Knik Arm Crossing

Engineering Feasibility and Cost Estimate Update

State Project No. 56047

Volume 3
Schedule, Cost, Contracting, and Finance Report

Prepared for:
Alaska Department of Transportation and Public Facilities

Prepared by:
Parsons Brinckerhoff
HDR Alaska, Inc.

In affiliation with:
Joe Smith
PB Consult
Word Wrangling, Inc.

January 31, 2003

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1.0 SUMMARY

The Knik Arm Crossing Engineering Feasibility and Cost Estimate Update Project (Update Project) provides planning, engineering, costing findings, and conclusions in support of engineering feasibility and an updated estimate of cost. Volume 3 provides a discussion of project schedule, updated cost information for several alternatives, a discussion of contracting methods, and a discussion of finance options.

Generally, the Update Project reviews the alternatives from the Knik Arm Crossing 1984 Draft Environmental Impact Statement (DEIS) and identifies new engineering and construction technology with the purpose of establishing an up-to-date opinion of project costs. The Update Project also examines changes, from 1984 to 2002, in land use and transportation planning, environmental regulations, and public support since the DEIS.

1.1 Schedule

The Knik Arm Crossing Hybrid Alignment was divided into four segments for the purpose of developing a logical phasing of the project. Each segment was intended to have independent utility, be constructible as a separate project, and have termini that could be easily tied into the existing transportation network. The segment representing the bridge or tunnel, which provides the physical crossing of the Knik Arm (from the Port of Anchorage [POA] to Point MacKenzie Road) is called the Crossing Project and the balance of the three road segments are referred to as “Associated Projects.”

The Crossing Project and the Associated Projects represent a major series of projects that will be constructed during a period of time in phases that need to be scheduled to maximize the utility of the project, and to provide the intended benefits as early as possible. This study considers factors such as funding, adjacent projects, contractor capacity, local market conditions, and other factors that may affect the overall schedule and attempts to lay out an optimistic view of how the projects may be constructed. Rather than arbitrarily delay projects, it was elected to show all Phase 1 work with a simultaneous completion date in late 2010, and to let future events decide the details of the schedule.

This section is not intended to lay out a detailed listing of construction activities necessary to construct the project, but instead to suggest a general order in which construction contracts could be advertised to meet the overall goals noted below:

- Phase the project to allow roadways of functional sections to be constructed
- Open constructed sections and put them in service as soon as possible
- Support the early development of the Point MacKenzie area
- Provide additional port access that bypasses the Anchorage downtown area
- Provide contract packages that are biddable by local contractors to the extent possible

The project schedule envisions two phases of construction: (1) Phase 1, which will build the Crossing Project and initial phases of Associated Projects to provide fully operating connections to the existing roadway network; and (2) the subsequent Phase 2, which will make improvements to fully build out the corridor. The schedule indicates that Phase 1 will be completed by fall 2010 and will include a fully functional route (minimum of one lane in each direction) from the Ingra-Gambell connection in Anchorage across Knik Arm to Houston. Phase 2 will include the construction of additional lanes to bring the facility to a minimum of two lanes in each direction as far north as Ayrshire Road. Although a firm schedule was not established for Phase 2, for estimating purposes, it was assumed that the mid-point of construction would be in 2015. It is suggested that all right-of-way (R/W) for Phase 2 be acquired during Phase 1.

The Environmental Impact Study (EIS) phase of the project is the most critical and time risky activity in the schedule. This activity must be completed before any other significant work begins, and careful attention to this activity will be warranted. Early delays in schedule are the hardest from which to recover, and usually result in increased costs.

1.2 Contracting Methods

The way in which an individual construction project is designed, constructed, managed, and inspected is referred to as the method of project delivery. In the 1985 “Knik Arm Crossing Implementation Options,” Volumes 1 and 2, design-build (DB) was cited as a viable option for project delivery in addition to the traditional design-bid-build (DBB). In 1985, the Federal Highway Administration (FHWA) was not an advocate of the DB method of project delivery, nor was any state department of transportation (DOT).

In the 1990s, the DB method and other alternative project delivery systems gained in popularity in very select regions of the United States. The reasons for the increase in diverse uses of project delivery may be traced to sources of funding, enabling legislation, necessity for schedule compression, and experimentation. The successful completions of the DB Interstate-15 Reconstruction Project in Salt Lake City, Utah, and Orange County California Toll Roads have demonstrated that DB is gaining in popularity among a variety of states. The State of Alaska has recent experience with alternative methods of project delivery with the Whittier Tunnel Project and the Glenn-Parks Interchange Project.

DB offers a number of advantages over the traditional DBB method of project delivery. Schedule and the application of specialized designs and construction are two advantages that are much easier to quantify as an advantage than are other less objective criteria.

The Knik Arm Crossing and Associated Projects were evaluated for DB advantages over DBB for the purpose of further and more extensive evaluations once the Crossing Project advances to preconstruction. The projects listed below are the best candidates for DB of all the Crossing and Associated Projects.

- Knik Arm Crossing, Phase 1
- Ingra-Gambell to Government Hill, Phase 1
- Government Hill Tunnel
- Government Hill to POA
- POA to Crossing, Phase 1

1.3 Capital Cost Development

This section describes the process and methodology used in establishing project costs for the Knik Arm Crossing. Early in the process, a project cost methodology report was written and circulated to develop agreed-upon uniform guidelines for calculating and comparing capital costs along with the agencies' costs for the alignment alternatives. The total project cost consists of known capital costs, contingencies, R/W costs, and agency costs. This type of analysis is essential in determining the fiscal requirements for a project and provides for cost-effective analyses and project financial planning.

Before beginning work on the estimate, a full review of prior planning and technical studies was conducted to revisit and renew understanding of all the technical, political, and public issues surrounding the project. Following this review, an alignment was selected as a baseline for the estimate. It should be clearly stated, however, that the selected alignment is not a proposed alignment to take forward as a preferred alignment; it is intended to be representative of the costs regardless of the final route that is selected.

Following the review of studies mentioned above, technical memorandums were written covering subjects such as foundations, structure type, tunnels, and alignment. These documents became the engineering basis for development of the detailed estimate contained in this study. The technical memorandums were ultimately combined into two companion volumes to this study: "Volume 1, Issues and Corridor Alignment" and "Volume 2, Technology Update."

The estimate itself was developed by using unit capital costs per foot for a variety of cross sections that would represent all the different cross sections anticipated over the length of the route. All items of work that could be identified are included in the hard cost per foot for each of the cross sections. These per-foot prices were then applied over the length of roadway where the cross section applies, and a hard cost was determined for the known work.

Because of different levels of risk and the accuracy with which each section could be estimated, varied allowances were assigned to each section to represent the estimators' best judgment about the probability of undefined work not being recognized and to account for the risks associated with the construction. These contingencies, along with multipliers for items such as market conditions, preconstruction costs, mobilization, and inflation, were applied in a logical order to develop a full buildup of project cost.

In developing the estimates for the project, two meetings with the Alaska Department of Transportation and Public Facilities (ADOT&PF) personnel were held. The first meeting assisted the estimating team in assessing the level of risk associated with the project and determining how to reflect that risk in the estimate. The second meeting considered design refinements aimed at reducing the overall cost of the project. These meetings were very useful and absolutely necessary to assist the team in adjusting costs associated with baseline projects (completed projects or projects with contractor bids) reflecting the Alaska market.

As a result of these meetings and the technical reviews, the final alternatives estimated for the Crossing Project included the following:

- 13,500-foot bridge—roadway only
- 9,500-foot bridge and causeway—roadway only
- Tunnel
- 13,500-foot bridge—roadway and railroad
- 9,500-foot bridge and causeway—roadway and railroad

All alternatives are on the same horizontal alignment, but the vertical alignments vary, particularly for the tunnel alternative. The causeway alternatives substitute 3,400 feet of embankment on the south approach and 600 feet of embankment on the north approach for the structure. A summary of the total costs and a reference to the appendix containing the detailed estimate for each alternative is shown in Table 1-1 below.

Table 1-1. Knik Arm Crossing Alternatives and Costs

Alternative	Estimated Cost	Reference Appendix
13,500-ft Bridge—Roadway Only	$1,535,600,000	1-A
9,500-ft Bridge and Causeway—Roadway Only	$1,160,800,000	1-B
Tunnel	$2,459,300,000	1-C
13,500-ft Bridge—Roadway and Railroad	$1,883,800,000	1-D
9,500-ft Bridge and Causeway—Roadway and Railroad	$1,473,300,000	1-E

The Associated Projects include three sections of roadway that provide independently needed transportation connections on both sides of Knik Arm. The three sections of roadway are South Segment (Third and Ingra-Gambell to POA), Point MacKenzie to Ayrshire Road Segment, and North Segment (Ayrshire Road to Houston). A summary of the total costs and a reference to the appendix containing the detailed estimate for each segment is shown in Table 1-2 below.

Table 1-2. Knik Arm Associated Projects and Costs

Associated Project	Estimated Cost	Reference Appendix
South Segment	$263,700,000	2-A
Point MacKenzie to Ayrshire Road Segment	$21,100,000	2-B
North Segment	$98,200,000	2-C

1.4 Finance

Federal funding aid will undoubtedly play a major role in project funding. The State of Alaska should pursue, and is indeed well positioned in the U.S. Legislature to obtain, a federal earmark grant for a portion of the project. This project is one of many around the country that have high costs relative to their state's annual apportionments, however, and competition for increasingly scarce funds will be a challenge. The current political and economic climate, combined with uncertainty about the Transportation Equity Act for the 21st Century (TEA-21) funding reauthorization process and pressure to make federal gas tax returns more equitable among states, suggests that a myriad of other non-federal funding sources will also be required to make this project a reality.

In particular, state and local sources of funding are likely to play a much larger role than they have in past large-scale transportation projects in Alaska. Options may include increasing the state motor fuel tax (among the lowest nationwide), implementing a local-option motor fuel tax, or both, as well as implementing a local-option sales tax in the Municipality of Anchorage (MOA) and the Matanuska-Susitna (Mat-Su) Borough. User fees in the form of tolls should also be considered. Because tolls will not be enacted before opening and because the Knik Arm Crossing will benefit new development and many users who are not currently traveling between Anchorage and the greater Point MacKenzie area of the Mat-Su Borough, tolls are not likely to be a major source of funding early on. Nonetheless, they are likely to become a significant revenue generator through time, and their existence opens the door to federal credit assistance programs such as Transportation Infrastructure Finance and Innovation Act (TIFIA) and other tools that could be used to help mitigate risk, accelerate construction, or both. Toll revenue may even provide an opportunity for the State of Alaska to provide long-term credit assistance to the project.

2.0 INTRODUCTION

2.1 Knik Arm Crossing Engineering Feasibility and Cost Estimate Update Project

As noted in the previous chapter, Volume 3 of the Knik Arm Crossing Engineering Feasibility and Cost Estimate Update provides a current probable range of project costs for viable build alternatives based on capital costs and risk-based contingency.

2.2 Purpose

The purpose of this opinion of cost is to detail the cost associated with the Crossing Project, and also to tabulate the costs of the Associated Projects that may ultimately be built to further integrate the Crossing Project into the balance of the roadway network on both sides of Knik Arm.

2.3 Corridor Definition

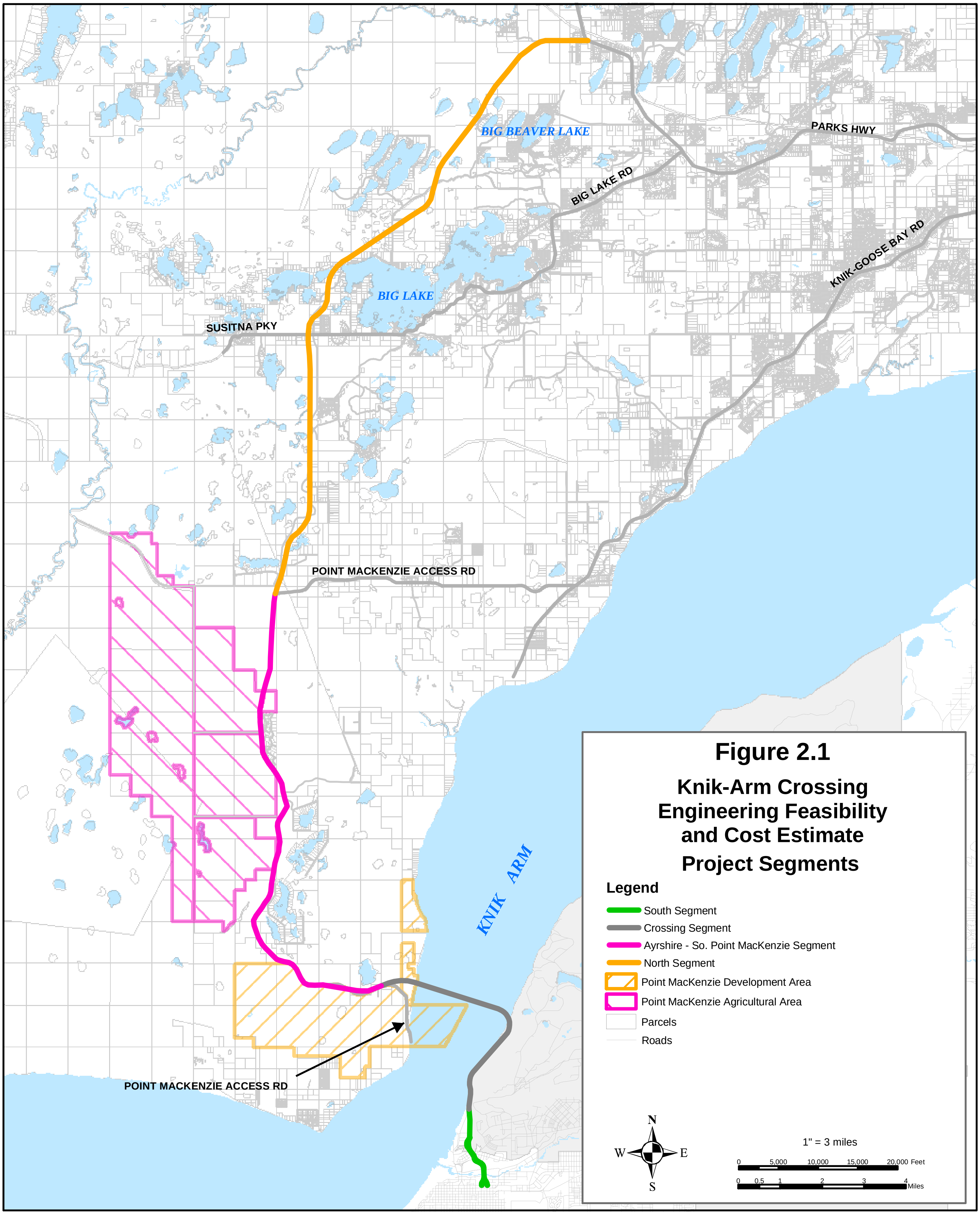
A literature search update was conducted for the Knik Arm Crossing Project to determine a Knik Arm Crossing alignment that best meets the project purpose and need objectives, and can be used as a basis for developing an opinion of cost that represents the probable range of costs for the project. This study did not attempt to identify a preferred alternative. From the review of historical Knik Arm Crossing documents, research of physical changes, land uses, new technologies, and issues and concerns, a general alignment was identified that will be used as a basis for developing planning level cost estimates to represent approximated funding needs for future project budgeting and work programming purposes. The alignment is identified as the Hybrid Alignment and is shown in **Figure 2.1**.

2.4 Roadway Cost Segments and Alignments

Estimating segments were established to provide broad boundaries from which the conceptual engineering cost estimates for the Crossing Project, the Associated Projects, and alternatives could be compared. The estimating segments were assembled in a cohesive manner, enabling establishment of a reasonable construction sequence and development of a schedule. The segments are discrete portions of the alignment that represent suitable places to break apart the alignment for use in providing elements that could be used in summarizing total cost. It is intended that these segments will be stationed so that it will be easy to substitute the various alternatives for the Knik Arm Crossing Project without adjusting costs for the adjacent Associated Projects.

2.4.1 Alignment

The alignment that was selected for estimating begins at the Ingra-Gambell couplet and Fourth Street, crosses Ship Creek near the Alaska Rail Maintenance Facility, and passes under Government Hill in a cut-and-cover tunnel. The alignment emerges at the POA and proceeds northeast along the shore of Knik Arm below the bluff. Near Cairn Point, the alignment curves to the crossing structure, crosses Knik Arm, and lands northeast of Port MacKenzie. From this



BIG BEAVER LAKE
PARKS HWY
BIG LAKE RD
KNIK-GOOSE BAY RD
BIG LAKE
SUSITNA PKY
POINT MACKENZIE ACCESS RD
KNIK ARM
POINT MACKENZIE ACCESS RD
Figure 2.1
Knik-Arm Crossing
Engineering Feasibility
and Cost Estimate
Project Segments
Legend
South Segment
Crossing Segment
Ayrshire - So. Point MacKenzie Segment
North Segment
Point MacKenzie Development Area
Point MacKenzie Agricultural Area
Parcels
Roads
N
W
E
S
1" = 3 miles
0 5,000 10,000 15,000 20,000 Feet
0 0.5 1 2 3 4 Miles

point, the alignment follows the alignment selected in the 1984 DEIS to a junction with the Glenn Highway at Houston.

2.4.2 Division of Alignment into Segments

Associated Projects South Segment

The South Segment begins at the southern terminus of the crossing (Third and Ingra-Gambell) and runs 2.05 miles to the northern limits of the POA.

Knik Arm Crossing Segment

The Crossing Segment begins at the northern limits of the POA and runs along the base of the bluff at Elmendorf Air Force Base to the beginning of the crossing structure north of Cairn Point. The structure crosses Knik Arm and lands on the north shore of Knik Arm and ends approximately 4,600 feet onshore. This segment is 5.76 miles long and will include all approach structures and approach fills or cuts necessary to connect to the existing road sections on both sides of Knik Arm.

Associated Projects, Point MacKenzie to Ayrshire Road Segment

The Point MacKenzie to Ayrshire Road Segment begins at the north end of the Crossing Segment and runs approximately 12.35 miles north to the point where the east-west segment of the Port MacKenzie Access Road intersects with the Hybrid Alignment. Costs for Lake Lorraine, Twin Island, North Lost Lake, and Holstein Heights accesses have also been included in this segment.

Associated Projects, North Segment

The North Segment begins where the east-west segment of the Port MacKenzie Access Road intersects with the Hybrid Alignment and runs approximately 16.86 miles to the northern terminus of the Crossing Project at Houston on the preferred alignment from the 1984 studies. Point MacKenzie Road, Jewell Lake, Irish Hills, South Big Lake Road, Horseshoe Lake Road, and Beaver Lake accesses have also been included in this segment. Structures were estimated for the Iditarod Trail Underpass, Access Road Overpass, Mirror Lake Bridge, and Briggs Road Underpass.

Since 1984, other studies have suggested a number of ways to connect the Point MacKenzie Road and Ayrshire Road vicinity to the Parks Highway. Most of these alignments were west of the 1984-selected alignment, and intersected the Parks Highway at various points from Houston to Willow. When these alignments were examined, it was noted some alignments would eliminate elements with high construction cost, such as the bridge over Mirror Lake, and possibly reduce impacts to wetlands. Another consideration was that all of these alternatives involve a longer route, which would tend to increase costs. Because it was not believed that selecting one of these alternatives would significantly change the overall costs, the 1984 route was selected for costing under this study. It should be recognized, however, that other alternatives exist and should be studied in depth during the EIS phase of the project.

2.4.3 Alternative Crossings

The Crossing Segment was initially estimated as a bridge and as a tunnel.

The initial Crossing Segment estimate included three alternatives with the following features:

- Only a roadway
- A roadway and a railroad
- One tunnel

The design for the bridge with rail alternative must allow for a connection to existing railroad lines in the POA and allow future connections on the Point MacKenzie side of Knik Arm. These features will require two additional flyover structures for the southbound (SB) roadway, one on each side of Knik Arm.

After completion of the initial estimate, two meetings were held. During the first meeting, project risks were analyzed and the costs were normalized to the Alaska market. The second meeting focused on considering value engineering (VE) suggestions and other means to reduce the costs of the original designs. During and following the VE meeting, additional estimates were developed for alternatives with causeways bridge approaches within the intertidal mudflats on both sides of Knik Arm. This estimating process resulted in a shortening of the overall bridge length from 13,500 feet to 9,500 feet, and two new alternatives for a total of five alternatives as follows:

- 13,500-foot bridge—roadway only
- 9,500-foot bridge and causeway—roadway only
- Tunnel
- 13,500-foot bridge—roadway and railroad
- 9,500-foot bridge and causeway—roadway and railroad

The tunnel estimate is based on a bored tunnel with a 48-foot diameter. The tunnel diameter if built today would be among the largest ever constructed in the world, and it can be expected that contractors will perceive a relative high level of risk associated with the tunnel. To minimize this risk, this estimate assumes that an extensive geotechnical investigation program will precede construction.

A tunnel alternative considered, but not estimated, was a submerged tube tunnel. This type of tunnel is normally constructed in onshore dry-docks or graving yards. The completed section then is floated into place and lowered into a pre-excavated trench in the sea floor. After placement an armored covering of fill and rock is placed over the tunnel to protect it from damage. Because of the high currents and scour in the vicinity of the alignment selected for this study, constructing a submerged tube tunnel would be nearly impossible, given today's technology. Such a tunnel on a different alignment, probably well to the southwest of Cairn Point, would warrant consideration. Such an alignment would be significantly longer than the selected crossing, and would be located in much shallower water. Generally the per-foot costs for a submerged tunnel are less than a bored or mined tunnel, but these savings would be largely offset by the longer alignment.

3.0 SCHEDULE

The Knik Arm Associated Projects and the Crossing Project represent a major series of projects that will be constructed during a period of time in phases that need to be scheduled to maximize the utility of each project and provide the intended benefits as early as possible. This chapter discusses each individual project that will make up the overall project. The program schedule is contained in Appendix 7. Each project in the program schedule is briefly discussed below in geographical order, beginning in the south and proceeding north.

3.1 Corridor EIS

3.1.1 Project-Wide EIS

The corridor EIS is scheduled to start in April 2003 and is estimated to take three years to complete. The duration of this activity is subject to potential delays needed to deal with public controversy, interagency coordination, permitting issues, and negotiation of mitigation measures. The corridor EIS activity is on the critical path, and no other project construction activities can start until it is complete. It will be critical to the project that this activity be pursued aggressively, and it is suggested that a separate team be established to accomplish this work. Experience in other states indicates that taking projects out of the normal flow of work can make it possible to maintain very aggressive schedules, particularly if the team is allowed to challenge traditional processes and pursue processes that result in abbreviated schedules.

3.2 South Approach Segment

3.2.1 Right-of-Way Acquisition

R/W acquisition is scheduled to start after the issuance of the Record of Decision (ROD) on the EIS, which is currently scheduled for July 2006. The R/W for this segment should be acquired within 14 months. The acquisition will involve industrial parcels and railroads and is likely to involve assessments of hazardous materials. Relocation and demolition will be required.

3.2.2 Ingra-Gambell Viaduct to Government Hill, Phase 1

For this four-lane elevated roadway in the Ingra-Gambell to Government Hill Tunnel portion of the South Segment, preconstruction activities are shown as starting in October 2007 and lasting 16 months for design, bid, and award. The construction of this 4,400-linear-foot (LF) bridge should be completed within three construction seasons. It is shown as starting in October 2007 and being completed at the same time as other major Phase 1 projects in September 2010. The bulk of the construction would probably take place during the 2008 through 2010 seasons. Full build-out of the four-lane viaduct would be accomplished as part of Phase 1.

3.2.3 Government Hill Tunnel, Phase 1

The Government Hill Tunnel is a 700-LF, four-lane, cut-and-cover tunnel. Construction of this type of structure typically takes about 18 months to complete, or three construction seasons. The preconstruction is shown as starting in July 2006, following the EIS phase and finishing in

October 2007 for a typical design, bid, and award scenario. The construction would take place during the construction seasons of 2008 through 2010.

3.2.4 Government Hill to Port of Anchorage, Phase 1

Phase 1 of the Government Hill to POA project builds approximately 4,000 LF of a two-lane, at-grade roadway from the tunnel to the POA. The schedule for this project shows preconstruction activities starting in May 2007 and taking 12 months to complete. Construction would then take place during the next three construction seasons, completing in October 2010.

3.2.5 Government Hill to Port of Anchorage, Phase 2

Phase 2 of the Government Hill to POA project expands the two-lane roadway to four lanes. This work should be tied to the availability of funds for the expansion of the section of roadway extending from the POA to the crossing structure.

3.3 Crossing Segment

3.3.1 Port of Anchorage to Crossing, Phases 1 and 2

The POA to Crossing Segment is an at-grade roadway of four lanes in the final configuration approximately 13,000 LF in length. Phase 1 will build the base embankment and riprap along the bluff for a four-lane roadway, but only pave two lanes. Phase 2 will complete the remaining two lanes. The schedule shows a 12-month preconstruction duration starting in May 2007. The construction would take place during the three construction seasons of 2008 through 2010. Phase 2 would take one construction season to complete.

3.3.2 Crossing, Phase 1

The Crossing is the largest and most difficult portion of this program to construct. It is a four-lane bridge, approximately 13,000 LF long, requiring substantial foundations and substructure. Because the construction duration is the longest of all the projects, and because this project is anticipated to have few design issues that are not resolved during the environmental and preliminary design phase, it is believed that this project would most likely be DB. A DB approach would allow the project construction to start soon after a ROD is issued, resulting in a shortening of the critical path.

DB procurement would be completed in July 2006, and the balance of the 2006 construction season would be used for on-site preparations. During winter 2007, off-site mobilization would occur and the heavy offshore equipment would be mobilized and arrive in the spring. The foundations would be constructed in the 2008 and 2009 construction seasons, and the superstructure construction would occur during the 2009 and 2010 seasons, overlapping the foundation work. This timeframe provides an aggressive schedule for this segment. Full build-out of the Crossing would be accomplished as part of Phase 1.

3.4 Point MacKenzie to Ayrshire Road Segment

3.4.1 Right-of-Way Acquisition

It is expected that the existing roadway from Point MacKenzie to Ayrshire Road will be paved in the next few years, before the EIS is completed. This road currently has a 150-foot R/W, and the alignment is generally suitable for a first-phase roadway. It is recommended that the full R/W for a four-lane, divided highway be acquired immediately and that limited access rights also be acquired. Use of this roadway may require the construction of some minor frontage roads for maintenance of access, but it may be advantageous for ADOT&PF to defer the construction of this segment until Phase 2.

3.4.2 Road Construction, Phases 1 and 2

As noted above, the first two lanes are expected to be paved between 2003 and 2005. Phase 1 construction will be limited to that work necessary to redirect property access to the roadway once access control is established. Phase 2 construction is planned to include completion of the four-lane divided highway and associated frontage roadways. The preconstruction activities should take 12 months to complete, and the construction should take two seasons to complete. The timeframe for these activities depends on need and funding.

3.5 North Segment

3.5.1 Right-of-Way Acquisition

R/W for this segment may be acquired immediately following approval of the EIS, but is shown starting in 2007 to ease cash requirements early in the project. Fourteen months are scheduled for acquisition.

3.5.2 Two Lanes, Phase 1

It is expected that this segment would be a candidate for a second DB contract. There is time to clear the R/W and clearly establish the project alignment, leaving a fairly straightforward final design and construction package. Two years are scheduled to procure the DB contractor, and complete this segment. DB activities for the two lanes are currently shown starting in August 2008 and finishing in October 2010, simultaneously with other projects in Phase 1. No Phase 2 is anticipated for this segment.

3.6 Schedule Delays

Any project delay will not only cause a slide in the opening dates of the various segments, but will also cause dramatic increases in costs. Costs have been escalated to the anticipated mid-point of construction for each segment and are time sensitive. It should also be noted that delay in early critical path items such as the EIS, will have a pronounced effect on costs. As an example, a few months delay in the EIS will cause the start of the construction schedule for the Crossing section to slide an equal amount. Because the overall schedule is reliant on having the first partial construction season available for on-site mobilization, however, this small slide would likely result in a delay of more than a year to completion of the project.

As ADOT&PF prepares requests for funding the project (Crossing and Associated Projects), all involved should be aware that costs are based on a presumed schedule and that delays, regardless of the cause, will result in increases to the costs. Because of the size of the project, even small percentage increases will result in dramatic dollar increases. It is advised that all involved in the funding process be made aware of the effects of delays and that adequate reserves be established. Also, to the extent possible, any project schedule risk that can be eliminated in the authorization bill, would greatly increase the chances of completing the project on time and on budget.

4.0 CONTRACTING METHODS

The way in which an individual construction project is designed, constructed, managed, and inspected is referred to as the method of project delivery. In the 1985 “Knik Arm Crossing Implementation Options,” Volumes 1 and 2, DB was cited as a viable option for project delivery in addition to the traditional DBB. In 1985, the FHWA was not an advocate of the DB project delivery method nor was any state DOT.

In the 1990s, the DB method and other alternative project delivery systems gained in popularity in very select regions of the United States. The reasons for the increase in diversity of project delivery may be traced to sources of funding, enabling legislation, necessity for schedule compression, and experimentation. The successful completion of the DB Interstate-15 Reconstruction Project in Salt Lake City, Utah, and Orange County California Toll Roads has demonstrated that DB is gaining in popularity among a variety of states. The State of Alaska has recent experience with alternative methods of project delivery with the Whittier Tunnel Project and the Glenn-Parks Interchange Project.

This section presents brief descriptions of DBB and DB project delivery methods that are widely used in the construction industry. In addition, a list of candidate projects for DB contracting considerations is presented.

4.1 Design-Bid-Build

Conventional DBB is typically employed for most public works projects and for many private work projects. It is effective for repetitive or recurrent typical construction such as for roads and earth moving and for specialized facilities for which the design, to meet the owner’s requirements, must be completed in great detail and built accordingly.

4.1.1 Conventional Design-Bid-Build

In DBB, the owner has the responsibility to define the project requirements and to provide the financing. The owner must provide whatever standards and contract terms it requires the constructor to follow. The owner may either self-perform or retain a design professional to become a part of a project team for the planning, conceptual design, and design professional services. The team seeks the required permits and has the necessary site investigations performed, possibly including investigations of geotechnical issues, utilities, hazardous materials, site surveys, drainage, wetlands, environmental clearances, and permits of all types. Bid documents are then prepared by the team as determined by the owner, or the owner may choose to add a construction management professional to the team to conduct the bidding process and oversee the construction. The construction bid documents must describe the owner’s desired facility in sufficient detail and clarity to obtain responsive and responsible bids and to ensure that the constructed result meets the owner’s expectation.

The constructor bids the job by a prescribed date, time, and place. The owner’s project team evaluates the bids and determines the responsive bidder. The bidder selection is typically based on the lowest responsive price bid but may be value based, as discussed below.

Upon award of the contract, the constructor provides its required bonds and insurance certificates to the owner, a contract is signed, and work begins. The owner, the design professional, or the construction manager may be designated to serve as the owner's representative (OR) for the contract. Such matters as contract administration, quality assurance and inspection, progress payment processing, and contract document interpretation may fall to the OR. The contractor proceeds with the work to completion. The OR inspects the finished facility and accepts it. The construction contract is adjusted for changes as may be appropriate and is closed out.

4.1.2 Fast Tracking

Within the DBB process, the time required to complete the facility can be accelerated in various ways. These methods are often characterized as fast track or fast tracking the work. In general, fast tracking involves the use of multiple procurements, construction contracts, or both that operate somewhat in parallel so that the work of the project is accomplished as much as possible concurrently rather than serially. This approach requires a careful and well-thought-out plan, a clear understanding by the owner of the risks and the rewards that are likely to be involved, and the preparation of multiple contract documents and bidding sequences for each multiple contract. The interface and intercontract coordination required must be spelled out for each concurrently working constructor. With this approach, changes in one contract can adversely affect other concurrent contracts, resulting in the owner essentially being placed in a DB situation without the associated contractual structure.

4.1.3 Incentives

A schedule result similar to fast tracking may be obtained by bidding the project as a single contract with an incentive clause that will reward the constructor if work is completed on or before a fixed completion date and penalize the constructor for finishing late. This contract then likely requires the single prime constructor to engage in a similar parallel fast-track-job planning and execution effort. That effort is transparent, for the most part, to the owner. Deliberate specifications to facilitate the desired results are required for such planning and execution. As much as practicable, particular attention should be given to defining schedule uncertainties before bidding to avoid disagreements over the resulting schedule and its associated influence on rewards and penalties.

4.2 Design-Build

The DB method differs from traditional contracting in that it combines, rather than separates, responsibility for the design and the construction phases of a transportation project. In this streamlined process, firms develop technical and cost proposals that optimize their design, construction, and managerial abilities. The contracting agency then rates the proposals, considering factors such as design quality, timeliness, capability to minimize traffic disruptions, managerial capability, and cost. The Knik Arm Crossing, with high currents and tide fluctuation, ice, and other nonstandard conditions, may benefit from innovative construction approaches developed by a contractor/designer with experience in similar conditions.

The FHWA has published a final rule in the Federal Register to allow DB contracting, an innovative technique with the potential to save time on transportation infrastructure projects, which in turn can save taxpayer dollars. The regulation allows, but does not require, the use of DB contracting procedures. When the final rule becomes effective (expected to occur on January 9, 2003), recipients in the federal-aid highway program will be able to use the DB contracting method just as they would the traditional DBB contracting method. TEA-21 required the FHWA to issue the rule.

Before TEA-21, the DB contracting method did not fully comply with existing statutes. The FHWA allowed states to evaluate the DB method on an experimental basis through Special Experimental Project Number 14 (SEP-14), Innovative Contracting. Under SEP-14, 25 states and several local public agencies have evaluated more than 230 DB projects during the last 10 years.

Congress limited the DB regulation to "qualified projects," defined as DB projects greater than $50 million or Intelligent Transportation System (ITS) DB projects greater than $5 million. The SEP-14 program will remain available for projects that do not meet this threshold. The FHWA also provided additional flexibility in the final rule by delegating the approval of these SEP-14 projects to the agency's division offices in the 50 states, the District of Columbia, and Puerto Rico.

4.2.1 Design-Build Variations

DB is a broadly defined project delivery method that has a variety of options to financing and long-term warranties of a project. Some variation to straight DB are described below.

Design/Build/Operate/Maintain (DBOM)—One contractor entity has responsibility for design, construction, operation, and maintenance of the project for a fixed period of time.

Design/Build/Finance or Finance/Design/Build (DBF or FDB)—One contractor entity has the single responsibility for design, construction, and financing of the project.

Build/Operate/Transfer (BOT)—One contractor entity has responsibility for design and construction, and will operate the project for a period of time, then transfer the facility to the client's organization. Financing is typically involved although ownership is typically held by the contractor during this period of time.

Build/Own/Operate/Transfer (BOOT) or Design/Build/Own/Operate/Maintain (DBOOM)—One contractor entity has responsibility for design, construction, ownership, and operation for a period of time, after which ownership and operation are transferred to the client's organization.

Build/Own/Operate (BOO)—This DB variation is really the privatization of a project; namely, the complete transfer of responsibility to a private firm for designing, building, owning, and operating a facility.

4.2.2 Advantages and Disadvantages

A DB process can significantly reduce project delivery time, because construction can begin before the design is complete. A low-bid DB procedure may not reduce costs, however, because the contractor may recoup with claims. Moreover, a heavily weighted, low-bid DB procedure may compromise quality. An owner may add provisions perceived to improve quality of the final product, because the contractor is responsible for operating and maintaining the project for a number of years. Therefore, incentives are provided to think in terms of life-cycle costs and to construct appropriate quality.

Compared with the DBB process, the various DB systems of project delivery have the potential to save time and to take advantage of the creativity and innovation of the designer/contractor, which in turn potentially may reduce costs and improve the project. The larger and more complicated the project, the more potential advantages of a DB process.

A second way in which a DB procedure may not reduce costs relates to risk allocation. When risk allocation drives up a DB contract price, it may be advisable for an owner or agency to selectively extract the affected components of the contract (those in which scope is ill-defined or uncertain or for which risks are high) from the lump sum price so that only what is required is paid for, and not what is speculated. Areas of potential risk for the designer/contractor include the following: environmental documentation, permits, geotechnical investigation, R/W acquisition, utility relocations, coordination with adjacent work, and scope (the description of the project, such as the number of traffic lanes required).

4.3 Project Delivery Selection Process

Common to all project delivery methods are a number of roles and expectations that are typically carried out by the owner, design professionals, and constructors. Selecting a project delivery system is among the most important owner decisions. The right method of project delivery will add measurably to the owner's chances for success.

A risk and uncertainty analysis should be performed in which those items in the job that add to the constructor's risks or to the constructor's uncertainty about the project cost or schedule will be defined and quantified. Where appropriate, a contingent sum will be added to and included in the bid price to cover these risks and uncertainties. Attention by the owner's team to reducing these risks and uncertainties in the bidding of the work is one of the best means of reducing the overall cost of the delivered project for the owner.

The final determination of project delivery methods for each project will result from a thorough evaluation of risk, schedule, and value. This study will provide a cursory evaluation based on schedule, cost, and design and construction skills requirements that identify possible candidate projects for DB. The evaluation assumes the traditional DBB method could be used in every case and that DB would be used if advantages could be recognized with the use of DB project delivery.

Table 4-1 illustrates three primary evaluation criteria and ratings of "advantage," "neutral," and "no advantage." Table 4-2 applies the ratings to the Knik Arm Crossing Project and Associated Projects.

Table 4-1. Design-Build Advantages Compared with Traditional Project Delivery

Evaluation Criteria	Rating (Score)		
	+ Advantage (+1)	**o Neutral (0)**	**-- No Advantage (-1)**
Schedule	Construction start and finish dates are significantly moved forward	Construction start or finish may be moved forward	Construction start and finish dates are substantially the same
Cost Savings	Cost reductions can be demonstrated	No cost difference can be demonstrated	Costs could be equal or higher
Design/Construction	Most design and/or construction requires specialized skill	Design and/or construction requires some specialized skills	Design and construction are routine

Table 4-2. Design-Build Advantages Evaluation

Projects	Schedule	Cost Savings	Design/ Construct	Score
ASSOCIATED PROJECTS				
South Approach Phase 1				
Ingra-Gambell – Govt. Hill Tunnel	+	o	o	+1
Government Hill Tunnel	+	o	o	+1
Government Hill Tunnel – POA	+	o	--	0
South Approach Phase 2				
Government Hill Tunnel – POA	--	--	--	-3
North Approach				
Point MacKenzie to Ayrshire Road	o	--	--	-2
Ayrshire Road to Houston	--	--	--	-3
KNIK ARM CROSSING PROJECT				
POA – Crossing Phase 1	+	o	--	0
Crossing Phase 1	+	o	+	+2
POA – Crossing Phase 2	--	--	--	-3

On the basis of the advantages evaluation in Table 4-2, the following list identifies the top candidate projects for use of the DB project delivery method in order from the most to least advantageous:

- Knik Arm Crossing, Phase 1
- Ingra-Gambell to Government Hill, Phase 1
- Government Hill Tunnel
- Government Hill to POA
- POA to Crossing, Phase 1

4.4 Design-Builder Selection

DB bidding, selection, and award can be based simply on the lowest price bid; however, employing a value-based selection process that may involve two or three steps can be beneficial. This process allows the owner to first select design-builder teams for further consideration only if the design professionals possess the experience and qualifications to successfully perform the work. In addition, the experience, reputation, and financial resources of the construction element should be considered. This evaluation process can lead to a short list of contenders who may then be invited to bid the work. Sometimes a stipend is offered as a means of partially compensating the competing DB teams for their bid preparation costs should they not be successful. This stipend is expected to improve the quality of the designs offered and bid, and reduce some of the loss for the unsuccessful DB teams.

Once offered, the bid price is evaluated together with all other evaluation points in a matrix of values with weights predetermined by the owner and a consultant. The scores for each bidder are evaluated, and the party with the best score is awarded the project. The final award can be preceded by a clarification-of-bid period in which the owner and the DB contractor can discuss the plan and adjustments. This step is usually closed out with a Best and Final Offer (BAFO). The BAFO becomes then the basis for the contract. The owner representative then assumes the role of facilitator, coordinator, and communicator on behalf of the owner's interests, and the DB contractor begins the work.

5.0 CAPITAL COST DEVELOPMENT

5.1 Methodology

The initial development of the opinion of cost for the Knik Arm Crossing Project was prepared using a logical and traditional estimating process based on the best available data from a number of sources. This process used a flexible spreadsheet and database developed specifically for the project. Following the initial development of the opinion of cost, two meetings were held with ADOT&PF personnel to fine-tune the estimate and adjust pricing, risk factors, and design elements so that ADOT&PF needs would be reflected as accurately as possible.

5.1.1 Basic Estimating Task

This section discusses the methods and processes that were used in preparing the cost estimates for the Crossing Project and Associated Projects on the north and south approaches. The intent of this methodology was to develop unit capital costs per foot for a variety of cross sections that would represent all the different cross sections anticipated over the length of the route. All items of work that could be identified are included in the hard cost per foot for each of the cross sections. These per-foot prices were then applied over the length of roadway where the cross section applies, and a hard cost for the known work was determined.

The level of risk, and the accuracy with which each section could be estimated, varied depending on available data and the estimators' ability to envision all the possible work. Accordingly, the allowances assigned to each section varied and represent the estimators' best judgment about the probability of undefined work not being recognized and about the risks associated with the construction. The contingencies were applied to each line item of the summary pricing sheets and varied with the level of detail for the design. (See detail sheets in the appendices.) These allowances are summarized and applied to the cost of the basic construction subtotals.

As an example of this methodology, consider a typical aerial roadway cross section, which would include foundation, pier, and superstructure cost elements or components. Each element (such as a foundation or pier) was grouped and costs for that element were developed separately. The costs then were aggregated to allow calculation of a per-foot price for the type of bridge. Next, an appropriate allowance was established based on the risks associated with this type of work, the level of detail in the design, and the probability of unforeseen work. Examples of possible risk factors are unsuitable foundation materials found during later design phases, unknown utility conflicts, demands for longer spans or higher clearances, and changes in geotechnical information. Examples of unforeseen work being added are wider lanes or shoulders being required, auxiliary lanes being added, or changes in standard loadings or seismic criteria.

This method will allow the summary of quantities to be tracked during follow-on design phases. As additional work is identified, that work can be added to the hard cost estimate and the allowances can be reduced accordingly. Throughout the design process and into construction, risks should be cataloged and recorded. Identifying risks at this early stage of project development will allow the cost of the risks to be included in the project cost, and will provide opportunities for the risks to be eliminated, mitigated, or dealt with in a cost-effective manner.

Costs and unit prices were developed from ADOT&PF projects, other similar comparable projects, and an application of standard estimating practices. The unit costs include contractor or supplier total costs (excluding sales tax), along with markups for the general contractor's overhead and profit. All costs were developed in 2002 dollars and escalated to the midpoint of construction. R/W costs and the associated contingency were also estimated and included in the project costs.

5.1.2 Verification of the Knik Arm Crossing Cost Estimate

A more detailed and verified cost estimate can be generated by conducting independent reviews of the cost estimate and VE studies to fine-tune the actual design. These verifications can be conducted during a period of several days, usually following a milestone for design, cost estimating, or both.

The estimate verification process begins with a review of the technical assumptions made to initiate the cost estimate. Quantity take-off figures are checked, as are basic design assumptions. For example, the unit price to deliver and place a cubic yard of concrete is verified. Following verification of the technical assumptions a risk analysis is conducted. In this process, all the contingency mark-ups are stripped out of the cost estimate, leaving the pure raw costs to perform the actual bricks and mortar construction. The next step is to replace the assigned contingencies with cost probability ranges. A low-cost probability range means there is a low probability the work can be accomplished at that price or below price. A high-cost probability range means there is a high probability the work can be accomplished at or below that higher price. A range of project estimated costs can then be determined as the sum of the individual construction items plus their associated high, medium, and low cost probability ranges. On this project following the assessment of risk, the review team revisited the assigned contingencies and multipliers and adjusted them based on the analysis, and their knowledge of the Alaskan market, political environment, and unique working conditions.

Following the assessment of risk for the Knik Arm Crossing Project, the review team revisited the assigned contingencies and multipliers and adjusted them based on the risk analysis, and knowledge of the Alaska market, political environment, and unique working conditions.

The last step in the cost estimate verification was for the design and cost team to meet with the cost review team to rectify differences. The solution can involve a reassessment of the associated project risks and contingencies, a discussion of modifying the project scope, or a combination of both.

A second meeting was held to further develop the project cost estimates through VE. During this meeting, the design of the project was reviewed against the functional needs, and where possible, changes to the design were made to reduce costs without affecting the project function.

As a result of these meetings, a total of five cost estimates were developed for the Knik Arm Crossing Project as noted earlier. Three of these estimates represent the project based on the designs contained in the original design technical memorandums before VE. Two additional estimates reflect the refinements from the VE session for the two bridge alternatives. No VE alternatives were developed for the Associated Projects.

5.2 Opinion of Cost Details

The estimate of cost is summarized in Table 1-1, and the detailed backup information is provided in Appendices 1 through 6. The general organization of the opinion of cost and a brief description of each estimate are described below:

Appendix 1 Knik Arm Crossing Opinion of Cost

- **1-A 13,500-Foot Bridge—Roadway Only—Opinion of Cost Summary** is for a roadway-only alternative and consists of an 11,433-foot, at-grade roadway from the north side of the POA to an 867-foot, retained-fill abutment on the south side of Knik Arm, to a 13,500-foot bridge over Knik Arm, to a 500-foot, retained-cut abutment on the north side of the waterway, to a 4,100-foot-long cut.
- **1-B 9,500-Foot Bridge and Causeway—Roadway Only—Opinion of Cost Summary** is also for a roadway-only alternative, but reduces the overall length of the bridge by substituting a 3,337-foot causeway on the south side and a 630-foot causeway on the north side of Knik Arm (a total of approximately 4,000 feet), and adjusts the grades of the roadway to reflect the fact that flatter grades required by rail vehicles will not be necessary.
- **1-C Tunnel Alternative Opinion of Cost Summary** is for a roadway-only alternative, consisting of an 11,300-foot, at-grade approach beginning at the north boundary of the POA to a pair of 15,500-foot bored or mined tunnels of 48 feet diameter, which lead to a 3,600-foot-long cut section on the north shore.
- **1-D 13,500-Foot Bridge—Roadway and Railroad—Opinion of Cost Summary** is for a roadway with railroad alternative and consists of 11,433-foot, at-grade roadway and rail bed from the north side of the POA to an 867-foot, retained-fill abutment on the south side of Knik Arm, to a 13,500-foot bridge over Knik Arm, to a 500-foot, retained-cut abutment on the north side of the waterway, to a 4,100-foot-long cut.
- **1-E 9,500-Foot Bridge and Causeway—Roadway and Railroad—Opinion of Cost Summary** is also for a roadway with railroad alternative, but it uses a 114-foot-wide causeway to reduce the length of the bridge, as described in Estimate 1-B. The grades for this alternative, however, reflect the fact that rail vehicles will operate on the alignment.
- **1-F Estimated Costs for Crossing Alternatives**. A summary of the construction, additive, and escalation costs for each alternative.
- **1-G Estimated Costs for Associated Projects**. A summary of the construction, additive, and escalation costs for the three Associated Projects.

Appendix 2 Associated Project Segments

- **2-A South Segment Opinion of Cost Summary** is the cost estimate for the Associated Projects beginning at 3rd at Ingra-Gambell and running 2.05 miles to the northern limits of the POA.
- **2-B Ayrshire–South Point MacKenzie Segment Opinion of Cost Summary** begins at the north end of the crossing segment and runs approximately 12.35 miles north to the point where the east-west segment of the Port MacKenzie Access Road intersects with the Hybrid Alignment and includes cost for Lake Lorraine, Twin Island, North Lost Lake, and Holstein Heights accesses (Station 616+00 to 1267+72).
- **2-C North Segment Opinion of Cost Summary** begins where the east-west segment of the Port MacKenzie Access Road intersects with the alignment and runs approximately 16.86 miles to the northern terminus of the project at Houston, including Point MacKenzie Road, Jewel Lake, Irish Hills, South Big Lake Road, Horseshoe Lake Road, and Beaver Lakes accesses and structures for Iditarod Trail Underpass, Mirror Lake Bridge, and Briggs Road Underpass (Station 1267+22 to 2157+58).

Appendix 3 Index to Composite Cost Buildup Detail Sheets
Appendix 4 Composite Cost Buildup Detail Sheets
Appendix 5 ADOT&PF Bid Tab Backup
Appendix 6 Historical Comparable Project Backup
Appendix 7 Master Project Schedule
Appendix 8 Right-of-Way Cost Update

Each appendix is discussed in more detail below.

5.3 Appendices 1 and 2—Opinion of Cost Summaries

A separate opinion of cost was developed for each of the five crossing alternatives in Appendices 1-A through 1-E and each of the segments containing the Associated Projects in Appendices 2-A through 2-C. Each appendix contains a summary sheet and all backup information for each opinion of cost. Each summary sheet includes a further breakdown into the categories of cost described in the subsections below.

5.3.1 Construction Costs

Basic Construction Item Costs

This cost category includes all hard costs associated with the construction of the roadways, bridges, and other amenities. Costs include all structures, embankments, excavations, paving, and drainage. As described above, these costs were developed by estimating per-foot costs for a variety of cross sections that represent all the different cross sections anticipated over the length of the project. The costs were then applied over the length of each section that makes up the length of each segment.

The unit prices proposed for the various components of the cost estimates were developed and compiled from a variety of sources, including recent ADOT&PF projects, other state DOT projects, and local contractors and suppliers. Standard cost-estimating buildups were used. All unit costs were referenced in 2002 dollars.

Some elements of the project such as mobilization/demobilization and special condition items (such as various water pollution control devices, scheduling tasks, and engineer's trailer) are handled as a percentage of the total estimate based on professional judgment and experience from similar projects.

Additive Construction Allowance

Allowances, sometimes called contingencies, are project allowances for items and conditions that cannot be assessed at the time of preparation of the cost estimate because of unknowns or incomplete design.

Allowances are needed for two primary reasons. First, because the work is not identified in extensive detail in the early stages of conceptual design, and project elements may get overlooked. Second, work tends to be added as the design is refined. Project scope tends to expand as more detail is developed in the design, approving jurisdictions conduct more detailed reviews, complete geotechnical data become available, or regulatory procedures become stricter. The additive construction allowance percentage has been calculated separately for each crossing alternative and Associated Project segment. This allowance is based on an assessment of the level of design development, potential for change or scope expansion, and other unknowns such as regulatory changes that affect the project.

The additive construction allowance, which declines as a project becomes better defined during design development, is intended to compensate for the ultimate project cost requirements and to allow an estimate of capital costs that reflects real budgetary needs. High allowance percentages are applied to planning-level studies, with the percentage decreasing as the project moves into conceptual engineering. The allowance percentages further decline as the project moves into preliminary engineering and final design. The contingency would approach zero at the 100 percent stage of contract documents. The additive construction allowance should reflect the degree of risk associated with the level of design detail available and the characteristics of the specific design elements. Table 5-1 indicates the allowance percentages to be typically applied during planning level and the conceptual/preliminary engineering design. Because of the amount of prior study that has been done on these projects, it was felt that the Knik Arm Crossing Project is just entering into the conceptual engineering phases. The typical percentages in Table 5-1 match closely with the percentages used for development of these opinions of cost.

Table 5-1. Additive Construction Allowance Percentages

Percentages	
Project Phase	**Additive Construction Allowance**
Planning Definition (Order of Magnitude)	50% - 60%
Conceptual Engineering	25% - 35%
Preliminary Engineering	20% - 25%
Final Engineer Estimate (100%)	0% - 5%

Nonstandard Item Conditions

Special condition costs include capital costs for unique or nontypical elements that can be identified at the conceptual design level. These items are usually civil in nature and include items that are not part of the standard alignment costs. Costs for special conditions were developed on a per-unit basis. The following items are examples of elements to be included in this capital cost category:

Line Item	Unit
Demolition	Lump Sum (LS)
Ventilation	LS
Mitigation (Environmental)	Acre
Intelligent Traffic Systems	LS
Tunnel Fire and Life Safety Systems	LS
Portal Vent Structures	LS
Roadway Lighting	LS
Utility Electrical Service	LS
Main Electrical Switch Gear	LS
Tunnel Control Software	LS

Mobilization and Demobilization

Mobilization and demobilization costs include the cost of moving on and off of the project. They included costs such as equipment mobilization, personnel relocation, shop drawing preparation, and other project startup costs for the home office.

Market Conditions

Market conditions at the time of award will affect the bids received, and the larger the project, the higher this item is likely to be. For the Knik Arm Crossing Project, local as well as national and international market conditions will affect the bids received. This price adjustment is included to account for the likelihood that past unit-bid experience will not apply to this project.

Construction Change Orders

As noted above, the design contingency percentage decreases as the project design detail increases. The capital cost estimate for a contract package can then be compared to contractors' bids. During construction, however, a construction contingency will also be needed for change orders. The change order contingency is included as part of the soft cost multiplier applied to the engineer's estimate total.

5.3.2 Agency Costs

Agency costs include the general administrative costs of the ADOT&PF that will be incurred in the administration and management of this project. These costs include the costs of project management, personnel management, and staff review on consultant and contractor submittals. Normally these costs are considerably higher, but given the scope of the project, a lower amount was decided on.

5.3.3 Preconstruction

Environmental Documentation

These costs cover development of environmental documentation (EIS) for the project, the costs of developing a preliminary design supporting the environmental document, and the costs associated with negotiating and obtaining necessary permits.

Geotechnical Exploration

The geotechnical exploration for this project is envisioned as occurring during the development of the environmental document, much earlier than the norm. As a result, these costs have been broken out of the design costs as a separate item.

Construction Plans, Specifications, and Estimate

Final design costs are carried under this item.

5.3.4 Construction Support

Design Services During Construction

During construction, the project designer is normally retained to continue services for the review of contractor-submitted materials such as shop drawings, construction schedules, and schedules of value. The designer is also called on to respond to requests for information, interpret design features, and make design changes, as may be necessary to account for changed or latent conditions.

Construction Management

During construction, the owner of the project is required to oversee the contractors' work to ensure that all aspects of the plans and specifications are met and that materials meet the standards set forth in the contract. Costs associated with this work are included in this item.

5.3.5 Right-of-Way

Land Acquisition and Administrative Way Cost

R/W costs are included in the capital costs for securing and providing all the property rights required for implementation of the project. These capital costs will include acquisition of property in fee or easement, as necessary; damages to remnant parcels; site clearing; building demolition; and relocation costs. Services to secure the R/W and contingency factors for R/W will be included as a multiplier to the R/W costs.

R/W will be measured by area based on a standard R/W width established for the project. Rates for R/W acquisition will be applied after the various parcels required are identified.

Right-of-Way Contingency

A contingency factor was applied to R/W costs so that sufficient funds are identified to secure the necessary R/W. This contingency covers items such as special damages that are not readily apparent, the inaccuracy of estimating R/W values based on per-square-foot values, and the cost of buying improvements that may be built between now and the time R/W is acquired.

Inflation

The costs associated with inflation can be very significant on large projects that have to be programmed over a number of years. Inflation was estimated to be a constant three percent per year over the duration of the project, and was based on Engineering News Record Indices, the Federal Consumer Price Index, and ADOT&PF cost data. Inflation values were used for several phases of this project and applied to the mid-year of activity for each phase. As can be seen in the appendices, the actual percentage applied is very sensitive to the mid-year of activity, which underscores the importance of keeping projects on schedule.

5.4 Appendix 3—Index to Composite Buildup Detail Sheets Appendix 3 is the index to Appendix 4.

5.5 Appendix 4—Composite Buildup Detail Sheets

As noted above, Appendix 3 is the index to Appendix 4, which provides the composite buildups for the per-foot costs associated with each typical cross section that were developed to represent the various portions of the project. As noted earlier, all items of work that could be identified are included in the hard cost per foot for each cross section. These per-foot prices were then applied over the length of roadway where the cross section applies, and a hard cost for the known work was determined.

5.6 Appendix 5—ADOT&PF Bid Tab Backup

This appendix contains backup for the unit pricing information that was extracted in 2000 dollars and escalated to 2002 dollars from ADOT&PF files for use on this project.

5.7 Appendix 6—Historical Comparable Project Backup

This appendix contains backup for the unit pricing information that was extracted from Parsons Brinckerhoff Construction Services estimating databases for use on this project.

5.8 Appendix 7—Project Schedule

The program schedule is contained in Appendix 7.

5.9 Appendix 8—Right-of-Way Cost Update

Appendix 8 updates the R/W cost estimates associated with the Hybrid Alignment.

6.0 FUNDING SOURCES

Federal and state funding sources that may be relevant for the proposed Knik Arm Crossing Project are presented first. Although discussed separately, they are closely related to each other. The vast majority of federal transportation dollars flow through the state, which either directs these funds directly to state-directed projects or provides funding to local governments through various mechanisms. The state itself plays a key role in building and maintaining not only state-owned and operated facilities, but also in serving as the interface between federal and local governments. The state and federal governments are also closely related in terms of the state's reliance on federal funding as a major source of transportation capital for state-owned and managed projects, such as the proposed Knik Arm Crossing.

Federal loan and credit assistance programs are also discussed in connection with existing Alaska participation and the proposed Knik Arm Crossing. Local (borough and municipality) funding sources, which include a series of regional tax options, also are discussed.

6.1 State Transportation Funding

Sources of revenue for transportation expenditures in Alaska are divided between federal-aid funds and state-generated motor fuel taxes. Federal grants, consisting of formula funding through the various TEA-21 programs, earmarked funds, or national discretionary (competitive) funds, provide the majority of highway funding in Alaska. State fuel tax revenues are more or less used to provide the necessary funding match to receive maximum federal dollars. Because the State of Alaska includes a substantial portion of federally owned land, Alaska is offered the opportunity for a much lower state-matching ratio than most other states. Alaska does not have a statewide property tax (except a tax on oil and gas real property), nor are there any other currently levied statewide taxes that lend themselves to transportation funding.

In addition to the federal tax, the State of Alaska levies a motor vehicle fuel tax on all motor fuel sold, transferred, or used within the state. The tax is collected primarily from wholesalers and distributors. Motor vehicle fuels (gasoline and diesel) sold for highway purposes are taxed by the State of Alaska at the rate of eight cents per gallon, and the tax proceeds are deposited into a special highway fuel tax account of the general fund. This gas tax is the second lowest nationwide. The average state gas tax is more than 20 cents per gallon. Only the State of Georgia has a lower gas tax at 7.5 cents per gallon.

The legislature may appropriate funds from the highway fuel tax account for expenditure by the ADOT&PF directly or as matched with available federal-aid highway money, as allowed for highway construction and maintenance and for ferries. **Figure 6.1** illustrates the federal and state shares of transportation funding for Fiscal Year (FY) 2002.

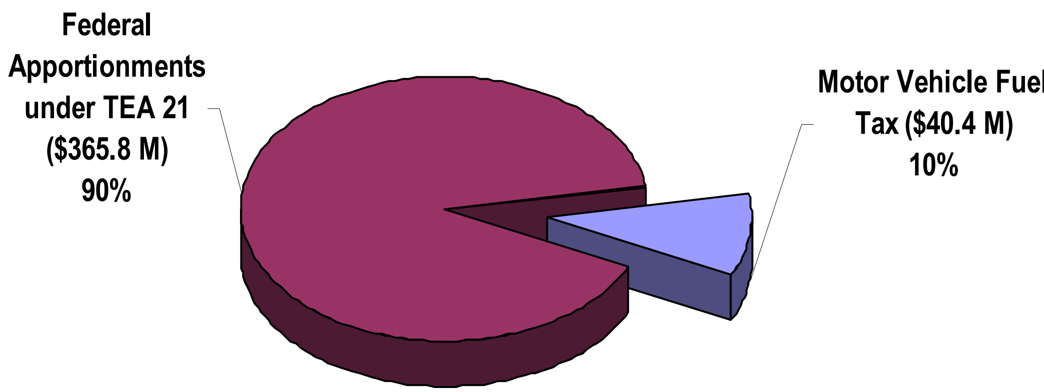


Figure 6.1. Alaska Highway Funding by Source (FY 2002)

The Statewide Transportation Improvement Program (STIP) is the state's plan for allocating available funds—whether they are state-managed federal funds or state fuel tax revenues—for surface transportation uses, including highways, transit, trails, and ferries. The plan is revised every three years, with its timing aligned to match three federal fiscal years. The 2001-2003 STIP is currently in place, and is due to expire in September 2003 at the same time as the federal TEA-21 transportation funding. The STIP covers only surface transportation projects, with highway projects divided into four major categories:

- National Highway System (NHS)—designated highways and ferry links of national or high importance (These facilities correspond to those designations made at the federal level under the NHS Act of 1994.)
- State Highway System (SHS)—major state roads and highways that are not part of the NHS but serve the economic and general welfare of the state as a whole
- Community Transportation Program (CTP)—roads and other transportation projects in partnership with local governments that serve local and regional needs
- Trails and Recreational Access for Alaska (TRAAK)—projects that improve access to recreational areas or provide trails for scenic and interpretive purposes

The ADOT&PF selects all projects for inclusion in the STIP, except Anchorage projects other than NHS and bridge projects, which are selected by the Anchorage Metropolitan Area Transportation Study (AMATS). The ADOT&PF uses a competitive process for selecting CTP and TRAAK projects. These projects are nominated by local communities and scored according to various criteria; project scores determine funding levels. Because of their statewide significance, ADOT&PF directly selects NHS and SHS projects, in part because these projects often have limited constituency. Traffic volumes, safety issues, and bridge and pavement management systems influence the selection process, although many factors other than strict rankings are considered in the final placement of projects within the STIP. There is a current goal to upgrade all NHS facilities statewide during the next dozen years.

6.2 Federal Funding Sources

6.2.1 Alaska Federal Aid Highway Funding

Federal funding, which is supported primarily by federal motor fuel taxes (currently 18.4 cents per gallon for gasoline and 24.4 cents per gallon for diesel), is an important element of transportation funding in Alaska. For every dollar that the State of Alaska contributes to the Federal Highway Trust Fund in motor fuel taxes, it receives more than five times as much back in federal aid, a higher return on taxes paid than any other state. In federal FY 2002, Alaska received a total of $365.8 million in federal apportionments, inclusive of minimum guarantees and Revenue Aligned Budget Authority (RABA) adjustments. **Figure 6.2** shows the distribution of federal aid by the core programs, other programs, and high priority projects (earmarks) after RABA adjustments.

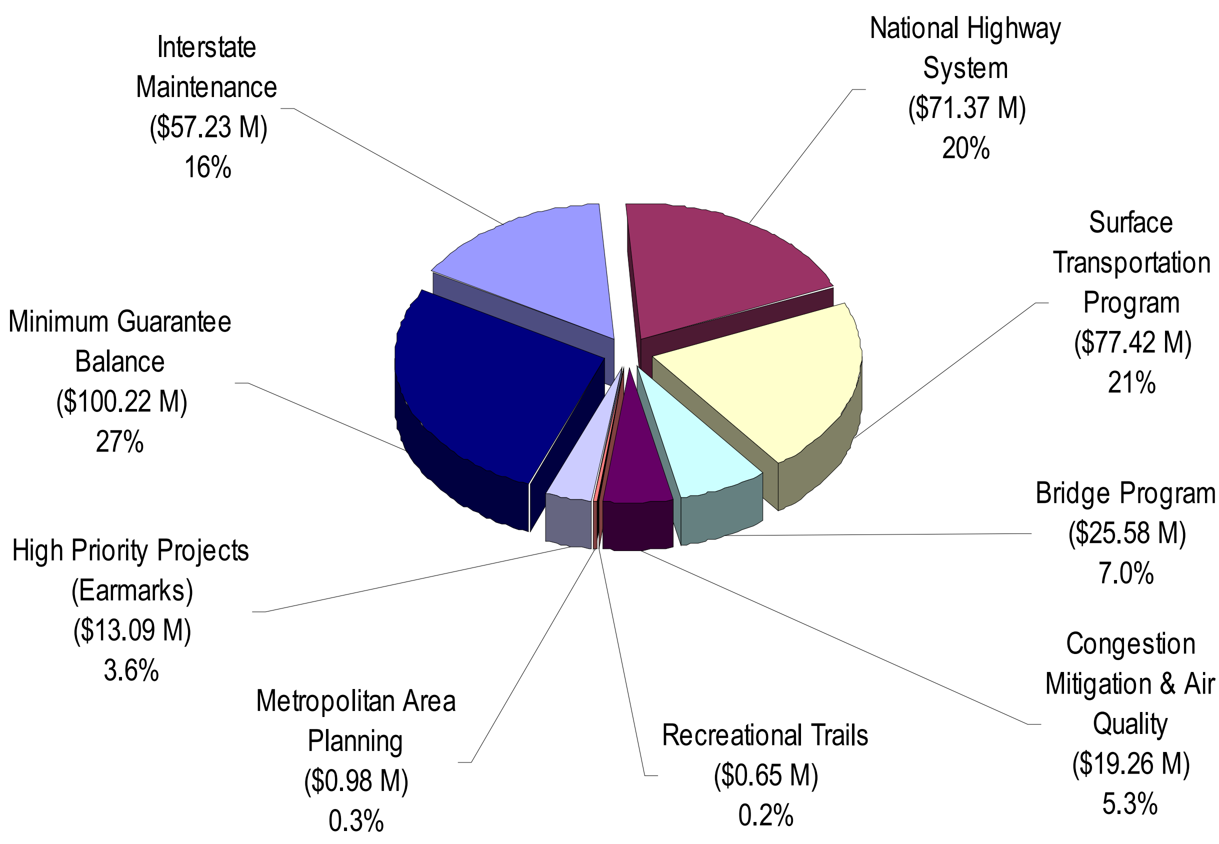


Figure 6.2. Federal Funding Apportionments by Program (FY 2002)

The federal government periodically passes a surface transportation funding act, which authorizes funding for future transportation programs. During the past couple of decades, these authorizations have covered four- to six-year periods. The current authorization, the TEA-21, expires in September 2003, and lawmakers in Congress are already preparing to work on its successor. Unlike most other federal programs, the funds generated through these surface transportation acts are in the form of "contract authority," which does not require additional appropriations actions to make funds available to the state recipients.

Federal funding to the states is disbursed through a complex set of formulas, criteria, and rules set by Congress and the U.S. Department of Transportation (USDOT). In addition to formula programs, the USDOT also administers funding through discretionary programs (although as noted below, Congress has removed virtually all discretion from the executive branch through the use of earmarks that totally consume discretionary funds in each category). A third mechanism by which states may receive federal funding is through Congressional earmarks, which are directed to specific projects and can constitute net gains in overall funding levels for a state. Certain earmarks have been carried in the authorization legislation. Additional earmarks of authorized funds, as well as occasional funds for entirely new projects, have been distributed through annual appropriations acts.

Formula apportionments by program, adjusted for the distribution of minimum guarantee and RABA funds, for federal FY 2002 for Alaska are shown in Table 6-1. The $365.8 million represents a 3.9 percent increase over the previous year. Alaska also receives modest funding for projects within publicly owned lands from the Federal Lands Highway Program.

Table 6-1. Federal Highway Funding to Alaska by Program (FY 2002)

Federal Program	*Apportionment*
Core Programs	
Interstate Maintenance	$57.23 M
National Highway System	$71.37 M
Surface Transportation Program	$77.42 M
Bridge Program	$25.58 M
Congestion Mitigation & Air Quality	$19.26 M
Other Programs	
Recreational Trails	$0.65 M
Metropolitan Area Planning	$0.98 M
High Priority Projects (Earmarks)	$13.09 M
Minimum Guarantee Balance	$100.22 M
Total Federal Aid	**$365.80 M**
Percent Increase over FY 2001	**+3.9%**
RABA Adjustment Included in Core Programs	+$41.68 M

6.2.2 Revenue Aligned Budget Authority Adjustments

Of the $250.9 million in core program funds during 2002, nearly 17 percent, or $41.7 million, resulted from a positive RABA adjustment. The RABA is an automatic adjustment provision of TEA-21 that ensures that the guaranteed level of transportation funding for the federal-aid highway program matches actual receipts from motor fuel and vehicle taxes.

RABA under TEA-21 requires that the President's budget automatically adjust the level of budgetary guaranteed funding for the highway program upward or downward to reflect new information and revised projections of receipts to the Highway Account. As part of the FY 2002 budget submission, TEA-21 required the Administration to compare actual FY 2000 Highway Account receipts with the TEA-21 FY 2000 project funding, and to compare revised Department of the Treasury projects of the FY 2002 Highway Account receipts with the TEA-21 FY 2002 projection. The sum of these differences becomes the RABA funding level for FY 2002, and so on for subsequent years.

To date, the RABA dollars provided under TEA-21 have been significantly positive—$4.5 billion nationwide in FY 2002 because tax revenues exceeded earlier expectations. This increased funding explains why Alaska's funding for core programs was 16.6 percent higher, and overall federal-aid highway funding 11.4 percent higher than otherwise expected. The basis for calculating RABA funding went from positive to negative in the FY 2003 calculation, however, based largely on lowered receipts of fuel taxes and excise taxes on truck purchases. According to the TEA-21 RABA formula, this drop in FY 2003 funding would have created a substantial reduction in program levels nationwide. Congress is still dealing with this issue in its belated appropriations bills for 2003, which will not be resolved until next year. The likely outcome is that there will be no new RABA funds provided in FY 2003 because of the lowered tax receipts. The likely range of program level permitted under the obligation ceiling will be somewhere between the amount permitted under the TEA-21 guarantees and an amount equal to that in place during FY 2002. Therefore, the effects of the tax decline will be mitigated to the extent that annual program levels will be at or close to FY 2002, rather than suffering a decline of as much as $6.5 billion. Under the unmitigated formulas, Alaska would have seen a negative RABA reduction of its funding level by as much as $40 million. Once Congress acts on the appropriations bill, the impact on Alaska will be somewhere between a zero reduction and a reduction of up to $30 million, which means that FY 2003 federal funding could be from $42 million to $72 million less than in FY 2002.

During deliberations on the FY 2002 USDOT appropriations bill, for the first time, Congress diverted more than $1 billion in RABA money that was supposed to go to state DOTs as part of the formula program; instead, the amount was used to make additional project earmarks. This move was highly controversial. Members of the TEA-21 authorizing committees were concerned by what they perceived as an overreaching of authority on the part of appropriators, and had threatened to reverse that outcome in another piece of legislation. No such legislation is pending in the remaining days of the 107th Congress, but given the negative RABA adjustments and the controversy of using RABA adjustments for project earmarks, it is unlikely that RABA funds would be made available specifically for the Knik Arm Crossing Project.

The future of RABA, as with all other factors in the federal funding equation, will be the subject of action in the 108th Congress as reauthorization action begins in 2003.

6.2.3 High Priority Projects and Earmarked Appropriations

Before passage of TEA-21, earmarked projects were generally referred to as “Demonstration Projects,” and each authorization bill (as well as many appropriations bills) carried such projects. In TEA-21, a specific category of “High Priority Projects” (HPP) was included in the program, with several billions of dollars allocated to specific projects identified by Congress (*United States Code,* Title 23, Section 117). The federal share on HPP funding is 80 percent. HPP funds do not expire and may be carried over from year to year until obligated. Conversely, funds cannot be used until the year for which they are designated, causing the need to stretch projects over the six-year life of the program or to find alternative sources of funds. The level of HPP funding has grown considerably during the past 15 years. TEA-21 contains 1,850 HPPs with a total authorized value of $9.4 billion over the 1998-2003 authorization period. The designated funding can only be used for the project as described in the law.

Projects may be earmarked as part of the multiyear authorizing legislation, or they may be added as part of the annual appropriations process. Congressional earmarking is applied to the entire discretionary public transit program, and close to 100 airport projects under the Airport Improvement Program were specifically identified. In the highway category, all the TEA-21 discretionary programs, such as the Border Crossing and Trade Corridors, Transportation and Community and System Preservation, Federal Lands, ITS, and Discretionary Bridge programs, were 100 percent earmarked. As mentioned previously, a portion of RABA funds was diverted from the TEA-21 statutory programs to fund member-requested project earmarks for the first time in FY 2002, which provided some states with a larger windfall than others, although some states also were affected by reduced discretion over their windfall funds.

In several recent years, the appropriators have also provided some new funding (typically from the General Fund, rather than the Highway Trust Fund) for certain projects in which they had interest.

Special appropriations, by their very definition, are unique in nature, and few if any rules govern how projects are selected or how much funding can be expected. A key factor in obtaining such funds is the seniority and committee assignments of the state’s Congressional delegation. Alaska is well positioned in this regard with members of the delegation holding two of the key Chairmanships in the 108th Congress—Senate Appropriations and House Transportation and Infrastructure. Even though these positions have great leverage on the process, especially as the authorizing legislation is being drawn, this power is not unlimited and the states and their delegations have to identify the priorities for which funding is to be sought.

For a very large project such as the Knik Arm Crossing, it would be beneficial to seek a multiyear earmark in the next round of TEA-21 authorization. Securing a six-year earmark would not preclude additional funding as part of yearly appropriations or the use of federal formula funds.

6.2.4 Economic Outlook and Issues in the TEA-21 Reauthorization

During the latter half of the 107th Congress, whose second session ended in 2003, Congress began preparations for surface transportation reauthorization. Each committee of jurisdiction held numerous hearings on its components of the prospective legislation, and all of the affected interest groups staked out their positions and policies.

Until the TEA-21 successor takes shape, it is difficult to know how the State of Alaska and projects such as the Knik Arm Crossing will fare. Alaska is certainly well positioned in terms of the surface transportation reauthorization process because of representation by Congressman Don Young. The following committees and members of Congress are considered likely to play roles in the process:

- House Transportation and Infrastructure Committee (Congressman Young, R-AK)
- House Ways and Means Committee (Congressman Thomas, R-CA)
- Senate Environment and Public Works Committee (Senator Inhofe, R-OK)
- Senate Banking, Housing, and Urban Affairs Committee (Senator Shelby, R-AL)
- Senate Commerce Committee (Senator McCain, R-AZ)
- Senate Finance Committee (Senator Grassley, R-IA)

It is not known with certainty; however, what issues will be paramount on the national agenda. Likely candidates include budget control, economic recovery, social security and health issues, infrastructure, national security, and war and peace.

Although current programs expire at the end of FY 2003, none of the last four reauthorization bills received timely passage. Issues such as those below could pose challenges to the reauthorization process:

- Equity and formula arguments
- Resource constraints
- Environmental streamlining
- Anti-tax sentiments
- Need for clarity on investment and performance
- Modal antagonisms (highways, transit, and Amtrak)

The issue of equity and formula distribution is of particular significance to Alaska. As the most favored “donee” state, it is the one most at risk of loss to the “donor” states, especially if the redistribution is not eased with some new resources.

The nation’s infrastructure needs remain, and while new investments are likely to show their worth just as those have in the past, there are lots of competing priorities and significant distractions to the reauthorization bill. As is often the case, a concerted action by a strong coalition will be the key to success for future transportation funding.

6.3 Federal Loans and Credit Assistance Programs

TEA-21 continued the incremental progress toward a wider array of debt-based project finance techniques for highways and transit that began with the authorization of its predecessor, the Intermodal Surface Transportation Efficiency Act of 1991. It is expected that a similar trend will be part of the upcoming reauthorization.

The federal loans and credit enhancement programs authorized under TEA-21 do not constitute new sources of funding; rather, they are money management tools that can be used to leverage existing local, state, and federal sources, whether in the form of a transportation tax, grant revenues, or project-specific sources, such as tolls, in order to build more and larger projects more quickly. In addition to their ability to accelerate investment, these programs can result in lower interest rates, debt issuance costs for state and local governments, or both. Key advantages and forms of a few of the most relevant programs that might be applicable for the Knik Arm Crossing are highlighted below.

6.3.1 Transportation Infrastructure Finance and Innovation Act

The Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA), enacted as part of TEA-21, established a new federal program under which the USDOT provides loans and credit assistance to major surface transportation projects of national or regional significance. TEA-21 has authorized up to $10.6 billion in TIFIA credit assistance over the FY 1999-2003 period, although it is uncertain whether this entire authorization will be used.

The strategic goal of the TIFIA program is to leverage limited federal resources and stimulate capital investment in transportation infrastructure by providing credit rather than outright grants to projects of critical importance to the nation’s transportation system.

The TIFIA credit program offers three distinct types of financial assistance, designed to address the varying financing requirements and constraints of projects throughout their life cycles:

- Direct loans to project sponsors that offer flexible repayment terms and provide combined construction and permanent financing of capital costs, often sooner and at a lower cost than could otherwise be obtained
- Loan guarantees that provide full faith and credit guarantees by the federal government to institutional investors, such as pension funds, which make loans for projects

- Standby lines of credit that represent secondary sources of funding in the form of contingent federal loans. These loans may be drawn upon to supplement project revenues, if needed, during the first 10 years of project operations. This latter tool is of particular importance to projects whose revenues, such as tolls, grow over the project life, but at rates that may fall unpredictably short of debt service needs.

TIFIA assistance provides a number of benefits to public and private project sponsors, including improved access to capital markets, flexible repayment terms, and potentially more favorable interest rates than can be found in the normal capital markets for similar instruments. TIFIA can help advance large capital-intensive projects that otherwise might be delayed or not built at all because of their size and complexity and the market's uncertainty about the timing of revenues.

TIFIA Requirements

Among requirements of TIFIA, the amount of federal credit assistance may not exceed 33 percent of total project costs. TIFIA project sponsors may be public or private entities, including state and local governments, special purpose authorities, transportation improvement districts, and private firms or consortia.

Any type of project that is eligible for federal assistance through existing surface transportation programs (highway projects and transit capital projects) is eligible for TIFIA credit assistance. In addition, the following types of projects are eligible: international bridges and tunnels, inter-city passenger bus and rail facilities and vehicles, and publicly owned intermodal freight transfer facilities on or adjacent to the NHS.

Unlike other innovative financing instruments, TIFIA assistance involves a competitive federal application process. Each project must meet certain objectively measurable threshold criteria to qualify. The estimated eligible costs of the project must be at least $100 million or 50 percent of the state's annual federal-aid highway apportionments, whichever is less, or at least $30 million for ITS projects.

The project must also be supported in whole or part by user charges or other nonfederal dedicated funding sources and included in the state's transportation plan. The project is subject to all federal requirements (including federal procurement rules) and, at the time of application, must have circulated a DEIS or received either a Finding of No Significant Impact (FONSI) or Categorical Exclusion. Some changes to these provisions, notably the one having to do with the size of projects, will be considered in the reauthorization cycle.

Qualified projects meeting the initial eligibility criteria are evaluated and selected based on eight statutory criteria, which include the extent to which they generate economic benefits, leverage private capital, promote innovative technologies, and meet other program objectives. Before the USDOT can commit TIFIA assistance or fund a credit instrument, the project must receive an investment grade rating on its senior debt obligations and have a ROD, FONSI, or Categorical Exclusion, as appropriate.

TIFIA assistance in some form would appear to be an attractive addition to the Knik Arm funding strategy. If nothing else, TIFIA credit assistance could broaden loan opportunities and bond market interest, which leads to lower cost debt and/or additional borrowing capacity. TIFIA assistance may also be invaluable for bridging the time period between the need for construction dollars and the availability of various potential revenue sources for debt repayment. However, it should be kept in mind that TIFIA assistance is a competitive federal process, and it requires that the project have either some user fee funding or a dedicated non-federal revenue source. The benefits of some forms of TIFIA assistance may be inversely proportional to the strength of the state's bond rating - meaning that states with great credit ratings have lesser need for credit assistance. In addition, TIFIA assistance, like other forms of federal aid, requires the project be subject to federal procurement rules. While this would not likely be an additional constraint, as the Knik Arm Crossing is expected to have some other form of federal aid, there have been state and/or user-funded bridge projects in other states that have opted not to use TIFIA because the increased project costs for U.S. procurement of items such as steel exceeded the savings in credit expenses.

6.3.2 Grant Anticipation Revenue Vehicle

A Grant Anticipation Revenue Vehicle (GARVEE) is a designation applied to a debt financing instrument that has a pledge of future federal aid for debt service and is authorized for federal reimbursement of debt service and related financing costs. This financing mechanism generates up-front capital for major highway projects that the state may be unable to construct in the near term with the use of traditional pay-as-you-go funding approaches. The 1995 NHS Act was a significant enabler for GARVEEs, expanding the eligibility of debt financing costs for federal-aid reimbursement. States can now receive federal-aid reimbursements for a wide array of debt-related costs incurred in connection with an eligible debt financing instrument, such as a bond, note, certificate, mortgage, or lease, the proceeds of which are used to fund a project eligible for assistance under Title 23. The issuer may be a state, political subdivision, or public authority. Bond-related costs now eligible for federal aid reimbursement include interest payments, retirement of principal, and any other cost incidental to the sale of an eligible bond issue.

Other legislative and administrative changes, such as the continuation of advance construction beyond the current authorization and the creation of partial conversion of advance construction, have facilitated state issuances of GARVEEs. GARVEEs are generally used in conjunction with advance construction, to enable use of federal-aid funds for future debt service payments. The GARVEE bond technique enables a state to accelerate construction timelines and spread the cost of a transportation facility over its useful life, rather than just the construction period. The use of GARVEEs serves to expand access to capital markets, as an alternative or in addition to potential general-obligation or revenue bonding capabilities.

Table 6-2 compares traditional federal aid funding with the GARVEE approach to debt financing.

Table 6-2. Standard Federal Aid versus GARVEE Debt-Financed Project

	Standard Federal Aid Project	*"Debt-Financed" GARVEE Project*
Total Project Cost Eligible for Federal Reimbursement	Federal-aid eligible construction costs	Total debt service (including principal, interest, and issuance costs) for bond issue to build eligible federal-aid project
Basis for Reimbursement	Construction expenditures	Debt service payments
Timing of Reimbursement	Construction period (typically 3-5 years)	Term of debt (5, 10, 15—even 20+ years)
Federal Requirements	All applicable	All applicable

Through the end of 2001, five states had issued nearly $1.8 billion in GARVEE bond debt over a total of 10 individual transactions. As shown in Table 6-3, four GARVEE transactions were issued in 2001. They include an $18.5 million issue for State Route 44 in New Mexico; a $506 million issue to support general highway improvements in Colorado; a $143 million issue for highway improvements in Maricopa County, Arizona; and a $185 million issue for interstate highway improvements in Arkansas. Other states have raised money for their programs through similar instruments, and GARVEE or similar financings are contemplated by other states for the future.

Table 6-3. GARVEE Transactions through 2001

State	Date of Issue	Face Amount of Issue	Rating Moody's/S&P/Fitch	Projects	Backstop Financed
New Mexico	Sep 98 Feb 01	$100.2 million $18.5 million	A3/A-/naA2/A/na	New Mexico State Route 44	No backstop; bond insurance obtained
Ohio	May 98 Aug 99	$70 million $20 million	Aa3/AA-/AA-	Spring-Sandusky Project	Moral obligation pledge to use state gas tax funds and seek general fund appropriations in the event of federal shortfall
Arkansas	Mar 00 Jul 01	$175 million $185 million	Aa2/AA/naAa2/AA/na	Interstate highways	Full faith and credit of state, plus state motor fuel taxes
Colorado	May 00 Apr 01	$537 million $506.4 million	Aa3/AA/AA	Any project financed wholly or in part by federal funds	Federal highway funds as allocated annually by CDOT; other state funds

State	Date of Issue	Face Amount of Issue	Rating Moody's/S&P/Fitch	Projects	Backstop Financed
Arizona	Jun 00 May 01	$39.4 million $142.9 million	Aa3/AA-/AA- Aa3/AA-/AA-	Maricopa freeway projects	Certain sub-account transfers
Total		**$1,794.4 million**			

GARVEEs in Alaska and Proposition B

In November 2002, voters in Alaska passed Proposition B, which authorizes the state to sell $102.8 million in GARVEE bonds[1] to accelerate state transportation projects qualifying for federal aid, combined with another $123.9 million in state general obligation bonds (backed by the full faith, credit, and resources of the state) for Alaska transportation projects. The combined bond proceeds of up to $226.7 million will be used to fund some 21 state transportation projects.

This GARVEE transaction will obligate a portion of Alaska's federal-aid dollars for the term of the debt, which will reduce funding for other potential transportation uses not included in Proposition B to the extent that Alaska's federal-aid highway program may not grow substantially in future years. Nonetheless, GARVEE bonds have potential for, and should be considered as, part of the funding package for the Knik Arm Crossing.

6.3.3 State Infrastructure Banks

Section 350 of the National Highway System Designation Act of 1995 established the State Infrastructure Bank (SIB) program. An SIB is a state (or multistate) revolving fund that, much like a commercial bank, can offer a range of loans and credit assistance enhancement products to public and private sponsors of Title 23 highway construction projects or Title 49 transit capital projects. Under the initial pilot program, ten states were authorized to use a portion of their FY 1996 and FY 1997 federal-aid funds as "seed" money, matched with nonfederal funds. The 1997 USDOT appropriations act provided $150 million in federal general revenue funds for SIB capitalization and allowed a limited time for additional qualified states to opt into the SIB pilot program.

TEA-21 extended the pilot program for the benefit of only four new states—California, Florida, Missouri, and Rhode Island—and one more was added in appropriations legislation. These five states are allowed to capitalize their banks with federal-aid funds authorized by TEA-21 through FY 2003, subject to the fact that standard federal requirements for labor, environment, and civil rights will be applicable to bank-funded projects. The various states participating in the SIB program are shown in **Figure 6.3**.

[1] Referred to as State Guaranteed Transportation Revenue Anticipation Bonds.

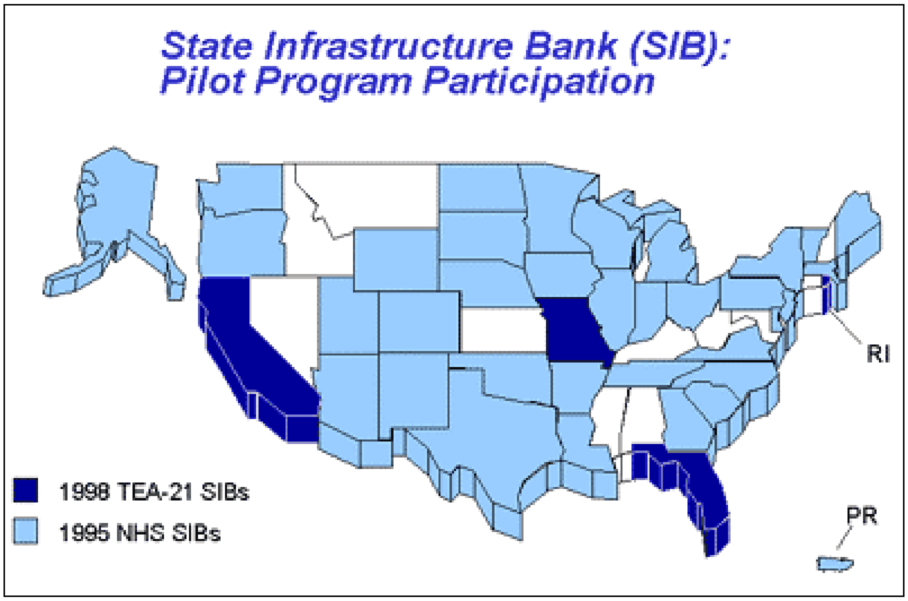


Figure 6.3. State Infrastructure Bank Pilot Program Participation

The types of assistance that may be provided by SIBs include loans (which may be at or below market rates), loan guarantees, standby lines of credit, letters of credit, certificates of participation, debt service reserve funds, bond insurance, and other forms of nongrant assistance. As loans or other credit assistance forms are repaid, the initial capital of an SIB is replenished and can be used to support a new cycle of projects.

SIB funds can be leveraged in several ways to enhance funding for transportation projects. By offering SIB support for a project, the sponsor may be able to attract private, local, and additional state financial resources, leveraging a small amount of SIB assistance into a larger dollar investment. Alternatively, SIB capital can be used as collateral to borrow in the bond market or to establish a guaranteed reserve fund. Loan demand, timing of needs, and debt financing considerations are factors to be considered by states in evaluating a leveraged SIB approach.

Although the state SIBs authorized by the USDOT under the pilot program began with an initial infusion of federal funds and nonfederal matching contributions, states have the opportunity to contribute additional state or local funds beyond the required nonfederal match.

SIBs serve as a flexible and useful tool to meet project financing demands of a state, stretching both federal and state dollars. Through the SIB financing mechanism, states can leverage additional transportation resources, accelerate construction timelines for projects with a dedicated revenue source, and recycle assistance for future transportation projects. SIBs can be used in conjunction with traditional finance approaches and other innovative tools to maximize transportation infrastructure investment. As with TIFIA, however, some source of tax or user fee receipts will be needed in the future to repay the SIB loans. SIB activity continues to grow, although six states accounted for more than 90 percent of SIB loan activity (in dollars) as of the end of FY 2001. Although some SIBs may attain a sufficient capital level to sustain and expand operations, others that fail to gain access to additional resources are likely to experience program stagnation. Those states with more successful, active SIBs have increased the capitalization of their banks by issuing bonds or committing additional state funds. The future of SIBs is another subject that will be debated as part of reauthorization.

SIB Status in Alaska

The Alaska SIB has issued just one loan for $2.7 million for the Whittier Access Project. The Alaska SIB uses an inflation adjusted below-market interest rate. Adjusting the interest rate to the rate of inflation ensures that the effective real interest rate remains constant. Alaska's loan policy precludes the use of SIB money for 100 percent of the cost of the project, implicitly requiring that a matching investment exists on all loan agreements. Alaska was not one of the subsequent five states that were allowed to capitalize their SIBs with TEA-21 authorized funds. Therefore, any funds in the Alaska SIB available for loans would have to come from pre-TEA-21 sources, unless the state chooses to further capitalize the bank with additional state funding.

Given the relatively small size of the SIB program and loans made to-date, combined with the facts that future capitalization of the Alaska SIB would likely require a new source of state funding and SIB funds would likely have competing uses, there is not likely much of a role for SIB funds in the Knik Arm Crossing. Even if the SIB program were recapitalized as part of the federal transportation funding re-authorization, it is likely that SIBs will continue to target small-to-mid-size projects. While a SIB might be able to provide credit enhancement in the form of funding debt service reserves, the reserve requirements for the debt in a billion dollar project like the Knik Arm Crossing would typically exceed the resources of a SIB as currently envisioned.

6.3.4 Project-Specific Funding Sources

Right-of-Access Sale or Lease—Telecommunications

The advent of fiber-optic and wireless communications technology coupled with continued rapid growth in demand for communications capacity have led private telecommunications firms to build new and extend existing fiber optic networks. At the same time, public transportation agencies are seeking to establish and upgrade communications networks for ITSs (including electronic tolling collection technology) and other governmental functions. Within this context, increased incentive and opportunity have resulted for sharing the public resource of highway R/W in exchange for private telecommunications expertise (in-kind bartering) or for cash compensation.

The overriding factor that determines the market value of publicly owned and controlled right of access is the cost of supplying telecommunications through that R/W, as opposed to any other alternative. The costs of the alternatives can be further broken down. The value of real estate—in terms of both area of the country and land use (urban versus suburban or rural)—affects the value of the right of access and its alternatives. The security of the R/W, in terms of its impermeability to natural or man-made intrusion, is another key factor in determining the value of the right of access, as is connectivity to viable retail distribution networks. Where few alternatives exist, except at extremely high cost—as in water crossings provided by bridges or tunnels—the value of the publicly owned right to access can be particularly high.

Although it is possible that the publicly owned R/W associated with whatever form the Knik Arm Crossing takes may well have value to a private telecommunications provider, it is extremely unlikely that this would contribute more than a very small percentage of the funding necessary for this project. Moreover, much of the value of this R/W may not be realized until some time beyond project completion when a critical mass of development has occurred in the Point MacKenzie area of the Mat-Su Borough.

Historical market ranges for right-of-access agreements between public transportation providers (including turnpike authorities, state DOTs, and transit agencies) have rarely exceeded $50,000 per year.[2] With the collapse of the telecom market and the extensive excess capacity already in place in most areas, however, only the most strategic new agreements have any chance of being realized in the coming years.

6.4 Borough and Municipality Funding Sources

The fiscal budgets of municipalities and boroughs within Alaska rely primarily on property taxes, sales taxes, and to a lesser extent, an assortment of special taxes. Special taxes include levies on beds and accommodations, liquor, raw fish production, and tobacco. The MOA depends almost solely on the property tax for its local revenues; in contrast, most other cities and boroughs have diversified their revenue streams with sales, excise, or severance taxes. Overall, Alaskans have the lowest tax burden of any state in the United States.

6.4.1 Local-Option Sales and Use Tax

Neither the MOA nor the Mat-Su Borough has a sales tax (although the cities of Wasilla and Palmer within the Mat-Su Borough have local sales taxes of 2.0 percent and 3.0 percent, respectively). As such, a locally approved sales tax could provide a stable new source of transportation funding for projects such as the Knik Arm Crossing.

There are no limits, by statute, on the rate of levy for sales or use taxes that can be levied by a municipality or borough, and such revenues may be pledged to the issuance and repayment of debt.

6.4.2 Local-Option Property Tax and Tax-Increment Financing

The MOA currently has a property tax of 1.879 percent of assessed value. The Mat-Su Borough imposes a property tax of 1.313 percent, with the cities of Wasilla and Palmer adding 0.120 percent and 0.300 percent, respectively.

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[2] Leonard Kott, Parsons Brinckerhoff Telecommunications (Atlanta, GA), personal correspondence, January 10, 2002.

The property tax ceiling for all municipalities is a combined three percent or 30 mills of assessed value applied to the municipal operating budget, with no limit on bonded indebtedness, as well as a limit of $1,500 per capita per year. The ceiling is lower for Second Class cities; the city cannot levy property taxes exceeding two percent or 20 mills of the assessed value within the municipality in any one year. Oil and gas (real) property is exempt from local municipal taxation; however, the state levies a two percent or 20 mill tax against this property and reimburses to each municipality that has oil and gas property located within its boundaries an amount equal to taxes that it would have levied, up to the 20 mill limit.

The outlook for increased property taxes within Anchorage to fund the Knik Arm Crossing may not be very favorable because of the relatively high existing tax rate. Although an increase in property taxes within the Mat-Su Borough may be more feasible, given the benefits that the Knik Arm Crossing could eventually provide new residents of this borough, the total assessed value is much lower because the borough has large pockets of undeveloped areas.

Nonetheless, property values have been rising at faster than average rates in the Mat-Su Borough in recent years. With the further development that would accompany the Knik Arm Crossing, a form of tax-increment financing may have some potential in the Point MacKenzie area, which would benefit most directly. Tax-increment financing taps the tax revenue associated with the increase in property value over some base year value, under the assumption that the increase in assessed value is partially or completely attributable to the project in question. Although tax-increment financing can help fund a project, the timing of the revenue is usually after the project is completed. Because of this timing, tax-increment financing typically is a source that can help pay debt service, but not a substitute for up-front funds.

6.4.3 Gas Tax

A local option motor fuel "gas" tax may warrant further consideration and research as a possible Knik Arm Crossing funding candidate. Such a tax would need to be collected by local retailers within the Municipality of Anchorage and/or the Mat-Su Borough, requiring administrative oversight by a taxing authority, as there is no way to append an additional, geographic-specific tax to the existing statewide motor fuel tax. The reason a local option gas tax needs to be detached from the state tax is because the state tax is collected at refinery sites before distribution, with tax collections remitted by each dealer/distributor for the state as a whole or for very large areas comprising distribution regions, rather than by point of retail consumption. There are no disaggregated records of motor fuel sales.

To estimate potential gas tax revenues, it is necessary to allocate statewide revenues by some proxy for point of sale consumption, such as population. Alaska's 8¢ per gallon state motor fuel tax generates approximately $40.4 million annually or about $5.1 million for each 1¢ per gallon. U.S. Census data for 2000 indicates that that the Municipality of Anchorage accounts for 42% of statewide population, and the Mat-Su Borough another 9%, for a total of 51%. This suggests that each 1¢ of gas tax levied within all of Anchorage and the Mat-Su Borough would generate approximately $2.6 million in annual revenue.

A conservative approach should be taken in forecasting future gas tax revenue, particularly if leveraged for debt service. Many states have observed a decline in fuel consumption, and thus revenue per vehicle, due to increasing overall vehicle fleet fuel efficiency. Whether or not increases in fuel efficiency actually lead to lower revenues depends on how fast population and/or vehicle use per capita is growing. Nonetheless, as hybrid and alternative fueled vehicles make inroads, gas tax revenue growth is bound to be dampened, and maintenance of existing revenue streams may require tax rate increases or new methods of taxing vehicle use.

6.4.4 User Fee Revenues

Perhaps the most promising user fee approach is vehicle tolls. Previous studies of the Knik Arm Crossing have assumed that vehicle toll revenues would play a significant role in project financing. Although construction of the crossing would undoubtedly spur development in the Point MacKenzie area of the Mat-Su Borough, the question remains about whether opening-day demand would be sufficient to allow tolls to fund a significant portion of the project or to be used to back toll-revenue bonds. Even if toll revenues look promising, there is still an issue of timing; because toll revenues are not available until after the project is completed and open for operation, the revenue source of tolls—assuming it was stable and well defined—might be able to leverage bond proceeds one to two years before opening. Some federal credit assistance programs (such as TIFIA) that require user charges or some other non-federal dedicated source of funding may be of help here.

More research is needed to assess demand levels and willingness to pay tolls or other user fees to help fund the Knik Arm Crossing. A first step would be to conduct a feasibility study of toll traffic and revenue. Such an effort would examine the travel demand market, planned development and land use, and other economic and demographic conditions to provide an initial feasibility assessment for collecting tolls on a Knik Arm Crossing. The analysis would focus on conventional "per-trip" tolling by attempting to assess demand through trade-offs of time and tolls with the use of outputs from the Anchorage "TransCAD" and Mat-Su "QRS2" travel-demand planning models. Depending on the outcome of the feasibility study, an "investment grade" study of toll revenue may be warranted to further analyze market potential and estimate toll revenues that could be used to secure debt financing, particularly if toll revenue bonds are envisioned as part of the funding strategy.

Nonetheless, the primary benefit of the crossing will be to new residents of the greater Point MacKenzie area, rather than to existing Mat-Su Borough residents. This benefit makes modeling and predicting toll revenue a challenge, because development patterns must be predicted, rather than considering changing travel patterns of existing residents in developed areas.

7.0 REFERENCES

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APPENDICES

Knik Arm Crossing Engineering Feasibility and Construction Cost Estimate Update

13,500' Bridge - Roadway Only - Opinion of Cost Summary

Estimated by: WLB
Checked by: PM
Date: December 23, 2002

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
Crossing Segment							
	Station 312+00 to Station 616+00	312+00	616+00	30,400	RF		
	Fill Section elevation 29 to elevation 55 4 lanes	312+00	426+33	11,433	RF		
ADOT 301	At grade four lanes to elevation 29	312+00	416+33	10,433	LF	$800	$8,346,400
ADOT 303	At grade four lanes from elevation 29 to elevation 55 roadway only	416+33	426+33	1,000	LF	$1,840	$1,840,000
ADOT 309	Pave 2 lanes	312+00	426+33	11,433	LF	$30	$342,990
	Retained Fill 4 lane	426+33	435+00	867	RF		
ADOT 203	Retained Fill Four Lanes	426+33	435+00	867	LF	$1,750	$1,517,250
ADOT 309	Pave 2 lanes	426+33	435+00	867	LF	$30	$26,010
	Aerial Structure over Knik Arm Section 4 lane	435+00	570+00	13,500	RF		
ADOT 509	Sub-structure roadway (no railroad in median of roadway)			22.00	EA	$16,941,400	$372,710,800
ADOT 511	Superstructure roadway only bridge 15' long segments			22.50	spans	$11,334,800	$255,033,000
	Retained Cut 4 lane	570+00	575+00	500	RF		
ADOT 205	Retained Cut Four Lanes	570+00	575+00	500	LF	$16,300	$8,150,000
ADOT 309	Pave 2 lanes	570+00	575+00	500	LF	$30	$15,000
	Big Cut Section 4 lane	575+00	616+00	4,100	RF		
	Unclassified excavation (4100*150*100/27)			2,277,778	CY	$5.43	$12,368,335
	Mitigation (Environmental)			1	LS	$25,000	$25,000
	Utility Electrical Service			1	LS	$50,000	$50,000
	Main Electrical Switchgear			1	LS	$50,000	$50,000
	Crossing Segment Total:						**$660,500,000**

Knik Arm Crossing Engineering Feasibility and Construction Cost Estimate Update

9,500' Bridge and Causeway - Roadway Only - Opinion of Cost Summary

Estimated by: WLB
Checked by: PM
Date: December 23, 2002

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
	Crossing Segment						
	Station 312+00 to Station 616+00	312+00	616+00	30,400	RF		
	Fill Section elevation 29 to elevation 55 4 lane	312+00	426+33	11,433	RF		
ADOT 301	At grade four lanes to elevation 29	312+00	416+33	10,433	LF	$800	$8,350,000
ADOT 303	At grade four lanes from elevation 29 to elevation 55 roadway only	416+33	426+33	1,000	LF	$1,840	$1,840,000
ADOT 309	Pave 2 lanes	312+00	426+33	11,433	LF	$30	$343,000
	Retained Fill 4 lane	426+33	435+00	867	RF		
ADOT 203	Retained Fill Four Lanes	426+33	435+00	867	LF	$1,750	$1,517,000
ADOT 309	Pave 2 lanes	426+33	435+00	867	LF	$30	$26,000
	Four Lane Causeway 90' wide at the top	435+00	468+37	3,337	LF		
ADOT 30490	Four lane causeway South Portion 90' wide	435+00	468+37	3,337	LF	$6,500	$21,690,000
ADOT 309	Pave 2 lanes	435+00	468+37	3,337	LF	$30	$100,000
	Aerial Structure over Knik Arm Section 4 lane	468+37	563+70	9,533	RF		
ADOT 509	Sub-structure roadway (no railroad in median of roadway)			15.39	EA	$16,941,400	$260,700,000
ADOT 511	Superstructure roadway only bridge 15' long segments			15.89	spans	$11,334,800	$180,100,000
	Four Lane Causeway 90' wide at the top	563+70	570+00	630	LF		
ADOT 30690	Four lane causeway North Portion 90' wide	563+70	570+00	630	LF	$10,400	$6,552,000
ADOT 309	Pave 2 lanes	563+70	570+00	630	LF	$30	$19,000
	Retained Cut 4 lane	570+00	575+00	500	RF		
ADOT 309	Pave 2 lanes	570+00	575+00	500	LF	$30	$15,000
	Big Cut Section 4 lane	575+00	616+00	4,100	RF		
	Unclassified excavation (4100*150*100/27)			2,277,778	CY	$2.17	$4,940,000
	Mitigation (Environmental)			1	LS	$25,000	$25,000
	Utility Electrical Service			1	LS	$50,000	$50,000
	Main Electrical Switchgear			1	LS	$50,000	$50,000
	Crossing Segment Total:						**$486,300,000**

Knik Arm Crossing Engineering Feasibility and Construction Cost Estimate Update

Tunnel Alternative Opinion of Cost Summary

Estimated by: WLB
Checked by: PM
Date: December 23, 2002

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
Crossing Segment							
	Station 312+00 to Station 616+00	312+00	616+00	30,400	RF		
	At Grade Section 4 lane	312+00	425+00	11,300	RF		
ADOT 301	At grade four lanes to elevation 29	312+00	425+00	11,300	LF	$800	$9,040,000
ADOT 309	Pave 2 lanes	312+00	425+00	11,300	LF	$30	$339,000
	Tunnel under Knik Arm	425+00	580+00	15,500	RF		
ADOT 601	Single Bored Tunnel 48' diameter	425+00	580+00	31,000	TUFT	$31,100	$964,100,000
	Big Cut Section 4 lane	580+00	616+00	3,600	RF		
	Unclassified excavation (3600*150*100/27)			2,000,000	CY	$5.43	$10,860,000
	Ventilation			1	LS	$10,000,000	$10,000,000
	Mitigation (Environmental)			1	LS	$25,000	$25,000
	Tunnel fire/Life/Safety Systems			1	LS	$62,000,000	$62,000,000
	Portal Vent Structures			1	LS	$30,000,000	$30,000,000
	Utility Electrical Service			1	LS	$500,000	$500,000
	Tunnel Control Software			1	LS	$1,000,000	$1,000,000
	Crossing Segment Total:						**$1,087,900,000**

Knik Arm Crossing Engineering Feasibility and Construction Cost Estimate Update

13,500' Bridge-Roadway and Railroad - Opinion of Cost Summary

Estimated by: WLB
Checked by: PM
Date: December 23, 2002

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
Crossing Segment							
	Station 312+00 to Station 616+00	312+00	616+00	30,400	RF		
	Fill Section elevation 29 to elevation 55 4 lane	312+00	426+33	11,433	RF		
ADOT 303	At grade four lanes from elevation 29 to elevation 55 roadway only	312+00	426+33	11,433	LF	$1,840	$21,036,720
ADOT 305	At grade railroad from elevation 29 to elevation 55	312+00	426+33	11,433	LF	$1,100	$12,576,300
ADOT 309	Pave 2 lanes	312+00	426+33	11,433	LF	$30	$342,990
	Retained Fill 4 lane	426+33	435+00	867	RF		
ADOT 203	Retained Fill Four Lanes	426+33	435+00	867	LF	$1,750	$1,517,250
ADOT 305	At grade railroad from elevation 29 to elevation 55	426+33	435+00	867	LF	$1,100	$953,700
ADOT 515	Flyover			250	LF	$4,900	$1,225,000
ADOT 309	Pave 2 lanes	426+33	435+00	867	LF	$30	$26,010
	Aerial Structure over Knik Arm Section 4 lane	435+00	570+00	13,500	RF		
ADOT 507	Sub-structure railroad in median of roadway			27.00	EA	$17,243,600	$465,577,200
ADOT 513	Superstructure roadway and railroad bridge 15' long segments			27.50	spans	$10,405,700	$286,156,750
	Retained Cut 4 lane	570+00	575+00	500	RF		
ADOT 205	Retained Cut Four Lanes	570+00	575+00	500	LF	$16,300	$8,150,000
ADOT 515	Flyover			250	LF	$4,900	$1,225,000
ADOT 309	Pave 2 lanes	570+00	575+00	500	LF	$30	$15,000
	Big Cut Section 4 lane	575+00	616+00	4,100	RF		
	Unclassified excavation (4100*150*100/27)			2,277,778	CY	$5.43	$12,368,335
	Mitigation (Environmental)			1	LS	$25,000	$25,000
	Utility Electrical Service			1	LS	$50,000	$50,000
	Main Electrical Switchgear			1	LS	$50,000	$50,000
	Crossing Segment Total:						**$811,300,000**

Knik Arm Crossing Engineering Feasibility and Construction Cost Estimate Update

9,500' Bridge and Causeway Roadway and Railroad - Opinion of Cost Summary

Estimated by: WLB
Checked by: PM
Date: December 23, 2002

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
Crossing Segment							
	Station 312+00 to Station 616+00	312+00	616+00	30,400	RF		
	Fill Section elevation 29 to elevation 55 4 lane	312+00	426+33	11,433	RF		
ADOT 303	At grade four lanes from elevation 29 to elevation 55 roadway only	312+00	426+33	11,433	LF	$1,840	$21,037,000
ADOT 305	At grade railroad from elevation 29 to elevation 55	312+00	426+33	11,433	LF	$1,100	$12,576,000
ADOT 309	Pave 2 lanes	312+00	426+33	11,433	LF	$30	$343,000
	Retained Fill 4 lane	426+33	435+00	867	RF		
ADOT 203	Retained Fill Four Lanes	426+33	435+00	867	LF	$1,750	$1,517,000
ADOT 305	At grade railroad from elevation 29 to elevation 55	426+33	435+00	867	LF	$1,100	$954,000
ADOT 515	Flyover			250	LF	$4,900	$1,225,000
ADOT 309	Pave 2 lanes	426+33	435+00	867	LF	$30	$26,000
	Four Lane Causeway South Portion 114' wide at the top	435+00	468+37	3,337	LF		
ADOT 30411	Four lane causeway South Portion 114' wide	435+00	468+37	3,337	LF	$7,900	$26,362,000
ADOT 309	Pave 2 lanes	435+00	468+37	3,337	LF	$30	$100,000
	Aerial Structure over Knik Arm Section 4 lane	468+37	563+70	9,533	RF		
ADOT 507	Sub-structure railroad in median of roadway			18.76	EA	$17,243,600	$323,490,000
ADOT 513	Superstructure roadway and railroad bridge 15' long segments			19.26	spans	$10,405,700	$200,414,000
	Four Lane Causeway North Portion 114' wide at the top	563+70	570+00	630	LF		
ADOT 30611	Four lane causeway North Portion 114' wide	563+70	570+00	630	LF	$11,000	$6,930,000
ADOT 309	Pave 2 lanes	563+70	570+00	630	LF	$30	$19,000
	Retained Cut 4 lane	570+00	575+00	500	RF		
ADOT 205	Retained Cut Four Lanes	570+00	575+00	500	LF	$16,300	$8,150,000
ADOT 515	Flyover			250	LF	$4,900	$1,225,000
ADOT 309	Pave 2 lanes	570+00	575+00	500	LF	$30	$15,000
	Big Cut Section 4 lane	575+00	616+00	4,100	RF		
	Unclassified excavation (4100*150*100/27)			2,277,778	CY	$2.17	$4,940,000
	Mitigation (Environmental)			1	LS	$25,000	$25,000
	Utility Electrical Service			1	LS	$50,000	$50,000
	Main Electrical Switchgear			1	LS	$50,000	$50,000
	Crossing Segment Total:						**$609,400,000**

APPENDIX 1F Estimated Costs for Crossing Alternatives

Knik Arm Crossing

Engineering Feasibility And Cost Estimate Update Project

Estimated Costs

					CROSSING ALTERNATIVES				
					Roadway Only			Roadway and Railroad	
		Category	Ref.	Factors	13,500' Bridge	9,500' Bridge+ Causeway	Tunnel	13,500' Bridge	9,500' Bridge+ Causeway
CONSTRUCTION COST					Est. $million	Est. $million	Est. $million		
C	1	Basic Construction Item Costs			$ 660.5	$ 486.3	$ 1,088.0	$ 811.3	$ 609.4
C	2	Additive Construction Items	C1	30.0%	$ 198.2	$ 145.9	$ 326.4	$ 243.4	$ 182.8
C	3	Non-Standard Item Conditions	C1 + C2	3.0%	$ 25.8	$ 19.0	$ 42.4	$ 31.6	$ 23.8
C	4	***Subtotal***	C1-3		$ 884.4	$ 651.2	$ 1,456.8	$ 1,086.3	$ 816.0
C	5	Mobilization - Demobilization			$ 81.1	$ 59.7	$ 133.6	$ 99.6	$ 74.8
C	6	***Subtotal***			$ 965.5	$ 710.9	$ 1,590.4	$ 1,185.9	$ 890.8
C	7	Market Conditions	C 6	5.0%	$ 48.3	$ 35.5	$ 79.5	$ 59.3	$ 44.5
C	8	***Construction Bid Subtotal***	C6+C7		$ 1,013.8	$ 746.4	$ 1,669.9	$ 1,245.2	$ 935.4
C	9	Change Orders	C8	10.0%	$ 101.4	$ 74.6	$ 167.0	$ 124.5	$ 93.5
C	10	***CONSTRUCTION COST TOTAL***	C8+C9		**$ 1,115.2**	**$ 821.1**	**$ 1,836.9**	**$ 1,369.8**	**$ 1,028.9**
ADDITIVE COST									
A	1	**Agency Costs**							
A	2	Agency Cost	C 6	1.25%	$ 12.1	$ 8.9	$ 19.9	$ 14.8	$ 11.1
A	3	Insurance	C 6	0	$ -	$ -	$ -	$ -	$ -
A	4	***Subtotal***	A 2+ A3		$ 12.1	$ 8.9	$ 19.9	$ 14.8	$ 11.1
A	5	**Preconstruction**							
A	6	Environmental Documentation / Permits	C 6	3.0%	$ 29.0	$ 21.3	$ 47.7	$ 35.6	$ 26.7
A	7	Geotechnical Exploration Program	C 6	1.8%	$ 17.4	$ 12.8	$ 28.6	$ 21.3	$ 16.0
A	8	Construction Plans, Specifications, and Estimate	C 6	4.2%	$ 40.6	$ 29.9	$ 66.8	$ 49.8	$ 37.4
A	9	***Subtotal***	A 6+7+8		$ 86.9	$ 64.0	$ 143.1	$ 106.7	$ 80.2
A	10	**Construction Support**							
A	11	Design Services during Construction	C 6	2.0%	$ 19.3	$ 14.2	$ 31.8	$ 23.7	$ 17.8
A	12	Construction Management	C 6	4.5%	$ 43.4	$ 32.0	$ 71.6	$ 53.4	$ 40.1
A	13	***Subtotal***	A12 + A13		$ 62.8	$ 46.2	$ 103.4	$ 77.1	$ 57.9
A	14	**Right-of-Way**							
A	15	Land Acquisition and Administrative Costs			$ 2.0	$ 2.0	$ 2.0	$ 2.0	$ 2.0
A	16	ROW Contingency		40.0%	$ 0.8	$ 0.8	$ 0.8	$ 0.8	$ 0.8
A	17	***Subtotal***	A16+ A17		$ 2.8	$ 2.8	$ 2.8	$ 2.8	$ 2.8
A	18	***ADDITIVE COST TOTAL***	A 4+9+13+17		**$ 164.5**	**$ 121.9**	**$ 269.2**	**$ 201.4**	**$ 152.0**
T	0	**Project Total Mid Year 2002**	C10+ A19		**$ 1,279.7**	**$ 942.9**	**$ 2,106.1**	**$ 1,571.2**	**$ 1,180.9**
ESCALATION COST		**(From mid)**	**2002**						
E	1	Yearly Average Escalation Factor	**3.00%**						
E	2	Construction Escalation	C10		21.2% 2008.5 $ 236.2	26.7% 2010.0 $ 199.1	19.4% 2008.0 $ 324.1	23.0% 2009.0 $ 286.2	28.6% 2010.5 $ 267.2
E	3	Preconstruction Escalation	A10		6.9% 2004.3 $ 6.0	9.3% 2005 $ 5.9	6.1% 2004 $ 8.7	7.7% 2005 $ 8.2	10.1% 2005 $ 8.1
E	4	Construction Support Escalation	A14		21.2% 2008.5 $ 13.3	26.7% 2010 $ 12.3	19.4% 2008 $ 20.1	23.0% 2009 $ 17.7	28.6% 2010.5 $ 16.5
E	5	Right-of-Way Escalation	A18		14.2% 2006.5 $ 0.4	19.4% 2008 $ 0.5	12.6% 2006 $ 0.4	15.9% 2007 $ 0.4	21.2% 2008.5 $ 0.6
E	6	***ESCALATION COST TOTAL***	E 2+3+4+5		**$ 255.9**	**$ 217.9**	**$ 353.2**	**$ 312.6**	**$ 292.4**
GRAND TOTAL			T0 + E6		**$ 1,535.6**	**$ 1,160.8**	**$ 2,459.3**	**$ 1,883.8**	**$ 1,473.3**

APPENDIX 1G Estimated Costs for Associated Projects

Knik Arm Crossing

Engineering Feasibility And Cost Estimate Update Project

Estimated Cost of Crossing Project

	Category	Refer.	Factors	South Project			Ayrshire			North Project		
CONSTRUCTION COST						Est. $million			Est. $million			Est. $million
C 1	Basic Construction Item Costs					$ 99.1			$ 8.9			$ 38.9
C 2	Additive Construction Items	C1		30%		$ 29.7	10%		$ 0.9	30%		$ 11.7
C 3	Non-Standard Item Conditions	C1 + C2	3.0%			$ 3.9			$ 0.3			$ 1.5
C 4	***Subtotal***	C1-3				$ 132.7			$ 10.1			$ 52.1
C 5	Mobilization - Demobilization					$ 12.2			$ 0.9			$ 4.8
C 6	***Subtotal***					$ 144.9			$ 11.0			$ 56.9
C 7	Market Conditions	C 6	5.0%			$ 7.2			$ 0.6			$ 2.8
C 8	***Construction Bid Subtotal***	C6+C7				$ 152.1			$ 11.6			$ 59.7
C 9	Change Orders	C8	10.0%			$ 15.2			$ 1.2			$ 6.0
C 10	***CONSTRUCTION COST TOTAL***	C8+C9				**$ 167.3**			**$ 12.7**			**$ 65.7**
ADDITIVE COST												
A 1	**Agency Costs**											
A 2	Agency Cost	C 6	1.25%			$ 1.8			$ 0.1			$ 0.7
A 3	Insurance	C 6	0			$ -			$ -			$ -
A 4	***Subtotal***	A 2+ A3				$ 1.8			$ 0.1			$ 0.7
A 5	**Preconstruction**											
A 6	Environmental Documentation / Permits	C 6	1.5%			$ 2.2			$ 0.2			$ 0.9
A 7	Geotechnical Exploration Program	C 6	1.5%			$ 2.2			$ 0.2			$ 0.9
A 8	Construction Plans, Specifications, and Estimate	C 6	4.5%			$ 6.5			$ 0.5			$ 2.6
A 9	***Subtotal***	A 6+7+8				$ 10.9			$ 0.8			$ 4.3
A 10	**Construction Support**											
A 11	Design Services during Construction	C 6	1.0%			$ 1.4			$ 0.1			$ 0.6
A 12	Construction Management	C 6	10.0%			$ 14.5			$ 1.1			$ 5.7
A 13	***Subtotal***	A12 + A13				$ 15.9			$ 1.2			$ 6.3
A 14	**Right-of-Way**											
A 15	Land Acquisition and Administrative Costs					$ 20.0			$ 2.0			$ 2.0
A 16	ROW Contingency		40.0%			$ 8.0			$ 0.8			$ 0.8
A 17	***Subtotal***	A16+ A17				$ 28.0			$ 2.8			$ 2.8
A 18	***ADDITIVE COST TOTAL***	A 4+9+13+17				**$ 56.6**			**$ 5.0**			**$ 14.0**
T 0	**Project Total Mid Year 2002**	C10+ A19				**$ 223.9**			**$ 17.7**			**$ 79.7**
ESCALATION COST (From mid)		**2002**										
E 1	Yearly Average Escalation Factor	**3.00%**										
E 2	Construction Escalation	C10		19.4%	2008	$ 32.5	23.0%	2009	$ 2.7	26.7%	2010	$ 15.9
E 3	Preconstruction Escalation	A10		6.1%	2004	$ 0.7	7.7%	2005	$ 0.1	9.3%	2005	$ 0.4
E 4	Construction Support Escalation	A14		19.4%	2008	$ 3.1	23.0%	2009	$ 0.3	26.7%	2010	$ 1.7
E 5	Right-of-Way Escalation	A18		12.6%	2006	$ 3.5	15.9%	2007	$ 0.4	19.4%	2008	$ 0.5
E 6	***ESCALATION COST TOTAL***	E 2+3+4+5				**$ 39.7**			**$ 3.4**			**$ 18.5**
GRAND TOTAL		T0 + E6				**$ 263.7**			**$ 21.1**			**$ 98.2**

Knik Arm Crossing Engineering Feasibility and Construction Cost Estimate Update

South Segment - Opinion of Cost Summary

Estimated by: WLB
Checked by: PM
Date: December 23, 2002

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
South Segment Project							
	Station 203+60 to Station 312+00	203+60	312+00	10,840	RF		
	Match existing pavement at grade 2 lane wye	203+60	204+00	40	RF		
ADOT 307	At grade two lanes	203+60	204+00	80	LF	$100	$8,000
ADOT 309	Pave 2 lanes	203+60	204+00	80	LF	$30	$2,000
	Cut Section 2 lane wye	204+00	211+00	700	RF		
	Unclassified excavation (700*100*40*2/27)			207,407	CY	$5.43	$1,126,000
	Retained Fill Section 2 lane wye	211+00	212+50	150	RF		
ADOT 201	Retained Fill Two Lanes	211+00	212+50	300	LF	$1,200	$360,000
ADOT 309	Pave 2 lanes	211+00	212+50	300	LF	$30	$9,000
	Aerial Structure Section 4 lane	212+50	236+50	2,400	RF		
ADOT 501	Aerial 4 lane cip deck 150' spans	212+50	236+50	2,400	LF	$17,700	$42,480,000
	Retained Fill Section 4 lane	236+50	237+00	50	RF		
ADOT 203	Retained Fill Four Lanes	236+50	237+00	50	LF	$1,800	$90,000
ADOT 309	Pave 2 lanes	236+50	237+00	50	LF	$30	$2,000
	Cut Section 4 lane	237+00	239+50	250	RF		
	Unclassified excavation (250*200*50/27)			92,593	CY	$5.43	$503,000
	Retained Cut Section 4 lane	239+50	248+00	850	RF		
ADOT 205	Retained Cut Four Lanes	239+50	248+00	850	LF	$16,300	$13,855,000
ADOT 309	Pave 2 lanes	239+50	248+00	850	LF	$30	$26,000
	Cut and Cover Box Structure Section 2 lane plus ramp lane	248+00	255+00	700	RF		
ADOT 403	C & C Box Four Lanes top of roof is roadway	248+00	255+00	700	LF	$27,400	$19,180,000
	Cut Section 4 lane	255+00	261+00	600	RF		
	Unclassified excavation (600*150*50/27)			166,667	CY	$5.43	$905,000

Knik Arm Crossing Engineering Feasibility and Construction Cost Estimate Update

Estimated by: WLB
Checked by: PM

South Segment - Opinion of Cost Summary

Date: December 23, 2002

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
	Fill Section 4 lane	261+00	272+00	1,100	RF		
	Borrow, Type A (1100*100*50/27*2)			407,407	TON	$7.84	$3,194,000
	At Grade Section 4 lane	272+00	312+00	4,000	RF		
ADOT 301	At grade four lanes to elevation 29	272+00	312+00	4,000	LF	$800	$3,200,000
ADOT 309	Pave 2 lanes	272+00	312+00	4,000	LF	$30	$120,000
	Water			1	LS	$700,000	$700,000
	Sewer			1	LS	$700,000	$700,000
	Natural Gas			1	LS	$70,000	$70,000
	Telephone			1	LS	$700,000	$700,000
	Fiber Optic			1	LS	$70,000	$70,000
	Power			1	LS	$70,000	$70,000
	Demolition			1	LS	$70,000	$70,000
	Mitigation (Environmental)			1	LS	$10,000,000	$10,000,000
	Intelligent Traffic System			1	LS	$1,000,000	$1,000,000
	Roadway Lighting			1	LS	$640,000	$640,000
	Utility Electrical Service			1	LS	$25,000	$25,000
	Main Electrical Switchgear			1	LS	$0	$0
	South Segment Project Total:						**$99,100,000**

Knik Arm Crossing Engineering Feasibility and Construction Cost Estimate Update

Ayrshire - South Point MacKenzie Segment - Opinion of Cost Summary

Estimated by: WLB
Checked by: PM
Date: December 23, 2002

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
	Ayrshire - South Point MacKenzie Road Segment Project						
	Station 616+00 to Station 1267+72	616+00	1267+72	65,172	RF		
	At Grade Section Port MacKenzie to Houston 2 lane	616+00	1267+72	65,172	RF		
ADOT 307	At grade two lanes	616+00	1267+72	65,172	LF	$100	$6,517,000
	Lake Lorraine Access			1,000	LF	$500	$500,000
	Twin Island Access			1,000	LF	$500	$500,000
	North Lost Lake Access			1,000	LF	$500	$500,000
	Holstein Heights Access			1,000	LF	$500	$500,000
	Water			1	LS	$15,000	$15,000
	Sewer			1	LS	$15,000	$15,000
	Natural Gas			1	LS	$15,000	$15,000
	Telephone			1	LS	$15,000	$15,000
	Fiber Optic			1	LS	$15,000	$15,000
	Power			1	LS	$15,000	$15,000
	Demolition			1	LS	$15,000	$15,000
	Mitigation (Environmental)			1	LS	$25,000	$25,000
	Intelligent Traffic System			1	LS	$100,000	$100,000
	Roadway Lighting			1	LS	$130,000	$130,000
	Utility Electrical Service			1	LS	$10,000	$10,000
	Main Electrical Switchgear			1	LS	$25,000	$25,000
	Ayshire Roadway Project Total:						**$8,900,000**

Knik Arm Crossing Engineering Feasibility and Construction Cost Estimate Update

North Segment - Opinion of Cost Summary

Estimated by: WLB
Checked by: PM
Date: December 23, 2002

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
	North Segment Project						
	Station 1267+72 to Station 2157+58	1267+72	2157+58	88,986	RF		
	At Grade Section Port MacKenzie to Houston 2 lane	1267+72	2157+58	88,986	RF		
ADOT 307	At grade two lanes	1267+72	2157+58	88,986	LF	$100	$8,900,000
ADOT 309	Pave 2 lanes	1267+72	2157+58	88,986	LF	$30	$2,670,000
	Point MacKenzie Road Access			1,000	LF	$500	$500,000
	Jewell Lake Access			1,000	LF	$500	$500,000
	Iditarod Trail Under Pass			100	LF	$26,100	$2,610,000
	Irish Hills Access			1,000	LF	$500	$500,000
	South Big Lake Road Access			1,000	LF	$500	$500,000
	Access Road Over Pass			100	LF	$26,100	$2,610,000
	Mirror Lake Bridge			500	LF	$26,100	$13,050,000
	Briggs Road Under Pass			100	LF	$26,100	$2,610,000
	Horseshoe Lake Road Access			1,000	LF	$500	$500,000
	Beaver Lakes Access			1,000	LF	$500	$500,000
	Parks Interchange			2,000	LF	$500	$1,000,000
	Water			1	LS	$15,000	$15,000
	Sewer			1	LS	$15,000	$15,000
	Natural Gas			1	LS	$15,000	$15,000
	Telephone			1	LS	$15,000	$15,000
	Fiber Optic			1	LS	$15,000	$15,000
	Power			1	LS	$15,000	$15,000
	Demolition			1	LS	$15,000	$15,000
	Mitigation (Environmental)			1	LS	$25,000	$25,000
	Intelligent Traffic System			1	LS	$1,000,000	$1,000,000
	Roadway Lighting			1	LS	$1,050,000	$1,050,000
	Utility Electrical Service			1	LS	$200,000	$200,000
	Main Electrical Switchgear			1	LS	$25,000	$25,000
	North Roadway Project Total:						**$38,900,000**

Index to Composite Cost Build Up Detail Sheets

Appendix 3

ADOT COMPOSITE BUILD UP INDEX

CODE	DESCRIPTION	Unit of Measure	UNIT COST 2002$
ADOT 200	**Retained Fill and Retained Cut Transition Build-ups**		
ADOT 201	Retained Fill Two Lanes	LF	$1,200
ADOT 203	Retained Fill Four Lanes	LF	$1,750
ADOT 205	Retained Cut Four Lanes	LF	$16,300
ADOT 300	**At Grade Build-ups**		
ADOT 301	At grade four lanes to elevation 29	LF	$800
ADOT 303	At grade four lanes from elevation 29 to elevation 55 roadway only	LF	$1,840
ADOT 30490	Four lane causeway South Portion 90' wide	LF	$6,500
ADOT 304200	Four lane causeway South Portion 200' wide	LF	$14,000
ADOT 304114	Four lane causeway South Portion 114' wide	LF	$7,900
ADOT 305	At grade railroad from elevation 29 to elevation 55	LF	$1,100
ADOT 30690	Four lane causeway North Portion 90' wide	LF	$10,400
ADOT 306200	Four lane causeway North Portion 200' wide	LF	$12,900
ADOT 306114	Four lane causeway North Portion 114' wide	LF	$11,000
ADOT 307	At grade two lanes	LF	$100
ADOT 309	Pave 2 lanes	LF	$30
ADOT 400	**Cut and Cover Box Build-ups**		
ADOT 401	C & C Box Stacked 3 lanes over 3 lanes	LF	$72,200
ADOT 403	C & C Box Four Lanes top of roof is roadway	LF	$27,400
ADOT 500	**Aerial Build-ups**		
ADOT 501	Aerial 4 lane cip deck 150' spans	LF	$17,700
ADOT 503	Bridge 2 lanes precast box girder 80' spans	LF	$26,100
ADOT 505	Aerial 4 lanes cip deck over Knik Arm	LF	$56,000
ADOT 507	Sub-structure railroad in median of roadway	EA	$17,243,600
ADOT 509	Sub-structure roadway (no railroad in median of roadway)	EA	$16,941,400
ADOT 511	Superstructure roadway only bridge 15' long segments	span	$11,334,800
ADOT 513	Superstructure roadway and railroad bridge 15' long segments	span	$10,405,700
ADOT 515	Flyover	LF	$4,900
ADOT 600	**Tunnel Build-ups**		
ADOT 601	Single Bored Tunnel 48' diameter	TUFT	$31,100

ADOT COMPOSITE BUILD UPS

Retained Fill Two Lanes

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 400 lineal feet long by 24 feet high by 43 feet wide (1.5'+8'+12+12'+8'+1.5') = 43' wide	**lf**		**400.00**	
02232.01	Clearing and grubbing	acres	$2,504.26	0.39	$977
02315.01	Common excavation including haul	cy	$5.43	318.52	$1,730
02620.03	Geotextile	sf	$0.14	17,200.00	$2,408
02830.21	Structural earth wall	sf	$16.91	9,600.00	$162,336
02830.22	Backfill for structural earth wall including haul	cy	$19.88	14,222.22	$282,738
02322.02	Embankment compaction	cy	$1.15	14,222.22	$16,356
ADOT 201	**Retained Fill Two Lanes**	**LF**	**400**	**$1,200**	**$466,600**

ADOT COMPOSITE BUILD UPS

Retained Fill Four Lanes

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 400 lineal feet of transition, 24 feet high, 71 feet wide (1.5'+8'+12+12+3+12'+12'+8'+1.5') = 70' wide	**lf**		**400.00**	
02232.01	Clearing and grubbing	acres	$2,504.26	0.64	$1,603
02315.01	Common excavation including haul	cy	$5.43	525.93	$2,856
02620.03	Geotextile	sf	$0.14	28,400.00	$3,976
02830.21	Structural earth wall	sf	$16.91	9,600.00	$162,336
02830.22	Backfill for structural earth wall including haul	cy	$19.88	23,822.22	$473,586
02322.02	Embankment compaction	cy	$1.15	23,822.22	$27,396
02770.08	Concrete barrier, two sided	lf	$72.50	400.00	$29,000
ADOT 203	**Retained Fill Four Lanes**	**LF**	**400**	**$1,750**	**$700,800**

Retained Cut Four Lanes

ADOT COMPOSITE BUILD UPS

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 400 lineal feet	**LF**		**400.00**	
	85' wide by 24' deep by 400' long				
02232.01	Clearing and grubbing	acres	$2,504.26	0.78	$1,953
02260.33	Slurry Concrete Wall, 4 foot Wide (Reinforced)	sf	$70.00	51,330.00	$3,593,100
02315.07	Excavation including haul	cy	$49.53	13,688.89	$678,011
07130.22	Waterproofing	sf	$3.13	11,640.00	$36,433
03310.05	Cast In Place Concrete Bottom Slab	cy	$227.66	4,562.96	$1,038,803
03310.03	Cast In Place Concrete Exterior Walls	cy	$267.66	1,066.67	$285,505
03210.02	Epoxy coated rebars	lb	$0.62	1,125,926.00	$698,074
02770.08	Concrete barrier, two sided	lf	$72.50	800.00	$58,000
09310.01	Ceramic tile finish	sf	$10.55	9,600.00	$101,280
02770.07	Concrete barrier, one sided	lf	$65.25	400.00	$26,100
ADOT 205	**Retained Cut Four Lanes**	**LF**	**400**	**$16,300**	**$6,517,300**

ADOT COMPOSITE BUILD UPS

At grade four lanes to elevation 29

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 200 lineal feet	**lf**		**200.00**	
	(10+12+8+12+12+6+3+6+12+12+8+12+10) = 113' wide select material				
	(8+12+12+6+3+6+12+12+8) = 79' wide pavement material				
	Elevation 29 has 325.5 sf cross section				
02232.01	Clearing and grubbing	acres	$2,504.26	0.52	$1,302
02315.01	Common excavation including haul	cy	$5.43	418.52	$2,273
02620.03	Geotextile	sf	$0.14	22,600.00	$3,164
02315.12	Gravel borrow including haul south portion of causeway	cy	$10.00	2,411.11	$24,111
02315.05	Embankment compaction	cy	$0.00	2,411.11	$0
02372.01	Light loose riprap	cy	$32.75	3,222.22	$105,528
02620.02	Underdrains	lf	$43.50	200.00	$8,700
02630.11	12" class III RCP	lf	$23.50	200.00	$4,700
02770.08	Concrete barrier, two sided	lf	$72.50	200.00	$14,500
ADOT 301	**At grade four lanes to elevation 29**	**LF**	**200**	**$800**	**$164,300**

ADOT COMPOSITE BUILD UPS

At grade four lanes from elevation 29 to elevation 55 roadway only

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 200 lineal feet	**lf**		**200.00**	
	(10+12+8+12+12+6+3+6+12+12+8+12+10) = 113' wide select material				
	(8+12+12+6+3+6+12+12+8) = 79' wide pavement material				
	Elevation 29 has 325.5 sf cross section - Elevation 55 has 5811.5 sf cross section				
02232.01	Clearing and grubbing	acres	$2,504.26	0.52	$1,302
02315.01	Common excavation including haul	cy	$5.43	418.52	$2,273
02620.03	Geotextile	sf	$0.14	22,600.00	$3,164
02315.12	Gravel borrow including haul south portion of causeway	cy	$10.00	22,729.63	$227,296
02315.05	Embankment compaction	cy	$0.00	22,729.63	$0
02372.01	Light loose riprap	cy	$32.75	3,222.22	$105,528
02620.02	Underdrains	lf	$43.50	200.00	$8,700
02630.11	12" class III RCP	lf	$23.50	200.00	$4,700
02770.08	Concrete barrier, two sided	lf	$72.50	200.00	$14,500
ADOT 303	**At grade four lanes from elevation 29 to elevation 55 roadway only**	**LF**	**200**	**$1,840**	**$367,500**

ADOT COMPOSITE BUILD UPS

Four lane causeway South Portion 90' wide

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 3337 lineal feet	**lf**		**3,337.00**	
	90' wide at top of causeway 3:1 side slopes Stationing 435+00 to 468+37 = 3337 route feet				
02620.03	Geotextile	sf	$0.14	13,348,000.00	$1,868,720
02315.12	Gravel borrow including haul south portion of causeway	cy	$10.00	1,766,255.80	$17,662,558
02315.05	Embankment compaction	cy	$0.00	1,766,255.80	$0
02372.01	Light loose riprap	cy	$32.75	43,100.00	$1,411,525
02770.07	Concrete barrier, one sided	lf	$65.25	6,674.00	$435,479
02770.08	Concrete barrier, two sided	lf	$72.50	3,337.00	$241,933
ADOT 30490	**Four lane causeway South Portion 90' wide**	**LF**	**3,337**	**$6,500**	**$21,620,300**

Four lane causeway South Portion 200' wide

ADOT COMPOSITE BUILD UPS

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 3337 lineal feet	**lf**		**3,337.00**	
	90' wide at top of causeway 3:1 side slopes Stationing 435+00 to 468+37 = 3337 route feet				
02620.03	Geotextile	sf	$0.14	13,348,000.00	$1,868,720
02315.12	Gravel borrow including haul south portion of causeway	cy	$10.00	4,247,825.00	$42,478,250
02315.05	Embankment compaction	cy	$0.00	4,247,825.00	$0
02372.01	Light loose riprap	cy	$32.75	47,000.00	$1,539,250
02770.07	Concrete barrier, one sided	lf	$65.25	6,674.00	$435,479
02770.08	Concrete barrier, two sided	lf	$72.50	3,337.00	$241,933
ADOT 304200	**Four lane causeway South Portion 200' wide**	**LF**	**3,337**	**$14,000**	**$46,563,700**

Four lane causeway South Portion 114' wide

ADOT COMPOSITE BUILD UPS

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 3337 lineal feet	**lf**		**3,337.00**	
	90' wide at top of causeway 3:1 side slopes Stationing 435+00 to 468+37 = 3337 route feet				
02620.03	Geotextile	sf	$0.14	13,348,000.00	$1,868,720
02315.12	Gravel borrow including haul south portion of causeway	cy	$10.00	2,237,316.00	$22,373,160
02315.05	Embankment compaction	cy	$0.00	2,237,316.00	$0
02372.01	Light loose riprap	cy	$32.75	47,000.00	$1,539,250
02770.07	Concrete barrier, one sided	lf	$65.25	6,674.00	$435,479
02770.08	Concrete barrier, two sided	lf	$72.50	3,337.00	$241,933
ADOT 304114	**Four lane causeway South Portion 114' wide**	**LF**	**3,337**	**$7,900**	**$26,458,600**

At grade railroad from elevation 29 to elevation 55

CODE	ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	TOTAL COST

ADOT COMPOSITE BUILD UPS

CODE	ITEM DESCRIPTION	UNIT	2002$	QUANTITY	2002$
	All quantities per 200 lineal feet 8' wide at the top (3.5'H 36' W at bottom 8'W at top = 77 sf) (29.5'H 244'W at bottom 8'W at top = 3717 sf)	**lf**		**200.00**	
02232.01	Clearing and grubbing	acres	$2,504.26	0.64	$1,603
02315.01	Common excavation including haul	cy	$5.43	518.52	$2,816
02620.03	Geotextile	sf	$0.14	28,000.00	$3,920
02315.12	Gravel borrow including haul south portion of causeway	cy	$10.00	14,051.85	$140,519
02720.05	Sub-ballast	cy	$27.91	292.59	$8,166
02315.05	Embankment compaction	cy	$0.00	14,344.44	$0
02720.06	Ballast	cy	$36.25	386.22	$14,000
05650.01	Ballasted Trackwork, including/ Ties, Fasteners & Rail	lf	$214.60	200.00	$42,920
ADOT 305	**At grade railroad from elevation 29 to elevation 55**	**LF**	**200**	**$1,100**	**$214,000**

Four lane causeway North Portion 90' wide

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$

	ADOT COMPOSITE BUILD UPS				
	All quantities per 630 lineal feet	**lf**		**630.00**	
	90' wide at top of causeway 3:1 side slopes Stationing 563+70 to 575+00 = 1130 route feet				
02620.03	Geotextile	sf	$0.14	2,520,000.00	$352,800
02315.13	Gravel borrow including haul north portion of causeway	cy	$4.50	1,315,143.62	$5,918,146
02315.05	Embankment compaction	cy	$0.00	1,315,143.62	$0
02372.01	Light loose riprap	cy	$32.75	5,100.00	$167,025
02770.07	Concrete barrier, one sided	lf	$65.25	1,260.00	$82,215
02770.08	Concrete barrier, two sided	lf	$72.50	630.00	$45,675
ADOT 30690	**Four lane causeway North Portion 90' wide**	**LF**	**630**	**$10,400**	**$6,565,900**
	Four lane causeway North Portion 200' wide				
CODE	**ITEM DESCRIPTION**	**UNIT**	**UNIT COST 2002$**	**QUANTITY**	**TOTAL COST 2002$**

ADOT COMPOSITE BUILD UPS

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 630 lineal feet	**lf**		**630.00**	
	90' wide at top of causeway 3:1 side slopes Stationing 563+70 to 575+00 = 1130 route feet				
02620.03	Geotextile	sf	$0.14	2,520,000.00	$352,800
02315.13	Gravel borrow including haul north portion of causeway	cy	$4.50	1,665,638.00	$7,495,371
02315.05	Embankment compaction	cy	$0.00	1,665,638.00	$0
02372.01	Light loose riprap	cy	$32.75	5,000.00	$163,750
02770.07	Concrete barrier, one sided	lf	$65.25	1,260.00	$82,215
02770.08	Concrete barrier, two sided	lf	$72.50	630.00	$45,675
ADOT 306200	**Four lane causeway North Portion 200' wide**	**LF**	**630**	**$12,900**	**$8,139,900**

Four lane causeway North Portion 114' wide

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 630 lineal feet	**lf**		**630.00**	

ADOT COMPOSITE BUILD UPS

	90' wide at top of causeway 3:1 side slopes Stationing 563+70 to 575+00 = 1130 route feet				
02620.03	Geotextile	sf	$0.14	2,520,000.00	$352,800
02315.13	Gravel borrow including haul north portion of causeway	cy	$4.50	1,391,622.00	$6,262,299
02315.05	Embankment compaction	cy	$0.00	1,391,622.00	$0
02372.01	Light loose riprap	cy	$32.75	5,000.00	$163,750
02770.07	Concrete barrier, one sided	lf	$65.25	1,260.00	$82,215
02770.08	Concrete barrier, two sided	lf	$72.50	630.00	$45,675
ADOT 306114	**Four lane causeway North Portion 114' wide**	**LF**	**630**	**$11,000**	**$6,906,800**

At grade two lanes

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 200 lineal feet (8'+12'+12'+8') = 40' wide	**lf**		**200.00**	

ADOT COMPOSITE BUILD UPS

02232.01	Clearing and grubbing	acres	$2,504.26	0.29	$726
02315.01	Common excavation including haul	cy	$5.43	237.04	$1,287
02620.03	Geotextile	sf	$0.14	12,800.00	$1,792
02315.12	Gravel borrow including haul south portion of causeway	cy	$10.00	1,348.15	$13,482
02315.05	Embankment compaction	cy	$0.00	1,348.15	$0
ADOT 307	**At grade two lanes**	**LF**	**200**	**$100**	**$17,300**

Pave 2 lanes

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 200 lineal feet (8'+12'+12'+8') = 40' wide	**lf**		**200.00**	

ADOT COMPOSITE BUILD UPS

02720.02	Crushed surfacing top course	cy	$12.64	148.15	$1,873
02315.05	Embankment compaction	cy	$0.00	148.15	$0
02740.02	Asphaltic Conc. Pavement (Large Qty.)	ton	$23.61	195.56	$4,617
02766.01	Paint line	lf	$0.14	600.00	$84
ADOT 309	**Pave 2 lanes**	**LF**	**200**	**$30**	**$6,600**

C & C Box Stacked 3 lanes over 3 lanes
SP&L = soldier piles and lagging walls

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per one hundred lineal feet	**lf**		**100.00**	
	(3'+1.5'+10'+12'+12'+12'+10'+1.5'+3') = 65' wide (15'+10'+19'+10'+19'+8') = 81' deep				

ADOT COMPOSITE BUILD UPS

01530.01	Temporary fence	lf	$4.95	200.00	$990
02220.11	Saw cut Asphalt Pavement	lf	$3.19	200.00	$638
02222.02	Remove asphaltic concrete pavement	sy	$2.93	722.22	$2,116
02232.01	Clearing and grubbing	acres	$2,504.26	0.15	$376
02260.21	Soldier Piles & Lagging	sf	$44.50	22,200.00	$987,900
02315.07	Excavation including haul	cy	$49.53	19,500.00	$965,835
07130.22	Waterproofing	sf	$3.13	26,200.00	$82,006
03210.02	Epoxy coated rebars	lb	$0.62	1,167,408.00	$723,793
03310.05	Cast In Place Concrete Bottom Slab	cy	$227.66	1,925.93	$438,457
03310.03	Cast In Place Concrete Exterior Walls	cy	$267.66	1,288.89	$344,984
03310.06	Cast In Place Concrete Waffle Slab	cy	$649.66	2,622.22	$1,703,551
09310.01	Ceramic tile finish	sf	$10.55	19,400.00	$204,670
02770.07	Concrete barrier, one sided	lf	$65.25	400.00	$26,100
02370.06	Backfill	cy	$41.04	3,611.11	$148,200
02315.05	Embankment compaction	cy	$0.00	3,611.11	$0
02630.06	Drainage inlet structure	ea	$1,031.25	2.00	$2,063
02630.05	Drainage inlet grate 37" by 54" by 3.5"	ea	$1,775.00	2.00	$3,550
02620.03	Geotextile	sf	$0.14	3,200.00	$448
02622.02	Filter blanket	cy	$113.46	59.26	$6,724
02630.07	6" underdrain pipe	lf	$7.66	200.00	$1,532
02630.11	12" class III RCP	lf	$23.50	200.00	$4,700
02260.51	Street Decking	sf	$50.75	6,500.00	$329,875
02262.04	Ground anchors	ea	$1,430.00	648.00	$926,640
02260.34	Install internal wales and struts	ton	$1,450.00	150.00	$217,500
02260.36	Remove internal wales and struts	ton	$605.00	150.00	$90,750
02510.01	8" D.I.P. storm sewer (box drainage piping)	lf	$50.67	200.00	$10,134
ADOT 401	**C & C Box Stacked 3 lanes over 3 lanes**	**LF**	**100**	**$72,200**	**$7,223,600**

C & C Box Four Lanes top of roof is roadway
SP&L = soldier piles and lagging walls

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per one hundred lineal feet	**lf**		**100.00**	
	(3'+8'+12'+12'+2'+3'+2'+12'+12+8'+3') = 77' wide (4'+19'+5') = 28' deep (soldier pile walls 10' deeper)				
01530.01	Temporary fence	lf	$4.95	200.00	$990

ADOT COMPOSITE BUILD UPS

02220.11	Saw cut Asphalt Pavement	lf	$3.19	200.00	$638
02222.02	Remove asphaltic concrete pavement	sy	$2.93	855.56	$2,507
02232.01	Clearing and grubbing	acres	$2,504.26	0.18	$451
02260.21	Soldier Piles & Lagging	sf	$44.50	7,200.00	$320,400
02315.07	Excavation including haul	cy	$49.53	7,985.19	$395,506
07130.22	Waterproofing	sf	$3.13	21,000.00	$65,730
03210.02	Epoxy coated rebars	lb	$0.62	838,516.00	$519,880
03310.05	Cast In Place Concrete Bottom Slab	cy	$227.66	1,314.81	$299,330
03310.03	Cast In Place Concrete Exterior Walls	cy	$267.66	422.22	$113,011
03310.02	Cast In Place Concrete Roof Slab	cy	$210.66	1,140.74	$240,308
02770.08	Concrete barrier, two sided	lf	$72.50	100.00	$7,250
09310.01	Ceramic tile finish	sf	$10.55	10,900.00	$114,995
02766.01	Paint line	lf	$0.14	800.00	$112
02770.07	Concrete barrier, one sided	lf	$65.25	200.00	$13,050
02820.23	Chain link fence type 3 for soldier pile wall	lf	$19.39	200.00	$3,878
02630.06	Drainage inlet structure	ea	$1,031.25	2.00	$2,063
02630.05	Drainage inlet grate 37" by 54" by 3.5"	ea	$1,775.00	2.00	$3,550
02620.03	Geotextile	sf	$0.14	3,200.00	$448
02622.02	Filter blanket	cy	$113.46	59.26	$6,724
02630.07	6" underdrain pipe	lf	$7.66	200.00	$1,532
02630.11	12" class III RCP	lf	$23.50	200.00	$4,700
02262.04	Ground anchors	ea	$1,430.00	368.00	$526,240
02510.01	8" D.I.P. storm sewer (box drainage piping)	lf	$50.67	200.00	$10,134
16500.03	Lighting, Cut and Cover roadway	lf	$217.50	400.00	$87,000
ADOT 403	**C & C Box Four Lanes top of roof is roadway**	**LF**	**100**	**27,400**	**$2,740,500**

Aerial 4 lane cip deck 150' spans
Twin pile caps 38'x38'x8' with 25 pile cluster per cap

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities for a 150 foot span 78'W by 32'H 150" spans 2.5' diameter piles 160' VLF (1.5+10+12+12+2+3+2+12+12+10+1.5) = 78' wide	**lf**		**150.00**	
	Superstructure				
03300.10	Deck Concrete and Formwork (Class 5,000)	cy	$400.00	889.78	$355,912

	ADOT COMPOSITE BUILD UPS				
03300.11	Deck epoxy coated rebars @ 200#/cy	ton	$1,240.00	88.98	$110,335
03300.12	Deck Post Tensioning @ 70 #/cy	lb	$3.00	62,284.60	$186,854
03300.22	Cross Beam Concrete and Formwork (Class 5,000)	cy	$400.00	72.22	$28,888
03300.23	Cross Beam epoxy coated rebars @ 200#/cy	ton	$1,240.00	7.22	$8,953
03300.24	Cross Beam Post Tensioning @ 70#/cy	lb	$3.00	5,055.40	$15,166
02770.07	Concrete barrier, one sided	lf	$65.25	300.00	$19,575
03300.19	Expansion Joint	lf	$1,000.00	30.00	$30,000
	Substructure				
03300.25	Square Column Concrete and Formwork	cy	$350.00	85.33	$29,866
03300.26	Square Column epoxy coated rebars @ 200#/cy	ton	$1,240.00	8.53	$10,577
03300.41	Edge Beam Concrete and Formwork	cy	$350.00	165.93	$58,076
03300.42	Edge Beam rebars @ 200#/cy	ton	$1,240.00	16.59	$20,572
03300.43	Edge Beam Post Tensioning @ 70#/cy	lb	$3.00	11,615.10	$34,845
03300.30	Pile Cap Concrete and Formwork	cy	$250.00	641.78	$160,445
03300.31	Pile Cap epoxy coated rebars @ 200#/cy	ton	$1,240.00	64.18	$79,583
03300.32	Furnish 2.5' diameter steel casing 0.75" wall	ton	$836.00	962.27	$804,458
03300.33	Pile Concrete (Class 4,000)	cy	$150.00	1,454.44	$218,166
03300.34	Pile epoxy coated rebars @ 200#/cy	ton	$1,240.00	145.44	$180,346
03300.35	Drive 2.5' diameter steel casing 0.75" wall	vlf	$36.95	8,000.00	$295,600
	Other Items				
02766.01	Paint line	lf	$0.14	750.00	$105
ADOT 501	**Aerial 4 lane cip deck 150' spans**	**LF**	**150**	**$17,700**	**$2,648,400**

	Bridge 2 lanes precast box girder 80' spans				
CODE	**ITEM DESCRIPTION**	**UNIT**	**UNIT COST 2002$**	**QUANTITY**	**TOTAL COST 2002$**
	All quantities for an 80 foot span 32' wide 27' high	**lf**		**80.00**	
02465.34	Pile cap 27'x27'x8' with 9 ea 36" diameter piles 300' deep	ea	$1,714,700.00	1.00	$1,714,700
03302.03	Oblong column concrete and formwork	cy	$384.00	46.27	$17,768
03302.04	Oblong column rebars @ 395 lbs/cy	ton	$1,440.00	9.14	$13,162
03302.21	Precast Concrete Waffle Truss	cy	$645.66	42.67	$27,550

ADOT COMPOSITE BUILD UPS

03302.22	T-Bent Cap concrete and formwork	cy	$482.00	5.59	$2,694
03302.16	Precast girder two lane fabrication & delivery to the site	cy	$984.00	303.20	$298,349
03302.19	Precast girder erection at level 4	ls	$5,635.00	1.00	$5,635
02766.01	Paint line	lf	$0.14	160.00	$22
02770.07	Concrete barrier, one sided	lf	$65.25	160.00	$10,440
ADOT 503	**Bridge 2 lanes precast box girder 80' spans**	**LF**	**80**	**$26,100**	**$2,090,400**

Aerial 4 lanes cip deck over Knik Arm

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities for a 120 foot span	**lf**		**120.00**	
	Superstructure				
03300.10	Deck Concrete and Formwork (Class 5,000)	cy	$400.00	694.22	$277,688
03300.11	Deck epoxy coated rebars @ 200#/cy	ton	$1,240.00	69.42	$86,081
03300.12	Deck Post Tensioning @ 70 #/cy	lb	$3.00	48,595.40	$145,786
03300.22	Cross Beam Concrete and Formwork (Class 5,000)	cy	$400.00	336.67	$134,668

ADOT COMPOSITE BUILD UPS

03300.23	Cross Beam epoxy coated rebars @ 200#/cy	ton	$1,240.00	33.67	$41,751
03300.24	Cross Beam Post Tensioning @ 70#/cy	lb	$3.00	23,566.90	$70,701
02770.07	Concrete barrier, one sided	lf	$65.25	240.00	$15,660
03300.19	Expansion Joint	lf	$1,000.00	30.00	$30,000
	Substructure				
03300.25	Square Column Concrete and Formwork	cy	$350.00	533.33	$186,666
03300.26	Square Column epoxy coated rebars @ 200#/cy	ton	$1,240.00	53.33	$66,129
03300.41	Edge Beam Concrete and Formwork	cy	$350.00	684.44	$239,554
03300.42	Edge Beam rebars @ 200#/cy	ton	$1,240.00	68.44	$84,866
03300.43	Edge Beam Post Tensioning @ 70#/cy	lb	$3.00	47,910.80	$143,732
03300.30	Pile Cap Concrete and Formwork	cy	$250.00	1,461.33	$365,333
03300.31	Pile Cap epoxy coated rebars @ 200#/cy	ton	$1,240.00	146.13	$181,201
03300.32	Furnish 2.5' diameter steel casing 0.75" wall	ton	$836.00	1,058.50	$884,906
03300.33	Pile Concrete (Class 4,000)	cy	$150.00	1,599.89	$239,984
03300.34	Pile epoxy coated rebars @ 200#/cy	ton	$1,240.00	159.99	$198,388
03300.35	Drive 2.5' diameter steel casing 0.75" wall	vlf	$36.95	8,800.00	$325,160
	Other Items				
02766.01	Paint line	lf	$0.14	480.00	$67
02360.02	Cement Deep Soil Mixing (CDSM)	cf	$3.75	799,820.00	$2,999,325
	Span Centers @ 120'				
	Width out to out @ 131'				
	Height above ground to deck @ 45'				
ADOT 505	**Aerial 4 lanes cip deck over Knik Arm**	**LF**	**120**	**$56,000**	**$6,717,700**

Sub-structure railroad in median of roadway

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities for 26 ea 495 foot spans	**EA**		**26.00**	
02425.01	Contractor field & home office overhead as a separate Bid Item per CALTRANS	days	$109,020.00	313.00	$34,123,260
02425.02	Access dredging	CY	$13.00	1,718,750.00	$22,343,750
02425.03	Seasonal dredging	CY	$13.00	429,688.00	$5,585,944
02425.04	Access trestle	SF	$65.00	375,000.00	$24,375,000
02425.05	Pile demonstration program	LS	$2,001,355.19	1.00	$2,001,355

ADOT COMPOSITE BUILD UPS

02425.06	Furnish 8' diameter cast in steel concrete piles	VLF	$1,300.90	39,080.00	$50,839,172
02425.07	Drive 8' diameter cast in steel concrete piles	EA	$367,911.60	216.00	$79,468,906
02425.08	Re-drive 8' diameter cast in steel concrete pile	EA	$42,000.00	6.00	$252,000
02425.09	Pier Column Structural Concrete	CY	$850.92	50,600.00	$43,056,552
02425.10	Furnish precast pile cap	CY	$742.55	27,300.00	$20,271,615
02425.11	Install precast pile cap	EA	$349,020.00	26.00	$9,074,520
02425.12	Furnish and install sacrificial 3' diameter 3" wall shell support piles	VLF	$966.84	24,840.00	$24,016,306
02425.13	Furnish and install steel templates for the batter piles	LBS	$3.68	8,019,000.00	$29,509,920
02425.14	Reinforcing steel plain	LBS	$0.69	22,770,000.00	$15,711,300
02425.15	Reinforcing steel epoxy coated	LBS	$1.24	22,356,000.00	$27,721,440
02425.16	Headed bar reinforcement	EA	$63.00	140,500.00	$8,851,500
02425.17	Miscellaneous Metal (Bridge)	LBS	$4.76	171,960.59	$818,532
02425.18	Surveying	LS	$6,505,800.00	0.524352	$3,411,329
02425.19	Furnish pier concrete	cy	$1,050.00	23,026	$24,177,300
02425.20	Install pier concrete	ea	$874,020.00	26	$22,724,520
	Estimate exclusions: Environmental mitigation (I.e. turbidity, marine pile driving energy attenuator, migratory shut down periods, storm water pollution, etc.) or a fender system.				
ADOT 507	**Sub-structure railroad in median of roadway**	**EA**	**26**	**$17,243,600**	**$448,334,300**

Sub-structure roadway (no railroad in median of roadway)

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities for 21 ea 600 foot spans	**EA**		**21.00**	
02425.01	Contractor field & home office overhead as a separate Bid Item per CALTRANS	days	$109,020.00	255.00	$27,800,100
02425.02	Access dredging	CY	$13.00	1,489,583.00	$19,364,579
02425.03	Seasonal dredging	CY	$13.00	372,396.00	$4,841,148
02425.04	Access trestle	SF	$65.00	240,000.00	$15,600,000
02425.05	Pile demonstration program	LS	$2,001,355.19	1.00	$2,001,355
02425.06	Furnish 8' diameter cast in steel concrete piles	VLF	$1,300.90	31,880.00	$41,472,692

ADOT COMPOSITE BUILD UPS

02425.07	Drive 8' diameter cast in steel concrete piles	EA	$367,911.60	176.00	$64,752,442
02425.08	Re-drive 8' diameter cast in steel concrete pile	EA	$42,000.00	5.00	$210,000
02425.09	Pier Column Structural Concrete	CY	$850.92	41,230.00	$35,083,432
02425.10	Furnish precast pile cap	CY	$742.55	22,244.00	$16,517,282
02425.11	Install precast pile cap	EA	$349,020.00	21.00	$7,329,420
02425.12	Furnish and install sacrificial 3' diameter 3" wall shell support piles	VLF	$966.84	20,240.00	$19,568,842
02425.13	Furnish and install steel templates for the batter piles	LBS	$3.68	6,534,000.00	$24,045,120
02425.14	Reinforcing steel plain	LBS	$0.69	14,430,370.00	$9,956,955
02425.15	Reinforcing steel epoxy coated	LBS	$1.24	18,216,000.00	$22,587,840
02425.16	Headed bar reinforcement	EA	$63.00	114,481.00	$7,212,303
02425.17	Miscellaneous Metal (Bridge)	LBS	$4.76	140,117.02	$666,957
02425.18	Surveying	LS	$6,505,800.00	0.427250	$2,779,603
02425.19	Furnish pier concrete	cy	$1,050.00	14,880	$15,624,000
02425.20	Install pier concrete	ea	$874,020.00	21	$18,354,420
	Estimate exclusions: Environmental mitigation (I.e. turbidity, marine pile driving energy attenuator, migratory shut down periods, storm water pollution, etc.) or a fender system.				
ADOT 509	**Sub-structure roadway (no railroad in median of roadway)**	**EA**	**21**	**$16,941,400**	**$355,768,500**

Superstructure roadway only bridge 15' long segments

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities for 21 ea 600 foot spans	**span**		**21.00**	
03302.36	Fabrication of 4125 cf trapedzodial segmental box 15' long & 320 tons	ea	$137,486.25	900.00	$123,737,625
03302.37	Erect trapedzodial segmental box	ea	$98,625.00	900.00	$88,762,500
03302.38	Post tension trapedzodial segmental box per span	ton	$3,000.00	8,510.00	$25,530,000

ADOT COMPOSITE BUILD UPS

ADOT 511	**Superstructure roadway only bridge 15' long segments**	**span**	**21**	**$11,334,800**	**$238,030,200**

Superstructure roadway and railroad bridge 15' long segments

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities for 26 ea 495 foot spans	**span**		**26.00**	
03302.39	Fabrication of 4800 cf trapedzodial segmental box 15' long & 370 tons	ea	$159,984.00	900.00	$143,985,600
03302.37	Erect trapedzodial segmental box	ea	$98,625.00	900.00	$88,762,500
03302.38	Post tension trapedzodial segmental box per span	ton	$3,000.00	12,600.00	$37,800,000

ADOT COMPOSITE BUILD UPS

ADOT 513	**Superstructure roadway and railroad bridge 15' long segments**	**span**	**26**	**$10,405,700**	**$270,548,100**

Flyover

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities for an 80 foot span 30' wide by 24' high	**LF**		**80.00**	
02465.04	8' diameter caisson with steel casing	vlf	$800.00	125.00	$100,000
03302.01	Round column concrete and formwork	cy	$422.00	49.33	$20,817
03302.02	Round column rebars @ 448 lbs/cy	ton	$1,440.00	11.05	$15,912
03302.21	Precast Concrete Waffle Truss	cy	$645.66	40.00	$25,826
03302.22	T-Bent Cap concrete and formwork	cy	$482.00	5.24	$2,526
03302.14	Precast girder one lane fabrication & delivery to the site	cy	$984.00	225.60	$221,990
03302.17	Precast girder erection at level 2	ls	$3,755.00	1.00	$3,755

ADOT COMPOSITE BUILD UPS

ADOT 515	**Flyover**	**LF**	**80**	**$4,900**	**$390,900**

Single Bored Tunnel 48' diameter

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002$	QUANTITY	TOTAL COST 2002$
	All quantities per 13500 tunnel feet	**lf**		**15,500.00**	
02400.30	EPBM Purchase	ls	$32,567,000.00	1.00	$32,567,000
02400.31	EPBM Backup equipment/conveyors Purchase	ls	$2,900,000.00	1.00	$2,900,000
02400.32	EPBM Locomotives Purchase	ls	$3,175,500.00	1.00	$3,175,500
02400.33	EPBM Rolling stock Purchase	ls	$1,225,250.00	1.00	$1,225,250
02400.34	Set up EPBM and backup equipment/conveyors	ls	$1,887,581.00	2.00	$3,775,162
02400.35	Remove EPBM and backup equipment/conveyors	ls	$2,222,328.00	2.00	$4,444,656
02400.36	Portal support crew and equipment	ls	$5,128,966.10	1.00	$5,128,966
02400.37	Precast concrete segmental final liner	lf	$3,784.01	15,500.00	$58,652,155
02400.38	EPBM Boring/Mining/Muck Removal	lf	$8,070.41	15,500.00	$125,091,355
02400.09	Waterproofing	sf	$7.00	2,337,350.40	$16,361,453
02400.12	Ceramic tile wall finish	sf	$10.55	930,000.00	$9,811,500
02400.04	Probing ahead, dewatering relief and grouting to prevent soil loss	cy	$52.00	1,038,822.40	$54,018,765

	ADOT COMPOSITE BUILD UPS				
02400.12	Ceramic tile wall finish	sf	$10.55	930,000.00	$9,811,500
02400.13	Consumables and minor expendables	cy	$6.00	1,038,822.40	$6,232,934
02400.14	Construction ventilation system	cy	$2.00	1,038,822.40	$2,077,645
02400.15	Construction lighting system	lf	$25.00	15,500.00	$387,500
02400.16	Construction dual railroad tracks, turnouts, crossovers, etc.	lf	$238.00	15,500.00	$3,689,000
02400.17	Construction dewatering	lf	$25.00	15,500.00	$387,500
02400.18	Instrumentation & monitoring	cy	$9.00	1,038,822.40	$9,349,402
02400.06	Support of excavation, spiles, soil nails, lattice girders, face bolts, etc.	cy	$14.00	1,038,822.40	$14,543,514
02400.07	Muck disposal offsite including haul	cy	$20.00	1,038,822.40	$20,776,448
02400.60	Cross Passageways at 750' intervals	ea	$4,849,642.00	20.00	$96,992,840
	Cross check on this build up price using Westerschelde Netherlands pricing:				
	Total cost at $700,000,000 divided by (6,600 M *2) 43,308 tunnel feet = $16,163 per tunnel foot				
	Escalate for three years = (16,163x1.045x1.045x1.045)= $18,445 per tunnel foot in 2002 dollars				
	Size adjustment factor Westerschelde at 37' diameter and Anchorage at 48' diameter				
	(48*48*0.7854) = 1810 sf of face area (37*37*0.7854) = 1075 sf of face area				
	1810 sf divided by 1075 sf = 1.683 size factor				
	$18,445 per tunnel foot in 2002 dollars times 1.683 = $31,043 per tunnel foot				
ADOT 601	**Single Bored Tunnel 48' diameter**	**TUFT**	**15,500**	**31,100**	**$481,400,100**

State of Alaska Transportation and Public Facilities
Bid Tabulations - Central Region Highways

Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
201 (1A)	Acre	Clearing	25	$2,536.04	$2,769.42
			39	$2,293.23	$2,504.26
201 (2A)	Acre	Grubbing	1	$10,133.33	$11,065.85
			16	$2,158.33	$2,356.95
			22	$1,753.64	$1,915.02
201 (3A)	Acre	Grubbing	3	$5,058.59	$5,524.11
			5	$4,884.85	$5,334.38
201 (4A)	Acre	Hand Clearing	2	$2,428.12	$2,651.57
202 (2)	SY	Removal of pavement	4,071	$4.00	$4.37
			15,000	$2.33	$2.54
			11,310	$0.79	$0.86
			12,600	$1.74	$1.90
			14,172	$2.20	$2.40
			14,236	$1.32	$1.44
			36,605	$1.57	$1.71
			53,712	$1.44	$1.57
			69,732	$1.84	$2.01
			78,910	$0.69	$0.75
202 (3)	SY	Removal of sidewalk	54	$10.33	$11.28
			319	$11.00	$12.01
			162	$5.16	$5.63
			994	$5.02	$5.48
			1,146	$3.70	$4.04
			2,626	$4.60	$5.02
202 (4)	LF	Removal of culvert pipe	70	$8.50	$9.28
			311	$10.17	$11.11
			561	$11.00	$12.01
			172	$29.97	$32.73
			285	$8.90	$9.72
			938	$7.95	$8.68
			1,670	$8.38	$9.15
			1,938	$3.66	$4.00
			2,388	$6.00	$6.55
			2,992	$3.40	$3.71
			3,750	$3.00	$3.28
202 (6)	EA	Removal of manhole	1	$900.00	$982.82
			4	$516.67	$564.22
			8	$525.00	$573.31
202 (8)	EA	Removal of inlet	1	$366.67	$400.41
			3	$616.67	$673.42
			9	$321.67	$351.27
			29	$362.50	$395.86
202 (9)	LF	Removal of curb and gutter	771	$5.00	$5.46
			2,098	$3.50	$3.82
			410	$2.64	$2.88
			6,752	$1.47	$1.61
			7,542	$2.06	$2.25
202 (13)	LF	Removal of fence	189	$5.00	$5.46
	LF		154	$4.27	$4.66

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Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
			606	$16.15	$17.64
			1,004	$3.86	$4.22
202 (15)	SY	Pavement planing	1,167	$8.33	$9.10
			1,308	$4.08	$4.46
			11,694	$1.73	$1.89
			16,744	$0.94	$1.03
			163,216	$0.61	$0.67
202 (16-200)	LF	Removal of 200 mm steel gas pipe	5,742	$4.37	$4.77
202 (37)	CY	Removal and disposal of bridge curb	11	$1,325.23	$1,447.18
203 (1)	CY	Common excavation	696	$7.13	$7.79
			169,225	$3.53	$3.85
203 (3)	CY	Unclassified excavation	1,345	$7.67	$8.38
			3,900	$10.08	$11.01
			4,060	$4.67	$5.10
			4,277	$5.00	$5.46
			4,840	$4.84	$5.29
			7,056	$4.82	$5.26
			12,916	$3.50	$3.82
			30,556	$1.60	$1.75
			112,898	$2.43	$2.65
			119,024	$3.34	$3.65
			137,150	$4.97	$5.43
203 (4)	CY	Muck excavation	37,306	$3.67	$4.01
203 (5A)	CY	Borrow, Type A	4,350	$14.22	$15.53
203 (6A)	TON	Borrow, Type A	2,500	$6.67	$7.28
			2,820	$16.67	$18.20
			8,387	$7.00	$7.64
			50,785	$5.50	$6.01
			3,346	$7.64	$8.34
			5,236	$8.01	$8.75
			5,732	$12.25	$13.38
			9,004	$4.08	$4.46
			28,666	$3.03	$3.31
			29,592	$4.43	$4.84
			62,214	$6.19	$6.76
			102,972	$2.59	$2.83
			149,914	$3.78	$4.13
			191,362	$7.18	$7.84
			266,012	$6.96	$7.60
			326,718	$2.12	$2.32
203 (6b)	TON	Borrow, Type B	168,654	$0.61	$0.67
203 (6c)	TON	Borrow, Type C	5,730	$3.78	$4.13
			15,432	$5.90	$6.44
203 (9)	SY	Obliteration of roadway	2,392	$1.67	$1.82
			3,592	$0.71	$0.78
203 (17)	LF	Ditch linear grading	31,300	$0.56	$0.61
			311,680	$0.04	$0.04
			33	$42.16	$46.04
203 (18)	LF	Pathway linear grading	6,234	$2.59	$2.83

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Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
			110	$31.17	$34.04
			3,000	$5.80	$6.33
203 (20)	EA	Pole shoring with line truck	2	$1,550.00	$1,692.64
			2	$1,091.67	$1,192.13
203 (21)	EA	Pole shoring with single pile	8	$1,700.00	$1,856.44
203 (23)	EA	Pole shoring with three piles	4	$3,166.67	$3,458.08
203 (24)	EA	Removal of pole shoring	14	$516.67	$564.22
203 (28)	M3	Contaminated soil special handling	11,314	$5.22	$5.70
203 (44)	EA	Fuel line casing removal	2	$3,100.00	$3,385.28
205 (1)	M3	Excavation for structures	576	$22.94	$25.05
301 (1)	TON	Aggregate base course	290	$24.00	$26.21
			365	$24.77	$27.05
			1,691	$14.33	$15.65
			2,600	$18.70	$20.42
			13,864	$10.50	$11.47
			24,990	$11.00	$12.01
			1,488	$32.81	$35.83
			3,622	$12.25	$13.38
			4,188	$15.27	$16.68
			5,512	$13.06	$14.26
			5,682	$11.19	$12.22
			22,818	$7.06	$7.71
			23,382	$9.37	$10.23
			29,608	$9.68	$10.57
			32,750	$9.80	$10.70
			37,964	$8.42	$9.19
			42,334	$7.46	$8.15
			52,614	$8.33	$9.10
306 (1)	TON	Asphalt treated base course	18,018	$20.87	$22.79
308 (1)	SY	Crushed asphalt base course (recycled existing mat.)	78,380	$1.75	$1.91
401 (1A)	TON	Asphalt concrete, type 2, class A	622	$54.17	$59.15
			2,822	$33.00	$36.04
			4,440	$30.16	$32.94
			8,951	$26.76	$29.22
			19,984	$24.19	$26.42
			42,990	$21.62	$23.61
401 (1B)	TON	Asphalt concrete, type 2, class B	2,540	$36.59	$39.96
			8,102	$28.12	$30.71
			9,982	$28.73	$31.37
			13,804	$29.94	$32.70
			16,810	$21.16	$23.11
			17,086	$38.10	$41.61
			28,390	$26.13	$28.53
	TON		13,356	$23.16	$25.29
			15,515	$31.00	$33.85
401 (1C)	TON	Asphalt concrete, type 3, class A	12,610	$21.62	$23.61
401 (1D)	TON	Asphalt concrete, type 3, class B	220	$66.52	$72.64
401 (2)	TON	Asphalt cement, grade PG 52-28	34	$43.33	$47.32
			734	$178.43	$194.85

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Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
401 (3)	TON	Temporary pavement	320	$57.76	$63.08
			1,086	$48.38	$52.83
402 (1)	TON	STE-1 asphalt for tack coat	17	$417.31	$455.71
			33	$435.45	$475.52
			46	$346.25	$378.11
			52	$385.55	$421.03
			110	$396.14	$432.59
402 (3)	TON	STE-1 asphalt for tack coat	0.30	$1,033.33	$1,128.42
404 (1)	TON	CRS-2 asphalt for seal coat	5	$628.98	$686.86
404 (2)	TON	Cover coat material grading B	200	$53.68	$58.62
405 (3)	SY	Asphalt surface treatment	8,750	$2.00	$2.18
407 (1)	TON	Stone mastic asphalt concrete	3,714	$33.79	$36.90
			7,664	$33.27	$36.33
			8,958	$38.56	$42.11
			18,074	$32.43	$35.41
407 (2)	TON	Asphalt cement grade PG 58-28	242	$356.07	$388.84
			498	$285.76	$312.06
			582	$249.48	$272.44
			1,176	$174.64	$190.71
501 (4)	CY	Class A Concrete	5	$504.61	$551.05
			17	$1,554.59	$1,697.65
501 (6)	CY	Class W Concrete	1	$30,000.00	$32,760.75
			60	$1,288.74	$1,407.34
501 (8)	LF	Coring concrete	1,170	$54.33	$59.33
501 (10)	EA	Core and grout dowels	18	$461.33	$503.78
501 (158)	SF	Stub wall	395	$69.67	$76.08
501 (15D)	SF	Retaining wall	430	$103.67	$113.21
501 (21)	EA	Drill and bond dowels	3,110	$30.67	$33.49
502 (1)	EA	Prestressed concrete bulb tees 31.774 mm	12	$34,333.33	$37,492.85
502 (1A)	EA	Prestressed concrete structural members	2	$48,333.33	$52,781.20
502 (1B)	EA	Prestressed concrete structural members	2	$46,333.33	$50,597.15
504 (3)	EA	Bridge joint restrainer units	160	$605.00	$660.68
504 (4)	EA	Interface base	2	$4,051.67	$4,424.52
504 (12)	EA	Reinforce slip fit joint	25	$1,478.33	$1,614.37
504 (13)	EA	Install hand hole door	15	$692.67	$756.41
505 (5A)	LF	Furnish structural steel piles HP 360x174	718	$50.80	$55.47
505 (5B)	LF	Furnish structural steel piles 762 mm diameter	354	$187.96	$205.26
505 (5B)	LF	Furnish structural steel piles HP 250x85	50	$38.61	$42.16
505 (6A)	EA	Drive structural steel piles HP 360x174	12	$4,500.00	$4,914.11
			18	$2,700.00	$2,948.47
505 (6B)	EA	Drive structural steel piles 762 mm diameter	4	$13,333.33	$14,560.33
505 (6B)	EA	Drive structural steel piles HP 250x85	2	$2,000.00	$2,184.05
505 (9)	SY	Structural steel sheet piles	1	$25,083.82	$27,392.16
506 (3)	MBM	Treated timber	1.7	$7,333.33	$8,008.18
			3.14	$5,782.84	$6,315.01
507 (1)	LF	Steel bridge railing	426	$39.62	$43.27
			584	$144.27	$157.55
507 (9)	LF	Balustrade railing	50	$170.00	$185.64
514 (1)	SF	Aesthetic fascia	504	$5.16	$5.63

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Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
			1,787	$3.75	$4.10
514 (2)	SF	Graffiti protection	504	$5.16	$5.63
			1,787	$2.60	$2.84
602 (1A)	LF	Structural plate pipe	85	$838.20	$915.34
606 (2)	LF	Structural plate pipe arch span 3530 rise 2260 thick 2.8	125	$426.72	$465.99
603 (2-2080)	LF	2080 mm CSP arch	167	$148.84	$162.54
603 (2-66)	LF	66 inch pipe arch	66	$135.00	$147.42
603 (2-710)	LF	710 mm CSP arch	90	$61.97	$67.67
603 (17-080)	LF	80 mm pipe	23	$31.24	$34.11
603 (17-12)	LF	12 inch pipe	14	$69.00	$75.35
			160	$29.15	$31.83
			435	$23.50	$25.66
603 (17-120)	LF	1200 mm pipe	184	$55.88	$61.02
603 (17-18)	LF	18 inch pipe	84	$40.43	$44.15
			170	$34.44	$37.61
			231	$46.67	$50.96
			636	$32.00	$34.94
			793	$30.00	$32.76
603 (17-24)	LF	24 inch pipe	156	$45.04	$49.18
			348	$40.00	$43.68
603 (17-300)	LF	300 mm pipe	27	$52.83	$57.69
			105	$37.29	$40.72
			190	$30.28	$33.07
			1,181	$38.10	$41.61
603 (17-36)	LF	36 inch pipe	16	$81.12	$88.59
			182	$55.00	$60.06
603 (17-450)	LF	450 mm pipe	42	$41.35	$45.16
			110	$65.53	$71.56
			198	$34.54	$37.72
			230	$35.05	$38.28
			335	$42.67	$46.60
			382	$47.24	$51.59
			843	$38.71	$42.27
			1,818	$29.26	$31.95
			2,520	$26.62	$29.07
			4,808	$29.47	$32.18
603 (17-60)	LF	60 inch pipe	72	$101.49	$110.83
603 (17-600)	LF	600 mm pipe	112	$50.29	$54.92
			130	$65.02	$71.00
			156	$61.47	$67.13
			455	$45.11	$49.26
			1,750	$48.41	$52.86
			1,791	$33.93	$37.05
			1,886	$33.53	$36.62
603 (17-750)	LF	750 mm pipe	216	$53.85	$58.81
			1,050	$39.83	$43.50
603 (17-900)	LF	900 mm pipe	26	$116.84	$127.59
			59	$56.90	$62.14
			157	$56.08	$61.24

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Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
			344	$62.79	$68.57
			604	$57.91	$63.24
603 (17-1200)	LF	1200 mm pipe	5	$452.12	$493.73
			154	$90.93	$99.30
			1,200	$78.74	$85.99
603 (17-1650)	LF	1650 mm pipe	303	$94.28	$102.96
603 (19-1)	LF	1850 mm x 1400 mm pipe arch	77	$140.21	$153.11
603 (20-12)	EA	End section for 12 inch pipe	2	$241.67	$263.91
			12	$124.36	$135.80
603 (20-120)	EA	End section for 1200 mm pipe	3	$583.33	$637.01
603 (20-18)	EA	End section for 18 inch pipe	3	$300.00	$327.61
			6	$155.87	$170.21
603 (20-24)	EA	End section for 24 inch pipe	14	$188.01	$205.31
			18	$200.00	$218.41
603 (20-30)	EA	End section for 30 inch pipe	7	$343.13	$374.71
603 (20-300)	EA	End section for 300 mm pipe	7	$174.00	$190.01
603 (20-36)	EA	End section for 36 inch pipe	4	$346.23	$378.09
			8	$425.00	$464.11
603 (20-450)	EA	End section for 450 mm pipe	4	$115.67	$126.31
			6	$175.00	$191.10
			6	$135.00	$147.42
			6	$116.67	$127.41
			13	$198.00	$216.22
			42	$197.33	$215.49
			98	$123.00	$134.32
603 (20-600)	EA	End section for 600 mm pipe	2	$275.00	$300.31
			2	$188.33	$205.66
			4	$183.33	$200.20
			5	$220.00	$240.25
			9	$265.67	$290.12
			17	$236.33	$258.08
			75	$160.00	$174.72
			96	$147.33	$160.89
603 (20-750)	EA	End section for 750 mm pipe	4	$320.00	$349.45
			12	$323.33	$353.08
603 (20-900)	EA	End section for 900 mm pipe	2	$366.67	$400.41
			11	$458.33	$500.51
			21	$326.67	$356.73
603 (20-1200)	EA	End section for 1200 mm pipe	1	$838.33	$915.48
603 (21-300)	LF	300 mm corrugated polyethylene pipe	1,535	$26.21	$28.62
			6,070	$20.83	$22.75
603 (21-450)	LF	450 mm corrugated polyethylene pipe	1,608	$25.55	$27.90
			2,067	$30.48	$33.28
603 (21-600)	LF	600 mm corrugated polyethylene pipe	1,417	$38.10	$41.61
			2,789	$31.39	$34.28
603 (21-750)	LF	750 mm corrugated polyethylene pipe	2,756	$43.89	$47.93
603 (21-900)	LF	900 mm corrugated polyethylene pipe	41	$58.93	$64.35
			3,215	$53.64	$58.58
603 (21-1050)	LF	1050 mm corrugated polyethylene pipe	853	$76.81	$83.88

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Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
603 (21-1200)	LF	1200 mm corrugated polyethylene pipe	215	$77.21	$84.32
603 (22-300)	LF	300 mm steel pipe	14	$104.04	$113.61
603 (22-450)	LF	450 mm steel pipe	79	$69.19	$75.56
603 (22-900)	LF	900 mm steel pipe	52	$196.60	$214.69
603 (32-1200)	LF	1200 mm pipe	974	$80.77	$88.20
604 (1A)	EA	Storm sewer manhole type 1	2	$3,933.33	$4,295.29
			4	$2,766.67	$3,021.27
			26	$2,450.00	$2,675.46
			28	$2,900.00	$3,166.87
			32	$2,500.00	$2,730.06
			38	$2,500.00	$2,730.06
604 (1B)	EA	Storm sewer manhole type 2	2	$4,433.33	$4,841.31
			3	$4,266.67	$4,659.31
			3	$5,650.00	$6,169.94
			16	$4,766.67	$5,205.32
			21	$3,833.33	$4,186.09
604 (1C)	EA	Storm sewer manhole type 3	1	$7,833.33	$8,554.19
			3	$6,733.33	$7,352.96
			17	$9,566.67	$10,447.04
604 (2)	EA	Sanitary sewer manhole	1	$4,300.00	$4,695.71
604 (3)	EA	Reconstruct existing manhole	1	$1,166.67	$1,274.03
			1	$1,666.67	$1,820.05
			1	$3,133.33	$3,421.67
			2	$1,833.33	$2,002.04
			2	$1,600.00	$1,747.24
			3	$1,666.67	$1,820.05
			4	$1,266.67	$1,383.24
			10	$1,333.33	$1,456.03
			25	$916.67	$1,001.03
604 (4)	EA	Adjust existing manhole	4	$275.00	$300.31
			8	$566.67	$618.82
			12	$273.33	$298.48
			15	$200.00	$218.41
			19	$316.67	$345.81
			47	$368.33	$402.23
604 (5)	EA	Inlet type A	1	$2,466.67	$2,693.67
			2	$1,866.67	$2,038.45
			8	$1,900.00	$2,074.85
			8	$1,866.67	$2,038.45
			17	$1,363.33	$1,488.79
			41	$1,500.00	$1,638.04
604 (5A)	EA	MOA catch basin inlet	20	$1,650.00	$1,801.84
604 (5B)	EA	Inlet type B	22	$2,266.67	$2,475.26
604 (5D)	EA	Inlet type D	1	$5,150.00	$5,623.93
604 (5F)	EA	Field inlet	65	$1,366.67	$1,492.44
604 (6)	EA	Relocate inlet	1	$983.33	$1,073.82
604 (10)	EA	Bypass pumping	14	$2,550.00	$2,784.66
604 (11)	EA	Remove and replace manhole	25	$6,275.00	$6,852.46
604 (13B)	EA	Furnish and install inlet frame and grate	24	$600.00	$655.22

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Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
604 (14)	EA	Petroleum separator manhole	1	$22,333.33	$24,388.55
			2	$23,000.00	$25,116.58
605 (5)	CY	Porous backfill material	1,439	$34.40	$37.57
606 (1)	LF	W-Beam guardrail	25	$55.88	$61.02
			171	$20.93	$22.86
			174	$46.23	$50.48
			1,811	$19.00	$20.75
			3,110	$20.52	$22.41
			4,289	$17.58	$19.20
			193	$40.00	$43.68
606 (2)	LF	Thrie beam guardrail	280	$30.67	$33.49
606 (3)	LF	Box beam guardrail	1,766	$31.80	$34.73
606 (6)	LF	Remove and dispose of guardrail	25	$10.67	$11.65
			39	$36.48	$39.84
			118	$6.10	$6.66
			650	$4.06	$4.43
			3,045	$3.56	$3.89
			3,284	$6.00	$6.55
			193	$11.00	$12.01
606 (9)	EA	Controlled release terminal (CRT)	1	$2,566.67	$2,802.87
			1	$2,433.33	$2,657.26
606 (9)	EA	Crash cushion	2	$36,800.00	$40,186.52
606 (10)	EA	Slotted rail terminal (SRT-350)	1	$7,533.33	$8,226.58
			1	$3,233.33	$3,530.88
			2	$3,100.00	$3,385.28
			3	$3,150.00	$3,439.88
			4	$2,166.67	$2,366.06
			11	$1,833.33	$2,002.04
			17	$2,100.00	$2,293.25
			24	$2,050.00	$2,238.65
606 (12)	EA	Guardrail/Bridgerail connection	1	$1,600.00	$1,747.24
			8	$2,066.67	$2,256.86
			20	$1,666.67	$1,820.05
606 (130	LF	Bridge rail retrofit	489	$81.79	$89.32
607 (3)	LF	Chain link fence	55	$62.00	$67.71
			220	$57.74	$63.05
	LF		475	$17.58	$19.20
			1,033	$24.38	$26.62
			1,033	$13.92	$15.20
607 (4)	LF	Reconstructed fence	446	$45.11	$49.26
			1,329	$19.51	$21.31
607 (5)	EA	Drive gate	3	$1,000.00	$1,092.03
607 (6)	EA	Walk gate	3	$891.67	$973.73
607 (8)	LF	Shiplap fence	420	$91.28	$99.68
607 (13)	LF	Separation fencing	36	$569.21	$621.59
608 (1)	SY	Concrete sidewalk	53	$41.67	$45.50
			371	$48.33	$52.78
			375	$66.33	$72.43
			2,398	$29.54	$32.26

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Bid Tabulations - Central Region Highways

Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
608 (1A)	SY	Concrete sidewalk 100 mm thick	1,833	$29.37	$32.07
			2,578	$28.01	$30.59
			3,782	$26.20	$28.61
			5,585	$24.81	$27.09
608 (1B)	SY	Concrete sidewalk 150 mm thick	490	$39.30	$42.92
			569	$35.12	$38.35
			2,080	$32.61	$35.61
608 (2)	TON	Asphalt sidewalk	276	$105.44	$115.14
608 (3)	SY	Asphalt sidewalk	6,698	$6.41	$7.00
608 (7)	TON	Asphalt pathway	100	$93.74	$102.37
			621	$39.31	$42.93
			681	$48.69	$53.17
608 (7A)	TON	Asphalt pathway	46	$67.50	$73.71
608 (8)	TON	Asphalt pathway and medians	1,044	$49.90	$54.49
			1,399	$45.36	$49.53
608 (8A)	SY	Asphalt pathway and medians	1,167	$13.67	$14.93
608 (16)	SY	Exposed aggregate sidewalk	130	$133.33	$145.60
			1,548	$34.56	$37.74
608 (17B)	SY	Patterned concrete	880	$74.83	$81.72
609 (2)	LF	Curb and gutter type 1	72	$23.87	$26.07
			328	$31.49	$34.39
			512	$23.57	$25.74
			8,358	$14.17	$15.47
			11,188	$11.99	$13.09
			20,832	$10.87	$11.87
			23,165	$11.99	$13.09
			810	$17.17	$18.75
			3,545	$15.50	$16.93
609 (3)	EA	Curb ramp	1	$633.33	$691.61
			8	$666.67	$728.02
			28	$666.67	$728.02
			30	$466.67	$509.62
			54	$600.00	$655.22
			62	$400.00	$436.81
			69	$573.33	$626.09
609 (7)	EA	Bumper curb	90	$108.33	$118.30
609 (12)	EA	Retrofit curb ramp	10	$1,450.00	$1,583.44
610 (1)	CY	Ditch lining	114	$32.36	$35.34
610 (2)	TON	Ditch lining	99	$42.03	$45.90
			213	$14.00	$15.29
610 (3)	LF	Ditch lining	1,890	$7.62	$8.32
			3,934	$5.59	$6.10
610 (4)	SY	Ditch lining	807	$15.33	$16.74
611 (18)	CY	Riprap class 2	806	$56.06	$61.22
			6,825	$17.07	$18.64
611 (2A)	TON	Riprap class 1	57	$67.12	$73.30
			136	$25.70	$28.07
			219	$62.60	$68.36
			1,922	$20.26	$22.12

State of Alaska Transportation and Public Facilities
Bid Tabulations - Central Region Highways

Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
			167	$19.00	$20.75
611 (2B)	TON	Riprap class 2	8	$139.41	$152.24
			227	$61.69	$67.37
			1,728	$24.49	$26.74
			83	$65.00	$70.98
			187	$18.00	$19.66
611 (2C)	TON	Riprap class 3	51	$90.00	$98.28
			51,814	$17.67	$19.30
611 (2C)	TON	Riprap class 4	4,781	$20.33	$22.20
611 (5)	SF	Slope protection	5,200	$9.00	$9.83
614 (1)	LF	Concrete barrier	110	$76.67	$83.73
615 (1)	SF	Standard sign	71	$40.65	$44.39
			145	$12.57	$13.73
			328	$48.87	$53.37
			384	$27.10	$29.59
			436	$54.19	$59.18
			441	$46.70	$51.00
			678	$43.48	$47.48
			755	$30.19	$32.97
			837	$33.45	$36.53
615 (11)	EA	Cantilevered sign	2	$36,666.67	$40,040.92
618 (2)	LB	Seeding	13	$172.33	$188.19
			65	$55.00	$60.06
	LB		49	$119.15	$130.11
			77	$28.12	$30.71
			101	$39.31	$42.93
			119	$34.02	$37.15
			386	$27.97	$30.54
			860	$36.74	$40.12
618 (2A)	LB	Seeding type A	71	$80.14	$87.51
			165	$54.13	$59.11
			1,038	$31.45	$34.34
			1,144	$30.69	$33.51
618 (2B)	LB	Seeding type B	141	$117.18	$127.96
			348	$40.82	$44.58
			580	$23.44	$25.60
618 (2C)	LB	Seeding type C	21	$114.91	$125.48
			24	$153.46	$167.58
618 (2D)	LB	Seeding type D	118	$110.37	$120.53
619 (2)	SY	Matting	323	$2.37	$2.59
619 (3)	SY	Hydro matting	8,145	$0.84	$0.92
			17,228	$0.81	$0.88
			20,000	$0.70	$0.76
619 (6)	SY	Soil stabilization blanket	4,365	$2.51	$2.74
620 (1)	SY	Topsoil	950	$3.33	$3.64
			1,490	$2.87	$3.13
			2,775	$4.33	$4.73
			3,530	$3.90	$4.26
			7,870	$3.58	$3.91

State of Alaska Transportation and Public Facilities
Bid Tabulations - Central Region Highways

Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
			9,180	$2.22	$2.42
			11,018	$2.43	$2.65
			35,000	$1.17	$1.28
			79,580	$0.62	$0.68
			120,104	$0.67	$0.73
620 (1A)	SY	Topsoil 100 mm depth	25,985	$1.67	$1.82
			70,199	$1.61	$1.76
620 (1B)	SY	Topsoil 300 mm depth	2,392	$5.02	$5.48
620 (1B)	SY	Topsoil 350 mm depth	25,483	$3.64	$3.97
620 (1C)	SY	Topsoil 450 mm depth	777	$7.80	$8.52
623 (1)	SY	Sodding	444	$29.26	$31.95
623 (3)	SY	Native sod	195	$46.82	$51.13
625 (1)	LF	Pipe hand rail	250	$219.33	$239.51
626 (1-200)	LF	Sanitary sewer 200 mm	105	$74.68	$81.55
626 (1-250)	LF	Sanitary sewer 250 mm	551	$87.88	$95.97
626 (1-300)	LF	Sanitary sewer 300 mm	85	$74.17	$81.00
627 (1-100)	LF	100 mm ductile iron water pipe class 52	26	$71.32	$77.88
627 (1-150)	LF	150 mm ductile iron water pipe class 52	56	$79.15	$86.43
627 (1-200)	LF	200 mm ductile iron water pipe class 2	49	$103.63	$113.17
627 (1-200)	LF	200 mm ductile iron water pipe class 52	1,066	$70.10	$76.55
627 (1-250)	LF	250 mm ductile iron water pipe class 2	699	$81.79	$89.32
627 (1-300)	LF	300 mm ductile iron water pipe class 2	82	$83.82	$91.53
627 (1-300)	LF	300 mm ductile iron water pipe class 52	4,495	$64.41	$70.34
627 (4)	EA	Fire hydrant adjustment	5	$876.67	$957.35
			11	$616.67	$673.42
627 (5)	EA	Fire hydrant installation	2	$4,533.33	$4,950.51
627 (5A)	EA	Fire hydrant installation single pumper	11	$3,576.67	$3,905.81
627 (5B)	EA	Fire hydrant installation double pumper	3	$3,950.00	$4,313.50
627 (6)	EA	Fire hydrant relocation	5	$1,916.67	$2,093.05
			9	$4,550.00	$4,968.71
627 (7)	EA	Fire hydrant removal	4	$1,500.00	$1,638.04
			5	$796.67	$869.98
627 (8)	EA	Water service connection	2	$6,666.67	$7,280.17
			8	$1,500.00	$1,638.04
			15	$750.00	$819.02
627 (9-100)	EA	100 mm gate valve	1	$544.33	$594.42
627 (9-150)	EA	150 mm gate valve	1	$606.00	$661.77
627 (9-200)	EA	200 mm gate valve	1	$1,000.00	$1,092.03
			18	$846.67	$924.58
627 (9-250)	EA	250 mm gate valve	5	$1,566.67	$1,710.84
627 (9-300)	EA	300 mm gate valve	14	$1,323.33	$1,445.11
630 (1)	SY	Geotextile separation	9,149	$0.89	$0.97
			33,455	$0.85	$0.93
			62,314	$1.34	$1.46
			72,892	$0.69	$0.75
631 (1A)	SY	Geotextile drainage class A	8,730	$1.28	$1.40
631 (2)	SY	Geotextile erosion control class A	5,963	$1.53	$1.67
631 (2)	SY	Geotextile erosion control class 1	311	$3.70	$4.04
			2,534	$0.00	$0.00

State of Alaska Transportation and Public Facilities
Bid Tabulations - Central Region Highways

Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
			2,595	$1.17	$1.28
636 (1)	CY	Gabion	487	$92.00	$100.47
			1,555	$117.99	$128.85
638 (2)	SY	Impermeable membrane	2,512	$15.05	$16.43
639 (1)	EA	Residence driveways	2	$933.33	$1,019.22
			7	$575.00	$627.91
			293	$111.67	$121.95
639 (2)	EA	Service driveways	2	$750.00	$819.02
			4	$933.33	$1,019.22
			17	$625.00	$682.52
			70	$460.00	$502.33
639 (3)	EA	Public approach	2	$933.33	$1,019.22
			2	$830.00	$906.38
			17	$625.00	$682.52
			50	$300.00	$327.61
639 (4)	EA	Driveway	4	$634.00	$692.34
			44	$283.33	$309.40
			93	$150.00	$163.80
639 (6)	EA	Approach	4	$933.33	$1,019.22
			8	$566.67	$618.82
			18	$350.00	$382.21
			21	$408.33	$445.91
			24	$500.00	$546.01
			34	$366.67	$400.41
			81	$333.33	$364.00
			250	$241.67	$263.91
641 (3)	LF	Silt fence	164	$6.10	$6.66
			656	$4.17	$4.55
			1,209	$3.05	$3.33
			1,601	$4.11	$4.49
			5,413	$3.15	$3.44
			9,252	$2.54	$2.77
			14,813	$3.15	$3.44
	LF		300	$5.50	$6.01
			649	$6.50	$7.10
641.(4)	EA	Straw bale	400	$21.67	$23.66
643 (1)	cal day	Traffic maintenance	107	$250.00	$273.01

State of Alaska Transportation and Public Facilities
Bid Tabulations - Central Region Highways

Bid Item No.	Unit	Description	Quantity	2000 $ Unit Price	2002 $ Unit Price
			180	$133.67	$145.97
			180	$133.34	$145.61
650 (21)	EA	Barrier rock	40	$196.67	$214.77
			92	$165.33	$180.54
650 (21)	EA	Boulder	24	$350.00	$382.21
660 (13)	EA	Electrolier	2	$6,633.33	$7,243.76
			18	$3,766.67	$4,113.30

HISTORICAL UNIT PRICE LIBRARY

CODE	DESCRIPTION	Unit of Measure	UNIT PRICE 2002$
01000.00	**General Requirements**		
01530.01	Temporary fence	lf	$4.95
02000.00	**Site Construction**		
02220.11	Saw cut Asphalt Pavement	lf	$3.19
02222.02	Remove asphaltic concrete pavement	sy	$2.93
02232.01	Clearing and grubbing	acres	$2,504.26
02260.21	Soldier Piles & Lagging	sf	$44.50
02260.33	Slurry Concrete Wall, 4 foot Wide (Reinforced)	sf	$70.00
02260.34	Install internal wales and struts	ton	$1,450.00
02260.36	Remove internal wales and struts	ton	$605.00
02260.51	Street Decking	sf	$50.75
02262.04	Ground anchors	ea	$1,430.00
02315.01	Common excavation including haul	cy	$5.43
02315.05	Embankment compaction	cy	$0.00
02315.07	Excavation including haul	cy	$49.53
02315.12	Gravel borrow including haul south portion of causeway	cy	$10.00
02315.13	Gravel borrow including haul north portion of causeway	cy	$4.50
02322.02	Embankment compaction	cy	$1.15
02360.02	Cement Deep Soil Mixing (CDSM)	cf	$3.75
02370.06	Backfill	cy	$41.04
02372.01	Light loose riprap	cy	$32.75
02400.04	Probing ahead, dewatering relief and grouting to prevent soil loss	cy	$52.00
02400.06	Support of excavation, spiles, soil nails, lattice girders, face bolts, etc.	cy	$14.00
02400.07	Muck disposal offsite including haul	cy	$20.00
02400.09	Waterproofing	sf	$7.00
02400.12	Ceramic tile wall finish	sf	$10.55
02400.13	Consumables and minor expendables	cy	$6.00
02400.14	Construction ventilation system	cy	$2.00
02400.15	Construction lighting system	lf	$25.00
02400.16	Construction dual railroad tracks, turnouts, crossovers, etc.	lf	$238.00
02400.17	Construction dewatering	lf	$25.00
02400.18	Instrumentation & monitoring	cy	$9.00
02400.30	EPBM Purchase	ls	$32,567,000.00
02400.31	EPBM Backup equipment/conveyors Purchase	ls	$2,900,000.00
02400.32	EPBM Locomotives Purchase	ls	$3,175,500.00
02400.33	EPBM Rolling stock Purchase	ls	$1,225,250.00
02400.34	Set up EPBM and backup equipment/conveyors	ls	$1,887,581.00
02400.35	Remove EPBM and backup equipment/conveyors	ls	$2,222,328.00

HISTORICAL UNIT PRICE LIBRARY

CODE	DESCRIPTION	Unit of Measure	UNIT PRICE 2002$
02400.36	Portal support crew and equipment	ls	$5,128,966.10
02400.37	Precast concrete segmental final liner	lf	$3,784.01
02400.38	EPBM Boring/Mining/Muck Removal	lf	$8,070.41
02400.60	Cross Passageways at 750' intervals	ea	$4,849,642.00
02425.01	Contractor field & home office overhead as a separate Bid Item per CALTR/	days	$109,020.00
02425.02	Access dredging	CY	$13.00
02425.03	Seasonal dredging	CY	$13.00
02425.04	Access trestle	SF	$65.00
02425.05	Pile demonstration program	LS	$2,001,355.19
02425.06	Furnish 8' diameter cast in steel concrete piles	VLF	$1,300.90
02425.07	Drive 8' diameter cast in steel concrete piles	EA	$367,911.60
02425.08	Re-drive 8' diameter cast in steel concrete pile	EA	$42,000.00
02425.09	Pier Column Structural Concrete	CY	$850.92
02425.10	Furnish precast pile cap	CY	$742.55
02425.11	Install precast pile cap	EA	$349,020.00
02425.12	Furnish and install sacrificial 3' diameter 3" wall shell support piles	VLF	$966.84
02425.13	Furnish and install steel templates for the batter piles	LBS	$3.68
02425.14	Reinforcing steel plain	LBS	$0.69
02425.15	Reinforcing steel epoxy coated	LBS	$1.24
02425.16	Headed bar reinforcement	EA	$63.00
02425.17	Miscellaneous Metal (Bridge)	LBS	$4.76
02425.18	Surveying	LS	$6,505,800.00
02425.19	Furnish pier concrete	cy	$1,050.00
02425.20	Install pier concrete	ea	$874,020.00
02465.04	8' diameter caisson with steel casing	vlf	$800.00
02465.34	Pile cap 27'x27'x8' with 9 ea 36" diameter piles 300' deep	ea	$1,714,700.00
02510.01	8" D.I.P. storm sewer (box drainage piping)	lf	$50.67
02620.02	Underdrains	lf	$43.50
02620.03	Geotextile	sf	$0.14
02622.02	Filter blanket	cy	$113.46
02630.05	Drainage inlet grate 37" by 54" by 3.5"	ea	$1,775.00
02630.06	Drainage inlet structure	ea	$1,031.25
02630.07	6" underdrain pipe	lf	$7.66
02630.11	12" class III RCP	lf	$23.50
02720.02	Crushed surfacing top course	cy	$12.64
02720.05	Sub-ballast	cy	$27.91
02720.06	Ballast	cy	$36.25
02740.02	Asphaltic Conc. Pavement (Large Qty.)	ton	$23.61

HISTORICAL UNIT PRICE LIBRARY

CODE	DESCRIPTION	Unit of Measure	UNIT PRICE 2002$
02766.01	Paint line	lf	$0.14
02770.07	Concrete barrier, one sided	lf	$65.25
02770.08	Concrete barrier, two sided	lf	$72.50
02820.23	Chain link fence type 3 for soldier pile wall	lf	$19.39
02830.21	Structural earth wall	sf	$16.91
02830.22	Backfill for structural earth wall including haul	cy	$19.88
03000.00	**Concrete**		
03210.02	Epoxy coated rebars	lb	$0.62
03300.10	Deck Concrete and Formwork (Class 5,000)	cy	$400.00
03300.11	Deck epoxy coated rebars @ 200#/cy	ton	$1,240.00
03300.12	Deck Post Tensioning @ 70 #/cy	lb	$3.00
03300.19	Expansion Joint	lf	$1,000.00
03300.22	Cross Beam Concrete and Formwork (Class 5,000)	cy	$400.00
03300.23	Cross Beam epoxy coated rebars @ 200#/cy	ton	$1,240.00
03300.24	Cross Beam Post Tensioning @ 70#/cy	lb	$3.00
03300.25	Square Column Concrete and Formwork	cy	$350.00
03300.26	Square Column epoxy coated rebars @ 200#/cy	ton	$1,240.00
03300.30	Pile Cap Concrete and Formwork	cy	$250.00
03300.31	Pile Cap epoxy coated rebars @ 200#/cy	ton	$1,240.00
03300.32	Furnish 2.5' diameter steel casing 0.75" wall	ton	$836.00
03300.33	Pile Concrete (Class 4,000)	cy	$150.00
03300.34	Pile epoxy coated rebars @ 200#/cy	ton	$1,240.00
03300.35	Drive 2.5' diameter steel casing 0.75" wall	vlf	$36.95
03300.41	Edge Beam Concrete and Formwork	cy	$350.00
03300.42	Edge Beam rebars @ 200#/cy	ton	$1,240.00
03300.43	Edge Beam Post Tensioning @ 70#/cy	lb	$3.00
03302.01	Round column concrete and formwork	cy	$422.00
03302.02	Round column rebars @ 448 lbs/cy	ton	$1,440.00
03302.03	Oblong column concrete and formwork	cy	$384.00
03302.04	Oblong column rebars @ 395 lbs/cy	ton	$1,440.00
03302.14	Precast girder one lane fabrication & delivery to the site	cy	$984.00
03302.16	Precast girder two lane fabrication & delivery to the site	cy	$984.00
03302.17	Precast girder erection at level 2	ls	$3,755.00
03302.19	Precast girder erection at level 4	ls	$5,635.00
03302.21	Precast Concrete Waffle Truss	cy	$645.66
03302.22	T-Bent Cap concrete and formwork	cy	$482.00
03302.30	Fabrication of 3750 cf trapedzodial segmental box 15' long & 295 tons	ea	$124,987.50
03302.31	Fabrication of 3550 cf trapedzodial segmental box 15' long & 280 tons	ea	$118,321.50

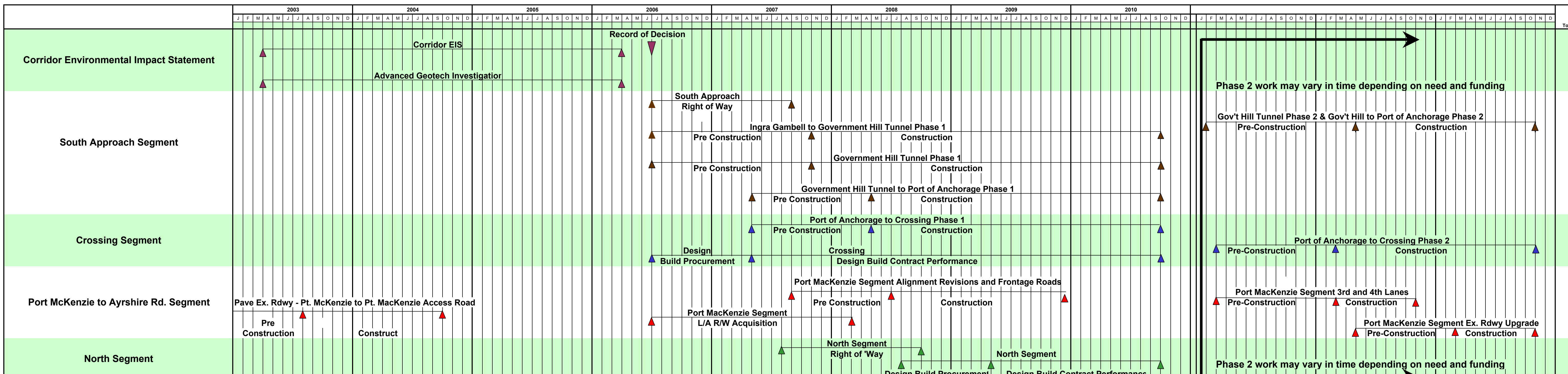
HISTORICAL UNIT PRICE LIBRARY

CODE	DESCRIPTION	Unit of Measure	UNIT PRICE 2002$
03302.32	Fabrication of 5650 cf trapedzodial segmental box 15' long & 440 tons	ea	$188,314.50
03302.33	Fabrication of 2850 cf trapedzodial segmental box 15' long & 225 tons	ea	$94,990.50
03302.34	Fabrication of 5550 cf trapedzodial segmental box 15' long & 435 tons	ea	$184,981.50
03302.35	Fabrication of 4600 cf trapedzodial segmental box 15' long & 360 tons	ea	$153,318.00
03302.36	Fabrication of 4125 cf trapedzodial segmental box 15' long & 320 tons	ea	$137,486.25
03302.37	Erect trapedzodial segmental box	ea	$98,625.00
03302.38	Post tension trapedzodial segmental box per span	ton	$3,000.00
03302.39	Fabrication of 4800 cf trapedzodial segmental box 15' long & 370 tons	ea	$159,984.00
03310.02	Cast In Place Concrete Roof Slab	cy	$210.66
03310.03	Cast In Place Concrete Exterior Walls	cy	$267.66
03310.05	Cast In Place Concrete Bottom Slab	cy	$227.66
03310.06	Cast In Place Concrete Waffle Slab	cy	$649.66
04000.00	**Masonry**		
05000.00	**Metals**		
05650.01	Ballasted Trackwork, including/ Ties, Fasteners & Rail	lf	$214.60
05650.02	Embedded Trackwork, including/ Fasteners & Rail	lf	$432.10
05650.03	Direct Fixation Trackwork, including/ Fasteners & Rail	lf	$249.40
06000.00	**Wood and Plastics**		
07000.00	**Thermal and Moisture Protection**		
07130.22	Waterproofing	sf	$3.13
08000.00	**Doors and Windows**		
09000.00	**Finishes**		
09310.01	Ceramic tile finish	sf	$10.55
10000.00	**Specialties**		
11000.00	**Equipment**		
14000.00	**Conveying Systems**		
15000.00	**Mechanical**		
16000.00	**Electrical**		
16500.03	Lighting, Cut and Cover roadway	lf	$217.50
17000.00	**Rail Transit**		
18000	**Retrofit**		
19000	**Seawall**		
EQ	**Construction Equipment Blue Book Rental Rates (Seattle, WA)**		
EQ 14.000	Marine		
EQ 14.010	Deck cargo barge 150' long by 45' beam by 9' deep 1100 short tons	HR	$36.95
EQ 14.011	Deck cargo barge operating cost per hour	HR	$39.00
EQ 14.012	Hopper barge 200' long by 35' beam by 12' deep 1600 short tons	HR	$34.28
EQ 14.013	Hopper barge operating cost per hour	HR	$33.30

HISTORICAL UNIT PRICE LIBRARY			
CODE	**DESCRIPTION**	**Unit of Measure**	**UNIT PRICE 2002$**
EQ 14.014	Sectional barge 40' by 10' by 5' deep mid-section	HR	$5.24
EQ 14.015	Sectional barge operating cost per hour	HR	$0.20
EQ 14.020	Hydraulic cutter suction dredge 150,000 lbs, 10" diam., 725 hp	HR	$55.17
EQ 14.021	Hydraulic cutter suction dredge 150.000 lbs operating cost per hour	HR	$115.20
EQ 14.022	Hydraulic cutter suction dredge 560,000 lbs, 20" diam., 2950 hp	HR	$275.97
EQ 14.023	Hydraulic cutter suction dredge 560.000 lbs operating cost per hour	HR	$460.95
EQ 14.024	Standard mudcat dredge 15' deep by 9' wide 228 hp	HR	$33.31
EQ 14.025	Standard mudcat dredge operating cots per hour	HR	$33.85
EQ 14.026	Special application mudcat dredge 15' weed cut auger, 228 hp	HR	$33.65
EQ 14.027	Special application mudcat dredge operating cost per hour	HR	$38.65
EQ 14.030	Cutter head 84.75" sweep diam., 39 teeth per set 225-675 hp required	HR	$8.12
EQ 14.031	Cutter head operating cost per hour	HR	$5.25
EQ 14.032	Replaceable teeth 84.75" diam., 39 teeth per set	HR	$0.41
EQ 14.033	Replaceable teeth operating cost per hour	HR	$0.20
EQ 14.040	Inland tug boat 51' long twin screw 700 hp	HR	$79.57
EQ 14.041	Inland tug boat 51' operating cost per hour	HR	$104.30
EQ 14.050	Push boat 140' long 54' beam 8'9" draft 5200 hp	HR	$531.08
EQ 14.051	Push boat 140' long operating cost per hour	HR	$702.25
EQ 14.060	Tow boat 140' long 45' beam 8' draft 5250 hp	HR	$503.31
EQ 14.061	Tow boat 140' long operating cost per hour	HR	$761.70
EQ 14.070	Runabout 13' long 5' beam 50 hp	HR	$3.06
EQ 14.071	Runabout 13' long operating cost per hour	HR	$7.30
EQ 14.080	Tender 14' long 7' beam 100 hp	HR	$11.40
EQ 14.081	Tender 14' long operating cost per hour	HR	$13.05

KNIK ARM CROSSING 2002 UPDATE STUDY - MASTER PROJECT SCHEDULE

APPENDIX 7



Project / Phase	2003				2004				2005				2006				2007				2008				2009				2010																Total
Corridor																																													0
Associated Projects South Segment																																													0
Crossing Project																																													0
Associated Projects Pt. McKenzie - Ayrshire Road																																													0
Associated Projects North Segment																																													0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX 8 - RIGHT-OF-WAY COST UPDATE

Summary

Appendix 8 updates the R/W cost estimates associated with the Hybrid Alignment for a Knik Arm Crossing project.

The total estimated R/W costs for the Knik Arm Crossing project based on the Downtown Alternative of the 1984 DEIS (ADOT&PF and FHWA) were $13.5 million (M), including $9 M for the south approach and $4.5 M for the north approach (Mat-Su Borough Connector).

Updated R/W cost estimates for the Hybrid Alignment are estimated at approximately $30 M. This estimate includes approximately $10.5 M for the south approach and approximately $19.5 M for the north approach.

Background Right-of-Way Cost Data

The Downtown Alternative of the 1984 DEIS provides the closest baseline comparison for developing updated R/W costs for the Hybrid Alignment. This alternative included the following R/W costs for the three project segments:

- South approach (Anchorage Connector): $9 M (1983 dollars) for R/W
- Knik Arm crossing: $0 for R/W
- North approach (Mat-Su Borough; Houston Connector):
  - Segment 1: $0 for R/W; no R/W costs for borough and state lands
  - Segment 2: $4.5 M (1983 dollars) for R/W, including one relocation of a single-family residence with airstrip and outbuildings at Mirror Lake

The total R/W costs from the 1984 DEIS Knik Arm Crossing project were estimated at approximately $13.5 M (1983 dollars).

Two source documents associated with the 1984 DEIS provided basic unit cost information for previous evaluations of R/W cost estimates: a benefit-cost analysis technical memorandum and a land value analysis technical memorandum.

In the benefit-cost analysis technical memorandum average costs of a typical single-family dwelling with an 8,500-square-foot R-1 lot were estimated as follows:

- Anchorage Bowl: $150,000 (1983 dollars)
- Point MacKenzie area (Mat-Su Borough): $116,000 (1983 dollars)

Developed lot costs for a R-1 8,500-square-foot lot were estimated as follows:

Anchorage Bowl: $50,000 (1983 dollars)
Matanuska Valley: $23,000 (1983 dollars)

The land value analysis technical memorandum was prepared to determine the increase in value of Mat-Su Borough lands attributable to a Knik Arm Crossing project. Land value changes (increases and decreases) were not accounted for on the south approach, the Anchorage

Connector. Generalized 1985 land values in the Point MacKenzie area for residential, subdivided lands that had access were estimated at $5,000 to $7,000 per acre. The memorandum estimated that undeveloped (lacking access) residential land values in the Point MacKenzie area were $3,500 to $4,000 per acre (1985 dollars) and undeveloped commercial, industrial, and multi-use land values were $1,500 to $3,000 per acre (1985 dollars).

Land values were estimated to increase with implementation of a Knik Arm Crossing project at approximately 74 percent for Segment 1 of the Houston Connector, 68 percent for the southern half of Segment 2 of the Houston Connector, and 45 percent for the northern half of Segment 2 of the Houston Connector. The dividing line for Segment 2 land values is approximately at South Big Lake Road.

Right-of-Way Cost Update Assumptions

To update R/W costs from the 1984 DEIS, updated technology in the form of a geographic information system (GIS) was used to calculate estimated R/W costs for the Hybrid Alignment. The approach varied slightly for the south approach (Anchorage Connector) and the North Approach (Mat-Su Borough Connector). No R/W costs are applicable to the Knik Arm crossing segment.

For the south approach, the MOA GIS parcel data files, linked to the MOA tax assessor's (parcel values as of October 2002) online database, were used to estimate R/W and relocation costs. The Hybrid Alignment was overlaid on a combination of year 2000 digital aerial photography and MOA parcel files. R/W costs were estimated based on the assumptions discussed below, and relocations were interpreted from the aerial photography.

For the north approach, the Mat-Su Borough 2002 GIS database containing digital parcel data and tax assessor's parcel values were used to estimate R/W costs. Because digital aerial photography was not available for use in this study, the Mat-Su Borough relocations were estimated through field reconnaissance and interpretation of tabular data in relation to R/W impacts and percent of parcel acquisition.

Assumptions and methodologies used for the cost update of the Hybrid Alignment R/W are outlined below.

- Mat-Su Borough lands, MOA lands, and most state lands were assumed to have $0 base R/W cost; however, required acquisition of state lands such as Mental Health Trust Lands or University of Alaska lands were included in the R/W cost estimate.
- R/W costs were calculated for impacts to structures on all governmental-owned land.
- Parcels that would be rendered useless or small parcels that required removing a house or primary structure were considered total parcel takes.
- Partial R/W acquisitions for individual parcels were calculated by using the percentage of the parcel that would be required for R/W and applying that percentage to the total assessed parcel value. (For example, a ten-acre parcel valued at $100,000 that required 2.5 acres, or 25 percent, for R/W purposes was assumed to have a base R/W cost of 25 percent of the assessed value of $100,000 or $25,000.)
- Assessed property values were increased by 25 percent to reflect actual market values.
- Administrative costs for R/W acquisition were estimated at an average of $12,000 per

affected parcel, in addition to the cost of purchasing the partial or total parcel and structure, if applicable. Administrative costs were applied to all affected parcels, including all governmental-owned parcels

- Relocation costs were based on an average residential or business relocation cost of \$100,000 or \$150,000, respectively, per unit depending on location, in addition to the cost of purchasing the total parcel and structure, as applicable
- The R/W-acquisition phase was assumed to occur in years 2006 to 2007.
- A four percent compounded annual increase was applied to base R/W costs, administrative costs, and relocation costs from current cost estimates to the completion of the Environmental Impact Statement Record of Decision (ROD), assumed to be in 2006, to account for the real estate value and cost increases between 2002 and 2006.
- Property values were assumed to increase in the Mat-Su Borough due to the construction of a Knik Arm Crossing project. From an analysis performed as part of the 1984 DEIS and its assumptions, the value increase rates noted below were applied to the Mat-Su Borough base R/W costs for the Mat-Su Borough. (No value increase or decrease was assumed for the south approach [Anchorage Connector].) These one-time value increases were applied at year 2006 when the ROD is assumed to be approved.
    - Segment 1 of the North Connector: Parcel values were assumed to increase 74 percent. This portion of the project would realize the greatest benefit from to improved access
    - Segment 2 of the North Connector: Parcel values were assumed to increase 68 percent south of South Big Lake Road (Segment 2A) and 45 percent north of South Big Lake Road (Segment 2B).
- From 2006 to 2007**,** a ten percent annual increase was applied to R/W costs for the North Connector to account for continued, although lessened, R/W speculation value increases.
- Condemnation costs were applied on a one-time basis during the R/W-acquisition phase, 2006 to 2007, at an assumed rate of \$150,000 per parcel for ten percent of the affected parcels.
- Base R/W cost calculations are based on current physical conditions and do not account for new developments that may occur in future years. A 40 percent R/W contingency cost was added to the final updated R/W cost estimate to account for the inherent inaccuracy of these planning-level R/W cost estimates, future potential alignment modifications, project scheduling delays, additional relocations, additional damages, property negotiations, and other unforeseen R/W cost additions.

Right-of Way Cost Update Analysis

Updated R/W costs for this study of the Hybrid Alignment include both R/W and relocation cost estimates. R/W costs were evaluated by segments: the south approach (Anchorage Connector) segment and the north approach (Mat-Su Borough; North Connector) segment.

R/W cost calculations were derived by using the assumptions listed above, basically consisting of estimating current R/W costs and escalating values up to the actual R/W-acquisition phase from years 2006 to 2007. Escalated values account for normal increases of property values through time, increased value because of land speculation and new access, and increased administrative and relocation costs during the interim timeframe.

For the south approach, R/W costs are applicable to two primary areas: commercial, industrial, and recreational structures in the Ship Creek area, Alaska Railroad Corporation (ARRC) rail yard, and residential properties on Government Hill. According to the MOA tax assessor's database, lands affected within the Ship Creek area and ARRC rail yard have a $0 assessed land value because they are primarily under state or municipal ownership. Therefore, R/W cost estimates only account for administrative and structure acquisition and relocation costs for properties affected within this area. On the basis of the footprint of the Hybrid Alignment, it is estimated that ten structures will require acquisition within the Ship Creek Area at an average cost of $250,000 per structure. Also, because of the unique aspects of the properties in the Ship Creek area and potential relocation difficulties, relocation costs were escalated to $150,000 per unit versus the standard of $100,000 per unit.

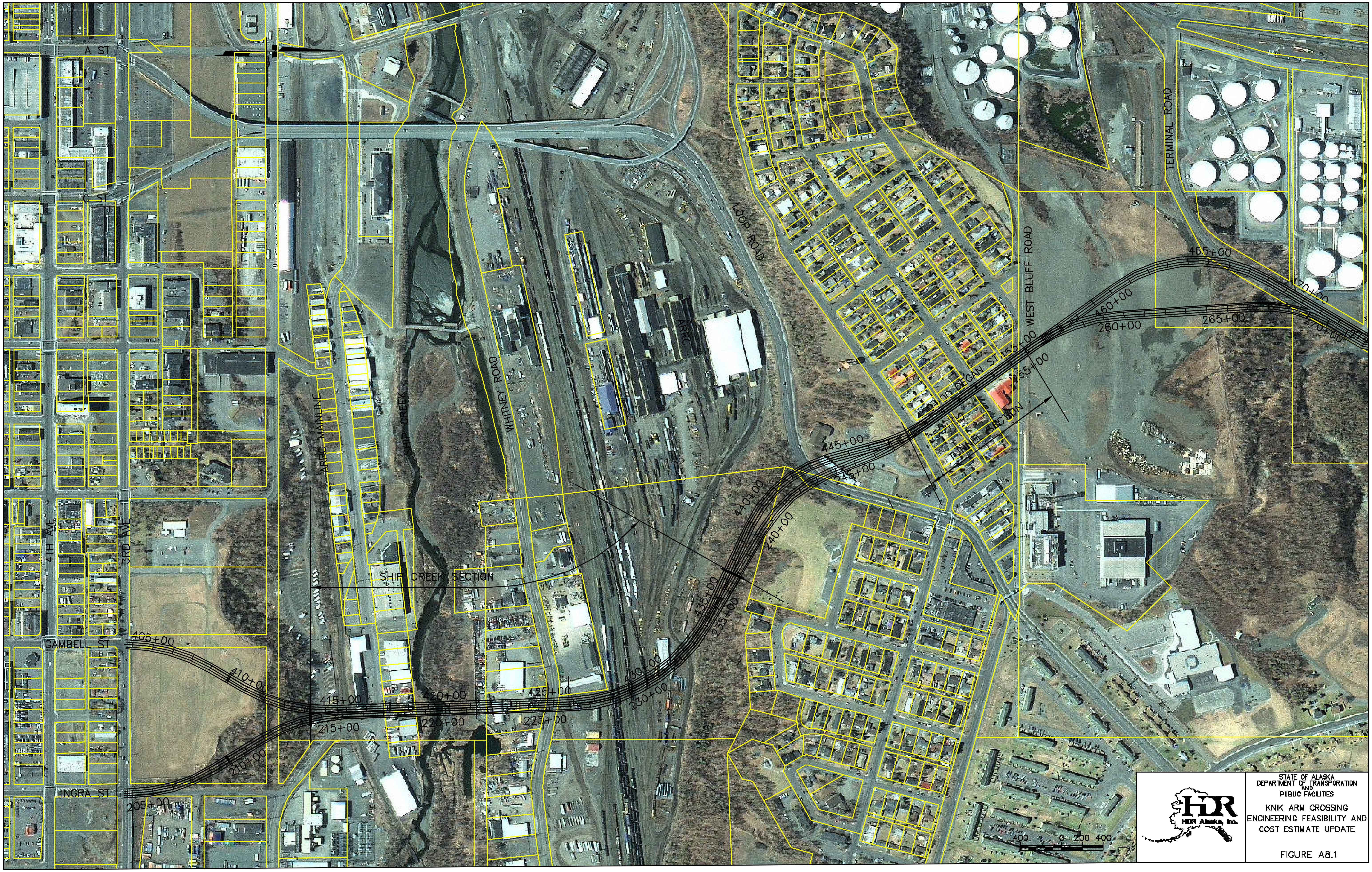
On Government Hill, estimated relocations include four residential properties and relocations and two vacant lot acquisitions. These relocations are due to either direct impact or loss of primary access to Degan Street during construction of the cut-and-cover tunnel.

Figure A8.1 shows the Hybrid Alignment and parcel platting within this project segment, overlaid on year 2000 digital aerial photography that was used to calculate R/W impacts and costs. The remainder of the properties affected by the Hybrid Alignment along the south approach are vacant land and are owned by or under the jurisdiction of the ARRC, MOA, U.S. Army Corps of Engineers, or Elmendorf AFB. R/W acquisition costs for these properties were calculated by using the assumptions previously described. Total R/W costs for the south approach adjusted to year 2007 are estimated at approximately $10.5 M. Table A8-1 lists the 2002 base R/W cost summary for the south approach, and Table A8-2 lists the adjusted R/W cost summary to the year 2007 for the south approach.

For the north approach, R/W requirements were based on the 1984 DEIS Houston Connector alignment, which included a 400-foot-wide, limited-access roadway. **Figure A8.2** highlights the potentially affected parcels within 200 feet of the centerline of the Houston Connector for both Segment 1 and Segment 2. **Figure A8.3** shows the general land ownership of these potentially affected parcels. On the basis of the footprint of the Houston Connector, it is estimated that seven residences will require relocation within Segment 2. Total R/W costs for the north approach adjusted to year 2007 are estimated at approximately $19.5 M. Table A8-3 lists the 2002 base R/W cost summary for the north approach, and Table A8-4 lists the adjusted R/W cost summary to the year 2007 for the north approach.

Conclusion

Total updated R/W costs for the Hybrid Alignment, adjusted to the year 2007 R/W-acquisition phase of the project, are estimated at approximately $30 M. This estimate includes approximately $10.5 M for the south approach and approximately $19.5 M for the north approach.


A ST
C ST
4TH AVE
3RD AVE
GAMBELL ST
INGRA ST
ARRC MAINLINE
SHIP CREEK
WHITNEY ROAD
LOOP ROAD
WEST BLUFF ROAD
TERMINAL ROAD
SHIP CREEK SECTION
DEGAN ST
TUNNEL SECTION
205+00
210+00
215+00
220+00
225+00
230+00
235+00
240+00
260+00
265+00
405+00
410+00
415+00
420+00
425+00
430+00
435+00
440+00
445+00
455+00
460+00
465+00
470+00
400
0
200
400
HDR Alaska, Inc.
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES
KNIK ARM CROSSING
ENGINEERING FEASIBILITY AND
COST ESTIMATE UPDATE
FIGURE A8.1

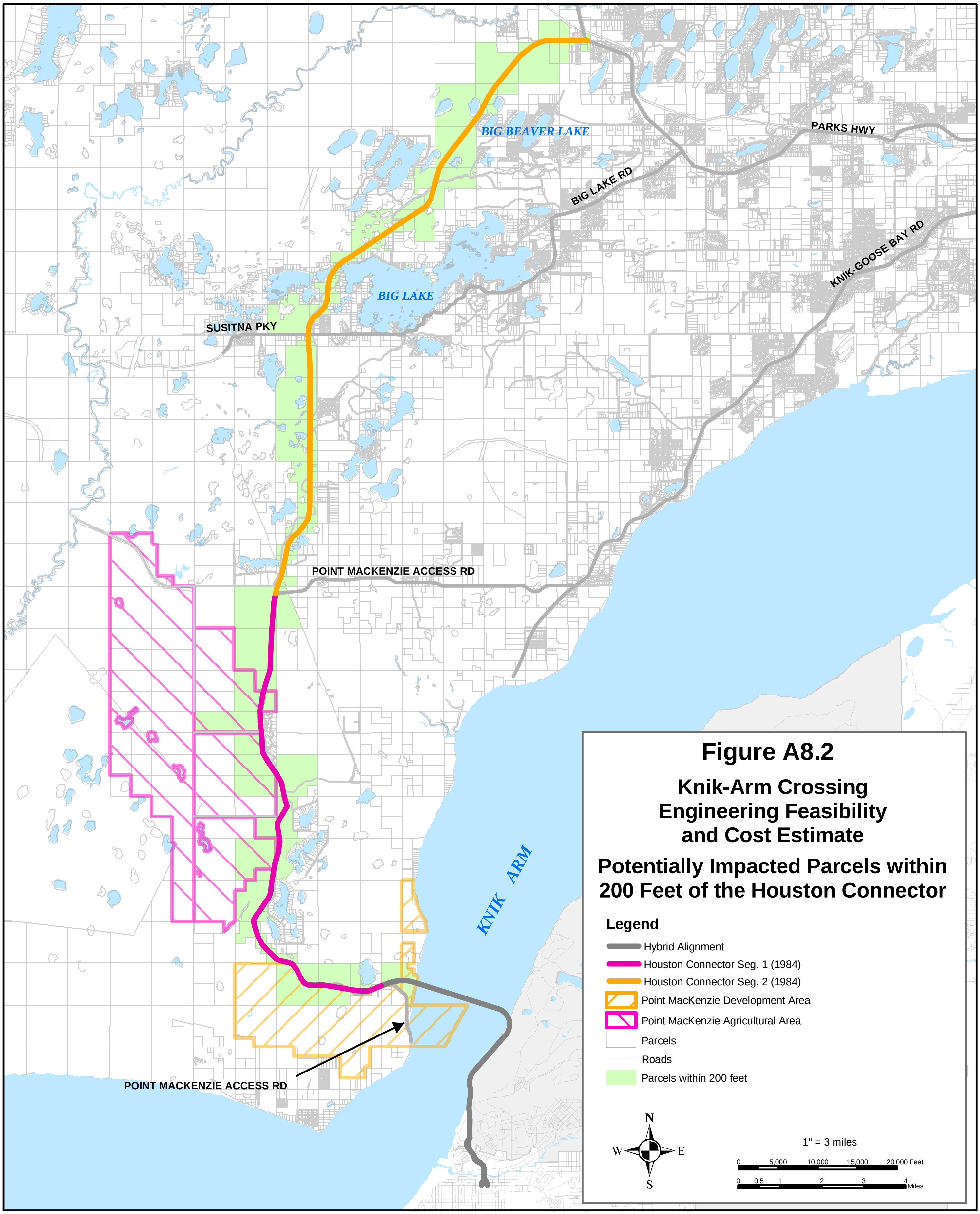


Figure A8.2
Knik-Arm Crossing
Engineering Feasibility
and Cost Estimate
Potentially Impacted Parcels within
200 Feet of the Houston Connector
Legend
Hybrid Alignment
Houston Connector Seg. 1 (1984)
Houston Connector Seg. 2 (1984)
Point MacKenzie Development Area
Point MacKenzie Agricultural Area
Parcels
Roads
Parcels within 200 feet
N
S
E
W
1" = 3 miles
0 5,000 10,000 15,000 20,000 Feet
0 0.5 1 2 3 4 Miles
BIG BEAVER LAKE
PARKS HWY
BIG LAKE RD
KNIK-GOOSE BAY RD
BIG LAKE
SUSITNA PKY
POINT MACKENZIE ACCESS RD
KNIK ARM
POINT MACKENZIE ACCESS RD

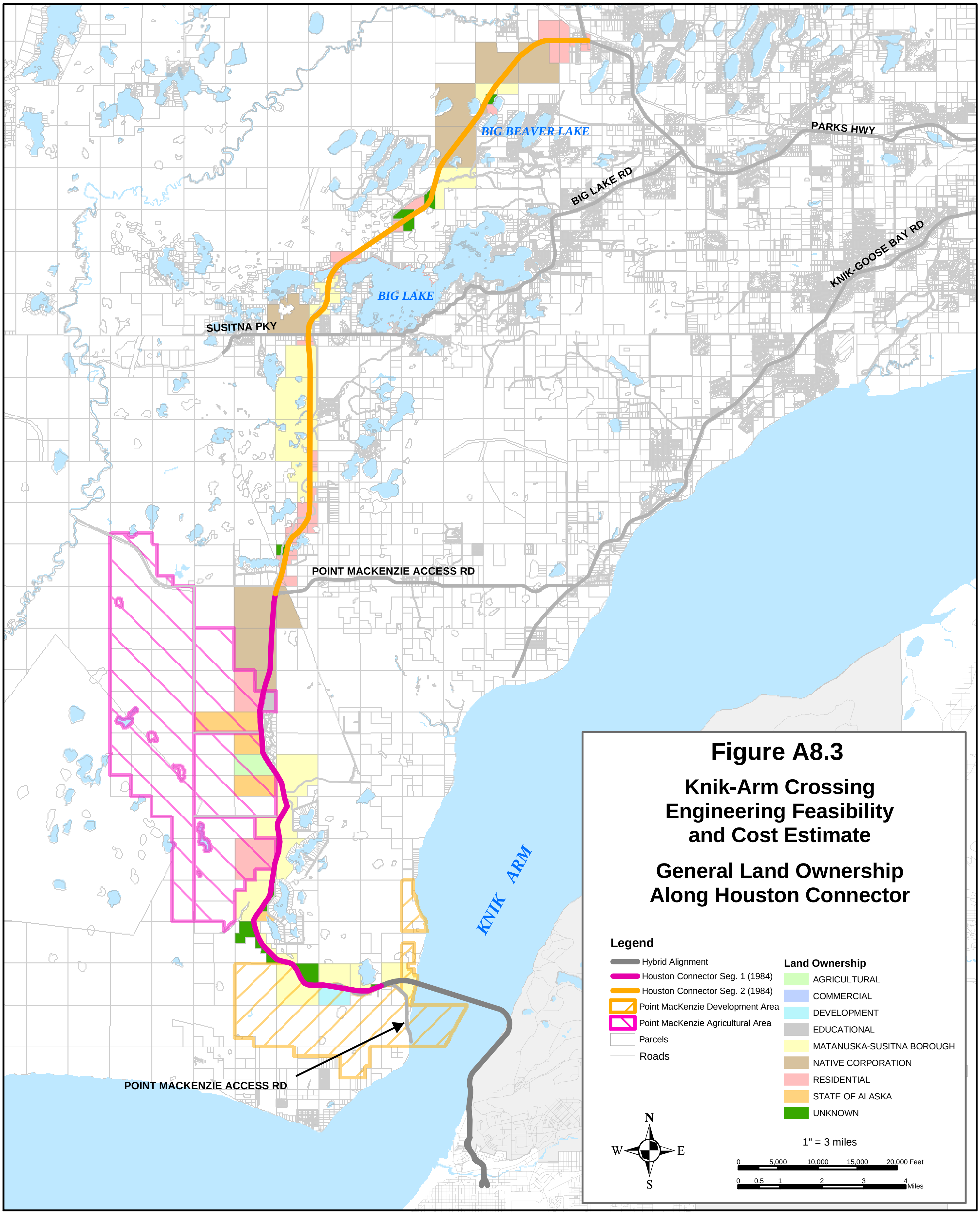


Figure A8.3
Knik-Arm Crossing
Engineering Feasibility
and Cost Estimate
General Land Ownership
Along Houston Connector
BIG BEAVER LAKE
PARKS HWY
BIG LAKE RD
KNIK-GOOSE BAY RD
BIG LAKE
SUSITNA PKY
POINT MACKENZIE ACCESS RD
KNIK ARM
POINT MACKENZIE ACCESS RD
Legend
Hybrid Alignment
Houston Connector Seg. 1 (1984)
Houston Connector Seg. 2 (1984)
Point MacKenzie Development Area
Point MacKenzie Agricultural Area
Parcels
Roads
Land Ownership
AGRICULTURAL
COMMERCIAL
DEVELOPMENT
EDUCATIONAL
MATANUSKA-SUSITNA BOROUGH
NATIVE CORPORATION
RESIDENTIAL
STATE OF ALASKA
UNKNOWN
N
W
E
S
1" = 3 miles
0
5,000
10,000
15,000
20,000 Feet
0
0.5
1
2
3
4
Miles

Table A8-1. South Approach 2002 Base R/W Costs

Parcel ID	Ownership Type	Parcel Size--Acres (ft^2)	% Parcel Acquisition	Total Assessed Parcel Value	Number of Relocations	Structure Acquisition Cost- $250,000/ unit	2002 Base R/W Costs
Ship Creek Area							
208201	Not Listed	10.0 (435,600)	50%	$0	0	$0	$0
No ID	Not Listed	Not listed	30%	$0	1	$250,000	$250,000
306214	Not Listed	0.45 (19,638)	100%	$0	0	$0	$0
No ID	Not Listed	Not listed	100%	$0	1	$250,000	$250,000
No ID	Not Listed	Not listed	100%	$0	1	$250,000	$250,000
999999	Not Listed	Not listed	10%	$0	0	$0	$0
205122	Not Listed	0.63 (27,429)	100%	$0	1	$250,000	$250,000
205123	ARRC	0.67 (29,097)	100%	$0	1	$250,000	$250,000
205137	ARRC	24.5 (1,069,000)	30%	$0	2	$500,000	$500,000
205128	ARRC	2.8 (123,465)	25%	$0	1	$250,000	$250,000
204620	Not Listed	5.4 (237,200)	15%	$0	0	$0	$0
204523	Not Listed	79.5 (3,465,483)	5%	$0	2	$500,000	$500,000
Subtotal Ship Creek Area Base R/W Costs:					10		$2,500,000
Government Hill							
204201	Residential	0.16 (6,987)	100%	$143,300	1	$0	$143,300
204236	Residential	0.16 (7,000)	100%	$134,900	1	$0	$134,900
204301	Residential	0.16 (6,996)	100%	$0	0	$0	$0
204336	Residential	0.08 (3,475)	100%	$0	0	$0	$0
204112	Residential	0.17 (7,281)	100%	$125,700	1	$0	$125,700
204113	Residential	0.16 (7,006)	100%	$142,300	1	$0	$142,300
Subtotal Government Hill Base R/W Costs:					4		$546,200
South Approach Total 2002 Base R/W Costs:					14		**$3,046,200**

Table A8-2. South Approach Adjusted R/W Costs to 2007

Parcel ID	2002 Base ROW Cost	Market Value Multiplier 1.25	Administrative Costs $12,000 / parcel	Relocation Costs $100K or $150,000 / Unit	2002 Adjusted R/W Cost	2003 Property Value/Cost Increase 1.04	2004 Property Value/Cost Increase 1.04	2005 Property Value/Cost Increase 1.04	2006 Property Value/Cost Increase 1.04	2006 FEIS/ ROD Approved- Begin R/W Acquisition	2007 Property Value/Cost Increase 1.04	2007 Adjusted R/W Cost
Ship Creek Area												
208201	$0	$0	$12,000	$0	$12,000	$12,480	$12,979	$13,498	$14,038		$14,600	$14,600
No ID	$250,000	$312,500	$324,500	$150,000	$474,500	$493,480	$513,219	$533,748	$555,098		$577,302	$577,302
306214	$0	$0	$12,000	$0	$12,000	$12,480	$12,979	$13,498	$14,038		$14,600	$14,600
No ID	$250,000	$312,500	$324,500	$150,000	$474,500	$493,480	$513,219	$533,748	$555,098		$577,302	$577,302
No ID	$250,000	$312,500	$324,500	$150,000	$474,500	$493,480	$513,219	$533,748	$555,098		$577,302	$577,302
999999	$0	$0	$12,000	$0	$12,000	$12,480	$12,979	$13,498	$14,038		$14,600	$14,600
205122	$250,000	$312,500	$324,500	$150,000	$474,500	$493,480	$513,219	$533,748	$555,098		$577,302	$577,302
205123	$250,000	$312,500	$324,500	$150,000	$474,500	$493,480	$513,219	$533,748	$555,098		$577,302	$577,302
205137	$500,000	$625,000	$637,000	$300,000	$937,000	$974,480	$1,013,459	$1,053,998	$1,096,157		$1,140,004	$1,140,004
205128	$250,000	$312,500	$324,500	$150,000	$474,500	$493,480	$513,219	$533,748	$555,098		$577,302	$577,302
204620	$0	$0	$12,000	$0	$12,000	$12,480	$12,979	$13,498	$14,038		$14,600	$14,600
204523	$500,000	$625,000	$637,000	$300,000	$937,000	$974,480	$1,013,459	$1,053,998	$1,096,157		$1,140,004	$1,140,004
	$2,500,000											
Subtotal Ship Creek Area Adjusted R/W Costs:					$4,769,000	$4,959,760	$5,158,150	$5,364,476	$5,579,055		$5,802,218	$5,802,218
Government Hill												
204201	$143,300	$179,125	$191,125	$100,000	$291,125	$302,770	$314,881	$327,476	$340,575		$354,198	$354,198
204236	$134,900	$168,625	$180,625	$100,000	$280,625	$291,850	$303,524	$315,665	$328,292		$341,423	$341,423
204301	$0	$0	$12,000	$0	$12,000	$12,480	$12,979	$13,498	$14,038		$14,600	$14,600
204336	$0	$0	$12,000	$0	$12,000	$12,480	$12,979	$13,498	$14,038		$14,600	$14,600
204112	$125,700	$157,125	$169,125	$100,000	$269,125	$279,890	$291,086	$302,729	$314,838		$327,432	$327,432
204113	$142,300	$177,875	$189,875	$100,000	$289,875	$301,470	$313,529	$326,070	$339,113		$352,677	$352,677
	$546,200											
Subtotal Government Hill Adjusted R/W Costs:					$1,154,750	$1,200,940	$1,248,978	$1,298,937	$1,350,894		$1,404,930	$1,404,930
Subtotal Ship Creek Area and Government Hill Adjusted R/W Costs:					$5,923,750	$6,160,700	$6,407,128	$6,663,413	$6,929,950		$7,207,148	$7,207,148
Condemnation Costs: 18 parcels X 10% X $150,000/ parcel=												$ 300,000
Subtotal:												$7,507,148
R/W Contingency Cost: + 40%												$3,002,859
South Approach Total Adjusted R/W Costs:												**$10,510,007**

Table A8-3. North Approach 2002 Base R/W Costs

Parcel ID	Ownership Type	Parcel Size- ft2	Parcel Size--Acres	Required R/W--Acres	% Parcel Acquisition	Assessed Land Value	Appraised Building Value	Number of Relocations	Total Parcel Value (Assessed Land Value plus Appraised Building Value)	2002 Base R/W Cost
Segment 1- From the East-West Segment of Point Mackenzie Road to the Knik Arm Crossing										
15325	NATIVE CORPORATION	26,124,555	600.9	14.9	2.48%	$ 288,000	$ -		$ 288,000	$ 7,143
15349	NATIVE CORPORATION	10,870,305	250.0	2.0	0.80%	$ 118,300	$ -		$ 118,300	$ 950
15357	NATIVE CORPORATION	789,581	18.2	8.9	48.97%	$ 288,000	$ -		$ 288,000	$ 141,032
15458	NATIVE CORPORATION	24,508,348	563.7	18.3	3.25%	$ 288,000	$ -		$ 288,000	$ 9,352
15459	NATIVE CORPORATION	2,571,709	59.1	12.1	20.52%	$ 288,000	$ -		$ 288,000	$ 59,100
15618	RESIDENTIAL	15,974,125	367.4	7.4	2.00%	$ 73,500	$ 19,500		$ 93,000	$ 1,861
15619	NATIVE CORPORATION	3,801,727	87.4	7.7	8.82%	$ 128,000	$ -		$ 128,000	$ 11,288
15620	NATIVE CORPORATION	2,780,664	64.0	8.1	12.67%	$ 128,000	$ -		$ 128,000	$ 16,217
15639	EDUCATIONAL-U of A	4,475,972	102.9	7.8	7.62%	$ 20,600	$ 7,100		$ 27,700	$ 2,111
15677	STATE	21,370,602	491.5	7.8	1.59%	$ -	$ -		$ -	$ -
15680	UNKNOWN	435,902	10.0	6.4	64.00%	$ -	$ -		$ -	$ -
15710	UNKNOWN	436,718	10.0	6.6	65.84%	$ -	$ -		$ -	$ -
15722	STATE	9,046,726	208.1	7.7	3.69%	$ -	$ -		$ -	$ -
15765	UNKNOWN	622,224	14.3	8.9	62.30%	$ -	$ -		$ -	$ -
15781	AGRICULTURAL (MSB)	11,602,107	266.8	9.0	3.37%	$ -	$ -		$ -	$ -
15783	MSB	24,147,657	555.4	11.2	2.02%	$ -	$ -		$ -	$ -
15799	STATE	13,970,292	321.3	0.4	0.12%	$ -	$ -		$ -	$ -
15805	MSB	1,583,607	36.4	7.4	20.28%	$ -	$ -		$ -	$ -
15852	MSB	3,452,887	79.4	16.9	21.32%	$ -	$ -		$ -	$ -
15853	MSB	8,331,497	191.6	15.7	8.19%	$ -	$ -		$ -	$ -
15876	MSB	6,833,917	157.2	0.1	0.04%	$ -	$ -		$ -	$ -
15917	RESIDENTIAL	24,124,359	554.9	4.6	0.83%	$ 280,000	$ -		$ 280,000	$ 2,313
36579	UNKNOWN	698,323	16.1	6.3	38.91%	$ -	$ -		$ -	$ -
36580	UNKNOWN	598,680	13.8	13.8	100.00%	$ -	$ -		$ -	$ -
125	MSB	8,832,636	203.2	10.7	5.27%	$ -	$ -		$ -	$ -
36581	UNKNOWN	92,799	2.1	2.0	100.00%	$ -	$ -		$ -	$ -
130	MSB	2,901,842	66.7	3.8	5.76%	$ -	$ -		$ -	$ -
131	MSB	358,807	8.3	3.9	47.71%	$ -	$ -		$ -	$ -
16002	MSB	17,752,474	408.3	14.4	3.52%	$ -	$ -		$ -	$ -
15973	UNKNOWN	1,880,535	43.3	13.5	31.27%	$ -	$ -		$ -	$ -
16042	STATE	2,141,422	49.3	6.1	12.39%	$ -	$ -		$ -	$ -
16066	UNKNOWN	8,103,298	186.4	20.6	11.07%	$ -	$ -		$ -	$ -
16067	MSB	3,544,240	81.5	16.4	20.16%	$ -	$ -		$ -	$ -
16117	MSB	2,744,636	63.1	6.0	9.50%	$ -	$ -		$ -	$ -
16124	MSB	6,193,926	142.5	15.5	10.89%	$ -	$ -		$ -	$ -
16127	MSB	7,575,548	174.2	18.2	10.46%	$ -	$ -		$ -	$ -
16131	MSB	4,931,299	113.4	12.8	11.27%	$ -	$ -		$ -	$ -
16132	MSB	11,163,525	256.8	2.4	0.92%	$ -	$ -		$ -	$ -
16132	MSB	11,163,525	256.8	6.6	2.55%	$ -	$ -		$ -	$ -
16133	MSB	20,671,985	475.5	14.6	3.08%	$ -	$ -		$ -	$ -
16134	UNKNOWN	6,478,170	149.0	15.2	10.23%	$ -	$ -		$ -	$ -
16139	MSB	1,759,424	40.5	12.9	31.84%	$ -	$ -		$ -	$ -
16141	UNKNOWN	924,437	21.3	11.3	52.92%	$ -	$ -		$ -	$ -
36582	DEVELOPMENT	9,036,530	207.8	18.3	8.80%	$ -	$ -		$ -	$ -
SUBTOTAL SEGMENT 1 Base R/W Costs:								0		$ 251,366

Table A8-3. North Approach 2002 Base R/W Costs

Parcel ID	Ownership Type	Parcel Size- ft2	Parcel Size--Acres	Required R/W--Acres	% Parcel Acquisition	Assessed Land Value	Appraised Building Value	Number of Relocations	Total Parcel Value (Assessed Land Value plus Appraised Building Value)	2002 Base R/W Cost
Segment 2A- From South Big Lake Road to the East-West Segment of Point MacKenzie Road										
10471	RESIDENTIAL	178,249	4.1	0.0	0.22%	$ 16,100	$ -		$ 16,100	$ 35
113	RESIDENTIAL	487,469	11.2	6.0	53.21%	$ 30,200	$ -		$ 30,200	$ 16,070
10724	RESIDENTIAL	862,321	19.8	0.0	0.11%	$ 34,800	$ -		$ 34,800	$ 37
114	RESIDENTIAL	527,994	12.1	5.2	42.72%	$ 30,200	$ -		$ 30,200	$ 12,902
10965	MSB	15,731,946	361.8	37.0	10.23%	$ -	$ -		$ -	$ -
11981	MSB	25,546,889	587.6	48.2	8.21%	$ -	$ -		$ -	$ -
13425	MSB	23,445,902	539.3	36.5	6.76%	$ -	$ -		$ -	$ -
13925	RESIDENTIAL	1,743,322	40.1	12.1	30.16%	$ 51,300	$ -		$ 51,300	$ 15,475
14132	MSB	10,032,253	230.7	12.2	5.27%	$ -	$ -		$ -	$ -
14135	RESIDENTIAL	453,432	10.4	3.1	30.16%	$ 25,000	$ -		$ 25,000	$ 7,539
14163	RESIDENTIAL	439,261	10.1	3.0	30.15%	$ 25,000	$ -		$ 25,000	$ 7,537
14191	RESIDENTIAL	846,835	19.5	5.9	30.16%	$ 36,000	$ -		$ 36,000	$ 10,857
14319	RESIDENTIAL	219,462	5.0	2.2	43.66%	$ 10,000	$ -		$ 10,000	$ 4,366
14320	RESIDENTIAL	218,628	5.0	3.9	100.00%	$ 10,000	$ -		$ 10,000	$ 10,000
14370	RESIDENTIAL	1,196,963	27.5	8.7	31.49%	$ 35,400	$ 11,800		$ 47,200	$ 14,863
14467	RESIDENTIAL	414,537	9.5	5.6	59.08%	$ 20,000	$ -		$ 20,000	$ 11,816
14468	RESIDENTIAL	424,449	9.8	3.1	32.01%	$ 20,000	$ -		$ 20,000	$ 6,402
23	RESIDENTIAL	3,457,650	79.5	3.9	4.85%	$ 40,700	$ 55,700		$ 96,400	$ 4,672
14562	RESIDENTIAL	3,437,144	79.1	21.3	26.89%	$ 39,000	$ -		$ 39,000	$ 10,488
14663	RESIDENTIAL	1,301,176	29.9	0.0	0.06%	$ 46,500	$ -		$ 46,500	$ 28
14664	RESIDENTIAL	1,716,060	39.5	15.0	38.12%	$ 62,000	$ 14,600		$ 76,600	$ 29,200
89	RESIDENTIAL	1,482,727	34.1	0.7	2.15%	$ 40,100	$ -		$ 40,100	$ 861
84	RESIDENTIAL	218,743	5.0	1.2	23.30%	$ 19,600	$ -		$ 19,600	$ 4,566
83	RESIDENTIAL	1,295,475	29.8	11.4	38.22%	$ 30,200	$ -		$ 30,200	$ 11,543
82	RESIDENTIAL	534,516	12.3	3.4	27.94%	$ 45,800	$ 14,000		$ 59,800	$ 16,709
55	RESIDENTIAL	1,047,431	24.1	9.4	38.84%	$ 39,700	$ -		$ 39,700	$ 15,421
14885	UNKNOWN	1,776,157	40.9	2.8	6.90%	$ -	$ -		$ -	$ -
15019	RESIDENTIAL	1,245,494	28.6	2.2	7.76%	$ 37,500	$ -		$ 37,500	$ 2,911
15020	RESIDENTIAL	1,494,569	34.4	10.2	29.78%	$ 72,700	$ -		$ 72,700	$ 21,650
15059	RESIDENTIAL	1,089,936	25.1	10.9	43.51%	$ 17,100	$ -		$ 17,100	$ 7,441
15128	RESIDENTIAL	608,830	14.0	7.4	53.05%	$ 25,500	$ -		$ 25,500	$ 13,528
15167	RESIDENTIAL	2,084,531	47.9	0.2	0.37%	$ 24,400	$ -		$ 24,400	$ 91
15216	RESIDENTIAL	609,474	14.0	6.5	46.61%	$ 25,500	$ -		$ 25,500	$ 11,886
15307	NATIVE CORPORATION	1,083,449	24.9	5.6	22.67%	$ 118,300	$ -		$ 118,300	$ 26,818
									$ -	
SUBTOTAL SEGMENT 2A BASE R/W COSTS:								0		$ 295,713

Table A8-3. North Approach 2002 Base R/W Costs

Parcel ID	Ownership Type	Parcel Size- ft2	Parcel Size--Acres	Required R/W--Acres	% Parcel Acquisition	Assessed Land Value	Appraised Building Value	Number of Relocations	Total Parcel Value (Assessed Land Value plus Appraised Building Value)	2002 Base R/W Cost
Segment 2B - From the Parks Highway to South Big Lake Road										
7133	RESIDENTIAL	6,955,978	160.0	13.9	8.67%	$ 96,000	$ -		$ 96,000	$ 8,321
7163	RESIDENTIAL	3,113,778	71.6	8.4	11.72%	$ 80,000	$ -		$ 80,000	$ 9,374
8800	RESIDENTIAL	456,554	10.5	0.3	2.38%	$ 27,600	$ -		$ 27,600	$ 657
9761	RESIDENTIAL	110,772	2.5	2.4	100.00%	$ 10,100	$ -		$ 10,100	$ 10,100
9775	RESIDENTIAL	110,775	2.5	2.4	100.00%	$ 10,100	$ -		$ 10,100	$ 10,100
9782	RESIDENTIAL	110,614	2.5	2.4	100.00%	$ 10,100	$ -		$ 10,100	$ 10,100
9786	RESIDENTIAL	134,201	3.1	3.1	100.00%	$ 13,800	$ -		$ 13,800	$ 13,800
44	RESIDENTIAL	1,070,684	24.6	0.2	0.71%	$ 40,200	$ -		$ 40,200	$ 287
44	RESIDENTIAL	1,070,684	24.6	0.2	1.00%	$ 40,200	$ -		$ 40,200	$ 402
1273	RESIDENTIAL	379,968	8.7	0.3	3.25%	$ 26,000	$ 118,900		$ 144,900	$ 4,709
10081	RESIDENTIAL	238,829	5.5	2.1	100.00%	$ 17,300	$ 142,500	1	$ 159,800	$ 159,800
10085	RESIDENTIAL	436,939	10.0	1.9	18.95%	$ 20,000	$ -		$ 20,000	$ 3,789
10087	RESIDENTIAL	3,491,602	80.3	3.8	4.72%	$ 48,000	$ -		$ 48,000	$ 2,265
10090	RESIDENTIAL	3,483,359	80.1	3.8	4.72%	$ 48,000	$ -		$ 48,000	$ 2,267
10091	NATIVE CORPORATION	24,388,852	560.9	38.2	6.81%	$ 224,000	$ -		$ 224,000	$ 15,258
10108	NATIVE CORPORATION	24,424,087	561.8	35.2	6.26%	$ 224,000	$ -		$ 224,000	$ 14,022
10147	RESIDENTIAL	44,662	1.0	0.5	100.00%	$ 10,000	$ -		$ 10,000	$ 10,000
10152	RESIDENTIAL	44,385	1.0	0.5	100.00%	$ 10,000	$ 108,000	1	$ 118,000	$ 118,000
15717	MSB	3,502,068	80.5	3.1	3.85%	$ -	$ -		$ -	$ -
15721	MSB	4,902,288	112.8	11.8	10.46%	$ -	$ -		$ -	$ -
15721	MSB	4,902,288	112.8	3.4	2.99%	$ -	$ -		$ -	$ -
15731	NATIVE CORPORATION	22,741,349	523.1	8.1	1.56%	$ 319,300	$ -		$ 319,300	$ 4,975
17144	UNKNOWN	1,492,139	34.3	10.6	30.90%	$ -	$ -		$ -	$ -
18293	RESIDENTIAL	1,479,030	34.0	0.1	0.27%	$ 27,900	$ 118,400		$ 146,300	$ 391
18294	NATIVE CORPORATION	1,197,017	27.5	13.5	49.15%	$ 66,900	$ -		$ 66,900	$ 32,882
19530	RESIDENTIAL	43,910	1.0	0.2	23.17%	$ 8,000	$ 4,700		$ 12,700	$ 2,943
19532	RESIDENTIAL	109,851	2.5	2.3	100.00%	$ 14,000	$ -		$ 14,000	$ 14,000
19534	RESIDENTIAL	100,239	2.3	1.7	100.00%	$ 14,300	$ -		$ 14,300	$ 14,300
19651	RESIDENTIAL	45,012	1.0	0.2	100.00%	$ 8,000	$ 136,700	1	$ 144,700	$ 144,700
19861	RESIDENTIAL	112,803	2.6	1.8	100.00%	$ 6,100	$ -		$ 6,100	$ 6,100
20378	RESIDENTIAL	86,852	2.0	0.3	15.22%	$ 9,000	$ -		$ 9,000	$ 1,370
20567	COMMERCIAL	48,493	1.1	0.0	0.00%	$ 8,000	$ -		$ 8,000	$ -
20875	NATIVE CORPORATION	25,825,072	594.0	60.6	10.21%	$ 233,800	$ -		$ 233,800	$ 23,867
25596	MSB	7,211,267	165.9	19.5	11.74%	$ -	$ -		$ -	$ -
230	MENTAL HEALTH TRUST	7,148,901	164.4	1.4	0.88%	$ 125,300	$ -		$ 125,300	$ 1,098
26137	MSB	9,156,655	210.6	2.6	1.24%	$ -	$ -		$ -	$ -
36295	UNKNOWN	77,705	1.8	1.3	100.00%	$ -	$ -		$ -	$ -
8809	UNKNOWN	3,007,220	69.2	25.3	36.64%	$ -	$ -		$ -	$ -
8824	RESIDENTIAL	2,884,078	66.3	0.3	0.38%	$ 110,600	$ 81,000		$ 191,600	$ 734
8852	RESIDENTIAL	16,685	0.4	0.4	100.00%	$ 110,600	$ 81,000	1	$ 191,600	$ 191,600
693	MENTAL HEALTH TRUST	9,902,325	227.8	10.9	4.77%	$ 156,000	$ -		$ 156,000	$ 7,440
693	MENTAL HEALTH TRUST	9,902,325	227.8	0.1	0.03%	$ 156,000	$ -		$ 156,000	$ 50
8866	UNKNOWN	4,733,001	108.9	14.5	13.29%		$ -		$ -	$ -
692	MENTAL HEALTH TRUST	7,608,960	175.0	1.0	0.59%	$ 158,200	$ -		$ 158,200	$ 939
692	MENTAL HEALTH TRUST	7,608,960	175.0	8.7	4.96%	$ 158,200	$ -		$ 158,200	$ 7,841
692	MENTAL HEALTH TRUST	7,608,960	175.0	0.0	0.01%	$ 158,200	$ -		$ 158,200	$ 19
692	MENTAL HEALTH TRUST	7,608,960	175.0	0.3	0.18%	$ 158,200	$ -		$ 158,200	$ 287
698	MENTAL HEALTH TRUST	10,646,488	244.9	0.2	0.07%	$ 167,500	$ -		$ 167,500	$ 115
698	MENTAL HEALTH TRUST	10,646,488	244.9	12.6	5.16%	$ 167,500	$ -		$ 167,500	$ 8,649
698	MENTAL HEALTH TRUST	10,646,488	244.9	0.0	0.00%	$ 167,500	$ -		$ 167,500	$ 1
48	RESIDENTIAL	871,400	20.0	7.1	35.44%	$ 36,000	$ 134,200		$ 170,200	$ 60,319
49	RESIDENTIAL	857,417	19.7	7.6	38.36%	$ 36,000	$ 168,400		$ 204,400	$ 78,399
8919	RESIDENTIAL	211,372	4.9	1.9	39.14%	$ 16,800	$ -		$ 16,800	$ 6,576
8930	RESIDENTIAL	196,596	4.5	3.0	100.00%	$ 15,900	$ 1,000		$ 16,900	$ 16,900
8931	RESIDENTIAL	147,636	3.4	0.7	21.00%	$ 9,100	$ -		$ 9,100	$ 1,911

Table A8-3. North Approach 2002 Base R/W Costs

Parcel ID	Ownership Type	Parcel Size- ft2	Parcel Size--Acres	Required R/W--Acres	% Parcel Acquisition	Assessed Land Value	Appraised Building Value	Number of Relocations	Total Parcel Value (Assessed Land Value plus Appraised Building Value)	2002 Base R/W Cost
8933	RESIDENTIAL	195,748	4.5	3.4	100.00%	$ 10,100	$ -		$ 10,100	$ 10,100
8935	RESIDENTIAL	437,575	10.1	0.1	0.58%	$ 25,000	$ -		$ 25,000	$ 144
8944	RESIDENTIAL	220,902	5.1	1.4	28.44%	$ 7,400	$ -		$ 7,400	$ 2,105
8945	RESIDENTIAL	194,244	4.5	3.8	100.00%	$ 9,400	$ -		$ 9,400	$ 9,400
8950	RESIDENTIAL	90,597	2.1	2.0	100.00%	$ 6,700	$ -		$ 6,700	$ 6,700
36299	UNKNOWN	24,886	0.6	0.6	100.00%	$ -	$ -		$ -	$ -
9037	MENTAL HEALTH TRUST	250,285	5.8	0.1	1.98%	$ 21,900	$ -		$ 21,900	$ 434
9039	RESIDENTIAL	1,098,261	25.3	11.7	46.21%	$ 36,000	$ -		$ 36,000	$ 16,636
9041	RESIDENTIAL	3,564,511	82.0	9.6	11.70%	$ 137,000	$ -		$ 137,000	$ 16,025
9093	RESIDENTIAL	73,249,067	1684.7	3.9	0.23%	$ 3,000	$ -		$ 3,000	$ 7
9112	RESIDENTIAL	268,654	6.2	0.5	8.17%	$ 21,900	$ -		$ 21,900	$ 1,790
9137	RESIDENTIAL	76,463	1.8	1.4	100.00%	$ 50,000	$ 12,600		$ 62,600	$ 62,600
9202	RESIDENTIAL	73,706	1.7	1.4	100.00%	$ 55,000	$ -		$ 55,000	$ 55,000
9203	RESIDENTIAL	90,521	2.1	1.9	100.00%	$ 14,500	$ 13,200		$ 27,700	$ 27,700
9204	MSB	131,338	3.0	1.6	51.48%	$ -	$ -		$ -	$ -
9206	RESIDENTIAL	117,676	2.7	0.7	26.34%	$ 31,400	$ 5,300		$ 36,700	$ 9,668
9207	RESIDENTIAL	225,230	5.2	0.0	0.42%	$ 45,500	$ -		$ 45,500	$ 193
9227	RESIDENTIAL	40,392	0.9	0.5	100.00%	$ 55,000	$ 41,400	1	$ 96,400	$ 96,400
9265	MENTAL HEALTH TRUST	38,569	0.9	0.0	0.68%	$ 56,500	$ -		$ 56,500	$ 382
9266	RESIDENTIAL	35,712	0.8	0.8	100.00%	$ 32,900	$ 6,000		$ 38,900	$ 38,900
9269	MENTAL HEALTH TRUST	71,149	1.6	0.4	24.32%	$ 23,000	$ -		$ 23,000	$ 5,594
9327	RESIDENTIAL	51,106	1.2	0.1	8.51%	$ 32,000	$ -		$ 32,000	$ 2,722
9332	RESIDENTIAL	89,373	2.1	1.8	100.00%	$ 36,000	$ 90,100	1	$ 126,100	$ 126,100
9361	RESIDENTIAL	216,465	5.0	3.5	100.00%	$ 27,500	$ 146,000	1	$ 173,500	$ 173,500
9362	RESIDENTIAL	215,074	4.9	0.0	0.22%	$ 17,500	$ 76,400		$ 93,900	$ 209
9365	RESIDENTIAL	134,904	3.1	0.5	16.37%	$ 40,500	$ 20,300		$ 60,800	$ 9,954
9384	MSB	4,543,128	104.5	14.9	14.29%	$ -	$ -		$ -	$ -
9385	RESIDENTIAL	219,810	5.1	2.9	58.23%	$ 17,500	$ -		$ 17,500	$ 10,191
9418	RESIDENTIAL	211,073	4.9	3.6	100.00%	$ 17,500	$ -		$ 17,500	$ 17,500
9647	MSB	6,866,463	157.9	27.8	17.62%	$ -	$ -		$ -	$ -
9656	NATIVE CORPORATION	20,880,550	480.3	6.6	1.38%	$ 292,200	$ -		$ 292,200	$ 4,025
9866	COMMERCIAL	51,283	1.2	0.1	6.78%	$ 7,000	$ -		$ 7,000	$ 475
9867	COMMERCIAL	31,512	0.7	0.3	100.00%	$ 7,000	$ -		$ 7,000	$ 7,000
9868	MSB	284,641	6.5	5.3	100.00%	$ -	$ -		$ -	$ -
9869	MSB	206,598	4.8	0.1	2.97%	$ -	$ -		$ -	$ -
9876	COMMERCIAL	38,301	0.9	0.0	5.56%	$ 7,000	$ -		$ 7,000	$ 389
9909	MSB	221,775	5.1	2.7	52.50%	$ -	$ -		$ -	$ -
9912	MSB	296,534	6.8	1.6	23.53%	$ -	$ -		$ -	$ -
9959	MSB	227,870	5.2	4.3	100.00%	$ -	$ -		$ -	$ -
10056	MSB	221,526	5.1	2.5	48.91%	$ -	$ -		$ -	$ -
10142	MSB	223,918	5.2	1.9	37.18%	$ -	$ -		$ -	$ -
10241	MSB	216,228	5.0	1.4	27.57%	$ -	$ -		$ -	$ -
									$ -	$ -
SUBTOTAL SEGMENT 2B BASE R/W COSTS:								7		$ 1,733,502
SUBTOTAL SEGMENT 2A AND SEGMENT 2B BASE R/W COSTS:								7		$ 2,029,215
TOTAL SEGMENT 1 AND SEGMENT 2 (SEGMENT 2A AND SEGMENT 2B) BASE R/W COSTS:								7		**$ 2,280,581**

Table A8-4. North Approach Adjusted R/W Costs to 2007

Parcel ID	2002 Base R/W Cost	Market Value Multiplier 1.25	Administrative Costs $12,000 / parcel	Relocation Costs $100,000/ Unit	2002 Adjusted R/W Cost	2003 Property Value/Cost Increase 1.04	2004 Property Value/Cost Increase 1.04	2005 Property Value/Cost Increase 1.04	2006 Property Value/Cost Increase 1.04	2006 FEIS/ ROD Approved-Begin R/W Acquisition	2006 R/W Escalations 75%	2006 R/W Escalations 68%	2006 R/W Escalations 45%	2007 Property Value Increase 1.10	2007 Adjusted R/W Cost
Segment 1- From the East-West Segment of Point Mackenzie Road to the Knik Arm Crossing															
15325	$ 7,143	$ 8,928	$ 20,928	**$** -	$ 20,928	$ 21,765	$ 22,636	$ 23,542	$ 24,483		$ 42,846			$ 47,130	$ 47,130
15349	$ 950	$ 1,188	$ 13,188	**$** -	$ 13,188	$ 13,715	$ 14,264	$ 14,834	$ 15,428		$ 26,998			$ 29,698	$ 29,698
15357	$ 141,032	$ 176,289	$ 188,289	**$** -	$ 188,289	$ 195,821	$ 203,654	$ 211,800	$ 220,272		$ 385,476			$ 424,024	$ 424,024
15458	$ 9,352	$ 11,690	$ 23,690	**$** -	$ 23,690	$ 24,637	$ 25,623	$ 26,648	$ 27,714		$ 48,499			$ 53,349	$ 53,349
15459	$ 59,100	$ 73,875	$ 85,875	**$** -	$ 85,875	$ 89,310	$ 92,883	$ 96,598	$ 100,462		$ 175,809			$ 193,390	$ 193,390
15618	$ 1,861	$ 2,326	$ 14,326	**$** -	$ 14,326	$ 14,899	$ 15,495	$ 16,115	$ 16,760		$ 29,329			$ 32,262	$ 32,262
15619	$ 11,288	$ 14,110	$ 26,110	**$** -	$ 26,110	$ 27,154	$ 28,240	$ 29,370	$ 30,545		$ 53,453			$ 58,799	$ 58,799
15620	$ 16,217	$ 20,272	$ 32,272	**$** -	$ 32,272	$ 33,563	$ 34,905	$ 36,301	$ 37,753		$ 66,068			$ 72,675	$ 72,675
15639	$ 2,111	$ 2,638	$ 14,638	**$** -	$ 14,638	$ 15,224	$ 15,833	$ 16,466	$ 17,125		$ 29,968			$ 32,965	$ 32,965
15677	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15680	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15710	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15722	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15765	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15781	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15783	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15799	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15805	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15852	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15853	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15876	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15917	$ 2,313	$ 2,891	$ 14,891	**$** -	$ 14,891	$ 15,487	$ 16,106	$ 16,750	$ 17,420		$ 30,485			$ 33,534	$ 33,534
36579	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
36580	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
125	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
36581	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
130	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
131	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16002	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
15973	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16042	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16066	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16067	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16117	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16124	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16127	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16131	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16132	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16132	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16133	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16134	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16139	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
16141	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
36582	$ -	$ -	$ 12,000	**$** -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038		$ 24,567			$ 27,024	$ 27,024
	$ 251,366														
Subtotal Segment 1 Adjusted R/W Costs:					$ 842,208	$ 875,896	$ 910,932	$ 947,369	$ 985,264		$ 1,724,211			$ 1,896,633	$ 1,896,633

Table A8-4. North Approach Adjusted R/W Costs to 2007

Parcel ID	2002 Base R/W Cost	Market Value Multiplier 1.25	Administrative Costs $12,000 / parcel	Relocation Costs $100,000/ Unit	2002 Adjusted R/W Cost	2003 Property Value/Cost Increase 1.04	2004 Property Value/Cost Increase 1.04	2005 Property Value/Cost Increase 1.04	2006 Property Value/Cost Increase 1.04	2006 FEIS/ ROD Approved-Begin R/W Acquisition	2006 R/W Escalations 75%	68%	45%	2007 Property Value Increase 1.10	2007 Adjusted R/W Cost
Segment 2A- From South Big Lake Road to the East-West Segment of Point MacKenzie Road															
10471	$ 35	$ 44	$ 12,044	$ -	$ 12,044	$ 12,526	$ 13,027	$ 13,548	$ 14,090			$ 23,671		$ 26,038	$ 26,038
113	$ 16,070	$ 20,087	$ 32,087	$ -	$ 32,087	$ 33,371	$ 34,706	$ 36,094	$ 37,538			$ 63,064		$ 69,370	$ 69,370
10724	$ 37	$ 46	$ 12,046	$ -	$ 12,046	$ 12,528	$ 13,029	$ 13,550	$ 14,092			$ 23,675		$ 26,042	$ 26,042
114	$ 12,902	$ 16,127	$ 28,127	$ -	$ 28,127	$ 29,252	$ 30,422	$ 31,639	$ 32,905			$ 55,280		$ 60,808	$ 60,808
10965	$ -	$ -	$ 12,000	$ -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038			$ 23,584		$ 25,943	$ 25,943
11981	$ -	$ -	$ 12,000	$ -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038			$ 23,584		$ 25,943	$ 25,943
13425	$ -	$ -	$ 12,000	$ -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038			$ 23,584		$ 25,943	$ 25,943
13925	$ 15,475	$ 19,343	$ 31,343	$ -	$ 31,343	$ 32,597	$ 33,901	$ 35,257	$ 36,667			$ 61,601		$ 67,761	$ 67,761
14132	$ -	$ -	$ 12,000	$ -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038			$ 23,584		$ 25,943	$ 25,943
14135	$ 7,539	$ 9,424	$ 21,424	$ -	$ 21,424	$ 22,281	$ 23,172	$ 24,099	$ 25,063			$ 42,106		$ 46,316	$ 46,316
14163	$ 7,537	$ 9,422	$ 21,422	$ -	$ 21,422	$ 22,279	$ 23,170	$ 24,096	$ 25,060			$ 42,101		$ 46,312	$ 46,312
14191	$ 10,857	$ 13,571	$ 25,571	$ -	$ 25,571	$ 26,594	$ 27,658	$ 28,764	$ 29,915			$ 50,257		$ 55,282	$ 55,282
14319	$ 4,366	$ 5,458	$ 17,458	$ -	$ 17,458	$ 18,156	$ 18,883	$ 19,638	$ 20,423			$ 34,311		$ 37,742	$ 37,742
14320	$ 10,000	$ 12,500	$ 24,500	$ -	$ 24,500	$ 25,480	$ 26,499	$ 27,559	$ 28,662			$ 48,151		$ 52,967	$ 52,967
14370	$ 14,863	$ 18,579	$ 30,579	$ -	$ 30,579	$ 31,802	$ 33,074	$ 34,397	$ 35,773			$ 60,098		$ 66,108	$ 66,108
14467	$ 11,816	$ 14,770	$ 26,770	$ -	$ 26,770	$ 27,841	$ 28,955	$ 30,113	$ 31,317			$ 52,613		$ 57,875	$ 57,875
14468	$ 6,402	$ 8,003	$ 20,003	$ -	$ 20,003	$ 20,803	$ 21,635	$ 22,500	$ 23,400			$ 39,313		$ 43,244	$ 43,244
23	$ 4,672	$ 5,840	$ 17,840	$ -	$ 17,840	$ 18,553	$ 19,295	$ 20,067	$ 20,870			$ 35,061		$ 38,568	$ 38,568
14562	$ 10,488	$ 13,110	$ 25,110	$ -	$ 25,110	$ 26,115	$ 27,159	$ 28,246	$ 29,375			$ 49,351		$ 54,286	$ 54,286
14663	$ 28	$ 35	$ 12,035	$ -	$ 12,035	$ 12,516	$ 13,017	$ 13,538	$ 14,079			$ 23,653		$ 26,018	$ 26,018
14664	$ 29,200	$ 36,501	$ 48,501	$ -	$ 48,501	$ 50,441	$ 52,458	$ 54,557	$ 56,739			$ 95,321		$ 104,853	$ 104,853
89	$ 861	$ 1,076	$ 13,076	$ -	$ 13,076	$ 13,599	$ 14,143	$ 14,709	$ 15,297			$ 25,699		$ 28,269	$ 28,269
84	$ 4,566	$ 5,707	$ 17,707	$ -	$ 17,707	$ 18,416	$ 19,152	$ 19,918	$ 20,715			$ 34,801		$ 38,281	$ 38,281
83	$ 11,543	$ 14,429	$ 26,429	$ -	$ 26,429	$ 27,486	$ 28,586	$ 29,729	$ 30,919			$ 51,943		$ 57,138	$ 57,138
82	$ 16,709	$ 20,886	$ 32,886	$ -	$ 32,886	$ 34,201	$ 35,569	$ 36,992	$ 38,472			$ 64,632		$ 71,096	$ 71,096
55	$ 15,421	$ 19,277	$ 31,277	$ -	$ 31,277	$ 32,528	$ 33,829	$ 35,182	$ 36,589			$ 61,470		$ 67,617	$ 67,617
14885	$ -	$ -	$ 12,000	$ -	$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038			$ 23,584		$ 25,943	$ 25,943
15019	$ 2,911	$ 3,639	$ 15,639	$ -	$ 15,639	$ 16,265	$ 16,915	$ 17,592	$ 18,296			$ 30,737		$ 33,810	$ 33,810
15020	$ 21,650	$ 27,063	$ 39,063	$ -	$ 39,063	$ 40,625	$ 42,250	$ 43,940	$ 45,698			$ 76,773		$ 84,450	$ 84,450
15059	$ 7,441	$ 9,301	$ 21,301	$ -	$ 21,301	$ 22,153	$ 23,039	$ 23,961	$ 24,919			$ 41,864		$ 46,050	$ 46,050
15128	$ 13,528	$ 16,911	$ 28,911	$ -	$ 28,911	$ 30,067	$ 31,270	$ 32,520	$ 33,821			$ 56,820		$ 62,502	$ 62,502
15167	$ 91	$ 114	$ 12,114	$ -	$ 12,114	$ 12,598	$ 13,102	$ 13,626	$ 14,172			$ 23,808		$ 26,189	$ 26,189
15216	$ 11,886	$ 14,858	$ 26,858	$ -	$ 26,858	$ 27,932	$ 29,049	$ 30,211	$ 31,419			$ 52,785		$ 58,063	$ 58,063
15307	$ 26,818	$ 33,522	$ 45,522	$ -	$ 45,522	$ 47,343	$ 49,237	$ 51,206	$ 53,254			$ 89,467		$ 98,414	$ 98,414
	$ 295,713														
Segment 2A Adjusted R/W Costs:					$ 777,642	$ 808,747	$ 841,097	$ 874,741	$ 909,731			$ 1,528,348		$ 1,681,183	$ 1,681,183

Table A8-4. North Approach Adjusted R/W Costs to 2007

Parcel ID	2002 Base R/W Cost	Market Value Multiplier 1.25	Administrative Costs $12,000 / parcel	Relocation Costs $100,000/ Unit	2002 Adjusted R/W Cost	2003 Property Value/Cost Increase 1.04	2004 Property Value/Cost Increase 1.04	2005 Property Value/Cost Increase 1.04	2006 Property Value/Cost Increase 1.04	2006 FEIS/ ROD Approved- Begin R/W Acquisition	2006 R/W Escalations 75%	68%	45%	2007 Property Value Increase 1.10	2007 Adjusted R/W Cost
Segment 2B - From the Parks Highway to South Big Lake Road															
7133	$ 8,321	$ 10,402	$ 22,402		$ 22,402	$ 23,298	$ 24,230	$ 25,199	$ 26,207				$ 38,000	$ 41,800	$ 41,800
7163	$ 9,374	$ 11,718	$ 23,718		$ 23,718	$ 24,667	$ 25,653	$ 26,679	$ 27,747				$ 40,233	$ 44,256	$ 44,256
8800	$ 657	$ 821	$ 12,821		$ 12,821	$ 13,334	$ 13,868	$ 14,422	$ 14,999				$ 21,749	$ 23,924	$ 23,924
9761	$ 10,100	$ 12,625	$ 24,625		$ 24,625	$ 25,610	$ 26,634	$ 27,700	$ 28,808				$ 41,771	$ 45,948	$ 45,948
9775	$ 10,100	$ 12,625	$ 24,625		$ 24,625	$ 25,610	$ 26,634	$ 27,700	$ 28,808				$ 41,771	$ 45,948	$ 45,948
9782	$ 10,100	$ 12,625	$ 24,625		$ 24,625	$ 25,610	$ 26,634	$ 27,700	$ 28,808				$ 41,771	$ 45,948	$ 45,948
9786	$ 13,800	$ 17,250	$ 29,250		$ 29,250	$ 30,420	$ 31,637	$ 32,902	$ 34,218				$ 49,617	$ 54,578	$ 54,578
44	$ 287	$ 359	$ 12,359		$ 12,359	$ 12,854	$ 13,368	$ 13,902	$ 14,458				$ 20,965	$ 23,061	$ 23,061
44	$ 402	$ 502	$ 12,502		$ 12,502	$ 13,002	$ 13,522	$ 14,063	$ 14,626				$ 21,207	$ 23,328	$ 23,328
1273	$ 4,709	$ 5,886	$ 17,886		$ 17,886	$ 18,601	$ 19,346	$ 20,119	$ 20,924				$ 30,340	$ 33,374	$ 33,374
10081	$ 159,800	$ 199,750	$ 211,750	$ 100,000	$ 311,750	$ 324,220	$ 337,189	$ 350,676	$ 364,703				$ 528,820	$ 581,702	$ 581,702
10085	$ 3,789	$ 4,737	$ 16,737		$ 16,737	$ 17,406	$ 18,102	$ 18,826	$ 19,579				$ 28,390	$ 31,229	$ 31,229
10087	$ 2,265	$ 2,832	$ 14,832		$ 14,832	$ 15,425	$ 16,042	$ 16,684	$ 17,351				$ 25,159	$ 27,675	$ 27,675
10090	$ 2,267	$ 2,834	$ 14,834		$ 14,834	$ 15,427	$ 16,044	$ 16,686	$ 17,354				$ 25,163	$ 27,679	$ 27,679
10091	$ 15,258	$ 19,073	$ 31,073		$ 31,073	$ 32,316	$ 33,608	$ 34,953	$ 36,351				$ 52,709	$ 57,980	$ 57,980
10108	$ 14,022	$ 17,528	$ 29,528		$ 29,528	$ 30,709	$ 31,937	$ 33,215	$ 34,543				$ 50,088	$ 55,096	$ 55,096
10147	$ 10,000	$ 12,500	$ 24,500		$ 24,500	$ 25,480	$ 26,499	$ 27,559	$ 28,662				$ 41,559	$ 45,715	$ 45,715
10152	$ 118,000	$ 147,500	$ 159,500	$ 100,000	$ 259,500	$ 269,880	$ 280,675	$ 291,902	$ 303,578				$ 440,189	$ 484,207	$ 484,207
15717	$ -	$ -	$ 12,000		$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038				$ 20,356	$ 22,391	$ 22,391
15721	$ -	$ -	$ 12,000		$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038				$ 20,356	$ 22,391	$ 22,391
15721	$ -	$ -	$ 12,000		$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038				$ 20,356	$ 22,391	$ 22,391
15731	$ 4,975	$ 6,218	$ 18,218		$ 18,218	$ 18,947	$ 19,705	$ 20,493	$ 21,313				$ 30,904	$ 33,994	$ 33,994
17144	$ -	$ -	$ 12,000		$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038				$ 20,356	$ 22,391	$ 22,391
18293	$ 391	$ 489	$ 12,489		$ 12,489	$ 12,989	$ 13,508	$ 14,049	$ 14,611				$ 21,185	$ 23,304	$ 23,304
18294	$ 32,882	$ 41,103	$ 53,103		$ 53,103	$ 55,227	$ 57,436	$ 59,733	$ 62,123				$ 90,078	$ 99,086	$ 99,086
19530	$ 2,943	$ 3,678	$ 15,678		$ 15,678	$ 16,305	$ 16,958	$ 17,636	$ 18,341				$ 26,595	$ 29,254	$ 29,254
19532	$ 14,000	$ 17,500	$ 29,500		$ 29,500	$ 30,680	$ 31,907	$ 33,183	$ 34,511				$ 50,041	$ 55,045	$ 55,045
19534	$ 14,300	$ 17,875	$ 29,875		$ 29,875	$ 31,070	$ 32,313	$ 33,605	$ 34,950				$ 50,677	$ 55,744	$ 55,744
19651	$ 144,700	$ 180,875	$ 192,875	$ 100,000	$ 292,875	$ 304,590	$ 316,774	$ 329,445	$ 342,622				$ 496,802	$ 546,483	$ 546,483
19861	$ 6,100	$ 7,625	$ 19,625		$ 19,625	$ 20,410	$ 21,226	$ 22,075	$ 22,958				$ 33,290	$ 36,619	$ 36,619
20378	$ 1,370	$ 1,712	$ 13,712		$ 13,712	$ 14,261	$ 14,831	$ 15,424	$ 16,041				$ 23,260	$ 25,586	$ 25,586
20567	$ -	$ -	$ 12,000		$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038				$ 20,356	$ 22,391	$ 22,391
20875	$ 23,867	$ 29,833	$ 41,833		$ 41,833	$ 43,507	$ 45,247	$ 47,057	$ 48,939				$ 70,962	$ 78,058	$ 78,058
25596	$ -	$ -	$ 12,000		$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038				$ 20,356	$ 22,391	$ 22,391
230	$ 1,098	$ 1,373	$ 13,373		$ 13,373	$ 13,908	$ 14,464	$ 15,042	$ 15,644				$ 22,684	$ 24,952	$ 24,952
26137	$ -	$ -	$ 12,000		$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038				$ 20,356	$ 22,391	$ 22,391
36295	$ -	$ -	$ 12,000		$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038				$ 20,356	$ 22,391	$ 22,391
8809	$ -	$ -	$ 12,000		$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038				$ 20,356	$ 22,391	$ 22,391
8824	$ 734	$ 917	$ 12,917		$ 12,917	$ 13,434	$ 13,971	$ 14,530	$ 15,111				$ 21,911	$ 24,102	$ 24,102
8852	$ 191,600	$ 239,500	$ 251,500	$ 100,000	$ 351,500	$ 365,560	$ 380,182	$ 395,390	$ 411,205				$ 596,248	$ 655,872	$ 655,872
693	$ 7,440	$ 9,300	$ 21,300		$ 21,300	$ 22,152	$ 23,038	$ 23,960	$ 24,918				$ 36,131	$ 39,744	$ 39,744
693	$ 50	$ 63	$ 12,063		$ 12,063	$ 12,545	$ 13,047	$ 13,569	$ 14,111				$ 20,462	$ 22,508	$ 22,508
8866	$ -	$ -	$ 12,000		$ 12,000	$ 12,480	$ 12,979	$ 13,498	$ 14,038				$ 20,356	$ 22,391	$ 22,391
692	$ 939	$ 1,174	$ 13,174		$ 13,174	$ 13,701	$ 14,249	$ 14,819	$ 15,412				$ 22,347	$ 24,582	$ 24,582
692	$ 7,841	$ 9,801	$ 21,801		$ 21,801	$ 22,673	$ 23,580	$ 24,523	$ 25,504				$ 36,981	$ 40,680	$ 40,680
692	$ 19	$ 24	$ 12,024		$ 12,024	$ 12,505	$ 13,005	$ 13,525	$ 14,066				$ 20,396	$ 22,435	$ 22,435
692	$ 287	$ 358	$ 12,358		$ 12,358	$ 12,853	$ 13,367	$ 13,901	$ 14,457				$ 20,963	$ 23,059	$ 23,059
698	$ 115	$ 144	$ 12,144		$ 12,144	$ 12,629	$ 13,135	$ 13,660	$ 14,206				$ 20,599	$ 22,659	$ 22,659
698	$ 8,649	$ 10,811	$ 22,811		$ 22,811	$ 23,724	$ 24,673	$ 25,660	$ 26,686				$ 38,695	$ 42,564	$ 42,564
698	$ 1	$ 2	$ 12,002		$ 12,002	$ 12,482	$ 12,981	$ 13,500	$ 14,040				$ 20,358	$ 22,394	$ 22,394
48	$ 60,319	$ 75,399	$ 87,399		$ 87,399	$ 90,895	$ 94,531	$ 98,312	$ 102,245				$ 148,255	$ 163,080	$ 163,080
49	$ 78,399	$ 97,999	$ 109,999		$ 109,999	$ 114,399	$ 118,975	$ 123,734	$ 128,683				$ 186,591	$ 205,250	$ 205,250
8919	$ 6,576	$ 8,220	$ 20,220		$ 20,220	$ 21,029	$ 21,870	$ 22,745	$ 23,655				$ 34,299	$ 37,729	$ 37,729
8930	$ 16,900	$ 21,125	$ 33,125		$ 33,125	$ 34,450	$ 35,828	$ 37,261	$ 38,752				$ 56,190	$ 61,809	$ 61,809
8931	$ 1,911	$ 2,388	$ 14,388		$ 14,388	$ 14,964	$ 15,563	$ 16,185	$ 16,832				$ 24,407	$ 26,848	$ 26,848
8933	$ 10,100	$ 12,625	$ 24,625		$ 24,625	$ 25,610	$ 26,634	$ 27,700	$ 28,808				$ 41,771	$ 45,948	$ 45,948
8935	$ 144	$ 180	$ 12,180		$ 12,180	$ 12,667	$ 13,174	$ 13,701	$ 14,249				$ 20,661	$ 22,727	$ 22,727
8944	$ 2,105	$ 2,631	$ 14,631		$ 14,631	$ 15,216	$ 15,825	$ 16,458	$ 17,116				$ 24,818	$ 27,300	$ 27,300
8945	$ 9,400	$ 11,750	$ 23,750		$ 23,750	$ 24,700	$ 25,688	$ 26,716	$ 27,784				$ 40,287	$ 44,316	$ 44,316
8950	$ 6,700	$ 8,375	$ 20,375		$ 20,375	$ 21,190	$ 22,038	$ 22,919	$ 23,836				$ 34,562	$ 38,018	$ 38,018

Table A8-4. North Approach Adjusted R/W Costs to 2007

Parcel ID	2002 Base R/W Cost	Market Value Multiplier 1.25	Administrative Costs $12,000 / parcel	Relocation Costs $100,000/ Unit	2002 Adjusted R/W Cost	2003 Property Value/Cost Increase 1.04	2004 Property Value/Cost Increase 1.04	2005 Property Value/Cost Increase 1.04	2006 Property Value/Cost Increase 1.04	2006 FEIS/ ROD Approved- Begin R/W Acquisition	2006 R/W Escalations 75%	68%	45%	2007 Property Value Increase 1.10	2007 Adjusted R/W Cost
36299	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
9037	434	542	12,542		12,542	13,044	13,566	14,108	14,673				21,275	23,403	23,403
9039	16,636	20,795	32,795		32,795	34,107	35,471	36,890	38,366				55,630	61,193	61,193
9041	16,025	20,032	32,032		32,032	33,313	34,646	36,031	37,473				54,335	59,769	59,769
9093	7	9	12,009		12,009	12,489	12,989	13,508	14,048				20,370	22,407	22,407
9112	1,790	2,237	14,237		14,237	14,807	15,399	16,015	16,656				24,151	26,566	26,566
9137	62,600	78,250	90,250		90,250	93,860	97,614	101,519	105,580				153,091	168,400	168,400
9202	55,000	68,750	80,750		80,750	83,980	87,339	90,833	94,466				136,976	150,673	150,673
9203	27,700	34,625	46,625		46,625	48,490	50,430	52,447	54,545				79,090	86,999	86,999
9204	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
9206	9,668	12,085	24,085		24,085	25,049	26,050	27,092	28,176				40,855	44,941	44,941
9207	193	242	12,242		12,242	12,731	13,240	13,770	14,321				20,765	22,842	22,842
9227	96,400	120,500	132,500	100,000	232,500	241,800	251,472	261,531	271,992				394,389	433,827	433,827
9265	382	478	12,478		12,478	12,977	13,496	14,036	14,597				21,166	23,282	23,282
9266	38,900	48,625	60,625		60,625	63,050	65,572	68,195	70,923				102,838	113,122	113,122
9269	5,594	6,992	18,992		18,992	19,752	20,542	21,364	22,218				32,217	35,438	35,438
9327	2,722	3,403	15,403		15,403	16,019	16,660	17,326	18,019				26,128	28,741	28,741
9332	126,100	157,625	169,625	100,000	269,625	280,410	291,626	303,291	315,423				457,364	503,100	503,100
9361	173,500	216,875	228,875	100,000	328,875	342,030	355,711	369,940	384,737				557,869	613,656	613,656
9362	209	261	12,261		12,261	12,751	13,262	13,792	14,344				20,798	22,878	22,878
9365	9,954	12,443	24,443		24,443	25,421	26,438	27,495	28,595				41,463	45,609	45,609
9384	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
9385	10,191	12,738	24,738		24,738	25,728	26,757	27,827	28,940				41,963	46,160	46,160
9418	17,500	21,875	33,875		33,875	35,230	36,639	38,105	39,629				57,462	63,208	63,208
9647	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
9656	4,025	5,032	17,032		17,032	17,713	18,422	19,158	19,925				28,891	31,780	31,780
9866	475	593	12,593		12,593	13,097	13,621	14,166	14,733				21,362	23,498	23,498
9867	7,000	8,750	20,750		20,750	21,580	22,443	23,341	24,275				35,198	38,718	38,718
9868	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
9869	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
9876	389	487	12,487		12,487	12,986	13,506	14,046	14,608				21,181	23,299	23,299
9909	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
9912	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
9959	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
10056	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
10142	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
10241	-	-	12,000		12,000	12,480	12,979	13,498	14,038				20,356	22,391	22,391
	1,733,502														
Subtotal Segment 2B Adjusted R/W Costs:					4,030,877	4,192,112	4,359,797	4,534,188	4,715,556				6,837,556	7,521,312	7,521,312
Subtotal Segment 2A and Segment 2B Adjusted R/W Costs:					4,808,519	5,000,860	5,200,894	5,408,930	5,625,287					9,202,495	9,202,495
Subtotal Segment 1 and Segment 2 Adjusted R/W Costs:					5,650,726	5,876,755	6,111,826	6,356,299	6,610,551					11,099,127	11,099,127
Condemnation Costs: 175 parcels X 10% X $150,000/ parcel=															2,700,000
Subtotal:															13,799,127
R/W Contingency Cost: + 40%															5,519,651
North Approach Total Adjusted R/W Costs:															**$ 19,318,778**