SR 303L

INDIAN SCHOOL ROAD TO CLEARVIEW BOULEVARD

Initial Design Concept Report

WO #69016 Volume 1

Prepared for

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION

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TABLE OF CONTENTS

Page

VOLUME I

LIST OF ACRONYMS VII

EXECUTIVE SUMMARY IX

1.0 INTRODUCTION 1-1
- 1.1 PURPOSE OF THE PROJECT 1-1
- 1.2 HISTORY OF CORRIDOR ACTIONS 1-4
- 1.3 CURRENT RELATED PROJECTS 1-7
- 1.4 SUPPORTING DOCUMENTS 1-8

2.0 CHARACTERISTICS OF THE EXISTING CORRIDOR 2-1
- 2.1 ROADWAY CHARACTERISTICS 2-1
  - 2.1.1 Design Speed 2-1
  - 2.1.2 Lane and Shoulder Width 2-1
  - 2.1.3 Vertical Alignment 2-2
  - 2.1.4 Horizontal Alignment 2-2
  - 2.1.5 Grades 2-2
  - 2.1.6 Cross Slopes 2-2
  - 2.1.7 Vertical Clearance and Bridge Structures 2-2
- 2.2 RIGHT-OF-WAY 2-3
- 2.3 PAVEMENT CONDITIONS 2-3
- 2.4 LAND USE PATTERNS 2-5
- 2.5 EXISTING TRAFFIC 2-8
- 2.6 ENVIRONMENTAL OVERVIEW 2-10
- 2.7 UTILITIES 2-12
- 2.8 IRRIGATION AND WELLS 2-13
  - 2.8.1 Maricopa Water District 2-14
  - 2.8.2 Adaman Water Company 2-15
- 2.9 RAILROAD 2-17
- 2.10 SUBSIDENCE AND EARTH FISSURES 2-17
  - 2.10.1 Future Activities 2-21
- 2.11 DRAINAGE 2-21

3.0 PURPOSE AND NEED 3-1
3.1 GROWTH AND DEVELOPMENT FORECASTS 3-1
3.2 TRAFFIC FORECASTS AND LEVELS OF SERVICE 3-5
3.2.1 Forecasts 3-5
3.2.2 Roadway Capacity 3-13
3.2.3 Travel Speed Analysis 3-14
3.2.4 Accident Rates 3-17
3.2.5 Summary of Traffic Analyses 3-18
3.3 PURPOSE AND NEED STATEMENT 3-21

4.0 ALTERNATIVES SELECTION 4-1
4.1 CORRIDOR, ALIGNMENT AND ROADWAY TYPE DETERMINATION .. 4-1
4.1.1 Corridor Alternatives 4-1
4.1.2 Alignment Alternatives 4-2
4.1.3 Facility Type 4-3
4.2 ULTIMATE ROADWAY ALTERNATIVES 4-4
4.3 INTERIM ROADWAY ALTERNATIVES 4-5
4.3.1 Interim A 4-5
4.3.2 Interim B 4-13

5.0 MAJOR DESIGN FEATURES OF RECOMMENDED INTERIM AND ULTIMATE CONCEPTS 5-1
5.1 DESIGN CRITERIA AND ROADWAY ELEMENTS 5-1
5.1.1 Ultimate Condition 5-1
5.1.2 Interim A 5-4
5.1.3 Interim B 5-5
5.2 STRUCTURES 5-5
5.3 EARTHWORK 5-7
5.4 OFF-SITE DRAINAGE 5-9
5.4.1 Off-Site Drainage Design Criteria 5-10
5.4.2 White Tanks ADMP 5-11
5.4.3 Recommended Off-Site Drainage 5-13
5.5 ROADWAY DRAINAGE 5-14
5.6 STREETS AND INTERSECTIONS 5-15
5.6.1 Ultimate Condition 5-15
5.6.2 Interim A and Interim B 5-16
5.7 INTERCHANGES 5-16

5.8 TRAFFIC CONTROL AND CONSTRUCTIBILITY 5-16
5.8.1 Construct Ultimate Freeway Without Interim 5-18
5.8.2 Construct Interim A 5-19
5.8.3 Construct Interim B..... 5-19
5.8.4 Upgrade Interim A to Ultimate Freeway 5-19
5.8.5 Upgrade Interim B to Ultimate Freeway 5-20
5.9 DESIGN TRAFFIC DATA 5-20
5.10 PAVEMENT DESIGN 5-22
5.11 UTILITIES..... 5-25
5.12 IRRIGATION 5-26
5.13 WELLS 5-27
5.13.1 Replacement of Existing Wells..... 5-27
5.13.2 Abandonment of Existing Wells..... 5-29
5.13.3 Permitting of Replacement Wells..... 5-29
5.13.4 Siting and Design of Replacement Wells Based on Well Yield..... 5-30
5.13.5 Siting and Design of Replacement Wells Based on Water Quality..... 5-31
5.14 RAILROAD..... 5-33
5.15 RIGHT-OF-WAY 5-33
5.16 GUIDE SIGNS, SIGNALS, AND LIGHTING..... 5-34
5.17 INTELLIGENT TRANSPORTATION SYSTEMS (ITS) 5-35
5.18 LANDSCAPING AND AESTHETIC TREATMENT..... 5-36
5.19 DESIGN EXCEPTIONS 5-36

6.0 COST ESTIMATE FOR INTERIM AND ULTIMATE CONCEPTS 6-1

7.0 SOCIAL, ECONOMIC, AND ENVIRONMENTAL CONCERNS 7-1
7.1 LAND USE AND OWNERSHIP..... 7-1
7.2 MINORITY CONSIDERATIONS..... 7-1
7.2.1 Demographic Characteristics..... 7-1
7.2.2 Impacts Associated with Minority or Low-Income Populations 7-2
7.3 SOCIAL IMPACTS..... 7-2
7.4 ECONOMICS 7-2
7.4.1 Economic Base..... 7-3
7.4.2 Employment..... 7-3
7.4.3 Growth and Development..... 7-3
7.4.4 Impacts on Economic Sectors..... 7-4
7.5 HAZARDOUS MATERIALS 7-4
7.5.1 Potential Impacts Related to Hazardous Materials 7-5
7.6 AIR QUALITY..... 7-5

7.7 NOISE 7-6
7.7.1 Noise Criteria 7-6
7.7.2 Existing Noise Levels 7-7
7.7.3 Future Noise Levels 7-8
7.8 VISUAL QUALITY 7-8
7.8.1 Landscape Character/Visual Quality 7-9
7.8.2 Visual Quality Impacts 7-9
7.9 WATER RESOURCES 7-10
7.9.1 Water Quality 7-10
7.9.2 Flooding 7-11
7.9.3 Wetlands 7-11
7.9.4 Groundwater 7-12
7.9.5 Water Resource Impacts 7-13
7.10 BIOTIC COMMUNITIES 7-14
7.10.1 Wildlife 7-14
7.10.2 Endangered Species 7-15
7.10.3 Invasive Species 7-15
7.10.4 Biotic Community Impacts 7-15
7.11 CULTURAL RESOURCES 7-16
7.11.1 Research Results 7-16
7.11.2 Cultural Resource Impacts 7-16
7.12 SECTION 4(F) / SECTION 6(F) EVALUATION 7-17
7.13 PRIME, UNIQUE AND IMPORTANT FARMLANDS 7-17
7.14 SECONDARY AND CUMULATIVE IMPACTS ASSESSMENT 7-18

8.0 PUBLIC INVOLVEMENT DOCUMENTATION 8-1

9.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS 9-1
9.1 FINDINGS 9-1
9.1.1 Programmed Related Projects 9-1
9.1.2 Funding 9-2
9.1.3 Right-of-Way Preservation 9-2
9.2 CONCLUSIONS 9-3
9.2.1 Consequences of the No Build Alternative 9-3
9.2.2 Interim Roadway Alternatives 9-4
9.2.3 Summary Conclusions 9-6
9.3 RECOMMENDATIONS 9-7

LIST OF TABLES

2.1 Utility Owners and Facility Locations
2.2 Wells Located Within Existing Right-of-Way
3.1 Land Use Parameter Comparisons
3.2 Ultimate Build-Out Dwelling Units and Employment
3.3 Comparison of Design Year Forecast to Build-Out Data
3.4 Future Average Daily Traffic Volumes by Segment
3.5 Design Values
3.6 Estimated Capacities (LOS C)
3.7 Segment Operating Speeds (mph Peak Hour/Peak Direction)
3.8 Speed Differential from Free-Flow (Peak Hour/Peak Direction)
5.1 Design Criteria Summary – SR 303L Ultimate Mainline
5.2 Design Criteria Summary – Ramps
5.3 Design Criteria Summary – Cross Streets
5.4 Description of Structures
5.5 Earthwork Summary
5.6 Design Traffic Data, SR 303L
5.7 Design Traffic Data, East/West Arterials
5.8 Design Traffic Loads
5.9 Future Planned Utilities
5.10 Cost Estimate for the Replacement of Irrigation Wells
5.11 Summary of Right-of-Way Status and Needs
6.1 Ultimate, SR 303L Preliminary Cost Estimate
6.2 Interim A – PCC, SR 303L Preliminary Cost Estimate
6.3 Interim A to Ultimate – PCC, SR 303L Preliminary Cost Estimate
6.4 Interim A – Asphalt, SR 303L Preliminary Cost Estimate
6.5 Interim A to Ultimate – Asphalt, SR 303L Preliminary Cost Estimate
6.6 Interim B, SR 303L Preliminary Cost Estimate
6.7 Interim B to Ultimate, SR 303L Preliminary Cost Estimate
7.1 Noise Abatement Criteria (NAC), Hourly A-Weighted Sound Level – Decibels (dBA)
7.2 Noise Measurement Locations and Existing Noise Levels
7.3 Summary of Potential Secondary and Cumulative Impacts
9.1 Comparison Between Interim A and Interim B
9.2 Implementation Steps to Provide Four-Lane Freeway by 2015

LIST OF FIGURES

1.1 Location Map
1.2 Project Vicinity Map
2.1 Existing Land Use
2.2 Proposed Developments
2.3 Inventory of Existing Traffic Data
2.4 Irrigation Districts Adjacent to SR 303L
2.5 Land Subsidence in Part of the Western Salt River Valley, 1957-1991
2.6 Land Subsidence Along Loop 303
3.1 Planned Land Use
3.2 2010 No-Build – Average Daily Traffic Volumes
3.3 Design Year No-Build – Average Daily Traffic Volumes
3.4 2010 Interim – Average Daily Traffic Volumes
3.5 Design Year Interim – Average Daily Traffic Volumes
3.6 Design Year Freeway – Average Daily Traffic Volumes
3.7 Projected Travel Speeds on SR 303L by Type of Roadway
3.8 Projected Volume Versus Design Capacities of Various Types of Roadways
4.1 Interim A: Concept 1 Typical Section
4.2 Interim A: Concept 2 Typical Section
4.3 Interim A: Concept 3 Typical Section (Along Auxiliary Lane)
4.4 Interim A: Concept 3 Typical Section (Along Ramps)
4.5 Overview of Interim A
5.1 Ultimate SR 303L and Ramp Typical Sections
5.2 Ultimate Cross Street Typical Sections
5.3 Location of Interim B in Relation to Ultimate
7.1 FEMA Floodplains

APPENDIX

A History
B Resource Documents
C Public Meeting Exhibits

LIST OF ACRONYMS

ACOE	U.S. Army Corps of Engineers
ADMP	Area Drainage Master Plan
ADOT	Arizona Department of Transportation
AGFD	Arizona Game and Fish Department
AASHTO	American Association of State Highway and Transportation Officials
AWC	Adaman Water Company
BMP	Best Management Practices
BNSF	Burlington Northern Santa Fe Railroad
CAAA	Clean Air Act Amendments
CAP	Central Arizona Project
cfs	cubic feet per second
CO	carbon monoxide
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DES	Arizona Department of Economic Security
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
FCDMC	Flood Control District of Maricopa County
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMS	Freeway Management System
gpm	gallons per minute
IDCR	Initial Design Concept Report
ISA	Initial Site Assessment
ITS	Intelligent Transportation System
kip	1,000 pounds
LWCFA	Land and Water Conservation Fund Act
L_{eq}	equivalent noise level
Luke AFB	Luke Air Force Base

MAG	Maricopa Association of Governments
MCDOT	Maricopa County Department of Transportation
mph	miles per hour
MWD	Maricopa Water District
NAAQS	national ambient air quality standards
NAC	noise abatement criteria
NAP	*Noise Abatement Policy for Federal Aid Projects*
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
PAMA	Phoenix Active Management Area
ppm	parts per million
PSI	Preliminary Site Investigation
RAZ	regional analysis zones
SPUI	single point urban interchange
SWPPP	Storm Water Pollution Prevention Plan
TIP	Transportation Improvement Program
USDOT	U.S. Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geologic Survey
vpd	vehicles per day
WSRV	West Salt River Valley

EXECUTIVE SUMMARY

SR 303L, also known as the Estrella Freeway or Parkway, is a planned regional highway from I-10 to US 60. The overall system plan includes the potential to extend the route southward from I-10 to MC 85 and perhaps further south and also to extend the route northeastward to I-17.

This Design Concept Report (DCR) is prepared in conjunction with an Environmental Assessment (EA) that covers the whole segment from I-10 to US 60. This DCR only covers an 11-mile section from Indian School Road to Clearview Boulevard (located near the Union Hills section line in the Sun City Grand area of the City of Surprise). An earlier study project established the proposed highway concept between Clearview Boulevard and US 60. A currently ongoing project by MCDOT is establishing the concept between I-10 and Indian School Road. These three efforts together define the whole project to be included in the EA.

Volumes 1 and 2 of this Initial DCR are provided for review and comment. Refinements will be made following a public hearing, and the final DCR will be prepared concurrent with the Final EA. This Volume 1 contains the full narrative DCR. Volume 2 contains the design concept drawings, typical sections, and right-of-way status and requirements.

Existing Conditions (Refer to Chapter 2)

In the early 1990s, the Arizona Department of Transportation (ADOT) completed alignment studies and environmental documentation, obtained dedication of much of the right-of-way needed, and constructed a two-lane highway along the chosen corridor. Through an intergovernmental agreement, the Maricopa County Department of Transportation (MCDOT) is currently maintaining this existing roadway and is constructing the interim connection to US 60 and grade separation. In 2002, MCDOT is programmed to widen and improve three intersections, construct a new four-lane interim roadway from Indian School Road to McDowell Road, and extend the roadway eastward to El Mirage Road.

Urban development is rapidly occurring in the City of Surprise at the north end of the corridor and in the City of Goodyear at the south end of the corridor. There are active development plans in the corridor as far south as Peoria Avenue east of the corridor and between Peoria and Northern avenues west of the corridor. The middle portion of the corridor is largely in agricultural uses. The noise zone from Luke Air Force Base (Luke AFB) restricts much of the middle portion of the corridor to low-density or non-residential uses.

Traffic volumes on the two-lane road are approximately 5,000 vehicles per day with almost 25% of the vehicles classified as trucks. Even with the ongoing interim road construction and the termination of the interim roadway at Thomas, the roadway is serving as a connector between I-10 and US 60. The accident rate is higher than normal due to the presence of 13 at-grade intersections between I-10 and US 60. Bell Road is the only signalized intersection. All other intersections are stop-signed for the cross street.

Future Conditions (Refer to Chapter 3)

The existing population in the corridor area is expected to increase from 35,000 in 2000 to 109,000 in 2010 and 149,000 in 2025. The area is capable of housing a population of 250,000 to 300,000 persons based on typical housing densities.

Traffic growth on SR 303L is expected to be dramatic over the next several years and exceed 30,000 vehicles per day by 2010 if a four-lane roadway is provided. By 2025, the forecast for a fully access controlled, grade separated highway is 76,000 vehicles per day.

Project Purpose and Need (Refer to Chapter 3)

SR 303L is planned as part of the regional freeway/expressway system. It is strategically located 9 miles west of SR 101L and 14 miles east of Sun Valley Parkway. Through location and alignment studies conducted by ADOT over 10 years ago, the corridor was selected. There is no other logical place for this highway between SR 101L and Sun Valley Parkway.

The primary purpose of the proposed project is to provide an appropriate link between I-10 and US 60. I-10 serves the Phoenix metropolitan area, southern Arizona and the southern tier of states across the nation. US 60 serves as an extension of US 93 which ends in Wickenburg. The US 60/US 93 route links the Phoenix metropolitan area to Las Vegas and I-15.

The project will also:

- Provide a link in the planned freeway/expressway system of the metropolitan area
- Provide a regional route to serve the growing area between the White Tank Mountains and the Agua Fria River
- Provide a safer route
- Accommodate efficient expansion of the metropolitan area

Proposed Ultimate Roadway (Refer to Chapters 4 and 5)

The only type of roadway that will fully meet the purpose and need for this project is a fully access controlled, grade separated highway. Without grade separations, each of the 13 existing intersections with arterial cross streets will eventually have to be signalized. When these signals are installed, speeds on SR 303L will drop from over 60 mph today to approximately 40 mph even if it is widened to four lanes. As a result, the route would no longer offer the free-flow conditions that are needed to serve the linkage between I-10 and US 60 and would not provide the regional route needed as part of the planned freeway expressway system.

On this basis, a six-lane freeway designed to ADOT standards is proposed for the corridor. The roadway would be near ground level from Indian School Road to a point north of Northern Avenue. The roadway would go over Olive Avenue and the railroad spur and then return to ground level to a point south of Greenway Road. At Greenway Road, the proposed road would be approximately 10 feet below ground level with Greenway Road elevated about 10 feet above ground level. The proposed roadway would be fully depressed under Bell Road and would continue below ground level to meet the newly constructed interim roadway near Clearview Boulevard. Portland Cement Concrete Pavement is recommended for the mainline roadway.

All of the cross streets except Olive Avenue and Bell Road would be elevated over the proposed freeway. Interchanges are planned at each mile arterial. The elevation of the cross streets over SR 303L requires that additional right-of-way be obtained along those cross streets to accommodate the embankment needed to elevate the cross street.

Construction of the ultimate roadway is dependent upon a dedicated funding source such as extension of the half-cent sales tax which currently ends at the end of 2005 or new funding sources such as recommended by the Governor's Vision 21 Task Force.

Proposed Interim Roadway (Refer to Chapters 4 and 5)

Due to funding limitations, the ultimate roadway is not expected to be constructed for 10 years or more. The existing two-lane road will be over-capacity by 2005. Accordingly, alternatives for providing a four-lane at-grade roadway were identified and evaluated. Two alternatives are presented in this DCR, and Interim A is recommended.

Interim A would construct a new four-lane divided roadway that would be part of the ultimate roadway from Indian School Road to north of Northern Avenue. The cross streets would be temporarily realigned as they approach SR 303L to a location near the right-of-way line that is needed to accommodate the embankment for the future cross street overpass. Interim at-grade

intersections would be created between the realigned cross street and SR 303L. These intersections would be signalized when warranted. It is recommended that this interim roadway be constructed with permanent concrete pavement on all mainline traffic lanes.

North of Northern Avenue, the existing SR 303L would be used for one direction of travel and a new two-lane roadway would be constructed for the other direction of travel. This new roadway would be part of the ultimate roadway and would follow the future auxiliary lane and ramp alignment. The new construction would serve the southbound traffic from Northern Avenue to Cactus Road and the northbound traffic from Cactus Road to Clearview Boulevard. All intersections would be at-grade as indicated above.

The Interim B Alternative would widen the existing SR 303L roadway to four lanes with additional turn lanes at intersections. All intersections would be at grade and signalized when warranted. This alternative would be less costly for initial construction but it would increase the ultimate cost of the project. The interim roadway would not be divided so it would be less safe, and construction of Interim B would greatly complicate construction of the ultimate roadway. See Table 9.1 for a summary comparison of Interim A and B alternatives.

Funding for the interim roadway is not currently programmed by either MCDOT or ADOT.

Drainage System (Refer to Chapter 5)

The Flood Control District of Maricopa County (FCDMC) is updating an existing Area Drainage Master Plan (ADMP) for the area east of the White Tank Mountains that includes the SR 303L corridor. The concept for flood control of this area includes construction of a drainageway along the west side of SR 303L, detention basins at six locations (three of which lie outside the limits of this portion of SR 303L), and outfalls to carry storm water from the detention basins to the Agua Fria and Gila/Salt rivers. The ADMP concept is based on protection for a 100-year storm frequency and would provide a wide, grass bottom channel adjacent to SR 303L. This channel would require more right-of-way than has currently been set aside for the roadway.

Funding and maintenance responsibilities for the ADMP have not been identified. Accordingly, a drainage system concept that meets ADOT highway requirements was developed as part of this DCR. This system is similar in concept to the ADMP except that it would handle a 50-year storm instead of a 100-year storm and the channel parallel to SR 303L would be more narrow and would be concrete lined to reduce construction cost, right-of-way requirements and maintenance cost.

Ideally, funding partnerships will be developed to construct the ADMP concurrent with the Interim A project. Efforts should continue among the agencies to seek out partnerships and funding sources. If such partnerships are not formed in a timely manner, the drainage system as presented in this Initial DCR would serve the needs of the roadway project.

Earthwork (Refer to Chapter 5)

Construction of Interim A along with the drainage system (ADOT standard) will produce approximately 2 million cubic yards of excess material that can be used in construction of the ultimate roadway. This material may be placed for the cross street overpasses within the right-of-way to be obtained for these overpasses. When the ultimate roadway is built at a later date, an additional 2.5 million cubic yards of borrow will be needed to complete the project.

If the FCDMC ADMP as described above is built instead of the ADOT standard drainage system, sufficient material will be created to complete the ultimate roadway without any borrow. If this system is built concurrent with Interim A, some of the material will have to be stockpiled for use on the ultimate roadway mainline during a later phase of construction.

Right-of-Way (Refer to Volume 2)

Much of the right-of-way for SR 303L has been preserved through dedications by property owners and some acquisitions. The most important action for this project is to secure all of the right-of-way needed for the ultimate roadway and the drainage system. The additional right-of-way needs are identified in Volume 2, Section 4.

Project Cost (Refer to Chapter 6)

The ultimate roadway is estimated to cost $244.8 million in 2001 prices. Interim A is estimated to cost $66.5 million including purchase of all the right-of-way for the ultimate roadway, construction of the ultimate drainage system, and relocation of all the irrigation wells and systems. Interim B is estimated to cost $14.8 million with no right-of-way, no drainage system, and no well relocation. Since none of Interim B can be used for the ultimate roadway, the total cost of providing the ultimate project is estimated to be $30 million more if Interim B is constructed instead of Interim A.

Preliminary Environmental Impacts (Refer to Chapter 7)

An EA is being prepared. When this Initial DCR was printed, the EA was basically on hold waiting for others to complete the concept design of the section of the project between I-10 and

Indian School Road. The draft EA will be completed when sufficient information is available for that southern portion of the roadway.

The full array of environmental factors has been evaluated for the corridor, and the results are included in Chapter 7. No notable environmental impacts are expected. Noise from traffic is an issue near existing residential development. A mitigation plan is being prepared.

Public Involvement (Refer to Chapter 8)

Public Meetings were held for the project on June 19, 2001 and on November 6, 2001. Both meetings were very well attended. There have been numerous contacts with individual property owners and interested citizens. A public hearing will be held when the Draft EA is available.

Action Items (Refer to Chapter 9)

- Request revision to the MAG Long Range Transportation Plan to reflect SR 303L as a six-lane freeway from I-10 to US 60.
- Complete the EA and obtain a Finding of No Significant Impact (FONSI).
- Secure all right-of-way needed for the ultimate roadway including the drainage system.
- Continue to improve existing SR 303L to meet current traffic volume and safety needs.
- Work with other governmental units to adopt and implement a dedicated transportation funding program that includes SR 303L as a funded element.
- Continue to work with FCDMC and local governments to develop a financial partnership to implement the ADMP along with the highway.
- Evaluate the need for interim upgrades on Cotton Lane and Sarival Road to accommodate increasing traffic in the corridor and to accommodate diverted traffic during construction of SR 303L.

1.0 INTRODUCTION

This Initial Design Concept Report (IDCR) presents the preliminary concept for interim and ultimate roadway construction in the SR 303L corridor between Indian School Road and Clearview Boulevard, a distance of 12 miles. The Loop 303 corridor is located between Cotton Lane and Sarival Road on the far west side of the Phoenix Metropolitan Area. Refer to Figures 1.1 and 1.2. An environmental assessment (EA) is also being prepared and covers the proposed project from I-10 to US 60, a distance of almost 15 miles. The roadway concepts for the project north and south of the DCR limits were prepared by others. After reviews and comments have been incorporated, a Draft DCR and EA will be prepared and a public hearing held. The Final DCR and EA will be prepared that address the comments received and incorporate the mitigation measures that emerge from the EA process.

1.1 PURPOSE OF THE PROJECT

SR 303L exists as an interim two-lane rural highway with very limited access to adjacent properties and with at-grade intersections at each mile street crossing. The purpose of this project is to prepare a DCR and EA for SR 303L for the limits described above. The roadway has been classified by the Maricopa County Department of Transportation (MCDOT) as a "Rural Major Freeway" and is to be developed to the standards of the Arizona Department of Transportation (ADOT). The roadway will have full access control and will have grade separations or interchanges at each intersecting street. The project is being advanced by MCDOT under an intergovernmental agreement with ADOT dated July 31, 2000.

The objective of the DCR portion of the project is develop the concept for the ultimate roadway and to identify, evaluate, and select an alternative interim roadway configuration that meets the short-term needs and leads toward the development of the ultimate roadway concept. It is anticipated that traffic needs and financial resources will not permit the development of the ultimate roadway as the next stage of implementation. Accordingly, through the DCR/EA process, an interim road concept will be selected for construction.

The goals of the project are as follows:

- Develop a consensus for action among the affected agencies and the general public
- Preserve right-of-way for the ultimate roadway
- Promote compatible development on the surrounding properties

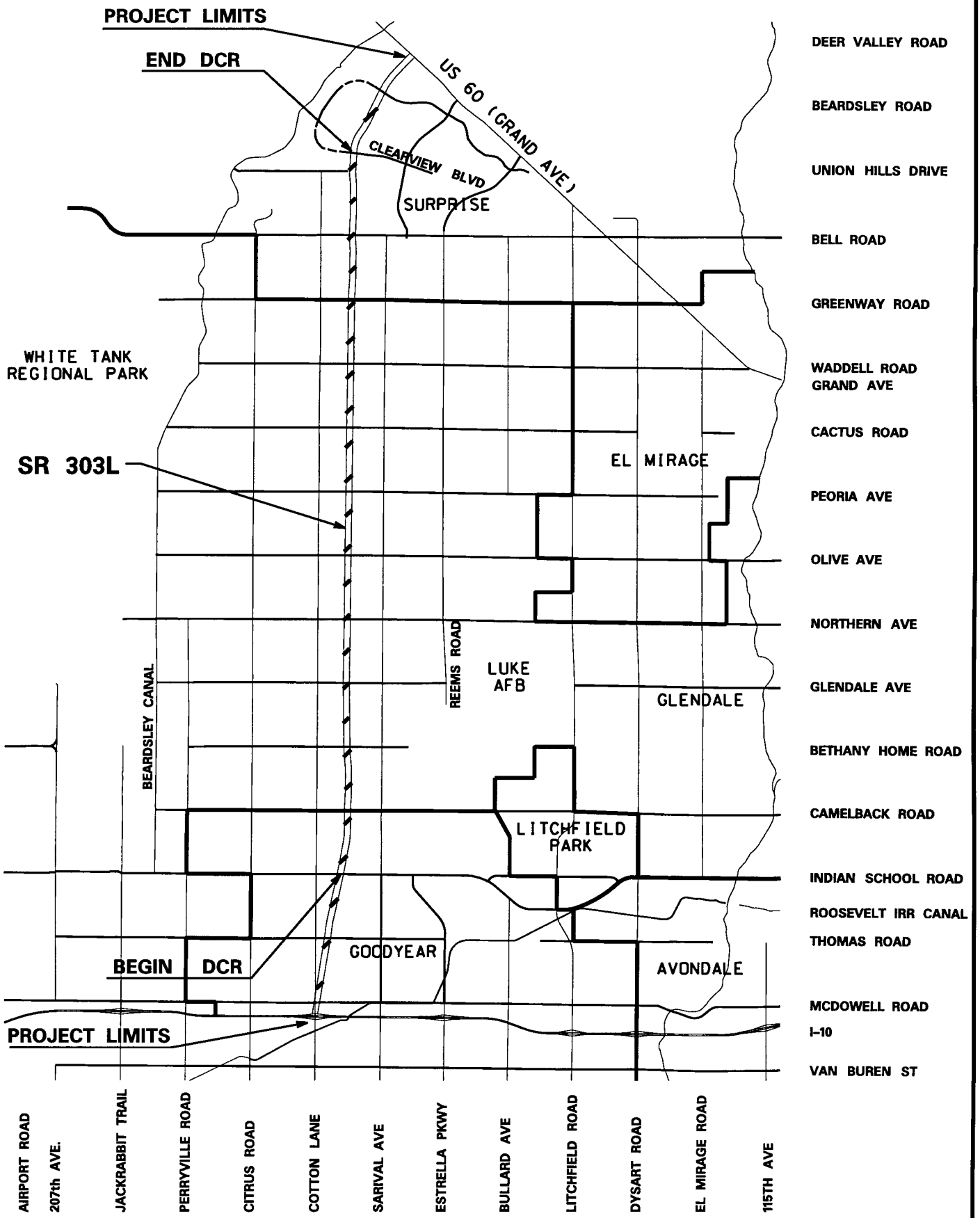


FIGURE 1.1 LOCATION MAP

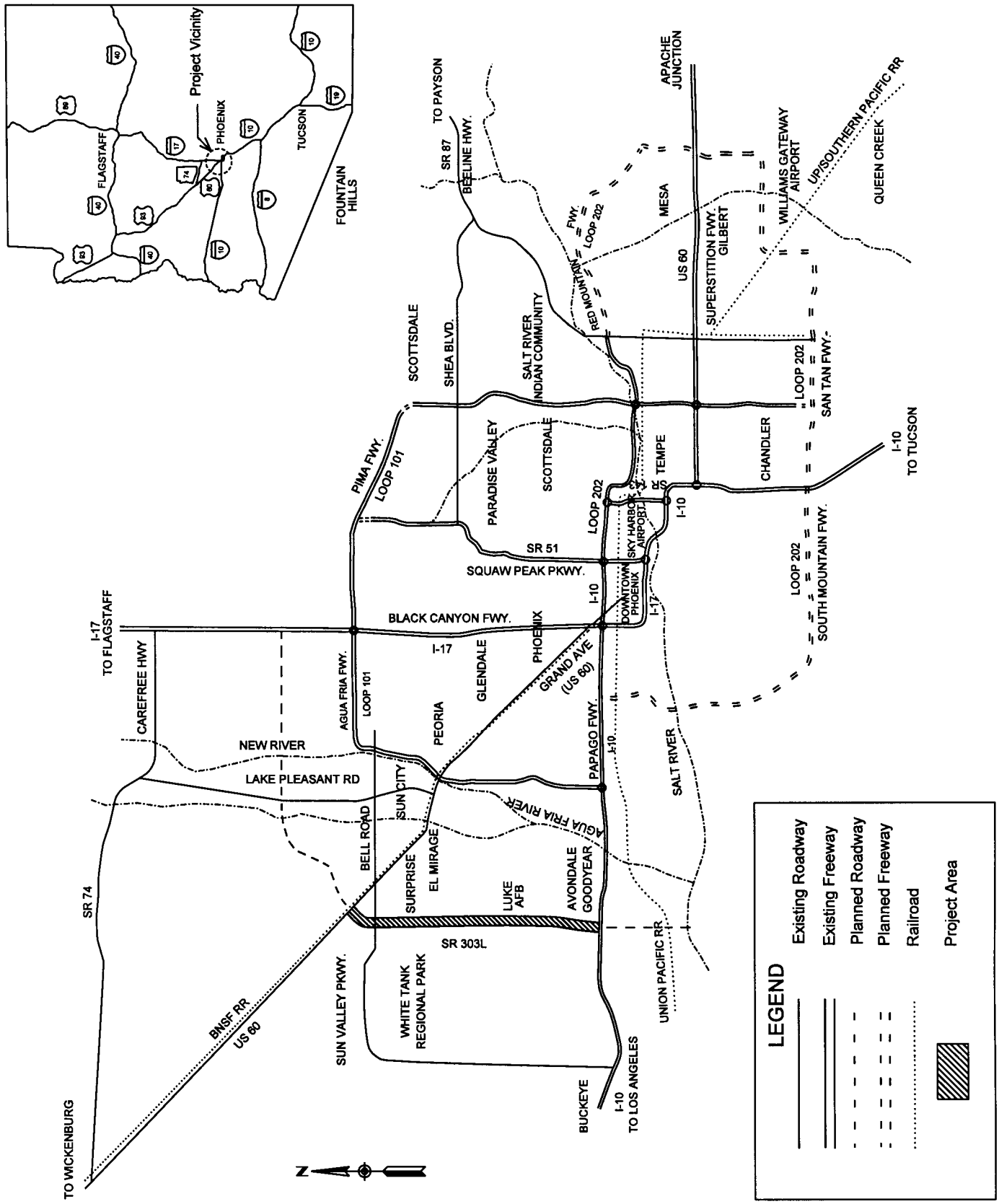


FIGURE 1.2 PROJECT VICINITY MAP

- Obtain environmental clearance for the interim and ultimate roadway
- Select an implementable interim roadway concept that meets the travel needs and the financial constraints

Within this IDCR, two interim roadway concepts are presented. The Interim A concept would build a new four-lane divided roadway for most of the project length. This new roadway would be designed and constructed to be a part of the ultimate roadway. At Olive Avenue, the southbound auxiliary lane and ramps of the ultimate roadway would be constructed to be used as half of the interim roadway. At Greenway Road and Bell Road, the northbound auxiliary lane and ramps would be constructed. At Cactus Road, new southbound through lanes would be constructed as part of the interim roadway. The existing roadway would serve for the opposing direction of travel from north of Bell Road to south of Olive Avenue. This interim roadway would provide a divided roadway with two lanes of travel in each direction and signalized intersections at each of the section-line cross streets when warranted.

The Interim B concept would widen the existing roadway to provide an undivided roadway with two lanes of travel in each direction. The intersections at each of the section-line cross streets would be signalized when warranted. This concept would have lower interim cost than Interim A and could be built on less right-of-way; however, the interim roadway would have to be completely removed to provide the ultimate freeway.

The ultimate roadway is proposed to be a fully access-controlled highway with grade separated interchanges at each section-line arterial crossing and designed and constructed to ADOT urban freeway standards. The ultimate roadway is planned to have six lanes with a 46-foot median that can accommodate two additional lanes when warranted.

1.2 HISTORY OF CORRIDOR ACTIONS

The roadway corridor now known as SR 303L was first envisioned in the *West Area Transportation Analyses* prepared in 1985 by Parsons Brinckerhoff for the Maricopa Association of Governments (MAG). The corridor was envisioned as a ring road that would link MC 85 and 1-10 to US 60 and eventually connect to I-17. It would serve as a bypass route as well as serve the area through which it passes when that area develops into urban uses. The need for the roadway was not foreseen during the 2005 planning period used in that study, but preservation of right-of-way was recommended. The roadway has undergone numerous steps through its 16-year history. Those steps are documented chronologically in Appendix A. The description below

provides a summary of the major actions that have led to the current status of the roadway at the start of the preparation of this DCR and EA.

SR 303L was incorporated into the MAG Long Range Transportation Plan in July 1985 for right-of-way protection as the Cotton Lane/Northwest Loop freeway corridor and was included in the Proposition 300 referendum in October 1985 that resulted in a 20-year one-half-cent sales tax to fund the urban freeway system in Maricopa County. ADOT included the route in the State Highway System as SR 517 and later named it the Estrella Freeway Loop 303. ADOT proceeded with location and environmental studies. The following three reports were produced and resulted in selection of a roadway location and general concept: *Draft Reconnaissance Report*, February 1987; *Estrella Freeway Final Environmental Assessment*, September 1991; and *Estrella Freeway Preliminary Location Plan and Profile*, November 1991 prepared by Cella Barr for ADOT.

The location selected within the limits of the current project begin at I-10 near the Cotton Lane section line. North of I-10, the alignment swings to the mid-section line between Cotton Lane and Sarival Road and continues in this position to the Union Hills Road section line. At that point, the alignment curves to intersect US 60 south of the Beardsley Canal. This selected alignment resulted from the corridor, alignment, and environmental documentation reports mentioned above. The alignment provides a starting point for the current study.

Based on the selected alignment, ADOT proceeded to obtain right-of-way dedications in exchange for advancing the construction of a two-lane highway in the corridor. The two-lane highway was constructed and opened to traffic in 1992. The extent of the dedicated right-of-way was documented in a report prepared for MCDOT in July 1999 entitled *Alignment Study Loop 303 McDowell Road to Clearview Boulevard.*

In 1994, due to a projected shortfall in the Proposition 300 revenue and the defeat of Proposition 400, which would have provided funding for SR 303, the Governor's Office working with ADOT recommended deleting the SR 303 from the freeway system. MAG therefore removed the corridor from the adopted Long Range Transportation Plan, and ADOT announced its intention to remove the roadway from the State Highway System. Maricopa County requested in June 1995 that the roadway not be removed from the highway system and volunteered to be "caretaker" of the corridor.

A concept plan was prepared for MCDOT by Gannett Fleming that developed plans for the portion of the corridor near US 60. These plans contain the partial cloverleaf interchange

between SR 303L and US 60 that is part of the proposed ultimate concept that provides a basis for the EA.

MCDOT commissioned the preparation of the *Estrella Corridor Study and Design Concept Report* prepared by Deleuw Cather which was completed in March 1998. This study primarily focused on the portion of SR 303L east of US 60. The report confirmed the use of the location per the earlier studies by ADOT but suggested that a six-lane, at-grade expressway using MCDOT Rural Principal Arterial standards and a design speed of 65 miles per hour (mph) be constructed between I-10 and US 60. This recommendation was based on the assumption that ADOT would remove the corridor from the State Highway System and that MCDOT would be solely responsible for funding the roadway. A supplementary Drainage Memorandum was prepared in August 1998 that recommended a drainage channel be constructed along the west side of the highway to intercept stormwater flows.

The *Estrella Roadway and Grade Separation, Phase I Technical Design Memorandum* by Cannon & Associates was completed for MCDOT in August 1999. In this report, several alternatives were identified and evaluated for the portion of SR 303L from Clearview Boulevard to a point east of US 60. A concept was chosen, and the design of the interim roadway and bridge over US 60 was completed in June 2000.

In 1999, MAG included SR 303L in the Long Range Transportation Plan as a four-lane, access-controlled facility and included the portion from US 60 to I-17 as a "Study Corridor." On May 15, 1999, the Arizona State Transportation Board formally decided to not abandon Loop 303 to local jurisdictions.

MCDOT contracted with DMJM to prepare a prototype interchange concept for SR 303L. The final report was published in January 2000, and an addendum was published in July 2000. An agreement was reached with Del E. Webb Corporation to exclude interchanges in the segment between Bell Road and US 60 and for funding participation in the design and construction of overpasses for Clearview Boulevard and Mountain View Boulevard. Dedication of the right-of-way through the Sun City Grand development was confirmed.

An intergovernmental agreement between MCDOT and ADOT was signed on July 31, 2000, that enabled MCDOT to continue the planning, design, construction, and maintenance of SR 303L with certain stipulations and funding participation by ADOT. The agreement stipulates that the ultimate roadway is to be "a fully access-controlled facility." Construction of the interim roadway from Clearview Boulevard to east of US 60, including a grade separation with US 60 and the Burlington Northern Santa Fe Railroad (BNSF), commenced.

On January 24, 2001, the MAG Regional Council approved the "Lone Mountain Alignment" as the preferred option for the Loop 303 connection with I-17.

In April 2001, MCDOT contracted with URS to prepare an EA for the section between I-10 and US 60 and to prepare the DCR for the portion between Indian School Road and Clearview Boulevard. The DCR presents the interim and ultimate roadway concept and ties into work prepared by others for the segments north and south of the DCR limits.

In October 2001, MCDOT contracted with HDR to prepare a DCR for SR 303L from MC 85 to Indian School Road including the system interchange at I-10. The concept plans prepared through this effort provide the basis for the EA between I-10 and Indian School Road.

Final design plans were completed in February 2002 for a four-lane divided interim roadway between McDowell Road and Indian School Road by Entranco. Construction is scheduled to begin in May 2002.

1.3 CURRENT RELATED PROJECTS

MCDOT has proceeded to develop the SR 303L interim roadway based on previously prepared plans and environmental documents. Construction of an overpass over US 60 and the BNSF along with an interim depressed roadway southward to Clearview Boulevard is under way. Grade separations with Mountain View Boulevard and Clearview Boulevard are included in the project. The interim roadway is being constructed along the future southbound lanes. The new interim connection to US 60 opened to traffic in June 2001, and construction is expected to be completed in April 2002. The plans prepared for this section of SR 303L from Clearview Boulevard to US 60 along with the ultimate concept plans prepared earlier by Gannett Fleming will be used as the basis for the EA for the northern end of the project.

MCDOT has also completed final design of a new interim four-lane roadway from McDowell Road to Indian School Road. This project is expected to start construction in May 2002 and will provide a smooth "S" curve alignment to replace the two 90-degree turns in the current alignment. The design concepts prepared as part of this document tie into these plans developed by Entranco. These plans will be used in part as the basis for the EA for the project between McDowell Road and Indian School Road.

MCDOT also has a parallel DCR study being prepared for the section between MC 85 and Indian School Road. That DCR will provide the ultimate concepts for the I-10 junction to be incorporated into the EA being prepared as part of this project.

MCDOT has also developed plans and intends to construct improved intersections on SR 303L at Indian School Road, Northern Avenue, and Olive Avenue. These projects will provide left-turn lanes and flashing traffic signals at these three locations. Construction is expected to be completed in 2002. MCDOT also is finalizing plans to construct an interim road in the SR 303L corridor from US 60 to Lake Pleasant Road. Construction is projected to start later in 2002.

ADOT intends to start the DCR and EA process for the portion of SR 303L from the MCDOT project near Lake Pleasant Road and Happy Valley Road to I-17. That process is scheduled to begin in March 2002.

1.4 SUPPORTING DOCUMENTS

The following documents are part of this project effort and provide supporting information for this DCR:

1. Final Study and Report (September 24, 2001)
2. Traffic Report (April 2002)
3. Preliminary Drainage Report (April 2002)
4. Preliminary Geotechnical Report (April 2002)
5. Preliminary Draft Environmental Assessment (being prepared)
6. Noise Report (being prepared)
7. Biology Report (being prepared)
8. Cultural Report (being prepared)
9. Farmlands Report (being prepared)

The information regarding these supporting documents will be updated in the Draft DCR, which will be prepared concurrently with the Draft EA. .

2.0 CHARACTERISTICS OF THE EXISTING CORRIDOR

This chapter presents the current status of facilities, rights-of-way, land use, and other characteristics of the corridor. This information provides a base for determining future conditions and facilities that need to be modified to meet these future conditions. The data presented herein were derived from as-builts, field reviews, photo logs, and other research sources.

2.1 ROADWAY CHARACTERISTICS

An interim roadway was constructed in 1992 within the ultimate SR 303L corridor between Thomas Road and Grand Avenue. The existing roadway is a two-lane rural road with access limited to at-grade intersections with the section line crossroads. A total of 11 at-grade crossings exists within the project limits. The Bell Road intersection is signalized. The Indian School Road, Northern Avenue, and Olive Avenue intersections have interim flashing lights. Other intersections are controlled by stop signs on section line crossroad. There is a railroad crossing adjacent and parallel to Olive Avenue. MCDOT plans to rehabilitate the entire existing roadway with 2-inch Asphaltic Rubber during 2001 and 2002. MCDOT also plans to improve existing interchanges at Indian School Road, Northern Avenue, and Olive Avenue in the near future.

The existing design features of SR 303L between Indian school Road and Clearview Boulevard were examined and evaluated relative to the American Association of State Highway and Transportation Officials (AASHTO) Controlling Criteria outlined in *A Policy on Geometric Design of Highways and Streets* (1994 and 2001 edition), commonly referred to as "AASHTO Green Book." ADOT's *Roadway Design Guidelines* was utilized for additional design reference.

2.1.1 Design Speed

The existing facility is a rural non-divided highway in level terrain. ADOT's *Roadway Design Guidelines* suggest a design speed of 60 to 70 mph. The posted speed on the roadway is 55 mph, and the design speed is 60 mph.

2.1.2 Lane and Shoulder Width

The interim roadway is 28 feet wide with 12-foot travel lanes in each direction and 2-foot shoulders. In addition to 2-foot paved shoulders, the roadway has 6 feet of graded shoulder. The roadway satisfies minimum requirements for lane and shoulder width.

2.1.3 Vertical Alignment

The alignment has 102 vertical curves within project limits. Three vertical curves do not meet stopping distance per 1994 AASHTO. Design speed on these three curves is slightly below 60 mph. However, they provide adequate stopping sight distance per 2001 AASHTO due to increased object height from 6 inches to 24 inches.

2.1.4 Horizontal Alignment

The minimum length of horizontal curve as recommended by AASHTO and ADOT for this classification of roadway is 500 feet. The alignment has 32 curves. A total of 19 curves have horizontal curve lengths less than 500.

All curves meet AASHTO recommendation of maximum degree of curvature.

Comparison of super elevation values for three different degrees of curves used on this project for maximum super elevation of 10% is as follows:

Degree of Curve	SE Used	ADOT	AASHTO (1994)	AASHTO (2001)
1-00-00	0.032%	0.030%	0.030%	0.032%
1-20-00	0.046%	0.038%	0.039%	0.036%
2-00-00	0.058%	0.055%	0.055%	0.055%

2.1.5 Grades

The AASHTO *Green Book* and ADOT *Roadway Design Guidelines* recommend a 4% maximum grade for rural non-divided highways in level terrain with 60 mph design speeds. All grades are within recommended guidelines.

2.1.6 Cross Slopes

Cross slopes are 2% throughout the project limits and conform to current design standards.

2.1.7 Vertical Clearance and Bridge Structures

There are no grade separations within the study area of the existing corridor. All crossings are at-grade intersections.

2.2 RIGHT-OF-WAY

ADOT previously purchased, or received by dedication, the right-of-way for the SR 303L Corridor in the early 1990's. Most of the ultimate right-of-way corridor of the original freeway concept exists from McDowell Road north to Grand Avenue (US 60). The right-of-way is generally 300 feet wide and widens to in excess of 600 feet at the future arterial street traffic interchange locations.

Most of the SR 303L right-of-way was dedicated to ADOT by the adjacent property owners in exchange for construction of the interim roadway in 1992 and a commitment to begin construction of a freeway by 2005. The dedicated parcels contain a reversion clause which states that the property will revert to the grantor "any portion of the right-of-way not used by ADOT for the interim roadway if ADOT (a) should abandon its plan to construct the SR 303L Freeway before December 31, 2005, or (b) should fail to commence construction of the SR 303L Freeway by December 31, 2005." If the reversion clause were to be activated, the existing right-of-way would be reduced to the width currently used for the interim roadway. Such action would negatively impact the proposed project by the additional costs required to purchase the necessary right-of-way. The parcels that have not been dedicated that lay inside the proposed right-of-way boundary would need to be acquired or rededicated.

Right-of-way strip maps depicting the status of the right-of-way along SR 303L are shown in Volume 2, Section 4. It should be noted that the right-of-way north of Bell Road that is shown with a reverter clause has been quitclaimed to ADOT by the Del Webb Corporation.

The existing right-of-way is not sufficient to accommodate the entire off-site drainage system that will be needed for this roadway. Additional right-of-way will also be needed for constructing cross-street overpasses along the SR 303L corridor. The existing right-of-way was obtained assuming that SR 303L would go over or under the section-line cross streets. As a result, little extra right-of-way along the cross streets was obtained outside the space needed for a standard diamond interchange.

2.3 PAVEMENT CONDITIONS

As-built drawings for the existing roadway improvements along the project corridor were obtained and reviewed. According to these drawings, the existing roadway pavement section typically consists of 6 inches of asphalt concrete (one layer each of 2 inches and 4 inches), overlying 4 inches of aggregate base course.

A preliminary visual assessment of the existing Loop 303 pavement surface along the project alignment was also performed. The visual inspection was performed at low vehicle speed with periodic stops to inspect areas of interest (e.g., areas of significant distress) for closer observation and documentation.

In general, the section of pavement between Indian School Road and Northern Avenue is in relatively good condition, with few distress manifestations. The section of Loop 303 north of Northern Avenue, however, shows several signs of distress and is generally in fair condition with segments that are in relatively poor condition. Common distress manifestations include alligator cracking, transverse cracks, patches, and potholes. Each of these distress manifestations is briefly described below. Of particular interest is a longitudinal crack that trends in a north-northeasterly direction, starting at the west edge of paving along Loop 303. There is also an erosion feature or gully west of the pavement at this location that may be associated with the documented fissure in this area (see Section 2.10). Further assessment of this issue is warranted during the final design phase of the project.

A brief discussion on the primary pavement distress manifestations noted during the field inspection is provided below:

Alligator Cracking: Alligator cracking is considered to be a major structural distress and is generally caused by fatigue failure of the asphalt concrete under repeated loading. Locations of moderate to severe alligator cracking were noted in the segment of Loop 303 between Waddell Road and Bell Road. Particularly severe alligator cracking in conjunction with vertical deformation (potentially rutting and/or depression) was noted at the intersection 2 miles south of Bell Road.

Transverse Cracking: Transverse cracking is generally caused by shrinkage and/or hardening of the asphalt concrete. Transverse cracks occur frequently along the alignment. These cracks are typically less than one inch in width with no to minor spalling.

Patching: Several patches were noted along the alignment. Most of these patches appear to have been installed for pavement rehabilitation purposes and generally appear to be performing well with a satisfactory ride quality. However, in the mile segment south of Greenway Road, some of the patches have deteriorated to a moderate to severe condition.

Potholes: Occasional potholes of low to medium severity were noted along the alignment. These potholes appear to be associated with areas of alligator cracking.

MCDOT has plans to rehabilitate the existing pavement along the SR 303L corridor during 2002. This rehabilitation will include spot excavation and reconstruction of pavement in areas of particularly severe distress together with 2-inch thick rubberized asphaltic concrete overlay on the existing pavement. The overlay will be placed on SR 303L from Northern Avenue to Clearview Boulevard in the summer of 2002 and from Thomas Road to Northern Avenue by the end of 2002. Accordingly to MCDOT Operations staff, the design life of this pavement is expected to be 12-15 years.

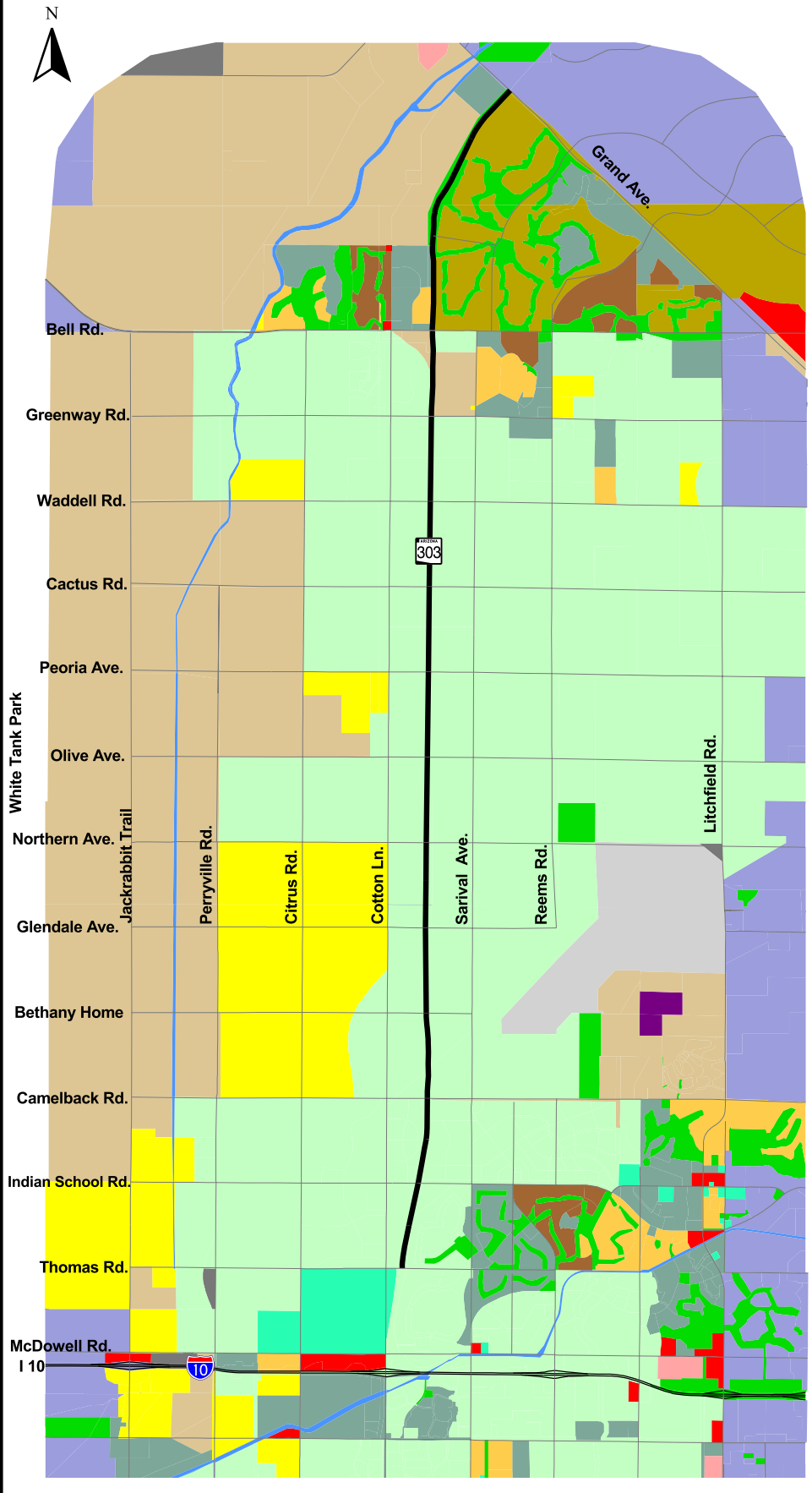
2.4 LAND USE PATTERNS

Lands located along the SR 303L corridor are both publicly and privately owned. Jurisdictions within the corridor, moving north from Indian School Road to Clearview Boulevard, includes Goodyear (south of Camelback Road), Glendale (strip annex, Camelback Road to Peoria Avenue), Maricopa County, and Surprise (Peoria Avenue to US 60). Existing land uses within the study area are primarily agricultural, single-family residential, and undeveloped parcels and are shown in Figure 2.1. Major agricultural crops include cotton, grapes, corn, melons, and flowers, with varied rotations of these crops occurring throughout the year. Much of the area lies within the noise contours of Luke Air Force Base (Luke AFB) so that development is limited to industrial, commercial, and low-density residential.

There are several existing and planned developments adjacent to the corridor as shown in Figure 2.2. Development in the corridor is extensive in the northern portion (City of Surprise) with the Sun City Grand and Bell West Ranch developments. The developments just north of Greenway Road and adjacent to the corridor are ready to commence. In the middle portion of the corridor, the development is limited to larger acre residential with the existing White Tanks Foothills development and the planned White Tank Mountains Ranch just to the north. South of Indian School Road in the City of Goodyear, the Pebble Creek development is well under way.

Other planned single-family residential communities and retirement communities include Camelback Farms, Ranch Gabriella, Mountain Gate, Legacy Meadows, Butler Properties, Legacy Park, Country Side, Royal Ranch, MHE, Waddell Ranches, Sierra Montana, Villages of Surprise South, North Ranch, and Bell West Ranch (Surprise). The plats for each planned community have been approved by the appropriate governmental jurisdiction.

There also are commercial retail, service, and light industrial land uses within the corridor. Commercial uses include the Wildlife World Zoo on Northern Avenue and Tanita Farms on SR 303L south of Northern Avenue.



Legend

2000 LAND USE

- Low Density Residential
- Medium Density Residential
- High Density Residential
- Retirement Community
- City Center
- Mixed Use
- Non-Retail Commercial
- Retail Commercial
- Industrial
- Public Facilities
- Airport
- Rural
- Open Space / Recreational Open
- Agriculture
- Water
- Vacant
- Data Not Available
- Streets

Figure 2.1

Existing Land Use (2000)

Data Source:
Lima & Associates 2001

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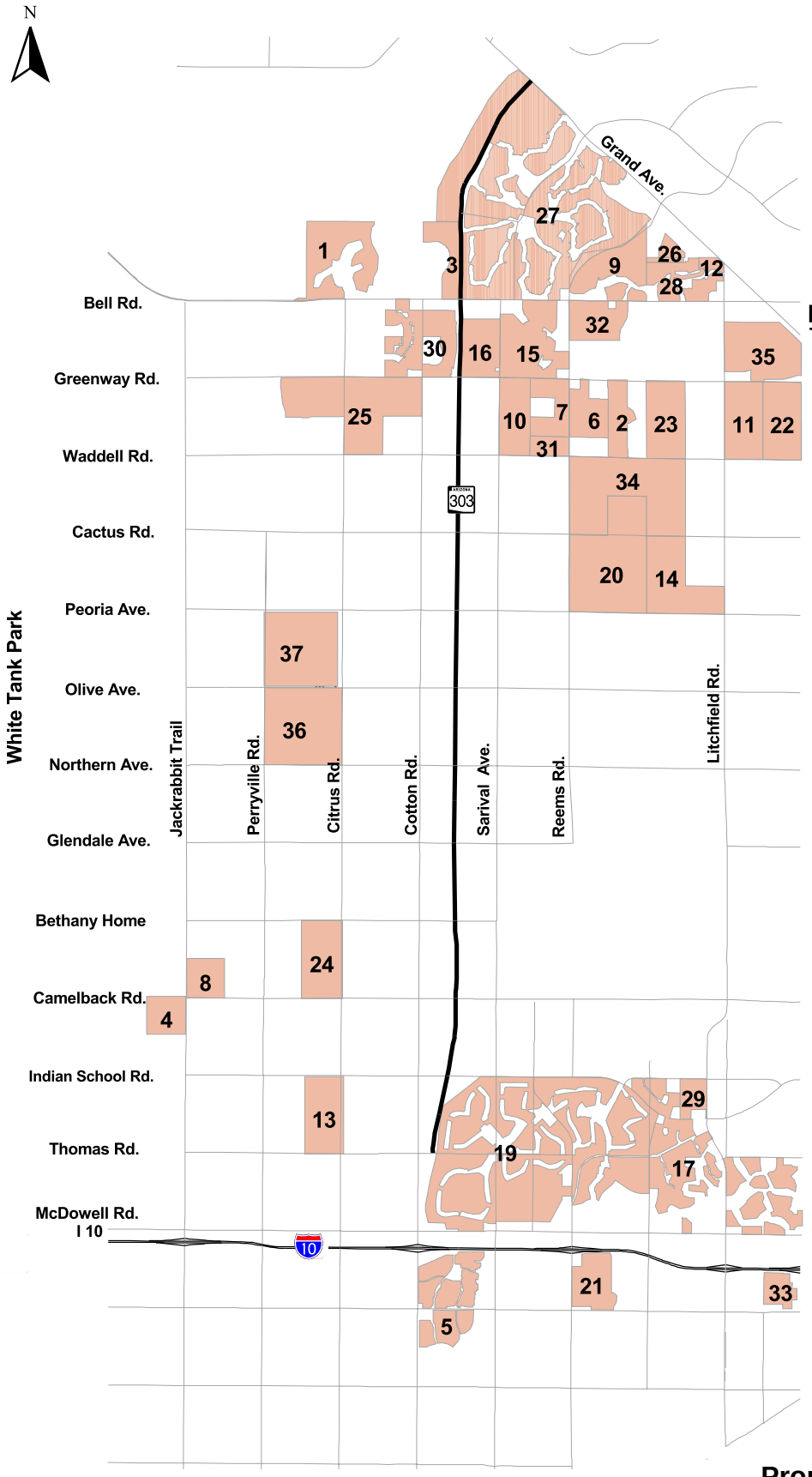


Legend

PROPOSED DEVELOPMENTS

1 Arizona Traditions
2 Ashton Ranch
3 Bell West Ranch
4 Briarwood Estates
5 Canyon Trails
6 Countryside
7 Greenway Parc
8 Jackrabbit Estates
9 Kingswood Parke
10 Legacy Parc
11 Litchfield Manor
12 Litchfields
13 Litchfields I & II
14 Mountain Gate
15 Mountain Vista Ranch
16 Northwest Ranch
17 Palm Valley
18 Parke Row
19 Pebble Creek
20 Rancho Gabriela
21 Rancho Mirage
22 Roseview
23 Royal Ranch
24 Russell Ranch
25 Sierra Montana
26 Stonebrook
27 Sun City Grand
28 Sun Village
29 Sunrise
30 Surprise Farms
31 Tash
32 The Orchards
33 Unkown
34 Waddell Property
35 West Point Towne Center
36 White Tank Foothills
37 White Tank Mountain Ranch
Streets

Data Soucce:
Lima & Associates 2001

Figure 2.2

Proposed Developments

The City of Glendale has strip annexed around the portion of the corridor between Camelback Road and Peoria Avenue. The City has not yet developed a master plan for this area. Some development is taking place under the jurisdiction of Maricopa County.

2.5 EXISTING TRAFFIC

Following is a summary of the existing traffic conditions in the corridor. Refer to the *Traffic Report* for more complete information. Based on the most recent counts provided by MCDOT, SR 303L currently serves approximately 4,900 vehicles per day (vpd) between Indian School Road and Bell Road. The majority of the traffic in the corridor travels the length of the corridor because development in the corridor is largely limited to the north and south ends. With the exception of Bell Road, the crossroads carry relatively light traffic volumes, and most of the crossroads traffic crosses east-west across SR 303L rather than turning onto the roadway.

Although traffic volume growth has been limited somewhat by the continuing construction at the SR 303L/Grand Avenue intersection, historical traffic data available from ADOT show that for the period of 1993 through 1998, traffic had been growing at a rate of approximately 4% per year. Completion of the SR 101L freeway connecting US 60 to I-10 in 2000 probably created a leveling off of the traffic growth on SR 303L. Given modest development in the 303 corridor over the next few years, the 4% growth rate is expected to resume. If rapid development takes place in the corridor, then the traffic growth rate could be substantially higher.

There is a definite pattern in terms of direction of travel during the peak hours. In the A.M. peak hour, which occurs generally between 7:00 and 9:00 A.M., the predominate travel direction is southbound. In the P.M. peak hour, which generally occurs between 4:00 and 6:00 P.M., the predominate travel direction is northbound. Likewise, on the crossroads, the predominate travel direction in the A.M. peak is eastbound, and the predominate P.M. peak travel direction is westbound.

SR 303L has a significant amount of truck traffic. Recent vehicle classification counts conducted by MCDOT show that truck traffic accounts for 23% of the total traffic near the south end of the corridor (north of Thomas Road) and 25% of the total traffic at the north end of the corridor (north of Bell Road).

Current speeds on the corridor are high. Speed studies show that the average speed is approximately 61 mph. Existing traffic data are summarized in Figure 2.3.

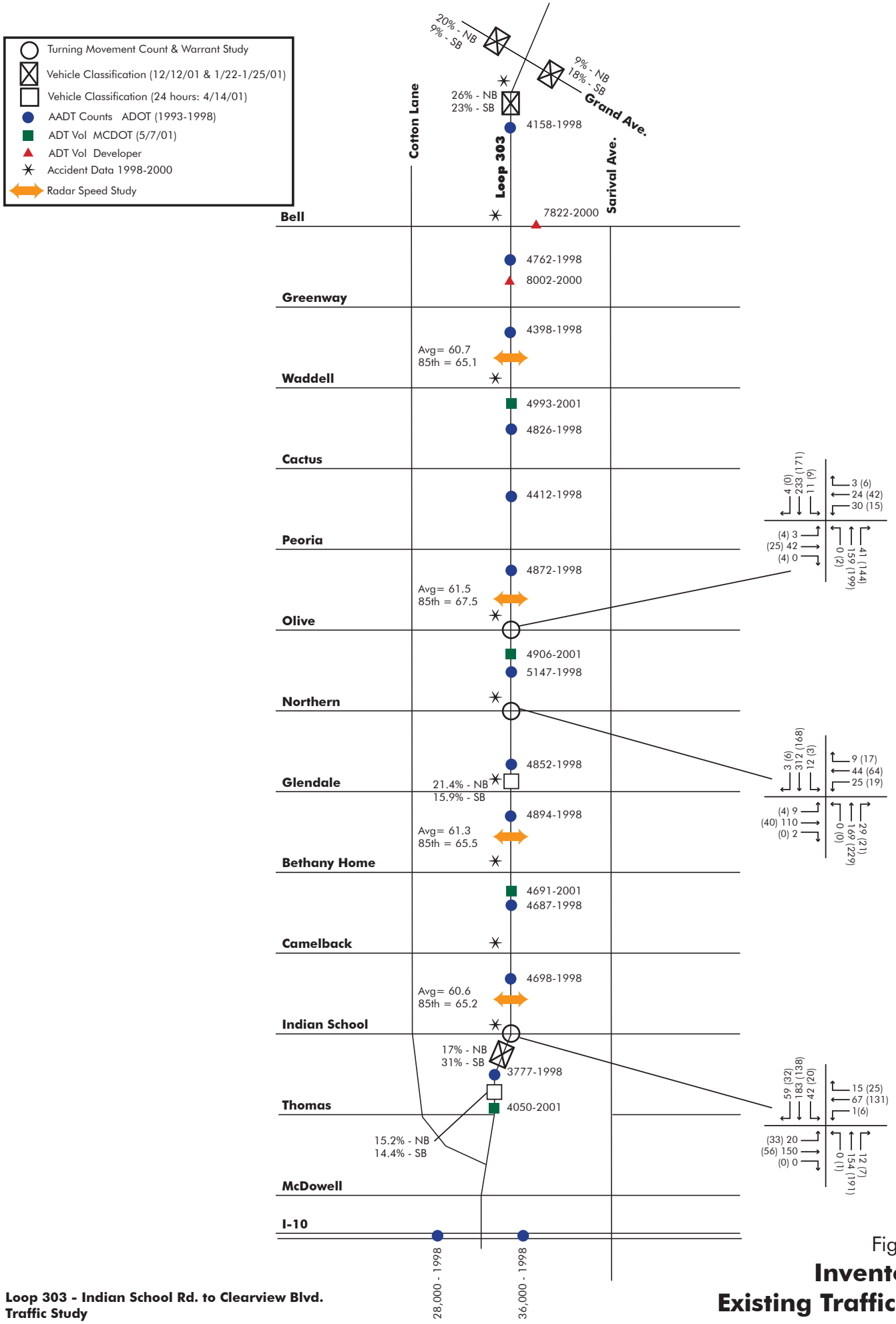


Figure 2.3

Inventory of Existing Traffic Data

Loop 303 - Indian School Rd. to Clearview Blvd. Traffic Study

Accident data for the period 1996 through 2000 were obtained and reviewed. In this period, there were a total of 156 accidents within the corridor. Of these, 78 or 50% were property damage only, 74 or 47% were injury accidents, and 4 or 3% were fatal accidents. There were 74 intersection-related accidents and 82 non-intersection-related accidents. In terms of accident type, 38% of all accidents were single-vehicle accidents, 33% were right angle accidents, and 14% were rear-end accidents.

2.6 ENVIRONMENTAL OVERVIEW

The SR 303L Corridor has been subject to several transportation studies since 1985 as noted in Section 1.2, History of Corridor Actions, including five separate environmental studies. The following is a brief summary of the previous environmental evaluations.

1987 – Draft Reconnaissance Report (Cotton Lane/Northwest Loop), ADOT

This report was prepared as a component of a route location study and preliminary design. Environmental issues addressed included the human environment (population, land use, community facilities), the natural environment (air, water, vegetation, wildlife, hazardous waste, agriculture), and cultural resources (historic, prehistoric). Project limits extended from State Route 85 (now MC 85) to I-17 and included the current SR 303L alignment between I-10 and US 60. The study included coordination with appropriate state agencies; as no federal funding nor action was contemplated at that time, no federal agency coordination occurred.

No substantive environmental issues were raised by the study. The area was sparsely populated, relatively slow growth projected, minimal natural habitat or vegetation was present, and limited evidence of cultural sites occurred. Relatively little has changed in the corridor with the exception of the City of Surprise. In 1987, MAG projections indicated the city population by 2015 would be 39,235 (current population is over 30,000). The only segment of natural vegetation in the corridor was the lands between Union Hills Drive and the Beardsley Canal, which was removed to build Sun City Grand and Bell West Ranch. In summary, the 1987 study concluded there were no substantive environmental constraints in the I-10 to US 60 segment of SR 303L.

1991 – Final Environmental Assessment, Estrella Freeway State Route 303L, ADOT

This Final Environmental Assessment (FEA) was prepared in accordance with the ADOT Action Plan Part 3.2.4 for state-funded projects on the State Highway System. The project limits were identical to the 1987 Reconnaissance Report. While the 1987 effort was more qualitative, this

1991 FEA was quantitative and covered a full range of environmental issues. Again, as no federal funding was anticipated, no federal agency coordination occurred.

The FEA included a substantial public involvement component, including public information meetings, newsletters, press releases, and two public hearings (attended by over 300 citizens). Again, as only minor land use changes and population growth occurred in the I-10 to US 60 segment, no substantive environmental issues were identified. The FEA did set the alignment for SR 303L and allowed the current two-lane roadway to be constructed.

1992 – Addenda to the Final Environmental Assessment (Grand Avenue to Dysart Road), ADOT

In 1992, the Del Webb Corporation requested ADOT amend the SR 303L alignment north of Grand Avenue (US 60) due to their pending acquisition of 880 acres known as the Sun City West Expansion Area. The addenda evaluated the relocation of an approximately 4-mile segment of SR 303L between US 60 and Dysart Road (extended) by approximately 1/4 mile. With the approval of the alignment shift, Del Webb Corporation was required to provide noise abatement in the Sun City West expansion area. No construction was programmed in this segment at the time of the addenda but served to preserve and dedicate the future right-of-way needed for a freeway facility. This realignment did not affect the intersection of SR 303L/US 60 nor the alignment south of US 60.

1997 – Environmental Assessment Update (Estrella Roadway Loop 303), MCDOT

In 1992, MCDOT agreed to assist ADOT in completing an interim two-lane facility extending from US 60 to Lake Pleasant Road. The 1997 County EA addressed this approximately 9.5 miles of construction. The project limits started just south of US 60 to include a grade-separated overpass at US 60 and continued east to Lake Pleasant Road.

The EA updated all the environmental issues relative to the 1991 ADOT FEA and 1992 ADOT Addenda. By 1997, the Sun City West expansion community was fully developed, and the Sun City Grand community was in the early stages of construction. A substantial public involvement program including three Information Meetings (each attended by 300-700 citizens), five Task Force Meetings (task force consisted of Sun City community representative), and several presentations to the Property Owners and Recreation Association were made.

The update recommended shifting the alignment approximately 300 feet west at US 60 for the overpass. This shift away from residents benefited both engineering issues and environmental (noise, visual) issues.

2000 – Environmental Assessment Update, State Route 303L Interim Roadway Project, MCDOT

The development of Sun City Grand, a master-planned community of up to 10,000 citizens between Union Hills Drive and US 60 adjacent to the SR 303L corridor, raised compatibility and access issues with Sun City Grand citizens, Del Webb Corporation (the builder), and the City of Surprise. The 2000 EA Update was prepared to provide baseline environmental conditions and address environmental effects associated with increased SR 303L capacity needs. Additionally, at that time, Del Webb Corporation sought to partner with MCDOT to construct grade-separated overpasses at Clearview Boulevard (formerly Union Hills Drive) and Mountain View Boulevard (formerly Beardsley Road). The overpasses would connect the future phase of Sun City Grand west of SR 303L to the existing phase.

The Update included a number of public meetings in Sun City Grand. The primary issues of truck traffic (CANAMEX traffic), noise, traffic safety (speeding, hazardous materials), air quality, and property values were raised, as well as the citizens' desire to relocate SR 303L or at least all truck traffic to the Sun Valley Parkway. As a result of this EA, MCDOT agreed to assist in the funding and construction of the Clearview and Mountain View overpasses, to shift the alignment slightly west away from existing homes, and to partially depress the roadway profile between Clearview and Mountain View. These mitigation measures substantially reduced the potential for noise impacts in accordance with Federal Highway Administration (FHWA) criteria. MCDOT Noise Policy is consistent with and is based on the FHWA criteria.

The resulting project from this EA Update is currently in its final construction stages.

2.7 UTILITIES

Many utilities presently cross the SR 303L corridor between Indian School Road and Clearview Boulevard. These utilities include telephone, gas, electric, cable, water and sewer facilities. In addition, many drainage culverts cross beneath the existing highway. Also, because much of the land use along the corridor is agriculture, numerous irrigation facilities exist across and along the highway. Irrigation facilities are discussed in Section 2.8. The majority of the utility crossings are located at the major section line roadways. In the future with the increase of development, the request for more utilities crossing the corridor will occur. Table 2.1 provides a list of existing utility owners and facility locations.

Table 2.1
Utility Owners and Facility Locations

Company	Utility	Existing/ Future	Size/Type	Location
QWEST	Telephone	Existing	Underground	Indian School Road, Waddell Road, Bethany Home Road, Glendale Avenue, Northern Avenue, Bell Road
Southwest Gas	Gas	Existing	4" Gas 4" Gas	Indian School Road Clearview Boulevard
Arizona Public Service	Power	Existing Existing	Overhead Underground	Indian School Road, Northern Avenue, Olive Avenue, Cactus Road, Camelback Road, Loop 303 south of Camelback (1/2 mile), Bethany Home Road, Loop 303 north of Bethany Home Road (1/2 mile), Glendale Avenue, Waddell Road, Greenway Road Bell Road, Clearview Boulevard
Cox Communications	Cable TV	Existing	Underground	Northern Avenue, Bell Road, Clearview Boulevard
Citizens Water Resources	Water	Existing Existing	12" Waterline 16" Waterline	Bell Road South of Union Hills Drive
City of Surprise	Sewer			South of Bell Road

2.8 IRRIGATION AND WELLS

The proposed SR 303L roadway passes through approximately 9 miles of agricultural land. This land is currently in use as aerable land and growing a variety of crops. These crops include roses, cotton, citrus, and lettuce. These fields are currently irrigated using water delivered to the field by a system of ditches and pipes. The continuous use of these water delivery facilities is very important to the farmer and landowner. Even short interruptions of service can be harmful to crops. Therefore, alternatives to the scheduled and continuous conveyance and delivery of irrigation water are not available.

Existing facilities include irrigation pipes, concrete and earthen irrigation ditches, tailwater ditches, wells and well sites, and tailwater sumps and irrigation appurtenances. Table 2.2 contains information about the 12 irrigation wells located within the project right-of-way. Other irrigation facilities are shown on the Irrigation and Well Replacement Plans included in Volume 2 of this DCR. Irrigation facilities that are affected by the proposed SR 303L can be grouped into four main groups based on the ownership or user of the facility. These groups are: (1) private, (2) Maricopa Water District (MWD), (3) Adaman Water Company (AWC), and (4) SunCor Development. Each of the groups has various interests and requirements to be met and maintained during and after the construction of the proposed SR 303L facility. Private facilities are those facilities used by individual farmers and operated by those farmers. These

facilities may be adjacent to or cross the SR 303L roadway. MWD facilities are those facilities owned and operated by the MWD for the good of its members. AWC facilities are also owned and operated by the AWC district for the good of its members. MWD and AWC are administered by a board of directors that is typically made up of farmers and landowners within the district area. SunCor Development currently owns the land that is being farmed from Indian School Road to Camelback Road. The irrigation facilities in this area associated with this land appear to be private (SunCor Development).

Table 2.2
Wells Located Within Existing Right-of-Way

Town ship	Range	Sec tion	Coor dinates	Registration # (55-)	Station (+/-)	Depth (in.)	Diameter (ft)	Cross Street	Owner	Remarks
T2N	R2W	24	BBB	611694	492+00	998	16	Camelback	SunCor	Irrigation
T2N	R2W	13	ABB	501837	545+00	Unknown	Unknown	Bethany Home	Adaman	Irrigation
T2N	R2W	12	ACC	501836	572+00	1,400	18	Between Bethany Home and Glendale	Adaman	Irrigation
T2N	R2W	12	ABB	502487	592+00	1,105	16	Glendale	Adaman	Irrigation
T3N	R2W	36	ABB	613004	703+00	1,000	16	Olive	Maricopa	Irrigation
T3N	R2W	25	DBB	606608	730+00	1,200	20	Between Olive and Peoria	Property Reserve Arizona	Irrigation
T3N	R2W	25	BAA	612998	756+00	1,000	16	Peoria	Maricopa	Irrigation
T3N	R2W	24	ABB	500768	808+00	1,050	16	Cactus	Robert Moore	Irrigation
T3N	R2W	24	ABB	617465	808+00	1,050	16	Cactus	Robert Moore	Irrigation
T3N	R2W	13	BAA	612990	861+00	930	16	Waddell	Maricopa	Irrigation
T3N	R2W	12	BAA	612986	915+00	1,000	16	Greenway	Maricopa	Irrigation
T4N	R2W	36	BDA	575578	1020+00	Unknown	Unknown	South of Clearview	Maricopa	Irrigation

Note: Coordinates refer to the 1/64 section location of the wells.

2.8.1 Maricopa Water District

The MWD is the largest irrigation district in this area. MWD facilities are mainly located on the one-mile roadway crossings and are typically on the south side of the east-west roads. The MWD owns five wells along the alignment that will have to be relocated for the SR 303L project; these wells are located in the vicinity of Clearview (Well No. 3-36), Greenway (Well No. 5-12C), Waddell (Well No. 6-13), Peoria (Well No. 8-25), and Olive (Well No. 9-36).

MWD wells are irrigation wells that are 16 to 20 inches in diameter, all are more than 1,000 feet in depth, and all are steel lined with no screening or filters. The wells usually run only in the winter for augmentation of the surface water. Production of the wells ranges from approximately 450 gpm to approximately 1,120 gpm. Water quality of the wells is very acceptable for irrigation

purposes. Surface water supplied from Lake Pleasant makes up nearly all of the water used in the MWD.

The MWD irrigation district facilities typically include lateral irrigation canals that are aligned east and west and sub-lateral canals that lie in a north-south direction. The lateral canals lie on one-mile roads from Clearview Boulevard to Northern Avenue. Laterals 3 through 10 are affected by SR 303L. Laterals 3, 4, and 10 cross the alignment as pipes. The rest of the laterals cross the alignment in pipes but are open-channel canals approaching and leaving the roadway. Figure 2.4 shows the layout of the laterals and sub-laterals in the area.

The MWD does not control drainage or tailwater. This is the landowner's or farmer's responsibility. They do not allow tailwater into their facilities. While they do have some places where this happens, they do not allow any further combining.

2.8.2 Adaman Water Company

AWC is a multi-function company that supplies water for irrigation and domestic use and for its district, and maintains drainage channels to protect the district farmlands. AWC currently owns and operates three registered wells in the SR 303L corridor. These wells are located at Bethany Home Road (Pump 13A), Glendale Avenue (Pump 12A), and one well between Bethany Home and Glendale (Pump 12B). The well at Bethany Home is a replacement well for another well at Northern Avenue (Pump 1B) that is in the process of being abandoned. The pump from the Northern Avenue well will be moved to the well at Bethany Home Road, probably in the summer of 2002.

All of the wells are irrigation wells that are 16 to 18 inches in diameter, all are more than 1,000 feet in depth, and all are steel lined with no screening or filters and run all year long. Production of the wells ranges from approximately 1,300 gpm to approximately 1,800 gpm. The wells are currently pulling water from approximately 300 feet. Water quality of the wells is very good at depths below 700 feet with low levels of nitrates. Water quality is not as good in AWC shallow domestic wells located off the SR 303L corridor. Water at depths of approximately 300 feet is high in nitrates (18-22 parts per million [ppm]). About 80% of the approximately 8,000 acre-feet of irrigation supplied each year is groundwater. Surface water supplied by the MWD makes up the rest.

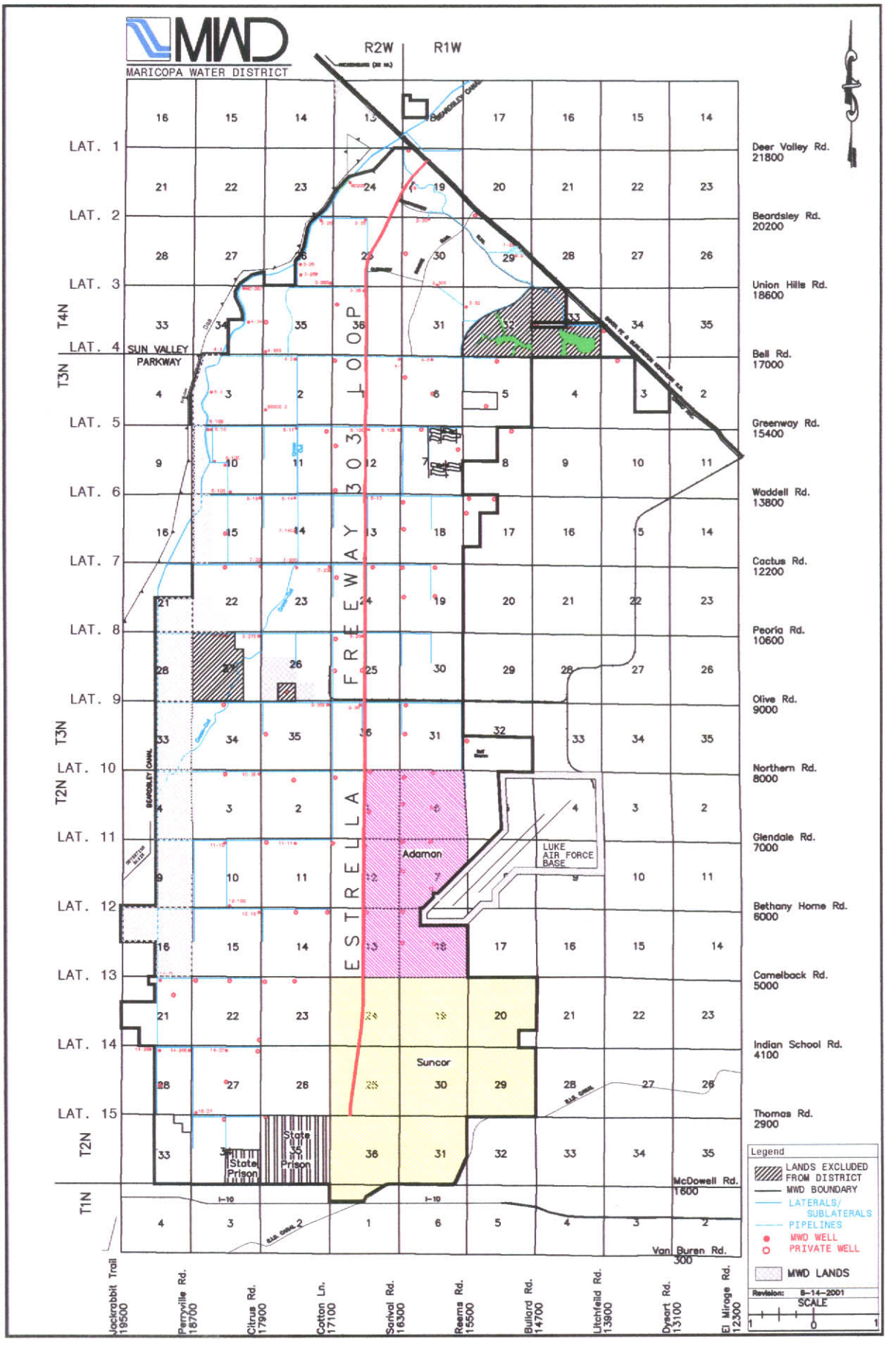


Figure 2.4 Irrigation Districts Adjacent to SR303L

The proposed SR 303L skirts the western edge of the AWC district. AWC makes deliveries to district lands using an 18-inch pipeline (Lateral A) along the east side of the SR 303L corridor from Northern Avenue to Camelback Road. A second parallel pipeline provides increased capacity from Northern Avenue to about one-half mile south of Northern Avenue. The capacity of this doubled section is approximately 700 miners' inches (17.5 cubic feet per second [cfs]). These pipes are connected to the wells and deliver water to ditches in the farm fields. Similar pipelines are located parallel to Northern Avenue on the south side.

Several sumps that collect irrigation tailwater exist along both sides of the SR 303L corridor. These sumps are connected by a combination of pipes and ditches, and the water is reused for irrigation.

2.9 RAILROAD

BNSF owns and operates the Ennis Spur which starts at the BNSF branch line adjacent to US 60 between Greenway Road and Waddell (Thunderbird) Road. The spur extends diagonally to the southwest toward Luke AFB. The spur delivers fuel to Luke AFB and gas stored in underground salt mines north of Luke AFB. The spur continues westward on the north side of Olive Avenue, crosses the SR 303 corridor to Cotton Lane where it turns to a north-south alignment. The spur serves a Fertizona fertilizer plant located in the northwest quadrant of Cotton Lane and Olive Avenue. BNSF has 100 feet of right-of-way across the SR 303L corridor. The right-of-way is north of and adjacent to the Olive Avenue right-of-way.

There are flashers located where SR 303L crosses the spur. The planking of the crossing has recently been upgraded to concrete. Due to the heavy truck traffic, BNSF has indicated that they are having unusually high maintenance costs associated with the crossing. Approximately one outbound and one inbound train uses the spur across SR 303L per day. The amount of usage is not expected to change in the near future.

2.10 SUBSIDENCE AND EARTH FISSURES

The proposed Loop 303 alignment traverses an area of known and documented ground subsidence and earth fissuring. In fact, the greatest measured subsidence in Arizona (approximately 18 feet between 1957 and 1991) has been documented at Luke AFB, located 2 to 3 miles east of the Loop 303 alignment. The proposed Loop 303 alignment crosses the Luke AFB subsidence "bowl" or "trough." Furthermore, a documented earth fissure extends from (approximately) the intersection of Northern Avenue and Cotton Lane to the intersection of

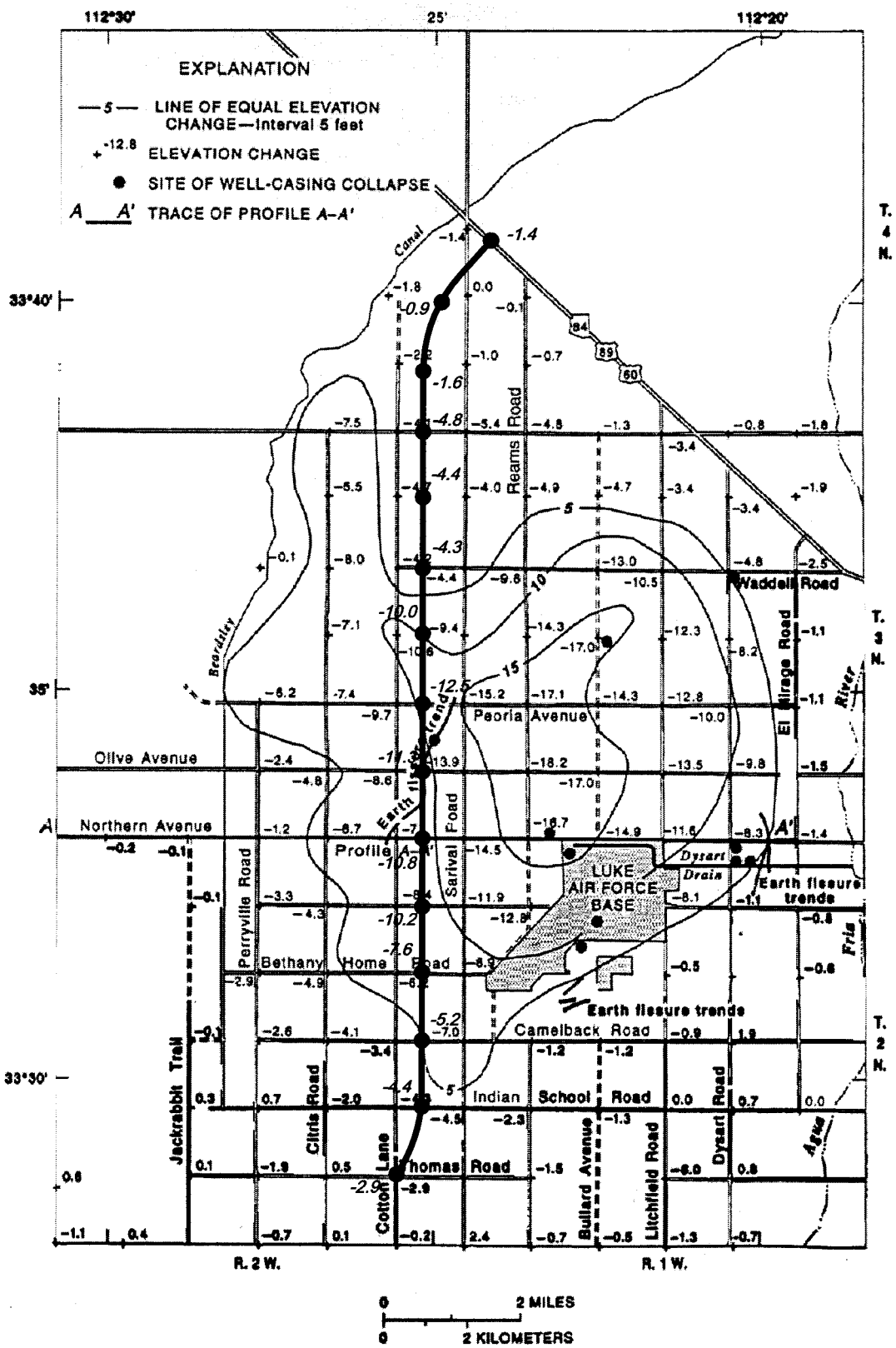
Peoria Avenue and Sarival Road and apparently intersects the Loop 303 alignment at Olive Avenue.

In light of the documented subsidence and earth fissures in the vicinity of Loop 303, URS performed a preliminary assessment of these geologic phenomena. The scope of work within this DCR was limited to review of published information on subsidence and fissuring that could potentially impact the proposed construction. A summary of discussions and preliminary recommendations related to subsidence and earth fissures is provided in this report. Additional details are included in the Preliminary Geotechnical Assessment Report to be submitted under a separate cover.

The project alignment is located in the West Salt River Valley (WSRV). This is an area of known ground water decline and associated ground subsidence and earth fissuring. In 1995, the United States Geologic Survey (USGS) in cooperation with the United States Air Force published an administrative report entitled *Investigation of Hydrogeology, Land Subsidence, and Earth Fissures, Luke Air Force Base, Arizona* (Study), by Herbert H. Schumann and Christie M. O'Day of the USGS. This report provides a comprehensive description of the hydrogeology and ground subsidence issues around Luke AFB. The following subsections related to ground subsidence and earth fissuring in the vicinity of the Loop 303 alignment were largely summarized from the above-mentioned reference.

The Study indicates that between 1952 and 1977, groundwater levels in the vicinity of Luke AFB declined by as much as 300 feet. Between 1976 and 1983, the groundwater decline was generally arrested, and water levels rose by as much as 50 feet in some wells. However, the water levels remained well below their highs prior to large-scale pumping. It is anticipated that groundwater levels continued to recover since 1983. This decline in groundwater levels has resulted in subsidence and the development of earth fissures.

Figure 2.5 is taken from the report by Schumann and O'Day discussed earlier in this section. The figure shows estimates of subsidence between 1957 and 1991. These estimates were made by comparing elevation data from historic topographic quadrangles published by the USGS. Data from Figure 2.5 were interpolated to estimate subsidence along the Loop 303 alignment. A profile of subsidence along Loop 303 is shown in Figure 2.6. Figure 2.5 shows that the maximum subsidence estimated for the area is approximately 18 feet and was measured at the intersection of Olive Avenue and Reems Road, approximately 1 1/2 miles east of the Loop 303 alignment. This is the highest subsidence recorded in Arizona. The profile depicted in Figure 2.6



Reference: Base map from U.S. Department of the Interior, U.S.G.S., Administrative Report; Investigation of Hydrogeology, Land Subsidence, and Earth Fissures, Luke Air Force Base, Arizona, 1995.

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FIGURE 2.5
Land Subsidence in Part of the Western Salt River Valley, 1957-1991

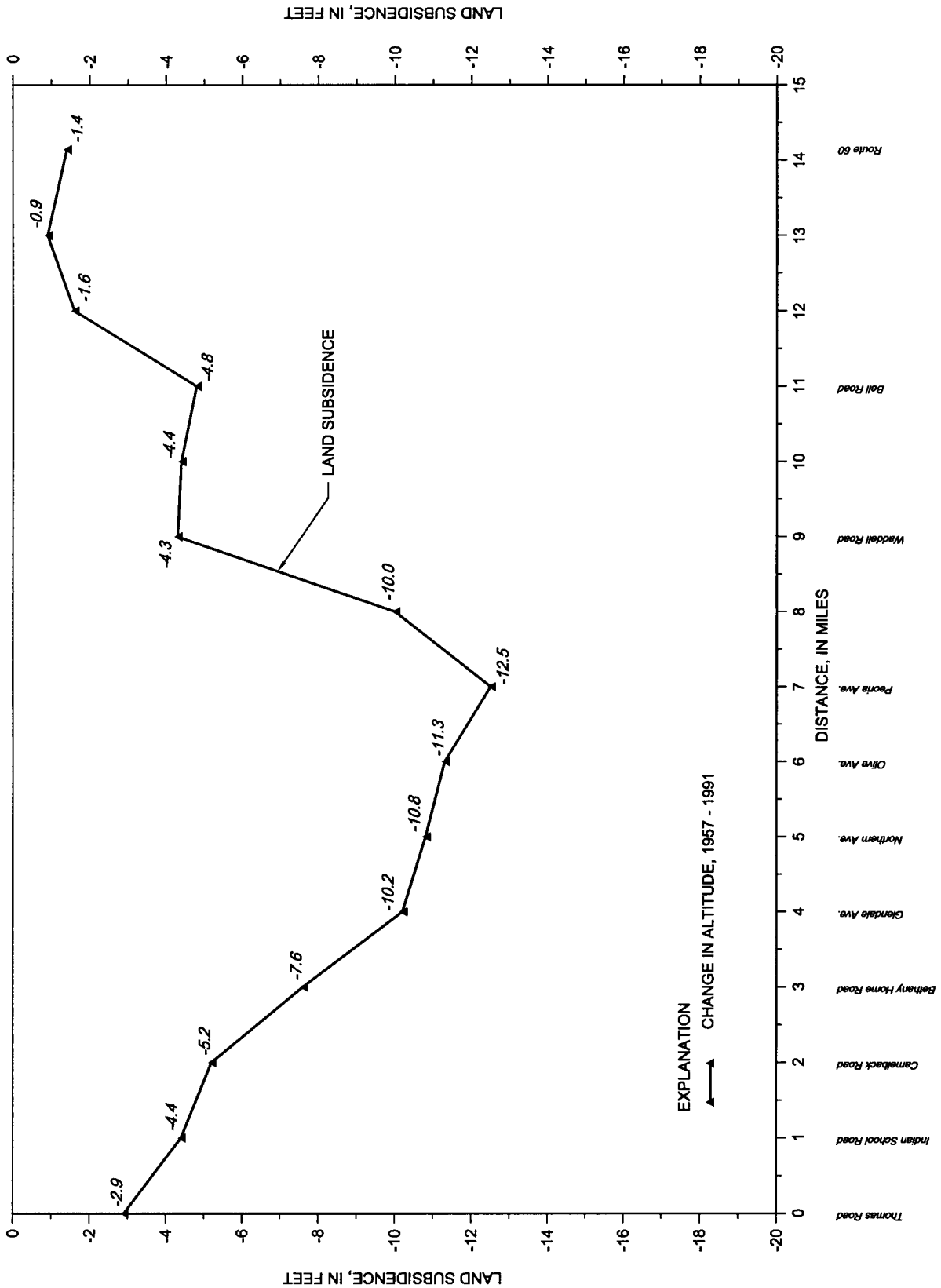

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FIGURE 2.6
Land Subsidence Along Loop 303

indicates that the greatest magnitude of subsidence along Loop 303 occurs between Bethany Home Road and Waddell Road and generally tapers to significantly smaller levels toward the north and south termini of the alignment.

Figure 2.5 also depicts three zones of documented fissuring. The first zone is located east of Luke AFB along Northern Avenue between Dysart Road and El Mirage Road; a second zone is north of Camelback Road due south of Luke AFB; and a third zone is along Olive Avenue between Sarival Road and Cotton Lane. The third zone discussed above directly impacts Loop 303 as it intersects the alignment at Olive Avenue. The final design phase should include a thorough assessment of the alignment for potential zones of fissuring. This is particularly critical because a grade separation structure (bridge) is planned for the Olive Avenue intersection.

2.10.1 Future Activities

The scope of work for this DCR was limited to general discussions on subsidence and earth fissuring along the Loop 303 alignment, based on published information. As discussed in the preceding paragraphs of this section, Loop 303 is located within a zone of significant, documented ground subsidence and earth fissuring. Careful and detailed assessment of these two geologic hazards and their impacts on the development of the proposed project should be a critical component of the final design phase. The final design phase of the project should include (but not be limited to) the following components:

- Obtain groundwater level information and prepare well hydrographs to assess groundwater trends post-1991.
- Contact and obtain (where possible) additional benchmark survey data in the project area in order to develop more realistic estimates of projected subsidence.
- Examine aerial photographs to identify and study fissures in the area.
- Perform a detailed site reconnaissance to identify earth fissures.
- Perform low-sun angle aerial photography and attempt to identify fissure traces.
- Perform soil-structure interaction studies to evaluate the impact of ground subsidence and earth fissuring on the proposed construction.

2.11 DRAINAGE

Surface runoff within the project area generally flows in a southeasterly direction. Along the SR 303L corridor, the tributary area extends west to the McMicken Dam in the northern portion

of the study area and to the White Tank Mountains in the southern portion of the study area. At the present time, small drainage culverts cross the SR 303L corridor at approximately one dozen locations. These culverts provide drainage protection for the highway from small storms but are completely inadequate for larger storm events. It is estimated that the existing ditches and culverts provide drainage protection for SR 303L from a 1- to 2-year frequency storm event. Larger storms will result in flooding conditions at various locations along the SR 303L corridor.

3.0 PURPOSE AND NEED

The need for this project is based upon continued growth and development of the greater Phoenix Metropolitan Area. This section presents the growth forecast for the corridor, the traffic forecasts for the no-build and the proposed interim and ultimate roadways and a statement of the purpose and need of the project based upon these forecasts and transportation planning standards for urban highway systems.

3.1 GROWTH AND DEVELOPMENT FORECASTS

The SR 303L corridor is at the western edge of the rapidly developing Phoenix Metropolitan Area. During the past two decades, this metropolitan area has been one of the fastest growing in the nation. That high growth rate continues today as evidenced by reports that in 2001 36,000 new homes were built. The corridor is experiencing its share of the growth. The Sun City Grand development located in the City of Surprise between Bell Road and US 60 was started in the late 1990's and is rapidly building out. Other developments as shown in Figure 2.2 in the previous section are also beginning to build out. There are continuous planned developments as far south as Greenway Road. These developments are expected to get under way in 2002.

On the south end of the corridor, the Pebble Creek development is well under way south of Indian School Road. The City of Goodyear, like to City of Surprise on the north end, is one of the most rapidly developing in the metropolitan area. The middle portion of the corridor is still dedicated to agricultural uses. There is one major existing larger lot development located west of the SR 303L alignment and south of Northern Avenue. A similar development directly to the north is getting under way. DBM development has obtained development rights to the old Caterpillar Proving Grounds located in the White Tank Mountains just to the west of the corridor. The current plans are to eventually develop 14,000 homes in that area.

Luke AFB is located just to the east of the SR 303L alignment. The 65 decibel (dB) noise contours encompass a large portion of the corridor from Indian School Road northward to near Peoria Avenue. Development in that area will be more limited to non-residential uses. The City of Glendale has strip annexed the portion of the corridor between Camelback Road and Peoria Avenue. The city has not yet master planned the area.

In the official growth forecasts prepared in 1997, MAG has assigned modest growth to the corridor area for the next two decades. The current level of activity on both ends of the corridor indicate that there is a significant probability that the growth in the corridor will be much greater

in the next 20 years than is reflected in the existing official MAG forecasts. MAG is updating the official forecasts and are expected to have those later in 2002. For use in this study, MCDOT commissioned Lima & Associates to update the growth forecasts in the corridor and to provide updated traffic forecasts for use in planning and analyzing this proposed roadway. The results of that effort are included in a report by Lima & Associates entitled *State Route 303L Land Use and Projected Traffic Data Phase I, Clearview Boulevard to I-10*.

The growth forecasts were updated based on the known developments shown earlier in Figure 2.2 and the current land use plans in the corridor as illustrated in Figure 3.1. In addition, the growth forecasts from the Jack Rabbit/Tuthill study by MCDOT were included along with some increase in growth in the King Ranch/Estrella Mountain Ranch developments. Table 3.1 shows a comparison between land use parameters in the current official MAG forecast and those prepared by Lima & Associates for this project. Lima prepared estimates for 2010 and 2020. Subsequently, MCDOT determined that the 2020 forecasts were adequate to be used for the 2025 design year forecasts.

Table 3.1
Land Use Parameter Comparisons

Land Use Parameter	2000	2010		2020	Design Year (2025)
		MAG	MCDOT (Lima)	MAG	MCDOT (Lima)
Population	35,717	45,453	109,243	65,063	149,218
Employment	5,283	22,803	27,369	29,460	39,926
Dwelling Units	NA	17,877	45,143	27,139	63,121

As can be seen, the revised forecasts includes considerably more land-use activity in the corridor than does the MAG forecast. To assess the reasonableness of these forecasts, an estimate of the ultimate build-out of development was made based upon the land use plans shown in Figure 3.1. The results are shown in Table 3.2. A high and low build-out forecast was made based on different density assumptions. Table 3.3 provides a comparison of the MCDOT design year growth forecasts prepared by Lima to the estimated average build-out forecasts. As indicated in Table 3.3, the design year forecast represents only 40.6% of the potential dwelling units in the corridor and only 13.8% of potential employment. It is important to recognize that traffic forecasts presented in the next section are based on a corridor area that is far from being built out.

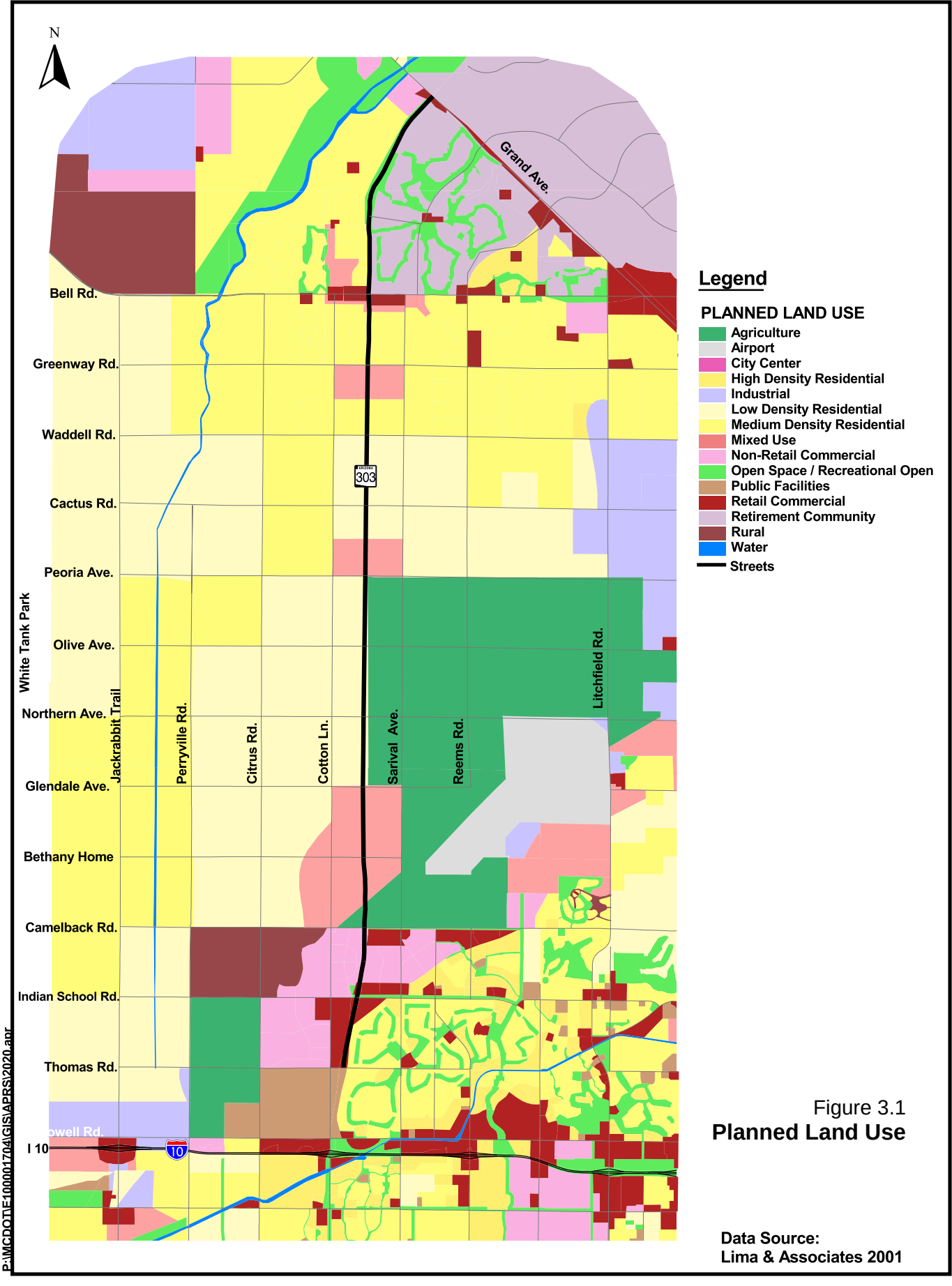

Figure 3.1
Planned Land Use

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Table 3.2
Ultimate Build-Out Dwelling Units and Employment

		Low Estimate		High Estimate		Factors	
Land Use	**Acreage**	**Dwelling Units**	**Employment**	**Dwelling Units**	**Employment**	**Low**	**High**
Agriculture	9204		460		460	0.05 Employees per GA	0.05 Employees per GA
Luke AFB	1969	213	6974	213	6974	TAZ 360	TAZ 360
High Density Residential	1704	10224		13632		6 DU/Acre	8 DU/Acre
Industrial	4510		90200		112750	20 Employees per GA	25 Employees per GA
Low Density Residential	20812	20812		41624		1 DU/Acre	2 DU/Acre
Medium Density Residential	24521	49042		98084		2 DU/Acre	4 DU Acre
Mixed Use	3504	21024	30660	24528	39420	6 DU/Acre, 8.75 Employees per GA	7 DU/Acre, 11.25 Employees per GA
Non-Retail Commercial	2915		58300		72875	20 Employees per GA	25 Employees per GA
Open Space / Recreational Open	4562					0	0
Public Facilities	1162		23240		29050	20 Employees per GA	25 Employees per GA
Retail Commercial	2735		41025		54700	15 Employees per GA	20 Employees per GA
Retirement Community	6626	13252		19878		2 DU/Acre	3 DU/Acre
Rural	3008	602		1203		0.2 DU/Acre	0.4 DU/Acre
Water	457						
Total		115169	250859	199162	316229		

GA = Gross Acre

Table 3.3
Comparison of Design Year Forecast to Build-Out Data

Category	2025 Design Year	Build-Out			2025 Design Year as % Average Build-Out
		Low	High	Average	
Dwelling Units	63,121	115,169	199,162	157,165	40.2%
Employment	39,926	250,859	316,229	283,544	14.1%

To validate the above described forecasts and holding capacity calculations, the MAG forecasts prepared in 1997 by regional analysis zones (RAZ) were examined for 2025, 2040, and 2050. Five RAZ areas approximate the study area used above: RAZ 232, 233, 254, 255, and 265. The forecast population totals in these five RAZ are 122,088 in 2025, 213,558 in 2040, and 336,847 in 2050. These forecasts indicate that the 2025 forecasts and the build-out forecasts used herein are reasonably consistent with MAG estimates.

3.2 TRAFFIC FORECASTS AND LEVELS OF SERVICE

In this section, traffic forecasts are presented for 2010 and design year for various roadway types. In addition, travel speeds for the various roadway alternative scenarios were estimated for the future years to provide a measure of how well each would perform.

3.2.1 Forecasts

In order to estimate future traffic volumes on SR 303L, MCDOT prepared traffic forecasts for 2010 and the design year. The design year is 2025. The growth forecast used to estimate the traffic forecasts was described by MCDOT as representing the 2020 to 2025 time period. The forecast volumes were developed using MCDOT's EMME2 travel demand model, which is based on the MAG regional model. The model networks were updated to include changes to the existing roadway system that are likely to occur by 2010 and by 2020. The population and employment forecasts were used as discussed in Section 3.1.

MCDOT supplied traffic forecasts for three cases:

1. **No Build** – In this scenario, SR 303L would remain a two-lane, undivided highway with at-grade intersections. The programmed interim improvements south of Indian School Road and north of Bell Road were included in the base network. Parallel and cross-roadways were assumed to be improved in accordance with the MAG 2010 and 2020 networks. It was assumed that each major street intersection would be signalized.
2. **Interim Improvements** – In this scenario, SR 303L would be improved to a four-lane, median-separated roadway with at-grade intersections. Parallel and cross-roadways were assumed to be improved in accordance with the MAG 2010 and 2020 networks. It was assumed that each major street intersection would be signalized. This facility would function as an expressway.

3. **Freeway** – In this scenario, SR 303L would be improved to a six-lane freeway with grade-separated interchanges at every mile crossroad. Parallel and cross-roadways were assumed to be improved in accordance with the MAG 2010 and 2020 networks.

The following sections describe the future traffic forecasts for each scenario.

No Build Scenario, 2010

In 2010 with this scenario, SR 303L would remain a two-lane roadway and the average daily traffic volumes on SR 303L will range from a low of approximately 7,700 vpd to 14,600 vpd. In general, traffic volumes on the parallel roadways of Cotton Lane and Sarival Avenue will equal the volumes on SR 303L.

2010 No Build average daily traffic volumes are shown in Figure 3.2.

No Build Scenario, Design Year

In the design year (2025) with this scenario, SR 303L would remain a two-lane roadway and average daily traffic volumes on SR 303L will range from a low of approximately 8,400 vpd to 12,500 vpd. In general, traffic volumes on the parallel roadways of Cotton Lane and Sarival Avenue will exceed the volumes on SR 303L, in some cases by a factor of two. These forecasts are based upon the assumption that these parallel roadways will be widened to four lanes and that Sarival would be extended between Waddell Road and Greenway Road.

Design Year No Build average daily traffic volumes are shown in Figure 3.3.

Interim Improvements Scenario, 2010

In 2010, assuming that SR 303L is widened to four lanes with at-grade intersections, average daily traffic volumes will range from 25,400 vpd between Greenway Road and Bell Road to 33,300 vpd between Olive Avenue and Peoria Avenue. On average, the average daily traffic volume will be approximately 31,000 vpd.

The average daily traffic volumes on Cotton Lane and Sarival Avenue will be significantly lower than the volumes on SR 303L, generally by a factor of four to six. Comparing 2010 interim improvement volumes to 2010 no build volumes on these parallel roadways shows that improving SR 303L to a four-lane, median-separated roadway results in both diversion from the parallel roadways and an increase in traffic in the corridor.

2010 Interim Improvements average daily traffic volumes are shown in Figure 3.4.

Interim Improvements Scenario, Design Year

In the design year with this scenario, SR 303L would be widened to four lanes with at-grade intersections and average daily traffic volumes will range from 27,200 vpd between Greenway Road and Bell Road to 33,700 vpd between Indian School Road and Camelback Road. On average, the average daily traffic volume will be approximately 32,000 vpd. The very small increase in traffic from 2010 is due to SR 303L being near its design capacity and continued improvements being made to parallel arterials.

The average daily traffic volumes on Cotton Lane and Sarival Avenue will be lower than the volumes on SR 303L, although volumes on Sarival Avenue will increase with its extension from Waddell Road to Greenway Road. Design Year Interim Improvements average daily traffic volumes are shown in Figure 3.5.

Freeway Scenario, Design Year

In the design year with this scenario, SR 303L would be widened to a four-lane freeway with grade separated interchanges at all one-mile crossroads. Average daily traffic volumes will range from 60,100 vpd between Greenway Road and Bell Road to 83,200 vpd between Indian School Road and Camelback Road. On average, the average daily traffic volume will be approximately 76,000 vpd.

The average daily traffic volumes on Cotton Lane and Sarival Avenue will be significantly lower than the volumes on SR 303L, by a large margin. Comparing design year freeway volumes to design year no-build volumes on these parallel roadways shows that improving SR 303L to a four-lane freeway results in both diversion from the parallel roadways and an increase in travel in the corridor.

Design Year Freeway average daily traffic volumes are shown in Figure 3.6.

Traffic forecast model runs (W/T 2025 NWG Socec) prepared by MAG indicate that 2025 daily volumes on SR 303L freeway could exceed 100,000 vpd. These data further indicate that there will be ample travel demand in the corridor to fully utilize a freeway by the 2025 design year.

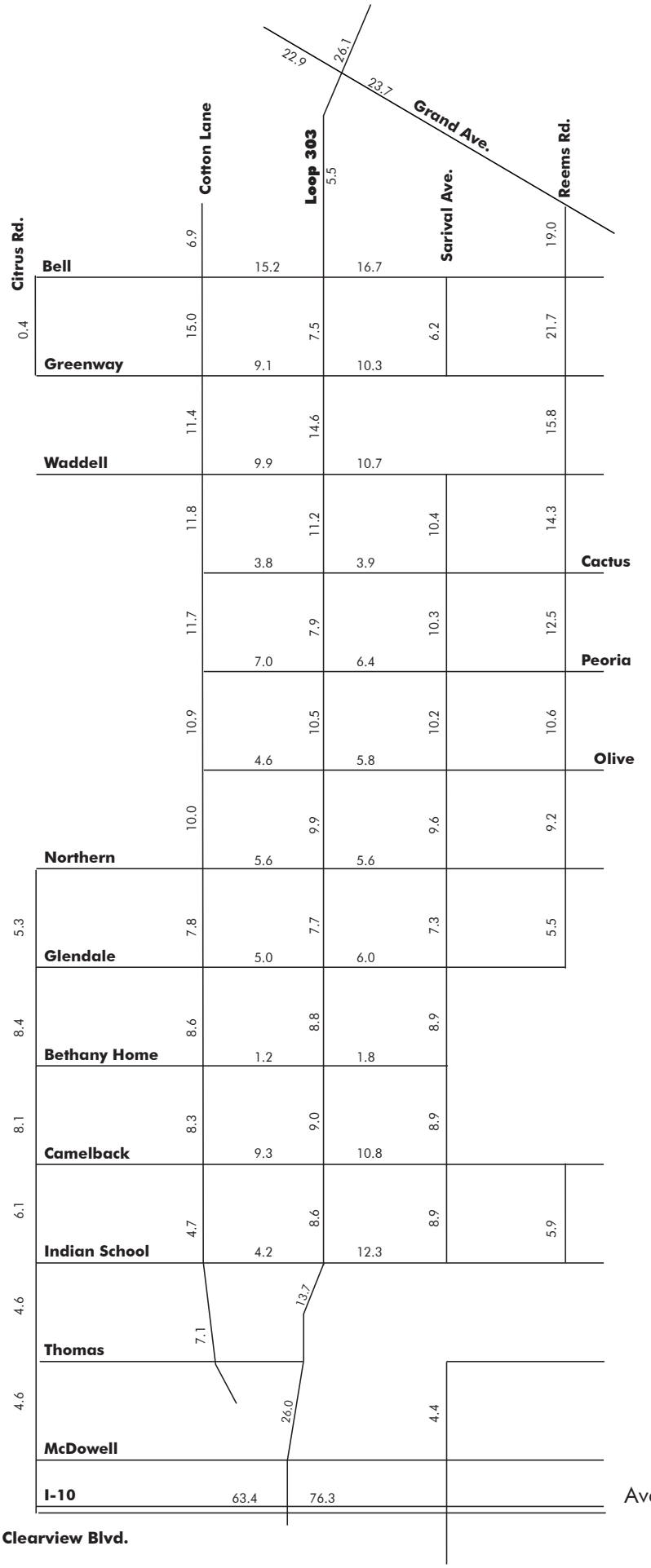


Figure 3.2

2010 No-Build

Average Daily Traffic Volumes
(ADT - 2 directions x1000)

Source: MCDOT

Loop 303 - Indian School Rd. to Clearview Blvd.
Traffic Study

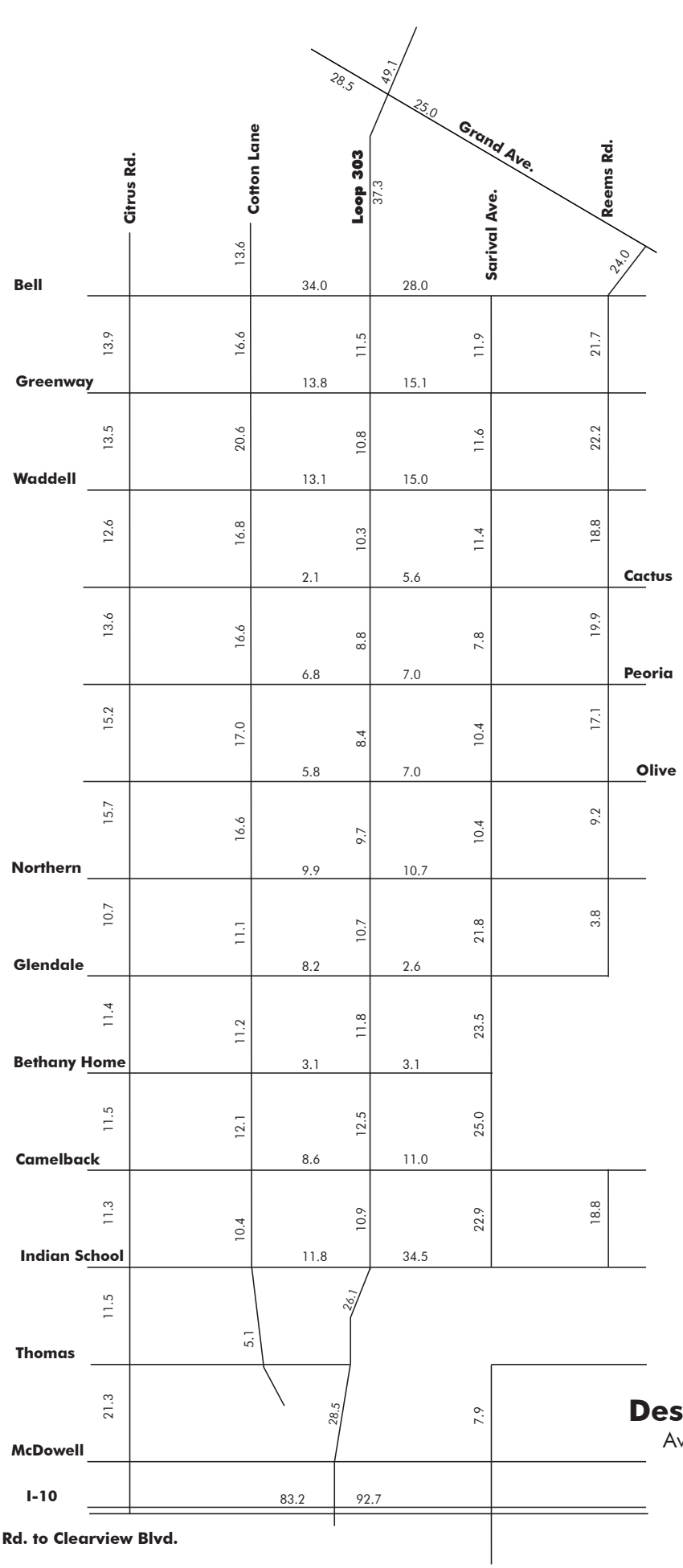


Figure 3.3

Design Year No-Build

Average Daily Traffic Volumes
(ADT - 2 directions x1000)

Source: MCDOT

Loop 303 - Indian School Rd. to Clearview Blvd.
Traffic Study

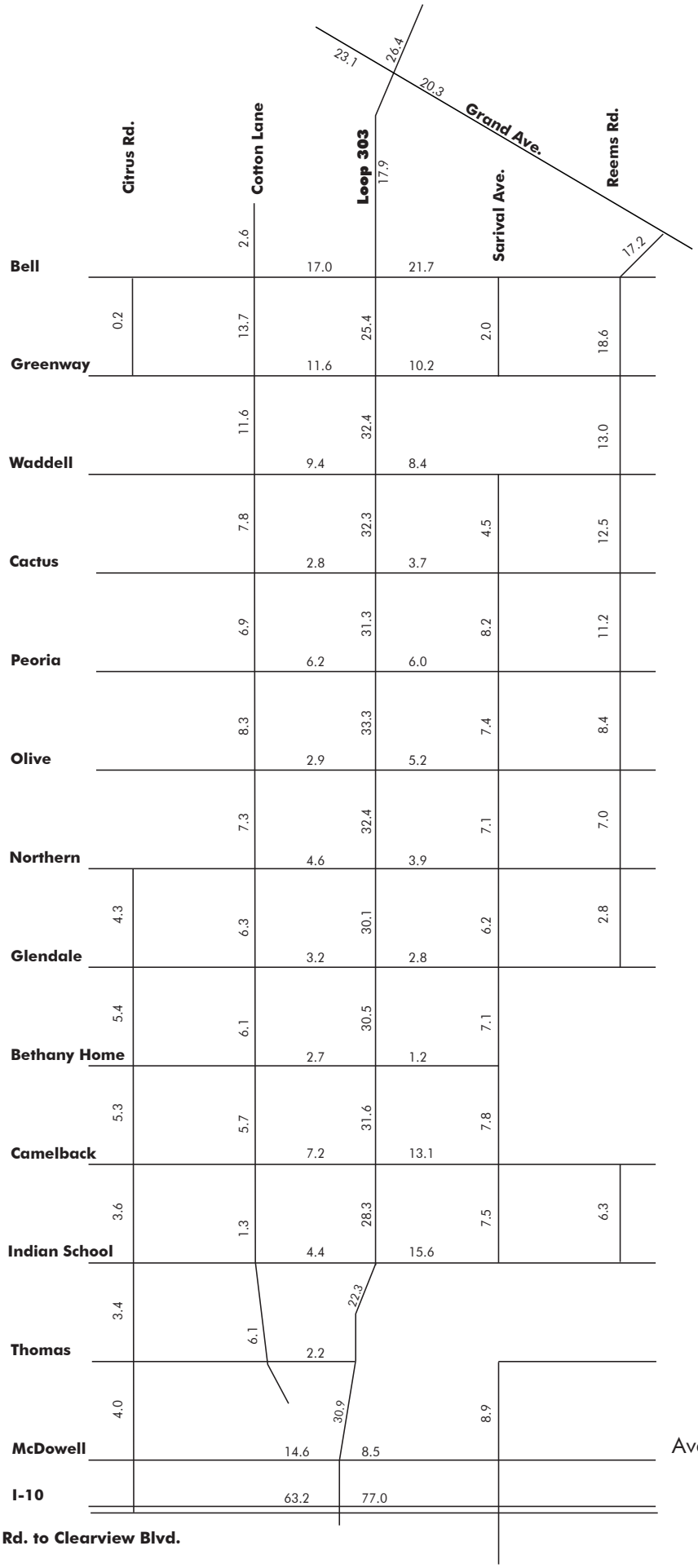


Figure 3.4

2010 Interim

Average Daily Traffic Volumes
(ADT - 2 directions x1000)

Source: MCDOT

Loop 303 - Indian School Rd. to Clearview Blvd.
Traffic Study

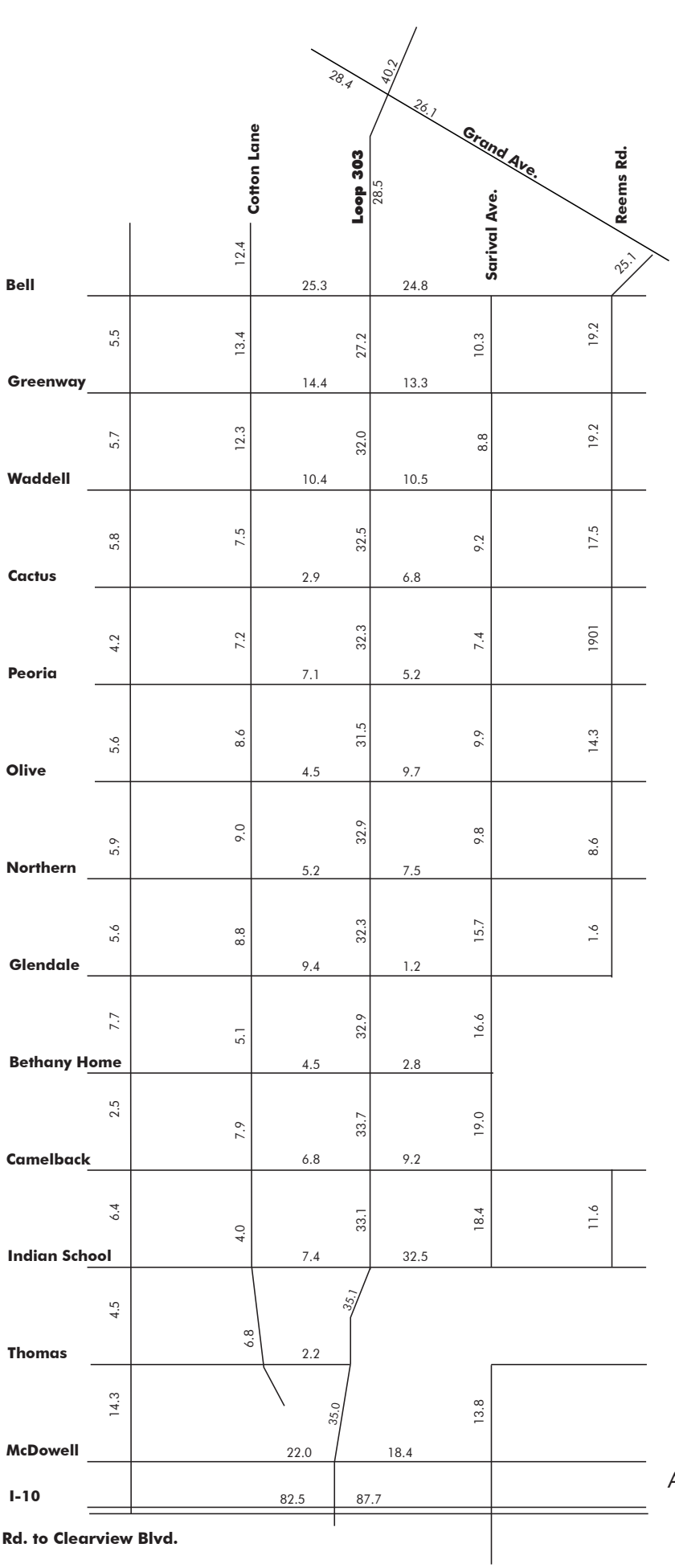


Figure 3.5
Design Year
Interim
Average Daily Traffic Volumes
(ADT - 2 directions x1000)

Source: MCDOT
Loop 303 - Indian School Rd. to Clearview Blvd.
Traffic Study

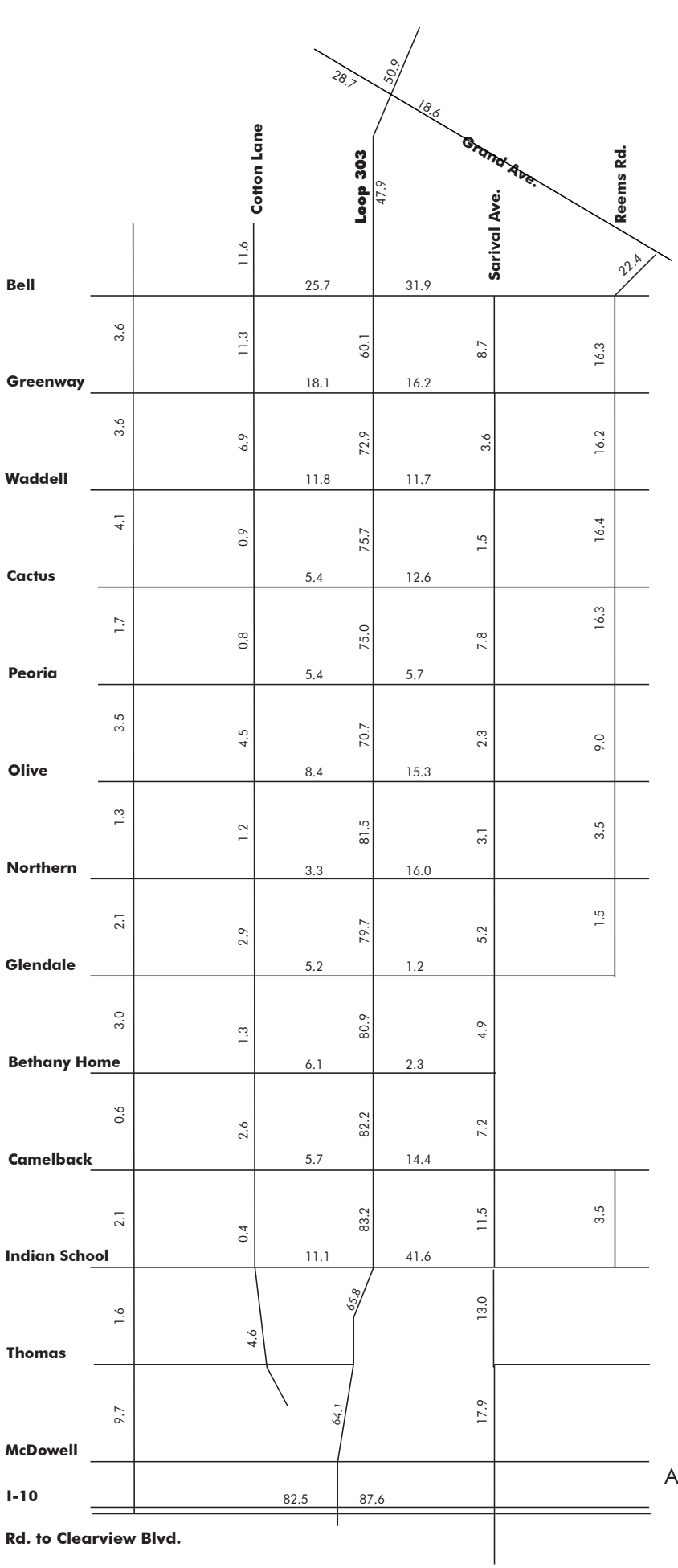


Figure 3.6
Design Year
Freeway
Average Daily Traffic Volumes
(ADT - 2 directions x1000)

Source: MCDOT
Loop 303 - Indian School Rd. to Clearview Blvd.
Traffic Study

Summary

Future volumes on SR 303L with the various alternatives is shown on Table 3.4.

Table 3.4
Future Average Daily Traffic Volumes by Segment

Segment	2010 No-Build	2010 Interim	Design Year No-Build	Design Year Interim	Design Year Freeway
Indian School to Camelback	8,600	28,300	10,900	33,100	83,200
Camelback to Bethany Home	9,000	31,600	12,500	33,700	82,200
Bethany Home to Glendale	8,800	30,500	11,800	32,900	80,900
Glendale to Northern	7,700	30,100	10,700	32,300	79,700
Northern to Olive	9,900	32,400	9,700	32,900	81,500
Olive to Peoria	10,500	33,300	8,400	31,500	70,700
Peoria to Cactus	7,900	31,300	8,800	32,300	75,000
Cactus to Waddell	11,200	32,300	10,300	32,500	75,700
Waddell to Greenway	14,600	32,400	10,800	32,000	72,900
Greenway to Bell	7,500	25,400	11,500	27,200	60,100
Average Segment Volume	9,600	30,800	10,500	32,000	76,200

3.2.2 Roadway Capacity

For the purposes of developing daily roadway capacity values for various roadway types to be used to compare against the forecasts of daily traffic volumes, the general peak hour values shown in Table 3.5 were utilized in the initial capacity calculations. The final design values are presented in Table 5.6.

Table 3.5
Design Values

K (Peak Volume to ADT)	0.10
D (Directional Distribution)	0.60 (60% in peak direction)
T (Truck Percentage)	10%

Although existing truck percentage is approximately 23%, a truck percentage of 10% was assumed for the future for these calculations. As total volumes on the roadway increase due to development activity, the proportion of trucks in the traffic stream should decline relative to passenger cars.

For various roadway configurations, capacities corresponding to a level of service (LOS) C were calculated. These calculations were based on *Highway Capacity Manual* methodologies and utilized the K, D and T values shown above. Table 3.6 presents the daily traffic capacities for various roadway types under consideration.

Table 3.6
Estimated Capacities (LOS C)

Roadway Type	Capacity (vpd)	Average Speed for Free-Flow Conditions
2 Lane Roadway – Rural	7,900	≥ 55 mph
2 Lane Roadway – Urban Traffic Signals, Turn Lanes at Intersections	13,500	40-45 mph
4 Lane Road – Urban Traffic Signals, Turn Lanes at Intersections	27,000	40-45 mph
4 Lane Freeway	52,000	≥ 65 mph
6 Lane Freeway	78,000	≥ 65 mph

For the two-lane road scenarios, the urban section has a much higher capacity than the rural section because the rural LOS C volume is based upon the ability for vehicles to pass while the urban LOS C is based upon the average delay at traffic signals. These methodologies measure very different aspects of travel and are not directly comparable.

3.2.3 Travel Speed Analysis

Using the forecasted volumes, an analysis was performed for each segment of the No-Build, Interim and Freeway Alternatives to determine the travel speeds that could be expected on each of the facilities. The analysis utilized the methodology contained in the *2000 Highway Capacity Manual* and determined the travel speed for each segment in the peak direction of the peak hour. The No-Build Scenario utilized the Urban Arterial Analysis methodology assuming that SR 303L would remain as a two-lane facility with signalized intersections at one-mile spacing. The Urban Arterial Analysis assumes that under free-flow conditions travel speeds will be 45 mph.

Segment operating speeds were determined based on the 2010 and design year future volumes. Segment speeds include both the operating speed along the segment and the delay that can be expected at the signalized intersections. Segment speeds for the peak hour/peak direction are shown in Table 3.5. Based on this analysis, it can be seen that the No-Build Alternative on average will operate at a speed of 23.4 mph in 2010 and 20.8 mph in the design year. In 2010,

there will be two segments of SR 303L which will have travel speeds below 20 mph. In the design year, the No-Build will have three segments with operating speeds at 20 mph or below.

In summary, the 20 to 25 mph speeds will be a dramatic change from today's average speeds through the corridor of 60 mph. With a modest increase in traffic volumes, traffic signals will be needed at many intersections and the speed will drop substantially. Within the next five years, it is estimated based on approved development activity in the corridor, traffic signals will be needed at nine locations between I-10 and US 60. With this number of signals and the resulting slow travel speeds, SR 303L will not serve the through and long-trip traffic from US 93 and US 60 to I-10 and will not serve the regional road function within the corridor because it will offer no advantage over parallel roads.

The analysis of the interim scenario also used the Urban Arterial Analysis methodology, with an assumption that SR 303L would be improved to two lanes in each direction and would have signalized intersections at one-mile spacing. Each of the signalized intersections would have additional left- and right-turn lanes on SR 303L and each of the crossroads were assumed to be improved at the approaches to SR 303L. Segment operating speeds are shown in Table 3.5. Based on this analysis, it can be seen that the interim roadway will operate at an average speed of 39 mph in 2010 and 37 mph in the design year.

The analysis of the freeway scenario used the Basic Freeway Segment methodology with an assumption that there would be three lanes in each direction. The free-flow speed was input as 70 mph. A separate analysis was performed for each of the merge/diverge areas along the facility as well as the signalized intersections of the ramps at the crossroads. The ramp and intersection analyses are contained in the *Traffic Report*. Segment operating speeds for the basic freeway segments are shown in Table 3.7. Based on this analysis, it can be seen that the freeway alternative will operate at an average speed of 67.7 mph in the design year.

In order to show how each of the alternatives compares to the ideal condition a table was developed which shows the speed differential of each operating segment to the free-flow operating speed for that alternative. Table 3.8 shows that the 2010 No-Build Alternative will operate 21.6 mph slower than the free-flow speed of 45 mph for a principal arterial. By the year 2020, the operating speed for the No-Build will be less than half the free-flow speed. The Interim Alternative will operate 6 mph slower than free-flow speed in the year 2010 and will be 8 mph slower than free-flow speed in the year 2020. The Freeway Alternative will have an operating speed which is only 2.3 mph slower than the free-flow speed of 70 mph in the design year.

Table 3.7
Segment Operating Speeds (mph Peak Hour/Peak Direction)

Segment	2001 Existing	2010 No-Build	2010 Interim	Design Year No-Build	Design Year Interim	Design Year Freeway
Indian School to Camelback	>60	26.3	40.1	20.4	38.0	65.9
Camelback to Bethany Home	>60	26.3	37.8	11.7	33.8	66.2
Bethany Home to Glendale	>60	26.1	43.7	14.5	42.7	66.7
Glendale to Northern	>60	27.2	40.2	22.1	33.6	67.1
Northern to Olive	>60	24.8	43.5	25.1	40.7	66.5
Olive to Peoria	>60	23.6	40.3	26.5	33.3	69.1
Peoria to Cactus	>60	27.0	33.9	26.1	40.4	68.3
Cactus to Waddell	>60	18.1	42.3	24.1	39.8	68.2
Waddell to Greenway	>60	7.4	36.4	21.2	36.7	68.8
Greenway to Bell	NA	27.4	31.8	16.2	31.1	70.0
Average Segment Speed	**>60**	**23.4**	**39.0**	**20.8**	**37.0**	**67.7**

Table 3.8
Speed Differential from Free-Flow (Peak Hour/Peak Direction)

Segment	2010 No-Build	2010 Interim	Design Year No-Build	Design Year Interim	Design Year Freeway
Indian School to Camelback	18.7	4.9	24.6	7.0	4.1
Camelback to Bethany Home	18.7	7.2	33.3	11.2	3.8
Bethany Home to Glendale	18.9	1.3	30.5	2.3	3.3
Glendale to Northern	17.8	4.8	22.9	11.4	2.9
Northern to Olive	20.2	1.5	19.9	4.3	3.5
Olive to Peoria	21.4	4.7	18.5	11.7	0.9
Peoria to Cactus	18.0	11.1	18.9	4.6	1.7
Cactus to Waddell	26.9	2.7	20.9	5.2	1.8
Waddell to Greenway	37.6	8.6	23.8	8.3	1.2
Greenway to Bell	17.6	13.2	28.8	13.9	0.0
Average Speed Reduction	**21.6**	**6.0**	**24.2**	**8.0**	**2.3**

In order to maintain adequate transportation service in the project area, it is necessary that SR 303L operate at a speed and level of service that will be above level of service for the other arterials in the West Valley. Based on the analysis, it can be seen that the four-lane interim configuration will not provide a facility that will operate much better than any other arterial. The freeway alternative will provide a facility which will attract much more traffic. The higher

operating speed of the freeway alternative will be the most significant attractive force, meaning that there will be significant relief to the other arterials in the project area. The freeway alternative will also provide a facility that can relieve traffic congestion on Grand Avenue.

3.2.4 Accident Rates

Accident rates along SR 303L have been found to be significantly higher than national crash rates for similar types of facilities. Arizona does not publish crash rates by roadway type; however, rates for Nevada are available and are believed to provide an appropriate basis for comparison. Travel characteristics in Nevada are similar to those in Arizona. Please refer to the Traffic Report for more detail.

Published crash rates from the State of Nevada for Minor Rural Arterials show that average crash rates for minor arterials are 143 crashes per 100 million vehicle miles of travel and fatal crash rates are 2.47 fatal crashes per 100 million vehicle miles of travel. Using the historical accident and traffic volume data for SR 303L in the years 1996 through 2000, it was calculated that the overall accident rate along SR 303L was 171 crashes per 100 million vehicle miles of travel. The fatal accident rate for SR 303L was calculated to be 4.38 fatal crashes per 100 million vehicle miles of travel. These rates show that SR 303L has an overall crash rate 20% higher than comparable facilities and that the fatal crash rate is over 75% higher than other minor rural arterials.

As traffic volumes increase on the existing SR 303L facility, the need for additional traffic signals at the major cross road intersections will be required. The installation of traffic signals generally reduce the severity of crashes at intersections, but may increase the frequency of crashes, especially rear end type crashes. Published data in Nevada show that the overall crash rates for urban principal arterials is the highest of any roadway functional classification with a rate of 682.57 crashes per 100 million vehicle miles of travel. The proposed interim roadway would be similar to an urban principal arterial.

Accident rates for Urban Expressways and Freeways are significantly lower than other functional classes of roadways. Data from Nevada show the fatal crash rate for urban freeways is only 0.67 fatal crashes per 100 million vehicle miles of travel, which is the lowest of any functional classification. The implementation of the ultimate freeway configuration on SR 303L would provide a major increase in safety for travel in the corridor. The freeway alternative would divert major amounts of traffic off of the adjacent arterials where they would be exposed to very high accident potential, and place them on a facility that would be one of the safest in the West Valley.

3.2.5 Summary of Traffic Analyses

After increasing steadily during the 1990's, traffic growth on SR 303L has held constant or declined in the past two years. Traffic growth was slowed by the construction activities at the north end of the corridor which resulted in closure of the roadway for several months south of Grand Avenue. Additional construction of interim improvements along the corridor will continue to affect traffic volumes in 2002. On the other hand, the rapid development occurring at the north and south ends of the corridor and the added traffic signals along Grand Avenue south of SR 303L will tend to cause increases in traffic volumes in the SR 303L corridor.

Figures 3.7 and 3.8 are provided to summarize the analyses presented in the preceding sections.

If road capacity is available, the traffic forecasts indicate that the volumes on SR 303L could increase from 4,900 vpd in 2001 to over 30,000 vpd in 2010. These projections indicate that there is ample demand in the corridor. As the volume on the existing two-lane rural roadway begins to increase only modestly (up to 6,000 to 7,000 vpd), traffic signals will be needed at many of the existing intersections. It is estimated that nine locations will require signals. As a result, the average speed on SR 303L will drop from over 60 mph today to less than 25 mph in the next three to five years. When this speed drop occurs, SR 303L will function as an arterial street and will no longer serve the regional function for through traffic and longer trip traffic. This traffic will seek other routes that are not designed for this higher speed travel including Grand Avenue, Reems Road, Sunrise Boulevard, Cotton Lane, and Sarival Road. This diversion of traffic will necessitate improvements on these other routes that are not currently planned or budgeted. Congestion at the signalized intersections along SR 303L will occur during the peak hours, and accident rates may increase from today's rates.

If a four-lane roadway is constructed as an interim project in the corridor, the capacity of the roadway would increase by a factor of four over the existing roadway. Traffic volumes are expected to increase rapidly and exceed 30,000 by 2010. Traffic signals will be required at most locations. As a result, the travel speed is expected to drop from over 60 mph today to average below 40 mph in 2010. When this speed drop occurs, some traffic will seek other routes where practical. As a result, Cotton Lane and Sarival Road are expected to serve much more traffic and will have to be built as arterial roadways. These improvements are not funded or programmed. With the lower average speeds and the stops required at traffic signals, SR 303L will only marginally serve the regional function for through and longer trip traffic. Traffic growth on SR 303L would expect to be very limited after 2010 because there will be some traffic congestion at intersections, it will no longer be attractive to through traffic, and it will offer no

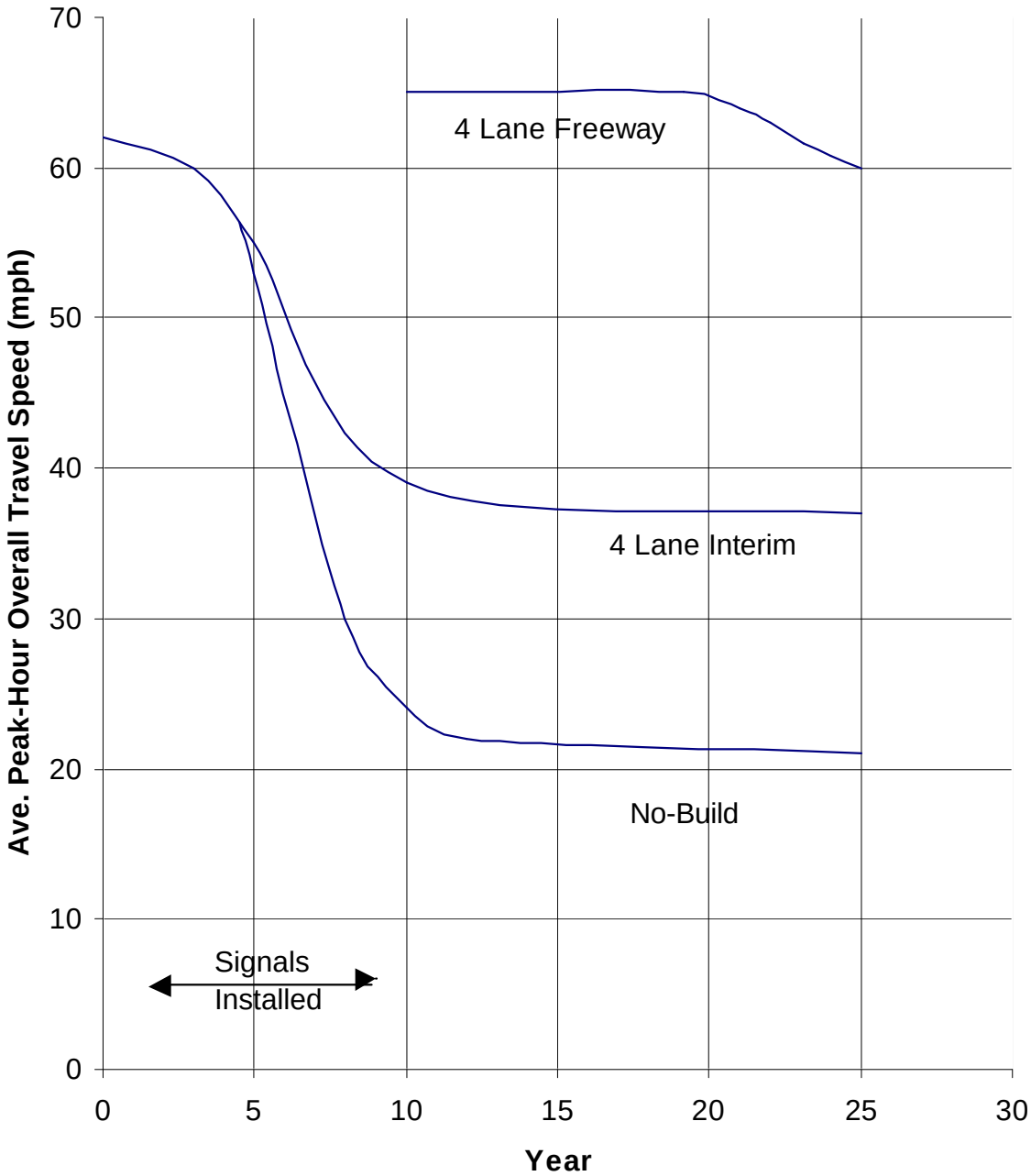


Figure 3.7

PROJECTED TRAVEL SPEEDS ON SR 303L BY TYPE OF ROADWAY

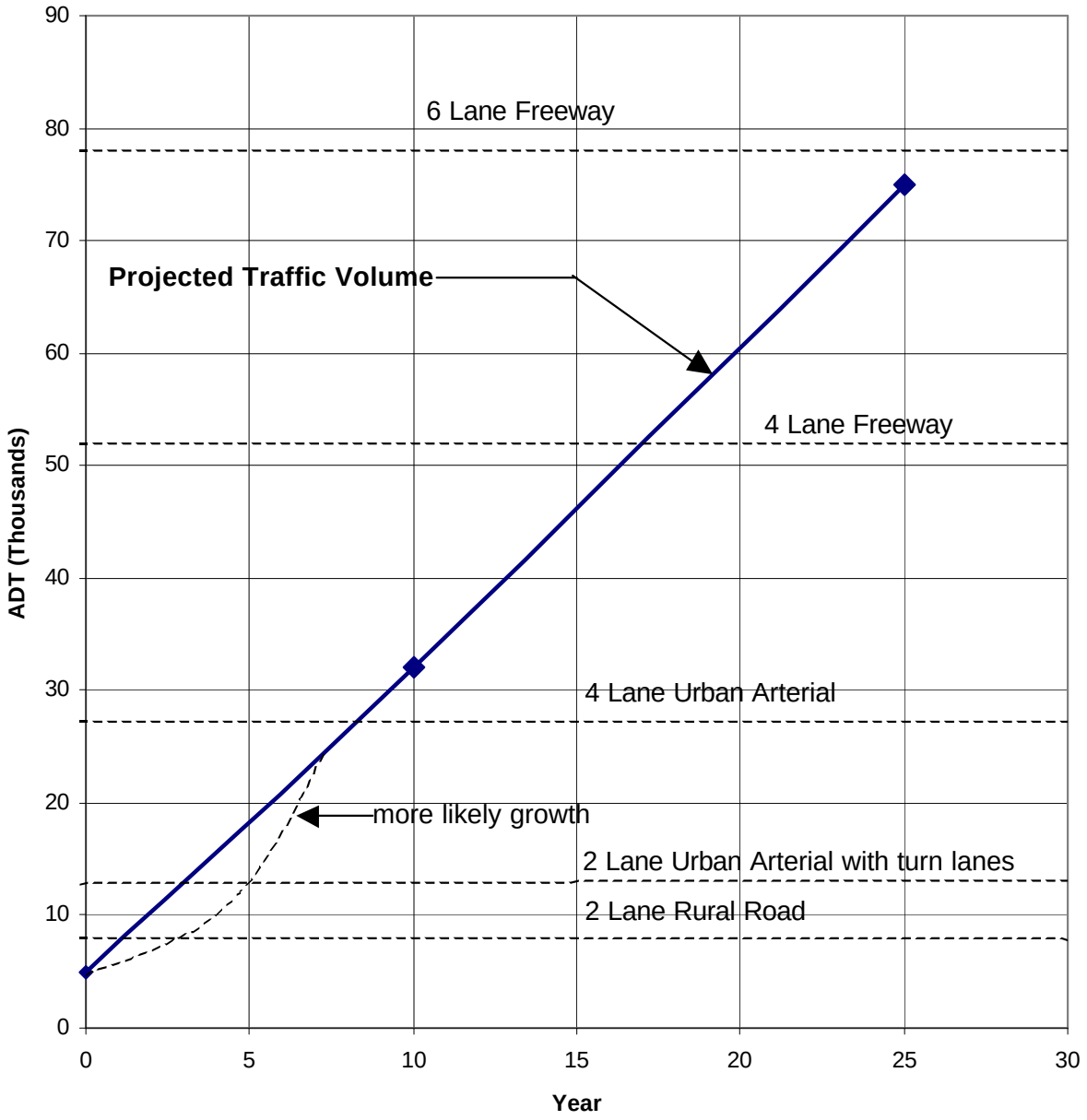


Figure 3.8

PROJECTED VOLUME VERSUS DESIGN CAPACITIES * OF VARIOUS TYPES OF ROADWAYS

* Based upon level of service C for various types of roadways

advantage over Cotton Lane or Sarival Road for the longer trip corridor traffic. With this interim roadway, the accident rate on SR 303L is expected to remain high.

If a four- or six-lane freeway is constructed by 2020, it will attract up to 80,000 vpd and still provide travel speeds in excess of 60 mph. As a result, the route will continue to provide its full regional function and will delay the need for improvements on other routes. It will divert traffic from other routes including Grand Avenue which is congested and has 19 signals between SR 303L and SR 101L. With the construction of a freeway, the accident rate on SR 303L is expected to be substantially less than today's rate.

3.3 PURPOSE AND NEED STATEMENT

The proposed project is to construct a freeway from I-10 to US 60 along the corridor identified between Cotton Lane and Sarival Road. The **purpose** of this project is as follows:

- **Provide a vital link between I-10 and US 60 to serve through traffic and traffic entering and leaving the Greater Phoenix Metropolitan Area**. US 60 serves as a continuation of US 93 which links the Phoenix area to I-15 in Las Vegas. This route is being upgraded to four-lane divided expressway standard from SR 303L to I-15, and it will play an increasingly major role in interstate travel in Arizona. The proposed SR 303L would be the only fully access controlled, grade separated connection from US 60/US 93 to the interstate and urban freeway system in the metropolitan area. The proposed project would divert 14,000 vpd from Grand Avenue, divert some traffic from other arterials, and provide an appropriate safe, high speed, high capacity route that is designed to accommodate this long-trip traffic. If the project is not constructed, there will continue to be a gap in the intrastate highway system. The long-trip and through traffic from US 93 will have to use arterial streets with numerous traffic signals and stop-and-go traffic flow. There will be increasing traffic congestion on these arterials with the mix of through traffic with local arterial traffic.

- **Provide a link in the planned freeway/expressway system for the Greater Phoenix Metropolitan Area**. SR 303L is part of a planned system of freeways, and it would link I-10 to I-17 on the west and north sides of the metropolitan area. The proposed project would be a vital portion of this planned system. The route was first placed on the Regional Freeway Plan in 1985, right-of-way has been preserved, and an interim two-lane roadway has been constructed. The corridor is 9 miles west of SR 101L so it is at the outer edge of the range of typical urban freeway spacing. The corridor would provide a high-speed, high-capacity facility that offers a level of performance not available on any other type of transportation system. Having a system of freeways reasonably spaced throughout the metropolitan area is

vital to the economic vitality and the quality of life in large cities such as the Phoenix area. Such routes provide residents with choices of places to work, live, shop, and recreate while also providing a route designed to accommodate regional and through commercial traffic.

- **Provide a regional route to serve the developing area west of the Agua Fria River and east of the White Tank Mountains**. The corridor area from I-10 to US 60 is 15 miles long and 5 miles wide. Urban development is rapidly expanding in the cities of Goodyear and Surprise at the southern and northern ends of the corridor. The area is projected to have a population of 149,218 in 2025 and eventually house 250,000 to 300,000 residents. The proposed SR 303L would provide a regional roadway to carry longer trips in the corridor and remove this traffic from the local arterials that are designed to serve major land uses and serve medium length trips. A decision to construct the proposed project will help ensure that compatible land uses develop adjacent to the roadway.

- **Provide a safer highway**. The existing roadway has a high fatality rate and crash rate. The higher-than-average rates are expected to continue if high-speed through and longer-trip traffic is forced to go through traffic signals at each of the 13 arterial crossings of the corridor. The proposed fully access controlled grade separated freeway will provide the safest type of roadway. Freeways have fatality rates and crash rates that are substantially less than any other type of roadway.

- **Accommodate efficient expansion of the Metropolitan Area**. The SR 303L corridor is part of the original Salt River Valley that was developed for agricultural purposes. As a result, the corridor area has an established water supply, is flat and easy to develop, and is served by an existing grid of arterial streets. It is one of only a few areas with such amenities that is currently undeveloped. As a result, it is a prime area to accommodate future expansion of the Phoenix Metropolitan Area. Since metropolitan growth is inevitable, directing growth to this corridor is consistent with regional goals since development in the corridor can be accomplished efficiently and served well with infrastructure. The proposed SR 303L would promote and accommodate this efficient growth pattern.

The **need** for the project is as follows:

(1) Provide Freeway System Spacing

The closest regional routes are SR 101L located 9 miles to the east and east of the Agua Fria River and the Sun Valley Parkway located 14 miles to the west and west of the White Tank Mountains. These two existing routes are physically separated from and too far from the project

area to serve the corridor. Common spacing for freeways in urban areas is 4 to 8 miles. The freeway system spacing in the Phoenix area exceeds the typical spacing because the arterial system is more regular and continuous than in most areas and, therefore, it carries a higher percentage of urban travel than in many urban areas. Nevertheless, a system of freeways that enable motorists to travel longer distances at higher speeds is an essential part of the urban transportation system. The freeway system relieves the arterial streets of these longer distance trips and allows those arterials to serve the dual role of moving traffic and providing access to land uses. Clearly, the proposed SR 303L is needed to provide freeway system spacing. The resulting spacing is greater than desirable but adequate for the metropolitan area and consistent with the Regional Long Range Transportation Plan.

(2) Connect Two Major Highways

US 60 serves as the extension of US 93 which links I-15 in the Las Vegas area and I-40 in northern Arizona to the Phoenix Metropolitan Area. US 93 is currently being upgraded to a four-lane divided highway throughout Arizona. Work is under way to construct a new bridge over the Colorado River to replace the existing two-lane roadway that utilizes the top of Hoover Dam. ADOT has recently constructed several sections of four-lane highway through the mountainous sections between Wickenburg and I-40 and more sections are programmed. A bypass of Wickenburg is being studied.

These improvements to US 93 are a reflection of the increased importance of this route as a carrier of intercity and interstate traffic. This route must connect to the Phoenix metropolitan freeway system and to the Interstate System in the metropolitan area.

US 93/US 60 traffic has three existing primary ways to enter the urban area: (1) continue on US 60 (Grand Avenue) to SR 101L; (2) use SR 74 to I-17; or (3) use the existing SR 303L interim two-lane road. For traffic destined for the western portion of the urban area, routes 1 and 3 above have the following deficiencies.

Grand Avenue (US 60) east of the SR 303L interim connection is being increasingly urbanized, is functioning as an arterial street, and is not suitable as a connection for US 60/US 93 to the urban freeway system. Several new traffic signals have recently been installed, and at least two more signals have been approved. The result will be 19 signals in a distance of 11 miles between SR 303L and SR 101L (one signal every 0.6 miles). Due to the diagonal orientation of Grand Avenue, the signals are not evenly spaced which makes good signal progression difficult. A current corridor study being conducted for MAG for the section of Grand Avenue between SR 303L and SR 101L indicates that significant upgrading of Grand Avenue is highly unlikely. It

is expected to be widened to six lanes, and one or more grade separations might be incorporated but are not part of any adopted plan and are not funded.

Based on recent traffic counts, it appears that existing SR 303L is diverting approximately 3,000 vpd from Grand Avenue. Based on the design-year forecast, as an expressway SR 303L will continue to divert 3,000 to 5,000 vpd; whereas if it is built as a freeway, it will divert 14,000 vpd. This additional diversion will enable Grand Avenue to continue to provide acceptable levels of service with some widening and perhaps construction of key grade separations (such as at Bell Road). Without SR 303L, the traffic congestion on Grand Avenue would increase, and there are no plans that would solve this growing traffic problem. The proposed SR 303L would meet this need.

The existing SR 303L is a two-lane roadway carrying 4,900 vpd. It functions as a rural two-lane highway on which the ability to pass slower moving vehicles is the primary criteria to determine level of service. The design capacity (LOS C) for this roadway is estimated to be 7,900 vpd. The volume on the roadway is expected to surpass its capacity in less than five years.

Traffic signals at the one-mile grid of arterial crossings of SR 303L will be necessary as traffic volumes continue to increase on the highway as well as on the cross streets. These signals will reduce the travel speed on SR 303L from over 60 mph today to less than 25 mph. This drop in speed will reduce the amount of traffic diverted from Grand Avenue. Upgrading SR 303L to a freeway will divert long-distance traffic from Grand Avenue which is not designed to handle it and provide a regional highway to serve this travel.

SR 74 does provide a free-flow, two-lane rural highway linking US 60 to I-17. This route is and will continue to be used by those motorists that are destined for the northern, central, and eastern parts of the metropolitan area. This route does not serve the majority of the truck traffic on US 60 as described below. The proposed SR 303L will provide a free flow direct connection between US 60 and I-10 that will serve through and long-trip traffic and divert traffic from other routes which are not able to accommodate it.

(3) Serve Truck Traffic

Truck traffic is a special component of the US 60 long-distance travel described above. A roadside interview survey was conducted for MAG on all major highways serving the Phoenix

area[1]. The survey found that on US 60 and US 93 west and north of Wickenburg, the combined routes served 1,809 trucks per day which accounted for 23% of the total travel. Of these trucks, 65% were through traffic (passing through the Phoenix area) and 35% were destined for places within the metropolitan area. The primary destination in the urban area was the I-10 corridor west of I-17. The primary destination for through trucks is I-10 east toward Tucson and New Mexico.

Traffic classification counts were made in December 2001 by MCDOT on US 60 near SR 303L and on SR 303L. These counts indicated that approximately 30% of the truck traffic entering the urban area on US 60 uses SR 303L. The truck traffic on SR 303L amounts to approximately 24% of all vehicles using that route. Clearly, existing SR 303L is serving as a truck diversion route for US 60 because it provides a relatively free-flow route to I-10 (except for one existing traffic signal at Bell Road and the dogleg at Thomas to Cotton Lane).

Truck traffic into the urban area is expected to continue to increase as the urban area and the state continue to develop. The proposed SR 303L would provide a non-stop route that would be designed to accommodate this truck traffic, and the potential adverse impact of this truck traffic (i.e., noise) can be estimated and mitigated. Without a freeway on SR 303L, signals will eventually be needed at most, if not all, of the 13 cross streets. With more traffic signals, fewer trucks will divert from US 60 to SR 303L, and those non-diverted trucks will remain on Grand Avenue where there are 19 traffic signals. The additional noise near Grand Avenue cannot be effectively mitigated because of the frequency of intersecting streets.

(4) Accommodate Development in the Corridor

The SR 303L corridor is at the edge of the rapidly developing urban area. The City of Goodyear at the south end of the project is beginning to develop very fast as evidenced by the Pebble Creek development south of Indian School Road. The City of Surprise and particularly the Sun City Grand development have grown very rapidly on the north end of the project. There are numerous developments planned or under way throughout the corridor. The City of Glendale has strip annexed the portion of the corridor between Peoria Avenue and Camelback Road. Development is continuing in that area under the jurisdiction of Maricopa County. The City of Glendale has not started its process to master plan the area. Much of the Glendale planning area is within the Luke Air Force Base noise contours (AICUZ 65 DNL) and is, therefore, not suitable for

[1] *Phoenix External Travel Survey*, Parsons Transportation Group, February 2001, for Maricopa Association of Governments.

residential development. However, the area is expected to be developed with industrial and commercial uses.

As part of this overall project study effort, population and employment forecasts for the corridor area were prepared for MCDOT. These forecasts were based on existing ongoing and approved development. The forecasts indicate that by 2020, there may be 151,000 residents and 39,000 jobs in the corridor. Based on the current general plans for the area, the 2020 forecasts represent 41% of the build-out residential population and only 14% of the build-out employment. There is substantial potential that these forecasts could be exceeded by 2020.

The proposed SR 303L would be the only regional highway to directly serve a corridor that will some day be home to 250,000 to 300,000 people. Without this route, residents in the northern portion of the corridor would have to travel 10 to 12 miles to the south on arterial streets to reach I-10 or travel 8 to 10 miles east on arterial streets to reach SR 101L. Arterial streets are not planned to carry such long trips in addition to carrying shorter trips and providing access to activities and land uses that develop along the routes. The proposed SR 303L would provide the necessary regional route to serve the area to meet standard transportation system planning guidelines.

(5) Serve Projected Traffic Volumes

The existing SR 303L is a two-lane rural highway from US 60 to Thomas Road. The route then "doglegs" on Thomas Road to Cotton Lane and follows Cotton Lane to I-10. MCDOT has an approved project to construct a four-lane divided highway from just south of Indian School Road southward to curve onto Cotton Lane at McDowell Road. MCDOT also has approved projects to extend SR 303L eastward across US 60 to Lake Pleasant Road.

The current road carries 4,900 vpd. The design capacity[2] of a two-lane rural highway is approximately 7,900 vpd. With the current development that is taking place in the corridor and the road improvements that will be made at either end of the corridor, the design capacity will be reached in the next five years.

There are 13 arterial streets that cross the SR 303L corridor between I-10 and US 60. Each of these streets will be constructed as an urban arterial as the corridor area is developed. The

[2] *Highway Capacity Manual*, Transportation Research Board, 1994 with updates. Design capacity was based on level of service C, which is typical for suburban areas. Capacities were derived from the appropriate rural or urban tables.

combination of increasing traffic on SR 303L and on the cross streets will necessitate installation of traffic signals at each of these 13 crossings in the future. When this occurs, SR 303L will function as an urban arterial instead of a rural highway as it does now. Under these conditions, a two-lane road with added left- and right-turn lanes at signalized intersections has a design capacity of approximately 13,500 vpd. A four-lane highway with additional turn lanes has a design capacity of approximately 27,000 vpd. Urban arterials often carry 30,000 to 50,000 vpd with peak-hour congestion.

If SR 303L is constructed as a four-lane, at-grade expressway, there will be traffic signals at one-mile intervals. The average travel speed with optimal signal progression would be approximately 42 mph. The projected traffic in the design year on the expressway is 32,000 vpd. These volumes exceed the design capacity so the peak-hour speeds could drop below 40 mph. This type of road offers only modest advantages over typical arterials. The average travel speed and potential for stopping at numerous traffic signals will negate the regional road function that is described above for SR 303L. Less traffic will be diverted from Grand Avenue, Cotton Lane, and Sarival Road. Trucks and longer trips will be subjected to long stretches of roadway with numerous traffic signals and the related stop-and-go travel.

If SR 303L is constructed as a freeway, the projected traffic in the design year is 76,000 vpd. A four- or six-lane freeway should be able to accommodate these volumes with little or no slowing in the peak hour. Traffic would be free flow, and average travel speeds would be approximately 65 mph. This type of road would fully serve the regional road functions as described above and will continue to serve the corridor well beyond the current forecasts for growth in the area.

Construction of SR 303L as a freeway will divert traffic from parallel streets which may postpone the time when these streets need to be improved to urban arterials. This delay could help county and city budgets and increase the potential that street improvements can be built by developers as the area urbanizes. The SR 303L freeway will also divert some traffic from existing urban arterials. Up to 3,000 vpd will be diverted from Reems Road and Sunrise Boulevard through the Sun City Grand area in 2020 if the freeway is completed.

(6) Provide Safer Roadway

A fully grade-separated access-controlled highway is the safest type of roadway in the nation. The Interstate System is this type of roadway which is also referred to as a freeway. The Valley Area Freeway System is designed to meet national Interstate Standards.

National and state statistics show that on a freeway there are approximately half the number of collision-related fatalities per vehicle-mile traveled as on any other type of roadway. SR 303L is proposed to meet these freeway standards and to provide the levels of accident reduction found elsewhere.

The existing roadway and the interim roadway with signalized intersections would have a higher accident rate than the ultimate roadway. Motorists tend to travel on SR 303L at high speeds because it serves long trips and because it has access control. The mix of high-speed traffic with traffic signals every mile will likely produce a higher-than-average fatality rate.

Early completion of the ultimate freeway will reduce the number of fatalities on this roadway.

(7) Promote Compatible Land Use Development

SR 303L was first placed on the MAG Long Range Transportation Plan in 1985. The study that recommended this route also indicated that the route may not be needed as a freeway prior to 2005, but right-of-way should be preserved. ADOT worked with property owners to have much of the freeway right-of-way dedicated in exchange for the early construction of an interim two-lane roadway in the corridor. These actions were completed in 1992. By having the right-of-way set aside, development can be designed to be compatible with the proposed freeway. This corridor reflects good community planning where major regional infrastructure needs have been identified, planned, and designed well before development to minimize conflicts and to promote logical development patterns.

(8) Implement Adopted Transportation Plan

The project is included in the MAG Long Range Transportation Plan as part of a regional freeway/expressway system that will provide a continuous route from MC 85 to I-17. The route was first added to the plan in 1985. It was removed from the plan between 1995 and 1999 due to uncertainties regarding the funding of the route. It was added back into the plan as part of the next generation freeway/expressway system that will be needed after completion of the currently funded program in 2006. SR 303L is a vital part of the transportation plan and implementation of the proposed project would help achieve the goal of the plan.

(9) Accommodate Expansion of the Urban Area

The corridor area is prime land for expansion of the urban area. The land is basically flat, it has an excellent established water supply from a canal system that delivers water from Lake Pleasant, and it has already started developing. Other areas with comparable features include the

far southeast portion of the County (Gilbert and Queen Creek) and the area south of I-10 and west of I-17. With the planned SR 303L route and the established grid of arterial roads, this corridor is well suited to support substantial growth and provide the transportation infrastructure necessary to serve that growth. In contrast, areas to the north of the corridor have few established roads, numerous natural and manmade constraints to developing a road system, and no planned freeways. As a result, growth in the SR 303L corridor is more consistent with good regional development planning than most other areas adjacent to the current urbanized area. Construction of SR 303L would accommodate the development in this logical corridor and perhaps delay development in other areas which are less compatible with efficient regional development patterns.

4.0 ALTERNATIVES SELECTION

4.1 CORRIDOR, ALIGNMENT AND ROADWAY TYPE DETERMINATION

Based on prior studies, alternatives for SR 303L have been narrowed. Described below are the corridor, alignment, and the facility type analyses that help define the project as proposed in this DCR.

4.1.1 Corridor Alternatives

The general corridor was identified in the *West Area Transportation Analyses* based on freeway spacing and avoidance of existing urban developments. SR 101L is located just east of 99th Avenue. Minimum freeway spacing is generally considered to be 4 miles. With the complete grid of arterials in the Phoenix Urban Area, the freeways are generally spaced 6 to 10 miles apart. The Agua Fria and New rivers and Luke AFB limit the density of urban development west of SR 101L. Therefore, it appears logical that the next freeway route would be west of Luke AFB and east of the White Tanks Regional Park. The project in the regional setting is shown in Figure 1.2.

Some people have suggested that Sun Valley Parkway be considered as an alternative to the SR 303L corridor. This roadway is located west of the White Tank Mountains 14 miles from the SR 303L corridor location. Sun Valley Parkway will serve development that will eventually occur west of the mountains and probably some day will be considered for upgrading and extending northward toward Wickenburg with a connection to US 60. When this occurs, some through traffic might choose to use that corridor to reach I-10 instead of US 60 and SR 303L. The Sun Valley Parkway route will be longer and would have no apparent advantage. Since the bulk of the traffic projected to be on SR 303L comes from places other than US 60 at Wickenburg, Sun Valley Parkway is not an alternative.

Some people have also suggested that the CANAMEX corridor be constructed soon instead of upgrading SR 303L. MAG has designated a corridor for the CANAMEX highway that is located 5 miles west of the Sun Valley Parkway along Wickenburg and Vulture Mine roads. This corridor would extend from US 93 north of Wickenburg southward to I-10. Such a route would only serve through traffic. Based on analyses contained in the Final Report for the CANAMEX corridor prepared for ADOT and MAG in August 2000 by Kimley-Horn & Associates, this route would divert very little traffic from the SR 303L corridor because there is very little through traffic. Since this route would be almost 20 miles west of SR 303L, it is clearly a different corridor and cannot be considered an alternative to SR 303L.

On this basis, the SR 303L corridor is defined as being located between Luke AFB and the White Tank Mountains.

4.1.2 Alignment Alternatives

As described above, the SR 303L corridor was identified to be west of Luke AFB because of freeway system spacing criteria, natural constraints, and existing developments.

The first continuous arterial west of Luke AFB is Sarival Road. West of Cotton Lane, there is a large rural subdivision, a state prison, and an abandoned race track. Between Cotton Lane and Sarival Road, the area is agricultural. That area is expected to be urbanized in the future, so it is reasonable to plan a freeway corridor in advance of the development to help ensure that compatible development is built adjacent to the freeway corridor. As a result, the corridor location was selected to be between Cotton Lane and Sarival Road.

In 1987, ADOT began the location studies and EA of the planned route. The *Draft Reconnaissance Report* prepared in February 1987 by Cella Barr & Associates determined the best-fit alignment for the Estrella Freeway from MC 85 to I-17. The proposed alignments avoided conflicts with existing and proposed land development. Other factors that were taken into consideration were compatibility for future extension or connections, impact on public utilities and wells, and cultural resources. In this report, the Estrella Freeway was divided into three sections: Cotton Lane Section, Agua Fria Section, and Northwest Loop Section. In the Cotton Lane Section, which extended from MC 85 to Grand Avenue, eight alternatives were evaluated, designated as A-1 through A-8, respectively. All alignment alternatives were on or between Cotton Lane and Sarival Road. Based on these studies, the general alignment selected is on the Cotton Lane section line south of I-10 and on or near the mid-section line north of I-10. The alignment was refined along this general location and documented in the *Estrella Freeway Preliminary Location Plan and Profile* prepared in November 1991 by Cella Barr & Associates.

In 1991, ADOT completed an EA for this planned new route and obtained right-of-way dedications for the route on the basis that a two-lane interim road be constructed within that right-of-way. That road was opened to traffic in 1992. To construct the roadway, irrigation systems were modified, and utilities were relocated to provide a relatively clean corridor for future freeway construction. Because the right-of-way was dedicated, no urban development has occurred within the designated right-of-way. As a result, the alignment as shown is the only logical place to put a new highway within the corridor. Any other alignment would be disruptive to existing residential, commercial, and agricultural uses. The alignment was cleared environmentally through the 1991 EA. As a result, the issue is whether to upgrade SR 303L, not where should the road be placed.

4.1.3 Facility Type

SR 303L was envisioned as a freeway in the original *West Area Transportation Analyses* and all the subsequent location studies, EA, and right-of-way dedication. The route crosses 13 east-west arterial streets between I-10 and US 60. At each of these streets, there are three options for SR 303L: (1) signalized intersection; (2) grade separation; or (3) interchange. If all or most of the intersections are signalized, SR 303L will function much like an arterial street such as Cotton Lane or Sarival Road when the area becomes urbanized. As such, SR 303L would offer little advantage over these arterials. It is estimated that the maximum average overall speed on SR 303L through the project limits would be 42 mph if all intersections are signalized.

Such a roadway would not attract through traffic and would provide a continuation of the rural routes of US 60 and US 93 to link them to the interstate system and the urban freeway system. Such a route would not provide a high-speed, high-capacity part of the metropolitan freeway system that allows motorists to move long distances in the metropolitan area on a system that is designed for and can accommodate high volumes of traffic. As a result, a grade-separated, access controlled roadway is the only type of roadway that would meet the purpose and need of the project.

Some people have suggested that SR 303L be built as a "Parkway." The term "Parkway" does not have a firm and consistent definition. There are local and arterial streets in the metropolitan area that carry the designation of "Parkway." SR 51 is known as the Squaw Peak Parkway, and it is a fully grade-separated, access-controlled highway more commonly called a "Freeway."

The 2001 *A Policy on Geometric Design of Highways and Streets* published by AASHTO does not use the term "Parkway" because of its highly variable meaning. An earlier definition was used that describes the older parkways that exist in some Eastern states. The definition used was "a fully or partially controlled access highway whose use is limited to passenger cars and is located in a park-like setting."

SR 303L is proposed to be built using state and federal highway user funds which are derived from passenger cars and trucks. These funds cannot be used to construct a roadway that would prohibit use by legal motor vehicles such as trucks. Therefore, SR 303L is not proposed to be restricted to passenger car usage only.

The SR 303L corridor has no existing characteristics that would characterize it as a "park-like setting." The adjacent land uses are agricultural which are giving away to urban development. The land is flat and essentially devoid of natural vegetation except in a few washes. To create a

"park-like setting" would require great additional cost, additional right-of-way, and financial participation by local governments. These conditions do not appear to be achievable nor desirable and, therefore, are not part of the proposed project.

Others have suggested that SR 303L be built as an "Expressway." The most recent MAG Long Range Transportation Plan describes SR 303L as an expressway. The definition of an expressway is not consistent. For example, the Hohokam Expressway (SR 143) is called an expressway but it functions like a freeway. In Arizona, the general use of the word expressway refers to a fully or partial access-controlled highway that has widely spaced at-grade intersections and may have some grade separations. The proposed interim roadway for SR 303L would function as an expressway.

With 13 arterial crossings of SR 303L between I-10 and US 60, at-grade intersections at each of these locations would result in the roadway functioning much like an arterial street as described in the first part of this section. Traffic forecasts indicate that the proposed interim roadway will reach its practical capacity by 2010. Little increase in traffic is expected after that time because SR 303L would offer no advantage over the parallel arterials. As a result, SR 303L would not be serving its regional function of attracting external traffic from US 60 and connecting it to I-10 and serving longer regional trips within the metropolitan area. Funding limitations indicate that the expressway is all that can be built in the next 10 years. However, the full freeway should be built as soon as funding allows in order for the roadway to serve its intended function.

4.2 ULTIMATE ROADWAY ALTERNATIVES

The proposed ultimate roadway is a six-lane, fully access-controlled freeway with auxiliary lanes between traffic interchanges. Tight diamond interchanges are proposed at every cross street within the corridor. The auxiliary lanes are necessary due to the one-mile spacing between interchanges and ADOT's requirement for parallel entrance and exit ramps in the Phoenix urban and fringe-urban areas.

With the corridor and alignment for SR 303L having been established previously, the only variation in the geometry is whether SR 303L stays at-grade with the cross street over, is elevated over the cross streets, or is depressed under the cross streets. Keeping SR 303L near the existing pavement grade minimizes borrow quantities and improves the ability to easily convert an interim roadway into the ultimate freeway. Depressing SR 303L would provide additional fill and reduce borrow requirements and would also have some noise mitigation and aesthetic benefits. However, depressing SR 303L would eliminate the possibility of maintaining gravity flow systems across the corridor for drainage, sanitary sewers and irrigation. Because the general

lay of the land is so flat (existing SR 303L is at an approximate 0.5% grade for the whole length of the corridor) and drains from the northwest to the southeast, it would be impractical to depress SR 303L anywhere south of Greenway Road and still drain the low areas without the construction of pump stations. Similarly, sewer lift stations and irrigation siphons would be required if SR 303L were depressed.

The ultimate vertical alignment of SR 303L is raised slightly above the existing pavement grade to allow for cross culverts where necessary from Indian School Road to just south of Greenway Road. The only exception is at Olive Avenue, where SR 303L is elevated due to the railroad, which runs parallel to Olive Avenue and crosses SR 303L. Starting from just south of Greenway Road and continuing north to Clearview Boulevard, SR 303L is depressed and is more consistent with the current construction north of Clearview Boulevard. Depressing SR 303L in this area should aid in providing noise mitigation and aesthetic benefits for the adjoining residential areas. The depressed section of SR 303L in this area can be drained with a gravity system that conveys the stormwater to an outfall near Waddell Road.

4.3 INTERIM ROADWAY ALTERNATIVES

Several different four-lane interim roadway concepts were developed and evaluated based on cost (both interim and ultimate), constructibility, ease of conversion to the ultimate freeway, amount of throwaway construction in converting to the ultimate condition, safety, capacity and ability to accommodate free-flow traffic. Each of these concepts were applied along the corridor in various combinations until a preferred alternative was chosen, the results of which are presented below and in the design concept plans. This concept is designated Interim A.

An additional four-lane interim roadway concept was developed at the request of MCDOT to present a low-cost option to Interim A. This concept is designated Interim B.

4.3.1 Interim A

Interim A was developed with the philosophy of minimizing throwaway construction when the time came to convert the interim roadway to the ultimate freeway while at the same time maximizing the use of the existing pavement to reduce the immediate cost of constructing the interim roadway. Interim A would be designed to ADOT highway standards in order to maximize the amount of construction that could be used for the ultimate freeway. Interim A assumes that all “permanent” pavement to be used in the ultimate condition would be PCCP. “Temporary” throwaway pavement constructed in Interim A would be asphalt. The plans

included in this Initial Draft DCR will need to be modified if this assumption is accepted. Three concepts would be used to construct Interim A:

Concept 1: Build four lanes of ultimate section – No existing pavement would be used in this concept. Instead, the existing roadway would be demolished and the outer four lanes (two for each direction) of the ultimate six-lane section would be built. This concept would be used in areas where the existing pavement would be in an inconvenient location, such as along the ultimate centerline. Converting to the ultimate freeway would be relatively simple. Existing traffic could be maintained while grade separations, ramps and additional through lanes are added in the future. See Figure 4.1.

Concept 2: Build two lanes along ultimate mainline alignment for one direction of traffic, use existing pavement for the other direction – In areas where there is sufficient separation between the existing pavement and half of the ultimate freeway (either northbound or southbound), this concept would be used to maximize the utilization of the existing pavement while the new construction would be used as part of the ultimate freeway. Again, with the appropriate construction staging, the ramps and cross street bridges could be built with minimal impact on existing traffic. See Figure 4.2.

Concept 3: Build two lanes along ultimate ramp alignments for one direction of traffic, use existing pavement for the other direction – In areas where SR 303L is either elevated or depressed and the cross street remains at-grade, the new construction would follow the ramp and auxiliary lane alignments. This would allow most of the new construction to be salvaged for the ramps and auxiliary lanes while minimizing the interim throwaway pavement. The interim pavement section is 34 feet wide (two 12-foot lanes and 5-foot shoulders) and widens out to 58 feet at the intersections to accommodate a left- and right-turn lane. The ultimate ramps are only 28 feet wide for entrance ramps and 22 feet (along the body) to 40 feet wide (at the intersections) for exit ramps. The additional width required for the interim pavement in these areas will be asphalt and removed when the ultimate is constructed. See Figures 4.3 and 4.4.

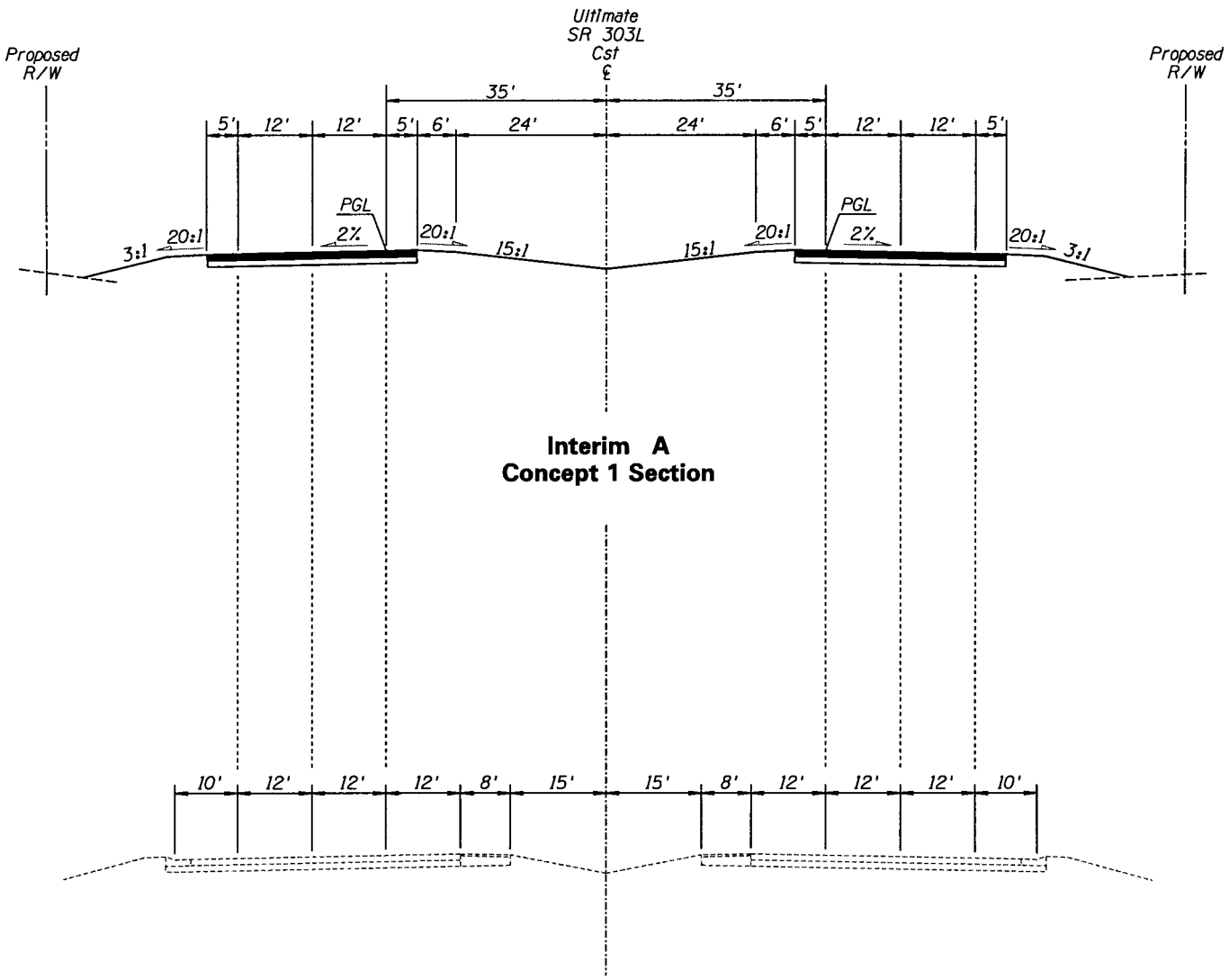
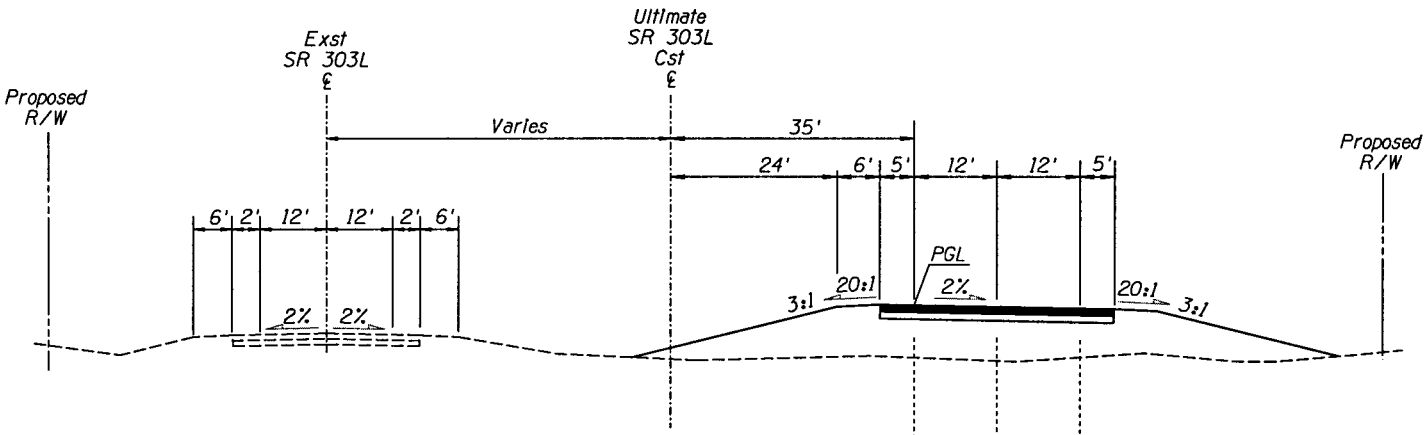
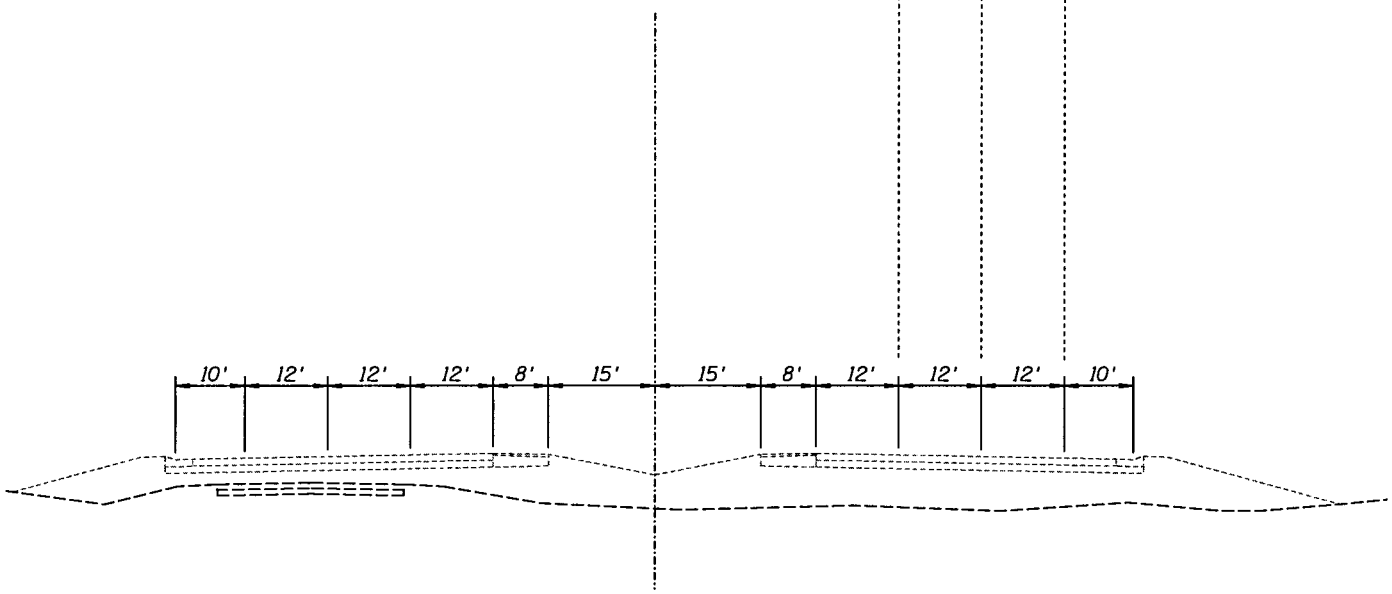


FIGURE 4.1
Interim A: Concept 1 Typical Section



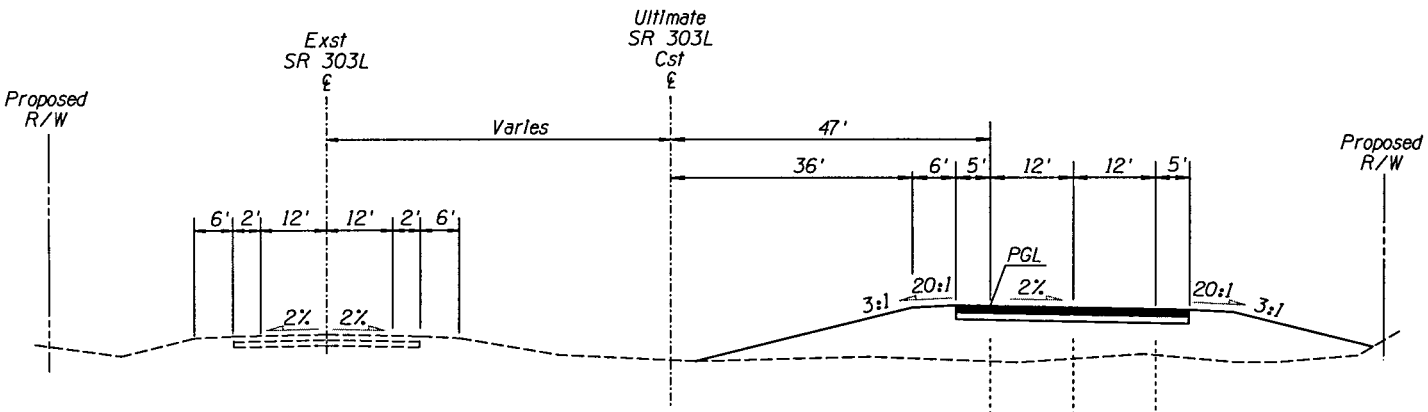
Interim A
Concept 2 Typical Section



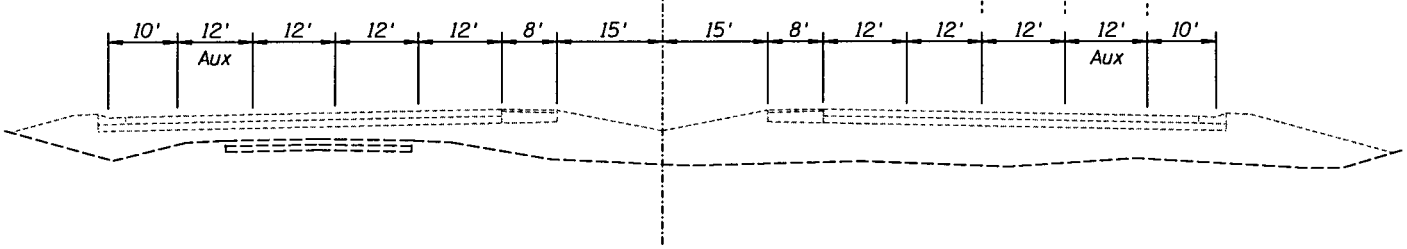
Ultimate SR 303L Section

Interim A
Ultimate SR 303L

FIGURE 4.2
Interim A: Concept 2 Typical Section



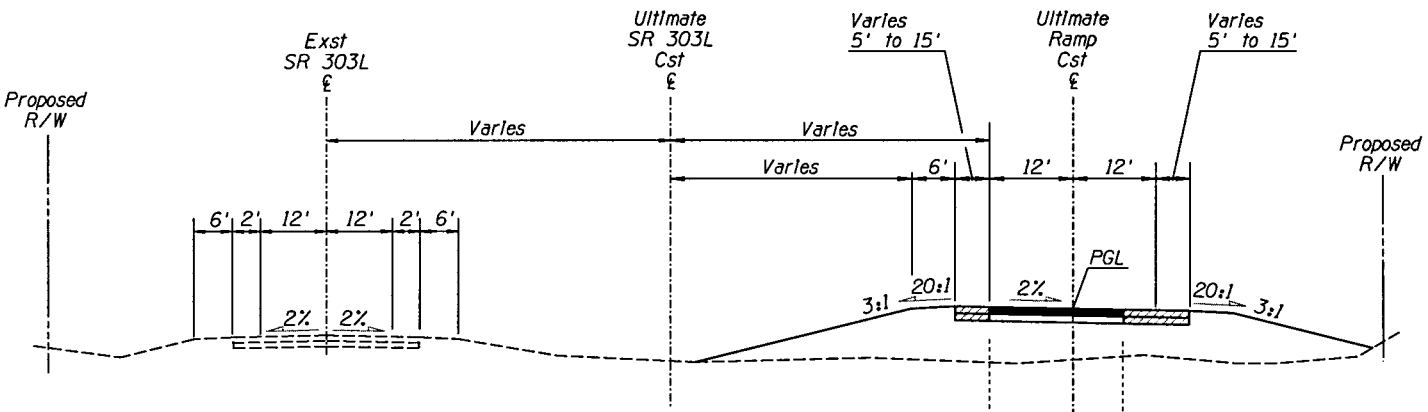
Interim A
Concept 3
Typical Section
(Along Auxiliary Lane)



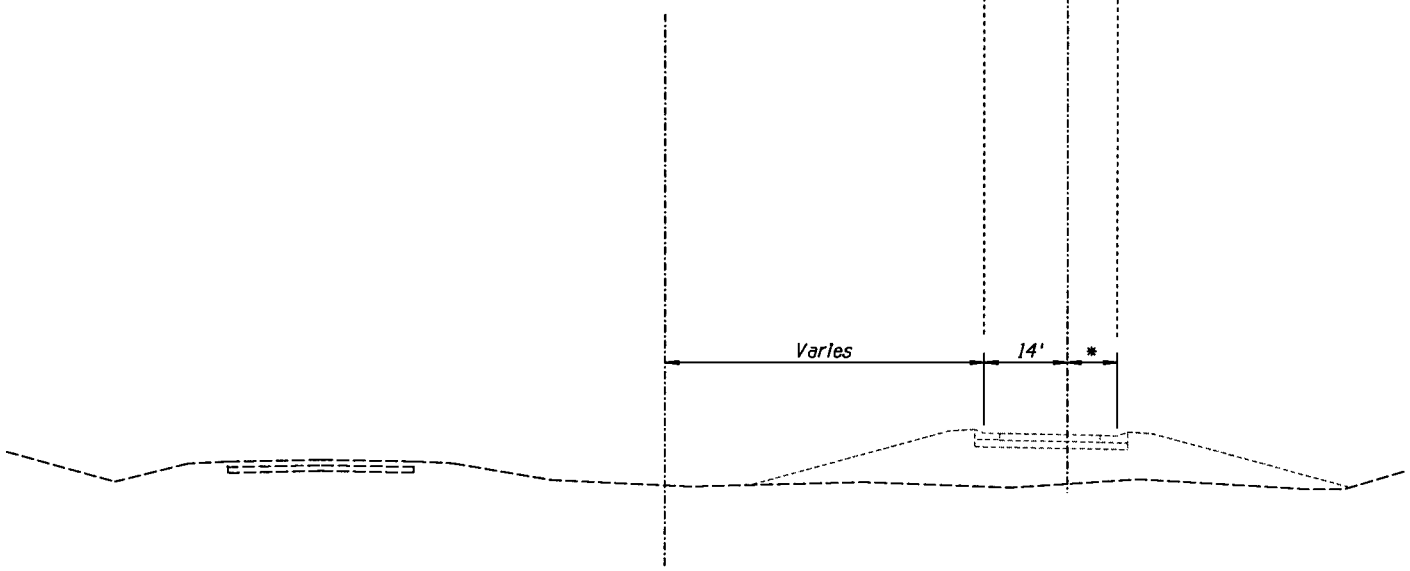
Ultimate SR 303L Section

Interim A
Ultimate SR 303L

FIGURE 4.3
Interim A: Concept 3 Typical Section (Along Auxiliary Lane)



Interim A
Concept 3
Typical Section
(Along Ramps)



Ultimate Ramp Section

*Entrance Ramp: 14'
Exit Ramp: Varies 8' to 26'

Interim A (Permanent Pavement)
Interim A (Temporary "Throwaway" Pavement)
Ultimate Ramp

FIGURE 4.4
Interim A: Concept 3 Typical Section (Along Ramps)

Concept 1 described above would be used from Indian School Road to approximately one-half mile north of Northern Avenue. In this section, the existing pavement is in conflict with the ultimate pavement location or with the location of the off-site drainage channel along the west side of the roadway. From just south of Peoria Avenue to Bell Road, with the exception of Greenway Road, Concept 2 would be used because of the wide separation of the ultimate SR 303L and the existing pavement. At Greenway Road, because the cross street is raised approximately 10 feet and SR 303L is depressed approximately 12 feet in the ultimate condition, interim "throwaway" pavement would have to be constructed along the approximate ramp horizontal alignments for northbound traffic. Concept 3 would be used at Olive Avenue and Bell Road because SR 303L would be elevated and depressed, respectively, in the ultimate condition. See Figure 4.5.

Interim A allows for a majority of the new construction to be used as part of the ultimate roadway thus dividing the cost of constructing the ultimate freeway between the near-term interim and the future ultimate. Interim A assumes that all of the right-of-way that would be needed for the eventual construction of the ultimate freeway would be acquired immediately before building the interim roadway. The Interim A concept utilizes this right-of-way to slightly realign most of the cross streets. This realignment would permit the ultimate cross street grade separation to be built while traffic is maintained on the realigned street. This configuration would also avoid having to remove an interim intersection and replace it with a temporary signal and detour to construct the grade separation. This feature increases the cost of Interim A but reduces the cost to convert Interim A to the ultimate freeway.

Off-site drainage improvements would have to be constructed with the Interim A roadway to protect the roadway from 50-year flows, per ADOT standard. These improvements would remain in place for the ultimate condition, thereby continuing to protect the freeway and eliminating the need to build further off-site drainage facilities. Also, on-site (roadway) drainage structures and pipes for the interim would be constructed in the ultimate location as much as possible. This is especially true for the depressed section north of Greenway Road. The ultimate roadway drainage system in that area calls for a large-diameter storm drain trunk line to be constructed in the median in order to drain the low areas under Greenway Road and Bell Road. This trunk line would have to be built in the interim because the northbound lanes of SR 303L are depressed north of Greenway Road (along the ultimate freeway grade) and would have to be drained. Obviously, the trunk line and any lateral pipes in this depressed area would be salvaged for use in the ultimate freeway.

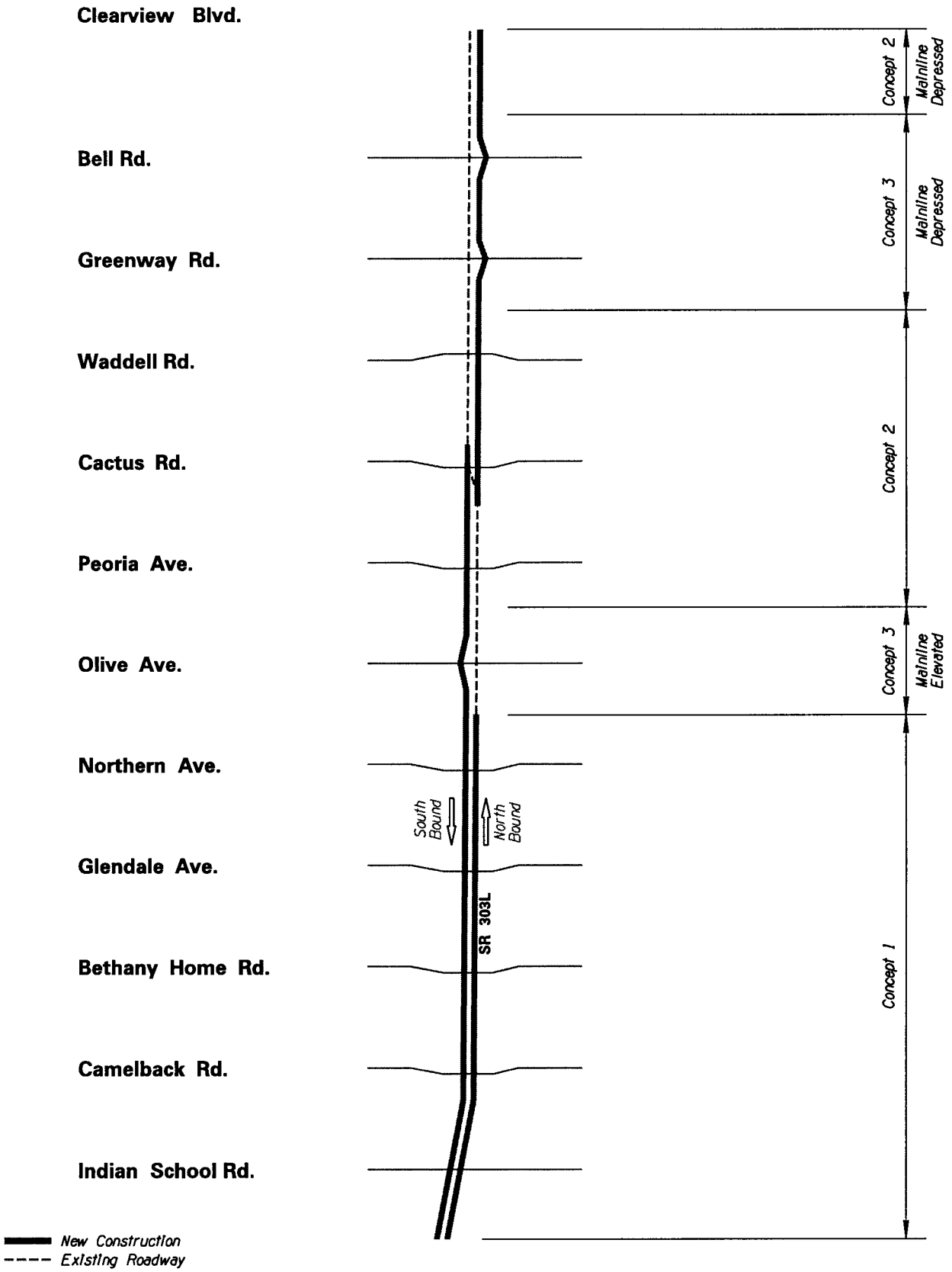


FIGURE 4.5
Overview of Interim A

Irrigation channels, tailwater ponds and other irrigation facilities that conflict with the interim roadway or drainage improvements would have to be relocated to their ultimate locations in order to avoid moving them a second time when the ultimate freeway is constructed. Approximately six existing wells conflict with the interim roadway configuration and would have to be relocated. Relocation of the remaining six wells could be postponed, although it may be prudent to identify and acquire new well sites during the interim phase.

With Interim A, all intersections would be at-grade and signalized when warranted. Lighting would be provided at the intersections.

The interim section of SR 303L between Indian School Road and McDowell Road that will be constructed soon will build the inner two lanes of the ultimate section. This differs from the section described in Concept 1 above, which builds the outer two lanes. Building the outer two lanes has the disadvantage of increasing the width of the intersections at the cross streets, which in turn decreases the operational efficiency. However, Interim A somewhat mitigates this disadvantage by canting the left-turn lanes on SR 303L toward the median at the intersections. Also, the Concept 1 section increases the flexibility in staging the upgrading of the Interim A roadway. For example, if the next phase of construction includes constructing the grade separations at the cross streets and the ramps (without widening the mainline), a fully grade separated four-lane freeway would be provided with all components in the ultimate locations. The four-lane freeway is expected to meet the needs of the corridor through the design year. Two or four lanes could be added in the median as needed. By contrast, if the two inner lanes are built first, some temporary paving along the ramps would be required to tie in correctly with the mainline pavement to create the four-lane freeway.

4.3.2 Interim B

Interim B is a low-cost alternative to Interim A. Interim B consists of simply widening the existing pavement 12 feet on each side to accommodate four lanes of traffic, with left and right turn lanes at the intersections. The only wrinkle is that the current SR 303L just south of Clearview Boulevard runs between a privacy wall on the west and a well on the east. Guardrail is provided along the west edge of pavement to protect the wall. Therefore, all widening would have to occur along the east side of the pavement and additional guardrail installed to protect the well. Throughout Interim B, opposing directions of traffic would be separated by a double yellow stripe, not with a median as with Interim A. The intersections would be signalized when warranted and lighting would be provided. Interim B would be designed to MCDOT standards, and no new construction would be usable for the ultimate construction. Also, only minor

additional right-of-way would need to be acquired to accommodate the interim widening at the intersections, but the cross streets would not be realigned to facilitate ultimate construction, only widened for a left-turn lane. This raises some traffic control and construction phasing challenges for converting Interim B to the ultimate freeway, which will be discussed in Section 5.11.

Culverts crossing the existing SR 303L would need to be extended to accommodate the pavement widening. Irrigation facilities would remain largely unchanged, since almost all improvements would occur within the existing right-of-way. Wells could remain in their existing locations as they do not conflict with the roadway improvements.

5.0 MAJOR DESIGN FEATURES OF RECOMMENDED INTERIM AND ULTIMATE CONCEPTS

This section provides a description of the major features of the proposed ultimate roadway. Also noted are different standards or features needed for the two interim alternatives, Interim A and Interim B described in Section 4.0. Plan and profile sheets of the concept are provided in Volume 2 of this DCR.

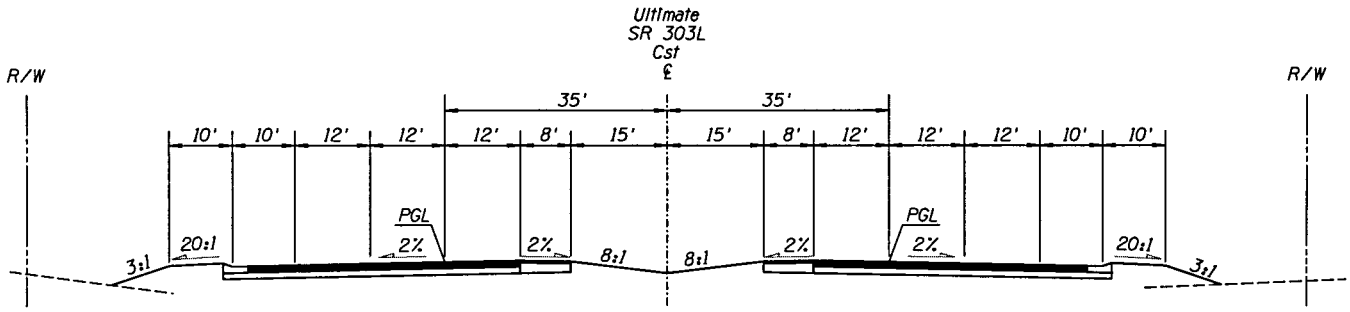
5.1 DESIGN CRITERIA AND ROADWAY ELEMENTS

5.1.1 Ultimate Condition

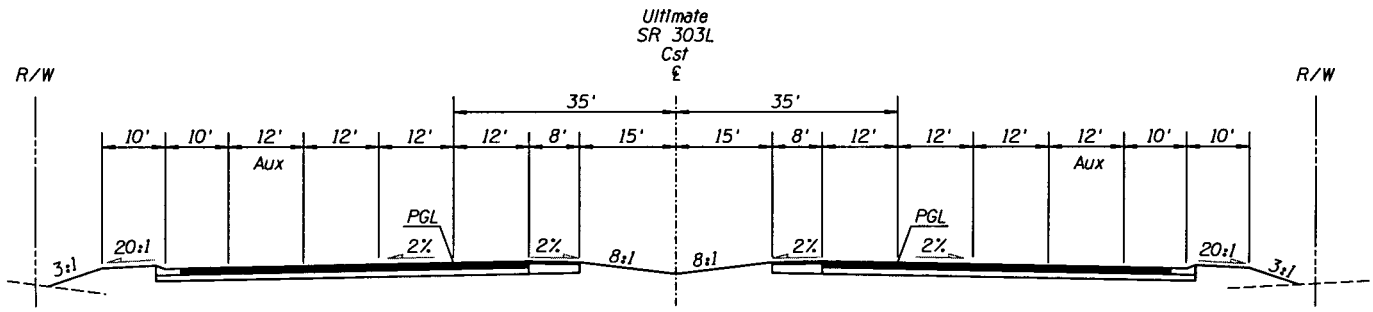
SR 303L will be designed to ultimately be a fully grade separated access-controlled highway. The design criteria used for the ultimate roadway mainline shall be the ADOT *Roadway Design Guidelines* and ADOT *Construction Standard Drawings*, as summarized in Table 5.1. The typical section for the ultimate six-lane fully access-controlled highway is shown in Figure 5.1 and in typical sections of the ultimate design concept plans.

Table 5.1
Design Criteria Summary – SR 303L Ultimate Mainline

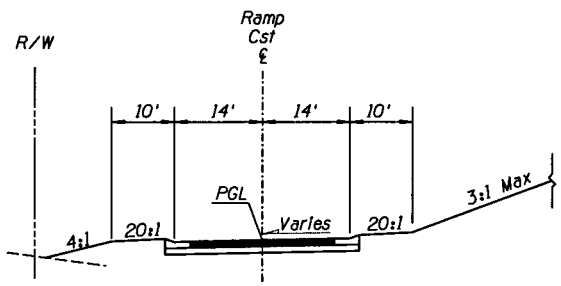
Description	SR 303L Ultimate Mainline
Standard Typical Section:	See Figure 5.1
Design Year:	2025
Design Vehicle:	WB-50
Design Speed:	65 mph
Superelevation:	0.06 ft/ft maximum
Minimum Vertical Curve Length:	800 ft
Maximum Gradient:	3%
Maximum Horizontal Curve:	2-degree, 45-minute
Median Width:	46 ft
Paved Roadway Width:	54 ft
Travel Lane Width:	12 ft
Median Shoulder Width:	8 ft (5 ft for Interim)
Outside Shoulder Width:	10 ft (5 ft for Interim)
Recovery Area:	30 ft
Cross-Slope:	0.02 ft/ft
Pavement Design:	20 years
Barrier Type:	ADOT Std C-10.62
Curb and Gutter Types:	ADOT Std C-05.10



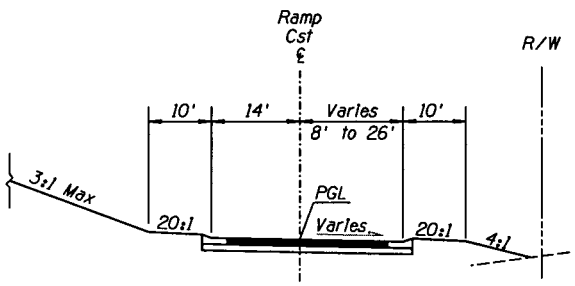
Ultimate SR 303L
Typical Section



Ultimate SR 303L
Typical Section
With Auxiliary Lanes



Entrance Ramp
Typical Section



Exit Ramp
Typical Section

FIGURE 5.1
Ultimate SR 303L and Ramp
Typical Sections

As part of the ultimate roadway, interchanges will be provided at the cross streets. The design criteria used for the SR 303L entrance and exit ramps shall be the ADOT *Roadway Design Guidelines* and ADOT *Construction Standard Drawings*, as summarized in Table 5.2. The typical section for ramps is shown in Figure 5.1 and in the typical sections of the ultimate design concept plans.

Table 5.2
Design Criteria Summary – Ramps

Description	Entrance Ramps	Exit Ramps
Standard Typical Section:	See Figure 5.1	See Figure 5.1
Design Year:	2025	2025
Design Vehicle:	WB-50	WB-50
Design Speed:	55 mph (Gore Area) 50 mph (Ramp Body) 35 mph (Intersection)	55 mph (Gore Area) 50 mph (Ramp Body) 35 mph (Intersection)
Pavement Design Life:	20 years	20 years
Number of Lanes:	1 (Gore Area) 2 (Ramp Body)	1 (Gore Area) (Varies at Intersection)
Number of Left-Turn Lanes at Interchange:	N/A	Per Traffic Analysis
Number of Right-Turn Lanes at Interchange:	N/A	Per Traffic Analysis
Paved Roadway Width:	28 ft	22 ft (Gore) 40 ft at Intersection
Drainage (Pavement):	10 years	10 years
Standard Right-of-Way Requirements:	Varies	Varies
Travel Lane Widths:	12 ft	12 ft
Clear Zone Width:	30 ft	30 ft
Barrier Type:	ADOT Std C-10.62	ADOT Std C-10.62
Curb & Gutter Types:	ADOT Std C-05.10	ADOT Std C-05.10

The cross streets at the connection points to SR 303L outside of the City of Surprise will be designed as MCDOT urban principal or minor arterials. Within the City of Surprise, the cross streets will have a slightly different typical section, as shown in Section 5.9. The design criteria used for all cross streets (both MCDOT and City of Surprise) are contained in the MCDOT *Roadway Design Manual*, as summarized in Table 5.3.

Table 5.3
Design Criteria Summary – Cross Streets

Description	Cross Street – Urban Principal Arterial	Cross Street – Urban Minor Arterial
Standard Typical Section:	MCDOT or COS Urban Principal Arterial	MCDOT or COS Urban Minor Arterial
Design Year:	2025	2025
Design Vehicle:	WB-50	WB-50
Design Speed:	45 mph at interchange	45 mph at interchange
Superelevation	None	None
Pavement Design Life:	20 years	20 years
Number of Lanes:	6 through lanes	4 though lanes
Number of Left-Turn Lanes at Interchange:	Per traffic analysis	Per traffic analysis
Number of Right-Turn Lanes at Interchange:	Per traffic analysis	Per traffic analysis
Paved Roadway Width:	See Figure 5.2	See Figure 5.2
Drainage (Pavement):	10 years	10 years
Standard Right-of-Way Requirements:	130 ft (varies at interchange)	130 ft (varies at interchange)
Travel Lane Widths:	12 ft	12 ft
Clear Zone Width:	1.5 ft from f/c	1.5 ft from f/c
Roadway Foreslope:	3:1	3:1
Median:	4 ft minimum; 14 ft maximum (varies at interchange)	4 ft minimum; 14 ft maximum (varies at interchange)
Curb & Gutter Types:	MAG Std Detail 220	MAG Std Detail 220

5.1.2 Interim A

The Interim A roadway will be designed to the same standards as the ultimate freeway but will function as an expressway with a design speed of 55 mph. The lower design speed is due to the fact that the Interim A mainline is along the ultimate ramp alignments in some locations, which are designed to ramp criteria and therefore lower design speeds than the ultimate mainline.

The existing cross streets are currently low volume two-lane rural roads. The design speed will be 30 mph for cross street improvements.

5.1.3 Interim B

The Interim B roadway will be designed to MCDOT roadway criteria as contained in the MCDOT *Roadway Design Manual*.

5.2 STRUCTURES

The ultimate design concept for SR 303L will result in grade separated traffic interchanges at all arterial street crossings. This section presents the engineering evaluation performed to determine the span configuration, functional structure type for the grade separations, and to establish any construction limitations for the chosen preliminary structure types. Between Indian School Road and Clearview Boulevard, there will be 11 grade separated traffic interchanges consisting of 10 underpasses and 1 overpass. The bridge concepts were developed assuming that two separate structures will be provided at each overpass and underpass location from Indian School Road to Bell Road. Table 5.4 provides a brief description of each structure:

Table 5.4
Description of Structures

Structure Location	Underpass/ Overpass	General Profile of SR 303L	Skew	No. of Spans	Structure Width per Bridge	Structure Length
Indian School Road	Underpass	At Grade	9° 38′ 52″	Two	75′-0″ EB & 75′-0″ WB	254′-6″
Camelback Road	Underpass	At Grade	None		63′-0″ EB & 63′-0″ WB	
Bethany Home Road	Underpass	At Grade			63′-0″ EB & 63′-0″ WB	
Glendale Avenue	Underpass	At Grade			63′-0″ EB & 63′-0″ WB	
Northern Avenue	Underpass	At Grade			63′-0″ EB & 63′-0″ WB	
Olive Avenue/ BNSF Railroad	Overpass	Elevated		Three	60′-10″ NB & 60′-10″ SB	344′-6″
Peoria Avenue	Underpass	At Grade		Two	63′-0″ EB & 63′-0″ WB	254′-6″
Cactus Road	Underpass	At Grade			63′-0″ EB & 63′-0″ WB	
Waddell Road	Underpass	At Grade			75′-0″ EB & 75′-0″ WB	
Greenway Road	Underpass	Depressed			63′-0″ EB & 63′-0″ WB	
Bell Road	Underpass	Depressed			75′-0″ EB & 75′-0″ EB	

Bridge Geometrics

The proposed structure widths for all underpass and overpass structures are shown in the table above. The underpass structures will include 6′-0″ sidewalks on both sides of the arterial cross streets. The Indian School Road Underpass is the only structure aligned on a skew.

For underpasses, the mainline section widths of 138 feet (curb-to-curb) and embankment slopes set at 3:1 controlled underpass structure lengths. This layout provides sufficient clearance for up to eight lanes (four in each direction) on SR 303L if future traffic volumes require this. In the future when more traffic volume information is available, the underpasses also could be configured as a diamond interchange or a single point urban interchange.

The Olive Avenue/BNSF overpass length and span configuration was controlled by a 148-foot wide roadway section (including 6-foot sidewalks on each side), embankment slopes set at 2:1 and the requirements set forth by the American Railway Engineering and Maintenance-of-Way Association *Manual for Railway Engineering* for horizontal and vertical clearances. This layout can also accommodate additional lanes on SR 303L in the future if a bridge is constructed between the northbound and southbound structures.

Aesthetic enhancements can be applied to all structures along the corridor including bridges, retaining walls and noise walls. For this DCR, it was assumed that standard ADOT urban freeway rustication and staining would be utilized.

Bridge Substructure

The abutments for all structures should be stub type abutments on fill supported by drilled shafts. The small amount of materials required for this type of abutment make it the most economical type.

With adequate right-of-way existing along the corridor, stub type abutments are more desirable because they can accommodate future widenings. Additionally, they are safer for higher design speeds than full-height abutments.

A straight bladed type pier supported by spread footings is recommended for all bridges in the corridor. This pier type has been used throughout many of the Outer Loop projects in the metropolitan Phoenix area.

Bridge Superstructure

Cast-in-place post-tensioned box girder bridges or precast prestressed AASHTO I-girder bridges are feasible structure types to be considered along this corridor. Precast prestressed AASHTO I-girder bridges have span limitations (approximately 140 feet) that appear applicable on this project. The precast girders have deeper sections than the cast-in-place; however, the cast-in-place requires false work since all bridges will be built over traffic.

Cost Estimate

The estimated cost for each structure has been developed by multiplying the square foot area of the bridge by a unit cost per square foot. The unit cost per square foot is based on an average cost per square foot of cast-in-place post-tensioned box girder bridges and precast prestressed AASHTO I-girder bridges that have been constructed within the last few years in the vicinity of the proposed SR 303L corridor. These costs are included in the project cost estimates contained in Section 6.0 of this report.

5.3 EARTHWORK

The amount of fill needed to construct the ultimate freeway is an important issue due to the absence of a close source of borrow. Because of the generally flat nature of the corridor, a significant amount of borrow will be needed. In all, five scenarios were examined for earthwork requirements:

1. Construct the ultimate freeway without any interim roadway
2. Construct Interim A
3. Construct Interim B
4. Upgrade Interim A to ultimate freeway
5. Upgrade Interim B to ultimate freeway

Preliminary geotechnical analysis of borings done in the area indicate that a shrinkage factor of 10% to 15% for borrow taken from an in-situ source and approximately 21% for borrow taken from a stockpiled source. Since the sources of borrow are not known at this time, an overall general conservative shrinkage factor of 20% was applied to all embankment quantities. A summary of the earthwork quantities are presented in Table 5.5 below.

Table 5.5
Earthwork Summary

	Ultimate (Scenario 1)	Interim A (Scenario 2)	Interim B (Scenario 3)	Interim A to Ultimate (Scenario 4)	Interim B to Ultimate (Scenario 5)
Roadway Excavation	1,660,000	535,000	25,000	1,125,000	1,660,000
Drainage Excavation	2,500,000	2,500,000	0	1,905,000 (Excess Avail.)	2,500,000
Roadway Embankment	6,650,000	1,130,000	92,000	5,520,000	6,558,000
Net	-2,490,000	+1,905,000	-67,000	-2,490,000	-2,398,000

Note: All quantities in cubic yards.

In all scenarios except the second, borrow is necessary to construct the roadway. The construction of the ultimate off-site drainage facilities contributes an additional 2.5 million cubic yards to reduce the amount of borrow required. Interim A has almost 2 million cubic yards of excess material due to the construction of the ultimate off-site drainage channels and retention basins. The excess material can be stockpiled in the corridor to be used when Interim A is upgraded to the ultimate freeway. The stockpile can take the form of berms in lieu of guardrail in areas where the clear zone is insufficient, or it can be placed where the eventual cross street embankment would be needed to cross the mainline. The roadway excavation and embankment that would occur in constructing Interim A would be in the correct location for the ultimate condition, eliminating the need for significant rework. Therefore, any earthwork that occurs during Interim A can be "subtracted" from the ultimate earthwork quantities. Interim B is in a borrow situation because no ultimate drainage facilities would be built in the interim and any roadway excavation would likely not further the construction of the ultimate facility. The small amount of fill placed during the construction of Interim B could be used as an on-site borrow source, but regrading would be required. Upgrading Interim B to the ultimate freeway (Scenario 5) could require additional borrow not shown in the above table due to the complexity of the construction staging and traffic control involved. Scenario 5 would probably require a greater number and more extensive detours than any other scenario, and those detours would require at least some fill. The additional borrow required for these detours is unknown at this time due to the many ways that the construction staging could be laid out.

Another scenario not included in Table 5.5 is building the ultimate six-lane immediately along with the Loop 303 ADMP improvements proposed by the FCDMC. The latest ADMP concept being considered by the FCDMC would be designed for a 100-year storm and would incorporate a multi-use linear park concept. This concept would provide an approximate 3 million cubic

yards of additional fill over and above the drainage design used for the earthwork calculations presented in Table 5.5 above. This would eliminate the need to borrow soil for the freeway construction as all the necessary soil would be on site and available from the construction of the ADMP.

It is worth noting that while Table 5.5 shows that to build the ultimate freeway requires borrowing approximately 2.5 million cubic yards of soil, the mainline and cross street profiles could be further refined in the final design process, in concert with the off-site drainage design, to reduce the amount of borrow needed. The proposed profile for the ultimate SR 303L has been raised 3 feet to 5 feet above the prevailing ground to allow for the possibility of culverts crossing the freeway at almost any point and still retain an acceptable amount of cover over those culverts. With the construction of the drainage channel along the west side of the freeway, significant portions of the profile may be able to be lowered somewhat. Even lowering the mainline profile an average of 0.5 feet over the whole corridor would eliminate approximately 200,000 cubic yards of borrow. Lowering the mainline profile would also allow the cross street profiles to be lowered, leading to more savings. Some additional borrow can also be obtained by making the channels and retention basins slightly deeper.

5.4 OFF-SITE DRAINAGE

Along the SR 303L corridor, the highway improvements will need to be protected from drainage flowing to the corridor from the west. Regional flood control facilities are currently being evaluated by the Flood Control District of Maricopa County (FCDMC) in connection with the Loop 303/White Tanks Area Drainage Master Plan (ADMP) Update. The ADMP preferred alternative shows a continuous channel along the west side of Loop 303 from Greenway Road to the Gila River together with a series of detention basins along the corridor and channels flowing east across the Loop 303 corridor near Northern Avenue and Camelback Road. The channel along the west side of Loop 303 is intended to be a wide, shallow grass-lined facility that will offer recreational uses during dry weather conditions. It is essentially envisioned as a linear multi-use corridor. Currently, hydrologic and hydraulic calculations are being refined for the ADMP to more accurately determine the sizes of the channels and detention basins for the preferred alternative. The ADMP is reviewed in more detail in Section 5.4.3.

At the beginning of the preparation of this DCR, it was assumed that the ADMP would be available at the time of roadway construction. However, FCDMC presently has no funding available for the ADMP improvements. Furthermore, the FCDMC has indicated that due to the high cost of these facilities, it is unlikely that the FCDMC could implement the ADMP improvements without financial partners. After some debate, it was then assumed that the ADMP

was not likely to be funded when the next major roadway construction would occur, so that an off-site drainage system would need to be constructed as part of the roadway project. For this reason, a coordination meeting was held with representatives of MCDOT, FCDMC and ADOT to review off-site drainage issues based on a "worst-case" scenario that assumes no ADMP drainage improvements are in place at the time of highway construction. Issues reviewed in this meeting included:

- Level of protection criteria
- Criteria for interim and ultimate highway improvements
- Review of alternative approaches for evaluating drainage improvements required in connection with the highway construction
- Cost sharing

These issues are addressed in the following paragraphs.

5.4.1 Off-Site Drainage Design Criteria

ADOT design criteria for sizing ditches, channels and culverts that intercept and convey off-site drainage along or across State highways are based on a design storm of 50-year frequency. In addition, ADOT criteria strives to design drainage facilities in such a way as to perpetuate existing drainage conditions for the 100-year storm as nearly as possible. These criteria will apply to design of the ultimate freeway improvements and also to design of the Interim A improvements since the majority of new construction for Interim A would remain in place and become part of the ultimate freeway improvements. Using these criteria, it was decided that three off-site drainage concepts would be evaluated. These concepts are described as follows:

1. Channels and detention basins along the west side of SR 303L with diversion channels running east from two of the detention basins to existing drainage facilities east of SR 303L. This alternative most closely resembles the ADMP.
2. Channels and detention basins along the west side of SR 303L but without diversion channels. The detention basins would have to be larger to store the extra flows that would have been diverted in the concept described above. With this concept, low flow pipes would be constructed from the basins to existing drainage facilities in order to drain the basins within 36 hours following the storm event.
3. A system of channels and cross culverts that would attempt to simulate existing sheet flow conditions east of SR 303L. Off-site drainage would be intercepted in channels

along the west side of SR 303L and conveyed across SR 303L in a system of culverts. On the east side of SR 303L, a system of short channels/basins would release the drainage in a sheet flow condition.

All three alternatives were evaluated for a 50-year, 24-hour storm. Additionally, Alternatives 1 and 2 were each analyzed using both earth-line and concrete-lined channels. The details of these concept evaluations are contained in the *Initial Drainage Report* for the SR 303L corridor.

It was later determined that the third concept was impractical and inappropriate due to the rapid development that is occurring along the corridor. It was subsequently dropped from further consideration.

For Interim B, no new off-site drainage improvements would be constructed. This low cost alternative would perpetuate existing drainage conditions.

5.4.2 White Tanks ADMP

The FCDMC contracted with URS to develop an update to the Area Drainage Master Plan (ADMP) Update for the Loop 303 Corridor/White Tanks Area, Contract FCD 99-40. This study updates the prior ADMP by The WLB Group, Inc. in March 1995. The need for update reflects dramatic changes in population density and land use in the West Valley, converting land from agriculture to residential land use. The land use changes are requiring infrastructure improvements that keep pace with development.

There are two primary objectives to this ADMP Update. The first is to develop a plan to control runoff and prevent flood damage in the watershed. The second is to develop and implement a plan to manage the interim condition due to discontinuous development in order to preserve the ability to provide protection to lands downstream from 100-year flood events.

The area the study covers is approximately 220 square miles of watershed west of metropolitan Phoenix, bounded by the White Tank Mountains west of the Loop 303, McMicken Dam/Deer Valley Road to the north, the Agua Fria River to the east, and Gila River to the south. The area includes portions of the incorporated areas of Avondale, Buckeye, El Mirage, Glendale, Goodyear, Litchfield Park, Peoria, Sun City, and Surprise, as well as unincorporated areas of Maricopa County.

The ADMP Update has four separate components as follows:

1. Data Collection and Existing Condition Hydrology
2. Level I Alternatives Analysis (Alternatives Formulation/Preliminary Analysis)
3. Level II Alternatives Analysis (Alternative Analysis)
4. Level III Alternatives Analysis (Preferred Alternative Analysis)

The first three components of the ADMP Update have been completed, and the project is currently in the Level III Alternatives Analysis. The Level III Alternatives Analysis includes analysis of the preferred flood control alternative and the preparation of conceptual level design plans. As with the alternatives previously analyzed, the preferred alternative has proposed improvements along the SR 303L corridor. The general features of the preferred flood control alternative that will impact the SR 303L corridor are listed below.

ADMP Preferred Alternative

- A proposed medium collector channel along the west side of Loop 303 from Greenway Road to the Gila River.
- A proposed medium to large west-east channel along Northern Avenue to the existing Falcon Dunes golf course/detention basin at the northeast corner of Reems Road and Northern Avenue.
- A proposed medium to large west-east channel along Camelback Road from SR 303L to the Bullard Wash.
- Proposed detention basins at SR 303L and Northern Avenue, at SR 303L and Camelback, and at SR 303L and Cactus Road.

Baseline Alternative

The baseline alternative used for comparing with the preferred alternative presented above is the proposed four basin and channel alternative from the *Drainage Channel Study for West Half of Estrella Freeway Loop 303 from Interstate 17 – Drainage Technical Memorandum* prepared by DeLeuw Cather & Co. in August 1998. This alternative consists of the following flood control elements:

- A large regional drainage channel along the SR 303L corridor.
- Four large detention basins with one located at each of the following roads: Peoria Avenue, Northern Avenue, Camelback Road and one between Indian School Road and Thomas Road.
- A proposed box culvert crossing at each street.

The alternative proposes no flood control facilities in any other part of the Loop 303 ADMP Update project area.

The Level III Alternatives Analysis is still being conducted, and the conceptual level design plans will be produced upon its completion.

5.4.3 Recommended Off-Site Drainage

The off-site drainage concept evaluations resulted in order of magnitude cost estimates for providing the necessary 50-year flood protection for the highway. Based on these evaluations, the Initial Drainage Report identified two least cost alternatives for the "worst case" scenario that assumes no ADMP improvements at the time of highway construction. The two alternatives identified have estimated costs that fall within 10% of each other ($15.5 and $16.6 million).

Both alternatives offer distinct advantages. Alternative 1B consists of a system of concrete-lined channels along the west side of SR 303L together with three retention basins (located at Cactus Road, Northern Avenue and Camelback Road) with west to east concrete-lined channels along Northern Avenue and Camelback Road. Alternative 1B relies on transferring a significant amount of flow to the existing Dysart Detention Basin during the peak of the rainfall event. Recent volume verification field survey data taken by FCDMC indicates that the existing Dysart Detention Basin may be undersized. Given the uncertainty in the total volume of the Dysart Detention Basin resulting from post-construction alteration of the basin, additional cost might be incurred if the basin is indeed undersized. Further investigation of the capacity of Bullard Wash at Camelback Road is also necessary as significant flow is transferred to Bullard Wash via a channel along Camelback Road during the peak of the rainfall event. It is important to note that there is an effective FEMA designated floodplain and floodway both upstream and downstream of Camelback Road along Bullard Wash.

Alternative 2B consists of a system of concrete-lined channels along the west side of SR 303L together with three retention basins (located at Cactus Road, Northern Avenue, and Camelback Road) and no east-west channels. The retention basins would be sized to hold 100% of the 50-year storm flows and would have low-flow pipes to enable the basins to drain within a

36-hour period following the peak of the storm. The advantage of this alternative is the fact that it will offer protection against the rainfall event without increasing the burden on any existing facilities. The disadvantage is that future development upstream of the proposed basins may render them oversized.

Both alternatives would need modification if ADMP improvements are made. Accordingly, a final alternative selection is not recommended at this time. For illustrative purposes, the off-site drainage facilities associated with Alternative 2B are shown on the conceptual drawings for Interim A since off-site drainage facilities would need to be constructed as part of the Interim A improvements.

In coordinating off-site drainage issues with MCDOT, FCDMC, and ADOT, it was generally concluded that the least cost approach for providing the necessary 50-year flood protection for the highway could define the extent of financial participation that the highway agency (MCDOT or ADOT) would be responsible for if a cooperative cost sharing agreement were to be executed with FCDMC in an effort to work together in achieving the ultimate ADMP system of flood control improvements. Alternatives 1B and 2B are the least cost alternatives primarily due to the difference in right-of-way cost. The concrete-lined channel varies in width from approximately 25 feet to 41 feet and generally fits within the existing right-of-way along the SR 303L corridor. The earth-lined channel with drop structures varies in width from approximately 80 feet to 140 feet. While the estimated construction costs of the two channel alternatives is fairly close, the earth-lined concept would require approximately 90 acres of additional right-of-way along the west side of the corridor due to the greater width of channels.

The retention basins for Alternative 2B vary in size from approximately 20 to 40 acres at an assumed depth of 15 feet. It should be noted that to provide the necessary storage capacity in the basins, more than 2 million cubic yards of excavation will be required. All of this material can be used as fill material for the SR 303L highway improvements.

5.5 ROADWAY DRAINAGE

Roadway drainage improvements are based on ADOT drainage criteria and are summarized in the *Initial Drainage Report*. Generally, roadway drainage facilities are designed for 10-year frequency storms in areas where the roadway is not depressed and for 50-year frequency storms in areas where the roadway is depressed.

Conceptual roadway drainage improvements for Interim A and the ultimate freeway are shown on the Interim A drawings and the ultimate drainage drawings, respectively, in Volume 2 of this

IDCR. For Interim B, no drainage improvements are anticipated except for extending existing culverts where necessary in connection with roadway widening.

For the ultimate freeway, roadway drainage improvements will consist of a network of catch basins along the curbs and in the medians that will connect to a system of storm drain pipes that will drain to the channel along the west side of SR 303L. It is recommended that all storm drain connections to the channel that are needed for the ultimate pavement drainage system be made when the channel is constructed during Interim A. Many of these storm drain connections can be utilized to provide drainage for the Interim A roadway improvements.

One important feature of the roadway drainage system is the trunk line shown on the drawings at the north end of the corridor to drain the depressed section of SR 303L from Greenway Road to Clearview Boulevard. This concept provides a gravity drainage system for the depressed portion of the corridor which extends south in the median area to an outfall location at the channel a short distance north of Waddell Road.

5.6 STREETS AND INTERSECTIONS

5.6.1 Ultimate Condition

The ultimate cross street typical sections were determined through a review of previous studies and consulting with MCDOT and local jurisdictions. The "first cut" was determined from the *Northwest Valley Transportation Study*, *Southwest Valley Transportation Study* and the cities' general plans. Where the Transportation Studies conflicted with the cities' general plans, the most conservative (widest) section was assumed. Typical MCDOT sections for principal arterials with bike lanes and minor arterials with bike lanes were used. These preliminary sections were then shown to MCDOT for comment.

URS and MCDOT met with the cities of Surprise, Glendale and Goodyear to discuss the corridor and cross street typicals. The City of Surprise requested that the typical sections from the City of Surprise general plan be used. The MCDOT and City of Surprise typical sections have minor differences, namely the Surprise sections measure the roadway widths from the back of curb (as opposed to face of curb) and the sidewalks are of different widths. Also, the *Northwest Valley Transportation Study* shows Bell Road to be planned for eight lanes. The City of Surprise did not think that was practical due to right-of-way constraints and requested that Bell Road be shown as a six-lane principal arterial. Bike lanes were added to all streets based on requests from the cities. The cities wanted to take advantage of the proposed ADMP project that shows a multi-use

facility along the west side of SR 303L featuring bike trails and "park-like" amenities. The sections are shown in Figure 5.2.

5.6.2 Interim A and Interim B

The existing cross street typical sections (two 12-foot lanes and 2-foot shoulders) would be perpetuated for the realignments (in Interim A) and widened to have a left-turn lane and one through lane in each direction at the intersections (in both Interim A and Interim B). SR 303L would be widened at the intersections to have left- and right-turn lanes and two through lanes in each direction for both interim conditions.

5.7 INTERCHANGES

Tight diamond interchanges are currently shown at every traffic interchange. Single point urban interchanges (SPUI) at some cross streets could be used because they typically offer better traffic service; however, they can add $1 million to the construction cost. Ideal candidates for SPUIs instead of tight diamonds are Indian School Road, Northern Avenue and Bell Road. Indian School Road and Bell Road could have projected ultimate volumes that would support a SPUI, and the City of Glendale currently designates Northern Avenue as a "superstreet" east of SR 303L. If Northern Avenue is upgraded to a "superstreet," volumes could rise to the point of supporting a SPUI instead of a tight diamond.

Traffic forecasts prepared as part of this DCR process do not indicate high traffic volumes on the cross streets. As stated in Section 3.2, these traffic forecasts are based on growth forecasts that represent only a fraction of what could develop in the corridor. In addition, the traffic model network and zone system used in the forecast is somewhat coarse in this corridor and therefore does not produce forecasts on individual streets as accurately as in other parts of the modeled area.

It is recommended that the issue of the type of interchange be revisited in the future when better data may be available.

5.8 TRAFFIC CONTROL AND CONSTRUCTIBILITY

Traffic control requirements and ease of constructibility for the different project scenarios are important considerations in evaluating the cost and feasibility of those scenarios. Therefore, the same five scenarios that were evaluated for earthwork were evaluated from the traffic control and constructibility perspective. The five scenarios are:

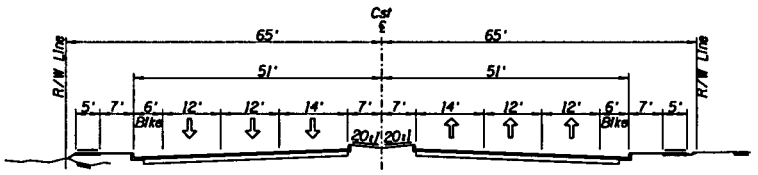
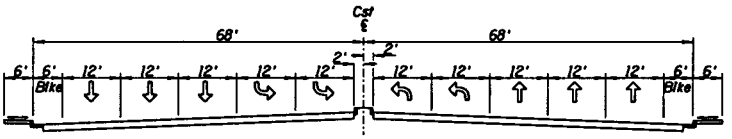
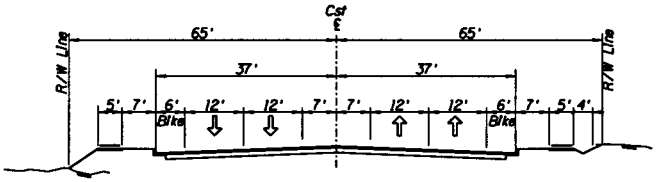
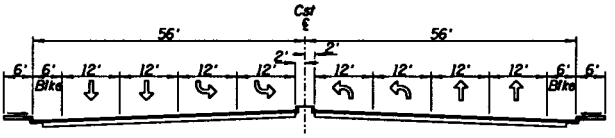
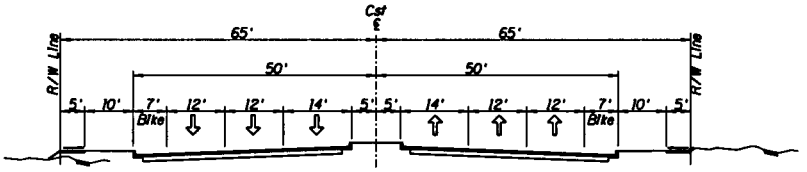
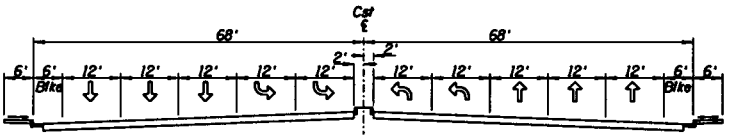
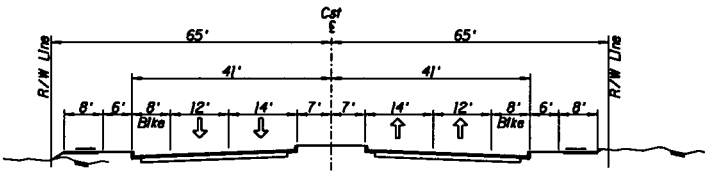
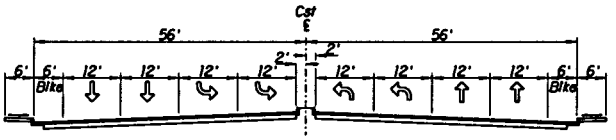
Indian School Rd. Northern Ave. Olive Ave. MCDOT Urban Principal Arterial with Bike Lanes	Away from TI	
	At Bridge	
Camelback Rd. Bethany Home Rd. Glendale Ave. MCDOT Urban Minor Arterial with Bike Lanes	Away from TI	
	At Bridge	
Waddell Rd. Bell Rd. City of Surprise Urban Principal Arterial with Bike Lanes	Away from TI	
	At Bridge	
Peoria Ave. Cactus Rd. Greenway Rd. City of Surprise Urban Minor Arterial with Bike Lanes	Away from TI	
	At Bridge	

FIGURE 5.2
Ultimate Cross Street Typical Sections

1. Construct the ultimate freeway without any interim roadway
2. Construct Interim A
3. Construct Interim B
4. Upgrade Interim A to ultimate freeway
5. Upgrade Interim B to ultimate freeway

Areas of concern common to many of these scenarios are the construction of the mainline near Camelback Road and between Olive Avenue and Clearview Boulevard and the traffic interchanges at Greenway Road and Bell Road. The existing pavement near Camelback Road is near the ultimate centerline which will complicate interim construction while maintaining traffic on the existing roadway. Between Olive Avenue and Cactus Road, the existing pavement is in the same location as the proposed ultimate northbound lanes.

Between Cactus Road and Clearview Boulevard, the existing pavement overlaps the proposed ultimate southbound lanes. As a result, some options to maintain traffic while constructing the new roadway have been identified. One option is to build the new ultimate lanes farthest from the existing pavement to full width first and then move all traffic onto it. A second option would be to construct a temporary detour for the existing roadway that is further away from the construction zone. A third option is to close down SR 303L in the direction that is under construction.

The Greenway Road and Bell Road traffic interchanges present challenges due to the fact that the ultimate mainline is depressed. The Greenway Road interchange is especially difficult to construct under traffic because the cross street is elevated and the mainline is depressed. This interchange will most likely be constructed in several phases and may need construction easements to allow for detours to maintain traffic. The Bell Road interchange is not as difficult because the cross street remains at-grade. Several lanes on Bell Road could probably be closed to allow for staged construction.

5.8.1 Construct Ultimate Freeway Without Interim

The full six-lane ultimate freeway would be constructed immediately without building an interim roadway first. The main advantage of this scenario is that the ultimate freeway would be built in the near-term while traffic volumes are relatively low, which would translate into easier implementation of traffic control and safer construction. In general, there is adequate space to maintain traffic flows on SR 303L while constructing portions of the new mainline. Traffic can

be shifted onto newly constructed portions of the mainline while the remainder of the mainline is constructed. To build the cross street overpasses, in most cases a detour would need to be constructed for the cross street or the cross street would have to be closed during construction of one-half of the overpass. Overall, this scenario will reduce the cost of traffic control during construction and the amount of temporary pavement. This scenario will also result in the least disruption and delay to traffic during construction.

5.8.2 Construct Interim A

Constructing Interim A is relatively simple. The proposed new interim roadway has sufficient separation from the existing pavement to permit new construction with minimal impact to existing traffic. The minimum distance between the existing and proposed edges of pavement is approximately 20 feet (near Camelback Road). The maximum elevation difference in this area is less than 6 feet, so the difference can be graded out with 2.5 to 3:1 slopes. It is proposed to realign (construct detours) for the cross streets as part of Interim A. This action will facilitate the upgrading to the ultimate at a later date.

5.8.3 Construct Interim B

Constructing Interim B is relatively straightforward. The major construction challenge will be constructing the widening of the existing pavement directly adjacent to traffic. Placing the necessary temporary barriers to delineate the work zone will narrow the existing pavement and may necessitate moving the center stripe to even out the two lanes.

5.8.4 Upgrade Interim A to Ultimate Freeway

Upgrading Interim A to the ultimate freeway configuration would be straightforward as the interim roadway is designed to “set up” the ultimate construction. The cross streets would already be realigned to allow enough room to build one-half of the grade separation at a time without impacting traffic. From Indian School Road to north of Northern Avenue, construction of the grade separations and ramps at the cross streets added to Interim A will result in a fully operational four-lane freeway. This configuration will meet the needs of the corridor for many years. North of Olive, new northbound lanes will need to be constructed along with the interchanges. Construction near Greenway Road and Bell Road requires more intricate phasing but it appears to be constructable.

5.8.5 Upgrade Interim B to Ultimate Freeway

Upgrading Interim B to the ultimate freeway presents the most challenges. This upgrade will probably occur when the four lanes constructed for Interim B are fully utilized. In many places along the corridor, there is insufficient space to maintain four lanes of traffic while constructing the new freeway. As a result, it may be necessary to close portions of SR 303L and detour traffic to Cotton Lane and/or Sarival Road. These roads would need to be upgraded to accommodate the additional traffic. No cost has been included to accomplish the upgrading of these streets.

Where there is adequate space to maintain traffic on the Interim B roadway, one direction of new ultimate six-lane roadway would be constructed. During this phase, realignments (detours) for the cross streets would be constructed so that temporary intersections are provided with the new roadway. Both directions of traffic would be shifted to the newly constructed roadway while the other direction of travel is constructed. Likewise, traffic on the cross streets would be shifted to the detours and temporary intersections. The grade separations and interchange construction could then commence. Figure 5.3 shows the location of the Interim B roadway in relation to the ultimate freeway at various locations throughout the corridor.

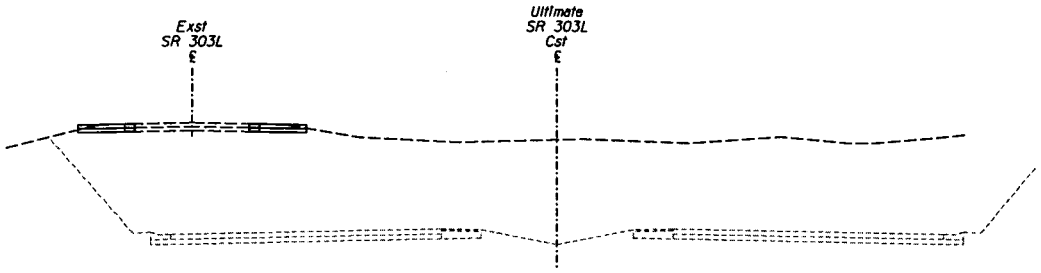
This scenario would have the highest traffic control cost and the highest impact to motorists during construction.

5.9 DESIGN TRAFFIC DATA

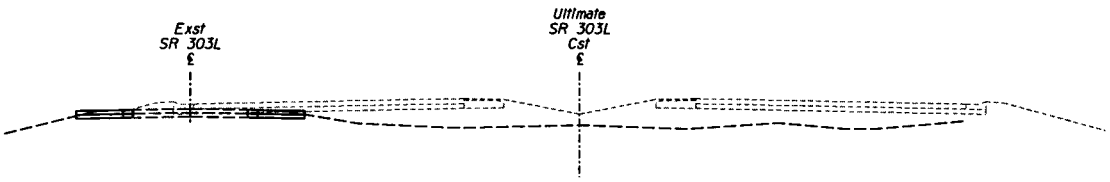
Based on analysis of existing traffic data and forecast future volumes, the following design traffic data shown in Table 5.6 were developed for SR 303L and each of the intersecting east-west arterials between Indian School Road and Bell Road.

Table 5.6
Design Traffic Data, SR 303L

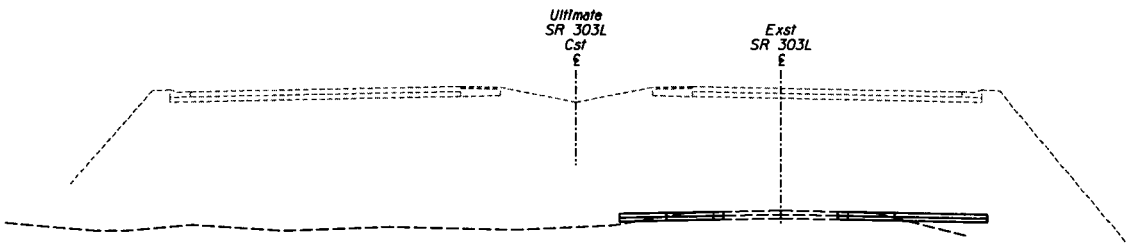
Factor	Interim Alternative	Freeway Alternative
ADT (Average Daily Traffic Volume 2020)	32,000	76,200
K (Peak Hour Volume/ADT)	0.10	0.10
D (Directional Factor)	0.60 (60% in Peak Direction)	0.60 (60% in Peak Direction)
T (Truck Percentage on SR 303L)	13%	10%



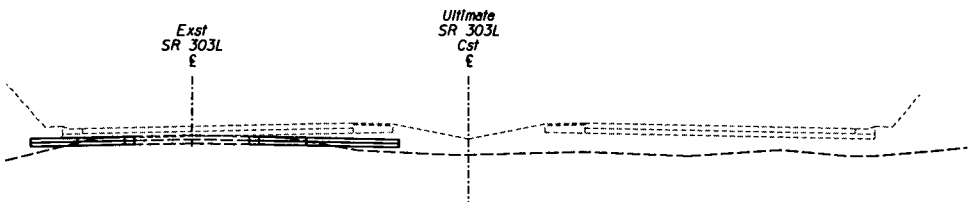
North of Greenway Road



Between Waddell Road and Greenway Road



Near Olive Avenue



Near Bethany Home Road

FIGURE 5.3
Location of Interim B In Relation To Ultimate

In the A.M. peak hour, which occurs generally between 7:00 and 9:00 A.M., the predominate travel direction on SR 303L will be southbound. In the P.M. peak hour, which generally occurs between 4:00 and 6:00 P.M., the predominate travel direction on SR 303L will be northbound.

Table 5.7
Design Traffic Data, East/West Arterials

E/W Arterial	ADT Interim Alternative		ADT Freeway Alternative	
	East of 303	West of 303	East of 303	West of 303
Bell Road	24,800	25,300	31,900	25,700
Greenway Road	13,300	14,400	16,200	18,100
Waddell Road	10,500	10,400	11,700	11,800
Cactus Road	6,800	2,900	12,600	5,400
Peoria Avenue	5,200	7,100	5,700	5,400
Olive Avenue	9,700	4,500	15,300	8,400
Northern Avenue	7,500	5,200	16,000	3,300
Glendale Avenue	1,200	9,400	1,200	5,200
Bethany Home Road	2,800	4,500	2,300	6,100
Camelback Road	9,200	6,800	14,400	5,700
Indian School	32,500	7,400	41,600	11,100
K (Peak Hour Volume/ADT)	0.10		0.10	
D (Directional Factor)	0.60 (60% in Peak Direction)		0.60 (60% in Peak Direction)	
T (Truck Percentage on E/W Arterial)	3%		3%	

In the A.M. peak hour, which occurs generally between 7:00 and 9:00 A.M., the predominate travel direction on east/west arterials will be toward SR 303L. In the P.M. peak hour, which generally occurs between 4:00 and 6:00 P.M., the predominate travel direction on east/west arterials will be away from SR 303L.

5.10 PAVEMENT DESIGN

URS developed preliminary pavement designs for the proposed project alignment using geotechnical subgrade data generated during a limited field and laboratory investigation program, and using guidelines published by ADOT in the *Preliminary Materials Engineering and Design Manual*. These designs pertain to construction of new pavement for the project and do not address the existing pavement structure or the pavement rehabilitation project currently programmed by MCDOT. Several different pavement configurations were evaluated. Details of

this evaluation process are included the *Preliminary Geotechnical Assessment Report* to be submitted under a separate cover. Key points from this report are summarized.

Preliminary Design Traffic (18-kip ESALs)

Traffic forecasts are presented in Section 3.2 for 2010 and 2025 Design Year. These data were used to estimate Equivalent Single Axle Loads (ESALs) for the following three cases:

Table 5.8
Design Traffic Loads

Case	Description	Estimated Traffic Load (ESALs)
Case 1	***Interim Improvements***; 10-year Design Life starting in 2005; Flexible Pavement	12,500,000
Case 2	***Final Improvements***; 20-year Design Life starting in 2015; Rigid Pavement	51,100,000
Case 3	***Final Improvements***; 30-year Design Life starting in 2005; Rigid Pavement	64,100,000

Preliminary Design R-value

Limited field investigations provided an assessment of the subgrade along the proposed alignment. Relatively shallow (5-foot) borings were drilled at approximately one-mile centers for this purpose. Sieve analyses and Atterberg Limits tests were performed on bulk samples collected from these borings. These data were used to estimate R-values based on guidelines provided in ADOT's *Preliminary Materials Engineering and Design Manual*. In addition, two laboratory R-value tests were also performed.

The correlated R-values ranged from 16 to 44 while the two laboratory tests yielded R-values of 20 and 25. An average R-value of approximately 27 was estimated by combining the correlated and tested R-values in accordance with a relationship provided in the *Preliminary Materials Engineering and Design Manual*. Based on these values, an R-value of 25 was used in the pavement design.

Pavement Design

The design of the flexible and rigid pavements presented herein is in general accordance with ADOT's *Preliminary Materials Engineering and Design Manual* using traffic load and subgrade R-value discussed above as input parameters. Consideration was given to using a flexible

pavement (asphaltic concrete) for the interim improvements, while a rigid pavement (PCCP, jointed reinforced with dowels) was considered for both the interim and ultimate pavements.

A summary of the recommended pavement sections for the three cases discussed at the start of this section is presented below:

- ***Case 1: Interim Improvements; 10-year Design Life starting in 2005; Flexible Pavement***

  Based on the preliminary analysis, the recommended pavement section for this case consist of a minimum of 5 inches of asphaltic concrete overlying at least 15 inches of aggregate base, placed on properly prepared subgrade.

- ***Case 2: Final Improvements; 20-year Design Life starting in 2015; Rigid Pavement***

  The rigid pavement section of this case should consist of a minimum of 12 inches of PCCP (jointed reinforced with dowels) over 4 inches of aggregate base for new pavement. Where the rigid pavement overlies existing asphaltic concrete pavement from Case 1, a portion or all of the asphaltic concrete should be removed (by milling, for example) before placement of the PCCP surface course.

- ***Case 3: Final Improvements; 30-year Design Life starting in 2005; Rigid Pavement***

  The preliminary analysis indicate that for this case, the minimum pavement section should include 12.5 inches of PCCP over 4 inches of aggregate base.

Discussions

1. Assuming a unit cost of $15 per square yard for flexible pavement and $22 per square yard for PCCP, the above analysis indicates that flexible pavement (Case 1 above) would be the least expensive (initial cost) for the interim roadway. However, when PCCP is added in 2015 for the final pavement construction, the total construction cost for the pavement would be approximately $33 to $37 per square yard.
2. On the other hand, if the final pavement section (see Case 3 above) is to be installed for two lanes in each direction in 2005, the initial cost of construction would be approximately $22 to $25 per square yard. This represents a 50% increase in initial cost when compared to the flexible pavement option discussed in Item 1 above; however, it also represents a 50% decrease in the ultimate cost.
3. In performing our pavement design and analysis, we have assumed that the final pavement will consist of a PCCP surface course. This assumption is consistent with our understanding

of ADOT's current policy. However, it is suggested that other options be considered during the final design stages of the project. Alternative approaches could address the use of overlays and flexible pavement for the final configuration.

Based on the above discussions relating to construction costs, the recommended permanent sections of the Interim A concept and the ultimate roadway would be paved with 12.5 inches of PCCP over 4 inches of aggregate base as discussed in Case 3 above. Some temporary asphalt paving will be needed for Interim A.

5.11 UTILITIES

As development continues to occur along the SR 303L corridor in the future, new utilities will be needed to service the new developments. In particular, trunk sewers and domestic water mains will be needed at most of the arterial cross streets. Additional underground telephone, gas, and cable facilities will be needed at many of the arterial cross streets as well. Additional overhead or underground electric lines will also be needed.

In addition to new utilities, many existing utilities will need to be relocated when the interim and ultimate improvements are constructed. The large drainage channel along the west side of SR 303L will require relocation of most underground utilities that cross the channel. The depressed portion of the ultimate freeway will require relocation of all existing utilities in Greenway Road and Bell Road. The diversion sewer that crosses SR 303L south of Bell Road will ***not*** need to be relocated because the highway profile has been designed to pass above this sewer line. Some protective encasement may be required, however, due to the relatively small cover over this sewer.

Some future utilities have already been planned. These include new water mains proposed by Citizens Water Company at the north end of the corridor and by Litchfield Park Service Company at the southern end of the corridor. Also, the City of Surprise has indicated that trunk sewer lines are likely at each of the arterial street crossings within the city. It should be noted that the City of Surprise is currently updating their water and sewer master plans. Upon completion of this work, additional water and sewer crossings may be identified.

Most of the existing utilities shown in Table 2.1 on page 2-9 will likely be impacted by the SR 303L improvements and relocations can be anticipated. The utilities shown on Table 5.9 are future utilities for which some planning has been done. Design of these utilities should be coordinated with the future SR 303L improvement concepts.

Table 5.9
Future Planned Utilities

Company	Utility	Existing/ Future	Size/Type	Location
Citizens Water Resources	Water	Future Future Future	8" Trans. Main 24" Waterline 12" Waterline	1/4 mile north of Greenway Road Either Waddell Road or Cactus Road Greenway Road
City of Surprise	Sanitary Sewer	Future		At Bell Road, Greenway Road, Waddell Road and Cactus Road
Litchfield Park Service Co.	Water, Sewer	Future	16" Water	Indian School Road

5.12 IRRIGATION

The concepts for relocating or rerouting the irrigation facilities along SR 303L are similar based on the location where the facility is encountered. Pipes and ditches that are parallel to the roadway will be moved to the new limits of the right-of-way and continue the parallel alignment of the facility where possible. Pipes and ditches that run perpendicular to the roadway and cross the current alignment will be lengthened to have the inlet and outlet located beyond the new proposed right-of-way. In areas where the roadway is depressed, the pipes and ditches crossing the roadway will be designed as inverted siphons. Other irrigation facilities impacted by the roadway are the tailwater ditches and tailwater retention basins called sumps. These sumps are used in farm operations to remove ponded irrigation water from the bottom of the field. This tailwater, if it were to remain on the field, would drown out the crops and eventually kill the plants. Where the roadway impacts these facilities for handling tailwater, they will have to be replaced or the volume taken would have to be replaced somehow.

Generally, relocation of irrigation facilities owned by MWD and AWC should be done as follows:

- Relocations should be as close as possible to the location of the existing facilities.
- Inverted siphons are not allowed.
- Flow rates and design requirements of the facilities are given to the designers and then MWD or AWC checks the design and accepts or rejects it.
- Structures relocated or improved that have a tailwater connection must be built to remove this connection.

AWC anticipates continued high demand for irrigation water for many years. Much of the area within the AWC district boundaries is within the flight path of Luke AFB and is not likely to experience high-density residential development. The larger residential parcels within the district generally want irrigation water. Much of the agricultural land in this area consists of high investment operations (roses, cotton, etc.) and is likely to continue in agricultural use for some time.

Large irrigation sumps present a problem both to the roadway construction and to the farm operations. New sumps must be built prior to the filling of the old existing sumps. Filling these sumps is also critical because many of these sumps have been in a saturated condition for many years and may require over-excavation and backfilling prior to construction of bridges or roadway structures. In most cases, the existing sumps will require being replaced in volume and operation. The proposed irrigation relocation plans for the SR 303L DCR have attempted to show possible locations for the replacement sumps.

As the design process continues, farmers will have to be contacted with regard to private irrigation facilities and plans made for implementing the new and relocated facilities. Consideration will have to be given to growing season and possible crop damage. This will avoid costly claims of negative impact on the farm operations.

Since the MWD does not currently have nor do they desire to have inverted siphons, efforts should be made to satisfy the district of the continuing ability to convey water across the SR 303L at depressed sections. Bell Road would remain a particularly deep siphon. Preliminary designs show that rerouting the pipeline along the roadway to a shallow location on the profile are not feasible.

5.13 WELLS

5.13.1 Replacement of Existing Wells

All 12 irrigation wells within the SR 303L right-of-way will need to be relocated prior to construction of the ultimate freeway improvements. Six of these wells would also need to be relocated in advance of interim roadway improvements if the Interim A concept is constructed. If the Interim B concept is constructed for SR 303L, none of the wells would need to be relocated to accommodate the roadway improvements. Also for Interim A, several wells would be located between the northbound and southbound lanes if not relocated in advance of constructing the Interim A improvements. It may be prudent to consider relocation of all of these wells in advance of Interim A instead of waiting until the ultimate freeway improvements are made. It is

also recommended that sites for the relocated wells be identified and acquired before much development occurs along the corridor that would make it more difficult to obtain nearby sites.

Meetings were held with representatives of the MWD and AWC to review their operations and to identify key issues related to the relocation of their facilities. Following are some of the key points from these meetings:

- Besides owning groundwater wells, the MWD also has rights to an allotment of Central Arizona Project (CAP) surface water. The majority of surface water is utilized during the fall and winter seasons, and the groundwater wells operate during the spring and summer.
- AWC's wells operate all year long. AWC supplies approximately 8,000 acre-feet of irrigation water each year. Approximately 80% of this is well water.
- The majority of the wells within the SR 303L right-of-way provide gravity irrigation for agricultural lands along the east side of the SR 303L corridor. Replacement wells must be located near the existing wells or relocated west of the SR 303L corridor.
- New well sites will need to be approximately 75 feet square in size to accommodate equipment and vehicles. Access will need to be provided from the local street system.
- Both MWD and AWC desire to have equivalent operating replacement wells provided to them rather than compensation for the value of the existing wells.

Conceptual design drawings for the ultimate freeway improvements show preliminary proposed sites for 11 of the 12 irrigation wells that will need to be relocated as well as relocated irrigation ditches, canals, and pipes. Access to the proposed well sites is also shown on the drawings. A nearby site is not available for the MWD well located near Clearview Boulevard. The future site of this well is unknown and is not shown on the drawings. It should be noted that this well would be considered a new well, and the existing Well No. 3-36 would be abandoned. The new well would be located somewhere upstream of the present location to allow for the same quantity of water to be conveyed in MWD Lateral 3. The MWD owns property in various locations in the district where the new well could be located.

Equivalent replacement wells may be provided by the transportation agency (MCDOT or ADOT) or the well owners may be compensated for the value of the existing wells. Either way, several important issues pertaining to the permitting and siting of replacement wells need to be understood. The following paragraphs provide an explanation of the issues and approximate costs.

5.13.2 Abandonment of Existing Wells

Abandonment of existing wells will require permitting, removal of pumping equipment, video survey, and bailing of sediments to original total depth. If oil is present on the water surface from pump lubrication, it will require bailing, profiling, and disposal. Because the wells penetrate multiple aquifer systems and have the potential to communicate flow between intervals of poor quality water to deeper intervals, abandonment will likely require ripping of the well casing with a downhole casing knife and backfill with cement slurry. Demolition of the well site and removal of electrical equipment, fencing, concrete pads, and conveyance structures may also be required. Well sites may have soil contamination from engine and pump lubricants and the use of solvents for equipment maintenance. Costs for well abandonment are estimated to be approximately $50,000 per well (Table 5.10).

5.13.3 Permitting of Replacement Wells

A drawdown impact analysis for neighboring wells is not required for replacement wells that meet the following conditions for location and pumpage. A new well can be permitted as a replacement well if it is drilled within 660 feet of the existing well it is replacing and the proposed annual pumpage is reasonably similar to historical use. If pumpage records are available for the existing well, the new well can be permitted for a similar annual volume of pumpage. If pumpage records are unavailable, the annual volume equivalent to pumping at the reported pumping rate for 50% of the year will be permitted. It is anticipated that 11 wells can be relocated within 660 feet of the original location and, therefore, should receive automatic permit approval for similar pumping volumes.

If a replacement well is drilled beyond 660 feet from the original well or requires pumpage larger than historical use, it is treated as a new well. A groundwater right is required and could be transferred from the existing well being replaced. A drawdown impact analysis is required to demonstrate impact on nearest wells from the proposed pumpage at the new well. If drawdown is 10 feet or less for a five-year period, the well and pumpage are automatically accepted. If drawdown is 25 feet or more in a five-year period, the well and pumpage will be rejected. If projected drawdown is between 10 and 25 feet, the permit is subject to further review and additional data and studies may be required. In addition, permit applications for wells in areas of known land subsidence or poor groundwater quality may require supplemental information and studies. It is anticipated that one well, located at Station 1020+00 north of Bell Road, will be relocated beyond the 660-foot limit and will require permitting as a new well including analysis of drawdown impact on the nearest neighboring wells. It is possible that drawdown constraints on nearby wells may result in a reduction in the permitted pumpage for the new well location.

Costs for preparing a drawdown impact analysis and permit application for one new well location is estimated to be approximately $3,000 (Table 5.10).

5.13.4 Siting and Design of Replacement Wells Based on Well Yield

If compensation to the well owners is not provided and the transportation agency is responsible for construction of replacement wells with similar yield and specific capacity, a preliminary well siting study should be conducted for the project area. The cost for a well siting study based on well yield is estimated to be approximately $25,000 (Table 5.10). Specific capacity is the ratio of pumping rate divided by the amount of drawdown in units of gallons per minute per foot of drawdown and is useful for comparing pumping lift costs. To evaluate potential yield and specific capacity of replacement wells, the following information should be prepared and analyzed:

- Map – Contour Map of Groundwater Level Altitude
- Map – Contour Map of the Base of Upper Alluvial Unit
- Map – Contour Map of Upper Alluvial Unit Saturated Thickness
- Map – Well Locations with Screened Interval and Specific Capacity
- Graphs – Water Level Hydrographs of Nearby Wells to Evaluate Long-term Trends and Seasonal Variations
- Table – Well Inventory with Construction Details, Pumping Rate, and Specific Capacity

If review of the data indicates that specific capacity does not vary widely for nearby wells of similar construction and saturated thickness of the upper alluvium unit is similar for the replacement well site compared to the original well site, chances for drilling a replacement well that will have similar yield and specific capacity are good. If large variations in specific capacity or saturated thickness of the upper alluvium occur in the project area, additional investigations may be warranted to evaluate potential well sites. Additional investigations may include exploratory drilling and geophysical logging to evaluate aquifer lithologic properties, and construction of smaller diameter, temporary wells to estimate potential yield, specific capacity, and aquifer hydraulic parameters. Costs for exploratory drilling and testing of one temporary test well is estimated to be approximately $125,000 (Table 5.10). The number of test wells that might be required would depend on data gaps identified in the available data.

5.13.5 Siting and Design of Replacement Wells Based on Water Quality

Historical agricultural use in the project area has resulted in poor groundwater quality in the upper alluvial unit resulting from infiltration of irrigation water potentially containing elevated concentrations of total dissolved solids, nitrates from fertilizers, and trace amounts of pesticides and herbicides. Nitrate concentrations may exceed drinking water standards. The underlying middle alluvial unit is predominantly sandy silt and clay and has better quality water but produces less water than the upper alluvial unit which is predominantly silty sand and gravel.

Agricultural wells where drinking water requirements are not a concern are typically screened across both units for maximum yield. Municipal wells are typically constructed to limit the amount of poor quality water yielded from the upper unit. Replacement wells drilled with screened interval similar to the original well in close proximity where the saturated thickness of the upper alluvium unit is comparable should produce similar yield and specific capacity. Modifications to well design to produce drinking water quality water will require additional costs for zonal sampling and well seals; additional costs are estimated to be approximately $50,000 per well (Table 5.10).

However, any reduction in the upper alluvium unit saturated screened interval will likely result in reduced well yield, reduced specific capacity, and increased pumping lift costs. Well yield and specific capacity for modified screen intervals cannot be accurately estimated prior to construction of the new well. Drinking water supply wells constructed in a 100-year flood plain have costs associated with additional wellhead requirements. Changes in specific capacity may require different pumping equipment than was used in the existing well. If replacement wells are constructed under contract with MCDOT, additional costs for hydrogeologic investigations and construction modifications, and potential risk of reduced yield and specific capacity should be negotiated with well owners who request an upgrade in replacement well construction from an agricultural well to a municipal drinking water supply well.

If replacement wells are to be used as sources for municipal drinking water supply, additional investigations will be necessary to evaluate the aerial and vertical distribution of water quality. To evaluate water quality of replacement wells, the following information for existing wells should be prepared and analyzed:

- Map – Contour map of groundwater quality for total dissolved solids, nitrate, and any other constituents of concern
- Table – Historical water quality data for nearby wells

Field investigations would include additional wellhead sampling of nearby wells to fill data gaps identified from maps and tables of historical water quality. The cost to conduct a preliminary review of available data and a wellhead sampling program for six wells is estimated to be approximately $25,000 (Table 5.10). Production logging of existing wells, including downhole spinner flowmeter and depth sampling, could be conducted to evaluate vertical distribution of well yield and water quality at an estimated cost of approximately $35,000 per well (Table 5.10). Exploratory drilling, geophysical logging, and construction and testing of smaller diameter, temporary wells could also be used to evaluate water quality in areas where data are sparse at an estimated cost of approximately $125,000 per well (Table 5.10).

Once a well site is selected, vertical distribution of well yield and water quality could also be evaluated by zonal sampling conducted during construction of the new production well by building temporary short-screened wells in the pilot borehole and obtaining samples from discrete intervals in the aquifer. The information would be used to design the screened interval of the well to avoid pumping water from aquifer intervals with poor quality water. Assuming zonal testing of four zones per well and the installation of cement seals, additional costs for testing and construction modifications to improve water quality are estimated to be approximately $60,000 per well (Table 5.10).

Table 5.10
Cost Estimate for the Replacement of Irrigation Wells

Scope of Work	Cost Estimate
Well Abandonment Costs per Well	$50,000
Well Construction Permit Application Costs per Well	
Without Drawdown Impact Analysis	$1,000
With Drawdown Impact Analysis	$3,000
Well Construction Costs per Well	
Installation of Replacement Well	$550,000
Well Site Construction, Pump Installation, and Electrical Services	$75,000
Construction Modifications to Improve Water Quality, Zonal Sampling During Well Construction, 4 Zones per Well, Install Well Seal	$60,000
Well Yield Investigations	
Well Siting Study for Well Yield	$25,000
Exploration Drilling, Testing and Sampling (per Test Well)	$125,000
Water Quality Investigations	
Well Siting Study for Water Quality, Sample 6 Existing Wells	$25,000
Logging and Testing of Existing Wells (per Well)	$35,000
Exploration Drilling, Testing and Sampling (per Test Well)	$125,000

5.14 RAILROAD

The ultimate freeway design concept would elevate SR 303L to cross over the BNSF railroad tracks and Olive Avenue. A traffic interchange at Olive Avenue would result in at-grade ramp crossings of the railroad tracks for both the northbound on-ramp and southbound off-ramps. These ramp crossings would be located approximately 400 feet apart.

Prior to construction of the grade separated traffic interchange, the design concept for Interim A is based on utilizing the existing roadway for northbound traffic and constructing two lanes for southbound traffic on the ultimate ramp alignment west of the existing road. This would result in two at-grade railroad crossing with Interim A located approximately 250 feet apart.

In reviewing this concept with the BNSF, they generally were agreeable to the concept subject to the following conditions:

1. BNSF may want the approval of a new at-grade crossing to be tied to a not-to-exceed construction date of the mainline grade separation.
2. BNSF would permit placement of piers for the grade separation in their right-of-way. However, the piers should provide a minimum horizontal clearance of 25 feet to the centerline of the track. Furthermore, piers placed within the railroad right-of-way should be placed between Olive Avenue and the railroad tracks, leaving the north side of the railroad right-of-way clear of obstructions.

The at-grade railroad crossings for Interim A and for the ultimate ramps would need to have crossing gate protection and be interconnected to the traffic signals at Olive Avenue. Any new at-grade railroad crossings would also need to be approved by the Arizona Corporation Commission.

5.15 RIGHT-OF-WAY

Right-of-way strip maps depicting the status of the existing and proposed right-of-way along SR 303L are shown in DCR Volume 2, Section 4.0 along with a right-of-way Summary Table. The table describes right-of-way needed for SR 303L by each parcel. In addition, the proposed right-of-way limits include the SR 303L off-site drainage requirements.

Table 5.11 provides a summary of the right-of-way status for the project. There are 229.8 acres that were donated for the existing roadway that are not subject to the reverter clause. There have been 16.7 acres acquired by deed. A total of 254.7 acres have been preserved through donations but are subject to a clause that could have the property revert back to the owner.

Table 5.11
Summary of Right-of-Way Status and Needs

	Acres
Donated for Existing SR 303L	229.8
Acquired by Warranty Deed	16.7
Donated or Easement with Reverter Clause	254.7
Total Preserved	501.2
Additional Right-of-Way Needed	163.8
Total Right-of-Way for Project	**665.0**

Out of the 665 acres needed for the project (with the drainage system as shown in this DCR), 501.2 acres have been preserved. An additional 163.8 acres are needed for this project. It is highly recommended that this additional acreage be obtained as soon as possible. If it is decided to build the drainage system as proposed by the FCDMC, additional right-of-way will be needed.

The existing right-of-way width for each crossroad varies dependent on the street classification and level of improvement. The right-of-way obtained with the original freeway concept to support the construction of traffic interchanges with an elevated crossroad design did not include right-of-way along the cross streets to accommodate the embankment needed to elevate these cross streets over SR 303L. This additional right-of-way need is included in Table 5.5.

5.16 GUIDE SIGNS, SIGNALS, AND LIGHTING

All signs during interim stages will be pole mounted. Cantilever or overhead signs are not required for interim stages. During ultimate configuration, all signing will be provided in accordance with ADOT and AASHTO criteria for access-controlled highways and interchanges.

Traffic signals are proposed at each section line roadway crossing. There is a signalized intersection at Bell Road and three signalized intersections to be constructed in 2002: at Indian School Road, Northern Avenue, and Olive Avenue/BNSF. All existing traffic signals will be removed with Interims A and B. New signals will be placed at all 11 intersections when warranted. Interim A would require three additional traffic signals because of separation of northbound and southbound lanes in ultimate location at Bell Road, Greenway Road, and Waddell Road.

During interim stages, only intersections will be lighted. In the ultimate configuration, mainline and interchanges will be lighted. Mainline lighting will be separate for each direction of traffic and will be placed on the right side of traffic direction.

5.17 INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

Based on the criteria set forth in ADOT's *Freeway Management System Infrastructure Design Guidelines*, March 2001, when this facility is a fully developed freeway, the typical Freeway Management System (FMS) design would include:

- ***Detector Loops***: Located in mainline lanes at one-third-mile intervals and on ramps, supported with control cabinets, fiber optic modems and electrical power.
- ***Closed Circuit Television***: Located for continuous coverage of the freeway and near critical locations. Along this corridor, there may be a dozen CCTV sites, supported with control cabinets, fiber optic modems and electrical power.
- ***Variable Message Signs***: Located in advance of critical decision points or alternative route opportunities. Along this corridor, there may be two VMS in each direction, supported with control cabinets, fiber optic modems and electrical power.
- ***Communication Trunk System***: Located along both sides of the freeway, bank of three 3-inch PVC conduits, concrete encased, containing fiber optic cables, power wires and supported with splice vaults and pull boxes. The FMS system uses a series of communications "nodes," requiring node buildings. A comprehensive communications plan that includes the corridor under study does not exist at present. (In the event ADOT decides a node building is required within the confines of this corridor, typical costs of such a facility is approximately an additional $250,000.)

A typical mile of freeway FMS, complete with fiber optic cable, all FMS elements and infrastructure has traditionally been approximately $1,000,000 per mile, in 1999 dollars. Design cost could be on the order of $300,000.

Typically, freeway construction projects do not contain the final FMS elements. These have tended to be separate stand-alone projects with CMAQ funding sources. However, urban freeway projects do typically provide the opportunity to install the underground infrastructure such as the trunk conduit system and loop detectors.

The recommended course of action would be to install the FMS infrastructure as a part of the ultimate freeway construction and avoid installation of any FMS elements in the interim designs. Given the significant cost of the infrastructure and its susceptibility to damage in an interim scenario, pre-installation would not be a good investment.

5.18 LANDSCAPING AND AESTHETIC TREATMENT

Standard ADOT landscaping would be included, which would consist of soil plating, decomposed granite ground cover, drought-resistant plants and drip irrigation. All non-paved portions of the right-of-way would be subject to landscaping. Standard ADOT staining and rustication of structures, such as soundwalls, retaining walls and bridge components, would also be provided. Variation from ADOT standard would allow local governments and jurisdictions the opportunity to participate in aesthetic enhancements.

5.19 DESIGN EXCEPTIONS

No design exceptions are anticipated for the ultimate freeway, Interim A or Interim B designs.

6.0 COST ESTIMATE FOR INTERIM AND ULTIMATE CONCEPTS

Estimated costs of each concept are presented in Tables 6.2 through 6.8 on the following pages. A summary of all costs is provided in Table 6.1. The construction costs were based on recent unit prices used by ADOT, and they include 8% for design, 14% for construction services, and 20% for contingency (or unidentified items). FMS costs ($1,000,000 per mile) were added to the future costs. Right-of-way for additional land needed over the typical existing reserved right-of-way for SR 303L is shown in the right-of-way maps and right-of-way summary table in DCR Volume 2, Section 4.0.

Additional right-of-way would be needed for the cross streets over the mainline because the toe of the fill slope for the cross street overpass is outside the standard MCDOT right-of-way. Right-of-way costs for Interim A were calculated assuming that all right-of-way anticipated for the eventual ultimate highway would be acquired in the interim condition. Interim costs are simply the sum of the construction costs and the right-of-way costs. Future cost indicates the amount it would take to upgrade the interim concept to the ultimate six-lane, fully access-controlled highway. For Interim B, the right-of-way acquisition cost is added when Interim B is upgraded to the ultimate configuration. Total cost is the interim cost and future costs added together. Costs are summarized in 2001 unit prices as well as adjusted for inflation to account for time lapse between interim alternate and ultimate concept. Costs are inflated from 2001 base prices at 3% for construction and design and 5% for right-of-way. Right-of-way costs were based on present per-acre costs provided by MCDOT Right-of-Way Section and guidance received from ADOT. Concrete pavement costs were based on pavement sections of approximately 12 inches of concrete on 4 inches of aggregate base, and asphalt pavement costs were based on a pavement section of approximately 5 inches of asphalt on 15 inches of aggregate base.

MCDOT plans to rehabilitate the existing interim roadway and add a 2-inch asphalt rubber overlay in 2002 for the entire length of the project. Also, the intersections of Indian School Road, Northern Avenue, and Olive Avenue are planned for widening and improvement in the near future. An additional overlay is proposed in areas where existing pavement would remain in service as part of Interim A or B.

The cost estimates were based on the configurations shown in Volume 2 of the DCR. No costs were added to account for possible additional costs due to subsidence. The costs included the drainage system as shown in the plans. The more extensive system currently being studied by the FCDMC has not been included.

Table 6.1

April 1, 2002

COST SUMMARY

SR 303 L

INDIAN SCHOOL ROAD TO CLEARVIEW BOULEVARD

CONCEPT	INTERIM COST				FUTURE COST (BASED ON 2001 PRICES)				TOTAL COST
	CONSTRUCTION COST	DESIGN COST	RIGHT-OF-WAY COSTS	TOTAL COST	CONSTRUCTION COST	DESIGN COST	ROW COST	TOTAL COST	
ULTIMATE	$220,124,000	$17,610,000	$7,100,000	$244,800,000	N/A	N/A	N/A	N/A	244,800,000
INTERIM A - PCC	$54,973,000	$4,398,000	$7,100,000	$66,500,000	$170,759,000	$13,661,000	$0	$184,400,000	250,900,000
INTERIM A - ASPHALT	$51,292,000	$4,103,000	$7,100,000	$62,500,000	$180,781,000	$14,462,000	$0	$195,200,000	257,700,000
INTERIM B	$13,719,000	$1,098,000	$0	$14,800,000	$221,628,000	$17,730,000	$7,100,000	$246,500,000	261,300,000

CONCEPT	INTERIM COST				FUTURE COST (ADJUSTED FOR INFLATION - 10 YEARS FROM INTERIM)				TOTAL COST
	CONSTRUCTION COST	DESIGN COST	RIGHT-OF-WAY COSTS	TOTAL COST	CONSTRUCTION COST	DESIGN COST	ROW COST	TOTAL COST	
ULTIMATE	$220,124,000	$17,610,000	$7,100,000	$244,800,000	N/A	N/A	N/A	N/A	244,800,000
INTERIM A - PCC	$54,973,000	$4,398,000	$7,100,000	$66,500,000	$221,986,700	$17,759,300	$0	$239,700,000	306,200,000
INTERIM A - ASPHALT	$51,292,000	$4,103,000	$7,100,000	$62,500,000	$235,015,300	$18,800,600	$0	$253,800,000	316,300,000
INTERIM B	$13,719,000	$1,098,000	$0	$14,800,000	$288,116,400	$23,049,000	$10,650,000	$321,800,000	336,600,000

Table 6.2

Ultimate
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
DEMOLITION				
CLEARING AND GRUBBING	ACRE	$2,500.00	590	$1,475,000
REMOVE ASPHALT CONCRETE PAVEMENT	SY	$2.00	281,900	$563,800
REMOVE TRAFFIC SIGNAL	EA	$10,000.00	4	$40,000
REMOVE INTERSECTION LIGHTING	EA	$7,000.00	4	$28,000
EARTHWORK				
EXCAVATION	CY	$2.00	1,660,000	$3,320,000
EMBANKMENT (BORROW)	CY	$5.00	2,490,000	$12,450,000
PAVEMENT				
CROSSROAD PAVEMENT (AC)	SY	$15.00	182,000	$2,730,000
MAINLINE PAVMENT (PCCP)	SY	$22.00	691,200	$15,206,400
RAMP & CROSSROAD PAVEMENT (PCCP)	SY	$21.75	242,100	$5,265,675
MAINLINE MEDIAN SHOULDER	SY	$11.00	109,800	$1,207,800
CONCRETE SIDEWALK	SF	$2.00	330,500	$661,000
CONCRETE CURB & GUTTER	LF	$8.00	278,000	$2,224,000
CONCRETE MEDIAN CURB	LF	$7.00	39,000	$273,000
CONCRETE HALF BARRIER	LF	$55.00	33,200	$1,826,000
GUARDRAIL	LF	$15.00	3,800	$57,000
GUARDRAIL TERMINAL (ET-2000)	EA	$2,000.00	38	$76,000
IMPACT ATTENUATION DEVICE (SAND BARREL)	EA	$4,500.00	22	$99,000
DRAINAGE - OFFSITE				
CONCRETE CHANNEL LINING 6"	SY	$20.00	163,520	$3,270,400
CONCRETE CHANNEL LINING 8"	SY	$25.00	37,560	$939,000
CHANNEL EXCAVATION	CY	$1.75	371,000	$649,250
STRUCTURE EXCAVATION	CY	$5.00	22,500	$112,500
STRUCTURE BACKFILL	CY	$20.00	9,270	$185,400
DOUBLE 4'x6' REINFORCED CULVERT BOX	LF	$400.00	420	$168,000
DOUBLE 5'x6' REINFORCED CULVERT BOX	LF	$425.00	190	$80,750
DOUBLE 6'x6' REINFORCED CULVERT BOX	LF	$450.00	230	$103,500
DOUBLE 6'x8' REINFORCED CULVERT BOX	LF	$580.00	330	$191,400
TRIPLE 6'x8' REINFORCED CULVERT BOX	LF	$820.00	970	$795,400
QUADRUPLE 6'x8' REINFORCED CULVERT BOX	LF	$1,060.00	320	$339,200
HEADWALL	EA	$2,500.00	3	$7,500
RETENTION BASIN EXCAVATION	CY	$1.50	2,100,000	$3,150,000
RIPRAP ENERGY DISSIPATOR	EA	$5,000.00	3	$15,000
72-INCH STORM DRAIN PIPE	LF	$110.00	18,600	$2,046,000
60-INCH STORM DRAIN PIPE	LF	$90.00	5,000	$450,000
MANHOLE	EA	$3,000.00	36	$108,000
CONCRETE CATCH BASIN	EA	$5,000.00	2	$10,000
SIDE INLETS	EA	$2,000.00	16	$32,000

Table 6.2 (Continued)

Ultimate
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
DRAINAGE - ONSITE				
24-INCH STORM DRAIN PIPE	LF	$35.00	9,445	$330,575
36-INCH STORM DRAIN PIPE	LF	$55.00	1,545	$84,975
CONCRETE CATCH BASIN	EA	$2,000.00	110	$220,000
MANHOLE (36")	EA	$2,000.00	10	$20,000
MANHOLE (30")	EA	$3,000.00	18	$54,000
CONCRETE CATCH BASIN (TYPE I)	LF	$3,000.00	7	$21,000
72-INCH STORM DRAIN PIPE	LF	$110.00	3,800	$418,000
66-INCH STORM DRAIN PIPE	LF	$100.00	1,450	$145,000
60-INCH STORM DRAIN PIPE	LF	$90.00	5,100	$459,000
36-INCH STORM DRAIN PIPE	LF	$55.00	1,300	$71,500
30-INCH STORM DRAIN PIPE	LF	$50.00	400	$20,000
24-INCH STORM DRAIN PIPE	LF	$35.00	800	$28,000
24-INCH STORM DRAIN PIPE	LF	$35.00	25,190	$881,650
36-INCH STORM DRAIN PIPE	LF	$55.00	11,750	$646,250
CONCRETE CATCH BASIN, TYPE IV	EA	$3,000.00	329	$987,000
CONCRETE CATCH BASIN, MEDIAN	EA	$2,000.00	20	$40,000
MANHOLE (36")	EA	$2,000.00	42	$84,000
BRIDGE STRUCTURES				
INDIAN SCHOOL ROAD	SF	$55.00	38,175	$2,099,625
CAMELBACK ROAD	SF	$55.00	32,067	$1,763,685
BETHANY HOME ROAD	SF	$55.00	32,067	$1,763,685
GLENDALE ROAD	SF	$55.00	32,067	$1,763,685
NORTHERN AVENUE	SF	$55.00	32,067	$1,763,685
OLIVE AVENUE/BNSF RAILROAD	SF	$55.00	41,926	$2,305,930
PEORIA AVENUE	SF	$55.00	32,067	$1,763,685
CACTUS AVENUE	SF	$55.00	32,067	$1,763,685
WADDELL ROAD	SF	$55.00	38,175	$2,099,625
GREENWAY ROAD	SF	$55.00	32,067	$1,763,685
BELL ROAD	SF	$55.00	38,175	$2,099,625
RETAINING WALL	SF	$25.00	7,440	$186,000
INCIDENTALS				
CHAIN LINK FENCE	LF	$7.00	137,600	$963,200
SIGNING	MILE	$315,000.00	11	$3,465,000
PAVEMENT MARKING	MILE	$45,000.00	11.8	$530,100
UTILITY RELOCATIONS/REMOVALS	MILE	$70,000.00	11.8	$824,600
LIGHTING	MILE	$460,000.00	11.8	$5,418,800
TRAFFIC SIGNALS	EA	$200,000.00	11	$2,200,000
LANDSCAPING	MILE	$850,000.00	11.8	$10,013,000
ITS	MILE	$1,000,000.00	11.8	$11,780,000
MEDIAN CABLE BARRIER	L.F.	$10.00	59,300	$593,000
WELLS RELOCATIONS/REMOVALS	EA	$700,000.00	12	$8,400,000

Table 6.2 (Continued)

Ultimate
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
IRRIGATION				
NEW CONCRETE IRRIGATION DITCH	LF	$16.00	5,100	$81,600
NEW IRRIGATION DITCH	LF	$16.00	42,000	$672,000
REMOVE EXISTING IRRIGATION DITCH	LF	$5.00	78,500	$392,500
NEW IRRIGATION PIPE (24")	LF	$50.00	36,410	$1,820,500
REMOVE IRRIGATION PIPE	LF	$20.00	12,308	$246,160
REMOVE TAILWATER SUMP	EA	$3,333.00	13	$43,329
NEW TAIL WATER SUMP	EA	$3,333.00	26	$86,658
REMOVE TAILWATER DITCH	LF		1,100	$0
NEW TAIL WATER DITCH	LF	$1.00	25,920	$25,920
REMOVE TAIL WATER PIPE	LF	$20.00	2,090	$41,800
NEW TAIL WATER PIPE	LF	$55.00	6,050	$332,750
NEW 15' FIELD ROAD	LF	$1.00	97,490	$97,490
REMOVE 15' FIELD ROAD	LF		2,300	$0
REMOVE EXISTING IRRIGATION STRUCTURE	EA	$1,500.00	17	$25,500
NEW IRRIGATION STRUCTURE	EA	$5,000.00	32	$160,000
NEW FIELD ROAD CROSSING	EA	$2,000.00	22	$44,000
NEW VALVE TURNOUT	EA	$3,000.00	9	$27,000
CONCRETE SLAB	EA	$3,000.00	1	$3,000
SUBTOTAL				$134,091,432
MISC, ITEMS (SURVEY, QC, NPDES, SWPPP)	L SUM	% OF CST	5.00%	$6,704,572
TRAFFIC CONTROL	L SUM	% OF CST	5.00%	$6,704,572
MOBILIZATION	L SUM	% OF CST	10.00%	$13,409,143
ROADWAY & STRUCTURES SUBTOTAL				$160,909,718
UNIDENTIFIED ITEMS (20%) -				$32,181,944
CONSTRUCTION COST SUBTOTAL				$193,091,662
CONSTRUCTION ADMIN. & CONTINGENCY (14%)				$27,032,833
TOTAL CONSTRUCTION COST				$220,124,000
TOTAL CONSTRUCTION COST				$220,124,000
DESIGN ENGINEERING (8%)				$17,610,000
TOTAL RIGHT-OF-WAY COST				$7,100,000
TOTAL PROJECT COST				**$244,834,000**

Table 6.3

INTERIM A - PCC
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
DEMOLITION				
CLEARING AND GRUBBING	ACRE	$2,500.00	90	$225,000
REMOVE TRAFFIC SIGNAL	EA	$10,000.00	4	$40,000
REMOVE INTERSECTION LIGHTING	EA	$7,000.00	4	$28,000
EARTHWORK				
EXCAVATION	CY	$2.00	535,000	$1,070,000
PAVEMENT				
MAINLINE & CROSS RD.PAVEMENT (AC)	SY	$15.00	102,600	$1,539,000
MAINLINE PAVMENT (PCCP)	SY	$22.00	330,000	$7,260,000
REHABILITATION OF EXISTING PAVEMENT	SY	$6.00	85,400	$512,400
DRAINAGE - OFFSITE				
CONCRETE CHANNEL LINING 6"	SY	$20.00	163,520	$3,270,400
CONCRETE CHANNEL LINING 8"	SY	$25.00	37,560	$939,000
CHANNEL EXCAVATION	CY	$1.75	371,000	$649,250
STRUCTURE EXCAVATION	CY	$5.00	22,500	$112,500
STRUCTURE BACKFILL	CY	$20.00	9,270	$185,400
DOUBLE 4'x6' REINFORCED CULVERT BOX	LF	$400.00	420	$168,000
DOUBLE 5'x6' REINFORCED CULVERT BOX	LF	$425.00	190	$80,750
DOUBLE 6'x6' REINFORCED CULVERT BOX	LF	$450.00	230	$103,500
DOUBLE 6'x8' REINFORCED CULVERT BOX	LF	$580.00	330	$191,400
TRIPLE 6'x8' REINFORCED CULVERT BOX	LF	$820.00	970	$795,400
QUADRUPLE 6'x8' REINFORCED CULVERT BOX	LF	$1,060.00	320	$339,200
HEADWALL	EA	$2,500.00	3	$7,500
RETENTION BASIN EXCAVATION	CY	$1.50	2,100,000	$3,150,000
RIPRAP ENERGY DISSIPATOR	EA	$5,000.00	3	$15,000
72-INCH STORM DRAIN PIPE	LF	$110.00	18,600	$2,046,000
60-INCH STORM DRAIN PIPE	LF	$90.00	5,000	$450,000
MANHOLE	EA	$3,000.00	36	$108,000
CONCRETE CATCH BASIN	EA	$5,000.00	2	$10,000
SIDE INLETS	EA	$2,000.00	16	$32,000
DRAINAGE - ONSITE				
24-INCH STORM DRAIN PIPE	LF	$35.00	9,445	$330,575
36-INCH STORM DRAIN PIPE	LF	$55.00	1,545	$84,975
CONCRETE CATCH BASIN	EA	$2,000.00	110	$220,000
MANHOLE (36")	EA	$2,000.00	10	$20,000
MANHOLE (30")	EA	$3,000.00	18	$54,000
CONCRETE CATCH BASIN (TYPE I)	LF	$3,000.00	7	$21,000
72-INCH STORM DRAIN PIPE	LF	$110.00	3,800	$418,000
66-INCH STORM DRAIN PIPE	LF	$100.00	1,450	$145,000
60-INCH STORM DRAIN PIPE	LF	$90.00	5,100	$459,000
36-INCH STORM DRAIN PIPE	LF	$55.00	1,300	$71,500
30-INCH STORM DRAIN PIPE	LF	$50.00	400	$20,000
24-INCH STORM DRAIN PIPE	LF	$35.00	800	$28,000

Table 6.3 (Continued)

INTERIM A - PCC
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
INCIDENTALS				
PAVEMENT MARKING & SIGNING	MILE	$30,000.00	11.8	$354,000
UTILITY RELOCATIONS/REMOVALS	MILE	$50,000.00	11.8	$590,000
LIGHTING	L SUM	$25,000.00	14	$350,000
TRAFFIC SIGNALS	EA	$125,000.00	14	$1,750,000
WELLS RELOCATIONS/REMOVALS	EA	$700,000.00	6	$4,200,000
IRRIGATION				
IRRIGATION RELOCATIONS	L SUM	$2,050,000.00	1	$2,050,000
SUBTOTAL				$34,493,750
MISC, ITEMS (SURVEY, QC, NPDES, SWPPP)	L SUM	% OF CST	5.00%	$1,724,688
TRAFFIC CONTROL	L SUM	% OF CST	1.50%	$517,406
MOBILIZATION	L SUM	% OF CST	10.00%	$3,449,375
ROADWAY & STRUCTURES SUBTOTAL				$40,185,219
UNIDENTIFIED ITEMS (20%)				$8,037,044
CONSTRUCTION COST SUBTOTAL				$48,222,263
CONSTRUCTION ADMIN. & CONTINGENCY (14%)				$6,751,117
TOTAL CONSTRUCTION COST				$54,973,000
TOTAL CONSTRUCTION COST				$54,973,000
DESIGN ENGINEERING (8%)				$4,398,000
TOTAL RIGHT-OF-WAY COST				$7,100,000
TOTAL PROJECT COST				**$66,471,000**

Table 6.4

INTERIM A TO ULTIMATE - PCC
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
DEMOLITION				
CLEARING AND GRUBBING	ACRE	$2,500.00	540	$1,350,000
REMOVE ASPHALT CONCRETE PAVEMENT	SY	$2.00	188,000	$376,000
REMOVE TRAFFIC SIGNAL	EA	$10,000.00	12	$120,000
REMOVE INTERSECTION LIGHTING	EA	$7,000.00	12	$84,000
EARTHWORK				
EXCAVATION	CY	$2.00	1,125,000	$2,250,000
EMBANKMENT (BORROW)	CY	$5.00	2,490,000	$12,450,000
PAVEMENT				
CROSSROAD PAVEMENT (AC)	SY	$15.00	182,000	$2,730,000
MAINLINE PAVMENT (PCCP)	SY	$22.00	361,200	$7,946,400
MILLING OVERLAY	SY	$1.00	0	$0
MAINLINE PAVMENT (PCCP) ON EXISTING BASE	SY	$17.50	0	$0
RAMP & CROSSROAD PAVEMENT (PCCP)	SY	$21.75	242,100	$5,265,675
MAINLINE MEDIAN SHOULDER	SY	$11.00	109,800	$1,207,800
CONCRETE SIDEWALK	SF	$2.00	330,500	$661,000
CONCRETE CURB & GUTTER	LF	$8.00	278,000	$2,224,000
CONCRETE MEDIAN CURB	LF	$7.00	39,000	$273,000
CONCRETE HALF BARRIER	LF	$55.00	33,200	$1,826,000
GUARDRAIL	LF	$15.00	3,800	$57,000
GUARDRAIL TERMINAL (ET-2000)	EA	$2,000.00	38	$76,000
IMPACT ATTENUATION DEVICE (SAND BARREL)	EA	$4,500.00	22	$99,000
DRAINAGE				
DRAINAGE - ONSITE				
24-INCH STORM DRAIN PIPE	LF	$35.00	25,190	$881,650
36-INCH STORM DRAIN PIPE	LF	$55.00	11,750	$646,250
CONCRETE CATCH BASIN, TYPE IV	EA	$3,000.00	329	$987,000
CONCRETE CATCH BASIN, MEDIAN	EA	$2,000.00	20	$40,000
MANHOLE (36")	EA	$2,000.00	42	$84,000
BRIDGE STRUCTURES				
INDIAN SCHOOL ROAD	SF	$55.00	38,175	$2,099,625
CAMELBACK ROAD	SF	$55.00	32,067	$1,763,685
BETHANY HOME ROAD	SF	$55.00	32,067	$1,763,685
GLENDALE ROAD	SF	$55.00	32,067	$1,763,685
NORTHERN AVENUE	SF	$55.00	32,067	$1,763,685
OLIVE AVENUE/BNSF RAILROAD	SF	$55.00	41,926	$2,305,930
PEORIA AVENUE	SF	$55.00	32,067	$1,763,685
CACTUS AVENUE	SF	$55.00	32,067	$1,763,685
WADDELL ROAD	SF	$55.00	38,175	$2,099,625
GREENWAY ROAD	SF	$55.00	32,067	$1,763,685
BELL ROAD	SF	$55.00	38,175	$2,099,625
RETAINING WALL	SF	$25.00	7,440	$186,000

Table 6.4 (Continued)

INTERIM A TO ULTIMATE - PCC
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
INCIDENTALS				
CHAIN LINK FENCE	LF	$7.00	137,600	$963,200
SIGNING	MILE	$315,000.00	11	$3,465,000
PAVEMENT MARKING	MILE	$45,000.00	11.8	$530,100
UTILITY RELOCATIONS/REMOVALS	MILE	$20,000.00	11.8	$235,600
LIGHTING	MILE	$460,000.00	11.8	$5,418,800
TRAFFIC SIGNALS	L SUM	$200,000.00	10	$2,000,000
LANDSCAPING	MILE	$850,000.00	11.8	$10,013,000
ITS	MILE	$1,000,000.00	11.8	$11,780,000
MEDIAN CABLE BARRIER	L.F.	$10.00	59,300	$593,000
WELLS RELOCATIONS/REMOVALS	EA	$700,000.00	6	$4,200,000
IRRIGATION				
IRRIGATION RELOCATIONS	L SUM	$2,050,000.00	1	$2,050,000
SUBTOTAL				$104,020,075
MISC, ITEMS (SURVEY, QC, NPDES, SWPPP)	L SUM	% OF CST	5.00%	$5,201,004
TRAFFIC CONTROL	L SUM	% OF CST	5.00%	$5,201,004
MOBILIZATION	L SUM	% OF CST	10.00%	$10,402,008
ROADWAY & STRUCTURES SUBTOTAL				$124,824,090
UNIDENTIFIED ITEMS (20%) -				$24,964,818
CONSTRUCTION COST SUBTOTAL				$149,788,908
CONSTRUCTION ADMIN. & CONTINGENCY (14%)				$20,970,447
TOTAL CONSTRUCTION COST				$170,759,000
TOTAL CONSTRUCTION COST				$170,759,000
DESIGN ENGINEERING (8%)				$13,661,000
TOTAL RIGHT-OF-WAY COST				$0
TOTAL PROJECT COST				**$184,420,000**

Table 6.5

INTERIM A - ASPHALT
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
DEMOLITION				
CLEARING AND GRUBBING	ACRE	$2,500.00	90	$225,000
REMOVE TRAFFIC SIGNAL	EA	$10,000.00	4	$40,000
REMOVE INTERSECTION LIGHTING	EA	$7,000.00	4	$28,000
EARTHWORK				
EXCAVATION	CY	$2.00	535,000	$1,070,000
PAVEMENT				
MAINLINE & CROSS RD.PAVEMENT (AC)	SY	$15.00	432,600	$6,489,000
MAINLINE PAVMENT (PCCP)	SY	$22.00	0	$0
REHABILITATION OF EXISTING PAVEMENT	SY	$6.00	85,400	$512,400
DRAINAGE - OFFSITE				
CONCRETE CHANNEL LINING 6"	SY	$20.00	163,520	$3,270,400
CONCRETE CHANNEL LINING 8"	SY	$25.00	37,560	$939,000
CHANNEL EXCAVATION	CY	$1.75	371,000	$649,250
STRUCTURE EXCAVATION	CY	$5.00	22,500	$112,500
STRUCTURE BACKFILL	CY	$20.00	9,270	$185,400
DOUBLE 4'x6' REINFORCED CULVERT BOX	LF	$400.00	420	$168,000
DOUBLE 5'x6' REINFORCED CULVERT BOX	LF	$425.00	190	$80,750
DOUBLE 6'x6' REINFORCED CULVERT BOX	LF	$450.00	230	$103,500
DOUBLE 6'x8' REINFORCED CULVERT BOX	LF	$580.00	330	$191,400
TRIPLE 6'x8' REINFORCED CULVERT BOX	LF	$820.00	970	$795,400
QUADRUPLE 6'x8' REINFORCED CULVERT BOX	LF	$1,060.00	320	$339,200
HEADWALL	EA	$2,500.00	3	$7,500
RETENTION BASIN EXCAVATION	CY	$1.50	2,100,000	$3,150,000
RIPRAP ENERGY DISSIPATOR	EA	$5,000.00	3	$15,000
72-INCH STORM DRAIN PIPE	LF	$110.00	18,600	$2,046,000
60-INCH STORM DRAIN PIPE	LF	$90.00	5,000	$450,000
MANHOLE	EA	$3,000.00	36	$108,000
CONCRETE CATCH BASIN	EA	$5,000.00	2	$10,000
SIDE INLETS	EA	$2,000.00	16	$32,000
DRAINAGE - ONSITE				
24-INCH STORM DRAIN PIPE	LF	$35.00	9,445	$330,575
36-INCH STORM DRAIN PIPE	LF	$55.00	1,545	$84,975
CONCRETE CATCH BASIN	EA	$2,000.00	110	$220,000
MANHOLE (36")	EA	$2,000.00	10	$20,000
MANHOLE (30")	EA	$3,000.00	18	$54,000
CONCRETE CATCH BASIN (TYPE I)	LF	$3,000.00	7	$21,000
72-INCH STORM DRAIN PIPE	LF	$110.00	3,800	$418,000
66-INCH STORM DRAIN PIPE	LF	$100.00	1,450	$145,000
60-INCH STORM DRAIN PIPE	LF	$90.00	5,100	$459,000
36-INCH STORM DRAIN PIPE	LF	$55.00	1,300	$71,500
30-INCH STORM DRAIN PIPE	LF	$50.00	400	$20,000
24-INCH STORM DRAIN PIPE	LF	$35.00	800	$28,000

Table 6.5 (Continued)

INTERIM A - ASPHALT
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
INCIDENTALS				
PAVEMENT MARKING & SIGNING	MILE	$30,000.00	11.8	$354,000
UTILITY RELOCATIONS/REMOVALS	MILE	$50,000.00	11.8	$590,000
LIGHTING	L SUM	$25,000.00	14	$350,000
TRAFFIC SIGNALS	EA	$125,000.00	14	$1,750,000
WELLS RELOCATIONS/REMOVALS	EA	$700,000.00	6	$4,200,000
IRRIGATION				
IRRIGATION RELOCATIONS	L SUM	$2,050,000.00	1	$2,050,000
SUBTOTAL				$32,183,750
MISC, ITEMS (SURVEY, QC, NPDES, SWPPP)	L SUM	% OF CST	5.00%	$1,609,188
TRAFFIC CONTROL	L SUM	% OF CST	1.50%	$482,756
MOBILIZATION	L SUM	% OF CST	10.00%	$3,218,375
ROADWAY & STRUCTURES SUBTOTAL				$37,494,069
UNIDENTIFIED ITEMS (20%)				$7,498,814
CONSTRUCTION COST SUBTOTAL				$44,992,883
CONSTRUCTION ADMIN. & CONTINGENCY (14%)				$6,299,004
TOTAL CONSTRUCTION COST				$51,292,000
TOTAL CONSTRUCTION COST				$51,292,000
DESIGN ENGINEERING (8%)				$4,103,000
TOTAL RIGHT-OF-WAY COST				$7,100,000
TOTAL PROJECT COST				**$62,495,000**

Table 6.6

INTERIM A TO ULTIMATE - ASPHALT
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
DEMOLITION				
CLEARING AND GRUBBING	ACRE	$2,500.00	540	$1,350,000
REMOVE ASPHALT CONCRETE PAVEMENT	SY	$2.00	188,000	$376,000
REMOVE TRAFFIC SIGNAL	EA	$10,000.00	12	$120,000
REMOVE INTERSECTION LIGHTING	EA	$7,000.00	12	$84,000
EARTHWORK				
EXCAVATION	CY	$2.00	1,125,000	$2,250,000
EMBANKMENT (BORROW)	CY	$5.00	2,490,000	$12,450,000
PAVEMENT				
CROSSROAD PAVEMENT (AC)	SY	$15.00	182,000	$2,730,000
MAINLINE PAVMENT (PCCP)	SY	$22.00	361,200	$7,946,400
MILLING OVERLAY	SY	$1.00	330,000	$330,000
MAINLINE PAVMENT (PCCP) ON EXISTING BASE	SY	$17.50	330,000	$5,775,000
RAMP & CROSSROAD PAVEMENT (PCCP)	SY	$21.75	242,100	$5,265,675
MAINLINE MEDIAN SHOULDER	SY	$11.00	109,800	$1,207,800
CONCRETE SIDEWALK	SF	$2.00	330,500	$661,000
CONCRETE CURB & GUTTER	LF	$8.00	278,000	$2,224,000
CONCRETE MEDIAN CURB	LF	$7.00	39,000	$273,000
CONCRETE HALF BARRIER	LF	$55.00	33,200	$1,826,000
GUARDRAIL	LF	$15.00	3,800	$57,000
GUARDRAIL TERMINAL (ET-2000)	EA	$2,000.00	38	$76,000
IMPACT ATTENUATION DEVICE (SAND BARREL)	EA	$4,500.00	22	$99,000
DRAINAGE				
DRAINAGE - ONSITE				
24-INCH STORM DRAIN PIPE	LF	$35.00	25,190	$881,650
36-INCH STORM DRAIN PIPE	LF	$55.00	11,750	$646,250
CONCRETE CATCH BASIN, TYPE IV	EA	$3,000.00	329	$987,000
CONCRETE CATCH BASIN, MEDIAN	EA	$2,000.00	20	$40,000
MANHOLE (36")	EA	$2,000.00	42	$84,000
BRIDGE STRUCTURES				
INDIAN SCHOOL ROAD	SF	$55.00	38,175	$2,099,625
CAMELBACK ROAD	SF	$55.00	32,067	$1,763,685
BETHANY HOME ROAD	SF	$55.00	32,067	$1,763,685
GLENDALE ROAD	SF	$55.00	32,067	$1,763,685
NORTHERN AVENUE	SF	$55.00	32,067	$1,763,685
OLIVE AVENUE/BNSF RAILROAD	SF	$55.00	41,926	$2,305,930
PEORIA AVENUE	SF	$55.00	32,067	$1,763,685
CACTUS AVENUE	SF	$55.00	32,067	$1,763,685
WADDELL ROAD	SF	$55.00	38,175	$2,099,625
GREENWAY ROAD	SF	$55.00	32,067	$1,763,685
BELL ROAD	SF	$55.00	38,175	$2,099,625
RETAINING WALL	SF	$25.00	7,440	$186,000

Table 6.6 (Continued)

INTERIM A TO ULTIMATE - ASPHALT
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
INCIDENTALS				
CHAIN LINK FENCE	LF	$7.00	137,600	$963,200
SIGNING	MILE	$315,000.00	11	$3,465,000
PAVEMENT MARKING	MILE	$45,000.00	11.8	$530,100
UTILITY RELOCATIONS/REMOVALS	MILE	$20,000.00	11.8	$235,600
LIGHTING	MILE	$460,000.00	11.8	$5,418,800
TRAFFIC SIGNALS	L SUM	$200,000.00	10	$2,000,000
LANDSCAPING	MILE	$850,000.00	11.8	$10,013,000
ITS	MILE	$1,000,000.00	11.8	$11,780,000
MEDIAN CABLE BARRIER	L.F.	$10.00	59,300	$593,000
WELLS RELOCATIONS/REMOVALS	EA	$700,000.00	6	$4,200,000
IRRIGATION				
IRRIGATION RELOCATIONS	L SUM	$2,050,000.00	1	$2,050,000
SUBTOTAL				$110,125,075
MISC, ITEMS (SURVEY, QC, NPDES, SWPPP)	L SUM	% OF CST	5.00%	$5,506,254
TRAFFIC CONTROL	L SUM	% OF CST	5.00%	$5,506,254
MOBILIZATION	L SUM	% OF CST	10.00%	$11,012,508
ROADWAY & STRUCTURES SUBTOTAL				$132,150,090
UNIDENTIFIED ITEMS (20%) -				$26,430,018
CONSTRUCTION COST SUBTOTAL				$158,580,108
CONSTRUCTION ADMIN. & CONTINGENCY (14%)				$22,201,215
TOTAL CONSTRUCTION COST				$180,781,000
TOTAL CONSTRUCTION COST				$180,781,000
DESIGN ENGINEERING (8%)				$14,462,000
TOTAL RIGHT-OF-WAY COST				$0
TOTAL PROJECT COST				**$195,243,000**

Table 6.7

INTERIM B
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
DEMOLITION				
CLEARING AND GRUBBING	ACRE	$2,500.00	45.0	$112,500
REMOVE TRAFFIC SIGNAL	EA	$10,000.00	4	$40,000
REMOVE INTERSECTION LIGHTING	EA	$7,000.00	4	$28,000
EARTHWORK				
EXCAVATION	CY	$2.00	25,000	$50,000
EMBANKMENT (BORROW)	CY	$5.00	67,000	$335,000
PAVEMENT				
MAINLINE & CROSS RD.PAVEMENT (AC)	SY	$15.00	245,800	$3,687,000
REHABILITATION OF EXISTING PAVEMENT (OVERLAY)	SY	$6.00	226,600	$1,359,600
GUARDRAIL	LF	$15.00	3,500	$52,500
GUARDRAIL TERMINAL (ET-2000)	EA	$2,000.00	5	$10,000
DRAINAGE				
EXTEND EXISTING CULVERTS	EA	$200.00	950	$190,000
GRADE DITCH ALONG ROADWAY	LF	$2.00	126,720	$253,440
INCIDENTALS				
PAVEMENT MARKING & SIGNING	MILE	$25,000.00	11.6	$288,825
UTILITY RELOCATIONS/REMOVALS	MILE	$20,000.00	11.6	$231,060
LIGHTING	LS	$25,000.00	11	$275,000
TRAFFIC SIGNALS	EA	$125,000.00	11	$1,375,000
WELLS RELOCATIONS/REMOVALS	EA	$0.00	0	$0
IRRIGATION				
IRRIGATION RELOCATIONS	L SUM	$0.00	0	$0
SUBTOTAL				$8,287,925
MISC, ITEMS (SURVEY, QC, NPDES, SWPPP)	L SUM	% OF CST	5.00%	$414,396
TRAFFIC CONTROL	L SUM	% OF CST	6.00%	$497,276
MOBILIZATION	L SUM	% OF CST	10.00%	$828,793
SUBTOTAL				$10,028,389
UNIDENTIFIED ITEMS (20%)				$2,005,678
CONSTRUCTION COST SUBTOTAL				$12,034,067
CONSTRUCTION ADMIN. & CONTINGENCY (14%)				$1,684,769
TOTAL CONSTRUCTION COST				$13,719,000
TOTAL CONSTRUCTION COST				$13,719,000
DESIGN ENGINEERING (8%)				$1,098,000
TOTAL RIGHT-OF-WAY COST				$0
TOTAL PROJECT COST				**$14,817,000**

Table 6.8

INTERIM B TO ULTIMATE
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
DEMOLITION				
CLEARING AND GRUBBING	ACRE	$2,500.00	505	$1,262,500
REMOVE ASPHALT CONCRETE PAVEMENT	SY	$2.00	458,800	$917,600
REMOVE TRAFFIC SIGNAL	EA	$10,000.00	11	$110,000
REMOVE INTERSECTION LIGHTING	EA	$7,000.00	11	$77,000
EARTHWORK				
EXCAVATION	CY	$2.00	1,660,000	$3,320,000
EMBANKMENT (BORROW)	CY	$5.00	2,398,000	$11,990,000
PAVEMENT				
CROSSROAD PAVEMENT (AC)	SY	$15.00	182,000	$2,730,000
MAINLINE PAVMENT (PCCP)	SY	$22.00	691,200	$15,206,400
RAMP & CROSSROAD PAVEMENT (PCCP)	SY	$21.75	242,100	$5,265,675
MAINLINE MEDIAN SHOULDER	SY	$11.00	109,800	$1,207,800
CONCRETE SIDEWALK	SF	$2.00	330,500	$661,000
CONCRETE CURB & GUTTER	LF	$8.00	278,000	$2,224,000
CONCRETE MEDIAN CURB	LF	$7.00	39,000	$273,000
CONCRETE HALF BARRIER	LF	$55.00	33,200	$1,826,000
GUARDRAIL	LF	$15.00	3,800	$57,000
GUARDRAIL TERMINAL (ET-2000)	EA	$2,000.00	38	$76,000
IMPACT ATTENUATION DEVICE (SAND BARREL)	EA	$4,500.00	22	$99,000
DRAINAGE - OFFSITE				
CONCRETE CHANNEL LINING 6"	SY	$20.00	163,520	$3,270,400
CONCRETE CHANNEL LINING 8"	SY	$25.00	37,560	$939,000
CHANNEL EXCAVATION	CY	$1.75	371,000	$649,250
STRUCTURE EXCAVATION	CY	$5.00	22,500	$112,500
STRUCTURE BACKFILL	CY	$20.00	9,270	$185,400
DOUBLE 4'x6' REINFORCED CULVERT BOX	LF	$400.00	420	$168,000
DOUBLE 5'x6' REINFORCED CULVERT BOX	LF	$425.00	190	$80,750
DOUBLE 6'x6' REINFORCED CULVERT BOX	LF	$450.00	230	$103,500
DOUBLE 6'x8' REINFORCED CULVERT BOX	LF	$580.00	330	$191,400
TRIPLE 6'x8' REINFORCED CULVERT BOX	LF	$820.00	970	$795,400
QUADRUPLE 6'x8' REINFORCED CULVERT BOX	LF	$1,060.00	320	$339,200
HEADWALL	EA	$2,500.00	3	$7,500
RETENTION BASIN EXCAVATION	CY	$1.50	2,100,000	$3,150,000
RIPRAP ENERGY DISSIPATOR	EA	$5,000.00	3	$15,000
72-INCH STORM DRAIN PIPE	LF	$110.00	18,600	$2,046,000
60-INCH STORM DRAIN PIPE	LF	$90.00	5,000	$450,000
MANHOLE	EA	$3,000.00	36	$108,000
CONCRETE CATCH BASIN	EA	$5,000.00	2	$10,000
SIDE INLETS	EA	$2,000.00	16	$32,000
DRAINAGE - ONSITE				
24-INCH STORM DRAIN PIPE	LF	$35.00	9,445	$330,575
36-INCH STORM DRAIN PIPE	LF	$55.00	1,545	$84,975
CONCRETE CATCH BASIN	EA	$2,000.00	110	$220,000
MANHOLE (36")	EA	$2,000.00	10	$20,000
MANHOLE (30")	EA	$3,000.00	18	$54,000
CONCRETE CATCH BASIN (TYPE I)	LF	$3,000.00	7	$21,000
72-INCH STORM DRAIN PIPE	LF	$110.00	3,800	$418,000
66-INCH STORM DRAIN PIPE	LF	$100.00	1,450	$145,000
60-INCH STORM DRAIN PIPE	LF	$90.00	5,100	$459,000
36-INCH STORM DRAIN PIPE	LF	$55.00	1,300	$71,500
30-INCH STORM DRAIN PIPE	LF	$50.00	400	$20,000
24-INCH STORM DRAIN PIPE	LF	$35.00	800	$28,000
24-INCH STORM DRAIN PIPE	LF	$35.00	25,190	$881,650
36-INCH STORM DRAIN PIPE	LF	$55.00	11,750	$646,250
CONCRETE CATCH BASIN, TYPE IV	EA	$3,000.00	329	$987,000
CONCRETE CATCH BASIN, MEDIAN	EA	$2,000.00	20	$40,000
MANHOLE (36")	EA	$2,000.00	42	$84,000

Table 6.8 (Continued)

INTERIM B TO ULTIMATE
SR 303L
PRELIMINARY COST ESTIMATE

April 1, 2002

ITEM DESCRIPTION	UNIT	UNIT COST	QUANTITY	CONSTRUCTION COST
BRIDGE STRUCTURES				
INDIAN SCHOOL ROAD	SF	$55.00	38,175	$2,099,625
CAMELBACK ROAD	SF	$55.00	32,067	$1,763,685
BETHANY HOME ROAD	SF	$55.00	32,067	$1,763,685
GLENDALE ROAD	SF	$55.00	32,067	$1,763,685
NORTHERN AVENUE	SF	$55.00	32,067	$1,763,685
OLIVE AVENUE/BNSF RAILROAD	SF	$55.00	41,926	$2,305,930
PEORIA AVENUE	SF	$55.00	32,067	$1,763,685
CACTUS AVENUE	SF	$55.00	32,067	$1,763,685
WADDELL ROAD	SF	$55.00	38,175	$2,099,625
GREENWAY ROAD	SF	$55.00	32,067	$1,763,685
BELL ROAD	SF	$55.00	38,175	$2,099,625
RETAINING WALL	SF	$25.00	7,440	$186,000
INCIDENTALS				
CHAIN LINK FENCE	LF	$7.00	137,600	$963,200
SIGNING	MILE	$315,000.00	11	$3,465,000
PAVEMENT MARKING	MILE	$45,000.00	11.8	$530,100
UTILITY RELOCATIONS/REMOVALS	MILE	$70,000.00	11.8	$824,600
LIGHTING	MILE	$460,000.00	11.8	$5,418,800
TRAFFIC SIGNALS	L SUM	$200,000.00	11	$2,200,000
LANDSCAPING	MILE	$850,000.00	11.8	$10,013,000
ITS	MILE	$1,000,000.00	11.8	$11,780,000
MEDIAN CABLE BARRIER	L.F.	$10.00	59,300	$593,000
WELLS RELOCATIONS/REMOVALS	L SUM	$700,000.00	12	$8,400,000
IRRIGATION				
NEW CONCRETE IRRIGATION DITCH	LF	$16.00	5,100	$81,600
NEW IRRIGATION DITCH	LF	$16.00	42,000	$672,000
REMOVE EXISTING IRRIGATION DITCH	LF	$5.00	78,500	$392,500
NEW IRRIGATION PIPE (24")	LF	$50.00	36,410	$1,820,500
REMOVE IRRIGATION PIPE	LF	$20.00	12,308	$246,160
REMOVE TAILWATER SUMP	EA	$3,333.00	13	$43,329
NEW TAIL WATER SUMP	EA	$3,333.00	26	$86,658
REMOVE TAILWATER DITCH	LF		1,100	$0
NEW TAIL WATER DITCH	LF	$1.00	25,920	$25,920
REMOVE TAIL WATER PIPE	LF	$20.00	2,090	$41,800
NEW TAIL WATER PIPE	LF	$55.00	6,050	$332,750
NEW 15' FIELD ROAD	LF	$1.00	97,490	$97,490
REMOVE 15' FIELD ROAD	LF		2,300	$0
REMOVE EXISTING IRRIGATION STRUCTURE	EA	$1,500.00	17	$25,500
NEW IRRIGATION STRUCTURE	EA	$5,000.00	32	$160,000
NEW FIELD ROAD CROSSING	EA	$2,000.00	22	$44,000
NEW VALVE TURNOUT	EA	$3,000.00	9	$27,000
CONCRETE SLAB	EA	$3,000.00	1	$3,000
SUBTOTAL				$133,891,732
MISC, ITEMS (SURVEY, QC, NPDES, SWPPP)	L SUM	% OF CST	5.00%	$6,694,587
TRAFFIC CONTROL	L SUM	% OF CST	6.00%	$8,033,504
MOBILIZATION	L SUM	% OF CST	10.00%	$13,389,173
ROADWAY & STRUCTURES SUBTOTAL				$162,008,996
UNIDENTIFIED ITEMS (20%) -				$32,401,799
CONSTRUCTION COST SUBTOTAL				$194,410,795
CONSTRUCTION ADMIN. & CONTINGENCY (14%)				$27,217,511
TOTAL CONSTRUCTION COST				$221,628,000
TOTAL CONSTRUCTION COST				$221,628,000
DESIGN ENGINEERING (8%)				$17,730,000
TOTAL RIGHT-OF-WAY COST				$7,100,000
TOTAL PROJECT COST				**$246,458,000**

7.0 SOCIAL, ECONOMIC, AND ENVIRONMENTAL CONCERNS

A Draft EA is being prepared in conjunction with this study to determine which aspects of the proposed project have potential for social, economic, and environmental impacts and to identify measures that will mitigate adverse impacts. This chapter summarizes an assessment of existing conditions for selected environmental elements in the immediate vicinity of the project area and presents measures to mitigate potential impacts of the proposed project. A detailed analysis of the social, economic, and environmental conditions and impacts is being presented in the Draft EA, which will be available at MCDOT Environmental Planning Section and ADOT's Environmental Planning Group.

7.1 LAND USE AND OWNERSHIP

The existing land use is shown in Figure 2.1, the planned developments in Figure 2.2, and the planned land uses in Figure 3.1. MCDOT maintains a list of adjacent property owners related to right-of-way acquisition or dedication.

7.2 MINORITY CONSIDERATIONS

"Title VI of the Civil Rights Act of 1964" and related statutes assure that individuals are not excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity receiving federal financial assistance on the basis of Race, Color, National Origin, Age, Sex, and Disability. In addition, Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by the President on February 11, 1994, requires federal agencies to identify and address as appropriate disproportionately high and adverse effects on minority and low-income populations.

7.2.1 Demographic Characteristics

Census tract data, compiled by the Arizona Department of Economic Security (DES), were evaluated to assess the demographic makeup of the project area. According to Census 2000 data, there are no concentrations of minority groups within the project area. In the northern portion of the study area, the City of Surprise census tracts show a high elderly population. Over 50% of the population living in the census tracts in the study area are 65 and older as compared to 11.7% for Maricopa County as a whole.

The Final Department of Transportation Order on Environmental Justice (U.S. Department of Transportation [USDOT], 1997) defines low-income as a median household income at or below

$17,650 for a family of four. According to 1990 census information (most current available), there are no known low-income populations within the study area.

7.2.2 Impacts Associated with Minority or Low-Income Populations

While the northern portions of the study area have a high percentage of elderly residents, the proposed project is not anticipated to have any disproportionately high and adverse effects on these populations. No low-income populations are found in the project area. The following is a summary of the factors evaluated in the determination that minority populations in the project area are not adversely impacted.

- The proposed roadway expansion will not result in any residential relocations.
- The proposed project will not eliminate any existing roads nor will it change residential access to service facilities.
- The adjacent Sun City Grand retirement community was developed with right-of-way and set-backs consistent with freeway or high volume roadway facilities.
- The proposed interim and ultimate improvements, with the recommended mitigation measures, are not predicted to exceed federal or state air quality or noise standards.
- The proposed project would improve mobility, eliminate controlled intersections, provide for quicker and more direct access to the existing freeway system, and is expected to benefit all residents living in the project vicinity.

7.3 SOCIAL IMPACTS

Facilities or services that are provided in the project area to the general public include: schools, hospitals, public transportation, trails, parks, post offices, police or fire stations, and libraries. There are no such facilities within the project area corridor that would be affected by the proposed action. The improved roadway would provide existing and future residents in the area an improved roadway to access those facilities or services.

7.4 ECONOMICS

Economics describes the businesses of the area, the growth and development of the area, and employment. The project area is essentially a corridor of land adjacent to the proposed SR 303L freeway. This linear corridor falls within the cities of Surprise and Goodyear, and portions of unincorporated Maricopa County which are expected to be annexed by the City of Glendale. The

City of Surprise is experiencing explosive growth in its residential, commercial, and industrial sectors. According to the DES, the City of Surprise is the fastest-growing city in Arizona.

7.4.1 Economic Base

The economy of the project area is predominately agricultural based with continued increases in construction and development of residential property in the area. The unincorporated areas of Maricopa County in the area of the proposed project are primarily in agricultural use.

There are several businesses located within the project area which include the Prado Kennel, Wildlife World Zoo, a plant nursery, and Tanita Farms Market. Tanita Farms is physically located in the SR 303L right-of-way and operates on a lease-back agreement from ADOT.

7.4.2 Employment

The major employers in the region include the Phoenix-Goodyear Airport Campus, Lockheed Martin, Lufthansa, Del Monte Fresh Produce, Poore Brothers, Snyder's of Hanover, McLane Sunwest, Rubbermaid, Arizona State Prison (Perryville), retailers, and Luke AFB. Luke AFB is a major national defense installation with approximately 8,488 military and civilian employees and is a major economic contributor to the entire Phoenix metropolitan area.

7.4.3 Growth and Development

The City of Surprise, Arizona, is experiencing rapid growth that has translated into considerable subdivision development adjacent to the project area. There are three subdivisions — Northwest Ranch, Bell West Ranch, and Sun City Grand — that are either under construction or completed along the northern portion of the project area. Much of the land adjacent to the SR 303L corridor and some of the major one-mile cross streets are zoned for commercial development. A Walgreen's is slated for the northeast corner of Bell Road and Cotton Lane, and a Safeway shopping center is approved for the southeast corner of the same intersection. The Surprise General Plan adopted in 2001 includes SR 303L as an important component to the city's transportation network. The General Plan envisions SR 303L as an employment and commercial corridor supportive of higher density residential. SR 303L is classified in the Surprise General Plan as a principal arterial that will be able to sufficiently carry approximately 100,000 vpd, in the city's fastest-growing area. The principal arterial classification is not consistent with the ADOT SR 303L classification as a Rural Major Freeway.

The U.S. Department of Commerce is studying the feasibility of implementing a farmland preservation zone for lands adjacent to the middle section of the SR 303L corridor. These lands

are predominately used for agricultural purposes and because they are within the Luke AFB noise contour zone and accident potential zone they may be able to provide the necessary buffer for continued aircraft operations into the future. Such zoning would prevent the development of these lands for increased residential use.

The southern portion of the project area has a state prison facility. There are rezoning efforts under way to provide for single- and multi-family residential development. The lands east of the SR 303L roadway north of Thomas Road are owned by Robson Development Company and are slated for additional phases of the Pebblecreek Retirement Community.

7.4.4 Impacts on Economic Sectors

The proposed project will require the acquisition of approximately 160 acres of land in the project area for SR 303L roadway right-of-way. Tanita Farms Market will have to be moved or relocated since it is within the existing right-of-way on a lease. The owners were aware of this consequence of implementing the proposed project. They may opt to move the facility back off the right-to-way and develop access off of the adjacent one-mile cross street.

Some of the existing right-of-way is being farmed and would be eliminated with the implementation of the proposed project. Agricultural land needed for new right-of-way will remove this land from agriculture production, thus removing it from the local tax base. However, the land needed is a minimal portion of the roughly 6,400 acres of agricultural land within the project area (2.5%), resulting in a very minor impact on the regional farming industry.

Businesses within the project area and those adjacent to the proposed project corridor will likely be affected temporarily by the inconvenience of freeway construction, including noise and detours. Positive impacts will result from the freeway's completion, however, from better business exposure and increased access for the traveling public.

In the long-term, transportation investments can provide economic benefits by reducing the cost of transportation for businesses and by expanding the accessibility of firms to suppliers, labor, and consumer markets.

7.5 HAZARDOUS MATERIALS

A Preliminary Initial Site Assessment (ISA) was conducted of the project area to determine the potential for the presence of environmental contamination from hazardous substances due to previous or existing land use activities.

The ISA process has revealed that one high-risk site is located adjacent to or within the project corridor that may warrant additional environmental investigation. This site is ranked as high-risk due to the type of business operations formerly performed at the site and the presence of unreported aboveground storage tanks at the site. The site is a nursery located at 16647 West Northern Avenue (aboveground storage tanks, Site D).

Although 22 irrigation well sites were identified, they do not pose a large-scale environmental contamination risk. Many irrigation well sites exhibit mild to moderate staining around pumps from lubrication oil overspill. This staining is localized and typically is present on the concrete pump pad and possibly on surrounding bare soil. This type of surface staining typically does not constitute a Recognized Environmental Condition as defined by ASTM 1527-00, since the staining is usually of low volume and is not very mobile in subsurface media.

7.5.1 Potential Impacts Related to Hazardous Materials

Additional investigations are recommended for hazardous materials relative to proceeding with the proposed project. Those recommendations are as follows:

1. Perform a Preliminary Site Investigation (PSI) or equivalent to determine presence and extent of impacts at the one high-risk site in the project area.
2. If more development occurs in the project area or if more than one year passes between the completion date of the ISA report and the start of construction, a follow-up ISA should be performed.

7.6 AIR QUALITY

Air quality modeling was conducted for the SR 303L traffic corridor using CAL3QHC, Version 2.0, the U.S. Environmental protection Agency (EPA) approved model for assessing air quality impacts associated with transportation projects. The model considers free-flow and idling emissions in conjunction with intersection geometry, wind direction, and other meteorological factors. The model was used to estimate peak 1-hour and 8-hour carbon monoxide (CO) concentrations near selected intersections under 2002 Existing Conditions, Design Year No-Build Conditions, and Design Year With-Project Conditions. Intersections modeled included SR 303/Indian School Road, SR 303/Northern Avenue, and SR 303/Bell Road.

Under all project scenarios, there were no modeled exceedances of the 1-hour or 8-hour national ambient air quality standards (NAAQS) for CO. As proposed, the project would not result in transportation-related air quality impacts.

7.7 NOISE

7.7.1 Noise Criteria

The basic unit for measuring sound is the decibel (dB). To assess noise impacts, a weighting curve known as the A-weighted scale has been developed for use in approximating the sensitivity of the average human ear. The base measurement for community and transportation noise is the A-weighted decibel (dBA).

Noise sensitive land uses and activities in the vicinity of the SR 303L project were identified and analyzed based on the type of land use and FHWA noise abatement criteria (NAC). The criteria and activity categories are summarized in Table 7.1. The NAC specify noise levels considered to be the upper levels of acceptability for outdoor activities and certain indoor activities.

Table 7.1
Noise Abatement Criteria (NAC)
Hourly A-Weighted Sound Level – Decibels (dBA)

Activity Category	L_{eq} (h)	L_{10} (h)	Description of Activity Category
A	57 (Exterior)	60 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of the area is to continue to serve its intended purpose.
B	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties, or activities not included in Category A or B above.
D	—	—	Undeveloped lands.
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

Notes: L_{eq}(h) is the one-hour energy equivalent sound level.

The interior noise levels (activity) apply to: (1) indoor activities for those parcels where no exterior noise-sensitive land use or activity is identified, and (2) those situations where the exterior activities are either remote from the highway or shielded in some manner so that the exterior activities will not be affected by the noise, but the interior activities will be affected.

Source: 23 CFR 772

The ADOT *Noise Abatement Policy for Federal Aid Projects* (NAP) (March 21, 2000) indicates that a traffic noise impact occurs under either of the following conditions:

- When the predicted level approaches or exceeds the FHWA's NAC. "Approaches" is defined as within 3 dBA of the NAC, or 64 dBA L_{eq} for residential areas, schools, and parks; or
- When the predicted level substantially exceeds the existing noise level. "Substantial" is defined as 15 dBA.

7.7.2 Existing Noise Levels

Noise level readings (L_{eq} Measured) were taken at seven representative sensitive locations in the vicinity of the project. The locations are identified in Table 7.2. As shown in the table, one of the representative locations, an open field at the site of the future Pebble Creek subdivision (M1), exceeds the ADOT approach of the NAC and two locations (M2 and M7) are just below the approach level under current conditions. All three of these locations are in unprotected open areas with each representing a residence in a future subdivision. The remaining four locations are in existing subdivisions and are protected by a combination of noise walls, privacy walls, and earth berms. This likely accounts for the difference in measured noise levels. The measured levels at monitoring locations M3 through M6, which do not exceed the ADOT NAP approach of the NAC, are considered more representative of existing noise levels in the project area.

Table 7.2
Noise Measurement Locations and Existing Noise Levels

Monitoring Location Number[a]	Location	L_{eq} Measured	L_{eq} Calculated	Date of Measurement	Time Measurement Began
M1	Open Field – Pebble Creek	64	TBD	Nov. 2, 2001	7:03 A.M.
M2	Northwest Ranch Lot #74 – Saguaro Lane	62	62	Nov. 2, 2001	7:59 A.M.
M3	Bell West Ranch Lot #132 – North 167th Drive	55	57	Nov. 2, 2001	8:46 A.M.
M4	Sun City Grand Single Family (SF) Home – 17158 North Estrella Vista Drive	55	53	Jan. 15, 2002	7:45 A.M.
M5	Sun City Grand SF Home – 19620 Sunburst Way	51	49	Jan. 15, 2002	8:50 A.M.
M6	Sun City Grand Vacant Lot – West of 20869 Shadow Mountain Drive	49	50	Jan. 15, 2002	4:26 P.M.
M7	Surprise Farms Lot #35 - Ironwood Street	61	59	Jan. 15, 2002	5:25 P.M.

[a] Number in parentheses designates receiver number for noise modeling (see Table 4).

Future noise levels will be determined using the FHWA approved traffic noise analysis computer model, STAMINA 2.0. This model calculates noise levels at adjacent receivers based on traffic, vehicle type, and vehicle speed, taking into account roadway geometry and terrain features (including existing privacy walls and noise walls) in the area analyzed. The field measurements listed in Table 7.2 were checked with the STAMINA 2.0 model using these input variables and traffic counts recorded in the field. The calculated levels (L_{eq} Calculated) agree well with measured levels in the field, indicating that no adjustments to model parameters are necessary for the analysis of existing and future noise levels in the project area.

7.7.3 Future Noise Levels

The SR 303L corridor concepts and traffic interchange alternatives will be analyzed in accordance with the ADOT NAP. Future noise levels will be predicted using STAMINA 2.0. The model will account for the different roadway geometry, traffic volumes, and design speeds of each alternative analyzed for this project; 2010 Interim Build A and B, 2020 No Build, and 2020 Ultimate Build. Per FHWA policy and the ADOT NAP, future noise levels will be calculated based on peak hour traffic in the project area. MCDOT has provided traffic data for the future design alternatives. The methodology of the analysis of each project alternative is as follows:

- Determine future noise levels at representative sensitive locations throughout the project area, including those listed in Table 7.2.
- Determine if impacts will occur due to a substantial increase above existing noise levels (calculated by the noise model) at those locations per the ADOT NAP.
- Compare future noise levels to the ADOT NAP approach level of the federal NAC to determine if impacts occur.
- Make preliminary design recommendations for noise mitigation (probably walls, berms, or both) which consider the cost of abatement for the amount provided.
- Prepare a technical noise analysis report discussing federal and ADOT traffic noise policy and the study methodology, results, and recommendations.

7.8 VISUAL QUALITY

This section discusses the potential for the construction, operation, maintenance, and long-term presence of the proposed project to cause impacts on visual quality or on sensitive views within the project area. This section also discusses the characterization of the natural and man-made visual elements that have created the visual setting within the project area.

7.8.1 Landscape Character/Visual Quality

The project area is located in an area of relatively flat terrain with a few disperse areas consisting of sloping contours. The existing SR 303L is surrounded primarily by agricultural fields accompanied by open space in the southern section of the study area with the northern section consisting of newly developed and developing single-family residential parcels.

Generally throughout the study area, the existing viewshed from the SR 303L corridor includes distant background views of mountains. Included are the Hieroglyphic Mountains located to the north, the White Tank Mountains to the west, and the Estrella Mountains to the south. Mid- and short-range views represent a highly modified landscape due to agriculture and new residential development; limited natural undisturbed vegetation exists within the project area. Mid-range views incorporate dispersed rural residential development, vacant land, and agricultural fields and orchards through much of the study area, with medium- to high-density residential developments in the northern area of the project. Short-range views are consistent with the mid-range views and include introduced trees and grasses bordering the parcels in the southern end of the project and community perimeter walls and residences in the northern portion. Views seen by the public traveling on SR 303L along the northern end of the project area include major overhead power lines that run perpendicular (northeast to southwest) to SR 303L.

Residential areas are generally considered high sensitivity viewing areas, and travel routes such as SR 303L are considered moderate to high. Therefore, for purposes of this study, impacts were evaluated for existing residential areas in the project area as well as for the public traveling along SR 303L.

7.8.2 Visual Quality Impacts

There are two visual quality criteria which were used to evaluate impacts: project visibility and viewer sensitivity. The addition of the freeway structures including multi-laned divided highway, overpasses, ramps, lighting, fencing, and median and shoulder landscaping that is associated with this project would represent a substantial change from the rural two-lane facility currently in place. The elevated portion of the proposed project would have the greatest viewer impact.

Those sections of the proposed project that would be at-grade or slightly depressed offer the least visual impact to residential areas both parallel and adjacent to these areas of roadway and are rated as low level visual impacts.

Travelers along SR 303L will experience a moderate change in the existing visual experience. The most significant views from SR 303L can be found to the west with views of the White Tank

Mountains. The overpass structure at Olive and BNSF spur will enhance the motorists' views. Generally, views will not be inhibited by the construction of a freeway. Existing residences east of SR 303L currently have an 8- to 12-foot screen wall affecting views of those nearest the walls. Long-range views would not be altered as the northern segment of SR 303L is depressed.

The facility would likely be constructed in phases over time so the visual impacts will gradually occur; likewise, the rural character of the corridor would change to a more urban setting gradually over time.

7.9 WATER RESOURCES

This section on water resources primarily refers to those issues relating to surface water drainage, wetlands, groundwater, water quality, and floodplains.

The project area is within the Agua Fria River watershed. The river essentially runs parallel to the SR 303L corridor but is approximately 6 to 7 miles to the east of the project area. The historic surface water drainage patterns in the project area have been altered and in many cases rerouted as a result of land leveling for agricultural irrigation, the construction of irrigation canals and dry land dams. These dams built by the U.S. Army Corps of Engineers (ACOE) were designed to control flooding in the metropolitan Phoenix area. The McMicken dam is one of such structures which is located a few miles to the west of the project area. Due mostly to the existing land use in the project area and flood control measures, there are no surface water drainages in the project area nor are there any areas that exhibit the characteristics of a federally defined wetland.

7.9.1 Water Quality

The Clean Water Act (CWA) is designed to protect the nation's surface waters from pollution and degradation. Section 401 of the CWA pertains to maintenance and improvement (water quality) of surface waters designated as Waters of the United States. The project area does not have any natural drainages or wetlands that would be classified as Waters of the United States nor will the proposed project affect any such natural drainages. Therefore, no Section 401 certification is needed or required.

Section 402 of the CWA pertains to the maintenance of water quality by managing stormwater run-off from projects impacting greater than 5 acres. Since the proposed project will impact approximately 550 acres, the construction of the project will be subject to the provisions of Section 402 and a National Pollution Discharge Elimination System (NPDES) permit will to be obtained from the EPA for the proposed project. Permitting requires that the project proponent

complete a Storm Water Pollution Prevention Plan (SWPPP) for the construction phases and that the overall project design provide for the protection of Waters of the United States. These plans require the implementation of Best Management Practices (BMP) used to prevent construction waste from entering the nation's waterways via surface water runoff. The SWPPP must incorporate temporary control measures during construction, permanent control measures when the project is completed, and BMP for the control and prevention of release of non-storm water discharges.

Section 404 of the CWA pertains to dredging and filling of Waters of the United States. Since the project area does not contain any Waters of the United States, a Section 404 permit is not required.

7.9.2 Flooding

Under Title 42 of the U.S. Code, the Federal Emergency Management Agency (FEMA) is granted the authority to manage the identification of floodplains within the United States. Floodplains are generally identified by area of 100-year and 500-year flood event inundation. FEMA publishes maps depicting the locations of 100-year and 500-year floodplains. The project area is situated within FEMA Map 04013 in Community Panels 1145, 1585, 1595, and 2060.

The entire project area is within the 500-year flood zone of the Agua Fria River. While there are large areas designated as 100-year flood zones adjacent to the project site boundaries, there is only one area of 100-year flood zone within the project area boundaries. This area is where SR 303L will connect with I-10 (see Figure 7.1). The FCDMC administers the floodplain permit program on behalf of FEMA. Permits are required when a project changes the floodplain or is situated within the 100-year flood zone of an existing floodplain.

7.9.3 Wetlands

There are no Waters of the United States or lands that exhibit the characteristics of federal wetlands within the project area nor are there any wetland areas in close proximity to the project area. There are several constructed irrigation drains that often have standing water and support some wetland-type vegetation, but these man-made facilities are not considered to be federal jurisdictional wetlands. The proposed project would not have any effects on wetlands.

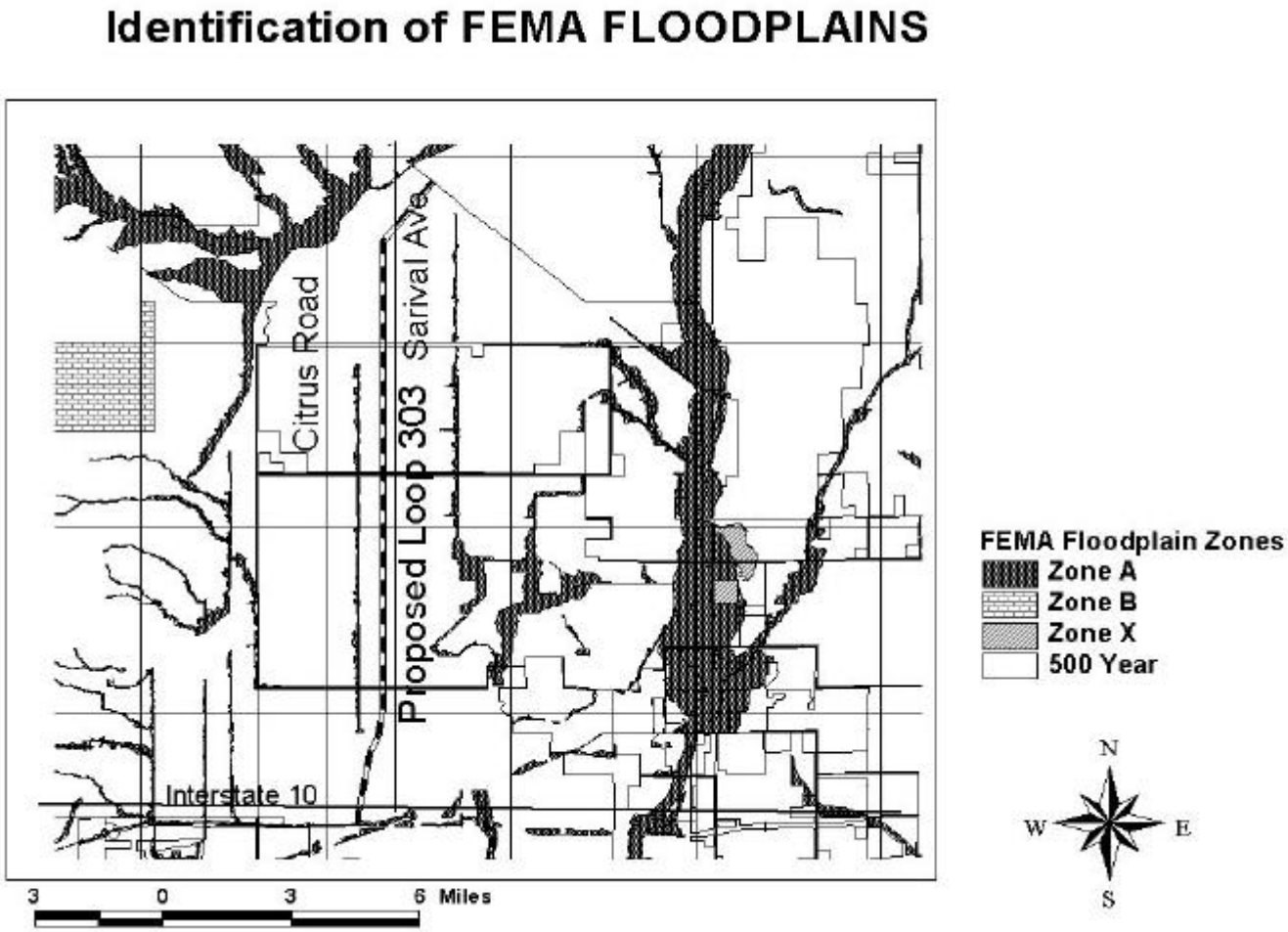


Figure 7.1. FEMA Floodplains

7.9.4 Groundwater

The project area is within the Phoenix Active Management Area (PAMA) where water conservation measures are encouraged. The PAMA Second Management Plan requires use of low-water-use (water conserving) plants in landscaping of public right-of-way. The landscaping plan for this proposed project will be reviewed with Arizona Department of Water Resources staff to ensure that appropriate vegetative species are used.

No principal or sole-source aquifer, as designated under Section 1424(e) of the Safe Drinking Water Act, exists in the vicinity of the proposed project. In addition, no wellhead protection areas, as authorized by the 1986 Amendments to the Safe Drinking Water Act, are in the project area. Therefore, no sole-source aquifers or wellhead protection areas would be affected by the proposed project.

7.9.5 Water Resource Impacts

The potential for adverse impacts to water resources is limited. There are no anticipated impacts to surface water drainages, wetlands, or groundwater. There is the potential for surface water run-off water quality to be affected by construction of the proposed roadway, but the regulatory requirements and necessary water quality permits will most likely prevent any adverse impacts to water quality.

The proposed project itself will result is some increased surface water run-off due to the expanded area of paved surfaces. The contribution of increased stormwater run-off volumes is expected to be minor and with the incorporation of BMP and storm drain management into the proposed project design such stormwater runoff is not expected to result in any localized or regional flooding.

Concerns related to possible development within the 100-year flood zone can be mitigated or avoided by design. This could involve locating any new connector ramps with I-10 outside of the flood zone or by elevating roadway sections above the 100-year floodplain. Since the project area is in an unincorporated area of Maricopa County, the FCDMC will be required to evaluate the roadway locations and design to assure that it meets their requirements for flood control and flood protection.

7.10 BIOTIC COMMUNITIES

The project area is located within the Sonoran Desert. Species typical of Sonoran Desertscrub habitat can be found in the project vicinity, where urbanization or agriculture has yet to occur. Due to the predominate agricultural and urban nature of the project study area, the majority of the project study area contains little native vegetation and does not truly represent Sonoran Desertscrub habitat.

Typical native plant species of the area include: Creosote bush (*Larea tridentata*), triangle-leaf bursage (*Ambrosia deltoidea*), foothill paloverde (*Cercidium microphyllum*), and honey mesquite (*Prosopis juliflora*). Several species of cactus are found, predominantly cholla (*Opuntia* sp.) and prickly pear (*Opuntia* sp.). Isolated, small remnants of native vegetation may be found in the project vicinity but not within the existing proposed project right-of-way. Remnants of native vegetation have lost much of their habitat value due to isolation and gradual changes in species composition that come with urbanization. No Arizona native plants protected by the Arizona Native Plant Law are found in the right-of-way, and none would be affected by the proposed action.

7.10.1 Wildlife

Wildlife that may occur in the project area are separated into two categories: common and transient. Since much of the area is agricultural, the most commonly seen species are mourning and white-winged dove (*Zenaida macroura* and *asiatica*), American kestrel (*Falco sparverius*), red-tailed hawks (*Buteo jamaicensis*), Harris' hawks (*Parabuteo unicinctus*), and turkey vultures (*Cathartes aura*). The open fields provide food and shelter for many small mammals that provide foraging opportunities for the raptors. Typical of the small mammals are mice (*Peromyscus* sp.), whitethroat woodrat (*Neotoma albigula*), and blacktail jackrabbit (*Lepus californicus*). Common reptiles and amphibians that may occur in the project area include various garter snakes (*Thamnophis* sp.), side-bloched lizards (*Uta stansburiana*), and bullfrogs (*Rana catesbieana*).

Transient species that may be observed in the project area are stripped skunk (*Mephitis mephitis*), coyote (*Canis latrans*), and mule deer (*Odocoileus hemionus*). Because the White Tank Mountains, a large expanse of natural undisturbed Sonoran desert, are approximately 5 miles to the west of the project area, it is possible that these species may be observed from time to time in the area.

7.10.2 Endangered Species

The potential for the project to affect federally listed threatened and endangered species was examined by a qualified biologist as required by the Endangered Species Act. The United States Fish and Wildlife Service (USFWS) Maricopa County list (USFWS 2001) of threatened or endangered species and species proposed for listing was reviewed for species which may occur in the project area. Based on a comparison of the habitat requirements for each listed species with the habitats in the project vicinity and field review of the project area, the biological evaluation concluded that no listed or proposed threatened or endangered species protected by the Endangered Species Act occur in the immediate vicinity of the proposed project. Because of the urban setting of the project area, no designated critical habitat for any federally listed species is found in the project vicinity. There are no known sensitive wildlife habitats in the project study area.

The Arizona Game and Fish Department (AGFD) records (Heritage Data Management System) documented the occurrence of the lowland leopard frog (*Rana yavapaiensis*) within the project vicinity. The lowland leopard frog is listed as a wildlife species of special concern in Arizona. The absence of natural drainages and perennial surface water within the project area would naturally limit the habitat for these amphibians, but the presence of irrigation ditches and drains does afford waterways that could provide access from other natural waterways (Agua Fria River) with more suitable habitat into forage areas within the vicinity of the proposed project.

7.10.3 Invasive Species

Most of the project area has been disturbed, and most of the soils are continually disturbed by farming and vehicular use. These conditions promote the succession of disturbance indicator species (weeds and annual grasses). No invasive species were found to occur with the project area.

7.10.4 Biotic Community Impacts

There are no anticipated adverse impacts expected to occur to the biotic community as a result of the proposed project.

While there were no invasive plant species identified in the project area, certain procedures and precautions are recommended to prevent the introduction of invasive plant species. Earth moving and hauling equipment should be washed in a “clean” facility prior to entering the project area. Disturbed soils that are not going to be landscaped or otherwise permanently stabilized needed to be seeded with native species.

7.11 CULTURAL RESOURCES

A cultural resources study of the SR 303L project area was conducted in conjunction with a Drainage Master Plan Update for the FCDMC (URS 2000). That study resulted in the identification of 16 previous cultural resource surveys and two cultural resource sites within the project area corridor. The results of this investigation are provided in a report entitled *Loop 303 Corridor/White Tanks Area Drainage Master Plan Update*, Contract FCD 99-40: Draft Collection Report, URS Greiner Woodward Clyde, 2000. Further literature research was conducted more recently to provide information about any cultural surveys and sites that might have been conducted subsequent to the previous study. It was determined that no additional cultural resource surveys or sites have been recorded within a one-half mile radius of the SR 303L project corridor since the previous report was published in 2000. Additional surveys at major cross streets were conducted; no sites were observed. The results of this investigation are provided in a technical report entitled *A Class I Cultural Resource Inventory of the State Route 303 Loop Corridor From I-10 to US 60 in Maricopa County, Arizona*, Entranco, October 2001. (State Historic Preservation Office concurrence is pending.)

7.11.1 Research Results

Sixteen surveys were previously conducted within the SR 303L project corridor and its vicinity. Two prehistoric cultural resource sites were recorded.

AZ T:7:46 (ASM) was recorded in 1989 and identified as a possible Archaic site consisting of a scatter of flaked stone and ground stone artifacts. The surface of the site was entirely collected and one trench was mechanically excavated to determine the potential for subsurface cultural deposits. No additional cultural resources were identified. AZ T:7:46 (ASM) was recommended as not eligible for inclusion in the National Register of Historic Places (NRHP).

AZ T:7:142 (ASM) is located approximately 1,600 feet northwest of the SR303L corridor. This prehistoric site consists of a scatter of flaked stone, ground stone, a roasting pit, and a possible second roasting pit. This site was recommended as “potentially eligible” for inclusion in the NRHP under Criterion D, for its potential to yield information important to prehistory.

7.11.2 Cultural Resource Impacts

The proposed project will result in impacts to AZ T:7:46 (ASM). However, this site was previously surface collected and tested, and it is considered to be not eligible for inclusion in the NRHP. No further work is required at this site, and no avoidance measures are necessary. In the event that previously unreported cultural resources are encountered as a result of construction-

related activities, however, all work in the vicinity of the discovery must cease until a qualified archaeologist determines the nature, extent, and significance of those resources.

AZ T:7:142 (ASM) is not located within the currently proposed SR 303L project area corridor. The proposed project should have no impacts on the site. No additional archaeological investigations are necessary, and no avoidance measures are recommended. However, any changes to the design of the SR 303L corridor should be evaluated by a qualified archaeologist prior to construction activities to determine whether AZ T:7:142 (ASM) would be affected.

7.12 SECTION 4(F) / SECTION 6(F) EVALUATION

Section 4(f) of the U.S. Department of Transportation Act of 1966 states that the FHWA "may approve a transportation program or project requiring publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if there is no prudent or feasible alternative to using that land and the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use" (49 U.S.C. 303).

No Section 4(f) properties occur in the vicinity of the SR 303L corridor. The proposed action will not result in any direct impacts on identified Section 4(f) resources within the project study area.

Section 6(f) refers to a section of the Land and Water Conservation Fund Act (LWCFA), addressing conversion of public recreation facilities funded by the LWCFA. No Section 6(f) properties are located in the vicinity of the SR 303L corridor.

7.13 PRIME, UNIQUE AND IMPORTANT FARMLANDS

Throughout the corridor, agricultural lands are adjacent to SR 303L. The highest concentration of agricultural farmlands is between McDowell and Greenway roads. Agricultural crops in this area range in type and include cotton, citrus, grapes, corn, melons and flowers (roses).

To accommodate future construction of the ultimate roadway, additional right-of-way is required. The acquisition of these parcels will require conversion of existing farmland (with the exception of parcels north of Greenway Road) to a preserved transportation right-of-way with both direct and indirect impacts to the existing farmland being associated with the conversion.

Since this project is assuming federal funds, compliance with the Farmland Protection Policy Act (FPPA) (7 USC 4202, Rules, 7 Code of Federal Regulations (CFR) Part 658) is required. To comply with the FPPA, a determination must be made as to the existence of prime or unique farmland or farmland of statewide or local importance through coordination with the United States Department of Agriculture (USDA). At this time, the USDA has not identified unique soils in the soil survey area that encompasses the proposed project area (personal communication, Rob Wilson, Soil Scientist, USDA Higley, Arizona office). Soils that would constitute prime farmlands have been delineated and recorded in Soil Survey of Maricopa County, Arizona Central Part. From review of this soil survey it has determined that there are soils present on farmable agricultural land in the project area that would constitute prime farmland. These soil types include but are not limited to soils associated with the Antho, Brios, Carrizo, Gilman, Laveen, and Mohall Series.

In accordance with the FPPA processing of USDA form Farmland Conversion Impact Rating (AD-1006) is required for all projects utilizing federal funds that will involve the conversion of farmland to a use other than farming. Processing form AD-1006 requires that the acreage of farmland to be converted be calculated and separated into two categories, acres to be converted directly, and acres to be converted indirectly. Site assessment criteria must also be applied to the area of farmland that will be converted as detailed in part 658.5 (b) of the CFR.

Approximately 160 acres of new right-of-way not previously acquired or dedicated to non-agricultural uses would be required to construct the ultimate freeway facility. This represents approximately 2% of the lands in the project study area and a fraction of the irrigated lands in the region.

7.14 SECONDARY AND CUMULATIVE IMPACTS ASSESSMENT

This Secondary and Cumulative Impacts Assessment (SCIA) was prepared for the *State Route (SR) Loop 303, Interstate 10 to Grand Avenue Environmental Assessment* in accordance with Federal Highway Administration (FHWA) and Council on Environmental Quality (CEQ) regulations and guidance documents. The *National Environmental Policy Act* [NEPA (23 Code of Federal Regulations (CFR) 771)] requires that the potential direct, secondary and cumulative impacts of a federally funded project be identified, evaluated, and mitigated as appropriate. Within the context of NEPA, secondary effects are defined by CEQ as impacts that are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable" (40 CFR 1508.8). Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions …" (40 CFR 1508.7). Logically, if a given project does not

directly impact a particular environmental resource, that project would not contribute to a ***cumulative*** impact on that resource.

Geographic and Time-Related Boundaries for the SCIA

The White Tank Mountains located approximately 5 miles west of the EA Study Area form the western limit for the SCIA Study Area, while the SR Loop 101 forms the eastern limit. The Sierra Estrella Mountains and the Gila River define the southern limit. The Hieroglyphic Mountains were identified as the northern SCIA Study Area limit. Generally, the 2020 design year was used as the minimum projection (although several identified secondary and cumulative impacts extend into longer periods of time). A historic time period of 18 years was also used for the SCIA; earlier information was included as available and appropriate.

Data Collection, Compilation and Analysis

An extensive data gathering effort was initiated. Data compiled for preparation of the EA were incorporated into the SCIA to the greatest extent possible. However, additional research was also necessary to evaluate historic and projected resource conditions, in a level of detail that is not typically warranted for an evaluation of direct impacts. Following the initial data collection effort, the Project Team began the data compilation and analysis process. Existing data were first organized into qualitative (and as possible, quantitative) descriptions of both the larger regional context, and the more immediate project area. Following the identification of potential secondary and/or cumulative impacts in the SCIA Study Area, mitigation measures were developed in an attempt to minimize those impacts.

Summary and Conclusions

The most noteworthy secondary impact that may result from the Preferred Alternative is a potential increase in the rate of development in the SCIA Study Area. As discussed, this development is prescribed in state and municipal land use and transportation plans and is expected to occur regardless of the Preferred Alternative. As explained earlier, construction of the proposed Preferred Alternative is not expected to result in any additional, currently unplanned development. Therefore, mitigation of potential environmental impacts resulting from these development projects would remain with each project proponent.

The Preferred Alternative is expected to have limited direct impacts on the surrounding environment. Therefore, it is not surprising that the Preferred Alternative is expected to contribute only to cumulative impacts on the surrounding viewshed, noise levels and native plants/non-listed species habitat. In sharp contrast, residential and commercial development

projects, and local/county transportation projects planned for the SCIA Study Area are expected to have a more substantial, cumulative contribution to the future condition of environmental resources. Therefore, the greatest mitigation responsibility would be attributable to the proponents of those projects.

It is intended that the evaluation of impacts, responsibility and mitigation as presented here can be discussed with various project proponents and stakeholders in the SCIA Study Area, as a basis for delegation of financial responsibility.

The SCIA summary is shown in Table 7.3 and provides an overall in-depth summary of individual summary of impacts to individual environmental elements that were identified in the SCIA.

Table 7.3
Summary of Potential Secondary and Cumulative Impacts

Resource	Project Causing Impact	Anticipated Impact (Prior to Mitigation)	Description of Impact	Expected Degree of Impact	Mitigation	Party Responsible to Implement Mitigation
Land Use	**Preferred Alternative,** Future Transportation Projects	Secondary (Neutral)	Potential increase in rate of land use conversion; Potential increase in rate of change for state land values	Moderate	Minimize impacts of development through careful design and enforcement	Each project proponent; governmental agencies; public input
	Future Residential, Commercial Development	Cumulative (Neutral)	Land use conversions	Substantial	Minimize impacts of development through careful design and enforcement	Each project proponent; governmental agencies; public input
Land Ownership and Potential Relocations	**Preferred Alternative**, Future Transportation Projects	Secondary (Moderate)	Potential increase in rate of land ownership transfer; Potential increase in rate of change for state land values	Moderate	Minimize impacts of development through careful design and enforcement	Each project proponent; governmental agencies; public input
Minority Populations/ Environmental Justice (EJ)	**Preferred Alternative,** Future Commercial Development, Transportation Projects	Secondary (Positive)	Improved availability of goods and services; improved access for all population groups	Substantial	NA	NA
	Preferred Alternative, Future Transportation Projects	Secondary (Neutral)	Potential increase in rate of change in population structure (due to increase in rate of land development)	Moderate	Careful zoning and review of development applications; active resident input; monitor substantial changes in local tax structure for both cumulative impacts	Governmental agencies; public input
	Future Residential Development	Cumulative (Neutral)	Potential change in population structure (incoming residents)	Minor	Careful zoning and review of development applications; active resident input; monitor substantial changes in local tax structure for both cumulative impacts	Governmental agencies; public input
Social Considerations **Emergency Units**	**Preferred Alternative**, Future Transportation Projects	Secondary (Positive)	Improved access and decreased response times	Substantial	NA	NA

Table 7.3 (continued)
Summary of Potential Secondary and Cumulative Impacts

Resource	Project Causing Impact	Anticipated Impact (Prior to Mitigation)	Description of Impact	Expected Degree of Impact	Mitigation	Party Responsible to Implement Mitigation
Social Considerations **Emergency Units, cont.**	**Preferred Alternative,** Future Transportation Projects	Secondary (Neutral)	Potential increase in rate of strain on existing services (due to increase in rate of development)	Minor	Ensure that service needs are identified early and agreements are enforced	Each project proponent, governmental agencies
	Future Residential, Commercial Development	Cumulative (Negative)	Strain on existing emergency service provision	Moderate	Ensure that service needs are identified early and agreements are enforced	Each project proponent, governmental agencies
Social Considerations **Parks, Recreational Facilities and Trails**	**Preferred Alternative,** Future Transportation Projects	Secondary (Neutral)	Potential increase in rate of land use conflict, trail loss (due to increased rate of land development)	Minor	Zoning and plan enforcement; coordination between adjacent landowners prior to sale; continued coordination during development and operation (secondary); re-routing or replacing in-kind an existing trail; active coordination and joint planning with governmental bodies (cumulative)	Each project proponent; governmental agencies; public input
	All Future Projects	Park: Secondary (Negative) Trails: Cumulative (Negative)	Potential loss of recreational space/impact on user experience (cumulative)	Minor for both secondary and cumulative impacts	Zoning and plan enforcement; coordination between adjacent landowners prior to sale; continued coordination during development and operation (secondary); re-routing or replacing in-kind an existing trail; active coordination and joint planning with governmental bodies (cumulative)	Each project proponent, governmental agencies for both secondary and cumulative impacts

Table 7.3 (continued)
Summary of Potential Secondary and Cumulative Impacts

Resource	Project Causing Impact	Anticipated Impact (Prior to Mitigation)	Description of Impact	Expected Degree of Impact	Mitigation	Party Responsible to Implement Mitigation
Social Considerations **Schools, Post Offices, Libraries; Public Transit (equestrian, pedestrian, bicycle)**	**Preferred Alternative**, All Future Projects	None	NA	NA	NA	NA
Economics	**Preferred Alternative**, Future Transportation Projects	Secondary (Neutral)	Potential increase in rate of local tax structure shift (due to increase in rate of development)	Minor	Careful zoning and review of development applications; active resident input; monitor substantial changes in local tax structure for both cumulative impacts: traffic control plan	Governmental agencies; public input
	Future Commercial Development	Cumulative (Positive)	Increased self-sufficiency of SCIA Study Area for employment and shopping	Moderate	NA	NA
	Future Residential Development	Secondary (Neutral)	Additional (currently unplanned) commercial development to accommodate residential development	Moderate	Careful zoning and review of development applications; active resident input	Governmental agencies
	Future Residential, Commercial Development	Cumulative (Neutral)	Potential shift in local tax structure, cost of living, land values	Minor	Careful zoning and review of development applications; active resident input; monitor substantial changes in local tax structure for both cumulative impacts	Governmental agencies; public input

Table 7.3 (continued)
Summary of Potential Secondary and Cumulative Impacts

Resource	Project Causing Impact	Anticipated Impact (Prior to Mitigation)	Description of Impact	Expected Degree of Impact	Mitigation	Party Responsible to Implement Mitigation
Hazardous Materials	Future Commercial Development	Secondary (Negative)	Potential for hazardous materials spills/releases	Minor	Regulatory enforcement of installation and operation standards; proper remediation by landowners	Each project proponent, governmental agencies
	Preferred Alternative, All Future Development Projects	Secondary (Positive)	Potential to identify previously unknown contamination sites through PISA process prior to construction	Minor	NA	Each future project proponent
Air Quality	Future Residential and Commercial Development	Secondary (Neutral)	Increase in overall traffic volumes	Moderate	Accommodated by planned transportation projects; signal timing; street design; (No air quality modeling performed for res/comm projects)	Each project proponent, governmental agencies
	Preferred Alternative, All Future Projects	Secondary (Negative, Temporary)	Release of dust emissions during project construction	Minor	Adherence to/ enforcement of Maricopa County dust standards	Each project proponent, governmental agencies
Noise	**Preferred Alternative**, All Future Projects	Secondary (Negative, Temporary)	Temporarily increased noise levels during project construction	Moderate	Proper maintenance of equipment and time/weekday construction restrictions; enforcement of construction noise standards as appropriate	Each project proponent (including ADOT), governmental agencies
	Preferred Alternative, Future Transportation Projects	Secondary (Negative)	Potential increase in rate of noise level changes (due to increase in rate of development)	Minor	Evaluation of potential noise impacts (if receivers nearby) prior to project approval; mitigation considered if standards are exceeded	Each project proponent; governmental agencies
	Preferred Alternative, All Future Projects	Cumulative (Negative)	Increased noise levels	Moderate	Evaluation of potential noise impacts (if receivers nearby) prior to project approval; mitigation considered if standards are exceeded	Each project proponent; governmental agencies

Table 7.3 (continued)
Summary of Potential Secondary and Cumulative Impacts

Resource	Project Causing Impact	Anticipated Impact (Prior to Mitigation)	Description of Impact	Expected Degree of Impact	Mitigation	Party Responsible to Implement Mitigation
Visual Quality	**Preferred Alternative**, All Future Projects	Cumulative (Neutral)	Change in short, mid-range viewsheds due to loss of vegetation, changes in topography, structural development	Substantial	Architectural treatment; shield future residential development; coordination with Maricopa County	Each project proponent (including ADOT); governmental agencies
Water Resources: Sole Source Aquifers, Wellhead Protection Areas	**Preferred Alternative**, All Future Projects	None	NA	NA	NA	NA
Water Resources: Jurisdictional Waters	**Preferred Alternative**, All Future Projects	Cumulative (Neutral)	Rerouting of local runoff, loss of water-dependent vegetation, resulting loss of species habitat.	Minor	Proper adherence to/enforcement of Section 404 permit requirements (depending on permit used)	Each project proponent; governmental agencies (depending on permit used)
	Preferred Alternative, Future Transportation Projects	Secondary (Negative)	Potential increase in rate of jurisdictional impacts (due to increase in rate of development)	Minor	Proper adherence to/enforcement of Section 404 permit requirements (depending on permit used)	Each project proponent; governmental agencies (depending on permit used)
Water Resources: Water Quantity and Quality	**Preferred Alternative,** Future Transportation Projects	Secondary (Negative)	Potential increase in rate of water degradation and/or depletion (due to increase in rate of development)	Minor	Adherence to development plans/agreements regarding water provision; enforcement of material handling standards and remediation as needed	Each project proponent; governmental agencies
	Future Residential, Commercial Development	Cumulative (Negative) Secondary (Negative)	Potential source depletion Potential source degradation	Moderate Minor	Adherence to development plans/agreements regarding water provision; enforcement of material handling standards and remediation as needed	Each project proponent; governmental agencies

Table 7.3 (continued)
Summary of Potential Secondary and Cumulative Impacts

Resource	Project Causing Impact	Anticipated Impact (Prior to Mitigation)	Description of Impact	Expected Degree of Impact	Mitigation	Party Responsible to Implement Mitigation
Biology: Habitat	**Preferred Alternative**, All Future Projects	Cumulative (Negative)	Loss of vegetation, re-routing of natural drainage flows	Moderate	Minimize impacts through careful design, replanting; Adherence to any resulting mitigation as required under law	Each project proponent; governmental agencies
	Preferred Alternative, All Future Projects	Secondary (Negative)	Due to loss of vegetation removal and drainage impacts: alteration of viewshed, increased runoff, loss of non-listed wildlife habitat	Moderate	Minimize impacts through careful design, replanting	Each project proponent; governmental agencies
	Preferred Alternative, Future Transportation Projects	Secondary (Negative)	Potential increase in rate of vegetation loss, drainage impacts (due to increase in rate of development)	Minor	Minimize impacts through careful design, replanting	Each project proponent; governmental agencies
Biology: Native Plants	**Preferred Alternative**, All Future Projects	Cumulative (Neutral)	Removal and salvage of native plant species	Minor	Adherence to state, local salvage requirements; non-profit efforts	Each project proponent; Dep of Ag to assist
Biology: Noxious Weeds	All Future Projects (State/Federal Funding)	Secondary (Positive)	Identification and treatment of noxious species; prevention of seed spread	Minor	Adherence to Executive Order requirements	Each project proponent
Cultural Resources	All Future Projects	Secondary (Subjective: Positive/ Negative)	Potential identification, data recovery of currently unknown cultural resources	Moderate	Proper adherence to survey, data recovery and/or coordination requirements under law; implementation of avoidance/mitigation measures as appropriate	Each project proponent, governmental agencies
		Secondary (Subjective: Neutral/ Negative)	If avoidance or removal not required, demolition of site following data collection	Moderate	None	NA

Table 7.3 (continued)
Summary of Potential Secondary and Cumulative Impacts

Resource	Project Causing Impact	Anticipated Impact (Prior to Mitigation)	Description of Impact	Expected Degree of Impact	Mitigation	Party Responsible to Implement Mitigation
	Preferred Alternative, Future Transportation Projects	Secondary (Subjective: Positive/ Negative)	Potential increase in rate of identifying currently unknown cultural resources (due to increase in rate of development)	Minor	NA	NA
Prime and Unique Farmland; Farmland of Statewide Importance	**Preferred Alternative**, All Future Projects	Secondary (Neutral)	Conversion of land use	Moderate	None	NA
Section 4(f) and Section 6(f) Resources	**Preferred Alternative**	None	NA	NA	NA	NA
	Future Residential, Commercial Development	NA	NA	NA	NA	NA
	Future, Federally-Funded Transportation Projects	Secondary (Negative)	Potential direct and/or proximity impacts	Minor	Proper Section 4(f) evaluation of any future resources and adherence to avoidance/mitigation measures as required under law	Each project proponent, governmental agencies

8.0 PUBLIC INVOLVEMENT DOCUMENTATION

This section includes documentation of MCDOT's public involvement program for the SR 303L DCR and EA. The primary component of this program has been the public meetings conducted on June 19, 2001, and November 6, 2001. These meetings were conducted for the following purposes:

- Inform and educate stakeholders about the project
- Obtain input and feedback
- Identify stakeholder issues and concerns
- Identify opportunities for incorporation of ideas/elements important to the public
- Facilitate consensus building

The documentation in this section includes copies of the public meeting notices, handout materials, meeting surveys and questionnaires, and summary reports of the meetings including a summary of public comments and questions. Copies of exhibits displayed at the public meetings and the PowerPoint presentation at the first public meeting are included in Appendix C.

In addition to the public meetings, several meetings have been held with representatives of the Sun City Grand Coalition, and representatives of Sun City Grand have attended several of the monthly coordination meetings at MCDOT. The monthly coordination meetings have included MCDOT staff as well as representatives of the engineering and environmental consultants, ADOT, FHWA, and FCDMC.

In addition, the public involvement program has included an SR 303L web site, SR 303L hotline, and regular press releases in local newspapers in order to provide the public with ongoing information on the status of the project.

Finally, MCDOT has provided information to real estate professionals in the West and Northwest Valley about the SR 303L project in an effort to convey accurate information to individuals and businesses that are buying and selling property in the vicinity of SR 303L.

Public Involvement Documentation

Initial Public Meeting, June 19, 2001

- Notice Mailed to Mailing List
- Handout Material
- Meeting Survey and Questionnaire
- Summary Report of Meeting

Second Public Meeting, November 6, 2001

- Notice Mailed to Mailing List
- Handout Material
- Meeting Survey and Questionnaire
- Sumary Report of Meeting

Letter to Real Estate Professionals

INITIAL PUBLIC MEETING, JUNE 19, 2001

URS

4.3

June 4, 2001

Re: **Public Meeting Notification**

Dear :

URS has been retained by the Maricopa County Department of Transportation (MCDOT) to prepare a Design Concept Report (DCR) and Environmental Assessment (EA) on SR 303L. The limits of the DCR are from Indian School Road to Clearview Boulevard; the limits of the EA are longer, covering from Interstate-10 to Grand Avenue. The public scoping meeting is scheduled for **Tuesday, June 19, from 5:00 P.M. to 7:00 P.M. at Dysart High School, 11405 North Dysart Road in El Mirage**. A brief presentation will occur at 6:00 P.M.

The purpose of the scoping meeting is to introduce the project to the community and identify stakeholder issues to be considered throughout the DCR and EA. You are invited to attend the June 19 meeting and to contact me at 602-648-2475 or Liz Ellis at 602-861-7487 with comments or concerns.

We would like to obtain a count of agency participants and are asking that you fax your confirmation to 602-371-1615 by June 14. If you do not plan to attend, you may write your comments below and fax them to me. Thank you for your interest in this project.

Sincerely,

URS Corporation

David K. French, PE
Vice President
Project Manager

☐ **Yes, I will attend** ☐ **No, I will not attend**

Comments:

URS Corporation
7720 North 16th Street, Suite 100
Phoenix, AZ 85020
Tel: 602.371.1100
Fax: 602.371.1615

Maricopa County Department of Transportation

WE NEED YOUR INPUT

SR Loop 303

Design Concept Report

Indian School Road to Clearview Boulevard

and Environmental Assessment

I -10 to US 60

Public Open House 5:00 p.m. - 7:00 p.m.
Presentation 6:00 p.m.
Tuesday, June 19, 2001
Dysart High School, 11405 North Dysart Road, El Mirage

SR Loop 303 Hotline: (602) 977-1141

Maricopa County Department of Transportation (MCDOT) ***RightRoads* Program** is hosting an open house meeting to gather public input about future improvements to SR Loop 303 from Indian School Road to Clearview Boulevard and the Environmental Assessment of SR Loop 303 between I-10 and US 60 (Grand Avenue).

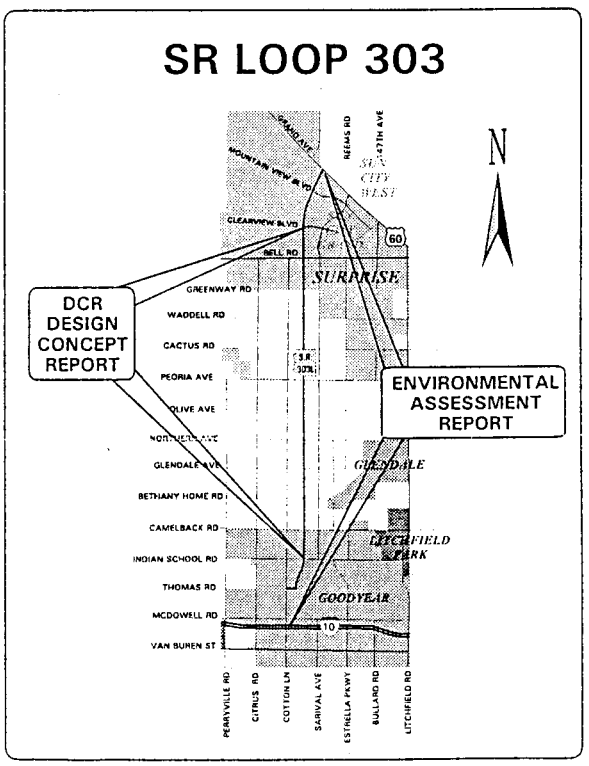
This initial "Public Scoping" meeting is the first in a series of three public open houses to be held in the course of the Environmental Assessment, Design Concept Report and Preliminary Design stages.

Public comment will be sought throughout the project. Your input during this phase is an integral part of the design concept and environmental process. Please plan to attend and learn more about project goals, help identify potential environmental impacts along the 11-mile corridor and to provide feedback.

Stop by anytime between 5:00 and 7:00 p.m. to speak with MCDOT project team members. A brief presentation will be held at 6:00 p.m.

For more information or to submit comments in writing, contact Sami Ayoub at (602) 506-4662 or write to Ayoub at: MCDOT, 2901 W. Durango Street, Phoenix, Arizona 85009 or e-mail at: SamiAyoub@maricopa.gov. Written comments should be submitted by July 19, 2001.

Any person with a disability may request a reasonable accommodation such as a sign language interpreter by contacting **Roberta Crowe**, 2901 W, Durango Street, Phoenix, Arizona 85009. Phone **602-506-8003** or fax **602-506-4882** to make known their needs and preferences. Requests should be made as soon as possible to allow time to arrange for these accommodations. This notice can be made available in alternative formats or in Spanish by contacting Roberta Crowe.



www.mcdot.maricopa.gov

MCDOT RightRoads PROGRAM

The Right System The Right Time The Right Cost

SR Loop 303

Design Concept Report

Indian School Road to Clearview Boulevard

Environmental Assessment

Interstate 10 to US 60

MCDOT RightRoads PROGRAM

The Right System The Right Time The Right Cost

Maricopa County Department of Transportation **June 19, 2001**

Public "Scoping" Meeting

Project Purpose and Goals

State Route Loop 303 is an important regional transportation corridor and key to meeting future west valley traffic needs. The Maricopa County Department of Transportation (MCDOT) has entered into an Intergovernmental Agreement with the Arizona Department of Transportation (ADOT) to plan, design, build, operate and maintain this important roadway.

MCDOT, with the consultant URS Corporation, is preparing a Design Concept Report (DCR) and preliminary design plans for an interim roadway and an ultimate freeway between Indian School Road and Clearview Boulevard and an Environmental Assessment (EA) for the fifteen-mile segment of SR Loop 303 extending between Interstate 10 and US 60 (Grand Avenue).

Project Purpose:

- Provide a portion of the urban freeway system to meet the growing needs of the west valley
- Link I-10 to US 60
- Provide an interim roadway in the near future that increases safety, meets the traffic needs of the corridor, and allows upgrading to the ultimate freeway

Project Goals:

- Gaining consensus for action (an agreed upon plan for implementation) among the public and agencies
- Preservation of right-of-way
- Construct interim roadway
- Obtain environmental clearance

Project Scope- Phase I

Design Concept/Environmental Assessment

- Develop travel forecasts (future traffic volume and growth projections)
- Document the purpose and need for the project
- Identify and analyze environmental impacts, such as existing and planned land use, noise, drainage, and any environmental hazards/waste
- Develop Design Concept Alternatives for an interim roadway and ultimate freeway
- Identify right-of-way needs
- Identify stakeholder issues/concerns and opportunities for incorporation
- Estimate project costs and identify potential funding sources

After this first phase, the next steps will be to secure project funding, complete final design, construct the new interim roadway and operate and maintain the improved SR Loop 303.

Issues and Concerns

This segment of the SR Loop 303 Corridor affects four different communities. The City of Goodyear is located at the southern end of the corridor on the east and west while the City of Glendale is to the east and north of the project area. The City of Surprise is located at the northern end of the project limits along with Sun City West. Multi-agency involvement and coordination are critical. Project issues include identifying potential funding partners and sources, developing a a phased construction plan to meet present and future needs and funding constraints, selecting an interim roadway design concept that will transition into the ultimate freeway design, inter-agency coordination, forecasting of future development and traffic demand, maintaining use of existing wells and irrigation, right-of-way acquistion, utility relocation and identification of environmental concerns.

For more information, contact Sami Ayoub, Project Manager, (602) 506-4662 or write to Ayoub at: MCDOT, 2901 W. Durango Street, Phoenix, AZ 85009, or e-mail at: samiayoub@mail.maricopa.gov

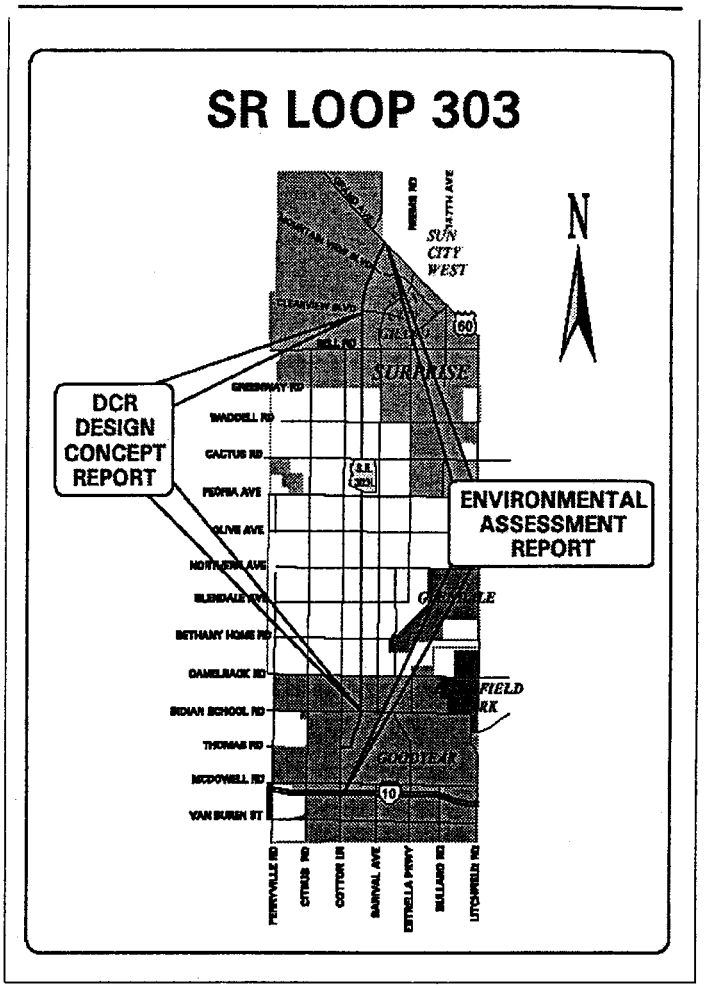
Public Involvement

Gaining consensus among the agencies and the public is critical to the success of this project and to the implementation of its recommendations to provide an efficient roadway for the long term. Therefore, there will be three public meetings during the Design Concept Report and Environmental Assessment process. Tonight's "Public Scoping" meeting is the first public meeting in this series. Stakeholders are invited to review project purpose and goals and aid in the identification of project issues and concerns.

In November 2001, the "Preliminary and Alternative Design" public open house will be held. The project team will present roadway improvement alternatives and elicit comments and concerns related to these alternatives. Preliminary findings of the environmental studies will also be presented. ***In February 2002, a hearing will be held on the draft Environmental Assessment.*** All environmental considerations will be described, and potential environmental impacts and possible ways to reduce these impacts will be identified. The final EA will respond to issues raised at the public hearing.

Public input is important to the success of this project. There are several opportunities to participate in the planning and design process:

- **Attend public meetings.** An agency scoping meeting was held on May 24, and a public scoping meeting is scheduled for June 19. Additional public meetings are scheduled for November 2001 to discuss the preliminary design concepts, and for February 2002 to discuss and comment on the draft Environmental Assessment. At the public meetings, you can talk to project staff and submit comments.
- **Add your name to the mailing list.** You will receive project updates by mail.
- **Contact the SR Loop 303 Telephone Hotline at 602-977-1141.** You can leave comments or questions and your message will be returned promptly.
- **Mail comments.** Public and agency comments will be received throughout the course of the project.
- **Visit our website at**
  www.mcdot.maricopa.gov



MCDOT Project Manager
Sami Ayoub
2901 W. Durango St.
Phoenix, AZ 85009
602-506-4662
SamiAyoub@mail.maricopa.gov

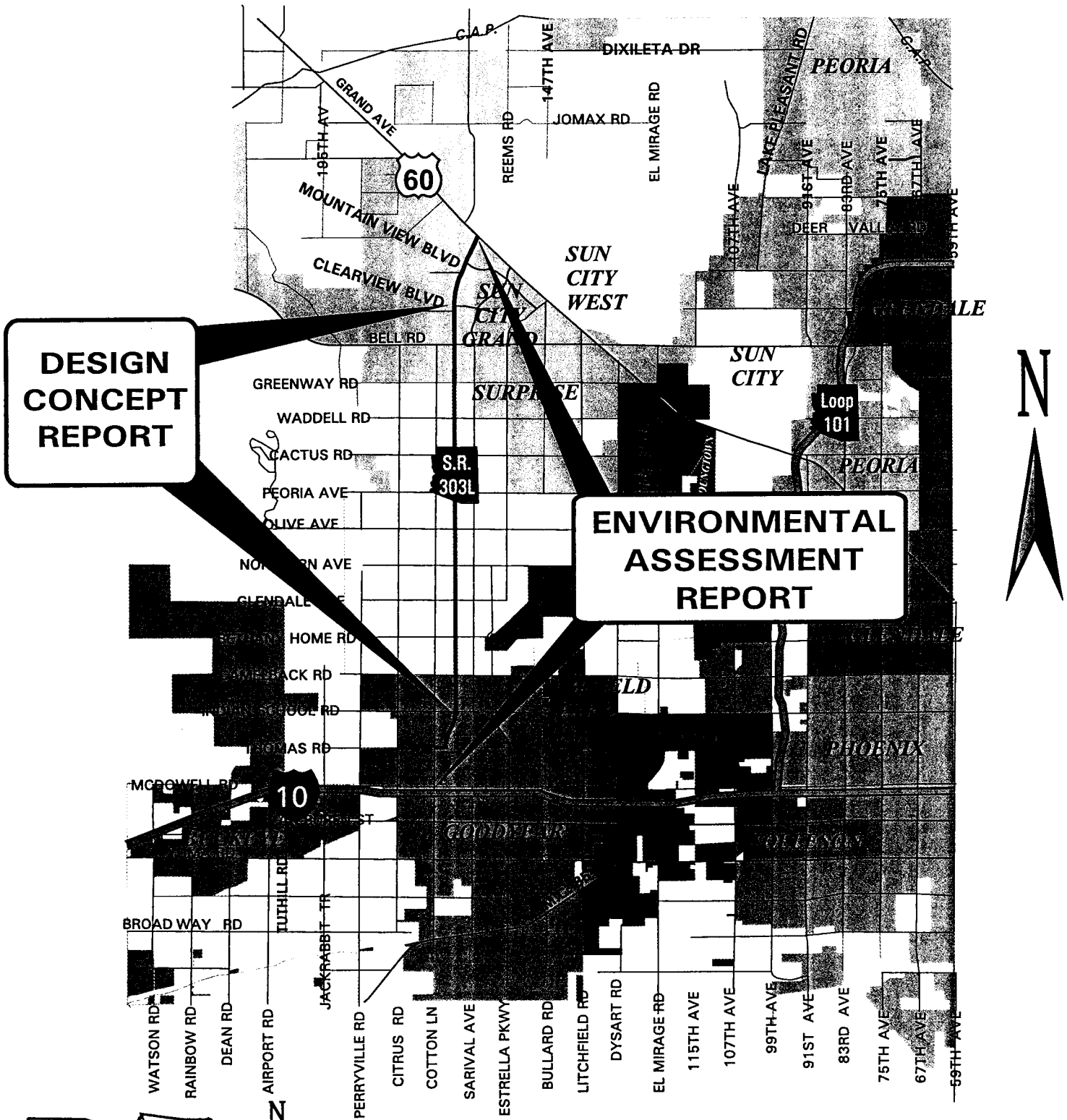
MCDOT Loop 303 Project Coordinator
Bill Hahn
2901 W. Durango St.
Phoenix, AZ 85009
602-506-4614
billhahn@mail.maricopa.gov

This project is compliant with NEPA and all related federal laws and regulations and as such, is eligible for federal transportation dollars. FHWA is lead federal agency and ADOT is lead state agency.

Thank you for your participation!

SR LOOP 303

Indian School Rd to Clearview Blvd



MCDOT RightRoads PROGRAM

The Right System The Right Time The Right Cost

5/21/2001

Maricopa County
Department of Transportation

MCDOT RightRoads PROGRAM

The Right System The Right Time The Right Cost

SR 303L Project Schedule

Indian School Rd to Clearview Blvd

PHASE	2001									2002					
	Apr	Mar	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
STUDY & REPORT PHASE		■	■	■	■										
PRELIMINARY DESIGN PHASE						■	■	■	■	■					
FINAL DESIGN PHASE - 30% PLANS											■	■	■	■	
TOPOGRAPHIC MAPPING		■	■	■	■	■									
ENVIRNMENTAL ASSESSMENT PHASE		■	■	■	■	■	■	■	■	■	■	■	■	■	

June 19, 2001

STATE ROUTE LOOP 303

Design Concept Report

Indian School Road to Clearview Boulevard

Environmental Assessment

Interstate 10 to US 60

MCDOT Project Manager: Sami Ayoub, 602-506-4662

Please complete and submit this card to a staff member before leaving or mail to **Maricopa County Department of Transportation, Attn:** Sami Ayoub at 2901 **W. Durango St., Phoenix, AZ 85009.** Include your name and mailing address. **Please Print.**

Name: _____ **Phone number:** _____

Agency/Address: _____

_____

E-Mail : _____

Meeting Survey

How would you rate the knowledge and helpfulness of staff members who assisted you?

Knowledge	Helpfulness
❒ Very knowledgeable	❒ Very helpful
❒ Somewhat knowledgeable	❒ Somewhat helpful
❒ Not very knowledgeable	❒ Not very helpful

Was all the project information presented in an understandable manner? Yes _____ No _____

Did staff answer your questions? Yes _____ No _____. If not, what didn't they answer?

_____

_____

_____

Do you want more information about MCDOT projects? Yes _____ No _____ . If yes, please make sure your name and address are filled in so we can add you to our mailing list.

How did you hear about the meeting?

Newspaper _____ Radio _____ Flyers _____ Trail Signs _____ Mailer_____

Friends/Neighbors _____ website _____ Other: _____

Additional Comments or Questions: _____

_____

_____

MCDOT *RightRoads* Program
Summary of Public Meeting
SR Loop 303
Design Concept Report
Indian School Road to Clearview Boulevard
Environmental Assessment
Interstate 10 to US 60
June 21, 2001
Public Meeting #1 Scoping

Final Report

Meeting Date: June 19, 2001, 5:00 p.m. - 7:00 p.m.

Meeting Site: Dysart High School
11405 N. Dysart Road, El Mirage

Meeting Purpose: Public Involvement- The Maricopa County Department of Transportation (MCDOT) RightRoads program hosted this informal "Scoping" open house to discuss and gather public input and comment on a Design Concept Report (DCR) and preliminary design plans for an interim roadway and an ultimate freeway between Indian School Road and Clearview Boulevard and an Environmental Assessment (EA) for the fifteen-mile segment of SR Loop 303 extending between Interstate 10 and US 60 (Grand Avenue).

State Route Loop 303 is an important regional transportation corridor and key to meeting future west valley traffic needs. The Maricopa County Department of Transportation (MCDOT) has entered into an Intergovernmental Agreement with the Arizona Department of Transportation (ADOT) to plan, design, build, operate and maintain this important roadway.

Gaining consensus among the agencies and the public is critical to the success of this project and to the implementation of its recommendations to provide an efficient roadway for the long term. Therefore, there will be three public meetings during the Design Concept Report and Environmental Assessment process. This "Public Scoping" meeting is the first public meeting in this series. Stakeholders were invited to review project purpose and goals and aid in the identification of project issues and concerns.

The meeting served to inform stakeholders and residents of the proposed study purpose and goals, the project schedule, and to compile comments regarding proposed work and conceptual alternatives to insure that the needs and issues important to the public are considered.

Approximately 212 persons attended this public open house. A brief PowerPoint presentation and Question and Answer session was held, also.

Participants: Sami Ayoub, MCDOT project manager

Chris Banks, MCDOT ROW
Gene Arnold, MCDOT ROW
Mike Smith, MCDOT Planning
Bill Hahn, MCDOT CGR
Chuck Willliams, MCDOT CGR
Ray Smith, MCDOT Engineering
Nicolaas Swart, MCDOT Traffic Engineering
Brenda Zambelli, MCDOT CGR
Roberta Crowe, MCDOT CGR
Joe Pinto, MCDOT Planning
Chris Plumb, MCDOT Planning
Greg Jones, FCDMC
Liz Ellis, URS Corp.
Dave French, URS Corp.
Joshua Brown, URS Corp.
Jim Martin, URS Corp.
Marty Sulla, URS Corp.
Avi Schmerer, URS Corp.
Dale Wiggins, URS Corp.
Mike Dawson, Entranco
Mike Riggs, Entranco
Mark Wheaton, Entranco

Other Attendees:

Tom Buick, MCDOT
Robert Forrest, ADOT
Steve Thomas, FHWA
Bill Vachon, FHWA
Surprise Mayor Joan Schaffer
Surprise Councilman Bob Vukanovich
Surprise Councilman Dan Cox
Surprise Councilman Tucker Smith
Surprise City Manager Bill Pupo

Public Comment

On June 19, 2001, approximately 212 people attended a public meeting to discuss and review the scope, purpose and goals of SR Loop 303 Design Concept Report (Indian School Road to Clearview Boulevard) and Environmental Assessment (I-10 to US60) at Dysart High School in El Mirage. Comment sheets were distributed to all those in attendance. The following information is a representative sampling of the respondents' written comments and discussions that consultants and staff had with the attendees during the meeting:

- Oppose possibility of APS power line on 303 right-of-way.
- Why considering a freeway when Parkway was supposed to be only consideration. Road not supposed as proposed.

- There was no "real" information displayed that would generate a need to "ask" any of the people standing around. No one can answer question of funding for Canamex proposed route. Without funding, Loop 303 would become the de facto Canamex highway. Why no funding for next 15-20 years??

- Most answers were still not available.

- Did not answer key questions well. (Canamex, APS lines)

- We understand that no decisions have been made. Do we truly HAVE input into final decisions? We know the 303 is a reality but we want it to NOT be done the cheapest way but the best - quietest - non-evasive way that would negatively effect our homes and community! Noise, pollution, etc.

- Evasive on Canamex - need further info.

- Canamex must be funded before 303 so that truck traffic is reduced on 303. You have hoodwinked us by stating 303 would be removed from Canamex consideration and then designating a road that will not be funded for many years. Truck traffic on 303 near Sun City Grand will create unreasonable levels of pollutants. Possibility of noise should be abated by walls, lower road levels and shrubbery. We do not want large amounts of truck traffic so close to a desirable residential community. Thank you.

- These potential environmental concerns are foremost in the minds of current residents near Route 303. Route 303 should eventually go under Bell Road. There should be noise abatement walls for the entire road in Surprise; particularly from Bell to Grand. We are concerned with air pollution from this highway. This wasn't addressed (I don't think) at the meeting. Safety - This concern would seem to be addressed by traffic lights. The Canamex highway Vulture Mine Road is not funded. This highway should be advanced and completed before further work on 303 is funded.

- Noise and air pollution associated with freeway would be intolerable to residents of Sun City Grand, and other developments already in existence and the future!

- Dirt and dust is now a problem, what are you doing to control this? Also noise, trucks , etc. for this project.

- This is an important "quality of life" concern for residents bordering Loop 303.

- This was not a good meeting for answering key questions. If 303's freeway is built - it will become Route from Mexico north - Canamex will not be built. These staff members cannot address this question.

- Lower Loop 303 (depress) build Bell overpass over Loop 303 noise abatement procedures.

- Big concern - analysis of Canamex, noise and light abatement.

Flip Chart Comments

- A parkway acceptable; no freeway
- Depress roadway
- Same old same old – LIES
- Depress roadway – get it done!
- Synchronize lights on Rte. 60
- Sound "attention" walls 60 feet
- Dome over entire road? Tunnel?
- No "Jake" brakes
- Noise suppression?
- Light standards – how high?
- Depress 303 – Clearview to Bell – (time constraints)
- Parkway – not limited access exp.
- Speed bumps
- Max speed limit 45 mph
- 4 lanes – 65 mph
- Off ramps (exit/entrance)
- Interim stop light at Indian School a safety concern – will still have accidents due to red light runners.
- 303 Needs to go through.
- Should fund Canamex – Vulture Mine Rd.
- 303 should be depressed south of Clearview to Bell.
- Speed limit should be 45 mph

The following are project team member notes from comments of public dialogue, discussions, and views expressed during this public meeting:

- All the comments I received were negative. No one had approached me with a "please go ahead with this project, this is the right project to do":

  1. Why did MCDOT hold this meeting at this early stage when MCDOT doesn't have much of the basic answers to the real issues, why at this time of the year, and why at this time of the day?

  2. Why MCDOT is undertaking this major project, knowing programming and funding of such a project is not feasible? Is this project an RTA attempt, why?

  3. Why MCDOT is pursuing development of a "Freeway" when MAG is calling it "expressway", and surrounding jurisdictions such as Surprise are calling it "parkway"?

  4. Why should you first enhance features of the Loop303 before building the CANAMAX route along Vulture Mine? That is only going to attract more traffic and especially trucks (?) consequently deteriorating the rural life settings.

  5. Why MCDOT is pursuing development of Loop303, from MC85 to I-17, when you have nothing in place that justify such planning other than it makes sense? If ADOT picked it, how and why?

  ... I was told: the place is too crowded and hot, and we did this on purpose; we through too many things at the attendees at once with many boards and different staff members saying different things purposely to confuse the issues and confuse people; we invite people to these meeting but we hardly consider what they say; we are misusing tax-payers money; etc.

- Noise levels in Sun City Grand already exceed the ADOT noise standard based on studies done by residents. They dispute studies prepared by MCDOT for the road section. Wants mitigation now.

- Depress SR 303L to some point south of Bell Road.

- Why not a Parkway?

- Build Vulture Mine Road for CANAMEX first, before improving SR 303

- Prohibit use of Jake Brakes by trucks on SR 303.

- Right-of-way through Sun City Grand does not appear adequate for six lane freeway.

- APS Power Lines is of concern
- Canamex designation as an issue
- Are we going to be doing new traffic study? Answer yes, for the new DCR from Indian School to Clearview.
- Can we reduce speed limit on detour road? Answer; we wil see if traffic warrants.
- Ban all Trucks on 303.
- Restrict the emissions on diesel trucks.
- Don't build a freeway.
- Restrict where people live and work so no one has to commute more than 30 miles to their job.
- Stop all development along 303 and leave it rural, except where they live that is.
- City of Surprise city engineer remarked favorably regarding meeting content, structure, organization and attendance.
- Concern raised regarding amount of truck traffic and noise levels.
- Concerns that the CanaMex route would not be funded for another 10 to 15 years which would result in CanaMex traffic to use SR 303L. Do not want
- Concerns about trucks using Jake brakes. Are there any laws against trucks using Jake brakes in residential areas?
- Do not want a freeway, politicians promised a parkway that would not allow truck traffic to use it.
- Widen the outside shoulder on the freeway so it would be safer for DPS
- to pull over large trucks.
- Depress Loop 303 north of Bell.
- Concerns about air quality with respect to the large volume of trucks and diesel fumes. Truck exhaust sends fumes upward and over adjacent neighborhoods.

From the Right-of-Way perspective:

- The majority of citizens were concerned with the APS transmission lines or the possibility of a lot of truck traffic from Mexico.
- Most inquiries were of a general nature, such as when, where, were their properties affected, etc.

- I had only one very negative conversation with someone who thought we had no right to build this road.

- Greg Jones of Flood Control was concerned with the drainage channel and encouraged an engineer from City of Goodyear to raise the issue during the question and answer session. Greg indicated to me that he felt that the meeting was the right place to inform the public of the drainage problems.

After the PowerPoint presentation, MCDOT opened the meeting up to questions from the public. People asked about the following:

Relation of the Loop 303 to the Canamex corridor. Many people were concerned that the SR Loop 303 would ultimately be used by trucks, traveling between Mexico and Canada. Views expressed that though the Vulture Mine Road was ultimately selected as the Canamex route, many people believe that the Loop 303 could be the de facto route.

Relation of SR Loop 303 to the Area Drainage Master Plan. An attendee asked where storm water would flow, wondering whether it would go over the highway. The project team explained that MCDOT is coordinating with Flood Control. The consultant URS is also working on the drainage plan. There are several different options under consideration, and these will be shared with the public later.

Definition of Parkway. Staff was asked about the difference between a highway and a parkway. The project team explained that there is no formal definition of a parkway. The SR Loop 303 would be built as a freeway, according to ADOT's standards.

Noise. A question was asked regarding increased noise from the freeway traffic. The project team explained that noise will be analyzed as part of the Environmental Assessment. The current ADOT standard is 64 decibels and if noise is above that standard, the EA will recommend ways to reduce noise impacts.

The freeway will be built near a residential area. The project team reminded the public that the SR Loop 303 has been on the map since 1985 and homes were built afterwards. The roadway existed first, and it helped encourage development.

Overall, meeting attendees expressed more interest in the SR Loop 303 segment north of Bell than south of Bell, or the project at hand. The way the road is being constructed and a desire to see it continuously depressed. They were also very concerned about sound walls and the need for them. Survey forms found project team members to be "somewhat knowledgeable" to "very knowledgeable" and "somewhat helpful" to very helpful".

Public meeting #2 "Conceptual Alternatives Presentation" is scheduled to be held November 2001.Public meeting #2 "Conceptual Alternatives Presentation" is scheduled to be held November 2001.

For more information about the study, contact Sami Ayoub, MCDOT Project Manager at 602/506-4662 or Roberta Crowe, MCDOT Public Involvement Coordinator, 602/506-8003.

SECOND PUBLIC MEETING, NOVEMBER 6, 2001

URS

October 30, 2001

Re: **Public Meeting Notification**

Dear Stakeholder:

URS Corporation was retained by the Maricopa County Department of Transportation (MCDOT) to prepare a Design Concept Report (DCR) and Environmental Assessment (EA) on SR 303L. The limits of the DCR are from Indian School Road to Clearview Boulevard; the limits of the EA are longer, covering from Interstate 10 to Grand Avenue. A public scoping meeting was held on June 19, 2001, to introduce the project to the community and to identify stakeholder issues to be considered throughout the DCR and EA.

Since the public scoping meeting, several alternative design concepts have been evaluated for the SR 303L corridor. A public informational meeting is scheduled for **Tuesday, November 6, 2001, from 6:00 P.M. to 9:00 P.M. at Dysart Elementary School, 11405 North Dysart Road in El Mirage** to present preliminary recommendations for the design concept and preliminary environmental findings.

We hope you can attend this meeting.

Sincerely,

URS Corporation

David K. French

David K. French, PE
Vice President
Project Manager

URS Corporation
7720 North 16th Street, Suite 100
Phoenix, AZ 85020
Tel: 602.371.1100
Fax: 602.371.1615

Maricopa County Department of Transportation

WE NEED YOUR INPUT

SR Loop 303

Design Concept Report

Indian School Road to Clearview Boulevard

and Environmental Assessment

I -10 to US 60

Public Open House 6:00 p.m. - 9:00 p.m.
Tuesday, November 6, 2001
Dysart Elementary School, 11405 North Dysart Road, El Mirage

SR Loop 303 Hotline: (602) 977-1141

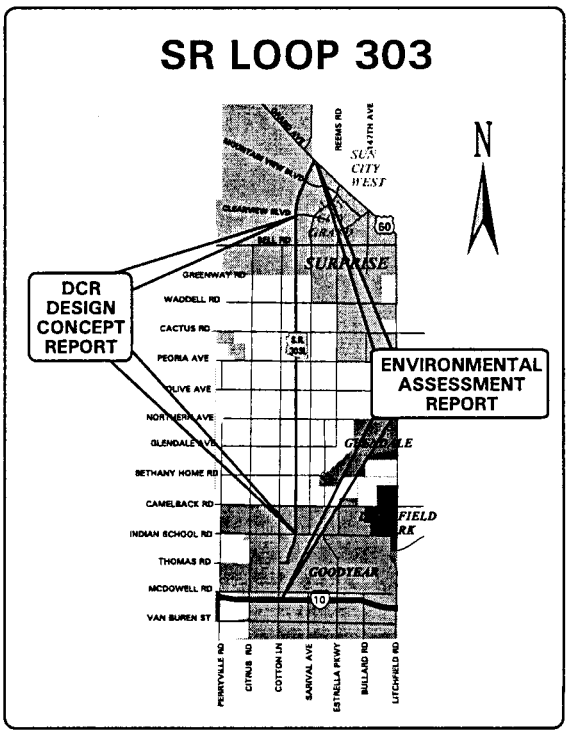
Maricopa County Department of Transportation (MCDOT) ***RightRoads* Program** is hosting an open house meeting to gather public input about future improvements to SR Loop 303 from Indian School Road to Clearview Boulevard and the Environmental Assessment of SR Loop 303 between I-10 and US 60 (Grand Avenue).

This information meeting is the second in a series of three public open houses to be held in the course of the Environmental Assessment, Design Concept Report and Preliminary Design stages.

Public comment will be sought throughout the project. Your input during this phase is an integral part of the design concept and environmental process. During this meeting, project team members will present "interim" and "ultimate" roadway improvement concepts. Preliminary design and environmental findings will be presented and public comments elicited. Stop by anytime between 6:00 and 9:00 p.m. to speak with MCDOT project team members.

For more information or to submit comments in writing, contact Sami Ayoub at (602) 506-4662 or write to Ayoub at: MCDOT, 2901 W. Durango Street, Phoenix, Arizona 85009 or e-mail at: SamiAyoub@mail.maricopa.gov.

Any person with a disability may request a reasonable accommodation such as a sign language interpreter by contacting **Roberta Crowe**, 2901 W. Durango Street, Phoenix, Arizona 85009. Phone **602-506-8003** or fax **602-506-4882** to make known their needs and preferences. Requests should be made as soon as possible to allow time to arrange for these accommodations. This notice can be made available in alternative formats or in Spanish by contacting Roberta Crowe.



This project is compliant with NEPA and all related federal laws and regulations and as such, is eligible for federal transportation dollars. In coordination with MCDOT, FHWA is the lead federal agency and ADOT is the lead state agency.

Maricopa County Supervisory District 4,
Janice K. Brewer, Supervisor

www.mcdot.maricopa.gov

MCDOT RightRoads PROGRAM

The Right System The Right Time The Right Cost

SR Loop 303

Design Concept Report

Indian School Road to Clearview Boulevard

Environmental Assessment

Interstate 10 to US 60

MCDOT RightRoads PROGRAM

The Right System The Right Time The Right Cost

Maricopa County Department of Transportation November 6, 2001

Public Information Meeting

Project Purpose and Goals

State Route Loop 303 is an important regional transportation corridor and key to meeting future west valley traffic needs. The Maricopa County Department of Transportation (MCDOT) has entered into an Intergovernmental Agreement with the Arizona Department of Transportation (ADOT) to plan, design, build, operate and maintain this important roadway.

MCDOT, with the consultant URS Corporation, is preparing a Design Concept Report (DCR) and preliminary design plans for an interim roadway and an ultimate freeway between Indian School Road and Clearview Boulevard and an Environmental Assessment (EA) for the fifteen-mile segment of SR Loop 303 extending between Interstate 10 and US 60 (Grand Avenue).

Project Purpose:

- Provide a portion of the urban freeway system to meet the growing needs of the west valley
- Link I-10 to US 60
- Provide an interim roadway in the near future that increases safety, meets the traffic needs of the corridor, and allows upgrading to the ultimate freeway

Project Goals:

- Gaining consensus for action (an agreed upon plan for implementation) among the public and agencies
- Preservation of right-of-way
- Construct interim roadway
- Obtain environmental clearance

Project Scope- Phase I

Design Concept/Environmental Assessment

- Develop travel forecasts (future traffic volume and growth projections)
- Document the purpose and need for the project
- Identify and analyze environmental impacts, such as existing and planned land use, noise, drainage, and any environmental hazards/waste
- Develop Design Concept Alternatives for an interim roadway and ultimate freeway
- Identify right-of-way needs
- Identify stakeholder issues/concerns and opportunities for incorporation
- Estimate project costs and identify potential funding sources

After this first phase, the next steps will be to secure project funding, complete final design, construct the new interim roadway and operate and maintain the improved SR Loop 303.

Issues and Concerns

This segment of the SR Loop 303 Corridor affects four different communities. The City of Goodyear is located at the southern end of the corridor on the east and west while the City of Glendale is to the east and north of the project area. The City of Surprise is located at the northern end of the project limits along with Sun City West. Multi-agency involvement and coordination are critical.

Project issues include identifying potential funding partners and sources, developing a phased construction plan to meet present and future needs and funding constraints, selecting an interim roadway design concept that will transition into the ultimate freeway design, inter-agency coordination, forecasting of future development and traffic demand, maintaining use of existing wells and irrigation, right-of-way acquistion, utility relocation and identification of environmental concerns.

Design Concept UPDATE

The ultimate SR Loop 303 design concept is a fully access controlled grade separated highway with six lanes. Project team members are evaluating interchanges or grade separations at all eleven arterial cross streets between Indian School Road and Bell Road. At the present time, the design concept would result in SR303L being constructed at the existing ground elevation along most of the corridor with cross street overpasses constructed at most cross street locations. Exceptions to this concept include crossings at Northern Avenue and Olive Avenue where SR303L would be elevated to cross over these streets, and at Greenway Road and Bell Road where SR303L would be depressed to pass under these streets.

Two interim phases are also being evaluated for the SR303L corridor prior to completion of the ultimate highway. The first interim phase would include construction of a 4-lane highway at the existing ground elevation with signalized intersections at some or all of the cross-street locations. This would also include right and left turn lanes at the cross street intersections. The second interim phase would include construction of interchanges or grade separations at the cross streets with SR303L still having 4 lanes. The ultimate highway would be completed when two additional lanes are added to accomodate the maximum projected traffic volumes.

Another alternative that is being evaluated is the possibility of constructing interchanges or grade separations at Bell Road and Greenway Road instead of signalized intersections during the first interim phase.

For more information, contact Sami Ayoub, Project Manager, (602) 506-4662 or write to Ayoub at: MCDOT, 2901 W. Durango Street, Phoenix, AZ 85009, or e-mail at: samiayoub@mail.maricopa.gov

Environmental Assessment UPDATE

The SR Loop 303 Environmental Assessment (EA) effort continues in the data gathering and analysis phase. Technical reports covering; hazardous materials, biotic resources, cultural resources and farmland resources have been drafted. Air Quality, Noise and Socioeconomic investigation and data gathering continues. This data gathering and analysis is being conducted in concert with the development of design concepts so those environmental issues can be evaluated and compared.

To date, the environmental analysis reports limited potential to impact any cultural resource sites. The corridor has been surveyed in recent years and no known sites are present in the corridor. Additional investigation will occur with respect to alternatives for the various cross streets, as previous survey limits did not cover the full extent of potential east-west cross street improvements.

Due to the agricultural use of the corridor there are several well sites and adjacent land uses that present the potential for hazardous waste contamination. Site investigation and records review discovered no sites that would indicate substantial issues to right-of-way acquisition or roadway construction. Standard care in relocating or abandoning several wells with lubricating oil surface stains would be typical in the corridor. The risk of contaminants being found in excess of state action levels is minor.

No threatened or endangered species, species of statewide importance or critical habitat is reported within or adjacent to the project corridor, by the US Fish and Wildlife Service or Arizona Game and Fish Department; thus biotic resources are not expected to be an issue with construction of this project. Coordination with the US Department of Agriculture is on going relative to the conversion of existing farmland within the proposed right-of-way to non-agricultural uses. Given that the presence of a roadway corridor does not preclude agricultural use of adjacent lands; and that in several locations local jurisdictions are already planning for non-agricultural uses in the area, farmland conversion does not appear to be a critical issue.

As the conceptual design process continues, the environmental investigations will focus on noise analysis and land use issues. Noise abatement and neighborhood compatibility are expected to be important issues to the public, thus both interim and ultimate design concepts will be evaluated for potential noise impacts and mitigation measures. Detailed results and recommendations will be developed for the final public hearing.

Public input relative to the social, economic or environmental issues associated with the project will continue to be sought and addressed in the Environmental Assessment.

Public Involvement

Gaining consensus among the agencies and the public is critical to the success of the project and to the implementation of its recommendations to provide an efficient roadway for the long term. Therefore, there will be three public meetings during the Design Concept Report and Environmental Assessment process.

Tonight's "Public Information" meeting is the second public meeting in this series. The project team is presenting roadway improvement concepts and eliciting comments and concerns related to these alternatives. Preliminary findings of the environmental studies will also be presented. Impacted stakeholders are invited to review project purpose and goals and aid in the identification of project issues and concerns. ***In April 2002, (Previously slated for February 2002) a hearing will be held on the draft Environmental Assessment***. Environmental considerations will be described, and potential environmental impacts and possible ways to reduce these impacts will be identified. The final EA will respond to issues raised at the public hearing.

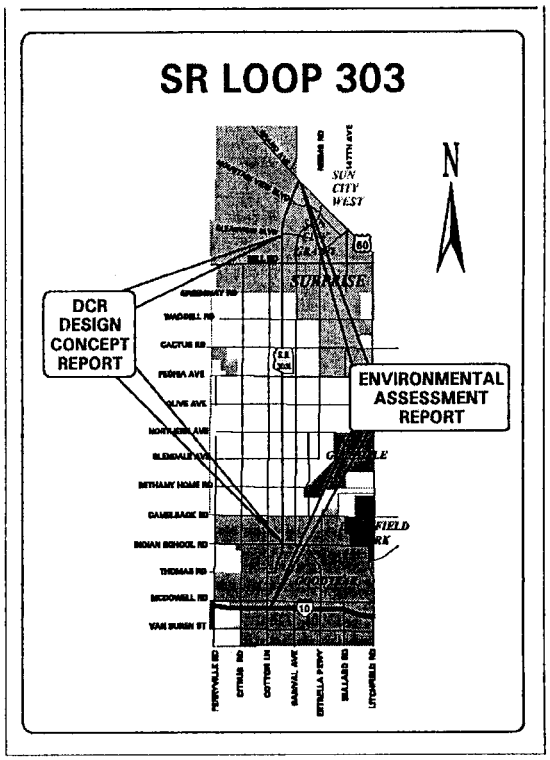
Public input is important to the success of this project. There are several opportunities to participate in the planning and design process:

- **Attend public meetings.**
  An agency scoping meeting was held on May 24, 2001 and a public scoping meeting was held June 19, 2001. A public hearing is scheduled for April 2002.
- **Add your name to the mailing list. You will receive project updates by mail.**
- **Contact the SR Loop 303 Telephone Hotline at 602-977-1141. You can leave comments or questions and your message will be returned promptly.**
- **Mail comments. Public and agency comment will be received throughout the course of the project.**
- **Visit our website at www.mcdot.maricopa.gov, www.rightroads.org or www.phxurs.com/loop303/**

Transportation Terminology

Freeway: The highest type of arterial highway is the freeway, which is defined as an expressway with full control of access. Full control of access means that the authority to control access is exercised to give preference to through traffic by providing access connections with selected public roads only and by prohibiting crossings at grade or direct private driveway connections. Freeways are selected for principal arterial corridors that are intended to provide for high levels of safety and efficiency in the movement of high volumes of traffic at high speeds. Expressways are normally considered for urban arterials with semi-full control of access. (AASHTO Green Book).

Parkway: Means an area along either or both sides of a highway, street, road or route acquired in fee or by easement by the governmental body having jurisdiction over the highway, street, road or route for the protection of geographic, natural flora or scenic values, and established or designated as a parkway by the transportation board.(A.R.S. 41-512.5)



MCDOT Project Manager:Sami Ayoub
2901 W. Durango St., Phoenix, AZ 85009, 602-506-4662
SamiAyoub@mail.maricopa.gov

MCDOT Loop 303 Project Coordinator: Bill Hahn
2901 W. Durango St., Phoenix, AZ 85009, 602-506-4614
billhahn@mail.maricopa.gov

This project is being administered to be in compliance **with NEPA and all related federal law and regulation and as such, is eligible for federal transportation dollars. FHWA is lead federal agency and ADOT is lead state agency.**

Thank you for your participation!

SR Loop 303

Design Concept Report

Indian School Road to Clearview Boulevard

Environmental Assessment

Interstate 10 to US 60

MCDOT RightRoads PROGRAM

The Right System The Right Time The Right Cost

Maricopa County Department of Transportation November 6, 2001

Public Scoping Meeting

June 19, 2001

Most Frequently Asked Questions

State Route Loop 303 is an important regional transportation corridor and key to meeting future West Valley traffic needs. The Maricopa County Department of Transportation (MCDOT) has entered into an Intergovernmental Agreement with the Arizona Department of Transportation (ADOT) to plan, design, build, operate and maintain this important roadway.

Gaining consensus among the agencies and the public is critical to the success of this project and to the implementation of its recommendations to provide an efficient roadway for the long term. Therefore, there will be three public meetings during the Design Concept Report and Environmental Assessment process. On June 19, 2001, approximately 212 people attended a public meeting to discuss and review the scope, purpose and goals of SR Loop 303 Design Concept Report (Indian School Road to Clearview Boulevard) and Environmental Assessment (I-10 to US 60) at Dysart High School in El Mirage. This "Public Scoping" meeting was the first public meeting in this series. Stakeholders were invited to review project purpose and goals and aid in the identification of project issues and concerns.

Is SR Loop 303 being considered as a "parkway" or "expressway"?

Answer: No. The ultimate design and construction of SR Loop 303 will be to an ADOT Urban Freeway Standard (six lanes with fully controlled access and traffic interchanges). The ultimate freeway may include landscaping and aesthetic structural enhancements. The Interim Roadway will be designed and constructed as a limited access four lane arterial roadway with at-grade intersections.

What are potential environmental impacts of the ultimate freeway SR Loop 303?

Answer: Determining what those impacts are is precisely the purpose of the Environmental Assessment. The study will look at the full range of social, economic and environmental issues following the National Environmental Policy Act (NEPA) guidelines. The document is subject to agency, local jurisdiction and public review before acceptance by MCDOT, ADOT and the Federal Highway Administration (FHWA). A hearing will be held in April 2002 on the draft Environmental Assessment along with the Design Concept Report. Environmental considerations will be described. Potential environmental impacts and possible ways to reduce those impacts will also be described.

Will SR Loop 303 eventually be a fully controlled access freeway?

Answer: Yes. SR Loop 303 will eventually be a fully controlled access freeway. Phasing and implementation will be determined and based on growth in traffic and development in the region.

Will this study look at providing noise impacts for the interim and ultimate projects?

Answer: Yes. Both MCDOT and ADOT noise policy requires the evaluation of new noise impacts when capacity improvement or alignment changes are considered.

What is being considered to mitigate noise on SR Loop 303?

Answer: The environmental study will evaluate the impacts, whether the impacts meet state or federal abatement criteria and what type of mitigation is appropriate. Abatement measures may include: the installation of noise walls/berms, depressing the roadway profile, use of rubberized asphalt concrete pavement surface and the acquisition of additional right-of-way.

What will be the speed limit of SR Loop 303?

Answer: At present, the speed limit from Indian School Road to Grand Avenue is 55 mph, but the ultimate speed limit for the freeway standard will be 65 mph.

When will SR Loop 303 be constructed?

Answer: Traffic demand and project funding will determine construction schedules. The SR Loop 303 will be constructed in phases. Proposed construction schedules will be set to meet current and future capacity requirements and incorporate forecasted traffic volumes and the urban development of the region.

Will truck traffic increase as a result of the construction of SR Loop 303?

Answer: During the construction of SR Loop 303, it can be expected that truck traffic could increase during certain phases of construction when materials are transported.

Truck traffic traveling on SR Loop 303 is mainly regional traffic supporting the economy of the region through transportation of goods. MCDOT, in its design of SR Loop 303, is taking into consideration truck traffic that uses this road now and in the future.

What does CANAMEX corridor really mean?

Answer: A CANAMEX corridor is one of 43 federally designated north/south transportation routes connecting Canada and Mexico and a component of NAFTA (North America Free Trade Agreement). Corridor 26, identified through Arizona, extends from Nogales, Arizona, north through Las Vegas, Nevada, to Salt Lake City, Utah, to Idaho Falls, Idaho, through Montana and on to the Canadian border.

Designation is an opportunity for federal funds to be dedicated to a selected route. In reality, only $140 million is available annually nationwide Fiscal Year 1999-Fiscal Year 2003. $123.6 million of this amount was awarded in 1999 to 35 projects, out of the 151 proposals submitted nationwide totaling $2.2 billion.

It is important to note that no state or federal regulations/laws exist that require truck traffic to follow a specific designated corridor. As such, designation of a truck route does not necessarily reflect real traffic flow needs or routes that trucks will follow.

Is SR Loop 303 being considered by Maricopa Association of Governments (MAG) as a possible CANAMEX Route?

Answer: No. In September 2000, the MAG Regional Council eliminated SR Loop 303 and SR Loop 101

from consideration as a future CANAMEX corridor. On April 25, 2001, the MAG Regional Council adopted the Wickenburg Road and Vulture Mine Road alignment between I-10 and the Wickenburg area as the location of a future CANAMEX corridor.

What does MAG's recent truck study tell us about north/south truck traffic and destination/origination in Maricopa County?

Answer: The *Phoenix External Travel Survey,* sponsored equally by MAG and MCDOT in February 2001, conducted thousands of vehicle surveys to determine their origins and destinations.

It was discovered that extremely few trucks travel between Mexico and Canada on *any* route in this region. The survey showed the vast majority of truck traffic was traveling in an east/west direction along I-10, primarily between Texas and California.

Would the construction of Vulture Mine Road (CANAMEX route designation) reduce truck traffic on SR Loop 303?

Answer: If Vulture Mine Road is designed and built, in 2020 it would carry 4,000 vehicles per day including an average of 304 trucks per day. SR Loop 303 is expected to carry 28,000 vehicles per day including 8,650 trucks per day. If all future truck traffic on Vulture Mine Road were a result of being diverted from SR Loop 303, the truck traffic on SR Loop 303 would only be reduced by 3.5 percent. From this information, it is concluded that construction and designation of Vulture Mine Road would have insignificant effect on truck traffic on SR Loop 303. The lack of impact is due to the significantly small number of the trucks currently using and projected to use SR Loop 303 as "through"-type truck traffic traveling from Tucson or Mexico and points north through the Phoenix area to Wickenburg.

Why not spend the available transportation dollars on the CANAMEX route instead of SR Loop 303?

Answer: Neither the SR Loop 303 interim or ultimate improvements considered in this study nor the Vulture Mine Road improvements as a CANAMEX corridor are funded today. A major goal of the SR Loop 303 study is to determine what improvements are necessary to meet future traffic demands of *all* users. Other goals include determining when those improvements should be made and how much they will cost. No prioritization on routes has been set.

The estimated cost for constructing this roadway, without taking the additional right-of-way acquisition into consideration, is a minimum of $121 million. Travel projections were made for several potential routes that might serve as the designated CANAMEX route. These projections are included in the report entitled *Compilation of Evaluation Data for Designation of the CANAMEX Corridor Through the Maricopa Region* published in August 2000 by ADOT and MAG.

Due to the very low current and future truck traffic volumes between Mexico and Canada and the extremely high financial and environmental costs of constructing the Wickenburg Road/Vulture Mine Road corridor, as documented by both the MAG studies mentioned above, this road offers a very low cost/benefit ratio. Thus, the priority rate will be equally low for the future CANAMEX corridor.

Does Arizona Public Service (APS) have plans for transmission lines along SR Loop 303?

Answer: APS has informed MCDOT that early stages of planning are under way to expand existing infrastructure to meet future electrical demand associated with development and growth. APS will conduct a public hearing process in the near future to gather input on potential options and alternatives. It is standard ADOT policy to not permit the placement of transmission towers/poles within highway right-of-way corridors.

Regional Transportation District

Frequently Asked Questions

RTD

What is an RTD?

A Regional Transportation District is a special district responsible for an integrated, regional, transportation system with dedicated funding and authority. It would be responsible for:

- Regional planning;
- Regional programming;
- Deployment, operations, and maintenance of an Intelligent regional traffic management system (ITS); and
- Development, implementation, operation, and maintenance of transportation (including transit) facilities and services of regional significance.

Why is an RTD needed? *What* is the problem?

Currently, there is a void in the deployment, operations, and maintenance of regional, integrated, multi-modal transportation systems within the metropolitan areas of Arizona. There is not a seamless regional transportation system that can supplement the existing congested freeway network.

Why a regional approach?

Since Arizona is one of the fastest growing states, it is time for a new paradigm in the planning, deployment, operations, and maintenance of the transportation system if the full potential and value of community investment in transportation is to be realized in the years ahead. Anthony Downs, senior fellow of the Brookings Institution, in Dealing Effectively with Fast Growth suggests a strategy persuading the state legislature to create some type of region wide agency with power to influence comprehensive plans developed at the local level. He said state legislatures should adopt goals to address transportation and land-use planning.

Why can't the existing arrangement of transportation agencies solve the problems?

Current statutes do not support integration of regional multi-modal transportation systems or land development and associated transportation requirements. The separate authority and role of existing governmental structure reduces the effectiveness of transportation service and slows innovations. Local officials are only accountable to their own politically defined communities. State officials are encouraged to look at regional issues in the context of the statewide needs and trade-offs among the different geographical regions of the state. An RTD, as the regional advocate, will have the responsibility, accountability, and the flexibility to go beyond conventional limits to provide a comprehensive regional approach to community goals focused on livability, quality of life, and economic vitality.

November 6, 2001

STATE ROUTE LOOP 303

Design Concept Report

Indian School Road to Clearview Boulevard

Environmental Assessment

Interstate 10 to US 60

MCDOT Project Manager: Sami Ayoub, 602-506-4662
Please complete and submit this card to a staff member before leaving or mail to **Maricopa County Department of Transportation, Attn:** Sami Ayoub at 2901 **W. Durango St., Phoenix, AZ 85009.** Include your name and mailing address. **Please Print.**

Name: _____ **Phone number:** _____

Agency/Address: _____

_____

E-Mail : _____

Meeting Survey

How would you rate the knowledge and helpfulness of staff members who assisted you?

Knowledge	Helpfulness
❒ Very knowledgeable	❒ Very helpful
❒ Somewhat knowledgeable	❒ Somewhat helpful
❒ Not very knowledgeable	❒ Not very helpful

Was all the project information presented in an understandable manner? Yes _____ No _____

Did staff answer your questions? Yes _____ No _____. If not, what didn't they answer?

_____

_____

_____

Do you want more information about MCDOT projects? Yes _____ No _____. If yes, please make sure your name and address are filled in so we can add you to our mailing list.

How did you hear about the meeting?

Newspaper _____ Radio _____ Flyers _____ Trail Signs _____ Mailer_____

Friends/Neighbors _____ website _____ Other: _____

Additional Comments or Questions: _____

_____

_____

MARICOPA COUNTY
DEPARTMENT OF TRANSPORTATION

SR303L, INDIAN SCHOOL TO CLEARVIEW

SURVEY (69016-11-06-01)

State Route Loop 303 is an important regional transportation corridor and key to meeting future west valley traffic needs. Currently, SR 303L is an interim two-lane rural highway with at-grade crossings at every mile. The proposed project would ultimately construct a fully access-controlled six-lane highway from I-10 to US 60 along the corridor identified between Cotton Lane and Sarival Road. The project is currently in the planning phase. Your input and comments are important and genuinely appreciated.

1. MCDOT's preliminary assessment of the key issues for this project includes noise, phasing of improvements, & partnering. What, In your opinion, do you consider the top three priority issues associated with this project?

   1. _____:_____

   _____

   2. _____:_____

   _____

   3. _____:_____

   _____

2. The initial traffic analysis for this project suggests establishment of an access-controlled facility sometime between 2015 and 2025. At what point in time do you envision SR Loop 303 will be needed as a freeway to meet the strategic transportation needs of affected communities? Why?

   ____ (2005-2010) _____

   ____(2010-2015) _____

   ____(2015-2020) _____

   ____(2020-2025) _____

3. At the present time, this project is not funded or programmed for construction. Who do you envision assuming the lead agency role in managing and funding major improvements as identified for this regional facility?

a. ___ Arizona Department of transportation (ADOT).

b. ___ Maricopa County Department of transportation (MCDOT).

c. ___ Proposed Regional Transportation District (RTD).

d. ___ Local Jurisdictions such as Cities and Townships.

e. ___ Other: _____

Name _____ **Address** _____ **Tel** _____

{Expires 01/06/02}: Please FILL OUT AND FAX TO (602) 506-5969 OR MAIL TO:

SAMI AYOUB-ENGG, MCDOT, 2901 W. DURANGO ST., PHOENIX ARIZONA 85009

MCDOT *RightRoads* Program
Summary of Public Meeting
SR Loop 303
Design Concept Report
Indian School Road to Clearview Boulevard
Environmental Assessment
Interstate 10 to US 60

Public Meeting #2 Preliminary Design Environmental Findings

Meeting Date: November 6, 2001, 6:00 p.m. - 9:00 p.m.

Meeting Site: Dysart Elementary School
11405 N. Dysart Road, El Mirage

Meeting Purpose: Public Involvement. The Maricopa County Department of Transportation (MCDOT) is conducting a Design Concept Report (DCR) and evaluating preliminary design concepts for an interim roadway and an ultimate freeway between Indian School Road and Clearview Boulevard and an Environmental Assessment (EA) for the fifteen-mile segment of SR Loop 303 extending between Interstate 10 and US 60 (Grand Avenue). MCDOT's *RightRoads* Program hosted this informal open house to discuss the project and gather public input and comment.

Project Background: State Route Loop 303 is an important regional transportation corridor and key to meeting future west valley traffic needs. The Maricopa County Department of Transportation (MCDOT) has entered into an Intergovernmental Agreement with the Arizona Department of Transportation (ADOT) to plan, design, build, operate and maintain this important roadway.

Three public meetings are scheduled during this Design Concept Report and Environmental Assessment process. Gaining consensus among the agencies and the public is critical to the success of this project and to the implementation of its recommendations to provide an efficient roadway for the long term. 281 people attended the second public meeting in this series. Stakeholders were invited to review "interim" and "ultimate" roadway improvement concepts, preliminary environmental findings and aid in the identification of project issues and concerns. The first public open house "Scoping" meeting, held June 19, 2001, was attended by 212 people and is detailed in a separate report.

Participants:
Sami Ayoub, MCDOT project manager
Linda Sciarro, MCDOT ROW
Mike Smith, MCDOT Planning
Chris Plumb, MCDOT Planning
Joe Pinto, MCDOT Planning
Bill Hahn, MCDOT CGR

Roberta Crowe, MCDOT CGR
Brenda Zambelli, MCDOT CGR
Nicolaas Swart, MCDOT Traffic Engineering
Greg Jones, FCDMC
Zach Bonin, URS Corp.
Dave French, URS Corp.
Dave Hedlund, URS Corp.
Marty Sulla, URS Corp.
Avi Schmerer, URS Corp.
Dale Wiggins, URS Corp.
Mike Dawson, Entranco
Scott Stapp, Entranco
Joe D'Onofrio, Entranco
Emily Paulsen, Entranco
Mike Riggs, Entranco
Mike Heaton, Project Engineering Consultants

Other Attendees:

Tom Buick, MCDOT
Robert Forrest, ADOT
Dan Lance, ADOT
Steve Thomas, FHWA
Bill Vachon, FHWA
Ken Davis, FHWA
City of Surprise Council and Staff

Public Comment

On November 6, 2001, 281 people attended a public meeting to discuss and review roadway improvement concepts and preliminary environmental findings of SR Loop 303 Design Concept Report (Indian School Road to Clearview Boulevard) and Environmental Assessment (I-10 to US60) at Dysart Elementary School in El Mirage. Comment sheets were distributed to all those in attendance. The following information is a representative sampling of the respondents' written comments:

- "I hereby request...a full Environmental Impact Statement (EIS) of the SR Loop 303 construction project."
- "Upgrading 303 before an alternate CANAMEX Highway is built is 'de facto' making 303 part of the CANAMEX."
- "Do not make 303 a six-lane highway or a truck route..."
- "Abandon the freeway concept for SR303."
- "Complete Sun Valley Parkway as air quality protection for valley until CANAMEX Corridor is completed."
- "Abandon posture about freeway on 303."

- "Ban all trucks from 303 and force them to use the designated CANAMEX route."
- "Plan for increased car traffic with speed controls."
- "They should do a full environmental impact statement not the EA which would leave a lot of things not answered."
- "Very concerned about noise and pollution as traffic grows."
- "Keep road lower than existing ground level, erect noise walls and limit pollution."
- "Traffic studies were done about a year ago...traffic has increased significantly in the past month."
- I am concerned about noise from 303 and Bell Road, but I think your design proposal is the best solution. I support the idea of having 303 go under Bell."
- "Why not use the existing Sun Valley Parkway and keep trucks away from existing residential areas."
- "...need environmentally good diesel fuel and complete Sun Valley Parkway to Grand first."
- "...EIS should be completed in full compliance with the National Environmental Policy Act."
- "Put stop lights at intersection along 303 instead of overpasses or rises."
- "...ridiculous for truck traffic to be on 303 when accessible land is available west and out of the Valley area...Phoenix has a smog problem...this just makes it worse."
- "We keep having meetings, but nothing changes!"
- "They don't care about your concern, it is a done deal."
- "Truck noise is a critical problem and should be addressed."
- "We do not need an expressway in a residential community!"
- "Please come and use our backyard as a test site for air and noise pollution."
- "Parkway we can live with freeway we cannot."
- "Why spend the money on 303 when it should be spent on CANAMEX."
- "Why can't 303 remain a parkway which is what was the designation in the first

place when we bought."

- "I realize that Loop 303 eventually will be, and needs to be, improved to handle additional traffic. Every effort needs to be used in this process to hold down the noise and pollution effects on people living along this corridor."

- "Depressing the highway, building walls, extensive landscaping would certainly lessen the noise impact."

- Traffic lights on 303 would be desirable."

- "My understanding when we purchased our home was a parkway would be behind out home (303) like Bell Road. That was not a big issue on our decision because we did not expect to have truck traffic!"

- "Have you consulted with the Natural Resources Conservation Service regarding the Farmland Protection Police Act of 1981..."

- "Have you consulted with Region IX of the US Environmental Protection Agency regarding the air quality impacts in the PM10 non-attainment area of Maricopa County?"

- "No one listens to the people who live in Sun City Grand."

- "MCDOT is not considering the tremendous impact of change on the community of Surprise. It is splitting through the heart of Surprise where new residential construction is now in full swing."

- "With only 9 miles to complete from the Sun Valley Parkway to US Hwy 60 in a less sparsely settled area west of the White Tanks, why wasn't that route selected. It does not present the noise and pollution problems."

- "Complete the Sun Valley Parkway as the interim roadway until the CANAMEX corridor is completed."

- "...very impressed with the proposed plans from Clearview to Indian School, i.e. overpass at Bell, etc. I can support the proposed design that was presented at the meeting."

- "I fear as speed limits are increased the noise will be unbearable, not just disturbing."

- "I would like to see traffic lights along 303 now—not waiting years and years."

- "What is the no action alternative for the I-10 to US 60 Hwy project for which you are doing the environmental?"

- "I would like to know if higher berms are designated along the east side of Sun City

Grand? The west side berms are much higher than the east side."

- "...nobody has a solution that will keep trucks off the 303."
- "Why does the County want to put a freeway through an existing community?'
- "I understand the plan was in place before the community was built, but now that the homes and residents are here, this must be changed."
- "...presented as a done deal."
- "I am opposed to APS installing electrical transmission lines along SR Loop 303."
- "An overpass at Bell and 303 is very important."
- "Crime rate will soar ...will have a fast get away route."
- "CANAMEX would only reduce truck traffic on 303 by 3.5%."
- "To go ahead with this now will encourage the truck traffic here and not west which can better absorb the diesel fumes."
- "Forget expanding 303 now. Concentrate on the Vulture Mine Road. Divert all funding of 303 to that project."
- "Develop a regional road in an undeveloped area...development can happen around that...people moving into the area will already be aware..."
- "...values of our properties will depreciate."
- "Develop the regional transportation district to handle transportation studies."
- "Why aren't there alternative truck routes under consideration and in planning stages?"
- "...build CANAMEX prior to building and widening the 303."
- "...concerned about HAZMAT transport along SR Loop 303."
- "Why were the plans drawn up for Loop 303 before public input and a full environmental impact statement was presented?"
- "I request that (MCDOT) inform the public of the public comments received on these forms."
- "We need a parkway to handle traffic in the future but we do not need a 'super highway' through Sun City Grand and Sun City West."

- "Why won't MCDOT acknowledge the impact of truck traffic on pollution...the impact on the quality of life in our communities will be horrendous!!?"

- "Will the Design Concept Report (DCR) for the Indian School Road to Clearview Blvd. project and the Environmental Assessment for the I-10 to US 60 project be separate documents?"

- "Please remember your top leaders are elected and subject to recall."

- "The state must initiate a clean air act similar to California..."

The following are project team member notes from comments of public dialogue, discussions and views expressed during this public meeting:

- Misconception continues that Loop 303 is a CANAMEX route.

- Concerned expressed about the amount of truck traffic currently utilizing Loop 303, ...don't want anymore.

- Misconception that trucks are not allowed to hall hazardous material on the existing Loop 303, and expansion of the roadway will allow for this type of transport (no current restriction exists regarding type of cargo hauled on Loop 303, nor will there be with construction of this project).

- Many were concerned about the implications to air quality from this project. Feel the air quality is already poor and that construction of this project will encourage more traffic and increased pollution.

- Misunderstanding as to the status of the project, several thought environmental document was already done.

- Funding questions – who will fund the future work. Some felt they got inconsistent answers as they moved around the room.

- Night time truck noise clearly perceived "peak noise" period.

- Prevalent viewpoint that until a CANAMEX route is funded on Vulture Mine road Loop 303 is CANAMEX.

- Issue of speed and the belief of no enforcement.

- No "jake" braking should be allowed on Loop 303.

- Add stoplights to Loop 303 to discourage trucks.

- 80% of all questions revolved around trucks.

- When will noise abatement be constructed, now or when full freeway built?
- Why a freeway, can't another route be built behind the White Tanks to take traffic around the west valley?
- Improve Sun Valley Parkway, nobody lives there now, connect it with Grand Avenue.
- An issue revolves around whether a true NEPA EA should be conducted (not just compliant – actually sanctioned under NEPA)

As occurred during the first Public "Scoping" Meeting on June 19, 2001, attendees expressed more interest in the SR Loop 303 segment north of Bell Road than south of Bell Road. The primary issues/concerns raised continue to be noise, air quality increased truck traffic and CANAMEX route designation. Organized opposition to the perceived impacts of an ultimate freeway design was evident. The majority of survey forms found project team members to be "somewhat knowledgeable" to "very knowledgeable" and "somewhat helpful" to very helpful". Unerringly, those survey forms finding staff to be unhelpful or unknowledgeable expressed adamant opposition to the project and emphatic environmental concerns.

In April 2002, additional public comment will be elicited during a hearing scheduled on the draft Environmental Assessment. Environmental considerations, potential impacts and possible ways to reduce these impacts will be described and identified.

For more information about the project, contact Sami Ayoub, MCDOT Project Manager at 602/506-4662 or Roberta Crowe, MCDOT Public Involvement Coordinator, 602/506-8003.

LETTER TO REAL ESTATE PROFESSIONALS

Thomas R. Buick, P.E.
Chief Public Works Officer,
Transportation Director & County Engineer

February 13, 2002

DEPARTMENT OF TRANSPORTATION

Dear Real Estate Professional:

Realtors are an important source of information to people, especially those moving into new communities. We know that many people buying and selling property in the west and northwest Valley have questions about SR Loop 303, and its impacts upon the communities in which you do business.

MCDOT staff frequently receive phone calls and are approached at public meetings by people requesting accurate information about the design and construction plans for SR Loop 303. We believe that possessing accurate information regarding SR Loop 303 would be a professional asset as you conduct the business of selling homes in this area. The Department of Transportation would also benefit through your dissemination of accurate information and the correction misinformation about this project. MCDOT would like to proactively tap you and your colleagues as an established information dissemination resource. We are providing you a simple document that gives the basic information about SR Loop 303 projects. Several copies are enclosed. Please feel free to make reprints and share it with others in your office and with clients.

This information is also available on our Web site: www.rightroads.com/realtor.

Please let us know if you have any specific questions that have not been answered here, or if you need additional copies of this material. We have also added your office to the list of people who receive announcements about our many public meetings on this project.

We would also be glad to visit your office to do a short group presentation to your agents and answer any questions they may have.

Thank you in advance for your time in reading and considering this pertinent information.

Sincerely,

Roger A. Ball
Community Relations Branch Manager/
Public Information Officer
602.506.8795
rogerball@mail.maricopa.gov

Roberta Crowe
RightRoads Program Manager
Public Involvement Coordinator
602.506.8003
robertacrowe@mail.maricopa.gov

9.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter is provided to give guidance to MCDOT in the implementation of SR 303L. The first section lists the findings of the project which are mainly items that are external to this particular project to prepare a DCR/EA but greatly affect the decisions regarding the project and the implementation of the project. The second section lists the conclusions reached as part of the DCR. The final section identifies the recommendations and provides a program for implementation.

9.1 FINDINGS

9.1.1 Programmed Related Projects

The following projects are currently programmed and funded:

1. McDowell Road to Indian School Road construction of four-lane divided roadway. Bid in March 2002; start construction by end of May; construction days allowed is 180; but project may be completed in 90 days.

2. Union Hills Drive to Reems Road construction of two- and four-lane interim roadway with bridge over US 60 and BNSF. Construction to be completed in April 2002.

3. Reems Road to El Mirage Road construction of four-lane divided roadway. Bid February 2002; construction May 2002; and will take 12 months.

4. El Mirage Road to Lake Pleasant Road construction of four-lane roadway including bridge over Agua Fria River; bid in June 2002; construction start in November; and will take 15-18 months. The project will link with Happy Valley Road. Width of bridge has not been determined yet.

5. Happy Valley Road, 91st to 75th avenues with low flow crossing of New River. Project lead is Peoria. Projects 4 and 5 will have funding agreements among MCDOT, Peoria and developer.

6. Overlay of existing SR 303L; (a) Cactus to Union Hills by June 2002: (b) Indian School to Cactus by end of calendar 2002. Overlay is expected to give 10- to 15-year life.

7. DCR MC 85 to Indian School Road. Complete later this year. Completion is tied to EA being prepared under URS contract.

8. MC 85 south to Riggs Road Corridor Study by PTG for MCDOT Planning; start March or April and take six months. Development of Estrella Ranch is prompting this study.

9. Intersection improvements (widen to include left-turn lane on all four approaches); signals to be flashing; Indian School complete by end of March; Olive and Northern by end of June 2002.

9.1.2 Funding

- There are no funds currently programmed to implement the interim improvements to SR 303L as they are envisioned in the DCR being prepared. Funds that originally were considered for this purpose have been programmed on other more pressing projects.
- Funding for SR 303L must come through a partnering arrangement with ADOT, FCDMC, local governments, ADOT "Help Fund" or perhaps "Infrastructure Bank," etc., or through a new initiative to replace or extend the current RARF program (half-cent sales tax).
- The Governor of Arizona commissioned the Vision 21 Task Force to identify transportation needs and funding options throughout the State. Recommendations from this task force include: (1) raising the statewide tax on gasoline on a phased basis over to next 14 years by a total of 13 cents per gallon; (2) establishment of a dedicated statewide sales tax phased in over five years of 0.75% which would replace the current 0.5% sales tax imposed in Maricopa and some other counties; and (3) establish dedicated statewide development fees on new commercial and residential development of 1% of the value.
- Public-Private partnerships will be needed particularly for the dedication and acquisition of right-of-way. Additional partnerships may be used to advance the construction of some interchanges.

9.1.3 Right-of-Way Preservation

- It is MCDOT's goal to avoid triggering the right-of-way reversion clause.
- Del Webb, SunCor, and the owner of one small parcel have allowed right-of-way to be quit claim deeded to ADOT.
- There is a case under review between MCDOT and a property owner that may help to define the reversion clause requirements.

- There are 255 acres of land dedicated for right-of-way between Indian School Road and Clearview Boulevard. If the reversion clause is activated, this land will need to be purchased or otherwise preserved for the roadway.
- There are an additional 164 acres of land needed for the proposed ultimate roadway. Purchase or otherwise preservation of this needed right-of-way must be a top priority. As development occurs in the corridor and improvements are made to SR 303L, the cost of the land is expected to increase much faster than the cost of construction. As a result, it is recommended that the top priority be right-of-way preservation, not construction of the interim roadway.
- Luke AFB would like to protect the noise sensitive area around the base from urban encroachment. The protection area could significantly affect growth potential in large portions of the corridor.

9.2 CONCLUSIONS

9.2.1 Consequences of the No Build Alternative

1. The greatest single consequence of the lack of a decision to build the proposed SR 303L is that the opportunity to ever build the corridor may be lost. The right-of-way that has been dedicated may revert back to the original land owner thus raising the cost of the project to a point that may not be achievable. Incompatible urban development may occur adjacent to or in the proposed corridor and thereby greatly increasing the potential for opposition to ever constructing the route and also increasing the cost of the route by requiring more soundwalls and increasing the cost of the right-of-way.

2. The SR 303L corridor is one of only two unfunded designated corridors in the Salt River Valley. Due to development, no other corridors are likely to be designated and constructed. Accordingly, loss of the SR 303L corridor will eliminate an opportunity to provide a high speed, high capacity route to connect I-10 and US 60/US 93; fail to serve the over 125 square miles in the corridor area that will eventually house 250,000 to 300,000 residents; and fail to provide a vital link in the planned urban freeway system that will eventually link MC 85 and I-17 with a beltway that is appropriately spaced 7 to 9 miles outside of SR 101L.

3. Grand Avenue (US 60) from SR 303L to SR 101L is the alternative connection between the US 60/US 93 highway and the urban freeway system including I-10. In this 11-mile stretch of Grand Avenue, there are 19 existing or planned traffic signals. It

serves as the main arterial route for the cities of Surprise, El Mirage and Youngtown as well as the unincorporated Sun City and Sun City West. Recent plans developed for this route include widening to six lanes, making some intersection improvements and perhaps eventually constructing up to four grade separations. If SR 303L is not constructed as a freeway, Grand Avenue is projected to carry traffic volumes that are at or near its capacity of over 50,000 vehicles per day in 2025. All the truck traffic that travels between I-10 and US 60/US 93 will continue to use this arterial route creating traffic noise and safety concerns for the residents of the communities along Grand Avenue.

4. If SR 303L remains a two-lane highway, even if all the intersections are widened to provide left- and right-turn lanes and are signalized, it will reach its capacity within five years. Travel speeds on the route are expected to drop from over 60 mph today to less than 25 mph by 2010. This roadway will not meet the purpose and need of the project.

5. If SR 303L is not built as a grade-separated freeway, corridor traffic will divert to Cotton Lane, Sarival Road and other parallel arterials which currently are rural two-lane roadways. This traffic diversion will require MCDOT and the cities to upgrade these roads sooner than currently anticipated. Funds have not been programmed for these upgrades. The upgrades may have to be made prior to a time when partnerships with private developers can be implemented to help fund the road improvements.

6. The accident rate on the existing SR 303L is high. Construction of a fully grade separated freeway will reduce the accident rate by a factor of 3 or 4 thus saving many lives and reducing the number and cost of hundreds of crashes.

7. Failure to proceed with SR 303L as proposed will miss an opportunity to direct future growth of the metropolitan area to a corridor that can be served well by a planned freeway/arterial system. Much of this growth is likely to occur instead in areas outside of the agricultural valley where there are no planned freeways and where construction of arterial roadways will be much more difficult and expensive.

9.2.2 Interim Roadway Alternatives

Two interim alternative roadway alternatives emerged from a whole array of alternatives considered in the Study and Report. Both alternatives would provide a four-lane roadway with at-grade intersections at each of the section line arterials. Interim A would build a new four-lane divided roadway that would be a portion of the ultimate roadway construction. The pavement

could be constructed initially as PCCP or asphalt. Asphalt appears to be less expensive for the initial construction but more expensive in the long run. Interim B would add one lane in each direction to the existing roadway and would widen the intersections. It is designed to have the lowest initial cost but none of this construction would be salvaged for the ultimate roadway construction. Table 9.1 provides a summary comparison of the two interim alternatives.

Table 9.1
Comparison Between Interim A and Interim B

Factor	Interim A	Interim B
Cost – Initial Construction	$66,500,000	$14,800,000 (without additional right-of-way)
Cost – Upgrade to Ultimate (Adjusted for Inflation)	$239,700,000	$321,800,000
Total Cost	$306,200,000	$336,600,000
Traffic Safety	Medium – Divided Roadway – Shoulders Provided with New Construction	Low – Undivided Roadway – Limited Shoulders
Off-Site Drainage	50-year Storm Protection	1- to 2-year Storm Protection
Intersection Operations	– Wide Separation May Delay Need For Signals – Wide Separation May Reduce Capacity of Signalized Intersections	– Signals May Be Warranted Sooner – Signalized Intersections Would Operate Normally
Throwaway Construction	Most of Interim Roadway and Drainage Construction Usable In-Place for Ultimate	No Interim Construction Usable for Ultimate
MOT – Initial Construction	Wide Separation Between Work Zones and Existing Traffic	Work Zones Adjacent to Existing Traffic
MOT – Upgrade to Ultimate	– No Detours or Shutdowns Needed to Construct Mainline – Cross Streets Already Realigned in Interim, So No Detours or Shutdowns Needed to Construct Interchanges	– Detours and/or Shutdowns Needed to Construct Mainline and Interchanges
Well Relocation	Approximately Six Wells Relocated	No Wells Relocated
Right-of-Way Requirements	Ultimate Right-of-way to Be Acquired	No Major New Right-of-Way Needed
Irrigation	Irrigation Facilities Relocated to Ultimate Location	No Major Irrigation Relocation

If budget can be made available, Interim A is a better choice than Interim B. Interim A provides the ultimate roadway drainage system, provides a portion of the ultimate roadway, will have much less disruption to traffic during construction of the ultimate roadway, may delay the need for signals at intersections, and preserves all right-of-way needed for the ultimate roadway. The cost of Interim B does not include any additional right-of-way. Delaying the acquisition of right-of-way for the ultimate roadway greatly increases the risk that the cost of the right-of-way will skyrocket and the potential for incompatible development to occur is also increased.

Based upon the analyses presented in Section 3.2.5, construction of either Interim A or B will enable the traffic in the corridor to increase to over 30,000 vpd by 2010. When this occurs, traffic signals will be needed at most if not all of the cross street intersections, and the average travel speed on SR 303L will drop from over 60 mph today to less than 40 mph. Traffic volumes in 2010 will exceed the design capacity (LOC C) of either Interim A or B. As a result, free flow traffic conditions will no longer exist and the purpose and need for the project will not be met.

9.2.3 Summary Conclusions

1. Traffic signals installed at many of the cross street intersections will reduce the travel speed on SR 303L substantially from today's free-flow speeds. As a result, the purpose and need of the project will not be met with either a two-lane or four lane at-grade roadway.

2. The No Build Alternative (two-lane roadway) will not accommodate the projected traffic in 2010.

3. A four-lane at-grade interim roadway will accommodate the projected traffic in 2010 at urban arterial level of service but will not meet the project purpose and need.

4. Interim A represents a better investment than Interim B because it will lead to construction of the ultimate freeway which is the only roadway type that meets the purpose and need of the project.

5. The first priority of any interim action should be preservation of right-of-way.

6. A fully grade separated access controlled freeway is the only type of roadway that fully meets the purpose and need. A four-lane freeway will meet the traffic needs for many years. Future widening to six or eight lanes will be needed.

9.3 RECOMMENDATIONS

The following recommendations are made for the sequential development of the SR 303L corridor:

- Request revision of the **MAG Long Range Transportation Plan** to reflect SR 303L as a six-lane freeway from I-10 to US 60 including major freeway junctions with these two roadways as defined in the concept reports prepared by others.
- Continue to improve the existing SR 303L two-lane interim roadway by widening intersections to incorporate turn lanes and traffic signals when warranted.
- Work with other governmental units to adopt and implement a dedicated transportation funding program such as the one recommended by the Governor's Vision 21 Task Force.
- Obtain, purchase, or otherwise preserve all the right-of-way needed for the ultimate roadway including the drainage facilities.
- Evaluate the need for interim upgrades to Cotton Lane and Sarival Road to accommodate increasing traffic in the corridor and to accommodate traffic diverted from SR 303L during construction.
- Continue to work with the FCDMC to develop a financial partnership to implement the flood control improvements in the corridor that meet the design requirements of the highway and that meet the flood control criteria for the entire corridor area. Accomplish this activity prior to construction of a four-lane interim roadway.

Construction of SR 303L will be totally dependent upon obtaining a funding source. Given the time frame needed to obtain approvals for the proposed project, complete the engineering, and obtain the right-of-way, it does not appear likely that any major construction will occur prior to 2006. The need for major improvements will exist by that date. If adequate funding exists, it is recommended that the ultimate freeway construction commence, starting with the needed drainage facilities that must be constructed from south to north. Improvements would be made in 2- to 3-mile segments starting at I-10 and working northward.

If funding availability is more limited, the sequence listed below is suggested. The suggested sequence is based upon a recognition that the drainage facilities need to be constructed from south to north and thus the roadway should also be built in this direction (Steps 1, 2 and 3). Currently, there is little difference in traffic volume on SR 303L so that improvements to any section has equal traffic justification. North of Waddell Road (Step 4), the ultimate roadway is to be depressed below ground level. Due to complications with the stage construction, it is

suggested that the four-lane freeway be constructed without first constructing an interim roadway. Step 5 below is sequenced so that the tie into I-10 and the upgrading of the soon-to-be-constructed section between McDowell and Indian School Road would be upgraded to a freeway prior to sections further north. In the future, the southern portion of the roadway is expected to carry higher traffic volumes than the northern section. Without upgrading, the junction with I-10 at Cotton Lane will become a bottleneck. Upgrading the portion from Northern northward (Step 6) is suggested to precede the section between Indian School and Northern (Step 7) because Interim A would continue use of the existing roadway for one direction of travel north of Northern Avenue. It is believed that the existing roadway will need to be replaced prior to the need to construct interchanges south of Northern.

1. Construct drainage facilities from Indian School Road southward.

2. Construct Interim A from Indian School Road to north of Northern Avenue.

3. Construct Interim A from north of Northern to north of Waddell Road.

4. Construct ultimate four-lane freeway from north of Waddell to US 60, including a full interchange at US 60.

5. Construct ultimate four-lane freeway from I-10 to north of Indian School Road including freeway to freeway ramps connecting to I-10.

6. Construct ultimate four-lane freeway from north of Northern to north of Waddell Road including overpass over Olive Avenue and railroad spur.

7. Construct overpasses and interchanges as needed from Camelback Road to Northern Avenue to complete the fully grade separated access controlled freeway.

8. Widened the freeway to six or eight lanes when warranted.

Table 9.2 presents a summary of the activities needed and the cost to provide a four-lane freeway by 2015.

Table 9.2
Implementation Steps to Provide Four-Lane Freeway by 2015

Year	Activity	Cost*
2002	• Complete DCRs/EAs	—
	• Update MAG LRTP	—
	• Resolve right-of-way dedication status	—
	• Construct McDowell to Indian School	MCDOT
	• Construct three intersection improvements	MCDOT
2003	• Begin preservation of additional right-of-way	3,900,000
	• Develop IGA with FCDMC for drainage system	—
	• Develop 30% plans for interim and ultimate roadway	600,000
2004	• Establish funding source and project timeline	—
	• PS&E for Interim A Indian School to Northern	2,000,000
	• Complete preservation of right-of-way	4,100,000
2005	• 1. Construct drainage system from Indian School Road southward	3,300,000
	• PS&E for Interim A Northern to Waddell	1,600,000
	• 2. Begin construction of Interim A Indian School to Northern	26,100,000
2007	• PS&E for Waddell to US 60	6,800,000
	• 3. Begin construction Interim A Northern to Waddell	21,400,000
2008	• PS&E Ultimate I-10 to Indian School	14,200,000
2009	• 4. Begin construction Ultimate Waddell to US 60	90,200,000
2010	• 5. Begin construction Ultimate I-10 to Indian School	186,400,000
	• PS&E Ultimate Northern to Waddell	7,400,000
2012	• 6. Begin construction Northern to Waddell	96,800,000
	• PS&E Ultimate Indian School to Northern	7,700,000
2014-2015	• 7. Construct Ultimate Indian School to Northern	100,600,000

*Cost inflated from 2001 base prices at 3% for construction and design and 5% for right-of-way.

APPENDIX A

HISTORY

History of SR 303L
I-10 to US 60

Year	Description
1985	The *West Area Transportation Analysis* for MAG recommended Cotton Lane/ Northwest Loop freeway corridor be preserved for construction after 2005.
1985	The MAG Regional Council added the Cotton Lane/Northwest Loop Freeway to the MAG Freeway/Expressway Plan for right-of-way protection only.
1985	ADOT added the Cotton Lane and Northwest Loop Highways as State Route 517 to the State Highway System.
1985	Voters approved Proposition 300. In the voter pamphlet, reference is made to the Cotton Lane/Northwest Loop Freeway and it is shown on a map.
1986	MAG set priorities for freeway construction. Cotton Lane and the Northwest Loop are included for construction (not just right-of-way protection) as the lowest priorities for completion.
1986	MAG named the Cotton Lane/Northwest Loop Freeway the Estrella Freeway.
1987	ADOT designated the Estrella Freeway as Loop 303.
1987	ADOT completed a draft reconnaissance report that identified alternative alignments within the Cotton Lane corridor.
1988	The State Transportation Board adopted the location for the Estrella corridor from I-10 to Grand Avenue, April 14, 1988.
1988	MAG approved a funding priority to construct Loop 303 as an interim two-lane access controlled facility between Thomas Road and Grand Avenue. In exchange, developers dedicated 300 feet of right-of-way for most of this section on condition that it be under construction as a freeway by 2005.
1990	ADOT prepared the *Abstract Report on Agreement to Dedicate Real Property for Estrella Roadway Improvements from I-10 to Grand Avenue*. This document established the basic agreement between ADOT and property owners for dedication of right-of-way.
1991	ADOT completed the *Estrella Freeway Final Environmental Assessment* September 1991.

Year	Description
1991	ADOT completed the *Preliminary Location Plan and Profile* November 1991, which established the alignment and right-of-way needs.
1992	A two-lane access controlled facility on Loop 303 is opened to traffic between Thomas Road and Grand Avenue.
1994	Proposition 400 is defeated — it would have provided additional funding to complete the freeway system.
1995	The Governor requested the removal of the Estrella Freeway from freeway funding. MAG removed the Estrella Freeway from the planned freeway system due to the absence of an identified funding source.
1995	ADOT gives notice that it will abandon Loop 303 as an element of the State Highway System.
1995	Maricopa County responded to ADOT requesting retention of route on the State Highway System, continued preservation of the corridor and offering to assume lead role as "caretaker" for the corridor, June 15, 1995.
1998	MCDOT completed the *Estrella Corridor Study MC 85 to Interstate 17 Design Concept Report* March 1998. This report primarily dealt with Loop 303 east of Grand Avenue but it also recommended construction between I-10 and US 60 of an at-grade highway designed to MCDOT Rural Principal Arterial standards with a 65 mph design speed. This recommendation was based upon MCDOT being solely responsible for funding the project.
1998	ADOT State Transportation Board determined it will keep Loop 303 on the State Highway System. Formal action taken May 15, 1999.
1999	MAG adds the Estrella Expressway (Loop 303) from MC 85 to Grand Avenue back on the MAG Freeway/Expressway Plan as a four-lane controlled access facility. The section from Grand Avenue to I-17 is added as a study corridor.
2000	ADOT signs an Intergovernmental Agreement with Maricopa County for the County to assume responsibilities for maintenance and construction of SR 303L, July 31, 2000.
2000	MCDOT has started construction of a two- to four-lane access controlled facility on Loop 303 between Clearview and Lake Pleasant Road with a grade separation over Grand Avenue and the Burlington Northern Santa Fe Railroad. A minimum of 300 feet of right-of-way is being obtained.

Year	Description
2000	Agreement reached with Del Webb to not include interchanges on SR 303L between Bell Road and Grand Avenue. Del Webb would design and construct grade separations over SR 303L for Clearview and Mountain View.
2001	MAG Regional Council selected corridor locations for SR 303L from Lake Pleasant Road to I-17 (along the Lone Mountain section line), January 24, 2001.
2001	MCDOT contracted with URS to prepare a Design Concept Report from Indian School Road to Clearview Boulevard and an Environmental Assessment from I-10 to US 60, April 26, 2001.

APPENDIX B

RESOURCE DOCUMENTS

SR 303L – Indian School Road to Clearview Boulevard
WO# 69016
URS Project No. E100001704.00

Data Collection Log

Log No.	Document
1	**Title:** Estrella Corridor Study, MC 85 to Interstate 17, Design Concept Report **Prepared for:** MCDOT, WO #80505, Contract #CY 1997-14 **Prepared by:** DeLeuw Cather & Company **Date:** March 1998
2	**Title:** Alignment Study, Loop 303, McDowell Road to Clearview Boulevard, Candidate Assessment Report **Prepared for:** MCDOT, Contract #CY-1999-19 **Prepared by:** Ritoch-Powel & Associates **Date:** July 1999
3	**Title:** Estrella Corridor Study, MC 85 to Interstate 17, Drainage Technical Memorandum **Prepared for:** MCDOT, WO #80505, Contract #CY 1997-14 **Prepared by:** DeLeuw Cather & Company **Date:** August 1998
4	**Title:** Estrella Roadway and Grade Separation, Phase 1, Technical Design Memorandum **Prepared for:** MCDOT, WO #69005 **Prepared by:** Cannon & Associates **Date:** August 4, 1999
5	**Title:** Plans, Estrella Roadway & Grade Separation Phase 1 **Prepared for:** MCDOT, Project No. 69005 **Prepared by:** ASL Consulting Engineers and Cannon & Associates **Date:** June 8, 2000
6	**Title:** Estrella Roadway Traffic Interchange Evaluation, Draft Report **Prepared for:** MCDOT, Contract #CY 1999-16 **Prepared by:** DMJM **Date:** November 18, 1999
7	**Title:** Estrella Roadway Traffic Interchange Evaluation, Final Report **Prepared for:** MCDOT, Contract #CY 1999-16 **Prepared by:** DMJM **Date:** January 14, 2000
8	**Title:** Estrella Roadway Traffic Interchange Evaluation, Final Report, Addendum No. 1 **Prepared for:** MCDOT, Contract #CY 1999-16 **Prepared by:** DMJM **Date:** July 27, 2000

Log No.	Document
9	**Title:** As-Built Plans, Estrella Freeway (303L), I-10 to Glendale Avenue, Interim Roadway **Prepared for:** ADOT, TRACS No. H0877 02C **Prepared by:** Cella Barr Associates **Date:** As-Built October 1992
10	**Title:** As-Built Plans, Estrella Freeway (303L), Glendale Avenue to Cactus Road, Interim Roadway **Prepared for:** ADOT, TRACS No. H0877 02C **Prepared by:** Cella Barr Associates **Date:** As-Built December 1992
11	**Title:** As-Built Plans, Estrella Freeway (303L), Cactus Road to Grand Avenue, Interim Roadway **Prepared for:** ADOT, TRACS No. H0877 02C **Prepared by:** Cella Barr Associates **Date:** As-Built September 1992
12	**Title:** Plans, Loop 303 – McDowell Road to Indian School Road, 90% Submittal **Prepared for:** MCDOT, Project No. 68965 **Prepared by:** Entranco **Date:** August 2000
13	**Title:** Final Environmental Assessment for Estrella Freeway (Loop 303), SR 85 to I-17 **Prepared for:** ADOT, Project RAM-600-9-301 **Prepared by:** Cella Barr Associates **Date:** September 11, 1991
14	**Title:** Study Orders 5313, 5314, 5318 & 5320, Traffic Volume Counts @ SR 303L Intersection with Indian School Road, Northern Avenue, and Olive Avenue **Prepared for:** MCDOT **Prepared by:** MCDOT **Date:** September 2000
15	**Title:** Draft Reconnaissance Report, Cotton Lane – Northwest Loop (Estrella Freeway – SR 517), Route Location Study **Prepared for:** ADOT, Project RAM-600-9-301 **Prepared by:** Cella Barr Associates **Date:** February 1987
16	**Title:** Preliminary Location Plan & Profile, Estrella Freeway, SR 303L **Prepared for:** ADOT, Project AZM-600-9-301 **Prepared by:** Cella Barr Associates **Date**: November 1991

Log No.	Document
17	**Title:** Draft Data Collection Report, Loop 303 Corridor/White Tanks Area Drainage Master Plan Update **Prepared for:** FCDMC, Contract FCD 99-40 **Prepared by:** URS **Date:** February 2000
18	**Title:** Draft Level 1 Alternative Analysis Report, Loop 303 Corridor/White Tanks Area Drainage Master Plan Update **Prepared for:** FCDMC, Contract FCD 99-40 **Prepared by:** URS **Date:** May 2000
19	**Title:** Draft Level II Phase 1 Technical Memorandum for the Bullard Wash – Thomas Road to Lower Buckeye, Loop 303 Corridor/White Tanks Area Drainage Master Plan Update **Prepared for:** FCDMC, Contract FCD 99-40 **Prepared by:** URS **Date:** September 2000
20	**Title:** Draft White Tank Grand Avenue Area Plan **Prepared for:** Maricopa County Planning and Development Department **Prepared by:** Maricopa County Planning and Development Department **Date:** 1998
21	**Title:** Right-of-Way Plans, Broadway Road to Jct US 60, Electronic Files from ADOT **Prepared for:** ADOT **Prepared by:** Cella Barr Associates **Date:** September 9, 1989
22	**Title:** Traffic Data from MCDOT including: 1. Turning movement counts at Indian School Road , Northern Avenue and Olive Avenue 2. ADT and classification counts between Glendale and Northern and between Thomas and Indian School 3. Speed studies 4. Intersection and non-intersection accident data 5. Traffic sign logs 6. Traffic control devices
23	**Title:** Accident Data from ADOT (1996-2001)
24	**Title:** Plans for Intersection Improvements for Indian School Road **Prepared for:** MCDOT **Prepared by:** Baker **Date:** April 30, 2001
25	**Title:** Aerial Photo Contact Prints for the SR 303L Project Mapping **Prepared for:** URS and MCDOT **Prepared by:** Kenney Aerial Mapping **Date:** March 15, 2001

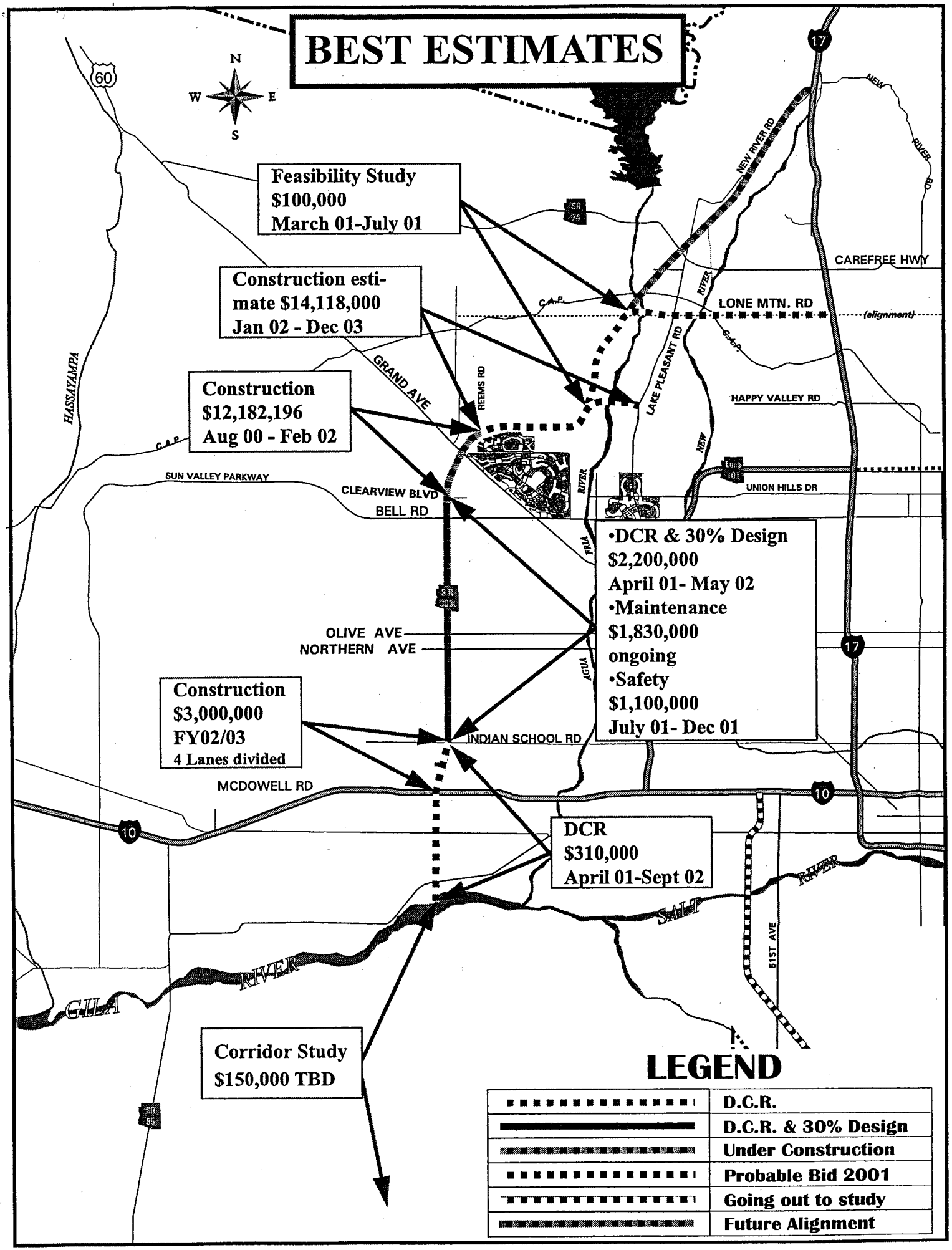
Log No.	Document
26	**Title:** ADOT Video Log of SR 303L **Prepared for:** ADOT **Prepared by:** ADOT **Date:**
27	**Title:** Plans, Loop 303 – McDowell Road to Indian School Road, Final Submittal **Prepared for:** MCDOT, Project No. 68965 **Prepared by:** Entranco **Date:** February 2000
	Title: APS As-Builts **Prepared for:** URS **Prepared by:** APS **Date:**
	Title: Cox Communications As-Builts **Prepared for:** URS **Prepared by:** Cox Communications **Date:**
	Title: Southwest Gas As-Builts **Prepared for:** URS **Prepared by:** Southwest Gas **Date:**
	Title: Qwest Communications As-Builts **Prepared for:** URS **Prepared by:** Qwest Communications **Date:**

APPENDIX C

PUBLIC MEETING EXHIBITS

DISPLAY EXHIBITS FOR FIRST PUBLIC MEETING

BEST ESTIMATES



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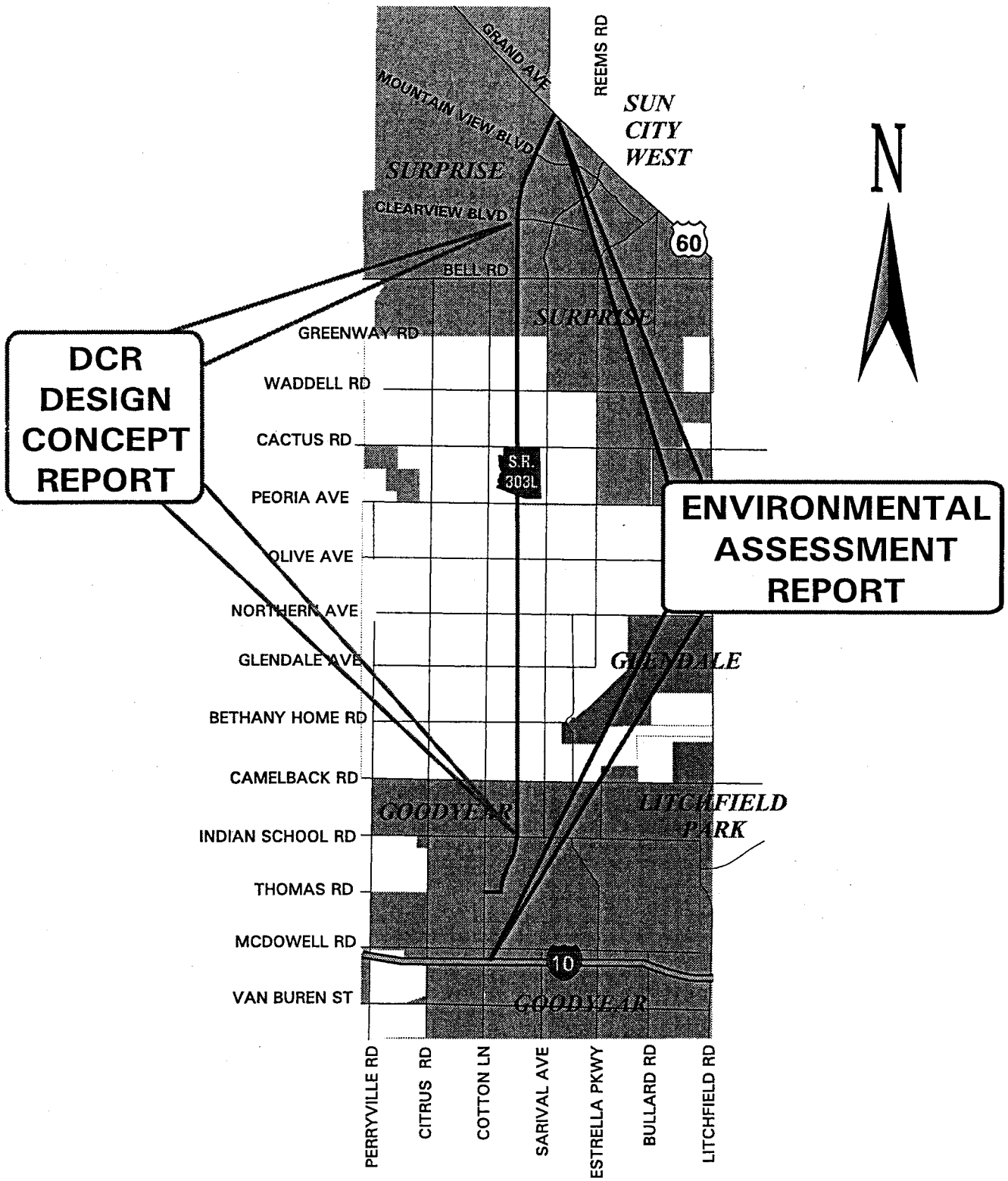
SR LOOP 303



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STATE ROUTE LOOP 303

Proposed Public Meeting Schedule

Agency Scoping **May 24, 2001**

This meeting will "kick-off" the project and the formal Environmental Assessment process. Issues raised at this meeting will be considered and addressed throughout the environmental studies.

First Public Meeting
(Public Scoping) **June 19, 2001**

The general public and all identified stakeholders will be invited to attend a "public scoping" meeting in review project purpose and goals and aid in the issue identification process.

Second Public Meeting
(Public Information Meeting) **November 2001**

The project team will present "interim" and "ultimate" roadway improvement alternatives and elicit comments and concerns related to these alternatives. Preliminary design concept and environmental study findings will be presented and public comment elicited..

Third Public Meeting
(Public Hearing on EA) **February 2002**

A hearing will be held on the draft Environmental Assessment and Design Concept Report. All environmental considerations will be described, and potential environmental impacts and possible ways to reduce these impacts will be identified. The final EA will respond to issues raised at this public hearing.

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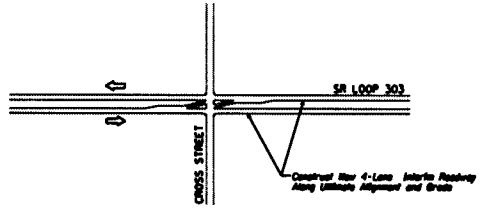
SR Loop 303

Cross Streets Over SR Loop 303
Interim Roadway Initial Concept Alternatives



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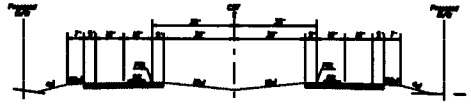
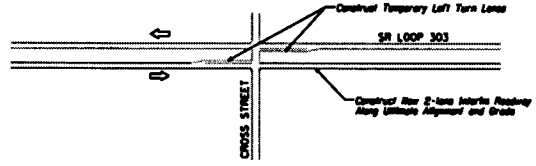


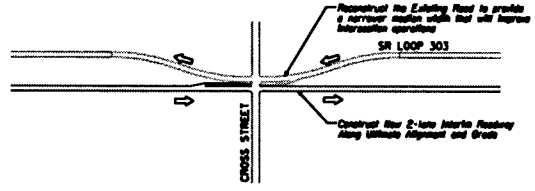
TYPICAL SECTION

CONCEPT #1
Construct New 4-Lane Interim Roadway
On Ultimate Alignment and Grade

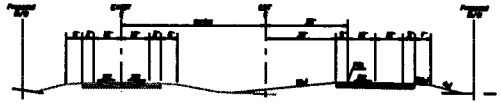
LEGEND
- Existing Roadway
- Construct Temporary Roadway
- Construct Interim Roadway
- Construct Ultimate Freeway
- Construct Ultimate Freeway Overpass



PLAN
Low Volume, Unsignalized Intersection

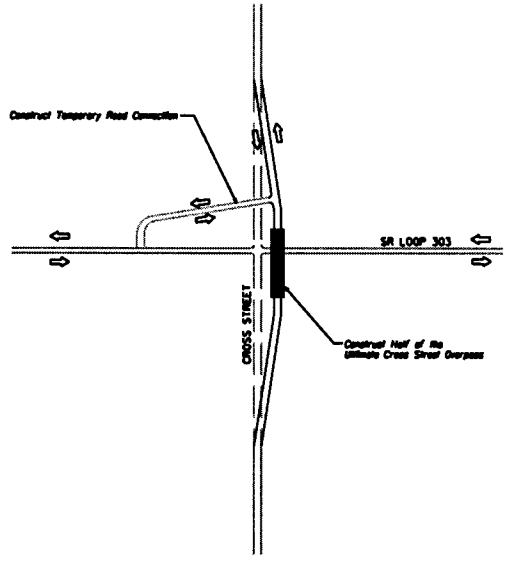


PLAN
High Volume, Signalized Intersection



TYPICAL SECTION

CONCEPT #2
Construct New 2-Lane Interim Roadway
Along Ultimate Alignment and Grade



PLAN

CONCEPT #3
Construct Half of the Ultimate Crossroad and Overpass
Structure and Provide a Temporary Connection to SR Loop 303.

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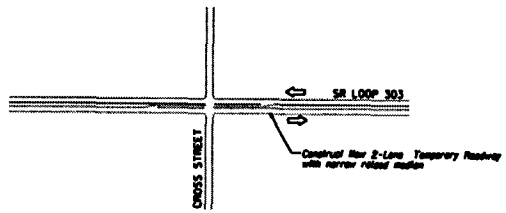
SR Loop 303

SR Loop 303 Over Cross Streets
Interim Roadway Initial Concept Alternatives



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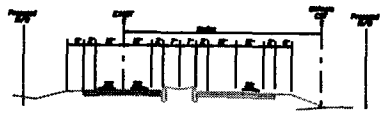
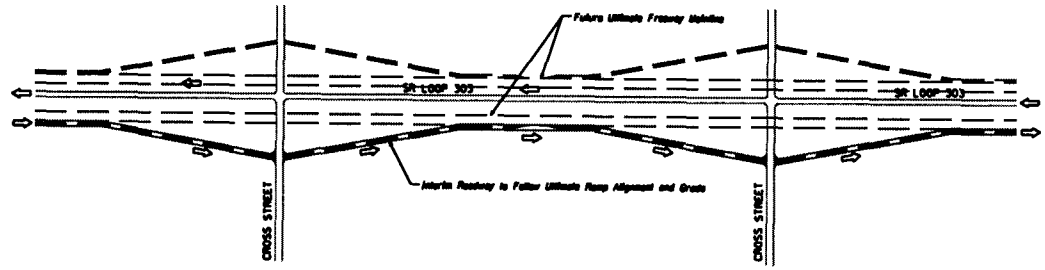


TYPICAL SECTION

CONCEPT #4
Construct New 2-Lane Temporary Roadway
Adjacent to the Exisitng Roadway with Narrow Raised Median

LEGEND
- Existing Roadway
- Construct Temporary Roadway
- Construct Interim Roadway
- Construct Ultimate Freeway
- Construct Ultimate Freeway Overpass



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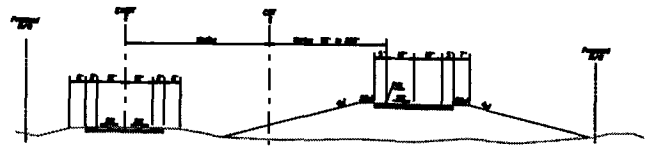

TYPICAL SECTION

CONCEPT #5
Construct New 2-Lane Interim Roadway
Along Ultimate Ramp Alignment and Grade

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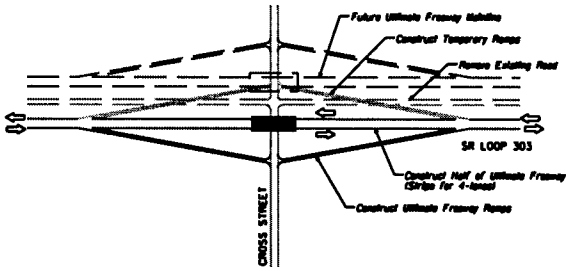
SR Loop 303

SR Loop 303 Over Cross Streets
Interim Roadway Initial Concept Alternatives



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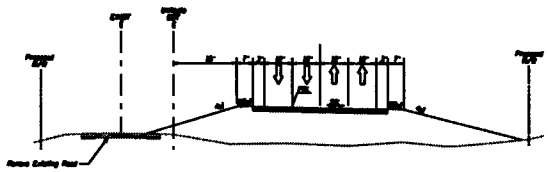
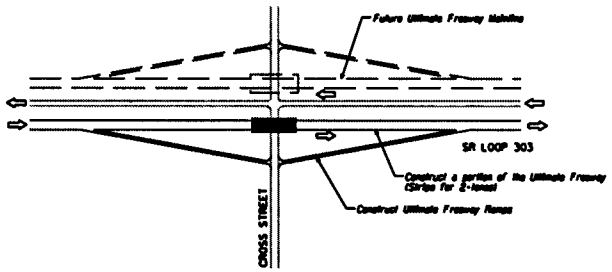


TYPICAL SECTION

CONCEPT #6
Construct Half of the Ultimate Freeway and Stripe for 4-lanes



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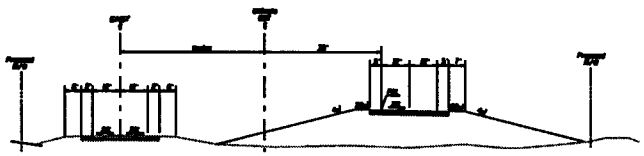

TYPICAL SECTION

CONCEPT #7
Construct New 2-Lane Portion of the Ultimate Freeway and Use the Existing Roadway for One-way

LEGEND
- Existing Roadway
- Construct Temporary Roadway
- Construct Interim Roadway
- Construct Ultimate Freeway
- Construct Ultimate Freeway Overpass

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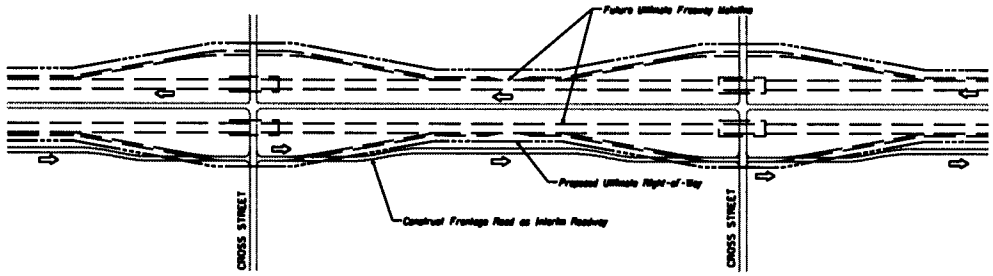
The Right System The Right Time The Right Cost

SR Loop 303

SR Loop 303 Over Cross Streets
Interim Roadway Initial Concept Alternatives



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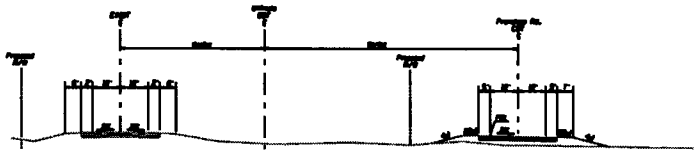

TYPICAL SECTION

LEGEND
- Existing Roadway
- Construct Temporary Roadway
- Construct Interim Roadway
- Construct Ultimate Freeway
- Construct Ultimate Freeway Overpass

CONCEPT #8
Construct New 2-Lane Frontage Road
and Use the Existing Roadway for One-way

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Project Purpose and Goals

Purpose:

- Provide a portion of the urban freeway system to meet the growing needs of the far west valley
- Link I-10 to US 60
- Provide an interim roadway in the near future that increases safety, meets the traffic needs of the corridor, and allows upgrading to the ultimate freeway

Goals:

- Develop a consensus for action
- Preserve right-of-way
- Promote compatible development
- Obtain environmental clearance
- Construct interim roadway

Project Issues

- Identify funding partners and sources
- Phase construction plan to meet needs and funding constraints
- Select interim roadway concept that fits ultimate freeway
- Ensure compatibility with flood control plans and schedule
- Forecast development and traffic
- Mix of high-speed through traffic with local traffic
- Maintain use of existing wells and irrigation systems
- Consider ground subsidence
- Integrate linkages to I-10 and US 60
- Right-of-Way acquisition
- Coordination with agencies
- Relocation of Utilities

Environmental Assessment

Previously Completed Environmental Assessments

- 1991 Estrella Freeway SR303L (SR85 to I-17), ADOT
- 1992 Addenda to Estrella Freeway EA (Grand Ave. to Dysart Ave.), ADOT
- 1997 Estrella Roadway (Loop 303) EA Update (Grand Ave. to Lake Pleasant Road), MCDOT
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MCDOT RightRoads PROGRAM

The Right System The Right Time The Right Cost

SR Loop 303

DCR: Indian School Road to Clearview Boulevard
EA: I-10 to US 60

Issues Addressed in an Environmental Assessment

- Air Quality
- Noise
- Land Use
- Socioeconomic Impacts
- Hazardous Waste
- Cultural Resources
- Community Involvement
- Biological Resources
- Water Quality
- Floodplain Impacts
- Prime and Unique Farmlands
- Visual Resources

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MCDOT RightRoads PROGRAM

The Right System The Right Time The Right Cost

SR Loop 303

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Milestone Schedule

April 25 Project start → May 24 Agency Scoping Meeting Field Tour → June 19 Public Scoping Meeting → Mid-August Study & Report Memo → Select Concepts → Nov. 2001 Public Meeting → January 2002 Design Concept Report Draft Environmental Assessment → Recommend Preferred Alternative → February 2002 Public Hearing → May 2002 30% Design Plans Environmental Assessment

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MCDOT RightRoads PROGRAM

The Right System The Right Time The Right Cost

SR Loop 303

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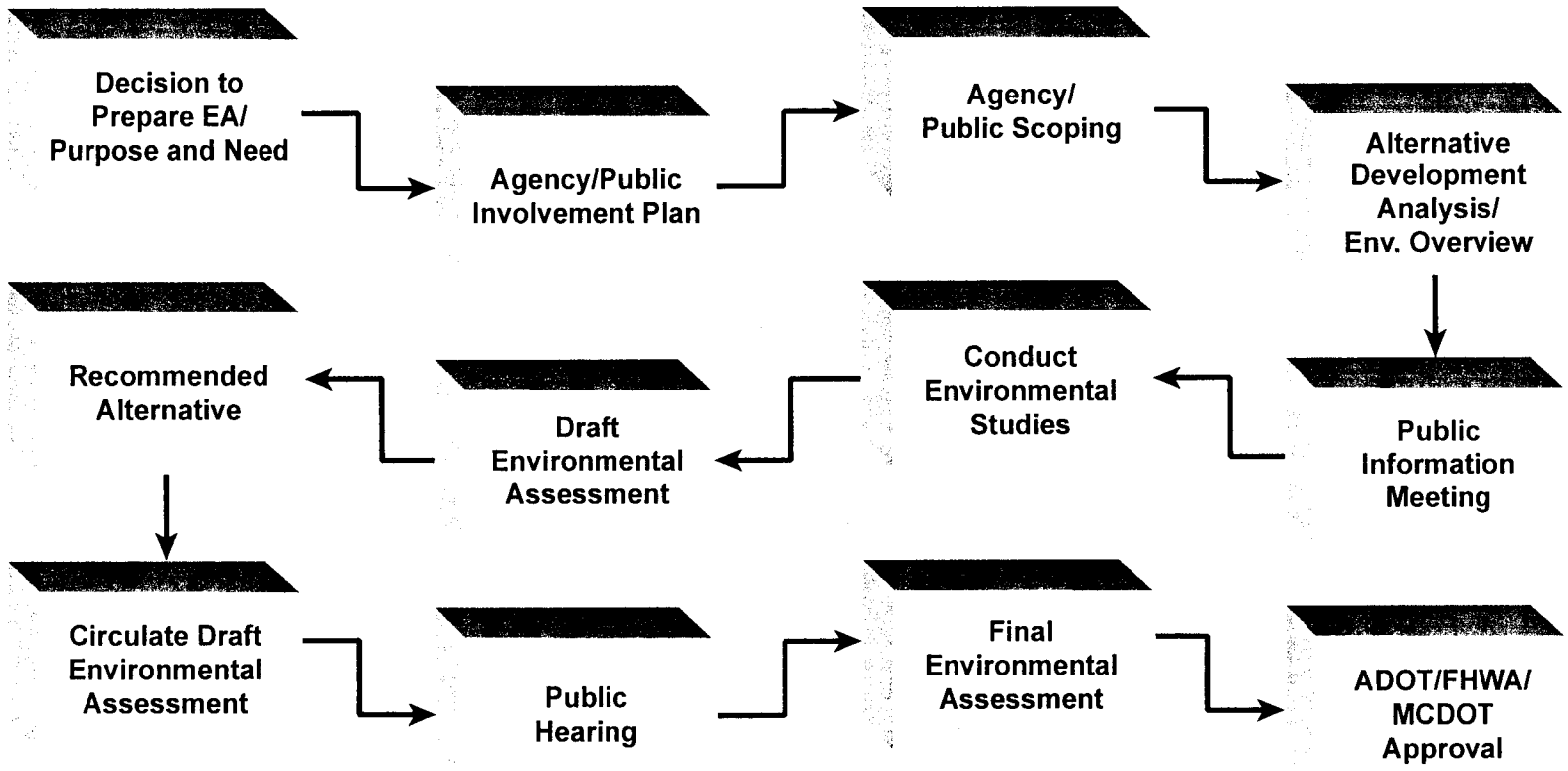
EA Process



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ADOT - State Lead Agency and Agent for FHWA
MCDOT - Project Sponsor

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POWERPOINT PRESENTATION AT FIRST PUBLIC MEETING

MCDOT RightRoads PROGRAM

The Right System The Right Time The Right Cost

SR Loop 303

Design Concept Report: Indian School Road to Clearview Boulevard

Environmental Assessment: I-10 to US 60

Public Scoping Meeting
June 19, 2001

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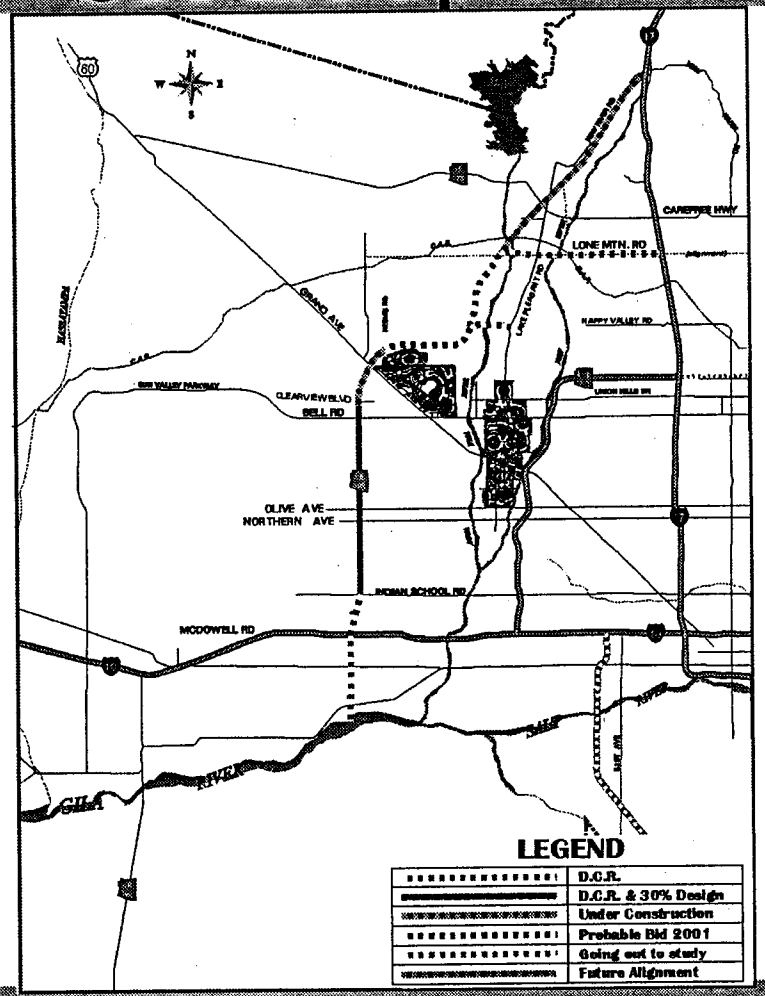
The Right System The Right Time The Right Cost

SR Loop 303 Map



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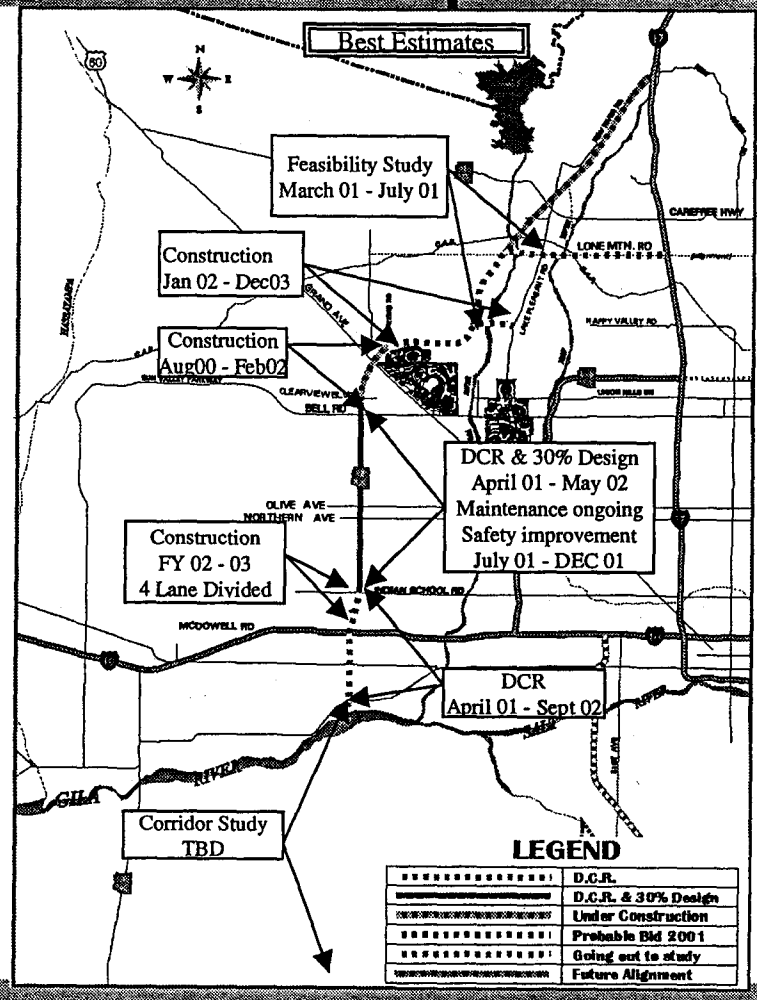

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The Right System The Right Time The Right Cost

Project Products

- Study and Report Memorandum - August
- Design Concept Report - January, 2002
- Environmental Assessment - May, 2002
- 30% Design Plans - May, 2002

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Type of Roadway

- Interim Roadway
- Ultimate Freeway

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Basis for Freeway

- 8-9 miles from SR Loop 101
- May serve 200,000 people
- Links I-10 to US 60
- Arterials cross every mile
- Right-of-way preserved

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The Right System The Right Time The Right Cost

Interim Roadway Initial Concept Alternatives

- Ultimate Freeway over cross streets? *or*
- Cross Streets over ultimate freeway?
- Ultimate freeway elevated, at-grade, or depressed?
- Use existing roadway for one-direction of travel?
- Build new roadway
  - As ultimate roadway?
  - Along future ramps and auxiliary lane?
  - As frontage road?
  - As temporary roadway?
- Priority on overpasses or on roadway?

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The Right System The Right Time The Right Cost

Environmental Assessment (EA)

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The Right System The Right Time The Right Cost

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DISPLAY EXHIBITS FOR SECOND PUBLIC MEETING

MCDOT RightRoads PROGRAM

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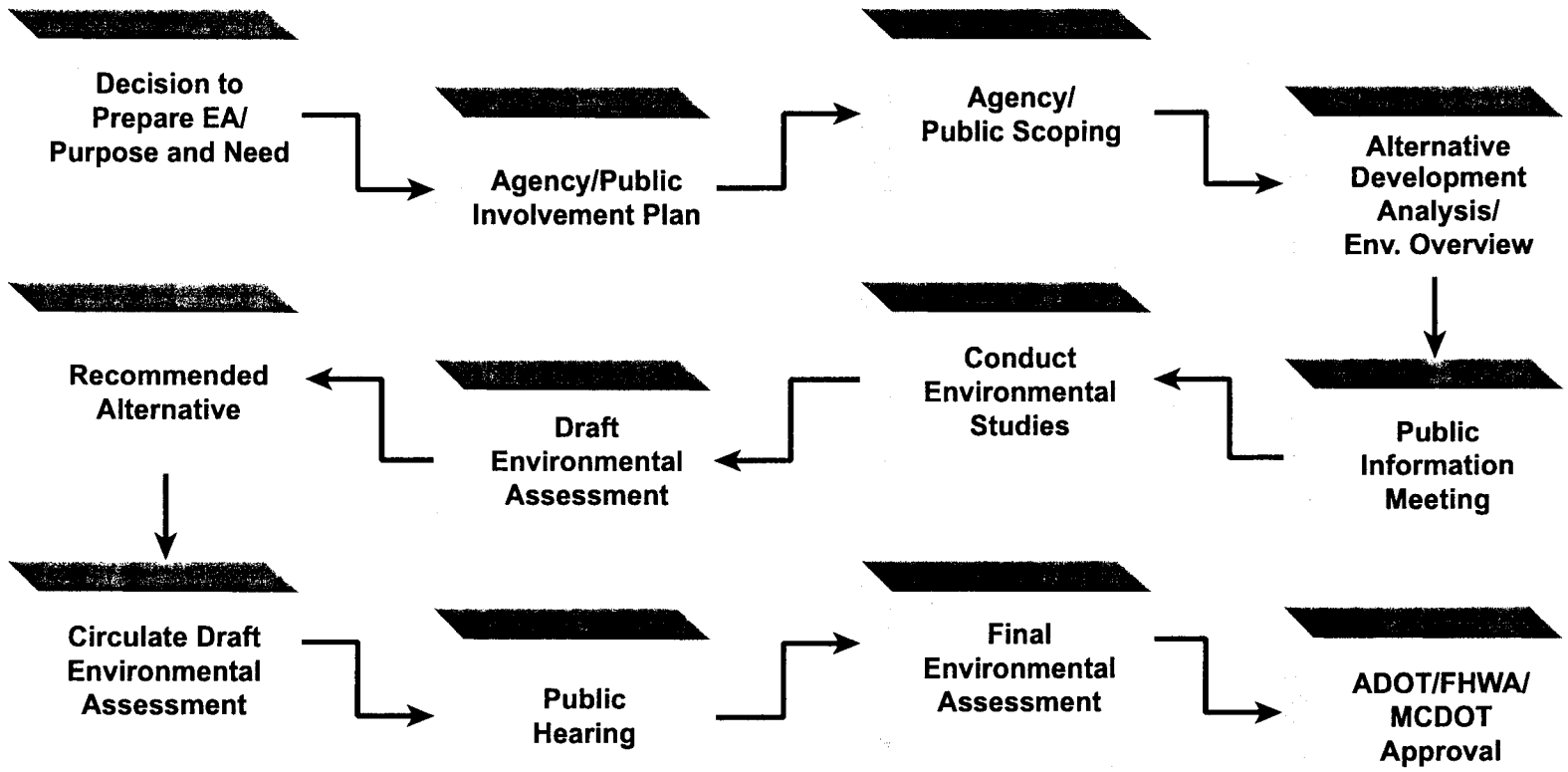

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Project Purpose and Need

Purpose:

Provide a portion of the regional highway system to meet the growing needs of the far west valley

Link I-10 to US 60

Provide an interim roadway in the near future that increases safety, meets the traffic needs of the corridor, and allows upgrading to the ultimate freeway

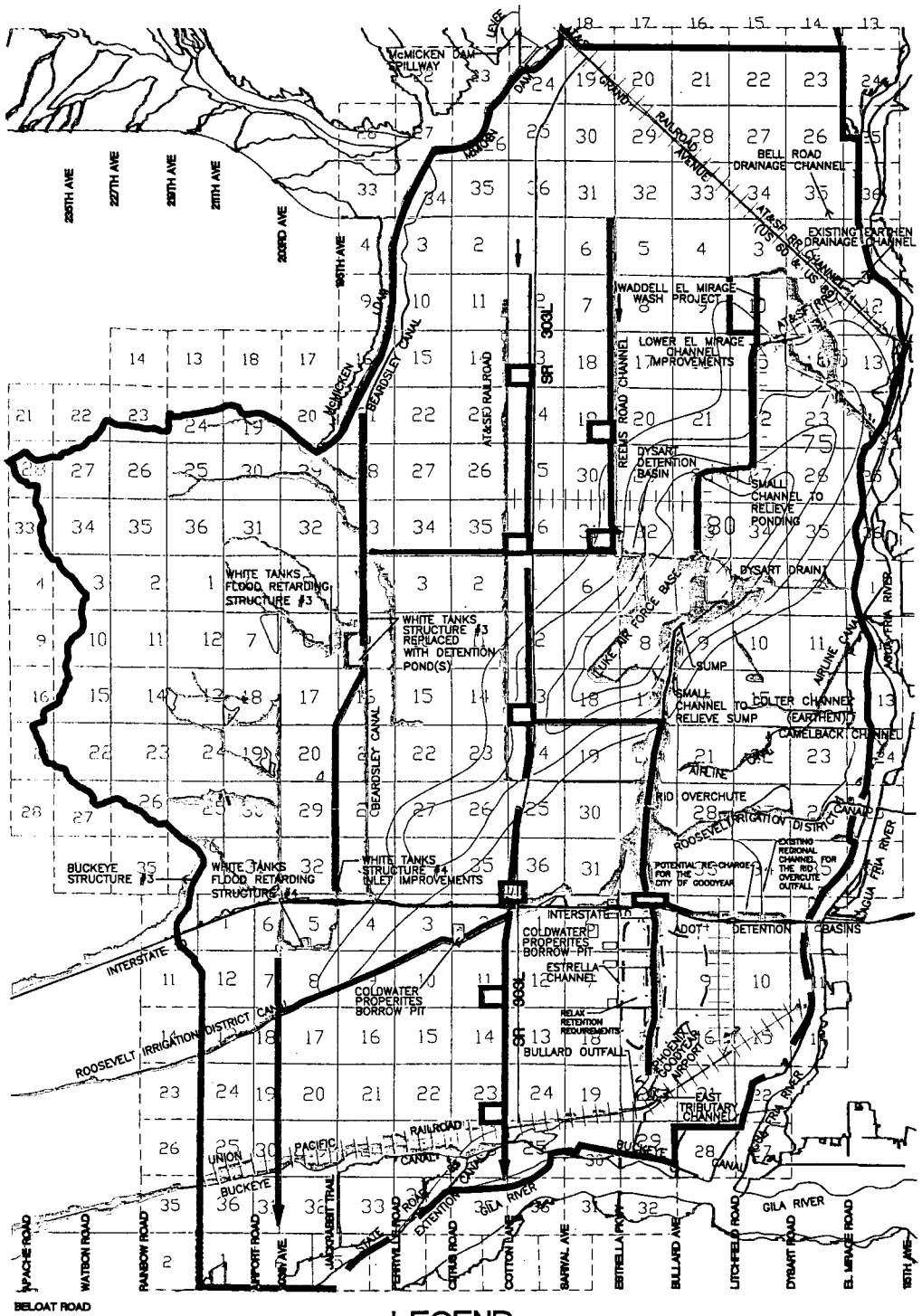
Need:

Corridor is 9 miles west of SR Loop 101 and 14 miles east of Sun Valley Parkway

Connects US 60 to I-10 to serve traffic entering and leaving the areas via US 60/US 93

The corridor is rapidly developing and is expected to be home to over 150,000 residents in the next 20 years and ultimately as many as 300,000 residents

Part of the MAG Long Range Transportation Plan, Regional Highway/Expressway system to provide a continuous route from MC 85 to I-17



LEGEND:

- PROPOSED LARGE REGIONAL OUTFALL CHANNEL
- PROPOSED MEDIUM TO LARGE LOCAL COLLECTOR CHANNEL
- PROPOSED SMALL COLLECTOR CHANNEL
- DIRECTION OF FLOW
- PROPOSED LARGE, MEDIUM OR SMALL BASIN/PARK
- PROJECT AREA BOUNDARY
- PROPOSED LOOP 303 PARKWAY ALIGNMENT
- EXISTING RAIL ROAD
- EXISTING STRUCTURE OR FACILITY
- FLOODPLAIN IDENTIFIED BY THE ORIGINAL WHITE TANKS ADMP, 1992

N

MARICOPA COUNTY
N.T.S.

PRELIMINARY/DRAFT PREFERRED ALTERNATIVE

September 26 2001

Loop 303 Corridor/White Tanks ADMP Update

Flood Control District of Maricopa County

FIGURE 4.2

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The Right System The Right Time The Right Cost

SR Loop 303

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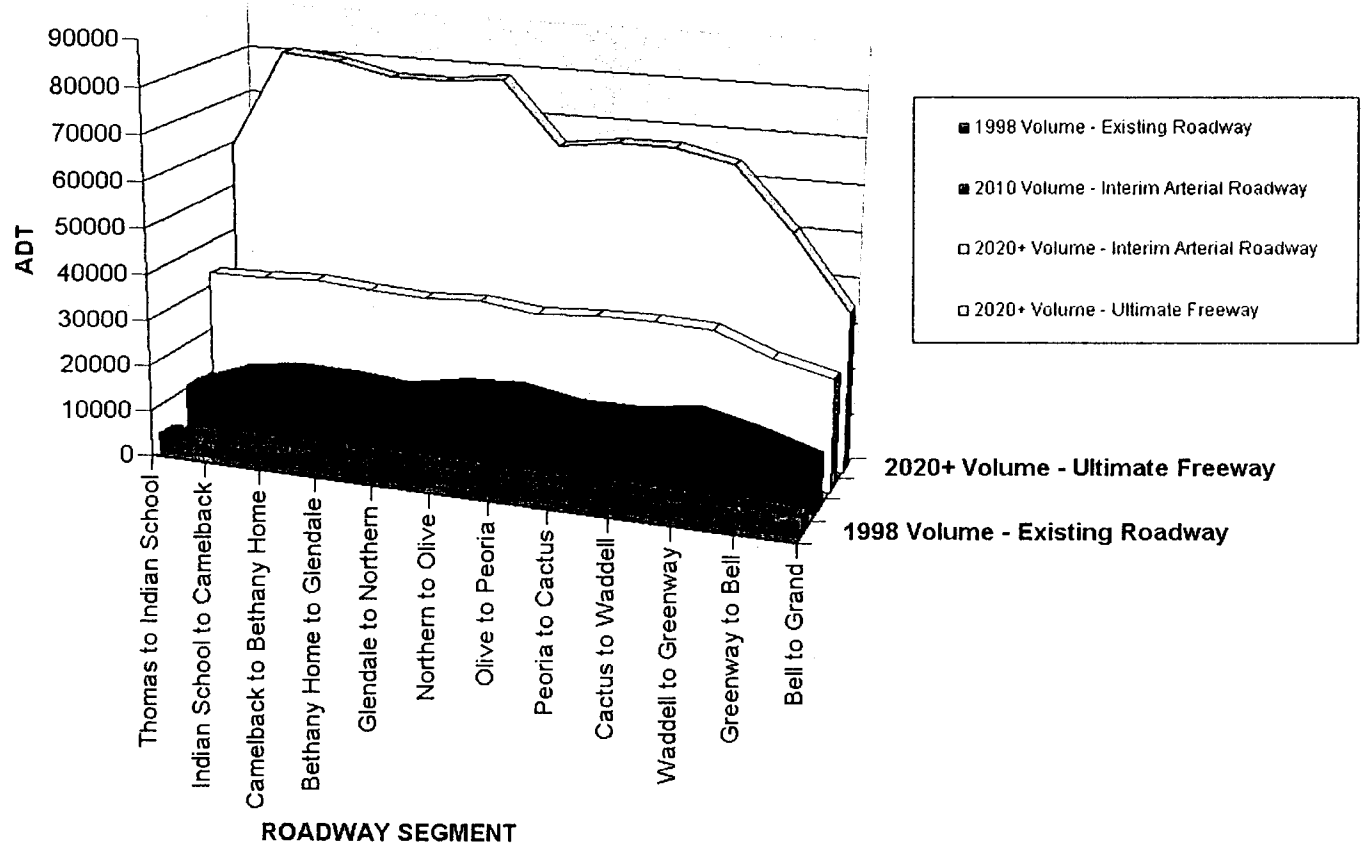
AVERAGE DAILY TRAFFIC VOLUMES



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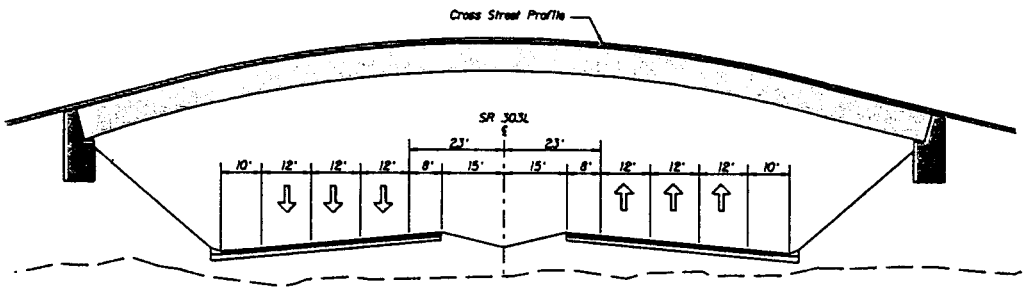
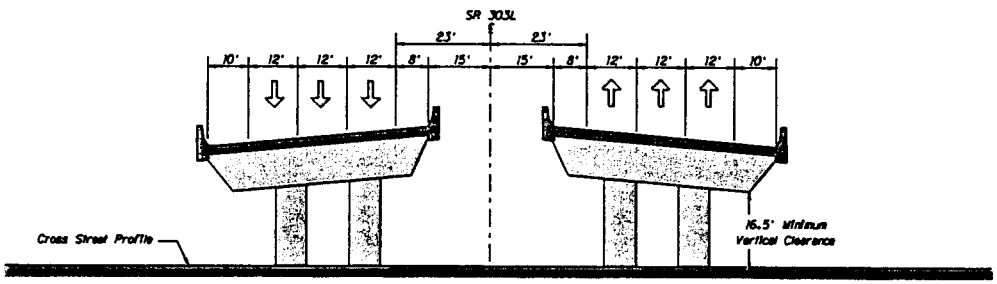
Ultimate Typical Sections At Cross Streets

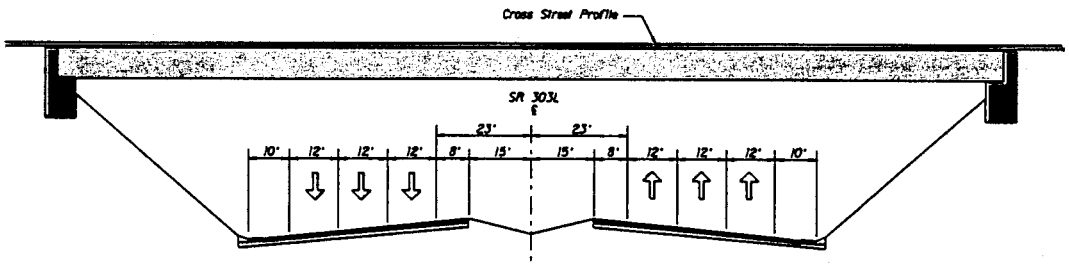
SR 303L At Grade — Cross Street Over



SR 303L Over — Cross Street At Grade



SR 303L Depressed — Cross Street At Grade



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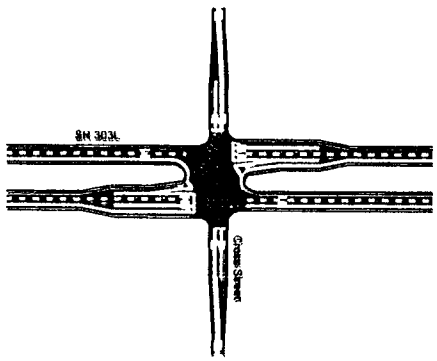
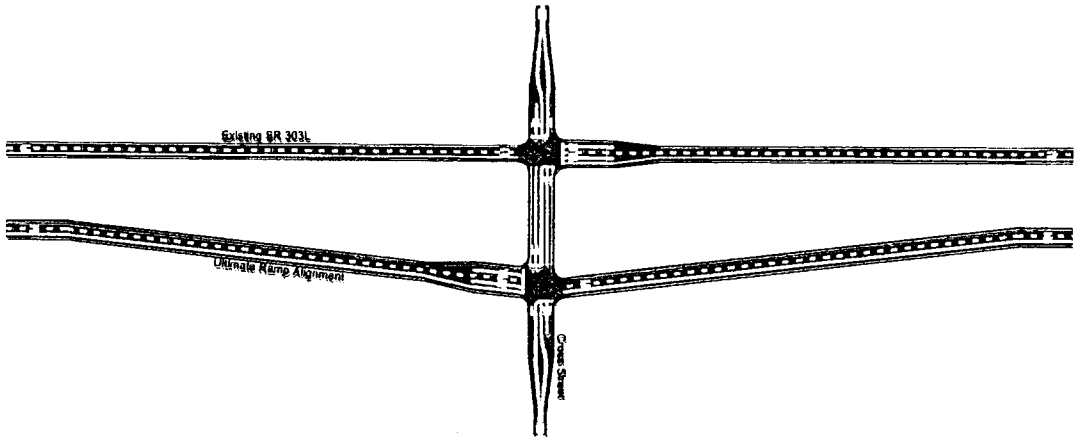
Typical At-Grade Intersection For Interim Phase 1



For Cross Streets:
- Indian School Road
- Camelback Road
- Bethany Home Road
- Glendale Avenue
- Peoria Avenure
- Cactus Road
- Waddell Road



For Cross Streets:
- Northern Avenue
- Olive Avenue

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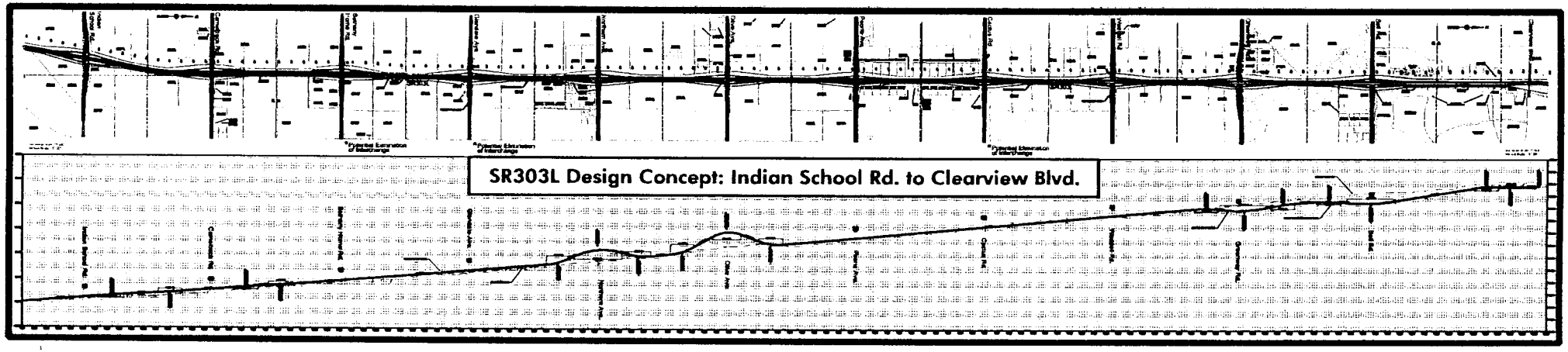
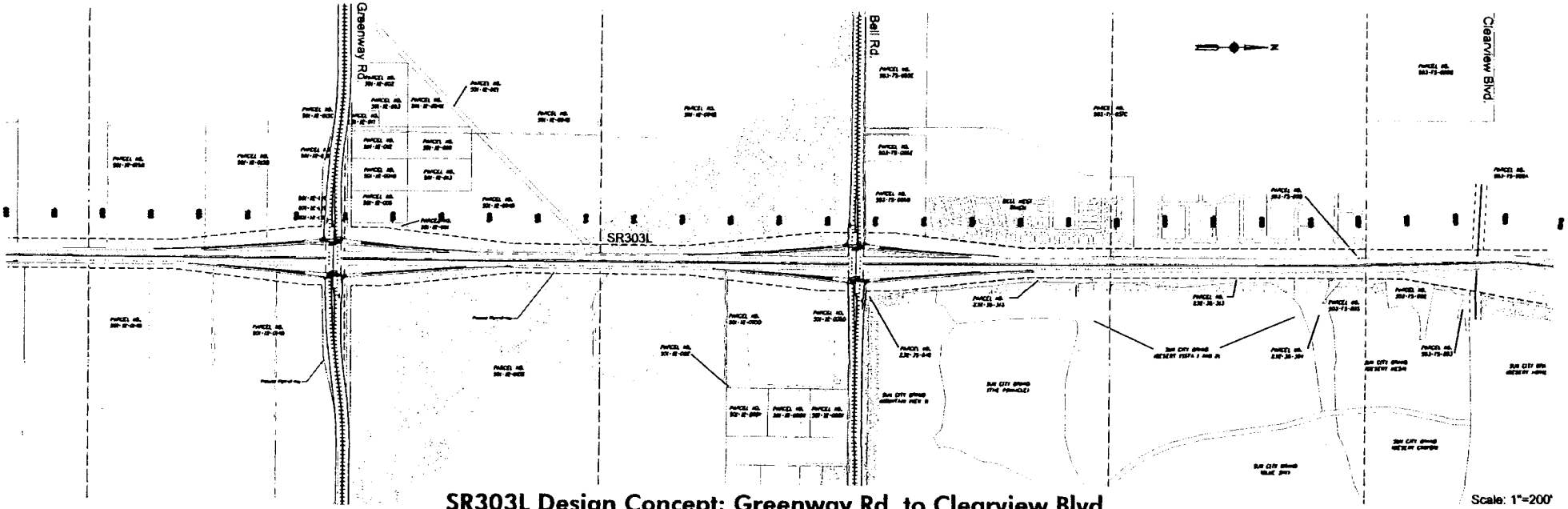
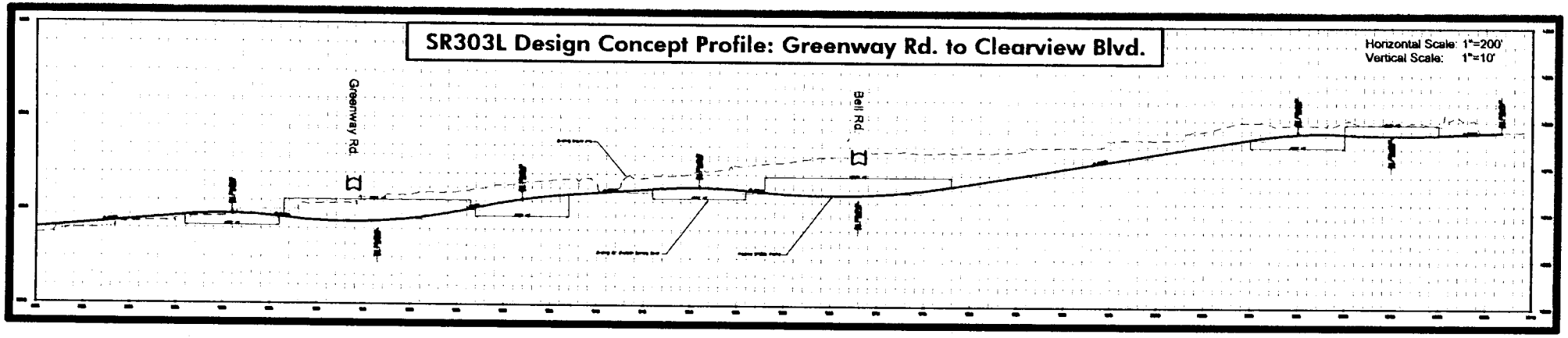

SR303L Design Concept: Indian School Rd. to Clearview Blvd.

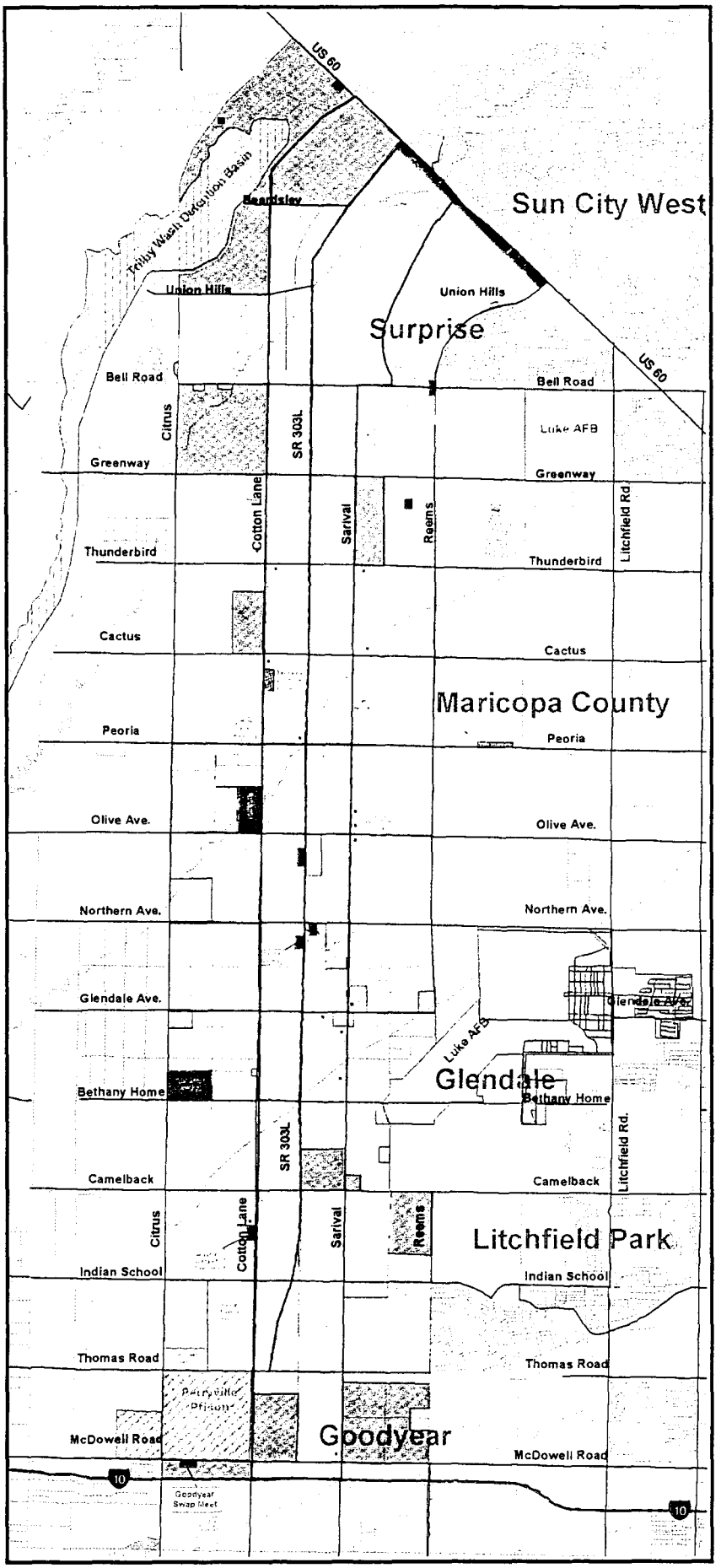


SR303L Design Concept: Greenway Rd. to Clearview Blvd.

Scale: 1"=200'


SR303L Design Concept Profile: Greenway Rd. to Clearview Blvd.
Horizontal Scale: 1"=200'
Vertical Scale: 1"=10'
Greenway Rd.
Bell Rd.

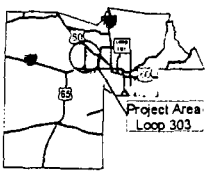
Existing Land Use



Legend

- Private Residents
- Environmental Assessment Analysis Area
- Existing Loop 303 Alignment
- Water Basins and Resivours
- 100 ft. Contours

Land Use Catagories
- Agriculture
- Commercial
- Light Industrial
- High Density Res
- Low Density Res
- Natural Desert
- Public
- Vacant



Maricopa County
Arizona

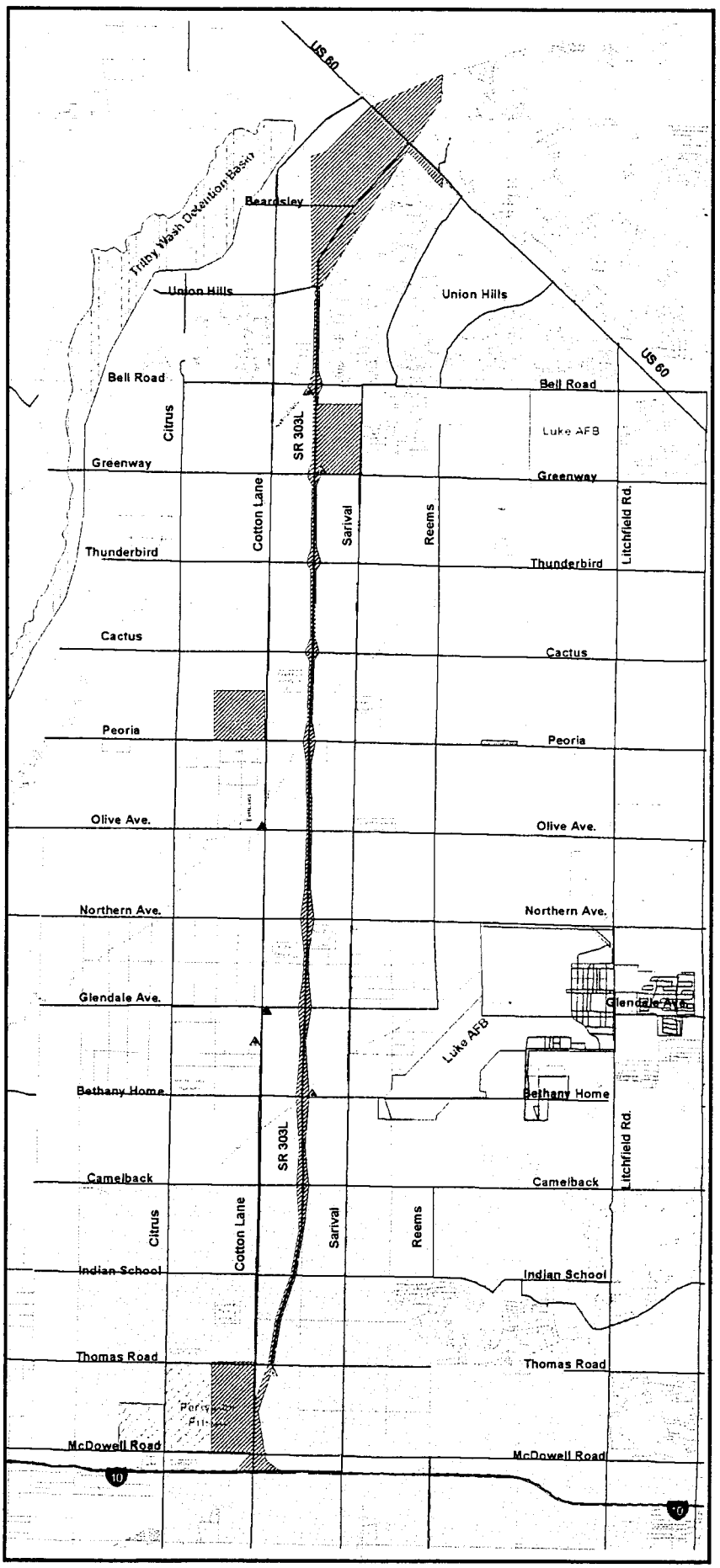
0.5 0 0.5 1 1.5 2 Miles

N

Map features based on US Census 2000 data
UTM Zone 12 NAD 1927 North American datum

Working Draft

Environmental Issues



Legend

Hazardous Material Sites
- Low Risk
- Moderate Risk
- High Risk

Areas Surveyed for Cultural Resources

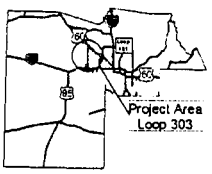
Environmental Assessment Analysis Area

Existing Loop 303 Alignment

Water Basins and Resivours

100 ft. Contours

Area Communities
- Avondale
- El Mirage
- Glendale
- Goodyear
- Litchfield Park
- Sun City West
- Surprise



Maricopa County
Arizona

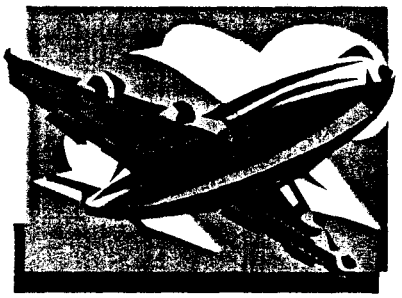
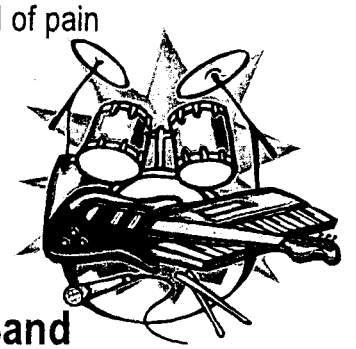
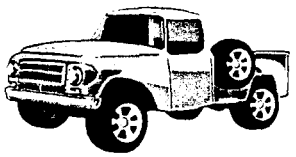
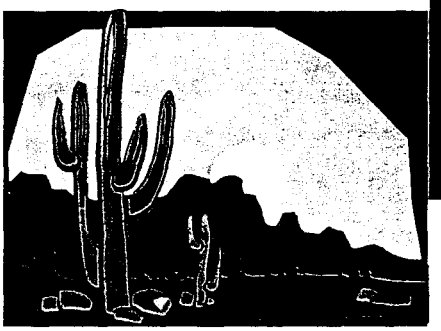
0.5 0 0.5 1 1.5 2 Miles

N

Map features based on US Census 2000 data
UTM Zone 12 - 1927 North American datum

Working Draft

Common Indoor and Outdoor Noise Levels

Common Outdoor Noises	Sound Level (dBA)	Common Indoor Noises
	140	Threshold of pain 
	130	
	120	
	110	**Rock Band** at 15 feet
Jet Flyover at 1000 feet		
Gas Lawn Mower at 3 feet	100	
Diesel Truck at 50 feet	90	**Food Blender** at 3 feet
Urban Daytime	80	Garbage Disposal at 3 feet
Gas Lawn Mower at 100 feet	70	Vacuum Cleaner at 10 feet
 **Heavy Traffic** at 300 feet	60	Normal speech at 3 feet
Typical Urban Daytime	50	Dishwasher next room
Urban Nighttime		
		Library
	30	Bedroom at night
Rural Nighttime 		
	0	Threshold of hearing

Note: Sound is perceived differently by every individual

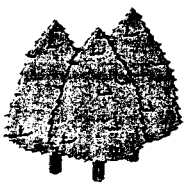
Interesting Facts about Noise

- Noise is unwanted sound. Noise is perceived differently by every individual. A noise that is irritating to one person may be tolerable to another.
- Noise is measured in decibels on a logarithmic scale.
- An increase of 10 decibels will cause the noise to be perceived as sounding twice as loud to the average listener.
- The smallest change in noise level that can be detected by the human ear is about 3 decibels.

- Doubling the traffic volume on a highway will increase the noise level by 3 decibels.
- The noise level will decrease by about 3 to 4.5 decibels for each doubling of the distance from the source. The amount of decrease depends on the absorptive characteristics of the ground.
- The Arizona Department of Transportation uses a noise level of 64 decibels as the criteria for considering noise barriers, which is lower than the 67 decibels specified in federal regulations.
- Noise barriers can be noise walls, earth berms, or a combination of walls and berms.
- Even with noise barriers, residents within 500 to 1000 feet of the highway will likely be able to hear the traffic. Barriers are designed to reduce noise to a tolerable level. They cannot completely eliminate noise.

- Noise barriers along a highway are only effective for homes within about 300 feet of the highway. Beyond that, noise barriers are less effective, but the natural decrease in noise with distance usually reduces noise levels to acceptable levels.

- Noise walls range in height from 8 to 20 feet, depending on what height is needed to reduce the noise to an acceptable level. Noise walls cost about $150 to $400 per linear foot, depending on the height.
- An earth berm (a large mound of packed dirt usually with landscaping) of a given height will provide slightly more noise reduction than a vertical barrier wall of the same height.



- In some cases, existing dense vegetation can reduce traffic noise levels. Vegetation that is a minimum of 100 feet in depth, at least 15 feet high and dense enough that you cannot see the highway through it, can reduce noise levels by approximately 5 decibels. Typical roadside landscaping does NOT affect noise levels.
- As a general rule-of-thumb, each foot of height added to a wall above the height that breaks the line of sight between the source (traffic) and receiver (residence) reduces the noise level by ½ decibel.

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Factors That Influence Traffic Noise

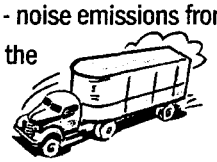
(Rules of Thumb)

- **Proximity to Roadway** - each **doubling of distance** from the roadway decreases noise about **4.5 dBA**

- **Vehicle Types** - **heavy trucks** generate about **1/3 more noise** than cars

- **Traffic Volumes** - a **doubling of traffic** increases noise about **3 dBA**

- **Acceleration/Deceleration** - noise emissions from a heavy truck **accelerating from stop** is about the **same** as a truck **cruising at 75 mph**



- **Vehicle Speeds** - a **20 mph reduction** in speed decreases noise about **3 dBA**

- **Line of Sight** - walls must be high enough and long enough to **break the line of sight**

- **Traffic Noise Sources** - **tire/pavement** almost **2/3** of traffic noise; exhaust, engine remaining 1/3

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Traffic Noise Analysis Methodology

- **Assess Existing and Planned Land Uses - residential, commercial, industrial, etc.**
- **Determine existing conditions and noise levels**
  - field measurements of noise using sound level meters, collect traffic data (volumes, vehicle types, speeds, etc.), roadway layout, topography of area, existing walls, locations of houses relative to roadway
- **Predict Future Noise Levels Using Federal Highway Administration's (FHWA) Traffic Noise Prediction Computer Model (Stamina)**
- **Determine Traffic Noise Impacts Using FHWA's Noise Abatement Criteria**
- **Examination and Evaluation of Mitigation Techniques**
  - Effective/Reasonable/Desirable

Residential Noise Policies

- **Federal Highway Administration (FHWA)/ Maricopa County Department of Transportation (MCDOT)**
  66 dBA L_{eq} impact
- **Arizona Department of Transportation (ADOT)**
  64 dBA L_{eq} impact
- **US Department of Housing and Urban Development (HUD)**
  66 dBA L_{dn} impact
- **FHWA & ADOT**
  Leq = hourly noise equivalent value (during loudest hour)
- **HUD and Federal Aviation Administration (FAA)**
  Ldn = day/night average sound level (24 hours)

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Prime and Unique Farmlands
Visual Resources

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Department of Transportation

Project Issues

Identify funding partners and sources
Phase construction plan to meet needs and funding constraints
Select interim roadway concept that fits ultimate freeway
Ensure compatibility with flood control plans and schedule
Forecast development and traffic
Mix of high-speed through traffic with local traffic
Maintain use of existing wells and irrigation systems
Consider ground subsidence
Integrate linkages to I-10 and US 60
Right-of-Way acquisition
Coordination with agencies
Relocation of Utilities