

Knik Arm Crossing

Engineering Feasibility and Cost Estimate Update

State Project No. 56047

2004 Project Estimate Update Technical Memorandum

Prepared for:
Alaska Department of Transportation
and Public Facilities



Prepared by:
Parsons Brinckerhoff

May 2004

Knik Arm Crossing Engineering Feasibility and Cost Estimate Update

State Project No. 56047

2004 Project Estimate Update Technical Memorandum

Prepared for:

Alaska Department of Transportation
and Public Facilities

Prepared by:

Parsons Brinckerhoff

May 2004

Contents

1.0	SUMMARY	1
2.0	INTRODUCTION	2
3.0	METHODOLOGY	9
3.1	Geotechnical Investigation Program Overview	9
3.2	Revised Structural Analysis	13
3.3	Estimate Update	14
4.0	REFERENCES	16

APPENDICES: REVISED COST ESTIMATES

- Appendix A: Project Cost Summary
- Appendix B: Four-Lane Alternative
- Appendix C: Two-Lane Alternative
- Appendix D: Cost Buildup

List of Figures

Figure 2.1:	Crossing Location.....	3
Figure 2.2:	13,500-Foot Span Option	5
Figure 2.3:	9,500-Foot Span Option	6
Figure 2.4:	7,200-Foot Span Option	7
Figure 2.5:	Typical Roadway Sections	7
Figure 3.1:	Knik Arm Profile and Pile Embedment Depths	10

List of Tables

Table 1.1:	Knik Arm Crossing Alternatives and Costs.....	1
Table 3.1:	Knik Arm Pile Lengths.....	14

1.0 SUMMARY

The Alaska Department of Transportation and Public Facilities (ADOT&PF) conducted the Knik Arm Crossing Draft Environmental Impact Statement (DEIS) in 1984 to evaluate alternative modes and locations for crossing the Knik Arm from Anchorage to the Matanuska-Susitna (Mat-Su) Borough. Since the 1984 DEIS, new project issues have evolved and previous project issues have changed.

In 2003, an updated report titled *Knik Arm Crossing Engineering Feasibility and Cost Estimate Update* was completed. This Update Project examined changes from 1984 to 2002 in land use, transportation planning, and environmental regulations. It used this information to select a hybrid alignment, which was representative of probable project costs. Estimates for several alternative crossing types were developed and presented.

During the summer of 2003, ADOT&PF collected geotechnical and geophysical data that would be valuable to further refine the previously developed estimates. The alternative crossing types evaluated were also refined, and the resulting costs are summarized in Table 1.1.

Alternative	Estimated Cost	Reference Appendix
Four-Lane 13,500-foot bridge	1,370,800,000	B
Four-Lane 9,500-foot bridge (4,000-foot causeway)	1,053,800,000	B
Two-Lane 9,500-foot bridge (4,000-foot causeway)	913,400,000	C
Four-Lane 7,200-foot bridge (6,300-foot causeway with scour)	893,300,000	B
Two-Lane 7,200-foot bridge (6,300-foot causeway with scour)	776,100,000	C

2.0 INTRODUCTION

The Alaska Department of Transportation and Public Facilities (ADOT&PF) conducted the Knik Arm Crossing Draft Environmental Impact Statement (DEIS) in 1984 to evaluate alternative modes and locations for crossing the Knik Arm from Anchorage to the Matanuska-Susitna (Mat-Su) Borough. Two viable corridor alignments were identified in the DEIS: the Downtown/Houston Alternative and the Elmendorf Air Force Base (AFB)/Houston Alternative. These alternatives were subsequently evaluated for detailed cost and impact comparisons. The key project issues identified in the DEIS included changes in travel patterns and induced growth, adverse affects to the natural and social environment, relocation and right-of-way impacts, and effects on the military missions of Elmendorf AFB and Fort Richardson. Since the 1984 DEIS, new project issues have evolved and previous project issues have changed.

In 2003 an updated report titled *Knik Arm Crossing Engineering Feasibility and Cost Estimate Update* was completed. The objective of this Update Project was to provide a preliminary examination of historical and current planning, engineering, and cost factors for the purpose of updating the project's engineering feasibility and cost estimate components. The Update Project reviewed the two viable build alternatives from the Knik Arm Crossing 1984 DEIS and identified new engineering and construction technology in order to establish an up-to-date opinion of project costs. The Update Project also examined changes from 1984 to 2002 in land use, transportation planning, and environmental regulations to determine whether the two DEIS build alternatives (the Downtown Anchorage/Houston Alternative and the Elmendorf AFB/Houston Alternative) continue to represent viable build alternatives for the project.

New alignments were studied in light of new information and changes in the Anchorage area during the intervening years. A hybrid alignment was identified because it was representative of probable project costs (see Figure 2.1). It should be clearly stated, however, that this alignment is not a proposed alignment to take forward as a preferred alignment. It is intended to be representative of the project costs regardless of the final route that is selected.

The 2003 Update Project estimated the costs of several alternative Knik Arm Crossing projects and the cost of three associated projects. The associated projects are independent projects that would provide additional connectivity for the Anchorage and Matanuska-Susitna (Mat-Su) Borough vicinity highway system, but were not viewed as a part of the Knik Arm Crossing Project. This report focuses solely on providing an update of the Knik Arm Crossing Project and its connection to the existing roadway system on each side of Knik Arm.

The updated costs resulting from the 2003 Update Project provide a probable range of project costs for viable build alternatives, based on capital costs and risk-based contingency. The design evaluations and resulting estimates were based on geotechnical data collected during past studies of a Kink Arm Crossing and other projects in the vicinity. This data did not provide adequate information to determine probable pile cutoff length, and as a result one of the most expensive risk elements was in foundation costs. 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's needs would be reflected as accurately as possible.



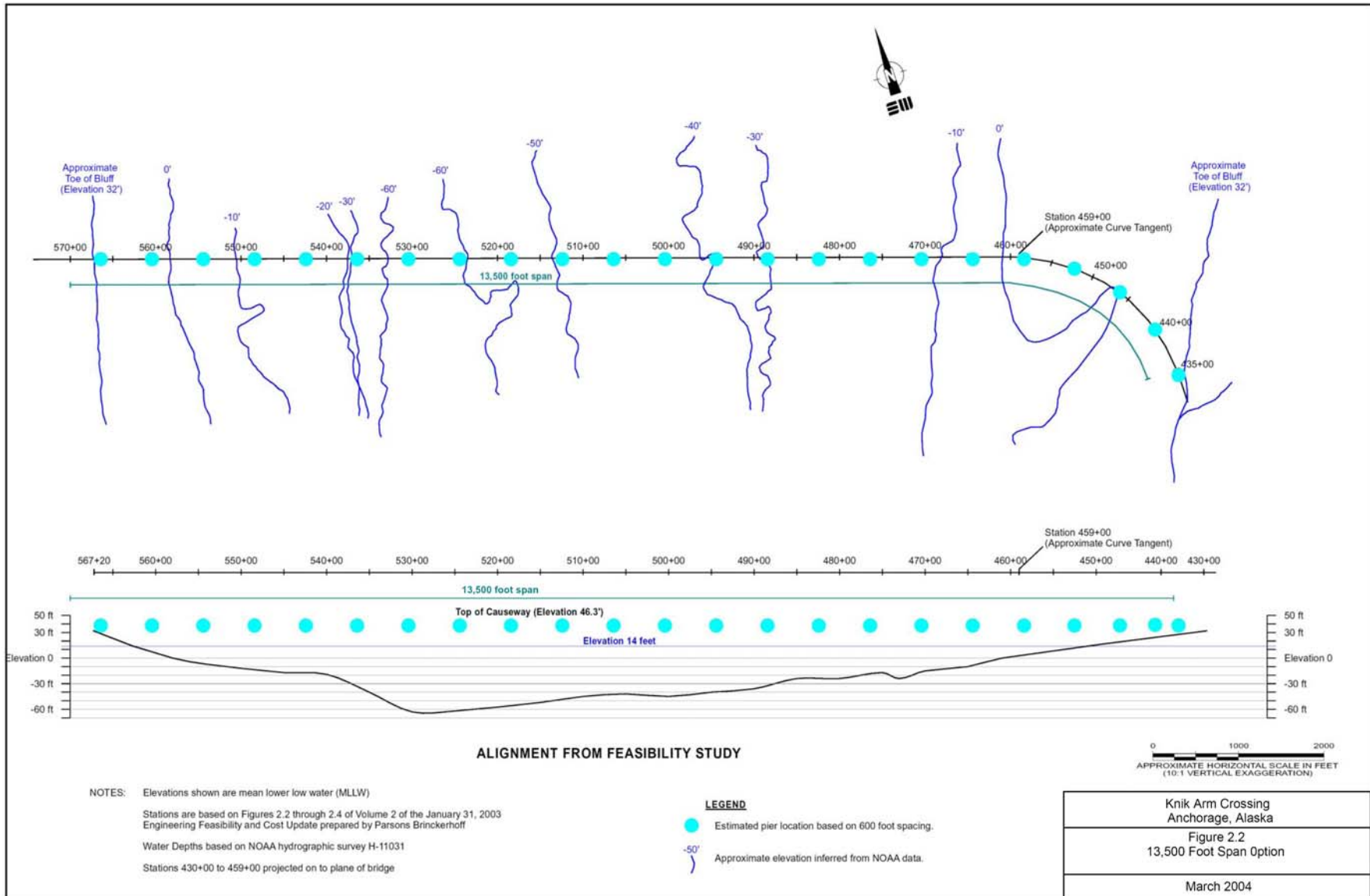
During the summer of 2003 the Port of Anchorage conducted an offshore geotechnical investigation program for the expansion of the Port facilities. A jack-up barge was mobilized to Knik Arm for this program and while in the area, offered a very cost-effective opportunity to collect much-needed geotechnical data in the corridor where the Knik Arm Crossing may be constructed. As a result, ADOT&PF authorized additional geotechnical and geophysical studies, with the goal of developing better information to use at this conceptual level of design and to ultimately reduce the level of risk included in the estimate data.

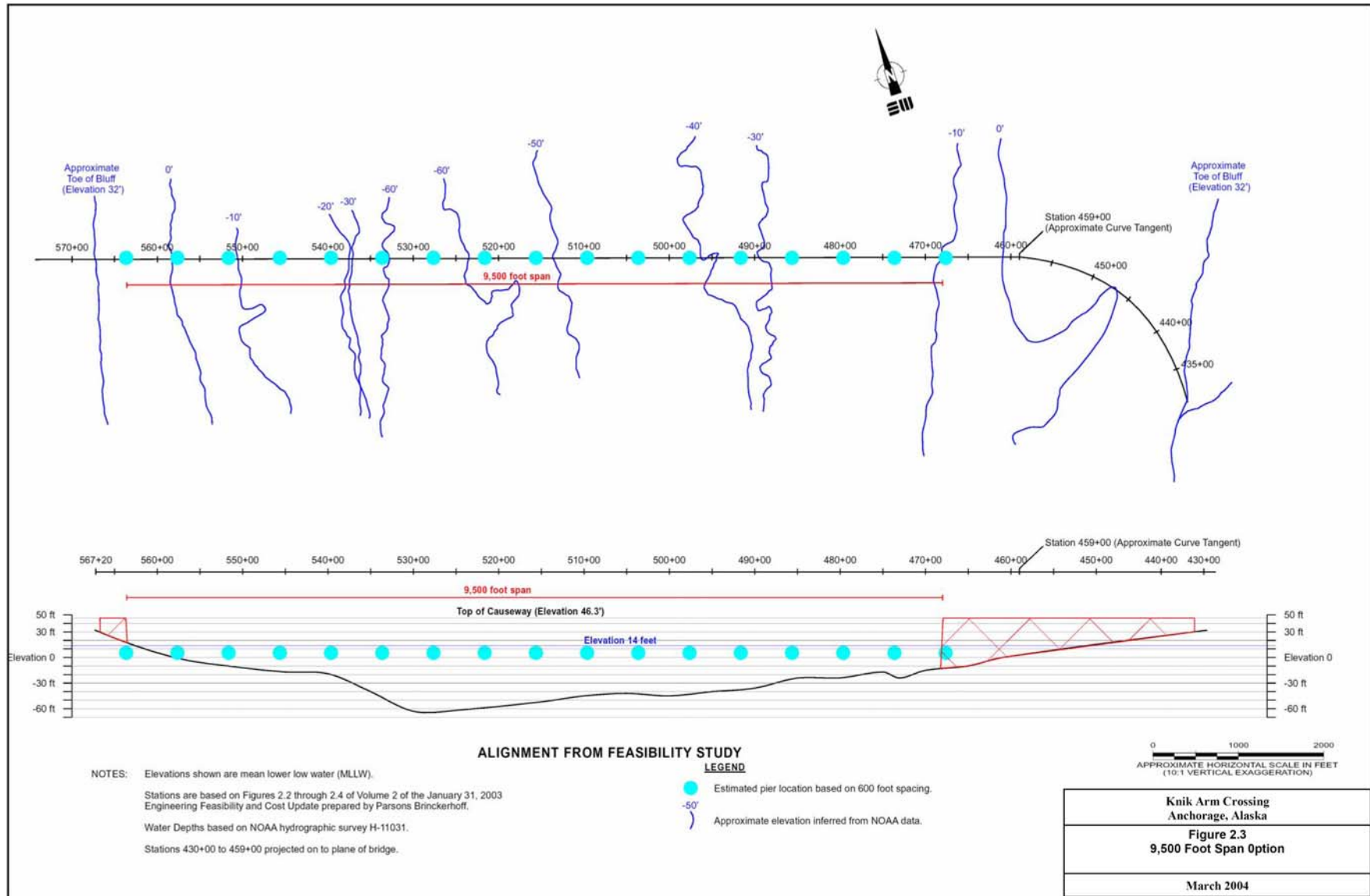
At the same time, Governor Frank Murkowski signed into law the establishment of the Knik Arm Bridge and Toll Authority (KABATA). The purpose of KABATA is to “develop, stimulate, and advance the economic welfare of the state and further the development of public transportation systems in the vicinity of the Upper Cook Inlet with construction of a bridge to span Knik Arm and connect the Municipality of Anchorage and the Matanuska-Susitna Borough”. According to State law, KABATA would not become an authority until mid-September 2003, and it was anticipated that the project would be turned over to the authority at that time.

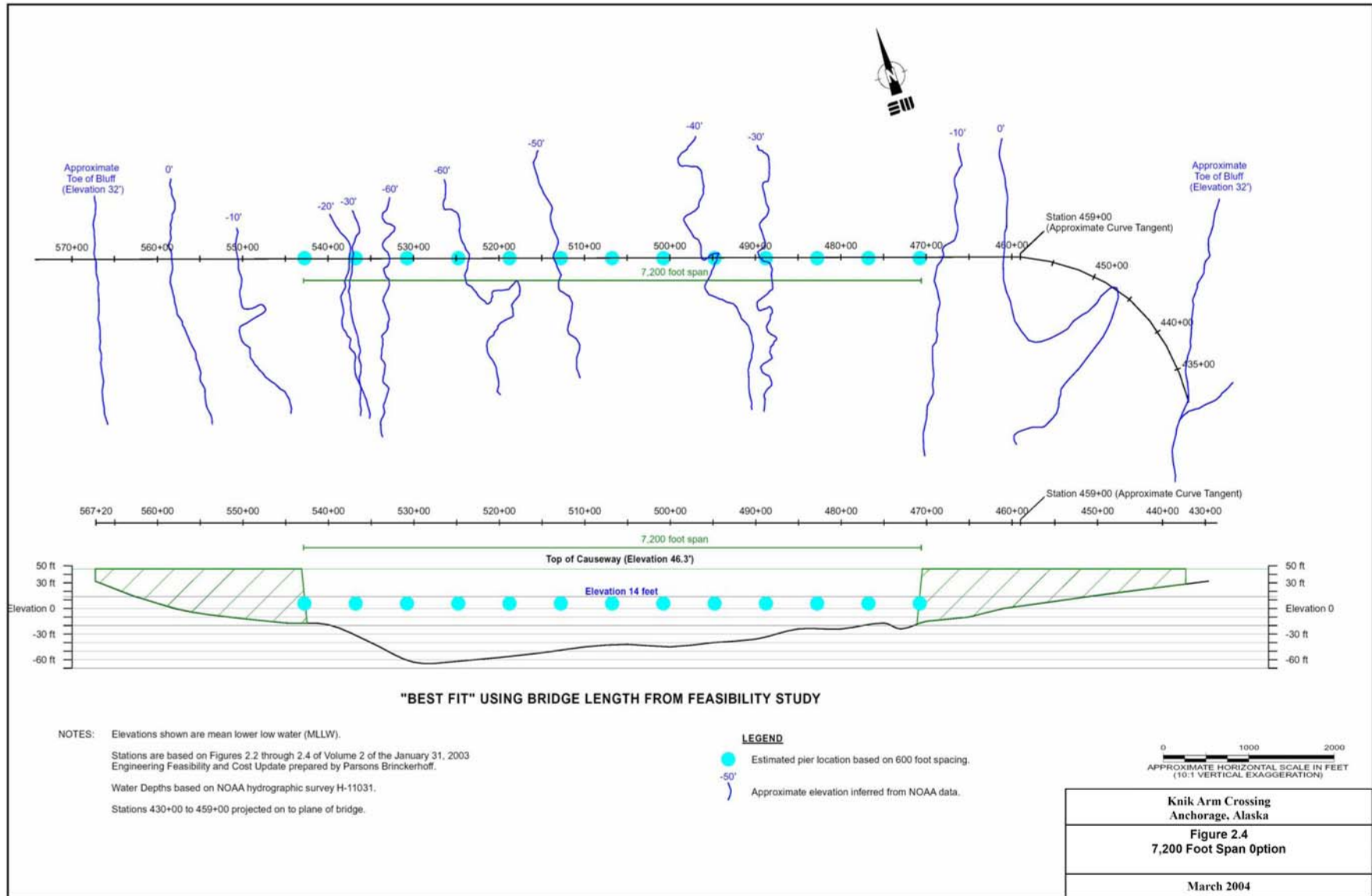
ADOT&PF was in the middle of the geotechnical and geophysical work as the KABATA authority was getting started. Since the project would eventually be turned over to this Authority, it was important to meet their goal and objectives within this study. Two of their objectives were to consider alternatives that shortened the length of the bridge section by lengthening the causeways, and to consider alternatives that provide two lanes rather than the four lanes considered in the 2003 Update Project.

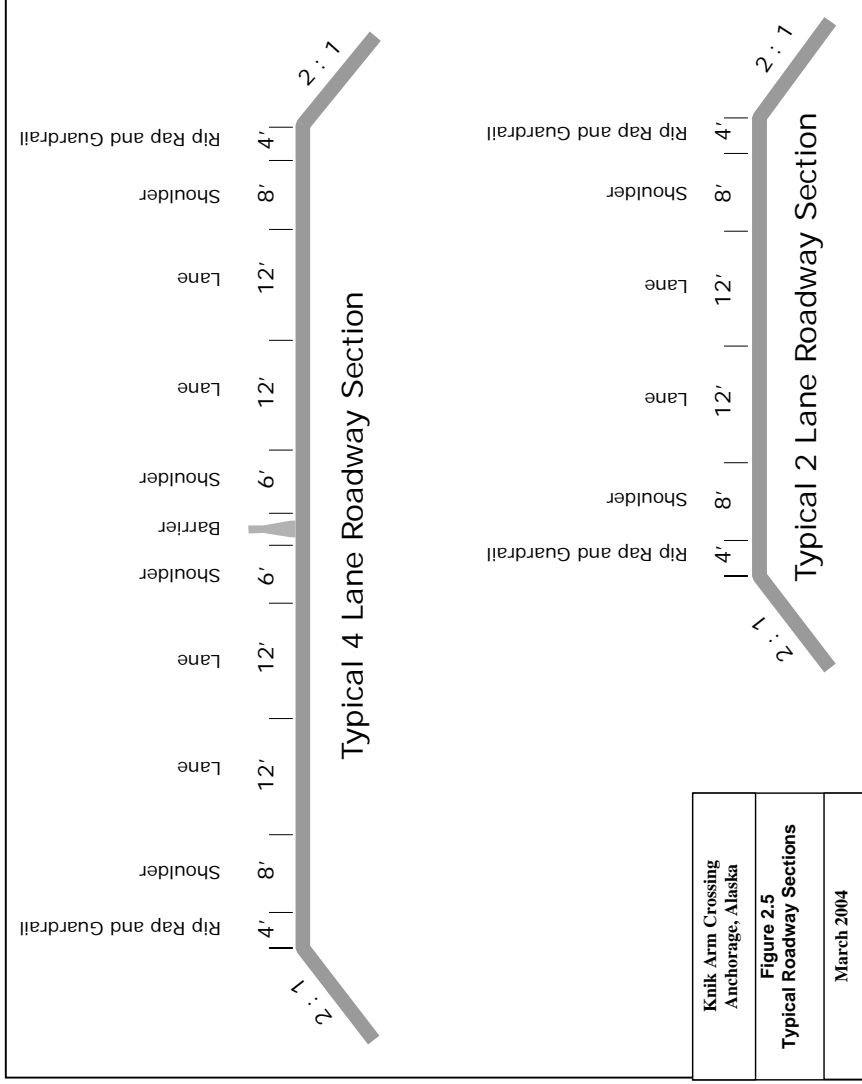
Accordingly, the alternatives estimated in the report were revised to better serve KABATA’s needs. Figures 2.2 through 2.4 show the location of the 13,500-foot, 9,500-foot, and 7,200-foot bridges and their associated causeways. Figure 2.5 depicts the general roadway configurations estimated for the two- and four-lane alternatives. The combinations of bridge length and lane configurations that were estimated are as follows:

- Four-lane 13,500-foot bridge
- Four-lane 9,500-foot bridge (4,000-foot causeway)
- Two-lane 9,500-foot bridge (4,000-foot causeway)
- Four-lane 7,200-foot bridge (6,300-foot causeway)
- Two-lane 7,200-foot bridge (6,300-foot causeway)









3.0 METHODOLOGY

3.1 Geotechnical Investigation Program Overview

A geotechnical report (*Preliminary Geotechnical Report, Knik Arm Bridge Project, Anchorage, Alaska*, Shannon & Wilson, February 2004) was prepared at the conclusion of the geotechnical and geophysical investigations. The report presents the results of field explorations, surface reconnaissance, laboratory testing and preliminary engineering analyses for the Knik Arm Project. The purpose of this study was to define subsurface conditions across a likely water corridor north of Cairn Point, in order to estimate concept-level pile sizes, capacities and embedment depths for bridge piers. The findings thus provide the support information needed for completing the updated conceptual construction costs for the bridge, but are not adequate for design purposes. The data also provides useful predesign information for performing follow-on planning, feasibility, and alignment studies. Also included is a limited ground response analysis of the site for future seismic design, and a preliminary evaluation of the soils along the two-mile highway corridor on the eastside shoreline (between the proposed east bridge abutment and the Port of Anchorage).

Work Scope

For this study, subsurface cross-sections were developed from the drilling, testing, reconnaissance, and over-water geophysics to represent an interpretation of subsurface conditions across this part of Knik Arm and along the east shoreline to the Port of Anchorage. This work included 16 borings, two cone penetration tests, over-water bathymetry/acoustical profiling, and shear wave velocity measurements at one location. A brief reconnaissance of both bluffs was also carried out to highlight slope and shoreline conditions and evaluate the potential for borrow material for causeway construction.

Channel Soils

The general subsurface conditions depicted in select borings in the channel crossing alignment and from the geophysical survey are summarized in Figure 3.1. For the purpose of developing a conceptual foundation design and cost estimate, it was assumed that in the middle of the channel, the soils in descending order comprised about 20 to 40 feet of loose to medium-dense recent marine sands, and 150 feet or more of dense to very dense fine sands and very stiff to hard silty clays overlying hard, gray, slightly gravelly silty clays or till as the basement material. It was also assumed that locally, these deeper basement clays are hard, registering standard penetration resistance values in excess of 100 blows per foot. The geophysical survey results in the *Technical Memorandum: Knik Arm Geophysical Investigation* (Golder 2004) indicated that the hard basement clays are relatively thick below the borings and eventually reach sands and gravelly soils, with bedrock being greater than 600 feet below the channel bottom.

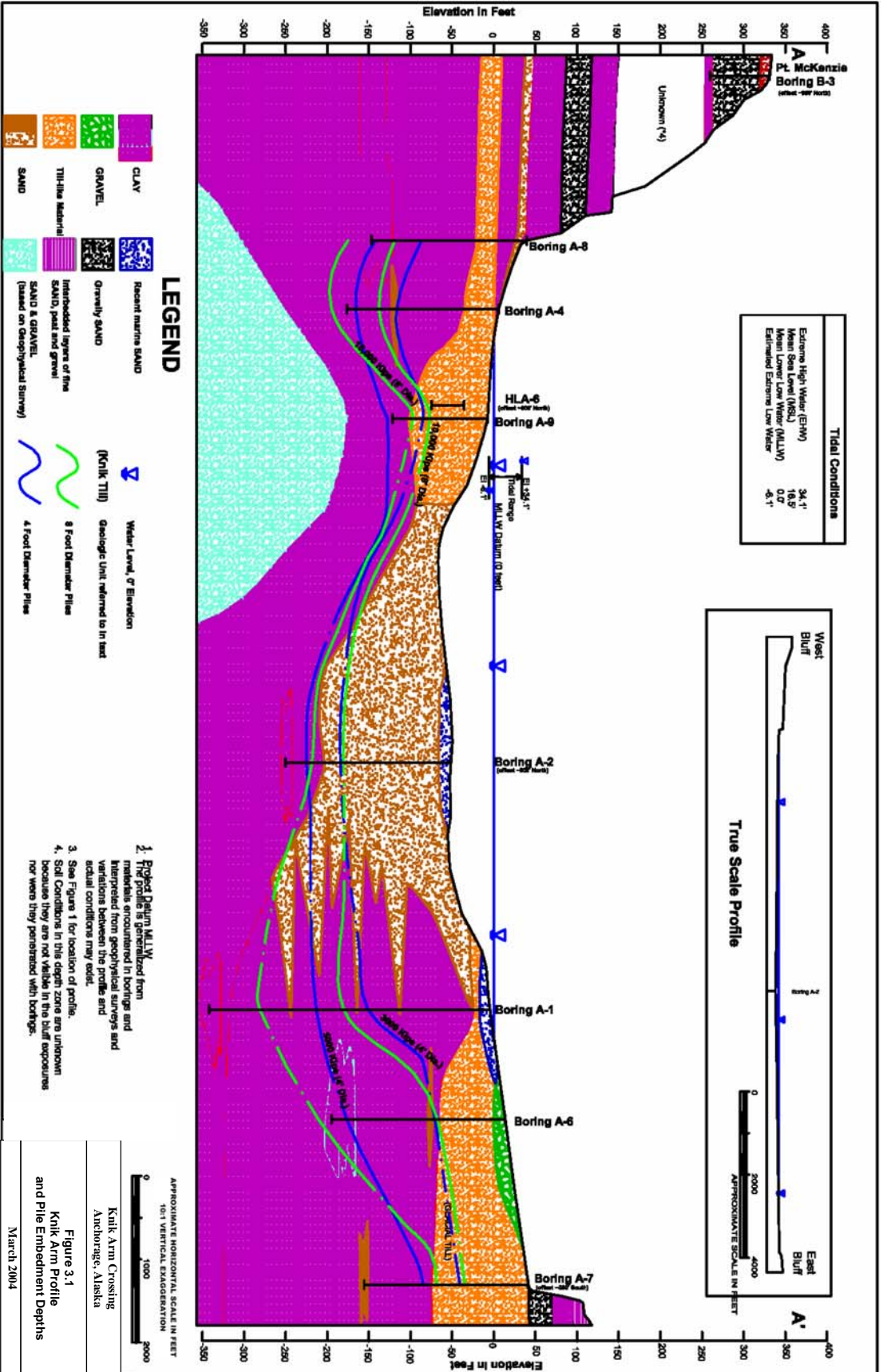
Pile Foundations

In the offshore areas, foundations to support the bridge piers at the selected crossing points would be constructed in over 100 feet of water in the middle one-mile-wide channel area, and must extend through the thin weaker soil units to derive foundation support in the deep underlying glacial deposits. For these conditions and to accommodate a reasonable water clearance, bridge piers below water were at first tentatively envisioned to be a group of four to six or more large-diameter pipe piles driven 60 to 250 feet below the mudline and deriving support in both skin friction and end bearing. Subsequent structural analysis revealed that this maximum depth could be further reduced depending on the pile size selected, although an additional allowance for river bed scour must then be added to this new pile length (see Section 3.2 for additional discussion). The pile cap or pile tops for each pier were envisioned to be near the mid-elevation of the tide range and protected from ice forces with a cone-shaped cover or jacket.

In this concept-level geotechnical study, 8- and 4-foot-diameter pile piles were analyzed. The results indicate that for the above embedment depths, ultimate axial pile capacities of 10,000 to 15,000 kips and 3,000 to 5,000 kips are possible for these two pile sizes respectively. Actual tip elevations to achieve these capacities at various locations in the channel are summarized in Figure 3.1. This figure provides an easy method for estimating pile numbers and lengths at concept pier locations and/or determining total piling footage and their approximate cost.

For the purpose of developing a conceptual foundation design and cost estimate, it was assumed that deep penetration of these large piles using large hammers is possible in these dense or hard glacial units, but higher than normal driving stresses and boulder obstructions are possible and may require thicker walls and high-strength steel in the piles. Of particular concern is a shallow, very dense till-like gravelly cap that will have to be penetrated in some parts of the channel and a few gravelly zones or local boulders. Our preliminary studies suggest that 1-to -1.5-inch and 2-inch wall thickness should be appropriate for 4- and 8-foot diameter piles, respectively, to penetrate into or through these very dense layers with possibly variable or less thick walls in other areas.

Additional borings at each pier will be necessary for final design, to define subsurface conditions along a final preferred alignment and refine the conclusions reached in this concept-level study. As the design evolves, follow-on studies may reveal that a test pile program may prove to be a cost-effective way to evaluate soil/pile setup characteristics, refine wall thickness requirements, and confirm that suitable capacities and embedment can be achieved in these dense/hard soils using large hammers. A test pile program may also serve as a demonstration project to pile contractors, to show the difficulties of driving large piles in these compact/ gravelly soils. This latter effort, if the added costs can be justified, will remove much of the guesswork in pile driving and should lead to lower construction bids for the production piles.



Ground Response Analysis

A preliminary ground response analysis was conducted at the bridge site for conceptual bridge design. The analysis was based on the shear wave velocities measured at the site and in the vicinity, and regional probabilistic ground motion hazard studies and Uniform Hazard Spectrum (UHS) by the United States Geological Survey (USGS). It was also based on a single earthquake time history, representing a nearby shallow crustal earthquake that was spectrally matched to the UHS. Based on the results of the preliminary site response analyses, the response spectrum prescribed by the American Association of State Highway and Transportation Officials (AASHTO) for Soil Type II and the Anchorage AASHTO Soil Type II spectrum is appropriate for conceptual bridge design.

Liquefaction

Our boring data reveals that the soils in the channel crossing are generally dense to very dense or very stiff to hard, and as such are not susceptible to liquefaction or strength losses with one minor exception. The recent marine sediments in the center of channel are loose to medium-dense fine sands in the upper 20 to 40 feet, and in all probability will liquefy and lose their strength during strong earthquake shaking. Since the skin friction of piles penetrating loose sands at shallow depths is small, liquefaction of this thin unit will not seriously impact the total axial carrying capacities or estimated lengths of the piles themselves. However, the temporary loss of strength in this shallow unit will cause reduced lateral support and require added stiffness in the pile to transmit these lateral loads to the deeper, more compact deposits.

East Shoreline Road Stability

Borings drilled along the east shoreline between the east abutment and the Port of Anchorage reveal generally stiff to hard, gravelly clays, and silty clays or very dense, silty sands at shallow depths. Preliminary calculations reveal adequate bearing support and slope stability for 2H:1V fill slopes and embankments to at least 15 feet high over the mudflats, to elevate the approach highway above the high tide line. The foundation soils are likely stronger than a granular embankment fill, making the fill the weak link in the stability analyses.

Causeways

Approach causeways are planned at both ends, with the objective of shortening the bridge length to reduce construction costs. The soils in the tide zone are dense or hard and generally suited for support of high embankment fills. However future hydrology studies are recommended to refine the feasible causeway lengths and scour/deposition characteristics for the causeway and bridge piers, before final geotechnical studies can be developed with foundation recommendations. If the causeways are lengthened too much, the remaining constriction and reduced cross section (similar to the channel narrowing at Cairn Point) may create a significant scour zone from the large tides and increased currents may result.

It should be emphasized that the full geotechnical report is a concept-level study with limited explorations, aimed at estimating pile lengths and project construction costs and is thus not intended for final design. After a preferred alignment is chosen, this information can be used as a guide for planning future explorations for final design of bridge piers, causeways, and the new shoreline road needed to tie the bridge structure into the existing road system.

3.2 Revised Structural Analysis

From the geotechnical investigation summarized above, revised concept-level designs of two- and four-lane bridges were made. Bridge lengths of 13,500, 9,500 and 7,200 feet were used. The 13,500-foot structure extends from bluff to bluff across Knik Arm. The 9,500 and 7,200-foot structures assume that causeways are built in the relatively shallow parts of Knik Arm. These causeways would be 4,000 feet and 6,300 feet in total length, respectively.

Superstructure and Pier

The proposed two- and four-lane bridges were conceptually designed with 12-foot-wide travel lanes and 10-foot-wide shoulders. The superstructure considered is a post-tensioned, segmental concrete box girder bridge. For an assumed 600-foot span, the girder depth is approximately 14 feet at mid span. Each span has an estimated 4,800 cubic yards (cy) and 4,250 cy of concrete and 370 tons and 257 tons of post-tensioning steel (for the four-lane and two-lane alternatives, respectively).

Piles

Two pile sizes were considered: 8-foot and 4-foot diameters. Eight-foot-diameter piles were designed with six piles per pier, and 4-foot-diameter piles were designed with 17 piles per pier. Pile lengths were first calculated assuming no scour in the Knik Arm channel. However, it is possible that scour will occur, because it has already occurred to the southwest of Knik Arm where the channel naturally narrows.

Although scour is likely to occur when the causeway is lengthened to 6,300 feet (the 7,200-foot bridge alternative), it is only possible to make a very rough estimate of the additional length of piling needed to accommodate scour. No study of scour has been made for the project, so the scour depth is unknown. Therefore, it was further assumed that piles for the 7,200-foot bridge alternative in scour-prone areas will need to be lengthened by 80 feet (an average of 55 feet lengthening for all piers) at piers founded in the "Recent Marine Deposits" areas identified in the geotechnical report. These deposits occur in the middle part of Knik Arm. Pile lengths for eight-foot diameter piles ranged from 154 to 243 feet, depending on span length and scour assumed. Pile lengths for four-foot diameter piles were almost identical, ranging from 154 to 253 feet, depending on span length and scour assumed. Pile lengths are summarized in Table 3.1.

Table 3.1 Knik Arm Pile Lengths			
Eight-foot Diameter Piles			
Four-Lane Bridge			
Bridge Length (ft.)	13,500	9,500	7,200
Number of Piles	186	136	100
Average Pile Length (ft.)	163	154	209
Two-Lane Bridge			
Bridge Length (ft.)	Not estimated	9,500	7,200
Number of Piles		105	78
Average Pile Length (ft.)		156	212
Four-foot Diameter Piles			
Four-Lane Bridge			
Bridge Length (ft.)	13,500	9,500	7,200
Number of Piles	436	314	232
Average Pile Length (ft.)	173	169	227
Two-Lane Bridge			
Bridge Length (ft.)	Not estimated	9,500	7,200
Number of Piles		290	216
Average Pile Length (ft.)		154	212

3.3 Estimate Update

Using the data in the *Preliminary Geotechnical Report* (Shannon and Wilson, February 2004) and the *Structural Update Technical Memoranda* (T. Y. Lin, March 2004), estimates were developed for the alternatives listed below:

- Four-lane 13,500-foot bridge
- Four-lane 9,500-foot bridge (4,000-foot causeway)
- Two-lane 9,500-foot bridge (4,000-foot causeway)
- Four-lane 7,200-foot bridge (6,300-foot causeway)
- Two-lane 7,200-foot bridge (6,300-foot causeway)

All estimates are summarized in Appendix A. Four Lane alternatives are detailed in Appendix B, and two-lane alternatives are detailed in Appendix C. All composite build-ups are included in Appendix D.

Composite build-ups were revised for the retained fill and causeway elements of the cost estimate, using new cross-section data and structural configurations provided in the geotechnical and structural reports. New aerial structure composite build-ups were developed to include pile length values from the Structural Update, and to include the effect of scour on pile lengths. The risk (contingencies) was also revised as a result of this work.

As the estimate was being developed, several refinements to the estimate were discussed and incorporated into this document. Discussion of these refinements follows.

The estimating team and ADOT&PF conferred to discuss the extent to which risk costs should be reduced, based on the new information available. The “Additive Construction Items” risk was reduced from 30% to 20%, taking into account an increase in design knowledge from the geotechnical and structural reports over previous estimates. Approximately 60% of the project cost is associated with construction of the bridge foundations. It was felt that this risk could be reduced by one half. Thus, of the original 30% total risk, 60% or 18% of the total risk is associated with the foundations. The reduction in the total risk cost associated with the foundations is then 9%. The original 30% when reduced by 9% yielded 21%, which was rounded to 20%.

Scour became an issue for the estimate team as the possibility of lengthening the causeway was considered. A simple analysis of bathometric data indicates a 16% to 24% reduction in the channel cross-sectional area. Tidal flow through this reduced area will accelerate and tidal currents may cause scour to occur, as seen to the southwest where the natural constriction at Cairn Point reduces the channel area. As a result, pile lengths for the 7,200-foot alternatives include additional length that may be required to account for scour.

The cost of preparing the environmental document for the project was estimated to be 3% of the base construction cost for each alternative in the 2003 Update Project. Although reducing from four to two lanes or increasing the length of the causeway will reduce construction costs, the cost of preparing environmental documents may not be reduced to same extent. In the end, the estimating team felt that using 3% of the construction costs for this item is more consistent with industry practice, and also consistent with the method used in the 2003 report.

Likewise, the cost of geotechnical investigations for the project was estimated to be 1.8% of the base construction cost for each alternative in the 2003 Update Project. Factors affecting the cost of the geotechnical investigation are the number of piers, scour potential at the piers, and scour potential for the causeways. Depending on how each of these factors are represented in each alternative, the geotechnical investigation costs may increase or decrease, but there is no rationale to believe that the geotechnical investigation cost will not be generally proportional to the cost of the project. As a result, the team decided to continue to use 1.8% of the base construction costs as the cost of the geotechnical studies.

Finally, international demand for steel has caused the price of steel to increase dramatically over the last several months. The Knik Arm Crossing includes large quantities of steel, and this could cause the price of the project to increase dramatically if prices do not return to normal levels. A contingency of 5% for market conditions has been included in the cost estimate, but over the past 12 months the price of rebar has increased 40% and the costs of other steel has experienced similar increases. It will be extremely important to monitor the price of steel and formulate strategies to mitigate this risk as the project moves ahead.

4.0 REFERENCES

- Golder Associates, 2004. *Technical Memorandum: Knik Arm Geophysical Investigation*, Golder Associates, February 26, 2004.
- Parsons Brinckerhoff and HDR Alaska, Inc., 2003a. *Knik Arm Crossing Engineering Feasibility and Cost Estimate Update. Volume 1: Issues and Corridor Alignment*. Parsons Brinckerhoff and HDR Alaska, Inc., January 31, 2003.
- Parsons Brinckerhoff and HDR Alaska, Inc., 2003b. *Knik Arm Crossing Engineering Feasibility and Cost Estimate Update. Volume 2: Technology Update*. Parsons Brinckerhoff and HDR Alaska, Inc., January 31, 2003.
- Parsons Brinckerhoff and HDR Alaska, Inc., 2003c. *Knik Arm Crossing Engineering Feasibility and Cost Estimate Update. Volume 3: Schedule, Cost, Contracting and Finance Report*. Parsons Brinckerhoff and HDR Alaska, Inc., January 31, 2003.
- Shannon & Wilson, Inc., 2004. *Preliminary Geotechnical Report, Knik Arm Bridge Project, Anchorage, Alaska*. Shannon & Wilson, Inc., February 2004.
- Shannon and Wilson, 2003a. *Technical Memorandum: Channel Area Evaluations, Knik Arm Crossing, Alaska*. Shannon & Wilson, December 10, 2003
- Shannon and Wilson, 2003b. *Technical Memorandum: Causeway Configuration Study, Knik Arm Crossing, Alaska*. Shannon & Wilson, December 26, 2003.
- T.Y. Lin International, 2004. *Technical Memorandum: Pile Quantity and Structure Update, Knik Arm Crossing*. T.Y. Lin International, February 4, 2004.

KNIK ARM CROSSING

REVISED COST ESTIMATE

APPENDICES

Revised on May 7, 2004

APPENDICES

Appendix A: Project Cost Summary

- 1 Project Summary

Appendix B: Four Lane Alternative and Option

- 1 13,500 feet Four Lane Bridge Cost Summary
- 2 13,500 feet Four Lane Bridge Cost Data
- 3 9,500 feet Four Lane Bridge and Causeway Cost Summary
- 4 9,500 feet Four Lane Bridge and Causeway Cost Data
- 5 7,200 feet Four Lane Bridge and Causeway Cost Summary
- 6 7,200 feet Four Lane Bridge and Causeway Cost Data

Appendix C: Two Lane Alternative

- 1 9,500 feet Two Lane Bridge and Causeway Cost Summary
- 2 9,500 feet Two Lane Bridge and Causeway Cost Data
- 3 7,200 feet Two Lane Bridge and Causeway Cost Summary
- 4 7,200 feet Two Lane Bridge and Causeway Cost Data

Appendix D: Cost Buildup

- 15 Composite Buildup Index
- 16 Bid Tabulations (Central Region)
- 26 Composite Buildup
- 47 Historical Unit Price Library

Knik Arm Crossing

Engineering Feasibility And Cost Estimate Update Project

ESTIMATED COSTS CROSSING OPTIONS

Category	Ref.	Factors	FOUR LANE			TWO LANE	
			13,500' Four Lane Bridge	9,500' Four Lane Bridge + 4,000' Causeway	7,200' Four Lane Bridge + 6,300' Causeway (Assume 55 Ft of Scour)	9,500' Two Lane Bridge + 4,000' Causeway	7,200' Two Lane Bridge + 6,300' Causeway (Assume 55 Ft of Scour)
			Est. \$million	Est. \$million	Est. \$million		
CONSTRUCTION COST							
C 1			\$ 638.4	\$ 478.0	\$ 405.0	\$ 414.2	\$ 351.7
C 2			\$ 127.7	\$ 95.6	\$ 81.0	\$ 82.8	\$ 70.3
C 3			\$ 23.0	\$ 17.2	\$ 14.6	\$ 14.9	\$ 12.7
C 4			\$ 789.1	\$ 590.8	\$ 500.6	\$ 511.9	\$ 434.7
C 5			\$ 72.4	\$ 54.2	\$ 45.9	\$ 46.9	\$ 39.9
C 6			\$ 861.5	\$ 645.0	\$ 546.5	\$ 558.8	\$ 474.6
C 7			\$ 43.1	\$ 32.3	\$ 27.3	\$ 27.9	\$ 23.7
C 8			\$ 904.6	\$ 677.3	\$ 573.8	\$ 586.7	\$ 498.3
C 9			\$ 90.5	\$ 67.7	\$ 57.4	\$ 58.7	\$ 49.8
C 10			\$ 995.1	\$ 745.0	\$ 631.2	\$ 645.4	\$ 548.1
ADDITIVE COST							
A 1							
A 2			\$ 10.8	\$ 8.1	\$ 6.8	\$ 7.0	\$ 5.9
A 3			\$ -	\$ -	\$ -	\$ -	\$ -
A 4			\$ 10.8	\$ 8.1	\$ 6.8	\$ 7.0	\$ 5.9
A 5							
A 6			\$ 25.8	\$ 19.4	\$ 16.4	\$ 16.8	\$ 14.2
A 7			\$ 15.5	\$ 11.6	\$ 9.8	\$ 10.1	\$ 8.5
A 8			\$ 36.2	\$ 27.1	\$ 23.0	\$ 23.5	\$ 19.9
A 9			\$ 77.5	\$ 58.1	\$ 49.2	\$ 50.4	\$ 42.6
A 10							
A 11			\$ 17.2	\$ 12.9	\$ 10.9	\$ 11.2	\$ 9.5
A 12			\$ 38.8	\$ 29.0	\$ 24.6	\$ 25.1	\$ 21.4
A 13			\$ 56.0	\$ 41.9	\$ 35.5	\$ 36.3	\$ 30.9
A 14							
A 15			\$ 2.0	\$ 2.0	\$ 2.0	\$ 2.0	\$ 2.0
A 16			\$ 0.8	\$ 0.8	\$ 0.8	\$ 0.8	\$ 0.8
A 17			\$ 2.8	\$ 2.8	\$ 2.8	\$ 2.8	\$ 2.8
A 18			\$ 147.1	\$ 110.9	\$ 94.3	\$ 96.5	\$ 82.2
T 0			\$ 1,142.2	\$ 855.9	\$ 725.5	\$ 741.9	\$ 630.3
ESCALATION COST (From mid)							
E 1							
E 2			21.2% 2008.5 \$ 211.0	26.7% 2010.0 \$ 180.8	26.7% 2010.0 \$ 153.2	26.7% 2010.0 \$ 156.6	26.7% 2010.0 \$ 133.0
E 3			6.9% 2004.3 \$ 5.3	9.3% 2005 \$ 5.4	9.3% 2005 \$ 4.6	9.3% 2005 \$ 4.7	9.3% 2005 \$ 4.0
E 4			21.2% 2008.5 \$ 11.9	26.7% 2010 \$ 11.2	26.7% 2010 \$ 9.5	26.7% 2010 \$ 9.7	26.7% 2010 \$ 8.3
E 5			14.2% 2006.5 \$ 0.4	19.4% 2008 \$ 0.5	19.4% 2008 \$ 0.5	19.4% 2008 \$ 0.5	19.4% 2008 \$ 0.5
E 6			\$ 228.6	\$ 197.9	\$ 167.8	\$ 171.5	\$ 145.8
GRAND TOTAL (2008 \$)			\$ 1,370.8	\$ 1,053.8	\$ 893.3	\$ 913.4	\$ 776.1

Knik Arm Crossing

Engineering Feasibility And Cost Estimate Update Project

Estimated Costs

			CROSSING OPTIONS	
			Roadway Only	
Category	Ref.	Factors	13,500' Bridge (Four Lane)	
			Est. \$million	
CONSTRUCTION COST				
C 1		Basic Construction Item Costs	\$	638.4
C 2		Additive Construction Items	\$	127.7
C 3		Non-Standard Item Conditions	\$	23.0
C 4		Subtotal	\$	789.1
C 5		Mobilization - Demobilization	\$	72.4
C 6		Subtotal	\$	861.5
C 7		Market Conditions	\$	43.1
C 8		Construction Bid Subtotal	\$	904.6
C 9		Change Orders	\$	90.5
C 10		CONSTRUCTION COST TOTAL	\$	995.1
ADDITIVE COST				
Agency Costs				
A 1		Agency Cost	\$	10.8
A 2		Insurance	\$	-
A 3		Subtotal	\$	10.8
A 4		Preconstruction		
A 5		Environmental Documentation / Permits	\$	25.8
A 6		Geotechnical Exploration Program	\$	15.5
A 7		Construction Plans, Specifications, and Estimate	\$	36.2
A 8		Subtotal	\$	77.5
A 9		Construction Support		
A 10		Design Services during Construction	\$	17.2
A 11		Construction Management	\$	38.8
A 12		Subtotal	\$	56.0
A 13		Right-of-Way		
A 14		Land Acquisition and Administrative Costs	\$	2.0
A 15		ROW Contingency	\$	0.8
A 16		Subtotal	\$	2.8
A 17		ADDITIVE COST TOTAL	\$	147.1
A 18		Project Total Mid Year 2002	\$	1,142.2
T 0				
ESCALATION COST (From mid)				
E 1		Yearly Average Escalation Factor	2002	
E 2		Construction Escalation	3.00%	
E 3		Preconstruction Escalation	21.2%	2008.5 \$ 211.0
E 4		Construction Support Escalation	6.9%	2004.25 \$ 5.3
E 5		Right-of-Way Escalation	21.2%	2008.5 \$ 11.9
E 6		ESCALATION COST TOTAL	14.2%	2006.5 \$ 0.4
			\$	228.6
GRAND TOTAL (2008 \$)			\$	1,370.8

Knik Arm Crossing Engineering Feasibility and Cost Estimate Update

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

Estimated by: FOI
 Checked by: PM
 Date: April 6, 2004

PRICE ID	DESCRIPTION	STATIONING		QTY	UNIT	UNIT COST	TOTAL COST
		START	END				
<u>Crossing Segment</u>							
	<u>Station 312+00 to Station 616+00</u>	312+00	616+00	30,400	RF		
	At Grade 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	\$1,100	\$11,476,300
ADOT 303	At grade four lanes from elevation 29 to elevation 55 roadway only	416+33	426+33	1,000	LF	\$2,070	\$2,070,000
ADOT 705	Pave 2 lanes, 48' wide	312+00	426+33	11,433	LF	\$40	\$457,320
	Retained Fill 4 lane	426+33	435+00	867	RF		
ADOT 203	Retained Fill Four Lanes	426+33	435+00	867	LF	\$1,940	\$1,681,980
ADOT 705	Pave 2 lanes, 48' wide	426+33	435+00	867	LF	\$40	\$34,680
	Aerial Structure over Knik Arm Section 4 lane	435+00	570+00	13,500	RF		
ADOT 900	13,500' Four Lane Bridge Sub-structure roadway			23	EA	\$14,944,500	\$343,723,500
ADOT 511	13,500' Four Lane Superstructure roadway only bridge 15' long segments			23	span	\$11,229,500	\$258,278,500
	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 705	Pave 2 lanes, 48' wide	570+00	575+00	500	LF	\$40	\$20,000
	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							\$638,400,000

Knik Arm Crossing

Engineering Feasibility And Cost Estimate Update Project

Estimated Costs

			CROSSING OPTIONS		
			Roadway Only		
Category			Ref.	Factors	9,500' Bridge + Causeway (Four Lane)
			Est. \$million		
CONSTRUCTION COST					
C 1	Basic Construction Item Costs				\$ 478.0
C 2	Additive Construction Items	C1	20.0%		\$ 95.6
C 3	Non-Standard Item Conditions	C1 + C2	3.0%		\$ 17.2
C 4	Subtotal	C1-3			\$ 590.8
C 5	Mobilization - Demobilization				\$ 54.2
C 6	Subtotal				\$ 645.0
C 7	Market Conditions	C 6	5.0%		\$ 32.3
C 8	Construction Bid Subtotal	C6+C7			\$ 677.3
C 9	Change Orders	C8	10.0%		\$ 67.7
C 10	CONSTRUCTION COST TOTAL	C8+C9			\$ 745.0
ADDITIVE COST					
Agency Costs					
A 2	Agency Cost	C 6	1.25%		\$ 8.1
A 3	Insurance	C 6	0		\$ -
A 4	Subtotal	A 2+ A3			\$ 8.1
Preconstruction					
A 6	Environmental Documentation / Permits	C 6	3.0%		\$ 19.4
A 7	Geotechnical Exploration Program	C 6	1.8%		\$ 11.6
A 8	Construction Plans, Specifications, and Estimate	C 6	4.2%		\$ 27.1
A 9	Subtotal	A 6+7+8			\$ 58.1
Construction Support					
A 11	Design Services during Construction	C 6	2.0%		\$ 12.9
A 12	Construction Management	C 6	4.5%		\$ 29.0
A 13	Subtotal	A12 + A13			\$ 41.9
Right-of-Way					
A 15	Land Acquisition and Administrative Costs				\$ 2.0
A 16	ROW Contingency		40.0%		\$ 0.8
A 17	Subtotal	A16+ A17			\$ 2.8
A 18	ADDITIVE COST TOTAL	A 4+9+13+17			\$ 110.9
T 0	Project Total Mid Year 2002	C10+ A19			\$ 855.9
ESCALATION COST (From mid)					
2002					
E 1	Yearly Average Escalation Factor		3.00%		
E 2	Construction Escalation	C10	26.7%	2010.0	\$ 180.8
E 3	Preconstruction Escalation	A10	9.3%	2005	\$ 5.4
E 4	Construction Support Escalation	A14	26.7%	2010	\$ 11.2
E 5	Right-of-Way Escalation	A18	19.4%	2008	\$ 0.5
E 6	ESCALATION COST TOTAL	E 2+3+4+5			\$ 197.9
GRAND TOTAL (2008 \$)					\$ 1,053.8
			T0 + E6		

Knik Arm Crossing Engineering Feasibility and Cost Estimate Update

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

Estimated by: FOI
 Checked by: PM
 Date: April 6, 2004

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
Crossing Segment							
	<u>Station 312+00 to Station 616+00</u>	312+00	616+00	30,400	RF		
	At Grade 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	\$1,100	\$11,476,300
ADOT 303	At grade four lanes from elevation 29 to elevation 55 roadway only	416+33	426+33	1,000	LF	\$2,070	\$2,070,000
ADOT 705	Pave 2 lanes, 48' wide	312+00	426+33	11,433	LF	\$40	\$457,320
	Retained Fill 4 lane	426+33	435+00	867	RF		
ADOT 203	Retained Fill Four Lanes	426+33	435+00	867	LF	\$1,940	\$1,681,980
ADOT 705	Pave 2 lanes, 48' wide	426+33	435+00	867	LF	\$40	\$34,680
	Four Lane Causeway 89' wide at the top	435+00	468+37	3,337	LF		
ADOT 805	Classified Fill: Four lane causeway South Portion 89' wide at the top, 67.5' Ave. Height	435+00	468+37	3,337	LF	\$8,400	\$28,030,800
ADOT 705	Pave 2 lanes, 48' wide	435+00	468+37	3,337	LF	\$40	\$133,480
	Aerial Structure over Knik Arm Section 4 lane	468+37	563+37	9,500	RF		
ADOT 915	9,500' Four Lane Bridge Sub-structure roadway			17.00	EA	\$14,348,600	\$243,926,200
ADOT 520	9,500' Four Lane Superstructure roadway only bridge 15' long segments			16	span	\$11,346,600	\$181,545,600
	Four Lane Causeway 89' wide at the top	563+37	570+00	663	LF		
ADOT 810	Classified Fill: Four lane causeway North Portion 89' wide at the top, 67.5' Ave. Height	563+37	570+00	663	LF	\$5,300	\$3,513,900
ADOT 705	Pave 2 lanes, 48' wide	563+37	570+00	663	LF	\$40	\$26,520
	Retained Cut 4 lane	570+00	575+00	500	RF		
ADOT 705	Pave 2 lanes, 48' wide	570+00	575+00	500	LF	\$40	\$20,000
	Big Cut Section 4 lane	575+00	616+00	4,100	RF		
	Unclassified excavation (4100*150*100/27)			2,277,778	CY	\$2.17	\$4,942,778
	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							\$478,000,000

Knik Arm Crossing

Engineering Feasibility And Cost Estimate Update Project

Estimated Costs

				CROSSING OPTIONS		
				Roadway Only		
Category				Ref.	Factors	7,200' Bridge+ Causeway (Four Lane)
						Assume 55' of Scour
CONSTRUCTION COST						Est. \$million
C 1		Basic Construction Item Costs				\$ 405.0
C 2		Additive Construction Items	C1	20.0%		\$ 81.0
C 3		Non-Standard Item Conditions	C1 + C2	3.0%		\$ 14.6
C 4		Subtotal	C1-3			\$ 500.6
C 5		Mobilization - Demobilization				\$ 45.9
C 6		Subtotal				\$ 546.5
C 7		Market Conditions	C 6	5.0%		\$ 27.3
C 8		Construction Bid Subtotal	C6+C7			\$ 573.8
C 9		Change Orders	C8	10.0%		\$ 57.4
C 10		CONSTRUCTION COST TOTAL	C8+C9			\$ 631.2
ADDITIVE COST						
A 1		Agency Costs				
A 2		Agency Cost	C 6	1.25%		\$ 6.8
A 3		Insurance	C 6	0		\$ -
A 4		Subtotal	A 2+ A3			\$ 6.8
A 5		Preconstruction				
A 6		Environmental Documentation / Permits	C 6	3.0%		\$ 16.4
A 7		Geotechnical Exploration Program	C 6	1.8%		\$ 9.8
A 8		Construction Plans, Specifications, and Estimate	C 6	4.2%		\$ 23.0
A 9		Subtotal	A 6+7+8			\$ 49.2
A 10		Construction Support				
A 11		Design Services during Construction	C 6	2.0%		\$ 10.9
A 12		Construction Management	C 6	4.5%		\$ 24.6
A 13		Subtotal	A12 + A13			\$ 35.5
A 14		Right-of-Way				
A 15		Land Acquisition and Administrative Costs				\$ 2.0
A 16		ROW Contingency		40.0%		\$ 0.8
A 17		Subtotal	A16+ A17			\$ 2.8
A 18		ADDITIVE COST TOTAL	A 4+9+13+17			\$ 94.3
T 0		Project Total Mid Year 2002	C10+ A19			\$ 725.5
ESCALATION COST (From mid)						
E 1		Yearly Average Escalation Factor		3.00%		
E 2		Construction Escalation	C10	26.7%	2010.0	\$ 153.2
E 3		Preconstruction Escalation	A10	9.3%	2005	\$ 4.6
E 4		Construction Support Escalation	A14	26.7%	2010	\$ 9.5
E 5		Right-of-Way Escalation	A18	19.4%	2008	\$ 0.5
E 6		ESCALATION COST TOTAL	E 2+3+4+5			\$ 167.8
GRAND TOTAL (2008 \$)						\$ 893.3

Knik Arm Crossing Engineering Feasibility and Cost Estimate Update

7,200' Bridge and Causeway - Four Lane Roadway Only - Opinion of Cost Summary

Estimated by: FOI
 Checked by: PM
 Date: April 6, 2004

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
Crossing Segment							
	<u>Station 312+00 to Station 616+00</u>	312+00	616+00	30,400	RF		
	At Grade 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	\$1,100	\$11,476,300
ADOT 303	At grade four lanes from elevation 29 to elevation 55 roadway only	416+33	426+33	1,000	LF	\$2,070	\$2,070,000
ADOT 705	Pave 2 lanes, 48' wide	312+00	426+33	11,433	LF	\$40	\$457,320
	Retained Fill 4 lane	426+33	435+00	867	RF		
ADOT 203	Retained Fill Four Lanes	426+33	435+00	867	LF	\$1,940	\$1,681,980
ADOT 705	Pave 2 lanes, 48' wide	426+33	435+00	867	LF	\$40	\$34,680
	Four Lane Causeway 89' wide at the top	435+00	470+00	3,500	LF		
ADOT 805	Classified Fill: Four lane causeway South Portion 89' wide at the top, 67.5' Ave. Height	435+00	470+00	3,500	LF	\$8,400	\$29,400,000
ADOT 705	Pave 2 lanes, 48' wide	435+00	470+00	3,500	LF	\$40	\$140,000
	Aerial Structure over Knik Arm Section 4 lane	470+00	542+00	7,200	RF		
ADOT 930	7,200' Four Lane Bridge Sub-structure roadway (Assume 55 Feet of Scour)			13.00	EA	\$15,557,000	\$202,241,000
ADOT 530	7,200' Four Lane Superstructure roadway only bridge 15' long segments			12.00	span	\$11,454,400	\$137,452,800
	Four Lane Causeway 89' wide at the top	542+00	570+00	2,800	LF		
ADOT 810	Classified Fill: Four lane causeway North Portion 89' wide at the top, 67.5' Ave. Height	542+00	570+00	2,800	LF	\$5,300	\$14,840,000
ADOT 705	Pave 2 lanes, 48' wide	542+00	570+00	2,800	LF	\$40	\$112,000
	Retained Cut 4 lane	570+00	575+00	500	RF		
ADOT 705	Pave 2 lanes, 48' wide	570+00	575+00	500	LF	\$40	\$20,000
	Big Cut Section 4 lane	575+00	616+00	4,100	RF		
	Unclassified excavation (4100*150*100/27)			2,277,778	CY	\$2.17	\$4,942,778
	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 (Assume 55 Feet of Scour)							\$405,000,000

TWO LANE ALTERNATIVE - CONTINUE ON
NEXT PAGE

Knik Arm Crossing

Engineering Feasibility And Cost Estimate Update Project

Estimated Costs

				CROSSING OPTIONS	
				Roadway Only	
				9,500' Bridge + Causeway Two Lane	
Category	Ref.	Factors	Est. \$million		
CONSTRUCTION COST					
C 1		Basic Construction Item Costs	\$	414.2	
C 2		Additive Construction Items	\$	82.8	
C 3		Non-Standard Item Conditions	\$	14.9	
C 4		Subtotal	\$	511.9	
C 5		Mobilization - Demobilization	\$	46.9	
C 6		Subtotal	\$	558.8	
C 7		Market Conditions	\$	27.9	
C 8		Construction Bid Subtotal	\$	586.7	
C 9		Change Orders	\$	58.7	
C 10		CONSTRUCTION COST TOTAL	\$	645.4	
ADDITIVE COST					
Agency Costs					
A 1		Agency Cost	\$	7.0	
A 2		Insurance	\$	-	
A 3		Subtotal	\$	7.0	
A 4		Preconstruction			
A 5		Environmental Documentation / Permits	\$	16.8	
A 6		Geotechnical Exploration Program	\$	10.1	
A 7		Construction Plans, Specifications, and Estimate	\$	23.5	
A 8		Subtotal	\$	50.4	
A 9		Construction Support			
A 10		Design Services during Construction	\$	11.2	
A 11		Construction Management	\$	25.1	
A 12		Subtotal	\$	36.3	
A 13		Right-of-Way			
A 14		Land Acquisition and Administrative Costs	\$	2.0	
A 15		ROW Contingency	\$	0.8	
A 16		Subtotal	\$	2.8	
A 17		ADDITIVE COST TOTAL	\$	96.5	
A 18		Project Total Mid Year 2002	\$	741.9	
T 0		2002			
ESCALATION COST (From mid)					
E 1		Yearly Average Escalation Factor	3.00%		
E 2		Construction Escalation	C10	26.7% 2010.0 \$ 156.6	
E 3		Preconstruction Escalation	A10	9.3% 2005 \$ 4.7	
E 4		Construction Support Escalation	A14	26.7% 2010 \$ 9.7	
E 5		Right-of-Way Escalation	A18	19.4% 2008 \$ 0.5	
E 6		ESCALATION COST TOTAL	E 2+3+4+5	\$ 171.5	
GRAND TOTAL (2008 \$)				\$ 913.4	

Knik Arm Crossing Engineering Feasibility and Cost Estimate Update

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

Estimated by: FOI
 Checked by: PM
 Date: April 6, 2004

PRICE ID	DESCRIPTION	STATIONING		QTY	UNIT	UNIT COST	TOTAL COST
		START	END				
<u>Crossing Segment</u>							
	<u>Station 312+00 to Station 616+00</u>	312+00	616+00	30,400	RF		
	At grade Section elevation 29 to elevation 55 Two lanes	312+00	426+33	11,433	RF		
ADOT 302	At grade two lanes to elevation 29	312+00	416+33	10,433	LF	\$900	\$9,389,700
ADOT 304	At grade two lanes from elevation 29 to elevation 55 roadway only	416+33	426+33	1,000	LF	\$1,910	\$1,910,000
ADOT 705	Pave 2 lanes, 48' wide	312+00	426+33	11,433	LF	\$40	\$457,320
	Retained Fill 2 lane	426+33	435+00	867	RF		
ADOT 204	Retained Fill Two Lane	426+33	435+00	867	LF	\$1,480	\$1,283,160
ADOT 705	Pave 2 lanes, 48' wide	426+33	435+00	867	LF	\$40	\$34,680
	Two Lane Causeway 48" wide at the top	435+00	468+37	3,337	LF		
ADOT 700	Classified Fill: Two lane Causeway South Portion 48' wide at the top, 67.5' Ave. Height (	435+00	468+37	3,337	LF	\$7,100	\$23,692,700
ADOT 705	Pave 2 lanes, 48' wide	435+00	468+37	3,337	LF	\$40	\$133,480
	Aerial Structure over Knik Arm Section 4 lane	468+37	563+37	9,500	RF		
ADOT 935	9,500' Two Lane Bridge Sub-structure roadway			17.00	EA	\$12,337,300	\$209,734,100
ADOT 540	9,500' Two Lane Superstructure roadway only bridge 15' long segments			16	span	\$10,117,000	\$161,872,000
	Two Lane Causeway 48' wide at the top	563+37	570+00	663	LF		
ADOT 800	Classified Fill: Two lane Causeway North Portion 48' wide at the top, 67.5' Ave. Height (	563+37	570+00	663	LF	\$4,600	\$3,049,800
ADOT 705	Pave 2 lanes, 48' wide	563+37	570+00	663	LF	\$40	\$26,520
	Retained Cut two lane	570+00	575+00	500	RF		
ADOT 705	Pave 2 lanes, 48' wide	570+00	575+00	500	LF	\$40	\$20,000
	Big Cut Section 4 lane	575+00	616+00	4,100	RF		
	Unclassified excavation (4100*75*100/27)			1,138,889	CY	\$2.17	\$2,471,389
	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							\$414,200,000

Knik Arm Crossing
Engineering Feasibility And Cost Estimate Update Project
Estimated Costs

			CROSSING OPTIONS	
			Roadway Only	
Category			Ref.	Factors
			7,200' Bridge+ Causeway (Two Lane)	
			Assume 55' of Scour	
CONSTRUCTION COST			Est. \$million	
C 1	Basic Construction Item Costs			\$ 351.7
C 2	Additive Construction Items	C1	20.0%	\$ 70.3
C 3	Non-Standard Item Conditions	C1 + C2	3.0%	\$ 12.7
C 4	Subtotal	C1-3		\$ 434.7
C 5	Mobilization - Demobilization			\$ 39.9
C 6	Subtotal			\$ 474.6
C 7	Market Conditions	C 6	5.0%	\$ 23.7
C 8	Construction Bid Subtotal	C6+C7		\$ 498.3
C 9	Change Orders	C8	10.0%	\$ 49.8
C 10	CONSTRUCTION COST TOTAL	C8+C9		\$ 548.1
ADDITIVE COST				
Agency Costs				
A 1	Agency Cost	C 6	1.25%	\$ 5.9
A 2	Insurance	C 6	0	\$ -
A 3	Subtotal	A 2+ A3		\$ 5.9
Preconstruction				
A 4	Environmental Documentation / Permits	C 6	3.0%	\$ 14.2
A 5	Geotechnical Exploration Program	C 6	1.8%	\$ 8.5
A 6	Construction Plans, Specifications, and Estimate	C 6	4.2%	\$ 19.9
A 7	Subtotal	A 6+7+8		\$ 42.6
Construction Support				
A 8	Design Services during Construction	C 6	2.0%	\$ 9.5
A 9	Construction Management	C 6	4.5%	\$ 21.4
A 10	Subtotal	A12 + A13		\$ 30.9
Right-of-Way				
A 11	Land Acquisition and Administrative Costs			\$ 2.0
A 12	ROW Contingency		40.0%	\$ 0.8
A 13	Subtotal	A16+ A17		\$ 2.8
A 14	ADDITIVE COST TOTAL	A 4+9+13+17		\$ 82.2
A 15	Project Total Mid Year 2002	C10+ A19		\$ 630.3
T 0				
ESCALATION COST (From mid)			2002	
E 1	Yearly Average Escalation Factor		3.00%	
E 2	Construction Escalation	C10	26.7%	2010.0 \$ 133.0
E 3	Preconstruction Escalation	A10	9.3%	2005 \$ 4.0
E 4	Construction Support Escalation	A14	26.7%	2010 \$ 8.3
E 5	Right-of-Way Escalation	A18	19.4%	2008 \$ 0.5
E 6	ESCALATION COST TOTAL	E 2+3+4+5		\$ 145.8
GRAND TOTAL (2008 \$)			T0 + E6	\$ 776.1

Knik Arm Crossing Engineering Feasibility and Cost Estimate Update

7,200' Bridge and Causeway - Two Lane Roadway Only - Opinion of Cost Summary

Estimated by: FOI
 Checked by: PM
 Date: April 6, 2004

PRICE ID	DESCRIPTION	STATIONING START	STATIONING END	QTY	UNIT	UNIT COST	TOTAL COST
<u>Crossing Segment</u>							
	<u>Station 312+00 to Station 616+00</u>	312+00	616+00	30,400	RF		
	At grade Section elevation 29 to elevation 55 two lane	312+00	426+33	11,433	RF		
ADOT 302	At grade two lanes to elevation 29	312+00	416+33	10,433	LF	\$900	\$9,389,700
ADOT 304	At grade two lanes from elevation 29 to elevation 55 roadway only	416+33	426+33	1,000	LF	\$1,910	\$1,910,000
ADOT 705	Pave 2 lanes, 48' wide	312+00	426+33	11,433	LF	\$40	\$457,320
	Retained Fill 2 lane	426+33	435+00	867	RF		
ADOT 204	Retained Fill Two Lane	426+33	435+00	867	LF	\$1,480	\$1,283,160
ADOT 705	Pave 2 lanes, 48' wide	426+33	435+00	867	LF	\$40	\$34,680
	Two Lane Causeway 48" wide at the top	435+00	470+00	3,500	LF		
ADOT 700	Classified Fill: Two lane Causeway South Portion 48' wide at the top, 67.5' Ave. Height (	435+00	470+00	3,500	LF	\$7,100	\$24,850,000
ADOT 705	Pave 2 lanes, 48' wide	435+00	470+00	3,500	LF	\$40	\$140,000
	Aerial Structure over Knik Arm Section 4 lane	470+00	542+00	7,200	RF		
ADOT 950	7,200' Two Lane Bridge Sub-structure roadway (Assume 55 Feet of Scour)			13.00	EA	\$13,498,000	\$175,474,000
ADOT 550	7,200' Two Lane Superstructure roadway only bridge 15' long segments			12.00	span	\$10,215,500	\$122,586,000
	Two Lane Causeway 48' wide at the top	542+00	570+00	2,800	LF		
ADOT 800	Classified Fill: Two lane Causeway North Portion 48' wide at the top, 67.5' Ave. Height (	542+00	570+00	2,800	LF	\$4,600	\$12,880,000
ADOT 705	Pave 2 lanes, 48' wide	542+00	570+00	2,800	LF	\$40	\$112,000
	Retained Cut 4 lane	570+00	575+00	500	RF		
ADOT 705	Pave 2 lanes, 48' wide	570+00	575+00	500	LF	\$40	\$20,000
	Big Cut Section two lane	575+00	616+00	4,100	RF		
	Unclassified excavation (4100*75*100/27)			1,138,889	CY	\$2.17	\$2,471,389
	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 (Assume 55 Feet of Scour):							\$351,700,000

ADOT COMPOSITE BUILD UP INDEX

<u>CODE</u>	<u>DESCRIPTION</u>	<u>Unit of Measure</u>	<u>UNIT COST 2002\$</u>
ADOT 200 - 205	Retained Fill and Retained Cut Transition Build-ups		
ADOT 203	Retained Fill Four Lanes	LF	1,940
ADOT 204	Retained Fill Two Lane	LF	1,480
ADOT 205	Retained Cut Four Lanes	LF	16,300
ADOT 300 - 309	At Grade Build-ups		
ADOT 301	At grade four lanes to elevation 29	LF	1,100
ADOT 302	At grade two lanes to elevation 29	LF	900
ADOT 303	At grade four lanes from elevation 29 to elevation 55 roadway only	LF	2,070
ADOT 304	At grade two lanes from elevation 29 to elevation 55 roadway only	LF	1,910
ADOT 500 - 950	Aerial Build-ups		
ADOT 511	13,500' Four Lane Superstructure roadway only bridge 15' long segments	span	11,229,500
ADOT 520	9,500' Four Lane Superstructure roadway only bridge 15' long segments	span	11,346,600
ADOT 530	7,200' Four Lane Superstructure roadway only bridge 15' long segments	span	11,454,400
ADOT 540	9,500' Two Lane Superstructure roadway only bridge 15' long segments	span	10,117,000
ADOT 550	7,200' Two Lane Superstructure roadway only bridge 15' long segments	span	10,215,500
ADOT 700	Classified Fill: Two lane Causeway South Portion 48' wide at the top, 67.5' Ave. Height @ 2:1 Slope	LF	7,100
ADOT 705	Pave 2 lanes, 48' wide	LF	40
ADOT 800	Classified Fill: Two lane Causeway North Portion 48' wide at the top, 67.5' Ave. Height @ 2:1 Slope	LF	4,600
ADOT 805	Classified Fill: Four lane causeway South Portion 89' wide at the top, 67.5' Ave. Height @ 2:1 Slope	LF	8,400
ADOT 810	Classified Fill: Four lane causeway North Portion 89' wide at the top, 67.5' Ave. Height @ 2:1 Slope	LF	5,300
ADOT 900	13,500' Four Lane Bridge Sub-structure roadway	EA	14,944,500
ADOT 915	9,500' Four Lane Bridge Sub-structure roadway	EA	14,348,600
ADOT 930	7,200' Four Lane Bridge Sub-structure roadway (Assume 55 Feet of Scour)	EA	15,557,000
ADOT 935	9,500' Two Lane Bridge Sub-structure roadway	EA	12,337,300
ADOT 950	7,200' Two Lane Bridge Sub-structure roadway (Assume 55 Feet of Scour)	EA	13,498,000

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

<u>Bid Item No.</u>	<u>Unit</u>	<u>Description</u>	<u>Quantity</u>	<u>2000 \$ Unit Price</u>	<u>2002 \$ Unit Price</u>
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			
202 (4)	LF	Removal of culvert pipe	2,626	\$4.60	\$5.02
			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
202 (6)	EA	Removal of manhole	2,992	\$3.40	\$3.71
			3,750	\$3.00	\$3.28
			1	\$900.00	\$982.82
			4	\$516.67	\$564.22
202 (8)	EA	Removal of inlet	8	\$525.00	\$573.31
			1	\$366.67	\$400.41
			3	\$616.67	\$673.42
202 (9)	LF	Removal of curb and gutter	9	\$321.67	\$351.27
			29	\$362.50	\$395.86
			771	\$5.00	\$5.46
			2,098	\$3.50	\$3.82
			410	\$2.64	\$2.88
202 (13)	LF	Removal of fence	6,752	\$1.47	\$1.61
			7,542	\$2.06	\$2.25
			189	\$5.00	\$5.46
			154	\$4.27	\$4.66
			606	\$16.15	\$17.64
202 (15)	SY	Pavement planning	1,004	\$3.86	\$4.22
			1,167	\$8.33	\$9.10
			1,308	\$4.08	\$4.46
			11,694	\$1.73	\$1.89
202 (16-200)	LF	Removal of 200 mm steel gas pipe	16,744	\$0.94	\$1.03
			163,216	\$0.61	\$0.67
			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

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

<u>Bid Item No.</u>	<u>Unit</u>	<u>Description</u>	<u>Quantity</u>	<u>2000 \$ Unit Price</u>	<u>2002 \$ Unit Price</u>			
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			
			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			

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

<u>Bid Item No.</u>	<u>Unit</u>	<u>Description</u>	<u>Quantity</u>	<u>2000 \$ Unit Price</u>	<u>2002 \$ Unit Price</u>
			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
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

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

<u>Bid Item No.</u>	<u>Unit</u>	<u>Description</u>	<u>Quantity</u>	<u>2000 \$ Unit Price</u>	<u>2002 \$ Unit Price</u>
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
			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 2.0	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

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

<u>Bid Item No.</u>	<u>Unit</u>	<u>Description</u>	<u>Quantity</u>	<u>2000 \$ Unit Price</u>	<u>2002 \$ Unit Price</u>
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
			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
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

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

<u>Bid Item No.</u>	<u>Unit</u>	<u>Description</u>	<u>Quantity</u>	<u>2000 \$ Unit Price</u>	<u>2002 \$ Unit Price</u>
			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
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

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

<u>Bid Item No.</u>	<u>Unit</u>	<u>Description</u>	<u>Quantity</u>	<u>2000 \$ Unit Price</u>	<u>2002 \$ Unit Price</u>
			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/Bridge rail 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
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

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

<u>Bid Item No.</u>	<u>Unit</u>	<u>Description</u>	<u>Quantity</u>	<u>2000 \$ Unit Price</u>	<u>2002 \$ Unit Price</u>
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
			1,890	\$7.62	\$8.32
610 (3)	LF	Ditch lining	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
			57	\$67.12	\$73.30
611 (2A)	TON	Riprap class 1	136	\$25.70	\$28.07
			219	\$62.60	\$68.36
			1,922	\$20.26	\$22.12
			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
611 (2C)	TON	Riprap class 3	51,814	\$17.67	\$19.30
			4,781	\$20.33	\$22.20
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
			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
			71	\$80.14	\$87.51
			165	\$54.13	\$59.11
618 (2A)	LB	Seeding type A	1,038	\$31.45	\$34.34
			1,144	\$30.69	\$33.51
			141	\$117.18	\$127.96
618 (2B)	LB	Seeding type B	348	\$40.82	\$44.58
			580	\$23.44	\$25.60
			21	\$114.91	\$125.48
618 (2C)	LB	Seeding type C	24	\$153.46	\$167.58
			118	\$110.37	\$120.53
618 (2D)	LB	Seeding type D	118	\$110.37	\$120.53

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

<u>Bid Item No.</u>	<u>Unit</u>	<u>Description</u>	<u>Quantity</u>	<u>2000 \$ Unit Price</u>	<u>2002 \$ Unit Price</u>
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
			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
			2,595	\$1.17	\$1.28

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

<u>Bid Item No.</u>	<u>Unit</u>	<u>Description</u>	<u>Quantity</u>	<u>2000 \$ Unit Price</u>	<u>2002 \$ Unit Price</u>
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
			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

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, 70 wide (1.5'+8'+12+12+3'+12'+12'+8'+1.5') = 70' wide	LF		400.00	
		width		70.00	
		Depth		24.00	
02232.01	Clearing and grubbing	acres	2,504.26	0.64	\$1,603
02315.01	Common excavation including haul	cy	5.43	863.85	\$4,691
02620.03	Geotextile	sf	2.00	28,000.00	\$56,000
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	24,888.89	\$494,791
02322.02	Embankment compaction	cy	1.15	24,888.89	\$28,622
02770.08	Concrete barrier, two sided	lf	72.50	400.00	\$29,000
ADOT 203	Retained Fill Four Lanes	LF	400	\$1,940	\$777,100

ADOT COMPOSITE BUILD UPS

Retained Fill Two Lane

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities per 400 lineal feet of transition, 24 feet high, 48 wide (2'+10'+12'+12'+10'+2') = 48' wide	LF		400.00	
02232.01	Clearing and grubbing	acres	2,504.26	0.44	\$1,102
02315.01	Common excavation including haul	cy	5.43	592.36	\$3,217
02620.03	Geotextile	sf	2.00	19,200.00	\$38,400
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	17,066.67	\$339,285
02322.02	Embankment compaction	cy	1.15	17,066.67	\$19,627
02770.08	Concrete barrier, two sided	lf	72.50	400.00	\$29,000
ADOT 204	Retained Fill Two Lane	LF	400	\$1,480	\$593,000

ADOT COMPOSITE BUILD UPS

Retained Cut Four Lanes

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities per 400 lineal feet 85' wide by 24' deep by 400' long	LF		400.00	
		Width		85.00	
		Depth		24.00	
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 (10+12+8+12+12+6+3+6+12+12+8+12+10) = 123' wide select material (8+12+12+6+3+6+12+12+8) = 79' wide pavement material Elevation 29 has 354.4 sf cross section	LF		200.00	
02232.01	Clearing and grubbing	acres	2,504.26	0.56	\$1,402
02315.01	Common excavation including haul	cy	5.43	455.56	\$2,474
02620.03	Geotextile	sf	2.00	24,600.00	\$49,200
02315.12	Gravel borrow including haul south portion of causeway	cy	10.00	2,625.19	\$26,252
02315.05	Embankment compaction	cy	0.00	2,625.19	\$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	\$1,100	\$212,800

ADOT COMPOSITE BUILD UPS

At grade two lanes to elevation 29

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities per 200 lineal feet (2'+10'+12'+12'+10'+2') = 48' wide select material Elevation 29 has 354.4 sf cross section	LF		200.00	
		Width		48.00	
02232.01	Clearing and grubbing	acres	2,504.26	0.22	\$551
02315.01	Common excavation including haul	cy	5.43	177.78	\$965
02620.03	Geotextile	sf	2.00	9,600.00	\$19,200
02315.12	Gravel borrow including haul south portion of causeway	cy	10.00	2,625.19	\$26,252
02315.05	Embankment compaction	cy	0.00	2,625.19	\$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 302	At grade two lanes to elevation 29	LF	200	\$900	\$180,400

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 (10+12+8+12+12+6+3+6+12+12+8+12+10) = 123' 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	LF		200.00	
02232.01	Clearing and grubbing	acres	2,504.26	0.56	\$1,402
02315.01	Common excavation including haul	cy	5.43	455.56	\$2,474
02620.03	Geotextile	sf	2.00	24,600.00	\$49,200
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	\$2,070	\$413,800

ADOT COMPOSITE BUILD UPS

At grade two 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 (2'+10'+12'+10'+2') = 48' wide select material Elevation 29 has 325.5 sf cross section - Elevation 55 has 5811.5 sf cross section	LF		200.00	
02232.01	Clearing and grubbing	acres	2,504.26	0.22	\$551
02315.01	Common excavation including haul	cy	5.43	177.78	\$965
02620.03	Geotextile	sf	2.00	9,600.00	\$19,200
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 304	At grade two lanes from elevation 29 to elevation 55 roadway only	LF	200	\$1,910	\$381,500

ADOT COMPOSITE BUILD UPS

13,500' Four Lane Superstructure roadway only bridge 15' long segments

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities for 23 ea 600 foot spans	span		23.00	
03302.39	Fabrication of 4800 cy trapezoidal segmental box 15' long & 370 tons	ea	159,984.00	900.00	\$143,985,600
03302.37	Erect trapezoidal segmental box	ea	98,625.00	900.00	\$88,762,500
03302.38	Post tension trapezoidal segmental box	ton	3,000.00	8,510.00	\$25,530,000
ADOT 511	13,500' Four Lane Superstructure roadway only bridge 15' long segments	span	23	\$11,229,500	\$258,278,100

ADOT COMPOSITE BUILD UPS

9,500' Four Lane Superstructure roadway only bridge 15' long segments

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities for 16 ea 600 foot spans	span		16	
03302.39	Fabrication of 4800 cy trapezoidal segmental box 15' long & 370 tons	ea	159,984.00	633.33	\$101,322,667
03302.37	Erect trapezoidal segmental box	ea	98,625.00	633.33	\$62,462,171
03302.38	Post tension trapezoidal segmental box	ton	3,000.00	5,920.00	\$17,760,000
ADOT 520	9,500' Four Lane Superstructure roadway only bridge 15' long segments	span	16	\$11,346,600	\$181,544,900

ADOT COMPOSITE BUILD UPS

7,200' Four Lane Superstructure roadway only bridge 15' long segments

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities for 12 ea 600 foot spans	span		12.00	
03302.39	Fabrication of 4800 cy trapezoidal segmental box 15' long & 370 tons	ea	159,984.00	480.00	\$76,792,320
03302.37	Erect trapezoidal segmental box	ea	98,625.00	480.00	\$47,340,000
03302.38	Post tension trapezoidal segmental box	ton	3,000.00	4,440.00	\$13,320,000
ADOT 530	7,200' Four Lane Superstructure roadway only bridge 15' long segments	span	12	\$11,454,400	\$137,452,400

ADOT COMPOSITE BUILD UPS

9,500' Two Lane Superstructure roadway only bridge 15' long segments

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities for 16 ea 600 foot spans	span		16	
03302.36-1	Fabrication of 4250 cy of Concrete segmental box girder 15' long	ea	137,486.25	633.33	\$87,074,167
03302.37	Erect trapezoidal segmental box	ea	98,625.00	633.33	\$62,462,171
03302.38	Post tension trapezoidal segmental box	ton	3,000.00	4,112.00	\$12,336,000
ADOT 540	9,500' Two Lane Superstructure roadway only bridge 15' long segments	span		16	\$10,117,000
					\$161,872,400

ADOT COMPOSITE BUILD UPS

7,200' Two Lane Superstructure roadway only bridge 15' long segments

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities for 12 ea 600 foot spans	span		12.00	
03302.36-1	Fabrication of 4250 cy of Concrete segmental box girder 15' long	ea	137,486.25	480.00	\$65,993,400
03302.37	Erect trapezoidal segmental box	ea	98,625.00	480.00	\$47,340,000
03302.38	Post tension trapezoidal segmental box	ton	3,000.00	3,084.00	\$9,252,000
ADOT 550	7,200' Two Lane Superstructure roadway only bridge 15' long segments	span	12	\$10,215,500	\$122,585,400

ADOT COMPOSITE BUILD UPS

Classified Fill: Two lane Causeway South Portion 48' wide at the top, 67.5' Ave. Height @ 2:1 Slope

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities per 3337 lineal feet	LF		3,337.00	
	48' wide at top of causeway 2:1 side slopes Stationing 435+00 to 468+37 = 3337 route feet				
02620.03	Geotextile	sf	2.00	1,170,486.12	\$2,340,972
02315.12	Gravel borrow including haul south portion of causeway	cy	10.00	1,536,518.56	\$15,365,186
02322.02	Embankment compaction	cy	1.15	1,536,518.56	\$1,766,996
02372.01	Light loose riprap	cy	32.75	112,256.68	\$3,676,406
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 700	Classified Fill: Two lane Causeway South Portion 48' wide at the top, 67.5' Ave. Height @ 2:1 Slope	LF	3,337	\$7,100	\$23,827,000

ADOT COMPOSITE BUILD UPS

Pave 2 lanes, 48' wide

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities per 200 lineal feet (2'+10'+12'+12'+10'+2') = 48' wide	LF		200.00	
02720.02	Crushed surfacing top course	cy	12.64	177.78	\$2,247
02315.05	Embankment compaction	cy	0.00	177.78	\$0
02740.02	Asphaltic Conc. Pavement (Large Qty.)	ton	23.61	234.67	\$5,541
02766.01	Paint line	lf	0.14	800.00	\$112
ADOT 705	Pave 2 lanes, 48' wide	LF	200	\$40	\$7,900

ADOT COMPOSITE BUILD UPS

Classified Fill: Two lane Causeway North Portion 48' wide at the top, 67.5' Ave. Height @ 2:1 Slope

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities per 663 lineal feet	LF		663.00	
	89' wide at top of causeway 2:1 side slopes Stationing 563+70 to 575+00 = 1130 route feet				
02620.03	Geotextile	sf	2.00	232,553.88	\$465,108
02315.13	Gravel borrow including haul north portion of causeway	cy	4.50	305,277.74	\$1,373,750
02322.02	Embankment compaction	cy	1.15	305,277.74	\$351,069
02372.01	Light loose riprap	cy	32.75	22,303.32	\$730,434
02770.07	Concrete barrier, one sided	lf	65.25	1,326.00	\$86,522
02770.08	Concrete barrier, two sided	lf	72.50	663.00	\$48,068
ADOT 800	Classified Fill: Two lane Causeway North Portion 48' wide at the top, 67.5' Ave. Height @ 2:1 Slope	LF	663	\$4,600	\$3,055,000

ADOT COMPOSITE BUILD UPS

Classified Fill: Four lane causeway South Portion 89' wide at the top, 67.5' Ave. Height @ 2:1 Slope

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities per 3337 lineal feet	LF		3,337.00	
	89' wide at top of causeway 2:1 side slopes Stationing 435+00 to 468+37 = 3337 route feet				
02620.03	Geotextile	sf	2.00	1,307,303.12	\$2,614,606
02315.12	Gravel borrow including haul south portion of causeway	cy	10.00	1,879,827.88	\$18,798,279
02322.02	Embankment compaction	cy	1.15	1,879,827.88	\$2,161,802
02372.01	Light loose riprap	cy	32.75	112,256.68	\$3,676,406
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 805	Classified Fill: Four lane causeway South Portion 89' wide at the top, 67.5' Ave. Height @ 2:1 Slope	LF	3,337	\$8,400	\$27,928,600

ADOT COMPOSITE BUILD UPS

Classified Fill: Four lane causeway North Portion 89' wide at the top, 67.5' Ave. Height @ 2:1 Slope

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities per 663 lineal feet	LF		663.00	
	89' wide at top of causeway 2:1 side slopes Stationing 563+70 to 575+00 = 1130 route feet				
02620.03	Geotextile	sf	2.00	259,736.88	\$519,474
02315.13	Gravel borrow including haul north portion of causeway	cy	4.50	373,486.93	\$1,680,691
02322.02	Embankment compaction	cy	1.15	373,486.93	\$429,510
02372.01	Light loose riprap	cy	32.75	22,303.32	\$730,434
02770.07	Concrete barrier, one sided	lf	65.25	1,326.00	\$86,522
02770.08	Concrete barrier, two sided	lf	72.50	663.00	\$48,068
ADOT 810	Classified Fill: Four lane causeway North Portion 89' wide at the top, 67.5' Ave. Height @ 2:1 Slope	LF	663	\$5,300	\$3,494,700

ADOT COMPOSITE BUILD UPS

13,500' Four Lane Bridge Sub-structure roadway

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities for 23 ea 600 foot spans	EA		23.00	
02425.01	Contractor field & home office overhead as a separate Bid Item per CALTRANS	days	109,020.00	0.00	\$0
02425.02	Access dredging	CY	13.00	1,631,448.05	\$21,208,825
02425.03	Seasonal dredging	CY	13.00	407,862.29	\$5,302,210
02425.04	Access trestle	SF	65.00	262,857.14	\$17,085,714
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	30,300.00	\$39,417,270
02425.07	Drive 8' diameter cast in steel concrete piles	EA	367,911.60	186.00	\$68,431,558
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	45,156.67	\$38,424,714
02425.10	Furnish pile cap	CY	742.55	24,362.48	\$18,090,360
02425.11	Install precast pile cap	EA	349,020.00	23.00	\$8,027,460
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	15,804,690.95	\$10,905,237
02425.15	Reinforcing steel epoxy coated	LBS	1.24	19,950,857.14	\$24,739,063
02425.16	Headed bar reinforcement	EA	63.00	125,383.95	\$7,899,189
02425.17	Miscellaneous Metal (Bridge)	LBS	4.76	153,461.50	\$730,477
02425.18	Surveying	LS	6,505,800.00	0.467940	\$3,044,324
02425.19	Furnish pier concrete	cy	1,050.00	13,800	\$14,490,000
02425.20	Install pier concrete	ea	874,020.00	23	\$20,102,460
	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 900	13,500' Four Lane Bridge Sub-structure roadway	EA	23	\$14,944,500	\$343,724,200

ADOT COMPOSITE BUILD UPS

9,500' Four Lane Bridge Sub-structure roadway

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities for 17 ea 600 foot spans	EA		17	
02425.01	Contractor field & home office overhead as a separate Bid Item per CALTRANS	days	109,020.00	0.00	\$0
02425.02	Access dredging	CY	13.00	0.00	\$0
02425.03	Seasonal dredging	CY	13.00	0.00	\$0
02425.04	Access trestle	SF	65.00	194,285.71	\$12,628,571
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	20,900.00	\$27,188,810
02425.07	Drive 8' diameter cast in steel concrete piles	EA	367,911.60	136.00	\$50,035,978
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	33,376.67	\$28,400,876
02425.10	Furnish pile cap	CY	742.55	18,007.05	\$13,371,135
02425.11	Install precast pile cap	EA	349,020.00	17.00	\$5,933,340
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	11,681,728.10	\$8,060,392
02425.15	Reinforcing steel epoxy coated	LBS	1.24	14,746,285.71	\$18,285,394
02425.16	Headed bar reinforcement	EA	63.00	92,675.10	\$5,838,531
02425.17	Miscellaneous Metal (Bridge)	LBS	4.76	113,428.06	\$539,918
02425.18	Surveying	LS	6,505,800.00	0.345869	\$2,250,155
02425.19	Furnish pier concrete	cy	1,050.00	10,200	\$10,710,000
02425.20	Install pier concrete	ea	874,020.00	17	\$14,858,340
	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 915	9,500' Four Lane Bridge Sub-structure roadway	EA	17	\$14,348,600	\$243,926,800

ADOT COMPOSITE BUILD UPS

7,200' Four Lane Bridge Sub-structure roadway (Assume 55 Feet of Scour)

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities for 13 ea 600 foot spans	EA		13.00	
02425.01	Contractor field & home office overhead as a separate Bid Item per CALTRANS	days	109,020.00	0.00	\$0
02425.02	Access dredging	CY	13.00	0.00	\$0
02425.03	Seasonal dredging	CY	13.00	0.00	\$0
02425.04	Access trestle	SF	65.00	148,571.43	\$9,657,143
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	20,900.00	\$27,188,810
02425.07	Drive 8' diameter cast in steel concrete piles	EA	367,911.60	100.00	\$36,791,160
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	25,523.33	\$21,718,312
02425.10	Furnish pile cap	CY	742.55	13,770.10	\$10,224,988
02425.11	Install precast pile cap	EA	349,020.00	13.00	\$4,537,260
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	8,933,086.19	\$6,163,829
02425.15	Reinforcing steel epoxy coated	LBS	1.24	11,276,571.43	\$13,982,949
02425.16	Headed bar reinforcement	EA	63.00	70,869.19	\$4,464,759
02425.17	Miscellaneous Metal (Bridge)	LBS	4.76	86,739.11	\$412,878
02425.18	Surveying	LS	6,505,800.00	0.264488	\$1,720,706
02425.19	Furnish pier concrete	cy	1,050.00	7,800	\$8,190,000
02425.20	Install pier concrete	ea	874,020.00	13	\$11,362,260
	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 930	7,200' Four Lane Bridge Sub-structure roadway (Assume 55 Feet of Scour)	EA	13	\$15,557,000	\$202,240,400

ADOT COMPOSITE BUILD UPS

9,500' Two Lane Bridge Sub-structure roadway

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities for 17 ea 600 foot spans	EA		17.00	
02425.01	Contractor field & home office overhead as a separate Bid Item per CALTRANS	days	109,020.00	0.00	\$0
02425.02	Access dredging	CY	13.00	0.00	\$0
02425.03	Seasonal dredging	CY	13.00	0.00	\$0
02425.04	Access trestle	SF	65.00	194,285.71	\$12,628,571
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	16,400.00	\$21,334,760
02425.07	Drive 8' diameter cast in steel concrete piles	EA	367,911.60	105.00	\$38,630,718
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	26,701.33	\$22,720,696
02425.10	Furnish pile cap	CY	742.55	14,405.64	\$10,696,908
02425.11	Install precast pile cap	EA	349,020.00	17.00	\$5,933,340
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	9,345,382.48	\$6,448,314
02425.15	Reinforcing steel epoxy coated	LBS	1.24	11,797,028.57	\$14,628,315
02425.16	Headed bar reinforcement	EA	63.00	74,140.08	\$4,670,825
02425.17	Miscellaneous Metal (Bridge)	LBS	4.76	113,428.06	\$539,918
02425.18	Surveying	LS	6,505,800.00	0.345869	\$2,250,155
02425.19	Furnish pier concrete	cy	1,050.00	8,160	\$8,568,000
02425.20	Install pier concrete	ea	874,020.00	17	\$14,858,340
	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 935	9,500' Two Lane Bridge Sub-structure roadway	EA	17	\$12,337,300	\$209,734,200

ADOT COMPOSITE BUILD UPS

7,200' Two Lane Bridge Sub-structure roadway (Assume 55 Feet of Scour)

CODE	ITEM DESCRIPTION	UNIT	UNIT COST 2002\$	QUANTITY	TOTAL COST 2002\$
	All quantities for 13 ea 600 foot spans	EA		13.00	
02425.01	Contractor field & home office overhead as a separate Bid Item per CALTRANS	days	109,020.00	0.00	\$0
02425.02	Access dredging	CY	13.00	0.00	\$0
02425.03	Seasonal dredging	CY	13.00	0.00	\$0
02425.04	Access trestle	SF	65.00	148,571.43	\$9,657,143
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	16,500.00	\$21,464,850
02425.07	Drive 8' diameter cast in steel concrete piles	EA	367,911.60	78.00	\$28,697,105
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	20,418.67	\$17,374,655
02425.10	Furnish pile cap	CY	742.55	11,016.08	\$8,179,990
02425.11	Install precast pile cap	EA	349,020.00	13.00	\$4,537,260
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	7,146,468.95	\$4,931,064
02425.15	Reinforcing steel epoxy coated	LBS	1.24	9,021,257.14	\$11,186,359
02425.16	Headed bar reinforcement	EA	63.00	56,695.35	\$3,571,807
02425.17	Miscellaneous Metal (Bridge)	LBS	4.76	86,739.11	\$412,878
02425.18	Surveying	LS	6,505,800.00	0.264488	\$1,720,706
02425.19	Furnish pier concrete	cy	1,050.00	6,240	\$6,552,000
02425.20	Install pier concrete	ea	874,020.00	13	\$11,362,260
	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 950	7,200' Two Lane Bridge Sub-structure roadway (Assume 55 Feet of Scour)	EA	13	\$13,498,000	\$175,473,400

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
02315.07	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, piles, 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
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 CALTRANS	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

HISTORICAL UNIT PRICE LIBRARY

CODE	DESCRIPTION	Unit of Measure	UNIT PRICE 2002\$
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 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	\$2.00
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
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

HISTORICAL UNIT PRICE LIBRARY

CODE	DESCRIPTION	Unit of Measure	UNIT PRICE 2002\$
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 cy trapezoidal segmental box 15' long & 295 tons	ea	\$124,987.50
03302.31	Fabrication of 3550 cy trapezoidal segmental box 15' long & 280 tons	ea	\$118,321.50
03302.32	Fabrication of 5650 cy trapezoidal segmental box 15' long & 440 tons	ea	\$188,314.50
03302.33	Fabrication of 2850 cy trapezoidal segmental box 15' long & 225 tons	ea	\$94,990.50
03302.34	Fabrication of 5550 cy trapezoidal segmental box 15' long & 435 tons	ea	\$184,981.50
03302.35	Fabrication of 4600 cy trapezoidal segmental box 15' long & 360 tons	ea	\$153,318.00
03302.36	Fabrication of 4125 cy trapezoidal segmental box 15' long & 320 tons	ea	\$137,486.25
03302.37	Erect trapezoidal segmental box	ea	\$98,625.00
03302.38	Post tension trapezoidal segmental box	ton	\$3,000.00
03302.39	Fabrication of 4800 cy trapezoidal 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
03302.36-1	Fabrication of 4250 cy of Concrete segmental box girder 15' long	ea	\$137,486.25
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

HISTORICAL UNIT PRICE LIBRARY			
CODE	DESCRIPTION	Unit of Measure	UNIT PRICE 2002\$
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
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 cost 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