

6.0 PROJECT COST ESTIMATES

6.1 BASIS OF COST ESTIMATE

The project cost estimate contained in this DCR is a planning level estimate based on preliminary design concept plans for the selected alternative—Alternative 1. The ultimate concept plans in Volume 2 of the DCR represent approximately a 20-25 percent level of final design. This project has been slated for federal funding for a portion of the project and is considered a major project by FHWA. Accordingly, a team from FHWA conducted a Cost Estimate Review in June of 2009 with the project team. As a result, the baseline estimate for the project was revised; however, local funding estimates have not been updated since the draft DCR. The cost estimate and funding will continue to be updated and refined on an annual basis as the project develops and actual construction plans and specifications are prepared.

Project costs in the estimate include construction costs, engineering and design, and right-of-way. These project costs were divided into approximately 1-mile segments for flexibility in determining phasing options.

6.1.1 Construction Costs

Construction costs were estimated using representative items for paving, bridges, earthwork, pavement marking and signing, traffic signals and lighting, landscaping, utility relocation, drainage, agricultural irrigation, curbing and barriers, and retaining walls (see Appendix E). Some items were estimated per mile while other items were based on detailed estimates of quantities derived from the concept plans. Construction unit price costs for items identified for each segment were based on actual recent bid results. Generally 2009 bid results from local agencies including ADOT, MCDOT, the City of Phoenix, and input from participants at the federal Cost Estimate Review were used to determine unit costs for Northern Parkway. Care was taken to match similar bid items, quantities, and project size. Northern Parkway quantities are generally much larger than quantities found in referenced bid results. It is assumed that unit prices are lower for large quantities. Unit prices determined using the average of the lowest three bidders were reduced slightly to account for large quantities on Northern Parkway.

Since the estimate is based on preliminary concept plans and not final construction documents, there is a possibility that the cost estimate will change. In addition, as the design of the improvements progresses, some design changes may be necessary and unforeseen site conditions may be discovered that would add cost to the estimate. In order to account for these uncertainties, an additional 15 percent of the total construction costs was added to the estimate to account for unidentified items.

Traffic control costs were estimated using a percentage of the total construction items. The percentage varied based on location. A factor of 2 percent was used in areas where the construction would occur on an entirely new alignment with little or no adjacent development or traffic while a factor of 7 percent was used in areas where the new parkway would be constructed in the same location as the existing Northern Avenue and adjacent to urbanized areas. Construction in these areas would occur under traffic conditions and access to adjacent businesses would need to be maintained.

Mobilization costs were estimated at 8 percent of the total construction and miscellaneous items totaled 12.1 percent including contractor quality control – 4 percent, construction survey – 1 percent, dust palliative – 2 percent, furnishing water – 2 percent, erosion control (SWPPP) – 2 percent, communication utility relocation – 1 percent, and utility potholing – 0.1 percent. Construction administration (9 percent) and construction contingency (5 percent) was estimated at a combined 14 percent of construction cost.

Utility unit costs were derived from the utility companies affected and from local light rail bid construction results. Irrigation relocation, drainage, and utility costs are listed in Appendix E. Prior rights determinations for utilities have not been established. It is assumed utilities located in the existing roadway right-of-way are there by permit and the cost to relocate these utilities would be the responsibility of the utility company. The cost of relocating all municipal utilities, the 16-inch EPNG, and utilities located outside the existing right-of-way are included in the Northern Parkway cost estimate.

6.1.2 Design Costs

Final design and engineering costs required to produce construction plans and specifications were estimated at 8 percent of the total construction cost.

6.1.3 Right-of-Way Costs

Estimated right-of-way cost along the corridor varied significantly. Land values are based on recent actual sales (2007-2009) along the corridor. An additional 15 percent was added to cover negotiated settlements and acquisitions cost such as appraisals, real estate agents, legal descriptions, etc. All acquisitions would follow the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. Actual acquisition costs for land will be based on actual appraisals reviewed by a certified federal review appraiser.

At the west end of the project adjacent to the future SR 303L (freeway) two recent sales (2009) were used to determine a value of \$150,000 per acre or \$3.44 per square foot (see Appendix E). Further east along the parkway between Reems Road and 143rd Avenue and between Dysart Road and 115th Avenue vacant unimproved property is affected by Luke Air Force Base noise contours and was estimated at \$90,000 per acre or approximately \$2.07 per square foot.

Much of the area adjacent to Litchfield Road is within the Luke Air Force Base runways accident potential zone. Land within the Luke Air Force Base accident potential zone has severe development restrictions so land values in this area were estimated at \$60,000 per acre or \$1.38 per square foot.

Vacant land adjacent to developed residential areas from 115th to 103rd avenues and from 91st Avenue to 79th Avenue were valued at \$250,000 per acre or \$5.74 per square foot.

Vacant land in areas adjacent to the existing SR 101L (freeway) was valued at \$450,000 per acre or \$10.33 per square foot. This price is based on early acquisitions in the area completed in 2007.

Vacant land between 79th Avenue and US 60 (Grand Avenue) was valued at \$400,000 per acre or \$9.18 per square foot based on early acquisitions in the area completed in 2007 and 2008.

In addition to the land values, \$300,000 was added for each house to be acquired including relocation of residents and \$500,000 for each business site, which included relocation costs as well.

6.2 ULTIMATE CONCEPT COST ESTIMATE

The cost estimate for the ultimate planned improvements for Northern Parkway is \$612.6 million in 2009 dollars. The summary of the estimate is included in Table 6-1 while details of the estimate are included in Appendix E. No phasing assumptions are included in this estimate.

Table 6-1 Alternative 1 Estimated Cost (2009 Dollars)

| Segment | ROW | Design | Construction | Total |
|---|---------------------|---------------------|----------------------|----------------------|
| Sarival Avenue | \$2,703,000 | \$1,274,059 | \$15,925,738 | \$19,902,797 |
| Reems Road | \$3,706,200 | \$1,688,789 | \$21,109,868 | \$26,504,858 |
| Bullard Avenue | \$5,734,800 | \$1,325,911 | \$16,573,890 | \$23,634,601 |
| BNSF Webb Spur Crossing | \$0 | \$238,172 | \$2,977,152 | \$3,215,324 |
| Litchfield Road | \$3,762,600 | \$2,014,500 | \$25,181,254 | \$30,958,355 |
| Dysart Road | \$3,794,400 | \$2,830,348 | \$35,379,345 | \$42,004,093 |
| El Mirage Alternative Access Streets | \$759,600 | \$226,055 | \$2,825,688 | \$3,811,344 |
| El Mirage Road | \$3,359,800 | \$2,649,296 | \$33,116,199 | \$39,125,295 |
| Agua Fria River Bridge | \$0 | \$1,021,614 | \$12,770,171 | \$13,791,785 |
| 115 th Avenue | \$1,474,200 | \$1,290,339 | \$16,129,232 | \$18,893,770 |
| 107 th Avenue | \$4,025,000 | \$1,098,156 | \$13,726,955 | \$18,850,111 |
| Loop 101 – Northern Ave (107 th to Loop 101) | \$11,866,500 | \$1,945,294 | \$24,316,177 | \$38,127,971 |
| Loop 101 – Northern Ave (Loop 101 to 87 th) | \$12,305,000 | \$1,775,460 | \$22,193,248 | \$36,273,708 |
| Loop 101 – Northern Parkway Bypass | \$0 | \$10,192,274 | \$127,403,422 | \$137,595,696 |
| 83 rd Avenue | \$5,075,000 | \$2,949,531 | \$36,869,132 | \$44,893,662 |
| 75 th Avenue | \$10,016,000 | \$3,050,171 | \$38,127,132 | \$51,193,303 |
| Grand Avenue | \$7,468,000 | \$4,177,969 | \$52,224,608 | \$63,870,577 |
| Total Costs | \$76,050,100 | \$39,747,937 | \$496,849,210 | \$612,647,247 |