

**ARIZONA DEPARTMENT OF TRANSPORTATION
Valley Project Management**

**Regional Transportation Plan
Freeway Program (RTPFP)**

**Construction Segments Costs and
Descriptions Notebook Guidelines**

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**Arizona Department of Transportation
205 S. 17th Avenue
Phoenix, Arizona 85007**



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1.0 INTRODUCTION

The Arizona Department of Transportation (ADOT) has management responsibility for the freeway and highways component of the Regional Transportation Plan (RTP). As learned during the recent Accelerated Freeway Program, a system to establish and maintain current freeway project construction cost estimate summaries is a vital element of managing the overall freeway program.

This document is intended to provide guidance for the development of the *Construction Segments Cost and Description Notebook* that is used to maintain an up-to-date summary of the project scope and estimated construction cost for each RTPFP project. This information will also be used to support ADOT's semi-annual Life-Cycle Certification process.

ADOT has retained three Management Consultants (MC's) to perform the following services:

- Develop project scoping and environmental documents,
- Develop 30% plans,
- Review construction cost estimates prepared by designers of the scoping and final design documents for projects located within each MC's assigned freeway corridors,
- Develop and update the portions of the overall RTPFP *Construction Segments Cost and Description Notebook* for the freeway corridors under their responsibility. Each MC will provide the current estimate summaries to DMJM Harris on an annual basis for the development of a composite RTPFP notebook. The composite notebook will be transmitted to representatives of ADOT and the Maricopa Association of Governments (MAG).
- Maintain a chronology of each project including submittal dates, estimated construction costs at each submittal, formal project scope and budget changes, and other milestones that occur during the project development process.

This information will assist the Department in the planning, scheduling, tracking and programming of construction projects throughout the 20-year duration of the RTPFP.

2.0 CONSTRUCTION SEGMENTS COSTS AND DESCRIPTIONS NOTEBOOK

2.1 Notebook Organization

The *Construction Segments Cost and Description Notebook* will be organized by freeway corridor, segment, section and project type. The composite notebook Table of Contents is included in Appendix A.

Each MC will be responsible for the portions of the notebook that include their freeway corridors. The construction cost estimate summary sheets included in the notebook must be updated at each formal submittal stage, and each approved scope/budget change, to ensure the estimates are up-to-date at all times.

Each MC shall provide a copy of their corridor notebooks to DMJM Harris by November 30th each year. DMJM Harris will assemble the corridor notebooks into a composite RTPFP notebook for transmittal to ADOT and MAG in support of the Life-Cycle Certification.

2.2 Estimate Summary Forms

A standard format for the estimate summary forms is provided in Appendix B. The form shall be updated to summarize the project scope and estimated construction cost for the project at each stage of project development.

Guidance for completing the project estimate summary forms is provided in Appendix C. A completed form for an example project is also provided for information.

3.0 COST ESTIMATE LEVELS

3.1 Introduction

Construction cost estimates are formally developed at six defined submittal stages of the highway development process, as shown in the following table:

No.	Estimate Level	Description
0	RTP Estimate	Documents the assumptions and total project estimate that is included in the RTP
1	Design Concept Estimate	Total estimated construction costs included in the final scoping document
2	30% Estimate	Total estimated construction cost estimated with the 30% submittal
3	Engineer's Estimate	Total estimated construction cost at the Stage III (60%), Stage IV (95%) and Final (100%) submittals
4	Contractor's Bid Amount	Total construction costs based on the Contractor's bid
5	Final Project Amount	Total construction costs at the project close-out

3.2 Level 0 - Regional Transportation Plan (RTP) Estimate

In May 2002, the legislature asked ADOT to provide recommendations for transportation improvements that could be funded if the current transportation excise tax in Maricopa County would be extended for an additional 20 years. In response to this request, the Department developed an estimate of anticipated project costs for various freeway corridors. The evaluation was documented in the draft final report entitled ***“Maricopa Regional Transportation Improvements, Potential Transportation Excise Tax Extension”***, dated September 25, 2002. This document included a brief description of the estimated costs of each freeway corridor (or project), and the corridors that could be included in the plan with various levels of funding.

The Maricopa Association of Governments (MAG), in cooperation with ADOT, continued to refine the estimates for each freeway and highway corridor (or project) during the development of the RTP that was adopted by the MAG Regional Council in November 2003.

The RTP Estimate (Level 0) is intended to document the original assumptions and estimated total cost for each project identified in the RTPFP and approved by county voters in November 2004.

3.3 Level 1 - Design Concept Estimate

The Design Concept (Level 1) Estimates are based on the approved scoping documents. The scoping documents will typically provide roadway location and concept drawings that include the general roadway features and design criteria, interchange locations and design features, preliminary structure requirements, utility conflicts and relocation concepts, approximate right-of-way acquisition requirements, environmental mitigation requirements and initial implementation recommendations.

The engineering evaluation conducted with the scoping document allows for the development of a refined project cost estimate based on the approved conceptual design. The estimate included in the scoping document should be used to prepare the estimate summary sheet provided in Appendix B for the Level 1 estimate documentation. The Level 1 estimate will be compared with the future estimates to evaluate and justify possible changes to the project scope and estimated construction costs.

The major items typically comprise the majority of the total cost of a freeway project. Once the subtotal of the cost of the “Major Items” is obtained, an “Unidentified Items” cost factor (%) is applied to accommodate the estimated cost of all minor items that are not defined and included in the major item categories. The “Unidentified Items” cost factor should be evaluated on a project-by-project basis, but is typically twenty percent (20%) at this stage of project development.

The project elements associated with the “Other Project Costs” portion of the estimate are undefined at this stage of project development. These items should be included in the estimate form as they become defined with the project.

A second “Construction Contingency and Engineering” cost factor (%) is then applied to the sum of the “Major Items” and “Other Items” to cover the cost of construction engineering administration and change orders that occur during the construction of the projects.

3.4 30% Estimate

The 30% Plan provides a more in-depth preliminary design of the freeway project defined with the scoping document. The 30% Plan typically includes the following items:

- Initial roadway plans
- Initial detour plans
- Preliminary Geotechnical Report
- Initial Bridge Foundation Report
- Initial Bridge Selection Report
- Initial Drainage Report and plans
- Utility Report and plans
- Traffic Report
- Concept signal plans
- Guide signing concept
- Lighting Design Concept Report
- Initial pavement marking plans
- Initial Wall Report and plans
- Construction phasing plans

The 30% Plan should also accomplish the following overall project goals:

- 1) Finalize the major design features of the project,
- 2) Determine prior rights for utility conflicts and develop relocation concepts,
- 3) Set the final right-of-way and easement requirements, and
- 4) Provide direction and guidance for designers that prepare the final design and plans, specifications and estimates (PS&E).

The Level 2 summary is prepared in a similar fashion to the Level 1 estimate summary. Since a greater level of engineering has been performed at this stage of development, a higher degree of accuracy can be obtained in developing the quantities for the major items of work. This additional level of detail allows the contingency percentage for the “Other Items” to be lowered from the contingency applied to the Level 1 Estimate. Previous experience has shown that the “Other Items” contingency applied to the Level 2 estimate should be ten percent (10%).

Some construction elements associated with the “Other Project Costs” portion of the estimate are still undefined at this stage of project development. These items should be included in the estimate form as they become defined with the project.

3.5 Level 3 - Engineer's Estimates

The Engineer's Estimates are estimates developed during the final design and represents the design engineer's estimate of the reasonable construction cost of the project.

The Engineer's Estimates are developed and documented at the Stage III (60%), Stage IV (95%) and Final (100%) submittal stages. Since the project becomes more defined as a greater level of engineering has been performed, a higher degree of accuracy can be obtained in developing the quantities for the major items of work. This additional level of detail will allow the cost factor for the "Unidentified Items" to be lowered in accordance with the following guidelines:

- Stage III (60%) estimate: 5 percent
- Stage IV (95%) estimate: 0 percent
- Final (100%) estimate: 0 percent

The Final estimate is also used to evaluate the validity of the bids received for the construction contract.

During the project development process, additional information becomes available regarding the use of Department of Public Safety (DPS) personnel for work zone traffic control, prior right utility relocations (by utility companies) and utility service agreements, construction items that are included in the project and funded by an outside agency, and possible bid item price escalation and contractor incentives. These items should be included in the "Other Project Costs" section of the estimate summary.

3.6 Level 4 - Contractor's Bid Amount

The Contractor' Bid Amount is the actual bid cost submitted by the contractor who is the successful bidder that is awarded the construction contract. It represents the cost at which the contractor agrees to build the project.

The bid items (with contractor bid amounts) associated with each major item of work should be summed and included in the estimate summary sheet.

The "Construction Contingency & Engineering" cost factor is still applied to the bid amount to determine the total project cost. The "Other Project Costs" items are also added to the bid amount to determine the total project cost.

3.7 Level 5 - Final Project Amount

The Final Project Amount represents the actual costs of the completed construction project. It is determined from the actual payments made to the contractor for all bid items, actual utility costs, and Joint Project Agreement (JPA) costs.

The “Construction Contingency and Engineering” costs are determined from the actual construction contract expenses. The actual costs should be used to validate the cost factor percentages used in earlier estimates.

4.0 MAJOR ITEM DESCRIPTIONS

4.1 Introduction

The major items that are the basis for estimating and summarizing costs for the *Construction Segments Cost and Description Notebook* have been categorized in accordance with the major subdivisions in the ADOT Standard Specifications, including:

MAJOR ITEMS OF WORK

Item 200	Earthwork
Item 300	Base Treatment
Item 400	Surface Treatment
Item 500	Drainage
Item 600	Structures
Item 700	Traffic Engineering
Item 800	Roadside Development
Item 900	Incidentals

The following provides additional definition of the major items that are estimated for the various estimate levels.

4.2 Item 200 - Earthwork

The Item 200 - Earthwork section includes several categories including:

- Clearing & Removals (L.Sum)
- Roadway Excavation (Cu. Yd.)
- Drainage Excavation (Cu. Yd.)
- Borrow (Cu. Yd.)
- Furnish Water Supply (Mile)

The Section 200 portion of the estimate summary is based on preliminary quantity estimates for the major items of work including Roadway Excavation, Drainage Excavation and Borrow. Other items included in Section 200 include Clearing and Removals, and Furnish Water Supply.

The estimates provided for Levels 2 and 3 shall be based on the actual quantities derived from the scoping document or general plans. The actual bid quantities shall be used for the estimates provided at Levels 4 and 5.

4.3 Items 300 and 400 - Base and Surface Treatments

The Items 300 and 400 – Base and Surface Treatments section includes the following major categories:

- Concrete Pavement (Sq. Yd.)
- Asphalt Pavement (Sq. Yd.)

The Base and Surface Treatment major items are based on estimated quantities derived from the best plan information that is available at that stage of project development.

The quantities shown in the summaries will be based on the pavement areas (sq. yd.) that should be provided by the designer of the project. The unit costs for concrete pavement will be calculated by summing the costs for base material, concrete pavement and surface treatment items included in the concrete pavement section(s), and dividing the total cost by the total pavement area. The same process shall be used to calculate the unit cost (sq. yd.) for all asphalt pavement areas.

For the Level 1, 2 and 3 estimate summaries, the Base and Surfacing costs shall be determined from the scoping documents and plans using unit prices provided by the designer. The actual bid quantities and prices should be used for the summaries developed with Levels 4 and 5.

4.4 Item 500 - Drainage

The Item 500 – Drainage section includes the following major categories:

- On-site Drainage (Mile)
- Off-site Drainage (Mile)
- Pump Stations (Each)
- Other (L. Sum)

The designers will provide a summary of the on-site and off-site drainage items and quantities from their submittal estimates. The unit costs for each category shown in the summaries will be calculated by summing the estimated costs associated with each drainage category and dividing by the appropriate unit of measurement.

On-site and off-site drainage items should include box culverts, concrete channel lining, scuppers, down-drains, and other drainage related features that are not included in Section 500 of the Standard Specifications.

The Pump Station item shown in the summary should include all items shown in the estimate relating to the pump station, including all underground storage that supports the pump station.

The “Other” category is intended to account for unique drainage items needed to support the freeway including bank protection, scour protection, and other items.

For the Level 1, 2 and 3 estimate summaries, the Drainage costs shall be determined from the scoping documents and plans using unit prices provided by the designer. The actual bid quantities and prices should be used for the summaries developed with Levels 4 and 5.

4.5 Item 600 - Structures

The Item 600 – Structures section includes the following major categories:

- Structures (Sq. Ft.)
- Other (each)

The major structures items section is primarily comprised of bridges. The unit costs for the bridges shown in the summaries shall be based on the total cost of the bridges shown in the designer’s estimates divided by the deck area in square feet for the total number of bridges included in the project. The designer should provide the deck area in square feet for each bridge. The designer should also include a description of each bridge that includes the number of spans, girder type, abutment type and foundation type.

The “Other” category is intended to include other unique structures including pedestrian crossings, equipment crossings, and other unique structures that are not included in other sections of the estimate summary. Retaining and sound walls are included in the Incidentals (900 series) section of the estimate summary.

For the Level 1, 2 and 3 estimate summaries, the Structure costs shall be determined from the scoping documents and plans using unit prices provided by the designer. The actual bid quantities and prices should be used for the summaries developed with Levels 4 and 5.

4.6 Item 700 - Traffic Engineering

The Item 700 - Traffic Engineering section includes the following major categories:

- Traffic Control (L. Sum)
- Signing & Pavement Marking (Mile)
- Lighting (Mile)
- Signals (Each)
- Freeway Management System (per Mile)

The unit cost for each category shown in the summaries will be calculated by summing the costs from the estimate and divided by the appropriate units.

In order to develop meaningful unit costs for traffic signal installations, diamond and urban interchanges will be defined as two signal installations.

The Freeway Management System (FMS) costs shall include conduit, pullboxes, loop detectors and other FMS costs typically included with the roadway construction project.

For the Level 1, 2 and 3 estimate summaries, the Traffic Engineering costs shall be determined from the scoping documents and plans using unit prices provided by the designer. The actual bid quantities and prices should be used for the summaries developed with Levels 4 and 5.

4.7 Item 800 – Roadside Development

The Item 800 – Roadside Development section includes the following major categories:

- Topsoil (Cu. Yd.)
- Landscaping (Mile)
- Erosion control (Mile)
- Utility relocation (Mile)

Following the development of the 30% Plans, landscaping projects are generally designed and constructed separately from the roadway project. The landscaping projects will be programmed at a specified budget per freeway mile inclusive of all contingencies and construction engineering cost factors (14%). Valley Project Management will provide this budget that will include plant materials, irrigation systems, land form graphics, decomposed granite and other landscaping related materials for a typical freeway project based upon an assumed landscaped area of 30 – 33 acres per mile. This budget does not include elements that are normally included with the roadway project including topsoil and utility service connections.

Level 0 and Level 1 estimates will include the freeway landscaping on a per mile basis. Once the landscaping and roadway projects are separated (after the 30% plan submittal), the per mile landscaping estimates shall be used until the roadway construction plans are finalized and the actual landscaped acreages are calculated by the management consultant. The final landscape budget will be calculated on a per acre basis for inclusion in the 5-Year Construction Program. The per acre budget for the freeway landscaping (including 14% construction engineering and contingencies) will be provided by Valley Project Management.

Topsoil plating is typically included with the grading of the freeway construction project. Erosion control features are also included with the freeway construction project in accordance with storm water pollution prevention permit requirements.

Erosion control items are typically provided in the Level 1 and Level 2 estimates on a lump sum basis. For the Levels 3 through Level 5 estimate summaries, the erosion control costs are developed by summing all estimated or actual erosion control bid item costs to derive a cost per mile for the project.

The anticipated utility relocation costs are typically provided in the Level 1 estimate summary as a per mile cost based on historical information from similar freeway projects. This approach may be modified dependent upon the level of effort performed to identify utility relocation costs in the scoping document.

For the Levels 3 through Level 5 summaries, the utility relocation costs are developed by summing all estimated or utility relocation bid item costs to derive an actual cost per mile for the project.

Prior right utility relocations that will be performed by the utility company or outside agency should not be included in this section of the estimate. These costs should be input into the estimate summary in the "Other Project Costs" section. Utility service agreements should also be included in the "Other Project Costs" section.

4.8 Item 900 - Incidentals

The Incidentals Item includes other major roadway features that are not included in the other major item categories of the summary. The incidental items included the following:

- Mobilization (L. Sum)
- Retaining Walls (Sq. Ft.)
- Sound Walls (Sq. Ft.)
- Roadway Appurtenances (Mile)
- Contractor Quality Control (L. Sum)
- Construction Surveying (L. Sum)

The estimated costs for mobilization should be included in the summary based on the estimate received from the designer. The estimated costs for mobilization should typically be eight percent of the total amount of the construction items.

The Retaining and Sound Wall items are based on estimated quantities derived from the best plan information that is available at that stage of project development.

The quantities shown in the summaries will be based on the wall areas (sq. yd.) that are provided by the designer of the project. The unit costs for the retaining walls will be calculated by summing the costs for the retaining walls and dividing the total cost by the total wall area. The same process shall be used to calculate the unit cost (sq. yd.) for the sound walls.

Roadway appurtenances include impact attenuators, fence, barrier systems, curb, curb and gutter, sidewalk, right-of-way and survey markers, median island paving, and other

minor items included in the estimate that are associated with the project. These items may not be very well defined with the Level 2 estimate, but will become more defined with the Level 3 estimates.

For the Level 1 estimate, incidental Items are generally provided as a per mile or lump sum cost derived from recent construction bid item costs from similar freeway construction projects. For the Levels 2 through Level 5 summaries, the incidental costs are developed by summing all estimated or actual incidental bid item costs to derive an actual cost per mile for the project.

4.9 Unidentified Items

The Unidentified Items category represents an allowance (%) for items not identified at the various stages of project development. As the design of the project becomes more refined, the Unidentified Items allowance will decrease. As presented earlier in this document, the recommended allowance (%) for each submittal stage is summarized as follows:

- Level 1 estimate: 20 percent
- Level 2 estimate: 10 percent
- Level 3 estimates
 - Stage III (60%): 5 percent
 - Stage IV (95%): 0 percent
 - Final (100%): 0 percent

By the time the project reaches the Stage IV (95%) submittal, the items work that will be included in the construction project should be sufficiently identified that an allowance for Unidentified Items is no longer necessary.

4.10 Construction Engineering and Contingency

The Construction Contingency and Engineering cost factor (14%) includes a 9% cost factor for Construction Engineering and 5% cost factor for construction contingencies (change orders) for projects with an estimated value above \$1 million. For projects anticipated to be less than \$1 million, the total Construction Contingency and Engineering cost factor should be adjusted to 20% which provides 15% for Construction Engineering and 5% for Construction Contingencies. This percentage is applied to the "Subtotal B" line in the estimate summary.

The actual Construction Contingency and Engineering costs should be reviewed periodically to evaluate possible modifications to these cost factors.

5.0 PROJECT CHRONOLOGY NOTEBOOK

A separate notebook should be maintained by each MC that includes the project summaries for all submittals for each construction project in their freeway corridors.

This notebook should be formatted similar to the *Construction Segments Cost and Description Notebook*, but will include the following additional information for each project:

- All Level 0 through 5 estimate summary sheets for each project
- Estimate tracking sheet for Levels 0 through 5
- Project chronology sheet

The goal of this notebook is to provide a chronology beginning with the development of the original scope and budget for each project. Once the project scope and budget is established, the notebook should provide a historical record of all submittal milestones and revised estimate amounts, formal budget revisions, and other important project information.

The estimate tracking sheet is provided in Appendix D. An example project chronology sheet is provided in Appendix E.

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SR 51 (Tatum) – Princess Drive	13-22 to 13-24
Princess Drive – 90 th Street	13-25 to 13-27
90 th Street – 202L, Red Mountain	13-28 to 13-30

New Arterial Traffic Interchanges

64 th Street TI	13-31 to 13-33
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SR 101L, PRICE

General-Purpose Lanes

Baseline Road – 202L, Santan	14-1 to 14-3
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High Occupancy Vehicle Lanes

202L, Red Mountain – Baseline Road	14-4 to 14-6
Baseline Road – 202L, Santan	14-7 to 14-9

Freeway Management System

Guadalupe Road – Chandler Boulevard	14-10 to 14-12
Baseline Road – 202L, Santan	14-13 to 14-15

SR 202L, SOUTH MOUNTAIN

General-Purpose Lanes

I-10 East, Santan – 51 st Avenue	15-1 to 15-3
51 st Avenue – I-10 West	15-4 to 15-6

TABLE OF CONTENTS

SR 202L, RED MOUNTAIN

General-Purpose Lanes

I-10/SR51 TI – 101L, EB.....	16-1 to 16-3
Rural Road – 101L, WB.....	16-4 to 16-6
Rural Road – 101L, Price.....	16-7 to 16-9
101L, Price – Gilbert Road.....	16-10 to 16-12
Gilbert Road – Higley Road.....	16-13 to 16-15
Higley Road – US 60, Superstition.....	16-16 to 16-18

High Occupancy Vehicle Lanes

101L, Price – Gilbert Road.....	16-19 to 16-21
Gilbert Road – Higley Road.....	16-22 to 16-24
Higley Road – US 60, Superstition.....	16-25 to 16-27
US 60 Interchange Ramp.....	16-28 to 16-30

Freeway Management System

101L, Price – SR 87.....	16-31 to 16-33
SR 87 – Higley Road.....	16-34 to 16-36
Higley Road - US 60.....	16-37 to 16-39

New Arterial Traffic Interchanges

Mesa Drive TI (Ramps Only).....	16-40 to 16-42
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SR 202L, SANTAN

General-Purpose Lanes

US 60, Superstition – Val Vista Drive.....	17-1 to 17-3
Val Vista Drive – Dobson Road.....	17-4 to 17-6
Dobson Road – I-10.....	17-7 to 17-9

High Occupancy Vehicle Lanes

US 60, Superstition – Val Vista Drive.....	17-10 to 17-12
101L System Interchange Ramp.....	17-13 to 17-15
Val Vista Drive – Dobson Road.....	17-16 to 17-18
Dobson Road – I-10.....	17-19 to 17-21
I-10 System Interchange Ramp.....	17-22 to 17-24

Freeway Management System

US 60, Superstition – Val Vista Drive.....	17-25 to 17-27
Val Vista Drive – Dobson Road.....	17-28 to 17-30
Dobson Road – I-10.....	17-31 to 17-33

Miscellaneous Projects

Lindsay Road – Gilbert Road (Multi-Use Trail).....	17-34 to 17-36
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SR 303L, ESTRELLA

General-Purpose Lanes

I-10 Reliever/MC 85 – I-10.....	18-1 to 18-3
I-10 – US60, Grand Avenue.....	18-4 to 18-6
Happy Valley Road – I-17 (Interim).....	18-7 to 18-9
US 60, Grand Avenue – I-17.....	18-10 to 18-12

TABLE OF CONTENTS

WILLIAMS GATEWAY FREEWAY

General-Purpose Lanes

202L, Santan – Ellsworth Road.....	19-1 to 19-3
Ellsworth Road – Meridian Road.....	19-4 to 19-6

SYSTEM WIDE SUBPROGRAMS

RTPFP Subprograms

Undefined Freeway Management System Projects	20-1 to 20-3
Noise Mitigation Projects (Including Asphalt Rubber Noise Mitigation).....	20-4 to 20-6
Right-of-Way Advance Acquisition	20-7 to 20-9
Maintenance (Landscape, Litter Pick-up and Street Sweeping)	20-10 to 20-12

Statewide Subprograms

Phoenix District Minor Projects	20-13 to 20-15
Other Statewide Subprograms.....	20-16 to 20-18

APPENDIX B – ESTIMATE SUMMARY FORM

**ARIZONA DEPARTMENT OF TRANSPORTATION
VALLEY PROJECT MANAGEMENT
CONSTRUCTION COST ESTIMATE SUMMARY**

ROUTE:
SEGMENT:
LENGTH:

TRACS NO.:

PROJECT DESCRIPTION:
ESTIMATE SUMMARY LEVEL:
DATE:

ITEM	MAJOR ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
200	EARTHWORK				
	CLEARING & REMOVALS	L.SUM			0
	ROADWAY EXCAVATION	CU.YD.			0
	DRAINAGE EXCAVATION	CU.YD.			0
	BORROW	CU.YD.			0
	FURNISH WATER SUPPLY	MILE			0
	TOTAL ITEM 200				0
300 & 400	BASE AND SURFACE TREATMENT				
	CONCRETE PAVEMENT	SQ.YD.			0
	ASPHALT PAVEMENT	SQ.YD.			0
	TOTAL ITEM 300 & 400				0
500	DRAINAGE				
	ON-SITE DRAINAGE	MILE			0
	OFF-SITE DRAINAGE	MILE			0
	PUMP STATION	EACH			0
	OTHER:	L.SUM			0
	TOTAL ITEM 500				0
600	STRUCTURES				
	NUMBER OF STRUCTURES:	SQ.FT.			0
	OTHER:	EACH			0
	TOTAL ITEM 600				0
700	TRAFFIC ENGINEERING				
	TRAFFIC CONTROL	L.SUM			0
	SIGNING & PAVEMENT MARKING	MILE			0
	LIGHTING	MILE			0
	TRAFFIC SIGNAL	EACH			0
	FREEWAY MANAGEMENT SYSTEM	MILE			0
	TOTAL ITEM 700				0
800	ROADSIDE DEVELOPMENT				
	LANDSCAPING	MILE			0
	TOPSOIL	CU.YD.			0
	EROSION CONTROL	MILE			0
	UTILITY RELOCATION	MILE			0
	TOTAL ITEM 800				0
900	INCIDENTALS				
	MOBILIZATION	L.SUM			0
	RETAINING WALLS	SQ.FT.			0
	SOUND WALLS	SQ.FT.			0
	ROADWAY APPURTENANCES	MILE			0
	CONTRACTOR QUALITY CONTROL	L.SUM			0
	CONSTRUCTION SURVEYING	L.SUM			0
	TOTAL ITEM 900				0
SUBTOTAL A (ITEMS 200 THRU 900)					\$0
UNIDENTIFIED ITEMS (X% OF SUBTOTAL A)					0
SUBTOTAL B (SUBTOTAL A + UNIDENTIFIED ITEMS)					\$0
CONSTRUCTION ENGINEERING AND CONTINGENCIES (9% OF SUBTOTAL B)					0
TOTAL ESTIMATED CONSTRUCTION COST					\$0
OTHER PROJECT COSTS					
DPS TRAFFIC CONTROL					\$0
PRIOR RIGHT UTILITY RELOCATIONS AND SERVICE AGREEMENTS					0
JOINT PROJECT AGREEMENT ITEMS					0
BID ITEM PRICE ESCALATION					0
CONTRACTOR INCENTIVES					0
SUBTOTAL OTHER PROJECT COSTS (*)					\$0
CONSTRUCTION CONTINGENCIES (5% OF SUBTOTAL B)					0
TOTAL ESTIMATED PROJECT COST (*)					\$0

(*) Total includes costs associated with other funding sources. See Sheet 3 of 3 for additional information.

CONSTRUCTION COST ESTIMATE SUMMARY

Segment or Project Description

Estimate Date:

Route:	
Segment:	
Project Description:	
ID No:	
TRACS No:	
Segment Designer(s):	
Estimate Level:	
RTP Phase:	

Scope of Work

Description of Limits:	
Length/Milepost Limits:	
Miles (Depressed/At-grade/Elevated):	
No. of Lanes/Total Lane Miles:	
Roadway Environment:	
Roadway Type:	
Pavement Type:	
Median Type:	

Interchanges:	
Full	Half

Earthwork:	
Bridges:	
Retaining Walls:	
Sound Walls:	
Utility Involvement:	
Traffic Control:	
Drainage - On-Site:	
Drainage - Off-Site:	
Pump Station:	
Major Drainage Items:	

CONSTRUCTION COST ESTIMATE SUMMARY

Segment or Project Description

Estimate Date:

Route:	
Segment:	
ID No.:	

**APPENDIX C – GUIDANCE FOR COMPLETION OF THE ESTIMATE
SUMMARY FORM**

**ARIZONA DEPARTMENT OF TRANSPORTATION
VALLEY PROJECT MANAGEMENT
CONSTRUCTION COST ESTIMATE SUMMARY**

ROUTE: (1)
SEGMENT: (2)
LENGTH: (3)

TRACS NO.: (4)

PROJECT DESCRIPTION: (5)
ESTIMATE SUMMARY LEVEL: (6)
DATE: (7)

ITEM	MAJOR ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
200	EARTHWORK				
	CLEARING & REMOVALS	L.SUM			0
(8)	ROADWAY EXCAVATION	CU.YD.			0
(9)	DRAINAGE EXCAVATION	CU.YD.			0
	BORROW	CU.YD.			0
	FURNISH WATER SUPPLY	MILE			0
	TOTAL ITEM 200				0
300 & 400	BASE AND SURFACE TREATMENT				
(10)	CONCRETE PAVEMENT	SQ.YD.			0
(11)	ASPHALT PAVEMENT	SQ.YD.			0
	TOTAL ITEM 300 & 400				0
500	DRAINAGE				
(12)	ON-SITE DRAINAGE	MILE			0
(13)	OFF-SITE DRAINAGE	MILE			0
(14)	PUMP STATION	EACH			0
(15)	OTHER:	L.SUM			0
	TOTAL ITEM 500				0
600	STRUCTURES				
(16)	NUMBER OF STRUCTURES:	SQ.FT.			0
(17)	OTHER:	EACH			0
	TOTAL ITEM 600				0
700	TRAFFIC ENGINEERING				
	TRAFFIC CONTROL	L.SUM			0
	SIGNING & PAVEMENT MARKING	MILE			0
	LIGHTING	MILE			0
	TRAFFIC SIGNAL	EACH			0
	FREEWAY MANAGEMENT SYSTEM	MILE			0
	TOTAL ITEM 700				0
800	ROADSIDE DEVELOPMENT				
	LANDSCAPING	MILE			0
	TOPSOIL	CU.YD.			0
	EROSION CONTROL	MILE			0
(18)	UTILITY RELOCATION	MILE			0
	TOTAL ITEM 800				0
900	INCIDENTALS				
	MOBILIZATION	L.SUM			0
	RETAINING WALLS	SQ.FT.			0
	SOUND WALLS	SQ.FT.			0
(19)	ROADWAY APPURTENANCES	MILE			0
	CONTRACTOR QUALITY CONTROL	L.SUM			0
	CONSTRUCTION SURVEYING	L.SUM			0
	TOTAL ITEM 900				0
SUBTOTAL A (ITEMS 200 THRU 900)					\$0
(20)	UNIDENTIFIED ITEMS (X% OF SUBTOTAL A)				0
SUBTOTAL B (SUBTOTAL A + UNIDENTIFIED ITEMS)					\$0
CONSTRUCTION ENGINEERING & CONTINGENCY (9% OF SUBTOTAL B)					0
TOTAL ESTIMATED CONSTRUCTION COST					\$0
OTHER PROJECT COSTS					
	DPS TRAFFIC CONTROL				\$0
(21)	PRIOR RIGHT UTILITY RELOCATIONS AND SERVICE AGREEMENTS				0
(22)	JOINT PROJECT AGREEMENT ITEMS				0
	BID ITEM PRICE ESCALATION				0
	CONTRACTOR INCENTIVES				0
(23)	SUBTOTAL OTHER PROJECT COSTS (*)				\$0
CONSTRUCTION CONTINGENCIES (5% OF SUBTOTAL B)					0
TOTAL ESTIMATED PROJECT COST (*)					\$0

(*) Total includes costs associated with other funding sources. See Sheet 3 of 3 for additional information.

CONSTRUCTION COST ESTIMATE SUMMARY

Segment or Project Description

Estimate Date: (7)

Route:	(1)
Segment:	(2)
Work Description:	(5)
TRACS No:	(4)
Segment Designer(s):	(24)
Estimate Level:	(6)
RTP Phase:	(25)

Scope of Work

Description of Limits:	(2)
Length/Milepost Limits:	(26)
Miles (Depressed/At-grade/Elevated):	(27)
No. of Lanes/Total Lane Miles:	(28)
Roadway Environment:	(29)
Roadway Type:	(30)
Pavement Type:	(31)
Median Type:	(32)

Interchanges: (33)

Full

Half

Earthwork:	(34)
Bridges: (35)	
Retaining Walls:	(36)
Sound Walls:	(37)
Utility Involvement:	(38)
Traffic Control:	(39)
Drainage - On-Site:	(40)
Drainage - Off-Site:	(41)
Pump Station:	(42)
Major Drainage Items:	(43)

CONSTRUCTION COST ESTIMATE SUMMARY

Segment or Project Description

Estimate Date: (7)

Route: (1)	
Segment: (2)	
TRACS No.: (4)	

Suggested Items for This Sheet (44)

Example Funding Recapitulation

Estimate Recap:	ADOT funds =	\$64,498,562	City of Chandler funds =	\$651,513
	City of Chandler SIB funding =	\$4,865,255	Utility Company funds =	\$124,374
Current ADOT Program:		\$64,800,000		

Definitions and Descriptions for Estimate Summary Sheets

- (1) **Route:** The route description is provided in the Regional Transportation Plan Freeway Program (RTPFP).
- (2) **Segment:** The segment definition is included in the RTPFP. As each segment is divided into sections and/or projects, the section and project information can be obtained from ADOT's 5-Year Construction Program.
- (3) **Length:** The project length is included in the RTPFP. The project length should be verified by the designer and updated in the estimate summary when any changes occur during the project development process.
- (4) **TRACS No.:** The TRACS number is obtained from the Project Manager.
- (5) **Project Description:** The project description should be obtained from the ADOT 5-Year Construction Program or ADOT's Regional Transportation Plan, Draft FY 2005-2025 (Phase 1 through IV). The typical project description will be selected from the following:
 - Construct roadway
 - Widen roadway
 - Construct HOV lanes
 - Construct FMS
 - Construct traffic interchange
 - Construct structures
 - Utility relocation
 - Landscaping
- (6) **Estimate Level:** The estimate level shall be selected from the following estimate descriptions:
 - RTP Estimate (Level 0)
 - Design Concept Estimate (Level 1)
 - 30% Estimate (Level 2)
 - Engineer's Estimate (Level 3) – an Engineer's Estimate will be developed for the Stage III (60%), Stage IV (95%) and Final (100%) design submittals
 - Contractor's Bid Amount (Level 4) – developed from the successful contractor's bid prices for each item of work and the agreement estimate recapitulation sheet
 - Final Project Amount (Level 5) – final project cost including all measured quantities. Construction change orders are summed into the construction contingency amount.
- (7) **Date:** The date of the estimate submittal.

Definitions and Descriptions for Estimate Summary Sheets

Page 2 of 6

- (8) **Roadway Excavation:** The roadway excavation quantity will include the total quantity of all roadway related excavation items, including any over-excavation required due to soil conditions.
- (9) **Drainage Excavation:** The drainage excavation quantity will include the total quantity of all related drainage excavation items including those required for all retention basins, drainage channels, or other drainage features. This item does not include pipe excavation or structural excavation for box culverts or any other drainage structures.
- (10) **Concrete Pavement:** The summation of all bid items that comprise the PCCP pavement structural section including aggregate base, asphaltic concrete base, PCCP and ARFC overlay.

The designer should provide the surface area of the concrete pavement shown on the plans, along with a list of the bid items associated with the concrete pavement sections.

- (11) **Asphalt Pavement:** The summation of all bid items that comprise the asphaltic concrete pavement sections including aggregate base, asphaltic concrete pavement, bituminous tack coat, apply bituminous tack coat, asphalt cement, mineral admixture, fog coat, blotter material and other related bid items

The designer should provide the surface area of the asphalt pavement shown on the plans, along with a list of the bid items associated with the asphalt pavement sections.

- (12) **On-Site Drainage:** The summation of all items associated with the on-site drainage systems.

The designer should provide a list of the bid items, with item quantities, of the on-site drainage elements to develop the overall cost of the on-site drainage systems for the project.

- (13) **Off-Site Drainage:** The summation of all items associated with the off-site drainage systems.

The designer should provide a list of the bid items, with item quantities, of the off-site drainage elements to develop the overall cost of the off-site drainage systems for the project.

- (14) **Pump Station:** The pump station costs shall include all costs associated with the pump station including the building and site improvements, electrical and mechanical systems, and the costs associated with underground storage.

Definitions and Descriptions for Estimate Summary Sheets

Page 3 of 6

The designer should provide a listing of the bid items, with item quantities, of the pump station elements to develop the overall cost of the pump station(s) included with the project.

- (15) **Other (Drainage):** The summation of special drainage features that may not be appropriate to include in the above drainage categories such as gabions, soil cement channel lining, and other special drainage features.
- (16) **Number of Structures:** The summation of all bridge structures included with the project, and the associated weighted unit cost per square foot of deck area for the structures. A list of the bridges should be included on page 3 of the estimate form

The designer should provide a summary of each bridge structure, with associated deck areas, to incorporate into the estimate summary..

- (17) **Other (Structures):** The summation of other structures including equipment underpasses, pedestrian overpasses/underpasses, or other major structures. A listing of these structures should be included on page 3 of the estimate form.
- (18) **Utilities:** The summation of all utility related items that is ADOT's responsibility by prior right, and will be constructed by ADOT's contractor. Utility items relocated by the individual utility company or outside agency should not be included in this portion of the estimate.
- (19) **Roadway Appurtenances:** The summation of all roadway appurtenances including impact attenuators, fence, barrier systems, curb, curb and gutter, sidewalk, right-of-way and survey markers, median island paving and other miscellaneous items.
- (20) **Unidentified Items:** Unidentified items are addressed by adding a cost factor to Subtotal A (Items 200 thru 900) of the estimate summary. The cost factor that is applied to Subtotal A is based on the submittal stage of the project, and should be as follows:
- Design Concept Estimate (Level 1) – 20%
 - 30% Estimate (Level 2) – 10%
 - Engineer's Estimate (Level 3)
 - Stage III (60%) – 5%
 - Stage IV (95%) – 0%
 - Final (100%) – 0%
- (21) **Prior Right Utility Relocations and Service Agreements:** The summation of utility relocations that will be completed by the utility company or local agency. This item shall also include any costs associated with service agreements with utility companies to provide service to an ADOT improvement.

Definitions and Descriptions for Estimate Summary Sheets

Page 4 of 6

- (22) **Joint Project Agreement Items:** The additional funding provided to the project by a local agency for additional work elements funded by that agency.
- (23) **Subtotal Other Project Costs:** The costs associated with DPS traffic control, prior right utility relocations and service agreements, Joint Project Agreement items, bid item escalation, contractor incentives, and other “below the line” items.
- (24) **Segment Designer:** The MC or final designer responsible for the current estimate.
- (25) **RTP Phase:** The phase the project identified in the RTPFP.
- (26) **Length/Milepost Limits:** the beginning milepost and project length is included in the current ADOT 5-Year Construction Program. For projects that are not included in the current program, the project length is provided in the RTPFP and ADOT’s 5-Year Construction Program. The milepost limits can be obtained from the Phoenix Metro Area Milepost System map.
- (27) **Miles (depressed/at-grade/elevated):** The length (in miles) the new or existing freeway is depressed, at-grade and elevated. The freeway is considered at-grade if the roadway profile is within 5 feet above or below the natural ground surface.
- (28) **No. of Lanes/Total Lane Miles:** Identify the number of mainline general-purpose lanes, and total lane miles that are included in the project. The lane mile calculations should not include auxiliary lanes.
- (29) **Roadway Environment:** The type of land use and development should be provided that represents the project area. The types of land use could include agricultural, residential, commercial, industrial and other lane use categories.
- (30) **Roadway Type:** Identify the general roadway type that best represents the proposed or existing facility. Various types of roadways could include elevated freeway, depressed freeway with frontage roads, and system or service interchanges.
- (31) **Pavement Type:** Identify the type of pavement that will be constructed with the project improvements. PCCP and AC pavements may be planned for different roadways included in the project, and should be identified in this field.
- (32) **Median Type:** Identify the type of median proposed for the segment of freeway included in the project. Examples of the median type would include open (with width) or closed, and should include the type of median barrier.

Definitions and Descriptions for Estimate Summary Sheets

Page 5 of 6

- (33) **Interchanges:** Provide a listing of the existing and proposed traffic interchanges within the project limits.
- (34) **Earthwork:** Identify the volume of borrow or waste material associated with the project. Borrow is generally listed in the detailed estimate, but the waste material is not typically provided by the final designer.

The designer should provide the volume of waste material. The MC should also determine if the volumes of borrow and waste are planned for use with other projects planned within the overall freeway corridor.

- (35) **Bridges:** The major bridge structures should be listed in this section. All bridges, type of bridge, deck area, foundation types, estimated cost per square foot, and other pertinent information should also be provided on page 3 of the estimate.
- (36) **Retaining Walls:** The estimated quantity of retaining walls should be provided in this field.
- (37) **Sound Walls:** The estimated quantity of sound walls should be provided in this field
- (38) **Utility Involvement:** A description of the anticipated or actual utility involvement requirements should be included in this field. The categories should include minimal, moderate and major involvement. A description of the utility conflicts and relocation requirements should be included on page 3 of the estimate summary.
- (39) **Traffic Control:** Provide a description of the significance of traffic control required for the project. The categories should include minimal, moderate and major requirements.
- (40) **Drainage On-Site:** Provide a general description of the on-site drainage system utilized for the project. Additional definition of the on-site drainage system should be provided on page 3 of the estimate summary.
- (41) **Drainage Off-Site:** Provide a general description of the on-site drainage system utilized for the project. Additional definition of the on-site drainage system should be provided on page 3 of the estimate summary.
- (42) **Pump Station:** List the number and location of pump stations. A description of the pump station(s), and interrelation of the pump station with the on-site and off-site drainage systems, should be provided on page 3 of the estimate summary.
- (43) **Major Drainage Items:** Provide a listing of the other significant drainage items that are included with the project.

Definitions and Descriptions for Estimate Summary Sheets

Page 6 of 6

(44) Additional items that should be included on page 3 of the estimate summary should include:

- Summary of the recapitulation sheet for the ADOT, local agency, utility company and other funding sources for the project.
- Estimate history for previous estimate submittals, the contractor's bid amount, and the final project amount
- Description of the freeway lighting system
- Description of the freeway management system (FMS) features that are included with the project.
- Date of approval of the environmental document
- Previous scoping document and final design submittal dates

If the project is combined with or separated out from another RTPFP project during the project development process, the estimate summary should include information regarding the combined project, the revised project estimate and programmed amount, and the State Transportation Board approval date.

**ARIZONA DEPARTMENT OF TRANSPORTATION
VALLEY PROJECT MANAGEMENT SECTION**

MAG CONSTRUCTION COST ESTIMATE

Note: This example is based on the previous RFS estimate summary form. Use the most recent updates for the Cost Notebook.

HIGHWAY PRICE ID NO. 101L14BRC

WORK DESCRIPTION

SECTION GUADALUPE RD - WARNER RD

Grade, Drain, Pavement, Structures

LENGTH 2.2 Miles Level 4

PROJECT STATUS: Life Cycle Program Ultimate

ITEM	MAJOR ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST
200	EARTHWORK				
	ROADWAY EXCAVATION	CU.YD.	2,100,021	3.32	6,972,070
	DRAINAGE EXCAVATION	CU.YD.	288,043	3.33	959,183
	BORROW	CU.YD.			
	TOTAL ITEM 200				7,931,253
300 & 400	BASE AND SURFACE TREATMENT				
	CONCRETE PAVEMENT	SQ.YD.	187,437	38.40	7,197,581
	ASPHALT PAVEMENT	SQ.YD.	123,000	23.80	2,927,400
	TOTAL ITEM 300 & 400				10,124,981
500	DRAINAGE				
	ON-SITE & OFF-SITE	MILE	2.17	3,717,108	8,066,124
	PUMP STATION	EACH	1	4,500,000	4,500,000
	TOTAL ITEM 500				12,566,124
600	STRUCTURES				
	NUMBER OF STRUCTURES: 5	SQ.FT.	94,888	49.58	4,704,547
	OTHER:	EACH			
	TOTAL ITEM 600				4,704,547
700	TRAFFIC ENGINEERING				
	SIGNING	MILE	2.17	288,663	626,399
	LIGHTING	MILE	2.17	293,183	636,207
	SIGNAL	MILE	2.17	489,790	1,062,844
	TOTAL ITEM 700				2,325,450
900	INCIDENTALS				
	UTILITIES	MILE	2.17	1,700,253	3,689,549
	WALLS (RETAINING & SOUND)	SQ.FT.	355,739	25.44	9,050,000
	MAJOR ITEMS OF WORK	L.SUM	1	1,751,252	1,751,252
	TOTAL ITEM 900				14,490,801
	SUBTOTAL A				52,143,156
	(ITEMS 200 THRU 700 & 900)				
	OTHER ITEMS				9,382,900
	(18.0% OF SUBTOTAL A)				
800	LANDSCAPING	MILE			
	SUBTOTAL B				61,526,056
	(SUBTOTAL A + OTHER ITEMS + ITEM 800)				
	CONTINGENCY & ENGINEERING : CONSTRUCTION				8,613,648
	(14% OF SUBTOTAL B)				
	TOTAL ESTIMATED CONSTRUCTION COST *				\$70,139,704

* Includes costs associated with other funding sources (See Sheet 5-28)

MAG SYSTEM CONSTRUCTION COST ESTIMATE

Segment or Project Description

Estimate Date: September 17, 1998

Freeway:	Price
MAG Segment:	PR14
Project:	Guadalupe Road - Warner Road
TRACS No:	101L MA 056 H3876 01C
ID No:	101L14BRC
Segment Designer(s):	HDR
Estimate Level:	Contractor's Bid
Const. Level:	Ultimate
Status:	Life Cycle Program

Scope of Work

Limits:	South of Guadalupe Road to south of Warner Road	
Fwy. Environment:	Residential, industrial, and strip commercial	
Fwy. Type:	Depressed freeway with frontage roads	
No. of Lanes:	6 plus auxiliary lanes	
Pavement Type:	PCCP (Mainline and Ramps), AC (Frontage Roads)	
Median Type:	46' Open	
Interchanges:	Full	Half
	Elliot Road	N/A
	Warner Road	
Earthwork:	2,137,000 C.Y. Waste	
Bridges:	Western Canal Irrig. Structure U.P.	Conference Drive U.P.
	Western Canal Crossing U.P.	Warner Road T.I.U.P.
	Elliot Road T.I.U.P.	
Retaining/Sound Walls:	355,739 S.F.	
Utility Involvement:	Major (Some relocations are included in a separate utility segment)	
Traffic Control:	Major	
Drainage On-Site:	Complex for depressed section - combined with off-site system	
Drainage Off-Site:	Complex	
Pump Stations:	1	
Major Drainage Items:	Basin 'E' drainage excavation Complex on-site/off-site drainage system: interconnected detention basins, pump station, and pipe networks	

MAG SYSTEM CONSTRUCTION COST ESTIMATE

Segment or Project Description

Estimate Date: September 17, 1998

Freeway:	Price
ID No:	101L14BRC
Project:	Guadalupe Road - Warner Road

On-Site Drainage: Mainline gravity storm drain in corridor. Large diameter underground storage / storm drain at sump for Conference Drive pump station.

Off-Site Drainage: Large diameter offsite collector and pump station discharge lines.

Pump Station: Combined on-site and off-site pump station located at Conference Drive.

Structures: Western Canal Irr. U.P. - 5,563 s.f., \$87.94/s.f., 2 span, CIP conc. box girder, stub abut, drilled shafts, superstructure carries 84" dia. Pipe
 Western Canal Xing U.P. - 11,786 s.f., \$56.75/s.f., 2 span, CIP conc. box girder, stub abuts, drilled shafts
 Elliot Road T.I.U.P. - 35,415 s.f., \$34.28/s.f., 2 span, CIP conc box girder, stub abutments, drilled shafts
 Conference Drive U.P. - 11,786 s.f., \$57.74/s.f., 2 span, CIP conc. box girder, stub abuts, drilled shafts
 Warner Road T.I.U.P. - 30,338 s.f., \$54.44/s.f., 2 span, CIP conc. box girder, stub abuts, drilled shafts

Lighting: Full lighting concept.

Signals: Includes the cost of FMS conduit, pull boxes, and detector loops.

Utilities: City of Chandler and a portion of City of Tempe water and sewer lines are included in this segment.
 See 101L14BUC for other relocations.

Landscaping: Included in separate segment.

Other: Final EIS July '93; the entire intersection at Warner Road is included in this segment.

CUAL

Estimate History:	Contractor =	\$70,139,704	
	Department =	\$69,078,851	
	FY '99 Program =	\$63,112,000	
	Recapitulation		
	ADOT funds =	\$64,498,562	City of Chandler funds = \$651,513
	City of Chandler SIB funding =	\$4,865,255	Utility Company funds = \$124,374

APPENDIX D – PROJECT ESTIMATE TRACKING SHEET

**ARIZONA DEPARTMENT OF TRANSPORTATION
VALLEY PROJECT MANAGEMENT
CONSTRUCTION COST ESTIMATE SUMMARY**

ROUTE:		PROJECT DESCRIPTION:																												
SEGMENT:	TRACS NO.:	DATE:	ESTIMATE SUMMARY LEVEL: Level 1				ESTIMATE LEVEL: Level 2				ESTIMATE LEVEL: Level 3 (60%)				ESTIMATE LEVEL: Level 3 (95%)				ESTIMATE LEVEL: Level 3 (100%)				ESTIMATE LEVEL: Level 4				ESTIMATE LEVEL: Level 5			
LENGTH:	TRACS NO.:	DATE:	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST				
ITEM	MAJOR ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST	QUANTITY	UNIT COST	TOTAL COST				
200	EARTHWORK				0			0			0			0			0			0			0			0				
	CLEARING & REMOVALS	L.SUM			0			0			0			0			0			0			0			0				
	ROADWAY EXCAVATION	CU.YD.			0			0			0			0			0			0			0			0				
	DRAINAGE EXCAVATION	CU.YD.			0			0			0			0			0			0			0			0				
	BORROW	CU.YD.			0			0			0			0			0			0			0			0				
	FURNISH WATER SUPPLY	MILE			0			0			0			0			0			0			0			0				
	TOTAL ITEM 200				0			0			0			0			0			0			0			0				
300	BASE AND SURFACE TREATMENT				0			0			0			0			0			0			0			0				
& 400	CONCRETE PAVEMENT	SQ.YD.			0			0			0			0			0			0			0			0				
	ASPHALT PAVEMENT	SQ.YD.			0			0			0			0			0			0			0			0				
	TOTAL ITEM 300 & 400				0			0			0			0			0			0			0			0				
500	DRAINAGE				0			0			0			0			0			0			0			0				
	ON-SITE DRAINAGE	MILE			0			0			0			0			0			0			0			0				
	OFF-SITE DRAINAGE	MILE			0			0			0			0			0			0			0			0				
	PUMP STATION	EACH			0			0			0			0			0			0			0			0				
	OTHER:	L.SUM			0			0			0			0			0			0			0			0				
	TOTAL ITEM 500				0			0			0			0			0			0			0			0				
600	STRUCTURES				0			0			0			0			0			0			0			0				
	NUMBER OF STRUCTURES:	SQ.FT.			0			0			0			0			0			0			0			0				
	OTHER:	EACH			0			0			0			0			0			0			0			0				
	TOTAL ITEM 600				0			0			0			0			0			0			0			0				
700	TRAFFIC ENGINEERING				0			0			0			0			0			0			0			0				
	TRAFFIC CONTROL	L.SUM			0			0			0			0			0			0			0			0				
	SIGNING & PAVEMENT MARKING	MILE			0			0			0			0			0			0			0			0				
	LIGHTING	MILE			0			0			0			0			0			0			0			0				
	TRAFFIC SIGNAL	EACH			0			0			0			0			0			0			0			0				
	FREEWAY MANAGEMENT SYSTEM	MILE			0			0			0			0			0			0			0			0				
	TOTAL ITEM 700				0			0			0			0			0			0			0			0				
800	ROADSIDE DEVELOPMENT				0			0			0			0			0			0			0			0				
	LANDSCAPING	MILE			0			0			0			0			0			0			0			0				
	TOPSOIL	CU.YD.			0			0			0			0			0			0			0			0				
	EROSION CONTROL	MILE			0			0			0			0			0			0			0			0				
	UTILITY RELOCATION	MILE			0			0			0			0			0			0			0			0				
	TOTAL ITEM 800				0			0			0			0			0			0			0			0				
900	INCIDENTALS				0			0			0			0			0			0			0			0				
	MOBILIZATION	L.SUM			0			0			0			0			0			0			0			0				
	RETAINING WALLS	SQ.FT.			0			0			0			0			0			0			0			0				
	SOUND WALLS	SQ.FT.			0			0			0			0			0			0			0			0				
	ROADWAY APPURTENANCES	MILE			0			0			0			0			0			0			0			0				
	CONTRACTOR QUALITY CONTROL	L.SUM			0			0			0			0			0			0			0			0				
	CONSTRUCTION SURVEYING	L.SUM			0			0			0			0			0			0			0			0				
	TOTAL ITEM 900				0			0			0			0			0			0			0			0				
	SUBTOTAL A (ITEMS 200 THRU 900)				\$0			\$0			\$0			\$0			\$0			\$0			\$0			\$0				
	UNIDENTIFIED ITEMS (X% OF SUBTOTAL A)				0			0			0			0			0			0			0			0				
	SUBTOTAL B (SUBTOTAL A + UNIDENTIFIED ITEMS)				\$0			\$0			\$0			\$0			\$0			\$0			\$0			\$0				
	CONSTRUCTION ENGINEERING & CONTINGENCIES (9% OF SUBTOTAL B)				0			0			0			0			0			0			0			0				
	TOTAL ESTIMATED CONSTRUCTION COST				\$0			\$0			\$0			\$0			\$0			\$0			\$0			\$0				
	OTHER PROJECT COSTS				0			0			0			0			0			0			0			0				
	DPS TRAFFIC CONTROL				\$0			\$0			\$0			\$0			\$0			\$0			\$0			\$0				
	PRIOR RIGHT UTILITY RELOCATIONS AND SERVICE AGREEMENTS				0			0			0			0			0			0			0			0				
	JOINT PROJECT AGREEMENT ITEMS				0			0			0			0			0			0			0			0				
	BID ITEM PRICE ESCALATION				0			0			0			0			0			0			0			0				
	CONTRACTOR INCENTIVES				0			0			0			0			0			0			0			0				
	SUBTOTAL OTHER PROJECT COSTS (*)				\$0			\$0			\$0			\$0			\$0			\$0			\$0			\$0				
	CONSTRUCTION CONTINGENCIES (5% OR SUBTOTAL B)				0			0			0			0			0			0			0			0				
	TOTAL ESTIMATED PROJECT COST (*)				\$0			\$0			\$0			\$0			\$0			\$0			\$0			\$0				

(*) Total includes costs associated with other funding sources.

APPENDIX E – EXAMPLE PROJECT CHRONOLOGY SHEET

SR51: Bell Road – Pima Freeway H5385 01C

- SR 510 Location/Design Concept Report March 1988
- SR 51 General Plan August 1989
- Revised June 1995
- General Consultant Selection (DMJM) May 1999
- Stage II (30%) Submittal by GC January 31 2000
- § 30% Cost Estimate:
- Bell Road-Union Hills \$29,964,597
- Union Hills- Pima Frwy \$15,175,645
- \$45, 140,242**
- Bridge Widening for BMP \$14M
- (NW & Lowflow/CAP)
- § VA Study February 8-10, 2000
- § Response to VA Recommendations March 21, 2000
- § 30% Comment Resolution March 22, 2000
- SOQ's received for Design Contract 00-70 February 10, 2000
- NTP Design for Contract 00-70 (Aztec) March 20, 2000
- Stage III (60%) Submittal October 17, 2000
- § 60% Cost Estimate **\$46,674,509**
- § 60% Comment Resolution November 14, 2000
- Stage IV (95%) Submittal February 20, 2001
- § 95% Cost Estimate **\$47,458,582**
- § 95% Comment Resolution March 19, 2001
- Program Change Request March 22, 2001
to combine Bell-Union Hills and Union Hills-Pima
and establish a new Program project cost estimate
for Bell-Pima as **\$48M**
- PS&E (100%) May 1, 2001
- § Engineer's Estimate **\$47,873,472**
- Project BID Advertisement (450 working days) May 4, 2001
- Addenda #1 (relocated Grovers; added TC on 101L) June 6, 2001
- § Updated Engineer's Estimate **\$48,278,214**
- Addenda #2 (minor revisions) June 12, 2001
- Project BID Opening June 15, 2001
- § Contractor's Bid (Pulice) **\$38,630,468**
- § Agreement Estimate **\$45,360,563**
- BOARD Award June 29, 2001
- Project Team Partnering Workshop August 14, 2001
- Construction Start September 4, 2001
- Dedication Ceremony May 24, 2001
- Construction "Substantial" Completion (426 working days) May 31, 2003