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UNION HILLS DRIVE Crossing at New River

Design Concept Report

W.O.# 68858

DCR # D94-4-03

May 23, 1994



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

DESIGN CONCEPT REPORT

UNION HILLS DRIVE CROSSING AT NEW RIVER

Work Order Number 68858

DCR # D94-4-03

May 23, 19934

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TABLE OF CONTENTS

TABLE OF CONTENTS	2
LIST OF FIGURES	5
LIST OF TABLES	6
SECTION 1 - INTRODUCTION	7
1.1 <u>OVERVIEW AND PROJECT BACKGROUND</u>	7
1.2 <u>PURPOSE OF THE REPORT</u>	7
SECTION 2 - CHARACTERISTICS OF THE CORRIDOR	12
2.1 <u>LAND USE PATTERNS</u>	12
2.2 <u>HISTORIC / ARCHAEOLOGICAL DATA</u>	16
2.2.1 <i>City of Glendale</i>	16
2.2.2 <i>City of Peoria</i>	16
2.2.3 <i>Sun City</i>	17
2.3 <u>ECOLOGICAL / ENVIRONMENTAL COMMUNITIES</u>	17
2.3.1 <i>Vegetation and Wildlife</i>	17
2.3.2 <i>Air, Noise and Water Quality</i>	17
2.4 <u>HYDROLOGY</u>	18
2.4.1 <i>Rainfall</i>	18
2.4.2 <i>100 Year FloodPlain</i>	22
2.5 <u>SOCIOECONOMIC ISSUES</u>	23
2.5.1 <i>Socioeconomic Setting:</i>	23
2.5.2 <i>Employment Centers:</i>	23
2.5.3 <i>Neighborhood Impact:</i>	26
2.6 <u>UTILITIES CORRIDORS</u>	26
2.7 <u>HIGHWAY CHARACTERISTICS AND CONSIDERATIONS</u>	27
2.7.1 <i>Horizontal Alignment</i>	27
2.7.2 <i>Vertical Alignment</i>	29
2.7.3 <i>Access Control</i>	29
2.7.4 <i>Drainage</i>	29
2.7.5 <i>Traffic / Accident Data</i>	32
2.7.6 <i>Intersections</i>	32
2.7.7 <i>Utilities</i>	37
2.7.8 <i>Traffic Signals, Pavement Markings, and Signing</i>	37
2.7.9 <i>Lighting</i>	37
2.7.10 <i>Geotechnical</i>	37
2.8 <u>TOPOGRAPHIC FEATURES</u>	42
2.9 <u>RIGHT-OF-WAY</u>	43
2.10 <u>HAZARDOUS MATERIALS</u>	43

SECTION 3 - MAJOR DESIGN FEATURES	46
3.1 <u>DESIGN FEATURES</u>	46
3.1.1 <i>Engineering</i>	46
3.1.2 <i>Drainage</i>	46
3.1.3 <i>Right-of-Way</i>	47
3.1.4 <i>Utilities</i>	47
3.2 <u>DESIGN EXCEPTIONS</u>	47
SECTION 4 - ALTERNATIVE DEVELOPMENT AND ANALYSIS	52
4.1 <u>ROUTE CONSIDERATIONS</u>	52
4.1.1 <i>Alternative #1</i> "No Build Alternative"	52
4.1.2 <i>Alternative #2</i> "Four Lane Dip Section"	52
4.1.3 <i>Alternative #3</i> "Install Box Culverts"	52
4.1.4 <i>Alternative #4</i> "New Alignments to Redirect Traffic Flow"	53
4.1.5 <i>Alternative #5</i> "Union Hills Drive Bridge"	53
4.1.6 <i>Alternative #6</i> "Union Hills Drive and 83rd Avenue Combined Bridge"	54
4.2 <u>IMPACT OF ALTERNATIVES</u>	59
4.2.1 <i>Natural Environment</i>	59
4.2.2 <i>Construction Impacts</i>	60
4.2.3 <i>Socioeconomic Impacts</i>	60
4.2.4 <i>Cultural Resources</i>	61
4.2.5 <i>Hazardous Materials</i>	61
4.2.6 <i>Economic Efficiency</i>	61
4.3 <u>EVALUATION MATRIX OF ALTERNATIVES</u>	65
SECTION 5 - SELECTION OF PREFERRED ALTERNATIVE	68
5.1 <u>PREFERRED ALTERNATIVE</u>	68
5.2 <u>KEY ELEMENTS</u>	70
SECTION 6 - CONCEPT DESIGN	72
6.1 <u>CONSTRUCTION ISSUES REPORT</u>	72
6.1.1 <i>Earthwork</i>	72
6.1.2 <i>Constructibility</i>	72
6.1.3 <i>Construction Phasing</i>	72
6.1.4 <i>Timing and Schedule</i>	72
6.1.5 <i>Pavement Design</i>	72
6.1.6 <i>Detour Road</i>	72
6.1.7 <i>Traffic Control During Construction</i>	72
6.1.8 <i>Itemized Cost Estimate</i>	73
6.1.9 <i>Political Feasibility</i>	74
6.1.10 <i>Economic Feasibility</i>	74
6.1.11 <i>Environmental Feasibility</i>	74

APPENDIX A:
DRAFT Intergovernmental Agreement: Maricopa County, Glendale and Peoria 75

APPENDIX B:
Public Involvement Plan 82

APPENDIX C:
Agency Contact Letters and List of Agencies 89

APPENDIX D:
DRAFT Environmental Assessment 127

LIST OF FIGURES

FIGURE 1.1	County Map	9
FIGURE 1.2	Location Map	10
FIGURE 1.3	83rd Avenue Dip Crossing when Flooded	11
FIGURE 2.1a	City of Glendale General Plan	13
FIGURE 2.1b	City of Peoria Comprehensive Master Plan: Land Use Map	14
FIGURE 2.1c	Sun Circle Hiking and Riding Trails	15
FIGURE 2.4	Glendale-Peoria Area Drainage Master Plan Designated Subareas	19
FIGURE 2.4.2a	100-Year Floodplain - Glendale-Peoria Area Drainage Master Plan	20
FIGURE 2.4.2b	100-Year Floodplain - FEMA Flood Insurance Rate Map (FIRM)	21
FIGURE 2.5.1	Vicinity Map	24
FIGURE 2.5.2	City of Glendale: Employment Centers	25
FIGURE 2.7	Interim Intersection Improvements	28
FIGURE 2.7.2a	Vertical Profile for Union Hills Drive	30
FIGURE 2.7.2b	Vertical Profile for 83rd Avenue	31
FIGURE 2.7.5a	MCDOT ADT/Accident History (1/1/91 to 12/31/92)	33
FIGURE 2.7.5b	MAG Average Daily Traffic (ADT) for 2005	34
FIGURE 2.7.5c	MAG Average Daily Traffic (ADT) for 2020	35
FIGURE 2.7.6	Aerial Photo of Union Hills and 83rd Avenue Intersection (Scale 1" = 100')	36
FIGURE 2.7.8	Pavement Markings and Signs (Prior to interim improvements)	38
FIGURE 2.7.10a	Soil Boring Logs - New River (South of Union Hills Drive)	39
FIGURE 2.7.10b	Soil Survey of Maricopa County, Arizona - Central Part	40
FIGURE 2.8	USGS Calderwood Butte and Hedgpeith Hills Quadrangles	44
FIGURE 2.9	Right of Way - Strip Map	45
FIGURE 3.1.1a	MCDOT Standard Typical Section for Urban Minor Arterial Road	48
FIGURE 3.1.1b	MCDOT Standard Typical Section for Urban (Major) Collector Road	49
FIGURE 4.1.6a	Schematic of Alternative #5 and Alternative #6	56
FIGURE 4.1.6b	Existing and Proposed Curve Data for 83rd Avenue	57
FIGURE 4.1.6c	Bridge Crossing Union Hills Drive and 83rd Avenue	58
FIGURE 5.1	Preferred Alignment - Alternative #5	69
FIGURE 5.2	Project Progress Schedule	71

LIST OF TABLES

TABLE 2.4.2	Discharges from New River Dam	22
TABLE 2.6	Utilities and Responsible Agencies	26
TABLE 2.7	Functional Classifications	27
TABLE 2.7.5a	Average Daily Traffic (ADT) Summary	32
TABLE 2.7.5b	Traffic Accidents Summary	32
TABLE 2.7.8	Posted Speed Limits	37
TABLE 2.7.10a	Soil Series Characteristics	41
TABLE 2.7.10b	Suitability of Soils	41
TABLE 2.7.10c	Soil Limitations	42
TABLE 2.9a	Existing Right-of-Way	43
TABLE 3.1a	Design Criteria for Bridge	46
TABLE 3.1b	Design Criteria for Union Hills Drive	50
TABLE 3.1c	Design Criteria for 83rd Avenue	51
TABLE 4.2.6a	Model Inputs	62
TABLE 4.2.6b	Model Results	63
TABLE 4.2.6c	Alternative #5 vs. Alternative #6	64
TABLE 4.3a	Cost Matrix of Alternatives	66
TABLE 4.3b	Evaluation Matrix of Alternatives	67
TABLE 5.2	Union Hills Bridge Proposed Funding Sources	70
TABLE 6.1.8	Itemized Cost Estimate	73

SECTION 1 - INTRODUCTION

1.1 OVERVIEW AND PROJECT BACKGROUND

In the center of Maricopa County in south-central Arizona, the Union Hills Drive Crossing at New River is located in the corner of Sections 26, 27, 34 and 35 of Township 4 North, Range 1 East of the Gila and Salt River Base and Meridian (Figure 1.1). 83rd Avenue and Union Hills Drive are section line roads and the intersection lies on the boundary between the Cities of Glendale and Peoria. The two cities are bounded on the south and east by the City of Phoenix and on the northeast by the cities of El Mirage and Youngtown. The proposed Union Hills Drive bridge over New River lies in Glendale with the west approach in Peoria.

Union Hills Drive is a primary access between the Vistas at Westbrook Village in Peoria and Sun City, crossing New River and the Agua Fria Freeway (Loop 101). Union Hills Drive crosses New River in a dip section that is often closed due to storm runoff and intersects with 83rd Avenue immediately west of the New River (Figure 1.2). 83rd Avenue crosses New River in a dip section immediately south of Union Hills Drive. That dip section is also often closed due to storm runoff. 83rd Avenue proceeds south to an intersection at Bell Road immediately east of the Bell Road and Agua Fria Freeway Traffic Interchange. When both dip crossings are closed, access is severely limited and results in 20 to 30 minute increases in travel time. Figure 1.3 is a picture of 83rd Avenue when the dip crossing floods.

1.2 PURPOSE OF THE REPORT

Maricopa County originally planned to begin construction of the 83rd Avenue bridge at New River in April of 1988. The project was not initiated, but the bridge project remained in the Five Year Capital Improvement Program (CIP) budget until 1992. At that time, Maricopa County Department of Transportation (MCDOT) informed the Cities of Glendale and Peoria that the Maricopa County Board of Supervisors would decide whether to reinstate funding. As early as October of 1991, discussions regarding alternate bridge locations were initiated between the Cities of Glendale and Peoria. The importance of a bridge at 83rd Avenue drastically changed with the construction of the Agua Fria Freeway (Loop 101). Current efforts and a meeting held in April of 1993 with the Cities of Glendale and Peoria, Arizona Department of Transportation (ADOT) Local Government and Statewide Project Management, Maricopa County Flood Control District (FCD), and MCDOT yielded the following conclusions:

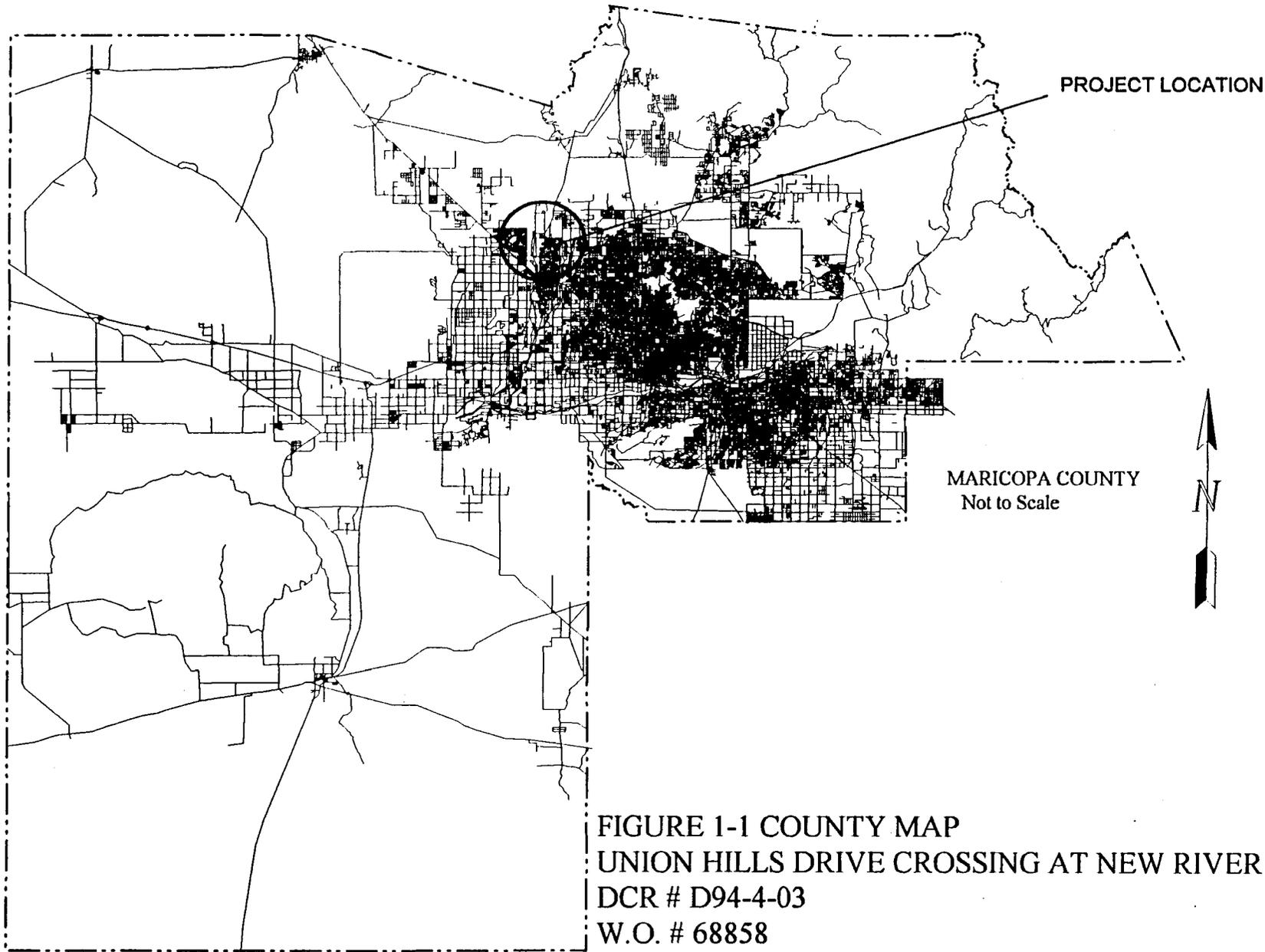
MCDOT will be the lead agency in the design and construction of the Union Hills Drive bridge at New River and the realignment of the 83rd Avenue and Union Hills Drive Intersection.

MCDOT agreed to formulate the Intergovernmental Agreement (IGA) between Glendale, Peoria, MCDOT, and Maricopa County FCD.

A copy of the DRAFT IGA is in Appendix A. MCDOT, FCD, Glendale and Peoria are currently working out the details to finalize the IGA. MCDOT removed the 83rd Avenue bridge project from the CIP and replaced it with the Union Hills Drive Bridge project. Currently, the Union Hills Bridge at New River (W.O. #68858) is scheduled for Fiscal Year 1995 in the MCDOT CIP for Fiscal Years 1993-94 through 1999-2000. This is contingent on the receipt of federal funds and joint funding by the City of Glendale, the City of Peoria, and FCD.

The project will be designed according to the FCD's Drainage Design Manual for Maricopa County, Volume I - Hydrology, Volume II - Hydraulics and Volume III - Erosion Control, MCDOT's Roadway Design Manual and all other manuals, policies, and guidelines, etc. incorporated by reference in those manuals. The design will be based on the Maricopa Association of Governments (MAG's) functional classification Urban Minor Arterial for Union Hills Drive and Urban Major Collector for 83rd Avenue.

Appendix B is the Public Involvement Plan for this project. MCDOT sent contact letters to introduce the project and to solicit information and/or comments from the appropriate federal, state, and local government agencies. Besides the many contacts made with public and private utility companies, other entities and individuals affected by the project were contacted to define their issues and concerns. Appendix C includes a listing of agencies and contact names for the project. The appendix also includes any letters and responses that MCDOT received during the Design Concept Report process.



PROJECT LOCATION

MARICOPA COUNTY
Not to Scale

FIGURE 1-1 COUNTY MAP
UNION HILLS DRIVE CROSSING AT NEW RIVER
DCR # D94-4-03
W.O. # 68858

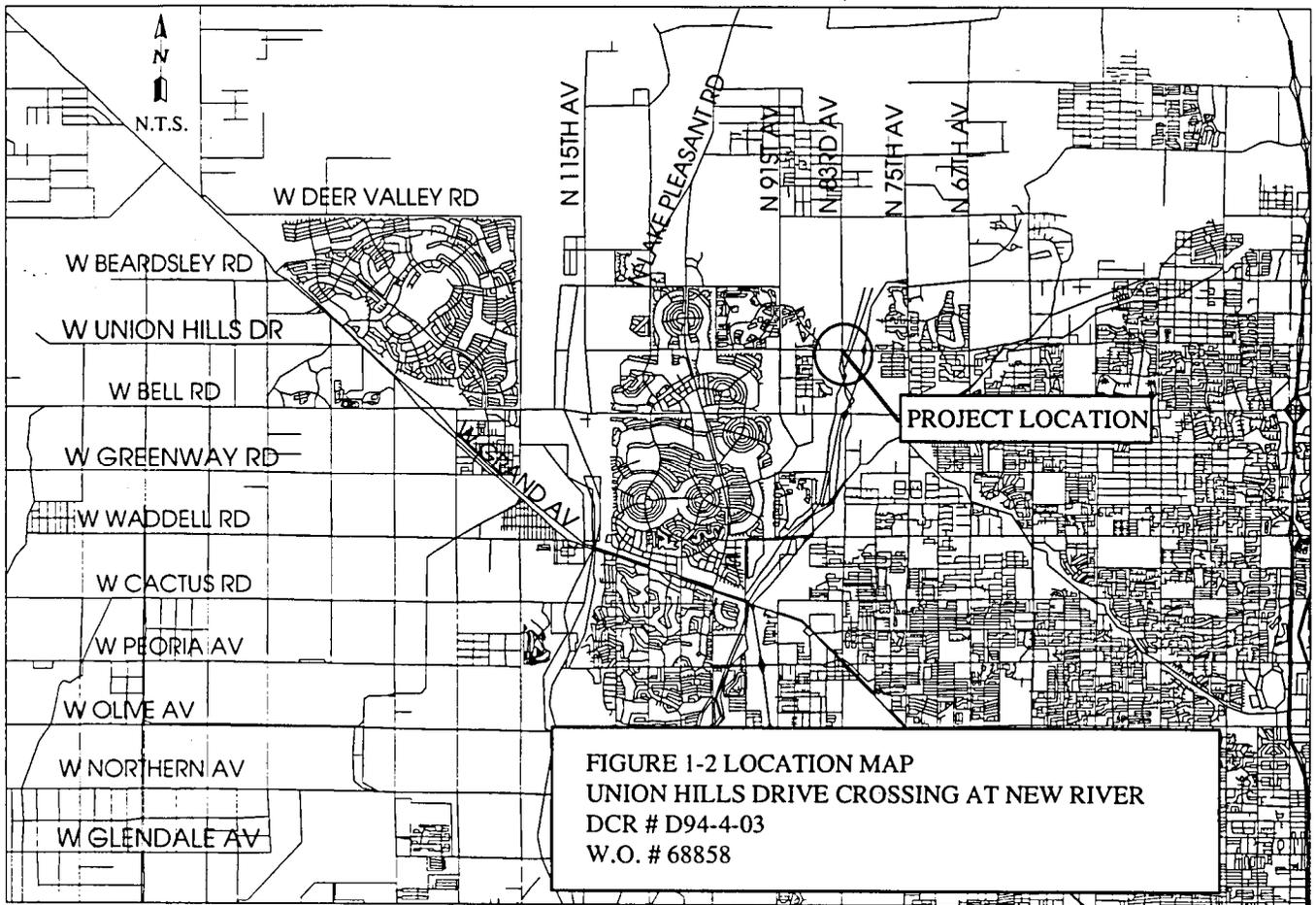


FIGURE 1-2 LOCATION MAP
UNION HILLS DRIVE CROSSING AT NEW RIVER
 DCR # D94-4-03
 W.O. # 68858

Figure 1.3
83rd Avenue approaching Union Hills Drive
Looking north at the New River



JANUARY 1994



JANUARY 1994

SECTION 2 - CHARACTERISTICS OF THE CORRIDOR

2.1 LAND USE PATTERNS

The project site is not within any approved Maricopa County Area Land Use Plan. The General Existing Land Use for the Union Hills Drive and 83rd Avenue intersection in the Cities of Glendale and Peoria is in Figures 2.1a and 2.1b, respectively. The information is from the Glendale General Plan and Peoria Comprehensive Master Plan. The City of Glendale General Plan shows Open Space along the boundary between Glendale and Peoria. Further east on Union Hills Drive, the Land Use is General Commercial (north) and Shopping Center (south). Past the Freeway, the land use is 3.5 - 5 Residential Units Per Gross Acre (north) and 12 - 20 Residential Units Per Gross Acre (south). The land use along the east side of 83rd Avenue (south of Union Hills Drive) changes from Open Space to Business Park and then to Light Industrial. Other commercial uses include a Neighborhood Park, a Regional Center, and Limited Office on the south side of Union Hills Drive, east of 83rd Avenue. According to Peoria's Master Plan, the intersection of Union Hills Drive and 83rd Avenue consists of Low Density (1.1 - 6.0 du/ac) in both the north and southwest corners. Although the northeast corner of the intersection is considered Park/Open Space in Peoria's Master Plan, the parcel is zoned as Planned Area Development (PAD).

The intersection is adjacent to the large retirement communities of Westbrook Village and Sun City. The retirement community of Sun City is one mile west of the project site. This retirement community provides a diverse array of cultural and social amenities. Historically, the cities of Glendale and Peoria are the center of agricultural activity, with relatively low population density. Presently, the area is undergoing rapid residential and commercial growth. Several recreational resources exist within two miles of the proposed bridge site. These include the Peoria Sports Complex, a professional baseball Spring Training Facility and public park, and four golf courses.

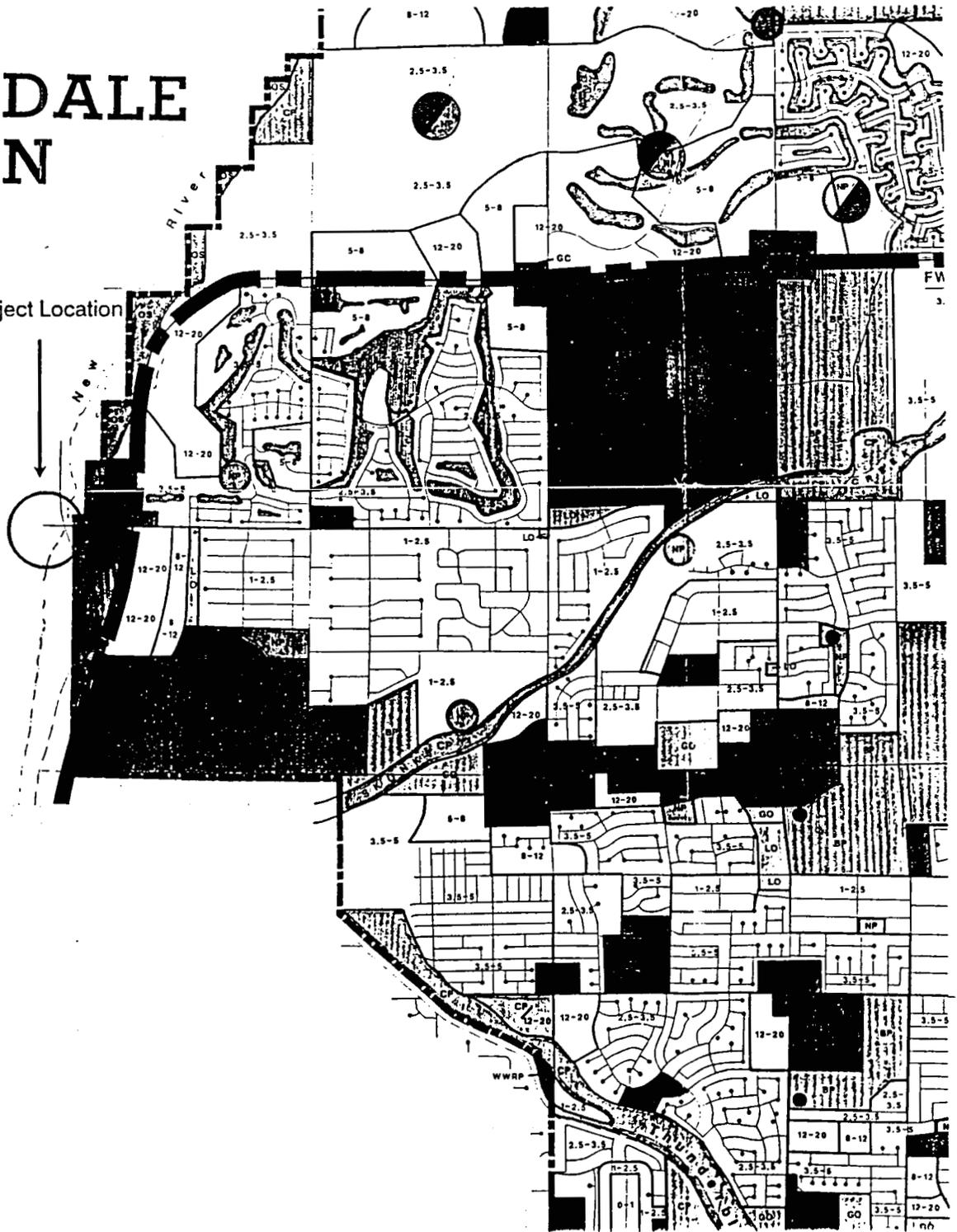
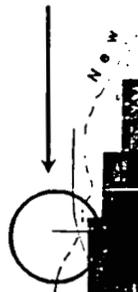
Figure 2.1c shows the existing and proposed Sun Circle Hiking and Riding Trails. The proposed trail on New River begins at the Gila River and runs northeast, following the New River to the intersection of Skunk Creek. The intersection of the two rivers is a quarter mile west of 83rd Avenue and one-half mile north of Thunderbird Road. At this point, Sun Circle Trail follows Skunk Creek to 75th Avenue, where it begins to run southeast on the Arizona Canal and Diversion Channel (ACDC). There is no existing or planned trail at the intersection of 83rd Avenue and Union Hills Drive.

CITY OF GLENDALE GENERAL PLAN

LEGEND

- | | |
|--|-----------------------------|
| 1-2.5 Residential Units Per Gross Acre | Public Facility |
| Regional Center | Elementary School |
| Shopping Center | Junior High School |
| General Commercial | High School |
| Heavy Retail | Freeway or Expressway |
| Pedestrian Retail | Street |
| Limited Office | Railroad |
| General Office | Canal |
| Downtown Office | River |
| Business Park | Storm Water Detention Basin |
| Light Industry | Study Area Boundary |
| Heavy Industry | |

Project Location



- BEARDSLEY RD
- Utopia Rd
- UNION HILLS DR
- Grovers Ave
- BELL RD
- Paradise Ln
- GREENWAY RD
- Acoma Dr

NOTE: For Arrowhead Ranch (most property north of Union Hills Drive and south of Deer Valley Road) there is a development agreement between the City of Glendale and Paloma Corporation that allows some variation from land uses shown on this map.

NOTE: Unless otherwise identified on this map, the alternative land use designation for public uses such as parks, schools, and public facilities is the lowest residential density contiguous to the property.

FIGURE 2-1a City of Glendale General Plan

Land Use Plan

RESIDENTIAL:

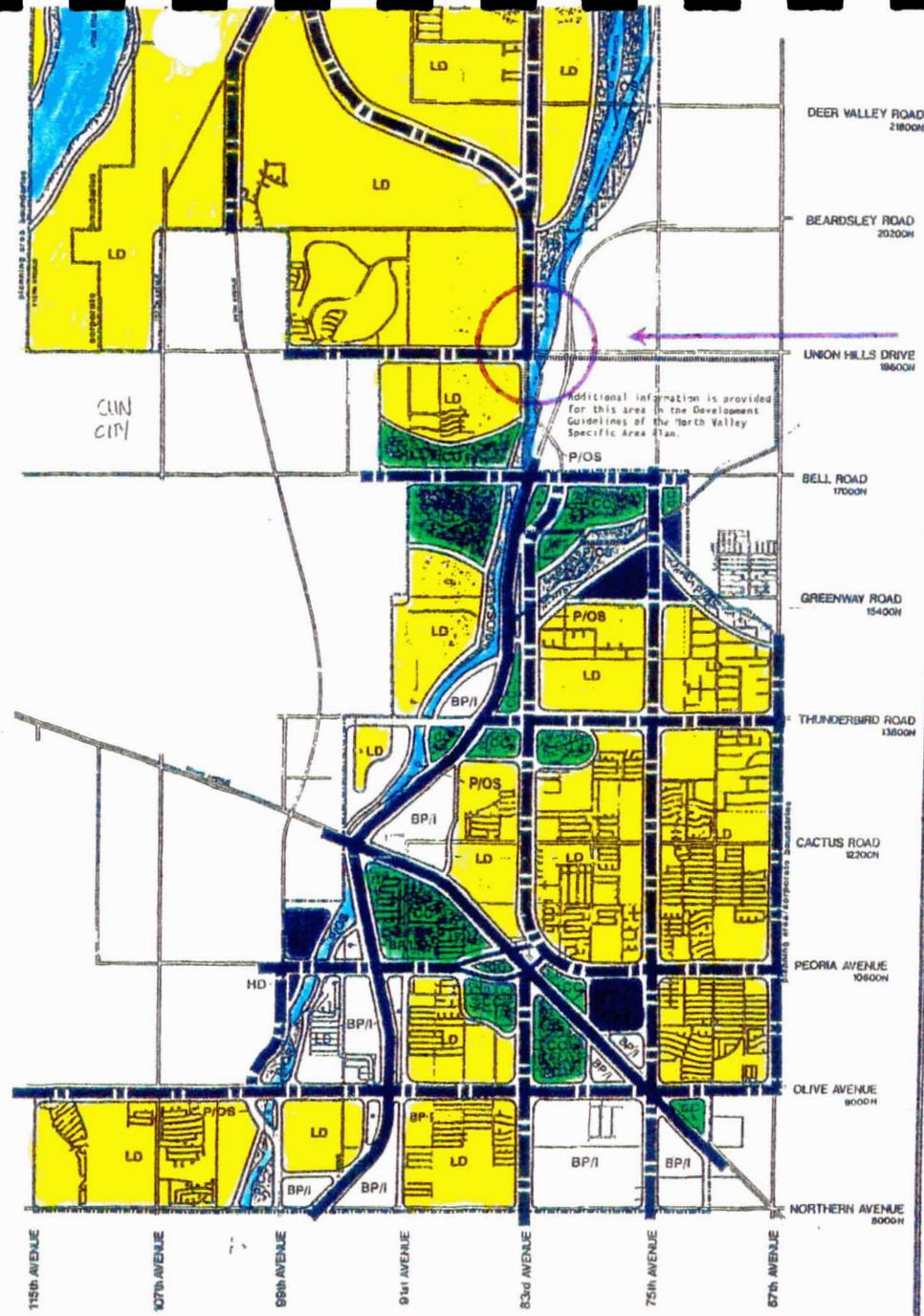
- RE Estate (0 - 1.0 du/ac)
- LD Low Density (1.1 - 6.0 du/ac)
- HD High Density (6.1 - 15.0 du/ac)
- RD Resort Development

NON-RESIDENTIAL:

- CC Community Commercial
- BP/I Business Park/Industrial
- POS Park/Open Space

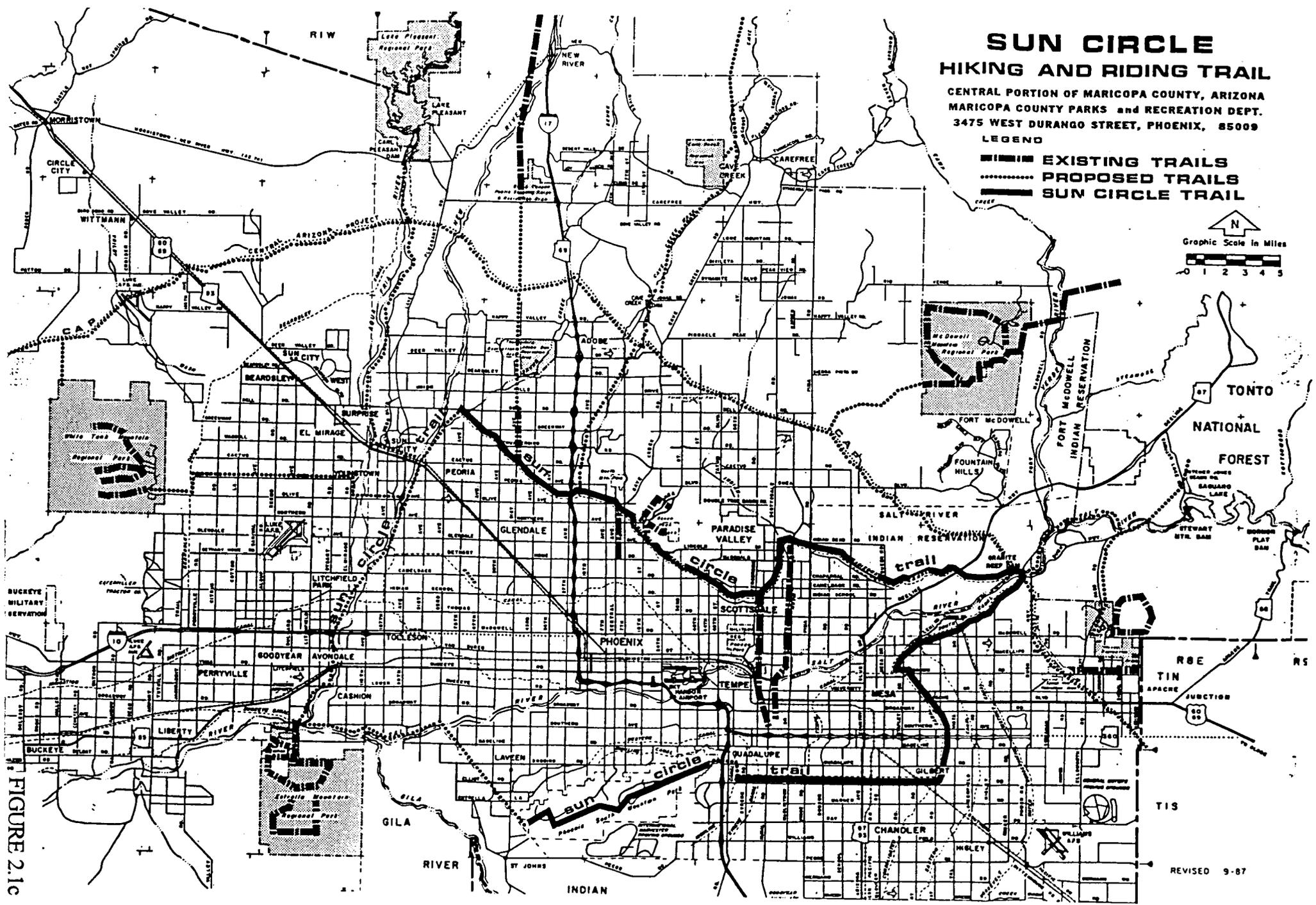
ROADWAYS:

- Principal Arterial
- Major Arterial



Project Location





SUN CIRCLE HIKING AND RIDING TRAIL

CENTRAL PORTION OF MARICOPA COUNTY, ARIZONA
 MARICOPA COUNTY PARKS and RECREATION DEPT.
 3475 WEST DURANGO STREET, PHOENIX, 85009

- LEGEND**
- EXISTING TRAILS
 - PROPOSED TRAILS
 - SUN CIRCLE TRAIL

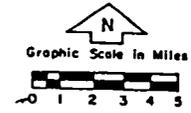


FIGURE 2.1c

2.2 HISTORIC / ARCHAEOLOGICAL DATA

The potential for the presence of cultural resources in the project area exists as historic and prehistoric land uses are commonly associated with desert watercourses. Archaeological surveys for the Agua Fria Freeway project and nearby residential developments discovered a few sites to the east of the proposed construction. A records review at the Arizona State Historic Preservation Office (SHPO) suggested:

A 15.4 acre survey in Section 33 and a ten acre archaeological survey in Section 34 produced negative results (no sites located).

The Baccharis Site, NA 19,342 lies in Section 3, approximately one mile south of the MCDOT project area. This late Pioneer Period/early Colonial Period Hohokam farmstead yielded numerous prehistoric features and human remains during excavation in 1987 (Greenwald 1988).

A surface artifact scatter, M-21, in Section 26; this site falls within the current MCDOT project boundary. SHPO records indicate that this site may have been destroyed years ago, about the time the property became citrus orchards.

MCDOT also requested a site file check from the Arizona State Museum (ASM) on March 28, 1994. ASM records indicate that there has not been a survey of the proposed project area for cultural resources. ASM recommends that an inspection for archaeological remains occur for all undisturbed areas associated with this MCDOT project.

2.2.1 *City of Glendale*

The City of Glendale was originally a trade and service center for the rich agricultural area lying west of the City of Phoenix. Population was constant until after World War II when a large population influx occurred due to the conversion of farmland to residential tracts. The increase in population was 176% between 1970 and 1980. In 1980, the population was 96,988 and the 1990 census reports 148,134 people (153% increase).

The project lies in the "Foothills" character areas of Glendale. Low-density residential development began in the early 1970's and then a few years later Glendale annexed the area. Development was relatively slow until the Paloma Corporation began to develop Arrowhead Ranch. With the Arrowhead Ranch and the 1985 approval of funding for the construction of the Agua Fria Freeway, development interest greatly accelerated. Included in the Foothills Development Guidelines is a recommendation for an IGA with Maricopa County to build a bridge at the Union Hills Drive across the New River.

2.2.2 *City of Peoria*

In 1886, the City of Peoria was founded as a farming community and has historically served as the agricultural center for the surrounding farm areas. The rapid regional growth has been converting the agricultural origins into more of a major urban center. This area has become the

greater Phoenix metropolitan area. Peoria's population increase was 157% from 1970 to 1980. This increase has resulted in large farming tracts sold to developers for conversions to subdivisions, schools, commercial centers, and industrial parks. Extensive development occurred in the area from Northern Avenue to Bell Road. Peoria's 1980 population was 12,230 and in 1990 Peoria's population grew to 50,618 (414% increase).

2.2.3 *Sun City*

Sun City is an unincorporated large residential retirement community. Residential and open space are the two primary land use classifications in Sun City. Most of the land use is for residential purposes and the open space areas primarily consist of golf courses.

2.3 ECOLOGICAL / ENVIRONMENTAL COMMUNITIES

Essentially no natural environment remains near Union Hills Drive, because the general area has become urbanized with the residential, commercial, recreational and freeway developments. The encroachment of the neighboring development has resulted in a narrow river corridor. The New River is an ephemeral watercourse subject to flow only following major storm events. This period is getting longer due to the metered dam upstream. New River traverses urban lands from Beardsley Road, one mile north, to its confluence with the Agua Fria River, eleven miles downstream. The reach north of Beardsley Road to the river's origin in the New River Mountains (approximately 25 miles) crosses rural lands with scattered agricultural and residential development. Significant alterations to the terrain of the natural watercourse are due to the embankment protection features up and downstream and the sand and gravel mining operations upstream.

2.3.1 *Vegetation and Wildlife*

Although some native plant species remain, a plant community or defined habitat is lacking. Responses from the state and federal wildlife agencies noted no existing wetland components, no threatened or endangered species present and no adverse wildlife impacts. Between Bell Road and Beardsley Road (one mile south and one mile north of Union Hills Drive) a one quarter mile strip of agricultural land remains. This corridor contains primarily citrus trees.

Typically, the wildlife species found near the project area are jackrabbits, cottontail rabbits, skunks, mourning dove, white-winged dove, Gambel quail, songbirds, rodents, Kangaroo rats, coyotes, roadrunners, banded gecko, chuckwalla, elf owl and desert mule deer.

2.3.2 *Air, Noise and Water Quality*

The project lies in the designated non-attainment areas for carbon monoxide (CO), particulate matter (PM₁₀), and ozone (O₃). The 20 to 30 minute delays in travel time when the crossings are closed contribute to the existing air pollution problem in Maricopa County. The project is in the current Transportation Improvement Program (TIP) Project #248. Conformity Analysis will be done for the TIP and "hot spot" analysis may be a requirement if the project receives federal funding. There are no sensitive noise receptors, public facilities or adjoining extramural use areas (e.g., school playgrounds, etc.) near the project area. New River, in the project area, is normally

a dry riverbed with surface water present only after major precipitations events. No adverse water quality impacts will occur due to the proposed project.

2.4 HYDROLOGY

Generally, both the cities of Glendale and Peoria experience a dry climate with low average rainfall. However, significant stormwater runoff can be associated with occasional storms in the area. The Glendale-Peoria Area Drainage Master Plan (ADMP - May 1987) divides Peoria and Glendale into six subareas and includes Sun City as a subarea (Figure 2.4). The intersection of 83rd Avenue and Union Hills Drive lies on the intersection of three subareas designated in the Glendale-Peoria ADMP. North Glendale subarea consists of the area north of the Arizona Canal Diversion Channel. The "Glendale Stormwater Management Plan" covers the facilities in this area. South Peoria/Glendale and North Peoria are the names of the other two subareas. The North Peoria area includes the portions of Peoria that are north of Skunk Creek or west of New River and north of Sun City. The "City of Peoria Master Plan of Storm Drainage" describes the facilities in the North Peoria subarea. Lastly, the South Peoria/Glendale subarea includes the portions of Peoria east of New River and Skunk Creek and the portion of Glendale south of the Arizona Canal Diversion Channel not included in the South Glendale area.

Contributing to the drainage from the two cities is drainage from the Agua Fria River on the west, the Central Arizona Project (CAP) Canal and the New River Dam alignment to the north, and the Hedgepeth Hills and Weir Valley on the east. The natural drainage pattern from east to west in the South Peoria/Glendale area showed that combining of the facilities would be beneficial. Therefore, the formulation and evaluation of the combined ADMP facilities determined the required facilities. The ADMS developed several different alternatives to collect water from the two cities and convey the flows to the New River.

2.4.1 *Rainfall*

Generally, there are three types of rain storms occurring in the project area: general winter storms, general summer storms, and local storms. The U.S. Army Corps of Engineers (Design Memorandum No. 2, 1982) describes the storms as follows:

- General winter storms: Storms originate from the north Pacific Ocean, and can occur from late October through May, although they are most common from December through early March. These storms frequently last several days and spread generally light to moderate precipitation over large area. Although these storms are generally of low intensity, combined with snowmelt from the mountains, their large areal extent and long duration, these storms can produce high peak flows in the large rivers.
- General summer storms: Storms generally originate from the southeast or south and are often associated with tropical storms or hurricanes. The storms can occur from late June through mid-October, but are most frequent from August through early October. They usually last from one to three days, and produce locally heavy precipitation for many areas within a widespread area of light to moderate rain.

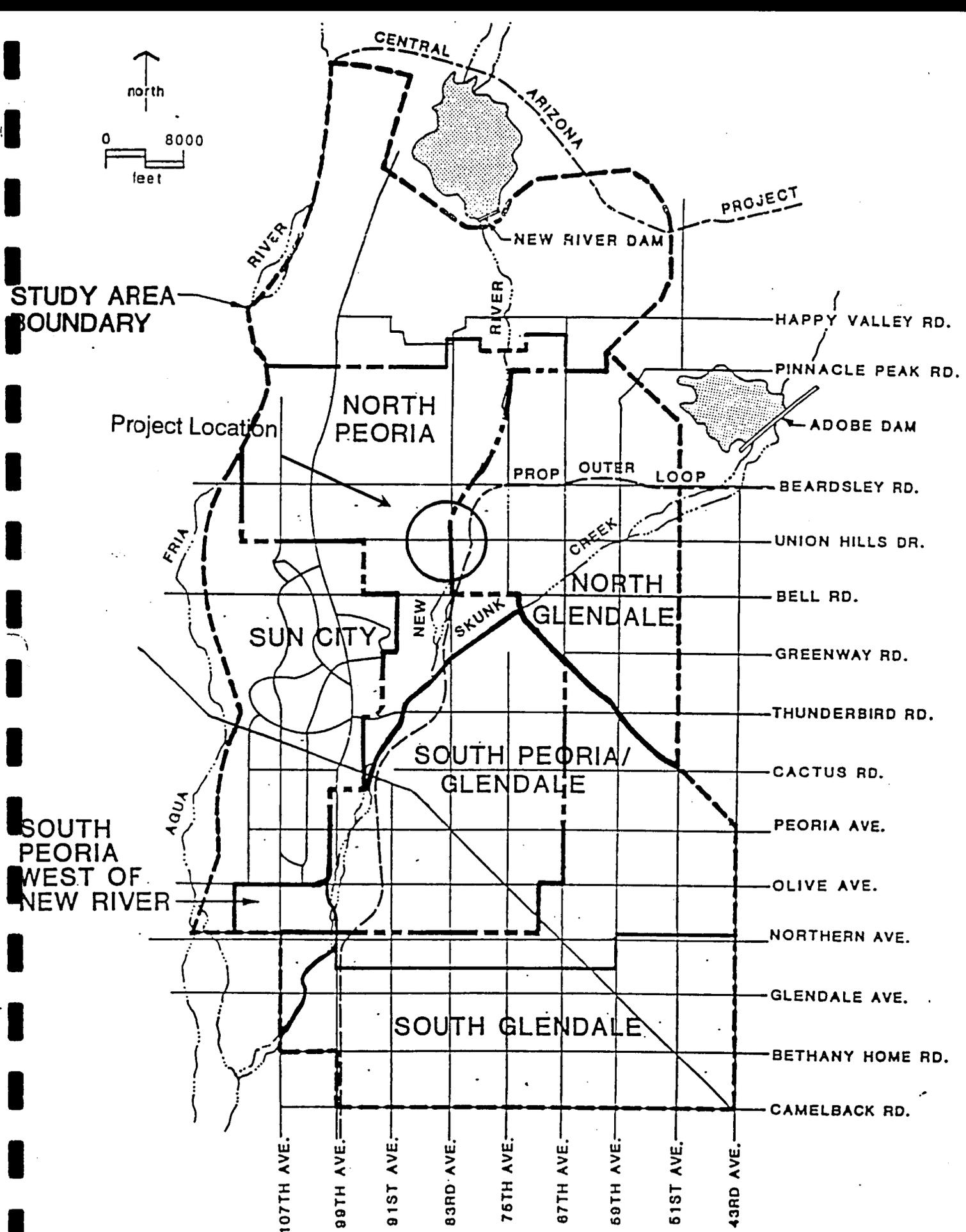


FIGURE 2.4 Glendale-Peoria Area Drainage Master Plan Designated Subareas

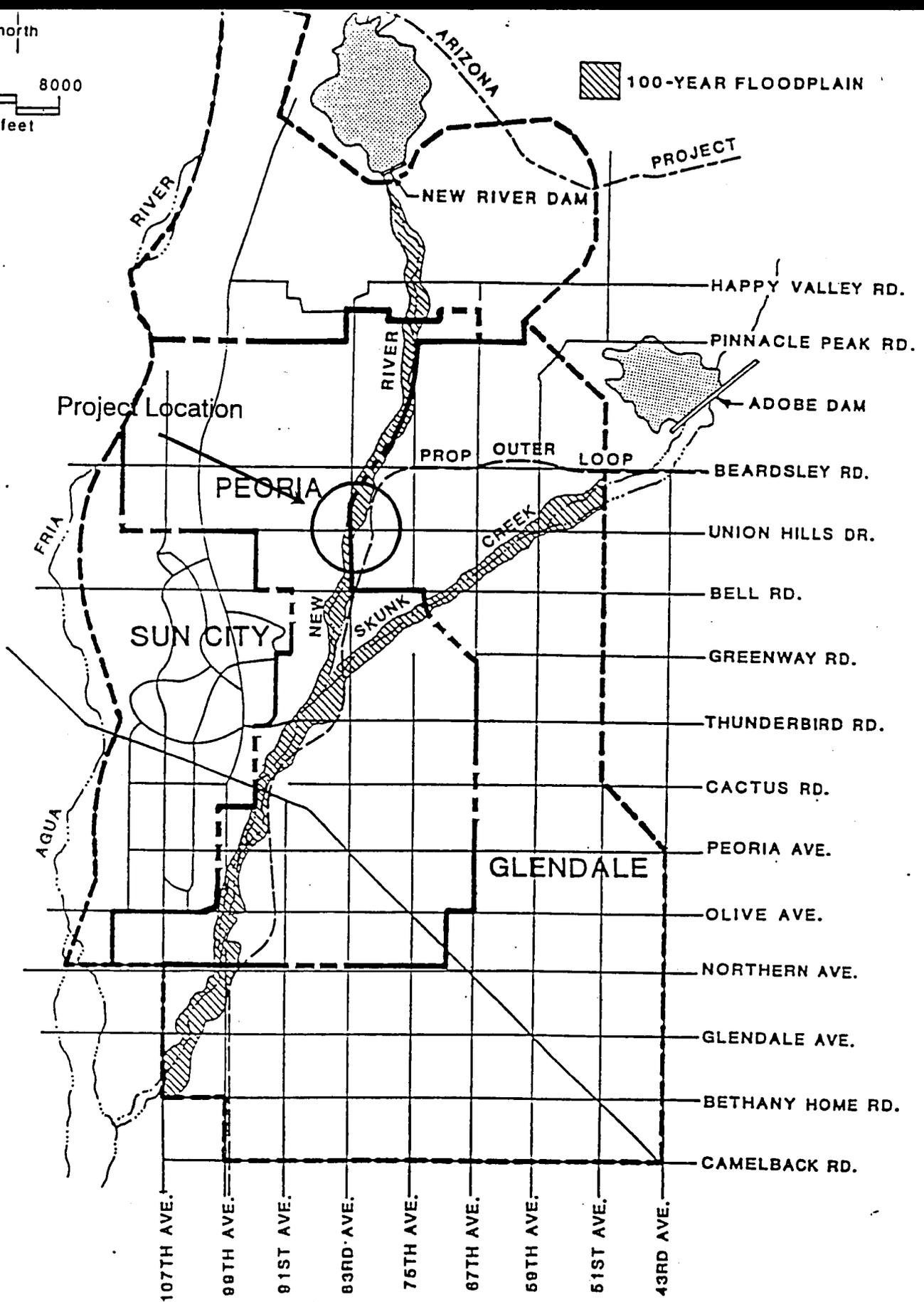
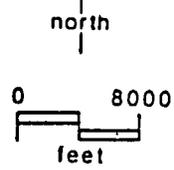


FIGURE 2.4.2a 100-Year Floodplain - Glendale-Peoria Area Drainage Master Plan

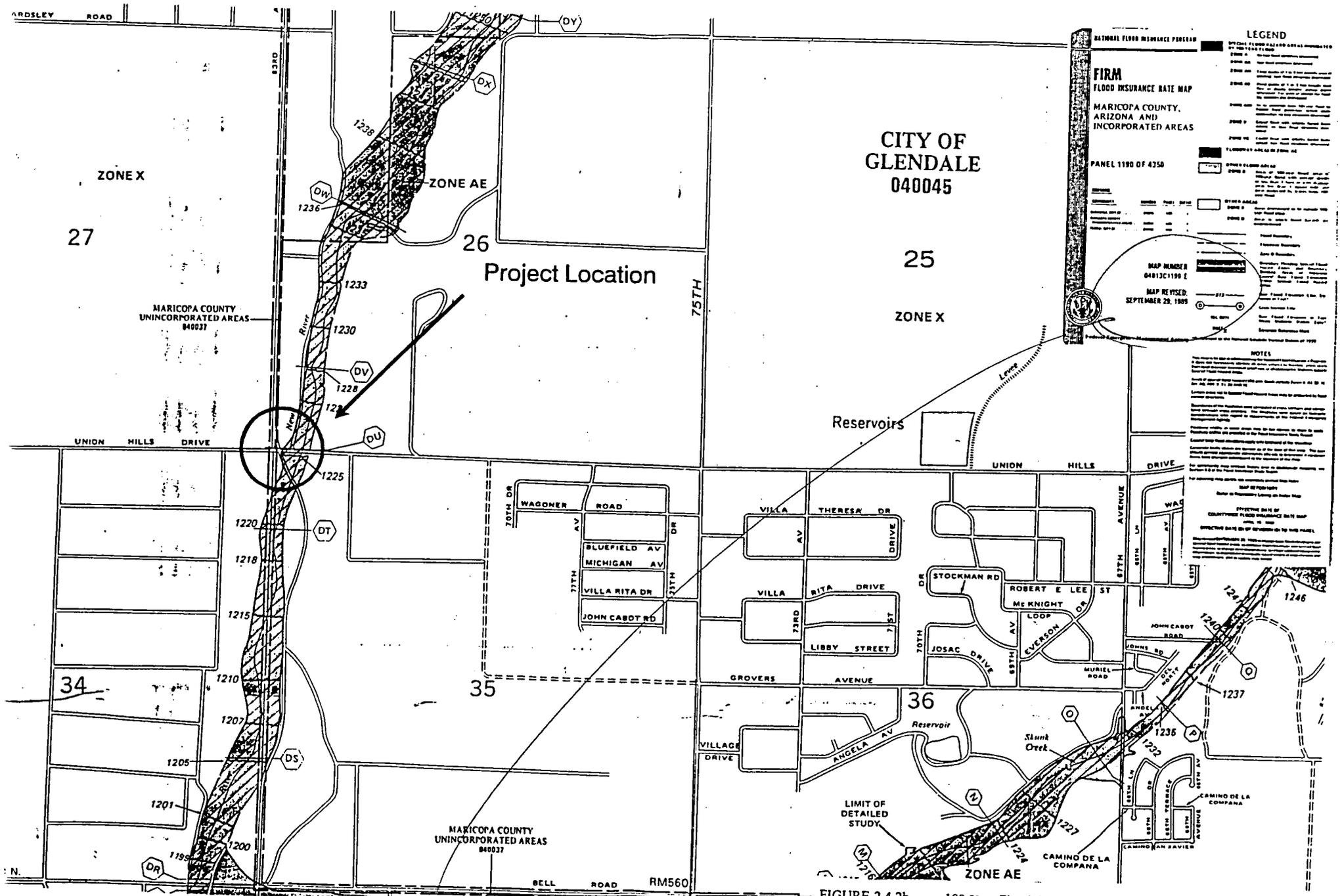


FIGURE 2.4.2b 100-Year Floodplain - FEMA Flood Insurance Rate Map (FIRM)

THE CURRENT FIRM PANEL IS THE DECEMBER 3, 1993 ONE. THE 1989 PANEL INFORMATION IS OK, SINCE THERE WEREN'T ANY CHANGES AT UNION HILLS DRIVES,

- Local storms: These convective storms are generally called thunderstorms or cloudbursts and consist of heavy downpours of rain over small areas for short periods of time. They are most prevalent during the summer months of July to September. The runoff from these storms generally has a high peak and low volume, and can result in serious flash floods.

2.4.2 100 Year FloodPlain

In the early 1980's, the Corps of Engineers constructed a flood control dam (New River Dam) upstream of Union Hills Drive. The dam is located in Section 35 of Township 5 North, Range 1 East of the Gila and Salt River Base and Meridian (approximately six miles north of the project area at the Pinnacle Vista Drive alignment). New River Dam has reduced the 100-Year flow. Because a metered dam controls the New River, the runoff period is longer than at other crossings. Frequent flooding requires barricades, and results in rerouted traffic for an extended period. Figure 2.4.2a shows the 100-year floodplain in the cities of Glendale, Peoria and Sun City. The floodplain width is 270 feet (water surface elevation = 1200 feet) at Bell Road and 1050 feet (water surface elevation = 1256 feet) at Beardsley Road. The ADMS did not provide widths and water surface elevation values for Union Hills. Figure 2.4.2b is part of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map #1190. According to the map, the base flood elevation is 1225 feet at Union Hills Drive. National Flood Insurance Program (NFIP) Community Identification Numbers are 040045 (Glendale), 040050 (Peoria), and 040037 (Maricopa County). The local communities are participants in good standing in the NFIP.

Table 2.4.2 summarizes the discharges from the New River Dam's primary outlet (6.25' x 9.5' Reinforced Concrete Box [RCB]).

TABLE 2.4.2 - Discharges from New River Dam				
FREQUENCY	Standard Project Flood (SPF)	10-Year	50-Year	100-Year
Q's at New River Dam Outlet (CFS)	2,665	1,700	2,200	2,350
Q's at Union Hills Crossing (CFS)	24,000-38,000 (Corps)	2,400-2,700 (FEMA)	6,800-8,000 (FEMA)	9,800-13,900 (FEMA)

2.5 SOCIOECONOMIC ISSUES

FEMA monies will partially fund the project. Other partners include the FCD, and the cities of Glendale and Peoria.

2.5.1 Socioeconomic Setting:

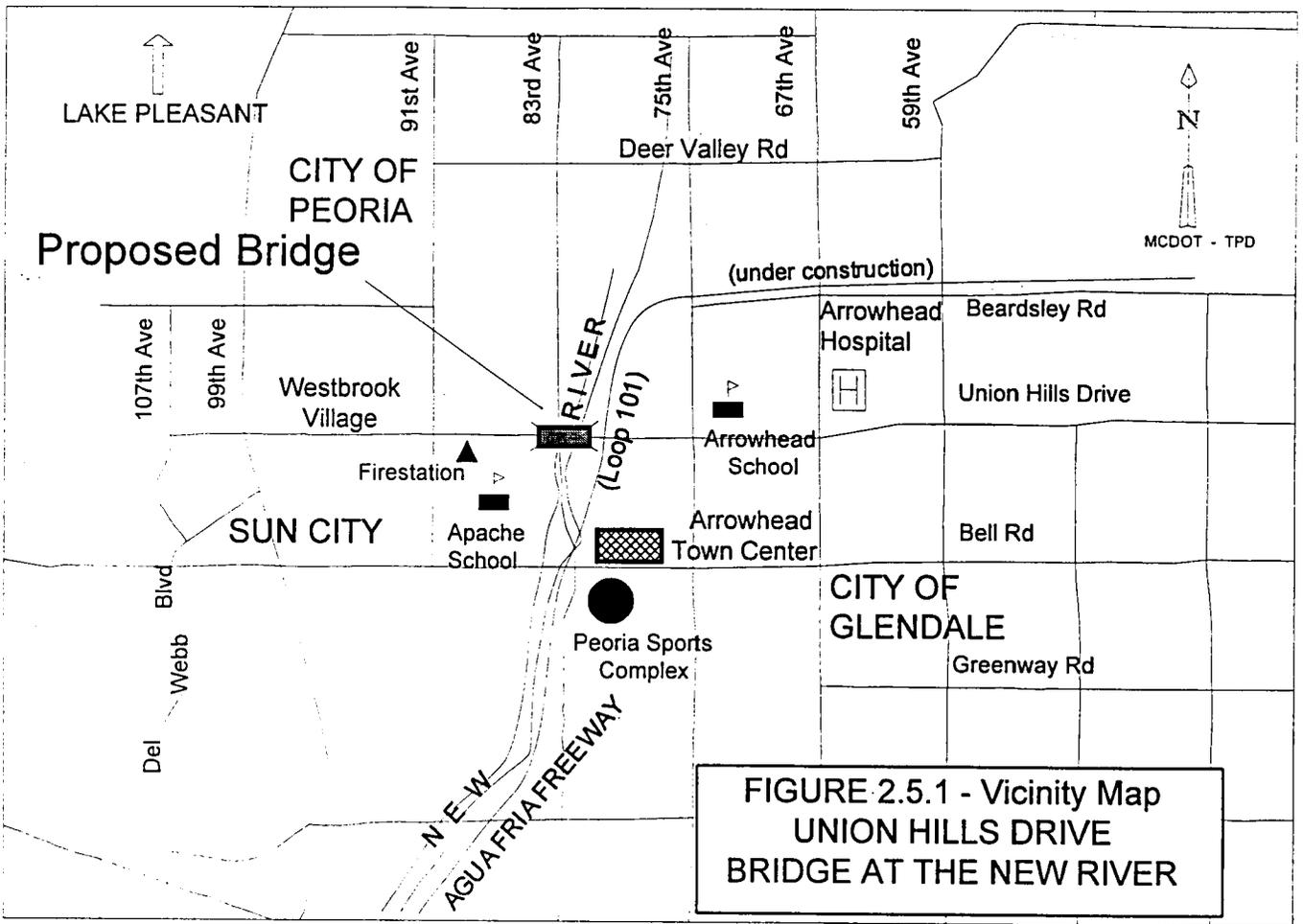
The proposed Union Hills Drive bridge over New River lies in the City of Glendale with the west approach within the City of Peoria (Figure 2.5.1). Union Hills Drive is a primary access between the Vistas at Westbrook Village in Peoria and Sun City, crossing the New River and the Agua Fria Freeway (Loop 101). Union Hills Drive is the primary emergency route for emergency vehicles directed to the Arrowhead Hospital. The hospital is on 67th Avenue, north of Union Hills Drive. Firetrucks leaving the fire station west of 89th Avenue also use Union Hills Drive as their access to the east and 83rd Avenue to the south. Two schools exist near the intersection: Arrowhead Elementary School at 75th Avenue and Union Hills, and Apache School south of Union Hills on 87th Avenue.

Additionally, the increase in recreational traffic to Lake Pleasant (30% growth by 2000 and 100% by 2010) will also have an effect on the traffic flow through the intersection. Lake Pleasant is approximately fifteen miles to the north. Peoria has designated 83rd Avenue as a parkway north of Union Hills Drive and it will be considered as regional access to Lake Pleasant. The 83rd Avenue Parkway alignment will continue north from Beardsley Road for approximately one quarter of a mile before it turns and heads due west on the Rose Garden Road alignment. The parkway will curve to the north and connect to Lake Pleasant Road at Deer Valley Road. The cross section of the proposed parkway includes six travel lanes and a 30-foot median. The parkway will have ten foot shoulders and 14 feet for drainage purposes. This cross section requires 150 feet of right of way.

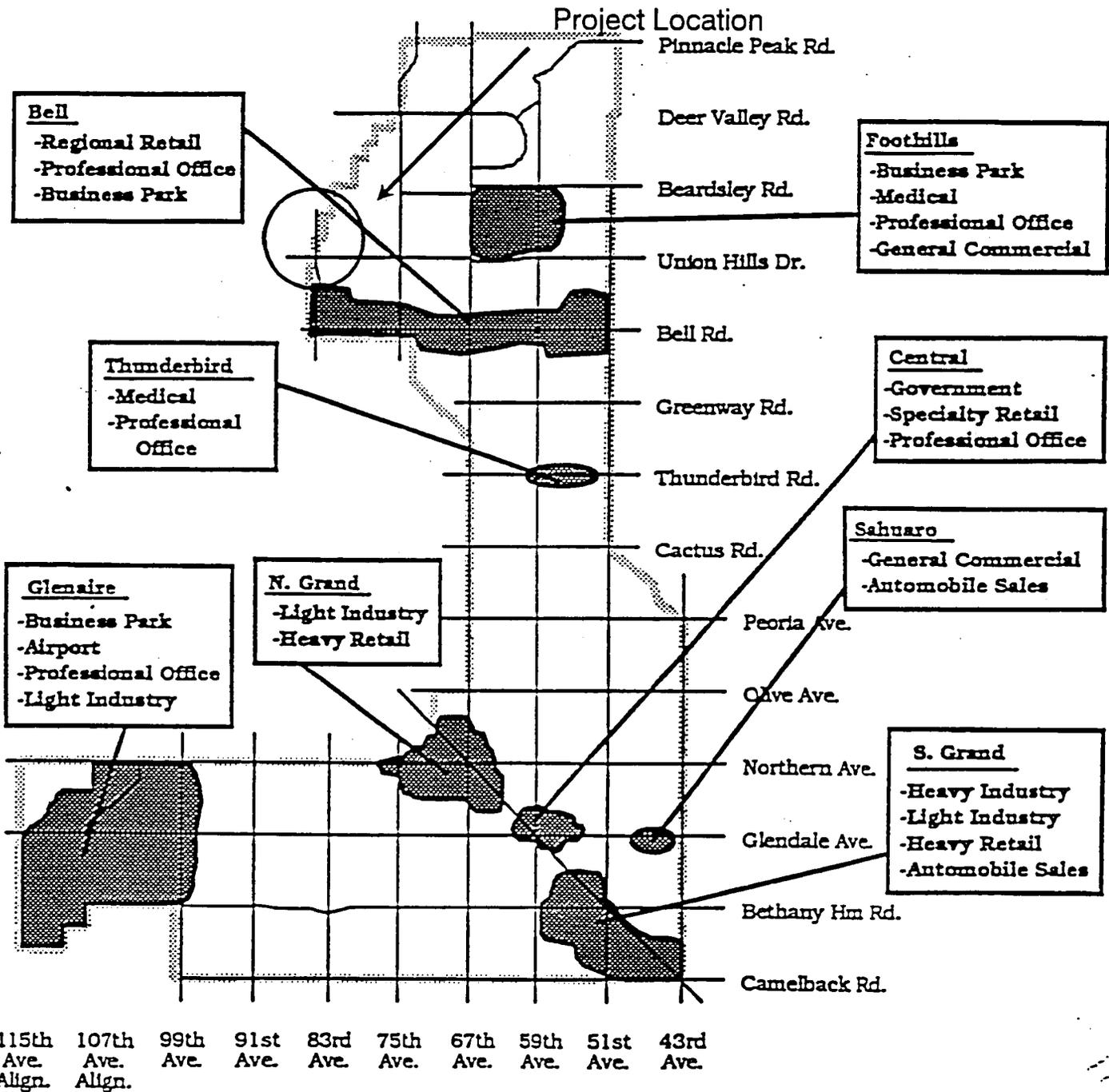
The existing ADT on Union Hills is 8,300 and 2010 forecasts are 33,000. This increase is due to the residential growth, the opening of the Arrowhead Towne Center in October of 1993 and the development of the Peoria Sports Complex, a professional baseball Spring Training Facility. Arrowhead Towne Center is east of the river between Bell Road and Union Hills Drive. The Peoria Sports Complex is south of Bell Road and east of 83rd Avenue.

2.5.2 Employment Centers:

Glendale has two primary employment centers near the project area (Figure 2.5.2). Bell is the first one and spans from 51st Avenue to 91st Avenue. Regional Retail, Professional Office and Business Park are the designated commercial land uses in this section. The second employment center, called the Foothills, contains Business Park, Medical, Professional Office, and General Commercial land uses.



**FIGURE 2.5.1 - Vicinity Map
UNION HILLS DRIVE
BRIDGE AT THE NEW RIVER**



EMPLOYMENT CENTERS MAP 1

FIGURE 2.5.2 City of Glendale: Employment Centers

2.5.3 Neighborhood Impact:

Citizens of Glendale and Peoria urge governmental leaders to construct a bridge at this crossing to meet the recurring flooding problems. The frequent road closures result in:

- 1.) Increase mileage and travel time for emergency vehicles;
- 2.) Potentially serious delays in treatment and transport of patients to the Arrowhead Community Hospital;
- 3.) Hazardous alteration in traffic patterns in nearby residential areas;
- 4.) Increased travel for drivers who regularly follow this route;
- 5.) Greater traffic demand on nearby arterial routes already heavily traveled.

The primary detour route is in the residential area on 87th Avenue between Union Hills Drive and Bell Road. The increased traffic and congestion create potential hazards for the children attending the Apache Elementary School and hinder the neighborhood people as they attempt to travel to work. A northern detour route is not practical because Beardsley Road is not continuous to the east and Deer Valley Road is also an unbridged crossing. Carefree Highway (10 miles north) is the only bridge crossing north of the intersection.

2.6 UTILITIES CORRIDORS

UTILITY	RESPONSIBLE AGENCY
Electricity	Arizona Public Service (APS)
Telephone	US West Communications
Water	Cities of Glendale and Peoria
Sewer	Cities of Glendale and Peoria
Garbage and Trash Collection	Cities of Glendale and Peoria
Gas	Southwest Gas
Cable	Dimension Cable
Irrigation	McMicken Irrigation District

2.7 HIGHWAY CHARACTERISTICS AND CONSIDERATIONS

The Agua Fria Freeway (Loop 101) has a traffic interchange on Union Hills Drive located approximately 0.25 miles east of New River designed for four through lanes. Before March 1994, 83rd Avenue and Union Hills Drive existed as 24 to 28 foot wide roadways at this location. Previously, Union Hills Drive was a two-lane roadway with a dip section through the New River and 83rd Avenue was a two-lane roadway intersecting Union Hills Drive near the west bank of New River. The intersection is considered a "bottleneck," because on either side of the intersection Union Hills Drive has four through lanes. Heading west from Loop 101, there are four lanes that taper into two just before the intersection of 83rd Avenue. Additionally, west of the intersection Union Hills Drive begins with two lanes and then tapers out to four lanes and a center turn lane. Travel delays caused by the "bottleneck" situation resulted in an interim solution and the installation of a temporary signal.

Interim improvements have widened and signalized the intersection (Figure 2.7). The new pavement on Union Hills Drive is 52 feet wide on the west and 36 feet on the east. Left turn lanes have been added to Union Hills Drive while 83rd Avenue remains one lane in each direction.

Table 2.7 lists the functional classifications for both roadways by agency.

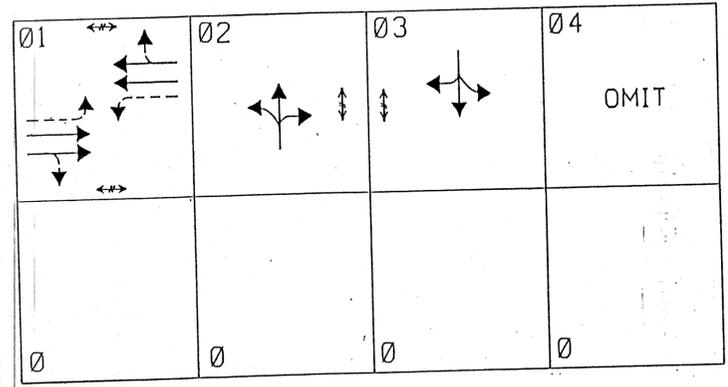
TABLE 2.7 - Functional Classifications			
	MAG	PEORIA	GLENDALE
UNION HILLS DRIVE	URBAN MINOR ARTERIAL	MAJOR ARTERIAL	ARTERIAL
83RD AVENUE	URBAN MAJOR ARTERIAL	MAJOR ARTERIAL	ARTERIAL

2.7.1 *Horizontal Alignment*

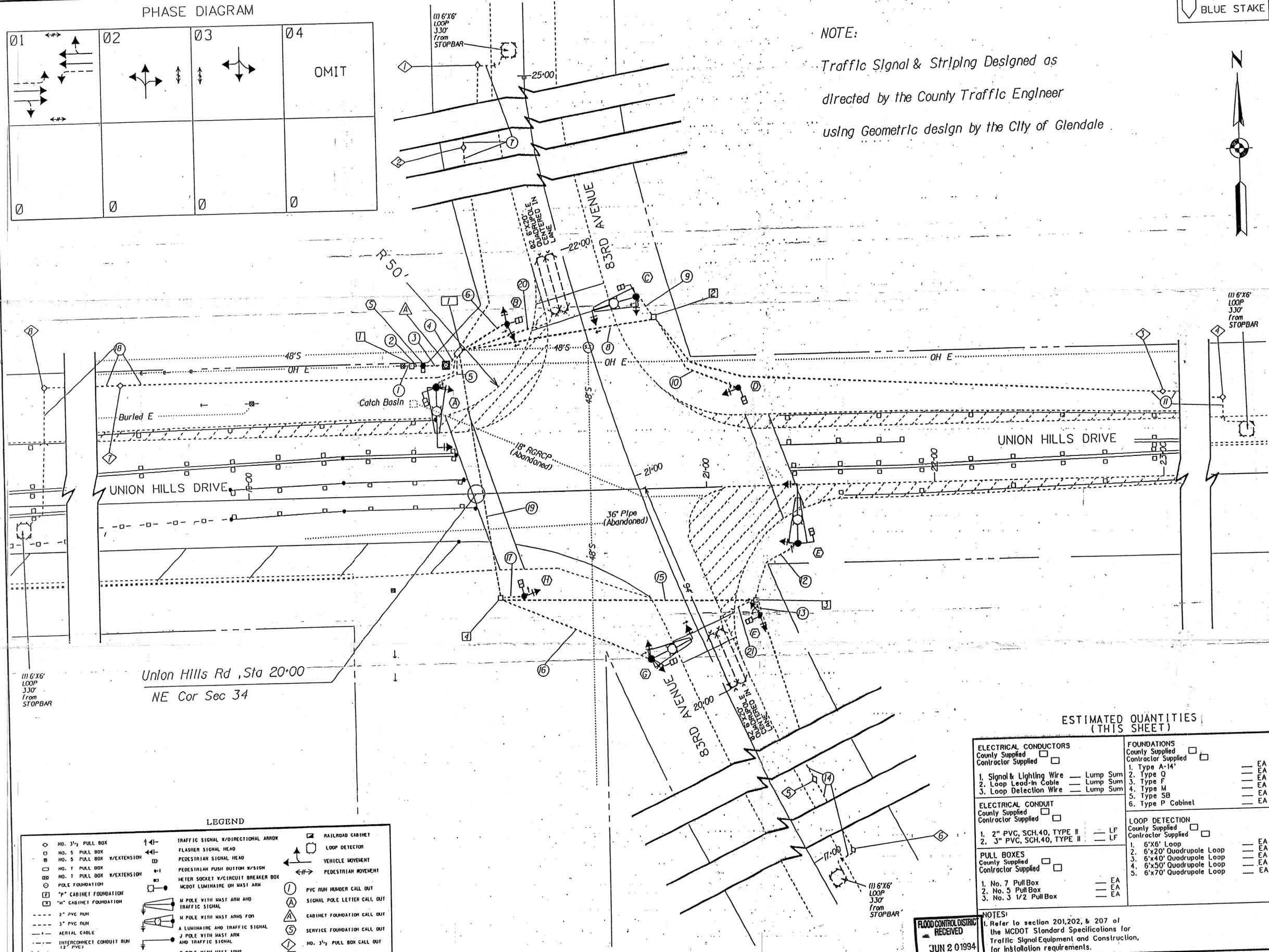
At Bell Road, the intersection of 83rd Avenue is one-quarter mile east of the section line. 83rd Avenue continues due north approximately one quarter of a mile before it curves and heads in a northwesterly direction and crosses Loop 101. From this point north, as 83rd Avenue approaches Union Hills Drive from the south, the alignment continues in a series of curves. 83rd Avenue does not lie on the section line until 300' north of Union Hills. Figure 4.1.6a shows the existing alignment and curve data and the proposed alignment in Alternative #6.

TWO WORKING DAYS BEFORE YOU DIG, CALL 263-1100 BLUE STAKE

PHASE DIAGRAM



NOTE:
Traffic Signal & Striping Designed as directed by the County Traffic Engineer using Geometric design by the City of Glendale



ELECTRICAL CONDUIT

RUN #	SIZE	LENGTH	RUN #	SIZE	LENGTH
1	2"	4 LF.	15	3"	110 LF.
2	2"	5 LF.	16	2"	70 LF.
3	2"	10 LF.	17	2"	10 LF.
4	3"	8 LF.	18	2"	339 LF.
5	2"	18 LF.	19	3"	105 LF.
6	2"	24 LF.	20	2"	35 LF.
7	2"	346 LF.	21	2"	11 LF.
8	3"	86 LF.	22	.	LF.
9	2"	12 LF.	23	.	LF.
10	2"	50 LF.	24	.	LF.
11	2"	395 LF.	25	.	LF.
12	2"	32 LF.	26	.	LF.
13	2"	6 LF.	27	.	LF.
14	2"	326 LF.	28	.	LF.

- #7 PULL BOX LOCATION:
1 STA. 19-94, U.53.5'
- #5 PULL BOX LOCATIONS:
1 STA. 19-73, U.54'
2 STA. 20-78, U.71.5'
3 STA. 21-21, R1.48'
4 STA. 20-09.5, R1.44.5'
5 STA.
6 STA.
7 STA.
8 STA.

- #3 1/2 PULL BOX LOCATIONS:
1 STA. 25-05, U.20' (83RD AVE.)
2 STA. 23-43, U.30' (83RD AVE.)
3 STA. 23-00, U.35.5' (UNION HILLS DR.)
4 STA. 24-53, U.32' (UNION HILLS DR.)
5 STA. 18-64, R1.18' (83RD AVE.)
6 STA. 16-95, R1.18' (83RD AVE.)
7 STA. 18-45, U.49' (UNION HILLS DR.)
8 STA. 16-80, U.49' (UNION HILLS DR.)

POLE FOUNDATION LOCATIONS:

TYPE	LOCATION	ELEV.
A	STA. 19-83.5, U.15'	*
B	A-14' STA. 20-15, U.70'	*
C	M STA. 20-71.5, U.80'	*
D	A-14' STA. 21-15, U.41'	*
E	M STA. 21-40, R1.24.5'	*
F	A-14' STA. 21-23, R1.55'	*
G	M STA. 20-74, R1.73'	*
H	A-14' STA. 20-20, R1.43'	*
I	STA.	*
J	STA.	*
K	STA.	*
L	STA.	*

* FOUNDATION SET TO TOP OF CURB

CABINET FOUNDATION LOCATION:

TYPE	LOCATION	ELEV.
A	M STA. 19-88, U.54'	*

* FOUNDATION SET TO TOP OF CURB

SERVICE FOUNDATION LOCATION:

TYPE	LOCATION	ELEV.
S	SB STA. 19-78, U.54'	*

* FOUNDATION SET TO TOP OF CURB

ESTIMATED QUANTITIES (THIS SHEET)

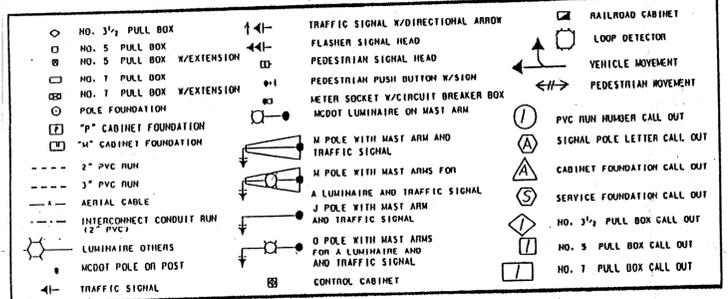
ELECTRICAL CONDUCTORS County Supplied <input type="checkbox"/> Contractor Supplied <input type="checkbox"/>	FOUNDATIONS County Supplied <input type="checkbox"/> Contractor Supplied <input type="checkbox"/>
1. Signal & Lighting Wire — Lump Sum	1. Type A-14' — EA
2. Loop Lead-in Cable — Lump Sum	2. Type Q — EA
3. Loop Detection Wire — Lump Sum	3. Type F — EA
	4. Type M — EA
	5. Type SB — EA
	6. Type P Cabinet — EA
ELECTRICAL CONDUIT County Supplied <input type="checkbox"/> Contractor Supplied <input type="checkbox"/>	LOOP DETECTION County Supplied <input type="checkbox"/> Contractor Supplied <input type="checkbox"/>
1. 2" PVC, SCH.40, TYPE II — LF	1. 6'x6' Loop — EA
2. 3" PVC, SCH.40, TYPE II — LF	2. 6'x20' Quadrupole Loop — EA
	3. 6'x40' Quadrupole Loop — EA
	4. 6'x50' Quadrupole Loop — EA
	5. 6'x70' Quadrupole Loop — EA
PULL BOXES County Supplied <input type="checkbox"/> Contractor Supplied <input type="checkbox"/>	
1. No. 7 Pull Box — EA	
2. No. 5 Pull Box — EA	
3. No. 3 1/2 Pull Box — EA	

NOTES:
1. Refer to section 201.202, & 207 of the MCDOT Standard Specifications for Traffic Signal Equipment and Construction, for installation requirements.

FLOOD CONTROL DISTRICT RECEIVED JUN 2 0 1994

Union Hills Rd, Sta 20+00
NE Cor Sec 34

LEGEND



MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION TRAFFIC ENGINEERING DIVISION

UNION HILLS DR. & 83RD AVE. PROJECT NO. 30650

BY	DATE
DESIGNED	see NOTE
DRAWN	BURRUEL
CHECKED	

TRAFFIC SIGNAL LAYOUT SHEET OF 1 2

2.7.2 Vertical Alignment

Figure 2.7.2a and 2.7.2b shows the vertical profile of Union Hills Drive and 83rd Avenue. Station 20+00 on Union Hills Drive is the northeast corner of Section 34 of Township 3 North, Range 1 East of the Gila and Salt River Base and Meridian. Along Union Hills Drive, the elevation ranges from 1220.03' at Station 23+00 to 1239.03' at Station 33+99.7. On 83rd Avenue, the minimum elevation is 1218.12 at Station 18+00 and the maximum value is 12+39.98 at Station 41+00. Station 21+00 on 83rd Avenue is approximately in the center of the intersection.

2.7.3 Access Control

Controlled access exists on the nearby Loop 101, but is not limited on Union Hills Drive or 83rd Avenue.

The City of Glendale Street Classification System defines arterial roads as having four to five lanes with moderate speed, providing intercity access and connecting neighborhoods to local commercial uses. Access is limited to side street and commercial entries with no back-out driveways. Medians are provided where possible and there is no on-street parking except downtown. Sidewalks should be on both sides and are determined by streetscape design. Bus shelters are at one-quarter mile intervals, and arterials are candidates for public transit corridors. Typically, the right-of-way requirement is a minimum of 110' and increases at intersections. The design volumes (ADT) ranges between zero and 25,000 and truck traffic is allowable.

Peoria's Comprehensive Master Plan defines a major arterial as performing the service of traffic movement with minimal land access. Arterials are at one mile intervals and are interconnected with principal arterials and continuous within subregions. Typical trip lengths are sub-regional and inter-community. Access type and spacing are signalized intersections at consistent spacing (e.g., 1/2 mile, 1/4 mile if warranted) with private access restricted.

2.7.4 Drainage

The slope of the New River riverbed increases the velocity of the water. This causes dip crossings to be more dangerous than they would appear, even when the water depth is not great. Union Hills Drive is a depressed roadway crossing at the New River. The dip crossing extends seven to eight feet below the top of the river banks, and the slope of the riverbed intensifies the velocity. Flows ranging from 1500 cfs to 2200 cfs can occur during the heavy events. Flooding in January of 1993 made the Union Hills Drive crossing impassable for approximately two months. The roadway has to be closed whenever the dam releases flows. Although storm runoff was more intense before the dam, the road was closed for shorter durations. Extended closure times result from the dam impeding the flow and extending the releases for longer periods. Extended periods of inundation cause increased maintenance costs to restore the roadway.

Union Hills Drive Profile

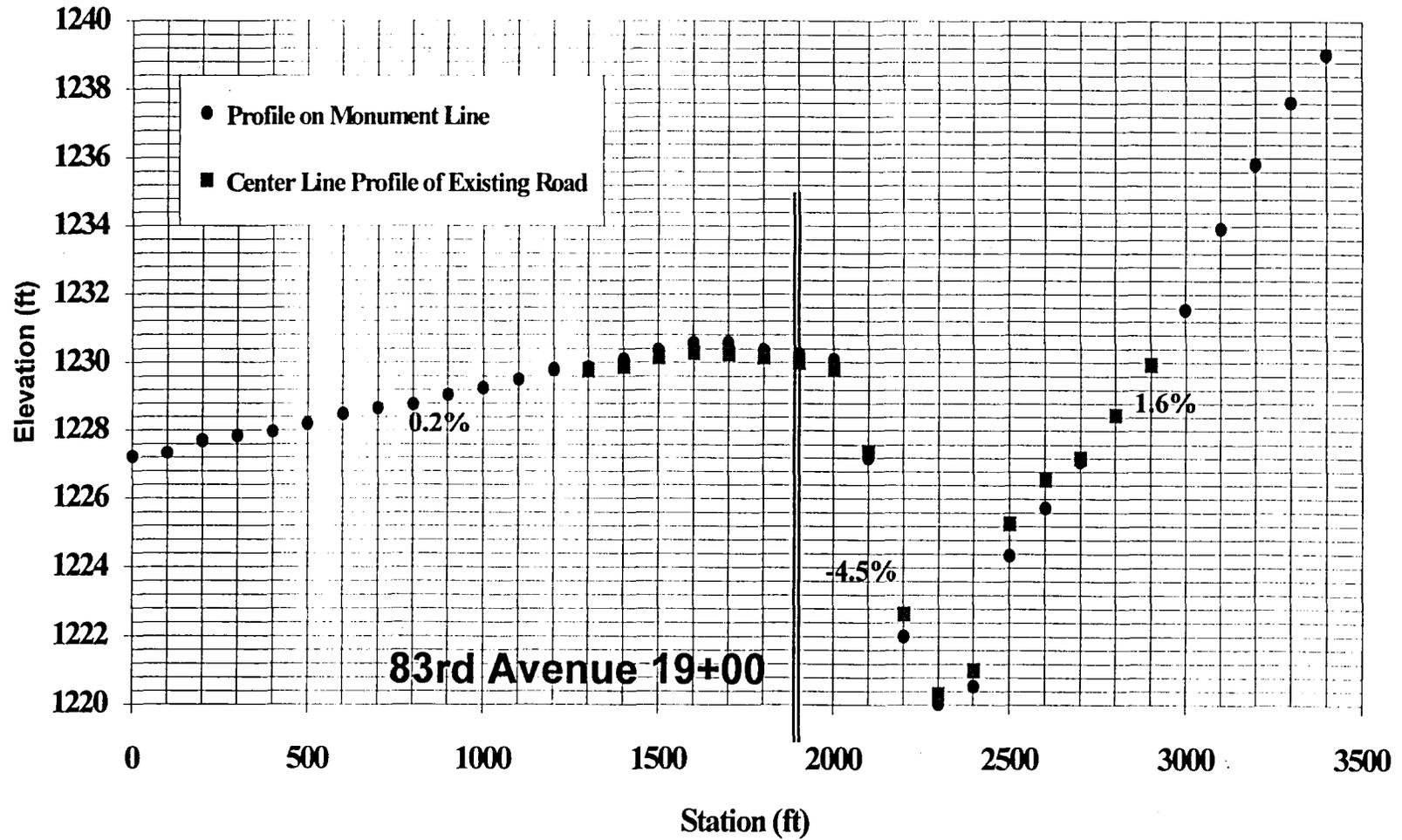


Figure 2.7.2a Vertical Profile for Union Hills Drive (looking north)

Profile of 83rd Avenue

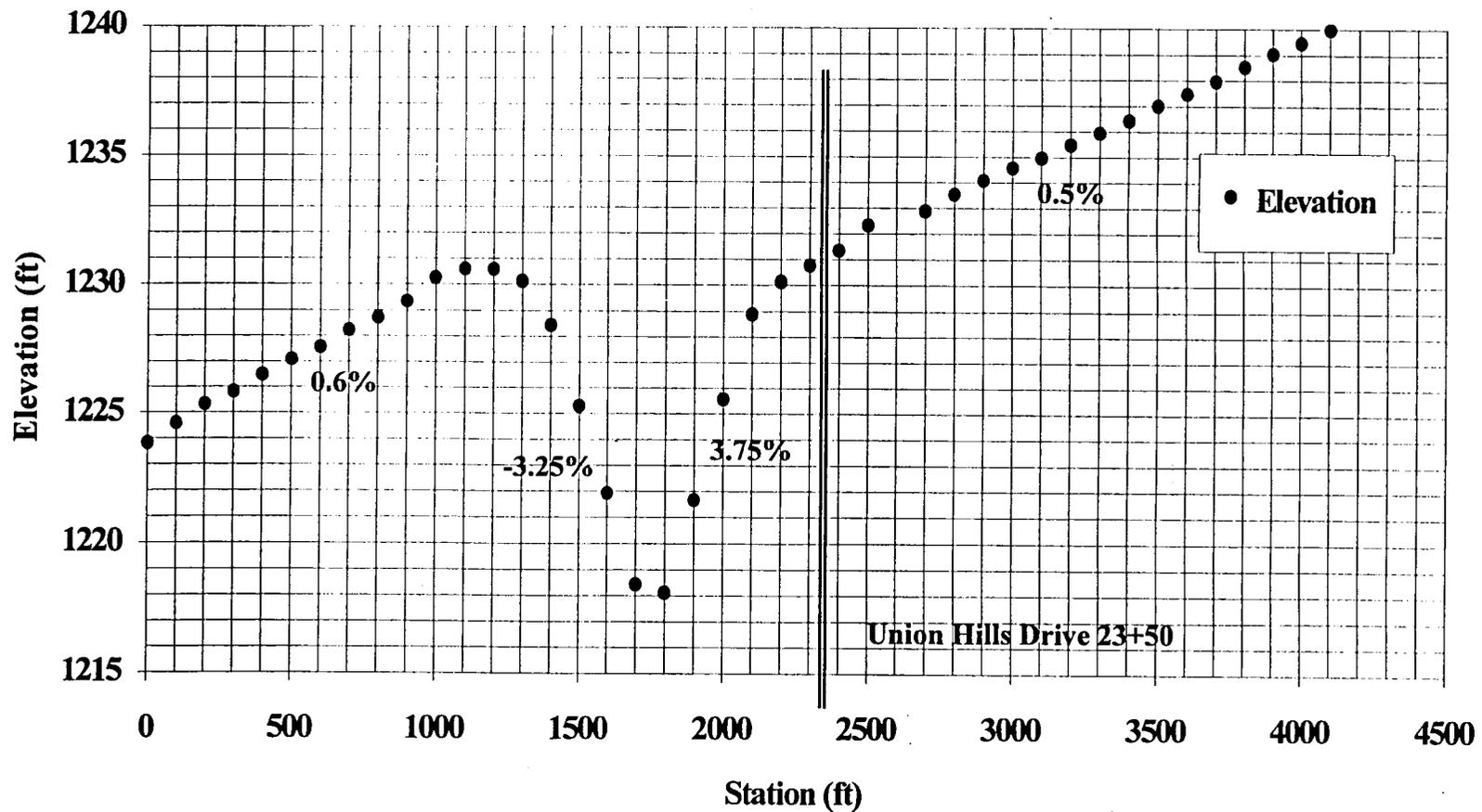


Figure 2.7.2b Vertical Profile for 83rd Avenue (looking west)

Bell Park New River Protection Plans (March 1992) provided bank stabilization to the New River from Union Hills Drive and south 3/4 of a mile. New River's west bank protection typically consists of a 12' x 6' x 9" thick Reno Mattress placed at a 2:1 slope. Three to six inch rocks with minimum $D_{50} = 4.5$ inches fill the gabion structures. Design plans called for a minimum of 1.5 feet of toe down for pullout resistance and the bottom buried at a depth of three feet below the streambed. Bottom toe widths vary from eight feet to 16 feet. The design provides two feet of freeboard for the future 100-year floodway elevation. Gabion structure was placed around the existing 42" storm sewer that extends from the northwest quadrant of the intersection and discharges into the New River. The outlet is approximately 400' south and lies 80' east of the section line. Pipe invert is at elevation 1215.59 and top of headwall is at elevation 1221.21. Country Club Parkway is the inlet for the storm sewer.

2.7.5 Traffic / Accident Data

The Maricopa County Sheriffs Office reports no accidents for this section during 1/1/91 - 12/31/92 (Figure 2.7.5a). The location is multi-jurisdictional; therefore, there could be additional accident information. There was no current Average Daily Traffic (ADT's) available on April 20, 1993. Figure 2.7.5b and Figure 2.7.5c show the forecasted ADT's in 2005 and 2020, respectively. MAG anticipates the ADT on Loop 101 to be 101,000 by the year 2020. The following tables summarize the ADT and Accident summaries.

TABLE 2.7.5a - Average Daily Traffic (ADT) Summary					
LOCATION OF ADT	1990	1991	1993	2005	2020
Union Hills Drive	6,720	8,400	13,680	22,135	32,223
83rd Avenue	3,802	na	2,440	19,911	19,880

TABLE 2.7.5b - Traffic Accidents Summary		
LOCATION	1991	1992
Union Hills Drive @ 83rd Avenue	None	None

2.7.6 Intersections

Figure 2.7.6 is a copy of the aerial photography taken of the intersection at 1" = 100' scale. The intersection is multi-jurisdictional and controlled by a four-way stop. The west leg of the intersection lies in Peoria, the east and south legs lie in Glendale and the north leg belongs to Maricopa County. Maricopa County's jurisdiction starts approximately 60 feet north of Union Hills Drive Centerline. There is only one through leg in each direction.

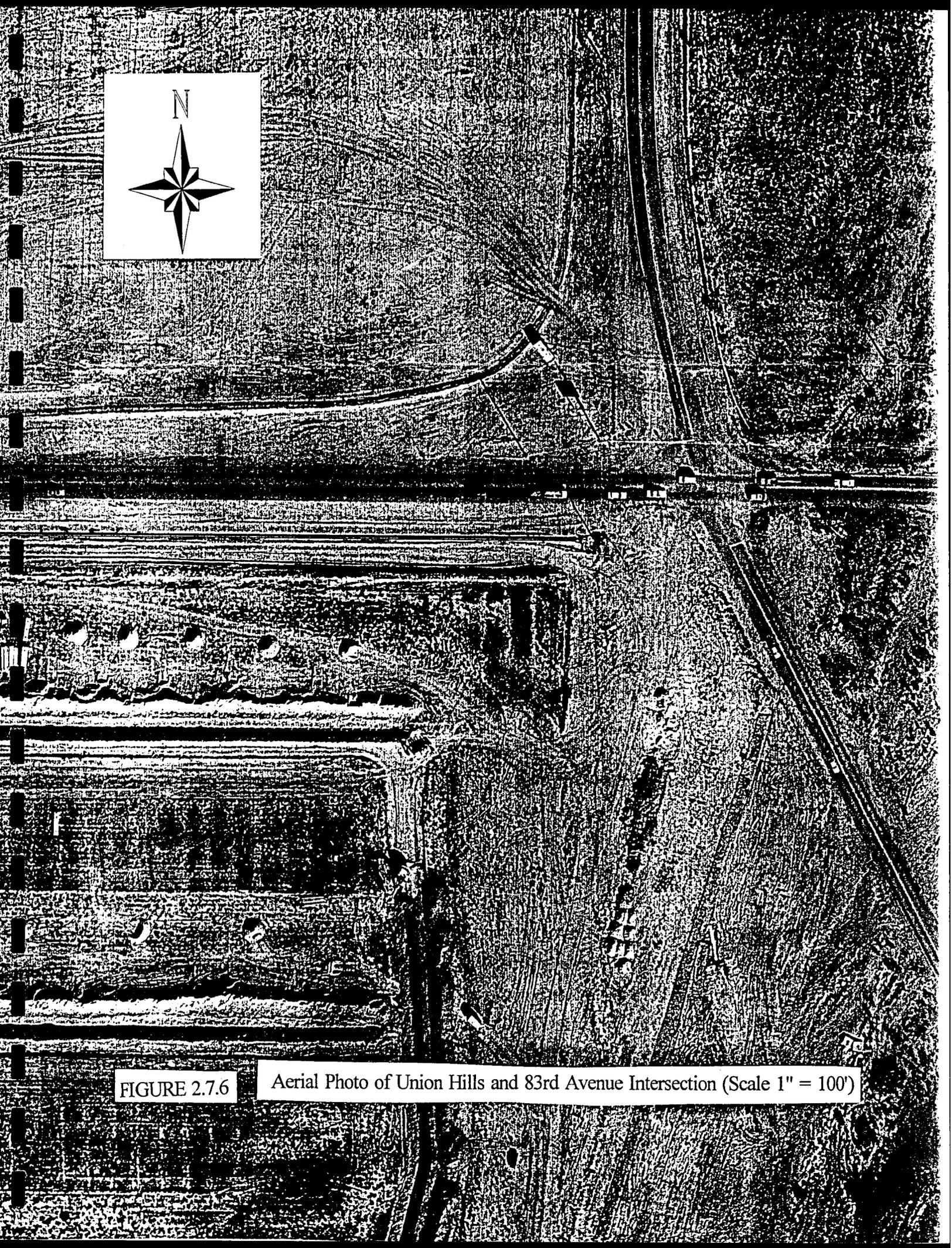


FIGURE 2.7.6

Aerial Photo of Union Hills and 83rd Avenue Intersection (Scale 1" = 100')

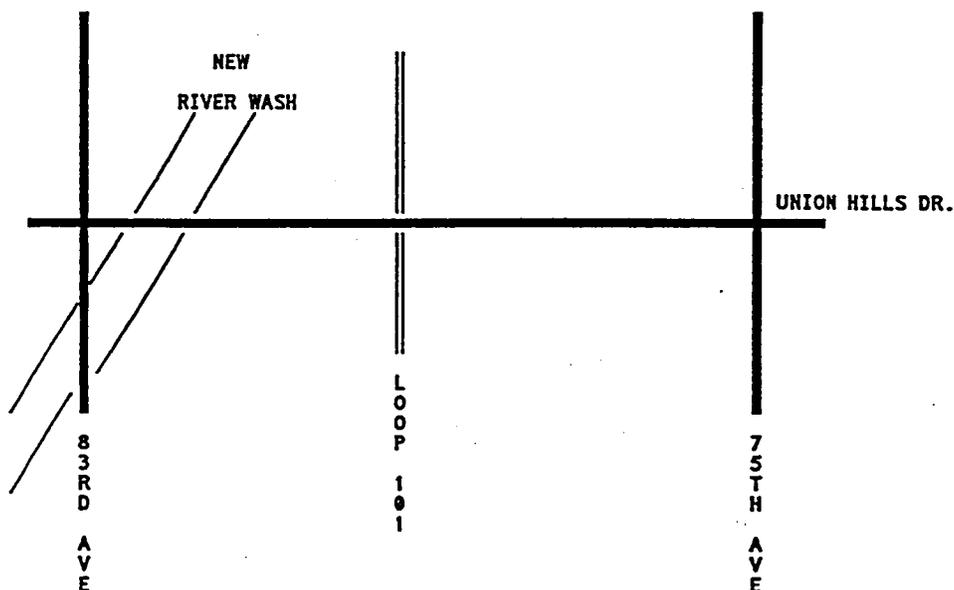
ACCIDENT HISTORY

1/1/91 TO 12/31/92

UNION HILLS DRIDGE AT NEW RIVER

NO ADTS FOR THIS SECTION

NO ACCIDENTS REPORTED TO MCSO



HORNUNHL

PREPARED BY - VICKI STEWART 4/20/93

FIGURE 2.7.5a MCDOT ADT/Accident History (1/1/91 to 12/31/92)

BEARDSLEY ROAD

91ST AVENUE

83RD AVENUE

Project Location

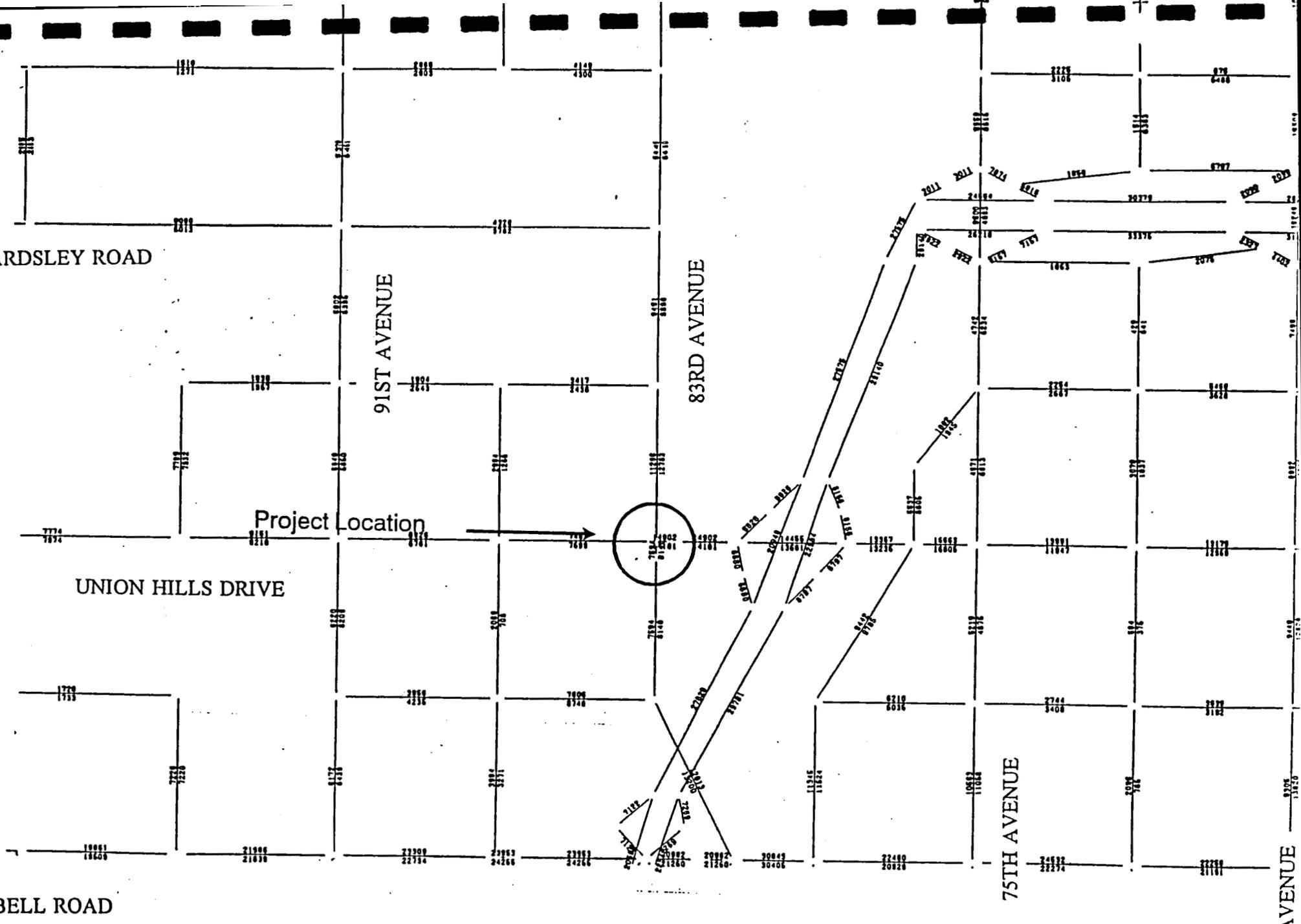
UNION HILLS DRIVE

BELL ROAD

75TH AVENUE

67TH AVENUE

FIGURE 2.7.5b MAG Average Daily Traffic (ADT) for 2005



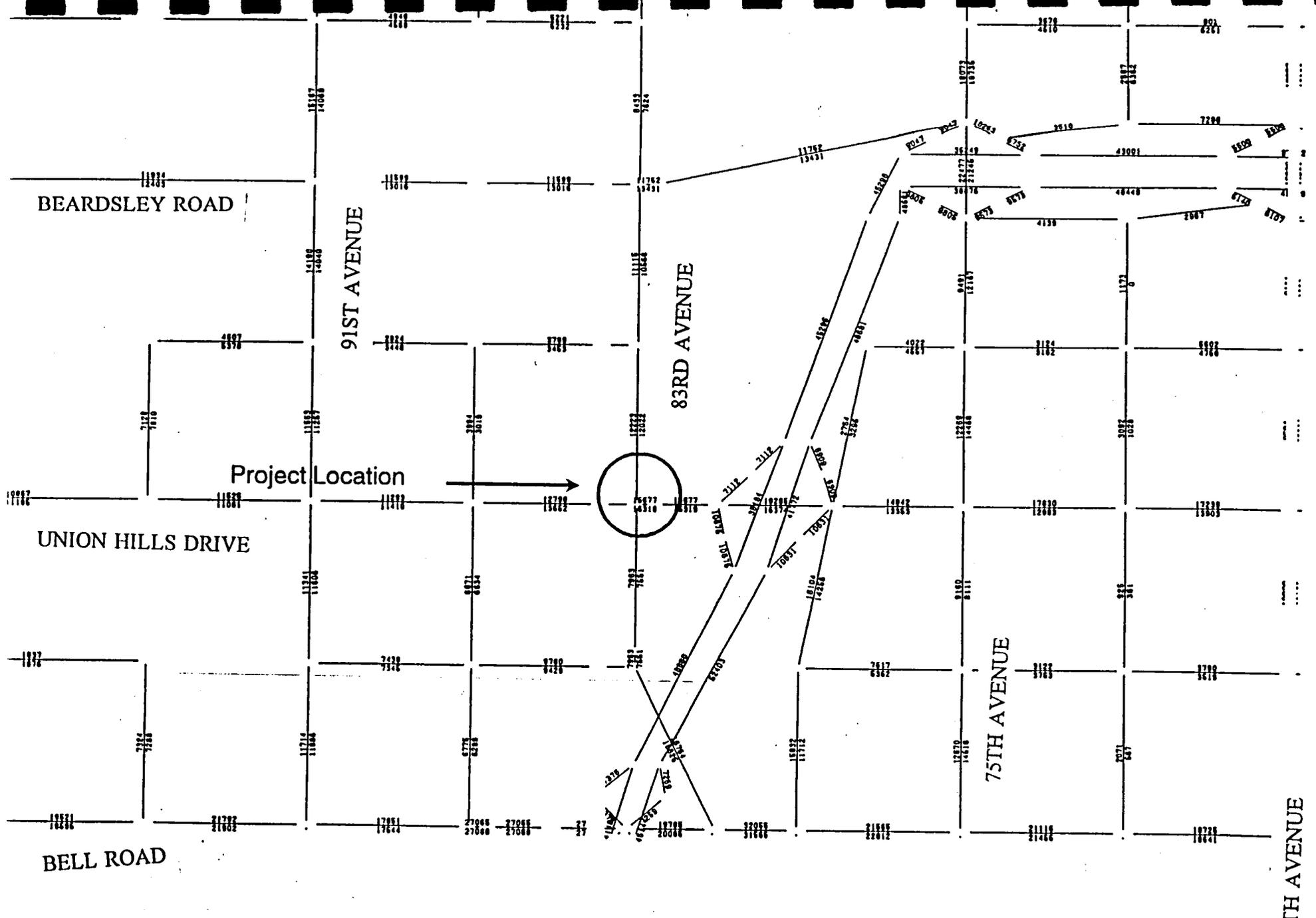


FIGURE 2.7.5c MAG Average Daily Traffic (ADT) for 2020

67TH AVENUE

2.7.7 Utilities

Overhead electrical lines lie along portions of Union Hills Drive. APS 69 kv poles exist on the north side of Union Hills Drive and the west side of 83rd Avenue (north of Union Hills Drive). Due to the development of the northwest quadrant, relocation of the power poles on the west side of 83rd Avenue will occur before the construction of the bridge and 83rd Avenue realignment. Underground telephone lines run parallel to 83rd Avenue, north of Union Hills Drive. The buried lines are 30 feet east of the section line.

Glendale

The City of Glendale does not have any water or sewer lines at the intersection. The closest utility on 83rd Avenue is approximately half a mile south of the intersection. These are water and sewer lines stubbed across Loop 101. Nine hundred feet east of the intersection on Union Hills Drive a 12 inch water line exists for the Wastewater Reclamation Plant serving Arrowhead Ranch. The plant's sewer lines are between 1000 and 1100 feet east.

2.7.8 Traffic Signals, Pavement Markings, and Signing

Existing signs and pavement markings are in Figure 2.7.8. Table 2.7.8 lists the posted speed limits for the approaches into the intersection. Signalization is three phase with east/west as Phase I, northbound as Phase II, and southbound traffic as Phase III.

TABLE 2.7.8 - Posted Speed Limits				
	<i>EAST BOUND</i>	<i>WEST BOUND</i>	<i>NORTH BOUND</i>	<i>SOUTH BOUND</i>
<i>MPH</i>	50	40	50	40

2.7.9 Lighting

There are no existing electrical lighting devices in the intersection.

2.7.10 Geotechnical

Soil borings taken during the design of the 83rd Avenue Bridge are in Figure 2.7.10a. There are five classified soil types within the 83rd Avenue and Union Hills Drive intersection (Figure 2.7.10b): Antho-Carrizo complex, zero to one percent slopes (AfA), Carrizo gravelly sandy loam (Cb), Mohall clay loam (Mr), Torripsamments and Torrifluvents, Frequently Flooded (TD), and Tremant clay loam (Tg).

Antho-Carrizo complex, zero to one percent (AfA) is a nearly level soil unit found on narrow stream terraces which parallel stream channels. Areas typically range from ten to 50 acres in size with 30 to 40 percent of the surface area covered with gravel.

Carrizo gravelly sandy loam (Cb) is found in or on low terraces near stream channels and on alluvial fans. Slopes range from one to three percent. Areas are approximately 13 acres in size and long and narrow. The Cb soil is a source of sand and gravel for construction.

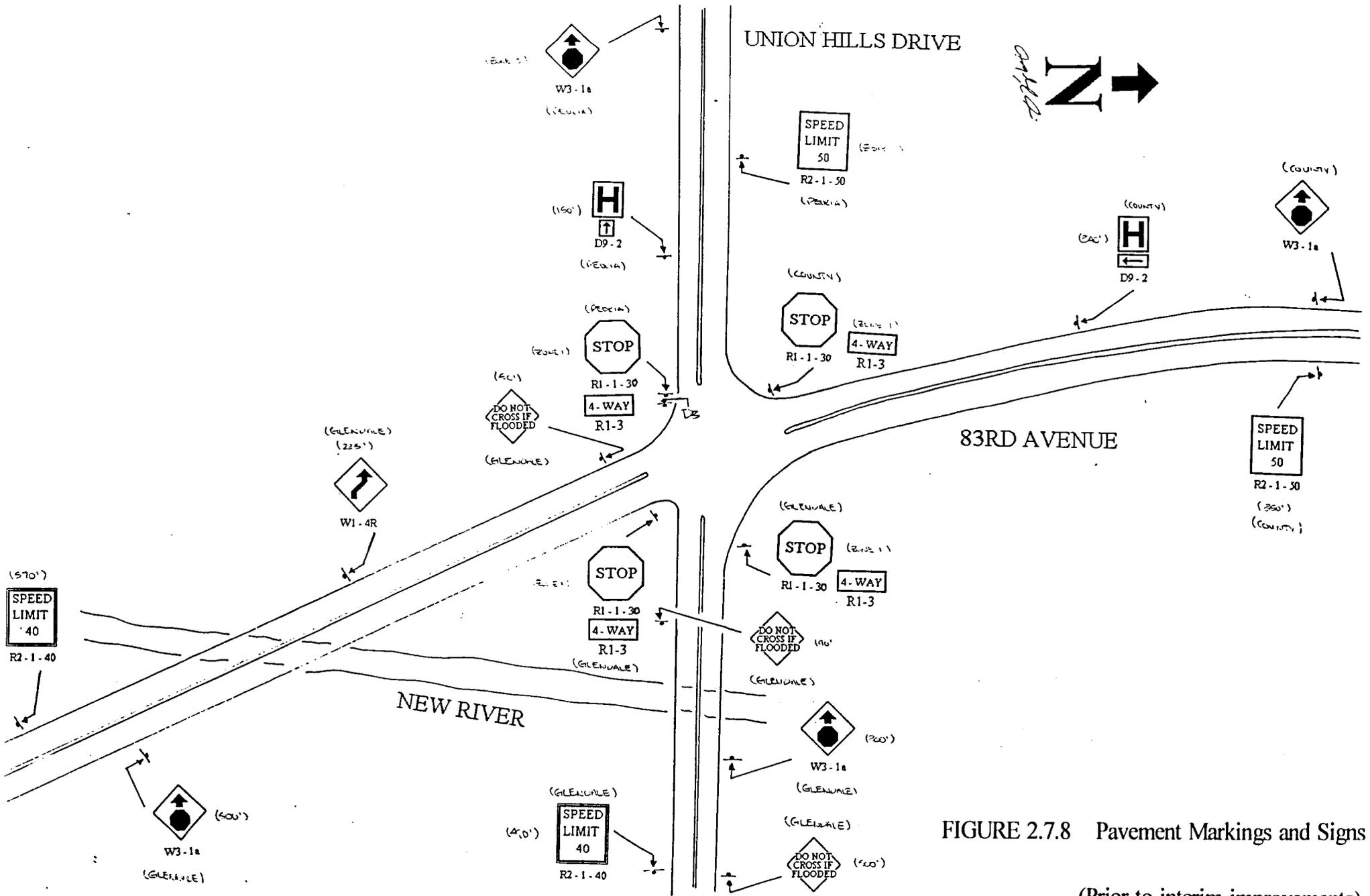
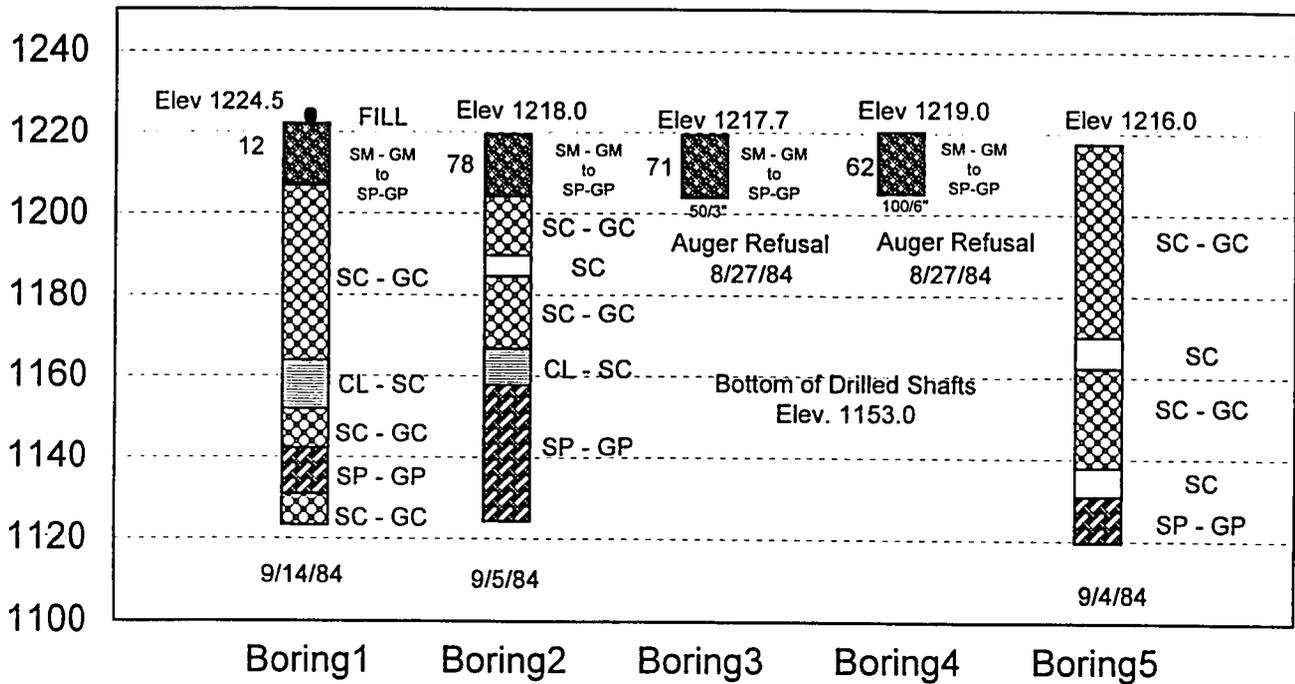


FIGURE 2.7.8 Pavement Markings and Signs

(Prior to interim improvements)

Soil Boring Logs

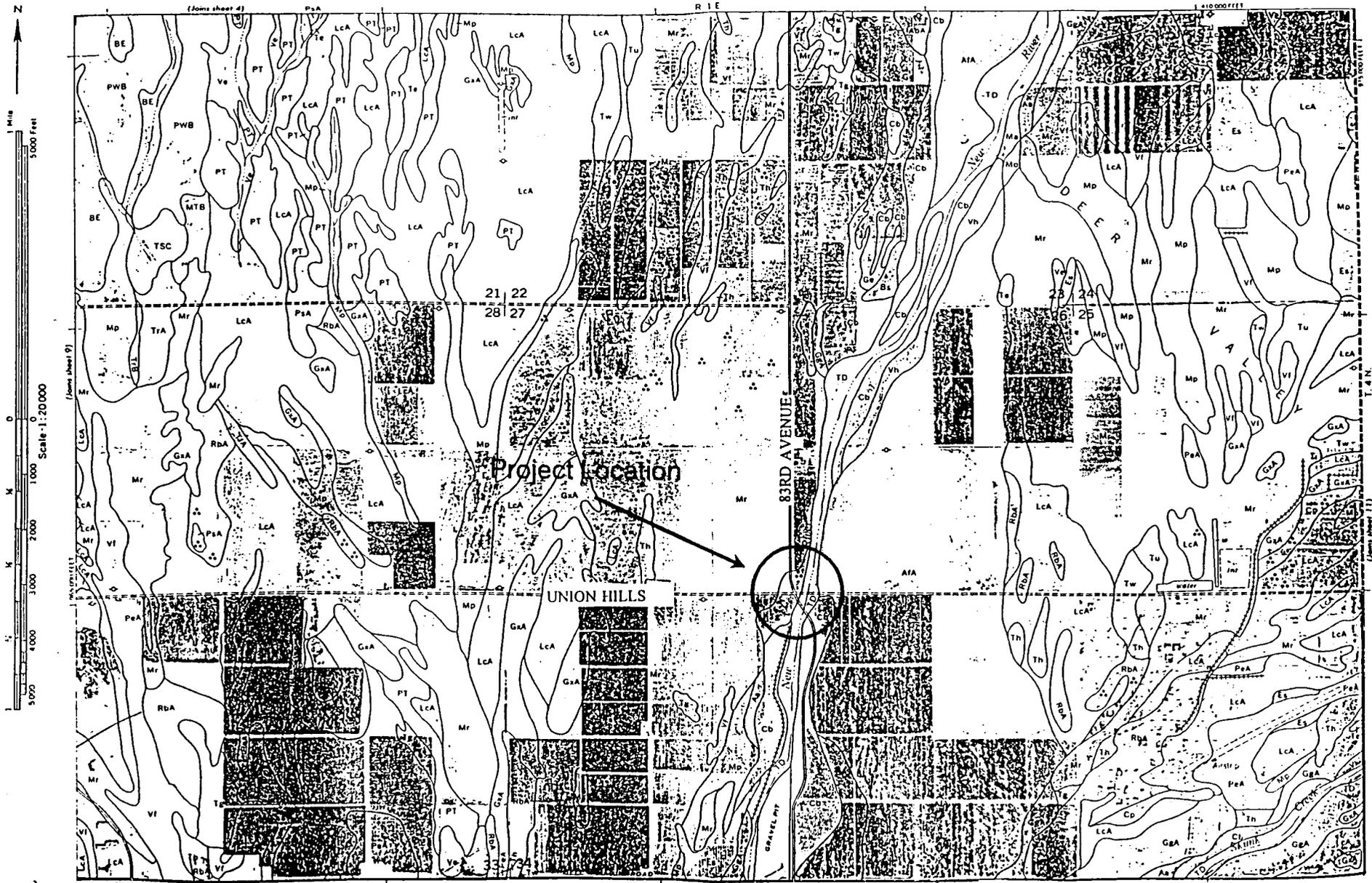
New River (South of Union Hills Drive)



NOTE: No free groundwater was encountered in the test borings at the time of drilling operations.

Soil Legend

- FILL Mixed trash and soil.
-  SM - GP to SP - GP Silty Sand & Gravel; brown, silt content decreases below an approx. depth of three feet and cobble content increases.
-  SC - GC Clayey sand, gravel & cobbles; variable content of clay with occasional clean sand or sand and gravel layers (SW - GW)
-  SC Clayey Sands; brown, some gravels, sand is fine to medium.
-  CL - SC Sandy Clay - Clayey Sand; brown, some gravelly zones.
-  SP - GP Sand & Gravel; brown, occasional cobbles, and clayey to zones.
- 50/3" 50 Blows/3" Penetration of a 140# Hammer with 30 free fall.
- 78 78 Blows per foot.



Source: United States Department of Agriculture, Soil Conservation Service in cooperation with University of Arizona Experiment Station

FIGURE 2.7.10 Soil Survey of Maricopa County, Arizona - Central Part

TABLE 2.7.10a - Soil Series Characteristics

Map Symbols	Soil Series	Dominant USDA Mixture	Depth from Surface (in)
AfA	Antho - carrizo complex	Sandy loam or gravelly sandy loam	0 - 60
Cb	Carrizo gravelly clay loam	Gravelly sandy loam Very gravelly coarse sand	0 - 5 5 - 60
Mr	Mohall clay loam	Clay loam Very fine sandy loam	0 - 35 35 - 60
TD	No valid estimate can be made for Torrripsamments and Torrfluents		
Tg	Tremant clay loam	Gravelly clay loam Gravelly loam	0 - 23 23 - 60

TABLE 2.7.10b - Suitability of Soils

Map Symbols	Suitability as a source of --		
	ROAD FILL	SAND	TOPSOIL
AfA	Good	Poor: high content of fines	Good
Cb	Good: if binder is used	Good	Poor: less than 20 inches to gravelly sand
Mr	Fair: excess fines; moderate shrink-swell potential	Unsuited: excess fines	Fair: Clay loam
TD	Too variable to be rated.		
Tg	Fair: excess fines	Unsuited: excess fines	Poor: more than 15 percent gravel

TABLE 2.7.10c - Soil Limitations			
Map Symbols	Degree and kind of limitation for--	Risk of corrosion to --	
		Local roads and streets	Uncoated Steel
AfA	Slight	High	Low
Cb	Severe: flooding	Low	Low
Mr	Severe: excess fines; moderate shrink-swell potential	High	Low
TD	Too variable to be rated	No valid estimate can be made	
Tg	Moderate: moderate shrink-swell potential	High	Low

Mohall clay loam (Mr) is a nearly level soil found on old alluvial fans and valley plains. The slope range is less than one percent and slightly convex. Areas are long and narrow, about 90 acres in size.

Torrripsamments and Torrifluents, Frequently Flooded, (TD) are found in long, narrow strips in the present channel of major streams. The TD soil consists of soils formed in a variety of stratified sediments recently deposited by intermittent streams. Slopes range from zero to three percent. TD contains almost no organic matter except the organic matter contained when deposited. TD is a mixture of sand and five to 80 percent gravel and cobbles.

Tremant clay loam (Tg) is found on old alluvial fans and stream terraces, mainly in the northern part of the Salt River Valley. Slopes are less than one percent. Areas are long and narrow, approximately eight acres in size. A few areas of the soil are homesites.

Soil uses in the project area include irrigating vegetation such as cotton, alfalfa, citrus, sorghum, sugar beets, small grain, safflower, vegetables, grapes, and barley.

2.8 TOPOGRAPHIC FEATURES

Figure 2.8 shows the United States Department of the Interior Geological Survey (U.S.G.S.) Calderwood Butte and Hedgpeth Hills Quadrangles. Glendale and Peoria inhabit the basin of the New River, which originates in the New River Mountains north and east of the two cities. Primary watercourses include the Agua Fria River, New River and Skunk Creek. The Agua Fria River originates in central Arizona in the mountains near Prescott. The river flows south more than 100 miles before it joins the Gila River 15 miles west of Phoenix. New River is a tributary of the Agua Fria River and flows southwesterly until it joins the Agua Fria River west of Glendale. Skunk Creek is the major tributary of the New River and starts in the New River

Mountains. Skunk Creek generally flows southwest until it joins the New River west of Glendale.

Generally, both cities lie on flat terrain. Glendale has gradual slopes of 4.5 feet per 1,000 feet toward the southwest and about 3 feet per 1,000 feet along the principal streets. The principal streets in Glendale run north and south or east and west in a rectangular grid. Similar slopes exist in the City of Peoria. However, the terrain of north Peoria is uneven. Several small mountains and hills can be found and some of them rise as much as 400 to 500 feet above the valley floor. The elevation at the Union Hills Drive and 83rd Avenue intersection is approximately 1,228 feet.

2.9 RIGHT-OF-WAY

There is 110 feet of existing right-of-way on Union Hills Drive. There is 80 feet of right-of-way along 83rd Avenue. Table 2.9a describes the existing right of way and Figure 2.9 is a strip map for the area.

CITY	ROW	LOCATION
Glendale	110' 80'	Union Hills Drive East of 83rd Avenue 83rd Avenue south of Union Hills Drive
Peoria	110'	Union Hills Drive West of 83rd Avenue
Maricopa County	80'	83rd Avenue north of Union Hills Drive

2.10 HAZARDOUS MATERIALS

The potential to encounter hazardous materials is minimal as there are no suspect land uses in the project corridor. An examination of published maps and aerial photo sources and a limited Phase I review warrants no additional investigations at this time. Right-of-way acquisition from typical hazardous materials sources (gas stations, industrial sites, etc.) is not necessary. Illegal dumping and its generic potential as hazardous materials source area is always a possibility, however, the above reviews encountered no dumping sites.

SECTION 3 - MAJOR DESIGN FEATURES

3.1 DESIGN FEATURES

3.1.1 Engineering

The roadway cross section shall conform to the Urban Minor Arterial Road as shown in Figure 3.1.1a and Urban (Major) Collector in Figure 3.1.1b. This typical section is from the MCDOT Roadway Design Manual. The bridge will be MCDOT's standard bridge for a section line road. Roadway width on the bridge will be 68 feet and the total bridge width will be 84 feet. Tables 3.1a and 3.1b summarize the design criteria.

Traffic Control Requirements (i.e., signals, signing, etc.) used to maintain access during construction will be performed according to standards set forth in the Manual on Uniform Traffic Control Devices (MUTCD). The project will meet all applicable codes and standards for the project locale, i.e., construction, public notification, etc. (American Association of State Highway and Transportation Officials, (AASHTO) 1992).

3.1.2 Drainage

Design Year	2020
Design Storm	100 - Year Flood
Design Speed	55 mph
Access	Bicycles and Pedestrians
Length	120-150 feet
Width	84'
Roadway Width	68'
Structural	Multi-span, precast concrete, bored caissons
Spurdikes	None required because of the well-defined channel.

Normally, there are no bridge maintenance costs for the first ten to twenty years. Occasionally after a ten year period, a bridge may develop problems with parts of the deck such as the expansion joints, concrete cracks and damaged railings. There is no way to anticipate what problems may arise. Each Maricopa County bridge gets a safety inspection every two years by

County inspectors, and certified safe in a report filed with ADOT. \$400.00 per bridge is the estimated cost of the biennial safety inspection.

Bank protection for the west bank of the New River will be designed according to the typical section in the Bell Park New River Bank Protection Plans and will conform to FCD requirements.

3.1.3 Right-of-Way

The right-of-way requirement for an Urban Minor Arterial Road (Union Hills Drive) is a minimum of 110 feet. 83rd Avenue, an urban (major) collector requires a minimum of 80 feet of right of way. To accommodate the planned parkway on 83rd Avenue north of Union Hills Drive, 150 feet of right-of-way is necessary. South of Union Hills Drive, the multi-lane roadway (divided - six travel lanes and right turn lanes) requires 130 feet of right-of-way.

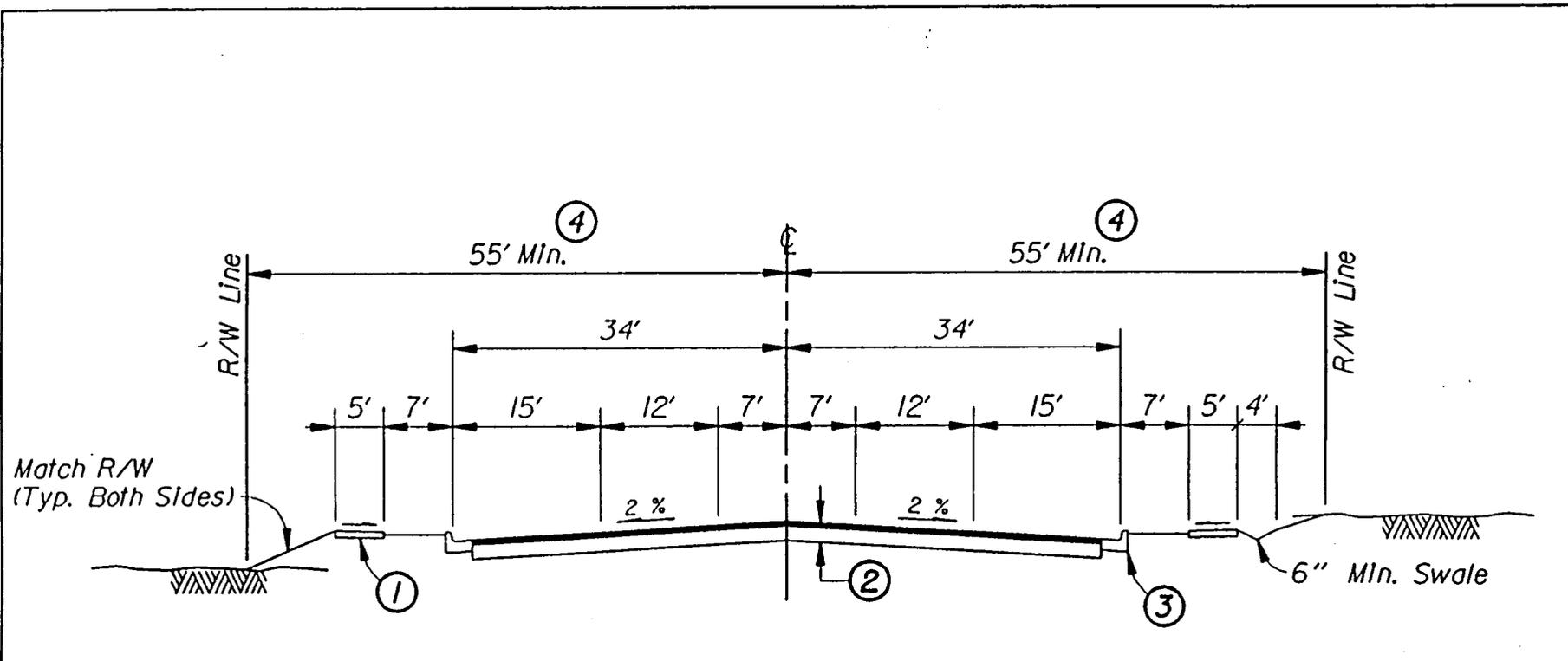
3.1.4 Utilities

Irrigation facilities exist in the citrus field. The power lines on the north side of Union Hills Drive will not require relocation for pavement widening. However, depending on the chosen alternative, a few power poles may need moved to allow the new alignment of the bridge and 83rd Avenue. APS reports that relocation of the power poles on 83rd Avenue will occur for the development of the northwest corner. APS plans due by the end of March will show the new location of these poles.

3.2 DESIGN EXCEPTIONS

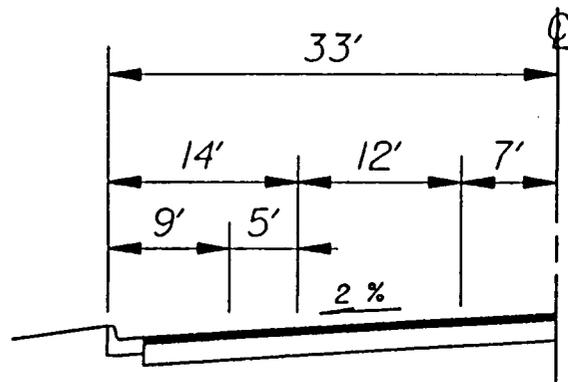
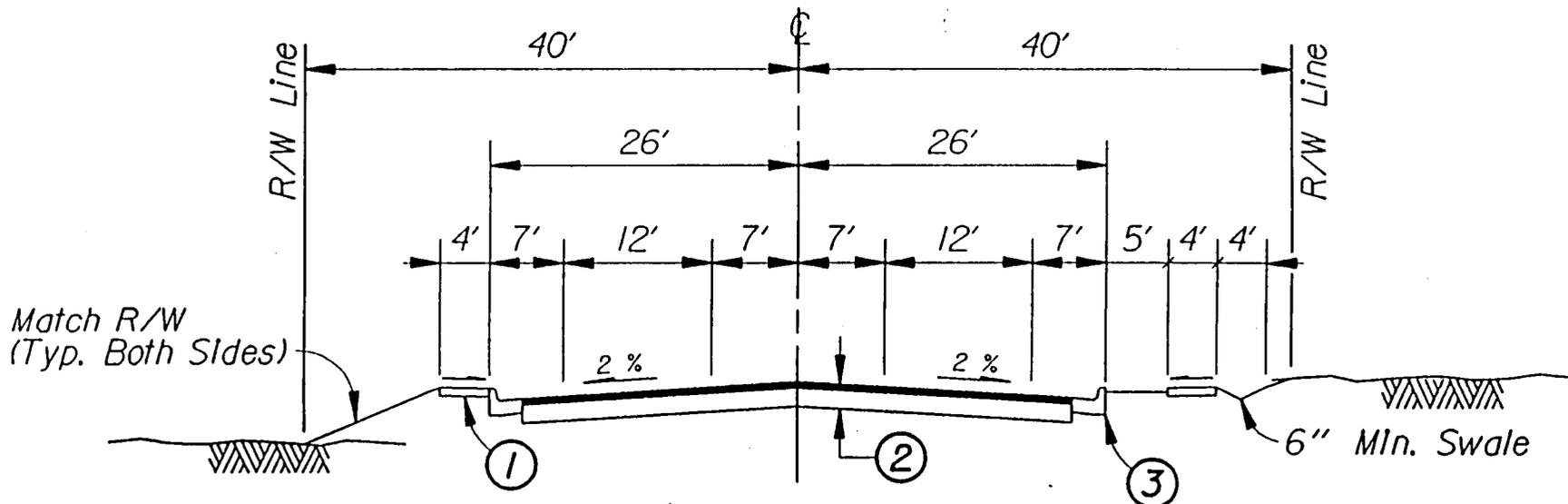
83rd Avenue: According to the standard typical section, an urban major collector should consist of two through lanes (12') and a center turn lane (14'). Additionally, the cross section includes curb and gutter and sidewalks. 83rd Avenue will not have sidewalks and curb and gutter south of Union Hills Drive. 83rd Avenue will have a left turn lane and will be 68' wide at the intersection. South of Union Hills Drive and after the left turn bay, the pavement will continue to have a 50:1 taper until the pavement returns to a width of 28 feet.

Because the project lies in a multi-jurisdictional area, the design standards of Peoria or Glendale may be substituted for MCDOT's design standards. The cities will review and provide approval at concept, 30, 60 and 90% of Design Stages.



- ① Designer Shall Offset S/W Except at Street Intersections (Typ. Both Sides).
- ② 4" Min. A.C. Over 10" Min. A.B. or Approved Equivalent.
- ③ MAG Std. Detail 220, Type A or MCDOT Std. Detail 2030. Curb & Gutter (Typ. Both Sides).
- ④ Road of Regional Significance Alignment - 70' Typical Half-Width Min.

Maricopa Co. Dept. of Transportation Standard Typical Section	URBAN MINOR ARTERIAL ROAD	FIG. 5.8
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WIDENED SECTION FOR PARKING

N. T. S.

- ① Designer Shall Offset S/W Except at Street Intersections (Typ. Both Sides).
- ② 4" Min. A.C. Over 10' Min. A.B. for Industrial/Commercial Areas, 2" Min. A.C. Over 9' Min. A.B. for Residential Areas or Approved Equivalents.

- ③ MAG Std. Detail 220, Type A or MCDOT Std. Detail 2030, Curb & Gutter (Typ. Both Sides).

Maricopa Co. Dept. of Transportation
Standard Typical Section

URBAN (MAJOR) COLLECTOR ROAD FIG. 5.10

TABLE 3.1b - Design Criteria for Union Hills Drive

Functional Classification	Urban Minor Arterial
Design Vehicle	WB-40
Turning Radius	Min. Design Radius = 40' Min. Inside Radius = 18.9'
Design Year	2020
Design Speed	55 mph (Level Terrain)
Pavement Design Life	20-25 years
Pavement Structure	4" Min. A.C. over 10" Min. A.B.
Horizontal Alignment	55 mph
Vertical Alignment	Required when algebraic difference in grade is equal to or greater than 0.5%
Clear Zones	26' minimum
Lane Widths (No Median)	Left Turn Lane = 14' Travel Lanes = 12'
Shoulder Widths	3'
Transverse Road Slope Sidewalks Offset Sidewalk	2.0% 5' 7' (except at street intersections)
Curb and Gutter Types	Type A
Curb Return Radii at Intersecting Streets	35'
Tapers	55:1
Access Control, Driveway and/or Turnout Design	Match Existing
Drainage	No over road flow, 100 - Year Flood
Structural	Concrete
Utilities	MCDOT guidelines for location
Lighting	None

TABLE 3.1c - Design Criteria for 83rd Avenue

Functional Classification	Urban Major Collector
Design Vehicle	WB-40
Turning Radius	Min. Design Radius = 40' Min. Inside Radius = 18.9'
Design Year	2020
Design Speed	55 mph
Pavement Design Life	20-25 years
Pavement Structure	4" Min. A.C. over 10" Min. A.B. for Industrial/Commercial Areas 2" Min. A.C. over 9" Min. A.B. for Residential Areas
Horizontal Alignment	55 mph
Vertical Alignment	Required when algebraic difference in grade is equal to or greater than 0.5%
Clear Zones	26' minimum
Lane Widths (No Median)	Left Turn Lane = 14' Travel Lanes = 12'
Shoulder Widths	7'
Transverse Road Slope Sidewalks Offset Sidewalks	2.0% 4' 5' (except at street intersections)
Curb and Gutter Types	Type A
Curb Return Radii at Intersecting Streets	35'
Tapers	55:1
Access Control, Driveway and/or Turnout Design	Match Existing
Drainage	No over road flow, 100 - Year Flood
Structural	Concrete
Utilities	MCDOT guidelines for location
Lighting	None

SECTION 4 - ALTERNATIVE DEVELOPMENT AND ANALYSIS

4.1 ROUTE CONSIDERATIONS

The Union Hills Drive Crossing at New River project develops and discusses six alternatives. The following section identifies each alternative and the advantages/disadvantages. At the end of this chapter, the evaluation matrix (Table 4.3) summarize all of the positive and negative impacts of each alternative.

4.1.1 *Alternative #1 "No Build Alternative"*

If the New River remains unbridged, the existing intersection will remain unchanged and the traffic west of New River will continue to have limited access to the Agua Fria Freeway (Loop 101) and Union Hills Drive traffic interchange during storm runoff. However, the advantages are no cost and immediate implementation. One disadvantage is that the intersection will be closed several weeks a year resulting in detour routes, traffic delays and potential hazards to residents and children. It is hazardous and inefficient to maintain a dip crossing that floods regularly because of the need to enforce a barricade and the accompanied high maintenance costs associated with this type of structure.

4.1.2 *Alternative #2 "Four Lane Dip Section"*

Alternative #2 provides a four-lane roadway continuing from Loop 101 and tying into the roadway west of 83rd Avenue on Union Hills Drive. Benefits of this solution are immediate implementation and elimination of the "bottleneck" problem. One disadvantage of this alternative is that a need for detour routes during storm runoff remains. The roadway will continue to be closed during these periods, therefore the need for barricades will remain. Additionally, maintenance costs increase because of the additional pavement replacement costs.

4.1.3 *Alternative #3 "Install Box Culverts"*

Install box culverts to pass low flow volumes to make the intersection a low flow crossing. The advantage is that Union Hills Drive will remain open for longer periods of time during the year. A disadvantage is that if the box culverts cannot handle the volume of water the road will flood, but only during extremely high volumes. According to the FCD, the estimated flows range from 2,400 cfs for a ten-year flood and 12,000 for the 100-year flood. The approximate cost is \$360,000 and it would take six months to build the box culverts. This alternative will provide 12 - 10' x 4' box culverts and a 68 foot wide roadway. The cost estimate includes the cost of the box culverts, headwalls, backfill, pavement replacement, roadway embankment protection and guardrail. An additional \$60,000 for engineering and construction management makes the total cost \$420,000. The alternative would require multiple box culverts to convey the flow and costs as much as a bridge. Lastly, box culverts are not a viable option, as they would cause a backwater depth greater than one foot.

4.1.4 *Alternative #4 "New Alignments to Redirect Traffic Flow"*

New alignments to redirect the traffic away from the dip crossing on Union Hills Drive at New River will eliminate the need to build a bridge at this location. The three best alternative routes are Deer Valley Road, Bell Road and 83rd Avenue. The nearest existing bridged crossing is Bell Road, one mile south of Union Hills. Beardsley Road and Deer Valley Road, to the north, will require longer bridges than one at Union Hills Drive. Deer Valley Road is a dip crossing and Beardsley Road is discontinuous in the project area with no existing crossing of the river. Deer Valley Road will increase the mileage by three miles on an emergency route; Bell Road is currently being widened to six lanes to meet current traffic demands, and the angle of 83rd Avenue will require a longer crossing and does not provide direct access to Loop 101, as Union Hills Drive does. Development is occurring on the southwest and soon to the northwest; therefore, the residents and emergency vehicles need direct access to Loop 101.

4.1.5 *Alternative #5 "Union Hills Drive Bridge"*

Construct a bridge across Union Hills Drive and produce an all-weather, 100-year flood crossing of New River. The bridge will be MCDOT's standard bridge for a section line road. This includes an 84-foot wide bridge with 68 foot roadway curb to curb. The bridge length will be between 190 and 200 feet. This alternative allows for smoother, direct access and passage for emergency vehicles and passenger cars. It eliminates the "bottleneck" problem and 83rd Avenue will return to the section line alignment. South of Union Hills Drive, 83rd Avenue needs alterations to allow the northern portion to be placed on the section line. The pavement structure for both roadways will be 4" AC over 10" AB. Figure 4.1.6a is a schematic of the bridge and 83rd Avenue alignment. This figure shows both Alternative #5 and Alternative #6. With this alternative, drivers will have a direct connection to the freeway. The new 83rd Avenue will remain a low-water crossing. Removal of the existing roadway will happen after construction is complete.

The realignment of 83rd Avenue on the section line requires 2,234 feet of new roadway and provides a longer dip section (430') through the New River. Concrete aprons will be added to 83rd Avenue in the dip section. Aprons are necessary because if this is the chosen alternative, a bridge for 83rd Avenue will not exist in the near future and the aprons will help to minimize the maintenance and/or replacement costs associated with an unbridged dip crossing. New right-of-way may be necessary for the realignment of 83rd Avenue depending on the preferred alignment. The Amended Map of Dedication and Grant of Easements: Arrowhead Mall (3/24/92), shows the right-of-way dedication for the abandoned 83rd Avenue bridge project. This right-of-way will allow the intersection to be realigned to 90°, but will not satisfy all of MCDOT's current design standards in the Roadway Design Manual. MCDOT, Glendale and Peoria will address the advantages and disadvantages of acquiring new right-of-way versus developing a new alignment during the design phase. The cities must agree to any proposed right-of-way recommendations.

The realignment, earthwork and channel alterations may impact the 42" storm sewer. The pipe may need relocation to bring 83rd Avenue down to the grade of the river bottom and for the necessary alterations to the bank stabilization. New River has rip-rap (gabion) bank protection

and will need modifications for the new alignment of 83rd Avenue. This entails removing the existing rip-rap and replacing with soil-cement or a similar gabion structure. This improvement can be completed using the specifications similar to those in the New River Channelization 99th Avenue Dip Crossing Design Plan Civil Job Number 1090-03-04 and 1090-03-02. Approximately 20,000 yd³ of cut and fill will be necessary for the new alignment. An advantage is that the intersection will be 90°, but a disadvantage is that 83rd Avenue will remain closed during storm periods.

A main disadvantage of this alternative depends on the need for providing a bridge crossing the New River for 83rd Avenue. If the need for a bridge on 83rd Avenue ever arises, the cost of a standard 84 foot wide bridge will be \$1,870,000 (bridge only in 1994 dollars). The total project cost in 1986 was \$2,800,000.

4.1.6 Alternative #6 "Union Hills Drive and 83rd Avenue Combined Bridge"

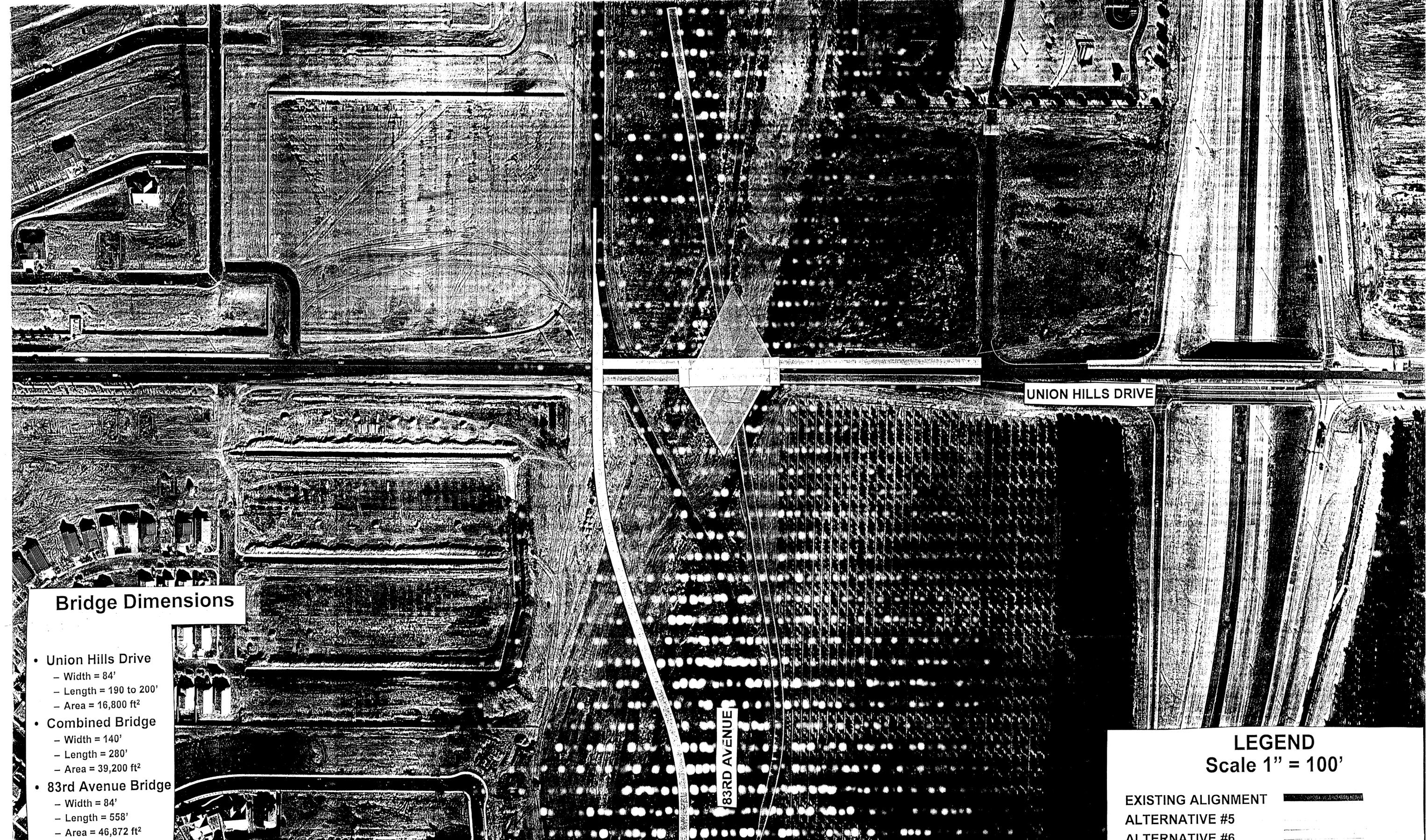
This alternative will provide a bridge crossing the New River and enable vehicles on both roadways to cross the New River. This alternative eliminates the need for a separate bridge for 83rd Avenue and eliminates the road closures due to storm runoff by eliminating both of the dip crossings. The bridge would produce all-weather, 100-year flood crossing of the New River for both roadways. Figure 4.1.6a shows a schematic of the proposed bridge and new alignment of 83rd Avenue. This improvement will tie in directly to the intersection of Loop 101. Curve data for the 83rd Avenue existing and proposed alignments are in Figure 4.1.6b. Figure 4.1.6c shows the bridge dimensions and alignment. Centerlines of the two roadways will intersect at an angle of 80° and the bridge dimensions will be 280 feet in length and 140 feet in width.

Roadway widths of Union Hills Drive and 83rd Avenue will be 68 feet at the intersection. 83rd Avenue will taper down to one lane north and south of the intersection. The new curve approaching the bridge at Union Hills Drive requires the removal or relocation of at least two power poles in the southeast corner. There is an existing well that lies in the proposed 83rd Avenue alignment. Depending on the anticipated development of this parcel of land, the relocation or removal of the well may be necessary.

One advantage of this alternative is that the existing 83rd Avenue acts as a detour route during the construction. This alternative also eliminates the maintenance cost associated with paved dip crossings and eliminates need for a bridge crossing on 83rd Avenue. The primary advantage is that the area will have only one construction period and detour routes and will receive bridge crossings for both Union Hills Drive and 83rd Avenue. Additionally, this alternative does not affect nor impact the 42" storm sewer or the existing bank stabilization on the west side of New River. This alternative requires less earthwork, eliminates both dip crossings and provides all-weather access in all directions. Although the overall project cost (including new right-of-way) is approximately \$2.9 million dollars more than Alternative #5, the cost difference remains smaller than a future bridge for 83rd Avenue.

Initially, Alternatives #5 and #6 originated on the premise that the 83rd Avenue parkway would be developed north of Union Hills Drive, and 83rd Avenue, between Bell Road and Union Hills

Drive, would remain an arterial roadway. As an arterial in Glendale's General Plan, 83rd Avenue would eventually be a four-lane roadway not a six-lane parkway. Recent discussions between the cities of Glendale and Peoria have addressed 83rd Avenue becoming a multi-lane roadway consisting of a divided roadway with six travel lanes and right turn lanes. If the length of the combined bridge increases to 310' (40' extension), it will adapt to the planned six lane roadway with right turn lanes and a 16-foot left turn lane. This improvement will cost an additional \$168,000. North of the bridge, 83rd Avenue can widen to accommodate the parkway cross section that includes six-twelve foot lanes and a thirty-foot median.



Bridge Dimensions

- Union Hills Drive
 - Width = 84'
 - Length = 190 to 200'
 - Area = 16,800 ft²
- Combined Bridge
 - Width = 140'
 - Length = 280'
 - Area = 39,200 ft²
- 83rd Avenue Bridge
 - Width = 84'
 - Length = 558'
 - Area = 46,872 ft²

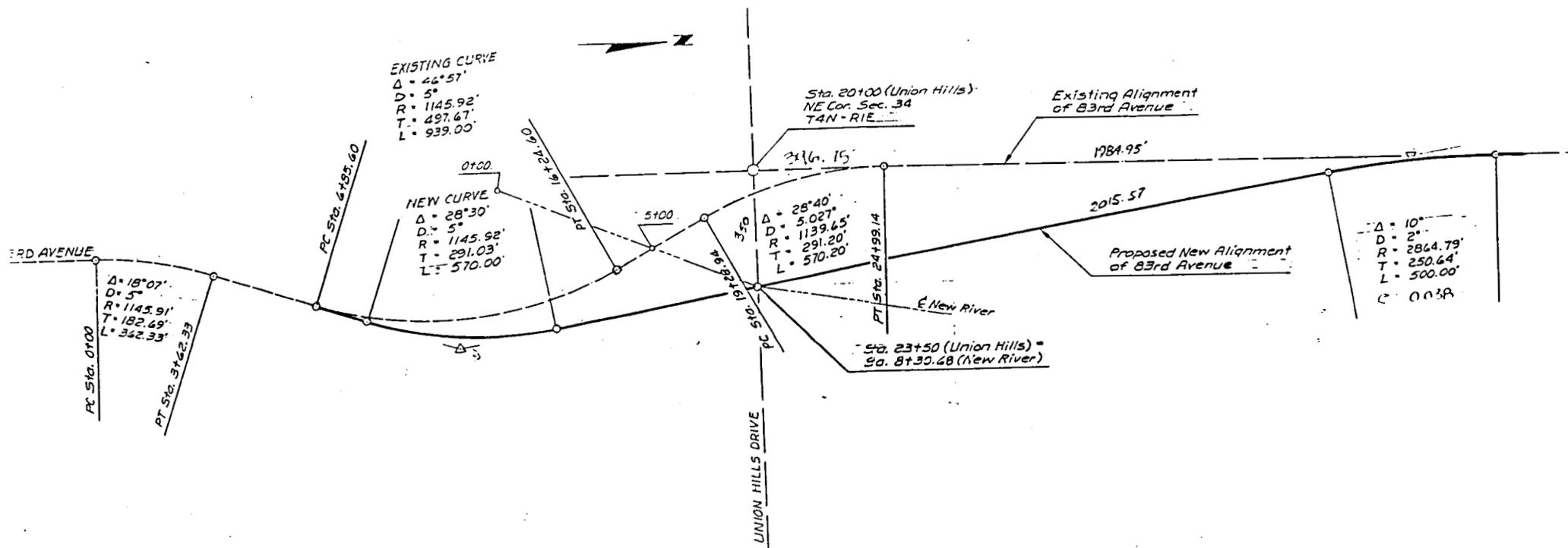
LEGEND
Scale 1" = 100'

EXISTING ALIGNMENT

ALTERNATIVE #5

ALTERNATIVE #6





PROJECT 68958

----- Existing Alignment of 83rd Avenue

_____ New Alignment of 83rd Avenue (Alternative #6)

FIGURE 4.1.6b Existing and Proposed Curve Data for 83rd Avenue

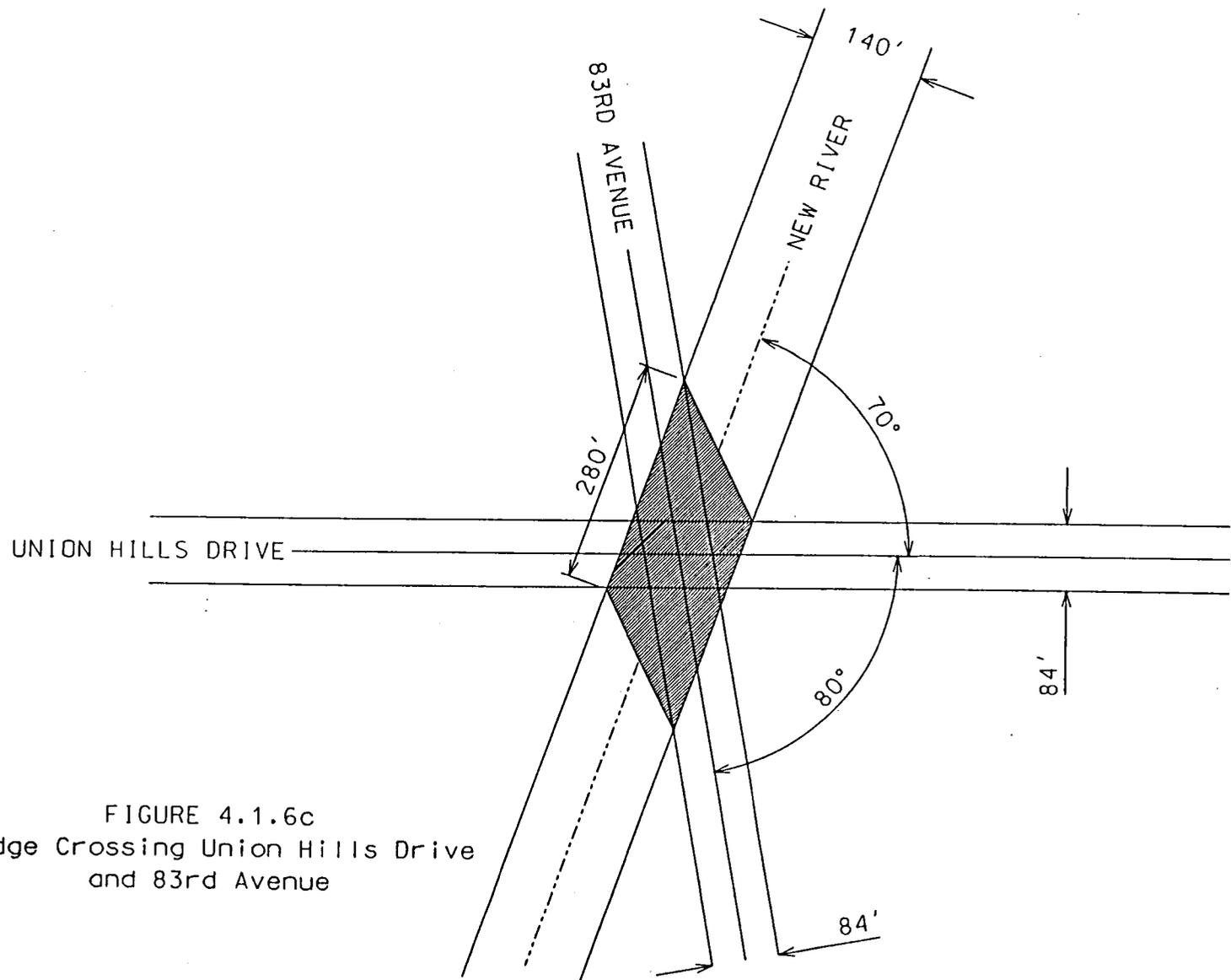


FIGURE 4.1.6c
 Bridge Crossing Union Hills Drive
 and 83rd Avenue

4.2 IMPACT OF ALTERNATIVES

The proposed bridge construction project will be subject to an EA consistent with the National Environmental Policy Act (NEPA) and FEMA guidance. Appendix D contains the EA. The EA covers both the bridge and approach roads. Projects funded under the Hazard Mitigation Grant Program must comply with all appropriate environmental requirements. This includes Executive Order 11988, Floodplain Management, and Executive Order 11990, Protection of Wetlands, and the environmental requirements of NEPA. These requirements ensure the application of all practical means and measures to protect, restore, and enhance the quality of the environment. The U.S. Army Corps of Engineers reports that this project may require a Section 404 permit. The discharge of dredged or fill material into the "waters of the United States," including adjacent wetlands requires a Section 404 permit. The USFWS determined no wetlands are present in the project area. All build alternatives will require either a nationwide or individual Section 404 permit. Based on preliminary design a combination of nationwide permits #13, 14 and 25 would appear appropriate for alternative #5 and #6. Examples of activities requiring a permit are placing bank protection, temporary or permanent stock-piling of excavated material, grading roads, grading (including vegetative clearing operations) that involves the filling of low areas or leveling the land, construction weirs or diversion dikes, constructing approach fills, and discharging dredged or fill material as part of any other activity (See letter in Appendix C). A section 401 State Water Quality Certification may be required depending on whether the project meets the conditions of a Nationwide Permit or requires an individual permit.

4.2.1 *Natural Environment*

The Arizona Department of Agriculture states that the project may require a plant survey if the project affects any protected plant species. Vegetation removal will be minor, because little native vegetation remains due to the previous channel modifications and river bed uses. Under the Arizona Native Plant Law, the Arizona Department of Agriculture will consider the few existing tree and cacti species for salvage. The response from the U.S. Fish and Wildlife Service that they had reviewed the National Wetland Inventory maps and the maps show that there are no wetlands of concern and no aquatic species present in the area. Additionally, the Endangered Species staff determined that there are no threatened or endangered species of concern in the area. The Arizona Game and Fish Department says that the project should not result in any significant adverse impacts to wildlife resources, and that their current records do not indicate the presence of any endangered, threatened, or other special status species (See letters in Appendix B).

The project lies in the 100-year floodplain as defined by FEMA, therefore the project will require a hydrological analysis. Coordination with the FCD is underway. To a limited degree, the river will require channelization and bank stabilization. Abutment protection, bank stabilization and channelization will extend beyond the existing right-of-way and will require easements. The riverbed is stable due to the prior channel and embankment work by the FCD and others associated with the adjacent developments.

Because the project involves road widening, the project may be subject to micro-scale air quality analysis modeling requirements. It is not anticipated that the project will increase the traffic capacity or volumes. The improvement will provide all-weather use of Union Hills Drive and 83rd Avenue. The project lies within the non-attainment area for CO, PM₁₀, and O₃ and is covered under the current Transportation Improvement Program (TIP) item 248, which is in conformity with the State Implementation Plan (SIP). Current conformity is only good to November. New analysis will be done this summer.

A visual investigation showed that no highly sensitive visual resources were found within the adjacent land uses and construction will not impact the visual quality of the area. There are no parks, forests, or refuges within one mile of the project. Recreational opportunities will remain unchanged.

4.2.2 Construction Impacts

The local traffic and emergency vehicles require a detour route. Construction will be six months and by the time construction begins the Bell Road construction will be complete. Air and noise quality impacts are insignificant based on the location and nature of the project. Some deterioration of air quality during construction is due to the operation of construction equipment combined with slower traffic speeds that are associated with a construction zone. This localized condition will cease when the project is complete and will eliminate the current traffic problem associated with the "bottleneck" intersection. Construction noise should not be a problem due to the limited number of close residential receptors and distance from the right-of-way. The project requires dust control permits before the earthmoving activities because of the acreage involved. Regulated activities include, but are not limited to, dust control, pollution discharge elimination (NPDES), and stormwater runoff prevention. The standard mitigation measures and recommendations can be found in Section III of the EA.

4.2.3 Socioeconomic Impacts

The socioeconomic impact is positive because of the improved access through a previous "bottleneck" intersection. The bridge is consistent with and supports the area existing and planned land uses. Conversion of the remnant citrus groves will occur due to the planned development of residential and commercial properties. Some citrus groves may remain due to the unusually shaped parcels bounded by the river or freeway. Because of their shape, these parcels may be difficult to develop. A bridge would serve this rapidly developing area and would not require the relocation of any residential or business developments. The only affected objects are the row of citrus trees and possibly an alteration to the irrigation delivery system. This area is less than one acre and is already in the land use plan for other uses. Therefore, the conversion of the agricultural land would not require a Farmland Conversion Rating under the Federal Farmland Protection Act.

The impacts to the area golf courses, Peoria Sports Complex, Arrowhead Hospital, and the Arrowhead Towne Center will be positive as the improvement provides better year round access for the entire area. No impacts to neighborhood continuity, business disruption, or access changes will result from this project.

4.2.4 *Cultural Resources*

As previously stated in Section 2.2, an ASM site file review and field survey, and coordination with the State Historic Preservation Office (SHPO) are underway. The project may contain the presence of archaeological, historical or culturally significant resources. Unintentional discovery of "significant" cultural resources, sites or artifacts exists, because there was no survey of the project area completed during the construction of the existing roadway. Per the recommendations of ASM, the project will require an archaeological survey of the existing right-of-way. The contractor shall follow the "Discovery Clause" of the Arizona Antiquities Act (ARS 41-844) and MAG Standard Provision 107.4.

Louis Berger Associates, Inc. (LBA) is under contract with MCDOT to perform the archaeological survey for this project. LBA scheduled the work to begin May 9, 1994 and anticipated the assignment, including all reporting will to be complete within 30 to 45 days. The final Environmental Assessment report will include LBA's findings.

4.2.5 *Hazardous Materials*

The project does not require right-of-way from land containing hazardous materials from sources such as gas stations or industrial sites. The sides of the right-of-way will be checked for petroleum contaminated soils or petroleum products spillage. Because the project area is almost completely undeveloped open space and rural in character, the possibility of encountering hazardous materials during construction is minimal. MCDOT shall inform the contractor of MCDOT's hazardous materials policy and procedures.

4.2.6 *Economic Efficiency*

This project will eliminate a "bottleneck" intersection and eliminate the closing of this river crossing due to storm runoff. Emergency vehicles must take a three-mile detour for access to the area hospitals and the situation results in substantial cost to the County to barricade the area and enforce and monitor the barricades. The influx of traffic heading to and from the Apache School impacts the surrounding community when detours reroute the traffic through the nearby residential neighborhood during the storm events. The traffic pattern in this area changes from residential to high traffic.

Maricopa County used the Unilink Benefit Cost Model, developed by the New Mexico Highway and Transportation Department, to evaluate the cost-effectiveness of constructing a bridge structure on Union Hills Drive at New River. MCDOT ran two scenarios through the model. First it was necessary to model the crossing when the existing structure was usable (when the riverbed remained dry). Secondly, MCDOT ran the model with a closed crossing and detour routes. Traffic, accident and speed data is from MCDOT's traffic records, and the forecasted traffic levels are from MAG's Travel Forecasts.

Table 4.2.6a identifies the data used in the two model runs. After the runs were completed, MCDOT merged the results by weighing the results by the amount of time the crossing was closed over a two-year period. Travel delay costs and operating costs are considered in the model. The benefits and project costs are then discounted by an interest factor to account for the value of money over time. Seven percent (7%) is the model default, and has been the prevailing rate for 20 to 30 year bonds over the last year. Table 4.2.6b summarizes the model runs and gives the benefit/cost ratio for the three cases: dry, flowing and combined. A benefit/cost ratio of 13.5 for the Union Hills Drive Bridge project is well above the established minimum necessary to support a cost-effective project. The benefits for this bridge project exceed the costs by a considerable margin indicating that this project has definite merit based on economic efficiency. The expected advantages to driver safety, the decline of travel time for emergency vehicles, and the general decrease in roadway travel and fuel consumption provides measurable benefits that justify the cost of construction.

TABLE 4.2.6a - Model Inputs						
Distance when open	Distance when closed	Traffic Counts		Travel Time Costs	Fuel Costs/Auto Use	Closure Time
		1993	2010			
0.5 miles	3 miles	8,000	33,000	\$8.00/hour	\$0.28/mile	115 days

TABLE 4.2.6b - Model Results							
River Status	Distance (miles)	Operating and Travel Time Benefits	Present Worth of Project	Present Worth of Project Cost	Net Present Worth	Percent of Year River Closed-Flowing	Benefit/cost
Dry	0.5	\$181,089	\$5,920,539	\$1,713,084	\$4,207,455	15.75%	3.46
Flowing	3.0	\$4,552,310	\$115,127,800	\$1,713,084	\$113,414,700		67.20
Combined	N/A	\$869,706	\$23,124,423	\$1,713,084	\$21,411,336		13.50

The grant application used the preliminary information provided in Table 4.2.6a and Table 4.2.6b. Additional model runs were necessary to discern the merits of the top two alternatives (Alternative #5 and Alternative #6). The primary objective was to weigh the advantages and disadvantages of a bridge on Union Hills Drive only compared to a combined bridge during the periods of storm runoff and roadway closures. Table 4.2.6c compares Alternative #5 and Alternative #6. Without any type of bridge crossing, detour routes for both Union Hills Drive and 83rd Avenue are three miles long during the storm runoff periods. With a bridge constructed on Union Hills Drive only, 83rd Avenue traffic will remain closed during the runoff periods. The detour route for 83rd Avenue reduces from three miles to 0.5 miles, but the increased traffic on Union Hills Drive will exceed the roadway capacity. On the other hand a combined bridge will provide all-weather access for both roadways and will have a level of service (LOS) rating of C even during the runoff periods.

TABLE 4.2.6c - Alternative #5 vs. Alternative #6		
	ALTERNATIVE #5 Union Hills Bridge	ALTERNATIVE #6 Combined Bridge
Project Cost	\$1,500,000	\$2,500,000
Benefit/Cost	68.81*	71.59
LOS - Union Hills Drive	E	C
LOS - 83rd Avenue	Closed	C
# of Closure Days on 83rd Avenue	~60 days/year (20% of year)	0

*Note: This number does not reflect the roadway capacity being exceeded by 20,000 vpd during periods of storm runoff.

4.3 EVALUATION MATRIX OF ALTERNATIVES

Table 4.3a is a matrix showing the costs associated with each alternative. Table 4.3b summarizes the impacts of all seven alternatives. Each alternative can have a positive, negative or neutral impact on the evaluation criteria. The ranking is either positive (1), more positive (2), negative (-1), more negative (-2) or neutral (0). The alternatives with an N.E. ranking means that definite locations do not exist and therefore, the impacts cannot be quantified.

The ideal alternative would encompass the new bridge, realignment of 83rd Avenue dip crossing and reconstruction of the 83rd Avenue and Union Hills intersection to the ultimate configuration. In October of 1991, the City of Peoria ranked three different alternatives based on the following criteria:

- Impact on the City of Peoria concept for an 83rd Avenue Parkway in accordance with our Comprehensive Master Plan.
- Consistency with the North Valley Area Specific Plan.
- Impact on traffic flows on Union Hills Drive.
- Impact on traffic flows on 83rd Avenue.
- Impact on property within the City limits of the City of Peoria.

The construction of a Union Hills Drive Bridge over New River with a low-water crossing by 83rd Avenue over New River was the preferred alternative. Peoria was also willing to accept one bridge for both 83rd Avenue and Union Hills Drive over New River. The construction of a bridge with two T-intersections for 83rd Avenue was not considered as a favorable solution. The combined bridge will have a positive impact and satisfy all of the above requirements.

Table 4.3a - UNION HILLS DRIVE BRIDGE OVER NEW RIVER
COST MATRIX

EVALUATION CRITERIA	Alternative #1 Do Nothing	Alternative #2 Paved Dip Section	Alternative #3 Box Culverts	Alternative #4 New Alignments	Alternative #5 Union Hills Drive Bridge (83rd Ave. Realigned)	Alternative #6 Combined Bridge
PROJECT LENGTH (UNION HILLS) (FT)	0	1,000	1,000	-	1,000	1,000
PROJECT LENGTH (83RD AVENUE) (FT)	0	0	0	-	2,234	3,406
EARTHWORK (yd ³)	0	10,000	NE	NE	20,000	5,000
COST	\$0	\$75,000	NE	NE	\$150,000	\$37,500
BRIDGE (materials, channelization and construction)	\$0	\$0	\$0	\$1,600,000 @ Beardsley \$1,100,000 @ Deer Valley \$2,800,000 @ 83rd Avenue	\$672,000	\$1,568,000
BRIDGE UPGRADE TO ULTIMATE CONFIGURATION	NA	NA	NA	NA	NA	\$168,000
BOX CULVERTS	\$0	\$0	\$420,000	**	NA	NA
4" AC	NA	\$38,974	*	**	\$94,695	\$97,830
10" AB	NA	\$22,715	*	**	\$55,191	\$75,736
BITUMINOUS PRIME COAT	NA	\$2,044	*	**	\$4,965	\$6,813
PRESERVATIVE SEAL	NA	\$350	*	**	\$751	\$1,137
WATERING	NA	\$901	*	**	\$2,190	\$4,127
EMBANKMENT	NA	\$3,000	*	**	\$4,500	\$1,500
DUST	NA	\$585	*	**	\$403	\$619
SUBGRADE PREPARATION	NA	\$3,788	\$3,788	**	\$11,492	\$12,917
CURB AND GUTTER	NA	\$11,000	\$11,000	**	\$8,800	\$19,525
SIDEWALKS	NA	\$15,000	\$15,000	**	\$12,000	\$26,625
STRIPING/SIGNALIZATION	\$	\$1,500	*	**	\$50,000	\$50,000
BANK STABILIZATION, RIP RAP (GABIONS)	NA	NA	NA	**	\$50,000	NA
CONCRETE APRONS	NA	NA	NA	**	\$61,333	NA
SAW CUT & REMOVALS (e.g EXISTING PAVEMENT)	NA	NA	*	**	\$50,000	\$50,000
DETOUR ROUTES	\$	\$	\$	**	\$150,000	\$150,000
UTILITY RELOCATIONS	NO	NO	NO	**	\$50,000	\$70,000
CONTINGENCY (15%)	\$0	\$26,229	\$67,468	**	\$225,000	\$351,049
TOTAL CONSTRUCTION COST	\$0	\$201,086	\$517,256	\$0	\$1,653,320	\$2,691,378
NEW RIGHT OF WAY	NO	NO	NO	**	\$50,000	\$1,500,000 (Peoria's Estimate)
ENGINEERING & DESIGN	\$0	\$20,109	\$51,726	**	\$150,000	\$200,000
SURVEY & GEOTECHNICAL	\$0	\$20,109	*	**	\$75,000	\$100,000
CONSTRUCTION ADMINISTRATION	\$0	\$50,000	*	**	\$170,000	\$300,000
TOTAL COST	\$0	\$291,303	\$568,982	\$1,000,000 - \$3,500,000	\$2,098,320	\$4,791,378

NE = Not Evaluated; NA = Not Applicable; * Item included in FCD estimate; ** Items depend on chosen alternative alignment

Table 4.3b - UNION HILLS DRIVE BRIDGE OVER NEW RIVER
EVALUATION MATRIX

EVALUATION CRITERIA	Alternative #1 Do Nothing	Alternative #2 Paved Dip Section	Alternative #3 Box Culverts	Alternative #4 New Alignments	Alternative #5 Union Hills Drive Bridge	Alternative #6 Combined Bridge
CONSTRUCTION COST	Maintenance and Replacement Costs	\$175,307	\$562,235	1,000,000 - \$3,500,000	\$1,432,018	\$2,641,253
NEW R.O.W. (ACRES)	0	0	0	?	YES -2 for 83rd Avenue	YES (-2) <9 for 83rd Avenue
ECONOMIC EFFICIENCY						
OPERATION AND MAINTENANCE	-2.0	-2.0	-1.0	-1.0	-1.0	1.0
CONSTRUCTION DETOURS	1.0	-1.0	-1.0	-2.0	-2.0	-1.0
UTILITY IMPACTS	0.0	0.0	0.0	-1.0	-1.0	-1.0
POLITICAL FEASIBILITY						
TRAFFIC	-2.0	-1.5	0.5	1.0	1.0	2.0
SAFETY	-2.0	-1.5	1.0	0.0	1.5	2.0
RESIDENTIAL/BUSINESS IMPACTS	-2.0	-1.5	1.0	0.0	1.5	1.5
ENVIRONMENTAL FEASIBILITY						
AGRICULTURAL LANDS IMPACTS	0.0	0.0	0.0	-1.0	0.0	0.0
FLOODPLAIN IMPACTS	0.0	0.0	0.0	-1.0	0.0	0.0
AIR QUALITY IMPACTS	-1.0	-1.0	0.5	0.5	1.0	2.0
WILDLIFE MITIGATION	0.0	0.0	0.0	0.0	0.0	0.0
WETLANDS MITIGATION	0.0	0.0	0.0	0.0	0.0	0.0
CULTURAL RESOURCES	0.0	0.0	0.0	0.0	0.0	0.0
HAZARDOUS MATERIALS	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	-8.0	-8.5	1.0	-4.5	1.0	4.5

0 = Neutral; 1 = Positive; 2 = More Positive; -1 = Negative; -2 = More Negative; N.E. = Not Evaluated or Not Applicable; ? = Variable

SECTION 5 - SELECTION OF PREFERRED ALTERNATIVE

5.1 PREFERRED ALTERNATIVE

This project lies in a rapidly developing portion of Maricopa County. MCDOT's responsibility is to provide a regional transportation system and facilities while protecting the safety of the citizens of Maricopa County. In an effort to facilitate a cooperative system planning effort between Peoria and Glendale, MCDOT is recommending Alternative #5, the Union Hills Drive bridge option, as the preferred alternative. Figure 5.1 shows the preferred alternative, alignment and intersection improvements.

Alternative #5, the Union Hills Drive Bridge option, is the preferred alternative of the cities of Peoria and Glendale, and the local private stake holders. They did not recommend Alternative #6 due to the total project cost, the cost of right-of-way acquisition and the potential impact to the parcel of land in the northeast quadrant. These parties believe that a single bridge crossing on Union Hills Drive can adequately serve the area and do not see the need for a bridge on 83rd Avenue.

Interim improvements have solved 70 to 80% of the dry weather traffic delays and the Union Hills Drive Bridge will relieve congestion and provide all-weather access to the area during storm events. A bridge on Union Hills Drive will improve mobility and decrease time delays during periods of storm runoff. Safety and environmental enhancements will occur because Union Hills Drive will remain open year round. Fuel consumption improves by reducing vehicle delays and decreasing pollutants emitted from idling vehicles. Alternative #5 will reduce the need for detour routes during storm runoff and enhance emergency access in the area. Traffic on 83rd Avenue will utilize the Union Hills Drive bridge to cross the New River during the storm periods.

Alternative #5 provides the ultimate configuration of Union Hills Drive only. 83rd Avenue will be widened for left turn lanes at the intersection and will taper back to one lane south of the intersection. The developer on the northwest side of the intersection is currently providing an additional 24 feet of pavement, therefore southbound traffic will have right turn, through and left turn lanes. Northbound traffic will remain one lane. According to the IGA, the cities of Peoria and Glendale will annex the roadways and will be responsible for achieving the ultimate lane configuration on 83rd Avenue.

Alternative #6, the combined bridge option, would provide all-weather access to both 83rd Avenue and Union Hills Drive. This alternative solves the existing bottleneck problems, eliminates the need for detour routes and blockades during periods of storm runoff, and provides the skeleton for the proposed ultimate lane configurations of both roadways. Construction of Peoria's 83rd Avenue Parkway will occur within three years and will provide regional access to Lake Pleasant. This six-lane parkway will begin north of Union Hills Drive. South of Union Hills Drive, local traffic will only have one travel lane north and southbound. Therefore, from a regional transportation view point and future planning perspective, providing all-weather access for both roadways in this rapidly developing area is the most desirable alternative. However, Alternative #6 lacks the necessary funding and support from all the involved agencies.

5.2 KEY ELEMENTS

PROPOSED CONCEPT

Union Hills Drive Bridge (Dimensions 84' x 150'). Four lanes of traffic plus bike lanes and sidewalks on Union Hills Drive.

PURPOSE

Enhanced Public Safety and Improved Mobility/Access

APPROXIMATE TOTAL PROJECT COST: \$2,110,000

AGENCY	DESIGN	CONSTRUCTION	CONSTRUCTION ADMINISTRATION	TOTAL
MCDOT	\$100	\$285	\$100	\$485
FEMA (HMGP)		\$800		\$800
FCD		\$100		\$100
PEORIA (Survey)	\$70	\$160		\$230
GLENDALE (Geotechnical)	\$25	\$225		\$250
TOTALS	\$195	\$1,570	\$100	\$1,865

NOTE: All number in Thousands of Dollars

TIME ESTIMATES

FIGURE 5.2 Shows the project progress schedule. Estimated design time is eight months, after the IGA is final. HMGP Committee funding will be received in September of 1994.

DESIGN CONCEPT REPORT (MAY 1994)
 ENVIRONMENTAL ASSESSMENT (MAY 1994)
 DESIGN COMPLETION / CONSTRUCTION (FY 96)

LEAD AGENCY	MCDOT
COORDINATION	FCD City of Glendale: Design Survey City of Peoria: Geotechnical

Maricopa County Department of Transportation
 Transportation Planning Division
Proposed Union Hills Bridge
Project Progress Schedule
 May 1994

TASK	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M		
	4Q 1993				1Q 1994			2Q 1994			3Q 1994			4Q 1994			1Q 1995			2Q 1995			3Q 1995			4Q 1995			1Q 1996				
DESIGN CONCEPT REPORT (IGA & Grant Approval)	9 months																																
ENVIRONMENTAL					6 months																												
CONSULTANT & Notice to Proceed										3 months																							
Receipt of Funding													X																				
DESIGN & Review														8 months																			
RIGHT-OF-WAY																							9 months *										
CONTRACTS & SPECIFICATION																							3 months										
CONSTRUCTION																																6 months →	

CURRENT DATE LINE

* Depends on the need for spur dikes and/or detour routes.

FIGURE 5.2

SECTION 6 - CONCEPT DESIGN

6.1 CONSTRUCTION ISSUES REPORT

6.1.1 *Earthwork*

The Union Hills Drive bridge option will require substantial earthwork, due to the new alignment of 83rd Avenue. A large cut is required to bring 83rd Avenue down to the grade of the river bottom. After crossing the New River, a large fill is necessary to bring the road back up to the existing alignment.

6.1.2 *Constructibility*

Union Hills Drive and 83rd Avenue must remain open during construction and managed utilizing the "Maricopa Association of Governments (MAG) Uniform Standard Specifications for Public Works Construction" and Part VI, Signals, of the MUTCD. The contractor must employ standard dust abatement measures during construction. No problems are anticipated during the construction period.

6.1.3 *Construction Phasing*

The construction will be completed in one phase and will be a minimum of six months. A typical wet season may affect the construction time.

6.1.4 *Timing and Schedule*

Construction should begin in the 4th quarter of calendar year 1995, and time frame from project initiation to finish is approximately 24 months. Abbreviation of the time line can occur by overlapping deadlines and shorter time durations for processes. Bridge design activity will be initiated when the terms of the IGA are final.

A public notification technique shall be employed prior to construction to inform the public of the upcoming project and any anticipated construction delays or congestion.

6.1.5 *Pavement Design*

The pavement design will consist of a minimum 4" Asphaltic Concrete (AC) over 10" Aggregate Base (AB). Further geotechnical work may dictate a more substantial pavement structure.

6.1.6 *Detour Road*

Bell Road, 91st, 87th and 75th Avenues can serve as the East-West and North-South detour routes, respectively, if needed during construction. Local traffic requires a east-west detour on Union Hills Drive. The existing 83rd Avenue will serve as a detour route during the construction period. To reduce the overall project cost and construction period, it may be necessary to close Union Hills Drive during the bridge construction.

6.1.7 *Traffic Control During Construction*

Union Hills Drive, 83rd Avenue, Bell Road, Beardsley Road, and the Agua Fria Freeway (Loop 101), may require traffic control during the construction period to divert excess traffic around the construction. An emergency traffic operation plan should be developed for alternate routing of traffic in the event of the complete closure of Union Hills Drive.

6.1.8 Itemized Cost Estimate

TABLE 6.1.8 - Itemized Cost Estimate

ITEM	Alternative #5 Union Hills Drive Bridge (83rd Ave. Realigned)
PROJECT LENGTH (UNION HILLS) (FT)	1,000
PROJECT LENGTH (83RD AVENUE) (FT)	2,234
EARTHWORK (yd ³)	20,000
COST	\$150,000
BRIDGE (materials, channelization and construction)	\$672,000
BRIDGE UPGRADE TO ULTIMATE CONFIGURATION	NA
BOX CULVERTS	NA
4" AC	\$94,695
10" AB	\$55,191
BITUMINOUS PRIME COAT	\$4,965
PRESERVATIVE SEAL	\$751
WATERING	\$2,190
EMBANKMENT	\$4,500
DUST	\$403
SUBGRADE PREPARATION	\$11,492
CURB AND GUTTER	\$8,800
SIDEWALKS	\$12,000
STRIPING/SIGNALIZATION	\$50,000
BANK STABILIZATION, RIP RAP (GABIONS)	\$50,000
CONCRETE APRONS	\$61,333
SAW CUT & REMOVALS (e.g EXISTING PAVEMENT)	\$50,000
DETOUR ROUTES	\$150,000
UTILITY RELOCATIONS	\$50,000
CONTINGENCY (15%)	\$225,000
TOTAL CONSTRUCTION COST	\$1,653,320
NEW RIGHT OF WAY	\$50,000
ENGINEERING & DESIGN	\$150,000
SURVEY & GEOTECHNICAL	\$75,000
CONSTRUCTION ADMINISTRATION	\$170,000
TOTAL COST	\$2,098,320

Note: Unit prices are based on current (March 1994) bidding history.

6.1.9 Political Feasibility

A solution to the flooding problem at Union Hills Drive and New River must be found for safety and socioeconomic reasons. The solution is a priority in the cities of Glendale and Peoria. Although the communities of Peoria and Glendale approve and need this project, they do not have the means to completely carry out the project without some financial assistance. Residents, commercial, education, emergency/medical and other interested groups strongly support a bridge over Union Hills Drive. All of the letters, newspaper articles and public meetings identify the political support for this bridge. The project does not interfere with any of ADOT's plans.

Traffic movement will be more efficient through the intersection with the implementation of this project. Additionally, the all-weather bridge will allow for east-west access even during the storm events.

6.1.10 Economic Feasibility

Unfortunately, the safety concerns and strong political support toward this project cannot overcome the financial burden of a bridge without some additional financial aid. Both parties (Glendale and Peoria) support this project but do not have the means to implement a solution unless MCDOT receives the federal funding or secures another form of funding. Alternative #5 is the only economically and politically feasible alternative to all parties.

MCDOT has successfully applied for federal funding from the Hazard Mitigation Grant Program. The program director informally notified MCDOT of this decision on May 5, 1994. Upon receipt of the federal money, the bridge design and construction will take two years. Notification of the funding amount of \$800,000 will allow the project to continue through design and construction phases.

6.1.11 Environmental Feasibility

Environmentally, this project is feasible because there are limited natural resources remaining, no sensitive habitats or species, and no known cultural resources present. The responsible resource agencies report no conflicts or concerns (See letters in Appendix C). Any project approved for the Hazard Mitigation Grant Program must conform with environmental regulations. Because the project lies in a rapidly developing and previously disturbed area, the project will not adversely affect any native vegetation or wildlife.

APPENDIX A:
**Intergovernmental Agreement: Maricopa
County, Glendale and Peoria**

**DRAFT
INTERGOVERNMENTAL AGREEMENT**

**BETWEEN MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION,
MARICOPA COUNTY FLOOD CONTROL DISTRICT, THE CITY OF GLENDALE,
AND THE CITY OF PEORIA**

**FOR IMPROVEMENTS TO:
UNION HILLS DRIVE AT NEW RIVER**

JUNE 3, 1994

This Agreement is between the County of Maricopa (County), a body politic, acting through the Maricopa County Department of Transportation (MCDOT), Maricopa County Flood Control District (District), and the City of Glendale, a municipal corporation, and the City of Peoria, a municipal corporation.

This Agreement shall become effective as of the date it is filed with the Maricopa County Recorder pursuant to Arizona Revised Statutes 11-952, as amended.

STATUTORY AUTHORIZATION

1. The County is empowered by Arizona Revised Statutes 11-251 and 18-201, et seq. to enter into this Agreement.
2. The District is empowered by Arizona Revised Statutes 48-3603 to enter into this Agreement.
3. The Cities are empowered by Arizona Revised Statutes 9-240 to enter into this Agreement.

BACKGROUND

4. The Union Hills Drive - New river crossing is flooded approximately two months a year. Normal and emergency traffic is required to detour to Bell Road. Population is increasing steadily west of New River. Numerous requests have been received from citizens in all jurisdictions to improve the crossing.
5. A bridge is necessary for connection to the 101 Loop to provide for continuing arterial traffic in the area. The river crossing and 83rd Avenue intersection are within all three jurisdictions, Maricopa County and the Cities of Glendale and Peoria.

PURPOSE OF THE AGREEMENT

6. The purpose of this Intergovernmental Agreement is to identify and define the responsibilities of the County, the District and the Cities for the cost sharing, design, construction, construction management, rights-of-way acquisition, utility relocation, and annexation of the roadway. The cost share amounts shall not exceed the amounts listed in Section 7 and Section 8. MCDOT will be responsible for any additional costs to design and construct the proposed project.

TERMS OF THE AGREEMENT

7. Design and Design Funding Sources:
Maricopa County agrees to be the lead agency for the project design encompassing: consultant management, survey, geotechnical, archaeological, and permits.
 - 7.1.1 The County and/or its consultant agrees to provide bridge and roadway design at an estimated cost of \$150,000. Peoria and Glendale will be on the consultant selection panel.
 - 7.1.2 MCDOT and/or its consultant will submit the required permits and clearances. The Federal Emergency Management Agency's (FEMA) environmental study requires a 404 Permit, and clearance from Arizona Game and Fish Department, U.S. Fish and Wildlife Service, and State Historic Preservation Office (SHPO) before the project will be submitted to the Inspector General.
 - 7.1.3 The City of Glendale will contribute \$25,000 to MCDOT for the cost of the required field surveys for the project.
 - 7.1.4 The City of Peoria will contribute \$70,000 to MCDOT for the cost of the required Geotechnical reports for the bridge.
 - 7.1.5 Louis Berger & Associates, Inc. (LBA), under contract to MCDOT, will perform the archaeological survey.
 - 7.1.6 Any right-of-way requirements must be agreed upon by all agencies. Each jurisdiction agrees to procure any required right-of-way within their boundaries.
 - 7.1.7 The Cities of Glendale and Peoria will review and provide approval at concept, 30%, 60%, 90% and Final (100%) Design Stages.

8. Construction and Construction Funding Sources:
Maricopa County agrees to be the lead agency for construction of the project including: utility relocations except those that are City owned, advertising and awarding of the construction contract, and construction administration. The estimated total construction cost is \$1,700,000.

Funding sources:

8.1.1	FEMA Hazard Mitigation Grant Program (HMGP)	\$ 800,000
8.1.2	Maricopa County Department of Transportation	\$ 415,000
8.1.3	Maricopa County Flood Control District	\$ 100,000
8.1.4	City of Glendale	\$ 225,000
8.1.5	City of Peoria	<u>\$ 160,000</u>
	Total Construction Funding	\$1,700,000

9. Construction Administration:

9.1. The County shall be responsible for Construction Administration at an estimated cost of \$170,000.

10. Traffic signals and Annexation:

10.1. Traffic signal warrants have been met @ 83rd Avenue and Union Hills Drive. MCDOT installed a temporary set of signals at the intersection to improve traffic flow until the proposed project is accomplished. Permanent traffic signals will be included in the project.

10.2. MCDOT and/or its Consultant will provide 100% design for the traffic signals.

10.3. The City of Peoria agrees to annex the remaining County right-of-way along the 83rd Avenue alignment, commencing 65 feet south of the section line to one quarter of a mile north of Beardsley Road. Peoria agrees to assume maintenance and operating responsibilities for the signals.

10.4. The City of Glendale agrees to annex the remaining County right-of-way on 83rd Avenue, commencing 65 feet south of the section line and continuing south of Union Hills Drive (Exhibit A).

- 10.5. All annexation proceedings shall commence at the Opening of Bids and shall be complete by the Acceptance of Improvements (Exhibit B).
11. The parties hereby agree that to the extent permitted by law, each party will indemnify and save the other parties harmless, including any of the parties departments, agencies, officers, employees, elected officials or agents, from and against all loss, expense, damage or claim of any nature whatsoever which is caused by any activity, condition or event arising out of the performance or nonperformance of any of the provisions of this agreement. All parties shall in all instances be indemnified against all liability, losses and damages of any nature for or on account of any injuries or death of persons or damages to or destruction of property arising out of or in any way connected with the performance or nonperformance of this agreement, except such injury or damage as shall have been occasioned by the negligence of the other party. The damages incurred by any party, their departments, agencies, officers, employees, elected officials or agents shall include in the event of an action, court costs, expenses for litigation and reasonable attorney's fees.
12. This Agreement shall continue until all stipulations previously indicated have been satisfied except that it may be amended or terminated upon written agreement of all parties.
13. Pursuant to Arizona Revised Statutes 11-952, as amended, attached to this Agreement are copies of appropriate action by ordinance, resolution or otherwise authorizing the respective parties to enter into this Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement.

MARICOPA COUNTY

Recommended by:

Robert E. Gagen, Date
Director of Transportation

Approved and Accepted:

By: _____
Chairman, Board of Supervisors

Attest:

By: _____
Clerk of the Board Date

FLOOD CONTROL DISTRICT

Recommended by:

Dan Sagramoso, Date
Chief Engineer and General Manager

Approved and Accepted:

By: _____
Chairman, Flood Control District

Attest:

By: _____
Clerk of the Board Date

CITY OF GLENDALE

Recommended by:

Grant Anderson, P.E. Date
City Engineer

Approved and Accepted:

By: _____
Mayor

Attest:

By: _____
City Clerk Date

CITY OF PEORIA

Recommended by:

Robert Darr, P.E. Date
City Engineer

Approved and Accepted:

By: _____
Mayor

Attest:

By: _____
City Clerk Date

APPENDIX B:
Public Involvement Plan

PUBLIC INVOLVEMENT PLAN

UNION HILLS DRIVE CROSSING AT NEW RIVER

This plan is in compliance with the Maricopa County Department of Transportation (MCDOT) Environmental Process (Chapter 3.1, MCDOT Roadway Design Manual). Additionally, the public involvement activities are consistent with the Council on Environmental Quality (CEQ) regulations for implementing the provisions of the National Environmental Policy Act [16 USC 4332 (2)(c)], Department of Transportation Order 5610.1C (23 CFR 771) and the Arizona Department of Transportation (ADOT) Action Plan for Federal-Aid Projects.

I. DESCRIPTION OF PROPOSED IMPROVEMENTS

Project Number: D94-4-03

Work Order Number: 68858

Proposed Action: The MCDOT Transportation Planning Division is currently developing a design concept report involving improvements to Union Hills Drive at the New River. We propose building an 84' bridge crossing the New River. The bridge will be designed for a Urban Minor Arterial Road.

Project Limits: The improvements will be at the intersection of Union Hills Drive and 83rd Avenue. The intersection lies on the boundary between the Cities of Peoria and the City of Glendale.

Level of Significance: MCDOT - Environmental Determination Report
FEMA - Environmental Assessment

II. IDENTIFICATION OF AGENCIES AND CONCERNED PUBLIC

The following federal, state, and local agencies having a potential concern in this project due to jurisdictional review or expressed interest have been identified and will be contacted by MCDOT at the outset of the project. As other concerned public agencies are identified during the study, they will be added to the list and contacted.

FEDERAL: US Army Corp of Engineers
US Fish & Wildlife Service
EPA - Region 9, WP & E Section (W-7-2)
Federal Emergency and Management Administration
Federal Highway Administration

STATE: Arizona Department of Transportation: Highways Division, Local
Government Assistance, and Environmental Planning
Services
Arizona Game & Fish Department
Arizona Department of Agriculture
Arizona Department of Environmental Quality
Arizona Department of Water Resources
Arizona Public Service

LOCAL: City of Glendale
City of Phoenix
City of Peoria
Maricopa Association of Governments
Maricopa County Flood Control District
Maricopa County Planning and Development
Maricopa County Sheriff's Office
McMicken Irrigation District
Rural Metro

Early in the study, a general letter of introduction will be prepared and submitted to the agencies which will alert them of the project and request input. An invitation will be distributed to the agencies approximately three weeks prior to a public information meeting, encouraging their participation.

The following local officials and interest groups having a direct or expressed interest in the project will be identified and contacted by MCDOT.

- **Local Elected and Appointed Officials:**
Ed King, Maricopa County District 4 Supervisor
Ken Forgia, Mayor of Peoria
Elaine Scruggs, Mayor of Glendale
David Pearson, Peoria Vice Mayor
Robert Darr, Peoria City Engineer

Grant Anderson, Glendale City Engineer
Karen Ewing, Glendale Councilmember
Martin Vanacour, Glendale City Manager

- **Public Interest Organizations:**
Westbrook Homeowners Association

The following federal and State agencies having a concern in this project due to permitting authority have been identified and will be contacted directly by MCDOT through the early permit coordination process.

FEDERAL: US Army Corp of Engineers

STATE: Arizona Department of Environmental Quality
Maricopa County Flood Control District

III. PUBLIC NOTIFICATION

The following techniques will be employed, either individually or concurrently, to notify the public of the proposed transportation improvements and upcoming meetings as well as to solicit public input into the project development process.

Identification of media used to carry public notices, news releases, public service announcements, news items, and interviews include:

NEWSPAPERS: Arizona Republic / Gazette Community Section
Sun Cities Independent
Peoria Times
Glendale Star
Westbrook Villager

RADIO: KTAR 620

TELEVISION:

Public notification techniques which will be used at various times during project development include:

- Invitational and/or information letters
- News releases to the media
- Public display notices
- Direct mail to the following in order to obtain input or provide project information:
 - Property owners within 500 feet of the proposed project centerline

- for all viable alternatives
- Local elected and appointed officials
- Individuals who request to be placed on the mailing list
- Public and private groups, organizations, agencies, or businesses that request being added to the mailing list

Press releases and/or advertisements will be placed in local and regional newspapers in order to notify the public about upcoming meetings. Newspaper advertisements will appear a minimum of two weeks prior to public information meeting and again one week prior to such meetings. A 30-day notice will be made regarding a public hearing, followed by a second advertisement five to seven days prior to the hearing.

IV. PUBLIC MEETING

The scoping meeting activities have been conducted previously by the City of Peoria and Glendale to determine the issues that will be addressed, and to outline the approach to conducting the Design Concept Report.

An information meeting will be conducted during project development to receive public input regarding project purpose, goals, study approach, and alternatives being considered. The meeting will be chaired by MCDOT. An informal format is suggested for this meeting to facilitate discussion with the community. Project staff will prepare detailed notes on comments and issues raised during the meeting. Exhibits will include aerial photography of the project area that will have significant aerial features and alternatives highlighted as well as other available mapping and photographs.

- | | |
|-------------------------------|---|
| Meeting Sites: | 200-person capacity facility in the project area. |
| Public Advertisement: | Press releases will be issued to the local media listed in section III. |
| Letters of Invitation: | Letters will be written and transmitted to all local officials and property owners regarding upcoming meetings. |
| Meeting Preparation: | A meeting planning session will be held among project team leaders, including FHWA, and MCDOT, to obtain meeting format, exhibits, and handout material three weeks before each meeting. Subsequently, display graphics and handout materials will be prepared. An open house format is recommended for these meetings following brief introductory remarks regarding the purpose and objective of the meeting. |
| Meeting Record: | Notes prepared by project team members, |

supplemented by a meeting debriefing session.

The results of the meeting will be summarized in the Environmental Determination Report/ Environmental Assessment. Additional meetings or workshops may be conducted as the need arises based upon public controversy or upon request of the local communities.

V. PUBLIC HEARING

If the NEPA process requires one, a public hearing will be conducted following the preparation and acceptance of the draft Design Concept Report and Draft Environmental Assessment (EA). The Draft EA availability period will be concurrent with the 45-day hearing notification period.

Hearing Sites:	200-seat capacity facility in the project area.
Public Advertisement:	Display advertisements will be printed in local media listed in Section III.
Letters of Invitation:	Letters will be written and transmitted to all local officials and property owners regarding upcoming hearing.
Hearing Preparation:	Display graphics and handout materials will be prepared to supplement the oral presentation. An informal hearing may be substituted for the traditional formal hearing format.
Transcript:	To be prepared by MCDOT.

VI. PUBLIC HEARING FOLLOW-UP

As necessary, responses to all questions and comments not addressed at the public hearing will be made in writing. Public notices will be provided by mail via the project newsletter and/or newspaper advertisement as to where the final study documents will be made available or public review. Public notices will also be made regarding approval of the final concepts and the project implementation schedule.

As required, public involvement techniques will be employed during the final design process to maintain contact with the interested public and keep the public apprised of the projects' status.

AGENDA

PUBLIC MEETING AT WESTBROOK VILLAGE

Boulders Recreation Center
Phase II of Westbrook Village
18825 County Club Blvd.

March 25, 1993 at 7:00 p.m.

- I. Hospitable Welcome to those assembled by Supervisor Ed King.
 - a) Coffee and cookies.
 - b) Sign-in sheet.
 - c) Locate your home on aerial photo.
- II. Introduction of dignitaries by Supervisor Ed King.
 - a) City of Peoria Council members.
 - b) Others.
 - c) Key staff---available to record your comments and concerns.
- III. Quick rundown of the agenda by Supervisor Ed King.
 - a) Want to hear your concerns!
 - b) Group dynamic to identify what is most important to you.
 - c) Share what is in process at the County, including Peoria and Glendale.
- IV. List of audience concerns (Tom Buick)
 - a) Each problem individually listed.
 - b) Consolidate where possible.
- V. Group by vote, expressed concerns (Tom Buick)
 - a) By raise of hands the audience weighs their priorities.
- VI. Staff highlights past and future projects (Tom Buick)
- VII. Group votes on options for Union Hills (Tom Buick)
- VIII. Thankful close of the meeting by Supervisor Ed King.
 - a) Staff will remain to talk individually.
 - b) Thanks for audience participation.
 - c) No promises except to give these issues our fullest consideration.

APPENDIX C:
Agency Contact Letters and List of Agencies

Agency Contact Names

MCDOT

John Dickson, Transportation Planner
Phil Epstein, Bridge Engineer
Robert E. Gagen, Director
Sharon Hansen, Environmental Planner
Greg Holverson, Acting Chief
Bill Home, Civil Engineer
Dana Owsiany, Civil Designer

FCD

Neil S. Irwin, Chief Engineer and General Manager
Amir Motamedi, Watershed Management Branch Manager

Maricopa County

Tom Buick, Director of Infrastructure

City of Glendale

Grant Anderson, City Engineer
Tim Ernster, Acting Assistant City Manager
Dan Sherwood, Civil Engineer

City of Peoria

Robert Darr, City Engineer
Ken Forgia, Mayor
David Pearson, Vice-Mayor

AGENCY CONTACT NAMES AND ADDRESSES

Ms. Cindy Lester, Project Manager
US Army Corp of Engineers
3636 N Central Ave RM 740
Phoenix, AZ 85012

Mr. James McGinnis
Native Plants Production
AZ Dept of Agriculture
1688 W Adams
Phoenix, AZ 85007

Mr. Sam Spiller, Field Supervisor
US Fish & Wildlife Service
3616 W Thomas Road Ste 6
Phoenix, AZ 85019

Mr. Neil Erwin
Chief Engineer & General Manager
Flood Control District
2801 W Durango Street
Phoenix, AZ 85009

Mr. Doug Williams
Advanced Planning
County Planning and Development
301 W Jefferson
Phoenix, AZ 85003

Mr. David Walker
Habitat Evaluation Coordinator
Arizona Game & Fish Department
2221 W Greenway Road
Phoenix, AZ 85023-4312

Mr. Jim Matt
Arizona Department of Environmental Quality
Water Quality Section
3033 N Central
Phoenix, AZ 85012

Mr. Joseph M Arpaio, County Sheriff
Sheriff's Office
102 W Madison
Phoenix, AZ 85003

Mr. Robert Mickelson, Assistant State Engineer
Highways Division
Arizona Department of Transportation
205 S 17th Avenue
Phoenix, AZ 85003

Mr. Jack DeBolske, Director
Maricopa Association of Governments
1820 W Washington Street
Phoenix, AZ 85007

Mr. Robert Manschot, CEO
Rural Metro
8401 E Indian School Road
Scottsdale, AZ 85251

Mr. Don Herp
Transportation Planning
City of Phoenix
125 E. Washington Avenue
Phoenix, AZ 85004

Bill P.Belt
Environmental Planning Services
Arizona Dept. of Transportation
205 S. 17th Avenue
Phoenix, AZ 85003

Mark Danelowitz
Local Government Assistance
Arizona Dept. of Transportation
205 S. 17th Avenue
Phoenix, AZ 85003

Rita Pearson, Director
Arizona Department of Water Resources
15 South 15th Avenue
Phoenix, AZ 85007

Mr. Clyde Morris, Chief
Wetlands & Permits
EPA - Region 9
WP & E Section (W-7-2)
75 Hawthorne Street
San Francisco, CA 94105

Mr. Edward A. Wueste
Division Administrator
Federal Highway Administration
234 n. Central, Suite 330
Phoenix, AZ 85004

AGENCY CONTACT NAMES AND ADDRESSES

Cherie L. Sweeter
Marketing/Public Relations Manager
Arrowhead Community Hospital and Med. Center
18701 North 67th Avenue
Glendale, AZ 85308

Chuck Dewald
Territorial Engineers, Inc.
2636 Highway 95 Suite 44
Bullhead City, AZ 86442

Richard C. Kraemer
4823 South Mill Avenue
Tempe, Arizona 85282

Lowe and Berman, P.A.
Attorneys
2901 North Central Avenue, Suite 1100
Phoenix, Arizona 85012

Kathy Lowe
Inca Engineers
(277-8161)

School Districts:

Glendale School District 40
Dr. Richard Terbush, Superintendent
7307 N. 58th Avenue
Glendale, AZ 85301

Glendale U.H.S. District 205
Dr. Gerald E. George, Superintendent
7650 N. 43rd Avenue
Glendale, AZ 85301

Peoria Unified District II
Dr. Raymond Kellis, Superintendent
P.O. Box 39
Peoria, AZ 85380

AGENCY CONTACT NAMES AND ADDRESSES

Electrical Services:

Mr. Al Field
Senior Liaison Coordinator
Arizona Public Service
P.O. Box 53999
Phoenix, AZ 85072-3999

Irrigation Services:

Mr. Duane Justice
McMicken Irrigation District
14629 W. Peoria Avenue
Waddell, AZ 85355

Water Company:

Mr. Dan Nissen
City of Peoria
8401 W. Monroe Street
Peoria, AZ 85345

Mr. Glenn Compton
Mr. Pete Corpus
City of Glendale
5850 W. Glendale Avenue
Glendale, AZ 85301

Sewer Company:

Mr. Jeff Kuzis
City of Peoria
8401 W. Monroe Street
Peoria, AZ 85345

Mr. Glenn Compton
Mr. Pete Corpus
City of Glendale
5850 W. Glendale Avenue
Glendale, AZ 85301

The following agencies have utilities in the area, but not within the project limits.

Southwest Gas
Dimension Cable
U.S. West

KEITH KELLY
Director

AUG 16 1993



DAN F. RICE
Associate Director

LVN
GRF
MWE
MCAD

Arizona Department of Agriculture

1688 West Adams, Phoenix, Arizona 85007
(602) 542-4373 FAX (602) 542-0909
PLANT SERVICES DIVISION

August 12, 1993

Mr. Thomas R. Buick, P.E., Chief
Transportation Planning Division
Maricopa County
Department of Transportation
2901 West Durango Street
Phoenix, AZ 85009

RE: Union Hills Drive Bridge Crossing of the New River

Dear Mr. Buick:

The Arizona Department of Agriculture has reviewed your letter of August 5, 1993 regarding the above referenced project.

A plant survey may be required to determine if the proposed project will have an impact on protected plant species.

The Department strongly recommends that, if plants are present, they be salvaged and the Maricopa County Department of Transportation notify us in writing at least sixty days before the work begins.

The Department will post and disseminate copies of the Notice to salvage operators or interested parties, and issue permits to donate, sell, salvage or harvest the plants.

If you need additional information, please call me at 542-3292.

Sincerely,

A handwritten signature in cursive script, appearing to read "James McGinnis".

James McGinnis
Native Plant Law Program Manager

JM:clw

U.E.
MWS ✓

M.D. AD.
AUG 23 1993



ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Fife Symington, Governor Edward Z. Fox, Director

August 20, 1993

Mr. Thomas R. Buick, P.E.
Chief, Transportation Planning Dept.
2901 West Durango Avenue
Phoenix, Arizona 85009

RE: UNION HILL DRIVE BRIDGE CROSSING OF THE NEW RIVER

Dear Mr. Buick:

We have concluded our review of the referenced project relative to water quality impacts. Thank you for the opportunity to review your proposal during initial project planning. Since we have not been on site as a part of this review, our comments are limited to those which could be ascertained from the information you have provided, our files and other available data sources. Our comments are:

- A. Permits or approvals may be required by the county health department, Arizona Department of Environmental Quality (ADEQ), Arizona Department of Water Resources, U.S. Army Corps of Engineers or the U.S. Environmental Protection Agency if the overall project includes construction within a watercourse, a potable water supply, wastewater reuse facilities, wastewater collection/holding/treatment/disposal facilities, stormwater facilities, or a dam.
- B. Runoff and seepage from roadways, embankments, and other alterations of the natural environment must not cause a violation of A.A.C. Title 18, Chapter 11, Article 1.
- C. All off-site material sources for the project must have valid and current permits under the Federal Clean Water Act [Sections 402 (NPDES) and 404 (Dredge and Fill)] and the State Aquifer Protection Program, where necessary. Facilities and activities not covered by individual permits under these programs are not exempt from the duty to comply with water quality standards for surface waters and aquifers, and will be subject to compliance action if violations are documented. Other permits pertaining to air quality may be required for material sources and are the responsibility of the applicant and/or his agent(s).
- D. Water for dust suppression, if used, must not contain contaminants that could violate water quality standards for surface waters or aquifers.
- E. It is recommended that the bridge be designed to ensure that runoff from the deck and approaches is routed and detained outside of the 100-year floodplain, and disposed of by a means other than surface discharge to the waters of the United States. This will confine the impacts of an accidental spill.

Mr. Thomas R. Buick, P.E.
Page 2
August 20, 1993

If you have any questions, please contact me at (602) 207-4502. Thank you for your cooperation and efforts to protect our natural environment.

Sincerely,

Byde for James Matt

James Matt, P.E.
Certification Engineer
Point Source & Monitoring Unit
FAX (602) 207-4528

Enclosure(s)

cc: Cindy Lester



ARIZONA DEPARTMENT OF TRANSPORTATION



HIGHWAY DIVISION

206 South Seventeenth Avenue - Phoenix, Arizona 85007-3213

FIFE SYMINGTON
Governor

GARY K. ROBINSON
State Engineer

LARRY S. BONINE
Director

August 26, 1993

Ms. Dana Owsiany, Project Manager
Maricopa County
Department of Transportation
2901 West Durango Street
Phoenix, Arizona 85009

Dear Ms. Owsiany,

The staff of Environmental Planning Services of the Arizona Department of Transportation has reviewed your letter regarding the Design Concept Report for the bridge crossing of New River at Union Hills Drive. This proposed project will not affect any of ADOT's plans as presently programmed.

Thank you very much for providing us with an opportunity to comment on this planned transportation proposal. If you have any further questions, do not hesitate to contact me at 255-7767.

Sincerely,

WILLIAM P. BELT, Manager
Environmental Planning Services

1230

AUG 30 1993



ARIZONA DEPARTMENT OF TRANSPORTATION



HIGHWAYS DIVISION

206 South Seventeenth Avenue - Phoenix, Arizona 85007-3213

FIFE SYMINGTON
Governor

APR 14 1994

GARY K. ROBINSON
State Engineer

LARRY S. BONINE
Director

April 13, 1994

Dana Owsiany
Project Manager
Maricopa County Department of Transportation
2901 W. Durango St.
Phoenix, Az. 85009

RE: Union Hill Dr. @ New River
Draft Design Concept Report

Dear Ms. Owsiany:

I have reviewed the draft Design Concept Report submitted on March 23, 1994 for the referenced project and offer the following comments shown below. I also spoke to Mike Dawson today and requested two additional copies of the Design Concept Report for ADOT Environmental Planning Section and FHWA review of the Environmental Assessment portion of the report

Page 8 ADOT is not committed to provide any funding for this project.

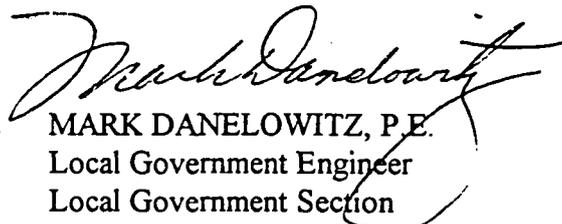
Environmental Assessment,

Page 2, last paragraph ADOT is not committed to provide any funding for this project. I am not completely familiar with FEMA policy, but I am questioning how MCDOT will be able to receive FEMA funds for this project since both 83rd Ave. and Union Hills Dr. are shown as functionally classified routes on the current FHWA approved functional classification map for MAG? My experience in dealing with flood damage projects is where the differences in funding responsibility were identified between FEMA and FHWA. Routes not functionally classified are eligible for FEMA funds, while functionally classified routes receive funds from FHWA.

Page 3 I understand the discussion of four alternatives for the project for this document, but perhaps the document should be revised to discuss the six alternatives previously described in the DCR. There is a difference in the total construction cost for the project described in the assessment report compared with what is shown in the DCR.

Please call me at 255-8107 if you have any questions regarding my comments.

Sincerely,


MARK DANELOWITZ, P.E.
Local Government Engineer
Local Government Section

ARIZONA DEPARTMENT OF WATER RESOURCES

Engineering Division
15 South 15th Avenue, Phoenix, Arizona 85007
Telephone (602) 542-1541
Fax (602) 542-3383



TRK
MWS ✓
GRH ✓
DLO -

FIFE SYMINGTON
Governor

RITA P. PEARSON
Director

August 31, 1993

Mr. Thomas R. Buick, P.E., Chief
Transportation Planning Division
Maricopa County Department of Transportation
2901 West Durango St.
Phoenix, AZ 85009

SEP 1 1993

SEP 2 1993

Re: Union Hills Drive Bridge Crossing of the New River

Dear Mr. Buick:

Thank you for the information concerning plans to construct a new bridge over New River on Union Hills Drive. The Director has asked me to respond.

This Department is responsible for the coordination of the National Flood Insurance Program requirements between the Federal Emergency Management Agency (FEMA) and Arizona's communities. In this instance, our role would be to review the bridge design and any revisions to hydrology that it necessitates. The Flood Control District of Maricopa County (FCDMC) is responsible for floodplain management within its boundaries unless the incorporated town or city accepts responsibility for its own floodplain management. Since the bridge will affect two communities, they may want to be involved in obtaining any revisions to Flood Insurance Rate Maps that may be desired after construction of the bridge. They will also desire to review the plans to be assured that the New River Channel capacity will not be diminished due to bridge construction. They will be responsible for forwarding new hydrology to FEMA for a map revision if one is warranted.

If there are any questions, please don't hesitate to contact Terri Miller in our Division.

Sincerely,

Dan R. Lawrence, P.E.
Chief Engineer

DRL:TM:js

THE STATE



OF ARIZONA

SEP 3 - 1993

GAME & FISH DEPARTMENT

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

STE
Governor
Fife Symington *MWS*

Commissioners:
Larry Taylor, Yuma, Chairman *MH4*
Elizabeth T. Woodin, Tucson
Arthur Porter, Phoenix
Nonie Johnson, Snowflake
Michael M. Golightly, Flagstaff *GRH*

Director
Duane L. Shroufe

Deputy Director
Thomas W. Spalding

Region VI

7200 East University, Mesa, Arizona 85207 (602) 981-9400

September 1, 1993

Thomas R. Buick, P.E., Chief
Maricopa County Department of Transportation
2901 West Durango Street
Phoenix, Arizona 85009

Dear Mr. Buick:

Re: Union Hills Drive Bridge Crossing at New River

The Arizona Game and Fish Department (Department) has reviewed the above referenced project. As proposed, this project is not expected to result in significant adverse impacts to wildlife resources. In addition, the Department's Heritage Data Management System has been accessed and at this time current records do not indicate the presence of any endangered, threatened, or other special status species in the vicinity of this project proposal.

Thank you for the opportunity to comment on this proposed project.

Sincerely,

Thomas R. McMahon
Habitat Evaluation Specialist
Mesa Region

TRMc:trMc

cc: Kelly Neal, Region VI Supervisor
Dave Walker, Habitat Branch, Phoenix
Pat Crouch, West Valley Sector Field Supervisor
Bill Brandel, NW Phoenix District Wildlife Manager
Sam Spiller, U.S. Fish and Wildlife Service, Phoenix

AGFD# 8-11-93(10)



MOBILITY RECEIVED	
SEP 23 1993	
Director	RM
Admin	TR
Exec	ENG
To Barb Bammarito	

September 21, 1993

Mr. D. E. Sagramoso
Department of Transportation
Maricopa County
2901 W. Durango
Phoenix, AZ 85009

Dear Mr. Sagramoso:

This letter is in support of the proposed bridge or over-pass for the dip-crossing on Union Hills Drive in New River. The frequent flooding of this crossing is a hazard to our patients in their access of Arrowhead Community Hospital and Health Center. In fact, the necessary detour could eventually bring about a serious delay in the case of a severely ill patient.

We ask that your department make this over-pass one of your top priorities.

Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Cherie L. Sweeter".

Cherie L. Sweeter
Marketing/Public Relations Manager

cc: Barbara Bammarito



REPLY TO
ATTENTION OF:

DEPARTMENT OF THE ARMY

LOS ANGELES DISTRICT, CORPS OF ENGINEERS
ARIZONA-NEVADA AREA OFFICE
3838 NORTH CENTRAL AVENUE
PHOENIX, ARIZONA 85012-1936

AUG 23 1993

~~FB~~
CERHGH
MD

Office of the Chief
Regulatory Branch

Maricopa County Department of Transportation
ATTN: Thomas R. Buick, P.E.
2901 West Durango Street
Phoenix, Arizona 85009

Dear Mr. Buick:

It has come to our attention that you plan to construct a 100-year bridge crossing of the New River along the Union Hills Drive corridor at Maricopa County, Arizona.

This activity may require a U.S. Army Corps of Engineers Section 404 permit. A Section 404 permit is required for the discharge of dredged or fill material into the "waters of the United States," including adjacent wetlands. Examples of activities requiring a permit are placing bank protection, temporary or permanent stock-piling of excavated material, grading roads, grading (including vegetative clearing operations) that involves the filling of low areas or leveling the land, constructing weirs or diversion dikes, constructing approach fills, and discharging dredged or fill material as part of any other activity.

Enclosed you will find a permit application form and a pamphlet that describes our regulatory program. If you have any questions, please contact Cindy Lester of my staff at (602) 640-5385. Please refer to this letter in your reply.

Sincerely,

Robert J. Dummer
Acting Chief, Arizona Field Office
Regulatory Branch

Enclosures



CITY OF
GLENDALE

5850 WEST GLENDALE AVENUE
GLENDALE, ARIZONA 85301
(602) 435-4250

ELAINE M. SCRUGGS
MAYOR

July 30, 1993

The Honorable Ken C. Forgia
Mayor of Peoria
8401 West Monroe Street, Room 310
Peoria, AZ 85345

Dear Ken:

Thank you for your July 6 letter detailing the City of Peoria's actions with regard to funding and initiating construction of a bridge where New River crosses Union Hills Drive. Following is a synopsis of the City of Glendale's understanding of the situation and a statement regarding our actions to further the process, as you requested in your letter.

Maricopa County planned to begin construction of the 83rd Avenue bridge at New River in April 1988. Although they did not follow through with that plan, Maricopa County did continue to carry the bridge project in their Five Year Capital Improvement Program (CIP) Budget until 1992. At that time, we were informed that the project would need to be brought before the Maricopa County Board of Supervisors for a decision to reinstate funding.

Discussions between the City of Glendale and the City of Peoria concerning alternative bridge locations and intersection alignments at 83rd Avenue and Union Hills Drive began as early as October 1991. With the construction of Loop 101, the importance of the 83rd Avenue bridge at New River lessened. Thus, efforts were begun to change the location of the bridge construction and to reinstate the bridge funding in the County's CIP. A meeting was held in April 1993 with the following governmental entities represented:

Grant Anderson	City of Glendale
Bob Darr	City of Peoria
Mark Danelowitz	ADOT Local Government
Bill Hayden	ADOT Statewide Project Management
Stan Smith	Maricopa County Flood Control District
Tom Buick	Maricopa County Department of Transportation

July 30, 1993
Mayor Ken C. Forgia
Page Two

That meeting culminated in the following agreements being reached:

Maricopa County Department of Transportation agreed to be the lead agency in the design and construction of the Union Hills Drive bridge at New River, along with the realignment of the 83rd Avenue and Union Hills Drive intersection.

Maricopa County Department of Transportation agreed to formulate the intergovernmental agreement between Glendale, Peoria, Maricopa County Department of Transportation, and Maricopa County Flood Control District to accomplish this work.

City of Peoria officials have informed City of Glendale officials that to assist in the funding of this project the City of Peoria has offered to reallocate federal funding from a 99th Avenue and New River bridge project to the Union Hills/New River project. In addition, Maricopa County Department of Transportation and Maricopa County Flood Control District would each contribute \$100,000 for the design of this bridge. The City of Glendale has budgeted \$250,000 of Highway User Revenue Funds for fiscal year 1995-96, if matched by the City of Peoria, for construction of the bridge. Construction of the bridge has been targeted to begin in October of 1995 to correspond to the beginning of the Federal fiscal year.

Because of the complexity of this project and the multiple entities involved, all parties have agreed that fiscal year 1995-96 is the earliest, feasible timetable for construction of the bridge. The City of Glendale's allocation of matching funds in fiscal year 1995-96 will correlate with this projected construction time frame.

Finally, as you stated in your letter the staffs of the City of Glendale, City of Peoria, and Maricopa County are continuing to meet and work toward accomplishing this bridge project.

July 30, 1993
Mayor Ken C. Forgia
Page Three

If you have any questions regarding the statement of facts in this letter, please contact me.

Sincerely,

Elaine Scruggs
Mayor

cc: Supervisor Ed King
District 4 - Maricopa County

Mr. Neil Erwin
Maricopa County Flood Control District

Dr. Martin Vanacour
City Manager - City of Glendale

Mr. Ken Reedy
Deputy City Manager - City of Glendale

Mr. Grant Anderson
City Engineer - City of Glendale



CITY OF
GLENDALE

5850 WEST GLENDALE AVENUE
GLENDALE, ARIZONA 85301
(602) 435-4250

~~GRB~~
WCP
MWS ✓
DO

ELAINE M. SCRUGGS
MAYOR

September 1, 1993

Dear Neighboring Resident,

For several months, I have received letters and calls from you and other Peoria residents expressing a desire for the immediate construction of a bridge over Union Hills Drive in Glendale where the New River crosses the roadway. I have delayed responding to you because definitive information has not been available until recently.

After several months of collaborative efforts involving all agencies which would be required to participate in a future construction project of this nature, I feel a realistic plan is being formulated. Therefore, I feel I finally have something to report to you.

Enclosed is a copy of a letter I sent to Peoria Mayor Ken Forgia establishing the city of Glendale's understanding of the process thus far and the actions needed to accomplish construction of a bridge. I hope this information will form a basis for a meaningful dialogue among all of us. It is my hope that unrealistic expectations will not be fostered, but that through truly sincere cooperation among all interests and jurisdictions we will achieve our common goal of bridging the New River at Union Hills Drive.

Sincerely,

Elaine Scruggs
Mayor

Enclosure

cc: Councilmember Karen Ewing, Cholla District, City of Glendale
Mayor Ken C. Forgia, City of Peoria
Vice Mayor David Pearson, City of Peoria
Congressman Bob Stump, District 3 - Arizona
Supervisor Ed King, District 4 - Maricopa County
Mr. Neil Erwin, Flood Control District Director
Mr. Tom Buick, Maricopa County Department of Transportation
Dr. Martin Vanacour, Glendale City Manager
Mr. Ken Reedy, Glendale Deputy City Manager
Mr. Grant Anderson, Glendale City Engineer

The attached letters went to the following Peoria Residents:

19117 North 90th Drive	Peoria 85382
19115 North 92nd Avenue	Peoria
19111 North 90th Drive	Peoria
19525 North 89th Drive	Peoria
8634 West Rockwood Drive	Peoria
20008 North 93rd Lane	Peoria
8633 West Morrow Drive	Peoria
18907 North 88th Drive	Peoria
9246 West Oraibi Drive	Peoria
9234 West Oraibi Drive	Peoria
9734 West McRae Way	Peoria
8962 West Utopia Road	Peoria
19527 North 98th Drive	Peoria
9117 West Palm Tree Drive	Peoria
8639 West McRae Way	Peoria
9421 West Chino Drive	Peoria
8738 West Rockwood Drive	Peoria
19715 North 94th Avenue	Peoria
18918 North 96th Lane	Peoria
18859 North 88th Drive	Peoria
18833 North 94th Lane	Peoria
19367 North 86th Drive	Peoria
9642 West Sierra Pines	Peoria
19607 North 89th Drive	Peoria
19239 North 89th Drive	Peoria
19213 North 86th Drive	Peoria
18886 North 91st Drive	Peoria

9124 West Oraibi Drive	Peoria
9122 West Oraibi Drive	Peoria
9067 West Taro Lane	Peoria
8818 West Rosemonte	Peoria
18843 North 94th Lane	Peoria
9442 West McRae	Peoria
8817 West Kimberly Way	Peoria
8816 West Topeka Drive	Peoria
8929 West Topeka Drive	Peoria
9130 West Utopia Road	Peoria



September 8, 1993

Mr. Dan Sagramoso, Transportation Director
Maricopa County Department of Transportation
2901 West Durango
Phoenix, AZ 85009

Dear Mr. Sagramoso:

It has come to my attention that the Maricopa County Department of Transportation is applying to FEMA for a grant to fund the construction of a bridge over the New River at Union Hills Drive. The City of Glendale is very supportive of your efforts to acquire funding for the construction of the bridge.

As you know, the construction of the bridge is a collaborative effort among a number of agencies including the City of Peoria, City of Glendale, Maricopa County Department of Transportation and the Maricopa County Flood Control District. It is extremely important to the Union Hills/New River area. The potential flooding and hazards presented to public facilities and private property in the area make the construction of this bridge a high priority to the west side.

If there is anything further the City of Glendale can do to support your application for grant funding, please let me know. This project is a high priority to the City of Glendale and its citizens.

Sincerely,

A handwritten signature in cursive script that reads "Tim Ernster".

Tim Ernster
Acting Assistant City Manager

c: Martin Vanacour, City Manager
Ken Reedy, Deputy City Manager - Public Works
Barbara Bommarito, Grant Writer - Maricopa County

GLEN

Post-It™ brand fax transmittal memo 7671		# of pages > 2
To Dana Owsiany	From Dan Sherwood	
Co. MCDOT	Co. City of Glendale	
Dept.	Phone # 435-4152	
Fax # 506-4882	Fax # 931-5533	

Original in the Mail.

April 14, 1994

Ms. Dana Owsiany
 Maricopa County Department of Transportation
 2901 West Durango Street
 Phoenix, Arizona 85009

RE: Project 934011 - Union Hills Bridge at New River

Dear Ms. Owsiany:

The City of Glendale has reviewed the Draft Design Concept Report for the Union Hills Bridge Project, dated March 22, 1994. In addition to the following comments, there are several additional comments marked up in the draft report.

The City is not in agreement that the combined bridge, Alternate 6, is the preferred alternative for several reasons:

The additional cost for the combined bridge is not warranted nor is it budgeted at this time unless the Highway Department is prepared to pay for the entire additional cost.

Alternate 6 will require considerable more right-of-way over the other alternates.

Alternate 6 will require complete reconstruction of the existing 83rd Avenue and will disturb existing land uses in the area.

I believe New River is part of a regional equestrian/pedestrian network. A large width bridge at this location would be a detriment to this purpose and could attract a large homeless population to this area.

The City of Glendale proposes that only the bridge on Union Hills Drive be constructed at this time. We also propose that 83rd Avenue remain in its present location and not be disturbed. The slight angle at the intersection of 83rd Avenue and Union Hills Drive does not create any problems and can remain in its present alignment. The grades for the intersection may need to be adjusted somewhat due to the bridge approaches but the roadway should not be disturbed any more than absolutely necessary.

April 14, 1994
Ms. Dana Owsiany
Project 934011 - Union Hills Bridge at New River
Page Two

We appreciate the opportunity to comment on the draft concept report and look forward to continued coordination on this project. Please feel free to contact me should you require additional information or assistance.

Sincerely,

Grant I. Anderson, P.E.
City Engineer



Daniel A. Sherwood, P.E.
Civil Engineer

DAS/pja
Attachment

cc Bob Darr, City of Peoria

ADD 27 1001

Richard C. Kraemer
4812 South Mill Avenue
Tempe, Arizona 85282

31111
FYD

MCDOT RECEIVED

APR 25 '94

Director	RI Est
Admin	Traf
Engr	File
Inf Sys	
Oper	
X Pinn	

REMARKS

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Feedback
on
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of
Study

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April 22, 1994

Ms. Julie Ellegood, Chairperson
Maricopa County
Transportation Advisory Board
2901 West Durango Street
Phoenix, Arizona 85009

Re: Union Hills Drive Crossing at New River/Draft Design
Concept Report dated March 22, 1994

Dear Ms. Ellegood:

I am one of the owners of the approximately 21½ acre parcel of land located at the northeast corner of 83rd Avenue and Union Hills Drive in Peoria, Arizona. I am writing this letter on my own behalf and on behalf of the other owners of the property.

I recently became aware of the Draft Design Concept Report for the Union Hills Drive Crossing at New River dated March 22, 1994. The staff of the Maricopa County Department of Transportation has graciously welcomed our comments and feedback regarding the proposed alternatives set forth in the Draft Report and this letter is in response to the staff's offer requesting our participation.

Based on our review of the Draft Report and, in particular, the provisions of the Draft Report dealing with project cost, it appears that the Draft Report fails to take into account the significant effect the implementation of Alternative #6 set forth in the Draft Report would have on the developability of our property and the significant effect of the cost of that taking on the overall project cost.

As you are undoubtedly aware, the report recommends the implementation of Alternative #6. Alternative #6 provides for a bridge crossing New River and for the realignment of 83rd Avenue from its present location to a location to the east thereof. The 83rd Avenue realignment would result in the bisecting of our property (which property is now readily developable) into two rather skinny triangular parcels of property. The developability of our property would be significantly impacted by the 83rd Avenue realignment and, in fact, the 83rd

Ms. Julie Ellegood, Chairperson
April 22, 1994
Page 2

Avenue realignment could totally destroy the economic viability of any possible development on our property. A rough drawing showing our property and the impact of the 83rd Avenue realignment on our property is attached.

Our property is zoned PAD with commercial, industrial and office uses allowed. While we have not undertaken at this time a detailed study of the economic impact on our property of the 83rd Avenue realignment, we have performed enough analysis to conclude that a taking could result in a seven figure impact on the cost of the project discussed in the Draft Report. That impact should, of course, be taken into account in determining the overall cost of the project and your cost benefit analysis.

Thank you for seeking our input and affording us the opportunity to present this additional information to you.

Very truly yours,



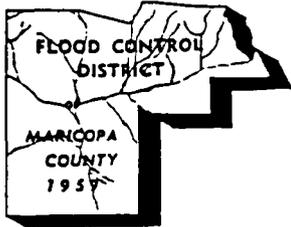
Richard C. Kraemer

RCK:sl

Enclosure (no attachment included w/ this copy)

R0104L011

cc: Supervisor Ed King
The Honorable Kenneth C. Forgia
Mr. Robert Gagen, Director ✓



FLOOD CONTROL DISTRICT

APR 20 1995

of

Maricopa County

2801 West Durango Street • Phoenix, Arizona 85009
Telephone (602) 506-1501
Fax (602) 506-4601
TDD (602) 506-5897

BOARD OF DIRECTORS
Betsey Bayless
James D. Bruner
Ed King
Tom Rawles
Mary Rose Garrido Wilcox

Neil S. Erwin, P.E., Chief Engineer and General Manager

DATE: April 19, 1994

MEMO TO: Greg Holverson, Chief, Transportation Planning Division, MCDOT

ATTN: Dana Owsiany, Civil Designer, Programming and Implementation Branch

FROM: Amir Motamedi, Watershed Management Branch Manager

SUBJECT: Union Hills Drive Crossing at New River - Draft Design Concept Report

The Draft Design Concept Report (DCR) for the subject project has been reviewed by the District. We offer the following concerns and comments:

1. We would like to emphasize that the design of the proposed bridge needs to comply with applicable Federal, State, and local floodplain regulations. Primarily, this means that the water surface elevation cannot be increased, or that there be an increase of the flooding to the surrounding properties. It is recommended that MCDOT perform a detailed hydraulic analysis of the proposed changes to determine what impacts they may have on the existing hydraulic conditions of New River.

It is also requested that a Letter of Map Revision be obtained from the Federal Emergency Management Agency for this project. Failure to do so may jeopardize the good standing of the Cities of Peoria and Glendale in the National Flood Insurance Program.

2. We ask that MCDOT reconsider the use of the gabions for bank protection. Previous experience indicates that maintenance of gabion protection is very labor intensive, and over time, other types of bank protection may prove to be more beneficial.

In addition, the toe down extent suggested in the report may be inadequate and may require further analysis.

3. In July 1977, the District's Board of Directors entered into an agreement with the Corps of Engineers to maintain the future condition flows within the designated floodways below its structures. The future condition flow at the proposed project site is estimated by the Corps to be approximately 13,900 cfs. The Corps' hydraulic analysis showed the future condition flows to be less than one foot above the existing water surface elevation (published by FEMA); therefore, remaining within the freeboard suggested for the project. The District requests that the bridge design maintain the conveyance of the future condition flows.

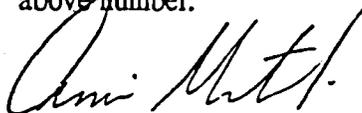
Memo to: Greg Holverson, MCDOT

Subject: Draft DCR

Page 2

4. Once the engineering and hydraulic analysis report is available, the District will need a copy of the report for review.
5. Maintenance responsibility issues need to be addressed since multiple jurisdictions and agencies are involved with this project.
6. Due to new developments in the watershed, a draft update to the hydrology for the subject area has been prepared by the District and will be forwarded to the City of Peoria for their review and comments. Our analysis shows that 83rd Avenue does convey some flow south to the project site. For additional details, contact Maximo DeVera of our Hydrology Division.

We would like to thank you for continuing to involve us in your review process. If you have any questions regarding these comments or require any additional information, please contact me at the above number.



Amir Motamedi



Maricopa County
Planning and Development

ETK

MWS

DLD -

AUG 17 1993

August 17, 1993

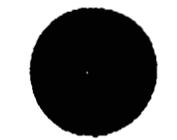
To: Thomas R. Buick, P.E., Chief
Transportation Planning Division

From: Debra W. Stark *DWS*
Planner III

Re: Union Hills Drive Bridge Crossing of the New River

Thank you for your letter of August 5, 1993. Subject site is not within any approved Area Land Use Plan. This office does not have any comments at this time. We would appreciate your office keeping us inform of this project.





CITY OF PEORIA

OFFICE OF THE MAYOR AND COUNCIL

September 17, 1993

Mr. Dan Sagramoso, Transportation Director
Maricopa County Department of Transportation
2901 West Durango
Phoenix, AZ 85009

Dear Mr. Sagramoso:

The City of Peoria applauds your efforts to obtain a FEMA grant in support of construction of a bridge over the New River at Union Hills Drive and 83rd Avenue. Although the planned bridge location is in the City of Glendale, the City of Peoria considers its construction to be of the highest priority.

The existing low-water crossings in this area are a cause for considerable concern whenever we experience an appreciable amount of rain. Water flowing over the roadway closed both Union Hills and 83rd Avenue west of the Agua Fria Freeway for extended periods last winter, causing serious inconvenience to the public, and impacting the response capability of Peoria Fire Station #2 and ambulance response times to Arrowhead Hospital. The citizens living in the area west of the New River that needed the services of Arrowhead Hospital were also greatly inconvenienced and delayed. Rapidly increasing residential and commercial growth along the Agua Fria corridor between Thunderbird and Beardsley has created additional traffic in the area, which will exacerbate the impact of future closures.

Please rest assured, Mr. Sagramoso, that the City of Peoria will continue to offer our strongest support of this project and will assist you in your efforts to secure funding in any way we can.

Sincerely,

Ken C. Forgia

Ken C. Forgia
Mayor

David Pearson

David Pearson
Vice-Mayor

Post-It™ brand fax transmittal memo 7871		# of pages > 1
To <i>Barb Bannarito</i>	From <i>Mayor Forgia</i>	
Co. <i>MC DOT</i>	Co. <i>City of Peoria</i>	
Dept.	Phone # <i>412-7306</i>	
Fax # <i>412-7306</i>	Fax # <i>412-7306</i>	



PEORIA
UNIFIED SCHOOL DISTRICT NO. 11

TKB
GPH
MD
AUG 30 1993

August 27, 1993

Thomas R. Buick, P.E., Chief
Transportation Planning Division
Maricopa Co. Dept. of Transportation
2901 West Durango St.
Phoenix, AZ 85009

Dear Mr. Buick:

We certainly favor the New River bridge crossing project and commend you for your decision to embark upon it. We look forward to an early construction date. Call if we can assist in any way.

Sincerely,

Raymond S. Kellis, Ed.D.
Superintendent

APR 28 1994



City of Peoria

8401 West Monroe Street, Peoria, Arizona 85345

April 20, 1994

Ms. Dana Owsiany
Maricopa County Department of Transportation
2901 West Durango Street
Phoenix, Az 85007

RE: Project 934011 - Union Hills Bridge at New River

Dear Ms. Owsiany:

The City of Peoria has reviewed the Draft Design Concept Report for the Union Hills Bridge Project dated March 22, 1994.

In addition to the attached comments, please find comments on the draft report on figure 4.1.6b and continuing to Page 4 of Appendix "D".

Thank you for the opportunity to comment on the project.

It is a pleasure working with you.

Sincerely,

Robert J. Darr
City Engineer

RJD:ka:owsianyMCDOT.ltr

M E M O R A N D U M

DATE: April 13, 1994
TO: Robert J. Darr, City Engineer
THROUGH: Philip V. Bloom, Development Services Director
FROM: Burton Charron, Engineer
SUBJECT: Union Hills Drive Crossing at New River, Draft Design
Concept Report.

I reviewed the draft report and have made comments beginning on figure 4.1.6b and continuing to Page 4 of Appendix "D".

I am concerned with the Preferred Alternative #6 and its impact on the City of Peoria.

The main concern is the representation that the City of Peoria will be responsible for the Right-of-way acquisitions within our City limits. These costs may be in excess of \$1,500,000.00 including condemnation, acquisition, and severance damages.

Further, the City may not be able to enforce the developer of the remaining adjacent property to participate in the improvements to both sides of the Parkway, and the City may need to fund these improvements. There is a cost associated with the City funding the Parkway on its own which is estimated at \$600,000.00.

Adding the \$225,000.00, which is programmed, the City will be committed to \$2,325,000.00 for the completion of the improvements proposed in Alternative #6.

This figure is less than the 83rd Avenue Bridge in Alternate #5 (\$1,870,000.00) which provides for a separate crossing of New River. The advantage is that the 83rd Avenue low-water crossing may remain and be maintained for sometime, since the Union Hills Bridge will provide the emergency access which is driving this issue. In Alternate #5 the right-of-way for 83rd Avenue Parkway will be dedicated and the adjoining developers will participate in the construction of the Parkway. The City may be responsible for an estimated \$200,000.00 north of Parkway improvements.

In the current proposal, the City's financial participation in Alternate #5 for the Union Hills Bridge alone is less than the combined bridge in Alternate #6. The 83rd Avenue Bridge can be constructed at a later date when appropriate funding is available.

Memorandum - Bob Darr
April 14, 1994
Page 2

In addition, the County has already funded and completed the design for the 83rd Avenue Bridge and paving improvements. The bridge can be constructed using this completed design, once traffic warrants.

The City is anticipating completion of 83rd Avenue improvements by UDC Homes in this vicinity. The design for the Parkway is underway and is planned to be constructed well ahead of the Union Hills Bridge being considered in either Alternative #5 and #6.

The City of Peoria would forfeit all of these accomplishments if Alternate #6 is selected.

In the Background section of the draft IGA, it is stated that the New River crossing is flooded approximately 2 months out of the year. This may have been the case for Spring of 1993, however this may not be historically accurate.

In the Terms of the agreement section of the draft IGA 7.1.4 it requires the City of Peoria to procure any required right-of-way. This may be a significant commitment of City resources which is obviously not discussed at all in this drafted Design Concept Report.

The recommendation of Alternative #5 allows the City of Peoria the flexibility to improve 83rd Avenue as development and traffic needs warrant. The options range from "Do nothing" presently, to construction of a bridge in the future when it can be justified. The City can participate in the construction of the Union Hills Bridge, without jeopardizing the intent to provide access during a flood event.

If there are any questions, please contact Burton Charron at extension 6225.

BC:jb\memos:uhbridge.mem



City of Phoenix
STREET TRANSPORTATION DEPARTMENT

JAE
MWS ✓
MRD —

August 13, 1993

AUG 10 1993

Thomas R. Buick, P.E., Chief
Transportation Planning Division
Maricopa County Department of Transportation
2901 West Durango Street
Phoenix, AZ 85009

Dear Mr. Buick:

This is in response to your August 5 letter concerning the Union Hills Drive bridge crossing of the New River.

The City of Phoenix does not have any input on this project at this time, but we appreciate the opportunity to do so.

This project will enhance east-west travel capacity across the north valley, enabling Union Hills Drive to serve as a viable reliever route for Bell Road. The City is focusing a significant part of its Five-Year Major Street Program on improving Union Hills Drive east of I-17 to Cave Creek Road.

If we can be of assistance in this project, please let us know.

Sincerely,

James H. Matteson, P.E.
Street Transportation Director

J. Donald Herp, P.E.
Deputy Street Transportation Director

JHM:JDH:mt:pjhl8302

c: Mr. Bortfeld

APR 26 1994

Planning
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See me
G.E.H.
4/27/94



TERRITORIAL ENGINEERS, INC.

2636 Highway 95 • Suite 44
Bullhead City, Arizona 86442
(602) 758-7600

April 19, 1994

MS. JULIE ELLEGOOD, Chairwoman
Maricopa County
Transportation Advisory Board
2901 W. Durango Street
Phoenix, Arizona 85009

**RE: UNION HILLS DRIVE BRIDGE over
NEW RIVER/83RD AVENUE**
TEI J.N.194120

Dear Ms. Ellegood:

We are consulting Civil Engineers, Surveyors and Land Planners who are engaged with UDC Homes, Inc. in the development of Westbrook village, Phase II in Peoria. We have also been retained by the owners of the 21.5 Acre piece of property on the East side of 83rd Avenue from Union Hills Drive to 1/2 mile North.

UDC Homes, Inc. has been required to construct improvements in the West 1/2 of 83rd Avenue as development progresses in Westbrook Village, Phase II. We have developed plans for these improvements to standards established by the City of Peoria. It was during this plan review process by Maricopa County Department of Transportation that we became aware of the "Draft Design Concept Report" dated March 22, 1994.

This report addresses the Union Hills Drive crossing of the New River with several alternatives.

We wish to point out that we believe this report does not address all of the elements for realignment of a roadway as a part of the cost analysis for alternate 6, staff's preferred alignment.

There is no cost assigned to the necessary right-of-way needed for the 83th Avenue re-alignment North of Union Hills Drive. In light of the fact that the proposed alignment renders the remaining property virtually useless, the right-of-way cost may need to include most of the 21.5 plus or minus acres.

Continued

It is also important to note that the property has been zoned for P.A.D. since 1985 for mixed uses of office, commercial and light industrial per Ordinance 85-17. The land has never been designated as Park/open space by the General Plan of the City of Peoria, nor has the City intended that this private property and the parcel to the North known as the Fletcher property be designated as Park/open space.

We wish to also point out the erroneous statements made in the environmental assessment portion of the report (Appendix D).

1. On Page 4, II.A.1 second paragraph:
"No significant contiguous parcels of undisturbed land exists within the project area."

The property East of 83rd Avenue that is 1/2 mile in length (21.5+ Acres) must be considered, although no protected species are present.
2. On Page 8, II.E.1:
"The roadway will not impact the adjacent land use."

Diagonally bisecting the property East of 83rd Avenue with a 150 foot wide street is a major impact on its land use, both present and future. In essence, it is rendered useless.
3. On Page 8, II.E.2:
"Due to the limited scope of the project, no public controversy is expected."

Creating two worthless parcels by the diagonally bisection is not going to be met with strong opposition by the property owners on both sides of 83rd Avenue.
4. On Page 9, II.E.3, Third paragraph:
"No residential, agricultural or commercial properties are affected by this project."

As stated previously, PAD zoning on East property with commercial, office and light industrial uses existed since 1985. Commercial acreage exists at the Northwest corner of 83rd Avenue and Union Hills Drive, from which frontage would be eliminated.
5. On Page 10, II.G.1, Second paragraph:
"Since this project does not require new right-of-way, does not cause an adverse impact on adjacent property, and does not have adverse social economic, or environmental impacts, public involvement has been minimal."

Continued

Page 3

Ms. Julie Ellegood

April 19, 1994

This project's staff recommended alignment requires new right-of-way which causes an extreme impact on adjacent lands.

In summary, we believe that a bridge over the New River is a necessary improvement at this time for Union Hills Drive. We feel that 83rd Avenue can remain as a dip section until traffic warrants a bridge on or near its existing alignment. We support 83rd Avenue at or near its present alignment North of Union Hills Drive. We also believe that utilizing the existing rights-of-way and building two bridges is by far the most cost effective approach to solving the problem.

Thank you for this opportunity to present our position on this important matter.

Very truly yours,

TERRITORIAL ENGINEERS, INC.



Charles K. Dewald, P.E., R.L.S.

Senior Vice President

CKD:esy

cc: Supervisor Ed King
301 W. Jefferson Street
Phoenix, Arizona 85003

Mr. Bob Gagen, Director
Department of Transportation
2901 W. Durango Street
Phoenix, Arizona 85009

Mr. Richard Kraemer
UDC Homes, Inc.

Mr. Carl Mulac
Manager, UDC
Westbrook Village



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ARIZONA ECOLOGICAL SERVICES STATE OFFICE
3616 West Thomas Road, Suite 6
Phoenix, Arizona 85019



MD

Telephone: (602) 379-4720 FAX: (602) 379-6629

August 17, 1993

Mr. Thomas Buick
Maricopa County Department of Transportation
2901 West Durango Street
Phoenix, Arizona 85009

Dear Mr. Buick:

The Fish and Wildlife Service (Service) has received your August 5, 1993, letter regarding the proposed 100-year flood bridge across the New River on Union Hills Drive. The Service appreciates the opportunity to provide comments on this project.

We have reviewed our National Wetland Inventory maps which indicate there are no wetlands of concern in the area. In addition, our Endangered Species staff has reviewed the proposed project area and determined there are no threatened or endangered species of concern in this area.

The New River is considered a waterway of the United States, and portions of the proposed bridge project may require placement of fill into this waterway. This type of activity is regulated under Section 404 of the Clean Water Act by the U.S. Army Corps of Engineers (Corps). We recommend that you contact Mr. Robert Dummer at the Corps' Phoenix Office to determine if a Section 404 permit is necessary.

Please contact Mary Richardson or Don Metz if you have any additional questions.

Sincerely,

Thomas A. Gatz
Acting State Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, New Mexico
(AES)
U.S. Army Corps of Engineers, Phoenix, Arizona, (Attn: Robert Dummer)
Director, Arizona Game and Fish Department, Phoenix, Arizona
Arizona Department of Environmental Quality, Phoenix, Arizona, Attn:
Jack Bale, Field Services, and Jim Mott, Surface Water Certification

APPENDIX D:
DRAFT Environmental Assessment

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL ASSESSMENT

Work Order # 68858 Date: May 11, 1994
Project Name: Union Hills Bridge Termini: New River

DRAFT

I. PROJECT DESCRIPTION

- A. Purpose and Need - The purpose of this environmental analysis is to address environmental concerns and develop mitigation measures to minimize impacts. Mitigation measures are listed on pages 10 and 11.

Maricopa County Department of Transportation (MCDOT), working together with the cities of Glendale and Peoria and the Maricopa County Flood Control District (FCD) propose to fund and construct a 84-foot wide, all-weather bridge crossing at New River. This would involve the realignment and reconstruction of the 83rd Avenue/Union Hills intersection dip crossing.

The Winter floods of 1993 caused New River to swell and the Union Hills Road east of 83rd Avenue dip crossing to be closed approximately two months. Emergency vehicles and all other motorists must detour a minimum of five miles to traverse New River when the dip crossing is impassable. Although the crossing is barricaded, motorists attempt to cross during flood events. Flows do not look swift or dangerous due to underlying sloping topography, thus causing a public safety hazard. The slope of the riverbed increases water velocity, however, this is not always apparent to the untrained eye. This proposed bridge crossing would be the only crossing for 10 miles to the north (Carefree Highway) and one mile to the south (Bell Road) during flood events. The closure of this intersection exacerbates the already critical volume of traffic in the area.

The proposed bridge location is adjacent to two large retirement communities, Westbrook Village and Sun City. The project is located between high density residential areas and the Agua Fria Freeway (Loop 101). There is a fire station, elementary school, golf course, baseball stadium, and major shopping mall within one mile of the project and a hospital within two miles of the project. Bridge construction at this location is key to meeting the northwest valley's growing transportation needs.

A bridge crossing is necessary in this area due to the high Average Daily Traffic (ADT), 8400 currently with 32000 in 2020; the extended time it takes for emergency vehicles to traverse New River on alternate routes when this dip crossing is closed; the river crossing safety issue during flooding; the high density residential makeup of the adjacent community; and the impact to local socioeconomics (baseball stadium and shopping mall).

Four project alternatives exist as follows: (1) The "do nothing" plan; (2) Build box culverts; (3) Develop new alignments to redirect the traffic flow; or (4) Build an all-weather bridge crossing. For further alternatives information see the description and physical construction sections of this report.

- B. **Description** - The project is situated on the east-west section line bordering Sections #26-27 and #24-25, T4N, R1E, G&SRB&M. 83rd Avenue and Union Hills Drive are section line roads and the intersection lies on the boundary between the cities of Glendale and Peoria (see attached location map). The Maricopa County boundary is located 60 feet north of the Union Hills centerline on the 83rd Avenue alignment. The project area is located within Maricopa County Board of Supervisors District # 4.

The proposed bridge site is within the City of Glendale with the west approach within the City of Peoria. The existing Union Hills Drive is a two-lane curbed roadway with a dip section through New River. The current dip crossing extends seven to eight feet below the top of the river banks, the slope of the riverbed gives floodwaters intense velocity, potentially ranging from 1500 to 2200 ft³/second (Cubic Feet per Second [cfs]). Additionally, 83rd Avenue intersects Union Hills Drive near the west bank of New River. The Agua Fria Freeway (Loop 101) has a traffic interchange on Union Hills Drive located approximately 0.25 miles east of New River and is designed for four through lanes. Loop 101 is a Road of Regional Significance in the Maricopa Association of Governments (MAG) Transportation System Plan.

A meeting held in April, 1993 with the cities of Glendale and Peoria, Arizona Department of Transportation (ADOT) Local Government and Statewide Project Management, Maricopa County FCD, and MCDOT resulted in MCDOT serving as the lead agency for project design and construction. An Intergovernmental Agreement (IGA) between Glendale, Peoria, MCDOT and FCD has been drafted. The completion of this project is contingent upon joint funding by the above partners and the County's ability to obtain Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant Program (HMGP) funding. The total cost of construction for this project is approximately \$ 1,600,000 (see attached draft IGA for funding breakdowns).

Construction is tentatively scheduled to begin in 1995. Since federal funds may be involved on this project, the completion of the Environmental Determination Report (EDR) will fulfill the National Environmental Policy Act (NEPA) process requirements, consistent with federal guidelines.

The four project alternatives are as follows:

Alternative 1: "No Build Alternative"

Do nothing. Traffic west of New River will not have access to the Agua Fria Freeway (Loop 101)/Union Hills Drive traffic interchange during storm runoff if a bridge is not built at New River. The advantage is no cost and immediate implementation. This was rejected because it is hazardous and inefficient to maintain a dip crossing that floods on a regular basis; and the high costs of maintaining and enforcing a barricade make this an inefficient solution. This alternative does not address the safety issue that exists at this site during flood events.

Alternative 2: "Four Lane Dip Section"

A four-lane roadway continuing from Loop 101 that ties into Union Hills west of 83rd Avenue. Benefits of this alternative include immediate implementation and elimination of the bottleneck problem. The disadvantages include detour routes and road closure during storm events. Additionally, maintenance costs increase due to the additional pavement replacement expenses.

Alternative 3: "Install Box Culverts"

Install box culverts to pass low flow volumes to make the intersection a low flow crossing. The advantage is that Union Hills Drive would close only during extreme high volumes. According to the FCD, flows at this site could range from 2,400 cfs for a ten-year flood to 12,000 cfs for a 100-year flood event. The approximate cost is \$420,000 and would take six months for culvert installation. This was rejected because like alternatives #1 and 2, the safety hazard remains; if the box cannot handle the volume, the road will flood again. These box culverts would also cause backwater above the FCD's allowable one foot rise. The alternative is not feasible because it would take require multiple box culverts to convey the flow and is almost as costly as a bridge.

Alternative 4: "New Alignments to Redirect Traffic Flow"

Develop new alignments to redirect the traffic flow. This was rejected because the three alternate routes, Deer Valley Road, Bell Road, and 83rd Avenue would not satisfactorily meet the problem. Deer Valley Road is a dip crossing and would increase mileage by three miles on an emergency route; Bell Road was recently widened to six lanes to meet its current traffic demands; and, the angle of 83rd Avenue would require a longer crossing, and not provide direct access to Loop 101 as Union Hills does.

Alternative 5: "Union Hills Drive Bridge"

Build an all-weather, 100-year flood bridge crossing that maintains access to local communities during flood events. This alternative addresses the safety and transportation flow issues that currently exist in the project area. This alternative would provide access to Loop 101 and facilitate traffic movement for the northwest valley. 83rd Avenue would have to be realigned onto the section lines and the dip crossing geometrics adjusted.

Alternative 6: "Union Hills Drive and 83rd Avenue Combined Bridge"

An all-weather bridge crossing that serves Union Hills Drive and 83rd Avenue. This would eliminate the need for a separate bridge at 83rd Avenue and would keep the roadway open during storm runoff events. The cost of this alternative is prohibitive.

MCDOT is recommending alternative #5, the Union Hills Drive Bridge as the preferred alternative. The proposed project design will be based on the Maricopa Association of Governments' (MAG) functional classifications of urban minor arterial for Union Hills Drive and urban major collector for 83rd Avenue (see attached details). The dimensions of the proposed project are as follows: length of the proposed bridge would be 120-150 feet, with a width of 84 feet; roadway width of 68 feet. The project would accommodate bicycle and pedestrian access to the bridge. This will require the realignment of the 83rd Avenue dip crossing and the reconstruction of the 83rd Avenue/Union Hills intersection.

- C. **Right-of-Way (ROW)** - The existing ROW varies between 110 and 180 feet on Union Hills Drive. There is 80 feet of ROW along 83rd Avenue. Minimum ROW requirements for an urban minor arterial road (Union Hills Drive) is 110 feet, with 80 feet required for an urban major collector (83rd Avenue).

ROW may be required for the completion of this project. A Temporary Construction Easement (TCE) may be necessary in the ultimate roadway construction scenario if detour roads or river channelization is required. No impacts to the adjacent land uses will occur. No relocations of businesses or residences are required.

II. IMPACT EVALUATION

A. Natural Environment

1. The proposed project area lies across the New River riverbottom. Surrounding areas are disturbed, cleared land for future housing developments. A cultivated citrus grove lies southeast of the project area. Undeveloped areas contain non-native herbaceous volunteers.

Plant species in the area are invaders of disturbed soils. Desert broom, globe mallow, red-stem filaree and ragweed were the predominant species. No protected plant species were found on the proposed project site.

No significant contiguous parcels of undisturbed land exists within the project area. The small, dispersed, undeveloped parcels do not support wildlife species other than those commonly associated with suburban areas. Dove, quail, songbirds, rabbits, and rodents could be expected to inhabit the area. No protected species are known to be present.

2. Published maps and data sources were reviewed for sensitive environmental concerns. The U.S. Fish and Wildlife Service (USFWS) reviewed their records and found no wetlands or threatened or endangered species in the area (see attached coordination letter). No wild and scenic rivers occur in the project area. The Arizona Department of Game and Fish's (AGFD) records do not indicate the presence of any endangered, threatened, or other special status species in the vicinity (see attached coordination letter).

A visual investigation indicated that no highly sensitive visual resources were found within the adjacent use areas. No impacts to the visual quality of the area will result from the construction of this project. There are no parks, forests, or refuges within one mile of the project area. No recreational opportunities would be hindered by the construction of this project. No significant resources are present or will be impacted.

3. There are five classified soil types within the 83rd Avenue and Union Hills Drive intersection: Antho-Carrizo (sandy loam), Carrizo (gravely sandy loam), Mohall (clay loam), Torrripsamments, Torrifluvents, and Tremant (clay loam). All soil types are typical of low terraces and stream channels with slopes ranging from one to three percent.

B. Air/Noise

1. The project is located in designated non-attainment areas for carbon monoxide, PM₁₀, and ozone. The project is covered under the current Transportation Improvement Program (TIP) item 248, which is in conformity with the State Implementation Plan (SIP).

Air and noise quality impacts for this project are judged to be insignificant. This judgement is based on the location and nature of the work this project requires. Some deterioration of air quality can be expected during construction due to the operation of construction

equipment combined with slower traffic speeds that are associated with a construction zone. However, this will be a localized condition that will discontinue when the project is complete.

Because of the acreage involved, a dust control permit will be required prior to earthmoving activities. All projects encompassing .1 acre or greater are required by Maricopa County Air Pollution Regulations 200 and 310 to apply for a dust control permit and may be required to submit a dust control plan. Measures such as watering or use of other dust suppressants are some of the Reasonably Available Control Measures (RACM) that may be required. Water for dust suppression, if used, must not contain contaminants that could violate water quality standards for surface waters or aquifers per Arizona Department of Environmental Quality (ADEQ) (see attached coordination letter and refer to standard mitigation measure A on page 10).

2. The current posted speed limits of 40 mph on the south and east legs, and 50 mph on the north and west legs will remain the same after the roadway improvements. The design speed of the improvements will be 55 mph on the east and west legs and 50 mph on the north and south legs. No increase in roadway use or volume is anticipated due to the projects' improvements.
3. There are no sensitive noise receptors, public facilities or adjoining extramural use areas (e.g., school playgrounds, etc.) near the project area. It is not anticipated that this project will contribute to the noise impacts of the area. No noise analysis is required. Construction noise is not anticipated to be a problem due to the limited number of close residential receptors and distance from the ROW. Construction Specifications (CS) should address this contractor responsibility (section 107.15, Community Relations.)

C. Water Quality

1. The project area lies in the basin of New River, which originates in the New River Mountains north and east of the City of Glendale. New River is a tributary of the Agua Fria River. Skunk Creek starts in the New River Mountains and is a tributary of New River. Skunk Creek joins New River west of Glendale.

Section 404 (b) (1) of the Clean Water Act requires an evaluation of the effects of projects involving the discharge of dredged or fill materials into waters of the United States, thus, Section 401 ADEQ and Federal Section 404 Corps of Engineers (COE) permits are required (refer to

specific mitigation measure B on page 10). This project qualifies for the Section 404 nationwide permit #s 13, 14, and 25. As land surface disturbance in excess of five acres will occur, the contractor must apply for a National Pollution Discharge Elimination System (NPDES) permit (reference CS section 107.2.1, NPDES Construction Permit Requirements), also, refer to standard mitigation measure C on page 10.

Runoff and seepage from roadways, embankments, and other alterations of the natural environment must not cause a violation of A.A.C. Title 18, Chapter 11, Article 1 per ADEQ (see attached coordination letter and refer to specific mitigation measure A on page 10). ADEQ recommended that the bridge be designed to ensure that runoff from the deck and approaches is routed and detained outside of the 100-year floodplain, and disposed of by a means other than surface discharge to the waters of the United States. This will confine the impacts of an accidental spill. (see attached coordination letter).

FEMA Flood Insurance Rate Maps (FIRM) indicate that this project is located within the 100-year floodplain of New River. At the time of the environmental review, there were no live surface flows in the riverbed.

A wastewater reclamation plant is located nine hundred feet east of the intersection, however, no impacts to this facility will result from the construction of this project. Best management practices will be followed on this project including minimizing the area of mechanical ground disturbance; monitoring of the project to ensure protection of the watershed; the provision of sanitary waste facilities during construction to protect surface and groundwater; and adherence to Surface Water Quality Standards Rule AAC R18-11-109-G.

D. Physical/Construction

1. Union Hills Road and 83rd Avenue will remain open during construction by means of detour roads and managed utilizing the "Maricopa Association of Governments' (MAG) Uniform Standard Specifications for Public Works Construction" and Part VI, Signals, of the "Manual on Uniform Traffic Control Devices for Streets and Highways." Also see standard mitigation measure D on page 11. Standard dust abatement measures should be employed during construction (MAG Standard Spec. 225) and should be addressed in the CSP (section 107.5.2, Transportation of Materials.)

2. The additional lanes, realignment, reconstruction of the intersection and construction of an all-weather bridge will move traffic more efficiently even during flood events. Transportation service will be enhanced with smooth traffic flows resulting from the proposed intersection and roadway improvements. The Arizona Department of Water Resources (DWR) requested that they review the bridge design and any revisions to hydrology (see attached coordination letter).
3. The project and utility corridor is almost completely suburban in character, thus, the potential to encounter hazardous materials is minimal. An examination of published map and aerial photo sources and a limited Phase I environmental review suggest no additional investigations are warranted at this time. While no additional investigations are warranted at this time, the contractor should be made aware of MCDOT's hazardous materials policy and procedures. Illegal dumping and its generic potential as hazardous materials source areas is always a possibility, however, no dumping sites were encountered in the above mentioned review.

No ROW from typical hazardous materials sources (gas stations, industrial sites, etc.) is required. Any spills of hazardous materials (oil, gasoline, diesel, lubricants, chemicals or other hazardous materials) should be reported and mitigated by the contractor per Maricopa County Department of Transportation (MCDOT) General Site Regulations (GSR) (section 7, Hazardous Material Handling.) Disposal of waste materials is the responsibility of the contractor with the approval of a MCDOT engineer, CSP (section 350, Removal of Existing Improvements). Also refer to standard mitigation measure E on page 11.

E. Socioeconomic

1. The project area is on land that is not part of the Maricopa County Land Use Plan. The Maricopa County Department of Planning and Development noted that the subject site is not within any approved Area Land Use Plan (see attached coordination letter). The primary land use in the general area is residential, commercial and agricultural. The roadway will not impact the adjacent land use. No relocations are required and access will be maintained. No impacts to neighborhood continuity, business disruption, or access changes will result from this project. The project is not in conflict with any local zoning ordinances.
2. In the event that there are public inquiries and a need for public interaction the contractor should comply with CSP (section 107.15, Community Relations) on the project.

3. Socioeconomic impacts will include improved safety and operational characteristics of the roadway. Completion of this project will provide the traveling public with an all-weather crossing contributing to a positive economic effect through better transportation service, improved business access and possible short term economic benefit from construction purchases and local hiring. There is a fire station, elementary school, golf course, baseball stadium, and major shopping mall within one mile of the project and a hospital within two miles of the project. This project will provide dependable, safe bridge crossing that accommodates access to the above mentioned facilities. Recreational facilities will be positively impacted as a result of this project (ie: the Peoria baseball stadium at 83rd Avenue, south of Bell Road).

No residential or commercial facilities are impacted by this bridge project. No defined neighborhoods will be dissected by the construction of this project. No residential, agricultural or commercial properties are affected by this project. No business access or disruption is expected, though inconveniences may occur during the construction period. The project will not affect any of the following socioeconomic characteristics: minorities; economic characteristics; or the area-wide, economy/economic base potential.

F. Cultural Resources

1. Arizona State Museum (ASM) site file check recommendations suggested a survey of the project area. The project area is being surveyed.
2. Because an archaeological survey was not required when the road was first constructed and the existing right-of-way acquired, some minor potential exists for unintentional discovery situations. The contractor is required to abide by the "Discovery Clause" of the Arizona Antiquities Act (ARS 41-844) and MAG Standard Provision 107.4. The person in charge of construction on lands owned or controlled by the County shall report promptly to the Director of the ASM the existence of any archaeological, paleontological or historic site or object discovered in the course of such construction, and shall take all reasonable steps to secure its preservation. Federal "Section 106" preservation requirements may take precedent over Arizona statutes. Refer to standard mitigation measure F on page 11.

G. Public Involvement

1. Coordination of this project has involved the U.S. Army COE, Arizona Department of Agriculture, USFWS, Maricopa County FCD, ADGF, Arizona Department of Environmental Quality, Bureau of Land Management, ADEQ, DWR, Federal Highway Administration, and ADOT and others (see attached agency coordination). Issues, concerns, and comments have been received from the agencies and have been incorporated in this environmental analysis.

Since this project does not require new right-of-way, does not cause an adverse impact on adjacent property, and does not have adverse social, economic, or environmental impacts, public involvement has been minimal. A TCE may be required during construction for a detour road or river channelization, however, this will have no impact on adjacent land uses. ADOT commented that the proposed bridge project would not affect any of ADOT's plans as presently programmed (see attached coordination letter). The cities of Peoria, Glendale, and Phoenix wrote a letters in support of the proposed bridge crossing (see attached coordination letters).

A presentation at the Westbrook Village Homeowners Association was conducted February 22, 1994 to brief the local residents on the FEMA grant submittal status, funding, design, and construction timetable. Local residents support the construction of a bridge over New River at 83rd Avenue.

In the event that there are public inquiries and a need for public interaction the contractor should comply with CS (section 107.15, Community Relations) on the project. See standard mitigation measure G on page 11.

2. Sewer lines for the wastewater treatment plant are 1000 to 1100 feet east of the intersection. Overhead electrical lines are located along portions of Union Hills Drive (APS 69 kv poles are on the north side of the roadway). The contractor should coordinate with utilities and agencies per CS (section 105.6, Cooperation with Utilities). See standard mitigation measure H on page 12.
3. Additional future public involvement is considered to be minimal on this project.

III. MITIGATION MEASURES AND RECOMMENDATIONS

Standard

- A. Water for dust suppression, if used, must not contain contaminants. Runoff and seepage from roadways, embankments, and other alterations of the natural environment must not cause a violation of A.A.C. Title 18, Chapter 11, Article 1 per ADEQ.
- B. Once bridge design plans are finalized for floodplain impact, a U.S. Army Corps of Engineers Section 404 permit and/or an Arizona Department of Environmental Quality Section 401 permit may be required. The Engineering Division will apply for any permits required.
- C. Regulated activities include, but are not limited to, dust control, pollution discharge elimination (NPDES), and stormwater runoff prevention. Standard dust abatement procedures will comply with General Site Regulations (GSR) 6.1, off-site tracking of sediments; the Maricopa County Air Pollution Control Regulation Rules 200 (permit requirements) and 310, (open fugitive dust sources); and MAG Standard Spec. 225. Water for dust suppression, if used, must not contain contaminants that could violate water quality standards for surface waters or aquifers.
- D. As noted previously, MCDOT will follow MAG Uniform Standard Specifications for Public Works Construction and Construction Special Provisions. The contractor will abide by the GSR published in MCDOT contract documents.
- E. MCDOT's hazardous materials policy and procedures for handling or discovery of hazardous materials are provided in the contract General Site Regulations (GSR) (section 7, Hazardous Material Handling) and CS (section 350, Removal of Existing Improvements) will be adhered to by the contractor.
- F. Discovery situations involving significant cultural resources including human remains, may occur during construction. A plan addressing likely contingency situations and the chain of command for project-specific responsibility and remedial action should be developed by MCDOT in consultation with interested parties. General regulations for dealing with the discovery of human remains and cultural resources are set out in Title 41 (ARS 41-841, et. seq. and 41-865).
- G. Public inquiries and public interaction, if required will comply with CS (section 107.15, Community Relations).

- H. Utilities and agency coordination will comply with CS (section 105.6, Cooperation with Utilities).

IV. RECOMMENDATIONS

It is recommended that alternative #4 be implemented, build a bridge. Reconstruction of the intersection and provision of an all-weather crossing over New River will provide for increased safety and improved traffic flow. Alternative #4 addresses safety, traffic movement, and emergency access issues as well as having a potential positive socioeconomic impact on the local communities.

V. CONCLUSION

This project has been reviewed by the Environmental Planning Branch of MCDOT and has been determined to meet the Environmental Process Policy as described in the Roadway Design Manual, Chapter 3. This report is intended to assist the roadway concept, design and construction process; and document the presence or absence of environmental impacts and related mitigation measures.

VI. ACTION REQUIRED

- MCDOT Environmental Determination (Only)
- Categorical Exclusion, Group (1) or (2)
- Environmental Assessment
- Environmental Impact Statement

This report satisfies the Maricopa County Department of Transportation environmental process policy for the preparation of Environmental Determination reports.

Prepared by _____ Date _____

Approved by _____ Date _____

- Map Attached
- Appendices Attached (coordination/supporting documents)