

ESTRELLA CORRIDOR STUDY

MC 85 to Interstate 17

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

DESIGN CONCEPT REPORT

March 1998



Maricopa County
Department of Transportation
CONTRACT NO. CY 1997-14
WORK ORDER NO. 80505

Prepared by:

DeLeuw Cather & Company
3875 N. 44th Street * Suite 250 * Phoenix, Arizona 85018

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TABLE OF CONTENTS

SECTION 1 INTRODUCTION	1
1.1 PURPOSE.....	4
1.2 STUDY AREA	4
SECTION 2 CHARACTERSTICS OF THE CORRIDOR	7
2.1 SOCIO-ECONOMIC ENVIRONMENT	7
2.1.1 Community Profiles.....	7
2.1.2 Jurisdiction/ Land Ownership.....	8
2.1.3 Land Use.....	8
2.1.4 Zoning.....	11
2.1.5 Population.....	11
2.1.6 Title VI/Environmental Justice.....	12
2.1.7 Summary of the Socio-Economic Environment.....	15
2.2 PHYSICAL AND NATURAL ENVIRONMENT	16
2.2.1 Topography/Physiology.....	16
2.2.2 Vegetation.....	17
2.2.3 Wildlife.....	17
2.2.4 Sensitive Species and Habitat.....	17
2.2.5 Water Resources	18
2.2.6 Visual Character.....	18
2.2.7 Air Quality.....	20
2.2.8 Noise Impacts	20
2.2.9 Hazardous Materials.....	22
2.2.10 Cultural Resources	22
2.2.11 Section 4(f) Properties.....	25
2.2.12 Special Management Areas.....	26
2.2.13 Summary of Physical and Natural Environment.....	26
2.3 HIGHWAY CHARACTERISTICS	27
2.3.1 Existing Corridor.....	27
2.3.2 Right of Way.....	29
2.3.3 Access Control.....	30
2.3.4 Major Utilities.....	30
2.3.5 Drainage/Floodplains.....	31
2.3.6 Structures.....	32
2.3.7 Geotechnical	32
SECTION 3 TRAFFIC DATA.....	38

3.1 PROJECTED TRAFFIC VOLUMES 38

3.2 FUTURE LANE REQUIREMENTS 38

SECTION 4 MAJOR DESIGN FEATURES 48

4.1 DESIGN CRITERIA 48

 4.1.1 MC 85 to Lake Pleasant Road 48

 4.1.2 Lake Pleasant Road to 67th Avenue 49

 4.1.3 67th Avenue to Interstate 17 50

4.2 TYPICAL SECTIONS 51

4.3 HORIZONTAL ALIGNMENT 51

4.4 VERTICAL ALIGNMENT 54

4.5 ACCESS CONTROL 54

4.6 INTERCHANGES/INTERSECTIONS 55

4.7 DRAINAGE/STRUCTURES 57

4.8 RIGHT OF WAY 60

4.9 EARTHWORK 60

SECTION 5 ALTERNATIVES ANALYSIS 62

5.1 DESIGN CONSTRAINTS 62

5.2 ALTERNATIVES CONSIDERED 62

 5.2.1 Alignment A1 (Preferred Alignment) 64

 5.2.2 Alignment A2 (Rejected Alignment) 68

 5.2.3 Alignment A3 (Rejected Alignment) 69

5.3 EVALUATION MATRIX 71

5.4 RIGHT OF WAY 71

5.5 MITIGATION MEASURES 71

5.6 COST ESTIMATE 77

SECTION 6 IMPLEMENTATION 79

6.1 PROGRAMMED PROJECTS 79

6.2 NEAR TERM IMPROVEMENTS 79

6.3 LONG RANGE IMPROVEMENTS 79

6.4 AGUA FRIA RIVER BRIDGE CONSTRUCTION 81

6.5 ESTRELLA DRAINAGE CHANNEL 82

6.6 ROADWAY MAINTENANCE..... 82

SECTION 7 PUBLIC PARTICIPATION..... 83

APPENDIX A
Special Status Species Correspondence

APPENDIX B
Estrella Freeway Location Plan and Profile

APPENDIX C
Estrella Interim Roadway Conceptual Plans

APPENDIX D
Happy Valley Road Conceptual Plans

APPENDIX E
Public Involvement

LIST OF FIGURES

Figure 1 Project Vicinity..... 2

Figure 2 ADOT Estrella Corridor Alignment..... 3

Figure 3 Study Area 6

Figure 4 Planned Developments..... 10

Figure 5 Potential Habitat/Hazardous Materials/4(f) Properties..... 19

Figure 6 Cultural Resources 24

Figure 7 Roads of Regional Significance..... 28

Figure 8a Flood Plains..... 33

Figure 8b Flood Plains..... 34

Figure 8c Flood Plains..... 35

Figure 8d Flood Plains..... 36

Figure 8e Flood Plains..... 37

Figure 9 MAG Year 2010 Build (I1) Network Twenty Four Hour Volumes 39

Figure 10 MAG Year 2010 Build (I1) Network Twenty Four Hour Volumes 40

Figure 11 MAG Year 2010 Build (I1) Network Twenty Four Hour Volumes 41
 Figure 12 MAG Year 2020 Build (I1) Network Twenty Four Hour Volumes 42
 Figure 13 MAG Year 2020 Build (I1) Network..... 43
 Figure 14 MAG Year 2020 Build (I1) Network Twenty Four Hour Volumes 44
 Figure 15 Average Daily Traffic Volumes..... 46
 Figure 16 Year Additional Lanes Are Required..... 47
 Figure 19 Single Point Urban Interchange Right Of Way Requirements..... 56
 Figure 20 Alternative Alignments - Happy Valley Road,77th Avenue to 99th Avenue..... 63
 Figure 21 Alternative A1 Plan and Profile..... 65
 Figure 22 Alternative A2 Plan and Profile..... 66
 Figure 23 Alternative A3 Plan and Profile..... 67
 Figure 24a Right of way Requirements..... 72
 Figure 24b Right of Way Requirements..... 73
 Figure 25 Mitigation Concepts 75
 Figure 26 Mitigation Concepts with Offset Median..... 76
 Figure 27 Recommended Improvement Projects..... 80

LIST OF TABLES

Table 1 Percent Major Land Use Categories Adjacent to Centerline..... 11
 Table 2 Population Trends for Major Communities (1980-1996)..... 12
 Table 3 Labor Force Statistics for Estrella Corridor, 1990 12
 Table 4 Racial Demographics (Percent), 1990..... 13
 Table 5 Population Greater than 60 Years of Age (Percent)..... 14
 Table 6 Population Living Below Poverty in 1990 (Percent)..... 14
 Table 7 Percent Population with Mobility Disability, 1990..... 15
 Table 8 FHWA Noise Abatement Criteria 21
 Table 9 Character and Number of Sites Along the Corridor and Potential Criteria Met for NRHP
 Eligibility..... 25
 Table 10 2010 and 2020 ADT 45
 Table 11 Box Culvert Crossings..... 57
 Table 12 Major Drainage Crossings..... 57
 Table 13 Estrella Drainage Channel Requirements..... 59
 Table 14 Additional Channel Right of Way Requirements (with detention basins)..... 60
 Table 15 Matrix Evaluation - Happy Valley Road Alternative Alignments..... 71
 Table 16 Estimated Costs - Happy Valley Road Alternative Alignments -
 75th Avenue to 99th Avenue..... 78
 Table 17 Future Improvements..... 81

SECTION 1 INTRODUCTION

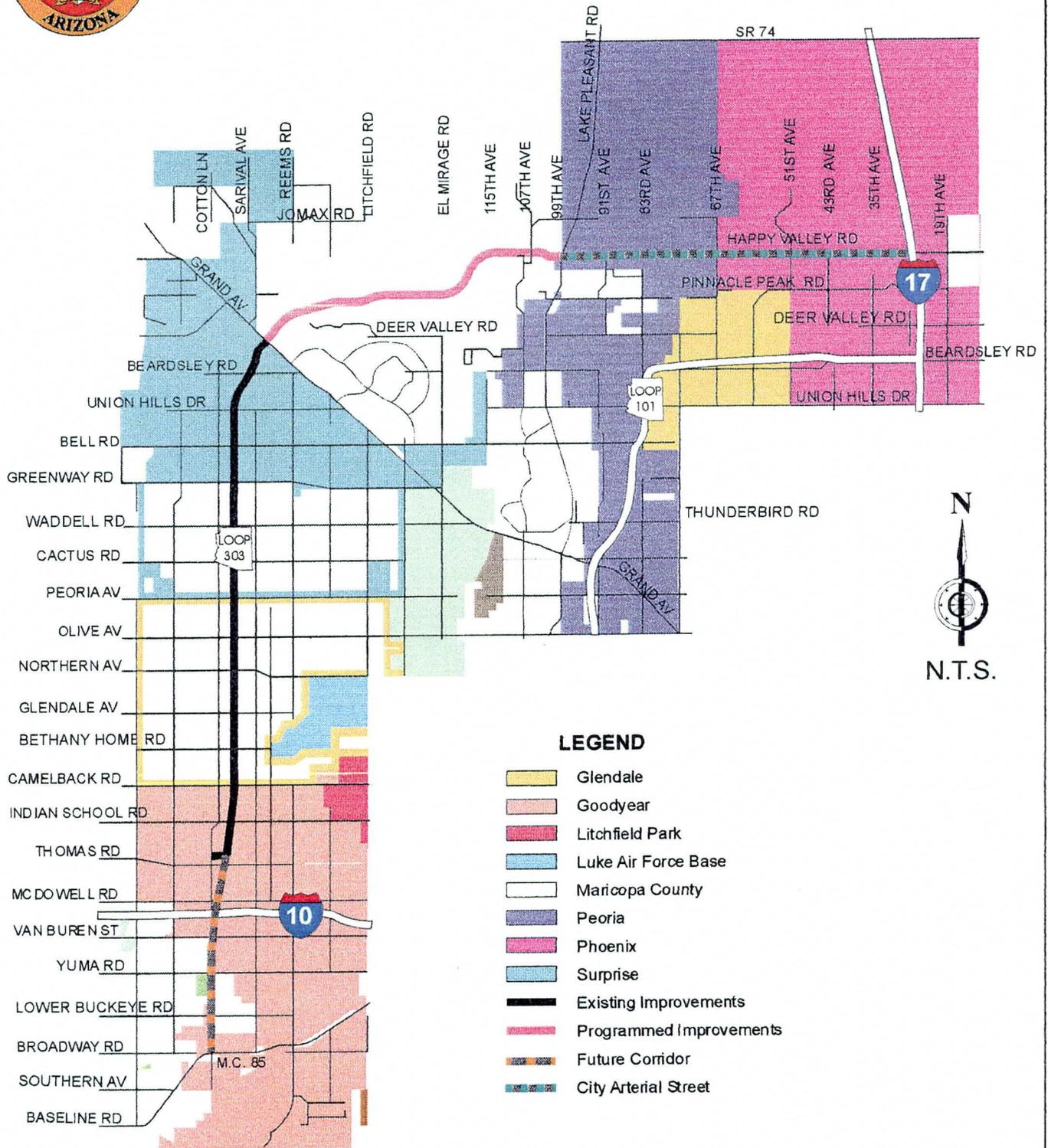
The Estrella Corridor is a regional transportation facility planned to serve the traffic needs of the northwest and southwest portions of the Phoenix Urban Area. It connects MC 85 and Interstate 10 with US 60 (Grand Avenue) and Interstate 17 as shown in Figure 1.

The need for this corridor was identified in the West Area Transportation Analysis, which was completed in June 1985, and the Maricopa Association of Governments (MAG) Regional Council included it in the 231 mile MAG Regional Freeway System which they adopted on July 24, 1985. Proposition 300, a 20 year one-half cent sales tax dedicated to construction of the Regional Freeway System, was approved by the voters of Maricopa County on October 9, 1985.

The Regional Freeway System was to be constructed, maintained and operated by the Arizona Department of Transportation (ADOT). In 1987 ADOT proceeded with the preparation of a Location/Design Concept Report and an Environmental Assessment for the Estrella Corridor. Public hearings were held on January 14, 1988 and May 17, 1988, and the location was adopted by the State Transportation Board on April 14, 1988 (I-10 to Grand Avenue), May 20, 1988 (SR 85 to I-10) and on July 21, 1989 (Grand Avenue to I-17). The adopted ADOT alignment is shown in Figure 2. Although the Estrella was the lowest priority corridor on the MAG system, fifteen miles of interim two lane roadway were constructed between Thomas Road and Grand Avenue in 1991 and 1992. The construction, which was in exchange for the donation of a substantial amount of the required right of way, provided a regional roadway for the adjacent property owners and early preservation of the right of way for ADOT.

Also in the early 1990's, it became apparent that the revenues being generated by Proposition 300 were insufficient to construct all 231 miles of the Regional Freeway System. In November 1994, Maricopa County voters were asked to approve, as part of Proposition 400, an additional one quarter cent sales tax to complete the MAG Freeway System; however, this proposition failed. Shortly thereafter, the Governor recommended removed the Estrella Corridor and several other routes from the Regional Freeway System and the MAG Regional Council took that action. In May 1995, ADOT gave four year notice of intent to abandon the corridor, including the 15 miles of interim roadway, to Maricopa County and those cities that have jurisdiction.

Maricopa County responded on June 15, 1995, identifying a number of issues, in particular the need for preservation of this corridor as a regional transportation facility. A major concern was a clause in the donation agreements that would allow significant portions of the existing right of way to revert to the prior owners if ADOT did not construct the freeway facility planned. MCDOT offered to assume the lead role of "caretaker" for the corridor; constructing, operating and maintaining the corridor in partnership with the jurisdictions through which it passes, but asked that ADOT not abandon the route. It now appears that ADOT will agree to retain the section between Interstate 10 and Grand Avenue as a State Route under these conditions. This will not resolve the right of way issue, but will provide greater flexibility for future construction funding.



N.T.S.

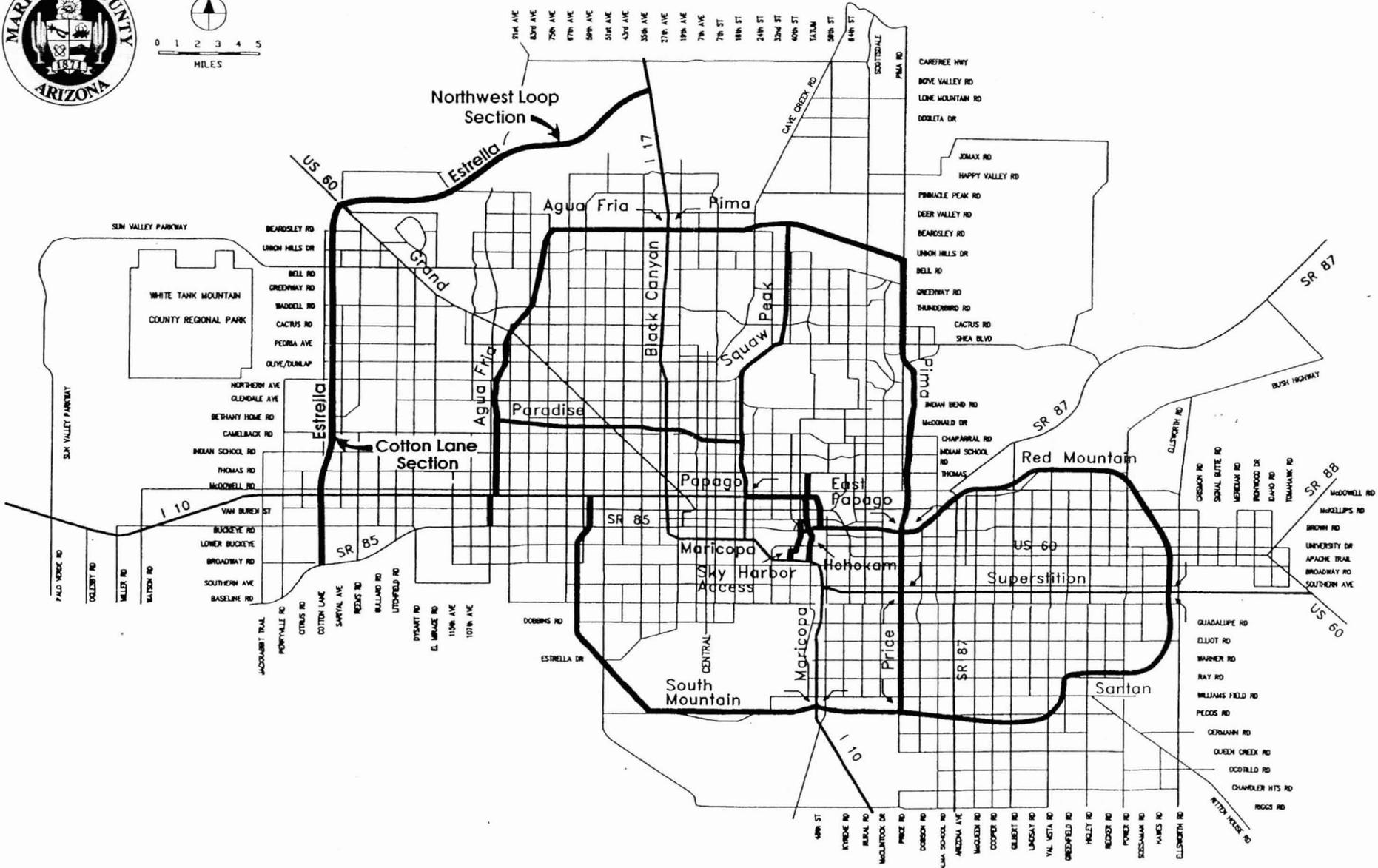
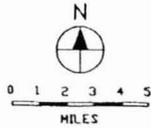
LEGEND

- Glendale
- Goodyear
- Litchfield Park
- Luke Air Force Base
- Maricopa County
- Peoria
- Phoenix
- Surprise
- Existing Improvements
- Programmed Improvements
- Future Corridor
- City Arterial Street

**DE LEUW,
CATHER**

PROJECT VICINITY

Figure 1



ADOT Estrella Corridor Alignment

Figure 2

1.1 PURPOSE

This study is intended to provide the Maricopa County Department of Transportation (MCDOT) and the other local jurisdictions with the information necessary for preserving and maintaining the existing and future Estrella Corridor with particular emphasis on:

- ◆ Partnership Development - Developing partnerships with the local agencies to maintain and improve the corridor
- ◆ Design Concept - Adopting a design concept for the corridor recognizing the Regional Freeway funding is no longer available
- ◆ Alignment Identification - Recommending a preferred alignment for Happy Valley Road between 91st Avenue and 67th Avenue
- ◆ R/W Requirements - Identifying the right of way requirements for the recommended roadway and drainage improvements
- ◆ Access Control Strategies - Agreeing on a level of access control consistent with a regional transportation facility
- ◆ Traffic Demand - Analyzing the projected traffic volumes and recommending a timetable for corridor improvements
- ◆ Phased Improvements - Developing an ultimate improvement plan for the Estrella Corridor and compatible interim, phased improvement design concepts

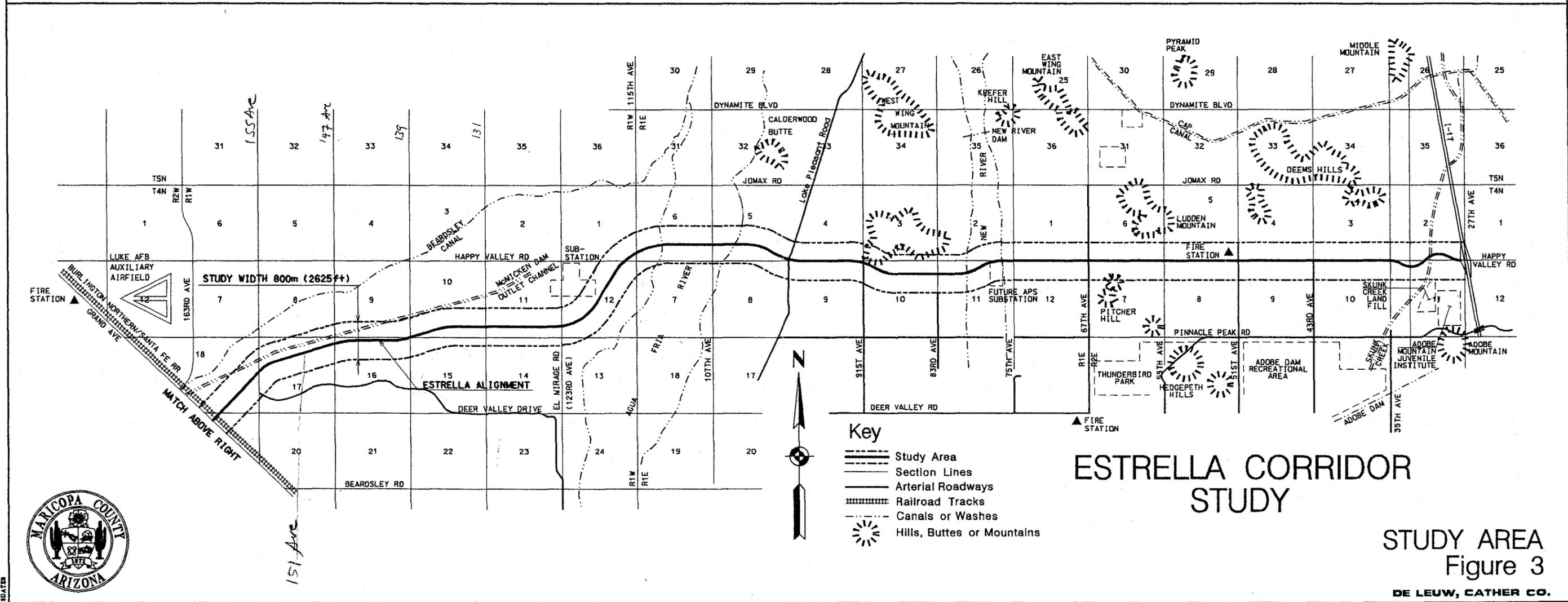
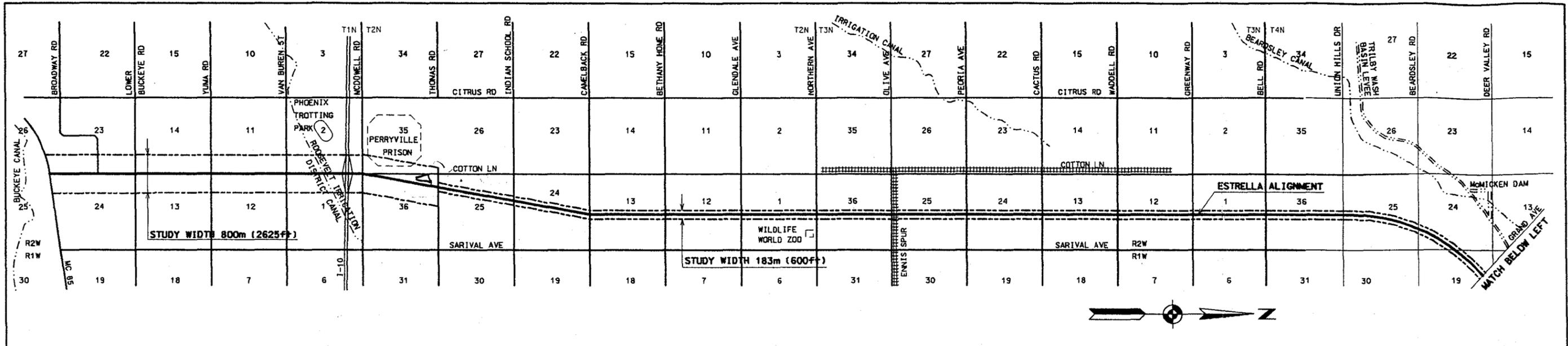
This study will be integrated with current MCDOT plans to construct two projects in the corridor, a bridge over Grand Avenue and the Burlington Northern/Santa Fe Railroad and a two lane interim roadway east from Reems Road to Lake Pleasant Road, scheduled for Fiscal Years 1999 and 2000 respectively. The City of Surprise is pursuing the installation of traffic signals at Bell Road and the City of Goodyear has requested that the interim roadway be extended from Thomas Road south to McDowell Road to eliminate the current "jog" at Thomas Road.

1.2 STUDY AREA

The Estrella Corridor study area is 59.4 kilometers (km) (37 mile) long and it passes through the cities of Goodyear, Glendale, Surprise, Peoria and Phoenix as well as unincorporated Maricopa County. The study area is 800 meter (m) (2625 foot) corridor wide, with the exception of the segment that encompasses the existing L303 interim roadway; this portion of the corridor is 183 m (600 ft.) wide (Figure 3).

The study area begins at MC 85 and follows the adopted ADOT alignment along or east of Cotton Lane north to Grand Avenue. East of Grand Avenue it will deviate from the original ADOT alignment, instead following the alignment recommended in the Northwest Area Study which was added to the MAG Long Range Plan in their September 1996 update. From Grand Avenue to Lake Pleasant Road the corridor follows the alignment described in Maricopa County's Estrella Interim Roadway DCR and from Lake Pleasant Road to Interstate 17 it follows the alignment of Happy Valley Road. This revised alignment was recommended by the jurisdictions in the northwest part of the valley as the most feasible, cost effective way to extend the corridor to Interstate 17 if no state funding is available to construct the Estrella. This

recommendation has been questioned during the study because access control strategies and the existing development and community expectations east of 99th Avenue are not consistent with a regional facility. These issues are further discussed in this report, with a recommendation that Happy Valley Road not be considered as an extension of the Estrella Corridor to Interstate 17. The report recommends further analysis of the corridor east of Lake Pleasant Road including consideration of utilizing Lake Pleasant Road to SR 74 as the Estrella Corridor extension to Interstate 17. This analysis would occur in the Spring 1998 NW Area Transportation Study by MCDOT and the local jurisdictions.



- Key**
- Study Area
 - Section Lines
 - Arterial Roadways
 - Railroad Tracks
 - Canals or Washes
 - Hills, Buttes or Mountains

ESTRELLA CORRIDOR STUDY

STUDY AREA
Figure 3
DE LEUW, CATHER CO.



SECTION 2 CHARACTERISTICS OF THE CORRIDOR

This section describes the existing characteristics and environment of the study area to identify any potential issues or concerns for future MCDOT and local jurisdiction planning and improvements. The information provided is based on existing data sources from various municipal, county and federal agencies and a windshield survey of the study area. The environmental overview is not intended to meet the requirements of the National Environmental Policy Act (NEPA) for the study area. It is anticipated that comprehensive, project specific documentation will be prepared by MCDOT and the local jurisdictions in association with the next level of engineering and project programming.

2.1 SOCIO-ECONOMIC ENVIRONMENT

The socio-economic environment description consists of a summary of the social and economic elements of the study area, including its jurisdiction, land use, zoning, economic profile and demographic composition. Planning documents and maps prepared by the cities of Goodyear, Glendale, Surprise (including Sun City Grand), Peoria and Phoenix, and Maricopa County (including Sun City West) were used to identify jurisdiction and zoning. The profile of each community was derived from the Arizona Department of Commerce (ADC) *Community Profile Sheets, 1997*.

2.1.1 Community Profiles

The City of Goodyear is a suburban community located 27.6 km (17 miles) west of downtown Phoenix. Goodyear encompasses roughly 319 square km (115 square miles), much of which is still in agricultural use. The majority of Goodyear's economic base is centered around the Phoenix-Goodyear Municipal Airport (formerly the Litchfield Naval Airfield). Other leading contributors to the local economy include Lockheed Martin, Poore Brothers, Adapto Manufacturing, Rubbermaid, McLane Sunwest and Cavco, among several others

The City of Glendale, Arizona's fourth largest city, is the commercial, industrial and educational hub of the northwest portion of the Phoenix metropolitan area. As a result of a 52 % growth rate between 1980 and 1990, Glendale was listed as the 14th fastest growing city in the U.S. for that period. The growing economic market has contributed to Glendale's commercial and residential growth. Honeywell is Glendale's largest employer, with Luke Air Force Base a close second. Numerous service and retail shops also provide employment opportunities to local residents.

The City of Surprise, a small farming community until the 1980s, is one of the fastest growing communities in the northwestern Phoenix metropolitan area. Over 20,000 new residential dwellings are planned for the period spanning 1995-2005. Sun City Grand, a planned retirement community comprises a large portion of planned development within the City of Surprise. The first residents moved in, in 1996. Construction and service jobs within Sun City Grand and in nearby Sun City provide employment to a number of residents of the City of Surprise. The retirement community also contributes significantly to the local economy. Sun City West, currently located on the far northwestern edge of the Phoenix metropolitan area, is an unincorporated master-planned active adult community for people 55 and over. Nearly 24,000 residents call Sun

City West home and when the community is fully completed there will be a population of approximately 32,000. The majority of residents are retired and income is derived from social security, investments and savings. Hundreds of jobs are created by Sun City West, providing employment to people living in Surprise, Glendale, Peoria and El Mirage.

The City of Peoria is a rapidly growing suburban community in the northwestern Phoenix metropolitan area. At present Peoria is a bedroom community, but is promoting commercial development as means of encouraging further growth into the 21st century. The Peoria Economic Development Group facilitates new businesses and industry moving into the city. Most employers in Peoria are in the commercial and service sectors, with Plaza del Rio, Wal Mart and Smitty's providing jobs to roughly 1,500 individuals. Many residents commute to nearby jobs at Honeywell and American Express in northwest Phoenix. Others commute to Luke Air Force Base.

The City of Phoenix is the seventh largest city in the nation, and is the hub of growth in the Southwestern U.S. Phoenix has a diversified economic base with manufacturing serving as a leading employer (148,000 people in 1994). Electronics is one of Phoenix's strongest manufacturing components, ranking third among electronic production centers in the country. Tourism is another major contributor to the economy. Major employers include Motorola, Allied Signal, American Express and Honeywell. Service jobs also employ a large sector of the population.

Each of the cities/communities in the study area have exhibited rapid economic growth, spurring increased population growth in these areas. Winter visitors "Snow Birds" increase the population of each of these cities significantly each winter. Money spent by the winter visitors contributes to the economy of the Phoenix Metropolitan area. In addition to the diverse economic base of each of these communities, each community has numerous parks, schools, and recreational facilities. Full-service hospitals, fire stations, police stations and other public services are also readily available.

2.1.2 Jurisdiction/ Land Ownership

Lands within the Estrella Corridor are both publicly and privately owned. Jurisdiction within the corridor, moving north from MC 85 to I-17, includes Goodyear, Glendale (strip annex), Maricopa County, Surprise, Peoria and Phoenix. In addition to these municipalities and the county, the Arizona State Land Department (ASLD) owns lands in a number of different areas within the corridor. With the exception of the Perryville State Prison, most of these lands are located within the northern portion of the study area, adjacent to Happy Valley Road. Private lands within the corridor are under either the jurisdiction of Maricopa County or the city(ies) in which they are developed.

2.1.3 Land Use

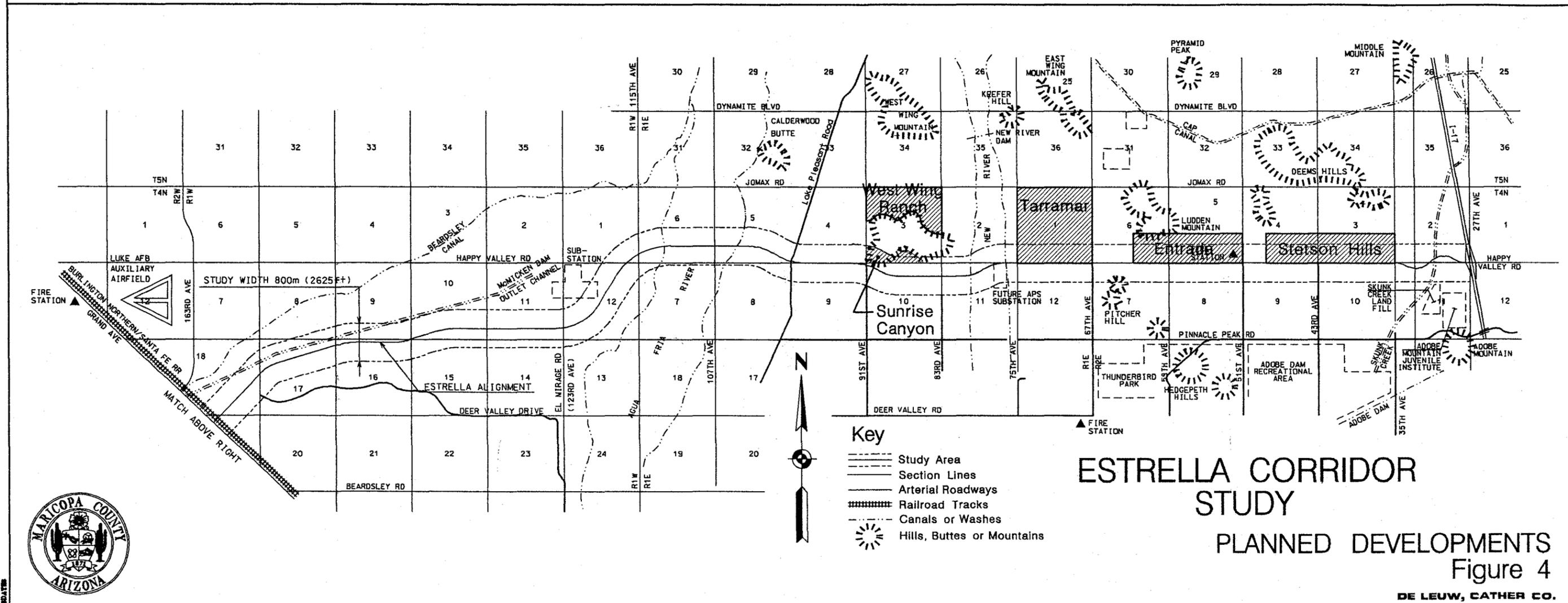
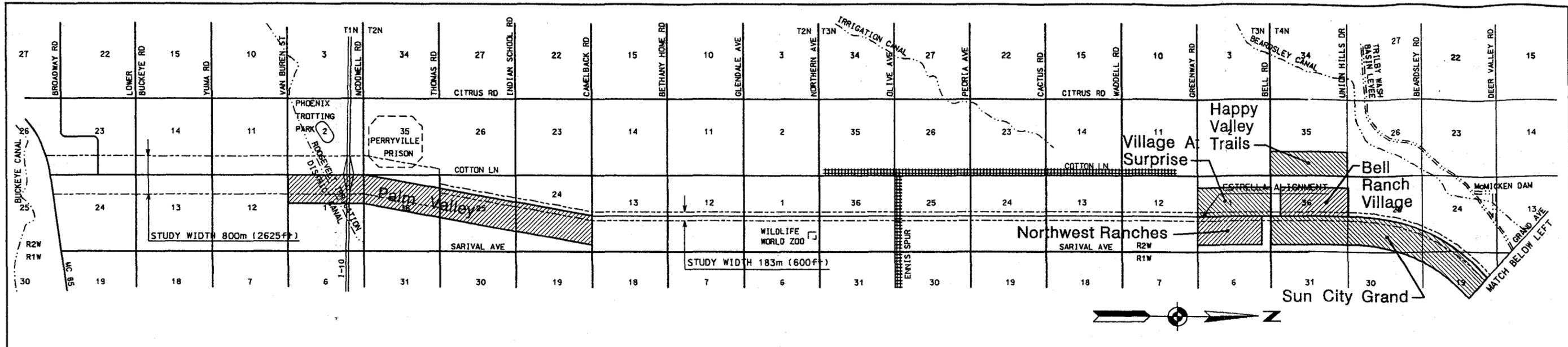
Existing land uses within the study area are primarily agricultural, single family residential, and open space/undeveloped. Major agricultural crops include cotton, grapes, corn, melons and flowers, with varied rotations of these crops occurring throughout the year. Single family

residential uses are sparse between MC 85 and Bell Road, with agriculture the dominant land use in this area. Sun City Grand, a new planned retirement community, is located between Bell Road and Grand Avenue. Between Grand Avenue and I-17, however, more significant residential communities have become established. The unincorporated community of Sun City West is located immediately east of Grand Avenue, and a number of communities are located east of Lake Pleasant Road. Some of these include Pinnacle Heights, Northwood Glenn, Saddleback Meadows, Pointe Upland Hills, Mountain Shadows at North Canyon Ranch, Canyon Springs Estates and Indian Springs Estates. Large tracts of open space/undeveloped areas are present between these residential developments, particularly between Sun City West and 67th Avenue. Open space/undeveloped areas also are present east of 67th Avenue, but are primarily located north of Happy Valley Road.

There are several planned developments adjacent to the corridor as shown in Figure 4. Planned single family residential communities and retirement communities include Palm Valley (Goodyear); Bell Ranch Village, Happy Trails, Northwest Ranches, Sun City Grand, and Villages at Surprise (Surprise); Terramar, Sunrise Canyon and West Wing Ranch (Peoria); and Entrada and Stetson Hills (Phoenix). The plats for each planned community have been approved by the municipalities.

There also are commercial retail and service, light industrial and public/quasi public land uses within the corridor. Existing commercial retail and service uses within the corridor include convenience marts and gasoline service stations. Commercial/recreational uses include the Wildlife World Zoo on Northern Avenue and Loop 303 and golf courses—one along the eastern edge of Loop 303 in Sun City Grand and the other in the northwest section of Sun City West. Other recreational uses include bicycle and equestrian trails along Peoria Avenue and Happy Valley Road respectively. Public/quasi public land uses include a fire station on Happy Valley Road between 51st and 52nd Avenues, and the Skunk Creek Landfill, located about 0.48 km (0.8 mile) west of I-17 on Happy Valley Road.

The percentage of each land use type adjacent to the proposed centerline was calculated for either side of the centerline (Table 1). It is important to note that these data do not represent percentages of total acreage in the Estrella Corridor, rather they represent the percentage of linear kilometers along the centerline. The dominant land use categories, agriculture and open space/undeveloped, are clearly segregated south and north of Grand Avenue, respectively, thus this avenue was used as a south-north dividing line in these calculations. These data indicate that 72.5 to 75.2% of lands between MC 85 and Grand Avenue are under agriculture. In contrast, agriculture only represents 4.4% of the land use north of Grand Avenue. As noted, open space/undeveloped is the dominant land use category along the northern portion of the proposed centerline, with 79.4 to 83.97% of lands falling within this category. Along the southern portion of the roadway, open space/undeveloped comprises 23.4% of lands west of the centerline and 9.23% east of the centerline. Single family/residential is the next highest land use category both south and north of Grand Avenue, with 12.3% and 11.9% of lands falling within this category, respectively.



- Key**
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 - Hills, Buttes or Mountains

ESTRELLA CORRIDOR STUDY
PLANNED DEVELOPMENTS
 Figure 4
 DE LEUW, CATHER CO.



Table 1 Percent Major Land Use Categories Adjacent to Centerline.

Land Use	MC 85 to Grand Avenue		Grand Avenue to I-17	
	East	West	North	South
Agricultural	75.21	72.56	4.4	4.4
Commercial/retail	2.54	2.74	0.8	1.2
Light industrial	0.2	0.1	1.4	1.4
Open space/undeveloped	9.23	23.4	83.97	79.4
Public/quasi public	0.49	0.49	2.9	1.5
Single family/residential	12.35	0.72	6	11.9

With continued growth in this area, future land use will show increased amounts of residential and commercial development with corresponding decreases in the amount of undeveloped and agricultural lands. Agriculture will continue to be an important land use between MC 85 and Grand Avenue and industrial uses are expected to develop in Goodyear and the southern parts of Surprise.

2.1.4 Zoning

Zoning classifications within the corridor include various agricultural, rural, residential, commercial, and industrial designations. Zoning for the portion of the project corridor within the City of Goodyear includes AU (agriculture/urban) and AG (agriculture), I-2 (General Industrial Park) and commercial. Much of the land within those sections of the corridor under the jurisdiction of Maricopa County are zoned R1-43 (Single Family Residential, Minimum Acre Lot), with unincorporated Sun City West zoned as R (Rural Residential). Lands under the jurisdiction of the City of Surprise are primarily R1-5 (single family minimum 5500 square feet) and R1-43 (Single Family Residential, Minimum Acre Lot). For those portions of the corridor within the cities of Peoria and Phoenix, zoning is primarily LD (Low Density), P/OS (Park/Open Space), RE (Estate), RD (Resort Development), and CC (Community Commercial).

2.1.5 Population

The *ADC Community Profiles 1997*, for the various cities through which the corridor traverses, indicate that between 1980 and 1996, the population of Goodyear and Surprise grew by over 200%, with increases of over 500% in Sun City West and Peoria (Table 2). On the average the growth within these communities was larger than the overall growth for Maricopa County (74.6%). It is important to note that the population statistics for Sun City West are segregated from the statistics for other portions of the corridor within unincorporated Maricopa County. This unincorporated community is treated separately due to its unique nature as a retirement community.

Table 2 Population Trends for Major Communities (1980-1996).

City/Community	1980	1990	1996	%1980-1996
Goodyear	2,747	6,258	10,215	272%
Surprise	3,723	7,122	11,335	204%
Sun City West	3,772	15,997	25,538	577%
Peoria	12,171	50,168	78,310	543%
Phoenix	789,704	983,403	1,180,740	49.5%
Maricopa County	1,509,175	2,122,101	2,634,625	74.6%

Source: ADC Community Profiles 1997

The ADES 1990 Census of Population and Housing statistics data indicate that unemployment varied from 2.7 to 8.4% in different portions of the corridor (Table 3). The highest level of unemployment was identified in the City of Peoria, with the portions of the corridor in Maricopa County exhibiting the second highest level of unemployment (7.3%). Unemployment rates within the remaining portions of the corridor is below the average for Maricopa County (6.4 %), with approximately 95 to 97% of the labor force of Goodyear, Surprise, Sun City West and Phoenix employed.

Table 3 Labor Force Statistics for Estrella Corridor, 1990

City/Community	Civilian Labor Force (%) ¹	% Employed	% Unemployed
City of Goodyear	1,179 (27%)	95	5
City of Surprise	332 (28%)	95.5	4.5
Sun City West	1,015 (10%)	96	4.4
Peoria (Block Group 1)	442 (52%)	92	8.4
Phoenix (Block Group 3)	2,836 (5.8%)	97.3	2.7
Maricopa County w/in Corridor ²	2,582 (4.6%)	92.7	7.3
Maricopa County	1,070,667 (51%)	93.6	6.4

Source: U.S. Department of Commerce 1990 Census of Population and Housing Summary

- 1 % of labor force equals % of total population
- 2 Maricopa County w/in Corridor reflects those portions of the corridor that pass through the County; Maricopa County reflects all of Maricopa County.

2.1.6 Title VI/Environmental Justice

The basic provisions of Title VI of the Civil Rights Act of 1964 require federal agencies to ensure that their actions do not exclude persons and populations from participation, deny persons and populations of the benefits of the proposed action/activities or subject persons and populations to discrimination because of race, color or national origin. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,"

reaffirms the principles of Title VI and related statutes. The Executive Order adds the consideration of low income populations to minority populations when a federal agency is examining effects from proposed actions. Minority means a person who is African American, Hispanic, Asian American, American Indian, or Alaskan Native. Low income means a person whose median household income is below the poverty guideline estimated from the 1990 Census to be \$12,600 per year for a family of four.

Demographic characteristics of populations living within the study area was derived using the ADES 1990, Census of Population and Housing statistics. Unfortunately block level census data is not available for the entire corridor, therefore tract level census data was used to identify the baseline demographic characteristics of the corridor. Whenever possible, block level data were used to supplement these data, providing more detailed information on the population living within, or adjacent to the corridor. Block level census data generally contain between 250 and 550 housing units, with the ideal size being 400 housing units. The statistics for the block group level may extend outside the study area; therefore, the exact population and demographic characteristics of the study area may vary from these data.

According to the ADES 1990 census, the racial composition of the corridor was predominately white (77% to 99.3%) throughout the study area (Table 4). The percentage of African Americans living in the study area is highest within the City of Goodyear (8.6 %), with the percentage of persons of Hispanic descent also highest within this portion of the study area (24.4%). Approximately 23% of persons living in the Maricopa County portions of the study area also are of Hispanic descent. The percentage of Native Americans (0 to 1.4%) and Asians (0 to 2.8%) is low throughout the study area.

Table 4 Racial Demographics (Percent), 1990

City/Community	White	African American	Native American	Asian	Other	*Percent Hispanic
City of Goodyear	75	8.6	1.4	1.0	15.9	24.4
City of Surprise	95.6	0	1	0.6	2.6	5.3
Sun City West	99.3	0.6	0	0	0	0.1
Peoria (Block Group 1)	98.6	0	0	1.4	0	5.7
Phoenix (Block Group 3)	96	1.8	0.4	0.6	0.9	4.2
Maricopa County Corridor	82.3	2.3	0.4	2.8	12.2	23.5
Maricopa County General	84.9	3.6	1.7	1.7	8.1	16.0

Source: U.S. Department of Commerce 1990 Census of Population and Housing Summary

* Ethnicity is reported separately from race

The 1990 ADES age census data indicate that the percentage of people over 60 years of age within the corridor varies markedly with location (Table 5). With the exception of the City of Surprise (58.8%) and Sun City West (89%), the percentage of elderly people living within the study area (5 to 7%) is lower than the mean for Maricopa County (16.4%). The high percentage of elderly within the City of Surprise and Sun City West undoubtedly reflects the retirement communities associated with these neighborhoods.

Table 5 Population Greater than 60 Years of Age (Percent)

City/Community	60 + years old
City of Goodyear	7
City of Surprise	58.8
Sun City West	89
Peoria (Block Group 1)	6.4
Phoenix (Block Group 3)	4.9
Maricopa County Corridor	4.9
Maricopa County	16.4

Source: U.S. Department of Commerce 1990 Census of Population and Housing Summary

The census data indicate that the highest percentage of people living below poverty in 1990, lived in the tracts associated with the City of Goodyear and Maricopa County, 18.6% and 14.9%, respectively. The percentage of people living below poverty in these areas is from 2.6 to 6.3% above the average for Maricopa County's general population.

Table 6 Population Living Below Poverty in 1990 (Percent)

City/Community	% Below Poverty (Jurisdiction-wide)	% Below Poverty (Study Area)
City of Goodyear	9.8	18.6
City of Surprise	33.5	8.9
Sun City West	5.2	3.3
Peoria	8.0	0
Phoenix	14.0	2.0
Maricopa County	12.3	14.9

Source: U.S. Department of Commerce 1990 Census of Population and Housing Summary

The 1990 Census data indicate the percentage of people who claim a mobility disability in Sun City West (5%) and the City of Surprise (3.6%) is slightly higher than Maricopa County in general (2.7%). A lower percentage of the population of other communities in the study area reported mobility disabilities (0 to 1.5%).

Table 7 Percent Population with Mobility Disability, 1990

City/Community	% Disability
City of Goodyear	1
City of Surprise	3.6
Sun City West	4.9
Peoria (Block Group 1)	0
Phoenix (Block Group 3)	1.5
Maricopa County Corridor	0.8
Maricopa County	2.7

Source: U.S. Department of Commerce 1990 Census of Population and Housing Summary

The 1990 Census data indicate that the percentage of female heads of household within the study area ranges from 0.6 to 1.3 %, which is 2.7% below the average for Maricopa County in general (4%). Female head of households comprise a very small percentage of the head of household population for the study area.

2.1.7 Summary of the Socio-Economic Environment

Luke Air Force Base, Honeywell, and American Express are three of the largest employers in the study area. A variety of commercial retail and service facilities, agriculture and municipal jobs also contribute to the economy of cities/communities in the study area. In general, agriculture, single family residential and open space/undeveloped comprise the largest land use categories. Much of the agricultural land under the jurisdiction of the Surprise, and Maricopa County north of I-10, is ultimately planned for single family residential/retirement community development. Today the largest planned developments are associated primarily with Del Webb and Sun Cor.

Luke Air Force Base is located immediately east of the corridor at Bethany Home Road and is a significant contributor to the economy of the area. Besides providing more than 7,000 jobs, the services available at Luke attract significant numbers of retired military personnel to the west valley, creating a demand for goods and services in the surrounding communities.

The population of cities/communities within the corridor has grown rapidly over the past 26 years. All of the communities have experienced at least 200% population growth between 1980 and 1996, with Sun City West and Peoria experiencing over 500% growth. In general, the percentage of protected minority, elderly, low income, disabled, and female head of household populations within the study area is fairly low. Elderly and low income populations represent the highest percentage of protected populations in the study area. However, these percentages are comparable to the percentages of these populations living in Maricopa County in general. The 1990 Census data for the study area indicate that future highway/arterial road projects in the Estrella Corridor will have no disproportionately high or adverse effects on minority or low income populations.

2.2 PHYSICAL AND NATURAL ENVIRONMENT

The inventory of the physical and natural environment of the study area consisted of gathering resource data and information from various local, state and federal regulatory agencies having jurisdiction within the study area. These agencies include the Arizona Department of Environmental Quality (ADEQ), Arizona Department of Transportation (ADOT), Arizona Game & Fish Department (AGFD), Arizona State Museum (ASM), Arizona State Land Department (ASLD), State Historic Preservation Office (SHPO), US Fish and Wildlife Service (USFWS), and the Maricopa Flood Control District (FCDMC). The characteristics of the physical and natural environment also were identified based on a windshield survey of those portions of the project corridor that could be driven. The study area between Grand Avenue and Lake Pleasant Road was not demarcated on the ground, and therefore was not driven. MCDOT has recently completed an "Environmental Assessment for the Estrella Roadway" for the interim roadway project that will be constructed within these limits.

2.2.1 Topography/Physiology

The study area is located within the Basin and Range Province of central Arizona. The northern portion of the study area is characterized by extensively eroded intrusive basalt and granitic domes, hills and mountains, that have been extensively eroded by weathering. Significant landforms in the northern portion of the study area include the Deem Hills, Ludden Mountain and hills immediately west of the Middle New River. The colluvial and alluvial slopes of these formations extend into the proposed Estrella Corridor. The lower-lying plains south of these slopes are composed of both alluvial and aeolian sands and silts that serve as rich agricultural soils. Over three-quarters of the study area (MC 85 to roughly 93rd Avenue) is located on gently undulating plains associated with these deposits, and correspondingly much of these lands have been converted to agriculture. Much of the area between 93rd Avenue and I-17 is still largely undeveloped, with rugged basalt and granitic hills and mountains forming a natural northern boundary to the corridor. Sunrise Relief Mine is located north of Happy Valley Road and 91st Avenue.

The northern portion of the study area is bisected by the Agua Fria River (west of 115th Avenue), New River (west of 75th Avenue) and Skunk Creek (east of 35th Avenue), as well as other notable washes. All of these major water courses flow generally north to south, draining the hills and mountains north of the study area and ultimately serving as tributaries to the Gila River. McMicken Dam and the Beardsley Canal are located to the north of the study area and the McMicken Dam Outlet Channel crosses the corridor. The Roosevelt Irrigation District Canal cross the corridor south of Interstate 10.

Previous geologic investigations associated with planning the Loop 303 highway corridor have identified subsidence and associated earth fissuring between Indian School Road and Grand Avenue. No similar geologic concerns were identified in the study area north of Grand Avenue.

2.2.2 Vegetation

The majority of lands within the southern portion of the corridor are under agriculture, with few natural areas present between MC 85 and Grand Avenue. The undeveloped areas present along this portion of the corridor support vegetation characteristic of the Lower Colorado River Subdivision of the Sonoran Desert Scrub Biotic Community. The desert areas in the northern portion of the corridor, between Grand Avenue and I-17, also exhibit vegetative characteristics associated with this Biotic Community.

The Lower Colorado River Subdivision of the Sonoran Desert Scrub Biotic Community includes various species of creosote (*Larrea tridentata*), agave (*Agave* spp.), bursage (*Ambrosia* spp.), catclaw (*Acacia roemeriana*), and assorted grasses. Creosote and bursage are the most prevalent species found in the study area. Cactus species prevalent within this community include cholla (*Opuntia* spp.) and saguaro cactus (*Carnegiea gigantea*) with dense clusters of these species present on the south facing slopes of the Deem Hills, Ludden Mountain, and hills west of New River. Barrel cactus (*Ferocactus* spp.) and ocotillo (*Fouquieria* spp.) also are common. Thickets of blue palo-verde (*Cercidium floridum*) and mesquite trees (*Prosopis* spp.) are present within the river and creek corridors, as well as within the channels of smaller washes.

2.2.3 Wildlife

Habitats within the Sonoran Desert Scrub Community generally support numerous smaller mammals, birds and reptiles. Wildlife habitats and populations are limited in agricultural areas, mostly consisting of birds and small animals such as doves, woodpeckers, and field mice. Mammals common to the undeveloped portions of the study area include the black-tailed jack rabbit (*Lepus californicus*), coyote (*Canis latrans*), javelina (*Dicotyles tajacu*), round-tailed ground squirrel (*Spermophilus tereticaudus*), and pocket mouse (*Perognathus hemionus crooki*). Birds commonly found in this Biotic Community include the mourning dove (*Zenaida macroura*), Gambels' quail (*Lophortyx gambeli*), and cactus wren (*Campylorhynchus brunneicapillus*). The western shovelnose snake (*Hionactis occipitalis*) and the zebra-tailed lizard (*Callisaurus draconoides*) are two of the most common reptiles observed in the study area.

2.2.4 Sensitive Species and Habitat

A list of special Status Species (federally listed Threatened or Endangered, and State listed Wildlife of Special Concern (WSC)) which may occur within the study area was prepared from information provided by the AGFD and the USFWS. Letters from these agencies are provided in Appendix A.

Based on the information provided by USFWS and AGFD potential habitat is present for one federally listed endangered species and four WSC species. The only Federally listed endangered species identified as potentially occurring in the area is the cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), which is also considered a WSC species by the AGFD. Other WSC species potentially occurring in the study area include the Sonoran desert tortoise, Harris' hawk and a variety of cholla (*Opuntia wiggensii*). The desertscrub vegetation and rocky slopes found in the vicinity of New River, Ludden Mountain, the Deem Hills, and a few areas west of Lake Pleasant Road, provide potential habitat for each of these species (Figure 5). The

AGFD has also expressed concern over the potential removal of eucalyptus trees along Cotton Lane.

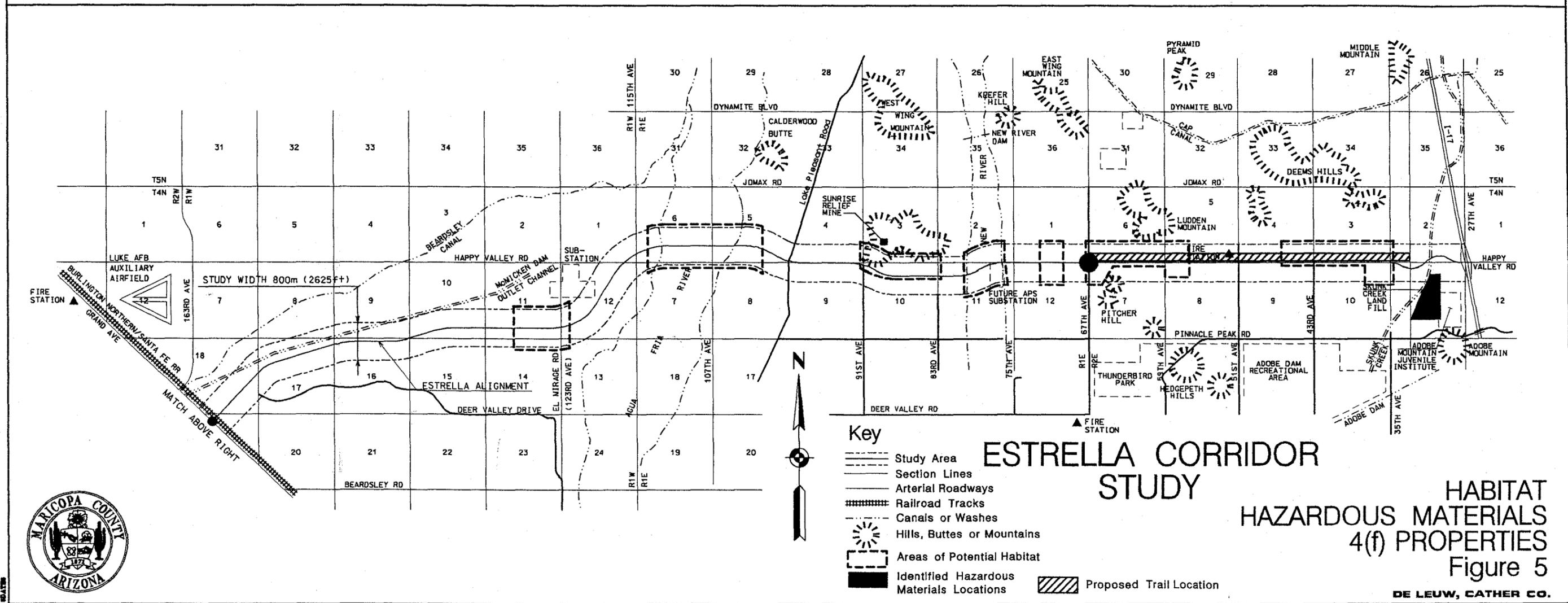
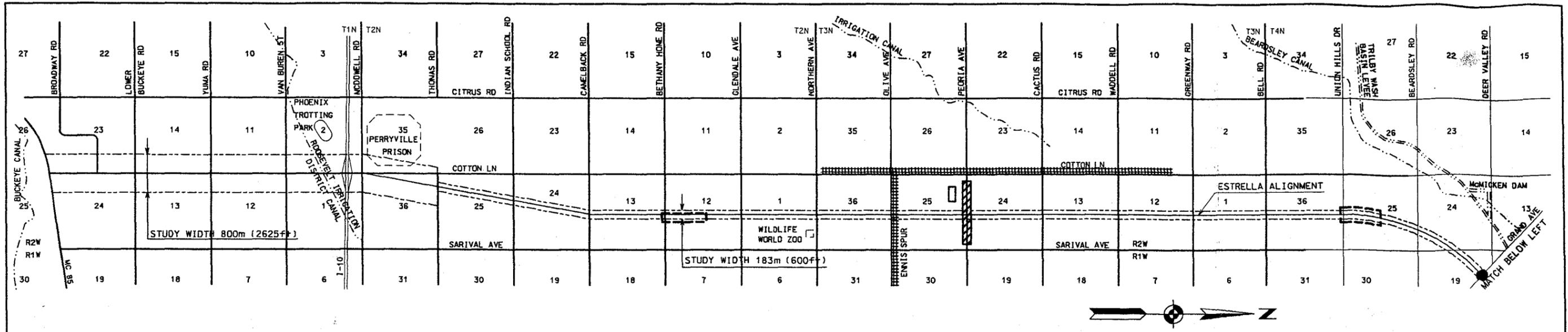
2.2.5 Water Resources

Water resource issues associated with the Estrella Corridor include the identification of wetlands, riparian areas, regulatory jurisdictions, sole source aquifers and unique waters. There are no sole source aquifers or unique waters within the study area. Wetlands are areas that are periodically or permanently inundated by surface or groundwater and support vegetation adapted for life in saturated soil. Wetland determination is made based on soil, hydrology and vegetation. Wetlands generally include swamps, marshes, bogs, and similar areas. During the windshield survey of the study area, a small wetland was identified on the northeast corner of Bethany Home Road and Loop 303. Dense clusters of scirpus sp., willow, and a variety of other riparian plants are supported by ponded irrigation water at this location.

The US Army Corps of Engineers (COE) has jurisdiction of "waters of the US" within the study area. "Waters of the US" include navigable waters and their tributaries, wetlands and lakes, intermittent streams, prairie potholes and other waters that are not a part of a tributary system to interstate waters or to navigable waters of the US. In general, for Arizona, it is any stream, lake or wash that carries or holds temporary storm water runoff. This includes those drainages that do not have flowing water. The northern portion of the proposed Estrella corridor, following the Happy Valley Road alignment, crosses both the Agua Fria and New Rivers, as well as Skunk Creek. In addition to these major waterways, several smaller washes/drainages are present within the corridor. When specific highway/arterial roadway projects are identified, all of the rivers, creeks and washes present within the specific project corridor will require Section 404 permitting which protects waters of the US from dredging or filling associated with construction.

2.2.6 Visual Character

The visual nature of the study area is primarily characterized by agricultural fields and open space, with sparse to moderately dense community developments along portions of the corridor. The southern portion of the corridor, between MC 85 and Grand Avenue, is characterized by low topographic relief, with agricultural fields dominating the foreground (within the 0.4 km (1/4 mile) corridor). The different crops provide contrast in color and texture against the backdrop of the Estrella Mountains to the south, and the White Tanks Mountains to the west. The varied architecture and color of residences, commercial, public and light industrial buildings on the landscape, both within and abutting the corridor, provide visual contrast to the fields and mountains. The northern portion of the corridor, between Grand Avenue and I-17, is characterized by a variety of natural and artificial forms, with a range of colors and textures. The communities of Sun City West, Pinnacle Heights and Indian Springs Estates, among many others, each entail unique architectural forms that contrast the rugged basaltic mountains of this region. Dense clusters of blue palo-verde and mesquite trees, growing along the river, creek and wash corridors, break the repetition of the greens and yellows of the desert scrub blanketing the surrounding alluvial plains and hills. The high transmission power lines that feed the Perkins, Westing and Eastwing Converter Substations visually impact the desert landscape in this area.



Key

- Study Area
- Section Lines
- Arterial Roadways
- Railroad Tracks
- Canals or Washes
- Hills, Buttes or Mountains
- Areas of Potential Habitat
- Identified Hazardous Materials Locations
- Proposed Trail Location

ESTRELLA CORRIDOR STUDY

HABITAT HAZARDOUS MATERIALS 4(f) PROPERTIES
Figure 5

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2.2.7 Air Quality

A nonattainment area is an area that exceeds any national ambient air quality standard (NAAQS) for any air pollutant. Nonattainment areas recognized in Arizona include areas that exceed NAAQS for Carbon Monoxide (CO), Particulate Matter less than or equal to 10 microns in diameter (PM₁₀), and Ozone (O₃). PM₁₀ is composed of a wide range of liquid and solid particles of various sizes and chemical composition, and is of concern due to the potential adverse health effects of breathing particulates of this size. O₃ is composed of photochemical oxidants formed through a series of reactions involving hydrocarbons and nitrogen oxides in the presence of sunlight. High concentrations of ozone are common in the Phoenix area during summer.

The entire corridor lies within the Maricopa County Nonattainment Area. The ADEQ Air Quality Division has determined that levels of air pollutants for CO and O₃ within the corridor exceed the Federal eight-hour standards. National standards for PM₁₀ also are exceeded within the corridor, with road dust and agricultural activities contributing significantly to PM₁₀ levels in the study area. CO is the pollutant of main concern on a project level basis because of its potential hazard to public health at excessive concentrations. When specific highway/arterial roadway projects are identified that require NEPA documentation, the ambient air quality for the specific study area will need to be evaluated in terms of State and NAAQS Compliance. Ozone, hydrocarbons, and nitrogen oxide air quality concerns are regional in nature (complex atmospheric chemistry) and as such, meaningful evaluation on a project-by-project (microscale) basis is not possible.

2.2.8 Noise Impacts

Maricopa County Department of Transportation while not mandated by federal regulations to mitigate noise for projects that are not federally funded will employ guidelines that determine the need, feasibility, and reasonableness of noise abatement measures. Funding for the Estrella future roadway improvement projects along this corridor would likely be from Highway User Revenue Funding. The Maricopa County Department of Transportation follows the FHWA criteria for Type I projects, which the Estrella Project is considered. Type I projects are those projects that are of new construction of highway on new location or when physical alteration of the existing highway changes the number of lanes.

Should future roadway improvement projects employ federal funding administered by the Federal Highway Administration (FHWA), noise considerations consistent with the FHWA noise policy would be incorporated into this overview. According to FHWA procedures, noise abatement must be considered when implementation of a roadway project results in a substantial increase over the existing noise level (most State Highway agencies define a substantial increase as 15 decibels greater than the existing noise level). Abatement must also be considered when noise levels are expected to approach or exceed the criteria levels.

FHWA has adopted Noise Abatement Criteria (NAC) that establish acceptable hourly, A-weighted noise levels in decibels (abbreviated dBA) for various land use activity categories (A-weighting emphasizes certain frequencies to approximate how sound is perceived by human hearing). An average of varying noise levels equivalent to one hour's exposure to a steady noise

pressure is abbreviated Leq(h). The FHWA's NAC emphasizes traffic generated noise and are intended to serve as guidelines for determining traffic noise impacts and the need for mitigation. FHWA Noise Abatement Criteria are shown in Table 8 below.

Table 8 FHWA Noise Abatement Criteria

Activity Category	Description	Leq(h)
A	Lands on which serenity and quiet are extraordinary significance and serve an important of public need and where the preservation of those qualities are essential if the area is to continue to serve it's intended purpose.	57 dBA
B	Residences, schools, parks, churches, libraries, hospitals, motels and hotels.	67 dBA
C	Developed lands not included in Categories A or B above.	72 dBA

Source: Code of Federal Regulations, Title 23, Part 772

There are two noise category types found within the study area. Category B includes residential type land uses such as single family homes and churches; residences are represented within each of the cities/communities in the study area. Category C activities relate to commercial businesses and other less noise sensitive areas with land uses such as commercial and light industrial, and noise generated by aircraft from Luke Air Force Base.

According to FHWA procedures, noise impacts occur if the anticipated sound levels for the project meets or exceeds the thresholds for each of the land use categories or approaches 67 dBA Leq for Category B type land uses. "Approaches" is considered to be 66 dBA Leq. These levels are typically applied to exterior areas where lowered noise levels would be of benefit. Traffic noise impacts also occur when the predicted traffic noise levels substantially exceed the existing noise level (15 dBA Leq or more).

Existing noise quality data is not currently available for the entire length of the corridor. An individual report for the Estrella Roadway from Grand Avenue to Lake Pleasant Road evaluating noise on adjacent residents of Sun City West was conducted in July 1997. During subsequent environmental documentation activities, ambient noise levels will be monitored at additional specified locations along the corridor. The future noise quality for those sections of the project area not previously studied will need to be evaluated against the existing noise data in terms of Federal Regulations for Noise Abatement. Noise abatement measures (mitigation) may be included in the project as required to meet noise requirements.

There may be extenuating circumstances where unique or unusual conditions warrant special consideration of highway traffic noise impacts and/or implementation of noise abatement measures. These circumstances could involve areas such as 1) those that are extremely noise sensitive, 2) those where severe traffic noise impacts are anticipated, or 3) those containing Section 4(f) resources as defined in the U.S. Department of Transportation Act of 1966. Extenuating circumstances will be considered on an individual project basis.

2.2.9 Hazardous Materials

Hazardous materials are regulated by the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The ADEQ implements CERCLA, commonly known as Superfund, and its amendment, the Superfund Amendments and Reauthorization Act of 1986 (SARA). The inherent environmental concerns associated with hazardous materials requires a preliminary investigation into the location of permitted and non-regulated hazardous material sites within the study area.

In July 1997, the National Priority List (NPL), the Remedial Projects Section Information Packer (formerly called Superfund and WQARF Priorities List), the Federal Resource Conservation and Recovery Act (RCRA) and Resource Conservation and Recovery Information System (RCRIS) database and Compliance Log, the Arizona CERCLA Information and Data System (ACIDS) List, the ADEQ Drywell Registration list, the ADEQ Hazardous Materials Incident Logbook, and the Arizona Directory of Active/Inactive Landfills and Closed Solid Waste Landfills were reviewed for evidence of hazardous materials within the corridor areas. Based on the review, there are no WQARF Priority sites and no closed solid waste landfills within the corridor. However, other sites with potential hazardous materials were identified in the RCRA/RCRIS files (Figure 5).

Based on the review and "windshield survey" one operational landfill, Skunk Creek Solid Waste Landfill, is located south of Happy Valley Road just west of I-17. The Skunk Creek landfill is also identified as a LUST site, and is listed in the RCRA Compliance Log. Additionally, wildcat dumping is evident along undeveloped portions of the Happy Valley Road alignment, particularly in the vicinity of the New and Agua Fria rivers.

The records search also revealed one dry well facility within the study area, at the intersection of Grand Avenue and Loop 303. Additionally, the Hazardous Materials Logbook lists five sites within the corridor area, all located west of I-17 on Happy Valley Road. Four of these were located on 67th Avenue and the other was located on 31st Avenue. The Environmental Site Assessment report for property located east of 91st Avenue and south of Happy Valley Road indicates the potential for mercury, other heavy metals and cyanide downstream of the Sunrise Relief Mine. No other potential hazardous materials sites were identified by the records search and windshield survey of the proposed Estrella corridor.

2.2.10 Cultural Resources

Four separate Federal Acts have been established to provide protection for cultural resources and ensure "future generations a genuine opportunity to appreciate and enjoy the rich heritage of our Nation" (P.L. 89-665). These acts and associated regulations include the National Historic Preservation Act, 1966 (NHPA, 36 CFR 60.4 and 36 CFR 800), the Archaeological Resources Protection Act, 1979 (ARPA, 43 CFR 7), the American Indian Religious Freedom Act, 1978 (AIRFA, P.L. 95-341), and the Native American Grave Protection and Repatriation Act (NAGPRA, Public Law 101-601). Cultural resources must be evaluated under each of these acts to ensure adequate protection of our cultural heritage.

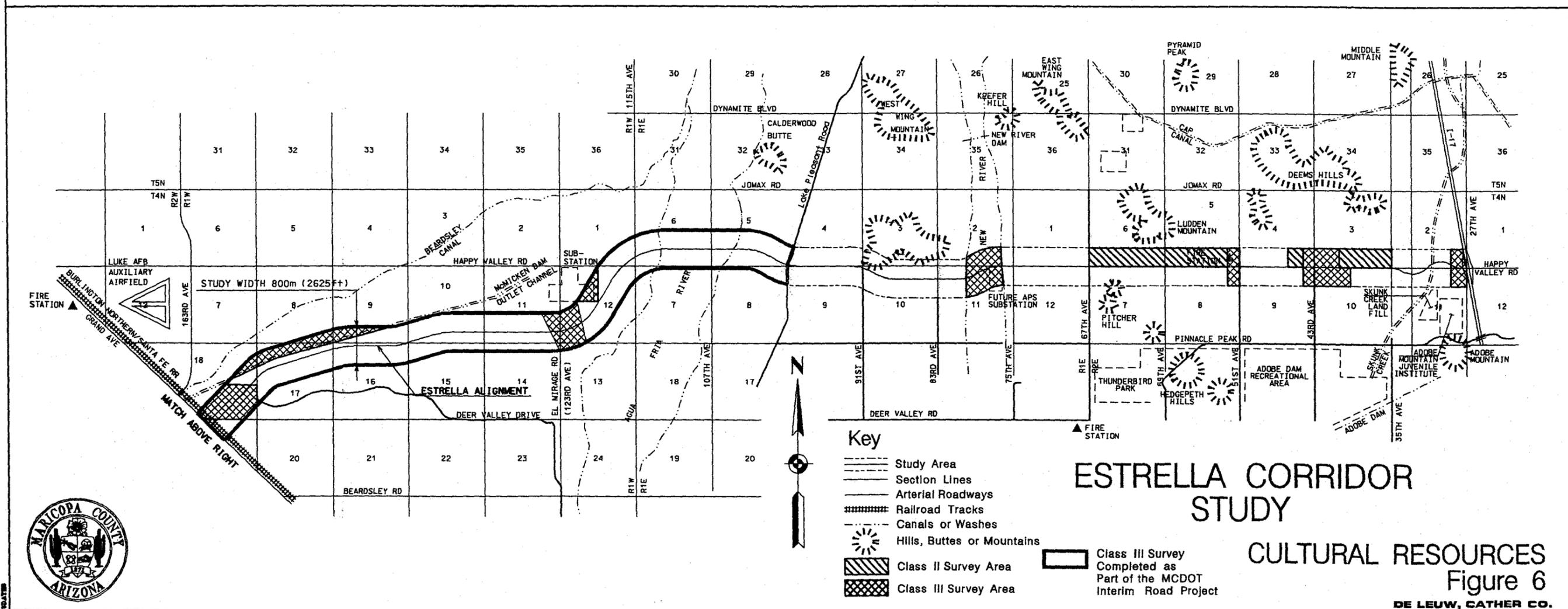
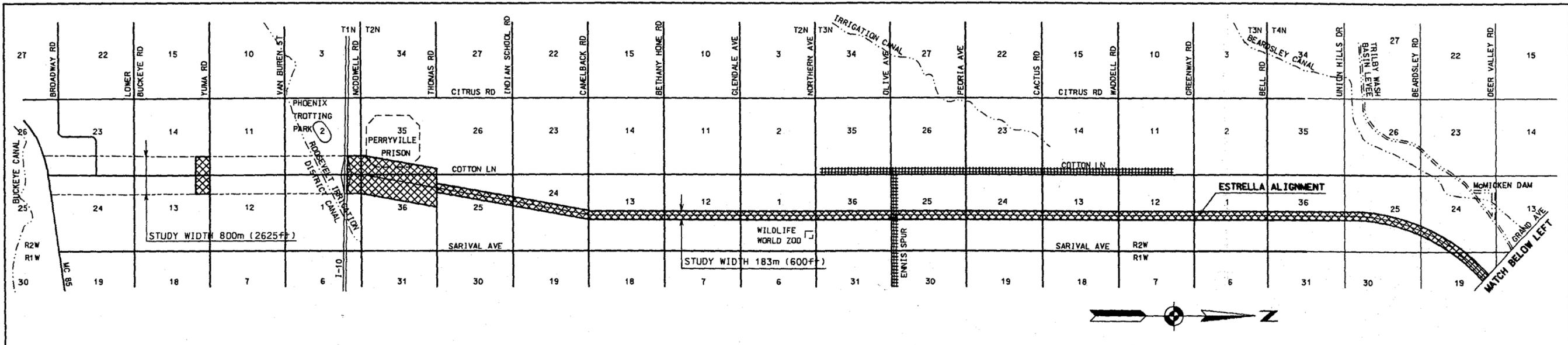
Under 36 CFR 60.4, cultural resources may be eligible for nomination to the NRHP if they "... possess integrity of location, design, setting, materials, workmanship, feeling and association..." and if these resources are either associated with (A) "significant themes in our Nation's history," or (B) "significant persons in our Nation's history," or if they (C) "embody distinctive construction characteristics or works of a master," or if they (D) "have yielded or have the potential to yield information important to history or prehistory." 36 CFR 800 Section 106 - stipulates that the State Historic Preservation Office (SHPO) must be consulted to determine the eligibility of a site for listing on the NRHP. ARPA 43 CFR Part 7, protects irreplaceable archaeological resources, that are at least 100 years old, located on public and Indian lands. The Act encourages the exchange of information between government agencies, professional archaeologists, and individuals with private collections of archaeological materials collected prior to the enactment of this act.

Cultural resource considerations within the project corridor were identified from information gathered from ASM, the SHPO, and existing environmental studies relevant to the study area. Based on these sources, previously identified historic properties within each corridor were identified. Historic properties include prehistoric and historic archaeological resources and architectural features. Districts, individual buildings, structures, sites and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association are potentially eligible for listing on the NRHP.

The Class I Cultural Resources Inventory identified all previous Class II and III surveys and previously recorded cultural resources within each corridor (Figure 6). The approximate distance of previous linear surveys within the corridor is 30.4 km (19 miles), with the existing portion of the Loop 303 corridor surveyed in 1988. Block surveys also have been conducted within the corridor, primarily in the vicinity of Sun City West and Middle New River, covering approximately 20.2 hectares (50 acres). A reconnaissance survey of ASLD lands between I-17 and 67th Avenue was conducted in 1987, identifying site clusters along the southern slopes of the Deem Hills. However, because the survey was conducted using pedestrian transects spaced more than 20 m (65.5 ft) apart, the survey does not meet ASM standards. These lands and areas not previously surveyed for cultural resources will need to be surveyed using pedestrian transects when specific highway projects are identified that will disturb the ground surface.

Our Class I Inventory of cultural resources within the corridor identified 25 previously recorded prehistoric and historic archaeological sites, with known cultural resources dense or moderately dense in five areas (Table 9). These areas include the Deem Hills, Middle New River, and three in the vicinity of the McMicken Dam Outlet Channel. One of the previously identified sites contains both prehistoric and historic components (multicomponent), 10 are historic and 14 are prehistoric.

MCDOT has completed a Class III Archaeological Field survey for the corridor from west of Grand Avenue to Lake Pleasant Road. Twenty-one sites were identified within the area surveyed. When the final right of way is identified for the Estrella project, the affected sites will be identified and a mitigation plan will be established.



- Key**
- Study Area
 - Section Lines
 - Arterial Roadways
 - Railroad Tracks
 - Canals or Washes
 - Hills, Buttes or Mountains
 - Class II Survey Area
 - Class III Survey Area
 - Class III Survey Completed as Part of the MCDOT Interim Road Project

ESTRELLA CORRIDOR STUDY

CULTURAL RESOURCES Figure 6

DE LEUW, CATHER CO.



It was unclear whether the previously recorded archaeological sites were recommended as eligible or potentially eligible for listing on the NRHP, based on the site descriptions on file at ASM. To provide a baseline of the potential NRHP eligibility of these sites, the potential NRHP criteria met by each previously recorded site was estimated based on the ASM site card descriptions. Twenty-four of the sites were estimated to potentially meet NRHP Criterion "D," because they may have yielded, or may be likely to yield, information important in prehistory or history. When future projects are identified that may impact these sites, a testing and data recovery plan will need to be formulated in consultation with the SHPO. The historic road appears to have only served local residents, and therefore was not considered eligible for listing because it is not associated with a major theme in the State's history

Table 9 Character and Number of Sites Along the Corridor and Potential Criteria Met for NRHP Eligibility.

Site Type	Total	Potential NRHP
Prehistoric artifact scatter	6	D
Prehistoric artifact scatter w/ features	4	D
Prehistoric lithic procurement	1	D
Prehistoric agricultural	2	D
Prehistoric canal	1	D
Multicomponent	1	D
Historic artifact scatter	1	D
Historic scatter w/ features	8	D
Historic road	1	not eligible
Total Previously Recorded Sites	25	D (24 of 25)

2.2.11 Section 4(f) Properties

With the possibility that funding by FHWA might be used to construct future projects, Section 4(f) of the Department of Transportation Act restricts the use of any publicly-owned land associated with a park, recreation area, wildlife or waterfowl refuge, or land associated with historical sites for highway purposes. This act requires consultation with various resource agencies, a specific finding that there are no feasible and prudent alternatives to the use of such land, and a determination that the proposed action includes all possible planning to minimize harm to such lands before Federal funds can be used for highway purposes on these lands. The Act is binding to programs administered by agencies under the Federal Department of Transportation.

There are no public parks located within the corridor, and no wildlife or waterfowl refuges proposed or designated within the study area. Also there are no NRHP listed properties eligible under Criteria "A," "B," or "C" located within the study area. Public properties within the project corridor include a planned hiking/bicycle/equestrian trail which will cross Loop 303 immediately

north of Peoria Avenue (Figure 5), and a planned equestrian trail adjacent to Happy Valley Road within the City of Phoenix (Figure 5). There is an "open space preserve" on ASLD lands, at Ludden Mountain, with greater than 15% slope. Additionally, the City of Phoenix has proposed an "open space preserve" on ASLD lands within the Deem Hills. If specific highway/arterial roadway projects are identified that will use federal funds and may impact these public properties, Section 4(f) consultation with the appropriate agencies may be required.

2.2.12 Special Management Areas

The City of Phoenix and the ASLD jointly manage an open space preserve on Ludden Mountain, on lands with greater than 15% slope. The City of Phoenix and ASLD recently agreed to the establishment of an open space preserve in conjunction with the Stetson Hills development, on lands with greater than 15% slope in the Deem Hills, on the far eastern end of the study area.

2.2.13 Summary of Physical and Natural Environment

Much of the study area is either undeveloped or under agriculture with few existing residential communities adjacent to the corridor. Rugged basalt and granitic hills and mountains form a natural northern boundary to the corridor. The desert scrub vegetation and rocky slopes found on the slopes of these hills and other undeveloped portions of the corridor, and riparian vegetation along the New and Agua Fria Rivers and Skunk Creek provide potential habitat for a range of wildlife. Wildlife potentially occurring in these areas include four special status species, cactus ferruginous pygmy-owl, Sonoran desert tortoise, Harris' Hawk and a variety of cholla (*Opuntia wiggensii*). No cottonwoods, willows, or wetlands were observed along any of the natural drainages in the study area, however, a small wetland is present in a tailwater pond on the northeast corner of Bethany Home Road and Loop 303. The majority of lands within the southern portion of the corridor are under agriculture.

Air quality and noise quality data for the study area are not currently available for the entire corridor. When specific highway/arterial roadway projects are identified within the corridor, noise will be monitored to FHWA and/or Maricopa County standards, and air quality will be monitored to federal standards. There are few hazardous materials concerns within the project corridor, with Skunk Creek Solid Waste Landfill and a dry well at the intersection of Grand Avenue and Loop 303 the only two facilities identified. In addition to these specific sites, five hazardous materials spills on Happy Valley Road were identified in the Hazardous Materials log book. Also, wildcat dumping along the undeveloped portions of the Happy Valley Road was identified during the windshield survey.

Twenty-five previously recorded prehistoric and historic archaeological sites were identified in the study area. Twenty-four of these sites were estimated to potentially meet the requirements for listing on the NRHP under Criteria "D." None of these sites are considered 4(f) properties. MCDOT has identified twenty-one sites within the corridor from west of Grand Avenue to Lake Pleasant Road. When the final right of way is identified for the Estrella project, the affected sites will be identified and a mitigation plan will be established. Potential 4(f) properties in existence within the project corridor include a planned hiking/bicycle/equestrian trail along Peoria Avenue, and a planned equestrian trail adjacent to Happy Valley Road within the City of Phoenix. When

specific highway/arterial roadway projects are identified that may impact the trails, Section 4(f) consultation with the appropriate agencies may be required.

2.3 HIGHWAY CHARACTERISTICS

Today, the regional transportation needs of the study area are served by Interstate 10 and Interstate 17, US 60 and MC 85 and the 15 mile L303 Interim Roadway. In the western portion of the study area from MC 85 to Grand Avenue local access is provided by a very complete system of existing section line roadways. Between Grand Avenue and Interstate 17 there are fewer existing roadways as much of the area is still undeveloped desert. Bell Road and SR 74 are the only continuous east-west roadways and 99th Avenue/Lake Pleasant Road is the only continuous north-south roadway in this part of the study area. Each of these roadways has been designated as a Road of Regional Significance by MAG (Figure 7). Camelback Road and Olive/Dunlap are other Roads of Regional Significance that cross the corridor.

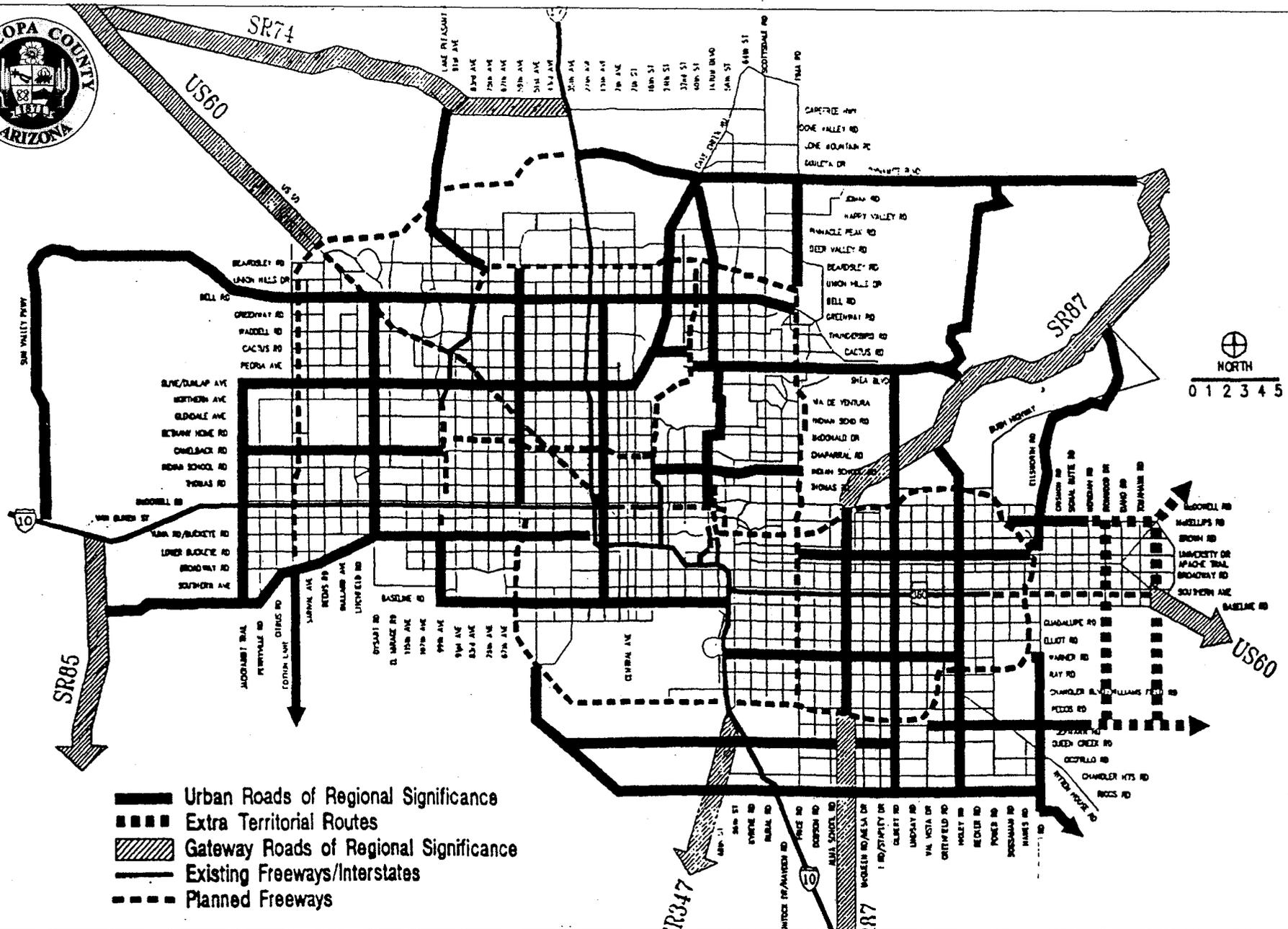
2.3.1 Existing Corridor

As a former planned freeway, the Estrella corridor is also a Road of Regional Significance; however, at the present time it is not continuous through the entire study area. Improved roadways exist for much of the corridor as described below.

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The Burlington Northern-Santa Fe Railroad line that runs parallel to the Grand Avenue, the Ennis Spur crossing north of Olive Road and the Union Pacific Railroad north of MC 85 are all rail lines crossing through the corridor that will have to be accommodated.

Outside of surface canals, railroad crossings and the power lines parallel to Cotton Lane there are no other significant utilities that should be affected by an at grade roadway alignment through the corridor.

These and other utilities were identified in an extensive utility study conducted by Cella Barr and Associates for the ADOT State Route 303L study, Utility and Irrigation Conflict Report for Estrella Freeway Project RAM-600-9-301 December 1990. This report identifies and gives the exact locations of all utilities along the corridor from MC 85 to Interstate 17 along the "Jomax Road Alignment" The report gives recommendations and costs for utility relocation based upon a full freeway facility.

2.3.5 Drainage/Floodplains

The drainage for the Estrella Corridor can be divided into two different drainage areas. The total drainage area has been studied in detail by the Flood Control District of Maricopa County and documented in the "White Tanks/Agua Fria Area Drainage Master Study", 1994, the "White Tanks/Agua Fria Area Drainage Master Plan", 1994, the "Wittmann Area Drainage Master Study", 1989 and the "ACDC Area Drainage Master Study", 1995. The drainage boundary between the west area and the north area is the McMicken Dam Outlet Wash near El Mirage Road.

For the western part, the upstream drainage area of the Estrella Corridor extends from mountainous areas of the White Tanks Mountains White Tanks #3 and #4, and from McMicken Dam. Drainage generally flows overland following agricultural field grading and following the roadway network. Flow patterns in undeveloped areas are generally from the northwest to the southeast. Developed areas, either agricultural or residential, have been graded to a north-south or east west orientation to follow the irrigation system and roadway system.

Flood flows reach the corridor mostly by the roadway system from the west. Approximately one mile to the east of the corridor, there is a major flooding zone that follows Reems Road north of Luke Air Force Base and follows Bullard Wash to the south. The FCDMC studies have determined that a major north south collector channel or a channel and series of detention basins is needed to relieve this flooding. The preferred location for this collection channel is just west of

the Estrella Corridor and a "Drainage Channel Right of Way Requirement Study" was prepared for MCDOT in March 1997.

McMicken Dam generally defines the upstream extent of the watershed for the north part of the western drainage area. The eastern edge of this drainage area, is defined by the McMicken Dam Outlet Wash. There is a relatively small watershed between the dam and the corridor so only minor roadway crossings are expected.

The drainage along the northern segment of the corridor flows in a southerly direction from the hills north of the corridor. The sheet flow follows many small washes through the desert region that are tributary to the Agua Fria River, New River and Skunk Creek channels. All three of these channels cross the corridor. The Agua Fria River and New River are very wide and extensively braided. The corridor will ultimately need bridges to cross these rivers although interim projects may be constructed with roadways that will have culverts to carry only low flows under the corridor. Several smaller washes also cross the corridor and must have relatively large culverts to convey the flow under the corridor. Currently, Happy Valley Road crosses a drainage channel near 43rd Avenue with a four barrel 5'x 9' concrete box culvert.

The FCDMC has mapped the 100-year floodplain of both the Agua Fria and New Rivers, as well as Skunk Creek. Flood insurance rate maps (FIRM) of the study area (Figure 8) indicate the proposed corridor is located within the 100-year floodplain of the Gila, Agua Fria and New Rivers, Twin Buttes Wash and Skunk Creek. The study area is also located within the 100-year floodplain of the Buckeye Canal, Beardsley Canal, McMicken Dam Channel and the McMicken Outlet Wash.

2.3.6 Structures

There are few major structures within the study area today. Bridges exist at both Interstate 10 and Interstate 17. McMicken Dam is located along the northwest section of the project and has a large outlet channel that crosses the corridor near an extended El Mirage Road alignment. There is a four barrel 5'x 9' box culvert located on the west side of 43rd Avenue that runs under Happy Valley Road and bank protection is provided along Skunk Creek where it crosses Happy Valley Road.

2.3.7 Geotechnical

The soils along the corridor from MC 85 to Grand Avenue are primarily silty soils with moderate erosion potential. The soils from Grand Avenue to I-17 are deeper soils with granite and have a low erosion potential. Some exposed granite and bedrock exists along the Happy Valley Road alignment. The area from Grand Avenue to Lake Pleasant Road consists primarily of sparse to moderate vegetation with areas of exposed sedimentation in washes that cross the corridor study area. The ground surface of the corridor through the Agua Fria River primarily consists of exposed river rock and sedimentation. Geotechnical and materials investigations will be necessary during the design phase of each project.

It was unclear whether the previously recorded archaeological sites were recommended as eligible or potentially eligible for listing on the NRHP, based on the site descriptions on file at ASM. To provide a baseline of the potential NRHP eligibility of these sites, the potential NRHP criteria met by each previously recorded site was estimated based on the ASM site card descriptions. Twenty-four of the sites were estimated to potentially meet NRHP Criterion "D," because they may have yielded, or may be likely to yield, information important in prehistory or history. When future projects are identified that may impact these sites, a testing and data recovery plan will need to be formulated in consultation with the SHPO. The historic road appears to have only served local residents, and therefore was not considered eligible for listing because it is not associated with a major theme in the State's history

Table 9 Character and Number of Sites Along the Corridor and Potential Criteria Met for NRHP Eligibility.

Site Type	Total	Potential NRHP
Prehistoric artifact scatter	6	D
Prehistoric artifact scatter w/ features	4	D
Prehistoric lithic procurement	1	D
Prehistoric agricultural	2	D
Prehistoric canal	1	D
Multicomponent	1	D
Historic artifact scatter	1	D
Historic scatter w/ features	8	D
Historic road	1	not eligible
Total Previously Recorded Sites	25	D (24 of 25)

2.2.11 Section 4(f) Properties

With the possibility that funding by FHWA might be used to construct future projects, Section 4(f) of the Department of Transportation Act restricts the use of any publicly-owned land associated with a park, recreation area, wildlife or waterfowl refuge, or land associated with historical sites for highway purposes. This act requires consultation with various resource agencies, a specific finding that there are no feasible and prudent alternatives to the use of such land, and a determination that the proposed action includes all possible planning to minimize harm to such lands before Federal funds can be used for highway purposes on these lands. The Act is binding to programs administered by agencies under the Federal Department of Transportation.

There are no public parks located within the corridor, and no wildlife or waterfowl refuges proposed or designated within the study area. Also there are no NRHP listed properties eligible under Criteria "A," "B," or "C" located within the study area. Public properties within the project corridor include a planned hiking/bicycle/equestrian trail which will cross Loop 303 immediately

north of Peoria Avenue (Figure 5), and a planned equestrian trail adjacent to Happy Valley Road within the City of Phoenix (Figure 5). There is an "open space preserve" on ASLD lands, at Ludden Mountain, with greater than 15% slope. Additionally, the City of Phoenix has proposed an "open space preserve" on ASLD lands within the Deem Hills. If specific highway/arterial roadway projects are identified that will use federal funds and may impact these public properties, Section 4(f) consultation with the appropriate agencies may be required.

2.2.12 Special Management Areas

The City of Phoenix and the ASLD jointly manage an open space preserve on Ludden Mountain, on lands with greater than 15% slope. The City of Phoenix and ASLD recently agreed to the establishment of an open space preserve in conjunction with the Stetson Hills development, on lands with greater than 15% slope in the Deem Hills, on the far eastern end of the study area.

2.2.13 Summary of Physical and Natural Environment

Much of the study area is either undeveloped or under agriculture with few existing residential communities adjacent to the corridor. Rugged basalt and granitic hills and mountains form a natural northern boundary to the corridor. The desert scrub vegetation and rocky slopes found on the slopes of these hills and other undeveloped portions of the corridor, and riparian vegetation along the New and Agua Fria Rivers and Skunk Creek provide potential habitat for a range of wildlife. Wildlife potentially occurring in these areas include four special status species, cactus ferruginous pygmy-owl, Sonoran desert tortoise, Harris' Hawk and a variety of cholla (*Opuntia wiggensii*). No cottonwoods, willows, or wetlands were observed along any of the natural drainages in the study area, however, a small wetland is present in a tailwater pond on the northeast corner of Bethany Home Road and Loop 303. The majority of lands within the southern portion of the corridor are under agriculture.

Air quality and noise quality data for the study area are not currently available for the entire corridor. When specific highway/arterial roadway projects are identified within the corridor, noise will be monitored to FHWA and/or Maricopa County standards, and air quality will be monitored to federal standards. There are few hazardous materials concerns within the project corridor, with Skunk Creek Solid Waste Landfill and a dry well at the intersection of Grand Avenue and Loop 303 the only two facilities identified. In addition to these specific sites, five hazardous materials spills on Happy Valley Road were identified in the Hazardous Materials log book. Also, wildcat dumping along the undeveloped portions of the Happy Valley Road was identified during the windshield survey.

Twenty-five previously recorded prehistoric and historic archaeological sites were identified in the study area. Twenty-four of these sites were estimated to potentially meet the requirements for listing on the NRHP under Criteria "D." None of these sites are considered 4(f) properties. MCDOT has identified twenty-one sites within the corridor from west of Grand Avenue to Lake Pleasant Road. When the final right of way is identified for the Estrella project, the affected sites will be identified and a mitigation plan will be established. Potential 4(f) properties in existence within the project corridor include a planned hiking/bicycle/equestrian trail along Peoria Avenue, and a planned equestrian trail adjacent to Happy Valley Road within the City of Phoenix. When

specific highway/arterial roadway projects are identified that may impact the trails, Section 4(f) consultation with the appropriate agencies may be required.

2.3 HIGHWAY CHARACTERISTICS

Today, the regional transportation needs of the study area are served by Interstate 10 and Interstate 17, US 60 and MC 85 and the 15 mile L303 Interim Roadway. In the western portion of the study area from MC 85 to Grand Avenue local access is provided by a very complete system of existing section line roadways. Between Grand Avenue and Interstate 17 there are fewer existing roadways as much of the area is still undeveloped desert. Bell Road and SR 74 are the only continuous east-west roadways and 99th Avenue/Lake Pleasant Road is the only continuous north-south roadway in this part of the study area. Each of these roadways has been designated as a Road of Regional Significance by MAG (Figure 7). Camelback Road and Olive/Dunlap are other Roads of Regional Significance that cross the corridor.

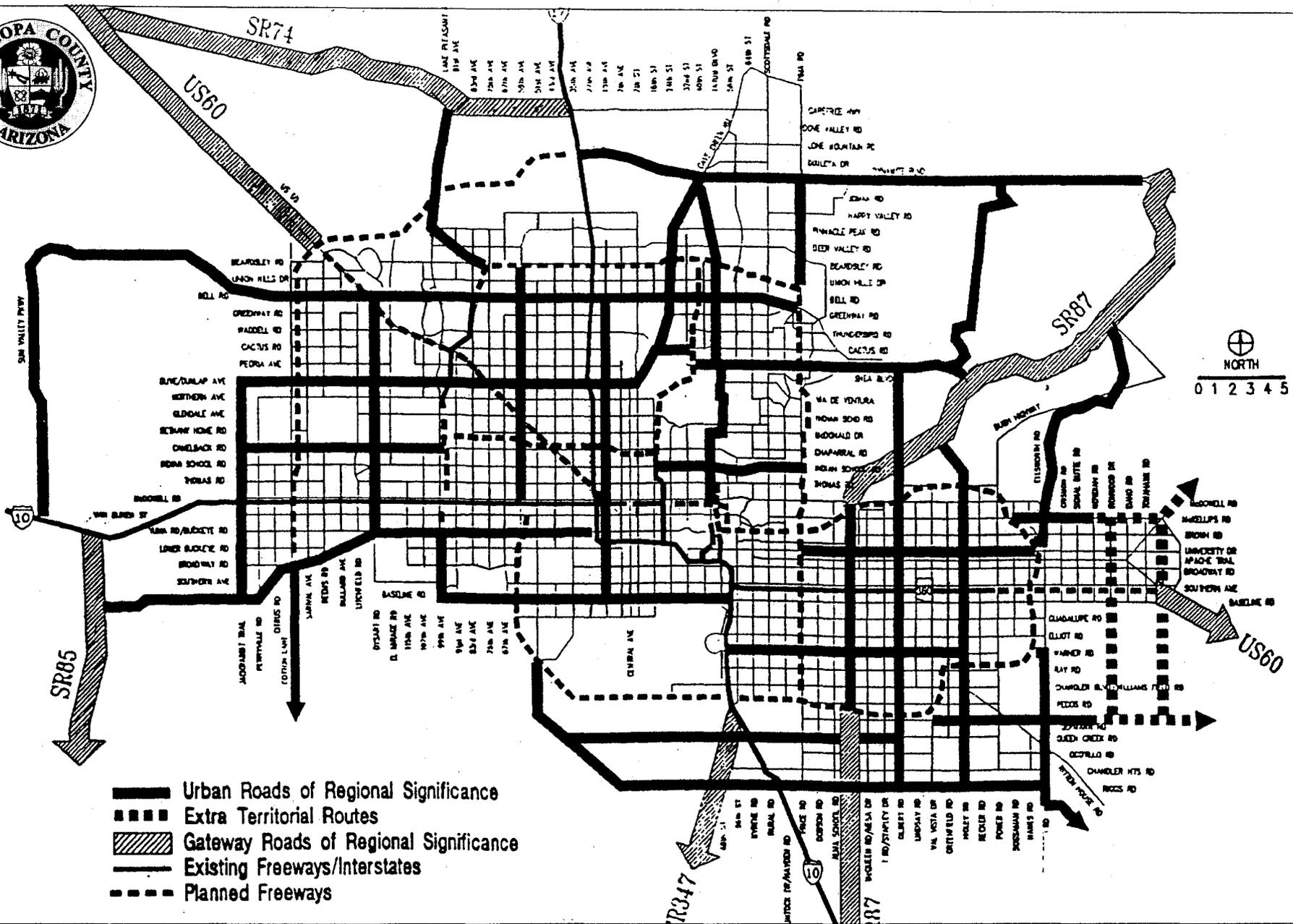
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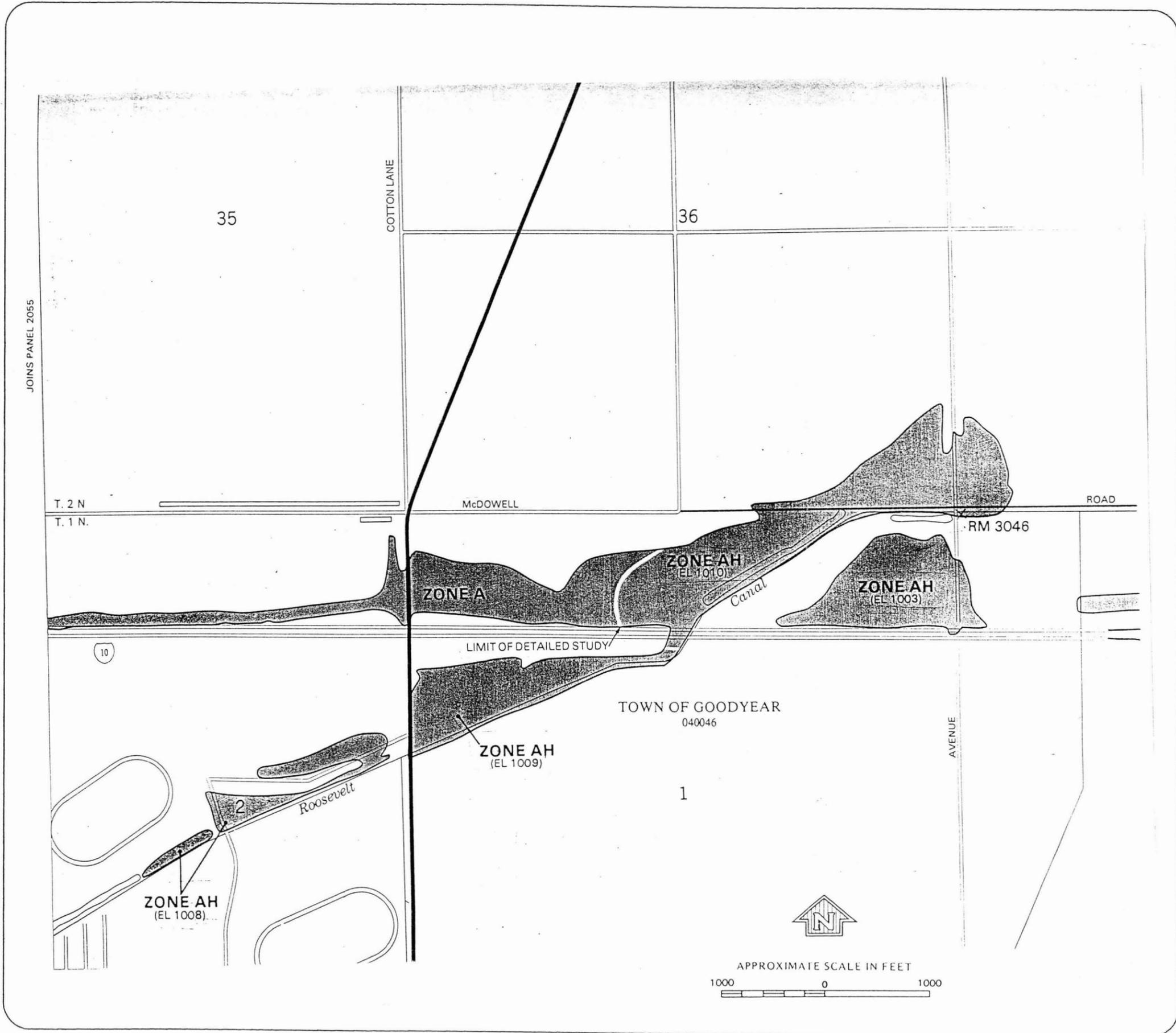
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There are few major structures within the study area today. Bridges exist at both Interstate 10 and Interstate 17. McMicken Dam is located along the northwest section of the project and has a large outlet channel that crosses the corridor near an extended El Mirage Road alignment. There is a four barrel 5'x 9' box culvert located on the west side of 43rd Avenue that runs under Happy Valley Road and bank protection is provided along Skunk Creek where it crosses Happy Valley Road.

2.3.7 Geotechnical

The soils along the corridor from MC 85 to Grand Avenue are primarily silty soils with moderate erosion potential. The soils from Grand Avenue to I-17 are deeper soils with granite and have a low erosion potential. Some exposed granite and bedrock exists along the Happy Valley Road alignment. The area from Grand Avenue to Lake Pleasant Road consists primarily of sparse to moderate vegetation with areas of exposed sedimentation in washes that cross the corridor study area. The ground surface of the corridor through the Agua Fria River primarily consists of exposed river rock and sedimentation. Geotechnical and materials investigations will be necessary during the design phase of each project.



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
MARICOPA COUNTY,
ARIZONA AND
INCORPORATED AREAS

PANEL 2060 OF 4530

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GOODYEAR, TOWN OF	040046	2060	E
LITCHFIELD PARK, CITY OF . . .	040128	2060	E
MARICOPA COUNTY UNINCORPORATED AREAS	040037	2060	E

MAP NUMBER
04013C2060 E

MAP REVISED:
SEPTEMBER 30, 1995

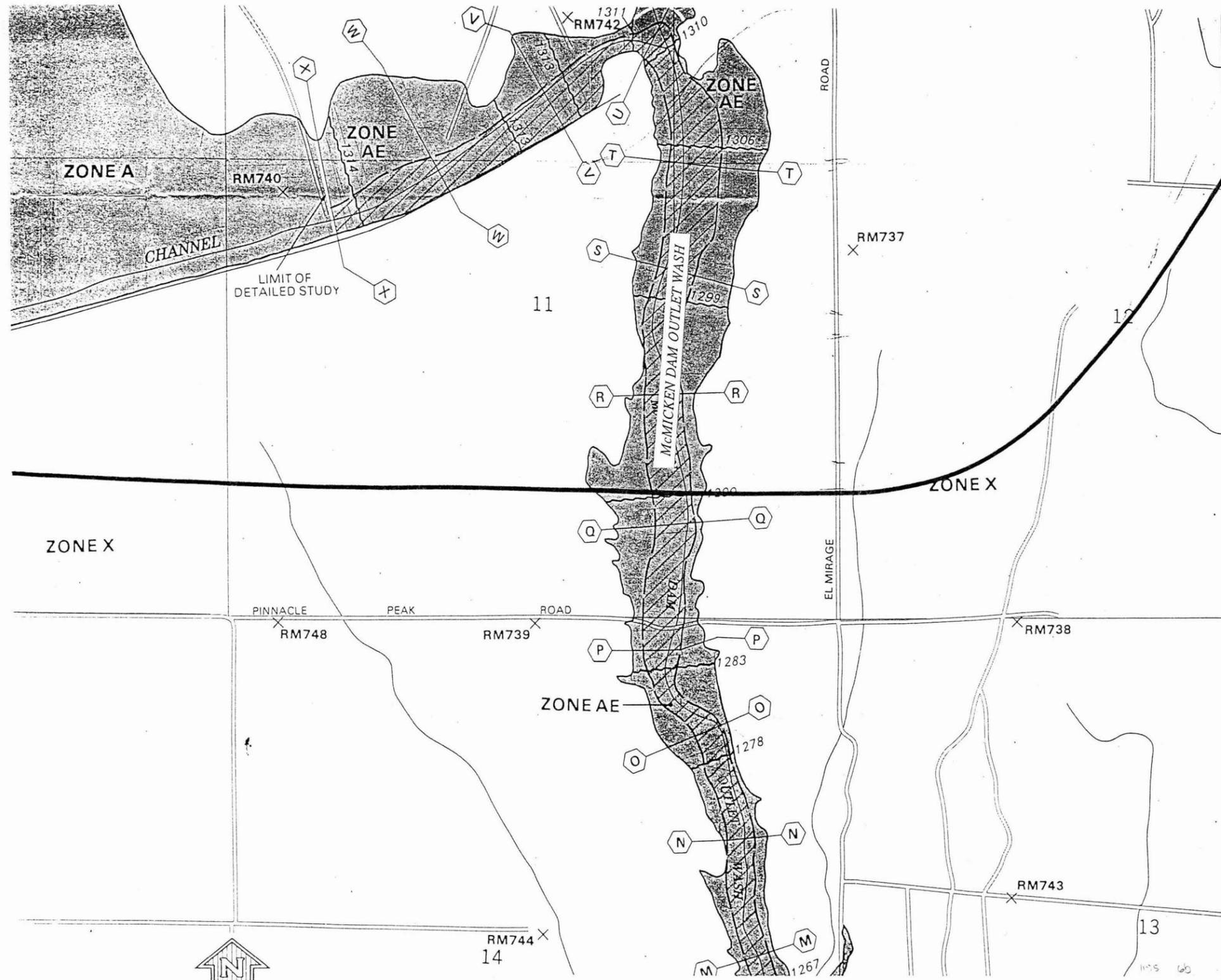


Federal Emergency Management Agency

Estrella Corridor Study

Figure 8a





FIRM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY,
ARIZONA AND
INCORPORATED AREAS

PANEL 1155 OF 4350

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY			
UNINCORPORATED AREAS	040037	1155	F

MAP NUMBER
04013C1155F

MAP REVISED:
DECEMBER 3, 1993

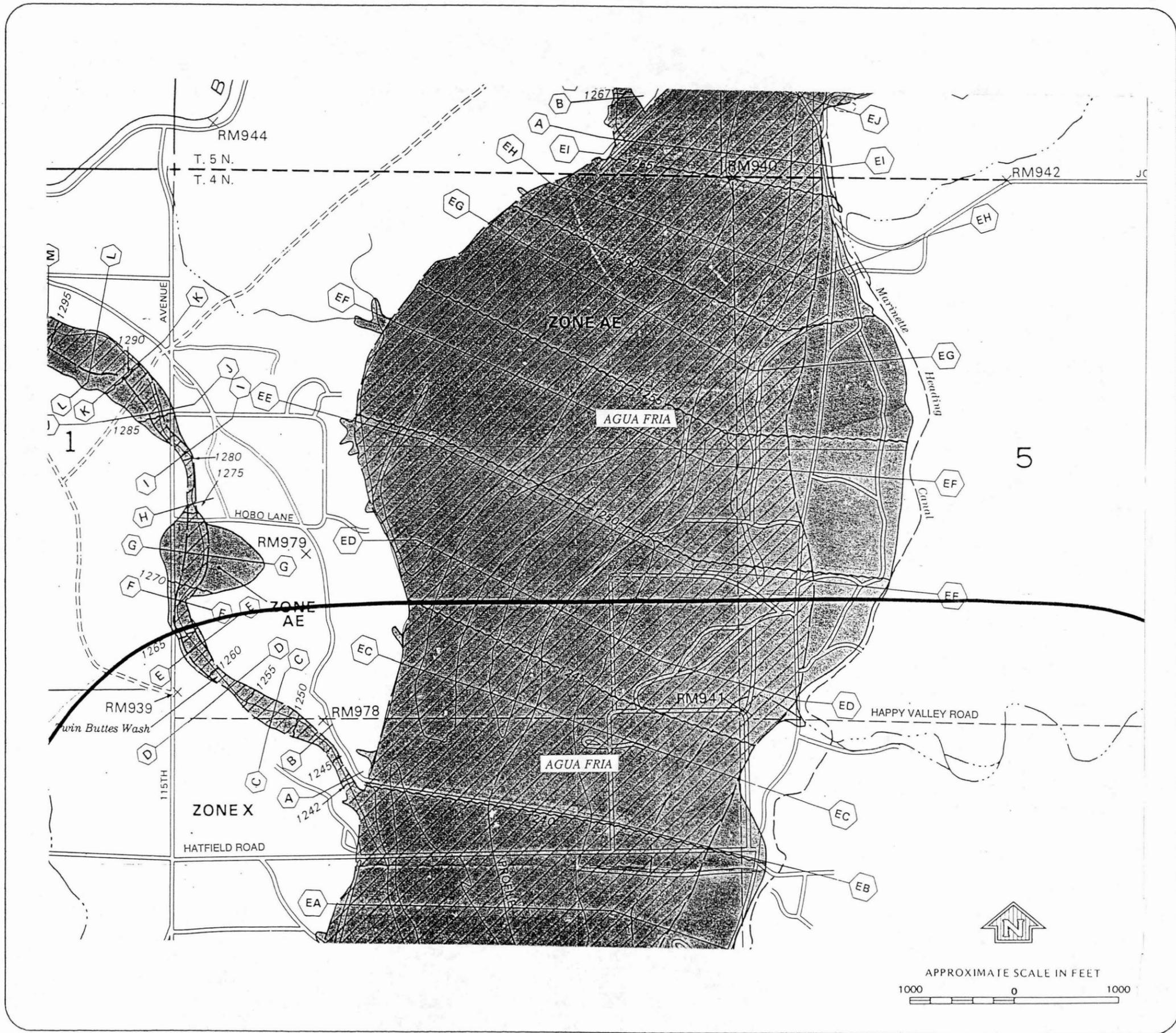


Federal Emergency Management Agency

Estrella Corridor Study

Figure 8b





NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY,
ARIZONA AND
INCORPORATED AREAS

PANEL 1160 OF 4350

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	1160	F
PEORIA, CITY OF	040050	1160	F

MAP NUMBER
04013C1160 F

MAP REVISED:
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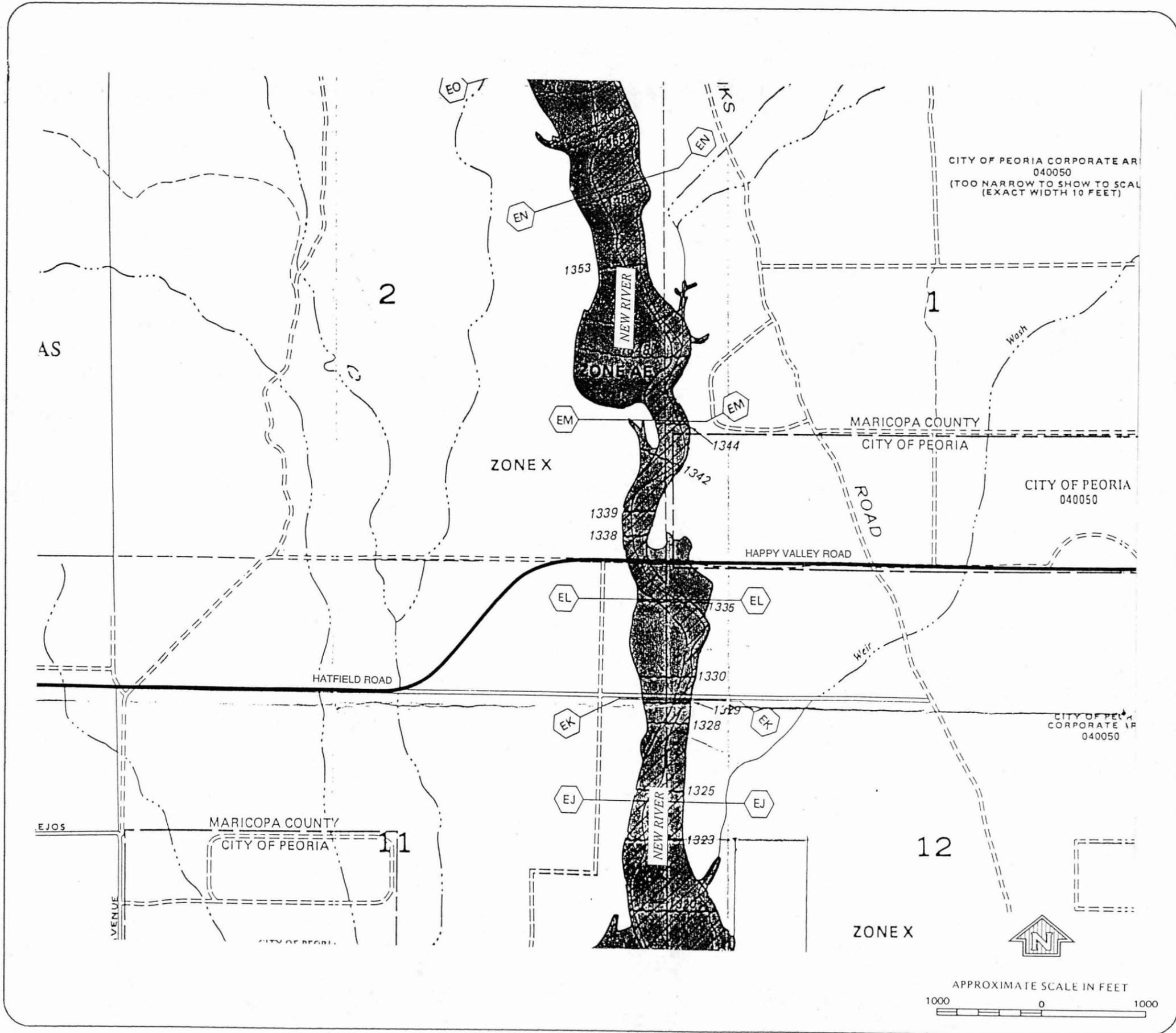


Federal Emergency Management Agency

Estrella Corridor Study

Figure 8c





FIRM
FLOOD INSURANCE RATE MAP
 MARICOPA COUNTY,
 ARIZONA AND
 INCORPORATED AREAS

PANEL 1180 OF 4350

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
GLENDALE, CITY OF	040045	1180	E
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	1180	E
PEORIA, CITY OF	040050	1180	E
PHOENIX, CITY OF	040051	1180	E

MAP NUMBER
 04013C1180 E

MAP REVISED:
 SEPTEMBER 29, 1989



Federal Emergency Management Agency

Estrella Corridor Study

Figure 8d



FIRM
 FLOOD INSURANCE RATE MAP
 MARICOPA COUNTY,
 ARIZONA AND
 INCORPORATED AREAS

PANEL 1185 OF 4350

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
GLENDALE, CITY OF	040045	1185	F
MARICOPA COUNTY, UNINCORPORATED AREAS	040037	1185	F
PHOENIX, CITY OF	040051	1185	F

MAP NUMBER
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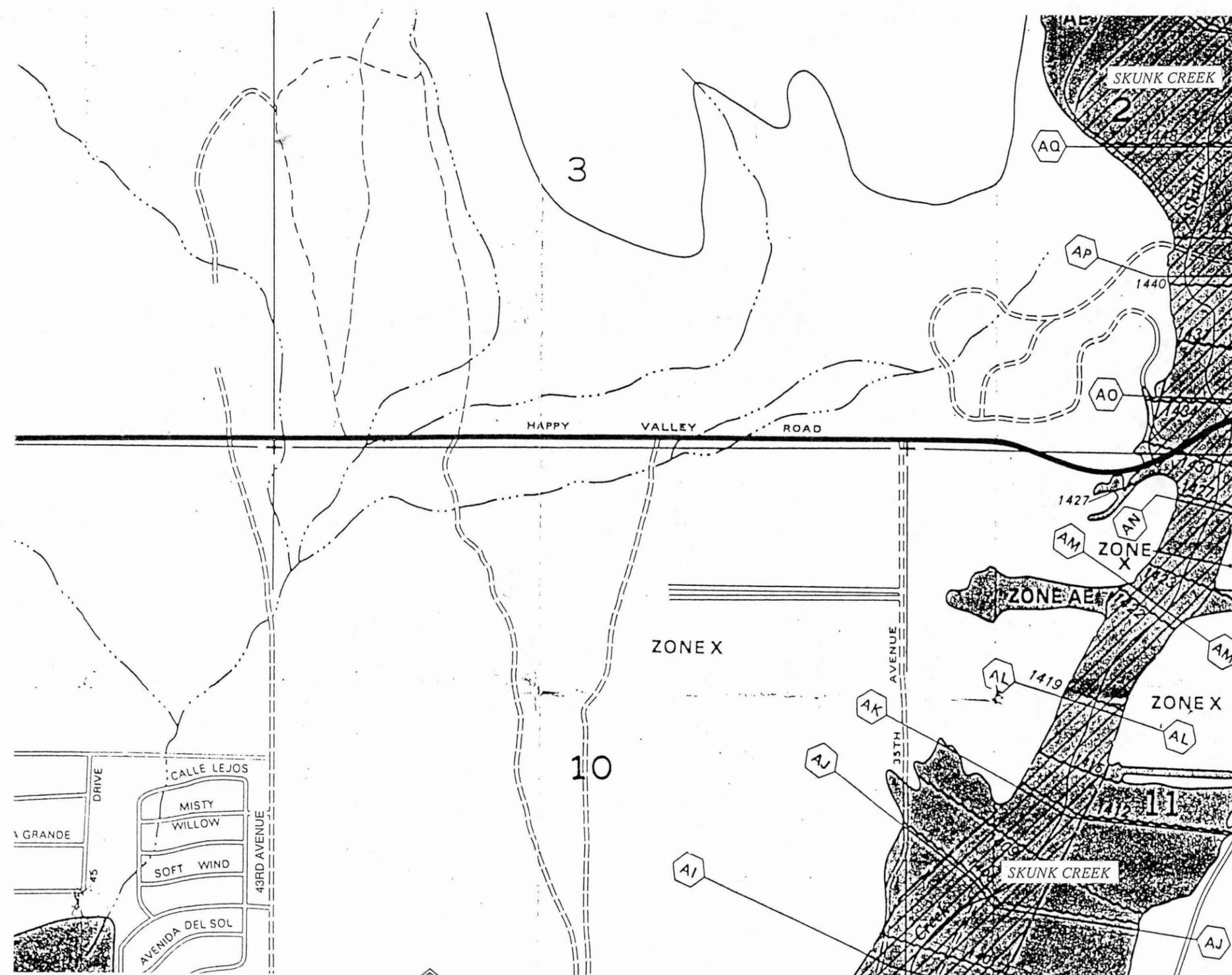
MAP REVISED:
 SEPTEMBER 4, 1991



Federal Emergency Management Agency

Estrella Corridor Study

Figure 8e



APPROXIMATE SCALE IN FEET
 1000 0 1000

SECTION 3 TRAFFIC DATA

The 2010 and 2020 projected traffic volumes in this report were provided by the Maricopa Association of Governments Transportation Planning Office (MAGTPO) in September, 1997. They are based on MAG's 2010 and 2020 Build (I1) Networks, and reflect the latest socio-economic data for the region. Two lanes were assumed in each direction from MC 85 to Lake Pleasant Road and three lanes in each direction from Lake Pleasant Road to Interstate 17.

3.1 PROJECTED TRAFFIC VOLUMES

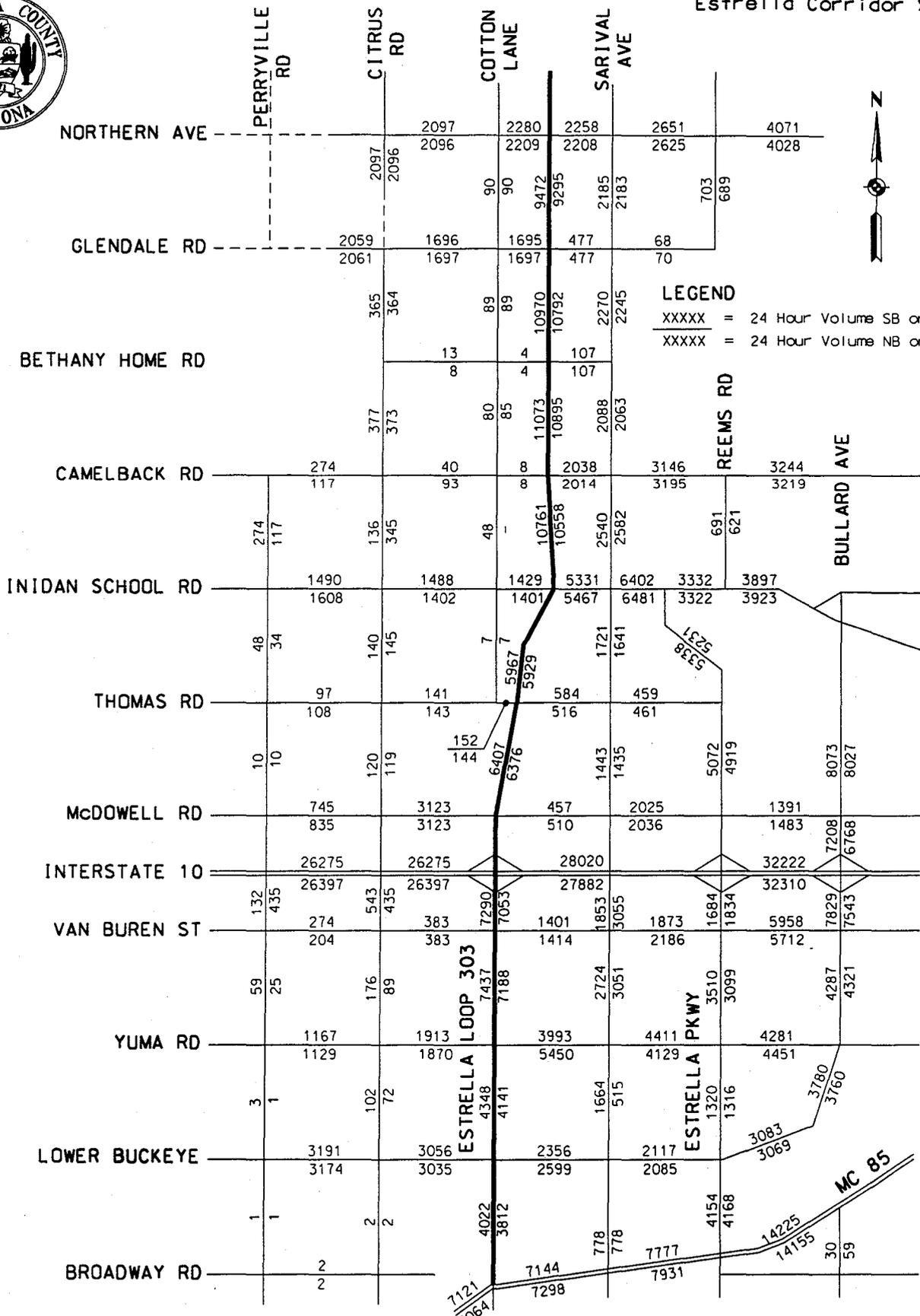
The projected average daily two-way traffic volumes for 2010 vary from a low of 3,639 vehicles per day (vpd) between Lake Pleasant Road and 91st Avenue to a high of 28,202 vpd between 43rd Avenue and 35th Avenue. Volumes along the north/south segment vary from 7,834 vpd just north of MC 85 to 21,968 vpd between Camelback Road and Bethany Home Road. Projected 2020 traffic volumes range from a low of 6,907 vpd between Lake Pleasant Road and 91st Avenue to a high of 39,476 from 35th Avenue to Interstate 17. Along Cotton Lane the 2020 volumes vary from 16,722 vpd just north of MC 85 to 31,707 vpd between Camelback Road and Bethany Home Road. 2010 traffic volumes are shown in Figures 9 through 11 and 2020 volumes are shown in Figures 12 through 14.

These traffic volumes are lower than the 2015 traffic volumes included in the Design Concept Report for the Estrella Freeway prepared by Cella Barr Associates and Kimley Horn in November 1991. These differences may be due in part to the designation of this alignment as an expressway/arterial instead of a freeway. The one location where the current 2020 projection exceeds the old 2015 projection is at Interstate 17 and Happy Valley Road. The 2020 projection is 39,476 vpd while the 2015 projection at Interstate 17 and Dixileta, the termination point of the original ADOT alignment was 34,300. The higher 2015 volumes were used as the mainline traffic projections for Estrella Interim Roadway Limited Scope Design Concept Report but have not been used in this analysis.

The traffic projections are relatively low along Happy Valley Road between Lake Pleasant Road and 67th Avenue while several of the north/south roadways are projected to carry larger volumes than might be reasonably expected. It appears that east/west traffic with destinations to or from the south is being attracted to the Agua Fria Freeway three miles south and traffic with destinations to the north is being attracted to Carefree Highway. These traffic projections indicate that Happy Valley Road is inappropriate for designation as the Estrella Expressway or Loop 303, but rather it functions as an arterial street that intersects Loop 303.

3.2 FUTURE LANE REQUIREMENTS

The traffic projections can be used to identify the years in which future improvements (additional lanes) will be required to maintain an acceptable level of service along the Estrella Corridor. For planning purposes 7,500 vehicles per lane (15,000 vpd for a two lane roadway and 30,000 vpd for a four lane roadway) has been used as the maximum service volume. This is the volume shown in the Table 2.1 of the Maricopa County Roadway Design Manual, for an Urban Principal Arterial. Although much of this corridor is currently rural in nature, it will continue to become more urbanized as the north and west areas of the Valley grow.



Source: MAGTPO (September 15, 1997)

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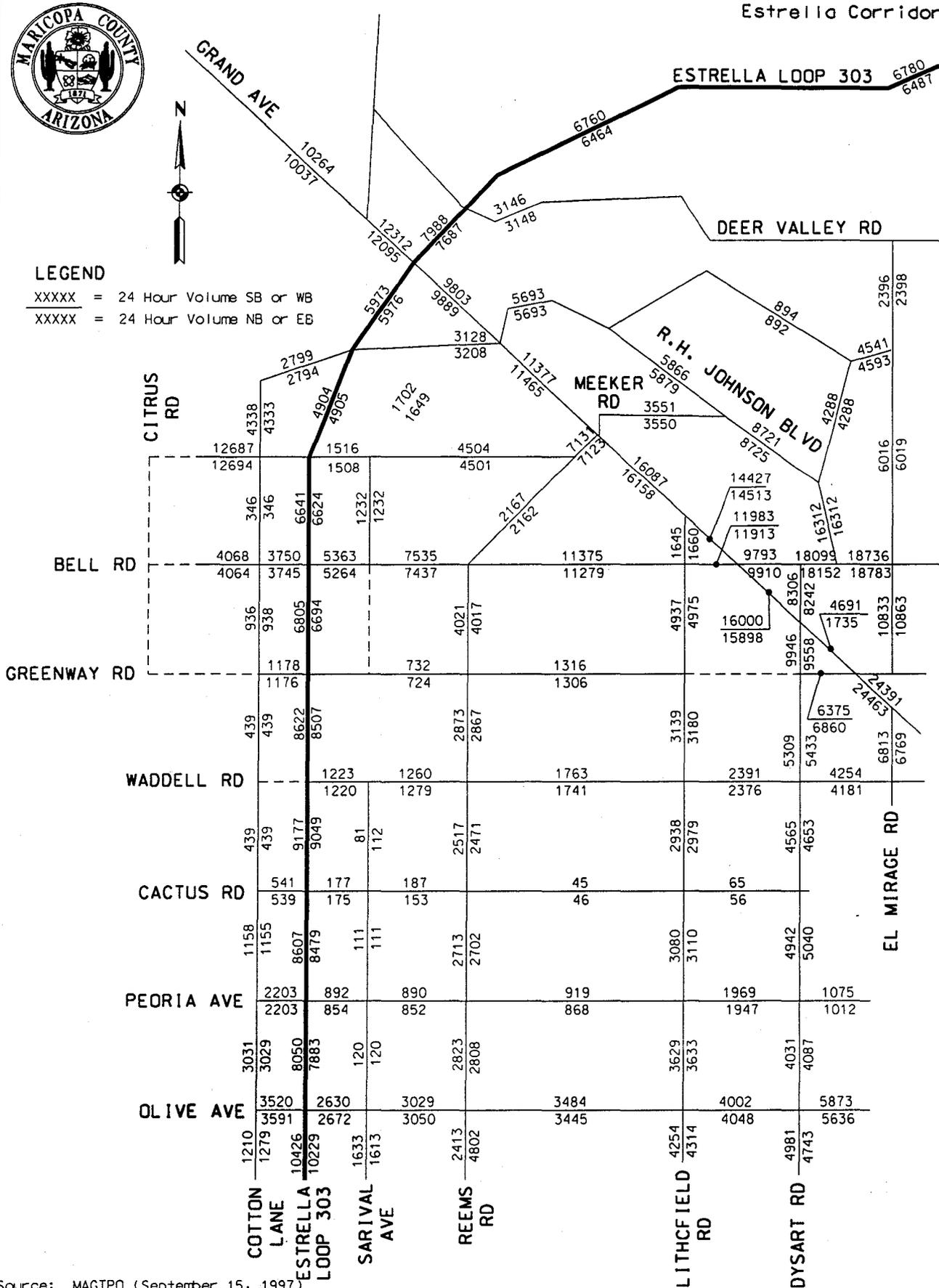
**MAG YEAR 2010 BUILD (I) NETWORK
TWENTY FOUR HOUR VOLUMES**

Figure 9



LEGEND

XXXXX = 24 Hour Volume SB or WB
 XXXXX = 24 Hour Volume NB or EB

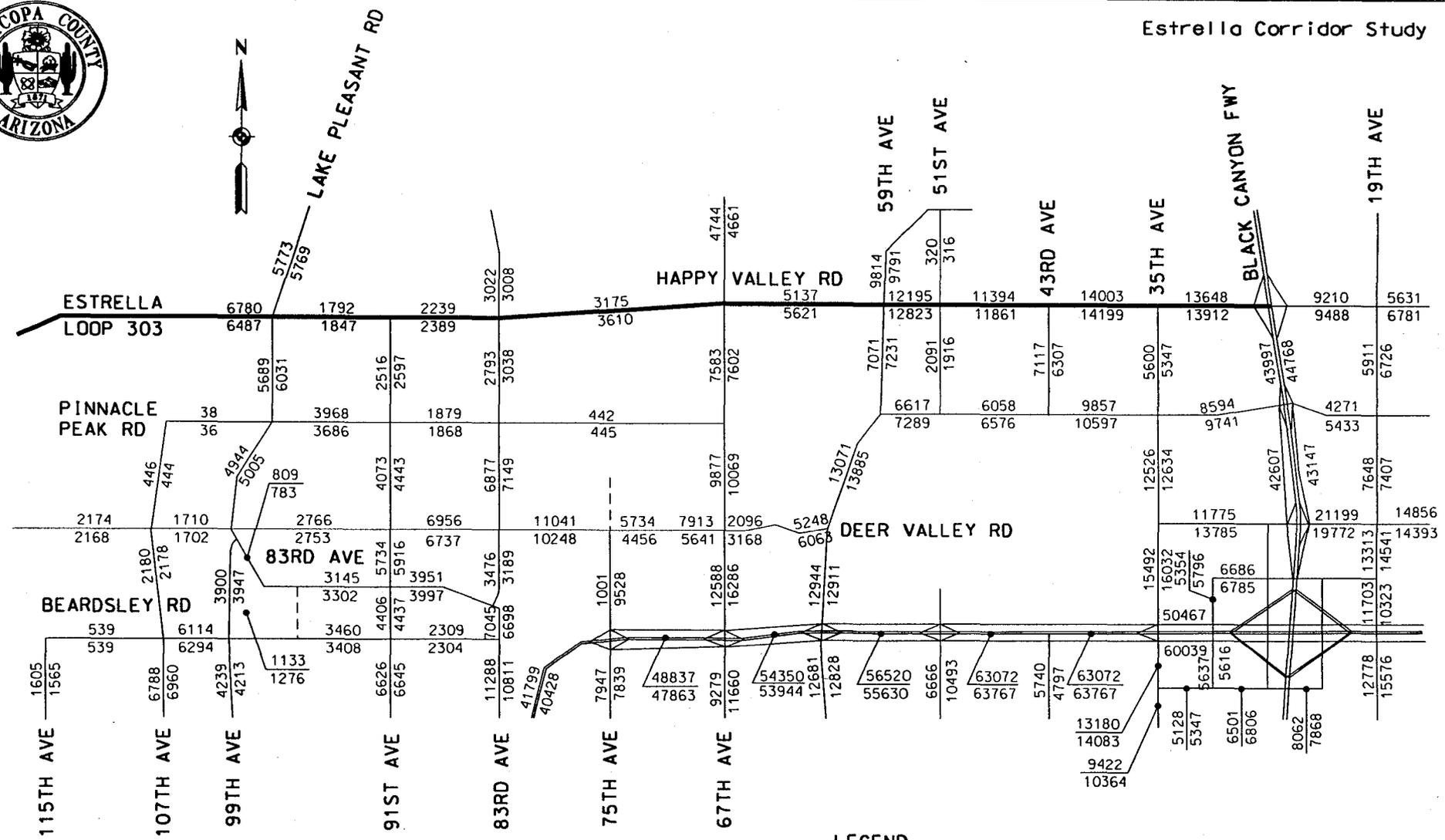


Source: MAGTPO (September 15, 1997)

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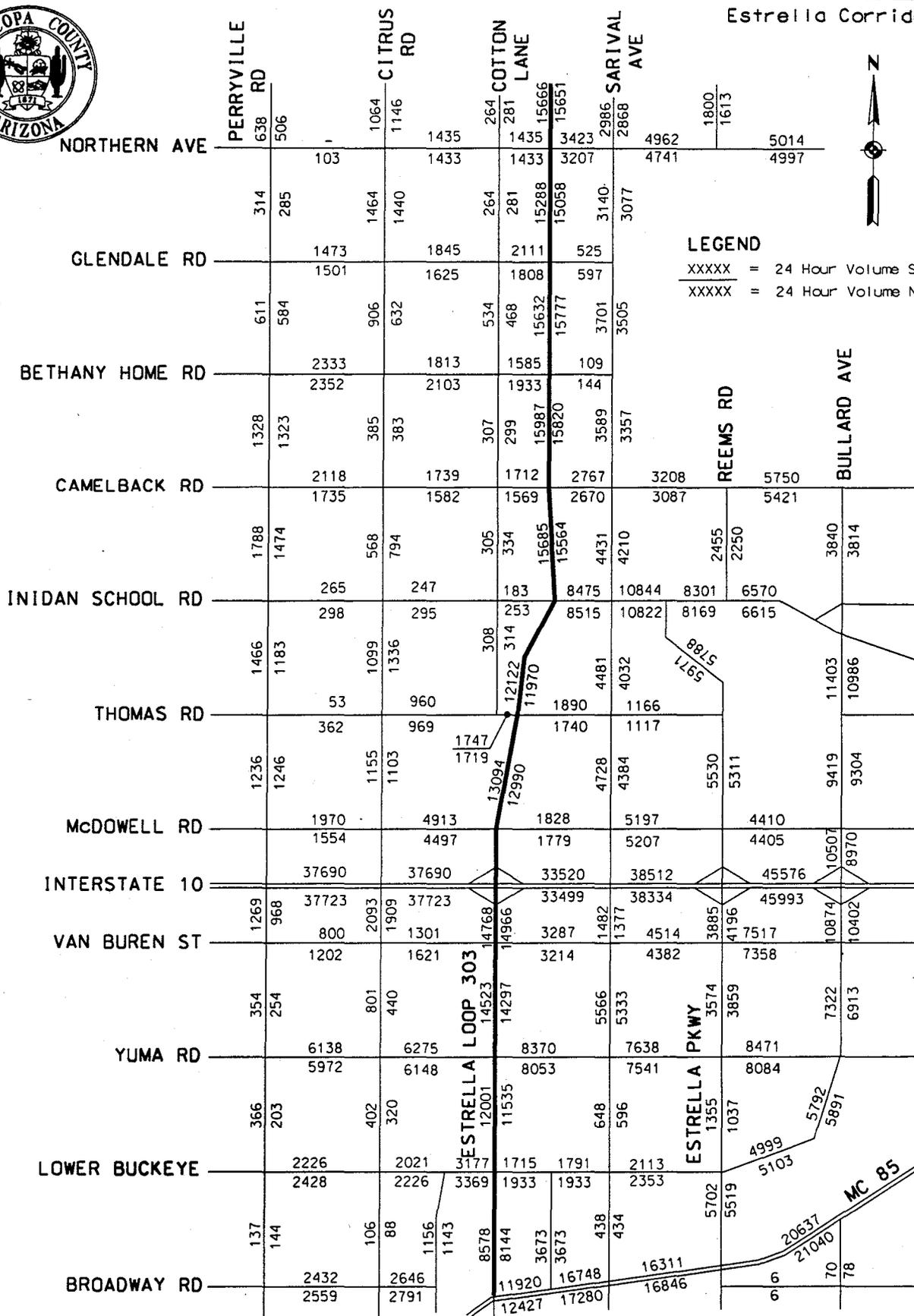
**MAG YEAR 2010 BUILD (I1) NETWORK
 TWENTY FOUR HOUR VOLUMES**

Figure 10



LEGEND
 XXXXX = 24 Hour Volume SB or WB
 XXXXX = 24 Hour Volume NB or EB

Source: MAGTPD (September 15, 1997)



LEGEND

- XXXXX = 24 Hour Volume SB or WB
- XXXXX = 24 Hour Volume NB or EB

Source: MAGTPO (September 15, 1997)

**DE LEUW,
CATHER**

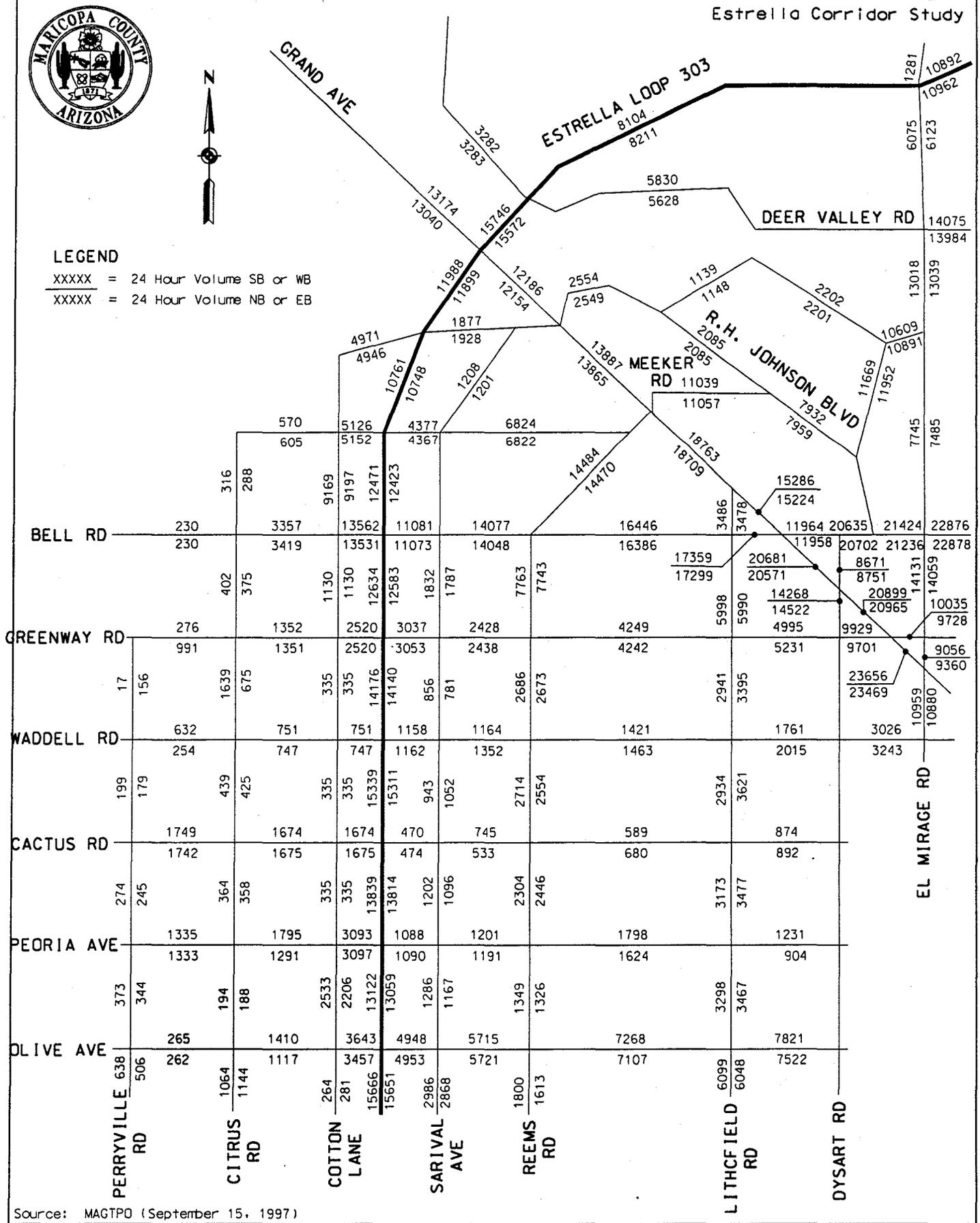
**MAG YEAR 2020 BUILD (I1) NETWORK
TWENTY FOUR HOUR VOLUMES**

Figure 12



LEGEND

XXXXX = 24 Hour Volume SB or WB
 XXXXX = 24 Hour Volume NB or EB

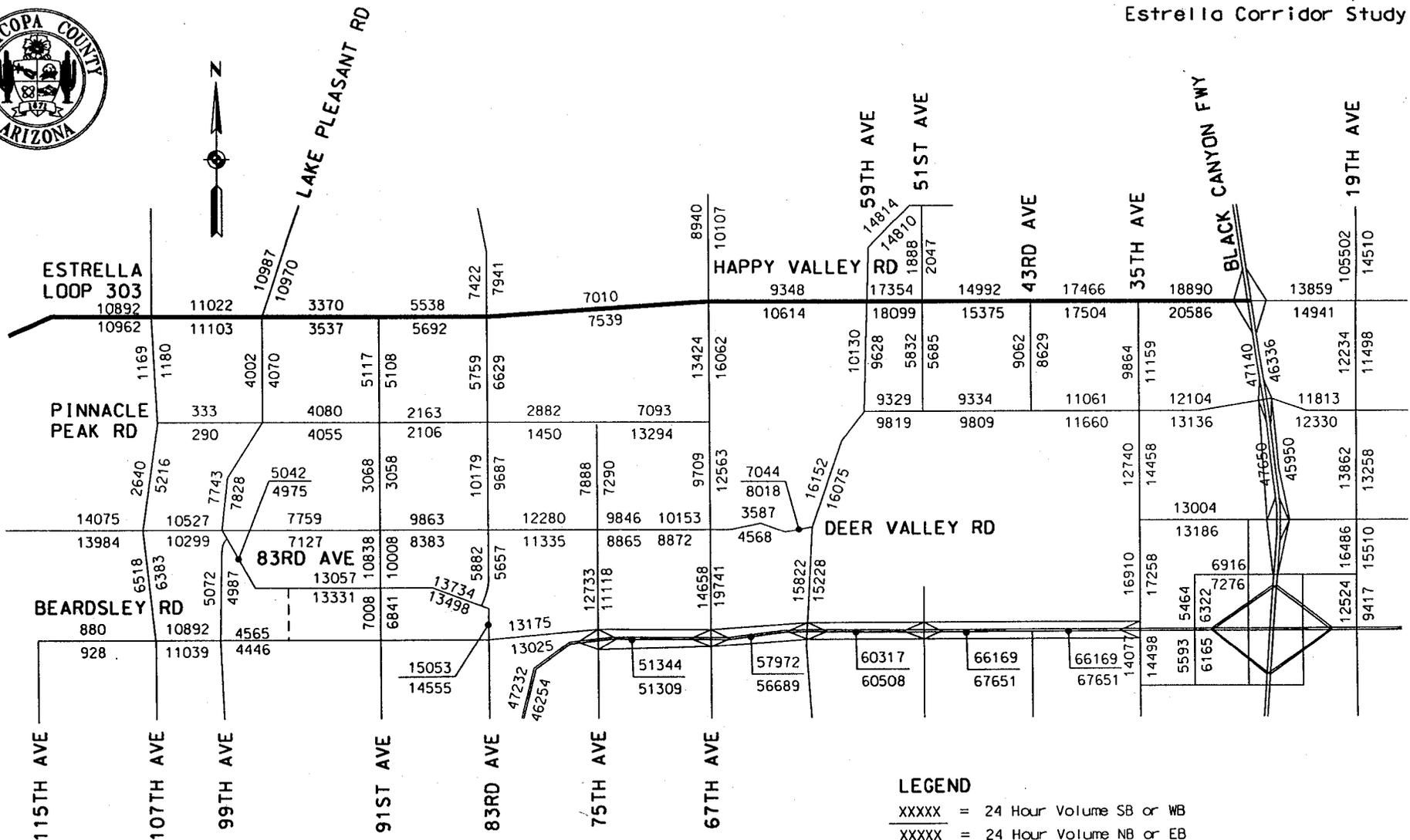


Source: MAGTPO (September 15, 1997)

**DE LEUW,
 CATHER**

**MAG YEAR 2020 BUILD (I1) NETWORK
 TWENTY FOUR HOUR VOLUMES**

Figure 13

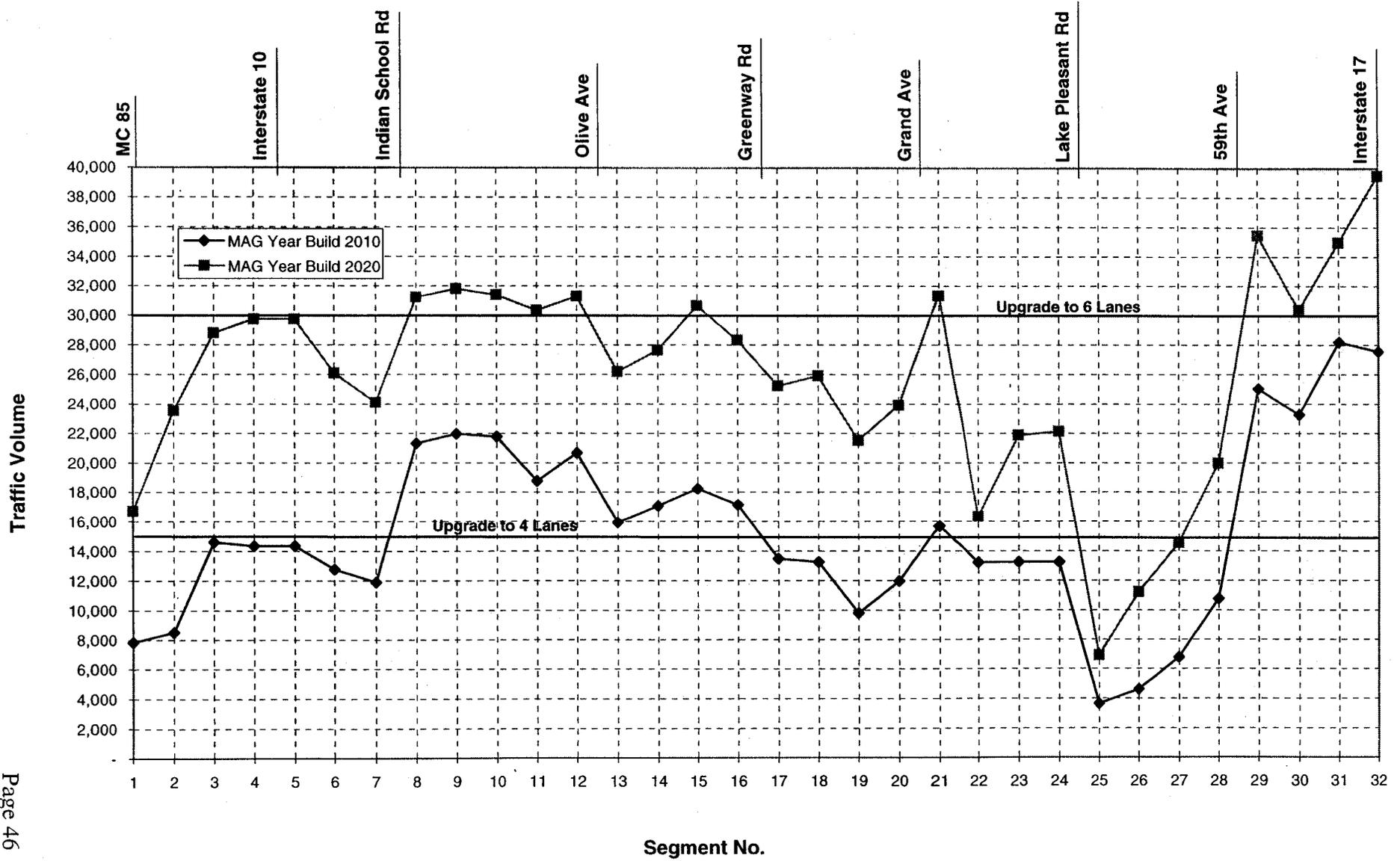


Source: MAGTPD (September 15, 1997)

The 2010 and 2020 volumes are shown for each segment of the corridor in Table 10 along with the year that each segment is projected to warrant upgrading to four and ultimately six lanes. These dates have been derived using a straight line extrapolation of the 2010 and 2020 volumes. Graphically this same information has been shown in Figures 15 and 16.

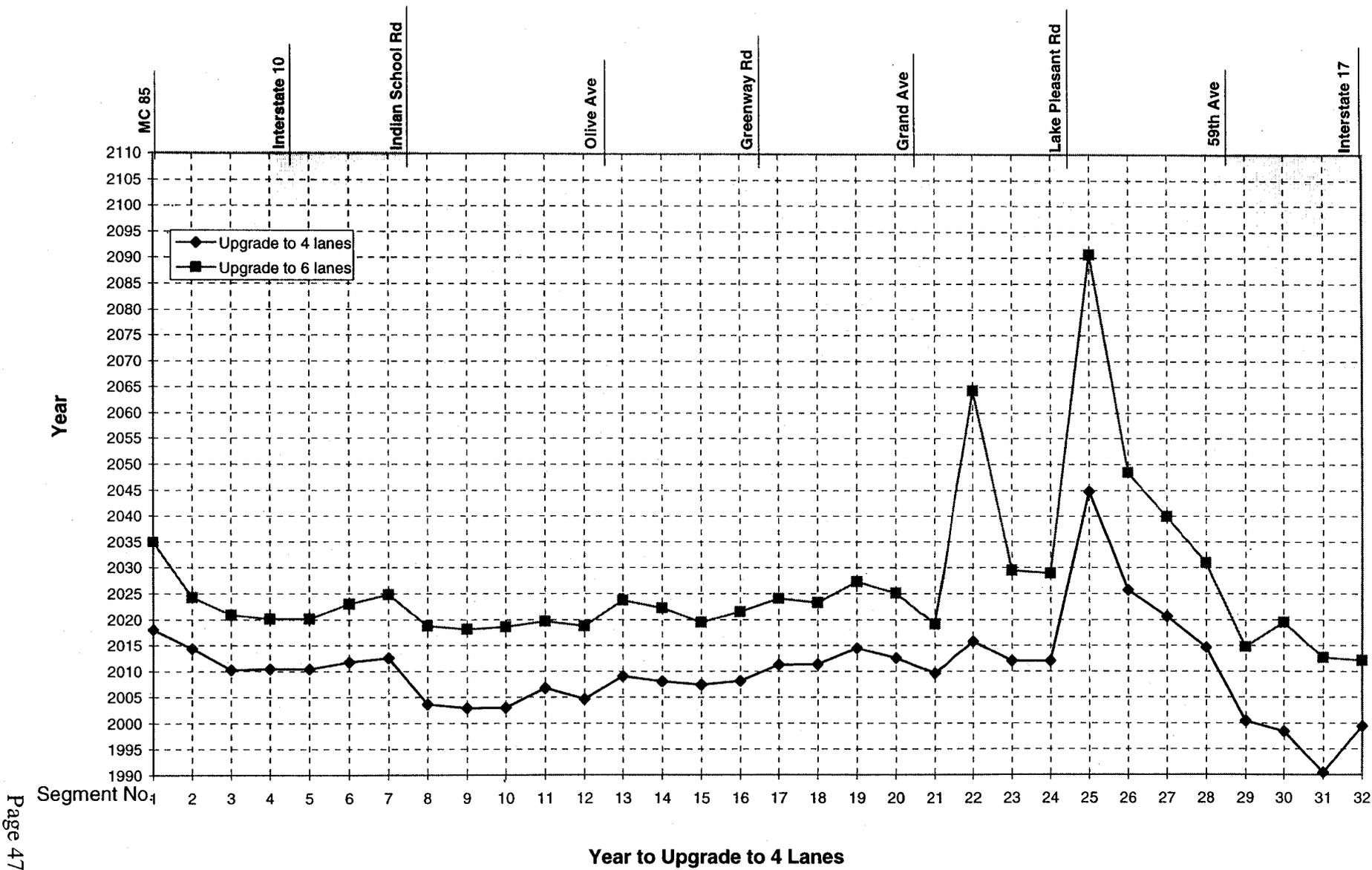
Table 10 2010 and 2020 ADT

Seg. No.	Segment Description	2010 ADT	2020 ADT	Upgrade to 4 Lanes	Upgrade to 6 Lanes
1	MC 85 to Lower Buckeye Rd	7,834	16,722	2018	2035
2	Lower Buckeye Rd to Yuma Rd	8,489	23,536	2014	2024
3	Yuma Rd to Van Buren St	14,625	28,820	2010	2021
4	Van Buren St to I-10	14,343	29,734	2010	2020
5	I-10 to McDowell Rd	14,343	29,734	2010	2020
6	McDowell Rd to Thomas Rd	12,783	26,084	2012	2023
7	Thomas Rd to Indian School Rd	11,896	24,092	2013	2025
8	Indian School Rd to Camelback Rd	21,319	31,249	2004	2019
9	Camelback Rd to Bethany Home Rd	21,968	31,807	2003	2018
10	Bethany Home Rd to Glendale Ave	21,762	31,409	2003	2019
11	Glendale Ave to Northern Ave	18,767	30,346	2007	2020
12	Northern Ave to Olive Ave	20,655	31,317	2005	2019
13	Olive Ave to Peoria Ave	15,933	26,181	2009	2024
14	Peoria Ave to Cactus Rd	17,086	27,653	2008	2022
15	Cactus Rd to Waddell Rd	18,226	30,650	2007	2019
16	Waddell Rd to Greenway Rd	17,129	28,316	2008	2022
17	Greenway Rd to Bell Rd	13,499	25,217	2011	2024
18	Bell Rd to Clearview Blvd	13,265	25,894	2011	2023
19	Clearview Blvd to Mountain View Blvd	9,809	21,509	2014	2027
20	Mountain View Blvd to Grand Ave	11,949	23,887	2013	2025
21	Grand Ave to Deer Valley Rd	15,675	31,318	2010	2019
22	Deer Valley Rd to El Mirage Rd	13,224	16,315	2016	2064
23	El Mirage to 107th Ave	13,267	21,854	2012	2029
24	107th Ave to Lake Pleasant Rd	13,267	22,125	2012	2029
25	Lake Pleasant Rd to 91st Ave	3,639	6,907	2045	2091
26	91st Ave to 83rd Ave	4,628	11,230	2026	2048
27	83rd Ave to 67th Ave	6,785	14,549	2021	2040
28	67th Ave to 59th Ave	10,758	19,962	2015	2031
29	59th Ave to 51st Ave	25,018	35,453	2000	2015
30	51st Ave to 43rd Ave	23,255	30,367	1998	2019
31	43rd Ave to 35th Ave	28,202	34,970	1990	2013
32	35th Ave to I-17	27,560	39,476	1999	2012



Average Daily Traffic Volumes

Figure 15



Year Additional Lanes Are Required

Figure 16

SECTION 4 MAJOR DESIGN FEATURES

The Estrella Corridor is intended to serve as a regional transportation facility. To provide the traffic carrying capacity and operational level of service envisioned, the highest obtainable design criteria should be specified. There are two distinct types of roadway proposed as part of the long range plan for the Estrella corridor. Between MC 85 and Lake Pleasant Road an "at-grade" expressway is the proposed ultimate facility. From Lake Pleasant Road to Interstate 17 the corridor follows Happy Valley Road and the proposed ultimate facility is an arterial street. These differences reflect the existing levels of development and access control along the corridor today as well as the long range plans of the jurisdictions through which the corridor passes.

4.1 DESIGN CRITERIA

4.1.1 MC 85 to Lake Pleasant Road

Between MC 85 and Lake Pleasant Road a six-lane "at-grade" expressway is the proposed ultimate facility. The functional classification of the roadway will be a Rural Principal Arterial with a design speed of 110 kilometers per hour (kph) (65 mph). The design will meet all applicable standards and specifications of the Maricopa County Department of Transportation and will conform to the following design criteria.

Functional Classification	Rural Principal Arterial
Design Vehicle	WB-15 (Large Semi-trailer)
Pavement Design Life	20 years
Design Speed	110 km/hr (65 mph)
Horizontal Curvature	Degree of Curvature (max) 3 ⁰ 30'
	Radius (min) 500 m (1640 ft)
	Length (min) 300m (975 ft)
Centerline Grade	3% (max)
Vertical Curvature	Length (min) 245 m (800 ft)
Lane Width	3.6 m (12 ft)
Shoulder Width	3.0 m (10 ft) ultimate, 1.5m (5 ft) interim
Median Width	8.5 m (28 ft)
Right of Way	61.0 m (200 ft) plus drainage channel r/w
Access Control	At mile arterials
Clear Zone	per AASHTO Roadside Design Guide
Roadway Cross Slope	2%
Superelevation	.06 (max)
Side Slopes	1:20 (20:1)

Cut Slopes	1:3 (3:1)
Fill Slopes	1:6 (6:1)
Tapers	65:1
Curbs	MAG Std Dtl 220 - Type A, H = 150mm (6in) - At signalized intersections only
Curb Returns	Radius 15 m (50 ft) curbed, 16.8 m (55 ft.) uncurbed
Drainage (off-site)	50 year flows without topping the roadway, 100 year flows a maximum of .15 m (6 in) over the roadway
Drainage (pavement)	10 year flows
Lighting	Signalized intersections only

4.1.2 Lake Pleasant Road to 67th Avenue

In Peoria, Happy Valley Road is classified as a Major Arterial Roadway. Due to the relatively small projected traffic volumes, a four-lane arterial street with a design speed of 90 kph (55 mph) is the proposed facility from Lake Pleasant Road to 67th Avenue,. The design will meet the applicable standards and specifications of the City of Peoria and will conform to the following design criteria.

Functional Classification	Urban Principal Arterial
Design Vehicle	WB-15 (Large Semi-trailer)
Pavement Design Life	20 years
Design Speed	100 km/hr (60 mph)
Horizontal Curvature	Radius (min) 435 m (1425 ft) Radius (min-sight distance) 700 m (2300 ft) Length (min) 275 m (900 ft)
Centerline Grade	4% (max)
Vertical Curvature	Length (min) 60 m (200 ft)
Lane Width	Varies 3.6-4.2 m (12-14 ft)
Median Width	8.5 m (28 ft)
Right of Way	45.7 m (150 ft)
Access Control	¼ mile access
Clear Zone	per AASHTO Roadside Design Guide
Roadway Cross Slope	2%
Superelevation	.06 (max)
Side Slopes	1:20 (20:1)

Cut Slopes	1:3 (3:1) 1:1 (1:1) for high rock cuts
Fill Slopes	1:6 (6:1)
Tapers	60:1
Curbs	MAG Std Detail 220 - Type A, H = 150mm (6in)
Curb Returns	Radius (min) 10.6 m (35 ft) major streets Radius (min) 9.1 m (30 ft) minor streets
Drainage (off-site)	50 year flows without topping the roadway, 100 year flows a maximum of .15 m (6 in) over the roadway
Drainage (pavement)	10 year flows
Lighting	Signalized intersections only

4.1.3 67th Avenue to Interstate 17

From 67th Avenue to Interstate 17, a six-lane arterail street is the proposed ultimate facility. Happy Valley Road will be classified as an Urban Principal Arterial with a design speed of 90 kph (55 mph). The design will meet the applicable standards and specifications of the City of Phoenix and will conform to the following design criteria.

Functional Classification	Urban Principal Arterial
Design Vehicle	WB-15 (Large Semi-trailer)
Pavement Design Life	20 years
Design Speed	90 km/hr (55 mph)
Horizontal Curvature	Radius (min) 375 m (1230 ft) Radius (min-sight distance) 650m (2130 ft.) Length (min) 350m (825 ft)
Centerline Grade	4% (max)
Vertical Curvature	Length (min) 60 m (200 ft)
Lane Width	Varies 3.3-3.6 m (11-12 ft)
Bike Lane	1.8m (6 ft)
Median Width	4.2m (14 ft)
Right of Way	Varies 39.6 - 45.7m (130 - 150 ft)
Access Control	none
Clear Zone	per AASHTO Roadside Design Guide
Roadway Cross Slope	2%

Superelevation	.04 (max)
Side Slopes	1:20 (20:1)
Cut Slopes	1:3 (3:1)
	1:1 (1:1) for high rock cuts
Fill Slopes	1:6 (6:1)
Tapers	55:1
Curbs	MAG Std Detail 220 - Type A, H = 150mm (6in)
Curb Returns	Radius (min) 10.6m (35 ft) major streets
	Radius (min) 9.1 m (20 ft) minor streets
Drainage (off-site)	50 year flows without topping the roadway, 100 year flows a maximum of .15 m (6 in) over the roadway
Drainage (pavement)	2 year flows

4.2 TYPICAL SECTIONS

The recommended typical sections for the Estrella Corridor from MC 85 to Lake Pleasant Road are shown in Figure 17. They are modifications of MCDOT's Rural Principal Arterial Road, Figure 5.1 in the Maricopa County Roadway Design Manual. MCDOT will construct an interim two lane expressway between Grand Avenue and Lake Pleasant Road in 2000/2001. As traffic volumes warrant, this section and the interim two lane roadway constructed by ADOT between Thomas Road and Grand Avenue can be upgraded to four lanes with the construction of a second, parallel roadway. Ultimately a third lane in each direction can be added.

The typical section for the Happy Valley Road between Lake Pleasant Road and 67th Avenue is shown in Figure 18. This four lane major arterial section is a modification of the City of Peoria's Major Arterial cross section shown in Figure 15 of the Peoria Comprehensive Master Plan. Also shown in Figure 18 is the typical section for the Happy Valley Road between 67th Avenue and Interstate 17. It reflects the six lane arterial shown in the City of Phoenix Happy Valley Route Study, drawing number 4776. The City of Phoenix is requiring new developments to construct one half of this ultimate cross-section. The typical sections for the Peoria and Phoenix arterial sections are shown within this corridor study; however, as noted earlier, the Happy Valley Road segments are not intended to function as a continuation of the Estrella Corridor.

4.3 HORIZONTAL ALIGNMENT

Between MC 85 and Grand Avenue the Estrella Corridor alignment is that adopted by ADOT in 1988 (See Appendix B). From the southerly end of the corridor to Grand Avenue, most of the horizontal alignment will be tangent. A 0^o-45' curve is necessary north of McDowell Road to move the corridor east, away from Cotton Lane. A 1^o curve south of Camelback Road aligns the corridor along the mid section line. Two additional 1^o curves are used north of Bell Road as the corridor turns to the east and crosses Grand Avenue.

Figure 17 Expressway Typical Sections

Figure 18 Arterial Typical Sections

From Grand Avenue to Lake Pleasant Road, the alignment was developed in September 1996 as part of MCDOT's Estrella Roadway Limited Scope Design Concept Report (See Appendix C). The alignment has a number of horizontal curves that vary between 1° and 2° as it passes north of Sun City West and then south and east of the Westwing Substation before intersecting Lake Pleasant Road at Happy Valley Road

Between Lake Pleasant Road and 67th Avenue this study looked at alignment alternatives for an arterial section along Happy Valley Road. The alignment follows the Happy Valley section line except between approximately 93rd Avenue and New River. Between 93rd Avenue and New River the alignment could swing to the south to avoid the hills that are located along the section line. The recommended alignment is discussed in Section 4. The City of Phoenix concept plans for Happy Valley Road between 67th Avenue and 35th Avenue are shown in Appendix D.

4.4 VERTICAL ALIGNMENT

For most of its length the Estrella Corridor will be an at-grade facility, raised to the extent necessary to accommodate drainage. The roadway will be elevated to cross over Grand Avenue and the Burlington Northern and Santa Fe Railroad and ultimately to bridge the Agua Fria and New Rivers and Skunk Creek.

Grades will range from $\pm 0.25\%$ to $\pm 1.0\%$ for the majority of the corridor. The maximum allowable grade of 3% for the expressway will be used on the approaches to the Grand Avenue structure and on the approaches to the Agua Fria River low flow crossing. The maximum grades for the new alignment between Lake Pleasant Road and 67th Avenue are expected to approach 2%, well below the 4% maximum specified for an urban arterial

4.5 ACCESS CONTROL

To provide the desired level of service and roadway capacity, access to the corridor will be limited to the extent possible. Between MC 85 and Lake Pleasant Road, access will be available only at intersections with mile arterial streets and with Interstate 10. Access control has already been obtained by ADOT between Cotton Lane and Grand Avenue and will be acquired by MCDOT for their interim project that extends to Lake Pleasant Road. Between Lake Pleasant Road and Interstate 17 access is based on city arterial standards. The City of Peoria intends to limit cross access to the one-half mile points with right turn access available at the quarter mile. More frequent access may be necessary between 95th Avenue and 91st Avenue to accommodate existing developed and undeveloped parcels. The City of Phoenix currently permits access every eighth mile. Deceleration lanes/right turn lanes should be provided at all access points.

4.6 INTERCHANGES/INTERSECTIONS

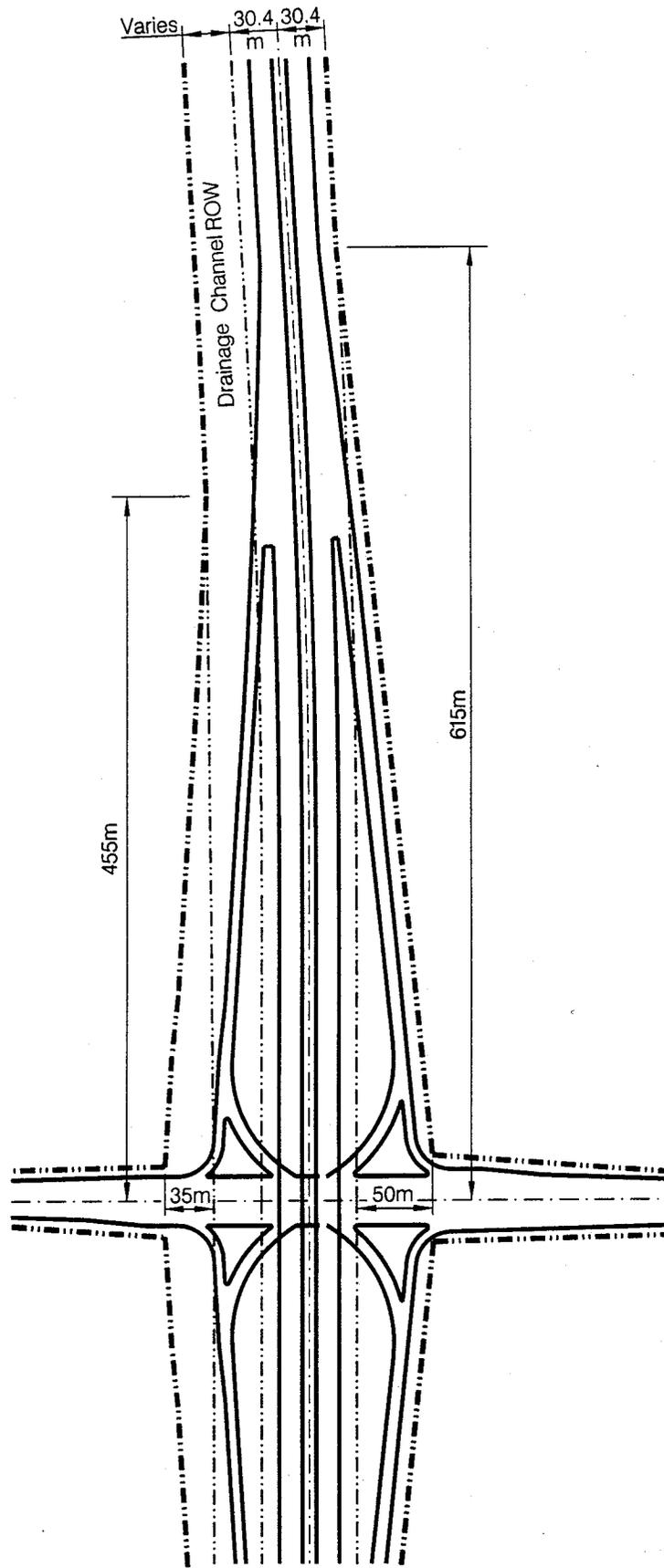
At grade intersections will be maintained at the following mile arterial intersections along the western leg of the Estrella Corridor between MC 85 and Grand Avenue:

MC 85	Elwood (relocated Broadway Road)
Yuma Road	Van Buren Street
McDowell Road	Thomas Road
Indian School Road	Camelback Road
Bethany Home Road	Glendale Avenue
Northern Avenue	Olive Avenue
Peoria Avenue	Cactus Road
Waddell Road	Greenway Road
Bell Road	

The Estrella Corridor will be grade separated over Grand Avenue. Clearview Boulevard and Mountain View Boulevard are projected to be grade separated over the Estrella Roadway as well. Project concepts are being discussed by Surprise, MCDOT and the developer. A half diamond interchange will be constructed to provide access between Grand Avenue and the Estrella Roadway. Between Grand Avenue and Lake Pleasant Road, intersections are being planned at Deer Valley Drive and at 107th Avenue as part of the County interim roadway project and a future intersection has been assumed at El Mirage Road. The Deer Valley Drive intersection is pending action by the Sun City West Property Owners and Residents Association (PORA) and the Sun City West Recreation Centers. It is expected that other intersections may be requested between Grand Avenue and Lake Pleasant Road as this area develops. They would have to fall within the guidelines for access control recommended in this study and in the Estrella Roadway Limited Scope Design Concept Report. The construction of the Estrella/Lake Pleasant Road intersection will require the relocation of the current intersection approximately 30 meters to the north. At the same time, the existing curve in Lake Pleasant Road should be replaced with flatter curve through the intersection.

A diamond interchange will continue to provide access to Interstate 10. This interchange will have to be upgraded in the future to accommodate greater ramp and Estrella corridor traffic volumes.

No other interchanges are planned. The City of Goodyear's General Plan Draft identifies the ultimate Estrella Corridor facility as a freeway from Estrella Mountain Ranch, south of the Gila River, to the north city limits. This level of facility is warranted by "build out" traffic projections of 78,000 vpd to 125,000 vpd. With additional right of way, Single Point Urban Interchanges could be added in the future as shown in Figure 19.



**DE LEUW,
CATHER**

**SINGLE POINT URBAN INTERCHANGE
Right Of Way Requirements**

Figure 19

Page 56

4.7 DRAINAGE/STRUCTURES

The hydrology, the drainage concepts and the required improvements for the Estrella corridor have been addressed in a separate Drainage Technical Memorandum. The most significant drainage features are identified below.

Between Grand Avenue and Interstate 17, there are a number of significant drainage crossings. Box culverts will be required at the following locations:

Table 11 Box Culvert Crossings

Location	Q(100)	Q(SPF)	Size
McMicken Dam Outlet Channel	190 m ³ /sec (6,600 cfs)	190 m ³ /sec (14,000 cfs)	6 - 3 m x 3 m (6 - 10 ft x 10 ft)
Twin Buttes Wash	63 m ³ /sec (2,200 cfs)	63 m ³ /sec (2,200 cfs)	2 - 3 m x 3 m (2 - 10 ft x 10 ft)
Wash west of Lake Pleasant Road	51 m ³ /sec (1,800 cfs)	--	2 - 3 m x 3 m (2 - 10 ft x 10 ft)
Rock Creek	28m ³ /sec (1,000 cfs)	--	3 m x 3 m (10 ft x 10 ft)
43 rd Avenue	--	--	4 - 1.5 m x 2.7 m (4 - 5 ft x 9 ft)

The corridor also crosses three major watercourses; the Agua Fria River, New River and Skunk Creek. Today Skunk Creek has a low flow crossing, while no crossing exists at the Agua Fria (a low flow crossing of the Agua Fria exists at Hatfield Road) or at New River. MCDOT's interim Estrella roadway will construct a low flow crossing at the Agua Fria and an initial crossing at New River can be constructed as a low flow crossing. At both of these low flow crossings, nuisance flows will be carried under the roadway with the major flows crossing over the top of the roadway. Ultimately bridges should be built at each location.

Table 12 Major Drainage Crossings

Location	Q(100)	Q(SPF)	Bridge Length
Agua Fria River	880 m ³ /sec (31,000 cfs)	1,200 m ³ /sec (42,000 cfs)	485 m (1600 ft.)
New River	340 m ³ /sec (12,000 cfs)	680 m ³ /sec (24,000 cfs)	100 m (330 ft.)
Skunk Creek	1,100 m ³ /sec (39,000 cfs)	1,900 m ³ /sec (66,000 cfs)	120 m (400 ft.)

An analysis of the impacts of each floodplain crossing on the floodplain should be made. This analysis should look at flood elevations, flow directions, velocities and erosion/deposition. All crossings should be designed such that any increases in water surface elevation during the SPF

event due to the new facility do not require any additional acquisition of flowage easements. If additional flowage easements are required, the analysis should compare the cost of the easements versus the cost of a larger structure.

A drainage channel will be required along the west side of the corridor from Bell Road to MC 85. It will extend another mile south of MC85 to discharge into the Gila River. The White Tanks ADMS identified flows that vary from 14 m³/sec (480 cfs) at the north end to 300 m³/sec (10,700 cfs) at the Gila River outfall requiring a lined channel that varies in bottom width from 3 to 26 m (10 to 85 feet). As shown in Table 13, the width of the channel will be significantly reduced by constructing a series of detention basins in conjunction with the channel. Four 8.9 ha (22 acre) basins 9.1 m (30 ft) deep will be constructed (at Thomas Road, Camelback Road, Northern Avenue and Peoria Avenue) reducing the peak flows to 110 m³/sec (3,800 cfs). The channel varies in depth from 3.8 to 4.9 m (12.5 to 16 ft.) through a series of drop structures to control the flow. Box culverts will be required to carry flows under each major arterial roadway, the Union Pacific Railroad, the Ennis Spur, Interstate 10 and the Roosevelt Irrigation Canal.

A more detailed analysis of the drainage concepts will be required during final design. Both the City of Surprise and the City of Goodyear have identified potential changes. Surprise believes that the channel can be downsized or eliminated south of Bell Road due to the on-site retention that will be constructed as continued development takes place. The City of Goodyear would like to eliminate the concrete channel lining south of Interstate 10 and incorporate an alternative channel into the open space requirements shown in their General Plan Draft.

A major bridge will be constructed over Grand Avenue and the Burlington Northern Railroad in 2000/2001 and ultimately a second parallel structure may be required.

Table 13 Estrella Drainage Channel Requirements

Location		without detention basins		with detention basins	
		100 Year Peak Flow m ³ /sec (cfs)	Channel Bottom Width m (ft)	100 Year Peak Flow m ³ /sec (cfs)	Channel Bottom Width m (ft)
from	to				
Bell Road	Greenway Road	22.7 (800)	3.0 (10)	22.7 (800)	3.0 (10)
Greenway Road	Waddell Road	28.3 (1,000)	3.0 (10)	28.3 (1,000)	3.0 (10)
Waddell Road	Cactus Road	59.5 (2,100)	6.1 (20)	59.5 (2,100)	6.1 (20)
Cactus Road	Peoria Avenue	93.4 (3,300)	7.6 (25)	93.4 (3,300)	7.6 (25)
Peoria Avenue	Olive Avenue	133.1 (4,700)	12.2 (40)	62.3 (2,200)	6.1 (20)
Olive Avenue	Northern Avenue	147.2 (5,200)	13.7 (45)	76.5 (2,700)	7.6 (25)
Northern Avenue	Glendale Avenue	172.7 (6,100)	16.8 (55)	39.7 (1,400)	4.6 (15)
Glendale Avenue	Bethany Home Road	218.0 (7,700)	21.3 (70)	82.2 (2,900)	9.1 (30)
Bethany Home Road	Camelback Road	240.7 (8,500)	22.9 (75)	104.8 (3,700)	10.7 (35)
Camelback Road	Indian School Road	254.9 (9,000)	24.4 (80)	62.3(2,200)	6.1 (20)
Indian School Road	Thomas Road	254.9 (9,000)	24.4 (80)	79.3 (2,800)	9.1 (30)
Thomas Road	McDowell Road	263.3 (9,300)	25.9 (85)	42.5 (1,500)	4.6 (15)
McDowell Road	Van Buren Street	303.0 (10,700)	25.9 (85)	90.7 (3,200)	9.1 (30)
Van Buren Street	Yuma Road	303.0 (10,700)	25.9 (85)	90.7 (3,200)	9.1 (30)
Yuma Road	Lower Buckeye Road	303.0 (10,700)	25.9 (85)	93.5 (3,300)	9.1 (30)
Lower Buckeye Road	MC85	303.0 (10,700)	25.9 (85)	104.8 (3,700)	9.1 (30)
MC85	Gila River	303.0 (10,700)	25.9 (85)	110.5 (3,900)	10.7 (35)

4.8 RIGHT OF WAY

The right of way width necessary to accommodate the ultimate expressway section has been set at 60.96 meters (200 feet), excluding the right of way needed for an adjacent drainage channel. This width will accommodate the basic roadway, slopes and clear zone requirements as well as right turn lanes, future utilities and potential mitigation features. From Bell Road south to the MC 85, the parallel drainage channel will require additional right of way varying from 22.9 meters (75 feet) to 33.5 meters (110 feet). A 30.48 meter (125 feet) right of way corridor from MC 85 to the Gila River will be required to outlet the drainage channel.

Table 14 Additional Channel Right of Way Requirements (with detention basins)

Location		Channel Bottom Width	Channel Depth	Additional Right of Way Width
from	to	m (ft)	m (ft)	m (ft)
Bell Road	Greenway Road	3.0 (10)	3.8 (12.5)	22.9 (75)
Greenway Road	Waddell Road	3.0 (10)	3.8 (12.5)	22.9 (75)
Waddell Road	Cactus Road	6.1 (20)	3.8 (12.5)	25.9 (85)
Cactus Road	Peoria Avenue	7.6 (25)	4.4 (14.5)	30.5 (100)
Peoria Avenue	Olive Avenue	6.1 (20)	4.0 (13)	27.4 (90)
Olive Avenue	Northern Avenue	7.6 (25)	4.9 (16)	32.0 (105)
Northern Avenue	Glendale Avenue	4.6 (15)	4.6(15)	27.4 (90)
Glendale Avenue	Bethany Home Road	9.1 (30)	4.6(15)	32.0 (105)
Bethany Home Road	Camelback Road	10.7 (35)	4.7 (15.5)	33.5 (110)
Camelback Road	Indian School Road	6.1 (20)	4.3 (14)	27.4 (90)
Indian School Road	Thomas Road	9.1 (30)	4.6(15)	32.0 (105)
Thomas Road	McDowell Road	4.6 (15)	4.6(15)	27.4 (90)
McDowell Road	Van Buren Street	9.1 (30)	4.6(15)	32.0 (105)
Van Buren Street	Yuma Road	9.1 (30)	4.6(15)	32.0 (105)
Yuma Road	Lower Buckeye Road	9.1 (30)	4.6(15)	32.0 (105)
Lower Buckeye Road	MC85	9.1 (30)	4.6(15)	33.5 (110)
MC85	Gila River	10.7 (35)	4.6(15)	38.1 (125)

To accommodate the channel design identified in Table 14, four detention basins each approximately 8.9 Ha (22 Acres) in size will be required at Thomas Road, Camelback Road, Northern Avenue and Peoria Avenue for the detention basins. The basin right of way requirements will be approximately 229 meters (750 feet) wide and 381 meters (1250 feet) long.

4.9 EARTHWORK

The Estrella corridor will be an at-grade facility, elevated only to the extent necessary to accommodate drainage and to pass over Grand Avenue and the Burlington Northern Railroad.

Between MC 85 and Grand Avenue the parallel drainage channel will minimize the need to elevate the roadway significantly. The material generated from excavation of the channel will be more than sufficient to construct the roadway. The roadway will be elevated to the extent feasible to reduce the amount of waste. If the channel/retention basin concept is constructed, an additional 1.5 mil m³ (2.0 mil cu. yds.) of material will be generated.

East of Grand Avenue, the drainage flows primarily to the south. The roadway will have to be elevated to the degree necessary to pass drainage under the corridor. Significant borrow will be required to construct the approach roadways whenever bridges over the Agua Fria River are built.

SECTION 5 ALTERNATIVES ANALYSIS

The original Estrella Corridor concept, based on the MAG Northwest Study was to incorporate Happy Valley Road as the extension of Loop 303 east of Lake Pleasant Road. Based on the traffic data, city (Peoria and Phoenix) access control standards and community input, it is recommended that Happy Valley Road not be considered as the extension of Loop 303. The work completed in this study may still be valuable to Peoria and its residents in defining possible alignments and characteristics of Happy Valley Road as a city arterial street. Today, Happy Valley Road does not exist from 91st Avenue to east of 75th Avenue. Due to the mountainous terrain in this area, it is unlikely that it will be constructed along the section line; therefore, a number of alternative alignments were investigated.

5.1 DESIGN CONSTRAINTS

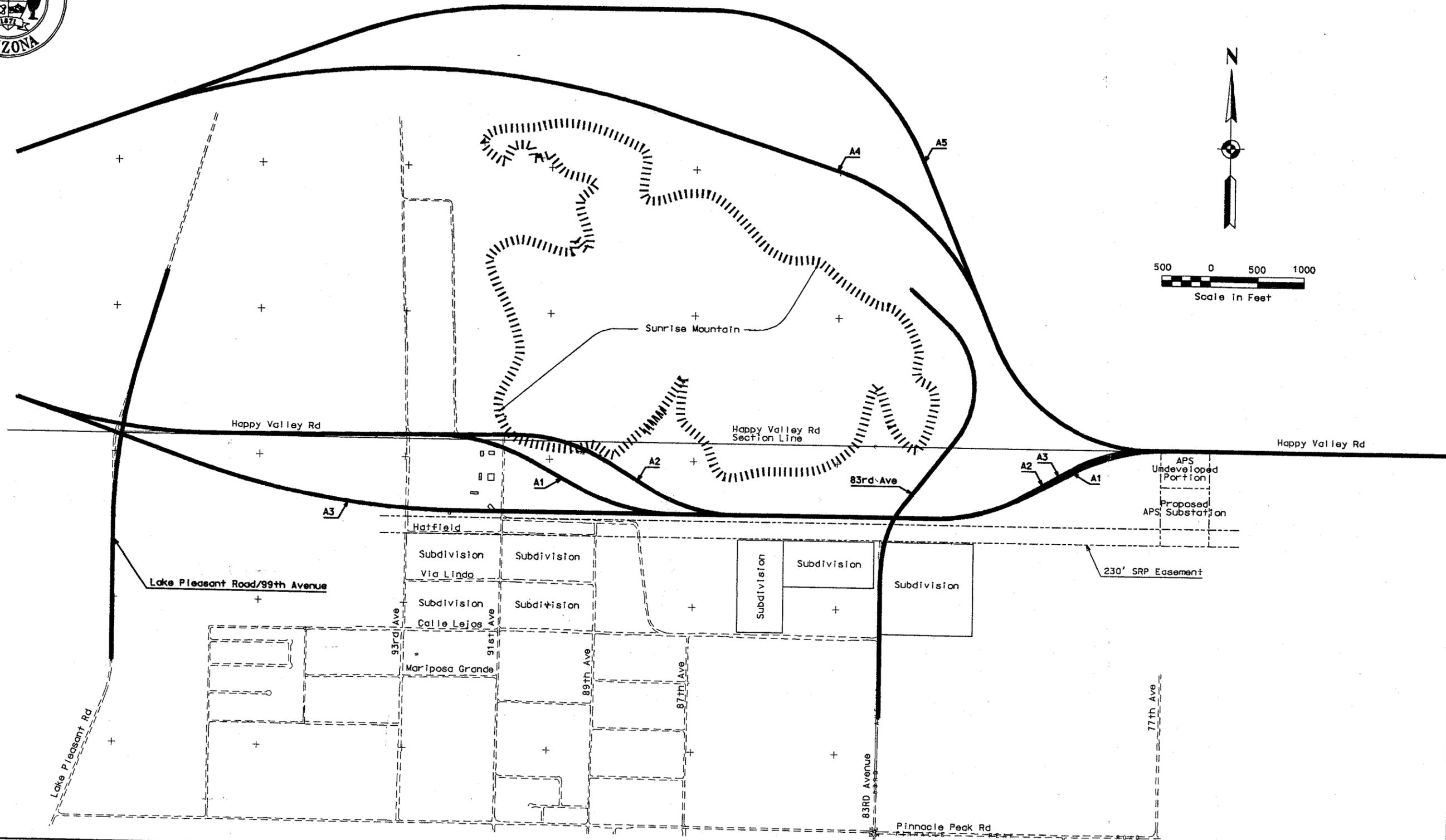
The following constraints were considered in the alternatives development and selection process:

1. SRP has an existing 230' easement immediately north of the alignment of Hatfield Road. This easement runs east/west throughout the alignment study area and cannot be encroached upon.
2. Access to the neighborhood north of Happy Valley Road and west of 91st Avenue must be maintained from the proposed alignment either directly or through the use of a local access/frontage road.
3. The curve on Lake Pleasant Road/99th Avenue needs to be flattened at the Happy Valley Road intersection to improve sight distance and safety.
4. Skew at the proposed intersection with future 83rd Avenue must be balanced against cuts necessary along 83rd Avenue as it skirts the mountain to the east.
5. The Rock Creek and New River crossings should be accomplished with as little skew as possible to minimize structure costs and improve hydraulics.
6. APS plans to build a substation on a parcel located between the Happy Valley Road section line on the north and the SRP easement on the south beginning 660' west of 75th Avenue and extending 660' to the west. The actual construction is to be on the first 500' north of the SRP easement. Current plans show the portion of the parcel immediately south of the Happy Valley Road alignment as undeveloped.
7. Signals, when warranted, will be placed at the major mile streets only.
8. Access will generally be limited to the major mile and half mile streets. Any access at the quarter-mile streets will be "right-in/right-out".

5.2 ALTERNATIVES CONSIDERED

The alternative alignments that were investigated are shown on Figure 20. In developing potential alignments, efforts were made to minimize impacts to existing and planned communities, to reduce scarring to the mountain slopes and to maintain a balance between a safe high speed roadway and the surrounding community.

Alternatives north and south of the mountain as well as along the Happy Valley Road section line were considered. To develop acceptable alternatives north of the mountain, the alignment must move at least one mile to the north to approximately Jomax Road before returning to the Happy



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CATHER

ALTERNATIVE ALIGNMENTS - HAPPY VALLEY ROAD - 77TH AVENUE TO 99TH AVENUE

Figure 20

Valley Road alignment. It is not feasible to remain on Jomax Road because little of Jomax exists today and there is no access to Interstate 17 at Jomax. These alternatives were not considered further because they are significantly longer and require additional right of way, have increased construction costs and result in longer travel times. A section line alignment was rejected because the flanks of the mountain extend well south of the section line and large cuts or retaining walls would be required. Three alignments that swing to the south of the section line as described below were developed for further study.

Alternative A1 begins at Happy Valley Road just east of 93rd Avenue. Reverse curves (875 m radius - superelevation 4.6%) shift the alignment to the south to parallel the SRP easement. The alignment runs east/west past the proposed intersection with 83rd Avenue. Once past 83rd Avenue, the alignment shifts north using another pair of reverse curves (875 m radius - superelevation 4.6%) to bring the alignment back onto the Happy Valley Road section line west of New River.

Alternative A2 begins at Happy Valley Road just east of 91st Avenue. This alignment uses sharper reverse curves (710 m radius - superelevation 5.2%) to shift the alignment to the south to parallel the SRP easement. The alignment runs east/west past the proposed intersection with 83rd Avenue. Once past 83rd Avenue, the alignment shifts north using another pair of reverse curves (710 m radius - superelevation 5.2%) to bring the alignment back onto the Happy Valley Road section line west of New River.

Alternative A3 begins at the existing intersection of Lake Pleasant Road/99th Avenue and Happy Valley Road. Rather than following existing Happy Valley Road east, this alternative extends the proposed alignment west of Lake Pleasant Road southeasterly through the proposed intersection. A 3500 m radius, normally crowned, curve to the east turns the alignment directly east/west, paralleling the SRP easement. The alignment then continues east past the proposed intersection with 83rd Avenue. From 83rd Avenue east, this alignment follows Alternative A2 but could follow either alternative.

5.2.1 Alignment A1 (Preferred Alignment)

Alternative A1 was chosen as the preferred alignment based on the comparative discussions which follow.

The preferred alternative follows the alignment of existing Happy Valley Road eastward from 99th Avenue until approximately 93rd Avenue where it begins a southerly curve deviating from the existing roadway. This curve allows the alignment to separate from the existing 91st Avenue/Happy Valley Road intersection and allows 91st Avenue to remain an access point.

Local access/frontage roads will be necessary from 91st Avenue to west of 93rd Avenue north of the proposed alignment and from 93rd Avenue to the east south of the proposed alignment. This keeps local traffic patterns in place and provides access to the proposed Happy Valley Road. By moving the 91st Avenue access further east and downslope, it provides access to 91st Avenue for future development along the mountain flanks. For property to the north, this alternative has less impact on the mountain slopes and mine site than Alternative A2.

After the curve at 93rd Avenue, the alignment continues southeastward before making a left hand curve to run parallel to the SRP easement. All alternatives have the same benefits once they reach the SRP easement. They avoid bisecting parcels and creating uneconomic remnants which optimizes use of the existing land. The alternatives are also further down the mountain slopes, reducing scarring from the road cut and minimizing visual impacts. Since this alternative begins paralleling the easement after Alternative A3 but before Alternative A2, its magnitude of impacts are between the others.

As with the other alternatives, the roadway parallels the SRP easement through the proposed intersection with 83rd Avenue to minimize the intersection skew. Skew is unavoidable because the proposed alignment of 83rd Avenue sweeps to the east around the mountain. This sweep is necessary to minimize scarring and reduce grades along the proposed 83rd Avenue extension.

Once past the intersection with 83rd Avenue, the alignment makes a left hand curve followed by a short tangent and a right hand curve to bring the alignment back onto the Happy Valley Road section line. These curves bring the alignment back to the Happy Valley Road section line before impacting the APS property but slightly further east than the other two alternatives.

The grades along alternative A1 are moderate. Upgrades vary from +0.25% to +0.084% and the only downgrade is -0.97%. The grade from the Lake Pleasant/99th Avenue intersection to 92nd Avenue closely matches the existing and varies from +0.26% to +0.84%. A point of vertical intersection (PVI) is located at 91st Avenue. From this point to the point when the alignment parallels the SRP easement, the alternative follows the existing contours, rising at +0.26%. After the point where the alignment begins paralleling the SRP easement, the profile drops at -0.97% until a low point is reached just west of Rock Creek. From here the profile rises at the minimum allowable grade of +0.25% until the alignment is back on the Happy Valley Road section line. After the low point, all profiles are virtually the same.

5.2.2 Alignment A2 (Rejected Alignment)

Alternative A2 follows the existing road eastward from 99th Avenue until 91st Avenue where existing Happy Valley Road ends. An intersection with 93rd Avenue will allow local traffic a "right-in/right-out" access point and the full intersection with 91st Avenue will allow traffic movement in all directions. To maintain existing access, local access/frontage roads similar to those shown in Alignment A1 are necessary.

After 91st Avenue, the proposed alignment begins a right hand curve deviating from the Happy Valley Road section line. Placing this curve east of 91st Avenue minimizes impact to existing properties south of Happy Valley Road but increases scarring and impact to homes located north of Happy Valley Road. The existing Sunrise Relief Mine site may also be adversely impacted.

Future planned development on the flank of the mountain east of 91st Avenue would be impacted. It is unlikely an access road could be constructed north of Happy Valley Road from 91st Avenue toward the east due to the proximity of this alternative to the mountain.

After the curve at 91st Avenue, the alignment continues southeastward before making a left hand curve to run parallel to the SRP easement. All alternatives have the same benefits once they reach the SRP easement. They avoid bisecting parcels and creating uneconomic remnants which optimizes use of the existing land. The alternatives are also further down the mountain slopes, reducing scarring from the road cut and minimizing visual impacts. Since this alternative takes the longest to begin paralleling the easement, it has the most impacts.

As with the other alternatives, the roadway parallels the SRP easement through the proposed intersection with 83rd Avenue to minimize the intersection skew. Skew is unavoidable because the proposed alignment of 83rd Avenue sweeps to the east around the mountain. This sweep is necessary to minimize scarring and reduce grades along the proposed 83rd Avenue extension.

Once past the intersection with 83rd Avenue, the alignment makes a left hand curve followed by a short tangent and a right hand curve to bring the alignment back onto the Happy Valley Road section line. This end of the Alternative is the same as Alternative A3 and brings the alignment back to the section line in the shortest distance.

Since this alignment is furthest up the mountain, the grades are higher than the other alternatives. Upgrades range from +0.25% to +2.44% and the only downgrade is -1.01%. The grade from the Lake Pleasant/99th Avenue intersection to 93rd Avenue closely matches the existing and varies from +0.28% to +0.84%. Once past 93rd Avenue the grade begins to rise to make the cut through the mountain slope. A crest vertical curve begins just west of 91st Avenue and extends 360 m (1181') east. Here the entrance grade is +2.44% and the exit grade is -1.01%. From this point the profile falls at -1.01%, past the proposed 83rd Avenue intersection, all the way to a low point just west of Rock Creek. From here the profile rises at the minimum allowable grade of +0.25% until the alignment is back on the Happy Valley Road section line. After the low point, all profiles are virtually the same.

5.2.3 Alignment A3 (Rejected Alignment)

Alternative A3 continues the southeasterly tangent alignment (proposed west of 99th Avenue) through the intersection of 99th Avenue before making a easterly curve to parallel the SRP easement, east of 91st Avenue. This alignment is the most direct alternative from 77th Avenue to 99th Avenue, containing the fewest horizontal curves. There are several drawbacks to this alignment that are discussed below.

One drawback is that this alternative introduces the most skew into the proposed intersection improvement at Lake Pleasant/99th Avenue. However, since traffic signals are ultimately proposed at this intersection it may only be a matter of installing them during the initial construction rather than at a later traffic warrant.

Existing Happy Valley Road would be terminated and not connect to Lake Pleasant Road. Local access for the neighborhood to the proposed alignment would be at 91st Avenue. The perpendicular crossing at 91st Avenue is desirable from a safety and operational standpoint.

Right-of-way would have to be acquired from Lake Pleasant Road/99th Avenue to 91st Avenue. Parcels would be bisected until approximately 93rd Avenue.

This alternative also has the most impact on homes in the community. By paralleling the SRP easement from 93rd Avenue to 91st Avenue, several properties with existing structures would be impacted. There is also a well within this portion of the alignment.

All alternatives have the same benefits once they reach the SRP easement. They avoid bisecting parcels and creating uneconomic remnants which optimizes use of the existing land. The alternatives are also further down the mountain slopes, reducing scarring from the road cut and minimizing visual impacts. Since this alternative begins paralleling the easement the soonest it has no adverse impacts to the east end of the mountain. Nor does it bisect any of the parcels between 91st and proposed 83rd Avenues.

As with the other alternatives, the roadway parallels the SRP easement through the proposed intersection with 83rd Avenue to minimize the intersection skew. Skew is unavoidable because the proposed alignment of 83rd Avenue sweeps to the east around the mountain. This sweep is necessary to minimize scarring and reduce grades along the proposed 83rd Avenue extension.

Once past the intersection with 83rd Avenue, the alignment makes a left hand curve followed by a short tangent and a right hand curve to bring the alignment back onto the Happy Valley Road section line. This end of the Alternative is the same as Alternative A2 and brings the alignment back to the section line in the shortest distance.

Upgrades range from +0.25% to 1.18% and the only downgrade is -1.06%. The grade from the Lake Pleasant/99th Avenue intersection to 91st Avenue rises steadily at +0.26%. Once past 91st Avenue the grade begins to rise to a 300 m (984') crest curve centered on projected 87th Avenue. The entrance grade is +1.18% and the exit grade is -1.06%. From this point the profile falls at -1.06%, past the proposed 83rd Avenue intersection, all the way to a low point just west of Rock Creek. From here the profile rises at +0.25% until the alignment is back on the Happy Valley Road section line. After the low point, all alternative profiles are virtually the same.

5.3 EVALUATION MATRIX

The following matrix quantitatively evaluates the advantages and disadvantages of each alignment alternative.

Table 15 Matrix Evaluation - Happy Valley Road Alternative Alignments

Evaluation Criteria	Alternative A1 (Preferred)	Alternative A2 (Rejected)	Alternative A3 (Rejected)
Construction Costs	3	1	3
Visual Impacts	3	1	5
Roadway Geometrics	3	1	3
Agricultural Lands Impacts	n/a	n/a	n/a
Utility Impacts	3	3	3
Floodplain Impacts	n/a	n/a	n/a
Air Quality Impacts	3	3	3
Consistency w/City General Plan	3	3	1
Right-of-way Impact	3	3	1
Future Crossroad Construction	3	3	3
Total Score	24	18	22

1=Poor 3=Average 5=Best

5.4 RIGHT OF WAY

The right of way requirements that have been identified for the preferred alignment are shown in Figure 24. 45.72 meters (150 feet) of right of way has been shown except between 94th Avenue and 91st where frontage roads are needed to provide local access. An additional 10.66 meters (35 feet) is required for each frontage road. It is expected that some of the right of way needed between Lake Pleasant Road and 75th Avenue and most of the right of way between 75th Avenue and 67th Avenue will be dedicated by the adjacent property owners as development takes place.

5.5 MITIGATION MEASURES

During the development of the alternative alignments, concerns have been expressed about the intrusion of an arterial street section into the rural undeveloped or low density residential land use that exists today between Lake Pleasant Road and 75th Avenue. Although not required by city standards, several construction features are identified below that could help mitigate the impacts of future construction projects. The decision to incorporate of any of these measures will be made by the City of Peoria on a project specific basis.

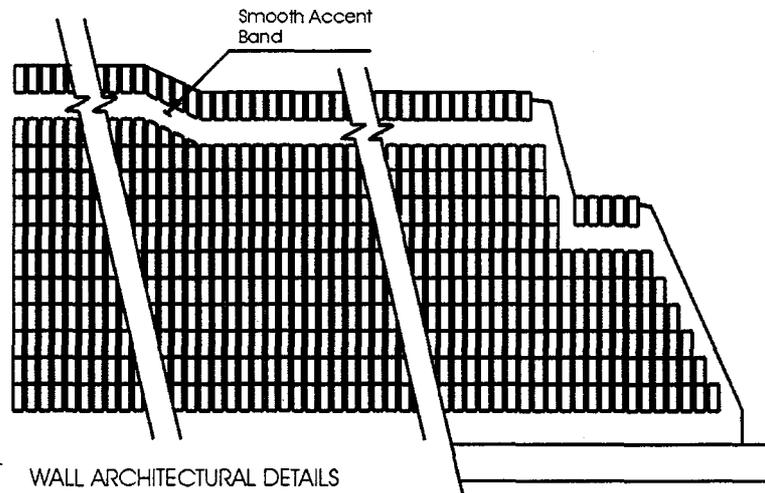
All designs should consider the use of separate roadway profiles, between 93rd Avenue and 81st Avenue, to keep the roadway as close to existing ground level as possible. The roadway cannot be placed significantly below existing grade because of the need to accommodate cross drainage. As shown in Figure 25, landscaping can provide a degree of visual screening for the adjacent properties. Walls in conjunction with landscaping can provide an even greater level of screening and noise mitigation. As shown in Figure 26, landscaping and/or walls can be enhanced by the construction of a berm along one side of the roadway if the roadway centerline is offset from the center of the right of way.

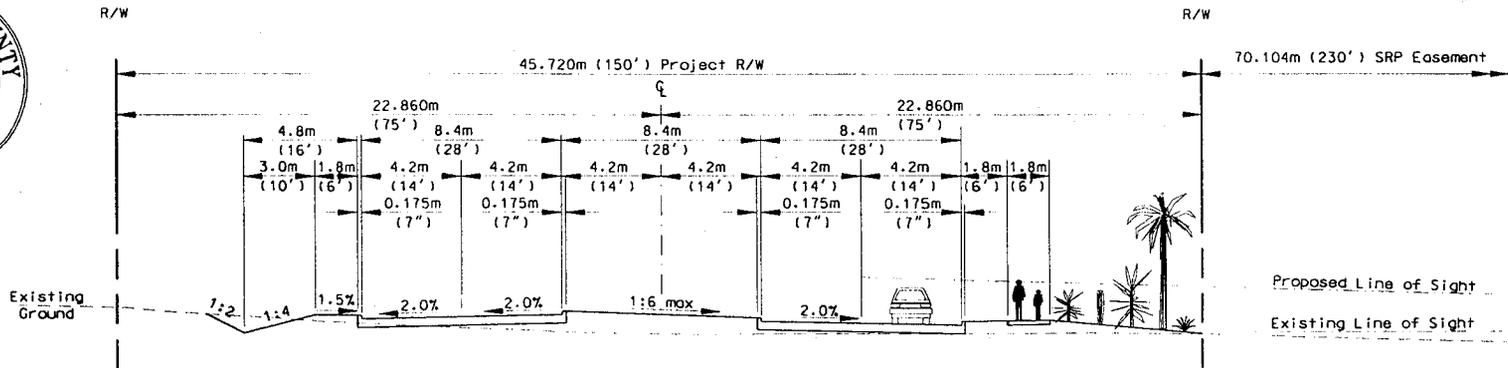
Any landscaping should utilize low water use plants compatible with the existing terrain. Evergreen shrubs and desert trees can provide a high level of visual screening. Planting design should complement and respond to landform grading, drainage schemes and the use of any walls. Walls are not a preferred treatment adjacent to the power easement because of the safety and maintenance issues associated

with isolating the power corridor between walls; however, they may be the most feasible treatment between 95th Avenue and 91st Avenue where the need for frontage roads limits available space.

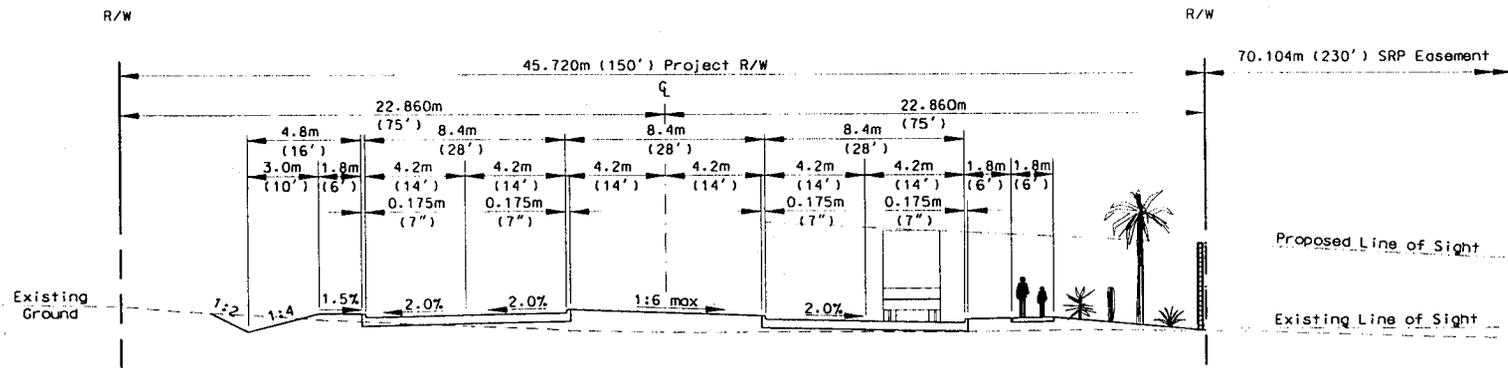
Extensive rock cuts are not expected, however, where cuts are necessary mitigation measures should be considered. Several rock cut mitigation methods exist to achieve a naturally appearing rock cut slope. Natural rock slopes tend to be steep with a jagged irregular appearance. This look can be mimicked through rock slope surface treatments including roughening the cut face, incorporating short staggered ledges, rock staining, minor warping, providing planting pockets and introducing other irregularities in the rock cut.

Staining is used where the cut rock varies in color from the surrounding weathered rock areas. An environmentally safe, penetrating oxide coloration product can be applied to the cut rock to match the weathered rock appearance. Stepping the cut slope in and out from the roadway is called warping and also promotes a natural appearance.





Landscaping Only

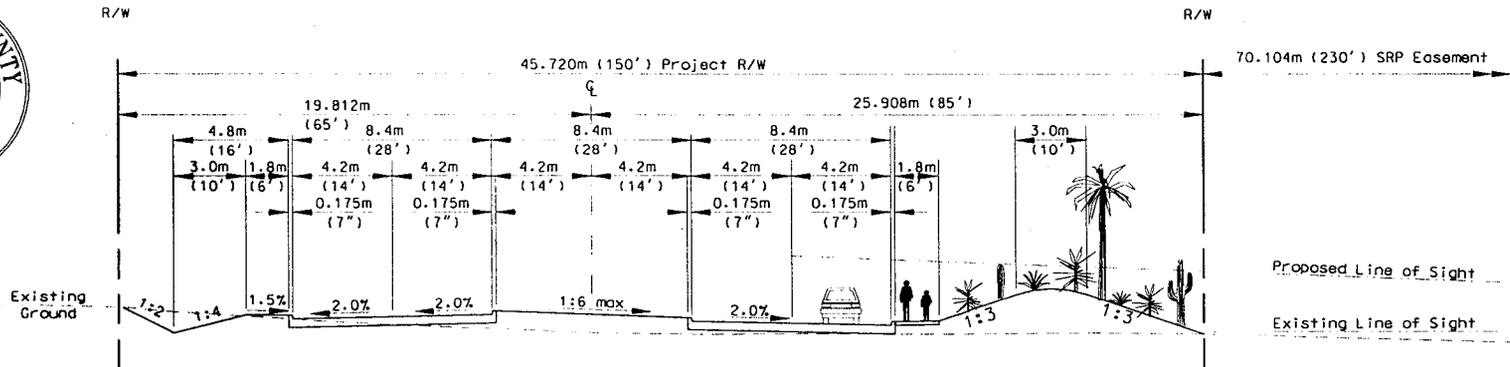


Landscaping with Wall

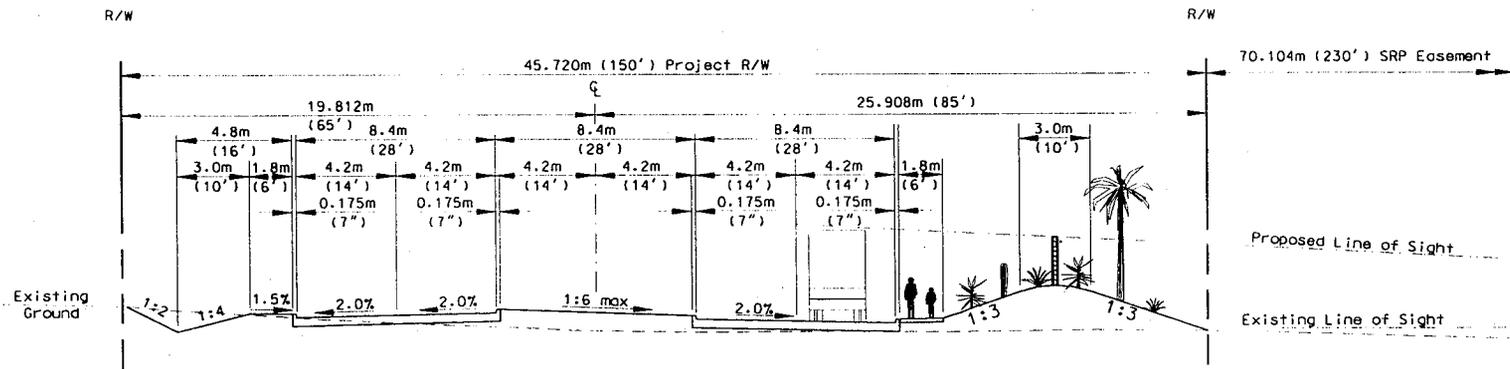
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CATHER

MITIGATION CONCEPTS

Figure 25



Landscaped Berm Only



Landscaped Berm with Wall

**DE LEUW,
CATHER**

MITIGATION CONCEPTS WITH OFFSET CENTERLINE

Figure 26

Whatever techniques are chosen, including whether the slopes are excavated or blasted, a realistic picture of what the rock cut slope should look like is the first step. This picture is dependent upon many engineering properties of the rock itself including the geology, fracture tendencies, slope stability, and susceptibility to scaling. These properties must be balanced against aesthetic considerations as well as safety, extent of cutting, and project costs to formulate the desired end result. Once the desired appearance is defined, how to achieve the results must be clearly detailed and defined in the specifications.

5.6 COST ESTIMATE

The estimated cost of construction for the preferred alignment from Lake Pleasant Road to 75th Avenue is \$4,143,128. The cost of new right of way is not included in this number.

Table 16 Estimated Costs - Happy Valley Road Alternative Alignments - 75th Avenue to 99th Avenue

Item Description	Unit Price	Unit	Alternative A1 4.99 km (3.10 mi)		Alternative A2 5.01 km (3.11 mi)		Alternative A3 4.98 km (3.10 mi)	
			Quantity	Amount	Quantity	Amount	Quantity	Amount
			NPDES	\$10,000.00	LS	1	\$10,000.00	1
Community Relations	\$25,000.00	LS	1	\$25,000.00	1	\$25,000.00	1	\$25,000.00
Clearing and Grubbing	\$50,000.00	LS	1	\$50,000.00	1	\$50,000.00	1	\$50,000.00
Roadway Excavation	\$4.00	cu m	83483	\$333,932.00	177078	\$708,312.00	44697	\$178,788.00
Borrow Excavation	\$4.00	cu m	11086	\$44,344.00	0	\$0.00	49543	\$198,172.00
Engineers Office	7500	LS	1	\$7,500.00	1	\$7,500.00	1	\$7,500.00
Watering	\$0.75	1000 L	50000	\$37,500.00	50000	\$37,500.00	50000	\$37,500.00
Aggregate Base Course	\$9.00	Mg	45989	\$413,903.37	46105	\$414,944.53	45922	\$413,299.89
Asphaltic Concrete Pavement	\$27.50	Mg	19457	\$535,068.95	19507	\$536,446.84	19429	\$534,298.95
ACFC	\$25.00	Mg	3113	\$77,825.00	3121	\$78,025.00	3109	\$77,725.00
Bituminous Tack Coat	\$0.19	sq m	115308	\$21,908.52	115604	\$21,964.76	115142	\$21,876.98
Concrete Ramp (MAG 231 Type "A")	\$600.00	EA	20	\$12,000.00	20	\$12,000.00	16	\$9,600.00
Concrete Curb and Gutter (MAG 220 Type "A")	\$20.00	m	19972	\$399,440.00	20027	\$400,540.00	19940	\$398,800.00
Concrete Sidewalk (MAG 230, 1500mm)	\$16.00	sq m	7490	\$119,840.00	7510	\$120,160.00	7480	\$119,680.00
Utility Relocations	\$25,000.00	LS	1	\$25,000.00	1	\$25,000.00	1	\$25,000.00
Removal of Existing Improvements	\$15,000.00	LS	1	\$15,000.00	1	\$15,000.00	1	\$15,000.00
Traffic Signing and Striping - 6 lanes	\$6.96	m	5740	\$39,950.40	5755	\$40,054.80	5735	\$39,915.60
Traffic Signals	\$75,000.00	EA	3	\$225,000.00	3	\$225,000.00	3	\$225,000.00
Right-of-way		sq m	202119	\$0.00	198736	\$0.00	227910	\$0.00
Drainage	\$350,000.00	LS	1	\$350,000.00	1	\$350,000.00	1	\$350,000.00
Traffic Control	3.5%	LS	1	\$96,012.43	1	\$107,710.68	1	\$95,800.47
Mobilization	5.0%	LS	1	\$137,160.61	1	\$153,872.40	1	\$136,857.82
SUBTOTAL CONSTRUCTION				\$2,976,385.28		\$3,339,031.00		\$2,969,814.72
	Contingencies @	20.0%	LS	1	\$595,277.06		\$667,806.20	\$593,962.94
TOTAL CONSTRUCTION				\$3,571,662.33		\$4,006,837.20		\$3,563,777.66
	Preliminary Engineering @	8.0%	LS	1	\$285,732.99		\$320,546.98	\$285,102.21
	Construction Engineering @	8.0%	LS	1	\$285,732.99		\$320,546.98	\$285,102.21
TOTAL PROJECT				\$4,143,128.30		\$4,647,931.16		\$4,133,982.09

SECTION 6 IMPLEMENTATION

The implementation of the ultimate improvements for the Estrella Corridor will occur over a long period of time. Improvements can be classified as already programmed, near term and long range.

6.1 PROGRAMMED PROJECTS

There are two projects currently programmed in MCDOT's Capital Improvement Program. They are the construction of a new bridge over Grand Avenue and the Burlington Northern Santa Fe Railroad and the construction of eight miles of interim roadway from Reems Road to Lake Pleasant Road. They will be constructed in 2001/2002.

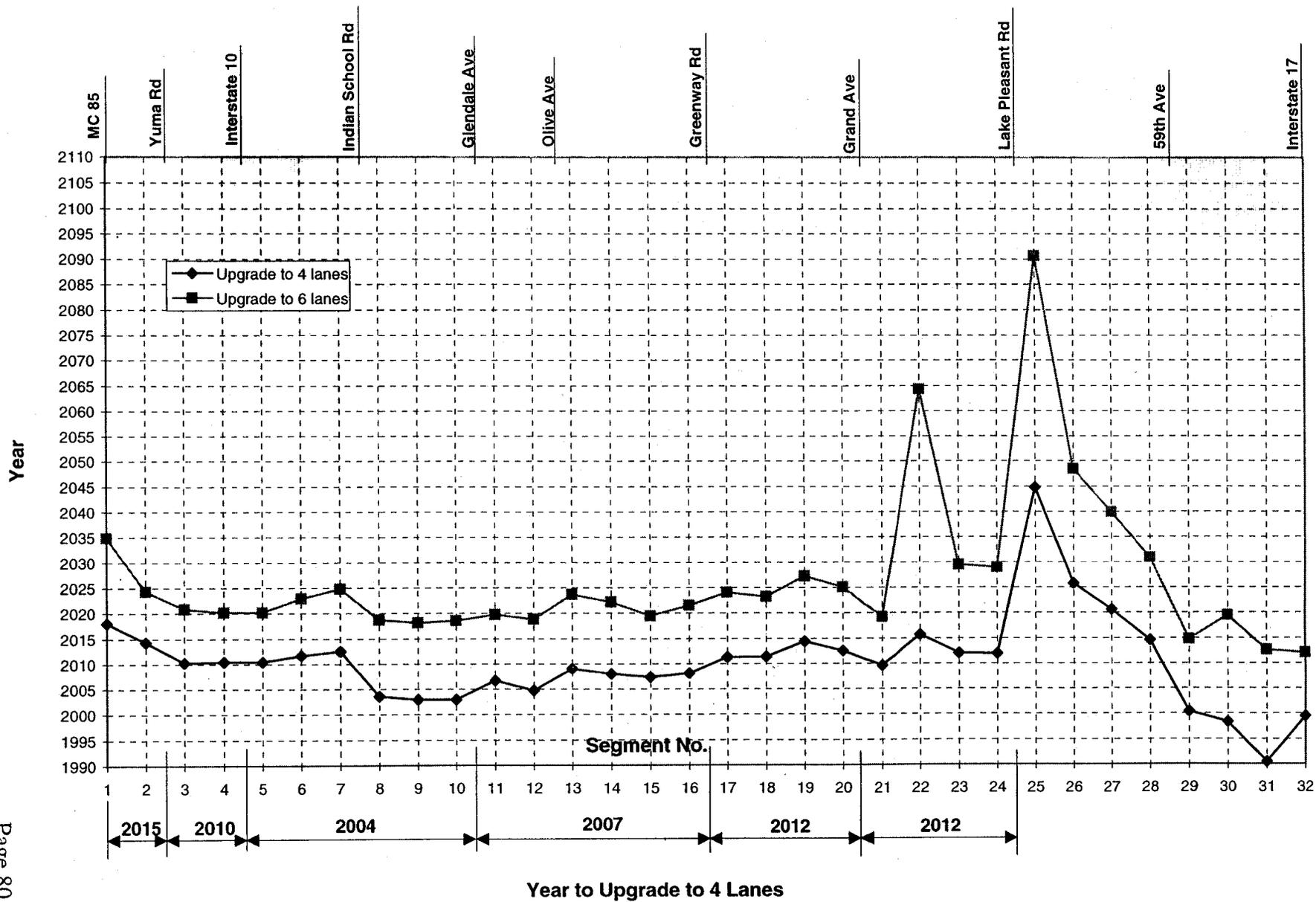
6.2 NEAR TERM IMPROVEMENTS

At the southern end of the corridor, a direct connection of the Estrella to Cotton Lane at McDowell Road to eliminate the jog at Thomas Road is expected to be programmed by MCDOT as a joint funded project with the City of Goodyear and ADOT. The City of Surprise is working with ADOT to install a traffic signal at Bell Road.

6.3 LONG RANGE IMPROVEMENTS

Based on the projected traffic volumes presented in Section 3, improvement of the Estrella Corridor can be divided into several logical projects, generally five to ten kilometers in length. Although the traffic projections can be interpreted to support a first project between Indian School Road and Glendale Avenue, we recommend that the first improvements extend as far south as Interstate 10. There are no traffic generators proposed in the vicinity of Indian School Road that make it a logical terminus. Figure 27 and Table 17 identify the recommended improvements through the year 2020.

It is expected that the need to upgrade from four to six lanes will be controlled by the capacity of each intersection rather than the through capacity of the Estrella. It may be possible to postpone the need to construct the full six lane section for a number of years by adding a third through lane at the intersections with the highest cross road volumes. Based on the traffic projections, the intersections most likely to need additional lanes are MC 85, Yuma Road, Interstate 10, Indian School Road, Bell Road, El Mirage Road and Lake Pleasant Road.



Recommended Improvement Projects

Figure 27

Table 17 Future Improvements

Project Limits	Length Km	Improvement	Year
I-10 - Glendale Ave	8.9	4 lanes	2004
Glendale Ave - Greenway Rd	9.7	4 lanes	2007
Yuma Rd - I-10	2.6	4 lanes	2010
Greenway Rd - Lake Pleasant Rd	16.1	4 lanes	2012
MC 85 - Yuma Rd	3.2	4 lanes	2015

6.4 AGUA FRIA RIVER BRIDGE CONSTRUCTION

The interim construction project from Grand Avenue to Lake Pleasant Road will provide a low-flow crossing of the Agua Fria River. This crossing will be closed during all but the lowest flows in the river which will subject the traveling public to significant out of direction travel and delay. As the traffic using this facility grows, the need and economic justification for a bridge at this location will increase. One measure of the need is the net present value of the improvements, the present value of the benefits less the present value of the costs. The present value of the benefits is the present value of the savings in vehicle operating costs plus the present value of the savings in travel time. The present value of the costs is the present value of the design and construction minus the present value of the reduction in annual operation and maintenance costs.

The low flow crossing will be designed to pass only 300 cfs under the roadway. This flow is less than that of a two year storm. We have assumed that the crossing will be closed on the average, once a year for a period of seven days. With the nearest all weather crossing of the Agua Fria located at Bell Road, a closure of the Estrella Corridor will result in a nine mile detour and approximately 25 minutes of delay per vehicle. The life of a new bridge will be set at 50 years and the present value factor of an annual cost over 50 years is 13.8.

The annual value of the reduced operating costs **per vehicle** will be \$19.53, (9 miles x \$0.31/mile x 7 days). The annual time value of any reduced delays **per vehicle** will be \$46.67, (\$8.00/hour x 2 people/vehicle x 25/60 hour x 7 days).

The present value of the benefits will be \$66.42 (\$19.53 + \$46.87) per vehicle times the number of vehicles times the present value factor (13.8).

The present value of the cost of the project will be the construction cost (estimated at \$11,910,000) plus the present value of the design cost (estimated at \$772,000) less the present value of the reduced maintenance costs over the life of the improvement (estimated at \$25,000 per year for the 50 year life of the structure).

The present value of the cost = $\$11,910,000 + \$772,000 - 13.8(\$25,000) = \$12,337,000$

A net present value greater than zero indicates that the benefits exceed the costs, justifying construction of the project. The value of the benefits is dependent on the projected traffic volumes using the roadway. If 100% of the projected traffic is assumed to be diverted, a traffic volume of 13,500 will result in a benefit cost ratio of 1.0; however, travelers with destinations in the vicinity of Bell Road will not be subjected to the same amount of out of direction travel and delay as those travelers with destinations to the north. If 50% of the projected traffic is assumed to be diverted, a traffic volume of 27,000 will result in a benefit cost ratio of 1.0.

Using these two extremes, construction of a bridge crossing will be justified somewhere between 2010 and 2026. These estimates are very dependent upon the assumptions made regarding the frequency and duration of closure as well as the cost to maintain the low flow crossing. Re-evaluation is appropriate after several years of operational history is available for the low flow crossing that will be constructed in 2001/2002.

6.5 ESTRELLA DRAINAGE CHANNEL

To have a functional drainage system, construction of the Estrella drainage channel must begin at the Gila River and proceed to the north. The channel should be built in conjunction with, or prior to, upgrading the corridor to four lanes. This report recommends that the expressway construction begin at Interstate 10 and proceed north; therefore, the channel construction south of Interstate 10 must be a part of this first project or must be constructed earlier as a separate project. The drainage improvements are an excellent opportunity for joint funding with the Flood Control District.

6.6 ROADWAY MAINTENANCE

Increasingly, the maintenance of new public infrastructure is an issue. Often, the addition of new facilities is not accompanied by a corresponding increase in operations budget. The City of Surprise wishes to minimize the right of way for the facility in part to reduce the amount of landscaping/maintenance effort that will be required.

As caretaker for the corridor, it is anticipated that the Maricopa County Department of Transportation will operate the facility. Through partnership agreements with the adjacent local jurisdictions and ADOT, maintenance will be the responsibilities will be defined.

SECTION 7 PUBLIC PARTICIPATION

Two sets of Public Information Meetings were held during the Estrella Corridor Study. The first meetings were held on July 24th at Mountain Ridge High School and on July 29th at Dysart Middle School during the Characteristics of the Corridor phase. They were introductory scoping meetings intended to inform the public about the study and to solicit comments, concerns and issues related to the project. The second set of meetings was held on November 13th at Dysart Middle School and on November 18th at Mountain Ridge High School. At these meeting, the recommended corridor design features, the projected 2010 and 2020 traffic volumes and the Happy Valley Road alignment alternatives that were studied were presented for public review and comment.

An open house format was used for the meetings. Handouts were developed describing the project purpose, need and location. Comment sheets were provide for written comment easels with writing tablets and markers were placed next to graphic displays to record verbal comments.

Both direct mail and public notices were used to notify the public and other affected entities/interests of the meeting. MCDOT has developed and maintained a mailing list (now with over 300 names) throughout the project. More detailed information on the public involvement process is contained in Appendix E.

APPENDIX A

Special Status Species Correspondence



GAME & FISH DEPARTMENT

2221 West Greenway Road, Phoenix, Arizona 85023-4399 (602) 942-3000

Governor
Fife Symington

Commissioners:
Chairman, Michael M. Golightly, Flagstaff
Herb Guenther, Tucson
Fred Belman, Tucson
M. Jean Hassell, Scottsdale
Dennis D. Manning, Alpine

Director
Duane L. Shroule

Deputy Director
Thomas W. Spalding

July 23, 1997

Ms. Diane L. Douglas
Logan Simpson & Dye LLC
398 South Mill Avenue, Suite 200
Tempe, Arizona 85281

Re: Special Status Species Request for Estrella Corridor Study
(MC-85 to I-17)

Dear Ms. Douglas:

The Arizona Game and Fish Department (Department) has reviewed the materials provided on the above-referenced subject from your letter dated July 7, 1997, and we provide the following comments for your consideration.

The Department's Heritage Data Management System has been accessed and current records show that the special status species listed below have been documented as occurring in the project vicinity.

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>STATUS</u>
greater western mastiff bat	<i>Eumops perotis californicus</i>	S
Sonoran desert tortoise	<i>Gopherus agassizii</i>	WC,S

STATUS DEFINITIONS

WC - Wildlife of Special Concern in Arizona. Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the Department's listing of Wildlife of Special Concern in Arizona (WSCA, in prep.). Species included in WSCA are currently the same as those in Threatened Native Wildlife in Arizona (1988).

Ms. Diane L. Douglas

July 23, 1997

2

S - **Sensitive.** Species classified as "**sensitive**" by the Regional Forester when occurring on lands managed by the U.S.D.A. Forest Service.

At this time, the Department's comments are limited to the special status species information provided above. This correspondence does not represent the Department's evaluation of impacts to wildlife or wildlife habitat associated with activities occurring in the subject area. The Department would appreciate the opportunity to provide such an evaluation when specific details become available. Please contact Russell Haughey, Regional Habitat Program Manager, at (602) 981-9309 extension 222 if this type of evaluation applies to your project.

Thank you for the opportunity to provide this information. If you have any further questions, please do not hesitate to contact me at 789-3611.

Sincerely,

Barbara Heslin

Barbara Heslin
Project Evaluation Specialist
Habitat Branch

cc: Kelly Neal, Regional Supervisor, Region VI, Mesa

BSH:bh

AGFD# 7-15-97(08)



United States Department of the Interior

Fish and Wildlife Service
Arizona Ecological Services Field Office
2321 W. Royal Palm Road, Suite 103
Phoenix, Arizona 85021-4951
(602) 640-2720 Fax (602) 640-2730



In Reply Refer To:
AESO/SE
2-21-97-I-331
CCN 97-0653

July 15, 1997

Ms. Diane L. Douglas
Environmental Planner
Logan Simpson & Dye
398 South Mill Avenue, Suite 200
Tempe, Arizona 85281

RE: Estrella Corridor Study (MC-85 to I-17) Environmental Overview

Dear Ms. Douglas:

This letter responds to your July 7, 1997, request for an inventory of threatened or endangered species, or those that are proposed to be listed as such under the Endangered Species Act of 1973, as amended (Act), which may potentially occur in your project area (Maricopa County). The attached list may include candidate species as well. In the past, the U.S. Fish and Wildlife Service has provided project-specific species lists and information. However, staff reductions no longer permit us to provide this detailed level of assistance. We regret any inconvenience this may cause you and hope the enclosed county list of species will be helpful. In future communications regarding this project, please refer to consultation number 2-21-97-I-331.

The enclosed list of the endangered, threatened, proposed, and candidate species includes all those potentially occurring anywhere in the county, or counties, where your project occurs. Please note that your project area may not necessarily include all or any of these species. The information provided includes general descriptions, habitat requirements, and other information for each species on the list. Also on the enclosed list is the Code of Federal Regulations (CFR) citation for each listed or proposed species. Additional information can be found in the CFR and is available at most public libraries. This information should assist you in determining which species may or may not occur within your project area. Site-specific surveys could also be helpful and may be needed to verify the presence or absence of a species or its habitat as required for the evaluation of proposed project-related impacts.

Endangered and threatened species are protected by Federal law and must be considered prior to project development. If the action agency determines that listed species or critical habitat may be adversely affected by a federally funded, permitted, or authorized activity, the action agency must request formal consultation with the Service. If the action agency determines that the planned action may jeopardize a proposed species or destroy or adversely modify proposed critical habitat, the action agency must enter into a section 7 conference with the Service.

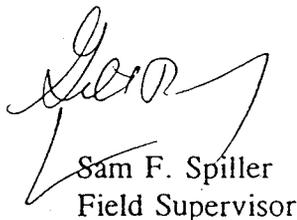
Candidate species are those which are being considered for addition to the list of threatened or endangered species. Candidate species are those for which there is sufficient information to support a proposal for listing. Although candidate species have no legal protection under the Act, we recommend that they be considered in the planning process in the event that they become listed or proposed for listing prior to project completion.

If any proposed action occurs in or near areas with trees and shrubs growing along watercourses, known as riparian habitat, the Service recommends the protection of these areas. Riparian areas are critical to biological community diversity and provide linear corridors important to migratory species. In addition, if the project will result in the deposition of dredged or fill materials into waterways or excavation in waterways, we recommend you contact the Army Corps of Engineers which regulates these activities under Section 404 of the Clean Water Act.

The State of Arizona protects some plant and animal species not protected by Federal law. We recommend you contact the Arizona Game and Fish Department and the Arizona Department of Agriculture for State-listed or sensitive species in your project area.

The Service appreciates your efforts to identify and avoid impacts to listed and sensitive species in your project area. If we may be of further assistance, please contact Tom Gatz.

Sincerely,



Sam F. Spiller
Field Supervisor

Enclosure

cc: Director, Arizona Game and Fish Department, Phoenix, AZ

3/19/97

LISTED TOTAL= 14

NAME: ARIZONA AGAVE

AGAVE ARIZONICA

STATUS: ENDANGERED CRITICAL HABITAT: No RECOVERY PLAN: No CFR: 49 FR 21055, 05-18-1984

DESCRIPTION: HAS ATTRACTIVE ROSETTES OF BRIGHT GREEN LEAVES WITH DARK MAHOGANY MARGINS. FLOWER: BORNE ON SUB-UMBELLATE INFLORESCENCES.

ELEVATION

RANGE: 3000-6000 FT.

COUNTIES: GILA, YAVAPAI, MARICOPA

HABITAT: TRANSITION ZONE BETWEEN OAK-JUNIPER WOODLAND & MOUNTAIN MAHOGANY-OAK SCRUB

SCATTERED CLONES IN NEW RIVER MOUNTAINS AND SIERRA ANCHA. USUALLY FOUND ON STEEP, ROCKY SLOPES. POSSIBLY MAZATAL MOUNTAINS. SHOULD BE LOOKED FOR WHEREVER THE RANGES OF *Agave toumeyana* var. *bella* AND *Agave chrystantha* OVERLAP.

NAME: ARIZONA CLIFFROSE

PURSHIA SUBINTEGRA

STATUS: ENDANGERED CRITICAL HABITAT: No RECOVERY PLAN: Yes CFR: 49 FR 22326 5-29-84

DESCRIPTION: EVERGREEN SHRUB OF THE ROSE FAMILY (ROSEACEAE). BARK PALE SHREDDY. YOUNG TWIGS WITH DENSE HAIRS. LEAVES 1-5 LOBES AND EDGES CURL DOWNWARD (REVOLUTE). FLOWERS: 5 WHITE OR YELLOW PETALS <0.5 INCH LONG.

ELEVATION

RANGE: <4000 FT.

COUNTIES: GRAHAM YAVAPAI MARICOPA MOHAVE

HABITAT: CHARACTERISTIC WHITE SOILS OF TERTIARY LIMESTONE LAKEBED DEPOSITS.

WHITE SOILS OF TERTIARY LIMESTONE LAKEBED DEPOSITS CAN BE SEEN FROM A DISTANCE.

NAME: ARIZONA HEDGEHOG CACTUS

ECHINOCEREUS TRIGLOCHIDIATUS ARIZONICUS

STATUS: ENDANGERED CRITICAL HABITAT: No RECOVERY PLAN: No CFR: 44 FR 61556, 10-15-1979

DESCRIPTION: DARK GREEN CYLINDROID 2.5-12 INCHES TALL, 2-10 INCHES IN DIAMETER, SINGLE OR IN CLUSTERS. 1-3 GRAY OR PINKISH CENTRAL SPINES LARGEST DEFLEXED AND 5-11 SHORTER RADIAL SPINES. FLOWER: BRILLIANT RED, SIDE OF STEM IN APRIL- MAY

ELEVATION

RANGE: 3700-5200 FT.

COUNTIES: MARICOPA, GILA, PINAL

HABITAT: ECOTONE BETWEEN INTERIOR CHAPPARAL AND MADREAN EVERGREEN WOODLAND

OPEN SLOPES, IN NARROW CRACKS BETWEEN BOULDERS, AND IN UNDERSTORY OF SHRUBS. THIS VARIETY IS BELIEVED TO INTERGRADE AT THE EDGES OF ITS DISTRIBUTION WITH VARIETIES *MELANCANTHUS* AND *NEOMEXICANUS* CAUSING SOME CONFUSION IN IDENTIFICATION.

3/21/96

NAME: LESSER LONG-NOSED BAT

LEPTONYCTERIS CURASOAE YERBABUENAE

STATUS: ENDANGERED CRITICAL HABITAT: No RECOVERY PLAN: No CFR: 53 FR 38456, 09-30-88

DESCRIPTION: ELONGATED MUZZLE, SMALL LEAF NOSE, AND LONG TONGUE.
YELLOWISH BROWN OR GRAY ABOVE AND CINNAMON BROWN BELOW.
TAIL MINUTE AND APPEARS TO BE LACKING. EASILY DISTURBED.ELEVATION
RANGE: <6000 FT. ✓

COUNTIES: COCHISE, PIMA, SANTA CRUZ, GRAHAM, PINAL, MARICOPA

HABITAT: DESERT SCRUB HABITAT WITH AGAVE AND COLUMNAR CACTI PRESENT AS FOOD PLANTS

DAY ROOSTS IN CAVES AND ABANDONED TUNNELS. FORAGES AT NIGHT ON NECTAR, POLLEN, AND FRUIT OF PANICULATE AGAVES AND COLUMNAR CACTI. THIS SPECIES IS MIGRATORY AND IS PRESENT IN ARIZONA, USUALLY FROM APRIL TO SEPTEMBER AND SOUTH OF THE BORDER THE REMAINDER OF THE YEAR.

NAME: SONORAN PRONGHORN

ANTILOCAPRA AMERICANA SONORIENSIS

STATUS: ENDANGERED CRITICAL HABITAT: No RECOVERY PLAN: Yes CFR: 32 FR 4001, 03-11-67

DESCRIPTION: BUFF ON BACK AND WHITE BELOW, HOOFED WITH SLIGHTLY CURVED
BLACK HORNS HAVING A SINGLE PRONG. SMALLEST AND PALEST OF
THE PRONGHORN SUBSPECIES.ELEVATION
RANGE: 2000-4000 FT. ✓

COUNTIES: PIMA, YUMA, MARICOPA

HABITAT: BROAD, INTERMOUNTAIN ALLUVIAL VALLEYS WITH CREOSOTE-BURSAGE & PALO VERDE-MIXED CACTI ASSOCIATIONS

TYPICALLY, BAJADAS ARE USED AS FAWNING AREAS AND SANDY DUNE AREAS PROVIDE FOOD SEASONALLY. HISTORIC RANGE WAS PROBABLY LARGER THAN EXISTS TODAY. THIS SUBSPECIES ALSO OCCURS IN MEXICO.

NAME: DESERT PUPFISH

CYPRINODON MACULARIUS

STATUS: ENDANGERED CRITICAL HABITAT: Yes RECOVERY PLAN: Yes CFR: 51 FR 10842, 03-31-1986

DESCRIPTION: SMALL (2 INCHES) SMOOTHLY ROUNDED BODY SHAPE WITH NARROW
VERTICAL BARS ON THE SIDES. BREEDING MALES BLUE ON HEAD AND
SIDES WITH YELLOW ON TAIL. FEMALES & JUVENILES TAN TO OLIVE
COLORED BACK AND SILVERY SIDES.ELEVATION
RANGE: <5000 FT.

COUNTIES: LA PAZ, PIMA, GRAHAM, MARICOPA, PINAL, YAVAPAI, SANTA CRUZ

HABITAT: SHALLOW SPRINGS, SMALL STREAMS, AND MARSHES. TOLERATES SALINE & WARM WATER

CRITICAL HABITAT INCLUDES QUITOBAQUITO SPRING, PIMA COUNTY, PORTIONS OF SAN FELIPE CREEK, CARRIZO WASH, AND FISH CREEK WASH, IMPERIAL COUNTY, CALIFORNIA. TWO SUBSPECIES ARE RECOGNIZED: DESERT PUPFISH (*C. m. macularis*) AND QUITOBAQUITO PUPFISH (*C. m. eremus*).

3/19/97

NAME: GILA TOPMINNOW

POECILIOPSIS OCCIDENTALIS OCCIDENTALIS

STATUS: ENDANGERED

CRITICAL HABITAT: No RECOVERY PLAN: Yes CFR: 32 FR 4001, 03-11-1967

DESCRIPTION: SMALL (2 INCHES), GUPPY-LIKE, LIVE BEARING, LACKS DARK SPOTS ON ITS FINS. BREEDING MALES ARE JET BLACK WITH YELLOW FINS.

ELEVATION

RANGE: <4500 FT.

COUNTIES: GILA, PINAL, GRAHAM, YAVAPAI, SANTA CRUZ, PIMA, MARICOPA, LA PAZ

HABITAT: SMALL STREAMS, SPRINGS, AND CIENEGAS VEGETATED SHALLOWS

NAME: RAZORBACK SUCKER

XYRAUCHEN TEXANUS

STATUS: ENDANGERED

CRITICAL HABITAT: Yes RECOVERY PLAN: No CFR: 55 FR 21154, 05-22-1990;

DESCRIPTION: LARGE (UP TO 3 FEET AND UP TO 16 POUNDS) LONG, HIGH SHARP-EDGED KEEL-LIKE HUMP BEHIND THE HEAD. HEAD FLATTENED ON TOP. OLIVE-BROWN ABOVE TO YELLOWISH BELOW.

59 FR 13374, 03-21-1994

ELEVATION

RANGE: <6000 FT.

COUNTIES: GREENLEE, MOHAVE, PINAL, YAVAPAI, YUMA, LA PAZ, MARICOPA (REFUGIA), GILA, COCONINO, GRAHAM

HABITAT: RIVERINE & LACUSTRINE AREAS, GENERALLY NOT IN FAST MOVING WATER AND MAY USE BACKWATERS

SPECIES IS ALSO FOUND IN HORSESHOE RESERVOIR (MARICOPA COUNTY).

NAME: AMERICAN PEREGRINE FALCON

FALCO PEREGRINUS ANATUM

STATUS: ENDANGERED

CRITICAL HABITAT: No RECOVERY PLAN: Yes CFR: 35 FR 16047, 10-13-70; 35

DESCRIPTION: A RECLUSIVE, CROW-SIZED FALCON SLATY BLUE ABOVE WHITISH BELOW WITH FINE DARK BARRING. THE HEAD IS BLACK AND APPEARS TO BE MASKED OR HELMETED. WINGS LONG AND POINTED. LOUD WAILING CALLS ARE GIVEN DURING BREEDING PERIOD.

FR 8495, 06-02-70

ELEVATION

RANGE: 3500-9000 FT.

COUNTIES: MOHAVE COCONINO NAVAJO APACHE SANTA CRUZ MARICOPA COCHISE YAVAPAI GILA PINAL PIMA GREENLEE GRAHAM

HABITAT: CLIFFS AND STEEP TERRAIN USUALLY NEAR WATER OR WOODLANDS WITH ABUNDANT PREY

THIS IS A WIDE-RANGING MIGRATORY BIRD THAT USES A VARIETY OF HABITATS. BREEDING BIRDS ARE YEAR-ROUND RESIDENTS. OTHER BIRDS WINTER AND MIGRATE THROUGH ARIZONA. SPECIES IS ENDANGERED FROM REPRODUCTIVE FAILURE FROM PESTICIDES.

3/21/96

NAME: BALD EAGLE

HALIAEETUS LEUCOCEPHALUS

STATUS: THREATENED

CRITICAL HABITAT: No RECOVERY PLAN: Yes CFR: 60 FR 35999, 07-12-95

DESCRIPTION: LARGE, ADULTS HAVE WHITE HEAD AND TAIL. HEIGHT 28 - 38";
WINGSPAN 66 - 96". 1-4 YRS DARK WITH VARYING DEGREES OF
MOTTLED BROWN PLUMAGE. FEET BARE OF FEATHERS.

ELEVATION

RANGE: VARIES FT.

COUNTIES: YUMA, LA PAZ, MOHAVE, YAVAPAI, MARICOPA, PINAL, COCONINO, NAVAJO, APACHE, SANTA CRUZ, PIMA,
GILA, GRAHAM

HABITAT: LARGE TREES OR CLIFFS NEAR WATER (RESERVOIRS, RIVERS AND STREAMS) WITH ABUNDANT PREY

SOME BIRDS ARE NESTING RESIDENTS WHILE A LARGER NUMBER WINTERS ALONG RIVERS AND RESERVOIRS. AN ESTIMATED 200 TO 300 BIRDS WINTER IN ARIZONA. ONCE ENDANGERED (32 FR 4001, 03-11-1967; 43 FR 6233, 02-14-78) BECAUSE OF REPRODUCTIVE FAILURES FROM PESTICIDE POISONING AND LOSS OF HABITAT, THIS SPECIES WAS DOWN LISTED TO THREATENED ON AUGUST 11, 1995. ILLEGAL SHOOTING, DISTURBANCE, LOSS OF HABITAT CONTINUES TO BE A PROBLEM.

NAME: MEXICAN SPOTTED OWL

STRIX OCCIDENTALIS LUCIDA

STATUS: THREATENED

CRITICAL HABITAT: Yes RECOVERY PLAN: Yes CFR: 56 FR 14678, 04-11-91

DESCRIPTION: MEDIUM SIZED WITH DARK EYES AND NO EAR TUFTS. BROWNISH AND
HEAVILY SPOTTED WITH WHITE OR BEIGE.

ELEVATION

RANGE: 4100-9000 FT.

COUNTIES: MOHAVE, COCONINO, NAVAJO, APACHE, YAVAPAI, GRAHAM, GREENLEE, COCHISE, SANTA CRUZ, PIMA,
PINAL, GILA, MARICOPA

HABITAT: NESTS IN CANYONS AND DENSE FORESTS WITH MULTI-LAYERED FOLIAGE STRUCTURE

GENERALLY NESTS IN OLDER FORESTS OF MIXED CONIFER OR PONDERSA PINE/GAMBEL OAK TYPE, IN CANYONS, AND USE VARIETY OF HABITATS FOR FORAGING. SITES WITH COOL MICROCLIMATES APPEAR TO BE OF IMPORTANCE OR ARE PREFERRED.

NAME: SOUTHWESTERN WILLOW FLYCATCHER

EMPIDONAX TRAILLII EXTIMUS

STATUS: ENDANGERED

CRITICAL HABITAT: Yes RECOVERY PLAN: No CFR: 60 FR 10694, 02-27-95

DESCRIPTION: SMALL PASSERINE (ABOUT 6") GRAYISH-GREEN BACK AND WINGS,
WHITISH THROAT, LIGHT OLIVE-GRAY BREAST AND PALE YELLOWISH
BELLY. TWO WINGBARS VISIBLE. EYE-RING FAINT OR ABSENT.

ELEVATION

RANGE: <8500 FT.

COUNTIES: YAVAPAI, GILA, MARICOPA, MOHAVE, COCONINO, NAVAJO, APACHE, PINAL, LA PAZ, GREENLEE, GRAHAM,
YUMA, PIMA, COCHISE, SANTA CRUZ

HABITAT: COTTONWOOD/WILLOW & TAMARISK VEGETATION COMMUNITIES ALONG RIVERS & STREAMS

MIGRATORY RIPARIAN OBLIGATE SPECIES THAT OCCUPIES BREEDING HABITAT FROM LATE APRIL TO SEPTEMBER. DISTRIBUTION WITHIN ITS RANGE IS RESTRICTED TO RIPARIAN CORRIDORS. DIFFICULT TO DISTINGUISH FROM OTHER MEMBERS OF THE EMPIDONAX COMPLEX BY SIGHT ALONE. TRAINING SEMINAR REQUIRED FOR THOSE CONDUCTING FLYCATCHER SURVEYS.

3/19/97

NAME: SOUTHWESTERN WILLOW FLYCATCHER *EMPIDONAX TRAILLII EXTIMUS*

STATUS: ENDANGERED CRITICAL HABITAT: Yes RECOVERY PLAN: No CFR: 60 FR 10694, 02-27-95

DESCRIPTION: SMALL PASSERINE (ABOUT 6") GRAYISH-GREEN BACK AND WINGS,
WHITISH THROAT, LIGHT OLIVE-GRAY BREAST AND PALE YELLOWISH
BELLY. TWO WINGBARS VISIBLE. EYE-RING FAINT OR ABSENT.ELEVATION
RANGE: <8500 FT.COUNTIES: YAVAPAI, GILA, MARICOPA, MOHAVE, COCONINO, NAVAJO, APACHE, PINAL, LA PAZ, GREENLEE, GRAHAM,
YUMA, PIMA, COCHISE, SANTA CRUZ

HABITAT: COTTONWOOD/WILLOW & TAMARISK VEGETATION COMMUNITIES ALONG RIVERS & STREAMS

MIGRATORY RIPARIAN OBLIGATE SPECIES THAT OCCUPIES BREEDING HABITAT FROM LATE APRIL TO
SEPTEMBER. DISTRIBUTION WITHIN ITS RANGE IS RESTRICTED TO RIPARIAN CORRIDORS. DIFFICULT TO
DISTINGUISH FROM OTHER MEMBERS OF THE EMPIDONAX COMPLEX BY SIGHT ALONE. TRAINING SEMINAR
REQUIRED FOR THOSE CONDUCTING FLYCATCHER SURVEYS.

NAME: YUMA CLAPPER RAIL

RALLUS LONGIROSTRIS YUMANENSIS

STATUS: ENDANGERED CRITICAL HABITAT: No RECOVERY PLAN: Yes CFR: 32 FR 4001, 03-11-67; 48

DESCRIPTION: WATER BIRD WITH LONG LEGS AND SHORT TAIL. LONG SLENDER
DECURVED BILL. MOTTLED BROWN ON GRAY ON ITS RUMP. FLANKS
AND UNDERSIDES ARE DARK GRAY WITH NARROW VERTICAL STRIPES
PRODUCING A BARRING EFFECT.ELEVATION
RANGE: <4500 FT.

COUNTIES: YUMA, LA PAZ, MARICOPA, PINAL, MOHAVE

HABITAT: FRESH WATER AND BRACKISH MARSHES

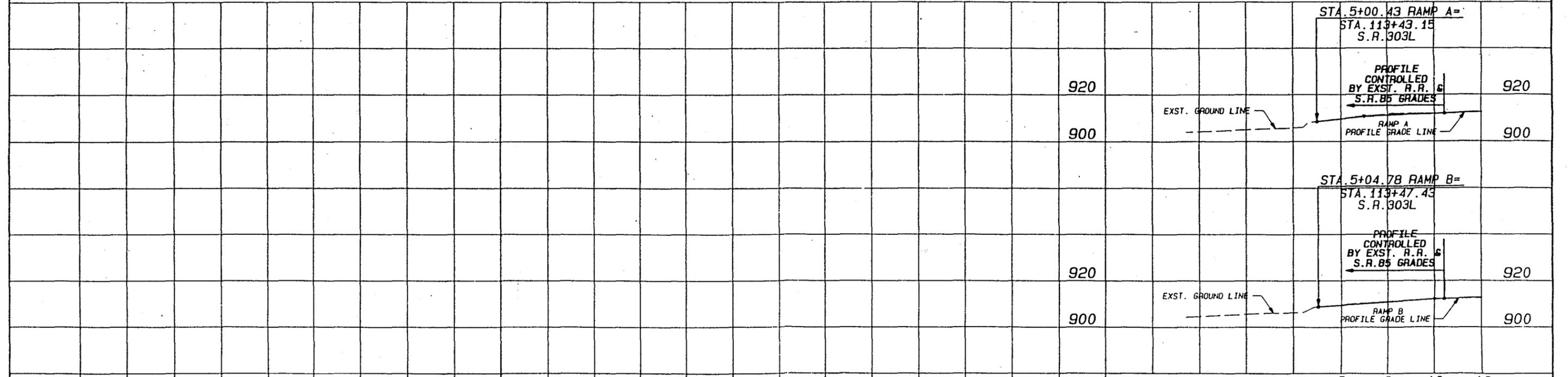
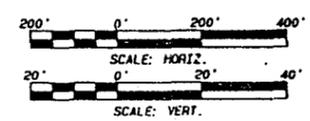
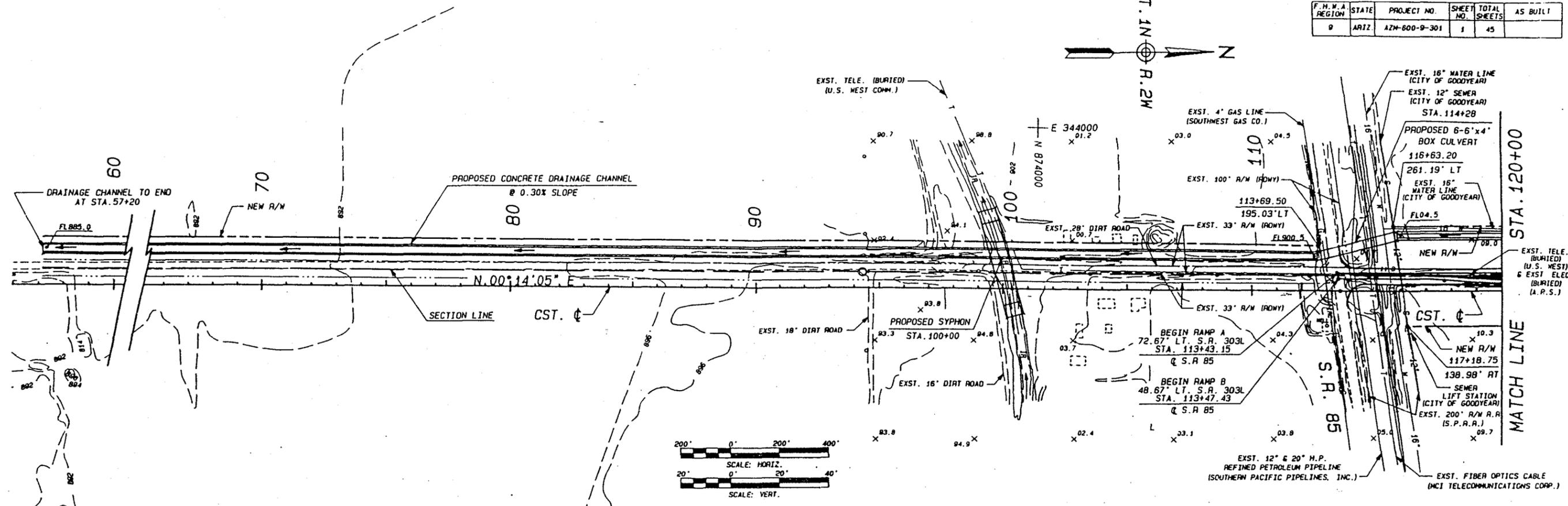
SPECIES IS ASSOCIATED WITH DENSE EMERGENT RIPARIAN VEGETATION. REQUIRES WET SUBSTRATE
(MUDFLAT, SANDBAR) WITH DENSE HERBACEOUS OR WOODY VEGETATION FOR NESTING AND FORAGING.
CHANNELIZATION AND MARSH DEVELOPMENT ARE PRIMARY SOURCES OF HABITAT LOSS.

APPENDIX B

**Arizona Department of Transportation
Estrella Freeway Location Plan and Profile
MC 85 to Grand Avenue**

**(These plans are included to show the Estrella Corridor alignment only)
(the design concepts shown are no longer valid)**

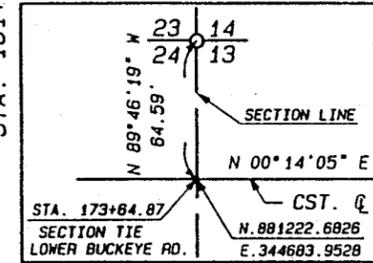
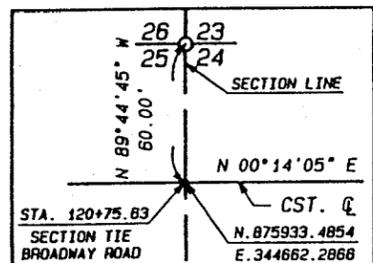
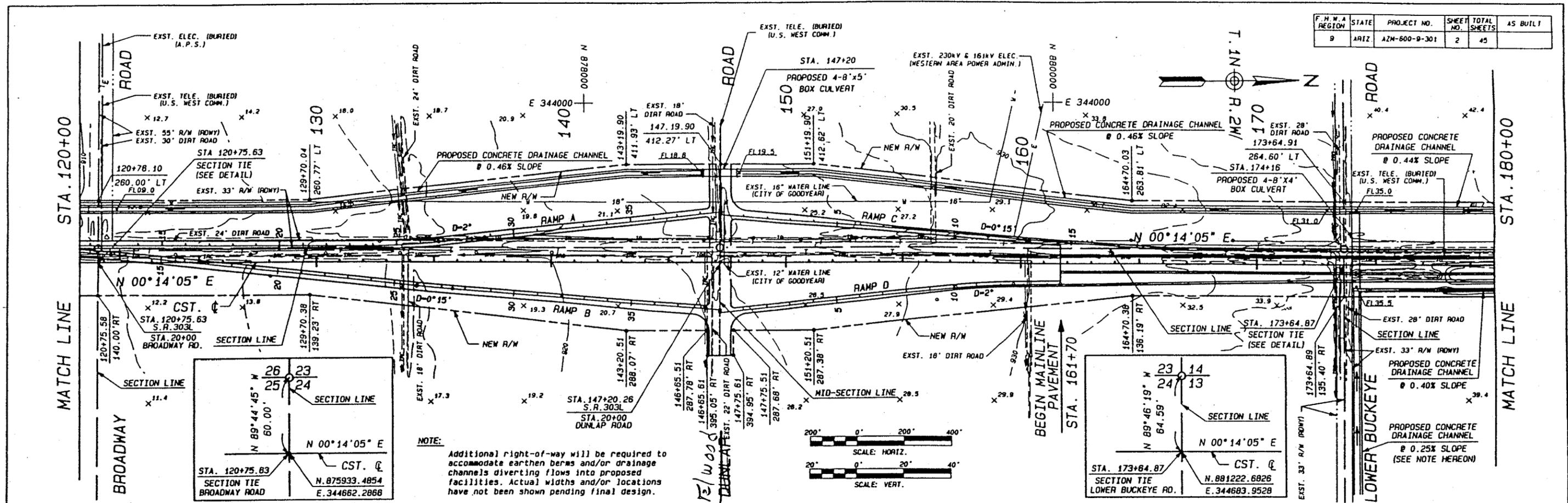
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	AZM-600-9-301	1	45	



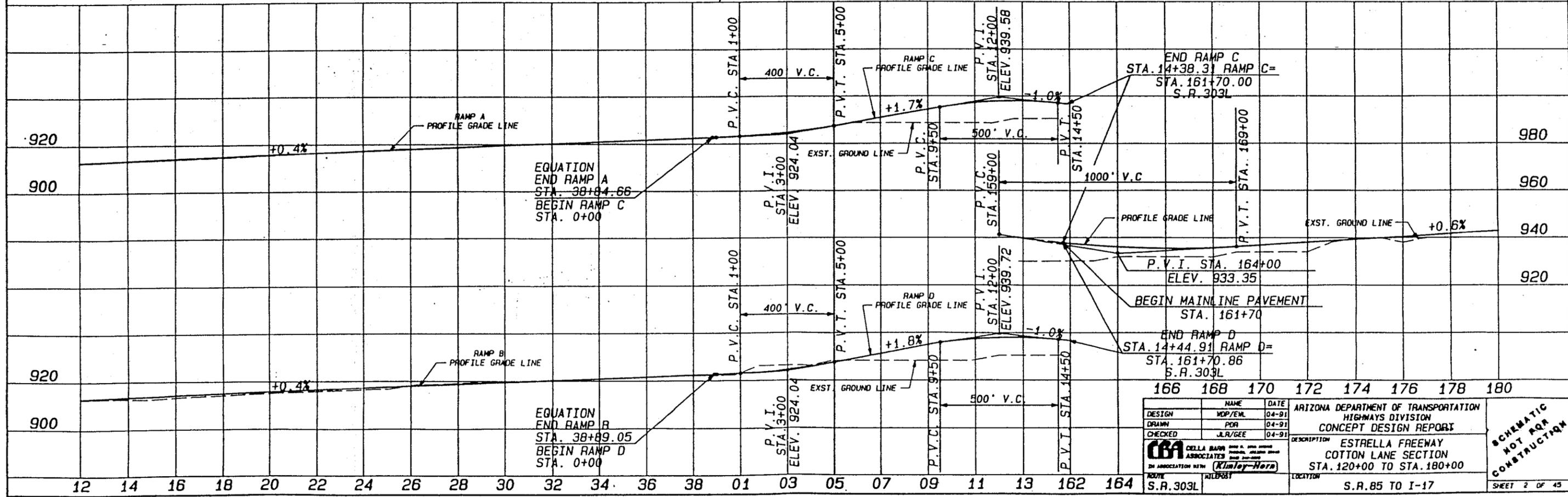
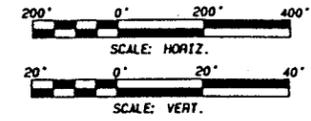
NAME	DATE	DESCRIPTION
DESIGN	WOP/EM	04-91
DRAWN	PDR	04-91
CHECKED	JLR/GEE	04-91

CBA CELLA BARRI AND ASSOCIATES IN ASSOCIATION WITH Kimley-Horn	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT ESTRELLA FREEWAY COTTON LANE SECTION STA. 56+00 TO STA. 120+00 S.R. 85 TO I-17	SCHEMATIC NOT FOR CONSTRUCTION SHEET 1 OF 45
---	---	---

F.H.W.A REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	AZM-600-9-301	2	45	



NOTE:
Additional right-of-way will be required to accommodate earthen berms and/or drainage channels diverting flows into proposed facilities. Actual widths and/or locations have not been shown pending final design.

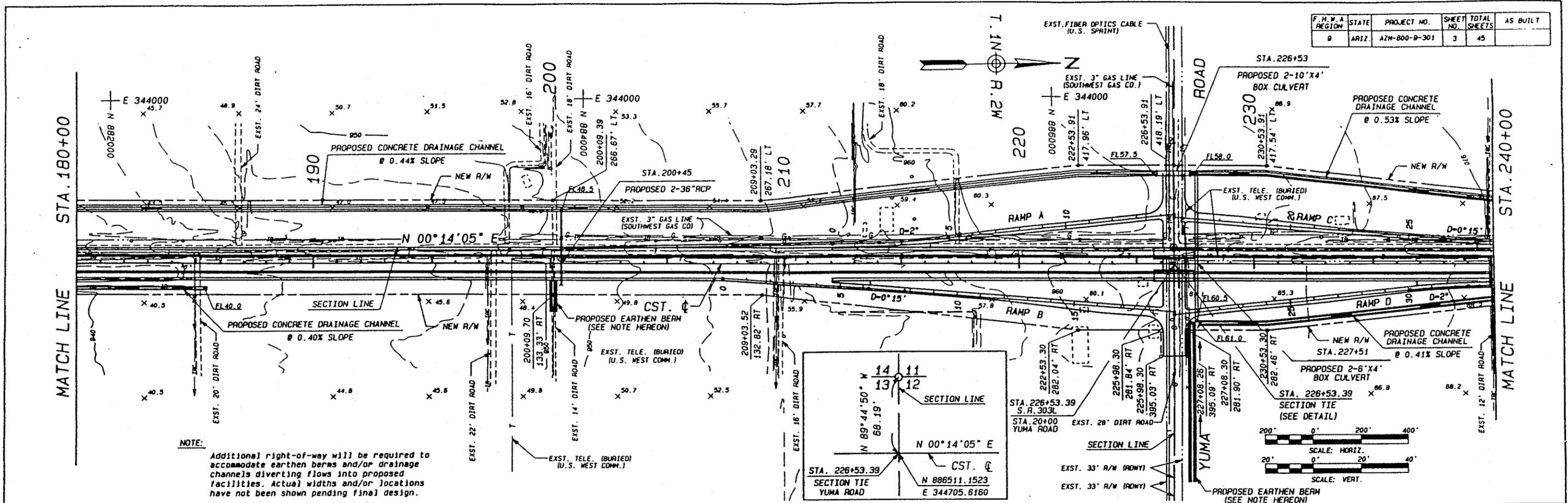


NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION
DESIGN	WDP/EM	04-91
DRAWN	PCR	04-91
CHECKED	JLR/GEE	04-91

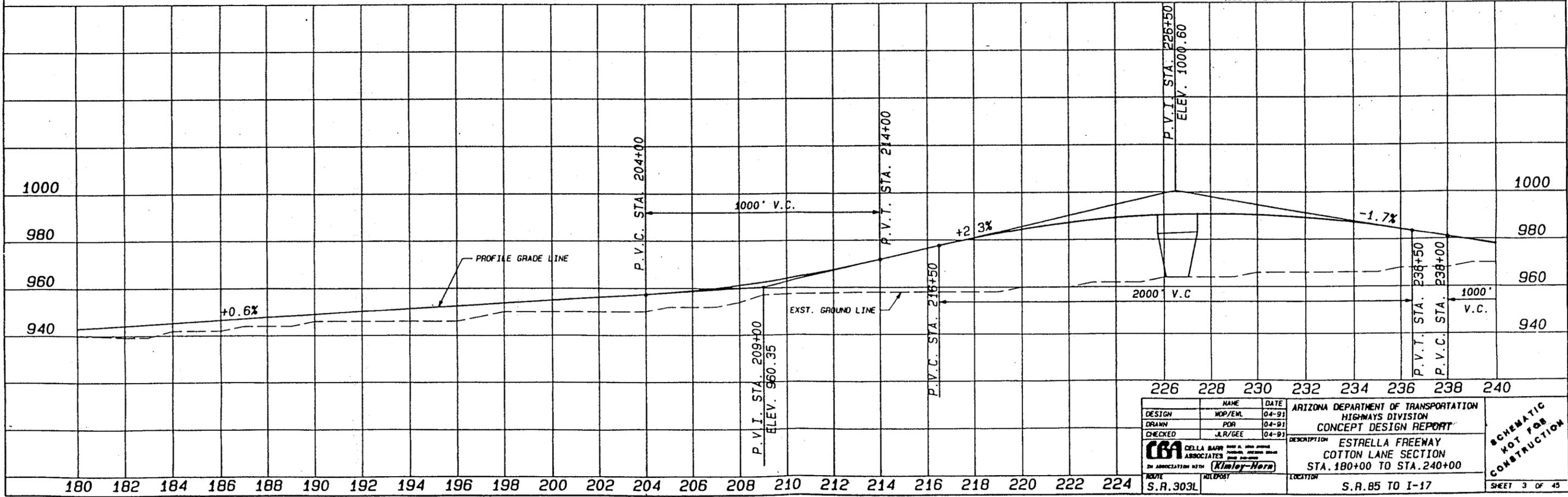
CBA CELLA BARR AND ASSOCIATES	DESCRIPTION	ESTRELLA FREEWAY
IN ASSOCIATION WITH (Kimley-Horn)		COTTON LANE SECTION
ROUTE		STA. 120+00 TO STA. 180+00
S.R. 303L	LOCATION	S.R. 85 TO I-17

SCHEMATIC NOT FOR CONSTRUCTION

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	AZN-800-9-301	3	45	



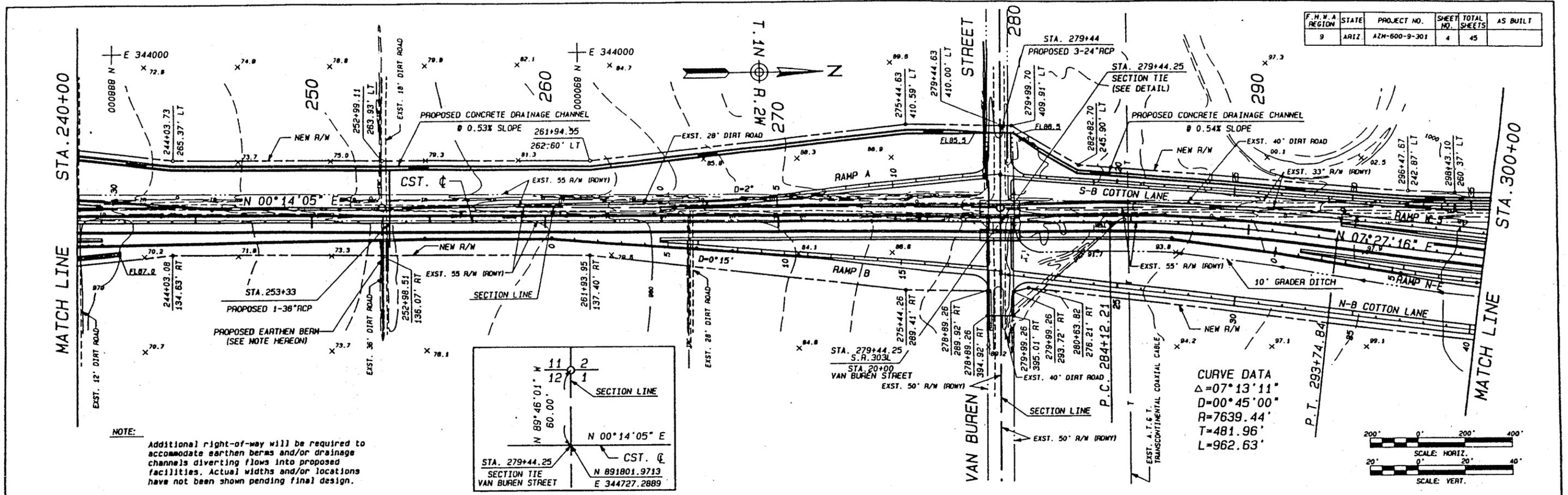
NOTE:
Additional right-of-way will be required to accommodate earthen berms and/or drainage channels diverting flows into proposed facilities. Actual widths and/or locations have not been shown pending final design.



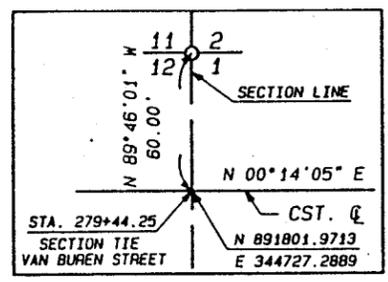
NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION
DESIGN	MWP/EM	04-91
DRAWN	PCR	04-91
CHECKED	J.R./GEE	04-91
CBA CELLA BARR AND ASSOCIATES <small>AN ASSOCIATION WITH</small> Kimley-Horn		HIGHWAYS DIVISION CONCEPT DESIGN REPORT ESTRELLA FREEWAY COTTON LANE SECTION STA. 180+00 TO STA. 240+00
ROUTE	S.R. 303L	LOCATION S.R. 85 TO I-17

**SCHEMATIC
NOT FOR
CONSTRUCTION**

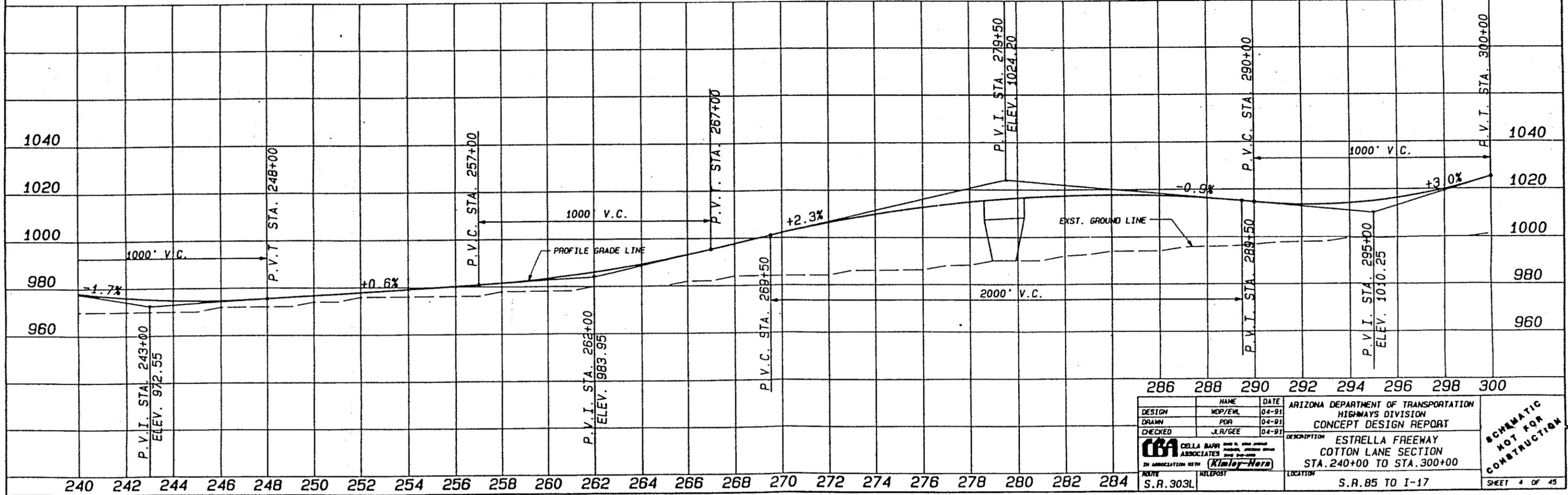
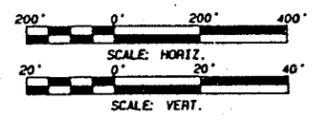
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	AZM-600-9-301	4	45	



NOTE:
Additional right-of-way will be required to accommodate earthen berms and/or drainage channels diverting flows into proposed facilities. Actual widths and/or locations have not been shown pending final design.



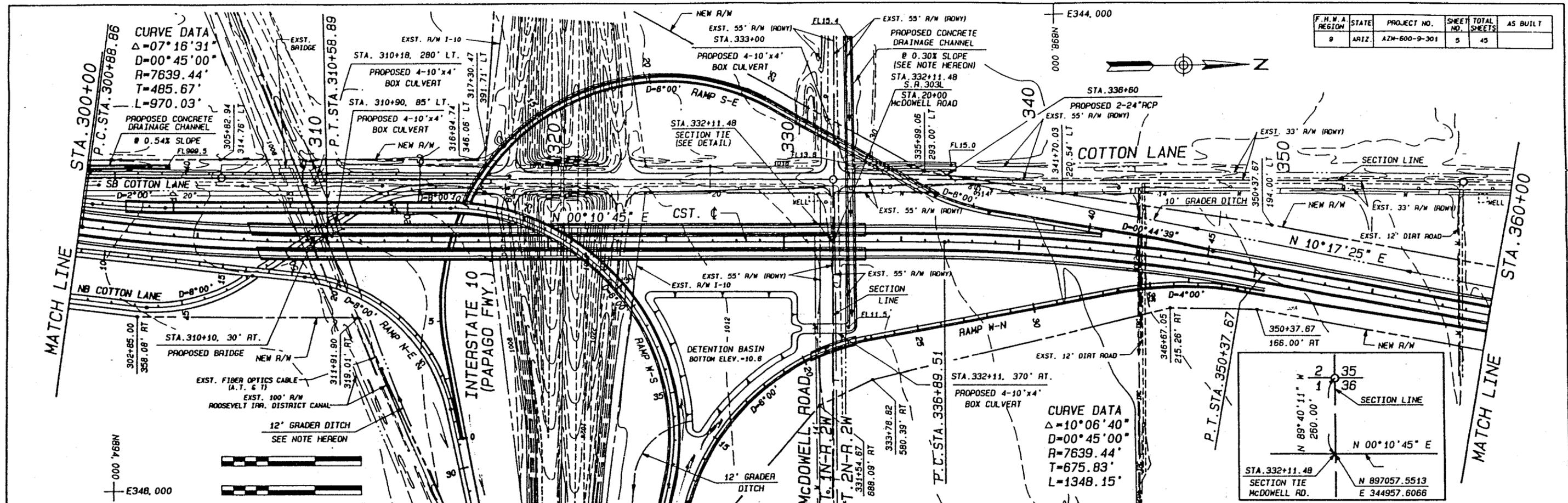
CURVE DATA
 $\Delta = 07^\circ 13' 11''$
 $D = 00^\circ 45' 00''$
 $R = 7639.44'$
 $T = 481.96'$
 $L = 962.63'$



DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT
DRAWN	MOP/EM	04-91	
CHECKED	J.R./GEE	04-91	
DATE			
CBA DELLA BARR ASSOCIATES IN ASSOCIATION WITH (Kimley-Horn)			DESCRIPTION ESTRELLA FREEWAY COTTON LANE SECTION STA. 240+00 TO STA. 300+00
ROUTE	S.R. 303L	LOCATION	

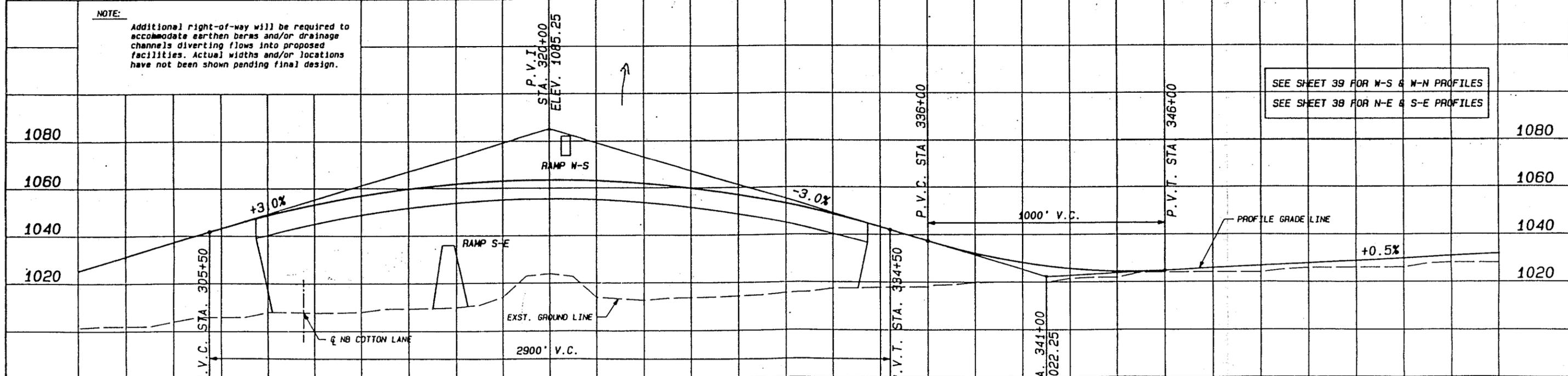
**SCHEMATIC
NOT FOR
CONSTRUCTION**

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	A7M-600-9-301	5	45	



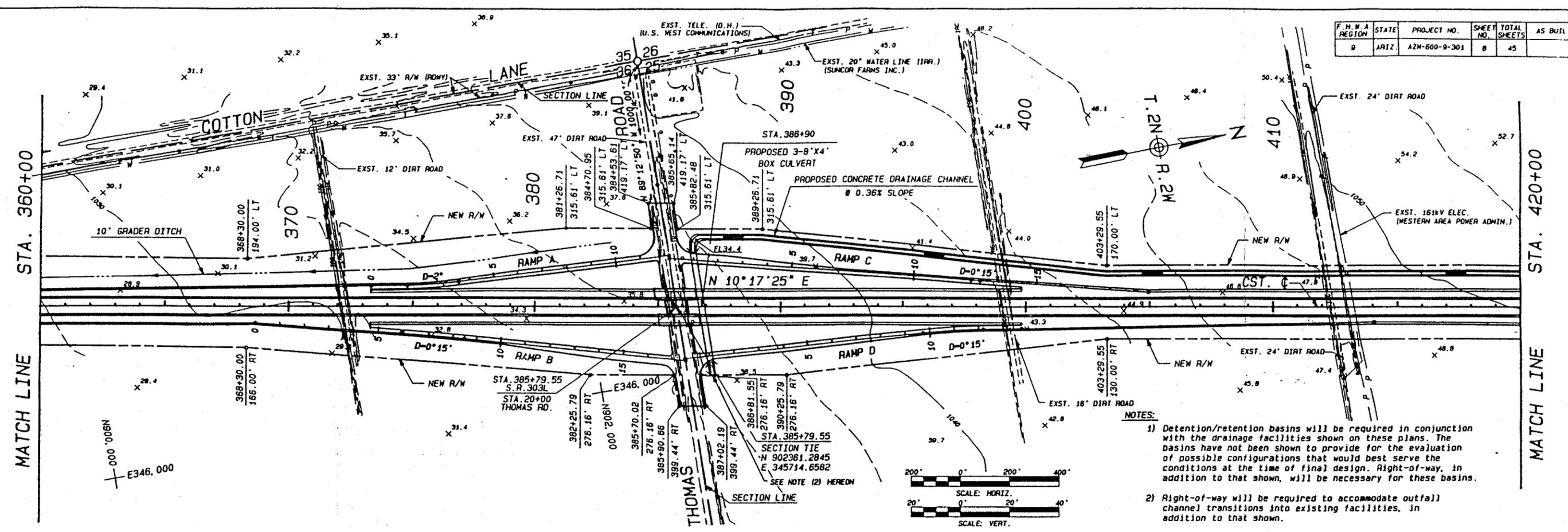
NOTE:
 Additional right-of-way will be required to accommodate earthen berms and/or drainage channels diverting flows into proposed facilities. Actual widths and/or locations have not been shown pending final design.

SEE SHEET 39 FOR N-S & M-N PROFILES
 SEE SHEET 38 FOR N-E & S-E PROFILES

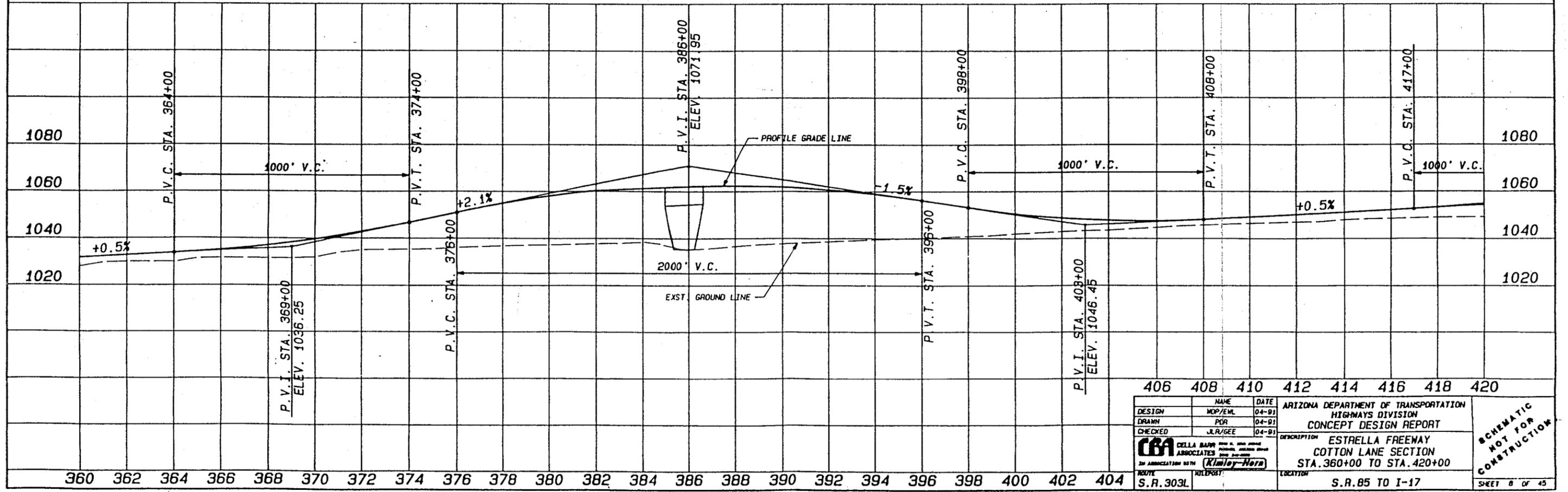


346	348	350	352	354	356	358	360
DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT				
DRAWN	MOP/ENL	04-91	DESCRIPTION ESTRELLA FREEWAY COTTON LANE SECTION STA. 300+00 TO STA. 360+00				
CHECKED	JLR/GEE	04-91					
CBA DELLA BARRA & ASSOCIATES IN ASSOCIATION WITH Kimley-Horn			LOCATION S.R. 85 TO I-17				
S.R. 303L			SHEET 5 OF 45				

F. H. W. A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	AZN-600-9-301	8	45	



- NOTES:
- 1) Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.
 - 2) Right-of-way will be required to accommodate outfall channel transitions into existing facilities, in addition to that shown.

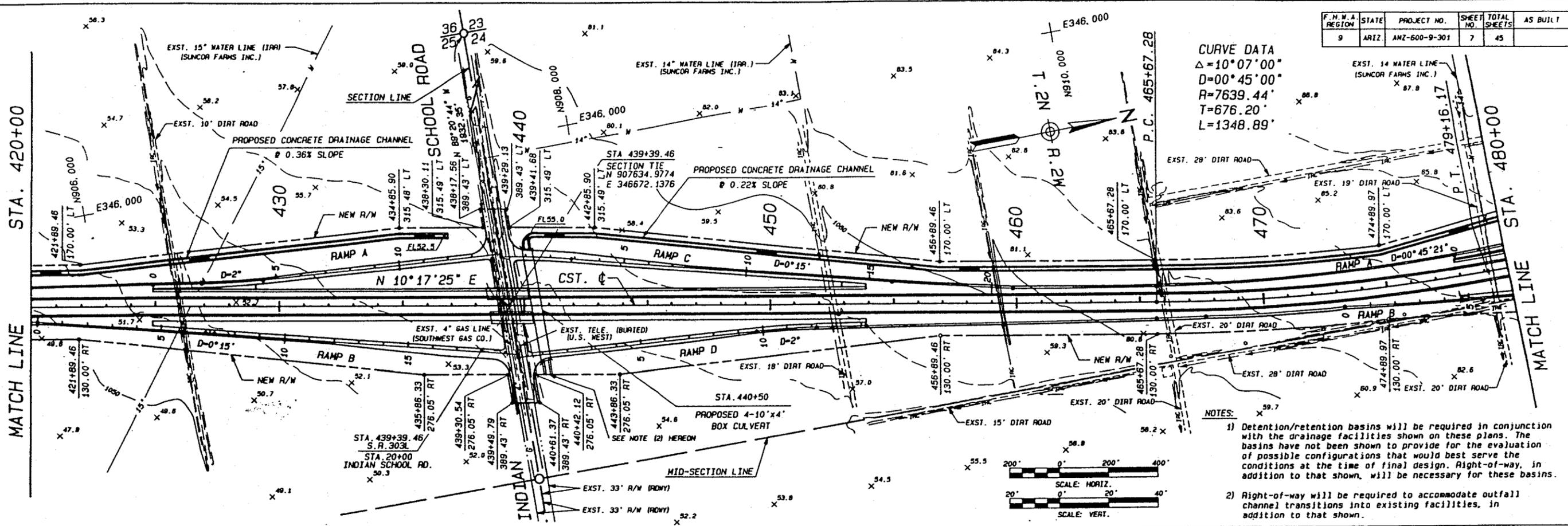


406	408	410	412	414	416	418	420
DESIGN NAME DATE MOP/EML 04-91 DRAWN PER 04-91 CHECKED J.R./GEE 04-91							
ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT							
DESCRIPTION ESTRELLA FREEWAY COTTON LANE SECTION STA. 360+00 TO STA. 420+00							
S.R. 303L LOCATION S.R. 85 TO I-17							

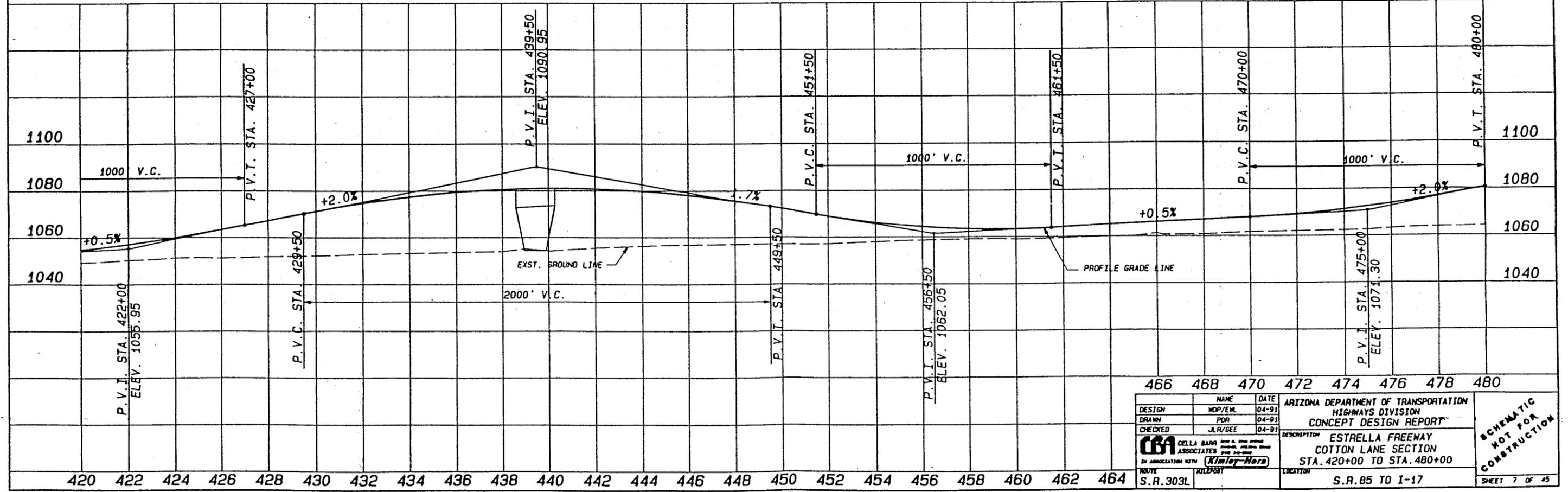
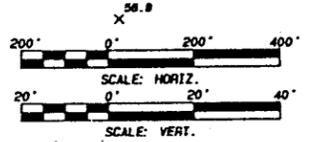
SCHEMATIC
 NOT FOR
 CONSTRUCTION

F.N.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	ANZ-600-9-301	7	45	

CURVE DATA
 $\Delta = 10^{\circ}07'00''$
 $D = 00^{\circ}45'00''$
 $R = 7639.44'$
 $T = 676.20'$
 $L = 1348.89'$



- NOTES:
- 1) Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.
 - 2) Right-of-way will be required to accommodate outfall channel transitions into existing facilities, in addition to that shown.



DATE	NAME	DESCRIPTION
04-91	WDP/EM	DESIGN
04-91	PCR	DRAWN
04-91	J.R./GEE	CHECKED

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
CONCEPT DESIGN REPORT

DESCRIPTION: ESTRELLA FREEWAY
COTTON LANE SECTION
STA. 420+00 TO STA. 480+00

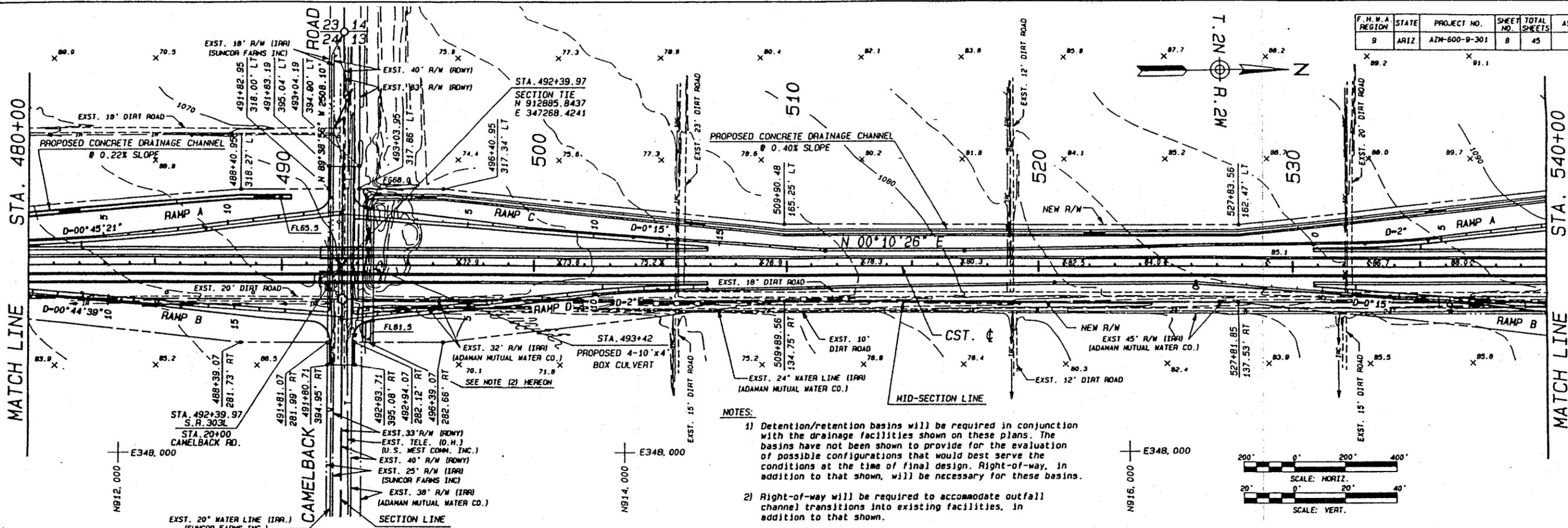
LOCATION: S.R. 85 TO I-17

SCALE: 1" = 200' (HORIZ.)
1" = 20' (VERT.)

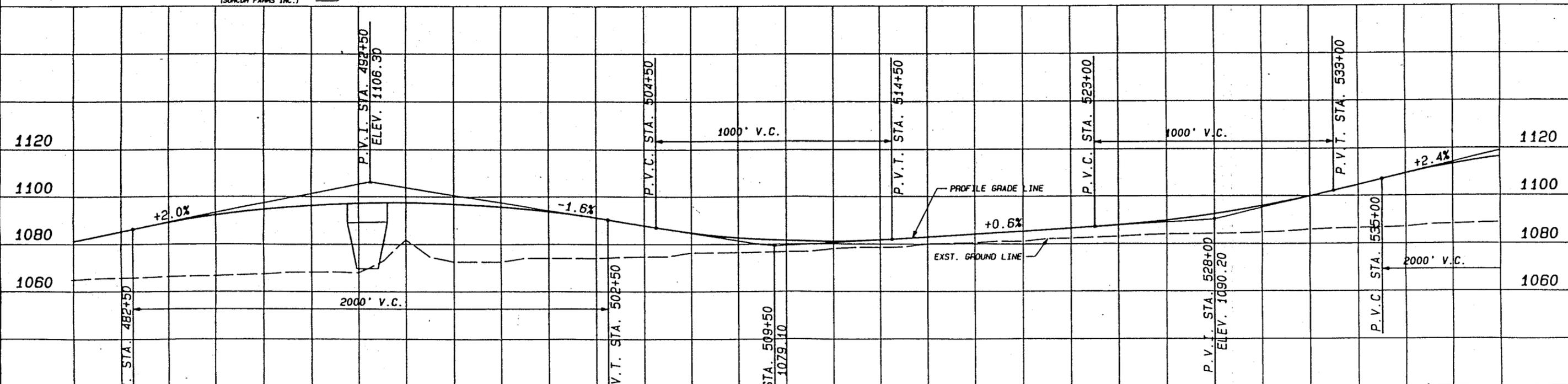
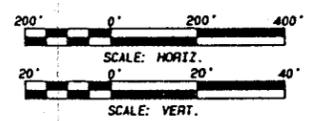
NOTE: S.R. 303L

SCHEMATIC NOT FOR CONSTRUCTION

F. H. W. A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	AZM-600-9-301	B	45	



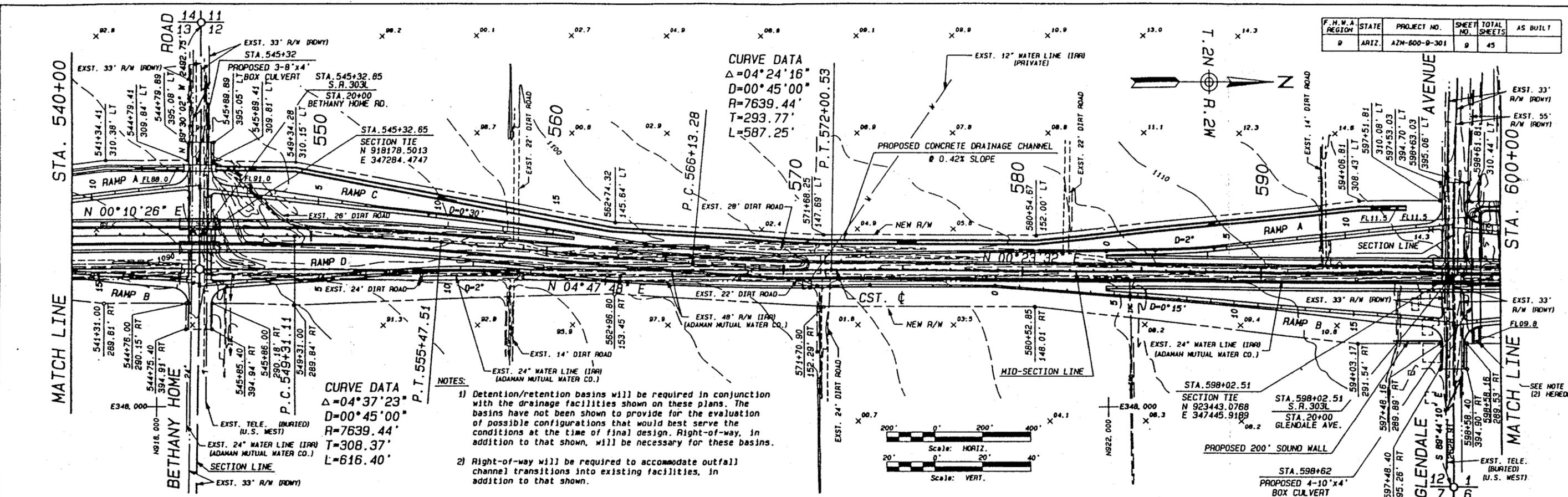
- NOTES:**
- 1) Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.
 - 2) Right-of-way will be required to accommodate outfall channel transitions into existing facilities, in addition to that shown.



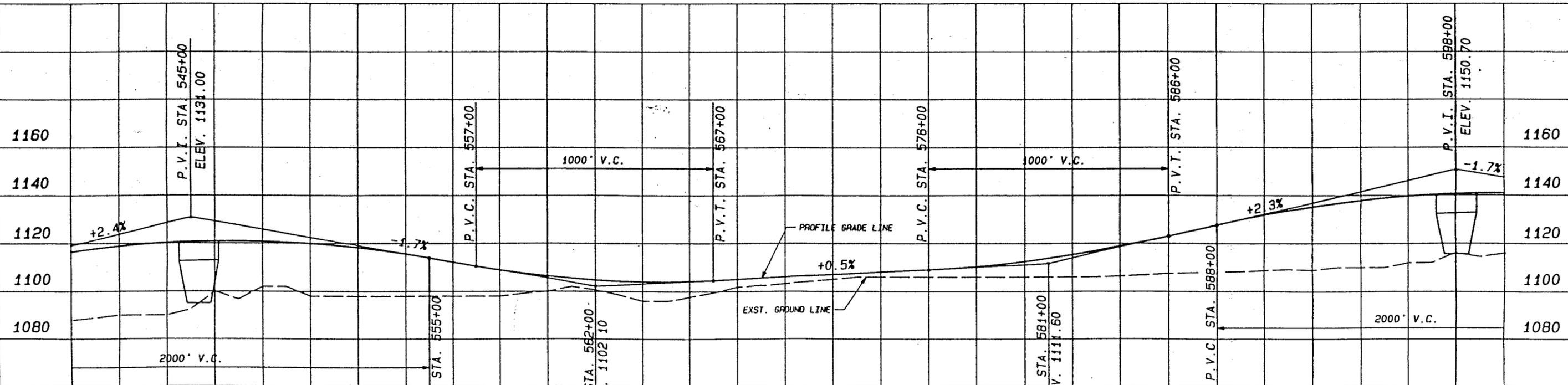
DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT
DRAWN	MOP/EWL	04-91	
CHECKED	JLR/GEE	04-91	
			ESTRELLA FREEWAY COTTON LANE SECTION STA. 480+00 TO STA. 540+00
CELLA BARRY ASSOCIATES IN ASSOCIATION WITH Kimley-Horn			
ROUTE	S.R. 303L	LOCATION	S.R. B5 TO I-17

SCHEMATIC NOT FOR CONSTRUCTION

F.N.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	AZM-600-9-301	9	45	

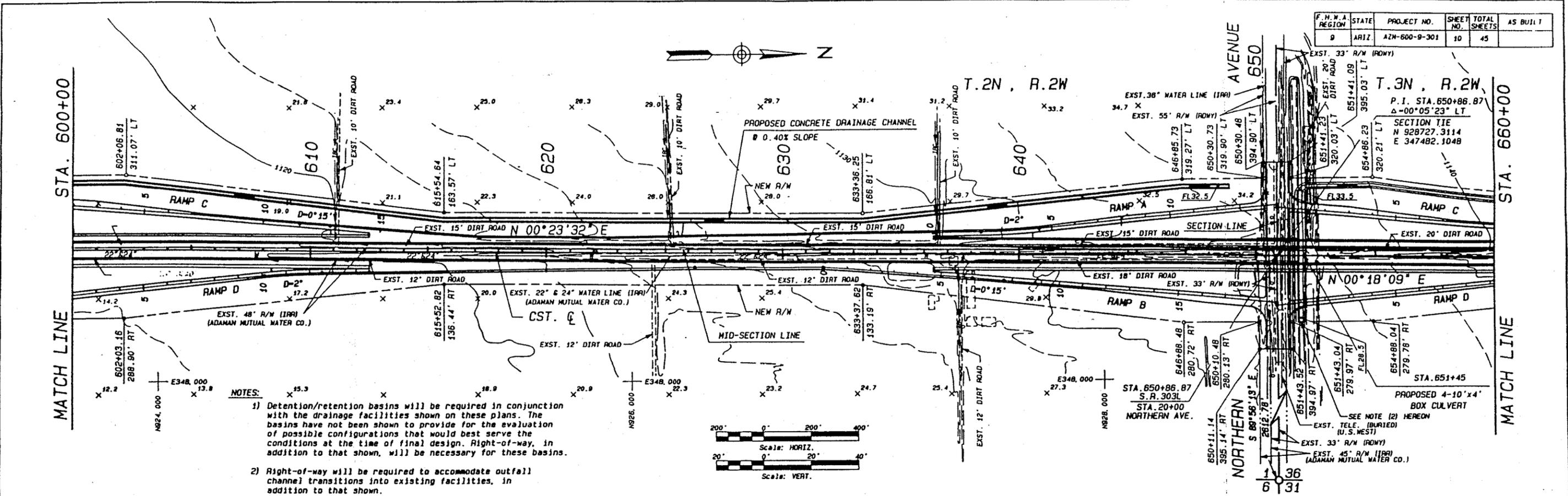


- NOTES:
- 1) Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.
 - 2) Right-of-way will be required to accommodate outfall channel transitions into existing facilities, in addition to that shown.



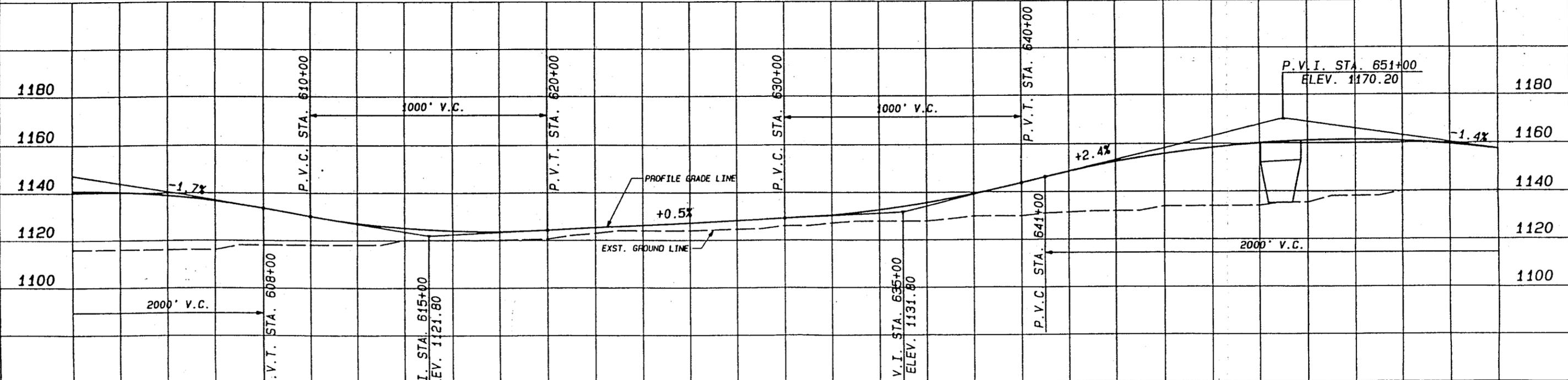
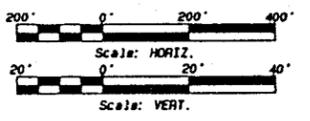
DESIGN	MOP/EM	04-91	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT ESTRELLA FREEWAY COTTON LANE SECTION STA. 540+00 TO STA. 600+00 S.R. 85 TO I-17
DRAWN	POA	04-91	
CHECKED	JLR/GEE	04-91	
DATE	04-91		
CELLA BARRI AND ASSOCIATES IN ASSOCIATION WITH S.R. 303L			SHEET 9 OF 45 SCHEMATIC NOT FOR CONSTRUCTION

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	AZN-600-9-301	10	45	



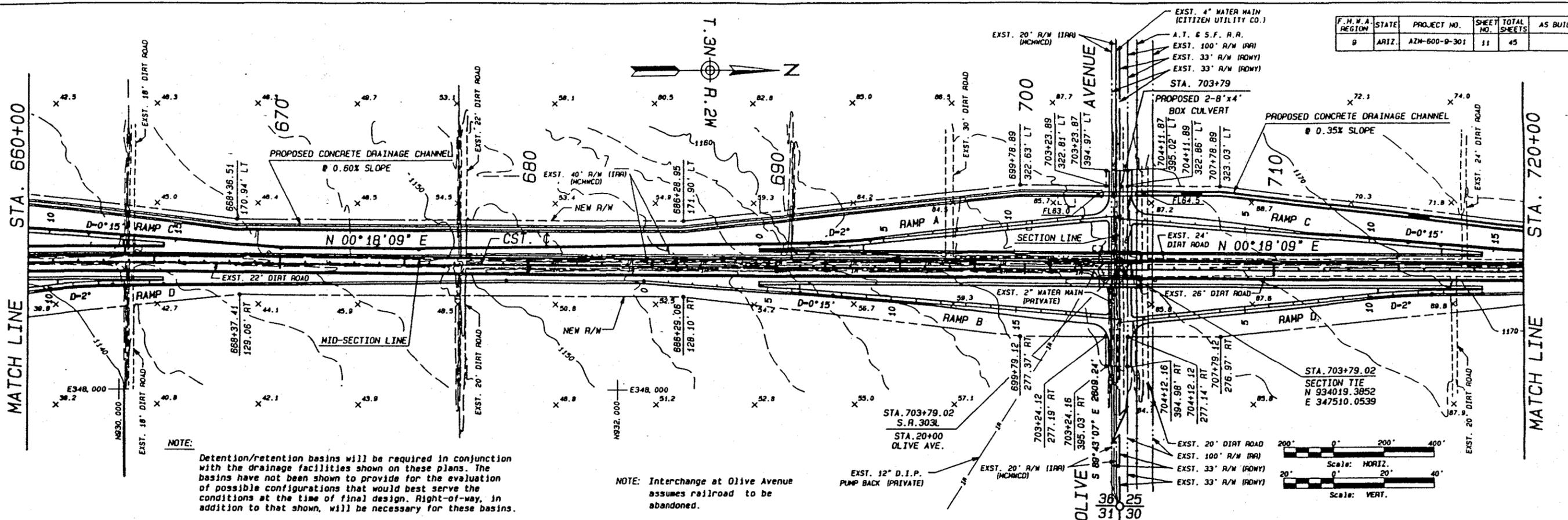
NOTES:

- 1) Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.
- 2) Right-of-way will be required to accommodate outfall channel transitions into existing facilities, in addition to that shown.



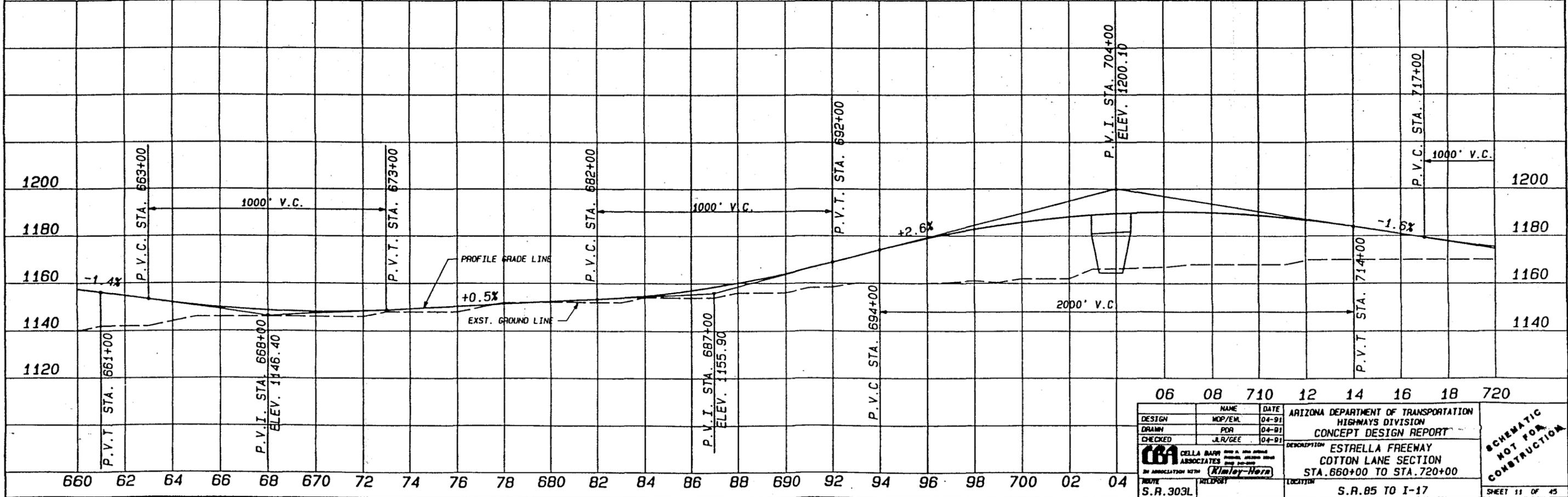
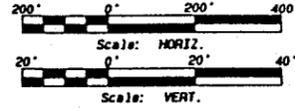
DESIGN	MOP/EML	04-91	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT	ESTRELLA FREEWAY COTTON LANE SECTION STA. 600+00 TO STA. 660+00	SCHEMATIC NOT FOR CONSTRUCTION
DRAWN	PCR	04-91			
CHECKED	JLR/GEE	04-91			
			DESCRIPTION	LOCATION	
ROUTE S.R. 303L			STATION	S.R. 85 TO I-17	SHEET 10 OF 45

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	AZM-600-9-301	11	45	



NOTE: Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.

NOTE: Interchange at Olive Avenue assumes railroad to be abandoned.

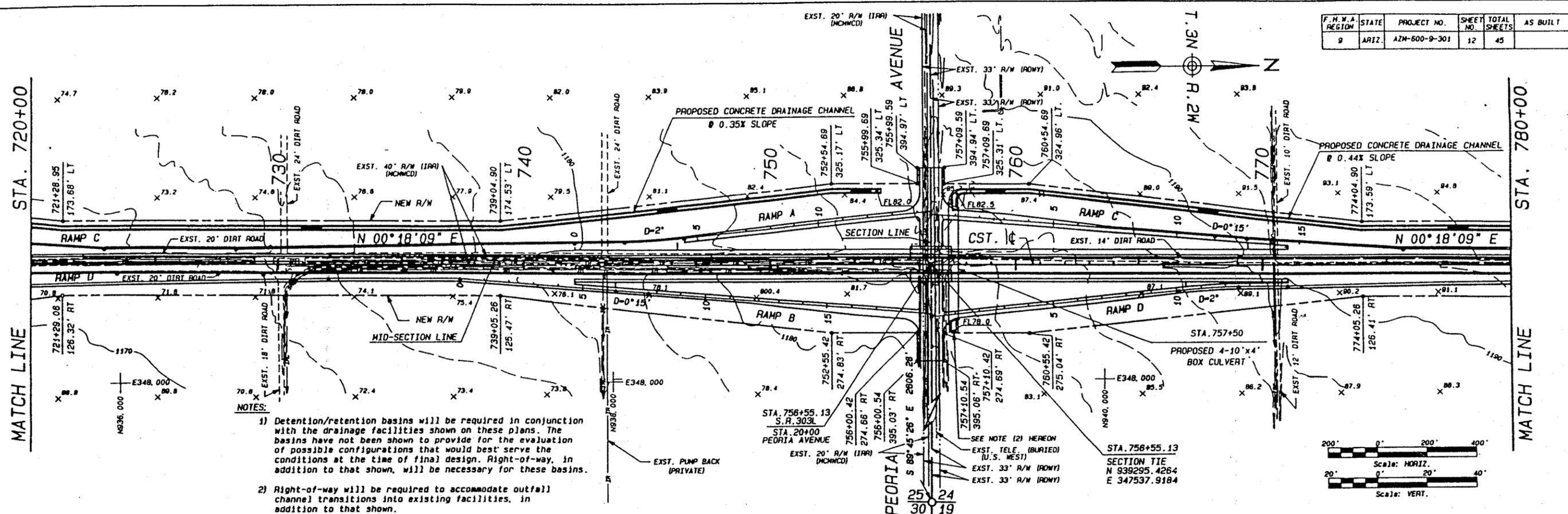


DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT
DRAWN	MOP/EM	04-91	
CHECKED	JLR/GEE	04-91	
APPROVED			
			ESTRELLA FREEWAY COTTON LANE SECTION STA. 660+00 TO STA. 720+00
S.R. 303L			
LOCATION: S.R. 85 TO I-17			SHEET 11 OF 45
Schematic NOT FOR CONSTRUCTION			

F.M.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	A2M-600-9-301	12	45	

MATCH LINE STA. 720+00

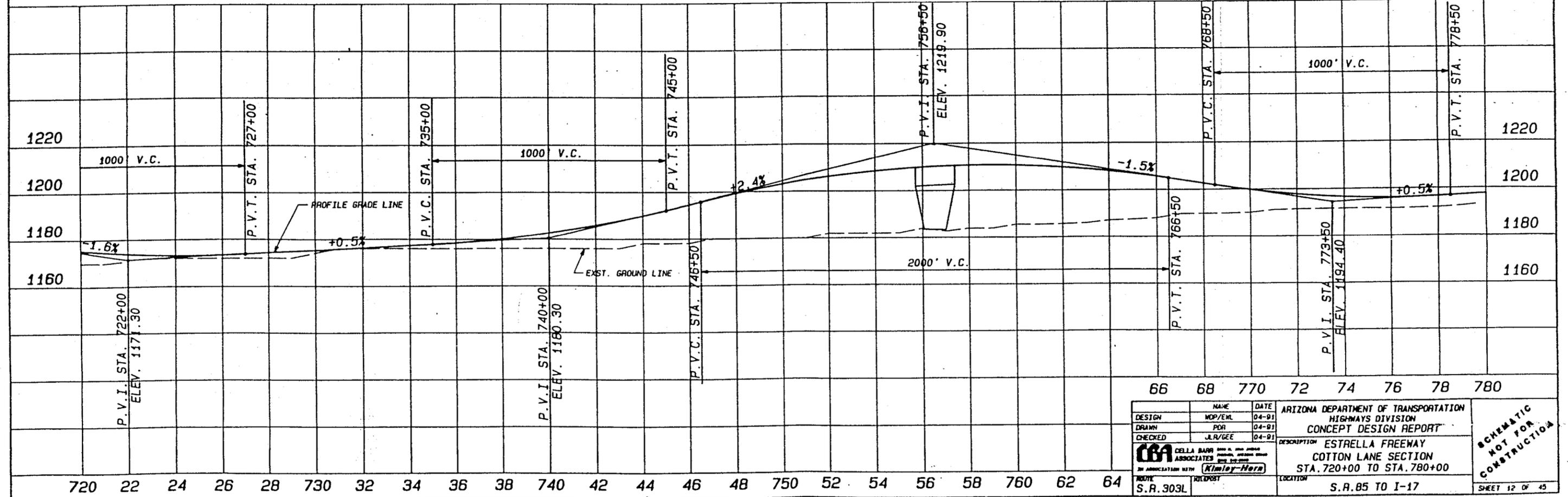
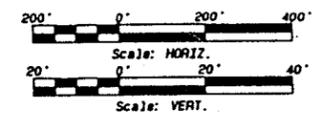
MATCH LINE STA. 780+00



- NOTES:**
- 1) Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.
 - 2) Right-of-way will be required to accommodate outfall channel transitions into existing facilities, in addition to that shown.

SEE NOTE (2) HEREON
 EXST. TELE. (BURIED)
 (U.S. WEST)
 EXST. 33' R/W (ROWY)
 EXST. 33' R/W (ROWY)

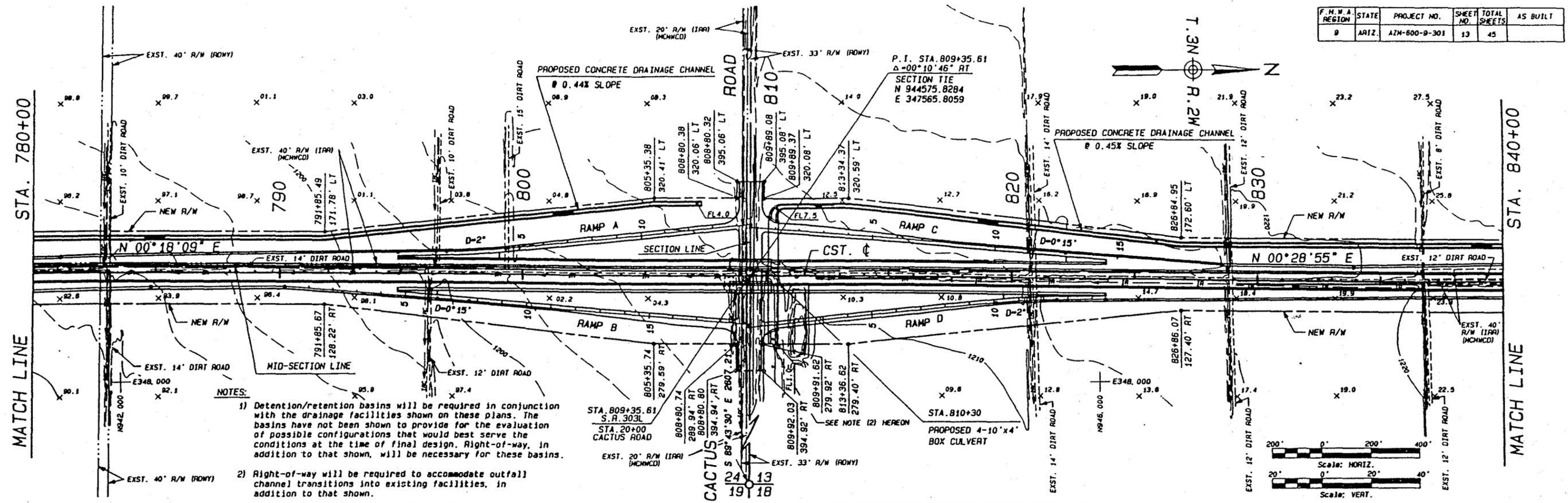
STA. 756+55.13
 SECTION TIE
 N 939295.4264
 E 347537.9184



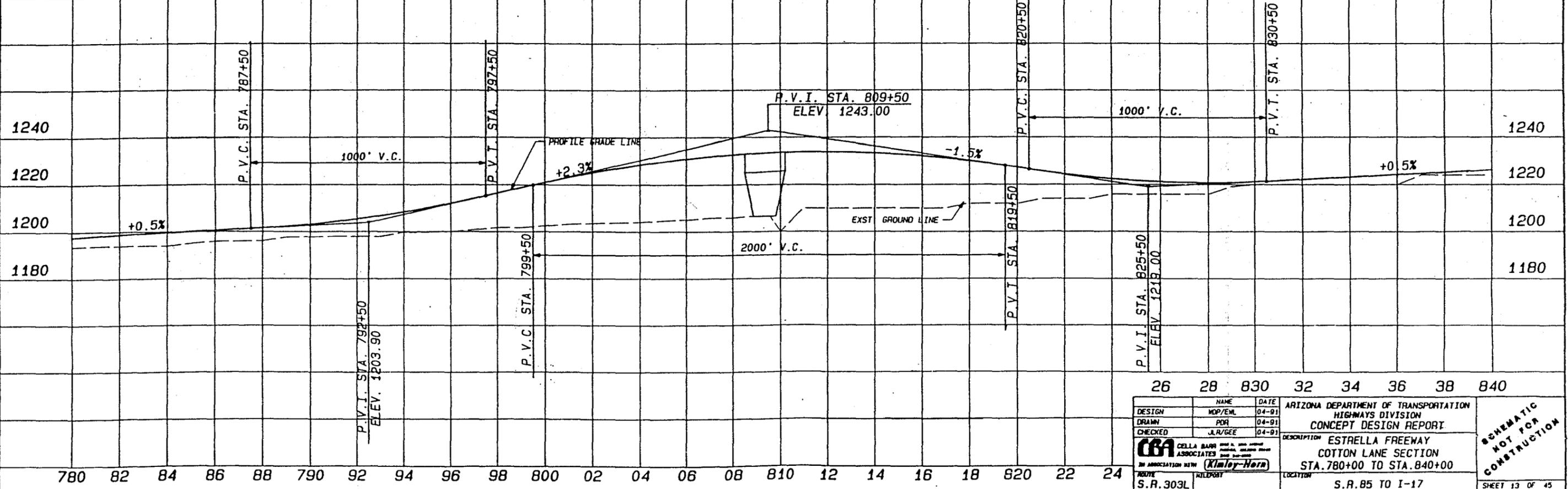
DESIGN	MOP/ERL	04-91	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT
DRAWN	POB	04-91	
CHECKED	JLR/GEE	04-91	
			DESCRIPTION ESTRELLA FREEWAY COTTON LANE SECTION STA. 720+00 TO STA. 780+00
ROUTE	S.R. 303L	LOCATION	

SCHEMATIC
NOT FOR
CONSTRUCTION

F.M.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	A2M-600-9-301	13	45	

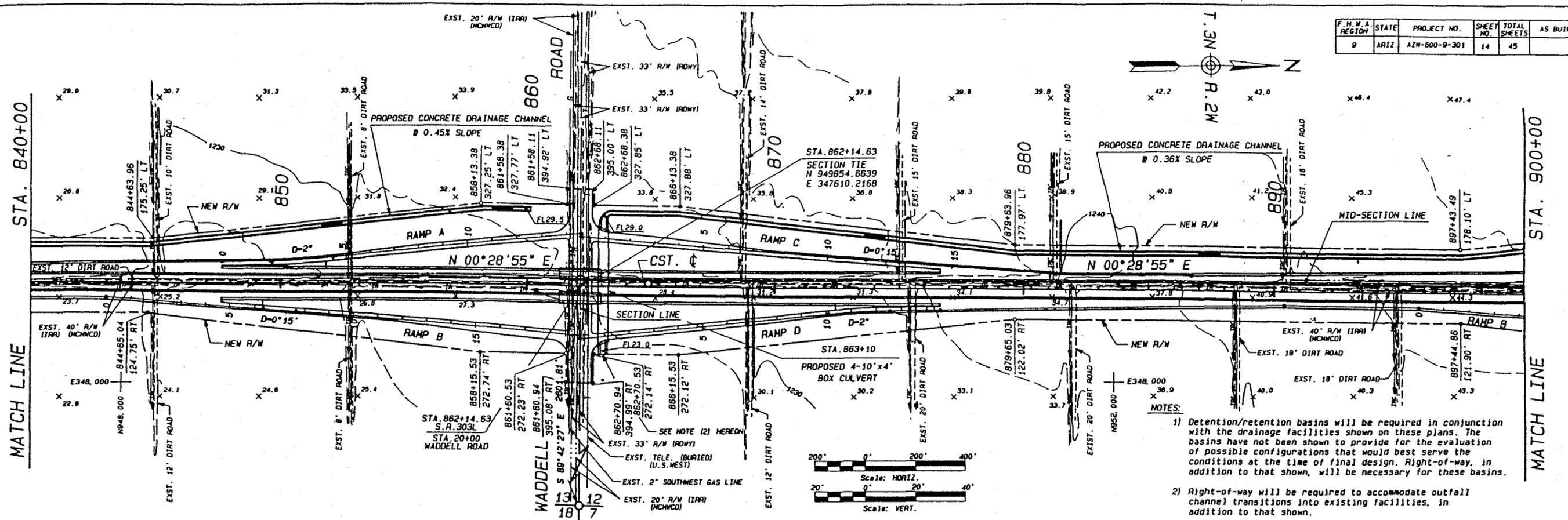
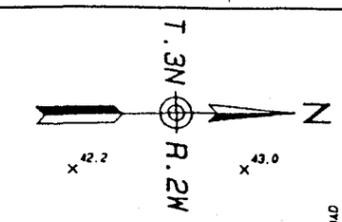


- NOTES:
- 1) Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.
 - 2) Right-of-way will be required to accommodate outfall channel transitions into existing facilities, in addition to that shown.

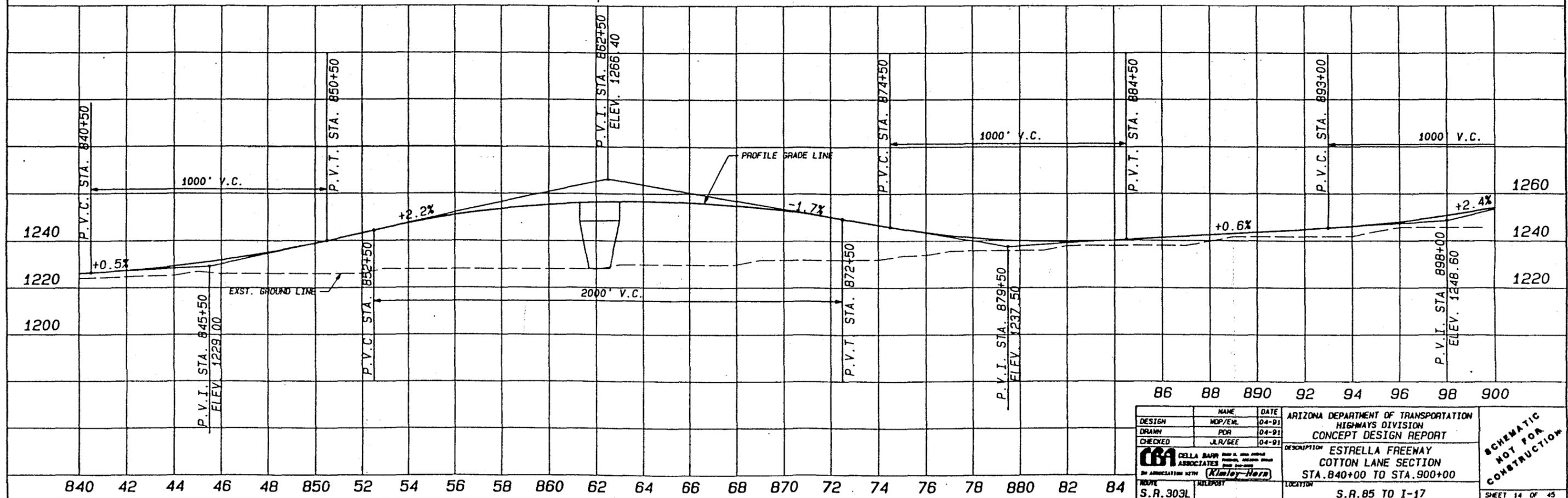
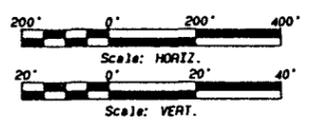


DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT ESTRELLA FREEWAY COTTON LANE SECTION STA. 780+00 TO STA. 840+00 S.R. 85 TO I-17	SCHEMATIC NOT FOR CONSTRUCTION
DRAWN	MCP/EM	04-91		
CHECKED	JLR/GEE	04-91		
CELLA BARRI ASSOCIATES AN ASSOCIATION WITH Kimley-Horn	PROJECT NO. S.R. 303L	LOCATION S.R. 85 TO I-17		

F. H. W. A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	A2N-600-9-301	14	45	



- NOTES:
- 1) Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.
 - 2) Right-of-way will be required to accommodate outfall channel transitions into existing facilities, in addition to that shown.



DESIGN	NAME	DATE
DESIGN	MOP/EM	04-91
DRAWN	FOR	04-91
CHECKED	J.R./GEE	04-91

ARIZONA DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
CONCEPT DESIGN REPORT

DESCRIPTION: ESTRELLA FREEWAY
COTTON LANE SECTION
STA. 840+00 TO STA. 900+00

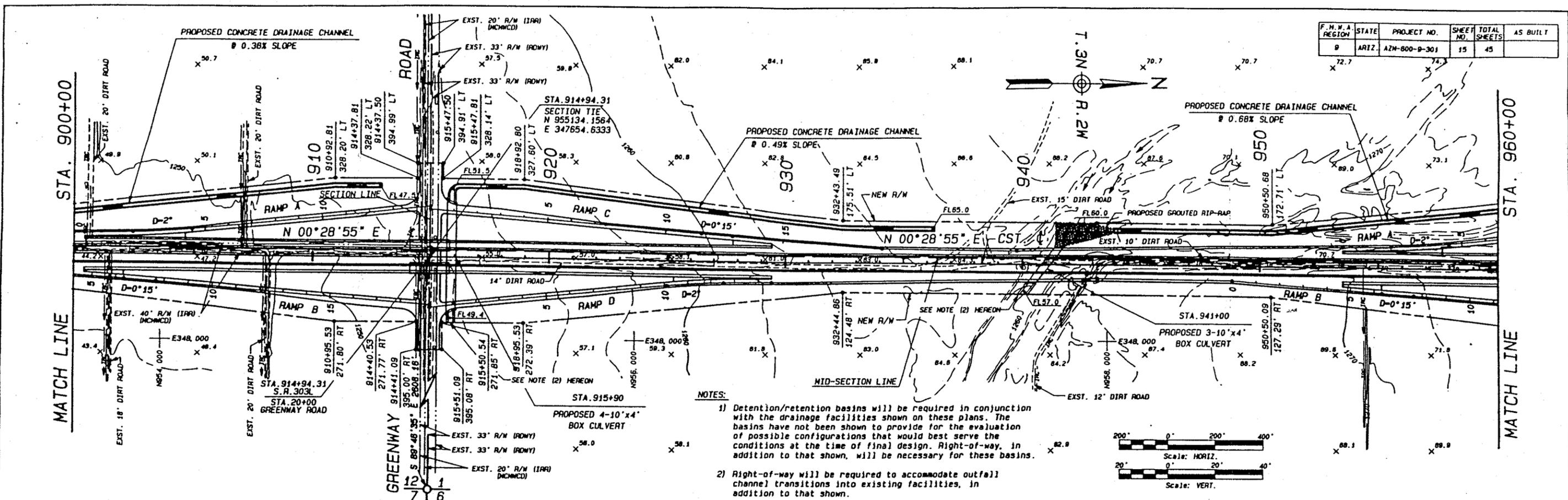
ROUTE: S.R. 303L

LOCATION: S.R. 85 TO I-17

SCHEMATIC NOT FOR CONSTRUCTION

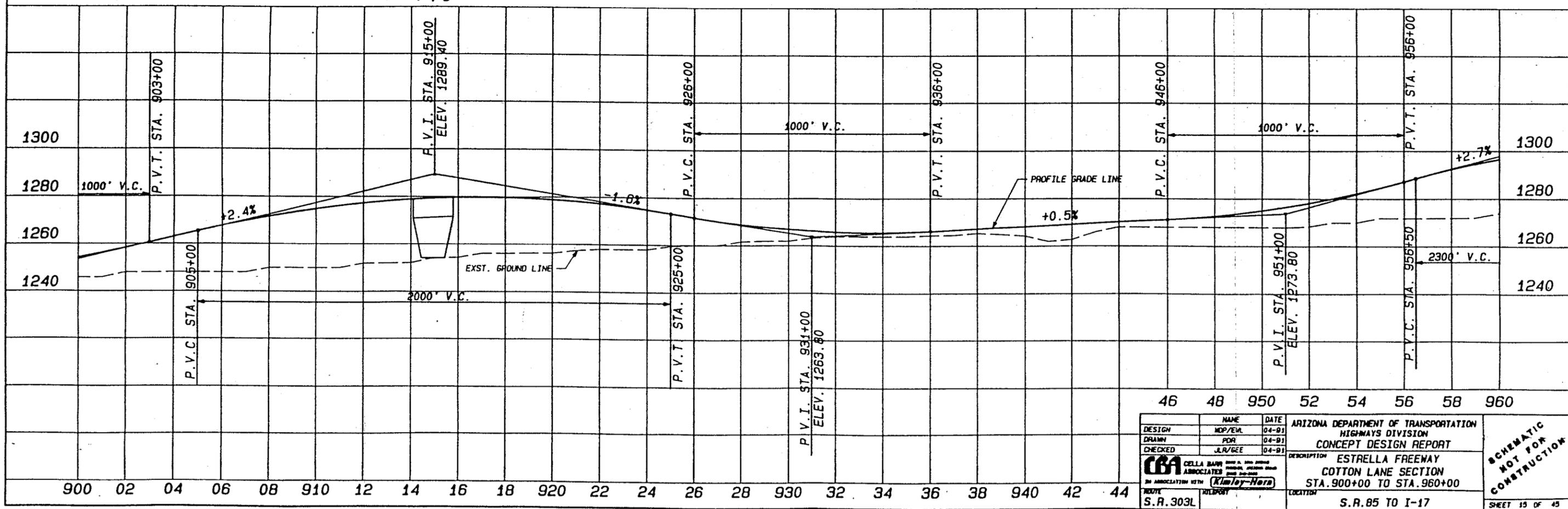
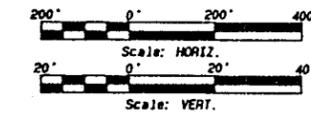
SHEET 14 OF 45

F.M.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	AZM-800-9-301	15	45	



NOTES:

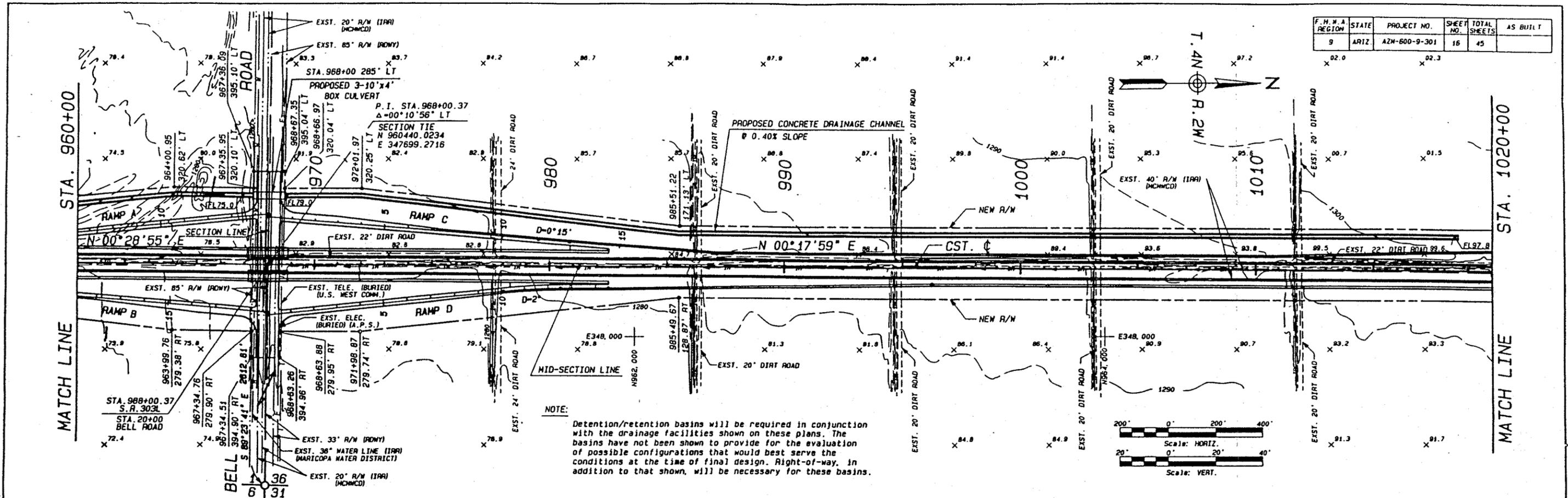
- 1) Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.
- 2) Right-of-way will be required to accommodate outfall channel transitions into existing facilities, in addition to that shown.



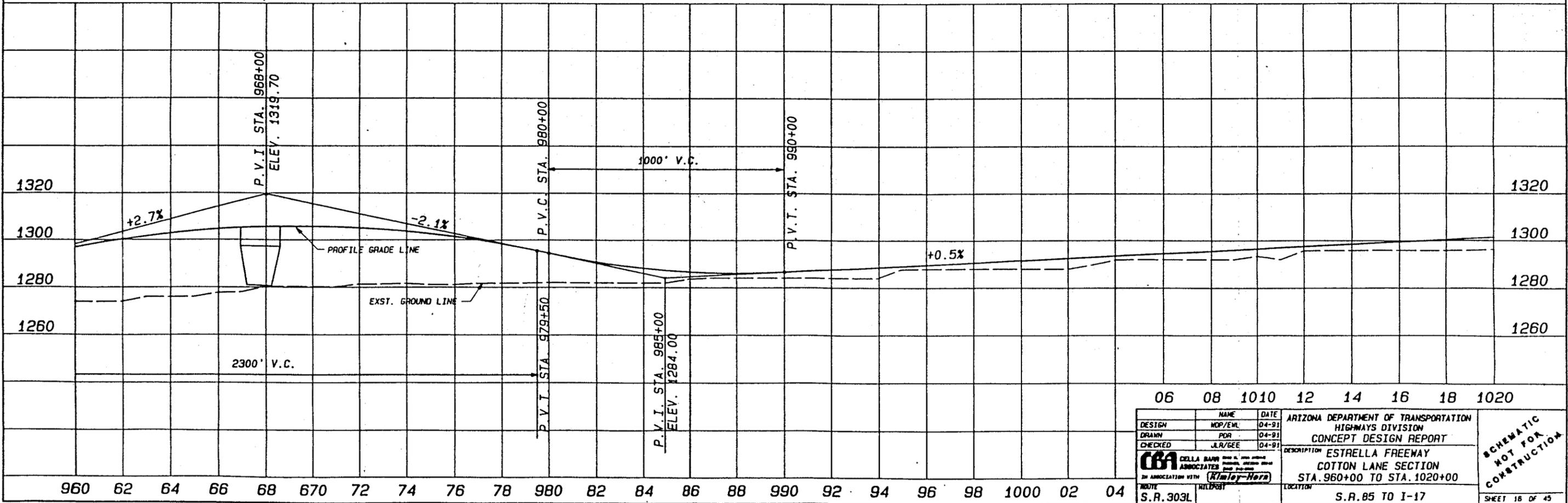
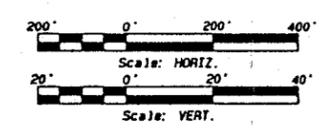
DESIGN	MCP/EWL	04-91	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT
DRAWN	PDR	04-91	
CHECKED	JLR/GEE	04-91	
			ESTRELLA FREEWAY COTTON LANE SECTION STA. 900+00 TO STA. 960+00
CELLIA BARR AND ASSOCIATES 1000 N. CENTRAL AVENUE, SUITE 100 PHOENIX, ARIZONA 85004 IN ASSOCIATION WITH			
S.R. 303L			LOCATION: S.R. 85 TO I-17

**Schematic
NOT FOR
CONSTRUCTION**

F. H. M. A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	AZM-600-9-301	16	45	



NOTE:
 Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.

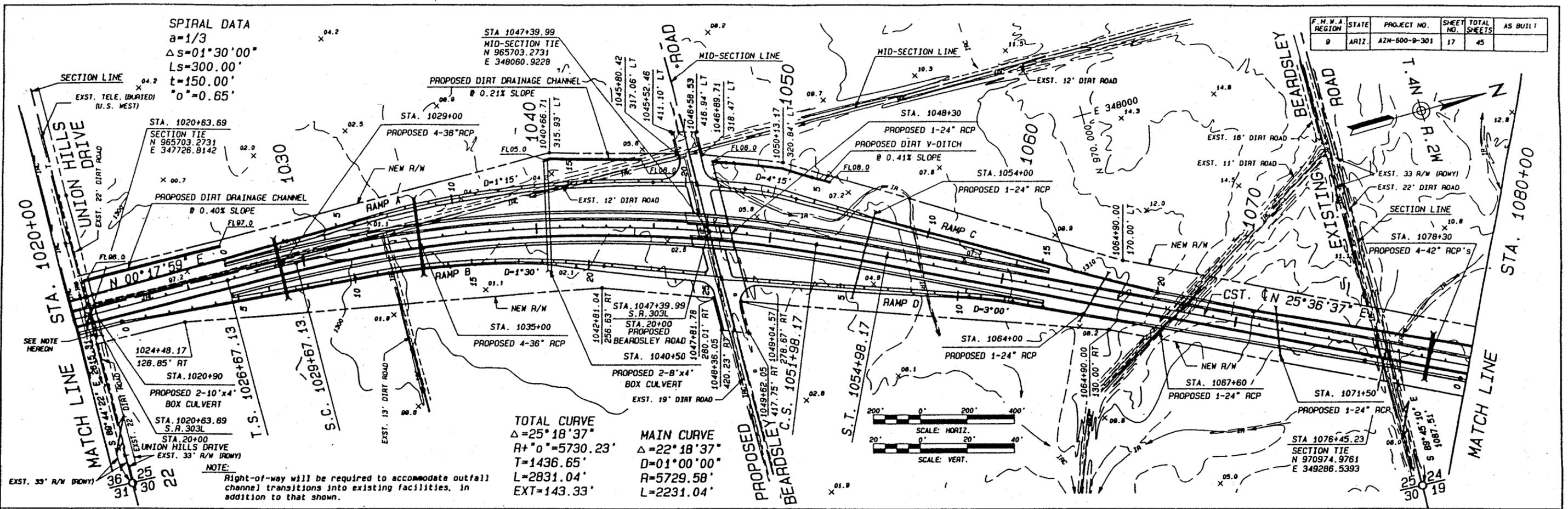


DATE	NAME	DESCRIPTION
04-91	MOP/EM	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
04-91	PDR	CONCEPT DESIGN REPORT
04-91	J.R./GEE	ESTRELLA FREEWAY COTTON LANE SECTION STA. 960+00 TO STA. 1020+00
04-91	J.R./GEE	LOCATION: S.R. 85 TO I-17

SCHEMATIC
 NOT FOR
 CONSTRUCTION

SPIRAL DATA
 $a=1/3$
 $\Delta s=01^{\circ}30'00''$
 $Ls=300.00'$
 $t=150.00'$
 $o^{\circ}=0.65'$

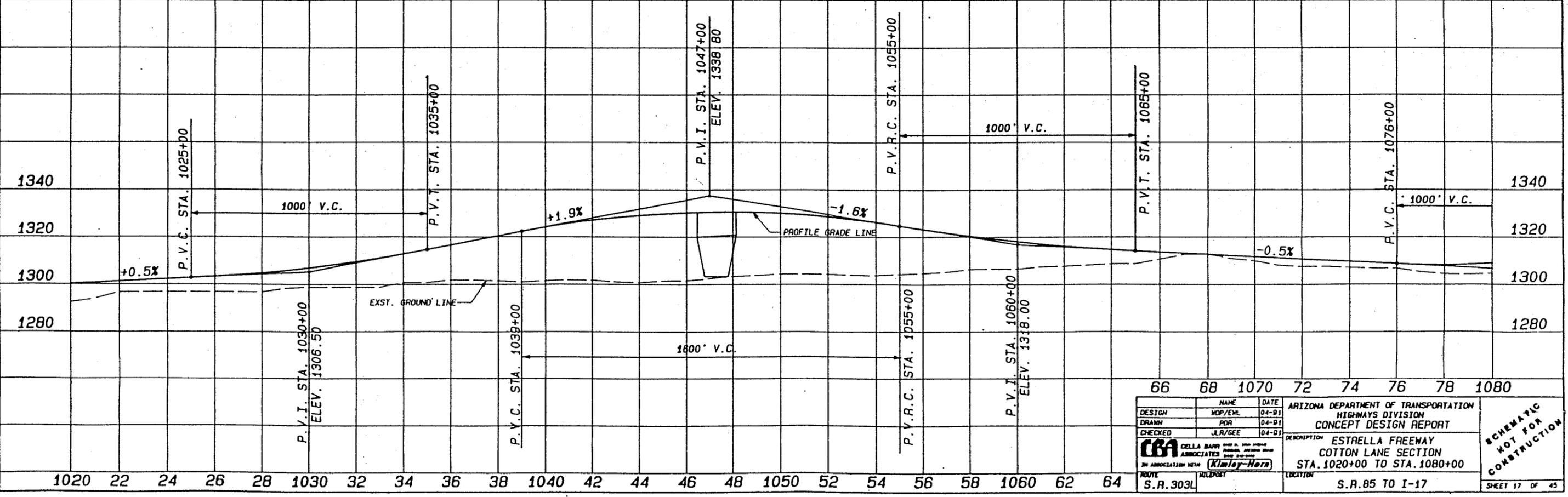
F. H. W. A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	A2M-600-9-301	17	45	



TOTAL CURVE
 $\Delta=25^{\circ}18'37''$
 $R+o^{\circ}=5730.23'$
 $T=1436.65'$
 $L=2831.04'$
 $EXT=143.33'$

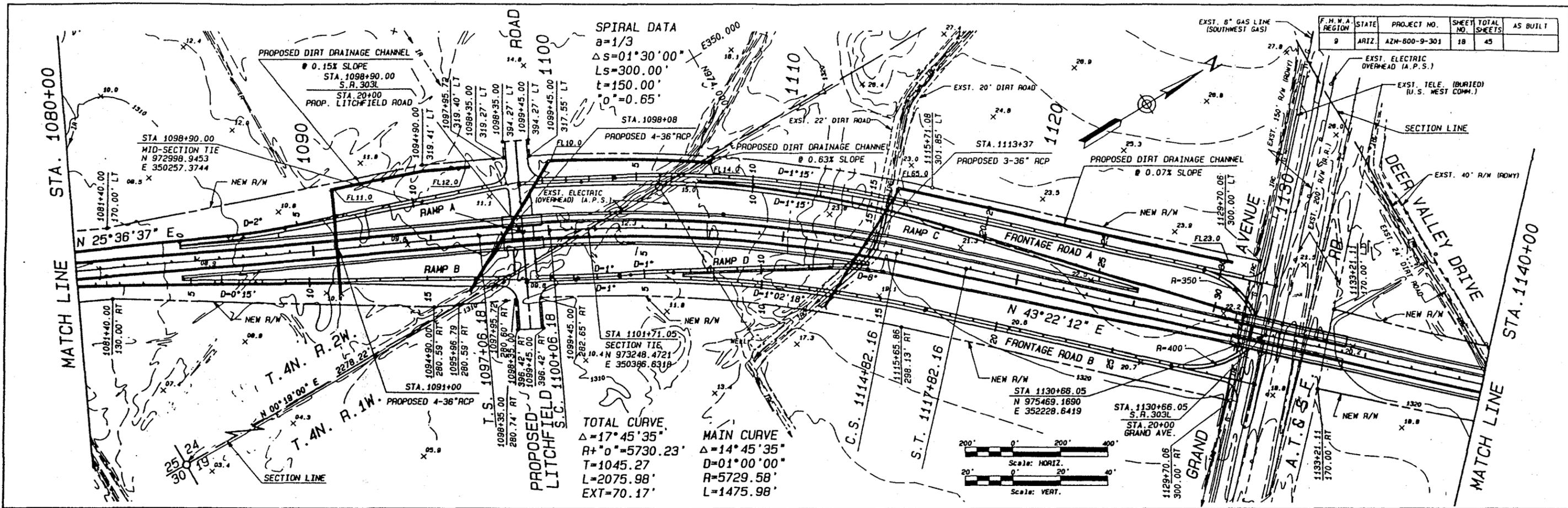
MAIN CURVE
 $\Delta=22^{\circ}18'37''$
 $D=01^{\circ}00'00''$
 $R=5729.58'$
 $L=2231.04'$

NOTE:
 Right-of-way will be required to accommodate outfall channel transitions into existing facilities, in addition to that shown.



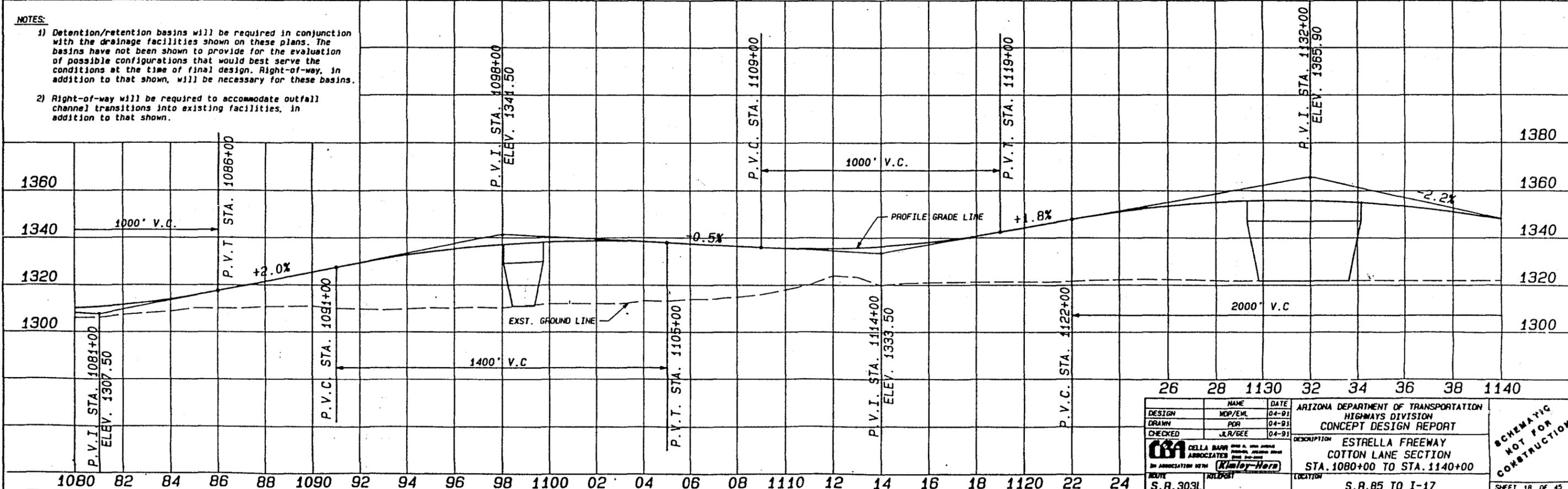
DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION CONCEPT DESIGN REPORT
DRAWN	WOP/EM	04-01	
CHECKED	JLR/GEE	04-01	
APPROVED			
			ESTRELLA FREEWAY COTTON LANE SECTION STA. 1020+00 TO STA. 1080+00
IN ASSOCIATION WITH			
ROUTE	S.R. 303L	ALLPORT	DESCRIPTION
			LOCATION
			S.R. 85 TO I-17

SCHEMATIC
 NOT FOR
 CONSTRUCTION



F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	AZM-600-9-301	18	45	

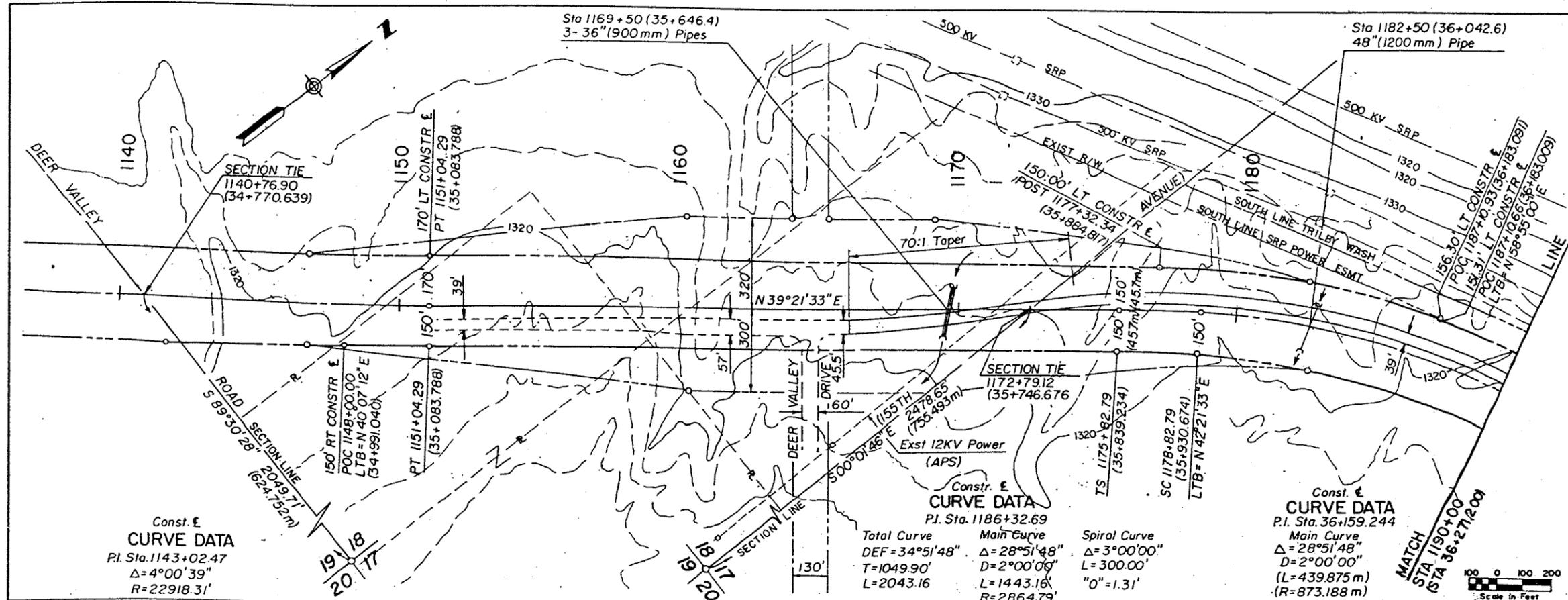
- NOTES:**
- 1) Detention/retention basins will be required in conjunction with the drainage facilities shown on these plans. The basins have not been shown to provide for the evaluation of possible configurations that would best serve the conditions at the time of final design. Right-of-way, in addition to that shown, will be necessary for these basins.
 - 2) Right-of-way will be required to accommodate outfall channel transitions into existing facilities, in addition to that shown.



DESIGN	NAME	DATE	ARIZONA DEPARTMENT OF TRANSPORTATION
DRAWN	JLR/BEE	04-91	HIGHWAYS DIVISION
CHECKED	JLR/BEE	04-91	CONCEPT DESIGN REPORT
			ESTRELLA FREEWAY COTTON LANE SECTION STA. 1080+00 TO STA. 1140+00
S.R. 303L			
LOCATION: S.R. 85 TO I-17			SHEET 18 OF 45

APPENDIX C

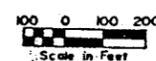
**Maricopa County Department of Transportation
Estrella Interim Roadway Conceptual Plans
Grand Avenue to Lake Pleasant Road**



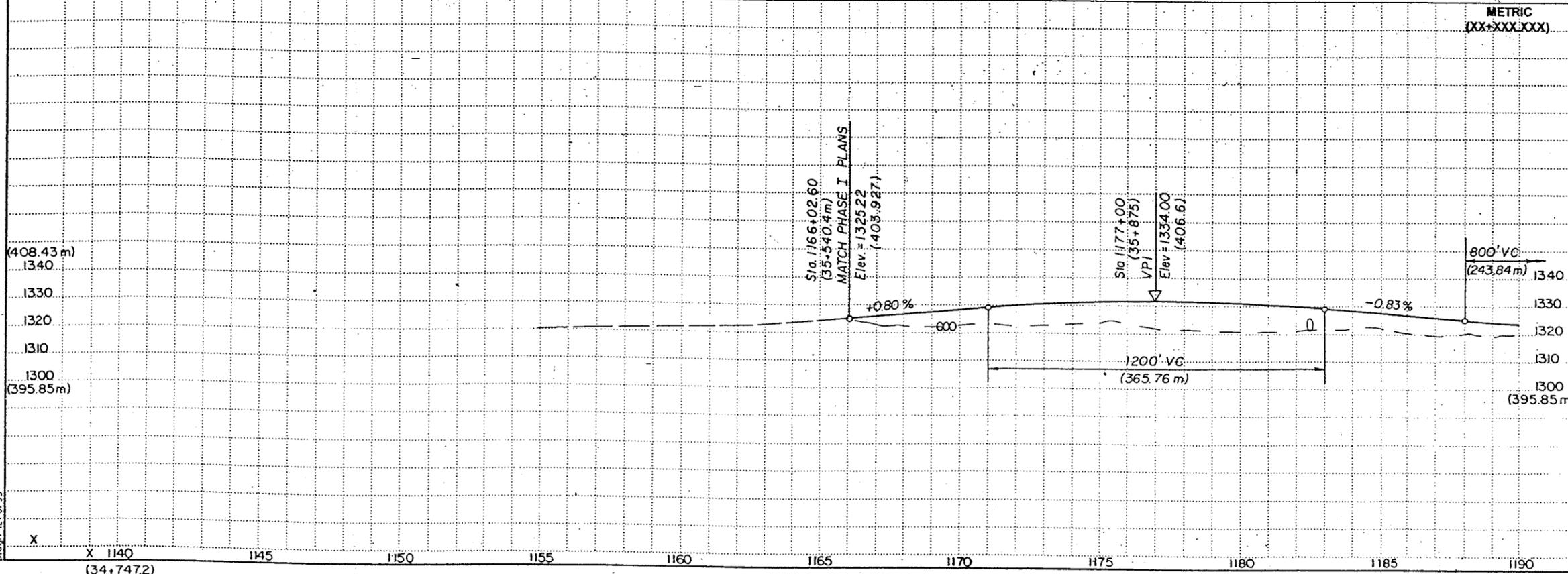
Const. E
CURVE DATA
 P.I. Sta. 1143+02.47
 $\Delta = 4^{\circ}00'39"$
 $R = 22918.31'$

Const. E
CURVE DATA
 P.I. Sta. 1186+32.69
 Total Curve DEF=34°51'48" T=1049.90' L=2043.16
 Main Curve $\Delta = 28^{\circ}51'48"$ D=2°00'00" L=1443.16 R=2864.79'
 Spiral Curve $\Delta = 3^{\circ}00'00"$ L=300.00' "O"=1.31'

Const. E
CURVE DATA
 P.I. Sta. 36+159.244
 Main Curve $\Delta = 28^{\circ}51'48"$ D=2°00'00" (L=439.875 m) (R=873.188 m)



METRIC
 (XX+XXX.XXX)



F.M.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	AZ.				

REMOVAL/RELOCATE

CONSTRUCTION

NO.	REVISION	BY	DATE

MARICOPA COUNTY
 DEPARTMENT OF TRANSPORTATION
 ENGINEERING DIVISION

ESTRELLA INTERIM ROADWAY
 Deer Valley Road to Lake Pleasant Road (99th Ave.)

DESIGNED	BY	DATE
DRAWN		
CHECKED		

PRELIMINARY NOT FOR CONSTRUCTION

ROBERT POWELL *Assistant*

Plan and Profile SHEET OF 9

d.don. 12/15/83

(36+271.2)

TRACS NO.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	AZ.				

REMOVAL/RELOCATE

7

CONSTRUCTION

1

NO.	REVISION	BY	DATE

MARICOPA COUNTY
DEPARTMENT OF TRANSPORTATION
ENGINEERING DIVISION

ESTRELLA INTERIM ROADWAY
Deer Valley Road to Lake Pleasant Road (99th Ave.)

DESIGNED	9607	BY	DATE
DRAWN			
CHECKED			

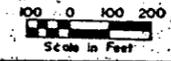
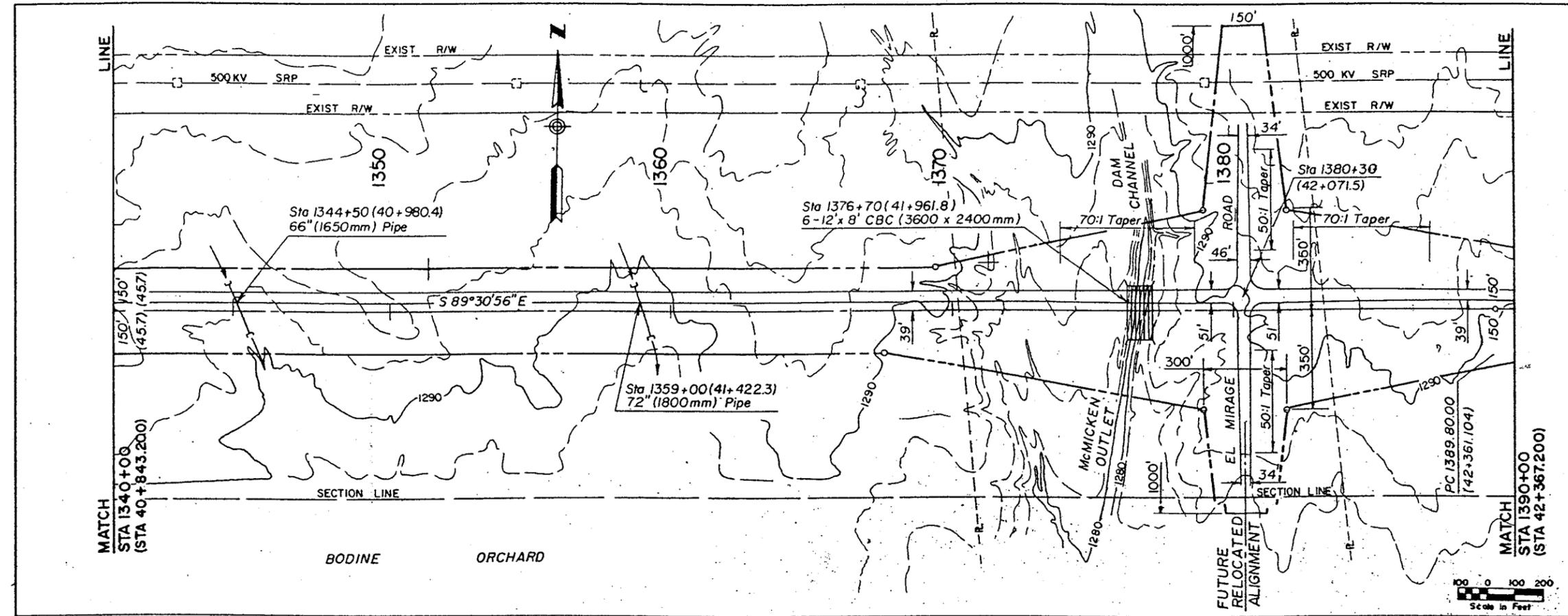
PRELIMINARY NOT FOR CONSTRUCTION

RYSCHE POWER & ENGINEERING, INC.
CONSULTING ENGINEERS, INC.

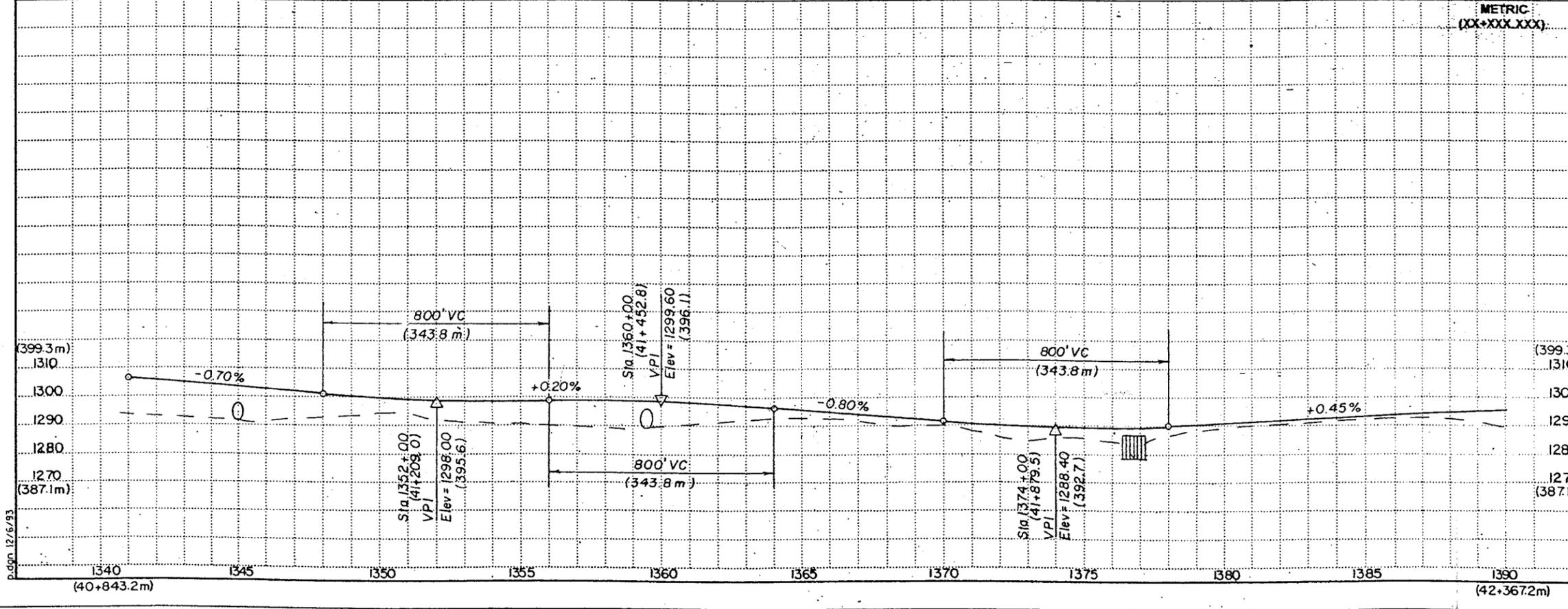
Plan and Profile

SHEET OF 5 9

TRACS NO.



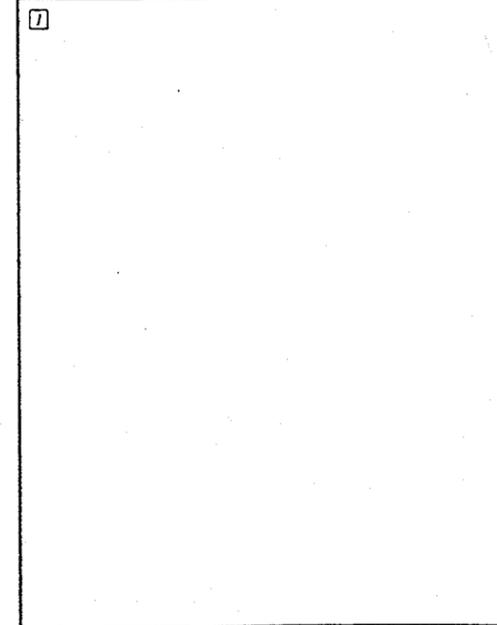
METRIC: (XX+XXX.XXX)



p.dgn 12/6/93

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	AZ.				

REMOVAL/RELOCATE

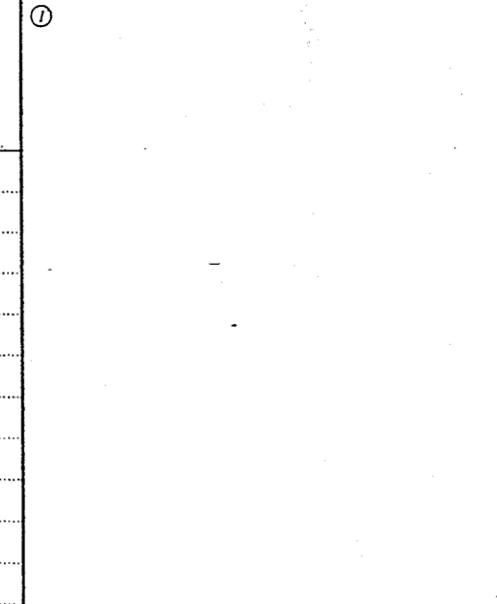


Const. & CURVE DATA
 P.I. STA. 1410+56.31
 $\Delta = 66^\circ 31' 53''$
 $R = 3165.00'$

Const. & CURVE DATA
 P.I. STA. 42+993.963
 $\Delta = 66^\circ 31' 53''$
 $(R = 964.692m)$

Scale in Feet
 100 0 100 200
 METRIC
 (XX+XXX.XXX)

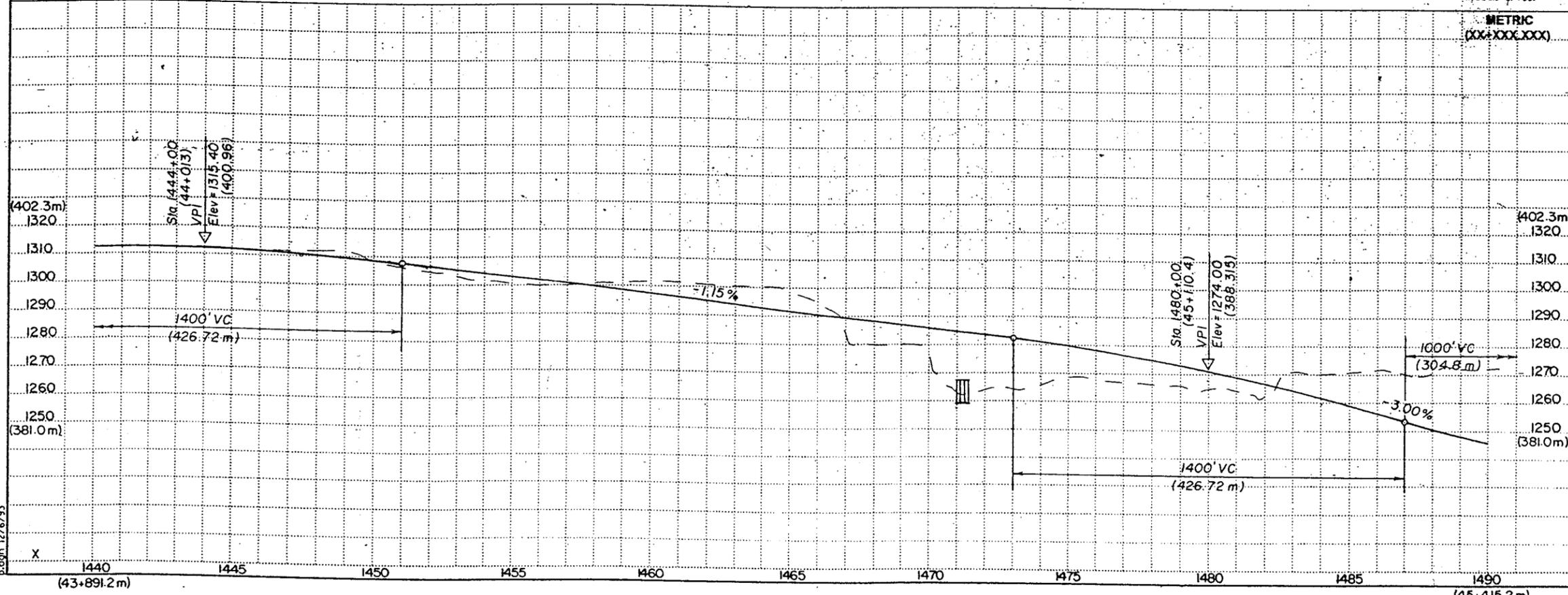
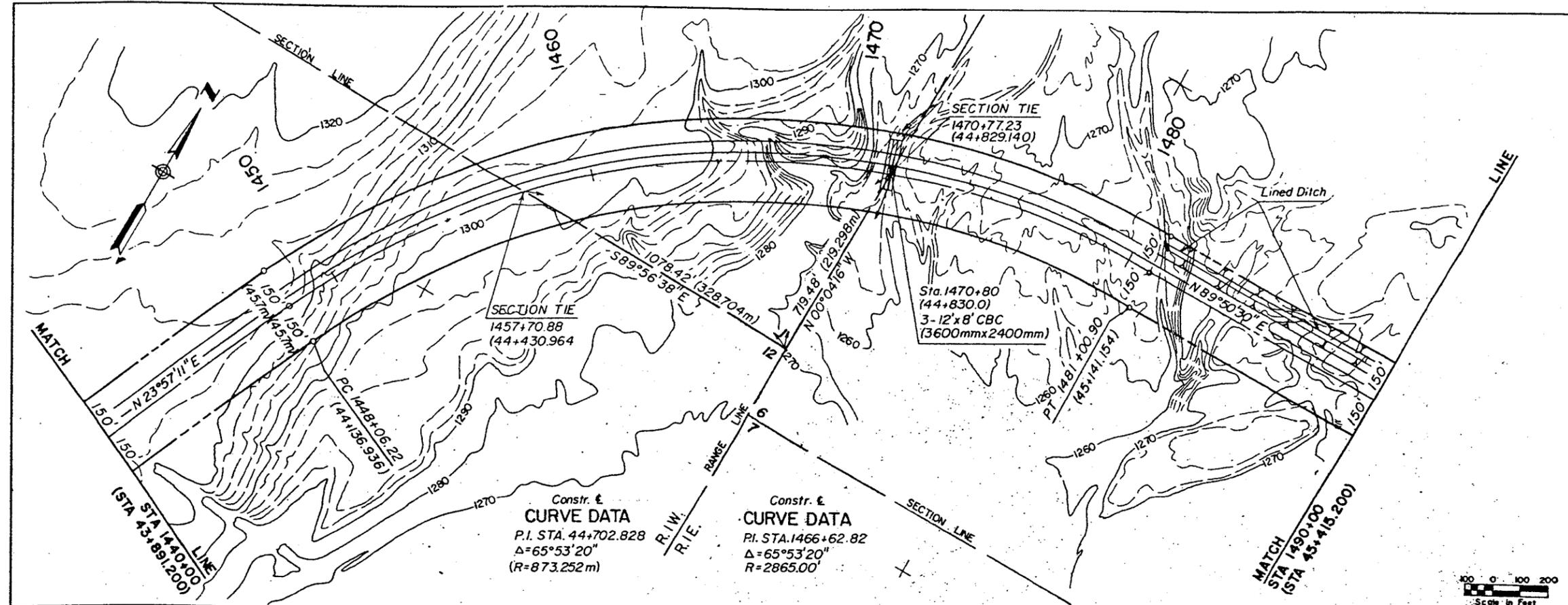
CONSTRUCTION



REVISION NO.	BY	DATE
MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION ENGINEERING DIVISION		
ESTRELLA INTERIM ROADWAY Deer Valley Road to Lake Pleasant Road (99th Ave.)		
DESIGNED	BY	DATE
DRAWN		
CHECKED		
RETTECH POWER & ASSOCIATES CONSULTING ENGINEERS, INC.		
Plan and Profile		SHEET OF 9

TRACS NO.

12/6/93
 X



F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	AZ.				

REMOVAL/RELOCATE

CONSTRUCTION

Scale in Feet
100 0 100 200

METRIC
(XX+XXX.XXX)

NO.	REVISION	BY	DATE
MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION ENGINEERING DIVISION			
ESTRELLA INTERIM ROADWAY Door Valley Road to Lake Pleasant Road (99th Ave.)			
PRELIMINARY NOT FOR CONSTRUCTION	DESIGNED	BY	DATE
	DRAWN		
	CHECKED		
	RITTOCH POWER & ENGINEERING, INC. <small>CONSULTING ENGINEERS, INC.</small>		
Plan and Profile			SHEET OF 7 9

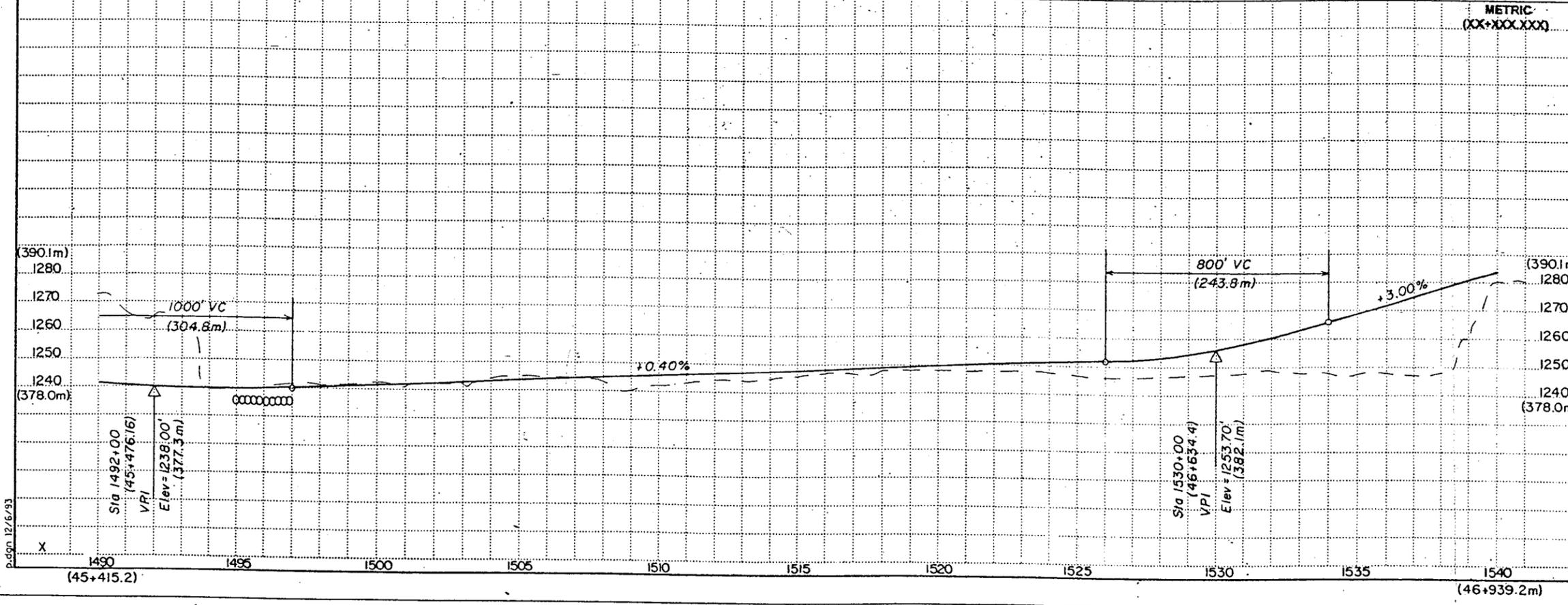
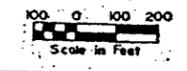
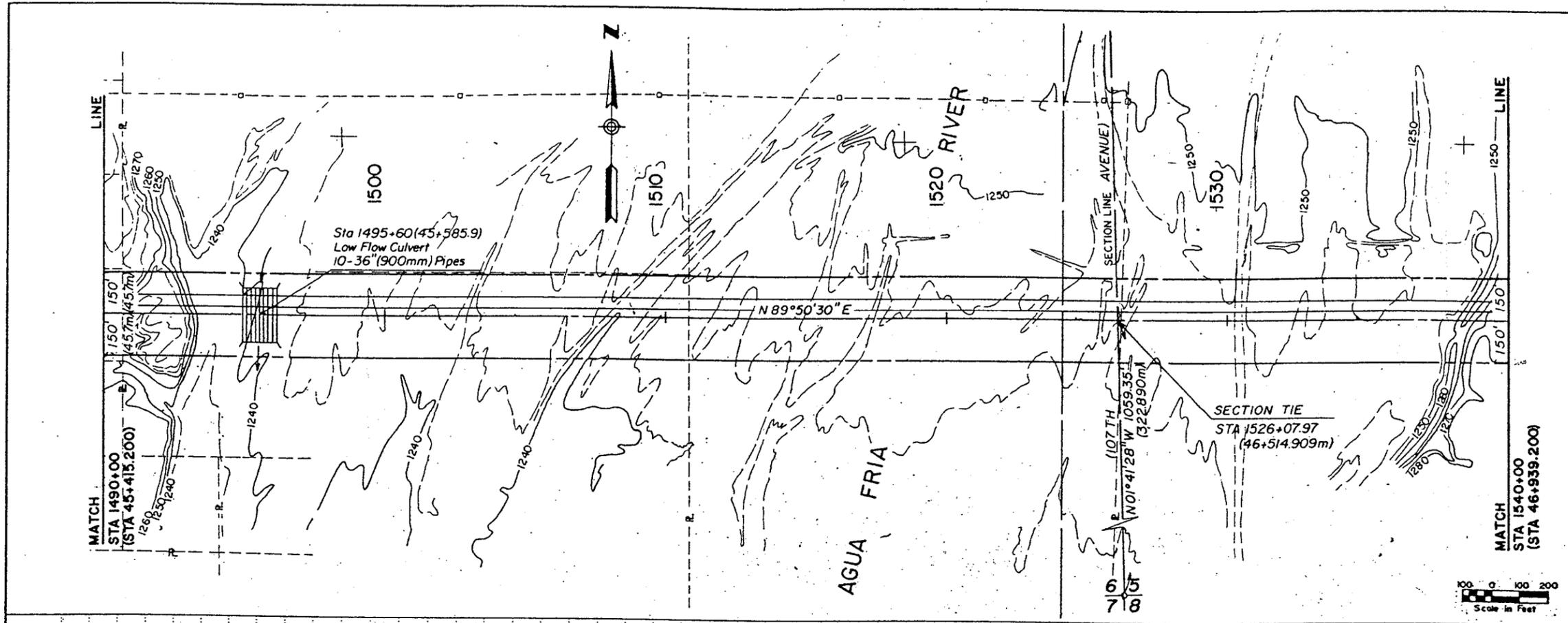
D:\900 12/6/93

TRACS NO.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	AZ.				

REMOVAL/RELOCATE

CONSTRUCTION

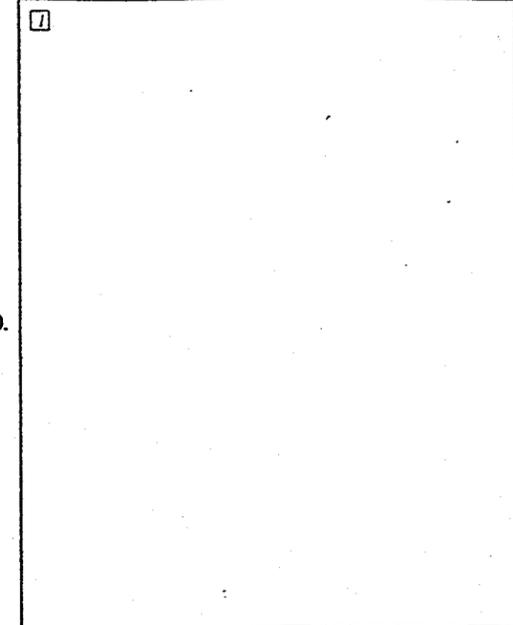


NO.	REVISION	BY	DATE
MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION ENGINEERING DIVISION			
ESTRELLA INTERIM ROADWAY Deer Valley Road to Lake Pleasant Road (99th Ave.)			
DESIGNED	9607	BY	DATE
DRAWN			
CHECKED			
RUTOCH POWER & Associates <small>LOCAL ENGINEERING FIRM</small>			
Plan and Profile			SHEET OF 8 9

P.59n 12/6/93

TRCS NO.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	AZ.				

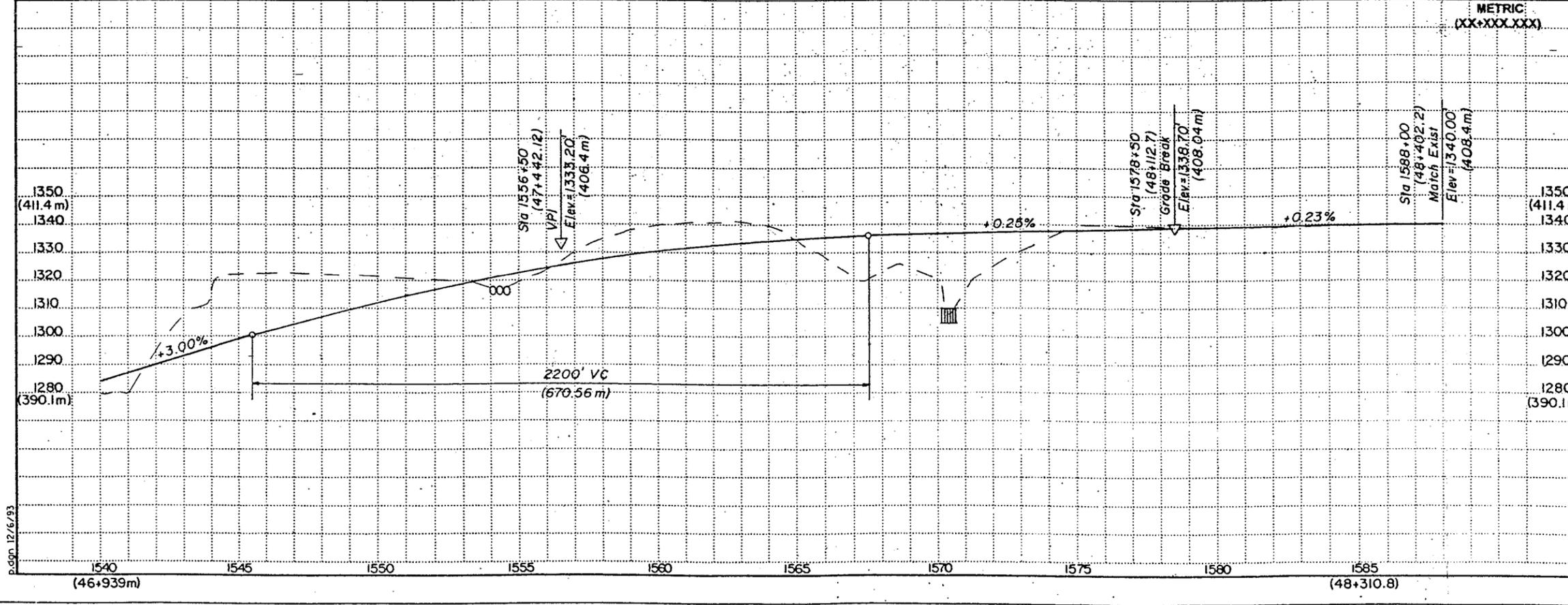
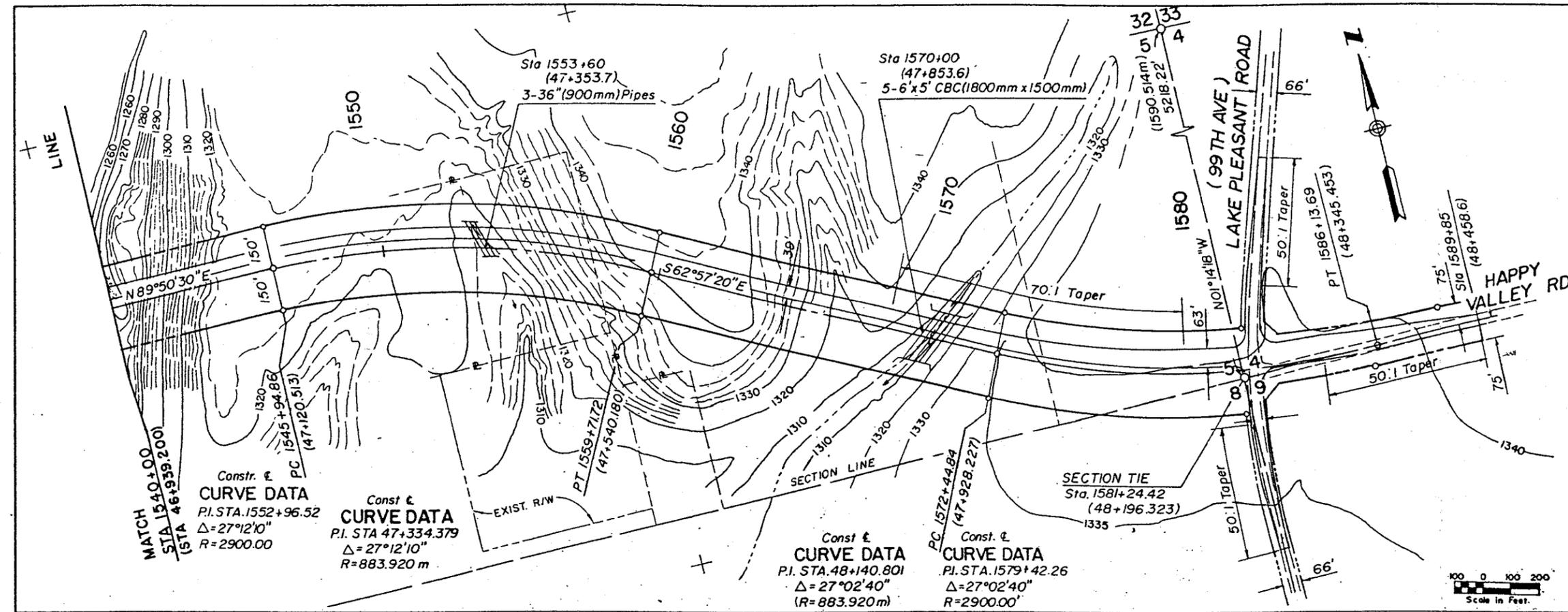


<input type="checkbox"/> REMOVAL/RELOCATE
<input type="checkbox"/> CONSTRUCTION

METRIC
(XX+XXX.XXX)

REVISION	BY	DATE
MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION ENGINEERING DIVISION		
ESTRELLA INTERIM ROADWAY Door Valley Road to Lake Pleasant Road (99th Ave.)		
DESIGNED	BY	DATE
DRAWN		
CHECKED		
PRELIMINARY NOT FOR CONSTRUCTION		
RITCHIE POWELL & ASSOCIATES CONSULTING ENGINEERS, INC.		
Plan and Profile		SHEET OF 9 9

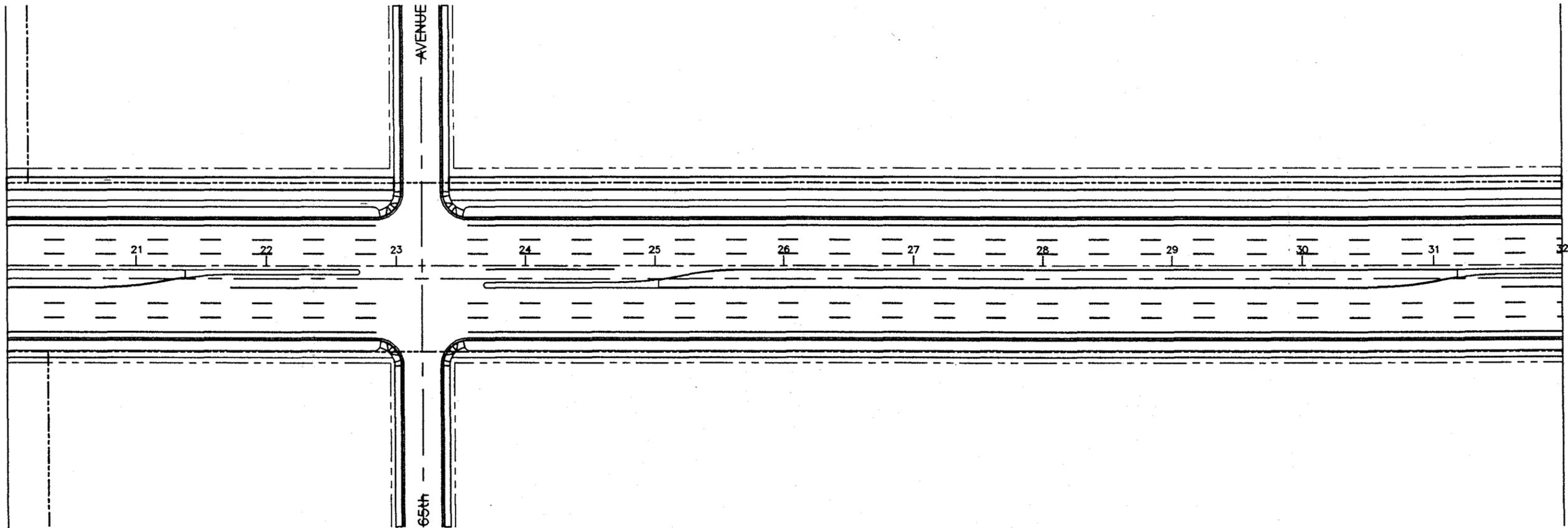
TRACS NO.



DESIGN 12/6/93

APPENDIX D

**City of Phoenix
Happy Valley Road Conceptual Plans
67th Avenue to 37th Avenue**



D:\AD\1776\SS\DWG APR/10/95 0792.dwg

ALTERNATE 8

DRAWN BY: SLAKER		CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:		ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
WORK ORDER NO.: 14938	SCALE: 1"=40'	DATE: 3-94	FILE NO. 4776
PROJECT NO.: HVRS	SHEET 2 OF 17 SHEETS		

STATE LAND

63rd AVENUE

HAPPY VALLEY ROAD

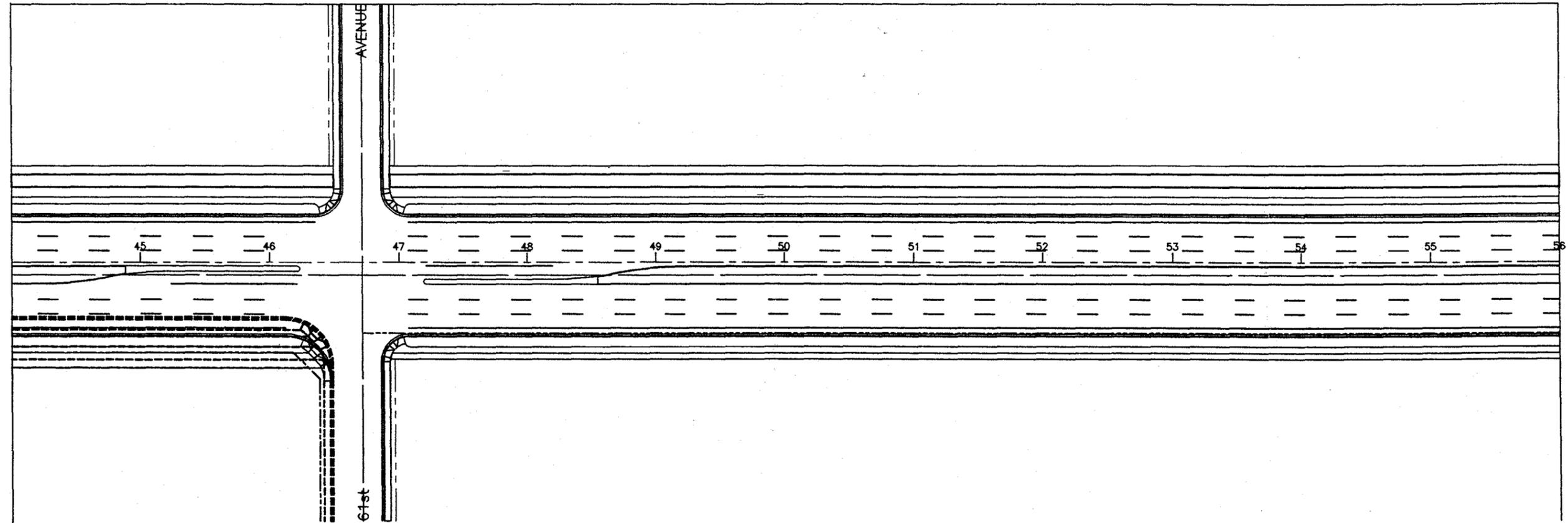
1st Lane

ALTERNATE 8

DRAWN BY: SLAKER	CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:	ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
WORK ORDER NO.: 14838	SCALE: 1"=40'	FILE NO.
PROJECT NO.: HVRS	DATE: 3-84	4776
	SHEET 3 OF 17 SHEETS	

C:\DWG\4776\SS3.DWG APR/18/95 07:07:04

STATE LAND

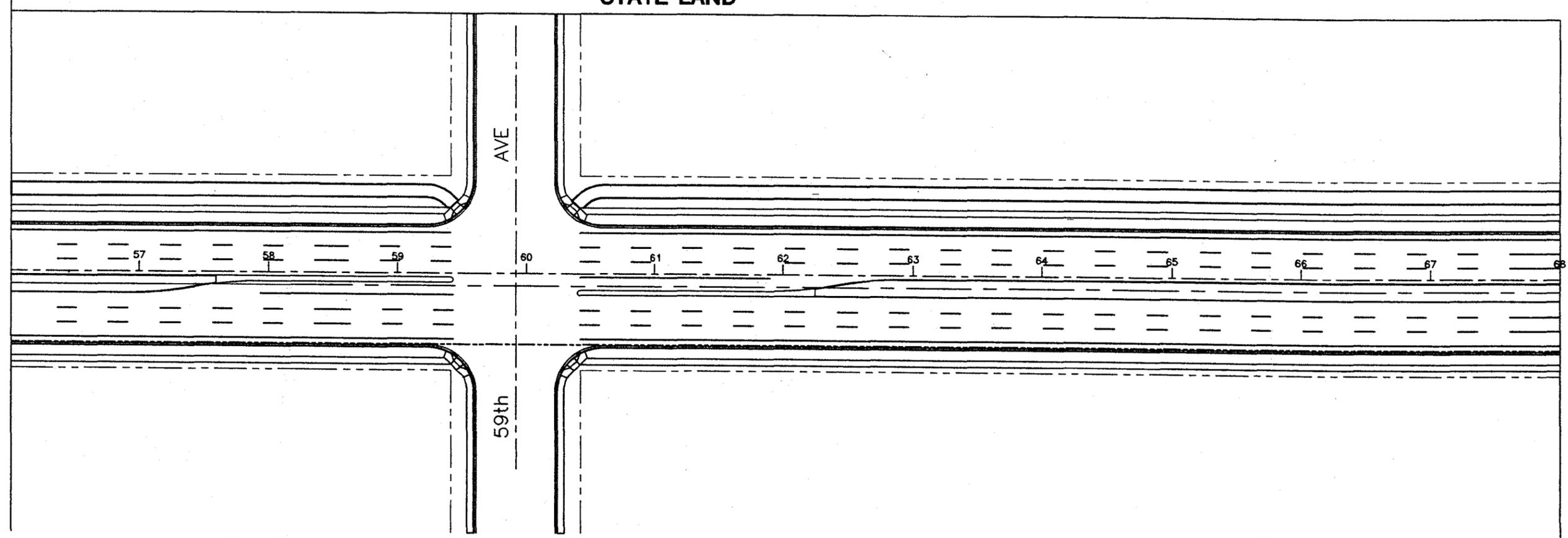


D:\DMD\1776485-1.DWG APR/10/95 07GBan

ALTERNATE 8

DRAWN BY: SLAKER		CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:		ROUTE STUDY	
DEPUTY STREET TRANSPORTATION DIR.		HAPPY VALLEY ROAD	
DEPUTY STREET TRANSPORTATION DIR.		67TH AVE TO 35TH AVE	
ASSISTANT STREET TRANSPORTATION DIR.		SCALE: 1"=40'	
WORK ORDER NO.: 14936		DATE: 3-84	FILE NO.
PROJECT NO.: HVRS		SHEET 4 OF 17 SHEETS	4776

STATE LAND

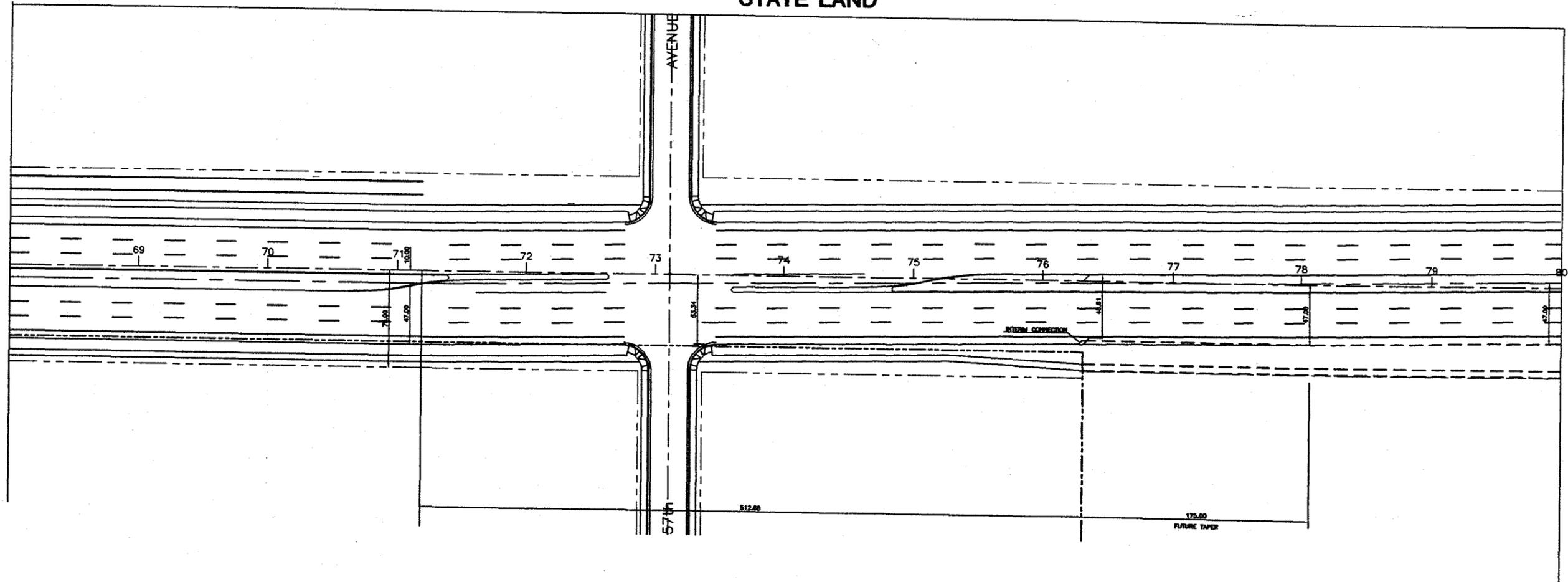


C:\DWG\17764833.DWG APR/26/95 09:43am

ALTERNATE 8

DRAWN BY: SLAKER	CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:	ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
WORK ORDER NO.: 14939	SCALE: 1"=40'	FILE NO.
PROJECT NO.: HVRS	DATE: 3-94	4776
	SHEET 5 OF 17 SHEETS	

STATE LAND



C:\DWG\4776AR55.DWG DCT/03/94 1:00pm

ALTERNATE 8

DRAWN BY: SLAKER	CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:	ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
DEPUTY STREET TRANSPORTATION MGR.	SCALE: 1"=40'	FILE NO. 4776
DEPUTY STREET TRANSPORTATION MGR.	DATE: 3-94	
DEPUTY STREET TRANSPORTATION MGR.	WORK ORDER NO.: 14939	SHEET 6 OF 17 SHEETS
ASSISTANT STREET TRANSPORTATION MGR.	PROJECT NO.: HVRS	

D = 4488.32'
 T = 372.00'
 LC = 100.00'
 R = 100.00'

55TH AVE.

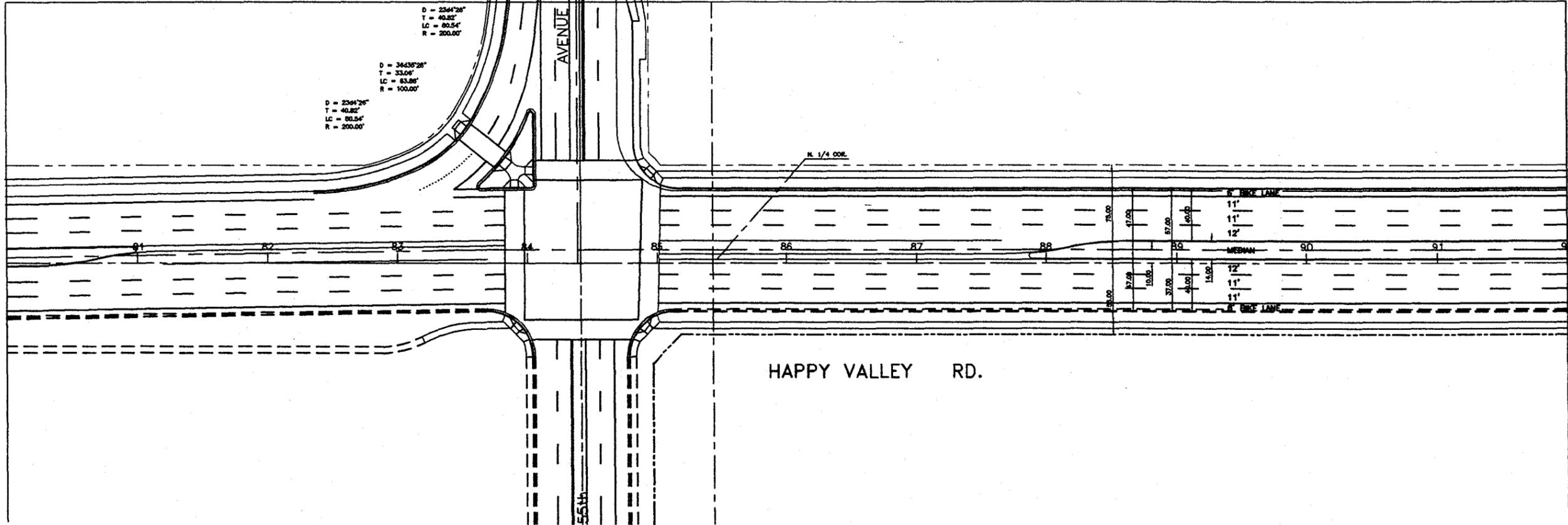
STATE LAND

D = 2344.26'
 T = 40.82'
 LC = 80.54'
 R = 200.00'

D = 3443.28'
 T = 33.04'
 LC = 83.86'
 R = 100.00'

D = 2344.26'
 T = 40.82'
 LC = 80.54'
 R = 200.00'

N. 1/4 COR.



HAPPY VALLEY RD.

C:\UNGV\17744837.DWG MAR/22/94 06:40am

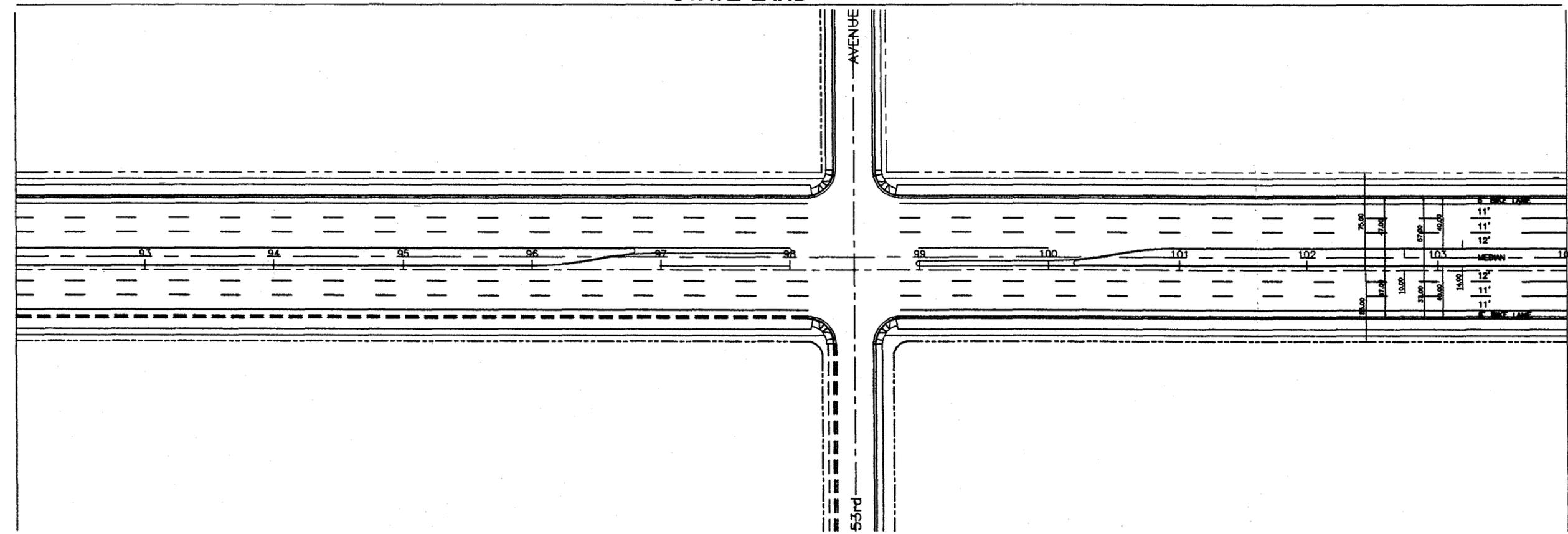
ALTERNATE 8

DRAWN BY: SLAKER		CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:		ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
DESIGNER:			
CHECKER:			
WORK ORDER NO.: 14939	SCALE: 1"=40'	DATE: 3-94	FILE NO.
PROJECT NO.: HVRS	SHEET 7 OF 17 SHEETS		4776

STATE LAND

AVENUE

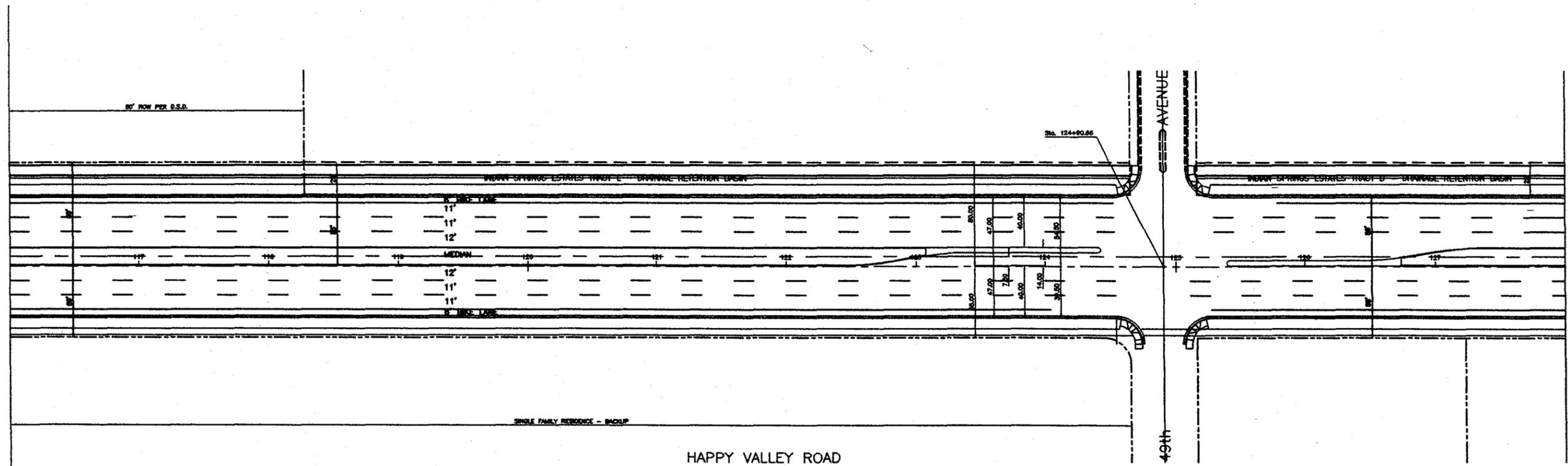
53'±



C:\DMD\17764883.DWG APR 25/95 10:33p

ALTERNATE 8

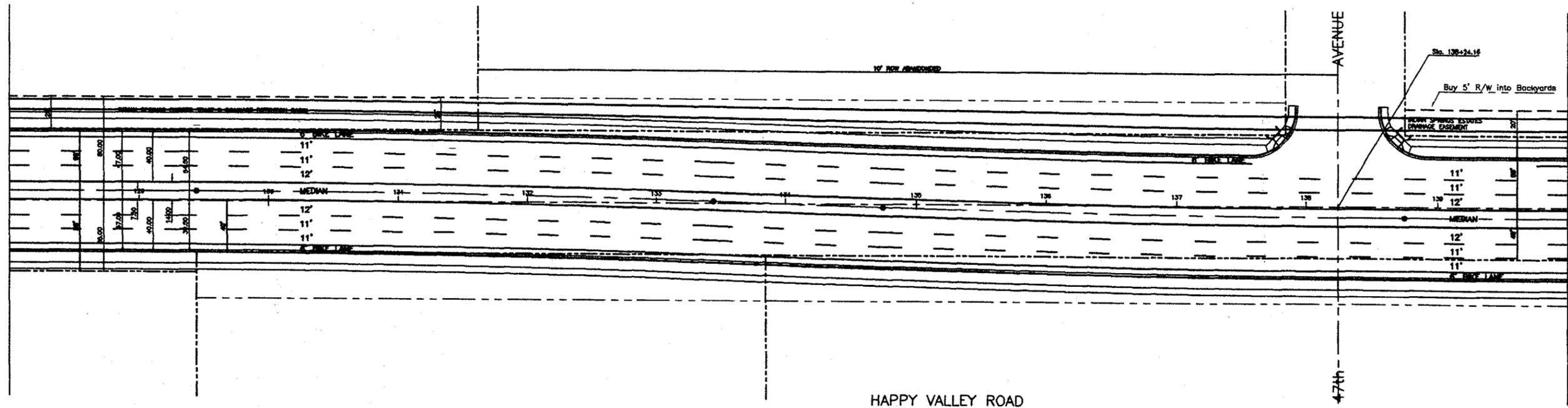
DRAWN BY: SLAKER		CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:		ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
WORK ORDER NO.:	14936	SCALE:	1"=40'
PROJECT NO.:	HVRS	DATE:	3-94
		SHEET	8 OF 17 SHEETS
		FILE NO.	4776



C:\D\4776\8113\8113.DWG MFR/26/93 12:55pm

DRAWN BY: SLAKER		CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:		ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
SEWER STREET TRANSPORTATION NO.			
ARROW STREET TRANSPORTATION NO.			
WORK ORDER NO.: 14938	SCALE: 1"=40'	DATE: 3-94	FILE NO.
PROJECT NO.: DSD	SHEET 10 OF 17 SHEETS		4776

CURVE DATA
 R=13,249.59'



HAPPY VALLEY ROAD

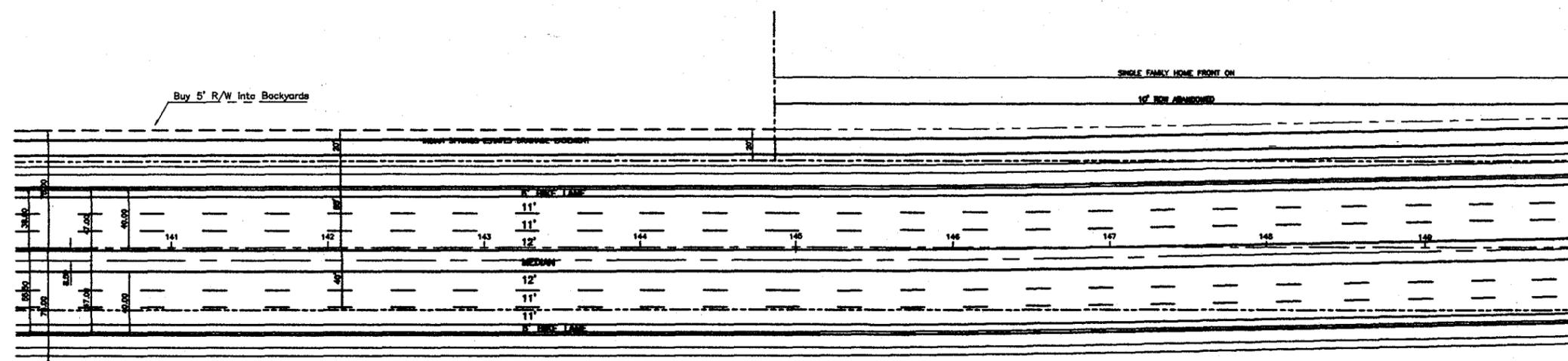
47th AVENUE

Sta. 138+24.16
 Buy 5' R/W into Backyards

C:\DWG\4776ABE.DWG APR/26/95 12:56pm

DRAWN BY: SLAKER		CITY OF PHOENIX, ARIZONA	
APPROVED BY:		STREET TRANSPORTATION DEPT.	
WORK ORDER NO.: 14939		ROUTE STUDY	
PROJECT NO.: DSD		HAPPY VALLEY ROAD	
		67TH AVE TO 35TH AVE	
		SCALE: 1"=40'	FILE NO.
		DATE: 3-94	4776
		SHEET 11 OF 17 SHEETS	

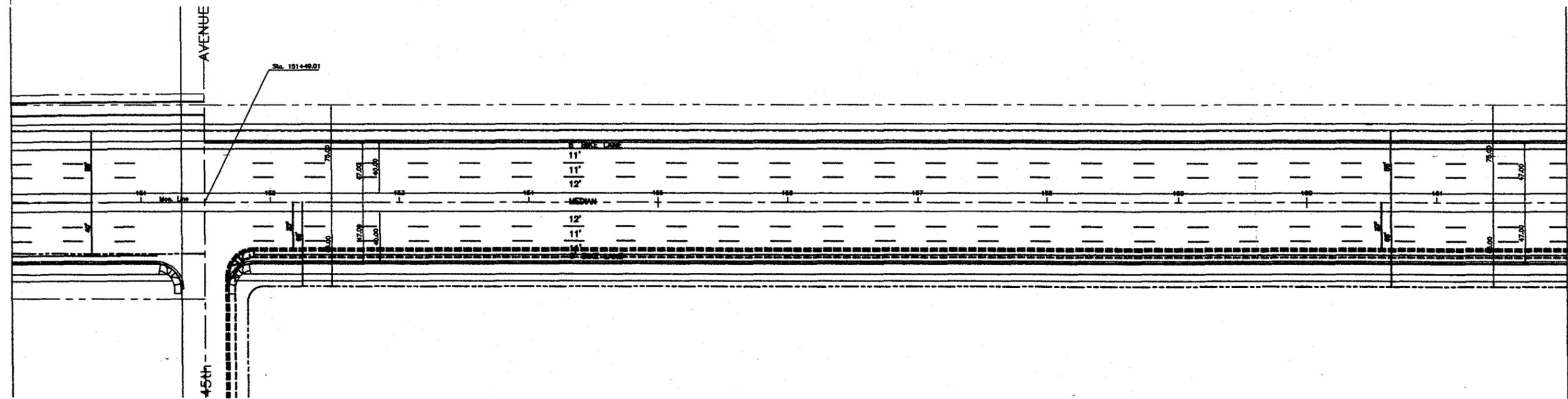
CURVE DATA
R=12,794.22'



HAPPY VALLEY ROAD

D:\DWG\17764613\DWG APR/28/95 08:42:41

DRAWN BY: SLAKER		CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:		ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
WORK ORDER NO.:	14938	SCALE:	1"=40'
PROJECT NO.:	DSD	DATE:	3-94
		SHEET	12 OF 17 SHEETS
		FILE NO.	4776

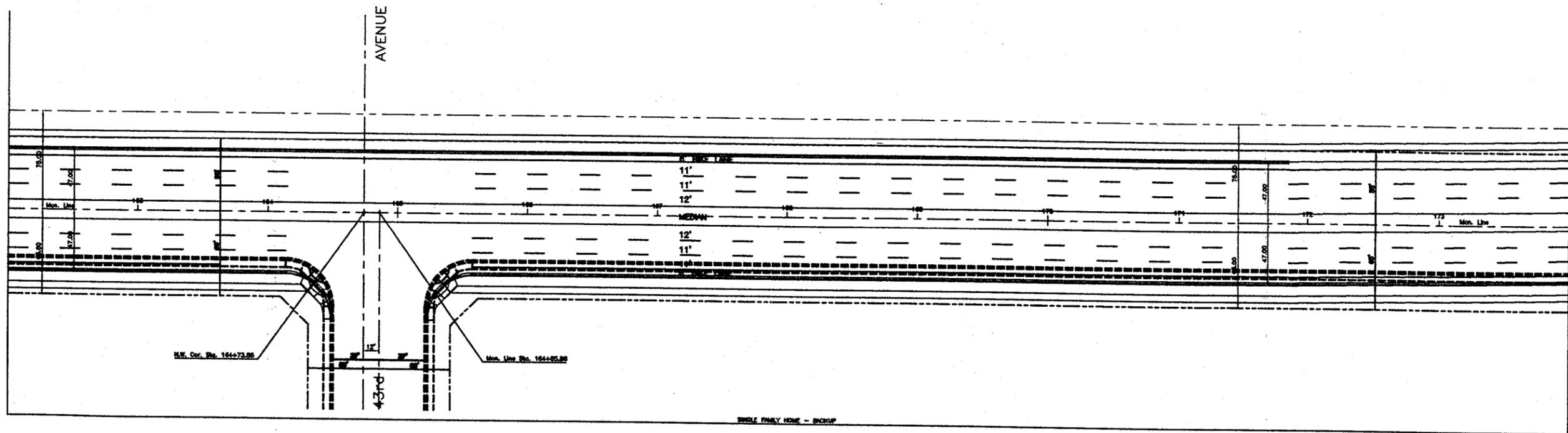


HAPPY VALLEY ROAD

SINGLE FAMILY HOME - BACKUP

D:\D\1776481\DWG APR/28/93 241P

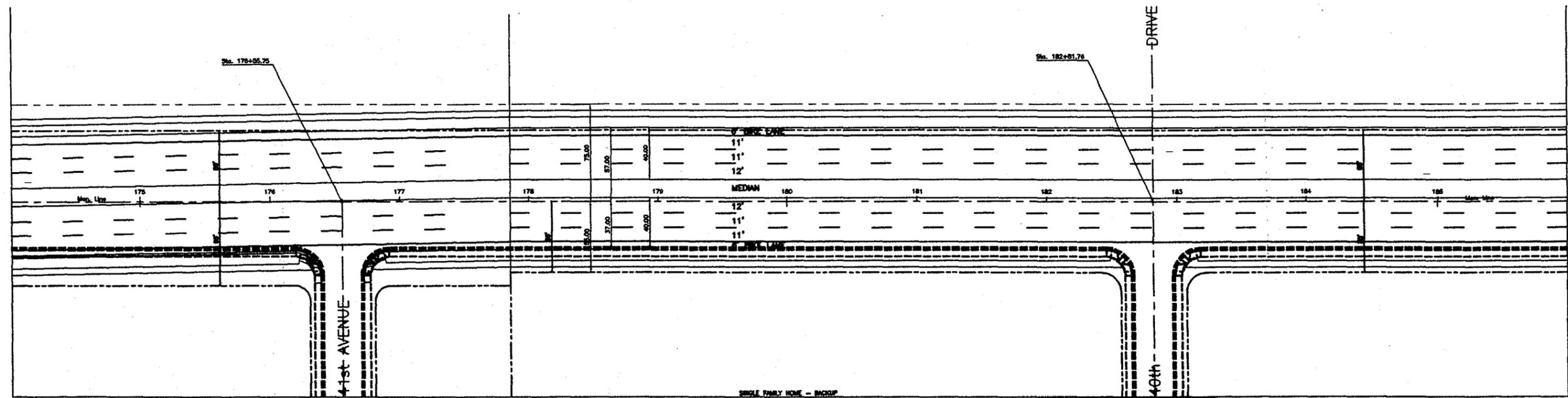
DRAWN BY: SLAKER		CITY OF PHOENIX, ARIZONA	
APPROVED BY:		STREET TRANSPORTATION DEPT.	
SEV'TY ENGINEER	_____	ROUTE STUDY	
TRANSPORTATION ENGR.	_____		
ASSISTANT ENGINEER	_____		
PROJECT NO.:	DSD	SCALE: 1"=40'	FILE NO.
WORK ORDER NO.:	14939	DATE: 3-94	4776
		SHEET 13 OF 17 SHEETS	



HAPPY VALLEY ROAD

D:\UNV\1776815.DWG MAY/81/93 0915am

DRAWN BY: SLAKER		CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:		ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
NEWBY STREET TRANSPORTATION DEPT.			
NEWBY STREET TRANSPORTATION DEPT.			
ARIZONA STREET TRANSPORTATION DEPT.			
WORK ORDER NO.: 14938	SCALE: 1"=40'	FILE NO.	
PROJECT NO.: DSD	DATE: 3-94	4776	
		SHEET 14 OF 17 SHEETS	

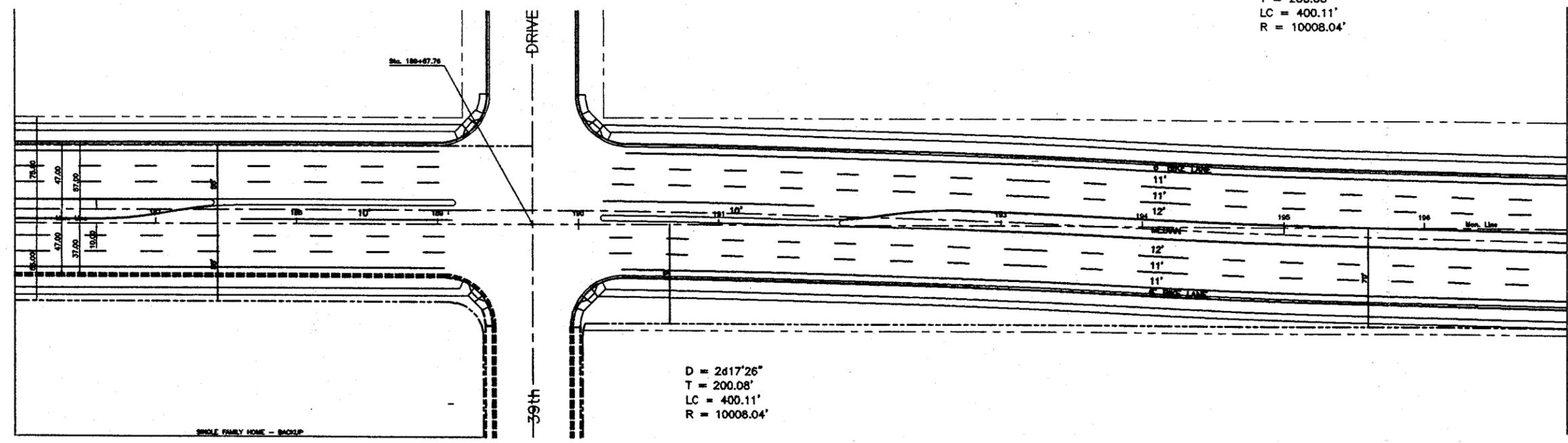


HAPPY VALLEY ROAD

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DRAWN BY: SLAKER	CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:	ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
WORK ORDER NO.: 14939	SCALE: 1"=40'	FILE NO.
PROJECT NO.: DSD	DATE: 3-94	4776
	SHEET 5 OF 17 SHEETS	

D = 2d17'26"
 T = 200.08'
 LC = 400.11'
 R = 10008.04'



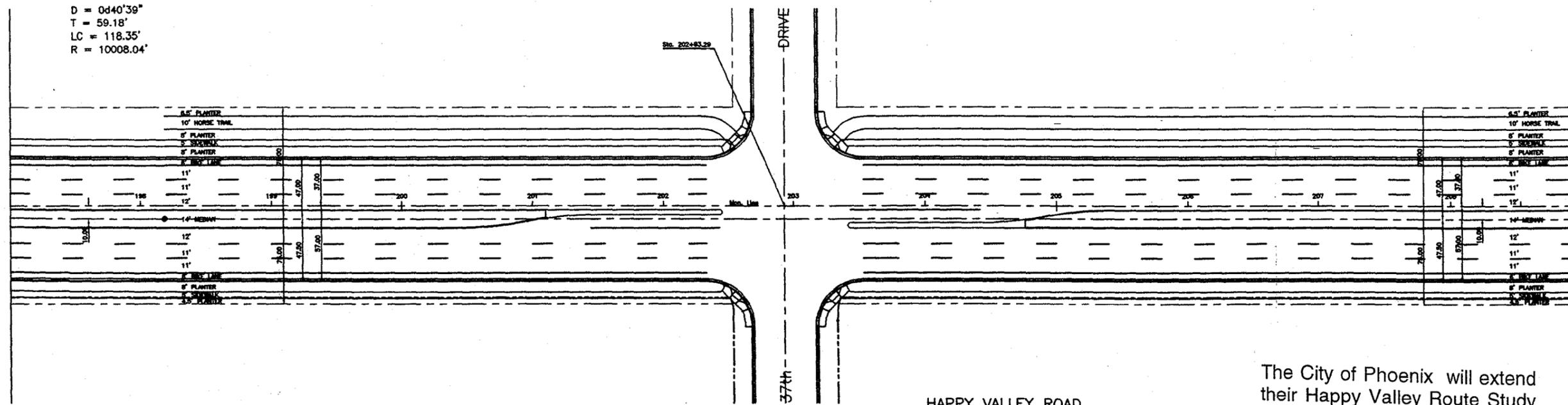
D = 2d17'26"
 T = 200.08'
 LC = 400.11'
 R = 10008.04'

HAPPY VALLEY ROAD

CAD/01/4776487.DWG MAY/01/95 11:45am

DRAWN BY: SLAKER		CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:		ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
COPY STREET TRANSPORTATION DEPT.			
COPY STREET TRANSPORTATION DEPT.			
PROJECT NO.: DSD		SCALE: 1"=40'	FILE NO.
		DATE: 3-94	4776
		SHEET 16 OF 17 SHEETS	

D = 0d40'39"
 T = 59.18'
 LC = 118.35'
 R = 10008.04'



The City of Phoenix will extend their Happy Valley Route Study east to 7th Street in the future.

C:\DWG\4776\4776\4776.DWG MNY/01/95 11:45am

DRAWN BY: SLAKER		CITY OF PHOENIX, ARIZONA STREET TRANSPORTATION DEPT.	
APPROVED BY:		ROUTE STUDY HAPPY VALLEY ROAD 67TH AVE TO 35TH AVE	
COPY SHEET			
WORK ORDER NO.			
PROJECT NO.: DSD		SCALE: 1"=40'	FILE NO.
		DATE: 3-84	4776
		SHEET 17 OF 17 SHEETS	

APPENDIX E

Public Involvement

ESTRELLA (LOOP 303) CORRIDOR STUDY

The purpose of the corridor study will be to provide Maricopa County Department of Transportation(MCDOT) staff, and other affected agencies, with the information necessary to select a strategy for preserving and maintaining the existing and future Estrella Corridor.

A second purpose of the report will be to provide the County staff with background information, research findings, analysis and recommendations necessary to estimate project costs, phasing, and projected year of construction

Location of project. Estrella Roadway (Loop 303) from MC 85 to I-17. This corridor shall follow the original ADOT alignment from MC 85 to Grand Avenue. The alignment from Grand Avenue to 99th Avenue shall be that identified in the MCDOT Estrella Interim Roadway, Phase 2, DCR. From 99th Avenue east to I-17, the corridor will lie on the Happy Valley Road alignment.

The Estrella Roadway corridor is approximately 37 miles long, extending from MC 85 at the south end to Interstate 17 at the east end. The corridor traverses the municipalities of Goodyear, Surprise, Peoria, Phoenix, and unincorporated Maricopa County.

In 1994, because of lower than expected sales tax revenue and higher costs, the Governor revised the MAG plan and deleted the Estrella Freeway project. As a result, ADOT removed the roadway from the list of planned improvements, and turned the responsibility of the Estrella corridor to the county and local jurisdictions. The 4 year letter of notification was given to MCDOT in March, 1995.

Several large proposed developments along the corridor are projected to dramatically increase the population throughout the area and the construction of the roadway will likely induce additional development. The original ADOT plan for the roadway was to construct the first two lanes of the ultimate four lane facility. A new study with updated socioeconomic data is needed to determine what will be the most appropriate design with respect to land use, capacity, and access control.

- The Study will recommend interim and ultimate roadway cross-sections(number of lanes, median width, right-of-way width, etc.) For the corridor.
- The study will identify when intersections will need improvements and when and if the roadway will need to be upgraded to four or six lanes to maintain an acceptable level of service.
- The study will recommend an alignment for Happy Valley Road from 91st Avenue to 67th Avenue.

The public is encouraged to share with MCDOT your expectations and wishes for the corridor. Your comments will assist MCDOT and the local jurisdictions in determining the future for Loop 303.

ESTRELLA CORRIDOR STUDY
Public Open House Meeting
MCDOT Work Order No. 80505

Summary of Comment Cards

On Thursday, July 24th, 1997, nearly 20 people attended a public open house meeting to discuss and participate in the development of a long range Transportation Plan for the Estrella Corridor.

As of August 4, MCDOT received comments from four citizens. The meeting was attended by property owners and others interested in the area's transportation plans.

The following is a summary of the respondents' comments.

Questions Asked

Private Property - Acquisition/Impacts

- Is the proposed project "a done deal"? (J)
- Which parcels are affected by the new alignment at 115th to 113th Avenue? (E)

Design

- What will the design speed be in vicinity of 91st Avenue? (M)

Construction Schedule

- When will the proposed roadway be constructed? (G)
- When will the proposed road east of 91st Avenue be built? (H)

Equestrian Trails

- Will there be equestrian crossings near 65th Avenue? (N)

Comments About the Project/Study

Alignment Location

- APS is planning to build a 230kv/69kv electric substation on the south side of Happy Valley Road, 660 ft west of the section line (75th Avenue). It was requested to keep the alignment of Happy Valley Road north of the proposed substation (see comment sheet/ Paul Herndon, APS). (A)
- There was a preference for the old alignment on Jomax Road or Carefree Highway. (F)
- There was a suggestion that the road may need to dip south (with alignment) to power lines farther east of 81st Avenue, in order to get a good intersection with 81st Avenue. (B)

Private Property - Acquisition/Impacts

- There was concern that their property on 91st Avenue will be affected - noise, safety, access (Carmela Fitzsimmons) (M)

Design

- There was a preference to keep the design speed in the vicinity of 91st Avenue at 45 mph or lower. (M)

Construction Schedule

- The County should build the section from 99th Avenue east, before the section to Grand Avenue. (I)

Equestrian Trails

- An equestrian trail connection is needed between Thunderbird Park and the lands north of Happy Valley Road. (O)
- Utilizing natural wash areas for equestrian access would be advantageous. (N)
- The existing equestrian trail by 56th Avenue is very well used. (P)
- Maintain equestrian access at 56th Avenue. (P)
- Need to address trail and drainage crossing at 67th Avenue. (B)
- Maintenance of equestrian/pedestrian trails through use of box culverts; avoid troubles such as those learned at Squaw Peak- horses do not like noisy, dark crossings (C)

Visual

- Provide for revegetation of cut-slopes. (C)
- Maintain natural desert areas. (C)

Off-topic Comments

No off topic comments were received.

Meeting Survey

There were 4 comment/survey cards submitted.

Comments	Number of Respondents
Staff very knowledgeable	3
Staff somewhat knowledgeable	0
Staff not very knowledgeable	0
Staff very helpful	2
Staff somewhat helpful	
Staff not very helpful	

Project information presented in
an understandable manner

Number of Respondents

Yes	3
No	0

Questions answered:

Yes	3
No	0

Wanting more information on
MCDOT projects

Number of Respondents

Yes	0
No	1

Open House/Public Meeting Attendees

Mountain Ridge High School
Thursday, July 24, 1997

Name	City
Bloom, Phil	Peoria
Fitzsimmons, Carmela	Peoria
Friend, Scott	Peoria
Graber, Aaron and Betty	Maricopa Cnty.
Herndon, Paul	Phoenix
Hull, Joe	Glendale
Mead, Jim	Glendale
Moody, David	Peoria
Nissen, Dan	Peoria
Olsen, Larry	Phoenix
Spoon, Dave	Peoria
VonDaren, Ronald	Maricopa Cnty.
Wallach, Brian	

ESTRELLA CORRIDOR STUDY
Public Open House Meeting
MCDOT Work Order No. 80505

Summary of Comment Cards

On Tuesday, July 29th, 1997, over 20 people attended a public open house meeting to discuss and participate in the development of a long range Transportation Plan for the Estrella Corridor.

As of August 4, MCDOT received comments from eight citizens. The meeting was attended by property owners, developers and others interested in the area's transportation plans.

The following is a summary of the respondents' comments.

Questions Asked

Alignment Location

- Can the road be built further north of Sun City West—as a means of limiting the amount of future air and noise pollution from the road? (A)
- How many lanes are proposed for the sections of the road in the vicinity of Sun City West? (F)

Construction Schedule

- What is the time frame of this project? (F)

Health

- Will construction activities increase the potential for catching Valley Fever? (H)

Interchanges

- What are the planned interchanges at Grand Avenue; Deer Valley Road; and Mountain View Boulevard (Larry Brokish, 15229 W. Domingo Lane, Sun City West 85375 would like more information about these planned interchanges)? (D)
- Where will traffic enter or exit on Grand Avenue? (F)

ROW width

- How will excess land outside the roadway be used? (G)

Noise

- Is the wall north of Sun City West in fact a noise wall? (A)

Comments About the Project/Study

Air Quality

- There will be a reduction in air quality in the vicinity of Sun City West. (A,B,H,I)

Habitat

- Maintain natural areas for wildlife. (L)

Alignment Location

- Move the location of the 303 further to the north where it crosses Grand Avenue.
- Continue Happy Valley Road straight from Lake Pleasant Road, over McMicken Dam
- Three bridges across McMicken Dam (H)
- Overpass by Limousine Street would affect community (H)

Interchanges

- It was requested that an on/off ramp be constructed at Deer Valley Road and Loop 303, to lighten traffic on 151st Street. Persons living on 151st Street think that other proposed developments in their neighborhood are going to result in tremendous traffic increases along 151st, and would like to see some of the traffic moved onto Deer Valley Road. (C)
- It was requested that no on/off ramp be constructed at Deer Valley Road and Loop 303. Individuals were concerned that increased traffic on Deer Valley Road will result in increased traffic, noise and litter in Sun City West. (E)

Noise

- There was concern that there will be increased noise along the northern section of Sun City West. It was requested that higher/better noise walls be constructed around the perimeter of the retirement community. (B, F, I, M)

Pollution

- There was concern that increased traffic will result in increased litter along roadways. (E)

Traffic

- There was concern for potential increased traffic along Deer Valley Road if an interchange is built with Deer Valley Road and Loop 303. (B, E)
- There was concern that the Loop 303 corridor will become a prime route for trucks traveling between Mexico and northern areas in response to the NAFTA agreement. (H)

SunCor Development Concerns (Guy L. Steele) (G)

Drainage

- SunCor development is concerned with drainage issues.

Intersections

- SunCor development is concerned with maintaining safety at existing east-west intersections.

Off-topic Comments

Meetings should be held in Sun City West, not during the dinner hour, and held after more people have returned for the winter so that they are represented. (E)

Please keep us informed. (E, F)

There will be an exodus out of Sun City West if the road is developed. (K)

Meeting Survey

There were eight comment/survey cards submitted.

Comments	Number of Respondents
Staff very knowledgeable	2
Staff somewhat knowledgeable	3
Staff not very knowledgeable	1
Staff very helpful	4
Staff somewhat helpful	
Staff not very helpful	

Project information presented in an understandable manner	Number of Respondents
Yes	4
No	2

Questions answered:	
Yes	3
No	3

Wanting more information on MCDOT projects	
Yes	4
No	1

Open House/Public Meeting Attendees

Dysart Middle School
Tuesday, July 29, 1997

Name	City
Bonucchi, J.V.	Sun City West
Brokish, Larry and Virginia	Sun City West
Buckholz, A.H. and P.J.	Sun City West
Comerford, John	Phoenix
Creedon, Jim	Phoenix
Davis, Ethel	Sun City West
De Chiest, Burl	Sun City West
Ellison, Bruce	Sun City West
Fischer, Carl	Sun City West
Hulse, Don K.	El Mirage
Janke, Richard	Glendale
Jesberger, Michael	Glendale
Murphy, Donald W.	Sun City West
Myklebust, A.	Chandler
Short, Marcia	Sun City West
Short, Wayne	Sun City West
Skinner, Ken	Scottsdale
Steele, Guy	Goodyear
Talvacchia, Bruno J.	Sun City West
Talvacchia, Connie	Sun City West
Vinson, M. L.	Sun City West
Walker, Paul	Luke Air Force Base



MCDOT News

**Maricopa County Department of Transportation
2901 West Durango Street, Phoenix, AZ 85009**

Contact: Teresa Verbout, Community Relations -- 506-8795

Developing long-range transportation plans for the Westside

Estrella Corridor study will determine future improvements

Phoenix, Oct. 31 — The public has an opportunity to comment on a 37-mile-long corridor study that will help determine future roadway improvements in several west Valley cities and unincorporated Maricopa County.

The Maricopa County Department of Transportation (MCDOT) is hosting a second round of open house public meetings in mid-November to discuss the Estrella Corridor (303L) Study. The public had an initial opportunity to comment on the study in July. Since then the MCDOT and local jurisdictions have reviewed the issues and public input to provide a range of alternatives. MCDOT expects the study to be completed by January.

"This is an important issue and I am very concerned about traffic in the West Valley and I urge residents to participate in this process," said Maricopa County Vice-Chair Jan Brewer.

The 37-mile-long Estrella Corridor travels through Goodyear, Glendale, Surprise, Peoria, Phoenix and portions of unincorporated Maricopa County. The corridor follows the original Arizona Department of Transportation alignment from MC 85 to Grand Avenue, between Grand Avenue and Lake Pleasant Road the alignment generally follows the ADOT alignment with variation east of El Mirage road, and Happy Valley Road from Lake Pleasant Road to Interstate 17.

The study will layout right-of-way requirements, recommend ultimate roadway cross-sections, identify when intersections will need improvements and when the roadway will need to be widened to four or six lanes. The study also will recommend a final alignment for Happy Valley Road from 91st Avenue to 67th Avenue.

"Part of the county's goal is to create a transportation system that will truly meet the needs of county residents," explained Brewer, who represents District 4. "To do this we are focusing on transportation studies, such as the Estrella Corridor study, that will help us accurately pinpoint and plan for future needs. We need public opinion to ensure the study's success."

The meetings are scheduled for Nov. 13, 6-8 p.m., at Dysart Middle School, 11405 N. Dysart, El Mirage, and Nov. 18, 6-8 p.m., at Mountain Ridge High School, 22800 N. 67th Ave., Glendale.

When given at least 72 hours' notice, additional reasonable accommodations can be made available for the public. This includes sign language interpretation, alternative format materials, such as large-print, or listening aid devices such as infra-red or FM radio.

-- MCDOT --

**The Maricopa County
Department of Transportation
invites you to two
open house public meetings**

Residents have two final opportunities to discuss the Estrella Corridor (303L) Study. The Estrella Corridor extends from MC 85 to Interstate 17. The study will layout right-of-way requirements, recommend roadway cross-sections, identify when intersections will need improvements and when the roadway will need to be widened to four or six lanes.

Thursday, November 13, 6-8 p.m.

Dysart Middle School

11405 N. Dysart, El Mirage

Tuesday, November 18, 6-8 p.m.

Mountain Ridge High School

22800 N. 67th Ave., Glendale

For more information, contact

Mike Marietti, project engineer, 506-4171

e-mail: MikeMarietti@mail.mcdot.maricopa.gov

Or write, MCDOT, 2901 W. Durango Street

Phoenix, AZ 85009-6357



Open House Public Meetings

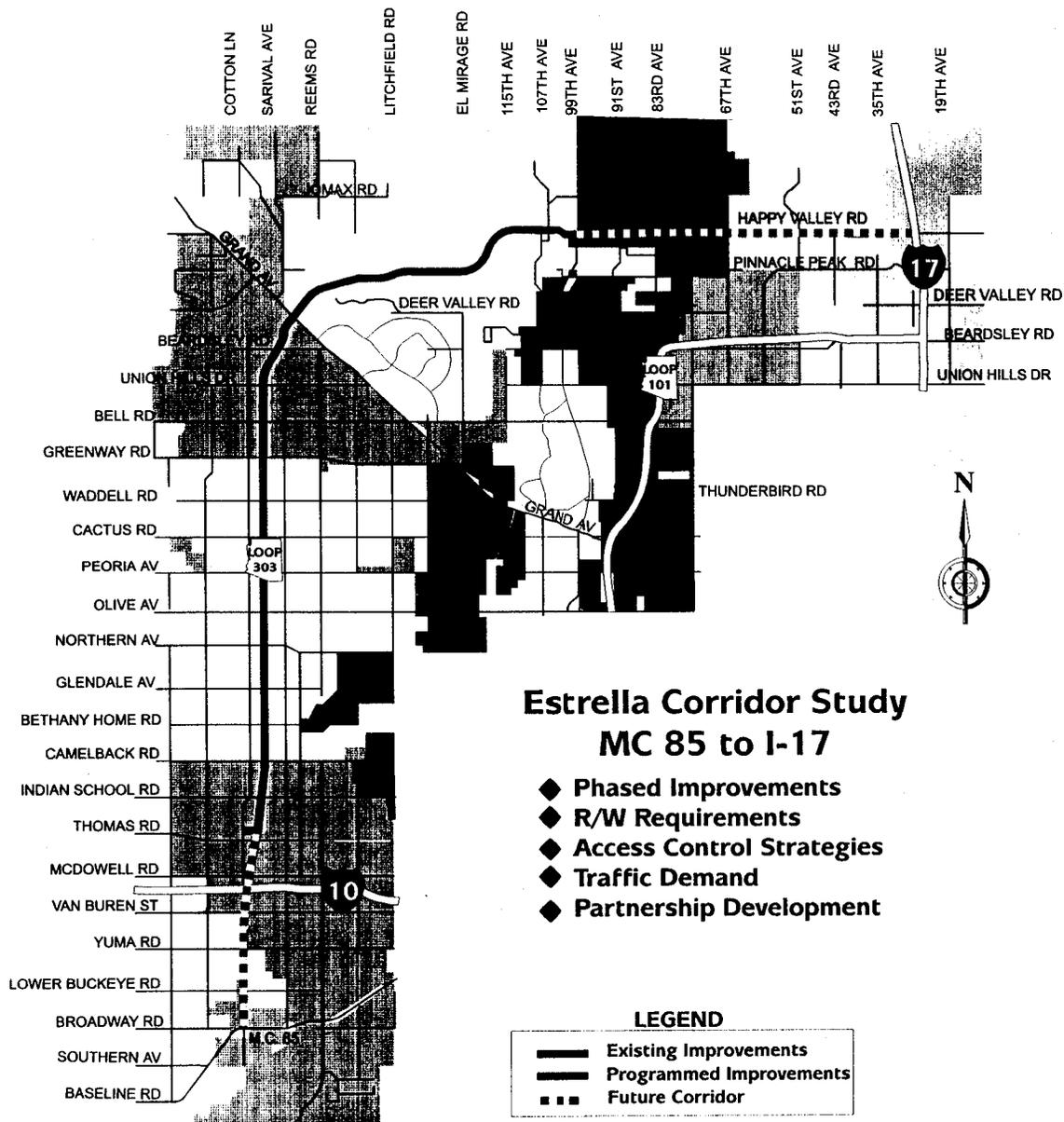
Hosted by the Maricopa County
Department of Transportation

Residents have a final opportunity to discuss the Estrella Corridor (303L) Study during two public meetings. The Estrella Corridor extends from MC 85 to Interstate 17. The study will layout right-of-way requirements, recommend roadway cross-sections, identify when intersections will need improvements and when the roadway will need to be widened to four or six lanes.

Thursday, November 13, 6-8 p.m.
Dysart Middle School
11405 N. Dysart in El Mirage
(near Dysart and Varney Road)

Tuesday, November 18, 6-8 p.m.
Mountain Ridge High School
22800 N. 67th Avenue in Glendale
(near 67th Avenue and Patrick Lane)

For information, contact Mike Marietti,
project manager, at 506-4171
or e-mail: MikeMarietti@mail.maricopa.gov
or write MCDOT, 2901 W. Durango St.,
Phoenix, AZ 85009-6357.



Loop 303 ideas sought

Number of lanes, alignment on the table

By Brent Whiting
The Arizona Republic

County transportation officials will conduct two meetings this month to review plans for the Loop 303 expressway, also known as the Estrella roadway.

Several considerations are on the table, said Michael Dawson, a spokesman for the Maricopa County Department of Transportation.

They include whether the 37-mile Estrella

roadway corridor should be upgraded to four lanes, or even six, and a possible alignment in the northern part of the county, between 91st and 67th avenues, Dawson said. "We're deciding what the Loop 303 corridor is all about," he said.

Current studies show that a six-lane roadway won't be needed for at least 20 years, Dawson said.

The meetings will be at 6 p.m. Thursday at

Dysart Middle School, 11405 N. Dysart Road, in El Mirage, and at 6 p.m. Nov. 18 at Mountain Ridge High School, 22800 N. 67th Ave., in Glendale.

"This is a very important issue," said Jan Brewer, a member of the county Board of Supervisors whose District 4 seat includes much of the Loop 303 corridor.

Brewer said one county goal is to create a highway system that will truly meet the needs of residents.

— Please see **PUBLIC INPUT**, Page 6

Public input sought on Loop 303 options

— **PUBLIC INPUT**, from Page 1

"To do this we are focusing on transportation studies, such as the Estrella corridor study, that will help us accurately pinpoint and plan for future needs," Brewer said. "We need public opinion to ensure the study's success."

The Estrella roadway, a two-lane thoroughfare with a bumpy history, now spans about a 17-mile stretch in the far West Valley between Thomas Road and Grand Avenue.

The county plans to break ground in late 2000 or early 2001 to extend the roadway northeastward across Grand Avenue and along a corridor north of Sun City West.

The roadway will continue eastward for about nine miles and connect with Lake Pleasant Road, aligning with Happy Valley Road east of the Agua Fria River.

On the south, one proposal calls for about a five-mile-long extension from Thomas Road to Maricopa County Route 85, a route that would take it across Interstate 10.

On the north, the other proposal

calls for about a six-mile-long extension between Lake Pleasant Road and Interstate 17, generally following an alignment with Happy Valley Road.

The Estrella roadway study includes right-of-way requirements and where intersections will be built, said Michael Marietti, a study coordinator for the county.

The 37-mile corridor crosses Good-year, Surprise, Glendale, Peoria and Phoenix, as well as unincorporated county areas, Marietti said.

The county marched to the rescue of Loop 303 after it was scrapped in 1995 by then-Gov. Fife Symington.

Original plans called for a four-lane highway, but those plans were revised after voters in 1994 turned down a request for additional sales-tax dollars to complete the Valley's 231-mile freeway system.

After the vote, Symington removed the Estrella corridor and several other routes from the freeway. The county then stepped in as a caretaker for the Estrella corridor.

Brent Whiting can be reached at 444-7119 or at brent.whiting@pni.com via e-mail.

The Arizona Republic
Friday, November 7, 1997

Estrella (Loop 303) Corridor Study

Purpose:

The purpose of this study is to provide the Maricopa County Department of Transportation (MCDOT) and other affected agencies with the information necessary to select a strategy for preserving and maintaining the existing and the future Estrella Corridor.

MCDOT is leading this effort because in March 1995 the Arizona Department of Transportation gave four-year notification of their intent to abandon responsibility for the corridor to the local jurisdictions following the governor's decision to remove the Estrella Freeway from the Regional Freeway Plan due to insufficient revenues to construct it. MCDOT has plans to construct a grade separation over Grand Avenue and a 2-lane roadway between Grand Avenue and Lake Pleasant Road in the year 2001-02.

Location:

The Estrella Corridor is approximately 59 kilometers (37 miles) long beginning at MC 85 and ending at Interstate 17. It follows the original ADOT alignment from MC 85 to Grand Avenue, the MCDOT Estrella Interim Roadway, Phase 2 DCR alignment from Grand Avenue to Lake Pleasant Road and Happy Valley Road from Lake Pleasant Road to Interstate 17. It passes through the municipalities of Goodyear, Glendale, Surprise, Peoria and Phoenix as well as unincorporated Maricopa County.

Recommendations:

A number of large developments are active or proposed along the corridor. Continued growth in population and traffic demand are expected in the north and west parts of the valley.

- This study will recommend interim and ultimate roadway cross-sections (number of lanes, median width, right of way width, etc.) for the corridor.
- It will identify when the corridor will need to be upgraded to four or six lanes and when intersections will need improvements to maintain an acceptable level of service.
- It will recommend an alignment for the section of Happy Valley Road between 91st Avenue and 67th Avenue. This section of roadway currently does not exist.

Schedule:

Following these public meetings, a "draft" Design Concept Report will be submitted in December 1997 with the final DCR expected in January 1998.

The public is encouraged to share with MCDOT your expectations and wishes for the corridor. Your comments will assist MCDOT and the local jurisdictions in shaping the future of Loop 303.

**Estrella Roadway Corridor Study - South Segment
Public Open House Meeting
MCDOT Project No. 80505**

Summary of Comment Cards

On Thursday, November 13, 1997, approximately 55 people attended a public open house meeting to discuss and participate in the corridor study. Comment cards were distributed to all those in attendance. As of November 23, comments were received from 11 citizens.

Of those who responded, four are concerned with noise and air pollution. One citizen said the Estrella Road alignment should be moved west to avoid the well site at Grand Avenue and the historical Deer Valley alignment. The same citizen also is concerned that the elevated crossing at Grand Avenue and the railroad tracks disregards environmental impacts on the surrounding neighborhoods. He suggests that the crossing be depressed.

Two respondents recommend that Deer Valley Drive be opened to Grand Avenue. One citizen says the Jomax plan is better.

The following is a summary of the respondents' comments:

- "I am very concerned regarding noise, pollution, decreased value of my home, loss of sun light due to overpass, possibility of trespassers."
- "Plans for improvements on proposed Route 303 north of Grand Avenue should include connection to Deer Valley Road and Sun City West. Total route looks good!"
- "The old plan (Jomax) is much better because it will bring people to build homes around the mountains and along Happy Valley Road to Jomax."
- "Open Deer Valley to Grand Avenue."

**Estrella Roadway Corridor Study - South Segment
Public Open House Meeting
MCDOT Project No. 80505**

Summary of Comment Cards

<u>Comments</u>	<u>Number Of Respondents</u>
Staff very knowledgeable	4
Staff somewhat knowledgeable	1
Staff not very knowledgeable	1
Staff very helpful	4
Staff somewhat helpful	2
Staff not very helpful	1
Project information presented in an understandable manner	
Yes	5
No	3
Questions answered	
Yes	5
No	3
Wanting more information on MCDOT projects	
Yes	8
No	1
Heard about the meeting from:	
Newspaper	10
Radio	0
Flyers	2
Trail Signs	0
Friends/Neighbors	3
Other	0

Open House/Public Meeting Attendees

Dysart Middle School
Thursday, November 13, 1997

Name	City
Joseph Cowey	Sun City West
Ron Hayden	Sun City West
Paul Schwartz	Sun City West
Bill Bond	Sun City West
D. H. Murphy	Sun City West
Lois Reed	Sun City West
Bill Moution	Sun City West
Marjorie Olsen	Sun City West
Chris Bryan	Peoria
Roger Bishop	Sun City West
Dudley Gibson	Sun City West
Joe LaRue	Phoenix
Donald Hilland	Sun City West
Ovis Myklebust	Surprise
Ferrin Squires	Waddell
Elaine Pearson	Sun City West
Mort Reed	Sun City
Larry Landry	Phoenix
Wayne Short	Sun City West
Donald Olsen	Sun City West
John Crawley	Sun City West
Mickey Allison	Litchfield Park
Hugh Grigsly	Sun City West
Arnold Biring	Sun City West
Doris Biring	Sun City West
Marjorie Cherry	Peoria
Clair Cherry	Peoria
Robert Stefanek	Phoenix
Sally Stefanek	Phoenix
Laura Irwin	
Lee Shoecraft	
Ron Pearson	
Betty Fischer	
Carl Fischer	

Open House/Public Meeting Attendees

Mike Jesegger	Glendale
Joan Wende	
Bob Wende	
Carolyn Dalmoli	
Glenn Geble	
Toni Thompson	Sun City
Richard Turley	Glendale
Ed Johnson	Youngtown
Howard Matthias	SunCity
Kim Xourafas	Peoria
Marvin Stein	Sun City West
Bruno Talvacchia	Sun City West
John Ritoch	Phoenix

**Estrella Roadway Corridor Study - North Segment
Public Open House Meeting
MCDOT Project No. 80505**

Summary of Comment Cards

On Tuesday, November 18, 1997, approximately 58 people attended a public open house meeting to discuss and participate in the corridor study. Comment cards were distributed to all those who attended.

As of November 23, comments were received from six citizens. Of those who responded, two said move the alignment north. Perhaps use Carefree Highway as a connection with I-17. One person is concerned with increased traffic and another said the 101 and 303 Loops would be too close.

The following is a summary of the respondents' comments:

- "I am very concerned that a freeway will be channeled into a parkway near my neighborhood."
- "I am very disappointed with the proposed alignment."
- "It is foolish to run a 6 lane road through people's front or back yards; why put 2 major loops within 5 miles of each other."
- "I liked the concept of charts and maps with staff members explaining details in lieu of visitors sitting in chairs with speakers up front trying to explain intricate details."
- "Thanks for the cookies and soda."

**Estrella Roadway Corridor Study - North Segment
Public Open House Meeting
MCDOT Project No. 80505**

Summary of Comment Cards

<u>Comments</u>	<u>Number of Respondents</u>
Staff very knowledgeable	5
Staff somewhat knowledgeable	1
Staff not very knowledgeable	0
Staff very helpful	5
Staff somewhat helpful	0
Staff not very helpful	0
Project information presented in an understandable manner	
Yes	6
No	0
Questions answered	
Yes	6
No	0
Wanting more information on MCDOT projects	
Yes	6
No	0
Heard about the meeting from:	
Newspaper	1
Radio	0
Flyers	2
Trail Signs	0
Friends/Neighbors	3
Other	0

Open House/Public Meeting Attendees

Mountain Ridge High School
Tuesday, November 18, 1997

Name	City
Russ Wieferich	
George Goss	Sun City West
Ronald Cobb	
Diane Cobb	
Roger Angell	
Pat Angell	
J. D. Campbell	
Richard Turley	
Evelyn Furman	
Larry Martinez	Goodyear
Coren Copson	
Angela Mogel	Phoenix
Wayne Baumgard	Glendale
Patricia Bennicksen	
Tim Wade	Mesa
Don Nicolay	Sun City West
Cathy Hrubec	Peoria
Gary Jones	Peoria
Dennis Brownell	Peoria
Martin Boltin	Sun City West
Matt D'Alesio	Glendale
Matt Wiese	Peoria
Don Herp	Phoenix
Gloria Fitzsimmons	Peoria
George Stout	Peoria
Roger Bennicksen	
Wes Wagner	
Alan Davis	
David Moody	Peoria
Gary Kulinec	
Richard Jones	
Ed Hospelhorn	
Art King	
Kyle Mohan	Peoria

Open House/Public Meeting Attendees

Kirk Young	Glendale
Don Fitzsimmons	Peoria
Bing Zhao	Chandler
Larry Dalton	Tempe
Jim Creedon	Phoenix
R Kirk Dunbar	Phoenix
David Beerman	Peoria
Dude Cherry	Peoria
Steve Jimenez	Phoenix
Phil Bloom	Peoria
Kevin Knight	Peoria
Steven Campbell	Peoria
Glen Beyeln	Glendale
Scott Friend	

Estrella Corridor Stakeholders

Federal Agencies

Federal Highway Administration

U.S. Dept. of Agr. Fish and Wildlife Service

U.S. Army Corps of Engineers

Bureau of Reclamation

State

Arizona Department of Environmental Quality

Arizona Department of Transportation

Arizona Farm Bureau Association

Arizona State Division of Emergency Services

Arizona State Land Department

House of Representatives

Arizona Department of Public Safety

Arizona Department of Water Resources

Arizona Game & Fish Department

Arizona State Historical Society

Governor's Office

Senate

Local Government Agencies

City of Avondale

City of Goodyear

City of Litchfield Park

City of Phoenix

City of Tolleson

City of El Mirage

City of Glendale

City of Peoria

City of Surprise

Town of Wickenburg

School Districts

Deer Valley Unified School District

Peoria Unified School District

Dysart Unified School District

County Agencies

MAG

FCDMC

MCDOT

Maricopa County Board of Supervisors

Other Entities

Agri-Business Council

Arizona Public Service

Birdstrup & Associates

Del Webb Corporation

First American Title

Forty One Corp.

Glendale Realty Executives

AMAR Investments

B.N. & S.F. Railway Company

B & R Engineering

El Paso Natural Gas Co.

Flood Control District of Maricopa County

Fulcrum Group

Goodyear Foundation

Iliff - Thorn & Co.
Ltd. Partnership Landry & Associates
Luke Air Force Base
MCI Telecommunications Corp.
National Western Vistas Realty
Phoenix Board of Supervisors
Phoenix Nature Conservancy
Phoenix Public Proj. Coordinator
Ritoch - Powell & Associates
Salt River Project
SCAT Dial-A-Ride
Sun City Home Owners Assoc.
Sun City West Community Organization
Sun City West - PORA
SunCor
Surprise Water Corp.
TJD Consulting
US West
Wickenburg Chamber of Commerce
Western Area Power Administration

Lake Pleasant Road Assoc.
LBB Enterprises
Maricopa Audubon Society
Municipal Water Cons. Dist. 1.
Noronda Properties Inc.
Phoenix Chamber of Commerce
Phoenix Newspapers
Rare Earth Development Co.
Robson Communities
Sprint Communications
Southwest Gas Corp.
Sun City Home Owners Transp. Committee
Sun City West Fire District
Sun Chase Capital
Sun Health
Swift Transportation
Union Pacific Railroad Co.
Waddel Property Management
Wilhelm Automotive

**Estrella Corridor Study
Mail List**

12/18/97

		Phoenix	AZ
		Phoenix	AZ
		Phoenix	AZ
		Sun City West	AZ
		Phoenix	AZ
		Scottsdale	AZ
		Phoenix	AZ
		Sun City West	AZ
Area Residents		Sun City West	AZ
Todd	Aaneson	Glendale	AZ
Afshin	Ahouraiyan	Phoenix	AZ
Bob	Alley	Sun City	AZ
Albert	Ambrock	Scottsdale	AZ
Kathy	Anderson	Peoria	AZ
Wayne E.	Anderson	Phoenix	AZ
Grant	Anderson	Glendale	AZ
Roger	Angell	Peoria	AZ
A. Lynn	Arend	Sun City	AZ
William	Arnold	Goodyear	AZ
Cathy	Arthur	Phoenix	AZ
Mary	Bartholomew	Phoenix	AZ
Wayne	Baumgard	Glendale	AZ
David	Beerman	Peoria	AZ
Todd	Belzner	Phoenix	AZ
Marc	Berg	Phoenix	AZ
Dave	Berry	Phoenix	AZ
Glen	Beyeln	Glendale	AZ
Carol	Bidstrup	Phoenix	AZ
Arnold	Biring	Sun City West	AZ
Roger	Bishop	Sun City West	AZ
Toby	Block	Phoenix	AZ
Philip	Bloom	Peoria	AZ
Martin	Bohn	Sun City	AZ
William	Bond	Sun City West	AZ
Larry	Bonine	Phoenix	AZ
Patricia	Bonnickson	Peoria	AZ
Rulon	Booth	Surprise	AZ
Mike	Boyer	Phoenix	AZ
Daniel	Bray	Phoenix	AZ
Janice	Brewer	Phoenix	AZ
Jennifer	Brooks	Phoenix	AZ
Betty	Brown	Phoenix	AZ
Dennis	Brownell	Peoria	AZ
Chris	Bryan	Peoria	AZ
Thomas	Buick	Phoenix	AZ
Fred	Burkhardt	Gila Bend	AZ
Steven D.	Campbell	Peoria	AZ
J.D.	Campbell	Peoria	AZ
Burton	Charron	Peoria	AZ

Estrella Corridor Study Mail List

12/18/97

NAME	NAME	CITY	STATE
Jim	Charters	Phoenix	AZ
J. R.	Chase	Phoenix	AZ
Clair	Cherry	Peoria	AZ
John	Christiansen	Phoenix	AZ
Ron	Christofferson	Phoenix	AZ
Ed	Cirillo	Phoenix	AZ
Joan	Cisco	Peoria	AZ
Steven S.	Cleveland	Goodyear	AZ
Ronald G.	Cobb	Peoria	AZ
Chuck	Coburn	Phoenix	AZ
Joyce E.	Coffey	Peoria	AZ
A.W.	Collins	Phoenix	AZ
Joseph	Conry	Sun City West	AZ
Caron	Copson	Peoria	AZ
Roger	Cousin	Sun City West	AZ
Gene	Cox	Phoenix	AZ
Don	Crampton	Phoenix	AZ
John	Crawley	Sun City West	AZ
James S.	Creedon	Phoenix	AZ
C. Web	Crockett	Phoenix	AZ
Matt	D'Alesio	Glendale	AZ
Arve H.	Dahl	Sun City West	AZ
Carolyn	Dalmolin	Sun City	AZ
Larry	Dalton	Tempe	AZ
Thomas	Darmody	Peoria	AZ
Alan	Davis	Peoria	AZ
Michael	Dawson	Phoenix	AZ
Paul	Dickman	Phoenix	AZ
George H.	Doerries	Sun City West	AZ
R. Kirk	Dunbar	Phoenix	AZ
Rick	Duncan	Buckeye	AZ
David	Eberhart	Phoenix	AZ
Timothy	Edwards	Goodyear	AZ
Ann	Eisentraut	Phoenix	AZ
Jay	Ellingson	Goodyear	AZ
Bruce	Ellison	Sun City	AZ
Bruce	Ellison	Sun City	AZ
Isidro	Escobar	Phoenix	AZ
Ken	Esposito	Glendale	AZ
Ken	Estrada	Sun City West	AZ
James G.	Evans	Peoria	AZ
Julie	Faist	Phoenix	AZ
Joe	Falbo	Waddell	AZ
Lillie	Fesenmaier	Peoria	AZ
Carl	Fischer	Sun City West	AZ
Dave	Fishell	Surprise	AZ
Don	Fitzsimmons	Peoria	AZ
Marsha	Franklin	Sun City West	AZ
Scott	Friend	Tolleson	AZ
Pat	Furman	Peoria	AZ
Frank	Galas	El Mirage	AZ
Adolfo	Gamez	Litchfield Park	AZ
E. Jim	Gardner	Tempe	AZ

**Estrella Corridor Study
Mail List**

12/18/97

		CITY	STATE
E. James	Gardner	Tempe	AZ
Jim	Garrison	Tempe	AZ
Glenn F.	Gehle	Sun City West	AZ
Dudley	Gibson	Sun City West	AZ
Larry	Ginrich	Tempe	AZ
Eric	Gorsegner	Phoenix	AZ
George E.	Goss	Sun City West	AZ
William	Griffin	Peoria	AZ
Hugh	Grigsby	Sun City West	AZ
Donna	Guilliland	Peoria	AZ
Charlie	Gyder	Peoria	AZ
Thom	Gyder	Peoria	AZ
Laudell	Hames	Peoria	AZ
Graeme	Hancock	Phoenix	AZ
Philip	Hanson	Sun City	AZ
Philip	Hanson	Sun City	AZ
Steve	Hanson	Phoenix	AZ
Russell	Haughy	Mesa	AZ
John	Hauskins	Phoenix	AZ
Ron	Hayden	Sun City West	AZ
William	Hayden	Phoenix	AZ
G.T.	Hennessy	Sun City	AZ
Bruce	Henning	Phoenix	AZ
Don	Herp	Phoenix	AZ
John	Herrera	Phoenix	AZ
Steve	Highlen	Glendale	AZ
Bruce T.	Hilby	Phoenix	AZ
Donald	Holland	Sun City West	AZ
Greg	Holverson	Phoenix	AZ
Ed	Hospelhorn	Peoria	AZ
Ken	Howell	Phoenix	AZ
George	Hrubec	Peoria	AZ
Carole	Hubbs	Sun City West	AZ
Joseph C.	Hull	Glendale	AZ
Floyd	Ireland	Ft. Collins	CO
Laura	Irwin	Surprise	AZ
Neil	Irwin	Phoenix	AZ
David	Iwaniski	Phoenix	AZ
Michael	Jesberger	Sun City West	AZ
Steven A.	Jimenez	Phoenix	AZ
Terry	Johnson	Phoenix	AZ
Elwood	Johnson	Peoria	AZ
Edward J.	Johnson	Youngtown	AZ
Richard	Jones	Peoria	AZ
Gary	Jones	Peoria	AZ
George	Kasper	Glendale	AZ
John	Keegan	Peoria	AZ
Birt	Kellam	Sun City West	AZ
Gregory	Keller	Phoenix	AZ
Raymond	Kellis	Peoria	AZ
Stacey A.	Kelly	Phoenix	AZ
Kenneth	Kemper	Peoria	AZ
Jessica	Kendall	Phoenix	AZ

**Estrella Corridor Study
Mail List**

12/18/97

F. NAME	L. NAME	CITY	STATE
Art	King	Peoria	AZ
David	Kinkaid	Glendale	AZ
Ernie	Kleinschmidt	Goodyear	AZ
Kevin	Knight	Peoria	AZ
W.	Koenig	Peoria	AZ
Karen	Kolb	Phoenix	AZ
Harvey H.	Krauss	Litchfield Park	AZ
Larry	Kruger	Phoenix	AZ
Gary	Kulinec	Phoenix	AZ
Andy	Kunasek	Scottsdale	AZ
Thomas F.	Lagier	Phoenix	AZ
Larry	Landry	Phoenix	AZ
Joe	Lane	Phoenix	AZ
Larry	Langer	Phoenix	AZ
Joe	LaRue	Sun City	AZ
Dan	Lawrence	Phoenix	AZ
Cindy	Lester	Phoenix	AZ
Mark	Lewis	Sun Lakes	AZ
Mike	Loo	Phoenix	AZ
Alan	Luhrs	Carefree	AZ
Larry	Mane	Glendale	AZ
Valerie	Manning	Phoenix	AZ
Mike	Marietti	Phoenix	AZ
Ken	Marks	Sun Lakes	AZ
Larry	Martinez	Goodyear	AZ
Dan	Marum	Phoenix	AZ
James	Matteson	Phoenix	AZ
Howard	Matthias	Sun City	AZ
Claude	Mattox	Phoenix	AZ
Jim	McArthur	Wickenburg	AZ
Sheila	McCafferty	Phoenix	AZ
Diane B.	McCarthy	Glendale	AZ
Dick	McComb	Surprise	AZ
James	McGinnis	Phoenix	AZ
James	McMenimen	Tempe	AZ
Victor	Mendez	Phoenix	AZ
Karen	Meyer	Glendale	AZ
Harvey E.	Minkler	Phoenix	AZ
James R.	Minter	Phoenix	AZ
Angela	Mogel	Pjoenix	AZ
Kyle	Mohan	Peoria	AZ
David	Moody	Peoria	AZ
Thomas	Morales, Jr.	Avondale	AZ
Kevin	Moran	Phoenix	AZ
Amir	Motamedi	Phoenix	AZ
Bill	Moulton	Sun City	AZ
Jack	Murphy	Wickenburg	AZ
William	Murphy	Litchfield Park	AZ
Donald H.	Murphy	Sun City West	AZ
Robert	Musselwhite	Litchfield Park	AZ
Avis	Myklebust	Surprise	AZ
G. Eugene	Neil	Phoenix	AZ
Don	Nicolay	Sun City West	AZ

**Estrella Corridor Study
Mail List**

12/18/97

NAME	NAME	CITY	STATE
Dan	Nissen	Peoria	AZ
Tim	Oliver	Phoenix	AZ
Mickey	Ollson	Litchfield Park	AZ
Larry	Olsen	Phoenix	AZ
Donald	Olson	Sun City West	AZ
Jerry	Overton	Phoenix	AZ
Dana	Owsiany	Phoenix	AZ
Mike	Padgett	Phoenix	AZ
Monica	Pastor	Phoenix	AZ
Eva	Patton	Phoenix	AZ
David	Pearson	Peoria	AZ
Ron	Pearson	Sun City West	AZ
Rita	Pearson	Phoenix	AZ
Jo	Penunuri	Phoenix	AZ
Dick	Perreault	Phoenix	AZ
Jim	Petty	Glendale	AZ
Robert	Pickering	Peoria	AZ
Mike	Pierce	Phoenix	AZ
Stan	Polasik	San Jose	CA
Philip	Polich	Phoenix	AZ
Richard	Porter	Wittman	AZ
Dan	Powell	Phoenix	AZ
Robert	Prince	Monterey Park	AZ
Lois	Reed	Sun City	AZ
Maggie	Reese	El Mirage	AZ
Charles	Reid	Tonto Basin	AZ
Tom	Renckly	Phoenix	AZ
Skip	Rimza	Phoenix	AZ
John M.	Ritoch	Phoenix	AZ
Charles	Roach	Sun City	AZ
Alan	Robertson	Phoenix	AZ
Martin	Ross	Phoenix	AZ
John	Rotz, III	Glendale	AZ
John	Rowlinson	Sun City West	AZ
Mike	Sabatini	Phoenix	AZ
Rudy	San Miguel	San Bernado	CA
Douglas	Sanders	Goodyear	AZ
Curt	Sayer	Phoenix	AZ
Mark	Scaife	Peoria	AZ
Mark	Schlappi	Phoenix	AZ
Mark	Schlappi	Phoenix	AZ
Paul	Schwartz	Sun City	AZ
Elaine	Scruggs	Glendale	AZ
J. Don	Seefelt	Sun City West	AZ
Craig	Seppelfrick	Phoenix	AZ
Joan	Shafer	Surprise	AZ
Harold	Shanahan	Phoenix	AZ
Lee	Shoecraft	Peoria	AZ
Kathie	Sholly	Waddell	AZ
Wayne	Short	Sun City West	AZ
Cindy	Simonsen-Daly	Scottsdale	AZ
Diane	Simpson-Colebank	Tempe	AZ
Ken	Skinner	Scottsdale	AZ

**Estrella Corridor Study
Mail List**

12/18/97

F. NAME	L. NAME	CITY	STATE
Jim	Slaker	Phoenix	AZ
Sue	Slezack	Peoria	AZ
Terri	Smith	Phoenix	AZ
Wayne C.	Spiekerman	Scottsdale	AZ
Sam	Spiller	Phoenix	AZ
Suzanne	Spoon	Peoria	AZ
Ferren	Squires	Waddell	AZ
Debra	Stark	Peoria	AZ
Bob	Stefanik	Phoenix	AZ
Marvin	Stein	Sun City West	AZ
George	Stout	Peoria	AZ
Paul F.	Swartz	Sun City	AZ
Colin	Sword	Phoenix	AZ
Victoria	Tafoya	Phoenix	AZ
Bruno	Talvacchia	Sun City West	AZ
Charles	Thomas	Glendale	AZ
Toni A.	Thompson	Sun City	AZ
Gary	Torhjem	Scottsdale	AZ
Mary	Tryon	Glendale	AZ
Todd	Tupper	Phoenix	AZ
Richard J.	Turley	Glendale	AZ
Jerry	Unger	Sun City	AZ
Walter	Urbach	Sun City West	AZ
Martin	Vanacour	Glendale	AZ
Roy	Villanueva	Surprise	AZ
Timothy	Wade	Mesa	AZ
Wes	Wagner	Peoria	AZ
Paul	Walker	Glendale	AZ
George	Wallace	Phoenix	AZ
Brian	Wallach	Phoenix	AZ
William	Ward	Phoenix	AZ
Bruce	Ward	Phoenix	AZ
Norman	Watson	Luke AFB	AZ
Arnold	Weed	Surprise	AZ
Bob	Wende	Sun City West	AZ
Brent	Whiting	Phoenix	AZ
R. Lamar	Whitmer	Scottsdale	AZ
Russ	Wieferich	Peoria	AZ
Rick	Wieferich	Peoria	AZ
Mike	Wiese	Peoria	AZ
David R.	Williams	Phoenix	AZ
Doug	Williams	Phoenix	AZ
Ralph	Williams	Goodyear	AZ
N.	Willis	Sun City West	AZ
James	Wirth	Phoenix	AZ
Robert	Witzeman	Phoenix	AZ
Greg	Wold	Phoenix	AZ
Kim	Wong	Phoenix	AZ
Bob	Woodring	Phoenix	AZ
William	Woods	Buckeye	AZ
Gordon	Work	Phoenix	AZ
James	Worth	Phoenix	AZ
Dick	Wright	Phoenix	AZ

Estrella Corridor Study
Mail List

12/18/97

F. NAME	L. NAME	CITY	STATE
Chuck	Wright	Phoenix	AZ
Louie	Xourapas	Peoria	AZ
David	Yeates	Peoria	AZ
Kirk L.	Young	Glendale	AZ
Bing	Zhao	Chandler	AZ