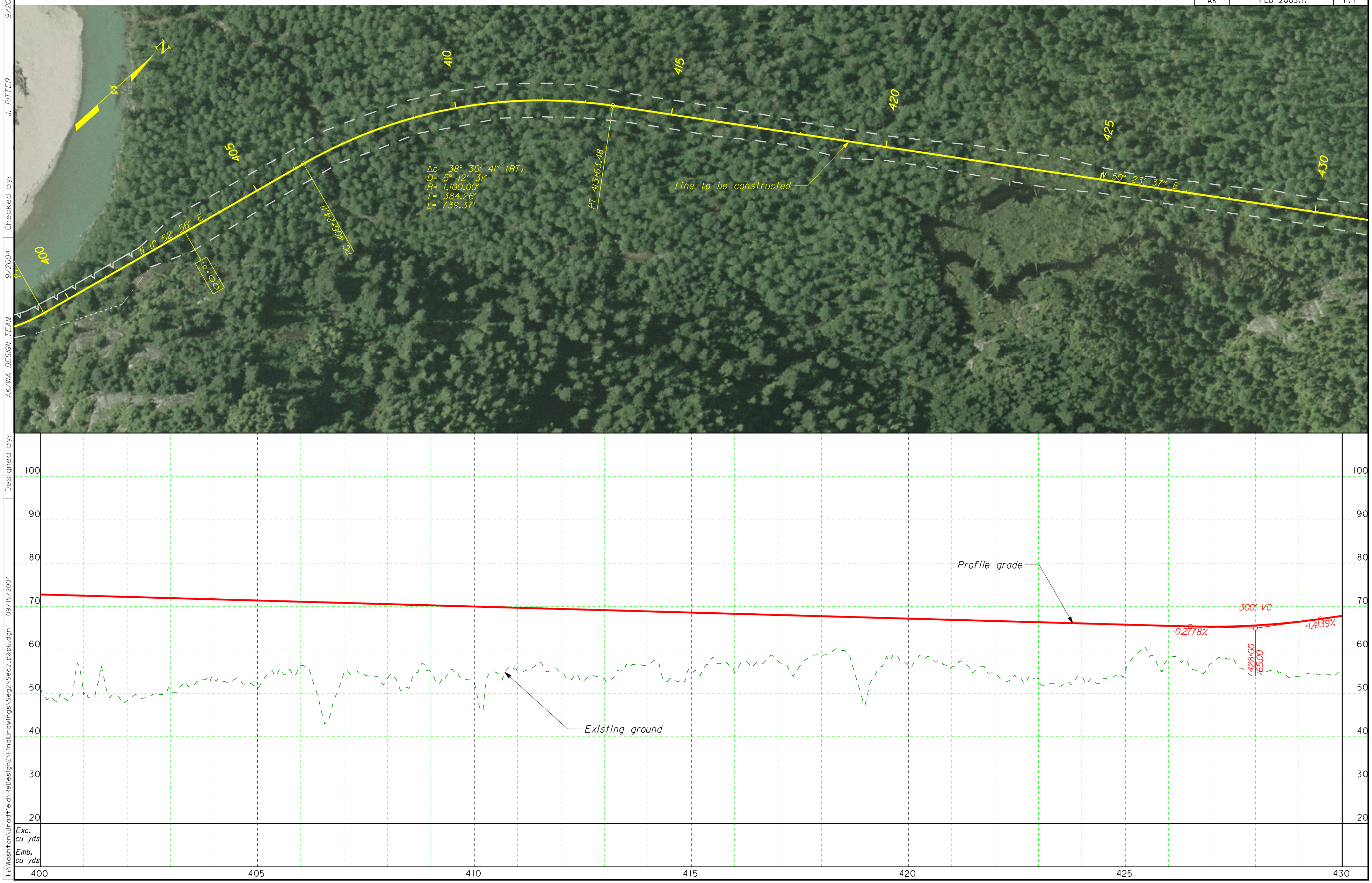
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg2\Sec2_p&p4.dgn 09/15/2004


STATE
AK
PROJECT
PLD 2003(1)
SHEET NUMBER
F.6
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg2\Sec2_p&p5.dgn
N
Revetment wall
MSE wall
Line to be constructed
370
375
380
385
390
395
400
N 9° 20' 00" E
N 38° 35' 56" W
N 18° 21' 45" W
N 57° 04' 21" E
PT 370+21.46
PC 373+84.27
PT 381+37.18
PC 383+57.81
PT 386+75.69
PC 391+14.61
PT 396+32.29
PC 398+24.30
PT 399+34.49
Δc= 47° 55' 56" (LT)
D= 6° 21' 58"
R= 900.00'
T= 400.07'
L= 752.92'
Δc= 20° 14' 11" (RT)
D= 6° 21' 58"
R= 900.00'
T= 160.61'
L= 317.87'
Δc= 49° 26' 06" (RT)
D= 9° 32' 57"
R= 600.00'
T= 276.19'
L= 517.68'
Δc= 15° 47' 04" (LT)
D= 14° 19' 26"
R= 400.00'
T= 55.45'
L= 110.20'
Profile grade
Existing ground
150' VC
-0.5238%
+1.4615%
379+00
56.00
400' VC
+1.4615%
-0.2778%
392+00
75.00
110
100
90
80
70
60
50
40
30
Exc. cu yds
Emb. cu yds
370
375
380
385
390
395
400

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	F.7



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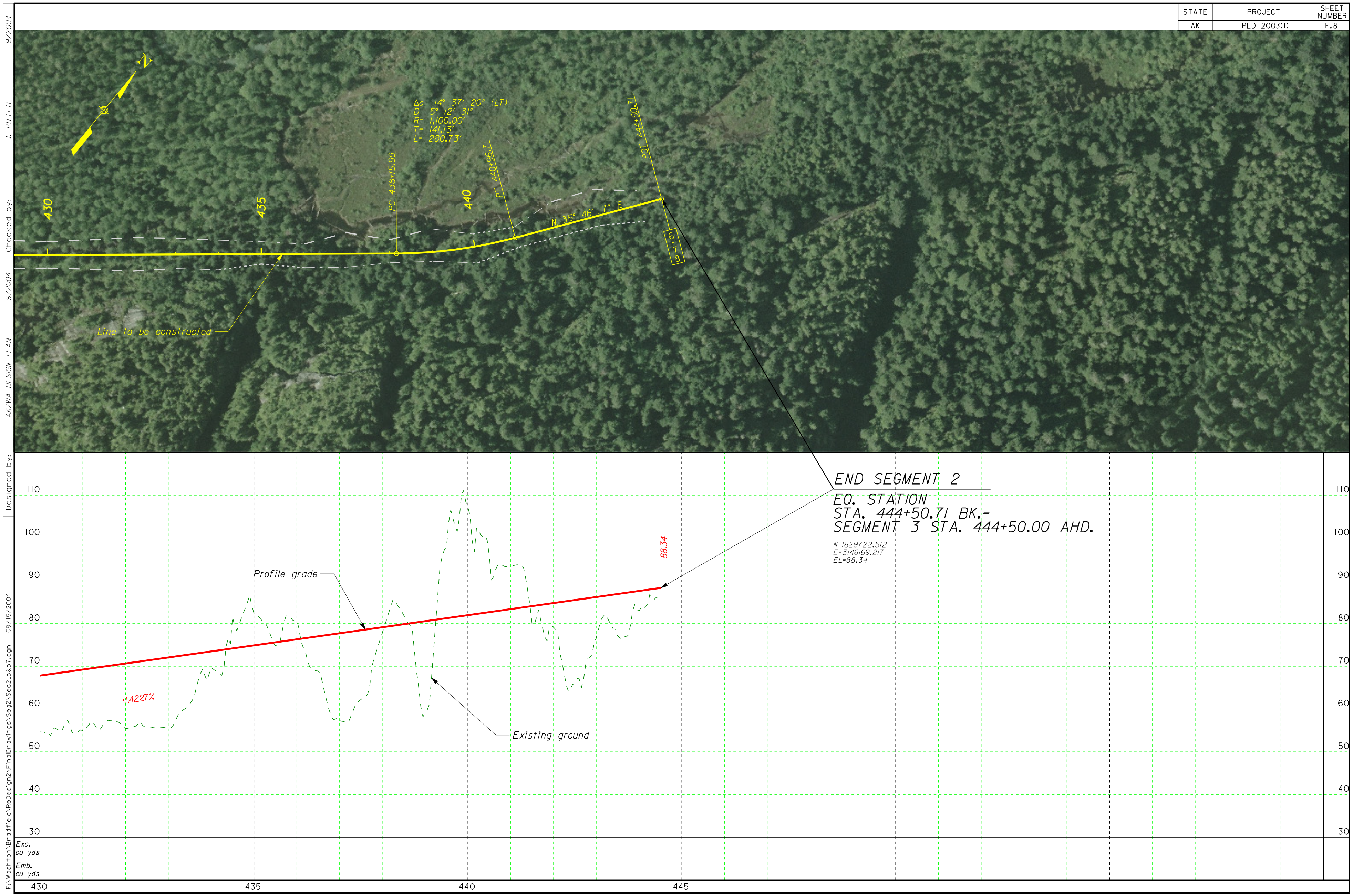
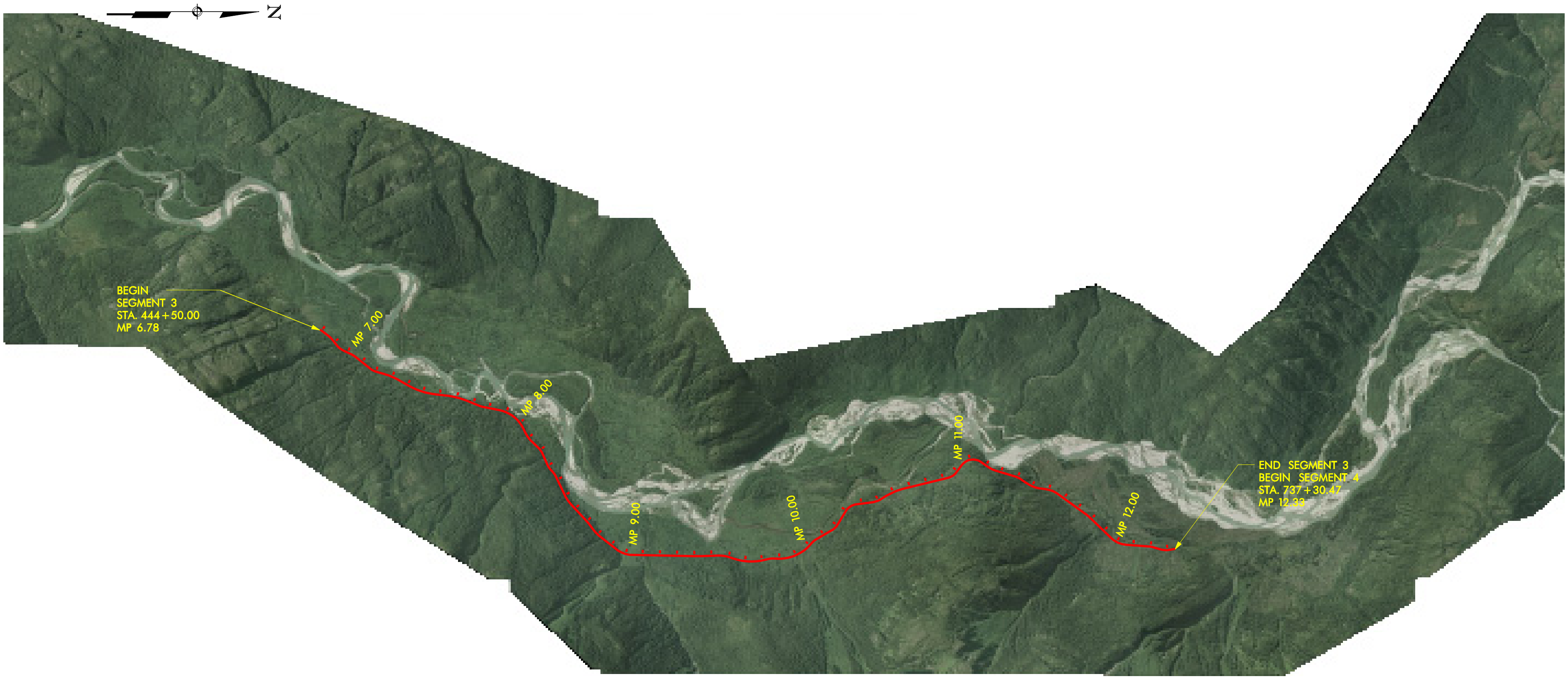
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg2\Sec2_p&p6.dgn 09/15/2004



STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
F.8
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg2\Sec2_p&p7.dgn
N
Δc= 14° 37' 20" (LT)
D= 5° 12' 31"
R= 1,100.00'
T= 141.13'
L= 280.73'
PC 438+15.99
PT 440+96.71
POT 444+50.71
N 35° 46' 17" E
430
435
440
Line to be constructed
END SEGMENT 2
EQ. STATION
STA. 444+50.71 BK.=
SEGMENT 3 STA. 444+50.00 AHD.
N=1629722.512
E=3146169.217
EL=88.34
88.34
Profile grade
Existing ground
+1.4227%
Exc. cu yds
Emb. cu yds
110
100
90
80
70
60
50
40
30
430
435
440
445

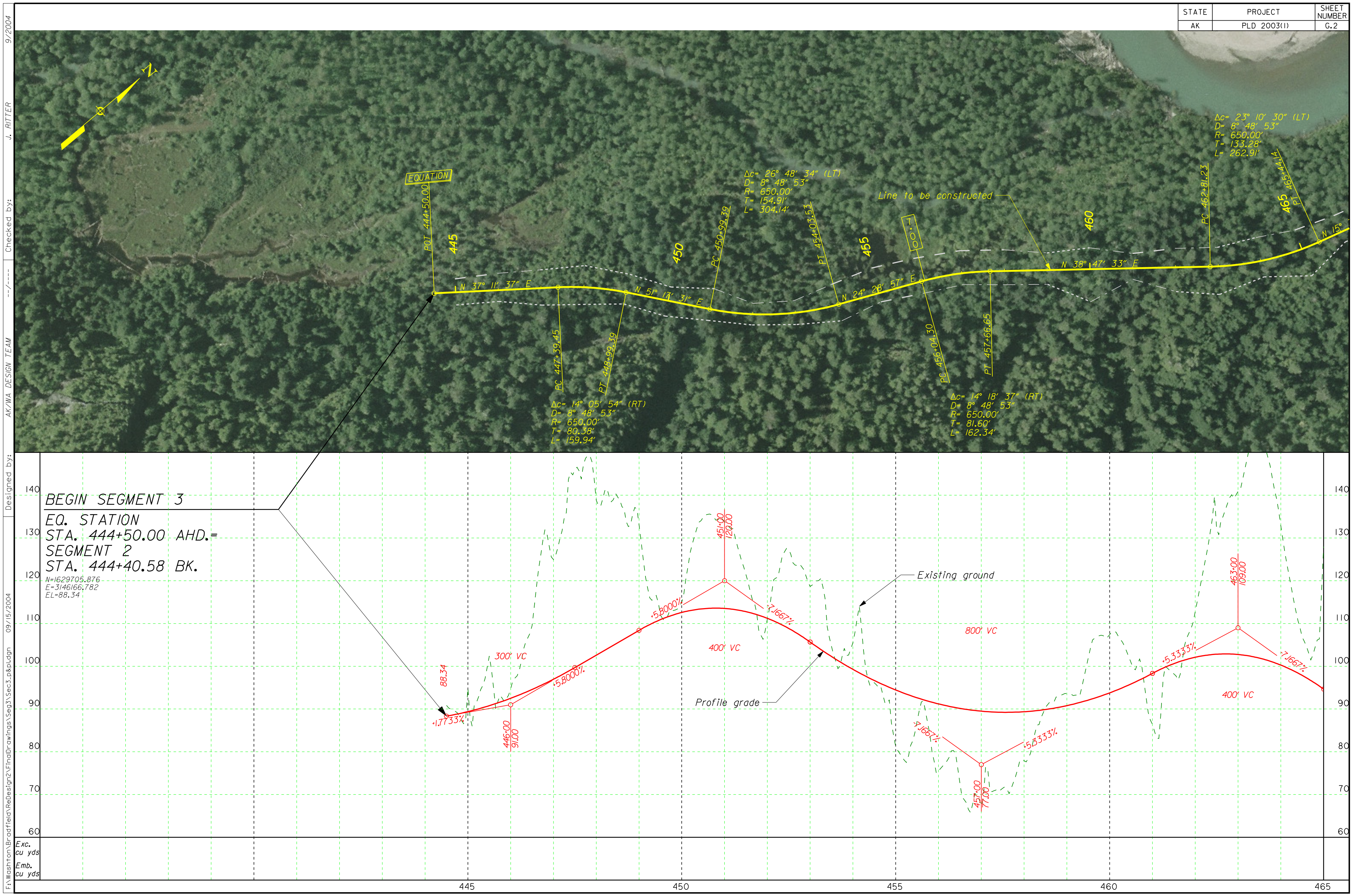
STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	G.1



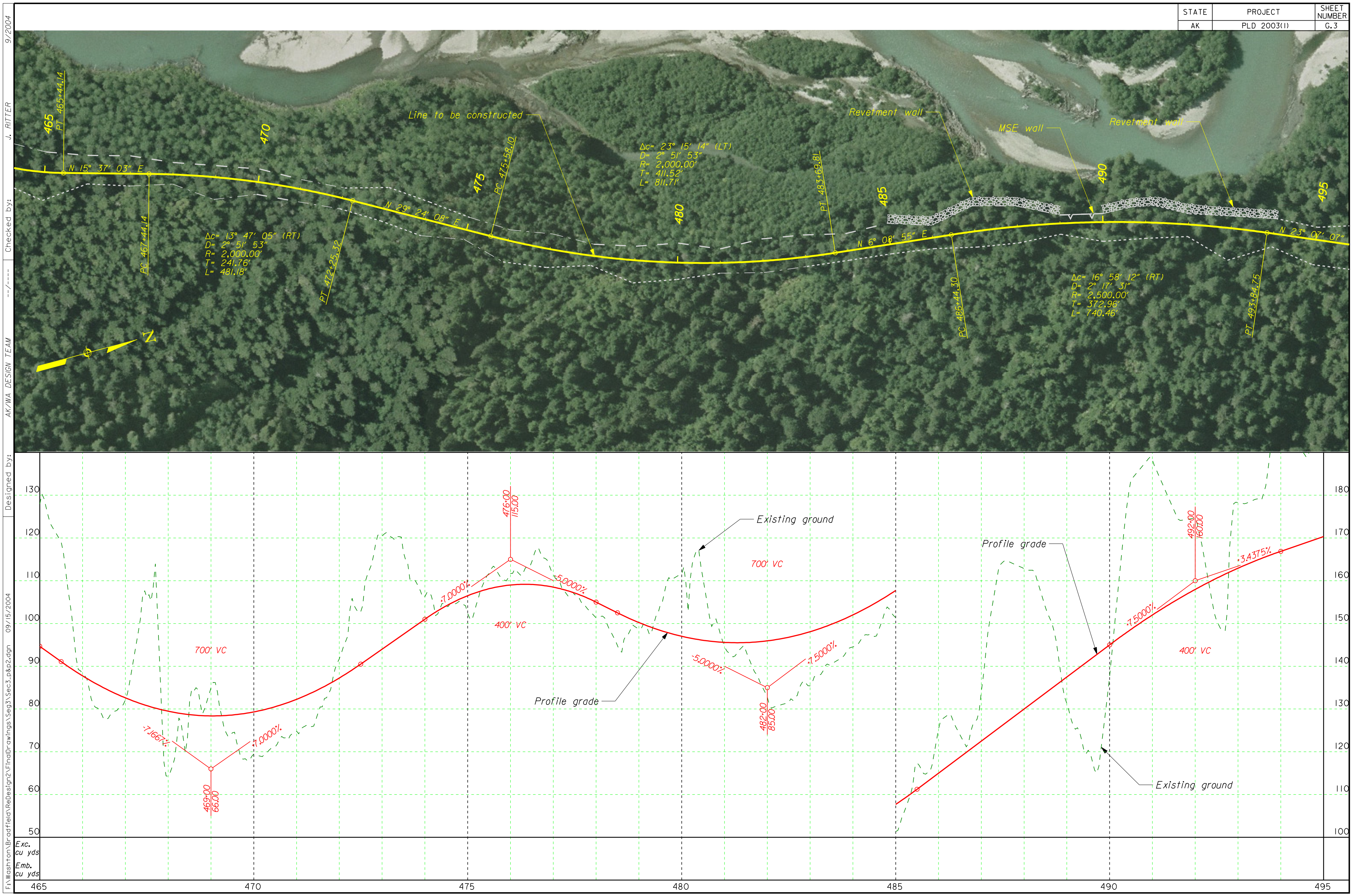
2500 0 1000 2000 3000 4000
SCALE IN FEET

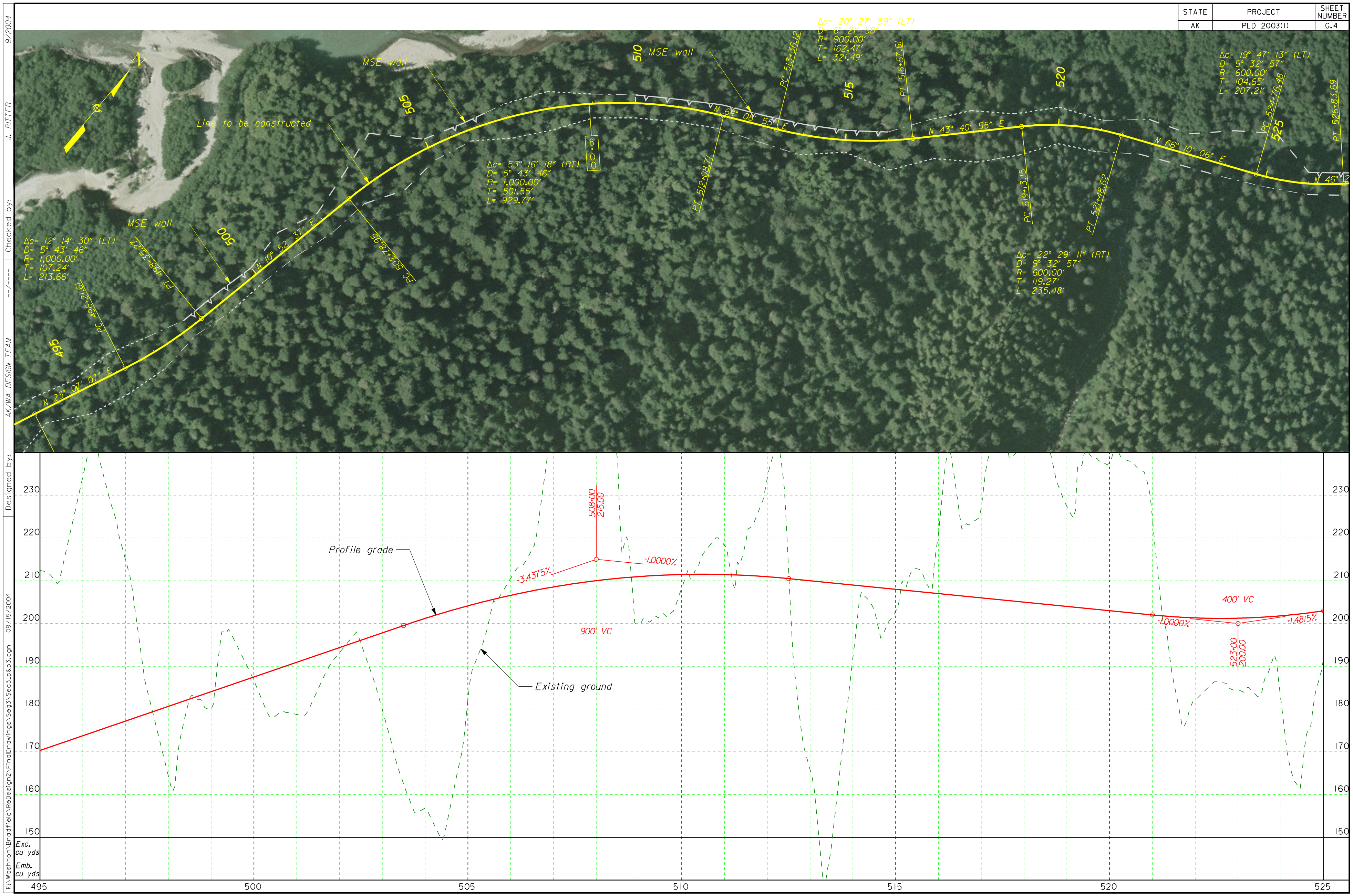
SEGMENT 3 MAP

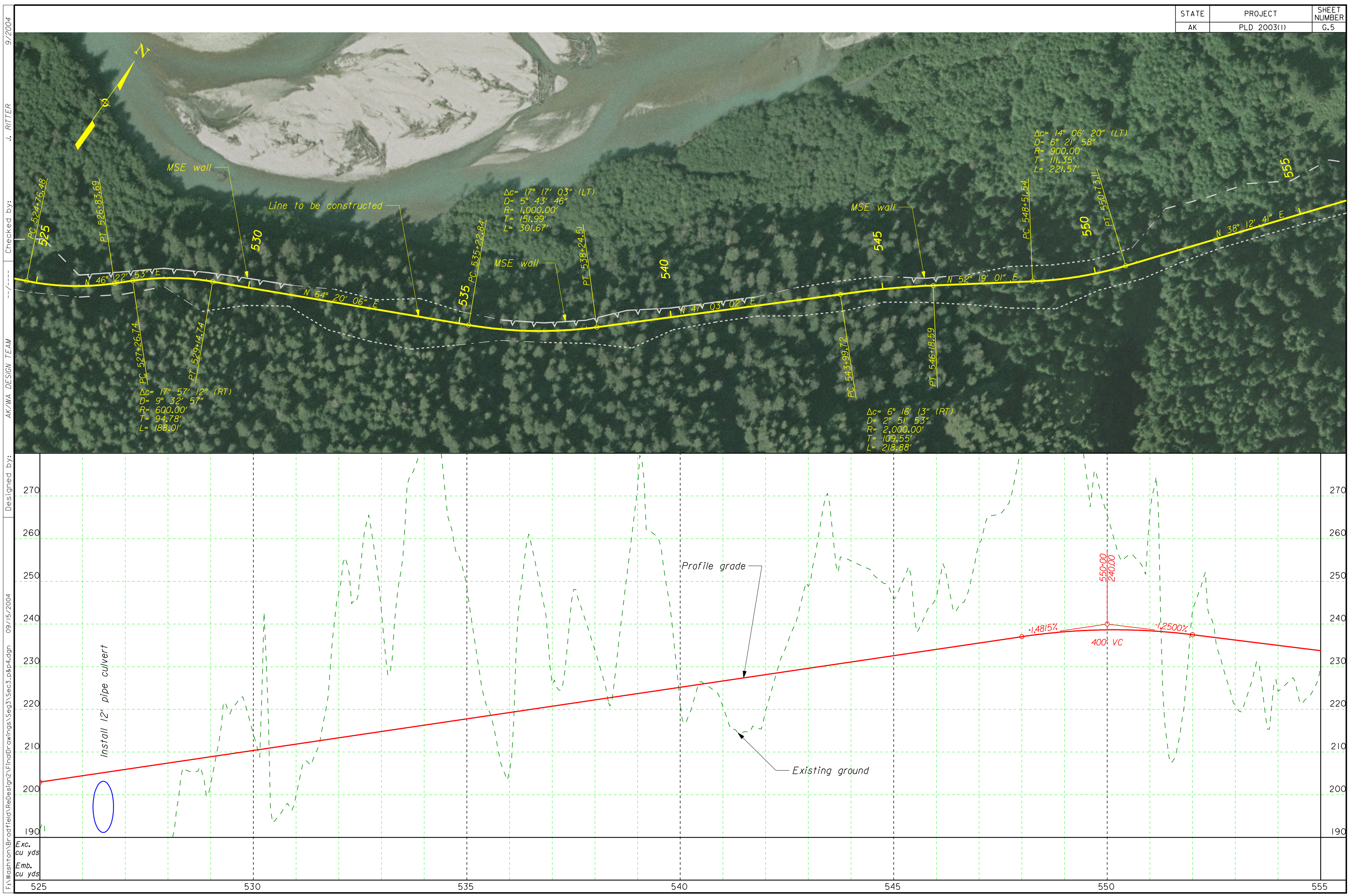
Designed by:
Checked by:


STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
G.2
N
EQUATION
POT 444+50.00
445
450
455
460
465
N 37° 11' 37" E
N 51° 13' 31" E
N 24° 28' 57" E
N 38° 47' 33" E
N 15°
PC 447+39.45
PT 448+99.39
Δc= 14° 05' 54" (RT)
D= 8° 48' 53"
R= 650.00'
T= 80.38'
L= 159.94'
PC 450+99.39
PT 454+03.53
Δc= 26° 48' 34" (LT)
D= 8° 48' 53"
R= 650.00'
T= 154.91'
L= 304.14'
T-1.00
Line to be constructed
PC 456+04.30
PT 457+66.65
Δc= 14° 18' 37" (RT)
D= 8° 48' 53"
R= 650.00'
T= 81.60'
L= 162.34'
PC 462+81.23
PT 465+44.14
Δc= 23° 10' 30" (LT)
D= 8° 48' 53"
R= 650.00'
T= 133.28'
L= 262.91'
BEGIN SEGMENT 3
EQ. STATION
STA. 444+50.00 AHD.=
SEGMENT 2
STA. 444+40.58 BK.
N=1629705.876
E=3146166.782
EL=88.34
88.34
-1.7733%
446.00
91.00
300' VC
+5.8000%
451.00
120.00
400' VC
-7.1667%
Existing ground
Profile grade
800' VC
457.00
77.00
+5.3333%
463.00
109.00
400' VC
140
130
120
110
100
90
80
70
60
Exc. cu yds
Emb. cu yds
Designed by:
AK/WA DESIGN TEAM
Checked by:
J. RITTER
9/2004
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg3\Sec3.p&p.dgn

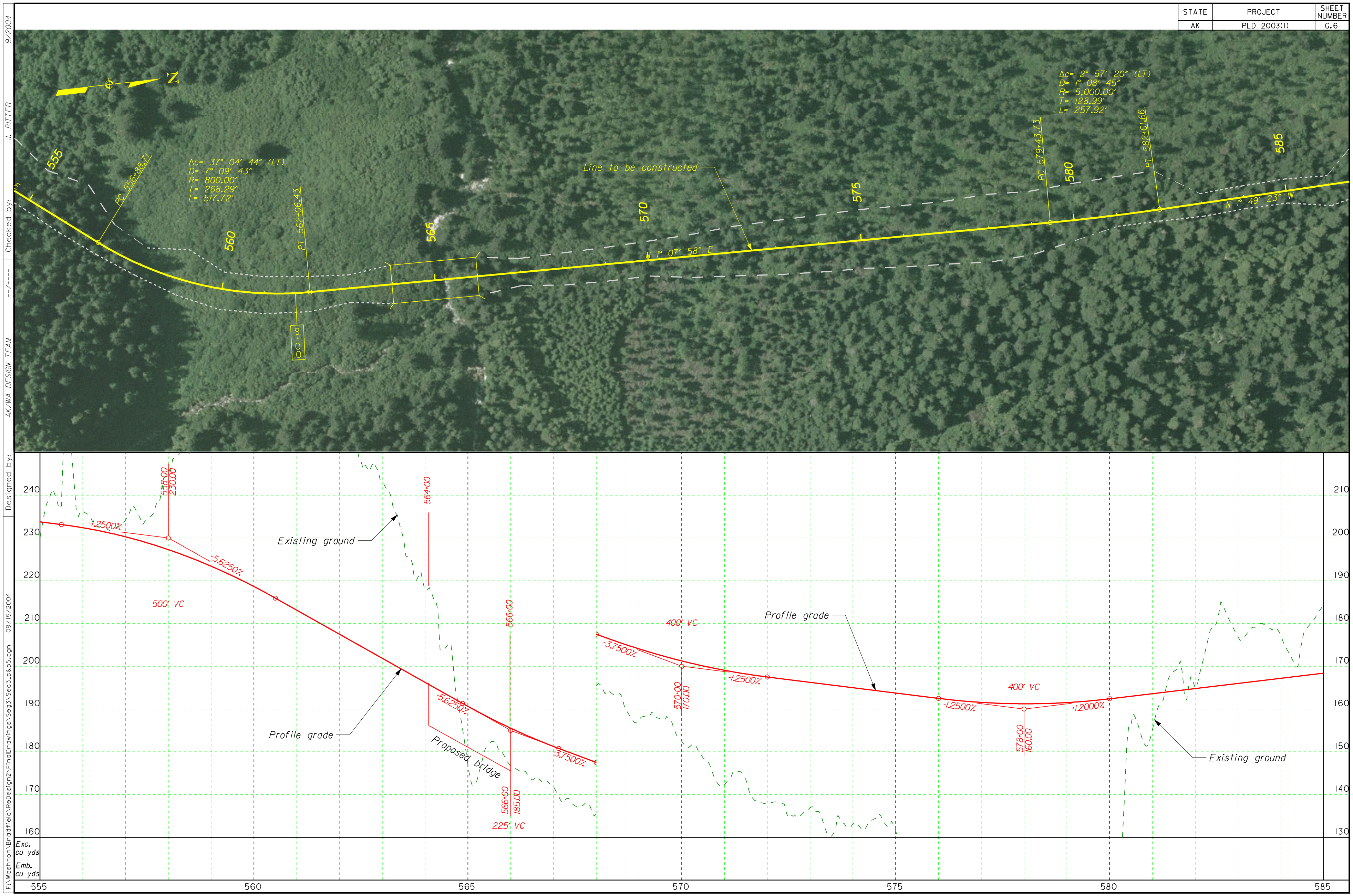
STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	G.3




STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
G.4
9/2004
J. RITTER
Checked by:
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg3\Sec3_p&p3.dgn
MSE wall
Line to be constructed
Δc= 12° 14' 30" (LT)
D= 5° 43' 46"
R= 1,000.00'
T= 107.24'
L= 213.66'
Δc= 53° 16' 18" (RT)
D= 5° 43' 46"
R= 1,000.00'
T= 501.55'
L= 929.77'
Δc= 20° 27' 59" (LT)
D= 6° 21' 58"
R= 900.00'
T= 162.47'
L= 321.49'
Δc= 22° 29' 11" (RT)
D= 9° 32' 57"
R= 600.00'
T= 119.27'
L= 235.48'
Δc= 19° 47' 13" (LT)
D= 9° 32' 57"
R= 600.00'
T= 104.65'
L= 207.21'
N 23° 07' 07" E
N 10° 52' 37" E
N 64° 08' 55" E
N 43° 40' 55" E
N 66° 10' 06" E
PC 496+21.61
PT 498+35.27
PC 502+78.95
PT 512+08.71
PC 513+36.12
PT 516+57.61
PC 519+13.15
PT 521+48.62
PC 524+76.48
PT 526+83.69
Profile grade
Existing ground
508+00
215.00
-3.4375%
-1.0000%
900' VC
400' VC
523+00
200.00
+1.4815%
Exc. cu yds
Emb. cu yds
495
500
505
510
515
520
525



STATE
AK
PROJECT
PLD 2003(1)
SHEET NUMBER
G.5
9/2004
J. RITTER
Checked by:
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg3\Sec3_p&p4.dgn
N
MSE wall
Line to be constructed
PC 524+76.48
PT 526+83.69
PC 527+26.74
PT 529+14.74
Δc= 17° 57' 12" (RT)
D= 9° 32' 57"
R= 600.00'
T= 94.78'
L= 188.01'
N 46° 22' 53" E
N 64° 20' 06" E
Δc= 17° 17' 03" (LT)
D= 5° 43' 46"
R= 1,000.00'
T= 151.99'
L= 301.67'
PC 535+22.84
PT 538+24.51
N 47° 03' 02" E
PC 543+99.72
PT 546+18.59
Δc= 6° 16' 13" (RT)
D= 2° 51' 53"
R= 2,000.00'
T= 109.55'
L= 218.88'
N 52° 19' 01" E
Δc= 14° 06' 20" (LT)
D= 6° 21' 58"
R= 900.00'
T= 111.35'
L= 221.57'
PC 548+51.54
PT 550+73.11
N 38° 12' 41" E
525
530
535
540
545
550
555
Profile grade
Existing ground
Install 12' pipe culvert
550+00
240.00
-1.4815%
-1.2500%
400' VC
270
260
250
240
230
220
210
200
190
Exc. cu yds
Emb. cu yds


STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
G.6
9/2004
J. RITTER
Checked by:
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg3\Seg3.p&p5.dgn
N
Δc= 37° 04' 44" (LT)
D= 7° 09' 43"
R= 800.00'
T= 268.29'
L= 517.72'
PC 556+88.71
PT 562+06.43
Line to be constructed
N 1° 07' 58" E
Δc= 2° 57' 20" (LT)
D= 1° 08' 45"
R= 5,000.00'
T= 128.99'
L= 257.92'
PC 579+43.73
PT 582+01.66
N 1° 49' 23" W
555
560
565
570
575
580
585
-1.2500%
558+00
230.00
-5.6250%
500' VC
Existing ground
564+00
566+00
Profile grade
-5.6250%
Proposed bridge
566+00
185.00
225' VC
-3.7500%
-3.7500%
400' VC
570+00
170.00
-1.2500%
Profile grade
-1.2500%
400' VC
578+00
160.00
-1.2000%
Existing ground
Exc. cu yds
Emb. cu yds
240
230
220
210
200
190
180
170
160
210
200
190
180
170
160
150
140
130

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	G.7

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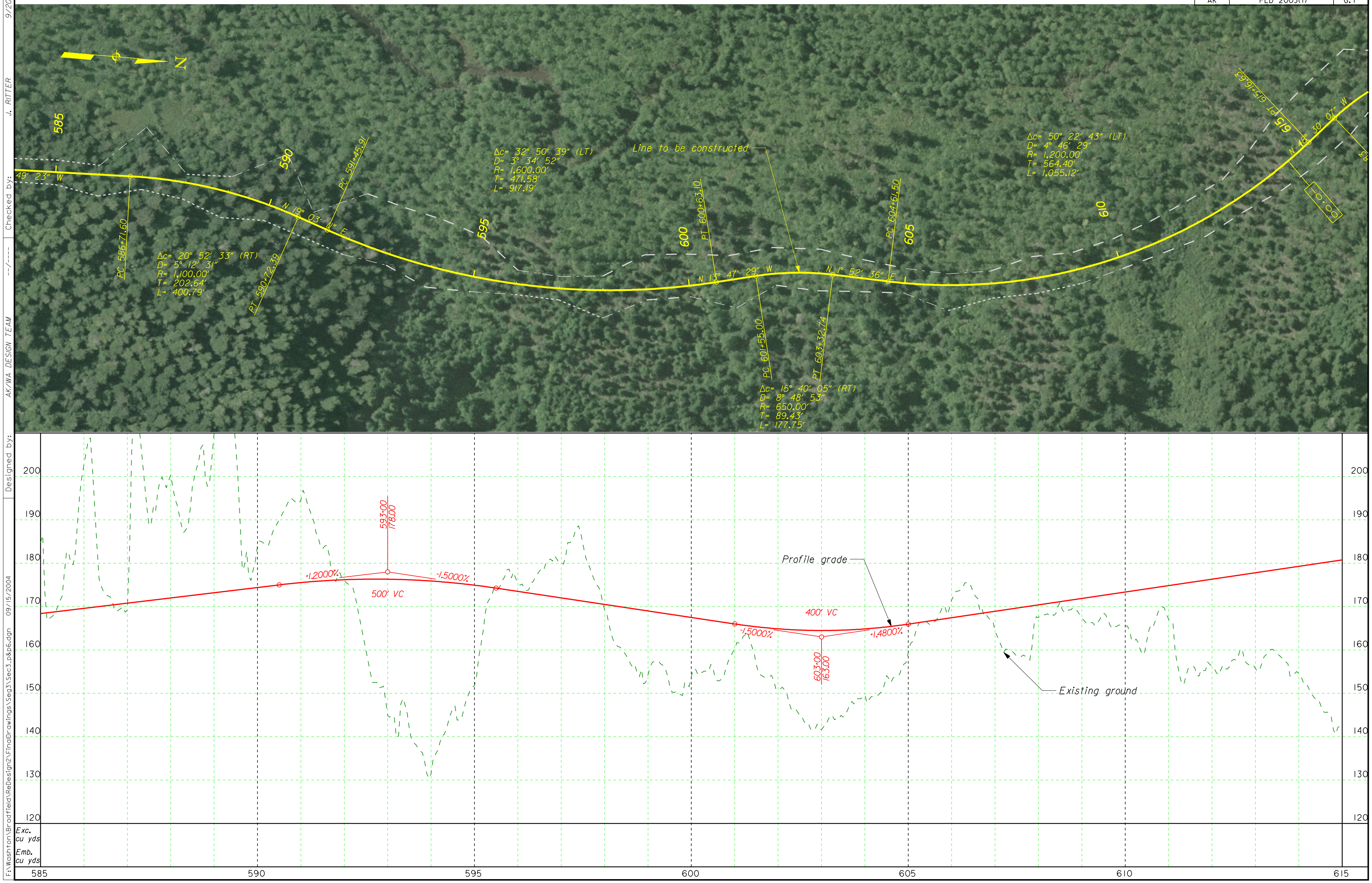
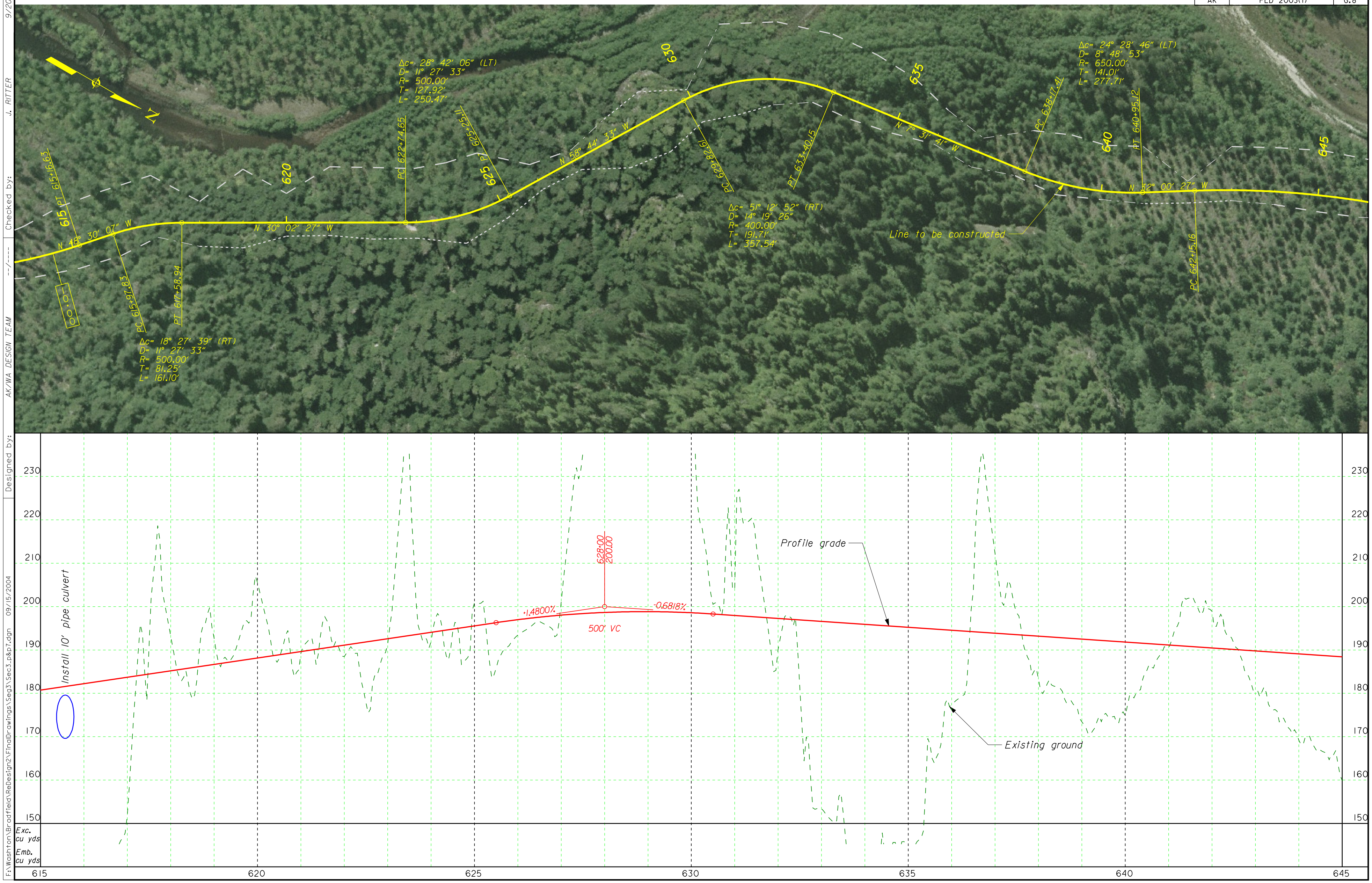
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg3\Sec3_p&p6.dgn



STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	G.8



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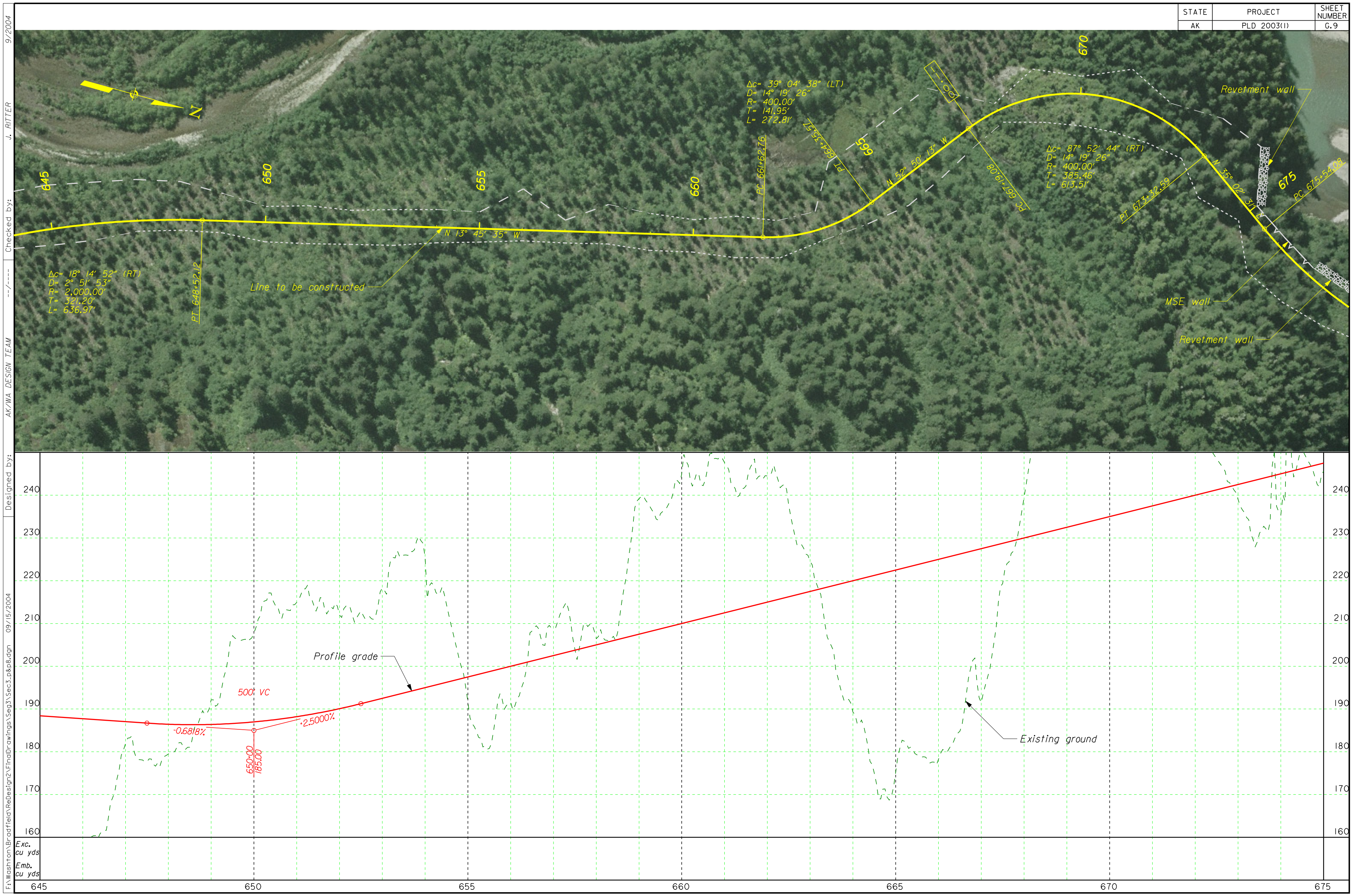
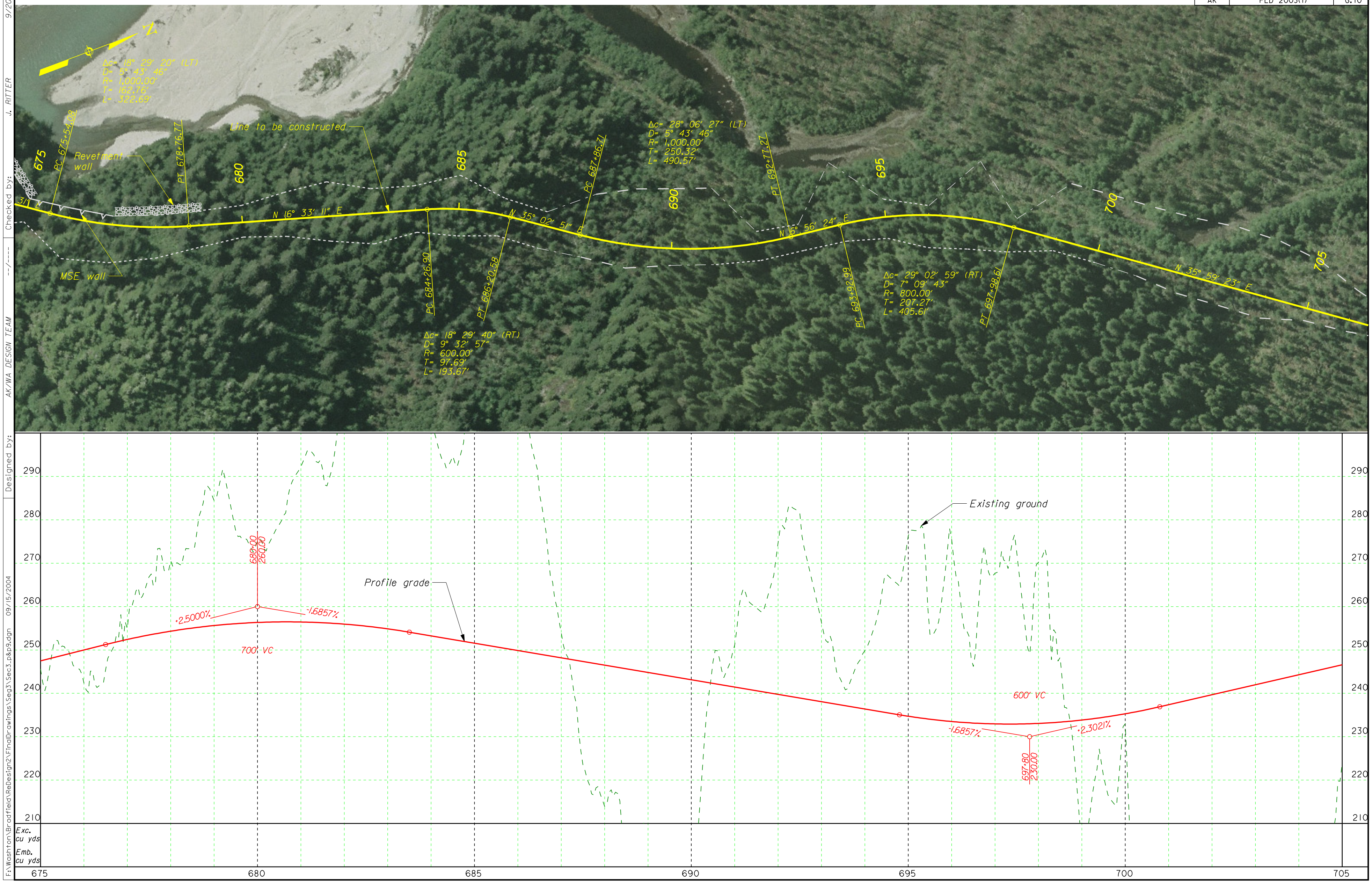

STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
G.9
9/2004
J. RITTER
Checked by:
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg3\Sec3_p&p8.dgn
N
645
650
655
660
665
670
675
Δc= 18° 14' 52" (RT)
D= 2° 51' 53"
R= 2,000.00'
T= 321.20'
L= 636.97'
PT 648+52.12
Line to be constructed
N 13° 45' 35" W
PC 661+62.76
Δc= 39° 04' 38" (LT)
D= 14° 19' 26"
R= 400.00'
T= 141.95'
L= 272.81'
PT 664+35.57
N 52° 50' 13" W
PC 667+19.08
Δc= 87° 52' 44" (RT)
D= 14° 19' 26"
R= 400.00'
T= 385.46'
L= 613.51'
PT 673+32.59
PC 675+54.98
Revetment wall
MSE wall
Revetment wall
Profile grade
500' VC
-0.6818%
2.5000%
650+00
185.00
Existing ground
240
230
220
210
200
190
180
170
160
Exc. cu yds
Emb. cu yds

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	G.10



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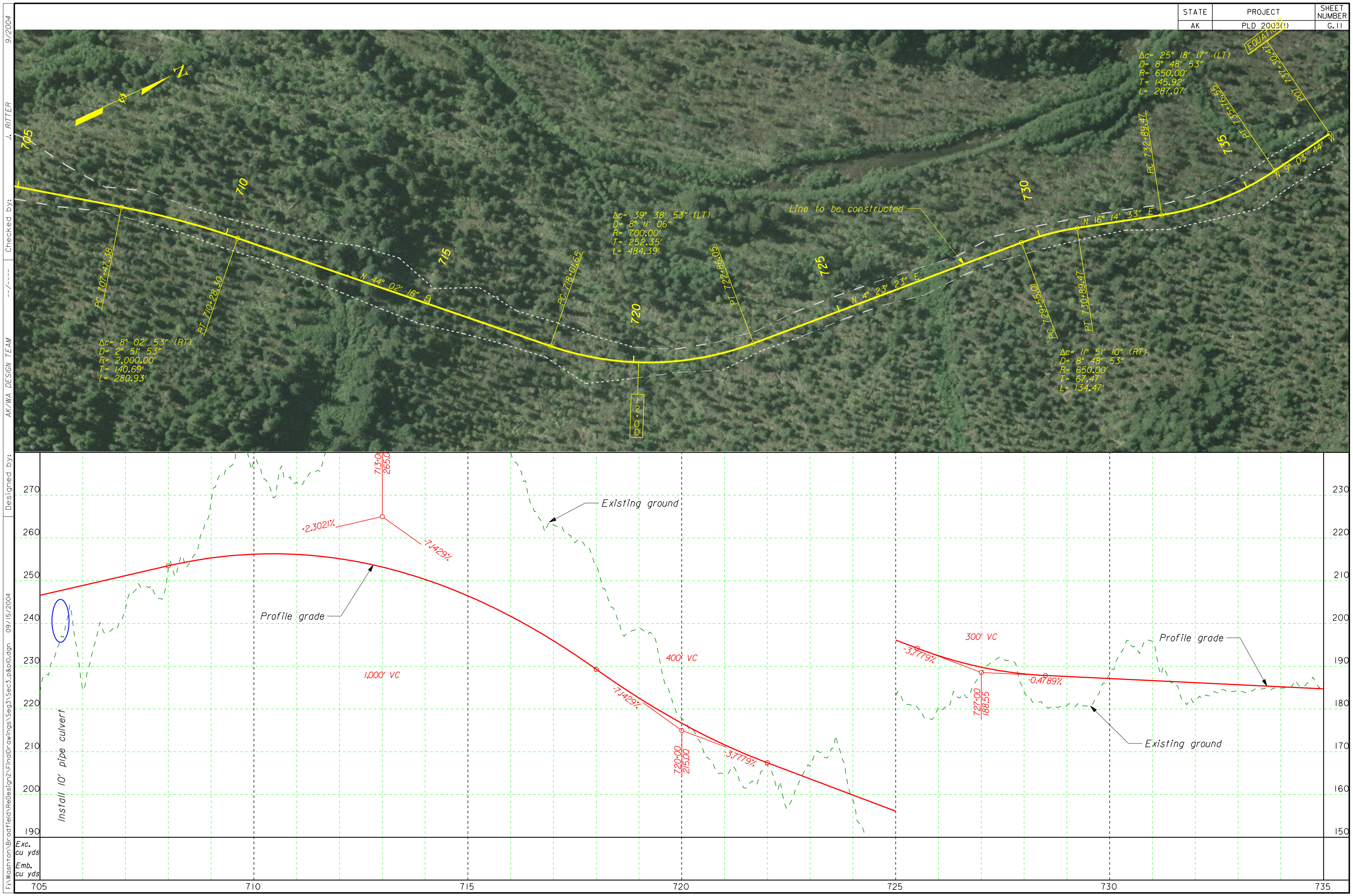
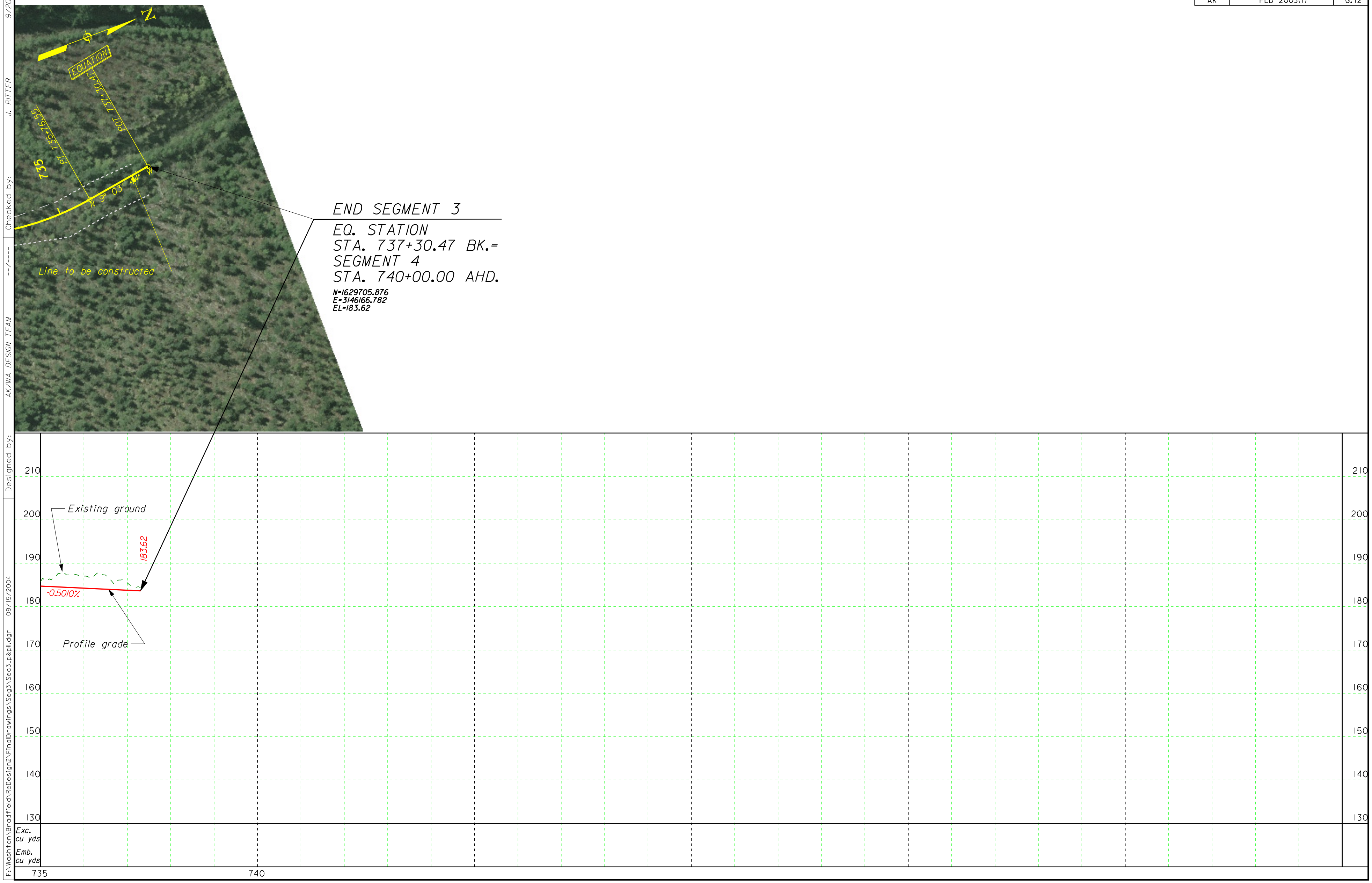
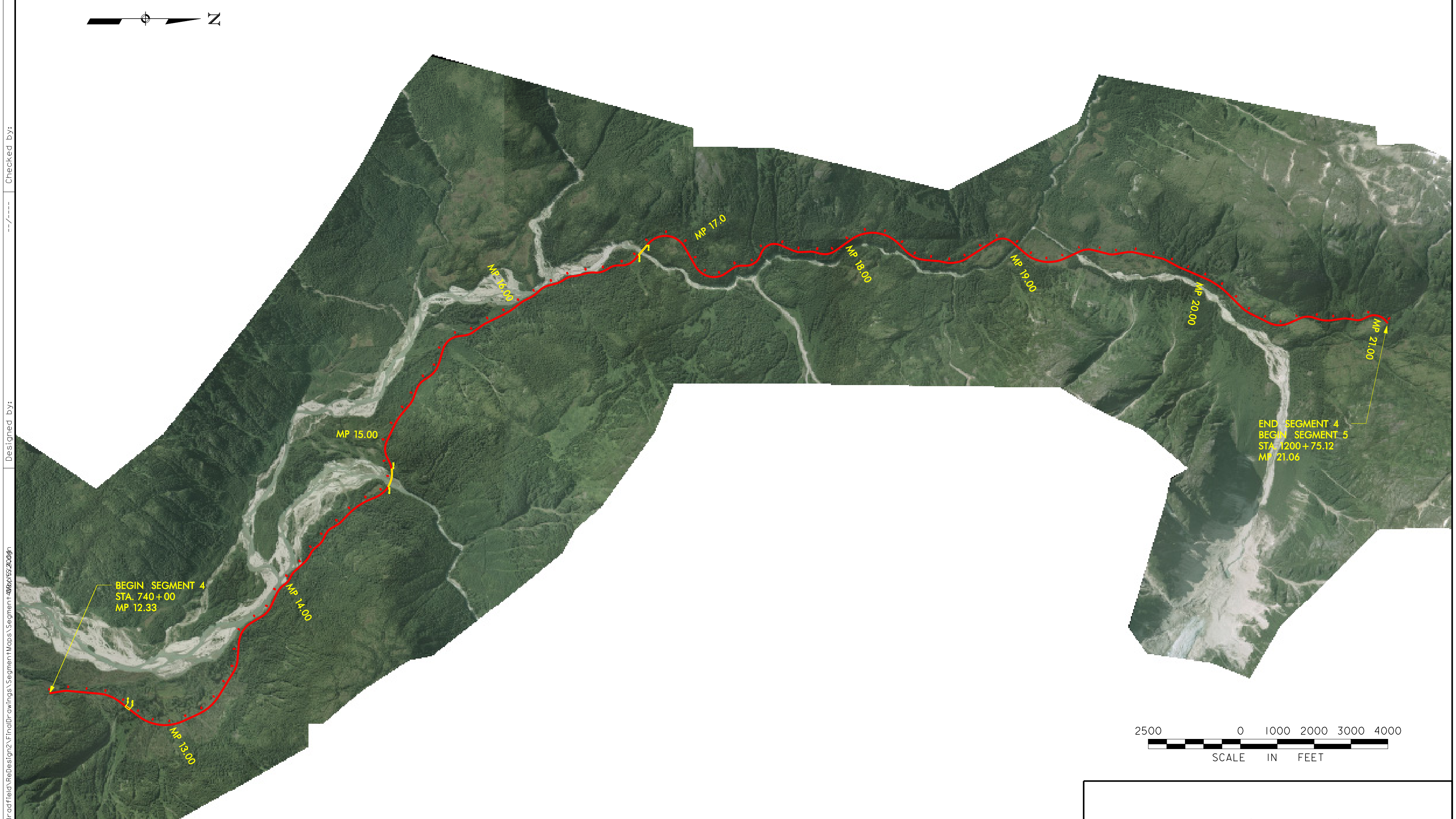

STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
G.11
EQUATION
N
705
710
715
720
725
730
735
Δc= 8° 02′ 53″ (RT)
D= 2° 51′ 53″
R= 2,000.00′
T= 140.69′
L= 280.93′
PC 707+47.38
PT 710+28.30
N 44° 02′ 16″ E
Δc= 39° 38′ 53″ (LT)
D= 8° 11′ 06″
R= 700.00′
T= 252.35′
L= 484.39′
PC 718+01.65
PT 722+86.05
N 4° 23′ 23″ E
Line to be constructed
Δc= 11° 51′ 10″ (RT)
D= 8° 48′ 53″
R= 650.00′
T= 67.47′
L= 134.47′
PC 729+55.01
PT 730+89.47
N 16° 14′ 33″ E
Δc= 25° 18′ 17″ (LT)
D= 8° 48′ 53″
R= 650.00′
T= 145.92′
L= 287.07′
PC 732+89.47
PT 735+76.55
N 9° 03′ 44″ W
Existing ground
Profile grade
+2.3021%
-7.1429%
713+00
265.00
1,000′ VC
-7.1429%
400′ VC
720+00
215.00
-3.7779%
Install 10′ pipe culvert
300′ VC
-3.7779%
-0.4789%
727+00
188.55
270
260
250
240
230
220
210
200
190
230
220
210
200
190
180
170
160
150
Exc. cu yds
Emb. cu yds
AK/WA DESIGN TEAM
J. RITTER
9/2004
Designed by:
Checked by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg3\Seg3_p&pl0.dgn

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	G.12



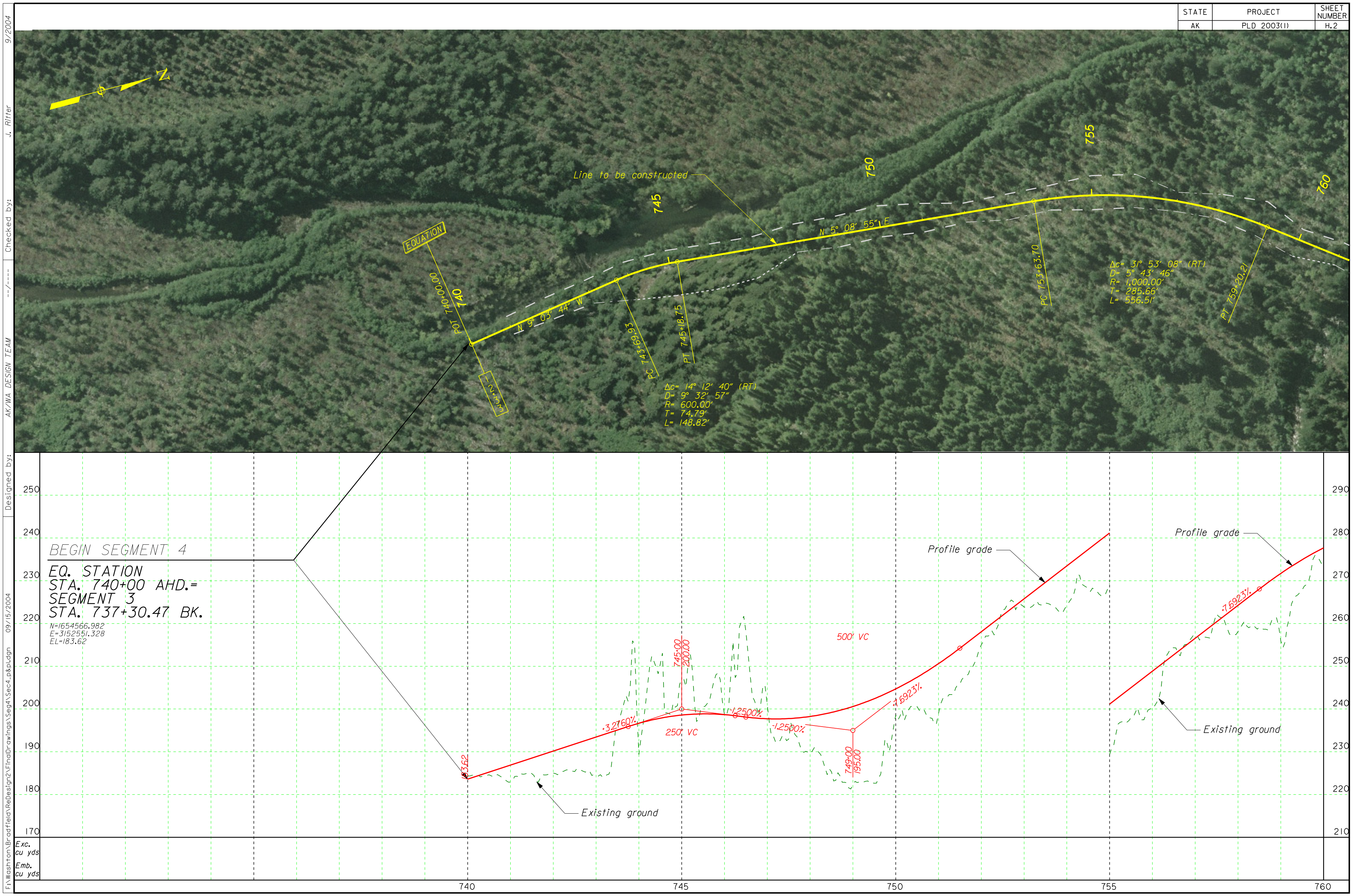
STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(3)	H.1



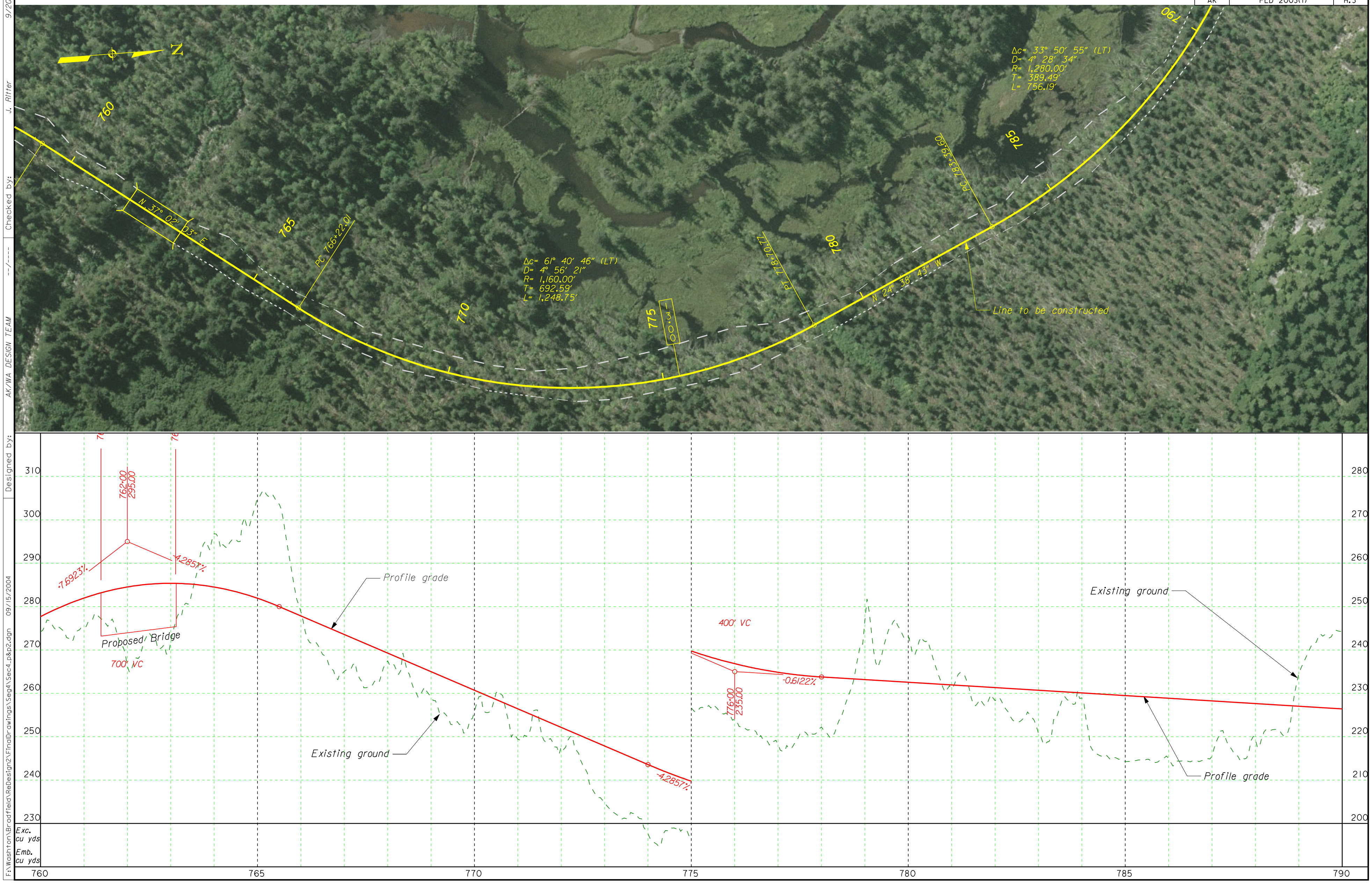
SEGMENT 4 MAP

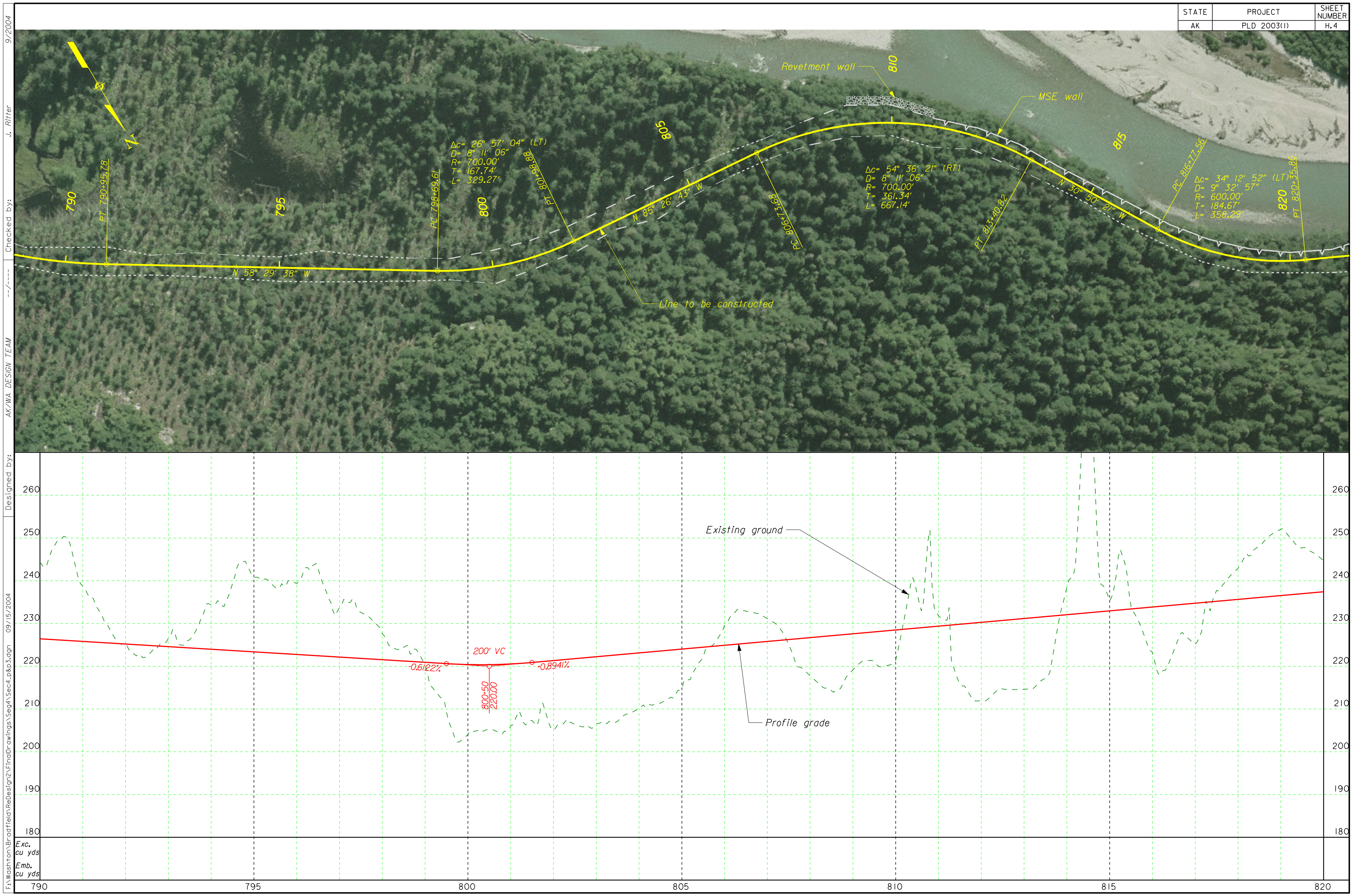
Designed by: --/---- Checked by: --/----

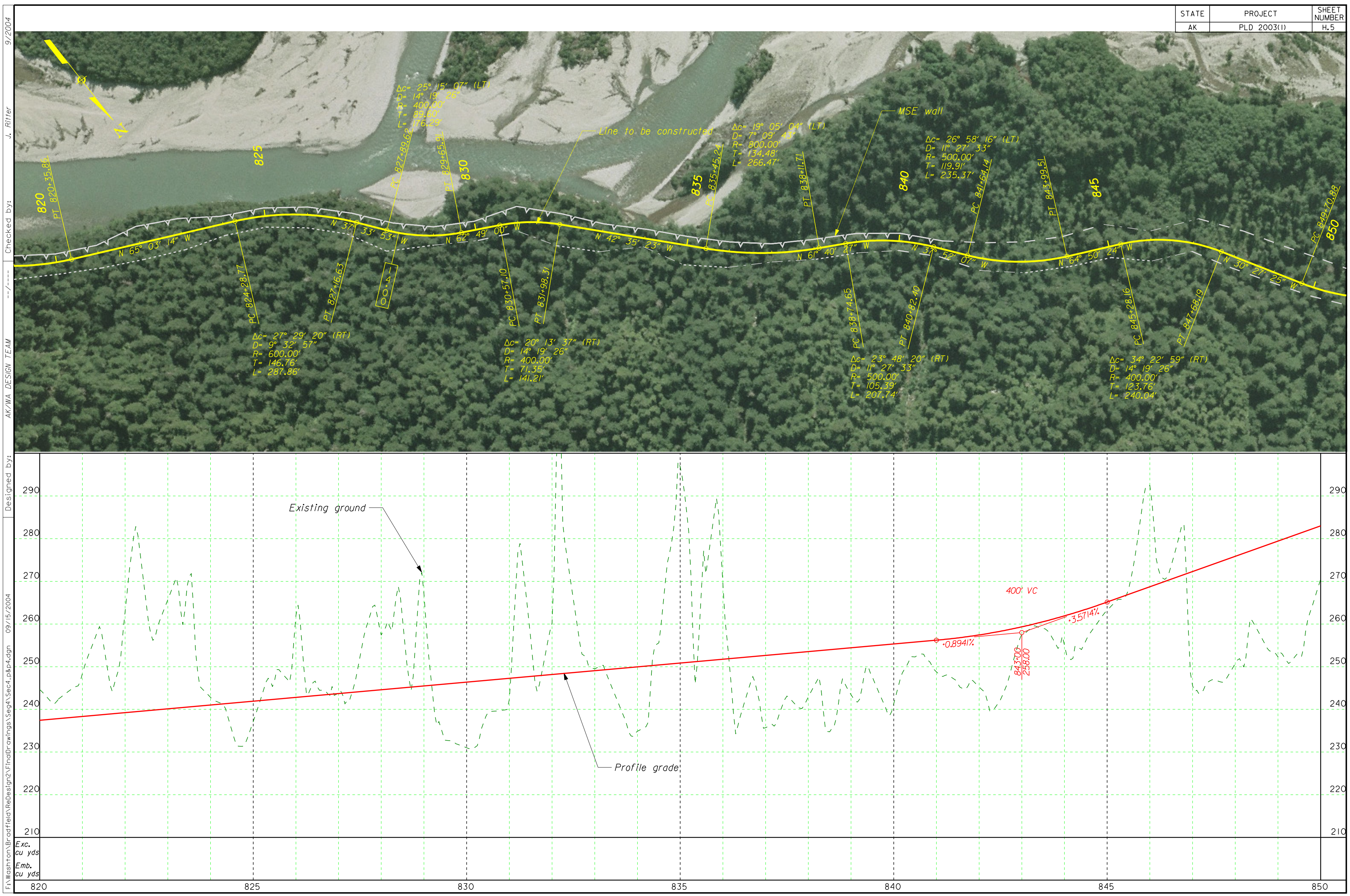
STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	H.2



STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	H.3

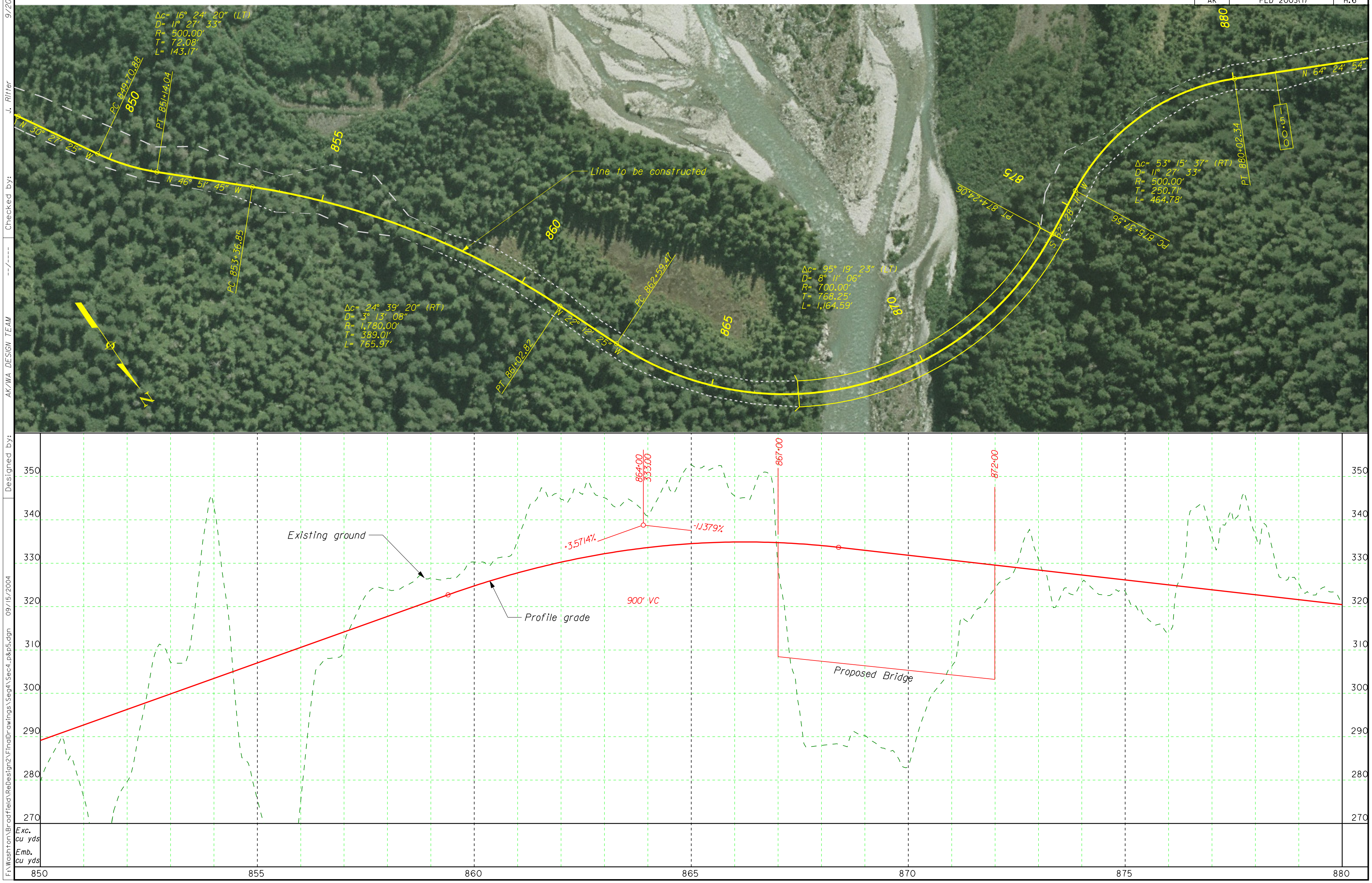



STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
H.4
9/2004
J. Ritter
Checked by:
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4.p&p3.dgn
N
790
795
800
805
810
815
820
PT 790+95.78
PC 798+69.61
PT 801+98.88
PC 806+73.68
PT 813+40.82
PC 816+77.56
PT 820+35.80
N 58° 29' 38" W
N 85° 26' 43" W
N 30° 50' 21" W
Δc= 26° 57' 04" (LT)
D= 8° 11' 06"
R= 700.00'
T= 167.74'
L= 329.27'
Δc= 54° 36' 21" (RT)
D= 8° 11' 06"
R= 700.00'
T= 361.34'
L= 667.14'
Δc= 34° 12' 52" (LT)
D= 9° 32' 57"
R= 600.00'
T= 184.67'
L= 358.29'
Revetment wall
MSE wall
Line to be constructed
Existing ground
Profile grade
200' VC
-0.6122%
+0.8941%
800+50
220.00
260
250
240
230
220
210
200
190
180
Exc. cu yds
Emb. cu yds



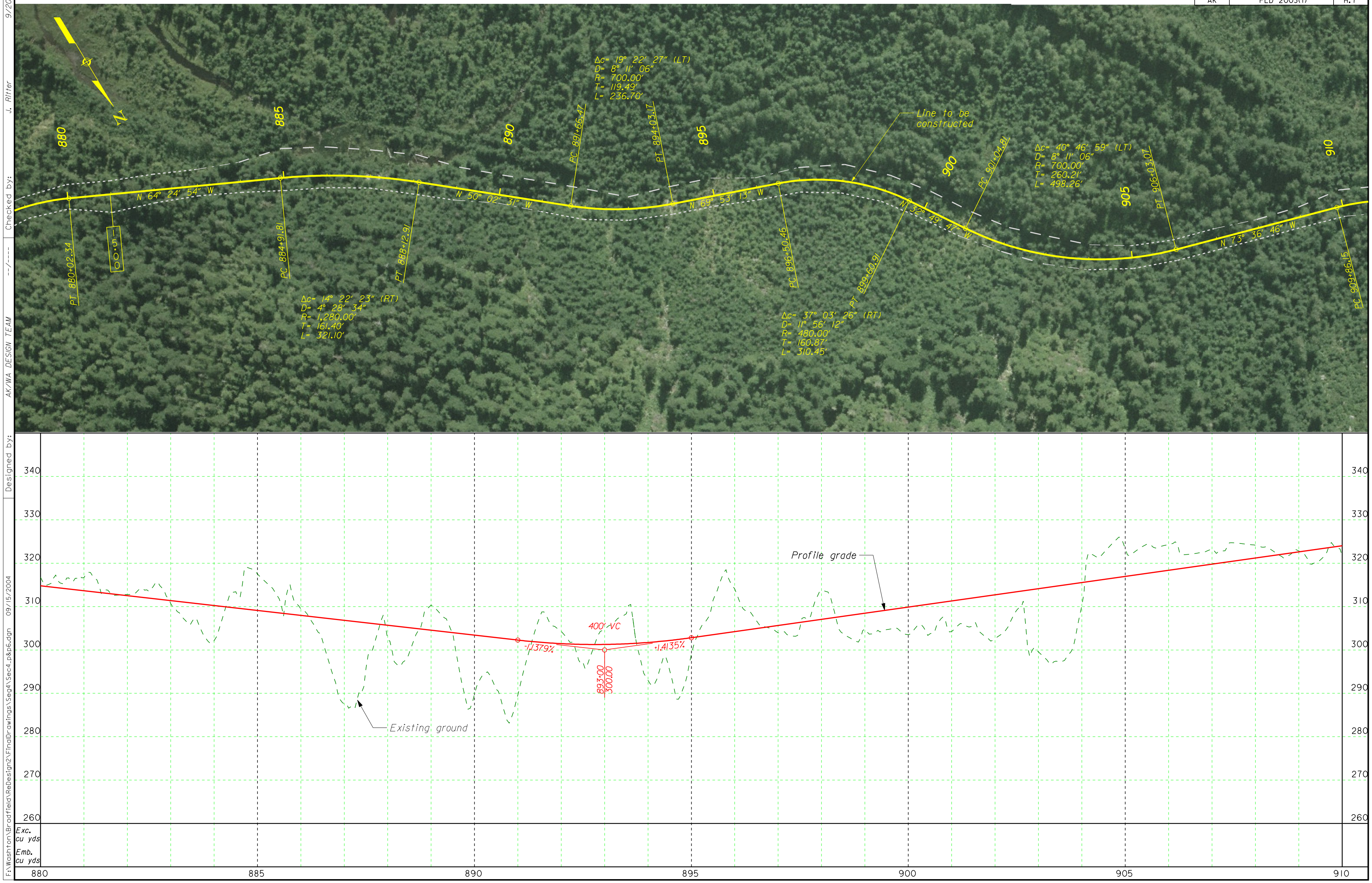
STATE AK
PROJECT PLD 2003(1)
SHEET NUMBER H.5
Designed by:
AK/WA DESIGN TEAM
Checked by:
J. Ritter
9/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4_p&p4.dgn
09/15/2004
820
825
830
835
840
845
850
PT 820+35.86
PC 824+28.77
PT 827+16.63
PC 827+89.62
PT 829+65.91
PC 830+57.10
PT 831+98.31
PC 835+45.24
PT 838+11.71
PC 838+74.65
PT 840+82.40
PC 841+64.14
PT 843+99.51
PC 845+28.16
PT 847+68.19
PC 849+70.88
N 65° 03' 14" W
N 37° 33' 53" W
N 62° 49' 00" W
N 42° 35' 23" W
N 61° 40' 47" W
N 37° 52' 07" W
N 64° 50' 24" W
N 30° 27' 25" W
Δc= 25° 15' 07" (LT)
D= 14° 19' 26"
R= 400.00'
T= 89.60'
L= 176.29'
Line to be constructed
Δc= 19° 05' 04" (LT)
D= 7° 09' 43"
R= 800.00'
T= 134.48'
L= 266.47'
MSE wall
Δc= 26° 58' 16" (LT)
D= 11° 27' 33"
R= 500.00'
T= 119.91'
L= 235.37'
Δc= 27° 29' 20" (RT)
D= 9° 32' 57"
R= 600.00'
T= 146.76'
L= 287.86'
Δc= 20° 13' 37" (RT)
D= 14° 19' 26"
R= 400.00'
T= 71.35'
L= 141.21'
Δc= 23° 48' 20" (RT)
D= 11° 27' 33"
R= 500.00'
T= 105.39'
L= 207.74'
Δc= 34° 22' 59" (RT)
D= 14° 19' 26"
R= 400.00'
T= 123.76'
L= 240.04'
Existing ground
Profile grade
400' VC
+0.8941%
+3.5714%
843+00
258.00
290
280
270
260
250
240
230
220
210
Exc. cu yds
Emb. cu yds

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	H.6



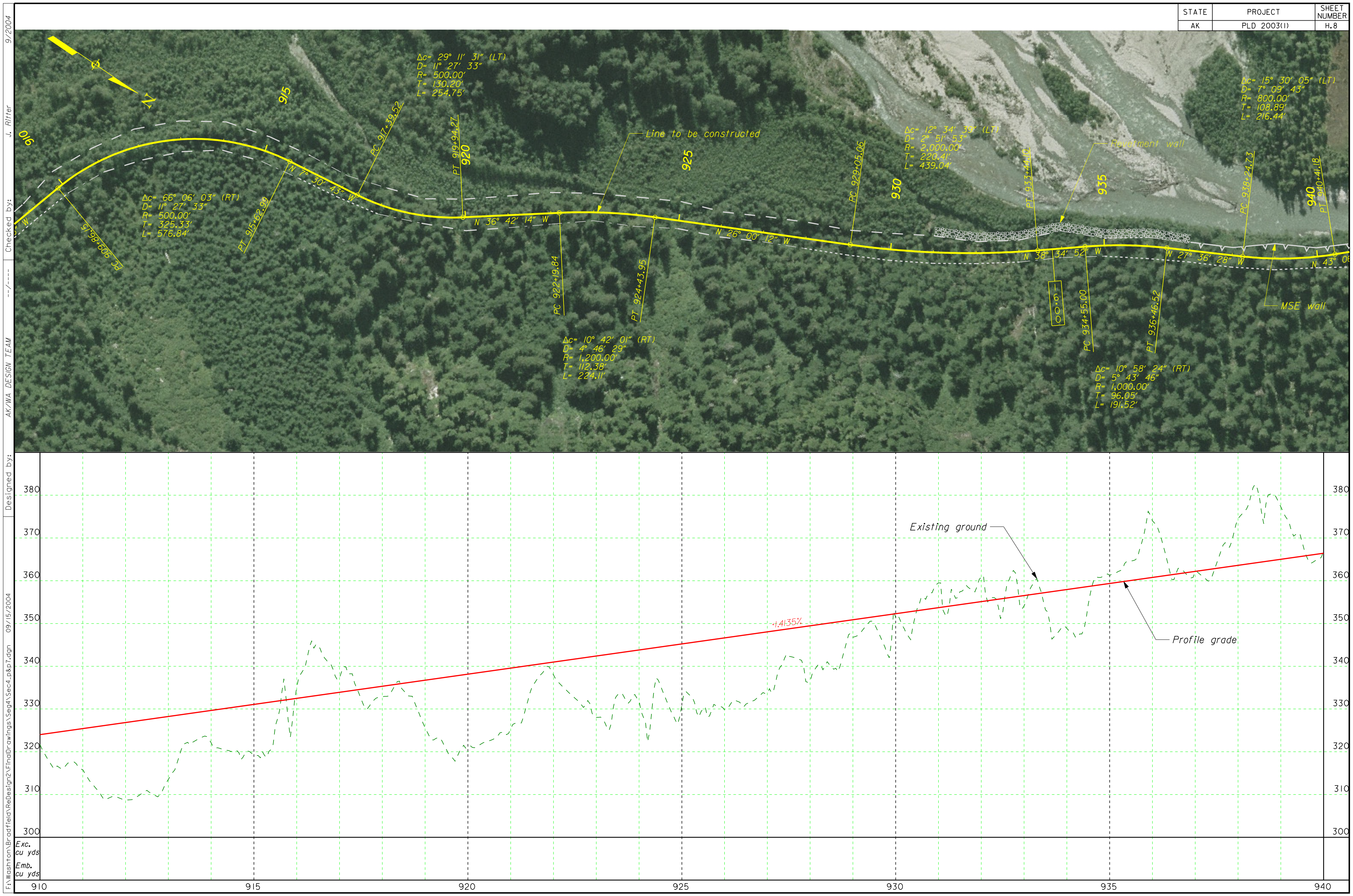
9/2/2004
J. Ritter
Checked by:
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4_p&p5.dgn

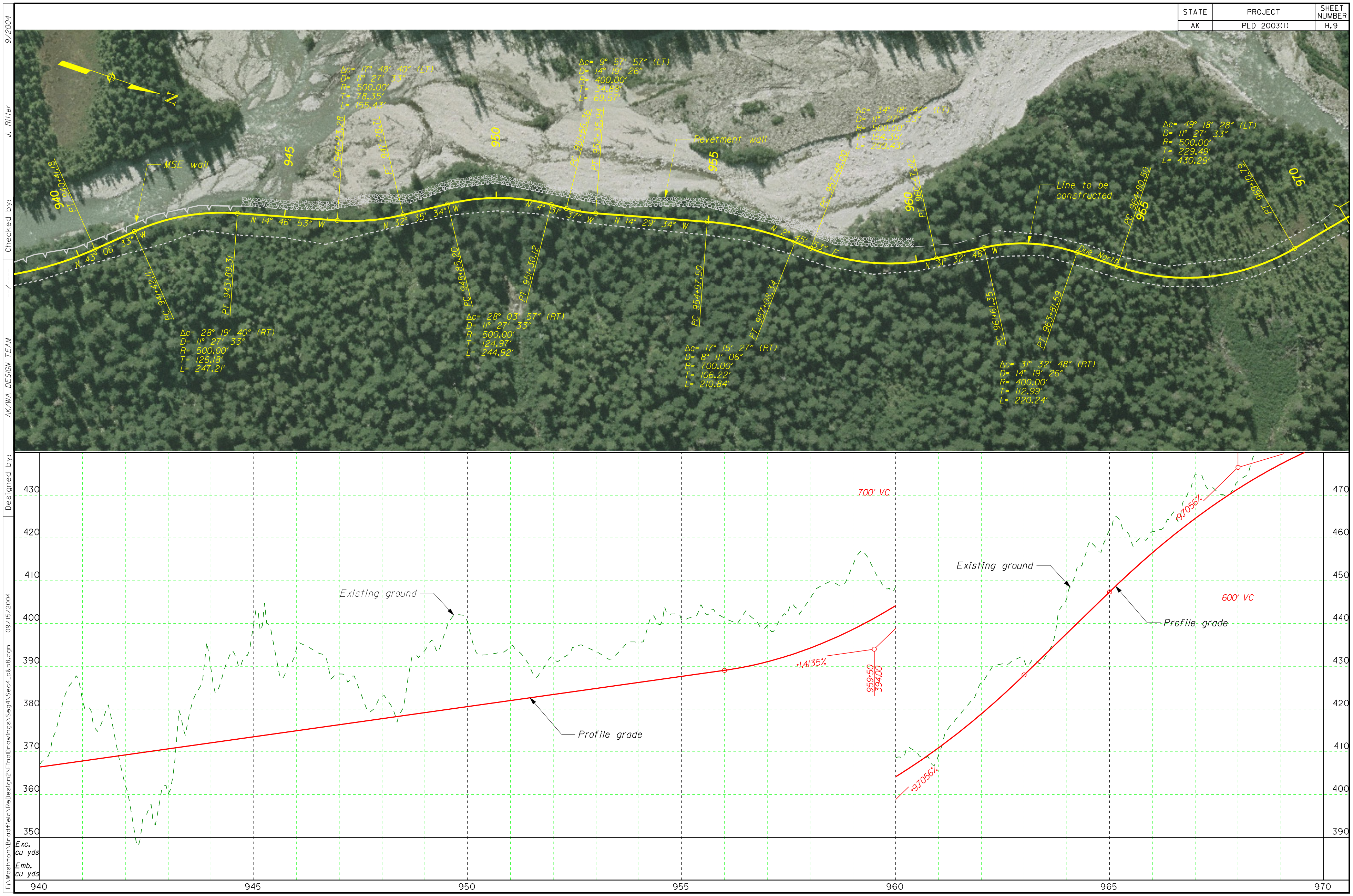
STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	H.7



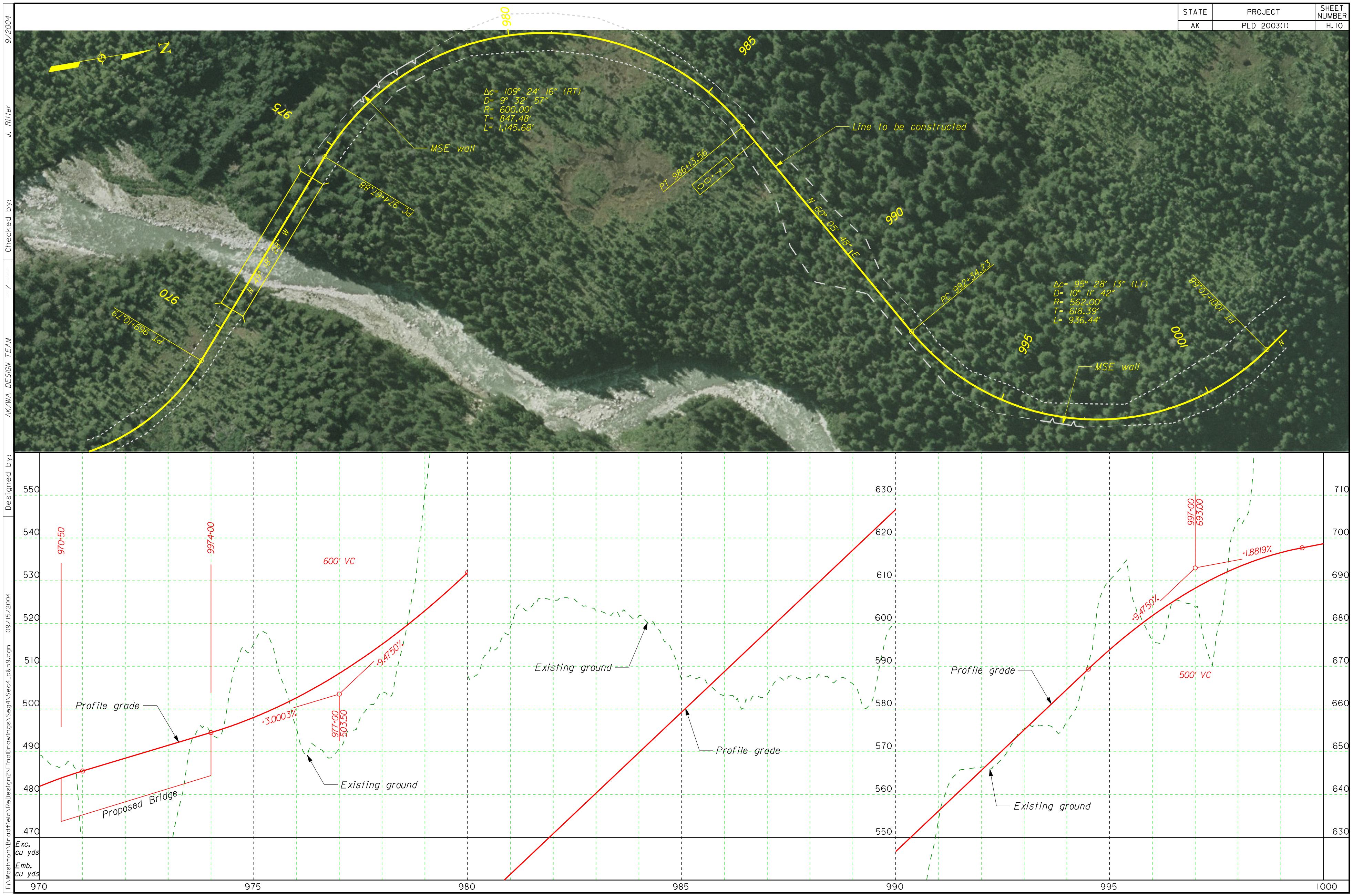
Designed by: AK/WA DESIGN TEAM --/---- Checked by: J. Ritter 9/2004

F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4.p&p6.dgn 09/15/2004


STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
H.8
9/2004
J. Ritter
Checked by:
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4_p&p7.dgn
N
Δc= 29° 11' 31" (LT)
D= 11° 27' 33"
R= 500.00'
T= 130.20'
L= 254.75'
Δc= 66° 06' 03" (RT)
D= 11° 27' 33"
R= 500.00'
T= 325.33'
L= 576.84'
Δc= 10° 42' 01" (RT)
D= 4° 46' 29"
R= 1,200.00'
T= 112.38'
L= 224.11'
Δc= 12° 34' 39" (LT)
D= 2° 51' 53"
R= 2,000.00'
T= 220.41'
L= 439.04'
Δc= 10° 58' 24" (RT)
D= 5° 43' 46"
R= 1,000.00'
T= 96.05'
L= 191.52'
Δc= 15° 30' 05" (LT)
D= 7° 09' 43"
R= 800.00'
T= 108.89'
L= 216.44'
PC 909+86.15
PT 915+62.99
PC 917+39.52
PT 919+94.27
PC 922+19.84
PT 924+43.95
PC 929+05.06
PT 933+44.10
PC 934+55.00
PT 936+46.52
PC 938+24.73
PT 940+41.18
N 7° 30' 43" W
N 36° 42' 14" W
N 26° 00' 12" W
N 38° 34' 52" W
N 27° 36' 28" W
N 43° 06'
Line to be constructed
Revetment wall
MSE wall
910
915
920
925
930
935
940
Existing ground
Profile grade
+1.4135%
380
370
360
350
340
330
320
310
300
Exc. cu yds
Emb. cu yds



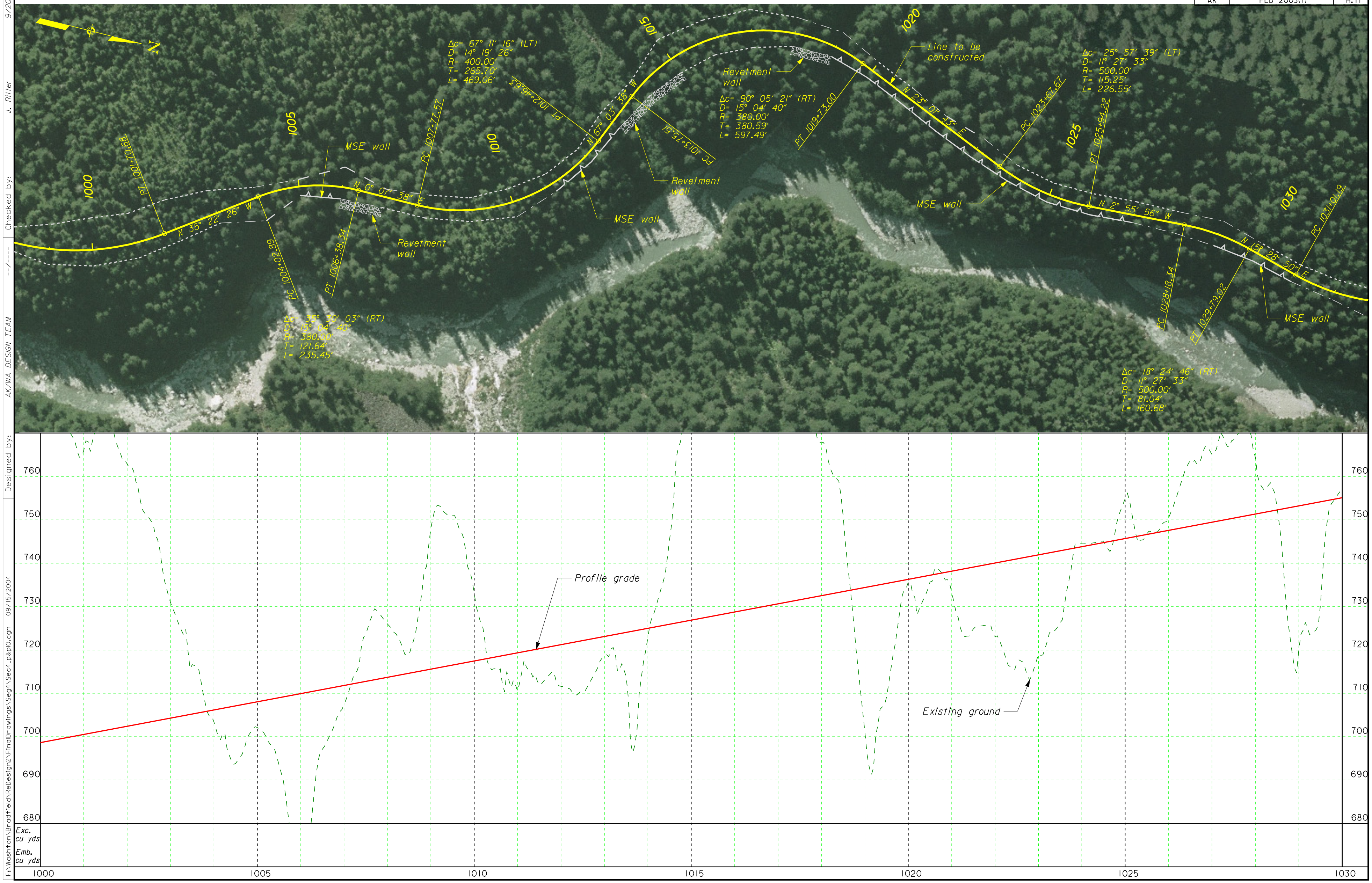
STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
H.9
9/2004
J. Ritter
Checked by:
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4_p&p8.dgn
N
MSE wall
Revetment wall
Line to be constructed
Due North
940
945
950
955
960
965
970
PT 940+41.18
PC 941+42.11
PT 943+89.31
PC 946+23.28
PT 947+78.71
PC 948+85.20
PT 951+30.12
PC 951+56.36
PT 952+25.94
PC 954+97.50
PT 957+08.34
PC 957+48.50
PT 960+17.42
PC 961+61.35
PT 963+81.59
PC 964+80.50
PT 969+10.79
N 43° 06' 33" W
N 14° 46' 53" W
N 32° 35' 34" W
N 4° 37' 37" W
N 14° 29' 34" W
N 2° 45' 53" E
N 31° 32' 48" W
Δc= 28° 19' 40" (RT)
D= 11° 27' 33"
R= 500.00'
T= 126.18'
L= 247.21'
Δc= 17° 48' 40" (LT)
D= 11° 27' 33"
R= 500.00'
T= 78.35'
L= 155.43'
Δc= 28° 03' 57" (RT)
D= 11° 27' 33"
R= 500.00'
T= 124.97'
L= 244.92'
Δc= 9° 57' 57" (LT)
D= 14° 19' 26"
R= 400.00'
T= 34.88'
L= 69.57'
Δc= 17° 15' 27" (RT)
D= 8° 11' 06"
R= 700.00'
T= 106.22'
L= 210.84'
Δc= 34° 18' 42" (LT)
D= 11° 27' 33"
R= 500.00'
T= 154.35'
L= 299.43'
Δc= 31° 32' 48" (RT)
D= 14° 19' 26"
R= 400.00'
T= 112.99'
L= 220.24'
Δc= 49° 18' 28" (LT)
D= 11° 27' 33"
R= 500.00'
T= 229.49'
L= 430.29'
Existing ground
Profile grade
700' VC
1.4135%
959+50
394.00
Existing ground
Profile grade
600' VC
9.7056%
9.7056%
430
420
410
400
390
380
370
360
350
470
460
450
440
430
420
410
400
390
Exc. cu yds
Emb. cu yds
940
945
950
955
960
965
970

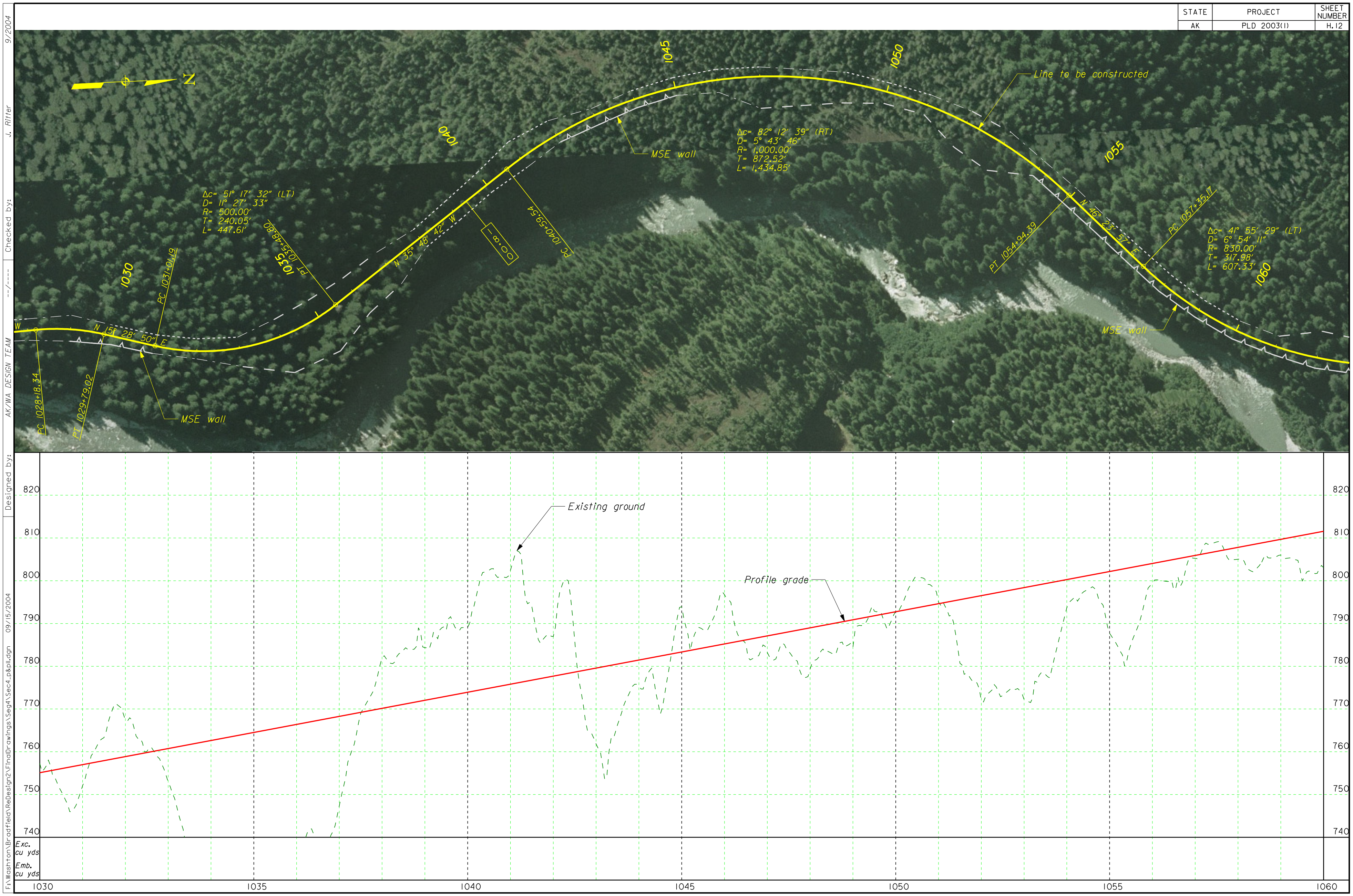

STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
H.10
N
975
970
980
985
990
995
1000
Δc= 109° 24' 16" (RT)
D= 9° 32' 57"
R= 600.00'
T= 847.48'
L= 1,145.68'
MSE wall
Line to be constructed
PT 986+13.56
PC 974+67.88
PT 969+10.79
N 60° 05' 48" E
PC 992+34.23
Δc= 95° 28' 13" (LT)
D= 10° 11' 42"
R= 562.00'
T= 618.39'
L= 936.44'
PT 1001+70.68
MSE wall
970+50
9974+00
600' VC
-3.0003%
-9.4750%
977+00
503.50
Profile grade
Proposed Bridge
Existing ground
Existing ground
Profile grade
Profile grade
Existing ground
-9.4750%
997+00
693.00
-1.8819%
500' VC
Exc. cu yds
Emb. cu yds
9/2004
J. Ritter
Checked by:
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Sec4\Sec4_p&p9.dgn

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	H.11

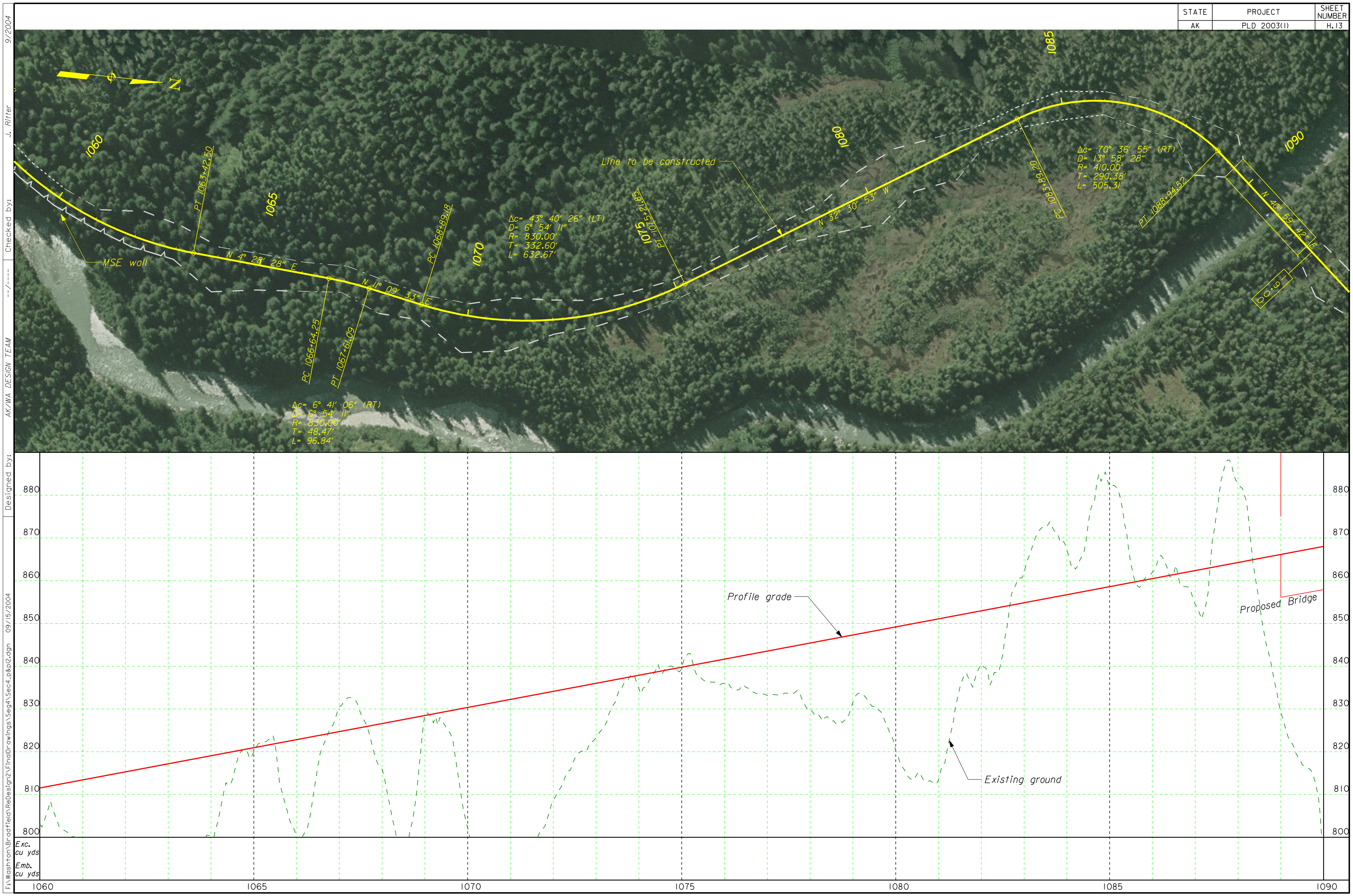
9/2004 J. Ritter Checked by: --/---- AK/WA DESIGN TEAM Designed by:

F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4_p&pl0.dgn 09/15/2004

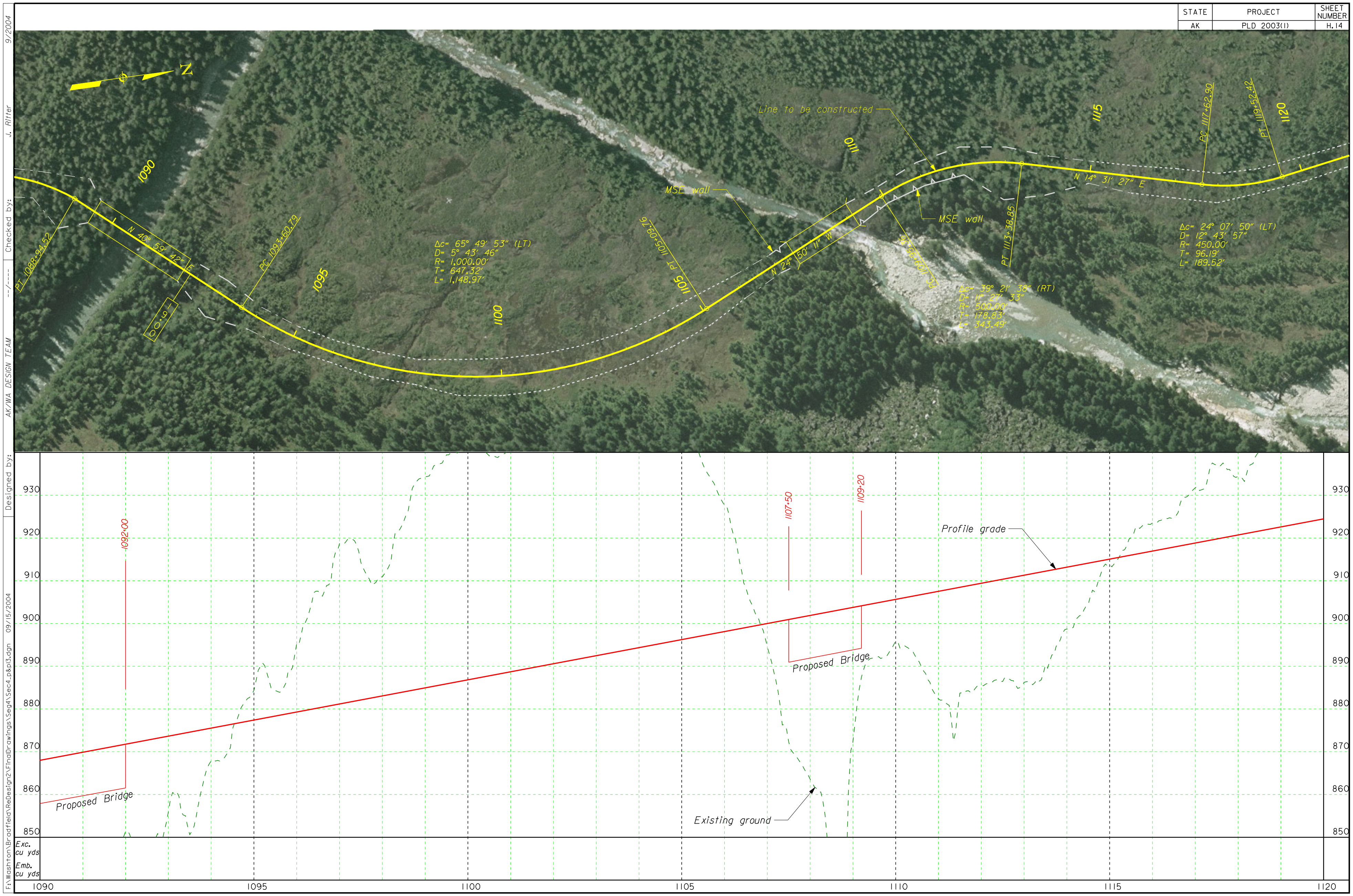


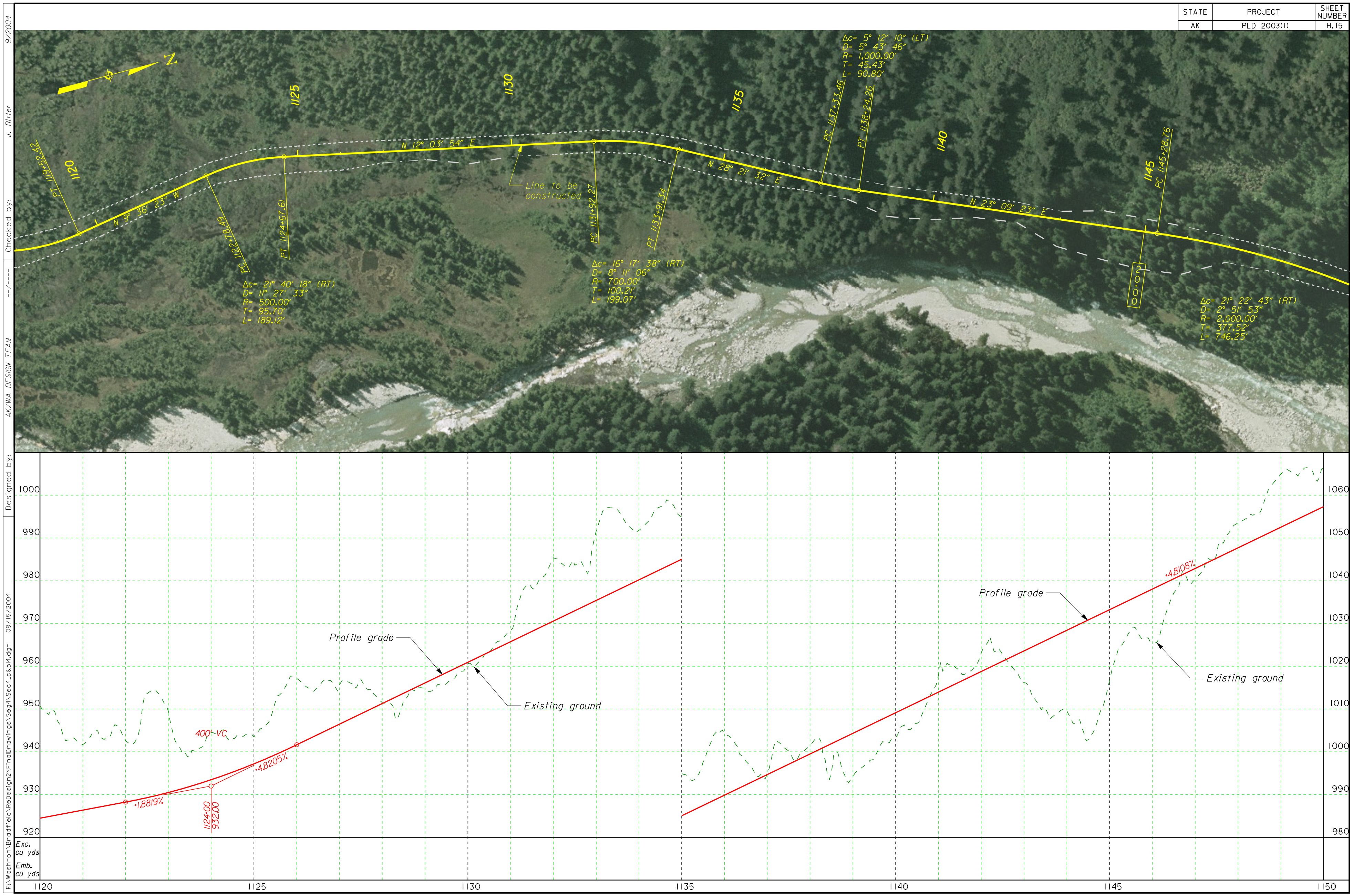


STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
H.12
9/2004
J. Ritter
Checked by:
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4_p&pll.dgn
N
Line to be constructed
MSE wall
MSE wall
MSE wall
Δc= 51° 17' 32" (LT)
D= 11° 27' 33"
R= 500.00'
T= 240.05'
L= 447.61'
Δc= 82° 12' 39" (RT)
D= 5° 43' 46"
R= 1,000.00'
T= 872.52'
L= 1,434.85'
Δc= 41° 55' 29" (LT)
D= 6° 54' 11"
R= 830.00'
T= 317.98'
L= 607.33'
PC 1028+18.34
PT 1029+79.02
PC 1031+01.19
PT 1035+48.80
PC 1040+59.54
PT 1054+94.39
PC 1057+35.17
N 15° 28' 50" E
N 35° 48' 42" W
N 46° 23' 57" E
1030
1035
1040
1045
1050
1055
1060
Existing ground
Profile grade
820
810
800
790
780
770
760
750
740
Exc. cu yds
Emb. cu yds



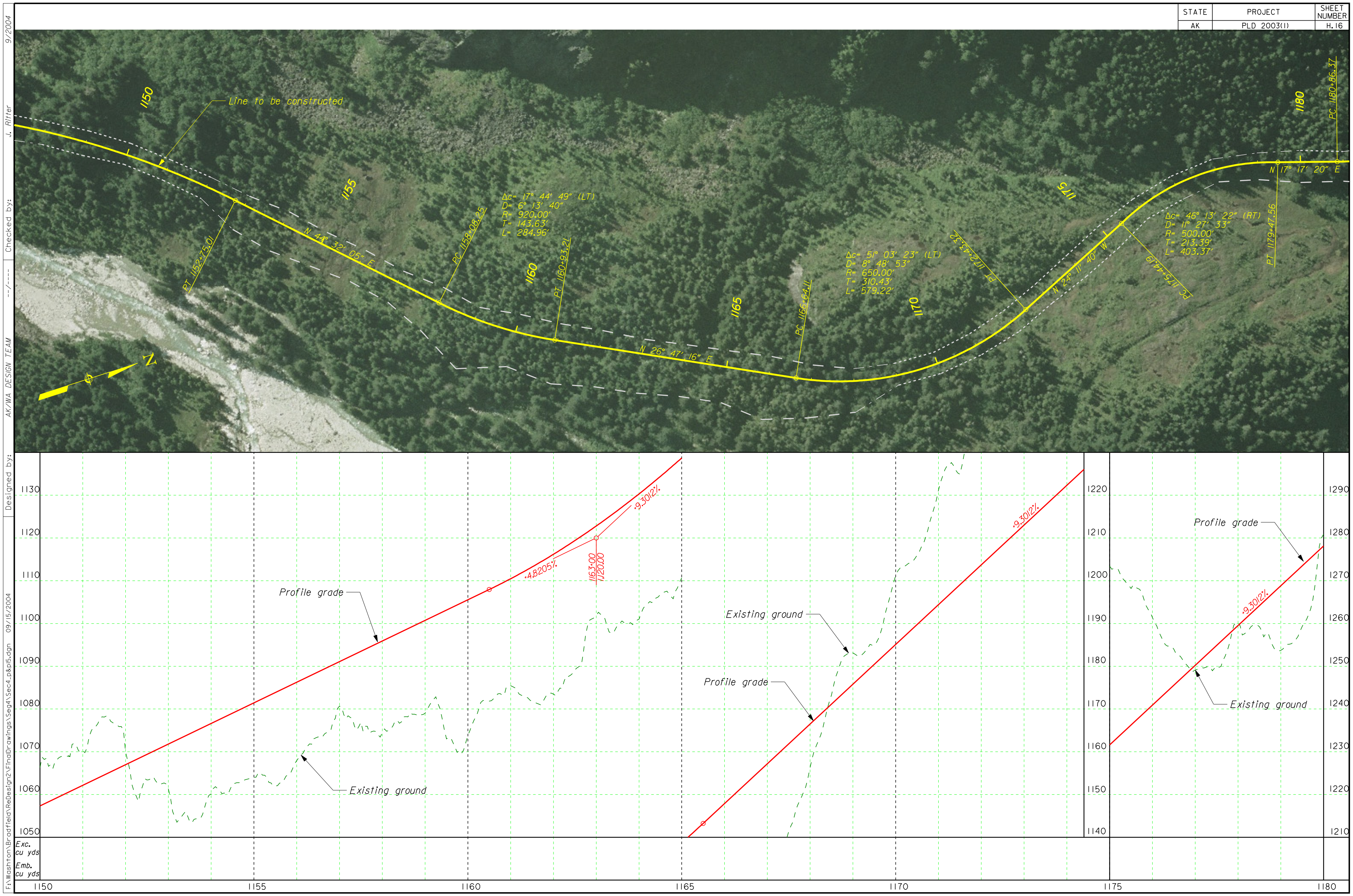
STATE
AK
PROJECT
PLD 2003(1)
SHEET NUMBER
H.13
AK/WA DESIGN TEAM
J. Ritter
9/2004
Designed by:
Checked by:
N
1060
1065
1070
1075
1080
1085
1090
MSE wall
PT 1063+42.50
N 4° 28' 28" E
PC 1066+64.25
PT 1067+61.09
N 11° 09' 33" E
PC 1068+69.18
Δc= 6° 41' 06" (RT)
D= 6° 54' 11"
R= 830.00'
T= 48.47'
L= 96.84'
Δc= 43° 40' 26" (LT)
D= 6° 54' 11"
R= 830.00'
T= 332.60'
L= 632.67'
PT 1075+21.85
Line to be constructed
N 32° 30' 53" W
PC 1083+89.20
Δc= 70° 36' 55" (RT)
D= 13° 58' 28"
R= 410.00'
T= 290.38'
L= 505.31'
PT 1088+94.52
N 40° 59' 42" E
Profile grade
Existing ground
Proposed Bridge
800
810
820
830
840
850
860
870
880
Exc. cu yds
Emb. cu yds
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4_p&p12.dgn
09/15/2004

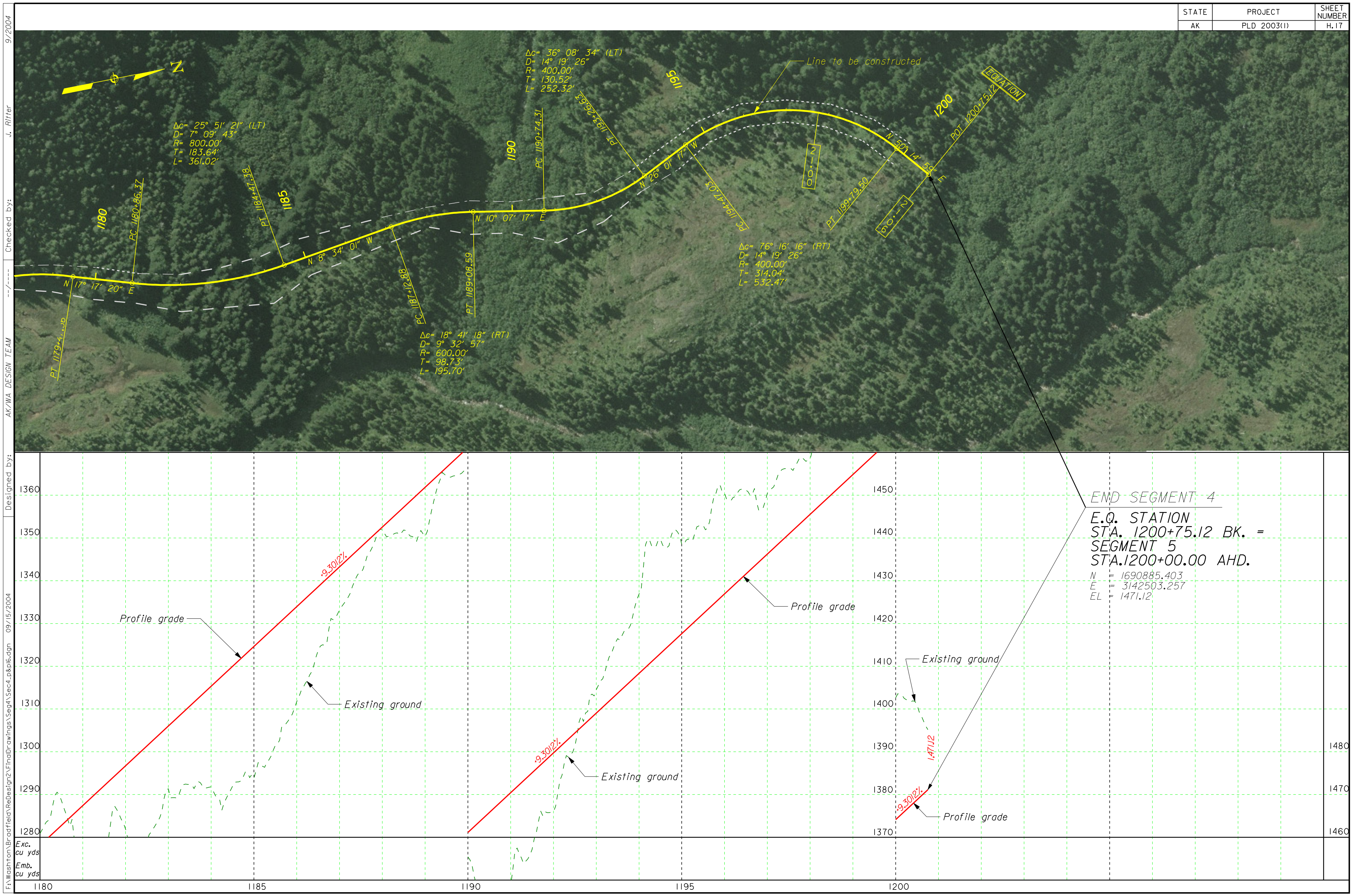

STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
H.14
9/2004
J. Ritter
Checked by:
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4.p&pl3.dgn
N
1090
1095
1100
1105
1110
1115
1120
PT 1088+94.52
N 40° 59' 42" E
PC 1093+60.79
Δc= 65° 49' 53" (LT)
D= 5° 43' 46"
R= 1,000.00'
T= 647.32'
L= 1,148.97'
PT 1105+09.76
MSE wall
N 24° 50' 11" W
Line to be constructed
MSE wall
PT 1113+38.85
Δc= 39° 21' 38" (RT)
D= 11° 27' 33"
R= 500.00'
T= 178.83'
L= 343.49'
N 14° 31' 27" E
PC 1117+62.90
PT 1119+52.42
Δc= 24° 07' 50" (LT)
D= 12° 43' 57"
R= 450.00'
T= 96.19'
L= 189.52'
930
920
910
900
890
880
870
860
850
1092+00
1107+50
1109+20
Profile grade
Proposed Bridge
Proposed Bridge
Existing ground
Exc. cu yds
Emb. cu yds



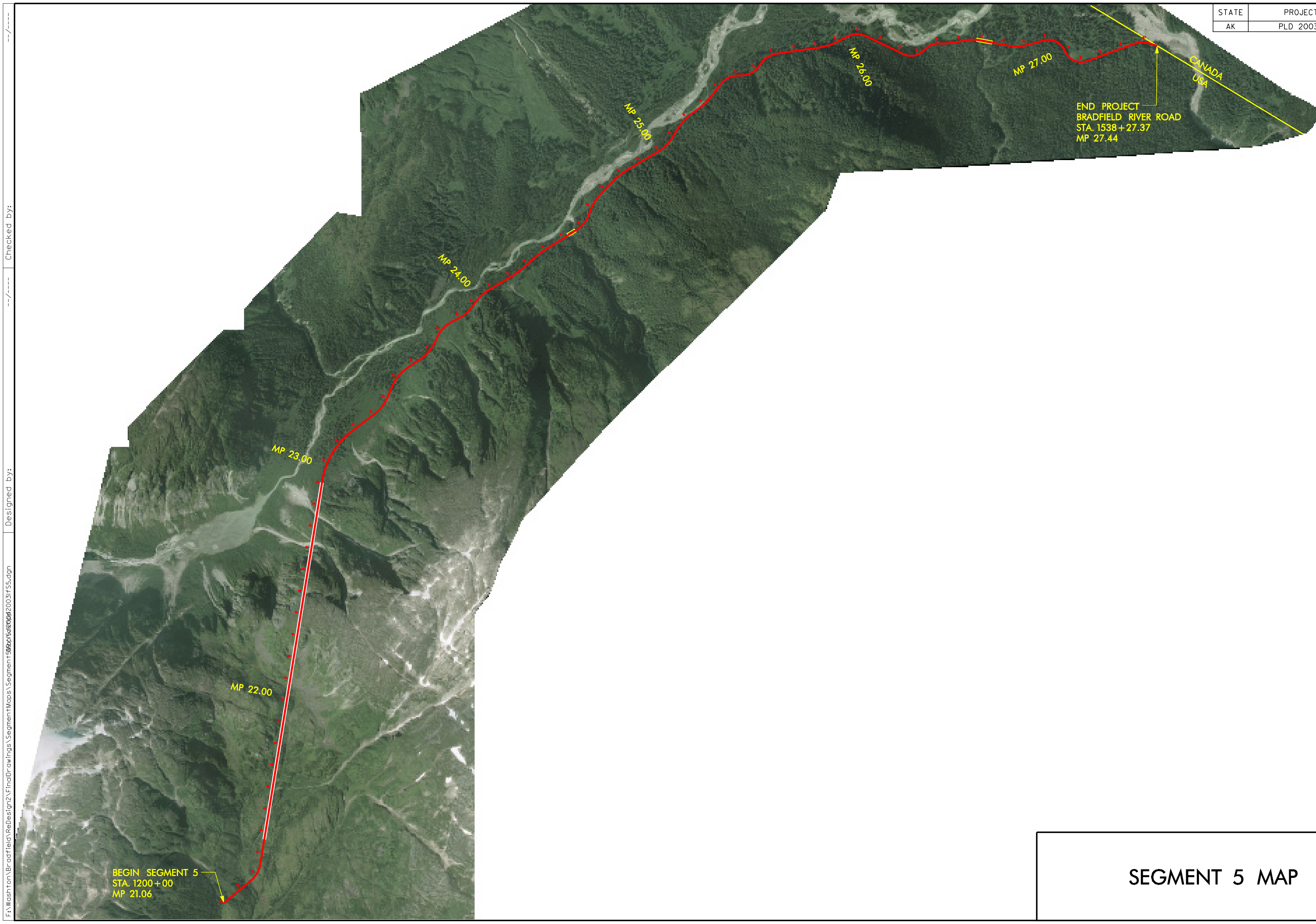
STATE | PROJECT | SHEET NUMBER
AK | PLD 2003(1) | H.15
N
1120
1125
1130
1135
1140
1145
PT 1119+52.42
N 9° 36' 23" W
PC 1122+78.49
PT 1124+67.61
Δc= 21° 40' 18" (RT)
D= 11° 27' 33"
R= 500.00'
T= 95.70'
L= 189.12'
N 12° 03' 54" E
Line to be constructed
PC 1131+92.27
PT 1133+91.34
Δc= 16° 17' 38" (RT)
D= 8° 11' 06"
R= 700.00'
T= 100.21'
L= 199.07'
N 28° 21' 32" E
PC 1137+33.46
PT 1138+24.26
Δc= 5° 12' 10" (LT)
D= 5° 43' 46"
R= 1,000.00'
T= 45.43'
L= 90.80'
N 23° 09' 23" E
PC 1145+28.76
2000
Δc= 21° 22' 43" (RT)
D= 2° 51' 53"
R= 2,000.00'
T= 377.52'
L= 746.25'
9/2004
J. Ritter
Checked by:
--/--
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4.p&pl4.dgn
Profile grade
Existing ground
400' VC
+1.8819%
+4.8205%
1124+00
932.00
+4.8108%
Exc. cu yds
Emb. cu yds
1000
990
980
970
960
950
940
930
920
1060
1050
1040
1030
1020
1010
1000
990
980
1120
1125
1130
1135
1140
1145
1150

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	H.16




STATE
AK
PROJECT
PLD 2003(1)
SHEET NUMBER
H.17
N
Δc= 25° 51' 21" (LT)
D= 7° 09' 43"
R= 800.00'
T= 183.64'
L= 361.02'
Δc= 36° 08' 34" (LT)
D= 14° 19' 26"
R= 400.00'
T= 130.52'
L= 252.32'
Line to be constructed
EQUATION
POT 1200+75.12
1180
1185
1190
1195
1200
PC 1180+86.37
PT 1184+47.38
PC 1190+74.31
PC 1194+47.03
PT 1199+79.50
PC 1187+12.88
PT 1189+08.59
N 17° 17' 20" E
N 8° 34' 01" W
N 10° 07' 17" E
N 26° 01' 17" W
Δc= 76° 16' 16" (RT)
D= 14° 19' 26"
R= 400.00'
T= 314.04'
L= 532.47'
Δc= 18° 41' 18" (RT)
D= 9° 32' 57"
R= 600.00'
T= 98.73'
L= 195.70'
END SEGMENT 4
E.Q. STATION
STA. 1200+75.12 BK. =
SEGMENT 5
STA.1200+00.00 AHD.
N = 1690885.403
E = 3142503.257
EL = 1471.12
Profile grade
Existing ground
-9.3012%
1.47112
Exc. cu yds
Emb. cu yds
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400
1410
1420
1430
1440
1450
1460
1470
1480
AK/WA DESIGN TEAM
Designed by:
Checked by:
J. Ritter
9/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg4\Sec4_p&p16.dgn 09/15/2004

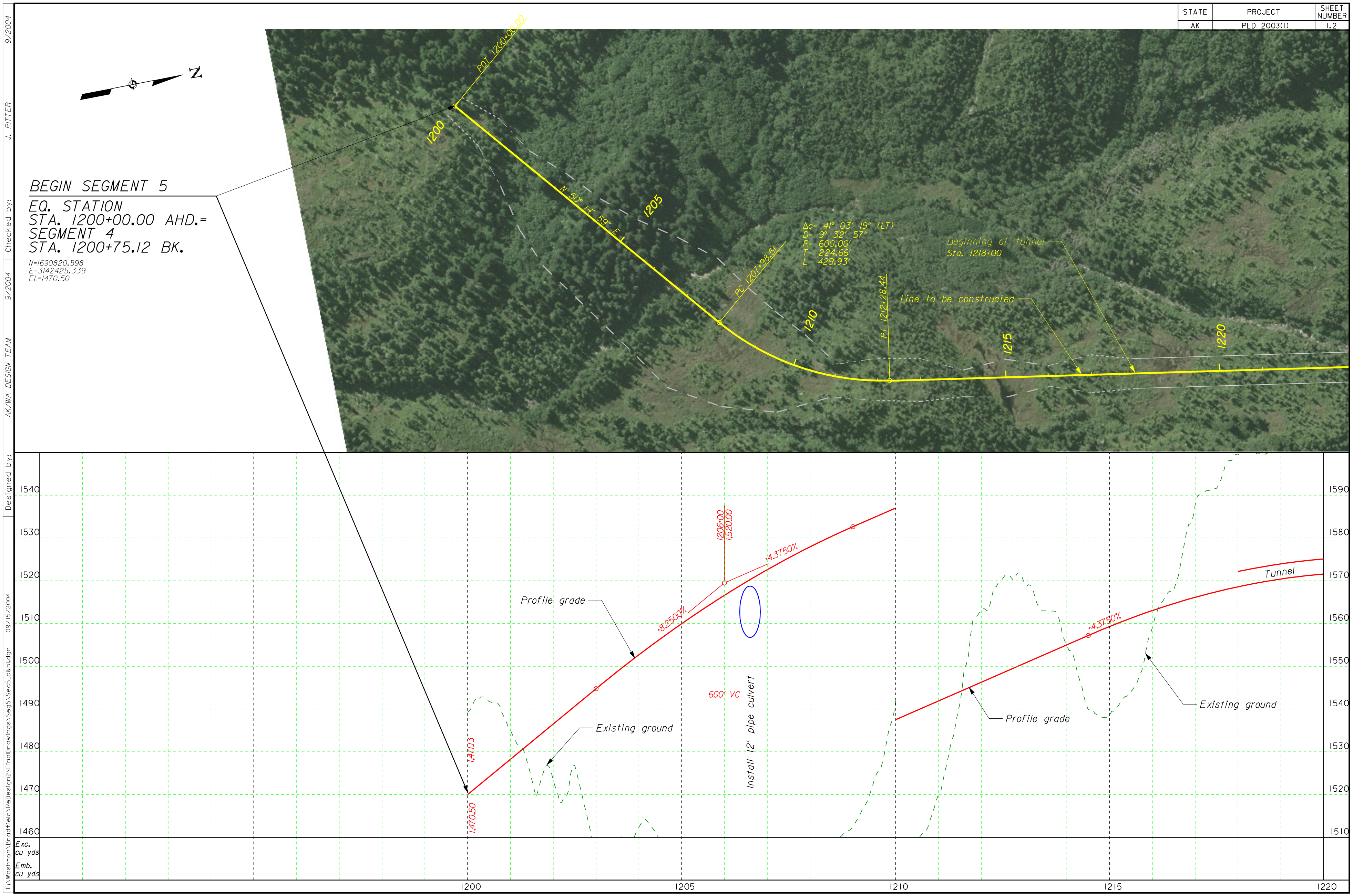
STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	1.1



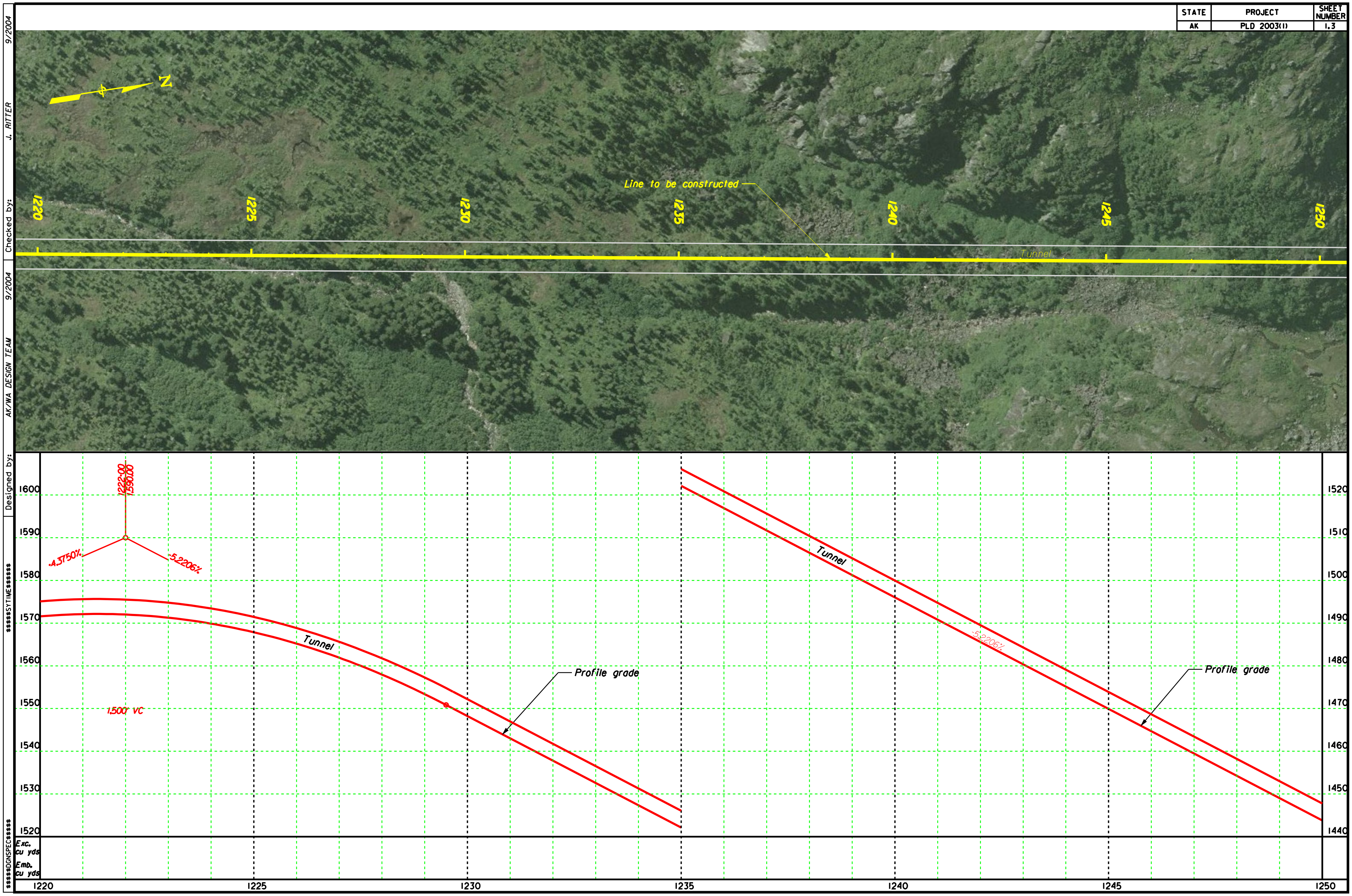
SEGMENT 5 MAP

Designed by:

Checked by:



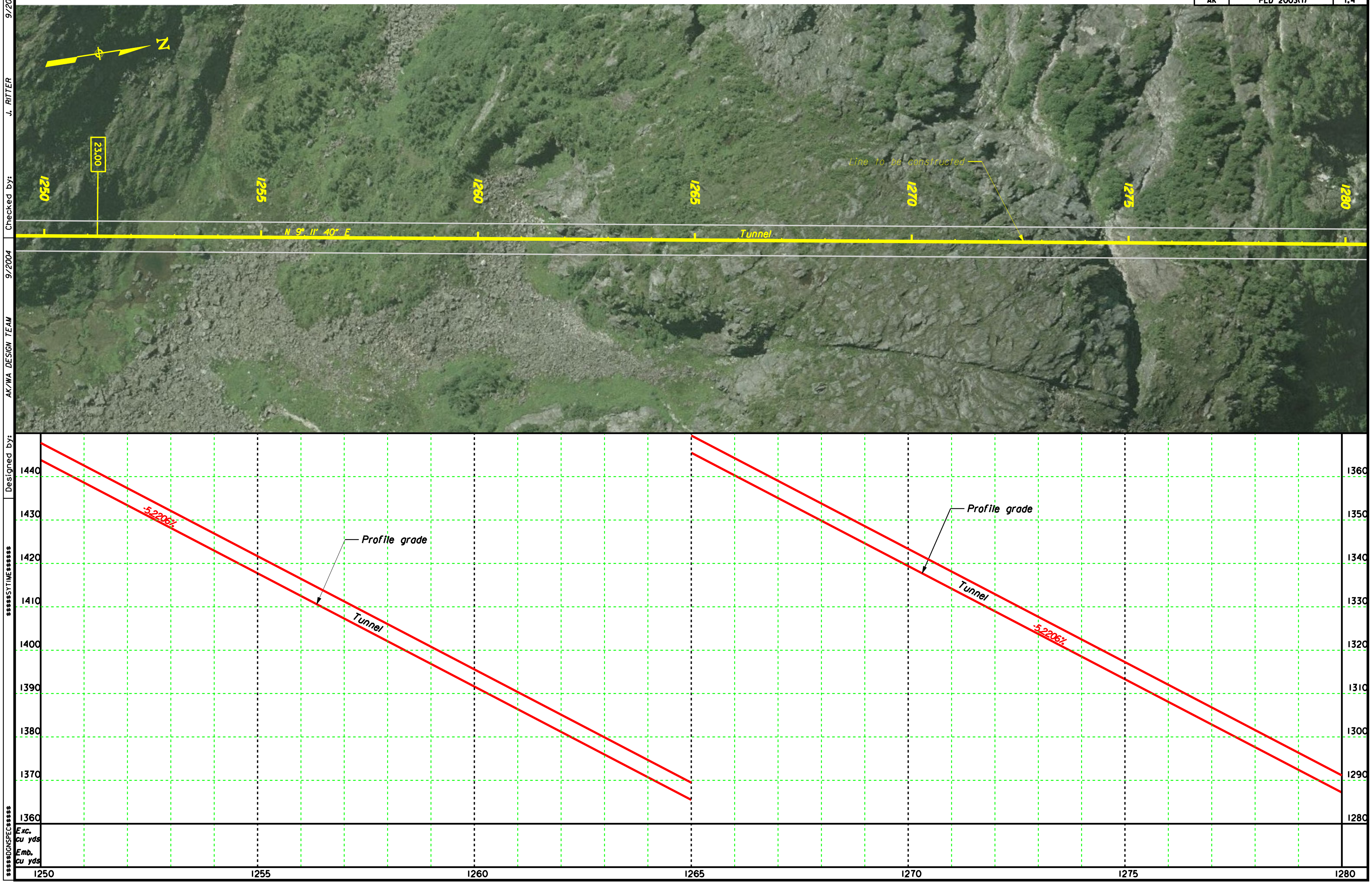
STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
1.2
N
BEGIN SEGMENT 5
EQ. STATION
STA. 1200+00.00 AHD.=
SEGMENT 4
STA. 1200+75.12 BK.
N=1690820.598
E=3142425.339
EL=1470.50
POT 1200+00.00
1200
N 50° 14' 59" E
1205
PC 1207+98.51
Δc= 41° 03' 19" (LT)
D= 9° 32' 57"
R= 600.00'
T= 224.66'
L= 429.93'
PT 1212+28.44
1210
Beginning of tunnel
Sta. 1218+00
Line to be constructed
1215
1220
Profile grade
Existing ground
1206.00
1,520.00
-4.3750%
-8.2500%
600' VC
Install 12' pipe culvert
1,471.13
1,470.50
Tunnel
-4.3750%
Profile grade
Existing ground
1540
1530
1520
1510
1500
1490
1480
1470
1460
1590
1580
1570
1560
1550
1540
1530
1520
1510
Exc. cu yds
Emb. cu yds
1200
1205
1210
1215
1220
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg5\Sec5_p&pl.dgn

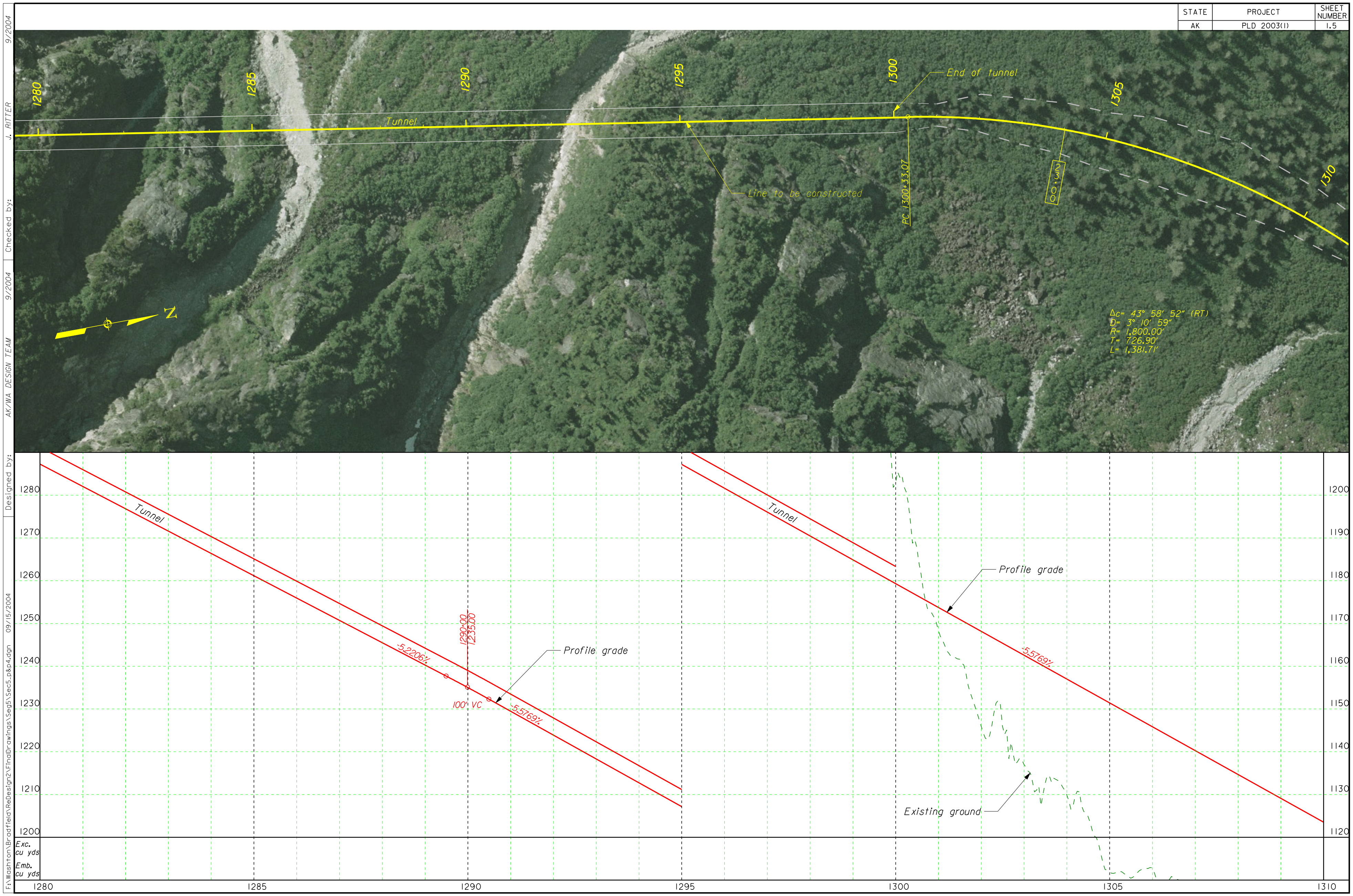


STATE
AK
PROJECT
PLD 2003(1)
SHEET NUMBER
1.3
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
$$$$$SYTIME$$$$$
$$$$$DGNSPEC$$$$$
N
Line to be constructed
Tunnel
1220
1225
1230
1235
1240
1245
1250
1222+00
1590.00
-4.3750%
-5.2206%
1,500' VC
Tunnel
Profile grade
-5.2206%
1600
1590
1580
1570
1560
1550
1540
1530
1520
1510
1500
1490
1480
1470
1460
1450
1440
Exc. cu yds
Emb. cu yds

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	1.4

Designed by: AK/WA DESIGN TEAM 9/2004
Checked by: J. RITTER 9/2004

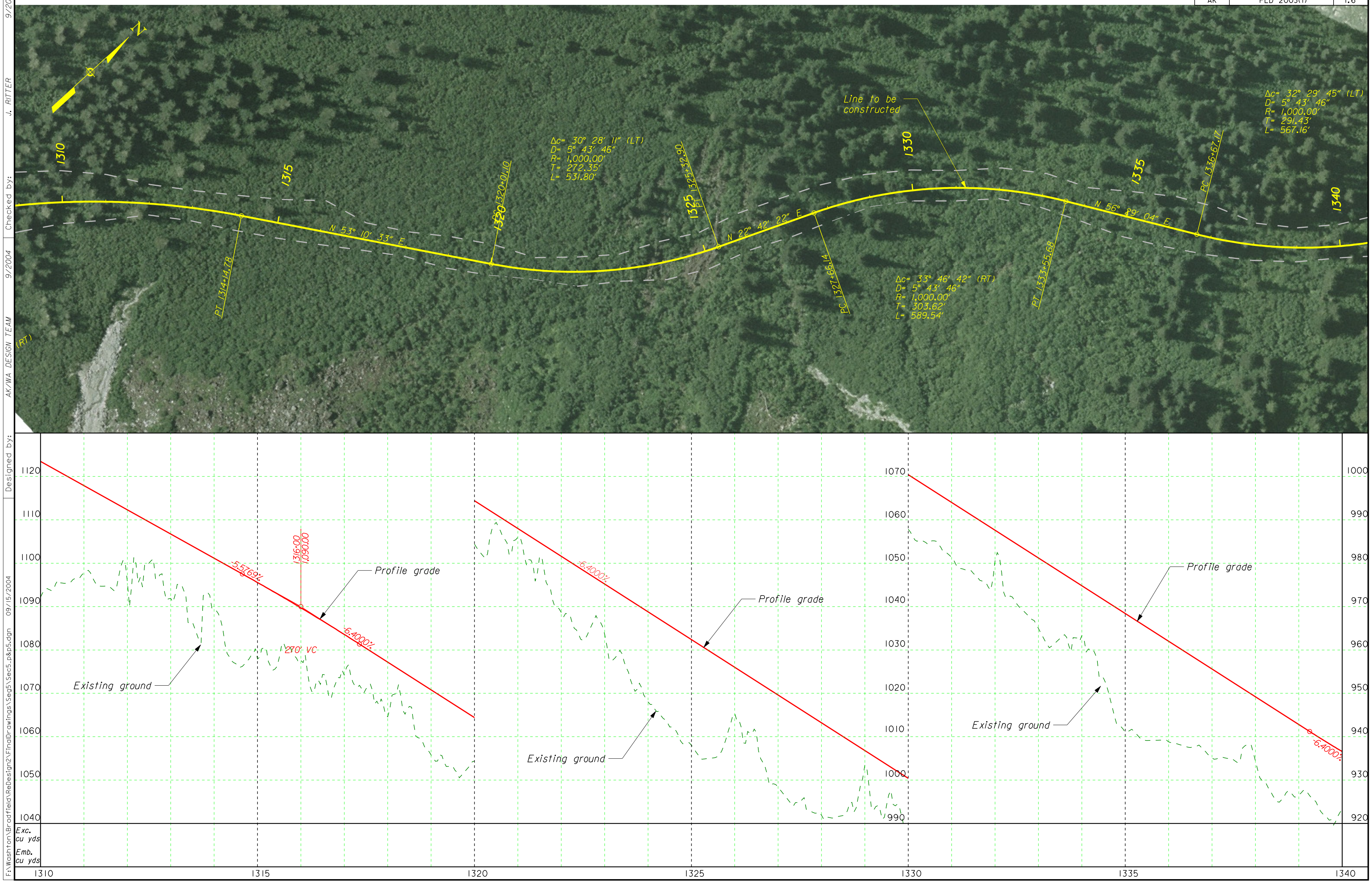


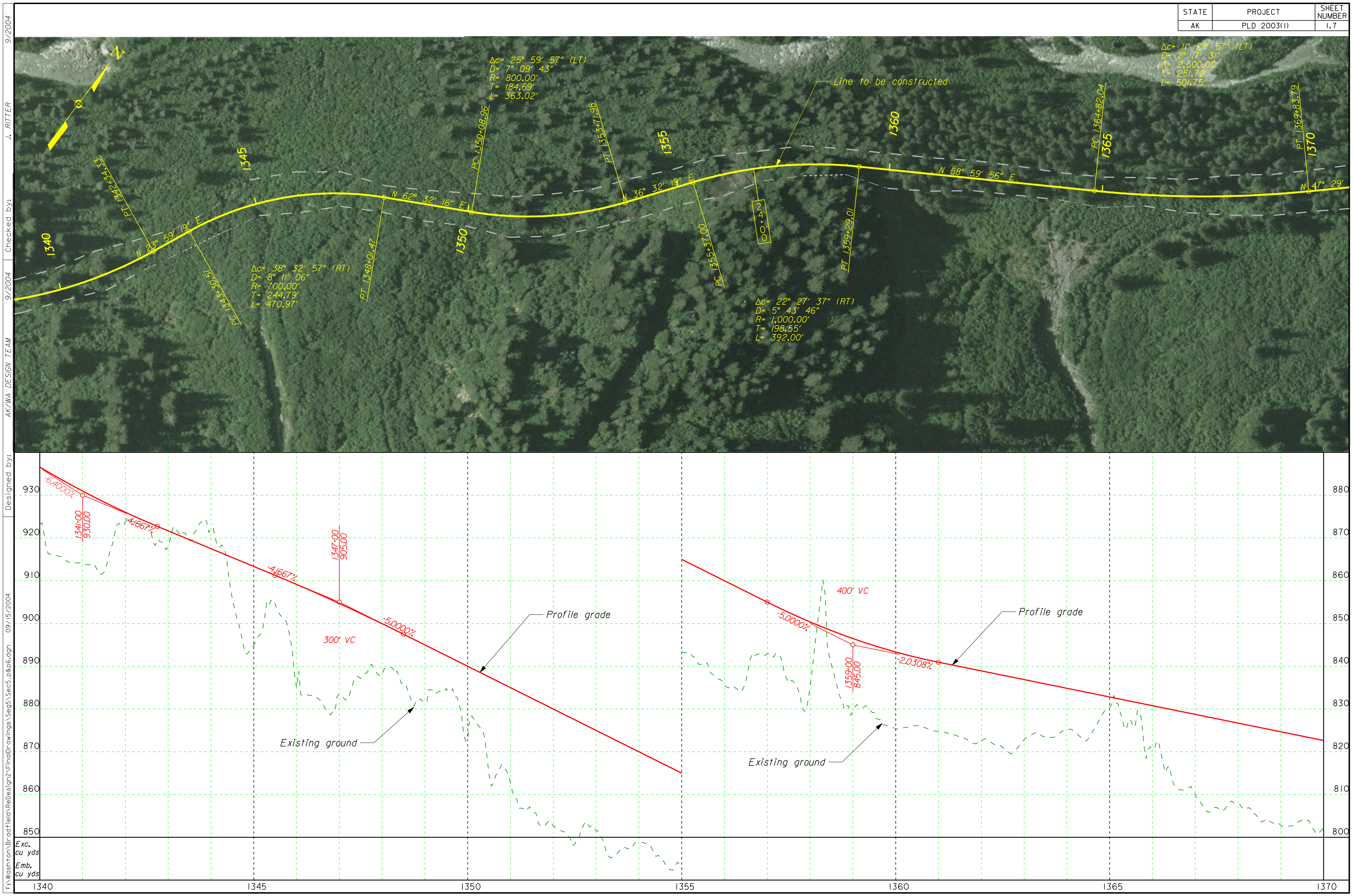


STATE | PROJECT | SHEET NUMBER
AK | PLD 2003(1) | 1.5
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Sec5\Sec5_p&p4.dgn 09/15/2004
Designed by: AK/WA DESIGN TEAM 9/2004
Checked by: J. RITTER 9/2004
1280
1285
1290
1295
1300
1305
1310
Tunnel
End of tunnel
Line to be constructed
PC 1300+33.07
Δc= 43° 58′ 52″ (RT)
D= 3° 10′ 59″
R= 1,800.00′
T= 726.90′
L= 1,381.71′
N
Tunnel
-5.2206%
1290+00
1235.00
100′ VC
-5.5769%
Profile grade
-5.5769%
Existing ground
Exc. cu yds
Emb. cu yds

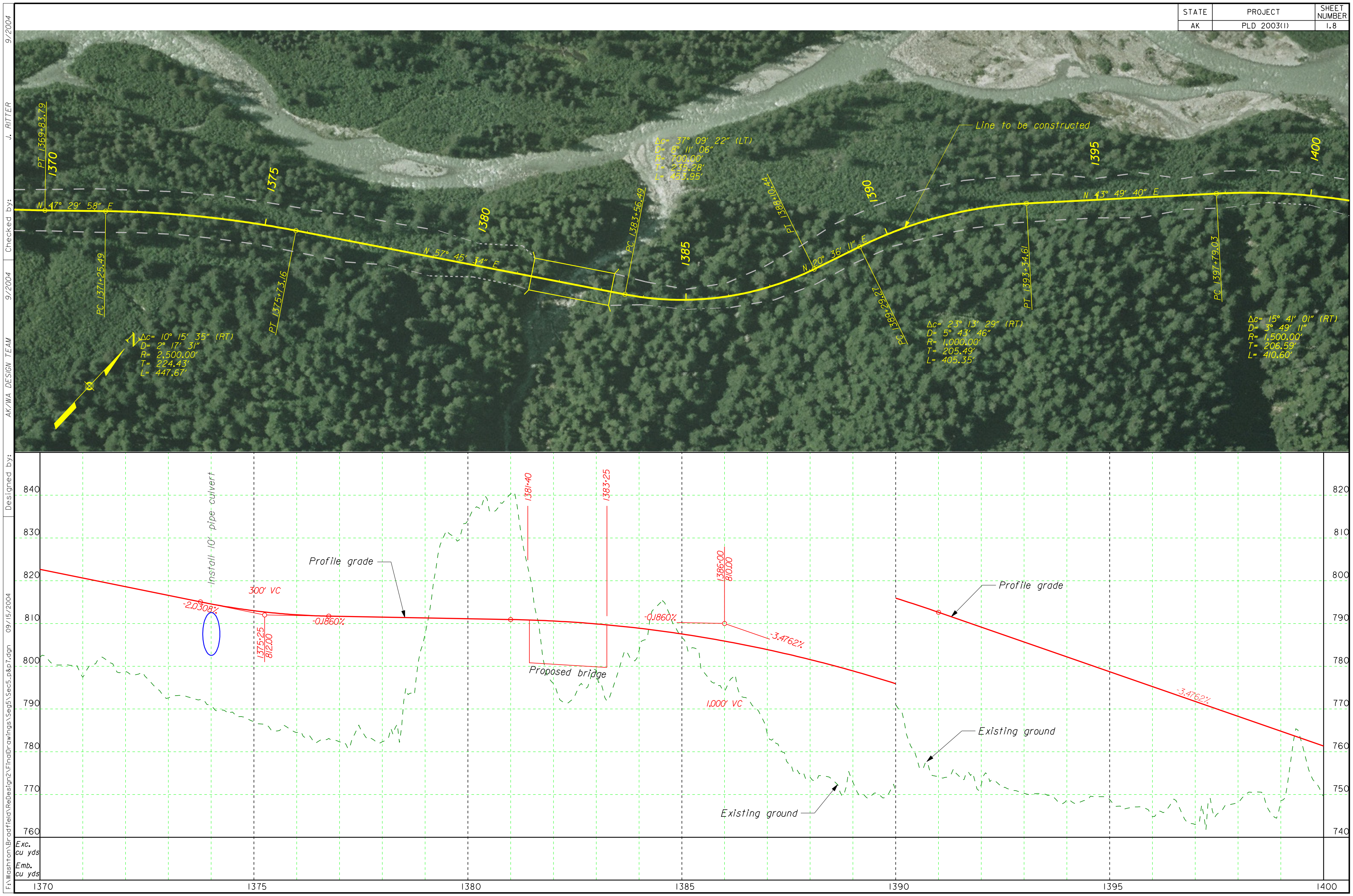
STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	1.6

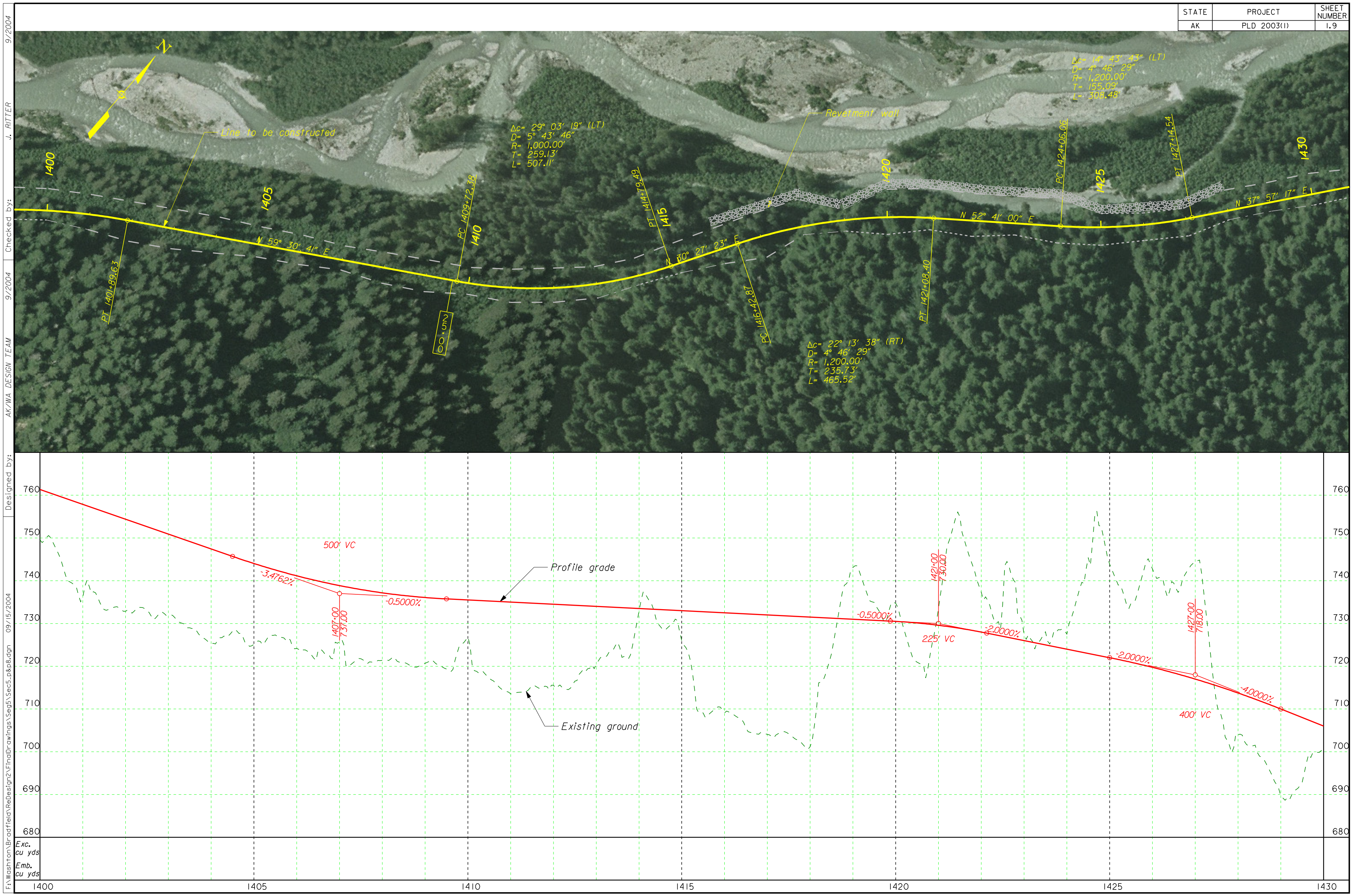
9/2004 J. RITTER Checked by: 9/2004 AK/WA DESIGN TEAM Designed by: 09/15/2004 F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg5\Sec5_p&p5.dgn





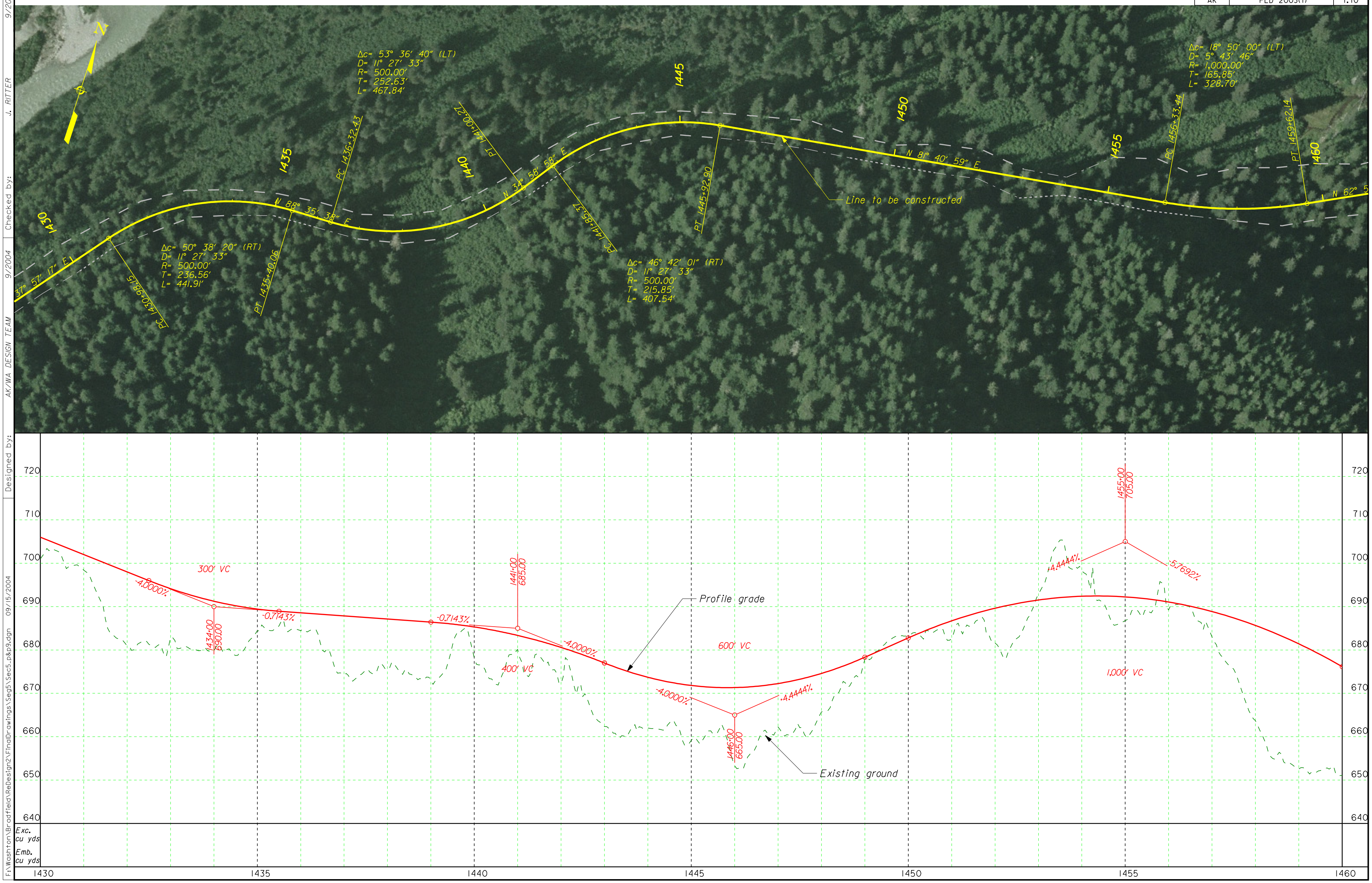
STATE
AK
PROJECT
PLD 2003(1)
SHEET NUMBER
1.7
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg5\Sec5_p&p6.dgn
N
Δc= 25° 59' 57" (LT)
D= 7° 09' 43"
R= 800.00'
T= 184.69'
L= 363.02'
Δc= 38° 32' 57" (RT)
D= 8° 11' 06"
R= 700.00'
T= 244.79'
L= 470.97'
Δc= 22° 27' 37" (RT)
D= 5° 43' 46"
R= 1,000.00'
T= 198.55'
L= 392.00'
Δc= 11° 29' 57" (LT)
D= 2° 17' 31"
R= 2,500.00'
T= 251.72'
L= 501.75'
Line to be constructed
PT 1342+34.33
PC 1343+30.51
PT 1348+01.47
PC 1350+08.96
PT 1353+71.98
PC 1355+37.00
PT 1359+29.01
PC 1364+82.04
PT 1369+83.79
N 23° 59' 19" E
N 62° 32' 16" E
N 36° 32' 19" E
N 58° 59' 56" E
N 47° 29'
24+00
1340
1345
1350
1355
1360
1365
1370
-6.4000%
-4.1667%
1341+00
930.00
1347+00
905.00
300' VC
-5.0000%
Profile grade
Existing ground
400' VC
-5.0000%
1359+00
845.00
-2.0308%
Profile grade
Existing ground
930
920
910
900
890
880
870
860
850
880
870
860
850
840
830
820
810
800
Exc. cu yds
Emb. cu yds
1340
1345
1350
1355
1360
1365
1370


STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
1.8
AK/WA DESIGN TEAM
Designed by:
Checked by:
J. RITTER
9/2004
9/2004
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg5\Sec5_p&p7.dgn
PT 1369+83.79
N 47° 29' 58" E
PC 1371+25.49
Δc= 10° 15' 35" (RT)
D= 2° 17' 31"
R= 2,500.00'
T= 224.43'
L= 447.67'
PT 1375+73.16
N 57° 45' 34" E
PC 1383+56.49
Δc= 37° 09' 22" (LT)
D= 8° 11' 06"
R= 700.00'
T= 235.28'
L= 453.95'
PT 1388+10.44
N 20° 36' 11" E
PC 1389+29.27
Δc= 23° 13' 29" (RT)
D= 5° 43' 46"
R= 1,000.00'
T= 205.49'
L= 405.35'
PT 1393+34.61
Line to be constructed
N 43° 49' 40" E
PC 1397+79.03
Δc= 15° 41' 01" (RT)
D= 3° 49' 11"
R= 1,500.00'
T= 206.59'
L= 410.60'
1370
1375
1380
1385
1390
1395
1400
Install 10' pipe culvert
300' VC
-2.0308%
1375+25
812.00
-0.1860%
Profile grade
1381+40
1383+25
Proposed bridge
-0.1860%
1386+00
810.00
-3.4762%
1,000' VC
Existing ground
Profile grade
-3.4762%
Existing ground
840
830
820
810
800
790
780
770
760
820
810
800
790
780
770
760
750
740
Exc. cu yds
Emb. cu yds
1370
1375
1380
1385
1390
1395
1400

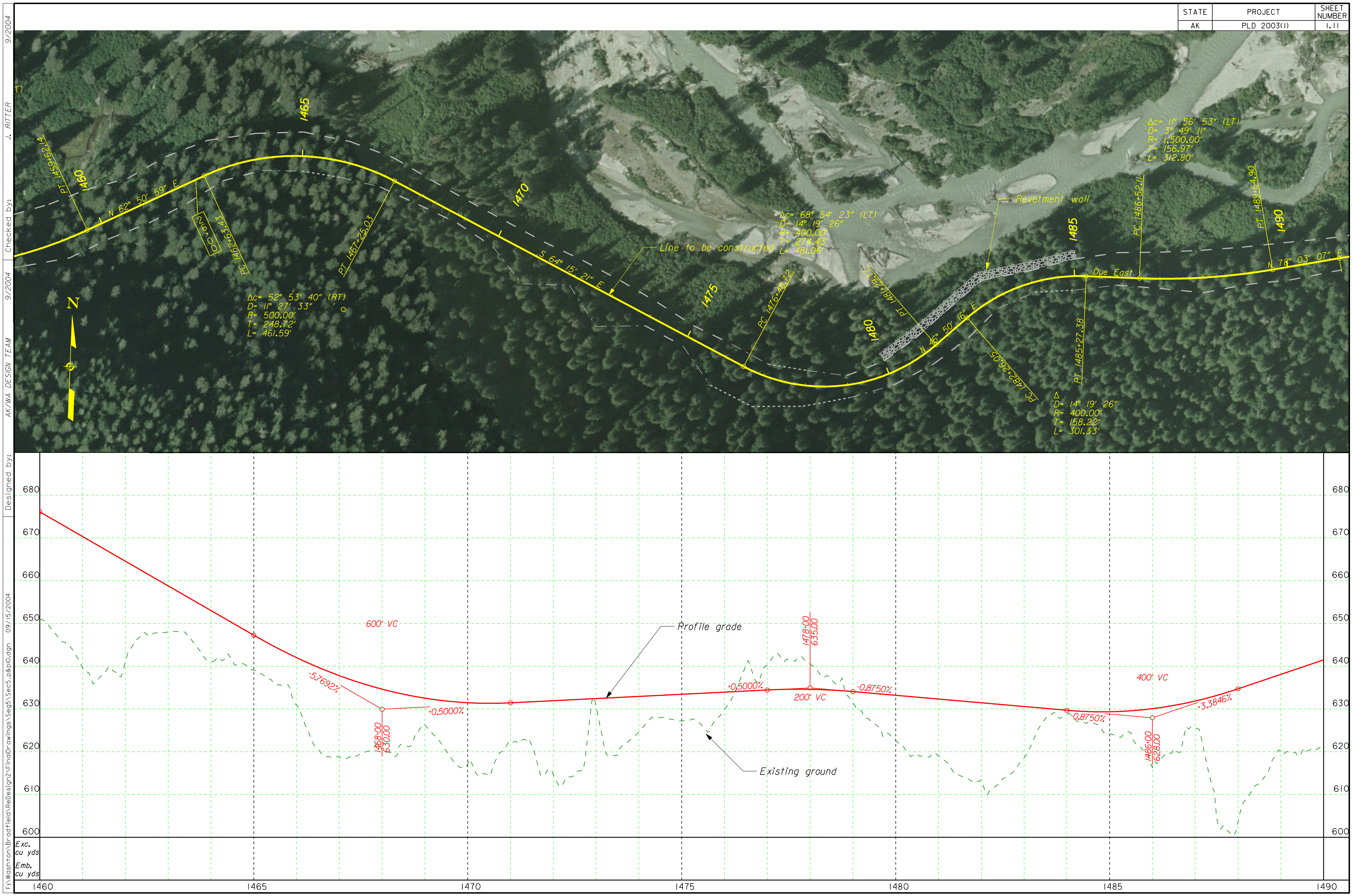


STATE
AK
PROJECT
PLD 2003(1)
SHEET NUMBER
1.9
N
Line to be constructed
Revetment wall
Δc= 29° 03' 19" (LT)
D= 5° 43' 46"
R= 1,000.00'
T= 259.13'
L= 507.11'
Δc= 14° 43' 43" (LT)
D= 4° 46' 29"
R= 1,200.00'
T= 155.09'
L= 308.48'
Δc= 22° 13' 38" (RT)
D= 4° 46' 29"
R= 1,200.00'
T= 235.73'
L= 465.52'
N 59° 30' 41" E
N 30° 27' 23" E
N 52° 41' 00" E
N 37° 57' 17" E
PT 1401+89.63
PC 1409+72.38
PT 1414+79.49
PC 1416+42.87
PT 1421+08.40
PC 1424+06.06
PT 1427+14.54
25.00
1400
1405
1410
1415
1420
1425
1430
500' VC
-3.4762%
-0.5000%
1407+00
737.00
Profile grade
Existing ground
-0.5000%
1421+00
730.00
225' VC
-2.0000%
-2.0000%
1427+00
718.00
-4.0000%
400' VC
760
750
740
730
720
710
700
690
680
Exc. cu yds
Emb. cu yds
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg5\Sec5_p&p8.dgn

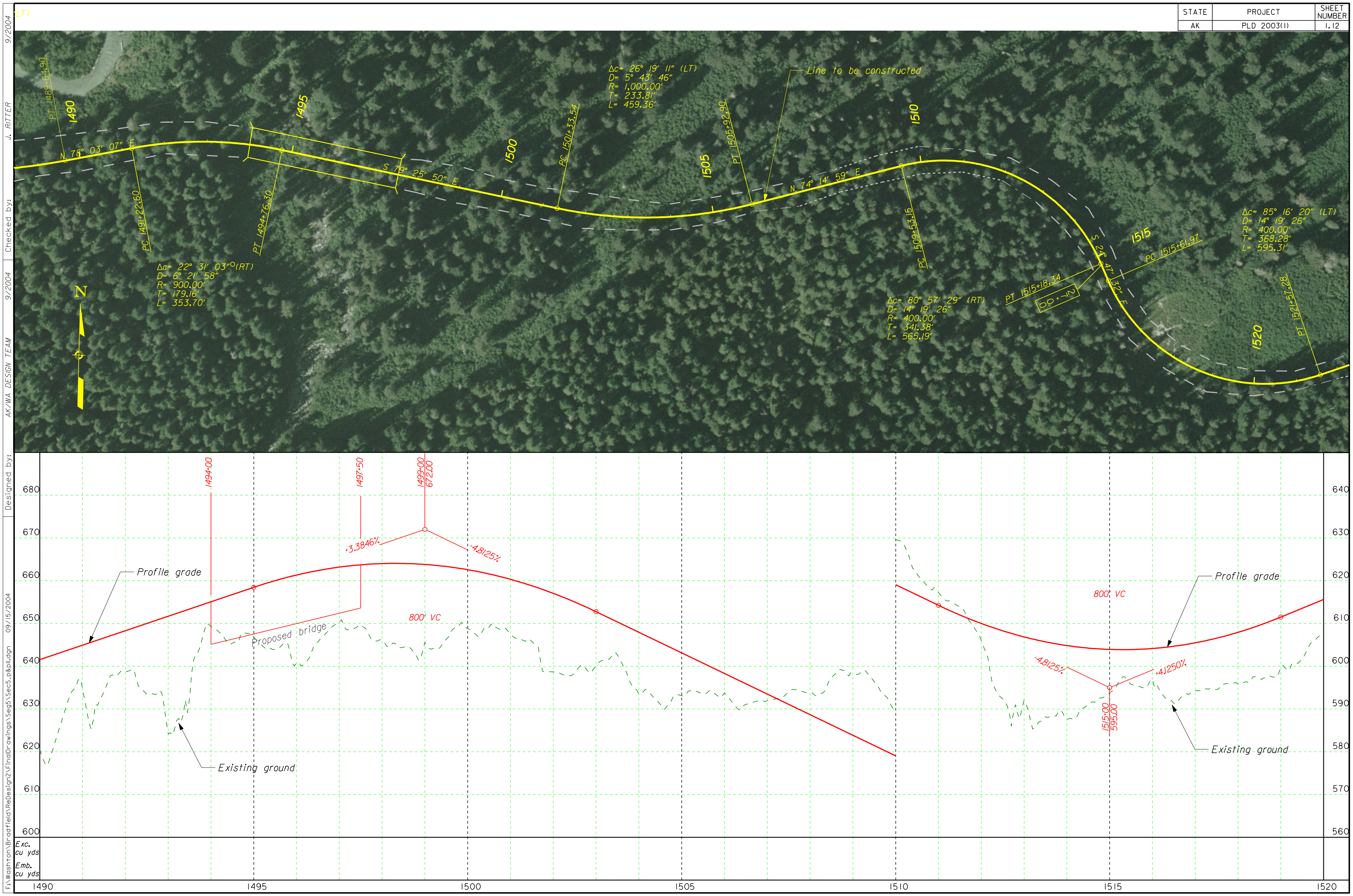
STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	1.10



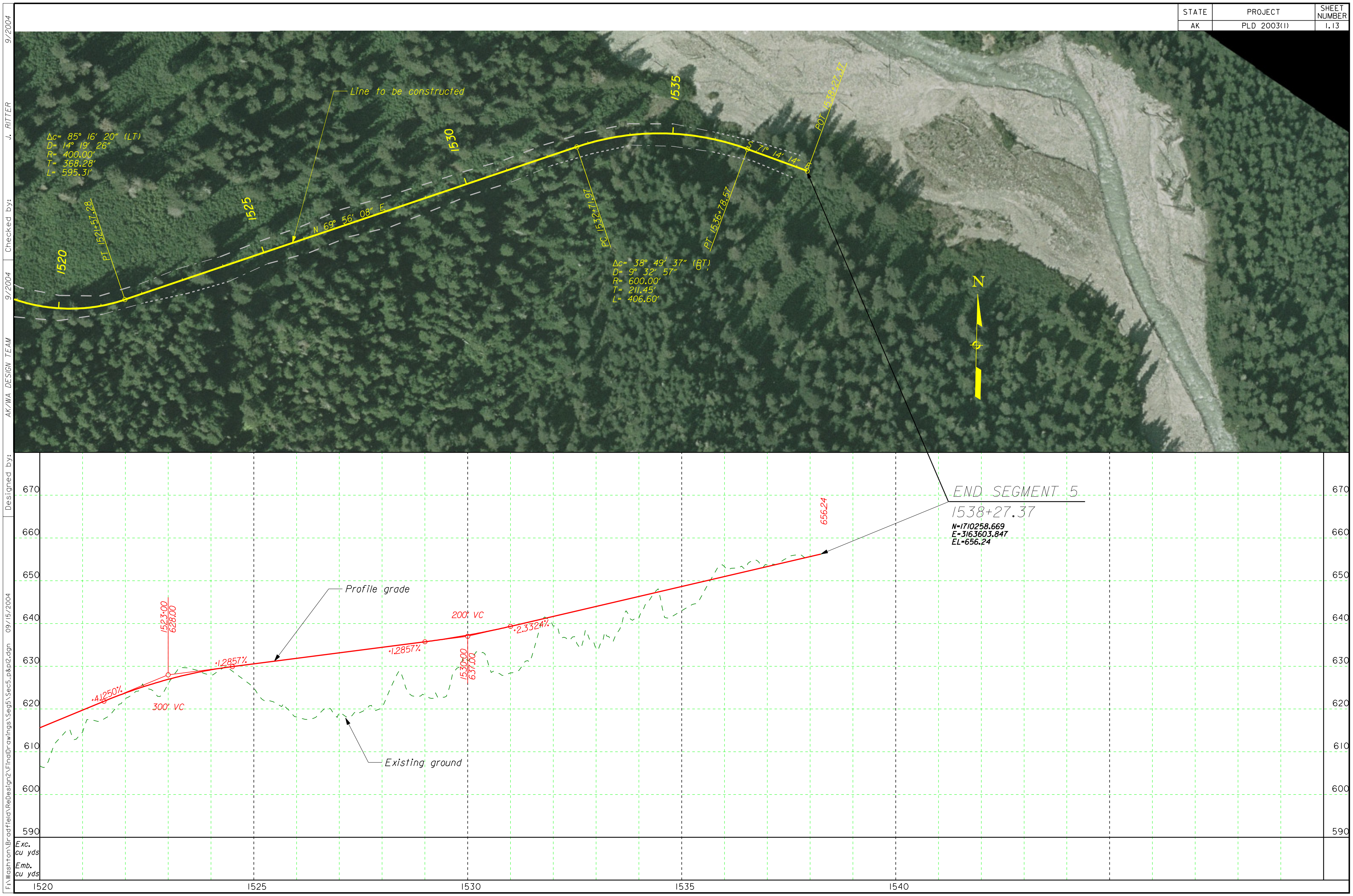
AK/WA DESIGN TEAM 9/2004 J. RITTER 9/2004
Designed by: Checked by:
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg5\Sec5_p&p9.dgn 09/15/2004



STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
1.11
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg5\Sec5_p&pl0.dgn
N
PT 1459+62.14
1460
N 62° 50' 59" E
PC 1462+63.43
1465
PT 1467+25.03
1470
S 64° 15' 21" E
Line to be constructed
Δc= 52° 53' 40" (RT)
D= 11° 27' 33"
R= 500.00'
T= 248.72'
L= 461.59'
1475
PC 1476+48.72
Δc= 68° 54' 23" (LT)
D= 14° 19' 26"
R= 400.00'
T= 274.43'
L= 481.06'
PT 1481+29.77
1480
N 45° 50' 16" E
PC 1482+26.05
Revetment wall
1485
Due East
PT 1485+27.38
Δ
D= 14° 19' 26"
R= 400.00'
T= 158.22'
L= 301.33'
PC 1486+52.11
Δc= 11° 56' 53" (LT)
D= 3° 49' 11"
R= 1,500.00'
T= 156.97'
L= 312.80'
PT 1489+64.90
1490
N 78° 03' 07" E
680
670
660
650
640
630
620
610
600
600' VC
-5.7692%
1468.00
630.00
-0.5000%
Profile grade
1478.00
635.00
0.5000%
200' VC
-0.8750%
Existing ground
400' VC
-0.8750%
1486.00
628.00
3.3846%
Exc. cu yds
Emb. cu yds
1460
1465
1470
1475
1480
1485
1490



STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
1.12
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg5\Sec5_p&pl.dgn
Δc= 26° 19' 11" (LT)
D= 5° 43' 46"
R= 1,000.00'
T= 233.81'
L= 459.36'
Line to be constructed
PT 1489+44.90
1490
1495
1500
1505
1510
1515
1520
N 78° 03' 07" E
S 76° 25' 50" E
N 74° 14' 59" E
S 24° 47' 32" E
PC 1491+22.60
PT 1494+76.30
PC 1501+33.54
PT 1505+92.90
PC 1509+53.15
PT 1515+18.34
PC 1515+61.97
PT 1521+57.28
Δc= 22° 31' 03"(RT)
D= 6° 21' 58"
R= 900.00'
T= 179.16'
L= 353.70'
Δc= 80° 57' 29" (RT)
D= 14° 19' 26"
R= 400.00'
T= 341.38'
L= 565.19'
Δc= 85° 16' 20" (LT)
D= 14° 19' 26"
R= 400.00'
T= 368.28'
L= 595.31'
N
1494+00
1497+50
1499+00
672.00
+3.3846%
-4.8125%
Profile grade
Proposed bridge
800' VC
Existing ground
-4.8125%
+4.1250%
1515+00
595.00
680
670
660
650
640
630
620
610
600
640
630
620
610
600
590
580
570
560
Exc. cu yds
Emb. cu yds
1490
1495
1500
1505
1510
1515
1520



STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
1.13
9/2004
J. RITTER
Checked by:
9/2004
AK/WA DESIGN TEAM
Designed by:
09/15/2004
F:\Washton\Bradfield\ReDesign2\FinalDrawings\Seg5\Sec5_p&p12.dgn
Line to be constructed
Δc= 85° 16′ 20″ (LT)
D= 14° 19′ 26″
R= 400.00′
T= 368.28′
L= 595.31′
PT 1521+57.28
1520
1525
1530
1535
N 69° 56′ 08″ E
PC 1532+71.97
PT 1536+78.57
POT 1538+27.37
S 71° 14′ 14″ E
Δc= 38° 49′ 37″ (RT)
D= 9° 32′ 57″
R= 600.00′
T= 211.45′
L= 406.60′
N
END SEGMENT 5
1538+27.37
N=1710258.669
E=3163603.847
EL=656.24
656.24
Profile grade
Existing ground
1523+00
628.00
+4.1250%
300′ VC
+1.2857%
200′ VC
1530+00
637.00
+2.3324%
670
660
650
640
630
620
610
600
590
Exc. cu yds
Emb. cu yds
1520
1525
1530
1535
1540

Project: Bradfield River Road Project
Project No.: AK PLD 2003(1)
Estimator: WFLHD

October 14, 2004

Conceptual Cost Estimate Summary

Summary of Option, Segment Numbers

	Segment Number							PROJECT TOTALS with OPTIONS		
	Tyee Creek Option	Kapho Mtn. Option	Duck Point Option					SEGMENTS 1A with 2 thru 5	SEGMENTS 1B with 2 thru 5	SEGMENTS 1C with 2 thru 5
	Segment 1			Segment 2	Segment 3	Segment 4	Segment 5			
Work Item Description	Option A	Option B	Option C	2	3	4	5			
LENGTH (Mile)	3.29	4.94	8.02	3.49	5.55	8.73	6.41	27.47	29.12	32.20
DIVISION 1 MOBILIZATION	$692,677	$1,724,615	$6,514,614	$785,008	$1,703,805	$2,581,850	$1,864,121	$7,627,460	$8,659,399	$13,449,397
DIVISION 2 EARTHWORK	$1,075,322	$5,781,332	$53,629,904	$2,166,216	$12,353,989	$8,967,575	$4,878,201	$29,441,303	$34,147,312	$81,995,884
DIVISION 3 UTILITIES & RELOCATIONS	$464,500	$547,000	$701,000	$474,723	$577,277	$736,316	$620,335	$2,873,151	$2,955,651	$3,109,651
DIVISION 4 BASES & PAVEMENT	$786,020	$1,063,780	$1,820,540	$794,220	$1,254,920	$1,944,620	$1,386,940	$6,166,720	$6,444,480	$7,201,240
DIVISION 5 TUNNEL	$0	$0	$0	$0	$0	$0	$75,030,000	$75,030,000	$75,030,000	$75,030,000
DIVISION 6 STRUCTURES	$4,031,500	$10,201,000	$17,162,800	$3,946,000	$3,217,000	$15,735,000	$3,926,000	$30,855,500	$37,025,000	$43,986,800
DIVISION 7 INCIDENTAL CONSTRUCTION	$1,997,725	$2,130,775	$2,383,630	$2,014,931	$2,186,138	$2,190,723	$1,877,676	$10,267,194	$10,400,244	$10,653,099
DIVISION 8 ROADWAY FINISHES	$113,700	$939,000	$283,106	$149,834	$676,366	$996,790	$447,201	$2,383,890	$3,209,190	$2,553,296
SUBTOTAL ROADWAY AND BRIDGE WORK	**$9,161,444**	**$22,387,502**	**$82,495,593**	**$10,330,932**	**$21,969,496**	**$33,152,873**	**$90,030,473**	**$164,645,218**	**$177,871,275**	**$237,979,367**
CONTINGENCIES: 25%	$2,290,361	$5,596,875	$20,623,898	$2,582,733	$5,492,374	$8,288,218	$22,507,618	$41,161,304	$44,467,819	$59,494,842
TOTAL CONSTRUCTION COST	**$11,451,806**	**$27,984,377**	**$103,119,492**	**$12,913,664**	**$27,461,870**	**$41,441,091**	**$112,538,092**	**$205,806,522**	**$222,339,094**	**$297,474,209**
CONSTRUCTION ENGINEERING SERVICES: 8%	$916,144	$2,238,750	$8,249,559	$1,033,093	$2,196,950	$3,315,287	$9,003,047	$16,464,522	$17,787,128	$23,797,937
EIS W/ SUPPORTING EINGINEERING: 5%	$572,590	$1,399,219	$5,155,975	$645,683	$1,373,093	$2,072,055	$1,687,830	$6,351,251	$7,177,880	$10,934,635
DESIGN ENGINEERING & ADMINISTRATION: 8%	$916,144	$2,238,750	$8,249,559	$1,033,093	$2,196,950	$3,315,287	$4,501,247	$11,962,722	$13,285,328	$19,296,137
TOTAL CONSTRUCTION & ENGINEERING	**$13,856,685**	**$33,861,097**	**$124,774,585**	**$15,625,534**	**$33,228,862**	**$50,143,720**	**$127,730,216**	**$240,585,017**	**$260,589,429**	**$351,502,917**
Construction Cost $/Mile	$3,480,792	$5,664,854	$12,857,792	$3,695,476	$4,948,085	$4,748,978	$17,565,691	$7,492,737	$7,635,935	$9,239,055

NOTE:
Segment 5 - EIS and Design Engineering Costs have been proportionately reduced to reflect the lower costs associated with the tunnel. The following formulas have been applied.
EIS - 5% ($119,678,062 Const.Cost - [$75,030,000 Tunnel Cost x 1.25 Contingency Factor]) + (1% x $75,030,000 Tunnel Cost) = $2,044,828
Design - 8% ($119,678,062 Const.Cost - [$75,030,000 Tunnel Cost x 1.25 Contingency Factor]) + (4% x $75,030,000 Tunnel Cost) = $5,072,445

	Segment Number 1:	**Option A** - Begin at Sta. 88+00, on the concrete dock at the outlet of Tyee Creek and beginning of existing road. The route continues northeasterly along the existing road, past the Tyee Power facilities and ends beyond the East Fork of the Bradfield River at Sta. 261+46.28.			
	LIMITS:	STA.	88+00.00	261+46.28	
	LENGTH:	3.29	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	AMOUNT
DIVISION 1	**MOBILIZATION**				
	Mobilization (9% of Construction Value)	1	LS	$692,677	$692,677
				SUBTOTAL	**$692,677**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$307,856	$307,856
	Clearing and Grubbing	29.9	ACRE	$3,500	$104,650
	Roadway Excavation incl Haul	29,752	CY	$8.00	$238,016
	Subexcavation	53,100	CY	$8.00	$424,800
				SUBTOTAL	**$1,075,322**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	3.3	Mile	$50,000	$164,500
	Right of Way & Building Relocation	1	LS	$300,000	$300,000
				SUBTOTAL	**$464,500**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	4,186	CY	$80.00	$334,880
	5" Crushed Agg.	7,890	CY	$20.00	$157,800
	8" Select Material	14,667	CY	$20.00	$293,340
				SUBTOTAL	**$786,020**
DIVISION 5	**TUNNEL**				
	Tunnel (excludes paving and drainage)		LF	$9,150	
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$150	
	Bridge Structure - Medium Complexity	4,800	SF	$200	$960,000
	Bridge Structure - High Complexity	9,780	SF	$275	$2,689,500
	Culverts -				
	> 10 foot diameter	1	EA	$60,000	$60,000
	Fish Passage Pipe	300	LF	$900	$270,000
	Revetment Wall (Class V Riprap)	1,300	CY	$40	$52,000
	MSE Wall		SF	$30	
				SUBTOTAL	**$4,031,500**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	20.0	Acre	$25,000	$500,000
	Cultural Resource Mitigation - Allowance	5	LS	$10,000	$50,000
	Drainage - Allowance	3.3	Mile	$80,000	$263,200
	Stormwater Management Ponds	5	LS	$206,000	$1,030,000
	Seeding and Landscaping	18.1	Acre	$250	$4,525
	Staging Area Rehabilitation	3	Acre	$50,000	$150,000
				SUBTOTAL	**$1,997,725**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	300	LF	$50	$15,000
	Roadway Signage - Allowance	3.3	Mile	$5,000	$16,450
	Pavement Stripping and Markings - Allowance	3.3	Mile	$25,000	$82,250
				SUBTOTAL	**$113,700**
	SUBTOTAL ROADWAY, TUNNEL, AND BRIDGE WORK				**$9,161,444**

	Segment Number 1	**Option B** - Begin at the first deep water access southeast of the Kapho Mountains and continue on the northerly side of the Bradfield River to the proposed bridge crossing and to Sta. 260+00 of Segment 2.			
	LIMITS:	Stationing	10+00.00	270+63.38	
	LENGTH:	4.94	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	AMOUNT
DIVISION 1	**MOBILIZATION**				
	Mobilization (9% of Construction Value)	1	LS	$1,724,615	$1,724,615
				SUBTOTAL	**$1,724,615**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$766,496	$766,496
	Clearing and Grubbing	44.6	Acre	$3,500	$156,100
	Roadway Excavation incl Haul	566,567	CY	$8.00	$4,532,536
	Subexcavation	17,400	CY	$8.00	$139,200
	Access Road	0.9	Mile	$200,000.00	$187,000
				SUBTOTAL	**$5,781,332**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	4.9	Mile	$50,000	$247,000
	Right of Way & Building Relocation	1	LS	$300,000	$300,000
				SUBTOTAL	**$547,000**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	5668	CY	$80.00	$453,440
	5" Crushed Agg.	10678	CY	$20.00	$213,560
	8" Select Material	19839	CY	$20.00	$396,780
				SUBTOTAL	**$1,063,780**
DIVISION 5	**TUNNEL**				
	Tunnel (excludes paving and drainage)		LF	$9,150	
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	6000	SF	$150	$900,000
	Bridge Structure - Medium Complexity	6750	SF	$200	$1,350,000
	Bridge Structure - High Complexity	12000	SF	$275	$3,300,000
	Culverts -				
	> 10 foot diameter	2	EA	$60,000	$120,000
	Fish Passage Pipe		LF	$900	
	Revetment Wall (Class V Riprap)	22000	CY	$40	$880,000
	MSE Wall	121700	SF	$30	$3,651,000
				SUBTOTAL	**$10,201,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	20.0	Acre	$25,000	$500,000
	Cultural Resource Mitigation - Allowance	5	LS	$10,000	$50,000
	Drainage - Allowance	4.9	Mile	$80,000	$395,200
	Stormwater Management Ponds	5	LS	$206,000	$1,030,000
	Seeding and Landscaping	22.3	Acre	$250	$5,575
	Staging Area Rehabilitation	3	Acre	$50,000	$150,000
				SUBTOTAL	**$2,130,775**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	15,840	LF	$50	$792,000
	Roadway Signage - Allowance	4.9	Mile	$5,000	$24,500
	Pavement Stripping and Markings - Allowance	4.9	Mile	$25,000	$122,500
				SUBTOTAL	**$939,000**
	SUBTOTAL ROADWAY, TUNNEL, AND BRIDGE WORK				**$22,387,502**

Segment Number 1

Option C - Begin at the base of Duck Point and traverse Northeasterly parallel to the Tyee Powerline. The route continues northwesterly past the Tyee Power facilities and ends beyond the East Fork of the Bradfield River.

LIMITS: Mileposts: 0.00 8.02

LENGTH: 8.02 Mile

Note: All quantities and unit costs are based on a conceptual alignment drawn on a topographic map. Unit costs and quantities are estimated and not based on a geometric design.

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	AMOUNT
DIVISION 1	**MOBILIZATION**				
	Mobilization (9% of Construction Value)	1	LS	$6,514,614	$6,514,614
				SUBTOTAL	**$6,514,614**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$2,895,384	$2,895,384
	Clearing and Grubbing	8.0	Mile	$36,000	$288,720
	Roadway Excavation incl Haul	8.0	Mile	$6,200,000.00	$49,724,000
	Subexcavation	8.0	Mile	$90,000.00	$721,800
				SUBTOTAL	**$53,629,904**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	8.0	Mile	$50,000	$401,000
	Right of Way & Building Relocation	1	LS	$300,000	$300,000
				SUBTOTAL	**$701,000**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	8.0	Mile	$97,000	$777,940
	5" Crushed Agg.	8.0	Mile	$45,000	$360,900
	8" Select Material	8.0	Mile	$85,000	$681,700
					$1,820,540
DIVISION 5	**TUNNEL**				
	Tunnel (excludes paving and drainage)		LF	$9,150	
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	8.0	Mile	$180,000	$1,443,600
	Bridge Structure - Medium Complexity	8.0	Mile	$275,000	$2,205,500
	Bridge Structure - High Complexity	8.0	Mile	$675,000	$5,413,500
	Culverts -				
	> 10 foot diameter	8.0	Mile	$60,000	$481,200
	Fish Passage Pipe	8.0	Mile	$90,000	$721,800
	Revetment Wall (Class V Riprap)	8.0	Mile	$110,000	$882,200
	MSE Wall	8.0	Mile	$750,000	$6,015,000
				SUBTOTAL	**$17,162,800**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	20.0	Acre	$25,000	$500,000
	Cultural Resource Mitigation - Allowance	5	LS	$10,000	$50,000
	Drainage - Allowance	8.0	Mile	$80,000	$641,600
	Stormwater Management Ponds	5	LS	$206,000	$1,030,000
	Seeding and Landscaping	8.0	Mile	$1,500	$12,030
	Staging Area Rehabilitation	3	Acre	$50,000	$150,000
				SUBTOTAL	**$2,383,630**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	8.0	Mile	$5,300	$42,506
	Roadway Signage - Allowance	8.0	Mile	$5,000	$40,100
	Pavement Stripping and Markings - Allowance	8.0	Mile	$25,000	$200,500
				SUBTOTAL	**$283,106**
	SUBTOTAL ROADWAY, TUNNEL, AND BRIDGE WORK				**$82,495,593**

Segment Number 2:

	LIMITS:	STA.	260+00.00	444+50.71	
	LENGTH:	3.49	Mile		

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	AMOUNT
DIVISION 1	**MOBILIZATION**				
	Mobilization (9% of Construction Value)	1	LS	$785,008	$785,008
				SUBTOTAL	**$785,008**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$348,892	$348,892
	Clearing and Grubbing	35.0	ACRE	$3,500	$122,500
	Roadway Excavation incl Haul	119,753	CY	$8.00	$958,024
	Subexcavation	92,100	CY	$8.00	$736,800
				SUBTOTAL	**$2,166,216**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	3.5	Mile	$50,000	$174,723
	Right of Way & Building Relocation	1	LS	$300,000	$300,000
				SUBTOTAL	**$474,723**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	4,232	CY	$80	$338,560
	5" Crushed Agg.	7,977	CY	$20	$159,540
	8" Select Material	14,806	CY	$20	$296,120
				SUBTOTAL	**$794,220**
DIVISION 5	**TUNNEL**				
	Tunnel (excludes paving and drainage)		LF	$9,150	
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$150	
	Bridge Structure - Medium Complexity	6,000	SF	$200	$1,200,000
	Bridge Structure - High Complexity		SF	$275	
	Culverts -				
	> 10 foot diameter		EA	$60,000	
	Fish Passage Pipe		LF	$900	
	Revetment Wall (Class V Riprap)	43,900	CY	$40	$1,756,000
	MSE Wall	33,000	SF	$30	$990,000
				SUBTOTAL	**$3,946,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	20.0	Acre	$25,000	$500,000
	Cultural Resource Mitigation - Allowance	5	LS	$10,000	$50,000
	Drainage - Allowance	3.5	Mile	$80,000	$279,556
	Stormwater Management Ponds	5	LS	$206,000	$1,030,000
	Seeding and Landscaping	21.5	Acre	$250	$5,375
	Staging Area Rehabilitation	3	Acre	$50,000	$150,000
				SUBTOTAL	**$2,014,931**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	900	LF	$50	$45,000
	Roadway Signage - Allowance	3.5	Mile	$5,000	$17,472
	Pavement Stripping and Markings - Allowance	3.5	Mile	$25,000	$87,361
				SUBTOTAL	**$149,834**
	SUBTOTAL ROADWAY, TUNNEL, AND BRIDGE WORK				**$10,330,932**

Segment Number 3:

	LIMITS:	STA.	444+50.00	737+30.47	
	LENGTH:	5.55	Mile		

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	AMOUNT
DIVISION 1	**MOBILIZATION**				
	Mobilization (9% of Construction Value)	1	LS	$1,703,805	$1,703,805
				SUBTOTAL	**$1,703,805**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$757,247	$757,247
	Clearing and Grubbing	74.5	ACRE	$3,500	$260,750
	Roadway Excavation incl Haul	1,373,899	CY	$8.00	$10,991,192
	Subexcavation	43,100	CY	$8.00	$344,800
				SUBTOTAL	**$12,353,989**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	5.5	Mile	$50,000	$277,277
	Right of Way & Building Relocation	1	LS	$300,000	$300,000
				SUBTOTAL	**$577,277**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	6,695	CY	$80	$535,600
	5" Crushed Agg.	12,580	CY	$20	$251,600
	8" Select Material	23,386	CY	$20	$467,720
				SUBTOTAL	**$1,254,920**
DIVISION 5	**TUNNEL**				
	Tunnel (excludes paving and drainage)		LF	$9,150	
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$150	
	Bridge Structure - Medium Complexity	6,000	SF	$200	$1,200,000
	Bridge Structure - High Complexity		SF	$275	
	Culverts -				
	> 10 foot diameter	3	EA	$60,000	$180,000
	Fish Passage Pipe		LF	$900	
	Revetment Wall (Class V Riprap)	8,800	CY	$40	$352,000
	MSE Wall	49,500	SF	$30	$1,485,000
				SUBTOTAL	**$3,217,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	20.0	Acre	$25,000	$500,000
	Cultural Resource Mitigation - Allowance	5	LS	$10,000	$50,000
	Drainage - Allowance	5.5	Mile	$80,000	$443,643
	Stormwater Management Ponds	5	LS	$206,000	$1,030,000
	Seeding and Landscaping	50.0	Acre	$250	$12,495
	Staging Area Rehabilitation	3	Acre	$50,000	$150,000
				SUBTOTAL	**$2,186,138**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	10,200	LF	$50	$510,000
	Roadway Signage - Allowance	5.5	Mile	$5,000	$27,728
	Pavement Stripping and Markings - Allowance	5.5	Mile	$25,000	$138,639
				SUBTOTAL	**$676,366**
	SUBTOTAL ROADWAY, TUNNEL, AND BRIDGE WORK				**$21,969,496**

Segment Number 4:

	LIMITS:	STA. 740+00.00 1200+74.96			
	LENGTH:	8.73 Mile			

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	AMOUNT
DIVISION 1	**MOBILIZATION**				
	Mobilization (9% of Construction Value)	1	LS	$2,581,850	$2,581,850
				SUBTOTAL	**$2,581,850**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$1,147,489	$1,147,489
	Clearing and Grubbing	88.9	ACRE	$3,500	$311,150
	Roadway Excavation incl Haul	922,217	CY	$8.00	$7,377,736
	Subexcavation	16,400	CY	$8.00	$131,200
				SUBTOTAL	**$8,967,575**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	8.7	Mile	$50,000	$436,316
	Right of Way & Building Relocation	1	LS	$300,000	$300,000
				SUBTOTAL	**$736,316**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	10,379	CY	$80	$830,320
	5" Crushed Agg.	19,458	CY	$20	$389,160
	8" Select Material	36,257	CY	$20	$725,140
				SUBTOTAL	**$1,944,620**
DIVISION 5	**TUNNEL**				
	Tunnel (excludes paving and drainage)		LF	$9,150	
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	6,000	SF	$150	$900,000
	Bridge Structure - Medium Complexity	24,600	SF	$200	$4,920,000
	Bridge Structure - High Complexity	15,000	SF	$275	$4,125,000
	Culverts -				
	> 10 foot diameter		EA	$60,000	
	Fish Passage Pipe		LF	$900	
	Revetment Wall (Class V Riprap)	24,600	CY	$40	$984,000
	MSE Wall	160,200	SF	$30	$4,806,000
				SUBTOTAL	**$15,735,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	10.0	Acre	$25,000	$250,000
	Cultural Resource Mitigation - Allowance	5	LS	$10,000	$50,000
	Drainage - Allowance	8.7	Mile	$80,000	$698,105
	Stormwater Management Ponds	5	LS	$206,000	$1,030,000
	Seeding and Landscaping	50.5	Acre	$250	$12,618
	Staging Area Rehabilitation	3	Acre	$50,000	$150,000
				SUBTOTAL	**$2,190,723**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	14,700	LF	$50	$735,000
	Roadway Signage - Allowance	8.7	Mile	$5,000	$43,632
	Pavement Stripping and Markings - Allowance	8.7	Mile	$25,000	$218,158
				SUBTOTAL	**$996,790**
	SUBTOTAL ROADWAY, TUNNEL, AND BRIDGE WORK				**$33,152,873**

Segment Number 5:

		LIMITS: STA.	1200+00.00	1538+27.37	
		LENGTH: 6.41	Mile		

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	AMOUNT
DIVISION 1	**MOBILIZATION**				
	Mobilization (9% of Construction Value)	1	LS	$1,864,121	$1,864,121
	***Tunnel Mobilization costs are included in Tunnel Unit Cost			**SUBTOTAL**	**$1,864,121**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$3,367,155	$3,367,155
	Clearing and Grubbing	56.9	ACRE	$3,500	$199,150
	Roadway Excavation incl Haul	122,187	CY	$8.00	$977,496
	Subexcavation	41,800	CY	$8.00	$334,400
				SUBTOTAL	**$4,878,201**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	6.4	Mile	$50,000	$320,335
	Right of Way & Building Relocation	1	LS	$300,000	$300,000
				SUBTOTAL	**$620,335**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	8,540	CY	$80	$683,200
	5" Crushed Agg.	14,444	CY	$20	$288,880
	8" Select Material	20,743	CY	$20	$414,860
				SUBTOTAL	**$1,386,940**
DIVISION 5	**TUNNEL**				
	Tunnel (excludes paving and drainage)	8,200	LF	$9,150	$75,030,000
				SUBTOTAL	**$75,030,000**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$150	
	Bridge Structure - Medium Complexity	16,050	SF	$200	$3,210,000
	Bridge Structure - High Complexity		SF	$275	
	Culverts -				
	> 10 foot diameter	2	EA	$60,000	$120,000
	Fish Passage Pipe		LF	$900	
	Revetment Wall (Class V Riprap)	14,900	CY	$40	$596,000
	MSE Wall		SF	$30	
				SUBTOTAL	**$3,926,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	5.0	Acre	$25,000	$125,000
	Cultural Resource Mitigation - Allowance	5	LS	$10,000	$50,000
	Drainage - Allowance	6.4	Mile	$80,000	$512,536
	Stormwater Management Ponds	5	LS	$206,000	$1,030,000
	Seeding and Landscaping	40.6	Acre	$250	$10,140
	Staging Area Rehabilitation	3	Acre	$50,000	$150,000
				SUBTOTAL	**$1,877,676**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	5,100	LF	$50	$255,000
	Roadway Signage - Allowance	6.4	Mile	$5,000	$32,033
	Pavement Stripping and Markings - Allowance	6.4	Mile	$25,000	$160,167
				SUBTOTAL	**$447,201**
	SUBTOTAL ROADWAY, TUNNEL, AND BRIDGE WORK				**$90,030,473**

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	all	$1,447,000	$1,447,000	$2,017,998	$2,017,998	$1,600,000	$1,600,000	$2,130,000	$2,130,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					9.0%		11.0%		8.4%		10.9%

Mobilization is usually 9% to 10%

For all Segments **Say** **9%**

Mobilization for tunnel is included in Tunnel Unit Costs (See Final Tunnel Report - Sheet 2 of Cost Estimate Summary Option 1, dated 11/30/04)

For Segment 5 **Say** **$1,864,121**

Erosion Control (4% of Construction Value) | 1 | LS

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15703	m	Silt fence	6,000	$11.00	$66,000.00	$5.00	$30,000.00	$11.00	$66,000.00	$6.00	$36,000.00
15705	m	Slope drains	110	$40.00	$4,400.00	$47.00	$5,170.00	$30.00	$3,300.00	$60.00	$6,600.00
15707 A	m	Temporary 600 millimeter culvert pipe	380.0	$100.00	$38,000.00	$60.00	$22,800.00	$150.00	$57,000.00	$150.00	$57,000.00
15707 B	m	Temporary 900 millimeter culvert pipe	70.0	$125.00	$8,750.00	$70.00	$4,900.00	$205.00	$14,350.00	$200.00	$14,000.00
15708	each	bales, straw	150	$30.00	$4,500.00	$50.00	$7,500.00	$14.00	$2,100.00	$30.00	$4,500.00
15709 A	each	check dams, riprap	170	$75.00	$12,750.00	$68.00	$11,560.00	$100.00	$17,000.00	$100.00	$17,000.00
15709 B	each	check dams, sandbag	140	$75.00	$10,500.00	$25.50	$3,570.00	$130.00	$18,200.00	$20.00	$2,800.00
15718 A	m	diversion channel, plastic lined	500	$55.00	$27,500.00	$30.00	$15,000.00	$7.00	$3,500.00	$40.00	$20,000.00
15718 B	m	diversion channel, riprap lined	220	$70.00	$15,400.00	$50.00	$11,000.00	$27.00	$5,940.00	$120.00	$26,400.00
15724	m	wattle, straw	3,100	$25.00	$77,500.00	$10.42	$32,302.00	$9.00	$27,900.00	$7.00	$21,700.00
15729	slry unit	soil stabilization	600.00	$250.00	$150,000.00	$320.61	$192,366.00	$525.00	$315,000.00	$400.00	$240,000.00
15749	m	turbidity curtain	60	$120.00	$7,200.00	$112.00	$6,720.00	$50.00	$3,000.00	$150.00	$9,000.00
15761	each	chitosan gel sock	10	$625.00	$6,250.00	$403.00	$4,030.00	$1,000.00	$10,000.00	$1,250.00	$12,500.00
15780	day	erosion control supervisor	450	$300.00	$135,000.00	$565.50	$254,475.00	$100.00	$45,000.00	$500.00	$225,000.00
15801	m^3	watering for dust control	15,000	$5.00	$75,000.00	$5.51	$82,650.00	$5.00	$75,000.00	$6.00	$90,000.00
20410	m	furrow ditches	1,600	$3.00	$4,800.00	$3.96	$6,336.00	$10.00	$16,000.00	$2.00	$3,200.00
25107	m	riprap lined ditch	1,800	$25.00	$45,000.00	$19.73	$35,514.00	$15.00	$27,000.00	$30.00	$54,000.00
62204	hour	pump, water, trash, 150 mm	200	$20.00	$4,000.00	$50.00	$10,000.00	$20.00	$4,000.00	$60.00	$12,000.00
62901	m^2	Erosion control mat type 1	1,700	$3.00	$5,100.00	$3.23	$5,491.00	$8.00	$13,600.00	$2.00	$3,400.00
					$697,650.00		$741,384.00		$723,890.00		$855,100.00
Total construction bid					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Erosion control ratio based on bid prices					4.0%		3.6%		3.5%		3.9%
Total length			(km)		15.785		15.785		15.785		15.785
			(mile)		9.8		9.8		9.8		9.8
Eroson control costs based on km			(per km)		$44,197		$46,968		$45,859		$54,172
Eroson control costs based on mile			(per mile)		$71,140		$75,599		$73,815		$87,195

Say **$7,500** **per mile**

Say **4%** **of Construction costs**

CLEARING & GRUBBING ACRE

	Coffman Cove Schedule B, 2003			Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	clearing and grubbing	50.000	$7,000.00	$350,000.00	$8,482.50	$424,125.00	$15,000.00	$750,000.00	$6,000.00	$300,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Units		Total		
$8,000	46.173	ha	$369,384		
	114	A		$3,240	per A

Say $3,500 per A

QUANTITIES

			STATIONING		QUANTITY	UNIT	SOURCE
Segment	1	A	88+00	261+46	29.9	A	clear.clr dated 4/7/04
Segment	1	B	10+00	270+63	44.6	A	See below
Segment	1	C	MP 0.00	MP 8.02	86.6	A/M	See below
Segment	2		260+00	444+51	35	A	clear.clr dated 4/7/04
Segment	3		444+50	737+30	74.5	A	clear.clr dated 7/7/04
Segment	4		740+00	1200+75	88.9	A	clear.clr dated 4/7/04
Segment	5		1200+00	1538+27	56.9	A	clear.clr dated 4/7/04

Projected Costs for Segment 1C based on the average cost/mile of
Segment 1A from Sta. 10+00 - 261+46 (4.76 miles)

		STATIONING		CLEARING QUANTITY	UNIT	SOURCE
Segment	A	88+00.00	261+46	51.4	Acre	clear.clr dated 4/7/04

	Quantity	Cost/Acre	Clearing Cos	Acres/Mile	Cost/Mile
Clearing Cost:	51.4	$3,500	$179,900	10.8	$36,343

Say $36,000 per Mile

Roadway Excavation incl Haul | CY

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Pri	Amount	Unit Price	Amount	Unit Price	Amount
20401 A	m^3	roadway excavation	528,752	$5.50	$2,908,136.00	$7.99	$4,224,728.48	$9.50	$5,023,144.00	$13.00	$6,873,776.00

(Common price in bid tabs)

Coffman Cove (1)						Coffman Cove (1)					
Ave.	Units		Total			Ave.	Units		Total		
$9	528752	m3	$4,758,768			$10	528752	m3	$5,287,520		
	691581	yd3		$7	per yd3		691581	yd3		$8	per yd3

Embankment was included in Coffman Cove bid price

Embankment was included in Coffman Cove bid price

Excavation includes much drilling and hauling	**Say**	**$8**	**per yd3**
Embankment includes haul and placement	**Say**	**$0**	**per yd3**

QUANTITIES

		STATIONING		EXCAVATION QUANTITY	UNIT	EMBANKMENT QUANTITY	UNIT	SOURCE
Segment	1 A	88+00.00	261+46.28	29,752	Cu. Yd.	291,545	Cu. Yd.	EW_1F2.log dated 4/7/04
Segment	1 B	10+00	270+63	566,567	Cu. Yd.	242,634	Cu. Yd.	EW_1F2.log dated 4/7/04
Segment	1 C	MP 0.00	MP 8.02	768,017	mile	51,108	mile	Scenario 2 - See Below
Segment	2	260+00	444+51	119,753	Cu. Yd.	420,314	Cu. Yd.	EW_1F2.log dated 7/7/04
Segment	3	444+50	737+30	1,373,899	Cu. Yd.	932,763	Cu. Yd.	EW_1F2.log dated 7/7/04
Segment	4	740+00	1200+75	922,217	Cu. Yd.	754,397	Cu. Yd.	EW_1F2.log dated 4/7/04
Segment	5	1200+00	1538+27	122,187	Cu. Yd.	817,683	Cu. Yd.	EW_1F2.log dated 7/7/04
				3,902,392		3,510,444		

Scenario #1 - Projected Costs for Segment 1C based on the average cost/mile **of the first mile** of Segment 1A from Sta. 10+00 - 63+00 - Based on complexity use $8/C.Y. Excavation & $5/C.Y. Embankment

		STATIONING		EXCAVATION QUANTITY	UNIT	EMBANKMENT QUANTITY	UNIT	SOURCE
Segment 1	Option A	10+00	63+00	1,315,173	Cu. Yd.	0	Cu. Yd.	EW_1F2.log dated 4/7/04

	Quantity	Cost/C.Y.	Excav. Cost	Cost/Mile	
Excavation Cost:	1,315,173	$8.00	$10,521,384	$9,210,978	**NOTE: Cost too excessive,**
Embankment Cost:	40,229	$0.00	$0	$0	**utilize scenario #2.**

Scenario #2 - Projected Costs for Segment 1C based on the average cost/mile **of the first 2 miles** of Segment 1A from Sta. 10+00 - 115+60 - Based on complexity use $8/C.Y. for Excavation.

		STATIONING		EXCAVATION QUANTITY	UNIT	EMBANKMENT QUANTITY	UNIT	SOURCE
Segment 1	Option A	88+00.00	115+60	1,536,033	Cu. Yd.	0	Cu. Yd.	EW_1F2.log dated 4/7/04

	Quantity	Cost/C.Y.	Excav. Cost	Cost/Mile
Excavation Cost:	1,536,033	$8.00	$12,288,264	$6,144,132
Embankment Cost:	102,216	$0.00	$0	$0

Excavation includes much drilling and hauling **Say** **$6,200,000** **per Mile**

Subexcavation | CY |

	Coffman Cove Schedule B, 2003			Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	subexcavation	280,000	$12.00	$3,360,000.00	$13.28	$3,718,400.00	$12.00	$3,360,000.00	$7.00	$1,960,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Units		Total	
$11	28000	m3	$301,280	
	36603	yd3		$8 per yd3

Say $8 per yd3

QUANTITIES

		STATIONING		QUANTITY	UNIT	SOURCE
Segment	1 A	88+00	261+46	53100	CY	Geotechnical Memo GM 1-04
Segment	1 B	10+00	270+63	17400	CY	See Below
Segment	1 C	MP 0.00	MP 8.02	13950	Mile	See Below
Segment	2	260+00	444+51	92100	CY	Geotechnical Memo GM 1-04
Segment	3	444+50	737+30	43100	CY	Geotechnical Memo GM 1-04
Segment	4	740+00	1200+75	16400	CY	Geotechnical Memo GM 1-04
Segment	5	1200+00	1538+27	41800	CY	Geotechnical Memo GM 1-04
				277850	CY	

Projected Costs for Segment 1 Option C based on the average cost/mile of
Segment 1A from Sta. 88+00 - 261+46 (4.76 miles)

					SUB-EX.		
		STATIONING			QUANTITY	UNIT	SOURCE
Segment	A	88+00.00		261+46	53,100	Cu. Yd.	Geotechnical Memo GM 1-04
	Quantity	Cost/C.Y.			Sub-Ex. Cost	C.Y./Mile	Cost/Mile
SubEx. Cost:	53,100	$8.00			$424,800	11155	$89,244

Say **$90,000 per Mile**

4" Asphalt Concrete Pavement | CY

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
40101	t	Hot asphalt concrete pavement Class B, grading C, type I pavement smoothness	22,300	$38.00	$847,400.00	$45.00	$1,003,500.00	$34.00	$758,200.00	$40.00	$892,000.00
40103	t	asphalt cement grade SHRP PG 58-28	1,200.0	$350.00	$420,000.00	$475.00	$570,000.00	$400.00	$480,000.00	$400.00	$480,000.00
40104	t	mineral filler (hydrated lime)	220.0	$160.00	$35,200.00	$317.80	$69,916.00	$350.00	$77,000.00	$350.00	$77,000.00
41201	t	tack coat grade CSS-1	40.0	$250.00	$10,000.00	$458.00	$18,320.00	$500.00	$20,000.00	$500.00	$20,000.00
Subtotals:							$1,661,736		$1,335,200		$1,469,000

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Units		602100	Total	
$40	22300	t		$892,000	
	9695.65	m3			
	12681.4	yd3			$70 per yd3

Assume 6% for oil, 1% mineral filler, 4% for tack coat increase costs by 10%
$77

Say $80 per yd3

QUANTITIES

			STATIONING		QUANTITY	UNIT	SOURCE
Segment	1	A	88+00	261+46	4186	CY	EW_1F2.log dated 4/7/04
Segment	1	B	10+00	270+63	5668	CY	See Below
Segment	1	C	MP 0.00	MP 8.02	1208	Mile	See Below
Segment	2		260+00	444+51	4232	CY	EW_1F2.log dated 7/7/04
Segment	3		444+50	737+30	6695	CY	EW_1F2.log dated 7/7/04
Segment	4		740+00	1200+75	10379	CY	EW_1F2.log dated 4/7/04
Segment	5		1200+00	1538+27	8540	CY	**5935 CY from EW_Seg5 dated 7/7/04, add 2605 CY for Tunnel.**

Quantity for Segment 1C are based on quantity per mile extracted from Segment 1A.				
Segment 1A	Total Quantity (C.Y.)	Length (mile)	Quantity/Mile	Cost/Mile
	5750	4.76	1,208	$96,639

Say $\boxed{\textbf{\$97,000}}$ **per Mile**

5" Crushed Agg. | CY

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	aggregate base grading D	84,000.0	$11.00	$924,000.00	$11.29	$948,360.00	$12.00	$1,008,000.00	$12.00	$1,008,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Units		602100 Total	
$12	22300	t	$267,600	
	9530	m3		
	12465	yd3		$21 per yd3

Say $20 per yd3

QUANTITIES

			STATIONING		QUANTITY	UNIT	SOURCE
Segment	1	A	88+00	261+46	7890	CY	EW_1F2.log
Segment	1	B	10+00	270+63	10678	CY	See Below
Segment	1	C	MP 0.00	MP 8.02	2275	Mile	See Below
Segment	2		260+00	444+51	7977	CY	EW_1F2.log
Segment	3		444+50	737+30	12580	CY	EW_1F2.log
Segment	4		740+00	1200+75	19458	CY	EW_1F2.log
Segment	5		1200+00	1538+27	14444	CY	****11154 CY from EW_Seg5 dated 7/7/04, add 3290 CY for Tunnel.**

Quantity for Segment 1B & Segment 1C are based on quantity per mile extracted from Segment 1A.

Segment 1A	Total Quantity (C.Y.)	Length (mile)	Quantity/Mile	Cost/Mile
	10827	4.76	2,275	$45,492

Say $45,000 per Mile

8" Select Material | CY

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20408	t	select topping	97,589	$8.50	$829,506.50	$10.25	$1,000,287.25	$12.00	$1,171,068.00	$11.00	$1,073,479.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Units		Total		
$11	97589	t	$1,073,479		
	41704.7	m3			
	54547.71	yd3		$20	per yd3

Say **$20** **per yd3**

QUANTITIES

			STATIONING		QUANTITY	UNIT	SOURCE
Segment	1	A	88+00	261+46	14667	CY	Section1F2\EW_1F2.log dated 4/7/2004
Segment	1	B	10+00	270+63	19839	CY	See Below
Segment	1	C	MP 0.00	MP 8.02	4229	Mile	See Below
Segment	2		260+00	444+51	14806	CY	Section1F2\EW_1F2.log dated 4/7/2004
Segment	3		444+50	737+30	23386	CY	Section1F2\EW_1F2.log dated 4/7/2004
Segment	4		740+00	1200+75	36257	CY	Section1F2\EW_1F2.log dated 4/7/2004
Segment	5		1200+00	1538+27	20743	CY	Section1F2\EW_1F2.log dated 4/7/2004

Quantity for Segment 1C are based on quantity per mile extracted from Segment 1A.

Segment 1A	Total Quantity (C.Y.)	Length (mile)	Quantity/Mile	Cost/Mile
	19839	4.94	4,016	$80,320

Say **$85,000** **per Mile**

Tunnel

Tunnel (excludes paving and drainage)	LF	1.5	miles

One Bore	Quantity	unit	price/unit	cost		
area of excavation	890	sq. ft				
length	7,920					
full perimeter	123	ft				
wall perimeter	87	ft				
waterproofing	689,040	sqfeet				
volume of tunnel excavation	261,067	cuyd	$160.00	$41,770,667		
8 Safe houses 50' x 10' x 15:						
	2,222	cuyd	$160.00	$355,556		
Shotcrete						
Bolts 8' long on 8'x8' pattern (3800' interior)	6,584	each	$500.00	$3,291,750		
Bolts 8' long on 4x4 pattern (100' each portal, near portals)	650	each	$500.00	$325,000		
Wire Mesh at Portals	15,000	sqyd	$3.00	$45,000		
Shotcrete 3" interior tunnel	64,167	sqyd	$150.00	$9,625,000		
Shotcrete 6" portals tunnel	15,000	sqyd	$250.00	$3,750,000		
filter fabric	64,167	sqyd	$9.00	$577,500		
Waterproofing Membrane	7,700	ft	$1,000.00	$7,700,000		
Concrete lining cut and cover at portals	417	cuyd	$600.00	$250,000		**Summary:**
						one bore
Subtotal				$67,690,472		$67,690,472
Electrical				$1,692,262		$1,692,262
Special Systems (telephone, CCTV, Ventilation for safe houses)				$3,384,524		$3,384,524
Lighting				$3,384,524		$3,384,524
Totals for one bore				$76,151,781		**$76,151,781**

Two bores- Two One Lane Tunnels	Two bores each		Two bores Total			
	Quantity	unit	Quantity	unit	price/unit	cost
area of excavation	586	sq. ft	1,172	sq. ft		
length						
full perimeter	102	ft	204	ft		
wall perimeter	70	ft	140	ft		
waterproofing		sqfeet	1,108,800	sq.ft		
volume of tunnel excavation	171,893	cuyd	343,787	cuyd	$160.00	$49,849,067
8 Safe houses 50' x 10' x 15			13 Cross passages 10x10x60			
		cuyd	2,889	cuyd	$160.00	$462,222
Shotcrete	22					
Bolts 8' long on 8'x8' pattern (3800' interior)		each	4,514	each	$500.00	$2,257,200
Bolts 8' long on 4x4 pattern (100' each portal, near portals)		each	600	each	$500.00	$300,000
Wire Mesh at Portals		sqyd	25,200	sqft	$3.00	$75,600
Shotcrete 3" interior tunnel		sqyd	105,336	sqft	$150.00	$15,800,400
Shotcrete 6" portals tunnel		sqyd	2,800	sqyd	$250.00	$700,000
filter fabric		sqyd	105,336	sqyd	$9.00	$948,024
Waterproofing Membrane		ft	3,800	ft	$1,000.00	$3,800,000
Concrete lining cut and cover at portals		cuyd	700	cuyd	$600.00	$420,000
Subtotal						$74,612,513
Electrical						$1,865,313
Special Systems (telephone, CCTV)						$3,730,626
Lighting						$3,730,626
Totals for two bore						$83,939,077

Adjusted to account for more efficient operation two faces at same time

Summary- Twin Single Lane Bores
$74,612,513
$1,865,313
$3,730,626
$3,730,626
$83,939,077

The double bore alternative is very close in cost to the single bore. However, based on the infomation available at this time, my recommendation is to use the double bore alternative for this project because the following reasons.

- Safety. The one lane double bore provides greater safety to the traveling public than the single bore with two way traffic.

- Maintenance costs. A single bore will require special equipment for the tunnel operation during emergencies (safe houses will require ventilation and other equipment), the maintenance cost of a single bore will be much greater than for a double bore

- A double bore could be constructed with a shoulder for almost the same cost of a single bore with no shoulders.

From Jesus Rohena, via email April 1, 2004

My estimate was for a 4000 ft rock tunnel. No permanent concrete lining was assumed, only shotcrete for the tunnel interior. I assumed a concrete lining for cut and cover section at the portals. No pavement or drainage was included on the estimate. A production rate of 8 to 12 ft could be expected for rock tunneling per 8 hrs shift.

From Jesus Rohena, via email April 5, 2004

Use two bores-Two One Lane Tunnel Summary:	$83,939,077
Say	$10,600 per ln. ft

From Don Richards, via email October 12, 2004

The doBradfield Tunnel Cost Summary - PRELIMINARY

Estimated Tunnel Cost Consideration	Option 1	Option 2
	Twin Bore	Single Bore
	Uni-directional	Bi-directional
Total Cost w/portals ($)	#########	169,373,239
Unit cost with portals* ($/lf)	16,021	21,172
Total Cost w/o portals($)	95,793,000	118,193,400
Unit cost w/o portals* ($/lf)	11,974	14,774

Note: The Costs shown above includes a 25% contingency fee added by PB. Final Costs DO NOT include this contingency fee. The Contingency Costs are added to the SubTotal to arrive at a Total Construction Cost Estimate.

From Don Richards, via email October 20, 2004

The doBradfield Tunnel Cost Summary - PRELIMINARY

Estimated Tunnel Cost Consideration	Option 1	Option 2
	Twin Tunnel	Single Tunnel
Total Cost w/25% Contingency	95,793,000	118,193,400
Tunnel Unit Cost w/25% Contingency	11,974	14,774
Total Cost w/o portals($)	75,267,900	92,672,500
Unit cost w/o portals* ($/lf)	9,409	11,584

FINAL ESTIMATE - SEE Parsons Brinckerhoff FINAL REPORT Dated NOVEMBER 30, 2004. See Section 8 - Construction Cost Estimates

Say $9,150 per ln. ft

Bridge Structure - Low Complexity SF
Bridge Structure - Medium Complexity SF
Bridge Structure - High Complexity SF

SPREADSHEET DEVELOPED BY M. VENEROSO 4/05/04 Edited by Durazo 9/10/04

	Sta	BOB	EOB	Bridge Length (ft)	Bridge Area[1] (sq.ft.)	Complexity Low[2]	Medium[3]	High[4]	Cost $
Seg 1	130+00	120+20	121+80	160	4,800		X		$960,000
Seg 1	227+00	224+74	228+00	326	9,780			X	$2,689,500
Seg 1B	50+00	48+70	49+70	100	3,000	X			$450,000
Seg 1B	54+00	54+00	55+00	100	3,000	X			$450,000
Seg 1B	132+50	132+50	134+75	225	6,750		X		$1,350,000
Seg 1B	267+00	267+00	270+35	400	12,000			X	$3,300,000
Seg 2	345+00	344+15	345+80	200	6,000		X		$1,200,000
Seg 3	567+00	564+00	566+00	200	6,000		X		$1,200,000
Seg 4	762+00	761+60	763+35	200	6,000	X			$900,000
Seg 4	869+00	867+00	872+00	500	15,000			X	$4,125,000
Seg 4	972+00	970+50	974+00	350	10,500		X		$2,100,000
Seg 4	1090+00	1089+00	1092+00	300	9,000		X		$1,800,000
Seg 4	1106+00	1107+50	1109+20	170	5,100		X		$1,020,000
Seg 5	1379+00	1381+40	1383+25	185	5,550		X		$1,110,000
Seg 5	1497+00	1494+00	1497+50	350	10,500		X		$2,100,000
	Total			3,766	112,980				$24,754,500

[1] Deck area based on average bridge width = 30
[2] Low complexity bridge, $/SF = **$150**
[3] Medium complexity bridge, $/SF = **$200**
[4] High complexity bridge, $/SF = **$275**

SUMMARY

	Sta	BOB	EOB	Bridge Length (lin.ft.)	Bridge Area[1] (sq.ft.)	Complexity: Low[2]	Medium[3]	High[4]	Cost $
Seg 1A	120+00	120+20	121+80	160	4800	0	4800	0	$960,000
	227+00	224+74	228+00	326	9780	0	0	9780	$2,689,500
	Subtotal:			486		0	4,800	9780	
	SAY					**0**	**4,800**	**9,780**	
	48+00	48+70	49+70	100	3,000	3000			$450,000
	54+00	54+00	55+00	100	3,000	3,000			$450,000
Seg 1B	132+50	132+50	134+75	225	6,750		6,750		$1,350,000
	267+00	267+00	270+35	400	12,000			12,000	$3,300,000
	Subtotal:			825		6000	6,750	12000	
	SAY			**825**	**24,750**	**6,000**	**6,750**	**12,000**	
Seg 1C	Costs based on a per mile bases - See Below					3000	6750	10050	$1,000,000
	SAY								
	345+00	344+15	345+80	200	6,000	0	6000	0	$1,200,000
Seg 2	Subtotal:			200		0	6,000	0	
	SAY					**0**	**6,000**	**0**	
	567+00	564+00	566+00	200	6,000	0	6000	0	$1,200,000
Seg 3	Subtotal:			200		0	6,000	0	
	SAY					**0**	**6,000**	**0**	
	762+00	761+60	763+35	200	6,000	6000	0	0	$900,000
Seg 4	869+00	867+00	872+00	500	15,000	0	0	15000	$4,125,000
	972+00	970+50	974+00	350	10,500	0	10500	0	$2,100,000
	1090+00	1089+00	1092+00	300	9,000	0	9000	0	$1,800,000
	1106+00	1107+50	1109+20	170	5,100	0	5100	0	$1,020,000
	Subtotal:			1,520		6000	24,600	15000	
	SAY					**6,000**	**24,600**	**15,000**	
	1379+00	1381+40	1383+25	185	5,550	0	5550	0	$1,110,000
Seg 5	1497+00	1494+00	1497+50	350	10,500	0	10500	0	$2,100,000
	Subtotal:			535		0	16,050	0	
	SAY					**0**	**16,050**	**0**	
	Total				88,230	6,000	57,450	24,780	$25,754,500

	Quantity	Complexity	Unit Cost	Cost per Mile		
Seg 1C	1215	**Low[3]**	$150	$182,250	**Say**	**$180,000**
Based on Seg 1B total quantities divided by project length	1366	**Medium[3]**	$200	$273,200	**Say**	**$275,000**
Low Complexity = 6000 sf / 4.94 mile = 1215 sf/Mile	2429	**High[4]**	$275	$667,975	**Say**	**$675,000**
Medium Complexity = 6750 sf / 4.94 miles = 1366 sf/mile						
High Complexity = 12000 sf / 4.94 miles = 2429 sf/Mile						

Backup Calculations for Bridge price:

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.			
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Secon	
55201	m^3	structural concrete class A (AE)	282.00	$1,200.00	$338,400.00	$1,100.00	$310,200.00	$1,200.00	$338,400.00	Unit Price	Amount
55301	each	precast, prestressed concrete structural members, Blub Tee Girder	6	$27,000.00	$162,000.00	$25,931.00	$155,586.00	$50,000.00	$300,000.00	$1,000.00	$282,000.00
55401	kg	reinforcing steel	21,070	$2.75	$57,942.50	$1.50	$31,605.00	$3.00	$63,210.00	$30,000.00	$180,000.00
55402	kg	epoxy coated reinforcing steel	1,770	$3.00	$5,310.00	$2.90	$5,133.00	$4.00	$7,080.00	$2.00	$42,140.00
55601 A	m	steel bridge railing	48.1	$300.00	$14,430.00	$324.00	$15,584.40	$450.00	$21,645.00	$4.00	$7,080.00
55601 b	m	steel bridge railing (retrofit)	132.7	$350.00	$46,445.00	$168.63	$22,377.20	$400.00	$53,080.00	$400.00	$19,240.00
55901	m^2	membrane, waterproofing, class C	260	$25.00	$6,500.00	$75.00	$19,500.00	$20.00	$5,200.00	$150.00	$19,905.00
61713	m	bridge transition railing	72.8	$180.00	$13,104.00	$150.00	$10,920.00	$300.00	$21,840.00	$40.00	$10,400.00
Subtotal of bridge costs:					$644,131.50		$570,905.60		$810,455.00	$400.00	$29,120.00
											$589,885.00

Bridge on Coffman Cove =	25	m length	11.37	m width	284.25	m2
Concrete abutments heights=	4.6	m	6.65	m		

(Common price in bid tabs)

Coffman Ave.		Units	Total			
$600,000		1 each		$600,000		
284.25	m2		$2,111	per m2		
3059.641	sq. ft		$196	per sq.ft		
	Say		200	per sq.ft	for low complexity bridge	

Culverts -				
> 10 foot diameter	EA			
Fish Passage Pipe	LF			

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 L	m	3600 millimeter pipe culvert	63.3	$2,300.00	$145,590.00	$2,445.00	$154,768.50	$2,100.00	$132,930.00	$3,200.00	$202,560.00
60301 A	m	3980 millimeter structural plate pipe	25.0	$2,500.00	$62,500.00	$2,897.00	$72,425.00	$3,000.00	$75,000.00	$3,200.00	$80,000.00
60301 B	m	4290 millimeter structural plate pipe	29.3	$3,000.00	$87,900.00	$2,515.00	$73,689.50	$3,100.00	$90,830.00	$3,200.00	$93,760.00
65001 A	each	Log weir	9	$2,000.00	$18,000.00	$400.00	$3,600.00	$900.00	$8,100.00	$400.00	$3,600.00
65001 B	each	Rock weir	2	$7,500.00	$15,000.00	$250.00	$500.00	$2,000.00	$4,000.00	$1,000.00	$2,000.00
25110	each	culvert outlet control system	17	$3,000.00	$51,000.00	$425.00	$7,225.00	$800.00	$13,600.00	$2,000.00	$34,000.00
25112	each	riprap headwall	50	$1,000.00	$50,000.00	$222.50	$11,125.00	$400.00	$20,000.00	$500.00	$25,000.00
25116	m	energy dissipator	65.0	$175.00	$11,375.00	$132.00	$8,580.00	$125.00	$8,125.00	$250.00	$16,250.00

(Common price in bid tabs)
Coffman Cove (1)

	Ave.	Units			Total			
Pipe alone	$3,000	25	m		$75,000			
		82.021	ln ft			$914	per ln ft	
					Say	$900	per ln ft	
		Say	**100**	**ft**		**$90,000**	**each**	**for culverts > 10 ft diameter**

8/15/04- As per Sven Leon reduce culvert cost > 10 ft diameter to: $60,000 each

Additions for fish culvert

Rock weir	$1,500	1	each	$1,500		
Culvert Outlet	$1,000	1	each	$1,000		
Riprap Headwall	$500	2	each	$1,000		
Subtotal for additions:				$3,500		
		25	m		$140	per m
		82.021	ln ft		$43	per ln ft
				Say	$50	per ln ft
				Say	$3,500	each

			Say	**$900**	**per ln ft**	**for fish passage culverts**
Say	100	ft		$90,000	each	

SEGMENT 1C - Quantities derived from Segment 1A and aerial photo

Fish Passage				**Unit Costs**
Say	100	ft	per mile	$90,000
				$90,000 per Mile
for culverts > 10 ft diameter				
Say	1	ea	per mile	$60,000
				$60,000 per Mile

RECOMMENDATIONS FROM S. LEON:

		STA	DIA. (ft)	**CULVERTS >10 ft**	Summation per Segment		**FISH PASSAGE** DIA (ft)	Length (ft)	Summation per Segment	
SEGMENT	1 A	155+00	12	1	1				0	
SEGMENT	1 A	201+00			0		7	100	100	
SEGMENT	1 A	206+00			0		7	100	100	
SEGMENT	1 A	210+20			0		7	100	100	
Subtotal:	**1 A**			**Say**	**1**	**Each**			**300**	**ln. ft**
SEGMENT	1 B	73+50	12	1	1					
SEGMENT	1 B	103+00	10	1	1					
Subtotal:	**1 B**			**Say**	**2**	**Each**			**0**	**ln. ft**
SEGMENT	1 C		0	0	0					
Subtotal:	**1 C**			**Say**	**0**	**Each**			**0**	**ln. ft**
SEGMENT	2		0	0	0					
Subtotal:	**2**			**Say**	**0**	**Each**			**0**	**ln. ft**
SEGMENT	3	526+50	12	1	1			0	0	
SEGMENT	3	615+59	10	1	1			0	0	
SEGMENT	3	705+50	10	1	1			0	0	
Subtotal:	**3**			**Say**	**3**	**Each**			**0**	**ln. ft**
SEGMENT	4	749+20	8		0			0	0	
SEGMENT	4	776+10	8		0			0	0	
Subtotal:	**4**			**Say**	**0**	**Each**			**0**	**ln. ft**
SEGMENT	5	1207+20	12	1	1			0	0	
SEGMENT	5	1371+00	10	1	1			0	0	
Subtotal:	**5**			**Say**	**2**	**Each**			**0**	**ln. ft**
				8	8	Each		300	300	ln. ft.

Revetment Wall | CY

(Class V Riprap)

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25101	m^3	placed riprap, class 2	100	$25.00	$2,500.00	$172.67	$17,267.00	$40.00	$4,000.00	$30.00	$3,000.00
25103	m^3	keyed riprap, class 5	400	$50.00	$20,000.00	$22.97	$9,188.00	$40.00	$16,000.00	$50.00	$20,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Units		Total		
$50	400	m3	$20,000		
	523.1804	yd3		$38	per yd3
			Say	**$40**	**per yd3**

RIPRAP REVETMENT LOCATIONS (See Sheet B.3)		9/10/2004
Typical Dimensions: [5'd x 20'h (slope distance) x length] + [5'd x 10'w (base) x length]		
SEGMENT 1	Option 1A	1300 CY
SEGMENT 1	Option 1B	22000 CY
SEGMENT 1	Option 1C	2818 per Mile
SEGMENT 2		43900 CY
SEGMENT 3		8800 CY
SEGMENT 4		24600 CY
SEGMENT 5		14900 CY

MSE Wall | SF

	Coffman Cove Schedule B, 2003			Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25119	m^2	riprap blanket	11,000.0	$20.00	$220,000.00	$13.47	$148,170.00	$11.50	$126,500.00	$15.00	$165,000.00
25203	m^3	rock buttress, mechanically-placed	3,500	$40.00	$140,000.00	$12.34	$43,190.00	$15.00	$52,500.00	$30.00	$105,000.00
25504	m^2	geogrid wall	180	$300.00	$54,000.00	$290.00	$52,200.00	$300.00	$54,000.00	$350.00	$63,000.00
26201	m^2	rockery wall	900	$225.00	$202,500.00	$61.00	$54,900.00	$175.00	$157,500.00	$100.00	$90,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Units		Total		
$300	180	m2	$54,000		
	1937.504	sq.ft		$28	per sq ft
		Say		**$30**	**per sq ft**

QUANTITIES

			STATIONING		QUANTITY	UNIT	SOURCE
Segment	1	A	88+00	261+46	0	SF	Geotechnical Memo GM 1-04
Segment	1	B	10+00	270+63	121700	SF	See Below
Segment	1	C	MP 0.00	MP 8.02	24,636	Mile	See Below
Segment	2		260+00	444+51	33000	SF	See RockFallDitch&MSE.xls 7/11/04
Segment	3		444+50	737+30	49500	SF	See RockFallDitch&MSE.xls 7/11/04
Segment	4		740+00	1200+75	160200	SF	See RockFallDitch&MSE.xls 7/11/04
Segment	5		1200+00	1538+27	0	SF	See RockFallDitch&MSE.xls 7/11/04

Quantity for Segment 1C are based on quantity per mile extracted from Segment 1B.

Segment 1B	Total Quantity (S.F.)	Length (mile)	Quantity/Mile	Cost/Mile
	121700	4.94	24,636	$739,069

Say **$750,000** **per Mile**

Wetland Mitigation - Allowance | Acre

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
21101 B	m^2	roadway obliteration, type 2	46,000	$4.50	$207,000.00	$2.45	$112,700.00	$1.00	$46,000.00	$5.00	$230,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Units		Total		
$3	46000	m2	$138,000		
	495140	sq.ft		$0.28	per sq ft
	11.3668	A	Say	$1.15	per sq ft
				$12,141	per A

$50,094 per A based on sq. ft. costs

Say $25,000 per A

Wetland mitigation in SE Alaska for Coffman Cove was conserving the top layer of muskeg and placing it on obliterated road.
Wetland mitigation may be more difficult to create on this project.

I think the wetland mitigation estimates are too uniformly distributed, and high, in both acres and cost/acre. Here's my best guess: $25,000/acre to mitigate (Big Salt cost $12K/acre and Coffman (1) and (2) cost $7K/acre), so $25K for Bradfield is generous.
I'd estimate 20 acres each for Segments 1-3 (same as you have),
but I'd drop to 10 acres for Segment 4 and 5 acres for Segment 5, for a total of 75 acres,
and a total cost of $1,875,000 - still generous, but more realistic.

Steve Email 4/6/2004

QUANTITIES

		STATIONING		QUANTITY	UNIT	SOURCE
Segment	1 A	88+00	261+46	20	A	See Email above
Segment	1 B	10+00	270+63	20	A	
Segment	1 C	MP 0.00	MP 8.02	20	A	
Segment	2	260+00	444+51	20	A	See Email above
Segment	3	444+50	737+30	20	A	See Email above
Segment	4	740+00	1200+75	10	A	See Email above
Segment	5	1200+00	1538+27	5	A	See Email above
				115	A	

Note: Quantities for Segment 1C are based on allowance for Segment 1A

Drainage - Allowance | Mile

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 B	m	600 millimeter pipe culvert	1,800	$100.00	$180,000.00	$125.17	$225,306.00	$180.00	$324,000.00	$110.00	$198,000.00
60201 C	m	900 millimeter pipe culvert	120	$150.00	$18,000.00	$208.00	$24,960.00	$260.00	$31,200.00	$150.00	$18,000.00
60201 D	m	1050 millimeter pipe culvert	55	$200.00	$11,000.00	$250.00	$13,750.00	$300.00	$16,500.00	$175.00	$9,625.00
60201 E	m	1200 millimeter pipe culvert	51	$325.00	$16,575.00	$400.00	$20,400.00	$320.00	$16,320.00	$250.00	$12,750.00
60201 F	m	1650 millimeter pipe culvert	73	$375.00	$27,375.00	$419.00	$30,587.00	$750.00	$54,750.00	$350.00	$25,550.00
60201 G	m	1800 millimeter pipe culvert	35.9	$400.00	$14,360.00	$772.00	$27,714.80	$850.00	$30,515.00	$800.00	$28,720.00
60201 H	m	2100 millimeter pipe culvert	59.1	$700.00	$41,370.00	$936.00	$55,317.60	$800.00	$47,280.00	$900.00	$53,190.00
60201 I	m	2400 millimeter pipe culvert	103.7	$725.00	$75,182.50	$996.00	$103,285.20	$850.00	$88,145.00	$1,000.00	$103,700.00
60206 A	each	end section for 450 millimeter pipe culvert	7	$150.00	$1,050.00	$192.00	$1,344.00	$150.00	$1,050.00	$300.00	$2,100.00
60206 B	each	end section for 600 millimeter pipe culvert	55	$200.00	$11,000.00	$233.00	$12,815.00	$175.00	$9,625.00	$350.00	$19,250.00
60206 C	each	end section for 900 millimeter pipe culvert	2	$350.00	$700.00	$750.00	$1,500.00	$500.00	$1,000.00	$700.00	$1,400.00
25116	m	energy dissipator	65.0	$175.00	$11,375.00	$132.00	$8,580.00	$125.00	$8,125.00	$250.00	$16,250.00

(Common price in bid tabs)
Coffman Cove (1)

	Ave.	Units		Total		
Pipe alone	$500	20 m		$10,000		
		65.6168 ln ft			$152	per ln ft
				Say	$200	per ln ft
		Say	70 ft		$14,000	each

Additions to drainage

	Ave.	Units	Total		
End Section	$500	2 each	$1,000		
Energy dissipator	$50	3 ln ft	$150		
subtotal			$1,150		
		20 m		$58	per m
		65.6168 ln ft		$18	per ln ft
			Say	$25	per ln ft
		Say		$1,150	each

Does not account for underdrains, horizontal pipes, or riprap lined ditches etc.

Say 70 ft of culvert every **500** ft = 739.2 ln feet of culvert per mile

Say 750 ln feet of culvert per mile to include other drainage incidentals

$225 x 750' = $168,750

Say **$180,000** **per mile f (very wet climate)**

See Hydraulic Report from Sven Leon dated 9/15/04 reduce drainage cost to: **$80,000** **per Mile**

Seeding and Landscaping Acre

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62514	slry unit	Turf establishment	300	$700.00	$210,000.00	$621.15	$186,345.00	$850.00	$255,000.00	$550.00	$165,000.00
62603	each	Cuttings, alder	630	$2.00	$1,260.00	$5.00	$3,150.00	$10.00	$6,300.00	$5.00	$3,150.00
62604	each	Bundle, alder	50	$5.00	$250.00	$67.00	$3,350.00	$30.00	$1,500.00	$25.00	$1,250.00
62407 A	m^2	Placing conserved topsoil, 300 millimeters depth	46,000	$3.00	$138,000.00	$2.88	$132,480.00	$1.25	$57,500.00	$3.00	$138,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Units		Total		
Seeding					
$700	300	slry unit	$21,000		
	30	ha		$700	per ha
	114	A		$184	per A
			Say	$250	per A
Ave.	Units		Total		
Conserved topsoil					
$3	46000	m2	$14		
	4.6	ha		$3	per ha
	11.3668	A		$1	per A

Say $250 per A

QUANTITIES

			STATIONING		QUANTITY	UNIT	SOURCE
Segment	1	A	88+00	261+46	18.1	A	Seed1.ser dated 4/6/04
Segment	1	B	10+00	270+63	22.3	A	1b_seed.ser dated 7/29/04
Segment	1	C	MP 0.00	MP 8.02	6.2	A	See Below
Segment	2		260+00	444+51	21.5	A	Seed1.ser dated 7/6/04
Segment	3		444+50	737+30	49.98	A	Seed1.ser dated 7/7/04
Segment	4		740+00	1200+75	50.47	A	Seed1.ser dated 7/7/04
Segment	5		1200+00	1538+27	40.56	A	Seed1.ser dated 7/7/04
					209.11	A	

Segment 1C based on quantities from Segment 1B

22.3 acres / 4.94 miles =	4.5 Acres/Mile	
4.5 Acres * $250/Acre =	$1,125	
Say	**$1,500**	**per Mile**

Guard Rail | LF

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701	m	guardrail system G4, type I, class A (wood posts)	430.0	$80.00	$34,400.00	$112.00	$48,160.00	$70.00	$30,100.00	$100.00	$43,000.00
61702 A	m	terminal section type G4-BAT	6	$2,000.00	$12,000.00	$2,977.00	$17,862.00	$2,500.00	$15,000.00	$3,000.00	$18,000.00
61702 B	each	terminal section type tangent	12	$2,500.00	$30,000.00	$2,988.00	$35,856.00	$2,500.00	$30,000.00	$2,500.00	$30,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Units		Total		
$100	430	m	$43,000		
	1410.76	ln ft		$30	per ln ft

Guardrail was estimated for areas protecting MSE walls and slopes greater than 50 ft.
Guardrail quantities were increased by 10% to compensate for flared areas.

To include extra length to obtain flare and termini

Say $\boxed{\$50}$ per ln ft

Quantities

				Length		Summation per Segment		To Protect:
		STA	STA					
SEGMENT	1 A - Left Side	172+50	175+50	300		300		Fills > 50'
Subtotal:	**1 A**				**Say**	**300**	**ln.ft**	
		STA	STA					
SEGMENT	1 B - Right Side	10+00	168+40	15840				
15840					**Say**	**15,840**	**ln.ft**	
Subtotal:	**1 B**	Assume	**0%**	of total length				
SEGMENT	1 C							
					Say	**$5,300**	**per Mile**	
Subtotal:	**1 C**	Assume	**0%**	of total length				
		STA	STA					Fills > 50'
SEGMENT	2 Left Side	331+50	336+50	500		500		Fills > 50'
SEGMENT	2 Left Side	393+50	395+50	200		700		Fills > 50'
SEGMENT	2 Left Side	441+50	443+50	200		900		Fills > 50'
Subtotal:	**2**				**Say**	**900**	**ln.ft**	

SEGMENT	3	Left Side	454+50	458+50	400	400	Fills > 50'
SEGMENT	3	Left Side	486+50	487+50	100	500	Fills > 50'
SEGMENT	3	Left Side	489+50	490+50	100	600	Fills > 50'
SEGMENT	3	Left Side	497+50	500+50	300	900	Fills > 50'
SEGMENT	3	Left Side	503+50	505+50	200	1100	Fills > 50'
SEGMENT	3	Left Side	512+50	515+50	300	1400	Fills > 50'
SEGMENT	3	Left Side	523+50	528+50	500	1900	Fills > 50'
SEGMENT	3	Left Side	529+50	531+50	200	2100	Fills > 50'
SEGMENT	3	Left Side	537+50	538+50	100	2200	Fills > 50'
SEGMENT	3	Left Side	539+50	542+50	300	2500	Fills > 50'
SEGMENT	3	Left Side	551+50	554+50	300	2800	Fills > 50'
SEGMENT	3	Left Side	571+50	581+50	1000	3800	Fills > 50'
SEGMENT	3	Right Side	571+50	579+50	800	4600	Fills > 50'
SEGMENT	3	Left Side	592+00	594+00	200	4800	Fills > 50'
SEGMENT	3	Left Side	598+00	602+00	400	5200	Fills > 50'
SEGMENT	3	Left Side	611+00	616+00	500	5700	Fills > 50'
SEGMENT	3	Right Side	615+00	616+00	100	5800	Fills > 50'
SEGMENT	3	Left Side	617+50	618+50	100	5900	Fills > 50'
SEGMENT	3	Left Side	619+50	622+50	300	6200	Fills > 50'
SEGMENT	3	Left Side	623+50	625+50	200	6400	Fills > 50'
SEGMENT	3	Left Side	629+50	635+50	600	7000	Fills > 50'
SEGMENT	3	Left Side	637+50	647+50	1000	8000	Fills > 50'
SEGMENT	3	Left Side	663+50	667+50	400	8400	Fills > 50'
SEGMENT	3	Left Side	672+50	673+50	100	8500	Fills > 50'
SEGMENT	3	Left Side	675+50	676+50	100	8600	Fills > 50'
SEGMENT	3	Left Side	687+50	690+50	300	8900	Fills > 50'
SEGMENT	3	Left Side	692+50	693+50	100	9000	Fills > 50'
SEGMENT	3	Left Side	695+50	707+50	1200	10200	Fills > 50'
Subtotal:	**3**				**Say**	**10200**	**ln.ft**

SEGMENT	**4** Left Side	773+50	777+50	400	400	Fills > 50'
SEGMENT	**4** Left Side	784+50	787+50	300	700	Fills > 50'
SEGMENT	**4** Left Side	823+50	825+50	200	900	Fills > 50'
SEGMENT	**4** Left Side	826+50	827+50	100	1000	Fills > 50'
SEGMENT	**4** Left Side	833+50	834+50	100	1100	Fills > 50'
SEGMENT	**4** Left Side	846+50	852+50	600	1700	Fills > 50'
SEGMENT	**4** Left Side	854+50	856+50	200	1900	Fills > 50'
SEGMENT	**4** Right Side	867+50	870+50	300	2200	Fills > 50'
SEGMENT	**4** Left Side	867+50	870+50	300	2500	Fills > 50'
SEGMENT	**4** Left Side	870+50	872+50	200	2700	Fills > 50'
SEGMENT	**4** Left Side	875+50	876+50	100	2800	Fills > 50'
SEGMENT	**4** Left Side	884+50	888+50	400	3200	Fills > 50'
SEGMENT	**4** Right Side	971+50	973+50	200	3400	Fills > 50'
SEGMENT	**4** Left Side	971+50	978+50	700	4100	Fills > 50'
SEGMENT	**4** Right Side	986+50	990+50	400	4500	Fills > 50'
SEGMENT	**4** Left Side	988+50	990+50	200	4700	Fills > 50'
SEGMENT	**4** Right Side	993+50	994+50	100	4800	Fills > 50'
SEGMENT	**4** Right Side	996+50	998+50	200	5000	Fills > 50'
SEGMENT	4 Right Side	1003+50	1006+50	300	5300	Fills > 50'
SEGMENT	4 Right Side	1010+50	1013+50	300	5600	Fills > 50'
SEGMENT	4 Right Side	1018+50	1027+50	900	6500	Fills > 50'
SEGMENT	4 Right Side	1028+50	1031+50	300	6800	Fills > 50'
SEGMENT	4 Right Side	1033+50	1037+50	400	7200	Fills > 50'
SEGMENT	4 Right Side	1041+50	1045+50	400	7600	Fills > 50'
SEGMENT	4 Right Side	1046+50	1049+50	300	7900	Fills > 50'
SEGMENT	4 Right Side	1051+50	1065+50	1400	9300	Fills > 50'
SEGMENT	4 Left Side	1061+50	1063+50	200	9500	Fills > 50'
SEGMENT	4 Right Side	1069+50	1071+50	200	9700	Fills > 50'
SEGMENT	**4** Left Side	1078+50	1082+50	400	10100	Fills > 50'
SEGMENT	**4** Right Side	1079+50	1082+50	300	10400	Fills > 50'
SEGMENT	**4** Right Side	1086+50	1087+50	100	10500	Fills > 50'
SEGMENT	**4** Left Side	1088+50	1089+50	100	10600	Fills > 50'
SEGMENT	**4** Right Side	1088+50	1093+50	500	11100	Fills > 50'
SEGMENT	**4** Right Side	1105+50	1106+50	100	11200	Fills > 50'
SEGMENT	4 Right Side	1111+50	1115+50	400	11600	Fills > 50'
SEGMENT	4 Right Side	1139+50	1140+50	100	11700	Fills > 50'
SEGMENT	4 Right Side	1143+50	1147+50	400	12100	Fills > 50'

B-174

SEGMENT	4 Right Side	1153+50	1169+50		1600	13700	Fills > 50'
SEGMENT	4 Right Side	1180+50	1186+50		600	14300	Fills > 50'
SEGMENT	4 Right Side	1189+50	1193+50		400	14700	Fills > 50'
Subtotal:	**4**			**Say**		**14700**	**In.ft**
SEGMENT	5 Left Side	1209+50	1210+50		100	100	Fills > 50'
SEGMENT	5 Right Side	1209+50	1210+50		100	200	Fills > 50'
SEGMENT	5 Left Side	1301+50	1311+50		1000	1200	Fills > 50'
SEGMENT	5 Right Side	1304+50	1309+50		500	1700	Fills > 50'
SEGMENT	5 Left Side	1314+50	1316+50		200	1900	Fills > 50'
SEGMENT	5 Left Side	1334+50	1337+50		300	2200	Fills > 50'
SEGMENT	5 Left Side	1376+50	1379+50		300	2500	Fills > 50'
SEGMENT	5 Left Side	1387+50	1394+50		700	3200	Fills > 50'
SEGMENT	5 Left Side	1417+50	1418+50		100	3300	Fills > 50'
SEGMENT	5 Left Side	1454+50	1465+50		1100	4400	Fills > 50'
SEGMENT	5 Left Side	1485+50	1492+50		700	5100	Fills > 50'
Subtotal:	**5**			**Say**		**5100**	**In.ft**
						31200	Each

Roadway Signage - Allowance | Mile

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m^2	Sign installation	70.00	$500.00	$35,000.00	$494.00	$34,580.00	$1,000.00	$70,000.00	$500.00	$35,000.00
63507	m^2	Construction sign	136	$200.00	$27,200.00	$158.00	$21,488.00	$100.00	$13,600.00	$150.00	$20,400.00
			206.00								
63308	each	Removing and resetting signs	1	$200.00	$200.00	$1,000.00	$1,000.00	$150.00	$150.00	$500.00	$500.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Units		Total		
$500	70	m2	$35,000		
	753.4737	sq.ft		$46	per sq ft
			Say	$50	per sq ft

70 m2 for 15.785 km (total project length for Coffman Cove (1)

Ave. sign area = 0.5

140 signs

14.2735608

Say 15 signs per mile

753.4737 sq.ft for 9.8083444 miles (total project length for Coffman Cove (1)

$3,840.98

Say $5,000 per mile for signage

Pavement Stripping and Markings - Allowance | Mile

Coffman Cove Schedule B, 2003				Engineers Estimate		SE Road Builders		Kiewitt Pacific Co.		Secon	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63401A	m	Pavement markings, type M, solid white	29,900	$5.00	$149,500.00	$4.14	$123,786.00	$2.75	$82,225.00	$3.00	$89,700.00
63401 B	m	Pavement markings, type M, solid yellow	26,600	$5.00	$133,000.00	$4.12	$109,592.00	$2.75	$73,150.00	$3.00	$79,800.00
63401 C	m	Pavement markings, broken yellow	3,900	$4.00	$15,600.00	$4.12	$16,068.00	$2.75	$10,725.00	$3.00	$11,700.00
			60,400		$298,100.00		$249,446.00		$166,100.00		$181,200.00
63406	each	Pavement markings, type M, Stop line	1	$1,000.00	$1,000.00	$295.00	$295.00	$1,000.00	$1,000.00	$300.00	$300.00
63410	each	Recessed pavement markers	1,300	$35.00	$45,500.00	$35.35	$45,955.00	$25.00	$32,500.00	$20.00	$26,000.00

(Common price in bid tabs)
Coffman Cove (1)
Ave. Units Total

$5 60400 m $302,000

198162.7 ln ft $2 per ln ft
Say $2 per ln ft
Coffman Cove used a very expensive pavement marking.

Say 5250 ft in 1 mile and 6 applications at $0.60 per ln ft = $3.60
2 applications for 2 fog lines and 1 centerline
Say $5 per ln ft or $26,250 per mile

Say $25,000 per mile

APPENDIX C

Table C-1
Riprap Revetment Summary

Location (sta)	Length (ft)	Volume (cy)
Segment 1 Option A		
260	150	1300
Segment 1 Option B		
140	2,000	17,600
185	500	4,400
Segment 2		
260	1,400	12,300
278	700	6,100
301	2,700	23,700
391	200	1,800
Segment 3		
485	400	3,500
491	300	2,600
674	100	900
677	200	1,800
Segment 4		
809	200	1,800
931	600	5,200
944	1600	14,000
1006	100	900
1013	200	1,800
1018	100	900
Segment 5		
1416	1200	10,500
1480	500	4,400
TOTALS	13,150	115,500

Notes:
1. Revetments assumed 10 feet high, 5 feet thick, 1(v):2(h) side slopes, and 10 feet long toe.

Table C-2
Bridge Summary

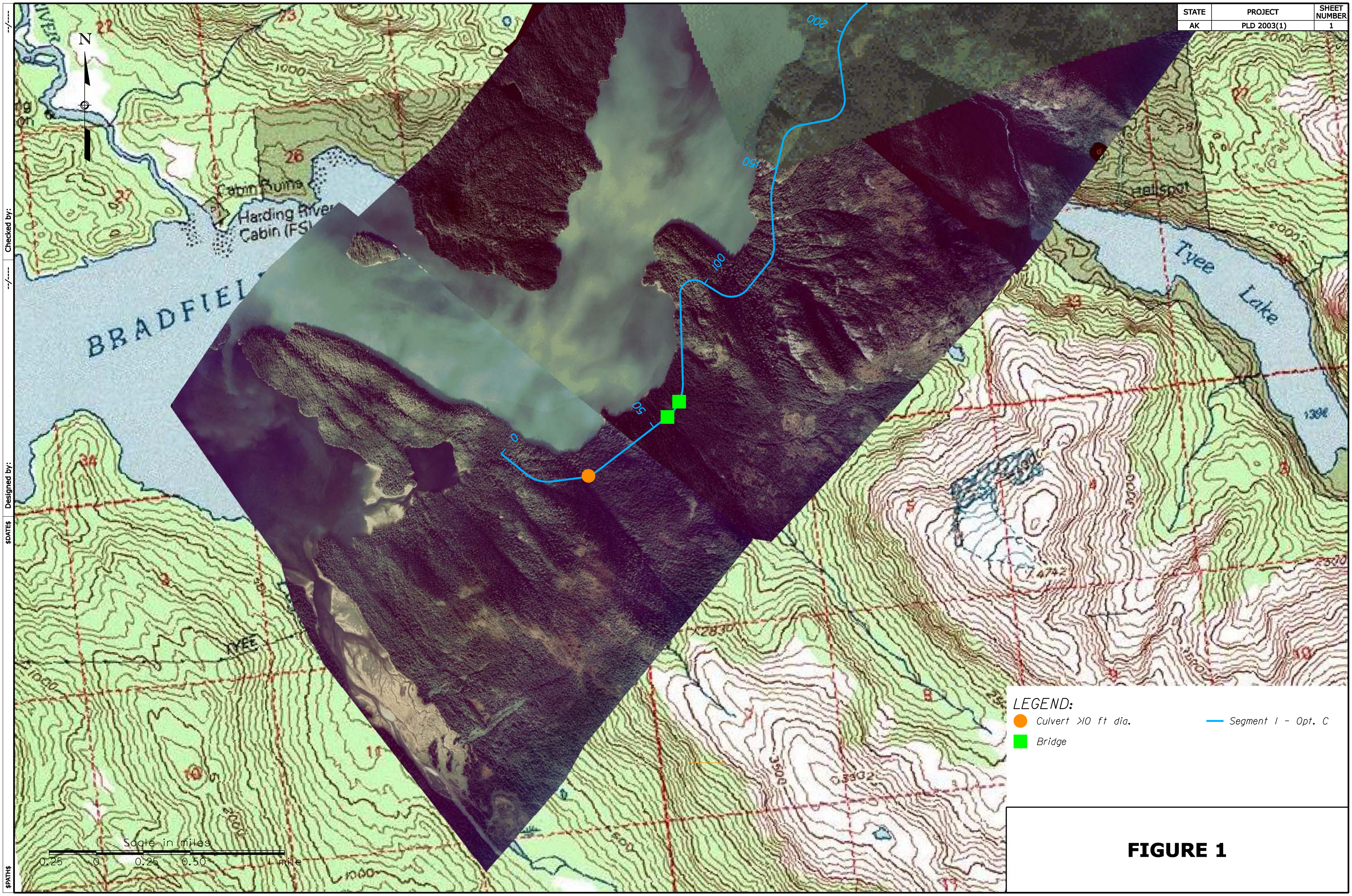
Location (sta)	Assumed Length (ft)	50-year Design Peak Discharge (cfs)
Segment 1 Option A		
121	160 Bridge or Large Culvert	Power House Discharge (cfs unknown)
225	326	30,100
Segment 1Option B		
50	100	1,000
54	100	1,000
134	225	10,900
268	400	40,600
Segment 1Option C		
55	200	2,200
60	100	1,100
250	400	3,700
Segment 2		
345	200	3,300
Segment 3		
565	200	3,400
Segment 4		
762	200	1,000
867	500	18,200
971	350	10,000
1090	300	8,700
1108	170	3,800
Segment 5		
1382	185	2,400
1495	350	1,400
TOTALS	4,466	

Notes:
1. Assume 15 feet minimum clearance between channel bottom and bridge low chord and spill through abutments with 1(v):2(h) side slopes.

Table C-3
Large Diameter Culvert Summary

Location (sta)	Assumed Diameter (ft)	50-year Design Peak Discharge (cfs)
Segment 1 Option A		
155	12	650
Segment 1 Option B		
103	10	600
Segment 1 Option C		
25	10	500
Segment 3		
526	12	900
615	10	600
705	10	500
Segment 5		
1206	12	900
1364	10	500
TOTALS	8 culverts	

Notes:
1. Assume 15 feet minimum clearance between channel bottom and bridge low chord and spill through abutments with 1(v):2(h) side slopes.



STATE | PROJECT | SHEET NUMBER
AK | PLD 2003(1) | 1
N
Cabin Ruins
Harding River Cabin (FS)
BRADFIEL
Tyee Lake
Hellspot
TYEE
0
50
100
150
200
LEGEND:
Culvert >10 ft dia.
Bridge
Segment I - Opt. C
Scale in miles
0.25 0 0.25 0.50 1 mile
Checked by:
Designed by:
$DATE$
$PATH$

FIGURE 1

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	2

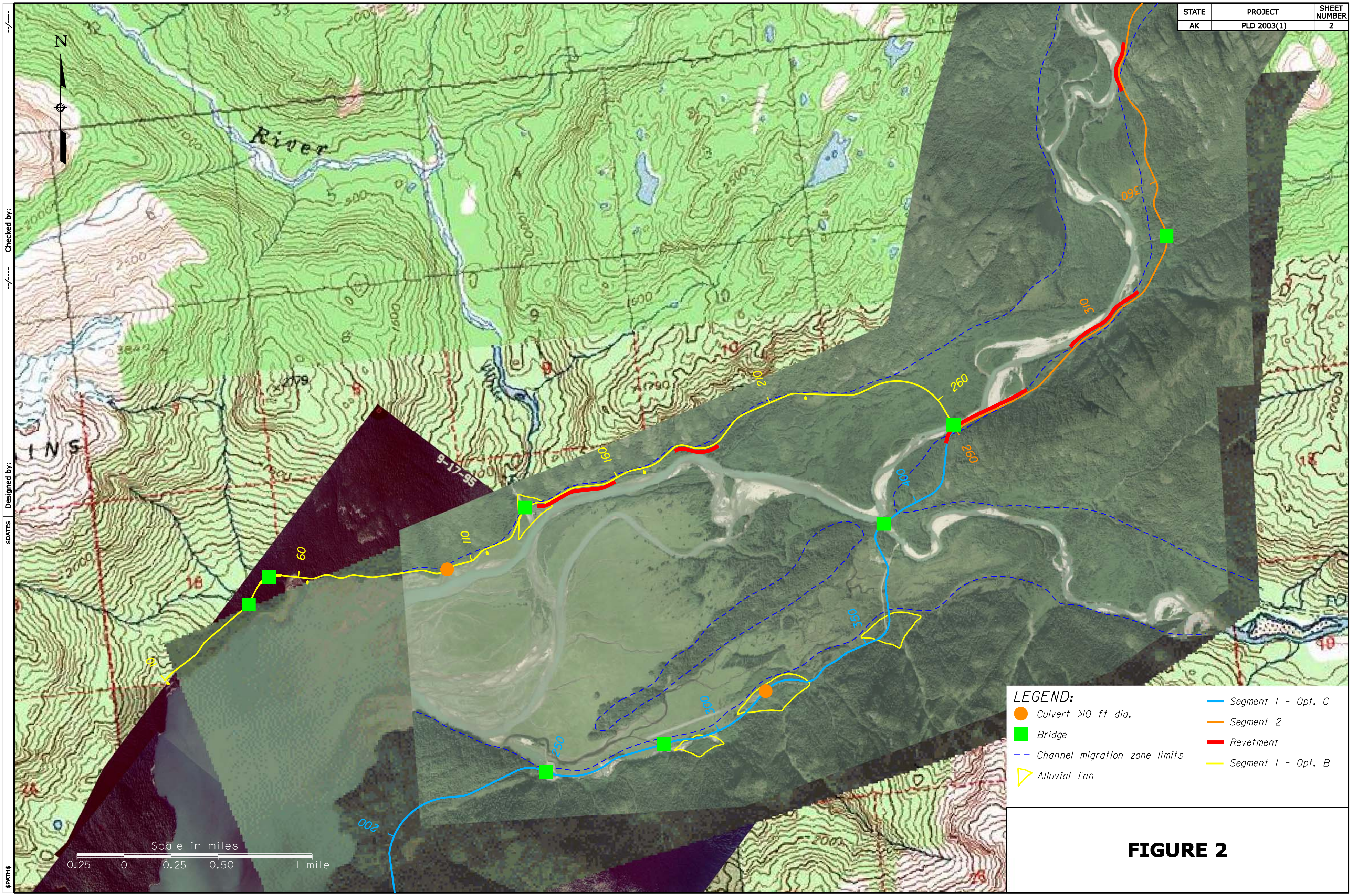
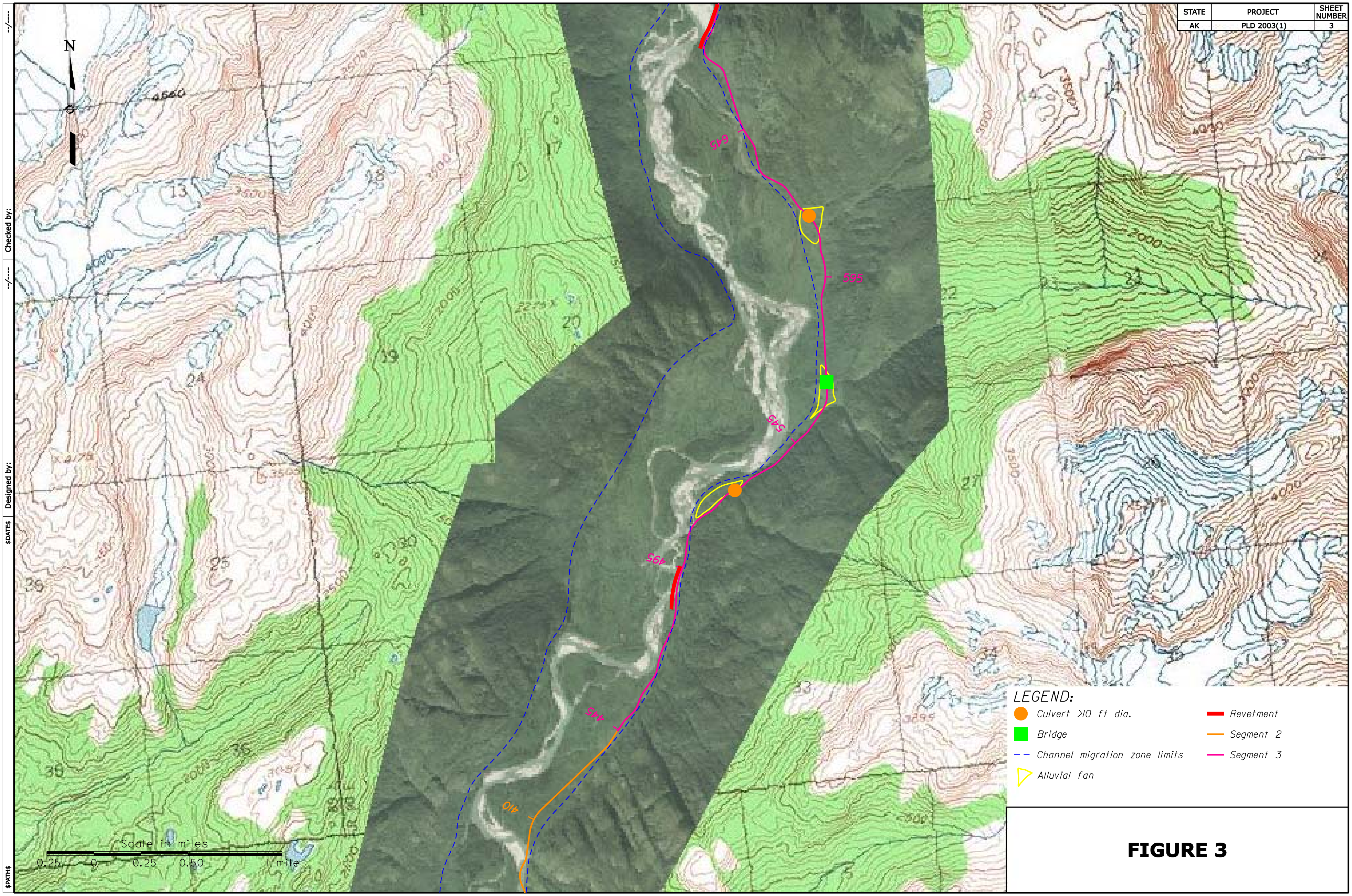


FIGURE 2

Designed by:
Checked by:
$DATE$
$PATHS$



STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
3
N
LEGEND:
Culvert >10 ft dia.
Bridge
Channel migration zone limits
Alluvial fan
Revetment
Segment 2
Segment 3
Scale in miles
0.25 0 0.25 0.50 1 mile
410
445
495
545
595
645
Checked by:
Designed by:
$DATE$
$PATHS

FIGURE 3

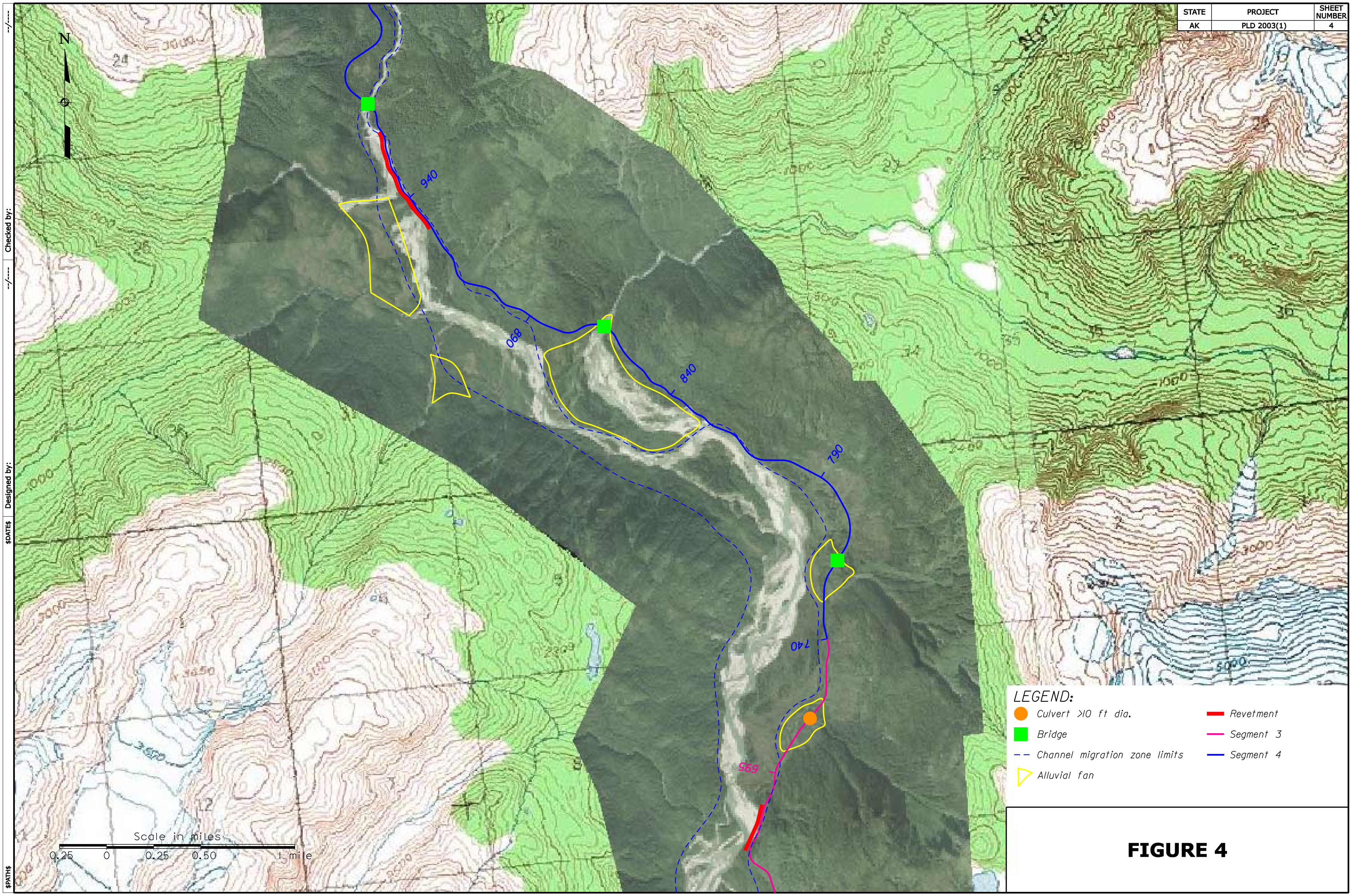
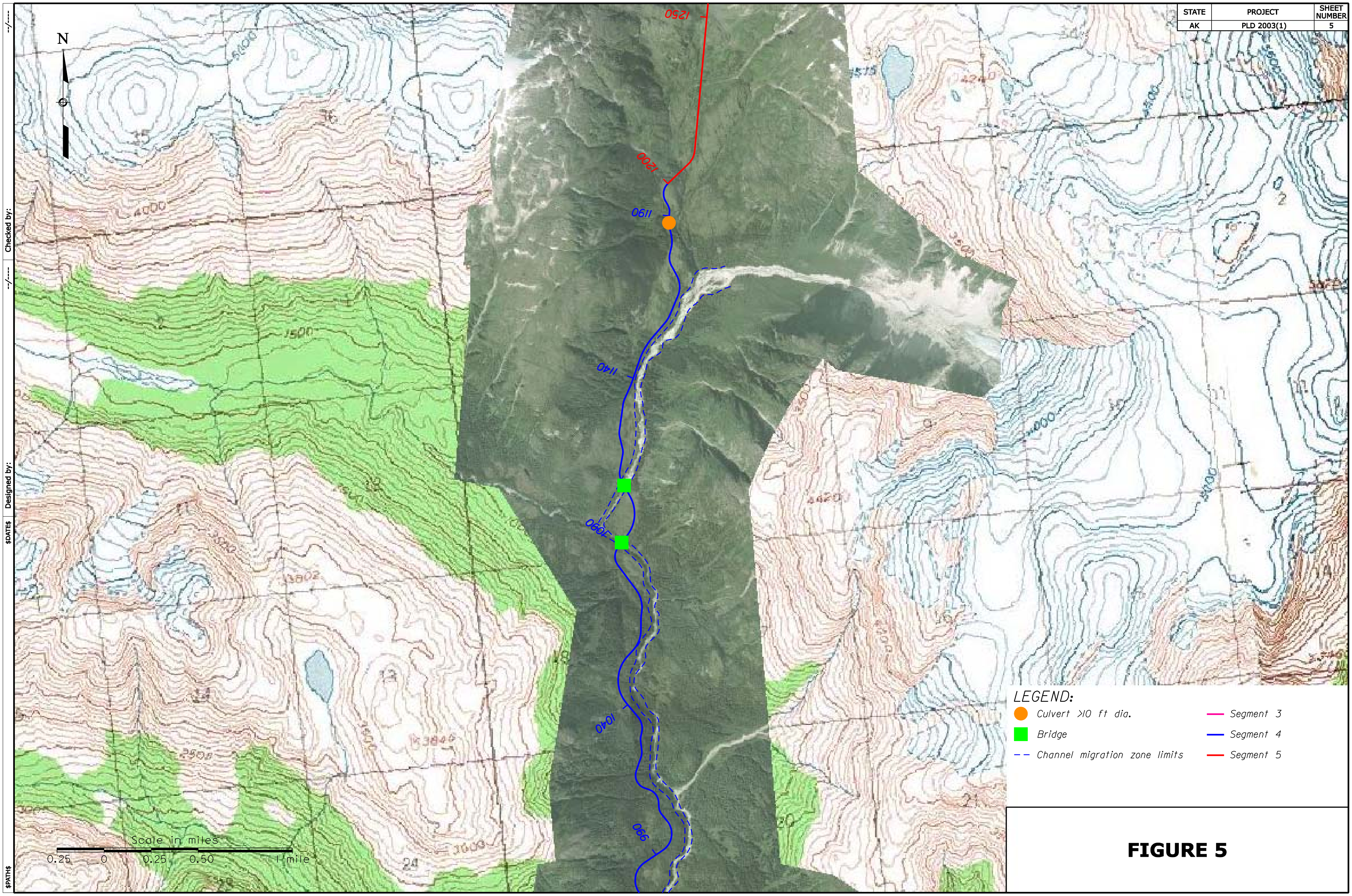

STATE
PROJECT
SHEET NUMBER
AK
PLD 2003(1)
4
N
940
890
840
790
740
695
LEGEND:
Culvert >10 ft dia.
Bridge
Channel migration zone limits
Alluvial fan
Revetment
Segment 3
Segment 4
Scale in miles
0.25
0
0.25
0.50
1 mile
Checked by:
Designed by:
$DATE$
$PATH$

FIGURE 4



STATE | PROJECT | SHEET NUMBER
AK | PLD 2003(1) | 5
N
1250
1200
1190
1140
1090
1040
990
Scale in miles
0.25 0 0.25 0.50 1 mile
LEGEND:
Culvert >10 ft dia.
Bridge
Channel migration zone limits
Segment 3
Segment 4
Segment 5
Checked by:
Designed by:
$DATE$
$PATH$

FIGURE 5

STATE	PROJECT	SHEET NUMBER
AK	PLD 2003(1)	6

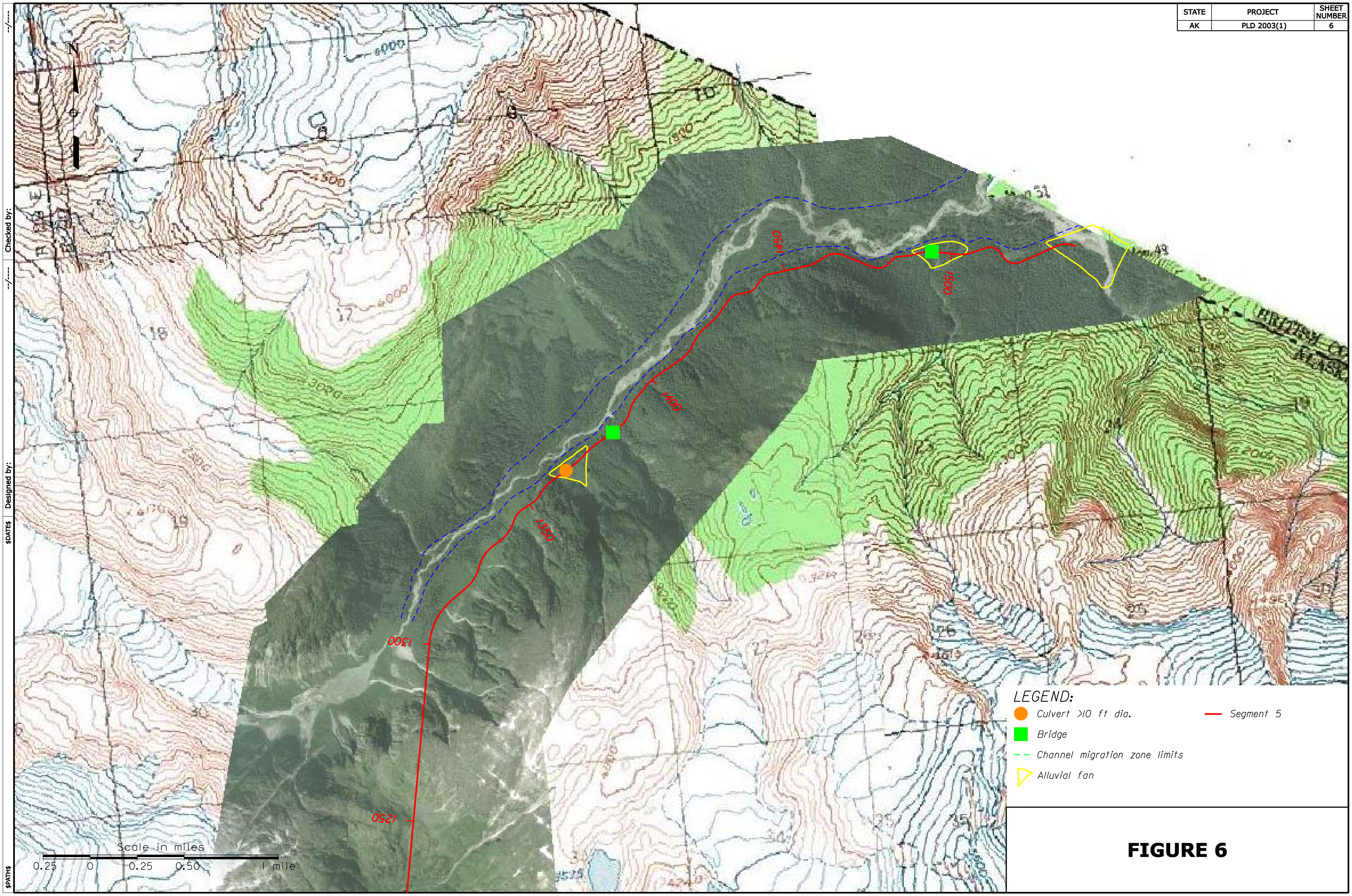
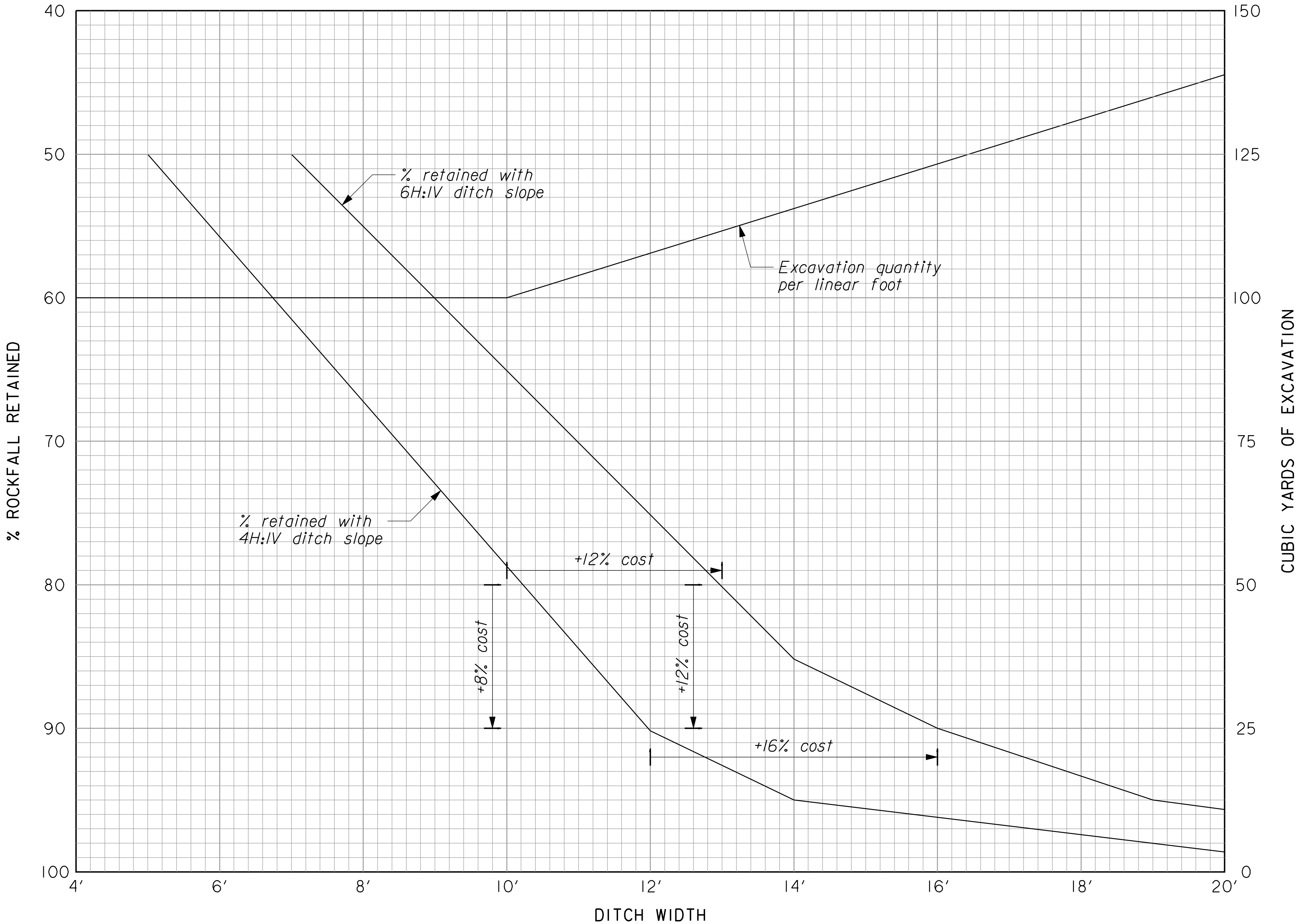


FIGURE 6

$$$$$DGNSPEC$$$$$ $$$$$SYTIME$$$$$$

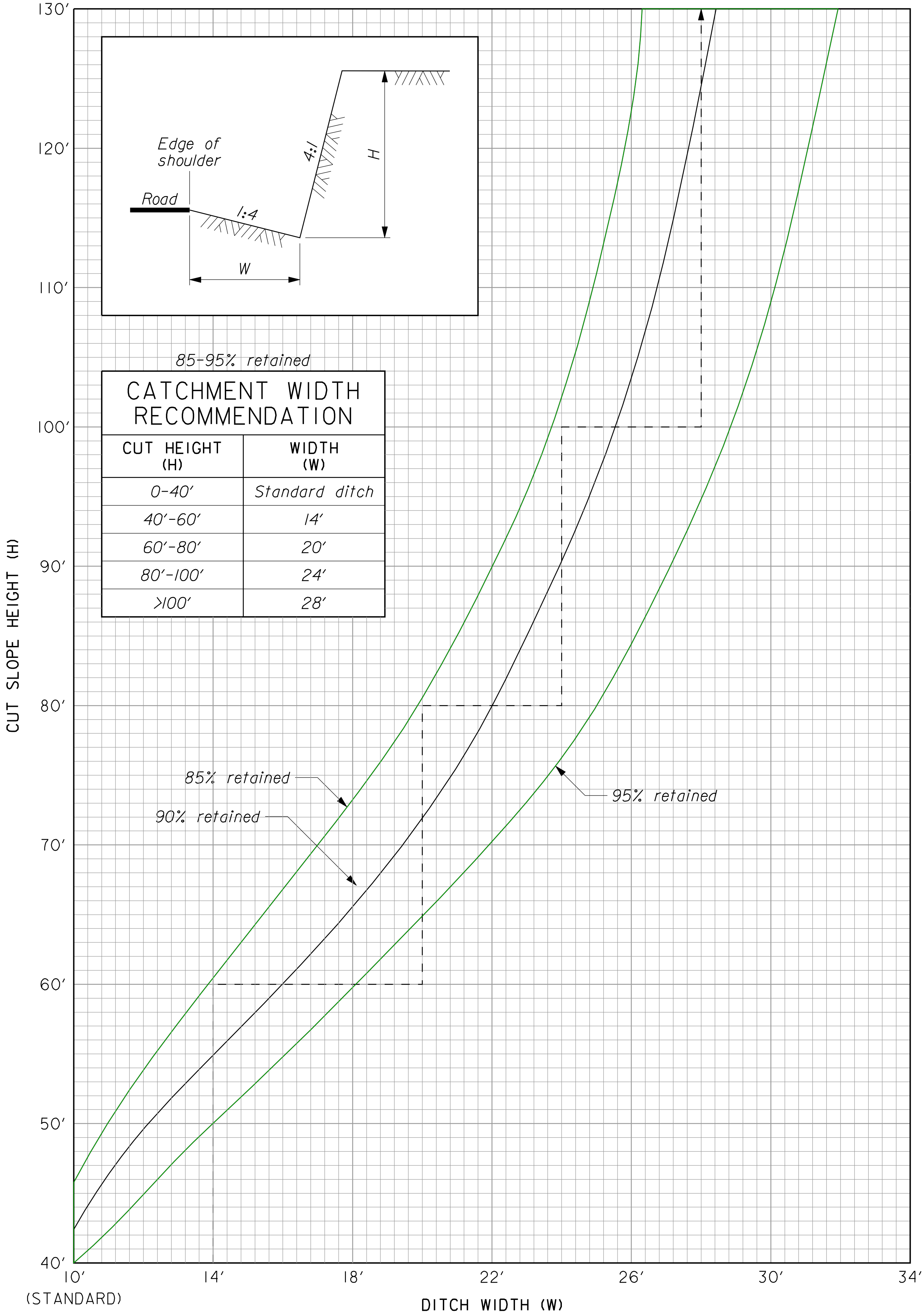


ROCKFALL DITCH ECONOMIC ANALYSIS

(50' SLOPE HEIGHT)

CONCLUSION: Design for 90% catchment with 4H:1V ditch slope.

FIGURE A.1



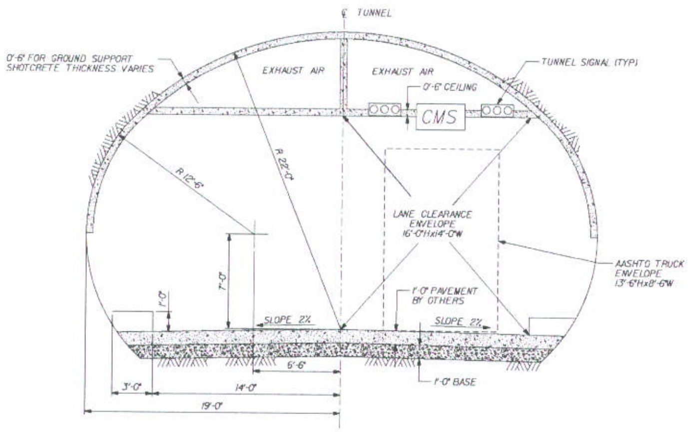
CATCHMENT WIDTH RECOMMENDATION

CUT HEIGHT (H)	WIDTH (W)
0-40′	Standard ditch
40′-60′	14′
60′-80′	20′
80′-100′	24′
>100′	28′

ROCKFALL DITCH WIDTH RECOMMENDATIONS

FIGURE A.2

Bradfield River Road Project
Tunnel Feasibility
&
Cost Estimates
FINAL REPORT
November 30, 2004



PORTAL

SINGLE TUNNEL
BI-DIRECTIONAL TRAFFIC

Prepared for:

U.S. Department of Transportation
Federal Highway Administration
Western Federal Lands Highway Division
610 East Fifth Street
Vancouver, WA 98661-3801

Prepared by:

PARSONS BRINCKERHOFF

100 YEARS

In association with:
LACHEL FELICE & Associates
P.O Box 5226
Golden, CO 80401

Bradfield River Road Project
Tunnel Feasibility
&
Cost Estimates
FINAL REPORT
November 30, 2004

Prepared by: Donald P. Richards, P.E. Technical Manager

Approved by: Thomas J. Hildreth, P.E. Project Manager

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Appendix No.	DESCRIPTION
1	Boundary Conditions & Assumptions
2	Tunnel Alignment Evaluation Figures
3	Tunnel Ventilation Concepts
4	Fire / Life Safety Regulatory Code Matrix
5	Tunnel Lighting Concepts
6	Cost Estimate Summary – Option 1: Twin Uni-Directional Tunnels
7	Cost Estimate Summary – Option 2: Single Bi-Directional Tunnel

1. EXECUTIVE SUMMARY

Parsons Brinckerhoff, in association with Lachel Felice & Associates, were retained by the Federal Highway Administration – Western Federal Lands Division, to develop a conceptual design and construction cost estimate for the Bradfield Road Tunnel in southeast Alaska.

The Bradfield Road Tunnel is part of a conceptual study for a highway corridor that would connect Wrangell and Ketchikan, Alaska with British Columbia. The study area is east of Wrangell generally paralleling the North Fork of the Bradfield River. The tunnel is located beneath a mountain pass dividing the watershed between the North Fork of the Bradfield River and the South Fork of the Craig River. The tunnel will be approximately 8000 feet in length through mixed metamorphic and igneous rock types.

The remote location, combined with the severe winter weather dictated the necessity for a construction operation supported by on-site self sufficient camp facilities, providing all necessary facilities and services within the tunnel construction contract. In addition to these basic guidelines, there were a set of mutually agreed boundary conditions and assumptions established to govern the development of the conceptual design and cost estimate.

The study concentrated on two tunnel options, both a twin tunnel uni-directional configuration, and a single tunnel bi-directional configuration. Due to the relatively long length, it was considered of utmost importance to develop designs and cost estimates that reflected all appropriate regulatory requirements for fire and life safety considerations.

The ventilation strategy for each tunnel option is substantially different. The single tunnel bidirectional traffic option requires removing smoke at the incident site. However, due to the remote location, it is unlikely that there will be a tunnel control center set up with emergency response teams to respond to emergency situations in the tunnel in a timely manner. In order to account for the absence of such emergency response teams, the ventilation system must be considerably oversized to account for this uncertainty.

The twin tunnel unidirectional traffic allows the use of longitudinal ventilation. The primary advantage of this method is that the fire location does not have to be precisely known. The ventilation airflow just stops smoke from spreading upstream. For traffic protection and fire smoke protection, the twin unidirectional tunnels are considered to provide a more satisfactory solution than the bidirectional traffic option.

Considering these project guidelines, the following conceptual tunnel construction costs were developed. The costs presented include no portal area earthworks, since these costs are addressed in the highway cost estimate. The costs presented include no contingency value, since the overall project will have a 25% global contingency applied to all construction costs, which will include the tunnel construction costs.

Estimated Tunnel Cost Consideration	Option 1	Option 2
	Twin Tunnel	Single Tunnel
Total Tunnel Cost ($)	73,200,000	92,400,000
Tunnel Unit Cost ($/lf)*	9,150	11,550

* Assumes tunnel length of 8000 linear feet

2. INTRODUCTION

2.1 SCOPE OF WORK

This Scope of Work includes utilizing information gathered by the USDOT – Federal Highway Administration - Western Federal Lands Division (FHWA) and engineering analysis to develop a conceptual tunnel design and construction cost estimate for evaluating the economic feasibility of a single bi-directional traffic tunnel vs a twin bore uni-directional tunnel for the proposed Bradfield River Road Tunnel. It should be noted that a site visit was not part of the Scope of Work, so that all geological and cost estimate evaluations were developed based solely upon data provided by FHWA, supplemented by published geological information and records of previous projects completed in the vicinity. This conceptual study considered all initial key assumptions for use in the engineering analysis and preliminary construction cost estimate for each alternative including:

1. Design assumptions
2. The effects of the existing geology
3. Seismic design considerations
4. Recommended tunnel geometry
5. Determination if a ventilation system is required
6. A conceptual evaluation of requirements for fire life safety, power supply, lighting and drainage
7. Operations and maintenance with associated cost estimates
8. Construction cost estimates
9. Staging areas (footprint of acres required)
10. Logistical needs

2.2 DESIGN ASSUMPTIONS

The general assumptions for performance of the conceptual design associated with completion of this task were initially agreed upon between FHWA and the PB - LACHEL FELICE & Associates team at the kick-off meeting on 02 September 2004. These were then summarized in writing by PB on 08 September 2004, and presented by FHWA to the Alaska Department of Transportation and Public facilities (AKDOT&PF) for concurrence. These were accepted with minor revisions by letter from FHWA on 14 September 2004. These "final" General Assumptions and Geotechnical Assumptions are included herein for reference as Appendix 1.

2.3 PROJECT DESCRIPTION & LOCATION

The proposed Bradfield River Road Tunnel is located in Southeast Alaska in T62S, R90E, of the Copper River Meridian. It will be part of a new roadway connecting Wrangell, Alaska to British Columbia in Canada. The new roadway will start at the south end at the coastal headwaters of the Bradfield Canal and extend generally northward along the east bank of the North Fork of the Bradfield River. The tunnel portion of the alignment is toward the north end beneath a mountain pass that divides the drainages of the North Fork of the Bradfield River to the south and the South Fork of the Craig River to the north. This layout is shown regionally in Figure 2-1 and more locally in Figure 2-2.

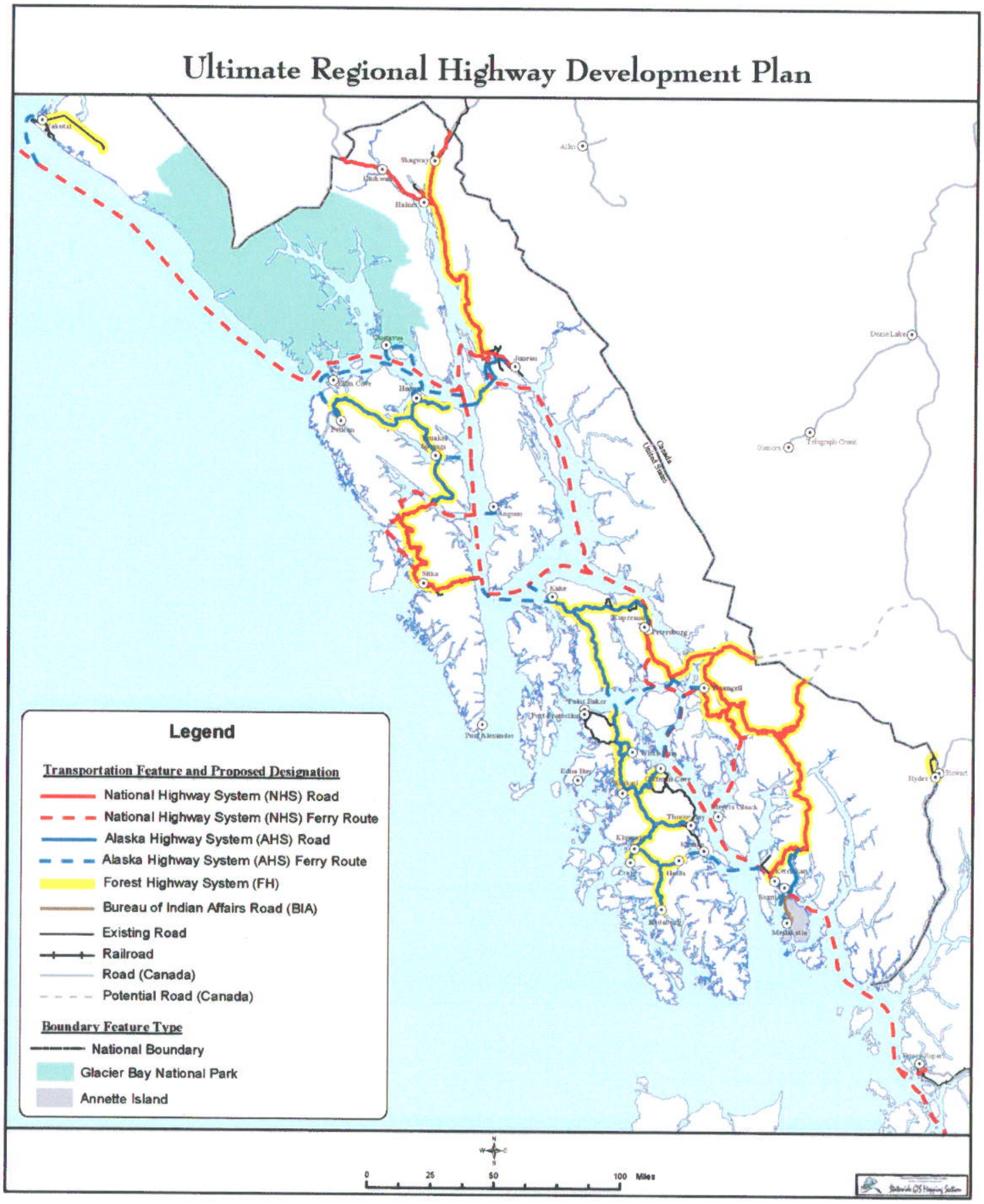


Figure 2-1: Location Map (Adapted from AKDOT&PF, 2004)

The proposed southern portal is located at approximately highway Station 1221+00 above the headwaters of the Bradfield River, the proposed northern portal is located at approximate highway Station 1300+00 above the headwaters of the Craig River approximately 3 miles southwest of the USA/Canada border. The proposed road alignment follows a river valley through steep, mountainous terrain to a proposed southern portal and continues northerly through a saddle of massive granitic rock to the proposed northern portal. A vertical profile and more detailed topography along the alignment of the proposed tunnel are shown in the figures of Appendix 2. The proposed tunnel is approximately 7900 linear feet, but for purposes of the cost estimate development, an 8000 foot tunnel length has been assumed as directed by FHWA.

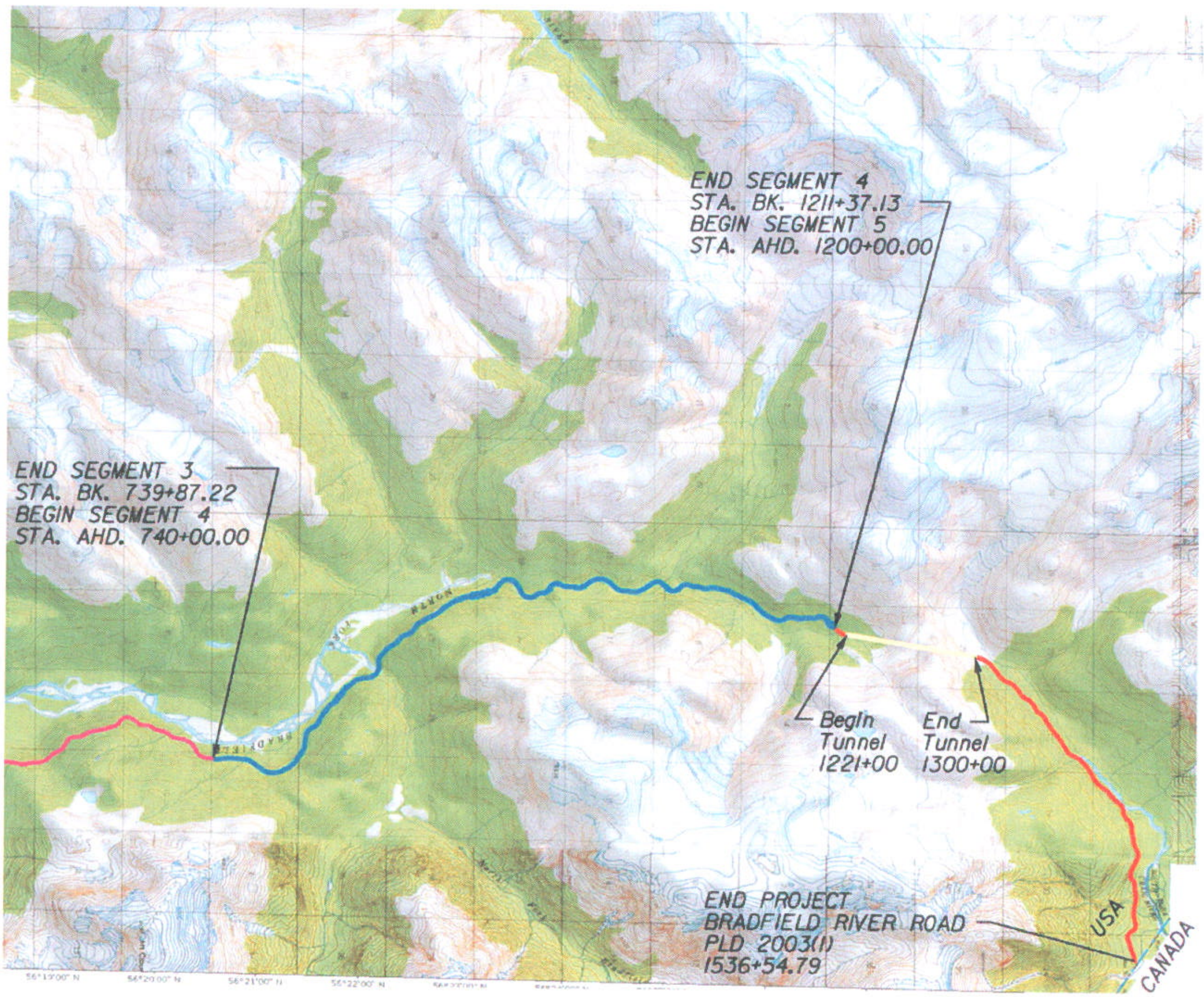


Figure 2-2: Vicinity Map (Adapted from USDOT, 2003)

3. GEOLOGIC SETTING AND SEISMIC CONSIDERATIONS

3.1 GENERAL WRANGELL AREA GEOLOGY

The regional geology in the Wrangell area is composed of high-grade metamorphosed sedimentary rocks that have been intruded by the plutonic rocks of the Coast Range batholith, as shown in Figure 3-1. The fabric of the Coast Range Belt strikes northwest and is comprised of three major bodies of elongate plutonic rocks ranging from Tertiary to Cretaceous age. The plutonic bodies intruded the existing Cretaceous accreted sedimentary units resulting in metamorphosed phyllites, biotite and hornblende schists, quartzites, gneisses and interbedded marbles (Gehrels and Berg, 1992). The plutonic rocks in the region are mapped dominantly as tonalites, granodiorites and granodioritic migmatites, with subordinate amounts of granites and diorites noted (Karl et al, 1999).

The local geology along the proposed tunnel alignment is assumed to be dominantly of a granodiorite lithology with subordinate amounts of quartz monzonite, quartz diorite, and leucogranite. Metasedimentary and metavolcanic units derived from sedimentary and volcanic rocks during a time of regional metamorphism are mapped in close proximity, and are possibly mapped overlying the tunnel alignment at the north end. Common metasedimentary rock types noted include: pelitic, semi-pelitic, and quartzofeldspathic schist and gneiss, with subordinate amphibolite, quartzite, marble, and calc-silicate.

The rock type mapped along the tunnel portion of the Bradfield Road project is noted as being similar to the plutonic rock exposed for the Snettisham project, which was documented as a quartz diorite, quartz diorite gneiss, and biotite-horneblende schist. Available geologic mapping shows that both sites are within the same Eocene pluton (Gehrels and Berg, 1992). The compositions of granodiorite and quartz diorites are very similar overall, with subtle differences in the amount of plagioclase present.

Faults

The Coast Range Megalineament (CRML) parallels the northwest trend of the plutonic belts and is associated with a boundary between superterranes. The CRML is mapped parallel to and along the Eagle River, which drains into the eastern end of Bradfield Canal. It has also been identified as the western margin of the Coast Range Mountains. This shear zone is interpreted to post date the 50-Ma Coast Mountains batholith (Brew and Ford, 1998) is visible crossing deposits as young as Holocene along its nearly linear 500 mile length. The width of the shear zone ranges from < .6 mi to just over a mile in width, although no piercing points have been determined to establish offsets across it. A Coast Range shear zone is mapped along the eastern margin of the CRML, and was believed to have been active during the late Cretaceous and early Tertiary. This zone was noted as being a 1.25 to 10 miles wide zone of steeply dipping late Cretaceous to Eocene ductile fabrics and shear zones (Stowell and McClelland, 2000).

3.2 AERIAL PHOTO ANALYSIS

Bedrock Structure

Based on the non-stereo aerial photograph analysis conducted for this study, four dominant joint sets were identified with general orientations of NE-SW, N-S, NW-SE, and E-W. The general character of the joint sets is described below.

The NE-SW joint set appears to be approximately perpendicular to the CRML, and is clearly visible over long distances on the topographic maps. This joint set crosses the tunnel alignment at an angle of approximately 25° off perpendicular. The NW-SE joint sets are parallel with the CRML and are over lengths of up to 1000 feet. The N-S joint set is almost parallel to, and within 150 feet of the proposed tunnel alignment, although evidence for this feature to extend beyond the tunnel area is not clear on the topographic maps. And the E-W joint sets appear to be localized fractures that are fairly perpendicular to the tunnel alignment and are visible over lengths of up to 1000 feet.

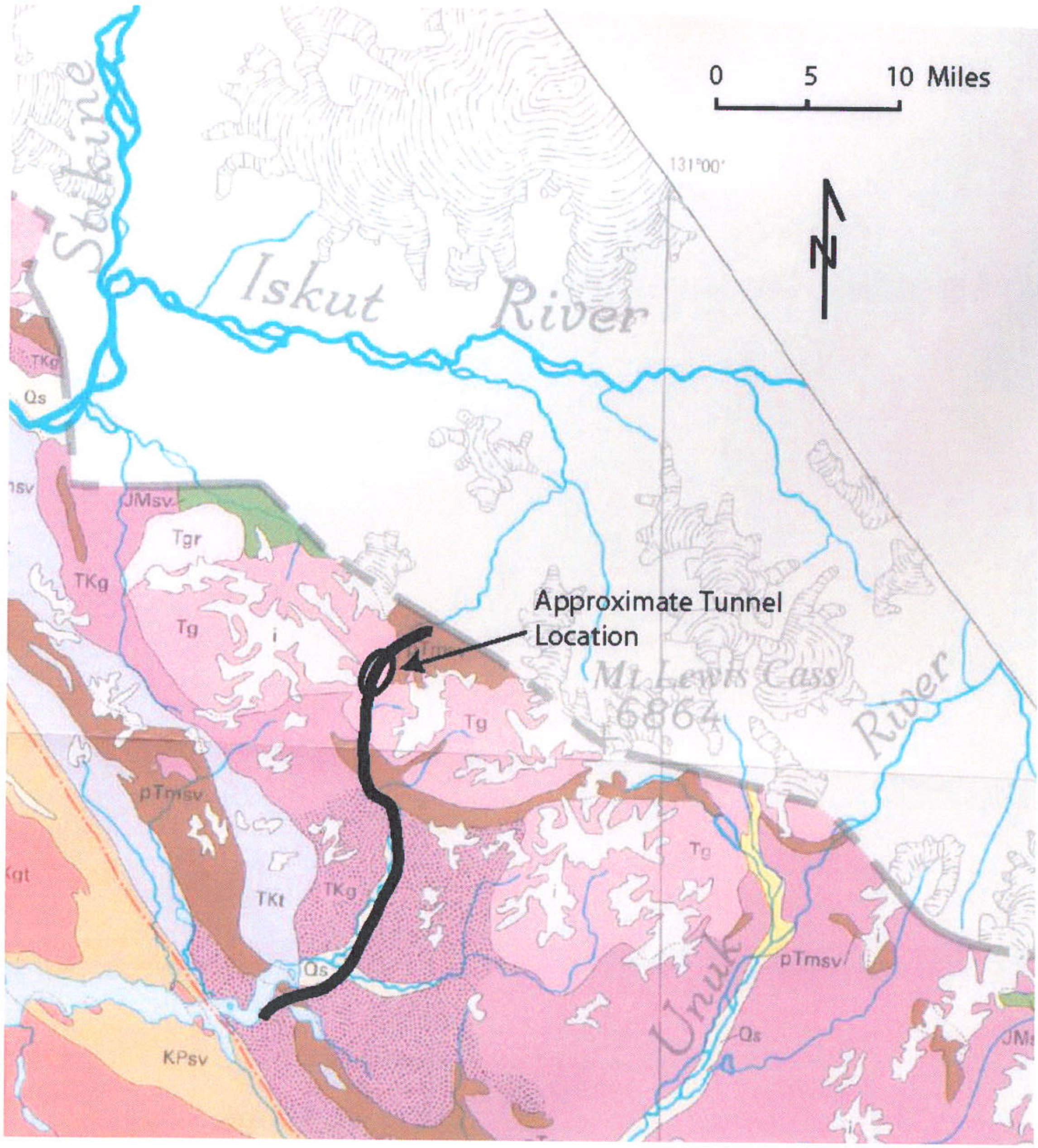


Figure 3-1: Regional Geology in Tunnel Area

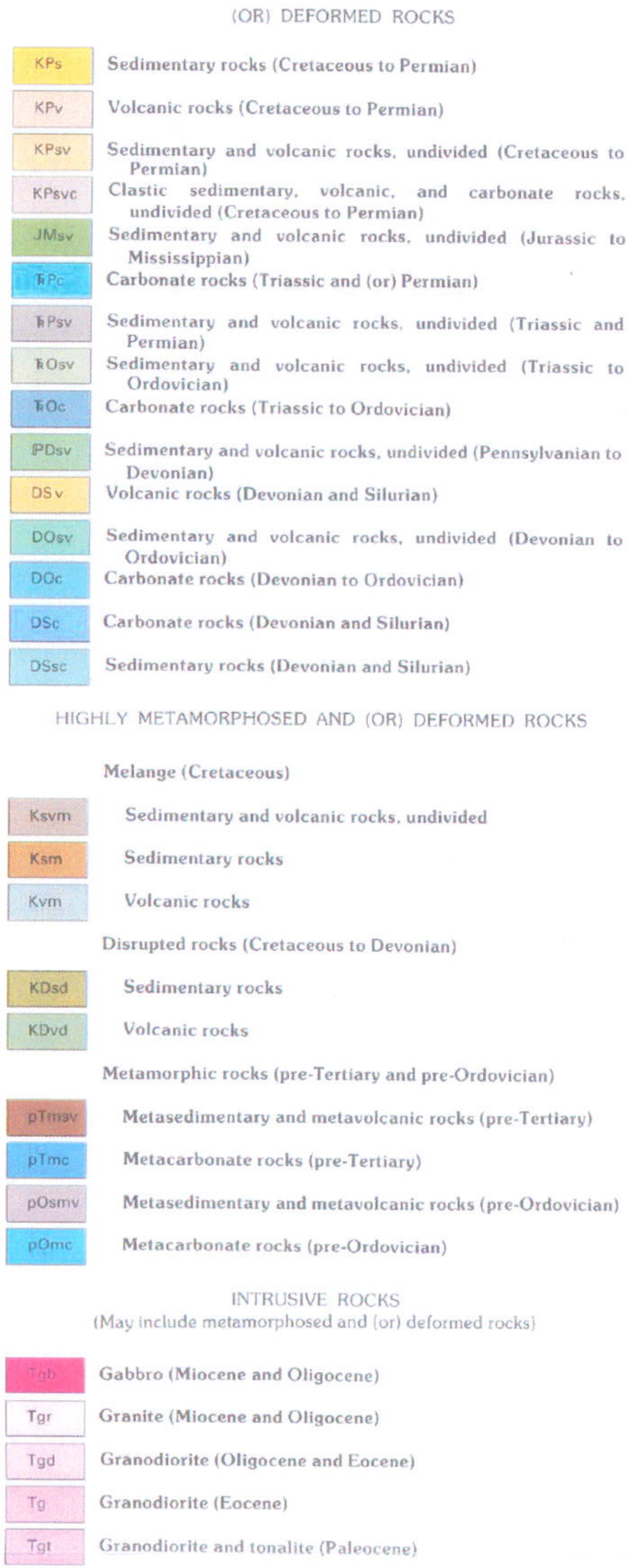


Figure 3-1 Continued

INTRUSIVE ROCKS
(May include metamorphosed and (or) deformed rocks)

Tgb	Gabbro (Miocene and Oligocene)
Tgr	Granite (Miocene and Oligocene)
Tgd	Granodiorite (Oligocene and Eocene)
Tg	Granodiorite (Eocene)
Tgt	Granodiorite and tonalite (Paleocene)
TKt	Tonalite (Paleocene and Cretaceous
TKg	Granodiorite (Paleocene and Cretaceous)
Kgt	Granodiorite and tonalite (Cretaceous)
Kdb	Diorite and gabbro (Cretaceous)
Kum	Ultramafic rocks (Cretaceous)
Kg	Granodiorite (Cretaceous)
Kd	Diorite (Cretaceous)
Kgb	Gabbro (Cretaceous)
KJd	Diorite (Cretaceous and Jurassic)
KJgb	Gabbro (Cretaceous and Jurassic)
Jgr	Granite (Jurassic)
Jt	Tonalite (Jurassic)
JTRd	Diorite (Jurassic and (or) Triassic)
TRgb	Gabbro (Triassic)
TRg	Granodiorite (Triassic)
PIPsy	Syenite (Permian and (or) Pennsylvanian)
Sst	Syenite and trondhjemite (Silurian)
SOum	Ultramafic rocks (Silurian and Ordovician)
SOq	Quartz diorite (Silurian and Ordovician)
Ogb	Gabbro (Ordovician)
Ꞓdg	Diorite and granodiorite (Cambrian)

INTRUSIVE LITHIC TERMS:
gr = granite
g or gd = granodiorite
t = tonalite
gt = granodiorite and tonalite
q = quartz diorite
d = diorite
db = diorite and gabbro
sy = syenite
st = syenite and trondhjemite
gb = gabbro
um = ultramafic rocks

Figure 3-1 Continued

The four main joint sets noted above are likely related to the high angle discontinuities that have developed via tectonic stresses in the region. The other jointing typically found in this region includes the low angle or stress relief joints that are caused by the removal of the overlying rock load by erosion as well as the removal of the previous glacial ice load. These stress relief joints are not typically encountered at depth and are not expected to impact the majority of the tunnel excavation. This type of jointing is not visible on the aerial photography, and will likely have the largest impact on the portal regions where the joints tend to parallel the rock structure.

Electronic imagery and stereo paired aerial photographs provided by FHWA after the initial lineament mapping analysis, allowed us to view the site and tunnel alignment at a smaller scale than the photo that was used for the initial analysis. The hillshade elevation map also provided a three dimensional view not available with the initial photo.

Based on these images, the NE-SW joints visible across the southern part of the tunnel are related to a fault (or fault zone) that can be traced on the USGS 1:63,500 scale Bradfield Canal Quadrangle map for at least 15 miles. This feature crosses the tunnel near Stations 1224+00 and 1235+00, as it steps to the south in the area of the tunnel. It is unknown how fractured the rock is at these locations, but the lineation at Station 1235+00 appears to be stronger and more well defined, and is interpreted as the through going strand of the fault.

As with the other lineaments identified in the air photo analysis, it is not possible at this point to assess the width and condition at depth; however, it is recommended that any future geotechnical investigation for this project include angled coring through this feature to more accurately determine the rock mass quality along this portion of the alignment.

Regional Seismicity

The project area in SE Alaska is in an area of relatively active seismicity as shown below in Figure 3-2. It should be noted however, that ground accelerations associated with a seismically active area do not normally influence tunnel behavior to a large extent, except in portal areas and at tunnel intersections. The rock reinforcement concepts defined at this conceptual stage of design are considered adequate for ground support, but when the project proceeds to detailed design, site specific evaluations of portal and intersection stability should be performed using site specific rock structure data and the recommended ground accelerations for Seismic Zone 3 for SE Alaska.

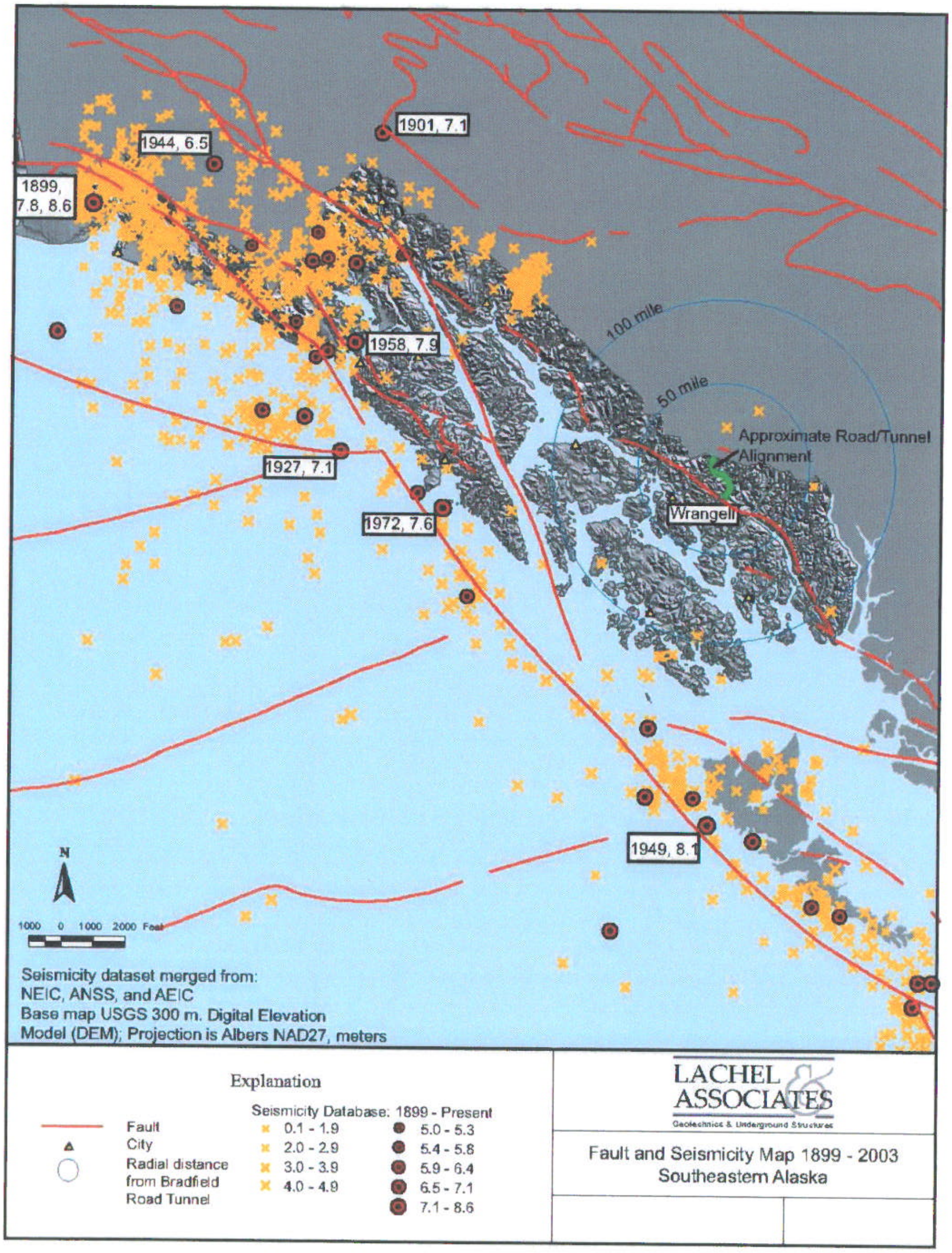


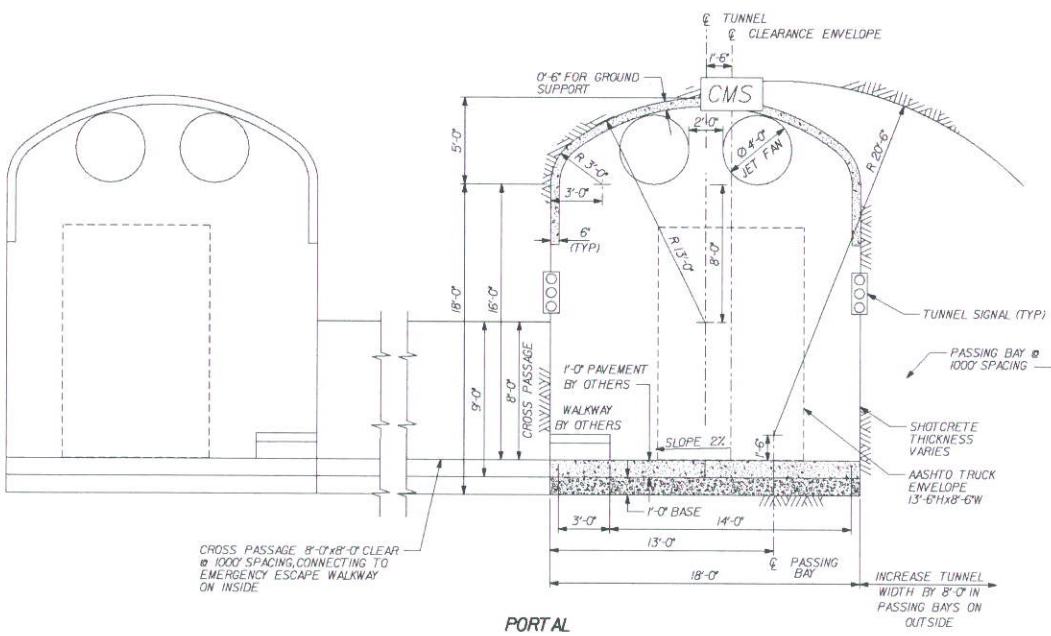
Figure 3-2: Regional Seismicity

4. TUNNEL GEOMETRY AND GROUND SUPPORT REQUIREMENTS

4.1 TUNNEL GEOMETRY

<u>General</u>

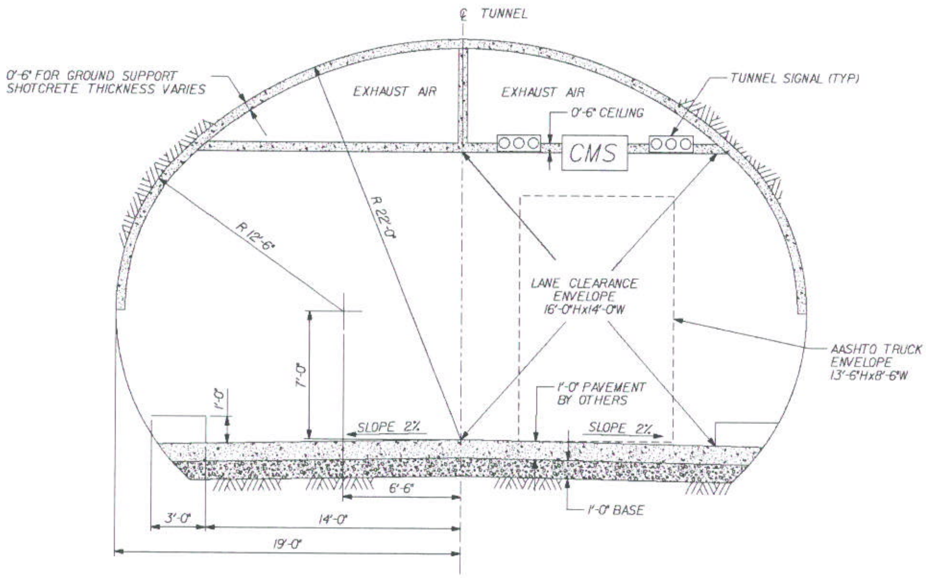
The General Assumptions noted in Appendix 1, called for consideration of vehicle clearance envelopes as defined by AASHTO guidelines for Interstate Semitrailers WB-65 or WB-67. Considering these vehicle clearance requirements, as well as the "typical" tunnel cross sections as presented by FHWA in the Bradfield River Road Project Plans – Preliminary Draft, tentative conceptual cross sections were developed and sent to FHWA for approval on 14 September 2004. These were subsequently approved and integrated into the conceptual engineering analysis and design process for development of conceptual design details for civil and systems engineering aspects of the project, as well as for development of the conceptual construction cost estimate. These cross sections are shown in Figures 4-1 and 4-2 for the twin and single tunnel options respectively. It should be emphasized that these cross sections are indeed conceptual for purposes of this stage of cost estimate development, requiring possible refinement during detailed design when site specific geotechnical information is available, and space requirements for all mechanical and electrical systems are better defined.



TWIN TUNNEL
UNI-DIRECTIONAL TRAFFIC

Figure 4-1: Layout of Twin Uni-Directional Tunnel

It should be noted that, as agreed upon in the initial boundary conditions and assumptions, for the twin tunnel option, these cross section represent the majority of the tunnel, but that at selected intervals, there will be emergency escape cross passages between the parallel tunnels, as well as periodic emergency turnout in the tunnel for temporarily disabled vehicles. For the single tunnel option, there will be periodic emergency escape refuges in the tunnel wall. These modifications to the "typical" tunnel have been accounted for in the construction cost estimate by the inclusion of additional excavation, grounds support, and systems support facilities and equipment.



PORTAL

SINGLE TUNNEL
BI-DIRECTIONAL TRAFFIC

Figure 4-2: Layout of Single Bi-Directional Tunnel

Excavated Span

For purposes of conceptual engineering and development of ground support concepts for the construction cost estimate, an excavation span of 18 feet was assumed for the twin tunnel (Option 1) and 38 feet for the single tunnel (Option 2). These are shown in Figures 4-1 and 4.2. These cross sections are considered adequate for the intended purpose of development of the conceptual construction cost estimate, but would likely require minor adjustments during detailed design. Such "adjustments" may consider issues such as modification of the twin tunnel arch height in order to get the fans further away from the excavation perimeter to reduce air flow friction losses, and possibly adjustment to the single tunnel arch height to ensure that the plenum area is sufficient for the "final" ventilation design air flow quantities. In addition, when detailed design proceeds, on-site geotechnical investigations may define locally worse ground conditions than assumed for this evaluation, which may require a slightly wider excavation for installation of a more massive ground support system.

4.2 ROCK TUNNELING QUALITY CLASSIFICATION

For purposes of evaluating ground support requirements for conceptual design of the Bradfield Road Tunnel, the "Q" system was used. The "Q" system is a commonly used rock engineering "tool" for the empirical evaluation of ground support requirements in hard rock tunnels. The following paragraphs summarize the assumptions used in determining the rock mass classification and Tunneling Quality Index Q. An analysis of available non-stereo aerial photography over the proposed alignment printed at a scale of 1 inch = 300 feet, and a review of the Foundation Reports for the Long Lake and Crater Lake phases of the Snettisham Hydroelectric Project were utilized as the basis of geotechnical information for this feasibility level study.

This consideration of non-site specific geotechnical data was required due to the absence of site specific information at this stage of the project evaluation. It should be noted however, that at this stage of the project, with geological conditions assumed as defined in Section 3, and with the Snettisham case history analogy available for reference, the geotechnical data base is considered adequate to establish a reasonable estimate of anticipated rock conditions for tunneling.

The following parameters related to tunnel excavation stability and ground support are discussed below:

Rock Quality Designation (RQD) ; Joint set number, (Jn); Joint roughness number, (Jr); Joint alteration, (Ja); Joint water reduction factor, (Jw); Stress reduction factor, (SRF); Excavation Span; and Excavation Support Ratio, (ESR).

<u>Rock Quality Designation</u>

A review of the RQD data from the borings for the Crater Lake Phase of the Snettisham Project was used to estimate the typical range of RQD values to expect during tunnel excavation. The use of this analogy is considered reasonable since the geologic history and rock types are similar. It has therefore been assumed that the same ranges and percentages of RQD as a rock quality parameter will be encountered in the bedrock expected to be encountered on the Bradfield Road project.

40-45% of the rock in the borings had RQD values ranging from 95-100

35-40% with RQD 90-95

15-18% (best estimate at this time) with RQD 80-90

2-5% (best estimate at this time) with RQD 50-70 (identified mainly as shear zones)

Note: The fault zones at Crater Lake were not cored through, so representative RQD values at those locations were not available, but the "best estimate" values noted above, are considered at this time to be reasonable in the absence of site specific data.

<u>Joint Set Number</u>

Based upon interpretation of the aerial photos provided to the project team by FHWA, estimates of rock structure conditions along the proposed tunnel alignment were made, for application in the rock quality estimates for tunnel design and construction. From this evaluation, three distinct lengths of tunnel over which jointing conditions varied were identified. The interpreted lineaments, representing regional rock structure patterns, and their relationship to the proposed tunnel alignment are shown in the figures presented in Appendix 2. The stationing and number of representative joint sets over each length are summarized as follows:

Station 1221+00 to Station 1265+00 – 3 joint sets

Station 1265+00 to Station 1282+00 – 2 joints sets + plus 1 random set

Station 1282+00 to Station 1300+00 – 2 joint sets

Station 1221+00 to Station 1265+00:

Three dominant joint sets were identified along this section of the tunnel, with average orientations of: N-S, E-W, NE-SW. The terrain along this section of tunnel is moderately vegetated, with one significant drainage crossing the alignment. The vegetative cover obscures the ability to accurately determine a realistic spacing of lineaments and features, so spacing of joint sets noted are for the dominant sets.

Based on the aerial photographs, the N-S joint set was mapped as continuous over distances of greater than 1500 feet. This joint set is mapped approximately 150-200 feet east of the proposed tunnel alignment, and is clearly visible to Station 1294+00, almost the full length of the tunnel. Many smaller less continuous parallel joints were mapped with spacing of 50 feet to as large as 500 feet. A large drainage that intersects the tunnel at Station 1230+00 is captured by the N-S joint set and runs parallel to the tunnel for a distance of approximately 400-500 feet before trending to the southwest. This N-S trending feature is not clearly visible on the USGS 1:63,500 scale topographic map, implying that it is a localized feature in the area of the tunnel. With respect to how this feature may impact the excavation of the tunnel, if this feature is dipping 80° to the west, then it would intercept the tunnel at a depth of 1400 feet. A shallower dip of 70° would intercept the tunnel at a depth of 700 feet. Based on the linearity of the joint over the mountainous terrain, it is implied that the dip of the joint along its length is very steep (>80°). For this preliminary analysis, at the depth that the N-S feature may intersect the tunnel, it was assumed to be a joint and not a wide sheared fault zone. This interpretation is based on the localization of the feature within the area studied and not forming a strong topographic signature.

The NE-SW joint sets were mapped as continuous for up to 600 feet (and possibly >1000 feet) with 250-300 foot spacing visible between them. This joint set crosses the tunnel several times and is a dominant feature in this section.

The E-W joint set is clearly visible over distances of greater than 1500 feet, with a wide spacing of up to 600 feet.

Station 1265+00 to Station 1282+00:

Two dominant joint sets plus one random joint set were identified along this section of the tunnel, with average orientations of: N-S, NW-SE for the dominant sets. The terrain along this section of tunnel has less vegetation, with more of a brushy landscape visible for much of the section. This section of tunnel appears to have the thickest amount of cover over the tunnel, with approximately 1100 feet of cover near the pass at Station 1280+00.

The N-S joint set is very similar to what is noted above in the first tunnel section, with minor differences. This section showed a broader distribution of the N-S joint set mapped with 150-200 foot spacing along distances of greater than 1000 feet paralleling the tunnel. This jointing pattern is visible up to 1500 feet away on both sides of the tunnel.

The NW-SE joint sets are continuous over distances of up to 500 feet, with spacing of less than 100 feet visible. This set crosses the tunnel at an oblique angle, and intersects the N-S set at the same orientation.

The random joint set that is assumed in this section is based on several strong lineations mapped in a random orientation to the typical sets visible on the photos.

Station 1282+00 to Station 1300+00:

Two dominant joint sets were identified along this section of the tunnel, with average orientations of: N-S, NW-SE for the dominant sets. The dominant joint sets in this section are the same orientation as in the second section, but the random set was not visible along this length. The terrain along this section of tunnel has moderate vegetation, with trees and brushy vegetation visible for much of the section. This section of tunnel has two very large avalanche chutes that cross the tunnel and appear to be active.

The N-S joint set becomes diffuse at Station 1294+00, with occasional 300-500 foot length parallel sets mapped in the area.

The NW-SE sets are locally parallel to the two avalanche chutes. The spacing on the NW-SE joint sets are approximately 400-600 feet, and are continuous over distances of 1000 feet.

Additional Information

The rock structure observations and interpretations from the aerial photos for the proposed Bradfield Road Tunnel demonstrate a fairly close correlation with observations made in the underground excavations for the Snettisham Hydroelectric Project. From the foundation report for the Long Lake phase of the project, the following statement summarizes the jointing conditions encountered: "In the underground excavation at Snettisham, three major sets of high angle joints, two of them prominent, have been observed." This statement pertains mainly to high angle discontinuities developed via tectonic stresses in the region. The other jointing typically found in this region includes the "low angle" or stress relief joints caused by "removal of the overlying rock load by erosion and the later removal of ice load." These low angle joints are not typically encountered at depth and are not expected to impact the majority of the tunnel excavation. Some impact of these low angle joints is expected in the vicinity of the portals. It should be noted however, that in the absence of site specific rock structure mapping for the Bradfield Road Tunnel, these interpreted rock structure patterns are indeed only estimates, albeit "educated" estimates.

Joint Roughness Number

Based on a review of the geologic mapping performed for the Crater Lake phase of the Snettisham project, a large portion of the tunnel was excavated through massive rock with areas of discontinuous to continuous "smooth, tight joints." Shear zones up to 24" in width, some unaltered, but most altered and containing gouge were also identified.

Descriptions of planarity were not always presented in the record of geologic mapping; however, in the text for the Foundation Report, the following statement was made: "Most of the discontinuities encountered in the tunnel are joints, which are typically planar, relatively smooth, and tight. Therefore "smooth, planar" joint roughness conditions have been assumed for the majority of discontinuities to be encountered on this project.

For the sheared zones along the alignment, it will be assumed that there is "No rock wall contact when sheared." Therefore joint roughness conditions designated as "zone containing clay minerals thick enough to prevent rock wall contact", have been assumed, with values of Jr as shown in Tables 4-1 and 4-2.

Joint Alteration Number

Based on a review of both phases of the Snettisham project, it has been assumed that the majority of the joints can be described either as: "Tightly healed, hard non-softening, impermeable filling (i.e., quartz or epidote)" or "Unaltered joint walls, surface staining only". For the shear zones to be encountered a "No rock wall contact when sheared" condition has been assumed and joint alteration described as "Zones or bands of disintegrated or crushed rock and clay" is representative of the majority of the shear zones, as shown in Tables 4-1 and 4-2.

Joint Water Reduction, Jw

Based on a review of the Crater Lake Foundation Report, most of the tunnel excavation was relatively dry, with only "occasional drips from blocky basalt dikes".

From this information, a Joint Water Reduction Factor, Jw=1 (representing "dry excavation or minor inflow") was assumed for the majority of the tunnel alignment. For the shear zones to be encountered, a Joint Water Reduction Factor, Jw=0.66 (representing "medium inflow or pressure, occasional outwash of joint fillings") was assumed.

Stress Reduction Factor, SRF

Determination of in-situ stresses, and the relationship between in-situ stresses and rock strength is an important factor to be considered in the design of underground structures. However, for feasibility level designs rarely is information available for making accurate assessments. For the Bradfield Road Tunnel a SRF = 1.0 ("High stress, very tight structure, usually favorable to stability, may be unfavorable to wall stability") condition has been assumed for the majority of the excavation based mainly on the depth of the proposed tunnel.

The case for a high stress condition is furthered based on the following excerpt from the Crater Lake Foundation Report:

> *"In certain sections of the tunnel where foliations or existing joint patterns were subparallel to the tunnel, loosening of the rock was apparently occurring, particularly in the nearly straight side walls of the tunnel. Between approximately Station 53+00 and Sta. 57+00 where the tunnel was under about 850 ft of cover and was approaching the Tlingit Shear Zone, the miners performed an inordinate amount of scaling on the side walls. As originally driven, the side walls were straight; however, stress-relief joints developed several tens of feet behind the advancing face, loosening the side wall rock. The loose rock was scaled off, and the result was a more stable, circular-shape tunnel."*

In the next phase of design, it is recommended that both compressive strength and tensile strength data on the rock be gathered, as well as an attempt be made to develop an understanding of the anisotropic nature of the rock in this region, which also plays an important role in the relationship between in-situ stresses and stability in underground excavations. It should also be noted, that "high stress" is a relative term, related to in-situ rock strength, depth of overburden and other factors. In addition, the implications of a "high stress" for tunnel excavation behavior and stability will also be a function of joint orientation and spacing with respect to the tunnel excavation, and widely spaced joints may be less problematic than closely spaced joints. It is however beyond the scope of this early stage study to evaluate the detailed implications of this potential tunnel design parameter.

Excavation Support Ratio, ESR

For this analysis, an ESR = 1.3, representing Excavation Category "C" (Storage rooms, water treatment plants, minor road and railway tunnels, surge chambers, access tunnels) was assumed. Though it could be argued that the Bradfield Road Tunnel should be classified as a "major roadway" due to it's significance as an access corridor within southeast Alaska (i.e., ESR = 1.0), the design team's decision to include 2 inches of shotcrete from springline to springline along the entire alignment as a final "protective" liner was considered appropriate in conjunction with an ESR = 1.3. This protective liner is intended to prevent isolated rock falls from the tunnel crown into the vehicular traffic.

Tables 4.1 and 4.2 summarize the calculations of Rock Tunneling Quality Index, Q, for both the single lane and dual lane Bradfield Road Tunnel alternatives. It should be noted in these tables, that the "ground Support Categories" relate to the "Q" system categories, not the categories selected for ground support design for the Bradfield road Tunnel.

Ground support requirements as indicated by the "Q" system of empirical grounds support design are shown in Figures 4-3 and 4-4 for the twin and single tunnel options respectively.

Q-System Support Category Calculation (Single Lane Alternative)

Location: Bradfield Canal Tunnel - Tongass National Forest ***Date: 9/7/04***
Rock Type: Granodiorite ***Classified by: GRT/CRL***

Tunnel Stationing	RQD	Jn	Jr	Ja	Jw	SRF	Span (m)	ESR	Q	Conditional Factors RQD/Jn	Jr/Ja	Span/ESR	% with RQD	Length of Tunnel (ft)	Ground Support Category
1221+00 to 1265+00	98	9	1	0.75	1.0	1	6.71	1.3	14.5	10.9	1.3	5.2	45	1980	1
1221+00 to 1265+00	95	9	1	1	1.0	1	6.71	1.3	10.6	10.6	1.0	5.2	35	1540	1
1221+00 to 1265+00	85	9	1	1	1.0	1	6.71	1.3	9.4	9.4	1.0	5.2	18	792	3
1221+00 to 1265+00	65	9	1	8	0.66	2.5	6.71	1.3	0.2	7.2	0.1	5.2	2	88	6
1265+00 to 1282+00	98	6	1	0.75	1.0	1	6.71	1.3	21.8	16.3	1.3	5.2	45	765	1
1265+00 to 1282+00	95	6	1	1	1.0	1	6.71	1.3	15.8	15.8	1.0	5.2	35	595	1
1265+00 to 1282+00	85	6	1	1	1.0	1	6.71	1.3	14.2	14.2	1.0	5.2	18	306	1
1265+00 to 1282+00	65	6	1	8	0.66	2.5	6.71	1.3	0.4	10.8	0.1	5.2	2	34	5
1282+00 to 1300+00	98	4	1	0.75	1.0	1	6.71	1.3	32.7	24.5	1.3	5.2	45	810	1
1282+00 to 1300+00	95	4	1	1	1.0	1	6.71	1.3	23.8	23.8	1.0	5.2	35	630	1
1282+00 to 1300+00	85	4	1	1	1.0	1	6.71	1.3	21.3	21.3	1.0	5.2	18	324	1
1282+00 to 1300+00	65	4	1	8	0.66	2.5	6.71	1.3	0.5	16.3	0.1	5.2	2	36	5
														7900	

Ground Support Summary

	Ground Support Category	Length of Tunnel (ft)	Description
73 %	1	5738	Unsupported
13 %	2	1013	Spot Bolting (1)
10 %	3	792	Systematic Bolting
0 %	4	0	Systematic Bolting w/ 40-100 mm unreinforced shotcrete (2)
3 %	5	270	Systematic Bolting w/ 50-90 mm fiber reinforced shotcrete
1 %	6	88	Systematic Bolting w/ 90-120 mm fiber reinforced shotcrete
		7900	

Notes
1. Spot bolting was assumed to be necessary in 15% of the tunnel due to additional disturbance from drill and blast excavation
2. Two hundred feet (200 ft) of Category 5 support was assumed necessary at the portals (footage taken from Category 1 - Unsupported Ground)

Table 4.1: Rock Tunneling Quality Index (Single Lane Twin Tunnel Configuration)

Q-System Support Category Calculation (Dual Lane Alternative)

Location: Bradfield Canal Tunnel - Tongass National Forest ***Date: 9/7/04***
Rock Type: Granodiorite ***Classified by: GRT/CRL***

Tunnel Stationing	RQD	Jn	Jr	Ja	Jw	SRF	Span (m)	ESR	Q	Conditional Factors RQD/Jn	Jr/Ja	Span/ESR	% with RQD	Length of Tunnel (ft)	Ground Support Category
1221+00 to 1265+00	98	9	1	0.75	1.0	1	11.58	1.3	14.5	10.9	1.3	8.9	45	1980	3
1221+00 to 1265+00	95	9	1	1	1.0	1	11.58	1.3	10.6	10.6	1.0	8.9	35	1540	3
1221+00 to 1265+00	85	9	1	1	1.0	1	11.58	1.3	9.4	9.4	1.0	8.9	18	792	3
1221+00 to 1265+00	65	9	1	8	0.66	2.5	11.58	1.3	0.2	7.2	0.1	8.9	2	88	7
1265+00 to 1282+00	98	6	1	0.75	1.0	1	11.58	1.3	21.8	16.3	1.3	8.9	45	765	2
1265+00 to 1282+00	95	6	1	1	1.0	1	11.58	1.3	15.8	15.8	1.0	8.9	35	595	3
1265+00 to 1282+00	85	6	1	1	1.0	1	11.58	1.3	14.2	14.2	1.0	8.9	18	306	3
1265+00 to 1282+00	65	6	1	8	0.66	2.5	11.58	1.3	0.4	10.8	0.1	8.9	2	34	6
1282+00 to 1300+00	98	4	1	0.75	1.0	1	11.58	1.3	32.7	24.5	1.3	8.9	45	810	2
1282+00 to 1300+00	95	4	1	1	1.0	1	11.58	1.3	23.8	23.8	1.0	8.9	35	630	2
1282+00 to 1300+00	85	4	1	1	1.0	1	11.58	1.3	21.3	21.3	1.0	8.9	18	324	2
1282+00 to 1300+00	65	4	1	8	0.66	2.5	11.58	1.3	0.5	16.3	0.1	8.9	2	36	6
														7900	

Ground Support Summary

	Ground Support Category	Length of Tunnel (ft)	Description
0 %	1	0	Unsupported
32 %	2	2529	Spot Bolting
63 %	3	5013	Systematic Bolting
0 %	4	0	Systematic Bolting w/ 40-100 mm unreinforced shotcrete (1)
3 %	5	200	Systematic Bolting w/ 50-90 mm fiber reinforced shotcrete
1 %	6	70	Systematic Bolting w/ 90-120 mm fiber reinforced shotcrete
1 %	7	88	Systematic Bolting w/ 120-150 mm fiber reinforced shotcrete
		7900	

Notes
1. Two hundred feet (200 ft) of Category 5 support was assumed necessary at the portals (footage taken from Category 3 - Systematic Bolting)

Table 4.2: Rock Tunneling Quality Index (Dual Lane Single Tunnel Configuration)

4.3 LENGTHS OF REQUIRED GROUND SUPPORT TYPES

Tables 4.3 and 4.4 summarize the type and lengths of ground support required based on the Rock Tunneling Quality Index, Q, for both the single lane and dual lane Bradfield Road Tunnel alternatives.

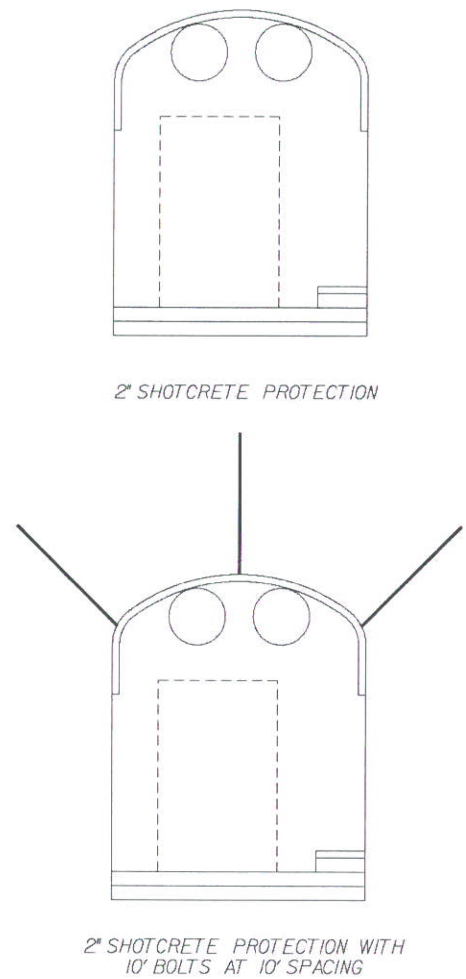
Ground Support	Tunnel Length (feet)	Description
Type A	6550	Spot bolting + protective shotcrete
Type B	790	Pattern bolting + protective shotcrete
Type C	360	Pattern bolting + fiber reinforced shotcrete
Type D	200	Pattern bolting + fiber reinforced shotcrete and built up shotcrete ribs

Table 4.3: Single Lane Tunnel – Lengths of Required Ground Support Types

Ground Support	Tunnel Length (feet)	Description
Type A	2530	Spot bolting + protective shotcrete
Type B	4810	Pattern bolting + protective shotcrete
Type C	360	Pattern bolting + fiber reinforced shotcrete
Type D	200	Pattern bolting + fiber reinforced shotcrete and built up shotcrete ribs

Table 4.4: Dual Lane Tunnel – Lengths of Required Ground Support Types

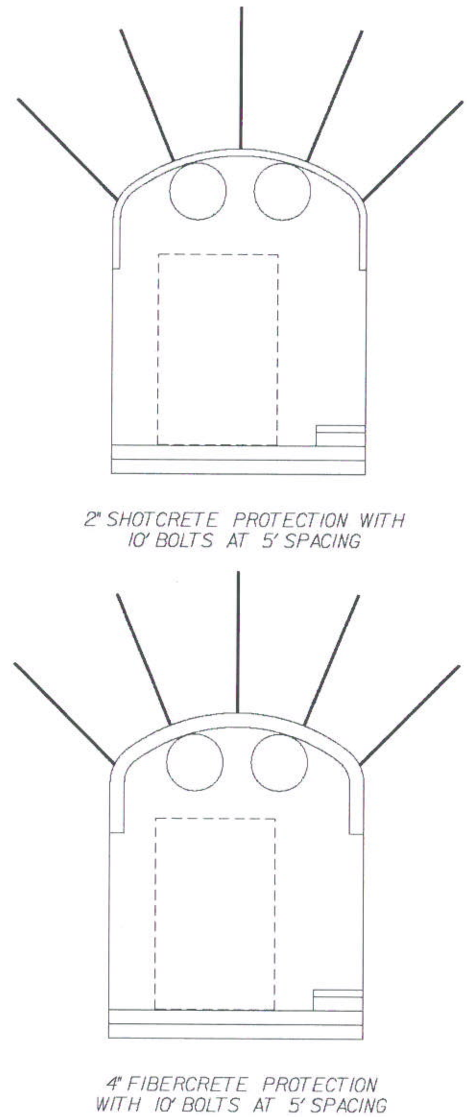
It should be emphasized that the ground support requirements defined above, should be considered only "estimates", based upon the review of all currently available geological and geotechnical information, in addition to the Snettisham case history information. At this stage of the study, in the absence of site specific "on the ground" geotechnical investigations. These estimates, although "educated estimates", should be considered to have a relatively high degree of uncertainty, to be reduced in the next phase of preliminary engineering. This relatively high degree of uncertainty, introduces a significant geotechnical risk, with the possibility that the relatively small amount of "bad" ground, requiring more intensive ground support, could be more than presently estimated. This possibility of this eventuality requires the application of a higher contingency value in the construction cost estimate, than would be used if the site exploration were developed in more detail.



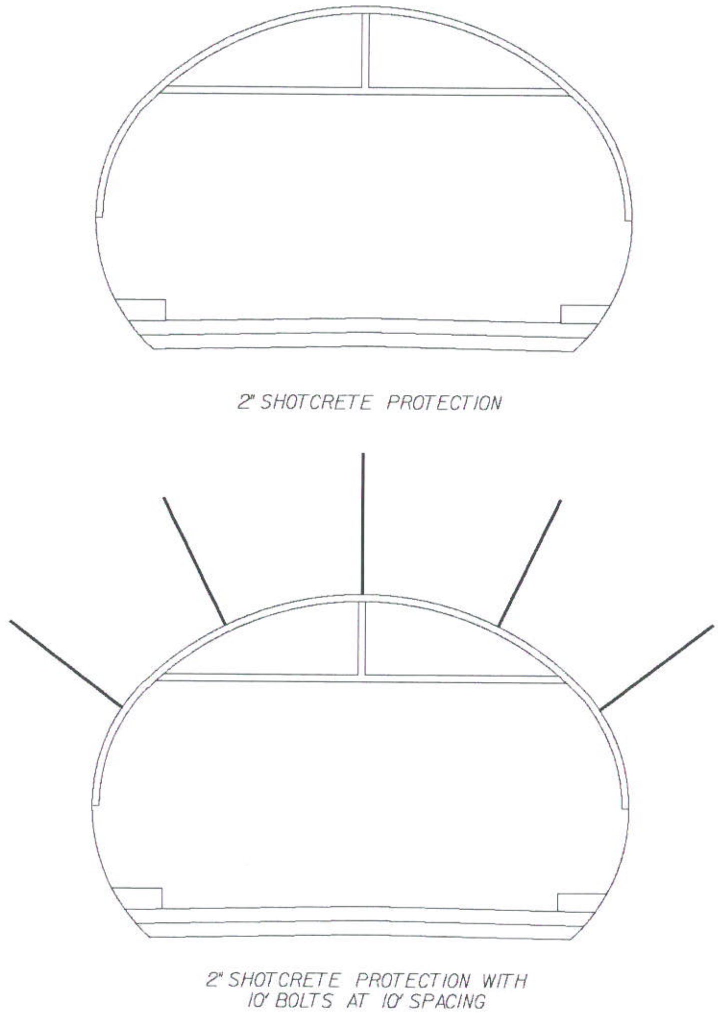
BRADFIELD TUNNEL
TWIN TUNNEL ALTERNATIVE
GROUND SUPPORT

FIGURE 4.3a

DATE 11/30/04

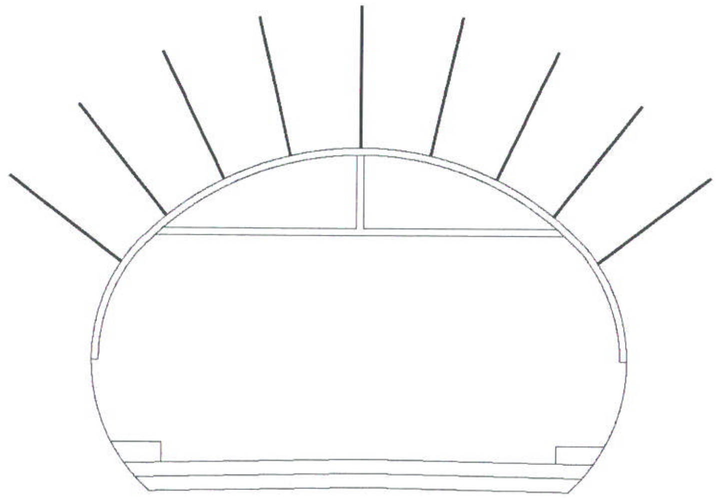


PB 100 YEARS	BRADFIELD TUNNEL TWIN TUNNEL ALTERNATIVE GROUND SUPPORT	FIGURE 4.3b DATE 11/30/04

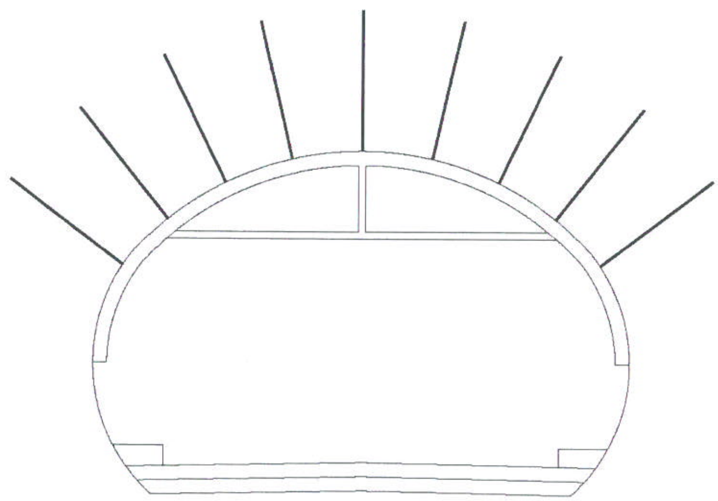


BRADFIELD TUNNEL
SINGLE TUNNEL ALTERNATIVE
GROUND SUPPORT

FIGURE 4.4a
DATE 11/30/04



2" SHOTCRETE PROTECTION WITH
10' BOLTS AT 5' SPACING



4" FIBERCRETE PROTECTION
WITH 10' BOLTS AT 5' SPACING

PB 100 YEARS	BRADFIELD TUNNEL SINGLE TUNNEL ALTERNATIVE GROUND SUPPORT	FIGURE 4.4b DATE 11/30/04

5. TUNNEL VENTILATION

5.1 GENERAL

Tunnel ventilation is provided for two purposes. The one usually governing the size and configuration is for protecting tunnel passengers from smoke from fire emergencies. The National Fire Protection Association (NFPA) Standard NFPA 502, Standard for Road Tunnels, Bridges and Other Limited Access Highways is the Standard usually applied to roadways in the United States. NFPA 502 requires mechanical ventilation on any tunnel longer than 1,000 feet. The second purpose is for carbon monoxide and general environmental control. Environmental Protection Agency (EPA) 1975 Supplement to its "Guidelines for Review of Environmental Statements for Highway Projects" is generally used for allowable carbon monoxide levels in tunnels. If the system has been designed for fire emergencies, the requirements for environmental control, which is a more frequent occurrence, is more likely to affect operational characteristics, such as variable speed and sequential starting. However, given the expected light traffic in this tunnel, ventilation for fire emergencies will be the controlling factor in system and equipment sizing.

5.2 FIRE SIZE

Fire heat release rate (FHRR) is a key element in the determination of the ventilation system capacity. The FHRR is currently undergoing examination in the profession, particularly in Europe, where there have been several large tunnel fires recently. NFPA 502, lists representative FHRRs referencing the 1995 PIARC Montreal Report. Based on this reference, the design FHRR for busses or trucks, excluding gasoline tankers, would be 20 MW (68 Million BTU/hr.) For gasoline tankers, it would be 100 MW (341 Million BTU/hr.) Recent data tabulated by PIARC indicates that the FHRR of a truck without very combustible goods would be around 30 MW (102 Million BTU/hr.) Dutch authorities use 300 MW (1020 Million BTU/hr.) for a 13,000 gallon tanker fire. This is considered a fire of extreme dimensions. The impact of FHRR on ventilation system capacity is very dependent on the type of tunnel and traffic allowed. For this study, the key assumptions affecting FHRR were the relatively light traffic volumes and the stipulation that gasoline tanker traffic would be restricted and escorted. Accordingly, 20 MW (68 Million BTU/hr.) was used as a design FHRR.

5.3 VENTILATION STRATEGY OPTIONS

Four primary methods have been and are being used for roadway tunnel ventilation. The Memorial Tunnel Fire Ventilation Test Program, co-sponsored by FHWA, compared the effectiveness of these ventilation strategies. The results are summarized as follows:

5.3.1 Transverse

The transverse ventilation strategy uses supply and exhaust fans to provide air uniformly along the tunnel. Flow is transverse to the roadway, with supply air usually being delivered at roadway level and exhaust removed at the tunnel ceiling. For long tunnels such as this one, the fan capacity required becomes very large and costly.

5.3.2 Longitudinal

The longitudinal ventilation strategy uses fans to produce a longitudinal airflow in the tunnel to prevent smoke from backlayering over the zone behind the fire. This longitudinal airflow protects people upwind of the fire. It is presumed that people downwind can drive out of the tunnel. People upstream are assumed to be blocked by the fire and traffic. Longitudinal ventilation is most effective at controlling smoke in the upstream zone and is the most efficient with regard to the fan equipment needed because the location of the fire within the tunnel does not have to be known. The area downwind of the fire is untenable (unsafe for people), so longitudinal ventilation can not be used in a bidirectional tunnel or where it is possible that downwind traffic could not drive away from the tunnel. In-tunnel jet fans are typically used to implement this strategy.

5.3.3 Semi-transverse

Semi-transverse ventilation strategy uses a transverse exhaust system with longitudinal fresh air supply, or vice versa. The tunnel actually uses longitudinal smoke control, but air is supplied or removed through transverse openings. Like the transverse strategy, the many openings require substantial fan capacity for long tunnels.

5.3.4 Extraction

Extraction ventilation strategy is similar to semi-transverse in that air flows longitudinally in the tunnel and transverse to/from the tunnel. In this case, flow is always from the tunnel. Extraction strategy may be forced or natural. Natural only works for small fires, while forced ventilation extraction is necessary for larger ones. Extraction is the only strategy that can be used when it is necessary to completely remove smoke from specific reaches of the tunnel, such as for stopped downstream traffic conditions or bidirectional traffic flows. In order for extraction strategy to work, the location of the fire must be precisely known.

5.4 TUNNEL VENTILATION DESIGN

Currently two tunnel Options are being investigated. Option 1 is a single-bore bidirectional traffic tunnel. Option 2 is a twin-bore unidirectional traffic tunnel. The ventilation strategy for each is substantially different.

5.4.1 Option 1.

For bidirectional traffic, NFPA 502 (10.2.3) mandates that smoke must be removed from the incident. This means drawing the smoke away from passengers through an overhead plenum. For this strategy, ventilation capacity is closely related to the fire size. The Design FHRR requires a minimum ventilation capacity of 85,000 cfm.

In order to effectively utilize this ventilation capacity, motorized dampers are required approximately every 100 feet. During a fire emergency, only the dampers near the fire would open. This requires a very reliable control system to operate ventilation. No current automated technology exists for this level of reliability. Linear heat detectors can show a fire, but because of large air movements, may not reliably give the location. Vehicle detectors can theoretically indicate stopped traffic, but in practice this has been difficult to implement. Closed circuit television has been used effectively in control centers, but requires operator monitoring. New software purports to analyze video images for indications of problems, but has not been used extensively. For this reason, the design ventilation capacity has been set at 300,000 cfm, in order to partially account for uncertainty in fire location. This allows for a total of three dampers to be open plus some contingency cross flow. It should be emphasized, however that without a manned tunnel control center, the ability to provide a reliable emergency ventilation system is severely compromised. In addition, given that the increased probability of head-on collisions with a bidirectional tunnel increases the likelihood the ventilation system will be required makes this a very unsatisfactory arrangement.

5.4.2 Option 2.

For unidirectional traffic, longitudinal ventilation is allowed. It is assumed that people downstream of the fire can drive out. This strategy involves providing sufficient longitudinal flow to prevent fire buoyant flows from traveling over the evacuating passengers. Because offsetting pressures are being evaluated, the ventilation capacity is a function of the cube root of FHRR. The assumed Design FHRR requires a minimum ventilation capacity of 311,000 cfm.

In order to utilize this strategy, three sets of fans are required as the set closest to the fire may be destroyed. The design ventilation capacity has been set at 320,000 cfm. Because longitudinal ventilation controls the fire buoyant pressure forces with velocity pressure forces at the fire incident, knowing the precise fire location is not critically important. Any fire detection method could be used. For a single lane unidirectional twin tunnel configuration, the longitudinal ventilation system is appropriate from both a technical and regulatory perspective. If a more elaborate fire zone operation is desired, the accurate determination of fire location will be necessary and a design similar to that for the bi-directional tunnel will be required. The primary concern with longitudinal ventilation is that passengers downstream of the fire will be trapped and unable to evacuate the hazardous conditions. Considering the very low traffic volume anticipated for the tunnel operation, this is not considered a likely occurrence and downstream traffic would be able to drive away from the incident. Given the advantages of reduced collision probability, simplified detection requirements and FHRR capacity, longitudinal ventilation for unidirectional traffic has a clear advantage in comparison to the bi-directional tunnel.

Ventilation concepts are presented in Appendix 3.

5.5 ENVIRONMENTAL STRATEGY

The primary concern in tunnel environmental ventilation is to prevent the build-up of carbon monoxide. Traffic moving between fifteen and twenty-five miles per hour will provide adequate ventilation by the vehicle piston effect. Given the forecast very low traffic volumes, this would appear to be the case.

If there is a concern about traffic stoppages inside the tunnel, carbon monoxide sensors can be installed. Fan operation could be activated by concentration level.

5.6 IMPLEMENTATION OF ALTERNATIVES

It should be emphasized that this study has only evaluated the prescriptive requirements for complying with NFPA 502. Given the relatively light traffic volumes, other strategies that would meet equivalent performance requirements may be reasonable and less costly alternatives. In general, these alternatives would have to show that people in an unprotected area could be given time to reach a point of safety that was equivalent to the protection they would otherwise have. These alternatives would have to be approved by the Authority Having Jurisdiction. As an example, if an exiting analysis shows that people downstream of an incident could reach a point of refuge before conditions became untenable, then longitudinal ventilation may be an acceptable alternative. The same approach could be applied to other systems. For example, NFPA 502 mandates a fire line for a tunnel this long. An alternative solution could be a standby tanker truck of adequate capacity to handle the design fire for sufficiently long to protect evacuees. An initial screening of system costs would identify those most likely to benefit from performance analysis.

It should noted that the evaluation of the pros and cons of single vs. twin tunnels in terms of operational like/safety considerations, as well as development of ventilation requirements of refuge rooms, is beyond the scope of this study, but that the alternative "discussions" presented above are offered for consideration in more detailed engineering studies that may follow these conceptual studies. Follow on studies should also consider the traffic safety and accident risk of the single vs. twin tunnel configuration options.

6. BASIS OF DESIGN FOR TRAFFIC AND FIRE & LIFE SAFETY SYSTEMS

6.1 DESIGN CRITERIA

The Proposed Bradfield Tunnel will be designed to meet minimum safety requirements as determined by local codes and the application of the National Fire Protection Association (NFPA) Standard 502 for Road Tunnels, Bridges and Other Limited Access Highways (latest edition). All systems shall also meet the requirements of NFPA 72 (National Fire Alarm Code); NFPA 10 (Standard for Portable Fire Extinguishers); NFPA 101 (Life Safety Code); and NFPA 14 (Standard for the Installation of Standpipe, Private Hydrant, and Hose Systems). See Appendix 4 for a listing of tunnel systems and their corresponding Code References. All systems components, including ventilation as discussed previously, are assumed to be required to be in full compliance with all applicable regulations. At such time as an NFPA variance might be obtained due to the remote location of the tunnel and/or the relatively low traffic volumes expected, the systems presented herein, designed preliminarily to satisfy the regulatory requirements, could be down scaled depending upon the degree of relaxation of requirements allowed by any variances obtained.

6.2 TRAFFIC SYSTEMS

Traffic System shall include the following:

- Changeable Message Signs (CMS) - CMS shall be included at each of the tunnel portals and possibly on each approach. These signs will be used to provide motorists with tunnel information including incidents and closures. No CMS are included inside the tunnel.

- Traffic signals – Traffic signals shall be included at both tunnel portals and will be used in the event of tunnel closures and caution scenarios. No traffic signals are included inside of the tunnel.

Both CMS and traffic signals shall be triggered automatically when at least two of the internal tunnel systems have detected an incident or fire alarm (See other Tunnel Systems). A remote activation is also provided in cases where the internal tunnel systems do not sense a bonafide alarm. CCTV and local Control Centers are not provided. It is assumed that the 911 System will be notified of tunnel incidents/fires, and that support systems such as telephone links will be provided as part of the overall highway development plan.

6.2.1 Fire Alarm

A fire alarm system has been included for early detection and location of a fire within the tunnel. These systems include:

- Manual Fire Alarm Pull Stations
- Automatic Fire Detectors
- Addressable Fire Alarm Control Panel
- Motorist Aide Telephones (See Communications)

6.2.2 Communications

An Emergency Telephone System has been included to allow audio communications between the motorists and 911 Operators in the event of an incident, accident or fire. Motorist Aid Telephones will be located every 1000 feet inside the tunnel (inside door of cross passages or the safe havens, where used) and on each tunnel approach.

Exit Signs and Strobe Lights shall also be located at each tunnel emergency exit locations (cross passage or safe haven). Activation of these strobe lights will alert motorists in the event of a tunnel evacuation. It is anticipated that the activation of the strobes will be automatic but will only be activate upon more than two of the fire detection systems being triggered to ensure that a fire has actually occurred and not a product of individual system malfunction and false alarms.

A new telephone (fiber optic) line is assumed to be provided along the length of the new roadway to provide connection to a 911 system. 911 communications system could be housed either from the Alaska or Canadian authorities.

6.2.3 Air Monitoring

A Carbon Monoxide (CO) detection system has been included. This system is the prime indicator of the tunnel air quality and shall be interfaced to the tunnel ventilation. It is anticipated that this system would be a simple one to two sensors to verify the need for operating fans on a daily basis.

6.2.4 Tunnel Security

Security Systems would entail simple monitoring of the doors and cabinets throughout the tunnel. Opening any door or cabinet would provide a status alarm to the 911 Operator.

6.2.5 Fire Extinguishers

Fire extinguishers have been accounted for in the tunnels at 250 feet spacing and at each cross passage or safe haven (minimum spacing per NFPA 502 is 300 feet).

6.2.6 Tunnel Lighting

The lighting system includes increased lighting levels (threshold/transition lighting) at the tunnel portals. Also included are lighting control and emergency lighting. All lighting fixtures have been assumed to be situated so as to not interfere with the required vehicle clearance envelopes. Actual locations may change as the conceptual tunnel cross section are developed further and refined during the preliminary engineering phase of the project. Tunnel lighting systems have been developed to be in accordance with ANSI/IES RP-22 American National Standard Practice for Tunnel Lighting, NFPA 70 (NEC) and NFRPA 101 Life Safety Code. (See Appendix 5 for details of the conceptual lighting arrangements).

6.2.7 Fire Suppression

The tunnel shall include a dry standpipe system connected to an available water supply. Fire hose connections shall be spaced at 250 feet and at each cross passage or safe haven (minimum spacing per NFPA 502 is 300 feet). The siting and development of a long term continuously available water source has not been defined at this stage of the design development, as several options may be available, and it was considered beyond the scope of this study to optimize precisely define such arrangements, other than assuming that they would be made available as required during tunnel operations.

7. OPERATIONS AND MAINTENANCE

7.1 TUNNEL OPERATIONS

The Bradfield Road Tunnel conceptual design assumptions include minimal traffic operations and control systems commensurate with the expected low volumes of traffic. Assuming:

- 35 MPH speed limit
- 400 ADT
- 29% Peak Hour Volumes (116 vehicles per jour in both direction/58 vehicles in one direction)
- Approximately 2.6 minutes to travel through this 8000 – ft tunnel section (23 intervals in an hour).
- Average number of vehicles in the tunnel at any one time estimated to be approximately 2.5
- From a statistical perspective (using a Poisson's distribution), there is estimated to be up 4 (95%-ile) or 5 (99%-ile) vehicles in the tunnel during any particular time interval.

7.1.1 Vehicle Incidents

During a tunnel incident, motorists would be automatically alerted to safety conditions via the Changeable Message Signs (CMS) and Traffic Signals at the portals and on the approaches to the tunnel. Once a potential incident is detected by one of the internal tunnel systems (Motorist Aide Telephones, one of the doors to the cross passages, safe havens or equipment cabinet doors are opened, the CMSs will automatically operate in the "CAUTION AHEAD" mode and the traffic signals would operate under the flashing yellow mode. The 911 Center would be notified of the status of these systems, prompting the dispatch of the appropriate response.

7.1.2 Vehicle Fires

In case of a fire (detected by the Manual Fire Alarm Pull Station, Automatic Fire Detectors, Addressable Fire Alarm Control Panel and Motorist Aide Telephones), the CMSs would automatically turn to "TUNNEL CLOSED" messages and the traffic signals would turn to the steady "RED" condition, effectively closing the tunnel and not allowing additional vehicles from entering the tunnel. In the event of an "in-tunnel" vehicle fire, tunnel ventilation systems would operate as outlined in Section 5 of this report. In such a fire emergency inside the tunnel, vehicles downstream of the fire location would continue to drive through and out of the tunnel while motorist behind the incident would be advised via the Exit signs and flashing strobe light to evacuate into the cross passage (twin tunnel uni-directional traffic configuration) or safe haven (single tunnel bi-directional traffic configuration). At the time of a fire incident, both directions of the tunnel would be closed to facilitate the safe evacuation of the motorists.

Fire extinguishers are available throughout the tunnel in case of small vehicle fires. If larger fires occur, it is best that motorist evacuate into the safer confines of the cross passage or safe haven. The nearest "local" fire authority would theoretically respond to larger fires, depending upon the distances involved and the travel time required to respond. The probability of "large" fires occurring should be substantially reduced by the operational plan to restrict access by fuel trucks to the tunnel except under escort by emergency vehicles. The feasibility of this emergency response scenario will require more detailed evaluation and development during more detailed engineering evaluations. A dry standpipe system is available for their use.

7.1.3 Power Outages

For the operation of this type of traffic tunnel, electrical power would “traditionally” be provide from two independent sources. Due to the remote location of the tunnel and the expected relatively low traffic volumes, relaxation of the “traditional” standards should be evaluated during more detailed engineering evaluations. It has been assumed for purposes of conceptual design and cost estimate development, that commercial electrical power would be available at the tunnel portals by the time the tunnel goes into service. During commercial power interruptions, standby generators have been assumed to be present for the continuous operation of critical life safety systems. These critical life safety systems include emergency lighting, portal signs and signals, fire alarm systems and communications. In case of an extended power outage, either tunnel configuration would require temporary closure to normal traffic since the ventilation systems would not be operational.

7.2 MAINTENANCE

It was not in the Scope of Work of this study to address maintenance issues as independent operations with associated costs. However, any traffic tunnel requires maintenance in order to remain at full functional capabilities, and these activities must address the prevention of potential long term problems such as drainage system blockages, corrosion of mechanical and electrical components, deterioration of concrete and/or shotcrete etc.

8. CONSTRUCTION COST ESTIMATES

8.1 BASIS OF ESTIMATE:

The estimate is based on information developed internally from the PB – LACHEL FELICE & Associates team, as well as from FHWA and AKDOT&PF. The various information sources supporting the cost estimate defined the scope, assumptions, quantities, concepts, and various dimensions of the project.

The project is based on a general length of tunnel of 8,000 lineal feet as defined in the initial boundary conditions and assumptions as outlined and agreed by FHWA and AKDOT&PF. As noted previously, this conceptual design and cost estimate considered two options for this tunnel; Option One consists of twin parallel tunnels for separated two-way traffic, each of 8,000 feet length. The second option includes one large tunnel incorporating the traffic in a bi-directional manner, also 8,000 lineal feet in length.

Labor costs are from the State of Alaska Laborers' and Mechanics' Minimum Rates of Pay, Issue #9, dated September 01, 2004. Additional information and cost factors are from the Employment Practices and Working Conditions, Wage and Hour Administration Pamphlet #100, dated September, 2003. Equipment rates for the most part are from the Corps of Engineers Hourly Equipment Ownership and Operating Expense document for Region #9, Alaska, and dated July, 2003. The equipment buy is factored with a 60% salvage factor for most of the long life units. A contingency of 25% has been added to the costs for unknowns and uncertainties relating to design and construction issues as yet not identified. This "tunnel contingency" could be deleted from the tunnel construction costs developed, if the overall project contingency is applied instead. A risk factor of 12% has been added based on the labor exposure for the project, which was felt to be appropriate since there is a possibility that the Contractor could have high employee turnover. The employment responsibilities of the contract require costs of transportation back to their hire site for all employees.

Camp costs and Catering costs have been quoted by ATCO Structures and by ESS Support Services Worldwide, both of whom are located in British Columbia. Rail freight has been assumed to a leased siding in Kitwanga, B.C., the nearest railhead to the North portal from which the tunnel is to be driven. Fuel costs for the diesel fuel to operate the various camp systems and the equipment has been priced according to the latest figures from B.C., and CP Rail. These costs were gathered and provided by LACHEL FELICE & Associates.

Electrical generation is provided by generator sets located both in the camp area and at the tunnel portal. Station air compressors at the portal supply piped air to the tunnels. Potable water is provided by plants that take raw water trucked from off-site and purify and store the treated water for the camp demand. Waste water treatment is by a package unit sized to handle the man-count for the camp. Costs for these items are based on quotes by providers of these units.

Freight costs for the equipment and supplies have been based on published weights for the various pieces of equipment anticipated, and the number of units of each kind. Rail freight is included from Edmonton to Kitwanga, and highway haul from the railhead in Kitwanga through Bob Quinn to the camp site near the North portal. The costs include hauling to and from the project and are based on the input from LACHEL FELICE & Associates for both highway and rail freight.

Costs for Systems, including Life Safety and Lighting, were provided by the respective technical discipline members of the project team. Ventilation concepts have also been provided. The unit costs for the majority of the systems have been entered as subcontract work. Cost of the ventilation has been included at a per tunnel foot rate based on recent, similar ventilation costs for other tunnels. It should be noted the costs for the active plenum in the bi-directional bore has been included at a fairly high cost per foot. This is due to a number of factors, including the apparent need for motorized dampers in the tunnel ceiling. In the relatively harsh conditions, and extended periods of inactivity the project will endure in this location, it is assumed the materials for these working parts will need to be manufactured of premium stock in order to function reliably over time.

As a precedent design for operations in environmentally harsh conditions (warm salty air) the fans and silencers for the Halawa and Hiaku tunnels on Oahu were constructed of highly resistant materials due to the probable conditions of exposure. That potential is recognizes for this project. The higher cost used in the Bradfield Road Tunnel project also recognizes the foot by foot adjustments to both the ceiling and the plenum divider wall dimensions due to the variableness of both the width and height of the drill and blast surface in the tunnel. The closure plates will have to be fit to the variable surface of the shot rock.

The Systems costs include the dry standpipe noted as being required for the project. Also included are the various methods of determining the current state of the tunnel at any time, and reporting that information to some remote location. For conceptual cost estimate development purposes, a simple tunnel subgrade drainage system has been assumed, including a length of 8" diameter, perforated HDPE pipe has been included throughout the length of each bore. This will provide positive means of draining inflow for the entire length of the tunnel, minimizing the risk of the potential freezing due to the absence of water, and the associated possible detrimental expansion of the tunnel muck (shot rock) invert leveling course underlying the pavement structure. The doors have been deleted from the portals per FHWA and AKDOT&PF direction, and consequently no frost protection measures or costs have been included, as of this time.

8.2 METHODS OF CONSTRUCTION:

The project assumptions consider that access to the tunnel construction area and to the portal sites is to be provided by others. An area is available at the North portal for disposal of the tunnel muck without a long haul. An additional area of 3 acres has been dedicated to the man-camp and the associated facilities for the prosecution of the work. Only minor clearing and grubbing, and incidental grading is included for this facility. As stated above, a railhead siding lease is proposed at Kitwanga for the acceptance of freight and fuel for the project. CP Rail states that sidings are available, but must be negotiated with the Owners. The estimated fuel burn is 20,000 gallons per week minimum for which the CP Railroad suggested leasing 4 each 30,000 gallon tank cars to assure a minimum of a 6 weeks supply for all non-electric on-site equipment.

Fuel haul is by tanker truck from the railhead to storage facilities at the camp site. Additionally, raw water is trucked by tanker from Kitwanga or the lake near Bob Quinn, if it is not frozen, to the project where both raw water and potable water storage facilities are provided. It was considered beyond the scope of this conceptual cost estimate to evaluate various water sources available, other than assuming that it would be available at the nearest "developed" area. The waste water treatment facilities are completely self-contained and require no further support. Camp buildings include sleeping accommodations for the anticipated manpower plus Owner representatives and occasional visitors. Space for a mess hall, dry and perishable foodstuffs storage, and a recreational area are also provided. Weather-resistant and transitional entries are provided for all the housing and related structures.

Drainage and supply piping is included from the local on-site water source to the camp and other facilities, and waste collection is also piped to the treatment facility. All water/waste water lines are insulated and buried. A fuel dock is provided for the dispensing of fuels and oils for the various pieces of equipment. Also included are mechanics trucks and fuel trucks for the moving equipment, available to service the equipment that will be maintaining portions of the access road, and traveling many miles per day hauling expendable supplies to the site.

A weather-protected mechanics shop is included in the camp as well as a warehouse and electrical shop. There is a transportable concrete batch plant with the required aggregate and cement storage facilities also included in the area from which the concrete for the portals and the portion of tunnel lined will be produced. The operations facilities are operated 10 hours a day with the exception of the fuel dock, which operates 20 hours per day. Special provision for cold weather concrete (and shotcrete) batching and placement have been assumed generically, without outlining specific measures to be employed.

Portal excavation quantities have been estimated at approximately 16,000 to 24,000 cubic yards at the North portal for the single tunnel and the twin tunnel options respectively. Portal excavation quantities have been estimated at approximately 39,000 to 65,000 cubic yards at the South portal for the single tunnel and the twin tunnel options respectively. The estimated cost of this required portal excavation is estimated to range from about $1.2-1.9 million for the single and twin tunnel options respectively. These costs have not been included in the tunnel construction cost, since it is understood that all costs associated with roadway earthwork up to the tunnel portal at both ends, have already been included in the overall project construction cost estimate.

It should be considered from an overall project planning perspective, to coordinate all portal development work with the tunnel work, such that the portal excavations could be done by a general highway earthworks contractor, ensuring that the North portal was available when the tunnel contractor started site development, and that the South portal was available before the tunnel contractor scheduled his hole through at tunnel completion.

The tunnel drive for the twin bores has been presented in the estimate as an alternating face operation taking a full-face excavation with a 10' pull. It should be noted that the increased excavation volumes for the emergency turnouts (including increased rock support requirements as appropriate) along the tunnel length have been included in the overall excavation volumes, but have not been identified as separate line items in the cost estimate itself. The drilling is by a three-drill jumbo with mucking by LHD's to the tunnel portal, and transfer by loader to the adjacent disposal site where it is spread by crawler dozer. The front-end loader also functions as a back-up mucker if needed due to service or breakdown delays to the LHD's. Blasting is by electric cap with bagged explosive to speed the loading process and resist moisture. It is, of course, also safer to handle and store. A site magazine has been included for a reasonable quantity of explosives stored at the site. The progress is an average of 39.9' per day working the two ten hour shifts. Tunnel drive requires about 13 months with an additional 3 months of set-up and 2 months of demobilization for a total duration of 18 months.

The tunnel drive for the bi-directional single tunnel is separated into heading and bench excavation. The equipment and method is the same as the twin tunnel, however the progress is much slower due to both the greater quantity of material, and the single working site. The average advance rate for this bore is only 14 feet per day.

The tunnel drive and support set-up and demobilization is 19 plus months for the drive, and again, about 5 months for support (3 months set-up and 2 months demobilization). Given enough men and equipment, and sufficient area to safely work together, it is anticipated that both portal excavations can be accomplished nearly within the time frame required for the tunnel drive.

8.3 EXCLUSIONS

There have been a few items identified and discussed during the development of the cost estimate that have not been included in this estimate. No provision is included for operational power for the tunnel systems and lighting, nor is there an inclusion of a power supply for the ventilation system. No costs have been included for telephone or data transmission of tunnel conditions by any method to a remote monitoring location.

Although a dry standpipe system has been included for fire protection, there is no provision for a water supply at the site. Several methods have been mentioned, including a reservoir and water trucks stationed at or near the portal(s). Either potential provision would require further evaluation due to geographic and environmental conditions existing at the tunnel site. Freezing is a potential with either solution; and tanker trucks parked at the portal site(s) for long periods of inactivity would render them subject to a great potential of failure to respond in an emergency. No costs have been included for drainage of liquids within or at the portals of the tunnel(s), nor for the containment of the liquids. It is presumed this system cost would be a part of the subsequent paving and drainage plan.

As directed by FHWA, no portal doors have been included in the estimate, nor has there been an inclusion of costs for frost control. Since the doors were deleted and the fire standpipe system is dry, there is no apparent need for the frost control.

As directed by FHWA, no contingency value has been included in the construction cost estimate, as it is understood that the overall project "global" contingency value of 25% will also be applied to the tunnel construction costs.

8.4 CONCLUSIONS:

The preliminary construction cost estimates based upon the conceptual tunnel designs outlined in this study are noted below in Table 8-1 for both tunnel options.

Estimated Tunnel Cost Consideration	Option 1	Option 2
	Twin Tunnel Uni-directional	Single Tunnel Bi-directional
Total Tunnel Cost w/o Contingency($)	73,168,953	92,378,252
Tunnel Unit Cost w/o Contingency* ($/lf)	9,146 (use 9,150)	11,547 (use 11,550)

* Assumes 8000 linear feet per agreed study parameters

Table 8-1: Summary Preliminary Tunnel Construction Costs

Several factors drive the costs of these options, perhaps the greatest being the project location. There is no easy way to arrive at the site; the access road from Highway 37 is noted as about 40 miles in length and will require constant maintenance to support the daily hauling traffic and snow clearing. It is an additional 185 miles to Kitwanga, and many more miles to any large metropolitan area, including Prince Rupert, Prince George, and Edmonton or Vancouver. The cost of providing at the site all the necessities of a project of this size requires mobilizing a sufficient number of people and an appropriate amount of equipment. There is no handy material, equipment, or supply store anywhere close. There is no ready source of fuels or electricity. The conclave of Bob Quinn, near the juncture of the project access road and Highway 37, is an accumulation of 12 manufactured houses (house trailers), an 8,000 square foot maintenance shop, and portable electrical generators for light and water pumping. Electrical power and telephone connections are obviously remote from this site, and also further from the project site.

Another factor to consider when evaluating these preliminary tunnel construction costs, is the cost of the fire/life safety systems. These are based at the present time, upon full compliance with all required NFPA regulations. However, as noted at the start of the project, it may ultimately be possible to get formal variances from NFPA requirements, considering the remoteness of the tunnel and the low traffic volumes anticipated. If this were to happen, selected systems components might be considered for deletion. In order to provide insight into the magnitude of the potential cost savings from these deletions, the fire/life safety components of the present cost estimate are presented below in Tables 8-2and 8-3 for twin and single tunnel options respectively. Appendices 6 and 7 include details of the construction cost estimate development for twin and single tunnel options respectively.

Since the development of cost estimates for tunnel construction must consider the level of risk associated with uncertainties during construction, the contingency value must reflect the level of risk assumed. The 25% "project global contingency" to be applied to the tunnel cost estimate would sometimes be on considered to be on the low side for this stage of project development, considering the absence of site specific geotechnical information, but was considered reasonable in this case, with the air photos available and the Snettisham case history as a reference project. As the project proceeds to further development, a comprehensive risk assessment should be considered as an integral part of preliminary engineering, in order to better characterize the type and range of risks anticipated, as well as the potential cost consequences to such risks. This type of risk assessment could include not only geotechnical type risks related to tunnel construction, but also tunnel operational risks, that would be of benefit in selecting a preferred tunnel configuration independent of construction cost comparisons.

Option #1: Twin Tunnels -

Annunciation:				
Exit Sign/Strobe Light	EA	16	$400	$6,400
Emergency Call Boxes	EA	16	$1,000	$16,000
Intrusion Detection	EA	82	$200	$16,400
Portal Sign/Signals	LS	2	$2,000	$4,000
				$42,800
Fire:				
Fire Pull Station	EA	64	$750	$48,000
Fire Extinguisher Cabinet	EA	64	$500	$32,000
Hydrant System	LF	18000	$100	$1,800,000
CO Detector	EA	16	$500	$8,000
Fire Detector	LF	16000	$0	$0
Conduit 4" RGS (Fire Systems)	LF	18000	$40	$720,000
Wire 12-pr Fiber (Fire Systems)	LF	18000	$15	$270,000
Junction Box (36"x24"x18")	EA	45	$1,000	$45,000
				$2,923,000
Systems/Startup:				
FACP System Controls	EA	6	$20,000	$120,000
Systems Controls	LS	1	$50,000	$50,000
Conduit 4" RGS (Systems)	LF	18000	$40	$720,000
Wire 12-pr Fiber (Systems)	LF	18000	$15	$270,000
Junction Box (36"x24"x18")	EA	45	$1,000	$45,000
Startup/Commissioning	LS	1	$25,000	$25,000
				$1,230,000
Ventilation Systems:				
Cross Passages				$55,642
Main Tunnel				$6,359,098
				$6,414,740
Total Option #1				**$10,610,540**
Unit Cost for Option 1				**$1,326.32/ft**

Table 8-2: Tunnel Option 1 Twin Tunnel Systems Component Costs

Option #2: Single Tunnel -

Annunciation:				
Exit Sign/Strobe Light	EA	8	$400	$3,200
Emergency Call Boxes	EA	8	$1,000	$8,000
Intrusion Detection	EA	42	$200	$8,400
Portal Sign/Signals	LS	2	$2,000	$4,000
				$23,600
Fire:				
Fire Pull Station	EA	32	$750	$24,000
Fire Extinguisher Cabinet	EA	32	$500	$16,000
Hydrant System	LF	9000	$100	$900,000
CO Detector	EA	8	$500	$4,000
Fire Detector	LF	8000	$0	$0
Conduit 4" RGS (Fire Systems)	LF	9000	$40	$360,000
Wire 12-pr Fiber (Fire Systems)	LF	9000	$15	$135,000
Junction Box (36"x24"x18")	EA	23	$1,000	$23,000
				$1,462,000
Systems/Startup:				
FACP System Controls	EA	3	$20,000	$60,000
Systems Controls	LS	1	$50,000	$50,000
Conduit 4" RGS (Systems)	LF	9000	$40	$360,000
Wire 12-pr Fiber (Systems)	LF	9000	$15	$135,000
Junction Box (36"x24"x18")	EA	23	$1,000	$23,000
Startup/Commissioning	LS	1	$25,000	$25,000
				$653,000
Ventilation Systems:				
Safe Havens				$630,000
Main Tunnel				$7,560,749
				$8,190,749
Total Option #2				**$10,329,349**
Unit Cost for Option 2				**$1,291.17**

Table 8-3: Tunnel Option 2 Single Tunnel Systems Component Costs

9. STAGING AREAS

9.1 STAGING AREAS

Staging areas near each portal must be available during construction for the contractor to set up camps and store materials and equipment for the duration of the construction period. It has been assumed for purposes of this evaluation and cost estimate that these required areas would be made available from adjacent Tongass National Forest property at no additional cost to the project. Since year round construction operations have been assumed, there must be no seasonal interruptions to the availability of these staging areas.

10. LOGISTICAL NEEDS

10.1 LOGISTICAL NEEDS

The logistics of personnel and material supply to the project site will be crucial to construction operations. It has been assumed for purposes of the study, that the all season primary road access to the north portal will be available from British Columbia. For winter operations, it will be important that this access is not disturbed by adverse weather for more than a few days at a time. Although critical construction materials and equipment spare parts can be held in inventory on site, and personnel can be interchanged on regular intervals by special winter snow vehicles, the availability of a continuous fuel supply to maintain uninterrupted construction operations will required in order to not introduce time consuming and costly delays to the project. In order to achieve these goals, maintenance and upkeep of a winter road will be required, but full costs associated with this activity have not been considered as part of the construction cost estimate. It has been assumed that the coordination of such activities with responsible government highway authorities will be arranged by others, and that the costs associated with such activities will be covered by non tunnel contract budgets. The cost estimate as presented herein, does however include some money for these activities for application to access road maintenance by the tunnel contractor himself, in the event that the "local authorities" fail to provide the access that the Contractor will depend on, in which case the cost of road maintenance by the contractor would be less than the cost of a shut-down if access were not provided by "others". These costs could be deleted from the present cost estimate if it is confirmed that there is minimal risk that all season road access will not be provided as planned.

11. REFERENCES

11.1 GOVERNMENT FURNISHED REFERENCES

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11.2 EXTERNAL REFERENCES

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APPENDICES

APPENDIX 1
BOUNDARY CONDITIONS AND ASSUMPTIONS

APPENDIX 1: BOUNDARY CONDITIONS AND ASSUMPTIONS

General Assumptions

1. Design/Build approximately 8000 lf of rock tunnel, both single and twin tunnel options.
2. Tunnel will be driven from the North end (Canadian side), where the drive will be uphill, and others will provide access roads.
3. Access roads, by others, will provide access to the portal preparation at south end of the tunnel.
4. Construction camp facilities will be located no more than 2 miles from the North portal.
5. A 7-day workweek consisting of 2-10 hour shifts and a 4 hour maintenance shift. This will get 24 hour production, reduce breakdowns, and keep camp development costs at a minimum.
6. Construction camp will be built and operated by Contractor, with all housing, mess, sewerage, water supply, parking, recreation, offices, temporary material storage etc., for all construction seasons until tunnel is completed.
7. Tunnel construction will be conducted on a year round schedule until completion of the tunnel project, provided it is the most cost efficient method of constructing the tunnel.
8. Design traffic volume of 400 vehicles per day.
9. Design truck traffic volume of 20 percent, as provided by AKDOT&PF.
10. Loaded fuel trucks will be allowed to use the tunnel, with restrictions. This requirement will probably maximize fire-life safety requirements, but until justification can be provided by more rigorous evaluations, a National Fire Protection Association (NFPA) waiver cannot be assumed. It will be assumed that fuel trucks would be allowed only at predetermined time intervals when no other traffic was in the tunnel, and only if the fuel truck were escorted by emergency vehicles.
11. Electric power required to support construction activities will be provided on site by the tunnel contractor, but commercial power will be available for tunnel maintenance and operation.
12. Maximum tunnel gradient to be 5.22% on a horizontal alignment tangent based upon the Federal Highway Administration (FHWA) conceptual plans.
13. Tunnel traffic speed restricted to 35 miles per hour.
14. It has been assumed that the tunnel will be operated during an extended season, with minimal requirements (tubbing) for frost/ice control at portals during the winter.
15. Muck disposal is available at the north construction portal, without re-handling to a second disposal site.
16. All equipment maintenance shops, spare parts inventory, field offices, etc., will be located at North construction portal.
17. Vehicle clearance envelops per American Association of State Highway & Transportation Officials (AASHTO) standards for "Interstate Semitrailer, WB-65" or WB-67".
18. No physical traffic divider between opposing travel lanes in the bi-directional tunnel.
19. Tunnel contractor will leave the tunnel invert leveled with tunnel muck, at a grade approximately 12 inches below final paving grade. Placement of the final base course and pavement structure will be completed with the roadway construction.
20. Davis-Bacon labor rules and rates apply.
21. Tunnel will satisfy AASHTO operational requirements.
22. Safe havens as required per National Fire Protection Association (NFPA) 502, with those in the bi-directional tunnel to include ventilation and water supply at each one, spacing to be a maximum of 1,000' intervals. Safe havens for single lane tunnel to be only vehicle bypass pullouts, spacing to

be a maximum of 1,000' intervals. Single lane tunnels to have emergency cross-overs between tunnels at a maximum distance of 1000'.

23. Tunnel lighting to be the minimum acceptable for safe operation. The "black hole effect" will be considered at tunnel entrances when evaluating illumination levels.
24. Both tunnel portals will have closing doors for winter shut down. (subsequently withdrawn).
25. A minimal emergency alert system will be included at both portals. This could be either a satellite phone system or an emergency alert beacon of some sort.
26. Signaling/signing will be the minimum acceptable for safety.
27. No fire/emergency response staff or vehicles will be available in case of tunnel accident and/or fire.
28. 100 year design life.
29. Construction cost estimates will be based on 2004 U.S. dollars.
30. Twin bore tunnels will be constructed at the same time (i.e. not separate contracts).
31. The tunnel will be constructed by a drill/blast method.

Geotechnical Assumptions

1. Rock type similar to that encountered at the Snettisham Hydro-Electric Project near Juneau.
2. Seismic Zone 3 for evaluating portal stabilization requirements, consider using

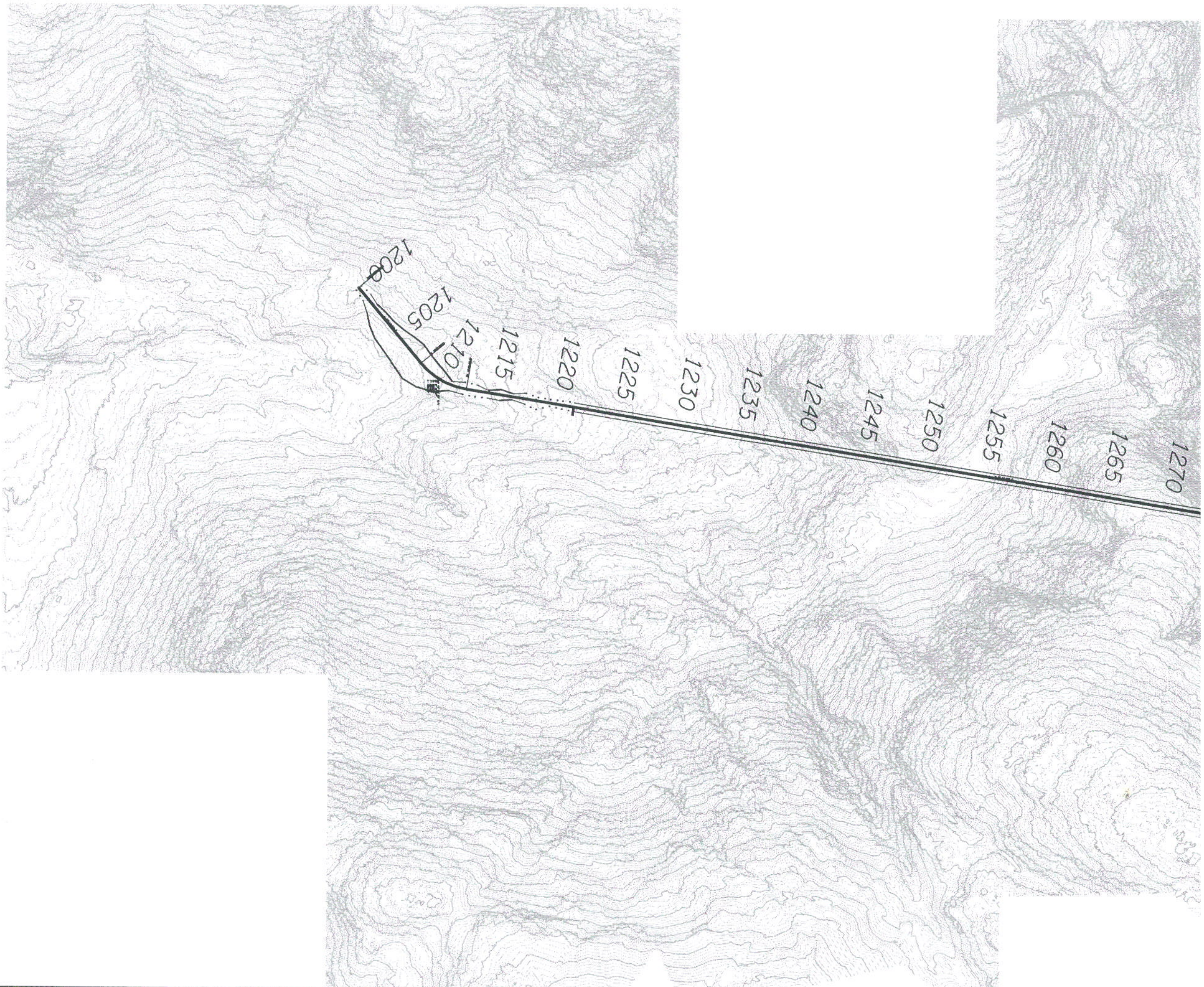
   U.S. Geological Survey (USGS) National Seismic Hazard Mapping data.
3. No avalanche protection measures required at the tunnel portals during tunnel operation.
4. Approximately 10% of tunnel will require systematic collection and drainage of seepage, which will be diverted to the tunnel muck invert leveling fill for gravity drainage toward the north portal.
5. Reinforced concrete tunnel lining requirements at the portals will not exceed 100 feet in length at either end.
6. Remainder of the tunnel will have two inches of shotcrete applied above the springline for rockfall/raveling protection, even though it may not be required for ground support.
7. Rock conditions will require four classes of ground support, with estimated lengths to be determined;
   a. Spot bolting with protection shotcrete
   b. Pattern bolting with protection shotcrete
   c. Pattern bolting with structural shotcrete
   d. Pattern bolting, with structural shotcrete, including fiber reinforced built-up "ribs".

APPENDIX 2

TUNNEL ALIGNMENT EVALUATION FIGURES

APPENDIX 2: TUNNEL ALIGNMENT EVALUATION FIGURES

Figure No.	DESCRIPTION
1	Tunnel Horizontal Alignment & Topography
2	Tunnel Vertical Alignment Profile
3	Tunnel Area Total Lineaments from Aerial Photo Interpretation
4	Tunnel Zone Major Lineaments from Aerial Photo Interpretation
5	Tunnel Area Major Drainage Patterns from Aerial Photo Interpretation
6	Tunnel Area Vegetation Patterns and Avalanche Chutes from Aerial Photo Interpretation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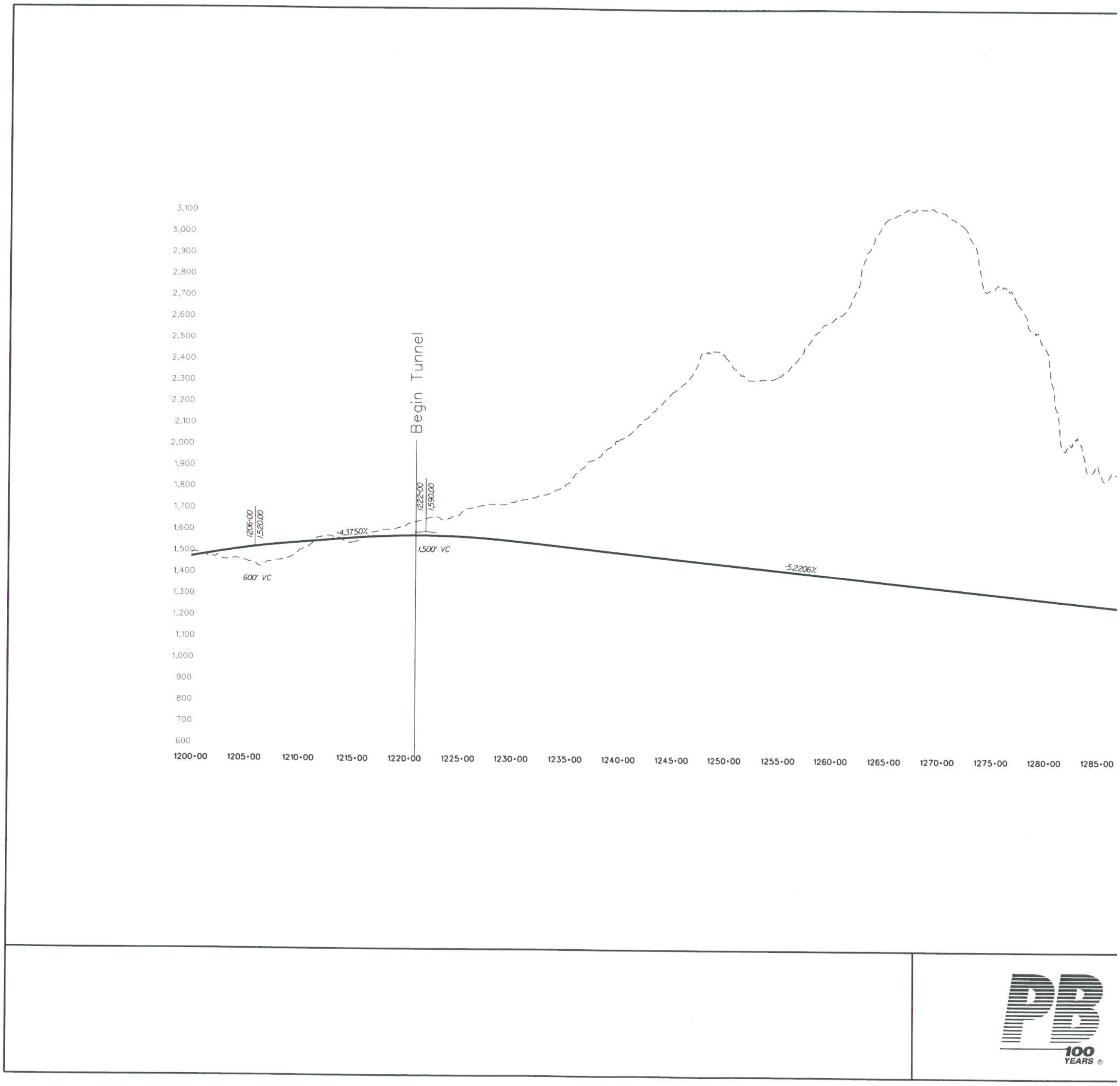
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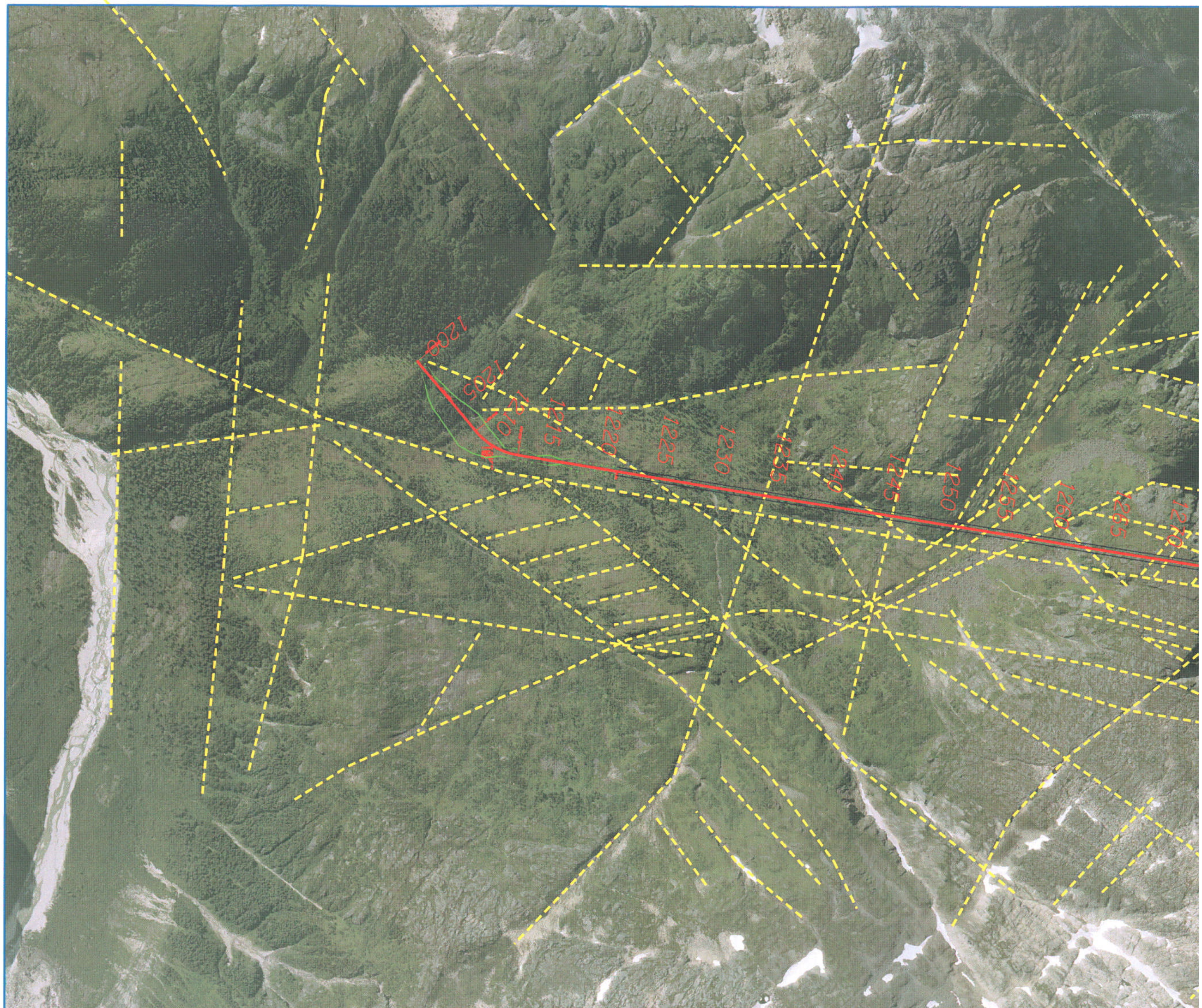

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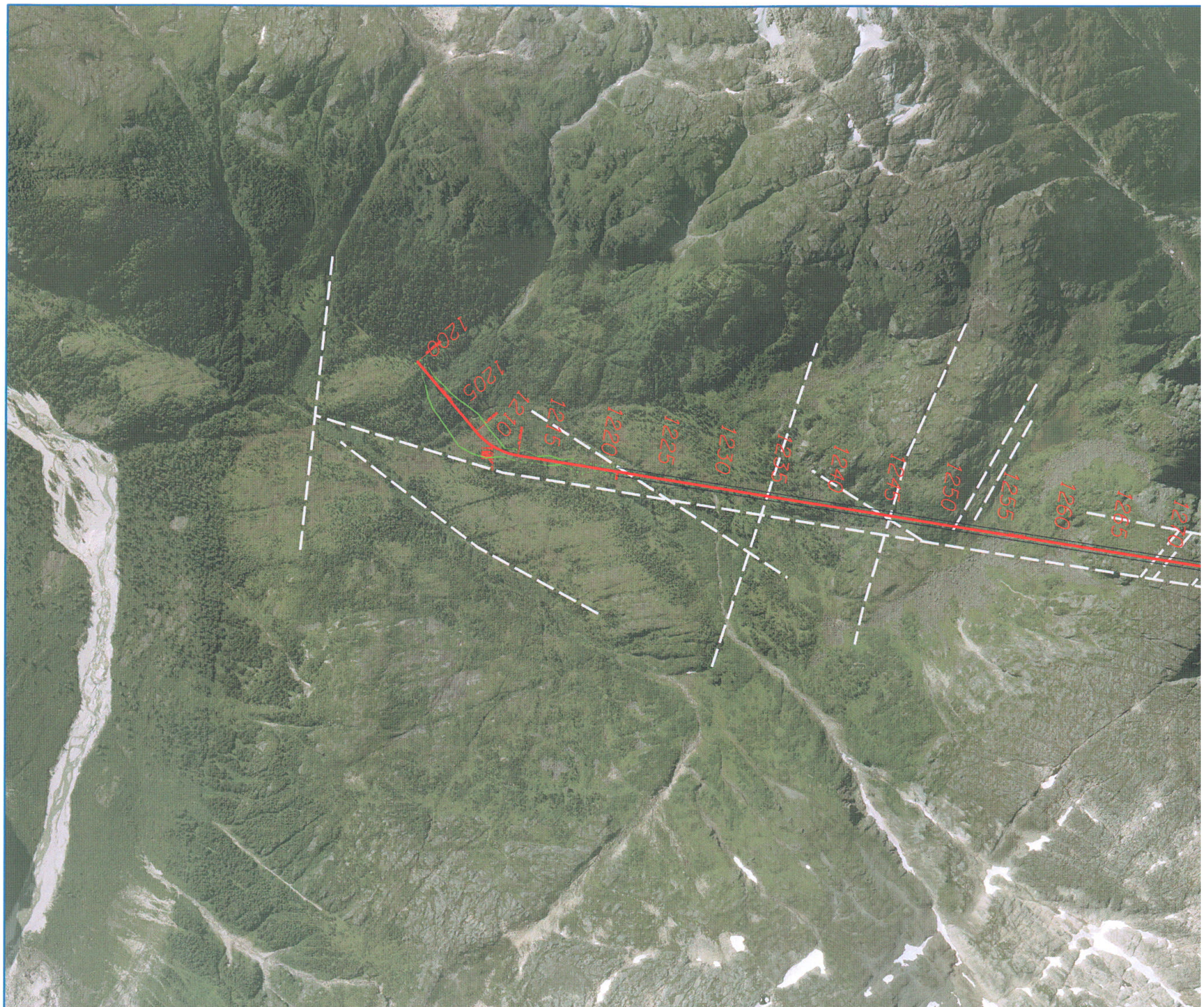
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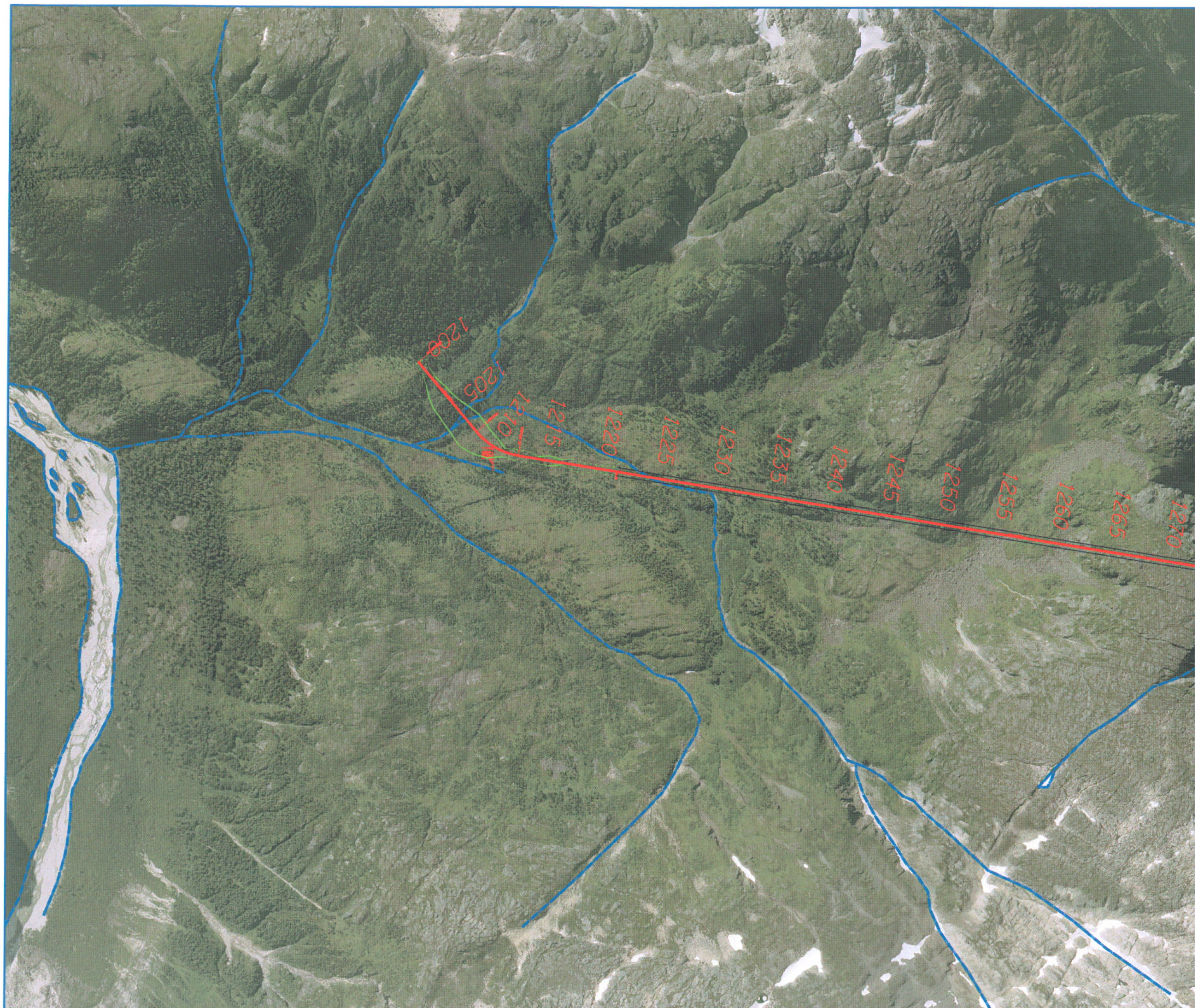

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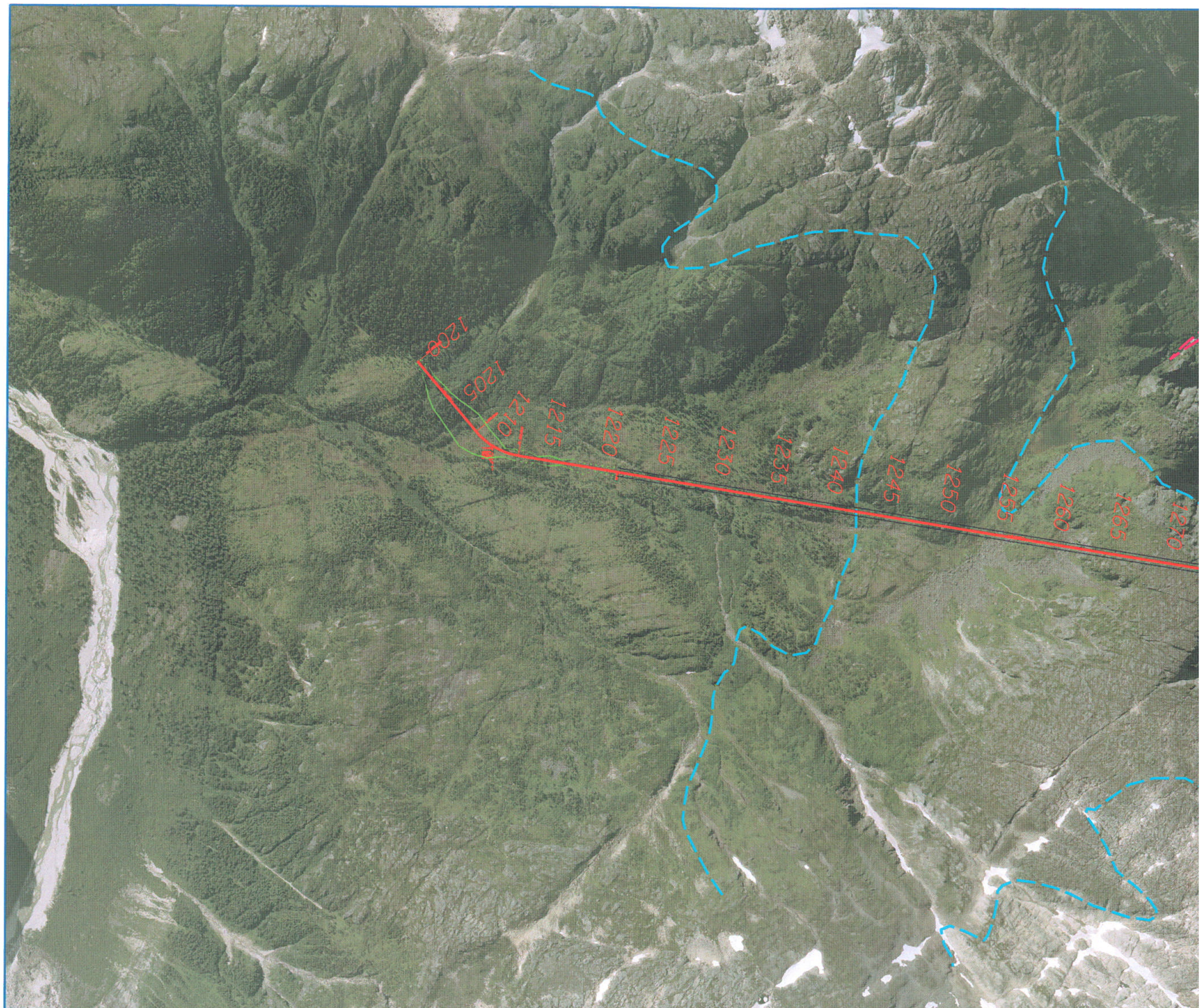
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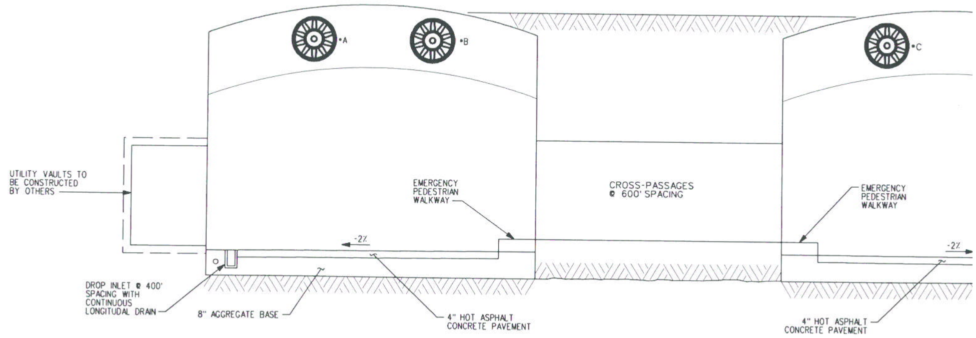
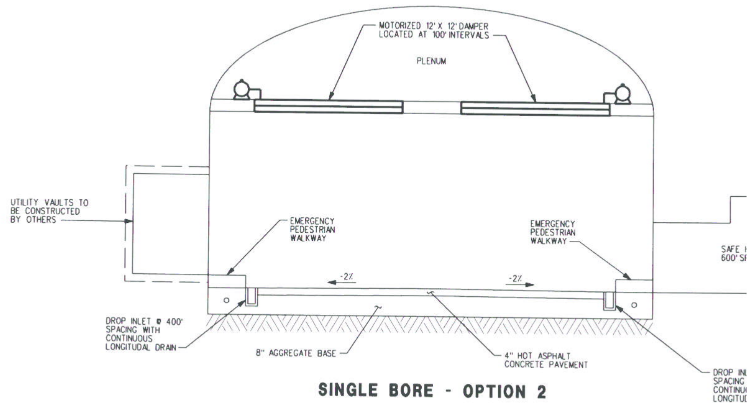
APPENDIX 3

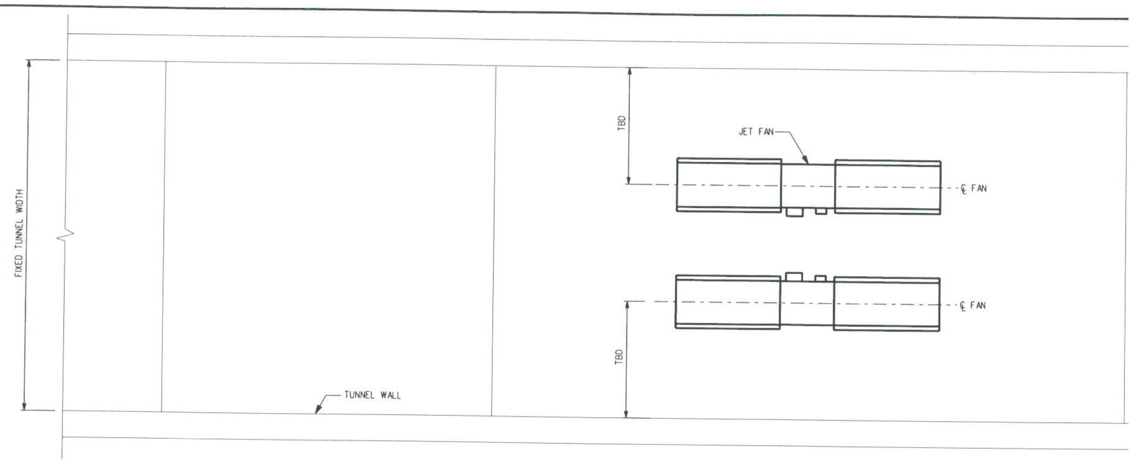
TUNNEL VENTILATION CONCEPTS



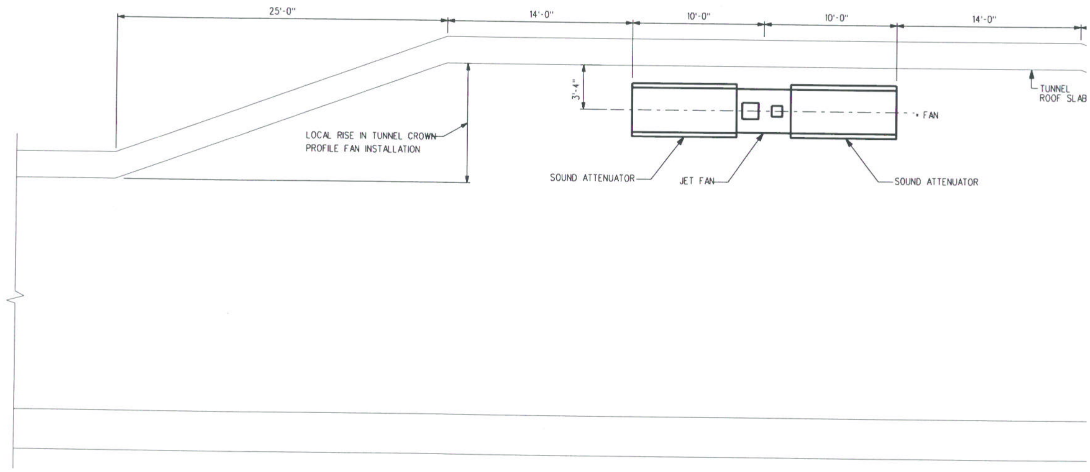
TWIN BORE - OPTION 1



SINGLE BORE - OPTION 2

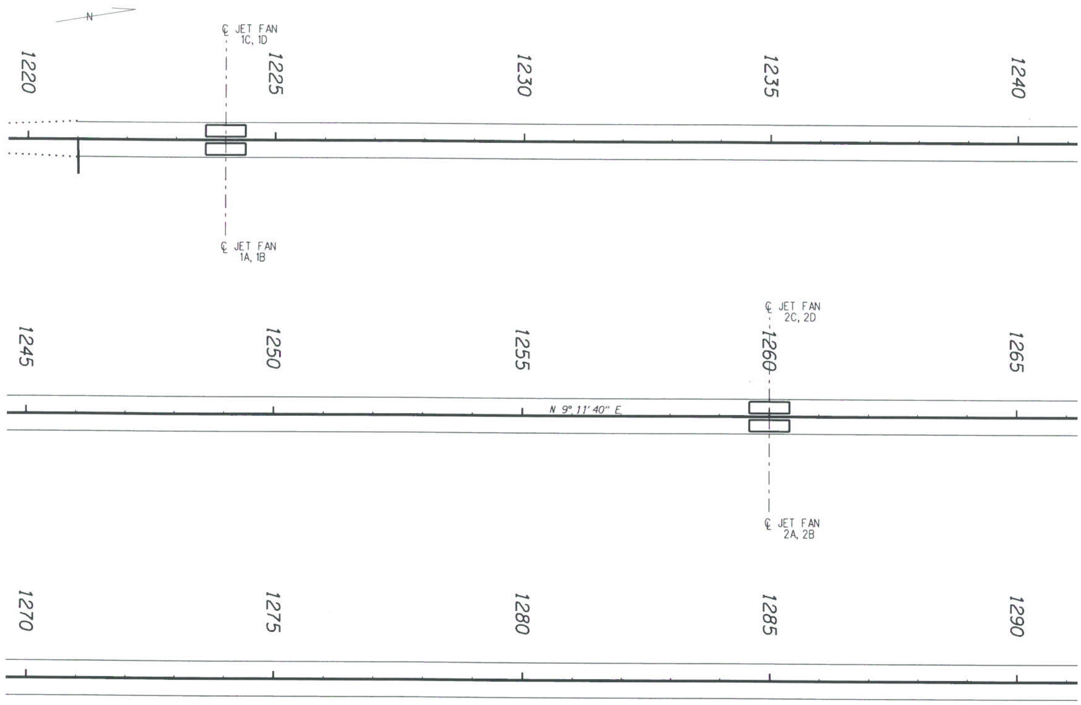


TYPICAL PLAN AT CEILING NICHE



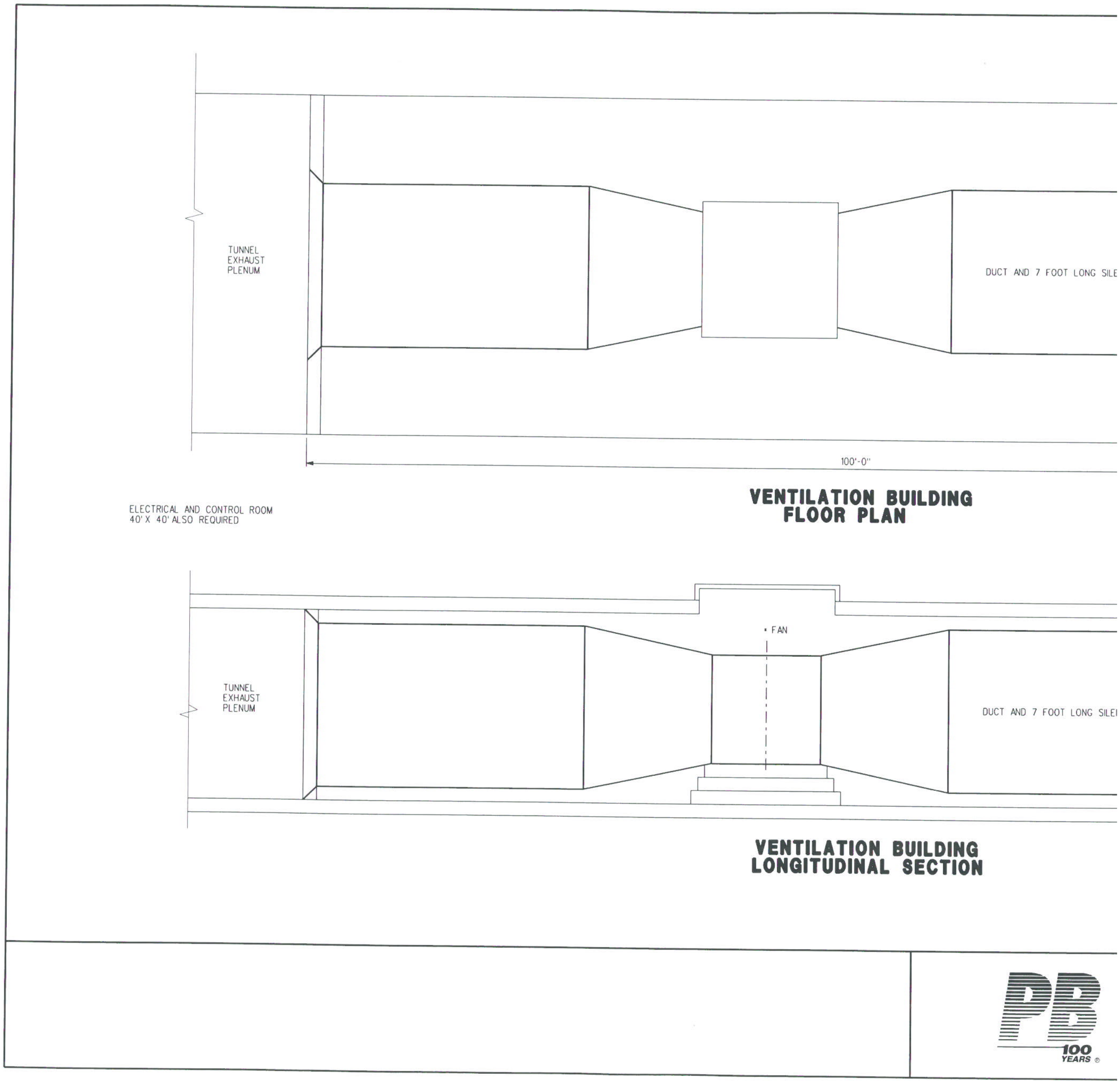
TYPICAL LONGITUDINAL SECTION AT CEILING NICHE OPTION 1

100 YEARS ®

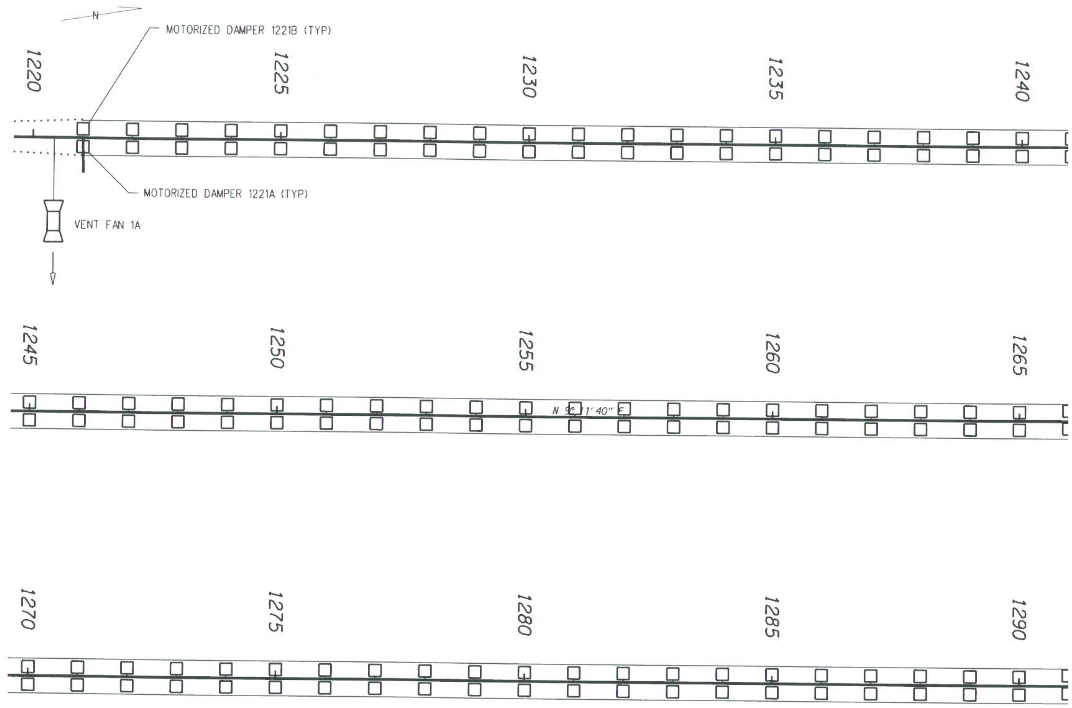


EACH JET FAN - 160,000 CFM, 4 IN. W.C., 200 HP MOTOR, 66 IN. DIAMETER, WITH 7 FT. LONG SILENCER EACH END

VENTILATION SCHEMATIC
OPTION 1



TUNNEL EXHAUST PLENUM
DUCT AND 7 FOOT LONG SILE
100'-0"
VENTILATION BUILDING FLOOR PLAN
ELECTRICAL AND CONTROL ROOM
40' X 40' ALSO REQUIRED
FAN
TUNNEL EXHAUST PLENUM
DUCT AND 7 FOOT LONG SILE
VENTILATION BUILDING LONGITUDINAL SECTION
100 YEARS



EACH VENT FAN - 150,000 CFM, 4 IN. W.C., 200 HP MOTOR, 84 IN. DIAMETER. DUCTWORK AND SILENCER SHOWN IN STRUCTURE PLAN.

VENTILATION SCHEMATIC
OPTION 2

PB 100 YEARS ®

APPENDIX 4

FIRE / LIFE SAFETY REGULATORY CODE MATRIX

APPENDIX 4: FIRE/LIFE SAFETY REGULATORY CODE MATRIX

Scenario	Operational Activity	Equipment System Component	Code References	Alt 1 Twin Tunnel	Alt 2 Single tunnel
STALLED VEHICLES/ ACCIDENTS					
Detection	Motorists, if able, drive to nearest turn-outs.				
	Motorist calls 911 Center from Cross Passage/Safe Haven area.	Motorist Aid Telephones (MAT) in Cross Passage/Safe Haven		MAT located on inside of crosspassage doors - 2 per cross Passage, spaced at 1000' and at each tunnel entrance. Total of 18.	MAT located inside each Safe Haven - 1 each, spaced at 1000' and at each tunnel entrance. Total of 10
Verification	911 Center verifies situation	Communication Connection			
Response/ Action	911 Operator dispatches necessary emergency response				
	Portal Signs and Signals automatically displays "CAUTION AHEAD" and flashing yellow.	Cross Passage/Safe Haven Door and/or MAT door alarm controls Portal Signs and Signals		Portal Signs and Tunnel Signals at each entrance - 1 sign and 2 signals	Same as Alt 1
	If a major accident, 911 Operator can remotely "Close" Tunnel. Portal signs to "CLOSED" "DO NOT ENTER" and portal signals to "steady red"	Communication Connection			
Clean-up	After stall vehicle or accident is cleared, manually re-set system in field or remotely from 911 Center	Reset from Cross Passage or remotely from 911 Center.			

FIRE					
Detection	Two primary methods of fire detection. Motorists manually triggers one of the "Fire Alarm Pull" Stations.	Fire Pull Station (FP)	Req.- NFPA 502; 7.3.1.1 (spacing not more than 300 ft)	FP spaced every 250' on the inside wall of each tunnel bore, including at each cross passage. Total of 64	FP spaced every 250' on the inside wall of tunnel bore, including at each safe haven. Total of 32.
	Automatic Fire detection, either a linear heat detection system or heat sensors.	Linear Heat Detector and/or heat sensors	Req. - NFPA 502; 7.3.1.3		
	MAT also available; motorists will go to nearest cross passage to phone in the fire.	MAT			
Verification	MAT in cross passage	MAT and 911 Center			
	Remote alarm sent to 911 Center by any of the fire detection systems				
Response/ Action	If two or more Fire Detection Systems are triggered, ventilation fans will automatically come on.	Ventilation Fans			
	Both bores are closed. Portal Signs and Signals automatically displays "FIRE" and "DO NOT ENTER" and steady or flashing reds.	Portal Signs and Signals	Req. - NFPA 502; 7.5.1		
	Strobe Lights next to Exit Signs to Cross Passages/Safe Havens will come on to indicate location of "Safe" Cross Passages/Safe Havens. Motorist should stop, exit their vehicles and evacuate to the cross passages/safe havens.	Exit Signs and Strobe Lights	Req. - NFPA 502; 7.5.2 Req. - NFPA 502; 7.16.2	Exit Signs and Strobe Lights located at each cross passage door, spaced at 1000'. Total of 16 each.	Exit Signs and Strobe Lights located at each safe haven door, spaced at 1000'. Total of 8 each.

	911 Operator dispatches necessary emergency response				
	If fire is small, motorist can use Fire Extinguishers.	Fire Extinguishers (FE)	Req. - NFPA 502; 7.8.1 (spacing not more than 300 ft)	FE spaced every 250' on the inside wall of each tunnel bore, including at each cross passage. Total of 64.	FE spaced every 250' on the inside wall of tunnel bore, including at each safe haven. Total of 32.
	Stand-Pipe System available for responding Fire personnel	Stand-Pipe System and Fire Hose (FH) Connections	Req. - NFPA 502; 7.7 (hose connections spacing not more than 275 ft as per Section 9.4.2)	FH spaced every 250' on the inside wall of each tunnel bore, including at each cross passage. Total of 64.	FH spaced every 250' on the inside wall of tunnel bore, including at each safe haven. Total of 32.
Clean-up	After fire scene is cleared, manually re-set system in field or remotely from 911 Center	Reset from Cross Passage or remotely from 911 Center.			
POWER OUTAGE					
Detection	Dual Feeds for power - Line Sensors	Line Sensors			
Verification	Remote alarm sent to 911 Center by any of the fire detection systems				
Response/ Action	Automatic Switch Over to Secondary	Automatic Switch Over			
	If both are down, tunnel is closed. Generator is automatically turned on.	Power Generator			
	Both bores are closed. Portal Signs and Signals automatically displays "CLOSED" and "DO NOT ENTER" and steady or flashing reds.	Portal Signs and Signals			

	Emergency Lighting remains on	Emergency Lighting/UPS	Req. - NFPA 502; 11.6.1		

Alternative 1: Dual Bore Alternative 2: Single Bore Bi-Directional Traffic

APPENDIX 5

TUNNEL LIGHTING CONCEPTS

APPENDIX 5: TUNNEL LIGHTING CONCEPTS

Bradfield Tunnel Lighting

Design Assumptions

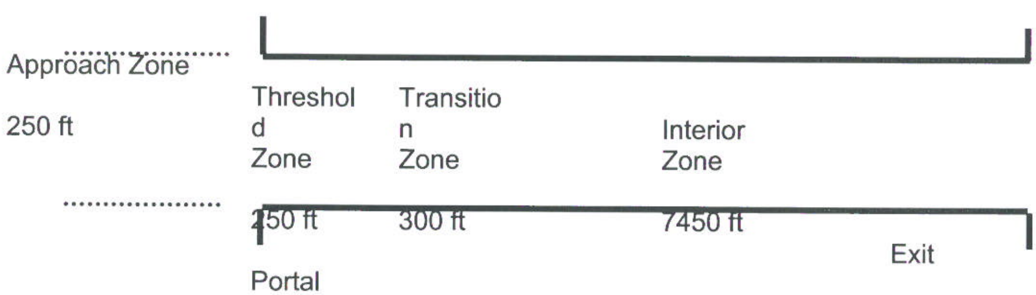
Location - Alaska (Juneau /Ketchikan vicinity)	
Length	8000 LF
Width	Alternative 1 - 20' (One 11' lane and Two 4'-6" shoulders) Alternative 2 - 30' (Two 11' lanes and Two 4' shoulders)
Height	16.5' Min Clearance
Orientation	North South
Finish	Shotcrete
ADT	650 Vehicles
Speed	25mph (North Portal) 35 mph (South Portal)

Lighting Criteria

American National Standard Practice for Tunnel Lighting. IESNA RP-22-95

NFPA 502 Standard for Road Tunnels Bridges and Other Limited Access Highways 2001 Edition

Note: Latest edition of standards shall apply for design



Lighting Levels

The lighting levels below are approximate and are based on RP 22 Tables. Further analysis is required during the design phase. Interior zone lighting levels for the bi-directional tunnel will need to be increased to enhance safety.

Approach Zone	1 cd/m2
Threshold Zone	170 cd/m2 (South Portal), 140 cd/m2 (North Portal)
Transition Zone	Reduce lighting levels from threshold levels to Interior levels
Interior Zone	3 cd/m2 (See Note above. Increase this level for bi-directional tunnel)

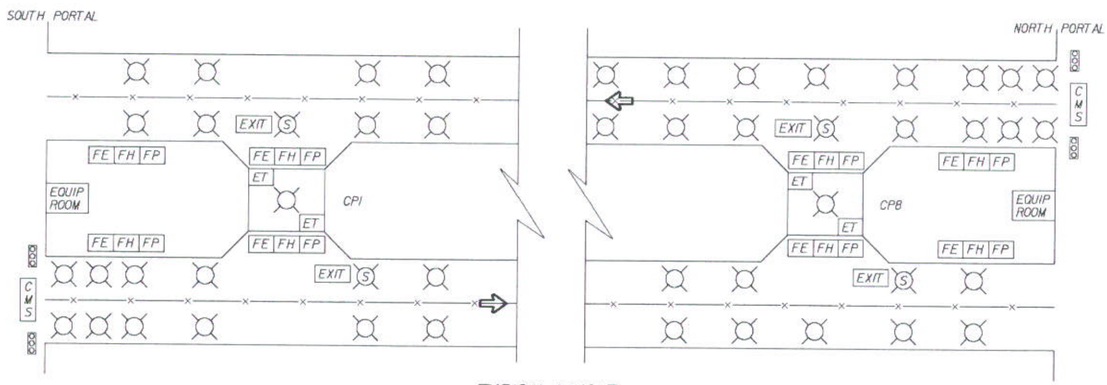
Uniformity	2:1 Average to Minimum and 3.5:1 Maximum to Minimum
Walls	Lower part of wall up to 10 ft above roadway shall have light level 1/3 or roadway level

Lighting Equipment

Fixture	Tunnel Environment Luminaire (Wet Location, Washdown)
Light Source	High Pressure Sodium
Conduit	Rigid Galvanized Steel (Embedded in tunnel ceiling for fire protection)
Junction Boxes	Tunnel Environment (Wet Location)
Wire	Lighting Feeders
Lighting Control System	Automatically adjust lighting levels based on outdoor ambient lighting

Emergency Lighting

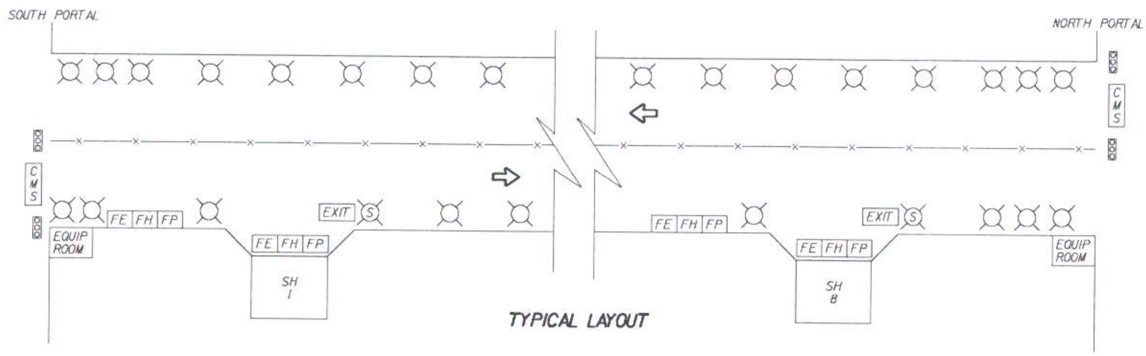
Maintain 3lux (.28 fc) at walking surface during power outage
No interruption of lighting levels for greater than .5 seconds
Highlight special emergency features such as exits, safehouses, crosspassages
It is expected that a Uninterruptible Power Supply (UPS) will be required to power lights
till the generator is operational



TYPICAL LAYOUT

TWIN TUNNEL
UNI-DIRECTIONAL TRAFFIC

SYMBOL	EQUIPMENT	SPACING	NOTES
EXIT	EMERGENCY EXIT	1000'	AT CROSSPASSAGES
ET	EMERGENCY CALL BOX	1000'	AT CROSSPASSAGES
FP	FIRE PULL STATION	250'	300' MAX (PER NFPA 502)
FE	FIRE EXTINGUISHER	250'	300' MAX (PER NFPA 502)
FH	FIRE HOSE STATION	250'	275' MAX (PER NFPA 502)
CO	CO DETECTOR	VARIES	VARIES
—x—	FIRE DETECTOR	VARIES	LINEAR HEAT DETECTOR
ID	INTRUSION DETECTOR	VARIES	LOCATE AT EXITS, CROSSPASSAGE, FIRE CABINETS
CMS	CHANGEABLE MESSAGE SIGN	PORTAL APPROACHES	LOCATE AT PORTAL & TUNNEL APPROACHES
▭▭▭	TRAFFIC SIGNAL	PORTAL	LOCATE AT PORTAL APPROACHES
¤	TUNNEL LIGHT	VARIES	INCLUDE APPROACH, THRESHOLD, TRANSITION LIGHTING, CROSSPASSAGE
¤	STROBE LIGHT	EXITS	LOCATE AT EXITS
CP	CROSS PASSAGE	1000'	
EQUIP ROOM	EQUIPMENT	AT PORTALS	



TYPICAL LAYOUT

SINGLE TUNNEL BI-DIRECTIONAL TRAFFIC

SYMBOL	EQUIPMENT	SPACING	NOTES
EXIT	EMERGENCY EXIT	1000'	AT SAFE HAVENS
ET	EMERGENCY CALL BOX	1000'	AT SAFE HAVENS
FP	FIRE PULL STATION	250'	300' MAX (PER NFPA 502)
FE	FIRE EXTINGUISHER	250'	300' MAX (PER NFPA 502)
FH	FIRE HOSE STATION	250'	275' MAX (PER NFPA 502)
CO	CO DETECTOR	VARIES	VARIES
—x—	FIRE DETECTOR	VARIES	LINEAR HEAT DETECTOR
ID	INTRUSION DETECTOR	VARIES	LOCATE AT EXITS, CROSSPASSAGE, FIRE CABINETS
CMS	CHANGEABLE MESSAGE SIGN	PORTAL APPROACHES	LOCATE AT PORTAL & TUNNEL APPROACHES
	TRAFFIC SIGNAL	PORTAL	LOCATE AT PORTAL APPROACHES
	TUNNEL LIGHT	VARIES	INCLUDE APPROACH, THRESHOLD, TRANSITION LIGHTING, SAFE HAVENS
	STROBE LIGHT	EXITS	LOCATE AT EXITS
SH	SAFE HAVEN	1000'	
EQUIP ROOM	EQUIPMENT	AT PORTALS	

APPENDIX 6

COST ESTIMATE SUMMARY
OPTION 1
TWIN UNI-DIRECTIONAL TUNNELS

PROJECT:..............
JOB NO:..............
ESTIMATOR:.................
CHECKED BY/DATE:

BRADFIELD ROAD TUNNELCOS

S.SUNDERLAND REV'D 10-26-04, SKS

TWIN TUNNEL OPTION

		COSTS	LABOR
DIRECT COST			
LABOR		$23,428,933	$23,428,933
E.O.E.		$2,072,753	
EQUIP.RENT		$841,697	
SUPPLIES		$7,015,400	
PERM.MATL'S.		$4,061,193	
SUB-CONTRACT		$15,848,353	
TOTAL DIRECT COST		$53,268,329	
INDIRECT COST			
LABOR		$1,036,220	$1,036,220
SUPPLIES		$3,788,202	
SUB-CONTRACT		$445,538	
TOTAL INDIRECT COST		$5,269,960	
PLANT & EQUIPMENT			
LABOR		$0	$0
EQUIP.RENT		$10,885,980	
FRT IN & OUT		$226,620	
TOTAL P & E COST		$11,112,600	
P & E SALVAGE		$4,727,240	
NET P & E COST		$6,385,360	
CONTINGENCY	0%	$0	
FINANCING		$0	
TOTAL COST		$64,923,649	
CONTRACTOR PROFITx	13%	$8,245,303	$24,465,153
TOTAL PROFIT AS % OF LABOR			0.337022361
TOTAL BID		$73,168,953	

PROJECT BRADFIELD ROAD TUNNEL
JOB NO
ESTIMATOR S.SUNDERLAND
CHECKED BY/DATE: REV'D 10-26-04, SKS

TWIN TUNNEL OPTION

PROJECT COST SUMMARY

BID ITEM	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT	UNIT PRICE	ADJUSTED UNITS	BID AMOUNT
	MOBILIZATION	1	LS									$6,500,000	$6,500,000
	PROJECT SET-UP:												
	CLEAR & GRUB	5	AC	$6,613	$1,026	$780	$500	$0	$0	$8,919	$1,783.83	$2,232.58	$11,163
	GRADE & PLATE	13300	SY	$14,419	$4,233	$3,259	$132,149	$0	$0	$154,060	$11.58	$14.50	$192,816
	INSTALL WASTE DISP FACILS	1	LS	$25,769	$6,356	$6,079	$16,500	$0	$0	$54,704	$54,704	$68,465	$68,465
	INSTALL POT. WATER FACILS	1	LS	$31,220	$2,807	$2,889	$19,800	$0	$0	$56,717	$56,717	$70,985	$70,985
	INSTALL CAMP STRS	1	LS	$81,757	$7,094	$7,992	$15,000	$2,005,640	$0	$2,117,483	$2,117,483	$2,650,175	$2,650,175
	INSTALL SHOPS & STORAGE STRS	1	LS	$41,291	$3,583	$4,036	$45,000	$0	$0	$93,911	$93,911	$117,536	$117,536
	INSTALL FUEL STORAGE	1	LS	$32,057	$3,662	$3,256	$6,500	$0	$0	$45,474	$45,474	$56,914	$56,914
	INSTALL BATCH PLANT	1	LS	$25,512	$4,554	$4,668	$4,500	$0	$0	$39,234	$39,234	$49,104	$49,104
	SUBTOTAL	1	LS	$258,638	$33,315	$32,960	$239,949	$2,005,640	$0	$2,570,502			$3,217,158
	OPERATIONS:	18	MOS	$9,001,162	$978,227	$772,095	$3,439,784	$0	$47,700	$14,238,968	$791,054	$990,058	$17,821,041
	CATERING:												
	CAMP CATERING PER MAN-DAY	540	MD						$5,726,700	$5,726,700	$10,605	$13,273	$7,167,356
	PORTAL EXCAVATION:												
	NORTH PORTAL	426000		$0	$0	$0	$0	$0	$0	$0	$0.00	$0.00	$0
	SOUTH PORTAL	1060000	CY	$0	$0	$0	$0	$0	$0	$0	$0.00	$0.00	$0
	SUBTOTAL	1486000	CY	$0	$0	$0	$0	$0	$0	$0			$0
	DRIVE & LINE TUNNEL(s)												
	DRIVE TUNNEL(s)	16000	LF	$13,718,317	$1,023,629	$8,942	$3,067,089	$768,278	$0	$18,586,256	$1,161.64	$1,453.87	$23,261,968
	CONC. LINE @ PORTAL(s)	200	LF	$96,044	$3,715	$3,710	$66,893	$76,499	$0	$246,861	$1,234.30	$1,544.82	$308,963
	SUBTOTAL	16000	LF	$13,814,361	$1,027,344	$12,653	$3,133,981	$844,778	$0	$18,833,117	$1,177.07		$23,570,932
	CROSSPASSAGES (7)												
	CONSTRUCT	140	LF	$120,876	$8,989	$111	$27,422	$7,392	$0	$164,790	$1,177.07	$1,473.18	$206,246
	VENTILATION	140	LF						$35,000	$35,000	$250.00	$312.89	$43,805
	LIFE/SAFETY	140	LF						$36,713	$36,713	$262.24	$328.21	$45,949
	SUBTOTAL	1	LS	$120,876	$8,989	$111	$27,422	$7,392	$71,713	$236,503			$296,000

SAFE HAVENS:											
CONSTRUCT											
VENTILATION											
LIFE/SAFETY											
SUBTOTAL	1 LS	$0	$0	$0	$0	$0	$0	$0			
CONSTRUCT PORTAL STRS	382 CY	$78,712	$4,888	$4,103	$30,295	$0	$0	$117,999	$309	$387	$147,684
TUNNEL VENTILATION	16000 LF						$4,000,000	$4,000,000	$250	$313	$5,006,273
TUNNEL LIFE/SAFETY	1 LS						$4,195,800	$4,195,800	$4,195,800	$5,251,330	$5,251,330
TUNNEL LIGHTING:	1 LS						$1,806,440	$1,806,440	$1,806,440	$2,260,883	$2,260,883
DEMOBILIZATION/RESTORATION:											
CAMP & SUPPORT	1 LS	$155,183	$19,989	$19,776	$143,969	$1,203,384	$0	$1,542,301	$1,542,301	$1,930,295	$1,930,295
ACCESS ROAD REMEDIATION	1 LS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SUBTOTAL		$155,183	$19,989	$19,776	$143,969	$1,203,384	$0	$1,542,301			$1,930,295
TOTAL PROJECT COST	8000 LF	$23,428,933	$2,072,753	$841,697	$7,015,400	$4,061,193	$15,848,353	$53,268,329		$9,146.12	$73,168,953

TOTAL BID	$73,168,953
MOBILIZATION	$6,500,000
SPREAD AMT	$66,668,953
M-U	1.251568307

Parsons Brinckerhoff Construction Services

PROJECT NAME: BRADFIELD ROAD TUNNEL
PROJECT NO.:
ESTIMATOR: S.SUNDERLAND
CHECKED BY/DATE: REV'D 10-25-04, SKS

YARD FACILITIES SET-UP

DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
CLEAR & GRUB	5	AC	$6,613	$1,026	$780	$500	$0	$0	$8,919
GRADE & PLATE	13300	SY	$14,419	$4,233	$3,259	$132,149	$0	$0	$154,060
WASTE FACILITIES	1	LS	$25,769	$6,356	$6,079	$16,500	$0	$0	$54,704
POTABLE WATER FACILITIES	1	LS	$31,220	$2,807	$2,889	$19,800	$0	$0	$56,717
CAMP STRUCTURES	1	LS	$81,757	$7,094	$7,992	$15,000	$2,005,640	$0	$2,117,483
SHOPS & STORAGE	1	LS	$41,291	$3,583	$4,036	$45,000	$0	$0	$93,911
FUEL STORAGE	1	LS	$32,057	$3,662	$3,256	$6,500	$0	$0	$45,474
BATCH PLANT	1	LS	$25,512	$4,554	$4,668	$4,500	$0	$0	$39,234

CLEAR & GRUB

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	CLEAR & GRUB	5	AC	$6,613	$1,026	$780	$500	$0	$0	$8,919
		1	AC	$1,322.70	$205.13	$156.00	$100.00	$0.00	$0.00	$1,783.83

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
C&G	5	AC	0.30	17	10	1.7
TOTAL PRODUCTIVITY				17		1.7

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	0	0	$55.78	$0
LAB FOREMN	1	17	$51.01	$850
ATO	3	50	$45.94	$2,297
COMMON LAB	2	33	$44.93	$1,498
HOE-DZR OPER	1	17	$53.79	$897
OILER	0	0	$45.11	$0
TMSTR	1	17	$49.99	$833
ELEC	0	0	$61.32	$0
PLMBR/FITTR	0	0	$54.24	$0
DIRECT LABOR COST				$6,374

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	17	$0.79	$13	$4.57	$76	$2.59	$43
CAT D8	1	17	$9.77	$163	$41.13	$686	$34.09	$568
CAT 16	0	0	$4.24	$0	$37.39	$0	$32.01	$0
HYD HOE	0	0	$7.39	$0	$17.34	$0	$18.10	$0
DUMPTRK	1	17	$3.79	$63	$15.84	$264	$10.12	$169
50TN TRL CR	0	0	$7.77	$0	$44.36	$0	$53.67	$0
FLTBD W/CR	0	0	$3.76	$0	$10.19	$0	$10.34	$0
TOTAL EQUIP.				$239		$1,026		$780

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
CHAIN SAWS	33	HR	0.00%	33	15.00	$500
TOTAL SUPPLIES						$500

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
WASTE HAUL	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

GRADE & PLATE

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	GRADE & PLATE	13,300	SY	$14,419	$4,233	$3,259	$132,149	$0	$0	$154,060
		1	SY	$1.08	$0.32	$0.25	$9.94	$0.00	$0.00	$11.58

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
GRADE & PLATE	13,300	SY	445	30	10	3.0
TOTAL PRODUCTIVITY	13,300	SY		30		3.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	0	0	$55.78	$0
LAB FOREMN	1	30	$51.01	$1,525
ATO	2	60	$45.94	$2,746
COMMON LAB	0	0	$44.93	$0
HOE-DZR OPER	3	90	$53.79	$4,823
OILER		0	$45.11	$0
TMSTR	3	90	$49.99	$4,482
ELEC	0	0	$61.32	$0
PLMBR/FITTR	0	0	$54.24	$0
DIRECT LABOR COST				$13,576

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	30	$0.79	$24	$4.57	$137	$2.59	$77
CAT D8	1	30	$9.77	$292	$41.13	$1,229	$34.09	$1,019
CAT 16	1	30	$4.24	$127	$37.39	$1,117	$32.01	$957
HYD HOE	0	0	$7.39	$0	$17.34	$0	$18.10	$0
DUMPTRK	3	90	$3.79	$340	$15.84	$1,420	$10.12	$907
VIB SLF-PROP	1	30	$2.05	$61	$11.01	$329	$10.00	$299
FLTBD W/CR	0	0	$3.76	$0	$10.19	$0	$10.34	$0
TOTAL EQUIP.				$843		$4,233		$3,259

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
AGGREGATE	5746	TN	15.00%	6607	$ 20.00	$132,149
TOTAL SUPPLIES						$132,149

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE		CY	$4.50	$0
TOTAL SUBCONTRACT				$0

WASTE FACILITIES

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	WASTE FACILITIES	1	LS	$25,769	$6,356	$6,079	$16,500	$0	$0	$54,704

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET PLANT	1	LS	0	40	10	4.0
EXC/LAY/BKFILL LINES	1,500	LF	50	30	10	3.0
TOTAL PRODUCTIVITY				70		7.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	1	70	$55.78	$3,905
LAB FOREMN		0	$51.01	
ATO		0	$45.94	
COMMON LAB		0	$44.93	
HOE-DZR OPER		0	$53.79	
OILER		0	$45.11	
TMSTR		0	$49.99	
ELEC	3	210	$61.32	$12,877
PLMBR/FITTR	2	140	$54.24	$7,594
DIRECT LABOR COST				$24,376

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	70	$0.79	$55	$4.57	$320	$2.59	$181
CAT D8		0	$9.77		$41.13		$34.09	
CAT 16		0	$4.24		$37.39		$32.01	
HYD HOE		0	$7.39		$17.34		$18.10	
DUMPTRK	2	140	$3.79	$531	$15.84	$2,218	$10.12	$1,417
50TN TRL CR	1	70	$7.77	$544	$44.36	$3,105	$53.67	$3,757
FLTBD W/CR	1	70	$3.76	$263	$10.19	$713	$10.34	$724
TOTAL EQUIP.				$1,393		$6,356		$6,079

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
6" HDPE	1,500	LF	10.00%	1650	10.00	$16,500
TOTAL SUPPLIES						$16,500

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

POTABLE WATER FACILITIES

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	POTABLE WATER FACILITIES	1	LS	$31,220	$2,807	$2,889	$19,800	$0	$0	$56,717

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET PLANT(s)	1	LS	0	20	10	2.0
EXC/LAY/BKFILL LINES	1,500	LF	50	30	10	3.0
INSULATE	1,500	LF	100	15	10	1.5
TOTAL PRODUCTIVITY				65		6.5

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	0.25	16	$55.78	$906
LAB FOREMN	1	65	$51.01	$3,316
ATO	0	0	$45.94	$0
COMMON LAB	2	130	$44.93	$5,841
HOE-DZR OPER	1	65	$53.79	$3,496
OILER	1	65	$45.11	$2,932
TMSTR	1	65	$49.99	$3,249
ELEC	0	0	$61.32	$0
PLMBR/FITTR	3	195	$54.24	$10,577
DIRECT LABOR COST				$30,318

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	65	$0.79	$51	$4.57	$297	$2.59	$168
CAT D8	0	0	$9.77	$0	$41.13	$0	$34.09	$0
CAT 16	0	0	$4.24	$0	$37.39	$0	$32.01	$0
HYD HOE	1	65	$7.39	$480	$17.34	$1,127	$18.10	$1,177
DUMPTRK	0	0	$3.79	$0	$15.84	$0	$10.12	$0
50TN TRL CR	0.25	16	$7.77	$126	$44.36	$721	$53.67	$872
FLTBD W/CR	1	65	$3.76	$244	$10.19	$662	$10.34	$672
TOTAL EQUIP.				$902		$2,807		$2,889

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
6" HDPE	1,500	LF	10.00%	1650	10.00	$16,500
IINSULATION	1500	LF	10.00%	1650	2.00	$3,300
TOTAL SUPPLIES						$19,800

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

CAMP STRUCTURES

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	CAMP STRUCTURES	147	LAB	$81,757	$7,094	$7,992	$15,000	$2,005,640	$0	$2,117,483
				$556.17	$48.26	$54.37	$102.04	$13,643.81	$0.00	$14,404.65

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET STR UNITS	35	EA	0.4	100	10	10.0
CONSTR. PROT. ENTRY/DECK	6	EA	0	20	10	2.0
TOTAL PRODUCTIVITY	35			120		12.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	1	120	$55.78	$6,693
LAB FOREMN	1	120	$51.01	$6,121
ATO	2	240	$45.94	$11,025
COMMON LAB	2	240	$44.93	$10,783
HOE-DZR OPER	0	0	$53.79	$0
OILER	1	120	$45.11	$5,413
TMSTR	1	120	$49.99	$5,999
ELEC	2	240	$61.32	$14,717
PLMBR/FITTR	3	360	$54.24	$19,527
DIRECT LABOR COST				$80,279

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	120	$0.79	$95	$4.57	$548	$2.59	$311
CAT D8	0	0	$9.77	$0	$41.13	$0	$34.09	$0
CAT 16	0	0	$4.24	$0	$37.39	$0	$32.01	$0
HYD HOE	0	0	$7.39	$0	$17.34	$0	$18.10	$0
DUMPTRK	0	0	$3.79	$0	$15.84	$0	$10.12	$0
50TN TRL CR	1	120	$7.77	$932	$44.36	$5,323	$53.67	$6,440
FLTBD W/CR	1	120	$3.76	$451	$10.19	$1,223	$10.34	$1,241
TOTAL EQUIP.				$1,478		$7,094		$7,992

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
ENCLOS/DECK	6	EA	0.00%	6	2500.00	$15,000
TOTAL SUPPLIES						$15,000

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
MODULAR HOUSING	24	MOS	0%	24	$68,950	$1,654,800
FRT TO/FROM BOB QUINN	1	LS	0%	1	$350,840	$350,840
TOTAL PERMANENT MATERIAL						$2,005,640

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

SHOPS & STORAGE

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	SHOPS & STORAGE	1	LS	$41,291	$3,583	$4,036	$45,000	$0	$0	$93,911

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET WHSE/PARTS	5,000	SF	165	30	10	3.0
SET EQ/ELEC	5,000	SF	165	30	10	3.0
TOTAL PRODUCTIVITY				61		6.1

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	1	61	$55.78	$3,381
LAB FOREMN	1	61	$51.01	$3,092
ATO	2	121	$45.94	$5,568
COMMON LAB	2	121	$44.93	$5,446
HOE-DZR OPER	0	0	$53.79	$0
OILER	1	61	$45.11	$2,734
TMSTR	1	61	$49.99	$3,030
ELEC	2	121	$61.32	$7,433
PLMBR/FITTR	3	182	$54.24	$9,862
DIRECT LABOR COST				$40,545

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	61	$0.79	$48	$4.57	$277	$2.59	$157
CAT D8	0	0	$9.77	$0	$41.13	$0	$34.09	$0
CAT 16	0	0	$4.24	$0	$37.39	$0	$32.01	$0
HYD HOE	0	0	$7.39	$0	$17.34	$0	$18.10	$0
DUMPTRK	0	0	$3.79	$0	$15.84	$0	$10.12	$0
50TN TRL CR	1	61	$7.77	$471	$44.36	$2,688	$53.67	$3,253
FLTBD W/CR	1	61	$3.76	$228	$10.19	$618	$10.34	$627
TOTAL EQUIP.				$747		$3,583		$4,036

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
FIT-OUT	10,000	SF	0.00%	10000	4.50	$45,000
TOTAL SUPPLIES						$45,000

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
COST IN CAMP ABOVE						
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

FUEL STORAGE

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	FUEL STORAGE	1	LS	$32,057	$3,662	$3,256	$6,500	$0	$0	$45,474

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET TANKER TRLRS	3	EA	0.3	10	10	1.0
CONSTR DIKE	1	LS	0.05	20	10	2.0
ERECT FUEL DOCK	400	SF	20	20	10	2.0
TOTAL PRODUCTIVITY				50		5.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	0	0	$55.78	$0
LAB FOREMN	1	50	$51.01	$2,551
ATO	0	0	$45.94	$0
COMMON LAB	4	200	$44.93	$8,986
HOE-DZR OPER	2	100	$53.79	$5,379
OILER	0	0	$45.11	$0
TMSTR	1	50	$49.99	$2,499
ELEC	2	100	$61.32	$6,132
PLMBR/FITTR	2	100	$54.24	$5,424
DIRECT LABOR COST				$30,971

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	50	$0.79	$40	$4.57	$229	$2.59	$130
CAT D8	1	50	$9.77	$489	$41.13	$2,057	$34.09	$1,705
CAT 16	0	0	$4.24	$0	$37.39	$0	$32.01	$0
HYD HOE	1	50	$7.39	$370	$17.34	$867	$18.10	$905
DUMPTRK	0	0	$3.79	$0	$15.84	$0	$10.12	$0
50TN TRL CR	0	0	$7.77	$0	$44.36	$0	$53.67	$0
FLTBD W/CR	1	50	$3.76	$188	$10.19	$510	$10.34	$517
TOTAL EQUIP.				$1,086		$3,662		$3,256

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
FUEL DISP/PIPING/PUMPS	1	ALLOV	0.00%	1	6500.00	$6,500
TOTAL SUPPLIES						$6,500

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

BATCH PLANT

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	BATCH PLANT	1	LS	$25,512	$4,554	$4,668	$4,500	$0	$0	$39,234

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET-UP PLANT	1	LS	0	10	10	1.0
PREPARE AGG STORE	10,000	SF	2000	5	10	0.5
WASHDOWN AREA	1,000	SF	200	5	10	0.5
OPER SHED	1	LS	0	20	10	2.0
TOTAL PRODUCTIVITY	10,113	SY		40		4.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	1	40	$55.78	$2,231
LAB FOREMN	1	40	$51.01	$2,040
ATO	2	80	$45.94	$3,675
COMMON LAB	2	80	$44.93	$3,594
HOE-DZR OPER	2	80	$53.79	$4,303
OILER	1	40	$45.11	$1,804
TMSTR	1	40	$49.99	$2,000
ELEC	2	80	$61.32	$4,906
PLMBR/FITTR	0	0	$54.24	$0
DIRECT LABOR COST				$24,554

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	40	$0.79	$32	$4.57	$183	$2.59	$104
CAT D8	0	0	$9.77	$0	$41.13	$0	$34.09	$0
CAT 16	1	40	$4.24	$170	$37.39	$1,496	$32.01	$1,280
HYD HOE	1	40	$7.39	$296	$17.34	$694	$18.10	$724
DUMPTRK	0	0	$3.79	$0	$15.84	$0	$10.12	$0
50TN TRL CR	1	40	$7.77	$311	$44.36	$1,774	$53.67	$2,147
FLTBD W/CR	1	40	$3.76	$150	$10.19	$408	$10.34	$414
TOTAL EQUIP.				$958		$4,554		$4,668

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
MISC CONSTR MAT'LS	1	ALLOV	0.00%	1	4500.00	$4,500
TOTAL SUPPLIES						$4,500

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

PROJECT: BRADFIELD ROAD TUNNEL
JOB NO.:
ESTIMATOR: S.SUNDERLAND
CHECKED BY/DATE:

TWIN TUNNEL OPTION

CAMP COST, CATERED

REV'D 10-26-04, SKS

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL
BASE COST/MAN DAY 1st 70 MEN	70	EA	$70.00	$4,900.00
NEXT 77 MEN	77	EA	$65.00	$5,005.00
SUBTOTAL	147	MAN/	$67.38	$9,905
		DAY		
TRIAGE MEDICAL FACILITY, OPER & EQUIPPED	1	DAY	$550.00	$550
FIRST AID TRAILER	1	DAY	$150.00	$150
147-MAN CAMP CATER COST	147	MAN/		$10,605
		DAY		
18 MOS. COST	540	DAYS	$10,605	**$5,726,700**

PROJECT: BRADFIELD ROAD TUNNEL
JOB NO.:
ESTIMATOR: S.SUNDERLAND
CHECKED BY/DATE:

CLASS 3,000psi, PORTAL CONC.

TWIN TUNNEL OPTION
FORM & PLACE ONLY

REF NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
	PORTALS	382	CY	$78,712	$4,888	$4,103	$30,295	$0	$0	$117,999

DIRECT COST SUMMARY

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1.0	FORMS: SHOP BUII	2,010	SF	$5,053	$0	$0	$7,387	$0	$0	$12,440
2.0	FORMS: BUILT IN P	0	LS	$0	$0	$0	$0	$0	$0	$0
3.0	FORMS: E S & M	6,030	SF	$46,329	$2,660	$2,313	$22,160	$0	$0	$73,462
4.0	PLACE CONCRETE	392	CY	$18,563	$2,229	$1,790	$0	$0	$0	$22,581
5.0	CONCRETE FINISH	5,750	SF	$8,768	$0	$0	$748	$0	$0	$9,516
	TOTAL DIRECT CO:	382	CY	$78,712	$4,888	$4,103	$30,295	$0	$0	$117,999
	DIRECT UNIT COST	1	CY	$206.05	$12.80	$10.74	$79.31	$0.00	$0.00	$308.90

QUANTITY ANALYSIS:

ITEM	UNIT			FOOTING	PORTAL	WINGS		TOTALS
CONCRETE - TAKEOFF	CY	0.0	0.0	110.0	112.0	160.0	0.0	382.0
- OVERBREAK	CY	0.0	0.0	2.8	2.8	4.0	0.0	9.6
FORMS - VERTICAL	SF	0	0	1280	2400	2350	0	6030
- HORZ.	SF	0	0	0	0	0	0	0
- CURVED	SF	0	0	0	0	0	0	0
- BULKHEAD JT.	SF	0	0	0	0	0	0	0
- CONSTR. JT.	SF	0	0	0	0	0	0	0
- OUTBOARD	SF	0	0	0	0	0	0	0
- FALSE WORK	CF	0	0	0	0	0	0	0
- KEYWAY	LF	0	0	0	0	0	0	0
- SCREEDS	LF	0	0	0	0	0	0	0
MISC. - WATERSTOP	LF	0	0	0	0	0	0	0
FINISHES - SCREED	SF	0	0	500	0	0	0	500
- FLOAT	SF	0	0	0	300	200	0	500
- TROWEL	SF	0				0	0	0
- P P & R	SF	0		0	2400	2350	0	4750
- CURE	SF	0	0	500	300	200	0	1000
REINFORCING	LB	0	0	14300	14560	20800	0	49660
FORM CONTACT AREA	SF/CY	0.00	0	12	21	0	0	16

FORMS: SHOP BUILT

	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1.0	FORMS: SHOP BUIL	2,010	SF	$5,053	$0	$0	$7,387	$0	$0	$12,440
	DIRECT UNIT COST	1	SF	$2.51	$0.00	$0.00	$3.68	$0.00	$0.00	$6.19

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
WALL : PATENT I/		SF	120.0	0	8.0	0.0
WALL : WOOD)	2010	SF	80.0	25	10.0	2.5
COLS : WOOD I/		SF	45.0	0	8.0	0.0
COLS : WOOD)	0	SF	35.0	0	8.0	0.0
TOTAL	2,010			25		2.5

1.2 LABOR:

DESCRIPTION	NO.	HRS	UNIT COST	CONSTR LABOR
CARP FOREMAN	1	25	$52.37	$1,316
CARP JNYMAN	2	50	$51.40	$2,583
COMMON LABOR	1	25	$45.94	$1,154
DIRECT LABOR				$5,053

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	UNIT COST	REPAIR LABOR	UNIT COST	E.O.E	UNIT COST	EQUIP RENT
NONE		0		$0		$0		$0
DIRECT EQUIP.				$0		$0		$0

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT	UNIT COST	SUPPLIES	
FORMWORK - WAL	2010	SF	5%	2111	SF	$3.50	$7,387	
FORMWORK - COL:	0	SF	5%	0	MBF	$400.00	$0	
FORMWORK - STAIRS		SF	5%	0	MBF	$400.00	$0	
DIRECT SUPPLIES	2,010						$7,387	$3.68

1.5 PERMANENT MATERIALS:

DESCRIPTION	IN PLACE QTY	UNIT	FACTOR	BUY QTY	UNIT COST	PERM MATL
STEEL PIER FORM	0	SF	90%	0	$15.00	$0
DIRECT P. M.						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE			$0.00	$0
DIRECT SUBCONTR				$0

FORMS: BUILT IN PLACE,

	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
2.0	FORMS: BUILT IN P	0	SF	$0	$0	$0	$0	$0	$0	$0
	DIRECT UNIT COST	1	SF							

2.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
BULKHEADS	0	SF	30.0	0	8.0	0.0
OUTBOARD	0	SF	90.0	0	8.0	0.0
STAY-IN-PLACE	0	SF	450.0	0	8.0	0.0
TRK.DRAIN REVEA	0	LF	100.0	0	8.0	0.0
SHEAR KEY BLOCK	0	EA	0.5	0	8.0	0.0
POST TENSION BLI	0	EA	0.5	0	8.0	0.0
TOTAL	0			0		0.0

2.2 LABOR:

DESCRIPTION	NO.	HRS	UNIT COST	CONSTR LABOR
CARP FOREMAN	1	0	$52.37	$0
CARP JNYMAN	5	0	$51.40	$0
LIFT CR OPER	0.0	0	$55.78	$0
OILER	0.0	0	$45.11	$0
TMSTR	0.5	0	$49.38	$0
COMMON LABOR	2	0	$45.94	$0
DIRECT LABOR	8.5			$0

2.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	UNIT COST	REPAIR LABOR	UNIT COST	E.O.E	UNIT COST	EQUIP RENT
RT CR 40TN	0.0	0	$6.42	$0	$33.92	$0	$28.02	$0
FLTBD W/CR	0.5	0	$3.76	$0	$10.19	$0	$10.34	$0
DIRECT EQUIP.				$0		$0		$0

2.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT	UNIT COST	SUPPLIES
OUTBOARD	0	SF	5%	0	SF	$3.25	$0
BULKHEAD MATL	0	SF	5%	0	SF	$2.00	$0
S-I-P FORM,GALV.	0	SF	2%	0	SF	$0.95	$0
DIRECT SUPPLIES							$0

2.5 PERMANENT MATERIALS:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
NONE					$0.00	$0
DIRECT P. M.						$0

2.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE			$0.00	$0
DIRECT SUBCONTR				$0

FORMS: E S & M

	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
3.0	FORMS: E S & M	6,030	SF	$46,329	$2,660	$2,313	$22,160	$0	$0	$73,462
	DIRECT UNIT COST	1	SF	$7.68	$0.44	$0.38	$3.68	$0.00	$0.00	$12.18

3.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
VERT. WALL	6030	SF	50.0	121	10.0	12.1
EXP. JTS	0	SF	85.0	0	8.0	0.0
BULKHEAD	0	SF	15.0	0	8.0	0.0
FALSE WORK	0	CF	1300.0	0	8.0	0.0
KEY WAY	0	LF	90.0	0	8.0	0.0
SCREEDS	0	LF	62.5	0	8.0	0.0
WATERSTOP	0	LF	65.0	0	8.0	0.0
TOTAL	6,030			121		12.1

3.2 LABOR:

DESCRIPTION	NO.	HRS	UNIT COST	CONSTR LABOR
CARP FOREMAN	1	121	$52.37	$6,316
CARP JNYMAN	4	482	$51.40	$24,797
LIFT CRANE OPER	1	60	$55.78	$3,363
OILER	1	60	$45.11	$2,720
TMSTR	0.5	60	$49.38	$2,978
COMMON LABOR	1	121	$45.94	$5,540
DIRECT LABOR	7.5			$45,715

3.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	UNIT COST	REPAIR LABOR	UNIT COST	E.O.E	UNIT COST	EQUIP RENT
TRK CR 50 TN	0.5	60	$6.42	$387	$33.92	$2,045	$28.02	$1,690
FLTBD W/CR	0.5	60	$3.76	$227	$10.19	$614	$10.34	$624
DIRECT EQUIP.				$614		$2,660		$2,313

3.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT	UNIT COST	SUPPLIES
VERT FORM	6030	SF	5%	6332	SF	$3.50	$22,160
SHORING	0	CF	0%	0	CF	$0.15	$0
SCREED BASE	0	LF	5%	0	LF	$2.50	$0
WATERSTOP	0	LF	5%	0	LF	$6.50	$0
DIRECT SUPPLIES							$22,160

3.5 PERMANENT MATERIALS:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
NONE					$0.00	$0
DIRECT P. M.						$0

3.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE			$0.00	$0
DIRECT SUBCONTR				$0

PLACE CONC. DIRECT

	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
4.0	PLACE CONCRETE	392	CY	$18,563	$2,229	$1,790	$0	$0	$0	$22,581
	DIRECT UNIT COST	1	CY	$47.41	$5.69	$4.57	$0.00	$0.00	$0.00	$57.67

4.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
DEADMAN	0	CY	19.0	0	8.0	0.0
GRADEBEAM	113	CY	20.0	6	10.0	0.6
PORTAL	115	CY	10.0	11	10.0	1.1
WING	164	CY	8.0	21	10.0	2.1
SET-UP/CLN-UP	8	EA	1.5	12	10.0	1.2
TOTAL	392			50		5.0

4.2 LABOR:

DESCRIPTION	NO.	HRS	UNIT COST	CONSTR LABOR
LABOR FOREMAN	1	50	$51.01	$2,531
ATO	1	50	$50.04	$2,483
LIFT CRANE OPER	1	50	$55.78	$2,768
OILER	1	50	$45.11	$2,238
TEAMSTER	0.50	25	$49.38	$1,225
COMMON LABOR	3	149	$45.94	$6,838
DIRECT LABOR				$18,083

4.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	UNIT COST	REPAIR LABOR	UNIT COST	E.O.E	UNIT COST	EQUIP RENT
PU 1/2 TN	1	50	$0.79	$39	$4.32	$214	$2.03	$101
TRK CR 50 TN	1	50	$6.42	$319	$33.92	$1,683	$28.02	$1,390
BIDWELL	0	0	$1.35	$0	$6.47	$0	$6.31	$0
VIBS & GEN	2	99	$0.29	$29	$0.79	$78	$0.43	$43
FLATBED TRK	0.50	25	$3.76	$93	$10.19	$253	$10.34	$257
DIRECT EQUIP.				$480		$2,229		$1,790

4.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT	UNIT COST	SUPPLIES
NONE						$0.00	$0
DIRECT SUPPLIES							$0

4.5 PERMANENT MATERIALS:

DESCRIPTION	PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
CONCRETE, 3500 p	392	CY	3%	403	$0.00	$0
DIRECT P. M.						$0

4.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE			$0.00	$0
DIRECT SUBCONTR				$0

CONCRETE FINISHES

	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
6.0	CONCRETE FINISH	5,750	SF	$8,768	$0	$0	$748	$0	$0	$9,516
	DIRECT UNIT COST	1	SF	$1.52	$0.00	$0.00	$0.13	$0.00	$0.00	$1.65

6.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS	
SCREED FIN.	500	SF	150.0	3	10.0	0.3	
FLOAT	500	SF	120.0	4	10.0	0.4	
TROWEL FIN.	0	SF	70.0	0	10.0	0.0	
P , P & R	4750	SF	90.0	53	10.0	5.3	
CURE	1000	SF	400.0	3	24.0	0.1	(NON-ADDITIVE)
TOTAL	5,750			60		6.1	

6.2 LABOR:

DESCRIPTION	NO.	HRS	UNIT COST	CONSTR LABOR
CM FOREMN	1	60	$50.08	$3,019
CM JRNYMN	1	60	$49.44	$2,980
COM LAB	1	60	$45.94	$2,769
DIRECT LABOR	3			$8,768

6.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	UNIT COST	REPAIR LABOR	UNIT COST	E.O.E	UNIT COST	EQUIP RENT
TROWEL	0	0	$1.35	$0	$6.47	$0	$6.31	$0
DIRECT EQUIP.				$0		$0		$0

6.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT	UNIT COST	SUPPLIES
TROWEL	0	SF	5%	0	SF	$0.02	$0
RUBBING	4750	SF	5%	4988	SF	$0.15	$748
CURE COMPOUND	0	SF	5%	0	SF	$0.00	$0
DIRECT SUPPLIES							$748

6.5 PERMANENT MATERIALS:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
NONE					$0.00	$0
DIRECT P. M.						$0

6.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE			$0.00	$0
DIRECT SUBCONTR				$0

END

PROJECT: BRADFIELD ROAD TUNNEL INDIRECT
JOB NO: REV'D 10-26-04, SKS
ESTIMATOR: S.SUNDERLAND
CHECKED BY/DATE: **TWIN TUNNEL OPTION**

SHEET	DESCRIPTION	LABOR	SUPPLIES	SUB-CONTRACT	TOTAL
1	SALARIES	$1,036,220			$1,036,220
2	OFFICE EXPENSE		$3,745,002		$3,745,002
3	VEHICLE EXPENSE		$43,200		$43,200
4	INSURANCE			$76,150	$76,150
5	TAXES		$0		$0
6	BOND			$369,388	$369,388
TOTAL INDIRECT COSTS		$1,036,220	$3,788,202	$445,538	$5,269,960

INDIRECT EXPENSE

DESCRIPTION	MAN EACH	MONTH TOTAL	RATE	COST	NO.OF VEHICLES
SUPERVISORY					
PROJ.MANAGER	1	18	$6,500.00	$117,000	1
GEN'L SUPERINTENDA	1	0	$6,000.00	$0	
ASSIST GEN'L SUPER.					
TUNNEL SUPER.	1	14	$5,500.00	$77,000	1
AREA SUPERINTENDANT					
SHIFT SUPERINTENDANT					
WALKER					
SHAFT SUPERINTENDANT					
EQUIP SUPERINTENDANT			$4,500.00		
MASTER MECHANIC	1	18	$6,000.00	$108,000	1
ELECT SUPERINTENDANT			$4,500.00		
EXCAV SUPERINTENDANT					
CONC SUPERINTENDA	1	0	$5,500.00	$0	
CARPENTER SUPERINTENDANT			$3,800.00		
RIGGING SUPERINTENDANT					
STEEL SUPERINTENDANT					
TOTAL SUPERVISORY	5	50	$42,300.00	$302,000	3
DESCRIPTION	MAN	MONTH	RATE	COST	NO.OF

FIELD ENGINEER PARTY CHIEF INSTRUMENT MAN RODMAN		INDIRECT	$3,000.00 $3,360.00 $3,156.72 $3,055.92		
TOTAL ENGINEERING	2	18	$24,072.64	$90,000	1
DESCRIPTION	MAN EACH	MONTH TOTAL	RATE	COST	NO.OF VEHICLES
OFFICE					
OFFICE MANAGER	1	18	$3,500.00	$63,000	
PURCHASING AGENT					
CLERK			$2,500.00	$0	
ACCOUNTANT					
LABOR RELATIONS MGR					
E.E.O.OFFICER					
MAN-HAUL	6	18	$2,500.00	$270,000	
SECRETARY					
GUARD					
WAREHOUSEMAN					
TOTAL OFFICE	7	36	$8,500.00	$333,000	0
DESCRIPTION	MAN EACH	MONTH TOTAL	RATE	COST	NO.OF VEHICLES
SAFETY					
SAFETY ENGINEER	1	18	$3,500.00	$63,000	
FIRST AID MAN			$2,500.00		
TOTAL SAFETY	1	18	$6,000.00	$63,000	0
SUMMARY					
SUPERVISORY	5	50		$302,000	3
ENGINEERING	2	18		$90,000	1
OFFICE	7	36		$333,000	0
SAFETY	1	18		$63,000	0
TOTAL	15	122	$0.00	$788,000	4
TAXES AND INSURANC	$788,000	31.50%		$248,220	
TOTAL SALARIES				$1.036.220	

HAND TOOLS AND SUF	1.50%	$23,428,933 INDIRECT	$351,434
HEAT	0	$100.00	$0
HOME OFFICE CHARGI	3.50%	$72,200,000	$2,527,000
LEASES		$1,500.00	$0
LEGAL	2	$5,000.00	$10,000
LICENSES,AUTOMOTIV	14	$250.00	$3,500
LICENSES,OTHER	0	$1,500.00	$0
MOVE IN EMPLOYEES	4	$5,000.00	$20,000
OFFICE SUPPLIES	18	$300.00	$5,400
PERMITS AND FEES	0	$1,000.00	$0
PHOTOGRAPHY	18	$150.00	$2,700
POSTAGE	18	$150.00	$2,700
PROTECTIVE CLOTHIN	1.50%	$23,428,933	$351,434
RECRUITING AND EMP	18	$5,000.00	$90,000
RENT TEMPORARY OFFICE		$1,500.00	$0
SAFETY AND FIRST AII	18	$250.00	$4,500
SMALL EQUIP/TOOLS	1.50%	$23,428,933	$351,434
TELEPHONE	0	$400.00	$0
SANITARY	0	$85.00	$0
TRAVEL	4	$2,000.00	$8,000
TUNNEL,PORTAL&YARD			$0
LIGHTING--------	0	$100.00	$0
WATER,CHLORINE,ICE	0	$100.00	$0
TOTAL OFFICE EXPENSE			$3,745,002

VEHICLE EXPENSE	NO.OF MONTHS	NO.OF VEHICLES	TOTAL VEHICLE MONTHS	RATE	COST
AMBULANCE	18	2	36	$300.00	$10,800
SEDAN	0	1	0	$350.00	$0
STATION WAGON			0		$0
PICK-UP	18	6	108	$300.00	$32,400
TOTAL VEHICLE EXPENSE			144		$43,200

INSURANCE	DESCRIPTION	COST
AUTOMOTIVE		$3,000
BUILDERS RISK		
CONTRACT LIABILITY		
EQUIP TRANSPORTATION	INCL.IN EQUIP.CO OST	
FIDELITY & FORGERY		
PLANT & EQUIPMENT		
MED. INSUR.-SUPERVI ORY PERSONNEL	122 MONTHS @ $350	$73,150
RAILROAD		
UMBRELLA		

0.0%	MATERIALS	$604,488.52 INDIRECT		
	RENTAL	$695,007.91		
TOTAL TAXES				$0

BOND CALCULATION					COST
ESTIMATED BID AMOUNT		$72,200,000.00			
		/ $1000	FACTOR		
FIRST	$100,000.00	$7.50	0.0075		$750
NEXT	$2,400,000.00	$5.00	0.005		$12,000
NEXT	$2,500,000.00	$4.00	0.004		$10,000
NEXT	$2,500,000.00	$3.90	0.0039		$9,750
ALL OVER $7500000	$64,700,000.00	$3.60	0.0036		$232,920
PROJECT DURATION	18 MONTHS				
SURCHARGE BEYOND	6	1%		0.024	$103,968
			TOTAL BOND		$369,388

BONDS	
PERFORMANCE BOND	$369,388
MAINTENANCE	
SUB-CONTRACTOR	
TOTAL BONDS	$369,388

PROJECT: BRADFIELD ROAD TUNNEL
JOB NO.:
ESTIMATOR: S.SUNDERLAND REV'D 10-25-04, SKS
CHECKED BY/DATE:

TWIN TUNNEL OPTION

PLANT & EQUIPMENT-SUMMARY

ITEM NO.	DESCRIPTION	PURC./ LEASE	ERECT. LABOR	FRT IN&OUT	TOTAL COST	SALVAGE	NET JOB COST
1	BUILDINGS & YARD	$659625	$0	$8500	$668125	$250000	$418125
2	UTILITIES & GEN'L PLANT	$1920955	$0	$27550	$1948505	$596400	$1352105
3	HOISTING & CRANES	$542200	$0	$4150	$546350	$216880	$329470
4	HAUL AND CONVEYING	$2182500	$0	$73320	$2255820	$873000	$1382820
5	SURFACE EXCAV EQUIP	$2077600	$0	$33170	$2110770	$1246560	$864210
6	DRILLS & AIR TOOL EQUIP	$905500	$0	$11480	$916980	$408800	$508180
7	TUNNEL & SHAFT MACHINES	$1460000	$0	$23200	$1483200	$876000	$607200
8	CONCRETE EQUIPMENT	$427800	$0	$7360	$435160	$79600	$355560
9	PILE DRIVING & MARINE EQUIP:	$0	$0	$0	$0	$0	$0
10	GENERAL	$709800	$0	$37890	$747690	$180000	$567690
	TOTAL PLANT & EQUIPMENT	$10885980	$0	$226620	$11112600	$4727240	$6385360

1 BUILDINGS & YARD

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
CLEARING & GRUBBING	5	AC	$3500.00	$17500	0	$0	$0	$17500	$0	$17500
SITE GRADING	22300	SY	$2.50	$55750	0	$0	$0	$55750	$0	$55750
FENCING & GATES	3500	LF	$16.25	$56875	0	$0	$0	$56875	$0	$56875
CAMP, COMPLETE, 150 CAI	0	SF	$20.00	$0	0	$0	$0	$0	$0	$0
CAMP CATERING	0	LS	$0.00	$0	0	$0	$0	$0	$0	$0
OWNERS OFFICE	0	SF	$25.00	$0	0	$0	$0	$0	$0	$0
FIRST AID STATION	0	SF	$30.00	$0	0	$0	$0	$0	$0	$0
EQUIPMENT SHOP	0	SF	$15.00	$0	0	$0	$0	$0	$0	$0
CARPENTER SHOP	0	SF	$15.00	$0	0	$0	$0	$0	$0	$0
ELEC. SHOP/WHSE	0	SF	$18.00	$0	0	$0	$0	$0	$0	$0
COMPRESSOR HOUSE	800	SF	$15.00	$12000	0	$0	$0	$12000	$0	$12000
WAREHOUSE-OFF-SITE	0	SF	$12.00	$0	0	$0	$0	$0	$0	$0

TOTAL BUILDINGS & YARD				$659625	0	$0	$8500	$668125	$250000	$418125

2 UTILITIES & GEN'L PLANT

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
SANITARY:										
U. G. ELEC. DISTR.		LF		$0	0	$0	$0	$0	$0	$0
WATER LINES		LF		$0	0	$0	$0	$0	$0	$0
SEWER LINES	2500	LF	$8.00	$20000	0	$0	$0	$20000	$0	$20000
HOOKUP TO CITY SEWER	0	EA	$2500.00	$0	0	$0	$0	$0	$0	$0
CHEM TREATMENT	0	LS		$0	0	$0	$0	$0	$0	$0
PORT.TOILETS MOS.	13	MOS	$750.00	$9750	0	$0	$0	$9750	$0	$9750
WATER SUPPLY:										
CONNECT TO MAIN	0	EA	$1500.00	$0	0	$0	$0	$0	$0	$0
DISTRIBUTION LINES	2500	LF	$8.00	$20000	0	$0	$0	$20000	$0	$20000
WELLS	0	EA		$0	0	$0	$0	$0	$0	$0
WELL PUMPS	0	EA		$0	0	$0	$0	$0	$0	$0
VALVES	0	EA		$0	0	$0	$0	$0	$0	$0
BOOSTER PUMPS	0	EA		$0	0	$0	$0	$0	$0	$0
ICE MACHINE	1	EA	$2500.00	$2500	0	$0	$0	$2500	$0	$2500
INSULATION	6000	LF	$5.00	$30000	0	$0	$0	$30000	$0	$30000
TANK-2500 GAL	0	EA		$0	0	$0	$0	$0	$0	$0
COMMUNICATIONS :										
COMMERCIAL PHONE	0	EA	$1500.00	$0	0	$0	$0	$0	$0	$0
JOB PHONES, SATELLITE	18	MOS	$3500	$63000	0	$0	$0	$63000	$0	$63000
PHONE LINES	0	LF	$250.00	$0	0	$0	$0	$0	$0	$0
RADIO, PROJECT	10	EA	$1200	$12000	0	$0	$0	$12000	$0	$12000
ELECTRICAL - POWER COMPANY:										
HIGH VOLTAGE LINES	0	LF	$50.00	$0	0	$0	$0	$0	$0	$0
SUBSTATION	0	EA	$35000.00	$0	0	$0	$0	$0	$0	$0
ELECTRICAL - SURFACE:										
DIESEL GEN SET 2000kw	3	EA	$300000	$900000	0	$0	$5800	$905800	$360000	$545800
DISTRIBUTION LINES	2500	LF	$10.00	$25000	0	$0		$25000	$0	$25000
DIESEL GEN SET 1000kw	1	EA	$142000	$142000	0	$0	$3600	$145600	$56800	$88800
LIGHTS (2-LVLS)	22300	SY	$4.50	$100350	0	$0	$0	$100350	$0	$100350
VENTILATION:										
FANS 125HP-65000cfm	4	EA	$20000	$80000	0	$0	$6000	$86000	$32000	$54000
FAN LINE&COUPLINGS	16000	LF	$10.00	$160000	0	$0	$4000	$164000	$64000	$100000
HANGERS	800	EA	$25.00	$20000	0	$0	$400	$20400	$0	$20400
BULKHEADS-DOORS	0	EA	$3500	$0	0	$0	$0	$0	$0	$0
SCRUBBERS	0	EA		$0	0	$0	$0	$0	$0	$0
COMPRESSED AIR:										
STA. COMPR. 1200CFM	1	EA	$120000	$120000	0	$0	$1750	$121750	$48000	$73750
STA. COMPR. 600CFM	1	EA	$56000	$56000	0	$0	$1000	$57000	$22400	$34600
FOUNDATIONS	0	SF		$0	0	$0	$0	$0	$0	$0
PIPING	17500	LF	$6.00	$105000	0	$0	$0	$105000	$0	$105000
AFTER COOLERS	2	EA	$2500.00	$5000	0	$0	$1000	$6000	$2000	$4000

CLEANING EQUIPMENT:										
STEAM CLEANER	1	EA	$750.00	$750	0	$0	$0	$750	$0	$750
SAND BLASTER	1	EA	$455.00	$455	0	$0	$0	$455	$0	$455
TOTAL UTILITIES & GEN'L PLANT				$1920955	0	$0	$27550	$1948505	$596400	$1352105

3 HOISTING & CRANES

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
HOISTS:										
MINE	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SHAFT	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
WINCHES	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
TUGGERS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
MAN HOIST	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SHAFT EQUIPMENT:										
HEAD FRAME	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
MUCK HOPPER	1	EA	$0.00	$0	0	$0	$0	$0	$0	$0
GUIDES	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SKIP SUMP	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
BUCKETS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SKIP	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SCANDO HOISTS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
LADDER	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SINKING HEAD FRAME	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
CRANES:										
YARD CRANE 30T HYDRO	1	EA	$0.00	$0	0	$0	$350	$350	$0	$350
SPEED SWING	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
CRAWLER CRANE 100T	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
TRUCK CRANE 50T	1	EA	$542200	$542200	0	$0	$3800	$546000	$216880	$329120
TOTAL HOISTING & CRANES				$542200	0	$0	$4150	$546350	$216880	$329470

4 HAUL AND CONVEYING

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
OFF HIGHWAY TRUCKS										
REAR DUMP TRUCKS	0	EA	$85000	$0	0	$0	$0	$0	$0	$0
SNOW CATS	2	EA	$75000	$150000	0	$0	$4920	$154920	$60000	$94920
ROADHEADERS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
WATER TRUCKS	3	EA	$125000	$375000	0	$0	$7600	$382600	$150000	$232600
ON HIGHWAY TRUCKS										
FLATBED w/CRANE	3	EA	$138500	$415500	0	$0	$7600	$423100	$166200	$256900
10-WHLRS	2	EA	$85000	$170000	0	$0	$7600	$177600	$68000	$109600
FUEL	2	EA	$125000	$250000	0	$0	$3800	$253800	$100000	$153800
GREASE	2	EA	$138500	$277000	0	$0	$3800	$280800	$110800	$170000
MECHANIC	3	EA	$35000	$105000	0	$0	$7600	$112600	$42000	$70600
POWDER	2	EA	$35000	$70000	0	$0	$3800	$73800	$28000	$45800

SUPPORTS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
TOTAL HAUL AND CONVEYING				$2182500	0	$0	$73320	$2255820	$873000	$1382820

5 SURFACE EXCAV EQUIP

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
POWER SHOVEL:										
BACKHOE	1	EA	$201000	$201000	0	$0	$4400	$205400	$120600	$84800
DRAGLINES	0	EA	$0	$0	0	$0	$0	$0	$0	$0
CLAMSHELL	0	EA	$0	$0	0	$0	$0	$0	$0	$0
GRADALL	0	EA	$0	$0	0	$0	$0	$0	$0	$0
MATS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
TRCTR-BKHOE	0	EA	$0	$0	0	$0	$0	$0	$0	$0
LOADERS:										
CRAWLER	0	EA	$0	$0	0	$0	$0	$0	$0	$0
RUBBER TIRED	2	EA	$412000	$824000	0	$0	$12900	$836900	$494400	$342500
SCRAPERS:										
SCRAPERS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
GRADERS	1	EA	$490400	$490400	0	$0	$5860	$496260	$294240	$202020
TRACTORS:										
DOZERS	1	EA	$423000	$423000	0	$0	$7550	$430550	$253800	$176750
DOZERS W/RIPERS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
AGG SPRDR	0	EA	$0	$0	0	$0	$0	$0	$0	$0
COMPACTORS:										
SELF-PROPELLED	1	EA	$139200	$139200	0	$0	$2460	$141660	$83520	$58140
TOWED	0	EA	$0	$0	0	$0	$0	$0	$0	$0
PLATE VIBRATORS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
RAMMERS	0	EA	$650	$0	0	$0	$0	$0	$0	$0
TAMPERS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
TOTAL SURFACE EXCAV EQUIP				$2077600	0	$0	$33170	$2110770	$1246560	$864210

6 DRILLS & AIR TOOL EQUIP

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
DRILLS:										
PNEUMATIC DRIFTERS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
HYDRAULIC DRIFTERS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
STOPPER	4	EA	$1250.00	$5000	0	$0	$0	$5000	$0	$5000
JACKLEG DRILL	2	EA	$1250.00	$2500	0	$0	$0	$2500	$0	$2500
SINKER DRILL	0	EA	$1250.00	$0	0	$0	$0	$0	$0	$0
AIR TRAK DRILL	2	EA	$124000	$248000	0	$0	$2580	$250580	$148800	$101780
DOWN-HOLE DRILL	0	EA	$344000	$0	0	$0	$0	$0	$0	$0
DRILL FEEDS & MOUNTS:										
FEED & EXTENSION	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
STRAIGHT BOOM	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
ROLL OVER BOOM	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0

AIR SPADES	0	EA	$750.00	$0	0	$0	$0	$0	$0	$0
AIR BREAKERS	0	EA	$1200.00	$0	0	$0	$0	$0	$0	$0
BIT GRINDER	0	EA		$0	0	$0	$0	$0	$0	$0
TOTAL DRILLS & AIR TOOL EQUIP				$905500	0	$0	$11480	$916980	$408800	$508180

7 TUNNEL AND SHAFT MACHINES

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
EPBM	1									
T.B.M. COST IN DIR COST										
ERECT & DISMANTLE	1		0							
EXPLOSION PROOF ADD	1		0							
BACK UP SYSTEM	1		0							
SHIELD SUB-TOTAL			0	0						
LAUNCHING FRAME	1		0							
BREAK THRU STA. WALLS	0		0							
RESET LAUNCHING FRAME	0		0							
			0							
T.B.M.SUB-TOTAL			0	0						
SUPPORT EQUIP			0							
ERECTOR ARMS			0							
RIB EXPANDER			0							
ROCK BOLT DRILLS			0							
FEELER HOLE DRILL			0							
SCRUBBER			0							
TRAILING FLOOR			0							
CAR MOVER			0							
METHANE DETECTOR			0							
CONVEYOR			0							
SCOOP TRAM, 6.5CY	4	EA	$365000	$1460000	0	$0	$23200	$1483200	$876000	$607200
SUPPORT EQUIP SUB-TOTAL			365000	1460000	0	0	23200	1483200	876000	607200
TUNNEL&SHAFT MACHINES			0	1460000	0	0	23200	1483200	876000	607200

8 CONCRETE EQUIP.

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
BATCH PLANT	1	EA	$199000	$199000	0	$0	$5360	$204360	$79600	$124760
AGGREGATE PLANT	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
CONC BUGGYS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0

FINISHING JUMBO	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
INTERNAL VIBRATORS	4	EA	$1200.00	$4800	0	$0	$0	$4800	$0	$4800
EXTERNAL VIBRATORS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
GROUT PLATFORM	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
GROUT MIXER AND PUMP	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
GROUT MATL'S TRAM	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SHOTCRETE GUN	2	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SHOTCRETE BATCHER	1	EA	$224000	$224000	0	$0	$2000	$226000	$0	$226000
TOTAL CONCRETE EQUIP				$427800	0	$0	$7360	$435160	$79600	$355560

9 PILE DRIVING & MARINE

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
PILING DRIVING:										
TRK-AUGER	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
LEADS-DRILL FRONT	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SLURRY PLANT MOVE IN	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
MARINE:										
BARGES	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
TUGS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
DREDGES	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
PILE DRIVING & MARINE				$0	0	$0	$0	$0	$0	$0

10 GENERAL

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
SEDANS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
PICK UPS	8	EA	$35000	$280000	0	$0	$30400	$310400	$112000	$198400
DIESEL WELDERS	4	EA	$1600	$6400	0	$0	$720	$7120	$0	$7120
ELECTRIC WELDERS	0	EA	$1300	$0	0	$0	$0	$0	$0	$0
MECHANIC SHOP EQUIP	1	EA	$12500	$12500	0	$0	$720	$13220	$0	$13220
CARPENTER SHOP EQUIP	0	EA	$10000	$0	0	$0	$0	$0	$0	$0
AMBULANCE	2	EA	$85000	$170000	0	$0	$3800	$173800	$68000	$105800
FIRE FIGHTING EQUIP	0	EA	$0	$0	0	$0	$0	$0	$0	$0
SAFETY EQUIP	2	EA	$5000	$10000	0	$0	$0	$10000	$0	$10000
SURVEYING SUBCONTRAC	13	EA	$15000	$195000	0	$0	$0	$195000	$0	$195000
TRANSITS	0	EA	$7500	$0	0	$0	$0	$0	$0	$0
LEVELS	0	EA	$5000	$0	0	$0	$0	$0	$0	$0
LASERS	1	EA	$4000	$4000	0	$0	$0	$4000	$0	$4000
LASER STANDS	1	EA	$500	$500	0	$0	$0	$500	$0	$500
ADDING MACHINE	1	EA	$250	$250	0	$0	$0	$250	$0	$250
CALCULATOR	1	EA	$150	$150	0	$0	$0	$150	$0	$150
MICRO COMPUTER	2	EA	$7500	$15000	0	$0	$0	$15000	$0	$15000
BLUE PRINT MACH	0	EA	$1800	$0	0	$0	$0	$0	$0	$0
DESK,TABLE,CHAIRS	8	EA	$150	$1200	0	$0	$0	$1200	$0	$1200
DRAFTING TABLES	3	EA	$400	$1200	0	$0	$0	$1200	$0	$1200
FILING CABINET	8	EA	$75	$600	0	$0	$0	$600	$0	$600
TELECOPIERS	1	EA	$500	$500	0	$0	$0	$500	$0	$500
COPY MACHINE	1	EA	$1500	$1500	0	$0	$0	$1500	$0	$1500
MISC.FURNISHINGS	2	EA	$5500	$11000	0	$0	$2250	$13250	$0	$13250
TOTAL GENERAL				$709800	0	$0	$37890	$747690	$180000	$567690

PROJECT:___________ BRADFIELD ROAD TUNNEL
JOB NO:_____________________
ESTIMATOR:_________ S.SUNDERLAND
CHECKED BY/DATE:

ADJ. 10-26-04, SKS

TWIN SINGLE BORES

ESTIMATING DATA FOR DRILL & BLAST TUNNEL EXCAVATION
INPUT DATA IN ( )

GEOMETRY	FEET & DECIMALS	SQUARE FEET	TOP HEADING SQUARE FEET	BENCH SQUARE FEET
TUNNEL EXCAVATION SHAPE				
CIRCULAR	0.00	0.00	0.00	0.00
HORSE SHOE **FULL FACE**	0.00	417.70	0.00	0.00
MODIFIED HORSE SHOE	0.00	0.00	0.00	0.00
N.A.T.M.(MEASURED)	0.00	0.00	0.00	0.00
DIAMETER	0.00	417.70	0.00	0.00

		CONC AREA SQUARE FEET
TUNNEL LINING SHAPE		
CIRCULAR	0.00	0.00
HORSE SHOE	0.00	417.70
MODIFIED HORSE SHOE	0.00	0.00
N.A.T.M.(MEASURED)	0.00	0.00
TUNNEL LINING DIAMETER	0.00	417.70

	FEET	
TUNNEL LENGTH EXCAVATED		
BEGINNING STATION	0.00 LF	
END STATION	8000.00 LF	
TUNNEL LENGTH EXCAVATED		16000 LF
TUNNEL LENGTH LINED	16000 LF	

GEOLOGY ROCK CLASSIFICATION	GROUND TYPE	ENTER ROUND LENGTH FOR FULL FACE	ENTER RND LENGTH FOR BENCH	ENTER SPILING SPACING FEET	ENTER STEEL RIB SPACING FEET	ENTER ROCK BOLT SPACING FEET	ENTER SHOTCRETE THICKNESS FEET	ENTER LENGTH OF TUNNEL
GRANITE	I	10	0	0.00	0.00	0.00	0.17	11480.00
GRANITE	II	10	0	0.00	0.00	50.00	0.17	2020.00
GRANITE	III	10	0	0.00	4.00	5.00	0.17	1580.00
GRANITE	IV	10	0	0.00	0.00	5.00	0.33	920.00
LENGTH				0		6		16000

LABOR DATA	BASIC WAGE	PAYROLL TAXES & INSURANCE RATE	FRINGES
	LABOR RATES (ALASKA LAB & MECH PAY, Issue #9, DATED 9/01/2004)		
UNDERGROUND LABOR			
MINER	$29.35	29.14%	$12.36
CHUCKTENDER	$27.74		
OPERATING ENGINEERS-UNDERGROUND			
EQUIP OPER HVY	$37.63		$11.60
EQUIP OPER MED	$35.93		
EQUIP OPER LIGHT	$34.50		
EQUIP OPER OILER	$28.54		
EQUIP OPER M/MEC	$35.93		
ELECTRICIANS			
ELECTRICIAN	$34.15		$17.22
TEAMSTERS			
WAREHOUSEMAN	$29.26		$10.77
FLATBED DRIVER 5T	$29.90		

OVERTIME	BASE HOURS	BASE HOURS	PAID TRAVEL	PAID LUNCH	OVERTIME WORKED	OVERTIME PAID & 1.5

	PAID	WORKED	HOURS			
						1.50
DAY SHIFT	8.00	7.50	0.00	0.00	2.00	
SWING SHIFT	8.00	7.00	0.00	0.00	2.00	
GRAVEYARD SHIFT	0.00	0.00	0.00	0.00	0.00	
	16.00	14.50	0.00	0.00	4.00	0.00
PAID OVERTIME	8.20					
TOTAL HRS PAID	24.20					
AVE HRS PAID/SHIFT	12.14	ELECTRICIANS-PAY			10.00	HRS

TUNNEL LABOR RATES
PROJECT:____________ BRADFIELD ROAD TUNNEL
JOB NO:______________ 0
ESTIMATOR:__________ S.SUNDERLAND
CHECKED BY/DATE: 0

CLASSIFICATION CRAFT	BASIC RATE RATE/HR.	TAXES & INSURANCE w/W.COMP	FRINGES	TOTAL /HOUR	PAY HRS. / SHIFT	TOTAL COST / SHIFT
UNDERGROUND LABOR						
WALKER	$30.85	$8.99	$12.36	$52.20	12.14	$633.70
SHIFTER	$29.85	$8.70	$12.36	$50.91	12.14	$618.03
MINER	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
CHUCKTENDER	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
NIPPER	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
BRAKEMAN	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
BULL GANG 4-MAN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
BULL GANG	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
TUNNEL LABORER	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
BOTTOM MAN	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
TOP MAN	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
SWAMPER	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
DUMPMAN	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
POWDERMAN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
OUTSIDE LABOR	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
POTMAN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
PIPEMAN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
NOZZLEMAN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
HELPER	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
VIBRATORMEN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
FINISHERS	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
FORMSETTERS	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
OPERATING ENGINEERS						
MUCKER OPER.	$37.63	$10.97	$11.60	$60.20	12.14	$730.77
HEADING MECHANIC	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
CABLE TENDER	$28.54	$8.32	$11.60	$48.46	12.14	$588.26
TRAIL CONVEYOR OPI	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
MOTORMAN	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
F.E.LOADER OPER	$35.93	$10.47	$11.60	$58.00	12.14	$704.12
DOZER OPER	$35.93	$10.47	$11.60	$58.00	12.14	$704.12
COMPRESSOR OPER	$28.54	$8.32	$11.60	$48.46	12.14	$588.26
DRILL DOCTOR	$28.54	$8.32	$11.60	$48.46	12.14	$588.26
BATCH OPER	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
HOIST OPER	$37.63	$10.97	$11.60	$60.20	12.14	$730.77
HOIST OILER	$28.54	$8.32	$11.60	$48.46	12.14	$588.26
MECHANIC 4-MAN	$35.93	$10.47	$11.60	$58.00	12.14	$704.12
SHOP MECHANICS	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
PUMPMAN	$28.54	$8.32	$11.60	$48.46	12.14	$588.26
CONVEYO OPER	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
INVERT BRIDGE OPEF	$34.50	$10.05	$11.60	$56.15	12.14	$681.70

INVERT SCREED OPEI	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
ELECTRICIANS						
ELECTRICAL FOREMA	$35.15	$10.24	$17.22	$62.61	10.00	$626.13
ELECTRICIAN	$34.15	$9.95	$17.22	$61.32	10.00	$613.21
TEAMSTERS						
TEAMSTER FLATBED !	$29.90	$8.71	$10.77	$49.38	12.14	$599.51
WAREHOUSEMAN	$29.26	$8.53	$10.77	$48.56	12.14	$589.47

EQUIP OPER & RENTAL RATES
PROJECT:___________ BRADFIELD ROAD TUNNEL
JOB NO:____________ 0
ESTIMATOR:_________ S.SUNDERLAND
PROJECT LOCATION___ 0

EQUIP.DESCRIPTION	CAPACITY	SPECIAL	E.O.E.	RENTAL
LOAD HAUL DUMP 8 CY			$35.00	$0.00
LOAD HAUL DUMP 5 CY			$30.00	$40.00
RAIL MNTD MUCKER 2 CY CONWAY			$27.00	$35.00
RAIL MNTD MUCKER 1 CY			$22.00	$30.00
SPECIAL TRACKWORK				
CALIFORNIA SWITCH	350 LF	$75,000	$3.75	$7.50
CAR PASSERS				
CAR DUMPER	ROTARY		$2.98	$2.46
TUNNEL HAUL UNITS				
LOCOMOTIVES	35 TON		$24.48	$46.43
MUCK CARS	18 CY		$2.28	$6.96
FAN LINE CAR			$1.19	$1.42
SEGMENT CAR			$1.19	$1.42
POWDER CAR				
FLAT CAR			$1.19	$1.42
CONC AGGITATOR CA	8 CY		$5.24	$6.96
DRILLS				
JACK LEG DRILLS			$0.92	$1.42
STOPERS			$0.92	$1.42
JACKHAMMER			$1.19	$1.42
HYDRA DRILL JUMBO-3 DRILLS		$450,000	$22.50	$0.00
UTILITIES				
VENTILATION FANS	65000 CFM		$3.16	$0.00
PUMPS	2 HP		$0.21	$0.46
COMPRESSORS	1200 CFM STA.		$26.69	$0.00
EXCAVATION EQUIPMENT				
D8-CAT				
WHEEL DOZER 824			$35.05	$25.98
CAT 12 GRADER				
F.E.LOADER 5 C.Y.	CAT 980B		$30.54	$0.00
HOISTING EQUIPMENT				
SHAFT HOIST & HD FRAME		$1,500,000	$75.00	$150.00
TRUCK CRANE 85T			$26.10	$49.88
HYDRO CRANE 15T			$15.85	$17.36
CONCRETE & SHOTCRETE				
SHOTCRETE TRUCK W/BOOM			$47.17	$0.00
SHOTCRETE BATCH PLANT			$3.04	$12.65

SHOTCRETE GUN	$0.85	$4.93
CONCRETE PUMP	5.32	14.54
GROUT PUMP	$2.66	$7.27
GROUT HOSE	$0.25	$1.75
GROUT PACKERS	$0.75	$3.00
INVERT CONVEYOR	$3.42	$7.38
INVERT BRIDGE	$4.50	$14.42
INVERT SCREED	$15.00	$8.65
CONCRETE VIBRATORS	$0.26	$0.23
BATCH&MIX PLANT GROUT	$2.17	$12.65
SLICK LINE	$1.25	$3.75
TRUCKS & MISCELLANEOUS		
FLATBED TRUCK 5T	$10.19	$0.00
AMBUANCE	$5.10	
TRANSIT MIX TRUCK	$21.83	$15.35
PORT.GEN.230KW		
HIGH LIFT CAR	$3.13	$14.42
PIPE JUMBO	$11.76	$78.43

MATERIALS
PROJECT:____________ BRADFIELD ROAD TUNNEL
JOB NO:______________ 0
ESTIMATOR:__________ S.SUNDERLAND
PROJECT LOCATION___ 0

DESCRIPTION	QUANTITY	UNIT	UNIT	SOURCES OF QUOTATIONS
SUPPLIES				
DRILL SUPPLIES				
DRILL STEEL 1 1/4 IN 1:		1 EA	$172.00	
DRILL STEEL 1 IN 12 F1		1 EA		
BITS 3 1/2 INCH DIA.		1 EA	$185.00	
STRIKING BAR		1 EA	$185.00	
COUPLER		1 EA	$110.00	
DISK CUTTERS		1 CY	$1.00	
EXPLOSIVES				
POWDER		1 LB	$2.05	
DETONATORS		1 EA	$3.40	
TIMBER LAGGING		1 MFBM	$850.00	
FORMING LUMBER		1 MFBM	$571.00	
WELDED WIRE FABRIC		1 SF	$0.30	
ELECTRIC POWER		1 KWH	$0.10	
SHAFT CONCRETE SUPPLIES				
SHAFT FORMS-CIRCUL		1 SF	$45.00	
PLACING DECK		1 EA	$50,000.00	
FORM JUMBO-13FT-20I		1 EA	$95,000.00	
FORM JUMBO-21FT-24I		1 EA	$125,000.00	
TRACK BALLAST		1 CY	$18.00	
8" PERF HDPE DRAIN		1 LF	$7.50	
PERMANENT MATERIALS				
CONCRETE MATERIALS				
CEMENT		1 CWT	$0.00	
CONCRETE 3000 psi		1 CY	$0.00	
CONCRETE 3500 psi		1 CY	$0.00	
CONCRETE 4000 psi		1 CY	$0.00	
CONCRETE 4500 psi		1 CY	$0.00	
CONCRETE 5000 psi		1 CY	$0.00	
CEMENT GROUT		1 CY	$0.00	
SHOTCRETE 3000 psi		1 CY	$0.00	
SHOTCRETE 3500 psi, I		1 CY	$0.00	
SHOTCRETE 4000 psi		1 CY	$0.00	

CONCRETE SAND	1 CY	$0.00
CONCRETE AGGREGA	1 CY	$0.00
DRAINAGE MEMBRANE	1 SF	$3.15
SHAFT SUPPORT MATERIALS		
STEEL WF RIBS	1 LB	$0.65
LATICE GIRDERS	1 LB	$1.25
ROCK BOLTS 1 IN DIA.	1 LF	$1.55
PLATE & NUT ASSEMBI	1 EA	$8.00
RESIN CARTRIDGE	1 EA	$1.40
MINE STRAPS	1 LB	$0.70
STEEL LINER PLATE	1 LB	$1.15
TIE BACK	1 LF	$30.00
SUBCONTRACTS		
REBAR INSTALLED	1 LB	$0.85
WATERPROFFING MBR	1 SF	$4.25
MUCK HAUL TO SPOIL	1 CY	$15.50
(W/DISPOSAL)		

PRODUCTION
PROJECT NAME______ BRADFIELD ROAD TUNNEL
JOB NO.____________ 0
ESTIMATOR__________ S.SUNDERLAND
LOCATION___________ 0

ROCK CLASSIFICATION	GRANITE	GRANITE	GRANITE	GRANITE	TOTAL
GROUND TYPE	I	II	III	IV	
SUPPORT	SHOTCRETE	& BOLTS	& BOLTS	& BOLTS	
TOTAL TUNNEL DRIVE	11480	2020.00	1580.00	920.00	16000

TUNNEL SHAPE	HORSE SHOE	HORSE SHOE	HORSE SHOE	HORSE SHOE	TOTAL
EXCAVATION DIAMETEF	0.00				
FACE	FULL FACE	FULL FACE	FULL FACE	FULL FACE	
FACE AREA SF	417.70	417.70	417.70	417.70	
LENGTH OF ROUND FT	10	10	10	10	
GROUND TYPE	I	II	III	IV	
PRIMARY SUPPPORT	SHOTCRETE	& BOLTS	& BOLTS	& BOLTS	
TOTAL TUNNEL LENGTH	11480	2020	1580	920	16000

EXCAV.PAY QTY./LF	15.47	15.47	15.47	15.47
EXCAV.QTY.W/OVER BR	17.02	17.02	17.02	17.02
LENGTH OF ROUND	10	10	10	10
# OF POWDER/UNIT QT'	3.5	3.5	3.5	3.5
# OF POWDER/LF	54	54	54	54
NO.OF DRILL HOLES	105	105	105	105
NO.OF MINERS-DRILLS	3	3	3	3
QTY DRILLING/ROUND	1155	1155	1155	1155
QTY DRILLING/MINER	385.00	385.00	385.00	385.00
DRILL RATE QTY/DRILL/	210	210	210	210
DRILL TIME MIN.	110.00	110.00	110.00	110.00
NO.OF HOLES/MINER	35.00	35.00	35.00	35.00
LOAD@4MIN/HOLE/MINE	140.00	140.00	140.00	140.00
BROKEN QTY/ROUND@	170.17	170.17	170.17	170.17
MUCK OUT @ 80 CY/HR	80	80	80	80
HAUL/LOAD RATE/HR.	80	80	80	80
HAUL/LOAD TIME MIN.	127.63	127.63	127.63	127.63
CYCLE SUMMARY-DRILI MIN	MIN	MIN	MIN	
MOVE IN JUMBO	10	10	10	10
DRILL	110.0	110.0	110.0	110.0
LOAD & WIRE FACE	140.0	140.0	140.0	140.0

MOVE OUT JUMBO	10.0	10.0	10.0	10.0	
VENT OUT	20.0	20.0	20.0	20.0	
SUB-TOTAL-DRILL	290.0	290.0	290.0	290.0	
CYCLE SUMMARY-MUCK OUT					
MOVE IN MUCKER	10.0	10.0	10.0	10.0	
MUCK OUT	127.6	127.6	127.6	127.6	
CLEAN UP & MOVE OUT	15.0	15.0	15.0	15.0	
SUB-TOTAL-MUCK OU	152.6	152.6	152.6	152.6	
CYCLE SUMMARY-SUPPORT					
SET ROCK DOWEL	0.0	0.3	14.9	14.9	
DRILL GROUT HOLE	0.0	0.0	0.0	0.0	
DRILL FOR SPILING	0.0	0.0	0.0	0.0	
SET SPILING	0.0	0.0	0.0	0.0	
SET STEEL RIB	0.0	0.0	0.0	0.0	
SET WIRE MESH	0.0	0.0	0.0	0.0	
PLACE SHOTCRETE	21.0	21.0	21.0	40.5	
SUB-TOTAL-SUPPORT	21.0	21.3	35.9	55.4	
SINGLE HEADING TOTAI	7.7	7.7	8.0	8.3	
TOTAL HOURS/DAY	20.0	20.0	20.0	20.0	
NO.OF ROUNDS/DAY	2.6	2.6	2.5	2.4	
TOTAL ADVANCE/DAY	25.9	25.9	25.1	24.1	
ALTERNATE HDG.TOTAI	4.8	4.8	5.1	5.3	
TOTAL HOURS/DAY	20.0	20.0	20.0	20.0	
NO.OF ROUNDS/DAY	4.1	4.1	3.9	3.8	
TOTAL ADVANCE/DAY	41.4	41.4	39.4	37.6	
	SINGLE HDG	SINGLE HDG	SINGLE HDG	SINGLE HDG	
PRODUCTION SUMMARY					
L.F. TUNNEL	11480	2020	1580	920	16000
NO.OF HEADING DAYS	277.43	48.82	40.09	24.46	390.80
TURN-UNDER	10.00				
START UP DAYS	5.00	0.00	0.00	0.00	5
TOTAL	292.43	48.82	40.09	24.46	405.80
USE NO. OF DAYS	292	49	40	24	405
AVE ADVANCE PER DAY	39.32	41.22	39.50	38.33	39.51
TOTAL NO OF ROUNDS	1148.00	202.00	158.00	92.00	1600.00
NO.OF HOLES/ROUND	105	105	105	105	
LF DRILLING /ROUND	1155	1155	1155	1155	
TOTAL LF DRILLING	121275	121275	121275	121275	485100
TOTAL NO DRILL HOLES	120540	21210	16590	9660	168000
TOTAL PAY CY	177600	31250	24443	14233	247526
TOTAL EXCAV/W O.B.	195360	34375	26888	15656	272279
POWDER	683760	120312.5	94108	54796	952976.5
STEEL RIB SPACING	0.00				
NO STEEL RIBS /ROUND	0				
NO STEEL RIBS	0				0
LENGTH / EA	0.00				
RIB WT/LF OF RIB W/AC	14.52				14.52
TOTAL WEIGHT / RIB	0				
TOTAL RIB WEIGHT	0				0
TIMBER LAGGING BFM/L	0				
TIMBER LGGING MFBM/I	0				
TIMBER LAGGING TOTA	0				0
STEEL LINER PLATE SF/LF					

STEEL LINER PLATE SF/	0						
TOTAL LINER PLATE SF	0					0	
ROCK BOLT SPACING-T	0	0	5	5			
ROCK BOLT SPACING-L	0	50	5	5			
NO BOLTS/TNL FT	0.00	0.02	0.89	0.89			
TOTAL NO ROCK BOLTS	0	40	1409	821		2270	
ROCK BOLT LENGTH / E	0	10	10	10			
TOTAL LENGTH-ROCK E	0	400	14090	8210		22700	
NO. ROCK BOLTS/ROUN	0	0.2	9	9			
WIRE MESH SF/TNL FT	0						
TOTAL WIRE MESH SF	0					0	
SHOTCRETE AREA SF	22.3	22.3	22.3	22.3	22.3		
SHOTCRETE THICKNES	0.170	0.167	0.170	0.330	0.000		DRIVE DAYS
SHOTCRETE VOL/RND (	1.4	1.4	1.4	2.7			CY SHOT
SHOTCRETE VOL.CY PA	1607.2	282.8	221.2	248.4		2359.6	
PROBE HOLES W/OVERLAP							
LF GROUT HOLE/ROUNI	0						
SPILE SPACING	10						
SPILLING BARS/ROUND	2.00						
LENGTH OF SPILING LF	0						
LF SPILING/ROUND	0						
SPILLING BARS LF	0					0	
MAX EXCAV PER DAY	669	702	672	652		702	

LABOR
PROJECT:___________ BRADFIELD ROAD TUNNEL
JOB NO:_____________ 0
ESTIMATOR:_________ S.SUNDERLAND
PROJECT LOCATION___ 0

TUNNEL EXCAVATION LABOR

CLASSIFICATION	NO OF MEN DAY	SWING	GRAVEYARD	TOTAL	RATE PER SHIFT	COST PER DAY
AT HEADING						
WALKER	1	1	0	2	$633.70	$1,267.41
SHIFTER	1	1	0	2	$618.03	$1,236.05
MUCKER OPER	4	4	0	8	$730.77	$5,846.18
MECHANIC	1	1	2	4	$681.70	$2,726.80
OILER	0	0	0	0	$588.26	$0.00
ELECTRICIAN	0	0	0	0	$613.21	$0.00
TRAIL CONVEYOR OPI	0	0	0	0	$681.70	$0.00
MINER	4	4	0	8	$610.19	$4,881.50
TUNNEL LABORER	2	2	0	4	$584.95	$2,339.79
SUB-TOTAL	13	13	2	28		$18,297.73
OTHERS UNDERGROUND						
MOTORMAN	0	0	0	0	$681.70	$0.00
BRAKEMAN	0	0	0	0	$584.95	$0.00
BULL GANG 4-MAN	1	0	0	1	$610.19	$610.19
BULL GANG	2	0	0	2	$584.95	$1,169.89
BOTTOM MAN	0	0	0	0	$584.95	$0.00
SUB-TOTAL	3	0	0	3		$1,780.08
ABOVE GROUND						
TOP MAN	0	0	0	0	$584.95	$0.00
HOIST OPER	0	0	0	0	$730.77	$0.00
HOIST OILER	0	0	0	0	$588.26	$0.00
DUMPMAN	0	0	0	0	$584.95	$0.00
F.E.LOADER OPER	0	0	0	0	$704.12	$0.00

DOZER OPER	1	1	0	2	$704.12	$1,408.24
MECHANIC 4-MAN	1	0	1	2	$704.12	$1,408.24
SHOP MECHANICS	2	0	1	3	$681.70	$2,045.10
COMPRESSOR OPER	1	1	1	3	$588.26	$1,764.79
ELECTRICAL 4-MAN	1	0	1	2	$626.13	$1,252.25
ELECTRICIANS	1	0	1	2	$613.21	$1,226.43
SWAMPER	1	1	1	3	$584.95	$1,754.84
OUTSIDE LABOR	1	1	0	2	$584.95	$1,169.89
PUMPMAN	1	1	1	3	$588.26	$1,764.79
SUB TOTAL	10	5	7	22		$13,794.57
TOTAL	26	18	9	53		$33,872.39
TOTAL DAYS						405
TOTAL MAN DAYS						21465
TOTAL LABOR						$13,718,317
AVE.COST/LF PAY	16000					$857.39
EXCAV.CY	247526					$55.42
AVE.COST/CY						

EQUIP.OPER.EXPENSE
PROJECT:____________ BRADFIELD ROAD TUNNEL
JOB NO:______________ 0
ESTIMATOR:__________ S.SUNDERLAND
PROJECT LOCATION___ 0

EQUIP.DESCRIPTION	OPERATED HOURS PER DAY	E.O.E. UNIT COST/HR.	E.O.E. COST /DAY	RENTAL COST /HOUR	RENTAL COST /DAY
COST OF FUEL,LUBE & REPAIR PARTS				COST OF EQUIP RENTAL	
LOAD HAUL DUMP 8 CY	80	$35.00	$2,800.00	$0.00	$0.00
LOAD HAUL DUMP 5 CY	0	$30.00	$0.00	$40.00	$0.00
SPECIAL TRACKWORK					
CALIFORNIA SWITCH	0	$3.75	$0.00	$7.50	$0.00
CAR PASSERS	0	$0.00	$0.00	$0.00	$0.00
CAR DUMPER	0	$2.98	$0.00	$2.46	$0.00
TUNNEL HAUL UNITS					
LOCOMOTIVES	0	$24.48	$0.00	$46.43	$0.00
MUCK CARS	0	$2.28	$0.00	$6.96	$0.00
FAN LINE CAR	0	$1.19	$0.00	$1.42	$0.00
SEGMENT CAR	0	$1.19	$0.00	$1.42	$0.00
POWDER CAR	0	$0.00	$0.00	$0.00	$0.00
FLAT CAR	0	$1.19	$0.00	$1.42	$0.00
CONC AGGITATOR CA	0	$5.24	$0.00	$6.96	$0.00
DRILLS					
JACK LEG DRILLS	0	$0.92	$0.00	$1.42	$0.00
STOPERS	40	$0.92	$36.80	$1.42	$56.80
JACKHAMMER	0	$1.19	$0.00	$1.42	$0.00
HYDRA DRILL JUMBO-	20	$22.50	$450.00	$0.00	$0.00
UTILITIES					
VENTILATION FANS	24	$3.16	$75.84	$0.00	$0.00
PUMPS	48	$0.21	$10.08	$0.46	$22.08
COMPRESSORS	24	$26.69	$640.56	$0.00	$0.00
EXCAVATION EQUIPMENT					
D8-CAT	0	$0.00	$0.00	$0.00	$0.00

DRILLS

D8-CAT W/RIPPER	0	$35.05	$0.00	$25.98	$0.00
CAT 12 GRADER	0	$0.00	$0.00	$0.00	$0.00
F.E.LOADER 7 C.Y.	0	$30.54	$0.00	$0.00	$0.00
HOISTING EQUIPMENT					
SHAFT HOIST & HD FF	0	$75.00	$0.00	$150.00	$0.00
TRUCK CRANE 85T	0	$26.10	$0.00	$49.88	$0.00
HYDRO CRANE 15T	0	$15.85	$0.00	$17.36	$0.00
CONCRETE & SHOTCRETE					
S.C. TRUCK W/BOOM	20	$47.17	$943.40	$0.00	$0.00
SHOTCRETE BATCH P	0	$3.04	$0.00	$12.65	$0.00
SHOTCRETE GUN	0	$0.85	$0.00	$4.93	$0.00
GROUT PUMP	0	$2.66	$0.00	$7.27	$0.00
INVERT CONVEYOR	0	$3.42	$0.00	$7.38	$0.00
INVERT BRIDGE	0	$4.50	$0.00	$14.42	$0.00
INVERT SCREED	0	$15.00	$0.00	$8.65	$0.00
CONCRETE VIBRATOF	0	$0.26	$0.00	$0.23	$0.00
BATCH&MIX PLANT GF	0	$0.26	$0.00	$0.23	$0.00
TRUCKS & MISCELLANEOUS					
FLATBED TRUCK 5T	20	$10.19	$203.80	$0.00	$0.00
AMBULANCE	40	$5.10	$203.80	$0.00	$0.00
TRANSIT MIX TRUCK	0	$21.83	$0.00	$15.35	$0.00
PORT.GEN.230KW	0	$0.00	$0.00	$0.00	$0.00
HIGH LIFT CAR	0	$3.13	$0.00	$14.42	$0.00
PIPE JUMBO	0	$11.76	$0.00	$78.43	$0.00

DAILY TOTAL COST	$2,527.48	$22.08
TOTAL DAYS	405	405
TOTAL COST	$1,023,629	$8,942
LF OF TUNNEL DRIVEN	16000	16000
COST PER LF	$63.98	$0.56
C.Y. OF EXCAVATION	247526	247526
COST PER C.Y.	$4.14	$0.04

TUNNEL SUPPLIES

PROJECT:___________ BRADFIELD ROAD TUNNEL

JOB NO:___________ 0

ESTIMATOR:_________ S.SUNDERLAND

LOCATION___________ 0

T.B.M. EXCAVATION SUMMARY-SUPPLIES		TOTAL COST
ROCK BOLT HOLE DRILLING		$333,286
POWER		$0
ELECTRICAL SUPPLIES		$24,000
ROADBED OR R.R.SUPP.		$2,527,350
HARD HATS-SAFETY		$21,465
MISC.SUPP&SANITATION		$96,593
SMALL TOOLS & MISC.		$64,395
TOTAL		$3,067,089
COST/LF	16000	$191.69
COST/CY	247526	$12.39
GROUT HOLE DRILLING	0	80
SPILING DRILLING	0	
BLAST HOLE DRILLING	485100	5
ROCK BOLT DRILLING	22700	6
TOTAL DRILLING	507800	
NO.HOLES	170270	
LF DRILLING	507800	

NO BITS @ 750 LF	677	$185.00	$125,257
NO COUPLINGS @ 1000	508	$110.00	$55,858
NO STRICKING BARS @ 1200			
1000 LF/EA	508	$185.00	$93,943
NO DRILL STLS @ 1500 I	339	$172.00	$58,228
TOTAL COST DRILLING			$333,286
COST/L.F.OF TUNNEL	16000		$20.83
DRILL SUPP /LF DRILLING			$0.66
POWER & ELECTRICAL QUANTITY			
SUPPLIES			
T.B.M.			
POWER LOAD QUANTITY		UNIT H.P.	TOTAL H.P.
HORSEPOWER REQUIRED			
DRILL JUMBO (ELEC/HY	1	150	150
MUCKER	0	0	0
VENT FANS-AVERAGE	2	125	250
COMPRESSORS	2	250	500
SHOPS	1	50	50
PUMPS	2	3	6
SHAFT HOIST	0	300	0
MISC(SHOPS,OFFICE)	1	50	50
TOTAL H.P.			1006
KILOWATTS			750
@ 60% LOAD FACTOR			450
TUNNEL LIGHTS			50
TOTAL KWH			500
COST			
KWH COST/HR.		$0.00	$0
KWH COST/DAY	24		$0
EQUIVALENT NO.OF DAYS		405	$0
ADD-SAT.& SUN	0.3	121.5	$0
TOTAL COST OF POWER			$0
COST/LF TUNNEL	16000		$0.00
ELECTRICAL SUPPLIES	16000 L.F.TNL		
HEADING LIGHTS			$0
LIGHT REPLACEMENT			
@ $1.50/LF TUNNEL	16000	$1.50	$24,000
TOTAL COST			$24,000
COST/LF TUNNEL	16000		$1.50
COST/CY EXCAVAT	247526		$0.10
BLASTING SUPPLIES QUANTITY		UNIT COST	TOTAL COST
TUNNEL LENGTH L.F.	16000		
POWDER IN CWT	9530	$205.00	$1,953,650
DETS EA	168000	$3.40	$571,200
BLASTING MATL'S	1	$2,500.00	$2,500
	0	$3.50	$0
TOTAL COST			$2,527,350
COST/LF TUNNEL	16000		$157.96
MAN DAY SUPPLIES			
CREW SIZE T.B.M.	53		
CREW DAYS	405		
TOTAL MAN DAYS TBM	21465		

BOLT DRILL !

HARD HATS, RAINGEAR & SAFETY SUPPLIES TBM	21465	$1.00	$21,465
MISC.SUPPLIES & SANITATION TBM	21465	$4.50	$96,593
SMALL TOOLS & MISC. TBM	21465	$3.00	$64,395

PERM. MATERIALS
PROJECT:____________ BRADFIELD ROAD TUNNEL
JOB NO:______________ 0
ESTIMATOR:__________ S.SUNDERLAND
LOCATION____________ 0

TUNNEL SUPPORTS			TOTAL COST	
STL. LINER PLATE			$0	
STEEL RIBS			$0	
SPILING			$0	
CEMENT GROUT			$0	
ROCK BOLTS			$72,895	
MINE STRAPS			$0	
DRAINAGE FABRIC			$413,895	
SHOTCRETE			$281,488	
TOTAL PERM.MATL'S.			$768,278	
COST/LF TUNNEL	16000		$48.02	
SF STL LINER PLATE	0			
WT @ 14.43#/SF	0	$0.85	$0	
STEEL RIBS	QUANTITY	UNIT COST	TOTAL COST	
TUNNEL LENGTH	16000			
STEEL RIBS	0			
TOTAL WT.	0			
WT /EA.	0			
TOTAL COST STL. RIBS	0	$1.40	$0	
COST/LF TNL	16000			
TOTAL			$0	
CEMENT GROUT	0 LF DRILLING	ALLOW CF/LF		0.5
CF GROUT	0			
CEMENT GROUT CY	0	$0.00	$0	
TOTAL			$0	
ROCK BOLTS				
ROCK BOLT DIA.	1			
TOTAL LENGTH	23900	$1.55	$37,045	
AVE.LENGTH/EA.	10			
NO.OF ROCK BOLTS	2390			
NO.-NUT/PLATE & WASHER ASSEMBLIES	2390	$8.00	$19,120	
NO.OF MECHANICAL ANCHORS			$0	
NO.OF RESIN CAPSULES	11950	$1.40	$16,730	

CEMENT GROUT CF/L			
CF OF GROUT REQ'D			$0
TOTAL			$72,895
SPILING BARS			
LF OF SPILES	0		
WT/LF OF SPILE	5.53		
TOTAL WT OF SPILING	0	$0.28	$0
CEMENT GROUT CF/L	0.01		
CF OF GROUT REQ'D	0	$2.41	$0
TOTAL			$0
MINE STRAPS	0		
NO.OF MINE STRAPS	299		
WT./EACH STRAP	12		
TOTAL WEIGHT	3585	$0.00	$0
TOTAL			$0
DRANIAGE FABRIC			
INVERT PERF DRAIN	16000	$7.50	120,000
S.F. OF FABRIC/L.F.			
TOTAL MESH	93300	$3.15	$293,895
TOTAL			$413,895
SHOTCRETE 3500 PSI			
SHOTCRETED TNL LENGTH			
C.Y.SHOTCRET	2360		
+100% FOR OVERBRE	2360		
TOTAL SHOTCRETE	4719	$59.65	$281,488
TOTAL			$281,488

SUB-CONTRACT
PROJECT:____________ BRADFIELD ROAD TUNNEL
JOB NO:______________ 0
ESTIMATOR:__________ S.SUNDERLAND
LOCATION____________ 0

HAUL TUNNEL MUCK TC SPOIL	******NOT USED******

Parsons Brinckerhoff Construction Services

PROJECT NAME: BRADFIELD ROAD TUNNEL
PROJECT NO.:
ESTIMATOR: S.SUNDERLAND REV'D 10-25-04, SKS
CHECKED BY/DATE:

TWIN TUNNEL OPTION

YARD OPERATIONS

DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
MECH SHOP	1	LS	$736,237	$0	$0	$0	$0	$0	$736,237
WAREHOUSE	1	LS	$636,632	$0	$0	$0	$0	$0	$636,632
ELEC SHOP	1	LS	$662,270	$0	$0	$0	$0	$0	$662,270
BATCH PLANT	1	LS	$301,625	$23,626	$22,253	$107,464	$0	$0	$454,968
FUEL DOCK	1	LS	$1,040,485	$46,120	$38,595	$2,416,900	$0	$47,700	$3,589,800
POT WATER	1	LS	$2,011,405	$139,860	$112,644	$3,720	$0	$0	$2,267,629
WASTE WATER	1	LS	$1,342,040	$155,466	$110,970	$11,700	$0	$0	$1,620,176
ACCESS ROAD MAINT.	1	LS	$2,270,468	$613,155	$487,633	$900,000	$0	$0	$4,271,256
OPERATIONS COSTS	1	LS	$9,001,162	$978,227	$772,095	$3,439,784	$0	$47,700	$14,238,968

MECH SHOP

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	MECH SHOP	18	MOS	$736,237	$0	$0	$0	$0	$0	$736,237
		1	MOS	$40,902.06	$0.00	$0.00	$0.00	$0.00	$0.00	$40,902.06

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	18	MOS	30.00	540		
TOTAL PRODUCTIVITY				540		0.0

1.2 LABOR:

DESCRIPTION	NO.	SHFTS	U.C.	CONSTR LABOR
MECH	2	1080	$681.70	$736,237
LAB FOREMN	0	0	$610.19	$0
ATO	0	0	$584.95	$0
COMMON LAB	0	0	$584.95	$0
HOE-DZR OPER	0	0	$704.12	$0
OILER	0	0	$588.26	$0
TMSTR	0	0	$599.51	$0
ELEC	0	0	$613.21	$0
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$736,237

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	0	0	$73.90	$0	$173.40	$0	$181.00	$0
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	0	0	$30.50	$0	$129.50	$0	$104.30	$0
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$0		$0		$0

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
NONE		HR	0.00%	0	15.00	$0
TOTAL SUPPLIES						$0

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
WASTE HAUL	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

WAREHOUSE

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	WAREHOUSE	18	MOS	$636,632	$0	$0	$0	$0	$0	$636,632
		1	MOS	$35,368.46	$0.00	$0.00	$0.00	$0.00	$0.00	$35,368.46

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	18	MOS	30.00	540		
TOTAL PRODUCTIVITY				540		0.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0	0	$681.70	$0
LAB FOREMN	0	0	$610.19	$0
ATO	0	0	$584.95	$0
COMMON LAB	0	0	$584.95	$0
HOE-DZR OPER	0	0	$704.12	$0
OILER		0	$588.26	$0
TMSTR	0	0	$599.51	$0
ELEC	0	0	$613.21	$0
WAREHOUSE	2	1080	$589.47	$636,632
DIRECT LABOR COST				$636,632

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	0	0	$73.90	$0	$173.40	$0	$181.00	$0
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	0	0	$30.50	$0	$129.50	$0	$104.30	$0
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$0		$0		$0

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
		TN	15.00%	0	20.00	$0
TOTAL SUPPLIES						$0

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE		CY	$4.50	$0
TOTAL SUBCONTRACT				$0

ELEC SHOP

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	ELEC SHOP	1	LS	$662,270	$0	$0	$0	$0	$0	$662,270

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	18	MOS	30.00	540		
TOTAL PRODUCTIVITY				540		

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0	0	$681.70	$0
LAB FOREMN		0	$610.19	
ATO		0	$584.95	
COMMON LAB		0	$584.95	
HOE-DZR OPER		0	$704.12	
OILER		0	$588.26	
TMSTR		0	$599.51	
ELEC	2	1080	$613.21	$662,270
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$662,270

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8		0	$97.70		$411.30		$340.90	
CAT 16		0	$42.40		$373.90		$320.10	
HYD HOE		0	$73.90		$173.40		$181.00	
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	0	0	$30.50	$0	$129.50	$0	$104.30	$0
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$0		$0		$0

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
		LF	10.00%	0	10.00	$0
TOTAL SUPPLIES						$0

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE		CY	$4.50	$0
TOTAL SUBCONTRACT				$0

BATCH PLANT

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	BATCH PLANT	1	LS	$301,625	$23,626	$22,253	$107,464	$0	$0	$454,968

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	3	MOS	26.00	78	10	7.8
TOTAL PRODUCTIVITY				78		7.8

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0	0	$681.70	$0
LAB FOREMN	0	0	$610.19	$0
ATO	1	78	$584.95	$45,626
COMMON LAB	2	156	$584.95	$91,252
HOE-DZR OPER	2	156	$704.12	$109,843
OILER	0	0	$588.26	$0
TMSTR	1	78	$599.51	$46,762
ELEC	0	0	$613.21	$0
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$293,482

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	1	78	$73.90	$5,764	$173.40	$13,525	$181.00	$14,118
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	1	78	$30.50	$2,379	$129.50	$10,101	$104.30	$8,135
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$8,143		$23,626		$22,253

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
CEMENT	9600	CWT	10.00%	10560	4.50	$47,520
AGG	2550	TN	15.00%	2932.5	20.00	$58,650
ADD	75	GAL	15.00%	86.25	15.00	$1,294
TOTAL SUPPLIES						$107,464

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

FUEL DOCK

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	FUEL DOCK	1	LS	$1,040,485	$46,120	$38,595	$2,416,900	$0	$47,700	$3,589,800

1.1 PRODUCTIVITY: NOTE: OPERATE 2-10HR SHIFTS ONLY

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	18	MOS	60.00	864		
TOTAL PRODUCTIVITY	18			864		0.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0	0	$681.70	$0
LAB FOREMN	0	0	$610.19	$0
ATO	0	0	$584.95	$0
COMMON LAB	1	864	$584.95	$505,394
HOE-DZR OPER	0	0	$704.12	$0
OILER	0	0	$588.26	$0
TMSTR	1	864	$599.51	$517,975
ELEC	0	0	$613.21	$0
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$1,023,369

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	0	0	$73.90	$0	$173.40	$0	$181.00	$0
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	0	0	$30.50	$0	$129.50	$0	$104.30	$0
FUEL TNKR	1	864	$19.81	$17,116	$53.38	$46,120	$44.67	$38,595
TOTAL EQUIP.				$17,116		$46,120		$38,595

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
DIESEL FUEL	1050	MGAL	15.00%	1210	1990	$2,407,900
SIDING LEASE	18	MOS		18	500	$9,000
TOTAL SUPPLIES						$2,416,900

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS: Lease 30,000 Gal Cars per Month

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
TANK CAR LEASE	90	MOS	$530.00	$47,700
TOTAL SUBCONTRACT				$47,700

POT WATER

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	POT WATER	1	LS	$2,011,405	$139,860	$112,644	$3,720	$0	$0	$2,267,629

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	18	MOS	60.00	1080		
WATER HAUL	18	MOS				
TOTAL PRODUCTIVITY				1080		0.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0.5	540	$681.70	$368,119
LAB FOREMN	0	0	$610.19	$0
ATO	1	1080	$584.95	$631,743
COMMON LAB	0	0	$584.95	$0
HOE-DZR OPER	0	0	$704.12	$0
OILER	0	0	$588.26	$0
TMSTR	1	1080	$599.51	$647,469
ELEC	0.5	540	$613.21	$331,135
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$1,978,465

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	0	0	$73.90	$0	$173.40	$0	$181.00	$0
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	1	1080	$30.50	$32,940	$129.50	$139,860	$104.30	$112,644
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$32,940		$139,860		$112,644

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
REPL PARTS	1	ALLOV	0.00%	1	$3,720.00	$3,720
TOTAL SUPPLIES						$3,720

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

WASTE WATER

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	WASTE WATER	1	LS	$1,342,040	$155,466	$110,970	$11,700	$0	$0	$1,620,176

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	18	MOS	30.00	540		
PORTA POT	13	MOS				
TOTAL PRODUCTIVITY				540		0.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0.5	270	$681.70	$184,059
LAB FOREMN	0	0	$610.19	$0
ATO	0	0	$584.95	$0
COMMON LAB	2	1080	$584.95	$631,743
HOE-DZR OPER	0	0	$704.12	$0
OILER	0	0	$588.26	$0
TMSTR	1	540	$599.51	$323,734
ELEC	0.5	270	$613.21	$165,568
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$1,305,104

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	0	0	$73.90	$0	$173.40	$0	$181.00	$0
DUMPTRK	1	540	$37.90	$20,466	$158.40	$85,536	$101.20	$54,648
H2O TNKR	1	540	$30.50	$16,470	$129.50	$69,930	$104.30	$56,322
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$36,936		$155,466		$110,970

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
SUPPLIES:	1	ALLOV	0.00%	1	11700.00	$11,700
TOTAL SUPPLIES						$11,700

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

ACCESS ROAD MAINT. 40 Mi. with Snow Removal, grading, aggregate plate.

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	ACCESS ROAD MAINT.	1	LS	$2,270,468	$613,155	$487,633	$900,000	$0	$0	$4,271,256

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	18	MOS	26.00	468		
TOTAL PRODUCTIVITY				468		0.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0	0	$681.70	$0
LAB FOREMN	1	468	$610.19	$285,568
ATO	0	0	$584.95	$0
COMMON LAB	0	0	$584.95	$0
HOE-DZR OPER	3.5	1638	$704.12	$1,153,349
OILER	0	0	$588.26	$0
TMSTR	2.5	1170	$599.51	$701,424
ELEC	0	0	$613.21	$0
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$2,140,341

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	468	$7.90	$3,697	$45.70	$21,388	$25.90	$12,121
CAT D8	1	468	$97.70	$45,724	$411.30	$192,488	$340.90	$159,541
CAT 16	1	468	$42.40	$19,843	$373.90	$174,985	$320.10	$149,807
HYD HOE	0.5	234	$73.90	$17,293	$173.40	$40,576	$181.00	$42,354
DUMPTRK	2	936	$37.90	$35,474	$158.40	$148,262	$101.20	$94,723
H2O TNKR	0.5	234	$30.50	$7,137	$129.50	$30,303	$104.30	$24,406
SLF-PROP VIB	1	468	$2.05	$959	$11.01	$5,153	$10.00	$4,680
TOTAL EQUIP.				$130,127		$613,155		$487,633

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
AGGREGATE	45000	TN	0.00%	45000	20.00	$900,000
TOTAL SUPPLIES						$900,000

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE		CY	$4.50	$0
TOTAL SUBCONTRACT				$0

END

APPENDIX 7

COST ESTIMATE SUMMARY
OPTION 2
SINGLE BI-DIRECTIONAL TUNNEL

PROJECT:..............	BRADFIELD ROAD TUNNEL COSTS
JOB NO:..............	REV'D 10-27-04, SKS
ESTIMATOR:.................	S.SUNDERLAND
CHECKED BY/DATE:	**SINGLE BORE OPTION**

DIRECT COST		COSTS	LABOR
LABOR		$31,959,671	$31,959,671
E.O.E.		$3,169,145	
EQUIP.RENT		$1,109,990	
SUPPLIES		$8,725,995	
PERM.MATL'S.		$5,373,485	
SUB-CONTRACT		$18,027,641	
TOTAL DIRECT COST		$68,365,927	
INDIRECT COST			
LABOR		$1,368,258	$1,368,258
SUPPLIES		$5,021,385	
SUB-CONTRACT		$697,250	
TOTAL INDIRECT COST		$7,086,893	
PLANT & EQUIPMENT			
LABOR		$0	$0
EQUIP.RENT		$11,015,480	
FRT IN & OUT		$227,220	
TOTAL P & E COST		$11,242,700	
P & E SALVAGE		$4,727,240	
NET P & E COST		$6,515,460	
CONTINGENCY	0%	$0	
FINANCING		$0	
TOTAL COST		$81,968,280	
CONTRACTOR PROFITx	13%	$10,409,972	$33,327,928
TOTAL PROFIT AS % OF LABOR			0.312349796
TOTAL BID		$92,378,252	

PARSONS BRINCKERHOFF

PROJECT	BRADFIELD ROAD TUNNEL
JOB NO	
ESTIMATOR	S.SUNDERLAND
CHECKED BY/DATE:	REV'D 10-27-04, SKS
	SINGLE BORE OPTION

PROJECT COST SUMMARY

BID ITEM DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT	UNIT PRICE	ADJUSTED UNITS	BID AMOUNT
MOBILIZATION	1	LS									$7,500,000	$7,500,000
PROJECT SET-UP:												
CLEAR & GRUB	3	AC	$3,968	$615	$468	$300	$0	$0	$5,351	$1,783.83	$2,214.68	$6,644
GRADE & PLATE	13300	SY	$12,750	$3,904	$2,960	$132,158	$0	$0	$151,772	$11.41	$14.17	$188,429
INSTALL WASTE DISP FACILS	1	LS	$18,406	$4,540	$4,342	$16,500	$0	$0	$43,788	$43,788	$54,364	$54,364
INSTALL POT. WATER FACILS	1	LS	$26,417	$2,375	$2,445	$19,800	$0	$0	$51,037	$51,037	$63,364	$63,364
INSTALL CAMP STRS	1	LS	$81,757	$7,094	$7,992	$15,000	$2,602,040	$0	$2,713,883	$2,713,883	$3,369,364	$3,369,364
INSTALL SHOPS & STORAGE STRS	1	LS	$41,291	$3,583	$4,036	$45,000	$0	$0	$93,911	$93,911	$116,593	$116,593
INSTALL FUEL STORAGE	1	LS	$32,057	$3,662	$3,256	$6,500	$0	$0	$45,474	$45,474	$56,457	$56,457
INSTALL BATCH PLANT	1	LS	$25,512	$4,554	$4,668	$4,500	$0	$0	$39,234	$39,234	$48,710	$48,710
SUBTOTAL	1	LS	$242,158	$30,327	$30,168	$239,758	$2,602,040	$0	$3,144,452			$3,903,926
OPERATIONS:	24	MOS	$10,905,554	$1,306,196	$1,042,585	$4,047,884	$0	$0	$17,302,218	$720,926	$895,050	$21,481,198
CATERING:												
CAMP CATERING PER MAN-DAY	720	MD						$9,236,571	$9,236,571	$12,829	$15,927	$11,467,467
PORTAL EXCAVATION:												
NORTH PORTAL	657000	CY	$0	$0	$0	$0	$0	$0	$0	$0.00	$0.00	$0
SOUTH PORTAL	1748000	CY	$0	$0	$0	$0	$0	$0	$0	$0.00	$0.00	$0
SUBTOTAL	2405000	CY	$0	$0	$0	$0	$0	$0	$0			$0
DRIVE & LINE TUNNEL(s)												
DRIVE TUNNEL(s)	8000	LF	$20,430,598	$1,798,234	$12,652	$4,158,158	$1,120,807	$0	$27,520,450	$3,440.06	$4,270.93	$34,167,425
CONC. LINE @ PORTAL(s)	100	LF	$48,022	$1,857	$1,855	$81,743	$83,870	$0	$217,347	$2,173.47	$2,698.42	$269,842
SUBTOTAL	8000	LF	$20,478,620	$1,800,092	$14,507	$4,239,901	$1,204,677	$0	$27,737,797	$3,467.22		$34,437,267
CROSSPASSAGES (7)												
CONSTRUCT	0	LF	$0	$0	$0	$0	$0	$0	$0	$0.00	$0.00	$0
VENTILATION	0	LF						$0	$0	$0.00	$0.00	$0
LIFE/SAFETY	0	LF						$0	$0	$0.00	$0.00	$0
SUBTOTAL	1	LS	$0	$0	$0	$0	$0	$0	$0			$0

SAFE HAVENS:											
CONSTRUCT	7 EA	$101,062	$8,895	$63	$20,569	$5,544	$0	$136,133	$19,448	$24,145	$169,012
VENTILATION	8000 LF						$400,000	$400,000	$50	$62	$496,611
LIFE/SAFETY	1 LS						$18,500	$18,500	$18,500	$22,968	$22,968
SUBTOTAL	1 LS	$101,062	$8,895	$63	$20,569	$5,544	$418,500	$554,633		$688,592	$688,592
CONSTRUCT PORTAL STRS	425 CY	$86,981	$5,439	$4,568	$34,029	$0	$0	$131,016	$308	$383	$162,660
TUNNEL VENTILATION	8000 LF						$4,800,000	$4,800,000	$600	$745	$5,959,337
TUNNEL LIFE/SAFETY	1 LS						$2,138,600	$2,138,600	$2,138,600	$2,655,133	$2,655,133
TUNNEL LIGHTING:	1 LS						$1,433,970	$1,433,970	$1,433,970	$1,780,315	$1,780,315
DEMOBILIZATION/RESTORATION:											
CAMP & SUPPORT	1 LS	$145,295	$18,196	$18,101	$143,855	$1,561,224	$0	$1,886,671	$1,886,671	$2,342,356	$2,342,356
ACCESS ROAD REMEDIATION	1 LS	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
SUBTOTAL		$145,295	$18,196	$18,101	$143,855	$1,561,224	$0	$1,886,671			$2,342,356
TOTAL PROJECT COST	8000 LF	$31,959,671	$3,169,145	$1,109,990	$8,725,995	$5,373,485	$18,027,641	$68,365,927		$11,547.28	$92,378,252

TOTAL BID	$92,378,252
MOBILIATION	$7,500,000
SPREAD AMT	$84,878,252
M-U	1.241528564

Parsons Brinckerhoff Construction Services

PROJECT NAME: BRADFIELD ROAD TUNNEL
PROJECT NO.:
ESTIMATOR: S.SUNDERLAND
CHECKED BY/DATE: REV'D 10-27-04, SKS

SINGLE BORE OPTION

YARD FACILITIES SET-UP

DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
CLEAR & GRUB	3	AC	$3,968	$615	$468	$300	$0	$0	$5,351
GRADE & PLATE	13300	SY	$12,750	$3,904	$2,960	$132,158	$0	$0	$151,772
WASTE FACILITIES	1	LS	$18,406	$4,540	$4,342	$16,500	$0	$0	$43,788
POTABLE WATER FACILITIES	1	LS	$26,417	$2,375	$2,445	$19,800	$0	$0	$51,037
CAMP STRUCTURES	1	LS	$81,757	$7,094	$7,992	$15,000	$2,602,040	$0	$2,713,883
SHOPS & STORAGE	1	LS	$41,291	$3,583	$4,036	$45,000	$0	$0	$93,911
FUEL STORAGE	1	LS	$32,057	$3,662	$3,256	$6,500	$0	$0	$45,474
BATCH PLANT	1	LS	$25,512	$4,554	$4,668	$4,500	$0	$0	$39,234

CLEAR & GRUB

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	CLEAR & GRUB	3	AC	$3,968	$615	$468	$300	$0	$0	$5,351
		1	AC	$1,322.70	$205.13	$156.00	$100.00	$0.00	$0.00	$1,783.83

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
C&G	3	AC	0.30	10	10	1.0
TOTAL PRODUCTIVITY				10		1.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	0	0	$55.78	$0
LAB FOREMN	1	10	$51.01	$510
ATO	3	30	$45.94	$1,378
COMMON LAB	2	20	$44.93	$899
HOE-DZR OPER	1	10	$53.79	$538
OILER	0	0	$45.11	$0
TMSTR	1	10	$49.99	$500
ELEC	0	0	$61.32	$0
PLMBR/FITTR	0	0	$54.24	$0
DIRECT LABOR COST				$3,825

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	10	$0.79	$8	$4.57	$46	$2.59	$26
CAT D8	1	10	$9.77	$98	$41.13	$411	$34.09	$341
CAT 16	0	0	$4.24	$0	$37.39	$0	$32.01	$0
HYD HOE	0	0	$7.39	$0	$17.34	$0	$18.10	$0
DUMPTRK	1	10	$3.79	$38	$15.84	$158	$10.12	$101
50TN TRL CR	0	0	$7.77	$0	$44.36	$0	$53.67	$0
FLTBD W/CR	0	0	$3.76	$0	$10.19	$0	$10.34	$0
TOTAL EQUIP.				$144		$615		$468

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
CHAIN SAWS	20	HR	0.00%	20	15.00	$300
TOTAL SUPPLIES						$300

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
WASTE HAUL	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

GRADE & PLATE

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	GRADE & PLATE	13,300	SY	$12,750	$3,904	$2,960	$132,158	$0	$0	$151,772
		1	SY	$0.96	$0.29	$0.22	$9.94	$0.00	$0.00	$11.41

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
GRADE & PLATE	13,300	SY	445	30	10	3.0
TOTAL PRODUCTIVITY	13,300	SY		30		3.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	0	0	$55.78	$0
LAB FOREMN	1	30	$51.01	$1,525
ATO	2	60	$45.94	$2,746
COMMON LAB	0	0	$44.93	$0
HOE-DZR OPER	2	60	$53.79	$3,215
OILER		0	$45.11	$0
TMSTR	3	90	$49.99	$4,482
ELEC	0	0	$61.32	$0
PLMBR/FITTR	0	0	$54.24	$0
DIRECT LABOR COST				$11,968

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	30	$0.79	$24	$4.57	$137	$2.59	$77
CAT D8	1	30	$9.77	$292	$41.13	$1,229	$34.09	$1,019
CAT 16	1	30	$4.24	$127	$37.39	$1,117	$32.01	$957
HYD HOE	0	0	$7.39	$0	$17.34	$0	$18.10	$0
DUMPTRK	3	90	$3.79	$340	$15.84	$1,420	$10.12	$907
50TN TRL CR	0	0	$7.77	$0	$44.36	$0	$53.67	$0
FLTBD W/CR	0	0	$3.76	$0	$10.19	$0	$10.34	$0
TOTAL EQUIP.				$782		$3,904		$2,960

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
AGGREGATE	5746	TN	15.00%	6608	20.00	$132,158
TOTAL SUPPLIES						$132,158

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE		CY	$4.50	$0
TOTAL SUBCONTRACT				$0

WASTE FACILITIES

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	WASTE FACILITIES	1	LS	$18,406	$4,540	$4,342	$16,500	$0	$0	$43,788

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET PLANT	1	LS	0	20	10	2.0
EXC/LAY/BKFILL LINES	1,500	LF	50	30	10	3.0
TOTAL PRODUCTIVITY				50		5.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	1	50	$55.78	$2,789
LAB FOREMN		0	$51.01	
ATO		0	$45.94	
COMMON LAB		0	$44.93	
HOE-DZR OPER		0	$53.79	
OILER		0	$45.11	
TMSTR		0	$49.99	
ELEC	3	150	$61.32	$9,198
PLMBR/FITTR	2	100	$54.24	$5,424
DIRECT LABOR COST				$17,411

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	50	$0.79	$40	$4.57	$229	$2.59	$130
CAT D8		0	$9.77		$41.13		$34.09	
CAT 16		0	$4.24		$37.39		$32.01	
HYD HOE		0	$7.39		$17.34		$18.10	
DUMPTRK	2	100	$3.79	$379	$15.84	$1,584	$10.12	$1,012
50TN TRL CR	1	50	$7.77	$389	$44.36	$2,218	$53.67	$2,684
FLTBD W/CR	1	50	$3.76	$188	$10.19	$510	$10.34	$517
TOTAL EQUIP.				$995		$4,540		$4,342

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
6" HDPE	1500	LF	10.00%	1650	10.00	$16,500
TOTAL SUPPLIES						$16,500

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

POTABLE WATER FACILITIES

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	POTABLE WATER FACILITIES	1	LS	$26,417	$2,375	$2,445	$19,800	$0	$0	$51,037

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET PLANT(s)	1	LS	0	10	10	1.0
EXC/LAY/BKFILL LINES	1,500	LF	50	30	10	3.0
INSULATE	1,500	LF	100	15	10	1.5
TOTAL PRODUCTIVITY				55		5.5

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	0.25	14	$55.78	$767
LAB FOREMN	1	55	$51.01	$2,806
ATO	0	0	$45.94	$0
COMMON LAB	2	110	$44.93	$4,942
HOE-DZR OPER	1	55	$53.79	$2,958
OILER	1	55	$45.11	$2,481
TMSTR	1	55	$49.99	$2,749
ELEC	0	0	$61.32	$0
PLMBR/FITTR	3	165	$54.24	$8,950
DIRECT LABOR COST				$25,654

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	55	$0.79	$43	$4.57	$251	$2.59	$142
CAT D8	0	0	$9.77	$0	$41.13	$0	$34.09	$0
CAT 16	0	0	$4.24	$0	$37.39	$0	$32.01	$0
HYD HOE	1	55	$7.39	$406	$17.34	$954	$18.10	$996
DUMPTRK	0	0	$3.79	$0	$15.84	$0	$10.12	$0
50TN TRL CR	0.25	14	$7.77	$107	$44.36	$610	$53.67	$738
FLTBD W/CR	1	55	$3.76	$207	$10.19	$560	$10.34	$569
TOTAL EQUIP.				$764		$2,375		$2,445

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
6" HDPE	1500	LF	10.00%	1650	10.00	$16,500
IINSULATION	1500	LF	10.00%	1650	2.00	$3,300
TOTAL SUPPLIES						$19,800

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

CAMP STRUCTURES

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	CAMP STRUCTURES	1	LS	$81,757	$7,094	$7,992	$15,000	$2,602,040	$0	$2,713,883

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET STR UNITS	35	EA	0.4	100	10	10.0
CONSTR. PROT. ENTRY/DECK	6	EA	0	20	10	2.0
TOTAL PRODUCTIVITY	35			120		12.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	1	120	$55.78	$6,693
LAB FOREMN	1	120	$51.01	$6,121
ATO	2	240	$45.94	$11,025
COMMON LAB	2	240	$44.93	$10,783
HOE-DZR OPER	0	0	$53.79	$0
OILER	1	120	$45.11	$5,413
TMSTR	1	120	$49.99	$5,999
ELEC	2	240	$61.32	$14,717
PLMBR/FITTR	3	360	$54.24	$19,527
DIRECT LABOR COST				$80,279

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	120	$0.79	$95	$4.57	$548	$2.59	$311
CAT D8	0	0	$9.77	$0	$41.13	$0	$34.09	$0
CAT 16	0	0	$4.24	$0	$37.39	$0	$32.01	$0
HYD HOE	0	0	$7.39	$0	$17.34	$0	$18.10	$0
DUMPTRK	0	0	$3.79	$0	$15.84	$0	$10.12	$0
50TN TRL CR	1	120	$7.77	$932	$44.36	$5,323	$53.67	$6,440
FLTBD W/CR	1	120	$3.76	$451	$10.19	$1,223	$10.34	$1,241
TOTAL EQUIP.				$1,478		$7,094		$7,992

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
ENCLOS/DECK	6	EA	0.00%	6	2500.00	$15,000
TOTAL SUPPLIES						$15,000

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
MODULAR HOUSING	24	MOS	0	24	$93,800	$2,251,200
FRT TO/FROM BOB QUINN	1	LS		1	$350,840	$350,840
TOTAL PERMANENT MATERIAL						$2,602,040

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

SHOPS & STORAGE

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	SHOPS & STORAGE	1	LS	$41,291	$3,583	$4,036	$45,000	$0	$0	$93,911

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET WHSE/PARTS	5,000	SF	165	30	10	3.0
SET EQ/ELEC	5,000	SF	165	30	10	3.0
TOTAL PRODUCTIVITY				61		6.1

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	1	61	$55.78	$3,381
LAB FOREMN	1	61	$51.01	$3,092
ATO	2	121	$45.94	$5,568
COMMON LAB	2	121	$44.93	$5,446
HOE-DZR OPER	0	0	$53.79	$0
OILER	1	61	$45.11	$2,734
TMSTR	1	61	$49.99	$3,030
ELEC	2	121	$61.32	$7,433
PLMBR/FITTR	3	182	$54.24	$9,862
DIRECT LABOR COST				$40,545

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	61	$0.79	$48	$4.57	$277	$2.59	$157
CAT D8	0	0	$9.77	$0	$41.13	$0	$34.09	$0
CAT 16	0	0	$4.24	$0	$37.39	$0	$32.01	$0
HYD HOE	0	0	$7.39	$0	$17.34	$0	$18.10	$0
DUMPTRK	0	0	$3.79	$0	$15.84	$0	$10.12	$0
50TN TRL CR	1	61	$7.77	$471	$44.36	$2,688	$53.67	$3,253
FLTBD W/CR	1	61	$3.76	$228	$10.19	$618	$10.34	$627
TOTAL EQUIP.				$747		$3,583		$4,036

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
FIT-OUT	10,000	SF	0.00%	10000	4.50	$45,000
TOTAL SUPPLIES						$45,000

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
COST IN CAMP ABOVE						
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

FUEL STORAGE

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	FUEL STORAGE	1	LS	$32,057	$3,662	$3,256	$6,500	$0	$0	$45,474

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET TANKER TRLRS	3	EA	0.3	10	10	1.0
CONSTR DIKE	1	LS	0.05	20	10	2.0
ERECT FUEL DOCK	400	SF	20	20	10	2.0
TOTAL PRODUCTIVITY				50		5.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	0	0	$55.78	$0
LAB FOREMN	1	50	$51.01	$2,551
ATO	0	0	$45.94	$0
COMMON LAB	4	200	$44.93	$8,986
HOE-DZR OPER	2	100	$53.79	$5,379
OILER	0	0	$45.11	$0
TMSTR	1	50	$49.99	$2,499
ELEC	2	100	$61.32	$6,132
PLMBR/FITTR	2	100	$54.24	$5,424
DIRECT LABOR COST				$30,971

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	50	$0.79	$40	$4.57	$229	$2.59	$130
CAT D8	1	50	$9.77	$489	$41.13	$2,057	$34.09	$1,705
CAT 16	0	0	$4.24	$0	$37.39	$0	$32.01	$0
HYD HOE	1	50	$7.39	$370	$17.34	$867	$18.10	$905
DUMPTRK	0	0	$3.79	$0	$15.84	$0	$10.12	$0
50TN TRL CR	0	0	$7.77	$0	$44.36	$0	$53.67	$0
FLTBD W/CR	1	50	$3.76	$188	$10.19	$510	$10.34	$517
TOTAL EQUIP.				$1,086		$3,662		$3,256

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
FUEL DISP/PIPING/PUMPS	1	ALLOV	0.00%	1	6500.00	$6,500
TOTAL SUPPLIES						$6,500

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

BATCH PLANT

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	BATCH PLANT	1	LS	$25,512	$4,554	$4,668	$4,500	$0	$0	$39,234

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
SET-UP PLANT	1	LS	0	10	10	1.0
PREPARE AGG STORE	10,000	SF	2000	5	10	0.5
WASHDOWN AREA	1,000	SF	200	5	10	0.5
OPER SHED	1	LS	0	20	10	2.0
TOTAL PRODUCTIVITY	10,113	SY		40		4.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
LIFT CR	1	40	$55.78	$2,231
LAB FOREMN	1	40	$51.01	$2,040
ATO	2	80	$45.94	$3,675
COMMON LAB	2	80	$44.93	$3,594
HOE-DZR OPER	2	80	$53.79	$4,303
OILER	1	40	$45.11	$1,804
TMSTR	1	40	$49.99	$2,000
ELEC	2	80	$61.32	$4,906
PLMBR/FITTR	0	0	$54.24	$0
DIRECT LABOR COST				$24,554

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	40	$0.79	$32	$4.57	$183	$2.59	$104
CAT D8	0	0	$9.77	$0	$41.13	$0	$34.09	$0
CAT 16	1	40	$4.24	$170	$37.39	$1,496	$32.01	$1,280
HYD HOE	1	40	$7.39	$296	$17.34	$694	$18.10	$724
DUMPTRK	0	0	$3.79	$0	$15.84	$0	$10.12	$0
50TN TRL CR	1	40	$7.77	$311	$44.36	$1,774	$53.67	$2,147
FLTBD W/CR	1	40	$3.76	$150	$10.19	$408	$10.34	$414
TOTAL EQUIP.				$958		$4,554		$4,668

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
MISC CONSTR MAT'LS	1	ALLOV	0.00%	1	4500.00	$4,500
TOTAL SUPPLIES						$4,500

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL

PROJECT: BRADFIELD ROAD TUNNEL
JOB NO.:
ESTIMATOR: S.SUNDERLAND
CHECKED BY/DATE:

SINGLE BORE OPTION

CAMP COST, CATERED

DESCRIPTION	QTY	UNIT	UNIT COST	TOTAL
BASE COST/MAN DAY 1st 70 MEN	70	EA	$70.00	$4,900.00
NEXT 77 MEN	77	EA	$65.00	$5,005.00
SUBTOTAL	147	MAN/	$67.38	$9,905
		DAY		
TRIAGE MEDICAL FACILITY, OPER & EQUIPPED	1	DAY	$550.00	$550
FIRST AID TRAILER	1	DAY	$150.00	$150
147-MAN CAMP CATER COST	180	MAN/		$12,829
		DAY		
24 MOS. COST	720	DAYS	$12,829	**$9,236,571**

Parsons Brinckerhoff

PROJECT:	BRADFIELD ROAD TUNNEL
JOB NO.:	
ESTIMATOR:	S.SUNDERLAND
CHECKED BY/DATE:	

SINGLE BORE OPTION

CLASS 3,000psi, PORTAL CONC. FORM & PLACE ONLY

REF NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
	PORTALS	425	CY	$86,981	$5,439	$4,568	$34,029	$0	$0	$131,016

DIRECT COST SUMMARY

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1.0	FORMS: SHOP BUII	2,263	SF	$5,690	$0	$0	$8,318	$0	$0	$14,008
2.0	FORMS: BUILT IN P	0	LS	$0	$0	$0	$0	$0	$0	$0
3.0	FORMS: E S & M	6,790	SF	$52,168	$2,995	$2,605	$24,953	$0	$0	$82,721
4.0	PLACE CONCRETE	436	CY	$20,355	$2,444	$1,963	$0	$0	$0	$24,762
5.0	CONCRETE FINISH	5,710	SF	$8,768	$0	$0	$758	$0	$0	$9,525
	TOTAL DIRECT CO:	425	CY	$86,981	$5,439	$4,568	$34,029	$0	$0	$131,016
	DIRECT UNIT COST	1	CY	$204.66	$12.80	$10.75	$80.07	$0.00	$0.00	$308.27

QUANTITY ANALYSIS:

ITEM	UNIT			FOOTING	PORTAL	WINGS		TOTALS
CONCRETE - TAKEOFF	CY	0.0	0.0	90.0	200.0	135.0	0.0	425.0
- OVERBREAK	CY	0.0	0.0	2.3	5.0	3.4	0.0	10.6
FORMS - VERTICAL	SF	0	0	1980	2890	1920	0	6790
- HORZ.	SF	0	0	0	0	0	0	0
- CURVED	SF	0	0	0	0	0	0	0
- BULKHEAD JT.	SF	0	0	0	0	0	0	0
- CONSTR. JT.	SF	0	0	0	0	0	0	0
- OUTBOARD	SF	0	0	0	0	0	0	0
- FALSE WORK	CF	0	0	0	0	0	0	0
- KEYWAY	LF	0	0	0	0	0	0	0
- SCREEDS	LF	0	0	0	0	0	0	0
MISC. - WATERSTOP	LF	0	0	0	0	0	0	0
FINISHES - SCREED	SF	0	0	400	0	0	0	400
- FLOAT	SF	0	0	0	300	200	0	500
- TROWEL	SF	0				0	0	0
- P P & R	SF	0		0	2890	1920	0	4810
- CURE	SF	0	0	400	300	200	0	900
REINFORCING	LB	0	0	11700	26000	17550	0	55250
FORM CONTACT AREA	SF/CY	0.00	0	22	14	0	0	16

FORMS: SHOP BUILT

	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1.0	FORMS: SHOP BUII	2,263	SF	$5,690	$0	$0	$8,318	$0	$0	$14,008
	DIRECT UNIT COST	1	SF	$2.51	$0.00	$0.00	$3.68	$0.00	$0.00	$6.19

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
WALL : PATENT I/		SF	120.0	0	8.0	0.0
WALL : WOOD)	2263	SF	80.0	28	10.0	2.8
COLS : WOOD I/		SF	45.0	0	8.0	0.0
COLS : WOOD)	0	SF	35.0	0	8.0	0.0
TOTAL	2,263			28		2.8

1.2 LABOR:

DESCRIPTION	NO.	HRS	UNIT COST	CONSTR LABOR
CARP FOREMAN	1	28	$52.37	$1,482
CARP JNYMAN	2	57	$51.40	$2,909
COMMON LABOR	1	28	$45.94	$1,300
DIRECT LABOR				$5,690

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	UNIT COST	REPAIR LABOR	UNIT COST	E.O.E	UNIT COST	EQUIP RENT
NONE		0		$0		$0		$0
DIRECT EQUIP.				$0		$0		$0

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT	UNIT COST	SUPPLIES	
FORMWORK - WAL	2263	SF	5%	2377	SF	$3.50	$8,318	
FORMWORK - COL:	0	SF	5%	0	MBF	$400.00	$0	
FORMWORK - STAIRS		SF	5%	0	MBF	$400.00	$0	
DIRECT SUPPLIES	2,263						$8,318	$3.68

1.5 PERMANENT MATERIALS:

DESCRIPTION	IN PLACE QTY	UNIT	FACTOR	BUY QTY	UNIT COST	PERM MATL
STEEL PIER FORM	0	SF	90%	0	$15.00	$0
DIRECT P. M.						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE			$0.00	$0
DIRECT SUBCONTR				$0

FORMS: BUILT IN PLACE,

	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
2.0	FORMS: BUILT IN P	0	SF	$0	$0	$0	$0	$0	$0	$0
	DIRECT UNIT COST	1	SF							

2.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
BULKHEADS	0	SF	30.0	0	8.0	0.0
OUTBOARD	0	SF	90.0	0	8.0	0.0
STAY-IN-PLACE	0	SF	450.0	0	8.0	0.0
TRK.DRAIN REVEA	0	LF	100.0	0	8.0	0.0
SHEAR KEY BLOCK	0	EA	0.5	0	8.0	0.0
POST TENSION BL	0	EA	0.5	0	8.0	0.0
TOTAL	0			0		0.0

2.2 LABOR:

DESCRIPTION	NO.	HRS	UNIT COST	CONSTR LABOR
CARP FOREMAN	1	0	$52.37	$0
CARP JNYMAN	5	0	$51.40	$0
LIFT CR OPER	0.0	0	$55.78	$0
OILER	0.0	0	$45.11	$0
TMSTR	0.5	0	$49.38	$0
COMMON LABOR	2	0	$45.94	$0
DIRECT LABOR	8.5			$0

2.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	UNIT COST	REPAIR LABOR	UNIT COST	E.O.E	UNIT COST	EQUIP RENT
RT CR 40TN	0.0	0	$6.42	$0	$33.92	$0	$28.02	$0
FLTBD W/CR	0.5	0	$3.76	$0	$10.19	$0	$10.34	$0
DIRECT EQUIP.				$0		$0		$0

2.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT	UNIT COST	SUPPLIES
OUTBOARD	0	SF	5%	0	SF	$3.25	$0
BULKHEAD MATL	0	SF	5%	0	SF	$2.00	$0
S-I-P FORM,GALV.	0	SF	2%	0	SF	$0.95	$0
DIRECT SUPPLIES							$0

2.5 PERMANENT MATERIALS:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
NONE					$0.00	$0
DIRECT P. M.						$0

2.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE			$0.00	$0
DIRECT SUBCONTR				$0

FORMS: E S & M

	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
3.0	FORMS: E S & M	6,790	SF	$52,168	$2,995	$2,605	$24,953	$0	$0	$82,721
	DIRECT UNIT COST	1	SF	$7.68	$0.44	$0.38	$3.68	$0.00	$0.00	$12.18

3.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
VERT. WALL	6790	SF	50.0	136	10.0	13.6
EXP. JTS	0	SF	85.0	0	8.0	0.0
BULKHEAD	0	SF	15.0	0	8.0	0.0
FALSE WORK	0	CF	1300.0	0	8.0	0.0
KEY WAY	0	LF	90.0	0	8.0	0.0
SCREEDS	0	LF	62.5	0	8.0	0.0
WATERSTOP	0	LF	65.0	0	8.0	0.0
TOTAL	6,790			136		13.6

3.2 LABOR:

DESCRIPTION	NO.	HRS	UNIT COST	CONSTR LABOR
CARP FOREMAN	1	136	$52.37	$7,112
CARP JNYMAN	4	543	$51.40	$27,923
LIFT CRANE OPER	1	68	$55.78	$3,787
OILER	1	68	$45.11	$3,063
TMSTR	0.5	68	$49.38	$3,353
COMMON LABOR	1	136	$45.94	$6,238
DIRECT LABOR	7.5			$51,477

3.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	UNIT COST	REPAIR LABOR	UNIT COST	E.O.E	UNIT COST	EQUIP RENT
TRK CR 50 TN	0.5	68	$6.42	$436	$33.92	$2,303	$28.02	$1,903
FLTBD W/CR	0.5	68	$3.76	$255	$10.19	$692	$10.34	$702
DIRECT EQUIP.				$691		$2,995		$2,605

3.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT	UNIT COST	SUPPLIES
VERT FORM	6790	SF	5%	7130	SF	$3.50	$24,953
SHORING	0	CF	0%	0	CF	$0.15	$0
SCREED BASE	0	LF	5%	0	LF	$2.50	$0
WATERSTOP	0	LF	5%	0	LF	$6.50	$0
DIRECT SUPPLIES							$24,953

3.5 PERMANENT MATERIALS:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
NONE					$0.00	$0
DIRECT P. M.						$0

3.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE			$0.00	$0
DIRECT SUBCONTR				$0

PLACE CONC. DIRECT

	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
4.0	PLACE CONCRETE	436	CY	$20,355	$2,444	$1,963	$0	$0	$0	$24,762
	DIRECT UNIT COST	1	CY	$46.73	$5.61	$4.51	$0.00	$0.00	$0.00	$56.84

4.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS
DEADMAN	0	CY	19.0	0	8.0	0.0
GRADEBEAM	92	CY	20.0	5	10.0	0.5
PORTAL	205	CY	10.0	21	10.0	2.1
WING	138	CY	8.0	17	10.0	1.7
SET-UP/CLN-UP	8	EA	1.5	12	10.0	1.2
TOTAL	436			54		5.4

4.2 LABOR:

DESCRIPTION	NO.	HRS	UNIT COST	CONSTR LABOR
LABOR FOREMAN	1	54	$51.01	$2,776
ATO	1	54	$50.04	$2,723
LIFT CRANE OPER	1	54	$55.78	$3,035
OILER	1	54	$45.11	$2,455
TEAMSTER	0.50	27	$49.38	$1,343
COMMON LABOR	3	163	$45.94	$7,498
DIRECT LABOR				$19,829

4.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	UNIT COST	REPAIR LABOR	UNIT COST	E.O.E	UNIT COST	EQUIP RENT
PU 1/2 TN	1	54	$0.79	$43	$4.32	$235	$2.03	$110
TRK CR 50 TN	1	54	$6.42	$349	$33.92	$1,846	$28.02	$1,525
BIDWELL	0	0	$1.35	$0	$6.47	$0	$6.31	$0
VIBS & GEN	2	109	$0.29	$32	$0.79	$86	$0.43	$47
FLATBED TRK	0.50	27	$3.76	$102	$10.19	$277	$10.34	$281
DIRECT EQUIP.				$526		$2,444		$1,963

4.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT	UNIT COST	SUPPLIES
NONE						$0.00	$0
DIRECT SUPPLIES							$0

4.5 PERMANENT MATERIALS:

DESCRIPTION	PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
CONCRETE, 3500 p	436	CY	3%	449	$0.00	$0
DIRECT P. M.						$0

4.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE			$0.00	$0
DIRECT SUBCONTR				$0

CONCRETE FINISHES

	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
6.0	CONCRETE FINISH	5,710	SF	$8,768	$0	$0	$758	$0	$0	$9,525
	DIRECT UNIT COST	1	SF	$1.54	$0.00	$0.00	$0.13	$0.00	$0.00	$1.67

6.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	UNITS PER CR-HR	TOTAL CR-HRS	CR-HRS PER DAY	DURATION DAYS	
SCREED FIN.	400	SF	150.0	3	10.0	0.3	
FLOAT	500	SF	120.0	4	10.0	0.4	
TROWEL FIN.	0	SF	70.0	0	10.0	0.0	
P , P & R	4810	SF	90.0	53	10.0	5.3	
CURE	900	SF	400.0	2	24.0	0.1	(NON-ADDITIVE)
TOTAL	5,710			60		6.1	

6.2 LABOR:

DESCRIPTION	NO.	HRS	UNIT COST	CONSTR LABOR
CM FOREMN	1	60	$50.08	$3,019
CM JRNYMN	1	60	$49.44	$2,980
COM LAB	1	60	$45.94	$2,769
DIRECT LABOR	3			$8,768

6.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	UNIT COST	REPAIR LABOR	UNIT COST	E.O.E	UNIT COST	EQUIP RENT
TROWEL	0	0	$1.35	$0	$6.47	$0	$6.31	$0
DIRECT EQUIP.				$0		$0		$0

6.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT	UNIT COST	SUPPLIES
TROWEL	0	SF	5%	0	SF	$0.02	$0
RUBBING	4810	SF	5%	5051	SF	$0.15	$758
CURE COMPOUND	0	SF	5%	0	SF	$0.00	$0
DIRECT SUPPLIES							$758

6.5 PERMANENT MATERIALS:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
NONE					$0.00	$0
DIRECT P. M.						$0

6.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE			$0.00	$0
DIRECT SUBCONTR				$0

END

PROJECT: BRADFIELD ROAD TUNNEL INDIRECT
JOB NO:
ESTIMATOR: S.SUNDERLAND REV'D 10-27-04, SKS
CHECKED BY/DATE: **SINGLE BORE OPTION**

SHEET	DESCRIPTION	LABOR	SUPPLIES	SUB-CONTRACT	TOTAL
1	SALARIES	$1,368,258			$1,368,258
2	OFFICE EXPENSE		$4,963,785		$4,963,785
3	VEHICLE EXPENSE		$57,600		$57,600
4	INSURANCE			$76,150	$76,150
5	TAXES		$0		$0
6	BOND			$621,100	$621,100
TOTAL INDIRECT COSTS		$1,368,258	$5,021,385	$697,250	$7,086,893

INDIRECT EXPENSE

DESCRIPTION	MAN EACH	MONTH TOTAL	RATE	COST	NO.OF VEHICLES
SUPERVISORY					
PROJ.MANAGER	1	24	$6,500.00	$156,000	1
GEN'L SUPERINTENDA	1	0	$6,000.00	$0	
ASSIST GEN'L SUPER.					
TUNNEL SUPER.	1	19	$5,500.00	$104,500	1
AREA SUPERINTENDANT					
SHIFT SUPERINTENDANT					
WALKER					
SHAFT SUPERINTENDANT					
EQUIP SUPERINTENDANT			$4,500.00		
MASTER MECHANIC	1	22	$6,000.00	$132,000	1
ELECT SUPERINTENDANT			$4,500.00		
EXCAV SUPERINTENDANT					
CONC SUPERINTENDA	1	0	$5,500.00	$0	
CARPENTER SUPERINTENDANT			$3,800.00		
RIGGING SUPERINTENDANT					
STEEL SUPERINTENDANT					
TOTAL SUPERVISORY	5	65	$42,300.00	$392,500	3
DESCRIPTION	MAN	MONTH	RATE	COST	NO.OF

FIELD ENGINEER		INDIRECT	$3,000.00		
PARTY CHIEF			$3,360.00		
INSTRUMENT MAN			$3,156.72		
RODMAN			$3,055.92		
TOTAL ENGINEERING	2	24	$24,072.64	$120,000	1

DESCRIPTION	MAN EACH	MONTH TOTAL	RATE	COST	NO.OF VEHICLES
OFFICE					
OFFICE MANAGER	1	24	$3,500.00	$84,000	
PURCHASING AGENT					
CLERK			$2,500.00	$0	
ACCOUNTANT					
LABOR RELATIONS MGR					
E.E.O.OFFICER					
MAN-HAUL	6	24	$2,500.00	$360,000	
SECRETARY					
GUARD					
WAREHOUSEMAN					
TOTAL OFFICE	7	48	$8,500.00	$444,000	0

DESCRIPTION	MAN EACH	MONTH TOTAL	RATE	COST	NO.OF VEHICLES
SAFETY					
SAFETY ENGINEER	1	24	$3,500.00	$84,000	
FIRST AID MAN			$2,500.00		
TOTAL SAFETY	1	24	$6,000.00	$84,000	0
SUMMARY					
SUPERVISORY	5	65		$392,500	3
ENGINEERING	2	24		$120,000	1
OFFICE	7	48		$444,000	0
SAFETY	1	24		$84,000	0
TOTAL	15	161	$0.00	$1,040,500	4
TAXES AND INSURANC	$1,040,500	31.50%		$327,758	
TOTAL SALARIES				$1.368.258	

HAND TOOLS AND SUF	1.50%	$31,959,671 INDIRECT	$479,395
HEAT	0	$100.00	$0
HOME OFFICE CHARGI	3.50%	$95,000,000	$3,325,000
LEASES		$1,500.00	$0
LEGAL	2	$5,000.00	$10,000
LICENSES,AUTOMOTIV	14	$250.00	$3,500
LICENSES,OTHER	0	$1,500.00	$0
MOVE IN EMPLOYEES	4	$5,000.00	$20,000
OFFICE SUPPLIES	24	$300.00	$7,200
PERMITS AND FEES	0	$1,000.00	$0
PHOTOGRAPHY	24	$150.00	$3,600
POSTAGE	24	$150.00	$3,600
PROTECTIVE CLOTHIN	1.50%	$31,959,671	$479,395
RECRUITING AND EMP	24	$5,000.00	$120,000
RENT TEMPORARY OFFICE		$1,500.00	$0
SAFETY AND FIRST AII	24	$250.00	$6,000
SMALL EQUIP/TOOLS	1.50%	$31,959,671	$479,395
TELEPHONE	0	$400.00	$0
SANITARY	0	$85.00	$0
TRAVEL	4	$2,000.00	$8,000
TUNNEL,PORTAL&YARD			$0
LIGHTING--------	0	$100.00	$0
WATER,CHLORINE,ICE	0	$100.00	$0
TOTAL OFFICE EXPENSE			$4,963,785

VEHICLE EXPENSE	NO.OF MONTHS	NO.OF VEHICLES	TOTAL VEHICLE MONTHS	RATE	COST
AMBULANCE	24	2	48	$300.00	$14,400
SEDAN	0	1	0	$350.00	$0
STATION WAGON			0		$0
PICK-UP	24	6	144	$300.00	$43,200
TOTAL VEHICLE EXPENSE			192		$57,600

INSURANCE	DESCRIPTION	COST
AUTOMOTIVE		$3,000
BUILDERS RISK		
CONTRACT LIABILITY		
EQUIP TRANSPORTATION	INCL.IN EQUIP.CO OST	
FIDELITY & FORGERY		
PLANT & EQUIPMENT		
MED. INSUR.-SUPERVI ORY PERSONNEL	161 MONTHS @ $350	$73,150
RAILROAD		
UMBRELLA		

0.0%	MATERIALS		$604,488.52 INDIRECT		
	RENTAL		$695,007.91		
TOTAL TAXES					$0
BOND CALCULATION					COST
ESTIMATED BID AMOUNT		$95,000,000.00			
		/ $1000	FACTOR		
FIRST	$100,000.00	$7.50	0.0075		$750
NEXT	$2,400,000.00	$5.00	0.005		$12,000
NEXT	$2,500,000.00	$4.00	0.004		$10,000
NEXT	$2,500,000.00	$3.90	0.0039		$9,750
ALL OVER $7500000	$87,500,000.00	$3.60	0.0036		$315,000
PROJECT DURATION	24 MONTHS				
SURCHARGE BEYOND	12	1%		0.024	$273,600
			TOTAL BOND		$621,100
BONDS					
PERFORMANCE BOND					$621,100
MAINTENANCE					
SUB-CONTRACTOR					
			TOTAL BONDS		$621,100

PROJECT: BRADFIELD ROAD TUNNEL
JOB NO.:
ESTIMATOR: S.SUNDERLAND
CHECKED BY/DATE:

LABOR RATES (ALASKA LAB & MECH PAY, Issue #9, DATED 9/01/2004)

RSM Code	CLASSIFICATION	BASE WAGE	FRINGES	TAX & INS (29.14%)	TOTAL RATE/HR
CLBO	LAB FOREMN	$29.93	$12.36	$8.72	$51.01
	POWDERMN	$29.88	$12.36	$8.71	$50.95
CAIR	AIR TRAC	$29.18	$12.36	$8.50	$50.04
CLAB	ATO	$26.00	$12.36	$7.58	$45.94
	COMMON LAB	$25.22	$12.36	$7.35	$44.93
	CARP GNL 4M	$30.58	$13.85	$8.91	$53.34
CARO	CARP FOREMN	$29.83	$13.85	$8.69	$52.37
CARP	CARP JNYMN	$29.08	$13.85	$8.47	$51.40
PILO	PD FOREMN	$31.05	$12.75	$9.05	$52.85
PILE	PILE DRVR	$30.30	$12.75	$8.83	$51.88
MILL	MILLWRT	$27.00	$14.67	$7.87	$49.54
EQHV	LIFT CR OPER	$34.21	$11.60	$9.97	$55.78
EQMD	BOAT/TUG OPER	$27.42	$11.60	$7.99	$47.01
	HOE DZR OPER	$32.67	$11.60	$9.52	$53.79
EQLT	PUMP-WLDR	$31.37	$11.60	$9.14	$52.11
EQOL	OILER	$25.95	$11.60	$7.56	$45.11
	IW GNL 4M	$30.20	$15.16	$8.80	$54.16
SSKO	IW FOREMN	$29.45	$15.16	$8.58	$53.19
SSWK	IW	$28.70	$15.16	$8.36	$52.22
	CEM MSN 4M	$29.79	$11.61	$8.68	$50.08
CEFI	CEM MSN	$29.29	$11.61	$8.54	$49.44
	DIVER	$38.05	$14.67	$11.09	$63.81
	SHEETMETAL JNYMN	$32.58	$13.61	$9.49	$55.68
	PLMBR FOREMN	$0.00	$0.00	$0.00	$0.00
PLUM	PIPELAYER JNYMN	$31.30	$13.82	$9.12	$54.24
	SURVEY CHIEF	$33.15	$10.77	$9.66	$53.58
TILF	INSTRUMENT	$30.37	$10.77	$8.85	$49.99
PSST	PAINTERS	$23.79	$13.71	$6.93	$44.43
TRHV	TMSTR TRC-TRLR	$32.10	$10.77	$9.35	$52.22
	FORKLIFT	$29.26	$10.77	$8.53	$48.56
TRLT	FLTBD	$29.90	$10.77	$8.71	$49.38
	WHSEMN	$29.26	$10.77	$8.53	$48.56
	DUMPTRK	$30.37	$10.77	$8.85	$49.99
	MIXER<12CY	$31.05	$10.77	$9.05	$50.87
	WATERPROOFER 4M	$17.10	$8.25	$4.98	$30.33
ROFC	WTRPRFR JNYMN	$29.62	$10.05	$8.63	$48.30
	WTRPRFR HOT PITCH	$29.62	$10.05	$8.63	$48.30
ELEC	ELECTRICIAN	$34.15	$17.22	$9.95	$61.32
	BAKER/COOK	$20.89	$5.82	$6.09	$32.80
	HOUSEKEEPER	$18.25	$5.82	$5.32	$29.39
	HEAD COOK	$21.36	$5.82	$6.22	$33.40
	HEAD HOUSEKEEPER	$18.61	$5.82	$5.42	$29.85

PROJECT: BRADFIELD ROAD TUNNEL
JOB NO.: 0
ESTIMATOR: S.SUNDERLAND
CHECKED BY/DATE:

EQUIPMENT RATES: Rates Current Feb., '99

	EQUIPMENT TYPE	CAPACITY /SIZE	UNIT	REP LAB COST/HR	E.O.E COST/HR	RENTAL COST/HR	TOTAL COST/HR
	3-AIR TOOLS AND EQUIP.:						
AIR1	PORT AIR COMPRESSOR (GAS)	125	CFM	$1.09	$6.35	$1.24	$8.68
AIR3	PORT AIR COMPRESSOR (DSL)	300	CFM	$2.44	$8.71	$3.60	$14.75
AIR5	PORT AIR COMPRESSOR (DSL)	600	CFM	$3.60	$13.85	$4.85	$22.30
AIR6	PORT AIR COMPRESSOR (DSL)	900	CFM	$5.72	$19.61	$7.45	$32.78
AIR7	PORT AIR COMPRESSOR (DSL)	1200	CFM	$9.64	$26.69	$10.78	$47.11
AIR8	PORT AIR COMPRESSOR (DSL)	1600	CFM	$9.64	$32.00	$11.75	$53.39
JHO1	PAVMT BREAKER	60	LB	$0.19	$0.12	$0.21	$0.52
DWS4	AIR TRK DRILL	4	in. DIA	$7.07	$7.34	$11.17	$25.58
DWS5	AIR TRK DRILL (Down-hole Drill)	5	in. DIA	$8.36	$10.53	$12.33	$31.22
	4-CRUSHING AND CONVEYING:						
CNV1	PORT BELT CNVR 24inX60FT (GAS)	350	TPH	$3.54	$5.96	$3.70	$13.20
CNV2	PORT BELT CNVR 36inX60FT (GAS)	1000	TPH	$4.82	$12.87	$4.62	$22.31
CNV3	RAD. STACKER 24inX100FT (GAS)	330	TPH	$6.43	$9.15	$6.66	$22.24
CNV4	RAD. STACKER 36inX100FT (GAS)	1000	TPH	$7.59	$18.25	$9.72	$35.56
AGSB	SURGE BIN 25CY	1050	TPH	$1.63	$2.67	$3.26	$7.56
AGC1	JAW CRUSHER-12inX48in	100	HP	$8.68	$6.52	$9.36	$24.56
AGC2	ROLL CRUSHER-40inX36in	250	HP	$5.09	$6.62	$11.81	$23.52
AGC3	CONE CRUSHER-45in	125	HP	$5.22	$9.60	$12.93	$27.75
AGV1	VIB. GRIZZLY 35inX20FT	30	HP	$4.44	$4.37	$6.69	$15.50
AGV2	APRON FEEDER 36inX18FT	10	HP	$4.56	$4.09	$7.11	$15.76
AGV3	VIB. SCREEN-DBL DECK, 24"x60', 5'x10'	37	HP	$4.48	$8.21	$4.48	$17.17
	5-ASPHALT AND BITUMINOUS:						
AMXP	ASPH BATCH PLANT	310	TPH	$37.92	$24.92	$30.69	$93.53
DAP2	ASPH DIST TRK	2000	GAL	$6.30	$16.51	$13.03	$35.84
AEP3	ASPH PAVER BG245B	10	FT	$22.63	$34.96	$28.05	$85.64
PP80	ASPH MILLING MACH., PR450C (176fpm)	79	IN	$31.50	$53.59	$40.74	$125.83
	6-COMPACTION:						
ROL3	TOWED VIB, SMOOTH CH47	75	IN	$2.18	$5.74	$5.79	$13.71
ROL5	PNEU-RLR, 8 WHLS, BW20R	101	HP	$2.12	$9.25	$6.98	$18.35
ROL2	BRKDWN, 2-DRM, ST75	10	TN	$1.67	$6.57	$4.61	$12.85
ROL8	PROOF RLR, 4-WHL PNEU.	100	TN	$2.00	$25.05	$10.50	$37.55
ROL7	VIB SLF-PROP, SMOOTH, BW212D	83	IN	$2.05	$11.01	$10.00	$23.06
CMP2	WLK-BHND VIB, 2 DRM, SMOOTH	24	IN	$0.68	$1.83	$1.38	$3.89
CMP3	PLATE-VIB	21	IN	$0.14	$0.85	$0.40	$1.39
	7-CONCRETE:						
CMXP	CONC BTCHPLT-TRANSIT MIX	150	YPH	$7.46	$9.30	$16.93	$33.69
CMX1	TRANSIT MIXER	8	CY	$7.72	$21.83	$15.35	$44.90
CMX2	TRANSIT MIXER	10	CY	$7.72	$24.01	$15.55	$47.28
CMX3	TRANSIT MIXER	12	CY	$7.72	$24.88	$16.66	$49.26
CBK1	BOT DUMP BKT-MANUAL	1	CY	$0.14	$0.13	$0.32	$0.59
CBK4	BOT DUMP BKT-MANUAL	4	CY	$0.36	$0.44	$0.88	$1.68
CRT1	WLK-BHND BUGGY	12	CF	$0.26	$1.07	$1.11	$2.44
CPF3	PWR TROWEL-36in, GAS	8	HP	$0.12	$1.02	$0.32	$1.46
PMP2	CONC PUMP-TRLR MTD	65	YPH	$2.89	$12.24	$7.56	$22.69
PMP3	CONC PUMP-TRK-MTD, 85'	117	YPH	$8.87	$25.35	$28.89	$63.11
PMP4	CONC PUMP-TRK-MTD, 130'	171	YPH	$10.73	$42.94	$61.37	$115.04
SRIG	SHTCRT PUMP	50	YPH	$2.47	$2.05	$3.48	$8.00
MXR4	SHTCRT BTCHPLT	100	YPH	$4.80	$4.53	$12.65	$21.98

TKC7	FELC 973	3.75	CY	$6.13	$36.24	$27.78	$70.15
TLW3	SKID STEER	1500	LB	$1.87	$4.15	$1.93	$7.95
DSK1	ROME DISC			$1.50	$2.10	$2.25	$5.85
TRT2	TRCTR RUB, 4WD	74	HP	$1.40	$5.17	$2.65	$9.22
TKLW7	FELW 950	4.00	CY	$3.02	$16.10	$17.21	$36.33
TLW8	FELW 966	5.00	CY	$3.02	$23.43	$24.43	$50.88
TLW6	FELW 980	7.00	CY	$7.13	$30.54	$30.55	$68.22
TLW9	FELW 988	8	CY	$7.13	$48.47	$47.19	$102.79
SCR7	CAT 627P-P SCRAPER	20	CY	$12.72	$71.43	$36.61	$120.76
SCR8	CAT 637P-P SCRAPER	31	CY	$19.28	$101.67	$59.69	$180.64
SCR9	CAT 657P-P SCRAPER	44	CY	$19.28	$136.07	$77.25	$232.60
SCR5	CAT SL613 ELEV-SCRAPER	11	CY	$8.48	$31.04	$17.09	$56.61
SCR6	CAT SL623 ELEV-SCRAPER	23	CY	$11.83	$64.21	$36.89	$112.93
TDC1	WHEEL DOZER 824	310	HP	$7.07	$35.05	$25.98	$68.10
TDC2	DOZER 3	71	HP	$5.85	$9.51	$7.89	$23.25
TDC3	DOZER 6	140	HP	$6.17	$18.49	$15.73	$40.39
TDC4	DOZER 8	305	HP	$9.77	$41.13	$34.09	$84.99
TDC5	DOZER 8 RIP	305	HP	$12.34	$47.25	$41.24	$100.83
TDC6	DOZER 9	405	HP	$11.44	$61.47	$43.34	$116.25
TDC7	DOZER 9 RIP	405	HP	$14.01	$69.63	$52.89	$136.53
TDC8	DOZER 10	570	HP	$11.44	$82.21	$56.48	$150.13
TDC9	DOZER 10 RIP	570	HP	$14.01	$90.37	$66.03	$170.41
	10-EXCAVATING:						
BHC5	CAT 320 BL	1.25	CY	$7.39	$17.34	$18.10	$42.83
BHC6	CAT 330 BL	2.25	CY	$9.70	$29.66	$30.86	$70.22
BHC7	CAT 375	3.75	CY	$20.25	$66.15	$70.96	$157.36
BHC8	HITACHI EX 1100-3	6.00	CY	$21.92	$84.13	$73.31	$179.36
BHG3	GRDAL G880E 6x4	0.75	CY	$8.81	$27.24	$16.96	$53.01
BHG4	GRDAL G660E 6x4	0.50	CY	$8.81	$24.65	$15.25	$48.71
BHG5	GRDAL XL 5100	1.25	CY	$8.81	$26.96	$19.87	$55.64
BHL3	JD 510 LDR-HOE	1.25	CY	$1.55	$11.35	$7.95	$20.85
BCL4	CLAM BUKT 1YD	1	CY	$0.74	$1.32	$2.39	$4.45
BCL5	CLAM BUKT 2YD	2	CY	$1.26	$2.18	$3.91	$7.35
BDL5	DRAGLINE 2YD	2	CY	$0.59	$0.76	$1.57	$2.92
TRH5	WHEEL TRENCHER 24in	185	HP	$13.18	$33.91	$21.04	$68.13
TRH6	WHEEL TRENCHER 36in	325	HP	$13.18	$28.40	$19.91	$61.49
TRH7	ROCK SAW 6 1/2" X 30" DEEP	66	HP	$6.42	$6.04	$3.41	$15.87
	11-MOTERS AND GENERATORS:						
GEN1	PORT GEN 5KW	7	HP	$0.22	$0.85	$0.43	$1.50
GEN5	GEN 150KW	214	HP	$2.17	$17.33	$2.31	$21.81
GEN6	GEN 250KW	357	HP	$3.35	$28.61	$3.19	$35.15
GEN7	GEN 300KW	428	HP	$3.35	$28.50	$3.77	$35.62
GEN8	GEN 450KW	640	HP	$7.42	$43.03	$6.30	$56.75
	12-HOISTS AND DERRICKS:						
ALT2	MANLIFT 40 FT	500	LBS	$4.79	$6.37	$8.74	$19.90
ALT3	MANLIFT 110 FT	700	LBS	$13.19	$15.42	$27.29	$55.90
ALT1	BUCKET TRK	670	LBS	$2.65	$10.40	$13.26	$26.31

	EQUIPMENT TYPE	CAPACITY /SIZE	UNIT	REP LAB COST/HR	E.O.E COST/HR	RENTAL COST/HR	TOTAL COST/HR
	13-LIFTING:						
FRK3	PNEU FRKLIFT	3	TN	$0.52	$3.76	$2.78	$7.06
FRK4	TEL. BOOM, RT LIFT TRUCK	10	TN	$12.47	$16.11	$12.44	$41.02
CR01	GANTRY CR	15	TN	$8.00	$11.18	$16.08	$35.26
CR02	R T CRANE-HYD, 70'	20	TN	$4.88	$25.10	$22.41	$52.39
CR03	R T CRANE-HYD, 90'	33	TN	$6.42	$33.92	$28.02	$68.36
CR05	R T CRANE-HYD, 110'	66	TN	$6.81	$54.04	$47.33	$108.18
CR35	TRK CRANE-MECH, 40'	50	TN	$7.77	$44.36	$53.67	$105.80
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

TUG3	TUG	5250	HP	$164.55	$503.79	$211.28	$879.62
TUG4	TENDER	100	HP	$3.56	$8.59	$4.42	$16.57
	15-PILE DRIVING:						
HMP1	SGL ACTING HAMMER (DSL)	70000	FLB	$2.19	$22.26	$10.38	$34.83
HMP3	DBL ACTING HAMMER (DSL)	40000	FLB	$2.19	$18.65	$6.86	$27.70
HMV3	VIB HAMMER & PWR PACK	80	TN	$2.76	$21.40	$15.74	$39.90
HMP7	SWG LEADS-36in X 20FT			$0.32	$0.51	$0.71	$1.54
HMP8	FIXED LEADS-36in X 20FT			$0.32	$0.61	$0.67	$1.60
	LEADS & AUGER(SEE PILE DRIVE)			$0.00	$0.00	$0.00	$0.00
	16-PUMPING:						
PD4	PUMP-DIAPH, GAS, 8K GPH, 4"	8	HP	$0.84	$1.16	$0.30	$2.30
PC3	PUMP-SUBMSBL ELEC, 3"	6	HP	$0.45	$0.74	$0.50	$1.69
PC4	PUMP-SUBMSBL ELEC, 4"	25	HP	$0.45	$3.03	$1.97	$5.45
	17-ROAD MAINTENANCE:						
RSWP	SLF-PROP BROOM, 96"	76	HP	$2.25	$5.89	$2.86	$11.00
AGS2	AGG SPEADER-10FT	152	HP	$7.02	$20.53	$8.90	$36.45
	18-RAILROAD:						
RRL1	LOCOMOTIVE			$43.17	$38.25	$61.14	$142.56
RRL2	FLAT CAR			$0.94	$0.65	$1.11	$2.70
RRL3	SPEED SWING			$6.75	$24.65	$28.40	$59.80
RRL4	BUTT WELD PLANT			$10.50	$7.00	$12.50	$30.00
RRL5	DOUBLE DRUM HOIST			$15.60	$9.70	$19.20	$44.50
RRL6	SAG CONTROL BUGGY			$4.80	$3.70	$5.70	$14.20
RRL7	STRADDLE BUGGY			$5.40	$4.10	$6.40	$15.90
RRT1	RAIL LIFTER			$3.90	$3.00	$4.50	$11.40
RRT2	HYD. PULLER/EXPANDER			$0.60	$0.40	$0.70	$1.70
RRT3	RAIL VIBRATOR			$0.35	$0.25	$0.45	$1.05
RRT4	RAIL GRINDER			$1.70	$1.10	$2.10	$4.90
RRT5	SELF PROP. GRINDER			$4.85	$3.05	$6.00	$13.90
RRT6	RAIL SAW/DRILL			$0.40	$0.25	$0.50	$1.15
	19-TRAILERS:						
PVS4	BOT-DMP SEMI-TRLR	21	CY	$1.55	$3.66	$3.47	$8.68
PVS5	REAR-DMP TRLR	21	CY	$2.32	$2.62	$2.61	$7.55
PVS3	TRC-TRLR, 40'	40	TN	$1.26	$3.11	$2.37	$6.74

	EQUIPMENT TYPE	CAPACITY /SIZE	UNIT	REP LAB COST/HR	E.O.E COST/HR	RENTAL COST/HR	TOTAL COST/HR
	20-TRUCKS:						
*	SEDAN			$0.34	$6.74	$1.48	$8.56
PU2	PICK-UP	1/2	TN	$0.79	$4.32	$2.03	$7.14
PU3	PICK-UP	3/4	TN	$0.79	$4.57	$2.59	$7.95
CAR9	PU CRCAB	1	TN	$0.79	$6.28	$3.45	$10.52
AMBU	AMBUL			$0.69	$12.20	$2.64	$15.53
TRT3	TRK TRCTR	310	HP	$4.31	$16.78	$9.97	$31.06
TRF3	FLTBD	170	HP	$1.38	$6.79	$3.88	$12.05
TRF4	FLTBD W/CR	7.5	TN	$3.76	$10.19	$10.34	$24.29
WTK1	WATER TRK-HWY	4000	GAL	$3.05	$12.95	$10.43	$26.43
WTK2	WATER TRK-OFF HWY	8000	GAL	$14.52	$52.86	$43.88	$111.26
WTK3	GREASE TRK			$1.45	$14.32	$5.36	$21.13
WTK4	MECH TRK			$0.68	$4.27	$2.37	$7.32
WTK5	FUEL TRK			$2.71	$7.66	$10.62	$20.99
WTK6	TIRE TRK			$2.71	$7.66	$10.62	$20.99
TVAN	PARTS TRK			$0.26	$0.39	$0.61	$1.26
TRD2	DUMPTRK	12	CY	$3.79	$15.84	$10.12	$29.75
TRD3	CAT 769	35	TN	$11.51	$37.97	$38.40	$87.88
TRD4	CAT 773	58	TN	$13.24	$52.97	$50.84	$117.05
TRD5	CAT 777	100	TN	$19.09	$78.97	$76.24	$174.30
	19-MISCELLANEOUS:						
*	SKIP			$0.20	$0.20	$0.40	$0.80
WLD2	ARC WLDR	250	AMP	$0.22	$2.79	$0.76	$3.77
WLD4	ARC WLDR	400	AMP	$0.30	$5.62	$1.05	$6.97
	TRAFFIC LINE REMOVER	8	HP	$0.36	$1.00	$0.76	$2.12
	STRIPERS WLK-BHD	11	GAL	$0.13	$0.78	$0.56	$1.47

PROJECT: BRADFIELD ROAD TUNNEL
JOB NO.: 0
ESTIMATOR: S.SUNDERLAND
CHECKED BY/DATE:

SUPPLIES, PERMANENT MATERIALS AND SUBCONTRACT

DESCRIPTION	QTY	UNIT	UNIT COST
SUPPLIES:			
ELECTRIC POWER	1	KWH	$0.00
STRUCT. STEEL, ROLLED SHAPES	1	TN	$0.00
STRUCT. STEEL, PIPE	1	TN	$0.00
STRUCT. STEEL, PLATES/ANGLES	1	TN	$0.00
TIMBER LAGGING	1	MFBM	$0.00
TIMBER DECKING	1	MFBM	$0.00
FORMING LUMBER, WALLS	1	MFBM	$0.00
FORMING LUMBER, COLUMNS	1	MFBM	$0.00
PLYFORM, 3/4in	1	MSF	$0.00
FALSEWORK/SHORING	1	CF	$0.00
KEYWAY	1	LF	$0.00
CURING COMPOUND	1	SF	$0.00
			$0.00
PERMANENT MATERIALS:			$0.00
PORTLAND CEMENT TYPE 1	1	TN	$0.00
CONCRETE 3000 psi	1	CY	$0.00
CONCRETE 3500 psi	1	CY	$0.00
CONCRETE 4000 psi	1	CY	$0.00
CONCRETE 4500 psi	1	CY	$0.00
CONCRETE 5000 psi	1	CY	$0.00
GROUT	1	CY	$0.00
AGG BASE COURSE	1	TN	$0.00
SHOTCRETE 3500 psi	1	CY	$0.00
LIME, BULK	1	TN	$0.00
CONCRETE SAND	1	TN	$0.00
CONCRETE AGGREGATE	1	TN	$0.00
FABRICATED REBAR	1	LB	$0.00
REINF. STEEL, GR 60(BUY ONLY)	1	LB	$0.00
EPOXY REBAR	1	LB	$0.00
WATERSTOP	1	LF	$0.00
EXPANSION JT., 1/2 in.	1	LF	$0.00
EXPANSION JT., 1 in.	1	SF	$0.00
BORROW	1	CY	$0.00
			$0.00
SUB CONTRACT:			$0.00
ASPHALTIC PAVING, AC 20	1	TN	$0.00
ASPHALTIC PAVING, IN PLACE	1	TN	$0.00
ASPHALTIC PAVING, HIGH SERVICE	1	TN	$0.00
CURB & GUTTER, CONC.	1	LF	$0.00
SIDEWALK, CONC	1	SY	$0.00
WATERPROOFING (HDPE)	1	SY	$0.00
SPOIL HAUL	1	CY	$0.00

FRT/TN	MILL BUY/TN
200	600
200	700
200	560

PROJECT: BRADFIELD ROAD TUNNEL
JOB NO.:
ESTIMATOR: S.SUNDERLAND
CHECKED BY/DATE: REV'D 10-27-04, SKS

SINGLE BORE OPTION

PLANT & EQUIPMENT-SUMMARY

ITEM NO.	DESCRIPTION	PURC./ LEASE	ERECT. LABOR	FRT IN&OUT	TOTAL COST	SALVAGE	NET JOB COST
1	BUILDINGS & YARD	$659625	$0	$8500	$668125	$250000	$418125
2	UTILITIES & GEN'L PLANT	$1960455	$0	$28150	$1988605	$596400	$1392205
3	HOISTING & CRANES	$542200	$0	$4150	$546350	$216880	$329470
4	HAUL AND CONVEYING	$2182500	$0	$73320	$2255820	$873000	$1382820
5	SURFACE EXCAV EQUIP	$2077600	$0	$33170	$2110770	$1246560	$864210
6	DRILLS & AIR TOOL EQUIP	$905500	$0	$11480	$916980	$408800	$508180
7	TUNNEL & SHAFT MACHINES	$1460000	$0	$23200	$1483200	$876000	$607200
8	CONCRETE EQUIPMENT	$427800	$0	$7360	$435160	$79600	$355560
9	PILE DRIVING & MARINE EQUIP:	$0	$0	$0	$0	$0	$0
10	GENERAL	$799800	$0	$37890	$837690	$180000	$657690
	TOTAL PLANT & EQUIPMENT	$11015480	$0	$227220	$11242700	$4727240	$6515460

1 BUILDINGS & YARD

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
CLEARING & GRUBBING	5	AC	$3500.00	$17500	0	$0	$0	$17500	$0	$17500
SITE GRADING	22300	SY	$2.50	$55750	0	$0	$0	$55750	$0	$55750
FENCING & GATES	3500	LF	$16.25	$56875	0	$0	$0	$56875	$0	$56875
CAMP, COMPLETE, 150 CAI	0	SF	$20.00	$0	0	$0	$0	$0	$0	$0
CAMP CATERING	0	LS	$0.00	$0	0	$0	$0	$0	$0	$0
OWNERS OFFICE	0	SF	$25.00	$0	0	$0	$0	$0	$0	$0
FIRST AID STATION	0	SF	$30.00	$0	0	$0	$0	$0	$0	$0
EQUIPMENT SHOP	0	SF	$15.00	$0	0	$0	$0	$0	$0	$0
CARPENTER SHOP	0	SF	$15.00	$0	0	$0	$0	$0	$0	$0
ELEC. SHOP/WHSE	0	SF	$18.00	$0	0	$0	$0	$0	$0	$0
COMPRESSOR HOUSE	800	SF	$15.00	$12000	0	$0	$0	$12000	$0	$12000
WAREHOUSE-OFF-SITE	0	SF	$12.00	$0	0	$0	$0	$0	$0	$0

TOTAL BUILDINGS & YARD				$659625	0	$0	$8500	$668125	$250000	$418125

2 UTILITIES & GEN'L PLANT

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
SANITARY:										
U. G. ELEC. DISTR.		LF		$0	0	$0	$0	$0	$0	$0
WATER LINES		LF		$0	0	$0	$0	$0	$0	$0
SEWER LINES	2500	LF	$8.00	$20000	0	$0	$0	$20000	$0	$20000
HOOKUP TO CITY SEWER	0	EA	$2500.00	$0	0	$0	$0	$0	$0	$0
CHEM TREATMENT	0	LS		$0	0	$0	$0	$0	$0	$0
PORT.TOILETS MOS.	19	MOS	$750.00	$14250	0	$0	$0	$14250	$0	$14250
WATER SUPPLY:										
CONNECT TO MAIN	0	EA	$1500.00	$0	0	$0	$0	$0	$0	$0
DISTRIBUTION LINES	2500	LF	$8.00	$20000	0	$0	$0	$20000	$0	$20000
WELLS	0	EA		$0	0	$0	$0	$0	$0	$0
WELL PUMPS	0	EA		$0	0	$0	$0	$0	$0	$0
VALVES	0	EA		$0	0	$0	$0	$0	$0	$0
BOOSTER PUMPS	0	EA		$0	0	$0	$0	$0	$0	$0
ICE MACHINE	1	EA	$2500.00	$2500	0	$0	$0	$2500	$0	$2500
INSULATION	6000	LF	$5.00	$30000	0	$0	$0	$30000	$0	$30000
TANK-2500 GAL	0	EA		$0	0	$0	$0	$0	$0	$0
COMMUNICATIONS :										
COMMERCIAL PHONE	0	EA	$1500.00	$0	0	$0	$0	$0	$0	$0
JOB PHONES, SATELLITE	24	MOS	$3500	$84000	0	$0	$0	$84000	$0	$84000
PHONE LINES	0	LF	$250.00	$0	0	$0	$0	$0	$0	$0
RADIO, PROJECT	10	EA	$1200	$12000	0	$0	$0	$12000	$0	$12000
ELECTRICAL - POWER COMPANY:										
HIGH VOLTAGE LINES	0	LF	$50.00	$0	0	$0	$0	$0	$0	$0
SUBSTATION	0	EA	$35000.00	$0	0	$0	$0	$0	$0	$0
ELECTRICAL - SURFACE:										
DIESEL GEN SET 2000kw	3	EA	$300000	$900000	0	$0	$5800	$905800	$360000	$545800
DISTRIBUTION LINES	2500	LF	$10.00	$25000	0	$0		$25000	$0	$25000
DIESEL GEN SET 1000kw	1	EA	$142000	$142000	0	$0	$3600	$145600	$56800	$88800
LIGHTS (2-LVLS)	22300	SY	$4.50	$100350	0	$0	$0	$100350	$0	$100350
VENTILATION:										
FANS 125HP-65000cfm	4	EA	$20000	$80000	0	$0	$6000	$86000	$32000	$54000
FAN LINE&COUPLINGS	16000	LF	$10.00	$160000	0	$0	$4000	$164000	$64000	$100000
HANGERS	800	EA	$25.00	$20000	0	$0	$400	$20400	$0	$20400
BULKHEADS-DOORS	4	EA	$3500	$14000	0	$0	$600	$14600	$0	$14600
SCRUBBERS	0	EA		$0	0	$0	$0	$0	$0	$0
COMPRESSED AIR:										
STA. COMPR. 1200CFM	1	EA	$120000	$120000	0	$0	$1750	$121750	$48000	$73750
STA. COMPR. 600CFM	1	EA	$56000	$56000	0	$0	$1000	$57000	$22400	$34600
FOUNDATIONS	0	SF		$0	0	$0	$0	$0	$0	$0
PIPING	17500	LF	$6.00	$105000	0	$0	$0	$105000	$0	$105000
AFTER COOLERS	2	EA	$2500.00	$5000	0	$0	$1000	$6000	$2000	$4000

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
CLEANING EQUIPMENT:										
STEAM CLEANER	1	EA	$750.00	$750	0	$0	$0	$750	$0	$750
SAND BLASTER	1	EA	$455.00	$455	0	$0	$0	$455	$0	$455
TOTAL UTILITIES & GEN'L PLANT				$1960455	0	$0	$28150	$1988605	$596400	$1392205

3 HOISTING & CRANES

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
HOISTS:										
MINE	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SHAFT	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
WINCHES	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
TUGGERS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
MAN HOIST	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SHAFT EQUIPMENT:										
HEAD FRAME	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
MUCK HOPPER	1	EA	$0.00	$0	0	$0	$0	$0	$0	$0
GUIDES	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SKIP SUMP	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
BUCKETS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SKIP	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SCANDO HOISTS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
LADDER	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SINKING HEAD FRAME	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
CRANES:										
YARD CRANE 30T HYDRO	1	EA	$0.00	$0	0	$0	$350	$350	$0	$350
SPEED SWING	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
CRAWLER CRANE 100T	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
TRUCK CRANE 50T	1	EA	$542200	$542200	0	$0	$3800	$546000	$216880	$329120
TOTAL HOISTING & CRANES				$542200	0	$0	$4150	$546350	$216880	$329470

4 HAUL AND CONVEYING

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
OFF HIGHWAY TRUCKS										
REAR DUMP TRUCKS	0	EA	$85000	$0	0	$0	$0	$0	$0	$0
SNOW CATS	2	EA	$75000	$150000	0	$0	$4920	$154920	$60000	$94920
ROADHEADERS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
WATER TRUCKS	3	EA	$125000	$375000	0	$0	$7600	$382600	$150000	$232600
ON HIGHWAY TRUCKS										
FLATBED w/CRANE	3	EA	$138500	$415500	0	$0	$7600	$423100	$166200	$256900
10-WHLRS	2	EA	$85000	$170000	0	$0	$7600	$177600	$68000	$109600
FUEL	2	EA	$125000	$250000	0	$0	$3800	$253800	$100000	$153800
GREASE	2	EA	$138500	$277000	0	$0	$3800	$280800	$110800	$170000
MECHANIC	3	EA	$35000	$105000	0	$0	$7600	$112600	$42000	$70600
POWDER	2	EA	$35000	$70000	0	$0	$3800	$73800	$28000	$45800

SUPPORTS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
TOTAL HAUL AND CONVEYING				$2182500	0	$0	$73320	$2255820	$873000	$1382820

5 SURFACE EXCAV EQUIP

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
POWER SHOVEL:										
BACKHOE	1	EA	$201000	$201000	0	$0	$4400	$205400	$120600	$84800
DRAGLINES	0	EA	$0	$0	0	$0	$0	$0	$0	$0
CLAMSHELL	0	EA	$0	$0	0	$0	$0	$0	$0	$0
GRADALL	0	EA	$0	$0	0	$0	$0	$0	$0	$0
MATS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
TRCTR-BKHOE	0	EA	$0	$0	0	$0	$0	$0	$0	$0
LOADERS:										
CRAWLER	0	EA	$0	$0	0	$0	$0	$0	$0	$0
RUBBER TIRED	2	EA	$412000	$824000	0	$0	$12900	$836900	$494400	$342500
SCRAPERS:										
SCRAPERS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
GRADERS	1	EA	$490400	$490400	0	$0	$5860	$496260	$294240	$202020
TRACTORS:										
DOZERS	1	EA	$423000	$423000	0	$0	$7550	$430550	$253800	$176750
DOZERS W/RIPERS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
AGG SPRDR	0	EA	$0	$0	0	$0	$0	$0	$0	$0
COMPACTORS:										
SELF-PROPELLED	1	EA	$139200	$139200	0	$0	$2460	$141660	$83520	$58140
TOWED	0	EA	$0	$0	0	$0	$0	$0	$0	$0
PLATE VIBRATORS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
RAMMERS	0	EA	$650	$0	0	$0	$0	$0	$0	$0
TAMPERS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
TOTAL SURFACE EXCAV EQUIP				$2077600	0	$0	$33170	$2110770	$1246560	$864210

6 DRILLS & AIR TOOL EQUIP

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
DRILLS:										
PNEUMATIC DRIFTERS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
HYDRAULIC DRIFTERS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
STOPPER	4	EA	$1250.00	$5000	0	$0	$0	$5000	$0	$5000
JACKLEG DRILL	2	EA	$1250.00	$2500	0	$0	$0	$2500	$0	$2500
SINKER DRILL	0	EA	$1250.00	$0	0	$0	$0	$0	$0	$0
AIR TRAK DRILL	2	EA	$124000	$248000	0	$0	$2580	$250580	$148800	$101780
DOWN-HOLE DRILL	0	EA	$344000	$0	0	$0	$0	$0	$0	$0
DRILL FEEDS & MOUNTS:										
FEED & EXTENSION	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
STRAIGHT BOOM	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
ROLL OVER BOOM	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0

AIR SPADES	0	EA	$750.00	$0	0	$0	$0	$0	$0	$0
AIR BREAKERS	0	EA	$1200.00	$0	0	$0	$0	$0	$0	$0
BIT GRINDER	0	EA		$0	0	$0	$0	$0	$0	$0
TOTAL DRILLS & AIR TOOL EQUIP				$905500	0	$0	$11480	$916980	$408800	$508180

7 TUNNEL AND SHAFT MACHINES

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
EPBM	1									
T.B.M. COST IN DIR COST										
ERECT & DISMANTLE	1		0							
EXPLOSION PROOF ADD	1		0							
BACK UP SYSTEM	1		0							
SHIELD SUB-TOTAL			0	0						
LAUNCHING FRAME	1		0							
BREAK THRU STA. WALLS	0		0							
RESET LAUNCHING FRAME	0		0							
			0							
T.B.M.SUB-TOTAL			0	0						
SUPPORT EQUIP			0							
ERECTOR ARMS			0							
RIB EXPANDER			0							
ROCK BOLT DRILLS			0							
FEELER HOLE DRILL			0							
SCRUBBER			0							
TRAILING FLOOR			0							
CAR MOVER			0							
METHANE DETECTOR			0							
CONVEYOR			0							
SCOOP TRAM, 6.5CY	4	EA	$365000	$1460000	0	$0	$23200	$1483200	$876000	$607200
SUPPORT EQUIP SUB-TOTAL			0	1460000	0	0	23200	1483200	876000	607200
TUNNEL&SHAFT MACHINES			0	1460000	0	0	23200	1483200	876000	607200

8 CONCRETE EQUIP.

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
BATCH PLANT	1	EA	$199000	$199000	0	$0	$5360	$204360	$79600	$124760
AGGREGATE PLANT	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
CONC BUGGYS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0

FINISHING JUMBO	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
INTERNAL VIBRATORS	4	EA	$1200.00	$4800	0	$0	$0	$4800	$0	$4800
EXTERNAL VIBRATORS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
GROUT PLATFORM	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
GROUT MIXER AND PUMP	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
GROUT MATL'S TRAM	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SHOTCRETE GUN	2	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SHOTCRETE BATCHER	1	EA	$224000	$224000	0	$0	$2000	$226000	$0	$226000
TOTAL CONCRETE EQUIP				$427800	0	$0	$7360	$435160	$79600	$355560

9 PILE DRIVING & MARINE

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
PILING DRIVING:										
TRK-AUGER	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
LEADS-DRILL FRONT	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
SLURRY PLANT MOVE IN	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
MARINE:										
BARGES	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
TUGS	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
DREDGES	0	EA	$0.00	$0	0	$0	$0	$0	$0	$0
PILE DRIVING & MARINE				$0	0	$0	$0	$0	$0	$0

10 GENERAL

DESCRIPTION	QTY.	UNIT	UNIT COST	PURCHASE/ LEASE COST	LABOR CR-HRS	ERECTION LABOR	FREIGHT IN&OUT	TOTAL COST	SALVAGE VALUE	NET JOB COST
SEDANS	0	EA	$0	$0	0	$0	$0	$0	$0	$0
PICK UPS	8	EA	$35000	$280000	0	$0	$30400	$310400	$112000	$198400
DIESEL WELDERS	4	EA	$1600	$6400	0	$0	$720	$7120	$0	$7120
ELECTRIC WELDERS	0	EA	$1300	$0	0	$0	$0	$0	$0	$0
MECHANIC SHOP EQUIP	1	EA	$12500	$12500	0	$0	$720	$13220	$0	$13220
CARPENTER SHOP EQUIP	0	EA	$10000	$0	0	$0	$0	$0	$0	$0
AMBULANCE	2	EA	$85000	$170000	0	$0	$3800	$173800	$68000	$105800
FIRE FIGHTING EQUIP	0	EA	$0	$0	0	$0	$0	$0	$0	$0
SAFETY EQUIP	2	EA	$5000	$10000	0	$0	$0	$10000	$0	$10000
SURVEYING SUBCONTRAC	19	EA	$15000	$285000	0	$0	$0	$285000	$0	$285000
TRANSITS	0	EA	$7500	$0	0	$0	$0	$0	$0	$0
LEVELS	0	EA	$5000	$0	0	$0	$0	$0	$0	$0
LASERS	1	EA	$4000	$4000	0	$0	$0	$4000	$0	$4000
LASER STANDS	1	EA	$500	$500	0	$0	$0	$500	$0	$500
ADDING MACHINE	1	EA	$250	$250	0	$0	$0	$250	$0	$250
CALCULATOR	1	EA	$150	$150	0	$0	$0	$150	$0	$150
MICRO COMPUTER	2	EA	$7500	$15000	0	$0	$0	$15000	$0	$15000
BLUE PRINT MACH	0	EA	$1800	$0	0	$0	$0	$0	$0	$0
DESK,TABLE,CHAIRS	8	EA	$150	$1200	0	$0	$0	$1200	$0	$1200
DRAFTING TABLES	3	EA	$400	$1200	0	$0	$0	$1200	$0	$1200
FILING CABINET	8	EA	$75	$600	0	$0	$0	$600	$0	$600
TELECOPIERS	1	EA	$500	$500	0	$0	$0	$500	$0	$500
COPY MACHINE	1	EA	$1500	$1500	0	$0	$0	$1500	$0	$1500
MISC.FURNISHINGS	2	EA	$5500	$11000	0	$0	$2250	$13250	$0	$13250
TOTAL GENERAL				$799800	0	$0	$37890	$837690	$180000	$657690

PROJECT:___________ BRADFIELD ROAD TUNNEL
JOB NO:______________________
ESTIMATOR:_________ S.SUNDERLAND REV'D 10-27-04, SKS
CHECKED BY/DATE: **SINGLE BORE OPTION**

ESTIMATING DATA FOR DRILL & BLAST TUNNEL EXCAVATION
INPUT DATA IN ( )

GEOMETRY	FEET & DECIMALS	SQUARE FEET	TOP HEADING SQUARE FEET	BENCH SQUARE FEET
TUNNEL EXCAVATION SHAPE				
CIRCULAR	0.00	0.00	0.00	0.00
HORSE SHOE	0.00	955.20	613.20	342.00
MODIFIED HORSE SHOE	0.00	0.00	0.00	0.00
N.A.T.M.(MEASURED)	0.00	0.00	0.00	0.00
DIAMETER	0.00	955.20	613.20	342.00
		CONC AREA SQUARE FEET		
TUNNEL LINING SHAPE				
CIRCULAR	0.00	0.00		
HORSE SHOE	0.00	955.20		
MODIFIED HORSE SHOE	0.00	0.00		
N.A.T.M.(MEASURED)	0.00	0.00		
TUNNEL LINING DIAMETER	0.00	955.20		

	FEET	
TUNNEL LENGTH EXCAVATED		
BEGINNING STATION	0.00 LF	
END STATION	8000.00 LF	
TUNNEL LENGTH EXCAVATED		8000.00 LF
TUNNEL LENGTH LINED	8000 LF	

GEOLOGY ROCK CLASSIFICATION	GROUND TYPE	ENTER ROUND LENGTH FOR FULL FACE	ENTER RND LENGTH FOR BENCH	ENTER SPILING SPACING FEET	ENTER STEEL RIB SPACING FEET	ENTER ROCK BOLT SPACING FEET	ENTER SHOTCRETE THICKNESS FEET	ENTER LENGTH OF TUNNEL
GRANITE	I	10	0	0.00	0.00	0.00	0.17	0.00
GRANITE	II	10	0	0.00	0.00	50.00	0.17	2530.00
GRANITE	III	10	0	0.00	4.00	5.00	0.17	5010.00
GRANITE	IV	10	0	0.00	0.00	5.00	0.33	460.00
LENGTH				0		10		8000

LABOR DATA	BASIC WAGE	PAYROLL TAXES & INSURANCE RATE	FRINGES
	LABOR RATES (ALASKA LAB & MECH PAY, Issue #9, DATED 9/01/2004)		
UNDERGROUND LABOR			
MINER	$29.35	29.14%	$12.36
CHUCKTENDER	$27.74		
OPERATING ENGINEERS-UNDERGROUND			
EQUIP OPER HVY	$37.63		$11.60
EQUIP OPER MED	$35.93		
EQUIP OPER LIGHT	$34.50		
EQUIP OPER OILER	$28.54		
EQUIP OPER M/MEC	$35.93		
ELECTRICIANS			
ELECTRICIAN	$34.15		$17.22
TEAMSTERS			
WAREHOUSEMAN	$29.26		$10.77
FLATBED DRIVER 5T	$29.90		

OVERTIME	BASE HOURS PAID	BASE HOURS WORKED	PAID TRAVEL HOURS	PAID LUNCH	OVERTIME WORKED	OVERTIME PAID & 1.5
						1.50
DAY SHIFT	8.00	7.50	0.00	0.00	2.00	
SWING SHIFT	8.00	7.00	0.00	0.00	2.00	
GRAVEYARD SHIFT	0.00	0.00	0.00	0.00	0.00	

	16.00	14.50	0.00	0.00	4.00	0.00
PAID OVERTIME	8.20					
TOTAL HRS PAID	24.20					
AVE HRS PAID/SHIFT	12.14	ELECTRICIANS-PAY			10.00	HRS

TUNNEL LABOR RATES
PROJECT:___________ BRADFIELD ROAD TUNNEL
JOB NO:_____________ 0
ESTIMATOR:_________ S.SUNDERLAND
CHECKED BY/DATE: 0

CLASSIFICATION CRAFT	BASIC RATE RATE/HR.	TAXES & INSURANCE w/W.COMP	FRINGES	TOTAL /HOUR	PAY HRS. / SHIFT	TOTAL COST / SHIFT
UNDERGROUND LABOR						
WALKER	$30.85	$8.99	$12.36	$52.20	12.14	$633.70
SHIFTER	$29.85	$8.70	$12.36	$50.91	12.14	$618.03
MINER	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
CHUCKTENDER	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
NIPPER	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
BRAKEMAN	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
BULL GANG 4-MAN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
BULL GANG	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
TUNNEL LABORER	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
BOTTOM MAN	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
TOP MAN	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
SWAMPER	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
DUMPMAN	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
POWDERMAN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
OUTSIDE LABOR	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
POTMAN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
PIPEMAN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
NOZZLEMAN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
HELPER	$27.74	$8.08	$12.36	$48.18	12.14	$584.95
VIBRATORMEN	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
FINISHERS	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
FORMSETTERS	$29.35	$8.55	$12.36	$50.26	12.14	$610.19
OPERATING ENGINEERS						
MUCKER OPER.	$37.63	$10.97	$11.60	$60.20	12.14	$730.77
HEADING MECHANIC	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
CABLE TENDER	$28.54	$8.32	$11.60	$48.46	12.14	$588.26
TRAIL CONVEYOR OPI	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
MOTORMAN	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
F.E.LOADER OPER	$35.93	$10.47	$11.60	$58.00	12.14	$704.12
DOZER OPER	$35.93	$10.47	$11.60	$58.00	12.14	$704.12
COMPRESSOR OPER	$28.54	$8.32	$11.60	$48.46	12.14	$588.26
DRILL DOCTOR	$28.54	$8.32	$11.60	$48.46	12.14	$588.26
BATCH OPER	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
HOIST OPER	$37.63	$10.97	$11.60	$60.20	12.14	$730.77
HOIST OILER	$28.54	$8.32	$11.60	$48.46	12.14	$588.26
MECHANIC 4-MAN	$35.93	$10.47	$11.60	$58.00	12.14	$704.12
SHOP MECHANICS	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
PUMPMAN	$28.54	$8.32	$11.60	$48.46	12.14	$588.26
CONVEYO OPER	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
INVERT BRIDGE OPEF	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
INVERT SCREED OPEI	$34.50	$10.05	$11.60	$56.15	12.14	$681.70
ELECTRICIANS						
ELECTRICAL FOREMA	$35.15	$10.24	$17.22	$62.61	10.00	$626.13
ELECTRICIAN	$34.15	$9.95	$17.22	$61.32	10.00	$613.21
TEAMSTERS						
TEAMSTER FLATBED !	$29.90	$8.71	$10.77	$49.38	12.14	$599.51
WAREHOUSEMAN	$29.26	$8.53	$10.77	$48.56	12.14	$589.47

EQUIP OPER & RENTAL RATES
PROJECT:__________ BRADFIELD ROAD TUNNEL
JOB NO:____________ 0
ESTIMATOR:_________ S.SUNDERLAND
PROJECT LOCATION___ 0

EQUIP.DESCRIPTION	CAPACITY	SPECIAL	E.O.E.	RENTAL
LOAD HAUL DUMP 8 CY			$35.00	$47.00
LOAD HAUL DUMP 5 CY			$30.00	$40.00
RAIL MNTD MUCKER 2 CY CONWAY			$27.00	$35.00
VOLVO A25D ARTIC.			$35.00	$0.00
SPECIAL TRACKWORK				
CALIFORNIA SWITCH	350 LF	$75,000	$3.75	$7.50
CAR PASSERS				
CAR DUMPER	ROTARY		$2.98	$2.46
TUNNEL HAUL UNITS				
LOCOMOTIVES	35 TON		$24.48	$46.43
MUCK CARS	18 CY		$2.28	$6.96
FAN LINE CAR			$1.19	$1.42
SEGMENT CAR			$1.19	$1.42
POWDER CAR				
FLAT CAR			$1.19	$1.42
CONC AGGITATOR CA	8 CY		$5.24	$6.96
DRILLS				
JACK LEG DRILLS			$0.92	$1.42
STOPERS			$0.92	$1.42
JACKHAMMER			$1.19	$1.42
HYDRA DRILL JUMBO-3 DRILLS		$450,000	$22.50	$0.00
UTILITIES				
VENTILATION FANS	65000 CFM		$3.16	$0.00
PUMPS	2 HP		$0.21	$0.46
COMPRESSORS	1200 CFM STA.		$26.69	$0.00
EXCAVATION EQUIPMENT				
D8-CAT				
WHEEL DOZER 824			$35.05	$25.98
CAT 12 GRADER				
F.E.LOADER 5 C.Y.	CAT 980B		$30.54	$0.00
HOISTING EQUIPMENT				
SHAFT HOIST & HD FRAME		$1,500,000	$75.00	$150.00
TRUCK CRANE 85T			$26.10	$49.88
HYDRO CRANE 15T			$15.85	$17.36
CONCRETE & SHOTCRETE				
SHOTCRETE TRUCK W/BOOM			$47.17	$0.00
SHOTCRETE BATCH PLANT			$3.04	$12.65
SHOTCRETE GUN			$0.85	$4.93
CONCRETE PUMP			5.32	14.54
GROUT PUMP			$2.66	$7.27
GROUT HOSE			$0.25	$1.75
GROUT PACKERS			$0.75	$3.00
INVERT CONVEYOR			$3.42	$7.38
INVERT BRIDGE			$4.50	$14.42
INVERT SCREED			$15.00	$8.65
CONCRETE VIBRATORS			$0.26	$0.23
BATCH&MIX PLANT GROUT			$2.17	$12.65
SLICK LINE			$1.25	$3.75

TRUCKS & MISCELLANEOUS		
FLATBED TRUCK 5T	$10.19	$0.00
AMBUANCE	$5.10	
TRANSIT MIX TRUCK	$21.83	$15.35
PORT.GEN.230KW		
HIGH LIFT CAR	$3.13	$14.42
PIPE JUMBO	$11.76	$78.43

MATERIALS
PROJECT:___________ BRADFIELD ROAD TUNNEL
JOB NO:_____________ 0
ESTIMATOR:_________ S.SUNDERLAND
PROJECT LOCATION___ 0

DESCRIPTION	QUANTITY	UNIT	UNIT	SOURCES OF QUOTATIONS
SUPPLIES				
DRILL SUPPLIES				
DRILL STEEL 1 1/4 IN 1:	1	EA	$172.00	
DRILL STEEL 1 IN 12 FT	1	EA		
BITS 3 1/2 INCH DIA.	1	EA	$185.00	
STRIKING BAR	1	EA	$185.00	
COUPLER	1	EA	$110.00	
DISK CUTTERS	1	CY	$1.00	
EXPLOSIVES				
POWDER	1	LB	$2.05	
DETONATORS	1	EA	$3.40	
TIMBER LAGGING	1	MFBM	$850.00	
FORMING LUMBER	1	MFBM	$571.00	
WELDED WIRE FABRIC	1	SF	$0.30	
ELECTRIC POWER	1	KWH	$0.10	
SHAFT CONCRETE SUPPLIES				
SHAFT FORMS-CIRCUL	1	SF	$45.00	
PLACING DECK	1	EA	$50,000.00	
FORM JUMBO-13FT-20I	1	EA	$95,000.00	
FORM JUMBO-21FT-24I	1	EA	$125,000.00	
8" PERF. HDPE DRAIN	1	LF	$7.50	
PERMANENT MATERIALS				
CONCRETE MATERIALS				
CEMENT	1	CWT	$0.00	
CONCRETE 3000 psi	1	CY	$0.00	
CONCRETE 3500 psi	1	CY	$0.00	
CONCRETE 4000 psi	1	CY	$0.00	
CONCRETE 4500 psi	1	CY	$0.00	
CONCRETE 5000 psi	1	CY	$0.00	
CEMENT GROUT	1	CY	$0.00	
SHOTCRETE 3000 psi	1	CY	$0.00	
SHOTCRETE 3500 psi, I	1	CY	$0.00	
SHOTCRETE 4000 psi	1	CY	$0.00	
CONCRETE SAND	1	CY	$0.00	
CONCRETE AGGREGA	1	CY	$0.00	
DRAINAGE MEMBRANE	1	SF	$3.15	
SHAFT SUPPORT MATERIALS				
STEEL WF RIBS	1	LB	$0.65	
LATICE GIRDERS	1	LB	$1.25	
ROCK BOLTS 1 IN DIA.	1	LF	$1.55	
PLATE & NUT ASSEMBI	1	EA	$8.00	
RESIN CARTRIDGE	1	EA	$1.40	
MINE STRAPS	1	LB	$0.70	
STEEL LINER PLATE	1	LB	$1.15	
TIE BACK	1	LF	$30.00	

SUBCONTRACTS		
REBAR INSTALLED	1 LB	$0.85
WATERPROFFING MBR	1 SF	$4.25
MUCK HAUL TO SPOIL	1 CY	$15.50
(W/DISPOSAL)		

PRODUCTION
PROJECT NAME_______ BRADFIELD ROAD TUNNEL
JOB NO.____________ 0
ESTIMATOR__________ S.SUNDERLAND
LOCATION___________ 0

ROCK CLASSIFICATION	GRANITE	GRANITE	GRANITE	GRANITE	GRANITE	GRANITE	GRANITE	GRANITE
GROUND TYPE	I	I	II	II	III	III	IV	IV
SUPPORT	SHOTCRETE	SHOTCRETE	& BOLTS	& BOLTS	& BOLTS	& BOLTS	& BOLTS	& BOLTS
TOTAL TUNNEL DRIVE	0	0.00	2530.00	2530.00	5010.00	5010.00	460.00	460.00
TUNNEL SHAPE	HORSE SHOE	HORSE SHOE	HORSE SHOE	HORSE SHOE	HORSE SHOE	HORSE SHOE	HORSE SHOE	HORSE SHOE
EXCAVATION DIAMETER								
FACE	HEADING	BENCH	HEADING	BENCH	HEADING	BENCH	HEADING	BENCH
FACE AREA SF	0.00	0.00	613.20	342.00	613.20	342.00	613.20	342.00
LENGTH OF ROUND FT	10	10	10	10	10	10	10	10
GROUND TYPE	I	I	II	II	III	III	IV	IV
PRIMARY SUPPPORT	SHOTCRETE	SHOTCRETE	& BOLTS	& BOLTS	& BOLTS	& BOLTS	& BOLTS	& BOLTS
TOTAL TUNNEL LENGTH	0	0	2530	2530	5010	5010	460	460
EXCAV.PAY QTY./LF	0.00	0.00	22.71	12.67	22.71	12.67	22.71	12.67
EXCAV.QTY.W/OVER BR	0.00	0.00	24.98	13.93	24.98	13.93	24.98	13.93
LENGTH OF ROUND	10	10	10	10	10	10	10	10
# OF POWDER/UNIT QTY	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
# OF POWDER/LF	0	0	79	44	79	44	79	44
NO.OF DRILL HOLES	105	105	172	69	172	69	172	69
NO.OF MINERS-DRILLS	3	3	3	3	3	3	3	3
QTY DRILLING/ROUND	1155	1155	1892	759	1892	759	1892	759
QTY DRILLING/MINER	385.00	385.00	630.67	253.00	630.67	253.00	630.67	253.00
DRILL RATE QTY/DRILL/	210	210	210	210	210	210	210	210
DRILL TIME MIN.	110.00	110.00	180.19	72.29	180.19	72.29	180.19	72.29
NO.OF HOLES/MINER	35.00	35.00	57.33	23.00	57.33	23.00	57.33	23.00
LOAD@4MIN/HOLE/MINE	140.00	140.00	229.33	92.00	229.33	92.00	229.33	92.00
BROKEN QTY/ROUND@	0.00	0.00	249.82	139.33	249.82	139.33	249.82	139.33
MUCK OUT @ 290 CY/HR	290	290	290	290	290	290	290	290
HAUL/LOAD RATE/HR.	290	290	290	290	290	290	290	290
HAUL/LOAD TIME MIN.	0.00	0.00	51.69	28.83	51.69	28.83	51.69	28.83
CYCLE SUMMARY-DRILL MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN	MIN
MOVE IN JUMBO	10	10	10	10	10	10	10	10
DRILL	110.0	110.0	180.2	72.3	180.2	72.3	180.2	72.3
LOAD & WIRE FACE	140.0	140.0	229.3	92.0	229.3	92.0	229.3	92.0
MOVE OUT JUMBO	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
VENT OUT	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
SUB-TOTAL-DRILL	290.0	290.0	449.5	204.3	449.5	204.3	449.5	204.3
CYCLE SUMMARY-MUCK OUT								
MOVE IN MUCKER	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
MUCK OUT	0.0	0.0	51.7	28.8	51.7	28.8	51.7	28.8
CLEAN UP & MOVE OUT	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0
SUB-TOTAL-MUCK OU	25.0	25.0	76.7	53.8	76.7	53.8	76.7	53.8

CYCLE SUMMARY-SUPPORT								
SET ROCK DOWEL	0.0	0.0	0.7	0.0	35.7	0.0	35.7	0.0
DRILL GROUT HOLE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DRILL FOR SPILING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SET SPILING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SET STEEL RIB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SET WIRE MESH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PLACE SHOTCRETE	0.0	0.0	34.0	0.0	34.0	0.0	66.0	0.0
SUB-TOTAL-SUPPORT	0.0	0.0	34.7	0.0	69.7	0.0	101.7	0.0
SINGLE HEADING TOTAI	5.3	5.3	9.3	4.3	9.9	4.3	10.5	4.3
TOTAL HOURS/DAY	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
NO.OF ROUNDS/DAY	3.8	3.8	2.1	4.6	2.0	4.6	1.9	4.6
TOTAL ADVANCE/DAY	38.1	38.1	21.4	46.5	20.1	46.5	19.1	46.5
ALTERNATE HDG.TOTAI	4.8	4.8	7.5	3.4	7.5	3.4	7.5	3.4
TOTAL HOURS/DAY	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
NO.OF ROUNDS/DAY	4.1	4.1	2.7	5.9	2.7	5.9	2.7	5.9
TOTAL ADVANCE/DAY	41.4	41.4	26.7	58.7	26.7	58.7	26.7	58.7

PRODUCTION SUMMARY	SINGLE HDG	SINGLE HDG	SINGLE HDG	SINGLE HDG	SINGLE HDG	SINGLE HDG	SINGLE HDG	SINGLE HDG
L.F. TUNNEL	0	0	2530	2530	5010	5010	460	460
NO.OF HEADING DAYS	0.00	0.00	118.25	54.42	248.78	107.76	24.07	9.89
TURN-UNDER	0.00		5.00					
START UP DAYS	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00
TOTAL	0.00	0.00	128.25	54.42	248.78	107.76	24.07	9.89
USE NO. OF DAYS	0	0	128	54	249	108	24	10
AVE ADVANCE PER DAY	0.00	0.00	19.77	46.85	20.12	46.39	19.17	46.00
TOTAL NO OF ROUNDS	0.00	0.00	253.00	253.00	501.00	501.00	46.00	46.00
NO.OF HOLES/ROUND	105	105	172	69	172	69	172	69
LF DRILLING /ROUND	1155	1155	1892	759	1892	759	1892	759
TOTAL LF DRILLING	121275	121275	325424	52371	325424	52371	325424	52371
TOTAL NO DRILL HOLES	0	0	43516	17457	86172	34569	7912	3174
TOTAL PAY CY	0	0	57459	32047	113783	63460	10447	5827
TOTAL EXCAV/W O.B.	0	0	63205	35251	125161	69806	11492	6409
POWDER	0	0	221218	123379	438064	244321	40222	22432
STEEL RIB SPACING	0.00							
NO STEEL RIBS /ROUNE	0							
NO STEEL RIBS	0							
LENGTH / EA	0.00							
RIB WT/LF OF RIB W/AC	14.52							
TOTAL WEIGHT / RIB	0							
TOTAL RIB WEIGHT	0							
TIMBER LAGGING BFM/L	0							
TIMBER LGGING MFBM/I	0							
TIMBER LAGGING TOTA	0							
STEEL LINER PLATE SF/LF								
STEEL LINER PLATE SF/	0							
TOTAL LINER PLATE SF	0							

ROCK BOLT SPACING-T	0	0	50	0	5	0	5	0
ROCK BOLT SPACING-L	0	0	50	0	5	0	5	0
NO BOLTS/TNL FT	0.00	0.00	0.04	0.00	2.14	0.00	2.14	0.00
TOTAL NO ROCK BOLTS	0	0	101	0	10721	0	984	0
ROCK BOLT LENGTH / E	0	0	15	0	10	0	10	0
TOTAL LENGTH-ROCK E	0	0	1515	0	107210	0	9840	0
NO. ROCK BOLTS/ROUN	0	0.0	0.4	0	21	0	21	0
WIRE MESH SF/TNL FT	0							
TOTAL WIRE MESH SF	0							
SHOTCRETE AREA SF	0	0	53.6	0	53.6	0	53.6	0
SHOTCRETE THICKNES	0.000	0.000	0.170	0.000	0.170	0.000	0.330	0.000
SHOTCRETE VOL/RND (	0	0	3.4	0	3.4	0	6.6	0
SHOTCRETE VOL.CY PA	0	0	860.2	0	1703.4	0	303.6	0
PROBE HOLES W/OVERLAP								
LF GROUT HOLE/ROUNI	0							
SPILE SPACING	10							
SPILLING BARS/ROUND	2.00							
LENGTH OF SPILING LF	0							
LF SPILING/ROUND	0							
SPILLING BARS LF	0							
MAX EXCAV PER DAY	0	0	494	653	503	646	479	641

LABOR
PROJECT:____________ BRADFIELD ROAD TUNNEL
JOB NO:_____________ 0
ESTIMATOR:_________ S.SUNDERLAND
PROJECT LOCATION___ 0

TUNNEL EXCAVATION LABOR

CLASSIFICATION	NO OF MEN DAY	SWING	GRAVEYARD	TOTAL	RATE PER SHIFT	COST PER DAY
AT HEADING						
WALKER	1	1	0	2	$633.70	$1,267.41
SHIFTER	1	1	0	2	$618.03	$1,236.05
MUCKER OPER	4	4	0	8	$730.77	$5,846.18
MECHANIC	1	1	2	4	$681.70	$2,726.80
OILER	0	0	0	0	$588.26	$0.00
ELECTRICIAN	0	0	0	0	$613.21	$0.00
TRAIL CONVEYOR OPI	0	0	0	0	$681.70	$0.00
MINER	4	4	0	8	$610.19	$4,881.50
TUNNEL LABORER	3	3	0	6	$584.95	$3,509.68
SUB-TOTAL	14	14	2	30		$19,467.63
OTHERS UNDERGROUND						
MOTORMAN	0	0	0	0	$681.70	$0.00
BRAKEMAN	0	0	0	0	$584.95	$0.00
BULL GANG 4-MAN	1	0	0	1	$610.19	$610.19
BULL GANG	2	0	0	2	$584.95	$1,169.89
BOTTOM MAN	0	0	0	0	$584.95	$0.00
SUB-TOTAL	3	0	0	3		$1,780.08

ABOVE GROUND						
TOP MAN	0	0	0	0	$584.95	$0.00
HOIST OPER	0	0	0	0	$730.77	$0.00
HOIST OILER	0	0	0	0	$588.26	$0.00
DUMPMAN	0	0	0	0	$584.95	$0.00
F.E.LOADER OPER	0	0	0	0	$704.12	$0.00
DOZER OPER	1	1	0	2	$704.12	$1,408.24
MECHANIC 4-MAN	1	0	1	2	$704.12	$1,408.24
SHOP MECHANICS	2	0	1	3	$681.70	$2,045.10
COMPRESSOR OPER	1	1	1	3	$588.26	$1,764.79
ELECTRICAL 4-MAN	1	0	1	2	$626.13	$1,252.25
ELECTRICIANS	2	0	1	3	$613.21	$1,839.64
SWAMPER	1	1	1	3	$584.95	$1,754.84
OUTSIDE LABOR	1	1	0	2	$584.95	$1,169.89
PUMPMAN	1	1	1	3	$588.26	$1,764.79
SUB TOTAL	11	5	7	23		$14,407.79
TOTAL	28	19	9	56		$35,655.49
TOTAL DAYS						573
TOTAL MAN DAYS						32088
TOTAL LABOR						$20,430,598
AVE.COST/LF PAY	8000					$2,553.82
EXCAV.CY	283023					$72.19
AVE.COST/CY						

EQUIP.OPER.EXPENSE
PROJECT:____________ BRADFIELD ROAD TUNNEL
JOB NO:______________ 0
ESTIMATOR:__________ S.SUNDERLAND
PROJECT LOCATION___ 0

EQUIP.DESCRIPTION	OPERATED HOURS PER DAY	E.O.E. UNIT COST/HR.	E.O.E. COST /DAY	RENTAL COST /HOUR	RENTAL COST /DAY
COST OF FUEL,LUBE & REPAIR PARTS				COST OF EQUIP	UIP RENTAL
LOAD HAUL DUMP 8 CY	0	$35.00	$0.00	$47.00	$0.00
LOAD HAUL DUMP 5 CY	0	$30.00	$0.00	$40.00	$0.00
VOLVO A25D ARTIC.	4	$35.00	$140.00	$0.00	$0.00
SPECIAL TRACKWORK					
CALIFORNIA SWITCH	0	$3.75	$0.00	$7.50	$0.00
CAR PASSERS	0	$0.00	$0.00	$0.00	$0.00
CAR DUMPER	0	$2.98	$0.00	$2.46	$0.00
TUNNEL HAUL UNITS					
LOCOMOTIVES	0	$24.48	$0.00	$46.43	$0.00
MUCK CARS	0	$2.28	$0.00	$6.96	$0.00
FAN LINE CAR	0	$1.19	$0.00	$1.42	$0.00
SEGMENT CAR	0	$1.19	$0.00	$1.42	$0.00
POWDER CAR	0	$0.00	$0.00	$0.00	$0.00
FLAT CAR	0	$1.19	$0.00	$1.42	$0.00
CONC AGGITATOR CA	0	$5.24	$0.00	$6.96	$0.00
DRILLS					
JACK LEG DRILLS	0	$0.92	$0.00	$1.42	$0.00
STOPERS	40	$0.92	$36.80	$1.42	$56.80
JACKHAMMER	0	$1.19	$0.00	$1.42	$0.00
HYDRA DRILL JUMBO-	20	$22.50	$450.00	$0.00	$0.00
UTILITIES					
VENTILATION FANS	24	$3.16	$75.84	$0.00	$0.00
PUMPS	48	$0.21	$10.08	$0.46	$22.08
COMPRESSORS	24	$26.69	$640.56	$0.00	$0.00

DRILLS

EXCAVATION EQUIPMENT					
D8-CAT	0	$0.00	$0.00	$0.00	$0.00
D8-CAT W/RIPPER	0	$35.05	$0.00	$25.98	$0.00
CAT 12 GRADER	0	$0.00	$0.00	$0.00	$0.00
F.E.LOADER 7 C.Y.	20	$30.54	$610.80	$0.00	$0.00
HOISTING EQUIPMENT					
SHAFT HOIST & HD FF	0	$75.00	$0.00	$150.00	$0.00
TRUCK CRANE 85T	0	$26.10	$0.00	$49.88	$0.00
HYDRO CRANE 15T	0	$15.85	$0.00	$17.36	$0.00
CONCRETE & SHOTCRETE					
S.C. TRUCK W/BOOM	20	$47.17	$943.40	$0.00	$0.00
SHOTCRETE BATCH P	0	$3.04	$0.00	$12.65	$0.00
SHOTCRETE GUN	0	$0.85	$0.00	$4.93	$0.00
GROUT PUMP	0	$2.66	$0.00	$7.27	$0.00
INVERT CONVEYOR	0	$3.42	$0.00	$7.38	$0.00
INVERT BRIDGE	0	$4.50	$0.00	$14.42	$0.00
INVERT SCREED	0	$15.00	$0.00	$8.65	$0.00
CONCRETE VIBRATOF	0	$0.26	$0.00	$0.23	$0.00
BATCH&MIX PLANT GI	0	$0.26	$0.00	$0.23	$0.00
TRUCKS & MISCELLANEOUS					
FLATBED TRUCK 5T	20	$10.19	$203.80	$0.00	$0.00
AMBULANCE	40	$5.10	$203.80	$0.00	$0.00
TRANSIT MIX TRUCK	0	$21.83	$0.00	$15.35	$0.00
PORT.GEN.230KW	0	$0.00	$0.00	$0.00	$0.00
HIGH LIFT CAR	0	$3.13	$0.00	$14.42	$0.00
PIPE JUMBO	0	$11.76	$0.00	$78.43	$0.00
DAILY TOTAL COST			$3,138.28		$22.08
TOTAL DAYS			573		573
TOTAL COST			$1,798,234		$12,652
LF OF TUNNEL DRIVEN			8000		8000
COST PER LF			$224.78		$1.58
C.Y. OF EXCAVATION			283023		283023
COST PER C.Y.			$6.35		$0.04

TUNNEL SUPPLIES

PROJECT:___________ BRADFIELD ROAD TUNNEL

JOB NO:_____________ 0

ESTIMATOR:_________ S.SUNDERLAND

LOCATION___________ 0

T.B.M. EXCAVATION SUMMARY-SUPPLIES		TOTAL COST
ROCK BOLT HOLE DRILLING		$980,890
POWER		$0
ELECTRICAL SUPPLIES		$12,000
BLASTING SUPPLIES		$2,892,520
HARD HATS-SAFETY		$32,088
MISC.SUPP&SANITATION		$144,396
SMALL TOOLS & MISC.		$96,264
TOTAL		$4,158,158
COST/LF	8000	$519.77
COST/CY	283023	$14.69

GROUT HOLE DRILLING	0		80
SPILING DRILLING	0		
BLAST HOLE DRILLING	1375935		5
ROCK BOLT DRILLING	118565		6
TOTAL DRILLING	1494500		
NO.HOLES	204657		
LF DRILLING	1494500		
NO BITS @ 750 LF	1993	$185.00	$368,643
NO COUPLINGS @ 1000	1495	$110.00	$164,395
NO STRICKING BARS @ 1200			
1000 LF/EA	1495	$185.00	$276,483
NO DRILL STLS @ 1500	996	$172.00	$171,369
TOTAL COST DRILLING			$980,890
COST/L.F.OF TUNNEL	8000		$122.61
DRILL SUPP /LF DRILLING			$0.66
POWER & ELECTRICAL QUANTITY			
SUPPLIES			
T.B.M.			
POWER LOAD QUANTITY		UNIT H.P.	TOTAL H.P.
HORSEPOWER REQUIRED			
DRILL JUMBO (ELEC/HY	1	150	150
MUCKER	0	0	0
VENT FANS-AVERAGE	2	125	250
COMPRESSORS	1	250	250
SHOPS	1	50	50
PUMPS	2	3	6
SHAFT HOIST	0	300	0
MISC(SHOPS,OFFICE)	1	50	50
TOTAL H.P.			756
KILOWATTS			564
@ 60% LOAD FACTOR			338
TUNNEL LIGHTS			50
TOTAL KWH			388
COST			
KWH COST/HR.		$0.00	$0
KWH COST/DAY	24		$0
EQUIVALENT NO.OF DAYS		573	$0
ADD-SAT.& SUN	0.3	171.9	$0
TOTAL COST OF POWER			$0
COST/LF TUNNEL	8000		$0.00
ELECTRICAL SUPPLIES	8000 L.F.TNL		
HEADING LIGHTS			$0
LIGHT REPLACEMENT			
@ $1.50/LF TUNNEL	8000	$1.50	$12,000
TOTAL COST			$12,000
COST/LF TUNNEL	8000		$1.50
COST/CY EXCAVAT	283023		$0.04
BLASTING SUPPLIES QUANTITY		UNIT COST	TOTAL COST
TUNNEL LENGTH L.F.	8000		
POWDER IN CWT	10900	$205.00	$2,234,500
DETS EA	192800	$3.40	$655,520
BLASTING MATL'S	1	$2,500.00	$2,500
	0	$3.50	$0
TOTAL COST			$2,892,520
COST/LF TUNNEL	8000		$361.57

BOLT DRILL :

MAN DAY SUPPLIES			
CREW SIZE T.B.M.	56		
CREW DAYS	573		
TOTAL MAN DAYS TBM	32088		
HARD HATS, RAINGEAR & SAFETY SUPPLIES TBM	32088	$1.00	$32,088
MISC.SUPPLIES & SANITATION TBM	32088	$4.50	$144,396
SMALL TOOLS & MISC. TBM	32088	$3.00	$96,264

PERM. MATERIALS
PROJECT:____________ BRADFIELD ROAD TUNNEL
JOB NO:______________ 0
ESTIMATOR:__________ S.SUNDERLAND
LOCATION____________ 0

TUNNEL SUPPORTS			TOTAL COST	
STL. LINER PLATE			$0	
STEEL RIBS			$0	
SPILING			$0	
CEMENT GROUT			$0	
ROCK BOLTS			$364,879	
MINE STRAPS			$0	
DRAINAGE FABRIC			$413,895	
SHOTCRETE			$342,033	
TOTAL PERM.MATL'S.			$1,120,807	
COST/LF TUNNEL	8000		$140.10	
SF STL LINER PLATE	0			
WT @ 14.43#/SF	0	$0.85	$0	
STEEL RIBS	QUANTITY	UNIT COST	TOTAL COST	
TUNNEL LENGTH	8000			
STEEL RIBS	0			
TOTAL WT.	0			
WT /EA.	0			
TOTAL COST STL. RIBS	0	$1.40	$0	
COST/LF TNL	8000			
TOTAL			$0	
CEMENT GROUT	0 LF DRILLING	ALLOW CF/LF		0.5
CF GROUT	0			
CEMENT GROUT CY	0	$0.00	$0	
TOTAL			$0	

ROCK BOLTS			
ROCK BOLT DIA.	1		
TOTAL LENGTH	119765	$1.55	$185,636
AVE.LENGTH/EA.	10.04234446		
NO.OF ROCK BOLTS	11926		
NO.-NUT/PLATE & WASHER ASSEMBLIES	11926	$8.00	$95,408
NO.OF MECHANICAL ANCHORS			$0
NO.OF RESIN CAPSULES	59882.5	$1.40	$83,836
CEMENT GROUT CF/L			
CF OF GROUT REQ'D			$0
TOTAL			$364,879
SPILING BARS			
LF OF SPILES	0		
WT/LF OF SPILE	5.53		
TOTAL WT OF SPILING	0	$0.28	$0
CEMENT GROUT CF/L	0.01		
CF OF GROUT REQ'D	0	$2.41	$0
TOTAL			$0
MINE STRAPS	0		
NO.OF MINE STRAPS	1491		
WT./EACH STRAP	12		
TOTAL WEIGHT	17889	$0.00	$0
TOTAL			$0
DRAINAGE FABRIC			
INVERT PERF DRAIN	16000	$7.50	$120,000
S.F. OF FABRIC/L.F.			
TOTAL MESH	93300	$3.15	$293,895
TOTAL			$413,895
SHOTCRETE 3500 PSI			
SHOTCRETED TNL LENGTH			
C.Y.SHOTCRET	2867		
+100% FOR OVERBRE	2867		
TOTAL SHOTCRETE	5734	$59.65	$342,033
TOTAL			$342,033

SUB-CONTRACT
PROJECT:____________ BRADFIELD ROAD TUNNEL
JOB NO:______________ 0
ESTIMATOR:__________ S.SUNDERLAND
LOCATION____________ 0

HAUL TUNNEL MUCK TC SPOIL		******NOT USED******
TUNNEL LENGTH	8000	
EXCAV.QTY	311324	
CONTRACT HAUL COST	$15.50	
TOTAL HAUL & SPOIL		$4,825,522

PROJECT NAME: BRADFIELD ROAD TUNNEL
PROJECT NO.:
ESTIMATOR: S.SUNDERLAND
CHECKED BY/DATE: REV'D 10-27-04, SKS

SINGLE BORE OPTION

YARD OPERATIONS

DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
MECH SHOP	1	LS	$981,650	$0	$0	$0	$0	$0	$981,650
WAREHOUSE	1	LS	$848,843	$0	$0	$0	$0	$0	$848,843
ELEC SHOP	1	LS	$883,027	$0	$0	$0	$0	$0	$883,027
BATCH PLANT	1	LS	$301,625	$23,626	$22,253	$107,464	$0	$0	$454,968
FUEL DOCK	1	LS	$1,734,141	$76,867	$64,325	$3,025,000	$0	$0	$4,900,333
POT WATER	1	LS	$1,340,937	$93,240	$75,096	$3,720	$0	$0	$1,512,993
WASTE WATER	1	LS	$1,789,386	$207,288	$147,960	$11,700	$0	$0	$2,156,334
ACCESS ROAD MAINT.	1	LS	$3,025,946	$905,174	$732,950	$900,000	$0	$0	$5,564,070
OPERATIONS COSTS	1	LS	$10,905,554	$1,306,196	$1,042,585	$4,047,884	$0	$0	$17,302,218

MECH SHOP

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	MECH SHOP	24	MOS	$981,650	$0	$0	$0	$0	$0	$981,650
		1	MOS	$40,902.06	$0.00	$0.00	$0.00	$0.00	$0.00	$40,902.06

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	24	MOS	30.00	720		
TOTAL PRODUCTIVITY				720		0.0

1.2 LABOR:

DESCRIPTION	NO.	SHFTS	U.C.	CONSTR LABOR
MECH	2	1440	$681.70	$981,650
LAB FOREMN	0	0	$610.19	$0
ATO	0	0	$584.95	$0
COMMON LAB	0	0	$584.95	$0
HOE-DZR OPER	0	0	$704.12	$0
OILER	0	0	$588.26	$0
TMSTR	0	0	$599.51	$0
ELEC	0	0	$613.21	$0
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$981,650

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	0	0	$73.90	$0	$173.40	$0	$181.00	$0
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	0	0	$30.50	$0	$129.50	$0	$104.30	$0
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$0		$0		$0

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
NONE		HR	0.00%	0	15.00	$0
TOTAL SUPPLIES						$0

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
WASTE HAUL	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

WAREHOUSE

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	WAREHOUSE	24	MOS	$848,843	$0	$0	$0	$0	$0	$848,843
		1	MOS	$35,368.46	$0.00	$0.00	$0.00	$0.00	$0.00	$35,368.46

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	24	MOS	30.00	720		
TOTAL PRODUCTIVITY				720		0.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0	0	$681.70	$0
LAB FOREMN	0	0	$610.19	$0
ATO	0	0	$584.95	$0
COMMON LAB	0	0	$584.95	$0
HOE-DZR OPER	0	0	$704.12	$0
OILER		0	$588.26	$0
TMSTR	0	0	$599.51	$0
ELEC	0	0	$613.21	$0
WAREHOUSE	2	1440	$589.47	$848,843
DIRECT LABOR COST				$848,843

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	0	0	$73.90	$0	$173.40	$0	$181.00	$0
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	0	0	$30.50	$0	$129.50	$0	$104.30	$0
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$0		$0		$0

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
		TN	15.00%	0	20.00	$0
TOTAL SUPPLIES						$0

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE		CY	$4.50	$0
TOTAL SUBCONTRACT				$0

ELEC SHOP

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	ELEC SHOP	1	LS	$883,027	$0	$0	$0	$0	$0	$883,027

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	24	MOS	30.00	720		
TOTAL PRODUCTIVITY				720		

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0	0	$681.70	$0
LAB FOREMN		0	$610.19	
ATO		0	$584.95	
COMMON LAB		0	$584.95	
HOE-DZR OPER		0	$704.12	
OILER		0	$588.26	
TMSTR		0	$599.51	
ELEC	2	1440	$613.21	$883,027
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$883,027

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8		0	$97.70		$411.30		$340.90	
CAT 16		0	$42.40		$373.90		$320.10	
HYD HOE		0	$73.90		$173.40		$181.00	
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	0	0	$30.50	$0	$129.50	$0	$104.30	$0
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$0		$0		$0

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
		LF	10.00%	0	10.00	$0
TOTAL SUPPLIES						$0

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE		CY	$4.50	$0
TOTAL SUBCONTRACT				$0

BATCH PLANT

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	BATCH PLANT	1	LS	$301,625	$23,626	$22,253	$107,464	$0	$0	$454,968

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	3	MOS	26.00	78	10	7.8
TOTAL PRODUCTIVITY				78		7.8

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0	0	$681.70	$0
LAB FOREMN	0	0	$610.19	$0
ATO	1	78	$584.95	$45,626
COMMON LAB	2	156	$584.95	$91,252
HOE-DZR OPER	2	156	$704.12	$109,843
OILER	0	0	$588.26	$0
TMSTR	1	78	$599.51	$46,762
ELEC	0	0	$613.21	$0
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$293,482

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	1	78	$73.90	$5,764	$173.40	$13,525	$181.00	$14,118
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	1	78	$30.50	$2,379	$129.50	$10,101	$104.30	$8,135
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$8,143		$23,626		$22,253

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
CEMENT	9600	CWT	10.00%	10560	4.50	$47,520
AGG	2550	TN	15.00%	2932.5	20.00	$58,650
ADD	75	GAL	15.00%	86.25	15.00	$1,294
TOTAL SUPPLIES						$107,464

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

FUEL DOCK

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	FUEL DOCK	1	LS	$1,734,141	$76,867	$64,325	$3,025,000	$0	$0	$4,900,333

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	24	MOS	60.00	1440		
TOTAL PRODUCTIVITY	24			1440		0.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0	0	$681.70	$0
LAB FOREMN	0	0	$610.19	$0
ATO	0	0	$584.95	$0
COMMON LAB	1	1440	$584.95	$842,324
HOE-DZR OPER	0	0	$704.12	$0
OILER	0	0	$588.26	$0
TMSTR	1	1440	$599.51	$863,291
ELEC	0	0	$613.21	$0
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$1,705,615

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	0	0	$73.90	$0	$173.40	$0	$181.00	$0
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	0	0	$30.50	$0	$129.50	$0	$104.30	$0
FUEL TNKR	1	1440	$19.81	$28,526	$53.38	$76,867	$44.67	$64,325
TOTAL EQUIP.				$28,526		$76,867		$64,325

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
DIESEL FUEL	1050	MGAL	15.00%	1210	2500	$3,025,000
TOTAL SUPPLIES						$3,025,000

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

POT WATER

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	POT WATER	1	LS	$1,340,937	$93,240	$75,096	$3,720	$0	$0	$1,512,993

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	24	MOS	30.00	720		
WATER HAUL	18	MOS				
TOTAL PRODUCTIVITY				720		0.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0.5	360	$681.70	$245,412
LAB FOREMN	0	0	$610.19	$0
ATO	1	720	$584.95	$421,162
COMMON LAB	0	0	$584.95	$0
HOE-DZR OPER	0	0	$704.12	$0
OILER	0	0	$588.26	$0
TMSTR	1	720	$599.51	$431,646
ELEC	0.5	360	$613.21	$220,757
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$1,318,977

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	0	0	$73.90	$0	$173.40	$0	$181.00	$0
DUMPTRK	0	0	$37.90	$0	$158.40	$0	$101.20	$0
H2O TNKR	1	720	$30.50	$21,960	$129.50	$93,240	$104.30	$75,096
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$21,960		$93,240		$75,096

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
REPL PARTS	1	ALLOV	0.00%	1	$3,720.00	$3,720
TOTAL SUPPLIES						$3,720

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

WASTE WATER

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	WASTE WATER	1	LS	$1,789,386	$207,288	$147,960	$11,700	$0	$0	$2,156,334

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	24	MOS	30.00	720		
PORTA POT	19	MOS				
TOTAL PRODUCTIVITY				720		0.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0.5	360	$681.70	$245,412
LAB FOREMN	0	0	$610.19	$0
ATO	0	0	$584.95	$0
COMMON LAB	2	1440	$584.95	$842,324
HOE-DZR OPER	0	0	$704.12	$0
OILER	0	0	$588.26	$0
TMSTR	1	720	$599.51	$431,646
ELEC	0.5	360	$613.21	$220,757
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$1,740,138

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	0	0	$7.90	$0	$45.70	$0	$25.90	$0
CAT D8	0	0	$97.70	$0	$411.30	$0	$340.90	$0
CAT 16	0	0	$42.40	$0	$373.90	$0	$320.10	$0
HYD HOE	0	0	$73.90	$0	$173.40	$0	$181.00	$0
DUMPTRK	1	720	$37.90	$27,288	$158.40	$114,048	$101.20	$72,864
H2O TNKR	1	720	$30.50	$21,960	$129.50	$93,240	$104.30	$75,096
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$49,248		$207,288		$147,960

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
SUPPLIES:	1	ALLOV	0.00%	1	11700.00	$11,700
TOTAL SUPPLIES						$11,700

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE	0	CY	$4.50	$0
TOTAL SUBCONTRACT				$0

ACCESS ROAD MAINT. 40 Mi. with Snow Removal, grading, aggregate plate.

ITEM NO.	DESCRIPTION	QTY	UNIT	LABOR	E.O.E.	EQUIP RENT	SUPPLIES	PERM MATL	SUB CONTR	TOTAL DIRECT
1	ACCESS ROAD MAINT.	1	LS	$3,025,946	$905,174	$732,950	$900,000	$0	$0	$5,564,070

1.1 PRODUCTIVITY:

DESCRIPTION	QTY	UNIT	SHIFTS PER MO	TOTAL SHIFTS	CR-HRS PER DAY	DURATION DAYS
OPERATE	24	MOS	26.00	624		
TOTAL PRODUCTIVITY				624		0.0

1.2 LABOR:

DESCRIPTION	NO.	HRS	U.C.	CONSTR LABOR
MECH	0	0	$681.70	$0
LAB FOREMN	1	624	$610.19	$380,757
ATO	0	0	$584.95	$0
COMMON LAB	0	0	$584.95	$0
HOE-DZR OPER	3	1872	$704.12	$1,318,113
OILER	0	0	$588.26	$0
TMSTR	3	1872	$599.51	$1,122,279
ELEC	0	0	$613.21	$0
WAREHOUSE	0	0	$589.47	$0
DIRECT LABOR COST				$2,821,149

1.3 EQUIPMENT:

DESCRIPTION	NO.	HRS	U.C.	REP. LABOR	U.C.	E.O.E.	U.C.	EQUIP RENT
PU 3/4 TN	1	624	$7.90	$4,930	$45.70	$28,517	$25.90	$16,162
CAT D8	1	624	$97.70	$60,965	$411.30	$256,651	$340.90	$212,722
CAT 16	1	624	$42.40	$26,458	$373.90	$233,314	$320.10	$199,742
HYD HOE	1	624	$73.90	$46,114	$173.40	$108,202	$181.00	$112,944
DUMPTRK	2	1248	$37.90	$47,299	$158.40	$197,683	$101.20	$126,298
H2O TNKR	1	624	$30.50	$19,032	$129.50	$80,808	$104.30	$65,083
FUEL TNKR	0	0	$19.81	$0	$53.38	$0	$44.67	$0
TOTAL EQUIP.				$204,797		$905,174		$732,950

1.4 SUPPLIES:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	SUPPLIES
AGGREGATE	45000	TN	0.00%	45000	20.00	$900,000
TOTAL SUPPLIES						$900,000

1.5 PERMANENT MATERIAL:

DESCRIPTION	IN PLACE QTY	UNIT	WASTE FACTOR	BUY QTY	UNIT COST	PERM MATL
TOTAL PERMANENT MATERIAL						$0

1.6 SUBCONTRACTS:

DESCRIPTION	QTY	UNIT	UNIT COST	SUB CONTR
NONE		CY	$4.50	$0
TOTAL SUBCONTRACT				$0

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APPENDIX C

Conceptual Design Plans

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APPENDIX C.1

Aaron Creek Pass Alignment

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Aaron Creek Pass Alignment (Segment A-1a)

Segment A-1a of the Aaron Creek Pass Alignment is part of Stage 2 of the Aaron Creek Corridor. Segment A-1 would connect the conceptual Berg Bay conventional ferry terminal to Segment I-3 of the Iskut River Alignment. The completion of Segment A-1a would replace ACV ferry operations between the proposed Iskut River ACV ferry terminal, near the beginning of Segment I-3, and Wrangell and Mitkof Islands. Once completed, a conventional ferry would operate between the new Berg Bay conventional ferry terminal near milepost (MP) 0.0 and the Log Transfer Station conventional ferry terminal proposed on Wrangell Island.

Segment A-1a would begin next to the proposed Berg Bay conventional ferry terminal at MP 0.0 and would parallel the western shore of Berg Bay until reaching the mouth of the Aaron Creek drainage near MP 0.5. The proposed roadway would proceed northeast along the western side of the Aaron Creek tidal flats between MP 0.5 and MP 4.5. Steep sidewalls between MP 2.3 and MP 3.2 would require a combination of mechanically stabilized earth (MSE) walls and bench cuts to keep the channel from affecting the alignment. For further information regarding the MSE walls, as well as rock revetment walls, refer to the typical sections (Sheet B.5). A large culvert is proposed for an active drainage at MP 3.3, and a 600-foot bridge would be needed to cross Berg Creek near MP 3.8. The terrain along the alignment would rise abruptly between the active drainage at MP 3.3 and Berg Creek. Muskeg deposits identified during the field review would restrict the alignment from completely avoiding this rise. Subsequently, the alignment would skirt the edge of the hill and would require a substantial cut section near MP 3.7. To avoid further muskeg areas, the alignment would begin to move away from Aaron Creek after crossing Berg Creek. The terrain would be moderate between MP 0.0 and MP 4.5.

The alignment and Aaron Creek would both take a turn to the northwest at MP 4.5. To avoid muskeg areas, the alignment would depart from Aaron Creek and would climb an adjacent drainage between MP 4.5 and MP 5.6. A large culvert would be needed to cross the drainage near MP 5.3. The alignment would return to the steep western slopes of the Aaron Creek drainage at MP 5.6 and would continue along these slopes until MP 6.6. MSE walls and bench cuts would be necessary for the steep slopes along this section. Following the creek, the alignment would turn back to the northeast at MP 6.6. The creek meanders back and forth between the east and west sides of the drainage between MP 6.6 and MP 8.4. Instead of following the creek, the roadway would keep to the western edge of the drainage along the base of the mountain slopes to avoid muskeg areas and any potential changes to the creek’s course. The alignment would encounter flat and moderate terrain when the creek is on the east side of the drainage. The flat terrain may present opportunities to use excess roadway excavation.

The entire Aaron Creek valley begins to swing back to the northwest between MP 8.4 and MP 9.5. The alignment would depart Aaron Creek at MP 8.4 and would parallel an active drainage to a 200-foot bridge crossing near MP 8.9. A large culvert would be needed at MP 8.5 for another active drainage. After crossing the drainage near MP 8.9, the alignment would return to the toe of the side slopes along the west side of the Aaron Creek valley. The creek would stay on the east side of the drainage until MP 9.5, where a meander brings the creek back to the west. The alignment would begin to turn east upon reaching MP 9.5, cross Aaron Creek via a 2,200-foot bridge near MP 9.6, and enter an unnamed creek valley. The terrain would begin to increase in gradient as the alignment enters the unnamed creek valley. The roadway would parallel the north side of the valley to MP 11.5. Sections of rock revetment walls would be needed near MP 10.8 to minimize channel impacts. To avoid avalanche areas along the northern side of the drainage, a 500-foot bridge crossing would shift the alignment to the south side of the drainage near MP 11.5. The overall terrain within this section would be moderate.

After crossing the unnamed creek at MP 11.5, the alignment would turn to the southeast and follow the south side of the drainage to MP 14.6. The floodplain begins to narrow within this section. This would force the alignment to begin climbing the valley sidewalls to avoid affecting the unnamed creek. The terrain begins to transition from moderate to steep. A short section of rock revetment would be needed near the end of the bridge at MP 11.6. MSE walls and bench cuts would be needed for the steeper sections. Two large culverts would be needed for active drainages near MP 13.7 and MP 14.2. The alignment would turn to the northeast at MP 14.6, where a 1,100-foot bridge would be needed to span an active channel. The alignment would continue to the northeast along the south side of the unnamed drainage until MP 15.2, where a 1,000-foot bridge would move the alignment back across the drainage. A large culvert would be needed for an active drainage near the end of the bridge at MP 15.4.

Once across the drainage, the alignment would proceed to the northeast and would immediately begin the steep climb up the mountain slopes to the pass separating the unnamed creek valley and the West Fork of the Katete River. A large culvert would be needed for an active drainage at MP 16.1. The alignment would turn to the north at MP 17.3 and would continue climbing to MP 18.3. A large culvert would be needed at MP 17.6. Between MP 15.2 and MP 18.3, the roadway grades would often be near the maximum allowable 10%, never below 5%, and would climb over a quarter-mile in elevation. The terrain would vary between moderate and steep during the climb with MSE walls and bench cuts needed for most of the steep sections. A section of rock revetment would be needed near MP 17.9 as the alignment nears a glacial channel. A 900-foot bridge would be needed to take the alignment across the active glacier channel at MP 18.3. In the process, the alignment would turn back to the southeast through a large sweeping curve. From MP 18.3 to MP 19.6, the alignment would continue the steep climb to the top of the pass through mostly moderate terrain. MSE walls and bench cuts would be needed intermittently throughout this section. Large culverts would be needed for an active drainage near MP 18.7. Upon reaching MP 19.6, the alignment would swing back to the north and begin the descent into the West Fork of the Katete River valley.

The descent would take the alignment to the north along the western side of the river valley between MP 19.6 to MP 20.3. A 700-foot bridge would be needed to cross a large avalanche chute near MP 19.7, and a large culvert would likely be needed for an active drainage at MP 20.2. Upon reaching MP 20.3, the alignment would swing to the northeast to parallel the river and would begin rapidly descending the valley walls at grades often above 5% and occasionally near the maximum allowable of 10%. The side slopes within this drainage are very steep and would result in extensive bench cuts and MSE walls. The avalanche danger along the steep mountain slopes is severe. The alignment would encounter three deep avalanche chutes at MP 20.7, MP 21.0, and MP 21.5. To maintain reasonable horizontal and vertical alignments, the chutes would be spanned with one 500-foot and two 1,200-foot bridges, respectively. The bridges would have to be designed to withstand potential avalanche loads. Large culverts would be needed for drainages near MP 20.4 and MP 21.2. The alignment would turn back to the north at the end of the third bridge near MP 21.5 and would continue descending the steep terrain toward the valley floor. The alignment would finish the pass descent and begin to level off upon reaching MP 25.7. The section of roadway between MP 21.5 and MP 25.7 would need bench cuts and MSE walls throughout. A 2,000-foot structure would be needed to cross a tributary near MP 23.7. Large culverts would also be needed for drainages near MP 21.8, MP 22.3, MP 22.4, MP 22.5, MP 23.5, and MP 25.1.

The valley floor becomes a very narrow canyon with almost vertical side slopes between MP 25.9 and MP 27.7. The roadway alignment would parallel the river through this section in the initial conceptual design. However, the field review revealed extremely steep cliffs that would make it very expensive to build a road. Thus, the conceptual alignment would continue north from MP 25.7 and would begin climbing the western sidewalls of the valley to avoid the canyon walls. Between MP 25.7 and MP 27.3, the alignment would climb the western slopes through moderate and steep terrain. MSE walls and bench cuts would be needed along most of the steep sections. Active drainages near MP 26.8 and MP 27.0 would require large culverts. The roadway would reach the top of the canyon slopes near MP 27.3.

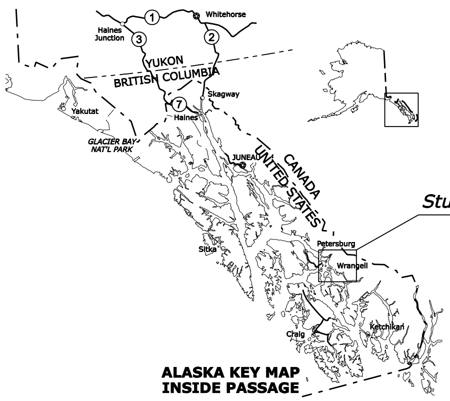
The alignment would quickly descend back down the S-shaped canyon slopes and cross the West Fork of the Katete River near MP 28.0. Crossing the river at this location would avoid an avalanche area on the west side of the drainage and would allow the alignment to meet up with the Iskut River Alignment in British Columbia (B.C.) without having to cross the Stikine or Iskut Rivers. The bridge necessary for this crossing would have a 1,500-foot span. After the crossing, the alignment would turn to the north and would parallel the river along the base of the mountain slopes from MP 28.2 to MP 30.4. Large culverts would be needed for active drainages at MP 28.5 and MP 29.8. The terrain is moderate along this section, and MSE and revetment walls would only be needed where the river meanders to the eastern side of the valley near MP 29.3 and MP 29.8. The Aaron Creek Pass Alignment would reach the Alaska/B.C. border at MP 30.4.

Segment A-1a would continue into B.C. to connect to Segment I-3 of the Iskut River Alignment near the confluence of the Stikine and Iskut Rivers. A full conceptual design for Segment A-1a was only completed to MP 34.2 where the alignment would meet Segment S-1 of the South Stikine River Alignment. From MP 30.4, the alignment would traverse to the north along the base of the mountain slopes until reaching the Katete River delta near MP 31.6. The alignment would turn northeast from MP 31.6 and cross the flat terrain along the floodplain to MP 32.9. A 2,400-foot bridge would be needed to cross the

Katete River near MP 32.9, and two large culverts would be needed for drainages at MP 32.2 and MP 32.6. Muskeg deposits are likely present throughout much of the floodplain, and they might result in substantial amounts of subexcavation. After crossing the Katete River near MP 32.9, the alignment would continue to the north and begin to climb up the slopes along the base of the Iskut and Katete Mountains. The alignment would reach the end of Segment S-1 at MP 34.2. From this point forward, only the horizontal alignment was developed based on USGS topographic maps, aerial photos, and orthophotography ground survey. Between MP 34.2 and MP 40.6, the alignment would continue to the north along the base of the Iskut and Katete Mountains. The terminus of the Aaron Creek Tunnel Alignment would occur at MP 40.6 where the alignment would meet Segment I-3 of the Iskut River Alignment near the confluence of the Iskut and Stikine Rivers.

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



ALASKA KEY MAP
INSIDE PASSAGE

PLANS FOR PROPOSED STUDY

AK HPP-2003(1)

SOUTHEAST ALASKA MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA

AARON CREEK PASS ALIGNMENT (SEGMENT A-1a)

LENGTH 40.6 MILES

INDEX TO SHEETS

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 41 miles of new alignment.

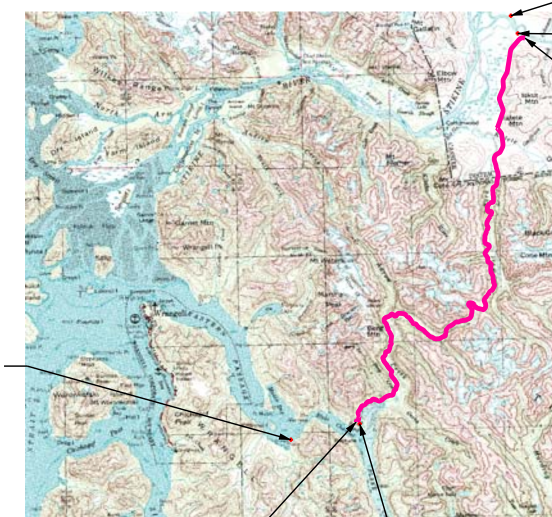
DESIGN DESIGNATION:

ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units

N



40000 20000 0 40000 80000
SCALE IN FEET

PLANS PREPARED FOR

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

PLANS PREPARED BY

RPA
ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 27-Apr-2009 07:21 AM ...\Segment A-1a\ad0301aa.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).

National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinate based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilities	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS GREATER THAN 7 FEET

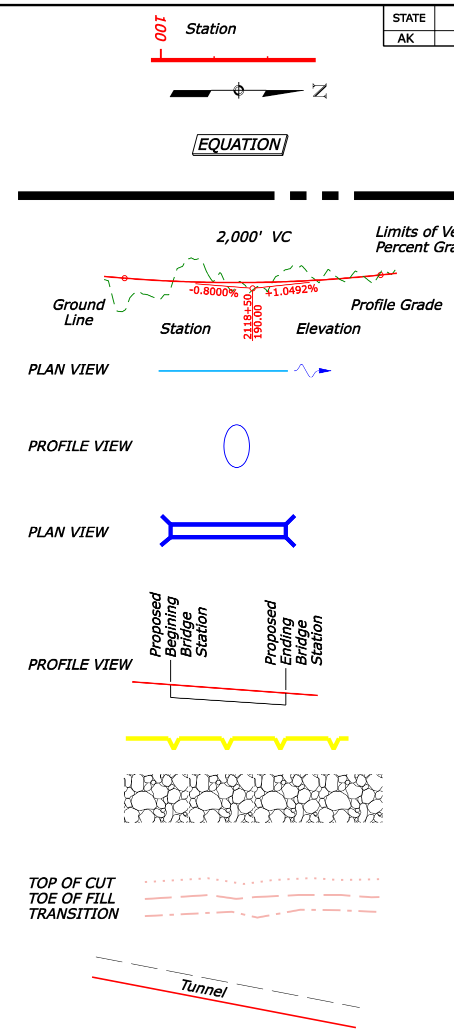
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

TUNNEL DESIGNATION ON PROFILE



NOTE:
1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

4/2009
B. WACKER
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4/2009
B. THOMPSON
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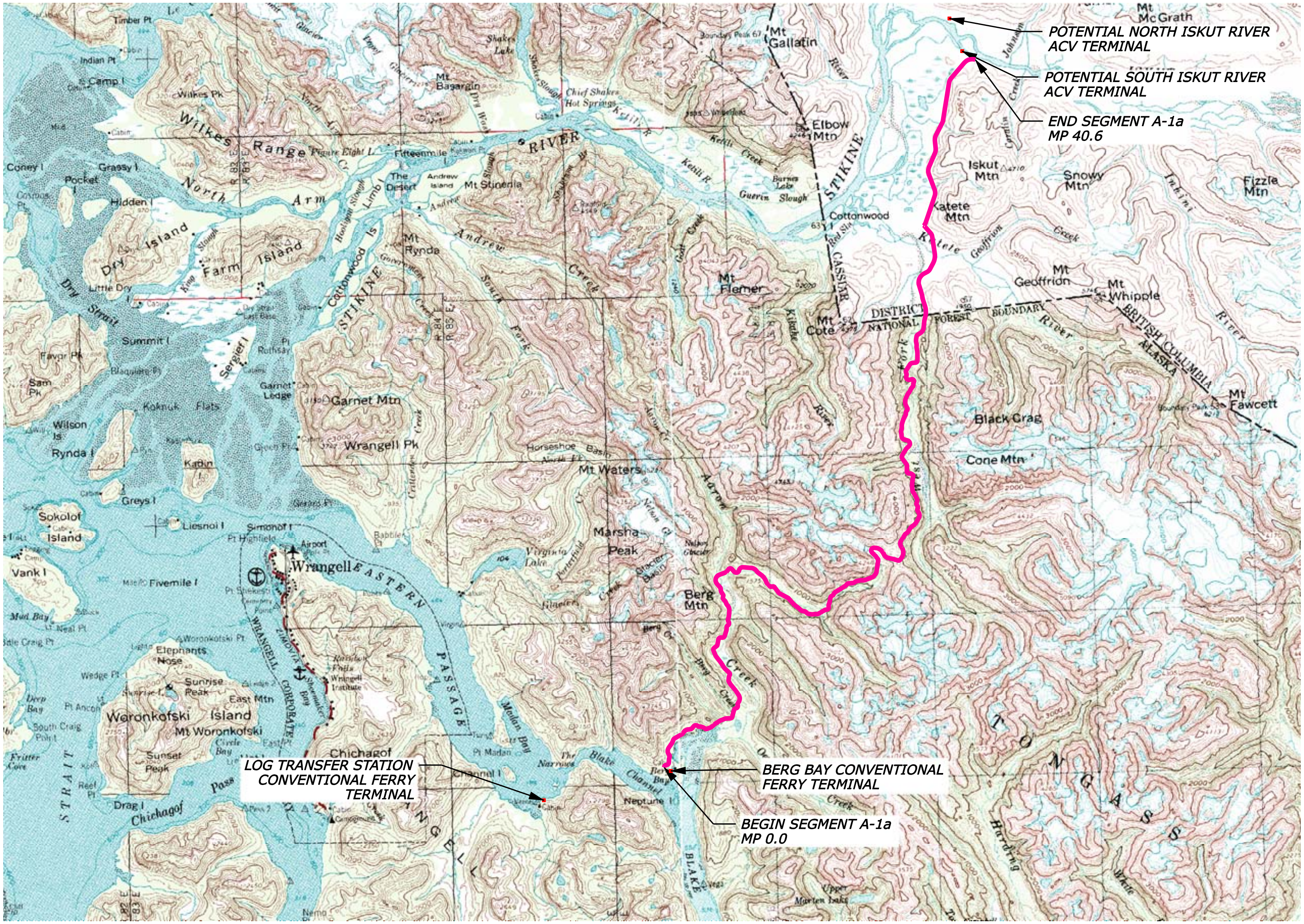
24-Apr-2009 07:56 PM
...\Segment A-1a\ad0301ab.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.3



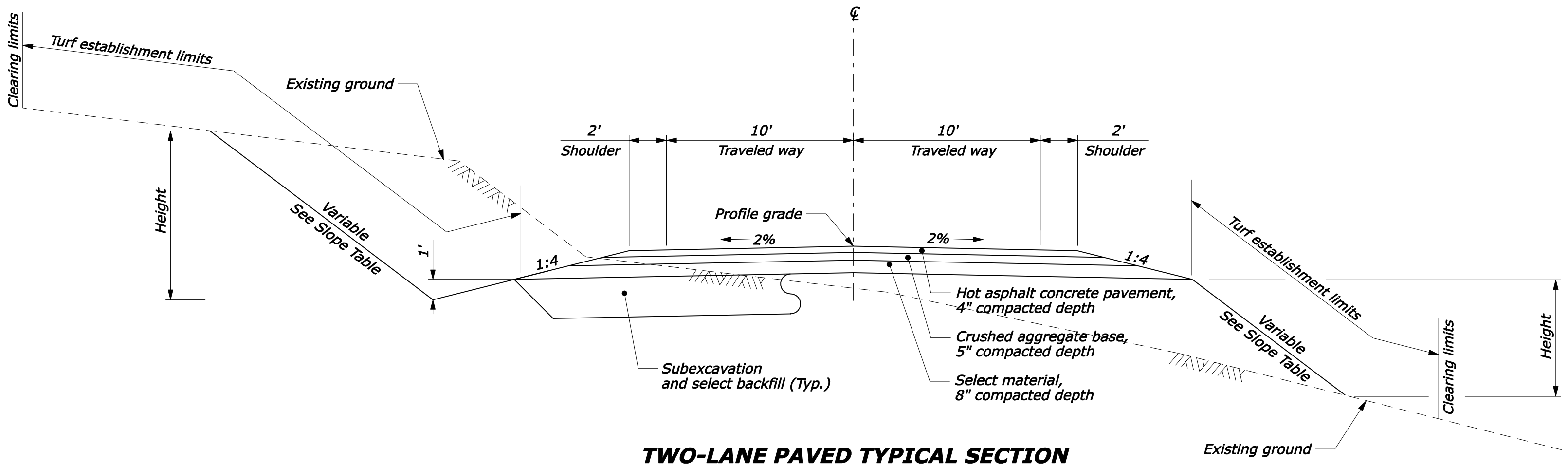
N

20000 10000 0 20000 40000
SCALE IN FEET

VICINITY MAP

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 01:13 PM ...\segment a-1a\ad0301ac.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.1



TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

TWO-LANE PAVED TYPICAL SECTION

4/2009
B. WACKER
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B. THOMPSON
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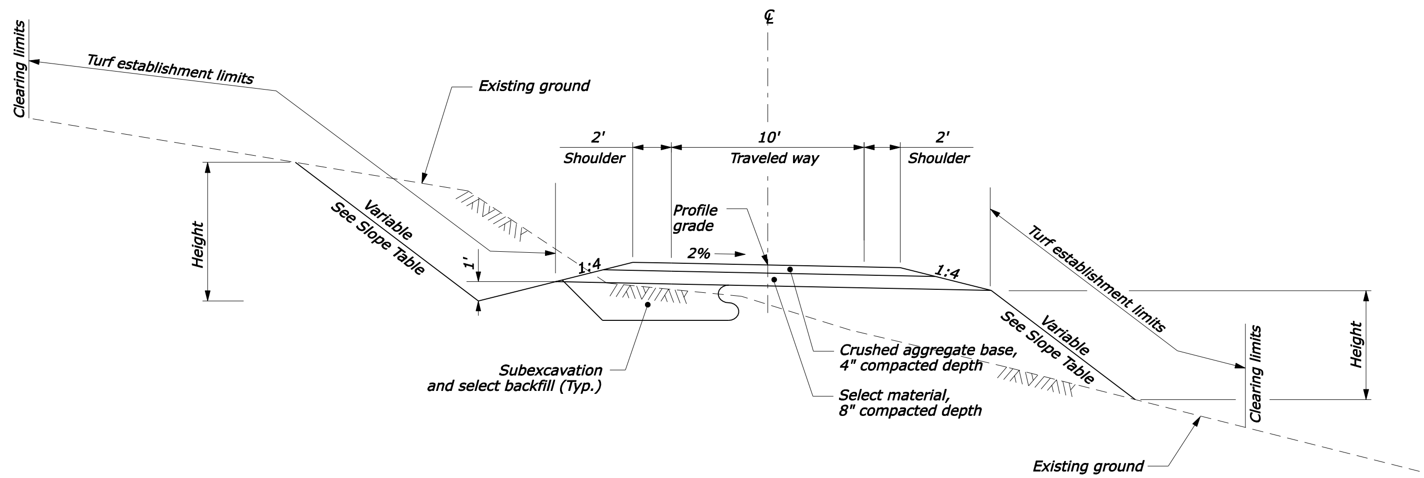
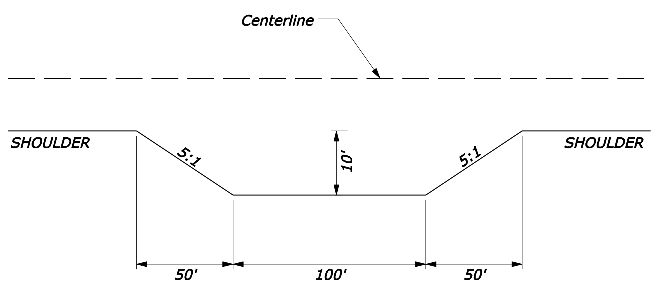
24-Apr-2009 07:59 PM
...\Segment A-1a\ad0301ca.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.2



ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



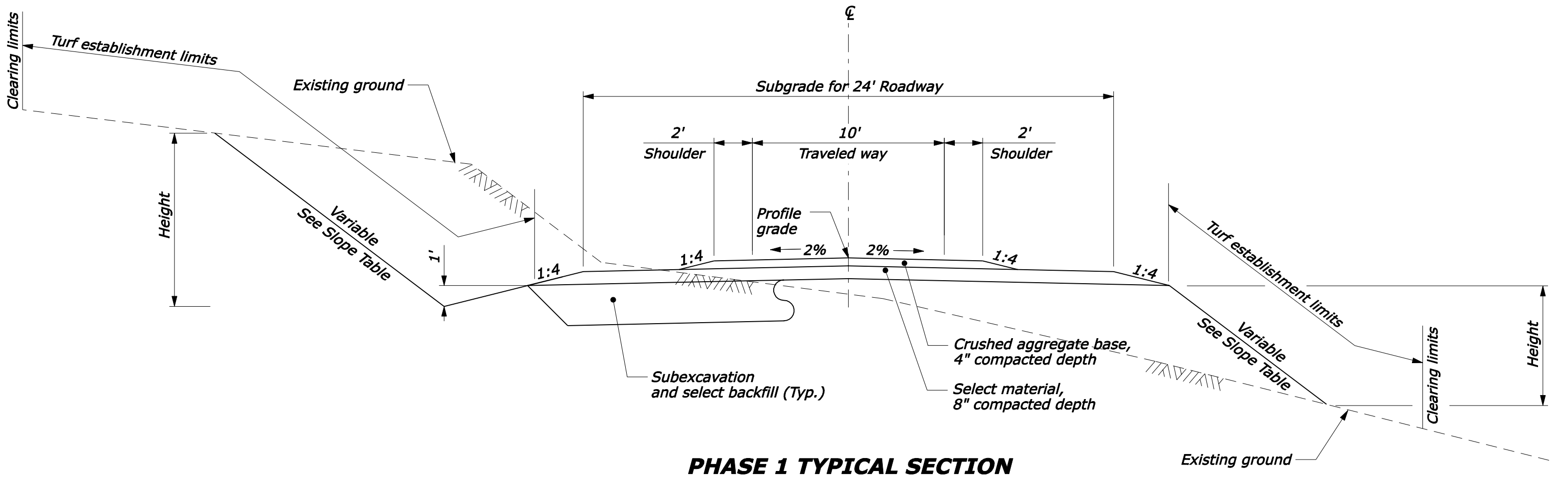
TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

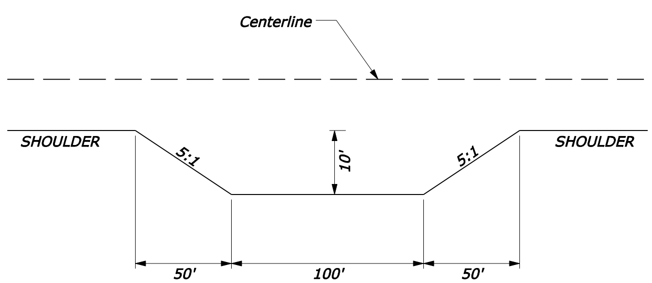
ONE-LANE GRAVEL TYPICAL SECTION

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 24-Apr-2009 08:00 PM ...\Segment A-1a\ad0301cb.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.3



PHASE 1 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 1 TYPICAL SECTION

4/2009
B. WACKER
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4/2009
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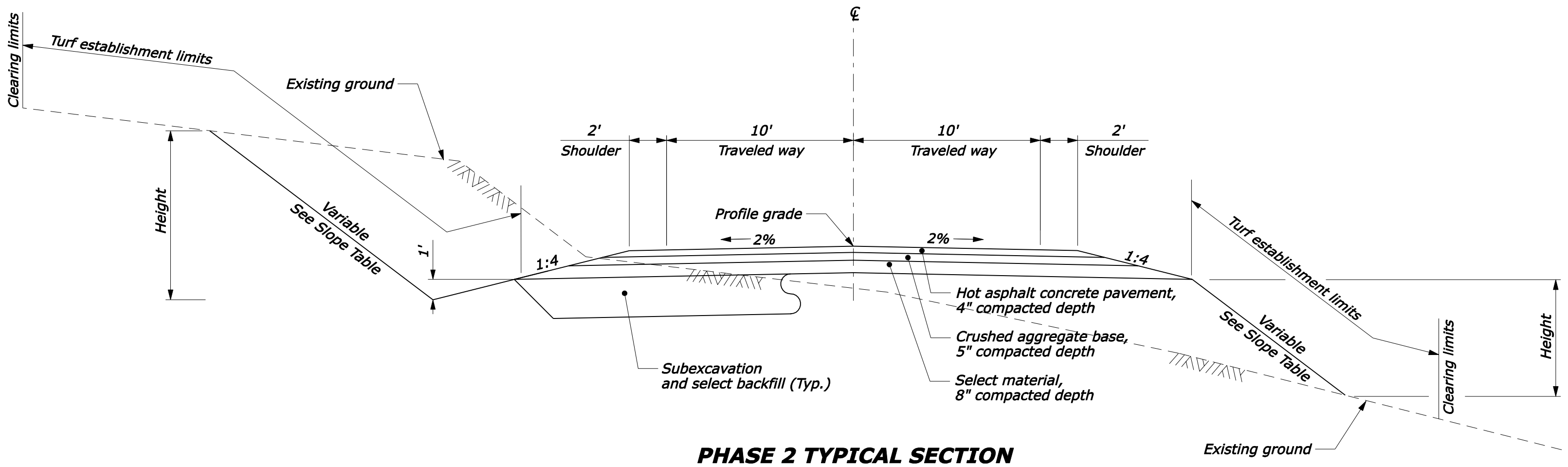
24-Apr-2009 08:02 PM
...\Segment A-1a\ad0301cc.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.4



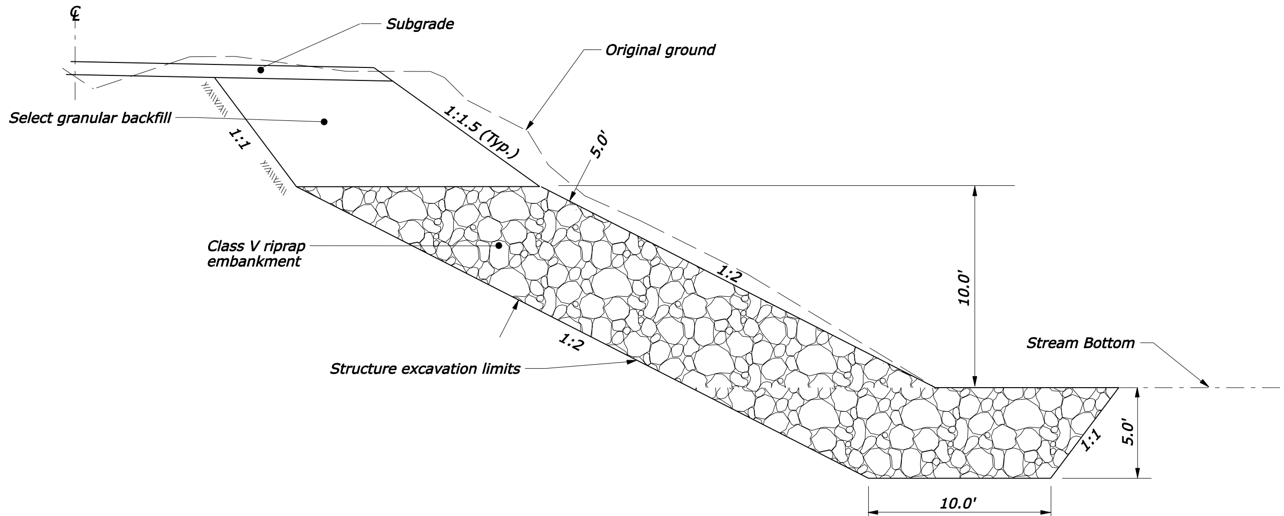
PHASE 2 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

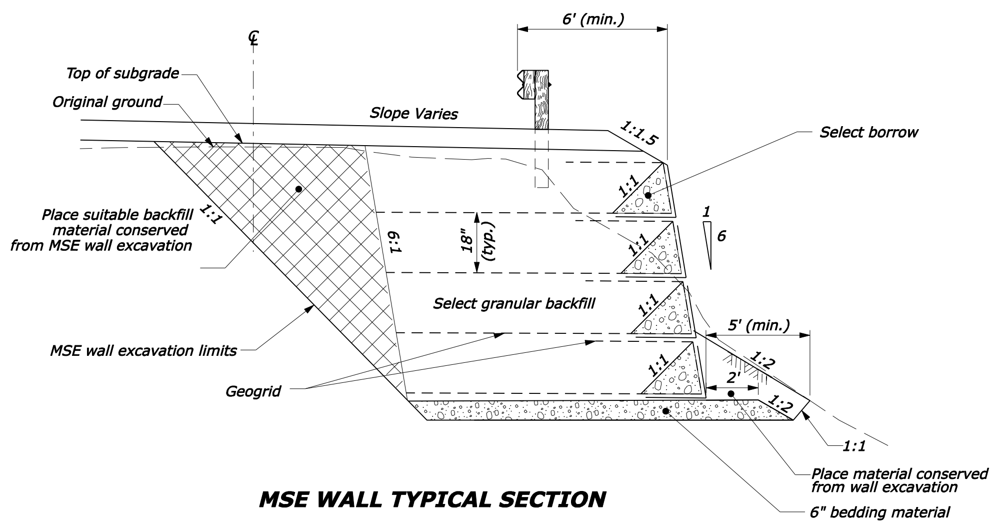
PHASE 2 TYPICAL SECTION

4/2009 B. WACKER Checked by:
4/2009 B. THOMPSON Designed by:
24-Apr-2009 08:02 PM
...\Segment A-1a\ad0301cd.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.5



ROCK REVETMENT TYPICAL SECTION



MSE WALL TYPICAL SECTION

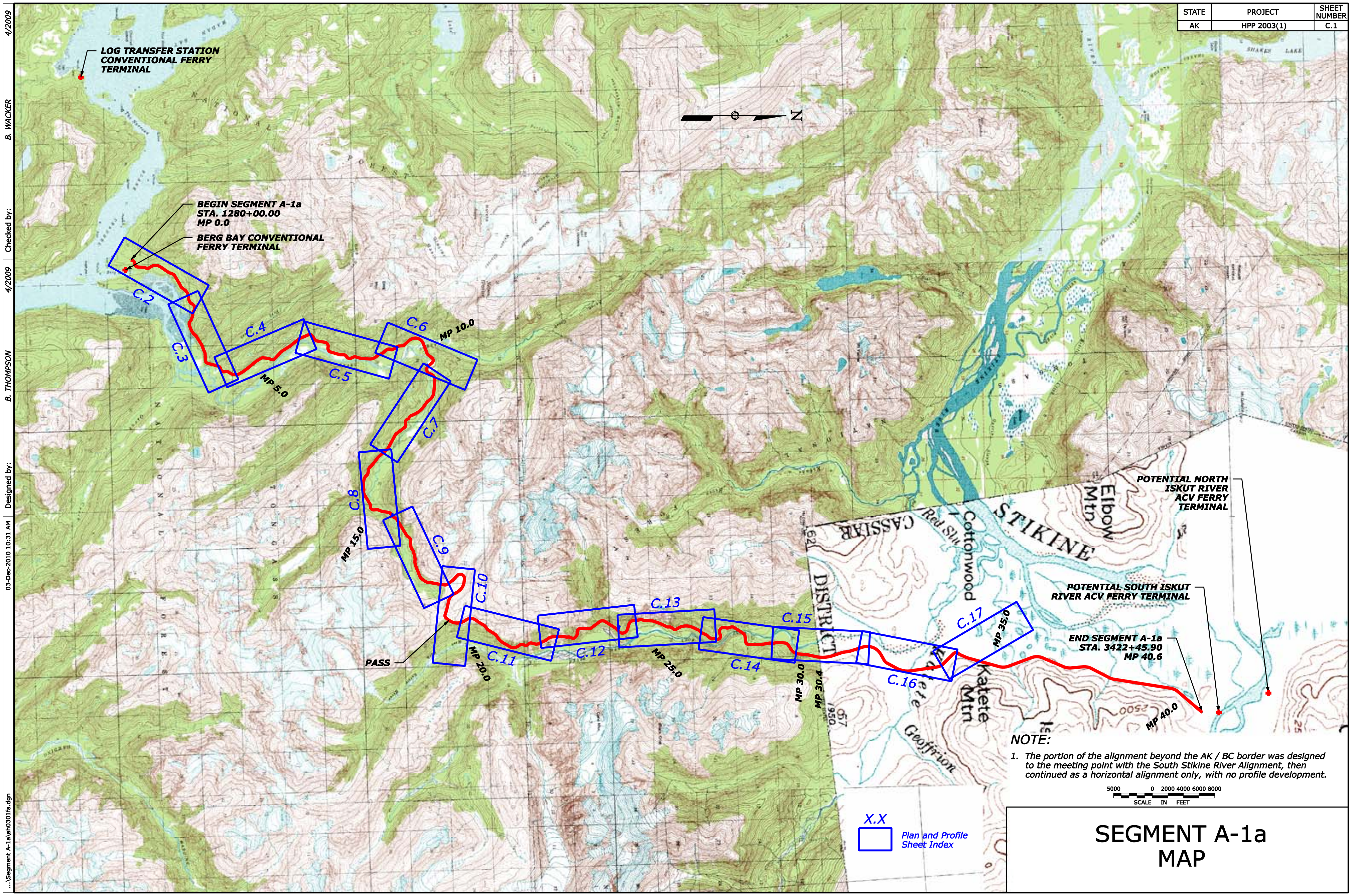
NOTE:

1. Rock revetment typical section from Bradfield River Road Final Scoping and Pre-NEPA Engineering Feasibility Study report dated January 10, 2005.
2. Class V riprap gradation requirements as shown in Table 705-1 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03).
3. Location of MSE walls and rock revetment are shown in the plan and profile sheets within Section C.

NO SCALE

MSE WALL & ROCK REVETMENT TYPICAL SECTIONS

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 24-Apr-2009 08:03 PM ...\Segment A-1a\ad0301ce.dgn



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4/2009
B. THOMPSON
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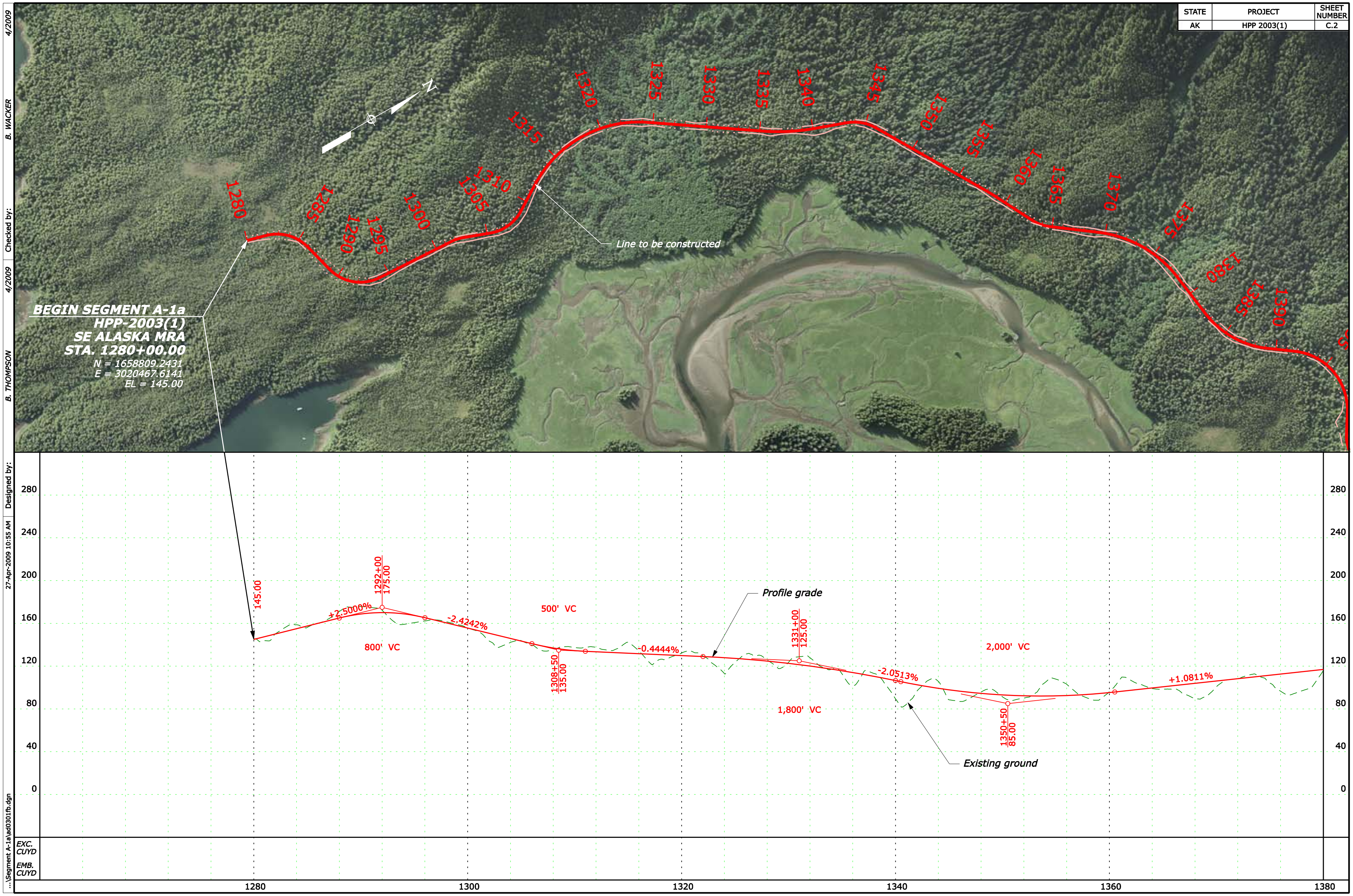
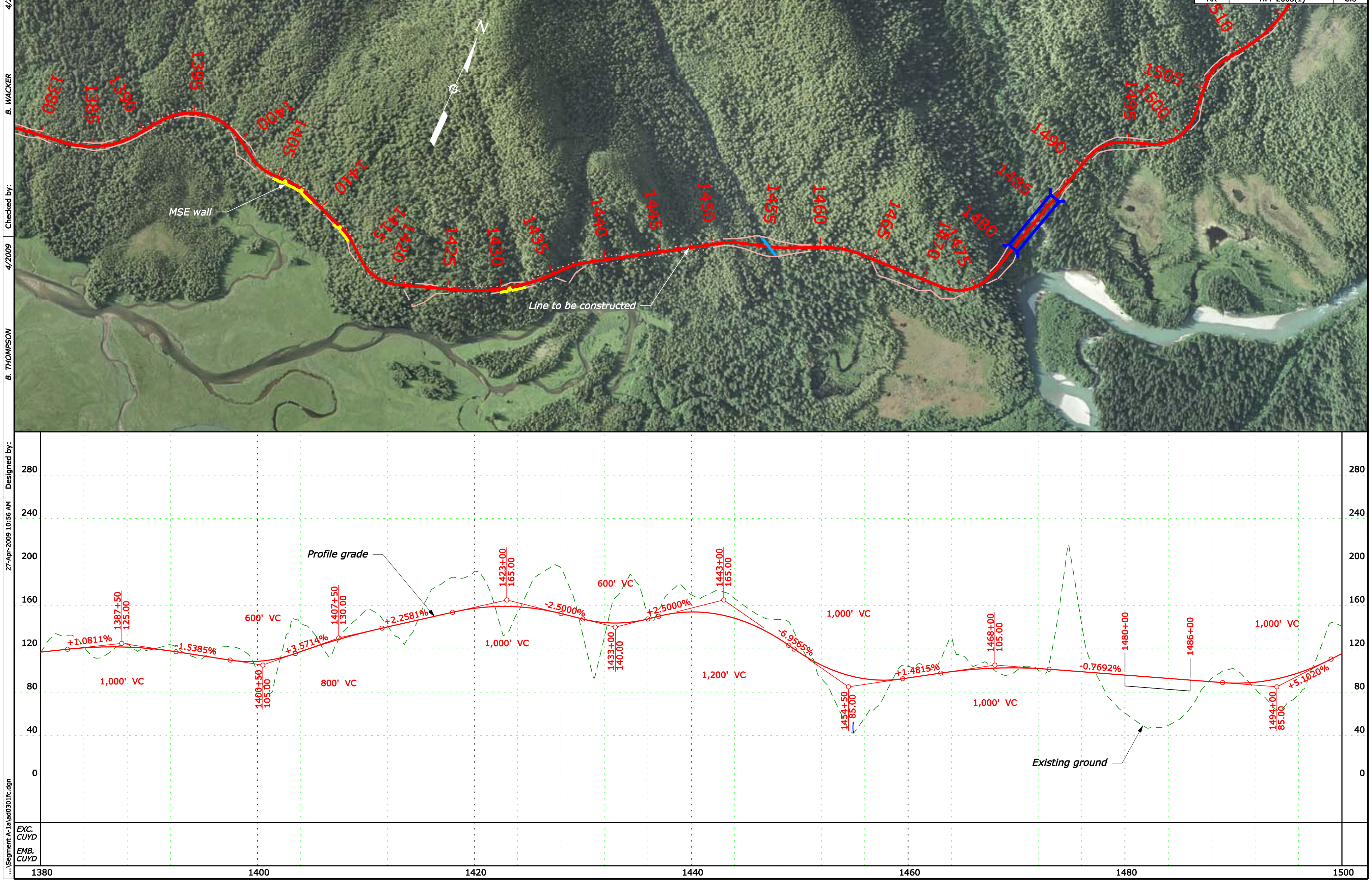

STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.2
BEGIN SEGMENT A-1a
HPP-2003(1)
SE ALASKA MRA
STA. 1280+00.00
N = 1658809.2431
E = 3020467.6141
EL = 145.00
Line to be constructed
N
1280
1285
1290
1295
1300
1305
1310
1315
1320
1325
1330
1335
1340
1345
1350
1355
1360
1365
1370
1375
1380
1385
1390
Profile grade
Existing ground
145.00
1292+00
175.00
+2.5000%
-2.4242%
800' VC
500' VC
1308+50
135.00
-0.4444%
1331+00
125.00
1,800' VC
-2.0513%
2,000' VC
1350+50
85.00
+1.0811%
280
240
200
160
120
80
40
0
EXC. CUYD
EMB. CUYD
1280
1300
1320
1340
1360
1380
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
27-Apr-2009 10:55 AM
...\Segment A-1a\ad0301fb.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.3



4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
27-Apr-2009 10:56 AM
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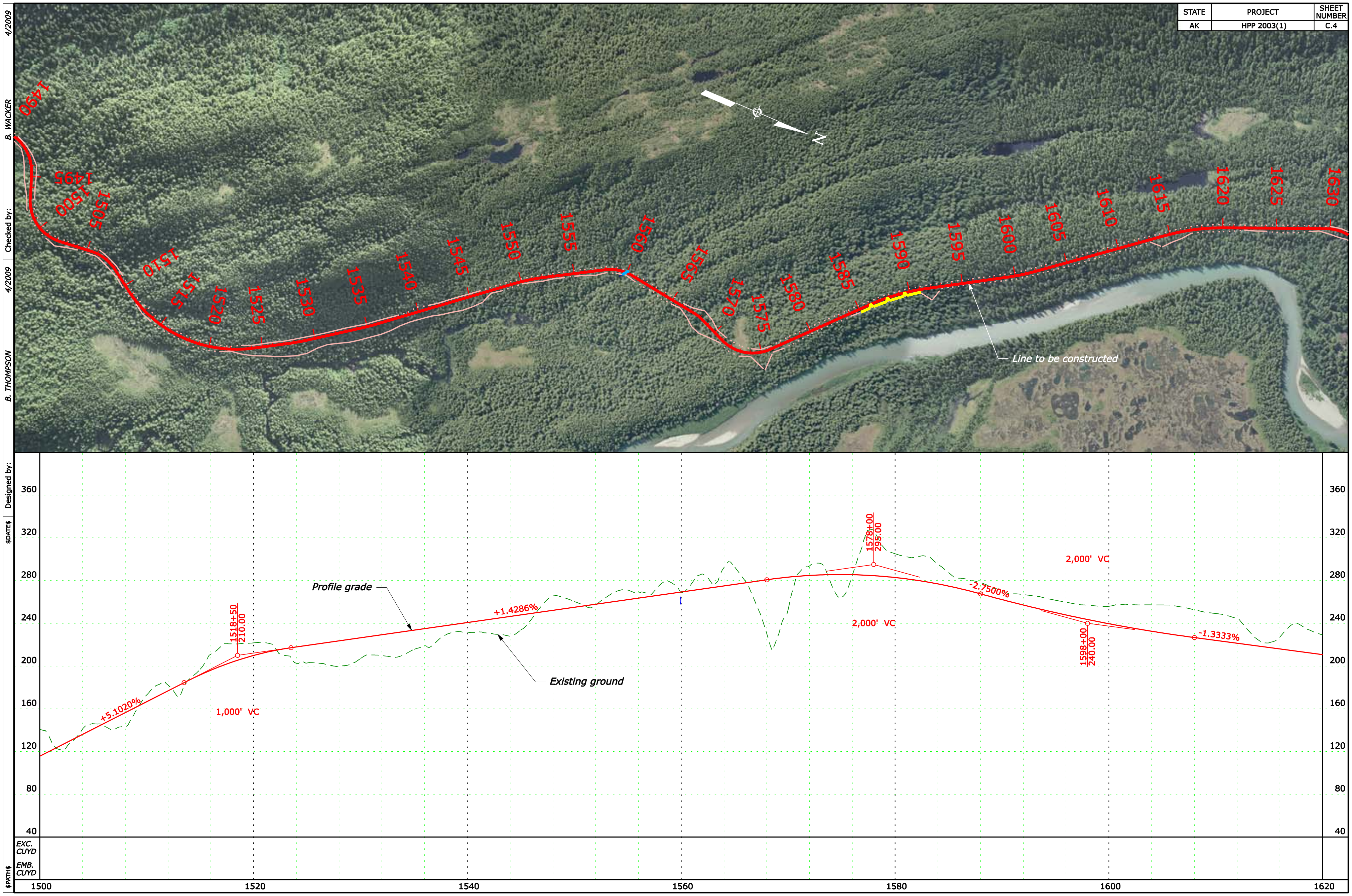
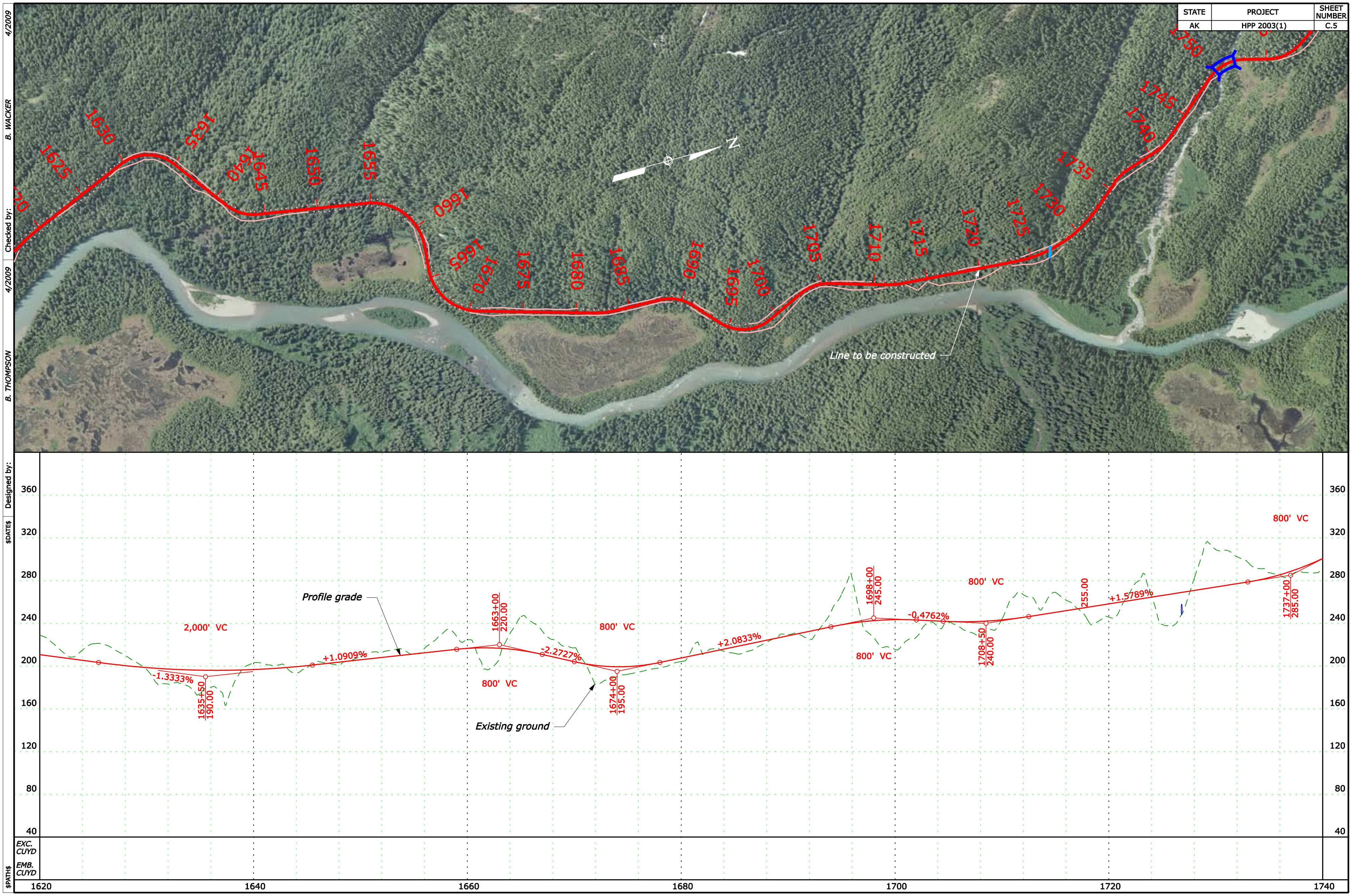


STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.4
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
$DATE$
$PATH$
N
1490
1495
1500
1505
1510
1515
1520
1525
1530
1535
1540
1545
1550
1555
1560
1565
1570
1575
1580
1585
1590
1595
1600
1605
1610
1615
1620
1625
1630
Line to be constructed
Profile grade
Existing ground
+5.1020%
1,000' VC
1518+50
210.00
+1.4286%
1578+00
295.00
2,000' VC
2,000' VC
-2.7500%
1598+00
240.00
-1.3333%
360
320
280
240
200
160
120
80
40
EXC. CUYD
EMB. CUYD
1500
1520
1540
1560
1580
1600
1620

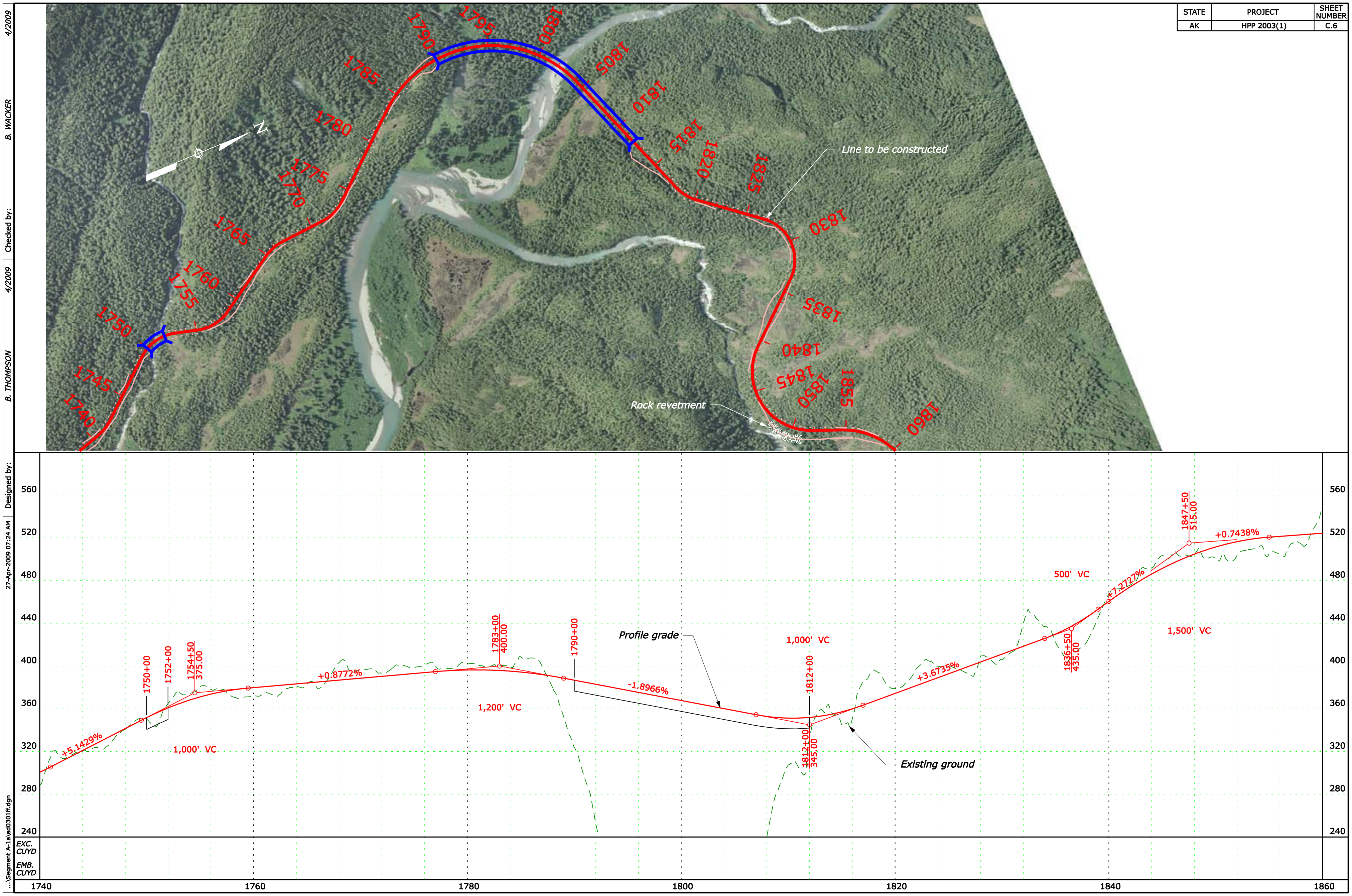
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
$DATE$
$PATH$

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.5



STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.6

Designed by: B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009
27-Apr-2009 07:24 AM
...\Segment A-1a\ad0301ff.dgn



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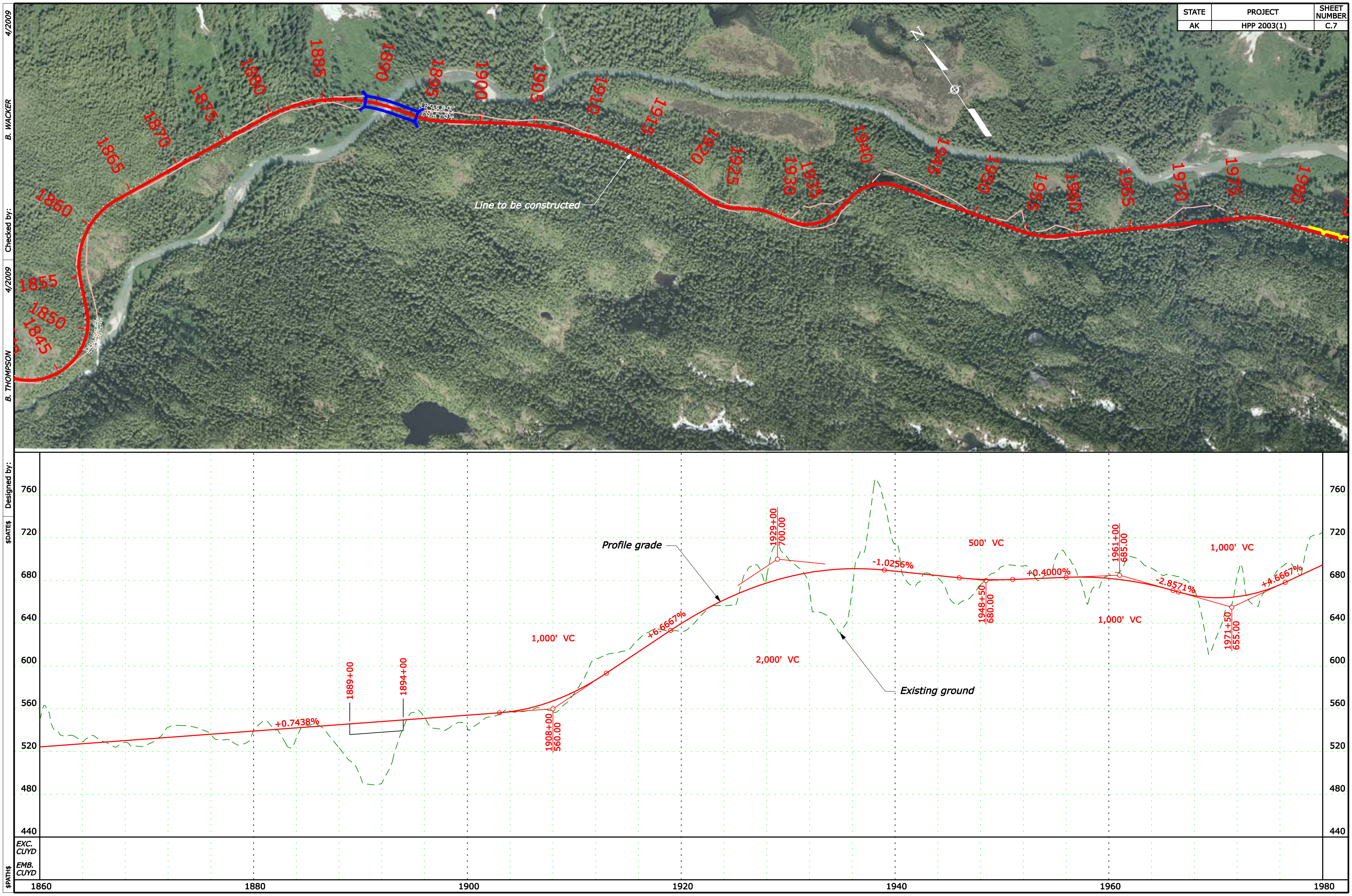
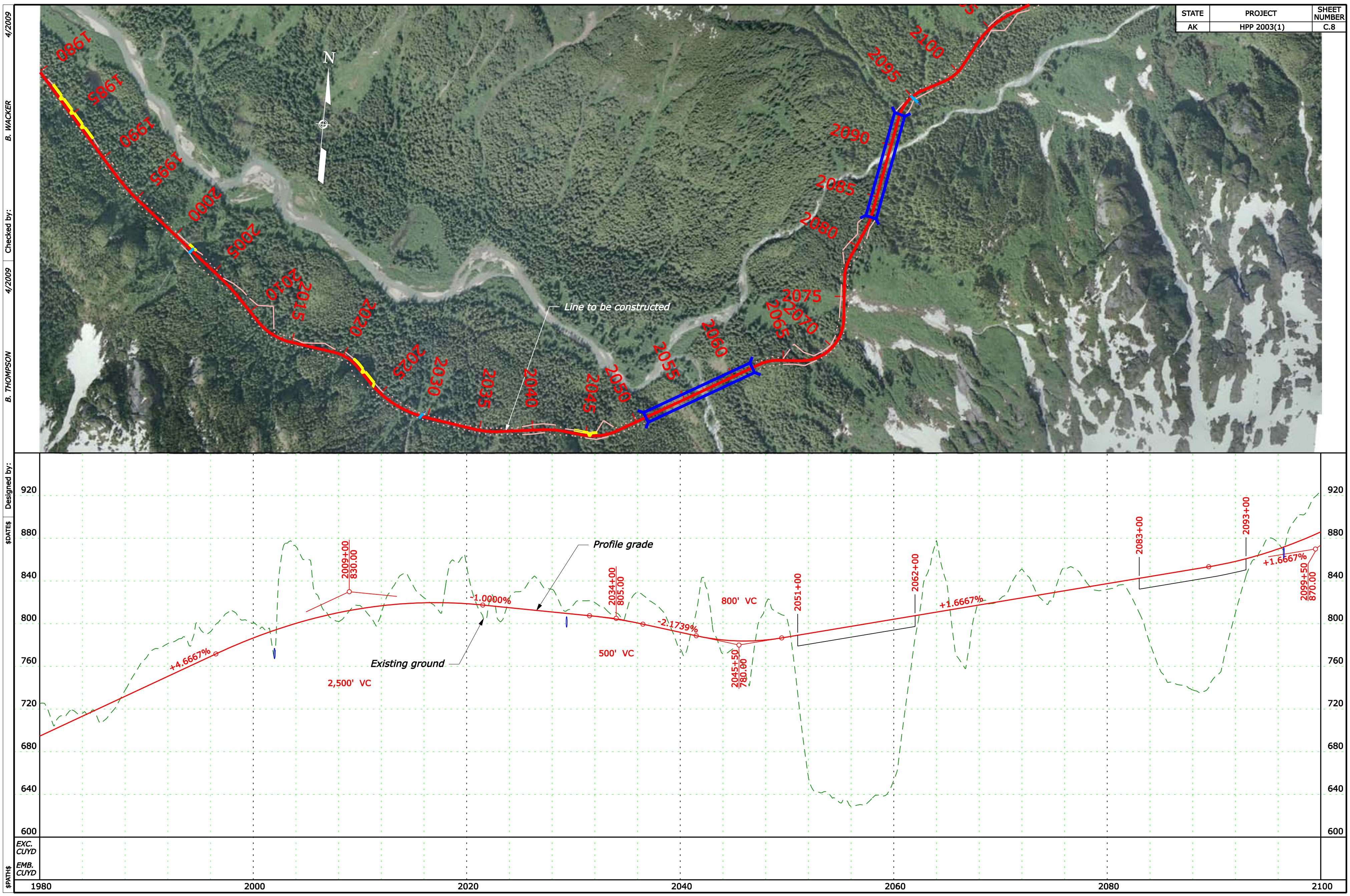
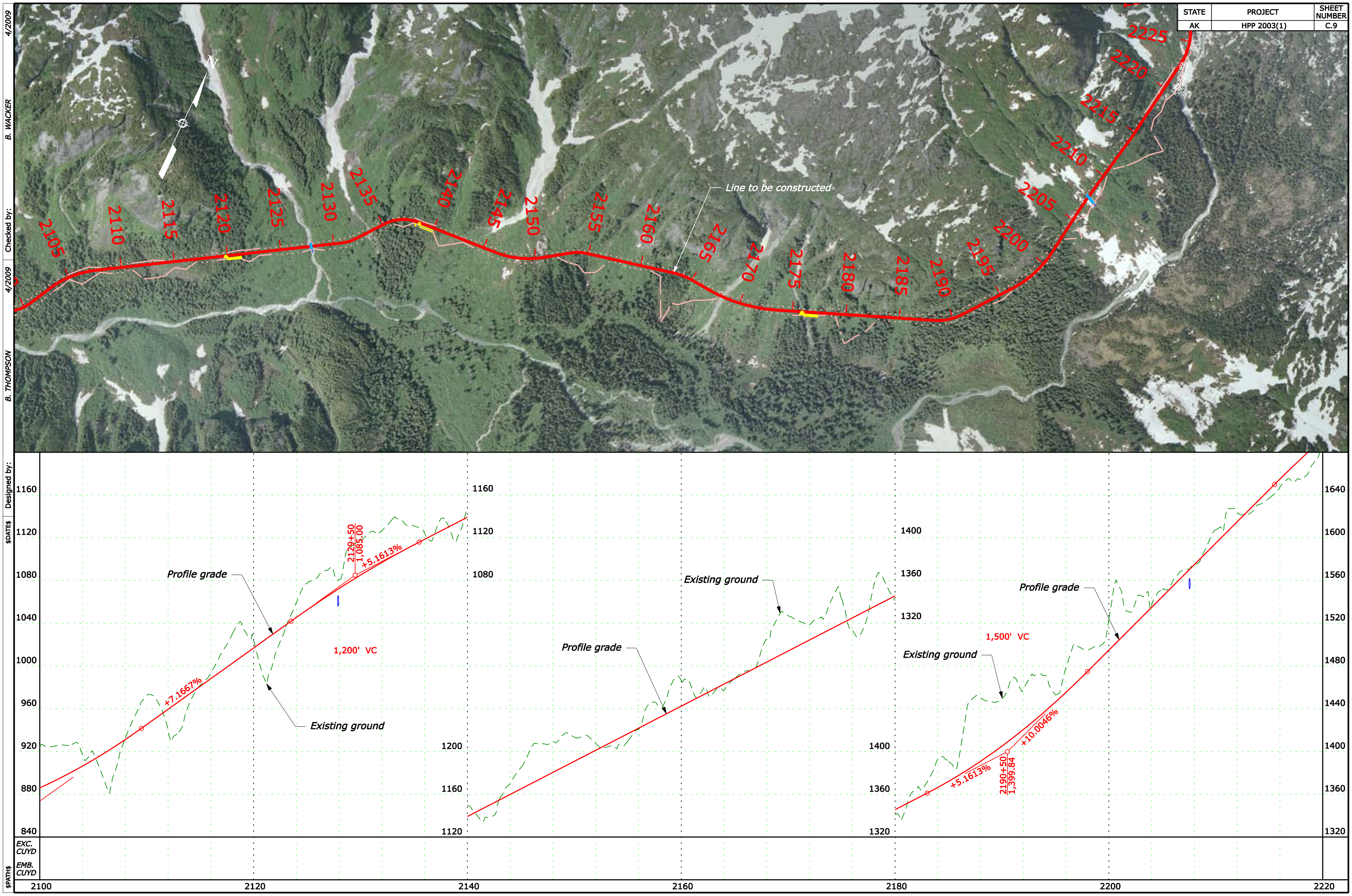
Checked by: B. WACKER 4/2009
$DATE$
$PATH$




STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.8
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
$DATE$
$PATH$
N
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055
2060
2065
2070
2075
2080
2085
2090
2095
2100
Line to be constructed
Profile grade
Existing ground
2009+00
830.00
2034+00
805.00
2045+50
780.00
2051+00
2062+00
2083+00
2093+00
2099+50
870.00
+4.6667%
-1.0000%
-2.1739%
+1.6667%
+1.6667%
2,500' VC
500' VC
800' VC
920
880
840
800
760
720
680
640
600
EXC. CUYD
EMB. CUYD
1980
2000
2020
2040
2060
2080
2100

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.9



4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
$DATE$
$PATH$

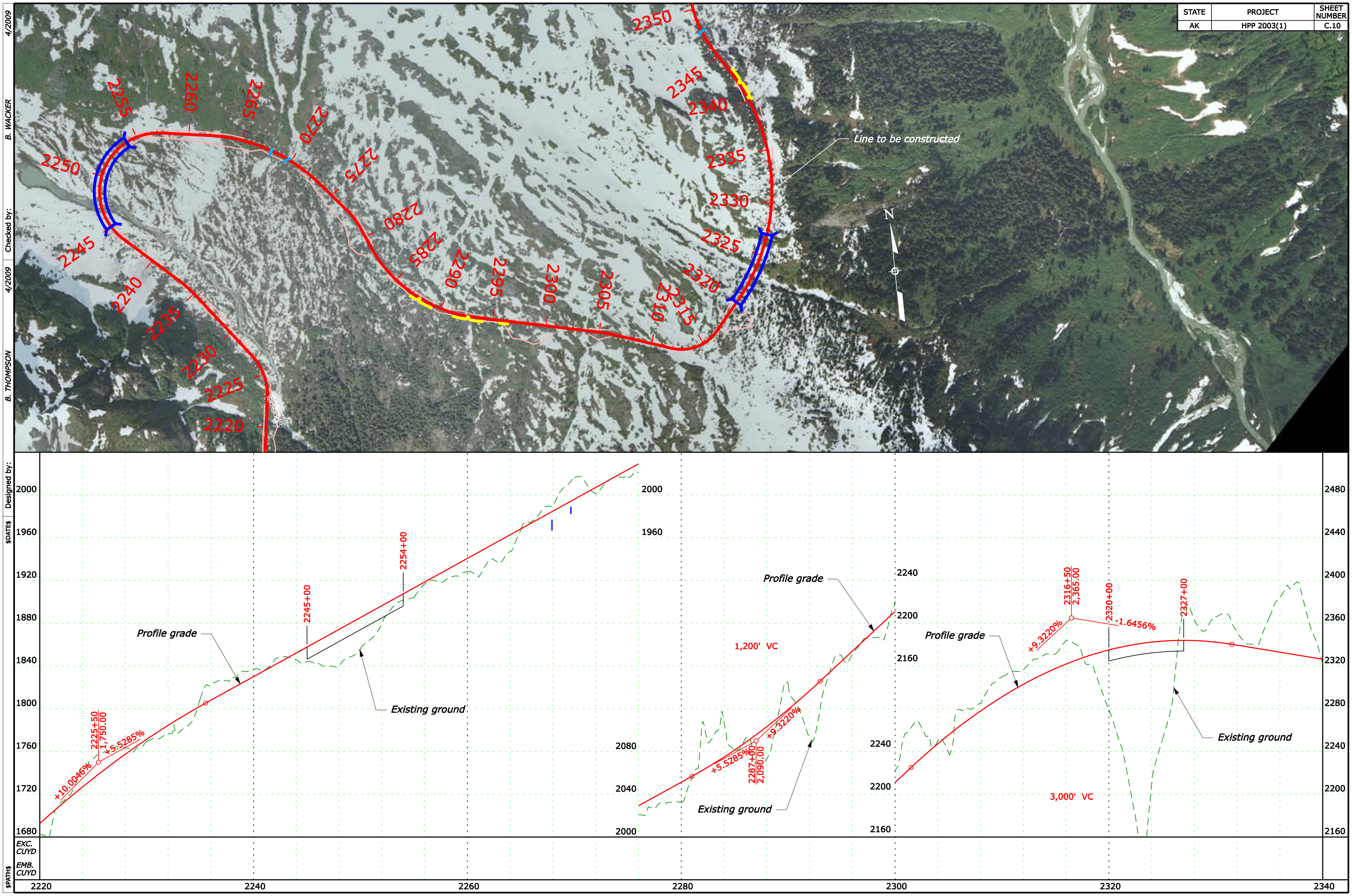
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.10

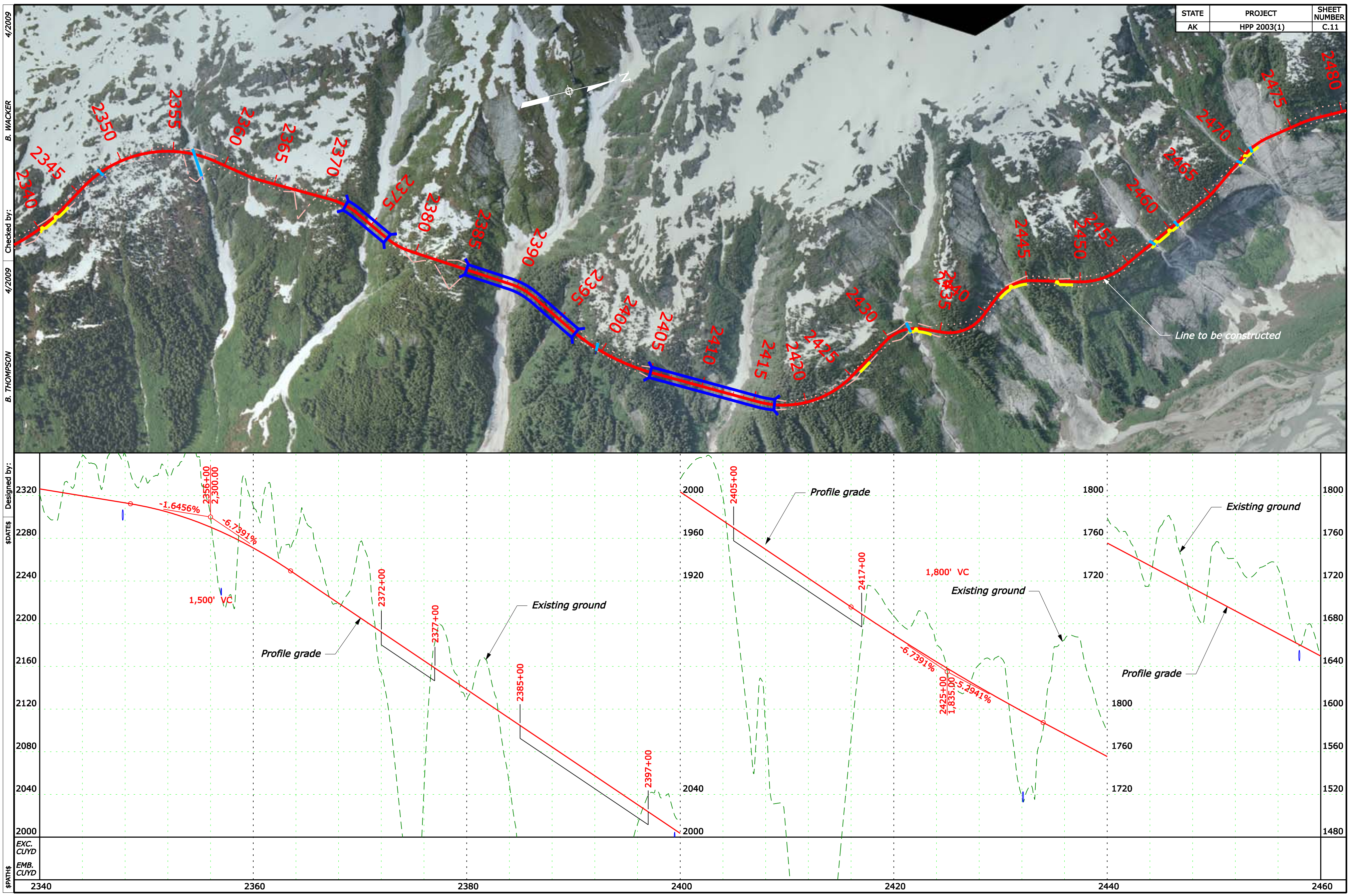
4/2009 B. WACKER Checked by:

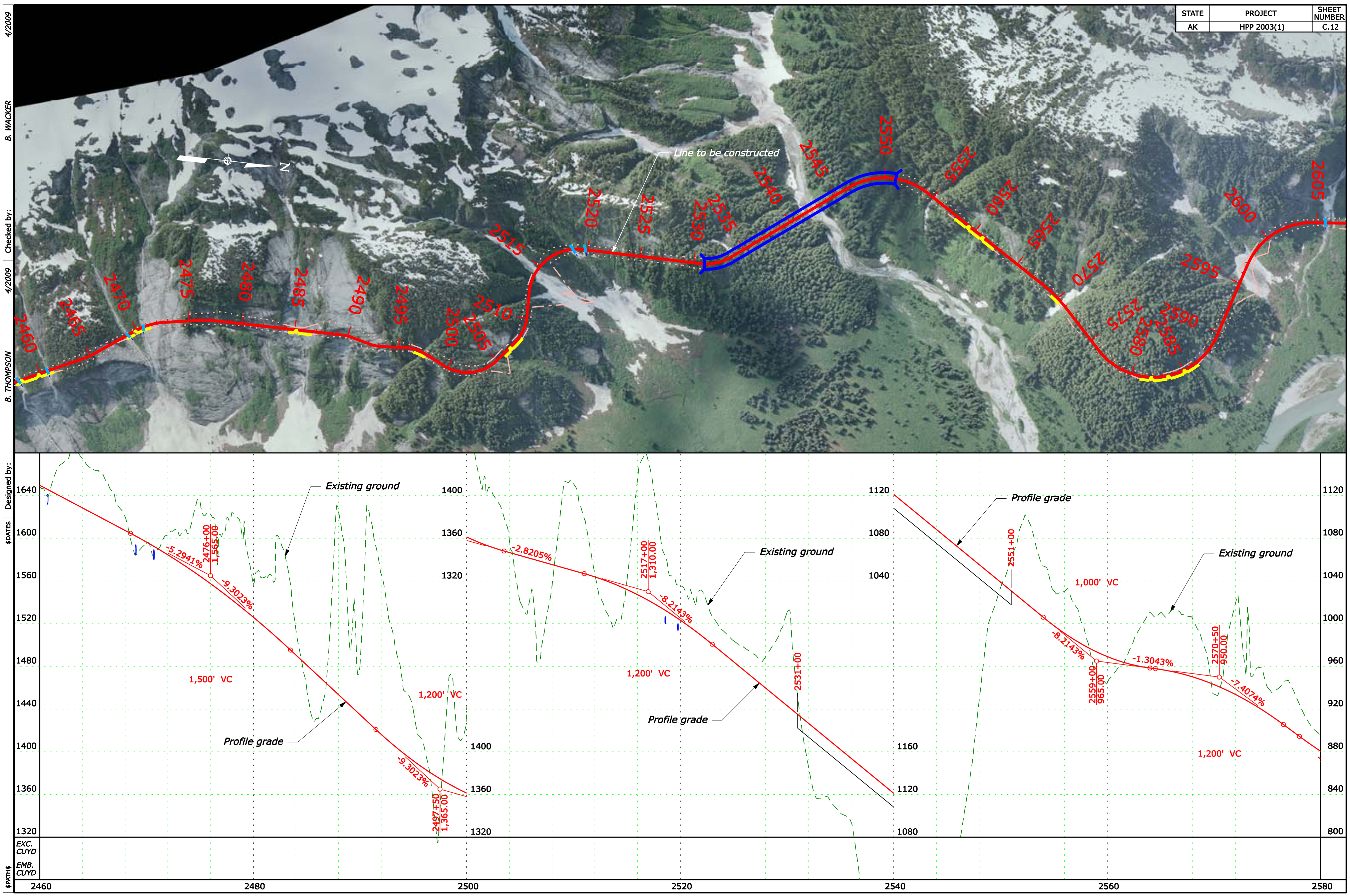
4/2009 B. THOMPSON Designed by:

$DATE$

$PATH$

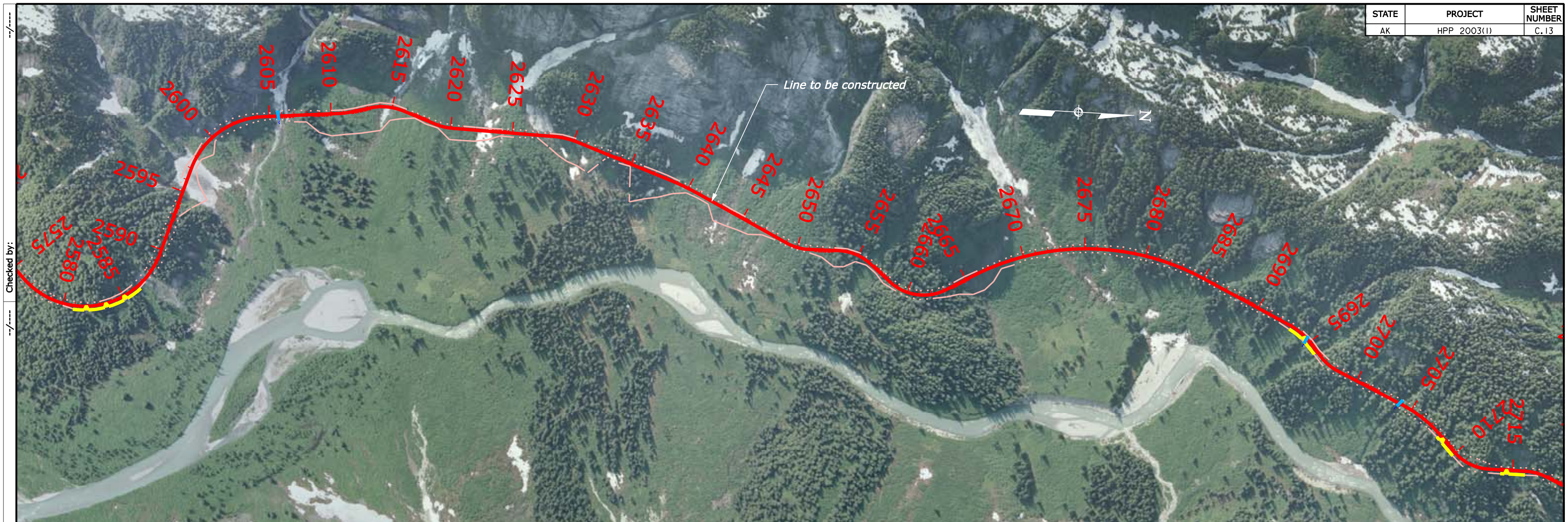



STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.11
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
$DATE$
$PATH$
N
2340
2345
2350
2355
2360
2365
2370
2375
2380
2385
2390
2395
2400
2405
2410
2415
2420
2425
2430
2435
2440
2445
2450
2455
2460
2465
2470
2475
2480
Line to be constructed
-1.6456%
2356+00
2,300.00
-6.7391%
1,500' VC
2372+00
2377+00
2385+00
2397+00
Profile grade
Existing ground
2405+00
2417+00
1,800' VC
-6.7391%
2425+00
1,835.00
-5.2941%
EXC. CUYD
EMB. CUYD
2320
2280
2240
2200
2160
2120
2080
2040
2000
1960
1920
1800
1760
1720
1680
1640
1600
1560
1520
1480
2340
2360
2380
2400
2420
2440
2460



STATE
AK
PROJECT
HPP 2003(1)
SHEET NUMBER
C.12
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
$DATE$
$PATH$
N
Line to be constructed
2460
2465
2470
2475
2480
2485
2490
2495
2500
2505
2510
2515
2520
2525
2530
2535
2540
2545
2550
2555
2560
2565
2570
2575
2580
2585
2590
2595
2600
2605
Existing ground
Profile grade
-5.2941%
2476+00
1,565.00
-9.3023%
1,500' VC
1,200' VC
-9.3023%
2497+50
1,365.00
-2.8205%
2517+00
1,310.00
-8.2143%
1,200' VC
2531+00
2551+00
1,000' VC
-8.2143%
2559+00
965.00
-1.3043%
2570+50
950.00
-7.4074%
1,200' VC
1640
1600
1560
1520
1480
1440
1400
1360
1320
1400
1360
1320
1120
1080
1040
1160
1120
1080
1120
1080
1040
1000
960
920
880
840
800
EXC. CUYD
EMB. CUYD
2460
2480
2500
2520
2540
2560
2580

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.13

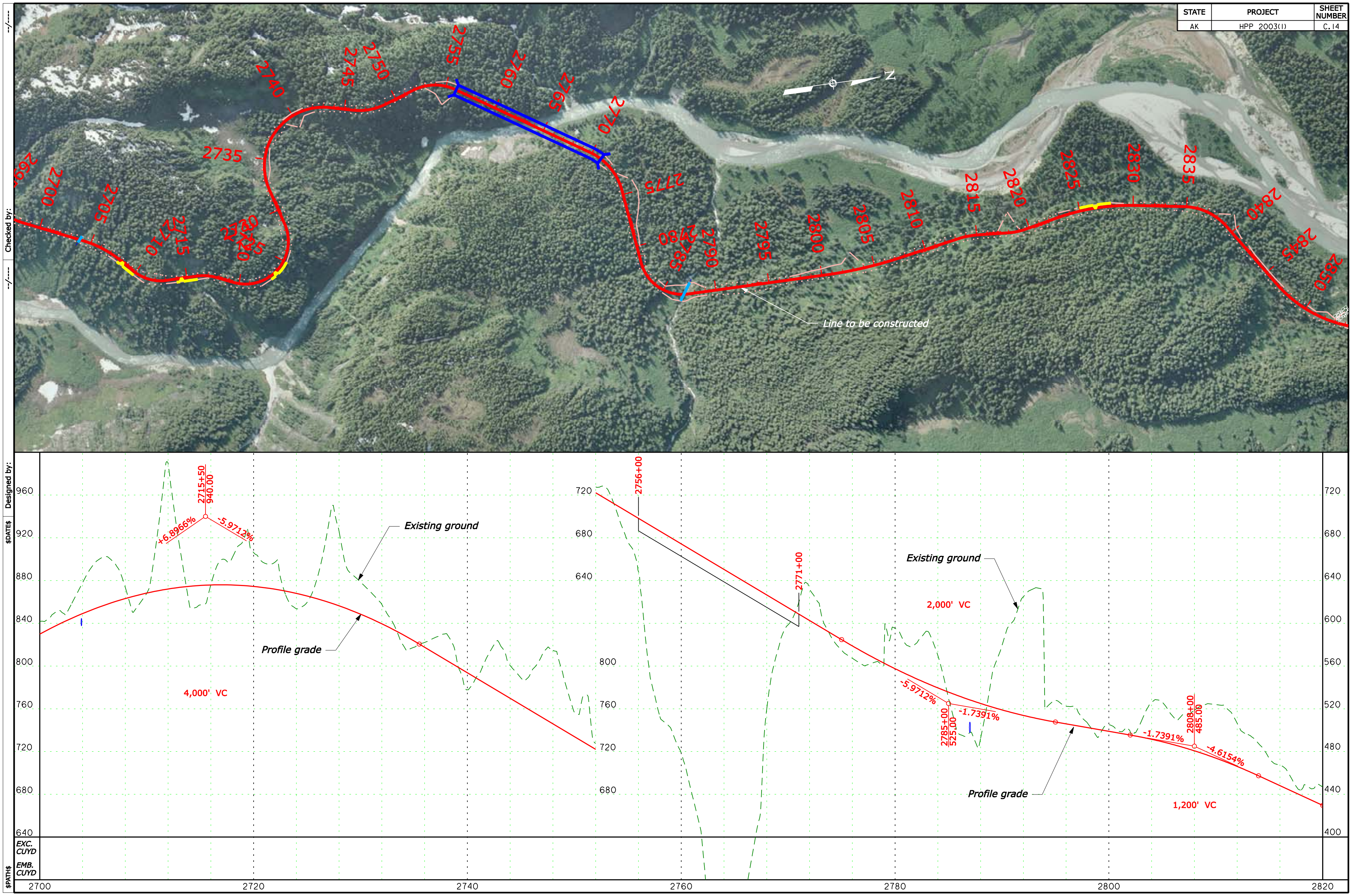


Checked by:

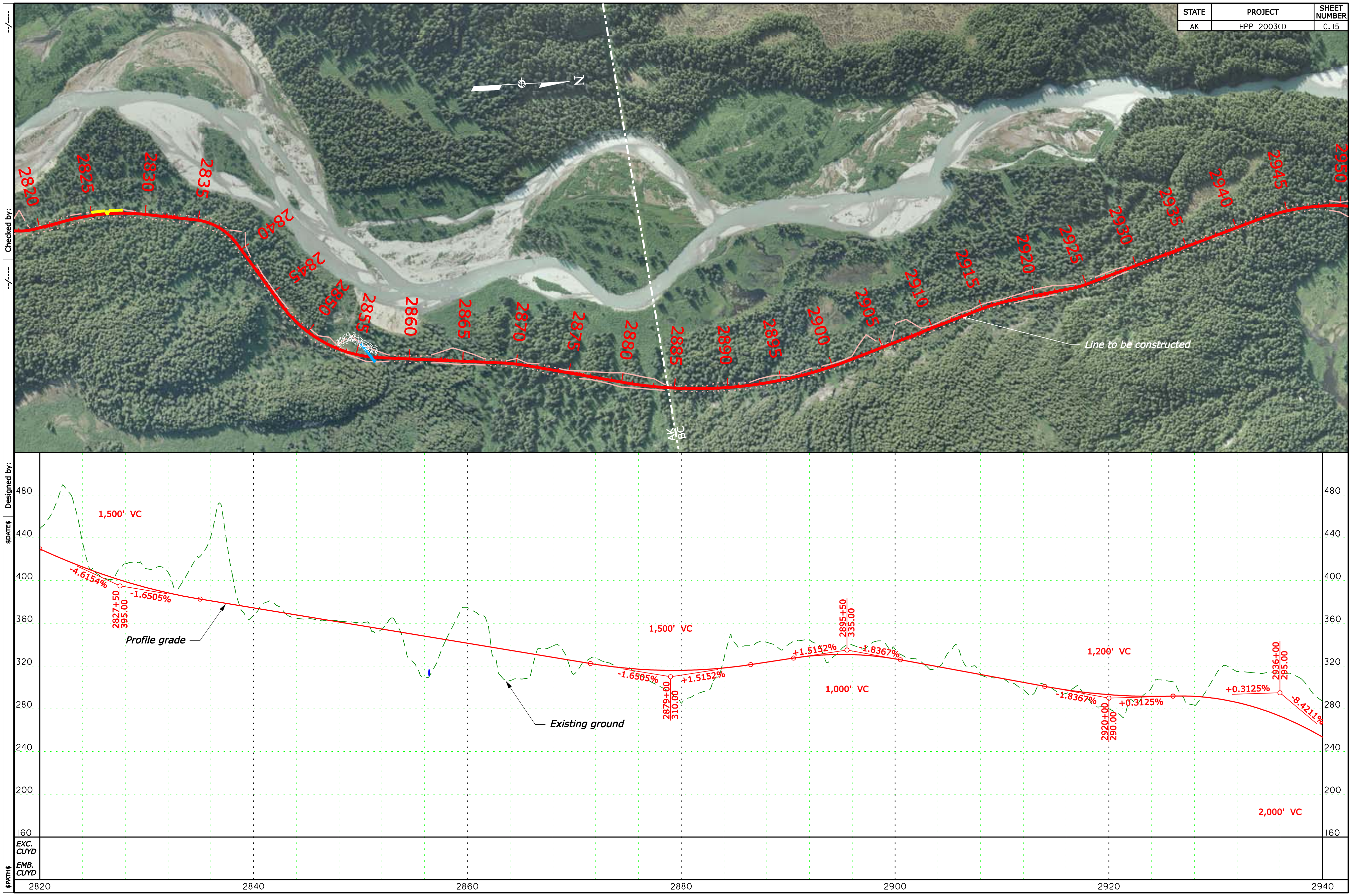
Designed by:

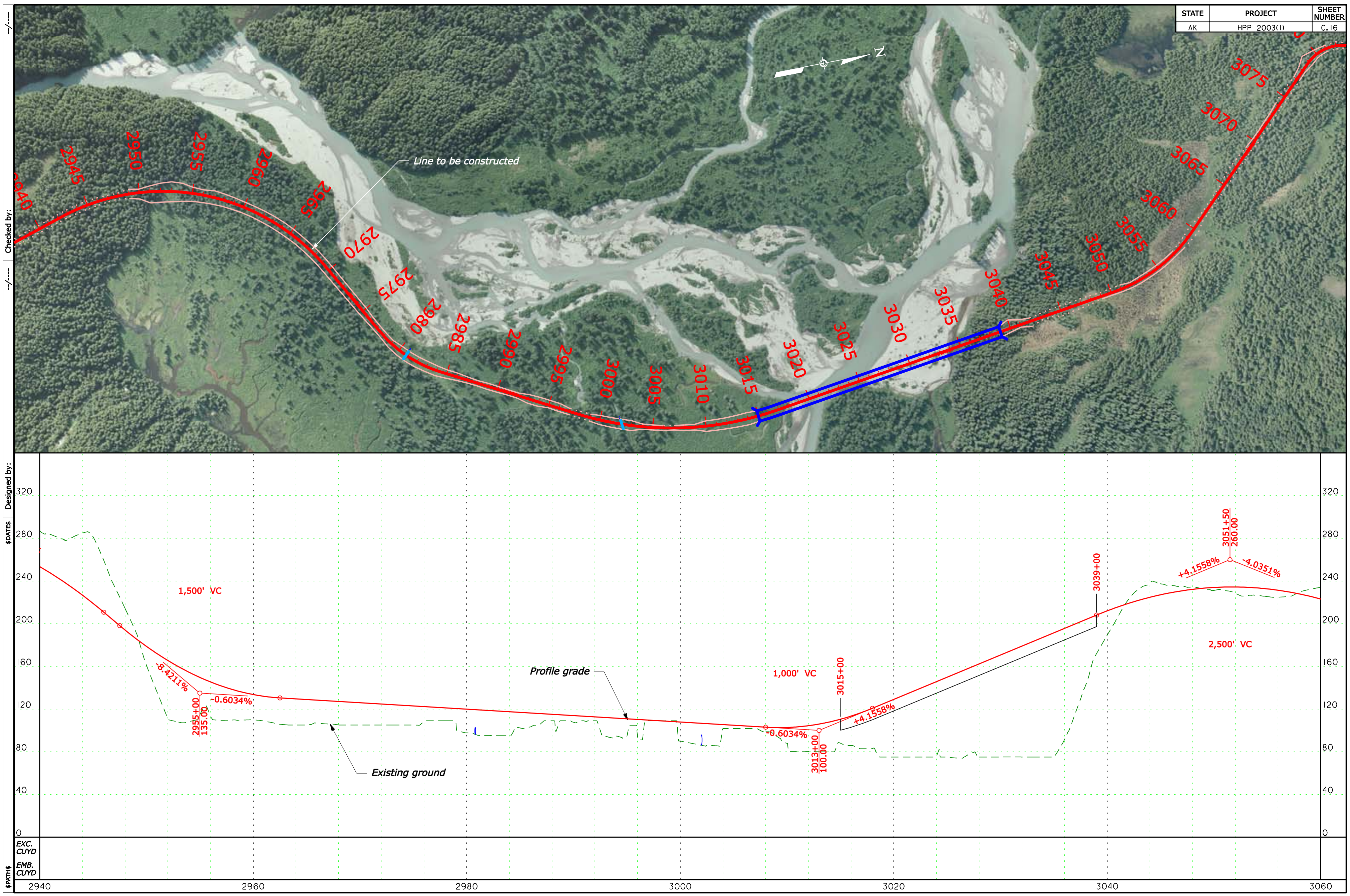
$DATE$

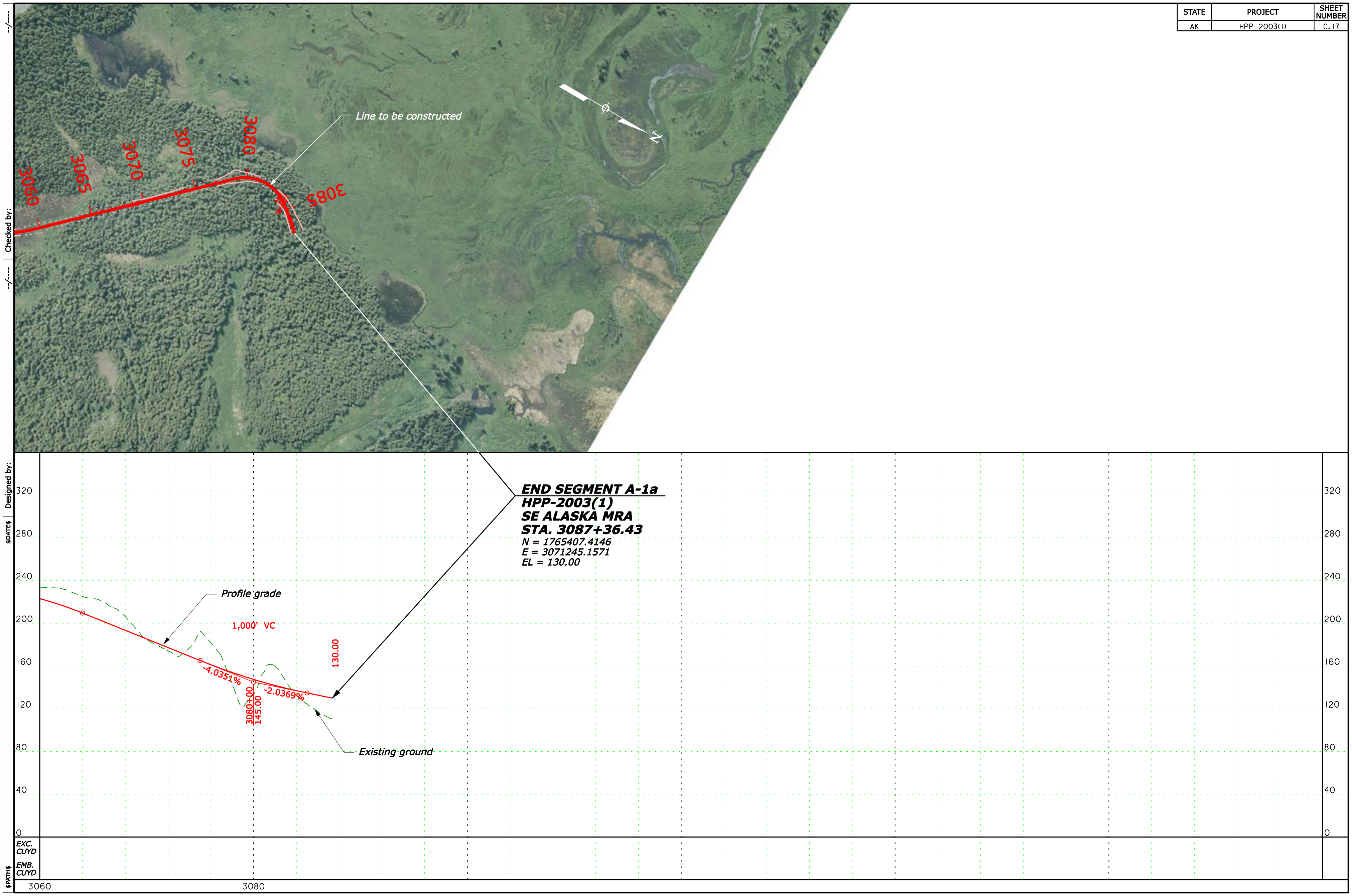
$PATH$


STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.14
Checked by:
Designed by:
$DATE$
$PATH$
Line to be constructed
Existing ground
Profile grade
2715+50
940.00
+6.8966%
-5.9712%
4,000' VC
2756+00
2771+00
2,000' VC
-5.9712%
-1.7391%
2785+00
525.00
2808+00
485.00
-4.6154%
1,200' VC
EXC. CUYD
EMB. CUYD
2700
2720
2740
2760
2780
2800
2820

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.15




STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.16
Checked by:
Designed by:
$DATE$
$PATH$
Line to be constructed
2940
2945
2950
2955
2960
2965
2970
2975
2980
2985
2990
2995
3000
3005
3010
3015
3020
3025
3030
3035
3040
3045
3050
3055
3060
3065
3070
3075
1,500' VC
-8.4211%
2955+00
135.00
-0.6034%
Profile grade
Existing ground
1,000' VC
3015+00
-0.6034%
3013+00
100.00
+4.1558%
3039+00
+4.1558%
3051+50
260.00
-4.0351%
2,500' VC
0
40
80
120
160
200
240
280
320
EXC. CUYD
EMB. CUYD
2940
2960
2980
3000
3020
3040
3060



Checked by:

Designed by:

$DATE$

$PATH$

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Aaron Creek Pass/Tunnel Alignment (Segment A-2)

Segment A-2 of the Aaron Creek Pass/Tunnel Alignment is part of Stage 4 of the Aaron Creek Corridor and connects Segment W-1 of the Wrangell Island Alignment to either Segment A-1a or Segment A-1b of the Aaron Creek Alignment. Construction of Segment W-1 is necessary to connect the Aaron Creek Pass/Tunnel Alignment with the reconstructed roads on Wrangell Island. The completion of Stage 4 of the Aaron Creek Corridor will replace conventional ferry operations between the proposed Berg Bay ferry terminal near milepost (MP) 5.2 and the Log Transfer Station ferry terminal proposed on Wrangell Island.

Segment A-2 would begin on the southeast side of The Narrows and would immediately cross the Narrows via a 1,500-foot bridge. The alignment would then parallel the north side of Blake Channel from MP 0.0 to MP 4.9. A large culvert is anticipated for an active drainage near MP 2.5. The terrain along the alignment from MP 0.0 to MP 4.9 is moderate. After reaching Berg Bay near MP 4.9, the alignment would turn to the north and parallel the western shore of Berg Bay until reaching the Berg Bay conventional ferry terminal and the beginning of Segment A-1a or A-1b at MP 5.2. The terrain is also moderate between MP 4.9 and MP 5.2.

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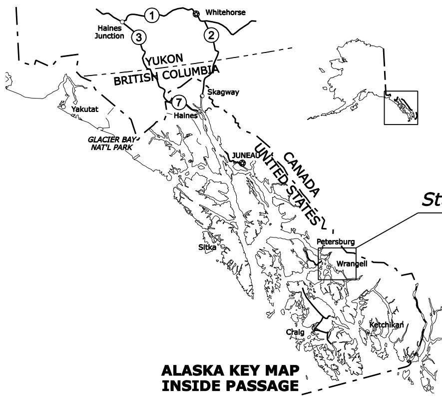
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



ALASKA KEY MAP
INSIDE PASSAGE

PLANS FOR PROPOSED STUDY

AK HPP-2003(1)

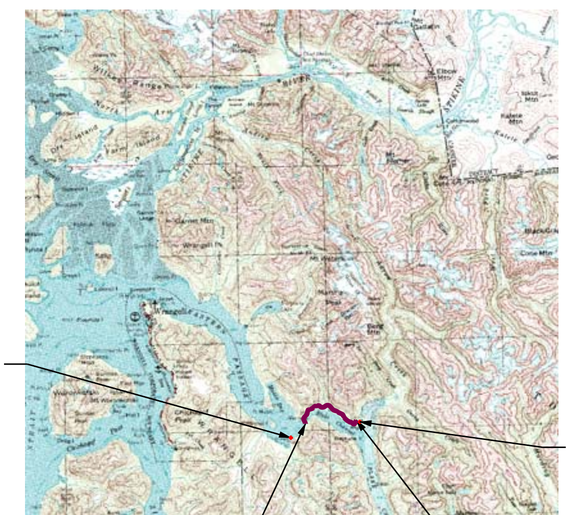
SOUTHEAST ALASKA MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA

AARON CREEK PASS / TUNNEL ALIGNMENT (SEGMENT A-2)

LENGTH 5.2 MILES

N



40000 20000 0 40000 80000
SCALE IN FEET

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 5 miles of new alignment.

DESIGN DESIGNATION:

ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units

PLANS PREPARED FOR

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

PLANS PREPARED BY

RPA
ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA

INDEX TO SHEETS

4/2009 B. WACKER. Checked by:
4/2009 B. THOMPSON Designed by:
23-Apr-2009 01:09 PM
...\Segment A-2\ad0301aa.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).

National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinae based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilites	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS GREATER THAN 7 FEET

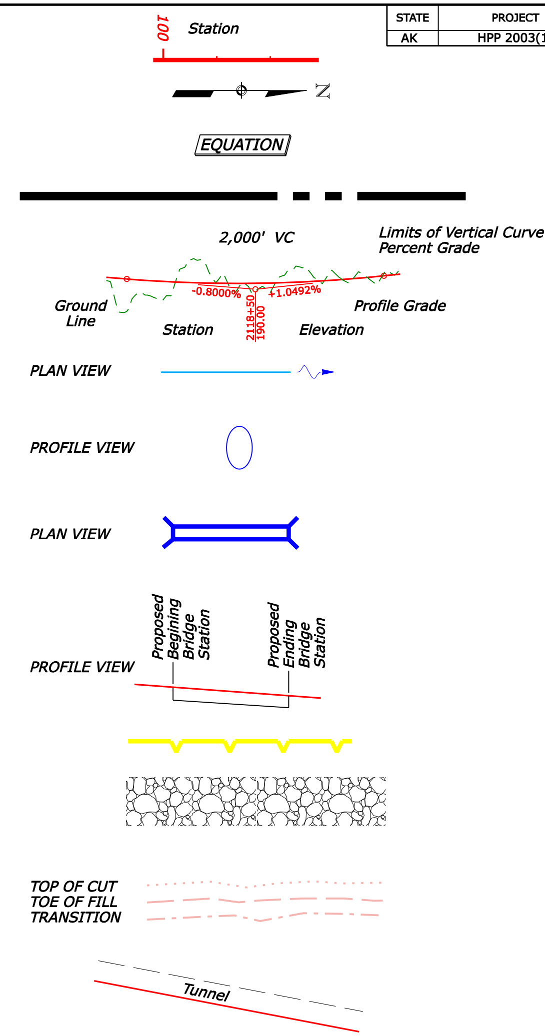
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

TUNNEL DESIGNATION ON PROFILE



NOTE:
1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

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23-Apr-2009 01:10 PM
Designed by: B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
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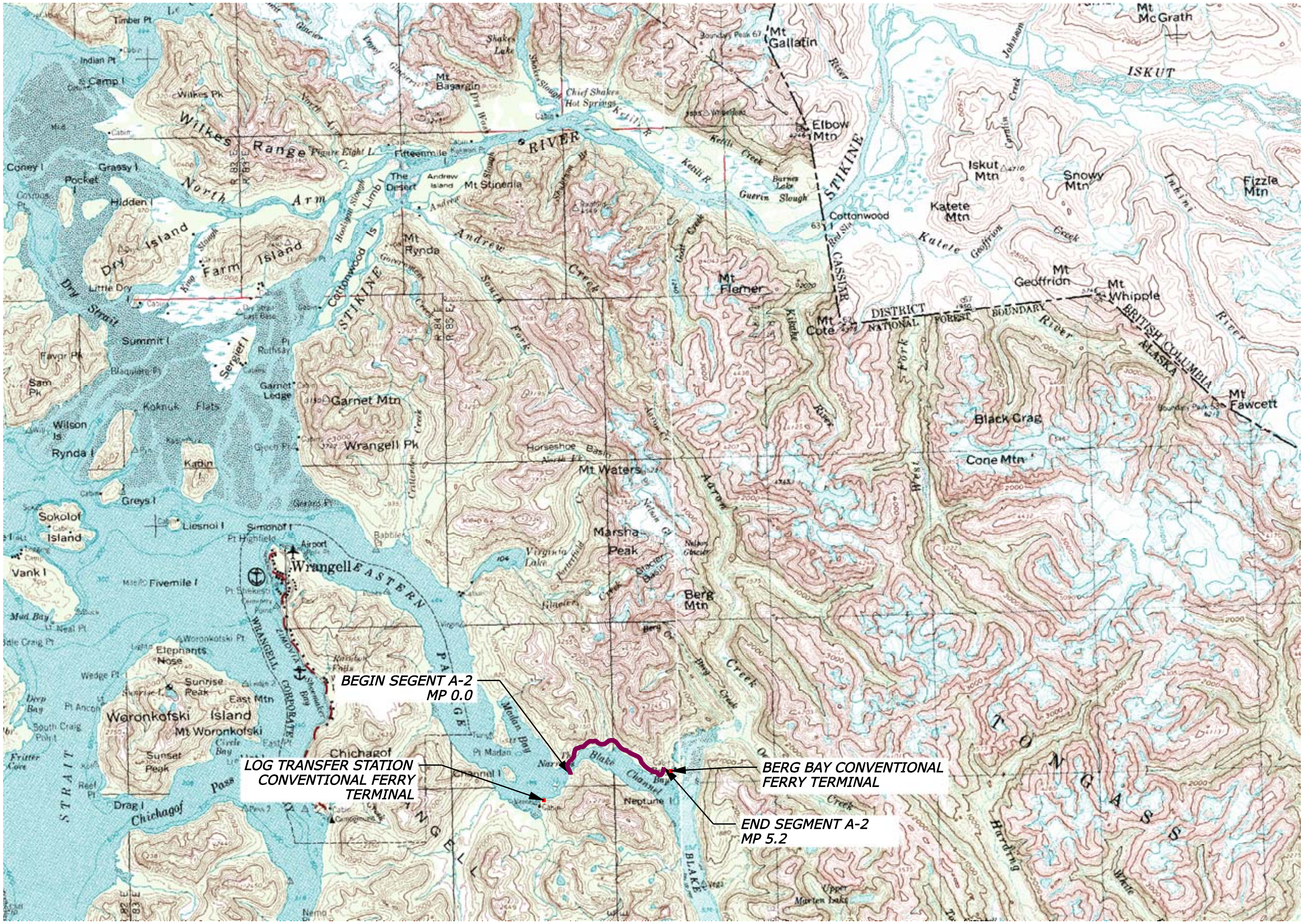


N

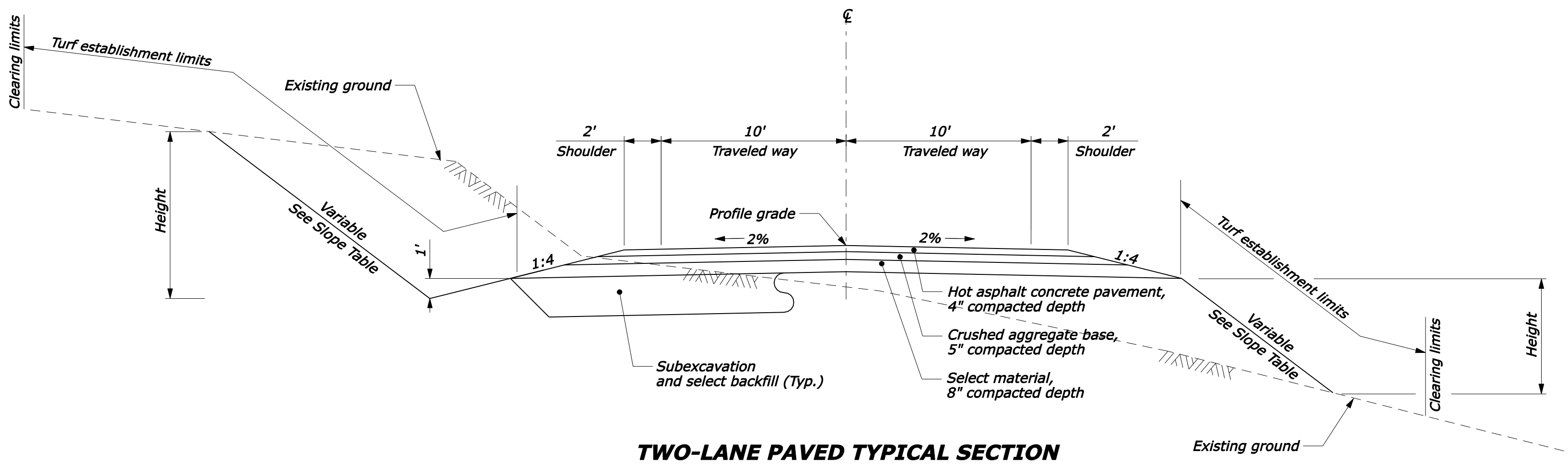
20000 10000 0 20000 40000

SCALE IN FEET

VICINITY MAP

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 01:10 PM ...\Segment A-2\ad0301ac.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.1



TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

TWO-LANE PAVED TYPICAL SECTION

4/2009 B. WACKER Checked by:
4/2009 B. THOMPSON Designed by:
23-Apr-2009 01:15 PM
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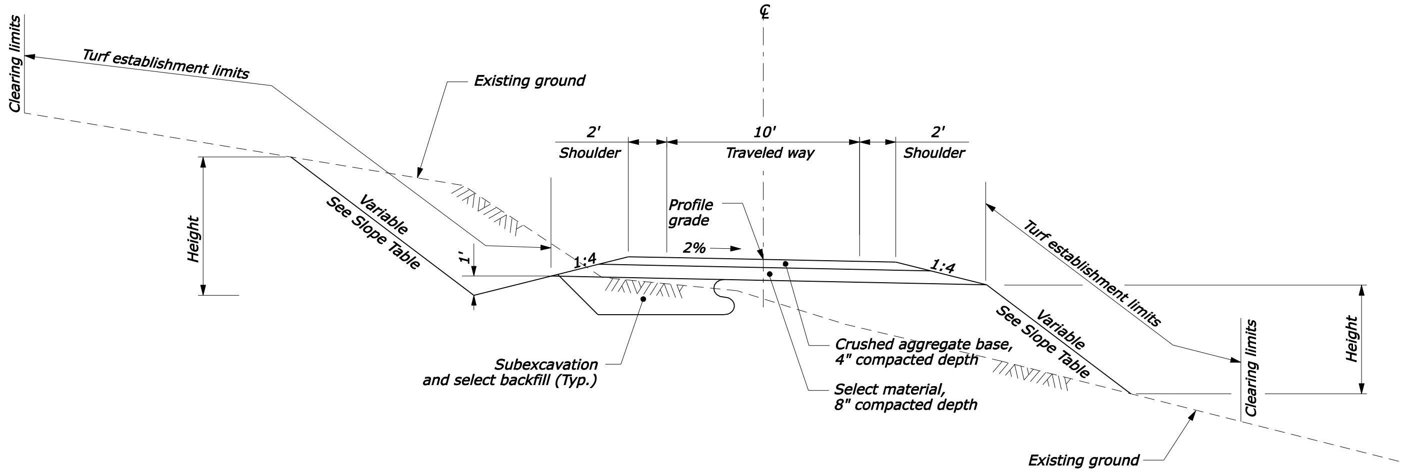
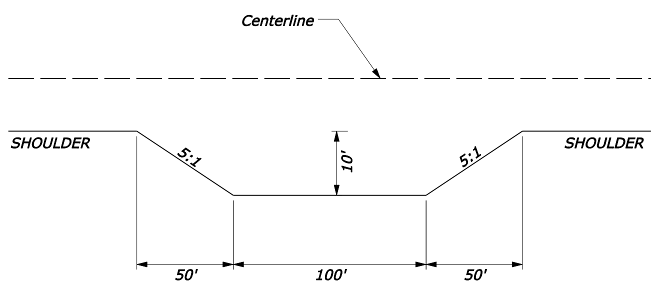
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.2



ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

ONE-LANE GRAVEL TYPICAL SECTION

4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
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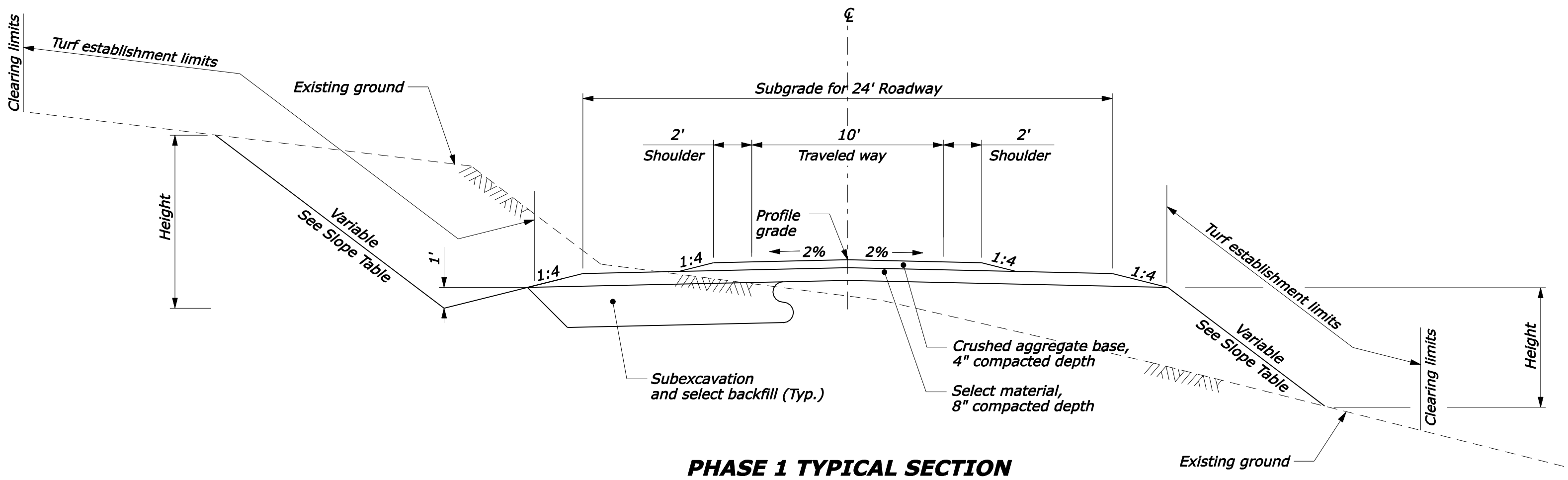
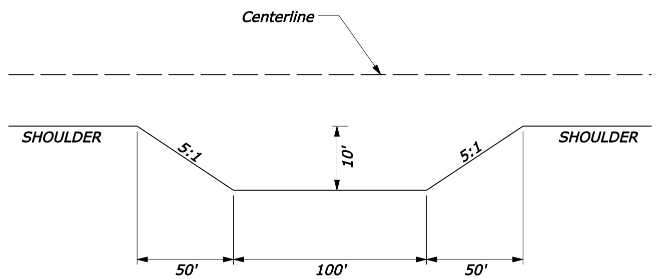
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.3



PHASE 1 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 1 TYPICAL SECTION

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Designed by: B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
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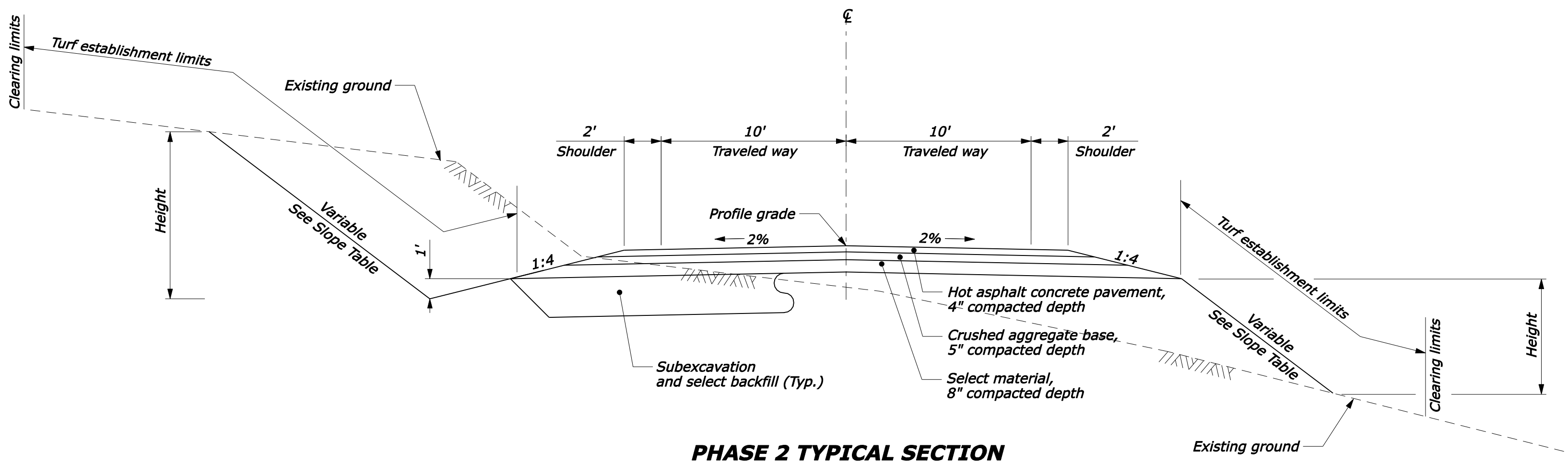

PHASE 2 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 2
TYPICAL SECTION

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4/2009 B. THOMPSON Designed by:
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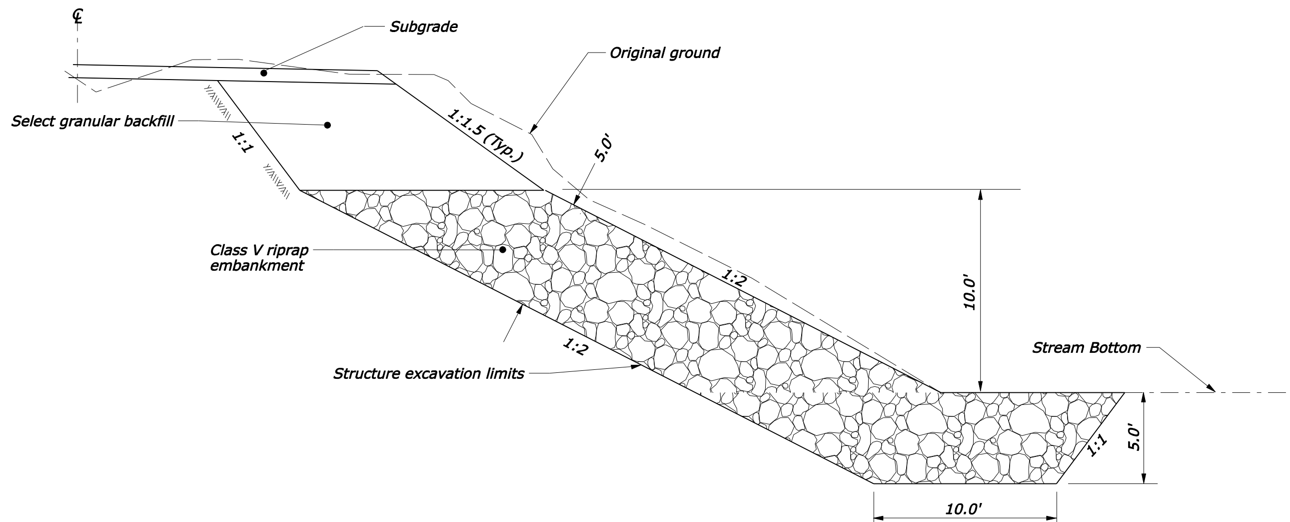
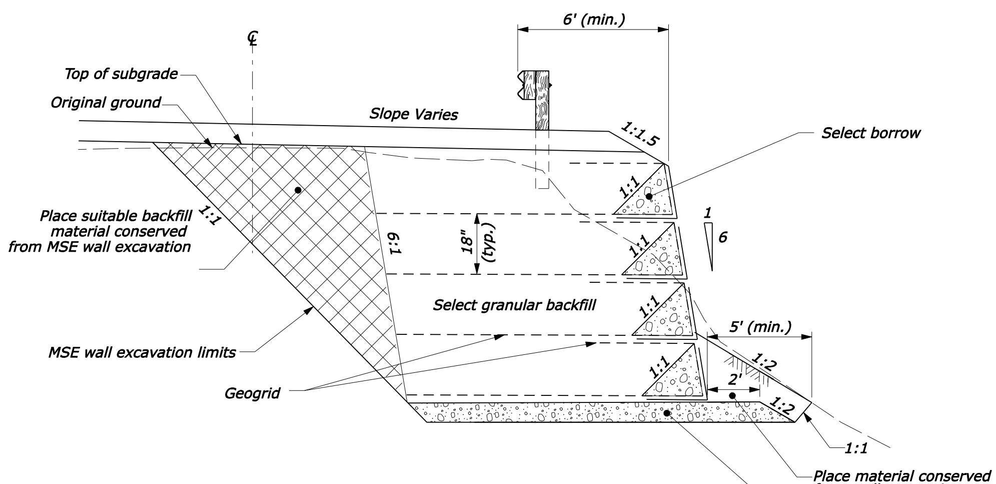
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.5



ROCK REVETMENT TYPICAL SECTION



MSE WALL TYPICAL SECTION

NOTE:

1. Rock revetment typical section from Bradfield River Road Final Scoping and Pre-NEPA Engineering Feasibility Study report dated January 10, 2005.
2. Class V riprap gradation requirements as shown in Table 705-1 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03).
3. Location of MSE walls and rock revetment are shown in the plan and profile sheets within Section C.

NO SCALE

MSE WALL & ROCK REVETMENT TYPICAL SECTIONS

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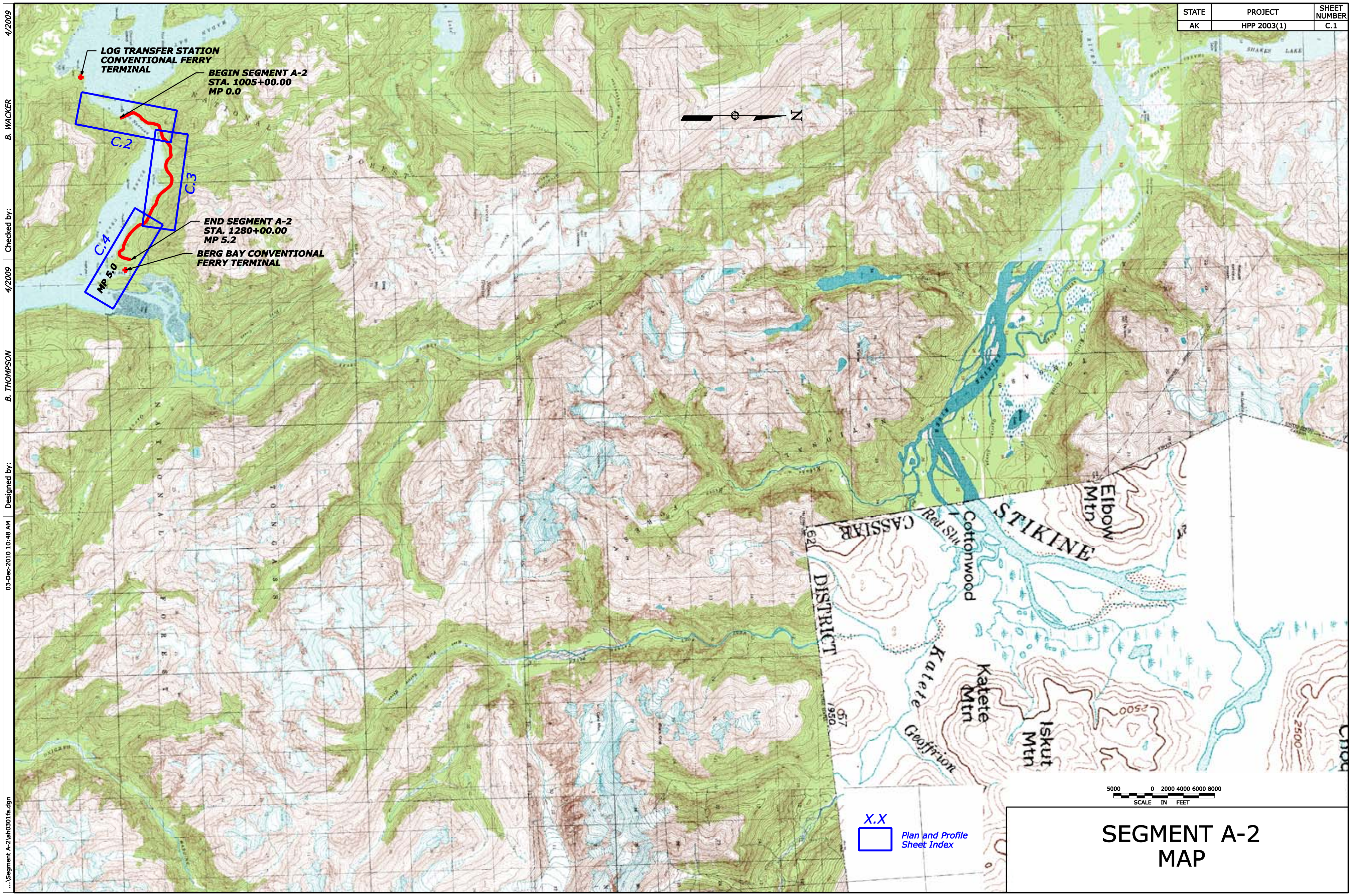
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.1



SEGMENT A-2 MAP

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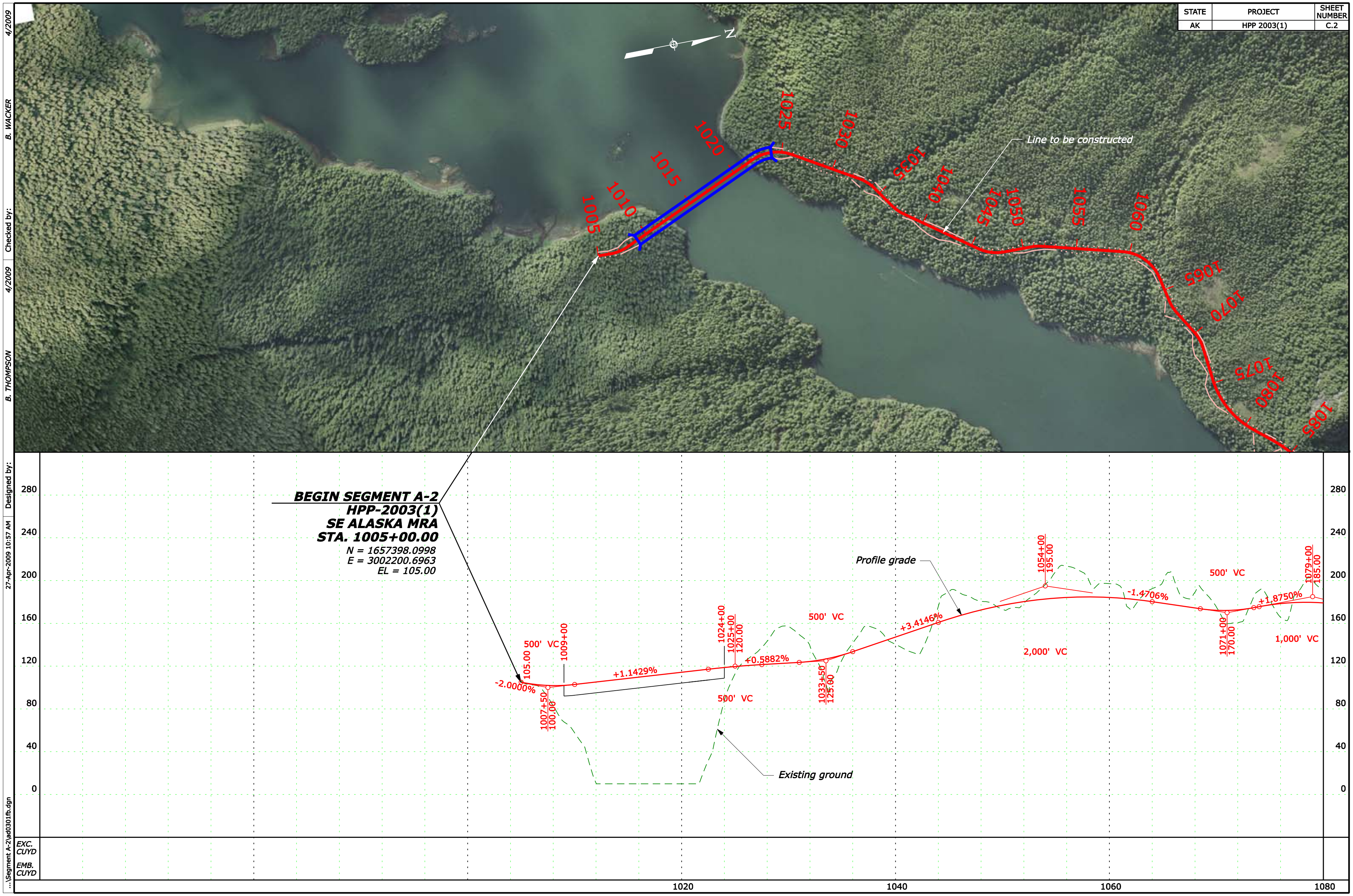

STATE | PROJECT | SHEET NUMBER
AK | HPP 2003(1) | C.2
N
Line to be constructed
1005
1010
1015
1020
1025
1030
1035
1040
1045
1050
1055
1060
1065
1070
1075
1080
1085
BEGIN SEGMENT A-2
HPP-2003(1)
SE ALASKA MRA
STA. 1005+00.00
N = 1657398.0998
E = 3002200.6963
EL = 105.00
Profile grade
Existing ground
-2.0000%
+1.1429%
+0.5882%
+3.4146%
-1.4706%
+1.8750%
500' VC
500' VC
500' VC
500' VC
2,000' VC
1,000' VC
105.00
1007+50
100.00
1009+00
1024+00
1025+00
120.00
1033+50
125.00
1054+00
195.00
1071+00
170.00
1079+00
185.00
280
240
200
160
120
80
40
0
EXC. CUYD
EMB. CUYD
1020
1040
1060
1080
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
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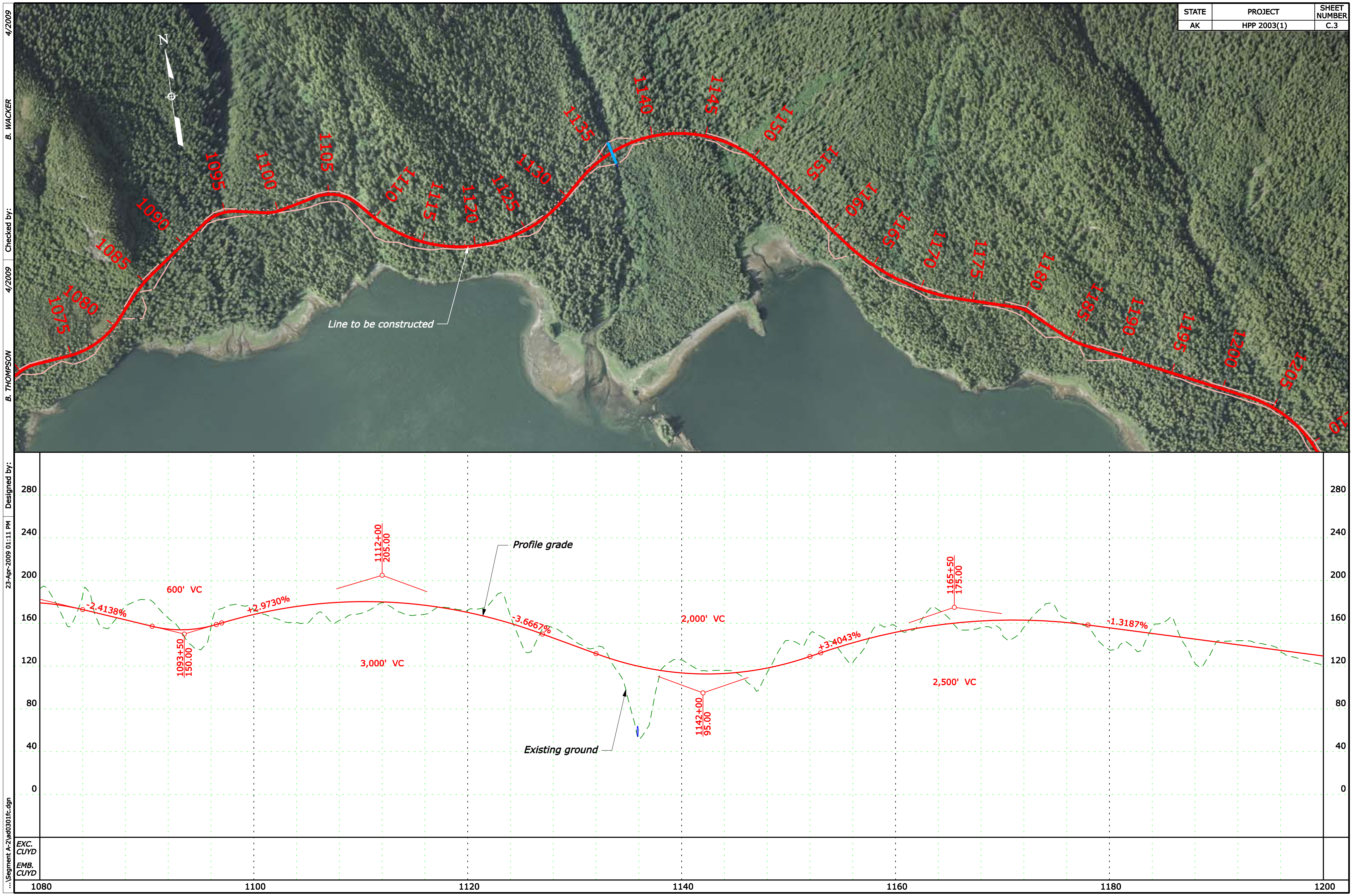

STATE | PROJECT | SHEET NUMBER
AK | HPP 2003(1) | C.3
N
1075
1080
1085
1090
1095
1100
1105
1110
1115
1120
1125
1130
1135
1140
1145
1150
1155
1160
1165
1170
1175
1180
1185
1190
1195
1200
1205
Line to be constructed
Profile grade
Existing ground
600' VC
3,000' VC
2,000' VC
2,500' VC
-2.4138%
+2.9730%
-3.6667%
+3.4043%
-1.3187%
1093+50
150.00
1112+00
205.00
1142+00
95.00
1165+50
175.00
280
240
200
160
120
80
40
0
EXC. CUYD
EMB. CUYD
1080
1100
1120
1140
1160
1180
1200
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
23-Apr-2009 01:11 PM
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STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.4

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 01:13 PM ...\Segment A-2\ad0301fd.dgn

END SEGMENT A-2
HPP-2003(1)
SE ALASKA MRA
STA. 1280+00.00
N = 1658809.2410
E = 3020467.6135
EL = 145.00

APPENDIX C.2

Aaron Creek Tunnel Alignment

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Aaron Creek Tunnel Alignment (Segment A-1b)

Segment A-1b of the Aaron Creek Tunnel Alignment is part of Stage 2 of the Aaron Creek Corridor. Segment A-1b would connect the conceptual Berg Bay conventional ferry terminal to Segment I-3 of the Iskut River Alignment. The completion of Segment A-1b would replace ACV ferry operations between the proposed Iskut River ACV ferry terminal near the beginning of Segment I-3 and Wrangell and Mitkof Island. Once completed, a conventional ferry would operate between the proposed Berg Bay conventional ferry terminal near milepost (MP) 0.0 and the Log Transfer Station conventional ferry terminal proposed on Wrangell Island.

Segment A-1b would begin next to the proposed Berg Bay conventional ferry terminal at MP 0.0 and would parallel the western shore of Berg Bay until reaching the mouth of the Aaron Creek drainage near MP 0.5. The proposed roadway would proceed northeast along the western side of the Aaron Creek tidal flats between MP 0.5 and MP 4.5. Steep sidewalls between MP 2.3 and MP 3.2 would require a combination of mechanically stabilized earth (MSE) walls and bench cuts to keep the channel from affecting the alignment. For further information regarding the MSE walls, as well as rock revetment walls, refer to the typical sections (Sheet B.6). A large culvert is proposed for an active drainage at MP 3.3 and a 600-foot bridge would be needed to cross Berg Creek near MP 3.8. The terrain along the alignment would rise abruptly between the active drainage at MP 3.3 and Berg Creek. Muskeg deposits identified during the field review would prevent the alignment from completely avoiding this rise. Subsequently, the alignment would skirt the edge of the hill and would require a substantial cut section near MP 3.7. To avoid other muskeg areas, the alignment would begin to move away from Aaron Creek after crossing Berg Creek. The terrain would be moderate between MP 0.0 and MP 4.5.

The alignment and Aaron Creek would both turn to the northwest at MP 4.5. To avoid muskeg areas, the alignment would depart from Aaron Creek and climb an adjacent drainage between MP 4.5 and MP 5.6. A large culvert would be needed to cross the drainage near MP 5.3. The alignment would return to the steep western slopes of the Aaron Creek drainage at MP 5.6 and would continue along the slopes until MP 6.6. MSE walls and bench cuts would be necessary for the steep slopes along this section. Following the creek, the alignment would turn back to the northeast at MP 6.6. The creek meanders back and forth between the east and west sides of the drainage between MP 6.6 and
MP 8.4. Instead of following the creek, the roadway would keep to western edge of the drainage along the base of the mountain slopes to avoid muskeg areas and any potential changes to the creek's course. Flat and moderate terrain would be encountered by the alignment when the creek is on the east side of the drainage. The flat terrain may present opportunities to use excess roadway excavation.

The entire Aaron Creek valley begins to swing back to the northwest between MP 8.4 and MP 9.5. The alignment would depart Aaron Creek at MP 8.4 and would parallel an active drainage to a 200-foot bridge crossing near MP 8.9. A large culvert would be needed at

MP 8.5 for another drainage. After crossing the drainage near MP 8.9, the alignment would return to the toe of the side slopes along the west side of the Aaron Creek valley. The creek would stay on the east side of the drainage until MP 9.5, where a meander brings the creek back to the west. The alignment would begin to turn east upon reaching MP 9.5, cross Aaron Creek via a 2,200-foot bridge near MP 9.6, and enter an unnamed creek valley. The terrain would begin to increase in gradient as the alignment enters the unnamed creek valley. The roadway would parallel the north side of the valley to MP 11.5. Sections of rock revetments would be needed near MP 10.8 to minimize channel impacts. To avoid avalanche areas along the northern side of the drainage, a 500-foot bridge crossing would shift the alignment to the south side of the drainage near MP 11.5. The overall terrain within this section is moderate.

After crossing the unnamed creek at MP 11.5, the alignment would turn to the southeast and follow the south side of the drainage to MP 14.6. The floodplain begins to narrow within this section, forcing the alignment to begin climbing the valley side slopes to avoid affecting the unnamed creek. The terrain would begin to transition from moderate to steep. A short section of rock revetment would be needed near the end of the bridge at MP 11.6. MSE walls and bench cuts would be needed for the steeper sections. Two large culverts would be needed for active drainages near MP 13.7 and MP 14.2. The alignment would turn to the northeast at MP 14.6, where a 1,100-foot bridge would be needed to span an active channel. The alignment would continue to the northeast along the south side of the unnamed creek valley and begin climbing toward the west tunnel portal at MP 17.9. Between MP 14.6 and MP 17.9, the alignment would gradually climb through moderate and steep terrain. A few short sections would require grades near the desired maximum of 8%, but overall the grades would be less severe than those of the pass alignment. MSE walls would be needed along a few steep sections to keep the fill slopes from encroaching on the creek. Active drainages near MP 16.4 and MP 17.3 would require large culverts. The tunnel beginning at MP 17.9 would be approximately 7,400 feet long and would take the alignment through the mountain at a 4.5% downgrade. All assumptions and sizing of the tunnel are from the 2005 FHWA-WFLHD Bradfield River Road Study (Appendix B). Refer to the tunnel typical sections for further details (Sheet B.5).

The alignment would emerge from the tunnel into the West Fork of the Katete River valley at MP 19.3. The roadway would continue downgrade along the west side of the river valley until MP 19.8. Two large culverts would be needed for drainages near MP 19.3 and MP 19.5. Before reaching an avalanche area, the alignment would cross the West Fork with a 1,500-foot bridge at MP 19.8. The alignment would then traverse to the northeast along the east side of the drainage to MP 20.7, where the whole river valley takes a turn to the northwest. As the roadway would swing to the northwest to follow the river, it would encounter the confluence of two tributaries. A 300-foot bridge would be used to cross the first waterway at MP 20.8, and a 500-foot bridge would cross the second waterway near MP 21.1. From MP 21.1, the roadway would continue northwest and parallel the river along the eastern edge of the drainage. The river runs along the western edge of the valley until MP 21.5, where it begins to veer back to the eastern side. To avoid climbing the eastern side slopes, the alignment would cross the river with a 2,000-

foot bridge beginning at MP 22.1. The terrain between MP 19.3 and MP 22.1 is predominantly moderate.

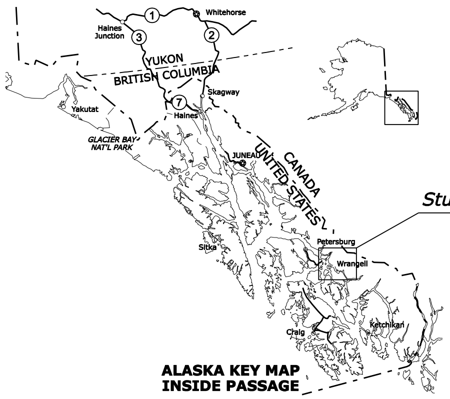
After crossing the river, the alignment would move to the western edge of the valley and turn to the north. A large culvert would likely be needed for an active drainage near MP 23.3. Near MP 23.8, the alignment would reach a tributary that would require a 700-foot bridge. The valley floor becomes a very narrow canyon with almost vertical side slopes between MP 25.9 and MP 27.7. The roadway alignment paralleled the river through this section in the initial conceptual design. However, the field review revealed extremely steep cliffs that would pose difficulties in building a road, and construction would be very expensive. Thus, the conceptual alignment would remain along the flat floodplain only long enough to cross the tributary at MP 23.8. Once over the tributary, the alignment would continue north, but would begin climbing the western sidewalls of the valley so that the canyon walls could be avoided. Between MP 23.8 and MP 26.6, the alignment would climb the western slopes through moderate and steep terrain. MSE walls and bench cuts would be needed along most of the steep sections. Active drainages near MP 24.5, MP 26.2, and MP 26.4 would require large culverts. The roadway would reach the top of the canyon slopes near MP 26.6.

The alignment would quickly descend back down the S-shaped canyon slopes and would cross the West Fork of the Katete River near MP 27.3. Crossing the river at this location would avoid an avalanche area on the west side of the drainage and would allow the alignment to meet up with the Iskut River Alignment in British Columbia (B.C.) without having to cross the Stikine or Iskut Rivers. The bridge needed for this crossing would have a 1,500-foot span. After the crossing, the alignment would turn to the north and would parallel the river along the base of the eastern slopes from MP 27.6 to MP 29.8. Large culverts would likely be needed for active drainages at MP 27.9 and MP 29.3. The terrain is moderate along this section, and MSE walls and revetments would only be needed where the river meanders to the eastern side of the valley near MP 28.7 and MP 29.2. The Aaron Creek Tunnel Alignment would reach the Alaska / B.C. border at MP 29.8.

Segment A-1b would continue into B.C. to connect to Segment I-3 of the Iskut River Alignment near the confluence of the Stikine and Iskut Rivers. A full conceptual design for Segment A-1b was only completed to MP 33.6, where the alignment would meet Segment S-1 of the South Stikine River Alignment. From MP 29.8, the alignment would traverse to the north along the base of the mountain slopes until reaching the Katete River delta near MP 31.0. The alignment would turn northeast from MP 31.0 and would cross the flat terrain along the floodplain to MP 32.3. A 2,400-foot bridge would be needed to cross the Katete River near MP 32.3, and two large culverts would be needed for drainages at MP 31.6 and MP 32.0. Muskeg deposits are likely present throughout much of the floodplain, and they might result in substantial amounts of subexcavation. After crossing the Katete River near MP 32.3, the alignment would continue to the north and would begin to climb the slopes along the base of Iskut and Katete Mountain. The alignment would reach the end of Segment S-1 at MP 33.6. From this point forward, only the horizontal alignment was developed based on USGS topographic maps, aerial photos, and orthophotography ground survey. Between MP 33.6 and MP 40.0, the alignment would continue to the north along the base of Iskut and Katete Mountain. The terminus of the Aaron Creek Tunnel Alignment would occur at MP 40.0, where the alignment would meet Segment I-3 of the Iskut River Alignment near the confluence of the Iskut and Stikine Rivers.

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



ALASKA KEY MAP
INSIDE PASSAGE

PLANS FOR PROPOSED STUDY

AK HPP-2003(1)

SOUTHEAST ALASKA MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA

AARON CREEK TUNNEL ALIGNMENT (SEGMENT A-1b)

LENGTH 40.0 MILES

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 40 miles of new alignment.

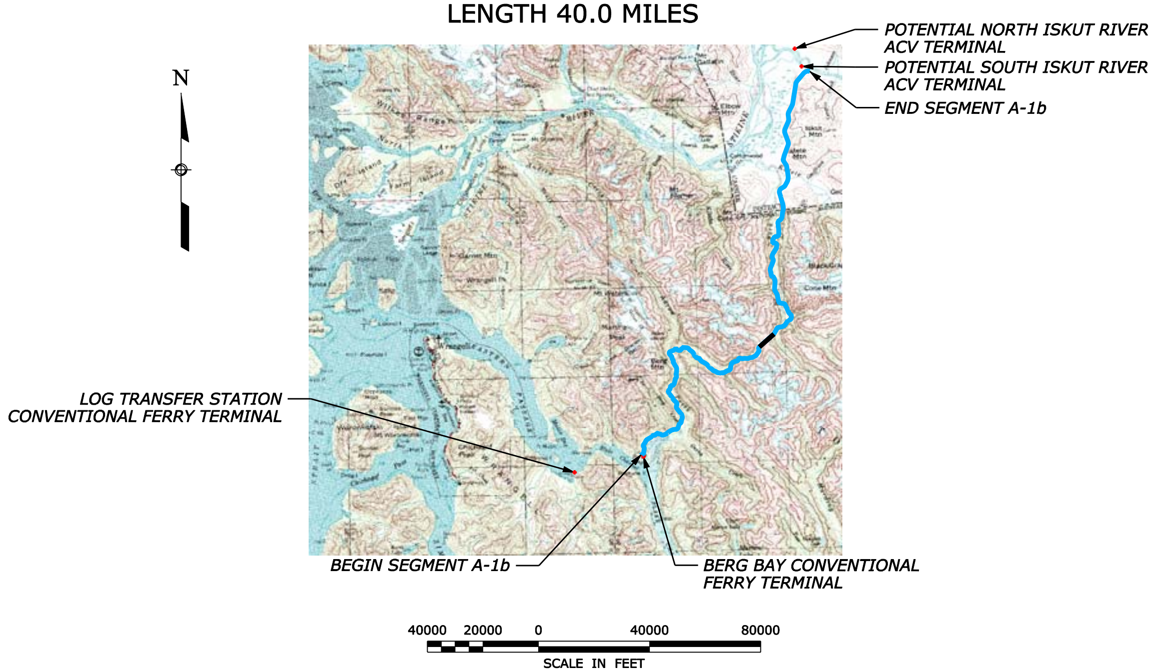
DESIGN DESIGNATION:

ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units

INDEX TO SHEETS



PLANS PREPARED FOR

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

PLANS PREPARED BY

RPA
ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 27-Apr-2009 07:37 AM ...\Segment A-1b\ad0301aa.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).

National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinate based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilities	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS GREATER THAN 7 FEET

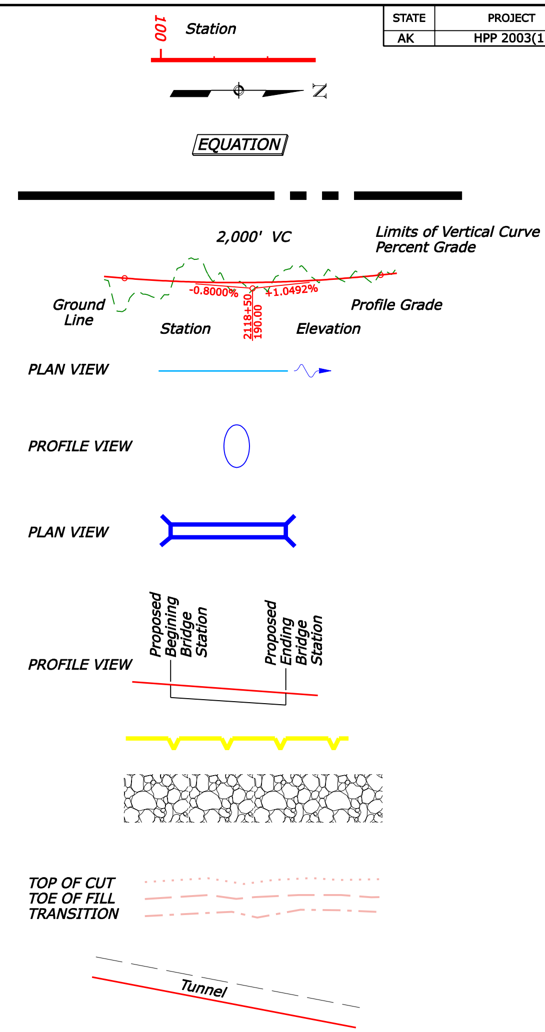
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

TUNNEL DESIGNATION ON PROFILE



NOTE:

1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 24-Apr-2009 07:56 PM ...\Segment A-1a\ad0301ab.dgn

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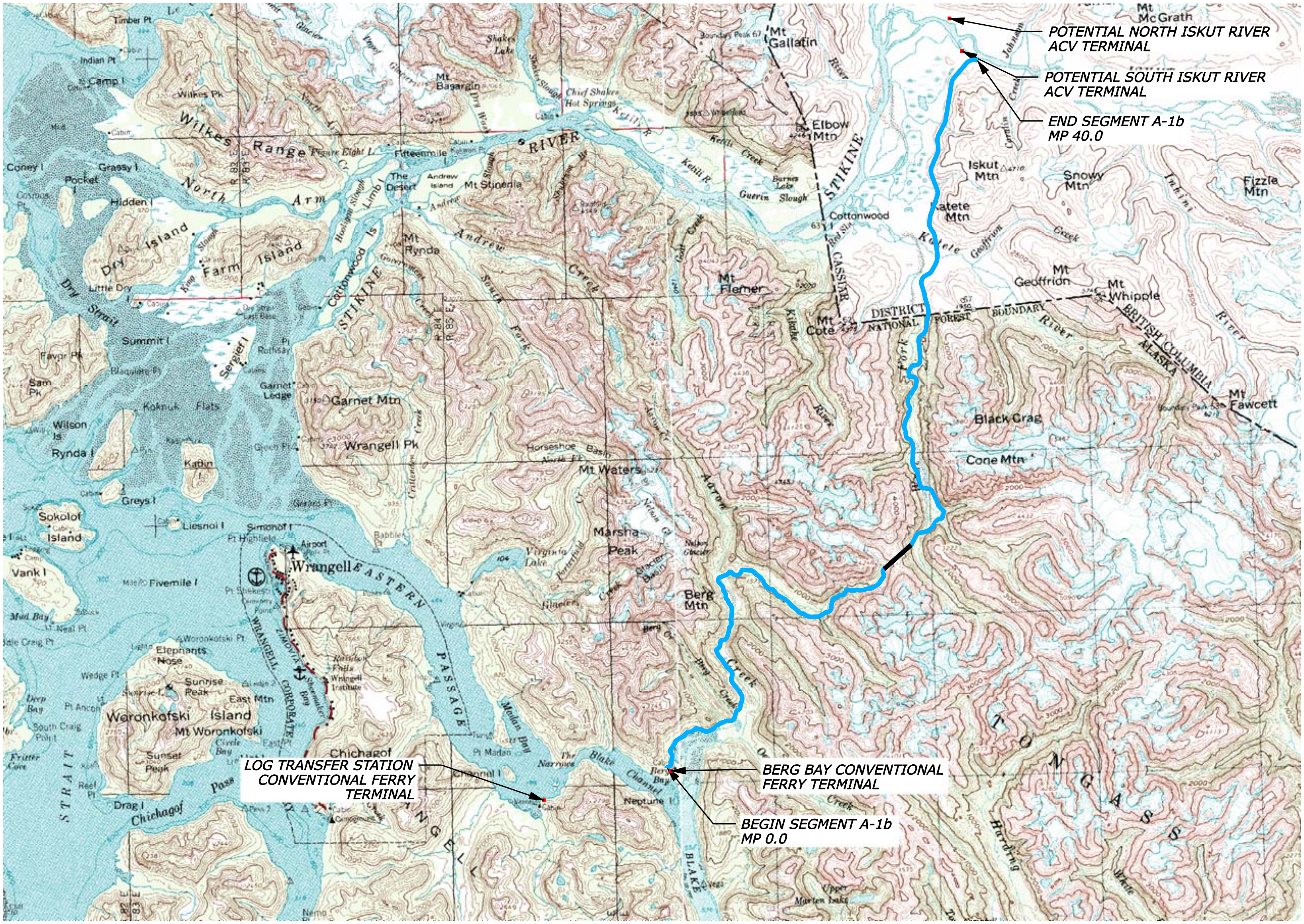

N

20000 10000 0 20000 40000
SCALE IN FEET

VICINITY MAP

Designed by: B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009
26-Apr-2009 01:15 PM
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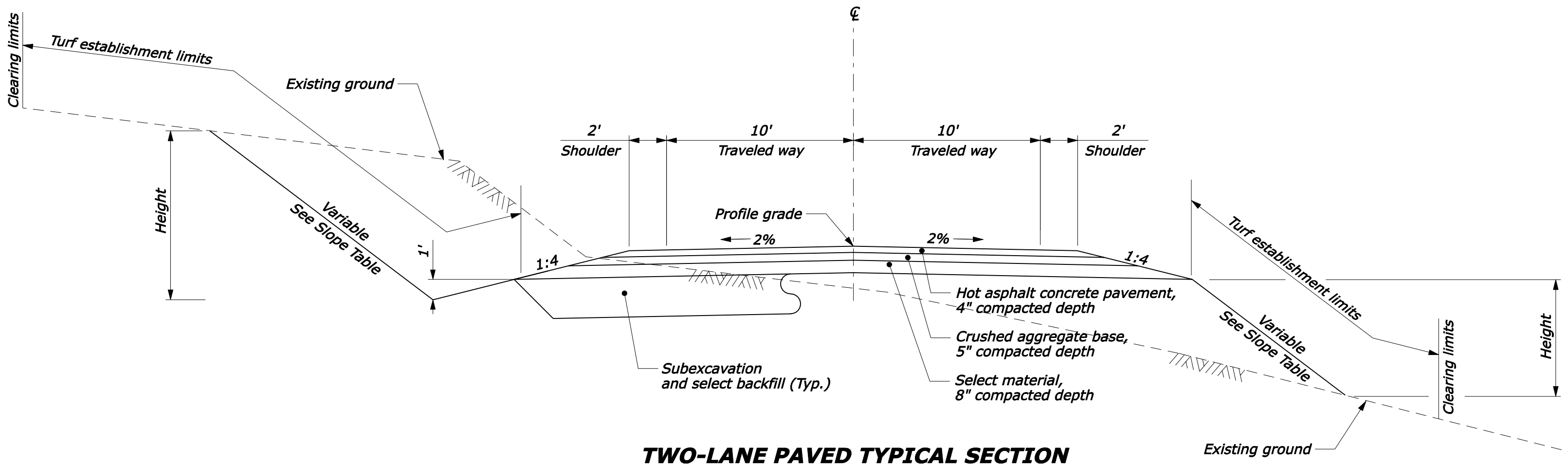
4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 24-Apr-2009 07:59 PM ...\Segment A-1a\ad0301ca.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.1

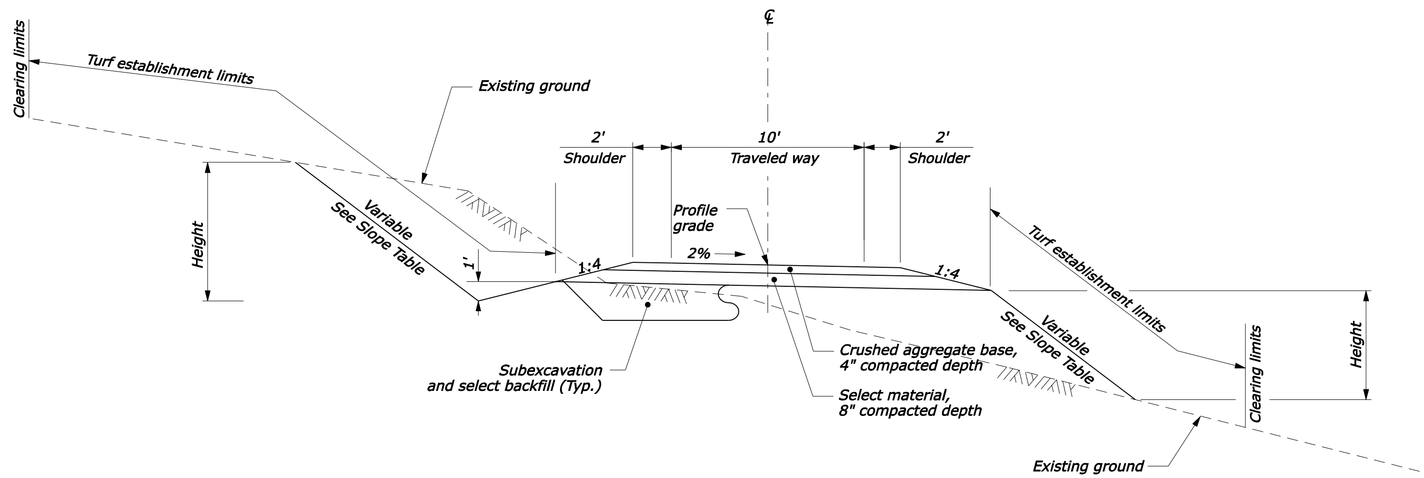


TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

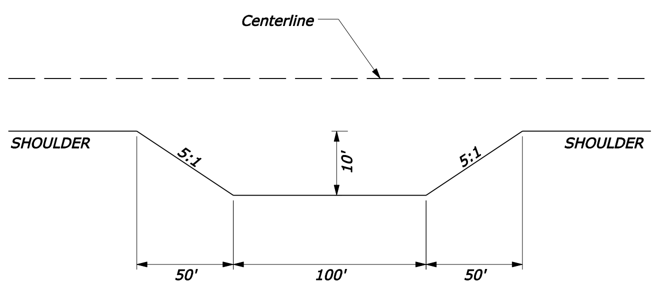
CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

TWO-LANE PAVED TYPICAL SECTION

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.2



ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

ONE-LANE GRAVEL TYPICAL SECTION

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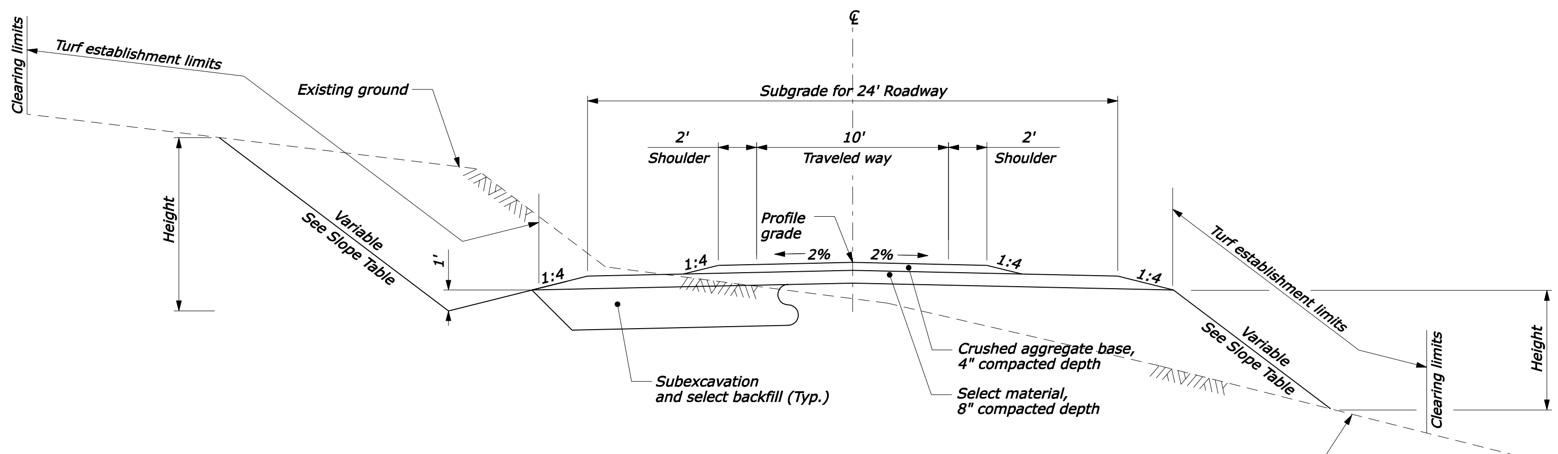
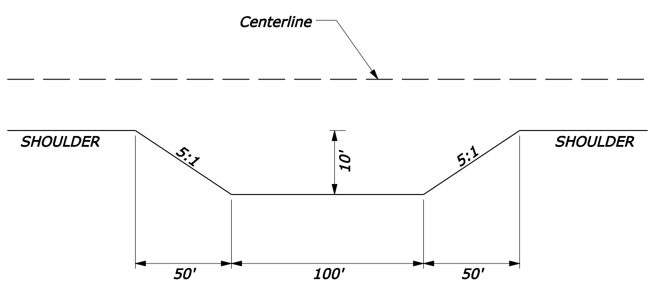
Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.3



PHASE 1 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

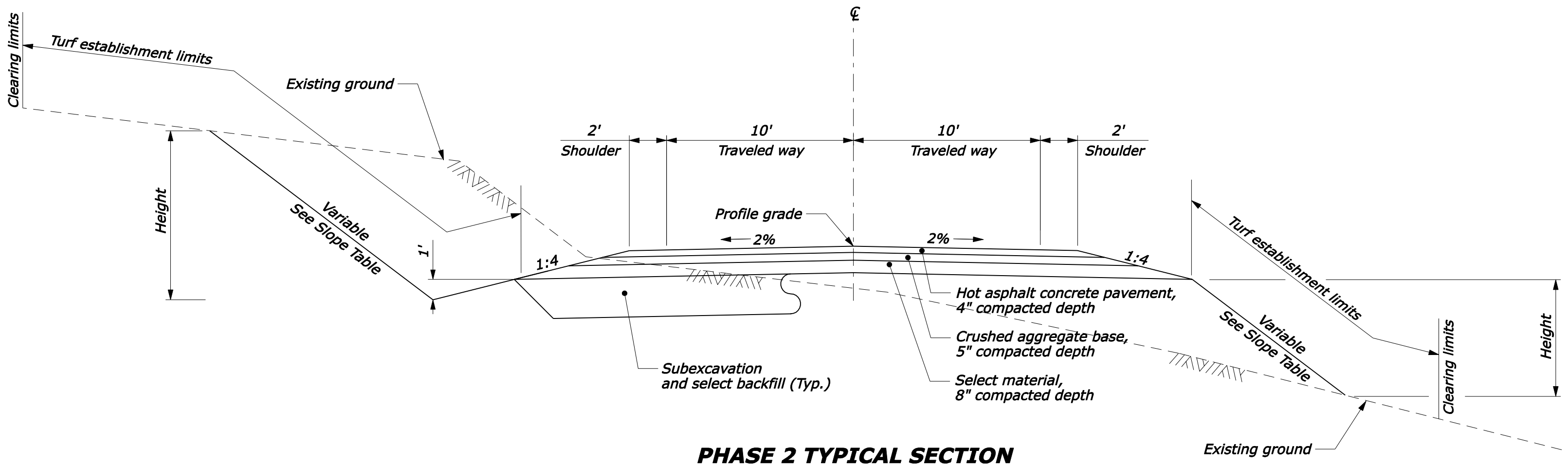


TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 1 TYPICAL SECTION

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 24-Apr-2009 08:02 PM ...\Segment A-1a\ad0301cc.dgn



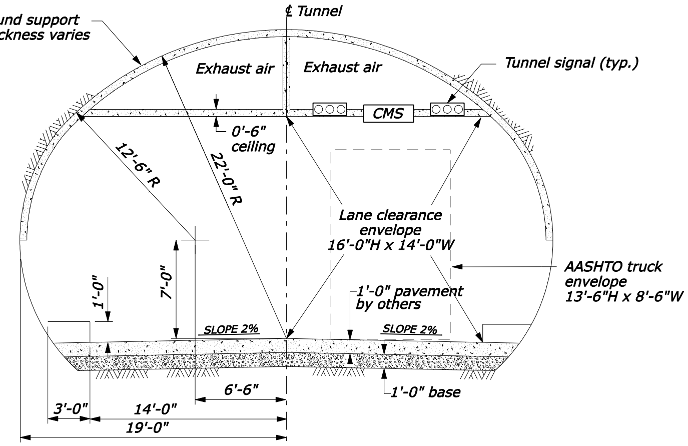
PHASE 2 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 2
TYPICAL SECTION

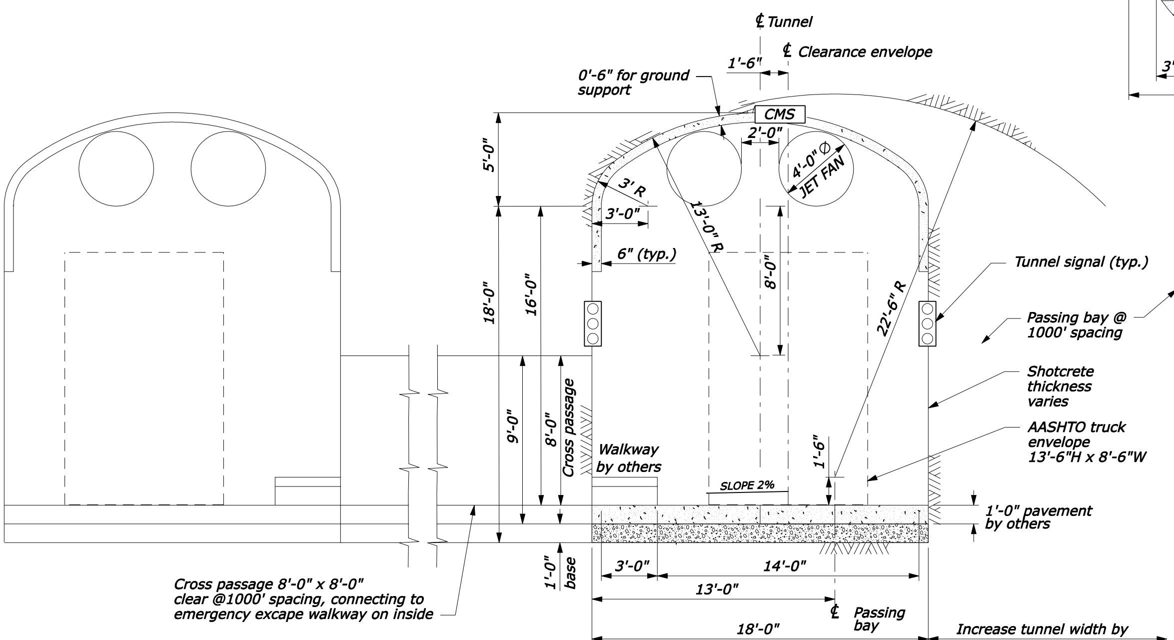
...\Segment A-1a\ad0301cd.dgn 24-Apr-2009 08:02 PM Designed by: B. THOMPSON 4/2009 Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.5



PORTAL

SINGLE TUNNEL
BI-DIRECTIONAL TRAFFIC



PORTAL

TWIN TUNNEL
UNI-DIRECTIONAL TRAFFIC

NOTE:

1. Tunnel detail from Bradfield River Road Project Tunnel Feasibility & Cost Estimates FINAL REPORT dated November 30, 2004 By PARSONS BRINKERHOFF.

NO SCALE

TUNNEL TYPICAL SECTIONS

...\Segment A-1b\ad0301ce.dgn | 24-Apr-2009 09:21 PM | Designed by: B. THOMPSON 4/2009 | Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
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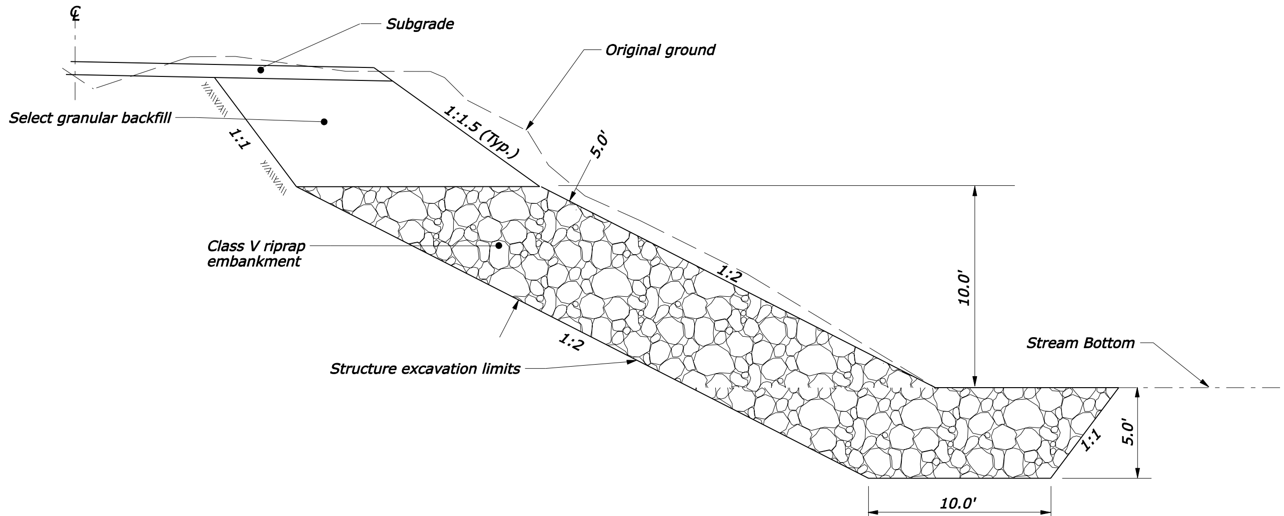
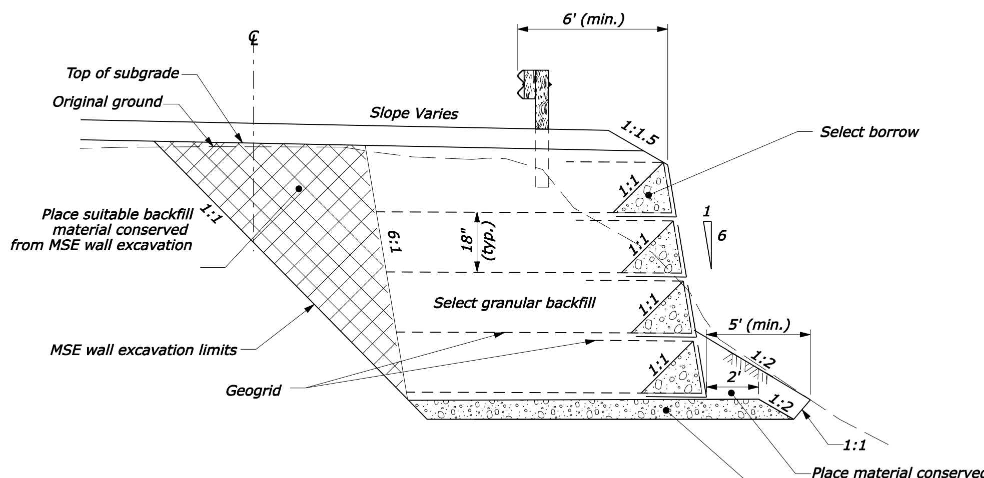


ROCK REVETMENT TYPICAL SECTION



MSE WALL TYPICAL SECTION

NOTE:

1. Rock revetment typical section from Bradfield River Road Final Scoping and Pre-NEPA Engineering Feasibility Study report dated January 10, 2005.

2. Class V riprap gradation requirements as shown in Table 705-1 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03).

3. Location of MSE walls and rock revetment are shown in the plan and profile sheets within Section C.

NO SCALE

MSE WALL & ROCK REVETMENT TYPICAL SECTIONS

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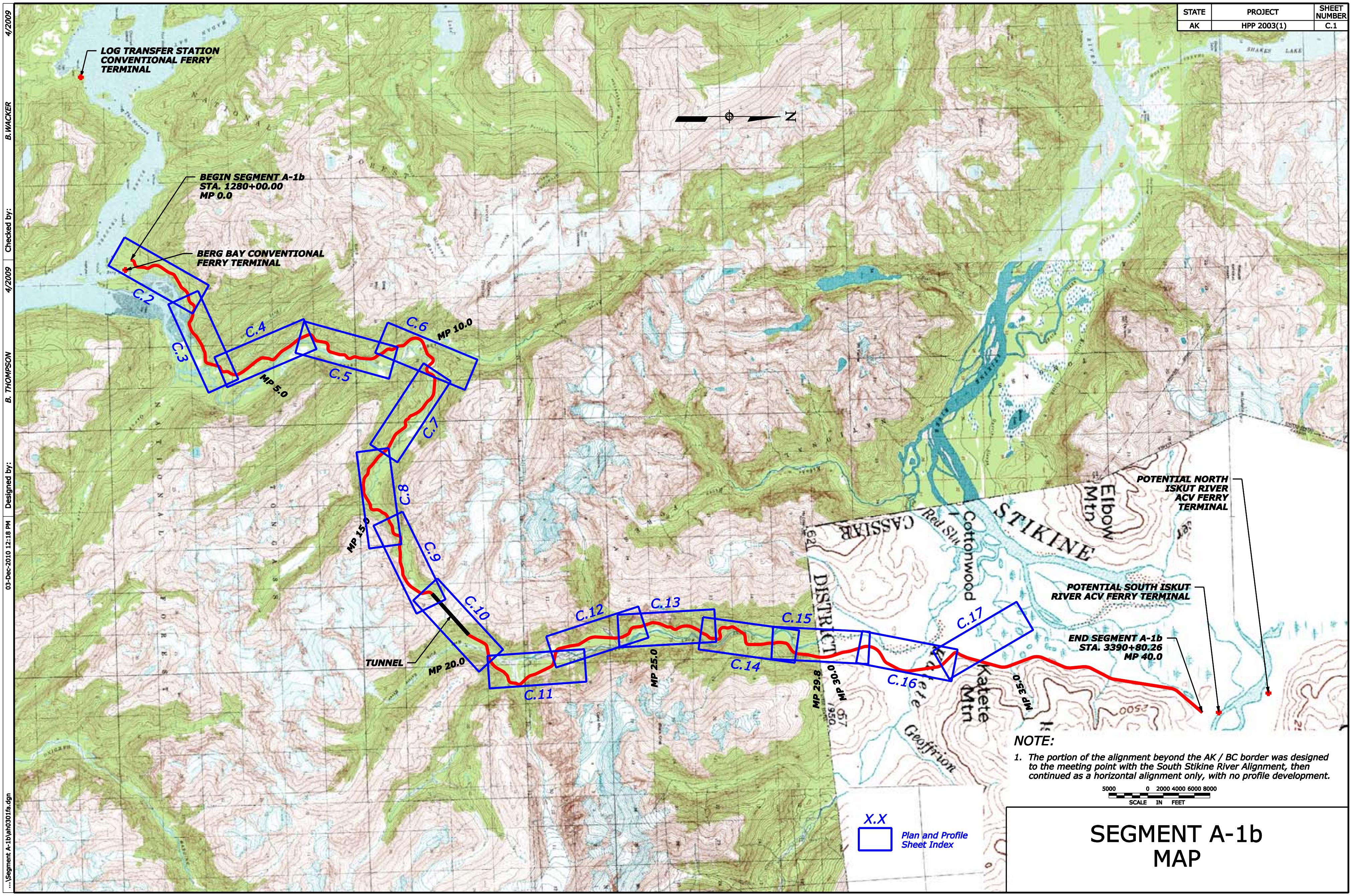
Checked by: B. WACKER 4/2009



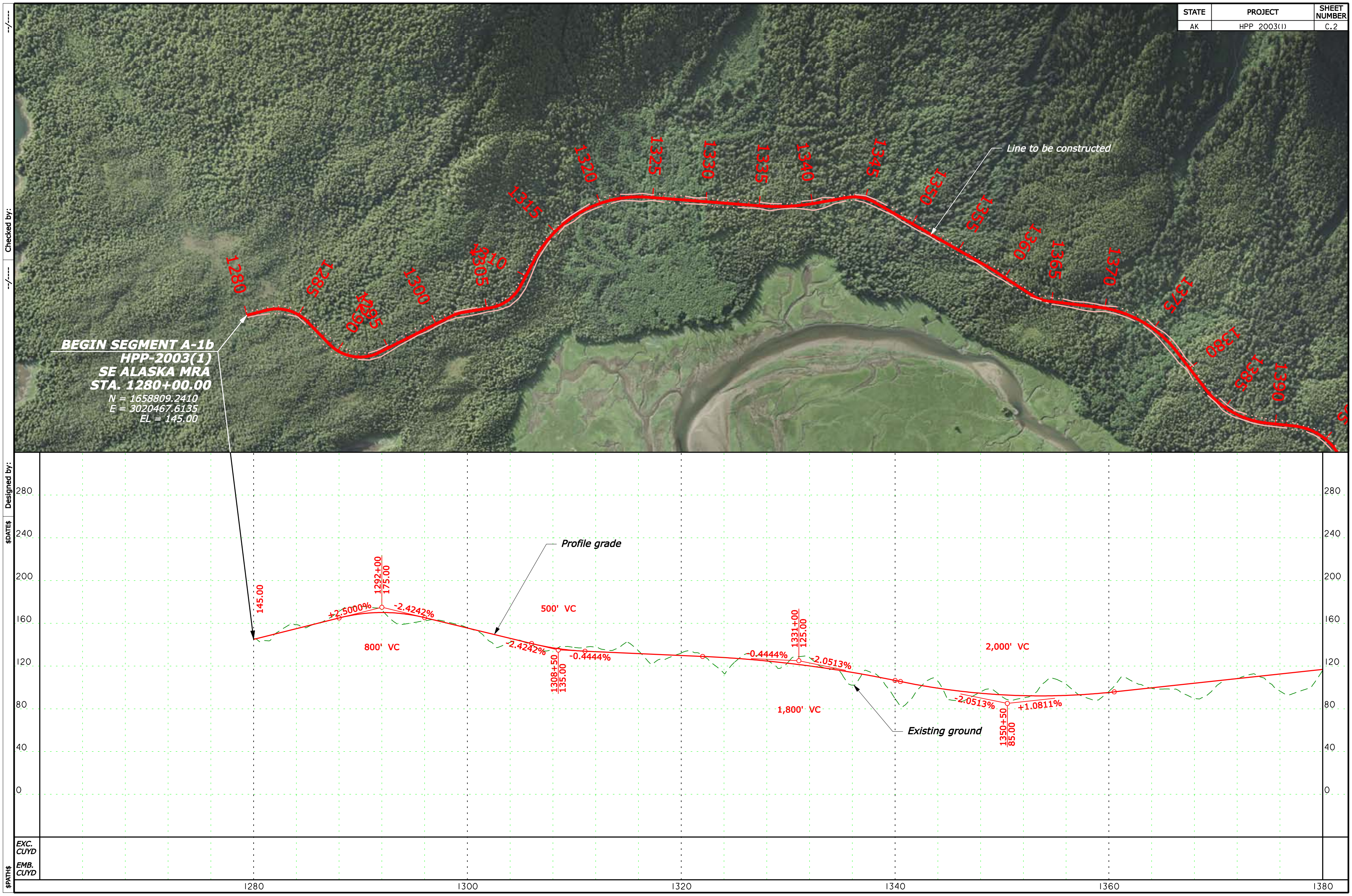
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.1

NOTE:

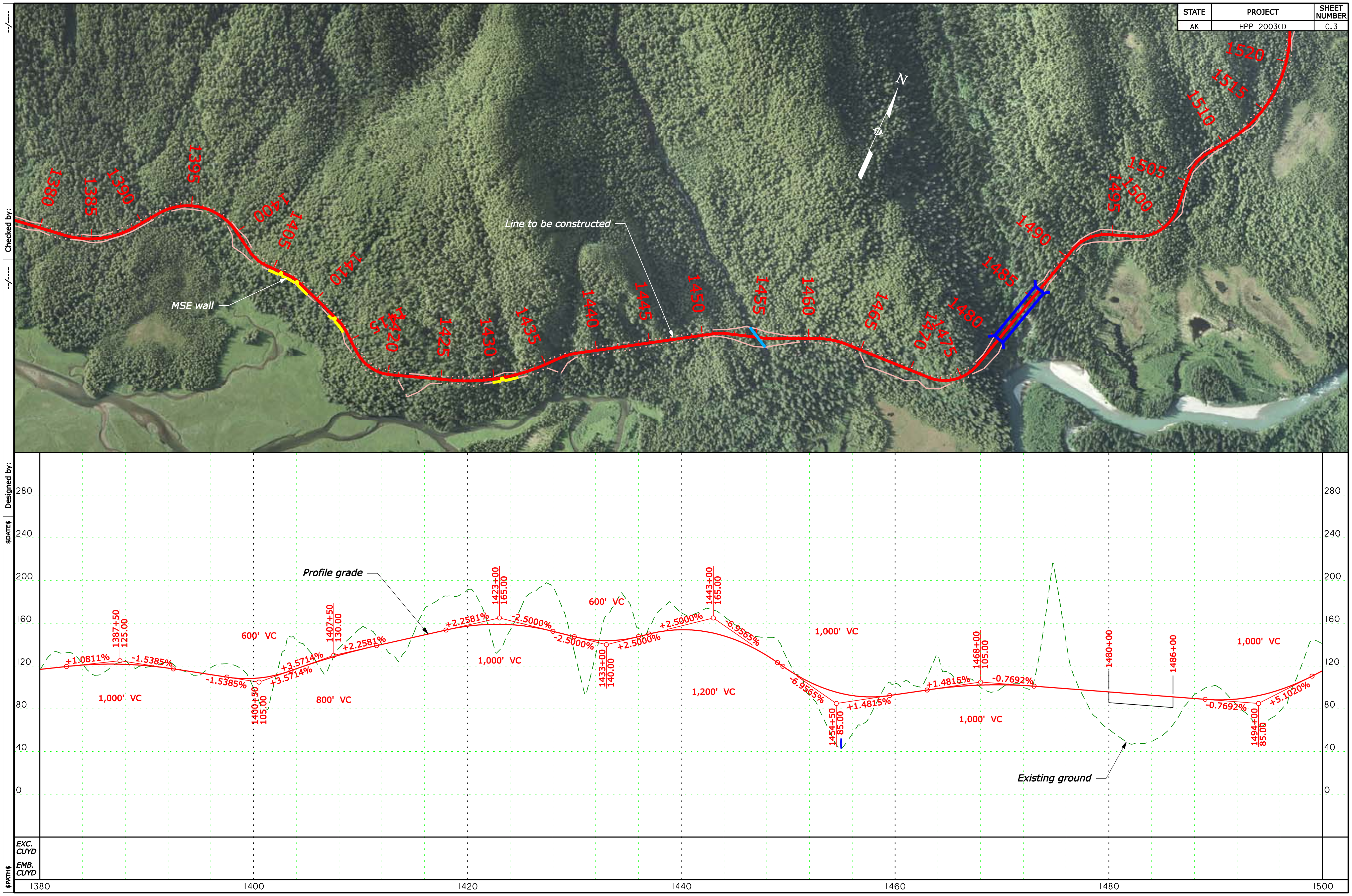
1. *The portion of the alignment beyond the AK / BC border was designed to the meeting point with the South Stikine River Alignment, then continued as a horizontal alignment only, with no profile development.*

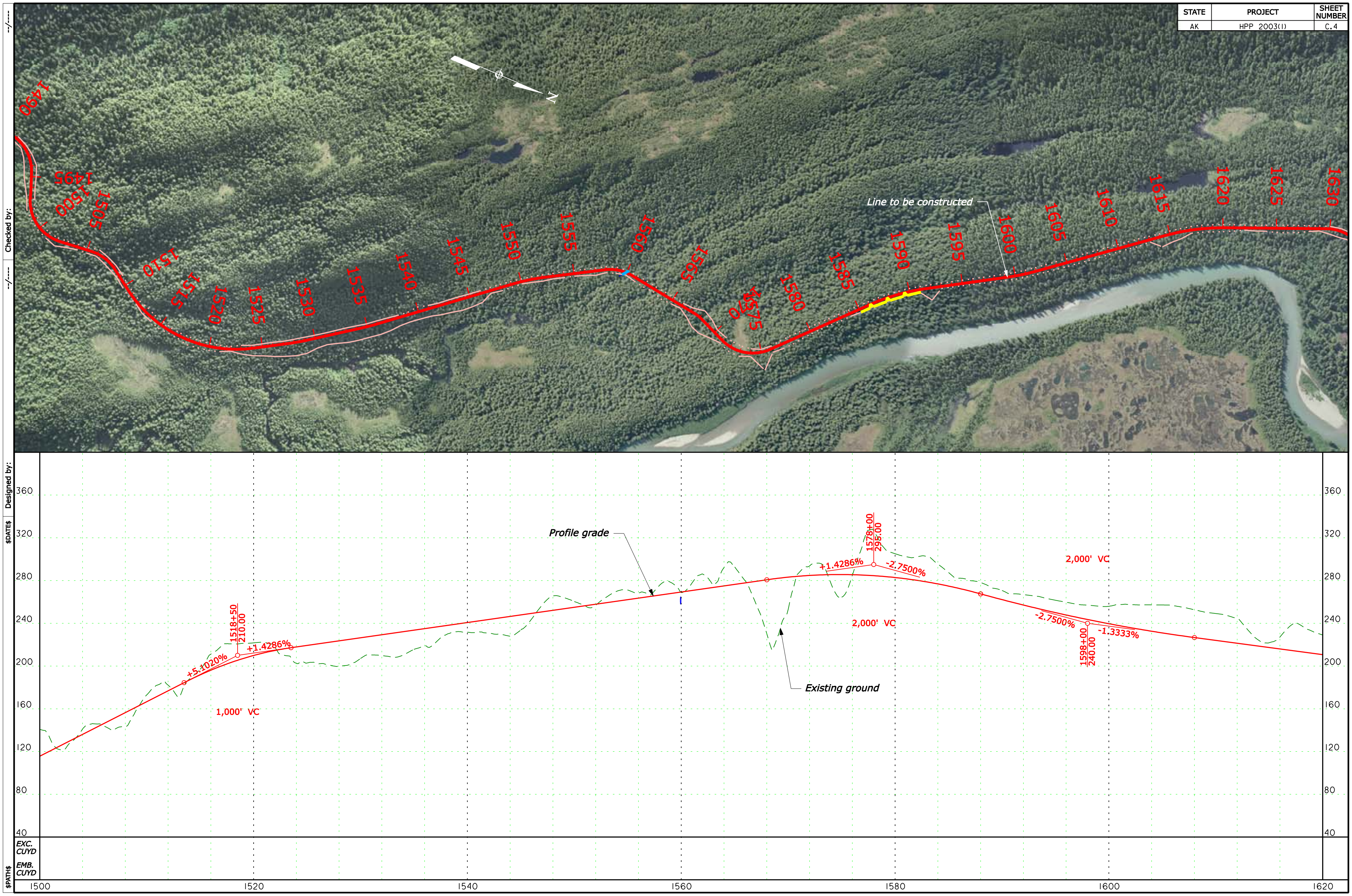
SEGMENT A-1b MAP

4/2009 B.WACKER Checked by: 4/2009 B. THOMPSON Designed by: 03-Dec-2010 12:18 PM ...\Segment A-1b\ah0301fa.dgn

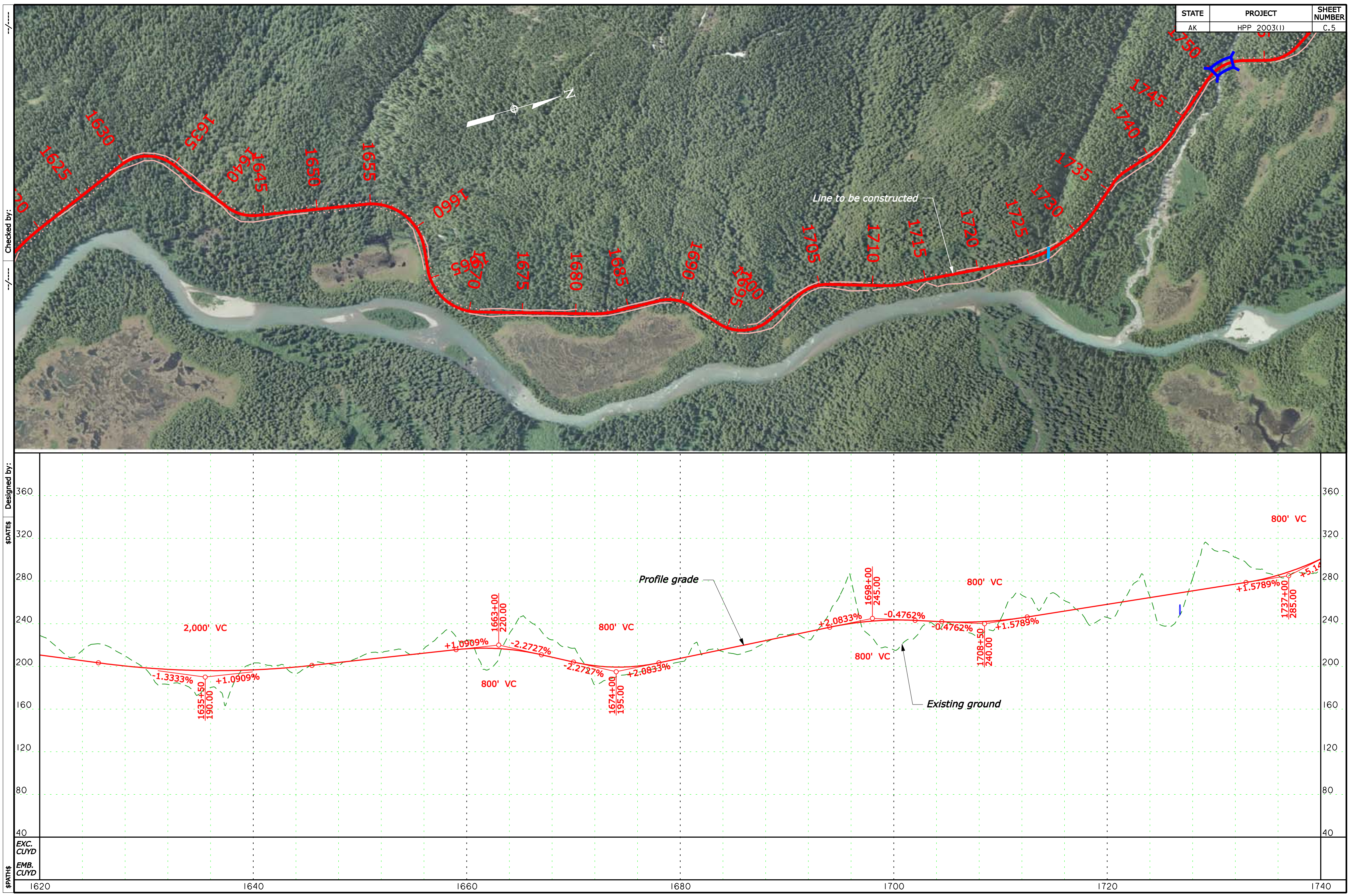


STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.2
Line to be constructed
BEGIN SEGMENT A-1b
HPP-2003(1)
SE ALASKA MRA
STA. 1280+00.00
N = 1658809.2410
E = 3020467.6135
EL = 145.00
1280
1285
1290
1295
1300
1305
1310
1315
1320
1325
1330
1335
1340
1345
1350
1355
1360
1365
1370
1375
1380
1385
1390
Profile grade
Existing ground
145.00
1292+00
175.00
+2.5000%
-2.4242%
800' VC
500' VC
-2.4242%
-0.4444%
1308+50
135.00
1331+00
125.00
-0.4444%
-2.0513%
1,800' VC
2,000' VC
-2.0513%
+1.0811%
1350+50
85.00
280
240
200
160
120
80
40
0
EXC. CUYD
EMB. CUYD
1280
1300
1320
1340
1360
1380
Checked by:
Designed by:
$DATE$
$PATH$

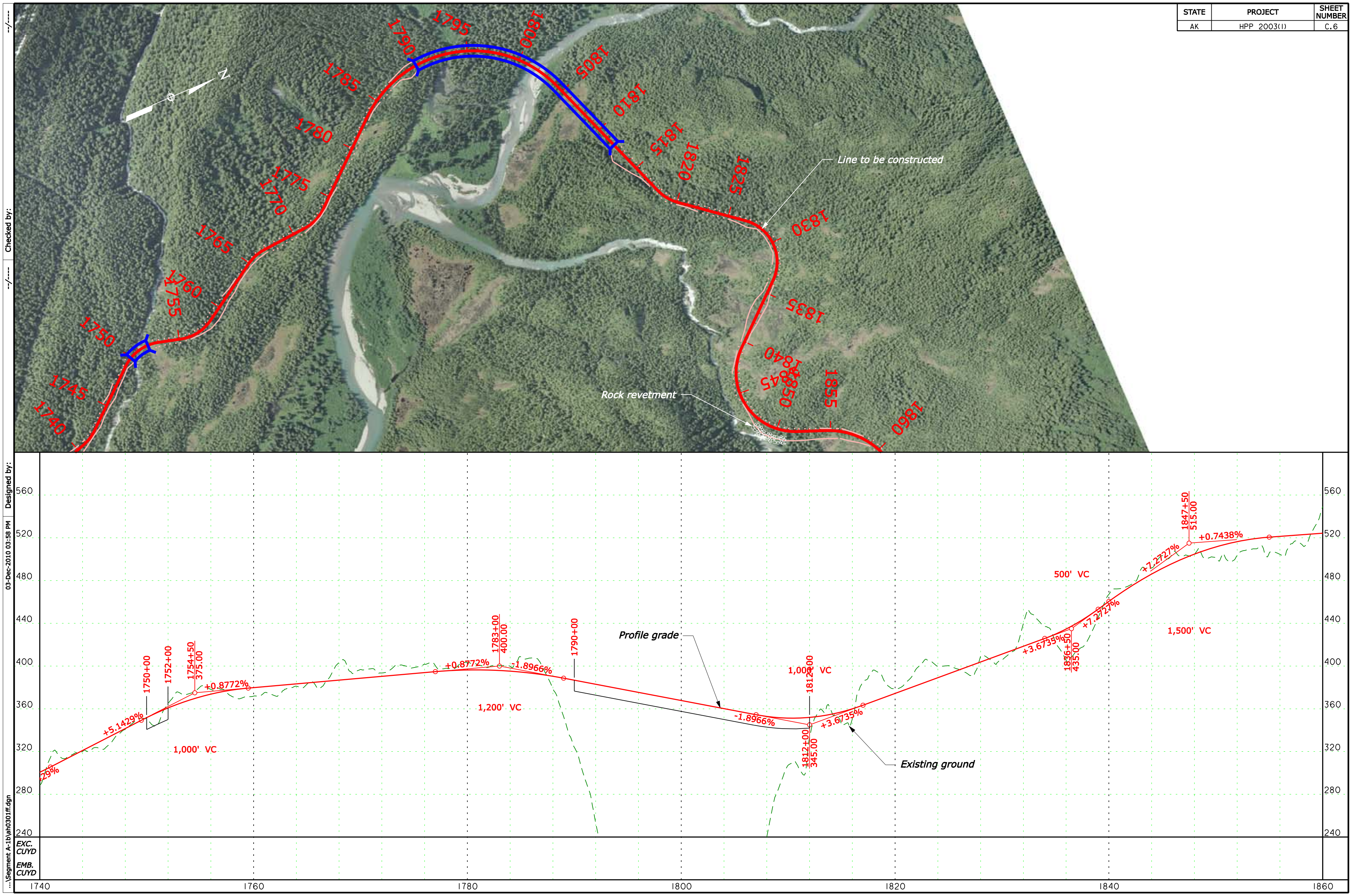

STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.3
Checked by:
Designed by:
$DATE$
$PATH$
N
MSE wall
Line to be constructed
1380
1385
1390
1395
1400
1405
1410
1420
1425
1430
1435
1440
1445
1450
1455
1460
1465
1475
1480
1485
1490
1495
1500
1505
1510
1515
1520
Profile grade
Existing ground
1387+50
125.00
1400+50
105.00
1407+50
130.00
1423+00
165.00
1433+00
140.00
1443+00
165.00
1454+50
85.00
1468+00
105.00
1480+00
1486+00
1494+00
85.00
+1.0811%
-1.5385%
+3.5714%
+2.2581%
-2.5000%
+2.5000%
-6.9565%
+1.4815%
-0.7692%
+5.1020%
1,000' VC
600' VC
800' VC
1,200' VC
EXC. CUYD
EMB. CUYD
0
40
80
120
160
200
240
280
1380
1400
1420
1440
1460
1480
1500


STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.4
Checked by:
Designed by:
$DATE$
$PATH$
N
Line to be constructed
1490
1495
1500
1505
1510
1515
1520
1525
1530
1535
1540
1545
1550
1555
1560
1565
1570
1575
1580
1585
1590
1595
1600
1605
1610
1615
1620
1625
1630
Profile grade
Existing ground
1518+50
210.00
+5.1020%
+1.4286%
1,000' VC
1578+00
295.00
+1.4286%
-2.7500%
2,000' VC
2,000' VC
1598+00
240.00
-2.7500%
-1.3333%
360
320
280
240
200
160
120
80
40
EXC. CUYD
EMB. CUYD
1500
1520
1540
1560
1580
1600
1620

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.5



STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.6

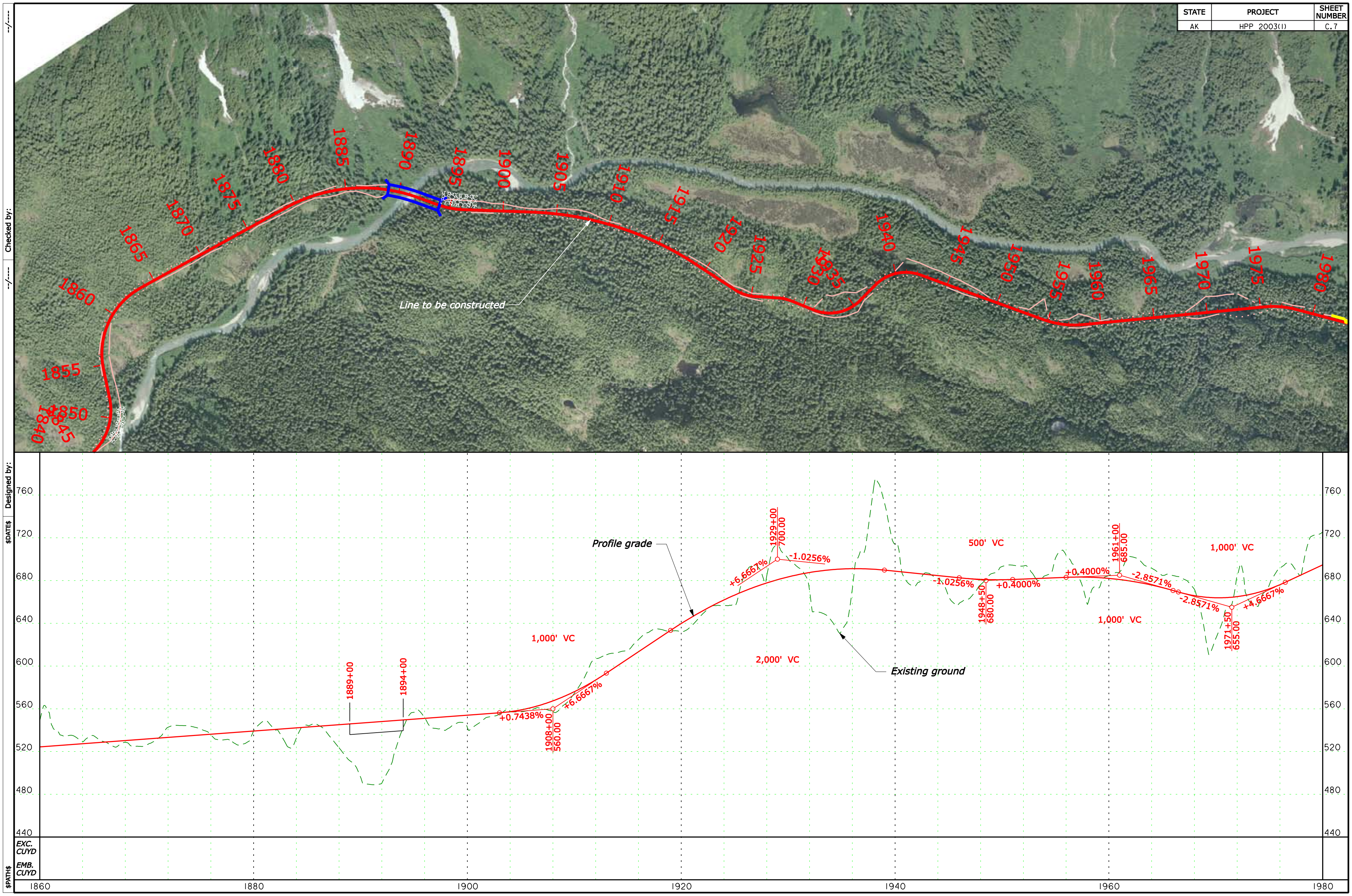


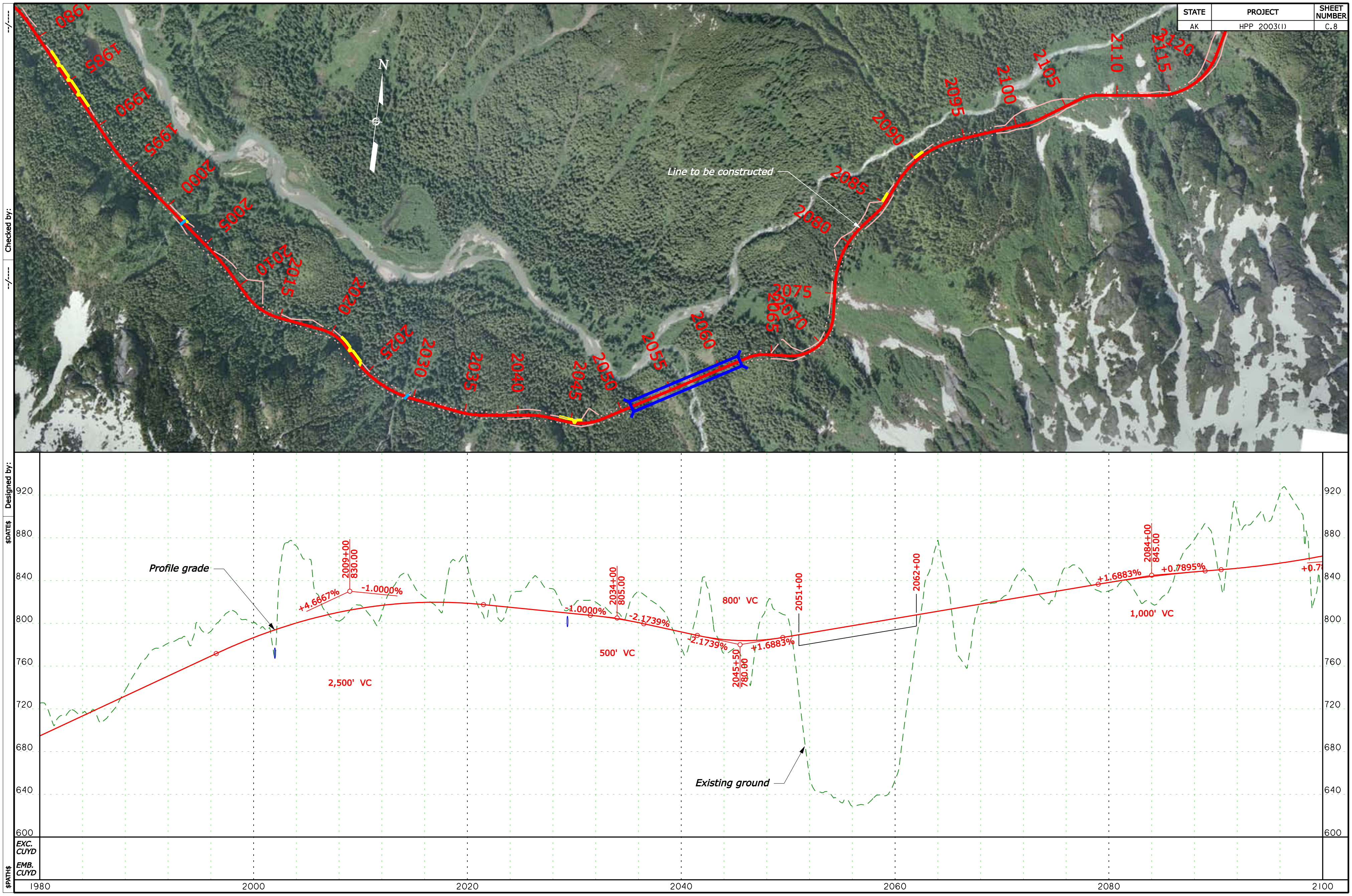
Checked by:

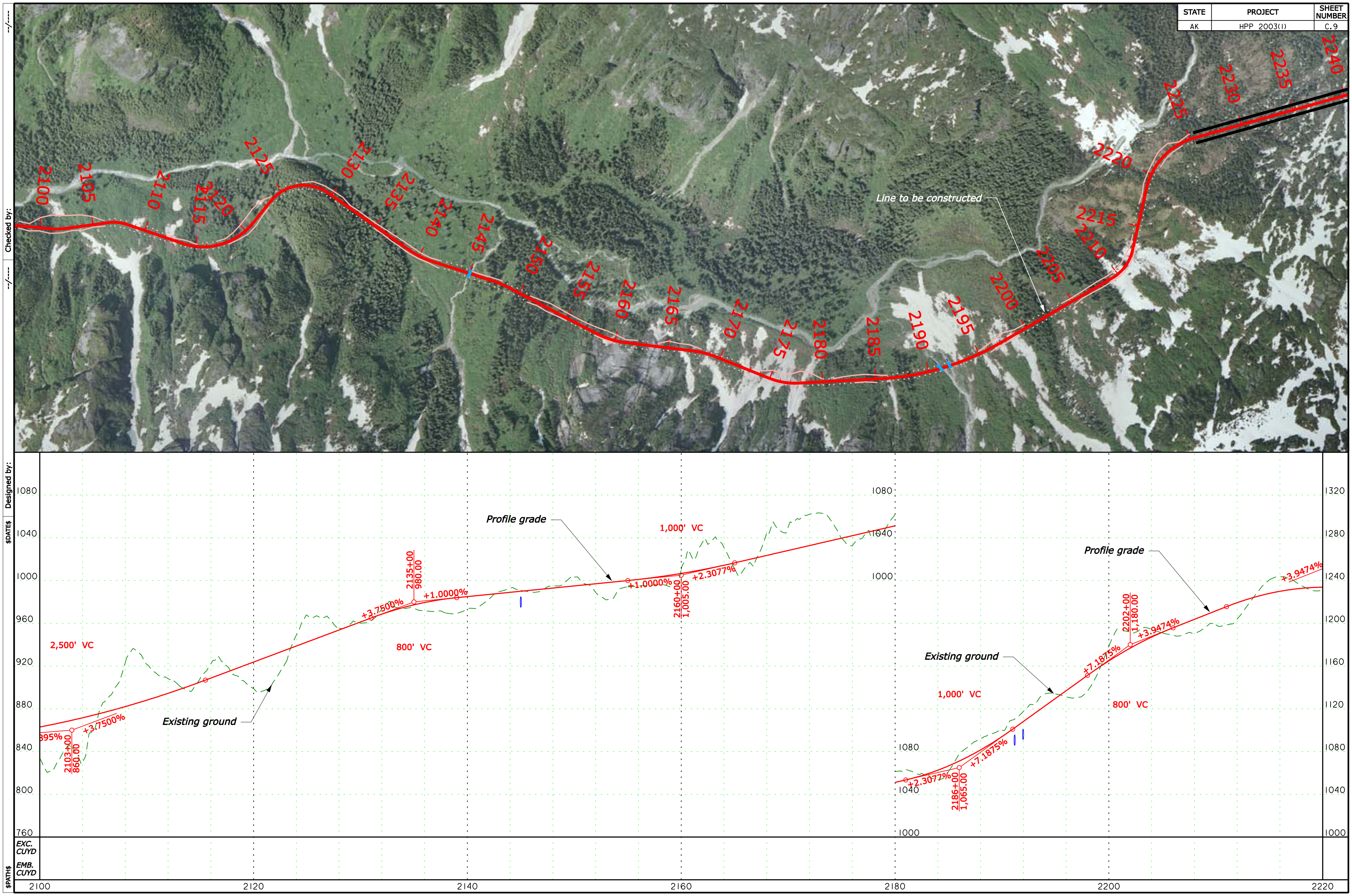
Designed by:

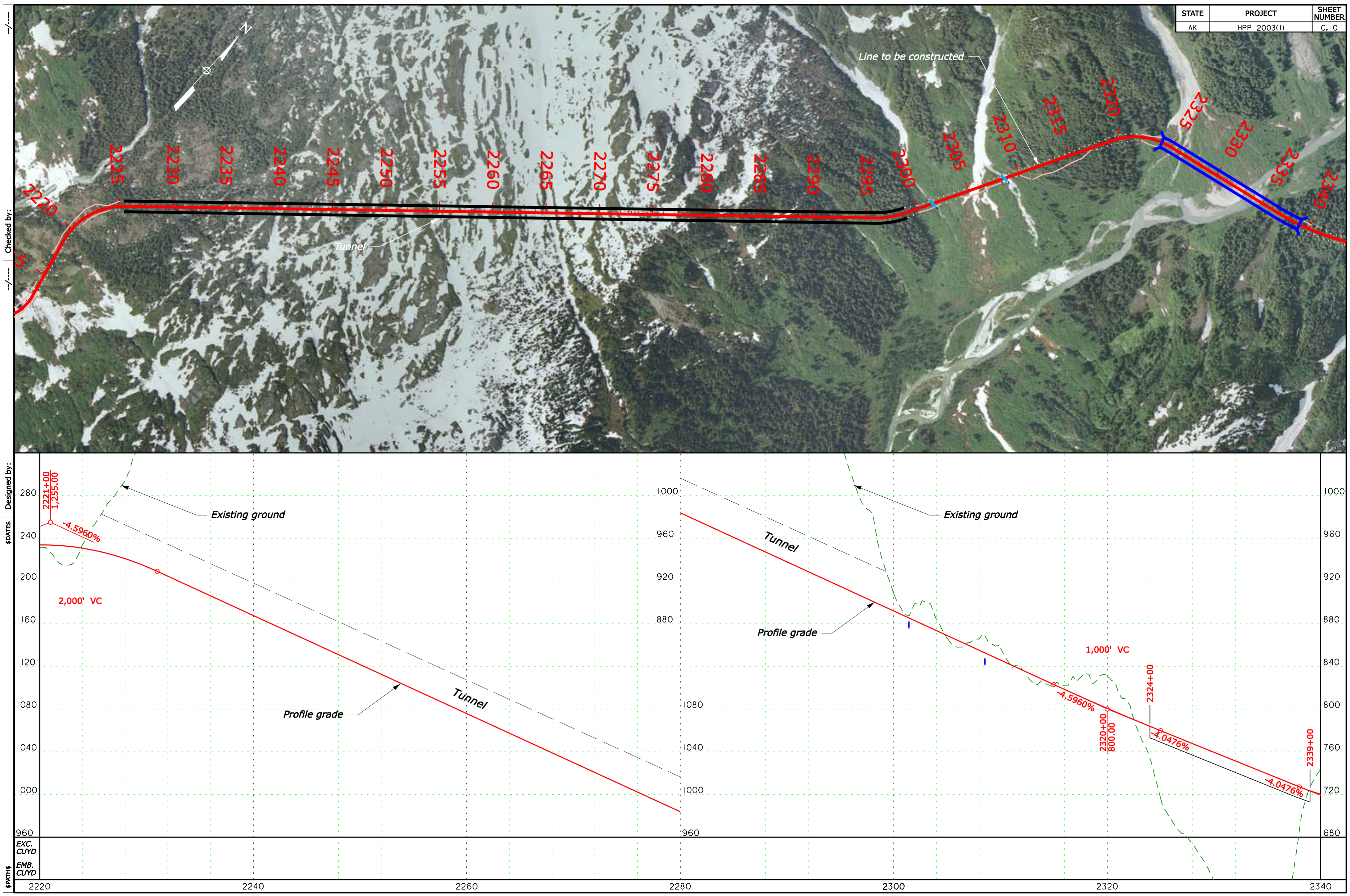
03-Dec-2010 03:58 PM

...\Segment A-1b\ah0301ff.dgn

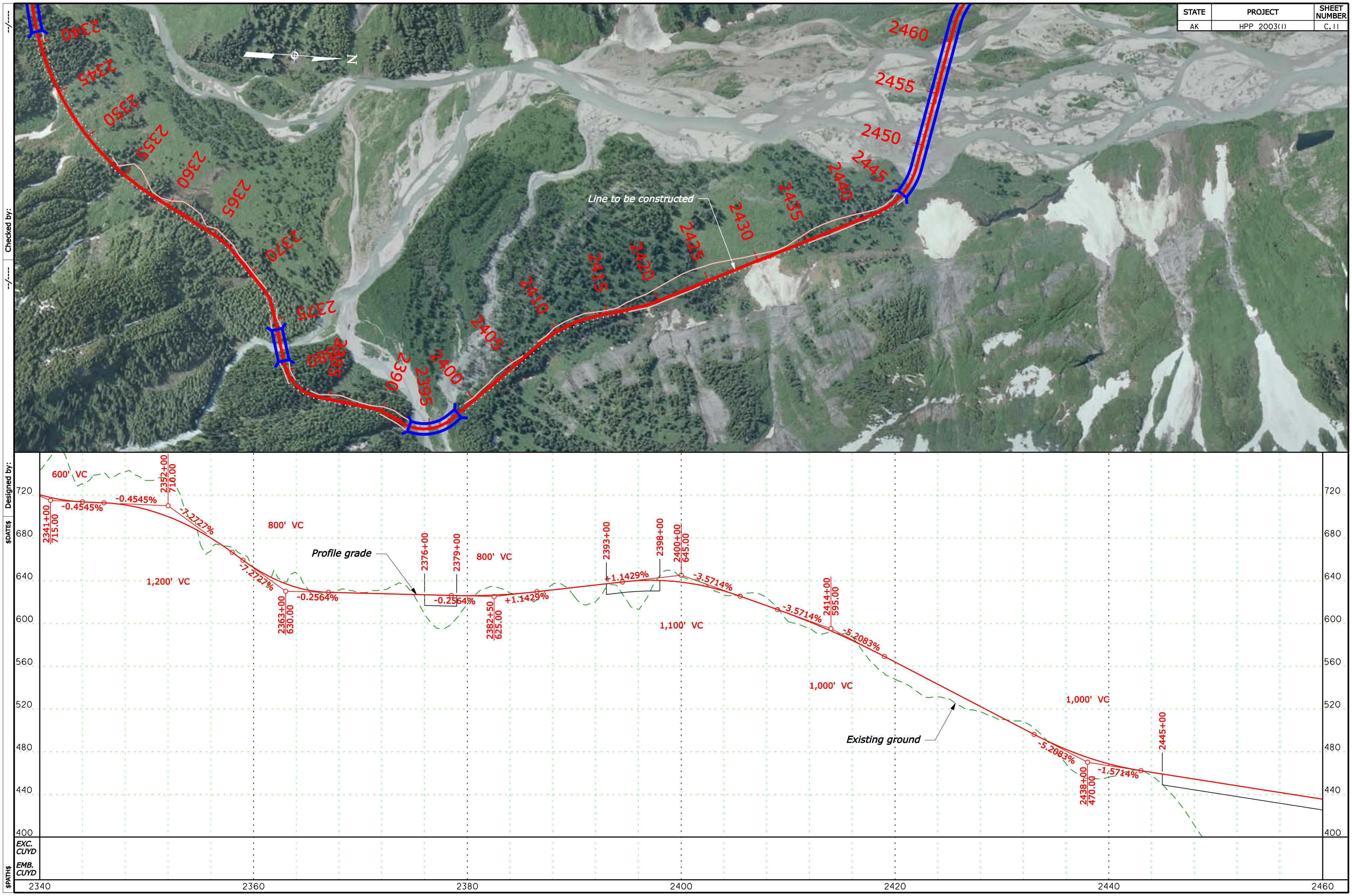

STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.7
Line to be constructed
Profile grade
Existing ground
1889+00
1894+00
+0.7438%
1908+00
560.00
+6.6667%
1,000' VC
2,000' VC
+6.6667%
1929+00
700.00
-1.0256%
500' VC
-1.0256%
1948+50
680.00
+0.4000%
+0.4000%
1961+00
685.00
-2.8571%
-2.8571%
1,000' VC
1971+50
655.00
+4.6667%
1,000' VC
EXC. CUYD
EMB. CUYD
Checked by:
Designed by:
$DATE$
$PATH$


STATE
AK
PROJECT
HPP 2003(1)
SHEET NUMBER
C.8
N
Line to be constructed
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
2055
2060
2065
2070
2075
2080
2085
2090
2095
2100
2105
2110
2115
2120
Profile grade
Existing ground
+4.6667%
2009+00
830.00
-1.0000%
2,500' VC
-1.0000%
2034+00
805.00
-2.1739%
500' VC
800' VC
-2.1739%
2045+50
780.00
+1.6883%
2051+00
2062+00
+1.6883%
2084+00
845.00
+0.7895%
1,000' VC
920
880
840
800
760
720
680
640
600
EXC. CUYD
EMB. CUYD
1980
2000
2020
2040
2060
2080
2100
Checked by:
Designed by:
$DATE$
$PATH$

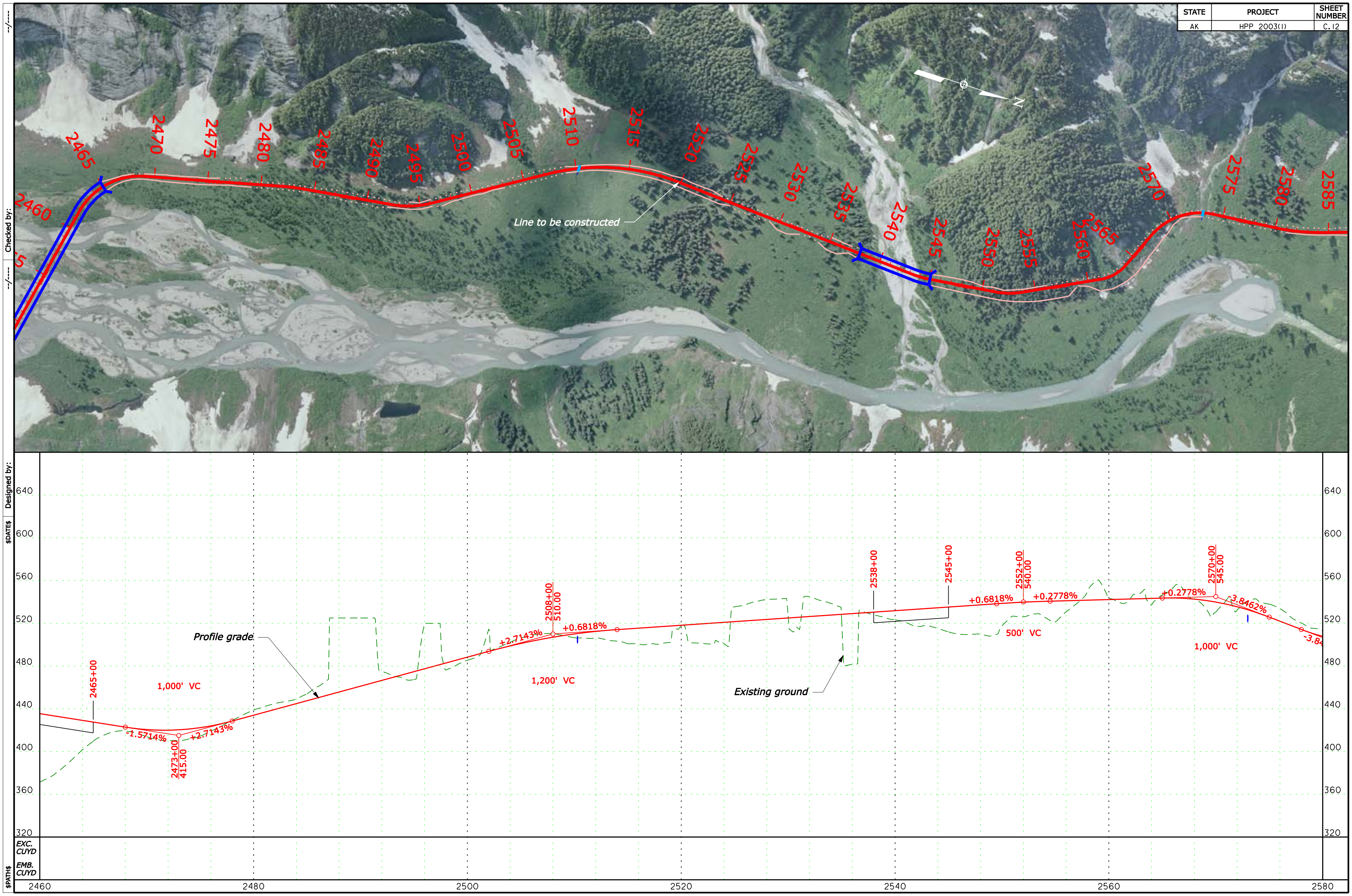

STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.9
Checked by:
Designed by:
$DATE$
$PATH$
Line to be constructed
2100
2105
2110
2115
2120
2125
2130
2135
2140
2145
2150
2155
2160
2165
2170
2175
2180
2185
2190
2195
2200
2205
2210
2215
2220
2225
2230
2235
2240
Profile grade
Existing ground
2,500' VC
800' VC
1,000' VC
800' VC
1,000' VC
+3.7500%
+1.0000%
+1.0000%
+2.3077%
+2.3077%
+7.1875%
+7.1875%
+3.9474%
+3.9474%
2103+00
860.00
2135+00
980.00
2160+00
1,005.00
2186+00
1,065.00
2202+00
1,180.00
EXC. CUYD
EMB. CUYD
2100
2120
2140
2160
2180
2200
2220

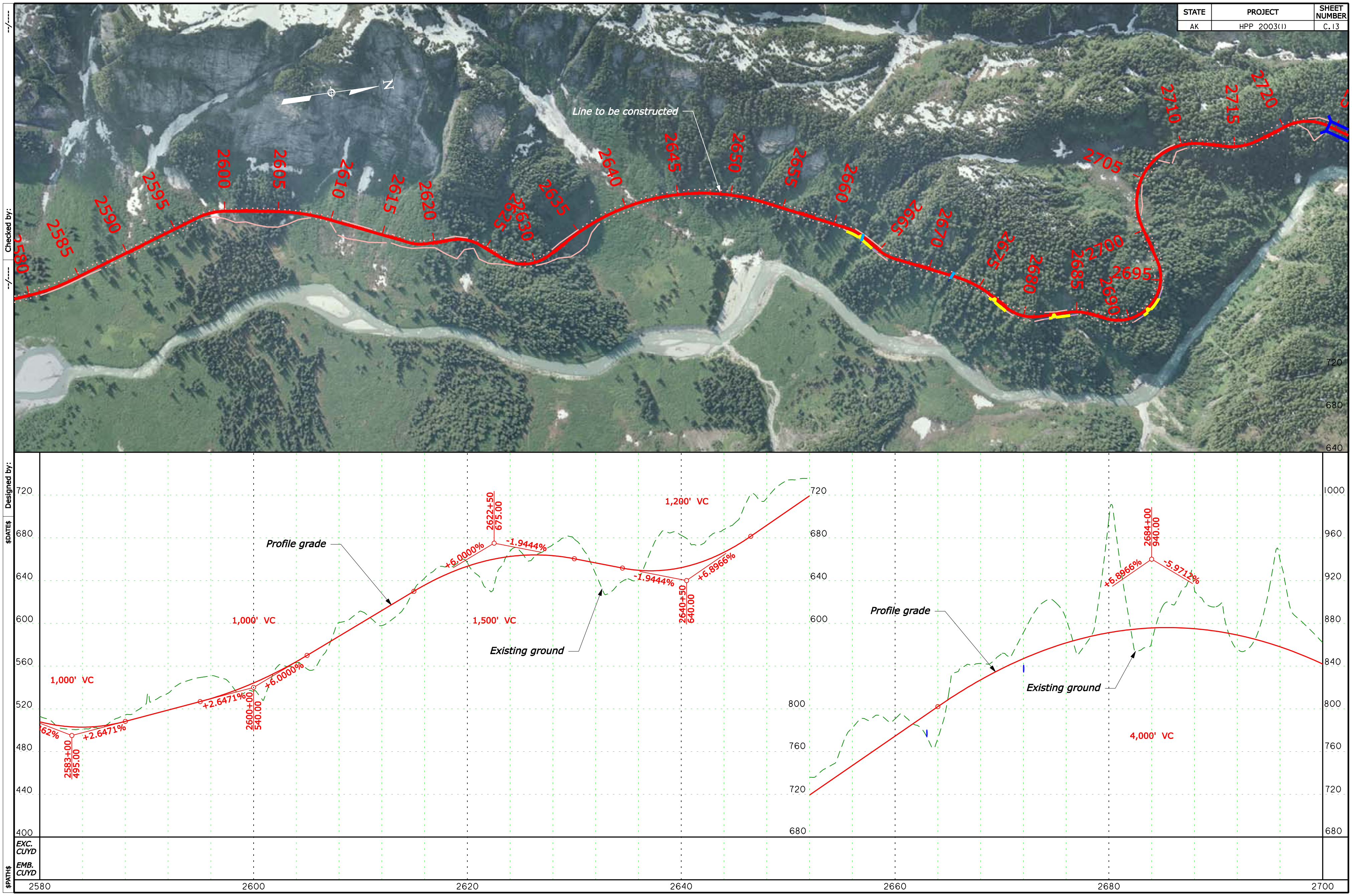

STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.10
Checked by:
Designed by:
$DATE$
$PATH$
N
Line to be constructed
Tunnel
2220
2225
2230
2235
2240
2245
2250
2255
2260
2265
2270
2275
2280
2285
2290
2295
2300
2305
2310
2315
2320
2325
2330
2335
2340
Existing ground
Tunnel
Profile grade
2221+00
1,255.00
-4.5960%
2,000' VC
1,000' VC
-4.5960%
2320+00
800.00
2324+00
-4.0476%
2339+00
-4.0476%
EXC. CUYD
EMB. CUYD
1280
1240
1200
1160
1120
1080
1040
1000
960
920
880
840
800
760
720
680
2220
2240
2260
2280
2300
2320
2340

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.11

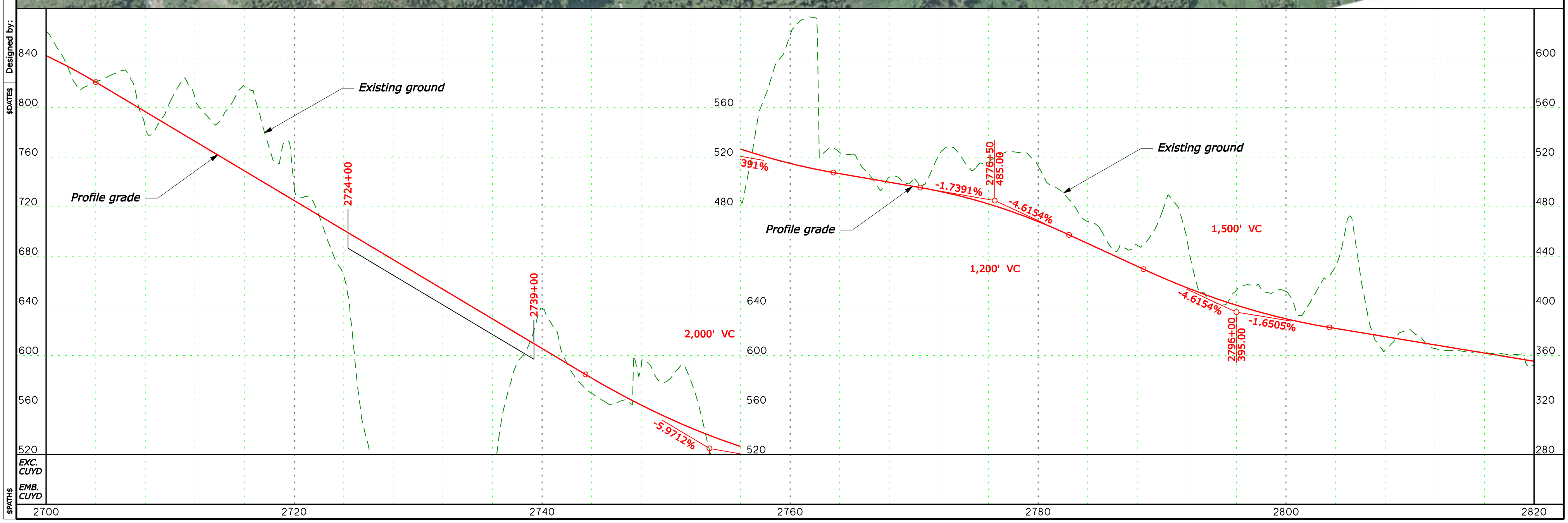


STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.12




STATE
AK
PROJECT
HPP 2003(1)
SHEET NUMBER
C.13
Checked by:
Designed by:
$DATE$
$PATH$
N
Line to be constructed
2580
2585
2590
2595
2600
2605
2610
2615
2620
2630
2635
2640
2645
2650
2655
2660
2665
2670
2675
2680
2685
2690
2695
2700
2705
2710
2715
2720
Profile grade
Existing ground
1,000' VC
1,000' VC
1,500' VC
1,200' VC
4,000' VC
2583+00
495.00
+2.6471%
+2.6471%
2600+00
540.00
+6.0000%
+6.0000%
2622+50
675.00
-1.9444%
-1.9444%
2640+50
640.00
+6.8966%
+6.8966%
2684+00
940.00
-5.9712%
EXC. CUYD
EMB. CUYD
400
440
480
520
560
600
640
680
720
760
800
840
880
920
960
1000
2580
2600
2620
2640
2660
2680
2700

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.14



Checked by:

Designed by:

$DATE$

$PATH$

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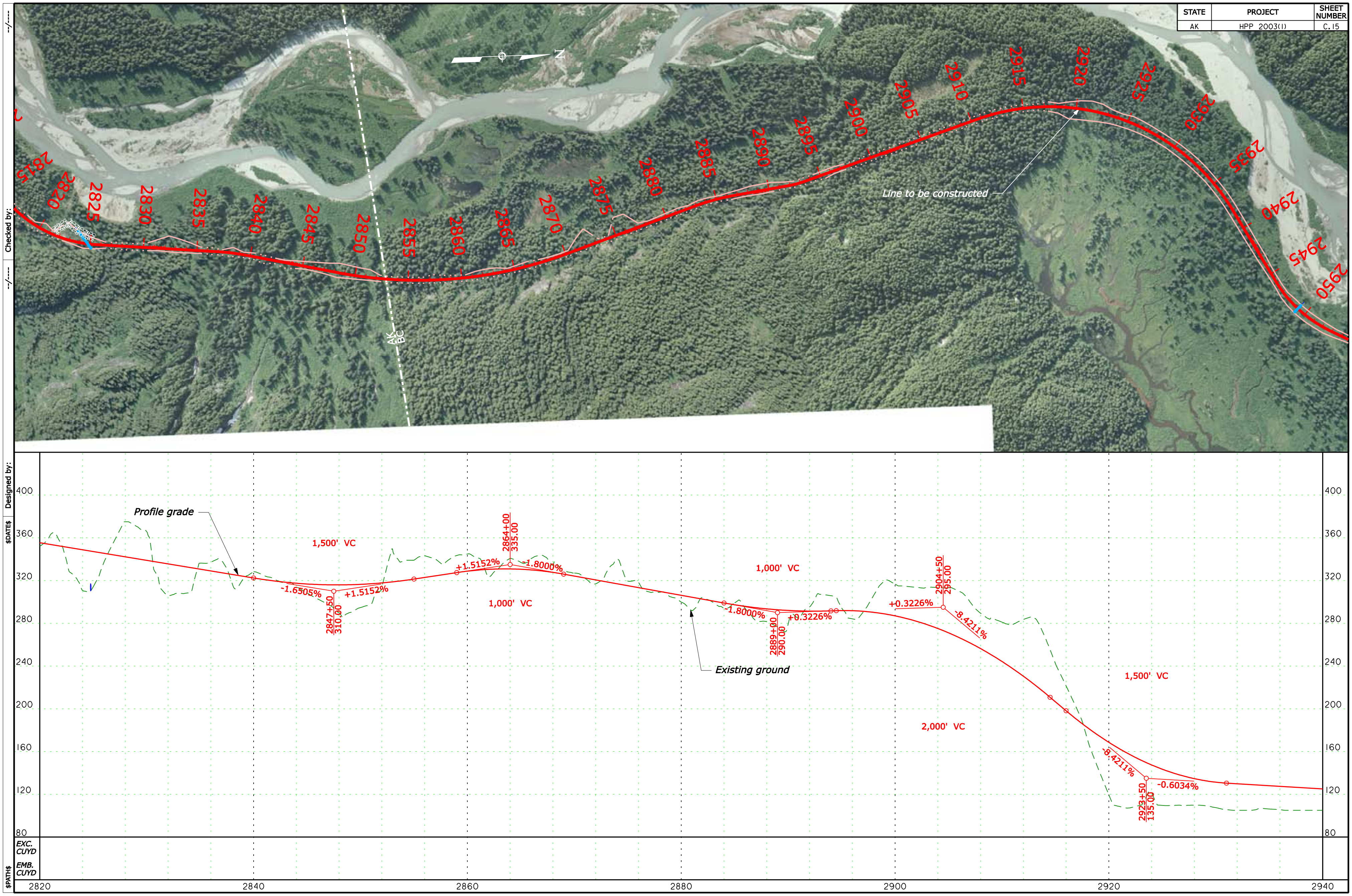
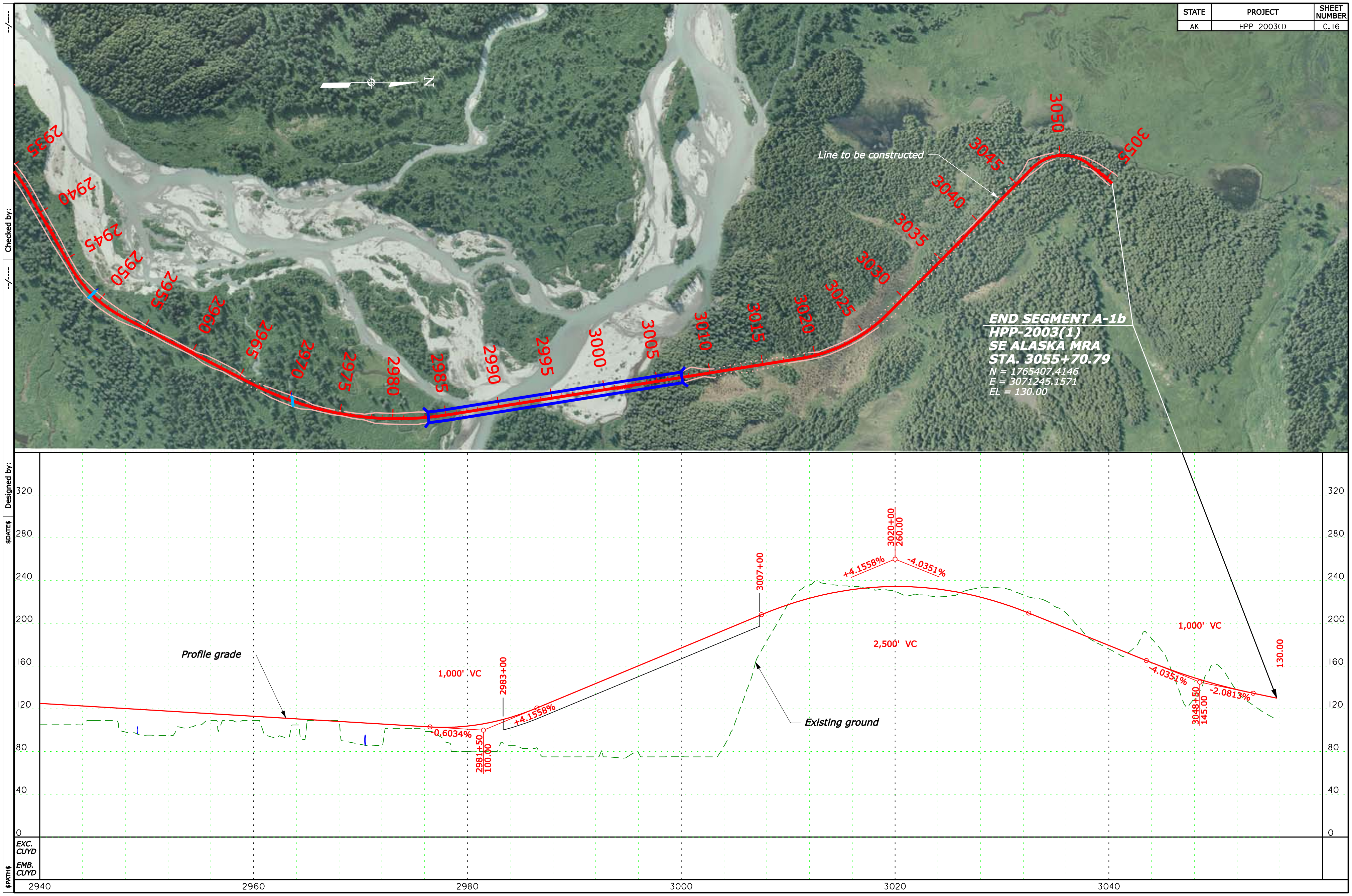


STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.15
Checked by:
Designed by:
$DATE$
$PATH$
N
AK
BC
2815
2820
2825
2830
2835
2840
2845
2850
2855
2860
2865
2870
2875
2880
2885
2890
2895
2900
2905
2910
2915
2920
2925
2930
2935
2940
2945
2950
Line to be constructed
Profile grade
Existing ground
1,500' VC
1,000' VC
1,000' VC
2,000' VC
1,500' VC
-1.6505%
+1.5152%
+1.5152%
-1.8000%
-1.8000%
+0.3226%
+0.3226%
-8.4211%
-8.4211%
-0.6034%
2847+50
310.00
2864+00
335.00
2889+00
290.00
2904+50
295.00
2923+50
135.00
400
360
320
280
240
200
160
120
80
EXC. CUYD
EMB. CUYD
2820
2840
2860
2880
2900
2920
2940



STATE
AK
PROJECT
HPP 2003(1)
SHEET NUMBER
C.16
Checked by:
Designed by:
$DATE$
$PATH$
N
Line to be constructed
END SEGMENT A-1b
HPP-2003(1)
SE ALASKA MRA
STA. 3055+70.79
N = 1765407.4146
E = 3071245.1571
EL = 130.00
2935
2940
2945
2950
2955
2960
2965
2970
2975
2980
2985
2990
2995
3000
3005
3010
3015
3020
3025
3030
3035
3040
3045
3050
3055
Profile grade
Existing ground
1,000' VC
2,500' VC
1,000' VC
-0.6034%
+4.1558%
+4.1558%
-4.0351%
-4.0351%
-2.0813%
2981+50
100.00
2983+00
3007+00
3020+00
260.00
3048+50
145.00
130.00
EXC. CUYD
EMB. CUYD
0
40
80
120
160
200
240
280
320
2940
2960
2980
3000
3020
3040

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APPENDIX C.3

Wrangell Island Alignment

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Wrangell Island Alignment (Segment W-1)

Segment W-1 of the Wrangell Island Alignment is part of Stage 4 of the Aaron Creek Corridor and Stage 5 of the Stikine River Corridor. Segment W-1 would connect the existing roads on Wrangell Island to Segment A-2 of the Aaron Creek Pass Alignment, Segment A-2 of the Aaron Creek Tunnel Alignment, or Segment S-3 of the South Stikine River Alignment. For the Aaron Creek Corridor, Segment W-1 would have to be built concurrently with Segment A-2 to replace conventional ferry operations between the proposed Berg Bay ferry terminal and the Log Transfer Station ferry terminal on Wrangell Island. For the Stikine River Corridor, Segment W-1 would have to be built along with Segment S-3 to replace conventional ferry operations between the proposed Crittenden Creek ferry terminal and one of the potential ferry terminals on Wrangell Island (Spur Road, Peninsula Street, or the existing Alaska Marine Highway System (AMHS) ferry terminal).

Segment W-1 would begin next to the proposed Log Transfer Station conventional ferry terminal at milepost (MP) 0.0. The alignment would depart from the Tongass National Forest Road (FR) 6265 at MP 0.0, and the new roadway alignment would parallel the southeast side of the Eastern Passage until reaching The Narrows at MP 1.7. Segment W-1 would terminate at MP 1.7, where it would meet up with either Segment A-2 of the Aaron Creek Alignments or Segment S-3 of the South Stikine River Alignment. From MP 0.0 to MP 1.7, the alignment would encounter moderately steep side slopes along Eastern Passage and intermittent mechanically stabilized earth (MSE) walls would be needed to avoid fill slopes encroaching on Eastern Passage. For further information regarding the MSE walls, refer to the typical sections (Sheet B.5).

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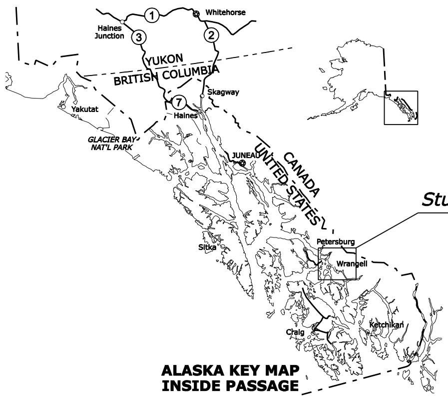
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



ALASKA KEY MAP
INSIDE PASSAGE

PLANS FOR PROPOSED STUDY

AK HPP-2003(1)

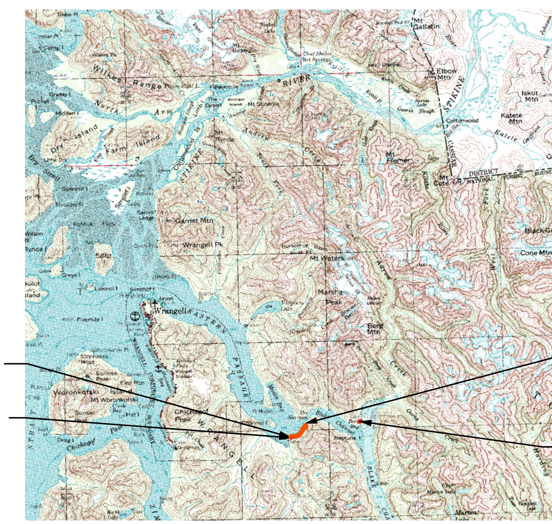
SOUTHEAST ALASKA
MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA

WRANGELL ISLAND ALIGNMENT (SEGMENT W-1)

LENGTH 1.7 MILES

N



LOG TRANSFER STATION
CONVENTIONAL FERRY TERMINAL

BEGIN SEGMENT W-1

END SEGMENT W-1

BERG BAY CONVENTIONAL
FERRY TERMINAL

40000 20000 0 40000 80000
SCALE IN FEET

INDEX TO SHEETS

A. GENERAL INFORMATION

A.1	TITLE SHEET
A.2	PLAN SYMBOLS AND ABBREVIATIONS
A.3	VICINITY MAP

B. TYPICAL SECTIONS

B.1-4	TYPICAL SECTIONS
B.5	MSE WALL & ROCK REVETMENT TYPICAL SECTIONS

C. WRANGELL ISLAND ALIGNMENT PLAN-PROFILES

C.1	SEGMENT W-1 MAP
C.2	PLAN-PROFILE

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 2 miles of new alignment.

DESIGN DESIGNATION:

ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units

PLANS PREPARED FOR

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

PLANS PREPARED BY

RPA
ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 02:14 PM ...\segment w-1\ad0301aa.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).

National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinae based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilites	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS GREATER THAN 7 FEET

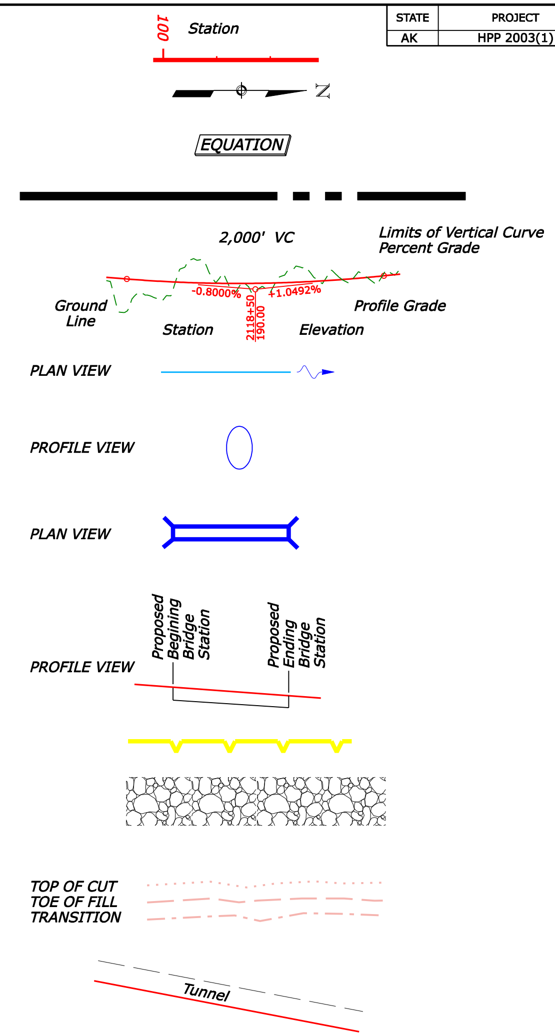
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

TUNNEL DESIGNATION ON PROFILE



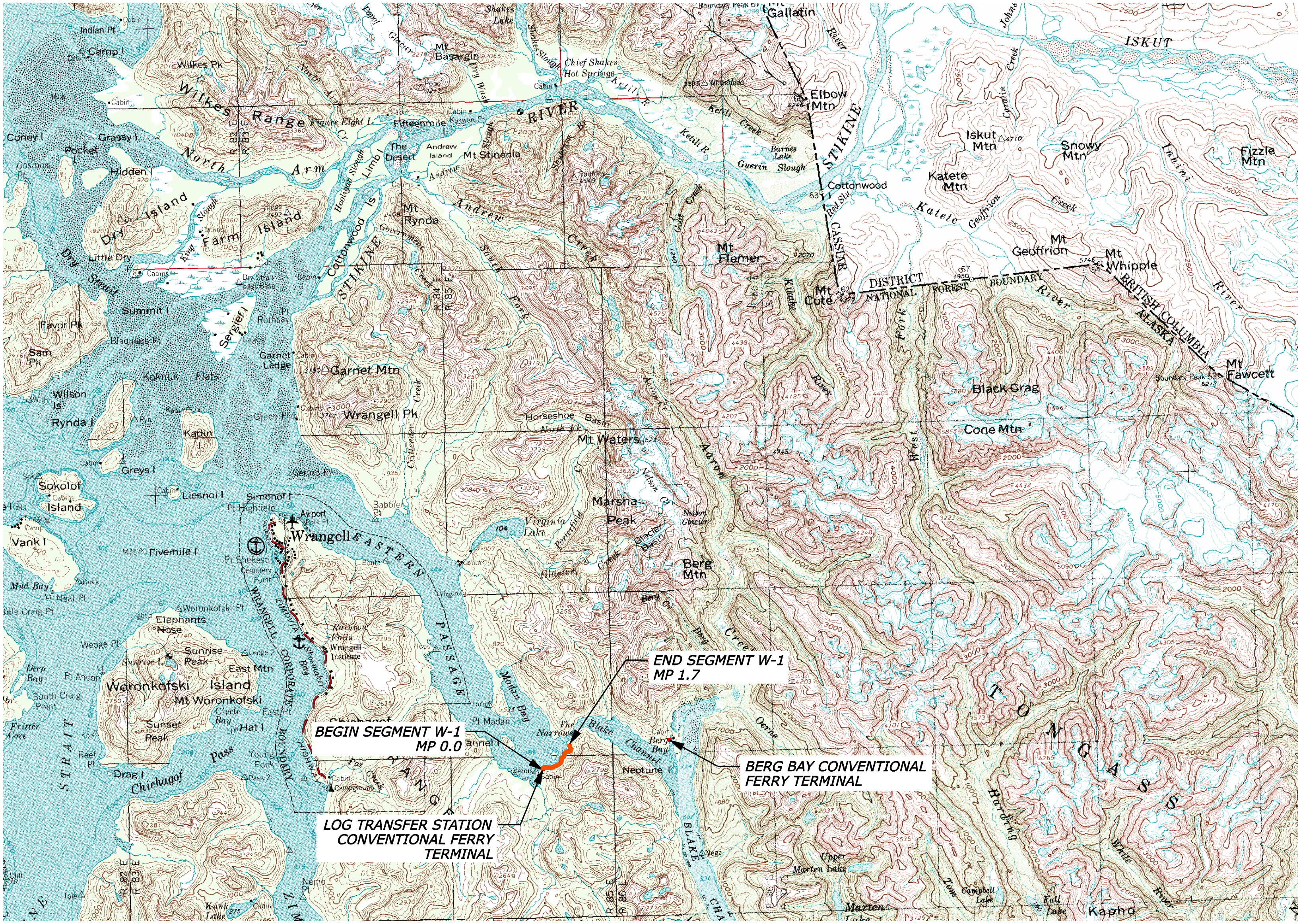
NOTE:

1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 02:15 PM ...\segment w-1\ad0301ab.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.3



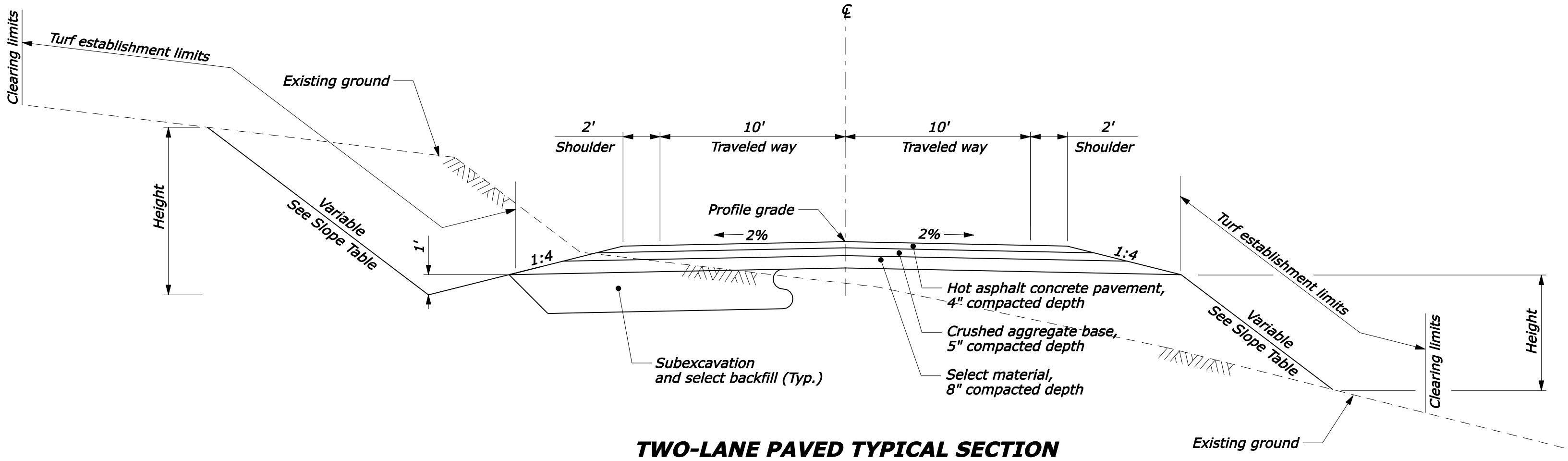
N

20000 10000 0 20000 40000
SCALE IN FEET

VICINITY MAP

...\segment w-1\ad0301ac.dgn
26-Apr-2009 02:15 PM
Designed by: B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.1



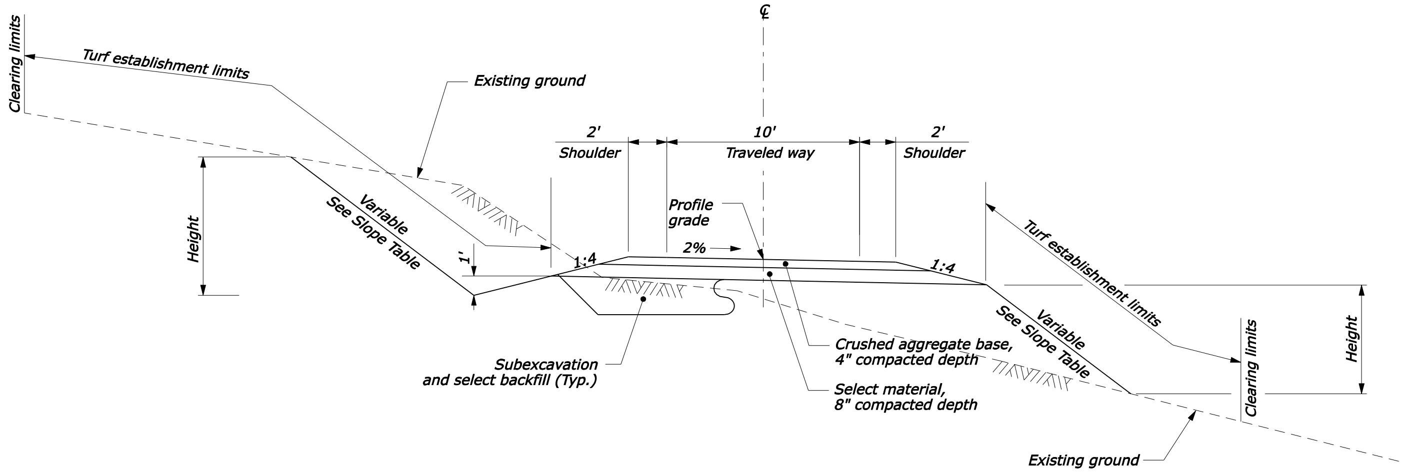
TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

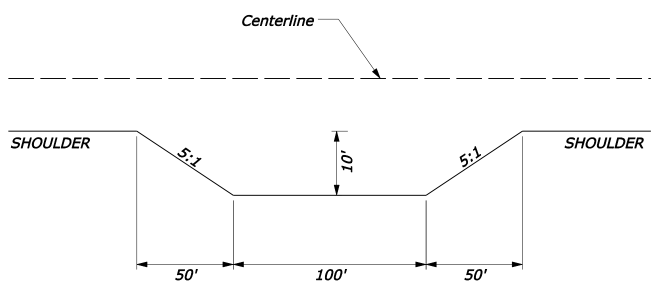
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 04:24 PM
...\segment w-1\ad0301ca.dgn

TWO-LANE PAVED TYPICAL SECTION

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.2



ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



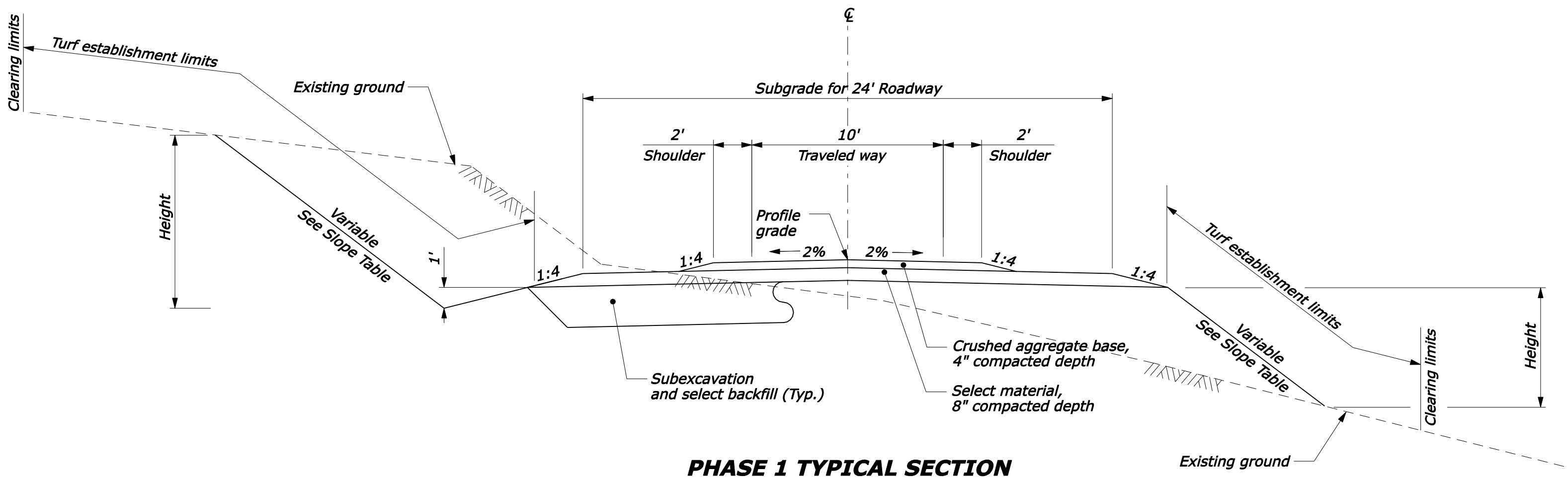
TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

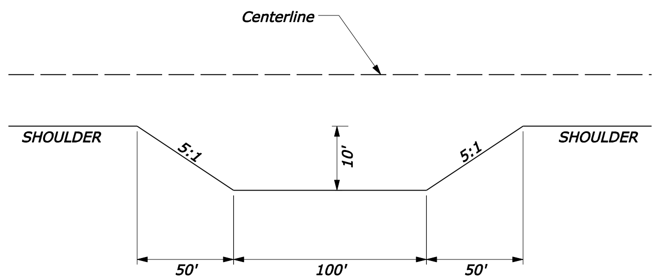
ONE-LANE GRAVEL TYPICAL SECTION

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 04:25 PM ...\segment w-1\ad0301cb.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.3



PHASE 1 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



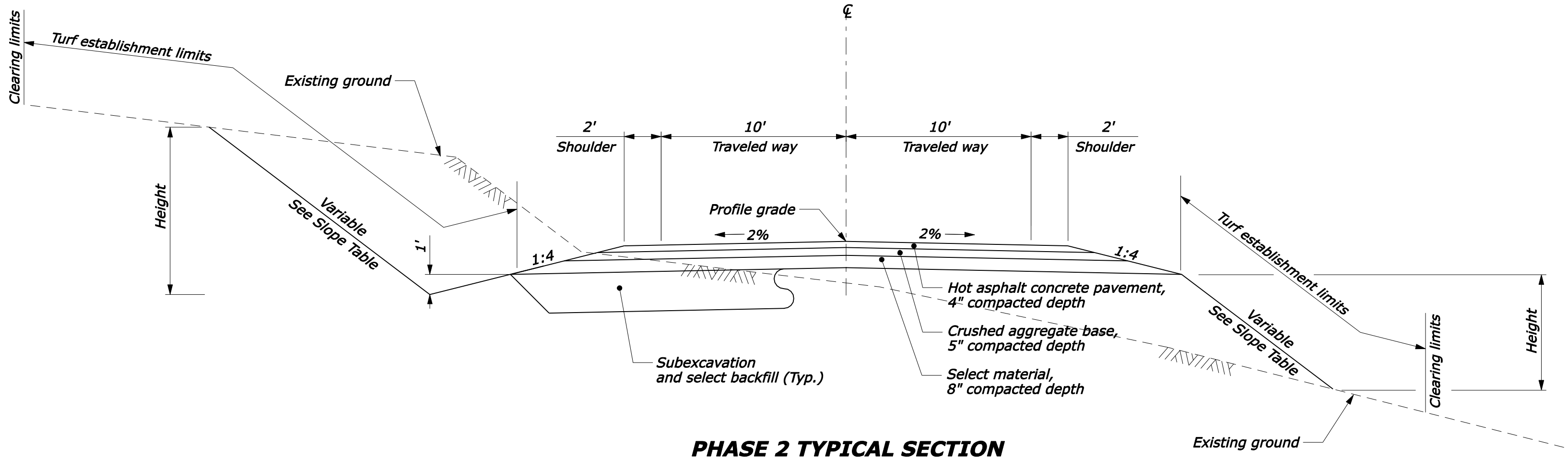
TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 1
TYPICAL SECTION

4/2009 | B. WACKER | Checked by: | 4/2009 | B. THOMPSON | Designed by: | 26-Apr-2009 04:25 PM | ...\segment w-1\ad0301cc.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.4



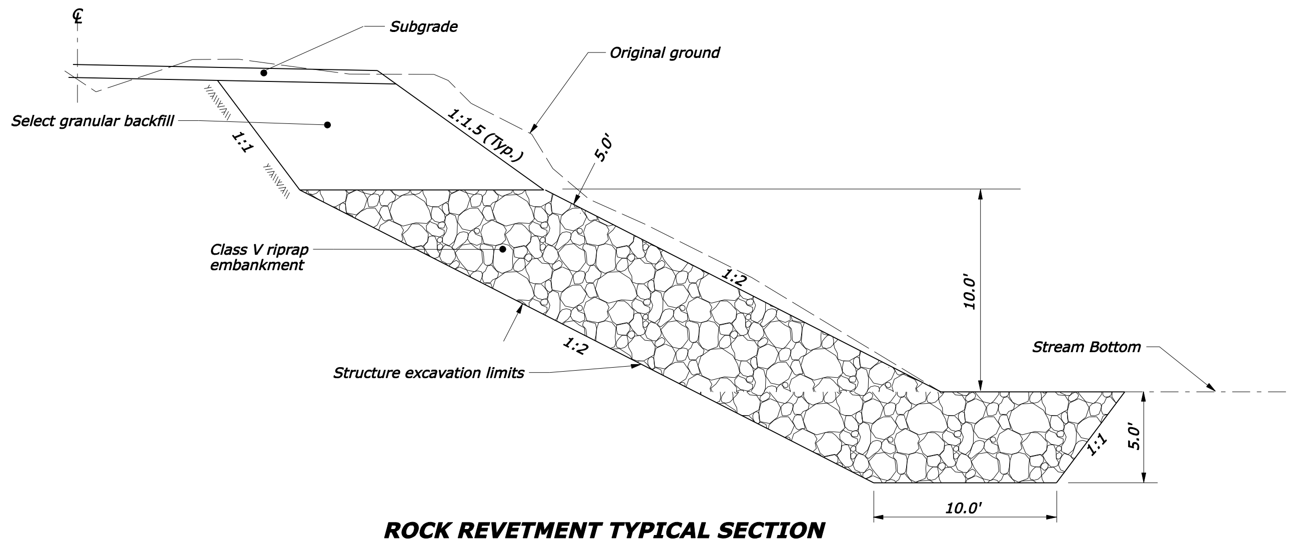
PHASE 2 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

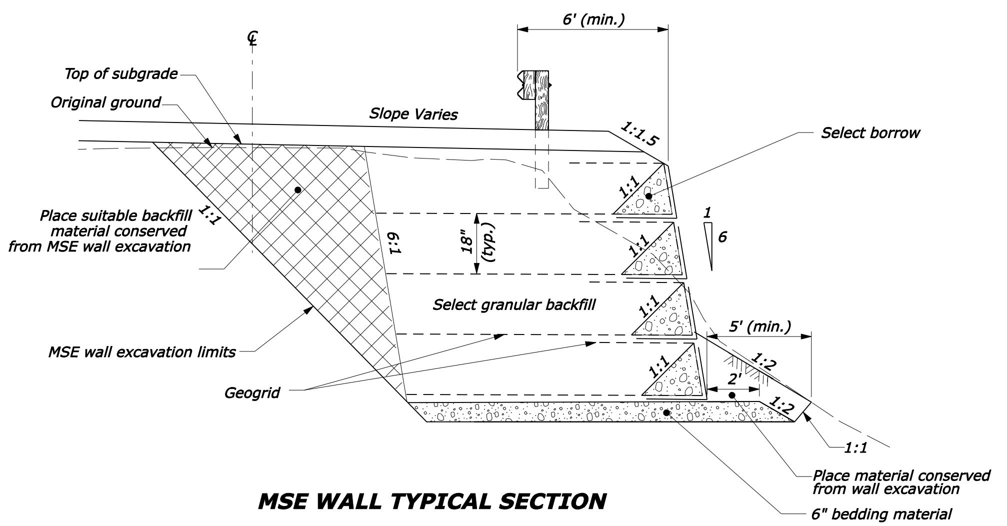
PHASE 2
TYPICAL SECTION

...\segment w-1\ad0301cd.dgn
26-Apr-2009 04:25 PM
Designed by: B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.5



ROCK REVETMENT TYPICAL SECTION



MSE WALL TYPICAL SECTION

NOTE:

1. Rock revetment typical section from Bradfield River Road Final Scoping and Pre-NEPA Engineering Feasibility Study report dated January 10, 2005.
2. Class V riprap gradation requirements as shown in Table 705-1 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03).
3. Location of MSE walls and rock revetment are shown in the plan and profile sheets within Section C.

NO SCALE

MSE WALL & ROCK REVETMENT TYPICAL SECTIONS

Designed by: B. THOMPSON 4/2009 Checked by: B. WACKER 4/2009

26-Apr-2009 04:25 PM

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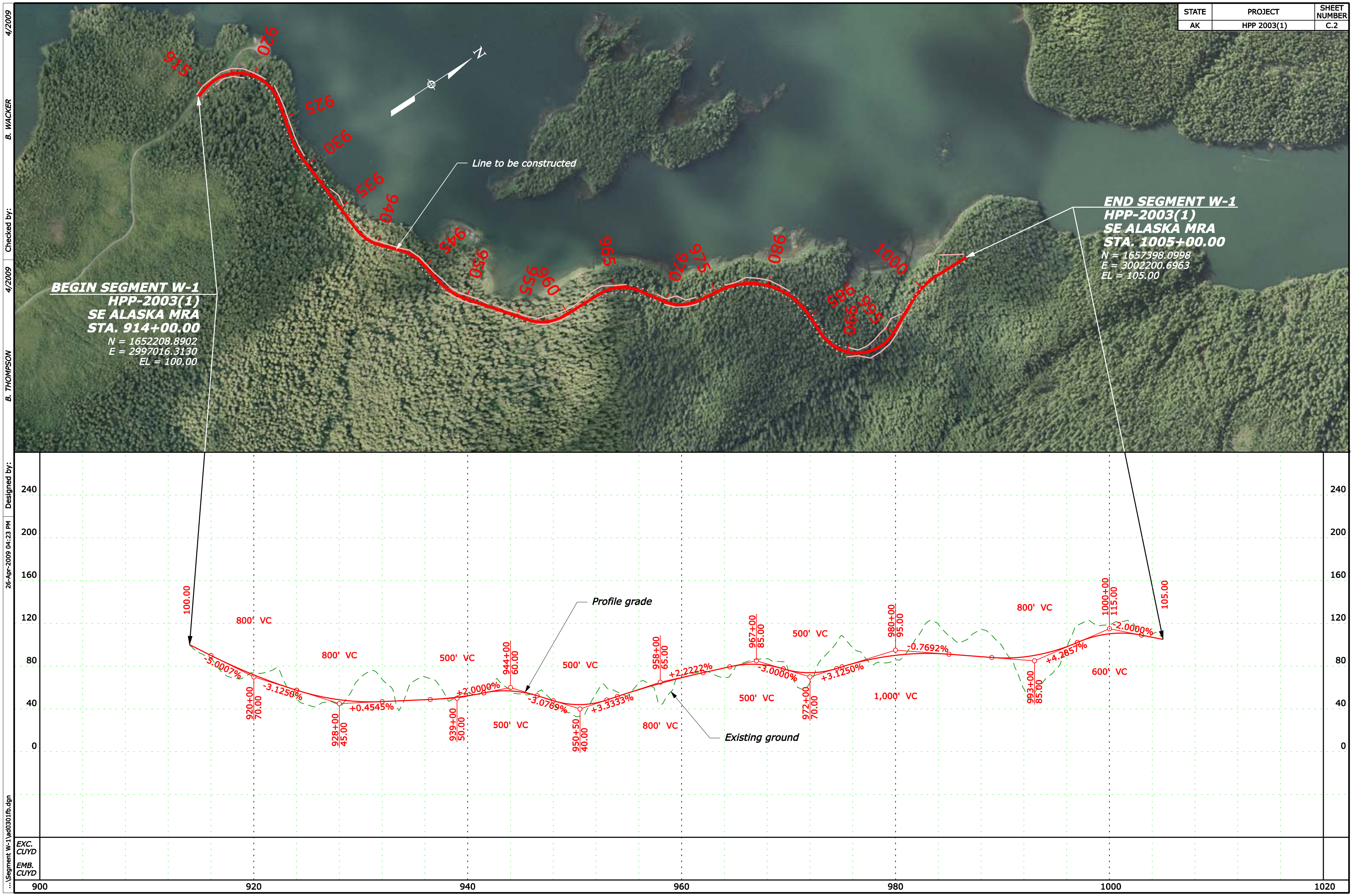
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.1

SEGMENT W-1
MAP

Designed by: B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009
03-Dec-2010 01:27 PM
...\Segment W-1\wh0301fa.dgn



STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.2
Line to be constructed
BEGIN SEGMENT W-1
HPP-2003(1)
SE ALASKA MRA
STA. 914+00.00
N = 1652208.8902
E = 2997016.3130
EL = 100.00
END SEGMENT W-1
HPP-2003(1)
SE ALASKA MRA
STA. 1005+00.00
N = 1657398.0998
E = 3002200.6963
EL = 105.00
N
Profile grade
Existing ground
800' VC
500' VC
600' VC
1,000' VC
-5.0007%
-3.1250%
+0.4545%
+2.0000%
-3.0769%
+3.3333%
+2.2222%
-3.0000%
+3.1250%
-0.7692%
+4.2857%
-2.0000%
920+00 70.00
928+00 45.00
939+00 50.00
944+00 60.00
950+50 40.00
958+00 65.00
967+00 85.00
972+00 70.00
980+00 95.00
993+00 85.00
1000+00 115.00
100.00
105.00
EXC. CUYD
EMB. CUYD
4/2009
B. WACKER
Checked by:
B. THOMPSON
Designed by:
26-Apr-2009 04:23 PM
...\Segment W-1\ad0301fb.dgn

Wrangell Island Alignment (Segment W-2)

Segment W-2 of the Wrangell Island Alignment is part of Stage 2 of the Aaron Creek Corridor and Stage 5 of the Stikine River Corridor. Segment W-2 would connect the intersection of Segment W-3 of the Wrangell Island Alignment and Segment F-1 of the Fools Inlet Alignment to Segment W-1 of the Wrangell Island Alignment. For the Aaron Creek Corridor, Segment W-2 would have to be built concurrently with Segment W-3 to connect the Zimovia Highway to the Log Transfer Station ferry terminal proposed near milepost (MP) 3.2. For the Stikine River Corridor, Segment W-2 would have to be built concurrently with both Segment S-3 of the South Stikine River Corridor and Segment W-1 to connect the Zimovia Highway to the Stikine River Corridor.

Segment W-2 would begin at the intersection of Tongass National Forest Road (FR) 6270 with FR 6265. From MP 0.0 to MP 1.4, the alignment would follow the existing gravel FR 6265 to the northeast. Turning to the north at MP 1.4, the alignment would continue to follow FR 6265 to the proposed Log Transfer Station conventional ferry terminal site at MP 3.2. Segment W-2 would end at MP 3.2, where it would connect to the beginning of Segment W-1. FR 6265 between MP 0.0 and MP 3.2 would have to be rehabilitated and paved. In addition, a few alterations to the existing roadway alignment near MP 0.6, MP 0.8, MP 1.3, MP 1.7, MP 2.2, MP 2.9, and MP 3.0 would be needed to correct deficient horizontal curves.

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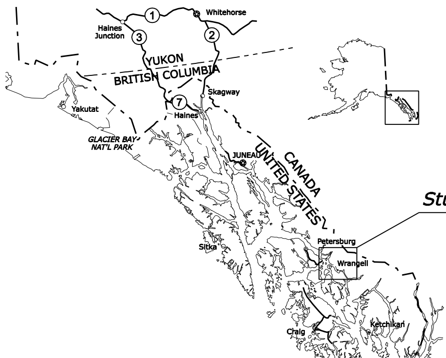
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



Study Location

ALASKA KEY MAP
INSIDE PASSAGE

PLANS FOR PROPOSED STUDY

AK HPP-2003(1)

SOUTHEAST ALASKA
MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 3 miles of reconstruction.

DESIGN DESIGNATION:

ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units

PLANS PREPARED FOR

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

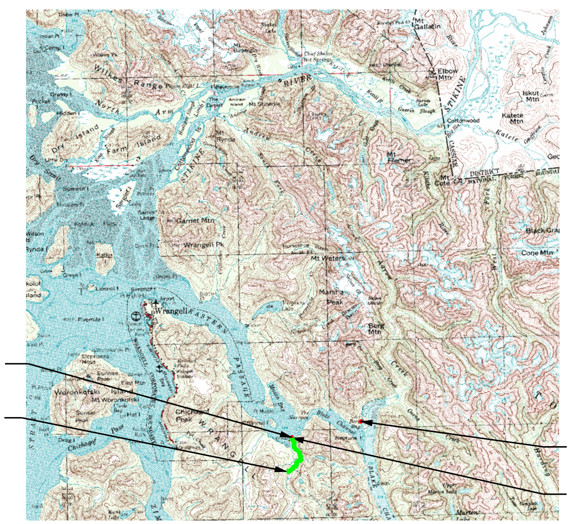
PLANS PREPARED BY

ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA

N

WRANGELL ISLAND ALIGNMENT (SEGMENT W-2)

LENGTH 3.2 MILES



LOG TRANSFER STATION
CONVENTIONAL FERRY TERMINAL

BEGIN SEGMENT W-2

BERG BAY CONVENTIONAL
FERRY TERMINAL

END SEGMENT W-2

40000 20000 0 40000 80000

SCALE IN FEET

INDEX TO SHEETS

4/2009 B. WACKER Checked by:
4/2009 B. THOMPSON Designed by:
26-Apr-2009 02:19 PM
...\segment w-2\ad0301aa.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).

National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinae based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilities	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS GREATER THAN 7 FEET

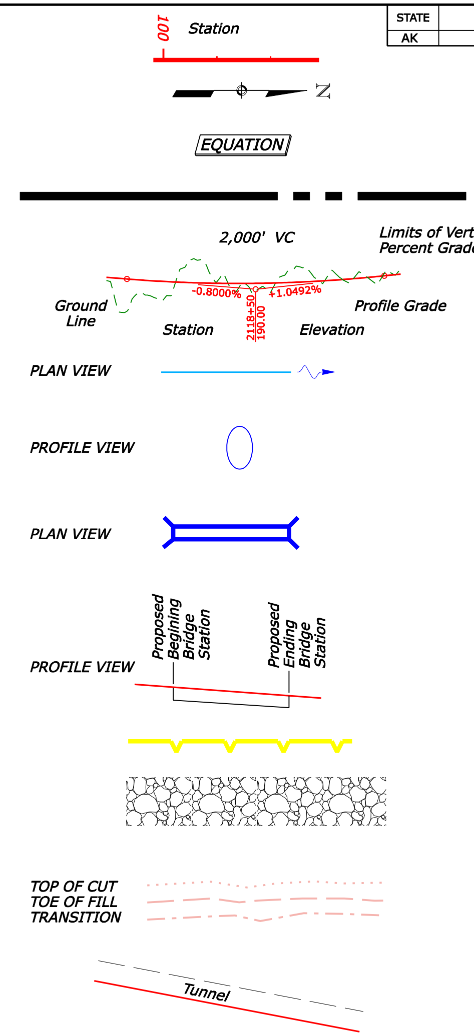
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

TUNNEL DESIGNATION ON PROFILE



NOTE:
1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

4/2009 B. WACKER Checked by:
4/2009 B. THOMPSON Designed by:
26-Apr-2009 02:19 PM
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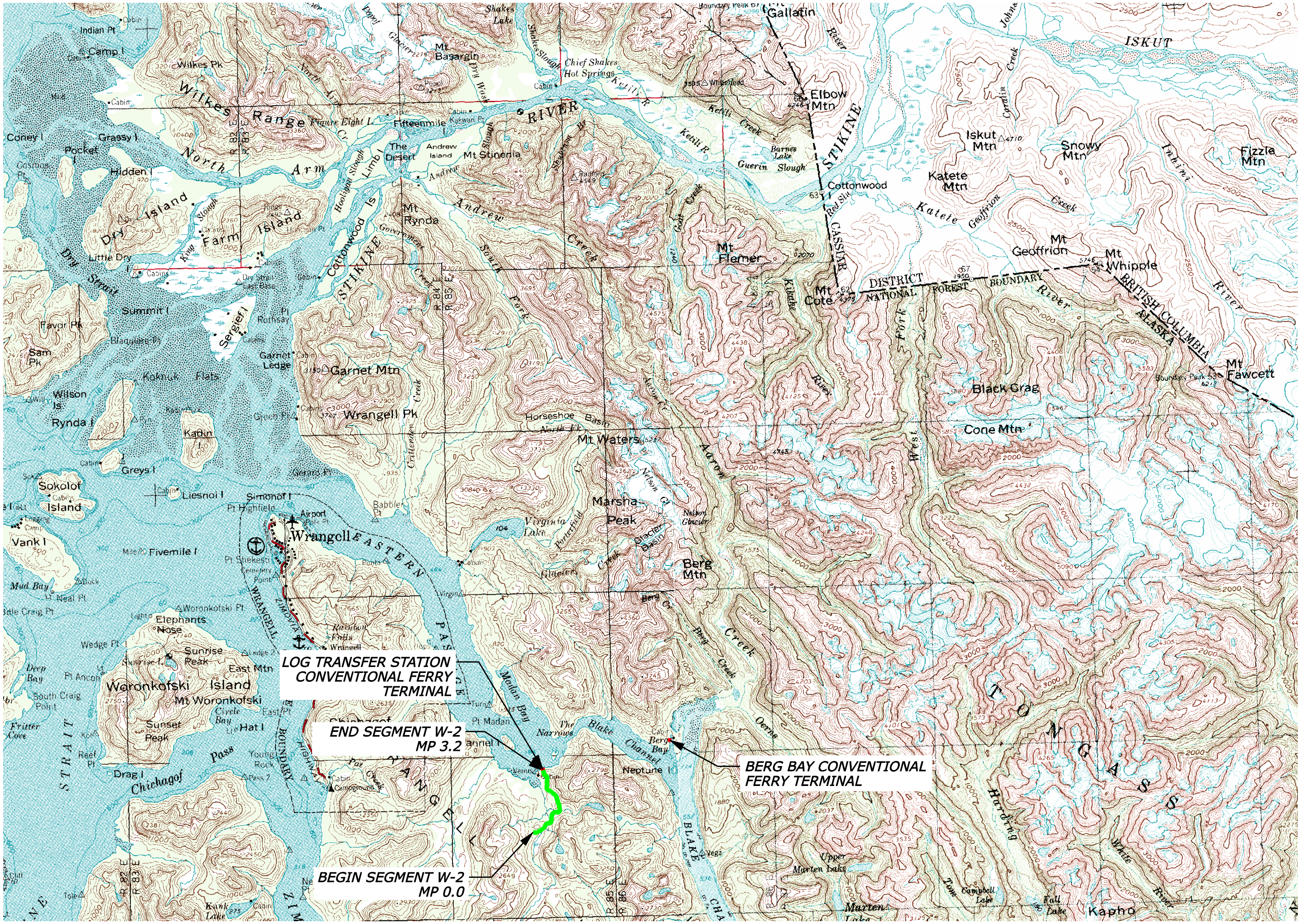
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.3



N

20000 10000 0 20000 40000

SCALE IN FEET

VICINITY MAP

4/2009 B. WACKER Checked by:

4/2009 B. THOMPSON Designed by:

26-Apr-2009 02:20 PM

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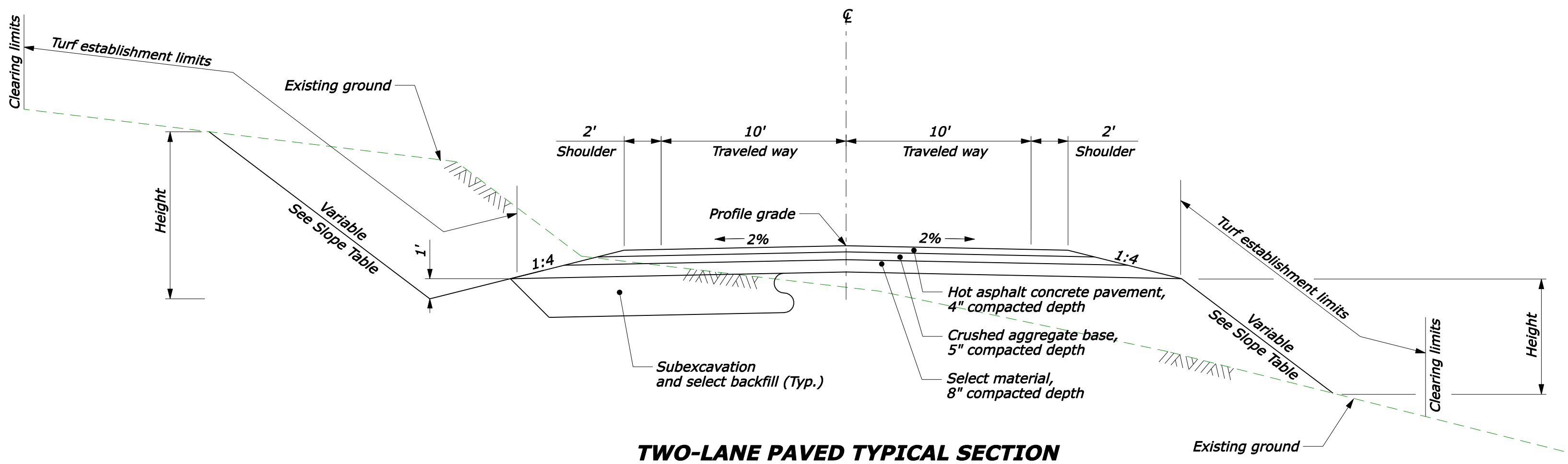
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.1



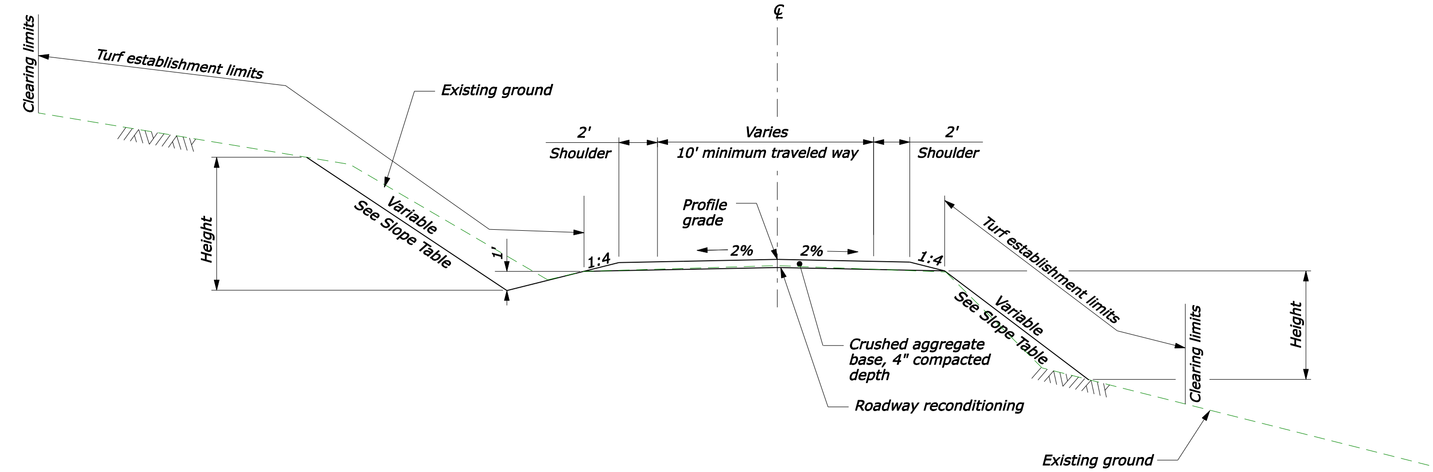
TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

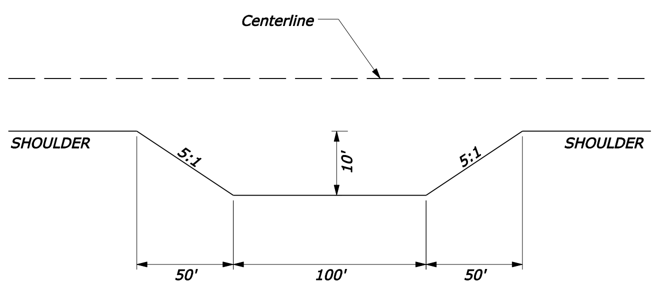
TWO-LANE PAVED TYPICAL SECTION

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 02:20 PM ...\segment w-2\ad0301ca.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.2



ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD
NEEDED FOR ANY EXTENDED SECTIONS
OF ROAD LESS THAN 18' WIDE

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

ONE-LANE GRAVEL TYPICAL SECTION

4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 02:20 PM
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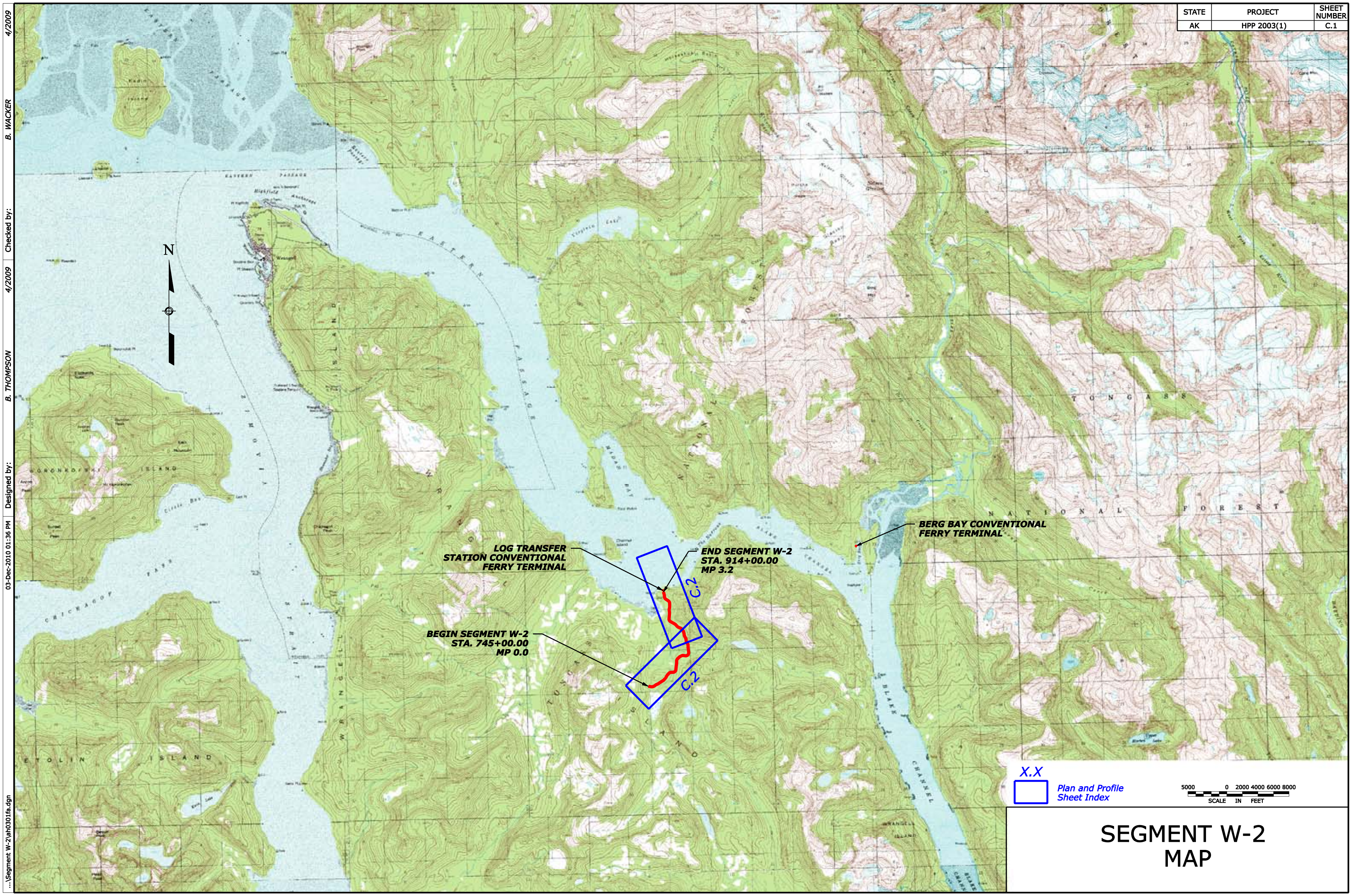

STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.1
N
LOG TRANSFER STATION CONVENTIONAL FERRY TERMINAL
END SEGMENT W-2
STA. 914+00.00
MP 3.2
BEGIN SEGMENT W-2
STA. 745+00.00
MP 0.0
BERG BAY CONVENTIONAL FERRY TERMINAL
C.2
C.2
X.X
Plan and Profile Sheet Index
5000 0 2000 4000 6000 8000
SCALE IN FEET
SEGMENT W-2
MAP
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
03-Dec-2010 01:36 PM
...\Segment W-2\ah0301fa.dgn

4/2009 B. WACKER Checked by:

4/2009 B. THOMPSON Designed by:

26-Apr-2009 02:23 PM

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Wrangell Island Alignment (Segment W-3)

Segment W-3 of the Wrangell Island Alignment is part of Stage 2 of the Aaron Creek Corridor, Stage 3 of the Stikine River Corridor, and Stage 1 of the Bradfield Canal Corridor. Segment W-3 would connect the intersection of Segment W-2 of the Wrangell Island Alignment and Segment F-1 of the Fools Inlet Alignment to the existing Zimovia Highway on Wrangell Island. For the Aaron Creek Corridor, Segment W-3 would have to be built concurrently with Segment W-2 to connect the Zimovia Highway to the Log Transfer Station ferry terminal site proposed near the end of Segment W-2. For the Stikine River and Bradfield Canal Corridors, Segment W-3 would have to be built concurrently with both Segment F-1 and Segment F-2 of the Fools Inlet Alignment to connect the Zimovia Highway to the proposed Fools Inlet conventional ferry terminal.

Segment W-3 would begin along the Zimovia Highway at milepost (MP) 0.0 where the highway splits into Tongass National Forest Road (FR) 6265 and FR 6267. The alignment would follow the existing gravel FR 6265 to the east as it winds across Wrangell Island until reaching the intersection with FR 6270 at MP 11.1, which coincides with the beginning of both Segment W-2 of the Wrangell Island Alignment and Segment F-1 of the Fools Inlet Alignment. FR 6265 between MP 0.0 and MP 11.1 would have to be rehabilitated and paved. Short sections of the existing roadway near MP 4.3, MP 4.8, MP 5.1, MP 5.6, MP 6.3, MP 7.5, MP 8.7, MP 9.2, MP 10.0, MP 10.4, MP 10.6, and MP 10.9 would have to be realigned to correct deficient horizontal curves.

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STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

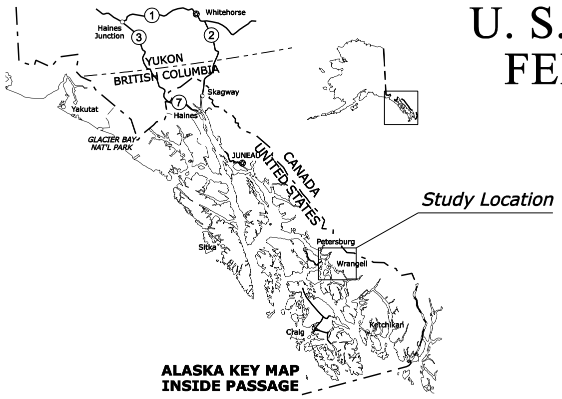
U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

PLANS FOR PROPOSED STUDY

AK HPP-2003(1)

SOUTHEAST ALASKA MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA



ALASKA KEY MAP
INSIDE PASSAGE

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 11 miles of reconstruction.

DESIGN DESIGNATION:

ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units

PLANS PREPARED FOR

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

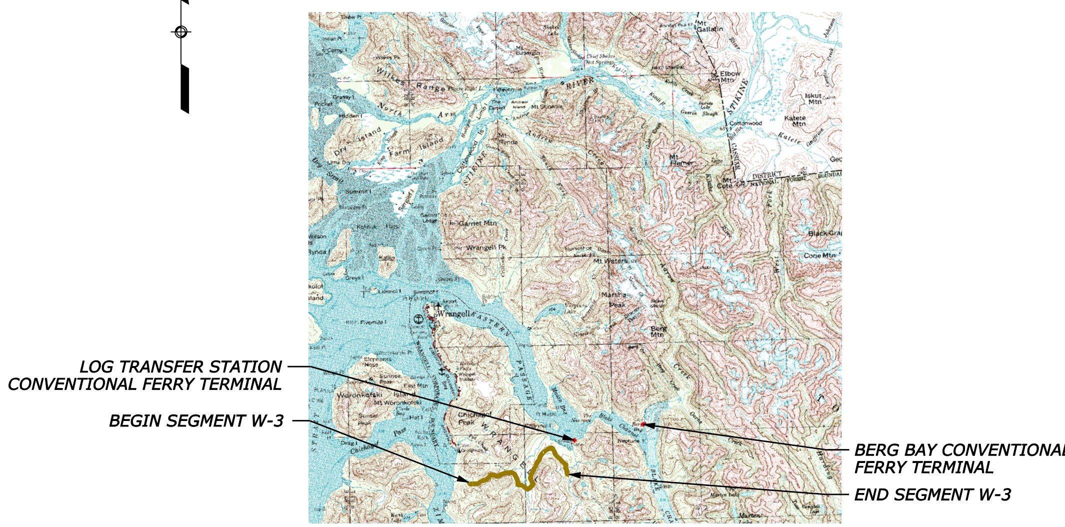
PLANS PREPARED BY

RPA
ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA

N

WRANGELL ISLAND ALIGNMENT (SEGMENT W-3)

LENGTH 11.1 MILES



40000 20000 0 40000 80000
SCALE IN FEET

INDEX TO SHEETS

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 02:24 PM ...\Segment W-3\ad0301aa.dgn

4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 02:24 PM
...\Segment W-3\ad0301ab.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).

National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinae based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilities	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS
GREATER THAN 7 FEET

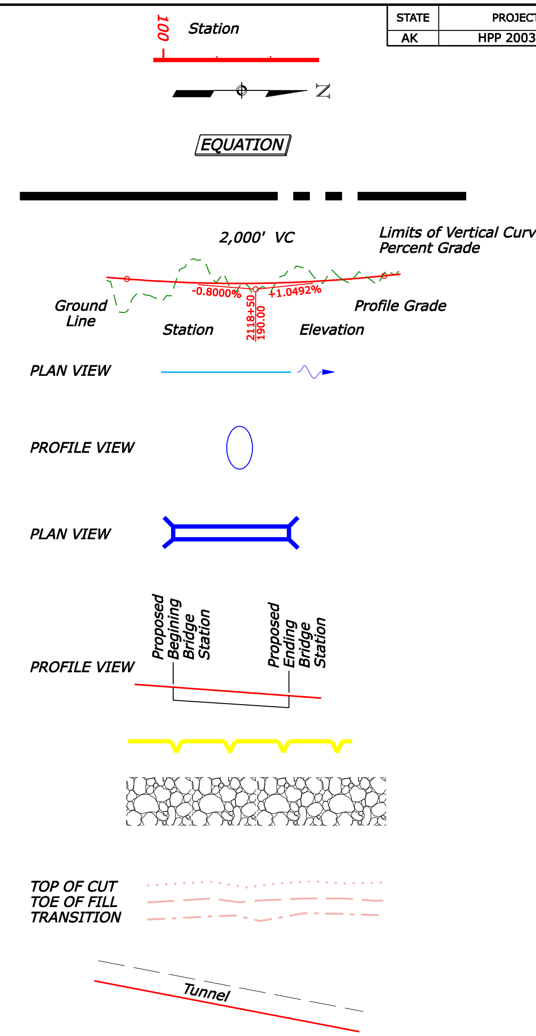
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

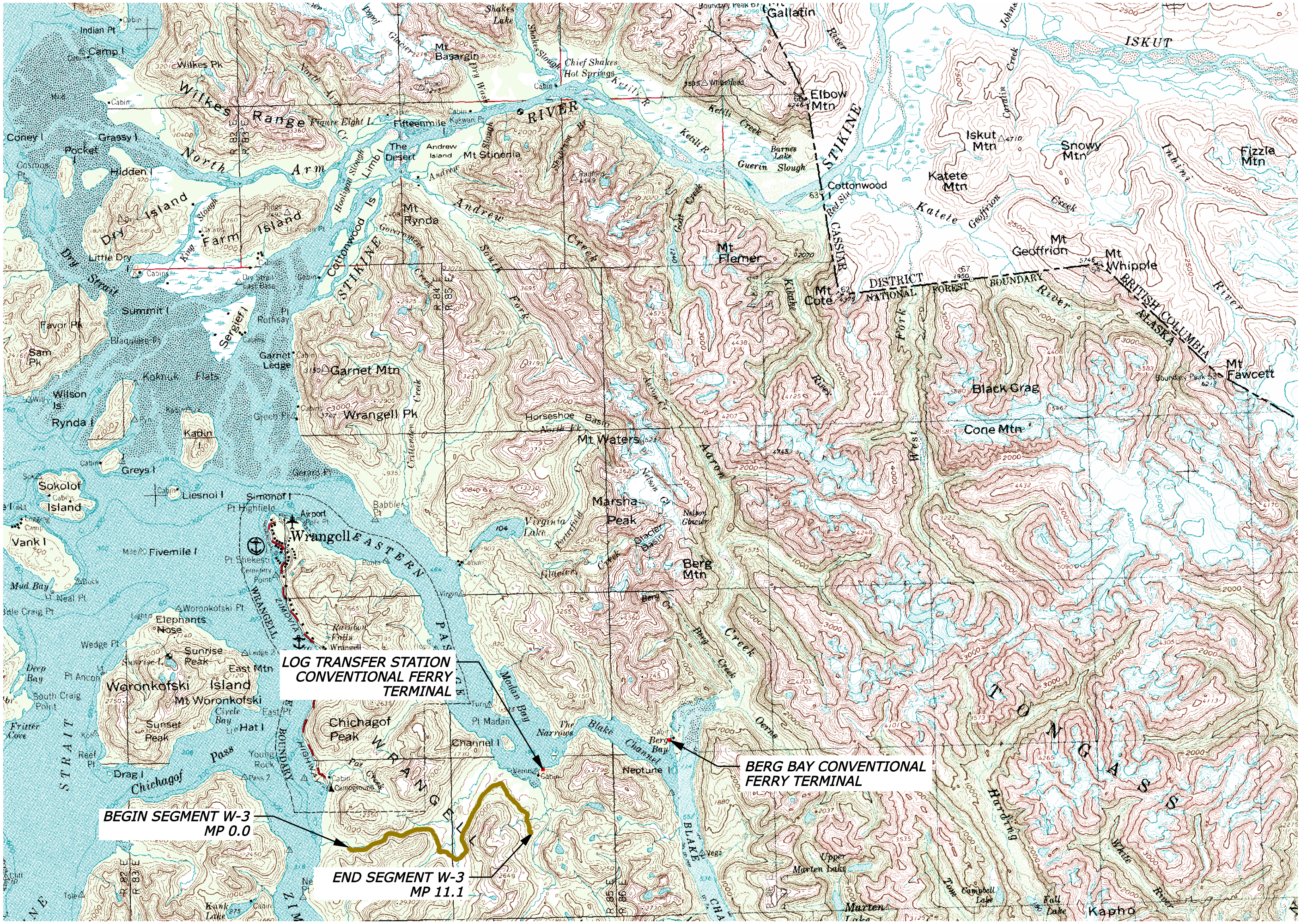
TUNNEL DESIGNATION
ON PROFILE



NOTE:
1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.3



N

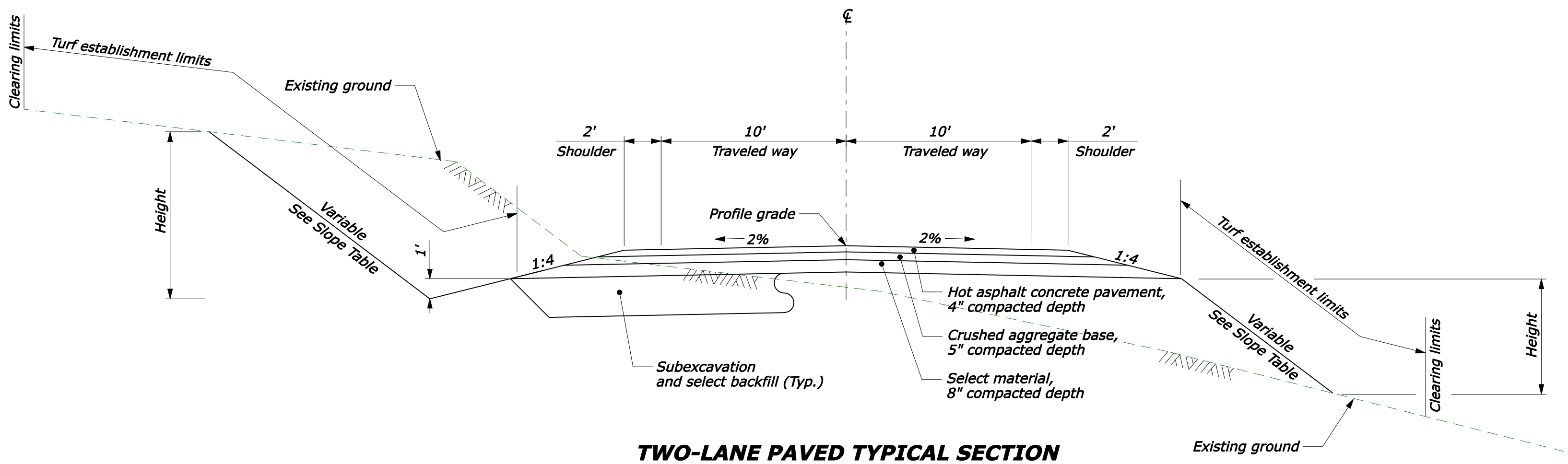
20000 10000 0 20000 40000

SCALE IN FEET

VICINITY MAP

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 02:24 PM ...\Segment W-3\ad0301ac.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.1



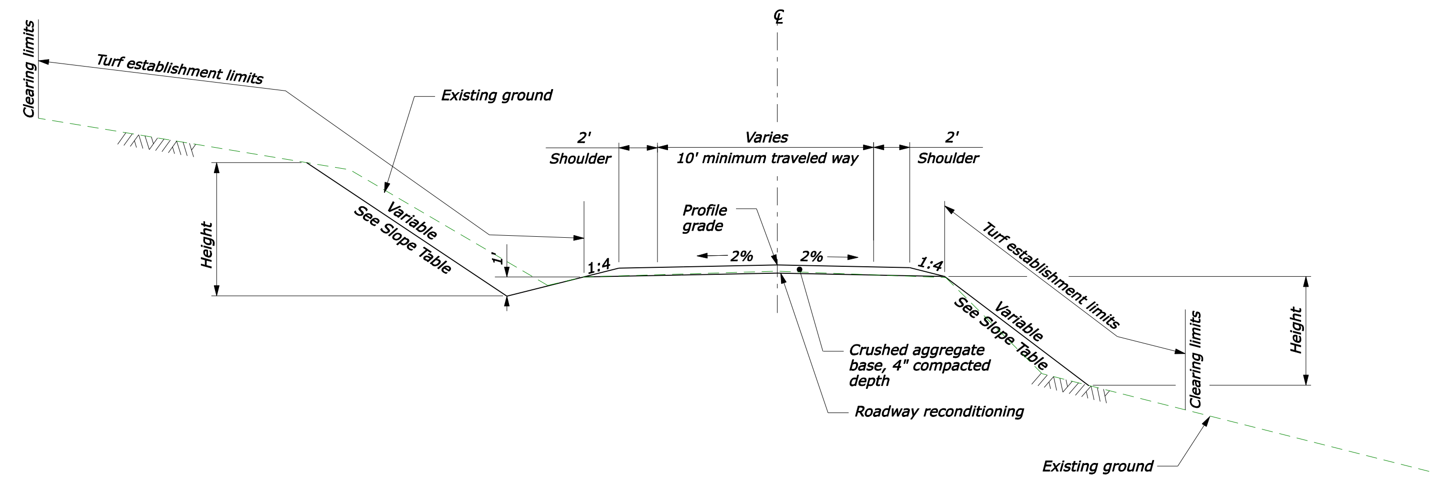
TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

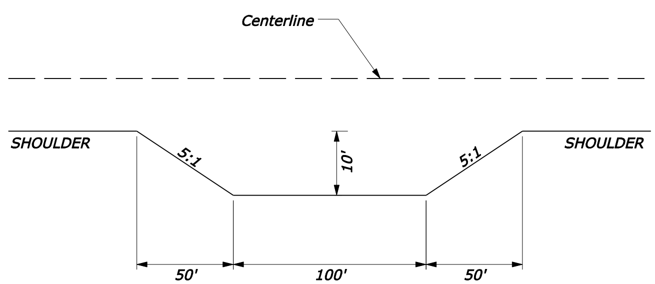
TWO-LANE PAVED TYPICAL SECTION

4/2009 B. WACKER Checked by:
4/2009 B. THOMPSON Designed by:
26-Apr-2009 02:24 PM
...\segment w-3\ad0301ca.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.2



ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



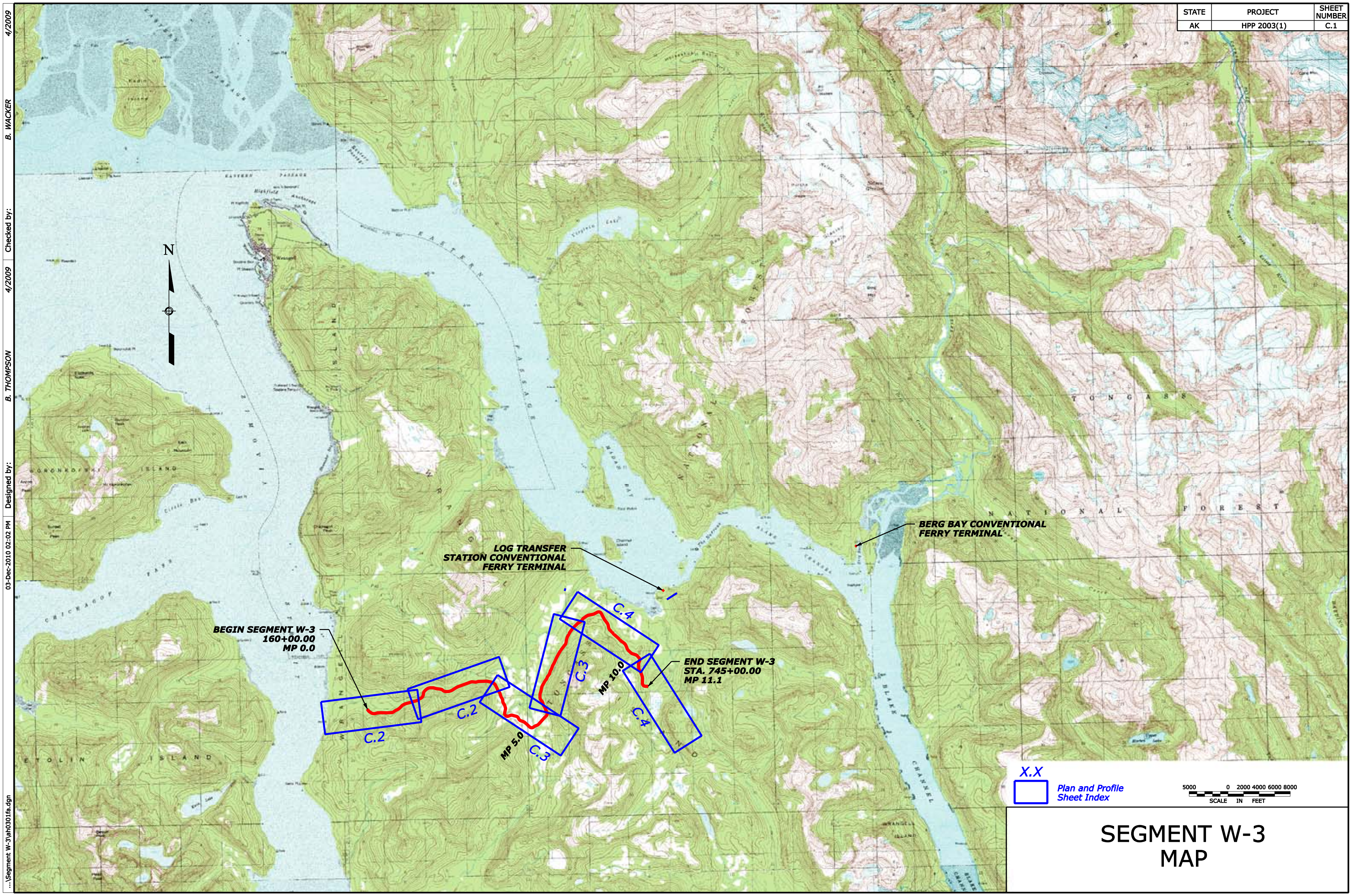
TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD
NEEDED FOR ANY EXTENDED SECTIONS
OF ROAD LESS THAN 18' WIDE

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

ONE-LANE GRAVEL TYPICAL SECTION

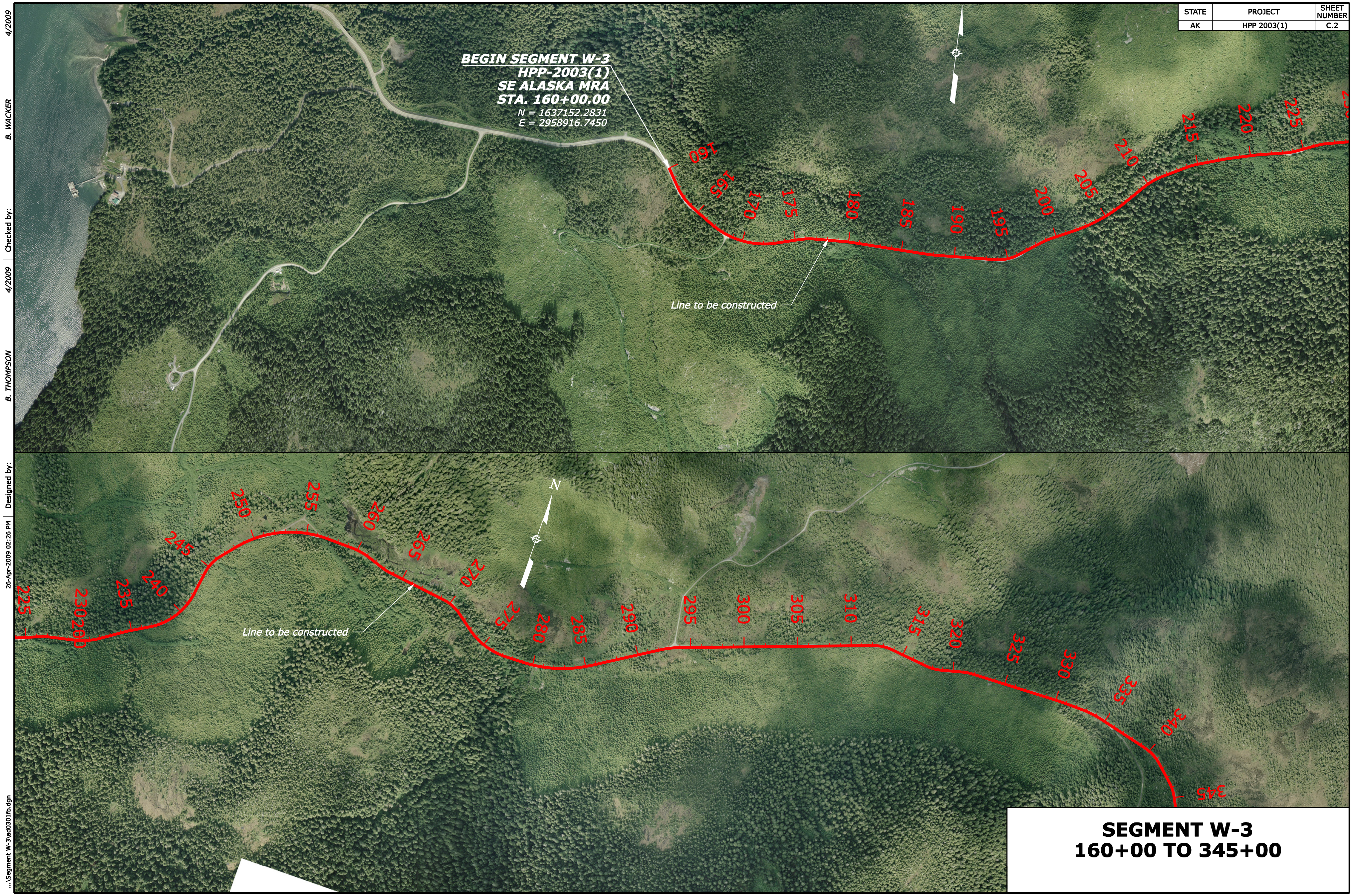
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 02:24 PM
...\segment w-3\ad0301cb.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.1



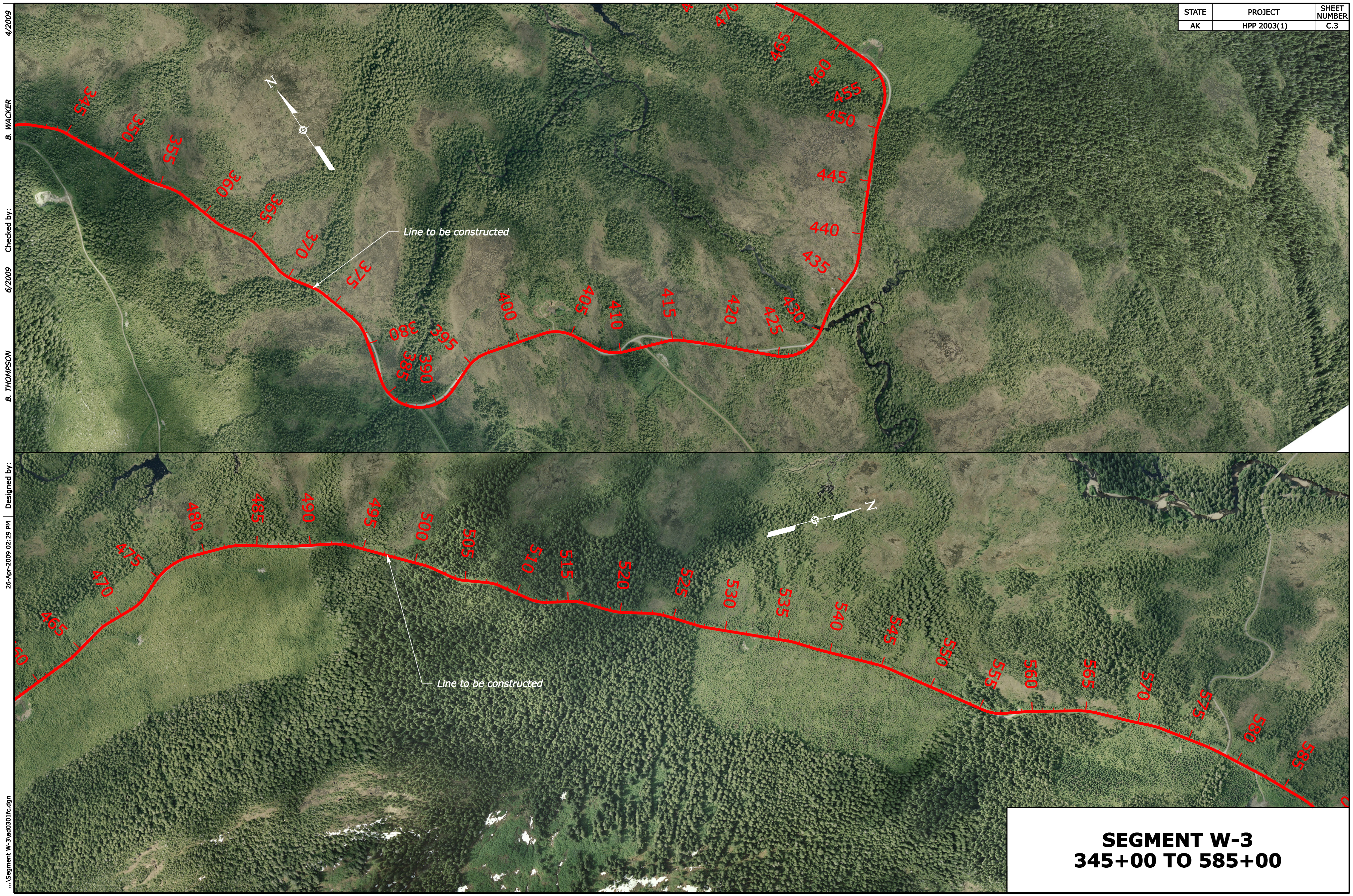
SEGMENT W-3 MAP

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 03-Dec-2010 02:02 PM ...\Segment W-3\ah0301fa.dgn



STATE | PROJECT | SHEET NUMBER
AK | HPP 2003(1) | C.2
BEGIN SEGMENT W-3
HPP-2003(1)
SE ALASKA MRA
STA. 160+00.00
N = 1637152.2831
E = 2958916.7450
Line to be constructed
N
Line to be constructed
SEGMENT W-3
160+00 TO 345+00
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 02:26 PM
...\Segment W-3\ad0301fb.dgn

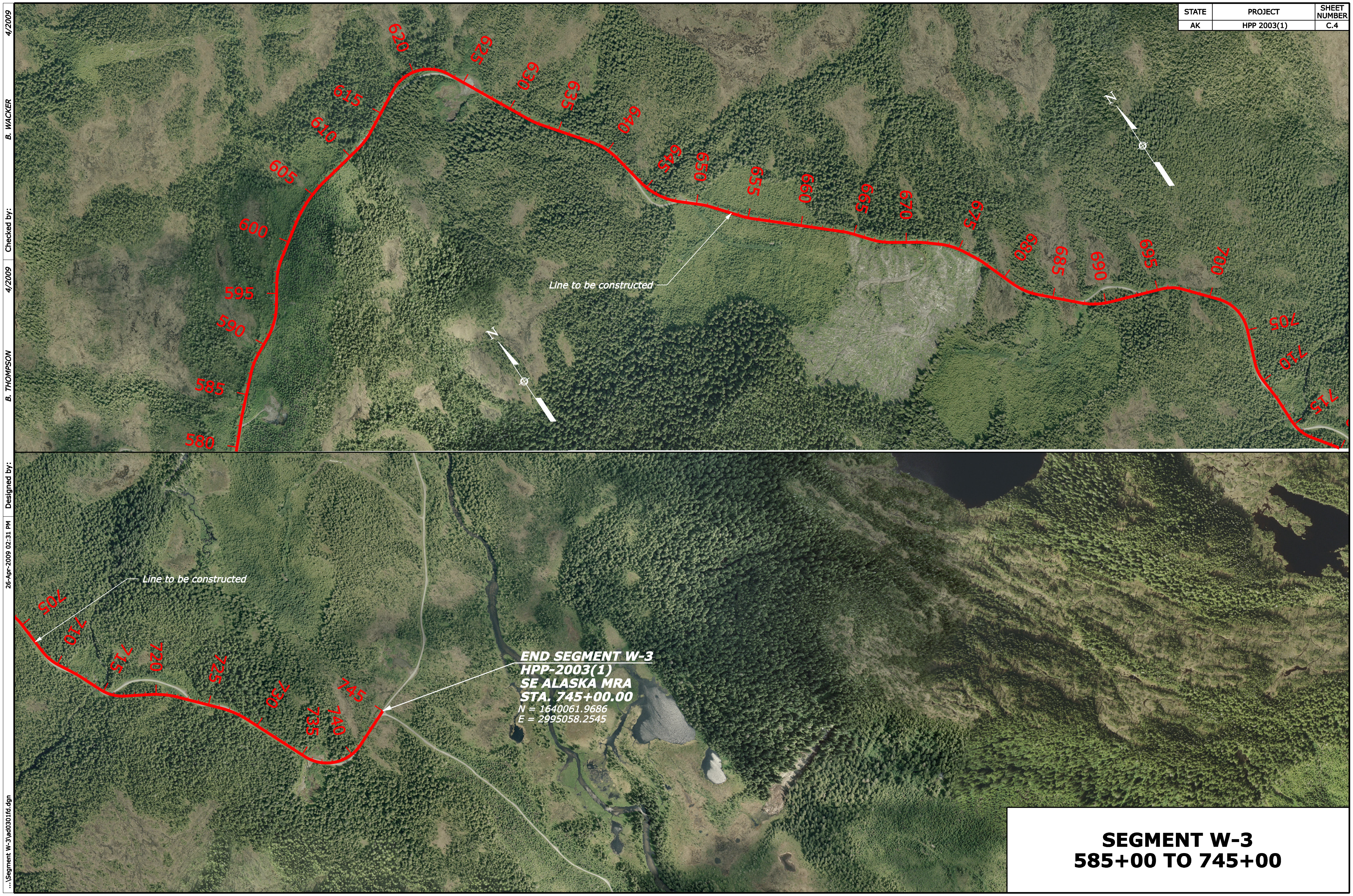
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.3



SEGMENT W-3
345+00 TO 585+00

4/2009
B. WACKER
Checked by:
6/2009
B. THOMPSON
Designed by:
26-Apr-2009 02:29 PM
...\Segment W-3\ad0301fc.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.4



SEGMENT W-3
585+00 TO 745+00

4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 02:31 PM
...\Segment W-3\ad0301fd.dgn

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APPENDIX C.4

Fools Inlet Alignment

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Fools Inlet Alignment (Segment F-1)

Segment F-1 of the Fools Inlet Alignment is part of Stage 1 of the Bradfield Canal Corridor, Stage 3 of the Aaron Creek Corridor, and Stage 3 of the Stikine River Corridor. Segment F-1 would connect Segment F-2 of the Fools Inlet Alignment with Tongass National Forest Road (FR) 6265 at the intersection of Segments W-2 and W-3 of the Wrangell Island Alignment. For the Stikine River and Bradfield Canal Corridors, Segment F-1 would have to be built concurrently with both Segment W-3 and Segment F-2 to connect the Zimovia Highway to the proposed Fools Inlet conventional ferry terminal. For the Aaron Creek Corridor, Segment F-1 would have to be built concurrently with Segment F-2 to connect the Fools Inlet terminal to rehabilitated FR 6265 and the Zimovia Highway.

Segment F-1 would begin at the intersection of FR 6270 with FR 6265. From milepost (MP) 0.0 to MP 2.7, the alignment would follow existing gravel FR 6270 to the southeast. The alignment would follow FR 6270 as it turns to the northeast from MP 2.7 to MP 3.5. Turning back to the southeast at MP 3.5, the alignment would continue to follow FR 6270 to MP 6.4, where the alignment would encounter the beginning of Segment F-2 of the Fools Inlet Alignment. Since the alignment would follow an existing road between MP 0.0 and MP 6.4, the road would have to be rehabilitated and paved. A few alterations to the existing roadway alignment near MP 0.1, MP 0.6, MP 1.2, MP 1.5, MP 1.8, MP 2.1, MP 2.5, and MP 4.1 would be needed to correct deficient horizontal curves.

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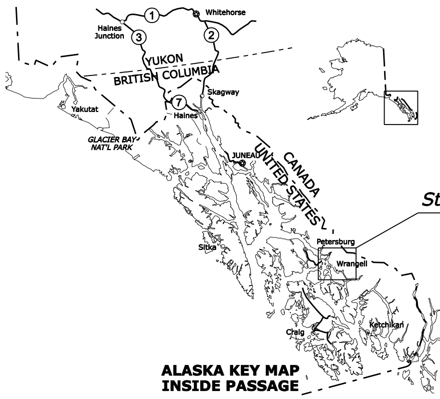
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



ALASKA KEY MAP
INSIDE PASSAGE

PLANS FOR PROPOSED STUDY

AK HPP-2003(1)

SOUTHEAST ALASKA MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA

FOOL'S INLET ALIGNMENT (SEGMENT F-1)

LENGTH 6.4 MILES

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 6 miles of reconstruction.

DESIGN DESIGNATION:

ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units

PLANS PREPARED FOR

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

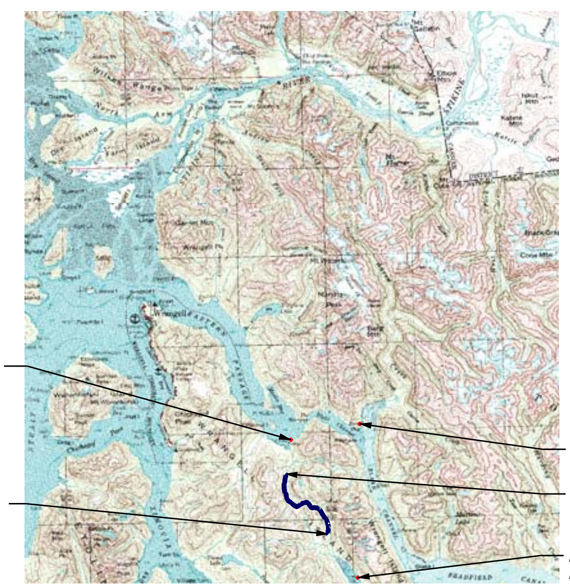
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

PLANS PREPARED BY

RPA
ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA

N



INDEX TO SHEETS

...\segment f-1\ad0301aa.dgn | 23-Apr-2009 11:29 AM | Designed by: B. THOMPSON 4/2009 | Checked by: B. WACKER 4/2009

C-122

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 11:30 AM ...\segment f-1\ad0301ab.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).
National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinae based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilities	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS GREATER THAN 7 FEET

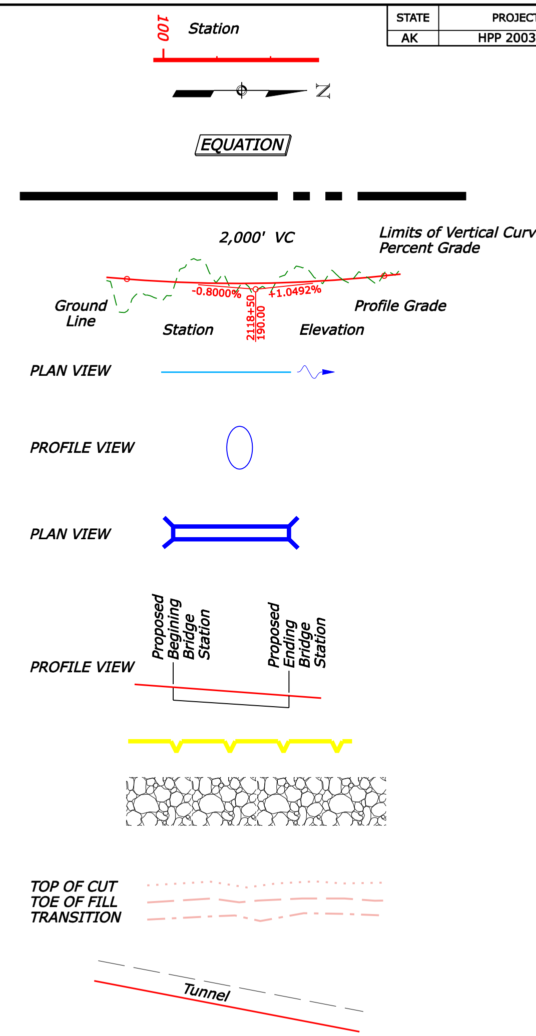
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

TUNNEL DESIGNATION ON PROFILE



NOTE:

1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.3

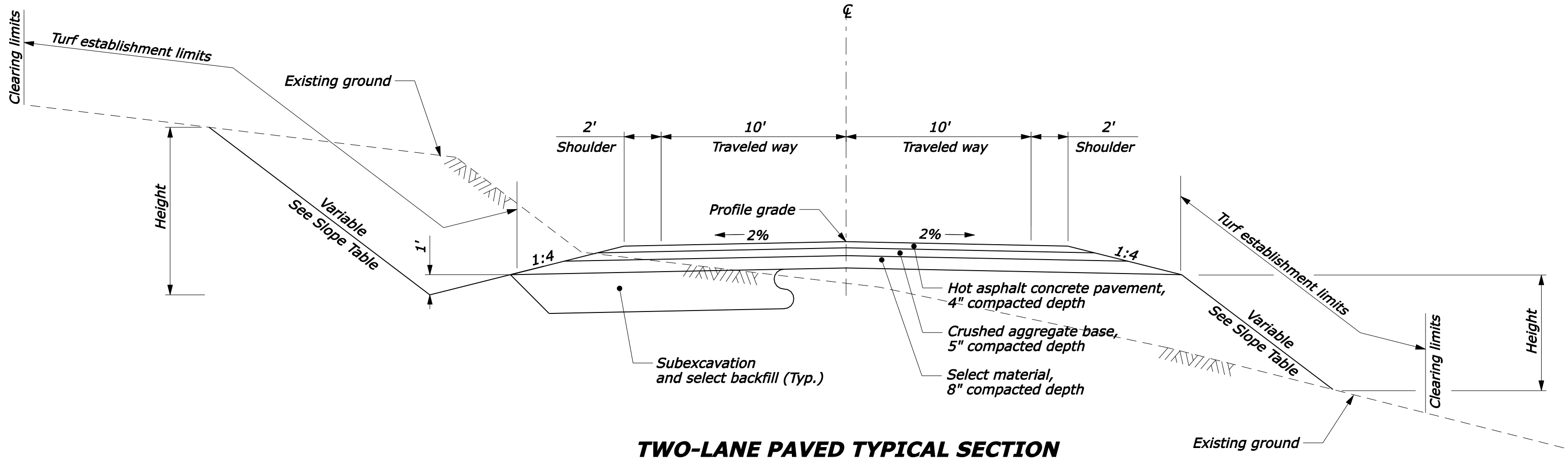
20000 10000 0 20000 40000

SCALE IN FEET

VICINITY MAP

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 11:30 AM ...\segment f-1\ad0301ac.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.1



TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

TWO-LANE PAVED TYPICAL SECTION

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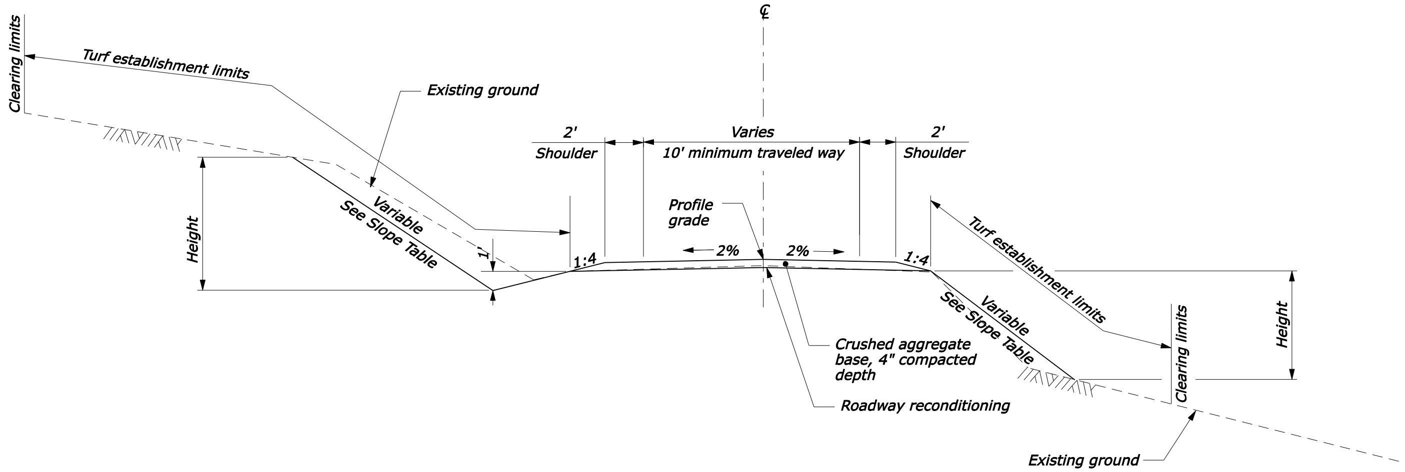
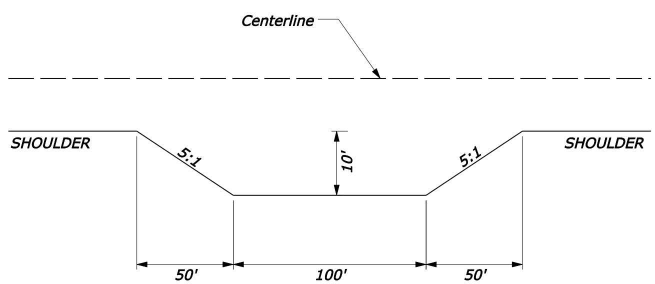
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.2



ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD
NEEDED FOR ANY EXTENDED SECTIONS
OF ROAD LESS THAN 18' WIDE

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

ONE-LANE GRAVEL TYPICAL SECTION

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 12:23 PM ...\Segment F-1\ad0301cb.dgn

Designed by: B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009
03-Dec-2010 12:29 PM
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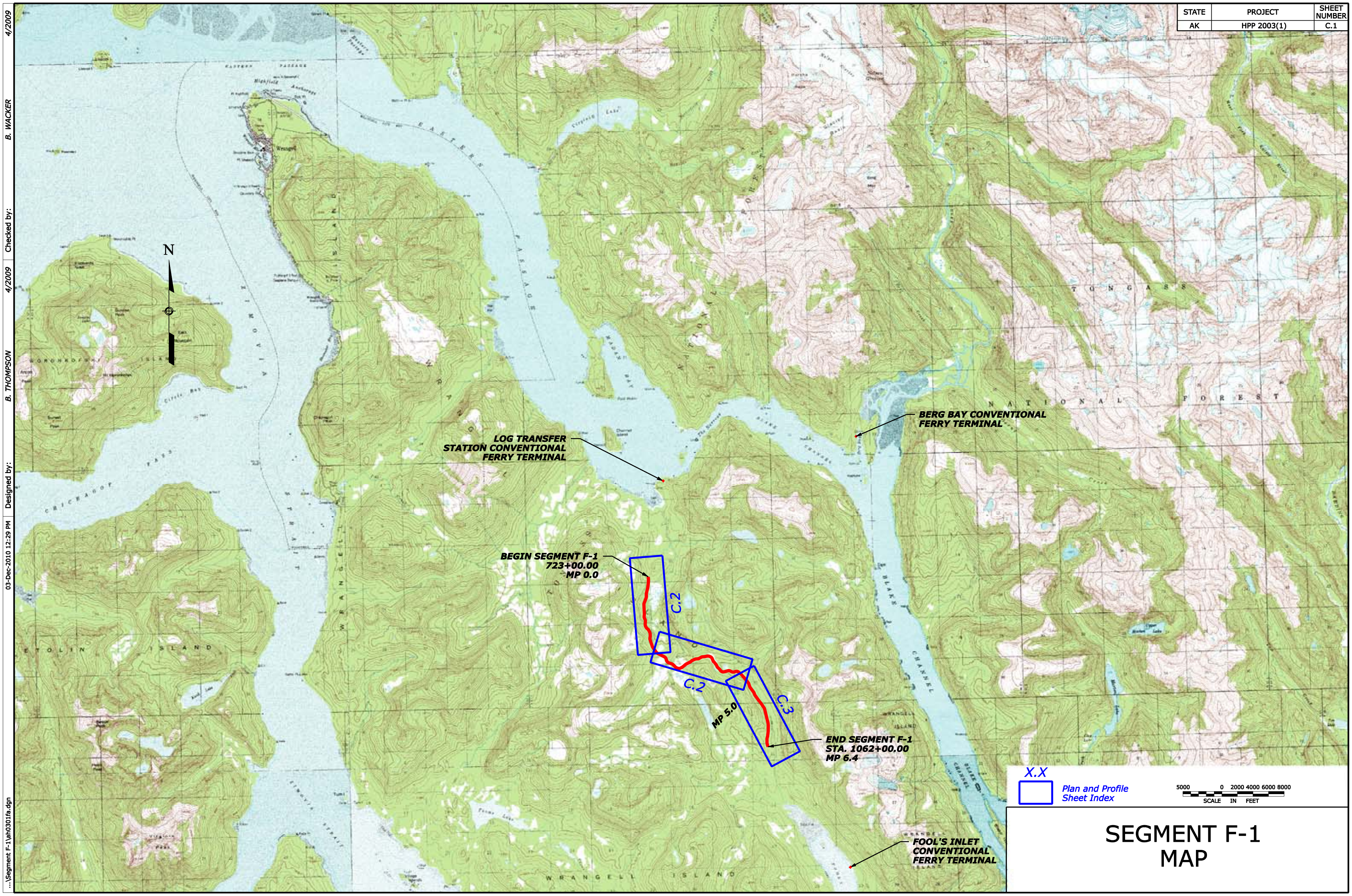
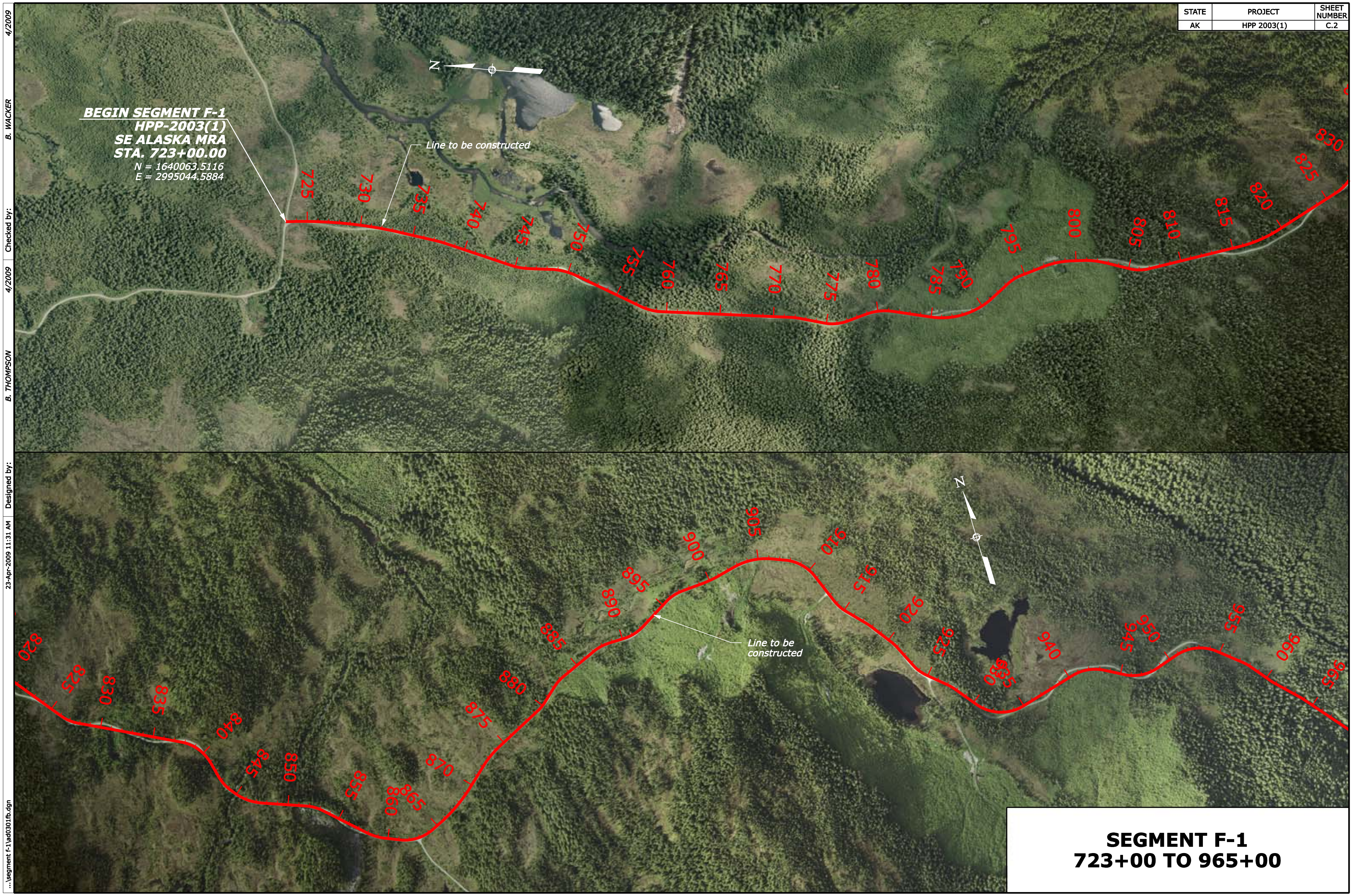


STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.2



SEGMENT F-1
723+00 TO 965+00

Designed by: B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009
23-Apr-2009 11:31 AM
...\segment f-1\ad0301fb.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.3

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 11:59 AM ...\Segment F-1\ad0301fc.dgn

SEGMENT F-1
965+00 TO 1062+00

Fools Inlet Alignment (Segment F-2)

Segment F-2 of the Fool's Inlet Alignment is part of Stage 1 of the Bradfield Canal Corridor, Stage 3 of the Aaron Creek Corridor, and Stage 3 of the Stikine River Corridor. Segment F-2 would connect the reconstructed roads on Wrangell Island to the conceptual Fools Inlet conventional ferry terminal. For the Bradfield Canal and Stikine River Corridors, Segment F-2 would have to be built concurrently with Segment F-1 of the Fools Inlet Alignment and Segment W-3 of the Wrangell Island Alignment to connect the Fools Inlet terminal to the Zimovia Highway. For the Aaron Creek Corridor, Segment F-2 would have to be built concurrently with Segment F-1 to connect with the reconstructed portion of Tongass National Forest Road (FR) 6265 and the Zimovia Highway.

Segment F-2 would depart the FR 6270 at milepost (MP) 0.0, and the new roadway alignment would run parallel to an unnamed drainage. The alignment would cross the drainage at MP 1.4 with two large culverts. After crossing the drainage, the alignment would follow the southeast shoreline of Fools Inlet to MP 4.1. Segment F-2 would terminate at MP 4.1, near the proposed Fools Inlet conventional ferry terminal. From MP 0.0 to MP 4.1, the alignment would encounter relatively flat terrain. Large culverts would be needed for active drainages near MP 2.3, MP 2.7, MP 2.8, and MP 2.9.

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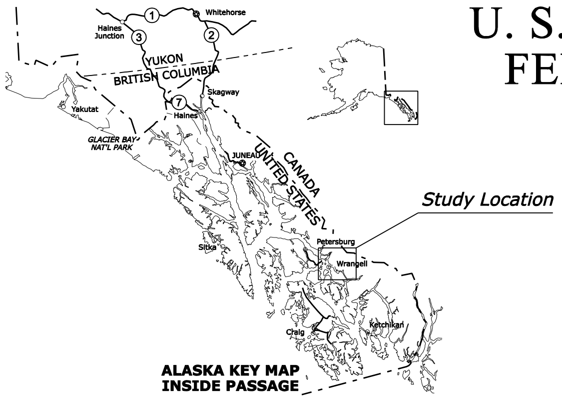
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA



ALASKA KEY MAP
INSIDE PASSAGE

PLANS FOR PROPOSED STUDY

AK HPP-2003(1)

SOUTHEAST ALASKA MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA

FOOL'S INLET ALIGNMENT (SEGMENT F-2)

LENGTH 4.1 MILES

INDEX TO SHEETS

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 4 miles of new alignment.

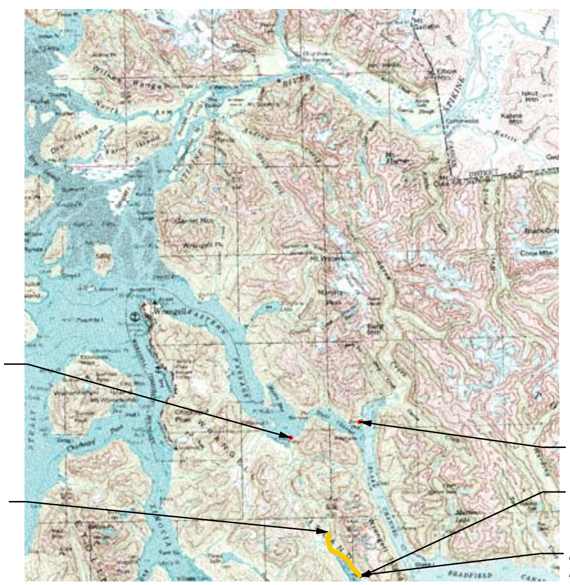
DESIGN DESIGNATION:

ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units

N



PLANS PREPARED FOR

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

PLANS PREPARED BY

RPA
ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA

4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
23-Apr-2009 12:24 PM
...\Segment F-2\ad0301aa.dgn

C-132

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 12:24 PM ...\Segment F-2\ad0301ab.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).

National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinae based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilites	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS
GREATER THAN 7 FEET

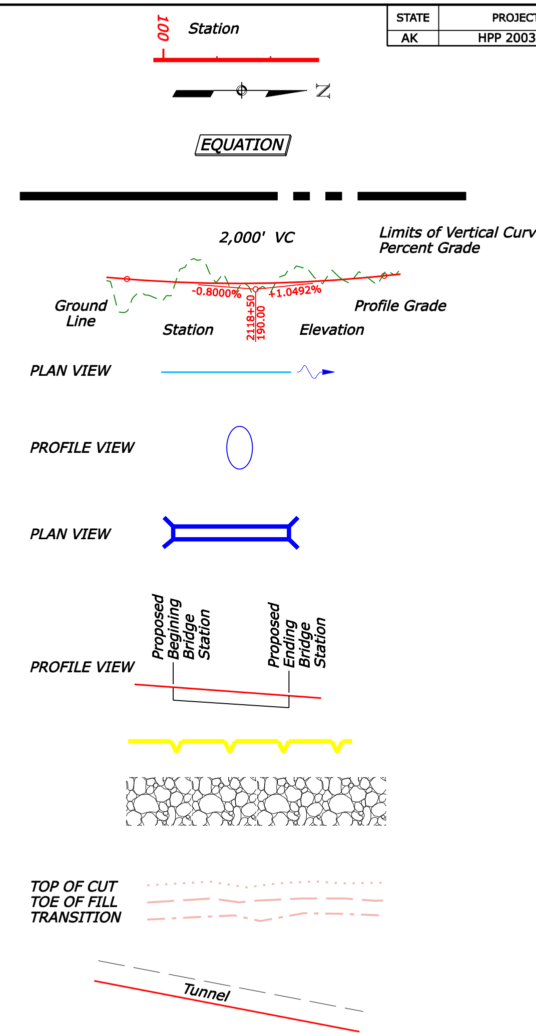
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

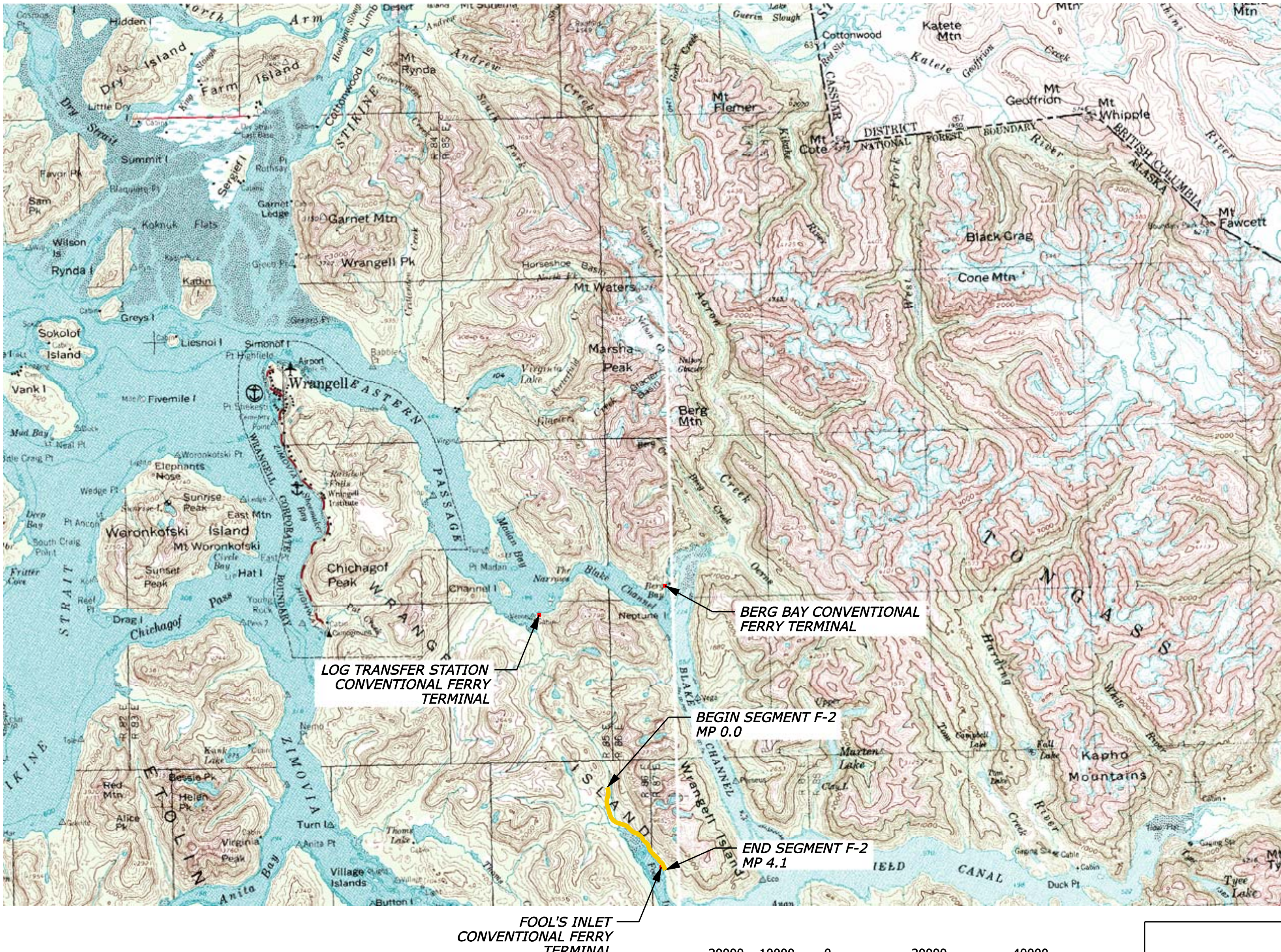
TUNNEL DESIGNATION
ON PROFILE



NOTE:
1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.3



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20000 10000 0 20000 40000
SCALE IN FEET

VICINITY MAP

4/2009 B. WACKER Checked by:
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STATE	PROJECT	SHEET NUMBER
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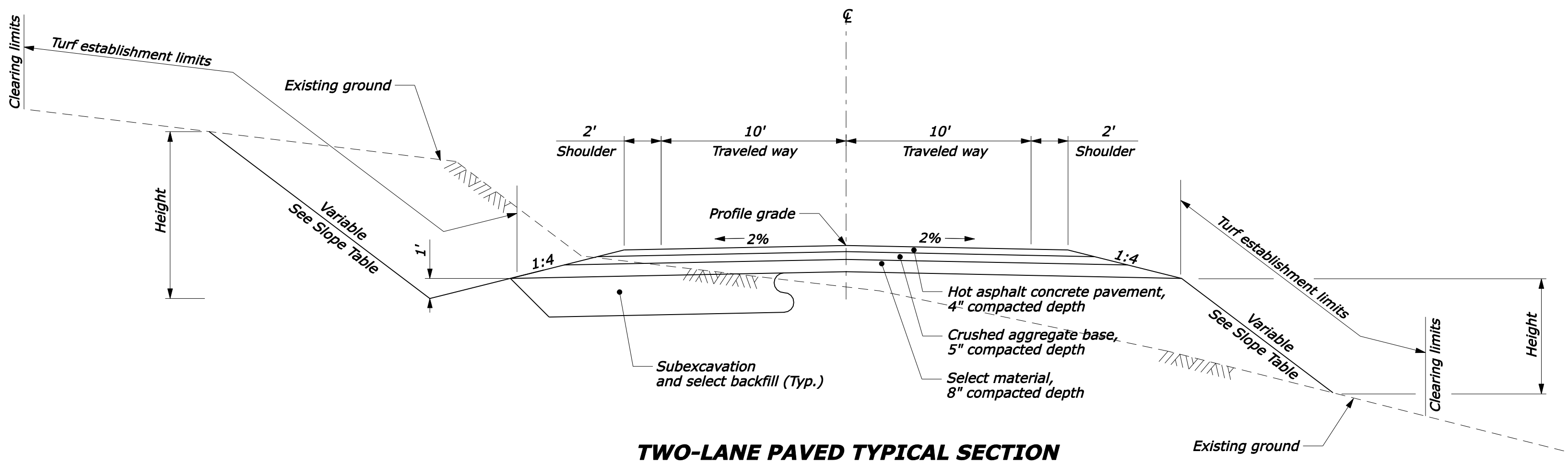


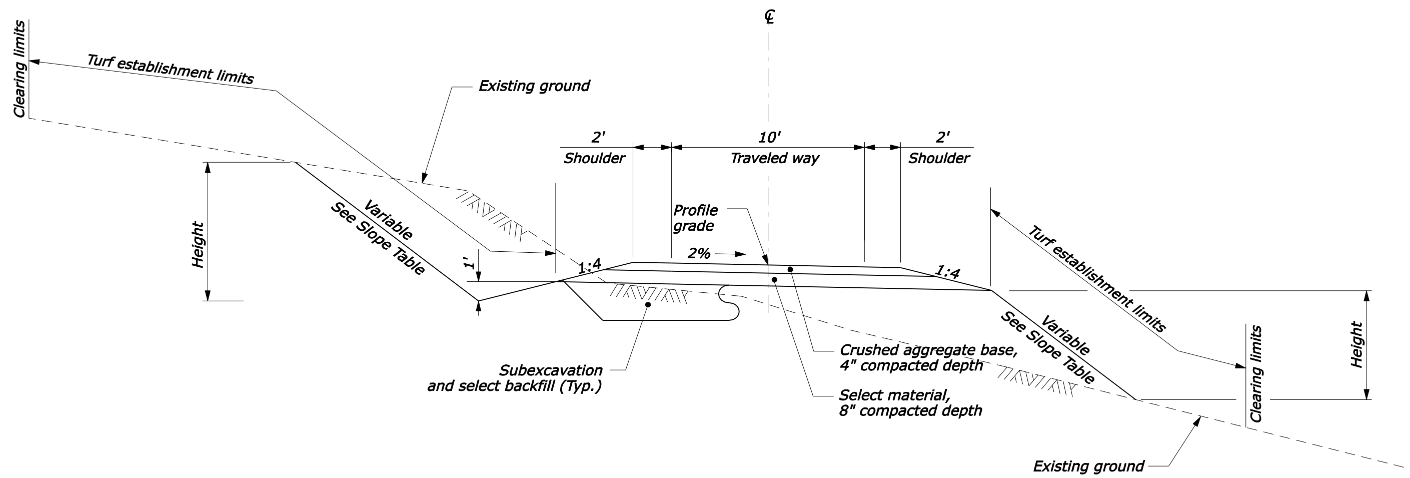
TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

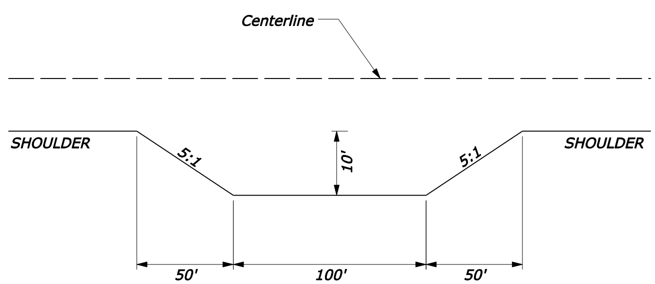
TWO-LANE PAVED TYPICAL SECTION

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 12:27 PM ...\Segment F-2\ad0301ca.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.2



ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



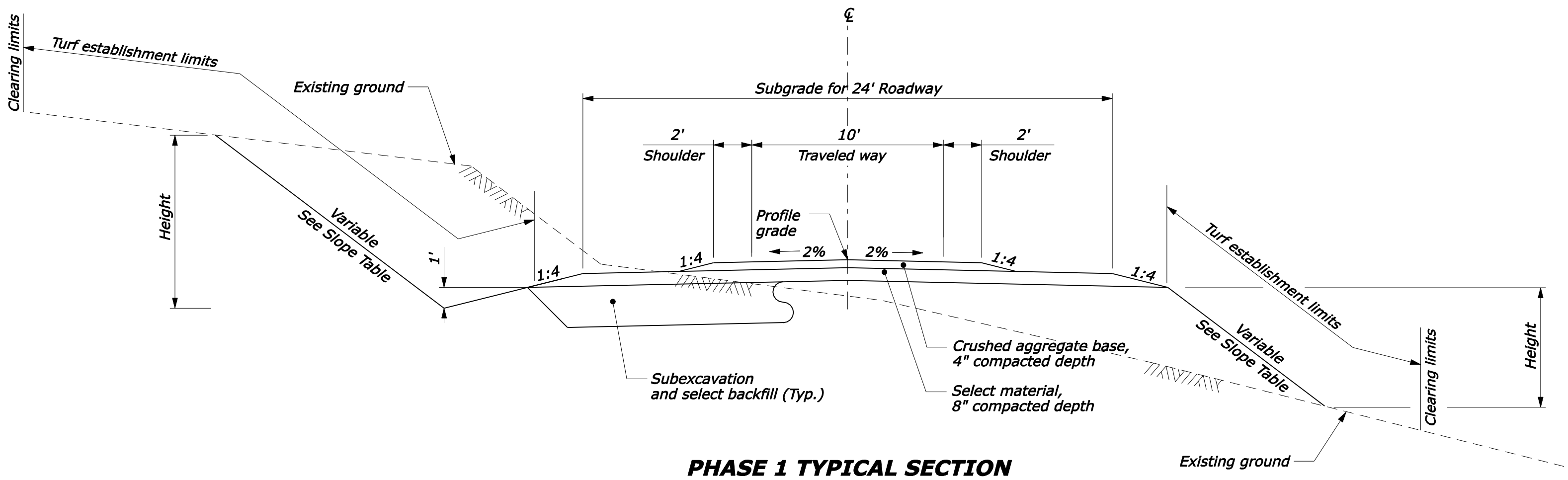
TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

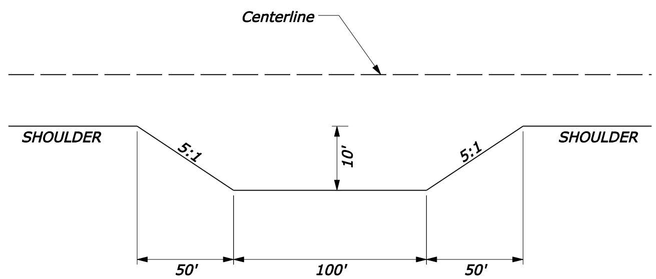
ONE-LANE GRAVEL TYPICAL SECTION

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 12:27 PM ...\Segment F-2\ad0301cb.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.3



PHASE 1 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 1
TYPICAL SECTION

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STATE	PROJECT	SHEET NUMBER
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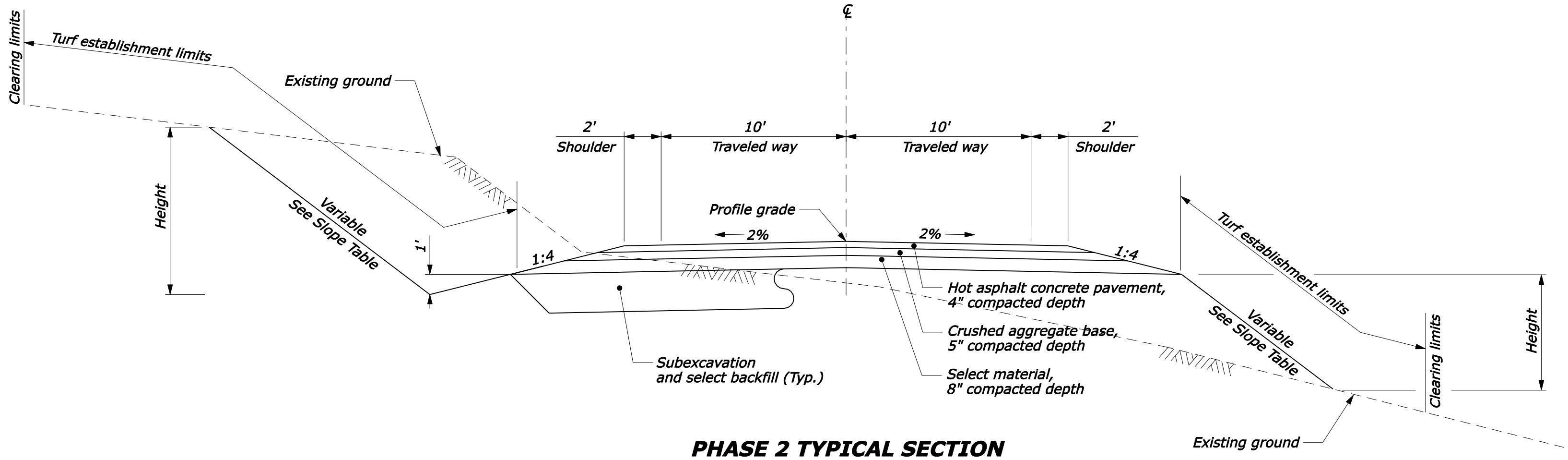

PHASE 2 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 2
TYPICAL SECTION

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STATE	PROJECT	SHEET NUMBER
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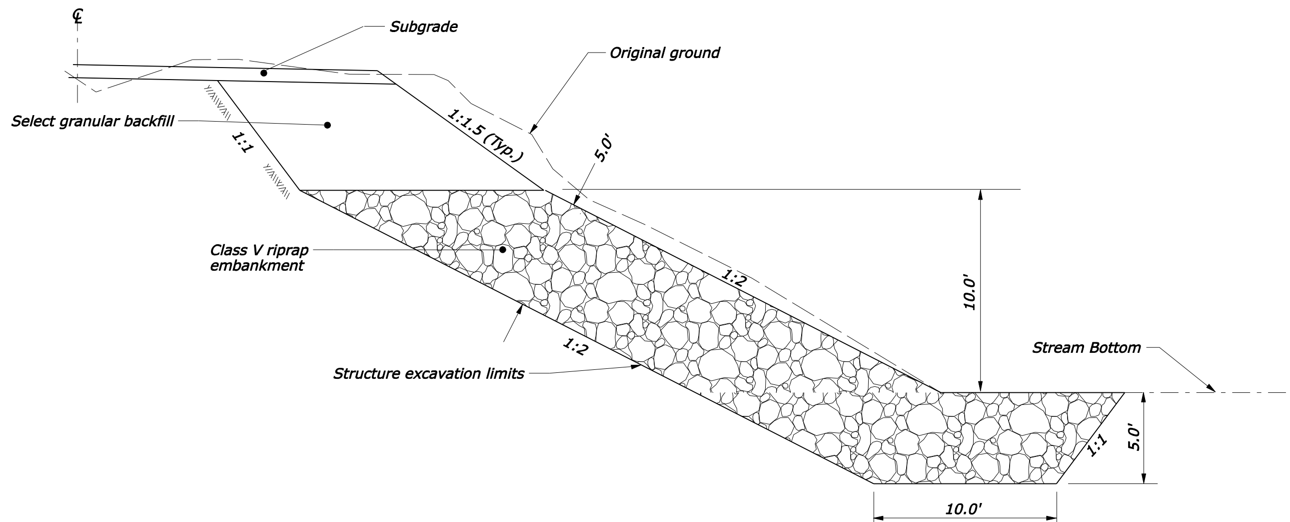
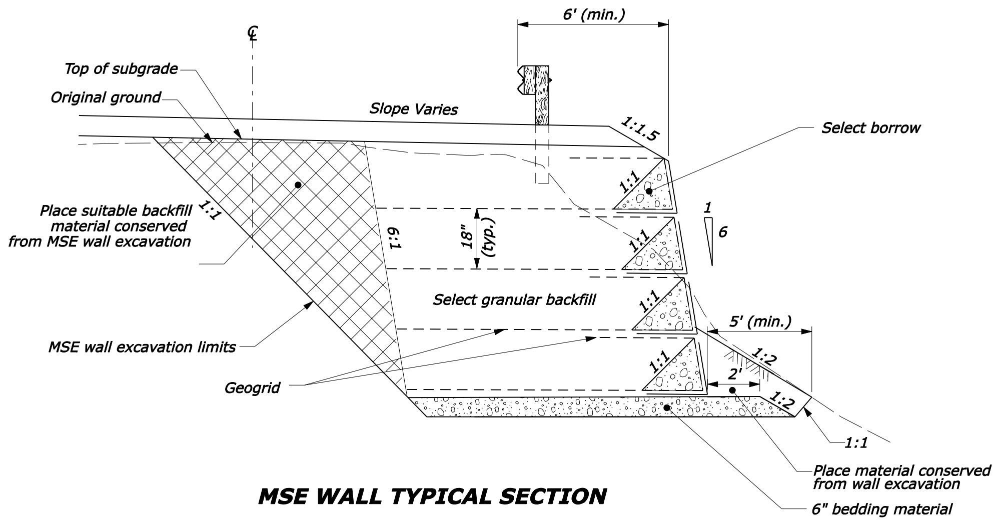


ROCK REVETMENT TYPICAL SECTION



MSE WALL TYPICAL SECTION

NOTE:

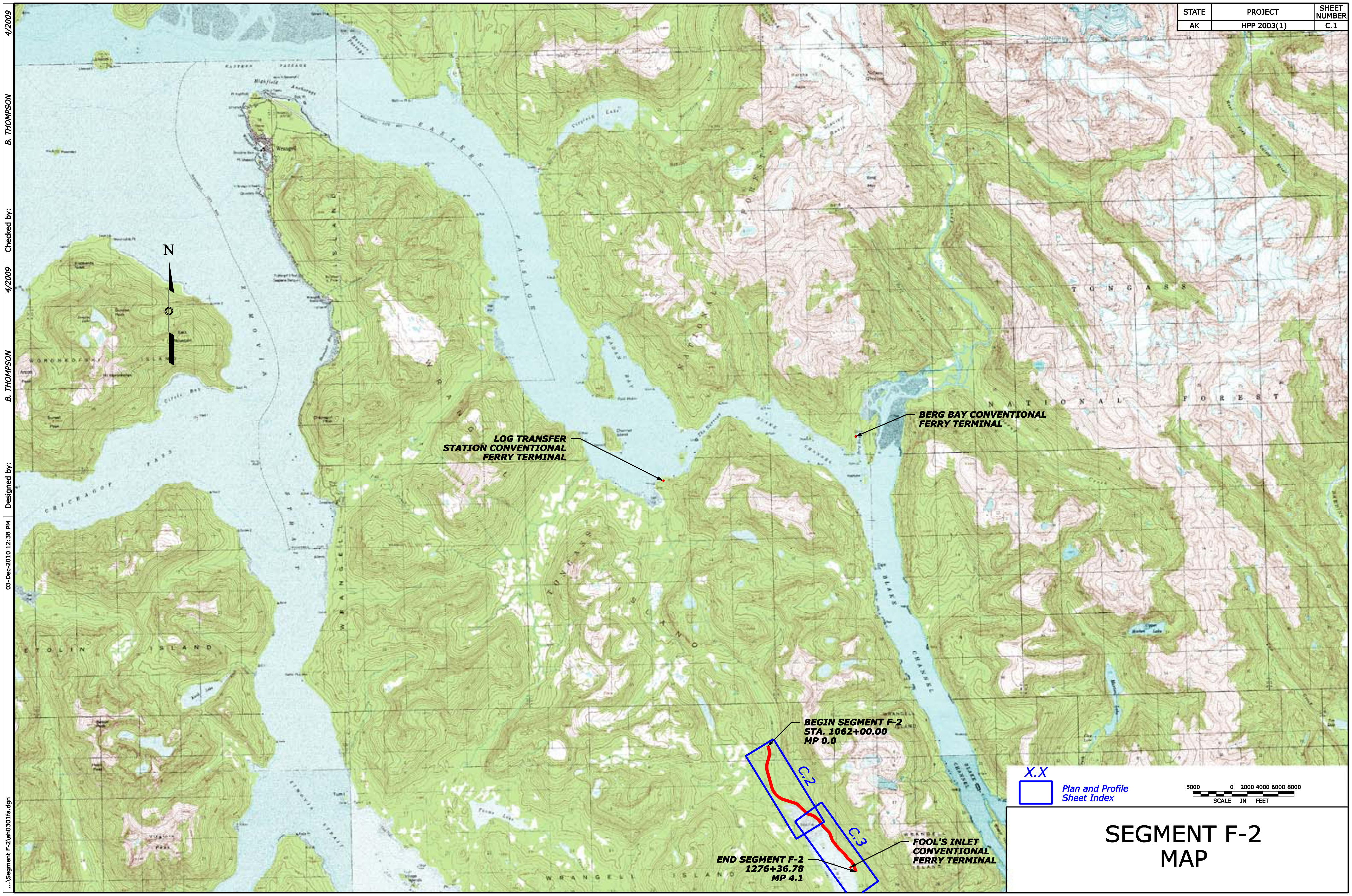
1. Rock revetment typical section from Bradfield River Road Final Scoping and Pre-NEPA Engineering Feasibility Study report dated January 10, 2005.
2. Class V riprap gradation requirements as shown in Table 705-1 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03).
3. Location of MSE walls and rock revetment are shown in the plan and profile sheets within Section C.

NO SCALE

MSE WALL & ROCK REVETMENT TYPICAL SECTIONS

...\Segment F-2\ad0301ce.dgn | 23-Apr-2009 12:28 PM | Designed by: B. THOMPSON 4/2009 | Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.1



SEGMENT F-2 MAP

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Checked by: B. THOMPSON 4/2009
03-Dec-2010 12:38 PM
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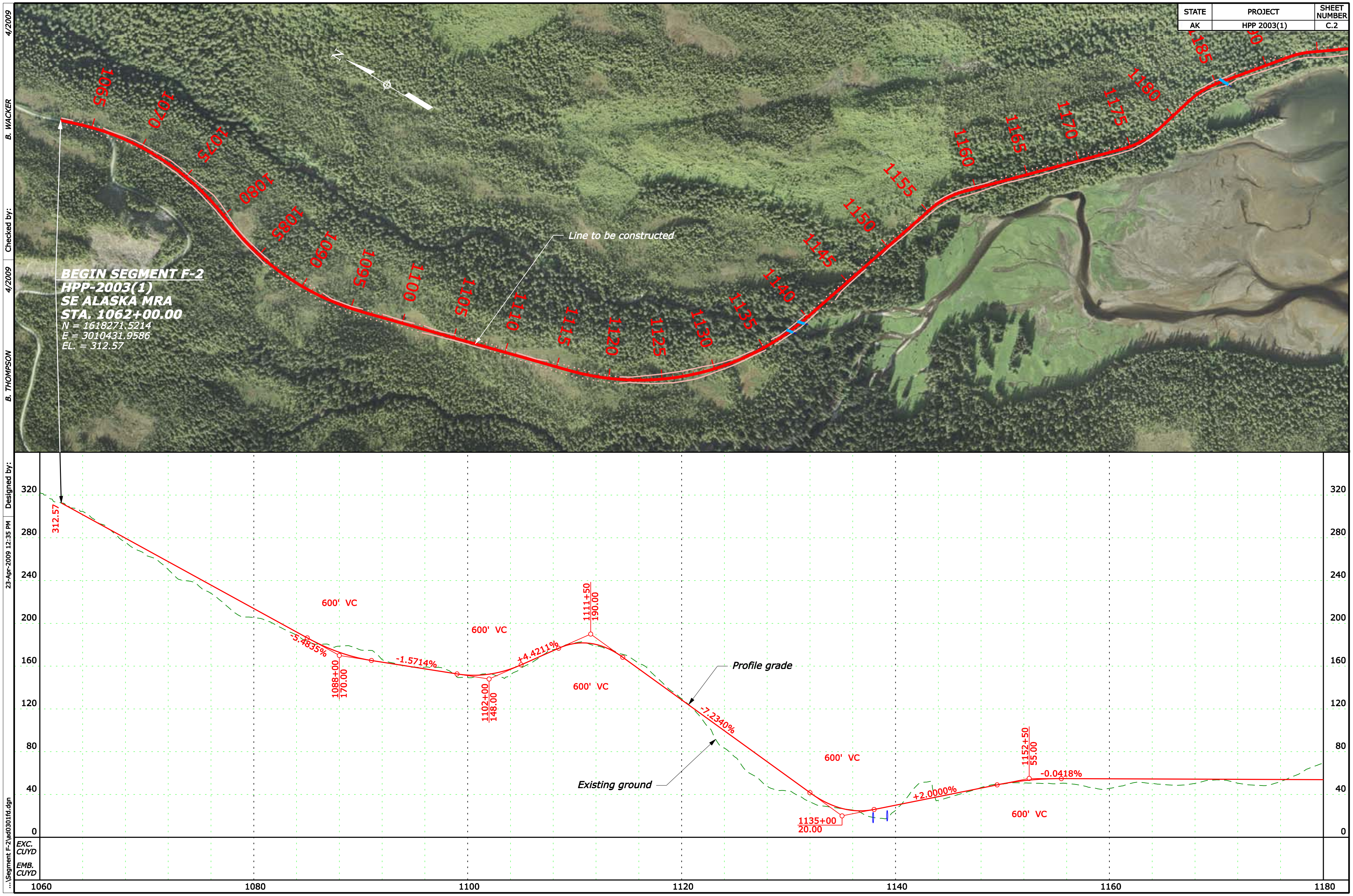
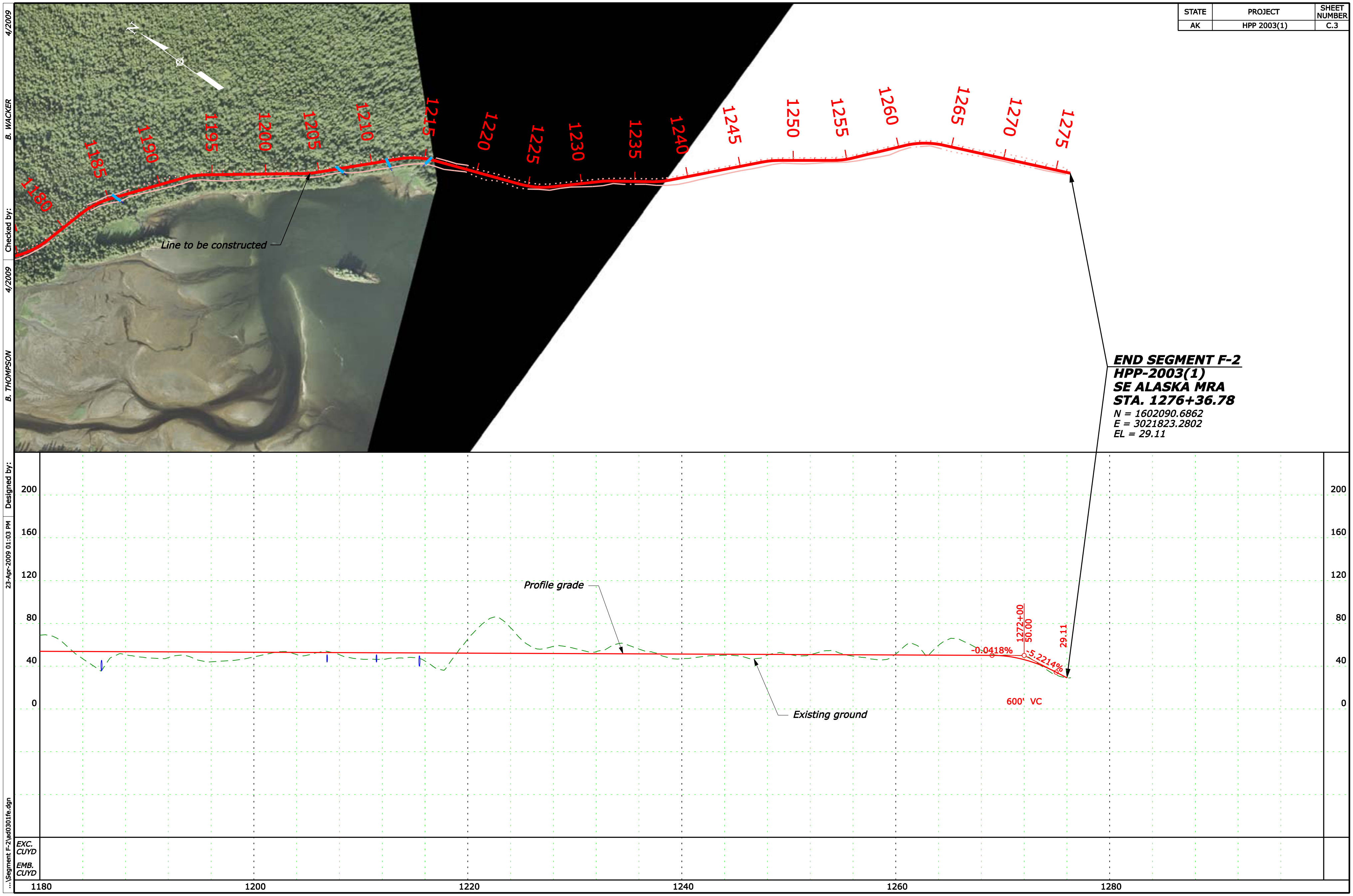

STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.2
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
23-Apr-2009 12:35 PM
...\Segment F-2\ad0301fd.dgn
N
BEGIN SEGMENT F-2
HPP-2003(1)
SE ALASKA MRA
STA. 1062+00.00
N = 1618271.5214
E = 3010431.9586
EL. = 312.57
Line to be constructed
1065
1070
1075
1080
1085
1090
1095
1100
1105
1110
1115
1120
1125
1130
1135
1140
1145
1150
1155
1160
1165
1170
1175
1180
1185
312.57
600' VC
-5.4835%
1088+00
170.00
-1.5714%
600' VC
1102+00
148.00
+4.4211%
1111+50
190.00
600' VC
Profile grade
-7.2340%
Existing ground
600' VC
1135+00
20.00
+2.0000%
1152+50
55.00
-0.0418%
600' VC
EXC. CUYD
EMB. CUYD
0
40
80
120
160
200
240
280
320
1060
1080
1100
1120
1140
1160
1180

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.3



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APPENDIX C.5

South Stikine River Alignment

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South Stikine River Alignment (Segment S-1)

Segment S-1 of the South Stikine River Alignment is part of Stage 2 of the Stikine River Corridor and would connect Segment I-3 of the Iskut River Alignment to Segment S-2 of the South Stikine River Alignment. Segment S-1 would have to be built concurrently with Segment S-2 to connect the alignment with the proposed conventional ferry terminal near Crittenden Creek. The completion of Stage 2 of the Stikine River Corridor would replace ACV ferry operations from the Iskut River ACV terminal near the confluence of the Stikine and Iskut Rivers to Wrangell and Mitkof Islands.

Segment S-1 would begin on the southern side of the Stikine River near where Andrew Creek empties into the Stikine River. Milepost (MP) 0.0 coincides with both the end of Segment S-2 and the end of Segment L-1 of the Limb Island Alignment. The alignment would follow the Stikine River to the east from MP 0.0 to MP 0.6, where it would encounter the mouth of Andrew Creek. A large culvert would be needed near MP 0.1 for an active drainage. To avoid spanning the entire mouth of Andrew Creek, which includes Andrew Slough, the alignment would parallel Andrew Creek to the southeast before reaching a narrower crossing near MP 1.5. After crossing Andrew Creek via an 800-foot bridge, the alignment would turn back to the northeast, paralleling a meander of the Stikine River. The alignment would remain along the southern mountain slopes above Andrew Slough while the river flows along the northern slopes of the valley. The terrain is moderate along this section, but mechanically stabilized earth (MSE) and rock revetment walls would be needed in spots to keep roadway slopes from affecting Andrew Slough. For further information regarding the MSE and rock revetment walls, refer to the typical sections (Sheet B.5). Channels draining into Andrew Slough near MP 2.1, MP 3.0, MP 3.5, and MP 4.4 would require large culverts. The Stikine River veers to the south side of the valley near MP 5.6. This would force the alignment to climb higher up the valley side slopes. Numerous sections of bench cuts, MSE walls, and rock revetment walls would be needed between MP 5.6 and MP 9.1 to keep the alignment from affecting the river. The alignment would cross eight active drainages between MP 5.6 and MP 9.1, requiring two large culverts at MP 6.3 and one each at MP 7.1, MP 7.3, MP 7.5, MP 8.2, MP 8.7 and MP 8.9.

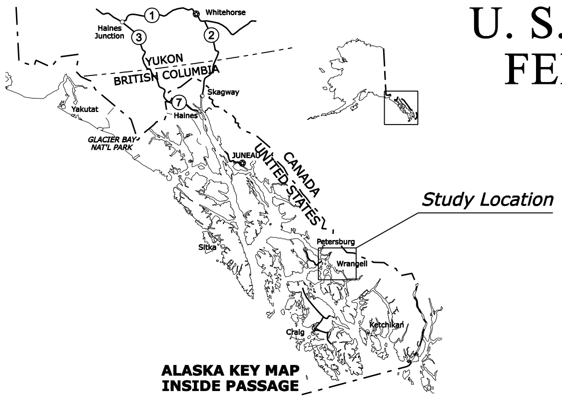
The entire Stikine River valley turns to the southeast near MP 9.1. The alignment and river would remain up against the southern mountain slopes until MP 18.5. Multiple sections of MSE walls, rock revetment walls, and bench cuts would be needed along this section to minimize earthwork and channel impacts. The only departures from the southern slopes would occur at active drainages entering the Stikine River valley. The alignment would veer up the Shuktusa Branch drainage near MP 9.8 and cross the waterway via a 700-foot bridge. A 1,100-foot bridge would also be needed near MP 15.2 as the alignment would briefly depart from the side slopes to cross Goat Creek. Large culverts would be needed for the remaining drainages at MP 10.4, MP 11.1, MP 11.2, MP 12.3, MP 12.4, MP 13.3, MP 13.6, MP 14.1, MP 14.8, MP 15.9, MP 16.7, MP 16.9, and MP 17.9. The main channel of the Stikine River turns back to the northeast near MP 18.5, while the alignment would depart from the river and continue to the southeast along Red Slough. Large culverts would be needed for active channels emptying into Red

Slough near MP 19.0, MP 19.1, and MP 19.5. The alignment and Red Slough would turn to the east upon reaching MP 19.7, and the alignment would continue along the southern slopes to MP 21.4. Large culverts would be required at MP 19.9, MP 20.0, MP 20.4, MP 21.3, and MP 21.4 for active channels, while a 1,100-foot bridge would be needed at MP 21.0 to cross the Kikahe River. The terrain along the southern slopes varies between moderate and steep. Bench cuts, rock revetment walls, and MSE walls would be needed intermittently throughout the area. The South Stikine River Alignment would reach the Alaska/British Columbia (B.C.) border at MP 21.4.

Segment S-1 would continue into B.C. and would connect to Segment I-3 of the Iskut River Alignment near the confluence of the Stikine and Iskut Rivers. A full conceptual design for Segment S-1 was only completed to MP 25.5, where the alignment would meet either Segment A-1a or Segment A-1b of the Aaron Creek Alignment. From MP 21.4, the alignment would traverse to the northeast along the base of the mountain slopes until reaching the Katete River delta near MP 23.3. An active drainage near MP 22.2 would require a large culvert. The alignment would continue northeast from MP 23.3 and would cross the flat terrain along the floodplain to MP 25.5. Two structures, a 1,000-foot bridge at MP 23.7 and a 700-foot bridge at MP 24.2, would be needed to cross the many braids of the Katete River. Muskeg deposits are likely present throughout much of the floodplain, and they might result in substantial amounts of subexcavation. From this point forward, only the horizontal alignment was developed based on USGS topographic maps, aerial photos, and 5-foot contour ground survey. Between MP 25.5 and MP 31.8, the alignment would continue to the north along the base of Iskut and Katete Mountains. The terminus of the South Stikine River Alignment would occur at MP 31.8, where the alignment would meet Segment I-3 of the Iskut River Alignment near the confluence of the Iskut and Stikine Rivers.

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



ALASKA KEY MAP
INSIDE PASSAGE

PLANS FOR PROPOSED STUDY

AK HPP-2003(1)

SOUTHEAST ALASKA MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA

SOUTH STIKINE RIVER ALIGNMENT (SEGMENT S-1)

LENGTH 31.8 MILES

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 32 miles of new alignment.

DESIGN DESIGNATION:

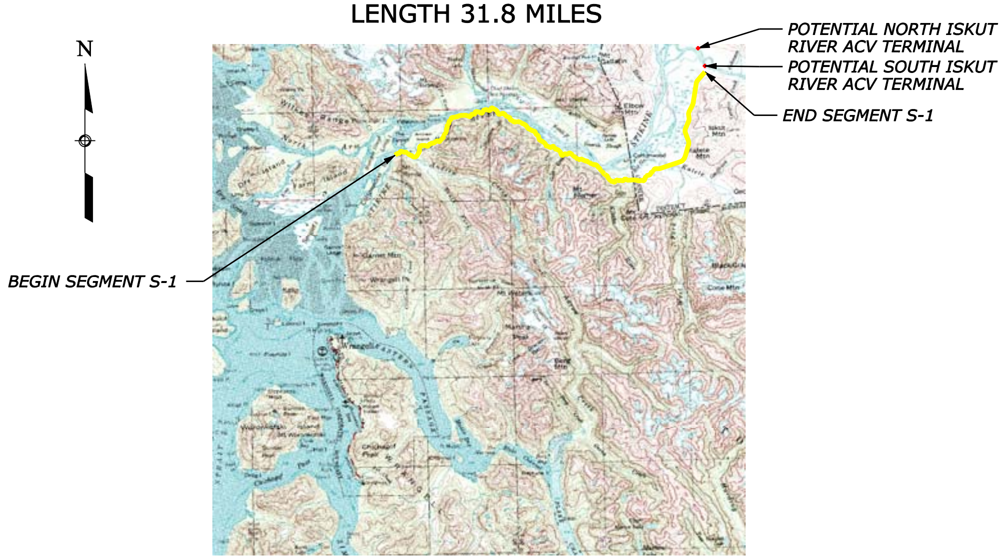
ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units

INDEX TO SHEETS

N



40000 20000 0 40000 80000
SCALE IN FEET

PLANS PREPARED FOR

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

PLANS PREPARED BY

RPA
ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 01:31 PM ...\Segment S-1\ad0301aa.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).

National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinae based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilites	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS GREATER THAN 7 FEET

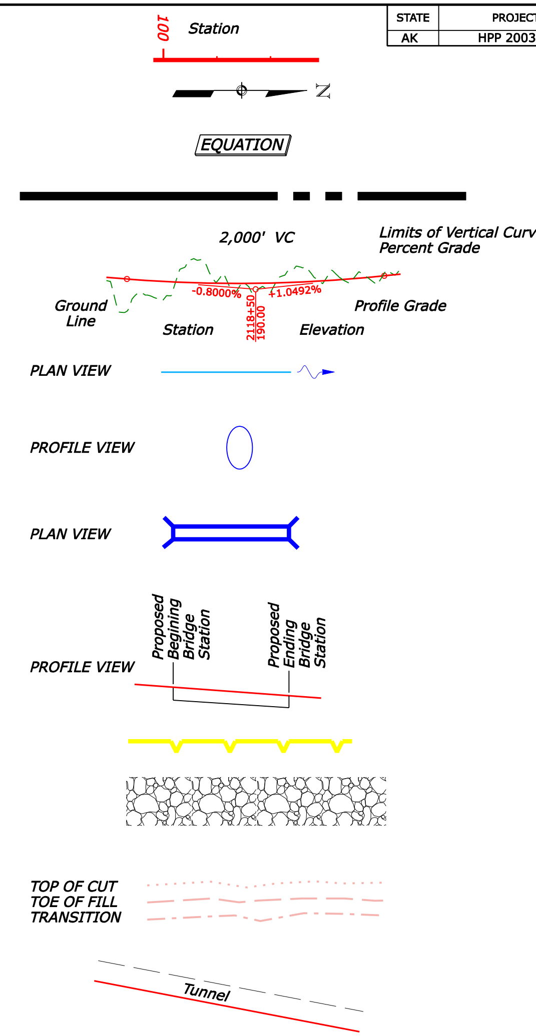
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

TUNNEL DESIGNATION ON PROFILE



NOTE:

1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

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4/2009 B. THOMPSON Designed by:

26-Apr-2009 01:31 PM

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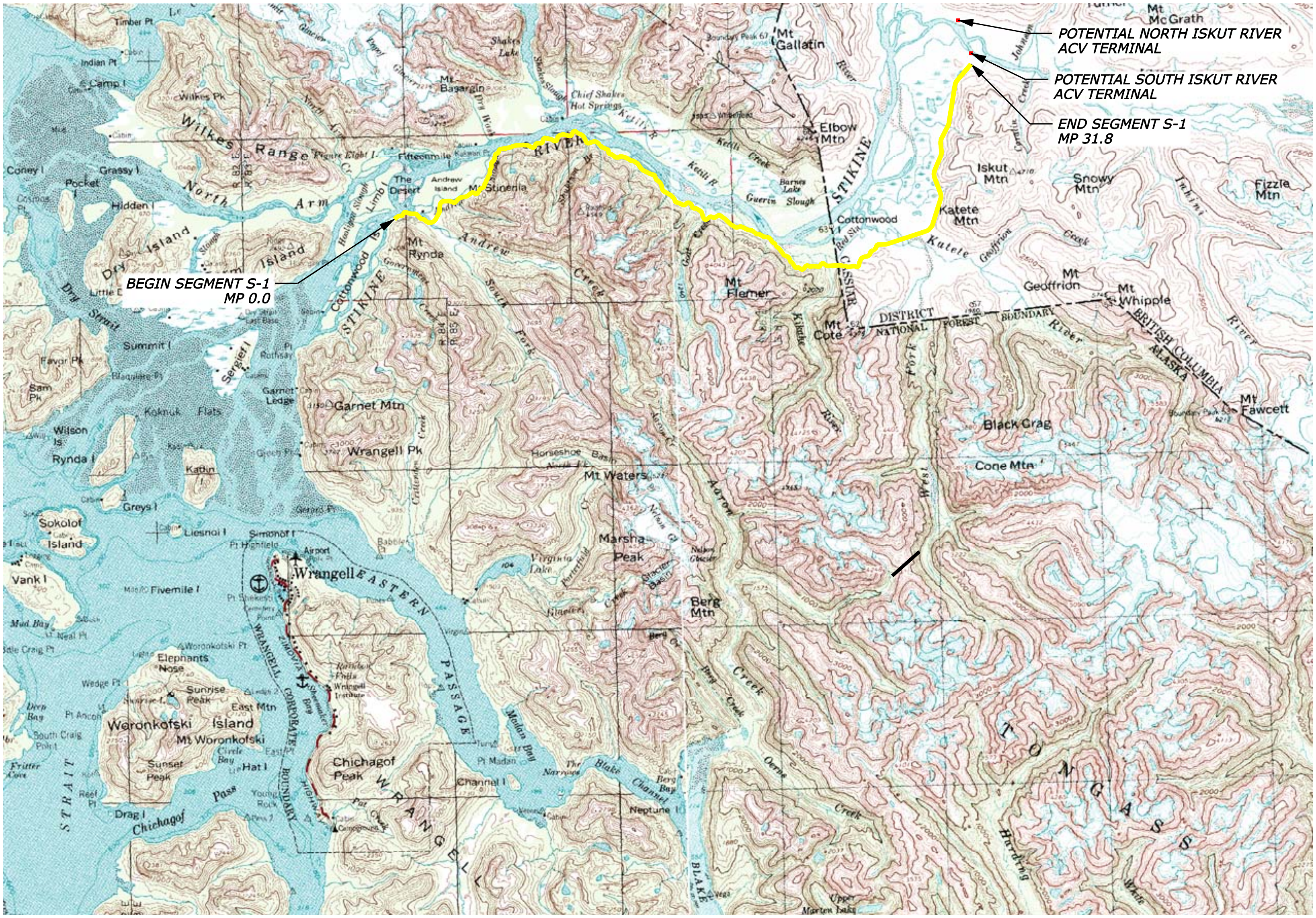

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SCALE IN FEET

VICINITY MAP

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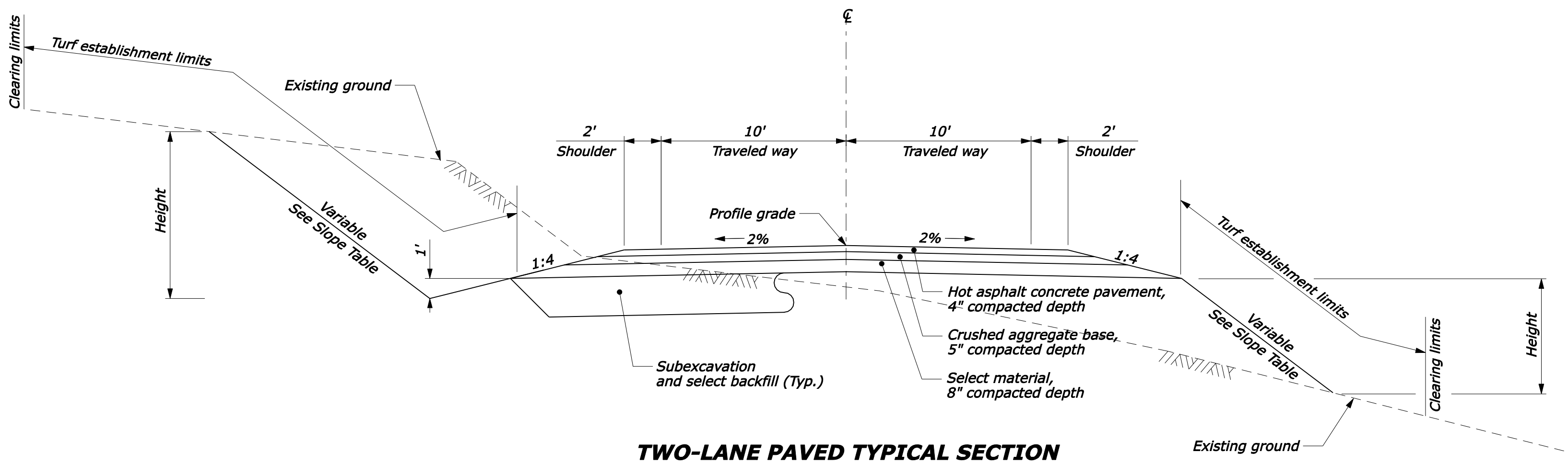

TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

TWO-LANE PAVED TYPICAL SECTION

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STATE	PROJECT	SHEET NUMBER
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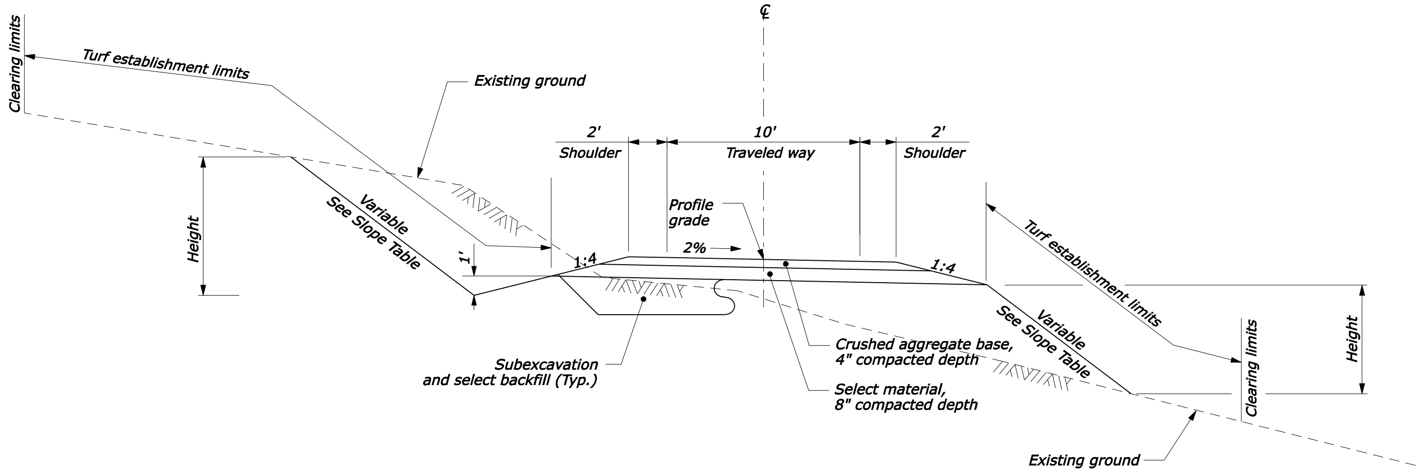
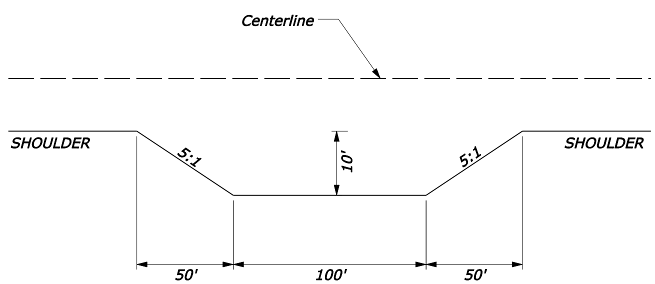


ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



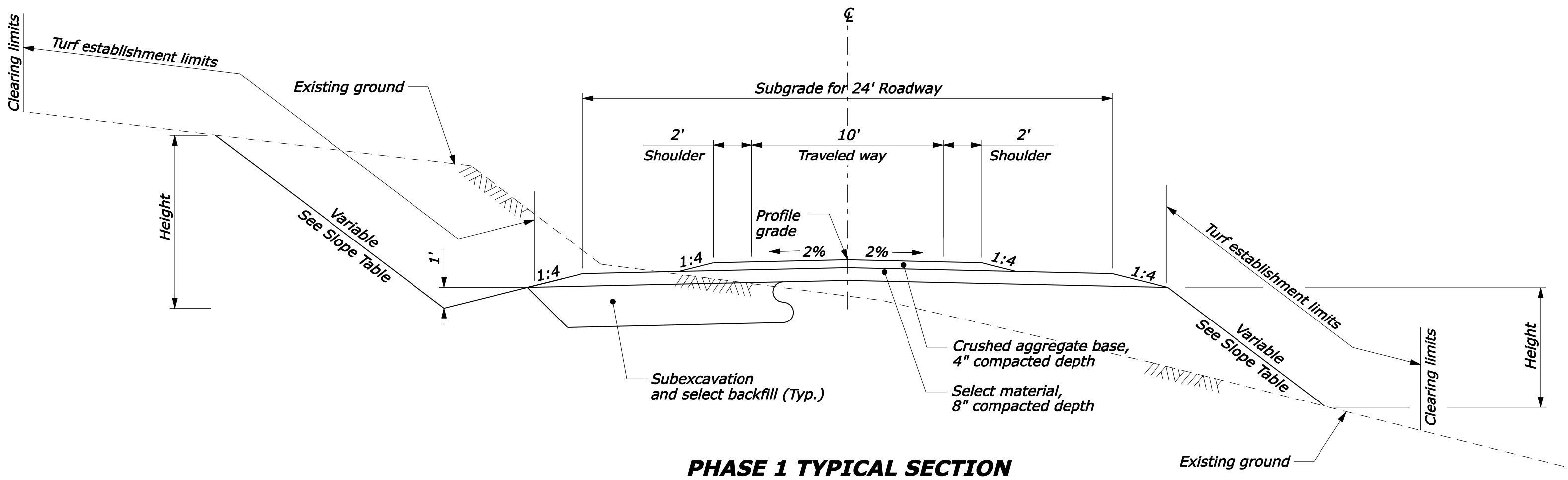
TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

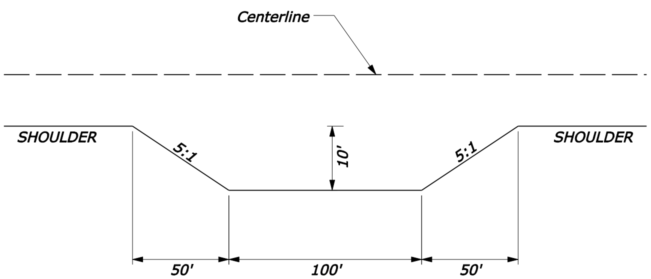
ONE-LANE GRAVEL TYPICAL SECTION

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 01:43 PM ...\Segment S-1\ad0301cb.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.3



PHASE 1 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



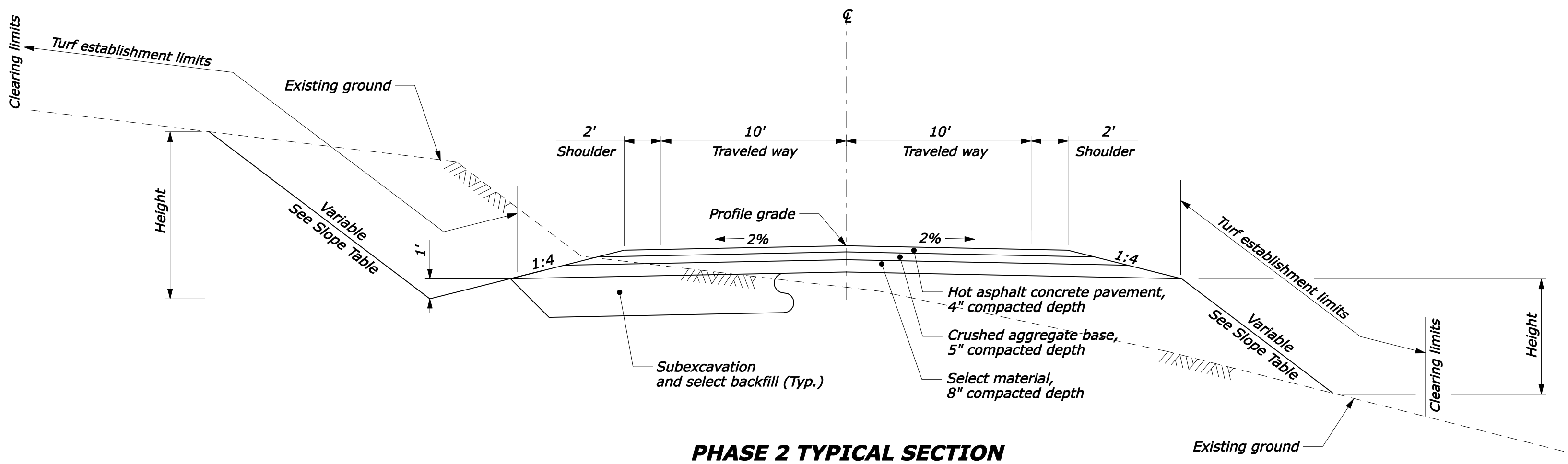
TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 1 TYPICAL SECTION

...\Segment S-1\ad0301cc.dgn | 26-Apr-2009 01:43 PM | Designed by: B. THOMPSON 4/2009 | Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.4



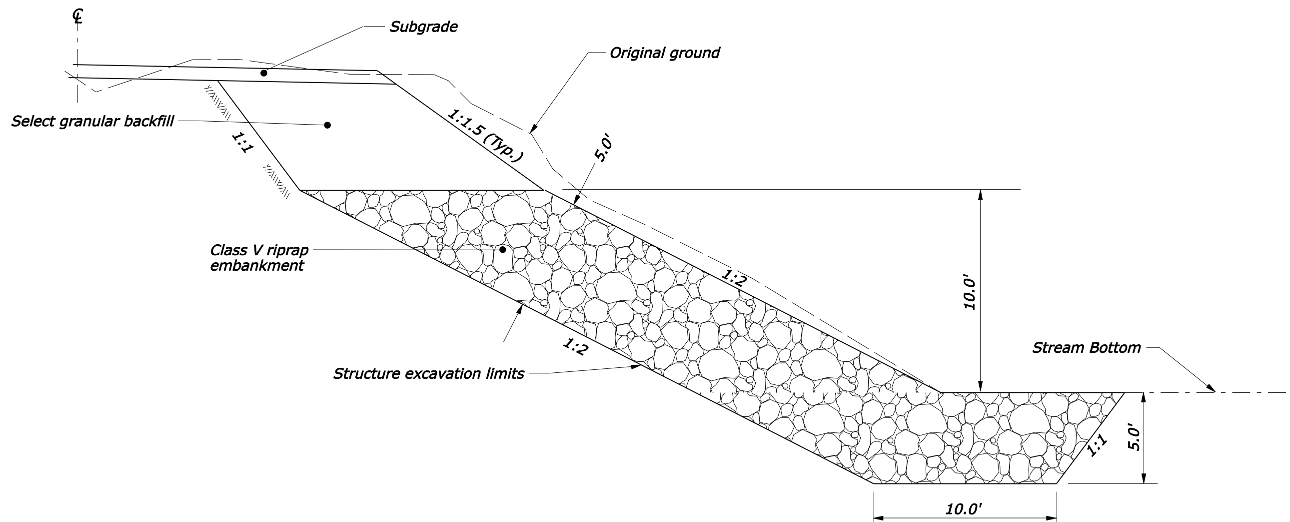
PHASE 2 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

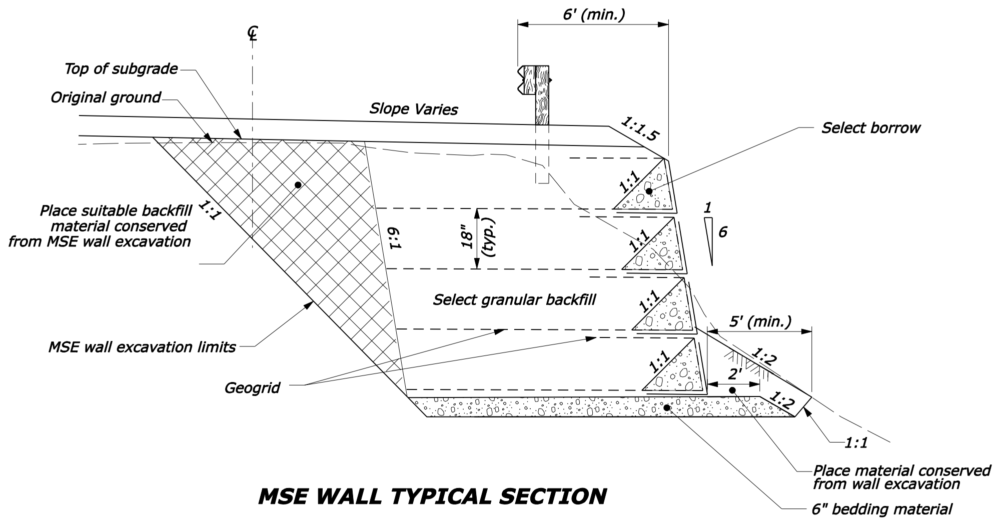
PHASE 2 TYPICAL SECTION

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 01:43 PM ...\Segment S-1\ad0301cd.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.5



ROCK REVETMENT TYPICAL SECTION



MSE WALL TYPICAL SECTION

NOTE:

1. Rock revetment typical section from Bradfield River Road Final Scoping and Pre-NEPA Engineering Feasibility Study report dated January 10, 2005.
2. Class V riprap gradation requirements as shown in Table 705-1 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03).
3. Location of MSE walls and rock revetment are shown in the plan and profile sheets within Section C.

NO SCALE

MSE WALL & ROCK REVETMENT TYPICAL SECTIONS

4/2009 B. WACKER Checked by:
4/2009 B. THOMPSON Designed by:
26-Apr-2009 01:44 PM
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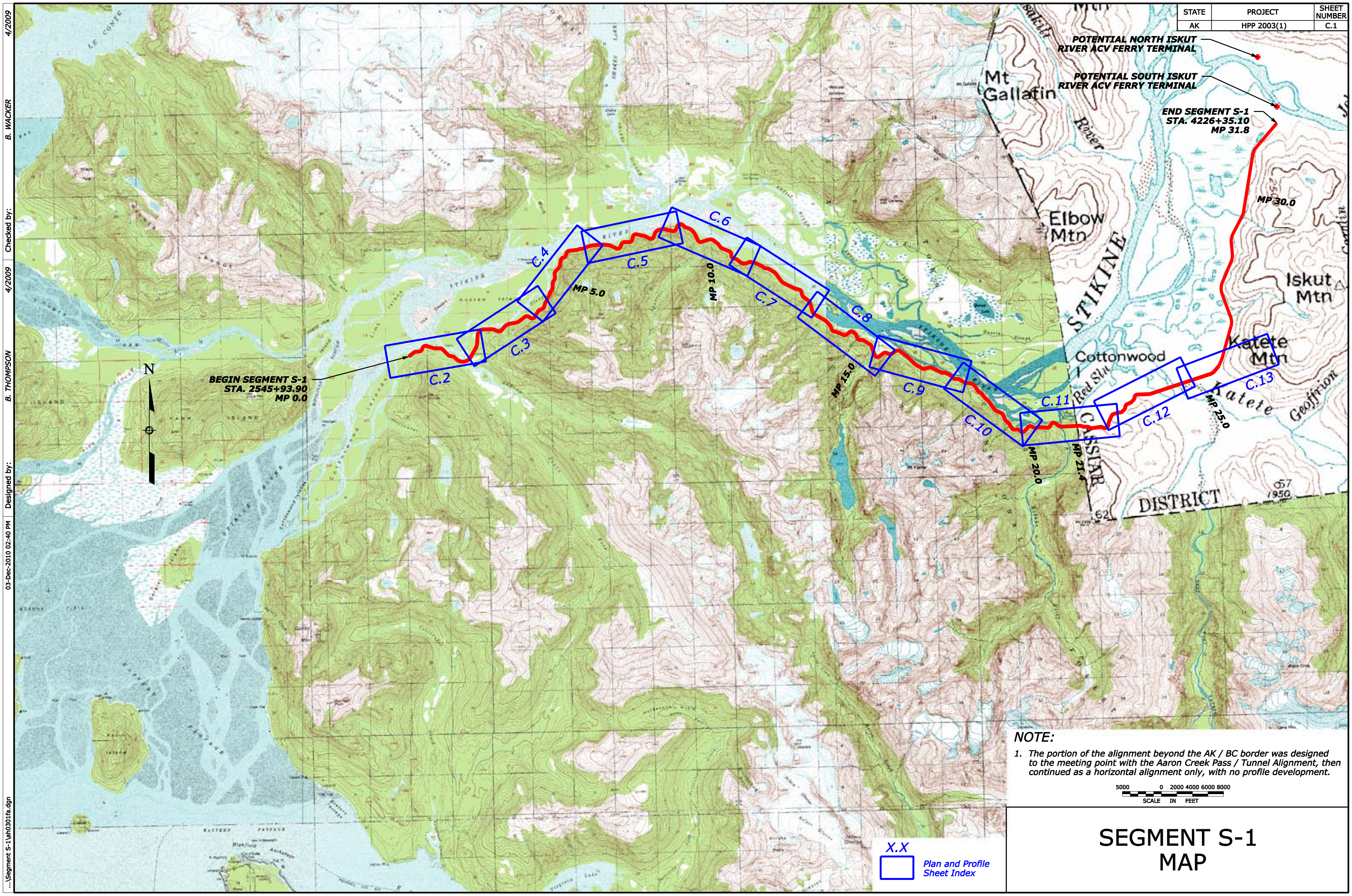
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.1



NOTE:

1. The portion of the alignment beyond the AK / BC border was designed to the meeting point with the Aaron Creek Pass / Tunnel Alignment, then continued as a horizontal alignment only, with no profile development.

5000 0 2000 4000 6000 8000
SCALE IN FEET

SEGMENT S-1 MAP

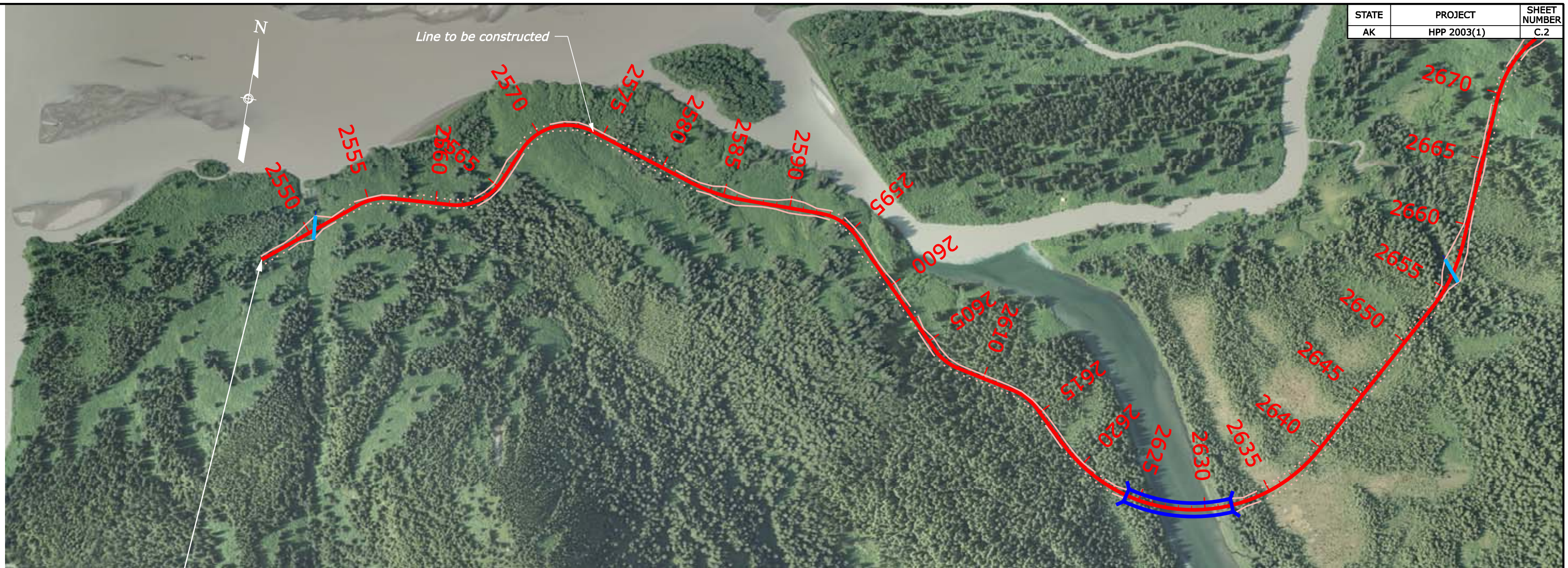
...\Segment S-1\ah0301fa.dgn

03-Dec-2010 02:40 PM

Designed by: B. THOMPSON 4/2009

Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.2



4/2009 B. WACKER Checked by:

4/2009 B. THOMPSON Designed by:

26-Apr-2009 01:33 PM

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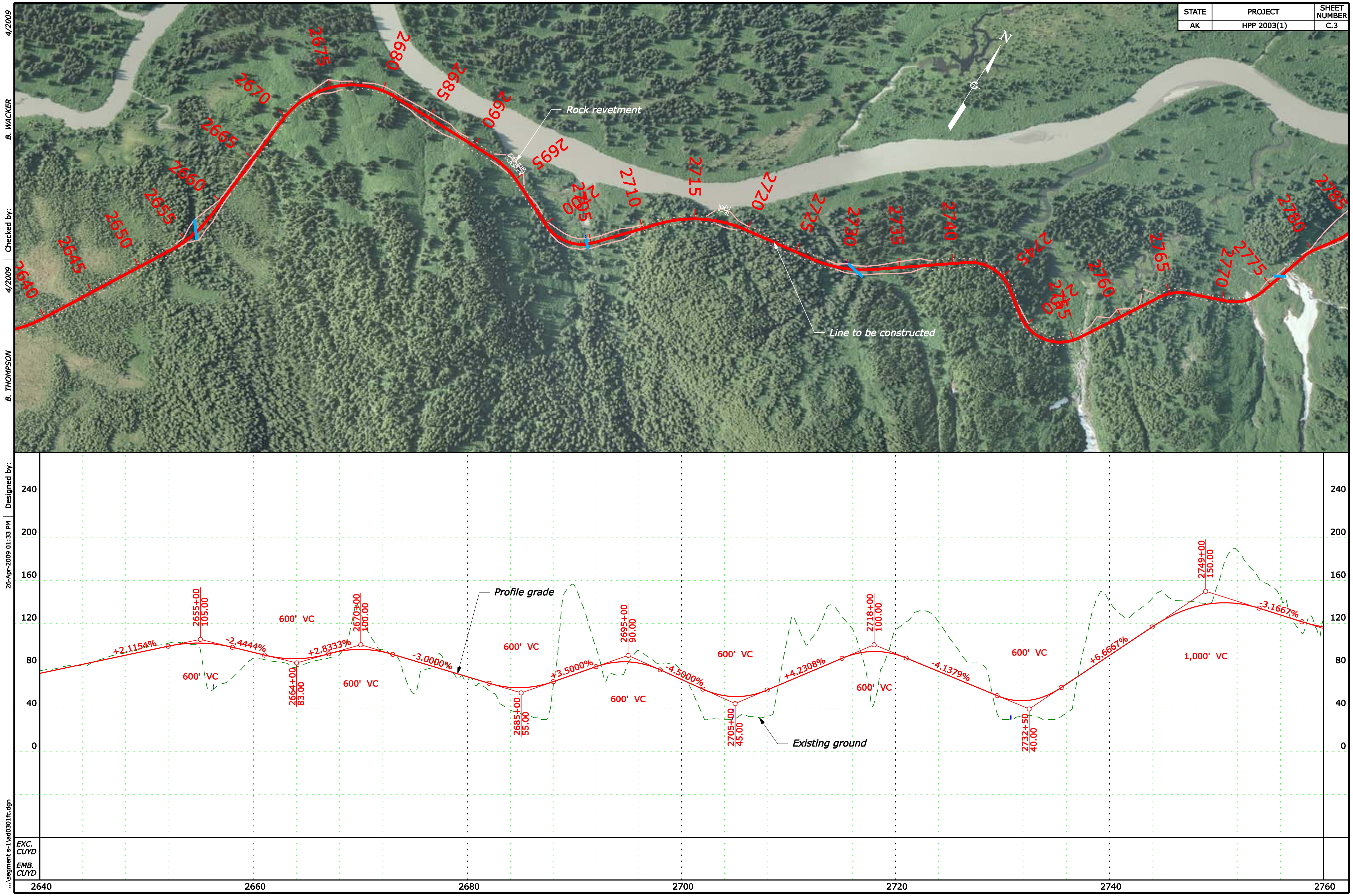

STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.3
N
Rock revetment
Line to be constructed
2640
2645
2650
2655
2660
2665
2670
2675
2680
2685
2690
2695
2700
2705
2710
2715
2720
2725
2730
2735
2740
2745
2750
2755
2760
2765
2770
2775
2780
2785
Profile grade
Existing ground
+2.1154%
2655+00
105.00
-2.4444%
600' VC
2664+00
83.00
+2.8333%
2670+00
100.00
600' VC
-3.0000%
2685+00
55.00
600' VC
+3.5000%
2695+00
90.00
600' VC
-4.5000%
2705+00
45.00
600' VC
+4.2308%
2718+00
100.00
600' VC
-4.1379%
2732+50
40.00
600' VC
+6.6667%
2749+00
150.00
1,000' VC
-3.1667%
240
200
160
120
80
40
0
EXC. CUYD
EMB. CUYD
2640
2660
2680
2700
2720
2740
2760
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 01:33 PM
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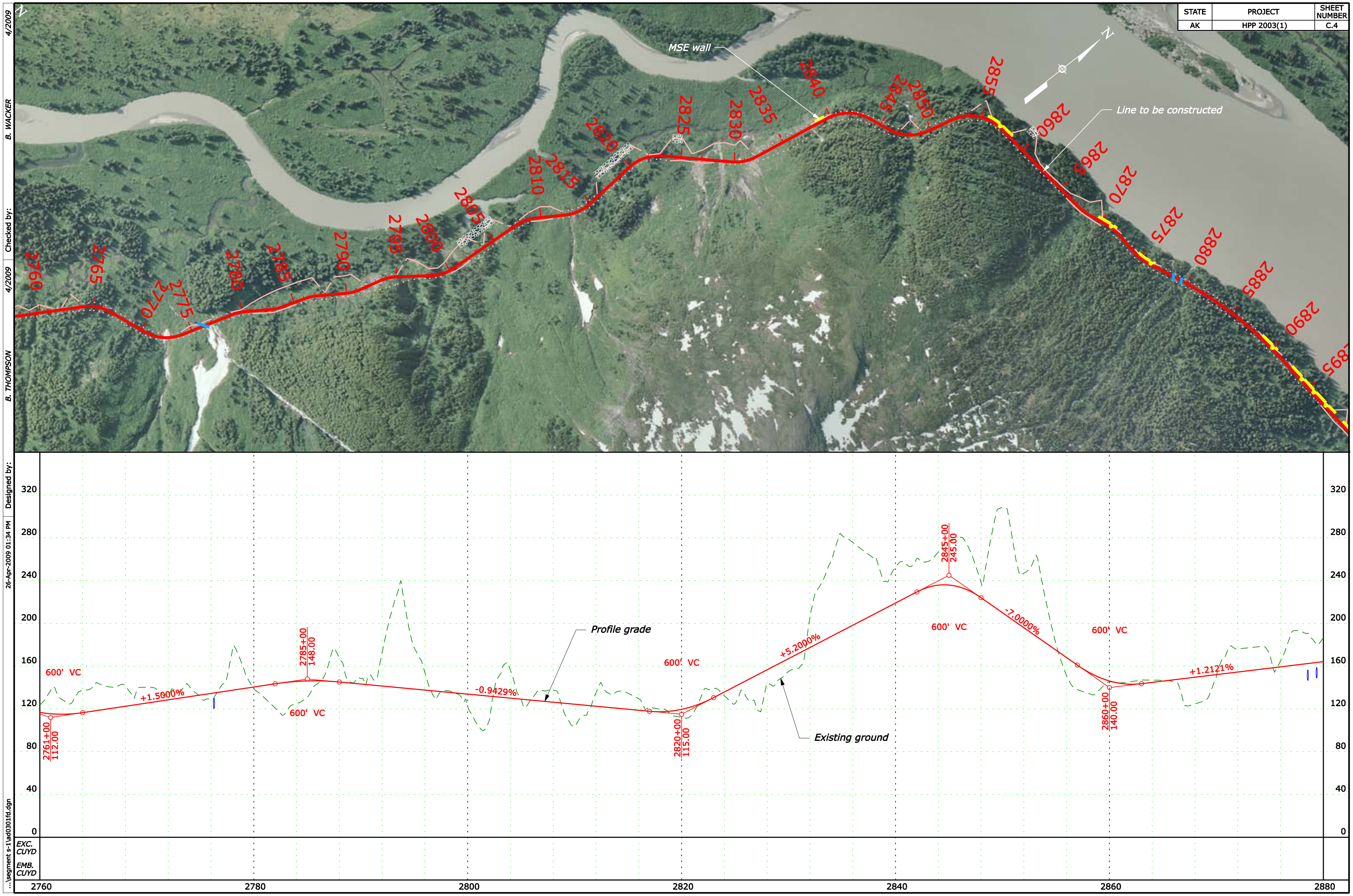
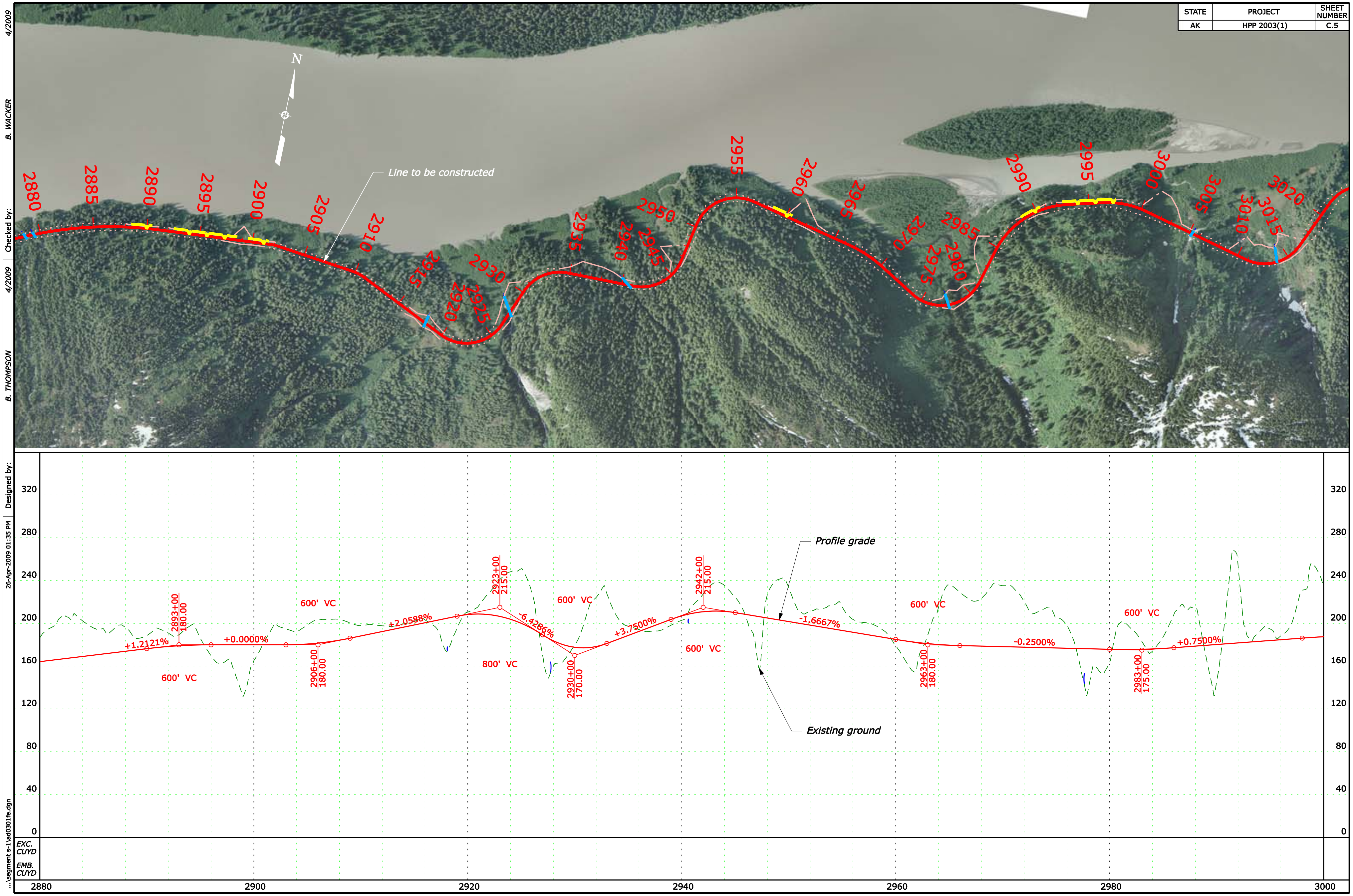
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.4





STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.5
N
Line to be constructed
Profile grade
Existing ground
+1.2121%
+0.0000%
+2.0588%
-6.4286%
+3.7500%
-1.6667%
-0.2500%
+0.7500%
600' VC
800' VC
2893+00
180.00
2906+00
180.00
2923+00
215.00
2930+00
170.00
2942+00
215.00
2963+00
180.00
2983+00
175.00
EXC. CUYD
EMB. CUYD
B. THOMPSON
Checked by:
B. WACKER
4/2009
Designed by:
26-Apr-2009 01:35 PM
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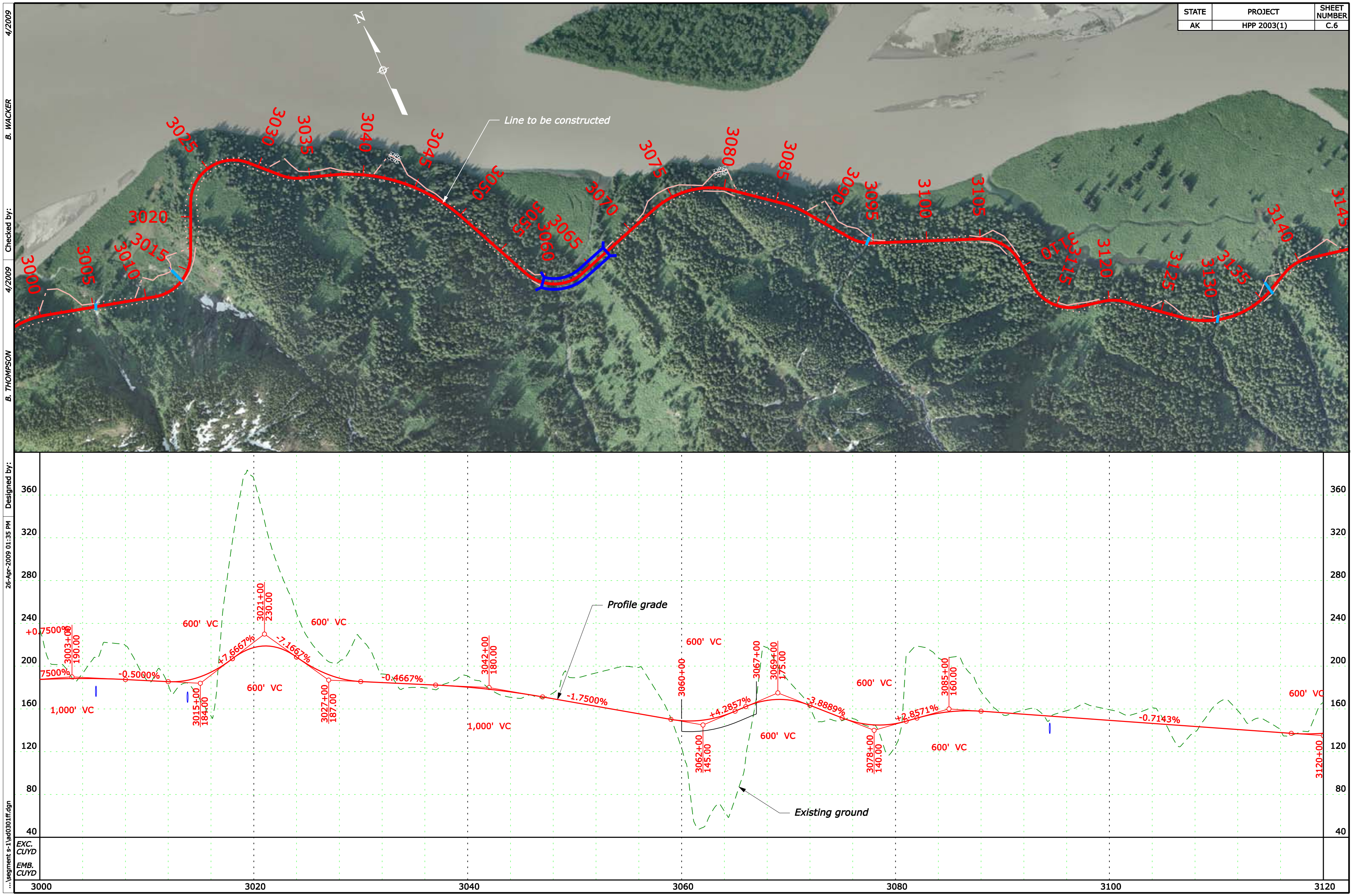
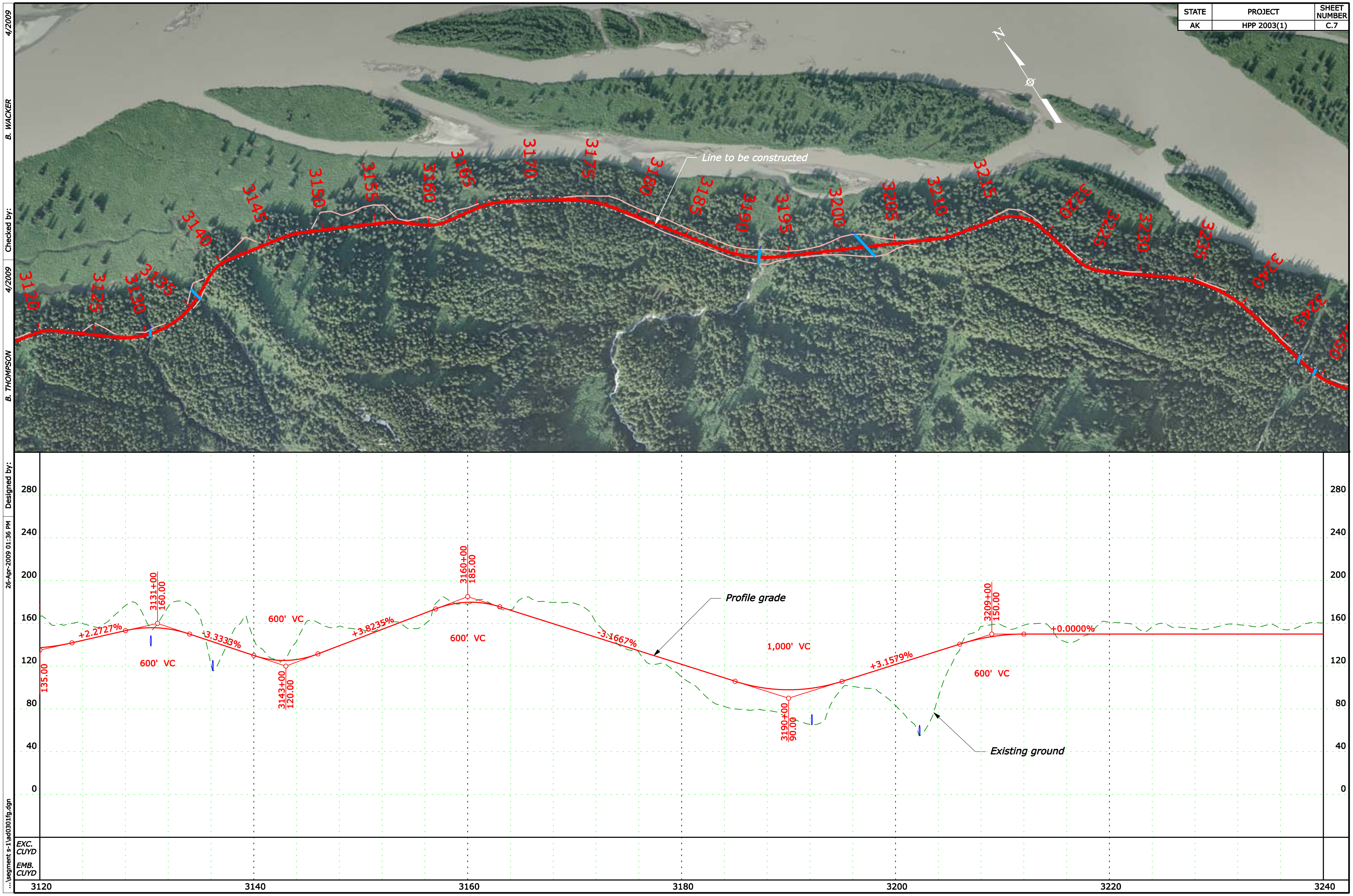
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.6





STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.7
N
Line to be constructed
3120
3125
3130
3135
3140
3145
3150
3155
3160
3165
3170
3175
3180
3185
3190
3195
3200
3205
3210
3215
3220
3225
3230
3235
3240
3245
Profile grade
Existing ground
+2.2727%
-3.3333%
+3.8235%
-3.1667%
+3.1579%
+0.0000%
600' VC
600' VC
600' VC
1,000' VC
600' VC
3131+00
160.00
3143+00
120.00
3160+00
185.00
3190+00
90.00
3209+00
150.00
135.00
280
240
200
160
120
80
40
0
EXC. CUYD
EMB. CUYD
3120
3140
3160
3180
3200
3220
3240
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 01:36 PM
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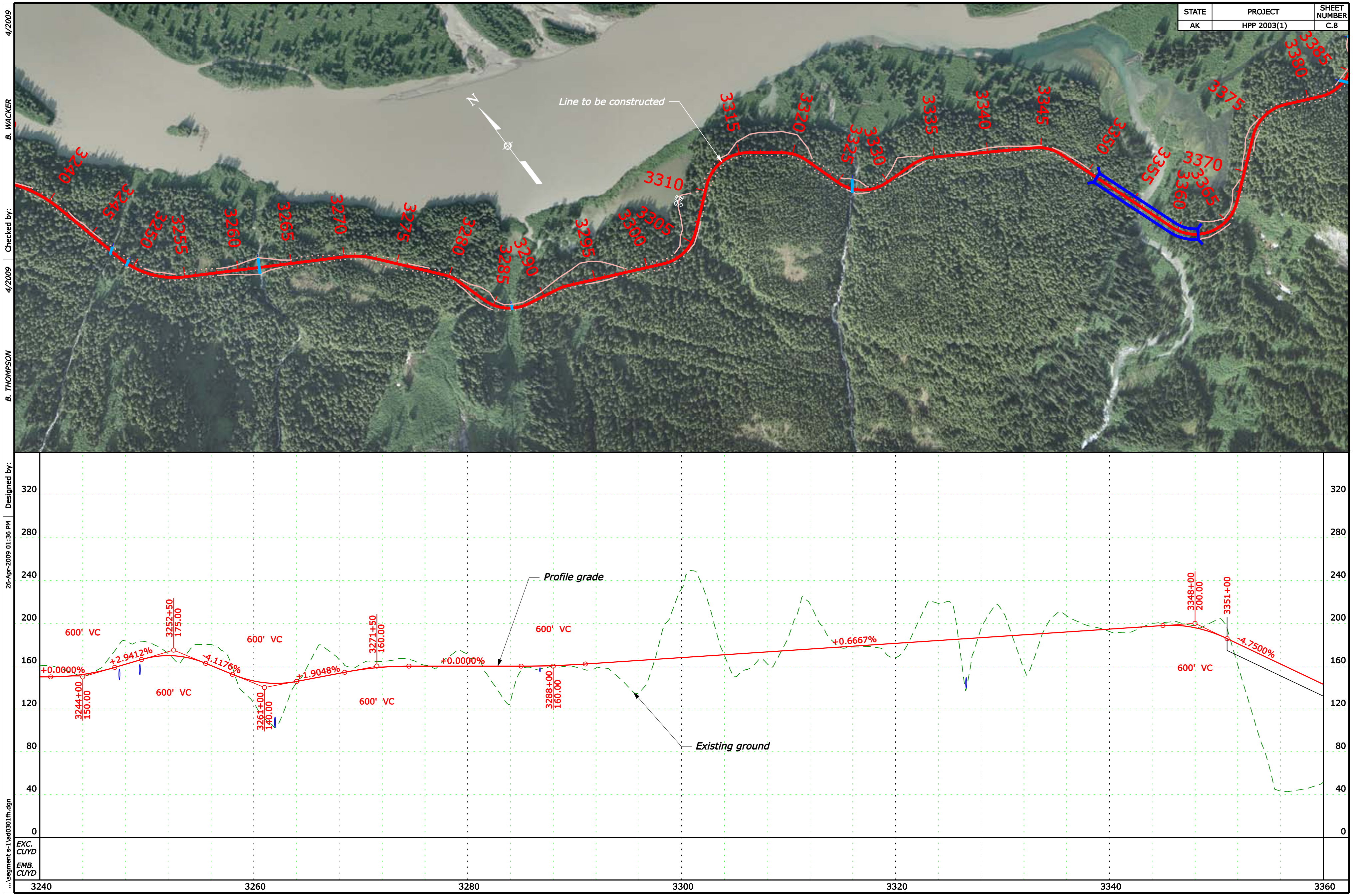
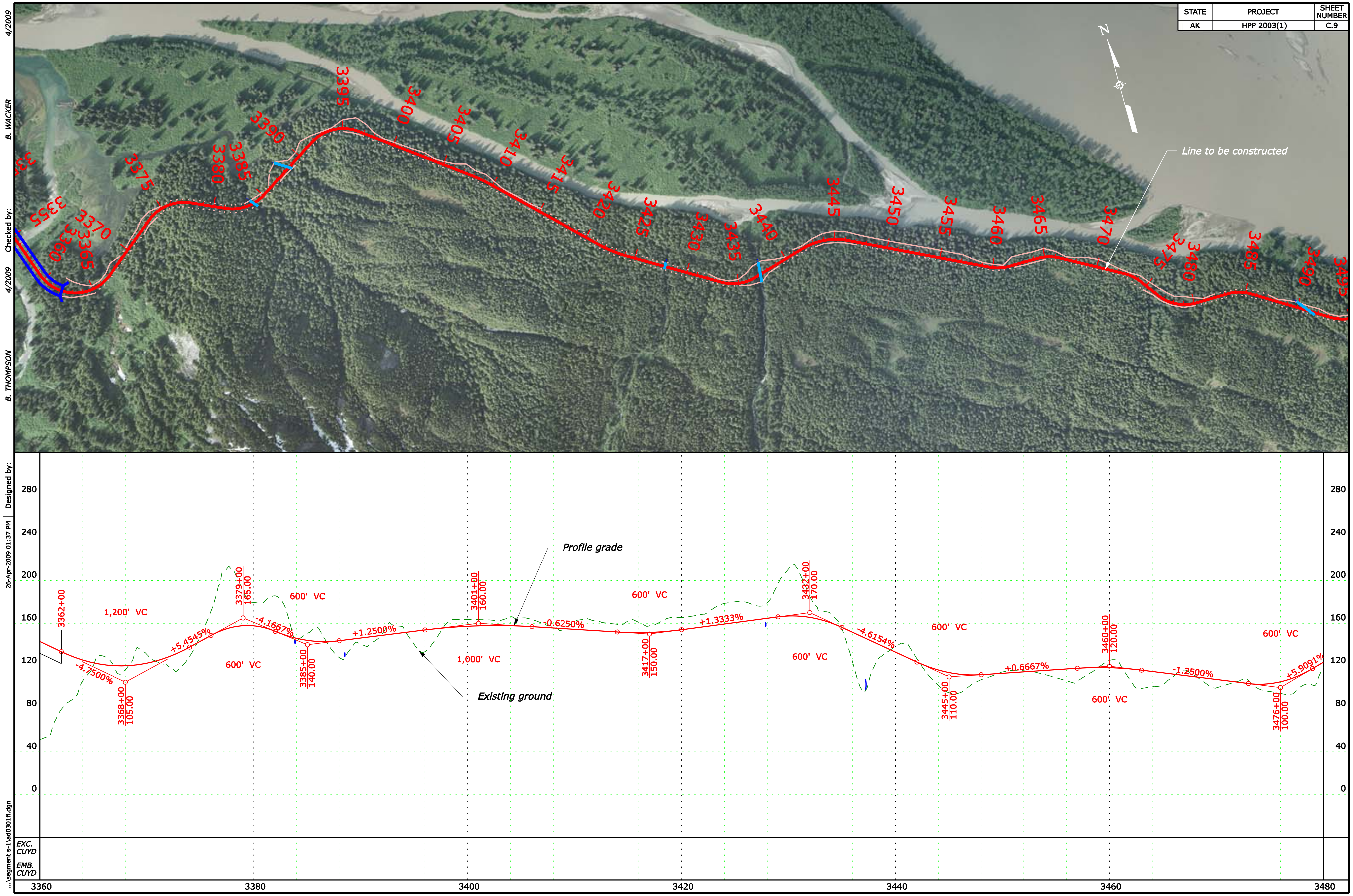
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.8



B. THOMPSON 4/2009 Checked by: B. WACKER 4/2009 Designed by:

26-Apr-2009 01:36 PM

...\segment a-1\ad0301fh.dgn



STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.9

4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
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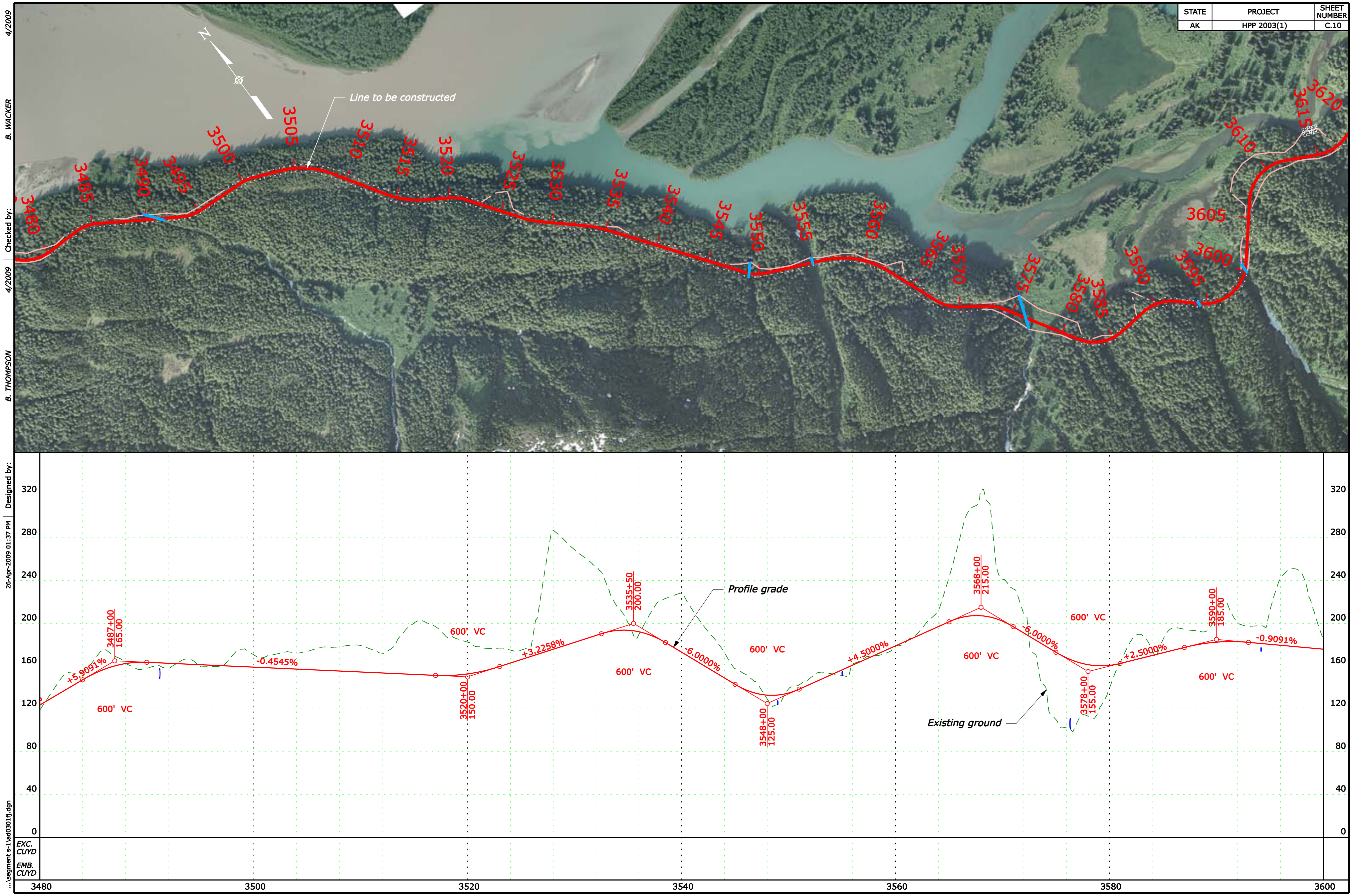
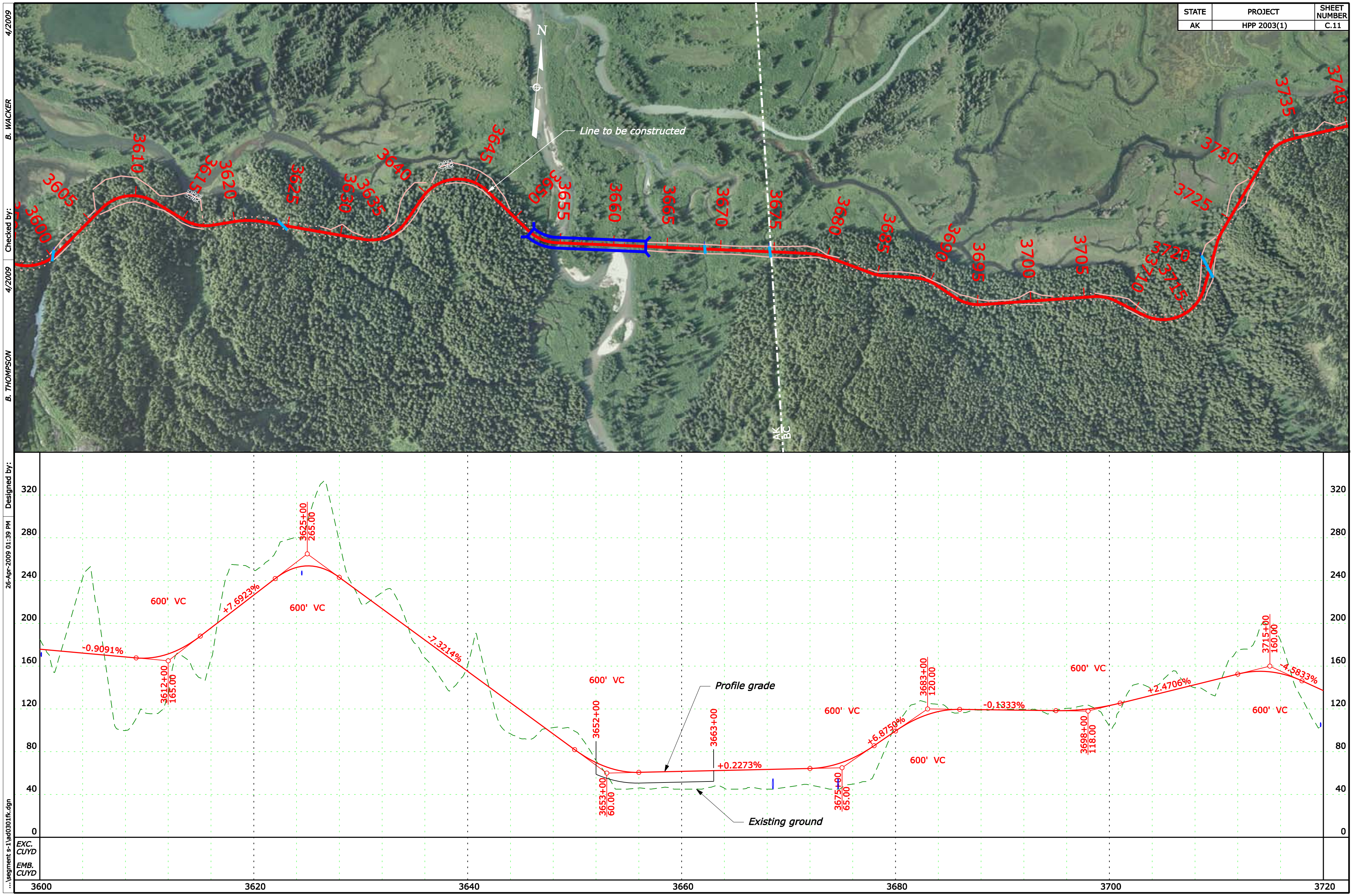

STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.10
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 01:37 PM
...\segment e-1\ad0301fj.dgn
N
Line to be constructed
3480
3485
3490
3495
3500
3505
3510
3515
3520
3525
3530
3535
3540
3545
3550
3555
3560
3565
3570
3575
3580
3585
3590
3595
3600
3605
3610
3615
3620
Profile grade
Existing ground
+5.9091%
3487+00
165.00
600' VC
-0.4545%
600' VC
3520+00
150.00
+3.2258%
3535+50
200.00
600' VC
-6.0000%
600' VC
3548+00
125.00
+4.5000%
3568+00
215.00
600' VC
-6.0000%
600' VC
3578+00
155.00
+2.5000%
3590+00
185.00
600' VC
-0.9091%
320
280
240
200
160
120
80
40
0
EXC. CUYD
EMB. CUYD
3480
3500
3520
3540
3560
3580
3600

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.11



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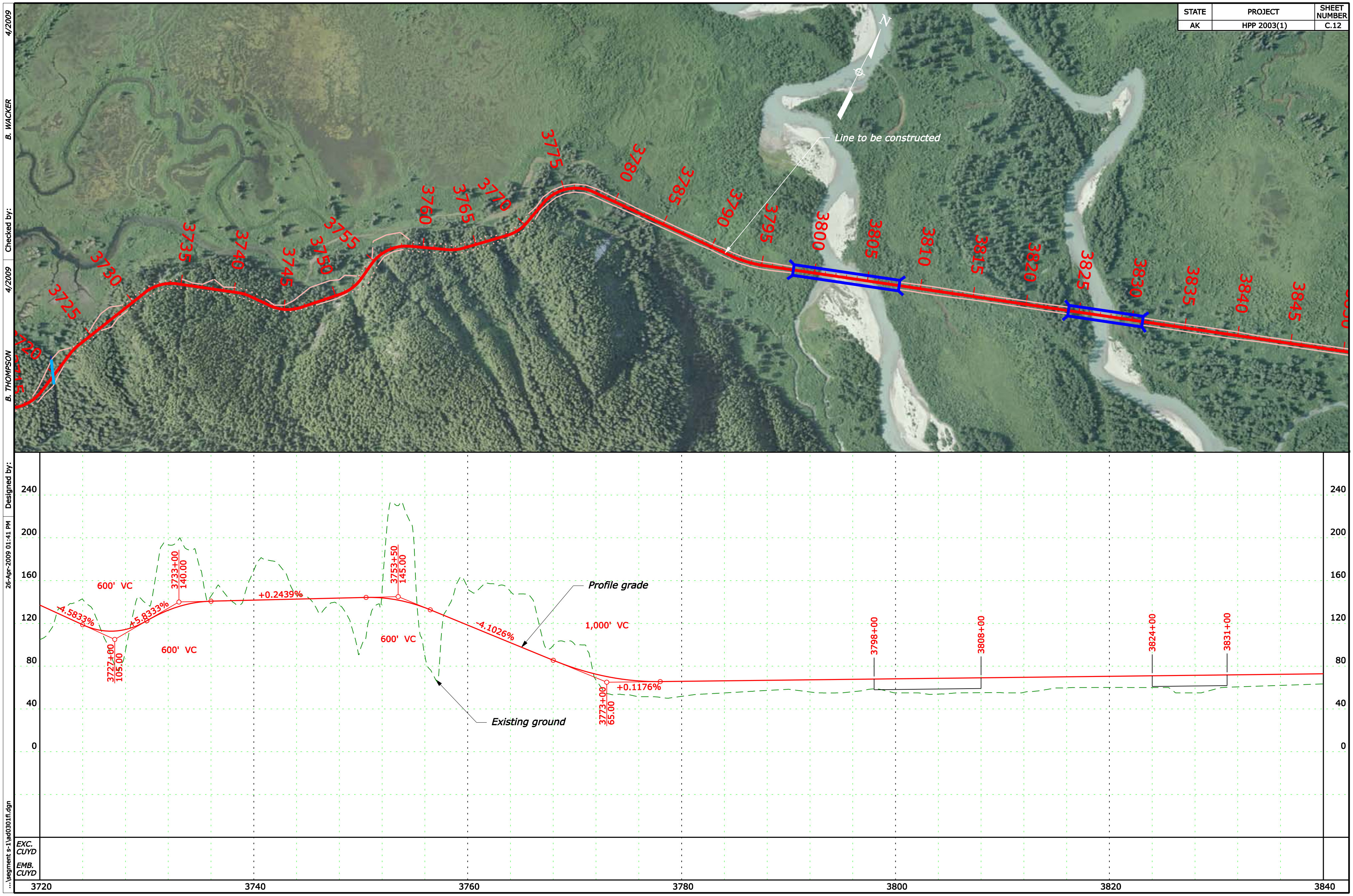
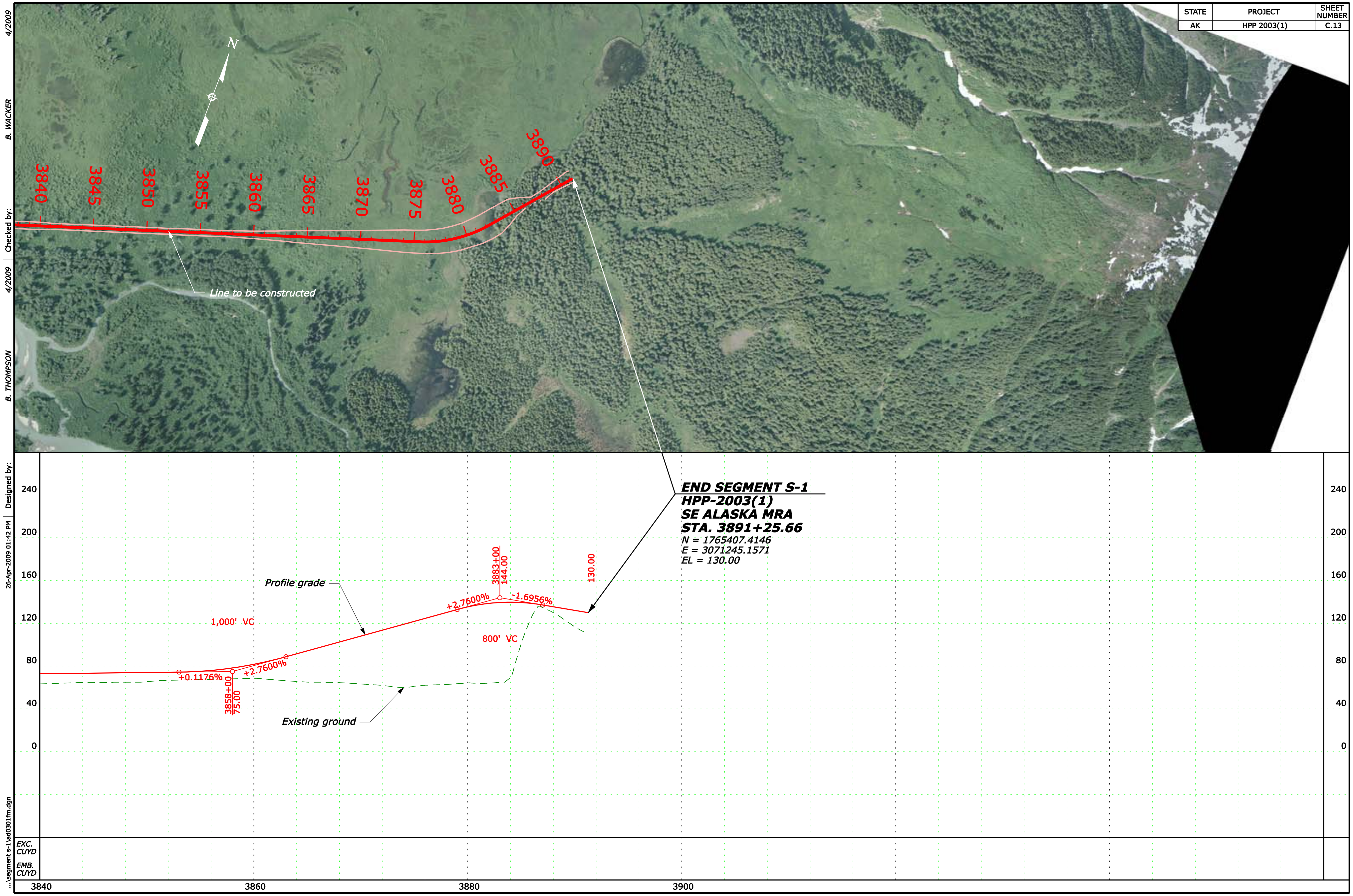
AK	HPP 2003(1)	C.12



STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.13



4/2009 B. WACKER Checked by:

4/2009 B. THOMPSON Designed by:

26-Apr-2009 01:42 PM

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South Stikine River Alignment (Segment S-2)

Segment S-2 of the South Stikine River Alignment is part of Stage 2 of the Stikine River Corridor. Segment S-2 would connect Segment S-1 of the South Stikine River Alignment to the proposed Crittenden Creek conventional ferry terminal. Segment S-2 would have to be built concurrently with Segment S-1 to connect the Iskut River Alignment with a conventional ferry terminal. The completion of Stage 2 of the Stikine River Corridor would replace ACV ferry operations from the Iskut River hovercraft terminal near the confluence of the Stikine and Iskut Rivers to Wrangell and Mitkof Island.

Segment S-2 would begin next to the conceptual Crittenden Creek conventional ferry terminal along the Eastern Passage at milepost (MP) 0.0. From MP 0.0 to MP 0.9, the alignment would follow the Eastern Passage shoreline northwest through moderate terrain. A 600-foot bridge would be needed to cross Crittenden Creek near MP 0.2. Between MP 0.9 and MP 1.8, the alignment would swing to the southwest to follow the shoreline around Babbler Point. After passing Babbler Point, the alignment would turn back to the northwest and continue in that direction until MP 6.1. The terrain between MP 0.9 and MP 6.1 varies between flat and moderate, with the terrain becoming increasingly steeper the farther north the alignment traverses the Eastern Passage shoreline.

From MP 6.1, the alignment would bear to the north past Green Point and Garnet Ledge before reaching Point Rothsay at MP 10.8. Two large culverts are proposed along this stretch for Garnet Creek near MP 9.4. The heavily timbered side slopes along this section would continue to increase in gradient, changing from moderate to steep after passing Green Point. Sections of bench cuts, mechanically stabilized earth (MSE) walls, and rock revetment walls would be necessary along the steep slopes to keep the roadway from affecting the Eastern Passage. For further information regarding MSE and rock revetment walls, refer to the typical sections (Sheet B.5). The roadway would veer to the northeast after Point Rothsay and enter the tidal flats of the vast Stikine River valley. The alignment would stay along the mountain slopes to avoid the many fingers of the Stikine River as they flow through the delta. As a result, the alignment would encounter moderate and steep terrain as it continues to the northeast to MP 17.6. A section of MSE wall near MP 14.0 would be needed to avoid large fills down to the Stikine River. Large culverts are proposed for three separate drainages crossed at MP 11.0, MP 12.0, and MP 13.6. A 400-foot bridge would be required for the alignment to cross Government Creek near MP 15.5. Segment S-2 of the South Stikine River Alignment would end at MP 17.6, where it would encounter both the start of Segment S-1 and the end of Segment L-1 of the Limb Island Alignment.

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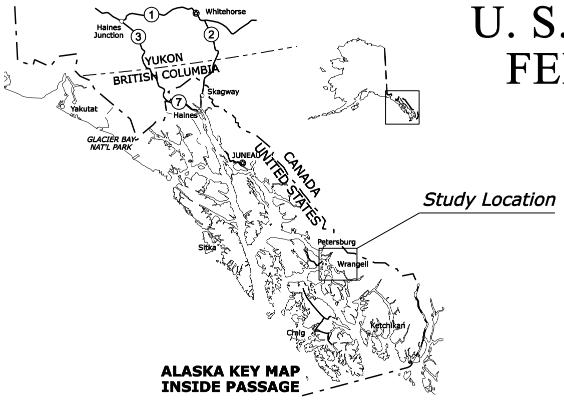
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



ALASKA KEY MAP
INSIDE PASSAGE

PLANS FOR PROPOSED STUDY

AK HPP-2003(1)

SOUTHEAST ALASKA MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA

SOUTH STIKINE RIVER ALIGNMENT (SEGMENT S-2)

LENGTH 17.6 MILES

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 18 miles of new alignment.

DESIGN DESIGNATION:

ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units

PLANS PREPARED FOR

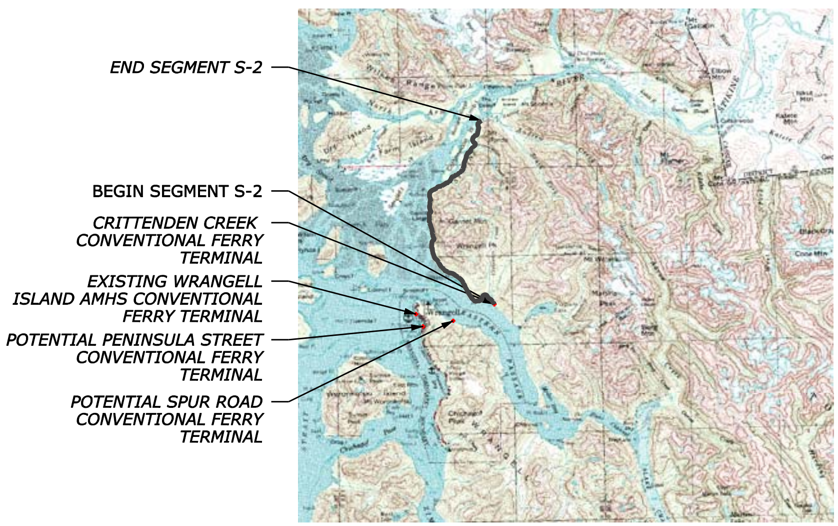
FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

PLANS PREPARED BY

RPA
ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA



N

40000 20000 0 40000 80000
SCALE IN FEET

INDEX TO SHEETS

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 27-Apr-2009 07:57 AM ...\Segment S-2\ad0301aa.dgn

C-172

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 01:57 PM ...\segment s-2\ad0301ab.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).

National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinae based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilities	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS GREATER THAN 7 FEET

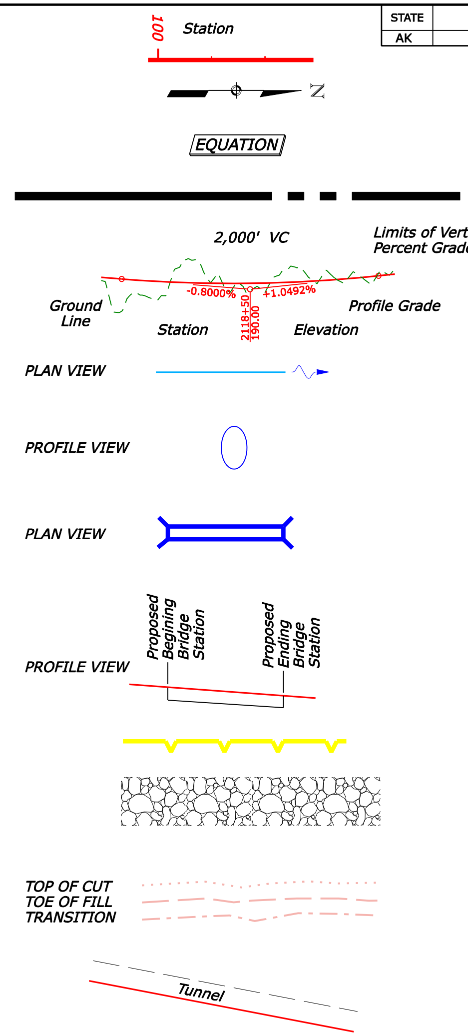
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

TUNNEL DESIGNATION ON PROFILE

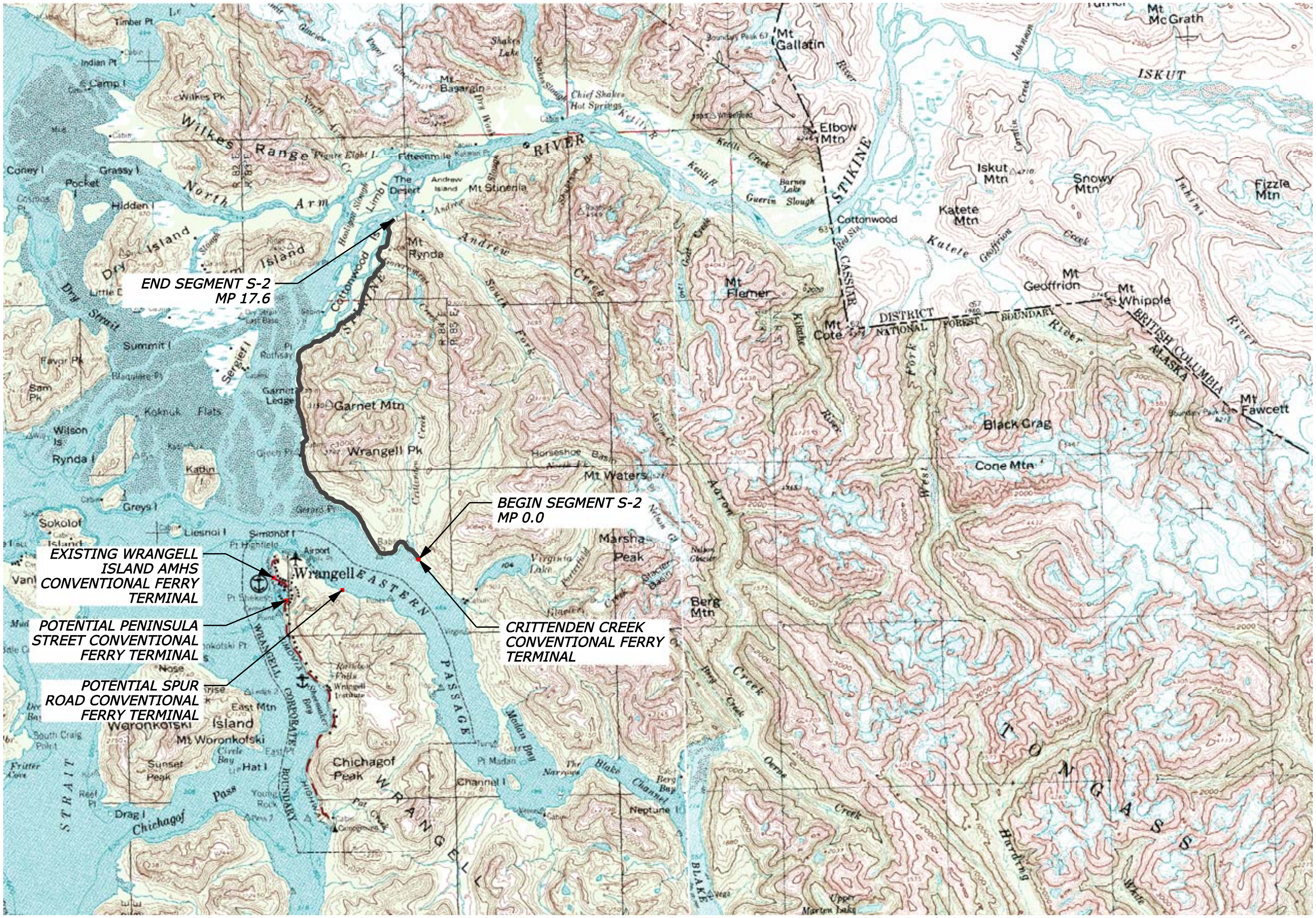


NOTE:

1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.3

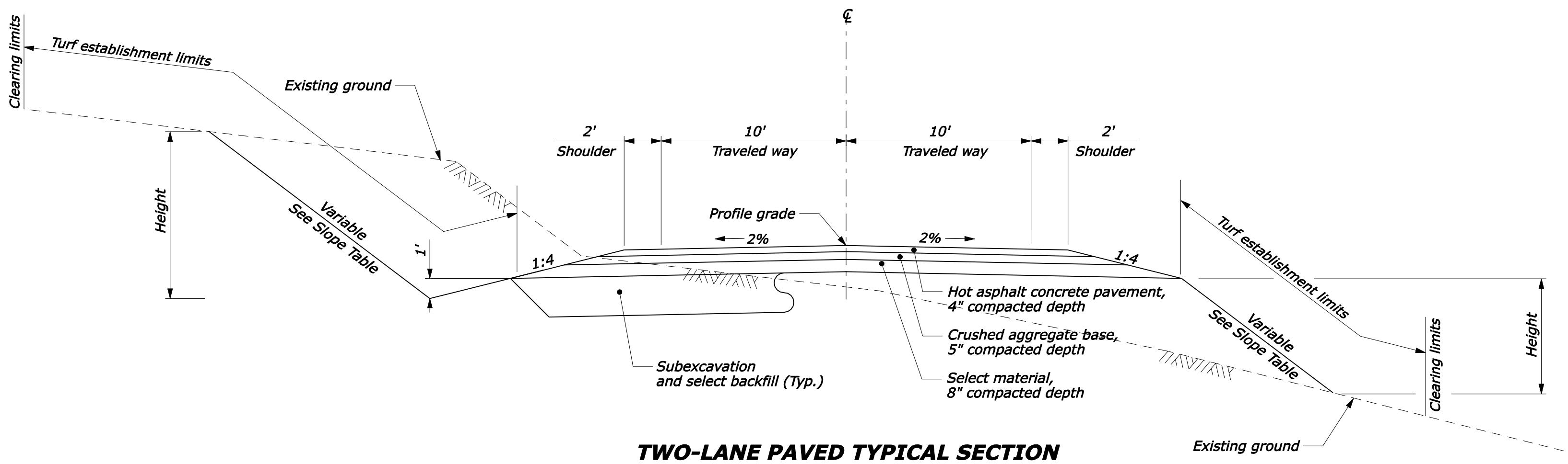


20000 10000 0 20000 40000
SCALE IN FEET

VICINITY MAP

...\segment s-2\ad0301ac.dgn | 26-Apr-2009 01:57 PM | Designed by: B. THOMPSON 4/2009 | Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.1



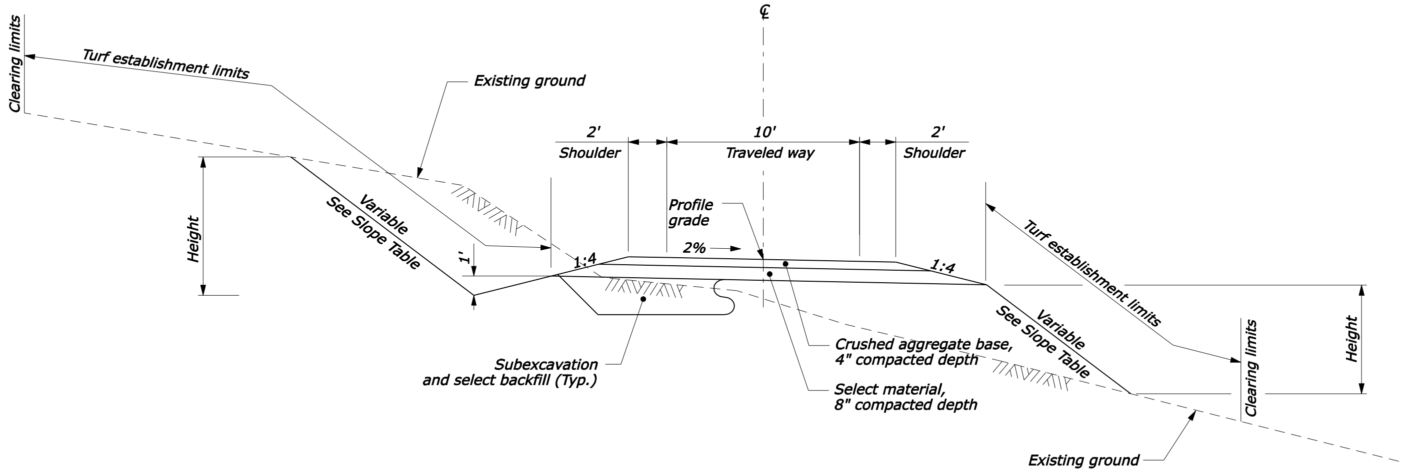
TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

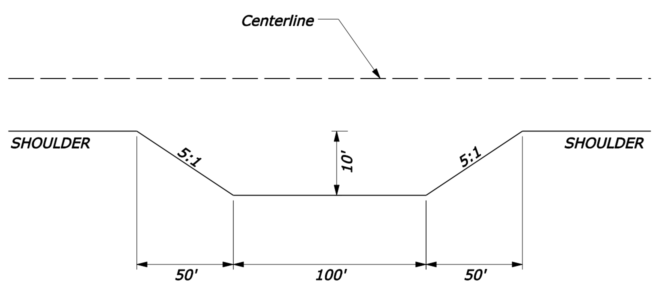
TWO-LANE PAVED TYPICAL SECTION

...\Segment S-2\ad0301ca.dgn | 26-Apr-2009 02:02 PM | Designed by: B. THOMPSON 4/2009 | Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.2



ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



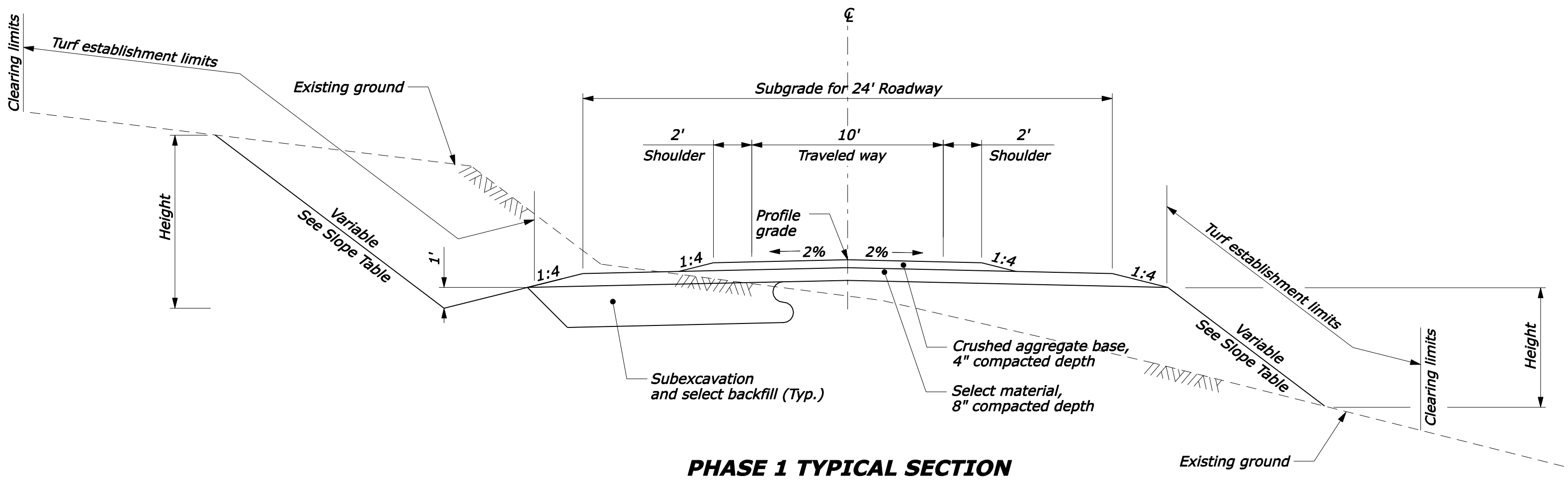
TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

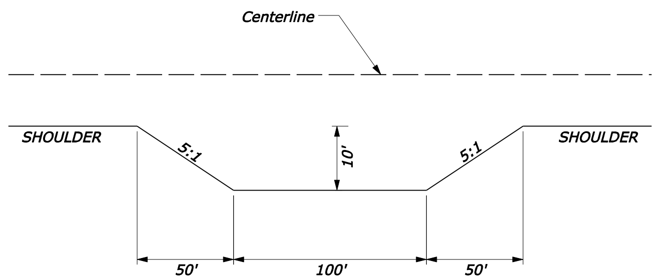
ONE-LANE GRAVEL TYPICAL SECTION

4/2009 B. WACKER Checked by:
4/2009 B. THOMPSON Designed by:
26-Apr-2009 02:02 PM
...\Segment S-2\ad0301cb.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.3



PHASE 1 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



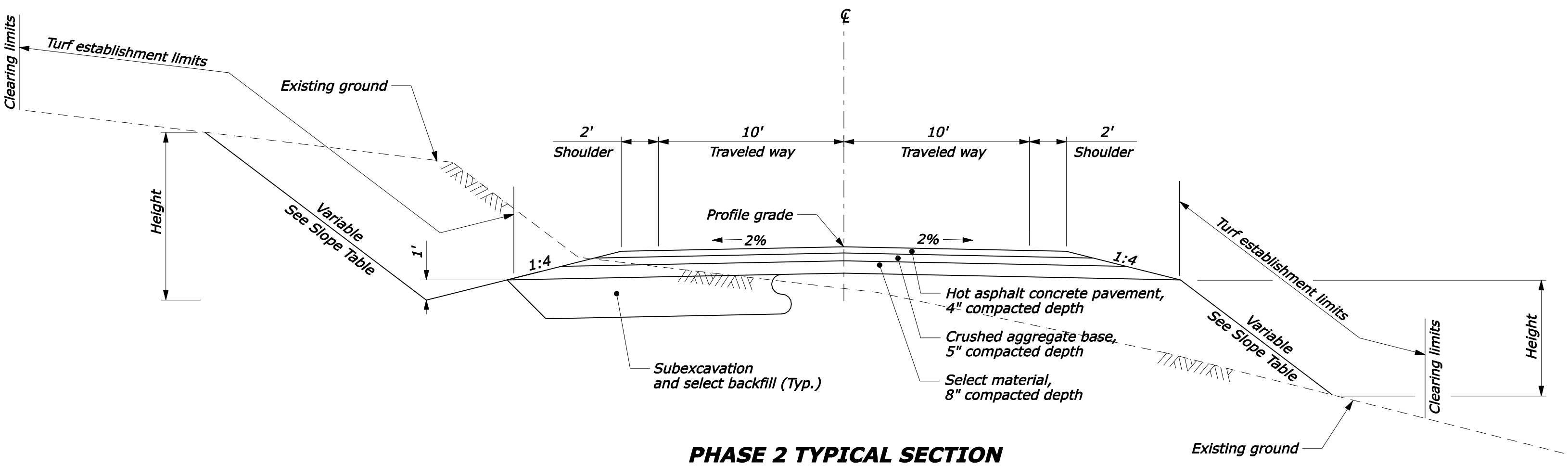
TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 1 TYPICAL SECTION

...\Segment S-2\ad0301cc.dgn | 26-Apr-2009 02:03 PM | Designed by: B. THOMPSON 4/2009 | Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.4



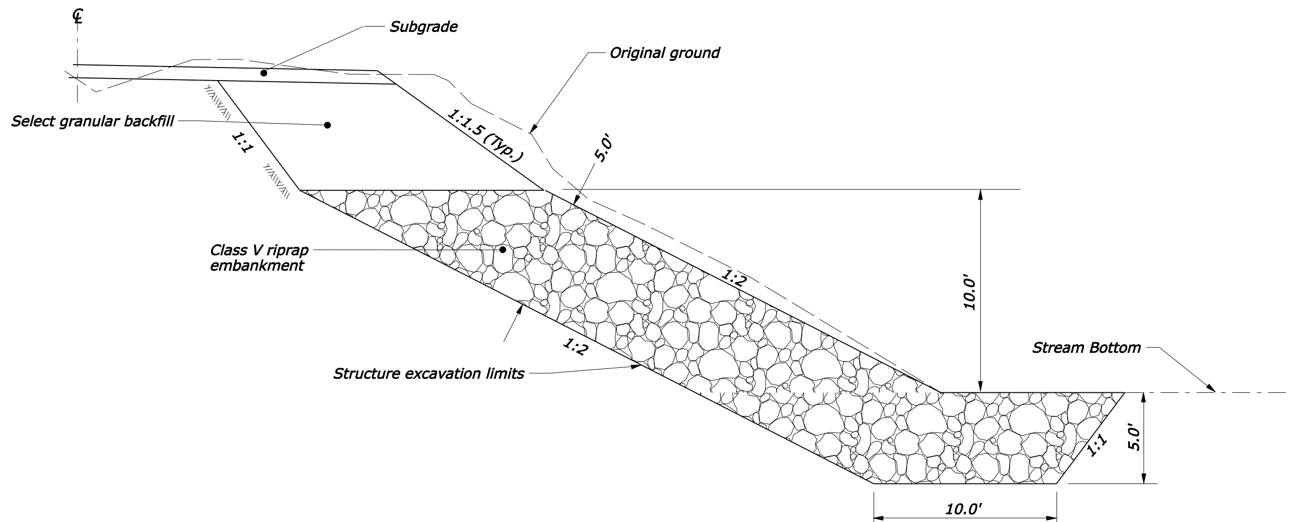
PHASE 2 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

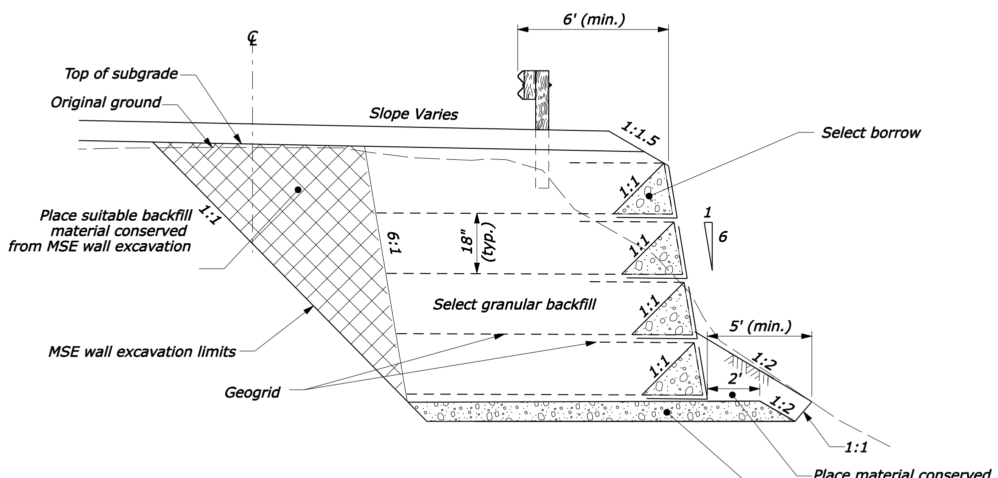
PHASE 2 TYPICAL SECTION

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 02:03 PM ...\Segment S-2\ad0301cd.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.5



ROCK REVETMENT TYPICAL SECTION



MSE WALL TYPICAL SECTION

NOTE:

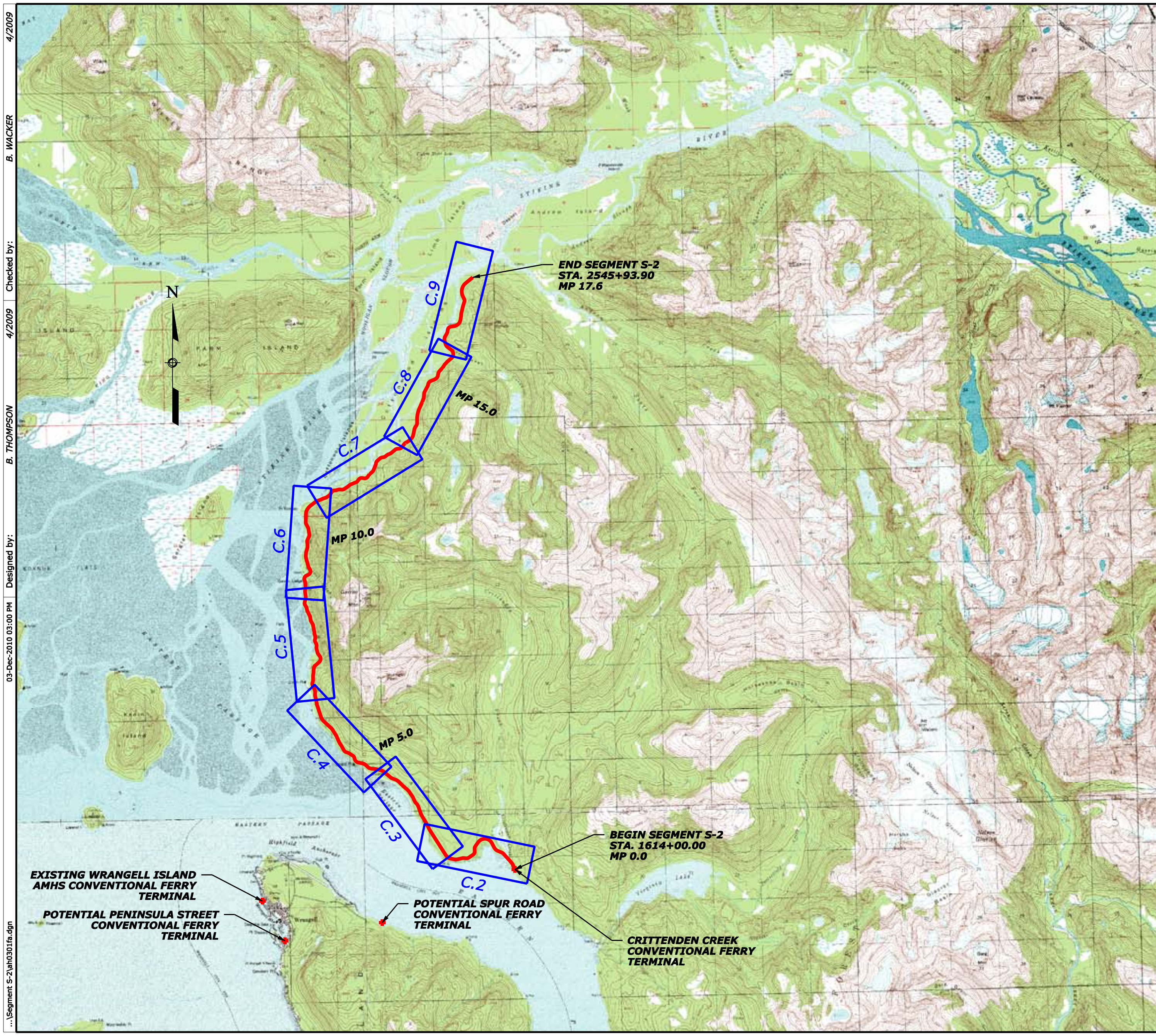
1. Rock revetment typical section from Bradfield River Road Final Scoping and Pre-NEPA Engineering Feasibility Study report dated January 10, 2005.
2. Class V riprap gradation requirements as shown in Table 705-1 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03).
3. Location of MSE walls and rock revetment are shown in the plan and profile sheets within Section C.

NO SCALE

MSE WALL & ROCK REVETMENT TYPICAL SECTIONS

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 02:03 PM ...\Segment S-2\ad0301ce.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.1



SEGMENT S-2 MAP

Designed by: B. THOMPSON 4/2009 Checked by: B. WACKER 4/2009

03-Dec-2010 03:00 PM

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STATE	PROJECT	SHEET NUMBER
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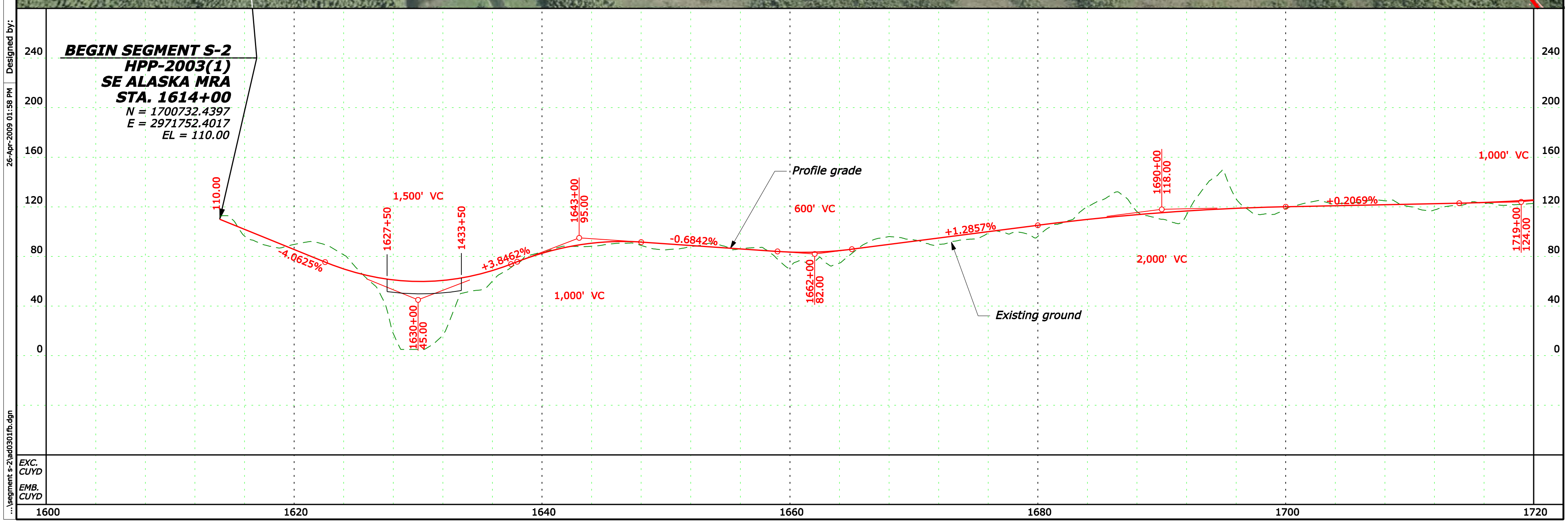

B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009
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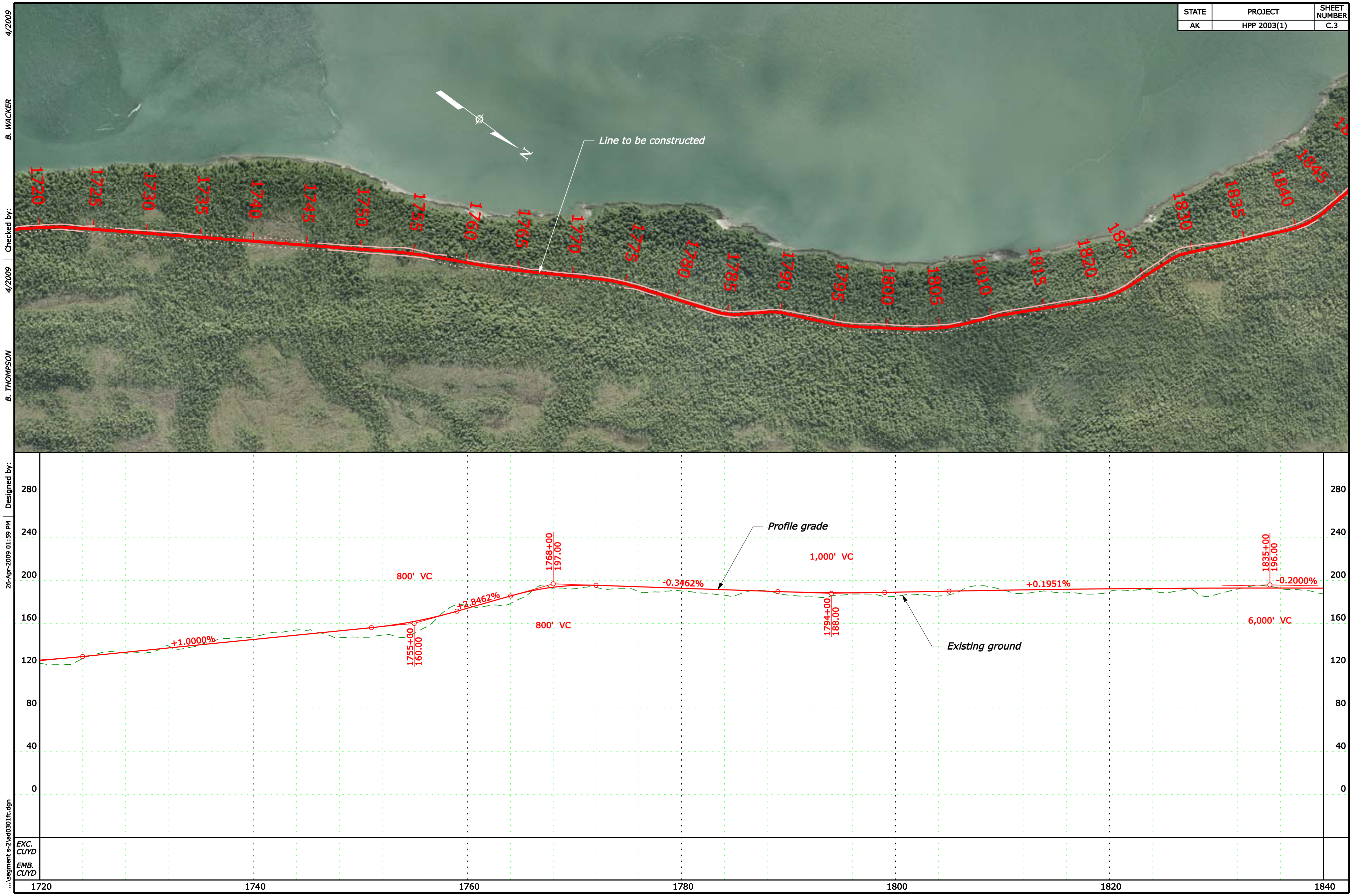
STATE AK
PROJECT HPP 2003(1)
SHEET NUMBER C.3
Line to be constructed
1720 1725 1730 1735 1740 1745 1750 1755 1760 1765 1770 1775 1780 1785 1790 1795 1800 1805 1810 1815 1820 1825 1830 1835 1840 1845
N
Profile grade
Existing ground
800' VC
800' VC
1,000' VC
6,000' VC
+1.0000%
+2.8462%
-0.3462%
+0.1951%
-0.2000%
1755+00 160.00
1768+00 197.00
1794+00 188.00
1835+00 196.00
280 240 200 160 120 80 40 0
EXC. CUYD
EMB. CUYD
1720 1740 1760 1780 1800 1820 1840
B. THOMPSON 4/2009
B. WACKER 4/2009
Checked by:
Designed by:
26-Apr-2009 01:59 PM
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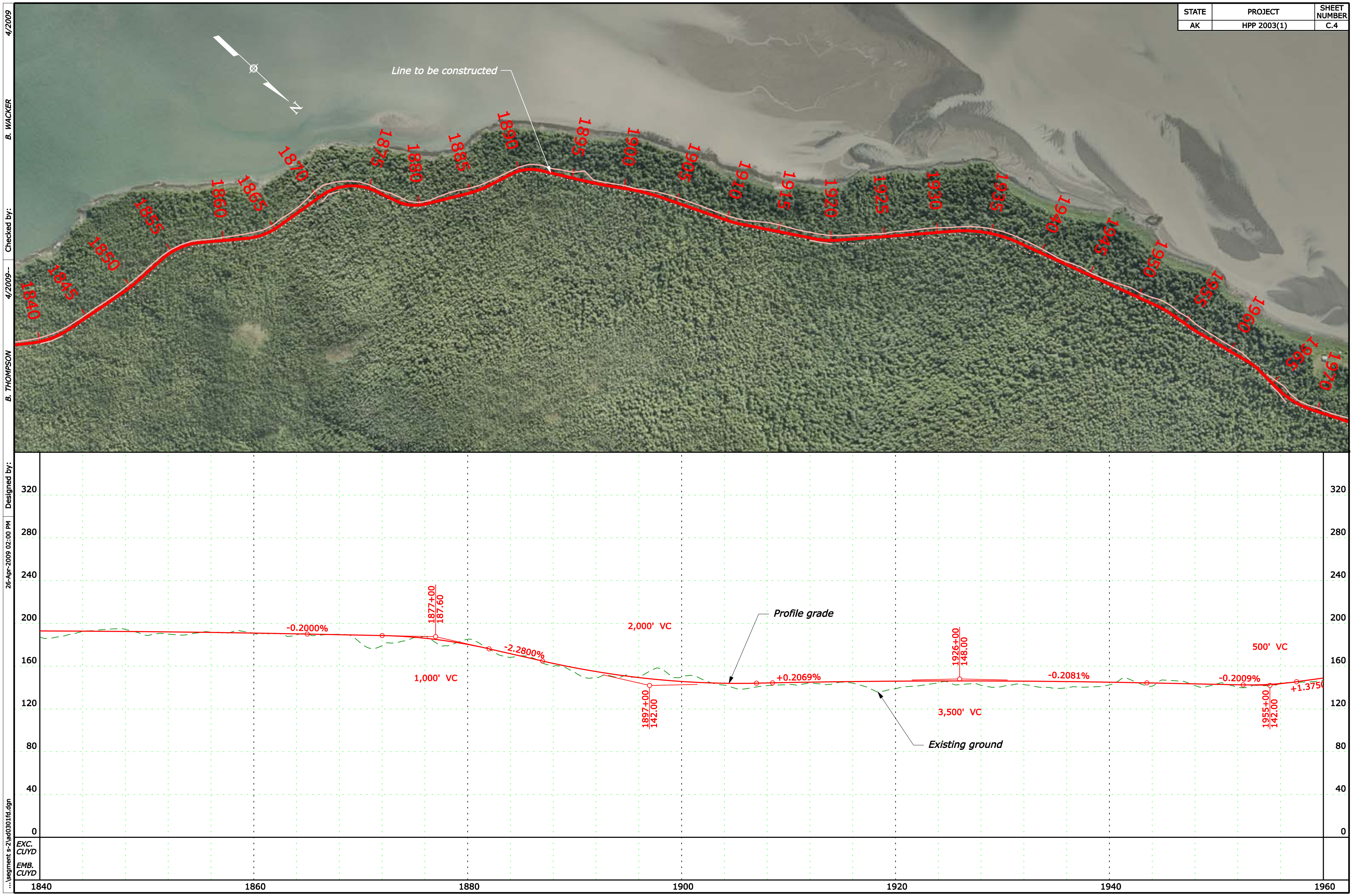
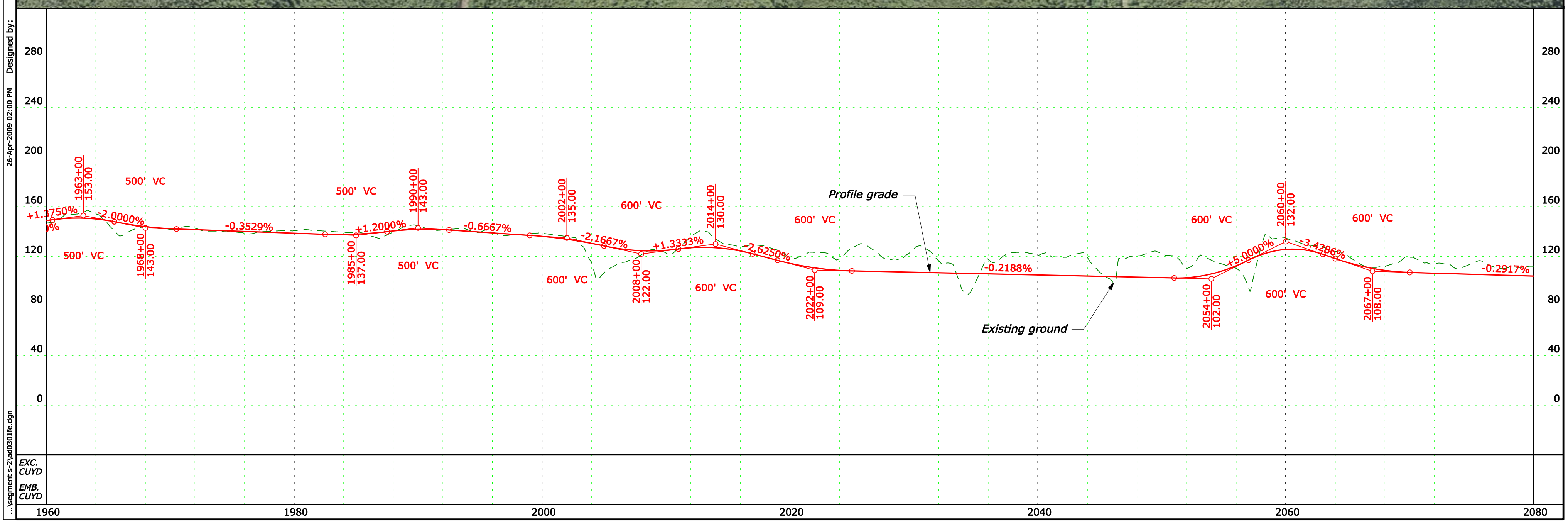


STATE | AK
PROJECT | HPP 2003(1)
SHEET NUMBER | C.4
N
Line to be constructed
1840 1845 1850 1855 1860 1865 1870 1875 1880 1885 1890 1895 1900 1905 1910 1915 1920 1925 1930 1935 1940 1945 1950 1955 1960 1965 1970
4/2009
B. WACKER
Checked by:
4/2009--
B. THOMPSON
Designed by:
26-Apr-2009 02:00 PM
...\segment e-2\ad0301fd.dgn
320 280 240 200 160 120 80 40 0
-0.2000%
1877+00
187.60
-2.2800%
1,000' VC
2,000' VC
1897+00
142.00
Profile grade
+0.2069%
1926+00
148.00
3,500' VC
Existing ground
-0.2081%
500' VC
-0.2009%
1955+00
142.00
+1.3750
EXC. CUYD
EMB. CUYD
1840 1860 1880 1900 1920 1940 1960

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.5



4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
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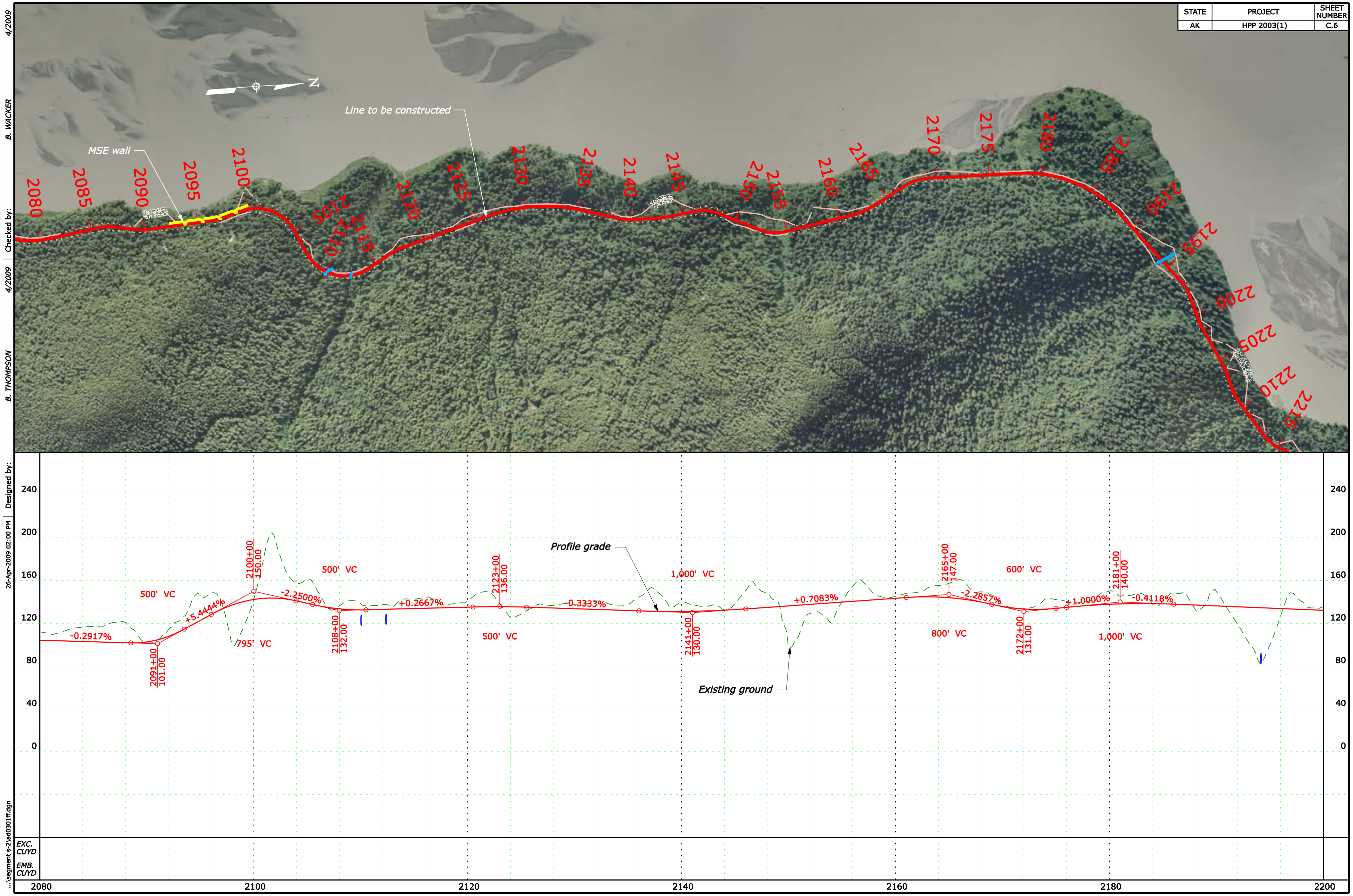
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.6



4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 02:00 PM
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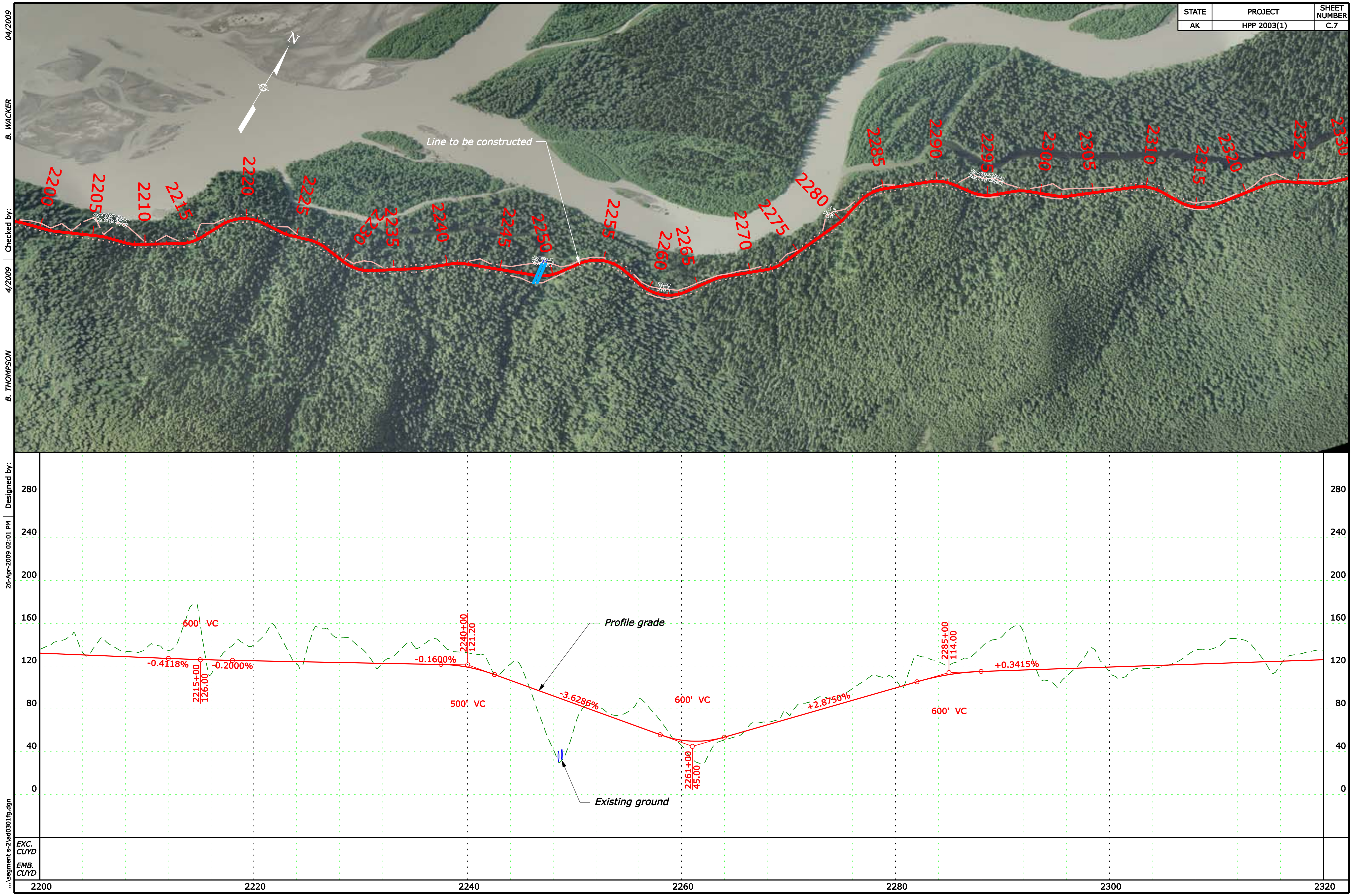
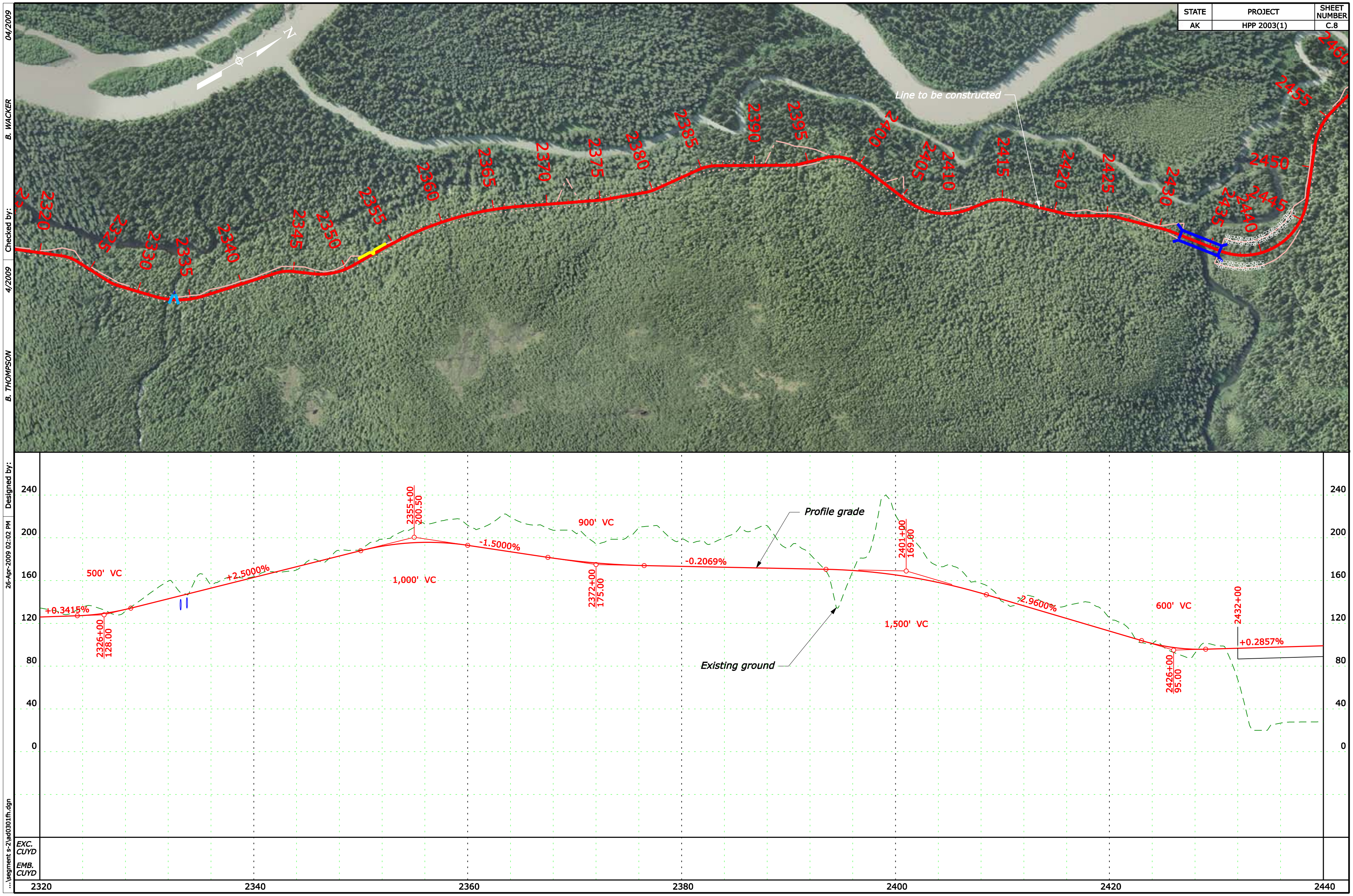

STATE | PROJECT | SHEET NUMBER
AK | HPP 2003(1) | C.7
04/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 02:01 PM
...\segment e-2\ad0301fg.dgn
N
Line to be constructed
2200 2205 2210 2215 2220 2225 2230 2235 2240 2245 2250 2255 2260 2265 2270 2275 2280 2285 2290 2295 2300 2305 2310 2315 2320 2325 2330
Profile grade
Existing ground
600' VC
-0.4118%
-0.2000%
2215+00
126.00
2240+00
121.20
-0.1600%
500' VC
-3.6286%
600' VC
2261+00
45.00
+2.8750%
2285+00
114.00
+0.3415%
600' VC
280 240 200 160 120 80 40 0
EXC. CUYD
EMB. CUYD
2200 2220 2240 2260 2280 2300 2320


STATE
PROJECT
SHEET NUMBER
AK
HPP 2003(1)
C.8
04/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 02:02 PM
...\segment e-2\ad0301fh.dgn
Line to be constructed
2320
2325
2330
2335
2340
2345
2350
2355
2360
2365
2370
2375
2380
2385
2390
2395
2400
2405
2410
2415
2420
2425
2430
2435
2440
2445
2450
2455
2460
Profile grade
Existing ground
500' VC
1,000' VC
900' VC
1,500' VC
600' VC
+0.3415%
+2.5000%
-1.5000%
-0.2069%
-2.9600%
+0.2857%
2326+00
128.00
2355+00
200.50
2372+00
175.00
2401+00
169.00
2426+00
95.00
2432+00
240
200
160
120
80
40
0
EXC. CUYD
EMB. CUYD
2320
2340
2360
2380
2400
2420
2440

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.9

4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 02:02 PM
...\segment s-2\ad0301fl.dgn

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South Stikine River Alignment (Segment S-3)

Segment S-3 of the South Stikine River Alignment is part of Stage 5 of the Stikine River Corridor. Segment S-3 would connect Segment S-2 of the South Stikine River Alignment to Segment W-1 of the Wrangell Island Alignment. The completion of Segment S-3 would replace conventional ferry operations between the proposed Crittenden Creek ferry terminal near milepost (MP) 11.5 and one of the potential ferry terminals on Wrangell Island (Spur Road, Peninsula Street, or the existing Alaska Marine Highway System terminal).

Segment S-3 would begin on the southeast side of The Narrows and would immediately cross the Narrows with a 1,525-foot structure. After crossing The Narrows, the alignment would parallel the eastern shore of Madan Bay between MP 0.4 and MP 4.4. Large culverts would be needed for active drainages at MP 1.5 and MP 3.8. Once past Madan Bay, the alignment would continue to the northwest along the Eastern Passage shoreline to near the mouth of Crittenden Creek at MP 11.5. Two active drainages would require large culverts, one just south of Mill Creek at MP 8.5 and another near MP 6.4. A 600-foot bridge would be needed near MP 8.9 to bring the alignment across Mill Creek. The terrain between MP 0.0 and MP 11.5 is predominantly moderate and may provide opportunities to use excess roadway excavation. However, a few sections of mechanically stabilized earth (MSE) walls would be necessary to keep fill slopes from encroaching on the Eastern Passage. For more information on MSE walls, refer to the typical sections (Sheet B.5). Segment S-3 would encounter the beginning of Segment S-2 and the proposed Crittenden Creek conventional ferry terminal near MP 11.5.

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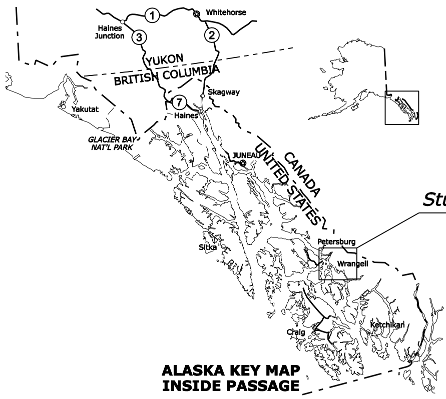
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

DEPARTMENT OF TRANSPORTATION UNITED STATES OF AMERICA



ALASKA KEY MAP
INSIDE PASSAGE

PLANS FOR PROPOSED STUDY

AK HPP-2003(1)

SOUTHEAST ALASKA MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA

SOUTH STIKINE RIVER ALIGNMENT (SEGMENT S-3)

LENGTH 11.5 MILES

TYPE OF CONSTRUCTION:

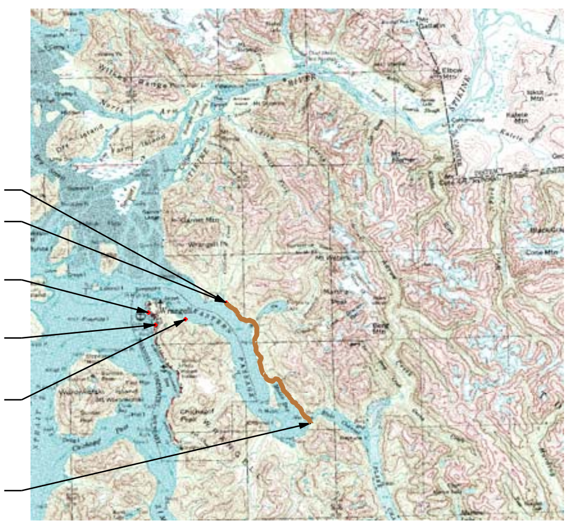
Conceptual analysis and design of approximately 12 miles of new alignment.

DESIGN DESIGNATION:

ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units



N

40000 20000 0 40000 80000

SCALE IN FEET

PLANS PREPARED FOR

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

PLANS PREPARED BY

RPA
ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA

...\Segment S-3\ad0301aa.dgn | 26-Apr-2009 04:03 PM | Designed by: B. THOMPSON 4/2009 | Checked by: B. WACKER 4/2009

C-192

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 04:03 PM ...\Segment S-3\ad0301ab.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).

National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinae based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilities	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS
GREATER THAN 7 FEET

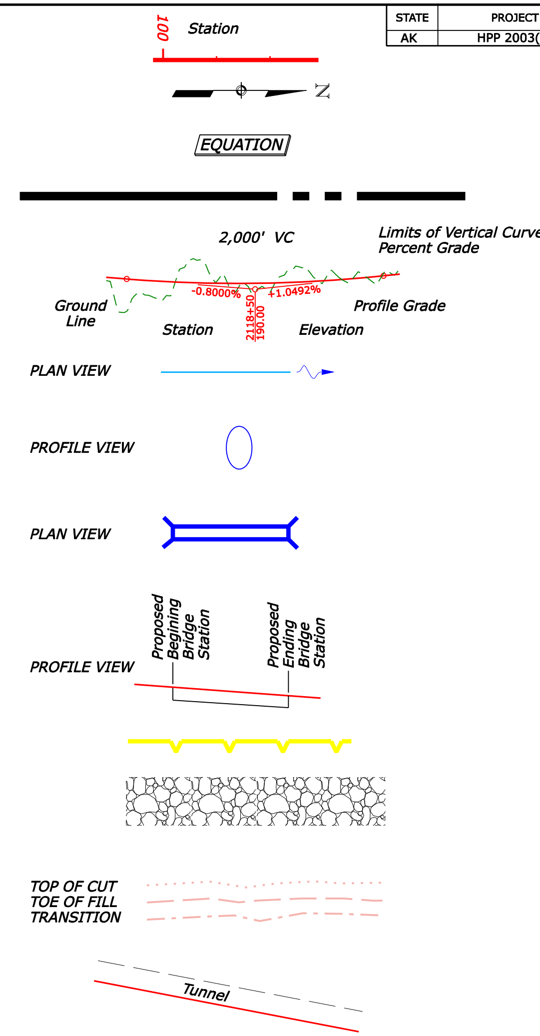
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

TUNNEL DESIGNATION
ON PROFILE

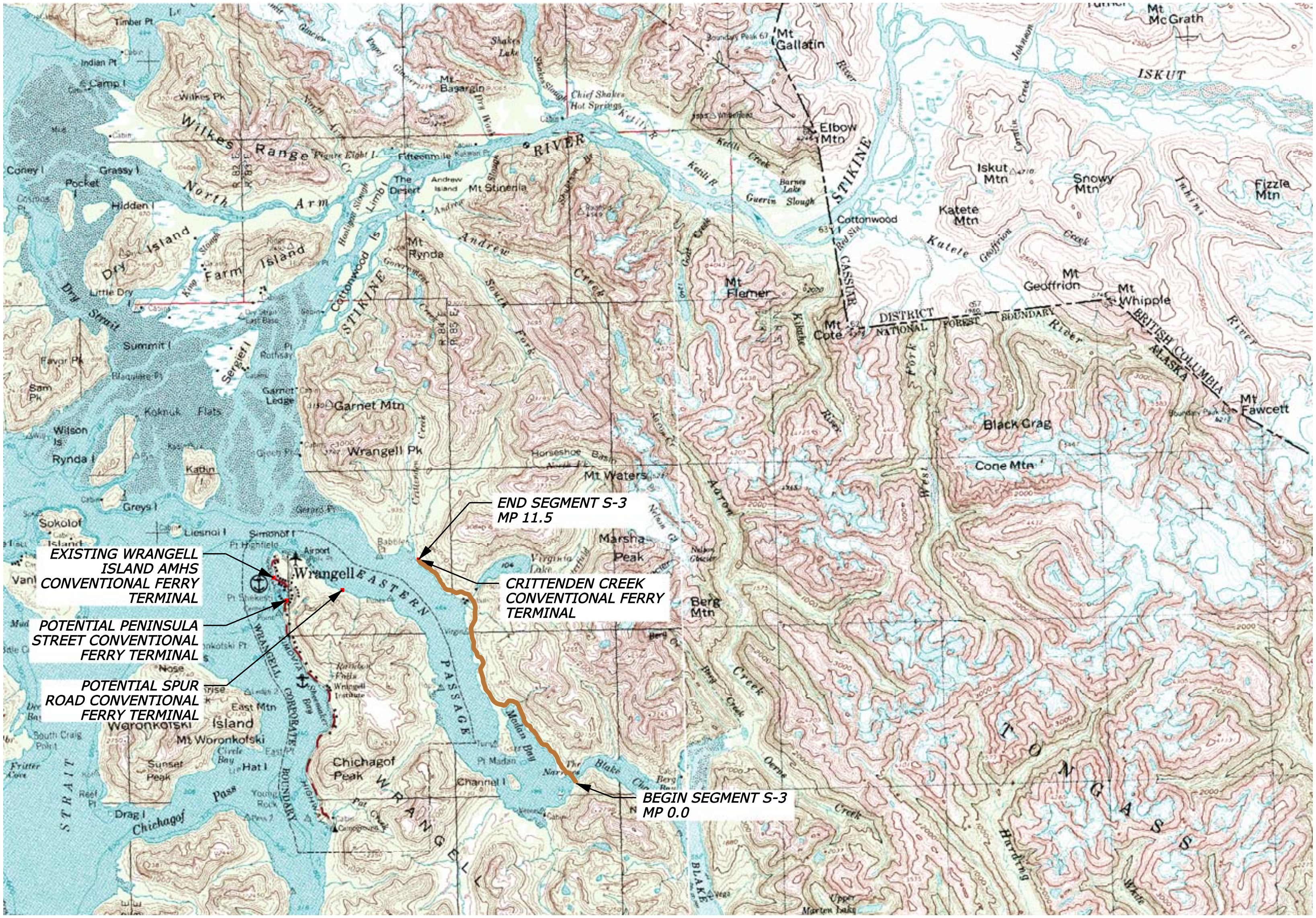


NOTE:

1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.3



N

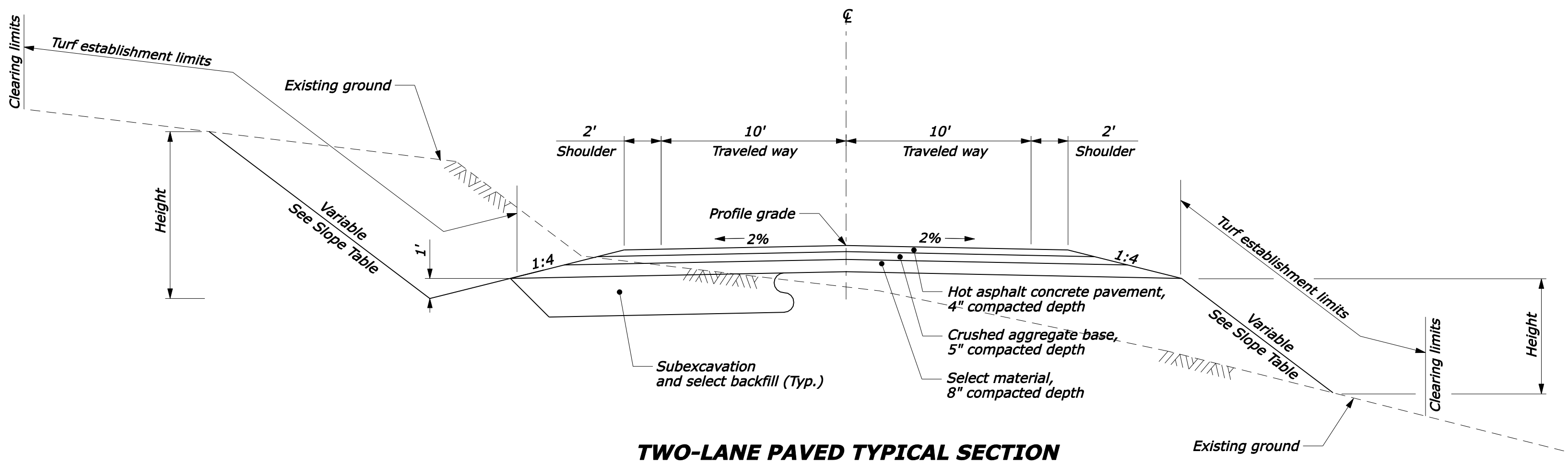
20000 10000 0 20000 40000

SCALE IN FEET

VICINITY MAP

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 04:03 PM ...\Segment S-3\ad0301ac.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.1



TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

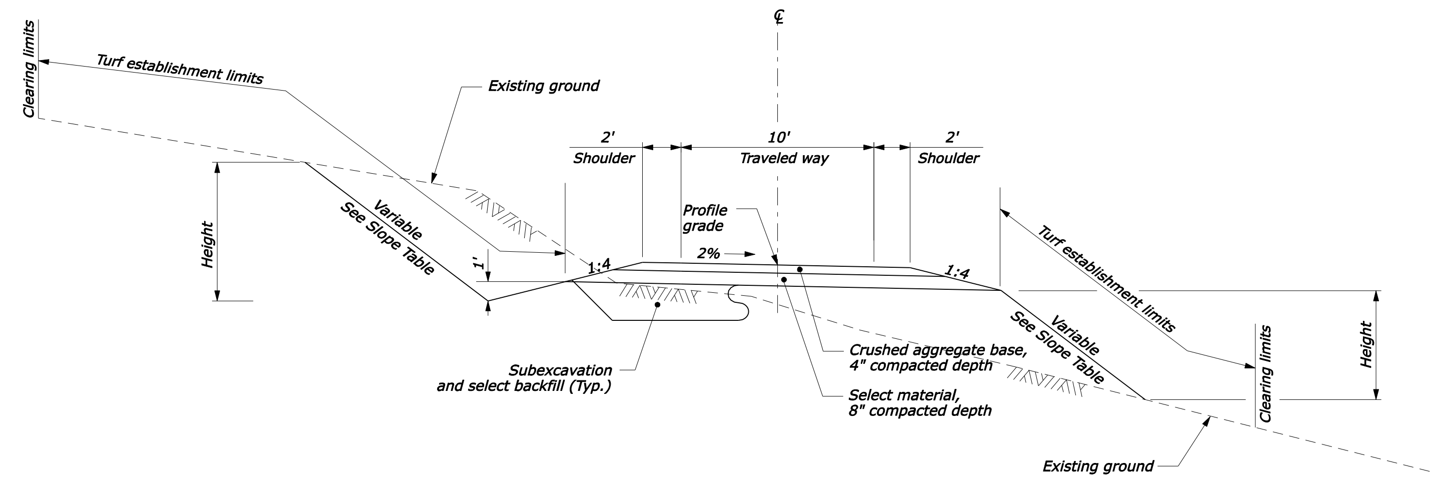
CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

TWO-LANE PAVED TYPICAL SECTION

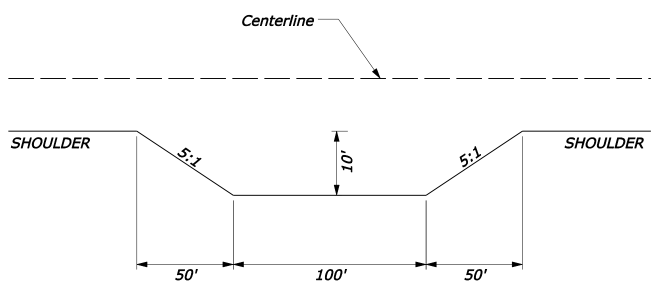
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 04:16 PM
...\Segment S-3\ad0301ca.dgn

...\Segment S-3\ad0301cb.dgn 26-Apr-2009 04:17 PM Designed by: B. THOMPSON 4/2009 Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.2



ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

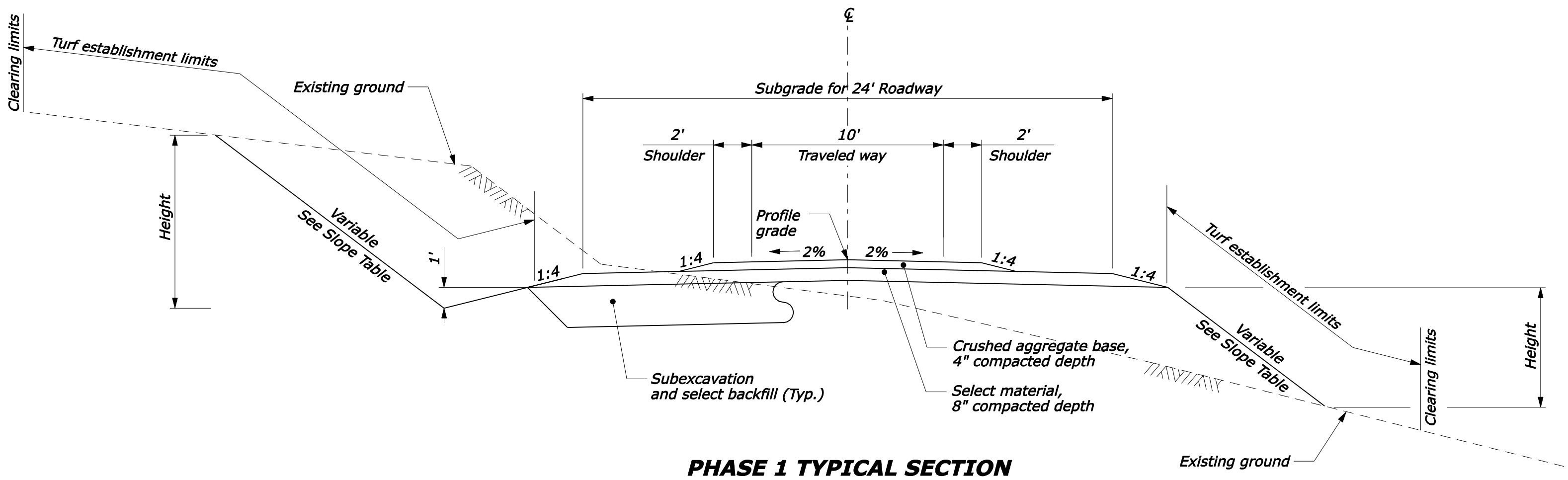


TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

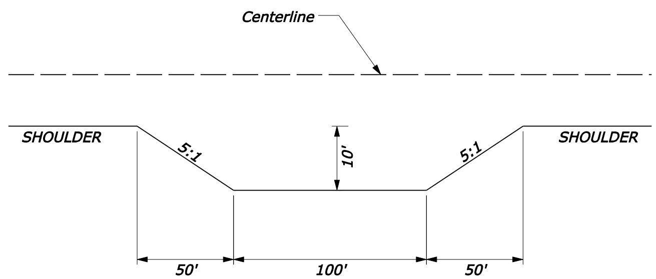
CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

ONE-LANE GRAVEL TYPICAL SECTION

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.3



PHASE 1 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



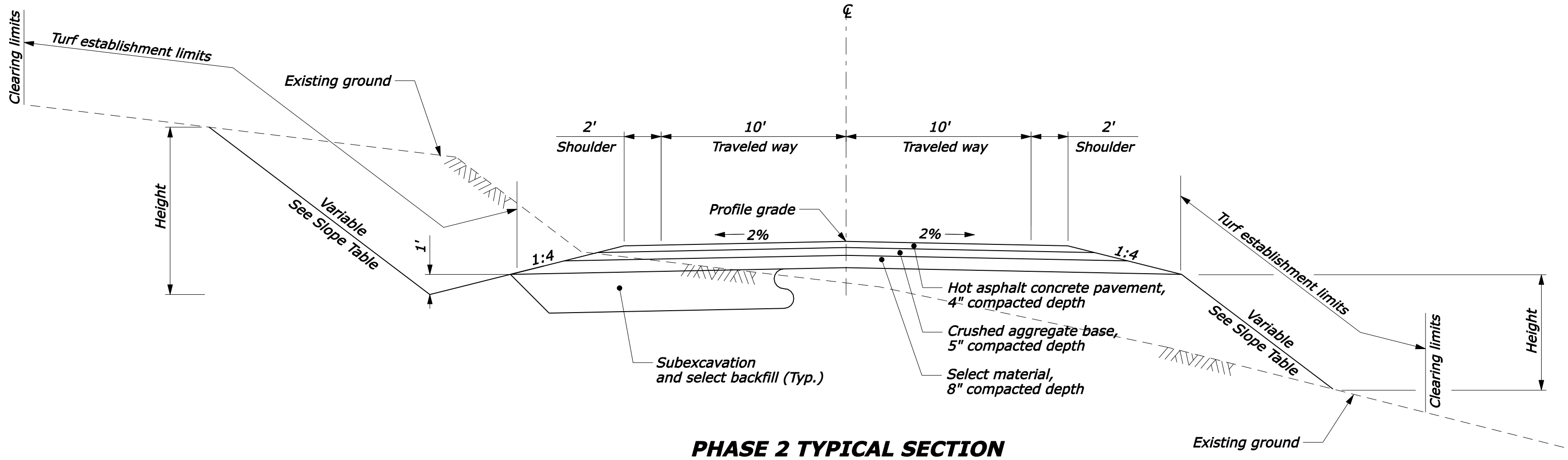
TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 1 TYPICAL SECTION

...\Segment S-3\ad0301cc.dgn
26-Apr-2009 04:17 PM
Designed by: B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.4



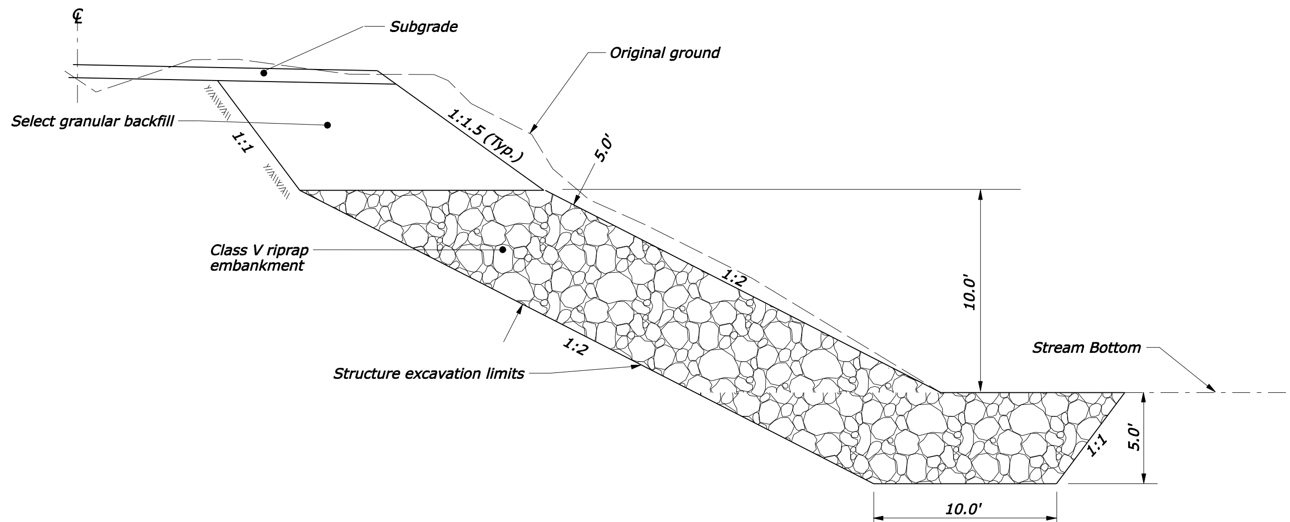
PHASE 2 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

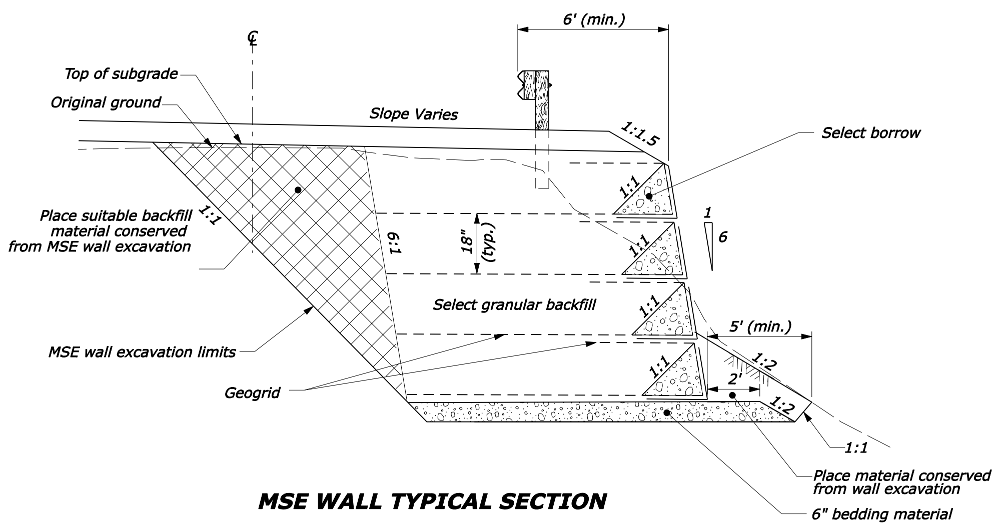
PHASE 2
TYPICAL SECTION

...\Segment S-3\ad0301cd.dgn
26-Apr-2009 04:17 PM
Designed by: B. THOMPSON 4/2009
Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.5



ROCK REVETMENT TYPICAL SECTION



MSE WALL TYPICAL SECTION

NOTE:

1. Rock revetment typical section from Bradfield River Road Final Scoping and Pre-NEPA Engineering Feasibility Study report dated January 10, 2005.
2. Class V riprap gradation requirements as shown in Table 705-1 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03).
3. Location of MSE walls and rock revetment are shown in the plan and profile sheets within Section C.

NO SCALE

MSE WALL & ROCK REVETMENT TYPICAL SECTIONS

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Checked by: B. WACKER 4/2009
26-Apr-2009 04:17 PM
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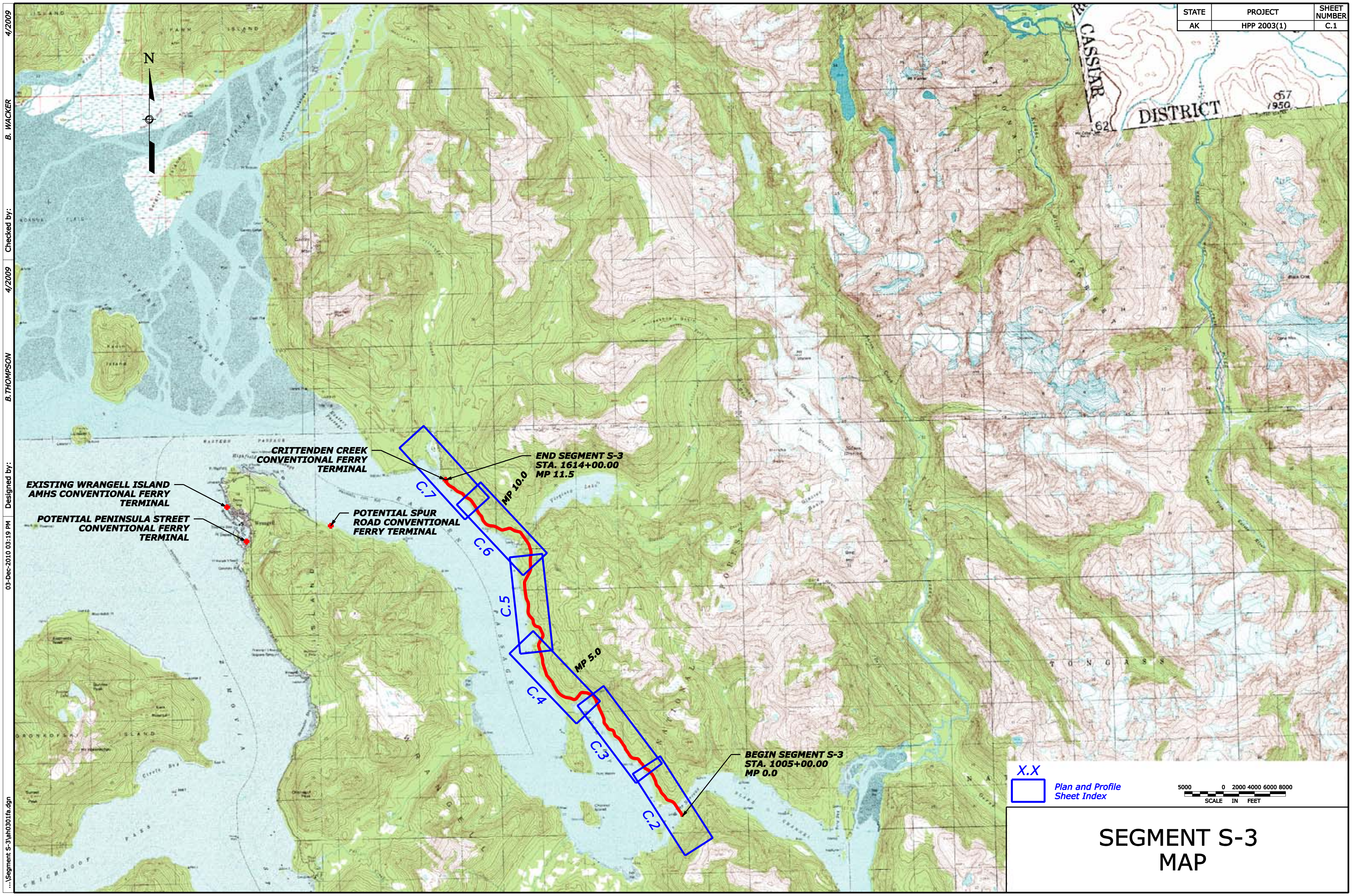
STATE
AK
PROJECT
HPP 2003(1)
SHEET NUMBER
C.1
N
CASSIAR
DISTRICT
CRITTENDEN CREEK CONVENTIONAL FERRY TERMINAL
END SEGMENT S-3
STA. 1614+00.00
MP 11.5
EXISTING WRANGELL ISLAND AMHS CONVENTIONAL FERRY TERMINAL
POTENTIAL PENINSULA STREET CONVENTIONAL FERRY TERMINAL
POTENTIAL SPUR ROAD CONVENTIONAL FERRY TERMINAL
MP 10.0
MP 5.0
C.7
C.6
C.5
C.4
C.3
C.2
BEGIN SEGMENT S-3
STA. 1005+00.00
MP 0.0
X.X
Plan and Profile Sheet Index
5000 0 2000 4000 6000 8000
SCALE IN FEET
SEGMENT S-3
MAP
4/2009
B. WACKER
Checked by:
4/2009
B.THOMPSON
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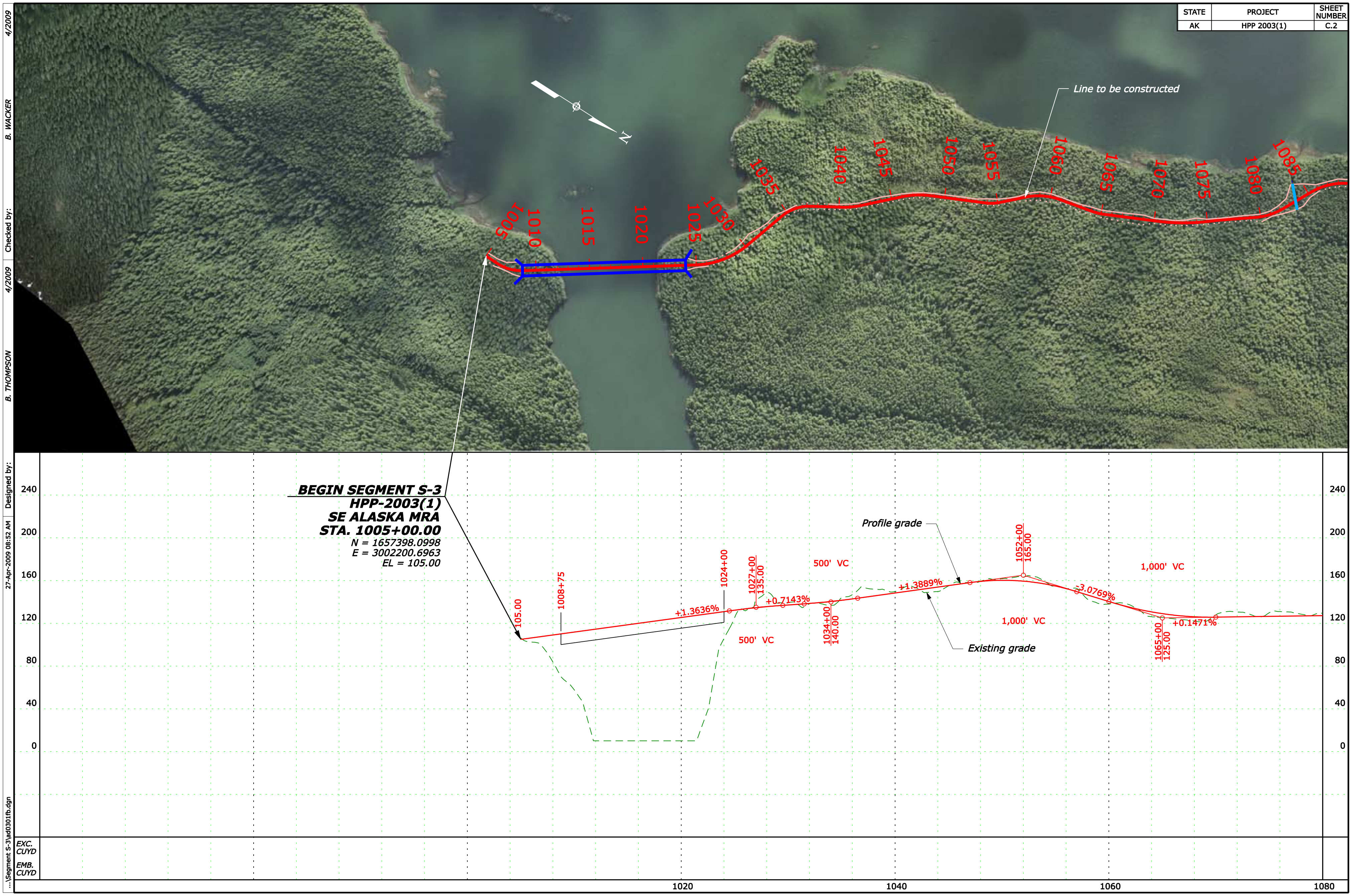
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.2



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B. THOMPSON
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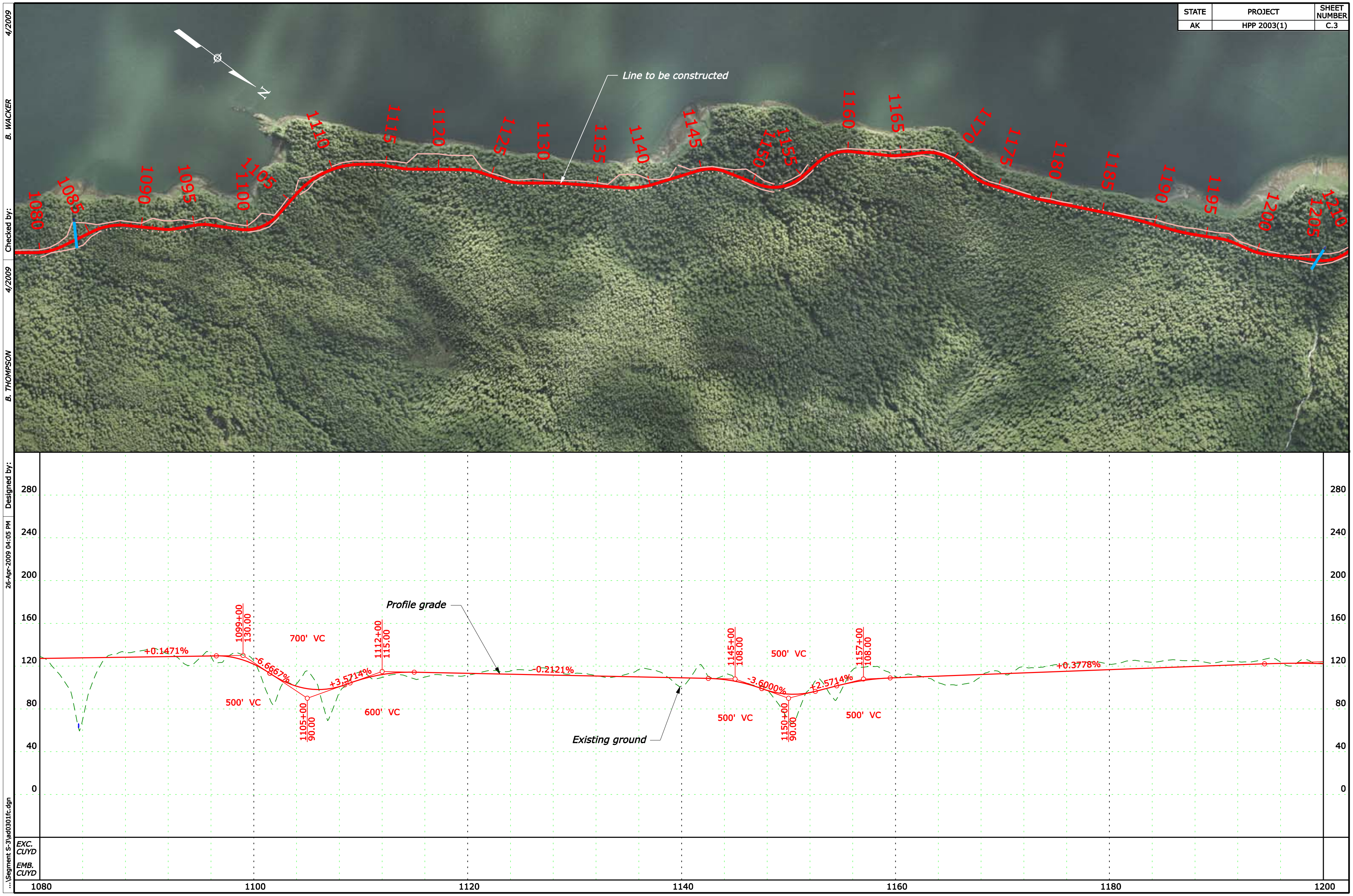
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.3



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B. WACKER
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4/2009
B. THOMPSON
Designed by:
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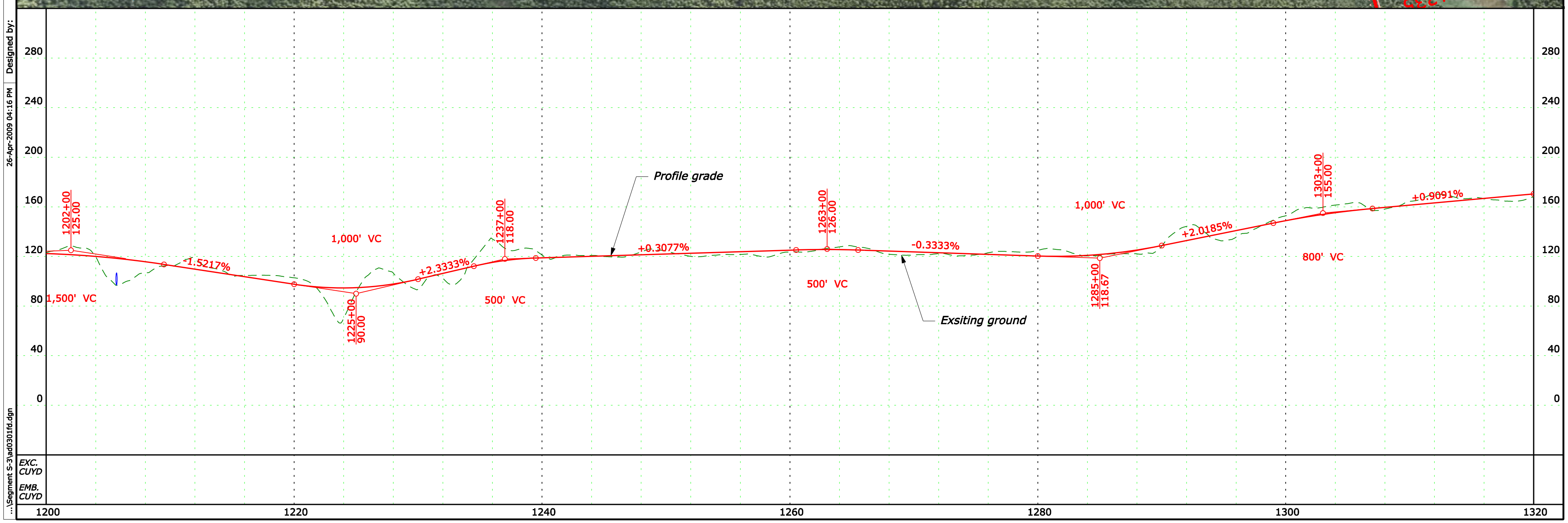
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.4



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Designed by:

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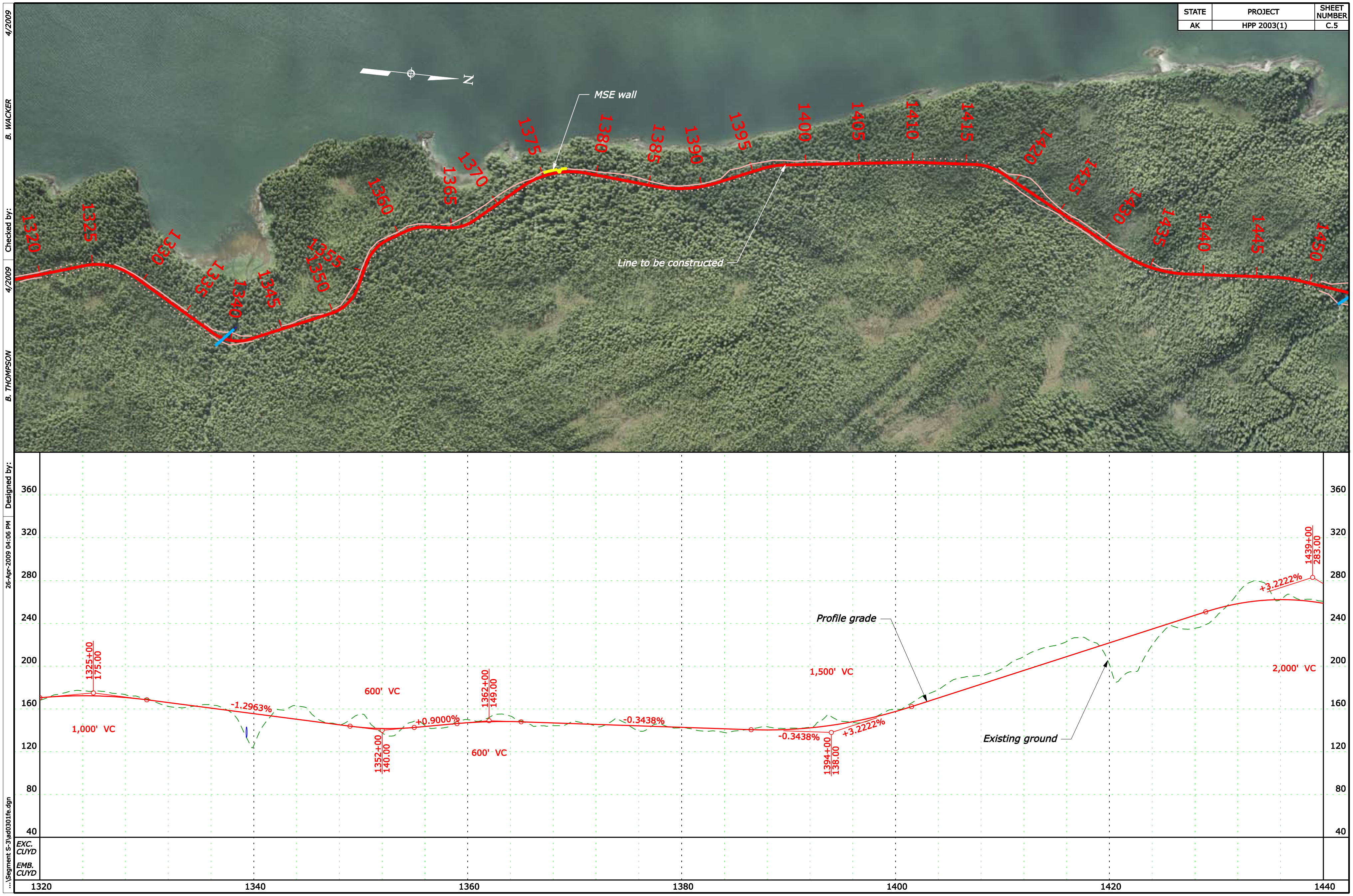

4/2009
B. WACKER
Checked by:
4/2009
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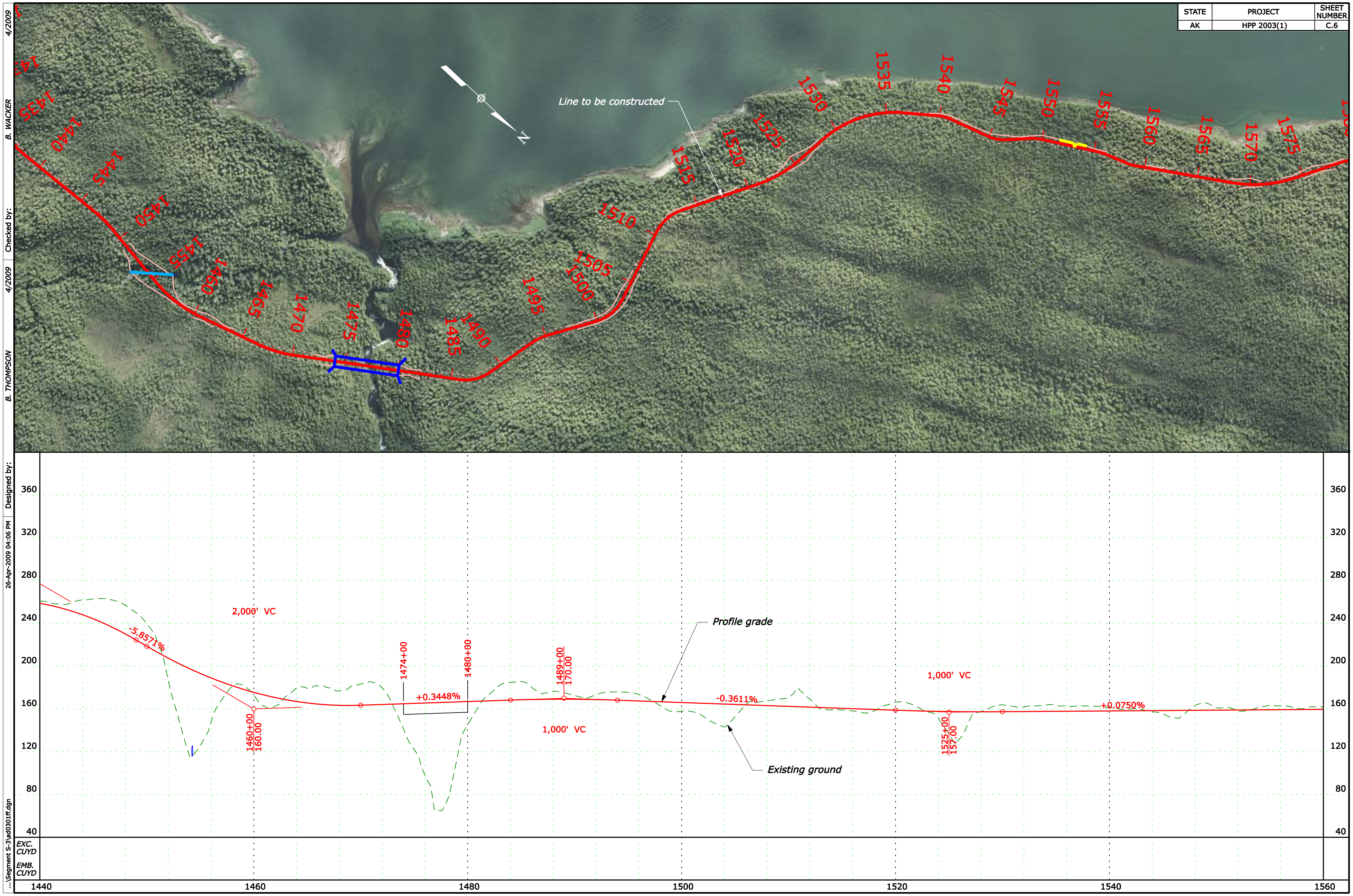
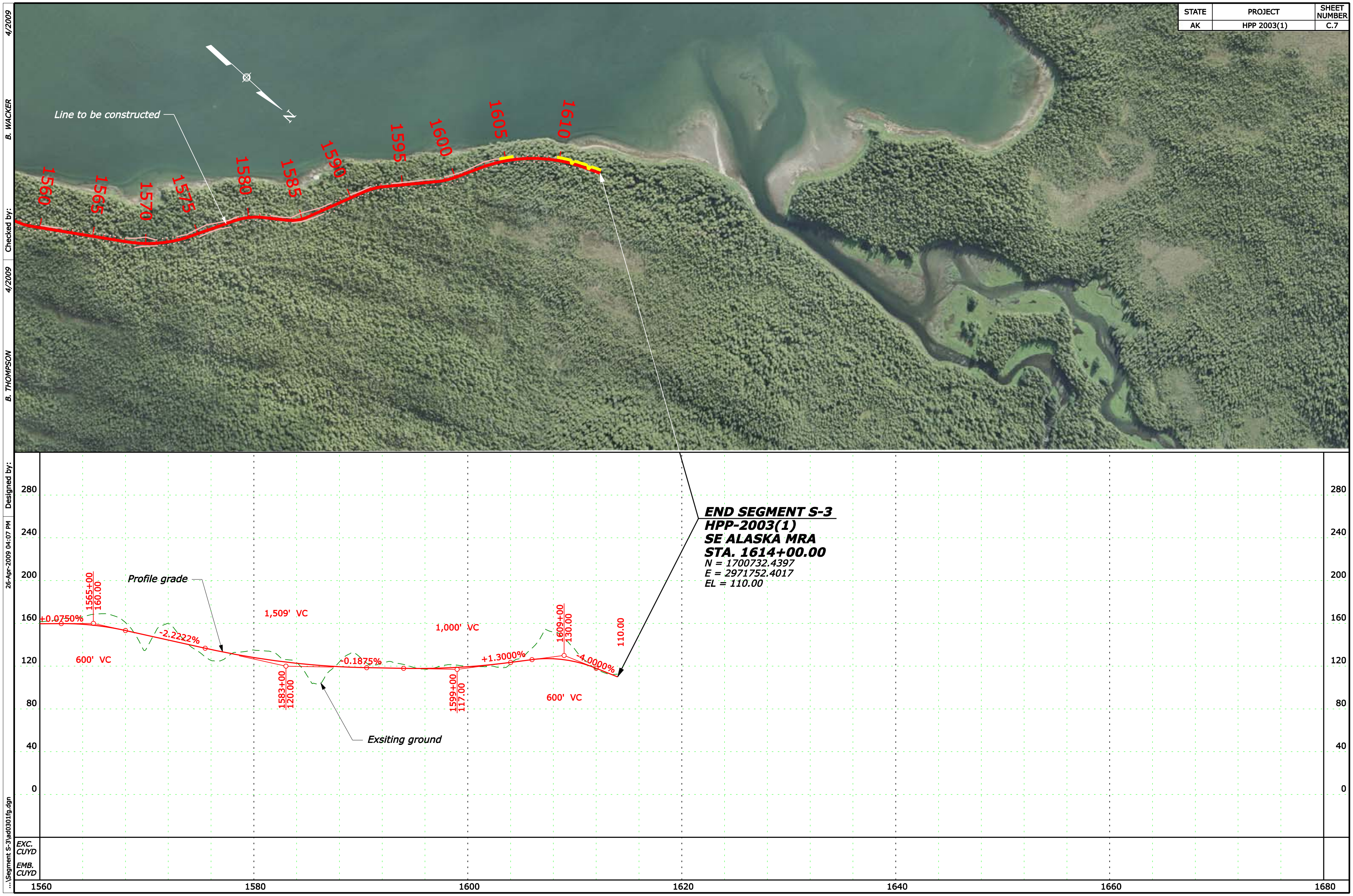
C-204

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.6



4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 26-Apr-2009 04:06 PM ...\Segment S-3\ad0301ff.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.7



4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
26-Apr-2009 04:07 PM
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C-205

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APPENDIX C.6

Limb Island Alignment

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Limb Island Alignment (Segment L-1)

Segment L-1 of the Limb Island Alignment is part of Stage 4 of the Stikine River Corridor. Segment L-1 would connect Segment S-1 of the South Stikine River Alignment to the Mitkof Highway on Mitkof Island. The completion of Segment L-1 would connect the community of Petersburg on Mitkof Island to the Stikine River Corridor via a land route. Without the construction of Segment L-1, the residents of Mitkof Island would have to take a ferry to Wrangell to access the Stikine River Corridor.

Segment L-1 would begin on Mitkof Island at the end of the Mitkof Highway. From milepost (MP) 0.0 to MP 1.4, the alignment would follow the shoreline north to Dry Strait. The terrain between MP 0.0 and MP 1.4 is moderate, but rock revetment walls may be needed intermittently to keep fill slopes from affecting the tidal flats. For further information regarding the rock revetment walls, refer to the typical sections (Sheet B.5). A 5,100-foot bridge beginning at MP 1.4 would connect the alignment on Mitkof Island with Dry Island to the northeast. The alignment would follow the southern shoreline of Dry Island to the east from MP 2.4 to MP 6.6. The side slopes along this section of roadway are moderate and would require rock revetment walls along some sections. The alignment would depart from the island slopes at MP 6.6 to parallel the west side of King Slough. The terrain along King Slough is flat. An active drainage at MP 3.0 would need a large culvert. An 800-foot structure beginning near MP 8.0 would convey the alignment across King Slough and onto the north side of Farm Island.

The alignment would follow flat terrain along the north side of Farm Island between MP 8.2 and MP 10.5. Large culverts would be needed for active drainages near MP 8.8, MP 8.9, and MP 9.7. From MP 10.5, the alignment would parallel the south side of the North Arm before reaching Hooligan Slough near MP 12.3, where a 2,300-foot bridge would carry the alignment to Limb Island. An active drainage near MP 13.2 would require a large culvert. The alignment would continue to the east and traverse the flat terrain of Limb Island to MP 13.8, where a 2,300-foot structure would bring the alignment across the Stikine River. The flat terrain along Limb Island may present difficulties in obtaining adequate on-site roadway embankment material. Extensive geotechnical, geomorphologic, and hydrologic analysis would be necessary to determine the feasibility of constructing the roadway across Limb Island. After crossing the Stikine River, the alignment would meet the beginning of Segment S-1 of the South Stikine River Alignment near MP 14.4.

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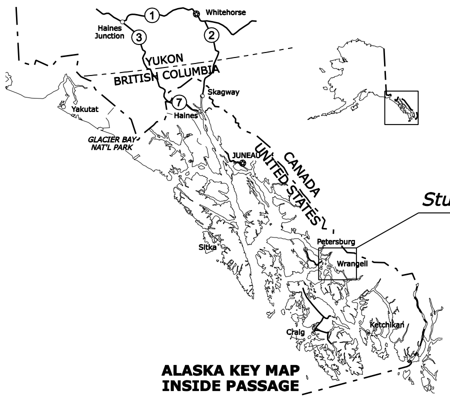
STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.1

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



ALASKA KEY MAP
INSIDE PASSAGE

PLANS FOR PROPOSED STUDY

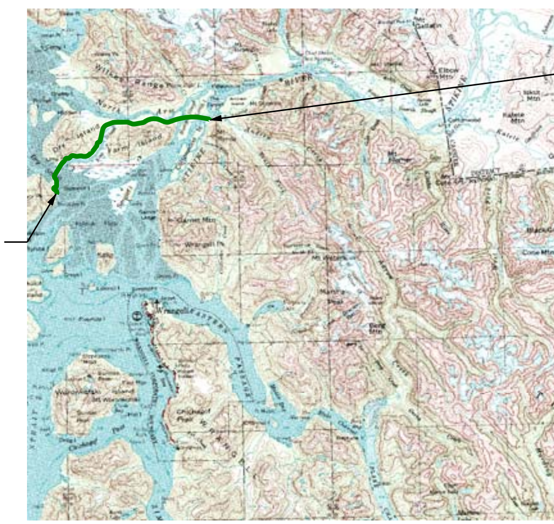
AK HPP-2003(1)

SOUTHEAST ALASKA MID-REGION ACCESS

TONGASS NATIONAL FOREST
ALASKA

LIMB ISLAND ALIGNMENT (SEGMENT L-1)

LENGTH 14.4 MILES



END SEGMENT L-1

BEGIN SEGMENT L-1

40000 20000 0 40000 80000
SCALE IN FEET

INDEX TO SHEETS

TYPE OF CONSTRUCTION:

Conceptual analysis and design of approximately 14 miles of new alignment.

DESIGN DESIGNATION:

ADT (2007)	0
ADT (2010)	400
V	*35 MPH*
e (max)	*0.060*

SPECIFICATION:

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 US Customary Units

PLANS PREPARED FOR

FEDERAL LANDS HIGHWAY
COMMITMENT TO EXCELLENCE

PLANS PREPARED BY

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

WESTERN FEDERAL LANDS HIGHWAY DIVISION
VANCOUVER, WASHINGTON

PLANS PREPARED BY

RPA
ROBERT PECCIA AND ASSOCIATES
HELENA, MONTANA

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 10:30 AM ...\segment l-1\ad0301aa.dgn

acre	ac
aggregate	aggr.
ahead	AHD
Alaska Marine Highway System	AMHS
alignment	alig.
alternate	alt.
and	&
and so forth (et cetera)	etc.
approach	appr.
approximate	approx.
asphalt	asph.
American Association of State Highway and Transportation Officials	AASHTO
at	@
average daily traffic	ADT
back	BK.
British Columbia, Canada	BC
bearing	brg.
beginning	beg.
bench mark	BM
bridge	br.
centerline	CL
clear	clr.
combined	comb.
connection	conn.
corrugated metal pipe	CMP
creek	cr.
Cross functional Team	CFT
cubic inch(es)	cuin, in or in3
cubic foot(feet)	cuft, ft or ft3
cubic yard(s)	cuyd, yd or yd3
culvert	culv.
curve central angle	
degree	^ or deg.
design speed	V
diameter	dia., D, or \
east	E
easting coordinate Based on State Plane Coordinate, Alaska, Zone 1, North American Datum of 1983 (1992), United States Survey Feet	E=
elevation	elv.
elevation based on on State Plane Coordinates, Alaska, Zone, North American Datum of 1988, United States Survey Feet	EL=
embankment	emb.
equation	EQ or eq.
excavation	exc.
Federal Highway Administration	FHWA
foot (feet)	' or ft
GEOPAK Digital Terrain Models	TIN files
inches	" or in
inclusive	incl.
latitude	lat.
left	lt. or LT
length of horizontal curve	L
length of vertical curve	VC
length of spiral	Ls
Light detection and ranging	LIDAR
linear foot (feet)	lnft
longitudinal	long.
lump sum	LPSM
magnetic	mag.
main line	M.L.
maintenance	maint.
material	matl.
maximum	max.
mechanical stabilized earthen	MSE
mile	mi
mile per hour	mph
mile post	M.P.
minute(s) (angular)	'
minimum	min.
miscellaneous	misc.
monument	mon.
mountain(s)	mtn(s).

National	Nat'l
National Forest	NF
National Environmental Policy Act	NEPA
north	N
north coordinae based on State Plane Coordinates, Datum 1983 (1992), United States Survey Feet	N=
number	no.
original ground	OG
pavement	pvmt.
percent	pct. or %
perforate	perf.
point of compound curve	PCC
point of curve	PC
point on curve	POC
point of intersection	PI
point of spiral to curve	PSC or SC
point of curve to spiral	PCS or CS
point on spiral	POS
point of spiral to reverse spiral	SRS
point of spiral to tangent	PST or ST
point on tangent	POT
point of tangent to spiral	PS or TS
point of tangent	PT
project	proj.
quantities	quant.
radius	R
range	R.
reconstruction	reconst.
reinforcement	reinf.
required	reqd.
retaining wall	ret. wall
right	rt. or RT
right-of-way	R/W
river	riv.
road	rd.
roadway	rdwy.
route	rte.
second (angular)	"
second (time)	s
section	sec.
slope protection	sl. prot.
slope ratio (vertical:hoirzontal) ratio of a number of units vertical to a number of units horizontal	1:4
south	S
specification	spec.
spiral central angle	s
square	sq
square foot	ft or ft2
square yard	yd or yd2
standard	std.
State of Alaska Department of Transportation and Public Facilities	ADOT & PF
station 1+00=100 ft	sta.
superelevation rate	e
tangent	tan.
tangent distance	T
tangent distance (spiral curves)	Ts
temporary bench mark	TBM
that is	i.e.
township	T.
typical	typ.
vehicles per hour	vph
vertical point of intersection	VPI
United States Forest Service	USFS
west	W
Western Federal Lands Highway Division	WFLHD
Wrangell, Alaska	WRG

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.2

LINE TO BE CONSTRUCTED

NORTH ARROW

EQUATION

AK / BC BORDER

CONCEPTUAL PROFILE VIEW

MAJOR CULVERTS
GREATER THAN 7 FEET

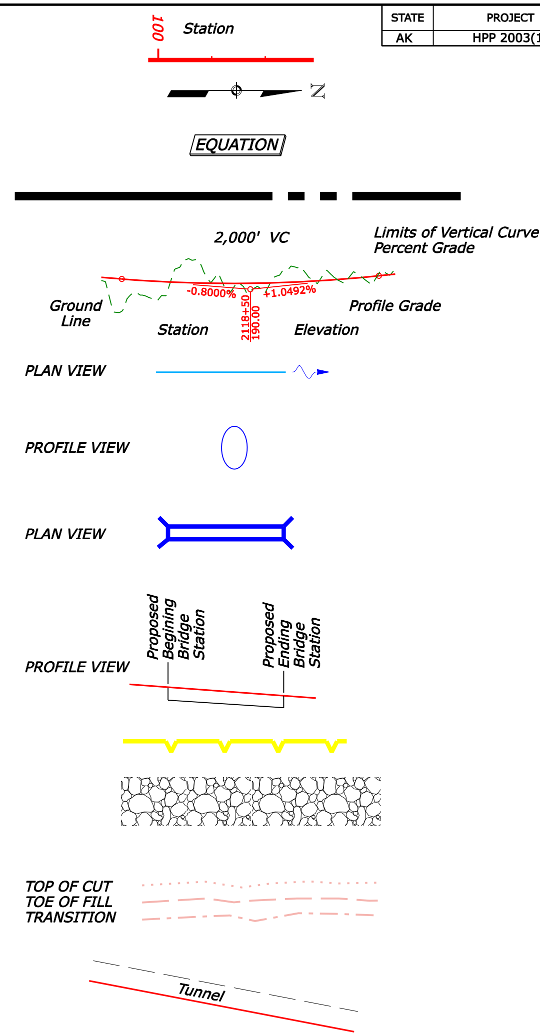
PROPOSED BRIDGE

MSE WALL LINE

REVETMENT WALL LINE

SLOPE STAKE LIMITS

TUNNEL DESIGNATION
ON PROFILE

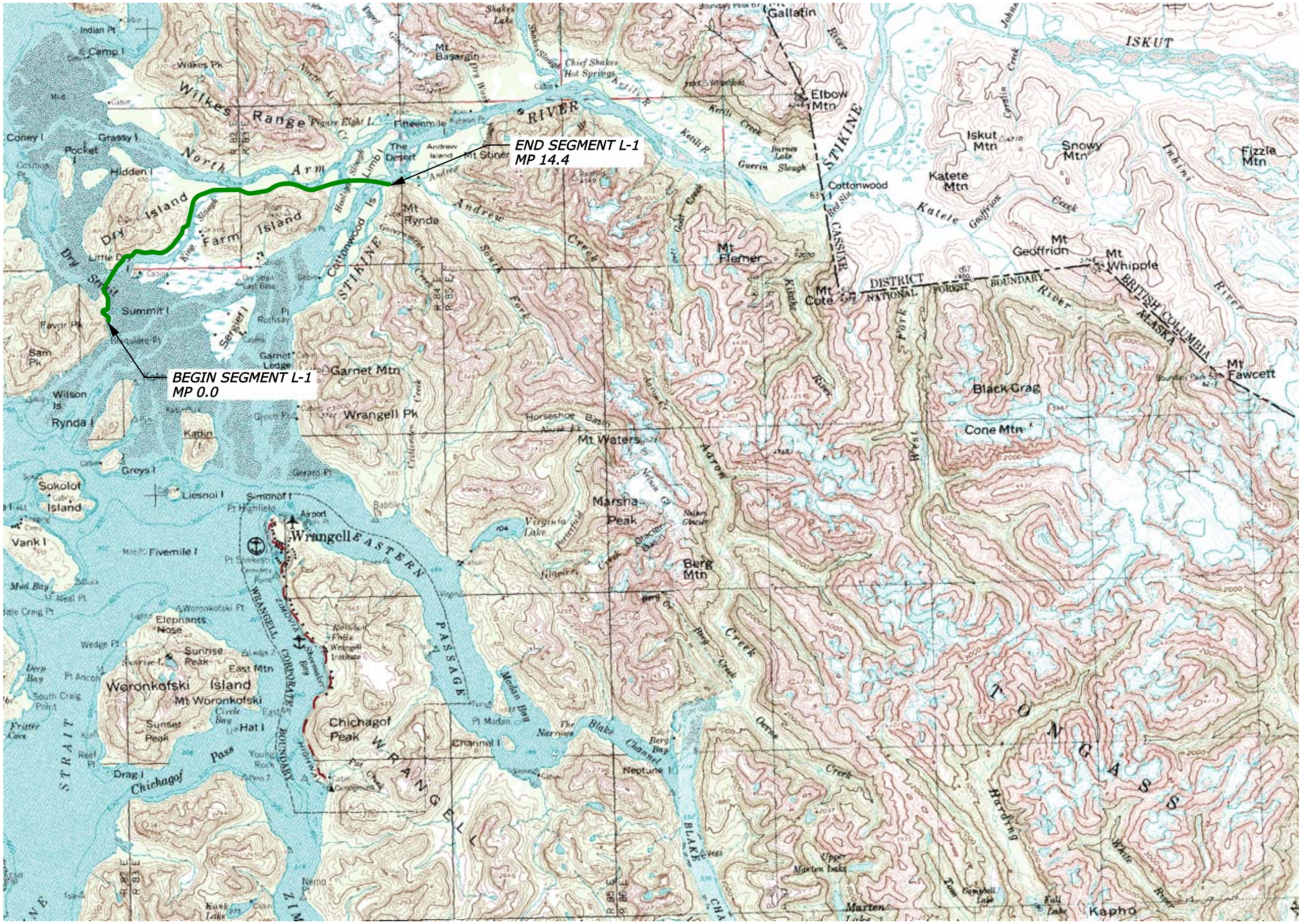


NOTE:
1. Other symbols used in the plans will be shown in a legend on the appropriate plan sheet.
2. Aerial photos taken August 2008.

PLAN SYMBOLS AND ABBREVIATIONS

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 10:30 AM ...\segment I-1\ad0301ab.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	A.3

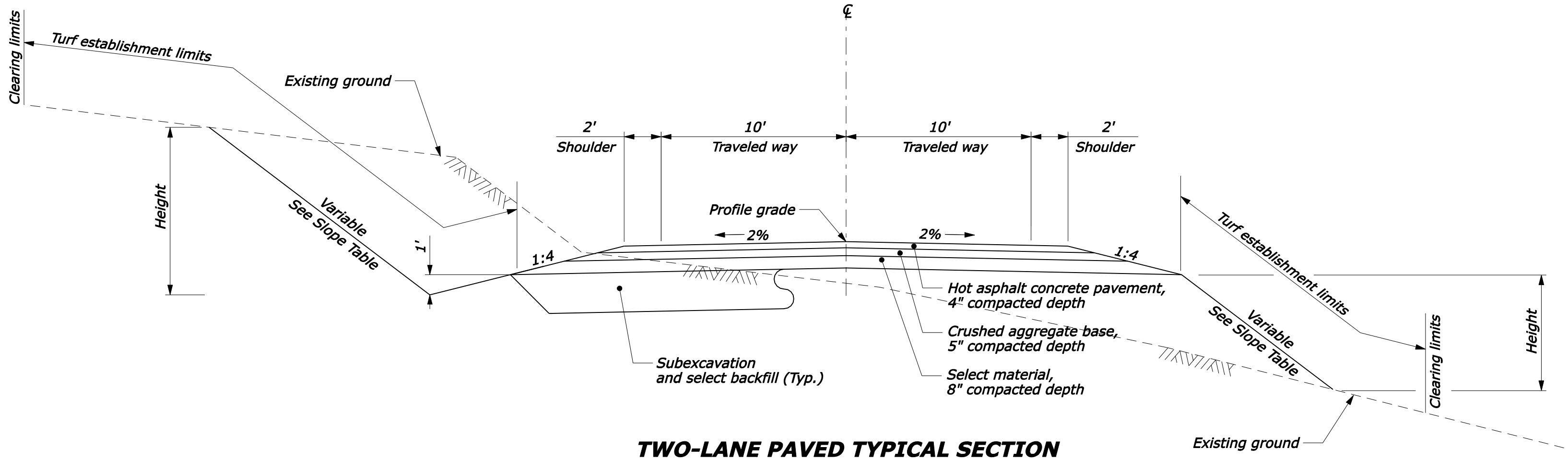


20000 10000 0 20000 40000
SCALE IN FEET

VICINITY MAP

B. WACKER 4/2009 Checked by: B. THOMPSON 4/2009 Designed by: 23-Apr-2009 10:40 AM ...\Segment L-1\ad0301ac.dgn

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.1



TWO-LANE PAVED TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	*SLOPE*	*HEIGHT (ft)*	*SLOPE*
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

TWO-LANE PAVED TYPICAL SECTION

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STATE	PROJECT	SHEET NUMBER
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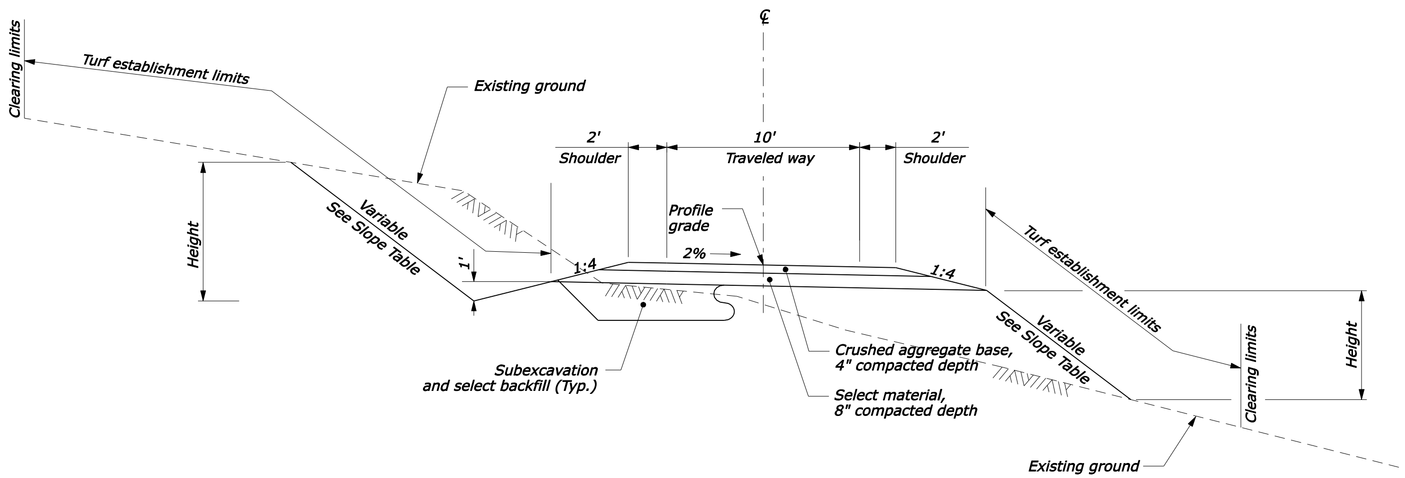
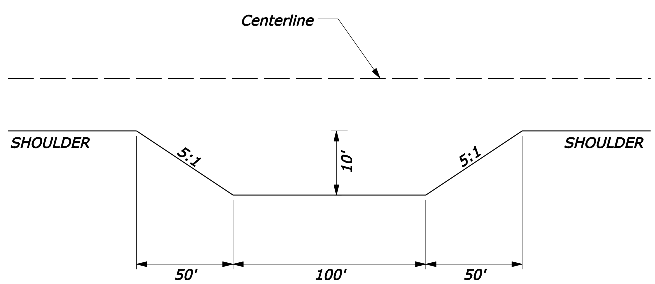


ONE-LANE GRAVEL TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD



TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

ONE-LANE GRAVEL TYPICAL SECTION

4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
23-Apr-2009 10:36 AM
...\Segment L-1\ad0301cb.dgn

4/2009 B. WACKER Checked by: 4/2009 B. THOMPSON Designed by: 23-Apr-2009 10:36 AM ...\Segment L-1\ad0301cc.dgn

STATE	PROJECT	SHEET NUMBER
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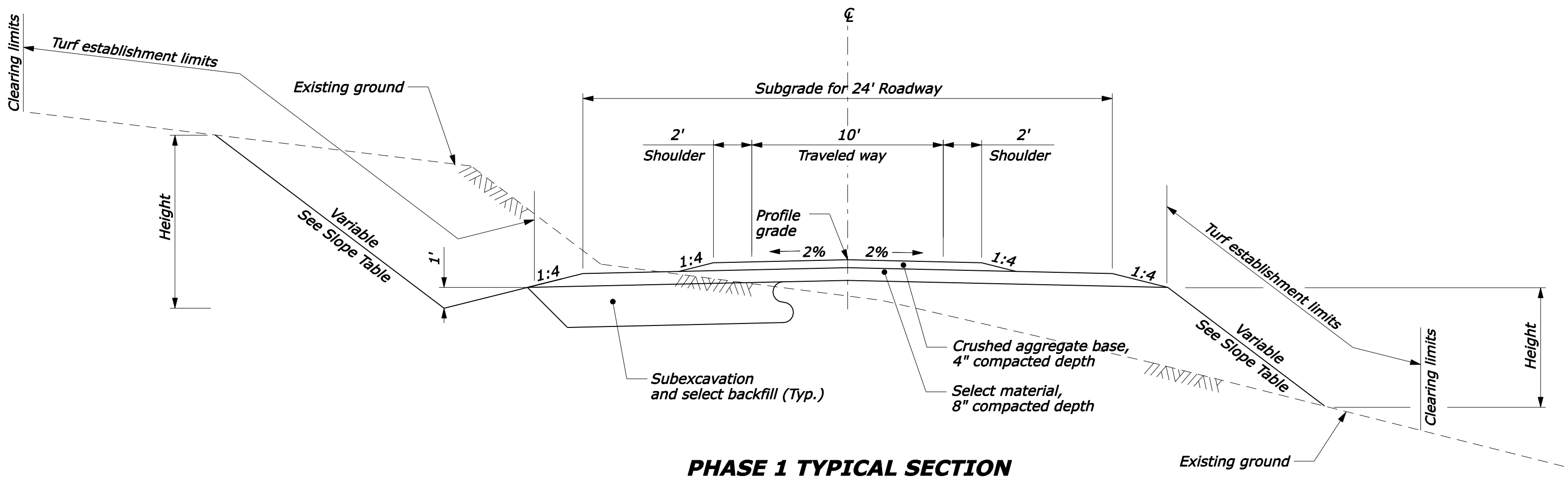
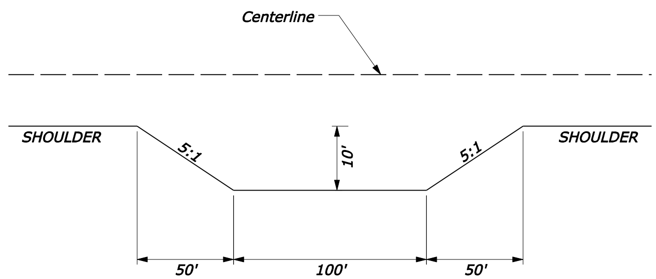


PHASE 1 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

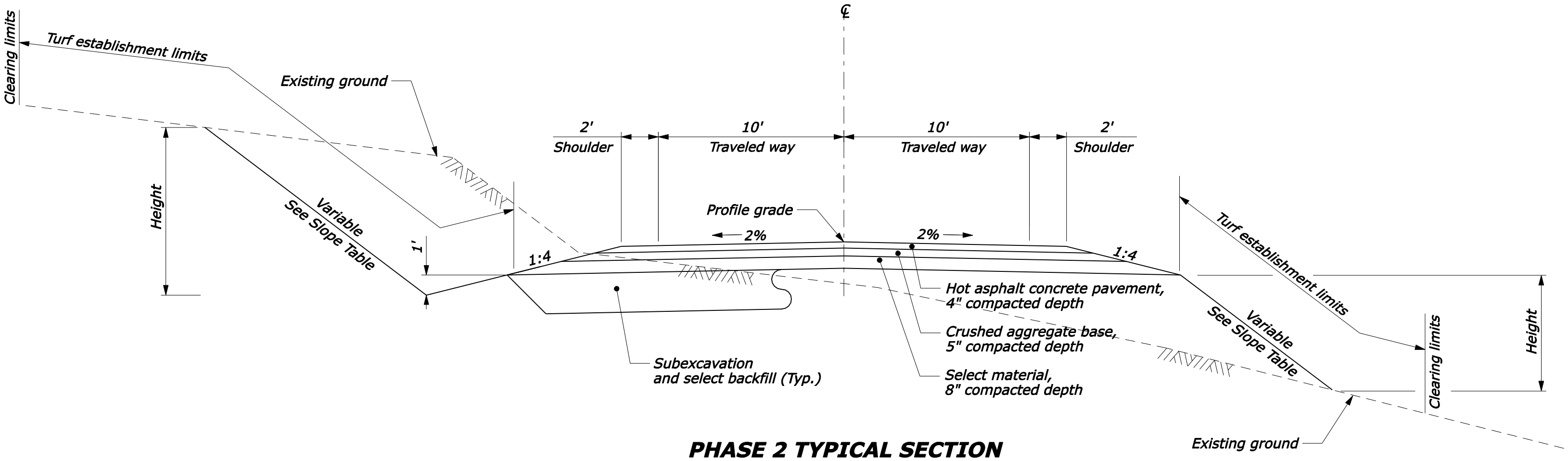


TYPICAL TURNOUT DETAIL (PLAN)
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

PHASE 1
TYPICAL SECTION

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.4



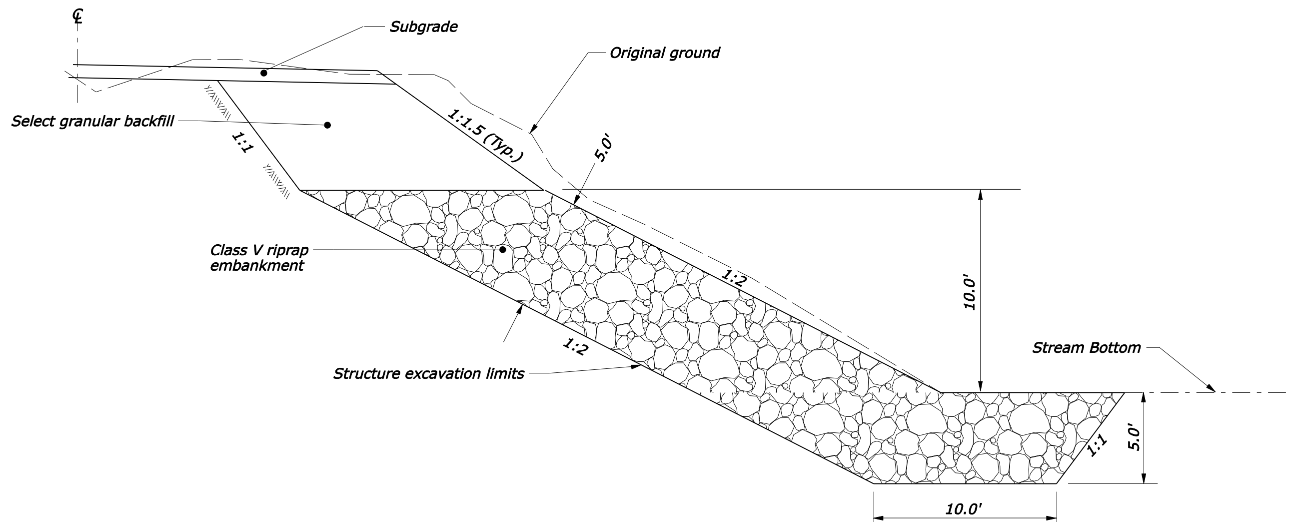
PHASE 2 TYPICAL SECTION
SE ALASKA MID-REGION ACCESS ROAD

CUT SLOPE TABLE		FILL SLOPE TABLE	
HEIGHT (ft)	SLOPE	HEIGHT (ft)	SLOPE
0 - 7	1:3	0 - 2	1:4
7 - 15	1:2	2 - 4	1:3
Over 15	4:1	Over 4	1:1.5

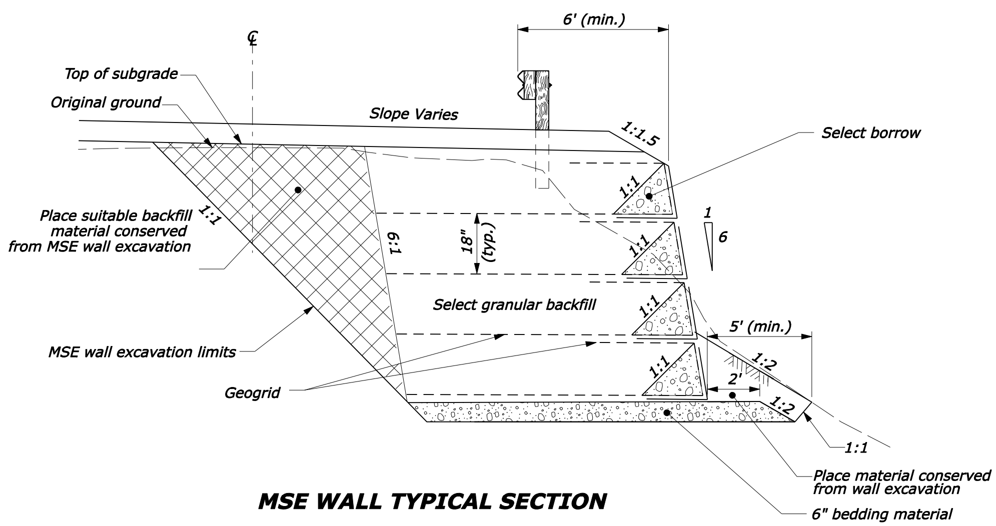
PHASE 2 TYPICAL SECTION

...\Segment L-1\ad0301cd.dgn 23-Apr-2009 10:37 AM Designed by: B. THOMPSON 4/2009 Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	B.5



ROCK REVETMENT TYPICAL SECTION



MSE WALL TYPICAL SECTION

NOTE:

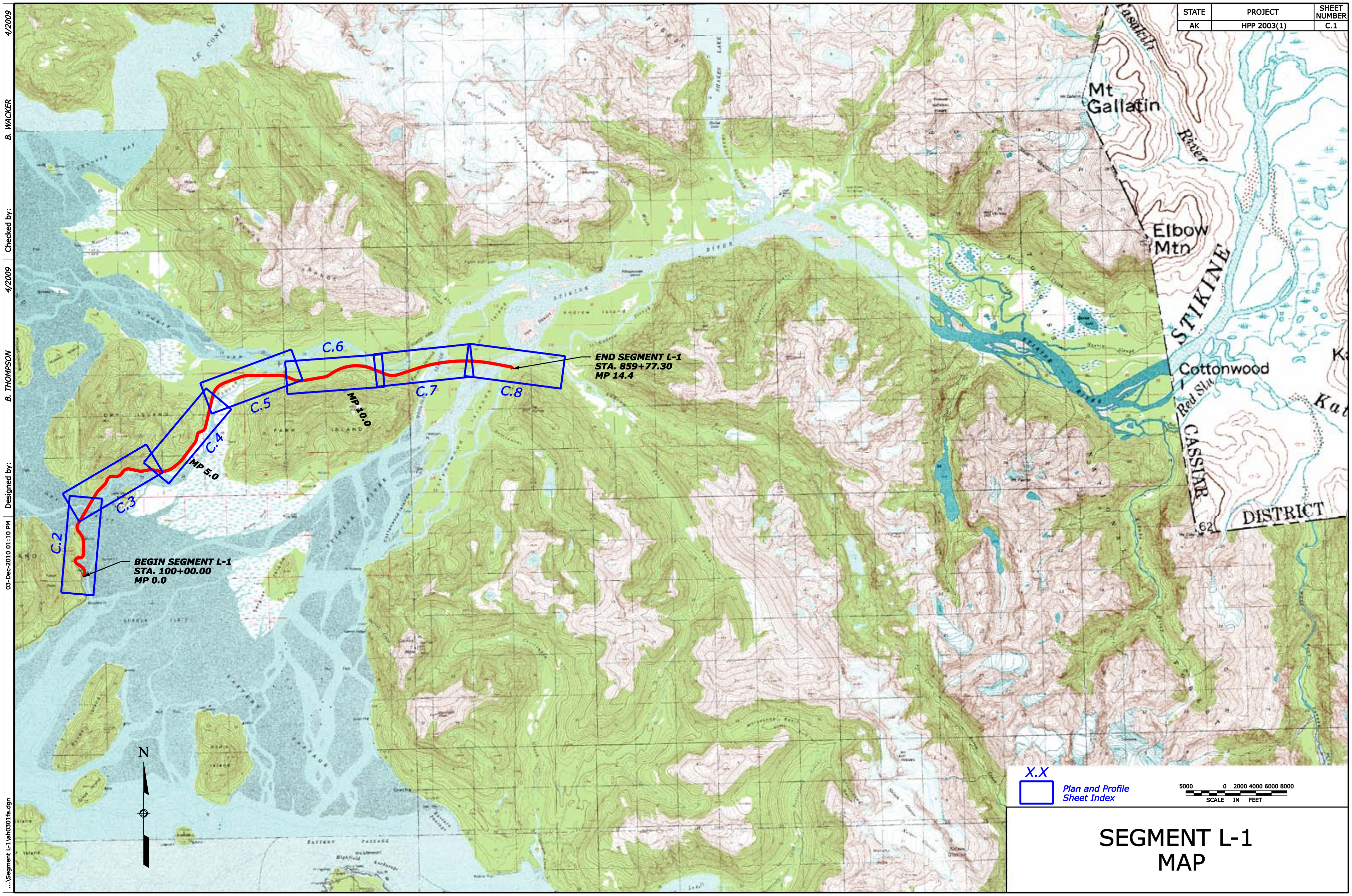
1. Rock revetment typical section from Bradfield River Road Final Scoping and Pre-NEPA Engineering Feasibility Study report dated January 10, 2005.
2. Class V riprap gradation requirements as shown in Table 705-1 of the Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects (FP-03).
3. Location of MSE walls and rock revetment are shown in the plan and profile sheets within Section C.

NO SCALE

MSE WALL & ROCK REVETMENT TYPICAL SECTIONS

...\Segment L-1\ad0301ce.dgn | 23-Apr-2009 10:37 AM | Designed by: B. THOMPSON 4/2009 | Checked by: B. WACKER 4/2009

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.1



SEGMENT L-1 MAP

4/2009 B. WACKER Checked by:

4/2009 B. THOMPSON Designed by:

03-Dec-2010 01:10 PM ...\Segment L-1\ah0301fa.dgn

STATE	PROJECT	SHEET NUMBER
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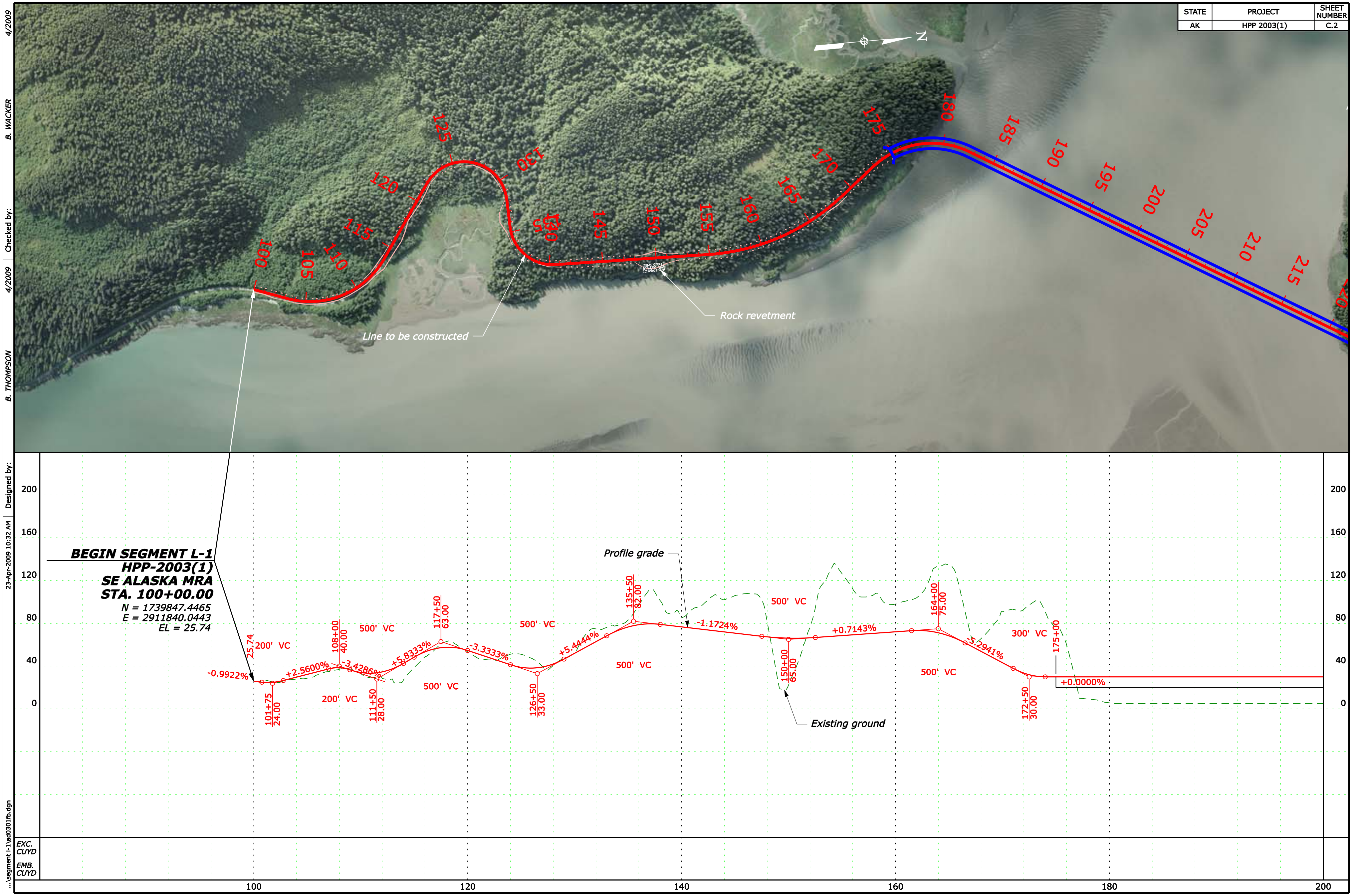

STATE	PROJECT	SHEET NUMBER
AK	HPP 2003(1)	C.3

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Checked by: B. WACKER 4/2009
23-Apr-2009 10:32 AM
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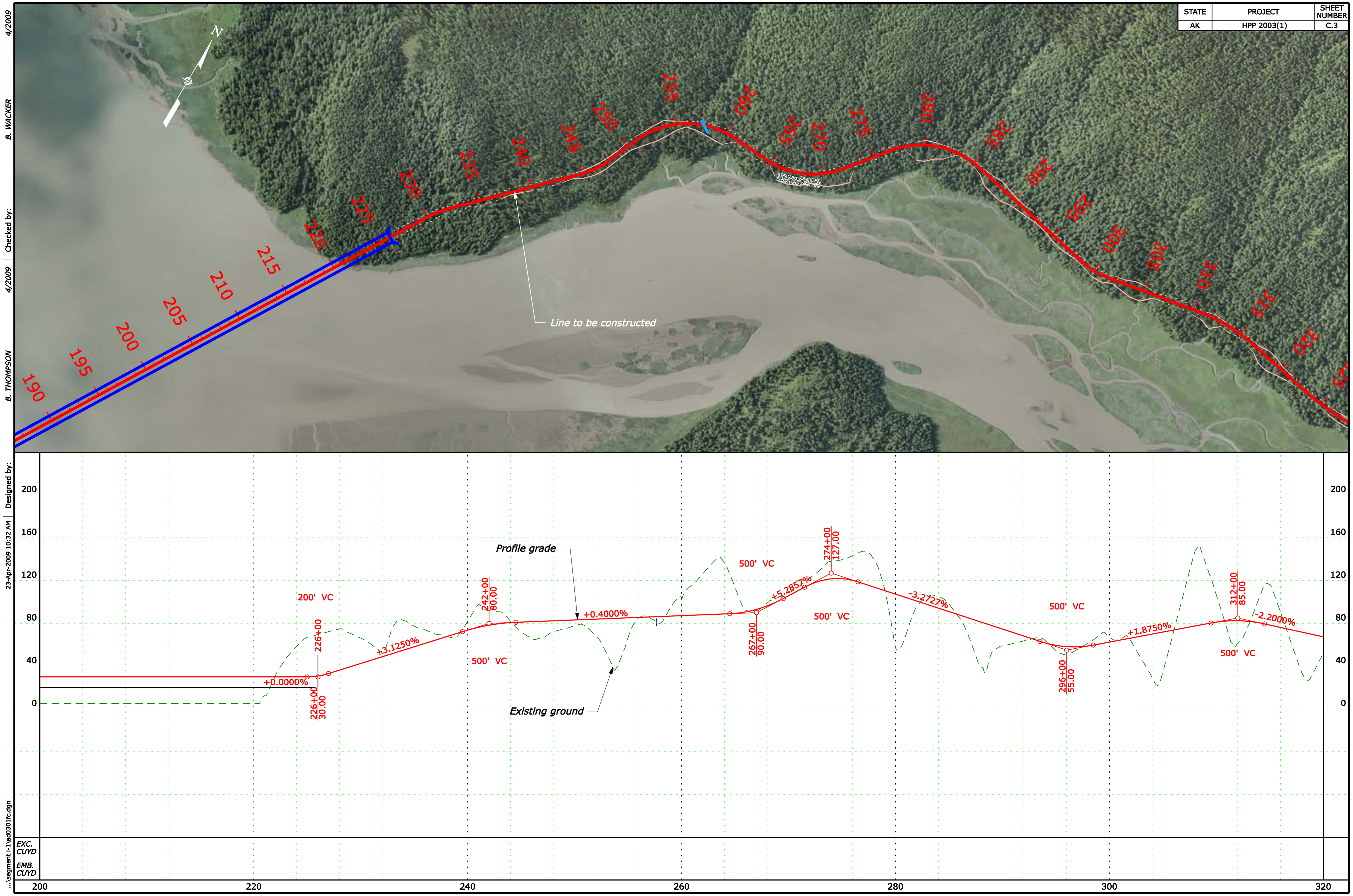

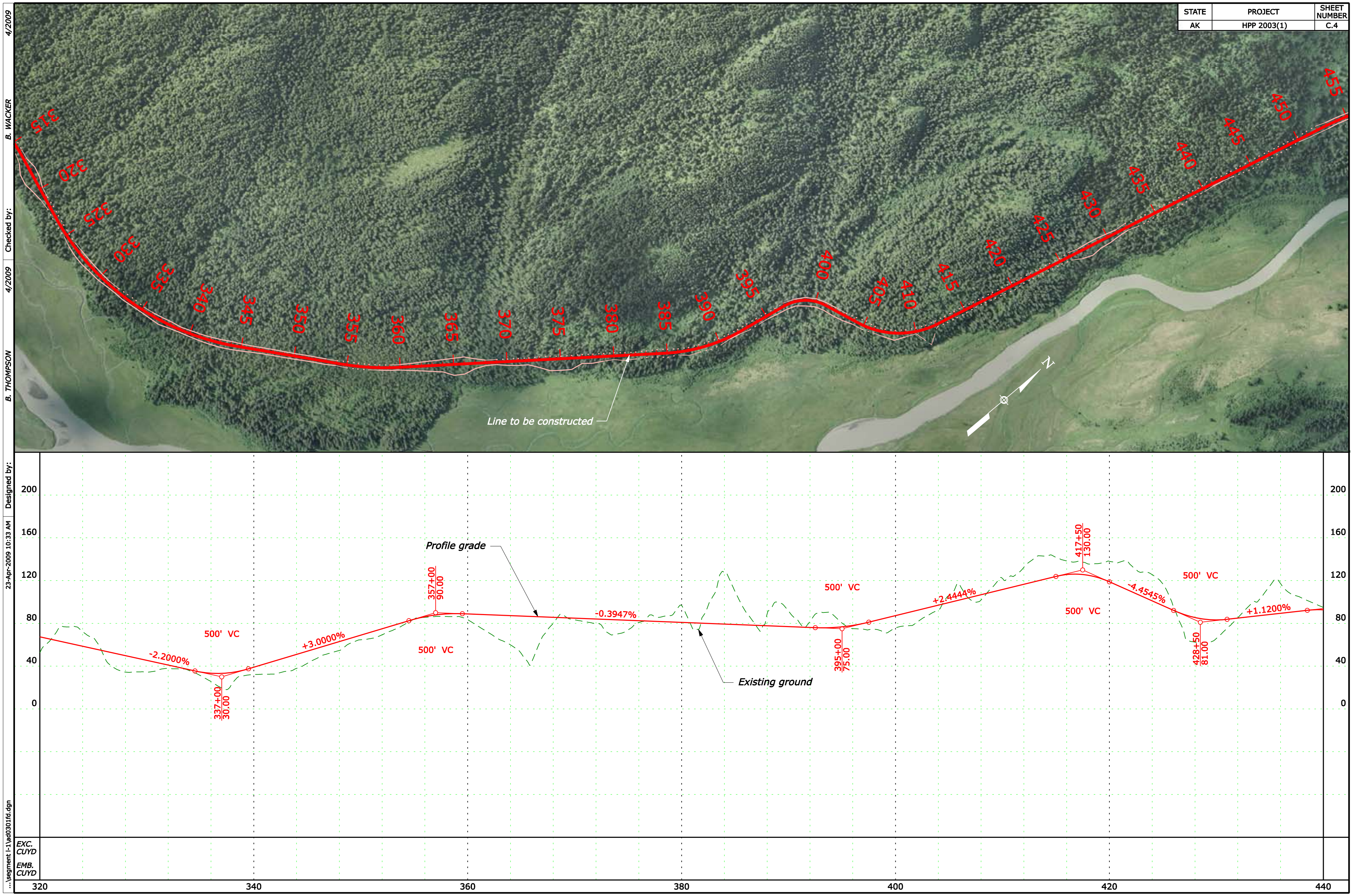
STATE
AK
PROJECT
HPP 2003(1)
SHEET NUMBER
C.4
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
Designed by:
23-Apr-2009 10:33 AM
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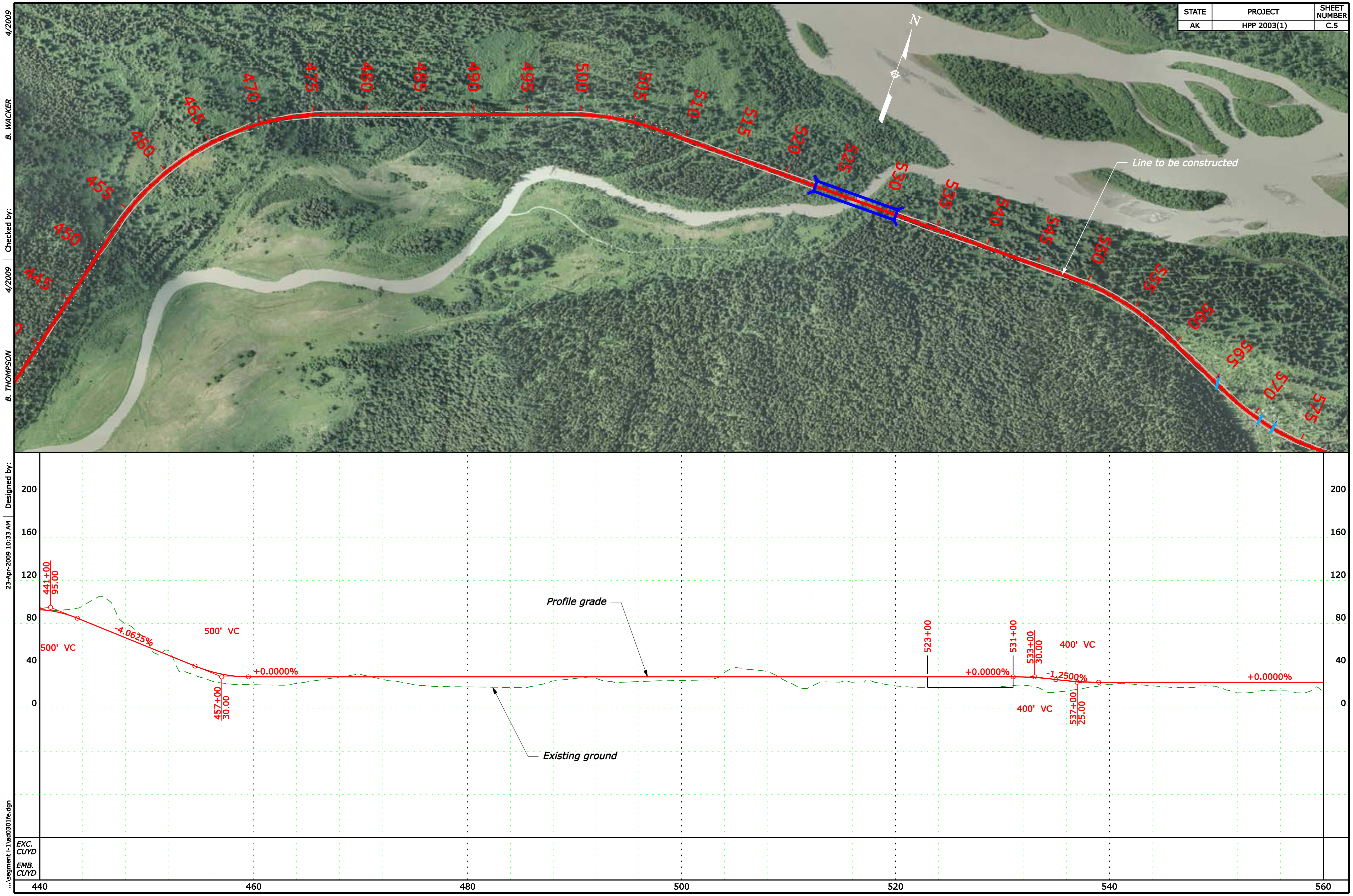
Line to be constructed
N
Profile grade
Existing ground
500' VC
-2.2000%
+3.0000%
-0.3947%
+2.4444%
-4.4545%
+1.1200%
337+00
30.00
357+00
90.00
395+00
75.00
417+50
130.00
428+50
81.00
EXC. CUYD
EMB. CUYD
320
340
360
380
400
420
440
0
40
80
120
160
200



STATE | PROJECT | SHEET NUMBER
AK | HPP 2003(1) | C.5
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Line to be constructed
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450
455
460
465
470
475
480
485
490
495
500
505
510
515
520
525
530
535
540
545
550
555
560
565
570
575
Profile grade
Existing ground
441+00
95.00
500' VC
-4.0625%
500' VC
457+00
30.00
+0.0000%
523+00
531+00
533+00
30.00
400' VC
+0.0000%
-1.2500%
400' VC
537+00
25.00
+0.0000%
200
160
120
80
40
0
EXC. CUYD
EMB. CUYD
440
460
480
500
520
540
560
4/2009
B. WACKER
Checked by:
4/2009
B. THOMPSON
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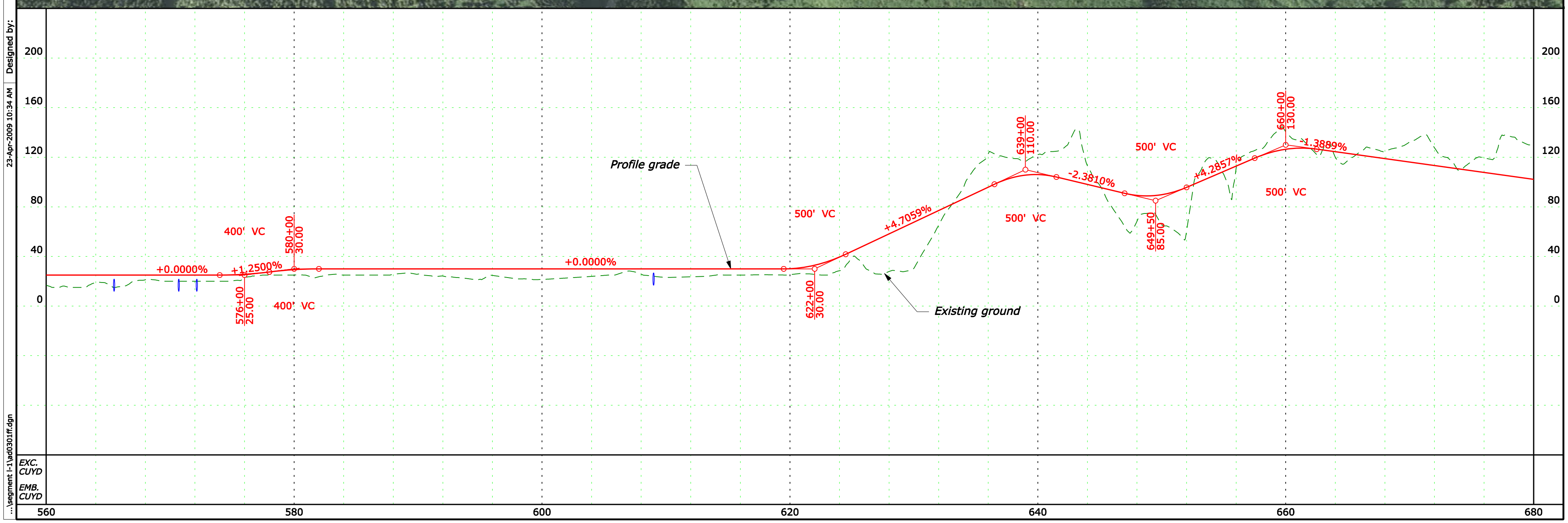

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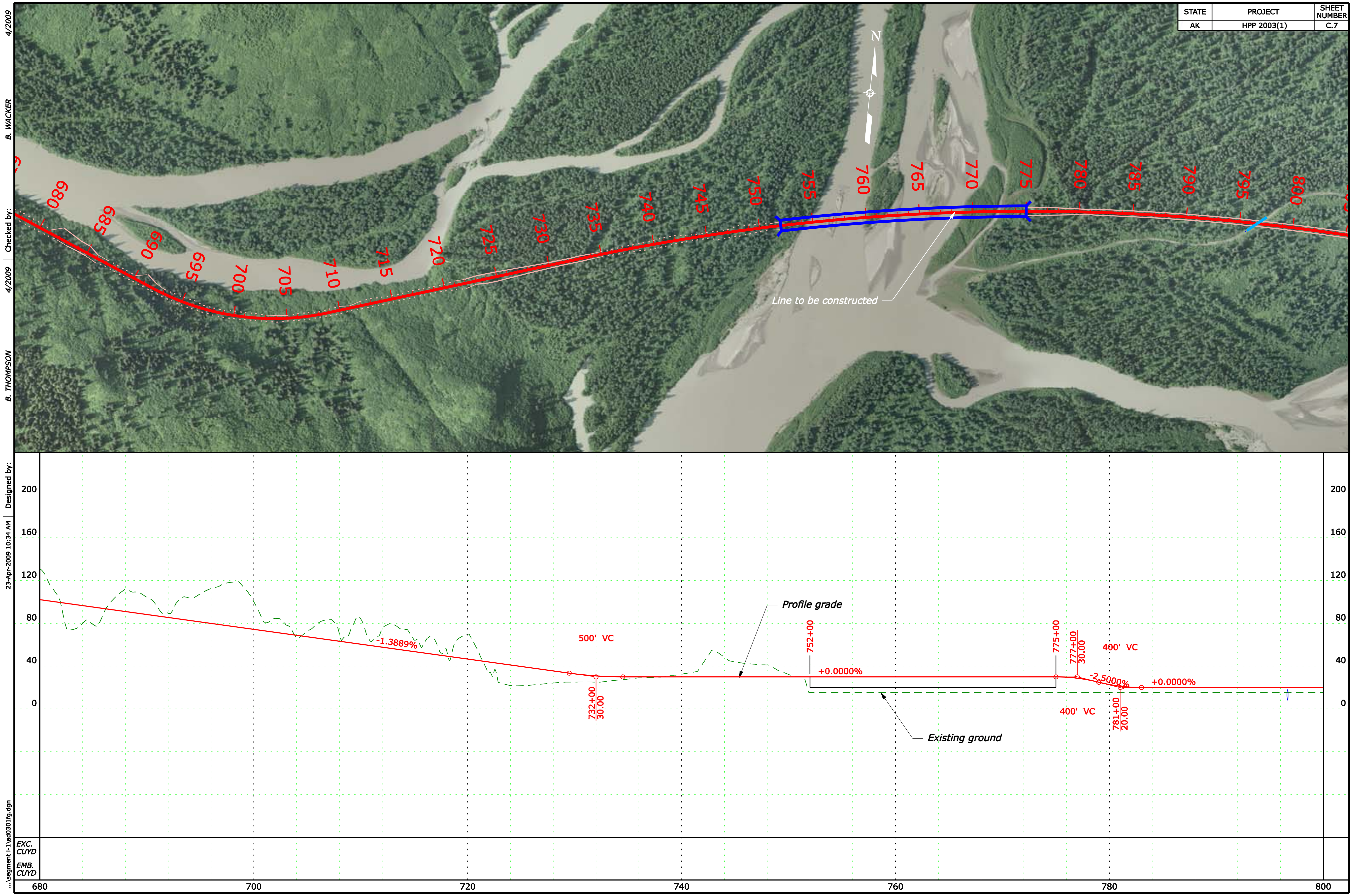

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4/2009
B. THOMPSON
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STATE	PROJECT	SHEET NUMBER
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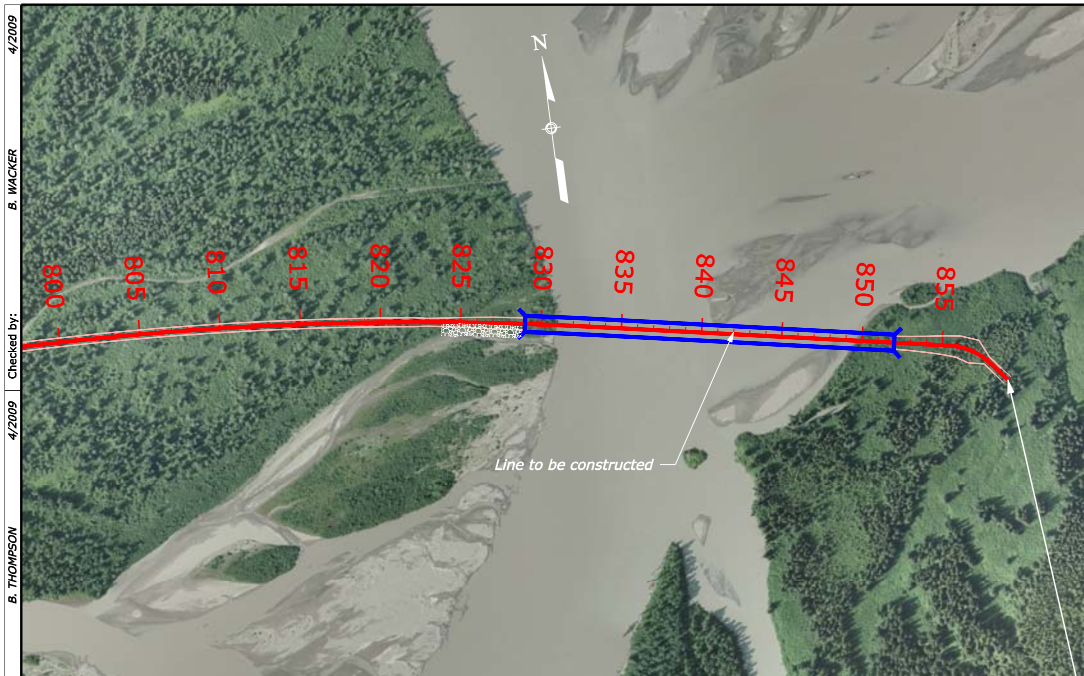

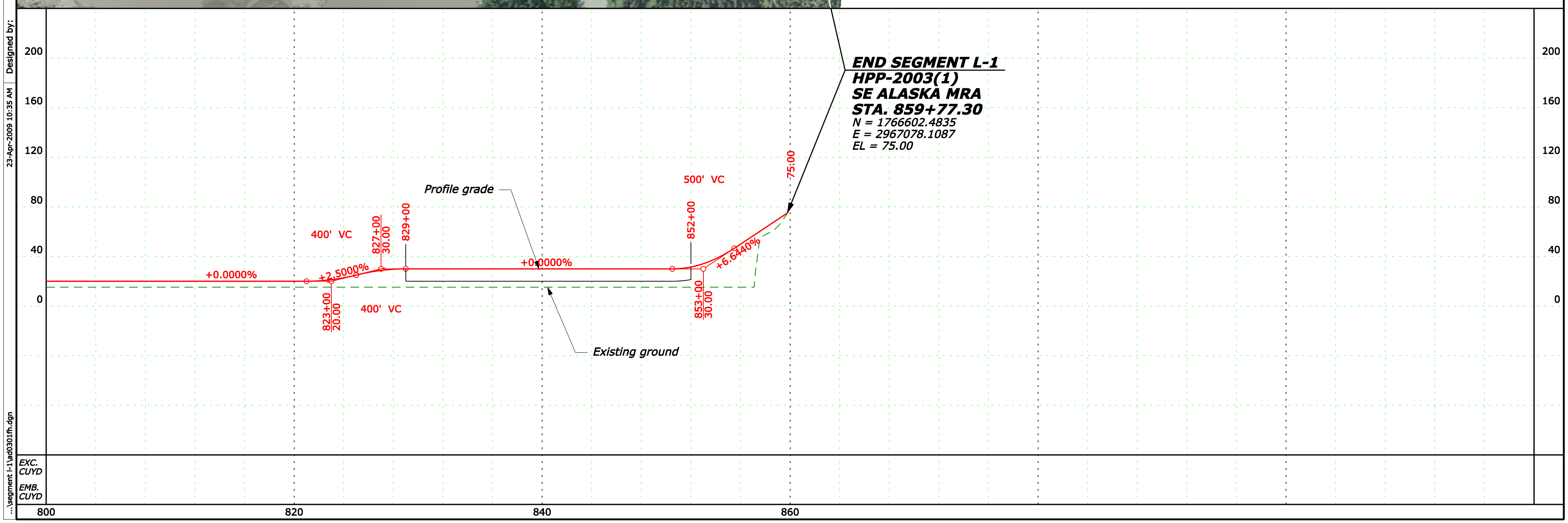

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APPENDIX D

Supporting Estimate Quantities

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APPENDIX D.1

Two-Lane Paved Roadway Estimate Support

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Project: SE Alaska Mid Region Access
Project No.: AK HPP-2003(1)

SE Alaska MRA Cost Estimate, Two-Lane Paved
Summary of Options, Alignments

Work Item Description	Alignment: Aaron Creek Alignment			Wrangell Island Alignment			Fool's Inlet Alignment		South Stikine River Alignment			Limb Island Alignment	Bradfield Canal Alignment	Iskut River Alignment		
	Segment A-1a (Pass Option)	Segment A-1b (Tunnel Option)	Segment A-2	Segment W-1	Segment W-2	Segment W-3	Segment F-1	Segment F-2	Segment S-1	Segment S-2	Segment S-3	Segment L-1	Segment B-1	Segment I-1	Segment I-2	Segment I-3
AK LENGTH (Mile)	30.37	29.77	5.21	1.72	3.20	11.08	6.42	4.06	21.35	17.65	11.53	14.39	29.15			
BC LENGTH (Mile)	10.21	10.21							10.48				17.29	24.08	20.33	26.45
DIVISION 1 PROJECT REQUIREMENTS	$ 30,011,942	$ 20,423,530	$ 3,482,251	$ 435,570	$ 321,945	$ 1,099,782	$ 630,941	$ 949,445	$ 12,432,393	$ 5,775,591	$ 5,314,944	$ 16,582,517	$ 14,279,535	$ -	$ -	$ -
DIVISION 2 EARTHWORK	$ 57,170,633	$ 35,740,122	$ 4,478,896	$ 1,449,416	$ 195,395	$ 727,396	$ 392,302	$ 1,767,103	$ 37,907,314	$ 15,874,529	$ 7,131,426	$ 15,942,235	$ 34,783,754	$ -	$ -	$ -
DIVISION 3 UTILITIES & RELOCATIONS	$ 1,761,460	$ 1,726,660	$ 302,180	$ 99,760	$ -	$ -	$ -	$ 235,480	$ 1,238,300	$ 1,023,700	$ 668,740	$ 834,620	$ 3,429,600	$ -	$ -	$ -
DIVISION 4 BASES & PAVEMENT	$ 17,152,500	$ 16,145,000	$ 3,067,500	$ 1,040,000	$ 2,027,500	$ 6,877,500	$ 3,965,000	$ 2,557,500	$ 12,722,500	$ 10,785,000	$ 6,865,000	$ 7,685,000	$ 15,069,725	$ -	$ -	$ -
DIVISION 5 TUNNEL	$ -	$ 74,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 82,000,000	$ -	$ -	$ -
DIVISION 6 STRUCTURES	$ 147,549,930	$ 94,690,010	$ 17,308,000	$ -	$ -	$ -	$ -	$ 1,119,850	$ 36,569,720	$ 9,754,900	$ 22,023,000	$ 100,346,670	$ 47,646,500	$ -	$ -	$ -
DIVISION 7 INCIDENTAL CONSTRUCTION	$ 14,572,550	$ 14,067,550	$ 2,568,150	$ 924,800	$ 265,500	$ 892,700	$ 516,500	$ 1,998,900	$ 10,296,250	$ 8,384,750	$ 5,585,950	$ 6,771,850	$ 13,667,250	$ -	$ -	$ -
DIVISION 8 ROADWAY FINISHES	$ 1,341,315	$ 1,174,515	$ 167,595	$ 36,840	$ 62,400	$ 216,060	$ 125,190	$ 79,170	$ 1,007,025	$ 961,275	$ 505,335	$ 638,805	$ 1,970,625	$ -	$ -	$ -
DIVISION 9 PORT DEVELOPMENT	$ 30,000,000	$ 30,000,000	$ -	$ -	$ -	$ -	$ -	$ 15,000,000	$ -	$ 30,000,000	$ -	$ -	$ 15,000,000	$ -	$ -	$ 20,000,000
DIVISION 10 CONSTRUCTION CAMPS	$ 23,086,110	$ 15,710,408	$ 2,678,655	$ 335,054	$ 247,650	$ 845,986	$ 485,339	$ 730,342	$ 9,563,380	$ 4,442,763	$ 4,088,419	$ 12,755,783	$ 10,984,258	$ -	$ -	$ -
SUBTOTAL ROADWAY AND BRIDGE WORK (AK)	**$ 322,646,440**	**$ 303,677,795**	**$ 34,053,227**	**$ 4,321,440**	**$ 3,120,390**	**$ 10,659,424**	**$ 6,115,272**	**$ 24,437,790**	**$ 121,736,882**	**$ 87,002,508**	**$ 52,182,814**	**$ 161,557,480**	**$ 238,831,247**	**$ -**	**$ -**	**$ 20,000,000**
CONTINGENCIES: 25%	$ 80,661,610	$ 75,919,449	$ 8,513,307	$ 1,080,360	$ 780,098	$ 2,664,856	$ 1,528,818	$ 6,109,448	$ 30,434,220	$ 21,750,627	$ 13,045,703	$ 40,389,370	$ 59,707,812	$ -	$ -	$ 5,000,000
TOTAL CONSTRUCTION COST (AK)	**$ 403,308,050**	**$ 379,597,244**	**$ 42,566,534**	**$ 5,401,800**	**$ 3,900,488**	**$ 13,324,280**	**$ 7,644,090**	**$ 30,547,238**	**$ 152,171,102**	**$ 108,753,135**	**$ 65,228,517**	**$ 201,946,850**	**$ 298,539,059**	**$ -**	**$ -**	**$ 25,000,000**
CONSTRUCTION ENGINEERING SERVICES: 7%	$ 28,231,563	$ 26,571,807	$ 2,979,657	$ 378,126	$ 273,034	$ 932,700	$ 535,086	$ 2,138,307	$ 10,651,977	$ 7,612,719	$ 4,565,996	$ 14,136,279	$ 20,897,734	$ -	$ -	$ 1,750,000
EIS W/ SUPPORTING ENGINEERING: 5%	$ 20,165,402	$ 18,979,862	$ 2,128,327	$ 270,090	$ 195,024	$ 666,214	$ 382,205	$ 1,527,362	$ 7,608,555	$ 5,437,657	$ 3,261,426	$ 10,097,342	$ 14,926,953	$ -	$ -	$ 1,250,000
DESIGN ENGINEERING & ADMINISTRATION: 8%	$ 32,264,644	$ 30,367,779	$ 3,405,323	$ 432,144	$ 312,039	$ 1,065,942	$ 611,527	$ 2,443,779	$ 12,173,688	$ 8,700,251	$ 5,218,281	$ 16,155,748	$ 23,883,125	$ -	$ -	$ 2,000,000
TOTAL CONSTRUCTION & ENGINEERING (AK)	**$ 483,969,659**	**$ 455,516,692**	**$ 51,079,841**	**$ 6,482,160**	**$ 4,680,585**	**$ 15,989,136**	**$ 9,172,908**	**$ 36,656,686**	**$ 182,605,322**	**$ 130,503,762**	**$ 78,274,220**	**$ 242,336,219**	**$ 358,246,871**	**$ -**	**$ -**	**$ 30,000,000**
CONSTRUCTION & ENGINEERING COST $/MILE (AK)	$ 14,574,506	$ 10,646,063	$ 9,885,893	$ 3,800,103	$ 1,474,872	$ 1,455,088	$ 1,440,709	$ 3,515,925	$ 8,624,217	$ 4,884,776	$ 6,845,317	$ 16,980,937	$ 7,773,309	$ -	$ -	$ -
SUBTOTAL ROADWAY AND BRIDGE WORK (BC)	**$ 69,762,963**	**$ 69,762,963**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 61,289,644**	**$ -**	**$ -**	**$ -**	**$ 88,859,846**	**$ 23,165,971**	**$ 115,920,887**	**$ 160,816,895**
CONTINGENCIES: 25%	$ 17,440,741	$ 17,440,741	$ -	$ -	$ -	$ -	$ -	$ -	$ 15,322,411	$ -	$ -	$ -	$ 22,214,961	$ 5,791,493	$ 28,980,222	$ 40,204,224
TOTAL CONSTRUCTION COST (BC)	**$ 87,203,704**	**$ 87,203,704**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 76,612,055**	**$ -**	**$ -**	**$ -**	**$ 111,074,807**	**$ 28,957,464**	**$ 144,901,109**	**$ 201,021,119**
CONSTRUCTION ENGINEERING SERVICES: 7%	$ 6,104,259	$ 6,104,259	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,362,844	$ -	$ -	$ -	$ 7,775,236	$ 2,027,022	$ 10,143,078	$ 14,071,478
EIS W/ SUPPORTING ENGINEERING: 5%	$ 4,360,185	$ 4,360,185	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,830,603	$ -	$ -	$ -	$ 5,553,740	$ 1,447,873	$ 7,245,055	$ 10,051,056
DESIGN ENGINEERING & ADMINISTRATION: 8%	$ 6,976,296	$ 6,976,296	$ -	$ -	$ -	$ -	$ -	$ -	$ 6,128,964	$ -	$ -	$ -	$ 8,885,985	$ 2,316,597	$ 11,592,089	$ 16,081,690
TOTAL CONSTRUCTION & ENGINEERING (BC)	**$ 104,644,444**	**$ 104,644,444**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 91,934,466**	**$ -**	**$ -**	**$ -**	**$ 133,289,768**	**$ 34,748,956**	**$ 173,881,331**	**$ 241,225,343**
CONSTRUCTION & ENGINEERING COST $/MILE (BC)	$ 10,249,211	$ 10,249,211	$ -	$ -	$ -	$ -	$ -	$ -	$ 8,772,373	$ -	$ -	$ -	$ 7,709,067	$ 1,443,063	$ 8,552,943	$ 8,624,218
TOTAL CONSTRUCTION & ENGINEERING	**$ 588,614,102**	**$ 560,161,135**	**$ 51,079,841**	**$ 6,482,160**	**$ 4,680,585**	**$ 15,989,136**	**$ 9,172,908**	**$ 36,656,686**	**$ 274,539,788**	**$ 130,503,762**	**$ 78,274,220**	**$ 242,336,219**	**$ 491,536,639**	**$ 34,748,956**	**$ 173,881,331**	**$ 271,225,343**

Note: Bradfield River BC cost developed from Bradfield River AK cost per mile excluding the tunnel and ferry terminal
Per mile costs for all alignments were calculated excluding both the tunnel and ferry terminal costs, as well as the tunnel length.

Project: SE Alaska Mid Region Access
Project No.: AK HPP-2003(1)

Bradfield Canal Corridor Stages, Two-Lane Paved

Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile*
Stage 1 (Ultimate)	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 34,748,956	$ 34,748,956	$ 1,443,063
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 173,881,331	$ 173,881,331	$ 8,552,943
	Bradfield Canal Alignment (Segment B-1)	46.44	$ 358,246,871	$ 133,289,768	$ 491,536,639	$ 10,584,338
	Wrangell Island Alignment (Segment W-3)	11.08	$ 15,989,136	$ -	$ 15,989,136	$ 1,443,063
	Fool's Inlet Alignment (Segment F-1)	6.42	$ 9,172,908	$ -	$ 9,172,908	$ 1,428,802
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 36,656,686	$ -	$ 36,656,686	$ 9,028,740
Stage 1 Subtotal		**112.41**	**$ 420,065,601**	**$ 341,920,055**	**$ 761,985,656**	**$ 6,778,629**
Stage 1 Upfront O&M Costs		**-**	**$ 5,380,000**	**$ 3,000,000**	**$ 8,380,000**	**-**
Bradfield Canal Corridor Total		**112.41**	**$ 425,445,601**	**$ 344,920,055**	**$ 770,365,656**	**$ 6,853,177**

*Average cost per mile includes tunnel, port development, and O&M as applicable

Stikine River Corridor Stages, Two-Lane Paved

Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile*
Stage 1	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 34,748,956	$ 34,748,956	$ 1,443,063
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 173,881,331	$ 173,881,331	$ 8,552,943
	Iskut River Alignment (Segment I-3)	26.45	$ 30,000,000	$ 241,225,343	$ 271,225,343	$ 10,254,266
Stage 1 Subtotal		**70.86**	**$ 30,000,000**	**$ 449,855,630**	**$ 479,855,630**	**$ 6,771,883**
Stage 1 Upfront O&M Costs		**-**	**$ -**	**$ 2,500,000**	**$ 2,500,000**	**-**
Stage 2	South Stikine River Alignment (Segment S-1)	31.83	$ 182,605,322	$ 91,934,466	$ 274,539,788	$ 8,625,190
	South Stikine River Alignment (Segment S-2)	17.65	$ 130,503,762	$ -	$ 130,503,762	$ 7,393,981
Stage 2 Subtotal		**49.48**	**$ 313,109,083**	**$ 91,934,466**	**$ 405,043,549**	**$ 8,186,005**
Stage 2 Upfront O&M Costs		**-**	**$ 2,875,000**	**$ 500,000**	**$ 3,375,000**	**-**
Stage 3	Wrangell Island Alignment (Segment W-3)	11.08	$ 15,989,136	$ -	$ 15,989,136	$ 1,443,063
	Fool's Inlet Alignment (Segment F-1)	6.42	$ 9,172,908	$ -	$ 9,172,908	$ 1,428,802
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 36,656,686	$ -	$ 36,656,686	$ 9,028,740
Stage 3 Subtotal		**21.56**	**$ 61,818,730**	**$ -**	**$ 61,818,730**	**$ 2,867,288**
Stage 3 Upfront O&M Costs		**-**	**$ 2,505,000**	**$ -**	**$ 2,505,000**	**-**
Stage 4	Limb Island Alignment (Segment L-1)	14.39	$ 242,336,219	$ -	$ 242,336,219	$ 16,840,599
Stage 4 Subtotal		**14.39**	**$ 242,336,219**	**$ -**	**$ 242,336,219**	**$ 16,840,599**
Stage 4 Upfront O&M Costs		**-**	**$ 290,000**	**$ -**	**$ 290,000**	**-**
Stage 5 (Ultimate)	South Stikine River Alignment (Segment S-3)	11.53	$ 78,274,220	$ -	$ 78,274,220	$ 6,788,744
	Wrangell Island Alignment (Segment W-1)	1.72	$ 6,482,160	$ -	$ 6,482,160	$ 3,768,698
	Wrangell Island Alignment (Segment W-2)	3.20	$ 4,680,585	$ -	$ 4,680,585	$ 1,462,683
Stage 5 Subtotal		**16.45**	**$ 89,436,965**	**$ -**	**$ 89,436,965**	**$ 5,436,898**
Stage 5 Upfront O&M Costs		**-**	**$ -**	**$ -**	**$ -**	**-**
Stikine River Corridor Total		**172.74**	**$ 742,370,996**	**$ 544,790,096**	**$ 1,287,161,092**	**$ 7,451,436**

*Average cost per mile includes tunnel, port development, and O&M as applicable

Aaron Creek Corridor Stages, Two-Lane Paved

Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile*
Stage 1	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 34,748,956	$ 34,748,956	$ 1,443,063
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 173,881,331	$ 173,881,331	$ 8,552,943
	Iskut River Alignment (Segment I-3)	26.45	$ 30,000,000	$ 241,225,343	$ 271,225,343	$ 10,254,266
Stage 1 Subtotal		**70.86**	**$ 30,000,000**	**$ 449,855,630**	**$ 479,855,630**	**$ 6,771,883**
Stage 1 Upfront O&M Costs		**-**	**$ -**	**$ 2,500,000**	**$ 2,500,000**	**-**
Stage 2	Aaron Creek Pass Alignment (Segment A-1a)	40.58	$ 483,969,659	$ 104,644,444	$ 588,614,102	$ 14,505,030
	Aaron Creek Tunnel Alignment (Segment A-1b)	39.98	$ 455,516,692	$ 104,644,444	$ 560,161,135	$ 14,011,034
	Wrangell Island Alignment (Segment W-2)	3.20	$ 4,680,585	$ -	$ 4,680,585	$ 1,462,683
	Wrangell Island Alignment (Segment W-3)	11.08	$ 15,989,136	$ -	$ 15,989,136	$ 1,443,063
Stage 2 Subtotal (Pass)		**54.86**	**$ 504,639,380**	**$ 104,644,444**	**$ 609,283,823**	**$ 11,106,158**
Stage 2 Subtotal (Tunnel)		**54.26**	**$ 476,186,413**	**$ 104,644,444**	**$ 580,830,856**	**$ 10,704,586**
Stage 2 Upfront O&M Costs (Pass)		**-**	**$ 3,000,000**	**$ 500,000**	**$ 3,500,000**	**-**
Stage 2 Upfront O&M Costs (Tunnel)		**-**	**$ 3,000,000**	**$ 500,000**	**$ 3,500,000**	**-**
Stage 3	Fool's Inlet Alignment (Segment F-1)	6.42	$ 9,172,908	$ -	$ 9,172,908	$ 1,428,802
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 36,656,686	$ -	$ 36,656,686	$ 9,028,740
Stage 3 Subtotal		**10.48**	**$ 45,829,594**	**$ -**	**$ 45,829,594**	**$ 4,373,053**
Stage 3 Upfront O&M Costs		**-**	**$ 290,000**	**$ -**	**$ 290,000**	**-**
Stage 4 (Ultimate)	Aaron Creek Alignment (Segment A-2)	5.21	$ 51,079,841	$ -	$ 51,079,841	$ 9,804,192
	Wrangell Island Alignment (Segment W-1)	1.72	$ 6,482,160	$ -	$ 6,482,160	$ 3,768,698
Stage 4 Subtotal		**6.93**	**$ 57,562,001**	**$ -**	**$ 57,562,001**	**$ 8,306,205**
Stage 4 Upfront O&M Costs		**-**	**$ 2,215,000**	**$ -**	**$ 2,215,000**	**-**
Aaron Creek Corridor (Pass) Total		**143.13**	**$ 643,535,974**	**$ 557,500,074**	**$ 1,201,036,048**	**$ 8,391,225**
Aaron Creek Corridor (Tunnel) Total		**142.53**	**$ 615,083,007**	**$ 557,500,074**	**$ 1,172,583,081**	**$ 8,226,921**

*Average cost per mile includes tunnel, port development, and O&M as applicable

Project: SE Alaska Mid Region Access
Project No.: AK HPP-2003(1)

SE Alaska MRA Corridors Summary, Two-Lane Paved							
Corridor	**Stage**	**Length (miles)**	**Hovercraft Ferry Terminals**	**Conventional Ferry Terminals**	**AK Cost**	**BC Cost**	**Total Cost**
Bradfield Canal	1 (Ultimate)	112.4	0	2	$ 425,445,601	$ 344,920,055	$ 770,365,656
Total		**112.4**	**0**	**2**	**$ 425,445,601**	**$ 344,920,055**	**$ 770,365,656**
Stikine River	1	70.9	3	0	$30,000,000	$452,355,630	$482,355,630
	2	49.5	0	2	$315,984,083	$92,434,466	$408,418,549
	3	21.6	0	1	$64,323,730	$0	$64,323,730
	4	14.4	0	0	$242,626,219	$0	$242,626,219
	5 (Ultimate)	16.5	0	0	$89,436,965	$0	$89,436,965
Total		**172.7**	**3**	**3**	**$ 742,370,996**	**$ 544,790,096**	**$ 1,287,161,092**
Aaron Creek	1	70.9	3	0	$30,000,000	$452,355,630	$482,355,630
	2 (Pass)	54.9	0	2	$507,639,380	$105,144,444	$612,783,823
	2 (Tunnel)	54.3	0	2	$479,186,413	$105,144,444	$584,330,856
	3	10.5	0	1	$46,119,594	$0	$46,119,594
	4 (Ultimate)	6.9	0	0	$59,777,001	$0	$59,777,001
Total (Pass)		**143.1**	**3**	**3**	**$ 643,535,974**	**$ 557,500,074**	**$ 1,201,036,048**
Total (Tunnel)		**142.5**	**3**	**3**	**$ 615,083,007**	**$ 557,500,074**	**$ 1,172,583,081**

Iskut River Alignment (Segment I-1):	**Segment I-1 -** Begins where the existing Eskay Creek Gold Mine road departs the Iskut River via the Unuk River drainage. The alignment follows the existing gravel road as it parallels the south side of the Iskut River to the Cassiar Highway near Echo Lake.			
EXISTING ROAD LIMITS:	STA.	6655+30	7926+96	
EXISTING ROAD LENGTH:	24.08	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Rehabilitation/Paving cost using Segment W-3 per mile cost	24.08	Mile	$ 962,042	$ 23,165,971
SUBTOTAL ROADWAY AND BRIDGE WORK				**$ 23,165,971**

Iskut River Alignment (Segment I-2):	**Segment I-2 -** Begins on the south side of the Iskut River near the airstrip and mining operations at Bronson Creek. The alignment parallels the south side of the Iskut River to the northeast until reaching Segment I-1 and the existing Eskay Creek Gold Mine road.			
LIMITS:	STA.	5582+10	6655+30	
LENGTH:	20.33	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Reconstruction cost using Segment S-1 per mile cost	20.33	Mile	$ 5,701,962	$ 115,920,887
SUBTOTAL ROADWAY AND BRIDGE WORK				**$ 115,920,887**

Iskut River Alignment (Segment I-3):	**Segment I-3 -** Begins adjacent to the ACV ferry terminal near the confluence of the Iskut and Stikine Rivers. The alignment parallels the south side of the Iskut River, crosses the Craig River, and meets with Segment I-2 near the airstrip and mining operations at Bronson Creek.			
LIMITS:	STA.	4185+80	5582+10	
LENGTH:	26.45	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Reconstruction cost using Segment S-1 per mile cost	26.45	Mile	$ 5,701,962	$ 150,816,895
Iskut River ACV Ferry Terminal	1.0	LS	$ 10,000,000	$ 10,000,000
Wrangell Island ACV Ferry Terminal	1.0	LS	$ 10,000,000	$ 10,000,000
Mitkof Island ACV Ferry Terminal	1.0	LS	$ 10,000,000	$ 10,000,000
SUBTOTAL ROADWAY, PORT, AND BRIDGE WORK (AK)				**$ 20,000,000**
SUBTOTAL ROADWAY, PORT, AND BRIDGE WORK (BC)				**$ 160,816,895**
PER MILE COST (BC SECTION)				**$ 6,080,034**

Bradfield Canal Alignment (Segment B-1 or Segment 1B with 2 thru 5 in Bradfield Report):		**Segment B-1 -** Begins at the Kapho Mountain conventional ferry terminal along Bradfield Canal. The alignment parallels the North Fork of the Bradfield River to the northeast before reaching a tunnel that takes the alignment into the Craig River drainage. The alignment follows the Craig River to the northeast and meets up with Segment I-2 of the Iskut River Alignment near the airstrip and mining operations at Bronson Creek.				
	AK SECTION LIMITS:	Stationing:	10+00	1538+27		
	BC SECTION LIMITS:	STA.	1538+27	2451+30		
	AK SECTION LIMITS:	29.15	Mile			
	BC SECTION LIMITS:	17.29	Mile			
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	BRADFIELD 2004 UNIT COST	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**					
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 8,659,399	$ 14,279,535	$ 14,279,535
					SUBTOTAL	**$ 14,279,535**
DIVISION 2	**EARTHWORK**					
	Erosion Control (4% of Construction Value)	1	LS	$ 6,387,279	$ 3,295,277	$ 3,295,277
	Clearing and Grubbing	300	Acre	$ 3,500	$ 5,500	$ 1,650,000
	Roadway Excavation incl. Haul	3,104,623	CY	$ 8	$ 9	$ 27,941,607
	Subexcavation	210,800	CY	$ 8	$ 8	$ 1,686,400
	Access Road	0.9	Mile	$ 200,000.00	$ 225,102.00	$210,470
					SUBTOTAL	**$ 34,783,754**
DIVISION 3	**UTILITIES & RELOCATIONS**					
	Utilities (Power and Water Allowance)	29.15	Mile	$ 50,000	$ 58,000	$ 1,690,700
	Right of Way & Building Relocation	1	LS	$ 1,500,000	$ 1,738,900	$ 1,738,900
					SUBTOTAL	**$ 3,429,600**
DIVISION 4	**BASES & PAVEMENT**					
	4" Asphalt Concrete Pavement	43,997	CY	$ 80	$ 220	$ 9,679,340
	5" Crushed Agg.	62,364	CY	$ 20	$ 40	$ 2,494,560
	8" Select Material	115,833	CY	$ 20	$ 25	$ 2,895,825
					SUBTOTAL	**$ 15,069,725**
DIVISION 5	**TUNNEL**					
	Tunnel (Excludes Surfacing and Drainage)	8,200	LF	$ 9,150	$ 10,000	$ 82,000,000
					SUBTOTAL	**$ 82,000,000**
DIVISION 6	**STRUCTURES**					
	Bridge Structure - Low Complexity	8,250	SF	$ 150	$ 210	$ 1,732,500
	Bridge Structure - Medium Complexity	58,350	SF	$ 200	$ 260	$ 15,171,000
	Bridge Structure - High Complexity	25,050	SF	$ 275	$ 380	$ 9,519,000
	Culverts -					
	> 10 foot diameter	7	Ea	$ 60,000	$ 200,000	$ 1,400,000
	Fish Passage	-	Ea	$ 90,000	$ 8,000	$ -
	Revetment Wall (Class V Riprap)	114,200	CY	$ 40	$ 30	$ 3,426,000
	MSE Wall	364,400	SF	$ 30	$ 45	$ 16,398,000
					SUBTOTAL	**$ 47,646,500**
DIVISION 7	**INCIDENTAL CONSTRUCTION**					
	Wetland Mitigation - Allowance	75	Acre	$ 25,000	$ 25,000	$ 1,875,000
	Cultural Resource Mitigation - Allowance	25	LS	$ 10,000	$ 12,000	$ 300,000
	Drainage - Allowance	29.2	Mile	$ 80,000	$ 115,000	$ 3,352,250
	Stormwater Management Ponds	25	LS	$ 206,000	$ 239,000	$ 5,975,000
	Seeding and Landscaping	185	Acre	$ 250	$ 7,000	$ 1,295,000
	Staging Area Rehabilitation	15	Acre	$ 50,000	$ 58,000	$ 870,000
					SUBTOTAL	**$ 13,667,250**
DIVISION 8	**ROADWAY FINISHES**					
	Guard Rail	46,740	LF	$ 50	$ 30	$ 1,402,200
	Roadway Signage - Allowance	29.15	Mile	$ 5,000	$ 3,500	$ 102,025
	Pavement Striping and Markings - Allowance	29.15	Mile	$ 25,000	$ 16,000	$ 466,400
					SUBTOTAL	**$ 1,970,625**
DIVISION 9	**PORT DEVELOPMENT**					
	Conventional Ferry Terminal - Kapho Mountain	1	LS	$ -	$ 15,000,000	$ 15,000,000
	ACV Ferry Terminal		LS	$ -	$ 10,000,000	$ -
					SUBTOTAL	**$ 15,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**					
	Construction Camps and Per Diem	1	LS	$ -	$ 10,984,258	$ 10,984,258
					SUBTOTAL	**$ 10,984,258**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)					**$ 238,831,247**
	PER MILE COST (AK SECTION)*				$ 5,139,378	
	BC SECTION	17.29	Mile		$ 5,139,378	**$88,859,846**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

*Note: Original Bradfield surfacing quantities increased to match SE MRA typical section.

	Aaron Creek Pass Alignment (Segment A-1a):	**Segment A-1a -** Begins at the Berg Bay conventional ferry terminal and follows the Aaron Creek drainage to the northeast until reaching an unnamed drainage near Berg Mountain. The alignment enters the unnamed drainage and follows it east to the West Fork Pass. The alignment traverses up and over the pass and enters the West Fork of the Katete River drainage. Paralleling the West Fork to the north, the alignment continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.	1280+00	2883+63	
	BC SECTION LIMITS:	STA.	2883+63	3087+36	
	AK SECTION LENGTH:	30.37	Mile		
	BC SECTION LENGTH (Designed):	3.86	Mile		
	BC SECTION LENGTH (Per Mile Cost):	6.35	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 30,011,942	$ 30,011,942
				SUBTOTAL	**$ 30,011,942**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 6,925,833	$ 6,925,833
	Clearing and Grubbing	323	Acre	$ 5,500	$ 1,776,500
	Roadway Excavation incl. Haul	5,371,500	CY	$ 9	$ 48,343,500
	Subexcavation	15,600	CY	$ 8	$ 124,800
				SUBTOTAL	**$ 57,170,633**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	30.37	Mile	$ 58,000	$ 1,761,460
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,761,460**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	50,000	CY	$ 220	$ 11,000,000
	5" Crushed Aggregate	71,000	CY	$ 40	$ 2,840,000
	8" Select Material	132,500	CY	$ 25	$ 3,312,500
				SUBTOTAL	**$ 17,152,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	39,000	SF	$ 210	$ 8,190,000
	Bridge Structure - Medium Complexity	129,000	SF	$ 260	$ 33,540,000
	Bridge Structure - High Complexity	240,000	SF	$ 380	$ 91,200,000
	Culverts -				
	> 10 foot diameter	15	Each	$ 200,000	$ 3,000,000
	Fish Passage	18	Each	$ 8,000	$ 144,000
	Revetment Wall (Class V Riprap)	7,381	CY	$ 30	$ 221,430
	MSE Wall	250,100	SF	$ 45	$ 11,254,500
				SUBTOTAL	**$ 147,549,930**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	91	Acre	$ 25,000	$ 2,275,000
	Cultural Resource Mitigation - Allowance	28	LS	$ 12,000	$ 336,000
	Drainage - Allowance	30.37	Mile	$ 115,000	$ 3,492,550
	Stormwater Management Ponds	28	LS	$ 239,000	$ 6,692,000
	Seeding and Landscaping	113	Acre	$ 7,000	$ 791,000
	Staging Area Rehabilitation	17	Acre	$ 58,000	$ 986,000
				SUBTOTAL	**$ 14,572,550**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	24,970	LF	$ 30	$ 749,100
	Roadway Signage - Allowance	30.37	Mile	$ 3,500	$ 106,295
	Pavement Striping and Markings - Allowance	30.37	Mile	$ 16,000	$ 485,920
				SUBTOTAL	**$ 1,341,315**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay	2	LS	$ 15,000,000	$ 30,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 30,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 23,086,110	$ 23,086,110
				SUBTOTAL	**$ 23,086,110**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 322,646,440**
	PER MILE COST (AK SECTION)*			$ 9,636,037	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 33,555,504**
	PER MILE COST (BC SECTION)*			$ 8,693,136	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 5,701,962	**$ 36,207,459**
	TOTAL BC SECTION COST				**$ 69,762,963**

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Aaron Creek Pass Alignment (BC) (Segment A-1a):	**Segment A-1a - BC** - Begins at the AK/BC border, parallels the West Fork to the north, continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.	1280+00	2883+63	
	BC SECTION LIMITS:	STA.	2883+63	3087+36	
	AK SECTION LENGTH:	30.37	Mile		
	BC SECTION LENGTH (Designed):	3.86	Mile		
	BC SECTION LENGTH (Per Mile Cost):	6.35	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 3,438,977	$ 3,438,977
				SUBTOTAL	**$ 3,438,977**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 793,610	$ 793,610
	Clearing and Grubbing	40	Acre	$ 5,500	$ 220,000
	Roadway Excavation incl. Haul	307,000	CY	$ 9	$ 2,763,000
	Subexcavation	55,100	CY	$ 8	$ 440,800
				SUBTOTAL	**$ 4,217,410**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	3.86	Mile	$ 58,000	$ 223,880
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 223,880**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	6,000	CY	$ 220	$ 1,320,000
	5" Crushed Aggregate	8,500	CY	$ 40	$ 340,000
	8" Select Material	16,500	CY	$ 25	$ 412,500
				SUBTOTAL	**$ 2,072,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity	72,000	SF	$ 260	$ 18,720,000
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	1	Each	$ 200,000	$ 200,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 18,928,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	12	Acre	$ 25,000	$ 300,000
	Cultural Resource Mitigation - Allowance	4	LS	$ 12,000	$ 48,000
	Drainage - Allowance	3.86	Mile	$ 115,000	$ 443,900
	Stormwater Management Ponds	4	LS	$ 239,000	$ 956,000
	Seeding and Landscaping	11	Acre	$ 7,000	$ 77,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,940,900**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	440	LF	$ 30	$ 13,200
	Roadway Signage - Allowance	3.86	Mile	$ 3,500	$ 13,510
	Pavement Striping and Markings - Allowance	3.86	Mile	$ 16,000	$ 61,760
				SUBTOTAL	**$ 88,470**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 2,645,367	$ 2,645,367
				SUBTOTAL	**$ 2,645,367**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 33,555,504**
	PER MILE COST (BC SECTION)*			$ 8,693,136	
	BC SECTION	6.35	Mile	$ 5,701,962	**$ 36,207,459**

*Note: Per mile cost calculated excludes tunnel and port development costs.

Aaron Creek Tunnel Alignment (Segment A-1b):

Segment A-1b - Begins at the Berg Bay conventional ferry terminal and follows the Aaron Creek drainage to the northeast until reaching an unnamed drainage near Berg Mountain. The alignment enters the unnamed drainage and follows it east to the West Fork Pass. The alignment traverses through the pass with a tunnel and enters the West Fork of the Katete River drainage. Paralleling the West Fork to the north, the alignment continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.

AK SECTION LIMITS:	STA.	1280+00	2851+97
BC SECTION LIMITS:	STA.	2851+97	3055+71
AK SECTION LENGTH:	29.77	Mile	
BC SECTION LENGTH (Designed):	3.86	Mile	
BC SECTION LENGTH (Per Mile Cost):	6.35	Mile	

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 20,423,530	$ 20,423,530
				SUBTOTAL	**$ 20,423,530**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 4,713,122	$ 4,713,122
	Clearing and Grubbing	299	Acre	$ 5,500	$ 1,644,500
	Roadway Excavation incl. Haul	3,246,500	CY	$ 9	$ 29,218,500
	Subexcavation	20,500	CY	$ 8	$ 164,000
				SUBTOTAL	**$ 35,740,122**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	29.77	Mile	$ 58,000	$ 1,726,660
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,726,660**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	47,000	CY	$ 220	$ 10,340,000
	5" Crushed Aggregate	67,000	CY	$ 40	$ 2,680,000
	8" Select Material	125,000	CY	$ 25	$ 3,125,000
				SUBTOTAL	**$ 16,145,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)	7,400	LF	$ 10,000	$ 74,000,000
				SUBTOTAL	**$ 74,000,000**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	84,000	SF	$ 210	$ 17,640,000
	Bridge Structure - Medium Complexity	204,000	SF	$ 260	$ 53,040,000
	Bridge Structure - High Complexity	45,000	SF	$ 380	$ 17,100,000
	Culverts -				
	> 10 foot diameter	8	Each	$ 200,000	$ 1,600,000
	Fish Passage	11	Each	$ 8,000	$ 88,000
	Revetment Wall (Class V Riprap)	5,167	CY	$ 30	$ 155,010
	MSE Wall	112,600	SF	$ 45	$ 5,067,000
				SUBTOTAL	**$ 94,690,010**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	89	Acre	$ 25,000	$ 2,225,000
	Cultural Resource Mitigation - Allowance	27	LS	$ 12,000	$ 324,000
	Drainage - Allowance	29.77	Mile	$ 115,000	$ 3,423,550
	Stormwater Management Ponds	27	LS	$ 239,000	$ 6,453,000
	Seeding and Landscaping	102	Acre	$ 7,000	$ 714,000
	Staging Area Rehabilitation	16	Acre	$ 58,000	$ 928,000
				SUBTOTAL	**$ 14,067,550**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	19,800	LF	$ 30	$ 594,000
	Roadway Signage - Allowance	29.77	Mile	$ 3,500	$ 104,195
	Pavement Striping and Markings - Allowance	29.77	Mile	$ 16,000	$ 476,320
				SUBTOTAL	**$ 1,174,515**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay	2	LS	$ 15,000,000	$ 30,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 30,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 15,710,408	$ 15,710,408
				SUBTOTAL	**$ 15,710,408**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 303,677,795**
	PER MILE COST (AK SECTION)*			$ 7,038,719	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 33,555,504**
	PER MILE COST (BC SECTION)*			$ 8,693,136	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 5,701,962	**$ 36,207,459**
	TOTAL BC SECTION COST				**$ 69,762,963**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

Aaron Creek Tunnel Alignment (BC) (Segment A-1b):

Segment A-1b - BC - Begins at the AK/BC border and parallels the West Fork to the north, continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.

	AK SECTION LIMITS:	STA.	1280+00	2851+97	
	BC SECTION LIMITS:	STA.	2851+97	3055+71	
	AK SECTION LENGTH:	29.77	Mile		
	BC SECTION LENGTH (Designed):	3.86	Mile		
	BC SECTION LENGTH (Per Mile Cost):	6.35	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 3,438,977	$ 3,438,977
				SUBTOTAL	**$ 3,438,977**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 793,610	$ 793,610
	Clearing and Grubbing	40	Acre	$ 5,500	$ 220,000
	Roadway Excavation incl. Haul	307,000	CY	$ 9	$ 2,763,000
	Subexcavation	55,100	CY	$ 8	$ 440,800
				SUBTOTAL	**$ 4,217,410**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	3.86	Mile	$ 58,000	$ 223,880
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 223,880**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	6,000	CY	$ 220	$ 1,320,000
	5" Crushed Aggregate	8,500	CY	$ 40	$ 340,000
	8" Select Material	16,500	CY	$ 25	$ 412,500
				SUBTOTAL	**$ 2,072,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity	72,000	SF	$ 260	$ 18,720,000
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	1	Each	$ 200,000	$ 200,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 18,928,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	12	Acre	$ 25,000	$ 300,000
	Cultural Resource Mitigation - Allowance	4	LS	$ 12,000	$ 48,000
	Drainage - Allowance	3.86	Mile	$ 115,000	$ 443,900
	Stormwater Management Ponds	4	LS	$ 239,000	$ 956,000
	Seeding and Landscaping	11	Acre	$ 7,000	$ 77,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,940,900**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	440	LF	$ 30	$ 13,200
	Roadway Signage - Allowance	3.86	Mile	$ 3,500	$ 13,510
	Pavement Striping and Markings - Allowance	3.86	Mile	$ 16,000	$ 61,760
				SUBTOTAL	**$ 88,470**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 2,645,367	$ 2,645,367
				SUBTOTAL	**$ 2,645,367**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 33,555,504**
	PER MILE COST (BC SECTION)*			$ 8,693,136	
	BC SECTION	6.35	Mile	$ 5,701,962	**$ 36,207,459**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

Aaron Creek Alignment (Segment A-2):

Segment A-2 - Begins at The Narrows and parallels Black Channel to the east until reaching Segment A-1a or A-1b near the Berg Bay conventional ferry terminal.

LIMITS: STA. 1005+00 1280+00

LENGTH: 5.21 Mile

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 3,482,251	$ 3,482,251
				SUBTOTAL	**$ 3,482,251**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 803,596	$ 803,596
	Clearing and Grubbing	49	Acre	$ 5,500	$ 269,500
	Roadway Excavation incl. Haul	377,000	CY	$ 9	$ 3,393,000
	Subexcavation	1,600	CY	$ 8	$ 12,800
				SUBTOTAL	**$ 4,478,896**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	5.21	Mile	$ 58,000	$ 302,180
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 302,180**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	9,000	CY	$ 220	$ 1,980,000
	5" Crushed Aggregate	12,500	CY	$ 40	$ 500,000
	8" Select Material	23,500	CY	$ 25	$ 587,500
				SUBTOTAL	**$ 3,067,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity	45,000	SF	$ 380	$ 17,100,000
	Culverts -				
	> 10 foot diameter	1	Each	$ 200,000	$ 200,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 17,308,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	16	Acre	$ 25,000	$ 400,000
	Cultural Resource Mitigation - Allowance	5	LS	$ 12,000	$ 60,000
	Drainage - Allowance	5.21	Mile	$ 115,000	$ 599,150
	Stormwater Management Ponds	5	LS	$ 239,000	$ 1,195,000
	Seeding and Landscaping	20	Acre	$ 7,000	$ 140,000
	Staging Area Rehabilitation	3	Acre	$ 58,000	$ 174,000
				SUBTOTAL	**$ 2,568,150**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	2,200	LF	$ 30	$ 66,000
	Roadway Signage - Allowance	5.21	Mile	$ 3,500	$ 18,235
	Pavement Striping and Markings - Allowance	5.21	Mile	$ 16,000	$ 83,360
				SUBTOTAL	**$ 167,595**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 2,678,655	$ 2,678,655
				SUBTOTAL	**$ 2,678,655**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 34,053,227**
	PER MILE COST*			$ 6,536,128	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	South Stikine River Alignment (Segment S-1):	**Segment S-1** - Begins along the south side of the Stikine River near the mouth of Andrew Creek and adjacent to Limb Island. The alignment parallels the south side of the Stikine River to the northeast before reaching Segment I-3 of the Iskut River Alignment and the ACV ferry terminal near the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.	2545+94	3673+29	
	BC SECTION LIMITS:	STA.	3673+29	3891+26	
	AK SECTION LIMITS:	21.35	Mile		
	BC SECTION LIMITS (Designed):	4.13	Mile		
	BC SECTION LIMITS (Per Mile Cost):	6.35	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 12,432,393	$ 12,432,393
				SUBTOTAL	**$ 12,432,393**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 2,869,014	$ 2,869,014
	Clearing and Grubbing	226	Acre	$ 5,500	$ 1,243,000
	Roadway Excavation incl. Haul	3,722,500	CY	$ 9	$ 33,502,500
	Subexcavation	36,600	CY	$ 8	$ 292,800
				SUBTOTAL	**$ 37,907,314**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	21.35	Mile	$ 58,000	$ 1,238,300
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,238,300**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	37,000	CY	$ 220	$ 8,140,000
	5" Crushed Aggregate	53,000	CY	$ 40	$ 2,120,000
	8" Select Material	98,500	CY	$ 25	$ 2,462,500
				SUBTOTAL	**$ 12,722,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity	111,000	SF	$ 260	$ 28,860,000
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	21	Each	$ 200,000	$ 4,200,000
	Fish Passage	25	Each	$ 8,000	$ 200,000
	Revetment Wall (Class V Riprap)	14,024	CY	$ 30	$ 420,720
	MSE Wall	64,200	SF	$ 45	$ 2,889,000
				SUBTOTAL	**$ 36,569,720**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	64	Acre	$ 25,000	$ 1,600,000
	Cultural Resource Mitigation - Allowance	20	LS	$ 12,000	$ 240,000
	Drainage - Allowance	21.35	Mile	$ 115,000	$ 2,455,250
	Stormwater Management Ponds	20	LS	$ 239,000	$ 4,780,000
	Seeding and Landscaping	75	Acre	$ 7,000	$ 525,000
	Staging Area Rehabilitation	12	Acre	$ 58,000	$ 696,000
				SUBTOTAL	**$ 10,296,250**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	19,690	LF	$ 30	$ 590,700
	Roadway Signage - Allowance	21.35	Mile	$ 3,500	$ 74,725
	Pavement Striping and Markings - Allowance	21.35	Mile	$ 16,000	$ 341,600
				SUBTOTAL	**$ 1,007,025**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 9,563,380	$ 9,563,380
				SUBTOTAL	**$ 9,563,380**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 121,736,882**
	PER MILE COST (AK SECTION)*			$ 5,701,962	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 25,082,186**
	PER MILE COST (BC SECTION)*			$ 6,073,168	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 5,701,962	**$ 36,207,459**
	TOTAL BC SECTION COST				**$ 61,289,644**

*Note: Per mile cost calculated excludes tunnel and port development costs.

	South Stikine River Alignment (BC) (Segment S-1):	**Segment S-1 - BC** - Begins at the AK/BC border and parallels the south side of the Stikine River to the northeast before reaching Segment I-3 of the Iskut River Alignment and the ACV ferry terminal near the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.	2545+94	3673+29	
	BC SECTION LIMITS:	STA.	3673+29	3891+26	
	AK SECTION LIMITS:	21.35	Mile		
	BC SECTION LIMITS (Designed):	4.13	Mile		
	BC SECTION LIMITS (Per Mile Cost):	6.35	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 2,563,130	$ 2,563,130
				SUBTOTAL	**$ 2,563,130**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 591,492	$ 591,492
	Clearing and Grubbing	45	Acre	$ 5,500	$ 247,500
	Roadway Excavation incl. Haul	396,500	CY	$ 9	$ 3,568,500
	Subexcavation	52,300	CY	$ 8	$ 418,400
				SUBTOTAL	**$ 4,825,892**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	4.13	Mile	$ 58,000	$ 239,540
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 239,540**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	7,000	CY	$ 220	$ 1,540,000
	5" Crushed Aggregate	9,500	CY	$ 40	$ 380,000
	8" Select Material	18,000	CY	$ 25	$ 450,000
				SUBTOTAL	**$ 2,370,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	51,000	SF	$ 210	$ 10,710,000
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	1	Each	$ 200,000	$ 200,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 10,918,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	12	Acre	$ 25,000	$ 300,000
	Cultural Resource Mitigation - Allowance	4	LS	$ 12,000	$ 48,000
	Drainage - Allowance	4.13	Mile	$ 115,000	$ 474,950
	Stormwater Management Ponds	4	LS	$ 239,000	$ 956,000
	Seeding and Landscaping	10	Acre	$ 7,000	$ 70,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,964,950**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	4,950	LF	$ 30	$ 148,500
	Roadway Signage - Allowance	4.13	Mile	$ 3,500	$ 14,455
	Pavement Striping and Markings - Allowance	4.13	Mile	$ 16,000	$ 66,080
				SUBTOTAL	**$ 229,035**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 1,971,639	$ 1,971,639
				SUBTOTAL	**$ 1,971,639**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 25,082,186**
	PER MILE COST (AK SECTION)*			$ 6,073,168	
	BC SECTION	6.35	Mile	$ 5,701,962	**$36,207,459**

*Note: Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (Segment S-2):		**Segment S-2** - Begins at the Crittenden Creek conventional ferry terminal site and parallels the Eastern Passage to the northwest. Once around Garnett Point, the alignment enters the Stikine River drainage, turns to the northeast, and follows the Stikine River to near the mouth of Andrew Creek.			
	LIMITS:	STA.	1614+00	2545+94	
	LENGTH:	17.65	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 5,775,591	$ 5,775,591
				SUBTOTAL	**$ 5,775,591**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 1,332,829	$ 1,332,829
	Clearing and Grubbing	161	Acre	$ 5,500	$ 885,500
	Roadway Excavation incl. Haul	1,501,000	CY	$ 9	$ 13,509,000
	Subexcavation	18,400	CY	$ 8	$ 147,200
				SUBTOTAL	**$ 15,874,529**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	17.65	Mile	$ 58,000	$ 1,023,700
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,023,700**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	31,500	CY	$ 220	$ 6,930,000
	5" Crushed Aggregate	44,500	CY	$ 40	$ 1,780,000
	8" Select Material	83,000	CY	$ 25	$ 2,075,000
				SUBTOTAL	**$ 10,785,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	30,000	SF	$ 210	$ 6,300,000
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	7	Each	$ 200,000	$ 1,400,000
	Fish Passage	4	Each	$ 8,000	$ 32,000
	Revetment Wall (Class V Riprap)	22,880	CY	$ 30	$ 686,400
	MSE Wall	29,700	SF	$ 45	$ 1,336,500
				SUBTOTAL	**$ 9,754,900**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	53	Acre	$ 25,000	$ 1,325,000
	Cultural Resource Mitigation - Allowance	16	LS	$ 12,000	$ 192,000
	Drainage - Allowance	17.65	Mile	$ 115,000	$ 2,029,750
	Stormwater Management Ponds	16	LS	$ 239,000	$ 3,824,000
	Seeding and Landscaping	62	Acre	$ 7,000	$ 434,000
	Staging Area Rehabilitation	10	Acre	$ 58,000	$ 580,000
				SUBTOTAL	**$ 8,384,750**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	20,570	LF	$ 30	$ 617,100
	Roadway Signage - Allowance	17.65	Mile	$ 3,500	$ 61,775
	Pavement Striping and Markings - Allowance	17.65	Mile	$ 16,000	$ 282,400
				SUBTOTAL	**$ 961,275**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Crittenden Creek & Wrangell Island (Spur Rd., Peninsula St., or AMHS*)	2	LS	$ 15,000,000	$ 30,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 30,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 4,442,763	$ 4,442,763
				SUBTOTAL	**$ 4,442,763**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 87,002,508**
	PER MILE COST*			$ 3,229,604	

*Notes: If existing AMHS ferry terminal is utilized on Wrangell Island the cost of 1 conventional ferry terminal can be eliminated.
Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (Segment S-3):

Segment S-3 - Begins at The Narrows and parallels the Eastern Passage to the northwest until reaching Segment S-2 near the Crittenden Creek conventional ferry terminal.

LIMITS: Stationing: 1005+00 1614+00

LENGTH: 11.53 Mile

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 5,314,944	$ 5,314,944
				SUBTOTAL	**$ 5,314,944**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 1,226,526	$ 1,226,526
	Clearing and Grubbing	104	Acre	$ 5,500	$ 572,000
	Roadway Excavation incl. Haul	590,500	CY	$ 9	$ 5,314,500
	Subexcavation	2,300	CY	$ 8	$ 18,400
				SUBTOTAL	**$ 7,131,426**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	11.53	Mile	$ 58,000	$ 668,740
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 668,740**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	20,000	CY	$ 220	$ 4,400,000
	5" Crushed Aggregate	28,500	CY	$ 40	$ 1,140,000
	8" Select Material	53,000	CY	$ 25	$ 1,325,000
				SUBTOTAL	**$ 6,865,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	18,000	SF	$ 210	$ 3,780,000
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity	45,750	SF	$ 380	$ 17,385,000
	Culverts -				
	> 10 foot diameter	3	Each	$ 200,000	$ 600,000
	Fish Passage	3	Each	$ 8,000	$ 24,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall	5,200.0	SF	$ 45	$ 234,000
				SUBTOTAL	**$ 22,023,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	34	Acre	$ 25,000	$ 850,000
	Cultural Resource Mitigation - Allowance	11	LS	$ 12,000	$ 132,000
	Drainage - Allowance	11.53	Mile	$ 115,000	$ 1,325,950
	Stormwater Management Ponds	11	LS	$ 239,000	$ 2,629,000
	Seeding and Landscaping	43	Acre	$ 7,000	$ 301,000
	Staging Area Rehabilitation	6	Acre	$ 58,000	$ 348,000
				SUBTOTAL	**$ 5,585,950**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	9,350	LF	$ 30	$ 280,500
	Roadway Signage - Allowance	11.53	Mile	$ 3,500	$ 40,355
	Pavement Striping and Markings - Allowance	11.53	Mile	$ 16,000	$ 184,480
				SUBTOTAL	**$ 505,335**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 4,088,419	$ 4,088,419
				SUBTOTAL	**$ 4,088,419**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 52,182,814**
	PER MILE COST*			$ 4,525,829	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Limb Island Alignment (Segment L-1):	**Segment L-1** - Begins at the end of the Mitkof Highway on Mitkof Island and crosses Dry Strait with a bridge. The alignment traverses the south side of Dry Island and the north side of Farm Island before crossing Hooligan Slough and reaching Limb Island. After crossing Limb Island and spanning the Stikine River, the alignment meets Segment S-1 near Andrew Creek.			
	LIMITS:	STA.	100+00	859+77	
	LENGTH:	14.39	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 16,582,517	$ 16,582,517
				SUBTOTAL	**$ 16,582,517**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 3,826,735	$ 3,826,735
	Clearing and Grubbing	122	Acre	$ 5,500	$ 671,000
	Roadway Excavation incl. Haul	1,076,500	CY	$ 9	$ 9,688,500
	Subexcavation	219,500	CY	$ 8	$ 1,756,000
				SUBTOTAL	**$ 15,942,235**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	14.39	Mile	$ 58,000	$ 834,620
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 834,620**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	22,500	CY	$ 220	$ 4,950,000
	5" Crushed Aggregate	31,500	CY	$ 40	$ 1,260,000
	8" Select Material	59,000	CY	$ 25	$ 1,475,000
				SUBTOTAL	**$ 7,685,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	24,000	SF	$ 210	$ 5,040,000
	Bridge Structure - Medium Complexity	138,000	SF	$ 260	$ 35,880,000
	Bridge Structure - High Complexity	153,000	SF	$ 380	$ 58,140,000
	Culverts -				
	> 10 foot diameter	5	Each	$ 200,000	$ 1,000,000
	Fish Passage	4	Each	$ 8,000	$ 32,000
	Revetment Wall (Class V Riprap)	8,489	CY	$ 30	$ 254,670
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 100,346,670**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	43	Acre	$ 25,000	$ 1,075,000
	Cultural Resource Mitigation - Allowance	13	LS	$ 12,000	$ 156,000
	Drainage - Allowance	14.39	Mile	$ 115,000	$ 1,654,850
	Stormwater Management Ponds	13	LS	$ 239,000	$ 3,107,000
	Seeding and Landscaping	45	Acre	$ 7,000	$ 315,000
	Staging Area Rehabilitation	8	Acre	$ 58,000	$ 464,000
				SUBTOTAL	**$ 6,771,850**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	11,940	LF	$ 30	$ 358,200
	Roadway Signage - Allowance	14.39	Mile	$ 3,500	$ 50,365
	Pavement Striping and Markings - Allowance	14.39	Mile	$ 16,000	$ 230,240
				SUBTOTAL	**$ 638,805**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 12,755,783	$ 12,755,783
				SUBTOTAL	**$ 12,755,783**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 161,557,480**
	PER MILE COST*			$ 11,227,066	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Wrangell Island Alignment (Segment W-1):	**Segment W-1** - Begins near the Log Transfer Station conventional ferry terminal site and parallels the shoreline along the Eastern Passage to the northeast. The alignment reaches The Narrows and ends after spanning Blake Channel with a structure.			
	LIMITS:	STA.	914+00	1005+00	
	LENGTH:	1.72	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 435,570	$ 435,570
				SUBTOTAL	**$ 435,570**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 100,516	$ 100,516
	Clearing and Grubbing	15	Acre	$ 5,500	$ 82,500
	Roadway Excavation incl. Haul	140,000	CY	$ 9	$ 1,260,000
	Subexcavation	800	CY	$ 8	$ 6,400
				SUBTOTAL	**$ 1,449,416**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	1.72	Mile	$ 58,000	$ 99,760
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 99,760**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	3,000	CY	$ 220	$ 660,000
	5" Crushed Aggregate	4,500	CY	$ 40	$ 180,000
	8" Select Material	8,000	CY	$ 25	$ 200,000
				SUBTOTAL	**$ 1,040,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 200,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	5	Acre	$ 25,000	$ 125,000
	Cultural Resource Mitigation - Allowance	2	LS	$ 12,000	$ 24,000
	Drainage - Allowance	1.72	Mile	$ 115,000	$ 197,800
	Stormwater Management Ponds	2	LS	$ 239,000	$ 478,000
	Seeding and Landscaping	6	Acre	$ 7,000	$ 42,000
	Staging Area Rehabilitation	1	Acre	$ 58,000	$ 58,000
				SUBTOTAL	**$ 924,800**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	110	LF	$ 30	$ 3,300
	Roadway Signage - Allowance	1.72	Mile	$ 3,500	$ 6,020
	Pavement Striping and Markings - Allowance	1.72	Mile	$ 16,000	$ 27,520
				SUBTOTAL	**$ 36,840**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Log Transfer Station		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 335,054	$ 335,054
				SUBTOTAL	**$ 335,054**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 4,321,440**
	PER MILE COST*			$ 2,512,465	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Wrangell Island Alignment (Segment W-2):		**Segment W-2** - Begins at the intersection of Segment W-3 and Segment F-1 of the Fool's Inlet Alignment. The alignment follows the existing McCormack Creek Road to the northeast before reaching the Log Transfer Station conventional ferry terminal and Segment W-1.			
	EXISTING ROAD LIMITS:	STA.	745+00	914+00	
	EXISTING ROAD LENGTH:	3.20	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 321,945	$ 321,945
				SUBTOTAL	**$ 321,945**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 74,295	$ 74,295
	Clearing and Grubbing	3	Acre	$ 5,500	$ 16,500
	Roadway Excavation incl. Haul	11,000	CY	$ 9	$ 99,000
	Subexcavation	700	CY	$ 8	$ 5,600
				SUBTOTAL	**$ 195,395**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)		Mile	$ 58,000	$ -
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	6,000	CY	$ 220	$ 1,320,000
	5" Crushed Aggregate	8,000	CY	$ 40	$ 320,000
	8" Select Material	15,500	CY	$ 25	$ 387,500
				SUBTOTAL	**$ 2,027,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 200,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	1.7	Acre	$ 25,000	$ 42,500
	Cultural Resource Mitigation - Allowance	0.6	LS	$ 12,000	$ 7,200
	Drainage - Allowance	3.20	Mile	$ 15,000	$ 48,000
	Stormwater Management Ponds	0.6	LS	$ 239,000	$ 143,400
	Seeding and Landscaping	1	Acre	$ 7,000	$ 7,000
	Staging Area Rehabilitation	0.3	Acre	$ 58,000	$ 17,400
				SUBTOTAL	**$ 265,500**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	3.20	Mile	$ 3,500	$ 11,200
	Pavement Striping and Markings - Allowance	3.20	Mile	$ 16,000	$ 51,200
				SUBTOTAL	**$ 62,400**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 247,650	$ 247,650
				SUBTOTAL	**$ 247,650**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 3,120,390**
	PER MILE COST*			$ 975,122	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Wrangell Island Alignment (Segment W-3):	**Segment W-3** - Begins at the end of the Zimovia Highway near Pat Creek and follows McCormack Creek Road northeast across most of Wrangell Island to the intersection with Segment F-1 of the Fool's Inlet Alignment.			
	EXISTING ROAD LIMITS:	STA.	160+00	745+00	
	EXISTING ROAD LENGTH:	11.08	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 1,099,782	$ 1,099,782
				SUBTOTAL	**$ 1,099,782**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 253,796	$ 253,796
	Clearing and Grubbing	11	Acre	$ 5,500	$ 60,500
	Roadway Excavation incl. Haul	43,500	CY	$ 9	$ 391,500
	Subexcavation	2,700	CY	$ 8	$ 21,600
				SUBTOTAL	**$ 727,396**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)		Mile	$ 58,000	$ -
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	20,000	CY	$ 220	$ 4,400,000
	5" Crushed Aggregate	28,500	CY	$ 40	$ 1,140,000
	8" Select Material	53,500	CY	$ 25	$ 1,337,500
				SUBTOTAL	**$ 6,877,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 200,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	5.8	Acre	$ 25,000	$ 145,000
	Cultural Resource Mitigation - Allowance	1.9	LS	$ 12,000	$ 22,800
	Drainage - Allowance	11.08	Mile	$ 15,000	$ 166,200
	Stormwater Management Ponds	1.9	LS	$ 239,000	$ 454,100
	Seeding and Landscaping	5	Acre	$ 7,000	$ 35,000
	Staging Area Rehabilitation	1.2	Acre	$ 58,000	$ 69,600
				SUBTOTAL	**$ 892,700**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	11.08	Mile	$ 3,500	$ 38,780
	Pavement Striping and Markings - Allowance	11.08	Mile	$ 16,000	$ 177,280
				SUBTOTAL	**$ 216,060**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 845,986	$ 845,986
				SUBTOTAL	**$ 845,986**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 10,659,424**
	PER MILE COST*			$ 962,042	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Fool's Inlet Alignment
(Segments F-1):

Segment F-1 - Begins at the beginning of Segment W-2 of the Wrangell Island Alignment and follows the existing road from McCormack Creek Road to just north of the mouth of Fool's Inlet.

	EXISTING ROAD LIMITS:	STA.	723+00	1062+00	
	EXISTING ROAD LENGTH:	6.42	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 630,941	$ 630,941
				SUBTOTAL	**$ 630,941**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 145,602	$ 145,602
	Clearing and Grubbing	6	Acre	$ 5,500	$ 33,000
	Roadway Excavation incl. Haul	22,500	CY	$ 9	$ 202,500
	Subexcavation	1,400	CY	$ 8	$ 11,200
				SUBTOTAL	**$ 392,302**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)		Mile	$ 58,000	$ -
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	11,500	CY	$ 220	$ 2,530,000
	5" Crushed Aggregate	16,500	CY	$ 40	$ 660,000
	8" Select Material	31,000	CY	$ 25	$ 775,000
				SUBTOTAL	**$ 3,965,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 200,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	3.3	Acre	$ 25,000	$ 82,500
	Cultural Resource Mitigation - Allowance	1.1	LS	$ 12,000	$ 13,200
	Drainage - Allowance	6.4	Mile	$ 15,000	$ 96,300
	Stormwater Management Ponds	1.1	LS	$ 239,000	$ 262,900
	Seeding and Landscaping	3	Acre	$ 7,000	$ 21,000
	Staging Area Rehabilitation	0.7	Acre	$ 58,000	$ 40,600
				SUBTOTAL	**$ 516,500**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	6.42	Mile	$ 3,500	$ 22,470
	Pavement Striping and Markings - Allowance	6.42	Mile	$ 16,000	$ 102,720
				SUBTOTAL	**$ 125,190**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 485,339	$ 485,339
				SUBTOTAL	**$ 485,339**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 6,115,272**
	PER MILE COST*			$ 952,535	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Fool's Inlet Alignment (Segment F-2):		**Segment F-2** - Begins at the end of Segment F-1 and continues to Fool's Inlet, where the alignment parallels the northeastern shore before reaching the Fool's Inlet conventional ferry terminal.			
	LIMITS:	STA.	1062+00	1276+37	
	LENGTH:	4.06	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 949,445	$ 949,445
				SUBTOTAL	**$ 949,445**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 219,103	$ 219,103
	Clearing and Grubbing	32	Acre	$ 5,500	$ 176,000
	Roadway Excavation incl. Haul	148,000	CY	$ 9	$ 1,332,000
	Subexcavation	5,000	CY	$ 8	$ 40,000
				SUBTOTAL	**$ 1,767,103**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	4.06	Mile	$ 58,000	$ 235,480
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 235,480**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	7,500	CY	$ 220	$ 1,650,000
	5" Crushed Aggregate	10,500	CY	$ 40	$ 420,000
	8" Select Material	19,500	CY	$ 25	$ 487,500
				SUBTOTAL	**$ 2,557,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	4	Each	$ 200,000	$ 800,000
	Fish Passage	4	Each	$ 8,000	$ 32,000
	Revetment Wall (Class V Riprap)	9,595	CY	$ 30	$ 287,850
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 1,119,850**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	12	Acre	$ 25,000	$ 300,000
	Cultural Resource Mitigation - Allowance	4	LS	$ 12,000	$ 48,000
	Drainage - Allowance	4.06	Mile	$ 115,000	$ 466,900
	Stormwater Management Ponds	4	LS	$ 239,000	$ 956,000
	Seeding and Landscaping	16	Acre	$ 7,000	$ 112,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,998,900**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	4.06	Mile	$ 3,500	$ 14,210
	Pavement Striping and Markings - Allowance	4.06	Mile	$ 16,000	$ 64,960
				SUBTOTAL	**$ 79,170**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Fool's Inlet	1	LS	$ 15,000,000	$ 15,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 15,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 730,342	$ 730,342
				SUBTOTAL	**$ 730,342**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 24,437,790**
	PER MILE COST*			$ 2,324,579	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$10,790,670	$10,790,670
Total bid estimate					$146,278,307
Mobilization percentage					8.0%

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$3,944,475	$3,944,475
642(3)	HR	3-Person Survey Crew	700	$312	$218,190
Total bid estimate					$146,278,307
Mobilization percentage					3.2%

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$231,741	$695,223
644(2)	EACH	Field Laboratory	3	$66,857	$200,570
644(3)	LPSM	Curing Shed	ALL	$51,498	$51,498
644(15)	LPSM	Nuclear Testing Equip.	ALL	$39,301	$39,301
644(16)	LPSM	Storage	ALL	$10,300	$10,300
645(1)	HOUR	Training	3000	$68	$203,280
Total bid estimate					$146,278,307
Mobilization percentage					0.9%

Total Project Requirements Percentage 12.1%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$12,853,660	$12,853,660
Total bid estimate					$121,650,994
Mobilization percentage					11.8%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$865,000	$865,000
642(3)	HR	3-Person Survey Crew	700	$250	$175,000
Total bid estimate					$121,650,994
Mobilization percentage					1.0%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$25,000	$75,000
644(2)	EACH	Field Laboratory	3	$25,000	$75,000
644(3)	LPSM	Curing Shed	ALL	$5,300	$5,300
644(15)	LPSM	Nuclear Testing Equip.	ALL	$79,500	$79,500
644(16)	LPSM	Storage	ALL	$16,000	$16,000
645(1)	HOUR	Training	3000	$10	$30,000
Total bid estimate					$121,650,994
Mobilization percentage					0.3%

Total Project Requirements Percentage 13.1%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$20,000,000	$20,000,000
Total bid estimate					$206,037,813
Mobilization percentage					10.8%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$700,000	$700,000
642(3)	HR	3-Person Survey Crew	0	$250	$0
Total bid estimate					$206,037,813
Mobilization percentage					0.4%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$0	$0
644(2)	EACH	Field Laboratory	3	$0	$0
644(3)	LPSM	Curing Shed	ALL	$0	$0
644(15)	LPSM	Nuclear Testing Equip.	ALL	$0	$0
644(16)	LPSM	Storage	ALL	$0	$0
645(1)	HOUR	Training	3000	$0	$0
Total bid estimate					$206,037,813
Mobilization percentage					0.0%

Total Project Requirements Percentage 11.2%

Juneau Access, Financial Plan, 2007, UPA	Sunny Point, 2006
Mobilization percentage	7.4%

Total Project Requirements Percentage 7.4%

Juneau Access, Final EIS, 2006, UPA				Valdez-Dayville Road, 2004		Valdez-Dayville Road, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$2,619,000	$2,619,000	$2,150,000	$2,150,000
Mobilization percentage					8.8%		7.3%

Total Project Requirements Percentage 8.1%

Juneau Access, Final EIS, 2006, UPA				Glacier Highway, 2005		Glacier Highway, 2005	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$700,000	$700,000	$675,000	$675,000
Mobilization percentage					7.0%		6.5%

Total Project Requirements Percentage 6.8%

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$2,300,000	$2,300,000	$800,000	$800,000	$700,000	$700,000	$400,000	$400,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					9.4%		3.2%		2.8%		1.6%
Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$450,000	$450,000	$230,000	$230,000	$300,000	$300,000	$350,000	$350,000
642(3)	HR	3-Person Survey Crew	1	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					2.0%		1.1%		1.3%		1.5%
Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
644(1)	EACH	Field Office	1	$50,000	$50,000	$40,000	$40,000	$60,000	$60,000	$50,000	$50,000
644(2)	EACH	Field Laboratory	1	$30,000	$30,000	$10,000	$10,000	$30,000	$30,000	$20,000	$20,000
644(15)	LPSM	Nuclear Testing Equip.	ALL	$3,000	$3,000	$2,300	$2,300	$2,000	$2,000	$20,000	$20,000
645(1)	HOUR	Training	1775	$1	$1,775	$1	$1,775	$1	$1,775	$1	$1,775
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					0.3%		0.2%		0.4%		0.4%

Total Project Requirements Percentage 6.1%

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,023,000	$1,023,000	$990,000	$990,000	$1,647,200	$1,647,200	$1,070,000	$1,070,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					9.0%		10.5%		17.5%		9.8%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$175,000	$175,000	$140,000	$140,000	$212,900	$212,900	$450,000	$450,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					1.6%		1.5%		2.3%		4.3%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$360,000	$360,000	$115,000	$115,000	$369,500	$369,500	$250,000	$250,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					3.3%		1.2%		4.1%		2.3%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$125,000	$125,000	$100,000	$100,000	$221,400	$221,400	$25,000	$25,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					1.1%		1.1%		2.4%		0.2%

Total Project Requirements Percentage 18.1%

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,845,000	$1,845,000	$1,809,000	$1,809,000	$2,370,000	$2,370,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					13.3%		11.5%		11.1%
Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$220,000	$220,000	$294,000	$294,000	$500,000	$500,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.6%		1.9%		2.4%
Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$214,000	$214,000	$379,000	$379,000	$400,000	$400,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.6%		2.5%		1.9%
Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$150,000	$150,000	$41,200	$41,200	$400,000	$400,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.1%		0.3%		1.9%

Total Project Requirements Percentage 17.0%

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,447,000	$1,447,000	$2,017,998	$2,017,998	$1,600,000	$1,600,000	$2,130,000	$2,130,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					9.0%		11.0%		8.4%		10.9%
Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$290,000	$290,000	$237,700	$237,700	$300,000	$300,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					1.8%		1.3%		1.6%		1.0%
Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$135,000	$135,000	$444,800	$444,800	$220,000	$220,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					0.8%		2.5%		1.2%		1.0%
Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$180,000	$180,000	$86,105	$86,105	$220,000	$220,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					1.1%		0.5%		1.2%		1.0%

Total Project Requirements Percentage 13.6%

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$923,000	$923,000	$783,000	$783,000	$1,100,000	$1,100,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					10.0%		9.1%		12.6%
Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$175,000	$175,000	$100,000	$100,000	$150,000	$150,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.9%		1.2%		1.7%
Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$112,000	$112,000	$171,000	$171,000	$25,000	$25,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.2%		2.0%		0.3%
Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$95,000	$95,000	$129,200	$129,200	$100,000	$100,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.0%		1.5%		1.2%

Total Project Requirements Percentage 14.6%

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$780,000	$780,000	$700,000	$700,000	$1,000,000	$1,000,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					9.0%		10.1%		11.0%

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$133,300	$133,300	$300,000	$300,000	$90,000	$90,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					1.6%		4.5%		1.0%

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$82,000	$82,000	$50,000	$50,000	$110,000	$110,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					1.0%		0.7%		1.2%

Total Project Requirements Percentage **13.4%**

Average Total Project Requirements Percentage **11.8%**

Use **13.0%**

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	3,222	$2.36	$7,603.92
631(1)	sq yd	Geotextile, Erosion Control, Class 1	3740	$2.51	$9,387.40
633(1)	ln ft	Silt fence	57,000	$3.05	$173,850.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$976,662.36	$976,662.36
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$717,461.94	$717,461.94
641(5)	acre	Preliminary Seeding	47.0	$5,219.00	$245,293.00
641(6)	each	Temp. Rock Check Dam	540.0	$67.76	$36,590.40
641(8)	each	Settling Pool	8	$767.39	$6,139.12
Subtotal erosion control					$2,172,988.14
Total const. bid (excluding mobilization & eros. cont.)					$133,314,649
Erosion control ratio based on bid prices					1.6%
Erosion control costs based on mile			(per mile)		$93,141

Average Percentage **1.6% of Construction costs**

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	3,222	$10.50	$33,831.00
631(1)	sq yd	Geotextile, Erosion Control, Class 1	3740	$2.00	$7,480.00
633(1)	ln ft	Silt fence	57,000	$4.00	$228,000.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$26,500.00	$26,500.00
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$529,410.00	$529,410.00
641(5)	acre	Preliminary Seeding	47.0	$2,500.00	$117,500.00
641(6)	each	Temp. Rock Check Dam	540.0	$100.00	$54,000.00
641(8)	each	Settling Pool	8	$530.00	$4,240.00
Subtotal erosion control					$1,000,961.00
Total const. bid (excluding mobilization & eros. cont.)					$107,796,373
Erosion control ratio based on bid prices					0.9%
Erosion control costs based on mile			(per mile)		$42,904

Average Percentage **0.9% of Construction costs**

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	28,800	$10.50	$302,400.00
633(1)	ln ft	Silt fence	15,000	$4.00	$60,000.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$53,000.00	$53,000.00
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$1,500,000.00	$1,500,000.00
Subtotal erosion control					$1,915,400.00
Total const. bid (excluding mobilization & eros. cont.)					$184,122,413
Erosion control ratio based on bid prices					1.0%
Erosion control costs based on mile			(per mile)		$82,100

Average Percentage **1.0% of Construction costs**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$75,000.00	$75,000.00	$5,000.00	$5,000.00	$25,000.00	$25,000.00	$10,000.00	$10,000.00
641(3)	LPSM	Temp. Erosion/Pollution Control	ALL	$290,000.00	$290,000.00	$200,000.00	$200,000.00	$300,000.00	$300,000.00	$150,000.00	$150,000.00
641(4)	LPSM	Temp. Erosion/Pollution Control Modification	ALL	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00
Subtotal erosion control					$415,000.00		$255,000.00		$375,000.00		$210,000.00
Total const. bid (excluding mobilization & eros. cont.)					$24,107,586		$24,587,513		$24,666,128		$25,388,433
Erosion control ratio based on bid prices					1.7%		1.0%		1.5%		0.8%
Erosion control costs based on mile			(per mile)		$17,788		$10,930		$16,074		$9,001

Average Percentage **1.3% of Construction costs**

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15705	m	Silt fence	1,150	$8.00	$9,200.00	$28.00	$32,200.00	$9.00	$10,350.00	$20.00	$23,000.00
15705	m	Sediment wattle	200	$26.00	$5,200.00	$56.00	$11,200.00	$43.00	$8,600.00	$30.00	$6,000.00
15801	m^3	watering for dust control	3,000	$7.00	$21,000.00	$12.00	$36,000.00	$9.30	$27,900.00	$12.50	$37,500.00
Subtotal erosion control					$35,400.00		$79,400.00		$46,850.00		$66,500.00
Total const. bid (excluding mobilization & eros. cont.)					$11,329,649		$9,321,735		$9,348,699		$10,884,799
Erosion control ratio based on bid prices					0.3%		0.9%		0.5%		0.6%
Total length			(km)		32.508		32.508		32.508		32.508
			(mile)		20.2		20.2		20.2		20.2
Erosion control costs based on km			(per km)		$1,089		$2,442		$1,441		$2,046
Erosion control costs based on mile			(per mile)		$1,753		$3,931		$2,320		$3,293

Average Percentage **0.6% of Construction costs**

Coffman Cove Phase 2, 2006				Enginee'rs Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15705	m	Silt fence	14,000	$7.00	$98,000.00	$5.27	$73,780.00	$9.00	$126,000.00
15705	LPSM	Soil erosion control, monitoring	ALL	$100,000.00	$100,000.00	$169,500.00	$169,500.00	$10,000.00	$10,000.00
15705	m	Temporary 750 millimeter culvert pipe	35.0	$100.00	$3,500.00	$90.00	$3,150.00	$200.00	$7,000.00
15705	m	Temporary 1200 millimeter culvert pipe	60.0	$150.00	$9,000.00	$140.00	$8,400.00	$230.00	$13,800.00
15705	m	Temporary 1800 millimeter culvert pipe	35	$250.00	$8,750.00	$190.00	$6,650.00	$500.00	$17,500.00
15705	m	diversion channel, temporary	800	$40.00	$32,000.00	$30.89	$24,712.00	$80.00	$64,000.00
15705	m	sediment log	1,700	$40.00	$68,000.00	$24.71	$42,007.00	$12.00	$20,400.00
15705	m	soil wrap	60	$50.00	$3,000.00	$69.00	$4,140.00	$23.00	$1,380.00
15706	each	check dams, sandbags	8	$80.00	$640.00	$705.00	$5,640.00	$400.00	$3,200.00
15706	each	check dam, riprap	230	$80.00	$18,400.00	$79.00	$18,170.00	$250.00	$57,500.00
15706	each	check dam (silt dike)	250.00	$80.00	$20,000.00	$75.00	$18,750.00	$400.00	$100,000.00
15706	each	chitosan gel sock	8	$700.00	$5,600.00	$750.00	$6,000.00	$1,000.00	$8,000.00
15801	m^3	watering for dust control	7,520	$5.50	$41,360.00	$5.50	$41,360.00	$4.00	$30,080.00
25120	m	Riprap ditch, class 1	1,100	$25.00	$27,500.00	$17.70	$19,470.00	$55.00	$60,500.00
Subtotal erosion control					$435,750.00		$441,729.00		$519,360.00
Total const. bid (excluding mobilization & eros. cont.)					$13,464,700		$15,330,307		$20,904,113
Erosion control ratio based on bid prices					3.2%		2.9%		2.5%
Total length			(km)		12.26		12.26		12.26
			(mile)		7.6		7.6		7.6
Erosion control costs based on km			(per km)		$35,542		$36,030		$42,362
Erosion control costs based on mile			(per mile)		$57,209		$57,994		$68,186

Average Percentage **2.9% of Construction costs**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15703	m	Silt fence	6,000	$11.00	$66,000.00	$5.00	$30,000.00	$11.00	$66,000.00	$6.00	$36,000.00
15705	m	Slope drains	110	$40.00	$4,400.00	$47.00	$5,170.00	$30.00	$3,300.00	$60.00	$6,600.00
15707 A	m	Temporary 600 millimeter culvert pipe	380.0	$100.00	$38,000.00	$60.00	$22,800.00	$150.00	$57,000.00	$150.00	$57,000.00
15707 B	m	Temporary 900 millimeter culvert pipe	70.0	$125.00	$8,750.00	$70.00	$4,900.00	$205.00	$14,350.00	$200.00	$14,000.00
15708	each	bales, straw	150	$30.00	$4,500.00	$50.00	$7,500.00	$14.00	$2,100.00	$30.00	$4,500.00
15709 A	each	check dams, riprap	170	$75.00	$12,750.00	$68.00	$11,560.00	$100.00	$17,000.00	$100.00	$17,000.00
15709 B	each	check dams, sandbag	140	$75.00	$10,500.00	$25.50	$3,570.00	$130.00	$18,200.00	$20.00	$2,800.00
15718 A	m	diversion channel, plastic lined	500	$55.00	$27,500.00	$30.00	$15,000.00	$7.00	$3,500.00	$40.00	$20,000.00
15718 B	m	diversion channel, riprap lined	220	$70.00	$15,400.00	$50.00	$11,000.00	$27.00	$5,940.00	$120.00	$26,400.00
15724	m	wattle, straw	3,100	$25.00	$77,500.00	$10.42	$32,302.00	$9.00	$27,900.00	$7.00	$21,700.00
15729	slry unit	soil stabilization	600.00	$250.00	$150,000.00	$320.61	$192,366.00	$525.00	$315,000.00	$400.00	$240,000.00
15749	m	turbidity curtain	60	$120.00	$7,200.00	$112.00	$6,720.00	$50.00	$3,000.00	$150.00	$9,000.00
15761	each	chitosan gel sock	10	$625.00	$6,250.00	$403.00	$4,030.00	$1,000.00	$10,000.00	$1,250.00	$12,500.00
15780	day	erosion control supervisor	450	$300.00	$135,000.00	$565.50	$254,475.00	$100.00	$45,000.00	$500.00	$225,000.00
15801	m^3	watering for dust control	15,000	$5.00	$75,000.00	$5.51	$82,650.00	$5.00	$75,000.00	$6.00	$90,000.00
20410	m	furrow ditches	1,600	$3.00	$4,800.00	$3.96	$6,336.00	$10.00	$16,000.00	$2.00	$3,200.00
25107	m	riprap lined ditch	1,800	$25.00	$45,000.00	$19.73	$35,514.00	$15.00	$27,000.00	$30.00	$54,000.00
62204	hour	pump, water, trash, 150 mm	200	$20.00	$4,000.00	$50.00	$10,000.00	$20.00	$4,000.00	$60.00	$12,000.00
62901	m^2	Erosion control mat type 1	1,700	$3.00	$5,100.00	$3.23	$5,491.00	$8.00	$13,600.00	$2.00	$3,400.00
					$697,650.00		$741,384.00		$723,890.00		$855,100.00
Total construction bid											
					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Erosion control ratio based on bid prices					4.0%		3.6%		3.5%		3.9%
Total length			(km)		15.785		15.785		15.785		15.785
			(mile)		9.8		9.8		9.8		9.8
Eroson control costs based on km			(per km)		$44,197		$46,968		$45,859		$54,172
Eroson control costs based on mile			(per mile)		$71,140		$75,599		$73,815		$87,195

Average Percentage **3.8% of Construction costs**

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15705	m	Silt fence	10,500	$11.00	$115,500.00	$6.20	$65,100.00	$7.00	$73,500.00
15708	each	Bales, straw	50	$50.00	$2,500.00	$75.00	$3,750.00	$30.00	$1,500.00
15724	each	Fiber log	350	$40.00	$14,000.00	$35.00	$12,250.00	$30.00	$10,500.00
15709	each	check dam	100	$100.00	$10,000.00	$90.00	$9,000.00	$100.00	$10,000.00
15801	m^3	watering for dust control	8,000	$4.50	$36,000.00	$7.00	$56,000.00	$8.00	$64,000.00
25119	m^2	Riprap ditch, class 1	3,400	$22.50	$76,500.00	$10.75	$36,550.00	$15.00	$51,000.00
Subtotal erosion control					$254,500.00		$182,650.00		$210,500.00
Total const. bid (excluding mobilization & eros. cont.)					$8,971,054		$8,391,653		$8,512,950
Erosion control ratio based on bid prices					2.8%		2.2%		2.5%
Total length			(km)		50		50		50
			(mile)		31.1		31.1		31.1
Erosion control costs based on km			(per km)		$5,090		$3,653		$4,210
Erosion control costs based on mile			(per mile)		$8,193		$5,880		$6,776

Average Percentage 2.5% of Construction costs

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15703	m	Silt fence	4,900	$10.00	$49,000.00	$6.00	$29,400.00	$20.00	$98,000.00
15705	each	Slope drains	50.0	$60.00	$3,000.00	$35.00	$1,750.00	$100.00	$5,000.00
15707a	m	Temporary 900 mm culvert pipe	12.0	$90.00	$1,080.00	$100.00	$1,200.00	$200.00	$2,400.00
15707c	m	Temporary 1800 mm culvert pipe	40	$225.00	$9,000.00	$250.00	$10,000.00	$350.00	$14,000.00
15708	each	Bales, straw	600	$30.00	$18,000.00	$50.00	$30,000.00	$40.00	$24,000.00
15709	each	Check dams	60	$100.00	$6,000.00	$100.00	$6,000.00	$100.00	$6,000.00
15718a	m	Diversion channel, plastic lined	300	$40.00	$12,000.00	$30.00	$9,000.00	$25.00	$7,500.00
15718b	m	Diversion channel, riprap lined	20	$290.00	$5,800.00	$50.00	$1,000.00	$90.00	$1,800.00
15801	m^3	watering for dust control	7,000	$10.00	$70,000.00	$5.00	$35,000.00	$7.00	$49,000.00
25119	m	Riprap lined ditch	260	$23.00	$5,980.00	$30.00	$7,800.00	$22.00	$5,720.00
Subtotal erosion control					$179,860.00		$131,150.00		$213,420.00
Total const. bid (excluding mobilization & eros. cont.)					$8,485,250		$6,778,090		$8,838,855
Erosion control ratio based on bid prices					2.1%		1.9%		2.4%
Total length			(km)		4.8		4.8		4.8
			(mile)		3.0		3.0		3.0
Erosion control costs based on km			(per km)		$37,471		$27,323		$44,463
Erosion control costs based on mile			(per mile)		$60,313		$43,979		$71,567

Average Percentage 2.2% of Construction costs

Total Average Percentage 1.9% of Construction costs

Use 3.0% of Construction costs

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	150	$3,822.63	$573,394.50
201(1B)	acre	Clearing	144	$4,300.43	$619,261.92

Average Unit Cost **$4,056.65 per acre**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3		Zones 4-5			
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	150	$6,900.00	$1,035,000.00	Clearing	333	$6,900.00	$2,297,700.00
201(1B)	acre	Clearing	144	$5,300.00	$763,200.00	Clearing	25	$5,300.00	$132,500.00

Average Unit Cost **$6,116.33 per acre** **Average Unit Cost** **$6,788.27 per acre**

Juneau Access, Financial Plan, 2007, UPA				Juneau - Lynn Canal, 2006		Juneau - Lynn Canal, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount
201(1A)	acre	Clearing	152	$6,533.00	$993,016.00	$15,000.00	$2,280,000.00
201(1B)	acre	Clearing	130	$5,000.00	$650,000.00	$5,000.00	$650,000.00
			Average	$5,826.30		$10,390.07	

Average Unit Cost **$8,108.18 per acre**
Average Unit Cost with 3%/year Inflation **$8,601.97 per acre**

Juneau Access, Final EIS, 2006, UPA				Juneau Glacier Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	35	$1,600.00	$56,000.00

Average Unit Cost **$1,600.00 per acre**
Average Unit Cost with 3%/year Inflation **$2,214.77 per acre**

Juneau Access, Final EIS, 2006, UPA				Parks Highway, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	181	$1,079.20	$195,335.20

Average Unit Cost **$1,079.20 per acre**
Average Unit Cost with 3%/year Inflation **$1,367.10 per acre**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	35.752	$7,200.00	$257,414.40	$10,160.00	$363,240.32	$30,600.00	$1,094,011.20

Ave.	Quantity	Unit	Total	Average Cost per Unit
$15,987	35.752	ha	$571,555	
	88.3	acre		**$6,473 per acre**

Average Unit Cost with 3%/year Inflation **$7,073.09 per acre**

Coffman Cove Schedule A, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	50	$7,000.00	$350,000.00	$8,482.50	$424,125.00	$15,000.00	$750,000.00	$6,000.00	$300,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$9,121	50	ha	$456,031	
	123.55	acre		**$3,691.07 per acre**

Average Unit Cost with 3%/year Inflation **$4,407.33 per acre**

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	1.00	$10,000.00	$10,000.00	$5,450.00	$5,450.00	$15,000.00	$15,000.00
20101	ha	Selective clearing	2.75	$8,085.00	$22,233.75	$1,385.00	$3,808.75	$10,000.00	$27,500.00

Ave.	Quantity	Unit	Total	Cost per Unit
$7,466	3.750	ha	$27,997.50	
	9.27	acre		**$3,020.23 per acre**

Average Unit Cost with 3%/year Inflation **$3,714.50 per acre**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	32	$7,000.00	$224,000.00	$5,000.00	$160,000.00	$7,000.00	$224,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$6,333	32.000	ha	$202,666.67	
	79	acre		**$2,565.40 per acre**

Average Unit Cost with 3%/year Inflation **$3,447.68 per acre**

Total Average Unit Cost **$4,778.77 per acre**

Use **$5,500.00 per acre**

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	15	acre	ad0301clW1.log dated 4/14/09
W - 2	3.20	745+00	914+00	3	acre	Misc. shaping
W - 3	11.08	160+00	745+00	11	acre	Misc. shaping
F - 1	6.42	723+00	1062+00	6	acre	Misc. shaping
F - 2	4.06	1062+00	1276+37	32	acre	ad0301clF2.log dated 4/2/09
A - 1a	30.37	1280+00	2883+63	323	acre	ad0301clAa(1-4).log dated 4/14/09
A-1a (BC)	3.86	2883+63	3087+36	40	acre	ad0301clAa4.log dated 4/14/09
A - 1b	29.77	1280+00	2851+97	299	acre	ad0301clAb(1-4).log dated 4/14/09
A - 1b (BC)	3.86	2851+97	3055+71	40	acre	ad0301clAb4.log dated 4/14/09
A - 2	5.21	1005+00	1280+00	49	acre	ad0301clA2.log dated 4/13/09
S -1	21.35	2545+94	3673+29	226	acre	ad0301clS1.log dated 4/3/09
S -1 (BC)	4.13	3673+29	3891+26	45	acre	ad0301clS1.log dated 4/3/9
S - 2	17.65	1614+00	2545+94	161	acre	ad0301clS2-(1-3).log, 3/20/09
S - 3	11.53	1005+00	1614+00	104	acre	ad0301clS3-(1-2).log, 3/20/09
L - 1	14.39	100+00	859+77	122	acre	ad0301clL1.log, 3/23/09

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	1,804,700.000	$12.03	$21,710,541.00
203(5)	CUYD	Unc. Exc.	786,900.000	$4.12	$3,242,028.00

Average Unit Cost $9.63 per yd3

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3		Zones 4-5		
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	1,804,700.000	$12.00	$21,656,400.00	3,105,810.000	$12.00	$37,269,720.00
203(5)	CUYD	Unc. Exc.	786,900.000	$5.00	$3,934,500.00	317,560.000	$5.00	$1,587,800.00

Average Unit Cost $9.87 per yd3 **Average Unit Cost $11.35 per yd3**

Juneau Access, Financial Plan, 2007, UPA				Ketchikan Airport, 2002	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	-	$5.46	-

Average Unit Cost with 3%/year Inflation $6.72 per yd3

Juneau Access, Final EIS, 2006, UPA				Ketchikan 3rd Ave, 1999	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	151,000.000	$15.68	$2,368,209.13
Juneau Access, Final EIS, 2006, UPA				Glacier Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	339,500.000	$4.47	$1,517,930.10
Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	511,700.000	$4.82	$2,464,927.40
Juneau Access, Final EIS, 2006, UPA				Glenn Highway, 2000	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	112,212.000	$3.16	$354,315.12
Juneau Access, Final EIS, 2006, UPA				Palmer-Wasilla, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	125,739.000	$3.29	$414,134.25
Juneau Access, Final EIS, 2006, UPA				Parks Highway, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	847,041.000	$2.90	$2,457,184.19

Common Average Unit Cost $5.72 per yd3
Weighted Average Unit Cost $4.59 per yd3

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401	m^3	roadway excavation	473,820	$10.00	$4,738,200.00	$8.14	$3,856,894.80	$14.00	$6,633,480.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$ 10.71	473,820	m3	$5,076,192	
	619,733	yd3		**$8.19 per yd3**

Embankment was included in Coffman Cove bid price

Average Unit Cost with 3%/year Inflation $8.95 per yd3

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401 A	m^3	roadway excavation	528,752	$5.50	$2,908,136.00	$7.99	$4,224,728.48	$9.50	$5,023,144.00	$13.00	$6,873,776

Coffman Cove (1)

Ave.	Quantity	Units	Total Cost	Cost per Unit
$9	528752	m3	$4,758,768	
	691581	yd3		**$6.88 per yd3**

Embankment was included in Coffman Cove bid price

Average Unit Cost with 3%/year Inflation $8.22 per yd3

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401	m^3	roadway excavation	2,000	$12.00	$24,000.00	$5.25	$10,500.00	$6.00	$12,000.00

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$7.75	2,000	m3	$15,500	
	2,616	yd3		**$5.93 per yd3**

Average Unit Cost with 3%/year Inflation $7.29 per yd3

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401A	m^3	roadway excavation	310,000	$5.00	$1,550,000.00	$3.50	$1,085,000.00	$5.50	$1,705,000.00
20401B	m^3	roadway excavation	171,000	$8.00	$1,368,000.00	$5.50	$940,500.00	$8.00	$1,368,000.00

$4.67	$1,446,666.67	$5.56
$7.17	$1,225,500.00	

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$5.56	481,000	m3	$2,672,167	
	629,124	yd3		**$4.25 per yd3**

Average Unit Cost with 3%/year Inflation **$5.71 per yd3**

Total Average Unit Cost **$7.41 per yd3**

Use **$9.00 per yd3**

QUANTITIES								
Segment	Length (mi.)	Stationing		Excavation	Unit	Embankment	Unit	Source
W - 1	1.72	914+00	1005+00	140,000	Cu. Yd.	83,000	Cu. Yd.	ad0301xaW1_ew.log
W - 2	3.20	745+00	914+00	11,000	Cu. Yd.	10,000	Cu. Yd.	Misc. shaping
W - 3	11.08	160+00	745+00	43,500	Cu. Yd.	40,500	Cu. Yd.	Misc. shaping
F - 1	6.42	723+00	1062+00	22,500	Cu. Yd.	21,000	Cu. Yd.	Misc. shaping
F - 2	4.06	1062+00	1276+37	148,000	Cu. Yd.	134,000	Cu. Yd.	ad0301xaF2_ew.log
A - 1a	30.37	1280+00	2883+63	5,371,500	Cu. Yd.	2,392,500	Cu. Yd.	ad0301xaAa_ew(1-4).log
A-1a (BC)	3.86	2883+63	3087+36	307,000	Cu. Yd.	393,500	Cu. Yd.	ad0301xaAa_ew4.log
A - 1b	29.77	1280+00	2851+97	3,246,500	Cu. Yd.	2,022,000	Cu. Yd.	ad0301xaAb_ew(1-4).log
A - 1b (BC)	3.86	2851+97	3055+71	307,000	Cu. Yd.	393,500	Cu. Yd.	ad0301xaAb_ew4.log
A - 2	5.21	1005+00	1280+00	377,000	Cu. Yd.	349,500	Cu. Yd.	ad0301xaA2_ew.log
S -1	21.35	2545+94	3673+29	3,722,500	Cu. Yd.	2,395,000	Cu. Yd.	ad0301xaS1_ew.log
S -1 (BC)	4.13	3673+29	3891+26	396,500	Cu. Yd.	1,067,000	Cu. Yd.	ad0301xaS1_ew.log
S - 2	17.65	1614+00	2545+94	1,501,000	Cu. Yd.	1,067,000	Cu. Yd.	ad0301xaS2-(1-3).log
S - 3	11.53	1005+00	1614+00	590,500	Cu. Yd.	539,000	Cu. Yd.	ad0301xaS3-(1-2).log
L - 1	14.39	100+00	859+77	1,076,500	Cu. Yd.	810,000	Cu. Yd.	ad0301xaL1.log

Alignment	Length (miles)	Exc. (from log file)	Emb. (from log file)	Excess Excavation	Borrow (+20%)	Subexcavation Replacement (+20%)	Total Exc.
Segment A-1a							
Total Earthwork	**30.37**	5,371,330	2,392,623	2,978,707	0	18,720	**5,371,330**
Equilavent per mile		176,853	78,778				**176,853**
Segment A-1a (BC)							
Total Earthwork	**3.86**	306,755	393,545	(86,790)	0	66,120	**306,755**
Equilavent per mile		79,470	101,955				**79,470**
Segment A-2							
Total Earthwork	**5.21**	377,202	349,495	27,707	0	1,920	**377,202**
Equilavent per mile		72,423	67,103				**72,423**
Segment A-1b							
Total Earthwork	**29.77**	3,246,579	2,021,769	1,224,810	0	24,600	**3,246,579**
Equilavent per mile		109,055	67,913				**109,055**
Segment A-1b (BC)							
Total Earthwork	**3.86**	306,755	393,545	(86,790)	0	24,600	**306,755**
Equilavent per mile		79,470	101,955				**79,470**
Segment W-1							
Total Earthwork	**1.72**	139,990	83,248	56,742	0	960	**139,990**
Equilavent per mile		81,225	48,302				**81,225**
Segment W-2							
Total Earthwork	**3.20**	10,500	10,000	500	0	840	**10,840**
Equilavent per mile		3,280	3,124				**3,387**
Segment W-3							
Total Earthwork	**11.08**	42,500	40,500	2,000	0	3,240	**43,740**
Equilavent per mile		3,836	3,655				**3,948**

Roadway Excavation Incl. Haul **Unit: CY**

Alignment	Length (miles)	Exc. (from log file)	Emb. (from log file)	Excess Excavation	Borrow (+20%)	Subexcavation Replacement (+20%)	Total Exc.
Segment S-1							
Total Earthwork	**21.35**	3,722,606	2,395,050	1,327,556	0	43,920	**3,722,606**
Equilavent per mile		174,350	112,173				**174,350**
Segment S-1 (BC)							
Total Earthwork	**4.13**	396,439	910,794	(514,355)	0	43,920	**396,439**
Equilavent per mile		96,033	220,630				**96,033**
Segment S-2							
Total Earthwork	**17.65**	1,500,763	1,067,164	433,599	0	22,080	**1,500,763**
Equilavent per mile		85,027	60,461				**85,027**
Segment S-3							
Total Earthwork	**11.53**	590,308	538,956	51,352	0	2,760	**590,308**
Equilavent per mile		51,179	46,727				**51,179**
Segment F-1							
Total Earthwork	**6.42**	22,000	21,000	1,000	0	1,680	**22,680**
Equilavent per mile		3,427	3,271				**3,532**
Segment F-2							
Total Earthwork	**4.06**	147,818	134,136	13,682	0	6,000	**147,818**
Equilavent per mile		36,408	33,038				**36,408**
Segment L-1							
Total Earthwork	**14.39**	1,076,609	810,223	266,386		263,400	**1,076,609**
Equilavent per mile		74,819	56,306				**74,819**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	subexcavation	308,000	$6.00	$1,848,000.00	$11.07	$3,409,560.00	$9.00	$2,772,000.00

Note: Subexcavation replacement material included in Excavation cost (See Excavation and Embankment Calculations)

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Total Cost per Unit
$ 8.69	308,000	m3	$2,676,520	
	402,849	yd3		**$6.64 per yd3**

Average Unit Cost with 3%/year Inflation $7.26 per yd3

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	subexcavation	280,000	$12.00	$3,360,000.00	$13.28	$3,718,400.00	$12.00	$3,360,000.00	$7.00	$1,960,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Unit	Total	Total Cost per Unit
$11	28,000	m3	$301,280	
	36,603	yd3		**$8.23 per yd3**

Average Unit Cost with 3%/year Inflation $9.83 per yd3

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	Subexcavation	2,500	$7.00	$17,500.00	$3.50	$8,750.00	$6.00	$15,000.00

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$5.50	2,500	m3	$13,750	
	3,270	yd3		**$4.20 per yd3**

Average Unit Cost with 3%/year Inflation $5.17 per yd3

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	Subexcavation	97,000	$4.00	$388,000.00	$2.75	$266,750.00	$3.00	$291,000.00

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$3.25	97,000	m3	$315,250	
	126,871	yd3		**$2.48 per yd3**

Average Unit Cost with 3%/year Inflation $3.34 per yd3

Total Average Unit Cost $6.40 per yd3

Use $8.00 per yd3

QUANTITIES

Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	800	Cu. Yd.	Aerial Photos
W - 2	3.20	745+00	914+00	700	Cu. Yd.	Aerial Photos
W - 3	11.08	160+00	745+00	2,700	Cu. Yd.	Aerial Photos
F - 1	6.42	723+00	1062+00	1,400	Cu. Yd.	Aerial Photos
F - 2	4.06	1062+00	1276+37	5,000	Cu. Yd.	Aerial Photos
A - 1a	30.37	1280+00	2883+63	15,600	Cu. Yd.	Aerial Photos
A-1a (BC)	3.86	2883+63	3087+36	55,100	Cu. Yd.	Aerial Photos
A - 1b	29.77	1280+00	2851+97	20,500	Cu. Yd.	Aerial Photos
A - 1b (BC)	3.86	2851+97	3055+71	55,100	Cu. Yd.	Aerial Photos
A - 2	5.21	1005+00	1280+00	1,600	Cu. Yd.	Aerial Photos
S -1	21.35	2545+94	3673+29	36,600	Cu. Yd.	Aerial Photos
S -1 (BC)	4.13	3673+29	3891+26	52,300	Cu. Yd.	Aerial Photos
S - 2	17.65	1614+00	2545+94	18,400	Cu. Yd.	Aerial Photos
S - 3	11.53	1005+00	1614+00	2,300	Cu. Yd.	Aerial Photos
L - 1	14.39	100+00	859+77	219,500	Cu. Yd.	Aerial Photos

QUANTITIES

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Aaron Creek	A -2	1147+00	1150+00	300	70	2	1,600	Cu. Yd.	Muskeg Subexcavation
Total	**Aaron Creek Pass**					**Total**	**1,600**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Aaron Creek	A-1a	1763+00	1765+00	200	50	2	800	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	1779+00	1782+00	300	50	2	1,200	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	1785+50	1786+50	100	60	2	500	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	1830+00	1843+00	1,300	70	2	6,800	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	1854+00	1860+00	600	90	2	4,000	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	1998+00	2003+00	500	60	2	2,300	Cu. Yd.	Drainage Encroachment
Total	**Aaron Creek Pass (AK)**					**Total**	**15,600**	**Cu. Yd.**	
Aaron Creek	A-1a	2951+00	2954+00	300	180	2	4,000	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	2972+00	3015+00	4,300	80	2	25,500	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	3042+00	3065+00	2,300	60	5	25,600	Cu. Yd.	Muskeg Subexcavation
Total	**Aaron Creek Pass (BC)**					**Total**	**55,100**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Aaron Creek	A-1b	1763+00	1765+00	200	50	2	800	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	1779+00	1782+00	300	50	2	1,200	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	1785+50	1786+50	100	60	2	500	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	1830+00	1843+00	1,300	70	2	6,800	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	1854+00	1860+00	600	90	2	4,000	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	1998+00	2003+00	500	60	2	2,300	Cu. Yd.	Drainage Encroachment
Aaron Creek	A-1b	2214+00	2218+00	400	60	2	1,800	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	2359+00	2361+00	200	50	2	800	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	2506+00	2512+00	600	50	2	2,300	Cu. Yd.	Muskeg Subexcavation
Total	**Aaron Creek Tunnel (AK)**					**Total**	**20,500**	**Cu. Yd.**	
Aaron Creek	A-1b	2919+00	2922+00	300	180	2	4,000	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	2940+00	2983+00	4,300	80	2	25,500	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	3010+00	3033+00	2,300	60	5	25,600	Cu. Yd.	Muskeg Subexcavation
Total	**Aaron Creek Tunnel (BC)**					**Total**	**55,100**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Wrangell	W-1			500	20	2	800	Cu. Yd.	Spot Repair/Digouts
Total	**Wrangell Island**					**Total**	**800**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Wrangell	W-2			178	50	2	700	Cu. Yd.	Spot Repair/Digouts
Total	**Wrangell Island**					**Total**	**700**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Wrangell	W-3			706	50	2	2,700	Cu. Yd.	Spot Repair/Digouts
Total	**Wrangell Island**					**Total**	**2,700**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Fool's Inlet	F-1			361	50	2	1,400	Cu. Yd.	Spot Repair/Digouts
Total	**Wrangell Island**					**Total**	**1,400**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Fool's Inlet	F-2	1081+00	1084+00	300	50	4	2,300	Cu. Yd.	Muskeg Subexcavation
Fool's Inlet	F-2	1097+00	1103+00	600	60	2	2,700	Cu. Yd.	Muskeg Subexcavation
Total	**Wrangell Island**					**Total**	**5,000**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
S. Stikine	S-3	1319+00	1324+00	500	60	2	2,300	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-3	1430+00	1433+00	300	60	2	1,400	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-3	1487+00	1492+00	500	60	2	2,300	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-3	1508+00	1512+00	400	60	2	1,800	Cu. Yd.	Muskeg Subexcavation
Total	**Eastern Passage**					**Total**	**2,300**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
S. Stikine	S-2	1655+00	1658+00	300	65	4	2,900	Cu. Yd.	Drainage Encroachment
S. Stikine	S-2	1663+00	1669+00	600	50	2	2,300	Cu. Yd.	Drainage Encroachment
S. Stikine	S-2	1724+00	1727+00	300	60	2	1,400	Cu. Yd.	Drainage Encroachment
S. Stikine	S-2	1739+00	1745+00	600	50	2	2,300	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-2	1751+00	1763+00	1,200	40	2	3,600	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-2	2462+00	2465+00	300	30	2	700	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-2	2523+00	2546+00	2,300	30	2	5,200	Cu. Yd.	Muskeg Subexcavation
Total	**South Stikine River**					**Total**	**18,400**	**Cu. Yd.**	

Subexcavation	Unit: CY	Page 3 of 3

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
S. Stikine	S-1	2634+00	2650+00	1,600	75	4	17,800	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3269+00	3276+00	700	75	4	7,800	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3576+00	3579+00	300	200	2	4,500	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3663+00	3673+29	1,029	85	2	6,500	Cu. Yd.	Muskeg Subexcavation
Total	**South Stikine River (AK)**					**Total**	**36,600**	**Cu. Yd.**	
S. Stikine	S-1	3673+29	3675+00	171	85	2	1100	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3773+00	3798+00	2,500	75	2	13,900	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3808+00	3824+00	1,600	65	2	7,800	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3831+00	3884+00	5,300	75	2	29,500	Cu. Yd.	Muskeg Subexcavation
Total	**South Stikine River (BC)**					**Total**	**52,300**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Limb Island	L-1	132+00	133+00	100	20	2	200	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	450+00	475+00	2,500	50	4	18,600	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	559+00	633+00	7,400	60	5	82,300	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	647+00	653+00	600	50	2	2,300	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	723+00	752+00	2,900	60	2	12,900	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	775+00	829+00	5,400	60	2	24,000	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	723+00	752+00	2,900	60	2	12,900	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	775+00	829+00	5,400	60	5	60,000	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	852+00	855+77	377	90	5	6,300	Cu. Yd.	Muskeg Subexcavation
Total	**Limb Island**					**Total**	**219,500**	**Cu. Yd.**	

Segment	Begin Station	End Station	Paved Length		Superpave	Agg. Base	Sel. Mat.
			feet	miles	yd3	yd3	yd3
A-2	1005+00	1280+00	26,000	4.92	8,060	11,444	21,268
Total Aaron Cr.			**26,000**	**4.92**	**8,060**	**11,444**	**21,268**
Increased by 10% and rounded, Aaron Cr.					**9,000**	**12,500**	**23,500**
A-1a	1280+00	1718+00	43,200	8.18	13,392	19,008	35,403
A-1a	1718+00	2145+00	37,700	7.14	11,627	16,500	30,774
A-1a	2145+00	2608+00	39,800	7.54	12,403	17,600	32,752
A-1a	2608+00	2883+63	26,063	4.94	8,062	11,440	21,305
Total Aaron Cr. Pass (AK)			**146,763**	**27.8**	**45,484**	**64,548**	**120,234**
Increased by 10% and rounded, Aaron Cr. Pass (AK)					**50,000**	**71,000**	**132,500**
A-1a	2883+63	3087+36	17,973	3.4	5,560	7,892	14,761
Total Aaron Cr. Pass (BC)			**17,973**	**3.4**	**5,560**	**7,892**	**14,761**
Increased by 10% and rounded, Aaron Cr. Pass (BC)					**6,000**	**8,500**	**16,500**
A-1b	1280+00	1718+00	43,200	8.18	13,392	19,008	35,403
A-1b	1718+00	2145+00	38,700	7.33	11,971	16,985	31,652
A-1b	2145+00	2615+00	42,000	7.95	10,726	15,226	28,421
A-1b	2615+00	2851+97	22,197	4.2	6,822	9,680	18,011
(Tunnel)	2225+00	2295+00					
Total Aaron Cr. Tunnel (AK)			**146,097**	**27.67**	**42,911**	**60,899**	**113,487**
Increased by 10% and rounded, Aaron Cr. Tunnel (AK)					**47,000**	**67,000**	**125,000**
A-1b	2851+97	3055+71	17,974	3.4	5,573	7,907	14,789
Total Aaron Cr. Tunnel (BC)			**17,974**	**3.4**	**5,573**	**7,907**	**14,789**
Increased by 10% and rounded, Aaron Cr. Tunnel (BC)					**6,000**	**8,500**	**16,500**
W-3	160+00	745+00	58,500	11.08	18,135	25,740	48,555
Total Wrangell Island			**58,500**	**11.08**	**18,135**	**25,740**	**48,555**
Increased by 10% and rounded, Wrangell Island					**20,000**	**28,500**	**53,500**
W-2	745+00	914+00	16,900	3.20	5,239	7,436	14,027
Total Wrangell Island			**16,900**	**3.20**	**5,239**	**7,436**	**14,027**
Increased by 10% and rounded, Wrangell Island					**6,000**	**8,000**	**15,500**
W-1	914+00	1005+00	9,100	1.72	2,821	4,004	7,448
Total Wrangell Island			**9,100**	**1.72**	**2,821**	**4,004**	**7,448**
Increased by 10% and rounded, Wrangell Island					**3,000**	**4,500**	**8,000**
F-1	723+00	1062+00	33,900	6.42	10,509	14,916	28,137
Total Fool's Inlet			**33,900**	**6.42**	**10,509**	**14,916**	**28,137**
Increased by 10% and rounded, Wrangell Island					**11,500**	**16,500**	**31,000**
F-2	1062+00	1276+37	21,437	4.06	6,634	9,416	17,541
Total Fool's Inlet			**21,437**	**4.06**	**6,634**	**9,416**	**17,541**
Increased by 10% and rounded, Wrangell Island					**7,500**	**10,500**	**19,500**
S-3	1005+00	1265+00	24,475	4.64	7,660	10,868	20,143
S-3	1265+00	1614+00	34,300	6.50	10,542	14,960	27,856
Total South Stikine River			**58,775**	**11.13**	**18,202**	**25,828**	**47,999**
Increased by 10% and rounded, Eastern Passage					**20,000**	**28,500**	**53,000**
S-2	1614+00	1950+00	33,000	6.25	10,201	14,481	26,991
S-2	1950+00	2235+00	28,500	5.40	8,809	12,497	23,189
S-2	2235+00	2454+94	21,594	4.09	9,475	13,445	24,995
Total South Stikine River			**83,094**	**15.74**	**28,485**	**40,423**	**75,175**
Increased by 10% and rounded, South Stikine River					**31,500**	**44,500**	**83,000**
S-1	2545+94	3673+29	109,035	20.65	33,790	47,960	89,387
Total South Stikine River (AK)			**109,035**	**20.65**	**33,821**	**48,004**	**89,470**
Increased by 10% and rounded, South Stikine River (AK)					**37,000**	**53,000**	**98,500**
S-1	3673+29	3891+26	20,097	3.81	6,239	8,855	16,551
Total South Stikine River (BC)			**20,097**	**3.81**	**6,239**	**8,855**	**16,551**
Increased by 10% and rounded, South Stikine River (BC)					**7,000**	**9,500**	**18,000**
L-1	100+00	859+77	65,477	12.40	20,299	28,810	53,847
Total Limb Island			**65,477**	**12.40**	**20,299**	**28,810**	**53,847**
Increased by 10% and rounded, Limb Island					**22,500**	**31,500**	**59,000**

Note: All surfacing quantities are from Geopak earthwork log files and have been increased 8% for curve widening and 2% for guardrail widening

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II	51,360.000	$34.15	$1,753,944.00
401(2)	Ton	Asphalt Concrete, grade 58-28	5,232.000	$691.56	$3,618,241.92
			$34.15	$691.56	
				$104.60	

Ave.	Quantity	Unit	Total	Cost per Unit
$104.60	51,360	t	$5,372,186	
	22,043	m3		
	26,474	yd3		**$202.92 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II	51,360.000	$50.00	$2,568,000.00
401(2)	Ton	Asphalt Concrete, grade 58-28	5,232.000	$700.00	$3,662,400.00
			$50.00	$700.00	
				$121.31	

Ave.	Quantity	Unit	Total	Cost per Unit
$121.31	51,360	t	$6,230,400	
	22,043	m3		
	26,474	yd3		**$235.34 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II	58,380.000	$50.00	$2,919,000.00
401(2)	Ton	Asphalt Concrete, grade 58-28	6,026.000	$700.00	$4,218,200.00
			$50.00	$700.00	
				$122.25	

Ave.	Quantity	Unit	Total	Cost per Unit
$122.25	58,380	t	$7,137,200	
	25,056	m3		
	30,093	yd3		**$237.17 per yd3**

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, SP, type B	8,180.000	$56.50	$462,170.00
401(2)	Ton	Asphalt Cement	1,120.000	$615.00	$688,800.00
			$56.50	$615.00	
				$140.71	

Ave.	Quantity	Unit	Total	Cost per Unit
$140.71	8,180	t	$1,150,970	
	3,511	m3		
	4,216	yd3		**$272.97 per yd3**

Average Unit Cost with 3%/year Inflation **$298.28 per yd3**

Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II, Class B	16,900.000	$35.13	$593,728.36
Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1999	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II, Class B	17,500.000	$31.35	$548,687.46
Juneau Access, Final EIS, 2006, UPA				Parks Highway, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II, Class A	66,256.000	$24.51	$1,624,067.14
			Average	$27.48	

Juneau Access, Final EIS, 2006, UPA				Kenai Peninsula, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(2)	Ton	Asphalt Concrete, grade 58-28	1,300.000	$246.35	$320,249.46
Juneau Access, Final EIS, 2006, UPA				North Kenai Spur, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(2)	Ton	Asphalt Concrete, grade 58-28	1,400.000	$289.82	$405,745.93
Juneau Access, Final EIS, 2006, UPA				Hope Road, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(2)	Ton	Asphalt Concrete, grade 58-28	1,750.000	$256.20	$448,349.25
			Average	$263.90	

6% cement	$43.32
10% cement	$53.87

Ave.	Quantity	Unit	Total	Cost per Unit
$43.32	100	t	$4,332	
	43	m3		
	52	yd3		**$84.04 per yd3**

Ave.	Quantity	Unit	Total	Cost per Unit
$53.87	100	t	$5,387	
	43	m3		
	52	yd3		**$104.52 per yd3**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
401(1)	Ton	Asphalt pavement, class B	45,800.000	$50.00	$2,290,000.00	$35.00	$1,603,000.00	$42.00	$1,923,600.00	$40.00	$1,832,000.00
306(2)	Ton	Asphalt cement grade SHRP PG 52-40	2,520.000	$550.00	$1,386,000.00	$1,285.00	$3,238,200.00	$1,000.00	$2,520,000.00	$1,000.00	$2,520,000.00
			$41.75	$958.75							
				$94.50							

Ave.	Quantity	Unit	Total	Cost per Unit
$95	45,800	t	$4,328,200	
	19,657	m3		
	23,608	yd3		**$183.33 per yd3**

Coffman Cove Paving, 2007				Engineer's Estimate		Bucknell, Inc.		SE Road Builders, Inc.		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
40101	t	Hot asphalt concrete pavement superpave, type III pavement smoothness	52,500	$110.00	$5,775,000.00	$94.00	$4,935,000.00	$108.00	$5,670,000.00	$100.00	$5,250,000.00
40105	t	Antistrip additive, type 3	525.0	$315.00	$165,375.00	$350.00	$183,750.00	$424.20	$222,705.00	$300.00	$157,500.00
41201	t	tack coat grade CSS-1	105.0	$575.00	$60,375.00	$940.00	$98,700.00	$800.00	$84,000.00	$1,250.00	$131,250.00

Coffman Cove (A)

Quantity	Unit	Total Surfacing Cost	Cost per Unit
52,500	t	$5,683,414	$108.26 t
57,871	t		$98.21 t
27,062	yd3		**$210.01 per yd3**

Average Unit Cost with 3%/year Inflation **$222.80 per yd3**

Coffman Cove, Schedule B, 2003				Engineer's Estimate		SE Road Builders.		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
40101	t	Asphalt pavement, class B	22,300.000	$38.00	$847,400.00	$45.00	$1,003,500.00	$34.00	$758,200.00	$40.00	$892,000.00
40103	t	Asphalt cement grade SHRP PG 58-28	1,200.000	$350.00	$420,000.00	$475.00	$570,000.00	$400.00	$480,000.00	$400.00	$480,000.00
			$39.25	$406.25							
				$61.11							

Ave.	Quantity	Unit	Total	Cost per Unit
$61	22,300	t	$1,362,775	
	9,571	m3		
	11,495	yd3		**$118.56 per yd3**

Average Unit Cost with 3%/year Inflation **$141.56 per yd3**

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
40101	t	Asphalt pavement, class B	82,000.000	$30.00	$2,460,000.00	$27.73	$2,273,860.00	$28.00	$2,296,000.00
40103	t	Asphalt cement grade SHRP PG 58-28	4,900.000	$350.00	$1,715,000.00	$313.30	$1,535,170.00	$280.00	$1,372,000.00
			$28.58	$314.43					
				$47.37					

Ave.	Quantity	Unit	Total	Cost per Unit
$47	82,000	t	$3,884,010	
	35,193	m3		
	42,268	yd3		**$91.89 per yd3**

Average Unit Cost with 3%/year Inflation **$113.01 per yd3**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
40101	t	Asphalt pavement, class B	21,500.000	$40.00	$860,000.00	$27.00	$580,500.00	$30.00	$645,000.00
40103	t	Asphalt cement grade SHRP PG 58-28	1,290.000	$300.00	$387,000.00	$300.00	$387,000.00	$300.00	$387,000.00
			$32.33	$300.00					
				$50.33					

Ave.	Quantity	Unit	Total	Cost per Unit
$50	21,500	t	$1,082,167	
	9,227	m3		
	11,082	yd3		**$97.65 per yd3**

Average Unit Cost with 3%/year Inflation **$131.23 per yd3**

Total Average Unit Cost **$177.66 per yd3**

Use **$220.00 per yd3**

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	3,000	Cu. Yd.	ad0301xaW1_ew.log
W - 2	3.20	745+00	914+00	6,000	Cu. Yd.	Typical section, surfacing.xls
W - 3	11.08	160+00	745+00	20,000	Cu. Yd.	Typical section, surfacing.xls
F - 1	6.42	723+00	1062+00	11,500	Cu. Yd.	Typical section, surfacing.xls
F - 2	4.06	1062+00	1276+37	7,500	Cu. Yd.	ad0301xaF2_ew.log
A - 1a	30.37	1280+00	2883+63	50,000	Cu. Yd.	ad0301xaAa_(1-4)_ew.log
A-1a (BC)	3.86	2883+63	3087+36	6,000	Cu. Yd.	ad0301xaAa_4_ew.log
A - 1b	29.77	1280+00	2851+97	47,000	Cu. Yd.	ad0301xaAb_(1-4)_ew.log
A - 1b (BC)	3.86	2851+97	3055+71	6,000	Cu. Yd.	ad0301xaAb_4_ew.log
A - 2	5.21	1005+00	1280+00	9,000	Cu. Yd.	ad0301xaA2_ew.log
S -1	21.35	2545+94	3673+29	37,000	Cu. Yd.	ad0301xaS1_ew.log
S -1 (BC)	4.13	3673+29	3891+26	7,000	Cu. Yd.	ad0301xaS1_ew.log
S - 2	17.65	1614+00	2545+94	31,500	Cu. Yd.	ad0301xaS2_(1-3)ew.log
S - 3	11.53	1005+00	1614+00	20,000	Cu. Yd.	ad0301xaS3_(1-2)ew.log
L - 1	14.39	100+00	859+77	22,500	Cu. Yd.	ad0301xaL1_ew.log

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	97,120.000	$15.65	$1,519,928.00

Ave.	Quantity	Unit	Total	Cost per Unit
$15.65	97,120	t	$1,519,928	
	41,682	m3		
	49,299	yd3		**$30.83 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	97,120.000	$25.00	$2,428,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$25.00	97,120	t	$2,428,000	
	41,682	m3		
	49,299	yd3		**$49.25 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	124,675.000	$25.00	$3,116,875.00

Ave.	Quantity	Unit	Total	Cost per Unit
$25.00	124,675	t	$3,116,875	
	53,509	m3		
	63,287	yd3		**$49.25 per yd3**

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
306(1)	Ton	Asphalt Treated Base	13,900.000	$42.50	$590,750.00

Ave.	Quantity	Unit	Total	Cost per Unit
$42.50	13,900	t	$590,750	
	5,966	m3		
	7,056	yd3		**$83.73 per yd3**

Average Unit Cost with 3%/year Inflation **$91.49 per yd3**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
306(1)	Ton	ATB	91,550.000	$35.00	$3,204,250.00	$30.00	$2,746,500.00	$34.00	$3,112,700.00	$35.00	$3,204,250.00

Ave.	Quantity	Unit	Total	Cost per Unit
$33.50	91,550	t	$3,066,925	
	39,292	m3		
	46,472	yd3		**$66.00 per yd3**

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Aggregate Base	136,500	$20.50	$2,798,250.00	$15.20	$2,074,800.00	$12.00	$1,638,000.00	$27.00	$3,685,500.00

Coffman Cove (A)

Ave.	Quantity	Unit	Total	Cost per Unit
$18.68	136,500	t	$2,549,138	
	58,584	m3		
	69,289	yd3		**$36.79 per yd3**

Average Unit Cost with 3%/year Inflation **$39.03 per yd3**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Aggregate Base Grading D	84,000.0	$11.00	$924,000.00	$11.29	$948,360.00	$12.00	$1,008,000.00	$12.00	$1,008,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$11.57	84,000	t	$971,880.00	
	36,052	m3		
	42,640	yd3		**$22.79 per yd3**

Average Unit Cost with 3%/year Inflation **$27.22 per yd3**

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Agg. Base grading D	119,000.000	$12.00	$1,428,000.00	$9.79	$1,165,010.00	$12.00	$1,428,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$11.26	119,000	t	$1,340,337	
	51,073	m3		
	60,406	yd3		**$22.19 per yd3**

Average Unit Cost with 3%/year Inflation **$27.29 per yd3**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Agg. Base grading D	29,400.000	$12.00	$352,800.00	$13.00	$382,200.00	$15.00	$441,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$13.33	29,400	t	$392,000.00	
	12,618	m3		
	14,924	yd3		**$26.27 per yd3**

Average Unit Cost with 3%/year Inflation **$35.30 per yd3**

Total Average Unit Cost **$46.18** **per yd3**

Use **$40.00** **per yd3**

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	4,500	Cu. Yd.	ad0301xaW1_ew.log
W - 2	3.20	745+00	914+00	8,000	Cu. Yd.	Typical section, surfacing.xls
W - 3	11.08	160+00	745+00	28,500	Cu. Yd.	Typical section, surfacing.xls
F - 1	6.42	723+00	1062+00	16,500	Cu. Yd.	Typical section, surfacing.xls
F - 2	4.06	1062+00	1276+37	10,500	Cu. Yd.	ad0301xaF2_ew.log
A - 1a	30.37	1280+00	2883+63	71,000	Cu. Yd.	ad0301xaAa_(1-4)_ew.log
A-1a (BC)	3.86	2883+63	3087+36	8,500	Cu. Yd.	ad0301xaAa_4_ew.log
A - 1b	29.77	1280+00	2851+97	67,000	Cu. Yd.	ad0301xaAb_(1-4)_ew.log
A - 1b (BC)	3.86	2851+97	3055+71	8,500	Cu. Yd.	ad0301xaAb_4_ew.log
A - 2	5.21	1005+00	1280+00	12,500	Cu. Yd.	ad0301xaA2_ew.log
S -1	21.35	2545+94	3673+29	53,000	Cu. Yd.	ad0301xaS1_ew.log
S -1 (BC)	4.13	3673+29	3891+26	9,500	Cu. Yd.	ad0301xaS1_ew.log
S - 2	17.65	1614+00	2545+94	44,500	Cu. Yd.	ad0301xaS2_(1-3)ew.log
S - 3	11.53	1005+00	1614+00	28,500	Cu. Yd.	ad0301xaS3_(1-2)ew.log
L - 1	14.39	100+00	859+77	31,500	Cu. Yd.	ad0301xaL1_ew.log

8" Select Material	Unit: CY	

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20416	t	select topping	81,269	$11.90	$967,101.10	$14.00	$1,137,766.00	$12.00	$975,228.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$12.63	81,269	t	$1,026,698	
	34,879	m3		
	45,621	yd3		**$22.51 per yd3**

Average Unit Cost with 3%/year Inflation **$24.59 per yd3**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20416	t	select topping	97,589	$8.50	$829,506.50	$10.25	$1,000,287.25	$12.00	$1,171,068.00	$11.00	$1,073,479.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$10.44	97,589	t	$1,018,829	
	41,884	m3		
	54,782	yd3		**$18.60 per yd3**

Average Unit Cost with 3%/year Inflation **$22.21 per yd3**

Total Average Unit Cost **$23.40** **per yd3**

Use **$25.00** **per yd3**

QUANTITIES						
Segment	Length (mi.)	Stationing		UNIT	Unit	Source
W - 1	1.72	914+00	1005+00	8,000	Cu. Yd.	ad0301xaW1_ew.log
W - 2	3.20	745+00	914+00	15,500	Cu. Yd.	Typical section, surfacing.xls
W - 3	11.08	160+00	745+00	53,500	Cu. Yd.	Typical section, surfacing.xls
F - 1	6.42	723+00	1062+00	31,000	Cu. Yd.	Typical section, surfacing.xls
F - 2	4.06	1062+00	1276+37	19,500	Cu. Yd.	ad0301xaF2_ew.log
A - 1a	30.37	1280+00	2883+63	132,500	Cu. Yd.	ad0301xaAa_(1-4)_ew.log
A - 1a (BC)	3.86	2883+63	3087+36	16,500	Cu. Yd.	ad0301xaAa_4_ew.log
A - 1b	29.77	1280+00	2851+97	125,000	Cu. Yd.	ad0301xaAb_(1-4)_ew.log
A - 1b (BC)	3.86	2851+97	3055+71	16,500	Cu. Yd.	ad0301xaAb_4_ew.log
A - 2	5.21	1005+00	1280+00	23,500	Cu. Yd.	ad0301xaA2_ew.log
S -1	21.35	2545+94	3673+29	98,500	Cu. Yd.	ad0301xaS1_ew.log
S -1 (BC)	4.13	3673+29	3891+26	18,000	Cu. Yd.	ad0301xaS1_ew.log
S - 2	17.65	1614+00	2545+94	83,000	Cu. Yd.	ad0301xaS2_(1-3)ew.log
S - 3	11.53	1005+00	1614+00	53,000	Cu. Yd.	ad0301xaS3_(1-2)ew.log
L - 1	14.39	100+00	859+77	59,000	Cu. Yd.	ad0301xaL1_ew.log

Kiewit Construction Company

Underground District

Bid estimate 2/8/07

Alaska Road Green Sheet

One Tunnel Option

Green Sheet Summary	Total Costs including Indirect and Margin	Unit Costs including Indirect and Margin	Unit	Comment
Single Tunnel Excavation =	$32,504,794	$4,104	LF	To D&S 7,920 FT of SINGLE Tunnel
Single Tunnel Bolting =	$13,552,110	$35	LF	To Install 390,000 LF of Bolts
Single Tunnel Shotcrete =	$5,574,319	$1,014	NCY	To apply 5,500 CY of S/C
Single Tunnel Membrane Waterproofing =	$17,200,755	$29	SF	To apply Membrane WP for 594,000 SF
TOTAL BID VALUE =	**$68,831,978**			
Cost per linear foot of advance	**$8,691**			

Two Tunnel Option

Green Sheet Summary	Total Costs including Indirect and Margin	Unit Costs including Indirect and Margin	Unit	Comment
Twin Tunnel Excavation =	$33,590,700	$2,121	LF	To D&S 15,840 FT of Tunnel
Twin Tunnel Bolting =	$9,729,720	$29	LF	To Install 336,000 LF of Bolts
Twin Tunnel Shotcrete =	$8,817,559	$1,014	NCY	To apply 8,700 CY of S/C
Twin Tunnel Membrane W.P. =	$27,075,263	$29	SF	To apply Membrane WP for 935,000 SF
TOTAL BID VALUE =	**$79,213,242**			
Cost per linear foot of advance	**$10,002**			

Use two bores-Two One Lane Tunnel Summary (plus two years inflation at 3%): $10,611

Note: The Bradfield River Report (2005) used $9,150/ln. ft. for the cost of the tunnel. Using 3% inflation over 5 years, the Bradfield cost would be $10,607.

$11,141 Kiewitt Bid Plus 5%

The Juneau Access Highway engineer's estimate used $9,200/ln ft. for the cost of the tunnel sections. Average of three costs is near $10,000/ln ft.

Use $10,000 per ln ft

Backup Calculations for Bridge price:

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
501(1)	LPSM	Class A Concrete	LPSM	$7,664,990	$7,664,990
501(2)	LPSM	Class A-A Concrete	LPSM	$1,253,977	$1,253,977
501(7A)	each	128' Decked Bulb Tee	18	$92,926.97	$1,672,685
501(7B)	each	143' Decked Bulb Tee	227	$96,516.91	$21,909,339
501(7C)	each	118' Decked Bulb Tee	12	$85,101.49	$1,021,218
501(9)	ln ft	Bridge Expansion Joint	660.0	$871.75	$575,355.00
503(1)	LPSM	Reinforcing Steel	LPSM	$2,511,192	$2,511,192
503(2)	LPSM	Epoxy-Coated Reinforcing Steel	LPSM	$906,925	$906,925
504(2)	lb	Structural Steel	1,150,000.0	$3	$3,335,000
505(5A)	ln ft	Steel Piles - HP14x117	787.5	$114	$89,807
505(5B)	ln ft	Steel Piles - 24 in	6,668.0	$170	$1,131,760
505(5C)	ln ft	Steel Piles - 48 in dia	15,161.4	$526	$7,982,325
505(6A)	each	Drive Steel Piles - HP14x117	6.0	$4,965	$29,788
505(6B)	each	Drive Steel Piles - 24 in	78.0	$6,110	$476,612
505(6C)	each	Drive Steel Piles - 48 in dia	111.0	$14,576	$1,617,980
505(9)	sq ft	Structural Steel Sheet Piles	3,200.0	$58	$185,088
507(1)	ln ft	Steel Bridge Railing	14,135.0	$182	$2,569,178
507(6)	ln ft	Safety Railing	1,553.0	$9	$13,263
Subtotal of bridge costs:					$54,946,482

Range of Possible Lengths	6280 ln ft	7470 ln ft	
	207,240 sq ft	246,510 sq ft	Using 33' width
	$265.13	$222.90	

Average Unit Cost **$244.02 per sq ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
501(1)	LPSM	Class A Concrete	LPSM	$9,973,080	$9,973,080
501(2)	LPSM	Class A-A Concrete	LPSM	$1,304,160	$1,304,160
501(7A)	each	128' Decked Bulb Tee	18	$60,000.00	$1,080,000
501(7B)	each	143' Decked Bulb Tee	227	$70,000.00	$15,890,000
501(7C)	each	118' Decked Bulb Tee	12	$60,000.00	$720,000
501(9)	ln ft	Bridge Expansion Joint	660.0	$1,100.00	$726,000.00
503(1)	LPSM	Reinforcing Steel	LPSM	$935,320	$935,320
503(2)	LPSM	Epoxy-Coated Reinforcing Steel	LPSM	$2,861,758	$2,861,758
504(2)	lb	Structural Steel	1,150,000.0	$3	$2,875,000
505(5A)	ln ft	Steel Piles - HP14x117	787.5	$65	$51,188
505(5B)	ln ft	Steel Piles - 24 in	6,668.0	$125	$833,500
505(5C)	ln ft	Steel Piles - 48 in dia	15,161.4	$500	$7,580,700
505(6A)	each	Drive Steel Piles - HP14x117	6.0	$5,000	$30,000
505(6B)	each	Drive Steel Piles - 24 in	78.0	$7,500	$585,000
505(6C)	each	Drive Steel Piles - 48 in dia	111.0	$25,000	$2,775,000
505(9)	sq ft	Structural Steel Sheet Piles	3,200.0	$45	$144,000
507(1)	ln ft	Steel Bridge Railing	14,135.0	$225	$3,180,375
507(6)	ln ft	Safety Railing	1,553.0	$4	$5,436
Subtotal of bridge costs:					$51,550,516

Range of Possible Lengths	6280 ln ft	7470 ln ft	
	207,240 sq ft	246,510 sq ft	Using 33' width
	$248.75	$209.12	

Average Unit Cost **$228.93 per sq ft**

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5	
Bridge Type	**$/sq. ft.**
Low Complexity:	**$250**
Medium Complexity:	**$350**
High Complexity:	**$500**

Juneau Access, Final EIS, 2006, UPA				Valdez-Dayville, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	SQFT	Bridge Replacement		$128.00	

Average Unit Cost with 3%/year Inflation **$148.39 per sq ft**

Juneau Access, Final EIS, 2006, UPA				San Mateo-Hayward, 2002	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	SQFT	Bridge Replacement		$132.00	

Average Unit Cost with 3%/year Inflation **$162.34 per sq ft**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
55201	m^3	structural concrete class A (AE)	95.00	$1,200.00	$114,000.00	$2,666.00	$253,270.00	$4,000.00	$380,000.00
55302	m	precast, prestressed concrete decked Bulb Tee Girder	169	$1,250.00	$211,250.00	$1,861.40	$314,576.60	$3,000.00	$507,000.00
55401	kg	reinforcing steel	5,200	$3.50	$18,200.00	$4.37	$22,724.00	$6.00	$31,200.00
55402	kg	epoxy coated reinforcing steel	2,064	$4.20	$8,668.80	$2.61	$5,387.04	$7.00	$14,448.00
55601 A	m	steel bridge railing	55.0	$450.00	$24,750.00	$340.00	$18,700.00	$750.00	$41,250.00
55601 b	m	steel bridge railing (retrofit)	95.0	$400.00	$38,000.00	$575.00	$54,625.00	$500.00	$47,500.00
55101	m	steel H piles, 310 x 110, in place	62.0	$300.00	$18,600.00	$820.00	$50,840.00	$2,000.00	$124,000.00
Subtotal of bridge costs:					$433,468.80		$720,122.64		$1,145,398.00

Bridge on Coffman Cove = 28.5 m length 12.79 m width 364.515 m2

Coffman Cove(2)

Ave.	Quantity	Unit	Total	Cost per Unit
$766,330	1	each	$766,330	
	364.52	m2		$2,102 per m2
	3923.61	sq. ft		$195 per sq ft

Average Unit Cost with 3%/year Inflation $213.42 per sq ft

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
55201	m^3	structural concrete class A (AE)	282.00	$1,200.00	$338,400.00	$1,100.00	$310,200.00	$1,200.00	$338,400.00	$1,000.00	$282,000.00
55302	each	precast, prestressed concrete decked Bulb Tee Girder	6	$27,000.00	$162,000.00	$25,931.00	$155,586.00	$50,000.00	$300,000.00	$30,000.00	$180,000.00
55401	kg	reinforcing steel	21,070	$2.75	$57,942.50	$1.50	$31,605.00	$3.00	$63,210.00	$2.00	$42,140.00
55402	kg	epoxy coated reinforcing steel	1,770	$3.00	$5,310.00	$2.90	$5,133.00	$4.00	$7,080.00	$4.00	$7,080.00
55601 A	m	steel bridge railing	48.1	$300.00	$14,430.00	$324.00	$15,584.40	$450.00	$21,645.00	$400.00	$19,240.00
55601 b	m	steel bridge railing (retrofit)	132.7	$350.00	$46,445.00	$168.63	$22,377.20	$400.00	$53,080.00	$150.00	$19,905.00
Subtotal of bridge costs:					$624,527.50		$540,485.60		$783,415.00		$550,365.00

Bridge on Coffman Cove = 25 m length 11.3 m width 282.5 m2

Coffman Cove(1)

Ave.	Quantity	Unit	Total	Cost per Unit
$624,698	1	each	$624,698	
	282.50	m2		$2,211 per m2
	3040.80	sq. ft		$205.44 per sq. ft

Average Unit Cost with 3%/year Inflation $245.30 per sq ft

Bradfield River Report (2005) Bridge Costs with inflation:

Bridge Type	$/sq. ft.	With 3% inflation/yea
Low Complexity:	$150	$174
Medium Complexity:	$200	$232
High Complexity:	$275	$319

Bridge on Camp Grisdale=		45 ft length	32 ft width	1440 sq. ft.
	Cost	$350,000	$243 per sq. ft.	

Total Average Unit Cost **$212.21** **per sq ft**

Use **$210** **per sq. ft. for low complexity bridges**

Yakataga Bridge Replacement:		490 ft length	14 ft width	6860 sq. ft.
	Cost	$1,654,962	$241 per sq. ft.	

Total Average Unit Cost **$259.21** **per sq ft**

Use **$260** **per sq. ft. for low to medium complexity bridges**

Bay Bridge: $1000/sf suspension, $650/sf viaduct span (higher complexity than AK bridges)

Total Average Unit Cost **$379.60** **per sq ft**

Use **$380** **per sq. ft. for high complexity bridges**

Segment	BOB	EOB	Bridge Length (ft)	Bridge Area[1] (sq.ft.)	Complexity Low[2]	Medium[3]	High[4]	Cost $
A2	1009+00	1024+00	1,500	45,000			X	$17,100,000
A-1a	1480+00	1486+00	600	18,000	X			$3,780,000
A-1a	1750+00	1752+00	200	6,000	X			$1,260,000
A-1a	1790+00	1812+00	2,200	66,000		X		$17,160,000
A-1a	1889+00	1894+00	500	15,000	X			$3,150,000
A-1a	2051+00	2062+00	1,100	33,000		X		$8,580,000
A-1a	2083+00	2093+00	1,000	30,000		X		$7,800,000
A-1a	2245+00	2254+00	900	27,000			X	$10,260,000
A-1a	2320+00	2327+00	700	21,000			X	$7,980,000
A-1a	2372+00	2377+00	500	15,000			X	$5,700,000
A-1a	2385+00	2397+00	1,200	36,000			X	$13,680,000
A-1a	2405+00	2417+00	1,200	36,000			X	$13,680,000
A-1a	2531+00	2551+00	2,000	60,000			X	$22,800,000
A-1a	2756+00	2771+00	1,500	45,000			X	$17,100,000
A-1a	3015+00	3039+00	2,400	72,000		X		$18,720,000
A-1b	1480+00	1486+00	600	18,000	X			$3,780,000
A-1b	1750+00	1752+00	200	6,000	X			$1,260,000
A-1b	1790+00	1812+00	2,200	66,000		X		$17,160,000
A-1b	1889+00	1894+00	500	15,000	X			$3,150,000
A-1b	2051+00	2062+00	1,100	33,000		X		$8,580,000
A-1b	2324+00	2339+00	1,500	45,000		X		$11,700,000
A-1b	2376+00	2379+00	300	9,000	X			$1,890,000
A-1b	2393+00	2398+00	500	15,000	X			$3,150,000
A-1b	2445+00	2465+00	2,000	60,000		X		$15,600,000
A-1b	2538+00	2545+00	700	21,000	X			$4,410,000
A-1b	2724+00	2739+00	1,500	45,000			X	$17,100,000
A-1b	2983+00	3007+00	2,400	72,000		X		$18,720,000
S-3	1008+75	1024+00	1525	45,750			X	$17,385,000
S-3	1474+00	1480+00	600	18,000	X			$3,780,000
S-2	1627+50	1633+50	600	18,000	X			$3,780,000
S-2	2432+00	2436+00	400	12,000	X			$2,520,000
S-1	2624+00	2632+00	800	24,000		X		$6,240,000
S-1	3060+00	3067+00	700	21,000		X		$5,460,000
S-1	3351+00	3362+00	1,100	33,000		X		$8,580,000
S-1	3652+00	3663+00	1,100	33,000		X		$8,580,000
S-1	3798+00	3808+00	1,000	30,000	X			$6,300,000
S-1	3824+00	3831+00	700	21,000	X			$4,410,000
L-1	175+00	226+00	5,100	153,000			X	$58,140,000
L-1	523+00	531+00	800	24,000	X			$5,040,000
L-1	752+00	775+00	2,300	69,000		X		$17,940,000
L-1	829+00	852+00	2,300	69,000		X		$17,940,000

[1] Deck area based on average bridge width of 30
[2] Low complexity bridge, $/SF = **$210**
[3] Medium complexity bridge, $/SF = **$260**
[4] High complexity bridge, $/SF = **$380**

Bridge Structure **Unit: SF**

SUMMARY

Alignment	Segment	BOB	EOB	Bridge Length (ln. ft.)	Bridge Area (sq.ft.)	Complexity Low	Complexity Medium	Complexity High	Cost $
Aaron Creek	A2	1009+00	1024+00	1,500	45,000	0	0	45,000	$17,100,000
Subtotal:				1,500	45,000	0	0	45000	$17,100,000
Use				**1,500**	**45,000**	**0**	**0**	**45,000**	**$17,100,000**
Aaron Creek Pass	A-1a	1480+00	1486+00	600	18,000	18,000	0	0	$3,780,000
	A-1a	1750+00	1752+00	200	6,000	6,000	0	0	$1,260,000
	A-1a	1790+00	1812+00	2,200	66,000	0	66,000	0	$17,160,000
	A-1a	1889+00	1894+00	500	15,000	15000	0	0	$3,150,000
	A-1a	2051+00	2062+00	1,100	33,000	0	33,000	0	$8,580,000
	A-1a	2083+00	2093+00	1,000	30,000	0	30,000	0	$7,800,000
	A-1a	2245+00	2254+00	900	27,000	0	0	27,000	$10,260,000
	A-1a	2320+00	2327+00	700	21,000	0	0	21,000	$7,980,000
	A-1a	2372+00	2377+00	500	15,000	0	0	15,000	$5,700,000
	A-1a	2385+00	2397+00	1,200	36,000	0	0	36,000	$13,680,000
	A-1a	2405+00	2417+00	1,200	36,000	0	0	36,000	$13,680,000
	A-1a	2531+00	2551+00	2,000	60,000	0	0	60,000	$22,800,000
	A-1a	2756+00	2771+00	1,500	45,000	0	0	45,000	$17,100,000
Subtotal:				13,600	408,000	39,000	129,000	240,000	$132,930,000
Use				**13,600**	**408,000**	**39,000**	**129,000**	**240,000**	**$132,930,000**
(BC)	A-1a	3015+00	3039+00	2,400	72,000	0	72,000	0	$18,720,000
Subtotal:				2,400	72,000	0	72,000	0	$18,720,000
Use				**2,400**	**72,000**	**0**	**72,000**	**0**	**$18,720,000**
Aaron Creek Tunnel	A-1b	1480+00	1486+00	600	18,000	18,000	0	0	$3,780,000
	A-1b	1750+00	1752+00	200	6,000	6,000	0	0	$1,260,000
	A-1b	1790+00	1812+00	2,200	66,000	0	66,000	0	$17,160,000
	A-1b	1889+00	1894+00	500	15,000	15,000	0	0	$3,150,000
	A-1b	2051+00	2062+00	1,100	33,000	0	33,000	0	$8,580,000
	A-1b	2324+00	2339+00	1,500	45,000	0	45,000	0	$11,700,000
	A-1b	2376+00	2379+00	300	9,000	9,000	0	0	$1,890,000
	A-1b	2393+00	2398+00	500	15,000	15,000	0	0	$3,150,000
	A-1b	2445+00	2465+00	2,000	60,000	0	60,000	0	$15,600,000
	A-1b	2538+00	2545+00	700	21,000	21,000	0	0	$4,410,000
	A-1b	2724+00	2739+00	1,500	45,000	0	0	45,000	$17,100,000
Subtotal:				11,100	333,000	84,000	204,000	45,000	$87,780,000
Use				**11,100**	**333,000**	**84,000**	**204,000**	**45,000**	**$87,780,000**
(BC)	A-1b	2983+00	3007+00	2,400	72,000	0	72,000	0	$18,720,000
Subtotal:				2,400	72,000	0	72,000	0	$18,720,000
Use				**32,700**	**72,000**	**0**	**72,000**	**0**	**$18,720,000**
S. Stikine River	S-3	1008+75	1024+00	1,525	45,750	0	0	45,750	$17,385,000
S. Stikine River	S-3	1474+00	1480+00	600	18,000	18,000	0	0	$3,780,000
Subtotal:				2,125	63,750	18,000	0	45,750	$21,165,000
Use				**2,125**	**63,750**	**18,000**	**0**	**45,750**	**$21,165,000**
South Stikine River	S-2	1627+50	1633+50	600	18,000	18,000	0	0	$3,780,000
	S-2	2432+00	2436+00	400	12,000	12,000	0	0	$2,520,000
Subtotal:				1,000	30,000	30,000	0	0	$6,300,000
Use				**1,000**	**30,000**	**30,000**	**0**	**0**	**$6,300,000**
South Stikine River	S-1	2624+00	2632+00	800	24,000	0	24,000	0	$6,240,000
	S-1	3060+00	3067+00	700	21,000	0	21,000	0	$5,460,000
	S-1	3351+00	3362+00	1,100	33,000	0	33,000	0	$8,580,000
	S-1	3652+00	3663+00	1,100	33,000	0	33,000	0	$8,580,000
Subtotal:				3,700	111,000	0	111,000	0	$28,860,000
Use				**3,700**	**111,000**	**0**	**111,000**	**0**	**$28,860,000**
South Stikine River (BC)	S-1	3798+00	3808+00	1,000	30,000	30,000	0	0	$6,300,000
	S-1	3824+00	3831+00	700	21,000	21,000	0	0	$4,410,000
Subtotal:				1,700	51,000	51,000	0	0	$10,710,000
Use				**1,700**	**51,000**	**51,000**	**0**	**0**	**$10,710,000**
Limb Island	L-1	175+00	226+00	5,100	153,000	0	0	153,000	$58,140,000
	L-1	523+00	531+00	800	24,000	24,000	0	0	$5,040,000
	L-1	752+00	775+00	2,300	69,000	0	69,000	0	$17,940,000
	L-1	829+00	852+00	2,300	69,000	0	69,000	0	$17,940,000
Subtotal:				10,500	315,000	24,000	138,000	153,000	$99,060,000
Use				**10,500**	**315,000**	**24,000**	**138,000**	**153,000**	**$99,060,000**
Total				**41,525**	**1,245,750**	**246,000**	**471,000**	**528,750**	**$375,045,000**

Large Culverts and Fish Passage **Unit: Each**

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
602(3A)	lnft	Structural Plate Arch 20' span	50	$2,207.72	$110,386.00
602(3B)	lnft	Structural Plate Arch 35'4" span	52	$3,880.56	$201,789.12
603(17-144)	lnft	144 Inch Pipe	120	$683.19	$81,982.80
					$394,157.92
					$16,894.90 per mile

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$1,775	222.0	ln ft	$394,158	
					$1,775.49 per ln ft

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
602(3A)	lnft	Structural Plate Arch 20' span	50	$2,120.00	$106,000.00
602(3B)	lnft	Structural Plate Arch 35'4" span	52	$3,900.00	$202,800.00
603(17-144)	lnft	144 Inch Pipe	120	$750.00	$90,000.00
					$398,800.00
					$17,093.87 per mile

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$1,796	222.0	ln ft	$398,800	
					$1,796.40 per ln ft

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
602(3B)	lnft	Structural Plate Arch 31'9" span	572	$3,900.00	$2,230,800.00
603(17-144)	lnft	144 Inch Pipe	250	$750.00	$187,500.00
					$2,418,300.00
					$88,034.22 per mile

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$2,942	822.0	ln ft	$2,418,300	
					$2,941.97 per ln ft

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
602(2-13)	LNFT	SPP-Arch 13'-3"	86.0	$2,500.00	$215,000.00	$1,470.00	$126,420.00	$1,200.00	$103,200.00	$1,500.00	$129,000.00
602(2-15)	LNFT	SPP-Arch 15'-4"	110.0	$3,000.00	$330,000.00	$1,600.00	$176,000.00	$1,250.00	$137,500.00	$2,000.00	$220,000.00
					$545,000.00		$302,420.00		$240,700.00		$349,000.00

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$1,833	196.0	m	$359,280	
		643.0	ln ft		**$1,833.06 per ln ft**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 L	m	3000 millimeter pipe culvert	58.0	$2,100.00	$121,800.00	$1,939.00	$112,462.00	$2,000.00	$116,000.00
60301 A	m	3825 millimeter structural plate pipe	43.1	$3,800.00	$163,780.00	$3,722.52	$160,440.61	$4,000.00	$172,400.00
60301 B	m	5030 millimeter structural plate pipe	56.5	$5,100.00	$288,150.00	$4,564.54	$257,896.51	$5,000.00	$282,500.00
60301 C	m	5510 millimeter structural steel plate arch	36.9	$5,200.00	$191,880.00	$4,976.38	$183,628.42	$5,000.00	$184,500.00

Coffman Cove (2)

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$3,831	194.5	m	$745,145	
		638.1	ln ft		$1,167.71 per ln ft

Average Unit Cost with 3%/year Inflation $1,275.99 per ln ft

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 L	m	3600 millimeter pipe culvert	63.3	$2,300.00	$145,590.00	$2,445.00	$154,768.50	$2,100.00	$132,930.00	$3,200.00	$202,560.00
60202 L	m	3000 millimeter pipe culvert	82.4	$825.00	$67,980.00	$1,554.00	$128,049.60	$1,300.00	$107,120.00	$1,800.00	$148,320.00
60301 A	m	3980 millimeter structural plate pipe	25.0	$2,500.00	$62,500.00	$2,897.00	$72,425.00	$3,000.00	$75,000.00	$3,200.00	$80,000.00
60301 B	m	4290 millimeter structural plate pipe	29.3	$3,000.00	$87,900.00	$2,515.00	$73,689.50	$3,100.00	$90,830.00	$3,200.00	$93,760.00
60301 C	m	4270 millimeter structural steel plate arch	14.6	$3,000.00	$43,800.00	$2,540.00	$37,084.00	$5,000.00	$73,000.00	$1,000.00	$14,600.00

Coffman Cove (1)

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$2,204	214.6	m	$472,976	
		704.1	ln ft		$671.78 per ln ft

Average Unit Cost with 3%/year Inflation $802.14 per ln ft

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60202 L	m	3600 millimeter pipe culvert	39.0	$900.00	$35,100.00	$2,500.00	$97,500.00	$3,000.00	$117,000.00
60301 A	m	4600 millimeter structural plate pipe	25.0	$1,800.00	$45,000.00	$3,000.00	$75,000.00	$4,000.00	$100,000.00

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$2,446	64.0	m	$156,533	
		210.0	ln ft		$745.49 per ln ft

Average Unit Cost with 3%/year Inflation $1,001.88 per ln ft

Total Average Unit Cost $1,632.42 per ln ft

Use $2,000.00 per ln ft

Use 100 ft $200,000 each **for culverts > 10 ft diameter**

$200,000 each

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
65001 A	each	Log weir	30	$400.00	$12,000.00	$231.00	$6,930.00	$1,500.00	$45,000.00
65001 B	each	Rock weir	5	$500.00	$2,500.00	$400.00	$2,000.00	$513.00	$2,565.00
25110	m3	culvert outlet control system	90	$180.00	$16,200.00	$77.00	$6,930.00	$60.00	$5,400.00
25112	m3	riprap headwall	700	$18.00	$12,600.00	$43.27	$30,289.00	$80.00	$56,000.00
25116	m3	energy dissipater	100.0	$240.00	$24,000.00	$61.00	$6,100.00	$60.00	$6,000.00

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
65001 A	each	Log weir	9	$2,000.00	$18,000.00	$400.00	$3,600.00	$900.00	$8,100.00	$400.00	$3,600.00
65001 B	each	Rock weir	2	$7,500.00	$15,000.00	$250.00	$500.00	$2,000.00	$4,000.00	$1,000.00	$2,000.00
25110	each	culvert outlet control system	17	$3,000.00	$51,000.00	$425.00	$7,225.00	$800.00	$13,600.00	$2,000.00	$34,000.00
25112	each	riprap headwall	50	$1,000.00	$50,000.00	$222.50	$11,125.00	$400.00	$20,000.00	$500.00	$25,000.00
25116	m	energy dissipater	65.0	$175.00	$11,375.00	$132.00	$8,580.00	$125.00	$8,125.00	$250.00	$16,250.00

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
25110	each	culvert outlet control system	8	$3,000.00	$24,000.00	$3,000.00	$24,000.00	$1,200.00	$9,600.00
25112	each	riprap headwall	7	$1,500.00	$10,500.00	$1,000.00	$7,000.00	$600.00	$4,200.00
25116A	m	energy dissipater	75.0	$50.00	$3,750.00	$200.00	$15,000.00	$100.00	$7,500.00
25116B	m	energy dissipater	65.0	$100.00	$6,500.00	$200.00	$13,000.00	$120.00	$7,800.00

Additions for fish culvert

Rock weir	$1,750	1	each	$1,750
Culvert Outlet	$2,000	1	each	$2,000
Riprap Headwall	$750	2	each	$1,500
Energy dissipater	$1,500	1	each	$1,500
Subtotal for additions:				$6,750
		With 3%/year inflation		$7,376

Use **$8,000.00** **each**

For fish passage only
Assume all listed 7' pipes and half of > 10' pipes

QUANTITIES

Segment	Length (mi.)	Stationing		Quantity 7'	Quantity > 10'	Quantity Fish Pass.	Unit	Source
W - 1	1.72	914+00	1005+00	0	0	0	each	Aerial photos
W - 2	3.20	745+00	914+00	0	0	0	each	Aerial photos
W - 3	11.08	160+00	745+00	0	0	0	each	Aerial photos
F - 1	6.42	723+00	1062+00	0	0	0	each	Aerial photos
F - 2	4.06	1062+00	1276+37	2	4	4	each	Aerial photos
A - 1a	30.37	1280+00	2883+63	10	15	18	each	Aerial photos
A - 1a (BC)	3.86	2883+63	3087+36	1	1	1	each	Aerial photos
A - 1b	29.77	1280+00	2851+97	7	8	11	each	Aerial photos
A - 1b (BC)	3.86	2851+97	3055+71	1	1	1	each	Aerial photos
A - 2	5.21	1005+00	1280+00	0	1	1	each	Aerial photos
S -1	21.35	2545+94	3673+29	14	21	25	each	Aerial photos
S -1 (BC)	4.13	3673+29	3891+26	1	1	1	each	Aerial photos
S - 2	17.65	1614+00	2545+94	0	7	4	each	Aerial photos
S - 3	11.53	1005+00	1614+00	1	3	3	each	Aerial photos
L - 1	14.39	100+00	859+77	1	5	4	each	Aerial photos

Quantities

Alignment	Segment	Sta.	Size
Aaron Cr. Pass	A-2	1135+89	>10'
Aaron Cr. Pass	1		

Alignment	Segment	Sta.	Size
Aaron Cr. Pass	A-1a	1455+20	>10'
Aaron Cr. Pass	A-1a	1726+88	>10'
Aaron Cr. Pass	A-1a	2002+07	>10'
Aaron Cr. Pass	A-1a	2029+35	>10'
Aaron Cr. Pass	A-1a	2093+40	>10'
Aaron Cr. Pass	A-1a	2127+89	>10'
Aaron Cr. Pass	A-1a	2207+55	>10'
Aaron Cr. Pass	A-1a	2267+92	>10'
Aaron Cr. Pass	A-1a	2347+77	>10'
Aaron Cr. Pass	A-1a	2432+10	>10'
Aaron Cr. Pass	A-1a	2457+91	>10'
Aaron Cr. Pass	A-1a	2460+76	>10'
Aaron Cr. Pass	A-1a	2469+04	>10'
Aaron Cr. Pass	A-1a	2470+70	>10'
Aaron Cr. Pass	A-1a	2786+97	>10'
Aaron Cr. Pass	15		

Alignment	Segment	Sta.	Size
Aaron Cr. Pass (BC)	A-1a	3002+09	>10'
Aaron Cr. Pass (BC)	1		

Alignment	Segment	Sta.	Size
Aaron Cr. Tunnel	A-1b	1455+20	>10'
Aaron Cr. Tunnel	A-1b	1726+88	>10'
Aaron Cr. Tunnel	A-1b	2002+07	>10'
Aaron Cr. Tunnel	A-1b	2029+35	>10'
Aaron Cr. Tunnel	A-1b	2144+99	>10'
Aaron Cr. Tunnel	A-1b	2191+17	>10'
Aaron Cr. Tunnel	A-1b	2192+04	>10'
Aaron Cr. Tunnel	A-1b	2755+62	>10'
Aaron Cr. Tunnel	8		

Alignment	Segment	Sta.	Size
Aaron Cr. Tunnel	A-1b	2970+43	>10'
Aaron Cr. Tunnel (BC)	1		

Alignment	Segment	Sta.	Size
Wrangell Island	W-1,2,3		>10'
Wrangell Island	0		

Alignment	Segment	Sta.	Size
Fool's Inlet	F-2	1137+91	>10'
Fool's Inlet	F-2	1139+22	>10'
Fool's Inlet	F-2	1185+71	>10'
Fool's Inlet	F-2	1215+47	>10'
Fool's Inlet	4		

Alignment	Segment	Sta.	Size
South Stikine R.	S-3	1205+67	>10'
South Stikine R.	S-3	1339+32	>10'
South Stikine R.	S-3	1454+25	>10'
South Stikine R.	3		

Alignment	Segment	Sta.	Size
South Stikine R.	S-2	2110+05	>10'
South Stikine R.	S-2	2112+37	>10'
South Stikine R.	S-2	2194+17	>10'
South Stikine R.	S-2	2248+48	>10'
South Stikine R.	S-2	2248+81	>10'
South Stikine R.	S-2	2333+17	>10'
South Stikine R.	S-2	2333+76	>10'
South Stikine R.	7		

Alignment	Segment	Sta.	Size
South Stikine R.	S-1	2704+75	>10'
South Stikine R.	S-1	2776+28	>10'
South Stikine R.	S-1	2878+56	>10'
South Stikine R.	S-1	2879+38	>10'
South Stikine R.	S-1	2927+75	>10'
South Stikine R.	S-1	2977+62	>10'
South Stikine R.	S-1	3005+25	>10'
South Stikine R.	S-1	3013+83	>10'
South Stikine R.	S-1	3094+42	>10'
South Stikine R.	S-1	3130+38	>10'
South Stikine R.	S-1	3136+17	>10'
South Stikine R.	S-1	3192+20	>10'
South Stikine R.	S-1	3202+26	>10'
South Stikine R.	S-1	3247+44	>10'
South Stikine R.	S-1	3249+34	>10'
South Stikine R.	S-1	3262+00	>10'
South Stikine R.	S-1	3326+62	>10'
South Stikine R.	S-1	3437+22	>10'
South Stikine R.	S-1	3491+20	>10'
South Stikine R.	S-1	3576+34	>10'
South Stikine R.	S-1	3668+54	>10'
South Stikine R.	21		

Alignment	Segment	Sta.	Size
South Stikine R.	S-1	3674+63	>10'
South Stikine R. (BC)	1		

Alignment	Segment	Sta.	Size
Limb Island	L-1	565+49	>10'
Limb Island	L-1	570+71	>10'
Limb Island	L-1	572+16	>10'
Limb Island	L-1	609+09	>10'
Limb Island	L-1	796+64	>10'
Limb Island	5		

Quantities

Alignment	Segment	Sta.	Size
Aaron Cr. Pass	A-2		7'
Aaron Cr. Pass	0		

Alignment	Segment	Sta.	Size
Aaron Cr. Pass	A-1a	1559+93	7'
Aaron Cr. Pass	A-1a	2269+66	7'
Aaron Cr. Pass	A-1a	2357+01	7'
Aaron Cr. Pass	A-1a	2399+47	7'
Aaron Cr. Pass	A-1a	2518+60	7'
Aaron Cr. Pass	A-1a	2519+77	7'
Aaron Cr. Pass	A-1a	2605+74	7'
Aaron Cr. Pass	A-1a	2694+63	7'
Aaron Cr. Pass	A-1a	2703+90	7'
Aaron Cr. Pass	A-1a	2856+42	7'
Aaron Cr. Pass	10		

Alignment	Segment	Sta.	Size
Aaron Cr. Pass	A-1a	2980+80	7'
Aaron Cr. Pass (BC)	1		

Alignment	Segment	Sta.	Size
Aaron Cr. Tunnel	A-1b	2301+42	7'
Aaron Cr. Tunnel	A-1b	2308+54	7'
Aaron Cr. Tunnel	A-1b	2510+30	7'
Aaron Cr. Tunnel	A-1b	2573+08	7'
Aaron Cr. Tunnel	A-1b	2662+97	7'
Aaron Cr. Tunnel	A-1b	2672+24	7'
Aaron Cr. Tunnel	A-1b	2824+77	7'
Aaron Cr. Pass	7		

Alignment	Segment	Sta.	Size
Aaron Cr. Tunnel	A-1b	2949+14	7'
Aaron Cr. Tunnel	1		

Alignment	Segment	Sta.	Size
Wrangell Island	W-1,2,3		7'
Wrangell Island	0		

Alignment	Segment	Sta.	Size
South Stikine R.	S-3	1083+61	7'
South Stikine R.	1		

Alignment	Segment	Sta.	Size
South Stikine R.	S-2		7'
South Stikine R.	0		

Alignment	Segment	Sta.	Size
South Stikine R.	S-1	2550+40	7'
South Stikine R.	S-1	2656+23	7'
South Stikine R.	S-1	2730+77	7'
South Stikine R.	S-1	2918+10	7'
South Stikine R.	S-1	2940+61	7'
South Stikine R.	S-1	3286+76	7'
South Stikine R.	S-1	3383+84	7'
South Stikine R.	S-1	3388+55	7'
South Stikine R.	S-1	3427+91	7'
South Stikine R.	S-1	3548+99	7'
South Stikine R.	S-1	3555+05	7'
South Stikine R.	S-1	3594+19	7'
South Stikine R.	S-1	3600+07	7'
South Stikine R.	S-1	3624+49	7'
South Stikine R.	14		

Alignment	Segment	Sta.	Size
South Stikine R.	S-1	3719+75	7'
South Stikine R. (BC)	1		

Alignment	Segment	Sta.	Size
Limb Island	L-1	257+66	7'
Limb Island	1		

Alignment	Segment	Sta.	Size
Fool's Inlet	F-2	1206+86	7'
Fool's Inlet	F-2	1211+46	7'
Fool's Inlet	2		

Revetment Wall **Unit: CY**

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
611(1A)	CUYD	Riprap, Class II	3,885.000	$48.38	$187,956.30

Average Unit Cost **$48.38 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
611(1A)	CUYD	Riprap, Class II	3,885.000	$10.00	$38,850.00

Average Unit Cost **$10.00 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
611(1B)	CUYD	Riprap, Class IV	105,380.000	$10.00	$1,053,800

Average Unit Cost **$10.00 per yd3**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
611(1-I)	CUYD	Riprap, Class I	1,065.000	$30.00	$31,950.00	$88.00	$93,720	$70.00	$74,550.0	$60.00	$63,900.00
611(1-II)	CUYD	Riprap, Class II	4,168.000	$50.00	$208,400.00	$68.00	$283,424	$56.00	$233,408.0	$60.00	$250,080.00

$62.00	$66,030.00	$59.21
$58.50	$243,828.00	

Ave.	Quantity	Unit	Total	Cost per Unit
$59	5,233.000	cuyd	$309,858.00	
				$59.21 per yd3

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25101	m^3	placed riprap, class 4	890	$59.33	$52,803.70	$77.56	$69,028.40	$46.84	$41,687.60
25103	m^3	keyed riprap, class 5	880	$45.00	$39,600.00	$30.00	$26,400.00	$80.00	$70,400.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$56.46	1,770	m3	$99,934	
	2,315	yd3		**$43.17 per yd3**

Average Unit Cost with 3%/year Inflation **$47.17 per yd3**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25101	m^3	placed riprap, class 2	100	$25.00	$2,500.00	$172.67	$17,267.00	$40.00	$4,000.00	$30.00	$3,000.00
25103	m^3	keyed riprap, class 5	400	$50.00	$20,000.00	$22.97	$9,188.00	$40.00	$16,000.00	$50.00	$20,000.00

$66.92	$6,691.75	45.9775
$40.74	$16,297.00	

Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$45.98	500	m3	$22,989	
	654	yd3		**$35.15 per yd3**

Average Unit Cost with 3%/year Inflation **$41.97 per yd3**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25101A	m3	Placed riprap, class 2	80.000	$40.00	$3,200.00	$40.00	$3,200.00	$30.00	$2,400.00

Ave.	Quantity	Unit	Total	Cost per Unit
$37	80.000	m3	$2,933.33	
	104.6	cuyd		**$28.04 per yd3**

Average Unit Cost with 3%/year Inflation **$37.69 per yd3**

Total Average Unit Cost **$36.35 per yd3**

Use **$30.00 per yd3** Riprap likely generated on-site

Revetment Wall	Unit: CY	Page 2 of 2

QUANTITIES

Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	0	Cu. Yd.	
W - 2	3.20	745+00	914+00	0	Cu. Yd.	
W - 3	11.08	160+00	745+00	0	Cu. Yd.	
F - 1	6.42	723+00	1062+00	0	Cu. Yd.	
F - 2	4.06	1062+00	1276+37	9,595	Cu. Yd.	
A - 1a	30.37	1280+00	2883+63	7,381	Cu. Yd.	
A - 1a (BC)	3.86	2883+63	3087+36	0	Cu. Yd.	
A - 1b	29.77	1280+00	2851+97	5,167	Cu. Yd.	
A - 1b (BC)	3.86	2851+97	3055+71	0	Cu. Yd.	
A - 2	5.21	1005+00	1280+00	0	Cu. Yd.	
S -1	21.35	2545+94	3673+29	14,024	Cu. Yd.	
S -1 (BC)	4.13	3673+29	3891+26	0	Cu. Yd.	
S - 2	17.65	1614+00	2545+94	22,880	Cu. Yd.	
S - 3	11.53	1005+00	1614+00	0	Cu. Yd.	
L - 1	14.39	100+00	859+77	8,489	Cu. Yd.	

QUANTITIES

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Cr.	A-2			0		0	Cu. Yd.
Total	**Aaron Creek**					**0**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Cr. Pass	A-1a	1848+00	1851+00	300	20	2,214	Cu. Yd.
Aaron Cr. Pass	A-1a	2220+00	2223+00	300	20	2,214	Cu. Yd.
Aaron Cr. Pass	A-1a	2853+00	2857+00	400	20	2,953	Cu. Yd.
Total	**Aaron Creek Pass**					**7,381**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Cr. Tunnel	A-1b	1848+00	1851+00	300	20	2,214	Cu. Yd.
Aaron Cr. Tunnel	A-1b	2821+00	2825+00	400	20	2,953	Cu. Yd.
Total	**Aaron Creek Tunnel**					**5,167**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Wrangell Island	W-1			0		0	Cu. Yd.
Total	**Wrangell Island**					**0**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Fool's Inlet	F-2	1208+00	1215+00	700	20	5,167	Cu. Yd.
Fool's Inlet	F-2	1238+00	1241+00	300	20	2,214	Cu. Yd.
Fool's Inlet	F-2	1257+00	1260+00	300	20	2,214	Cu. Yd.
Total	**Fool's Inlet**					**9,595**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-3			0		0	Cu. Yd.
Total	**South Stikine River**					**0**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-2	2034+00	2037+00	300	20	2,214	Cu. Yd.
S. Stikine	S-2	2090+00	2093+00	300	20	2,214	Cu. Yd.
S. Stikine	S-2	2143+00	2144+00	100	20	738	Cu. Yd.
S. Stikine	S-2	2205+00	2208+00	300	20	2,214	Cu. Yd.
S. Stikine	S-2	2248+00	2250+00	200	20	1,476	Cu. Yd.
S. Stikine	S-2	2261+00	2262+00	100	20	738	Cu. Yd.
S. Stikine	S-2	2279+00	2280+00	100	20	738	Cu. Yd.
S. Stikine	S-2	2293+00	2296+00	300	20	2,214	Cu. Yd.
S. Stikine	S-2	2436+00	2446+00	1,000	20	7,381	Cu. Yd.
S. Stikine	S-2	2436+00	2440+00	400	20	2,953	Cu. Yd.
Total	**South Stikine River**					**22,880**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-1	2693+00	2695+00	200	20	1,476	Cu. Yd.
S. Stikine	S-1	2717+00	2718+00	100	20	738	Cu. Yd.
S. Stikine	S-1	2802+00	2806+00	400	20	2,953	Cu. Yd.
S. Stikine	S-1	2817+00	2821+00	400	20	2,953	Cu. Yd.
S. Stikine	S-1	2824+00	2825+00	100	20	738	Cu. Yd.
S. Stikine	S-1	2859+00	2860+00	100	20	738	Cu. Yd.
S. Stikine	S-1	3042+00	3043+00	100	20	738	Cu. Yd.
S. Stikine	S-1	3079+00	3080+00	100	20	738	Cu. Yd.
S. Stikine	S-1	3308+00	3309+00	100	20	738	Cu. Yd.
S. Stikine	S-1	3614+00	3616+00	200	20	1,476	Cu. Yd.
S. Stikine	S-1	3642+00	3643+00	100	20	738	Cu. Yd.
Total	**South Stikine River**					**14,024**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Limb Island	L-1	149+00	151+50	250	30	1,845	Cu. Yd.
Limb Island	L-1	266+00	270+00	400	20	2,953	Cu. Yd.
Limb Island	L-1	824+00	829+00	500	17	3,691	Cu. Yd.
Total	**Limb Island**					**8,489**	**Cu. Yd.**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
21101 B	m^2	roadway obliteration, type 2	3,000	$5.00	$15,000.00	$5.34	$16,020.00	$8.00	$24,000.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$ 6.11	3,000	m2	$18,340	
	32,292	sq.ft.		$0.57 per sq ft
	0.74	acre		**$24,784 per acre**

Average Unit Cost with 3%/year Inflation **$27,081.91 per acre**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
21101 B	m^2	roadway obliteration, type 2	46,000	$4.50	$207,000.00	$2.45	$112,700.00	$1.00	$46,000.00	$5.00	$230,000.00

Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$3.24	46,000	m2	$148,925	
	495,140	sq.ft.		$0.30 per sq ft
	11.37	acre		$13,098 per acre

Average Unit Cost with 3%/year Inflation **$15,639.77 per acre**

Wetland mitigation in SE Alaska for Coffman Cove was conserving the top layer of muskeg and placing it on obliterated road.
Wetland mitigation may be more difficult to create on this project. (Bradfield note)

Total Average Unit Cost **$21,360.84** **per acre**

Use **$25,000.00** **per acre**

Wetland Mitigation Allowance
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (acres)	Rate (acre/mile)
Segment 1	5.40	20	3.70
Segment 2	3.49	20	5.73
Segment 3	5.55	20	3.60
Segment 4	8.73	10	1.15
Segment 5	6.41	5	0.78
Average Rate			2.99

Cultural Resource Mitigation Allowance
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (LS)	Rate (LS/mile)
Segment 1	5.40	5	0.93
Segment 2	3.49	5	1.43
Segment 3	5.55	5	0.90
Segment 4	8.73	5	0.57
Segment 5	6.41	5	0.78
Average Rate			0.92

Wetland Mitigation-Allowance

Segment	Length (mile)	Quantity (acres)
W-1	1.72	5
W-2	3.20	*
W-3	11.08	*
F-1	6.42	*
F-2	4.06	12
A-1a	30.37	91
A-1a (BC)	3.86	12
A-1b	29.77	89
A-1b (BC)	3.86	12
A-2	5.21	16
S-1	21.35	64
S-1 (BC)	4.13	12
S-2	17.65	53
S-3	11.53	34
L-1	14.39	43

Cultural Resource Mitigation-Allowance

Segment	Length (mile)	Quantity (LS)
W-1	1.72	2
W-2	3.20	*
W-3	11.08	*
F-1	6.42	*
F-2	4.06	4
A-1a	30.37	28
A-1a (BC)	3.86	4
A-1b	29.77	27
A-1b (BC)	3.86	4
A-2	5.21	5
S-1	21.35	20
S-1 (BC)	4.13	4
S-2	17.65	16
S-3	11.53	11
L-1	14.39	13

Staging Area Rehabilitation
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (acres)	Rate (SAR/mile)
Segment 1	5.40	3	0.56
Segment 2	3.49	3	0.86
Segment 3	5.55	3	0.54
Segment 4	8.73	3	0.34
Segment 5	6.41	3	0.47
Average Rate			0.55

Stormwater Management Ponds
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (LS)	Rate (SMP/mile)
Segment 1	5.40	5	0.93
Segment 2	3.49	5	1.43
Segment 3	5.55	5	0.90
Segment 4	8.73	5	0.57
Segment 5	6.41	5	0.78
Average Rate			0.92

Staging Area Rehabilitation

Segment	Length (mile)	Quantity (acres)
W-1	1.72	1
W-2	3.20	*
W-3	11.08	*
F-1	6.42	*
F-2	4.06	2
A-1a	30.37	17
A-1a (BC)	3.86	2
A-1b	29.77	16
A-1b (BC)	3.86	2
A-2	5.21	3
S-1	21.35	12
S-1 (BC)	4.13	2
S-2	17.65	10
S-3	11.53	6
L-1	14.39	8

Stormwater Management Ponds

Segment	Length (mile)	Quantity (LS)
W-1	1.72	2
W-2	3.20	*
W-3	11.08	*
F-1	6.42	*
F-2	4.06	4
A-1a	30.37	28
A-1a (BC)	3.86	4
A-1b	29.77	27
A-1b (BC)	3.86	4
A-2	5.21	5
S-1	21.35	20
S-1 (BC)	4.13	4
S-2	17.65	16
S-3	11.53	11
L-1	14.39	13

* Calculated as a percentage, based on Bradfield percentage of cost

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	22,306	$85.15	$1,899,356

Average Unit Cost **$85.15 per sq ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	22,306	$50.00	$1,115,300

Average Unit Cost **$50.00 per sq ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	838,230	$50.00	$41,911,500

Average Unit Cost **$50.00 per sq ft**

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall - Pattern Finish	37,905	$70.00	$2,653,350

Average Unit Cost with 3%/year Inflation **$76.49 per sq ft**

Juneau Access, Financial Plan, 2007, UPA				South Tongass, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	4,993.000	$35.00	$174,755.00

Average Unit Cost with 3%/year Inflation **$38.25 per sq ft**

Juneau Access, Final EIS, 2006, UPA				Palmer-Wasilla, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	17,712.000	$29.14	$516,127.68

Average Unit Cost with 3%/year Inflation **$36.91 per sq ft**

Juneau Access, Final EIS, 2006, UPA				Parks Highway, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	25,488.000	$30.93	$788,343.84

Average Unit Cost with 3%/year Inflation **$39.18 per sq ft**

Juneau Access, Final EIS, 2006, UPA				Glenn Highway, 2002	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	34,830.000	$28.55	$994,396.50

Average Unit Cost with 3%/year Inflation **$35.11 per sq ft**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25119	m^3	riprap blanket	8,500.0	$15.00	$127,500.00	$19.80	$168,300.00	$75.00	$637,500.00
25203	m^3	rock buttress, mechanically-placed*	3,500	$44.80	$156,800.00	$13.82	$48,372.80	$16.80	$58,800.00
25504	m^2	geogrid wall*	180	$347.78	$62,600.80	$326.40	$58,751.56	$347.78	$62,600.80
26201	m^2	rockery wall	200	$150.00	$30,000.00	$80.00	$16,000.00	$130.00	$26,000.00

* From Coffman Cove, Phase 1, 2003, increased for inflation

Coffman Cove (2), geogrid wall

Ave.	Quantity	Unit	Total	Cost per Unit
$341	180	m2	$61,380	
	1938	sq.ft.		**$31.68 per sq ft**

Average Unit Cost with 3%/year Inflation **$34.62 per sq ft**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25504	m2	Gabion-faced ret. Wall	988.000	$300.00	$296,400.00	$110.00	$108,680.00	$200.00	$197,600.00

Ave.	Quantity	Unit	Total	Cost per Unit
$203	988.000	m2	$200,893	
	10635	sqft		**$18.89 per sqft**

Average Unit Cost with 3%/year Inflation **$25.39 per sq ft**

Total Average Unit Cost **$47.11 per sq ft**

Use **$45.00 per sq ft**

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	0	sq. ft.	
W - 2	3.20	745+00	914+00	0	sq. ft.	
W - 3	11.08	160+00	745+00	0	sq. ft.	
F - 1	6.42	723+00	1062+00	0	sq. ft.	
F - 2	4.06	1062+00	1276+37	0	sq. ft.	
A - 1a	30.37	1280+00	2883+63	250,100	sq. ft.	
A - 1a (BC)	3.86	2883+63	3087+36	0	sq. ft.	
A - 1b	29.77	1280+00	2851+97	112,600	sq. ft.	
A - 1b (BC)	3.86	2851+97	3055+71	0	sq. ft.	
A - 2	5.21	1005+00	1280+00	0	sq. ft.	
S -1	21.35	2545+94	3673+29	64,200	sq. ft.	
S -1 (BC)	4.13	3673+29	3891+26	0	sq. ft.	
S - 2	17.65	1614+00	2545+94	29,700	sq. ft.	
S - 3	11.53	1005+00	1614+00	5,200	sq. ft.	
L - 1	14.39	100+00	859+77	0	sq. ft.	

QUANTITIES

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Creek	A-2			0		0	SF
Total	**Aaron Creek**					**0**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Cr. Pass	A-1a	1405+00	1409+00	400	23	9,200	SF
Aaron Cr. Pass	A-1a	1412+00	1414+00	200	30	6,000	SF
Aaron Cr. Pass	A-1a	1430+00	1432+00	200	43	8,600	SF
Aaron Cr. Pass	A-1a	1585+00	1591+00	600	13	7,800	SF
Aaron Cr. Pass	A-1a	1982+00	1988+00	600	23	13,800	SF
Aaron Cr. Pass	A-1a	2001+50	2002+50	100	39	3,900	SF
Aaron Cr. Pass	A-1a	2021+00	2024+00	300	32	9,600	SF
Aaron Cr. Pass	A-1a	2044+00	2046+00	200	33	6,600	SF
Aaron Cr. Pass	A-1a	2120+00	2121+00	100	43	4,300	SF
Aaron Cr. Pass	A-1a	2139+00	2140+00	100	30	3,000	SF
Aaron Cr. Pass	A-1a	2176+00	2177+00	100	29	2,900	SF
Aaron Cr. Pass	A-1a	2287+00	2289+00	200	35	7,000	SF
Aaron Cr. Pass	A-1a	2292+00	2294+00	200	41	8,200	SF
Aaron Cr. Pass	A-1a	2295+50	2296+50	100	21	2,100	SF
Aaron Cr. Pass	A-1a	2340+00	2343+00	300	40	12,000	SF
Aaron Cr. Pass	A-1a	2426+00	2427+00	100	26	2,600	SF
Aaron Cr. Pass	A-1a	2433+00	2434+00	100	88	8,800	SF
Aaron Cr. Pass	A-1a	2442+00	2444+00	200	22	4,400	SF
Aaron Cr. Pass	A-1a	2448+00	2449+00	100	41	4,100	SF
Aaron Cr. Pass	A-1a	2458+00	2461+00	300	18	5,400	SF
Aaron Cr. Pass	A-1a	2469+00	2471+00	200	23	4,600	SF
Aaron Cr. Pass	A-1a	2485+00	2486+00	100	55	5,500	SF
Aaron Cr. Pass	A-1a	2496+50	2497+50	100	62	6,200	SF
Aaron Cr. Pass	A-1a	2506+00	2508+00	200	93	18,600	SF
Aaron Cr. Pass	A-1a	2558+00	2562+00	400	35	14,000	SF
Aaron Cr. Pass	A-1a	2569+50	2570+50	100	27	2,700	SF
Aaron Cr. Pass	A-1a	2581+00	2586+00	500	48	24,000	SF
Aaron Cr. Pass	A-1a	2693+00	2696+00	300	36	10,800	SF
Aaron Cr. Pass	A-1a	2708+00	2710+00	200	24	4,800	SF
Aaron Cr. Pass	A-1a	2714+00	2716+00	200	36	7,200	SF
Aaron Cr. Pass	A-1a	2723+00	2725+00	200	43	8,600	SF
Aaron Cr. Pass	A-1a	2824+00	2828+00	400	32	12,800	SF
Total	**Aaron Creek Pass**					**250,100**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Cr. Tunnel	A-1b	1405+00	1409+00	400	23	9,200	SF
Aaron Cr. Tunnel	A-1b	1412+00	1414+00	200	30	6,000	SF
Aaron Cr. Tunnel	A-1b	1430+00	1432+00	200	43	8,600	SF
Aaron Cr. Tunnel	A-1b	1585+00	1591+00	600	13	7,800	SF
Aaron Cr. Tunnel	A-1b	1982+00	1988+00	600	23	13,800	SF
Aaron Cr. Tunnel	A-1b	2001+50	2002+50	100	39	3,900	SF
Aaron Cr. Tunnel	A-1b	2021+00	2024+00	300	32	9,600	SF
Aaron Cr. Tunnel	A-1b	2044+00	2046+00	200	33	6,600	SF
Aaron Cr. Tunnel	A-1b	2085+00	2086+00	100	29	2,900	SF
Aaron Cr. Tunnel	A-1b	2090+00	2091+00	100	16	1,600	SF
Aaron Cr. Tunnel	A-1b	2662+00	2665+00	300	33	9,900	SF
Aaron Cr. Tunnel	A-1b	2677+00	2678+00	100	27	2,700	SF
Aaron Cr. Tunnel	A-1b	2682+00	2685+00	300	31	9,300	SF
Aaron Cr. Tunnel	A-1b	2691+00	2694+00	300	33	9,900	SF
Aaron Cr. Tunnel	A-1b	2793+00	2796+00	300	36	10,800	SF
Total	**Aaron Creek Tunnel**					**112,600**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Wrangell Island	W-1,2,3			0		0	SF
Total	**Wrangell Island**					**0**	**SF**

MSE Wall	Unit: SF	

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Fool's Inlet	F-1,2			0		0	SF
Total	**Fool's Inlet**					**0**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-3	1375+50	1377+50	200	14	2800	SF
S. Stikine	S-3	1551+50	1555+00	350	14	4900	SF
S. Stikine	S-3	1610+00	1614+00	400	13	5,200	SF
Total	**South Stikine River**					**5,200**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-2	2090+00	2100+00	1,000	21	21,000	SF
S. Stikine	S-2	2351+50	2354+50	300	29	8,700	SF
Total	**South Stikine River**					**29,700**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-1	2838+50	2839+50	100	15	1,500	SF
S. Stikine	S-1	2855+50	2858+50	300	40	12,000	SF
S. Stikine	S-1	2869+50	2871+50	200	15	3,000	SF
S. Stikine	S-1	2874+50	2876+50	200	20	4,000	SF
S. Stikine	S-1	2888+50	2890+50	200	6	1,200	SF
S. Stikine	S-1	2892+50	2898+50	600	20	12,000	SF
S. Stikine	S-1	2899+50	2901+50	200	18	3,600	SF
S. Stikine	S-1	2958+50	2960+50	200	18	3,600	SF
S. Stikine	S-1	2988+50	2990+50	200	44	8,800	SF
S. Stikine	S-1	2992+50	2997+50	500	29	14,500	SF
Total	**South Stikine River**					**64,200**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Limb Island	L-1			0		0	SF
Total	**Limb Island**					**0**	**SF**

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	10,877	$54.61	$593,992.97
603(17-36)	lnft	36 Inch Pipe	7,312	$74.75	$546,572.00
603(17-48)	lnft	48 Inch Pipe	1,434.0	$104.76	$150,225.84
603(17-60)	lnft	60 Inch Pipe	664.0	$193.43	$128,437.52
603(17-72)	lnft	72 Inch Pipe	504.0	$270.65	$136,407.60
					$1,555,636

Average Unit Cost $66,679.64 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	10,877	$80.00	$870,160.00
603(17-36)	lnft	36 Inch Pipe	7,312	$140.00	$1,023,680.0
603(17-48)	lnft	48 Inch Pipe	1,434.0	$190.00	$272,460.00
603(17-60)	lnft	60 Inch Pipe	664.0	$290.00	$192,560.00
603(17-72)	lnft	72 Inch Pipe	504.0	$350.00	$176,400.00
					$2,535,260.0

Average Unit Cost $108,669.52 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	16,000	$80.00	$1,280,000.0
603(17-36)	lnft	36 Inch Pipe	8,540	$140.00	$1,195,600.0
603(17-48)	lnft	48 Inch Pipe	2,490.0	$190.00	$473,100.00
603(17-60)	lnft	60 Inch Pipe	1,110.0	$290.00	$321,900.00
603(17-72)	lnft	72 Inch Pipe	310.0	$350.00	$108,500.00
					$3,379,100.0

Average Unit Cost $123,010.56 per mile

Juneau Access, Financial Plan, 2007, UPA				Lynn Canal Zones 1-3, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	10,877	$87.42	$950,867.34
603(17-36)	lnft	36 Inch Pipe	7,312	$152.98	$1,118,589.8
603(17-48)	lnft	48 Inch Pipe	1,434.0	$207.62	$297,727.08
603(17-60)	lnft	60 Inch Pipe	664.0	$316.89	$210,414.96
603(17-72)	lnft	72 Inch Pipe	504.0	$382.45	$192,754.80
					$2,770,353.9

$118,746.42

Average Unit Cost with 3%/year Inflation $129,757.42 per mile

Juneau Access, Financial Plan, 2007, UPA				Lynn Canal Zones 4-5, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	16,000	$87.42	$1,398,720.0
603(17-36)	lnft	36 Inch Pipe	8,540	$152.98	$1,306,449.2
603(17-48)	lnft	48 Inch Pipe	2,490.0	$207.62	$516,973.80
603(17-60)	lnft	60 Inch Pipe	1,110.0	$316.89	$351,747.90
603(17-72)	lnft	72 Inch Pipe	310.0	$382.45	$118,559.50
					$3,692,450.4

$134,417.56

Average Unit Cost with 3%/year Inflation $146,881.70 per mile

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
602(1-60)A	LNFT	60" SPP	183	$850.00	$155,550.00	$810.00	$148,230.00	$515.00	$94,245.00	$1,500.00	$274,500.00
602(1-60)B	LNFT	60" SPP	118	$1,000.00	$118,000.00	$840.00	$99,120.00	$570.00	$67,260.00	$1,600.00	$188,800.00
602(1-72)A	LNFT	72" SPP	322	$1,300.00	$418,600.00	$820.00	$264,040.00	$500.00	$161,000.00	$1,600.00	$515,200.00
602(1-72)b	LNFT	72"SPP	100	$1,500.00	$150,000.00	$800.00	$80,000.00	$620.00	$62,000.00	$1,700.00	$170,000.00
602(1-84)	LNFT	84" SPP	213.0	$1,800.00	$383,400.00	$970.00	$206,610.00	$650.00	$138,450.00	$2,000.00	$426,000.00
602(1-108)	LNFT	108" SPP	80.0	$2,200.00	$176,000.00	$980.00	$78,400.00	$900.00	$72,000.00	$3,000.00	$240,000.00
603(1-24)	LNFT	24" CSP	164	$120.00	$19,680.00	$120.00	$19,680.00	$110.00	$18,040.00	$130.00	$21,320.00
603(1-36)	LNFT	36" CSP	7,181	$160.00	$1,148,960.0	$180.00	$1,292,580.0	$160.00	$1,148,960	$160.00	$1,148,960.00
603(1-48)	LNFT	48" CSP	398	$350.00	$139,300.00	$490.00	$195,020.00	$225.00	$89,550.00	$400.00	$159,200.00
603(1-60)	LNFT	60" CSP	428	$600.00	$256,800.00	$570.00	$243,960.00	$300.00	$128,400.00	$600.00	$256,800.00
					$2,966,290.0		$2,627,640.0		$1,979,905		$3,400,780.00
					$2,743,653.8						

Average Unit Cost $124,711.53 per mile

Drainage Allowance	Unit: Mile	Page 2 of 3

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	450 millimeter pipe	300	120	$36,000.00	117.36	$35,208.00	200	$60,000.00
60201 A	m	2850 mm pipe	26	1600	$41,600.00	2047.97	$53,247.22	1800	$46,800.00
60201 A	m	600 millimeter pipe culvert	1000	$200.00	$200,000.00	$177.05	$177,050.00	$220.00	$220,000.00
60201 B	m	750 millimeter pipe culvert	180	$320.00	$57,600.00	$333.93	$60,107.40	$250.00	$45,000.00
60201 C	m	900 millimeter pipe culvert	60	$350.00	$21,000.00	$425.00	$25,500.00	$320.00	$19,200.00
60201 E	m	1200 millimeter pipe culvert	67	$500.00	$33,500.00	$666.23	$44,637.41	$400.00	$26,800.00
60201 G	m	1800 millimeter pipe culvert	100.0	$950.00	$95,000.00	$1,005.49	$100,549.00	$975.00	$97,500.00
60201 H	m	2100 millimeter pipe culvert	132.0	$1,000.00	$132,000.00	$1,658.20	$218,882.40	$1,750.00	$231,000.00
60201 I	m	2400 millimeter pipe culvert	45.0	$1,300.00	$58,500.00	$1,615.36	$72,691.20	$1,400.00	$63,000.00
60206 A	each	end section for 450 millimeter pipe culvert	24	$200.00	$4,800.00	$235.00	$5,640.00	$200.00	$4,800.00
60206 B	each	end section for 600 millimeter pipe culvert	24	$250.00	$6,000.00	$237.00	$5,688.00	$250.00	$6,000.00
60206 D	each	end section for 750 millimeter pipe culvert	4	$600.00	$2,400.00	$562.00	$2,248.00	$300.00	$1,200.00
					$688,400.00		$801,448.63		$821,300.00
					$770,382.88				
					$101,100.12				
		Average Unit Cost with 3%/year Inflation			**$110,474.83 per mile**				

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	450 millimeter pipe culvert	240	$90.00	$21,600.00	$64.00	$15,360.00	$150.00	$36,000.00	$100.00	$24,000.00
60201 B	m	600 millimeter pipe culvert	1800	$100.00	$180,000.00	$125.17	$225,306.00	$180.00	$324,000.00	$110.00	$198,000.00
60201 C	m	900 millimeter pipe culvert	120	$150.00	$18,000.00	$208.00	$24,960.00	$260.00	$31,200.00	$150.00	$18,000.00
60201 D	m	1050 millimeter pipe culvert	55	$200.00	$11,000.00	$250.00	$13,750.00	$300.00	$16,500.00	$175.00	$9,625.00
60201 E	m	1200 millimeter pipe culvert	51.0	$325.00	$16,575.00	$400.00	$20,400.00	$320.00	$16,320.00	$250.00	$12,750.00
60201 F	m	1650 millimeter pipe culvert	73.0	$375.00	$27,375.00	$419.00	$30,587.00	$750.00	$54,750.00	$350.00	$25,550.00
60201 G	m	1800 millimeter pipe culvert	35.9	$400.00	$14,360.00	$772.00	$27,714.80	$850.00	$30,515.00	$800.00	$28,720.00
60201H	m	2100 millimeter pipe culvert	59.1	$700.00	$41,370.00	$936.00	$55,317.60	$800.00	$47,280.00	$900.00	$53,190.00
60201I	m	2400 millimeter pipe culvert	103.7	$725.00	$75,182.50	$996.00	$103,285.20	$850.00	$88,145.00	$1,000.00	$103,700.00
60201J	m	2700 millimeter pipe culvert	80.5	$800.00	$64,400.00	$1,222.00	$98,371.00	$1,150.00	$92,575.00	$1,600.00	$128,800.00
60206 A	each	end section for 450 millimeter pipe culvert	7	$150.00	$1,050.00	$192.00	$1,344.00	$150.00	$1,050.00	$300.00	$2,100.00
60206 B	each	end section for 600 millimeter pipe culvert	55	$200.00	$11,000.00	$233.00	$12,815.00	$175.00	$9,625.00	$350.00	$19,250.00
60206 D	each	end section for 900 millimeter pipe culvert	2	$350.00	$700.00	$750.00	$1,500.00	$500.00	$1,000.00	$700.00	$1,400.00
					$482,612.50		$630,710.60		$748,960.00		$625,085.00
					$621,842.03						
					9.808344269						
					$63,399.29 per mile						
		Average Unit Cost with 3%/year Inflation			**$75,702.06 per mile**						

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	450 millimeter pipe culvert	100	$110.00	$11,000.00	$57.40	$5,740.00	$80.00	$8,000.00
60201 B	m	600 millimeter pipe culvert	110	$130.00	$14,300.00	$100.00	$11,000.00	$100.00	$11,000.00
60502	m	Standard underdrain system	40	$150.00	$6,000.00	$114.00	$4,560.00	$150.00	$6,000.00
60507	m	200 millimeter outlet pipe	20	$50.00	$1,000.00	$40.50	$810.00	$50.00	$1,000.00
60802	m	Paved waterway type Vi	60.0	$60.00	$3,600.00	$79.40	$4,764.00	$60.00	$3,600.00
					$35,900.00		$26,874.00		$29,600.00
					$30,791.33				
					$990.08 per mile				

Average Unit Cost with 3%/year Inflation **$1,217.67 per mile**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	600 millimeter pipe culvert	1010	$100.00	$101,000.00	$130.00	$131,300.00	$100.00	$101,000.00
60201 B	m	900 millimeter pipe culvert	240	$180.00	$43,200.00	$165.00	$39,600.00	$150.00	$36,000.00
60201 C	m	1200 millimeter pipe culvert	70	$240.00	$16,800.00	$250.00	$17,500.00	$200.00	$14,000.00
60201 D	m	1500 millimeter pipe culvert	0	$280.00	$0.00	$0.00	$0.00	$0.00	$0.00
60201 E	m	1800 millimeter pipe culvert	0.0	$460.00	$0.00	$0.00	$0.00	$0.00	$0.00
60201 F	m	2100 millimeter pipe culvert	116.0	$550.00	$63,800.00	$600.00	$69,600.00	$400.00	$46,400.00
60206 A	each	end section for 600 millimeter pipe culvert	41	$170.00	$6,970.00	$150.00	$6,150.00	$200.00	$8,200.00
60206 B	each	end section for 900 millimeter pipe culvert	6	$350.00	$2,100.00	$200.00	$1,200.00	$400.00	$2,400.00
60206 D	each	end section for 750 millimeter pipe culvert	0	$350.00	$0.00	$750.00	$0.00	$500.00	$0.00
60501	m	Underdrain system	150	$100.00	$15,000.00	$100.00	$15,000.00	$100.00	$15,000.00
60506	m	200 millimeter collector pipe	44	$25.00	$1,100.00	$100.00	$4,400.00	$100.00	$4,400.00
					$249,970.00		$284,750.00		$227,400.00
					$254,040.00				
					$84,680.00 per mile				

Average Unit Cost with 3%/year Inflation **$113,802.84 per mile**

Total Average Unit Cost **$111,076.68 per mile**

Does not account for underdrains, horizontal pipes, or riprap lined ditches etc.

Use **$115,000.00** **per mile for drainage** **(very wet climate)**

Adjusting for the segments utilizing existing roads, reduce culverts to 2 per mile:

50 ft of culvert every **2640** ft = 100 ln ft of culvert per mile

100 ln ft of culvert per mile to include other drainage incidentals

$150 x 100' = $15,000

Use **$15,000.00** **per mile for drainage** **(very wet climate)**

Used only for segments utilizing existing roads

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
618(1)	ACRE	Seeding	94.000	$6,342.10	$596,157.40

Average Unit Cost $6,342.10 per acre

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
618(1)	ACRE	Seeding	94.000	$2,510.00	$235,940.00

Average Unit Cost $2,510.00 per acre

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
618(1)	ACRE	Seeding	112.000	$2,510.00	$281,120.00

Average Unit Cost $2,510.00 per acre

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62514	slry unit	Turf establishment	280	$650.00	$182,000.00	$319.24	$89,387.20	$555.00	$155,400.00
62603	each	Cuttings, alder	1,300	$5.00	$6,500.00	$4.64	$6,032.00	$5.00	$6,500.00
62604	each	Bundle, alder	120	$50.00	$6,000.00	$29.00	$3,480.00	$10.00	$1,200.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$508	280	slry unit	$142,240	
	28	ha		$5,080 per ha
	69	acre		$2,061 per acre

Average Unit Cost with 3%/year Inflation $2,252.60 per acre

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62514	slry unit	Turf establishment	300	$700.00	$210,000.00	$621.15	$186,345.00	$850.00	$255,000.00	$550.00	$165,000.00
62603	each	Cuttings, alder	1,300	$5.00	$6,500.00	$4.64	$6,032.00	$5.00	$6,500.00	$5.00	$6,500.00
62407 A	m^2	Placing conserved topsoil, 300 millimeters depth	46,000	$3.00	$138,000.00	$2.88	$132,480.00	$1.25	$57,500.00	$3.00	$138,000.00
62407 B	m^2	Placing conserved topsoil, 600 millimeters depth	1,900	$4.00	$7,600.00	$14.86	$28,234.00	$2.50	$4,750.00	$5.00	$9,500.00

Coffman Cove (1)

Seeding

Ave.	Quantity	Unit	Total	Cost per Unit
$680	300	slry unit	$204,087	
	30	ha		$6,803 per ha
	74	acre		$2,754 per acre
			With 3%/year inflation	$3,288.67 per acre

Conserved topsoil 4"

Ave.	Quantity	Unit	Total	Cost per Unit
$2.69	47,900	m2	$129,016	
	46,000	m2	300 mm depth	
	149,400	m2	100 mm depth	$0.86 per m2
	14.9	ha		$8,636 per ha
	36.9	acre		$3,495 per acre
			With 3%/year inflation	$4,173 per acre

Average Unit Cost $7,461.55 per acre

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62503	slry unit	Seeding, hydraulic	320	$350.00	$112,000.00	$250.00	$80,000.00	$200.00	$64,000.00
62503	slry unit	Turf establishment	320	$400.00	$128,000.00	$160.00	$51,200.00	$200.00	$64,000.00
62604	each	Bundle, alder	120	$50.00	$6,000.00	$29.00	$3,480.00	$10.00	$1,200.00
62404	m^2	Placing conserved topsoil, 100 millimeters depth	2,000	$1.50	$3,000.00	$1.50	$3,000.00	$1.00	$2,000.00

Seeding

Ave.	Quantity	Unit	Total	Cost per Unit
$260	640	slry unit	$166,400	
	64	ha		$2,600 per ha
	158	acre		$1,052.63 per acre
		With 3%/year inflation		$1,294.60 per acre

Conserved topsoil 4"

Ave.	Quantity	Unit	Total	Cost per Unit
$1.33	2,000	m2	$2,660	
	2,000	m2	300 mm depth	
	2,000	m2	100 mm depth	$1.33 per m2
	0.2	ha		$13,300 per ha
	0.5	acre		$5,382 per acre
		With 3%/year inflation		$6,620 per acre

Average Unit Cost $7,914.20 per acre

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62509	ha	Turf establishment	0	$3,000.00	$300.00	$10,000.00	$1,000.00	$10,000.00	$1,000.00
62503	slry unit	Seeding	320	$350.00	$112,000.00	$250.00	$80,000.00	$200.00	$64,000.00
62506	slry unit	Mulching	180	$300.00	$54,000.00	$300.00	$54,000.00	$400.00	$72,000.00

Seeding

Ave.	Quantity	Unit	Total	Cost per Unit
$291	500	slry unit	$145,333	
	50	ha		$2,907 per ha
	124	acre		$1,176 per acre

Average Unit Cost with 3%/year Inflation $1,580.86 per acre

Total Average Unit Cost $4,367.33 per acre

Use $7,000.00 per acre

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	6	acre	ad0301W1.ser
W - 2	3.20	745+00	914+00	1	acre	Misc. shaping
W - 3	11.08	160+00	745+00	5	acre	Misc. shaping
F - 1	6.42	723+00	1062+00	3	acre	Misc. shaping
F - 2	4.06	1062+00	1276+37	16	acre	ad0301F2.ser
A - 1a	30.37	1280+00	2883+63	113	acre	ad0301Ab_(1-4).ser
A - 1a (BC)	3.86	2883+63	3087+36	11	acre	ad0301Ab_4.ser
A - 1b	29.77	1280+00	2851+97	102	acre	ad0301Aa_(1-4).ser
A - 1b (BC)	3.86	2851+97	3055+71	11	acre	ad0301Aa_4.ser
A - 2	5.21	1005+00	1280+00	20	acre	ad0301A2.ser
S -1	21.35	2545+94	3673+29	75	acre	ad0301S1.ser
S -1 (BC)	4.13	3673+29	3891+26	10	acre	ad0301S1.ser
S - 2	17.65	1614+00	2545+94	62	acre	ad0301S2_(1-3).ser
S - 3	11.53	1005+00	1614+00	43	acre	ad0301S3_(1-2).ser
L - 1	14.39	100+00	859+77	45	acre	ad0301L1.ser

Guard Rail **Unit: LF**

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	4,400.000	$33.88	$149,072

Average Unit Cost **$33.88 per ln ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	4,400.000	$27.50	$121,000

Average Unit Cost **$27.50 per ln ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	97,657.000	$27.50	$2,685,568

Average Unit Cost **$27.50 per ln ft**

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	12,101.000	$37.50	$453,788

Average Unit Cost with 3%/year Inflation **$40.98 per ln ft**

Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	20,475.000	$15.04	$307,944

Average Unit Cost with 3%/year Inflation **$20.82 per ln ft**

Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1999	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	2,662.500	$14.50	$38,606

Average Unit Cost with 3%/year Inflation **$19.49 per ln ft**

Juneau Access, Final EIS, 2006, UPA				Old Glenn Highway, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	14,375.000	$17.77	$255,444

Average Unit Cost with 3%/year Inflation **$20.60 per ln ft**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	2,448.000	$35.00	$85,680.00	$30.00	$73,440	$34.00	$83,232	$35.00	$85,680

Average Unit Cost **$33.50 per ln ft**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701	m	guardrail system G4, type I, class A (wood posts)	190.0	$120.00	$22,800.00	$199.84	$37,969.60	$100.00	$19,000.00
61702 A	each	terminal section type G4-BAT	0		$0.00		$0.00		$0.00
61702 B	each	terminal section type tangent	12	$3,000.00	$36,000.00	$3,951.50	$47,418.00	$4,000.00	$48,000.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$140	190.0	m	$26,591	
	623.4	ln ft		**$42.66 per ln ft**

Average Unit Cost with 3%/year Inflation **$46.61 per ln ft**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701	m	guardrail system G4, type I, class A (wood posts)	430.0	$80.00	$34,400.00	$112.00	$48,160.00	$70.00	$30,100.00	$100.00	$43,000.00
61702 A	m	terminal section type G4-BAT	6	$2,000.00	$12,000.00	$2,977.00	$17,862.00	$2,500.00	$15,000.00	$3,000.00	$18,000.00
61702 B	each	terminal section type tangent	12	$2,500.00	$30,000.00	$2,988.00	$35,856.00	$2,500.00	$30,000.00	$2,500.00	$30,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Units	Total	Cost per Unit
$91	430	m	$38,915	
	1410.7612	ln ft		**$27.58 per ln ft**

Average Unit Cost with 3%/year Inflation **$32.94 per ln ft**

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701A	m	Guardrail system G4, type 1	455.000	$70.00	$31,850.00	$84.40	$38,402.00	$80.00	$36,400.00

Ave.	Quantity	Unit	Total	Cost per Unit
$78	455.000	m	$35,550.67	
	1492.782152	ft		**$23.82 per ft**

Average Unit Cost with 3%/year Inflation **$29.29 per ln ft**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701A	m	Guardrail system G4, type 1	1,715.000	$80.00	$137,200.00	$80.00	$137,200.00	$70.00	$120,050.00

Ave.	Quantity	Unit	Total	Cost per Unit
$77	1,715.000	m	$131,483.33	
	5626.64042	ft		**$23.37 per ln ft**

Average Unit Cost with 3%/year Inflation **$31.40 per ln ft**

Total Average Unit Cost **$30.38 per ln ft**

Use **$30.00 per ln ft**

Guardrail was estimated for areas protecting tall MSE walls and proposed tall slopes steeper than 1:2.
Guardrail quantities were increased by 10% to compensate for flared areas.

QUANTITIES

Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	110	ft.	
W - 2	3.20	745+00	914+00	0	ft.	
W - 3	11.08	160+00	745+00	0	ft.	
F - 1	6.42	723+00	1062+00	0	ft.	
F - 2	4.06	1062+00	1276+37	0	ft.	
A - 1a	30.37	1280+00	2883+63	24,970	ft.	
A - 1a (BC)	3.86	2883+63	3087+36	440	ft.	
A - 1b	29.77	1280+00	2851+97	19,800	ft.	
A - 1b (BC)	3.86	2851+97	3055+71	440	ft.	
A - 2	5.21	1005+00	1280+00	2,200	ft.	
S -1	21.35	2545+94	3673+29	19,690	ft.	
S -1 (BC)	4.13	3673+29	3891+26	4,950	ft.	
S - 2	17.65	1614+00	2545+94	20,570	ft.	
S - 3	11.53	1005+00	1614+00	9,350	ft.	
L - 1	14.39	100+00	859+77	11,940	ft.	

QUANTITIES

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Creek	A-2	Rt.	1033+00	1034+00	100	100
Aaron Creek	A-2	Rt.	1082+00	1086+00	400	500
Aaron Creek	A-2	Rt.	1108+00	1112+00	400	900
Aaron Creek	A-2	Rt.	1120+00	1121+00	100	1,000
Aaron Creek	A-2	Lt.	1135+00	1137+00	200	1,200
Aaron Creek	A-2	Rt.	1135+00	1137+00	200	1,400
Aaron Creek	A-2	Rt.	1154+00	1156+00	200	1,600
Aaron Creek	A-2	Rt.	1161+00	1162+00	100	1,700
Aaron Creek	A-2	Rt.	1181+00	1183+00	200	1,900
Aaron Creek	A-2	Rt.	1187+00	1188+00	100	2,000
					2,000 ln ft	
Total	**Aaron Creek**		**10% Increase for Flared Ends**		**2,200 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Pass	A-1a	Rt.	1405+00	1409+00	400	400
Aaron Cr. Pass	A-1a	Rt.	1412+00	1415+00	300	700
Aaron Cr. Pass	A-1a	Rt.	1422+00	1423+00	100	800
Aaron Cr. Pass	A-1a	Rt.	1430+00	1432+00	200	1,000
Aaron Cr. Pass	A-1a	Lt.	1454+00	1456+00	200	1,200
Aaron Cr. Pass	A-1a	Rt.	1454+00	1456+00	200	1,400
Aaron Cr. Pass	A-1a	Rt.	1466+00	1470+00	400	1,800
Aaron Cr. Pass	A-1a	Rt.	1526+00	1537+00	1,100	2,900
Aaron Cr. Pass	A-1a	Lt.	1568+00	1569+00	100	3,000
Aaron Cr. Pass	A-1a	Rt.	1568+00	1570+00	200	3,200
Aaron Cr. Pass	A-1a	Rt.	1574+50	1575+50	100	3,300
Aaron Cr. Pass	A-1a	Rt.	1585+00	1591+00	600	3,900
Aaron Cr. Pass	A-1a	Rt.	1718+00	1720+00	200	4,100
Aaron Cr. Pass	A-1a	Lt.	1789+00	1790+00	100	4,200
Aaron Cr. Pass	A-1a	Rt.	1789+00	1790+00	100	4,300
Aaron Cr. Pass	A-1a	Rt.	1812+00	1815+00	300	4,600
Aaron Cr. Pass	A-1a	Rt.	1849+00	1855+00	600	5,200
Aaron Cr. Pass	A-1a	Lt.	1894+00	1898+00	400	5,600
Aaron Cr. Pass	A-1a	Lt.	1932+00	1936+00	400	6,000
Aaron Cr. Pass	A-1a	Lt.	1941+00	1946+00	500	6,500
Aaron Cr. Pass	A-1a	Lt.	1953+50	1954+50	100	6,600
Aaron Cr. Pass	A-1a	Lt.	1969+00	1973+00	400	7,000
Aaron Cr. Pass	A-1a	Lt.	1982+00	1988+00	600	7,600
Aaron Cr. Pass	A-1a	Lt.	2001+50	2002+50	100	7,700
Aaron Cr. Pass	A-1a	Lt.	2009+00	2012+00	300	8,000
Aaron Cr. Pass	A-1a	Lt.	2021+00	2024+00	300	8,300
Aaron Cr. Pass	A-1a	Lt.	2044+00	2047+00	300	8,600
Aaron Cr. Pass	A-1a	Lt.	2065+00	2067+00	200	8,800
Aaron Cr. Pass	A-1a	Lt.	2079+00	2083+00	400	9,200
Aaron Cr. Pass	A-1a	Rt.	2093+00	2094+00	100	9,300

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Pass	A-1a	Rt.	2106+00	2107+00	100	9,400
Aaron Cr. Pass	A-1a	Rt.	2112+00	2114+00	200	9,600
Aaron Cr. Pass	A-1a	Rt.	2120+00	2122+00	200	9,800
Aaron Cr. Pass	A-1a	Rt.	2138+00	2142+00	400	10,200
Aaron Cr. Pass	A-1a	Rt.	2153+00	2156+00	300	10,500
Aaron Cr. Pass	A-1a	Rt.	2163+00	2167+00	400	10,900
Aaron Cr. Pass	A-1a	Rt.	2176+00	2177+00	100	11,000
Aaron Cr. Pass	A-1a	Rt.	2180+00	2182+00	200	11,200
Aaron Cr. Pass	A-1a	Rt.	2199+00	2200+00	100	11,300
Aaron Cr. Pass	A-1a	Rt.	2203+50	2204+50	100	11,400
Aaron Cr. Pass	A-1a	Rt.	2212+00	2222+00	1,000	12,400
Aaron Cr. Pass	A-1a	Rt.	2275+00	2281+00	600	13,000
Aaron Cr. Pass	A-1a	Rt.	2287+00	2289+00	200	13,200
Aaron Cr. Pass	A-1a	Rt.	2292+00	2294+00	200	13,400
Aaron Cr. Pass	A-1a	Rt.	2296+00	2300+00	400	13,800
Aaron Cr. Pass	A-1a	Rt.	2318+00	2320+00	200	14,000
Aaron Cr. Pass	A-1a	Rt.	2340+00	2343+00	300	14,300
Aaron Cr. Pass	A-1a	Rt.	2357+00	2358+00	100	14,400
Aaron Cr. Pass	A-1a	Rt.	2367+50	2368+50	100	14,500
Aaron Cr. Pass	A-1a	Rt.	2383+00	2385+00	200	14,700
Aaron Cr. Pass	A-1a	Rt.	2399+50	2400+50	100	14,800
Aaron Cr. Pass	A-1a	Rt.	2426+00	2427+00	100	14,900
Aaron Cr. Pass	A-1a	Rt.	2432+00	2434+00	200	15,100
Aaron Cr. Pass	A-1a	Rt.	2443+00	2444+00	100	15,200
Aaron Cr. Pass	A-1a	Rt.	2448+00	2449+00	100	15,300
Aaron Cr. Pass	A-1a	Rt.	2458+00	2461+00	300	15,600
Aaron Cr. Pass	A-1a	Rt.	2469+00	2471+00	200	15,800
Aaron Cr. Pass	A-1a	Rt.	2485+00	2486+00	100	15,900
Aaron Cr. Pass	A-1a	Rt.	2496+50	2497+50	100	16,000
Aaron Cr. Pass	A-1a	Rt.	2505+00	2508+00	300	16,300
Aaron Cr. Pass	A-1a	Rt.	2512+00	2515+00	300	16,600
Aaron Cr. Pass	A-1a	Rt.	2523+00	2528+00	500	17,100
Aaron Cr. Pass	A-1a	Rt.	2558+00	2562+00	400	17,500
Aaron Cr. Pass	A-1a	Rt.	2569+50	2570+50	100	17,600
Aaron Cr. Pass	A-1a	Rt.	2580+00	2587+00	700	18,300
Aaron Cr. Pass	A-1a	Rt.	2594+00	2595+00	100	18,400
Aaron Cr. Pass	A-1a	Rt.	2609+00	2615+00	600	19,000
Aaron Cr. Pass	A-1a	Rt.	2629+00	2632+00	300	19,300
Aaron Cr. Pass	A-1a	Rt.	2635+00	2639+00	400	19,700
Aaron Cr. Pass	A-1a	Rt.	2643+00	2645+00	200	19,900
Aaron Cr. Pass	A-1a	Rt.	2653+00	2654+00	100	20,000
Aaron Cr. Pass	A-1a	Rt.	2665+00	2667+00	200	20,200
Aaron Cr. Pass	A-1a	Rt.	2693+00	2696+00	300	20,500
Aaron Cr. Pass	A-1a	Rt.	2702+00	2703+00	100	20,600
Aaron Cr. Pass	A-1a	Rt.	2708+00	2710+00	200	20,800
Aaron Cr. Pass	A-1a	Rt.	2714+00	2717+00	300	21,100
Aaron Cr. Pass	A-1a	Rt.	2723+00	2725+00	200	21,300
Aaron Cr. Pass	A-1a	Rt.	2739+50	2740+50	100	21,400
Aaron Cr. Pass	A-1a	Rt.	2750+00	2752+00	200	21,600
Aaron Cr. Pass	A-1a	Rt.	2755+00	2756+00	100	21,700
Aaron Cr. Pass	A-1a	Lt.	2774+00	2776+00	200	21,900
Aaron Cr. Pass	A-1a	Lt.	2802+00	2803+00	100	22,000
Aaron Cr. Pass	A-1a	Lt.	2824+00	2828+00	400	22,400
Aaron Cr. Pass	A-1a	Lt.	2832+50	2833+50	100	22,500
Aaron Cr. Pass	A-1a	Lt.	2838+50	2839+50	100	22,600
Aaron Cr. Pass	A-1a	Lt.	2854+00	2855+00	100	22,700
					22,700 ln ft	
Total	**Aaron Cr. Pass**		**10% Increase for Flared Ends**		**24,970 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Pass (BC)	A-1a	Lt.	2902+00	2904+00	200	200
Aaron Cr. Pass (BC)	A-1a	Lt.	2906+00	2908+00	200	400
					400 ln ft	
Total	**Aaron Cr. Pass (BC)**		**10% Increase for Flared Ends**		**440 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Tunnel	A-1b	Rt.	1405+00	1409+00	400	400
Aaron Cr. Tunnel	A-1b	Rt.	1412+00	1415+00	300	700
Aaron Cr. Tunnel	A-1b	Rt.	1422+00	1423+00	100	800
Aaron Cr. Tunnel	A-1b	Rt.	1430+00	1432+00	200	1,000
Aaron Cr. Tunnel	A-1b	Lt.	1454+00	1456+00	200	1,200
Aaron Cr. Tunnel	A-1b	Rt.	1454+00	1456+00	200	1,400
Aaron Cr. Tunnel	A-1b	Rt.	1466+00	1470+00	400	1,800
Aaron Cr. Tunnel	A-1b	Rt.	1526+00	1537+00	1,100	2,900
Aaron Cr. Tunnel	A-1b	Lt.	1568+00	1569+00	100	3,000
Aaron Cr. Tunnel	A-1b	Rt.	1568+00	1570+00	200	3,200
Aaron Cr. Tunnel	A-1b	Rt.	1574+50	1575+50	100	3,300
Aaron Cr. Tunnel	A-1b	Rt.	1585+00	1591+00	600	3,900
Aaron Cr. Tunnel	A-1b	Rt.	1718+00	1720+00	200	4,100
Aaron Cr. Tunnel	A-1b	Lt.	1789+00	1790+00	100	4,200
Aaron Cr. Tunnel	A-1b	Rt.	1789+00	1790+00	100	4,300
Aaron Cr. Tunnel	A-1b	Rt.	1812+00	1815+00	300	4,600
Aaron Cr. Tunnel	A-1b	Rt.	1849+00	1855+00	600	5,200
Aaron Cr. Tunnel	A-1b	Lt.	1894+00	1898+00	400	5,600
Aaron Cr. Tunnel	A-1b	Lt.	1932+00	1936+00	400	6,000
Aaron Cr. Tunnel	A-1b	Lt.	1941+00	1946+00	500	6,500
Aaron Cr. Tunnel	A-1b	Lt.	1953+50	1954+50	100	6,600
Aaron Cr. Tunnel	A-1b	Lt.	1969+00	1973+00	400	7,000
Aaron Cr. Tunnel	A-1b	Lt.	1982+00	1988+00	600	7,600
Aaron Cr. Tunnel	A-1b	Lt.	2001+50	2002+50	100	7,700
Aaron Cr. Tunnel	A-1b	Lt.	2009+00	2012+00	300	8,000
Aaron Cr. Tunnel	A-1b	Lt.	2021+00	2024+00	300	8,300
Aaron Cr. Tunnel	A-1b	Lt.	2044+00	2047+00	300	8,600
Aaron Cr. Tunnel	A-1b	Lt.	2065+00	2067+00	200	8,800
Aaron Cr. Tunnel	A-1b	Lt.	2078+50	2079+50	100	8,900
Aaron Cr. Tunnel	A-1b	Lt.	2084+00	2086+00	200	9,100
Aaron Cr. Tunnel	A-1b	Lt.	2090+00	2091+00	100	9,200

Guard Rail **Unit: LF**

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Tunnel	A-1b	Lt.	2100+00	2104+00	400	9,600
Aaron Cr. Tunnel	A-1b	Lt.	2175+00	2179+00	400	10,000
Aaron Cr. Tunnel	A-1b	Rt.	2311+00	2314+00	300	10,300
Aaron Cr. Tunnel	A-1b	Lt.	2355+00	2357+00	200	10,500
Aaron Cr. Tunnel	A-1b	Lt.	2361+00	2363+00	200	10,700
Aaron Cr. Tunnel	A-1b	Lt.	2418+00	2429+00	1,100	11,800
Aaron Cr. Tunnel	A-1b	Rt.	2554+00	2558+00	400	12,200
Aaron Cr. Tunnel	A-1b	Rt.	2561+00	2569+00	800	13,000
Aaron Cr. Tunnel	A-1b	Rt.	2601+00	2606+00	500	13,500
Aaron Cr. Tunnel	A-1b	Rt.	2611+00	2615+00	400	13,900
Aaron Cr. Tunnel	A-1b	Rt.	2621+00	2626+00	500	14,400
Aaron Cr. Tunnel	A-1b	Rt.	2633+00	2636+00	300	14,700
Aaron Cr. Tunnel	A-1b	Rt.	2661+00	2665+00	400	15,100
Aaron Cr. Tunnel	A-1b	Rt.	2670+50	2671+50	100	15,200
Aaron Cr. Tunnel	A-1b	Rt.	2677+00	2678+00	100	15,300
Aaron Cr. Tunnel	A-1b	Rt.	2682+00	2685+00	300	15,600
Aaron Cr. Tunnel	A-1b	Rt.	2691+00	2694+00	300	15,900
Aaron Cr. Tunnel	A-1b	Rt.	2708+00	2709+00	100	16,000
Aaron Cr. Tunnel	A-1b	Rt.	2720+00	2724+00	400	16,400
Aaron Cr. Tunnel	A-1b	Lt.	2742+00	2745+00	300	16,700
Aaron Cr. Tunnel	A-1b	Lt.	2769+00	2771+00	200	16,900
Aaron Cr. Tunnel	A-1b	Lt.	2786+00	2787+00	100	17,000
Aaron Cr. Tunnel	A-1b	Lt.	2793+00	2797+00	400	17,400
Aaron Cr. Tunnel	A-1b	Lt.	2800+50	2801+50	100	17,500
Aaron Cr. Tunnel	A-1b	Lt.	2807+00	2808+00	100	17,600
Aaron Cr. Tunnel	A-1b	Lt.	2822+00	2824+00	200	17,800
Aaron Cr. Tunnel	A-1b	Lt.	2832+00	2834+00	200	18,000
					18,000 ln ft	
Total	**Aaron Cr. Tunnel**		**10% Increase for Flared Ends**		**19,800 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Tunnel	A-1b	Lt.	2871+00	2873+00	200	200
Aaron Cr. Tunnel	A-1b	Lt.	2875+00	2877+00	200	400
					400 ln ft	
Total	**Aaron Cr. Tunnel (BC)**		**10% Increase for Flared Ends**		**440 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Wrangell Island	W-1	Lt.	999+00	1000+00	100	100
					100 ln ft	
Total	**Wrangell Island**		**10% Increase for Flared Ends**		**110 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Wrangell Island	W-2	Lt.				0
					0 ln ft	
Total	**Wrangell Island**		**10% Increase for Flared Ends**		**0 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Wrangell Island	W-3	Rt.				0
					0 ln ft	
Total	**Wrangell Island**		**10% Increase for Flared Ends**		**0 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Fool's Inlet	F-1	Rt.				0
					0 ln ft	
Total	**Fool's Inlet**		**10% Increase for Flared Ends**		**0 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Fool's Inlet	F-2	Rt.				0
					0 ln ft	
Total	**Fool's Inlet**		**10% Increase for Flared Ends**		**0 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
S. Stikine River	S-3	Lt.	1008+00	1025+00	1,700	1,700
S. Stikine River	S-3	Rt.	1008+00	1024+00	1,600	3,300
S. Stikine River	S-3	Rt.	1082+00	1085+00	300	3,600
S. Stikine River	S-3	Lt.	1082+00	1086+00	400	4,000
S. Stikine River	S-3	Lt.	1116+00	1125+00	900	4,900
S. Stikine River	S-3	Lt.	1376+00	1378+00	200	5,100
S. Stikine River	S-3	Rt.	1419+00	1425+00	600	5,700
S. Stikine River	S-3	Lt.	1419+00	1425+00	600	6,300
S. Stikine River	S-3	Rt.	1452+00	1457+00	500	6,800
S. Stikine River	S-3	Lt.	1452+00	1458+00	600	7,400
S. Stikine River	S-3	Rt.	1473+00	1474+00	100	7,500
S. Stikine River	S-3	Lt.	1473+00	1474+00	100	7,600
S. Stikine River	S-3	Rt.	1480+00	1481+00	100	7,700
S. Stikine River	S-3	Lt.	1480+00	1481+00	100	7,800
S. Stikine River	S-3	Lt.	1603+00	1606+00	300	8,100
S. Stikine River	S-3	Lt.	1610+00	1614+00	400	8,500
					8,500 ln ft	
Total	**South Stikine River**		**10% Increase for Flared Ends**		**9,350 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
S. Stikine River	S-2	Lt.	1626+00	1627+50	150	150
S. Stikine River	S-2	Rt.	1626+00	1627+50	150	300
S. Stikine River	S-2	Rt.	1633+50	1635+00	150	450
S. Stikine River	S-2	Lt.	1633+50	1635+00	150	600
S. Stikine River	S-2	Lt.	2033+00	2041+00	800	1,400
S. Stikine River	S-2	Lt.	2089+00	2101+00	1,200	2,600
S. Stikine River	S-2	Lt.	2141+00	2145+00	400	3,000
S. Stikine River	S-2	Lt.	2149+00	2156+00	700	3,700
S. Stikine River	S-2	Lt.	2191+00	2196+00	500	4,200
S. Stikine River	S-2	Rt.	2193+00	2195+50	250	4,450
S. Stikine River	S-2	Lt.	2235+00	2251+00	1,600	6,050
S. Stikine River	S-2	Rt.	2146+50	2251+50	10,500	16,550
S. Stikine River	S-2	Lt.	2292+00	2297+00	500	17,050

Alignment	Segment	Side	STA	STA	Length	Cum. Length
S. Stikine River	S-2	Lt.	2351+00	2355+00	400	17,450
S. Stikine River	S-2	Lt.	2372+00	2374+00	200	17,650
S. Stikine River	S-2	Lt.	2392+00	2397+00	500	18,150
S. Stikine River	S-2	Lt.	2404+00	2405+00	100	18,250
S. Stikine River	S-2	Lt.	2431+00	2432+00	100	18,350
S. Stikine River	S-2	Rt.	2431+00	2431+00	0	18,350
S. Stikine River	S-2	Lt.	2444+00	2447+00	300	18,650
S. Stikine River	S-2	Rt.	2444+00	2444+50	50	18,700
					18,700 ln ft	
Total	**South Stikine River**		**10% Increase for Flared Ends**		**20,570 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
S. Stikine River	S-1	Lt.	2655+00	2659+00	400	400
S. Stikine River	S-1	Rt.	2655+00	2659+00	400	800
S. Stikine River	S-1	Lt.	2781+00	2792+00	1,100	1,900
S. Stikine River	S-1	Lt.	2795+00	2798+00	300	2,200
S. Stikine River	S-1	Lt.	2800+00	2806+00	600	2,800
S. Stikine River	S-1	Lt.	2816+00	2825+00	900	3,700
S. Stikine River	S-1	Lt.	2827+00	2832+00	500	4,200
S. Stikine River	S-1	Lt.	2839+00	2844+00	500	4,700
S. Stikine River	S-1	Lt.	2856+00	2861+00	500	5,200
S. Stikine River	S-1	Lt.	2867+00	2876+00	900	6,100
S. Stikine River	S-1	Lt.	2889+00	2901+00	1,200	7,300
S. Stikine River	S-1	Lt.	2946+00	2948+00	200	7,500
S. Stikine River	S-1	Lt.	2959+00	2963+00	400	7,900
S. Stikine River	S-1	Lt.	2982+00	2986+00	400	8,300
S. Stikine River	S-1	Lt.	2989+00	2991+00	200	8,500
S. Stikine River	S-1	Lt.	2993+00	2998+00	500	9,000
S. Stikine River	S-1	Lt.	3001+00	3003+00	200	9,200
S. Stikine River	S-1	Lt.	3010+00	3017+00	700	9,900
S. Stikine River	S-1	Lt.	3042+00	3044+00	200	10,100
S. Stikine River	S-1	Lt.	3079+00	3080+00	100	10,200
S. Stikine River	S-1	Lt.	3149+00	3156+00	700	10,900
S. Stikine River	S-1	Lt.	3199+00	3205+00	600	11,500
S. Stikine River	S-1	Rt.	3199+00	3205+00	600	12,100
S. Stikine River	S-1	Lt.	3291+00	3298+00	700	12,800
S. Stikine River	S-1	Lt.	3304+00	3310+00	600	13,400
S. Stikine River	S-1	Lt.	3315+00	3321+00	600	14,000
S. Stikine River	S-1	Lt.	3387+00	3389+00	200	14,200
S. Stikine River	S-1	Lt.	3524+00	3526+00	200	14,400
S. Stikine River	S-1	Lt.	3573+00	3582+00	900	15,300
S. Stikine River	S-1	Rt.	3575+00	3579+00	400	15,700
S. Stikine River	S-1	Lt.	3588+50	3589+50	100	15,800
S. Stikine River	S-1	Lt.	3606+00	3617+00	1,100	16,900
S. Stikine River	S-1	Lt.	3637+00	3647+00	1,000	17,900
					17,900 ln ft	
Total	**South Stikine River**		**10% Increase for Flared Ends**		**19,690 ln ft**	
Alignment	**Segment**	**Side**	**STA**	**STA**	**Length**	**Cum. Length**
S. Stikine River	S-1	Lt.	3756+00	3759+00	300	300
S. Stikine River	S-1	Lt.	3865+00	3887+00	2,200	2,500
S. Stikine River	S-1	Rt.	3865+00	3885+00	2,000	4,500
					4,500 ln ft	
Total	**South Stikine River (BC)**		**10% Increase for Flared Ends**		**4,950 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Limb Island	L-1	Rt.	132+00	135+00	300	300
Limb Island	L-1	Lt.	148+50	152+00	350	650
Limb Island	L-1	Rt.	148+00	152+00	400	1,050
Limb Island	L-1	Rt.	174+00	175+00	100	1,150
Limb Island	L-1	Lt.	174+00	175+00	100	1,250
Limb Island	L-1	Lt.	225+00	226+00	100	1,350
Limb Island	L-1	Rt.	225+00	226+00	100	1,450
Limb Island	L-1	Rt.	244+00	260+00	1,600	3,050
Limb Island	L-1	Lt.	252+00	255+00	300	3,350
Limb Island	L-1	Rt.	266+00	274+00	800	4,150
Limb Island	L-1	Rt.	278+00	282+00	400	4,550
Limb Island	L-1	Lt.	280+00	282+00	200	4,750
Limb Island	L-1	Rt.	360+00	368+00	800	5,550
Limb Island	L-1	Lt.	360+00	368+00	800	6,350
Limb Island	L-1	Rt.	410+00	416+00	600	6,950
Limb Island	L-1	Lt.	521+00	523+00	200	7,150
Limb Island	L-1	Rt.	521+00	523+00	200	7,350
Limb Island	L-1	Rt.	531+00	533+00	200	7,550
Limb Island	L-1	Lt.	531+00	533+00	200	7,750
Limb Island	L-1	Lt.	682+00	685+00	300	8,050
Limb Island	L-1	Rt.	750+00	752+00	200	8,250
Limb Island	L-1	Lt.	750+00	752+00	200	8,450
Limb Island	L-1	Lt.	775+00	777+00	200	8,650
Limb Island	L-1	Rt.	775+00	777+00	200	8,850
Limb Island	L-1	Rt.	825+00	829+00	400	9,250
Limb Island	L-1	Lt.	825+00	829+00	400	9,650
Limb Island	L-1	Lt.	852+00	858+00	600	10,250
Limb Island	L-1	Rt.	852+00	858+00	600	10,850
					10,850 ln ft	
Total	**Limb Island**		**10% Increase for Flared Ends**		**11,940 ln ft**	

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
615(1)	SQFT	Standard Sign	1,872.000	$27.10	$50,731.20

Project Signs:

1,872.0 ft2 for 23.33 mi (total length)
80.2 ft2 per mile

Average Unit Cost $2,173.42 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
615(1)	SQFT	Standard Sign	1,872.000	$55.00	$102,960

Project Signs:

1,872.0 ft2 for 23.33 mi (total length)
80.2 ft2 per mile

Average Unit Cost $4,411.00 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
615(1)	SQFT	Standard Sign	2,000.000	$55.00	$110,000

$55.00 110000

Project Signs:

2,000.0 ft2 for 27.47 mi (total length)
72.8 ft2 per mile

Average Unit Cost $4,004.00 per mile

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
615(1)	SQFT	Standard Sign	766.380	$115	$88,133.70	$100	$76,638.00	$150	$114,957.00	$100	$76,638.00
				$116	$89,091.68						

Project Signs:

766.4 ft2 for 22.00 mi (total length)
34.8 ft2 per mile

Average Unit Cost $4,049.62 per mile

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m^2	Sign installation	7.1	$650.00	$4,582.50	$2,500.00	$17,625.00	$1,100.00	$7,755.00	$950.00	$6,697.50
63504	m^2	Construction sign	0.0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$1,300	7.1	m2	$9,165	
	75.9	sq.ft.		$120.75 per sq ft

Increase 3% per year for inflation $128.10 per sq ft Project signs

Project Signs:

75.9 ft2 for 20.32 mi (total length of Coffman Cove (2))
3.7 ft2 per mile

Average Unit Cost $473.99 per mile

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m^2	Sign system	55.0	$500.00	$27,500.00	$525.85	$28,921.75	$200.00	$11,000.00
63504	m^2	Construction sign	56.0	$150.00	$8,400.00	$178.00	$9,968.00	$100.00	$5,600.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$409	55.0	m2	$22,495	
	592.0	sq.ft.		$38.00 per sq ft

Increase 3% per year for inflation $41.52 per sq ft Project signs

Project Signs:

592.0 ft2 for 7.62 mi (total length of Coffman Cove (2))
77.7 ft2 per mile

Average Unit Cost $3,226.24 per mile

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m^2	Sign installation	70.0	$500.00	$35,000.00	$494.00	$34,580.00	$1,000.00	$70,000.00	$500.00	$35,000.00
63504	m^2	Construction sign	136.0	$200.00	$27,200.00	$158.00	$21,488.00	$100.00	$13,600.00	$150.00	$20,400.00

Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$624	70.0	m2	$43,645	
	753.5	sq.ft.		$57.92 per sq ft

Increase 3% per year for inflation $69.16 per sq ft Project signs

Project Signs:

753.5 ft2 for 9.87 mi (total length of Coffman Cove (1))

76.3 ft2 per mile

Average Unit Cost $5,277.15 per mile

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m2	Sign installation	75.000	$450.00	$33,750.00	$719.00	$53,925.00	$400.00	$30,000.00
63507	m2	Construction sign	190.000	$140.00	$26,600.00	$27.50	$5,225.00	$150.00	$28,500.00

Ave.	Quantity	Unit	Total	Cost per Unit
$523	75.000	m2	$39,225	
	807.29	sqft		$48.59 per sqft

Increase 3% per year for inflation $59.76 per sq ft Project signs

Project Signs:

807.3 ft2 for 31.10 mi

25.96 ft2 per mile

Average Unit Cost $1,551.18 per mile

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m2	Sign installation	5.600	$600.00	$3,360.00	$575.00	$3,220.00	$600.00	$3,360.00
63507	m2	Construction sign	62.000	$150.00	$9,300.00	$100.00	$6,200.00	$250.00	$15,500.00

Ave.	Quantity	Unit	Total	Cost per Unit
$592	5.600	m2	$3,313.33	
	60.3	sqft		$54.95 per sqft

Increase 3% per year for inflation $73.84 per sq ft Project signs

Project Signs:

60.3 ft2 for 3 mi

20.10 ft2 per mile

Average Unit Cost $1,484.28 per mile

Total Average Unit Cost $2,961.21 per mile

Use $3,500.00 per mile

Construction Signs:

Not needed since not built under traffic

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
670(1)	LPSM	Painted Traffic Markings	ALL	$108,370	$108,370

$ 108,370 for 23.33 mi (total length)

Average Unit Cost $ 4,645.10 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
670(1)	LPSM	Painted Traffic Markings	ALL	$124,010	$124,010

$ 124,010 for 23.33 mi (total length)

Average Unit Cost $ 5,315.47 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
670(1)	LPSM	Painted Traffic Markings	ALL	$132,500	$132,500

$ 132,500 for 27.47 mi (total length)

Average Unit Cost $ 4,823.40 per mile

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
670(1)	LPSM	Painted Traffic Markings	ALL	$99,500.00	$99,500.00	$63,000.00	$63,000.00	########	$70,000.00	$60,000.00	$60,000.00

$73,125.00

Average Unit Cost $3,323.86 per mile

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63401A	m	Pavement markings, type B, solid white	129,000	$3.50	$451,500.00	$1.20	$154,800.00	$0.56	$72,240.00	$0.50	$64,500.00
63401 B	m	Pavement markings, type M, solid yellow	118,000	$3.50	$413,000.00	$1.20	$141,600.00	$0.56	$66,080.00	$0.50	$59,000.00
63401 C	m	Pavement markings, broken yellow	10,500	$3.50	$36,750.00	$1.10	$11,550.00	$0.58	$6,090.00	$0.50	$5,250.00
			257,500		$901,250.00		$307,950.00		$144,410.00		$128,750.00
63406	each	Pavement markings, type M, Stop line	1	$1,000.00	$1,000.00	$295.00	$295.00	$1,000.00	$1,000.00	$1,000.00	$1,000.00
63410	each	Recessed pavement markers	2,750	$35.00	$96,250.00	$30.00	$82,500.00	$30.00	$82,500.00	$20.00	$55,000.00

Pavement Markings:

Ave.	Quantity	Unit	Total	Cost per Unit
$1.43	257,500	m	$368,225	
	844,816	ln ft		$0.44 per ln ft

Increase 3% per year for inflation $0.48 per ln ft

$403,319.53

$873.92

Recessed Pavement Markers:

Ave.	Quantity	Unit	Total	Cost per Unit
$28.75	2,750	each	$79,063	$28.75 each

Increase 3% per year for inflation $30.50 each

$83,877.41

$488,070.85

Average Unit Cost $ 24,162.48 per mile

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63401A	m	Pavement markings, type M, solid white	29,900	$5.00	$149,500.00	$4.14	$123,786.00	$2.75	$82,225.00	$3.00	$89,700.00
63401 B	m	Pavement markings, type M, solid yellow	26,600	$5.00	$133,000.00	$4.12	$109,592.00	$2.75	$73,150.00	$3.00	$79,800.00
63401 C	m	Pavement markings, type M, broken yellow	3,900	$4.00	$15,600.00	$4.12	$16,068.00	$2.75	$10,725.00	$3.00	$11,700.00
			60,400		$298,100.00		$249,446.00		$166,100.00		$181,200.00
63406	each	Pavement markings, type M stop line	1	$1,000.00	$1,000.00	$295.00	$295.00	$1,000.00	$1,000.00	$300.00	$300.00
63410	each	Recessed pavement markers	1,300	$35.00	$45,500.00	$35.35	$45,955.00	$25.00	$32,500.00	$20.00	$26,000.00
					$343,600.00		$295,401.00		$198,600.00		$207,200.00

$261,200.25

Pavement Markings:

Ave.	Quantity	Unit	Total	Cost per Unit
$3.70	60,400	m	$223,712	
	198,163	ln ft		$1.13 per ln ft

Increase 3% per year for inflation $1.35 per ln ft

$267,376.84

$774.64

Recessed Pavement Markers:

Ave.	Quantity	Unit	Total	Cost per Unit
$28.84	1,300	each	$37,489	$28.84 each

Increase 3% per year for inflation $34.43 each

$44,763.53

$312,915.01

Average Unit Cost $31,902.94 per mile

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63401A	m	Pavement markings, type M, solid white	102,000	$0.50	$51,000.00	$3.20	$326,400.00	$3.00	$306,000.00
63401 B	m	Pavement markings, type M, solid yellow	91,000	$0.60	$54,600.00	$3.20	$291,200.00	$3.00	$273,000.00
63401 C	m	Pavement markings, type M, broken yellow	8,350	$0.60	$5,010.00	$3.20	$26,720.00	$3.00	$25,050.00
			201,350		$110,610.00		$644,320.00		$604,050.00
63410	each	Recessed pavement markers	4,300	$20.00	$86,000.00	$21.38	$91,934.00	$25.00	$107,500.00
					$196,610.00		$736,254.00		$711,550.00
						$548,138.00			

Pavement Markings:

Ave.	Quantity	Unit	Total	Cost per Unit
$2.25	201,350	m	$452,993	
	660,597	ln ft		$0.69 per ln ft

Increase 3% per year for inflation $0.85 per ln ft

$560,591.29

Recessed Pavement Markers:

Ave.	Quantity	Unit	Total	Cost per Unit
$22.13	4,300	each	$95,145	$22.13 per mile

Increase 3% per year for inflation $27.21 each

$117,015.94

$677,607.23

Average Unit Cost $21,788.01 per mile

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63401A	m	Pavement markings, type B, broken yellow	7,900	$0.80	$6,320.00	$1.00	$7,900.00	$0.30	$2,370.00
63401 B	m	Pavement markings, type M, solid yellow	29,500	$0.80	$23,600.00	$1.00	$29,500.00	$0.30	$8,850.00
63401 C	m	Pavement markings, solid white	19,100	$0.80	$15,280.00	$1.00	$19,100.00	$0.30	$5,730.00
			56,500		$45,200.00		$56,500.00		$16,950.00
63410	each	Recessed pavement markers	794	$30.00	$23,820.00	$35.00	$27,790.00	$30.00	$23,820.00
					$69,020.00		$84,290.00		$40,770.00
						$64,693.33			

Pavement Markings:

Ave.	Quantity	Unit	Total	Cost per Unit
$0.70	56,500	m	$39,550	
	185,367	ln ft		$0.21 per ln ft

Increase 3% per year for inflation $0.28 per ln ft

$52,314.86

Recessed Pavement Markers:

Ave.	Quantity	Unit	Total	Cost per Unit
$31.67	794	each	$25,143	$31.67 each

Increase 3% per year for inflation $42.56 each

$33,790.54

$86,105.39

Average Unit Cost $28,701.80 per mile

Total Average Unit Cost $15,582.88 per mile

Use $16,000.00 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	LPSM	Katzehin Ferry	LPSM	$17,000,000	$17,000,000

Conventional Ferry Terminal

Use **$15,000,000.00** each

ACV Ferry Terminal
ACV Research yielded estimates for ACV ferry terminals ranging from $1 - $10 million.

Use **$10,000,000.00** each

Construction Camps | **Unit: LPSM** |

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	LPSM	Construction Camp and Per Diem	LPSM	$14,427,807	$14,427,807
Total bid estimate					$146,278,307
Percentage of construction costs					10.9%

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
640 (2)	LPSM	Contractor Camp	LPSM	$768,750	$768,750	$1,000,000	$1,000,000	$1,300,000	$1,300,000	$1,000,000	$1,000,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Percentage of construction costs					3.0%		4.1%		5.3%		4.0%

Average Construction Camps Percentage **7.5%**

Use **10.0%**

APPENDIX D.2

One-Lane Gravel Roadway Estimate Support

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Project: SE Alaska Mid Region Access
Project No.: AK HPP-2003(1)

SE Alaska MRA Cost Estimate, One-Lane Gravel
Summary of Options, Alignments

Work Item Description	Aaron Creek Alignment			Wrangell Island Alignment			Fool's Inlet Alignment		South Stikine River Alignment			Limb Island Alignment	Bradfield Canal Alignment	Iskut River Alignment		
	Segment A-1a (Pass Option)	Segment A-1b (Tunnel Option)	Segment A-2	Segment W-1	Segment W-2	Segment W-3	Segment F-1	Segment F-2	Segment S-1	Segment S-2	Segment S-3	Segment L-1	Segment B-1	Segment I-1	Segment I-2	Segment I-3
AK LENGTH (Mile)	30.37	29.77	5.21	1.72	3.20	11.08	6.42	4.06	21.35	17.65	11.53	14.39	29.15			
BC LENGTH (Mile)	10.21	10.21							10.48				17.29	24.08	20.33	26.45
DIVISION 1 PROJECT REQUIREMENTS	$ 20,492,586	$ 13,508,593	$ 2,265,131	$ 286,341	$ 47,195	$ 156,626	$ 92,441	$ 572,957	$ 8,428,315	$ 3,605,085	$ 3,322,320	$ 11,007,722	$ 10,675,171	$ -	$ -	$ -
DIVISION 2 EARTHWORK	$ 45,914,958	$ 28,418,368	$ 3,475,923	$ 1,135,079	$ 134,831	$ 490,780	$ 279,447	$ 1,295,121	$ 30,342,796	$ 12,029,843	$ 5,346,689	$ 12,360,444	$ 28,242,676	$ -	$ -	$ -
DIVISION 3 UTILITIES & RELOCATIONS	$ 1,761,460	$ 1,726,660	$ 302,180	$ 99,760	$ -	$ -	$ -	$ 235,480	$ 1,238,300	$ 1,023,700	$ 668,740	$ 834,620	$ 3,429,600	$ -	$ -	$ -
DIVISION 4 BASES & PAVEMENT	$ 3,520,000	$ 3,335,000	$ 632,500	$ 217,500	$ 185,000	$ 602,500	$ 357,500	$ 517,500	$ 2,632,500	$ 2,197,500	$ 1,392,500	$ 1,577,500	$ 3,118,203	$ -	$ -	$ -
DIVISION 5 TUNNEL	$ -	$ 74,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 82,000,000	$ -	$ -	$ -
DIVISION 6 STRUCTURES	$ 100,037,430	$ 62,979,510	$ 11,588,000	$ -	$ -	$ -	$ -	$ 1,039,850	$ 24,635,220	$ 6,682,400	$ 14,674,000	$ 67,226,670	$ 38,522,850	$ -	$ -	$ -
DIVISION 7 INCIDENTAL CONSTRUCTION	$ 12,036,550	$ 11,598,550	$ 2,166,150	$ 906,800	$ 42,900	$ 108,900	$ 73,000	$ 1,672,900	$ 8,502,250	$ 6,974,750	$ 4,588,950	$ 5,641,850	$ 13,192,250	$ -	$ -	$ -
DIVISION 8 ROADWAY FINISHES	$ 855,395	$ 698,195	$ 84,235	$ 9,320	$ 11,200	$ 38,780	$ 22,470	$ 14,210	$ 665,425	$ 678,875	$ 320,855	$ 408,565	$ 1,504,225	$ -	$ -	$ -
DIVISION 9 PORT DEVELOPMENT	$ 30,000,000	$ 30,000,000	$ -	$ -	$ -	$ -	$ -	$ 15,000,000	$ -	$ 30,000,000	$ -	$ -	$ 15,000,000	$ -	$ -	$ 20,000,000
DIVISION 10 CONSTRUCTION CAMPS	$ 15,763,528	$ 10,391,226	$ 1,742,409	$ 220,262	$ 36,304	$ 120,482	$ 71,108	$ 440,736	$ 6,483,320	$ 2,773,143	$ 2,555,631	$ 8,467,479	$ 8,211,670	$ -	$ -	$ -
SUBTOTAL ROADWAY AND BRIDGE WORK (AK)	**$ 230,381,907**	**$ 236,656,102**	**$ 22,256,528**	**$ 2,875,062**	**$ 457,430**	**$ 1,518,068**	**$ 895,966**	**$ 20,788,754**	**$ 82,928,126**	**$ 65,965,296**	**$ 32,869,685**	**$ 107,524,850**	**$ 203,896,646**	**$ -**	**$ -**	**$ 20,000,000**
CONTINGENCIES: 25%	$ 57,595,477	$ 59,164,025	$ 5,564,132	$ 718,766	$ 114,358	$ 379,517	$ 223,992	$ 5,197,189	$ 20,732,031	$ 16,491,324	$ 8,217,421	$ 26,881,212	$ 50,974,161	$ -	$ -	$ 5,000,000
TOTAL CONSTRUCTION COST (AK)	**$ 287,977,384**	**$ 295,820,127**	**$ 27,820,660**	**$ 3,593,828**	**$ 571,788**	**$ 1,897,585**	**$ 1,119,958**	**$ 25,985,943**	**$ 103,660,157**	**$ 82,456,620**	**$ 41,087,106**	**$ 134,406,062**	**$ 254,870,807**	**$ -**	**$ -**	**$ 25,000,000**
CONSTRUCTION ENGINEERING SERVICES: 7%	$ 20,158,417	$ 20,707,409	$ 1,947,446	$ 251,568	$ 40,025	$ 132,831	$ 78,397	$ 1,819,016	$ 7,256,211	$ 5,771,963	$ 2,876,097	$ 9,408,424	$ 17,840,956	$ -	$ -	$ 1,750,000
EIS W/ SUPPORTING ENGINEERING: 5%	$ 14,398,869	$ 14,791,006	$ 1,391,033	$ 179,691	$ 28,589	$ 94,879	$ 55,998	$ 1,299,297	$ 5,183,008	$ 4,122,831	$ 2,054,355	$ 6,720,303	$ 12,743,540	$ -	$ -	$ 1,250,000
DESIGN ENGINEERING & ADMINISTRATION: 8%	$ 23,038,191	$ 23,665,610	$ 2,225,653	$ 287,506	$ 45,743	$ 151,807	$ 89,597	$ 2,078,875	$ 8,292,813	$ 6,596,530	$ 3,286,968	$ 10,752,485	$ 20,389,665	$ -	$ -	$ 2,000,000
TOTAL CONSTRUCTION & ENGINEERING (AK)	**$ 345,572,861**	**$ 354,984,152**	**$ 33,384,792**	**$ 4,312,593**	**$ 686,145**	**$ 2,277,102**	**$ 1,343,950**	**$ 31,183,131**	**$ 124,392,189**	**$ 98,947,944**	**$ 49,304,526**	**$ 161,287,274**	**$ 305,844,968**	**$ -**	**$ -**	**$ 30,000,000**
CONSTRUCTION & ENGINEERING COST $/MILE (AK)	$ 9,979,507	$ 7,072,720	$ 6,461,228	$ 2,528,216	$ 216,207	$ 207,227	$ 211,082	$ 2,156,525	$ 5,874,885	$ 3,082,012	$ 4,311,830	$ 11,301,691	$ 5,858,657	$ -	$ -	$ -
SUBTOTAL ROADWAY AND BRIDGE WORK (BC)	**$ 46,973,219**	**$ 46,970,699**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 41,450,670**	**$ -**	**$ -**	**$ -**	**$ 66,972,677**	**$ 3,299,201**	**$ 78,966,213**	**$ 112,737,645**
CONTINGENCIES: 25%	$ 11,743,305	$ 11,742,675	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,362,667	$ -	$ -	$ -	$ 16,743,169	$ 824,800	$ 19,741,553	$ 28,184,411
TOTAL CONSTRUCTION COST (BC)	**$ 58,716,524**	**$ 58,713,374**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 51,813,337**	**$ -**	**$ -**	**$ -**	**$ 83,715,846**	**$ 4,124,001**	**$ 98,707,766**	**$ 140,922,056**
CONSTRUCTION ENGINEERING SERVICES: 7%	$ 4,110,157	$ 4,109,936	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,626,934	$ -	$ -	$ -	$ 5,860,109	$ 288,680	$ 6,909,544	$ 9,864,544
EIS W/ SUPPORTING ENGINEERING: 5%	$ 2,935,826	$ 2,935,669	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,590,667	$ -	$ -	$ -	$ 4,185,792	$ 206,200	$ 4,935,388	$ 7,046,103
DESIGN ENGINEERING & ADMINISTRATION: 8%	$ 4,697,322	$ 4,697,070	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,145,067	$ -	$ -	$ -	$ 6,697,268	$ 329,920	$ 7,896,621	$ 11,273,764
TOTAL CONSTRUCTION & ENGINEERING (BC)	**$ 70,459,829**	**$ 70,456,049**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 62,176,005**	**$ -**	**$ -**	**$ -**	**$ 100,459,015**	**$ 4,948,801**	**$ 118,449,319**	**$ 169,106,467**
CONSTRUCTION & ENGINEERING COST $/MILE (BC)	$ 6,901,061	$ 6,900,690	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,932,825	$ -	$ -	$ -	$ 5,810,238	$ 205,515	$ 5,826,331	$ 5,874,884
TOTAL CONSTRUCTION & ENGINEERING	**$ 416,032,690**	**$ 425,440,201**	**$ 33,384,792**	**$ 4,312,593**	**$ 686,145**	**$ 2,277,102**	**$ 1,343,950**	**$ 31,183,131**	**$ 186,568,193**	**$ 98,947,944**	**$ 49,304,526**	**$ 161,287,274**	**$ 406,303,982**	**$ 4,948,801**	**$ 118,449,319**	**$ 199,106,467**

Note: Bradfield River BC cost developed from Bradfield River AK cost per mile excluding the tunnel and ferry terminal
Per mile costs for all alignments were calculated excluding both the tunnel and ferry terminal costs, as well as the tunnel length.

Project: SE Alaska Mid Region Access
Project No.: AK HPP-2003(1)

Bradfield Canal Corridor Stages, One-Lane Gravel

Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile*
Stage 1 (Ultimate)	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 4,948,801	$ 4,948,801	$ 205,515
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 118,449,319	$ 118,449,319	$ 5,826,331
	Bradfield Canal Alignment (Segment B-1)	46.44	$ 305,844,968	$ 100,459,015	$ 406,303,982	$ 8,749,009
	Wrangell Island Alignment (Segment W-3)	11.08	$ 2,277,102	$ -	$ 2,277,102	$ 205,515
	Fool's Inlet Alignment (Segment F-1)	6.42	$ 1,343,950	$ -	$ 1,343,950	$ 209,338
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 31,183,131	$ -	$ 31,183,131	$ 7,680,574
Stage 1 Subtotal		**112.41**	**$ 340,649,151**	**$ 223,857,135**	**$ 564,506,285**	**$ 5,021,851**
Stage 1 Upfront O&M Costs		**-**	**$ 5,380,000**	**$ 3,000,000**	**$ 8,380,000**	**-**
Bradfield Canal Corridor Total		**112.41**	**$ 346,029,151**	**$ 226,857,135**	**$ 572,886,285**	**$ 5,096,400**

*Average cost per mile includes tunnel, port development, and O&M as applicable

Stikine River Corridor Stages, One-Lane Gravel

Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile*
Stage 1	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 4,948,801	$ 4,948,801	$ 205,515
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 118,449,319	$ 118,449,319	$ 5,826,331
	Iskut River Alignment (Segment I-3)	26.45	$ 30,000,000	$ 169,106,467	$ 199,106,467	$ 7,527,655
Stage 1 Subtotal		**70.86**	**$ 30,000,000**	**$ 292,504,587**	**$ 322,504,587**	**$ 4,551,293**
Stage 1 Upfront O&M Costs		**-**	**$ -**	**$ 2,500,000**	**$ 2,500,000**	**-**
Stage 2	South Stikine River Alignment (Segment S-1)	31.83	$ 124,392,189	$ 62,176,005	$ 186,568,193	$ 5,861,395
	South Stikine River Alignment (Segment S-2)	17.65	$ 98,947,944	$ -	$ 98,947,944	$ 5,606,116
Stage 2 Subtotal		**49.48**	**$ 223,340,132**	**$ 62,176,005**	**$ 285,516,137**	**$ 5,770,334**
Stage 2 Upfront O&M Costs		**-**	**$ 2,875,000**	**$ 500,000**	**$ 3,375,000**	**-**
Stage 3	Wrangell Island Alignment (Segment W-3)	11.08	$ 2,277,102	$ -	$ 2,277,102	$ 205,515
	Fool's Inlet Alignment (Segment F-1)	6.42	$ 1,343,950	$ -	$ 1,343,950	$ 209,338
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 31,183,131	$ -	$ 31,183,131	$ 7,680,574
Stage 3 Subtotal		**21.56**	**$ 34,804,183**	**$ -**	**$ 34,804,183**	**$ 1,614,294**
Stage 3 Upfront O&M Costs		**-**	**$ 2,505,000**	**$ -**	**$ 2,505,000**	**-**
Stage 4	Limb Island Alignment (Segment L-1)	14.39	$ 161,287,274	$ -	$ 161,287,274	$ 11,208,289
Stage 4 Subtotal		**14.39**	**$ 161,287,274**	**$ -**	**$ 161,287,274**	**$ 11,208,289**
Stage 4 Upfront O&M Costs		**-**	**$ 290,000**	**$ -**	**$ 290,000**	**-**
Stage 5 (Ultimate)	South Stikine River Alignment (Segment S-3)	11.53	$ 49,304,526	$ -	$ 49,304,526	$ 4,276,195
	Wrangell Island Alignment (Segment W-1)	1.72	$ 4,312,593	$ -	$ 4,312,593	$ 2,507,322
	Wrangell Island Alignment (Segment W-2)	3.20	$ 686,145	$ -	$ 686,145	$ 214,420
Stage 5 Subtotal		**16.45**	**$ 54,303,264**	**$ -**	**$ 54,303,264**	**$ 3,301,110**
Stage 5 Upfront O&M Costs		**-**	**$ -**	**$ -**	**$ -**	**-**
Stikine River Corridor Total		**172.74**	**$ 509,404,852**	**$ 357,680,592**	**$ 867,085,444**	**$ 5,019,598**

*Average cost per mile includes tunnel, port development, and O&M as applicable

Aaron Creek Corridor Stages, One-Lane Gravel

Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile*
Stage 1	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 4,948,801	$ 4,948,801	$ 205,515
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 118,449,319	$ 118,449,319	$ 5,826,331
	Iskut River Alignment (Segment I-3)	26.45	$ 30,000,000	$ 169,106,467	$ 199,106,467	$ 7,527,655
Stage 1 Subtotal		**70.86**	**$ 30,000,000**	**$ 292,504,587**	**$ 322,504,587**	**$ 4,551,293**
Stage 1 Upfront O&M Costs		**-**	**$ -**	**$ 2,500,000**	**$ 2,500,000**	**-**
Stage 2	Aaron Creek Pass Alignment (Segment A-1a)	40.58	$ 345,572,861	$ 70,459,829	$ 416,032,690	$ 10,252,161
	Aaron Creek Tunnel Alignment (Segment A-1b)	39.98	$ 354,984,152	$ 70,456,049	$ 425,440,201	$ 10,641,326
	Wrangell Island Alignment (Segment W-2)	3.20	$ 686,145	$ -	$ 686,145	$ 214,420
	Wrangell Island Alignment (Segment W-3)	11.08	$ 2,277,102	$ -	$ 2,277,102	$ 205,515
Stage 2 Subtotal (Pass)		**54.86**	**$ 348,536,107**	**$ 70,459,829**	**$ 418,995,936**	**$ 7,637,549**
Stage 2 Subtotal (Tunnel)		**54.26**	**$ 357,947,398**	**$ 70,456,049**	**$ 428,403,447**	**$ 7,895,382**
Stage 2 Upfront O&M Costs (Pass)		**-**	**$ 3,000,000**	**$ 500,000**	**$ 3,500,000**	**-**
Stage 2 Upfront O&M Costs (Tunnel)		**-**	**$ 3,000,000**	**$ 500,000**	**$ 3,500,000**	**-**
Stage 3	Fool's Inlet Alignment (Segment F-1)	6.42	$ 1,343,950	$ -	$ 1,343,950	$ 209,338
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 31,183,131	$ -	$ 31,183,131	$ 7,680,574
Stage 3 Subtotal		**10.48**	**$ 32,527,081**	**$ -**	**$ 32,527,081**	**$ 3,103,729**
Stage 3 Upfront O&M Costs		**-**	**$ 290,000**	**$ -**	**$ 290,000**	**-**
Stage 4 (Ultimate)	Aaron Creek Alignment (Segment A-2)	5.21	$ 33,384,792	$ -	$ 33,384,792	$ 6,407,829
	Wrangell Island Alignment (Segment W-1)	1.72	$ 4,312,593	$ -	$ 4,312,593	$ 2,507,322
Stage 4 Subtotal		**6.93**	**$ 37,697,385**	**$ -**	**$ 37,697,385**	**$ 5,439,738**
Stage 4 Upfront O&M Costs		**-**	**$ 2,215,000**	**$ -**	**$ 2,215,000**	**-**
Aaron Creek Corridor (Pass) Total		**143.13**	**$ 454,265,573**	**$ 365,964,416**	**$ 820,229,989**	**$ 5,730,664**
Aaron Creek Corridor (Tunnel) Total		**142.53**	**$ 463,676,864**	**$ 365,960,636**	**$ 829,637,500**	**$ 5,820,792**

*Average cost per mile includes tunnel, port development, and O&M as applicable

Project: SE Alaska Mid Region Access
Project No.: AK HPP-2003(1)

SE Alaska MRA Corridors Summary, One-Lane Gravel

Corridor	Stage	Length (miles)	ACV Ferry Terminals	Conventional Ferry Terminals	AK Cost	BC Cost	Total Cost
Bradfield Canal	1 (Ultimate)	112.4	0	2	$ 346,029,151	$ 226,857,135	$ 572,886,285
Total		**112.4**	**0**	**2**	**$ 346,029,151**	**$ 226,857,135**	**$ 572,886,285**
Stikine River	1	70.9	3	0	$30,000,000	$295,004,587	$325,004,587
	2	49.5	0	2	$226,215,132	$62,676,005	$288,891,137
	3	21.6	0	1	$37,309,183	$0	$37,309,183
	4	14.4	0	0	$161,577,274	$0	$161,577,274
	5 (Ultimate)	16.5	0	0	$54,303,264	$0	$54,303,264
Total		**172.7**	**3**	**3**	**$ 509,404,852**	**$ 357,680,592**	**$ 867,085,444**
Aaron Creek	1	70.9	3	0	$30,000,000	$295,004,587	$325,004,587
	2 (Pass)	54.9	0	2	$351,536,107	$70,959,829	$422,495,936
	2 (Tunnel)	54.3	0	2	$360,947,398	$70,956,049	$431,903,447
	3	10.5	0	1	$32,817,081	$0	$32,817,081
	4 (Ultimate)	6.9	0	0	$39,912,385	$0	$39,912,385
Total (Pass)		**143.1**	**3**	**3**	**$ 454,265,573**	**$ 365,964,416**	**$ 820,229,989**
Total (Tunnel)		**142.5**	**3**	**3**	**$ 463,676,864**	**$ 365,960,636**	**$ 829,637,500**

Iskut River Alignment (Segment I-1):	**Segment I-1 -** Begins where the existing Eskay Creek Gold Mine road departs the Iskut River via the Unuk River drainage. The alignment follows the existing gravel road as it parallels the south side of the Iskut River to the Cassiar Highway near Echo Lake.			
EXISTING ROAD LIMITS:	STA.	6655+30	7926+96	
EXISTING ROAD LENGTH:	24.08	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Rehabilitation/Paving cost using Segment W-3 per mile cost	24.08	Mile	$ 137,010	$ 3,299,201
SUBTOTAL ROADWAY AND BRIDGE WORK				**$ 3,299,201**

Iskut River Alignment (Segment I-2):	**Segment I-2 -** Begins on the south side of the Iskut River near the airstrip and mining operations at Bronson Creek. The alignment parallels the south side of the Iskut River to the northeast until reaching Segment I-1 and the existing Eskay Creek Gold Mine road.			
LIMITS:	STA.	5582+10	6655+30	
LENGTH:	20.33	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Reconstruction cost using Segment S-1 per mile cost	20.33	Mile	$ 3,884,221	$ 78,966,213
SUBTOTAL ROADWAY AND BRIDGE WORK				**$ 78,966,213**

Iskut River Alignment (Segment I-3):	**Segment I-3 -** Begins adjacent to the ACV ferry terminal near the confluence of the Iskut and Stikine Rivers. The alignment parallels the south side of the Iskut River, crosses the Craig River, and meets with Segment I-2 near the airstrip and mining operations at Bronson Creek.			
LIMITS:	STA.	4185+80	5582+10	
LENGTH:	26.45	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Reconstruction cost using Segment S-1 per mile cost	26.45	Mile	$ 3,884,221	$ 102,737,645
Iskut River ACV Ferry Terminal	1.0	LS	$ 10,000,000	$ 10,000,000
Wrangell Island ACV Ferry Terminal	1.0	LS	$ 10,000,000	$ 10,000,000
Mitkof Island ACV Ferry Terminal	1.0	LS	$ 10,000,000	$ 10,000,000
SUBTOTAL ROADWAY, PORT, AND BRIDGE WORK (AK)				**$ 20,000,000**
SUBTOTAL ROADWAY, PORT, AND BRIDGE WORK (BC)				**$ 112,737,645**
PER MILE COST (BC SECTION)				**$ 4,262,293**

Bradfield Canal Alignment (Segment B-1 or Segment 1B with 2 thru 5 in Bradfield Report):		**Segment B-1 -** Begins at the Kapho Mountain conventional ferry terminal along Bradfield Canal. The alignment parallels the North Fork of the Bradfield River to the northeast before reaching a tunnel that takes the alignment into the Craig River drainage. The alignment follows the Craig River to the northeast and meets up with Segment I-2 of the Iskut River Alignment near the airstrip and mining operations at Bronson Creek.				
	AK SECTION LIMITS:	Stationing:	10+00	1538+27		
	BC SECTION LIMITS:	STA.	1538+27	2451+30		
	AK SECTION LIMITS:	29.15	Mile			
	BC SECTION LIMITS:	17.29	Mile			
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	BRADFIELD 2004 UNIT COST	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**					
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 8,659,399	$ 10,675,171	$ 10,675,171
					SUBTOTAL	**$ 10,675,171**
DIVISION 2	**EARTHWORK**					
	Erosion Control (4% of Construction Value)	1	LS	$ 6,387,279	$ 2,463,501	$ 2,463,501
	Clearing and Grubbing	264	Acre	$ 3,500	$ 5,500	$ 1,452,000
	Roadway Excavation incl. Haul	2,514,745	CY	$ 8	$ 9	$ 22,632,705
	Subexcavation	185,500	CY	$ 8	$ 8	$ 1,484,000
	Access Road	0.9	Mile	$ 200,000.00	$ 225,102.00	$210,470
					SUBTOTAL	**$ 28,242,676**
DIVISION 3	**UTILITIES & RELOCATIONS**					
	Utilities (Power and Water Allowance)	29.15	Mile	$ 50,000	$ 58,000	$ 1,690,700
	Right of Way & Building Relocation	1	LS	$ 1,500,000	$ 1,738,900	$ 1,738,900
					SUBTOTAL	**$ 3,429,600**
DIVISION 4	**BASES & PAVEMENT**					
	4" Crushed Aggregate	27,278	CY	$ 80	$ 40	$ 1,091,126
	8" Select Material	81,083	CY	$ 20	$ 25	$ 2,027,078
					SUBTOTAL	**$ 3,118,203**
DIVISION 5	**TUNNEL**					
	Tunnel (Excludes Surfacing and Drainage)	8,200	LF	$ 9,150	$ 10,000	$ 82,000,000
					SUBTOTAL	**$ 82,000,000**
DIVISION 6	**STRUCTURES**					
	Bridge Structure - Low Complexity	5,445	SF	$ 150	$ 210	$ 1,143,450
	Bridge Structure - Medium Complexity	38,511	SF	$ 200	$ 260	$ 10,012,860
	Bridge Structure - High Complexity	16,533	SF	$ 275	$ 380	$ 6,282,540
	Culverts -					
	> 10 foot diameter	7	Ea	$ 60,000	$ 180,000	$ 1,260,000
	Fish Passage	-	Ea	$ 90,000	$ 8,000	$ -
	Revetment Wall (Class V Riprap)	114,200	CY	$ 40	$ 30	$ 3,426,000
	MSE Wall	364,400	SF	$ 30	$ 45	$ 16,398,000
					SUBTOTAL	**$ 38,522,850**
DIVISION 7	**INCIDENTAL CONSTRUCTION**					
	Wetland Mitigation - Allowance	56	Acre	$ 25,000	$ 25,000	$ 1,400,000
	Cultural Resource Mitigation - Allowance	25	LS	$ 10,000	$ 12,000	$ 300,000
	Drainage - Allowance	29.2	Mile	$ 80,000	$ 115,000	$ 3,352,250
	Stormwater Management Ponds	25	LS	$ 206,000	$ 239,000	$ 5,975,000
	Seeding and Landscaping	185	Acre	$ 250	$ 7,000	$ 1,295,000
	Staging Area Rehabilitation	15	Acre	$ 50,000	$ 58,000	$ 870,000
					SUBTOTAL	**$ 13,192,250**
DIVISION 8	**ROADWAY FINISHES**					
	Guard Rail	46,740	LF	$ 50	$ 30	$ 1,402,200
	Roadway Signage - Allowance	29.15	Mile	$ 5,000	$ 3,500	$ 102,025
					SUBTOTAL	**$ 1,504,225**
DIVISION 9	**PORT DEVELOPMENT**					
	Conventional Ferry Terminal - Kapho Mountain	1	LS	$ -	$ 15,000,000	$ 15,000,000
	ACV Ferry Terminal		LS	$ -	$ 10,000,000	$ -
					SUBTOTAL	**$ 15,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**					
	Construction Camps and Per Diem	1	LS	$ -	$ 8,211,670	$ 8,211,670
					SUBTOTAL	**$ 8,211,670**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)					**$ 203,896,646**
	PER MILE COST (AK SECTION)*				$ 3,873,492	
	BC SECTION	17.29	Mile		$ 3,873,492	**$66,972,677**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

*Note: Original Bradfield quantities adjusted to one lane based on ratio of 1 vs. 2 lane designs on similar terrain.

Aaron Creek Pass Alignment (Segment A-1a):		**Segment A-1a -** Begins at the Berg Bay conventional ferry terminal and follows the Aaron Creek drainage to the northeast until reaching an unnamed drainage near Berg Mountain. The alignment enters the unnamed drainage and follows it east to the West Fork Pass. The alignment traverses up and over the pass and enters the West Fork of the Katete River drainage. Paralleling the West Fork to the north, the alignment continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.		1280+00	2883+63
	BC SECTION LIMITS:	STA.		2883+63	3087+36
	AK SECTION LENGTH:	30.37	Mile		
	BC SECTION LENGTH (Designed):	3.86	Mile		
	BC SECTION LENGTH (Per Mile Cost):	6.35	Mile		

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 20,492,586	$ 20,492,586
				SUBTOTAL	**$ 20,492,586**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 4,729,058	$ 4,729,058
	Clearing and Grubbing	283	Acre	$ 5,500	$ 1,556,500
	Roadway Excavation incl. Haul	4,391,000	CY	$ 9	$ 39,519,000
	Subexcavation	13,800	CY	$ 8	$ 110,400
				SUBTOTAL	**$ 45,914,958**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	30.37	Mile	$ 58,000	$ 1,761,460
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,761,460**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	30,500	CY	$ 40	$ 1,220,000
	8" Select Material	92,000	CY	$ 25	$ 2,300,000
				SUBTOTAL	**$ 3,520,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	26,000	SF	$ 210	$ 5,460,000
	Bridge Structure - Medium Complexity	86,000	SF	$ 260	$ 22,360,000
	Bridge Structure - High Complexity	160,000	SF	$ 380	$ 60,800,000
	Culverts -				
	> 10 foot diameter	15	Each	$ 180,000	$ 2,700,000
	Fish Passage	18	Each	$ 8,000	$ 144,000
	Revetment Wall (Class V Riprap)	7,381	CY	$ 30	$ 221,430
	MSE Wall	185,600	SF	$ 45	$ 8,352,000
				SUBTOTAL	**$ 100,037,430**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	68	Acre	$ 25,000	$ 1,700,000
	Cultural Resource Mitigation - Allowance	21	LS	$ 12,000	$ 252,000
	Drainage - Allowance	30.37	Mile	$ 115,000	$ 3,492,550
	Stormwater Management Ponds	21	LS	$ 239,000	$ 5,019,000
	Seeding and Landscaping	117	Acre	$ 7,000	$ 819,000
	Staging Area Rehabilitation	13	Acre	$ 58,000	$ 754,000
				SUBTOTAL	**$ 12,036,550**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	24,970	LF	$ 30	$ 749,100
	Roadway Signage - Allowance	30.37	Mile	$ 3,500	$ 106,295
				SUBTOTAL	**$ 855,395**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay	2	LS	$ 15,000,000	$ 30,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 30,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 15,763,528	$ 15,763,528
				SUBTOTAL	**$ 15,763,528**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 230,381,907**
	PER MILE COST (AK SECTION)*			$ 6,598,021	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 22,308,416**
	PER MILE COST (BC SECTION)*			$ 5,779,382	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 3,884,221	**$ 24,664,803**
	TOTAL BC SECTION COST				**$ 46,973,219**

*Note: Per mile cost calculated excludes tunnel and port development costs.

Aaron Creek Pass Alignment (BC) (Segment A-1a):		**Segment A-1a - BC -** Begins at the AK/BC border, parallels the West Fork to the north, continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.	1280+00	2883+63	
	BC SECTION LIMITS:	STA.	2883+63	3087+36	
	AK SECTION LENGTH:	30.37	Mile		
	BC SECTION LENGTH (Designed):	3.86	Mile		
	BC SECTION LENGTH (Per Mile Cost):	6.35	Mile		

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 2,278,563	$ 2,278,563
				SUBTOTAL	**$ 2,278,563**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 525,822	$ 525,822
	Clearing and Grubbing	35	Acre	$ 5,500	$ 192,500
	Roadway Excavation incl. Haul	245,000	CY	$ 9	$ 2,205,000
	Subexcavation	49,100	CY	$ 8	$ 392,800
				SUBTOTAL	**$ 3,316,122**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	3.86	Mile	$ 58,000	$ 223,880
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 223,880**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	3,500	CY	$ 40	$ 140,000
	5" Crushed Aggregate	11,500	CY	$ 25	$ 287,500
				SUBTOTAL	**$ 427,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity	48,000	SF	$ 260	$ 12,480,000
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	1	Each	$ 180,000	$ 180,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 12,668,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	9	Acre	$ 25,000	$ 225,000
	Cultural Resource Mitigation - Allowance	3	LS	$ 12,000	$ 36,000
	Drainage - Allowance	3.86	Mile	$ 115,000	$ 443,900
	Stormwater Management Ponds	3	LS	$ 239,000	$ 717,000
	Seeding and Landscaping	11	Acre	$ 7,000	$ 77,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,614,900**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	440	LF	$ 30	$ 13,200
	Roadway Signage - Allowance	3.86	Mile	$ 3,500	$ 13,510
				SUBTOTAL	**$ 26,710**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 1,752,741	$ 1,752,741
				SUBTOTAL	**$ 1,752,741**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 22,308,416**
	PER MILE COST (BC SECTION)*			$ 5,779,382	
	BC SECTION	6.35	Mile	$ 3,884,221	**$ 24,664,803**

*Note: Per mile cost calculated excludes tunnel and port development costs.

Aaron Creek Tunnel Alignment (Segment A-1b):

Segment A-1b - Begins at the Berg Bay conventional ferry terminal and follows the Aaron Creek drainage to the northeast until reaching an unnamed drainage near Berg Mountain. The alignment enters the unnamed drainage and follows it east to the West Fork Pass. The alignment traverses through the pass with a tunnel and enters the West Fork of the Katete River drainage. Paralleling the West Fork to the north, the alignment continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.

AK SECTION LIMITS:	STA.	1280+00	2851+97
BC SECTION LIMITS:	STA.	2851+97	3055+71
AK SECTION LENGTH:	29.77	Mile	
BC SECTION LENGTH (Designed):	3.86	Mile	
BC SECTION LENGTH (Per Mile Cost):	6.35	Mile	

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 13,508,593	$ 13,508,593
				SUBTOTAL	**$ 13,508,593**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 3,117,368	$ 3,117,368
	Clearing and Grubbing	263	Acre	$ 5,500	$ 1,446,500
	Roadway Excavation incl. Haul	2,634,500	CY	$ 9	$ 23,710,500
	Subexcavation	18,000	CY	$ 8	$ 144,000
				SUBTOTAL	**$ 28,418,368**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	29.77	Mile	$ 58,000	$ 1,726,660
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,726,660**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	29,000	CY	$ 40	$ 1,160,000
	8" Select Material	87,000	CY	$ 25	$ 2,175,000
				SUBTOTAL	**$ 3,335,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)	7,400	LF	$ 10,000	$ 74,000,000
				SUBTOTAL	**$ 74,000,000**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	56,000	SF	$ 210	$ 11,760,000
	Bridge Structure - Medium Complexity	136,000	SF	$ 260	$ 35,360,000
	Bridge Structure - High Complexity	30,000	SF	$ 380	$ 11,400,000
	Culverts -				
	> 10 foot diameter	8	Each	$ 180,000	$ 1,440,000
	Fish Passage	11	Each	$ 8,000	$ 88,000
	Revetment Wall (Class V Riprap)	5,167	CY	$ 30	$ 155,010
	MSE Wall	61,700	SF	$ 45	$ 2,776,500
				SUBTOTAL	**$ 62,979,510**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	67	Acre	$ 25,000	$ 1,675,000
	Cultural Resource Mitigation - Allowance	20	LS	$ 12,000	$ 240,000
	Drainage - Allowance	29.77	Mile	$ 115,000	$ 3,423,550
	Stormwater Management Ponds	20	LS	$ 239,000	$ 4,780,000
	Seeding and Landscaping	112	Acre	$ 7,000	$ 784,000
	Staging Area Rehabilitation	12	Acre	$ 58,000	$ 696,000
				SUBTOTAL	**$ 11,598,550**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	19,800	LF	$ 30	$ 594,000
	Roadway Signage - Allowance	29.77	Mile	$ 3,500	$ 104,195
				SUBTOTAL	**$ 698,195**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay	2	LS	$ 15,000,000	$ 30,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 30,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 10,391,226	$ 10,391,226
				SUBTOTAL	**$ 10,391,226**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 236,656,102**
	PER MILE COST (AK SECTION)*			$ 4,676,179	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 22,305,896**
	PER MILE COST (BC SECTION)*			$ 5,778,730	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 3,884,221	**$ 24,664,803**
	TOTAL BC SECTION COST				**$ 46,970,699**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

	Aaron Creek Tunnel Alignment (BC) (Segment A-1b):	**Segment A-1b - BC -** Begins at the AK/BC border and parallels the West Fork to the north, continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.	1280+00	2851+97	
	BC SECTION LIMITS:	STA.	2851+97	3055+71	
	AK SECTION LENGTH:	29.77	Mile		
	BC SECTION LENGTH (Designed):	3.86	Mile		
	BC SECTION LENGTH (Per Mile Cost):	6.35	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 2,278,303	$ 2,278,303
				SUBTOTAL	**$ 2,278,303**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 525,762	$ 525,762
	Clearing and Grubbing	40	Acre	$ 5,500	$ 220,000
	Roadway Excavation incl. Haul	239,500	CY	$ 9	$ 2,155,500
	Subexcavation	49,100	CY	$ 8	$ 392,800
				SUBTOTAL	**$ 3,294,062**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	3.86	Mile	$ 58,000	$ 223,880
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 223,880**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	4,000	CY	$ 40	$ 160,000
	8" Select Material	11,500	CY	$ 25	$ 287,500
				SUBTOTAL	**$ 447,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity	48,000	SF	$ 260	$ 12,480,000
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	1	Each	$ 180,000	$ 180,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 12,668,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	9	Acre	$ 25,000	$ 225,000
	Cultural Resource Mitigation - Allowance	3	LS	$ 12,000	$ 36,000
	Drainage - Allowance	3.86	Mile	$ 115,000	$ 443,900
	Stormwater Management Ponds	3	LS	$ 239,000	$ 717,000
	Seeding and Landscaping	11	Acre	$ 7,000	$ 77,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,614,900**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	440	LF	$ 30	$ 13,200
	Roadway Signage - Allowance	3.86	Mile	$ 3,500	$ 13,510
				SUBTOTAL	**$ 26,710**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 1,752,541	$ 1,752,541
				SUBTOTAL	**$ 1,752,541**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 22,305,896**
	PER MILE COST (BC SECTION)*			$ 5,778,730	
	BC SECTION	6.35	Mile	$ 3,884,221	**$ 24,664,803**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

Aaron Creek Alignment (Segment A-2):		**Segment A-2 -** Begins at The Narrows and parallels Black Channel to the east until reaching Segment A-1a or A-1b near the Berg Bay conventional ferry terminal.			
	LIMITS:	STA.	1005+00	1280+00	
	LENGTH:	5.21	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 2,265,131	$ 2,265,131
				SUBTOTAL	**$ 2,265,131**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 522,723	$ 522,723
	Clearing and Grubbing	44	Acre	$ 5,500	$ 242,000
	Roadway Excavation incl. Haul	300,000	CY	$ 9	$ 2,700,000
	Subexcavation	1,400	CY	$ 8	$ 11,200
				SUBTOTAL	**$ 3,475,923**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	5.21	Mile	$ 58,000	$ 302,180
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 302,180**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	5,500	CY	$ 40	$ 220,000
	8" Select Material	16,500	CY	$ 25	$ 412,500
				SUBTOTAL	**$ 632,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity	30,000	SF	$ 380	$ 11,400,000
	Culverts -				
	> 10 foot diameter	1	Each	$ 180,000	$ 180,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 11,588,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	12	Acre	$ 25,000	$ 300,000
	Cultural Resource Mitigation - Allowance	4	LS	$ 12,000	$ 48,000
	Drainage - Allowance	5.21	Mile	$ 115,000	$ 599,150
	Stormwater Management Ponds	4	LS	$ 239,000	$ 956,000
	Seeding and Landscaping	21	Acre	$ 7,000	$ 147,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 2,166,150**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	2,200	LF	$ 30	$ 66,000
	Roadway Signage - Allowance	5.21	Mile	$ 3,500	$ 18,235
				SUBTOTAL	**$ 84,235**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 1,742,409	$ 1,742,409
				SUBTOTAL	**$ 1,742,409**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 22,256,528**
	PER MILE COST*			$ 4,271,886	

*Note: Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (Segment S-1):

Segment S-1 - Begins along the south side of the Stikine River near the mouth of Andrew Creek and adjacent to Limb Island. The alignment parallels the south side of the Stikine River to the northeast before reaching Segment I-3 of the Iskut River Alignment and the ACV ferry terminal near the confluence of the Iskut and Stikine Rivers.

AK SECTION LIMITS:	STA.	2545+94	3673+29
BC SECTION LIMITS:	STA.	3673+29	3891+26
AK SECTION LIMITS:	21.35	Mile	
BC SECTION LIMITS (Designed):	4.13	Mile	
BC SECTION LIMITS (Per Mile Cost):	6.35	Mile	

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 8,428,315	$ 8,428,315
				SUBTOTAL	**$ 8,428,315**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 1,944,996	$ 1,944,996
	Clearing and Grubbing	197	Acre	$ 5,500	$ 1,083,500
	Roadway Excavation incl. Haul	3,005,500	CY	$ 9	$ 27,049,500
	Subexcavation	33,100	CY	$ 8	$ 264,800
				SUBTOTAL	**$ 30,342,796**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	21.35	Mile	$ 58,000	$ 1,238,300
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,238,300**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	23,000	CY	$ 40	$ 920,000
	8" Select Material	68,500	CY	$ 25	$ 1,712,500
				SUBTOTAL	**$ 2,632,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity	74,000	SF	$ 260	$ 19,240,000
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	21	Each	$ 180,000	$ 3,780,000
	Fish Passage	25	Each	$ 8,000	$ 200,000
	Revetment Wall (Class V Riprap)	14,024	CY	$ 30	$ 420,720
	MSE Wall	22,100	SF	$ 45	$ 994,500
				SUBTOTAL	**$ 24,635,220**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	48	Acre	$ 25,000	$ 1,200,000
	Cultural Resource Mitigation - Allowance	15	LS	$ 12,000	$ 180,000
	Drainage - Allowance	21.35	Mile	$ 115,000	$ 2,455,250
	Stormwater Management Ponds	15	LS	$ 239,000	$ 3,585,000
	Seeding and Landscaping	80	Acre	$ 7,000	$ 560,000
	Staging Area Rehabilitation	9	Acre	$ 58,000	$ 522,000
				SUBTOTAL	**$ 8,502,250**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	19,690	LF	$ 30	$ 590,700
	Roadway Signage - Allowance	21.35	Mile	$ 3,500	$ 74,725
				SUBTOTAL	**$ 665,425**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 6,483,320	$ 6,483,320
				SUBTOTAL	**$ 6,483,320**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 82,928,126**
	PER MILE COST (AK SECTION)*			$ 3,884,221	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 16,785,867**
	PER MILE COST (BC SECTION)*			$ 4,064,374	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 3,884,221	**$ 24,664,803**
	TOTAL BC SECTION COST				**$ 41,450,670**

*Note: Per mile cost calculated excludes tunnel and port development costs.

	South Stikine River Alignment (BC) (Segment S-1):	**Segment S-1 - BC -** Begins at the AK/BC border and parallels the south side of the Stikine River to the northeast before reaching Segment I-3 of the Iskut River Alignment and the ACV ferry terminal near the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.	2545+94	3673+29	
	BC SECTION LIMITS:	STA.	3673+29	3891+26	
	AK SECTION LIMITS:	21.35	Mile		
	BC SECTION LIMITS (Designed):	4.13	Mile		
	BC SECTION LIMITS (Per Mile Cost):	6.35	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 1,707,161	$ 1,707,161
				SUBTOTAL	**$ 1,707,161**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 393,960	$ 393,960
	Clearing and Grubbing	39	Acre	$ 5,500	$ 214,500
	Roadway Excavation incl. Haul	318,500	CY	$ 9	$ 2,866,500
	Subexcavation	46,700	CY	$ 8	$ 373,600
				SUBTOTAL	**$ 3,848,560**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	4.13	Mile	$ 58,000	$ 239,540
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 239,540**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	4,000	CY	$ 40	$ 160,000
	8" Select Material	12,500	CY	$ 25	$ 312,500
				SUBTOTAL	**$ 472,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	34,000	SF	$ 210	$ 7,140,000
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	1	Each	$ 180,000	$ 180,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 7,328,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	12	Acre	$ 25,000	$ 300,000
	Cultural Resource Mitigation - Allowance	3	LS	$ 12,000	$ 36,000
	Drainage - Allowance	4.13	Mile	$ 115,000	$ 474,950
	Stormwater Management Ponds	3	LS	$ 239,000	$ 717,000
	Seeding and Landscaping	10	Acre	$ 7,000	$ 70,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,713,950**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	4,950	LF	$ 30	$ 148,500
	Roadway Signage - Allowance	4.13	Mile	$ 3,500	$ 14,455
				SUBTOTAL	**$ 162,955**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 1,313,201	$ 1,313,201
				SUBTOTAL	**$ 1,313,201**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 16,785,867**
	PER MILE COST (AK SECTION)*			$ 4,064,374	
	BC SECTION	6.35	Mile	$ 3,884,221	**$24,664,803**

*Note: Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (Segment S-2):

Segment S-2 - Begins at the Crittenden Creek conventional ferry terminal site and parallels the Eastern Passage to the northwest. Once around Garnett Point, the alignment enters the Stikine River drainage, turns to the northeast, and follows the Stikine River to near the mouth of Andrew Creek.

LIMITS: STA. 1614+00 2545+94

LENGTH: 17.65 Mile

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 3,605,085	$ 3,605,085
				SUBTOTAL	**$ 3,605,085**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 831,943	$ 831,943
	Clearing and Grubbing	131	Acre	$ 5,500	$ 720,500
	Roadway Excavation incl. Haul	1,151,000	CY	$ 9	$ 10,359,000
	Subexcavation	14,800	CY	$ 8	$ 118,400
				SUBTOTAL	**$ 12,029,843**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	17.65	Mile	$ 58,000	$ 1,023,700
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,023,700**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	19,000	CY	$ 40	$ 760,000
	8" Select Material	57,500	CY	$ 25	$ 1,437,500
				SUBTOTAL	**$ 2,197,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	20,000	SF	$ 210	$ 4,200,000
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	7	Each	$ 180,000	$ 1,260,000
	Fish Passage	4	Each	$ 8,000	$ 32,000
	Revetment Wall (Class V Riprap)	22,880	CY	$ 30	$ 686,400
	MSE Wall	11,200	SF	$ 45	$ 504,000
				SUBTOTAL	**$ 6,682,400**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	40	Acre	$ 25,000	$ 1,000,000
	Cultural Resource Mitigation - Allowance	12	LS	$ 12,000	$ 144,000
	Drainage - Allowance	17.65	Mile	$ 115,000	$ 2,029,750
	Stormwater Management Ponds	12	LS	$ 239,000	$ 2,868,000
	Seeding and Landscaping	67	Acre	$ 7,000	$ 469,000
	Staging Area Rehabilitation	8	Acre	$ 58,000	$ 464,000
				SUBTOTAL	**$ 6,974,750**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	20,570	LF	$ 30	$ 617,100
	Roadway Signage - Allowance	17.65	Mile	$ 3,500	$ 61,775
				SUBTOTAL	**$ 678,875**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Crittenden Creek & Wrangell Island (Spur Rd., Peninsula St., or AMHS*)	2	LS	$ 15,000,000	$ 30,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 30,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 2,773,143	$ 2,773,143
				SUBTOTAL	**$ 2,773,143**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 65,965,296**
	PER MILE COST*			$ 2,037,694	

*Notes: If existing AMHS ferry terminal is utilized on Wrangell Island the cost of 1 conventional ferry terminal can be eliminated.
Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (Segment S-3):		**Segment S-3** - Begins at The Narrows and parallels the Eastern Passage to the northwest until reaching Segment S-2 near the Crittenden Creek conventional ferry terminal.			
	LIMITS:	Stationing:	1005+00	1614+00	
	LENGTH:	11.53	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 3,322,320	$ 3,322,320
				SUBTOTAL	**$ 3,322,320**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 766,689	$ 766,689
	Clearing and Grubbing	82	Acre	$ 5,500	$ 451,000
	Roadway Excavation incl. Haul	457,000	CY	$ 9	$ 4,113,000
	Subexcavation	2,000	CY	$ 8	$ 16,000
				SUBTOTAL	**$ 5,346,689**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	11.53	Mile	$ 58,000	$ 668,740
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 668,740**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	12,000	CY	$ 40	$ 480,000
	8" Select Material	36,500	CY	$ 25	$ 912,500
				SUBTOTAL	**$ 1,392,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	12,000	SF	$ 210	$ 2,520,000
	Bridge Structure - Medium Complexity	-	SF	$ 260	$ -
	Bridge Structure - High Complexity	30,500	SF	$ 380	$ 11,590,000
	Culverts -				
	> 10 foot diameter	3	Each	$ 180,000	$ 540,000
	Fish Passage	3	Each	$ 8,000	$ 24,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 14,674,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	26	Acre	$ 25,000	$ 650,000
	Cultural Resource Mitigation - Allowance	8	LS	$ 12,000	$ 96,000
	Drainage - Allowance	11.53	Mile	$ 115,000	$ 1,325,950
	Stormwater Management Ponds	8	LS	$ 239,000	$ 1,912,000
	Seeding and Landscaping	45	Acre	$ 7,000	$ 315,000
	Staging Area Rehabilitation	5	Acre	$ 58,000	$ 290,000
				SUBTOTAL	**$ 4,588,950**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	9,350	LF	$ 30	$ 280,500
	Roadway Signage - Allowance	11.53	Mile	$ 3,500	$ 40,355
				SUBTOTAL	**$ 320,855**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 2,555,631	$ 2,555,631
				SUBTOTAL	**$ 2,555,631**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 32,869,685**
	PER MILE COST*			$ 2,850,797	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Limb Island Alignment (Segment L-1):		**Segment L-1** - Begins at the end of the Mitkof Highway on Mitkof Island and crosses Dry Strait with a bridge. The alignment traverses the south side of Dry Island and the north side of Farm Island before crossing Hooligan Slough and reaching Limb Island. After crossing Limb Island and spanning the Stikine River, the alignment meets Segment S-1 near Andrew Creek.			
	LIMITS:	STA.	100+00	859+77	
	LENGTH:	14.39	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 11,007,722	$ 11,007,722
				SUBTOTAL	**$ 11,007,722**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 2,540,244	$ 2,540,244
	Clearing and Grubbing	102	Acre	$ 5,500	$ 561,000
	Roadway Excavation incl. Haul	860,000	CY	$ 9	$ 7,740,000
	Subexcavation	189,900	CY	$ 8	$ 1,519,200
				SUBTOTAL	**$ 12,360,444**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	14.39	Mile	$ 58,000	$ 834,620
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 834,620**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	13,500	CY	$ 40	$ 540,000
	8" Select Material	41,500	CY	$ 25	$ 1,037,500
				SUBTOTAL	**$ 1,577,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	16,000	SF	$ 210	$ 3,360,000
	Bridge Structure - Medium Complexity	92,000	SF	$ 260	$ 23,920,000
	Bridge Structure - High Complexity	102,000	SF	$ 380	$ 38,760,000
	Culverts -				
	> 10 foot diameter	5	Each	$ 180,000	$ 900,000
	Fish Passage	4	Each	$ 8,000	$ 32,000
	Revetment Wall (Class V Riprap)	8,489	CY	$ 30	$ 254,670
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 67,226,670**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	32	Acre	$ 25,000	$ 800,000
	Cultural Resource Mitigation - Allowance	10	LS	$ 12,000	$ 120,000
	Drainage - Allowance	14.39	Mile	$ 115,000	$ 1,654,850
	Stormwater Management Ponds	10	LS	$ 239,000	$ 2,390,000
	Seeding and Landscaping	47	Acre	$ 7,000	$ 329,000
	Staging Area Rehabilitation	6	Acre	$ 58,000	$ 348,000
				SUBTOTAL	**$ 5,641,850**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	11,940	LF	$ 30	$ 358,200
	Roadway Signage - Allowance	14.39	Mile	$ 3,500	$ 50,365
				SUBTOTAL	**$ 408,565**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 8,467,479	$ 8,467,479
				SUBTOTAL	**$ 8,467,479**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 107,524,850**
	PER MILE COST*			$ 7,472,192	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Wrangell Island Alignment (Segment W-1):	**Segment W-1** - Begins near the Log Transfer Station conventional ferry terminal site and parallels the shoreline along the Eastern Passage to the northeast. The alignment reaches The Narrows and ends after spanning Blake Channel with a structure.			
	LIMITS:	STA.	914+00	1005+00	
	LENGTH:	1.72	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 286,341	$ 286,341
				SUBTOTAL	**$ 286,341**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 66,079	$ 66,079
	Clearing and Grubbing	12	Acre	$ 5,500	$ 66,000
	Roadway Excavation incl. Haul	111,000	CY	$ 9	$ 999,000
	Subexcavation	500	CY	$ 8	$ 4,000
				SUBTOTAL	**$ 1,135,079**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	1.72	Mile	$ 58,000	$ 99,760
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 99,760**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	2,000	CY	$ 40	$ 80,000
	8" Select Material	5,500	CY	$ 25	$ 137,500
				SUBTOTAL	**$ 217,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity	-	SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 180,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall	-	SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	4	Acre	$ 25,000	$ 100,000
	Cultural Resource Mitigation - Allowance	2	LS	$ 12,000	$ 24,000
	Drainage - Allowance	1.72	Mile	$ 115,000	$ 197,800
	Stormwater Management Ponds	2	LS	$ 239,000	$ 478,000
	Seeding and Landscaping	7	Acre	$ 7,000	$ 49,000
	Staging Area Rehabilitation	1	Acre	$ 58,000	$ 58,000
				SUBTOTAL	**$ 906,800**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	110	LF	$ 30	$ 3,300
	Roadway Signage - Allowance	1.72	Mile	$ 3,500	$ 6,020
				SUBTOTAL	**$ 9,320**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Log Transfer Station		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 220,262	$ 220,262
				SUBTOTAL	**$ 220,262**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 2,875,062**
	PER MILE COST*			$ 1,671,548	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Wrangell Island Alignment (Segment W-2):	**Segment W-2** - Begins at the intersection of Segment W-3 and Segment F-1 of the Fool's Inlet Alignment. The alignment follows the existing McCormack Creek Road to the northeast before reaching the Log Transfer Station conventional ferry terminal and Segment W-1.			
	EXISTING ROAD LIMITS:	STA.	745+00	914+00	
	EXISTING ROAD LENGTH:	3.20	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 47,195	$ 47,195
				SUBTOTAL	**$ 47,195**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 10,891	$ 10,891
	Clearing and Grubbing	1	Acre	$ 5,500	$ 5,500
	Roadway Excavation incl. Haul	9,000	CY	$ 9	$ 81,000
	Roadway Reconditioning	3.20	Mile	$ 11,700	$ 37,440
				SUBTOTAL	**$ 134,831**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)		Mile	$ 58,000	$ -
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	4,000	CY	$ 40	$ 160,000
	8" Select Material	1,000	CY	$ 25	$ 25,000
				SUBTOTAL	**$ 185,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 180,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	0.2	Acre	$ 25,000	$ 5,000
	Cultural Resource Mitigation - Allowance	0.1	LS	$ 12,000	$ 1,200
	Drainage - Allowance		Mile	$ 15,000	$ -
	Stormwater Management Ponds	0.1	LS	$ 239,000	$ 23,900
	Seeding and Landscaping	1	Acre	$ 7,000	$ 7,000
	Staging Area Rehabilitation	0.1	Acre	$ 58,000	$ 5,800
				SUBTOTAL	**$ 42,900**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	3.20	Mile	$ 3,500	$ 11,200
				SUBTOTAL	**$ 11,200**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 36,304	$ 36,304
				SUBTOTAL	**$ 36,304**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 457,430**
	PER MILE COST*			$ 142,947	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Wrangell Island Alignment (Segment W-3):		**Segment W-3** - Begins at the end of the Zimovia Highway near Pat Creek and follows McCormack Creek Road northeast across most of Wrangell Island to the intersection with Segment F-1 of the Fool's Inlet Alignment.			
	EXISTING ROAD LIMITS:	STA.	160+00	745+00	
	EXISTING ROAD LENGTH:	11.08	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 156,626	$ 156,626
				SUBTOTAL	**$ 156,626**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 36,144	$ 36,144
	Clearing and Grubbing	1	Acre	$ 5,500	$ 5,500
	Roadway Excavation incl. Haul	35,500	CY	$ 9	$ 319,500
	Roadway Reconditioning	11.08	Mile	$ 11,700	$ 129,636
				SUBTOTAL	**$ 490,780**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)		Mile	$ 58,000	$ -
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	13,500	CY	$ 40	$ 540,000
	8" Select Material	2,500	CY	$ 25	$ 62,500
				SUBTOTAL	**$ 602,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 180,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	0.6	Acre	$ 25,000	$ 15,000
	Cultural Resource Mitigation - Allowance	0.3	LS	$ 12,000	$ 3,600
	Drainage - Allowance		Mile	$ 15,000	$ -
	Stormwater Management Ponds	0.3	LS	$ 239,000	$ 71,700
	Seeding and Landscaping	1	Acre	$ 7,000	$ 7,000
	Staging Area Rehabilitation	0.2	Acre	$ 58,000	$ 11,600
				SUBTOTAL	**$ 108,900**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	11.08	Mile	$ 3,500	$ 38,780
				SUBTOTAL	**$ 38,780**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 120,482	$ 120,482
				SUBTOTAL	**$ 120,482**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 1,518,068**
	PER MILE COST*			$ 137,010	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Fool's Inlet Alignment (Segments F-1):	**Segment F-1** - Begins at the beginning of Segment W-2 of the Wrangell Island Alignment and follows the existing road from McCormack Creek Road to just north of the mouth of Fool's Inlet.			
	EXISTING ROAD LIMITS:	STA.	723+00	1062+00	
	EXISTING ROAD LENGTH:	6.42	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 92,441	$ 92,441
				SUBTOTAL	**$ 92,441**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 21,333	$ 21,333
	Clearing and Grubbing	3	Acre	$ 5,500	$ 16,500
	Roadway Excavation incl. Haul	18,500	CY	$ 9	$ 166,500
	Roadway Reconditioning	6.42	Mile	$ 11,700	$ 75,114
				SUBTOTAL	**$ 279,447**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)		Mile	$ 58,000	$ -
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	8,000	CY	$ 40	$ 320,000
	8" Select Material	1,500	CY	$ 25	$ 37,500
				SUBTOTAL	**$ 357,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 180,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	0.4	Acre	$ 25,000	$ 10,000
	Cultural Resource Mitigation - Allowance	0.2	LS	$ 12,000	$ 2,400
	Drainage - Allowance		Mile	$ 15,000	$ -
	Stormwater Management Ponds	0.2	LS	$ 239,000	$ 47,800
	Seeding and Landscaping	1	Acre	$ 7,000	$ 7,000
	Staging Area Rehabilitation	0.1	Acre	$ 58,000	$ 5,800
				SUBTOTAL	**$ 73,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	6.42	Mile	$ 3,500	$ 22,470
				SUBTOTAL	**$ 22,470**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 71,108	$ 71,108
				SUBTOTAL	**$ 71,108**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 895,966**
	PER MILE COST*			$ 139,559	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Fool's Inlet Alignment (Segment F-2):	**Segment F-2** - Begins at the end of Segment F-1 and continues to Fool's Inlet, where the alignment parallels the northeastern shore before reaching the Fool's Inlet conventional ferry terminal.			
	LIMITS:	STA.	1062+00	1276+37	
	LENGTH:	4.06	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 572,957	$ 572,957
				SUBTOTAL	**$ 572,957**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 132,221	$ 132,221
	Clearing and Grubbing	26	Acre	$ 5,500	$ 143,000
	Roadway Excavation incl. Haul	109,500	CY	$ 9	$ 985,500
	Subexcavation	4,300	CY	$ 8	$ 34,400
				SUBTOTAL	**$ 1,295,121**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	4.06	Mile	$ 58,000	$ 235,480
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 235,480**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	4,500	CY	$ 40	$ 180,000
	8" Select Material	13,500	CY	$ 25	$ 337,500
				SUBTOTAL	**$ 517,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	4	Each	$ 180,000	$ 720,000
	Fish Passage	4	Each	$ 8,000	$ 32,000
	Revetment Wall (Class V Riprap)	9,595	CY	$ 30	$ 287,850
	MSE Wall	-	SF	$ 45	$ -
				SUBTOTAL	**$ 1,039,850**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	9	Acre	$ 25,000	$ 225,000
	Cultural Resource Mitigation - Allowance	3	LS	$ 12,000	$ 36,000
	Drainage - Allowance	4.06	Mile	$ 115,000	$ 466,900
	Stormwater Management Ponds	3	LS	$ 239,000	$ 717,000
	Seeding and Landscaping	16	Acre	$ 7,000	$ 112,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,672,900**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	4.06	Mile	$ 3,500	$ 14,210
				SUBTOTAL	**$ 14,210**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Fool's Inlet	1	LS	$ 15,000,000	$ 15,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 15,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 440,736	$ 440,736
				SUBTOTAL	**$ 440,736**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 20,788,754**
	PER MILE COST*			$ 1,425,801	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$10,790,670	$10,790,670
Total bid estimate					$146,278,307
Mobilization percentage					8.0%

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$3,944,475	$3,944,475
642(3)	HR	3-Person Survey Crew	700	$312	$218,190
Total bid estimate					$146,278,307
Mobilization percentage					3.2%

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$231,741	$695,223
644(2)	EACH	Field Laboratory	3	$66,857	$200,570
644(3)	LPSM	Curing Shed	ALL	$51,498	$51,498
644(15)	LPSM	Nuclear Testing Equip.	ALL	$39,301	$39,301
644(16)	LPSM	Storage	ALL	$10,300	$10,300
645(1)	HOUR	Training	3000	$68	$203,280
Total bid estimate					$146,278,307
Mobilization percentage					0.9%

Total Project Requirements Percentage 12.1%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$12,853,660	$12,853,660
Total bid estimate					$121,650,994
Mobilization percentage					11.8%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$865,000	$865,000
642(3)	HR	3-Person Survey Crew	700	$250	$175,000
Total bid estimate					$121,650,994
Mobilization percentage					1.0%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$25,000	$75,000
644(2)	EACH	Field Laboratory	3	$25,000	$75,000
644(3)	LPSM	Curing Shed	ALL	$5,300	$5,300
644(15)	LPSM	Nuclear Testing Equip.	ALL	$79,500	$79,500
644(16)	LPSM	Storage	ALL	$16,000	$16,000
645(1)	HOUR	Training	3000	$10	$30,000
Total bid estimate					$121,650,994
Mobilization percentage					0.3%

Total Project Requirements Percentage 13.1%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$20,000,000	$20,000,000
Total bid estimate					$206,037,813
Mobilization percentage					10.8%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$700,000	$700,000
642(3)	HR	3-Person Survey Crew	0	$250	$0
Total bid estimate					$206,037,813
Mobilization percentage					0.4%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$0	$0
644(2)	EACH	Field Laboratory	3	$0	$0
644(3)	LPSM	Curing Shed	ALL	$0	$0
644(15)	LPSM	Nuclear Testing Equip.	ALL	$0	$0
644(16)	LPSM	Storage	ALL	$0	$0
645(1)	HOUR	Training	3000	$0	$0
Total bid estimate					$206,037,813
Mobilization percentage					0.0%

Total Project Requirements Percentage 11.2%

Juneau Access, Financial Plan, 2007, UPA	Sunny Point, 2006
Mobilization percentage	7.4%

Total Project Requirements Percentage 7.4%

Juneau Access, Final EIS, 2006, UPA				Valdez-Dayville Road, 2004		Valdez-Dayville Road, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$2,619,000	$2,619,000	$2,150,000	$2,150,000
Mobilization percentage					8.8%		7.3%

Total Project Requirements Percentage 8.1%

Juneau Access, Final EIS, 2006, UPA				Glacier Highway, 2005		Glacier Highway, 2005	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$700,000	$700,000	$675,000	$675,000
Mobilization percentage					7.0%		6.5%

Total Project Requirements Percentage 6.8%

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$2,300,000	$2,300,000	$800,000	$800,000	$700,000	$700,000	$400,000	$400,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					9.4%		3.2%		2.8%		1.6%
Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$450,000	$450,000	$230,000	$230,000	$300,000	$300,000	$350,000	$350,000
642(3)	HR	3-Person Survey Crew	1	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					2.0%		1.1%		1.3%		1.5%
Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
644(1)	EACH	Field Office	1	$50,000	$50,000	$40,000	$40,000	$60,000	$60,000	$50,000	$50,000
644(2)	EACH	Field Laboratory	1	$30,000	$30,000	$10,000	$10,000	$30,000	$30,000	$20,000	$20,000
644(15)	LPSM	Nuclear Testing Equip.	ALL	$3,000	$3,000	$2,300	$2,300	$2,000	$2,000	$20,000	$20,000
645(1)	HOUR	Training	1775	$1	$1,775	$1	$1,775	$1	$1,775	$1	$1,775
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					0.3%		0.2%		0.4%		0.4%

Total Project Requirements Percentage 6.1%

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,023,000	$1,023,000	$990,000	$990,000	$1,647,200	$1,647,200	$1,070,000	$1,070,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					9.0%		10.5%		17.5%		9.8%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$175,000	$175,000	$140,000	$140,000	$212,900	$212,900	$450,000	$450,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					1.6%		1.5%		2.3%		4.3%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$360,000	$360,000	$115,000	$115,000	$369,500	$369,500	$250,000	$250,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					3.3%		1.2%		4.1%		2.3%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$125,000	$125,000	$100,000	$100,000	$221,400	$221,400	$25,000	$25,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					1.1%		1.1%		2.4%		0.2%

Total Project Requirements Percentage 18.1%

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,845,000	$1,845,000	$1,809,000	$1,809,000	$2,370,000	$2,370,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					13.3%		11.5%		11.1%
Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$220,000	$220,000	$294,000	$294,000	$500,000	$500,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.6%		1.9%		2.4%
Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$214,000	$214,000	$379,000	$379,000	$400,000	$400,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.6%		2.5%		1.9%
Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$150,000	$150,000	$41,200	$41,200	$400,000	$400,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.1%		0.3%		1.9%

Total Project Requirements Percentage 17.0%

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,447,000	$1,447,000	$2,017,998	$2,017,998	$1,600,000	$1,600,000	$2,130,000	$2,130,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					9.0%		11.0%		8.4%		10.9%
Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$290,000	$290,000	$237,700	$237,700	$300,000	$300,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					1.8%		1.3%		1.6%		1.0%
Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$135,000	$135,000	$444,800	$444,800	$220,000	$220,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					0.8%		2.5%		1.2%		1.0%
Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$180,000	$180,000	$86,105	$86,105	$220,000	$220,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					1.1%		0.5%		1.2%		1.0%

Total Project Requirements Percentage 13.6%

Control Lake, 2002				Engineers Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$923,000	$923,000	$783,000	$783,000	$1,100,000	$1,100,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					10.0%		9.1%		12.6%
Control Lake, 2002				Engineers Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$175,000	$175,000	$100,000	$100,000	$150,000	$150,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.9%		1.2%		1.7%
Control Lake, 2002				Engineers Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$112,000	$112,000	$171,000	$171,000	$25,000	$25,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.2%		2.0%		0.3%
Control Lake, 2002				Engineers Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$95,000	$95,000	$129,200	$129,200	$100,000	$100,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.0%		1.5%		1.2%

Total Project Requirements Percentage 14.6%

Big Salt Lake Road, 1999				Engineers Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$780,000	$780,000	$700,000	$700,000	$1,000,000	$1,000,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					9.0%		10.1%		11.0%

Big Salt Lake Road, 1999				Engineers Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$133,300	$133,300	$300,000	$300,000	$90,000	$90,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					1.6%		4.5%		1.0%

Big Salt Lake Road, 1999				Engineers Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$82,000	$82,000	$50,000	$50,000	$110,000	$110,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					1.0%		0.7%		1.2%

Total Project Requirements Percentage **13.4%**

Average Total Project Requirements Percentage **11.8%**

Use **13.0%**

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	3,222	$2.36	$7,603.92
631(1)	sq yd	Geotextile, Erosion Control, Class 1	3740	$2.51	$9,387.40
633(1)	ln ft	Silt fence	57,000	$3.05	$173,850.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$976,662.36	$976,662.36
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$717,461.94	$717,461.94
641(5)	acre	Preliminary Seeding	47.0	$5,219.00	$245,293.00
641(6)	each	Temp. Rock Check Dam	540.0	$67.76	$36,590.40
641(8)	each	Settling Pool	8	$767.39	$6,139.12
Subtotal erosion control					$2,172,988.14
Total const. bid (excluding mobilization & eros. cont.)					$133,314,649
Erosion control ratio based on bid prices					1.6%
Erosion control costs based on mile			(per mile)		$93,141

Average Percentage 1.6% of Construction costs

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	3,222	$10.50	$33,831.00
631(1)	sq yd	Geotextile, Erosion Control, Class 1	3740	$2.00	$7,480.00
633(1)	ln ft	Silt fence	57,000	$4.00	$228,000.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$26,500.00	$26,500.00
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$529,410.00	$529,410.00
641(5)	acre	Preliminary Seeding	47.0	$2,500.00	$117,500.00
641(6)	each	Temp. Rock Check Dam	540.0	$100.00	$54,000.00
641(8)	each	Settling Pool	8	$530.00	$4,240.00
Subtotal erosion control					$1,000,961.00
Total const. bid (excluding mobilization & eros. cont.)					$107,796,373
Erosion control ratio based on bid prices					0.9%
Erosion control costs based on mile			(per mile)		$42,904

Average Percentage 0.9% of Construction costs

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	28,800	$10.50	$302,400.00
633(1)	ln ft	Silt fence	15,000	$4.00	$60,000.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$53,000.00	$53,000.00
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$1,500,000.00	$1,500,000.00
Subtotal erosion control					$1,915,400.00
Total const. bid (excluding mobilization & eros. cont.)					$184,122,413
Erosion control ratio based on bid prices					1.0%
Erosion control costs based on mile			(per mile)		$82,100

Average Percentage 1.0% of Construction costs

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$75,000.00	$75,000.00	$5,000.00	$5,000.00	$25,000.00	$25,000.00	$10,000.00	$10,000.00
641(3)	LPSM	Temp. Erosion/Pollution Control	ALL	$290,000.00	$290,000.00	$200,000.00	$200,000.00	$300,000.00	$300,000.00	$150,000.00	$150,000.00
641(4)	LPSM	Temp. Erosion/Pollution Control Modification	ALL	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00
Subtotal erosion control					$415,000.00		$255,000.00		$375,000.00		$210,000.00
Total const. bid (excluding mobilization & eros. cont.)					$24,107,586		$24,587,513		$24,666,128		$25,388,433
Erosion control ratio based on bid prices					1.7%		1.0%		1.5%		0.8%
Erosion control costs based on mile			(per mile)		$17,788		$10,930		$16,074		$9,001

Average Percentage 1.3% of Construction costs

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15705	m	Silt fence	1,150	$8.00	$9,200.00	$28.00	$32,200.00	$9.00	$10,350.00	$20.00	$23,000.00
15705	m	Sediment wattle	200	$26.00	$5,200.00	$56.00	$11,200.00	$43.00	$8,600.00	$30.00	$6,000.00
15801	m^3	watering for dust control	3,000	$7.00	$21,000.00	$12.00	$36,000.00	$9.30	$27,900.00	$12.50	$37,500.00
Subtotal erosion control					$35,400.00		$79,400.00		$46,850.00		$66,500.00
Total const. bid (excluding mobilization & eros. cont.)					$11,329,649		$9,321,735		$9,348,699		$10,884,799
Erosion control ratio based on bid prices					0.3%		0.9%		0.5%		0.6%
Total length			(km)		32.508		32.508		32.508		32.508
			(mile)		20.2		20.2		20.2		20.2
Erosion control costs based on km			(per km)		$1,089		$2,442		$1,441		$2,046
Erosion control costs based on mile			(per mile)		$1,753		$3,931		$2,320		$3,293

Average Percentage 0.6% of Construction costs

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15705	m	Silt fence	14,000	$7.00	$98,000.00	$5.27	$73,780.00	$9.00	$126,000.00
15705	LPSM	Soil erosion control, monitoring	ALL	$100,000.00	$100,000.00	$169,500.00	$169,500.00	$10,000.00	$10,000.00
15705	m	Temporary 750 millimeter culvert pipe	35.0	$100.00	$3,500.00	$90.00	$3,150.00	$200.00	$7,000.00
15705	m	Temporary 1200 millimeter culvert pipe	60.0	$150.00	$9,000.00	$140.00	$8,400.00	$230.00	$13,800.00
15705	m	Temporary 1800 millimeter culvert pipe	35	$250.00	$8,750.00	$190.00	$6,650.00	$500.00	$17,500.00
15705	m	diversion channel, temporary	800	$40.00	$32,000.00	$30.89	$24,712.00	$80.00	$64,000.00
15705	m	sediment log	1,700	$40.00	$68,000.00	$24.71	$42,007.00	$12.00	$20,400.00
15705	m	soil wrap	60	$50.00	$3,000.00	$69.00	$4,140.00	$23.00	$1,380.00
15706	each	check dams, sandbags	8	$80.00	$640.00	$705.00	$5,640.00	$400.00	$3,200.00
15706	each	check dam, riprap	230	$80.00	$18,400.00	$79.00	$18,170.00	$250.00	$57,500.00
15706	each	check dam (silt dike)	250.00	$80.00	$20,000.00	$75.00	$18,750.00	$400.00	$100,000.00
15706	each	chitosan gel sock	8	$700.00	$5,600.00	$750.00	$6,000.00	$1,000.00	$8,000.00
15801	m^3	watering for dust control	7,520	$5.50	$41,360.00	$5.50	$41,360.00	$4.00	$30,080.00
25120	m	Riprap ditch, class 1	1,100	$25.00	$27,500.00	$17.70	$19,470.00	$55.00	$60,500.00
Subtotal erosion control					$435,750.00		$441,729.00		$519,360.00
Total const. bid (excluding mobilization & eros. cont.)					$13,464,700		$15,330,307		$20,904,113
Erosion control ratio based on bid prices					3.2%		2.9%		2.5%
Total length			(km)		12.26		12.26		12.26
			(mile)		7.6		7.6		7.6
Erosion control costs based on km			(per km)		$35,542		$36,030		$42,362
Erosion control costs based on mile			(per mile)		$57,209		$57,994		$68,186

Average Percentage 2.9% of Construction costs

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15703	m	Silt fence	6,000	$11.00	$66,000.00	$5.00	$30,000.00	$11.00	$66,000.00	$6.00	$36,000.00
15705	m	Slope drains	110	$40.00	$4,400.00	$47.00	$5,170.00	$30.00	$3,300.00	$60.00	$6,600.00
15707 A	m	Temporary 600 millimeter culvert pipe	380.0	$100.00	$38,000.00	$60.00	$22,800.00	$150.00	$57,000.00	$150.00	$57,000.00
15707 B	m	Temporary 900 millimeter culvert pipe	70.0	$125.00	$8,750.00	$70.00	$4,900.00	$205.00	$14,350.00	$200.00	$14,000.00
15708	each	bales, straw	150	$30.00	$4,500.00	$50.00	$7,500.00	$14.00	$2,100.00	$30.00	$4,500.00
15709 A	each	check dams, riprap	170	$75.00	$12,750.00	$68.00	$11,560.00	$100.00	$17,000.00	$100.00	$17,000.00
15709 B	each	check dams, sandbag	140	$75.00	$10,500.00	$25.50	$3,570.00	$130.00	$18,200.00	$20.00	$2,800.00
15718 A	m	diversion channel, plastic lined	500	$55.00	$27,500.00	$30.00	$15,000.00	$7.00	$3,500.00	$40.00	$20,000.00
15718 B	m	diversion channel, riprap lined	220	$70.00	$15,400.00	$50.00	$11,000.00	$27.00	$5,940.00	$120.00	$26,400.00
15724	m	wattle, straw	3,100	$25.00	$77,500.00	$10.42	$32,302.00	$9.00	$27,900.00	$7.00	$21,700.00
15729	slry unit	soil stabilization	600.00	$250.00	$150,000.00	$320.61	$192,366.00	$525.00	$315,000.00	$400.00	$240,000.00
15749	m	turbidity curtain	60	$120.00	$7,200.00	$112.00	$6,720.00	$50.00	$3,000.00	$150.00	$9,000.00
15761	each	chitosan gel sock	10	$625.00	$6,250.00	$403.00	$4,030.00	$1,000.00	$10,000.00	$1,250.00	$12,500.00
15780	day	erosion control supervisor	450	$300.00	$135,000.00	$565.50	$254,475.00	$100.00	$45,000.00	$500.00	$225,000.00
15801	m^3	watering for dust control	15,000	$5.00	$75,000.00	$5.51	$82,650.00	$5.00	$75,000.00	$6.00	$90,000.00
20410	m	furrow ditches	1,600	$3.00	$4,800.00	$3.96	$6,336.00	$10.00	$16,000.00	$2.00	$3,200.00
25107	m	riprap lined ditch	1,800	$25.00	$45,000.00	$19.73	$35,514.00	$15.00	$27,000.00	$30.00	$54,000.00
62204	hour	pump, water, trash, 150 mm	200	$20.00	$4,000.00	$50.00	$10,000.00	$20.00	$4,000.00	$60.00	$12,000.00
62901	m^2	Erosion control mat type 1	1,700	$3.00	$5,100.00	$3.23	$5,491.00	$8.00	$13,600.00	$2.00	$3,400.00
					$697,650.00		$741,384.00		$723,890.00		$855,100.00
Total construction bid											
					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Erosion control ratio based on bid prices					4.0%		3.6%		3.5%		3.9%
Total length			(km)		15.785		15.785		15.785		15.785
			(mile)		9.8		9.8		9.8		9.8
Eroson control costs based on km			(per km)		$44,197		$46,968		$45,859		$54,172
Eroson control costs based on mile			(per mile)		$71,140		$75,599		$73,815		$87,195

Average Percentage 3.8% of Construction costs

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15705	m	Silt fence	10,500	$11.00	$115,500.00	$6.20	$65,100.00	$7.00	$73,500.00
15708	each	Bales, straw	50	$50.00	$2,500.00	$75.00	$3,750.00	$30.00	$1,500.00
15724	each	Fiber log	350	$40.00	$14,000.00	$35.00	$12,250.00	$30.00	$10,500.00
15709	each	check dam	100	$100.00	$10,000.00	$90.00	$9,000.00	$100.00	$10,000.00
15801	m^3	watering for dust control	8,000	$4.50	$36,000.00	$7.00	$56,000.00	$8.00	$64,000.00
25119	m^2	Riprap ditch, class 1	3,400	$22.50	$76,500.00	$10.75	$36,550.00	$15.00	$51,000.00
Subtotal erosion control					$254,500.00		$182,650.00		$210,500.00
Total const. bid (excluding mobilization & eros. cont.)					$8,971,054		$8,391,653		$8,512,950
Erosion control ratio based on bid prices					2.8%		2.2%		2.5%
Total length			(km)		50		50		50
			(mile)		31.1		31.1		31.1
Erosion control costs based on km			(per km)		$5,090		$3,653		$4,210
Erosion control costs based on mile			(per mile)		$8,193		$5,880		$6,776

Average Percentage 2.5% of Construction costs

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15703	m	Silt fence	4,900	$10.00	$49,000.00	$6.00	$29,400.00	$20.00	$98,000.00
15705	each	Slope drains	50.0	$60.00	$3,000.00	$35.00	$1,750.00	$100.00	$5,000.00
15707a	m	Temporary 900 mm culvert pipe	12.0	$90.00	$1,080.00	$100.00	$1,200.00	$200.00	$2,400.00
15707c	m	Temporary 1800 mm culvert pipe	40	$225.00	$9,000.00	$250.00	$10,000.00	$350.00	$14,000.00
15708	each	Bales, straw	600	$30.00	$18,000.00	$50.00	$30,000.00	$40.00	$24,000.00
15709	each	Check dams	60	$100.00	$6,000.00	$100.00	$6,000.00	$100.00	$6,000.00
15718a	m	Diversion channel, plastic lined	300	$40.00	$12,000.00	$30.00	$9,000.00	$25.00	$7,500.00
15718b	m	Diversion channel, riprap lined	20	$290.00	$5,800.00	$50.00	$1,000.00	$90.00	$1,800.00
15801	m^3	watering for dust control	7,000	$10.00	$70,000.00	$5.00	$35,000.00	$7.00	$49,000.00
25119	m	Riprap lined ditch	260	$23.00	$5,980.00	$30.00	$7,800.00	$22.00	$5,720.00
Subtotal erosion control					$179,860.00		$131,150.00		$213,420.00
Total const. bid (excluding mobilization & eros. cont.)					$8,485,250		$6,778,090		$8,838,855
Erosion control ratio based on bid prices					2.1%		1.9%		2.4%
Total length			(km)		4.8		4.8		4.8
			(mile)		3.0		3.0		3.0
Erosion control costs based on km			(per km)		$37,471		$27,323		$44,463
Erosion control costs based on mile			(per mile)		$60,313		$43,979		$71,567

Average Percentage 2.2% of Construction costs

Total Average Percentage 1.9% of Construction costs

Use 3.0% of Construction costs

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	150	$3,822.63	$573,394.50
201(1B)	acre	Clearing	144	$4,300.43	$619,261.92

Average Unit Cost $4,056.65 per acre

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3		Zones 4-5			
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	150	$6,900.00	$1,035,000.00	Clearing	333	$6,900.00	$2,297,700.00
201(1B)	acre	Clearing	144	$5,300.00	$763,200.00	Clearing	25	$5,300.00	$132,500.00

Average Unit Cost $6,116.33 per acre **Average Unit Cost $6,788.27 per acre**

Juneau Access, Financial Plan, 2007, UPA				Juneau - Lynn Canal, 2006		Juneau - Lynn Canal, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount
201(1A)	acre	Clearing	152	$6,533.00	$993,016.00	$15,000.00	$2,280,000.00
201(1B)	acre	Clearing	130	$5,000.00	$650,000.00	$5,000.00	$650,000.00
			Average	$5,826.30		$10,390.07	

Average Unit Cost $8,108.18 per acre
Average Unit Cost with 3%/year Inflation $8,601.97 per acre

Juneau Access, Final EIS, 2006, UPA				Juneau Glacier Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	35	$1,600.00	$56,000.00

Average Unit Cost $1,600.00 per acre
Average Unit Cost with 3%/year Inflation $2,214.77 per acre

Juneau Access, Final EIS, 2006, UPA				Parks Highway, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	181	$1,079.20	$195,335.20

Average Unit Cost $1,079.20 per acre
Average Unit Cost with 3%/year Inflation $1,367.10 per acre

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	35.752	$7,200.00	$257,414.40	$10,160.00	$363,240.32	$30,600.00	$1,094,011.20

Ave.	Quantity	Unit	Total	Average Cost per Unit
$15,987	35.752	ha	$571,555	
	88.3	acre		**$6,473 per acre**

Average Unit Cost with 3%/year Inflation $7,073.09 per acre

Coffman Cove Schedule A, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	50	$7,000.00	$350,000.00	$8,482.50	$424,125.00	$15,000.00	$750,000.00	$6,000.00	$300,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$9,121	50	ha	$456,031	
	123.55	acre		**$3,691.07 per acre**

Average Unit Cost with 3%/year Inflation $4,407.33 per acre

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	1.00	$10,000.00	$10,000.00	$5,450.00	$5,450.00	$15,000.00	$15,000.00
20101	ha	Selective clearing	2.75	$8,085.00	$22,233.75	$1,385.00	$3,808.75	$10,000.00	$27,500.00

Ave.	Quantity	Unit	Total	Cost per Unit
$7,466	3.750	ha	$27,997.50	
	9.27	acre		**$3,020.23 per acre**

Average Unit Cost with 3%/year Inflation $3,714.50 per acre

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	32	$7,000.00	$224,000.00	$5,000.00	$160,000.00	$7,000.00	$224,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$6,333	32.000	ha	$202,666.67	
	79	acre		**$2,565.40 per acre**

Average Unit Cost with 3%/year Inflation $3,447.68 per acre

Total Average Unit Cost $4,778.77 per acre

Use $5,500.00 per acre

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	12	acre	ad0301xaW1_1lane.clr
W - 2	3.20	745+00	914+00	1	acre	
W - 3	11.08	160+00	745+00	1	acre	
F - 1	6.42	723+00	1062+00	3	acre	
F - 2	4.06	1062+00	1276+37	26	acre	ad0301xaF1_1lane.clr
A - 1a	30.37	1280+00	2883+63	283	acre	ad0301xaAa(1-4)_1lane.clr
A-1a (BC)	3.86	2883+63	3087+36	35	acre	ad0301xaAa_4_1lane_BC.clr
A - 1b	29.77	1280+00	2851+97	263	acre	ad0301xaAb(1-4)_1lane.clr
A - 1b (BC)	3.86	2851+97	3055+71	36	acre	ad0301xaAb_4_1lane_BC.clr
A - 2	5.21	1005+00	1280+00	44	acre	ad0301xaA2_1lane.clr
S -1	21.35	2545+94	3673+29	197	acre	ad0301xaS1_1lane_AK.clr
S -1 (BC)	4.13	3673+29	3891+26	39	acre	Ad0301xaS1_1lane_BC.clr
S - 2	17.65	1614+00	2545+94	131	acre	ad0301xaS2_(1-3)_1lane.clr
S - 3	11.53	1005+00	1614+00	82	acre	ad0301xaS3_(1-2)_1lane.clr
L - 1	14.39	100+00	859+77	102	acre	ad0301xaL1_1lane.clr

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	1,804,700.000	$12.03	$21,710,541.00
203(5)	CUYD	Unc. Exc.	786,900.000	$4.12	$3,242,028.00

Average Unit Cost $9.63 per yd3

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3		Zones 4-5		
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	1,804,700.000	$12.00	$21,656,400.00	3,105,810.000	$12.00	$37,269,720.00
203(5)	CUYD	Unc. Exc.	786,900.000	$5.00	$3,934,500.00	317,560.000	$5.00	$1,587,800.00

Average Unit Cost $9.87 per yd3 **Average Unit Cost $11.35 per yd3**

Juneau Access, Financial Plan, 2007, UPA				Ketchikan Airport, 2002	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	-	$5.46	-

Average Unit Cost with 3%/year Inflation $6.72 per yd3

Juneau Access, Final EIS, 2006, UPA				Ketchikan 3rd Ave, 1999	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	151,000.000	$15.68	$2,368,209.13
Juneau Access, Final EIS, 2006, UPA				Glacier Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	339,500.000	$4.47	$1,517,930.10
Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	511,700.000	$4.82	$2,464,927.40
Juneau Access, Final EIS, 2006, UPA				Glenn Highway, 2000	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	112,212.000	$3.16	$354,315.12
Juneau Access, Final EIS, 2006, UPA				Palmer-Wasilla, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	125,739.000	$3.29	$414,134.25
Juneau Access, Final EIS, 2006, UPA				Parks Highway, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	847,041.000	$2.90	$2,457,184.19

Common Average Unit Cost $5.72 per yd3
Weighted Average Unit Cost $4.59 per yd3

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401	m^3	roadway excavation	473,820	$10.00	$4,738,200.00	$8.14	$3,856,894.80	$14.00	$6,633,480.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$ 10.71	473,820	m3	$5,076,192	
	619,733	yd3		**$8.19 per yd3**

Embankment was included in Coffman Cove bid price

Average Unit Cost with 3%/year Inflation $8.95 per yd3

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401 A	m^3	roadway excavation	528,752	$5.50	$2,908,136.00	$7.99	$4,224,728.48	$9.50	$5,023,144.00	$13.00	$6,873,776

Coffman Cove (1)

Ave.	Quantity	Units	Total Cost	Cost per Unit
$9	528752	m3	$4,758,768	
	691581	yd3		**$6.88 per yd3**

Embankment was included in Coffman Cove bid price

Average Unit Cost with 3%/year Inflation $8.22 per yd3

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401	m^3	roadway excavation	2,000	$12.00	$24,000.00	$5.25	$10,500.00	$6.00	$12,000.00

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$7.75	2,000	m3	$15,500	
	2,616	yd3		**$5.93 per yd3**

Average Unit Cost with 3%/year Inflation $7.29 per yd3

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401A	m^3	roadway excavation	310,000	$5.00	$1,550,000.00	$3.50	$1,085,000.00	$5.50	$1,705,000.00
20401B	m^3	roadway excavation	171,000	$8.00	$1,368,000.00	$5.50	$940,500.00	$8.00	$1,368,000.00

$4.67 $1,446,666.67 $5.56
$7.17 $1,225,500.00

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$5.56	481,000	m3	$2,672,167	
	629,124	yd3		**$4.25 per yd3**

Average Unit Cost with 3%/year Inflation **$5.71 per yd3**

Total Average Unit Cost **$7.41 per yd3**

Use **$9.00 per yd3**

QUANTITIES								
Segment	Length (mi.)	Stationing		Excavation	Unit	Embankment	Unit	Source
W - 1	1.72	914+00	1005+00	111,000	Cu. Yd.	65,000	Cu. Yd.	ad0301xaW1_1lane.log
W - 2	3.20	745+00	914+00	9,000	Cu. Yd.	8,000	Cu. Yd.	Misc. shaping
W - 3	11.08	160+00	745+00	35,500	Cu. Yd.	32,500	Cu. Yd.	Misc. shaping
F - 1	6.42	723+00	1062+00	18,500	Cu. Yd.	17,000	Cu. Yd.	Misc. shaping
F - 2	4.06	1062+00	1276+37	109,500	Cu. Yd.	100,500	Cu. Yd.	ad0301xaF2_1lane.log
A - 1a	30.37	1280+00	2883+63	4,391,000	Cu. Yd.	2,169,000	Cu. Yd.	ad0301xaAa_(1-4)_1lane.log
A-1a (BC)	3.86	2883+63	3087+36	245,000	Cu. Yd.	327,000	Cu. Yd.	ad0301xaAa_4_1lane.log
A - 1b	29.77	1280+00	2851+97	2,634,500	Cu. Yd.	1,826,000	Cu. Yd.	ad0301xaAb_(1-4)_1lane.log
A - 1b (BC)	3.86	2851+97	3055+71	239,500	Cu. Yd.	335,500	Cu. Yd.	ad0301xaAb_4_1lane.log
A - 2	5.21	1005+00	1280+00	300,000	Cu. Yd.	280,000	Cu. Yd.	ad0301xaA2_1lane.log
S -1	21.35	2545+94	3673+29	3,005,500	Cu. Yd.	2,192,500	Cu. Yd.	ad0301xaS1_1lane.log
S -1 (BC)	4.13	3673+29	3891+26	318,500	Cu. Yd.	825,000	Cu. Yd.	ad0301xaS1_1lane.log
S - 2	17.65	1614+00	2545+94	1,151,000	Cu. Yd.	825,000	Cu. Yd.	ad0301xaS2_(1-3)_1lane.log
S - 3	11.53	1005+00	1614+00	457,000	Cu. Yd.	403,500	Cu. Yd.	ad0301xaS3_(1-2)_1lane.log
L - 1	14.39	100+00	859+77	860,000	Cu. Yd.	665,500	Cu. Yd.	ad0301xaL1_1lane.log

Alignment	Length (miles)	Exc. (from log file)	Emb. (from log file)	Excess Excavation	Borrow (+20%)	Subexcavation Replacement (+20%)	Total Exc.
Segment A-1a							
Total Earthwork	**30.37**	4,390,751	2,168,976	2,221,775	0	16,560	**4,390,751**
Equilavent per mile		144,567	71,414				**144,567**
Segment A-1a (BC)							
Total Earthwork	**3.86**	244,964	326,923	(81,959)	0	58,920	**244,964**
Equilavent per mile		63,462	84,695				**63,462**
Segment A-2							
Total Earthwork	**5.21**	300,138	280,067	20,071	0	1,680	**300,138**
Equilavent per mile		57,626	53,773				**57,626**
Segment A-1b							
Total Earthwork	**29.77**	2,634,668	1,826,176	808,492	0	21,600	**2,634,668**
Equilavent per mile		88,501	61,343				**88,501**
Segment A-1b (BC)							
Total Earthwork	**3.86**	239,275	335,488	(96,213)	0	21,600	**239,275**
Equilavent per mile		61,988	86,914				**61,988**
Segment W-1							
Total Earthwork	**1.72**	110,768	65,048	45,720	0	600	**110,768**
Equilavent per mile		64,270	37,742				**64,270**
Segment W-2							
Total Earthwork	**3.20**	7,500	8,000	(500)	600	720	**8,820**
Equilavent per mile		2,343	2,499				**2,756**
Segment W-3							
Total Earthwork	**11.08**	30,000	32,500	(2,500)	3,000	2,640	**35,640**
Equilavent per mile		2,708	2,933				**3,217**

Alignment	Length (miles)	Exc. (from log file)	Emb. (from log file)	Excess Excavation	Borrow (+20%)	Subexcavation Replacement (+20%)	Total Exc.
Segment S-1							
Total Earthwork	**21.35**	3,005,526	2,192,388	813,138	0	39,720	**3,005,526**
Equilavent per mile		140,765	102,681				**140,765**
Segment S-1 (BC)							
Total Earthwork	**4.13**	318,408	805,456	(487,048)	0	39,720	**318,408**
Equilavent per mile		77,131	195,113				**77,131**
Segment S-2							
Total Earthwork	**17.65**	1,151,240	825,173	326,067	0	17,760	**1,151,240**
Equilavent per mile		65,225	46,751				**65,225**
Segment S-3							
Total Earthwork	**11.53**	457,074	403,433	53,641	0	2,400	**457,074**
Equilavent per mile		39,628	34,977				**39,628**
Segment F-1							
Total Earthwork	**6.42**	15,500	17,000	(1,500)	1,800	1,440	**18,740**
Equilavent per mile		2,414	2,648				**2,919**
Segment F-2							
Total Earthwork	**4.06**	109,266	100,637	8,629	0	5,160	**109,266**
Equilavent per mile		26,913	24,787				**26,913**
Segment L-1							
Total Earthwork	**14.39**	859,750	665,257	194,493		227,880	**859,750**
Equilavent per mile		59,748	46,232				**59,748**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	subexcavation	308,000	$6.00	$1,848,000.00	$11.07	$3,409,560.00	$9.00	$2,772,000.00

Note: Subexcavation replacement material included in Excavation cost (See Excavation and Embankment Calculations)

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Total Cost per Unit
$ 8.69	308,000	m3	$2,676,520	
	402,849	yd3		**$6.64 per yd3**

Average Unit Cost with 3%/year Inflation $7.26 per yd3

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	subexcavation	280,000	$12.00	$3,360,000.00	$13.28	$3,718,400.00	$12.00	$3,360,000.00	$7.00	$1,960,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Unit	Total	Total Cost per Unit
$11	28,000	m3	$301,280	
	36,603	yd3		**$8.23 per yd3**

Average Unit Cost with 3%/year Inflation $9.83 per yd3

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	Subexcavation	2,500	$7.00	$17,500.00	$3.50	$8,750.00	$6.00	$15,000.00

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$5.50	2,500	m3	$13,750	
	3,270	yd3		**$4.20 per yd3**

Average Unit Cost with 3%/year Inflation $5.17 per yd3

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	Subexcavation	97,000	$4.00	$388,000.00	$2.75	$266,750.00	$3.00	$291,000.00

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$3.25	97,000	m3	$315,250	
	126,871	yd3		**$2.48 per yd3**

Average Unit Cost with 3%/year Inflation $3.34 per yd3

Total Average Unit Cost $6.40 per yd3

Use $8.00 per yd3

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	500	Cu. Yd.	Aerial Photos
W - 2	3.20	745+00	914+00	600	Cu. Yd.	Aerial Photos
W - 3	11.08	160+00	745+00	2,200	Cu. Yd.	Aerial Photos
F - 1	6.42	723+00	1062+00	1,200	Cu. Yd.	Aerial Photos
F - 2	4.06	1062+00	1276+37	4,300	Cu. Yd.	Aerial Photos
A - 1a	30.37	1280+00	2883+63	13,800	Cu. Yd.	Aerial Photos
A-1a (BC)	3.86	2883+63	3087+36	49,100	Cu. Yd.	Aerial Photos
A - 1b	29.77	1280+00	2851+97	18,000	Cu. Yd.	Aerial Photos
A - 1b (BC)	3.86	2851+97	3055+71	49,100	Cu. Yd.	Aerial Photos
A - 2	5.21	1005+00	1280+00	1,400	Cu. Yd.	Aerial Photos
S -1	21.35	2545+94	3673+29	33,100	Cu. Yd.	Aerial Photos
S -1 (BC)	4.13	3673+29	3891+26	46,700	Cu. Yd.	Aerial Photos
S - 2	17.65	1614+00	2545+94	14,800	Cu. Yd.	Aerial Photos
S - 3	11.53	1005+00	1614+00	2,000	Cu. Yd.	Aerial Photos
L - 1	14.39	100+00	859+77	189,900	Cu. Yd.	Aerial Photos

One-Lane Road: 14 ft typical section
One-Lane Road w/ Turnouts: 24 ft typical section = full 2-lane width
10 ft narrower typical section

Adjusted 2-lane quantities accordingly

Turnouts placed every 1000': 200 ft turnouts
20% full 2-lane width every mile
80% one-lane width every mile

QUANTITIES

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Aaron Creek	A -2	1147+00	1150+00	300	70	2	1,400	Cu. Yd.	Muskeg Subexcavation
Total	**Aaron Creek Pass**					**Total**	**1,400**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Aaron Creek	A-1a	1763+00	1765+00	200	50	2	700	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	1779+00	1782+00	300	50	2	1,000	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	1785+50	1786+50	100	60	2	400	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	1830+00	1843+00	1,300	70	2	6,000	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	1854+00	1860+00	600	90	2	3,700	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	1998+00	2003+00	500	60	2	2,000	Cu. Yd.	Drainage Encroachment
Total	**Aaron Creek Pass (AK)**					**Total**	**13,800**	**Cu. Yd.**	
Aaron Creek	A-1a	2951+00	2954+00	300	180	2	3,900	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	2972+00	3015+00	4,300	80	2	23,000	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1a	3042+00	3065+00	2,300	60	5	22,200	Cu. Yd.	Muskeg Subexcavation
Total	**Aaron Creek Pass (BC)**					**Total**	**49,100**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Aaron Creek	A-1b	1763+00	1765+00	200	50	2	700	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	1779+00	1782+00	300	50	2	1,000	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	1785+50	1786+50	100	60	2	400	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	1830+00	1843+00	1,300	70	2	6,000	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	1854+00	1860+00	600	90	2	3,700	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	1998+00	2003+00	500	60	2	2,000	Cu. Yd.	Drainage Encroachment
Aaron Creek	A-1b	2214+00	2218+00	400	60	2	1,600	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	2359+00	2361+00	200	50	2	700	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	2506+00	2512+00	600	50	2	1,900	Cu. Yd.	Muskeg Subexcavation
Total	**Aaron Creek Tunnel (AK)**					**Total**	**18,000**	**Cu. Yd.**	
Aaron Creek	A-1b	2919+00	2922+00	300	180	2	3,900	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	2940+00	2983+00	4,300	80	2	23,000	Cu. Yd.	Muskeg Subexcavation
Aaron Creek	A-1b	3010+00	3033+00	2,300	60	5	22,200	Cu. Yd.	Muskeg Subexcavation
Total	**Aaron Creek Tunnel (BC)**					**Total**	**49,100**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Wrangell	W-1			500	20	2	500	Cu. Yd.	Spot Repair/Digouts
Total	**Wrangell Island**					**Total**	**500**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Wrangell	W-2			178	50	2	600	Cu. Yd.	Spot Repair/Digouts
Total	**Wrangell Island**					**Total**	**600**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Wrangell	W-3			706	50	2	2,200	Cu. Yd.	Spot Repair/Digouts
Total	**Wrangell Island**					**Total**	**2,200**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Fool's Inlet	F-1			361	50	2	1,200	Cu. Yd.	Spot Repair/Digouts
Total	**Wrangell Island**					**Total**	**1,200**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Fool's Inlet	F-2	1081+00	1084+00	300	50	4	1,900	Cu. Yd.	Muskeg Subexcavation
Fool's Inlet	F-2	1097+00	1103+00	600	60	2	2,400	Cu. Yd.	Muskeg Subexcavation
Total	**Wrangell Island**					**Total**	**4,300**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
S. Stikine	S-3	1319+00	1324+00	500	60	2	2,000	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-3	1430+00	1433+00	300	60	2	1,200	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-3	1487+00	1492+00	500	60	2	2,000	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-3	1508+00	1512+00	400	60	2	1,600	Cu. Yd.	Muskeg Subexcavation
Total	**Eastern Passage**					**Total**	**2,000**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
S. Stikine	S-2	1655+00	1658+00	300	65	4	2,600	Cu. Yd.	Drainage Encroachment
S. Stikine	S-2	1663+00	1669+00	600	50	2	1,900	Cu. Yd.	Drainage Encroachment
S. Stikine	S-2	1724+00	1727+00	300	60	2	1,200	Cu. Yd.	Drainage Encroachment
S. Stikine	S-2	1739+00	1745+00	600	50	2	1,900	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-2	1751+00	1763+00	1,200	40	2	2,900	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-2	2462+00	2465+00	300	30	2	500	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-2	2523+00	2546+00	2,300	30	2	3,800	Cu. Yd.	Muskeg Subexcavation
Total	**South Stikine River**					**Total**	**14,800**	**Cu. Yd.**	

Subexcavation	Unit: CY	Page 3 of 3

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
S. Stikine	S-1	2634+00	2650+00	1,600	75	4	15,900	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3269+00	3276+00	700	75	4	7,000	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3576+00	3579+00	300	200	2	4,300	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3663+00	3673+29	1,029	85	2	5,900	Cu. Yd.	Muskeg Subexcavation
Total	**South Stikine River (AK)**					**Total**	**33,100**	**Cu. Yd.**	
S. Stikine	S-1	3673+29	3675+00	171	85	2	1000	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3773+00	3798+00	2,500	75	2	12,500	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3808+00	3824+00	1,600	65	2	6,800	Cu. Yd.	Muskeg Subexcavation
S. Stikine	S-1	3831+00	3884+00	5,300	75	2	26,400	Cu. Yd.	Muskeg Subexcavation
Total	**South Stikine River (BC)**					**Total**	**46,700**	**Cu. Yd.**	

Alignment	Segment	Sta.	Sta.	Length	Width	Depth	Quan.	Unit	Comment
Limb Island	L-1	132+00	133+00	100	20	2	100	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	450+00	475+00	2,500	50	4	15,600	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	559+00	633+00	7,400	60	5	71,300	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	647+00	653+00	600	50	2	1,900	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	723+00	752+00	2,900	60	2	11,200	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	775+00	829+00	5,400	60	2	20,800	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	723+00	752+00	2,900	60	2	11,200	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	775+00	829+00	5,400	60	5	52,000	Cu. Yd.	Muskeg Subexcavation
Limb Island	L-1	852+00	855+77	377	90	5	5,800	Cu. Yd.	Muskeg Subexcavation
Total	**Limb Island**					**Total**	**189,900**	**Cu. Yd.**	

Typical Section Calculations

Segment	Begin Station	End Station	Length		Agg. Base	Sel. Mat.
			feet	miles	yd3	yd3
A-2	1005+00	1280+00	26,000	4.92	4,940	14,813
Total Aaron Cr.			**26,000**	**4.92**	**4,940**	**14,813**
Increased by 10% and rounded, Aaron Cr.					**5,500**	**16,500**
A-1a	1280+00	1718+00	43,200	8.18	8,189	24,613
A-1a	1718+00	2145+00	37,700	7.14	7,144	21,519
A-1a	2145+00	2608+00	39,800	7.54	7,628	22,824
A-1a	2608+00	2883+63	26,063	4.94	4,959	14,894
Total Aaron Cr. Pass (AK)			**146,763**	**27.8**	**27,920**	**83,850**
Increased by 10% and rounded, Aaron Cr. Pass (AK)					**30,500**	**92,000**
A-1a	2883+63	3087+36	17,973	3.4	3,408	10,286
Total Aaron Cr. Pass (BC)			**17,973**	**3.4**	**3,408**	**10,286**
Increased by 10% and rounded, Aaron Cr. Pass (BC)					**3,500**	**11,500**
A-1b	1280+00	1718+00	43,200	8.18	8,208	24,672
A-1b	1718+00	2145+00	38,700	7.33	7,315	22,020
A-1b	2145+00	2615+00	42,000	7.95	6,593	19,873
A-1b	2615+00	2851+97	22,197	4.2	4,218	12,662
(Tunnel)	2225+00	2295+00				
Total Aaron Cr. Tunnel (AK)			**146,097**	**27.67**	**26,334**	**79,227**
Increased by 10% and rounded, Aaron Cr. Tunnel (AK)					**29,000**	**87,000**
A-1b	2851+97	3055+71	17,974	3.4	3,415	10,308
Total Aaron Cr. Tunnel (BC)			**17,974**	**3.4**	**3,415**	**10,308**
Increased by 10% and rounded, Aaron Cr. Tunnel (BC)					**4,000**	**11,500**
W-3	160+00	745+00	58,500	11.08	12,241	2,448
Total Wrangell Island			**58,500**	**11.08**	**12,241**	**2,448**
Increased by 10% and rounded, Wrangell Island					**13,500**	**2,500**
W-2	745+00	914+00	16,900	3.20	3,536	707
Total Wrangell Island			**16,900**	**3.20**	**3,536**	**707**
Increased by 10% and rounded, Wrangell Island					**4,000**	**1,000**
W-1	914+00	1005+00	9,100	1.72	1,729	5,189
Total Wrangell Island			**9,100**	**1.72**	**1,729**	**5,189**
Increased by 10% and rounded, Wrangell Island					**2,000**	**5,500**
F-1	723+00	1062+00	33,900	6.42	7,094	1,419
Total Fool's Inlet			**33,900**	**6.42**	**7,094**	**1,419**
Increased by 10% and rounded, Wrangell Island					**8,000**	**1,500**
F-2	1062+00	1276+37	21,437	4.06	4,066	12,224
Total Fool's Inlet			**21,437**	**4.06**	**4,066**	**12,224**
Increased by 10% and rounded, Wrangell Island					**4,500**	**13,500**
S-3	1005+00	1265+00	24,475	4.64	4,655	13,914
S-3	1265+00	1614+00	34,300	6.50	6,460	19,423
Total South Stikine River			**58,775**	**11.13**	**11,115**	**33,337**
Increased by 10% and rounded, Eastern Passage					**12,000**	**36,500**
S-2	1614+00	1950+00	33,000	6.25	6,251	18,833
S-2	1950+00	2235+00	28,500	5.40	5,396	16,155
S-2	2235+00	2454+94	21,594	4.09	5,832	17,498
Total South Stikine River			**83,094**	**15.74**	**17,479**	**52,486**
Increased by 10% and rounded, South Stikine River					**19,000**	**57,500**
S-1	2545+94	3673+29	109,035	20.65	20,710	62,326
Total South Stikine River (AK)			**109,035**	**20.65**	**20,710**	**62,326**
Increased by 10% and rounded, South Stikine River (AK)					**23,000**	**68,500**
S-1	3673+29	3891+26	20,097	3.81	3,824	11,547
Total South Stikine River (BC)			**20,097**	**3.81**	**3,824**	**11,547**
Increased by 10% and rounded, South Stikine River (BC)					**4,000**	**12,500**
L-1	100+00	859+77	65,477	12.40	12,441	37,557
Total Limb Island			**65,477**	**12.40**	**12,441**	**37,557**
Increased by 10% and rounded, Limb Island					**13,500**	**41,500**

Note: All surfacing quantities are from Geopak earthwork log files and have been increased 8% for curve widening and 2% for guardrail widening

One Lane Road End Areas:

Crushed aggregate area:	*5.1498*	*sqft*
Select material area:	*13.198*	*sqft*

additional areas for turnout:			select	cr. agg.	
0	0	0			
50	6.6666667	3.3333333	166.666668	83.3333325	sqft
150	6.6666667	3.3333333	666.66667	333.33333	sqft
200	0	0	166.666668	83.3333325	sqft
			1000	499.999995	sqft
			37.04	*18.52*	*yd^3 per turnout*

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	97,120.000	$15.65	$1,519,928.00

Ave.	Quantity	Unit	Total	Cost per Unit
$15.65	97,120	t	$1,519,928	
	41,682	m3		
	49,299	yd3		**$30.83 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	97,120.000	$25.00	$2,428,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$25.00	97,120	t	$2,428,000	
	41,682	m3		
	49,299	yd3		**$49.25 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	124,675.000	$25.00	$3,116,875.00

Ave.	Quantity	Unit	Total	Cost per Unit
$25.00	124,675	t	$3,116,875	
	53,509	m3		
	63,287	yd3		**$49.25 per yd3**

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
306(1)	Ton	Asphalt Treated Base	13,900.000	$42.50	$590,750.00

Ave.	Quantity	Unit	Total	Cost per Unit
$42.50	13,900	t	$590,750	
	5,966	m3		
	7,056	yd3		**$83.73 per yd3**

Average Unit Cost with 3%/year Inflation **$91.49 per yd3**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
306(1)	Ton	ATB	91,550.000	$35.00	$3,204,250.00	$30.00	$2,746,500.00	$34.00	$3,112,700.00	$35.00	$3,204,250.00

Ave.	Quantity	Unit	Total	Cost per Unit
$33.50	91,550	t	$3,066,925	
	39,292	m3		
	46,472	yd3		**$66.00 per yd3**

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Aggregate Base	136,500	$20.50	$2,798,250.00	$15.20	$2,074,800.00	$12.00	$1,638,000.00	$27.00	$3,685,500.00

Coffman Cove (A)

Ave.	Quantity	Unit	Total	Cost per Unit
$18.68	136,500	t	$2,549,138	
	58,584	m3		
	69,289	yd3		**$36.79 per yd3**

Average Unit Cost with 3%/year Inflation **$39.03 per yd3**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Aggregate Base Grading D	84,000.0	$11.00	$924,000.00	$11.29	$948,360.00	$12.00	$1,008,000.00	$12.00	$1,008,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$11.57	84,000	t	$971,880.00	
	36,052	m3		
	42,640	yd3		**$22.79 per yd3**

Average Unit Cost with 3%/year Inflation **$27.22 per yd3**

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Agg. Base grading D	119,000.000	$12.00	$1,428,000.00	$9.79	$1,165,010.00	$12.00	$1,428,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$11.26	119,000	t	$1,340,337	
	51,073	m3		
	60,406	yd3		**$22.19 per yd3**

Average Unit Cost with 3%/year Inflation **$27.29 per yd3**

Big Salt Lake, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Agg. Base grading D	29,400.000	$12.00	$352,800.00	$13.00	$382,200.00	$15.00	$441,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$13.33	29,400	t	$392,000.00	
	12,618	m3		
	14,924	yd3		**$26.27 per yd3**

Average Unit Cost with 3%/year Inflation **$35.30 per yd3**

Total Average Unit Cost **$46.18 per yd3**

Use **$40.00 per yd3**

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	2,000	Cu. Yd.	ad0301xaW1_1lane.log
W - 2	3.20	745+00	914+00	4,000	Cu. Yd.	Misc. shaping
W - 3	11.08	160+00	745+00	13,500	Cu. Yd.	Misc. shaping
F - 1	6.42	723+00	1062+00	8,000	Cu. Yd.	Misc. shaping
F - 2	4.06	1062+00	1276+37	4,500	Cu. Yd.	ad0301xaF2_1lane.log
A - 1a	30.37	1280+00	2883+63	30,500	Cu. Yd.	ad0301xaAa_(1-4)_1lane.log
A-1a (BC)	3.86	2883+63	3087+36	3,500	Cu. Yd.	ad0301xaAa_4_1lane.log
A - 1b	29.77	1280+00	2851+97	29,000	Cu. Yd.	ad0301xaAb_(1-4)_1lane.log
A - 1b (BC)	3.86	2851+97	3055+71	4,000	Cu. Yd.	ad0301xaAb_4_1lane.log
A - 2	5.21	1005+00	1280+00	5,500	Cu. Yd.	ad0301xaA2_1lane.log
S -1	21.35	2545+94	3673+29	23,000	Cu. Yd.	ad0301xaS1_1lane.log
S -1 (BC)	4.13	3673+29	3891+26	4,000	Cu. Yd.	ad0301xaS1_1lane.log
S - 2	17.65	1614+00	2545+94	19,000	Cu. Yd.	ad0301xaS2_(1-3)_1lane.log
S - 3	11.53	1005+00	1614+00	12,000	Cu. Yd.	ad0301xaS3_(1-2)_1lane.log
L - 1	14.39	100+00	859+77	13,500	Cu. Yd.	ad0301xaL1_1lane.log

8" Select Material	Unit: CY	Page 1 of 1

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20416	t	select topping	81,269	$11.90	$967,101.10	$14.00	$1,137,766.00	$12.00	$975,228.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$12.63	81,269	t	$1,026,698	
	34,879	m3		
	45,621	yd3		**$22.51 per yd3**

Average Unit Cost with 3%/year Inflation **$24.59 per yd3**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20416	t	select topping	97,589	$8.50	$829,506.50	$10.25	$1,000,287.25	$12.00	$1,171,068.00	$11.00	$1,073,479.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$10.44	97,589	t	$1,018,829	
	41,884	m3		
	54,782	yd3		**$18.60 per yd3**

Average Unit Cost with 3%/year Inflation **$22.21 per yd3**

Total Average Unit Cost **$23.40** **per yd3**

Use **$25.00** **per yd3**

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	5,500	Cu. Yd.	ad0301xaW1_1lane.log
W - 2	3.20	745+00	914+00	1,000	Cu. Yd.	Misc. shaping
W - 3	11.08	160+00	745+00	2,500	Cu. Yd.	Misc. shaping
F - 1	6.42	723+00	1062+00	1,500	Cu. Yd.	Misc. shaping
F - 2	4.06	1062+00	1276+37	13,500	Cu. Yd.	ad0301xaF2_1lane.log
A - 1a	30.37	1280+00	2883+63	92,000	Cu. Yd.	ad0301xaAa_(1-4)_1lane.log
A-1a (BC)	3.86	2883+63	3087+36	11,500	Cu. Yd.	ad0301xaAa_4_1lane.log
A - 1b	29.77	1280+00	2851+97	87,000	Cu. Yd.	ad0301xaAb_(1-4)_1lane.log
A - 1b (BC)	3.86	2851+97	3055+71	11,500	Cu. Yd.	ad0301xaAb_4_1lane.log
A - 2	5.21	1005+00	1280+00	16,500	Cu. Yd.	ad0301xaA2_1lane.log
S -1	21.35	2545+94	3673+29	68,500	Cu. Yd.	ad0301xaS1_1lane.log
S -1 (BC)	4.13	3673+29	3891+26	12,500	Cu. Yd.	ad0301xaS1_1lane.log
S - 2	17.65	1614+00	2545+94	57,500	Cu. Yd.	ad0301xaS2_(1-3)_1lane.log
S - 3	11.53	1005+00	1614+00	36,500	Cu. Yd.	ad0301xaS3_(1-2)_1lane.log
L - 1	14.39	100+00	859+77	41,500	Cu. Yd.	ad0301xaL1_1lane.log

Kiewit Construction Company

Underground District

Bid estimate 2/8/07

Alaska Road Green Sheet

One Tunnel Option

Green Sheet Summary	Total Costs including Indirect and Margin	Unit Costs including Indirect and Margin	Unit	Comment
Single Tunnel Excavation =	**$32,504,794**	**$4,104**	**LF**	**To D&S 7,920 FT of SINGLE Tunnel**
Single Tunnel Bolting =	**$13,552,110**	**$35**	**LF**	**To Install 390,000 LF of Bolts**
Single Tunnel Shotcrete =	**$5,574,319**	**$1,014**	**NCY**	**To apply 5,500 CY of S/C**
Single Tunnel Membrane Waterproofing =	**$17,200,755**	**$29**	**SF**	**To apply Membrane WP for 594,000 SF**
TOTAL BID VALUE =	**$68,831,978**			
Cost per linear foot of advance	**$8,691**			

Two Tunnel Option

Green Sheet Summary	Total Costs including Indirect and Margin	Unit Costs including Indirect and Margin	Unit	Comment
Twin Tunnel Excavation =	**$33,590,700**	**$2,121**	**LF**	**To D&S 15,840 FT of Tunnel**
Twin Tunnel Bolting =	**$9,729,720**	**$29**	**LF**	**To Install 336,000 LF of Bolts**
Twin Tunnel Shotcrete =	**$8,817,559**	**$1,014**	**NCY**	**To apply 8,700 CY of S/C**
Twin Tunnel Membrane W.P. =	**$27,075,263**	**$29**	**SF**	**To apply Membrane WP for 935,000 SF**
TOTAL BID VALUE =	**$79,213,242**			
Cost per linear foot of advance	**$10,002**			

Use two bores-Two One Lane Tunnel Summary (plus two years inflation at 3%): $10,611

Note: The Bradfield River Report (2005) used $9,150/ln. ft. for the cost of the tunnel. Using 3% inflation over 5 years, the Bradfield cost would be $10,607.

$11,141 Kiewitt Bid Plus 5%

The Juneau Access Highway engineer's estimate used $9,200/ln ft. for the cost of the tunnel sections. Average of three costs is near $10,000/ln ft.

Use $10,000 per ln ft

Backup Calculations for Bridge price:

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
501(1)	LPSM	Class A Concrete	LPSM	$7,664,990	$7,664,990
501(2)	LPSM	Class A-A Concrete	LPSM	$1,253,977	$1,253,977
501(7A)	each	128' Decked Bulb Tee	18	$92,926.97	$1,672,685
501(7B)	each	143' Decked Bulb Tee	227	$96,516.91	$21,909,339
501(7C)	each	118' Decked Bulb Tee	12	$85,101.49	$1,021,218
501(9)	ln ft	Bridge Expansion Joint	660.0	$871.75	$575,355.00
503(1)	LPSM	Reinforcing Steel	LPSM	$2,511,192	$2,511,192
503(2)	LPSM	Epoxy-Coated Reinforcing Steel	LPSM	$906,925	$906,925
504(2)	lb	Structural Steel	1,150,000.0	$3	$3,335,000
505(5A)	ln ft	Steel Piles - HP14x117	787.5	$114	$89,807
505(5B)	ln ft	Steel Piles - 24 in	6,668.0	$170	$1,131,760
505(5C)	ln ft	Steel Piles - 48 in dia	15,161.4	$526	$7,982,325
505(6A)	each	Drive Steel Piles - HP14x117	6.0	$4,965	$29,788
505(6B)	each	Drive Steel Piles - 24 in	78.0	$6,110	$476,612
505(6C)	each	Drive Steel Piles - 48 in dia	111.0	$14,576	$1,617,980
505(9)	sq ft	Structural Steel Sheet Piles	3,200.0	$58	$185,088
507(1)	ln ft	Steel Bridge Railing	14,135.0	$182	$2,569,178
507(6)	ln ft	Safety Railing	1,553.0	$9	$13,263
Subtotal of bridge costs:					$54,946,482

Range of Possible Lengths	6280 ln ft	7470 ln ft	
	207,240 sq ft	246,510 sq ft	Using 33' width
	$265.13	$222.90	

Average Unit Cost **$244.02 per sq ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
501(1)	LPSM	Class A Concrete	LPSM	$9,973,080	$9,973,080
501(2)	LPSM	Class A-A Concrete	LPSM	$1,304,160	$1,304,160
501(7A)	each	128' Decked Bulb Tee	18	$60,000.00	$1,080,000
501(7B)	each	143' Decked Bulb Tee	227	$70,000.00	$15,890,000
501(7C)	each	118' Decked Bulb Tee	12	$60,000.00	$720,000
501(9)	ln ft	Bridge Expansion Joint	660.0	$1,100.00	$726,000.00
503(1)	LPSM	Reinforcing Steel	LPSM	$935,320	$935,320
503(2)	LPSM	Epoxy-Coated Reinforcing Steel	LPSM	$2,861,758	$2,861,758
504(2)	lb	Structural Steel	1,150,000.0	$3	$2,875,000
505(5A)	ln ft	Steel Piles - HP14x117	787.5	$65	$51,188
505(5B)	ln ft	Steel Piles - 24 in	6,668.0	$125	$833,500
505(5C)	ln ft	Steel Piles - 48 in dia	15,161.4	$500	$7,580,700
505(6A)	each	Drive Steel Piles - HP14x117	6.0	$5,000	$30,000
505(6B)	each	Drive Steel Piles - 24 in	78.0	$7,500	$585,000
505(6C)	each	Drive Steel Piles - 48 in dia	111.0	$25,000	$2,775,000
505(9)	sq ft	Structural Steel Sheet Piles	3,200.0	$45	$144,000
507(1)	ln ft	Steel Bridge Railing	14,135.0	$225	$3,180,375
507(6)	ln ft	Safety Railing	1,553.0	$4	$5,436
Subtotal of bridge costs:					$51,550,516

Range of Possible Lengths	6280 ln ft	7470 ln ft	
	207,240 sq ft	246,510 sq ft	Using 33' width
	$248.75	$209.12	

Average Unit Cost $228.93 per sq ft

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5	
Bridge Type	**$/sq. ft.**
Low Complexity:	**$250**
Medium Complexity:	**$350**
High Complexity:	**$500**

Juneau Access, Final EIS, 2006, UPA				Valdez-Dayville, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	SQFT	Bridge Replacement		$128.00	

Average Unit Cost with 3%/year Inflation $148.39 per sq ft

Juneau Access, Final EIS, 2006, UPA				San Mateo-Hayward, 2002	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	SQFT	Bridge Replacement		$132.00	

Average Unit Cost with 3%/year Inflation $162.34 per sq ft

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
55201	m^3	structural concrete class A (AE)	95.00	$1,200.00	$114,000.00	$2,666.00	$253,270.00	$4,000.00	$380,000.00
55302	m	precast, prestressed concrete decked Bulb Tee Girder	169	$1,250.00	$211,250.00	$1,861.40	$314,576.60	$3,000.00	$507,000.00
55401	kg	reinforcing steel	5,200	$3.50	$18,200.00	$4.37	$22,724.00	$6.00	$31,200.00
55402	kg	epoxy coated reinforcing steel	2,064	$4.20	$8,668.80	$2.61	$5,387.04	$7.00	$14,448.00
55601 A	m	steel bridge railing	55.0	$450.00	$24,750.00	$340.00	$18,700.00	$750.00	$41,250.00
55601 b	m	steel bridge railing (retrofit)	95.0	$400.00	$38,000.00	$575.00	$54,625.00	$500.00	$47,500.00
55101	m	steel H piles, 310 x 110, in place	62.0	$300.00	$18,600.00	$820.00	$50,840.00	$2,000.00	$124,000.00
Subtotal of bridge costs:					$433,468.80		$720,122.64		$1,145,398.00

Bridge on Coffman Cove = 28.5 m length 12.79 m width 364.515 m2

Coffman Cove(2)

Ave.	Quantity	Unit	Total	Cost per Unit
$766,330	1	each	$766,330	
	364.52	m2		$2,102 per m2
	3923.61	sq. ft		$195 per sq ft

Average Unit Cost with 3%/year Inflation $213.42 per sq ft

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
55201	m^3	structural concrete class A (AE)	282.00	$1,200.00	$338,400.00	$1,100.00	$310,200.00	$1,200.00	$338,400.00	$1,000.00	$282,000.00
55302	each	precast, prestressed concrete decked Bulb Tee Girder	6	$27,000.00	$162,000.00	$25,931.00	$155,586.00	$50,000.00	$300,000.00	$30,000.00	$180,000.00
55401	kg	reinforcing steel	21,070	$2.75	$57,942.50	$1.50	$31,605.00	$3.00	$63,210.00	$2.00	$42,140.00
55402	kg	epoxy coated reinforcing steel	1,770	$3.00	$5,310.00	$2.90	$5,133.00	$4.00	$7,080.00	$4.00	$7,080.00
55601 A	m	steel bridge railing	48.1	$300.00	$14,430.00	$324.00	$15,584.40	$450.00	$21,645.00	$400.00	$19,240.00
55601 b	m	steel bridge railing (retrofit)	132.7	$350.00	$46,445.00	$168.63	$22,377.20	$400.00	$53,080.00	$150.00	$19,905.00
Subtotal of bridge costs:					$624,527.50		$540,485.60		$783,415.00		$550,365.00

Bridge on Coffman Cove = 25 m length 11.3 m width 282.5 m2

Coffman Cove(1)

Ave.	Quantity	Unit	Total	Cost per Unit
$624,698	1	each	$624,698	
	282.50	m2		$2,211 per m2
	3040.80	sq. ft		$205.44 per sq. ft

Average Unit Cost with 3%/year Inflation $245.30 per sq ft

Bradfield River Report (2005) Bridge Costs with inflation:

Bridge Type	$/sq. ft.	With 3% inflation/yea
Low Complexity:	$150	$174
Medium Complexity:	$200	$232
High Complexity:	$275	$319

Bridge on Camp Grisdale= 45 ft length 32 ft width 1440 sq. ft.
Cost $350,000 $243 per sq. ft.

Total Average Unit Cost $212.21 per sq ft

Use $210 per sq. ft. for low complexity bridges

Yakataga Bridge Replacement: 490 ft length 14 ft width 6860 sq. ft.
Cost $1,654,962 $241 per sq. ft.

Total Average Unit Cost $259.21 per sq ft

Use $260 per sq. ft. for low to medium complexity bridges

Bay Bridge: $1000/sf suspension, $650/sf viaduct span (higher complexity than AK bridges)

Total Average Unit Cost $379.60 per sq ft

Use $380 per sq. ft. for high complexity bridges

Segment	BOB	EOB	Bridge Length (ft)	Bridge Area[1] (sq.ft.)	Complexity Low[2]	Medium[3]	High[4]	Cost $
A2	1009+00	1024+00	1,500	30,000			X	$11,400,000
A-1a	1480+00	1486+00	600	12,000	X			$2,520,000
A-1a	1750+00	1752+00	200	4,000	X			$840,000
A-1a	1790+00	1812+00	2,200	44,000		X		$11,440,000
A-1a	1889+00	1894+00	500	10,000	X			$2,100,000
A-1a	2051+00	2062+00	1,100	22,000		X		$5,720,000
A-1a	2083+00	2093+00	1,000	20,000		X		$5,200,000
A-1a	2245+00	2254+00	900	18,000			X	$6,840,000
A-1a	2320+00	2327+00	700	14,000			X	$5,320,000
A-1a	2372+00	2377+00	500	10,000			X	$3,800,000
A-1a	2385+00	2397+00	1,200	24,000			X	$9,120,000
A-1a	2405+00	2417+00	1,200	24,000			X	$9,120,000
A-1a	2531+00	2551+00	2,000	40,000			X	$15,200,000
A-1a	2756+00	2771+00	1,500	30,000			X	$11,400,000
A-1a	3015+00	3039+00	2,400	48,000		X		$12,480,000
A-1b	1480+00	1486+00	600	12,000	X			$2,520,000
A-1b	1750+00	1752+00	200	4,000	X			$840,000
A-1b	1790+00	1812+00	2,200	44,000		X		$11,440,000
A-1b	1889+00	1894+00	500	10,000	X			$2,100,000
A-1b	2051+00	2062+00	1,100	22,000		X		$5,720,000
A-1b	2324+00	2339+00	1,500	30,000		X		$7,800,000
A-1b	2376+00	2379+00	300	6,000	X			$1,260,000
A-1b	2393+00	2398+00	500	10,000	X			$2,100,000
A-1b	2445+00	2465+00	2,000	40,000		X		$10,400,000
A-1b	2538+00	2545+00	700	14,000	X			$2,940,000
A-1b	2724+00	2739+00	1,500	30,000			X	$11,400,000
A-1b	2983+00	3007+00	2,400	48,000		X		$12,480,000
S-3	1008+75	1024+00	1525	30,500			X	$11,590,000
S-3	1474+00	1480+00	600	12,000	X			$2,520,000
S-2	1627+50	1633+50	600	12,000	X			$2,520,000
S-2	2432+00	2436+00	400	8,000	X			$1,680,000
S-1	2624+00	2632+00	800	16,000		X		$4,160,000
S-1	3060+00	3067+00	700	14,000		X		$3,640,000
S-1	3351+00	3362+00	1,100	22,000		X		$5,720,000
S-1	3652+00	3663+00	1,100	22,000		X		$5,720,000
S-1	3798+00	3808+00	1,000	20,000	X			$4,200,000
S-1	3824+00	3831+00	700	14,000	X			$2,940,000
L-1	175+00	226+00	5,100	102,000			X	$38,760,000
L-1	523+00	531+00	800	16,000	X			$3,360,000
L-1	752+00	775+00	2,300	46,000		X		$11,960,000
L-1	829+00	852+00	2,300	46,000		X		$11,960,000

[1] Deck area based on average bridge width of 20
[2] Low complexity bridge, $/SF = **$210**
[3] Medium complexity bridge, $/SF = **$260**
[4] High complexity bridge, $/SF = **$380**

SUMMARY

Alignment	Segment	BOB	EOB	Bridge Length (ln. ft.)	Bridge Area (sq.ft.)	Complexity Low	Complexity Medium	Complexity High	Cost $
Aaron Creek	A2	1009+00	1024+00	1,500	30,000	0	0	30,000	$11,400,000
Subtotal:				1,500	30,000	0	0	30000	$11,400,000
Use				**1,500**	**30,000**	**0**	**0**	**30,000**	**$11,400,000**
Aaron Creek Pass	A-1a	1480+00	1486+00	600	12,000	12,000	0	0	$2,520,000
	A-1a	1750+00	1752+00	200	4,000	4,000	0	0	$840,000
	A-1a	1790+00	1812+00	2,200	44,000	0	44,000	0	$11,440,000
	A-1a	1889+00	1894+00	500	10,000	10000	0	0	$2,100,000
	A-1a	2051+00	2062+00	1,100	22,000	0	22,000	0	$5,720,000
	A-1a	2083+00	2093+00	1,000	20,000	0	20,000	0	$5,200,000
	A-1a	2245+00	2254+00	900	18,000	0	0	18,000	$6,840,000
	A-1a	2320+00	2327+00	700	14,000	0	0	14,000	$5,320,000
	A-1a	2372+00	2377+00	500	10,000	0	0	10,000	$3,800,000
	A-1a	2385+00	2397+00	1,200	24,000	0	0	24,000	$9,120,000
	A-1a	2405+00	2417+00	1,200	24,000	0	0	24,000	$9,120,000
	A-1a	2531+00	2551+00	2,000	40,000	0	0	40,000	$15,200,000
	A-1a	2756+00	2771+00	1,500	30,000	0	0	30,000	$11,400,000
Subtotal:				13,600	272,000	26,000	86,000	160,000	$88,620,000
Use				**13,600**	**272,000**	**26,000**	**86,000**	**160,000**	**$88,620,000**
(BC)	A-1a	3015+00	3039+00	2,400	48,000	0	48,000	0	$12,480,000
Subtotal:				2,400	48,000	0	48,000	0	$12,480,000
Use				**2,400**	**48,000**	**0**	**48,000**	**0**	**$12,480,000**
Aaron Creek Tunnel	A-1b	1480+00	1486+00	600	12,000	12,000	0	0	$2,520,000
	A-1b	1750+00	1752+00	200	4,000	4,000	0	0	$840,000
	A-1b	1790+00	1812+00	2,200	44,000	0	44,000	0	$11,440,000
	A-1b	1889+00	1894+00	500	10,000	10,000	0	0	$2,100,000
	A-1b	2051+00	2062+00	1,100	22,000	0	22,000	0	$5,720,000
	A-1b	2324+00	2339+00	1,500	30,000	0	30,000	0	$7,800,000
	A-1b	2376+00	2379+00	300	6,000	6,000	0	0	$1,260,000
	A-1b	2393+00	2398+00	500	10,000	10,000	0	0	$2,100,000
	A-1b	2445+00	2465+00	2,000	40,000	0	40,000	0	$10,400,000
	A-1b	2538+00	2545+00	700	14,000	14,000	0	0	$2,940,000
	A-1b	2724+00	2739+00	1,500	30,000	0	0	30,000	$11,400,000
Subtotal:				11,100	222,000	56,000	136,000	30,000	$58,520,000
Use				**11,100**	**222,000**	**56,000**	**136,000**	**30,000**	**$58,520,000**
(BC)	A-1b	2983+00	3007+00	2,400	48,000	0	48,000	0	$12,480,000
Subtotal:				2,400	48,000	0	48,000	0	$12,480,000
Use				**32,700**	**48,000**	**0**	**48,000**	**0**	**$12,480,000**
S. Stikine River	S-3	1008+75	1024+00	1,525	30,500	0	0	30,500	$11,590,000
S. Stikine River	S-3	1474+00	1480+00	600	12,000	12,000	0	0	$2,520,000
Subtotal:				2,125	42,500	12,000	0	30,500	$14,110,000
Use				**2,125**	**42,500**	**12,000**	**0**	**30,500**	**$14,110,000**
South Stikine River	S-2	1627+50	1633+50	600	12,000	12,000	0	0	$2,520,000
	S-2	2432+00	2436+00	400	8,000	8,000	0	0	$1,680,000
Subtotal:				1,000	20,000	20,000	0	0	$4,200,000
Use				**1,000**	**20,000**	**20,000**	**0**	**0**	**$4,200,000**
South Stikine River	S-1	2624+00	2632+00	800	16,000	0	16,000	0	$4,160,000
	S-1	3060+00	3067+00	700	14,000	0	14,000	0	$3,640,000
	S-1	3351+00	3362+00	1,100	22,000	0	22,000	0	$5,720,000
	S-1	3652+00	3663+00	1,100	22,000	0	22,000	0	$5,720,000
Subtotal:				3,700	74,000	0	74,000	0	$19,240,000
Use				**3,700**	**74,000**	**0**	**74,000**	**0**	**$19,240,000**
South Stikine River (BC)	S-1	3798+00	3808+00	1,000	20,000	20,000	0	0	$4,200,000
	S-1	3824+00	3831+00	700	14,000	14,000	0	0	$2,940,000
Subtotal:				1,700	34,000	34,000	0	0	$7,140,000
Use				**1,700**	**34,000**	**34,000**	**0**	**0**	**$7,140,000**
Limb Island	L-1	175+00	226+00	5,100	102,000	0	0	102,000	$38,760,000
	L-1	523+00	531+00	800	16,000	16,000	0	0	$3,360,000
	L-1	752+00	775+00	2,300	46,000	0	46,000	0	$11,960,000
	L-1	829+00	852+00	2,300	46,000	0	46,000	0	$11,960,000
Subtotal:				10,500	210,000	16,000	92,000	102,000	$66,040,000
Use				**10,500**	**210,000**	**16,000**	**92,000**	**102,000**	**$66,040,000**
Total				**41,525**	**830,500**	**164,000**	**314,000**	**352,500**	**$250,030,000**

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
602(3A)	lnft	Structural Plate Arch 20' span	50	$2,207.72	$110,386.00
602(3B)	lnft	Structural Plate Arch 35'4" span	52	$3,880.56	$201,789.12
603(17-144)	lnft	144 Inch Pipe	120	$683.19	$81,982.80
					$394,157.92
					$16,894.90 per mile

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$1,775	222.0	ln ft	$394,158	
					$1,775.49 per ln ft

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
602(3A)	lnft	Structural Plate Arch 20' span	50	$2,120.00	$106,000.00
602(3B)	lnft	Structural Plate Arch 35'4" span	52	$3,900.00	$202,800.00
603(17-144)	lnft	144 Inch Pipe	120	$750.00	$90,000.00
					$398,800.00
					$17,093.87 per mile

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$1,796	222.0	ln ft	$398,800	
					$1,796.40 per ln ft

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
602(3B)	lnft	Structural Plate Arch 31'9" span	572	$3,900.00	$2,230,800.00
603(17-144)	lnft	144 Inch Pipe	250	$750.00	$187,500.00
					$2,418,300.00
					$88,034.22 per mile

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$2,942	822.0	ln ft	$2,418,300	
					$2,941.97 per ln ft

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
602(2-13)	LNFT	SPP-Arch 13'-3"	86.0	$2,500.00	$215,000.00	$1,470.00	$126,420.00	$1,200.00	$103,200.00	$1,500.00	$129,000.00
602(2-15)	LNFT	SPP-Arch 15'-4"	110.0	$3,000.00	$330,000.00	$1,600.00	$176,000.00	$1,250.00	$137,500.00	$2,000.00	$220,000.00
					$545,000.00		$302,420.00		$240,700.00		$349,000.00

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$1,833	196.0	m	$359,280	
		643.0	ln ft		**$1,833.06 per ln ft**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 L	m	3000 millimeter pipe culvert	58.0	$2,100.00	$121,800.00	$1,939.00	$112,462.00	$2,000.00	$116,000.00
60301 A	m	3825 millimeter structural plate pipe	43.1	$3,800.00	$163,780.00	$3,722.52	$160,440.61	$4,000.00	$172,400.00
60301 B	m	5030 millimeter structural plate pipe	56.5	$5,100.00	$288,150.00	$4,564.54	$257,896.51	$5,000.00	$282,500.00
60301 C	m	5510 millimeter structural steel plate arch	36.9	$5,200.00	$191,880.00	$4,976.38	$183,628.42	$5,000.00	$184,500.00

Coffman Cove (2)

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$3,831	194.5	m	$745,145	
		638.1	ln ft		$1,167.71 per ln ft

Average Unit Cost with 3%/year Inflation $1,275.99 per ln ft

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 L	m	3600 millimeter pipe culvert	63.3	$2,300.00	$145,590.00	$2,445.00	$154,768.50	$2,100.00	$132,930.00	$3,200.00	$202,560.00
60202 L	m	3000 millimeter pipe culvert	82.4	$825.00	$67,980.00	$1,554.00	$128,049.60	$1,300.00	$107,120.00	$1,800.00	$148,320.00
60301 A	m	3980 millimeter structural plate pipe	25.0	$2,500.00	$62,500.00	$2,897.00	$72,425.00	$3,000.00	$75,000.00	$3,200.00	$80,000.00
60301 B	m	4290 millimeter structural plate pipe	29.3	$3,000.00	$87,900.00	$2,515.00	$73,689.50	$3,100.00	$90,830.00	$3,200.00	$93,760.00
60301 C	m	4270 millimeter structural steel plate arch	14.6	$3,000.00	$43,800.00	$2,540.00	$37,084.00	$5,000.00	$73,000.00	$1,000.00	$14,600.00

Coffman Cove (1)

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$2,204	214.6	m	$472,976	
		704.1	ln ft		$671.78 per ln ft

Average Unit Cost with 3%/year Inflation $802.14 per ln ft

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60202 L	m	3600 millimeter pipe culvert	39.0	$900.00	$35,100.00	$2,500.00	$97,500.00	$3,000.00	$117,000.00
60301 A	m	4600 millimeter structural plate pipe	25.0	$1,800.00	$45,000.00	$3,000.00	$75,000.00	$4,000.00	$100,000.00

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$2,446	64.0	m	$156,533	
		210.0	ln ft		$745.49 per ln ft

Average Unit Cost with 3%/year Inflation $1,001.88 per ln ft

Total Average Unit Cost $1,632.42 per ln ft

Use $2,000.00 per ln ft

Use 90 ft $180,000 each **for culverts > 10 ft diameter**

$180,000 each

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
65001 A	each	Log weir	30	$400.00	$12,000.00	$231.00	$6,930.00	$1,500.00	$45,000.00
65001 B	each	Rock weir	5	$500.00	$2,500.00	$400.00	$2,000.00	$513.00	$2,565.00
25110	m3	culvert outlet control system	90	$180.00	$16,200.00	$77.00	$6,930.00	$60.00	$5,400.00
25112	m3	riprap headwall	700	$18.00	$12,600.00	$43.27	$30,289.00	$80.00	$56,000.00
25116	m3	energy dissipater	100.0	$240.00	$24,000.00	$61.00	$6,100.00	$60.00	$6,000.00

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
65001 A	each	Log weir	9	$2,000.00	$18,000.00	$400.00	$3,600.00	$900.00	$8,100.00	$400.00	$3,600.00
65001 B	each	Rock weir	2	$7,500.00	$15,000.00	$250.00	$500.00	$2,000.00	$4,000.00	$1,000.00	$2,000.00
25110	each	culvert outlet control system	17	$3,000.00	$51,000.00	$425.00	$7,225.00	$800.00	$13,600.00	$2,000.00	$34,000.00
25112	each	riprap headwall	50	$1,000.00	$50,000.00	$222.50	$11,125.00	$400.00	$20,000.00	$500.00	$25,000.00
25116	m	energy dissipater	65.0	$175.00	$11,375.00	$132.00	$8,580.00	$125.00	$8,125.00	$250.00	$16,250.00

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
25110	each	culvert outlet control system	8	$3,000.00	$24,000.00	$3,000.00	$24,000.00	$1,200.00	$9,600.00
25112	each	riprap headwall	7	$1,500.00	$10,500.00	$1,000.00	$7,000.00	$600.00	$4,200.00
25116A	m	energy dissipater	75.0	$50.00	$3,750.00	$200.00	$15,000.00	$100.00	$7,500.00
25116B	m	energy dissipater	65.0	$100.00	$6,500.00	$200.00	$13,000.00	$120.00	$7,800.00

Additions for fish culvert

Rock weir	$1,750	1 each	$1,750
Culvert Outlet	$2,000	1 each	$2,000
Riprap Headwall	$750	2 each	$1,500
Energy dissipater	$1,500	1 each	$1,500
Subtotal for additions:			$6,750
		With 3%/year inflation	$7,376

Use **$8,000.00 each**

For fish passage only
Assume all listed 7' pipes and half of > 10' pipes

QUANTITIES								
Segment	Length (mi.)	Stationing		Quantity 7'	Quantity > 10'	Quantity Fish Pass.	Unit	Source
W - 1	1.72	914+00	1005+00	0	0	0	each	Aerial photos
W - 2	3.20	745+00	914+00	0	0	0	each	Aerial photos
W - 3	11.08	160+00	745+00	0	0	0	each	Aerial photos
F - 1	6.42	723+00	1062+00	0	0	0	each	Aerial photos
F - 2	4.06	1062+00	1276+37	2	4	4	each	Aerial photos
A - 1a	30.37	1280+00	2883+63	10	15	18	each	Aerial photos
A - 1a (BC)	3.86	2883+63	3087+36	1	1	1	each	Aerial photos
A - 1b	29.77	1280+00	2851+97	7	8	11	each	Aerial photos
A - 1b (BC)	3.86	2851+97	3055+71	1	1	1	each	Aerial photos
A - 2	5.21	1005+00	1280+00	0	1	1	each	Aerial photos
S -1	21.35	2545+94	3673+29	14	21	25	each	Aerial photos
S -1 (BC)	4.13	3673+29	3891+26	1	1	1	each	Aerial photos
S - 2	17.65	1614+00	2545+94	0	7	4	each	Aerial photos
S - 3	11.53	1005+00	1614+00	1	3	3	each	Aerial photos
L - 1	14.39	100+00	859+77	1	5	4	each	Aerial photos

Quantities

Alignment	Segment	Sta.	Size
Aaron Cr. Pass	A-2	1135+89	>10'
Aaron Cr. Pass	1		

Alignment	Segment	Sta.	Size
Aaron Cr. Pass	A-1a	1455+20	>10'
Aaron Cr. Pass	A-1a	1726+88	>10'
Aaron Cr. Pass	A-1a	2002+07	>10'
Aaron Cr. Pass	A-1a	2029+35	>10'
Aaron Cr. Pass	A-1a	2093+40	>10'
Aaron Cr. Pass	A-1a	2127+89	>10'
Aaron Cr. Pass	A-1a	2207+55	>10'
Aaron Cr. Pass	A-1a	2267+92	>10'
Aaron Cr. Pass	A-1a	2347+77	>10'
Aaron Cr. Pass	A-1a	2432+10	>10'
Aaron Cr. Pass	A-1a	2457+91	>10'
Aaron Cr. Pass	A-1a	2460+76	>10'
Aaron Cr. Pass	A-1a	2469+04	>10'
Aaron Cr. Pass	A-1a	2470+70	>10'
Aaron Cr. Pass	A-1a	2786+97	>10'
Aaron Cr. Pass	15		
Alignment	Segment	Sta.	Size
Aaron Cr. Pass (BC)	A-1a	3002+09	>10'
Aaron Cr. Pass (BC)	1		

Alignment	Segment	Sta.	Size
Aaron Cr. Tunnel	A-1b	1455+20	>10'
Aaron Cr. Tunnel	A-1b	1726+88	>10'
Aaron Cr. Tunnel	A-1b	2002+07	>10'
Aaron Cr. Tunnel	A-1b	2029+35	>10'
Aaron Cr. Tunnel	A-1b	2144+99	>10'
Aaron Cr. Tunnel	A-1b	2191+17	>10'
Aaron Cr. Tunnel	A-1b	2192+04	>10'
Aaron Cr. Tunnel	A-1b	2755+62	>10'
Aaron Cr. Tunnel	8		
Alignment	Segment	Sta.	Size
Aaron Cr. Tunnel	A-1b	2970+43	>10'
Aaron Cr. Tunnel (BC)	1		

Alignment	Segment	Sta.	Size
Wrangell Island	W-1,2,3		>10'
Wrangell Island	0		

Alignment	Segment	Sta.	Size
Fool's Inlet	F-2	1137+91	>10'
Fool's Inlet	F-2	1139+22	>10'
Fool's Inlet	F-2	1185+71	>10'
Fool's Inlet	F-2	1215+47	>10'
Fool's Inlet	4		

Alignment	Segment	Sta.	Size
South Stikine R.	S-3	1205+67	>10'
South Stikine R.	S-3	1339+32	>10'
South Stikine R.	S-3	1454+25	>10'
South Stikine R.	3		

Alignment	Segment	Sta.	Size
South Stikine R.	S-2	2110+05	>10'
South Stikine R.	S-2	2112+37	>10'
South Stikine R.	S-2	2194+17	>10'
South Stikine R.	S-2	2248+48	>10'
South Stikine R.	S-2	2248+81	>10'
South Stikine R.	S-2	2333+17	>10'
South Stikine R.	S-2	2333+76	>10'
South Stikine R.	7		

Alignment	Segment	Sta.	Size
South Stikine R.	S-1	2704+75	>10'
South Stikine R.	S-1	2776+28	>10'
South Stikine R.	S-1	2878+56	>10'
South Stikine R.	S-1	2879+38	>10'
South Stikine R.	S-1	2927+75	>10'
South Stikine R.	S-1	2977+62	>10'
South Stikine R.	S-1	3005+25	>10'
South Stikine R.	S-1	3013+83	>10'
South Stikine R.	S-1	3094+42	>10'
South Stikine R.	S-1	3130+38	>10'
South Stikine R.	S-1	3136+17	>10'
South Stikine R.	S-1	3192+20	>10'
South Stikine R.	S-1	3202+26	>10'
South Stikine R.	S-1	3247+44	>10'
South Stikine R.	S-1	3249+34	>10'
South Stikine R.	S-1	3262+00	>10'
South Stikine R.	S-1	3326+62	>10'
South Stikine R.	S-1	3437+22	>10'
South Stikine R.	S-1	3491+20	>10'
South Stikine R.	S-1	3576+34	>10'
South Stikine R.	S-1	3668+54	>10'
South Stikine R.	21		
Alignment	**Segment**	**Sta.**	**Size**
South Stikine R.	S-1	3674+63	>10'
South Stikine R. (BC)	1		

Alignment	Segment	Sta.	Size
Limb Island	L-1	565+49	>10'
Limb Island	L-1	570+71	>10'
Limb Island	L-1	572+16	>10'
Limb Island	L-1	609+09	>10'
Limb Island	L-1	796+64	>10'
Limb Island	5		

Quantities

Alignment	Segment	Sta.	Size
Aaron Cr. Pass	A-2		7'
Aaron Cr. Pass	0		

Alignment	Segment	Sta.	Size
Aaron Cr. Pass	A-1a	1559+93	7'
Aaron Cr. Pass	A-1a	2269+66	7'
Aaron Cr. Pass	A-1a	2357+01	7'
Aaron Cr. Pass	A-1a	2399+47	7'
Aaron Cr. Pass	A-1a	2518+60	7'
Aaron Cr. Pass	A-1a	2519+77	7'
Aaron Cr. Pass	A-1a	2605+74	7'
Aaron Cr. Pass	A-1a	2694+63	7'
Aaron Cr. Pass	A-1a	2703+90	7'
Aaron Cr. Pass	A-1a	2856+42	7'
Aaron Cr. Pass	10		
Alignment	**Segment**	**Sta.**	**Size**
Aaron Cr. Pass	A-1a	2980+80	7'
Aaron Cr. Pass (BC)	1		

Alignment	Segment	Sta.	Size
Aaron Cr. Tunnel	A-1b	2301+42	7'
Aaron Cr. Tunnel	A-1b	2308+54	7'
Aaron Cr. Tunnel	A-1b	2510+30	7'
Aaron Cr. Tunnel	A-1b	2573+08	7'
Aaron Cr. Tunnel	A-1b	2662+97	7'
Aaron Cr. Tunnel	A-1b	2672+24	7'
Aaron Cr. Tunnel	A-1b	2824+77	7'
Aaron Cr. Pass	7		
Alignment	**Segment**	**Sta.**	**Size**
Aaron Cr. Tunnel	A-1b	2949+14	7'
Aaron Cr. Tunnel	1		

Alignment	Segment	Sta.	Size
Wrangell Island	W-1,2,3		7'
Wrangell Island	0		

Alignment	Segment	Sta.	Size
South Stikine R.	S-3	1083+61	7'
South Stikine R.	1		

Alignment	Segment	Sta.	Size
South Stikine R.	S-2		7'
South Stikine R.	0		

Alignment	Segment	Sta.	Size
South Stikine R.	S-1	2550+40	7'
South Stikine R.	S-1	2656+23	7'
South Stikine R.	S-1	2730+77	7'
South Stikine R.	S-1	2918+10	7'
South Stikine R.	S-1	2940+61	7'
South Stikine R.	S-1	3286+76	7'
South Stikine R.	S-1	3383+84	7'
South Stikine R.	S-1	3388+55	7'
South Stikine R.	S-1	3427+91	7'
South Stikine R.	S-1	3548+99	7'
South Stikine R.	S-1	3555+05	7'
South Stikine R.	S-1	3594+19	7'
South Stikine R.	S-1	3600+07	7'
South Stikine R.	S-1	3624+49	7'
South Stikine R.	14		

Alignment	Segment	Sta.	Size
South Stikine R.	S-1	3719+75	7'
South Stikine R. (BC)	1		

Alignment	Segment	Sta.	Size
Limb Island	L-1	257+66	7'
Limb Island	1		

Alignment	Segment	Sta.	Size
Fool's Inlet	F-2	1206+86	7'
Fool's Inlet	F-2	1211+46	7'
Fool's Inlet	2		

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
611(1A)	CUYD	Riprap, Class II	3,885.000	$48.38	$187,956.30

Average Unit Cost $48.38 per yd3

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
611(1A)	CUYD	Riprap, Class II	3,885.000	$10.00	$38,850.00

Average Unit Cost $10.00 per yd3

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
611(1B)	CUYD	Riprap, Class IV	105,380.000	$10.00	$1,053,800

Average Unit Cost $10.00 per yd3

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
611(1-I)	CUYD	Riprap, Class I	1,065.000	$30.00	$31,950.00	$88.00	$93,720	$70.00	$74,550.0	$60.00	$63,900.00
611(1-II)	CUYD	Riprap, Class II	4,168.000	$50.00	$208,400.00	$68.00	$283,424	$56.00	$233,408.0	$60.00	$250,080.00

$62.00 $66,030.00 $59.21
$58.50 $243,828.00

Ave.	Quantity	Unit	Total	Cost per Unit
$59	5,233.000	cuyd	$309,858.00	
				$59.21 per yd3

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25101	m^3	placed riprap, class 4	890	$59.33	$52,803.70	$77.56	$69,028.40	$46.84	$41,687.60
25103	m^3	keyed riprap, class 5	880	$45.00	$39,600.00	$30.00	$26,400.00	$80.00	$70,400.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$56.46	1,770	m3	$99,934	
	2,315	yd3		**$43.17 per yd3**

Average Unit Cost with 3%/year Inflation $47.17 per yd3

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25101	m^3	placed riprap, class 2	100	$25.00	$2,500.00	$172.67	$17,267.00	$40.00	$4,000.00	$30.00	$3,000.00
25103	m^3	keyed riprap, class 5	400	$50.00	$20,000.00	$22.97	$9,188.00	$40.00	$16,000.00	$50.00	$20,000.00

$66.92 $6,691.75 45.9775
$40.74 $16,297.00

Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$45.98	500	m3	$22,989	
	654	yd3		**$35.15 per yd3**

Average Unit Cost with 3%/year Inflation $41.97 per yd3

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25101A	m3	Placed riprap, class 2	80.000	$40.00	$3,200.00	$40.00	$3,200.00	$30.00	$2,400.00

Ave.	Quantity	Unit	Total	Cost per Unit
$37	80.000	m3	$2,933.33	
	104.6	cuyd		**$28.04 per yd3**

Average Unit Cost with 3%/year Inflation $37.69 per yd3

Total Average Unit Cost $36.35 per yd3

Use $30.00 per yd3 Riprap likely generated on-site

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	0	Cu. Yd.	Aerial photos
W - 2	3.20	745+00	914+00	0	Cu. Yd.	Aerial photos
W - 3	11.08	160+00	745+00	0	Cu. Yd.	Aerial photos
F - 1	6.42	723+00	1062+00	0	Cu. Yd.	Aerial photos
F - 2	4.06	1062+00	1276+37	9,595	Cu. Yd.	Aerial photos
A - 1a	30.37	1280+00	2883+63	7,381	Cu. Yd.	Aerial photos
A - 1a (BC)	3.86	2883+63	3087+36	0	Cu. Yd.	Aerial photos
A - 1b	29.77	1280+00	2851+97	5,167	Cu. Yd.	Aerial photos
A - 1b (BC)	3.86	2851+97	3055+71	0	Cu. Yd.	Aerial photos
A - 2	5.21	1005+00	1280+00	0	Cu. Yd.	Aerial photos
S -1	21.35	2545+94	3673+29	14,024	Cu. Yd.	Aerial photos
S -1 (BC)	4.13	3673+29	3891+26	0	Cu. Yd.	Aerial photos
S - 2	17.65	1614+00	2545+94	22,880	Cu. Yd.	Aerial photos
S - 3	11.53	1005+00	1614+00	0	Cu. Yd.	Aerial photos
L - 1	14.39	100+00	859+77	8,489	Cu. Yd.	Aerial photos

QUANTITIES

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Cr.	A-2			0		0	Cu. Yd.
Total	**Aaron Creek**					**0**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Cr. Pass	A-1a	1848+00	1851+00	300	20	2,214	Cu. Yd.
Aaron Cr. Pass	A-1a	2220+00	2223+00	300	20	2,214	Cu. Yd.
Aaron Cr. Pass	A-1a	2853+00	2857+00	400	20	2,953	Cu. Yd.
Total	**Aaron Creek Pass**					**7,381**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Cr. Tunnel	A-1b	1848+00	1851+00	300	20	2,214	Cu. Yd.
Aaron Cr. Tunnel	A-1b	2821+00	2825+00	400	20	2,953	Cu. Yd.
Total	**Aaron Creek Tunnel**					**5,167**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Wrangell Island	W-1			0		0	Cu. Yd.
Total	**Wrangell Island**					**0**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Fool's Inlet	F-2	1208+00	1215+00	700	20	5,167	Cu. Yd.
Fool's Inlet	F-2	1238+00	1241+00	300	20	2,214	Cu. Yd.
Fool's Inlet	F-2	1257+00	1260+00	300	20	2,214	Cu. Yd.
Total	**Fool's Inlet**					**9,595**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-3			0		0	Cu. Yd.
Total	**South Stikine River**					**0**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-2	2034+00	2037+00	300	20	2,214	Cu. Yd.
S. Stikine	S-2	2090+00	2093+00	300	20	2,214	Cu. Yd.
S. Stikine	S-2	2143+00	2144+00	100	20	738	Cu. Yd.
S. Stikine	S-2	2205+00	2208+00	300	20	2,214	Cu. Yd.
S. Stikine	S-2	2248+00	2250+00	200	20	1,476	Cu. Yd.
S. Stikine	S-2	2261+00	2262+00	100	20	738	Cu. Yd.
S. Stikine	S-2	2279+00	2280+00	100	20	738	Cu. Yd.
S. Stikine	S-2	2293+00	2296+00	300	20	2,214	Cu. Yd.
S. Stikine	S-2	2436+00	2446+00	1,000	20	7,381	Cu. Yd.
S. Stikine	S-2	2436+00	2440+00	400	20	2,953	Cu. Yd.
Total	**South Stikine River**					**22,880**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-1	2693+00	2695+00	200	20	1,476	Cu. Yd.
S. Stikine	S-1	2717+00	2718+00	100	20	738	Cu. Yd.
S. Stikine	S-1	2802+00	2806+00	400	20	2,953	Cu. Yd.
S. Stikine	S-1	2817+00	2821+00	400	20	2,953	Cu. Yd.
S. Stikine	S-1	2824+00	2825+00	100	20	738	Cu. Yd.
S. Stikine	S-1	2859+00	2860+00	100	20	738	Cu. Yd.
S. Stikine	S-1	3042+00	3043+00	100	20	738	Cu. Yd.
S. Stikine	S-1	3079+00	3080+00	100	20	738	Cu. Yd.
S. Stikine	S-1	3308+00	3309+00	100	20	738	Cu. Yd.
S. Stikine	S-1	3614+00	3616+00	200	20	1,476	Cu. Yd.
S. Stikine	S-1	3642+00	3643+00	100	20	738	Cu. Yd.
Total	**South Stikine River**					**14,024**	**Cu. Yd.**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Limb Island	L-1	149+00	151+50	250	30	1,845	Cu. Yd.
Limb Island	L-1	266+00	270+00	400	20	2,953	Cu. Yd.
Limb Island	L-1	824+00	829+00	500	17	3,691	Cu. Yd.
Total	**Limb Island**					**8,489**	**Cu. Yd.**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
21101 B	m^2	roadway obliteration, type 2	3,000	$5.00	$15,000.00	$5.34	$16,020.00	$8.00	$24,000.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$ 6.11	3,000	m2	$18,340	
	32,292	sq.ft.		$0.57 per sq ft
	0.74	acre		**$24,784 per acre**

Average Unit Cost with 3%/year Inflation $27,081.91 per acre

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
21101 B	m^2	roadway obliteration, type 2	46,000	$4.50	$207,000.00	$2.45	$112,700.00	$1.00	$46,000.00	$5.00	$230,000.00

Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$3.24	46,000	m2	$148,925	
	495,140	sq.ft.		$0.30 per sq ft
	11.37	acre		$13,098 per acre

Average Unit Cost with 3%/year Inflation $15,639.77 per acre

Wetland mitigation in SE Alaska for Coffman Cove was conserving the top layer of muskeg and placing it on obliterated road.
Wetland mitigation may be more difficult to create on this project. (Bradfield note)

Total Average Unit Cost $21,360.84 per acre

Use $25,000.00 per acre

Wetland Mitigation Allowance
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (acres)	Rate (acre/mile)
Segment 1	5.40	20	3.70
Segment 2	3.49	20	5.73
Segment 3	5.55	20	3.60
Segment 4	8.73	10	1.15
Segment 5	6.41	5	0.78
Average Rate			2.99

Cultural Resource Mitigation Allowance
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (LS)	Rate (LS/mile)
Segment 1	5.40	5	0.93
Segment 2	3.49	5	1.43
Segment 3	5.55	5	0.90
Segment 4	8.73	5	0.57
Segment 5	6.41	5	0.78
Average Rate			0.92

Wetland Mitigation-Allowance

Segment	Length (mile)	Quantity (acres)
W-1	1.72	4
W-2	3.20	*
W-3	11.08	*
F-1	6.42	*
F-2	4.06	9
A-1a	30.37	68
A-1a (BC)	3.86	9
A-1b	29.77	67
A-1b (BC)	3.86	9
A-2	5.21	12
S-1	21.35	48
S-1 (BC)	4.13	9
S-2	17.65	40
S-3	11.53	26
L-1	14.39	32

Cultural Resource Mitigation-Allowance

Segment	Length (mile)	Quantity (LS)	avg. ratio 2-lane to 1-lane from A-1b
W-1	1.72	2	
W-2	3.20	*	0.88
W-3	11.08	*	0.81
F-1	6.42	*	0.88
F-2	4.06	3	0.94
A-1a	30.37	21	0.62
A-1a (BC)	3.86	3	0.7
A-1b	29.77	20	0.66
A-1b (BC)	3.86	3	0.66
A-2	5.21	4	0.66
S-1	21.35	15	6.81
S-1 (BC)	4.13	3	0.756666667
S-2	17.65	12	*Use 75%*
S-3	11.53	8	
L-1	14.39	10	

Staging Area Rehabilitation
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (acres)	Rate (SAR/mile)
Segment 1	5.40	3	0.56
Segment 2	3.49	3	0.86
Segment 3	5.55	3	0.54
Segment 4	8.73	3	0.34
Segment 5	6.41	3	0.47
Average Rate			0.55

Stormwater Management Ponds
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (LS)	Rate (SMP/mile)
Segment 1	5.40	5	0.93
Segment 2	3.49	5	1.43
Segment 3	5.55	5	0.90
Segment 4	8.73	5	0.57
Segment 5	6.41	5	0.78
Average Rate			0.92

Staging Area Rehabilitation

Segment	Length (mile)	Quantity (acres)
W-1	1.72	1
W-2	3.20	*
W-3	11.08	*
F-1	6.42	*
F-2	4.06	2
A-1a	30.37	13
A-1a (BC)	3.86	2
A-1b	29.77	12
A-1b (BC)	3.86	2
A-2	5.21	2
S-1	21.35	9
S-1 (BC)	4.13	2
S-2	17.65	8
S-3	11.53	5
L-1	14.39	6

Stormwater Management Ponds

Segment	Length (mile)	Quantity (LS)	
W-1	1.72	2	*Use 75%*
W-2	3.20	*	
W-3	11.08	*	
F-1	6.42	*	
F-2	4.06	3	
A-1a	30.37	21	
A-1a (BC)	3.86	3	
A-1b	29.77	20	
A-1b (BC)	3.86	3	
A-2	5.21	4	
S-1	21.35	15	
S-1 (BC)	4.13	3	
S-2	17.65	12	
S-3	11.53	8	
L-1	14.39	10	

* Calculated as a percentage, based on Bradfield percentage of cost

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	22,306	$85.15	$1,899,356

Average Unit Cost **$85.15 per sq ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	22,306	$50.00	$1,115,300

Average Unit Cost **$50.00 per sq ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	838,230	$50.00	$41,911,500

Average Unit Cost **$50.00 per sq ft**

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall - Pattern Finish	37,905	$70.00	$2,653,350

Average Unit Cost with 3%/year Inflation **$76.49 per sq ft**

Juneau Access, Financial Plan, 2007, UPA				South Tongass, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	4,993.000	$35.00	$174,755.00

Average Unit Cost with 3%/year Inflation **$38.25 per sq ft**

Juneau Access, Final EIS, 2006, UPA				Palmer-Wasilla, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	17,712.000	$29.14	$516,127.68

Average Unit Cost with 3%/year Inflation **$36.91 per sq ft**

Juneau Access, Final EIS, 2006, UPA				Parks Highway, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	25,488.000	$30.93	$788,343.84

Average Unit Cost with 3%/year Inflation **$39.18 per sq ft**

Juneau Access, Final EIS, 2006, UPA				Glenn Highway, 2002	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	34,830.000	$28.55	$994,396.50

Average Unit Cost with 3%/year Inflation **$35.11 per sq ft**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25119	m^3	riprap blanket	8,500.0	$15.00	$127,500.00	$19.80	$168,300.00	$75.00	$637,500.00
25203	m^3	rock buttress, mechanically-placed*	3,500	$44.80	$156,800.00	$13.82	$48,372.80	$16.80	$58,800.00
25504	m^2	geogrid wall*	180	$347.78	$62,600.80	$326.40	$58,751.56	$347.78	$62,600.80
26201	m^2	rockery wall	200	$150.00	$30,000.00	$80.00	$16,000.00	$130.00	$26,000.00

* From Coffman Cove, Phase 1, 2003, increased for inflation

Coffman Cove (2), geogrid wall

Ave.	Quantity	Unit	Total	Cost per Unit
$341	180	m2	$61,380	
	1938	sq.ft.		**$31.68 per sq ft**

Average Unit Cost with 3%/year Inflation **$34.62 per sq ft**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25504	m2	Gabion-faced ret. Wall	988.000	$300.00	$296,400.00	$110.00	$108,680.00	$200.00	$197,600.00

Ave.	Quantity	Unit	Total	Cost per Unit
$203	988.000	m2	$200,893	
	10635	sqft		**$18.89 per sqft**

Average Unit Cost with 3%/year Inflation **$25.39 per sq ft**

Total Average Unit Cost **$47.11** **per sq ft**

Use **$45.00** **per sq ft**

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	0	sq. ft.	
W - 2	3.20	745+00	914+00	0	sq. ft.	
W - 3	11.08	160+00	745+00	0	sq. ft.	
F - 1	6.42	723+00	1062+00	0	sq. ft.	
F - 2	4.06	1062+00	1276+37	0	sq. ft.	
A - 1a	30.37	1280+00	2883+63	185,600	sq. ft.	
A - 1a (BC)	3.86	2883+63	3087+36	0	sq. ft.	
A - 1b	29.77	1280+00	2851+97	61,700	sq. ft.	
A - 1b (BC)	3.86	2851+97	3055+71	0	sq. ft.	
A - 2	5.21	1005+00	1280+00	0	sq. ft.	
S -1	21.35	2545+94	3673+29	22,100	sq. ft.	
S -1 (BC)	4.13	3673+29	3891+26	0	sq. ft.	
S - 2	17.65	1614+00	2545+94	11,200	sq. ft.	
S - 3	11.53	1005+00	1614+00	0	sq. ft.	
L - 1	14.39	100+00	859+77	0	sq. ft.	

QUANTITIES

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Creek	A-2			0		0	SF
Total	**Aaron Creek**					**0**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Cr. Pass	A-1a	1984+00	1988+00	400	26	10,400	SF
Aaron Cr. Pass	A-1a	2001+00	2002+00	100	21	2,100	SF
Aaron Cr. Pass	A-1a	2044+00	2046+00	200	31	6,200	SF
Aaron Cr. Pass	A-1a	2176+00	2177+00	100	27	2,700	SF
Aaron Cr. Pass	A-1a	2287+00	2288+00	100	45	4,500	SF
Aaron Cr. Pass	A-1a	2292+00	2294+00	200	39	7,800	SF
Aaron Cr. Pass	A-1a	2295+50	2296+50	100	20	2,000	SF
Aaron Cr. Pass	A-1a	2340+00	2343+00	300	39	11,700	SF
Aaron Cr. Pass	A-1a	2426+00	2427+00	100	24	2,400	SF
Aaron Cr. Pass	A-1a	2433+00	2434+00	100	87	8,700	SF
Aaron Cr. Pass	A-1a	2443+00	2444+00	100	30	3,000	SF
Aaron Cr. Pass	A-1a	2448+00	2449+00	100	39	3,900	SF
Aaron Cr. Pass	A-1a	2457+50	2458+50	100	24	2,400	SF
Aaron Cr. Pass	A-1a	2460+00	2461+00	100	20	2,000	SF
Aaron Cr. Pass	A-1a	2469+00	2471+00	200	22	4,400	SF
Aaron Cr. Pass	A-1a	2485+00	2486+00	100	54	5,400	SF
Aaron Cr. Pass	A-1a	2496+50	2497+50	100	60	6,000	SF
Aaron Cr. Pass	A-1a	2506+00	2508+00	200	91	18,200	SF
Aaron Cr. Pass	A-1a	2558+00	2562+00	400	34	13,600	SF
Aaron Cr. Pass	A-1a	2569+50	2570+50	100	26	2,600	SF
Aaron Cr. Pass	A-1a	2581+00	2586+00	500	47	23,500	SF
Aaron Cr. Pass	A-1a	2693+00	2696+00	300	35	10,500	SF
Aaron Cr. Pass	A-1a	2708+00	2710+00	200	22	4,400	SF
Aaron Cr. Pass	A-1a	2714+00	2716+00	200	34	6,800	SF
Aaron Cr. Pass	A-1a	2723+00	2725+00	200	40	8,000	SF
Aaron Cr. Pass	A-1a	2824+00	2828+00	400	31	12,400	SF
Total	**Aaron Creek Pass**					**185,600**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Aaron Cr. Tunnel	A-1b	1984+00	1988+00	400	26	10,400	SF
Aaron Cr. Tunnel	A-1b	2001+00	2002+00	100	21	2,100	SF
Aaron Cr. Tunnel	A-1b	2021+50	2022+50	100	32	3,200	SF
Aaron Cr. Tunnel	A-1b	2044+00	2046+00	200	31	6,200	SF
Aaron Cr. Tunnel	A-1b	2662+00	2665+00	300	32	9,600	SF
Aaron Cr. Tunnel	A-1b	2676+00	2678+00	200	21	4,200	SF
Aaron Cr. Tunnel	A-1b	2682+00	2684+00	200	31	6,200	SF
Aaron Cr. Tunnel	A-1b	2691+00	2693+00	200	37	7,400	SF
Aaron Cr. Tunnel	A-1b	2792+00	2796+00	400	31	12,400	SF
Total	**Aaron Creek Tunnel**					**61,700**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Wrangell Island	W-1,2,3			0		0	SF
Total	**Wrangell Island**					**0**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Fool's Inlet	F-1,2			0		0	SF
Total	**Fool's Inlet**					**0**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-3			0		0	SF
Total	**South Stikine River**					**0**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-2	2092+50	2093+50	100	18	1,800	SF
S. Stikine	S-2	2097+00	2099+00	200	47	9,400	SF
Total	**South Stikine River**					**11,200**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
S. Stikine	S-1	2856+00	2858+00	200	42	8,400	SF
S. Stikine	S-1	2869+50	2870+50	100	24	2,400	SF
S. Stikine	S-1	2875+00	2876+00	100	27	2,700	SF
S. Stikine	S-1	2892+50	2893+50	100	11	1,100	SF
S. Stikine	S-1	2895+00	2897+00	200	27	5,400	SF
S. Stikine	S-1	2959+00	2960+00	100	21	2,100	SF
Total	**South Stikine River**					**22,100**	**SF**

Alignment	Segment	Sta.	Sta.	Length	Height	Quan.	Unit
Limb Island	L-1			0		0	SF
Total	**Limb Island**					**0**	**SF**

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	10,877	$54.61	$593,992.97
603(17-36)	lnft	36 Inch Pipe	7,312	$74.75	$546,572.00
603(17-48)	lnft	48 Inch Pipe	1,434.0	$104.76	$150,225.84
603(17-60)	lnft	60 Inch Pipe	664.0	$193.43	$128,437.52
603(17-72)	lnft	72 Inch Pipe	504.0	$270.65	$136,407.60
					$1,555,636

Average Unit Cost $66,679.64 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	10,877	$80.00	$870,160.00
603(17-36)	lnft	36 Inch Pipe	7,312	$140.00	$1,023,680.0
603(17-48)	lnft	48 Inch Pipe	1,434.0	$190.00	$272,460.00
603(17-60)	lnft	60 Inch Pipe	664.0	$290.00	$192,560.00
603(17-72)	lnft	72 Inch Pipe	504.0	$350.00	$176,400.00
					$2,535,260.0

Average Unit Cost $108,669.52 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	16,000	$80.00	$1,280,000.0
603(17-36)	lnft	36 Inch Pipe	8,540	$140.00	$1,195,600.0
603(17-48)	lnft	48 Inch Pipe	2,490.0	$190.00	$473,100.00
603(17-60)	lnft	60 Inch Pipe	1,110.0	$290.00	$321,900.00
603(17-72)	lnft	72 Inch Pipe	310.0	$350.00	$108,500.00
					$3,379,100.0

Average Unit Cost $123,010.56 per mile

Juneau Access, Financial Plan, 2007, UPA				Lynn Canal Zones 1-3, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	10,877	$87.42	$950,867.34
603(17-36)	lnft	36 Inch Pipe	7,312	$152.98	$1,118,589.8
603(17-48)	lnft	48 Inch Pipe	1,434.0	$207.62	$297,727.08
603(17-60)	lnft	60 Inch Pipe	664.0	$316.89	$210,414.96
603(17-72)	lnft	72 Inch Pipe	504.0	$382.45	$192,754.80
					$2,770,353.9

$118,746.42

Average Unit Cost with 3%/year Inflation $129,757.42 per mile

Juneau Access, Financial Plan, 2007, UPA				Lynn Canal Zones 4-5, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	16,000	$87.42	$1,398,720.0
603(17-36)	lnft	36 Inch Pipe	8,540	$152.98	$1,306,449.2
603(17-48)	lnft	48 Inch Pipe	2,490.0	$207.62	$516,973.80
603(17-60)	lnft	60 Inch Pipe	1,110.0	$316.89	$351,747.90
603(17-72)	lnft	72 Inch Pipe	310.0	$382.45	$118,559.50
					$3,692,450.4

$134,417.56

Average Unit Cost with 3%/year Inflation $146,881.70 per mile

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
602(1-60)A	LNFT	60" SPP	183	$850.00	$155,550.00	$810.00	$148,230.00	$515.00	$94,245.00	$1,500.00	$274,500.00
602(1-60)B	LNFT	60" SPP	118	$1,000.00	$118,000.00	$840.00	$99,120.00	$570.00	$67,260.00	$1,600.00	$188,800.00
602(1-72)A	LNFT	72" SPP	322	$1,300.00	$418,600.00	$820.00	$264,040.00	$500.00	$161,000.00	$1,600.00	$515,200.00
602(1-72)b	LNFT	72"SPP	100	$1,500.00	$150,000.00	$800.00	$80,000.00	$620.00	$62,000.00	$1,700.00	$170,000.00
602(1-84)	LNFT	84" SPP	213.0	$1,800.00	$383,400.00	$970.00	$206,610.00	$650.00	$138,450.00	$2,000.00	$426,000.00
602(1-108)	LNFT	108" SPP	80.0	$2,200.00	$176,000.00	$980.00	$78,400.00	$900.00	$72,000.00	$3,000.00	$240,000.00
603(1-24)	LNFT	24" CSP	164	$120.00	$19,680.00	$120.00	$19,680.00	$110.00	$18,040.00	$130.00	$21,320.00
603(1-36)	LNFT	36" CSP	7,181	$160.00	$1,148,960.0	$180.00	$1,292,580.0	$160.00	$1,148,960	$160.00	$1,148,960.00
603(1-48)	LNFT	48" CSP	398	$350.00	$139,300.00	$490.00	$195,020.00	$225.00	$89,550.00	$400.00	$159,200.00
603(1-60)	LNFT	60" CSP	428	$600.00	$256,800.00	$570.00	$243,960.00	$300.00	$128,400.00	$600.00	$256,800.00
					$2,966,290.0		$2,627,640.0		$1,979,905		$3,400,780.00
					$2,743,653.8						

Average Unit Cost $124,711.53 per mile

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	450 millimeter pipe	300	120	$36,000.00	117.36	$35,208.00	200	$60,000.00
60201 A	m	2850 mm pipe	26	1600	$41,600.00	2047.97	$53,247.22	1800	$46,800.00
60201 A	m	600 millimeter pipe culvert	1000	$200.00	$200,000.00	$177.05	$177,050.00	$220.00	$220,000.00
60201 B	m	750 millimeter pipe culvert	180	$320.00	$57,600.00	$333.93	$60,107.40	$250.00	$45,000.00
60201 C	m	900 millimeter pipe culvert	60	$350.00	$21,000.00	$425.00	$25,500.00	$320.00	$19,200.00
60201 E	m	1200 millimeter pipe culvert	67	$500.00	$33,500.00	$666.23	$44,637.41	$400.00	$26,800.00
60201 G	m	1800 millimeter pipe culvert	100.0	$950.00	$95,000.00	$1,005.49	$100,549.00	$975.00	$97,500.00
60201 H	m	2100 millimeter pipe culvert	132.0	$1,000.00	$132,000.00	$1,658.20	$218,882.40	$1,750.00	$231,000.00
60201 I	m	2400 millimeter pipe culvert	45.0	$1,300.00	$58,500.00	$1,615.36	$72,691.20	$1,400.00	$63,000.00
60206 A	each	end section for 450 millimeter pipe culvert	24	$200.00	$4,800.00	$235.00	$5,640.00	$200.00	$4,800.00
60206 B	each	end section for 600 millimeter pipe culvert	24	$250.00	$6,000.00	$237.00	$5,688.00	$250.00	$6,000.00
60206 D	each	end section for 750 millimeter pipe culvert	4	$600.00	$2,400.00	$562.00	$2,248.00	$300.00	$1,200.00
					$688,400.00		$801,448.63		$821,300.00
					$770,382.88				
					$101,100.12				
				Average Unit Cost with 3%/year Inflation	**$110,474.83 per mile**				

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	450 millimeter pipe culvert	240	$90.00	$21,600.00	$64.00	$15,360.00	$150.00	$36,000.00	$100.00	$24,000.00
60201 B	m	600 millimeter pipe culvert	1800	$100.00	$180,000.00	$125.17	$225,306.00	$180.00	$324,000.00	$110.00	$198,000.00
60201 C	m	900 millimeter pipe culvert	120	$150.00	$18,000.00	$208.00	$24,960.00	$260.00	$31,200.00	$150.00	$18,000.00
60201 D	m	1050 millimeter pipe culvert	55	$200.00	$11,000.00	$250.00	$13,750.00	$300.00	$16,500.00	$175.00	$9,625.00
60201 E	m	1200 millimeter pipe culvert	51.0	$325.00	$16,575.00	$400.00	$20,400.00	$320.00	$16,320.00	$250.00	$12,750.00
60201 F	m	1650 millimeter pipe culvert	73.0	$375.00	$27,375.00	$419.00	$30,587.00	$750.00	$54,750.00	$350.00	$25,550.00
60201 G	m	1800 millimeter pipe culvert	35.9	$400.00	$14,360.00	$772.00	$27,714.80	$850.00	$30,515.00	$800.00	$28,720.00
60201H	m	2100 millimeter pipe culvert	59.1	$700.00	$41,370.00	$936.00	$55,317.60	$800.00	$47,280.00	$900.00	$53,190.00
60201I	m	2400 millimeter pipe culvert	103.7	$725.00	$75,182.50	$996.00	$103,285.20	$850.00	$88,145.00	$1,000.00	$103,700.00
60201J	m	2700 millimeter pipe culvert	80.5	$800.00	$64,400.00	$1,222.00	$98,371.00	$1,150.00	$92,575.00	$1,600.00	$128,800.00
60206 A	each	end section for 450 millimeter pipe culvert	7	$150.00	$1,050.00	$192.00	$1,344.00	$150.00	$1,050.00	$300.00	$2,100.00
60206 B	each	end section for 600 millimeter pipe culvert	55	$200.00	$11,000.00	$233.00	$12,815.00	$175.00	$9,625.00	$350.00	$19,250.00
60206 D	each	end section for 900 millimeter pipe culvert	2	$350.00	$700.00	$750.00	$1,500.00	$500.00	$1,000.00	$700.00	$1,400.00
					$482,612.50		$630,710.60		$748,960.00		$625,085.00
					$621,842.03						
					9.808344269						
					$63,399.29 per mile						
				Average Unit Cost with 3%/year Inflation	**$75,702.06 per mile**						

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	450 millimeter pipe culvert	100	$110.00	$11,000.00	$57.40	$5,740.00	$80.00	$8,000.00
60201 B	m	600 millimeter pipe culvert	110	$130.00	$14,300.00	$100.00	$11,000.00	$100.00	$11,000.00
60502	m	Standard underdrain system	40	$150.00	$6,000.00	$114.00	$4,560.00	$150.00	$6,000.00
60507	m	200 millimeter outlet pipe	20	$50.00	$1,000.00	$40.50	$810.00	$50.00	$1,000.00
60802	m	Paved waterway type Vi	60.0	$60.00	$3,600.00	$79.40	$4,764.00	$60.00	$3,600.00
					$35,900.00		$26,874.00		$29,600.00
					$30,791.33				
					$990.08 per mile				

Average Unit Cost with 3%/year Inflation **$1,217.67 per mile**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	600 millimeter pipe culvert	1010	$100.00	$101,000.00	$130.00	$131,300.00	$100.00	$101,000.00
60201 B	m	900 millimeter pipe culvert	240	$180.00	$43,200.00	$165.00	$39,600.00	$150.00	$36,000.00
60201 C	m	1200 millimeter pipe culvert	70	$240.00	$16,800.00	$250.00	$17,500.00	$200.00	$14,000.00
60201 D	m	1500 millimeter pipe culvert	0	$280.00	$0.00	$0.00	$0.00	$0.00	$0.00
60201 E	m	1800 millimeter pipe culvert	0.0	$460.00	$0.00	$0.00	$0.00	$0.00	$0.00
60201 F	m	2100 millimeter pipe culvert	116.0	$550.00	$63,800.00	$600.00	$69,600.00	$400.00	$46,400.00
60206 A	each	end section for 600 millimeter pipe culvert	41	$170.00	$6,970.00	$150.00	$6,150.00	$200.00	$8,200.00
60206 B	each	end section for 900 millimeter pipe culvert	6	$350.00	$2,100.00	$200.00	$1,200.00	$400.00	$2,400.00
60206 D	each	end section for 750 millimeter pipe culvert	0	$350.00	$0.00	$750.00	$0.00	$500.00	$0.00
60501	m	Underdrain system	150	$100.00	$15,000.00	$100.00	$15,000.00	$100.00	$15,000.00
60506	m	200 millimeter collector pipe	44	$25.00	$1,100.00	$100.00	$4,400.00	$100.00	$4,400.00
					$249,970.00		$284,750.00		$227,400.00
					$254,040.00				
					$84,680.00 per mile				

Average Unit Cost with 3%/year Inflation **$113,802.84 per mile**

Total Average Unit Cost **$111,076.68 per mile**

Does not account for underdrains, horizontal pipes, or riprap lined ditches etc.

Use $115,000.00 per mile for drainage (very wet climate)

Adjusting for the segments utilizing existing roads, reduce culverts to 2 per mile:

50 ft of culvert every **2640** ft = 100 ln ft of culvert per mile

100 ln ft of culvert per mile to include other drainage incidentals

$150 x 100' = $15,000

Use $15,000.00 per mile for drainage (very wet climate)

Used only for segments utilizing existing roads

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
618(1)	ACRE	Seeding	94.000	$6,342.10	$596,157.40

Average Unit Cost $6,342.10 per acre

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
618(1)	ACRE	Seeding	94.000	$2,510.00	$235,940.00

Average Unit Cost $2,510.00 per acre

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
618(1)	ACRE	Seeding	112.000	$2,510.00	$281,120.00

Average Unit Cost $2,510.00 per acre

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62514	slry unit	Turf establishment	280	$650.00	$182,000.00	$319.24	$89,387.20	$555.00	$155,400.00
62603	each	Cuttings, alder	1,300	$5.00	$6,500.00	$4.64	$6,032.00	$5.00	$6,500.00
62604	each	Bundle, alder	120	$50.00	$6,000.00	$29.00	$3,480.00	$10.00	$1,200.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$508	280	slry unit	$142,240	
	28	ha		$5,080 per ha
	69	acre		$2,061 per acre

Average Unit Cost with 3%/year Inflation $2,252.60 per acre

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62514	slry unit	Turf establishment	300	$700.00	$210,000.00	$621.15	$186,345.00	$850.00	$255,000.00	$550.00	$165,000.00
62603	each	Cuttings, alder	1,300	$5.00	$6,500.00	$4.64	$6,032.00	$5.00	$6,500.00	$5.00	$6,500.00
62407 A	m^2	Placing conserved topsoil, 300 millimeters depth	46,000	$3.00	$138,000.00	$2.88	$132,480.00	$1.25	$57,500.00	$3.00	$138,000.00
62407 B	m^2	Placing conserved topsoil, 600 millimeters depth	1,900	$4.00	$7,600.00	$14.86	$28,234.00	$2.50	$4,750.00	$5.00	$9,500.00

Coffman Cove (1)

Seeding

Ave.	Quantity	Unit	Total	Cost per Unit
$680	300	slry unit	$204,087	
	30	ha		$6,803 per ha
	74	acre		$2,754 per acre
		With 3%/year inflation		$3,288.67 per acre

Conserved topsoil 4"

Ave.	Quantity	Unit	Total	Cost per Unit
$2.69	47,900	m2	$129,016	
	46,000	m2	300 mm depth	
	149,400	m2	100 mm depth	$0.86 per m2
	14.9	ha		$8,636 per ha
	36.9	acre		$3,495 per acre
		With 3%/year inflation		$4,173 per acre

Average Unit Cost $7,461.55 per acre

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62503	slry unit	Seeding, hydraulic	320	$350.00	$112,000.00	$250.00	$80,000.00	$200.00	$64,000.00
62503	slry unit	Turf establishment	320	$400.00	$128,000.00	$160.00	$51,200.00	$200.00	$64,000.00
62604	each	Bundle, alder	120	$50.00	$6,000.00	$29.00	$3,480.00	$10.00	$1,200.00
62404	m^2	Placing conserved topsoil, 100 millimeters depth	2,000	$1.50	$3,000.00	$1.50	$3,000.00	$1.00	$2,000.00

Seeding

Ave.	Quantity	Unit	Total	Cost per Unit
$260	640	slry unit	$166,400	
	64	ha		$2,600 per ha
	158	acre		$1,052.63 per acre
		With 3%/year inflation		$1,294.60 per acre

Conserved topsoil 4"

Ave.	Quantity	Unit	Total	Cost per Unit
$1.33	2,000	m2	$2,660	
	2,000	m2	300 mm depth	
	2,000	m2	100 mm depth	$1.33 per m2
	0.2	ha		$13,300 per ha
	0.5	acre		$5,382 per acre
		With 3%/year inflation		$6,620 per acre

Average Unit Cost $7,914.20 per acre

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62509	ha	Turf establishment	0	$3,000.00	$300.00	$10,000.00	$1,000.00	$10,000.00	$1,000.00
62503	slry unit	Seeding	320	$350.00	$112,000.00	$250.00	$80,000.00	$200.00	$64,000.00
62506	slry unit	Mulching	180	$300.00	$54,000.00	$300.00	$54,000.00	$400.00	$72,000.00

Seeding

Ave.	Quantity	Unit	Total	Cost per Unit
$291	500	slry unit	$145,333	
	50	ha		$2,907 per ha
	124	acre		$1,176 per acre

Average Unit Cost with 3%/year Inflation $1,580.86 per acre

Total Average Unit Cost $4,367.33 per acre

Use $7,000.00 per acre

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	7	acre	ad0301W_1_1lane.ser
W - 2	3.20	745+00	914+00	1	acre	Misc. shaping
W - 3	11.08	160+00	745+00	5	acre	Misc. shaping
F - 1	6.42	723+00	1062+00	3	acre	Misc. shaping
F - 2	4.06	1062+00	1276+37	16	acre	ad0301F1_1lane.ser
A - 1a	30.37	1280+00	2883+63	117	acre	ad0301Aa(1-4)-1lane.ser
A - 1a (BC)	3.86	2883+63	3087+36	11	acre	ad0301Aa4-BC1lane.ser
A - 1b	29.77	1280+00	2851+97	112	acre	ad0301Ab(1-4)-1lane.ser
A - 1b (BC)	3.86	2851+97	3055+71	11	acre	ad0301Ab4-BC1lane.ser
A - 2	5.21	1005+00	1280+00	21	acre	ad0301A2-1lane.ser
S -1	21.35	2545+94	3673+29	80	acre	ad0301S1.ser
S -1 (BC)	4.13	3673+29	3891+26	10	acre	ad0301S1.ser
S - 2	17.65	1614+00	2545+94	67	acre	ad0301S2_(1-3)_1lane.ser
S - 3	11.53	1005+00	1614+00	45	acre	ad0301S3_(1-2).ser
L - 1	14.39	100+00	859+77	47	acre	ad0301L1.ser

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	4,400.000	$33.88	$149,072

Average Unit Cost **$33.88 per ln ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	4,400.000	$27.50	$121,000

Average Unit Cost **$27.50 per ln ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	97,657.000	$27.50	$2,685,568

Average Unit Cost **$27.50 per ln ft**

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	12,101.000	$37.50	$453,788

Average Unit Cost with 3%/year Inflation **$40.98 per ln ft**

Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	20,475.000	$15.04	$307,944

Average Unit Cost with 3%/year Inflation **$20.82 per ln ft**

Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1999	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	2,662.500	$14.50	$38,606

Average Unit Cost with 3%/year Inflation **$19.49 per ln ft**

Juneau Access, Final EIS, 2006, UPA				Old Glenn Highway, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	14,375.000	$17.77	$255,444

Average Unit Cost with 3%/year Inflation **$20.60 per ln ft**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	2,448.000	$35.00	$85,680.00	$30.00	$73,440	$34.00	$83,232	$35.00	$85,680

Average Unit Cost **$33.50 per ln ft**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701	m	guardrail system G4, type I, class A (wood posts)	190.0	$120.00	$22,800.00	$199.84	$37,969.60	$100.00	$19,000.00
61702 A	each	terminal section type G4-BAT	0		$0.00		$0.00		$0.00
61702 B	each	terminal section type tangent	12	$3,000.00	$36,000.00	$3,951.50	$47,418.00	$4,000.00	$48,000.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$140	190.0	m	$26,591	
	623.4	ln ft		**$42.66 per ln ft**

Average Unit Cost with 3%/year Inflation **$46.61 per ln ft**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701	m	guardrail system G4, type I, class A (wood posts)	430.0	$80.00	$34,400.00	$112.00	$48,160.00	$70.00	$30,100.00	$100.00	$43,000.00
61702 A	m	terminal section type G4-BAT	6	$2,000.00	$12,000.00	$2,977.00	$17,862.00	$2,500.00	$15,000.00	$3,000.00	$18,000.00
61702 B	each	terminal section type tangent	12	$2,500.00	$30,000.00	$2,988.00	$35,856.00	$2,500.00	$30,000.00	$2,500.00	$30,000.00

(Common price in bid tabs)

Coffman Cove (1)

Ave.	Quantity	Units	Total	Cost per Unit
$91	430	m	$38,915	
	1410.7612	ln ft		**$27.58 per ln ft**

Average Unit Cost with 3%/year Inflation **$32.94 per ln ft**

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701A	m	Guardrail system G4, type 1	455.000	$70.00	$31,850.00	$84.40	$38,402.00	$80.00	$36,400.00

Ave.	Quantity	Unit	Total	Cost per Unit
$78	455.000	m	$35,550.67	
	1492.782152	ft		**$23.82 per ft**

Average Unit Cost with 3%/year Inflation **$29.29 per ln ft**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701A	m	Guardrail system G4, type 1	1,715.000	$80.00	$137,200.00	$80.00	$137,200.00	$70.00	$120,050.00

Ave.	Quantity	Unit	Total	Cost per Unit
$77	1,715.000	m	$131,483.33	
	5626.64042	ft		**$23.37 per ln ft**

Average Unit Cost with 3%/year Inflation **$31.40 per ln ft**

Total Average Unit Cost **$30.38 per ln ft**

Use **$30.00 per ln ft**

Guardrail was estimated for areas protecting tall MSE walls and proposed tall slopes steeper than 1:2.
Guardrail quantities were increased by 10% to compensate for flared areas.

QUANTITIES

Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	110	ft.	
W - 2	3.20	745+00	914+00	0	ft.	
W - 3	11.08	160+00	745+00	0	ft.	
F - 1	6.42	723+00	1062+00	0	ft.	
F - 2	4.06	1062+00	1276+37	0	ft.	
A - 1a	30.37	1280+00	2883+63	24,970	ft.	
A - 1a (BC)	3.86	2883+63	3087+36	440	ft.	
A - 1b	29.77	1280+00	2851+97	19,800	ft.	
A - 1b (BC)	3.86	2851+97	3055+71	440	ft.	
A - 2	5.21	1005+00	1280+00	2,200	ft.	
S -1	21.35	2545+94	3673+29	19,690	ft.	
S -1 (BC)	4.13	3673+29	3891+26	4,950	ft.	
S - 2	17.65	1614+00	2545+94	20,570	ft.	
S - 3	11.53	1005+00	1614+00	9,350	ft.	
L - 1	14.39	100+00	859+77	11,940	ft.	

QUANTITIES

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Creek	A-2	Rt.	1033+00	1034+00	100	100
Aaron Creek	A-2	Rt.	1082+00	1086+00	400	500
Aaron Creek	A-2	Rt.	1108+00	1112+00	400	900
Aaron Creek	A-2	Rt.	1120+00	1121+00	100	1,000
Aaron Creek	A-2	Lt.	1135+00	1137+00	200	1,200
Aaron Creek	A-2	Rt.	1135+00	1137+00	200	1,400
Aaron Creek	A-2	Rt.	1154+00	1156+00	200	1,600
Aaron Creek	A-2	Rt.	1161+00	1162+00	100	1,700
Aaron Creek	A-2	Rt.	1181+00	1183+00	200	1,900
Aaron Creek	A-2	Rt.	1187+00	1188+00	100	2,000
					2,000 ln ft	
Total	**Aaron Creek**		**10% Increase for Flared Ends**		**2,200 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Pass	A-1a	Rt.	1405+00	1409+00	400	400
Aaron Cr. Pass	A-1a	Rt.	1412+00	1415+00	300	700
Aaron Cr. Pass	A-1a	Rt.	1422+00	1423+00	100	800
Aaron Cr. Pass	A-1a	Rt.	1430+00	1432+00	200	1,000
Aaron Cr. Pass	A-1a	Lt.	1454+00	1456+00	200	1,200
Aaron Cr. Pass	A-1a	Rt.	1454+00	1456+00	200	1,400
Aaron Cr. Pass	A-1a	Rt.	1466+00	1470+00	400	1,800
Aaron Cr. Pass	A-1a	Rt.	1526+00	1537+00	1,100	2,900
Aaron Cr. Pass	A-1a	Lt.	1568+00	1569+00	100	3,000
Aaron Cr. Pass	A-1a	Rt.	1568+00	1570+00	200	3,200
Aaron Cr. Pass	A-1a	Rt.	1574+50	1575+50	100	3,300
Aaron Cr. Pass	A-1a	Rt.	1585+00	1591+00	600	3,900
Aaron Cr. Pass	A-1a	Rt.	1718+00	1720+00	200	4,100
Aaron Cr. Pass	A-1a	Lt.	1789+00	1790+00	100	4,200
Aaron Cr. Pass	A-1a	Rt.	1789+00	1790+00	100	4,300
Aaron Cr. Pass	A-1a	Rt.	1812+00	1815+00	300	4,600
Aaron Cr. Pass	A-1a	Rt.	1849+00	1855+00	600	5,200
Aaron Cr. Pass	A-1a	Lt.	1894+00	1898+00	400	5,600
Aaron Cr. Pass	A-1a	Lt.	1932+00	1936+00	400	6,000
Aaron Cr. Pass	A-1a	Lt.	1941+00	1946+00	500	6,500
Aaron Cr. Pass	A-1a	Lt.	1953+50	1954+50	100	6,600
Aaron Cr. Pass	A-1a	Lt.	1969+00	1973+00	400	7,000
Aaron Cr. Pass	A-1a	Lt.	1982+00	1988+00	600	7,600
Aaron Cr. Pass	A-1a	Lt.	2001+50	2002+50	100	7,700
Aaron Cr. Pass	A-1a	Lt.	2009+00	2012+00	300	8,000
Aaron Cr. Pass	A-1a	Lt.	2021+00	2024+00	300	8,300
Aaron Cr. Pass	A-1a	Lt.	2044+00	2047+00	300	8,600
Aaron Cr. Pass	A-1a	Lt.	2065+00	2067+00	200	8,800
Aaron Cr. Pass	A-1a	Lt.	2079+00	2083+00	400	9,200
Aaron Cr. Pass	A-1a	Rt.	2093+00	2094+00	100	9,300

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Pass	A-1a	Rt.	2106+00	2107+00	100	9,400
Aaron Cr. Pass	A-1a	Rt.	2112+00	2114+00	200	9,600
Aaron Cr. Pass	A-1a	Rt.	2120+00	2122+00	200	9,800
Aaron Cr. Pass	A-1a	Rt.	2138+00	2142+00	400	10,200
Aaron Cr. Pass	A-1a	Rt.	2153+00	2156+00	300	10,500
Aaron Cr. Pass	A-1a	Rt.	2163+00	2167+00	400	10,900
Aaron Cr. Pass	A-1a	Rt.	2176+00	2177+00	100	11,000
Aaron Cr. Pass	A-1a	Rt.	2180+00	2182+00	200	11,200
Aaron Cr. Pass	A-1a	Rt.	2199+00	2200+00	100	11,300
Aaron Cr. Pass	A-1a	Rt.	2203+50	2204+50	100	11,400
Aaron Cr. Pass	A-1a	Rt.	2212+00	2222+00	1,000	12,400
Aaron Cr. Pass	A-1a	Rt.	2275+00	2281+00	600	13,000
Aaron Cr. Pass	A-1a	Rt.	2287+00	2289+00	200	13,200
Aaron Cr. Pass	A-1a	Rt.	2292+00	2294+00	200	13,400
Aaron Cr. Pass	A-1a	Rt.	2296+00	2300+00	400	13,800
Aaron Cr. Pass	A-1a	Rt.	2318+00	2320+00	200	14,000
Aaron Cr. Pass	A-1a	Rt.	2340+00	2343+00	300	14,300
Aaron Cr. Pass	A-1a	Rt.	2357+00	2358+00	100	14,400
Aaron Cr. Pass	A-1a	Rt.	2367+50	2368+50	100	14,500
Aaron Cr. Pass	A-1a	Rt.	2383+00	2385+00	200	14,700
Aaron Cr. Pass	A-1a	Rt.	2399+50	2400+50	100	14,800
Aaron Cr. Pass	A-1a	Rt.	2426+00	2427+00	100	14,900
Aaron Cr. Pass	A-1a	Rt.	2432+00	2434+00	200	15,100
Aaron Cr. Pass	A-1a	Rt.	2443+00	2444+00	100	15,200
Aaron Cr. Pass	A-1a	Rt.	2448+00	2449+00	100	15,300
Aaron Cr. Pass	A-1a	Rt.	2458+00	2461+00	300	15,600
Aaron Cr. Pass	A-1a	Rt.	2469+00	2471+00	200	15,800
Aaron Cr. Pass	A-1a	Rt.	2485+00	2486+00	100	15,900
Aaron Cr. Pass	A-1a	Rt.	2496+50	2497+50	100	16,000
Aaron Cr. Pass	A-1a	Rt.	2505+00	2508+00	300	16,300
Aaron Cr. Pass	A-1a	Rt.	2512+00	2515+00	300	16,600
Aaron Cr. Pass	A-1a	Rt.	2523+00	2528+00	500	17,100
Aaron Cr. Pass	A-1a	Rt.	2558+00	2562+00	400	17,500
Aaron Cr. Pass	A-1a	Rt.	2569+50	2570+50	100	17,600
Aaron Cr. Pass	A-1a	Rt.	2580+00	2587+00	700	18,300
Aaron Cr. Pass	A-1a	Rt.	2594+00	2595+00	100	18,400
Aaron Cr. Pass	A-1a	Rt.	2609+00	2615+00	600	19,000
Aaron Cr. Pass	A-1a	Rt.	2629+00	2632+00	300	19,300
Aaron Cr. Pass	A-1a	Rt.	2635+00	2639+00	400	19,700
Aaron Cr. Pass	A-1a	Rt.	2643+00	2645+00	200	19,900
Aaron Cr. Pass	A-1a	Rt.	2653+00	2654+00	100	20,000
Aaron Cr. Pass	A-1a	Rt.	2665+00	2667+00	200	20,200
Aaron Cr. Pass	A-1a	Rt.	2693+00	2696+00	300	20,500
Aaron Cr. Pass	A-1a	Rt.	2702+00	2703+00	100	20,600
Aaron Cr. Pass	A-1a	Rt.	2708+00	2710+00	200	20,800
Aaron Cr. Pass	A-1a	Rt.	2714+00	2717+00	300	21,100
Aaron Cr. Pass	A-1a	Rt.	2723+00	2725+00	200	21,300
Aaron Cr. Pass	A-1a	Rt.	2739+50	2740+50	100	21,400
Aaron Cr. Pass	A-1a	Rt.	2750+00	2752+00	200	21,600
Aaron Cr. Pass	A-1a	Rt.	2755+00	2756+00	100	21,700
Aaron Cr. Pass	A-1a	Lt.	2774+00	2776+00	200	21,900
Aaron Cr. Pass	A-1a	Lt.	2802+00	2803+00	100	22,000
Aaron Cr. Pass	A-1a	Lt.	2824+00	2828+00	400	22,400
Aaron Cr. Pass	A-1a	Lt.	2832+50	2833+50	100	22,500
Aaron Cr. Pass	A-1a	Lt.	2838+50	2839+50	100	22,600
Aaron Cr. Pass	A-1a	Lt.	2854+00	2855+00	100	22,700
					22,700 ln ft	
Total	**Aaron Cr. Pass**		**10% Increase for Flared Ends**		**24,970 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Pass (BC)	A-1a	Lt.	2902+00	2904+00	200	200
Aaron Cr. Pass (BC)	A-1a	Lt.	2906+00	2908+00	200	400
					400 ln ft	
Total	**Aaron Cr. Pass (BC)**		**10% Increase for Flared Ends**		**440 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Tunnel	A-1b	Rt.	1405+00	1409+00	400	400
Aaron Cr. Tunnel	A-1b	Rt.	1412+00	1415+00	300	700
Aaron Cr. Tunnel	A-1b	Rt.	1422+00	1423+00	100	800
Aaron Cr. Tunnel	A-1b	Rt.	1430+00	1432+00	200	1,000
Aaron Cr. Tunnel	A-1b	Lt.	1454+00	1456+00	200	1,200
Aaron Cr. Tunnel	A-1b	Rt.	1454+00	1456+00	200	1,400
Aaron Cr. Tunnel	A-1b	Rt.	1466+00	1470+00	400	1,800
Aaron Cr. Tunnel	A-1b	Rt.	1526+00	1537+00	1,100	2,900
Aaron Cr. Tunnel	A-1b	Lt.	1568+00	1569+00	100	3,000
Aaron Cr. Tunnel	A-1b	Rt.	1568+00	1570+00	200	3,200
Aaron Cr. Tunnel	A-1b	Rt.	1574+50	1575+50	100	3,300
Aaron Cr. Tunnel	A-1b	Rt.	1585+00	1591+00	600	3,900
Aaron Cr. Tunnel	A-1b	Rt.	1718+00	1720+00	200	4,100
Aaron Cr. Tunnel	A-1b	Lt.	1789+00	1790+00	100	4,200
Aaron Cr. Tunnel	A-1b	Rt.	1789+00	1790+00	100	4,300
Aaron Cr. Tunnel	A-1b	Rt.	1812+00	1815+00	300	4,600
Aaron Cr. Tunnel	A-1b	Rt.	1849+00	1855+00	600	5,200
Aaron Cr. Tunnel	A-1b	Lt.	1894+00	1898+00	400	5,600
Aaron Cr. Tunnel	A-1b	Lt.	1932+00	1936+00	400	6,000
Aaron Cr. Tunnel	A-1b	Lt.	1941+00	1946+00	500	6,500
Aaron Cr. Tunnel	A-1b	Lt.	1953+50	1954+50	100	6,600
Aaron Cr. Tunnel	A-1b	Lt.	1969+00	1973+00	400	7,000
Aaron Cr. Tunnel	A-1b	Lt.	1982+00	1988+00	600	7,600
Aaron Cr. Tunnel	A-1b	Lt.	2001+50	2002+50	100	7,700
Aaron Cr. Tunnel	A-1b	Lt.	2009+00	2012+00	300	8,000
Aaron Cr. Tunnel	A-1b	Lt.	2021+00	2024+00	300	8,300
Aaron Cr. Tunnel	A-1b	Lt.	2044+00	2047+00	300	8,600
Aaron Cr. Tunnel	A-1b	Lt.	2065+00	2067+00	200	8,800
Aaron Cr. Tunnel	A-1b	Lt.	2078+50	2079+50	100	8,900
Aaron Cr. Tunnel	A-1b	Lt.	2084+00	2086+00	200	9,100
Aaron Cr. Tunnel	A-1b	Lt.	2090+00	2091+00	100	9,200

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Tunnel	A-1b	Lt.	2100+00	2104+00	400	9,600
Aaron Cr. Tunnel	A-1b	Lt.	2175+00	2179+00	400	10,000
Aaron Cr. Tunnel	A-1b	Rt.	2311+00	2314+00	300	10,300
Aaron Cr. Tunnel	A-1b	Lt.	2355+00	2357+00	200	10,500
Aaron Cr. Tunnel	A-1b	Lt.	2361+00	2363+00	200	10,700
Aaron Cr. Tunnel	A-1b	Lt.	2418+00	2429+00	1,100	11,800
Aaron Cr. Tunnel	A-1b	Rt.	2554+00	2558+00	400	12,200
Aaron Cr. Tunnel	A-1b	Rt.	2561+00	2569+00	800	13,000
Aaron Cr. Tunnel	A-1b	Rt.	2601+00	2606+00	500	13,500
Aaron Cr. Tunnel	A-1b	Rt.	2611+00	2615+00	400	13,900
Aaron Cr. Tunnel	A-1b	Rt.	2621+00	2626+00	500	14,400
Aaron Cr. Tunnel	A-1b	Rt.	2633+00	2636+00	300	14,700
Aaron Cr. Tunnel	A-1b	Rt.	2661+00	2665+00	400	15,100
Aaron Cr. Tunnel	A-1b	Rt.	2670+50	2671+50	100	15,200
Aaron Cr. Tunnel	A-1b	Rt.	2677+00	2678+00	100	15,300
Aaron Cr. Tunnel	A-1b	Rt.	2682+00	2685+00	300	15,600
Aaron Cr. Tunnel	A-1b	Rt.	2691+00	2694+00	300	15,900
Aaron Cr. Tunnel	A-1b	Rt.	2708+00	2709+00	100	16,000
Aaron Cr. Tunnel	A-1b	Rt.	2720+00	2724+00	400	16,400
Aaron Cr. Tunnel	A-1b	Lt.	2742+00	2745+00	300	16,700
Aaron Cr. Tunnel	A-1b	Lt.	2769+00	2771+00	200	16,900
Aaron Cr. Tunnel	A-1b	Lt.	2786+00	2787+00	100	17,000
Aaron Cr. Tunnel	A-1b	Lt.	2793+00	2797+00	400	17,400
Aaron Cr. Tunnel	A-1b	Lt.	2800+50	2801+50	100	17,500
Aaron Cr. Tunnel	A-1b	Lt.	2807+00	2808+00	100	17,600
Aaron Cr. Tunnel	A-1b	Lt.	2822+00	2824+00	200	17,800
Aaron Cr. Tunnel	A-1b	Lt.	2832+00	2834+00	200	18,000
					18,000 ln ft	
Total	**Aaron Cr. Tunnel**		**10% Increase for Flared Ends**		**19,800 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Tunnel	A-1b	Lt.	2871+00	2873+00	200	200
Aaron Cr. Tunnel	A-1b	Lt.	2875+00	2877+00	200	400
					400 ln ft	
Total	**Aaron Cr. Tunnel (BC)**		**10% Increase for Flared Ends**		**440 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Wrangell Island	W-1	Lt.	999+00	1000+00	100	100
					100 ln ft	
Total	**Wrangell Island**		**10% Increase for Flared Ends**		**110 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Wrangell Island	W-2	Lt.				0
					0 ln ft	
Total	**Wrangell Island**		**10% Increase for Flared Ends**		**0 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Wrangell Island	W-3	Rt.				0
					0 ln ft	
Total	**Wrangell Island**		**10% Increase for Flared Ends**		**0 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Fool's Inlet	F-1	Rt.				0
					0 ln ft	
Total	**Fool's Inlet**		**10% Increase for Flared Ends**		**0 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Fool's Inlet	F-2	Rt.				0
					0 ln ft	
Total	**Fool's Inlet**		**10% Increase for Flared Ends**		**0 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
S. Stikine River	S-3	Lt.	1008+00	1025+00	1,700	1,700
S. Stikine River	S-3	Rt.	1008+00	1024+00	1,600	3,300
S. Stikine River	S-3	Rt.	1082+00	1085+00	300	3,600
S. Stikine River	S-3	Lt.	1082+00	1086+00	400	4,000
S. Stikine River	S-3	Lt.	1116+00	1125+00	900	4,900
S. Stikine River	S-3	Lt.	1376+00	1378+00	200	5,100
S. Stikine River	S-3	Rt.	1419+00	1425+00	600	5,700
S. Stikine River	S-3	Lt.	1419+00	1425+00	600	6,300
S. Stikine River	S-3	Rt.	1452+00	1457+00	500	6,800
S. Stikine River	S-3	Lt.	1452+00	1458+00	600	7,400
S. Stikine River	S-3	Rt.	1473+00	1474+00	100	7,500
S. Stikine River	S-3	Lt.	1473+00	1474+00	100	7,600
S. Stikine River	S-3	Rt.	1480+00	1481+00	100	7,700
S. Stikine River	S-3	Lt.	1480+00	1481+00	100	7,800
S. Stikine River	S-3	Lt.	1603+00	1606+00	300	8,100
S. Stikine River	S-3	Lt.	1610+00	1614+00	400	8,500
					8,500 ln ft	
Total	**South Stikine River**		**10% Increase for Flared Ends**		**9,350 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
S. Stikine River	S-2	Lt.	1626+00	1627+50	150	150
S. Stikine River	S-2	Rt.	1626+00	1627+50	150	300
S. Stikine River	S-2	Rt.	1633+50	1635+00	150	450
S. Stikine River	S-2	Lt.	1633+50	1635+00	150	600
S. Stikine River	S-2	Lt.	2033+00	2041+00	800	1,400
S. Stikine River	S-2	Lt.	2089+00	2101+00	1,200	2,600
S. Stikine River	S-2	Lt.	2141+00	2145+00	400	3,000
S. Stikine River	S-2	Lt.	2149+00	2156+00	700	3,700
S. Stikine River	S-2	Lt.	2191+00	2196+00	500	4,200
S. Stikine River	S-2	Rt.	2193+00	2195+50	250	4,450
S. Stikine River	S-2	Lt.	2235+00	2251+00	1,600	6,050
S. Stikine River	S-2	Rt.	2146+50	2251+50	10,500	16,550
S. Stikine River	S-2	Lt.	2292+00	2297+00	500	17,050

Alignment	Segment	Side	STA	STA	Length	Cum. Length
S. Stikine River	S-2	Lt.	2351+00	2355+00	400	17,450
S. Stikine River	S-2	Lt.	2372+00	2374+00	200	17,650
S. Stikine River	S-2	Lt.	2392+00	2397+00	500	18,150
S. Stikine River	S-2	Lt.	2404+00	2405+00	100	18,250
S. Stikine River	S-2	Lt.	2431+00	2432+00	100	18,350
S. Stikine River	S-2	Rt.	2431+00	2431+00	0	18,350
S. Stikine River	S-2	Lt.	2444+00	2447+00	300	18,650
S. Stikine River	S-2	Rt.	2444+00	2444+50	50	18,700
					18,700 ln ft	
Total	**South Stikine River**		**10% Increase for Flared Ends**		**20,570 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
S. Stikine River	S-1	Lt.	2655+00	2659+00	400	400
S. Stikine River	S-1	Rt.	2655+00	2659+00	400	800
S. Stikine River	S-1	Lt.	2781+00	2792+00	1,100	1,900
S. Stikine River	S-1	Lt.	2795+00	2798+00	300	2,200
S. Stikine River	S-1	Lt.	2800+00	2806+00	600	2,800
S. Stikine River	S-1	Lt.	2816+00	2825+00	900	3,700
S. Stikine River	S-1	Lt.	2827+00	2832+00	500	4,200
S. Stikine River	S-1	Lt.	2839+00	2844+00	500	4,700
S. Stikine River	S-1	Lt.	2856+00	2861+00	500	5,200
S. Stikine River	S-1	Lt.	2867+00	2876+00	900	6,100
S. Stikine River	S-1	Lt.	2889+00	2901+00	1,200	7,300
S. Stikine River	S-1	Lt.	2946+00	2948+00	200	7,500
S. Stikine River	S-1	Lt.	2959+00	2963+00	400	7,900
S. Stikine River	S-1	Lt.	2982+00	2986+00	400	8,300
S. Stikine River	S-1	Lt.	2989+00	2991+00	200	8,500
S. Stikine River	S-1	Lt.	2993+00	2998+00	500	9,000
S. Stikine River	S-1	Lt.	3001+00	3003+00	200	9,200
S. Stikine River	S-1	Lt.	3010+00	3017+00	700	9,900
S. Stikine River	S-1	Lt.	3042+00	3044+00	200	10,100
S. Stikine River	S-1	Lt.	3079+00	3080+00	100	10,200
S. Stikine River	S-1	Lt.	3149+00	3156+00	700	10,900
S. Stikine River	S-1	Lt.	3199+00	3205+00	600	11,500
S. Stikine River	S-1	Rt.	3199+00	3205+00	600	12,100
S. Stikine River	S-1	Lt.	3291+00	3298+00	700	12,800
S. Stikine River	S-1	Lt.	3304+00	3310+00	600	13,400
S. Stikine River	S-1	Lt.	3315+00	3321+00	600	14,000
S. Stikine River	S-1	Lt.	3387+00	3389+00	200	14,200
S. Stikine River	S-1	Lt.	3524+00	3526+00	200	14,400
S. Stikine River	S-1	Lt.	3573+00	3582+00	900	15,300
S. Stikine River	S-1	Rt.	3575+00	3579+00	400	15,700
S. Stikine River	S-1	Lt.	3588+50	3589+50	100	15,800
S. Stikine River	S-1	Lt.	3606+00	3617+00	1,100	16,900
S. Stikine River	S-1	Lt.	3637+00	3647+00	1,000	17,900
					17,900 ln ft	
Total	**South Stikine River**		**10% Increase for Flared Ends**		**19,690 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
S. Stikine River	S-1	Lt.	3756+00	3759+00	300	300
S. Stikine River	S-1	Lt.	3865+00	3887+00	2,200	2,500
S. Stikine River	S-1	Rt.	3865+00	3885+00	2,000	4,500
					4,500 ln ft	
Total	**South Stikine River (BC)**		**10% Increase for Flared Ends**		**4,950 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Limb Island	L-1	Rt.	132+00	135+00	300	300
Limb Island	L-1	Lt.	148+50	152+00	350	650
Limb Island	L-1	Rt.	148+00	152+00	400	1,050
Limb Island	L-1	Rt.	174+00	175+00	100	1,150
Limb Island	L-1	Lt.	174+00	175+00	100	1,250
Limb Island	L-1	Lt.	225+00	226+00	100	1,350
Limb Island	L-1	Rt.	225+00	226+00	100	1,450
Limb Island	L-1	Rt.	244+00	260+00	1,600	3,050
Limb Island	L-1	Lt.	252+00	255+00	300	3,350
Limb Island	L-1	Rt.	266+00	274+00	800	4,150
Limb Island	L-1	Rt.	278+00	282+00	400	4,550
Limb Island	L-1	Lt.	280+00	282+00	200	4,750
Limb Island	L-1	Rt.	360+00	368+00	800	5,550
Limb Island	L-1	Lt.	360+00	368+00	800	6,350
Limb Island	L-1	Rt.	410+00	416+00	600	6,950
Limb Island	L-1	Lt.	521+00	523+00	200	7,150
Limb Island	L-1	Rt.	521+00	523+00	200	7,350
Limb Island	L-1	Rt.	531+00	533+00	200	7,550
Limb Island	L-1	Lt.	531+00	533+00	200	7,750
Limb Island	L-1	Lt.	682+00	685+00	300	8,050
Limb Island	L-1	Rt.	750+00	752+00	200	8,250
Limb Island	L-1	Lt.	750+00	752+00	200	8,450
Limb Island	L-1	Lt.	775+00	777+00	200	8,650
Limb Island	L-1	Rt.	775+00	777+00	200	8,850
Limb Island	L-1	Rt.	825+00	829+00	400	9,250
Limb Island	L-1	Lt.	825+00	829+00	400	9,650
Limb Island	L-1	Lt.	852+00	858+00	600	10,250
Limb Island	L-1	Rt.	852+00	858+00	600	10,850
					10,850 ln ft	
Total	**Limb Island**		**10% Increase for Flared Ends**		**11,940 ln ft**	

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
615(1)	SQFT	Standard Sign	1,872.000	$27.10	$50,731.20

Project Signs:

1,872.0 ft2 for 23.33 mi (total length)
80.2 ft2 per mile

Average Unit Cost $2,173.42 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
615(1)	SQFT	Standard Sign	1,872.000	$55.00	$102,960

Project Signs:

1,872.0 ft2 for 23.33 mi (total length)
80.2 ft2 per mile

Average Unit Cost $4,411.00 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
615(1)	SQFT	Standard Sign	2,000.000	$55.00	$110,000

$55.00 110000

Project Signs:

2,000.0 ft2 for 27.47 mi (total length)
72.8 ft2 per mile

Average Unit Cost $4,004.00 per mile

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
615(1)	SQFT	Standard Sign	766.380	$115	$88,133.70	$100	$76,638.00	$150	$114,957.00	$100	$76,638.00
				$116	$89,091.68						

Project Signs:

766.4 ft2 for 22.00 mi (total length)
34.8 ft2 per mile

Average Unit Cost $4,049.62 per mile

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m^2	Sign installation	7.1	$650.00	$4,582.50	$2,500.00	$17,625.00	$1,100.00	$7,755.00	$950.00	$6,697.50
63504	m^2	Construction sign	0.0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$1,300	7.1	m2	$9,165	
	75.9	sq.ft.		$120.75 per sq ft

Increase 3% per year for inflation $128.10 per sq ft Project signs

Project Signs:

75.9 ft2 for 20.32 mi (total length of Coffman Cove (2))
3.7 ft2 per mile

Average Unit Cost $473.99 per mile

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m^2	Sign system	55.0	$500.00	$27,500.00	$525.85	$28,921.75	$200.00	$11,000.00
63504	m^2	Construction sign	56.0	$150.00	$8,400.00	$178.00	$9,968.00	$100.00	$5,600.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$409	55.0	m2	$22,495	
	592.0	sq.ft.		$38.00 per sq ft

Increase 3% per year for inflation $41.52 per sq ft Project signs

Project Signs:

592.0 ft2 for 7.62 mi (total length of Coffman Cove (2))
77.7 ft2 per mile

Average Unit Cost $3,226.24 per mile

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m^2	Sign installation	70.0	$500.00	$35,000.00	$494.00	$34,580.00	$1,000.00	$70,000.00	$500.00	$35,000.00
63504	m^2	Construction sign	136.0	$200.00	$27,200.00	$158.00	$21,488.00	$100.00	$13,600.00	$150.00	$20,400.00

Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$624	70.0	m2	$43,645	
	753.5	sq.ft.		$57.92 per sq ft

Increase 3% per year for inflation $69.16 per sq ft Project signs

Project Signs:

753.5 ft2 for 9.87 mi (total length of Coffman Cove (1))

76.3 ft2 per mile

Average Unit Cost $5,277.15 per mile

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m2	Sign installation	75.000	$450.00	$33,750.00	$719.00	$53,925.00	$400.00	$30,000.00
63507	m2	Construction sign	190.000	$140.00	$26,600.00	$27.50	$5,225.00	$150.00	$28,500.00

Ave.	Quantity	Unit	Total	Cost per Unit
$523	75.000	m2	$39,225	
	807.29	sqft		$48.59 per sqft

Increase 3% per year for inflation $59.76 per sq ft Project signs

Project Signs:

807.3 ft2 for 31.10 mi

25.96 ft2 per mile

Average Unit Cost $1,551.18 per mile

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m2	Sign installation	5.600	$600.00	$3,360.00	$575.00	$3,220.00	$600.00	$3,360.00
63507	m2	Construction sign	62.000	$150.00	$9,300.00	$100.00	$6,200.00	$250.00	$15,500.00

Ave.	Quantity	Unit	Total	Cost per Unit
$592	5.600	m2	$3,313.33	
	60.3	sqft		$54.95 per sqft

Increase 3% per year for inflation $73.84 per sq ft Project signs

Project Signs:

60.3 ft2 for 3 mi

20.10 ft2 per mile

Average Unit Cost $1,484.28 per mile

Total Average Unit Cost $2,961.21 per mile

Use $3,500.00 per mile

Construction Signs:

Not needed since not built under traffic

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	LPSM	Katzehin Ferry	LPSM	$17,000,000	$17,000,000

Conventional Ferry Terminal

Use **$15,000,000.00** each

ACV Ferry Terminal
ACV Research yielded estimates for ACV ferry terminals ranging from $1 - $10 million.

Use **$10,000,000.00** each

Construction Camps | **Unit: LPSM** |

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	LPSM	Construction Camp and Per Diem	LPSM	$14,427,807	$14,427,807
Total bid estimate					$146,278,307
Percentage of construction costs					10.9%

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
640 (2)	LPSM	Contractor Camp	LPSM	$768,750	$768,750	$1,000,000	$1,000,000	$1,300,000	$1,300,000	$1,000,000	$1,000,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Percentage of construction costs					3.0%		4.1%		5.3%		4.0%

Average Construction Camps Percentage **7.5%**

Use **10.0%**

Roadway Reconditioning **Unit: Mile**

Coffman Cove Paving, 2007				Engineers Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30301	km	Roadway reconditioning	32.508	$3,000.00	$97,524.00	$15,000.00	$487,620.00	$3,860.00	$125,480.88	$5,500.00	$178,794.00

Coffman Cove (A)

Ave.	Quantity	Unit	Total	Cost per Unit
$6,840.00	32.508	km	$222,355	
	20	mile		$11,007 per mile

With 3%/year inflation $11,678

Use **$11,700** **per mile**

Used only for segments utilizing existing roads

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APPENDIX D.3

Phased Construction: Phase 1 Estimate Support

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Project: SE Alaska Mid Region Access
Project No.: AK HPP-2003(1)

SE Alaska MRA Cost Estimate, Phase 1
Summary of Options, Alignments

Work Item Description	Alignment: Aaron Creek Alignment – Segment A-1a (Pass Option)	Aaron Creek Alignment – Segment A-1b (Tunnel Option)	Aaron Creek Alignment – Segment A-2	Wrangell Island Alignment – Segment W-1	Wrangell Island Alignment – Segment W-2	Wrangell Island Alignment – Segment W-3	Fool's Inlet Alignment – Segment F-1	Fool's Inlet Alignment – Segment F-2	South Stikine River Alignment – Segment S-1	South Stikine River Alignment – Segment S-2	South Stikine River Alignment – Segment S-3	Limb Island Alignment – Segment L-1	Bradfield Canal Alignment – Segment B-1	Iskut River Alignment – Segment I-1	Iskut River Alignment – Segment I-2	Iskut River Alignment – Segment I-3
AK LENGTH (Mile)	30.37	29.77	5.21	1.72	3.20	11.08	6.42	4.06	21.35	17.65	11.53	14.39	29.15			
BC LENGTH (Mile)	10.21	10.21							10.48				17.29	24.08	20.33	26.45
DIVISION 1 PROJECT REQUIREMENTS	$ 28,280,717	$ 18,791,494	$ 3,169,034	$ 332,764	$ 53,932	$ 185,670	$ 107,819	$ 695,300	$ 11,096,994	$ 4,413,906	$ 4,596,697	$ 15,768,920	$ 12,725,119	$ -	$ -	$ -
DIVISION 2 EARTHWORK	$ 56,771,119	$ 35,363,499	$ 4,406,616	$ 1,425,692	$ 126,429	$ 463,205	$ 263,090	$ 1,708,454	$ 37,599,145	$ 15,560,294	$ 6,965,676	$ 15,754,482	$ 34,401,573	$ -	$ -	$ -
DIVISION 3 UTILITIES & RELOCATIONS	$ 1,761,460	$ 1,726,660	$ 302,180	$ 99,760	$ -	$ -	$ -	$ 235,480	$ 1,238,300	$ 1,023,700	$ 668,740	$ 834,620	$ 3,429,600	$ -	$ -	$ -
DIVISION 4 BASES & PAVEMENT	$ 4,532,500	$ 4,285,000	$ 807,500	$ 280,000	$ 185,000	$ 602,500	$ 357,500	$ 667,500	$ 3,382,500	$ 1,210,000	$ 1,805,000	$ 2,015,000	$ 4,415,825	$ -	$ -	$ -
DIVISION 5 TUNNEL	$ -	$ 74,000,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 82,000,000	$ -	$ -	$ -
DIVISION 6 STRUCTURES	$ 147,549,930	$ 94,690,010	$ 17,308,000	$ -	$ -	$ -	$ -	$ 1,119,850	$ 36,569,720	$ 9,754,900	$ 22,023,000	$ 100,346,670	$ 47,646,500	$ -	$ -	$ -
DIVISION 7 INCIDENTAL CONSTRUCTION	$ 14,572,550	$ 14,067,550	$ 2,568,150	$ 924,800	$ 94,723	$ 332,313	$ 191,289	$ 1,998,900	$ 10,296,250	$ 8,384,750	$ 5,585,950	$ 6,771,850	$ 13,667,250	$ -	$ -	$ -
DIVISION 8 ROADWAY FINISHES	$ 644,195	$ 480,395	$ 18,235	$ 6,020	$ 11,200	$ 38,780	$ 22,470	$ 14,210	$ 74,725	$ 61,775	$ 40,355	$ 50,365	$ 690,949	$ -	$ -	$ -
DIVISION 9 PORT DEVELOPMENT	$ 30,000,000	$ 30,000,000	$ -	$ -	$ -	$ -	$ -	$ 15,000,000	$ -	$ 30,000,000	$ -	$ -	$ 15,000,000	$ -	$ -	$ 20,000,000
DIVISION 10 CONSTRUCTION CAMPS	$ 21,754,398	$ 14,454,996	$ 2,437,719	$ 255,972	$ 41,486	$ 142,823	$ 82,937	$ 534,846	$ 8,536,150	$ 3,395,313	$ 3,535,921	$ 12,129,939	$ 9,788,553	$ -	$ -	$ -
SUBTOTAL ROADWAY AND BRIDGE WORK (AK)	**$ 305,866,869**	**$ 287,859,604**	**$ 31,017,434**	**$ 3,325,008**	**$ 512,770**	**$ 1,765,291**	**$ 1,025,106**	**$ 21,974,540**	**$ 108,793,784**	**$ 73,804,638**	**$ 45,221,339**	**$ 153,671,846**	**$ 223,765,369**	**$ -**	**$ -**	**$ 20,000,000**
CONTINGENCIES: 25%	$ 76,466,717	$ 71,964,901	$ 7,754,358	$ 831,252	$ 128,193	$ 441,323	$ 256,276	$ 5,493,635	$ 27,198,446	$ 18,451,159	$ 11,305,335	$ 38,417,961	$ 55,941,342	$ -	$ -	$ 5,000,000
TOTAL CONSTRUCTION COST (AK)	**$ 382,333,586**	**$ 359,824,505**	**$ 38,771,792**	**$ 4,156,260**	**$ 640,963**	**$ 2,206,614**	**$ 1,281,382**	**$ 27,468,175**	**$ 135,992,230**	**$ 92,255,797**	**$ 56,526,674**	**$ 192,089,807**	**$ 279,706,711**	**$ -**	**$ -**	**$ 25,000,000**
CONSTRUCTION ENGINEERING SERVICES: 7%	$ 26,763,351	$ 25,187,715	$ 2,714,025	$ 290,938	$ 44,867	$ 154,463	$ 89,697	$ 1,922,772	$ 9,519,456	$ 6,457,906	$ 3,956,867	$ 13,446,286	$ 19,579,470	$ -	$ -	$ 1,750,000
EIS W/ SUPPORTING ENGINEERING: 5%	$ 19,116,679	$ 17,991,225	$ 1,938,590	$ 207,813	$ 32,048	$ 110,331	$ 64,069	$ 1,373,409	$ 6,799,611	$ 4,612,790	$ 2,826,334	$ 9,604,490	$ 13,985,336	$ -	$ -	$ 1,250,000
DESIGN ENGINEERING & ADMINISTRATION: 8%	$ 30,586,687	$ 28,785,960	$ 3,101,743	$ 332,501	$ 51,277	$ 176,529	$ 102,511	$ 2,197,454	$ 10,879,378	$ 7,380,464	$ 4,522,134	$ 15,367,185	$ 22,376,537	$ -	$ -	$ 2,000,000
TOTAL CONSTRUCTION & ENGINEERING (AK)	**$ 458,800,303**	**$ 431,789,405**	**$ 46,526,150**	**$ 4,987,512**	**$ 769,155**	**$ 2,647,937**	**$ 1,537,659**	**$ 32,961,810**	**$ 163,190,675**	**$ 110,706,957**	**$ 67,832,009**	**$ 230,507,768**	**$ 335,648,054**	**$ -**	**$ -**	**$ 30,000,000**
CONSTRUCTION & ENGINEERING COST $/MILE (AK)	$ 13,738,842	$ 9,802,697	$ 9,004,581	$ 2,923,881	$ 242,364	$ 240,975	$ 241,507	$ 2,598,274	$ 7,707,288	$ 3,753,797	$ 5,932,114	$ 16,152,096	$ 6,947,597	$ -	$ -	$ -
SUBTOTAL ROADWAY AND BRIDGE WORK (BC)	**$ 63,903,727**	**$ 63,928,927**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$54,952,087**	**$ -**	**$ -**	**$ -**	**$79,420,785**	**$ 3,836,474**	**$ 103,596,150**	**$ 144,782,006**
CONTINGENCIES: 25%	$ 15,975,932	$ 15,982,232	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,738,022	$ -	$ -	$ -	$ 19,855,196	$ 959,119	$ 25,899,038	$ 36,195,502
TOTAL CONSTRUCTION COST (BC)	**$ 79,879,659**	**$ 79,911,159**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$68,690,109**	**$ -**	**$ -**	**$ -**	**$99,275,981**	**$ 4,795,593**	**$ 129,495,188**	**$ 180,977,508**
CONSTRUCTION ENGINEERING SERVICES: 7%	$ 5,591,576	$ 5,593,781	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,808,308	$ -	$ -	$ -	$ 6,949,319	$ 335,692	$ 9,064,663	$ 12,668,426
EIS W/ SUPPORTING ENGINEERING: 5%	$ 3,993,983	$ 3,995,558	$ -	$ -	$ -	$ -	$ -	$ -	$ 3,434,505	$ -	$ -	$ -	$ 4,963,799	$ 239,780	$ 6,474,759	$ 9,048,875
DESIGN ENGINEERING & ADMINISTRATION: 8%	$ 6,390,373	$ 6,392,893	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,495,209	$ -	$ -	$ -	$ 7,942,078	$ 383,647	$ 10,359,615	$ 14,478,201
TOTAL CONSTRUCTION & ENGINEERING (BC)	**$ 95,855,591**	**$ 95,893,391**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$82,428,131**	**$ -**	**$ -**	**$ -**	**$119,131,177**	**$ 5,754,712**	**$ 155,394,225**	**$ 217,173,010**
CONSTRUCTION & ENGINEERING COST $/MILE (BC)	$ 9,388,403	$ 9,392,105	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,865,280	$ -	$ -	$ -	$ 6,890,178	$ 238,983	$ 7,643,592	$ 8,210,700
TOTAL CONSTRUCTION & ENGINEERING	**$ 554,655,893**	**$ 527,682,795**	**$ 46,526,150**	**$ 4,987,512**	**$ 769,155**	**$ 2,647,937**	**$ 1,537,659**	**$ 32,961,810**	**$ 245,618,806**	**$ 110,706,957**	**$ 67,832,009**	**$ 230,507,768**	**$ 454,779,231**	**$ 5,754,712**	**$ 155,394,225**	**$ 247,173,010**

Note: Bradfield River BC cost developed from Bradfield River AK cost per mile excluding the tunnel and ferry terminal
Per mile costs for all alignments were calculated excluding both the tunnel and ferry terminal costs, as well as the tunnel length.

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Bradfield Canal Corridor Stages, Phase 1

Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile*
Stage 1 (Ultimate)	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 5,754,712	$ 5,754,712	$ 238,983
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 155,394,225	$ 155,394,225	$ 7,643,592
	Bradfield Canal Alignment (Segment B-1)	46.44	$ 335,648,054	$ 119,131,177	$ 454,779,231	$ 9,792,834
	Wrangell Island Alignment (Segment W-3)	11.08	$ 2,647,937	$ -	$ 2,647,937	$ 238,984
	Fool's Inlet Alignment (Segment F-1)	6.42	$ 1,537,659	$ -	$ 1,537,659	$ 239,511
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 32,961,810	$ -	$ 32,961,810	$ 8,118,672
Stage 1 Subtotal		**112.41**	**$ 372,795,460**	**$ 280,280,114**	**$ 653,075,574**	**$ 5,809,764**
Stage 1 Upfront O&M Costs		**-**	**$ 5,380,000**	**$ 3,000,000**	**$ 8,380,000**	**-**
Bradfield Canal Corridor Total		**112.41**	**$ 378,175,460**	**$ 283,280,114**	**$ 661,455,574**	**$ 5,884,313**

*Average cost per mile includes tunnel, port development, and O&M as applicable

Stikine River Corridor Stages, Phase 1						
Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile*
Stage 1	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 5,754,712	$ 5,754,712	$ 238,983
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 155,394,225	$ 155,394,225	$ 7,643,592
	Iskut River Alignment (Segment I-3)	26.45	$ 30,000,000	$ 217,173,010	$ 247,173,010	$ 9,344,915
Stage 1 Subtotal		**70.86**	**$ 30,000,000**	**$ 378,321,947**	**$ 408,321,947**	**$ 5,762,376**
Stage 1 Upfront O&M Costs		**-**	**$ -**	**$ 2,500,000**	**$ 2,500,000**	**-**
Stage 2	South Stikine River Alignment (Segment S-1)	31.83	$ 163,190,675	$ 82,428,131	$ 245,618,806	$ 7,716,582
	South Stikine River Alignment (Segment S-2)	17.65	$ 110,706,957	$ -	$ 110,706,957	$ 6,272,349
Stage 2 Subtotal		**49.48**	**$ 273,897,631**	**$ 82,428,131**	**$ 356,325,762**	**$ 7,201,410**
Stage 2 Upfront O&M Costs		**-**	**$ 2,875,000**	**$ 500,000**	**$ 3,375,000**	**-**
Stage 3	Wrangell Island Alignment (Segment W-3)	11.08	$ 2,647,937	$ -	$ 2,647,937	$ 238,984
	Fool's Inlet Alignment (Segment F-1)	6.42	$ 1,537,659	$ -	$ 1,537,659	$ 239,511
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 32,961,810	$ -	$ 32,961,810	$ 8,118,672
Stage 3 Subtotal		**21.56**	**$ 37,147,406**	**$ -**	**$ 37,147,406**	**$ 1,722,978**
Stage 3 Upfront O&M Costs		**-**	**$ 2,505,000**	**$ -**	**$ 2,505,000**	**-**
Stage 4	Limb Island Alignment (Segment L-1)	14.39	$ 230,507,768	$ -	$ 230,507,768	$ 16,018,608
Stage 4 Subtotal		**14.39**	**$ 230,507,768**	**$ -**	**$ 230,507,768**	**$ 16,018,608**
Stage 4 Upfront O&M Costs		**-**	**$ 290,000**	**$ -**	**$ 290,000**	**-**
Stage 5 (Ultimate)	South Stikine River Alignment (Segment S-3)	11.53	$ 67,832,009	$ -	$ 67,832,009	$ 5,883,088
	Wrangell Island Alignment (Segment W-1)	1.72	$ 4,987,512	$ -	$ 4,987,512	$ 2,899,716
	Wrangell Island Alignment (Segment W-2)	3.20	$ 769,155	$ -	$ 769,155	$ 240,361.06
Stage 5 Subtotal		**16.45**	**$ 73,588,676**	**$ -**	**$ 73,588,676**	**$ 4,473,476**
Stage 5 Upfront O&M Costs		**-**	**$ -**	**$ -**	**$ -**	**-**
Stikine River Corridor Total		**172.74**	**$ 650,811,480**	**$ 463,750,078**	**$ 1,114,561,559**	**$ 6,452,249**

*Average cost per mile includes tunnel, port development, and O&M as applicable

Aaron Creek Corridor Stages, Phase 1

Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile*
Stage 1	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 5,754,712	$ 5,754,712	$ 238,983
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 155,394,225	$ 155,394,225	$ 7,643,592
	Iskut River Alignment (Segment I-3)	26.45	$ 30,000,000	$ 217,173,010	$ 247,173,010	$ 9,344,915
Stage 1 Subtotal		**70.86**	**$ 30,000,000**	**$ 378,321,947**	**$ 408,321,947**	**$ 5,762,376**
Stage 1 Upfront O&M Costs		**-**	**$ -**	**$ 2,500,000**	**$ 2,500,000**	**-**
Stage 2	Aaron Creek Pass Alignment (Segment A-1a)	40.58	$ 458,800,303	$ 95,855,591	$ 554,655,893	$ 13,668,208
	Aaron Creek Tunnel Alignment (Segment A-1b)	39.98	$ 431,789,405	$ 95,893,391	$ 527,682,795	$ 13,198,669
	Wrangell Island Alignment (Segment W-2)	3.20	$ 769,155	$ -	$ 769,155	$ 240,361
	Wrangell Island Alignment (Segment W-3)	11.08	$ 2,647,937	$ -	$ 2,647,937	$ 238,984
Stage 2 Subtotal (Pass)		**54.86**	**$ 462,217,395**	**$ 95,855,591**	**$ 558,072,986**	**$ 10,172,676**
Stage 2 Subtotal (Tunnel)		**54.26**	**$ 435,206,497**	**$ 95,893,391**	**$ 531,099,888**	**$ 9,788,055**
Stage 2 Upfront O&M Costs (Pass)		**-**	**$ 3,000,000**	**$ 500,000**	**$ 3,500,000**	**-**
Stage 2 Upfront O&M Costs (Tunnel)		**-**	**$ 3,000,000**	**$ 500,000**	**$ 3,500,000**	**-**
Stage 3	Fool's Inlet Alignment (Segment F-1)	6.42	$ 1,537,659	$ -	$ 1,537,659	$ 239,511
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 32,961,810	$ -	$ 32,961,810	$ 8,118,672
Stage 3 Subtotal		**10.48**	**$ 34,499,469**	**$ -**	**$ 34,499,469**	**$ 3,291,934**
Stage 3 Upfront O&M Costs		**-**	**$ 290,000**	**$ -**	**$ 290,000**	**-**
Stage 4 (Ultimate)	Aaron Creek Alignment (Segment A-2)	5.21	$ 46,526,150	$ -	$ 46,526,150	$ 8,930,163
	Wrangell Island Alignment (Segment W-1)	1.72	$ 4,987,512	$ -	$ 4,987,512	$ 2,899,716
Stage 4 Subtotal		**6.93**	**$ 51,513,662**	**$ -**	**$ 51,513,662**	**$ 7,433,429**
Stage 4 Upfront O&M Costs		**-**	**$ 2,215,000**	**$ -**	**$ 2,215,000**	**-**
Aaron Creek Corridor (Pass) Total		**143.13**	**$ 583,735,525**	**$ 477,177,538**	**$ 1,060,913,063**	**$ 7,412,234**
Aaron Creek Corridor (Tunnel) Total		**142.53**	**$ 556,724,627**	**$ 477,215,338**	**$ 1,033,939,965**	**$ 7,254,192**

*Average cost per mile includes tunnel, port development, and O&M as applicable

Project: SE Alaska Mid Region Access
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SE Alaska MRA Corridors Summary, Phase 1

Corridor	Stage	Length (miles)	Hovercraft Ferry Terminals	Conventional Ferry Terminals	AK Cost	BC Cost	Total Cost
Bradfield Canal	1 (Ultimate)	112.4	0	2	$ 378,175,460	$ 283,280,114	$ 661,455,574
Total		**112.4**	**0**	**2**	**$ 378,175,460**	**$ 283,280,114**	**$ 661,455,574**
Stikine River	1	70.9	3	0	$30,000,000	$380,821,947	$410,821,947
	2	49.5	0	2	$276,772,631	$82,928,131	$359,700,762
	3	21.6	0	1	$39,652,406	$0	$39,652,406
	4	14.4	0	0	$230,797,768	$0	$230,797,768
	5 (Ultimate)	16.5	0	0	$73,588,676	$0	$73,588,676
Total		**172.7**	**3**	**3**	**$ 650,811,480**	**$ 463,750,078**	**$ 1,114,561,559**
Aaron Creek	1	70.9	3	0	$30,000,000	$380,821,947	$410,821,947
	2 (Pass)	54.9	0	2	$465,217,395	$96,355,591	$561,572,986
	2 (Tunnel)	54.3	0	2	$438,206,497	$96,393,391	$534,599,888
	3	10.5	0	1	$34,789,469	$0	$34,789,469
	4 (Ultimate)	6.9	0	0	$53,728,662	$0	$53,728,662
Total (Pass)		**143.1**	**3**	**3**	**$ 583,735,525**	**$ 477,177,538**	**$ 1,060,913,063**
Total (Tunnel)		**142.5**	**3**	**3**	**$ 556,724,627**	**$ 477,215,338**	**$ 1,033,939,965**

Iskut River Alignment (Segment I-1):	**Segment I-1 -** Begins where the existing Eskay Creek Gold Mine road departs the Iskut River via the Unuk River drainage. The alignment follows the existing gravel road as it parallels the south side of the Iskut River to the Cassiar Highway near Echo Lake.			
EXISTING ROAD LIMITS:	STA.	6655+30	7926+96	
EXISTING ROAD LENGTH:	24.08	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Rehabilitation/Paving cost using Segment W-3 per mile cost	24.08	Mile	$ 159,322	$ 3,836,474
SUBTOTAL ROADWAY AND BRIDGE WORK				**$ 3,836,474**

Iskut River Alignment (Segment I-2):	**Segment I-2 -** Begins on the south side of the Iskut River near the airstrip and mining operations at Bronson Creek. The alignment parallels the south side of the Iskut River to the northeast until reaching Segment I-1 and the existing Eskay Creek Gold Mine road.			
LIMITS:	STA.	5582+10	6655+30	
LENGTH:	20.33	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Reconstruction cost using Segment S-1 per mile cost	20.33	Mile	$ 5,095,728	103,596,150
SUBTOTAL ROADWAY AND BRIDGE WORK				**$ 103,596,150**

Iskut River Alignment (Segment I-3):	**Segment I-3 -** Begins adjacent to the ACV ferry terminal near the confluence of the Iskut and Stikine Rivers. The alignment parallels the south side of the Iskut River, crosses the Craig River, and meets with Segment I-2 near the airstrip and mining operations at Bronson Creek.			
LIMITS:	STA.	4185+80	5582+10	
LENGTH:	26.45	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Reconstruction cost using Segment S-1 per mile cost	26.45	Mile	$ 5,095,728	$ 134,782,006
Iskut River ACV Ferry Terminal	1.0	LS	$ 10,000,000	$ 10,000,000
Wrangell Island ACV Ferry Terminal	1.0	LS	$ 10,000,000	$ 10,000,000
Mitkof Island ACV Ferry Terminal	1.0	LS	$ 10,000,000	$ 10,000,000
SUBTOTAL ROADWAY, PORT, AND BRIDGE WORK (AK)				**$ 20,000,000**
SUBTOTAL ROADWAY, PORT, AND BRIDGE WORK (BC)				**$ 144,782,006**
PER MILE COST (BC SECTION)				**$ 5,473,800**

Bradfield Canal Alignment (Segment B-1 or Segment 1B with 2 thru 5 in Bradfield Report):		**Segment B-1 -** Begins at the Kapho Mountain conventional ferry terminal along Bradfield Canal. The alignment parallels the North Fork of the Bradfield River to the northeast before reaching a tunnel that takes the alignment into the Craig River drainage. The alignment follows the Craig River to the northeast and meets up with Segment I-2 of the Iskut River Alignment near the airstrip and mining operations at Bronson Creek.				
	AK SECTION LIMITS:	Stationing:	10+00	1538+27		
	BC SECTION LIMITS:	STA.	1538+27	2451+30		
	AK SECTION LIMITS:	29.15	Mile			
	BC SECTION LIMITS:	17.29	Mile			
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	BRADFIELD 2004 UNIT COST	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**					
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 8,659,399	$ 12,725,119	$ 12,725,119
					SUBTOTAL	**$ 12,725,119**
DIVISION 2	**EARTHWORK**					
	Erosion Control (4% of Construction Value)	1	LS	$ 6,387,279	$ 2,936,566	$ 2,936,566
	Clearing and Grubbing	300	Acre	$ 3,500	$ 5,500	$ 1,650,000
	Roadway Excavation incl. Haul	3,104,623	CY	$ 8	$ 9	$ 27,941,607
	Subexcavation	210,800	CY	$ 8	$ 8	$ 1,686,400
	Access Road	0.9	Mile	$ 200,000	$ 200,000	$187,000
					SUBTOTAL	**$ 34,401,573**
DIVISION 3	**UTILITIES & RELOCATIONS**					
	Utilities (Power and Water Allowance)	29.15	Mile	$ 50,000	$ 58,000	$ 1,690,700
	Right of Way & Building Relocation	1	LS	$ 1,500,000	$ 1,738,900	$ 1,738,900
					SUBTOTAL	**$ 3,429,600**
DIVISION 4	**BASES & PAVEMENT**					
	4" Crushed Agg.	38,000	CY	$ 20	$ 40	$ 1,520,000
	8" Select Material	115,833	CY	$ 20	$ 25	$ 2,895,825
					SUBTOTAL	**$ 4,415,825**
DIVISION 5	**TUNNEL**					
	Tunnel (Excludes Surfacing and Drainage)	8,200	LF	$ 9,150	$ 10,000	$ 82,000,000
					SUBTOTAL	**$ 82,000,000**
DIVISION 6	**STRUCTURES**					
	Bridge Structure - Low Complexity	8,250	SF	$ 150	$ 210	$ 1,732,500
	Bridge Structure - Medium Complexity	58,350	SF	$ 200	$ 260	$ 15,171,000
	Bridge Structure - High Complexity	25,050	SF	$ 275	$ 380	$ 9,519,000
	Culverts -					
	> 10 foot diameter	7	Ea	$ 60,000	$ 200,000	$ 1,400,000
	Fish Passage	-	Ea	$ 90,000	$ 8,000	$ -
	Revetment Wall (Class V Riprap)	114,200	CY	$ 40	$ 30	$ 3,426,000
	MSE Wall	364,400	SF	$ 30	$ 45	$ 16,398,000
					SUBTOTAL	**$ 47,646,500**
DIVISION 7	**INCIDENTAL CONSTRUCTION**					
	Wetland Mitigation - Allowance	75	Acre	$ 25,000	$ 25,000	$ 1,875,000
	Cultural Resource Mitigation - Allowance	25	LS	$ 10,000	$ 12,000	$ 300,000
	Drainage - Allowance	29.2	Mile	$ 80,000	$ 115,000	$ 3,352,250
	Stormwater Management Ponds	25	LS	$ 206,000	$ 239,000	$ 5,975,000
	Seeding and Landscaping	185	Acre	$ 250	$ 7,000	$ 1,295,000
	Staging Area Rehabilitation	15	Acre	$ 50,000	$ 58,000	$ 870,000
					SUBTOTAL	**$ 13,667,250**
DIVISION 8	**ROADWAY FINISHES**					
	Guard Rail	19,631	LF	$ 50	$ 30	$ 588,924
	Roadway Signage - Allowance	29.15	Mile	$ 5,000	$ 3,500	$ 102,025
					SUBTOTAL	**$ 690,949**
DIVISION 9	**PORT DEVELOPMENT**					
	Conventional Ferry Terminal - Kapho Mountain	1	LS	$ -	$ 15,000,000	$ 15,000,000
	ACV Ferry Terminal		LS	$ -	$ 10,000,000	$ -
					SUBTOTAL	**$ 15,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**					
	Construction Camps and Per Diem	1	LS	$ -	$ 9,788,553	$ 9,788,553
					SUBTOTAL	**$ 9,788,553**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)					**$ 223,765,369**
	PER MILE COST (AK SECTION)*				$ 4,593,452	
	BC SECTION	17.29	Mile		$ 4,593,452	**$79,420,785**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

Aaron Creek Pass Alignment (Segment A-1a):

Segment A-1a - Begins at the Berg Bay conventional ferry terminal and follows the Aaron Creek drainage to the northeast until reaching an unnamed drainage near Berg Mountain. The alignment enters the unnamed drainage and follows it east to the West Fork Pass. The alignment traverses up and over the pass and enters the West Fork of the Katete River drainage. Paralleling the West Fork to the north, the alignment continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.

AK SECTION LIMITS:	STA.	1280+00	2883+63
BC SECTION LIMITS:	STA.	2883+63	3087+36
AK SECTION LENGTH:	30.37	Mile	
BC SECTION LENGTH (Designed):	3.86	Mile	
BC SECTION LENGTH (Per Mile Cost):	6.35	Mile	

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 28,280,717	$ 28,280,717
				SUBTOTAL	**$ 28,280,717**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 6,526,319	$ 6,526,319
	Clearing and Grubbing	323	Acre	$ 5,500	$ 1,776,500
	Roadway Excavation incl. Haul	5,371,500	CY	$ 9	$ 48,343,500
	Subexcavation	15,600	CY	$ 8	$ 124,800
				SUBTOTAL	**$ 56,771,119**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	30.37	Mile	$ 58,000	$ 1,761,460
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,761,460**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	30,500	CY	$ 40	$ 1,220,000
	8" Select Material	132,500	CY	$ 25	$ 3,312,500
				SUBTOTAL	**$ 4,532,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	39,000	SF	$ 210	$ 8,190,000
	Bridge Structure - Medium Complexity	129,000	SF	$ 260	$ 33,540,000
	Bridge Structure - High Complexity	240,000	SF	$ 380	$ 91,200,000
	Culverts -				
	> 10 foot diameter	15	Each	$ 200,000	$ 3,000,000
	Fish Passage	18	Each	$ 8,000	$ 144,000
	Revetment Wall (Class V Riprap)	7,381	CY	$ 30	$ 221,430
	MSE Wall	250,100	SF	$ 45	$ 11,254,500
				SUBTOTAL	**$ 147,549,930**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	91	Acre	$ 25,000	$ 2,275,000
	Cultural Resource Mitigation - Allowance	28	LS	$ 12,000	$ 336,000
	Drainage - Allowance	30.37	Mile	$ 115,000	$ 3,492,550
	Stormwater Management Ponds	28	LS	$ 239,000	$ 6,692,000
	Seeding and Landscaping	113	Acre	$ 7,000	$ 791,000
	Staging Area Rehabilitation	17	Acre	$ 58,000	$ 986,000
				SUBTOTAL	**$ 14,572,550**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	17,930	LF	$ 30	$ 537,900
	Roadway Signage - Allowance	30.37	Mile	$ 3,500	$ 106,295
				SUBTOTAL	**$ 644,195**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay & Log Transfer Station	2	LS	$ 15,000,000	$ 30,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 30,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 21,754,398	$ 21,754,398
				SUBTOTAL	**$ 21,754,398**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 305,866,869**
	PER MILE COST (AK SECTION)			$ 9,083,532	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 31,545,854**
	PER MILE COST (BC SECTION)*			$ 8,172,501	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 5,095,728	**$ 32,357,873**
	TOTAL BC SECTION COST				**$ 63,903,727**

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Aaron Creek Pass Alignment (BC) (Segment A-1a):	**Segment A-1a - BC -** Begins at the AK/BC border, parallels the West Fork to the north, continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.	1280+00	2883+63	
	BC SECTION LIMITS:	STA.	2883+63	3087+36	
	AK SECTION LENGTH:	30.37	Mile		
	BC SECTION LENGTH (Designed):	3.86	Mile		
	BC SECTION LENGTH (Per Mile Cost):	6.35	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 3,231,632	$ 3,231,632
				SUBTOTAL	**$ 3,231,632**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 745,761	$ 745,761
	Clearing and Grubbing	40	Acre	$ 5,500	$ 220,000
	Roadway Excavation incl. Haul	307,000	CY	$ 9	$ 2,763,000
	Subexcavation	55,100	CY	$ 8	$ 440,800
				SUBTOTAL	**$ 4,169,561**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	3.86	Mile	$ 58,000	$ 223,880
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 223,880**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	3,500	CY	$ 40	$ 140,000
	8" Select Material	16,500	CY	$ 25	$ 412,500
				SUBTOTAL	**$ 552,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity	72,000	SF	$ 260	$ 18,720,000
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	1	Each	$ 200,000	$ 200,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 18,928,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	12	Acre	$ 25,000	$ 300,000
	Cultural Resource Mitigation - Allowance	4	LS	$ 12,000	$ 48,000
	Drainage - Allowance	3.86	Mile	$ 115,000	$ 443,900
	Stormwater Management Ponds	4	LS	$ 239,000	$ 956,000
	Seeding and Landscaping	11	Acre	$ 7,000	$ 77,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,940,900**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	3.86	Mile	$ 3,500	$ 13,510
				SUBTOTAL	**$ 13,510**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 2,485,871	$ 2,485,871
				SUBTOTAL	**$ 2,485,871**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 31,545,854**
	PER MILE COST (BC SECTION)*			$ 8,172,501	
	BC SECTION	6.35	Mile	$ 5,095,728	**$ 32,357,873**

*Note: Per mile cost calculated excludes tunnel and port development costs.

Aaron Creek Tunnel Alignment (Segment A-1b):

Segment A-1b - Begins at the Berg Bay conventional ferry terminal and follows the Aaron Creek drainage to the northeast until reaching an unnamed drainage near Berg Mountain. The alignment enters the unnamed drainage and follows it east to the West Fork Pass. The alignment traverses through the pass with a tunnel and enters the West Fork of the Katete River drainage. Paralleling the West Fork to the north, the alignment continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.

AK SECTION LIMITS:	STA.	1280+00	2851+97
BC SECTION LIMITS:	STA.	2851+97	3055+71
AK SECTION LENGTH:	29.77	Mile	
BC SECTION LENGTH (Designed):	3.86	Mile	
BC SECTION LENGTH (Per Mile Cost):	6.35	Mile	

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 18,791,494	$ 18,791,494
				SUBTOTAL	**$ 18,791,494**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 4,336,499	$ 4,336,499
	Clearing and Grubbing	299	Acre	$ 5,500	$ 1,644,500
	Roadway Excavation incl. Haul	3,246,500	CY	$ 9	$ 29,218,500
	Subexcavation	20,500	CY	$ 8	$ 164,000
				SUBTOTAL	**$ 35,363,499**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	29.77	Mile	$ 58,000	$ 1,726,660
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,726,660**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	29,000	CY	$ 40	$ 1,160,000
	8" Select Material	125,000	CY	$ 25	$ 3,125,000
				SUBTOTAL	**$ 4,285,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)	7,400	LF	$ 10,000	$ 74,000,000
				SUBTOTAL	**$ 74,000,000**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	84,000	SF	$ 210	$ 17,640,000
	Bridge Structure - Medium Complexity	204,000	SF	$ 260	$ 53,040,000
	Bridge Structure - High Complexity	45,000	SF	$ 380	$ 17,100,000
	Culverts -				
	> 10 foot diameter	8	Each	$ 200,000	$ 1,600,000
	Fish Passage	11	Each	$ 8,000	$ 88,000
	Revetment Wall (Class V Riprap)	5,167	CY	$ 30	$ 155,010
	MSE Wall	112,600	SF	$ 45	$ 5,067,000
				SUBTOTAL	**$ 94,690,010**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	89	Acre	$ 25,000	$ 2,225,000
	Cultural Resource Mitigation - Allowance	27	LS	$ 12,000	$ 324,000
	Drainage - Allowance	29.77	Mile	$ 115,000	$ 3,423,550
	Stormwater Management Ponds	27	LS	$ 239,000	$ 6,453,000
	Seeding and Landscaping	102	Acre	$ 7,000	$ 714,000
	Staging Area Rehabilitation	16	Acre	$ 58,000	$ 928,000
				SUBTOTAL	**$ 14,067,550**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	12,540	LF	$ 30	$ 376,200
	Roadway Signage - Allowance	29.77	Mile	$ 3,500	$ 104,195
				SUBTOTAL	**$ 480,395**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay & Log Transfer Station	2	LS	$ 15,000,000	$ 30,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 30,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 14,454,996	$ 14,454,996
				SUBTOTAL	**$ 14,454,996**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 287,859,604**
	PER MILE COST (AK SECTION)*			$ 6,481,122	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 31,571,054**
	PER MILE COST (BC SECTION)*			$ 8,179,030	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 5,095,728	**$ 32,357,873**
	TOTAL BC SECTION COST				**$ 63,928,927**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

	Aaron Creek Tunnel Alignment (BC) (Segment A-1b):	**Segment A-1b - BC -** Begins at the AK/BC border and parallels the West Fork to the north, continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.	1280+00	2851+97	
	BC SECTION LIMITS:	STA.	2851+97	3055+71	
	AK SECTION LENGTH:	29.77	Mile		
	BC SECTION LENGTH (Designed):	3.86	Mile		
	BC SECTION LENGTH (Per Mile Cost):	6.35	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 3,234,232	$ 3,234,232
				SUBTOTAL	**$ 3,234,232**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 746,361	$ 746,361
	Clearing and Grubbing	40	Acre	$ 5,500	$ 220,000
	Roadway Excavation incl. Haul	307,000	CY	$ 9	$ 2,763,000
	Subexcavation	55,100	CY	$ 8	$ 440,800
				SUBTOTAL	**$ 4,170,161**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	3.86	Mile	$ 58,000	$ 223,880
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 223,880**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	4,000	CY	$ 40	$ 160,000
	8" Select Material	16,500	CY	$ 25	$ 412,500
				SUBTOTAL	**$ 572,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity	72,000	SF	$ 260	$ 18,720,000
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	1	Each	$ 200,000	$ 200,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 18,928,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	12	Acre	$ 25,000	$ 300,000
	Cultural Resource Mitigation - Allowance	4	LS	$ 12,000	$ 48,000
	Drainage - Allowance	3.86	Mile	$ 115,000	$ 443,900
	Stormwater Management Ponds	4	LS	$ 239,000	$ 956,000
	Seeding and Landscaping	11	Acre	$ 7,000	$ 77,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,940,900**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	3.86	Mile	$ 3,500	$ 13,510
				SUBTOTAL	**$ 13,510**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Berg Bay		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 2,487,871	$ 2,487,871
				SUBTOTAL	**$ 2,487,871**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 31,571,054**
	PER MILE COST (BC SECTION)*			$ 8,179,030	
	BC SECTION	6.35	Mile	$ 5,095,728	**$ 32,357,873**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

	Aaron Creek Alignment (Segment A-2):	**Segment A-2 -** Begins at The Narrows and parallels Black Channel to the east until reaching Segment A-1a or A-1b near the Berg Bay conventional ferry terminal.			
	LIMITS:	STA.	1005+00	1280+00	
	LENGTH:	5.21	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 3,169,034	$ 3,169,034
				SUBTOTAL	**$ 3,169,034**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 731,316	$ 731,316
	Clearing and Grubbing	49	Acre	$ 5,500	$ 269,500
	Roadway Excavation incl. Haul	377,000	CY	$ 9	$ 3,393,000
	Subexcavation	1,600	CY	$ 8	$ 12,800
				SUBTOTAL	**$ 4,406,616**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	5.21	Mile	$ 58,000	$ 302,180
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 302,180**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	5,500	CY	$ 40	$ 220,000
	8" Select Material	23,500	CY	$ 25	$ 587,500
				SUBTOTAL	**$ 807,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity	45,000	SF	$ 380	$ 17,100,000
	Culverts -				
	> 10 foot diameter	1	Each	$ 200,000	$ 200,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 17,308,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	16	Acre	$ 25,000	$ 400,000
	Cultural Resource Mitigation - Allowance	5	LS	$ 12,000	$ 60,000
	Drainage - Allowance	5.21	Mile	$ 115,000	$ 599,150
	Stormwater Management Ponds	5	LS	$ 239,000	$ 1,195,000
	Seeding and Landscaping	20	Acre	$ 7,000	$ 140,000
	Staging Area Rehabilitation	3	Acre	$ 58,000	$ 174,000
				SUBTOTAL	**$ 2,568,150**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	5.21	Mile	$ 3,500	$ 18,235
				SUBTOTAL	**$ 18,235**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 2,437,719	$ 2,437,719
				SUBTOTAL	**$ 2,437,719**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 31,017,434**
	PER MILE COST*			$ 5,953,442	

*Note: Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (Segment S-1):

Segment S-1 - Begins along the south side of the Stikine River near the mouth of Andrew Creek and adjacent to Limb Island. The alignment parallels the south side of the Stikine River to the northeast before reaching Segment I-3 of the Iskut River Alignment and the ACV ferry terminal near the confluence of the Iskut and Stikine Rivers.

AK SECTION LIMITS:	STA.	2545+94	3673+29
BC SECTION LIMITS:	STA.	3673+29	3891+26
AK SECTION LIMITS:	21.35	Mile	
BC SECTION LIMITS (Designed):	4.13	Mile	
BC SECTION LIMITS (Per Mile Cost):	6.35	Mile	

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 11,096,994	$ 11,096,994
				SUBTOTAL	**$ 11,096,994**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 2,560,845	$ 2,560,845
	Clearing and Grubbing	226	Acre	$ 5,500	$ 1,243,000
	Roadway Excavation incl. Haul	3,722,500	CY	$ 9	$ 33,502,500
	Subexcavation	36,600	CY	$ 8	$ 292,800
				SUBTOTAL	**$ 37,599,145**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	21.35	Mile	$ 58,000	$ 1,238,300
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,238,300**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	23,000	CY	$ 40	$ 920,000
	8" Select Material	98,500	CY	$ 25	$ 2,462,500
				SUBTOTAL	**$ 3,382,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity	111,000	SF	$ 260	$ 28,860,000
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	21	Each	$ 200,000	$ 4,200,000
	Fish Passage	25	Each	$ 8,000	$ 200,000
	Revetment Wall (Class V Riprap)	14,024	CY	$ 30	$ 420,720
	MSE Wall	64,200	SF	$ 45	$ 2,889,000
				SUBTOTAL	**$ 36,569,720**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	64	Acre	$ 25,000	$ 1,600,000
	Cultural Resource Mitigation - Allowance	20	LS	$ 12,000	$ 240,000
	Drainage - Allowance	21.35	Mile	$ 115,000	$ 2,455,250
	Stormwater Management Ponds	20	LS	$ 239,000	$ 4,780,000
	Seeding and Landscaping	75	Acre	$ 7,000	$ 525,000
	Staging Area Rehabilitation	12	Acre	$ 58,000	$ 696,000
				SUBTOTAL	**$ 10,296,250**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	21.35	Mile	$ 3,500	$ 74,725
				SUBTOTAL	**$ 74,725**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 8,536,150	$ 8,536,150
				SUBTOTAL	**$ 8,536,150**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 108,793,784**
	PER MILE COST (AK SECTION)*			$ 5,095,728	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 22,594,215**
	PER MILE COST (BC SECTION)*			$ 5,470,754	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 5,095,728	**$ 32,357,873**
	TOTAL BC SECTION COST				**$ 54,952,087**

*Note: Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (BC) (Segment S-1):

Segment S-1 - BC - Begins at the AK/BC border and parallels the south side of the Stikine River to the northeast before reaching Segment I-3 of the Iskut River Alignment and the ACV ferry terminal near the confluence o the Iskut and Stikine Rivers.

AK SECTION LIMITS:	STA.	2545+94	3673+29
BC SECTION LIMITS:	STA.	3673+29	3891+26
AK SECTION LIMITS:	21.35	Mile	
BC SECTION LIMITS (Designed):	4.13	Mile	
BC SECTION LIMITS (Per Mile Cost):	6.35	Mile	

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 2,306,435	$ 2,306,435
				SUBTOTAL	**$ 2,306,435**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 532,254	$ 532,254
	Clearing and Grubbing	45	Acre	$ 5,500	$ 247,500
	Roadway Excavation incl. Haul	396,500	CY	$ 9	$ 3,568,500
	Subexcavation	52,300	CY	$ 8	$ 418,400
				SUBTOTAL	**$ 4,766,654**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	4.13	Mile	$ 58,000	$ 239,540
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 239,540**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	4,000	CY	$ 40	$ 160,000
	8" Select Material	18,000	CY	$ 25	$ 450,000
				SUBTOTAL	**$ 610,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	51,000	SF	$ 210	$ 10,710,000
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	1	Each	$ 200,000	$ 200,000
	Fish Passage	1	Each	$ 8,000	$ 8,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 10,918,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	12	Acre	$ 25,000	$ 300,000
	Cultural Resource Mitigation - Allowance	4	LS	$ 12,000	$ 48,000
	Drainage - Allowance	4.13	Mile	$ 115,000	$ 474,950
	Stormwater Management Ponds	4	LS	$ 239,000	$ 956,000
	Seeding and Landscaping	10	Acre	$ 7,000	$ 70,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,964,950**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	4.13	Mile	$ 3,500	$ 14,455
				SUBTOTAL	**$ 14,455**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 1,774,181	$ 1,774,181
				SUBTOTAL	**$ 1,774,181**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 22,594,215**
	PER MILE COST (AK SECTION)*			$ 5,470,754	
	BC SECTION	6.35	Mile	$ 5,095,728	**$32,357,873**

*Note: Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (Segment S-2):		**Segment S-2** - Begins at the Crittenden Creek conventional ferry terminal site and parallels the Eastern Passage to the northwest. Once around Garnett Point, the alignment enters the Stikine River drainage, turns to the northeast, and follows the Stikine River to near the mouth of Andrew Creek.			
	LIMITS:	STA.	1614+00	2545+94	
	LENGTH:	17.65	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 4,413,906	$ 4,413,906
				SUBTOTAL	**$ 4,413,906**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 1,018,594	$ 1,018,594
	Clearing and Grubbing	161	Acre	$ 5,500	$ 885,500
	Roadway Excavation incl. Haul	1,501,000	CY	$ 9	$ 13,509,000
	Subexcavation	18,400	CY	$ 8	$ 147,200
				SUBTOTAL	**$ 15,560,294**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	17.65	Mile	$ 58,000	$ 1,023,700
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 1,023,700**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	19,000	CY	$ 40	$ 760,000
	8" Select Material	18,000	CY	$ 25	$ 450,000
				SUBTOTAL	**$ 1,210,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	30,000	SF	$ 210	$ 6,300,000
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	7	Each	$ 200,000	$ 1,400,000
	Fish Passage	4	Each	$ 8,000	$ 32,000
	Revetment Wall (Class V Riprap)	22,880	CY	$ 30	$ 686,400
	MSE Wall	29,700	SF	$ 45	$ 1,336,500
				SUBTOTAL	**$ 9,754,900**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	53	Acre	$ 25,000	$ 1,325,000
	Cultural Resource Mitigation - Allowance	16	LS	$ 12,000	$ 192,000
	Drainage - Allowance	17.65	Mile	$ 115,000	$ 2,029,750
	Stormwater Management Ponds	16	LS	$ 239,000	$ 3,824,000
	Seeding and Landscaping	62	Acre	$ 7,000	$ 434,000
	Staging Area Rehabilitation	10	Acre	$ 58,000	$ 580,000
				SUBTOTAL	**$ 8,384,750**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	17.65	Mile	$ 3,500	$ 61,775
				SUBTOTAL	**$ 61,775**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Crittenden Creek & Wrangell Island (Spur Rd., Peninsula St., or AMHS*)	2	LS	$ 15,000,000	$ 30,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 30,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 3,395,313	$ 3,395,313
				SUBTOTAL	**$ 3,395,313**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 73,804,638**
	PER MILE COST*			$ 2,481,849	

*Notes: If existing AMHS ferry terminal is utilized on Wrangell Island the cost of 1 conventional ferry terminal can be eliminated.
Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (Segment S-3):		**Segment S-3** - Begins at The Narrows and parallels the Eastern Passage to the northwest until reaching Segment S-2 near the Crittenden Creek conventional ferry terminal.			
	LIMITS:	Stationing:	1005+00	1614+00	
	LENGTH:	11.53	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 4,596,697	$ 4,596,697
				SUBTOTAL	**$ 4,596,697**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 1,060,776	$ 1,060,776
	Clearing and Grubbing	104	Acre	$ 5,500	$ 572,000
	Roadway Excavation incl. Haul	590,500	CY	$ 9	$ 5,314,500
	Subexcavation	2,300	CY	$ 8	$ 18,400
				SUBTOTAL	**$ 6,965,676**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	11.53	Mile	$ 58,000	$ 668,740
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 668,740**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	12,000	CY	$ 40	$ 480,000
	8" Select Material	53,000	CY	$ 25	$ 1,325,000
				SUBTOTAL	**$ 1,805,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	18,000	SF	$ 210	$ 3,780,000
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity	45,750	SF	$ 380	$ 17,385,000
	Culverts -				
	> 10 foot diameter	3	Each	$ 200,000	$ 600,000
	Fish Passage	3	Each	$ 8,000	$ 24,000
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall	5,200.0	SF	$ 45	$ 234,000
				SUBTOTAL	**$ 22,023,000**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	34	Acre	$ 25,000	$ 850,000
	Cultural Resource Mitigation - Allowance	11	LS	$ 12,000	$ 132,000
	Drainage - Allowance	11.53	Mile	$ 115,000	$ 1,325,950
	Stormwater Management Ponds	11	LS	$ 239,000	$ 2,629,000
	Seeding and Landscaping	43	Acre	$ 7,000	$ 301,000
	Staging Area Rehabilitation	6	Acre	$ 58,000	$ 348,000
				SUBTOTAL	**$ 5,585,950**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	11.53	Mile	$ 3,500	$ 40,355
				SUBTOTAL	**$ 40,355**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 3,535,921	$ 3,535,921
				SUBTOTAL	**$ 3,535,921**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 45,221,339**
	PER MILE COST*			$ 3,922,059	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Limb Island Alignment (Segment L-1):	**Segment L-1** - Begins at the end of the Mitkof Highway on Mitkof Island and crosses Dry Strait with a bridge. The alignment traverses the south side of Dry Island and the north side of Farm Island before crossing Hooligan Slough and reaching Limb Island. After crossing Limb Island and spanning the Stikine River, the alignment meets Segment S-1 near Andrew Creek.			
	LIMITS:	STA.	100+00	859+77	
	LENGTH:	14.39	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 15,768,920	$ 15,768,920
				SUBTOTAL	**$ 15,768,920**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 3,638,982	$ 3,638,982
	Clearing and Grubbing	122	Acre	$ 5,500	$ 671,000
	Roadway Excavation incl. Haul	1,076,500	CY	$ 9	$ 9,688,500
	Subexcavation	219,500	CY	$ 8	$ 1,756,000
				SUBTOTAL	**$ 15,754,482**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	14.39	Mile	$ 58,000	$ 834,620
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 834,620**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	13,500	CY	$ 40	$ 540,000
	8" Select Material	59,000	CY	$ 25	$ 1,475,000
				SUBTOTAL	**$ 2,015,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity	24,000	SF	$ 210	$ 5,040,000
	Bridge Structure - Medium Complexity	138,000	SF	$ 260	$ 35,880,000
	Bridge Structure - High Complexity	153,000	SF	$ 380	$ 58,140,000
	Culverts -				
	> 10 foot diameter	5	Each	$ 200,000	$ 1,000,000
	Fish Passage	4	Each	$ 8,000	$ 32,000
	Revetment Wall (Class V Riprap)	8,489	CY	$ 30	$ 254,670
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 100,346,670**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	43	Acre	$ 25,000	$ 1,075,000
	Cultural Resource Mitigation - Allowance	13	LS	$ 12,000	$ 156,000
	Drainage - Allowance	14.39	Mile	$ 115,000	$ 1,654,850
	Stormwater Management Ponds	13	LS	$ 239,000	$ 3,107,000
	Seeding and Landscaping	45	Acre	$ 7,000	$ 315,000
	Staging Area Rehabilitation	8	Acre	$ 58,000	$ 464,000
				SUBTOTAL	**$ 6,771,850**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	14.39	Mile	$ 3,500	$ 50,365
				SUBTOTAL	**$ 50,365**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 12,129,939	$ 12,129,939
				SUBTOTAL	**$ 12,129,939**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 153,671,846**
	PER MILE COST*			$ 10,679,072	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Wrangell Island Alignment (Segment W-1):	**Segment W-1** - Begins near the Log Transfer Station conventional ferry terminal site and parallels the shoreline along the Eastern Passage to the northeast. The alignment reaches The Narrows and ends after spanning Blake Channel with a structure.			
	LIMITS:	STA.	914+00	1005+00	
	LENGTH:	1.72	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 332,764	$ 332,764
				SUBTOTAL	**$ 332,764**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 76,792	$ 76,792
	Clearing and Grubbing	15	Acre	$ 5,500	$ 82,500
	Roadway Excavation incl. Haul	140,000	CY	$ 9	$ 1,260,000
	Subexcavation	800	CY	$ 8	$ 6,400
				SUBTOTAL	**$ 1,425,692**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	1.72	Mile	$ 58,000	$ 99,760
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 99,760**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	2,000	CY	$ 40	$ 80,000
	8" Select Material	8,000	CY	$ 25	$ 200,000
				SUBTOTAL	**$ 280,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 200,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	5	Acre	$ 25,000	$ 125,000
	Cultural Resource Mitigation - Allowance	2	LS	$ 12,000	$ 24,000
	Drainage - Allowance	1.72	Mile	$ 115,000	$ 197,800
	Stormwater Management Ponds	2	LS	$ 239,000	$ 478,000
	Seeding and Landscaping	6	Acre	$ 7,000	$ 42,000
	Staging Area Rehabilitation	1	Acre	$ 58,000	$ 58,000
				SUBTOTAL	**$ 924,800**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	1.72	Mile	$ 3,500	$ 6,020
				SUBTOTAL	**$ 6,020**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Log Transfer Station		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 255,972	$ 255,972
				SUBTOTAL	**$ 255,972**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 3,325,008**
	PER MILE COST*			$ 1,933,144	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Wrangell Island Alignment (Segment W-2):	**Segment W-2** - Begins at the intersection of Segment W-3 and Segment F-1 of the Fool's Inlet Alignment. The alignment follows the existing McCormack Creek Road to the northeast before reaching the Log Transfer Station conventional ferry terminal and Segment W-1.			
	EXISTING ROAD LIMITS:	STA.	745+00	914+00	
	EXISTING ROAD LENGTH:	3.20	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 53,932	$ 53,932
				SUBTOTAL	**$ 53,932**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 2,489	$ 2,489
	Clearing and Grubbing	1.00	Acre	$ 5,500	$ 5,500
	Roadway Excavation incl. Haul	9,000	CY	$ 9	$ 81,000
	Roadway ReconditItoning	3.20	Mile	$ 11,700	$ 37,440
				SUBTOTAL	**$ 126,429**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)		Mile	$ 58,000	$ -
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	4,000	CY	$ 40	$ 160,000
	8" Select Material	1,000	CY	$ 25	$ 25,000
				SUBTOTAL	**$ 185,000**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 200,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	0.3	Acre	$ 25,000	$ 7,500
	Cultural Resource Mitigation - Allowance	0.1	LS	$ 12,000	$ 1,200
	Drainage - Allowance	3.20	Mile	$ 15,000	$ 48,000
	Stormwater Management Ponds	0.1	LS	$ 239,000	$ 25,223
	Seeding and Landscaping	1	Acre	$ 7,000	$ 7,000
	Staging Area Rehabilitation	0.1	Acre	$ 58,000	$ 5,800
				SUBTOTAL	**$ 94,723**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	3.20	Mile	$ 3,500	$ 11,200
				SUBTOTAL	**$ 11,200**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 41,486	$ 41,486
				SUBTOTAL	**$ 41,486**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 512,770**
	PER MILE COST*			$ 160,241	

*Note: Per mile cost calculated excludes tunnel and port development costs.

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
	Wrangell Island Alignment (Segment W-3):	**Segment W-3** - Begins at the end of the Zimovia Highway near Pat Creek and follows McCormack Creek Road northeast across most of Wrangell Island to the intersection with Segment F-1 of the Fool's Inlet Alignment.			
	EXISTING ROAD LIMITS:	STA.	160+00	745+00	
	EXISTING ROAD LENGTH:	11.08	Mile		
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 185,670	$ 185,670
				SUBTOTAL	**$ 185,670**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 8,569	$ 8,569
	Clearing and Grubbing	1.00	Acre	$ 5,500	$ 5,500
	Roadway Excavation incl. Haul	35,500	CY	$ 9	$ 319,500
	Roadway Recondititoning	11.08	Mile	$ 11,700	$ 129,636
				SUBTOTAL	**$ 463,205**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)		Mile	$ 58,000	$ -
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	13,500	CY	$ 40	$ 540,000
	8" Select Material	2,500	CY	$ 25	$ 62,500
				SUBTOTAL	**$ 602,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 200,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	1.1	Acre	$ 25,000	$ 27,500
	Cultural Resource Mitigation - Allowance	0.4	LS	$ 12,000	$ 4,800
	Drainage - Allowance	11.08	Mile	$ 15,000	$ 166,200
	Stormwater Management Ponds	0.4	LS	$ 239,000	$ 87,213
	Seeding and Landscaping	5	Acre	$ 7,000	$ 35,000
	Staging Area Rehabilitation	0.2	Acre	$ 58,000	$ 11,600
				SUBTOTAL	**$ 332,313**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	11.08	Mile	$ 3,500	$ 38,780
				SUBTOTAL	**$ 38,780**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 142,823	$ 142,823
				SUBTOTAL	**$ 142,823**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 1,765,291**
	PER MILE COST*			$ 159,322	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Fool's Inlet Alignment (Segments F-1):	**Segment F-1** - Begins at the beginning of Segment W-2 of the Wrangell Island Alignment and follows the existing road from McCormack Creek Road to just north of the mouth of Fool's Inlet.			
	EXISTING ROAD LIMITS:	STA.	723+00	1062+00	
	EXISTING ROAD LENGTH:	6.42	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 107,819	$ 107,819
				SUBTOTAL	**$ 107,819**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 4,976	$ 4,976
	Clearing and Grubbing	3.00	Acre	$ 5,500	$ 16,500
	Roadway Excavation incl. Haul	18,500	CY	$ 9	$ 166,500
	Roadway Reconditiitoning	6.42	Mile	$ 11,700	$ 75,114
				SUBTOTAL	**$ 263,090**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)		Mile	$ 58,000	$ -
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	8,000	CY	$ 40	$ 320,000
	8" Select Material	1,500	CY	$ 25	$ 37,500
				SUBTOTAL	**$ 357,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter		Each	$ 200,000	$ -
	Fish Passage		Each	$ 8,000	$ -
	Revetment Wall (Class V Riprap)		CY	$ 30	$ -
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	0.6	Acre	$ 25,000	$ 15,000
	Cultural Resource Mitigation - Allowance	0.2	LS	$ 12,000	$ 2,400
	Drainage - Allowance	6.4	Mile	$ 15,000	$ 96,300
	Stormwater Management Ponds	0.2	LS	$ 239,000	$ 50,789
	Seeding and Landscaping	3	Acre	$ 7,000	$ 21,000
	Staging Area Rehabilitation	0.1	Acre	$ 58,000	$ 5,800
				SUBTOTAL	**$ 191,289**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	6.42	Mile	$ 3,500	$ 22,470
				SUBTOTAL	**$ 22,470**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal		LS	$ 15,000,000	$ -
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 82,937	$ 82,937
				SUBTOTAL	**$ 82,937**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 1,025,106**
	PER MILE COST*			$ 159,674	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Fool's Inlet Alignment (Segment F-2):		**Segment F-2** - Begins at the end of Segment F-1 and continues to Fool's Inlet, where the alignment parallels the northeastern shore before reaching the Fool's Inlet conventional ferry terminal.			
	LIMITS:	STA.	1062+00	1276+37	
	LENGTH:	4.06	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 695,300	$ 695,300
				SUBTOTAL	**$ 695,300**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 160,454	$ 160,454
	Clearing and Grubbing	32	Acre	$ 5,500	$ 176,000
	Roadway Excavation incl. Haul	148,000	CY	$ 9	$ 1,332,000
	Subexcavation	5,000	CY	$ 8	$ 40,000
				SUBTOTAL	**$ 1,708,454**
DIVISION 3	**UTILITIES & RELOCATIONS**				
	Utilities (Power and Water Allowance)	4.06	Mile	$ 58,000	$ 235,480
	Right of Way & Building Relocation		LS	$ 1,738,900	$ -
				SUBTOTAL	**$ 235,480**
DIVISION 4	**BASES & PAVEMENT**				
	4" Crushed Aggregate	4,500	CY	$ 40	$ 180,000
	8" Select Material	19,500	CY	$ 25	$ 487,500
				SUBTOTAL	**$ 667,500**
DIVISION 5	**TUNNEL**				
	Tunnel (Includes Lighting and Surfacing)		LF	$ 10,000	$ -
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
	Bridge Structure - Low Complexity		SF	$ 210	$ -
	Bridge Structure - Medium Complexity		SF	$ 260	$ -
	Bridge Structure - High Complexity		SF	$ 380	$ -
	Culverts -				
	> 10 foot diameter	4	Each	$ 200,000	$ 800,000
	Fish Passage	4	Each	$ 8,000	$ 32,000
	Revetment Wall (Class V Riprap)	9,595	CY	$ 30	$ 287,850
	MSE Wall		SF	$ 45	$ -
				SUBTOTAL	**$ 1,119,850**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Wetland Mitigation - Allowance	12	Acre	$ 25,000	$ 300,000
	Cultural Resource Mitigation - Allowance	4	LS	$ 12,000	$ 48,000
	Drainage - Allowance	4.06	Mile	$ 115,000	$ 466,900
	Stormwater Management Ponds	4	LS	$ 239,000	$ 956,000
	Seeding and Landscaping	16	Acre	$ 7,000	$ 112,000
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 1,998,900**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Roadway Signage - Allowance	4.06	Mile	$ 3,500	$ 14,210
				SUBTOTAL	**$ 14,210**
DIVISION 9	**PORT DEVELOPMENT**				
	Conventional Ferry Terminal - Fool's Inlet	1	LS	$ 15,000,000	$ 15,000,000
	ACV Ferry Terminal		LS	$ 10,000,000	$ -
				SUBTOTAL	**$ 15,000,000**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 534,846	$ 534,846
				SUBTOTAL	**$ 534,846**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 21,974,540**
	PER MILE COST*			$ 1,717,867	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$10,790,670	$10,790,670
Total bid estimate					$146,278,307
Mobilization percentage					8.0%

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$3,944,475	$3,944,475
642(3)	HR	3-Person Survey Crew	700	$312	$218,190
Total bid estimate					$146,278,307
Mobilization percentage					3.2%

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$231,741	$695,223
644(2)	EACH	Field Laboratory	3	$66,857	$200,570
644(3)	LPSM	Curing Shed	ALL	$51,498	$51,498
644(15)	LPSM	Nuclear Testing Equip.	ALL	$39,301	$39,301
644(16)	LPSM	Storage	ALL	$10,300	$10,300
645(1)	HOUR	Training	3000	$68	$203,280
Total bid estimate					$146,278,307
Mobilization percentage					0.9%

Total Project Requirements Percentage 12.1%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$12,853,660	$12,853,660
Total bid estimate					$121,650,994
Mobilization percentage					11.8%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$865,000	$865,000
642(3)	HR	3-Person Survey Crew	700	$250	$175,000
Total bid estimate					$121,650,994
Mobilization percentage					1.0%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$25,000	$75,000
644(2)	EACH	Field Laboratory	3	$25,000	$75,000
644(3)	LPSM	Curing Shed	ALL	$5,300	$5,300
644(15)	LPSM	Nuclear Testing Equip.	ALL	$79,500	$79,500
644(16)	LPSM	Storage	ALL	$16,000	$16,000
645(1)	HOUR	Training	3000	$10	$30,000
Total bid estimate					$121,650,994
Mobilization percentage					0.3%

Total Project Requirements Percentage 13.1%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$20,000,000	$20,000,000
Total bid estimate					$206,037,813
Mobilization percentage					10.8%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$700,000	$700,000
642(3)	HR	3-Person Survey Crew	0	$250	$0
Total bid estimate					$206,037,813
Mobilization percentage					0.4%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$0	$0
644(2)	EACH	Field Laboratory	3	$0	$0
644(3)	LPSM	Curing Shed	ALL	$0	$0
644(15)	LPSM	Nuclear Testing Equip.	ALL	$0	$0
644(16)	LPSM	Storage	ALL	$0	$0
645(1)	HOUR	Training	3000	$0	$0
Total bid estimate					$206,037,813
Mobilization percentage					0.0%

Total Project Requirements Percentage 11.2%

Juneau Access, Financial Plan, 2007, UPA	Sunny Point, 2006
Mobilization percentage	7.4%

Total Project Requirements Percentage 7.4%

Juneau Access, Final EIS, 2006, UPA				Valdez-Dayville Road, 2004		Valdez-Dayville Road, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$2,619,000	$2,619,000	$2,150,000	$2,150,000
Mobilization percentage					8.8%		7.3%

Total Project Requirements Percentage 8.1%

Juneau Access, Final EIS, 2006, UPA				Glacier Highway, 2005		Glacier Highway, 2005	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$700,000	$700,000	$675,000	$675,000
Mobilization percentage					7.0%		6.5%

Total Project Requirements Percentage 6.8%

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$2,300,000	$2,300,000	$800,000	$800,000	$700,000	$700,000	$400,000	$400,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					9.4%		3.2%		2.8%		1.6%
Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$450,000	$450,000	$230,000	$230,000	$300,000	$300,000	$350,000	$350,000
642(3)	HR	3-Person Survey Crew	1	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					2.0%		1.1%		1.3%		1.5%
Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
644(1)	EACH	Field Office	1	$50,000	$50,000	$40,000	$40,000	$60,000	$60,000	$50,000	$50,000
644(2)	EACH	Field Laboratory	1	$30,000	$30,000	$10,000	$10,000	$30,000	$30,000	$20,000	$20,000
644(15)	LPSM	Nuclear Testing Equip.	ALL	$3,000	$3,000	$2,300	$2,300	$2,000	$2,000	$20,000	$20,000
645(1)	HOUR	Training	1775	$1	$1,775	$1	$1,775	$1	$1,775	$1	$1,775
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					0.3%		0.2%		0.4%		0.4%

Total Project Requirements Percentage 6.1%

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,023,000	$1,023,000	$990,000	$990,000	$1,647,200	$1,647,200	$1,070,000	$1,070,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					9.0%		10.5%		17.5%		9.8%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$175,000	$175,000	$140,000	$140,000	$212,900	$212,900	$450,000	$450,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					1.6%		1.5%		2.3%		4.3%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$360,000	$360,000	$115,000	$115,000	$369,500	$369,500	$250,000	$250,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					3.3%		1.2%		4.1%		2.3%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$125,000	$125,000	$100,000	$100,000	$221,400	$221,400	$25,000	$25,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					1.1%		1.1%		2.4%		0.2%

Total Project Requirements Percentage 18.1%

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,845,000	$1,845,000	$1,809,000	$1,809,000	$2,370,000	$2,370,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					13.3%		11.5%		11.1%
Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$220,000	$220,000	$294,000	$294,000	$500,000	$500,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.6%		1.9%		2.4%
Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$214,000	$214,000	$379,000	$379,000	$400,000	$400,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.6%		2.5%		1.9%
Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$150,000	$150,000	$41,200	$41,200	$400,000	$400,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.1%		0.3%		1.9%

Total Project Requirements Percentage 17.0%

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,447,000	$1,447,000	$2,017,998	$2,017,998	$1,600,000	$1,600,000	$2,130,000	$2,130,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					9.0%		11.0%		8.4%		10.9%
Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$290,000	$290,000	$237,700	$237,700	$300,000	$300,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					1.8%		1.3%		1.6%		1.0%
Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$135,000	$135,000	$444,800	$444,800	$220,000	$220,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					0.8%		2.5%		1.2%		1.0%
Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$180,000	$180,000	$86,105	$86,105	$220,000	$220,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					1.1%		0.5%		1.2%		1.0%

Total Project Requirements Percentage 13.6%

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$923,000	$923,000	$783,000	$783,000	$1,100,000	$1,100,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					10.0%		9.1%		12.6%
Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$175,000	$175,000	$100,000	$100,000	$150,000	$150,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.9%		1.2%		1.7%
Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$112,000	$112,000	$171,000	$171,000	$25,000	$25,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.2%		2.0%		0.3%
Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$95,000	$95,000	$129,200	$129,200	$100,000	$100,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.0%		1.5%		1.2%

Total Project Requirements Percentage 14.6%

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$780,000	$780,000	$700,000	$700,000	$1,000,000	$1,000,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					9.0%		10.1%		11.0%

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$133,300	$133,300	$300,000	$300,000	$90,000	$90,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					1.6%		4.5%		1.0%

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$82,000	$82,000	$50,000	$50,000	$110,000	$110,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					1.0%		0.7%		1.2%

Total Project Requirements Percentage **13.4%**

Average Total Project Requirements Percentage **11.8%**

Use **13.0%**

Same rates as 2-lane road

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	3,222	$2.36	$7,603.92
631(1)	sq yd	Geotextile, Erosion Control, Class 1	3740	$2.51	$9,387.40
633(1)	ln ft	Silt fence	57,000	$3.05	$173,850.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$976,662.36	$976,662.36
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$717,461.94	$717,461.94
641(5)	acre	Preliminary Seeding	47.0	$5,219.00	$245,293.00
641(6)	each	Temp. Rock Check Dam	540.0	$67.76	$36,590.40
641(8)	each	Settling Pool	8	$767.39	$6,139.12
Subtotal erosion control					$2,172,988.14
Total const. bid (excluding mobilization & eros. cont.)					$133,314,649
Erosion control ratio based on bid prices					1.6%
Erosion control costs based on mile			(per mile)		$93,141

Average Percentage 1.6% of Construction costs

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	3,222	$10.50	$33,831.00
631(1)	sq yd	Geotextile, Erosion Control, Class 1	3740	$2.00	$7,480.00
633(1)	ln ft	Silt fence	57,000	$4.00	$228,000.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$26,500.00	$26,500.00
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$529,410.00	$529,410.00
641(5)	acre	Preliminary Seeding	47.0	$2,500.00	$117,500.00
641(6)	each	Temp. Rock Check Dam	540.0	$100.00	$54,000.00
641(8)	each	Settling Pool	8	$530.00	$4,240.00
Subtotal erosion control					$1,000,961.00
Total const. bid (excluding mobilization & eros. cont.)					$107,796,373
Erosion control ratio based on bid prices					0.9%
Erosion control costs based on mile			(per mile)		$42,904

Average Percentage 0.9% of Construction costs

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	28,800	$10.50	$302,400.00
633(1)	ln ft	Silt fence	15,000	$4.00	$60,000.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$53,000.00	$53,000.00
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$1,500,000.00	$1,500,000.00
Subtotal erosion control					$1,915,400.00
Total const. bid (excluding mobilization & eros. cont.)					$184,122,413
Erosion control ratio based on bid prices					1.0%
Erosion control costs based on mile			(per mile)		$82,100

Average Percentage 1.0% of Construction costs

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$75,000.00	$75,000.00	$5,000.00	$5,000.00	$25,000.00	$25,000.00	$10,000.00	$10,000.00
641(3)	LPSM	Temp. Erosion/Pollution Control	ALL	$290,000.00	$290,000.00	$200,000.00	$200,000.00	$300,000.00	$300,000.00	$150,000.00	$150,000.00
641(4)	LPSM	Temp. Erosion/Pollution Control Modification	ALL	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00
Subtotal erosion control					$415,000.00		$255,000.00		$375,000.00		$210,000.00
Total const. bid (excluding mobilization & eros. cont.)					$24,107,586		$24,587,513		$24,666,128		$25,388,433
Erosion control ratio based on bid prices					1.7%		1.0%		1.5%		0.8%
Erosion control costs based on mile			(per mile)		$17,788		$10,930		$16,074		$9,001

Average Percentage 1.3% of Construction costs

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15705	m	Silt fence	1,150	$8.00	$9,200.00	$28.00	$32,200.00	$9.00	$10,350.00	$20.00	$23,000.00
15705	m	Sediment wattle	200	$26.00	$5,200.00	$56.00	$11,200.00	$43.00	$8,600.00	$30.00	$6,000.00
15801	m^3	watering for dust control	3,000	$7.00	$21,000.00	$12.00	$36,000.00	$9.30	$27,900.00	$12.50	$37,500.00
Subtotal erosion control					$35,400.00		$79,400.00		$46,850.00		$66,500.00
Total const. bid (excluding mobilization & eros. cont.)					$11,329,649		$9,321,735		$9,348,699		$10,884,799
Erosion control ratio based on bid prices					0.3%		0.9%		0.5%		0.6%
Total length			(km)		32.508		32.508		32.508		32.508
			(mile)		20.2		20.2		20.2		20.2
Erosion control costs based on km			(per km)		$1,089		$2,442		$1,441		$2,046
Erosion control costs based on mile			(per mile)		$1,753		$3,931		$2,320		$3,293

Average Percentage 0.6% of Construction costs

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15705	m	Silt fence	14,000	$7.00	$98,000.00	$5.27	$73,780.00	$9.00	$126,000.00
15705	LPSM	Soil erosion control, monitoring	ALL	$100,000.00	$100,000.00	$169,500.00	$169,500.00	$10,000.00	$10,000.00
15705	m	Temporary 750 millimeter culvert pipe	35.0	$100.00	$3,500.00	$90.00	$3,150.00	$200.00	$7,000.00
15705	m	Temporary 1200 millimeter culvert pipe	60.0	$150.00	$9,000.00	$140.00	$8,400.00	$230.00	$13,800.00
15705	m	Temporary 1800 millimeter culvert pipe	35	$250.00	$8,750.00	$190.00	$6,650.00	$500.00	$17,500.00
15705	m	diversion channel, temporary	800	$40.00	$32,000.00	$30.89	$24,712.00	$80.00	$64,000.00
15705	m	sediment log	1,700	$40.00	$68,000.00	$24.71	$42,007.00	$12.00	$20,400.00
15705	m	soil wrap	60	$50.00	$3,000.00	$69.00	$4,140.00	$23.00	$1,380.00
15706	each	check dams, sandbags	8	$80.00	$640.00	$705.00	$5,640.00	$400.00	$3,200.00
15706	each	check dam, riprap	230	$80.00	$18,400.00	$79.00	$18,170.00	$250.00	$57,500.00
15706	each	check dam (silt dike)	250.00	$80.00	$20,000.00	$75.00	$18,750.00	$400.00	$100,000.00
15706	each	chitosan gel sock	8	$700.00	$5,600.00	$750.00	$6,000.00	$1,000.00	$8,000.00
15801	m^3	watering for dust control	7,520	$5.50	$41,360.00	$5.50	$41,360.00	$4.00	$30,080.00
25120	m	Riprap ditch, class 1	1,100	$25.00	$27,500.00	$17.70	$19,470.00	$55.00	$60,500.00
Subtotal erosion control					$435,750.00		$441,729.00		$519,360.00
Total const. bid (excluding mobilization & eros. cont.)					$13,464,700		$15,330,307		$20,904,113
Erosion control ratio based on bid prices					3.2%		2.9%		2.5%
Total length			(km)		12.26		12.26		12.26
			(mile)		7.6		7.6		7.6
Erosion control costs based on km			(per km)		$35,542		$36,030		$42,362
Erosion control costs based on mile			(per mile)		$57,209		$57,994		$68,186

Average Percentage 2.9% of Construction costs

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15703	m	Silt fence	6,000	$11.00	$66,000.00	$5.00	$30,000.00	$11.00	$66,000.00	$6.00	$36,000.00
15705	m	Slope drains	110	$40.00	$4,400.00	$47.00	$5,170.00	$30.00	$3,300.00	$60.00	$6,600.00
15707 A	m	Temporary 600 millimeter culvert pipe	380.0	$100.00	$38,000.00	$60.00	$22,800.00	$150.00	$57,000.00	$150.00	$57,000.00
15707 B	m	Temporary 900 millimeter culvert pipe	70.0	$125.00	$8,750.00	$70.00	$4,900.00	$205.00	$14,350.00	$200.00	$14,000.00
15708	each	bales, straw	150	$30.00	$4,500.00	$50.00	$7,500.00	$14.00	$2,100.00	$30.00	$4,500.00
15709 A	each	check dams, riprap	170	$75.00	$12,750.00	$68.00	$11,560.00	$100.00	$17,000.00	$100.00	$17,000.00
15709 B	each	check dams, sandbag	140	$75.00	$10,500.00	$25.50	$3,570.00	$130.00	$18,200.00	$20.00	$2,800.00
15718 A	m	diversion channel, plastic lined	500	$55.00	$27,500.00	$30.00	$15,000.00	$7.00	$3,500.00	$40.00	$20,000.00
15718 B	m	diversion channel, riprap lined	220	$70.00	$15,400.00	$50.00	$11,000.00	$27.00	$5,940.00	$120.00	$26,400.00
15724	m	wattle, straw	3,100	$25.00	$77,500.00	$10.42	$32,302.00	$9.00	$27,900.00	$7.00	$21,700.00
15729	slry unit	soil stabilization	600.00	$250.00	$150,000.00	$320.61	$192,366.00	$525.00	$315,000.00	$400.00	$240,000.00
15749	m	turbidity curtain	60	$120.00	$7,200.00	$112.00	$6,720.00	$50.00	$3,000.00	$150.00	$9,000.00
15761	each	chitosan gel sock	10	$625.00	$6,250.00	$403.00	$4,030.00	$1,000.00	$10,000.00	$1,250.00	$12,500.00
15780	day	erosion control supervisor	450	$300.00	$135,000.00	$565.50	$254,475.00	$100.00	$45,000.00	$500.00	$225,000.00
15801	m^3	watering for dust control	15,000	$5.00	$75,000.00	$5.51	$82,650.00	$5.00	$75,000.00	$6.00	$90,000.00
20410	m	furrow ditches	1,600	$3.00	$4,800.00	$3.96	$6,336.00	$10.00	$16,000.00	$2.00	$3,200.00
25107	m	riprap lined ditch	1,800	$25.00	$45,000.00	$19.73	$35,514.00	$15.00	$27,000.00	$30.00	$54,000.00
62204	hour	pump, water, trash, 150 mm	200	$20.00	$4,000.00	$50.00	$10,000.00	$20.00	$4,000.00	$60.00	$12,000.00
62901	m^2	Erosion control mat type 1	1,700	$3.00	$5,100.00	$3.23	$5,491.00	$8.00	$13,600.00	$2.00	$3,400.00
					$697,650.00		$741,384.00		$723,890.00		$855,100.00
Total construction bid											
					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Erosion control ratio based on bid prices					4.0%		3.6%		3.5%		3.9%
Total length			(km)		15.785		15.785		15.785		15.785
			(mile)		9.8		9.8		9.8		9.8
Eroson control costs based on km			(per km)		$44,197		$46,968		$45,859		$54,172
Eroson control costs based on mile			(per mile)		$71,140		$75,599		$73,815		$87,195

Average Percentage 3.8% of Construction costs

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15705	m	Silt fence	10,500	$11.00	$115,500.00	$6.20	$65,100.00	$7.00	$73,500.00
15708	each	Bales, straw	50	$50.00	$2,500.00	$75.00	$3,750.00	$30.00	$1,500.00
15724	each	Fiber log	350	$40.00	$14,000.00	$35.00	$12,250.00	$30.00	$10,500.00
15709	each	check dam	100	$100.00	$10,000.00	$90.00	$9,000.00	$100.00	$10,000.00
15801	m^3	watering for dust control	8,000	$4.50	$36,000.00	$7.00	$56,000.00	$8.00	$64,000.00
25119	m^2	Riprap ditch, class 1	3,400	$22.50	$76,500.00	$10.75	$36,550.00	$15.00	$51,000.00
Subtotal erosion control					$254,500.00		$182,650.00		$210,500.00
Total const. bid (excluding mobilization & eros. cont.)					$8,971,054		$8,391,653		$8,512,950
Erosion control ratio based on bid prices					2.8%		2.2%		2.5%
Total length			(km)		50		50		50
			(mile)		31.1		31.1		31.1
Erosion control costs based on km			(per km)		$5,090		$3,653		$4,210
Erosion control costs based on mile			(per mile)		$8,193		$5,880		$6,776

Average Percentage 2.5% of Construction costs

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15703	m	Silt fence	4,900	$10.00	$49,000.00	$6.00	$29,400.00	$20.00	$98,000.00
15705	each	Slope drains	50.0	$60.00	$3,000.00	$35.00	$1,750.00	$100.00	$5,000.00
15707a	m	Temporary 900 mm culvert pipe	12.0	$90.00	$1,080.00	$100.00	$1,200.00	$200.00	$2,400.00
15707c	m	Temporary 1800 mm culvert pipe	40	$225.00	$9,000.00	$250.00	$10,000.00	$350.00	$14,000.00
15708	each	Bales, straw	600	$30.00	$18,000.00	$50.00	$30,000.00	$40.00	$24,000.00
15709	each	Check dams	60	$100.00	$6,000.00	$100.00	$6,000.00	$100.00	$6,000.00
15718a	m	Diversion channel, plastic lined	300	$40.00	$12,000.00	$30.00	$9,000.00	$25.00	$7,500.00
15718b	m	Diversion channel, riprap lined	20	$290.00	$5,800.00	$50.00	$1,000.00	$90.00	$1,800.00
15801	m^3	watering for dust control	7,000	$10.00	$70,000.00	$5.00	$35,000.00	$7.00	$49,000.00
25119	m	Riprap lined ditch	260	$23.00	$5,980.00	$30.00	$7,800.00	$22.00	$5,720.00
Subtotal erosion control					$179,860.00		$131,150.00		$213,420.00
Total const. bid (excluding mobilization & eros. cont.)					$8,485,250		$6,778,090		$8,838,855
Erosion control ratio based on bid prices					2.1%		1.9%		2.4%
Total length			(km)		4.8		4.8		4.8
			(mile)		3.0		3.0		3.0
Erosion control costs based on km			(per km)		$37,471		$27,323		$44,463
Erosion control costs based on mile			(per mile)		$60,313		$43,979		$71,567

Average Percentage 2.2% of Construction costs

Total Average Percentage 1.9% of Construction costs

Use 3.0% of Construction costs *Same rates as 2-lane road*

Use 0.6% of Construction costs *Assumed 80% less for alignments utilizing existing roads*

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	150	$3,822.63	$573,394.50
201(1B)	acre	Clearing	144	$4,300.43	$619,261.92

Average Unit Cost **$4,056.65 per acre**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3		Zones 4-5			
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	150	$6,900.00	$1,035,000.00	Clearing	333	$6,900.00	$2,297,700.00
201(1B)	acre	Clearing	144	$5,300.00	$763,200.00	Clearing	25	$5,300.00	$132,500.00

Average Unit Cost **$6,116.33 per acre** **Average Unit Cost** **$6,788.27 per acre**

Juneau Access, Financial Plan, 2007, UPA				Juneau - Lynn Canal, 2006		Juneau - Lynn Canal, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount
201(1A)	acre	Clearing	152	$6,533.00	$993,016.00	$15,000.00	$2,280,000.00
201(1B)	acre	Clearing	130	$5,000.00	$650,000.00	$5,000.00	$650,000.00
			Average	$5,826.30		$10,390.07	

Average Unit Cost **$8,108.18 per acre**
Average Unit Cost with 3%/year Inflation **$8,601.97 per acre**

Juneau Access, Final EIS, 2006, UPA				Juneau Glacier Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	35	$1,600.00	$56,000.00

Average Unit Cost **$1,600.00 per acre**
Average Unit Cost with 3%/year Inflation **$2,214.77 per acre**

Juneau Access, Final EIS, 2006, UPA				Parks Highway, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
201(1A)	acre	Clearing	181	$1,079.20	$195,335.20

Average Unit Cost **$1,079.20 per acre**
Average Unit Cost with 3%/year Inflation **$1,367.10 per acre**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	35.752	$7,200.00	$257,414.40	$10,160.00	$363,240.32	$30,600.00	$1,094,011.20

Ave.	Quantity	Unit	Total	Average Cost per Unit
$15,987	35.752	ha	$571,555	
	88.3	acre		**$6,473 per acre**

Average Unit Cost with 3%/year Inflation **$7,073.09 per acre**

Coffman Cove Schedule A, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	50	$7,000.00	$350,000.00	$8,482.50	$424,125.00	$15,000.00	$750,000.00	$6,000.00	$300,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$9,121	50	ha	$456,031	
	123.55	acre		**$3,691.07 per acre**

Average Unit Cost with 3%/year Inflation **$4,407.33 per acre**

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	1.00	$10,000.00	$10,000.00	$5,450.00	$5,450.00	$15,000.00	$15,000.00
20101	ha	Selective clearing	2.75	$8,085.00	$22,233.75	$1,385.00	$3,808.75	$10,000.00	$27,500.00

Ave.	Quantity	Unit	Total	Cost per Unit
$7,466	3.750	ha	$27,997.50	
	9.27	acre		**$3,020.23 per acre**

Average Unit Cost with 3%/year Inflation **$3,714.50 per acre**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20101	ha	Clear and Grubbing	32	$7,000.00	$224,000.00	$5,000.00	$160,000.00	$7,000.00	$224,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$6,333	32.000	ha	$202,666.67	
	79	acre		**$2,565.40 per acre**

Average Unit Cost with 3%/year Inflation **$3,447.68 per acre**

Total Average Unit Cost **$4,778.77 per acre**

Use **$5,500.00 per acre**

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	15	acre	ad0301clW1.log dated 4/14/09
W - 2	3.20	745+00	914+00	1	acre	
W - 3	11.08	160+00	745+00	1	acre	
F - 1	6.42	723+00	1062+00	3	acre	
F - 2	4.06	1062+00	1276+37	32	acre	ad0301clF2.log dated 4/2/09
A - 1a	30.37	1280+00	2883+63	323	acre	ad0301clAa(1-4).log dated 4/14/09
A-1a (BC)	3.86	2883+63	3087+36	40	acre	ad0301clAa4.log dated 4/14/09
A - 1b	29.77	1280+00	2851+97	299	acre	ad0301clAb(1-4).log dated 4/14/09
A - 1b (BC)	3.86	2851+97	3055+71	40	acre	ad0301clAb4.log dated 4/14/09
A - 2	5.21	1005+00	1280+00	49	acre	ad0301clA2.log dated 4/13/09
S -1	21.35	2545+94	3673+29	226	acre	ad0301clS1.log dated 4/3/09
S -1 (BC)	4.13	3673+29	3891+26	45	acre	ad0301clS1.log dated 4/3/9
S - 2	17.65	1614+00	2545+94	161	acre	ad0301clS2-(1-3).log, 3/20/09
S - 3	11.53	1005+00	1614+00	104	acre	ad0301clS3-(1-2).log, 3/20/09
L - 1	14.39	100+00	859+77	122	acre	ad0301clL1.log, 3/23/09

100% 1-lane quantities for existing road alignments
100% 2-lane quantities for new alignments

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	1,804,700.000	$12.03	$21,710,541.00
203(5)	CUYD	Unc. Exc.	786,900.000	$4.12	$3,242,028.00

Average Unit Cost **$9.63 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3		Zones 4-5		
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	1,804,700.000	$12.00	$21,656,400.00	3,105,810.000	$12.00	$37,269,720.00
203(5)	CUYD	Unc. Exc.	786,900.000	$5.00	$3,934,500.00	317,560.000	$5.00	$1,587,800.00

Average Unit Cost **$9.87 per yd3** **Average Unit Cost** **$11.35 per yd3**

Juneau Access, Financial Plan, 2007, UPA				Ketchikan Airport, 2002	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	-	$5.46	-

Average Unit Cost with 3%/year Inflation **$6.72 per yd3**

Juneau Access, Final EIS, 2006, UPA				Ketchikan 3rd Ave, 1999	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(2)	CUYD	Rock Exc.	151,000.000	$15.68	$2,368,209.13
Juneau Access, Final EIS, 2006, UPA				Glacier Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	339,500.000	$4.47	$1,517,930.10
Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	511,700.000	$4.82	$2,464,927.40
Juneau Access, Final EIS, 2006, UPA				Glenn Highway, 2000	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	112,212.000	$3.16	$354,315.12
Juneau Access, Final EIS, 2006, UPA				Palmer-Wasilla, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	125,739.000	$3.29	$414,134.25
Juneau Access, Final EIS, 2006, UPA				Parks Highway, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
203(5)	CUYD	Unc. Exc.	847,041.000	$2.90	$2,457,184.19

Common Average Unit Cost **$5.72 per yd3**
Weighted Average Unit Cost **$4.59 per yd3**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401	m^3	roadway excavation	473,820	$10.00	$4,738,200.00	$8.14	$3,856,894.80	$14.00	$6,633,480.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$ 10.71	473,820	m3	$5,076,192	
	619,733	yd3		**$8.19 per yd3**

Embankment was included in Coffman Cove bid price

Average Unit Cost with 3%/year Inflation **$8.95 per yd3**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401 A	m^3	roadway excavation	528,752	$5.50	$2,908,136.00	$7.99	$4,224,728.48	$9.50	$5,023,144.00	$13.00	$6,873,776

Coffman Cove (1)

Ave.	Quantity	Units	Total Cost	Cost per Unit
$9	528752	m3	$4,758,768	
	691581	yd3		**$6.88 per yd3**

Embankment was included in Coffman Cove bid price

Average Unit Cost with 3%/year Inflation **$8.22 per yd3**

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401	m^3	roadway excavation	2,000	$12.00	$24,000.00	$5.25	$10,500.00	$6.00	$12,000.00

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$7.75	2,000	m3	$15,500	
	2,616	yd3		**$5.93 per yd3**

Average Unit Cost with 3%/year Inflation **$7.29 per yd3**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20401A	m^3	roadway excavation	310,000	$5.00	$1,550,000.00	$3.50	$1,085,000.00	$5.50	$1,705,000.00
20401B	m^3	roadway excavation	171,000	$8.00	$1,368,000.00	$5.50	$940,500.00	$8.00	$1,368,000.00

$4.67 $1,446,666.67 $5.56
$7.17 $1,225,500.00

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$5.56	481,000	m3	$2,672,167	
	629,124	yd3		**$4.25 per yd3**

Average Unit Cost with 3%/year Inflation **$5.71 per yd3**

Total Average Unit Cost **$7.41 per yd3**

Use **$9.00 per yd3**

QUANTITIES								
Segment	Length (mi.)	Stationing		Excavation	Unit	Embankment	Unit	Source
W - 1	1.72	914+00	1005+00	140,000	Cu. Yd.	83,000	Cu. Yd.	ad0301xaW1_1lane.log
W - 2	3.20	745+00	914+00	9,000	Cu. Yd.	8,000	Cu. Yd.	Misc. shaping
W - 3	11.08	160+00	745+00	35,500	Cu. Yd.	32,500	Cu. Yd.	Misc. shaping
F - 1	6.42	723+00	1062+00	18,500	Cu. Yd.	17,000	Cu. Yd.	Misc. shaping
F - 2	4.06	1062+00	1276+37	148,000	Cu. Yd.	134,000	Cu. Yd.	ad0301xaF2_1lane.log
A - 1a	30.37	1280+00	2883+63	5,371,500	Cu. Yd.	2,392,500	Cu. Yd.	ad0301xaAa_(1-4)_1lane.log
A-1a (BC)	3.86	2883+63	3087+36	307,000	Cu. Yd.	393,500	Cu. Yd.	ad0301xaAa_4_1lane.log
A - 1b	29.77	1280+00	2851+97	3,246,500	Cu. Yd.	2,022,000	Cu. Yd.	ad0301xaAb_(1-4)_1lane.log
A - 1b (BC)	3.86	2851+97	3055+71	307,000	Cu. Yd.	393,500	Cu. Yd.	ad0301xaAb_4_1lane.log
A - 2	5.21	1005+00	1280+00	377,000	Cu. Yd.	349,500	Cu. Yd.	ad0301xaA2_1lane.log
S -1	21.35	2545+94	3673+29	3,722,500	Cu. Yd.	2,395,000	Cu. Yd.	ad0301xaS1_1lane.log
S -1 (BC)	4.13	3673+29	3891+26	396,500	Cu. Yd.	1,067,000	Cu. Yd.	ad0301xaS1_1lane.log
S - 2	17.65	1614+00	2545+94	1,501,000	Cu. Yd.	1,067,000	Cu. Yd.	ad0301xaS2_(1-3)_1lane.log
S - 3	11.53	1005+00	1614+00	590,500	Cu. Yd.	539,000	Cu. Yd.	ad0301xaS3_(1-2)_1lane.log
L - 1	14.39	100+00	859+77	1,076,500	Cu. Yd.	810,000	Cu. Yd.	ad0301xaL1_1lane.log

100% 1-lane quantities for existing road alignments
100% 2-lane quantities for new alignments

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	subexcavation	308,000	$6.00	$1,848,000.00	$11.07	$3,409,560.00	$9.00	$2,772,000.00

Note: Subexcavation replacement material included in Excavation cost (See Excavation and Embankment Calculations)

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Total Cost per Unit
$ 8.69	308,000	m3	$2,676,520	
	402,849	yd3		**$6.64 per yd3**

Average Unit Cost with 3%/year Inflation $7.26 per yd3

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	subexcavation	280,000	$12.00	$3,360,000.00	$13.28	$3,718,400.00	$12.00	$3,360,000.00	$7.00	$1,960,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Unit	Total	Total Cost per Unit
$11	28,000	m3	$301,280	
	36,603	yd3		**$8.23 per yd3**

Average Unit Cost with 3%/year Inflation $9.83 per yd3

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	Subexcavation	2,500	$7.00	$17,500.00	$3.50	$8,750.00	$6.00	$15,000.00

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$5.50	2,500	m3	$13,750	
	3,270	yd3		**$4.20 per yd3**

Average Unit Cost with 3%/year Inflation $5.17 per yd3

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20402	m^3	Subexcavation	97,000	$4.00	$388,000.00	$2.75	$266,750.00	$3.00	$291,000.00

Ave.	Quantity	Unit	Total Cost	Cost per Unit
$3.25	97,000	m3	$315,250	
	126,871	yd3		**$2.48 per yd3**

Average Unit Cost with 3%/year Inflation $3.34 per yd3

Total Average Unit Cost $6.40 per yd3

Use $8.00 per yd3

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	800	Cu. Yd.	Topo map
W - 2	3.20	745+00	914+00	600	Cu. Yd.	
W - 3	11.08	160+00	745+00	2,200	Cu. Yd.	
F - 1	6.42	723+00	1062+00	1,200	Cu. Yd.	
F - 2	4.06	1062+00	1276+37	5,000	Cu. Yd.	
A - 1a	30.37	1280+00	2883+63	15,600	Cu. Yd.	
A-1a (BC)	3.86	2883+63	3087+36	55,100	Cu. Yd.	
A - 1b	29.77	1280+00	2851+97	20,500	Cu. Yd.	
A - 1b (BC)	3.86	2851+97	3055+71	55,100	Cu. Yd.	
A - 2	5.21	1005+00	1280+00	1,600	Cu. Yd.	
S -1	21.35	2545+94	3673+29	36,600	Cu. Yd.	
S -1 (BC)	4.13	3673+29	3891+26	52,300	Cu. Yd.	
S - 2	17.65	1614+00	2545+94	18,400	Cu. Yd.	
S - 3	11.53	1005+00	1614+00	2,300	Cu. Yd.	
L - 1	14.39	100+00	859+77	219,500	Cu. Yd.	

100% 1-lane quantities for existing road alignments
100% 2-lane quantities for new alignments

Segment	Begin Station	End Station	Length feet	Length miles	Agg. Base yd3	Sel. Mat. yd3
A-2	1005+00	1280+00	27,500	5.21	4,940	21,268
Total Aaron Cr.			**27,500**	**5.21**	**4,940**	**21,268**
Increased by 10% and rounded, Aaron Cr.					**5,500**	**23,500**
A-1a	1280+00	1718+00	43,800	8.30	8,189	35,403
A-1a	1718+00	2145+00	42,100	7.97	7,144	30,774
A-1a	2145+00	2608+00	44,100	8.35	7,628	32,752
A-1a	2608+00	2883+63	27,063	5.13	4,959	21,305
Total Aaron Cr. Pass			**157,063**	**29.75**	**27,920**	**120,234**
Increased by 10% and rounded, Aaron Cr. Pass					**30,500**	**132,500**
A-1a	2883+63	3087+36	19,473	3.69	3,408	14,761
Total Aaron Cr. Pass (BC)			**19,473**	**3.69**	**3,408**	**14,761**
Increased by 10% and rounded, Aaron Cr. Pass (BC)					**3,500**	**16,500**
A-1b	1280+00	1718+00	43,800	8.30	8,208	35,403
A-1b	1718+00	2145+00	42,100	7.97	7,315	31,652
A-1b	2145+00	2615+00	44,600	8.45	6,593	28,421
A-1b	2615+00	2851+97	23,197	4.39	4,218	18,011
(Tunnel)	2225+00	2295+00				
Total Aaron Cr. Tunnel			**153,697**	**29.11**	**26,334**	**113,487**
Increased by 10% and rounded, Aaron Cr. Tunnel					**29,000**	**125,000**
A-1b	2851+97	3055+71	19,674	3.73	3,415	14,789
Total Aaron Cr. Tunnel (BC)			**19,674**	**3.73**	**3,415**	**14,789**
Increased by 10% and rounded, Aaron Cr. Tunnel (BC)					**4,000**	**16,500**
W-3	160+00	745+00	58,500	11.08	12,241	48,555
Total Wrangell Island			**58,500**	**11.08**	**12,241**	**48,555**
Increased by 10% and rounded, Wrangell Island					**13,500**	**53,500**
W-2	745+00	914+00	16,900	3.20	3,536	14,027
Total Wrangell Island			**16,900**	**3.20**	**3,536**	**14,027**
Increased by 10% and rounded, Wrangell Island					**4,000**	**15,500**
W-1	914+00	1005+00	7,600	1.44	1,729	7,448
Total Wrangell Island			**7,600**	**1.44**	**1,729**	**7,448**
Increased by 10% and rounded, Wrangell Island					**2,000**	**8,000**
F-1	723+00	1062+00	33,900	6.42	7,094	28,137
Total Fool's Inlet			**33,900**	**6.42**	**7,094**	**28,137**
Increased by 10% and rounded, Wrangell Island					**8,000**	**31,000**
F-2	1062+00	1276+37	21,437	4.06	4,066	17,541
Total Fool's Inlet			**21,437**	**4.06**	**4,066**	**17,541**
Increased by 10% and rounded, Wrangell Island					**4,500**	**19,500**
S-3	1005+00	1265+00	25,400	4.81	4,655	20,143
S-3	1265+00	1614+00	34,900	6.61	6,460	27,856
Total South Stikine River			**60,300**	**11.42**	**11,115**	**47,999**
Increased by 10% and rounded, Eastern Passage					**12,000**	**53,000**
S-2	1614+00	1950+00	33,000	6.25	6,251	26,991
S-2	1950+00	2235+00	28,500	5.40	5,396	23,189
S-2	2235+00	2454+94	21,594	4.09	5,832	24,995
Total South Stikine River			**83,094**	**15.74**	**17,479**	**75,175**
Increased by 10% and rounded, South Stikine River					**19,000**	**83,000**
S-1	2545+94	3673+29	107,335	20.33	20,710	89,387
Total South Stikine River			**107,335**	**20.33**	**20,710**	**89,387**
Increased by 10% and rounded, South Stikine River					**23,000**	**98,500**
S-1	3673+29	3891+26	10,797	2.04	3,824	16,551
Total South Stikine River (BC)			**10,797**	**2.04**	**3,824**	**16,551**
Increased by 10% and rounded, South Stikine River (BC)					**4,000**	**18,000**
L-1	100+00	859+77	65,477	12.40	12,441	53,847
Total Limb Island			**65,477**	**12.40**	**12,441**	**53,847**
Increased by 10% and rounded, Limb Island					**13,500**	**59,000**
B-1	10+00	1538+27	145,691	27.59	34,750	115,833
Total Bradfield			**145,691**	**27.59**	**34,750**	**115,833**
Increased by 10% and rounded, Wrangell Island					**38,000**	**127,500**

Note: All surfacing quantities are from Geopak earthwork log files and have been increased 8% for curve widening and 2% for guardrail widening

Crushed aggregate quantities:

100% 1-lane quantities for all road alignments

Select material:

100% 1-lane quantities for existing road alignments
100% 2-lane quantities for new alignments

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	97,120.000	$15.65	$1,519,928.00

Ave.	Quantity	Unit	Total	Cost per Unit
$15.65	97,120	t	$1,519,928	
	41,682	m3		
	49,299	yd3		**$30.83 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	97,120.000	$25.00	$2,428,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$25.00	97,120	t	$2,428,000	
	41,682	m3		
	49,299	yd3		**$49.25 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	124,675.000	$25.00	$3,116,875.00

Ave.	Quantity	Unit	Total	Cost per Unit
$25.00	124,675	t	$3,116,875	
	53,509	m3		
	63,287	yd3		**$49.25 per yd3**

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
306(1)	Ton	Asphalt Treated Base	13,900.000	$42.50	$590,750.00

Ave.	Quantity	Unit	Total	Cost per Unit
$42.50	13,900	t	$590,750	
	5,966	m3		
	7,056	yd3		**$83.73 per yd3**

Average Unit Cost with 3%/year Inflation **$91.49 per yd3**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
306(1)	Ton	ATB	91,550.000	$35.00	$3,204,250.00	$30.00	$2,746,500.00	$34.00	$3,112,700.00	$35.00	$3,204,250.00

Ave.	Quantity	Unit	Total	Cost per Unit
$33.50	91,550	t	$3,066,925	
	39,292	m3		
	46,472	yd3		**$66.00 per yd3**

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Aggregate Base	136,500	$20.50	$2,798,250.00	$15.20	$2,074,800.00	$12.00	$1,638,000.00	$27.00	$3,685,500.00

Coffman Cove (A)

Ave.	Quantity	Unit	Total	Cost per Unit
$18.68	136,500	t	$2,549,138	
	58,584	m3		
	69,289	yd3		**$36.79 per yd3**

Average Unit Cost with 3%/year Inflation **$39.03 per yd3**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Aggregate Base Grading D	84,000.0	$11.00	$924,000.00	$11.29	$948,360.00	$12.00	$1,008,000.00	$12.00	$1,008,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$11.57	84,000	t	$971,880.00	
	36,052	m3		
	42,640	yd3		**$22.79 per yd3**

Average Unit Cost with 3%/year Inflation **$27.22 per yd3**

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Agg. Base grading D	119,000.000	$12.00	$1,428,000.00	$9.79	$1,165,010.00	$12.00	$1,428,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$11.26	119,000	t	$1,340,337	
	51,073	m3		
	60,406	yd3		**$22.19 per yd3**

Average Unit Cost with 3%/year Inflation **$27.29 per yd3**

Big Salt Lake, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Agg. Base grading D	29,400.000	$12.00	$352,800.00	$13.00	$382,200.00	$15.00	$441,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$13.33	29,400	t	$392,000.00	
	12,618	m3		
	14,924	yd3		**$26.27 per yd3**

Average Unit Cost with 3%/year Inflation **$35.30 per yd3**

Total Average Unit Cost **$46.18 per yd3**

Use **$40.00 per yd3**

QUANTITIES							
Segment	Length (mi.)	Stationing		Quantity	Unit	Source	
W - 1	1.72	914+00	1005+00	2,000	Cu. Yd.		
W - 2	3.20	745+00	914+00	4,000	Cu. Yd.		
W - 3	11.08	160+00	745+00	13,500	Cu. Yd.		
F - 1	6.42	723+00	1062+00	8,000	Cu. Yd.		
F - 2	4.06	1062+00	1276+37	4,500	Cu. Yd.		
A - 1a	30.37	1280+00	2883+63	30,500	Cu. Yd.		
A-1a (BC)	3.86	2883+63	3087+36	3,500	Cu. Yd.		
A - 1b	29.77	1280+00	2851+97	29,000	Cu. Yd.		
A - 1b (BC)	3.86	2851+97	3055+71	4,000	Cu. Yd.		
A - 2	5.21	1005+00	1280+00	5,500	Cu. Yd.		
S -1	21.35	2545+94	3673+29	23,000	Cu. Yd.		
S -1 (BC)	4.13	3673+29	3891+26	4,000	Cu. Yd.		
S - 2	17.65	1614+00	2545+94	19,000	Cu. Yd.		
S - 3	11.53	1005+00	1614+00	12,000	Cu. Yd.		
L - 1	14.39	100+00	859+77	13,500	Cu. Yd.		
B - 1	29.15	10+00	1538+27	38,000	Cu. Yd.		

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20416	t	select topping	81,269	$11.90	$967,101.10	$14.00	$1,137,766.00	$12.00	$975,228.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$12.63	81,269	t	$1,026,698	
	34,879	m3		
	45,621	yd3		**$22.51 per yd3**

Average Unit Cost with 3%/year Inflation $24.59 per yd3

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
20416	t	select topping	97,589	$8.50	$829,506.50	$10.25	$1,000,287.25	$12.00	$1,171,068.00	$11.00	$1,073,479.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$10.44	97,589	t	$1,018,829	
	41,884	m3		
	54,782	yd3		**$18.60 per yd3**

Average Unit Cost with 3%/year Inflation $22.21 per yd3

Total Average Unit Cost $23.40 per yd3

Use $25.00 per yd3

QUANTITIES						
Segment	Length (mi.)	Stationing		UNIT	Unit	Source
W - 1	1.72	914+00	1005+00	8,000	Cu. Yd.	ad0301xaW1_ew.log
W - 2	3.20	745+00	914+00	1,000	Cu. Yd.	
W - 3	11.08	160+00	745+00	2,500	Cu. Yd.	
F - 1	6.42	723+00	1062+00	1,500	Cu. Yd.	
F - 2	4.06	1062+00	1276+37	19,500	Cu. Yd.	ad0301xaF2_ew.log
A - 1a	30.37	1280+00	2883+63	132,500	Cu. Yd.	ad0301xaAa_(1-4)_ew.log
A - 1a (BC)	3.86	2883+63	3087+36	16,500	Cu. Yd.	ad0301xaAa_4_ew.log
A - 1b	29.77	1280+00	2851+97	125,000	Cu. Yd.	ad0301xaAb_(1-4)_ew.log
A - 1b (BC)	3.86	2851+97	3055+71	16,500	Cu. Yd.	ad0301xaAb_4_ew.log
A - 2	5.21	1005+00	1280+00	23,500	Cu. Yd.	ad0301xaA2_ew.log
S -1	21.35	2545+94	3673+29	98,500	Cu. Yd.	ad0301xaS1_ew.log
S -1 (BC)	4.13	3673+29	3891+26	18,000	Cu. Yd.	ad0301xaS1_ew.log
S - 2	17.65	1614+00	2545+94	83,000	Cu. Yd.	ad0301xaS2_(1-3)ew.log
S - 3	11.53	1005+00	1614+00	53,000	Cu. Yd.	ad0301xaS3_(1-2)ew.log
L - 1	14.39	100+00	859+77	59,000	Cu. Yd.	ad0301xaL1_ew.log
B - 1	29.15	10+00	1538+27	115,833	Cu. Yd.	Bradfield Report

Kiewit Construction Company

Underground District

Bid estimate 2/8/07

Alaska Road Green Sheet

One Tunnel Option

Green Sheet Summary	Total Costs including Indirect and Margin	Unit Costs including Indirect and Margin	Unit	Comment
Single Tunnel Excavation =	**$32,504,794**	**$4,104**	**LF**	**To D&S 7,920 FT of SINGLE Tunnel**
Single Tunnel Bolting =	**$13,552,110**	**$35**	**LF**	**To Install 390,000 LF of Bolts**
Single Tunnel Shotcrete =	**$5,574,319**	**$1,014**	**NCY**	**To apply 5500 CY of S/C**
Single Tunnel Membrane Waterproofing =	**$17,200,755**	**$29**	**SF**	**To apply Membrane WP for 594,000 SF**
TOTAL BID VALUE =	**$68,831,978**			
Cost per linear foot of advance	**$8,691**			

Two Tunnel Option

Green Sheet Summary	Total Costs including Indirect and Margin	Unit Costs including Indirect and Margin	Unit	Comment
Twin Tunnel Excavation =	**$33,590,700**	**$2,121**	**LF**	**To D&S 15,840 FT of Tunnel**
Twin Tunnel Bolting =	**$9,729,720**	**$29**	**LF**	**To Install 336,000 LF of Bolts**
Twin Tunnel Shotcrete =	**$8,817,559**	**$1,014**	**NCY**	**To apply 8700 CY of S/C**
Twin Tunnel Membrane W.P. =	**$27,075,263**	**$29**	**SF**	**To apply Membrane WP for 935,000 SF**
TOTAL BID VALUE =	**$79,213,242**			
Cost per linear foot of advance	**$10,002**			

Use two bores-Two One Lane Tunnel Summary:		$10,611	
Note: The Bradfield River Report (2005) used $9150/ln. ft. for the cost of the tunnel. Using 3% inflation over 5 years, the Bradfield cost would be $10,607.		$11,141	Kiewitt Bid Plus 5%
The Juneau Access Highway engineer's estimate used $9,200/ln ft. for the cost of the tunnel sections. Average of three costs is near $10,000/ln ft.	**Use**	**$10,000**	**per ln. ft**
			Same

Backup Calculations for Bridge price:

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
501(1)	LPSM	Class A Concrete	LPSM	$7,664,990	$7,664,990
501(2)	LPSM	Class A-A Concrete	LPSM	$1,253,977	$1,253,977
501(7A)	each	128' Decked Bulb Tee	18	$92,926.97	$1,672,685
501(7B)	each	143' Decked Bulb Tee	227	$96,516.91	$21,909,339
501(7C)	each	118' Decked Bulb Tee	12	$85,101.49	$1,021,218
501(9)	ln ft	Bridge Expansion Joint	660.0	$871.75	$575,355.00
503(1)	LPSM	Reinforcing Steel	LPSM	$2,511,192	$2,511,192
503(2)	LPSM	Epoxy-Coated Reinforcing Steel	LPSM	$906,925	$906,925
504(2)	lb	Structural Steel	1,150,000.0	$3	$3,335,000
505(5A)	ln ft	Steel Piles - HP14x117	787.5	$114	$89,807
505(5B)	ln ft	Steel Piles - 24 in	6,668.0	$170	$1,131,760
505(5C)	ln ft	Steel Piles - 48 in dia	15,161.4	$526	$7,982,325
505(6A)	each	Drive Steel Piles - HP14x117	6.0	$4,965	$29,788
505(6B)	each	Drive Steel Piles - 24 in	78.0	$6,110	$476,612
505(6C)	each	Drive Steel Piles - 48 in dia	111.0	$14,576	$1,617,980
505(9)	sq ft	Structural Steel Sheet Piles	3,200.0	$58	$185,088
507(1)	ln ft	Steel Bridge Railing	14,135.0	$182	$2,569,178
507(6)	ln ft	Safety Railing	1,553.0	$9	$13,263
Subtotal of bridge costs:					$54,946,482

Range of Possible Lengths	6280 ln ft	7470 ln ft	
	207,240 sq ft	246,510 sq ft	Using 33' width
	$265.13	$222.90	

Average Unit Cost $244.02 per sq ft

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
501(1)	LPSM	Class A Concrete	LPSM	$9,973,080	$9,973,080
501(2)	LPSM	Class A-A Concrete	LPSM	$1,304,160	$1,304,160
501(7A)	each	128' Decked Bulb Tee	18	$60,000.00	$1,080,000
501(7B)	each	143' Decked Bulb Tee	227	$70,000.00	$15,890,000
501(7C)	each	118' Decked Bulb Tee	12	$60,000.00	$720,000
501(9)	ln ft	Bridge Expansion Joint	660.0	$1,100.00	$726,000.00
503(1)	LPSM	Reinforcing Steel	LPSM	$935,320	$935,320
503(2)	LPSM	Epoxy-Coated Reinforcing Steel	LPSM	$2,861,758	$2,861,758
504(2)	lb	Structural Steel	1,150,000.0	$3	$2,875,000
505(5A)	ln ft	Steel Piles - HP14x117	787.5	$65	$51,188
505(5B)	ln ft	Steel Piles - 24 in	6,668.0	$125	$833,500
505(5C)	ln ft	Steel Piles - 48 in dia	15,161.4	$500	$7,580,700
505(6A)	each	Drive Steel Piles - HP14x117	6.0	$5,000	$30,000
505(6B)	each	Drive Steel Piles - 24 in	78.0	$7,500	$585,000
505(6C)	each	Drive Steel Piles - 48 in dia	111.0	$25,000	$2,775,000
505(9)	sq ft	Structural Steel Sheet Piles	3,200.0	$45	$144,000
507(1)	ln ft	Steel Bridge Railing	14,135.0	$225	$3,180,375
507(6)	ln ft	Safety Railing	1,553.0	$4	$5,436
Subtotal of bridge costs:					$51,550,516

Range of Possible Lengths	6280 ln ft	7470 ln ft	
	207,240 sq ft	246,510 sq ft	Using 33' width
	$248.75	$209.12	

Average Unit Cost $228.93 per sq ft

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5	
Bridge Type	**$/sq. ft.**
Low Complexity:	**$250**
Medium Complexity:	**$350**
High Complexity:	**$500**

Juneau Access, Final EIS, 2006, UPA				Valdez-Dayville, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	SQFT	Bridge Replacement		$128.00	

Average Unit Cost with 3%/year Inflation $148.39 per sq ft

Juneau Access, Final EIS, 2006, UPA				San Mateo-Hayward, 2002	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	SQFT	Bridge Replacement		$132.00	

Average Unit Cost with 3%/year Inflation $162.34 per sq ft

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
55201	m^3	structural concrete class A (AE)	95.00	$1,200.00	$114,000.00	$2,666.00	$253,270.00	$4,000.00	$380,000.00
55302	m	precast, prestressed concrete decked Bulb Tee Girder	169	$1,250.00	$211,250.00	$1,861.40	$314,576.60	$3,000.00	$507,000.00
55401	kg	reinforcing steel	5,200	$3.50	$18,200.00	$4.37	$22,724.00	$6.00	$31,200.00
55402	kg	epoxy coated reinforcing steel	2,064	$4.20	$8,668.80	$2.61	$5,387.04	$7.00	$14,448.00
55601 A	m	steel bridge railing	55.0	$450.00	$24,750.00	$340.00	$18,700.00	$750.00	$41,250.00
55601 b	m	steel bridge railing (retrofit)	95.0	$400.00	$38,000.00	$575.00	$54,625.00	$500.00	$47,500.00
55101	m	steel H piles, 310 x 110, in place	62.0	$300.00	$18,600.00	$820.00	$50,840.00	$2,000.00	$124,000.00
Subtotal of bridge costs:					$433,468.80		$720,122.64		$1,145,398.00

Bridge on Coffman Cove = 28.5 m length 12.79 m width 364.515 m2

Coffman Cove(2)

Ave.	Quantity	Unit	Total	Cost per Unit
$766,330	1	each	$766,330	
	364.52	m2		$2,102 per m2
	3923.61	sq. ft		$195 per sq ft

Average Unit Cost with 3%/year Inflation $213.42 per sq ft

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
55201	m^3	structural concrete class A (AE)	282.00	$1,200.00	$338,400.00	$1,100.00	$310,200.00	$1,200.00	$338,400.00	$1,000.00	$282,000.00
55302	each	precast, prestressed concrete decked Bulb Tee Girder	6	$27,000.00	$162,000.00	$25,931.00	$155,586.00	$50,000.00	$300,000.00	$30,000.00	$180,000.00
55401	kg	reinforcing steel	21,070	$2.75	$57,942.50	$1.50	$31,605.00	$3.00	$63,210.00	$2.00	$42,140.00
55402	kg	epoxy coated reinforcing steel	1,770	$3.00	$5,310.00	$2.90	$5,133.00	$4.00	$7,080.00	$4.00	$7,080.00
55601 A	m	steel bridge railing	48.1	$300.00	$14,430.00	$324.00	$15,584.40	$450.00	$21,645.00	$400.00	$19,240.00
55601 b	m	steel bridge railing (retrofit)	132.7	$350.00	$46,445.00	$168.63	$22,377.20	$400.00	$53,080.00	$150.00	$19,905.00
Subtotal of bridge costs:					$624,527.50		$540,485.60		$783,415.00		$550,365.00

Bridge on Coffman Cove = 25 m length 11.3 m width 282.5 m2

Coffman Cove(1)

Ave.	Quantity	Unit	Total	Cost per Unit
$624,698	1	each	$624,698	
	282.50	m2		$2,211 per m2
	3040.80	sq. ft		$205.44 per sq. ft

Average Unit Cost with 3%/year Inflation $245.30 per sq ft

Bradfield River Report (2005) Bridge Costs with inflation:

Bridge Type	$/sq. ft.	With 3% inflation/yea
Low Complexity:	$150	$174
Medium Complexity:	$200	$232
High Complexity:	$275	$319

Bridge on Camp Grisdale=		45 ft length	32 ft width	1440 sq. ft.
	Cost	$350,000	$243 per sq. ft.	

Total Average Unit Cost **$212.21** **per sq ft**

Use **$210** **per sq. ft. for low complexity bridges**

Yakataga Bridge Replacement:		490 ft length	14 ft width	6860 sq. ft.
	Cost	$1,654,962	$241 per sq. ft.	

Total Average Unit Cost **$259.21** **per sq ft**

Use **$260** **per sq. ft. for low to medium complexity bridges**

Bay Bridge: $1000/sf suspension, $650/sf viaduct span (higher complexity than AK bridges)

Total Average Unit Cost **$379.60** **per sq ft**

Use **$380** **per sq. ft. for high complexity bridges**

Segment	BOB	EOB	Bridge Length (ft)	Bridge Area[1] (sq.ft.)	Complexity Low[2]	Medium[3]	High[4]	Cost $
A2	1009+00	1024+00	1,500	45,000			X	$17,100,000
A-1a	1480+00	1486+00	600	18,000	X			$3,780,000
A-1a	1750+00	1752+00	200	6,000	X			$1,260,000
A-1a	1790+00	1812+00	2,200	66,000		X		$17,160,000
A-1a	1889+00	1894+00	500	15,000	X			$3,150,000
A-1a	2051+00	2062+00	1,100	33,000		X		$8,580,000
A-1a	2083+00	2093+00	1,000	30,000		X		$7,800,000
A-1a	2245+00	2254+00	900	27,000			X	$10,260,000
A-1a	2320+00	2327+00	700	21,000			X	$7,980,000
A-1a	2372+00	2377+00	500	15,000			X	$5,700,000
A-1a	2385+00	2397+00	1,200	36,000			X	$13,680,000
A-1a	2405+00	2417+00	1,200	36,000			X	$13,680,000
A-1a	2531+00	2551+00	2,000	60,000			X	$22,800,000
A-1a	2756+00	2771+00	1,500	45,000			X	$17,100,000
A-1a	3015+00	3039+00	2,400	72,000		X		$18,720,000
A-1b	1480+00	1486+00	600	18,000	X			$3,780,000
A-1b	1750+00	1752+00	200	6,000	X			$1,260,000
A-1b	1790+00	1812+00	2,200	66,000		X		$17,160,000
A-1b	1889+00	1894+00	500	15,000	X			$3,150,000
A-1b	2051+00	2062+00	1,100	33,000		X		$8,580,000
A-1b	2324+00	2339+00	1,500	45,000		X		$11,700,000
A-1b	2376+00	2379+00	300	9,000	X			$1,890,000
A-1b	2393+00	2398+00	500	15,000	X			$3,150,000
A-1b	2445+00	2465+00	2,000	60,000		X		$15,600,000
A-1b	2538+00	2545+00	700	21,000	X			$4,410,000
A-1b	2724+00	2739+00	1,500	45,000			X	$17,100,000
A-1b	2983+00	3007+00	2,400	72,000		X		$18,720,000
S-3	1008+75	1024+00	1525	45,750			X	$17,385,000
S-3	1474+00	1480+00	600	18,000	X			$3,780,000
S-2	1627+50	1633+50	600	18,000	X			$3,780,000
S-2	2432+00	2436+00	400	12,000	X			$2,520,000
S-1	2624+00	2632+00	800	24,000		X		$6,240,000
S-1	3060+00	3067+00	700	21,000		X		$5,460,000
S-1	3351+00	3362+00	1,100	33,000		X		$8,580,000
S-1	3652+00	3663+00	1,100	33,000		X		$8,580,000
S-1	3798+00	3808+00	1,000	30,000	X			$6,300,000
S-1	3824+00	3831+00	700	21,000	X			$4,410,000
L-1	175+00	226+00	5,100	153,000			X	$58,140,000
L-1	523+00	531+00	800	24,000	X			$5,040,000
L-1	752+00	775+00	2,300	69,000		X		$17,940,000
L-1	829+00	852+00	2,300	69,000		X		$17,940,000

[1] Deck area based on average bridge width of 30 *2-lane bridge width*

[2] Low complexity bridge, $/SF = **$210**

[3] Medium complexity bridge, $/SF = **$260**

[4] High complexity bridge, $/SF = **$380**

SUMMARY

Alignment	Segment	BOB	EOB	Bridge Length (ln. ft.)	Bridge Area (sq.ft.)	Complexity Low	Complexity Medium	Complexity High	Cost $
Aaron Creek	A2	1009+00	1024+00	1,500	45,000	0	0	45,000	$17,100,000
Subtotal:				1,500	45,000	0	0	45000	$17,100,000
Use				**1,500**	**45,000**	**0**	**0**	**45,000**	**$17,100,000**
Aaron Creek Pass	A-1a	1480+00	1486+00	600	18,000	18,000	0	0	$3,780,000
	A-1a	1750+00	1752+00	200	6,000	6,000	0	0	$1,260,000
	A-1a	1790+00	1812+00	2,200	66,000	0	66,000	0	$17,160,000
	A-1a	1889+00	1894+00	500	15,000	15000	0	0	$3,150,000
	A-1a	2051+00	2062+00	1,100	33,000	0	33,000	0	$8,580,000
	A-1a	2083+00	2093+00	1,000	30,000	0	30,000	0	$7,800,000
	A-1a	2245+00	2254+00	900	27,000	0	0	27,000	$10,260,000
	A-1a	2320+00	2327+00	700	21,000	0	0	21,000	$7,980,000
	A-1a	2372+00	2377+00	500	15,000	0	0	15,000	$5,700,000
	A-1a	2385+00	2397+00	1,200	36,000	0	0	36,000	$13,680,000
	A-1a	2405+00	2417+00	1,200	36,000	0	0	36,000	$13,680,000
	A-1a	2531+00	2551+00	2,000	60,000	0	0	60,000	$22,800,000
	A-1a	2756+00	2771+00	1,500	45,000	0	0	45,000	$17,100,000
Subtotal:				13,600	408,000	39,000	129,000	240,000	$132,930,000
Use				**13,600**	**408,000**	**39,000**	**129,000**	**240,000**	**$132,930,000**
(BC)	A-1a	3015+00	3039+00	2,400	72,000	0	72,000	0	$18,720,000
Subtotal:				2,400	72,000	0	72,000	0	$18,720,000
Use				**2,400**	**72,000**	**0**	**72,000**	**0**	**$18,720,000**
Aaron Creek Tunnel	A-1b	1480+00	1486+00	600	18,000	18,000	0	0	$3,780,000
	A-1b	1750+00	1752+00	200	6,000	6,000	0	0	$1,260,000
	A-1b	1790+00	1812+00	2,200	66,000	0	66,000	0	$17,160,000
	A-1b	1889+00	1894+00	500	15,000	15,000	0	0	$3,150,000
	A-1b	2051+00	2062+00	1,100	33,000	0	33,000	0	$8,580,000
	A-1b	2324+00	2339+00	1,500	45,000	0	45,000	0	$11,700,000
	A-1b	2376+00	2379+00	300	9,000	9,000	0	0	$1,890,000
	A-1b	2393+00	2398+00	500	15,000	15,000	0	0	$3,150,000
	A-1b	2445+00	2465+00	2,000	60,000	0	60,000	0	$15,600,000
	A-1b	2538+00	2545+00	700	21,000	21,000	0	0	$4,410,000
	A-1b	2724+00	2739+00	1,500	45,000	0	0	45,000	$17,100,000
Subtotal:				11,100	333,000	84,000	204,000	45,000	$87,780,000
Use				**11,100**	**333,000**	**84,000**	**204,000**	**45,000**	**$87,780,000**
(BC)	A-1b	2983+00	3007+00	2,400	72,000	0	72,000	0	$18,720,000
Subtotal:				2,400	72,000	0	72,000	0	$18,720,000
Use				**32,700**	**72,000**	**0**	**72,000**	**0**	**$18,720,000**
S. Stikine River	S-3	1008+75	1024+00	1,525	45,750	0	0	45,750	$17,385,000
S. Stikine River	S-3	1474+00	1480+00	600	18,000	18,000	0	0	$3,780,000
Subtotal:				2,125	63,750	18,000	0	45,750	$21,165,000
Use				**2,125**	**63,750**	**18,000**	**0**	**45,750**	**$21,165,000**
South Stikine River	S-2	1627+50	1633+50	600	18,000	18,000	0	0	$3,780,000
	S-2	2432+00	2436+00	400	12,000	12,000	0	0	$2,520,000
Subtotal:				1,000	30,000	30,000	0	0	$6,300,000
Use				**1,000**	**30,000**	**30,000**	**0**	**0**	**$6,300,000**
South Stikine River	S-1	2624+00	2632+00	800	24,000	0	24,000	0	$6,240,000
	S-1	3060+00	3067+00	700	21,000	0	21,000	0	$5,460,000
	S-1	3351+00	3362+00	1,100	33,000	0	33,000	0	$8,580,000
	S-1	3652+00	3663+00	1,100	33,000	0	33,000	0	$8,580,000
Subtotal:				3,700	111,000	0	111,000	0	$28,860,000
Use				**3,700**	**111,000**	**0**	**111,000**	**0**	**$28,860,000**
South Stikine River (BC)	S-1	3798+00	3808+00	1,000	30,000	30,000	0	0	$6,300,000
	S-1	3824+00	3831+00	700	21,000	21,000	0	0	$4,410,000
Subtotal:				1,700	51,000	51,000	0	0	$10,710,000
Use				**1,700**	**51,000**	**51,000**	**0**	**0**	**$10,710,000**
Limb Island	L-1	175+00	226+00	5,100	153,000	0	0	153,000	$58,140,000
	L-1	523+00	531+00	800	24,000	24,000	0	0	$5,040,000
	L-1	752+00	775+00	2,300	69,000	0	69,000	0	$17,940,000
	L-1	829+00	852+00	2,300	69,000	0	69,000	0	$17,940,000
Subtotal:				10,500	315,000	24,000	138,000	153,000	$99,060,000
Use				**10,500**	**315,000**	**24,000**	**138,000**	**153,000**	**$99,060,000**
Total				**41,525**	**1,245,750**	**246,000**	**471,000**	**528,750**	**$375,045,000**

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
602(3A)	lnft	Structural Plate Arch 20' span	50	$2,207.72	$110,386.00
602(3B)	lnft	Structural Plate Arch 35'4" span	52	$3,880.56	$201,789.12
603(17-144)	lnft	144 Inch Pipe	120	$683.19	$81,982.80
					$394,157.92
					$16,894.90 per mile

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$1,775	222.0	ln ft	$394,158	
					$1,775.49 per ln ft

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
602(3A)	lnft	Structural Plate Arch 20' span	50	$2,120.00	$106,000.00
602(3B)	lnft	Structural Plate Arch 35'4" span	52	$3,900.00	$202,800.00
603(17-144)	lnft	144 Inch Pipe	120	$750.00	$90,000.00
					$398,800.00
					$17,093.87 per mile

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$1,796	222.0	ln ft	$398,800	
					$1,796.40 per ln ft

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
602(3B)	lnft	Structural Plate Arch 31'9" span	572	$3,900.00	$2,230,800.00
603(17-144)	lnft	144 Inch Pipe	250	$750.00	$187,500.00
					$2,418,300.00
					$88,034.22 per mile

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$2,942	822.0	ln ft	$2,418,300	
					$2,941.97 per ln ft

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
602(2-13)	LNFT	SPP-Arch 13'-3"	86.0	$2,500.00	$215,000.00	$1,470.00	$126,420.00	$1,200.00	$103,200.00	$1,500.00	$129,000.00
602(2-15)	LNFT	SPP-Arch 15'-4"	110.0	$3,000.00	$330,000.00	$1,600.00	$176,000.00	$1,250.00	$137,500.00	$2,000.00	$220,000.00
					$545,000.00		$302,420.00		$240,700.00		$349,000.00

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$1,833	196.0	m	$359,280	
		643.0	ln ft		**$1,833.06 per ln ft**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 L	m	3000 millimeter pipe culvert	58.0	$2,100.00	$121,800.00	$1,939.00	$112,462.00	$2,000.00	$116,000.00
60301 A	m	3825 millimeter structural plate pipe	43.1	$3,800.00	$163,780.00	$3,722.52	$160,440.61	$4,000.00	$172,400.00
60301 B	m	5030 millimeter structural plate pipe	56.5	$5,100.00	$288,150.00	$4,564.54	$257,896.51	$5,000.00	$282,500.00
60301 C	m	5510 millimeter structural steel plate arch	36.9	$5,200.00	$191,880.00	$4,976.38	$183,628.42	$5,000.00	$184,500.00

Coffman Cove (2)

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$3,831	194.5	m	$745,145	
		638.1	ln ft		$1,167.71 per ln ft

Average Unit Cost with 3%/year Inflation **$1,275.99 per ln ft**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 L	m	3600 millimeter pipe culvert	63.3	$2,300.00	$145,590.00	$2,445.00	$154,768.50	$2,100.00	$132,930.00	$3,200.00	$202,560.00
60202 L	m	3000 millimeter pipe culvert	82.4	$825.00	$67,980.00	$1,554.00	$128,049.60	$1,300.00	$107,120.00	$1,800.00	$148,320.00
60301 A	m	3980 millimeter structural plate pipe	25.0	$2,500.00	$62,500.00	$2,897.00	$72,425.00	$3,000.00	$75,000.00	$3,200.00	$80,000.00
60301 B	m	4290 millimeter structural plate pipe	29.3	$3,000.00	$87,900.00	$2,515.00	$73,689.50	$3,100.00	$90,830.00	$3,200.00	$93,760.00
60301 C	m	4270 millimeter structural steel plate arch	14.6	$3,000.00	$43,800.00	$2,540.00	$37,084.00	$5,000.00	$73,000.00	$1,000.00	$14,600.00

Coffman Cove (1)

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$2,204	214.6	m	$472,976	
		704.1	ln ft		$671.78 per ln ft

Average Unit Cost with 3%/year Inflation **$802.14 per ln ft**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60202 L	m	3600 millimeter pipe culvert	39.0	$900.00	$35,100.00	$2,500.00	$97,500.00	$3,000.00	$117,000.00
60301 A	m	4600 millimeter structural plate pipe	25.0	$1,800.00	$45,000.00	$3,000.00	$75,000.00	$4,000.00	$100,000.00

	Ave.	Quantity	Unit	Total	Cost per Unit
Pipe alone	$2,446	64.0	m	$156,533	
		210.0	ln ft		$745.49 per ln ft

Average Unit Cost with 3%/year Inflation **$1,001.88 per ln ft**

Total Average Unit Cost **$1,632.42** **per ln ft**

Use **$2,000.00** **per ln ft**

Use 100 ft $200,000 each **for culverts > 10 ft diameter**

$200,000 **each**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
65001 A	each	Log weir	30	$400.00	$12,000.00	$231.00	$6,930.00	$1,500.00	$45,000.00
65001 B	each	Rock weir	5	$500.00	$2,500.00	$400.00	$2,000.00	$513.00	$2,565.00
25110	m3	culvert outlet control system	90	$180.00	$16,200.00	$77.00	$6,930.00	$60.00	$5,400.00
25112	m3	riprap headwall	700	$18.00	$12,600.00	$43.27	$30,289.00	$80.00	$56,000.00
25116	m3	energy dissipater	100.0	$240.00	$24,000.00	$61.00	$6,100.00	$60.00	$6,000.00

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
65001 A	each	Log weir	9	$2,000.00	$18,000.00	$400.00	$3,600.00	$900.00	$8,100.00	$400.00	$3,600.00
65001 B	each	Rock weir	2	$7,500.00	$15,000.00	$250.00	$500.00	$2,000.00	$4,000.00	$1,000.00	$2,000.00
25110	each	culvert outlet control system	17	$3,000.00	$51,000.00	$425.00	$7,225.00	$800.00	$13,600.00	$2,000.00	$34,000.00
25112	each	riprap headwall	50	$1,000.00	$50,000.00	$222.50	$11,125.00	$400.00	$20,000.00	$500.00	$25,000.00
25116	m	energy dissipater	65.0	$175.00	$11,375.00	$132.00	$8,580.00	$125.00	$8,125.00	$250.00	$16,250.00

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
25110	each	culvert outlet control system	8	$3,000.00	$24,000.00	$3,000.00	$24,000.00	$1,200.00	$9,600.00
25112	each	riprap headwall	7	$1,500.00	$10,500.00	$1,000.00	$7,000.00	$600.00	$4,200.00
25116A	m	energy dissipater	75.0	$50.00	$3,750.00	$200.00	$15,000.00	$100.00	$7,500.00
25116B	m	energy dissipater	65.0	$100.00	$6,500.00	$200.00	$13,000.00	$120.00	$7,800.00

Additions for fish culvert

Rock weir	$1,750	1 each	$1,750
Culvert Outlet	$2,000	1 each	$2,000
Riprap Headwall	$750	2 each	$1,500
Energy dissipater	$1,500	1 each	$1,500
Subtotal for additions:			$6,750
		With 3%/year inflation	$7,376

Use **$8,000.00 each**

For fish passage only
Assume all listed 7' pipes and half of > 10' pipes

QUANTITIES								
Segment	Length (mi.)	Stationing		Quantity			Unit	Source
				7'	> 10'	Fish Pass.		
W - 1	1.72	914+00	1005+00	0	0	0	each	
W - 2	3.20	745+00	914+00	0	0	0	each	
W - 3	11.08	160+00	745+00	0	0	0	each	
F - 1	6.42	723+00	1062+00	0	0	0	each	
F - 2	4.06	1062+00	1276+37	2	4	4	each	
A - 1a	30.37	1280+00	2883+63	10	15	18	each	
A - 1a (BC)	3.86	2883+63	3087+36	1	1	1	each	
A - 1b	29.77	1280+00	2851+97	7	8	11	each	
A - 1b (BC)	3.86	2851+97	3055+71	1	1	1	each	
A - 2	5.21	1005+00	1280+00	0	1	1	each	
S -1	21.35	2545+94	3673+29	14	21	25	each	
S -1 (BC)	4.13	3673+29	3891+26	1	1	1	each	
S - 2	17.65	1614+00	2545+94	0	7	4	each	
S - 3	11.53	1005+00	1614+00	1	3	3	each	
L - 1	14.39	100+00	859+77	1	5	4	each	

100% 1-lane quantities for existing road alignments
100% 2-lane quantities for new alignments

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
611(1A)	CUYD	Riprap, Class II	3,885.000	$48.38	$187,956.30

Average Unit Cost **$48.38 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
611(1A)	CUYD	Riprap, Class II	3,885.000	$10.00	$38,850.00

Average Unit Cost **$10.00 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
611(1B)	CUYD	Riprap, Class IV	105,380.000	$10.00	$1,053,800

Average Unit Cost **$10.00 per yd3**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
611(1-I)	CUYD	Riprap, Class I	1,065.000	$30.00	$31,950.00	$88.00	$93,720	$70.00	$74,550.0	$60.00	$63,900.00
611(1-II)	CUYD	Riprap, Class II	4,168.000	$50.00	$208,400.00	$68.00	$283,424	$56.00	$233,408.0	$60.00	$250,080.00

$62.00	$66,030.00	$59.21
$58.50	$243,828.00	

Ave.	Quantity	Unit	Total	Cost per Unit
$59	5,233.000	cuyd	$309,858.00	
				$59.21 per yd3

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25101	m^3	placed riprap, class 4	890	$59.33	$52,803.70	$77.56	$69,028.40	$46.84	$41,687.60
25103	m^3	keyed riprap, class 5	880	$45.00	$39,600.00	$30.00	$26,400.00	$80.00	$70,400.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$56.46	1,770	m3	$99,934	
	2,315	yd3		**$43.17 per yd3**

Average Unit Cost with 3%/year Inflation **$47.17 per yd3**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25101	m^3	placed riprap, class 2	100	$25.00	$2,500.00	$172.67	$17,267.00	$40.00	$4,000.00	$30.00	$3,000.00
25103	m^3	keyed riprap, class 5	400	$50.00	$20,000.00	$22.97	$9,188.00	$40.00	$16,000.00	$50.00	$20,000.00

$66.92	$6,691.75	45.9775
$40.74	$16,297.00	

Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$45.98	500	m3	$22,989	
	654	yd3		**$35.15 per yd3**

Average Unit Cost with 3%/year Inflation **$41.97 per yd3**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25101A	m3	Placed riprap, class 2	80.000	$40.00	$3,200.00	$40.00	$3,200.00	$30.00	$2,400.00

Ave.	Quantity	Unit	Total	Cost per Unit
$37	80.000	m3	$2,933.33	
	104.6	cuyd		**$28.04 per yd3**

Average Unit Cost with 3%/year Inflation **$37.69 per yd3**

Total Average Unit Cost **$36.35 per yd3**

Use **$30.00 per yd3** Riprap likely generated on-site

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	0	Cu. Yd.	
W - 2	3.20	745+00	914+00	0	Cu. Yd.	
W - 3	11.08	160+00	745+00	0	Cu. Yd.	
F - 1	6.42	723+00	1062+00	0	Cu. Yd.	
F - 2	4.06	1062+00	1276+37	9,595	Cu. Yd.	
A - 1a	30.37	1280+00	2883+63	7,381	Cu. Yd.	
A - 1a (BC)	3.86	2883+63	3087+36	0	Cu. Yd.	
A - 1b	29.77	1280+00	2851+97	5,167	Cu. Yd.	
A - 1b (BC)	3.86	2851+97	3055+71	0	Cu. Yd.	
A - 2	5.21	1005+00	1280+00	0	Cu. Yd.	
S -1	21.35	2545+94	3673+29	14,024	Cu. Yd.	
S -1 (BC)	4.13	3673+29	3891+26	0	Cu. Yd.	
S - 2	17.65	1614+00	2545+94	22,880	Cu. Yd.	
S - 3	11.53	1005+00	1614+00	0	Cu. Yd.	
L - 1	14.39	100+00	859+77	8,489	Cu. Yd.	

100% 1-lane quantities for existing road alignments
100% 2-lane quantities for new alignments

Wetland Mitigation **Unit: Acre**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
21101 B	m^2	roadway obliteration, type 2	3,000	$5.00	$15,000.00	$5.34	$16,020.00	$8.00	$24,000.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$ 6.11	3,000	m2	$18,340	
	32,292	sq.ft.		$0.57 per sq ft
	0.74	acre		**$24,784 per acre**

Average Unit Cost with 3%/year Inflation **$27,081.91 per acre**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
21101 B	m^2	roadway obliteration, type 2	46,000	$4.50	$207,000.00	$2.45	$112,700.00	$1.00	$46,000.00	$5.00	$230,000.00

Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$3.24	46,000	m2	$148,925	
	495,140	sq.ft.		$0.30 per sq ft
	11.37	acre		$13,098 per acre

Average Unit Cost with 3%/year Inflation **$15,639.77 per acre**

Wetland mitigation in SE Alaska for Coffman Cove was conserving the top layer of muskeg and placing it on obliterated road.
Wetland mitigation may be more difficult to create on this project. (Bradfield note)

Total Average Unit Cost **$21,360.84 per acre**

Use **$25,000.00 per acre**

Wetland Mitigation Allowance
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (acres)	Rate (acre/mile)
Segment 1	5.40	20	3.70
Segment 2	3.49	20	5.73
Segment 3	5.55	20	3.60
Segment 4	8.73	10	1.15
Segment 5	6.41	5	0.78
Average Rate			2.99

Cultural Resource Mitigation Allowance
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (LS)	Rate (LS/mile)
Segment 1	5.40	5	0.93
Segment 2	3.49	5	1.43
Segment 3	5.55	5	0.90
Segment 4	8.73	5	0.57
Segment 5	6.41	5	0.78
Average Rate			0.92

Wetland Mitigation-Allowance

Segment	Length (mile)	Quantity (acres)
W-1	1.72	5
W-2	3.20	*
W-3	11.08	*
F-1	6.42	*
F-2	4.06	12
A-1a	30.37	91
A-1a (BC)	3.86	12
A-1b	29.77	89
A-1b (BC)	3.86	12
A-2	5.21	16
S-1	21.35	64
S-1 (BC)	4.13	12
S-2	17.65	53
S-3	11.53	34
L-1	14.39	43

Cultural Resource Mitigation-Allowance

Segment	Length (mile)	Quantity (LS)
W-1	1.72	2
W-2	3.20	*
W-3	11.08	*
F-1	6.42	*
F-2	4.06	4
A-1a	30.37	28
A-1a (BC)	3.86	4
A-1b	29.77	27
A-1b (BC)	3.86	4
A-2	5.21	5
S-1	21.35	20
S-1 (BC)	4.13	4
S-2	17.65	16
S-3	11.53	11
L-1	14.39	13

Assumed same rates as 2-lane applied

Staging Area Rehabilitation
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (acres)	Rate (SAR/mile)
Segment 1	5.40	3	0.56
Segment 2	3.49	3	0.86
Segment 3	5.55	3	0.54
Segment 4	8.73	3	0.34
Segment 5	6.41	3	0.47
Average Rate			0.55

Stormwater Management Ponds
Bradfield River Road Engineering Study, 2005

	Length (Miles)	Quantity (LS)	Rate (SMP/mile)
Segment 1	5.40	5	0.93
Segment 2	3.49	5	1.43
Segment 3	5.55	5	0.90
Segment 4	8.73	5	0.57
Segment 5	6.41	5	0.78
Average Rate			0.92

Staging Area Rehabilitation

Segment	Length (mile)	Quantity (acres)
W-1	1.72	1
W-2	3.20	*
W-3	11.08	*
F-1	6.42	*
F-2	4.06	2
A-1a	30.37	17
A-1a (BC)	3.86	2
A-1b	29.77	16
A-1b (BC)	3.86	2
A-2	5.21	3
S-1	21.35	12
S-1 (BC)	4.13	2
S-2	17.65	10
S-3	11.53	6
L-1	14.39	8

Stormwater Management Ponds

Segment	Length (mile)	Quantity (LS)
W-1	1.72	2
W-2	3.20	*
W-3	11.08	*
F-1	6.42	*
F-2	4.06	4
A-1a	30.37	28
A-1a (BC)	3.86	4
A-1b	29.77	27
A-1b (BC)	3.86	4
A-2	5.21	5
S-1	21.35	20
S-1 (BC)	4.13	4
S-2	17.65	16
S-3	11.53	11
L-1	14.39	13

Assumed same rates as 2-lane applied

* Calculated as a percentage, base on Bradfield percentage of cost

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	22,306	$85.15	$1,899,356

Average Unit Cost **$85.15 per sq ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	22,306	$50.00	$1,115,300

Average Unit Cost **$50.00 per sq ft**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	838,230	$50.00	$41,911,500

Average Unit Cost **$50.00 per sq ft**

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall - Pattern Finish	37,905	$70.00	$2,653,350

Average Unit Cost with 3%/year Inflation **$76.49 per sq ft**

Juneau Access, Financial Plan, 2007, UPA				South Tongass, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	4,993.000	$35.00	$174,755.00

Average Unit Cost with 3%/year Inflation **$38.25 per sq ft**

Juneau Access, Final EIS, 2006, UPA				Palmer-Wasilla, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	17,712.000	$29.14	$516,127.68

Average Unit Cost with 3%/year Inflation **$36.91 per sq ft**

Juneau Access, Final EIS, 2006, UPA				Parks Highway, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	25,488.000	$30.93	$788,343.84

Average Unit Cost with 3%/year Inflation **$39.18 per sq ft**

Juneau Access, Final EIS, 2006, UPA				Glenn Highway, 2002	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
511(1)	SQFT	MSE Wall	34,830.000	$28.55	$994,396.50

Average Unit Cost with 3%/year Inflation **$35.11 per sq ft**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25119	m^3	riprap blanket	8,500.0	$15.00	$127,500.00	$19.80	$168,300.00	$75.00	$637,500.00
25203	m^3	rock buttress, mechanically-placed*	3,500	$44.80	$156,800.00	$13.82	$48,372.80	$16.80	$58,800.00
25504	m^2	geogrid wall*	180	$347.78	$62,600.80	$326.40	$58,751.56	$347.78	$62,600.80
26201	m^2	rockery wall	200	$150.00	$30,000.00	$80.00	$16,000.00	$130.00	$26,000.00

* From Coffman Cove, Phase 1, 2003, increased for inflation

Coffman Cove (2), geogrid wall

Ave.	Quantity	Unit	Total	Cost per Unit
$341	180	m2	$61,380	
	1938	sq.ft.		**$31.68 per sq ft**

Average Unit Cost with 3%/year Inflation **$34.62 per sq ft**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
25504	m2	Gabion-faced ret. Wall	988.000	$300.00	$296,400.00	$110.00	$108,680.00	$200.00	$197,600.00

Ave.	Quantity	Unit	Total	Cost per Unit
$203	988.000	m2	$200,893	
	10635	sqft		**$18.89 per sqft**

Average Unit Cost with 3%/year Inflation **$25.39 per sq ft**

Total Average Unit Cost **$47.11 per sq ft**

Use **$45.00 per sq ft**

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	0	sq. ft.	
W - 2	3.20	745+00	914+00	0	sq. ft.	
W - 3	11.08	160+00	745+00	0	sq. ft.	
F - 1	6.42	723+00	1062+00	0	sq. ft.	
F - 2	4.06	1062+00	1276+37	0	sq. ft.	
A - 1a	30.37	1280+00	2883+63	250,100	sq. ft.	
A - 1a (BC)	3.86	2883+63	3087+36	0	sq. ft.	
A - 1b	29.77	1280+00	2851+97	112,600	sq. ft.	
A - 1b (BC)	3.86	2851+97	3055+71	0	sq. ft.	
A - 2	5.21	1005+00	1280+00	0	sq. ft.	
S -1	21.35	2545+94	3673+29	64,200	sq. ft.	
S -1 (BC)	4.13	3673+29	3891+26	0	sq. ft.	
S - 2	17.65	1614+00	2545+94	29,700	sq. ft.	
S - 3	11.53	1005+00	1614+00	5,200	sq. ft.	
L - 1	14.39	100+00	859+77	0	sq. ft.	

100% 1-lane quantities for existing road alignments
100% 2-lane quantities for new alignments

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	10,877	$54.61	$593,992.97
603(17-36)	lnft	36 Inch Pipe	7,312	$74.75	$546,572.00
603(17-48)	lnft	48 Inch Pipe	1,434.0	$104.76	$150,225.84
603(17-60)	lnft	60 Inch Pipe	664.0	$193.43	$128,437.52
603(17-72)	lnft	72 Inch Pipe	504.0	$270.65	$136,407.60
					$1,555,636

Average Unit Cost $66,679.64 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	10,877	$80.00	$870,160.00
603(17-36)	lnft	36 Inch Pipe	7,312	$140.00	$1,023,680.0
603(17-48)	lnft	48 Inch Pipe	1,434.0	$190.00	$272,460.00
603(17-60)	lnft	60 Inch Pipe	664.0	$290.00	$192,560.00
603(17-72)	lnft	72 Inch Pipe	504.0	$350.00	$176,400.00
					$2,535,260.0

Average Unit Cost $108,669.52 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	16,000	$80.00	$1,280,000.0
603(17-36)	lnft	36 Inch Pipe	8,540	$140.00	$1,195,600.0
603(17-48)	lnft	48 Inch Pipe	2,490.0	$190.00	$473,100.00
603(17-60)	lnft	60 Inch Pipe	1,110.0	$290.00	$321,900.00
603(17-72)	lnft	72 Inch Pipe	310.0	$350.00	$108,500.00
					$3,379,100.0

Average Unit Cost $123,010.56 per mile

Juneau Access, Financial Plan, 2007, UPA				Lynn Canal Zones 1-3, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	10,877	$87.42	$950,867.34
603(17-36)	lnft	36 Inch Pipe	7,312	$152.98	$1,118,589.8
603(17-48)	lnft	48 Inch Pipe	1,434.0	$207.62	$297,727.08
603(17-60)	lnft	60 Inch Pipe	664.0	$316.89	$210,414.96
603(17-72)	lnft	72 Inch Pipe	504.0	$382.45	$192,754.80
					$2,770,353.9

$118,746.42

Average Unit Cost with 3%/year Inflation $129,757.42 per mile

Juneau Access, Financial Plan, 2007, UPA				Lynn Canal Zones 4-5, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
603(17-24)	lnft	24 Inch Pipe	16,000	$87.42	$1,398,720.0
603(17-36)	lnft	36 Inch Pipe	8,540	$152.98	$1,306,449.2
603(17-48)	lnft	48 Inch Pipe	2,490.0	$207.62	$516,973.80
603(17-60)	lnft	60 Inch Pipe	1,110.0	$316.89	$351,747.90
603(17-72)	lnft	72 Inch Pipe	310.0	$382.45	$118,559.50
					$3,692,450.4

$134,417.56

Average Unit Cost with 3%/year Inflation $146,881.70 per mile

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
602(1-60)A	LNFT	60" SPP	183	$850.00	$155,550.00	$810.00	$148,230.00	$515.00	$94,245.00	$1,500.00	$274,500.00
602(1-60)B	LNFT	60" SPP	118	$1,000.00	$118,000.00	$840.00	$99,120.00	$570.00	$67,260.00	$1,600.00	$188,800.00
602(1-72)A	LNFT	72" SPP	322	$1,300.00	$418,600.00	$820.00	$264,040.00	$500.00	$161,000.00	$1,600.00	$515,200.00
602(1-72)b	LNFT	72"SPP	100	$1,500.00	$150,000.00	$800.00	$80,000.00	$620.00	$62,000.00	$1,700.00	$170,000.00
602(1-84)	LNFT	84" SPP	213.0	$1,800.00	$383,400.00	$970.00	$206,610.00	$650.00	$138,450.00	$2,000.00	$426,000.00
602(1-108)	LNFT	108" SPP	80.0	$2,200.00	$176,000.00	$980.00	$78,400.00	$900.00	$72,000.00	$3,000.00	$240,000.00
603(1-24)	LNFT	24" CSP	164	$120.00	$19,680.00	$120.00	$19,680.00	$110.00	$18,040.00	$130.00	$21,320.00
603(1-36)	LNFT	36" CSP	7,181	$160.00	$1,148,960.0	$180.00	$1,292,580.0	$160.00	$1,148,960	$160.00	$1,148,960.00
603(1-48)	LNFT	48" CSP	398	$350.00	$139,300.00	$490.00	$195,020.00	$225.00	$89,550.00	$400.00	$159,200.00
603(1-60)	LNFT	60" CSP	428	$600.00	$256,800.00	$570.00	$243,960.00	$300.00	$128,400.00	$600.00	$256,800.00
					$2,966,290.0		$2,627,640.0		$1,979,905		$3,400,780.00
					$2,743,654						

Average Unit Cost $124,711.53 per mile

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	450 millimeter pipe	300	120	$36,000.00	117.36	$35,208.00	200	$60,000.00
60201 A	m	2850 mm pipe	26	1600	$41,600.00	2047.97	$53,247.22	1800	$46,800.00
60201 A	m	600 millimeter pipe culvert	1000	$200.00	$200,000.00	$177.05	$177,050.00	$220.00	$220,000.00
60201 B	m	750 millimeter pipe culvert	180	$320.00	$57,600.00	$333.93	$60,107.40	$250.00	$45,000.00
60201 C	m	900 millimeter pipe culvert	60	$350.00	$21,000.00	$425.00	$25,500.00	$320.00	$19,200.00
60201 E	m	1200 millimeter pipe culvert	67	$500.00	$33,500.00	$666.23	$44,637.41	$400.00	$26,800.00
60201 G	m	1800 millimeter pipe culvert	100.0	$950.00	$95,000.00	$1,005.49	$100,549.00	$975.00	$97,500.00
60201 H	m	2100 millimeter pipe culvert	132.0	$1,000.00	$132,000.00	$1,658.20	$218,882.40	$1,750.00	$231,000.00
60201 I	m	2400 millimeter pipe culvert	45.0	$1,300.00	$58,500.00	$1,615.36	$72,691.20	$1,400.00	$63,000.00
60206 A	each	end section for 450 millimeter pipe culvert	24	$200.00	$4,800.00	$235.00	$5,640.00	$200.00	$4,800.00
60206 B	each	end section for 600 millimeter pipe culvert	24	$250.00	$6,000.00	$237.00	$5,688.00	$250.00	$6,000.00
60206 D	each	end section for 750 millimeter pipe culvert	4	$600.00	$2,400.00	$562.00	$2,248.00	$300.00	$1,200.00
					$688,400.00		$801,448.63		$821,300.00
					$770,382.88				
					$101,100.12				
		Average Unit Cost with 3%/year Inflation			**$110,474.83**	**per mile**			

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	450 millimeter pipe culvert	240	$90.00	$21,600.00	$64.00	$15,360.00	$150.00	$36,000.00	$100.00	$24,000.00
60201 B	m	600 millimeter pipe culvert	1800	$100.00	$180,000.00	$125.17	$225,306.00	$180.00	$324,000.00	$110.00	$198,000.00
60201 C	m	900 millimeter pipe culvert	120	$150.00	$18,000.00	$208.00	$24,960.00	$260.00	$31,200.00	$150.00	$18,000.00
60201 D	m	1050 millimeter pipe culvert	55	$200.00	$11,000.00	$250.00	$13,750.00	$300.00	$16,500.00	$175.00	$9,625.00
60201 E	m	1200 millimeter pipe culvert	51.0	$325.00	$16,575.00	$400.00	$20,400.00	$320.00	$16,320.00	$250.00	$12,750.00
60201 F	m	1650 millimeter pipe culvert	73.0	$375.00	$27,375.00	$419.00	$30,587.00	$750.00	$54,750.00	$350.00	$25,550.00
60201 G	m	1800 millimeter pipe culvert	35.9	$400.00	$14,360.00	$772.00	$27,714.80	$850.00	$30,515.00	$800.00	$28,720.00
60201H	m	2100 millimeter pipe culvert	59.1	$700.00	$41,370.00	$936.00	$55,317.60	$800.00	$47,280.00	$900.00	$53,190.00
60201I	m	2400 millimeter pipe culvert	103.7	$725.00	$75,182.50	$996.00	$103,285.20	$850.00	$88,145.00	$1,000.00	$103,700.00
60201J	m	2700 millimeter pipe culvert	80.5	$800.00	$64,400.00	$1,222.00	$98,371.00	$1,150.00	$92,575.00	$1,600.00	$128,800.00
60206 A	each	end section for 450 millimeter pipe culvert	7	$150.00	$1,050.00	$192.00	$1,344.00	$150.00	$1,050.00	$300.00	$2,100.00
60206 B	each	end section for 600 millimeter pipe culvert	55	$200.00	$11,000.00	$233.00	$12,815.00	$175.00	$9,625.00	$350.00	$19,250.00
60206 D	each	end section for 900 millimeter pipe culvert	2	$350.00	$700.00	$750.00	$1,500.00	$500.00	$1,000.00	$700.00	$1,400.00
					$482,612.50		$630,710.60		$748,960.00		$625,085.00
					$621,842.03						
					9.808344269						
					$63,399.29	per mile					
		Average Unit Cost with 3%/year Inflation			**$75,702.06**	**per mile**					

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	450 millimeter pipe culvert	100	$110.00	$11,000.00	$57.40	$5,740.00	$80.00	$8,000.00
60201 B	m	600 millimeter pipe culvert	110	$130.00	$14,300.00	$100.00	$11,000.00	$100.00	$11,000.00
60502	m	Standard underdrain system	40	$150.00	$6,000.00	$114.00	$4,560.00	$150.00	$6,000.00
60507	m	200 millimeter outlet pipe	20	$50.00	$1,000.00	$40.50	$810.00	$50.00	$1,000.00
60802	m	Paved waterway type Vi	60.0	$60.00	$3,600.00	$79.40	$4,764.00	$60.00	$3,600.00
					$35,900.00		$26,874.00		$29,600.00
					$30,791.33				
					$990.08 per mile				

Average Unit Cost with 3%/year Inflation $1,217.67 per mile

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
60201 A	m	600 millimeter pipe culvert	1010	$100.00	$101,000.00	$130.00	$131,300.00	$100.00	$101,000.00
60201 B	m	900 millimeter pipe culvert	240	$180.00	$43,200.00	$165.00	$39,600.00	$150.00	$36,000.00
60201 C	m	1200 millimeter pipe culvert	70	$240.00	$16,800.00	$250.00	$17,500.00	$200.00	$14,000.00
60201 D	m	1500 millimeter pipe culvert	0	$280.00	$0.00	$0.00	$0.00	$0.00	$0.00
60201 E	m	1800 millimeter pipe culvert	0.0	$460.00	$0.00	$0.00	$0.00	$0.00	$0.00
60201 F	m	2100 millimeter pipe culvert	116.0	$550.00	$63,800.00	$600.00	$69,600.00	$400.00	$46,400.00
60206 A	each	end section for 600 millimeter pipe culvert	41	$170.00	$6,970.00	$150.00	$6,150.00	$200.00	$8,200.00
60206 B	each	end section for 900 millimeter pipe culvert	6	$350.00	$2,100.00	$200.00	$1,200.00	$400.00	$2,400.00
60206 D	each	end section for 750 millimeter pipe culvert	0	$350.00	$0.00	$750.00	$0.00	$500.00	$0.00
60501	m	Underdrain system	150	$100.00	$15,000.00	$100.00	$15,000.00	$100.00	$15,000.00
60506	m	200 millimeter collector pipe	44	$25.00	$1,100.00	$100.00	$4,400.00	$100.00	$4,400.00
					$249,970.00		$284,750.00		$227,400.00
					$254,040.00				
					$84,680.00 per mile				

Average Unit Cost with 3%/year Inflation $113,802.84 per mile

Total Average Unit Cost $111,076.68 per mile

Does not account for underdrains, horizontal pipes, or riprap lined ditches etc.

Use $115,000.00 per mile for drainage (very wet climate)

Adjusting for the segments utilizing existing roads, reduce culverts to 2 per mile:

50 ft of culvert every **2640** ft = 100 ln ft of culvert per mile

100 ln ft of culvert per mile to include other drainage incidentals

$150 x 100' = $15,000

Use $15,000.00 per mile for drainage (very wet climate)

Used only for segments utilizing existing roads

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
618(1)	ACRE	Seeding	94.000	$6,342.10	$596,157.40

Average Unit Cost $6,342.10 per acre

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
618(1)	ACRE	Seeding	94.000	$2,510.00	$235,940.00

Average Unit Cost $2,510.00 per acre

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
618(1)	ACRE	Seeding	112.000	$2,510.00	$281,120.00

Average Unit Cost $2,510.00 per acre

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62514	slry unit	Turf establishment	280	$650.00	$182,000.00	$319.24	$89,387.20	$555.00	$155,400.00
62603	each	Cuttings, alder	1,300	$5.00	$6,500.00	$4.64	$6,032.00	$5.00	$6,500.00
62604	each	Bundle, alder	120	$50.00	$6,000.00	$29.00	$3,480.00	$10.00	$1,200.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$508	280	slry unit	$142,240	
	28	ha		$5,080 per ha
	69	acre		$2,061 per acre

Average Unit Cost with 3%/year Inflation $2,252.60 per acre

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62514	slry unit	Turf establishment	300	$700.00	$210,000.00	$621.15	$186,345.00	$850.00	$255,000.00	$550.00	$165,000.00
62603	each	Cuttings, alder	1,300	$5.00	$6,500.00	$4.64	$6,032.00	$5.00	$6,500.00	$5.00	$6,500.00
62407 A	m^2	Placing conserved topsoil, 300 millimeters depth	46,000	$3.00	$138,000.00	$2.88	$132,480.00	$1.25	$57,500.00	$3.00	$138,000.00
62407 B	m^2	Placing conserved topsoil, 600 millimeters depth	1,900	$4.00	$7,600.00	$14.86	$28,234.00	$2.50	$4,750.00	$5.00	$9,500.00

Coffman Cove (1)

Seeding

Ave.	Quantity	Unit	Total	Cost per Unit
$680	300	slry unit	$204,087	
	30	ha		$6,803 per ha
	74	acre		$2,754 per acre
		With 3%/year inflation		$3,288.67 per acre

Conserved topsoil 4"

Ave.	Quantity	Unit	Total	Cost per Unit
$2.69	47,900	m2	$129,016	
	46,000	m2	300 mm depth	
	149,400	m2	100 mm depth	$0.86 per m2
	14.9	ha		$8,636 per ha
	36.9	acre		$3,495 per acre
		With 3%/year inflation		$4,173 per acre

Average Unit Cost $7,461.55 per acre

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62503	slry unit	Seeding, hydraulic	320	$350.00	$112,000.00	$250.00	$80,000.00	$200.00	$64,000.00
62503	slry unit	Turf establishment	320	$400.00	$128,000.00	$160.00	$51,200.00	$200.00	$64,000.00
62604	each	Bundle, alder	120	$50.00	$6,000.00	$29.00	$3,480.00	$10.00	$1,200.00
62404	m^2	Placing conserved topsoil, 100 millimeters depth	2,000	$1.50	$3,000.00	$1.50	$3,000.00	$1.00	$2,000.00

Seeding

Ave.	Quantity	Unit	Total	Cost per Unit
$260	640	slry unit	$166,400	
	64	ha		$2,600 per ha
	158	acre		$1,052.63 per acre
		With 3%/year inflation		$1,294.60 per acre

Conserved topsoil 4"

Ave.	Quantity	Unit	Total	Cost per Unit
$1.33	2,000	m2	$2,660	
	2,000	m2	300 mm depth	
	2,000	m2	100 mm depth	$1.33 per m2
	0.2	ha		$13,300 per ha
	0.5	acre		$5,382 per acre
		With 3%/year inflation		$6,620 per acre

Average Unit Cost $7,914.20 per acre

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
62509	ha	Turf establishment	0	$3,000.00	$300.00	$10,000.00	$1,000.00	$10,000.00	$1,000.00
62503	slry unit	Seeding	320	$350.00	$112,000.00	$250.00	$80,000.00	$200.00	$64,000.00
62506	slry unit	Mulching	180	$300.00	$54,000.00	$300.00	$54,000.00	$400.00	$72,000.00

Seeding

Ave.	Quantity	Unit	Total	Cost per Unit
$291	500	slry unit	$145,333	
	50	ha		$2,907 per ha
	124	acre		$1,176 per acre

Average Unit Cost with 3%/year Inflation $1,580.86 per acre

Total Average Unit Cost $4,367.33 per acre

Use $7,000.00 per acre

QUANTITIES

Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	6	acre	ad0301W1.ser
W - 2	3.20	745+00	914+00	1	acre	Misc. shaping
W - 3	11.08	160+00	745+00	5	acre	Misc. shaping
F - 1	6.42	723+00	1062+00	3	acre	Misc. shaping
F - 2	4.06	1062+00	1276+37	16	acre	ad0301F2.ser
A - 1a	30.37	1280+00	2883+63	113	acre	ad0301Ab_(1-4).ser
A - 1a (BC)	3.86	2883+63	3087+36	11	acre	ad0301Ab_4.ser
A - 1b	29.77	1280+00	2851+97	102	acre	ad0301Aa_(1-4).ser
A - 1b (BC)	3.86	2851+97	3055+71	11	acre	ad0301Aa_4.ser
A - 2	5.21	1005+00	1280+00	20	acre	ad0301A2.ser
S -1	21.35	2545+94	3673+29	75	acre	ad0301S1.ser
S -1 (BC)	4.13	3673+29	3891+26	10	acre	ad0301S1.ser
S - 2	17.65	1614+00	2545+94	62	acre	ad0301S2_(1-3).ser
S - 3	11.53	1005+00	1614+00	43	acre	ad0301S3_(1-2).ser
L - 1	14.39	100+00	859+77	45	acre	ad0301L1.ser

100% 1-lane quantities for existing road alignments
100% 2-lane quantities for new alignments

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	4,400.000	$33.88	$149,072

Average Unit Cost $33.88 per ln ft

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	4,400.000	$27.50	$121,000

Average Unit Cost $27.50 per ln ft

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	97,657.000	$27.50	$2,685,568

Average Unit Cost $27.50 per ln ft

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	12,101.000	$37.50	$453,788

Average Unit Cost with 3%/year Inflation $40.98 per ln ft

Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	20,475.000	$15.04	$307,944

Average Unit Cost with 3%/year Inflation $20.82 per ln ft

Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1999	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	2,662.500	$14.50	$38,606

Average Unit Cost with 3%/year Inflation $19.49 per ln ft

Juneau Access, Final EIS, 2006, UPA				Old Glenn Highway, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	14,375.000	$17.77	$255,444

Average Unit Cost with 3%/year Inflation $20.60 per ln ft

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	2,448.000	$35.00	$85,680.00	$30.00	$73,440	$34.00	$83,232	$35.00	$85,680

Average Unit Cost $33.50 per ln ft

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701	m	guardrail system G4, type I, class A (wood posts)	190.0	$120.00	$22,800.00	$199.84	$37,969.60	$100.00	$19,000.00
61702 A	each	terminal section type G4-BAT	0		$0.00		$0.00		$0.00
61702 B	each	terminal section type tangent	12	$3,000.00	$36,000.00	$3,951.50	$47,418.00	$4,000.00	$48,000.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$140	190.0	m	$26,591	
	623.4	ln ft		**$42.66 per ln ft**

Average Unit Cost with 3%/year Inflation $46.61 per ln ft

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701	m	guardrail system G4, type I, class A (wood posts)	430.0	$80.00	$34,400.00	$112.00	$48,160.00	$70.00	$30,100.00	$100.00	$43,000.00
61702 A	m	terminal section type G4-BAT	6	$2,000.00	$12,000.00	$2,977.00	$17,862.00	$2,500.00	$15,000.00	$3,000.00	$18,000.00
61702 B	each	terminal section type tangent	12	$2,500.00	$30,000.00	$2,988.00	$35,856.00	$2,500.00	$30,000.00	$2,500.00	$30,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Units	Total	Cost per Unit
$91	430	m	$38,915	
	1410.7612	ln ft		**$27.58 per ln ft**

Average Unit Cost with 3%/year Inflation $32.94 per ln ft

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701A	m	Guardrail system G4, type 1	455.000	$70.00	$31,850.00	$84.40	$38,402.00	$80.00	$36,400.00

Ave.	Quantity	Unit	Total	Cost per Unit
$78	455.000	m	$35,550.67	
	1492.782152	ft		**$23.82 per ft**

Average Unit Cost with 3%/year Inflation **$29.29 per ln ft**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701A	m	Guardrail system G4, type 1	1,715.000	$80.00	$137,200.00	$80.00	$137,200.00	$70.00	$120,050.00

Ave.	Quantity	Unit	Total	Cost per Unit
$77	1,715.000	m	$131,483.33	
	5626.64042	ft		**$23.37 per ln ft**

Average Unit Cost with 3%/year Inflation **$31.40 per ln ft**

Total Average Unit Cost **$30.38 per ln ft**

Use **$30.00 per ln ft**

Guardrail was estimated for areas protecting MSE walls and proposed tall slopes steeper than 1:2.
Guardrail quantities were increased by 10% to compensate for flared areas.

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	0	ft.	
W - 2	3.20	745+00	914+00	0	ft.	
W - 3	11.08	160+00	745+00	0	ft.	
F - 1	6.42	723+00	1062+00	0	ft.	
F - 2	4.06	1062+00	1276+37	0	ft.	
A - 1a	30.37	1280+00	2883+63	17,930	ft.	
A - 1a (BC)	3.86	2883+63	3087+36	0	ft.	
A - 1b	29.77	1280+00	2851+97	12,540	ft.	
A - 1b (BC)	3.86	2851+97	3055+71	0	ft.	
A - 2	5.21	1005+00	1280+00	0	ft.	
S -1	21.35	2545+94	3673+29	0	ft.	
S -1 (BC)	4.13	3673+29	3891+26	0	ft.	
S - 2	17.65	1614+00	2545+94	0	ft.	
S - 3	11.53	1005+00	1614+00	0	ft.	
L - 1	14.39	100+00	859+77	0	ft.	

Included 2-lane quantities for pass and tunnel only

QUANTITIES

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Pass	A-1a	Lt.	1932+00	1936+00	400	400
Aaron Cr. Pass	A-1a	Lt.	1941+00	1946+00	500	900
Aaron Cr. Pass	A-1a	Lt.	1953+50	1954+50	100	1,000
Aaron Cr. Pass	A-1a	Lt.	1969+00	1973+00	400	1,400
Aaron Cr. Pass	A-1a	Lt.	1982+00	1988+00	600	2,000
Aaron Cr. Pass	A-1a	Lt.	2001+50	2002+50	100	2,100
Aaron Cr. Pass	A-1a	Lt.	2009+00	2012+00	300	2,400
Aaron Cr. Pass	A-1a	Lt.	2021+00	2024+00	300	2,700
Aaron Cr. Pass	A-1a	Lt.	2044+00	2047+00	300	3,000
Aaron Cr. Pass	A-1a	Lt.	2065+00	2067+00	200	3,200
Aaron Cr. Pass	A-1a	Lt.	2079+00	2083+00	400	3,600
Aaron Cr. Pass	A-1a	Rt.	2093+00	2094+00	100	3,700
Aaron Cr. Pass	A-1a	Rt.	2106+00	2107+00	100	3,800
Aaron Cr. Pass	A-1a	Rt.	2112+00	2114+00	200	4,000
Aaron Cr. Pass	A-1a	Rt.	2120+00	2122+00	200	4,200
Aaron Cr. Pass	A-1a	Rt.	2138+00	2142+00	400	4,600
Aaron Cr. Pass	A-1a	Rt.	2153+00	2156+00	300	4,900
Aaron Cr. Pass	A-1a	Rt.	2163+00	2167+00	400	5,300
Aaron Cr. Pass	A-1a	Rt.	2176+00	2177+00	100	5,400
Aaron Cr. Pass	A-1a	Rt.	2180+00	2182+00	200	5,600
Aaron Cr. Pass	A-1a	Rt.	2199+00	2200+00	100	5,700
Aaron Cr. Pass	A-1a	Rt.	2203+50	2204+50	100	5,800
Aaron Cr. Pass	A-1a	Rt.	2212+00	2222+00	1,000	6,800
Aaron Cr. Pass	A-1a	Rt.	2275+00	2281+00	600	7,400
Aaron Cr. Pass	A-1a	Rt.	2287+00	2289+00	200	7,600
Aaron Cr. Pass	A-1a	Rt.	2292+00	2294+00	200	7,800
Aaron Cr. Pass	A-1a	Rt.	2296+00	2300+00	400	8,200
Aaron Cr. Pass	A-1a	Rt.	2318+00	2320+00	200	8,400
Aaron Cr. Pass	A-1a	Rt.	2340+00	2343+00	300	8,700
Aaron Cr. Pass	A-1a	Rt.	2357+00	2358+00	100	8,800
Aaron Cr. Pass	A-1a	Rt.	2367+50	2368+50	100	8,900
Aaron Cr. Pass	A-1a	Rt.	2383+00	2385+00	200	9,100
Aaron Cr. Pass	A-1a	Rt.	2399+50	2400+50	100	9,200
Aaron Cr. Pass	A-1a	Rt.	2426+00	2427+00	100	9,300

Guard Rail	Unit: LF	Page 3 of 3

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Pass	A-1a	Rt.	2432+00	2434+00	200	9,500
Aaron Cr. Pass	A-1a	Rt.	2443+00	2444+00	100	9,600
Aaron Cr. Pass	A-1a	Rt.	2448+00	2449+00	100	9,700
Aaron Cr. Pass	A-1a	Rt.	2458+00	2461+00	300	10,000
Aaron Cr. Pass	A-1a	Rt.	2469+00	2471+00	200	10,200
Aaron Cr. Pass	A-1a	Rt.	2485+00	2486+00	100	10,300
Aaron Cr. Pass	A-1a	Rt.	2496+50	2497+50	100	10,400
Aaron Cr. Pass	A-1a	Rt.	2505+00	2508+00	300	10,700
Aaron Cr. Pass	A-1a	Rt.	2512+00	2515+00	300	11,000
Aaron Cr. Pass	A-1a	Rt.	2523+00	2528+00	500	11,500
Aaron Cr. Pass	A-1a	Rt.	2558+00	2562+00	400	11,900
Aaron Cr. Pass	A-1a	Rt.	2569+50	2570+50	100	12,000
Aaron Cr. Pass	A-1a	Rt.	2580+00	2587+00	700	12,700
Aaron Cr. Pass	A-1a	Rt.	2594+00	2595+00	100	12,800
Aaron Cr. Pass	A-1a	Rt.	2609+00	2615+00	600	13,400
Aaron Cr. Pass	A-1a	Rt.	2629+00	2632+00	300	13,700
Aaron Cr. Pass	A-1a	Rt.	2635+00	2639+00	400	14,100
Aaron Cr. Pass	A-1a	Rt.	2643+00	2645+00	200	14,300
Aaron Cr. Pass	A-1a	Rt.	2653+00	2654+00	100	14,400
Aaron Cr. Pass	A-1a	Rt.	2665+00	2667+00	200	14,600
Aaron Cr. Pass	A-1a	Rt.	2693+00	2696+00	300	14,900
Aaron Cr. Pass	A-1a	Rt.	2702+00	2703+00	100	15,000
Aaron Cr. Pass	A-1a	Rt.	2708+00	2710+00	200	15,200
Aaron Cr. Pass	A-1a	Rt.	2714+00	2717+00	300	15,500
Aaron Cr. Pass	A-1a	Rt.	2723+00	2725+00	200	15,700
Aaron Cr. Pass	A-1a	Rt.	2739+50	2740+50	100	15,800
Aaron Cr. Pass	A-1a	Rt.	2750+00	2752+00	200	16,000
Aaron Cr. Pass	A-1a	Rt.	2755+00	2756+00	100	16,100
Aaron Cr. Pass	A-1a	Lt.	2774+00	2776+00	200	16,300
					16,300 ln ft	
Total	**Aaron Cr. Pass**		**10% Increase for Flared Ends**		**17,930 ln ft**	

Alignment	Segment	Side	STA	STA	Length	Cum. Length
Aaron Cr. Tunnel	A-1b	Lt.	1932+00	1936+00	400	400
Aaron Cr. Tunnel	A-1b	Lt.	1941+00	1946+00	500	900
Aaron Cr. Tunnel	A-1b	Lt.	1953+50	1954+50	100	1,000
Aaron Cr. Tunnel	A-1b	Lt.	1969+00	1973+00	400	1,400
Aaron Cr. Tunnel	A-1b	Lt.	1982+00	1988+00	600	2,000
Aaron Cr. Tunnel	A-1b	Lt.	2001+50	2002+50	100	2,100
Aaron Cr. Tunnel	A-1b	Lt.	2009+00	2012+00	300	2,400
Aaron Cr. Tunnel	A-1b	Lt.	2021+00	2024+00	300	2,700
Aaron Cr. Tunnel	A-1b	Lt.	2044+00	2047+00	300	3,000
Aaron Cr. Tunnel	A-1b	Lt.	2065+00	2067+00	200	3,200
Aaron Cr. Tunnel	A-1b	Lt.	2078+50	2079+50	100	3,300
Aaron Cr. Tunnel	A-1b	Lt.	2084+00	2086+00	200	3,500
Aaron Cr. Tunnel	A-1b	Lt.	2090+00	2091+00	100	3,600
Aaron Cr. Tunnel	A-1b	Lt.	2100+00	2104+00	400	4,000
Aaron Cr. Tunnel	A-1b	Lt.	2175+00	2179+00	400	4,400
Aaron Cr. Tunnel	A-1b	Rt.	2311+00	2314+00	300	4,700
Aaron Cr. Tunnel	A-1b	Lt.	2355+00	2357+00	200	4,900
Aaron Cr. Tunnel	A-1b	Lt.	2361+00	2363+00	200	5,100
Aaron Cr. Tunnel	A-1b	Lt.	2418+00	2429+00	1,100	6,200
Aaron Cr. Tunnel	A-1b	Rt.	2554+00	2558+00	400	6,600
Aaron Cr. Tunnel	A-1b	Rt.	2561+00	2569+00	800	7,400
Aaron Cr. Tunnel	A-1b	Rt.	2601+00	2606+00	500	7,900
Aaron Cr. Tunnel	A-1b	Rt.	2611+00	2615+00	400	8,300
Aaron Cr. Tunnel	A-1b	Rt.	2621+00	2626+00	500	8,800
Aaron Cr. Tunnel	A-1b	Rt.	2633+00	2636+00	300	9,100
Aaron Cr. Tunnel	A-1b	Rt.	2661+00	2665+00	400	9,500
Aaron Cr. Tunnel	A-1b	Rt.	2670+50	2671+50	100	9,600
Aaron Cr. Tunnel	A-1b	Rt.	2677+00	2678+00	100	9,700
Aaron Cr. Tunnel	A-1b	Rt.	2682+00	2685+00	300	10,000
Aaron Cr. Tunnel	A-1b	Rt.	2691+00	2694+00	300	10,300
Aaron Cr. Tunnel	A-1b	Rt.	2708+00	2709+00	100	10,400
Aaron Cr. Tunnel	A-1b	Rt.	2720+00	2724+00	400	10,800
Aaron Cr. Tunnel	A-1b	Lt.	2742+00	2745+00	300	11,100
Aaron Cr. Tunnel	A-1b	Lt.	2769+00	2771+00	200	11,300
Aaron Cr. Tunnel	A-1b	Lt.	2786+00	2787+00	100	11,400
					11,400 ln ft	
Total	**Aaron Cr. Tunnel**		**10% Increase for Flared Ends**		**12,540 ln ft**	

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
615(1)	SQFT	Standard Sign	1,872.000	$27.10	$50,731.20

Project Signs:

1,872.0 ft2 for 23.33 mi (total length)
80.2 ft2 per mile

Average Unit Cost $2,173.42 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
615(1)	SQFT	Standard Sign	1,872.000	$55.00	$102,960

Project Signs:

1,872.0 ft2 for 23.33 mi (total length)
80.2 ft2 per mile

Average Unit Cost $4,411.00 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
615(1)	SQFT	Standard Sign	2,000.000	$55.00	$110,000

$55.00 110000

Project Signs:

2,000.0 ft2 for 27.47 mi (total length)
72.8 ft2 per mile

Average Unit Cost $4,004.00 per mile

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
615(1)	SQFT	Standard Sign	766.380	$115	$88,133.70	$100	$76,638.00	$150	$114,957.00	$100	$76,638.00
				$116	$89,091.68						

Project Signs:

766.4 ft2 for 22.00 mi (total length)
34.8 ft2 per mile

Average Unit Cost $4,049.62 per mile

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m^2	Sign installation	7.1	$650.00	$4,582.50	$2,500.00	$17,625.00	$1,100.00	$7,755.00	$950.00	$6,697.50
63504	m^2	Construction sign	0.0	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$1,300	7.1	m2	$9,165	
	75.9	sq.ft.		$120.75 per sq ft

Increase 3% per year for inflation $128.10 per sq ft Project signs

Project Signs:

75.9 ft2 for 20.32 mi (total length of Coffman Cove (2))
3.7 ft2 per mile

Average Unit Cost $473.99 per mile

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m^2	Sign system	55.0	$500.00	$27,500.00	$525.85	$28,921.75	$200.00	$11,000.00
63504	m^2	Construction sign	56.0	$150.00	$8,400.00	$178.00	$9,968.00	$100.00	$5,600.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$409	55.0	m2	$22,495	
	592.0	sq.ft.		$38.00 per sq ft

Increase 3% per year for inflation $41.52 per sq ft Project signs

Project Signs:

592.0 ft2 for 7.62 mi (total length of Coffman Cove (2))
77.7 ft2 per mile

Average Unit Cost $3,226.24 per mile

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m^2	Sign installation	70.0	$500.00	$35,000.00	$494.00	$34,580.00	$1,000.00	$70,000.00	$500.00	$35,000.00
63504	m^2	Construction sign	136.0	$200.00	$27,200.00	$158.00	$21,488.00	$100.00	$13,600.00	$150.00	$20,400.00

Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$624	70.0	m2	$43,645	
	753.5	sq.ft.		$57.92 per sq ft

Increase 3% per year for inflation $69.16 per sq ft Project signs

Project Signs:

753.5 ft2 for 9.87 mi (total length of Coffman Cove (1))
76.3 ft2 per mile

Average Unit Cost $5,277.15 per mile

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m2	Sign installation	75.000	$450.00	$33,750.00	$719.00	$53,925.00	$400.00	$30,000.00
63507	m2	Construction sign	190.000	$140.00	$26,600.00	$27.50	$5,225.00	$150.00	$28,500.00

Ave.	Quantity	Unit	Total	Cost per Unit
$523	75.000	m2	$39,225	
	807.29	sqft		$48.59 per sqft

Increase 3% per year for inflation $59.76 per sq ft Project signs

Project Signs:

807.3 ft2 for 31.10 mi
25.96 ft2 per mile

Average Unit Cost $1,551.18 per mile

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63302	m2	Sign installation	5.600	$600.00	$3,360.00	$575.00	$3,220.00	$600.00	$3,360.00
63507	m2	Construction sign	62.000	$150.00	$9,300.00	$100.00	$6,200.00	$250.00	$15,500.00

Ave.	Quantity	Unit	Total	Cost per Unit
$592	5.600	m2	$3,313.33	
	60.3	sqft		$54.95 per sqft

Increase 3% per year for inflation $73.84 per sq ft Project signs

Project Signs:

60.3 ft2 for 3 mi
20.10 ft2 per mile

Average Unit Cost $1,484.28 per mile

Total Average Unit Cost $2,961.21 per mile

Use $3,500.00 per mile

Construction Signs:

Not needed since not built under traffic

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	LPSM	Katzehin Ferry	LPSM	$17,000,000	$17,000,000

Conventional Ferry Terminal

Use **$15,000,000.00** each

ACV Ferry Terminal
ACV Research yielded estimates for ACV ferry terminals ranging from $1 - $10 million.

Use **$10,000,000.00** each

Roadway Reconditioning **Unit: Mile**

Coffman Cove Schedule A, 2007				Engineers Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30301	km	Roadway reconditioning	32.508	$3,000.00	$97,524.00	$15,000.00	$487,620.00	$3,860.00	$125,480.88	$5,500.00	$178,794.00

Coffman Cove (A)

Ave.	Quantity	Unit	Total	Cost per Unit
$6,840.00	32.508	km	$222,355	
	20	mile		$11,007 per mile

With 3%/year inflation $11,678

Use **$11,700** **per mile**

Used only for segments utilizing existing roads

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	LPSM	Construction Camp and Per Diem	LPSM	$14,427,807	$14,427,807
Total bid estimate					$146,278,307
Percentage of construction costs					10.9%

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
640 (2)	LPSM	Contractor Camp	LPSM	$768,750	$768,750	$1,000,000	$1,000,000	$1,300,000	$1,300,000	$1,000,000	$1,000,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Percentage of construction costs					3.0%		4.1%		5.3%		4.0%

Average Construction Camps Percentage **7.5%**

Use **10.0%**

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APPENDIX D.4

Phased Construction: Phase 2 Estimate Support

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Project: SE Alaska Mid Region Access
Project No.: AK HPP-2003(1)

SE Alaska MRA Cost Estimate, Phase 2
Summary of Options, Alignments

	Alignment															
	Aaron Creek Alignment			Wrangell Island Alignment			Fool's Inlet Alignment		South Stikine River Alignment			Limb Island Alignment	Bradfield River Alignment	Iskut River Alignment		
Work Item Description	Segment A-1a (Pass Option)	Segment A-1b (Tunnel Option)	Segment A-2	Segment W-1	Segment W-2	Segment W-3	Segment F-1	Segment F-2	Segment S-1	Segment S-2	Segment S-3	Segment L-1	Segment B-1	Segment I-1	Segment I-2	Segment I-3
AK LENGTH (Mile)	30.37	29.77	5.21	1.72	3.20	11.08	6.42	4.06	21.35	17.65	11.53	14.39	29.15			
BC LENGTH (Mile)	10.21	10.21							10.48				17.29	24.08	20.33	26.45
DIVISION 1 PROJECT REQUIREMENTS	$ 2,087,933	$ 1,952,382	$ 364,437	$ 120,747	$ 227,396	$ 750,786	$ 435,594	$ 292,625	$ 1,545,479	$ 1,324,635	$ 825,887	$ 944,117	$ 1,938,625	$ -	$ -	$ -
DIVISION 2 EARTHWORK	$ 837,160	$ 798,859	$ 145,058	$ 47,989	$ 89,916	$ 302,894	$ 175,636	$ 115,031	$ 606,444	$ 512,190	$ 325,490	$ 386,236	$ 788,430	$ -	$ -	$ -
DIVISION 3 UTILITIES & RELOCATIONS	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
DIVISION 4 BASES & PAVEMENT	$ 13,840,000	$ 13,020,000	$ 2,480,000	$ 840,000	$ 1,640,000	$ 5,540,000	$ 3,190,000	$ 2,070,000	$ 10,260,000	$ 8,710,000	$ 5,540,000	$ 6,210,000	$ 12,173,900	$ -	$ -	$ -
DIVISION 5 TUNNEL	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
DIVISION 6 STRUCTURES	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
DIVISION 7 INCIDENTAL CONSTRUCTION	$ 986,000	$ 928,000	$ 174,000	$ 58,000	$ 58,000	$ 58,000	$ 58,000	$ 116,000	$ 696,000	$ 580,000	$ 348,000	$ 464,000	$ 870,000	$ -	$ -	$ -
DIVISION 8 ROADWAY FINISHES	$ 1,235,020	$ 1,070,320	$ 149,360	$ 30,820	$ 51,200	$ 177,280	$ 102,720	$ 64,960	$ 932,300	$ 899,500	$ 464,980	$ 588,440	$ 1,868,600	$ -	$ -	$ -
DIVISION 9 PORT DEVELOPMENT	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
DIVISION 10 CONSTRUCTION CAMPS	$ 1,606,102	$ 1,501,832	$ 280,336	$ 92,882	$ 174,920	$ 577,528	$ 335,072	$ 225,096	$ 1,188,830	$ 1,018,950	$ 635,298	$ 726,244	$ 1,491,250	$ -	$ -	$ -
SUBTOTAL ROADWAY AND BRIDGE WORK (AK)	**$ 20,592,215**	**$ 19,271,393**	**$ 3,593,191**	**$ 1,190,438**	**$ 2,241,432**	**$ 7,406,488**	**$ 4,297,022**	**$ 2,883,712**	**$ 15,229,053**	**$ 13,045,275**	**$ 8,139,655**	**$ 9,319,037**	**$ 19,130,805**	**$ -**	**$ -**	**$ -**
CONTINGENCIES: 25%	$ 5,148,054	$ 4,817,848	$ 898,298	$ 297,610	$ 560,358	$ 1,851,622	$ 1,074,256	$ 720,928	$ 3,807,263	$ 3,261,319	$ 2,034,914	$ 2,329,759	$ 4,782,701	$ -	$ -	$ -
TOTAL CONSTRUCTION COST (AK)	**$ 25,740,269**	**$ 24,089,241**	**$ 4,491,489**	**$ 1,488,048**	**$ 2,801,790**	**$ 9,258,110**	**$ 5,371,278**	**$ 3,604,640**	**$ 19,036,316**	**$ 16,306,594**	**$ 10,174,569**	**$ 11,648,796**	**$ 23,913,506**	**$ -**	**$ -**	**$ -**
CONSTRUCTION ENGINEERING SERVICES: 7%	$ 1,801,819	$ 1,686,247	$ 314,404	$ 104,163	$ 196,125	$ 648,068	$ 375,989	$ 252,325	$ 1,332,542	$ 1,141,462	$ 712,220	$ 815,416	$ 1,673,945	$ -	$ -	$ -
EIS W/ SUPPORTING ENGINEERING: 5%	$ 1,287,013	$ 1,204,462	$ 224,574	$ 74,402	$ 140,090	$ 462,906	$ 268,564	$ 180,232	$ 951,816	$ 815,330	$ 508,728	$ 582,440	$ 1,195,675	$ -	$ -	$ -
DESIGN ENGINEERING & ADMINISTRATION: 78%	$ 2,059,222	$ 1,927,139	$ 359,319	$ 119,044	$ 224,143	$ 740,649	$ 429,702	$ 288,371	$ 1,522,905	$ 1,304,528	$ 813,966	$ 931,904	$ 1,913,080	$ -	$ -	$ -
TOTAL CONSTRUCTION & ENGINEERING (AK)	**$ 30,888,323**	**$ 28,907,089**	**$ 5,389,786**	**$ 1,785,657**	**$ 3,362,148**	**$ 11,109,733**	**$ 6,445,533**	**$ 4,325,568**	**$ 22,843,579**	**$ 19,567,914**	**$ 12,209,483**	**$ 13,978,556**	**$ 28,696,206**	**$ -**	**$ -**	**$ -**
CONSTRUCTION & ENGINEERING COST $/MILE (AK)	$ 1,025,542	$ 1,027,478	$ 1,043,129	$ 1,046,824	$ 1,059,427	$ 1,011,039	$ 1,012,344	$ 1,074,289	$ 1,078,873	$ 1,117,902	$ 1,067,756	$ 979,503	$ 1,048,497	$ -	$ -	$ -
SUBTOTAL ROADWAY AND BRIDGE WORK (BC)	**$ 6,918,601**	**$ 6,918,601**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$7,426,102**	**$ -**	**$ -**	**$ -**	**$11,985,791**	**$ 16,096,420**	**$ 14,501,491**	**$ 18,866,917**
CONTINGENCIES: 25%	$ 1,729,650	$ 1,729,650	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,856,525	$ -	$ -	$ -	$ 2,996,448	$ 4,024,105	$ 3,625,373	$ 4,716,729
TOTAL CONSTRUCTION COST (BC)	**$ 8,648,251**	**$ 8,648,251**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$9,282,627**	**$ -**	**$ -**	**$ -**	**$14,982,239**	**$ 20,120,525**	**$ 18,126,864**	**$ 23,583,646**
CONSTRUCTION ENGINEERING SERVICES: 7%	$ 605,378	$ 605,378	$ -	$ -	$ -	$ -	$ -	$ -	$ 649,784	$ -	$ -	$ -	$ 1,048,757	$ 1,408,437	$ 1,268,880	$ 1,650,855
EIS W/ SUPPORTING ENGINEERING: 5%	$ 432,413	$ 432,413	$ -	$ -	$ -	$ -	$ -	$ -	$ 464,131	$ -	$ -	$ -	$ 749,112	$ 1,006,026	$ 906,343	$ 1,179,182
DESIGN ENGINEERING & ADMINISTRATION: 8%	$ 691,860	$ 691,860	$ -	$ -	$ -	$ -	$ -	$ -	$ 742,610	$ -	$ -	$ -	$ 1,198,579	$ 1,609,642	$ 1,450,149	$ 1,886,692
TOTAL CONSTRUCTION & ENGINEERING (BC)	**$ 10,377,902**	**$ 10,377,902**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$11,139,152**	**$ -**	**$ -**	**$ -**	**$17,978,687**	**$ 24,144,630**	**$ 21,752,236**	**$ 28,300,375**
CONSTRUCTION & ENGINEERING COST $/MILE (BC)	$ 1,016,445	$ 1,016,445	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,062,896	$ -	$ -	$ -	$ 1,039,832	$ 1,002,684	$ 1,069,958	$ 1,069,957
TOTAL CONSTRUCTION & ENGINEERING	**$ 41,266,225**	**$ 39,284,991**	**$ 5,389,786**	**$ 1,785,657**	**$ 3,362,148**	**$ 11,109,733**	**$ 6,445,533**	**$ 4,325,568**	**$ 33,982,731**	**$ 19,567,914**	**$ 12,209,483**	**$ 13,978,556**	**$ 46,674,893**	**$ 24,144,630**	**$ 21,752,236**	**$ 28,300,375**

Note: Bradfield River BC cost developed from Bradfield River AK cost per mile excluding the tunnel and ferry terminal
Per mile costs for all alignments were calculated excluding both the tunnel and ferry terminal costs, as well as the tunnel length.

Project: SE Alaska Mid Region Access
Project No.: AK HPP-2003(1)

Bradfield Canal Corridor Stages, Phase 2

Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile
Stage 1 (Ultimate)	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 24,144,630	$ 24,144,630	$ 1,002,684
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 21,752,236	$ 21,752,236	$ 1,069,958
	Bradfield Canal Alignment (Segment B-1)	46.44	$ 28,696,206	$ 17,978,687	$ 46,674,893	$ 1,005,058
	Wrangell Island Alignment (Segment W-3)	11.08	$ 11,109,733	$ -	$ 11,109,733	$ 1,002,683
	Fool's Inlet Alignment (Segment F-1)	6.42	$ 6,445,533	$ -	$ 6,445,533	$ 1,003,977
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 4,325,568	$ -	$ 4,325,568	$ 1,065,411
Bradfield Canal Corridor Total		**112.41**	**$ 50,577,040**	**$ 63,875,553**	**$ 114,452,593**	**$ 1,018,171**

Stikine River Corridor Stages, Phase 2

Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile
Stage 1	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 24,144,630	$ 24,144,630	$ 1,002,684
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 21,752,236	$ 21,752,236	$ 1,069,958
	Iskut River Alignment (Segment I-3)	26.45	$ -	$ 28,300,375	$ 28,300,375	$ 1,069,957
	Stage 1 Subtotal	**70.86**	**$ -**	**$ 74,197,241**	**$ 74,197,241**	**$ 1,047,096**
Stage 2	South Stikine River Alignment (Segment S-1)	31.83	$ 22,843,579	$ 11,139,152	$ 33,982,731	$ 1,067,632
	South Stikine River Alignment (Segment S-2)	17.65	$ 19,567,914	$ -	$ 19,567,914	$ 1,108,664
	Stage 2 Subtotal	**49.48**	**$ 42,411,493**	**$ 11,139,152**	**$ 53,550,645**	**$ 1,082,268**
Stage 3	Wrangell Island Alignment (Segment W-3)	11.08	$ 11,109,733	$ -	$ 11,109,733	$ 1,002,683
	Fool's Inlet Alignment (Segment F-1)	6.42	$ 6,445,533	$ -	$ 6,445,533	$ 1,003,977
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 4,325,568	$ -	$ 4,325,568	$ 1,065,411
	Stage 3 Subtotal	**21.56**	**$ 21,880,834**	**$ -**	**$ 21,880,834**	**$ 1,014,881**
Stage 4	Limb Island Alignment (Segment L-1)	14.39	$ 13,978,556	$ -	$ 13,978,556	$ 971,408
	Stage 4 Subtotal	**14.39**	**$ 13,978,556**	**$ -**	**$ 13,978,556**	**$ 971,408**
Stage 5 (Ultimate)	South Stikine River Alignment (Segment S-3)	11.53	$ 12,209,483	$ -	$ 12,209,483	$ 1,058,932
	Wrangell Island Alignment (Segment W-1)	1.72	$ 1,785,657	$ -	$ 1,785,657	$ 1,038,173
	Wrangell Island Alignment (Segment W-2)	3.20	$ 3,362,148	$ -	$ 3,362,148	$ 1,050,671
	Stage 5 Subtotal	**16.45**	**$ 17,357,288**	**$ -**	**$ 17,357,288**	**$ 1,055,154**
Stikine River Corridor Total		**172.74**	**$ 95,628,171**	**$ 85,336,393**	**$ 180,964,564**	**$ 1,047,612**

Aaron Creek Corridor Stages, Phase 2

Stage	Segment	Length (miles)	AK Cost	BC Cost	Total Cost	Avg. Cost Per Mile
Stage 1	Iskut River Alignment (Segment I-1)	24.08	$ -	$ 24,144,630	$ 24,144,630	$ 1,002,684
	Iskut River Alignment (Segment I-2)	20.33	$ -	$ 21,752,236	$ 21,752,236	$ 1,069,958
	Iskut River Alignment (Segment I-3)	26.45	$ -	$ 28,300,375	$ 28,300,375	$ 1,069,957
Stage 1 Subtotal		**70.86**	**$ -**	**$ 74,197,241**	**$ 74,197,241**	**$ 1,047,096**
Stage 2	Aaron Creek Pass Alignment (Segment A-1a)	40.58	$ 30,888,323	$ 10,377,902	$ 41,266,225	$ 1,016,910
	Aaron Creek Tunnel Alignment (Segment A-1b)	39.98	$ 28,907,089	$ 10,377,902	$ 39,284,991	$ 982,616
	Wrangell Island Alignment (Segment W-2)	3.20	$ 3,362,148	$ -	$ 3,362,148	$ 1,050,671
	Wrangell Island Alignment (Segment W-3)	11.08	$ 11,109,733	$ -	$ 11,109,733	$ 1,002,683
Stage 2 Subtotal (Pass)		**54.86**	**$ 45,360,204**	**$ 10,377,902**	**$ 55,738,106**	**$ 1,016,006**
Stage 2 Subtotal (Tunnel)		**54.26**	**$ 43,378,970**	**$ 10,377,902**	**$ 53,756,872**	**$ 990,727**
Stage 3	Fool's Inlet Alignment (Segment F-1)	6.42	$ 6,445,533	$ -	$ 6,445,533	$ 1,003,977
	Fool's Inlet Alignment (Segment F-2)	4.06	$ 4,325,568	$ -	$ 4,325,568	$ 1,065,411
Stage 3 Subtotal		**10.48**	**$ 10,771,101**	**$ -**	**$ 10,771,101**	**$ 1,027,777**
Stage 4 (Ultimate)	Aaron Creek Alignment (Segment A-2)	5.21	$ 5,389,786	$ -	$ 5,389,786	$ 1,034,508
	Wrangell Island Alignment (Segment W-1)	1.72	$ 1,785,657	$ -	$ 1,785,657	$ 1,038,173
Stage 4 Subtotal		**6.93**	**$ 7,175,443**	**$ -**	**$ 7,175,443**	**$ 1,035,417**
Aaron Creek Corridor (Pass) Total		**143.13**	**$ 63,306,748**	**$ 84,575,143**	**$ 147,881,891**	**$ 1,033,200**
Aaron Creek Corridor (Tunnel) Total		**142.53**	**$ 61,325,514**	**$ 84,575,143**	**$ 145,900,657**	**$ 1,023,649**

Project: SE Alaska Mid Region Access
Project No.: AK HPP-2003(1)

SE Alaska MRA Corridors Summary, Phase 2

Corridor	Stage	Length (miles)	Hovercraft Ferry Terminals	Conventional Ferry Terminals	AK Cost	BC Cost	Total Cost
Bradfield Canal	1 (Ultimate)	112.4	0	2	$ 50,577,040	$ 63,875,553	$ 114,452,593
Total		**112.4**	**0**	**2**	**$ 50,577,040**	**$ 63,875,553**	**$ 114,452,593**
Stikine River	1	70.9	3	0	$0	$74,197,241	$74,197,241
	2	49.5	0	2	$42,411,493	$11,139,152	$53,550,645
	3	21.6	0	1	$21,880,834	$0	$21,880,834
	4	14.4	0	0	$13,978,556	$0	$13,978,556
	5 (Ultimate)	16.5	0	0	$17,357,288	$0	$17,357,288
Total		**172.7**	**3**	**3**	**$ 95,628,171**	**$ 85,336,393**	**$ 180,964,564**
Aaron Creek	1	70.9	3	0	$0	$74,197,241	$74,197,241
	2 (Pass)	54.9	0	2	$45,360,204	$10,377,902	$55,738,106
	2 (Tunnel)	54.3	0	2	$43,378,970	$10,377,902	$53,756,872
	3	10.5	0	1	$10,771,101	$0	$10,771,101
	4 (Ultimate)	6.9	0	0	$7,175,443	$0	$7,175,443
Total (Pass)		**143.1**	**3**	**3**	**$ 63,306,748**	**$ 84,575,143**	**$ 147,881,891**
Total (Tunnel)		**142.5**	**3**	**3**	**$ 61,325,514**	**$ 84,575,143**	**$ 145,900,657**

Iskut River Alignment (Segment I-1):	**Segment I-1 -** Begins where the existing Eskay Creek Gold Mine road departs the Iskut River via the Unuk River drainage. The alignment follows the existing gravel road as it parallels the south side of the Iskut River to the Cassiar Highway near Echo Lake.			
EXISTING ROAD LIMITS:	STA.	6655+30	7926+96	
EXISTING ROAD LENGTH:	24.08	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Rehabilitation/Paving cost using Segment W-3 per mile cost	24.08	Mile	$ 668,456	$ 16,096,420
SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 16,096,420**

Iskut River Alignment (Segment I-2):	**Segment I-2 -** Begins on the south side of the Iskut River near the airstrip and mining operations at Bronson Creek. The alignment parallels the south side of the Iskut River to the northeast until reaching Segment I-1 and the existing Eskay Creek Gold Mine road.			
LIMITS:	STA.	5582+10	6655+30	
LENGTH:	20.33	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Reconstruction cost using Segment S-1 per mile cost	20.33	Mile	$ 713,305	14,501,491
SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 14,501,491**

Iskut River Alignment (Segment I-3):	**Segment I-3 -** Begins adjacent to the ACV ferry terminal near the confluence of the Iskut and Stikine Rivers. The alignment parallels the south side of the Iskut River, crosses the Craig River, and meets with Segment I-2 near the airstrip and mining operations at Bronson Creek.			
LIMITS:	STA.	4185+80	5582+10	
LENGTH:	26.45	Mile		
ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
Iskut River Reconstruction cost using Segment S-1 per mile cost	26.45	Mile	$ 713,305	18,866,917
SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 18,866,917**

Bradfield Canal Alignment (Segment B-1 or Segment 1B with 2 thru 5 in Bradfield Report):		**Segment B-1 -** Begins at the Kapho Mountain conventional ferry terminal along Bradfield Canal. The alignment parallels the North Fork of the Bradfield River to the northeast before reaching a tunnel that takes the alignment into the Craig River drainage. The alignment follows the Craig River to the northeast and meets up with Segment I-2 of the Iskut River Alignment near the airstrip and mining operations at Bronson Creek.				
	AK SECTION LIMITS:	Stationing:	10+00	1538+27		
	BC SECTION LIMITS:	STA.	1538+27	2451+30		
	AK SECTION LIMITS:	29.15	Mile			
	BC SECTION LIMITS:	17.29	Mile			
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	BRADFIELD 2004 UNIT COST	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**					
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 8,659,399	$ 1,938,625	$ 1,938,625
					SUBTOTAL	**$ 1,938,625**
DIVISION 2	**EARTHWORK**					
	Erosion Control (4% of Construction Value)	1	LS	$ 6,387,279	$ 447,375	$ 447,375
	Roadway Reconditioning	29.15	Mile		$ 11,700	$ 341,055
					SUBTOTAL	**$ 788,430**
DIVISION 3	**UTILITIES & RELOCATIONS**					
					SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**					
	4" Asphalt Concrete Pavement	43,997	CY	$ 80	$ 220	$ 9,679,340
	5" Crushed Agg.	62,364	CY	$ 20	$ 40	$ 2,494,560
					SUBTOTAL	**$ 12,173,900**
DIVISION 5	**TUNNEL**					
					SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**					
					SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**					
	Staging Area Rehabilitation	15	Acre	$ 50,000	$ 58,000	$ 870,000
					SUBTOTAL	**$ 870,000**
DIVISION 8	**ROADWAY FINISHES**					
	Guard Rail	46,740	LF	$ 50	$ 30	$ 1,402,200
	Pavement Striping and Markings - Allowance	29.15	Mile	$ 25,000	$ 16,000	$ 466,400
					SUBTOTAL	**$ 1,868,600**
DIVISION 9	**PORT DEVELOPMENT**					
					SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**					
	Construction Camps and Per Diem	1	LS	$ -	$ 1,491,250	$ 1,491,250
					SUBTOTAL	**$ 1,491,250**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)					**$ 19,130,805**
	PER MILE COST (AK SECTION)*				$ 693,221	
	BC SECTION	17.29	Mile		$ 693,221	**$11,985,791**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

Aaron Creek Pass Alignment (Segment A-1a):

Segment A-1a - Begins at the Berg Bay conventional ferry terminal and follows the Aaron Creek drainage to the northeast until reaching an unnamed drainage near Berg Mountain. The alignment enters the unnamed drainage and follows it east to the West Fork Pass. The alignment traverses up and over the pass and enters the West Fork of the Katete River drainage. Paralleling the West Fork to the north, the alignment continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.

AK SECTION LIMITS:	STA.	1280+00	2883+63
BC SECTION LIMITS:	STA.	2883+63	3087+36
AK SECTION LENGTH:	30.37	Mile	
BC SECTION LENGTH (Designed):	3.86	Mile	
BC SECTION LENGTH (Per Mile Cost):	6.35	Mile	

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 2,087,933	$ 2,087,933
				SUBTOTAL	**$ 2,087,933**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 481,831	$ 481,831
	Roadway Reconditiitoning	30.37	Mile	$ 11,700	$ 355,329
				SUBTOTAL	**$ 837,160**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	50,000	CY	$ 220	$ 11,000,000
	5" Crushed Aggregate	71,000	CY	$ 40	$ 2,840,000
				SUBTOTAL	**$ 13,840,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	17	Acre	$ 58,000	$ 986,000
				SUBTOTAL	**$ 986,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	24,970	LF	$ 30	$ 749,100
	Pavement Striping and Markings - Allowance	30.37	Mile	$ 16,000	$ 485,920
				SUBTOTAL	**$ 1,235,020**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 1,606,102	$ 1,606,102
				SUBTOTAL	**$ 1,606,102**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 20,592,215**
	PER MILE COST (AK SECTION)*			$ 678,045	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 2,389,114**
	PER MILE COST (BC SECTION)*			$ 618,942	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 713,305	**$ 4,529,487**
	TOTAL BC SECTION COST				**$ 6,918,601**

*Note: Per mile cost calculated excludes tunnel and port development costs.

Aaron Creek Pass Alignment (BC) (Segment A-1a):

Segment A-1a - BC - Begins at the AK/BC border, parallels the West Fork to the north, continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.

AK SECTION LIMITS:	STA.	1280+00	2883+63
BC SECTION LIMITS:	STA.	2883+63	3087+36
AK SECTION LENGTH:	30.37	Mile	
BC SECTION LENGTH (Designed):	3.86	Mile	
BC SECTION LENGTH (Per Mile Cost):	6.35	Mile	

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 246,496	$ 246,496
				SUBTOTAL	**$ 246,496**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 56,884	$ 56,884
	Roadway Recondititoning	3.86	Mile	$ 11,700	$ 45,162
				SUBTOTAL	**$ 102,046**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Concrete Pavement	6,000	CY	$ 220	$ 1,320,000
	5" Crushed Aggregate	8,500	CY	$ 40	$ 340,000
				SUBTOTAL	**$ 1,660,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 116,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	440	LF	$ 30	$ 13,200
	Pavement Striping and Markings - Allowance	3.86	Mile	$ 16,000	$ 61,760
				SUBTOTAL	**$ 74,960**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 189,612	$ 189,612
				SUBTOTAL	**$ 189,612**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 2,389,114**
	PER MILE COST (BC SECTION)*			$ 618,942	
	BC SECTION	6.35	Mile	$ 713,305	**$ 4,529,487**

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Aaron Creek Tunnel Alignment (Segment A-1b):				
		Segment A-1b - Begins at the Berg Bay conventional ferry terminal and follows the Aaron Creek drainage to the northeast until reaching an unnamed drainage near Berg Mountain. The alignment enters the unnamed drainage and follows it east to the West Fork Pass. The alignment traverses through the pass with a tunnel and enters the West Fork of the Katete River drainage. Paralleling the West Fork to the north, the alignment continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.	1280+00	2851+97	
	BC SECTION LIMITS:	STA.	2851+97	3055+71	
	AK SECTION LENGTH:	29.77	Mile		
	BC SECTION LENGTH (Designed):	3.86	Mile		
	BC SECTION LENGTH (Per Mile Cost):	6.35	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 1,952,382	$ 1,952,382
				SUBTOTAL	**$ 1,952,382**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 450,550	$ 450,550
	Roadway Recondititoning	29.77	Mile	$ 11,700	$ 348,309
				SUBTOTAL	**$ 798,859**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	47,000	CY	$ 220	$ 10,340,000
	5" Crushed Aggregate	67,000	CY	$ 40	$ 2,680,000
				SUBTOTAL	**$ 13,020,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	16	Acre	$ 58,000	$ 928,000
				SUBTOTAL	**$ 928,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	19,800	LF	$ 30	$ 594,000
	Pavement Striping and Markings - Allowance	29.77	Mile	$ 16,000	$ 476,320
				SUBTOTAL	**$ 1,070,320**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 1,501,832	$ 1,501,832
				SUBTOTAL	**$ 1,501,832**
	SUBTOTAL ROADWAY, TUNNEL, AND BRIDGE WORK (AK SECTION)				**$ 19,271,393**
	PER MILE COST (AK SECTION)*			$ 679,324	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 2,389,114**
	PER MILE COST (BC SECTION)*			$ 618,942	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 713,305	**$ 4,529,487**
	TOTAL BC SECTION COST				**$ 6,918,601**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

Aaron Creek Tunnel Alignment (BC) (Segment A-1b):

Segment A-1b - BC - Begins at the AK/BC border and parallels the West Fork to the north, continues to the mouth of the West Fork and meets with Segment I-3 of the Iskut River Alignment near the ACV ferry terminal at the confluence of the Iskut and Stikine Rivers.

AK SECTION LIMITS:	STA.	1280+00	2851+97
BC SECTION LIMITS:	STA.	2851+97	3055+71
AK SECTION LENGTH:	29.77	Mile	
BC SECTION LENGTH (Designed):	3.86	Mile	
BC SECTION LENGTH (Per Mile Cost):	6.35	Mile	

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 246,496	$ 246,496
				SUBTOTAL	**$ 246,496**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 56,884	$ 56,884
	Roadway Recondititoning	3.86	Mile	$ 11,700	$ 45,162
				SUBTOTAL	**$ 102,046**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	6,000	CY	$ 220	$ 1,320,000
	5" Crushed Aggregate	8,500	CY	$ 40	$ 340,000
				SUBTOTAL	**$ 1,660,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 116,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	440	LF	$ 30	$ 13,200
	Pavement Striping and Markings - Allowance	3.86	Mile	$ 16,000	$ 61,760
				SUBTOTAL	**$ 74,960**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 189,612	$ 189,612
				SUBTOTAL	**$ 189,612**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 2,389,114**
	PER MILE COST (BC SECTION)*			$ 618,942	
	BC SECTION	6.35	Mile	$ 713,305	**$ 4,529,487**

*Note: Per mile cost calculated excludes tunnel and port development costs, as well as the length of the tunnel.

Aaron Creek Alignment (Segment A-2):		**Segment A-2 -** Begins at The Narrows and parallels Black Channel to the east until reaching Segment A-1a or A-1b near the Berg Bay conventional ferry terminal.			
	LIMITS:	STA.	1005+00	1280+00	
	LENGTH:	5.21	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 364,437	$ 364,437
				SUBTOTAL	**$ 364,437**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 84,101	$ 84,101
	Roadway Reconditiitoning	5.21	Mile	$ 11,700	$ 60,957
				SUBTOTAL	**$ 145,058**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	9,000	CY	$ 220	$ 1,980,000
	5" Crushed Aggregate	12,500	CY	$ 40	$ 500,000
				SUBTOTAL	**$ 2,480,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	3	Acre	$ 58,000	$ 174,000
				SUBTOTAL	**$ 174,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	2,200	LF	$ 30	$ 66,000
	Pavement Striping and Markings - Allowance	5.21	Mile	$ 16,000	$ 83,360
				SUBTOTAL	**$ 149,360**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 280,336	$ 280,336
				SUBTOTAL	**$ 280,336**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 3,593,191**
	PER MILE COST*			$ 689,672	

*Note: Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (Segment S-1):

Segment S-1 - Begins along the south side of the Stikine River near the mouth of Andrew Creek and adjacent to Limb Island. The alignment parallels the south side of the Stikine River to the northeast before reaching Segment I-3 of the Iskut River Alignment and the ACV ferry terminal near the confluence of the Iskut and Stikine Rivers.

AK SECTION LIMITS:	STA.	2545+94	3673+29
BC SECTION LIMITS:	STA.	3673+29	3891+26
AK SECTION LIMITS:	21.35	Mile	
BC SECTION LIMITS (Designed):	4.13	Mile	
BC SECTION LIMITS (Per Mile Cost):	6.35	Mile	

ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 1,545,479	$ 1,545,479
				SUBTOTAL	**$ 1,545,479**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 356,649	$ 356,649
	Roadway Recondititoning	21.35	Mile	$ 11,700	$ 249,795
				SUBTOTAL	**$ 606,444**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	37,000	CY	$ 220	$ 8,140,000
	5" Crushed Aggregate	53,000	CY	$ 40	$ 2,120,000
				SUBTOTAL	**$ 10,260,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	12	Acre	$ 58,000	$ 696,000
				SUBTOTAL	**$ 696,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	19,690	LF	$ 30	$ 590,700
	Pavement Striping and Markings - Allowance	21.35	Mile	$ 16,000	$ 341,600
				SUBTOTAL	**$ 932,300**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 1,188,830	$ 1,188,830
				SUBTOTAL	**$ 1,188,830**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 15,229,053**
	PER MILE COST (AK SECTION)*			$ 713,305	
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (BC SECTION)				**$ 2,896,615**
	PER MILE COST (BC SECTION)*			$ 701,360	
	BC SECTION (By Per Mile Cost)	6.35	Mile	$ 713,305	**$ 4,529,487**
	TOTAL BC SECTION COST				**$ 7,426,102**

*Note: Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (BC) (Segment S-1):		**Segment S-1 - BC** - Begins at the AK/BC border and parallels the south side of the Stikine River to the northeast before reaching Segment I-3 of the Iskut River Alignment and the ACV ferry terminal near the confluence of the Iskut and Stikine Rivers.			
	AK SECTION LIMITS:	STA.	2545+94	3673+29	
	BC SECTION LIMITS:	STA.	3673+29	3891+26	
	AK SECTION LIMITS:	21.35	Mile		
	BC SECTION LIMITS (Designed):	4.13	Mile		
	BC SECTION LIMITS (Per Mile Cost):	6.35	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 298,857	$ 298,857
				SUBTOTAL	**$ 298,857**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 68,967	$ 68,967
	Roadway Reconditioning	4.13	Mile	$ 11,700	$ 48,321
				SUBTOTAL	**$ 117,288**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	7,000	CY	$ 220	$ 1,540,000
	5" Crushed Aggregate	9,500	CY	$ 40	$ 380,000
				SUBTOTAL	**$ 1,920,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 116,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	4,950	LF	$ 30	$ 148,500
	Pavement Striping and Markings - Allowance	4.13	Mile	$ 16,000	$ 66,080
				SUBTOTAL	**$ 214,580**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 229,890	$ 229,890
				SUBTOTAL	**$ 229,890**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK (AK SECTION)				**$ 2,896,615**
	PER MILE COST (AK SECTION)*			$ 701,360	
	BC SECTION	6.35	Mile	$ 713,305	**$4,529,487**

*Note: Per mile cost calculated excludes tunnel and port development costs.

South Stikine River Alignment (Segment S-2):		**Segment S-2** - Begins at the Crittenden Creek conventional ferry terminal site and parallels the Eastern Passage to the northwest. Once around Garnett Point, the alignment enters the Stikine River drainage, turns to the northeast, and follows the Stikine River to near the mouth of Andrew Creek.			
	LIMITS:	STA.	1614+00	2545+94	
	LENGTH:	17.65	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 1,324,635	$ 1,324,635
				SUBTOTAL	**$ 1,324,635**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 305,685	$ 305,685
	Roadway Recondititoning	17.65	Mile	$ 11,700	$ 206,505
				SUBTOTAL	**$ 512,190**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	31,500	CY	$ 220	$ 6,930,000
	5" Crushed Aggregate	44,500	CY	$ 40	$ 1,780,000
				SUBTOTAL	**$ 8,710,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	10	Acre	$ 58,000	$ 580,000
				SUBTOTAL	**$ 580,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	20,570	LF	$ 30	$ 617,100
	Pavement Striping and Markings - Allowance	17.65	Mile	$ 16,000	$ 282,400
				SUBTOTAL	**$ 899,500**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 1,018,950	$ 1,018,950
				SUBTOTAL	**$ 1,018,950**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 13,045,275**
	PER MILE COST*			$ 739,109	

*Notes: If existing AMHS ferry terminal is utilized on Wrangell Island the cost of 1 conventional ferry terminal can be eliminated.

	South Stikine River Alignment (Segment S-3):	**Segment S-3** - Begins at The Narrows and parallels the Eastern Passage to the northwest until reaching Segment S-2 near the Crittenden Creek conventional ferry terminal.			
	LIMITS:	Stationing:	1005+00	1614+00	
	LENGTH:	11.53	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 825,887	$ 825,887
				SUBTOTAL	**$ 825,887**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 190,589	$ 190,589
	Roadway Reconditiitoning	11.53	Mile	$ 11,700	$ 134,901
				SUBTOTAL	**$ 325,490**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	20,000	CY	$ 220	$ 4,400,000
	5" Crushed Aggregate	28,500	CY	$ 40	$ 1,140,000
				SUBTOTAL	**$ 5,540,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	6	Acre	$ 58,000	$ 348,000
				SUBTOTAL	**$ 348,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	9,350	LF	$ 30	$ 280,500
	Pavement Striping and Markings - Allowance	11.53	Mile	$ 16,000	$ 184,480
				SUBTOTAL	**$ 464,980**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 635,298	$ 635,298
				SUBTOTAL	**$ 635,298**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 8,139,655**
	PER MILE COST*			$ 705,954	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Limb Island Alignment (Segment L-1):	**Segment L-1** - Begins at the end of the Mitkof Highway on Mitkof Island and crosses Dry Strait with a bridge. The alignment traverses the south side of Dry Island and the north side of Farm Island before crossing Hooligan Slough and reaching Limb Island. After crossing Limb Island and spanning the Stikine River, the alignment meets Segment S-1 near Andrew Creek.			
	LIMITS:	STA.	100+00	859+77	
	LENGTH:	14.39	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 944,117	$ 944,117
				SUBTOTAL	**$ 944,117**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 217,873	$ 217,873
	Roadway Reconditoning	14.39	Mile	$ 11,700	$ 168,363
				SUBTOTAL	**$ 386,236**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	22,500	CY	$ 220	$ 4,950,000
	5" Crushed Aggregate	31,500	CY	$ 40	$ 1,260,000
				SUBTOTAL	**$ 6,210,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	8	Acre	$ 58,000	$ 464,000
				SUBTOTAL	**$ 464,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	11,940	LF	$ 30	$ 358,200
	Pavement Striping and Markings - Allowance	14.39	Mile	$ 16,000	$ 230,240
				SUBTOTAL	**$ 588,440**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 726,244	$ 726,244
				SUBTOTAL	**$ 726,244**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 9,319,037**
	PER MILE COST*			$ 647,605	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Wrangell Island Alignment (Segment W-1):		**Segment W-1** - Begins near the Log Transfer Station conventional ferry terminal site and parallels the shoreline along the Eastern Passage to the northeast. The alignment reaches The Narrows and ends after spanning Blake Channel with a structure.			
	LIMITS:	STA.	914+00	1005+00	
	LENGTH:	1.72	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 120,747	$ 120,747
				SUBTOTAL	**$ 120,747**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 27,865	$ 27,865
	Roadway Recondititoning	1.72	Mile	$ 11,700	$ 20,124
				SUBTOTAL	**$ 47,989**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	3,000	CY	$ 220	$ 660,000
	5" Crushed Aggregate	4,500	CY	$ 40	$ 180,000
				SUBTOTAL	**$ 840,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	1	Acre	$ 58,000	$ 58,000
				SUBTOTAL	**$ 58,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail	110	LF	$ 30	$ 3,300
	Pavement Striping and Markings - Allowance	1.72	Mile	$ 16,000	$ 27,520
				SUBTOTAL	**$ 30,820**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 92,882	$ 92,882
				SUBTOTAL	**$ 92,882**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 1,190,438**
	PER MILE COST*			$ 692,115	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Wrangell Island Alignment (Segment W-2):	**Segment W-2** - Begins at the intersection of Segment W-3 and Segment F-1 of the Fool's Inlet Alignment. The alignment follows the existing McCormack Creek Road to the northeast before reaching the Log Transfer Station conventional ferry terminal and Segment W-1.			
	EXISTING ROAD LIMITS:	STA.	745+00	914+00	
	EXISTING ROAD LENGTH:	3.20	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 227,396	$ 227,396
				SUBTOTAL	**$ 227,396**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 52,476	$ 52,476
	Roadway Reconditiitoning	3.20	Mile	$ 11,700	$ 37,440
				SUBTOTAL	**$ 89,916**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	6,000	CY	$ 220	$ 1,320,000
	5" Crushed Aggregate	8,000	CY	$ 40	$ 320,000
				SUBTOTAL	**$ 1,640,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	1	Acre	$ 58,000	$ 58,000
				SUBTOTAL	**$ 58,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Pavement Striping and Markings - Allowance	3.20	Mile	$ 16,000	$ 51,200
				SUBTOTAL	**$ 51,200**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 174,920	$ 174,920
				SUBTOTAL	**$ 174,920**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 2,241,432**
	PER MILE COST*			$ 700,448	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Wrangell Island Alignment (Segment W-3):	**Segment W-3** - Begins at the end of the Zimovia Highway near Pat Creek and follows McCormack Creek Road northeast across most of Wrangell Island to the intersection with Segment F-1 of the Fool's Inlet Alignment.			
	EXISTING ROAD LIMITS:	STA.	160+00	745+00	
	EXISTING ROAD LENGTH:	11.08	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 750,786	$ 750,786
				SUBTOTAL	**$ 750,786**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 173,258	$ 173,258
	Roadway Recondititoning	11.08	Mile	$ 11,700	$ 129,636
				SUBTOTAL	**$ 302,894**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	20,000	CY	$ 220	$ 4,400,000
	5" Crushed Aggregate	28,500	CY	$ 40	$ 1,140,000
				SUBTOTAL	**$ 5,540,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	1	Acre	$ 58,000	$ 58,000
				SUBTOTAL	**$ 58,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Pavement Striping and Markings - Allowance	11.08	Mile	$ 16,000	$ 177,280
				SUBTOTAL	**$ 177,280**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 577,528	$ 577,528
				SUBTOTAL	**$ 577,528**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 7,406,488**
	PER MILE COST*			$ 668,456	

*Note: Per mile cost calculated excludes tunnel and port development costs.

	Fool's Inlet Alignment (Segments F-1):	**Segment F-1** - Begins at the beginning of Segment W-2 of the Wrangell Island Alignment and follows the existing road from McCormack Creek Road to just north of the mouth of Fool's Inlet.			
	EXISTING ROAD LIMITS:	STA.	723+00	1062+00	
	EXISTING ROAD LENGTH:	6.42	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 435,594	$ 435,594
				SUBTOTAL	**$ 435,594**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 100,522	$ 100,522
	Roadway Reconditiitoning	6.42	Mile	$ 11,700	$ 75,114
				SUBTOTAL	**$ 175,636**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	11,500	CY	$ 220	$ 2,530,000
	5" Crushed Aggregate	16,500	CY	$ 40	$ 660,000
				SUBTOTAL	**$ 3,190,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	**$ -**
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	1	Acre	$ 58,000	$ 58,000
				SUBTOTAL	**$ 58,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Pavement Striping and Markings - Allowance	6.42	Mile	$ 16,000	$ 102,720
				SUBTOTAL	**$ 102,720**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 335,072	$ 335,072
				SUBTOTAL	**$ 335,072**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 4,297,022**
	PER MILE COST*			$ 669,318	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Fool's Inlet Alignment (Segment F-2):		**Segment F-2** - Begins at the end of Segment F-1 and continues to Fool's Inlet, where the alignment parallels the northeastern shore before reaching the Fool's Inlet conventional ferry terminal.			
	LIMITS:	STA.	1062+00	1276+37	
	LENGTH:	4.06	Mile		
ITEM NO.	ITEM DESCRIPTION	QUANTITY	UNIT	2009 UNIT COST	AMOUNT
DIVISION 1	**DIVISION 150 PROJECT REQUIREMENTS**				
	Mobilization, Contractor QC, Surveying & Sampling	1	LS	$ 292,625	$ 292,625
				SUBTOTAL	**$ 292,625**
DIVISION 2	**EARTHWORK**				
	Erosion Control (4% of Construction Value)	1	LS	$ 67,529	$ 67,529
	Roadway Reconditioning	4.06	Mile	$ 11,700	$ 47,502
				SUBTOTAL	**$ 115,031**
DIVISION 3	**UTILITIES & RELOCATIONS**				
				SUBTOTAL	**$ -**
DIVISION 4	**BASES & PAVEMENT**				
	4" Asphalt Pavement	7,500	CY	$ 220	$ 1,650,000
	5" Crushed Aggregate	10,500	CY	$ 40	$ 420,000
				SUBTOTAL	**$ 2,070,000**
DIVISION 5	**TUNNEL**				
				SUBTOTAL	
DIVISION 6	**STRUCTURES**				
				SUBTOTAL	**$ -**
DIVISION 7	**INCIDENTAL CONSTRUCTION**				
	Staging Area Rehabilitation	2	Acre	$ 58,000	$ 116,000
				SUBTOTAL	**$ 116,000**
DIVISION 8	**ROADWAY FINISHES**				
	Guard Rail		LF	$ 30	$ -
	Pavement Striping and Markings - Allowance	4.06	Mile	$ 16,000	$ 64,960
				SUBTOTAL	**$ 64,960**
DIVISION 9	**PORT DEVELOPMENT**				
				SUBTOTAL	**$ -**
DIVISION 10	**CONSTRUCTION CAMPS**				
	Construction Camps and Per Diem	1	LS	$ 225,096	$ 225,096
				SUBTOTAL	**$ 225,096**
	SUBTOTAL ROADWAY, TUNNEL, PORT, AND BRIDGE WORK				**$ 2,883,712**
	PER MILE COST*			$ 710,274	

*Note: Per mile cost calculated excludes tunnel and port development costs.

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$10,790,670	$10,790,670
Total bid estimate					$146,278,307
Mobilization percentage					8.0%

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$3,944,475	$3,944,475
642(3)	HR	3-Person Survey Crew	700	$312	$218,190
Total bid estimate					$146,278,307
Mobilization percentage					3.2%

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$231,741	$695,223
644(2)	EACH	Field Laboratory	3	$66,857	$200,570
644(3)	LPSM	Curing Shed	ALL	$51,498	$51,498
644(15)	LPSM	Nuclear Testing Equip.	ALL	$39,301	$39,301
644(16)	LPSM	Storage	ALL	$10,300	$10,300
645(1)	HOUR	Training	3000	$68	$203,280
Total bid estimate					$146,278,307
Mobilization percentage					0.9%

Total Project Requirements Percentage 12.1%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$12,853,660	$12,853,660
Total bid estimate					$121,650,994
Mobilization percentage					11.8%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$865,000	$865,000
642(3)	HR	3-Person Survey Crew	700	$250	$175,000
Total bid estimate					$121,650,994
Mobilization percentage					1.0%

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$25,000	$75,000
644(2)	EACH	Field Laboratory	3	$25,000	$75,000
644(3)	LPSM	Curing Shed	ALL	$5,300	$5,300
644(15)	LPSM	Nuclear Testing Equip.	ALL	$79,500	$79,500
644(16)	LPSM	Storage	ALL	$16,000	$16,000
645(1)	HOUR	Training	3000	$10	$30,000
Total bid estimate					$121,650,994
Mobilization percentage					0.3%

Total Project Requirements Percentage 13.1%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$20,000,000	$20,000,000
Total bid estimate					$206,037,813
Mobilization percentage					10.8%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$700,000	$700,000
642(3)	HR	3-Person Survey Crew	0	$250	$0
Total bid estimate					$206,037,813
Mobilization percentage					0.4%

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
644(1)	EACH	Field Office	3	$0	$0
644(2)	EACH	Field Laboratory	3	$0	$0
644(3)	LPSM	Curing Shed	ALL	$0	$0
644(15)	LPSM	Nuclear Testing Equip.	ALL	$0	$0
644(16)	LPSM	Storage	ALL	$0	$0
645(1)	HOUR	Training	3000	$0	$0
Total bid estimate					$206,037,813
Mobilization percentage					0.0%

Total Project Requirements Percentage 11.2%

Juneau Access, Financial Plan, 2007, UPA	Sunny Point, 2006
Mobilization percentage	7.4%

Total Project Requirements Percentage 7.4%

Juneau Access, Final EIS, 2006, UPA				Valdez-Dayville Road, 2004		Valdez-Dayville Road, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$2,619,000	$2,619,000	$2,150,000	$2,150,000
Mobilization percentage					8.8%		7.3%

Total Project Requirements Percentage 8.1%

Juneau Access, Final EIS, 2006, UPA				Glacier Highway, 2005		Glacier Highway, 2005	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$700,000	$700,000	$675,000	$675,000
Mobilization percentage					7.0%		6.5%

Total Project Requirements Percentage 6.8%

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
640(1)	LPSM	Mobilization & Demob	ALL	$2,300,000	$2,300,000	$800,000	$800,000	$700,000	$700,000	$400,000	$400,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					9.4%		3.2%		2.8%		1.6%
Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
642(1)	LPSM	Const. Surveying	ALL	$450,000	$450,000	$230,000	$230,000	$300,000	$300,000	$350,000	$350,000
642(3)	HR	3-Person Survey Crew	1	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000	$30,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					2.0%		1.1%		1.3%		1.5%
Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
644(1)	EACH	Field Office	1	$50,000	$50,000	$40,000	$40,000	$60,000	$60,000	$50,000	$50,000
644(2)	EACH	Field Laboratory	1	$30,000	$30,000	$10,000	$10,000	$30,000	$30,000	$20,000	$20,000
644(15)	LPSM	Nuclear Testing Equip.	ALL	$3,000	$3,000	$2,300	$2,300	$2,000	$2,000	$20,000	$20,000
645(1)	HOUR	Training	1775	$1	$1,775	$1	$1,775	$1	$1,775	$1	$1,775
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Mobilization percentage					0.3%		0.2%		0.4%		0.4%

Total Project Requirements Percentage 6.1%

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,023,000	$1,023,000	$990,000	$990,000	$1,647,200	$1,647,200	$1,070,000	$1,070,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					9.0%		10.5%		17.5%		9.8%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$175,000	$175,000	$140,000	$140,000	$212,900	$212,900	$450,000	$450,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					1.6%		1.5%		2.3%		4.3%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$360,000	$360,000	$115,000	$115,000	$369,500	$369,500	$250,000	$250,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					3.3%		1.2%		4.1%		2.3%
Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$125,000	$125,000	$100,000	$100,000	$221,400	$221,400	$25,000	$25,000
Total bid estimate					$12,388,049		$10,391,135		$11,042,749		$12,021,299
Mobilization percentage					1.1%		1.1%		2.4%		0.2%

Total Project Requirements Percentage 18.1%

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,845,000	$1,845,000	$1,809,000	$1,809,000	$2,370,000	$2,370,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					13.3%		11.5%		11.1%

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$220,000	$220,000	$294,000	$294,000	$500,000	$500,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.6%		1.9%		2.4%

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$214,000	$214,000	$379,000	$379,000	$400,000	$400,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.6%		2.5%		1.9%

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$150,000	$150,000	$41,200	$41,200	$400,000	$400,000
Total bid estimate					$15,745,450		$17,581,026		$23,793,473
Mobilization percentage					1.1%		0.3%		1.9%

Total Project Requirements Percentage 17.0%

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$1,447,000	$1,447,000	$2,017,998	$2,017,998	$1,600,000	$1,600,000	$2,130,000	$2,130,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					9.0%		11.0%		8.4%		10.9%

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$290,000	$290,000	$237,700	$237,700	$300,000	$300,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					1.8%		1.3%		1.6%		1.0%

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$135,000	$135,000	$444,800	$444,800	$220,000	$220,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					0.8%		2.5%		1.2%		1.0%

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$180,000	$180,000	$86,105	$86,105	$220,000	$220,000	$200,000	$200,000
Total bid estimate					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Mobilization percentage					1.1%		0.5%		1.2%		1.0%

Total Project Requirements Percentage 13.6%

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$923,000	$923,000	$783,000	$783,000	$1,100,000	$1,100,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					10.0%		9.1%		12.6%

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$175,000	$175,000	$100,000	$100,000	$150,000	$150,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.9%		1.2%		1.7%

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15301	LPSM	Contractor QC	ALL	$112,000	$112,000	$171,000	$171,000	$25,000	$25,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.2%		2.0%		0.3%

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$95,000	$95,000	$129,200	$129,200	$100,000	$100,000
Total bid estimate					$10,148,554		$9,357,303		$9,823,450
Mobilization percentage					1.0%		1.5%		1.2%

Total Project Requirements Percentage 14.6%

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15101	LPSM	Mobilization	ALL	$780,000	$780,000	$700,000	$700,000	$1,000,000	$1,000,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					9.0%		10.1%		11.0%
Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15201	LPSM	Const. Survey & Staking	ALL	$133,300	$133,300	$300,000	$300,000	$90,000	$90,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					1.6%		4.5%		1.0%
Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15401	LPSM	Contractor Sampling	ALL	$82,000	$82,000	$50,000	$50,000	$110,000	$110,000
Total bid estimate					$9,445,110		$7,609,240		$10,052,275
Mobilization percentage					1.0%		0.7%		1.2%

Total Project Requirements Percentage **13.4%**

Average Total Project Requirements Percentage **11.8%**

Use **13.0%** *Same rates as 2-lane road*

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	3,222	$2.36	$7,603.92
631(1)	sq yd	Geotextile, Erosion Control, Class 1	3740	$2.51	$9,387.40
633(1)	ln ft	Silt fence	57,000	$3.05	$173,850.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$976,662.36	$976,662.36
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$717,461.94	$717,461.94
641(5)	acre	Preliminary Seeding	47.0	$5,219.00	$245,293.00
641(6)	each	Temp. Rock Check Dam	540.0	$67.76	$36,590.40
641(8)	each	Settling Pool	8	$767.39	$6,139.12
Subtotal erosion control					$2,172,988.14
Total const. bid (excluding mobilization & eros. cont.)					$133,314,649
Erosion control ratio based on bid prices					1.6%
Erosion control costs based on mile			(per mile)		$93,141

Average Percentage **1.6% of Construction costs**

Juneau Access, DOT&PF Estimate, 2009, Zones 1-3				Engineer's Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	3,222	$10.50	$33,831.00
631(1)	sq yd	Geotextile, Erosion Control, Class 1	3740	$2.00	$7,480.00
633(1)	ln ft	Silt fence	57,000	$4.00	$228,000.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$26,500.00	$26,500.00
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$529,410.00	$529,410.00
641(5)	acre	Preliminary Seeding	47.0	$2,500.00	$117,500.00
641(6)	each	Temp. Rock Check Dam	540.0	$100.00	$54,000.00
641(8)	each	Settling Pool	8	$530.00	$4,240.00
Subtotal erosion control					$1,000,961.00
Total const. bid (excluding mobilization & eros. cont.)					$107,796,373
Erosion control ratio based on bid prices					0.9%
Erosion control costs based on mile			(per mile)		$42,904

Average Percentage **0.9% of Construction costs**

Juneau Access, DOT&PF Estimate, 2009, Zones 4-5				Engineer's Estimate	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**
611(3)	sq yd	Riprap slope stabilization	28,800	$10.50	$302,400.00
633(1)	ln ft	Silt fence	15,000	$4.00	$60,000.00
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$53,000.00	$53,000.00
641(2)	LPSM	Temp. Erosion/Pollution Control	ALL	$1,500,000.00	$1,500,000.00
Subtotal erosion control					$1,915,400.00
Total const. bid (excluding mobilization & eros. cont.)					$184,122,413
Erosion control ratio based on bid prices					1.0%
Erosion control costs based on mile			(per mile)		$82,100

Average Percentage **1.0% of Construction costs**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
641(1)	LPSM	Erosion/Pollution Control Admin	ALL	$75,000.00	$75,000.00	$5,000.00	$5,000.00	$25,000.00	$25,000.00	$10,000.00	$10,000.00
641(3)	LPSM	Temp. Erosion/Pollution Control	ALL	$290,000.00	$290,000.00	$200,000.00	$200,000.00	$300,000.00	$300,000.00	$150,000.00	$150,000.00
641(4)	LPSM	Temp. Erosion/Pollution Control Modification	ALL	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00	$50,000.00
Subtotal erosion control					$415,000.00		$255,000.00		$375,000.00		$210,000.00
Total const. bid (excluding mobilization & eros. cont.)					$24,107,586		$24,587,513		$24,666,128		$25,388,433
Erosion control ratio based on bid prices					1.7%		1.0%		1.5%		0.8%
Erosion control costs based on mile			(per mile)		$17,788		$10,930		$16,074		$9,001

Average Percentage **1.3% of Construction costs**

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15705	m	Silt fence	1,150	$8.00	$9,200.00	$28.00	$32,200.00	$9.00	$10,350.00	$20.00	$23,000.00
15705	m	Sediment wattle	200	$26.00	$5,200.00	$56.00	$11,200.00	$43.00	$8,600.00	$30.00	$6,000.00
15801	m^3	watering for dust control	3,000	$7.00	$21,000.00	$12.00	$36,000.00	$9.30	$27,900.00	$12.50	$37,500.00
Subtotal erosion control					$35,400.00		$79,400.00		$46,850.00		$66,500.00
Total const. bid (excluding mobilization & eros. cont.)					$11,329,649		$9,321,735		$9,348,699		$10,884,799
Erosion control ratio based on bid prices					0.3%		0.9%		0.5%		0.6%
Total length			(km)		32.508		32.508		32.508		32.508
			(mile)		20.2		20.2		20.2		20.2
Erosion control costs based on km			(per km)		$1,089		$2,442		$1,441		$2,046
Erosion control costs based on mile			(per mile)		$1,753		$3,931		$2,320		$3,293

Average Percentage 0.6% of Construction costs

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	**Item Unit**	**Description**	**Quantity**	**Unit Price**	**Amount**	**Unit Price**	**Amount**	**Unit Price**	**Amount**
15705	m	Silt fence	14,000	$7.00	$98,000.00	$5.27	$73,780.00	$9.00	$126,000.00
15705	LPSM	Soil erosion control, monitoring	ALL	$100,000.00	$100,000.00	$169,500.00	$169,500.00	$10,000.00	$10,000.00
15705	m	Temporary 750 millimeter culvert pipe	35.0	$100.00	$3,500.00	$90.00	$3,150.00	$200.00	$7,000.00
15705	m	Temporary 1200 millimeter culvert pipe	60.0	$150.00	$9,000.00	$140.00	$8,400.00	$230.00	$13,800.00
15705	m	Temporary 1800 millimeter culvert pipe	35	$250.00	$8,750.00	$190.00	$6,650.00	$500.00	$17,500.00
15705	m	diversion channel, temporary	800	$40.00	$32,000.00	$30.89	$24,712.00	$80.00	$64,000.00
15705	m	sediment log	1,700	$40.00	$68,000.00	$24.71	$42,007.00	$12.00	$20,400.00
15705	m	soil wrap	60	$50.00	$3,000.00	$69.00	$4,140.00	$23.00	$1,380.00
15706	each	check dams, sandbags	8	$80.00	$640.00	$705.00	$5,640.00	$400.00	$3,200.00
15706	each	check dam, riprap	230	$80.00	$18,400.00	$79.00	$18,170.00	$250.00	$57,500.00
15706	each	check dam (silt dike)	250.00	$80.00	$20,000.00	$75.00	$18,750.00	$400.00	$100,000.00
15706	each	chitosan gel sock	8	$700.00	$5,600.00	$750.00	$6,000.00	$1,000.00	$8,000.00
15801	m^3	watering for dust control	7,520	$5.50	$41,360.00	$5.50	$41,360.00	$4.00	$30,080.00
25120	m	Riprap ditch, class 1	1,100	$25.00	$27,500.00	$17.70	$19,470.00	$55.00	$60,500.00
Subtotal erosion control					$435,750.00		$441,729.00		$519,360.00
Total const. bid (excluding mobilization & eros. cont.)					$13,464,700		$15,330,307		$20,904,113
Erosion control ratio based on bid prices					3.2%		2.9%		2.5%
Total length			(km)		12.26		12.26		12.26
			(mile)		7.6		7.6		7.6
Erosion control costs based on km			(per km)		$35,542		$36,030		$42,362
Erosion control costs based on mile			(per mile)		$57,209		$57,994		$68,186

Average Percentage 2.9% of Construction costs

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15703	m	Silt fence	6,000	$11.00	$66,000.00	$5.00	$30,000.00	$11.00	$66,000.00	$6.00	$36,000.00
15705	m	Slope drains	110	$40.00	$4,400.00	$47.00	$5,170.00	$30.00	$3,300.00	$60.00	$6,600.00
15707 A	m	Temporary 600 millimeter culvert pipe	380.0	$100.00	$38,000.00	$60.00	$22,800.00	$150.00	$57,000.00	$150.00	$57,000.00
15707 B	m	Temporary 900 millimeter culvert pipe	70.0	$125.00	$8,750.00	$70.00	$4,900.00	$205.00	$14,350.00	$200.00	$14,000.00
15708	each	bales, straw	150	$30.00	$4,500.00	$50.00	$7,500.00	$14.00	$2,100.00	$30.00	$4,500.00
15709 A	each	check dams, riprap	170	$75.00	$12,750.00	$68.00	$11,560.00	$100.00	$17,000.00	$100.00	$17,000.00
15709 B	each	check dams, sandbag	140	$75.00	$10,500.00	$25.50	$3,570.00	$130.00	$18,200.00	$20.00	$2,800.00
15718 A	m	diversion channel, plastic lined	500	$55.00	$27,500.00	$30.00	$15,000.00	$7.00	$3,500.00	$40.00	$20,000.00
15718 B	m	diversion channel, riprap lined	220	$70.00	$15,400.00	$50.00	$11,000.00	$27.00	$5,940.00	$120.00	$26,400.00
15724	m	wattle, straw	3,100	$25.00	$77,500.00	$10.42	$32,302.00	$9.00	$27,900.00	$7.00	$21,700.00
15729	slry unit	soil stabilization	600.00	$250.00	$150,000.00	$320.61	$192,366.00	$525.00	$315,000.00	$400.00	$240,000.00
15749	m	turbidity curtain	60	$120.00	$7,200.00	$112.00	$6,720.00	$50.00	$3,000.00	$150.00	$9,000.00
15761	each	chitosan gel sock	10	$625.00	$6,250.00	$403.00	$4,030.00	$1,000.00	$10,000.00	$1,250.00	$12,500.00
15780	day	erosion control supervisor	450	$300.00	$135,000.00	$565.50	$254,475.00	$100.00	$45,000.00	$500.00	$225,000.00
15801	m^3	watering for dust control	15,000	$5.00	$75,000.00	$5.51	$82,650.00	$5.00	$75,000.00	$6.00	$90,000.00
20410	m	furrow ditches	1,600	$3.00	$4,800.00	$3.96	$6,336.00	$10.00	$16,000.00	$2.00	$3,200.00
25107	m	riprap lined ditch	1,800	$25.00	$45,000.00	$19.73	$35,514.00	$15.00	$27,000.00	$30.00	$54,000.00
62204	hour	pump, water, trash, 150 mm	200	$20.00	$4,000.00	$50.00	$10,000.00	$20.00	$4,000.00	$60.00	$12,000.00
62901	m^2	Erosion control mat type 1	1,700	$3.00	$5,100.00	$3.23	$5,491.00	$8.00	$13,600.00	$2.00	$3,400.00
					$697,650.00		$741,384.00		$723,890.00		$855,100.00
Total construction bid											
					$17,527,699		$20,374,701		$20,749,772		$21,713,815
Erosion control ratio based on bid prices					4.0%		3.6%		3.5%		3.9%
Total length			(km)		15.785		15.785		15.785		15.785
			(mile)		9.8		9.8		9.8		9.8
Eroson control costs based on km			(per km)		$44,197		$46,968		$45,859		$54,172
Eroson control costs based on mile			(per mile)		$71,140		$75,599		$73,815		$87,195

Average Percentage 3.8% of Construction costs

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15705	m	Silt fence	10,500	$11.00	$115,500.00	$6.20	$65,100.00	$7.00	$73,500.00
15708	each	Bales, straw	50	$50.00	$2,500.00	$75.00	$3,750.00	$30.00	$1,500.00
15724	each	Fiber log	350	$40.00	$14,000.00	$35.00	$12,250.00	$30.00	$10,500.00
15709	each	check dam	100	$100.00	$10,000.00	$90.00	$9,000.00	$100.00	$10,000.00
15801	m^3	watering for dust control	8,000	$4.50	$36,000.00	$7.00	$56,000.00	$8.00	$64,000.00
25119	m^2	Riprap ditch, class 1	3,400	$22.50	$76,500.00	$10.75	$36,550.00	$15.00	$51,000.00
Subtotal erosion control					$254,500.00		$182,650.00		$210,500.00
Total const. bid (excluding mobilization & eros. cont.)					$8,971,054		$8,391,653		$8,512,950
Erosion control ratio based on bid prices					2.8%		2.2%		2.5%
Total length			(km)		50		50		50
			(mile)		31.1		31.1		31.1
Erosion control costs based on km			(per km)		$5,090		$3,653		$4,210
Erosion control costs based on mile			(per mile)		$8,193		$5,880		$6,776

Average Percentage **2.5% of Construction costs**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
15703	m	Silt fence	4,900	$10.00	$49,000.00	$6.00	$29,400.00	$20.00	$98,000.00
15705	each	Slope drains	50.0	$60.00	$3,000.00	$35.00	$1,750.00	$100.00	$5,000.00
15707a	m	Temporary 900 mm culvert pipe	12.0	$90.00	$1,080.00	$100.00	$1,200.00	$200.00	$2,400.00
15707c	m	Temporary 1800 mm culvert pipe	40	$225.00	$9,000.00	$250.00	$10,000.00	$350.00	$14,000.00
15708	each	Bales, straw	600	$30.00	$18,000.00	$50.00	$30,000.00	$40.00	$24,000.00
15709	each	Check dams	60	$100.00	$6,000.00	$100.00	$6,000.00	$100.00	$6,000.00
15718a	m	Diversion channel, plastic lined	300	$40.00	$12,000.00	$30.00	$9,000.00	$25.00	$7,500.00
15718b	m	Diversion channel, riprap lined	20	$290.00	$5,800.00	$50.00	$1,000.00	$90.00	$1,800.00
15801	m^3	watering for dust control	7,000	$10.00	$70,000.00	$5.00	$35,000.00	$7.00	$49,000.00
25119	m	Riprap lined ditch	260	$23.00	$5,980.00	$30.00	$7,800.00	$22.00	$5,720.00
Subtotal erosion control					$179,860.00		$131,150.00		$213,420.00
Total const. bid (excluding mobilization & eros. cont.)					$8,485,250		$6,778,090		$8,838,855
Erosion control ratio based on bid prices					2.1%		1.9%		2.4%
Total length			(km)		4.8		4.8		4.8
			(mile)		3.0		3.0		3.0
Erosion control costs based on km			(per km)		$37,471		$27,323		$44,463
Erosion control costs based on mile			(per mile)		$60,313		$43,979		$71,567

Average Percentage **2.2% of Construction costs**

Total Average Percentage **1.9% of Construction costs**

Use **3.0% of Construction costs** *Same rates as 2-lane road*

Typical Section Calculations	**Page 1 of 1**

Segment	Begin Station	End Station	Paved Length		Superpave	Agg. Base
			feet	miles	yd3	yd3
A-2	1005+00	1280+00	26,000	4.92	8,060	11,444
Total Aaron Cr.			**26,000**	**4.92**	**8,060**	**11,444**
Increased by 10% and rounded, Aaron Cr.					**9,000**	**12,500**
A-1a	1280+00	1718+00	43,200	8.18	13,392	19,008
A-1a	1718+00	2145+00	37,700	7.14	11,627	16,500
A-1a	2145+00	2608+00	39,800	7.54	12,403	17,600
A-1a	2608+00	2883+63	26,063	4.94	8,062	11,440
Total Aaron Cr. Pass (AK)			**146,763**	**27.8**	**45,484**	**64,548**
Increased by 10% and rounded, Aaron Cr. Pass (AK)					**50,000**	**71,000**
A-1a	2883+63	3087+36	17,973	3.4	5,560	7,892
Total Aaron Cr. Pass (BC)			**17,973**	**3.4**	**5,560**	**7,892**
Increased by 10% and rounded, Aaron Cr. Pass (BC)					**6,000**	**8,500**
A-1b	1280+00	1718+00	43,200	8.18	13,392	19,008
A-1b	1718+00	2145+00	38,700	7.33	11,971	16,985
A-1b	2145+00	2615+00	42,000	7.95	10,726	15,226
A-1b	2615+00	2851+97	22,197	4.2	6,822	9,680
(Tunnel)	2225+00	2295+00				
Total Aaron Cr. Tunnel (AK)			**146,097**	**27.67**	**42,911**	**60,899**
Increased by 10% and rounded, Aaron Cr. Tunnel (AK)					**47,000**	**67,000**
A-1b	2851+97	3055+71	17,974	3.4	5,573	7,907
Total Aaron Cr. Tunnel (BC)			**17,974**	**3.4**	**5,573**	**7,907**
Increased by 10% and rounded, Aaron Cr. Tunnel (BC)					**6,000**	**8,500**
W-3	160+00	745+00	58,500	11.08	18,135	25,740
Total Wrangell Island			**58,500**	**11.08**	**18,135**	**25,740**
Increased by 10% and rounded, Wrangell Island					**20,000**	**28,500**
W-2	745+00	914+00	16,900	3.20	5,239	7,436
Total Wrangell Island			**16,900**	**3.20**	**5,239**	**7,436**
Increased by 10% and rounded, Wrangell Island					**6,000**	**8,000**
W-1	914+00	1005+00	9,100	1.72	2,821	4,004
Total Wrangell Island			**9,100**	**1.72**	**2,821**	**4,004**
Increased by 10% and rounded, Wrangell Island					**3,000**	**4,500**
F-1	723+00	1062+00	33,900	6.42	10,509	14,916
Total Fool's Inlet			**33,900**	**6.42**	**10,509**	**14,916**
Increased by 10% and rounded, Wrangell Island					**11,500**	**16,500**
F-2	1062+00	1276+37	21,437	4.06	6,634	9,416
Total Fool's Inlet			**21,437**	**4.06**	**6,634**	**9,416**
Increased by 10% and rounded, Wrangell Island					**7,500**	**10,500**
S-3	1005+00	1265+00	24,475	4.64	7,660	10,868
S-3	1265+00	1614+00	34,300	6.50	10,542	14,960
Total South Stikine River			**58,775**	**11.13**	**18,202**	**25,828**
Increased by 10% and rounded, Eastern Passage					**20,000**	**28,500**
S-2	1614+00	1950+00	33,000	6.25	10,201	14,481
S-2	1950+00	2235+00	28,500	5.40	8,809	12,497
S-2	2235+00	2454+94	21,594	4.09	9,475	13,445
Total South Stikine River			**83,094**	**15.74**	**28,485**	**40,423**
Increased by 10% and rounded, South Stikine River					**31,500**	**44,500**
S-1	2545+94	3673+29	109,035	20.65	33,790	47,960
Total South Stikine River (AK)			**109,035**	**20.65**	**33,821**	**48,004**
Increased by 10% and rounded, South Stikine River (AK)					**37,000**	**53,000**
S-1	3673+29	3891+26	20,097	3.81	6,239	8,855
Total South Stikine River (BC)			**20,097**	**3.81**	**6,239**	**8,855**
Increased by 10% and rounded, South Stikine River (BC)					**7,000**	**9,500**
L-1	100+00	859+77	65,477	12.40	20,299	28,810
Total Limb Island			**65,477**	**12.40**	**20,299**	**28,810**
Increased by 10% and rounded, Limb Island					**22,500**	**31,500**

Note: All surfacing quantities are from Geopak earthwork log files and have been increased 8% for curve widening and 2% for guardrail widening

100% 2-lane quantities for all alignments

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II	51,360.000	$34.15	$1,753,944.00
401(2)	Ton	Asphalt Concrete, grade 58-28	5,232.000	$691.56	$3,618,241.92
			$34.15	$691.56	
				$104.60	

Ave.	Quantity	Unit	Total	Cost per Unit
$104.60	51,360	t	$5,372,186	
	22,043	m3		
	26,474	yd3		**$202.92 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II	51,360.000	$50.00	$2,568,000.00
401(2)	Ton	Asphalt Concrete, grade 58-28	5,232.000	$700.00	$3,662,400.00
			$50.00	$700.00	
				$121.31	

Ave.	Quantity	Unit	Total	Cost per Unit
$121.31	51,360	t	$6,230,400	
	22,043	m3		
	26,474	yd3		**$235.34 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II	58,380.000	$50.00	$2,919,000.00
401(2)	Ton	Asphalt Concrete, grade 58-28	6,026.000	$700.00	$4,218,200.00
			$50.00	$700.00	
				$122.25	

Ave.	Quantity	Unit	Total	Cost per Unit
$122.25	58,380	t	$7,137,200	
	25,056	m3		
	30,093	yd3		**$237.17 per yd3**

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, SP, type B	8,180.000	$56.50	$462,170.00
401(2)	Ton	Asphalt Cement	1,120.000	$615.00	$688,800.00
			$56.50	$615.00	
				$140.71	

Ave.	Quantity	Unit	Total	Cost per Unit
$140.71	8,180	t	$1,150,970	
	3,511	m3		
	4,216	yd3		**$272.97 per yd3**

Average Unit Cost with 3%/year Inflation $298.28 per yd3

Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II, Class B	16,900.000	$35.13	$593,728.36
Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1999	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II, Class B	17,500.000	$31.35	$548,687.46
Juneau Access, Final EIS, 2006, UPA				Parks Highway, 2001	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(1)	Ton	Asphalt Concrete, type II, Class A	66,256.000	$24.51	$1,624,067.14
			Average	$27.48	

Juneau Access, Final EIS, 2006, UPA				Kenai Peninsula, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(2)	Ton	Asphalt Concrete, grade 58-28	1,300.000	$246.35	$320,249.46
Juneau Access, Final EIS, 2006, UPA				North Kenai Spur, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(2)	Ton	Asphalt Concrete, grade 58-28	1,400.000	$289.82	$405,745.93
Juneau Access, Final EIS, 2006, UPA				Hope Road, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
401(2)	Ton	Asphalt Concrete, grade 58-28	1,750.000	$256.20	$448,349.25
			Average	$263.90	

6% cement	$43.32
10% cement	$53.87

Ave.	Quantity	Unit	Total	Cost per Unit
$43.32	100	t	$4,332	
	43	m3		
	52	yd3		**$84.04 per yd3**

Ave.	Quantity	Unit	Total	Cost per Unit
$53.87	100	t	$5,387	
	43	m3		
	52	yd3		**$104.52 per yd3**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
401(1)	Ton	Asphalt pavement, class B	45,800.000	$50.00	$2,290,000.00	$35.00	$1,603,000.00	$42.00	$1,923,600.00	$40.00	$1,832,000.00
306(2)	Ton	Asphalt cement grade SHRP PG 52-40	2,520.000	$550.00	$1,386,000.00	$1,285.00	$3,238,200.00	$1,000.00	$2,520,000.00	$1,000.00	$2,520,000.00
			$41.75	$958.75							
				$94.50							

Ave.	Quantity	Unit	Total	Cost per Unit
$95	45,800	t	$4,328,200	
	19,657	m3		
	23,608	yd3		**$183.33 per yd3**

Coffman Cove Paving, 2007				Engineer's Estimate		Bucknell, Inc.		SE Road Builders, Inc.		Wilder	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
40101	t	Hot asphalt concrete pavement superpave, type III pavement smoothness	52,500	$110.00	$5,775,000.00	$94.00	$4,935,000.00	$108.00	$5,670,000.00	$100.00	$5,250,000.00
40105	t	Antistrip additive, type 3	525.0	$315.00	$165,375.00	$350.00	$183,750.00	$424.20	$222,705.00	$300.00	$157,500.00
41201	t	tack coat grade CSS-1	105.0	$575.00	$60,375.00	$940.00	$98,700.00	$800.00	$84,000.00	$1,250.00	$131,250.00

Coffman Cove (A)

Quantity	Unit	Total Surfacing Cost	Cost per Unit
52,500	t	$5,683,414	$108.26 t
57,871	t		$98.21 t
27,062	yd3		**$210.01 per yd3**

Average Unit Cost with 3%/year Inflation **$222.80 per yd3**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders.		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
40101	t	Asphalt pavement, class B	22,300.000	$38.00	$847,400.00	$45.00	$1,003,500.00	$34.00	$758,200.00	$40.00	$892,000.00
40103	t	Asphalt cement grade SHRP PG 58-28	1,200.000	$350.00	$420,000.00	$475.00	$570,000.00	$400.00	$480,000.00	$400.00	$480,000.00
			$39.25	$406.25							
				$61.11							

Ave.	Quantity	Unit	Total	Cost per Unit
$61	22,300	t	$1,362,775	
	9,571	m3		
	11,495	yd3		**$118.56 per yd3**

Average Unit Cost with 3%/year Inflation **$141.56 per yd3**

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
40101	t	Asphalt pavement, class B	82,000.000	$30.00	$2,460,000.00	$27.73	$2,273,860.00	$28.00	$2,296,000.00
40103	t	Asphalt cement grade SHRP PG 58-28	4,900.000	$350.00	$1,715,000.00	$313.30	$1,535,170.00	$280.00	$1,372,000.00
			$28.58	$314.43					
				$47.37					

Ave.	Quantity	Unit	Total	Cost per Unit
$47	82,000	t	$3,884,010	
	35,193	m3		
	42,268	yd3		**$91.89 per yd3**

Average Unit Cost with 3%/year Inflation **$113.01 per yd3**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
40101	t	Asphalt pavement, class B	21,500.000	$40.00	$860,000.00	$27.00	$580,500.00	$30.00	$645,000.00
40103	t	Asphalt cement grade SHRP PG 58-28	1,290.000	$300.00	$387,000.00	$300.00	$387,000.00	$300.00	$387,000.00
			$32.33	$300.00					
				$50.33					

Ave.	Quantity	Unit	Total	Cost per Unit
$50	21,500	t	$1,082,167	
	9,227	m3		
	11,082	yd3		**$97.65 per yd3**

Average Unit Cost with 3%/year Inflation **$131.23 per yd3**

Total Average Unit Cost **$177.66 per yd3**

Use **$220.00 per yd3**

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	3,000	Cu. Yd.	Typical section, surfacing.xls
W - 2	3.20	745+00	914+00	6,000	Cu. Yd.	Typical section, surfacing.xls
W - 3	11.08	160+00	745+00	20,000	Cu. Yd.	Typical section, surfacing.xls
F - 1	6.42	723+00	1062+00	11,500	Cu. Yd.	Typical section, surfacing.xls
F - 2	4.06	1062+00	1276+37	7,500	Cu. Yd.	Typical section, surfacing.xls
A - 1a	30.37	1280+00	2883+63	50,000	Cu. Yd.	Typical section, surfacing.xls
A-1a (BC)	3.86	2883+63	3087+36	6,000	Cu. Yd.	Typical section, surfacing.xls
A - 1b	29.77	1280+00	2851+97	47,000	Cu. Yd.	Typical section, surfacing.xls
A - 1b (BC)	3.86	2851+97	3055+71	6,000	Cu. Yd.	Typical section, surfacing.xls
A - 2	5.21	1005+00	1280+00	9,000	Cu. Yd.	Typical section, surfacing.xls
S -1	21.35	2545+94	3673+29	37,000	Cu. Yd.	Typical section, surfacing.xls
S -1 (BC)	4.13	3673+29	3891+26	7,000	Cu. Yd.	Typical section, surfacing.xls
S - 2	17.65	1614+00	2545+94	31,500	Cu. Yd.	Typical section, surfacing.xls
S - 3	11.53	1005+00	1614+00	20,000	Cu. Yd.	Typical section, surfacing.xls
L - 1	14.39	100+00	859+77	22,500	Cu. Yd.	Typical section, surfacing.xls

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	97,120.000	$15.65	$1,519,928.00

Ave.	Quantity	Unit	Total	Cost per Unit
$15.65	97,120	t	$1,519,928	
	41,682	m3		
	49,299	yd3		**$30.83 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	97,120.000	$25.00	$2,428,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$25.00	97,120	t	$2,428,000	
	41,682	m3		
	49,299	yd3		**$49.25 per yd3**

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
301(1)	Ton	Agg. Base Course	124,675.000	$25.00	$3,116,875.00

Ave.	Quantity	Unit	Total	Cost per Unit
$25.00	124,675	t	$3,116,875	
	53,509	m3		
	63,287	yd3		**$49.25 per yd3**

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
306(1)	Ton	Asphalt Treated Base	13,900.000	$42.50	$590,750.00

Ave.	Quantity	Unit	Total	Cost per Unit
$42.50	13,900	t	$590,750	
	5,966	m3		
	7,056	yd3		**$83.73 per yd3**

Average Unit Cost with 3%/year Inflation **$91.49 per yd3**

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
306(1)	Ton	ATB	91,550.000	$35.00	$3,204,250.00	$30.00	$2,746,500.00	$34.00	$3,112,700.00	$35.00	$3,204,250.00

Ave.	Quantity	Unit	Total	Cost per Unit
$33.50	91,550	t	$3,066,925	
	39,292	m3		
	46,472	yd3		**$66.00 per yd3**

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Aggregate Base	136,500	$20.50	$2,798,250.00	$15.20	$2,074,800.00	$12.00	$1,638,000.00	$27.00	$3,685,500.00

Coffman Cove (A)

Ave.	Quantity	Unit	Total	Cost per Unit
$18.68	136,500	t	$2,549,138	
	58,584	m3		
	69,289	yd3		**$36.79 per yd3**

Average Unit Cost with 3%/year Inflation **$39.03 per yd3**

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Aggregate Base Grading D	84,000.0	$11.00	$924,000.00	$11.29	$948,360.00	$12.00	$1,008,000.00	$12.00	$1,008,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$11.57	84,000	t	$971,880.00	
	36,052	m3		
	42,640	yd3		**$22.79 per yd3**

Average Unit Cost with 3%/year Inflation **$27.22 per yd3**

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Agg. Base grading D	119,000.000	$12.00	$1,428,000.00	$9.79	$1,165,010.00	$12.00	$1,428,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$11.26	119,000	t	$1,340,337	
	51,073	m3		
	60,406	yd3		**$22.19 per yd3**

Average Unit Cost with 3%/year Inflation **$27.29 per yd3**

Big Salt Lake, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30101	t	Agg. Base grading D	29,400.000	$12.00	$352,800.00	$13.00	$382,200.00	$15.00	$441,000.00

Ave.	Quantity	Unit	Total	Cost per Unit
$13.33	29,400	t	$392,000.00	
	12,618	m3		
	14,924	yd3		**$26.27 per yd3**

Average Unit Cost with 3%/year Inflation **$35.30 per yd3**

Total Average Unit Cost **$46.18 per yd3**

Use **$40.00 per yd3**

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	4,500	Cu. Yd.	Typical section, surfacing.xls
W - 2	3.20	745+00	914+00	8,000	Cu. Yd.	Typical section, surfacing.xls
W - 3	11.08	160+00	745+00	28,500	Cu. Yd.	Typical section, surfacing.xls
F - 1	6.42	723+00	1062+00	16,500	Cu. Yd.	Typical section, surfacing.xls
F - 2	4.06	1062+00	1276+37	10,500	Cu. Yd.	Typical section, surfacing.xls
A - 1a	30.37	1280+00	2883+63	71,000	Cu. Yd.	Typical section, surfacing.xls
A-1a (BC)	3.86	2883+63	3087+36	8,500	Cu. Yd.	Typical section, surfacing.xls
A - 1b	29.77	1280+00	2851+97	67,000	Cu. Yd.	Typical section, surfacing.xls
A - 1b (BC)	3.86	2851+97	3055+71	8,500	Cu. Yd.	Typical section, surfacing.xls
A - 2	5.21	1005+00	1280+00	12,500	Cu. Yd.	Typical section, surfacing.xls
S -1	21.35	2545+94	3673+29	53,000	Cu. Yd.	Typical section, surfacing.xls
S -1 (BC)	4.13	3673+29	3891+26	9,500	Cu. Yd.	Typical section, surfacing.xls
S - 2	17.65	1614+00	2545+94	44,500	Cu. Yd.	Typical section, surfacing.xls
S - 3	11.53	1005+00	1614+00	28,500	Cu. Yd.	Typical section, surfacing.xls
L - 1	14.39	100+00	859+77	31,500	Cu. Yd.	Typical section, surfacing.xls

Wetland Mitigation **Unit: Acre**

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
21101 B	m^2	roadway obliteration, type 2	3,000	$5.00	$15,000.00	$5.34	$16,020.00	$8.00	$24,000.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$ 6.11	3,000	m2	$18,340	
	32,292	sq.ft.		$0.57 per sq ft
	0.74	acre		**$24,784 per acre**

Average Unit Cost with 3%/year Inflation $27,081.91 per acre

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
21101 B	m^2	roadway obliteration, type 2	46,000	$4.50	$207,000.00	$2.45	$112,700.00	$1.00	$46,000.00	$5.00	$230,000.00

Coffman Cove (1)

Ave.	Quantity	Unit	Total	Cost per Unit
$3.24	46,000	m2	$148,925	
	495,140	sq.ft.		$0.30 per sq ft
	11.37	acre		$13,098 per acre

Average Unit Cost with 3%/year Inflation $15,639.77 per acre

Wetland mitigation in SE Alaska for Coffman Cove was conserving the top layer of muskeg and placing it on obliterated road.
Wetland mitigation may be more difficult to create on this project. (Bradfield note)

Total Average Unit Cost $21,360.84 per acre

Use $25,000.00 per acre

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	4,400.000	$33.88	$149,072

Average Unit Cost $33.88 per ln ft

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	4,400.000	$27.50	$121,000

Average Unit Cost $27.50 per ln ft

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	97,657.000	$27.50	$2,685,568

Average Unit Cost $27.50 per ln ft

Juneau Access, Financial Plan, 2007, UPA				Sunny Point, 2006	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	12,101.000	$37.50	$453,788

Average Unit Cost with 3%/year Inflation $40.98 per ln ft

Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1998	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	20,475.000	$15.04	$307,944

Average Unit Cost with 3%/year Inflation $20.82 per ln ft

Juneau Access, Final EIS, 2006, UPA				Haines Highway, 1999	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	2,662.500	$14.50	$38,606

Average Unit Cost with 3%/year Inflation $19.49 per ln ft

Juneau Access, Final EIS, 2006, UPA				Old Glenn Highway, 2004	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	14,375.000	$17.77	$255,444

Average Unit Cost with 3%/year Inflation $20.60 per ln ft

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
606(1)	LNFT	W-beam guardrail	2,448.000	$35.00	$85,680.00	$30.00	$73,440	$34.00	$83,232	$35.00	$85,680

Average Unit Cost $33.50 per ln ft

Coffman Cove Phase 2, 2006				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701	m	guardrail system G4, type I, class A (wood posts)	190.0	$120.00	$22,800.00	$199.84	$37,969.60	$100.00	$19,000.00
61702 A	each	terminal section type G4-BAT	0		$0.00		$0.00		$0.00
61702 B	each	terminal section type tangent	12	$3,000.00	$36,000.00	$3,951.50	$47,418.00	$4,000.00	$48,000.00

Coffman Cove (2)

Ave.	Quantity	Unit	Total	Cost per Unit
$140	190.0	m	$26,591	
	623.4	ln ft		**$42.66 per ln ft**

Average Unit Cost with 3%/year Inflation $46.61 per ln ft

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt Pacific Co.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701	m	guardrail system G4, type I, class A (wood posts)	430.0	$80.00	$34,400.00	$112.00	$48,160.00	$70.00	$30,100.00	$100.00	$43,000.00
61702 A	m	terminal section type G4-BAT	6	$2,000.00	$12,000.00	$2,977.00	$17,862.00	$2,500.00	$15,000.00	$3,000.00	$18,000.00
61702 B	each	terminal section type tangent	12	$2,500.00	$30,000.00	$2,988.00	$35,856.00	$2,500.00	$30,000.00	$2,500.00	$30,000.00

(Common price in bid tabs)
Coffman Cove (1)

Ave.	Quantity	Units	Total	Cost per Unit
$91	430	m	$38,915	
	1410.7612	ln ft		**$27.58 per ln ft**

Average Unit Cost with 3%/year Inflation $32.94 per ln ft

Guard Rail	Unit: LF	

Control Lake, 2002				Engineer's Estimate		SE Road Builders.		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701A	m	Guardrail system G4, type 1	455.000	$70.00	$31,850.00	$84.40	$38,402.00	$80.00	$36,400.00

Ave.	Quantity	Unit	Total	Cost per Unit
$78	455.000	m	$35,550.67	
	1492.782152	ft		**$23.82 per ft**

Average Unit Cost with 3%/year Inflation $29.29 per ln ft

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
61701A	m	Guardrail system G4, type 1	1,715.000	$80.00	$137,200.0	$80.00	$137,200.00	$70.00	$120,050.00

Ave.	Quantity	Unit	Total	Cost per Unit
$77	1,715.000	m	$131,483.3	
	5626.64042	ft		**$23.37 per ln ft**

Average Unit Cost with 3%/year Inflation $31.40 per ln ft

Total Average Unit Cost $30.38 per ln ft

Use $30.00 per ln ft

Guardrail was estimated for areas protecting MSE walls and proposed tall slopes steeper than 1:2.
Guardrail quantities were increased by 10% to compensate for flared areas.

QUANTITIES						
Segment	Length (mi.)	Stationing		Quantity	Unit	Source
W - 1	1.72	914+00	1005+00	110	ft.	
W - 2	3.20	745+00	914+00	0	ft.	
W - 3	11.08	160+00	745+00	0	ft.	
F - 1	6.42	723+00	1062+00	0	ft.	
F - 2	4.06	1062+00	1276+37	0	ft.	
A - 1a	30.37	1280+00	2883+63	24,970	ft.	
A - 1a (BC)	3.86	2883+63	3087+36	440	ft.	
A - 1b	29.77	1280+00	2851+97	19,800	ft.	
A - 1b (BC)	3.86	2851+97	3055+71	440	ft.	
A - 2	5.21	1005+00	1280+00	2,200	ft.	
S -1	21.35	2545+94	3673+29	19,690	ft.	
S -1 (BC)	4.13	3673+29	3891+26	4,950	ft.	
S - 2	17.65	1614+00	2545+94	20,570	ft.	
S - 3	11.53	1005+00	1614+00	9,350	ft.	
L - 1	14.39	100+00	859+77	11,940	ft.	

100% 2-lane quantities for all alignments

Pavement Striping and Markings **Unit: Mile**

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
670(1)	LPSM	Painted Traffic Markings	ALL	$108,370	$108,370

$ 108,370 for 23.33 mi (total length)

Average Unit Cost $ 4,645.10 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 1-3	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
670(1)	LPSM	Painted Traffic Markings	ALL	$124,010	$124,010

$ 124,010 for 23.33 mi (total length)

Average Unit Cost $ 5,315.47 per mile

Juneau Access, DOT&PF Estimate, 2009				Zones 4-5	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
670(1)	LPSM	Painted Traffic Markings	ALL	$132,500	$132,500

$ 132,500 for 27.47 mi (total length)

Average Unit Cost $ 4,823.40 per mile

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
670(1)	LPSM	Painted Traffic Markings	ALL	$99,500.00	$99,500.00	$63,000.00	$63,000.00	$70,000	$70,000.00	$60,000.00	$60,000.00

$73,125.00

Average Unit Cost $3,323.86 per mile

Coffman Cove Paving, 2007				Engineer's Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63401A	m	Pavement markings, type B, solid white	129,000	$3.50	$451,500.00	$1.20	$154,800.00	$0.56	$72,240.00	$0.50	$64,500.00
63401 B	m	Pavement markings, type M, solid yellow	118,000	$3.50	$413,000.00	$1.20	$141,600.00	$0.56	$66,080.00	$0.50	$59,000.00
63401 C	m	Pavement markings, broken yellow	10,500	$3.50	$36,750.00	$1.10	$11,550.00	$0.58	$6,090.00	$0.50	$5,250.00
			257,500		$901,250.00		$307,950.00		$144,410.00		$128,750.00
63406	each	Pavement markings, type M, Stop line	1	$1,000.00	$1,000.00	$295.00	$295.00	$1,000.00	$1,000.00	$1,000.00	$1,000.00
63410	each	Recessed pavement markers	2,750	$35.00	$96,250.00	$30.00	$82,500.00	$30.00	$82,500.00	$20.00	$55,000.00

Pavement Markings:

Ave.	Quantity	Unit	Total	Cost per Unit
$1.43	257,500	m	$368,225	
	844,816	ln ft		$0.44 per ln ft

Increase 3% per year for inflation $0.48 per ln ft

$403,319.53

$873.92

Recessed Pavement Markers:

Ave.	Quantity	Unit	Total	Cost per Unit
$28.75	2,750	each	$79,063	$28.75 each

Increase 3% per year for inflation $30.50 each

$83,877.41

$488,070.85

Average Unit Cost $ 24,162.48 per mile

Coffman Cove Schedule B, 2003				Engineer's Estimate		SE Road Builders		Kiewitt		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63401A	m	Pavement markings, type M, solid white	29,900	$5.00	$149,500.00	$4.14	$123,786.00	$2.75	$82,225.00	$3.00	$89,700.00
63401 B	m	Pavement markings, type M, solid yellow	26,600	$5.00	$133,000.00	$4.12	$109,592.00	$2.75	$73,150.00	$3.00	$79,800.00
63401 C	m	Pavement markings, type M, broken yellow	3,900	$4.00	$15,600.00	$4.12	$16,068.00	$2.75	$10,725.00	$3.00	$11,700.00
			60,400		$298,100.00		$249,446.00		$166,100.00		$181,200.00
63406	each	Pavement markings, type M stop line	1	$1,000.00	$1,000.00	$295.00	$295.00	$1,000.00	$1,000.00	$300.00	$300.00
63410	each	Recessed pavement markers	1,300	$35.00	$45,500.00	$35.35	$45,955.00	$25.00	$32,500.00	$20.00	$26,000.00
					$343,600.00		$295,401.00		$198,600.00		$207,200.00

$261,200.25

Pavement Markings:

Ave.	Quantity	Unit	Total	Cost per Unit
$3.70	60,400	m	$223,712	
	198,163	ln ft		$1.13 per ln ft

Increase 3% per year for inflation $1.35 per ln ft

$267,376.84

$774.64

Recessed Pavement Markers:

Ave.	Quantity	Unit	Total	Cost per Unit
$28.84	1,300	each	$37,489	$28.84 each
		Increase 3% per year for inflation		$34.43 each
				$44,763.53

$312,915.01

Average Unit Cost **$31,902.94** **per mile**

Control Lake, 2002				Engineer's Estimate		SE Road Builders		SECON	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63401A	m	Pavement markings, type M, solid white	102,000	$0.50	$51,000.00	$3.20	$326,400.00	$3.00	$306,000.00
63401 B	m	Pavement markings, type M, solid yellow	91,000	$0.60	$54,600.00	$3.20	$291,200.00	$3.00	$273,000.00
63401 C	m	Pavement markings, type M, broken yellow	8,350	$0.60	$5,010.00	$3.20	$26,720.00	$3.00	$25,050.00
			201,350		$110,610.00		$644,320.00		$604,050.00
63410	each	Recessed pavement markers	4,300	$20.00	$86,000.00	$21.38	$91,934.00	$25.00	$107,500.00
					$196,610.00		$736,254.00		$711,550.00
						$548,138.00			

Pavement Markings:

Ave.	Quantity	Unit	Total	Cost per Unit
$2.25	201,350	m	$452,993	
	660,597	ln ft		$0.69 per ln ft
		Increase 3% per year for inflation		$0.85 per ln ft
				$560,591.29

Recessed Pavement Markers:

Ave.	Quantity	Unit	Total	Cost per Unit
$22.13	4,300	each	$95,145	$22.13 per mile
		Increase 3% per year for inflation		$27.21 each
				$117,015.94

$677,607.23

Average Unit Cost **$21,788.01** **per mile**

Big Salt Lake Road, 1999				Engineer's Estimate		Southcoast, Inc.		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
63401A	m	Pavement markings, type B, broken yellow	7,900	$0.80	$6,320.00	$1.00	$7,900.00	$0.30	$2,370.00
63401 B	m	Pavement markings, type M, solid yellow	29,500	$0.80	$23,600.00	$1.00	$29,500.00	$0.30	$8,850.00
63401 C	m	Pavement markings, solid white	19,100	$0.80	$15,280.00	$1.00	$19,100.00	$0.30	$5,730.00
			56,500		$45,200.00		$56,500.00		$16,950.00
63410	each	Recessed pavement markers	794	$30.00	$23,820.00	$35.00	$27,790.00	$30.00	$23,820.00
					$69,020.00		$84,290.00		$40,770.00
						$64,693.33			

Pavement Markings:

Ave.	Quantity	Unit	Total	Cost per Unit
$0.70	56,500	m	$39,550	
	185,367	ln ft		$0.21 per ln ft
		Increase 3% per year for inflation		$0.28 per ln ft
				$52,314.86

Recessed Pavement Markers:

Ave.	Quantity	Unit	Total	Cost per Unit
$31.67	794	each	$25,143	$31.67 each
		Increase 3% per year for inflation		$42.56 each
				$33,790.54

$86,105.39

Average Unit Cost **$28,701.80** **per mile**

Total Average Unit Cost **$15,582.88** **per mile**

Use **$16,000.00** **per mile**

Roadway Reconditioning **Unit: Mile**

Coffman Cove Schedule A, 2007				Engineers Estimate		Bicknell, Inc.		SE Road Builders		Wilder Construction	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
30301	km	Roadway reconditioning	32.508	$3,000.00	$97,524.00	$15,000.00	$487,620.00	$3,860.00	$125,480.88	$5,500.00	$178,794.00

Coffman Cove (A)

Ave.	Quantity	Unit	Total	Cost per Unit
$6,840.00	32.508	km	$222,355	
	20	mile		$11,007 per mile

With 3%/year inflation $11,678

Use **$11,700** **per mile**

Used only for segments utilizing existing roads

Juneau Access, ICE Estimate, 2009, Zones 1-3				ICE Estimate	
Item #	Item Unit	Description	Quantity	Unit Price	Amount
	LPSM	Construction Camp and Per Diem	LPSM	$14,427,807	$14,427,807
Total bid estimate					$146,278,307
Percentage of construction costs					10.9%

Dalton Highway, 2009				Engineer's Estimate		GNI		PRUHS		QAP	
Item #	Item Unit	Description	Quantity	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount	Unit Price	Amount
640 (2)	LPSM	Contractor Camp	LPSM	$768,750	$768,750	$1,000,000	$1,000,000	$1,300,000	$1,300,000	$1,000,000	$1,000,000
Total bid estimate					$26,822,586		$25,642,513		$25,741,128		$25,998,433
Percentage of construction costs					3.0%		4.1%		5.3%		4.0%

Average Construction Camps Percentage **7.5%**

Use **10.0%**