

## 6. ITEMIZED COST ESTIMATE

A detailed cost estimate has been prepared for the preferred alternatives (Appendix C). The unit prices are based on recent ADOT bid results with adjustments made to reflect the project location and the difficulty of the work anticipated. Detailed cost estimates for the Implementation Projects also appear in Appendix C.

The basis for the quantity estimates and unit prices is summarized below.

- **Clearing and Grubbing per Acre**—Construction area quantities were computed and listed as part of the Microstation computer output during design development. An average price of \$2,500/acre was used based on previous bid prices statewide.
- **Removal of Structures and Obstructions per Lump Sum**—Quantities were based on anticipated removals (i.e., existing box and pipe culverts, bridges, etc.) and priced according to type and difficulty of removal.
- **Remove AC per Square Yard**—Asphalt Concrete removal was itemized separately and not included in the Roadway Excavation or Obliterate Roadway items. The quantity was based on the area of existing pavement removed.
- **Obliterate Roadway per Square Yard**—The portions of the existing roadway that will no longer remain in use and are to be abandoned were assumed to be scarified, regraded as necessary, and revegetated. Asphalt removal is included under the item “Remove AC.”
- **Roadway Excavation per Cubic Yard**—Quantities were provided as part of the InRoads computer output using the appropriate typical section, 3-D topo files, and calculated at 50-foot intervals. Shrink and swell factors were applied as recommended by the Geotechnical Report (see Section 5.9, Earthwork).

- **Structural Roadway Section**—The structural section was derived from a review of previous projects in the area. Quantities were based upon the initial structural sections provided by ADOT’s Materials Section, as displayed on the typical sections presented in Appendix D. The unit price for AC includes aggregate, prime/tack coats, and asphalt cement.
- **Pipe Culverts per Foot**—Pipe sizes and locations were derived from the preliminary drainage analysis. Lengths were measured between the cut/fill lines as plotted on the plan/profile sheets (see Appendix E). Pipe culverts for ditch drainage at turn-outs and for nuisance water are not listed in the Appendix. The quantities for headwalls are included under the items for structural concrete and reinforcing steel.
- **Reinforced Concrete Box Culverts RCBC**—RCBC sizes and locations were derived from the preliminary drainage analysis. Lengths were measured between the cut/fill lines as plotted on the plan/profile sheets. The quantities are shown as structural concrete per cubic yard and reinforcing steel per pound (including wingwalls and aprons) with prices adjusted to include structural excavation and backfill.
- **Riprap per Cubic Yard**—Quantities were estimated based on needs as indicated in the preliminary drainage analysis.
- **Fencing per Foot**—Quantities were based on parallel fencing each side of the roadway. In the final analysis, fencing may not be required in some areas.
- **Seeding per Acre**—The quantities for seeding and revegetation outside the roadway prism were determined by measuring the cut and fill surfaces outside the roadway surface.
- **Guardrail per Foot**—Quantities were based on approximate design locations for guardrail as required by fill height.
- **Signing and Pavement Marking**—An average cost was determined for signing and pavement marking based on recently

completed ADOT projects. The average cost per mile was used to determine the lump sum cost for each alternative.

- **Bridges per Square Foot**—Quantities were based on width and length of structure determined for each site. Price per square foot was consistent through the corridor as many of the bridges were similar with respect to access and the site location, height of piers, and environmental constraints expected to be imposed on the construction.
- **Maintenance of Traffic** (percent of construction cost) —The percentage varied depending on the anticipated difficulty of maintaining traffic through the construction zone, need for construction staging to accommodate traffic, and need for detours.
- **Environmental Impact Mitigation Measures**—Mitigation costs are included as a percentage of the construction cost, and include special landscaping and the SWPPP costs.

A summary of the costs associated with each preferred alternative is presented in Table 6-1.

**Table 6-1  
COST ESTIMATE SUMMARY\***

Design Concept Alternative	Construction (\$)	Design (\$)	Right-of-Way (\$)	Total (\$)
A-1a	\$11,131,495	\$890,520	\$2,000,000	\$16,022,015
B-2a	\$46,539,801	\$3,723,184	\$1,128,000	\$51,590,985
C-3	\$66,395,024	\$5,311,602	\$14,372,000	\$86,278,626

\* Cost Estimates are based on early 2006 unit prices

The summary cost for the preferred alternative(s) is:

Construction:	\$	124,066,320
R/W:	\$	17,500,000
Design:	\$	9,925,306
Utilities	\$	2,400,000
<b>Total:</b>	<b>\$</b>	<b>153,891,626</b>