

**MERIDIAN ROAD,  
SOUTHERN AVE. TO UNIVERSITY  
DRIVE**

**Project Assessment Report**

**PAR No. P95-16**

**W. O. No. 68756**

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**30 NOVEMBER, 1995**



**Maricopa County  
Department of Transportation**

**Prepared By:  
Paul E. Sullivan, P.E., CEM  
Transportation Planning Division,  
Programming and Implementation Branch**

**A303.911**

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# PROJECT ASSESSMENT REPORT P95-16

## MERIDIAN ROAD, SOUTHERN AVENUE to UNIVERSITY DRIVE

SECTIONS 13, 24, 25, & 36 , T. 1 N., R. 7 E., & SECTIONS 18, 19, 30 & 31  
G & S R B & M

### MCDOT TRANSPORTATION PLANNING DIVISION

November 30, 1995

<b>C.I.P. INFORMATION:</b>	<b>C.I.P. Project?</b>	<i>Yes</i>	<b>Work Order #</b>	68756
<b>Further C.I.P. Programming required?</b>		<i>Yes</i>		
<b>C.I.P. Funds:</b>	<i>\$1,000,000</i>	<b>FY 2000</b>	<b>Description</b>	<i>2 to 5 Lane Reconstruct</i>

**Lead Division:** **Planning**                      **PM-10 Area?** *Yes*                      **Length:** 2.76 miles

#### **Problem Identification:**

1. The City of Apache Junction, the City of Mesa, and Pinal County have requested Maricopa County Department of Transportation, to widen Meridian Road from Southern Avenue to University Drive. All three agencies have requested that MCDOT take the lead on this project.
2. Accident history and ADT's indicate the necessity to investigate the need for widening Meridian Road.
3. Flooding on Meridian Road at various locations throughout the project, especially at the southern and northern ends of the project is a major problem even with small storm events.
4. The City of Apache Junction has recently requested that the project limits be extended to include the one mile section between Baseline Road and Southern Avenue.

Background Information: Apache Junction through its City Engineer, Mr. Gordon Grandy, has indicated the city's willingness to participate financially in the design and construction stages of the project in a cost sharing arrangement. Mr. Grandy indicated that the City of Apache Junction is willing to participate financially up to 33 % depending on the cost of the new roadway improvements, the cost participation of the City of Mesa and the cost participation of Pinal County. The amount of cost participation by The City of Mesa and Pinal County has not yet been determined. The MCDOT Planning Division will pursue participation by Mesa and Pinal County.

## **Existing Conditions:**

### Engineering:

Meridian Road is a two-lane paved roadway, varying in width from 24 feet (7.3 M) to 68 feet (20.7 M), centrally crowned, and with graded shoulders and is approximately centered on the monument line. It is a North-South aligned roadway which widens to 68 feet (20.7 M) including left turn lanes at the Broadway Road, Apache Trail, and University Drive Intersections. The Southern Avenue Intersection has one left turn lane on the West leg of the intersection with a pavement width of approximately 36 feet (11.0 M) to 38 feet (11.6 M). The remaining three legs are all two lanes with varying pavement widths of 24 feet (7.3 M) to 26 feet (7.9 M). The East leg of the Southern Avenue Intersection is offset to the North of the section line. The remaining three legs of the intersection appear to be centered on the monument line. The Apache Trail is the only six lane divided roadway within the project limits and is East-West aligned.

Meridian Road lies on a township line and is also the boundary line between Maricopa County and Pinal County. The Broadway Road, Apache Trail, and University Drive Intersections all have existing curb returns, gutters, and traffic signals. The Southern Avenue intersection is controlled with a four-way stop and does not have any curb and gutter. The current roadway surface appears to be built-up layers of chip seal on native subgrade and varies from poor to fair condition. The exception is at the above mentioned intersections which have been reconstructed in past MCDOT roadway improvement projects. The pavement at the above intersections appears to be in fair condition. See Figure 1 page 5 of 17, for the project location.

Baseline Road from Ellsworth Road to Meridian Road (W. O. # 68392), was completed on 11 June, 1992. Southern Avenue from Ellsworth Road to Meridian Road (W. O. # 68313), was completed on 04 December, 1989. Broadway Road from Hawes Road to Meridian Road (W. O. # 68300), was completed on 25 September, 1987. University Drive from Ellsworth Road to Meridian Road (W. O. # 68601), was completed on 27 September, 1993.

The posted speed limit on Meridian Road, both North and South bound is 35 MPH (56 kph).

The existing roadway does not appear to have any type of access control.

### Current Roadway Classification:

The East Mesa Land Use Plan for Maricopa County classifies Meridian Road as an "Arterial Street". MCDOT Operations currently classifies Meridian Road, in the project area, as an Urban Minor Arterial (from Southern Avenue to University Drive).

### Right of Way:

West side of Meridian Road (Maricopa County):

The assessor's maps show existing Right-of-Way which varies from 33 feet (10.1 M) on two short sections to 65 feet (19.8 M) (half street Right-of-Way) throughout the reaches of the project.

East side of Meridian Road (Pinal County and Apache Junction):

The assessor's maps show existing Right-of-Way which varies from 33 feet (10.1 M) to 50 feet (15.2 M) (half street Right-of-Way) throughout the reaches of the project.

Drainage:

The project site is within the East Maricopa County, Area Drainage Master Study (ADMS). Although the area is not classified as a flood plain, there are approximately 13 areas where water crosses Meridian Road from East to West. The water flows over the top of Meridian Road then continues Southwesterly if the defined wash is still in existence. Where development has obliterated the natural wash, the water continues Southwesterly in the form of sheet flow or runs South down the shoulder. The earthen shoulders exhibit signs of erosion due to storm run-off in various locations throughout the reaches of the project. Eleven of these thirteen water crossings can be taken care of with pipe culverts or dip sections. The remaining two water crossings may require box culverts. The details of the flows (cfs and locations) crossing Meridian Road are in the Transportation Planning Division (TPD) project files. The Maricopa County Flood Control District (FCD) does not have any projects scheduled for design or construction within the project area.

Generally, the slopes within the project area, are between 0 to 1 percent, with drainage sloping from the Northeast to the Southwest.

The USGS Apache Junction Topographic Map for the project area is shown in Figure 4.

ADT's & Accidents

The existing ADT's on Meridian Road between Baseline Road and University Drive are as follows for the years 1993 and 1994 with MAG projections for the year 2015 GU (Governor's Update) All "Traffic Counts" (from MCDOT and Apache Junction) are ADT's. That is, the traffic is counted in both directions for a minimum of 24 hours.

**ADT's** (From Apache Junction)

MERIDIAN ROAD	1993	1994	2015 GU <sup>∞</sup>
At University Drive	5,631	7,201	7,468
At The Apache Trail	8,503	8,959	8,715
At Broadway Road	8,506	8,592	12,983
At Southern Avenue	4,011	3,812*	12,912
At Baseline Road	721	748*	14,267

\* These traffic counts are low due to construction on Meridian Road when these traffic counts were taken.

<sup>∞</sup> MAG has indicated that the two projections on University Drive and Apache Trail, which appear to be low, may be due to out-dated demographics. Approved demographic updates along with new traffic projections will be available around March, 1997.

### ADT's (From MCDOT)

MERIDIAN ROAD	1992	1993	1994
North of University Drive	3680	n/a**	3711
North of Apache Trail	8669	n/a**	7027
North of Broadway Road	11755	n/a**	7375
North of Southern Avenue	n/a**	n/a**	2800
North of Baseline Road	n/a**	n/a**	1117

\*\* No traffic counts were available from MCDOT for these areas.

### ACCIDENT HISTORY CHART\*

YEAR	89	90	91	92	93	94	95
<b>MERIDIAN ROAD:</b>							
North of University Drive:		1		1			1
At The University Drive Intersection:	3	3	4	5	5	7	4
Between Apache Trail and University Drive:	1	2		1	1		2
At The Apache Trail Intersection	14	18	9	11	11	12	5
Between Broadway Road and Apache Trail:	5	3	2	3	4	1	5
At The Broadway Road Intersection:	8	7	4	2	5	3	3
Between Southern Ave and Broadway Road					1	1	2
At The Southern Avenue Intersection:		4			1		1
Between Baseline Road and Southern Avenue:							
At The Baseline Road Intersection:					1		

\* This "Accident History Chart" is composed of data from MCDOT and The City of Apache Junction.

The accident history data is divided into four categories. Head-on Collisions, Right Angle Collisions Rear end Collisions, and All Others. Approximately 1% are Head-on Collisions, 48% are Right Angle Collisions, 28% are Rear end Collisions, 22% are classified as Other, and 1% were not identified.

FIGURE 1 - PROJECT LOCATION MAP

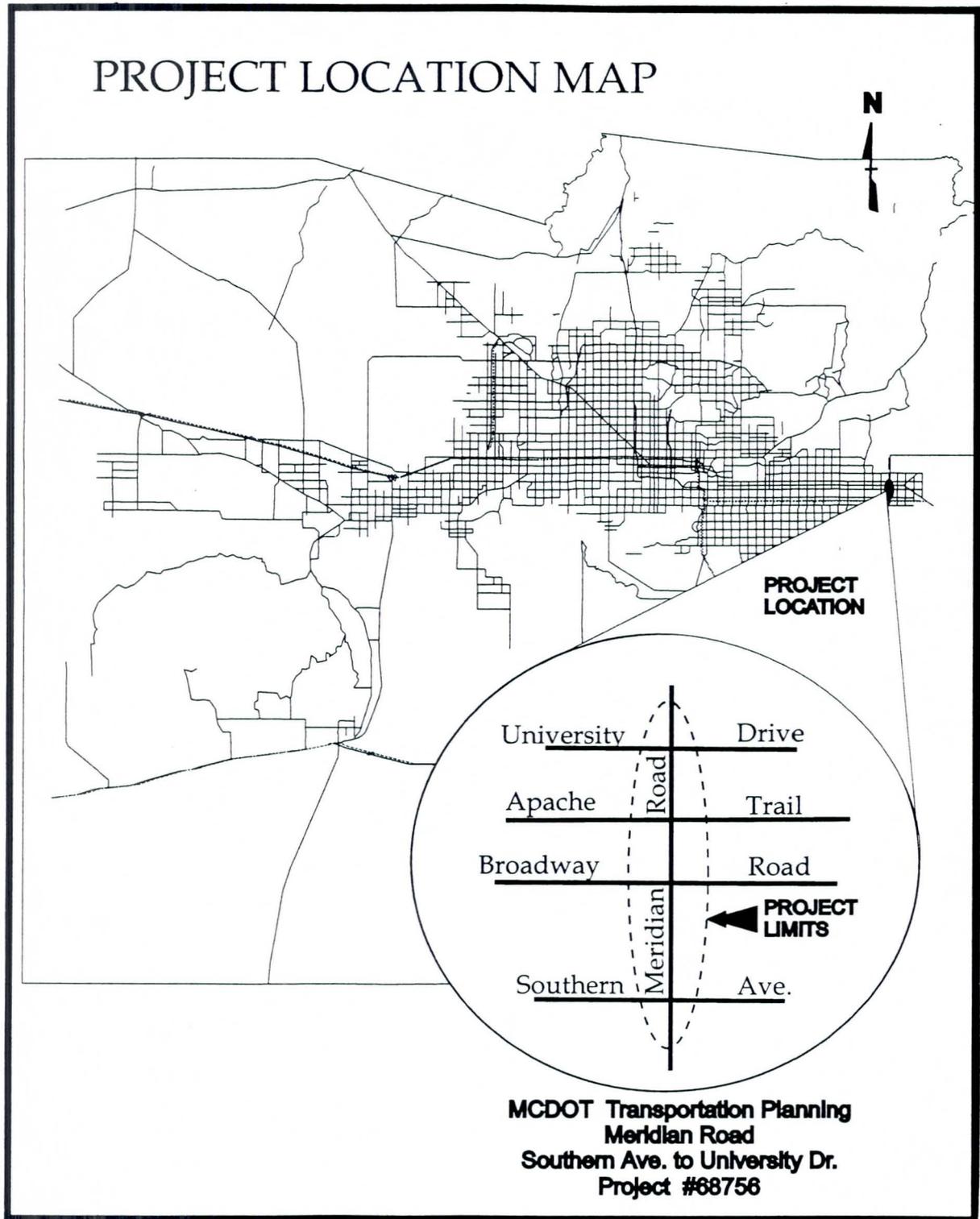
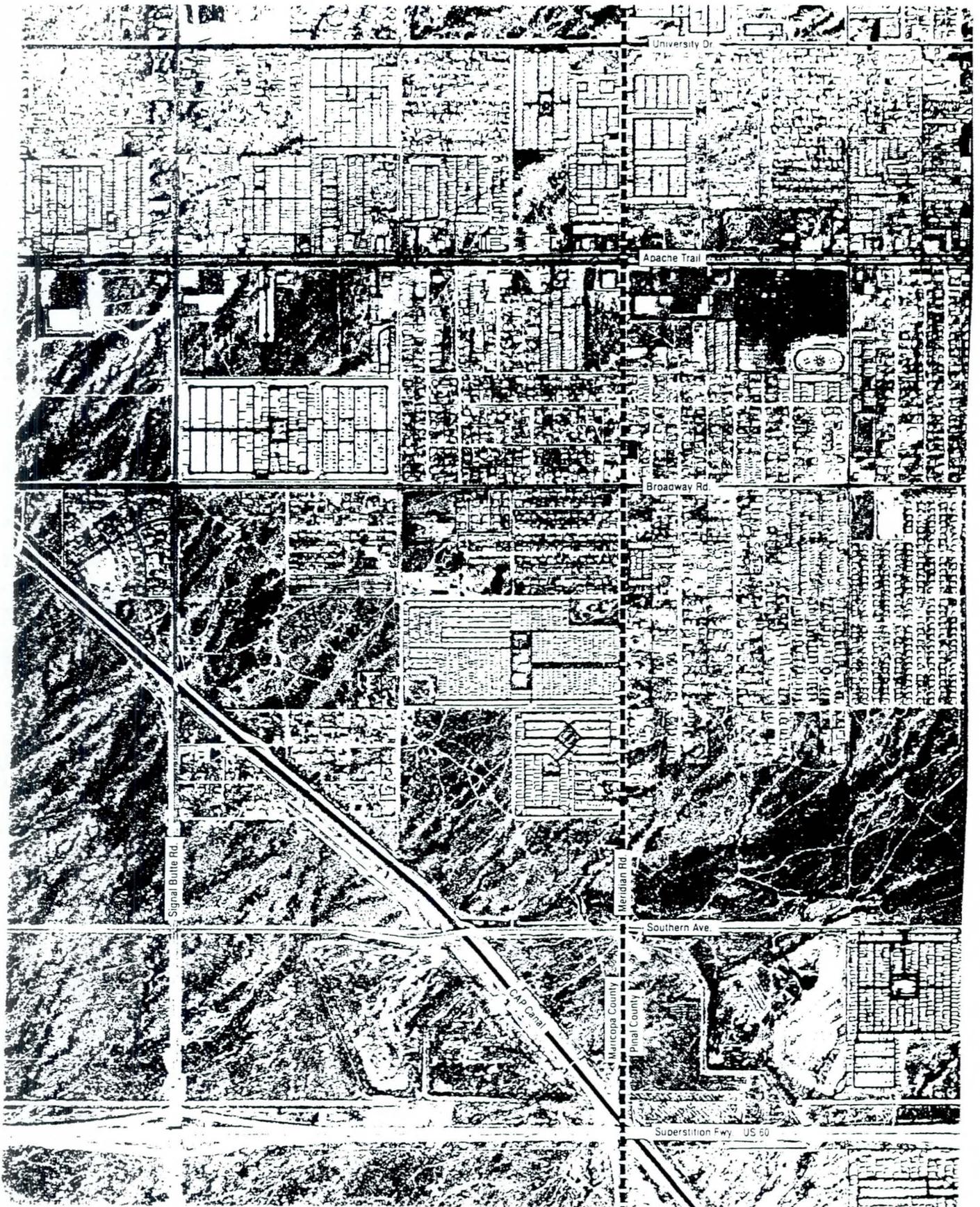
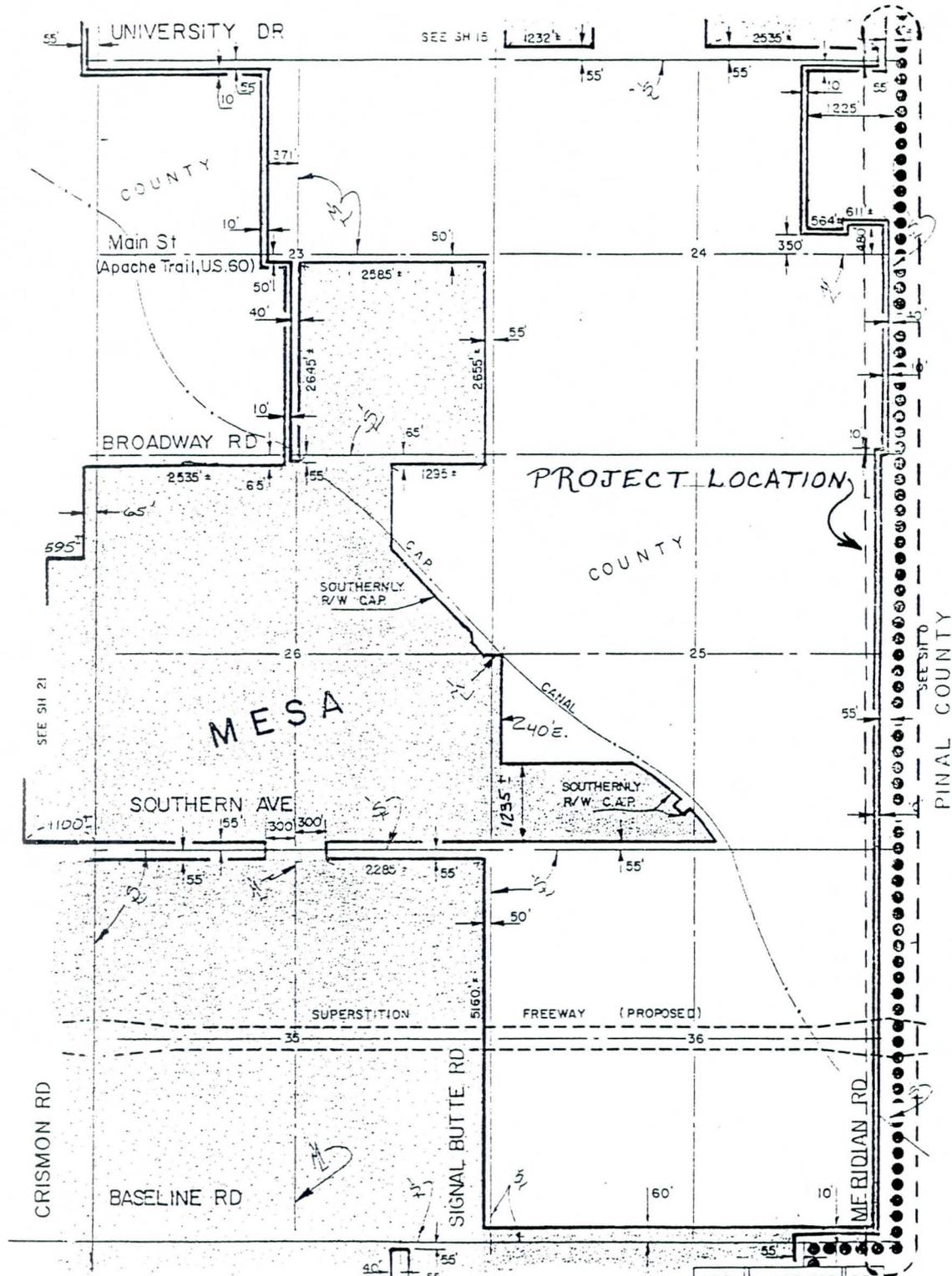


FIGURE 2 - AERIAL PHOTOGRAPHY



# FIGURE 3 - CITY LIMITS MAP



SEE SH 21

SEE SH 15

SEE SHEET 23

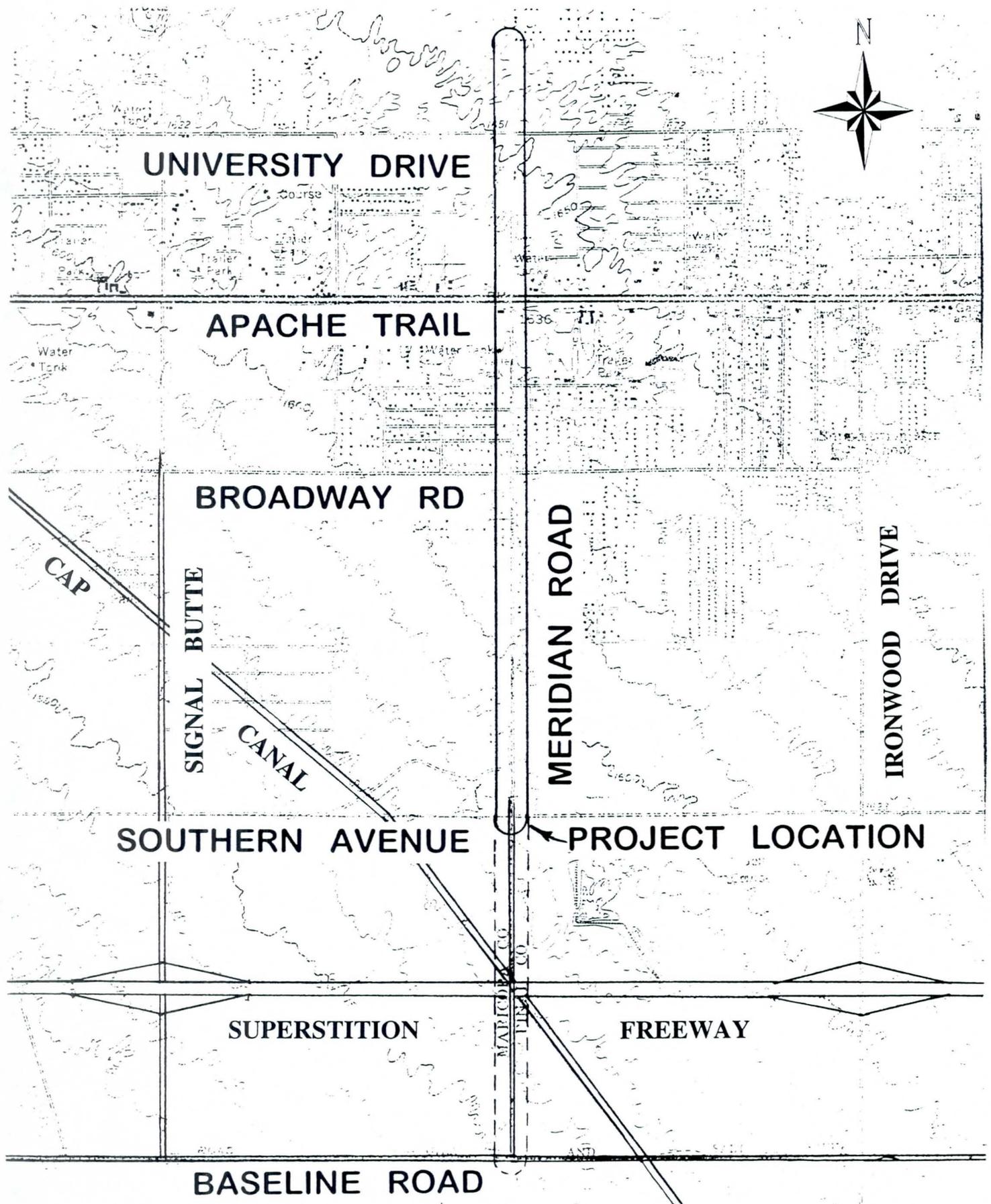


MESA  
T IN-R 7E (22)

This city limit sheet is to be used as a **GUIDE ONLY!**  
Maricopa County will not be responsible for errors  
or omissions that might occur.

ORD NO	LAST EFF ANNEX DATE	REV BY
2250	9 2 87	KDO
2497	4-19-90	R.N.
2680	5-6-92	JL
2856	1-20-94	JL

FIGURE 4 - TOPOGRAPHIC MAP



Utilities:

The Project area includes a variety of utilities. There are overhead 12 KV power lines which belong to SRP. They are intermittent and vary from the East side to the West side of the roadway throughout the length of the project. In addition there are overhead CATV and Telephone lines intermittent throughout the length of the project. There are buried water, sewer, and gas lines within the project limits. The existing clear distance between the edge of pavement and the power poles varies from 5 feet (1.5 M) to 16 feet (4.9 M).

There are two Salt River Project 69 KV power lines which run East and West across Meridian Road. The first 69 KV line is on Southern Avenue and the second line is on University Drive. The most that would be required would be to relocate one (possibly two) 69 KV power poles at the Southern Avenue Intersection. The University Drive Intersection should be free of 69 KV power pole obstruction. The 69 KV power poles were relocated during the University Drive Project which was completed by MCDOT on 27 September, 1993.

Environmental:

No environmental concerns were observed during the field visits to the project area.

Environmental documentation will be provided during the last quarter of FY 96 (May, June, or July 1996).

The soil association groups for this area are; Mohall Loam (approximately 7%), Mohall Clay Loam, Calcareous Solum (approximately 44%), Tremant Gravelly Loams (approximately 44%), and Tremant-Antho Complex, with 1% to 5% slopes (approximately 5%). These soil classifications were taken from the "Soil Survey of Aguila-Carefree Area, Parts of Maricopa County and Pinal Counties, Arizona."

The natural vegetation in the project area is typical of the Sonoran Desert and consists of creosote bush, mesquite, saltbrush, paloverde, brittlebush, and cactus including saguaro, barrel, cholla, and prickly pear.

Multi-Modal and Transportation System Plan:

Meridian Road is a county section line road and is also a township line. The Meridian Road Monument Line is also the boundary line between Maricopa County and Pinal County. The Maricopa County Transportation System Plan (TSP) is currently in the early stages of development and has not yet defined all of the roadways which will be part of the County TSP.

There is currently no bus service on Meridian Road between Baseline Road a half mile North of University Drive. Dial-A-Ride, however, serves a small area along Meridian Road from University Drive to Teepee Street (approximately 1/2 mile North of University Drive). Bus service in the area should be reviewed once again as design starts. If Bus service is in the area, the inclusion of bus bays should be considered in the early stages of the design process. No funds were included for Bus Bays in the cost estimate.

Meridian Road between Southern Avenue and University Drive, is part of the "Regional, On-Road System, Bikeway Plan." There are currently no bike lanes on Meridian Road.

Land Use:

The project is within the area covered by the East Maricopa Land Use Plan and the City of Apache Junction Land Use Plan.

The generalized land use plan for the west side of the project area includes mixed use, high and low urban residential, and suburban residential.

The Apache Junction Land Use Plan, East of Meridian Road, includes Planned Area Developments (PAD's), Medium Density Residential, and Commercial on the corners of the section line road intersections with Meridian Road. In addition, the area North of University Drive includes Open Space, Low Density PAD's, along with Commercial Development. The area South of the Superstition Freeway includes Open Space along the Central Arizona Project Canal and areas set aside for Industrial Development.

The existing development within the project area (East and West sides combined) is commercial and industrial, (which includes stores such as K-Mart, Walgreens, fast food restaurants, banks, concrete manufacturing facility, automotive wrecking yards, a metal recycling facility, small and medium sized businesses, etc.), rural residential, apartment complexes, mobile home and travel trailer parks. There is also a high percentage of vacant land scattered throughout the reaches of the project.

Approximately 67 % of the land on the East side is undeveloped while the remaining 33 % consists of rural residential with various forms of commercial development scattered throughout. The West side is estimated to have approximately 58 % of the land developed as mentioned above with 42 % undeveloped.

Economic Development/Joint Sponsorship/Funding:

The City of Apache Junction has requested curb and gutter throughout the project and has indicated a willingness to participate financially in the construction of the project if MCDOT will design the project. Mr. Gordon Grandy (City Engineer) indicated that the city is willing to contribute approximately 33 % of the construction costs depending on how much the project costs and the financial participation of The City of Mesa and Pinal County. He also indicated that if MCDOT wants to construct the project within the next 3 to 4 years that the county may have to front the money and work an IGA with the City of Apache Junction to pay back the money over a period of 2 to 3 years after construction. The project is currently programmed for FY 2000, therefore repayment time frames should only be an issue if construction is accelerated.

The City of Mesa is in the process of approving a 120 +/- acre Residential Development Master Plan (Meridian Hills), on the Northwest corner of Meridian Road and University Drive. Mesa has required the developer to construct a 34 foot\* (10.4 M) wide 1/2 street along Meridian Road from University Drive to approximately 1/4 mile north. In addition, the developer is also responsible for dedicating 65 feet (19.8 M) of Right-of-Way on the west side of Meridian. This is Mesa's standard Right-of-Way requirement. In addition Mr. David Rameriz of Mesa

\* MCDOT is proposing a 37 foot (11.6 M) wide half street in this area to accommodate a bicycle lane.

requested that MCDOT acquire 65 feet (19.8 M) of half street Right-of-Way all along the West side of Meridian Road since this is their (Mesa's) standard. MCDOT's standard for this roadway is also 65 feet (19.8 M) of half street Right-of-Way.

The City of Mesa has indicated a willingness to participate in the widening of Meridian Road in the past. In addition an IGA should be prepared to include cost participation and annexation of the appropriate sections of Meridian Roadway by both the City of Mesa and the City of Apache Junction.

In view of the several large flows which cross over Meridian Road, *there may be a possibility of participation* from the Maricopa County and Pinal County Flood Control Districts (FCD) to assist in the construction of pipe or box culverts. Maricopa County FCD indicated that if channeling of the washes up and/or down stream were included in the project design, *there may be the possibility* of limited participation from the Maricopa County FCD. No dollars were included in the cost estimate for the channeling of the washes.

The West half of the roadway is currently maintained by Maricopa County and the East half of the roadway is maintained by Apache Junction and Pinal County. There are no plans for roadway construction by any other municipality or agency within the project limits. See the last paragraph on page 10 of 17 for potential road construction work by a developer.

#### Capital Improvements and Force Account Projects:

The C.I.P. Review Committee classifies this project as a CIP Project in the current 5 Year Capital Improvement Program. It is scheduled for construction in FY 2000 in the MCDOT Capital Improvements and Force Account Projects for Fiscal Years 1996 through 2000 (July 1995).

#### **Alternative Solutions and Evaluation:**

**Alternative 1:** Do nothing. This alternative does not address the requests made by the City of Apache Junction, The City of Mesa, and Pinal County to widen Meridian Road to a minimum of four lanes with a continuous left turn lane to help reduce traffic congestion, thereby assisting to reduce pollution as well as improving traffic flow and safety.

This alternative would do nothing to reduce or solve the flooding problems. If nothing is done, during light to moderate storms the several dip sections throughout the project will continue to delay traffic as well as cause other unsafe conditions (such as shoulder washouts, deterioration of the paved surface, etc.).

There are also potential safety problems due to the increasing volume of traffic on Meridian Road (the very short tapers from four lanes back to two lanes and vice versa). Apache Junction has indicated that the existing left turn pockets are too short for the number of cars desiring to make left turns. This in turn holds up other through traffic since the left turn line is backed up beyond the two lane flair to four lanes.

In addition there have been a substantial number of accidents within the project area, some of which may be related to the larger traffic volumes as well as the flooding conditions. This is not a viable alternative.

**Alternative 2\*:** Design and construct a five lane roadway with a continuous left turn lane, curb & gutter between Baseline Road and University Drive with the appropriate five lane sections and tapers south of Baseline Road and north of University Drive. Meridian Road to be centered on the monument line if possible. Place pipe culverts and/or box culverts (where necessary) across Meridian Road in approximately 13 +/- locations which are mentioned in the East Maricopa County Area Drainage Master Study (ADMS). This alternate will require widening the existing ADOT bridge or a new two lane bridge (adjacent to the existing bridge) over the CAP Canal and the Superstition Freeway.

Cost Estimate = \$6,500,000.00 for this alternative.

\* This alternative includes the improvement of one additional mile (1.6 km) of roadway between Baseline Road and Southern Avenue which was requested by the City of Apache Junction.

**Alternative 3:** Design and construct a five lane roadway with a continuous left turn lane, bike lanes, and curb and gutter between Southern Avenue and University Drive with the appropriate five lane sections and tapers south of Southern Avenue and north of University Drive. Meridian Road to be centered on the monument line if possible. Place pipe culverts and/or box culverts (where necessary) across Meridian Road in approximately 13 +/- locations which are mentioned in the East Maricopa County Area Drainage Master Study (ADMS).

Cost Estimate = \$3,302,000.00 for this alternative.

#### Alternatives Discussion:

As mentioned in Alternative 1 this is not a viable solution at this time. It does not address the safety concerns, or the two lane to four lane expansion as requested by the municipalities and Pinal County.

In addition the substantial number of traffic accidents over the last five years will not be addressed. The flooding issues on Meridian Road will continue to remain a problem.

Alternative number 2 will require a new two lane bridge structure or a two lane addition to the existing bridge to complete a five lane cross section from Baseline Road to Southern Avenue. This alternative, is considerably more costly than alternative number 3. The \$3,198,000.00 cost differential is sufficient in size to exclude this project from the current CIP if the section between Baseline Road and Southern Avenue is included in the project. In addition the current ADT's are too low to warrant the substantial expenditure these improvements would require at this time. Even though Apache Junction has indicated that development is pending in the area between Baseline Road and Southern Avenue, East and West of Meridian, the roadway expansion costs (including the Bridge expansion) would be much more economical if developer participation were involved.

Therefore the section of Meridian Road between Baseline Road and Southern Avenue is not recommended for inclusion in this project at this time.

When developing alternative number 3, consideration was given to constructing the project without curb and gutter. Preliminary calculations indicated that with the required 30 foot clear distances, the taking of a substantial number of buildings (both residential as well as commercial) would be required. In addition more Right-of-Way would also be required on the East side of Meridian Road. The proposed savings by not installing curb and gutter would be more than off-set by purchasing the required structures and additional Right-of-Way.

## RECOMMENDED ALTERNATIVE AND DESIGN SPECIFICATIONS

### Selected Alternative:

**Alternative 3 is the recommended Alternative.**

It is also recommended that the City of Apache Junction submit to MCDOT a separate request for the section of Meridian Road between Baseline Road and Southern Avenue. This can then be treated as a new and separate project and will not delay or potentially remove this project from the current CIP due to excessive costs.

### DESIGN CRITERIA

<i>Standard Typical Section:</i>	<i>Urban Principal Arterial Fig. 5.7 (rev)*</i>
<i>Design Year:</i>	2015
<i>Design Vehicle:</i>	WB - 40*
<i>Design Speed:</i>	65 MPH* (105.0 kph)
<i>Pavement Design Life:</i>	20 years
<i>Number of Lanes:</i>	5, with continuous center turn lane* **
<i>Roadway Width:</i>	74 feet*+ (22.6 Meters)
<i>Intersection Geometrics:</i>	5, lanes with center left turn lane* **
<i>Clear Distance</i>	3 feet (0.9M) from back of curb *, ***
<i>Standard Right-of-Way Requirements:</i>	65 ft. (19.8M) - half street Right-of-Way*

\* Maricopa County Department of Transportation Roadway Design Manual. See figure 5.

\*\* And including Bicycle Lanes.

\*\*\* A minimum of ten feet (3.0 M) of clear distance is preferred back of curb.

+ The widened pavement section for bicycle lanes will be on Meridian Road only. It is not intended to widen Broadway Road or University Drive to accommodate bicycle lanes at this time.

## HYDROLOGIC / HYDRAULIC DESIGN CRITERIA

PEAK FREQUENCIES		
Drainage Feature	10 Year	100 Year
Streets with Curb and Gutter.	Runoff contained within street curbs.  For collector and arterial streets, one 12-foot dry driving lane must be maintained in each direction.	Runoff to be contained below the finished floor of buildings.  $Q_{max} = 100$ cfs (2.8 cubic meters per sec.) $V_{max} = 10$ fps (3.0 meters per sec.) $d_{max} = 8$ inches (203.2 mm) above the centerline of the street.

Source: Table 2.1 Maricopa County Flood Control District Drainage Design Manual, Volume 2, Hydraulics.

### PROJECT REQUIREMENTS

Survey:

This project *will require a survey* from approximately 2,000 feet (610 M) South of Southern Avenue to approximately 2,000 feet (610.0 M) North of University Drive. In addition there are approximately 13 locations, that the Maricopa County Flood Control District (FCD) has identified, where storm water crosses Meridian Road. These water crossings/washes should have several hundred feet of cross section surveyed both up stream as well as downstream to assist in the design of the necessary pipe or box culverts to convey the storm runoff under Meridian Road if possible.

Design:

This project *will require a design*.

Construction:

This project *should be let for Bid and construction* by the MCDOT Engineering Division once design is complete. Funds are budgeted in the current MCDOT CIP for construction in FY 2000.

Design Concept Report:

This project *will not require a DCR*. The water crossings/washes that cross Meridian Road appear to be the biggest problem on this project. The necessary box or pipe culverts can be sized during the design process.

C.I.P. Review

This project *will require further review* by the C.I.P. Review Committee.

### Open and Declare Necessary and Recommended?

The records indicate that an "Open and Declare" (O & D) will probably be required. Portions of Meridian Road have an O & D, while other sections do not have sufficient width O & D's.

### I. G. A.

It is recommended that an IGA be initiated prior to design, between MCDOT, The City of Mesa, The City of Apache Junction, Pinal County, and ADOT for cost participation from all of the aforementioned agencies for the five lane reconstruction of Meridian Road. It is also recommended that Meridian Road be annexed by The City of Mesa and/or Apache Junction or a dual annexation by both agencies prior to financial participation by MCDOT on the five lane reconstruction. In addition, verbiage should be added to the IGA's to allow MCDOT to acquire Right-of-Way in The City of Mesa, The City of Apache Junction, and Pinal County under Eminent Domain (and through condemnation) should the need arise. Cut-off dates should be incorporated into the IGA to allow the MCDOT Right-of-Way Division sufficient time to complete any delayed Right-of-Way acquisitions if the cities choose to initially acquire the necessary Right-of-Way within their respective jurisdictions.

### Traffic Counts.

It is recommended that a more detailed traffic count be taken during the first two weeks in February of each year until the project is designed (two to three years), on all four legs at each of the following intersections: Meridian Road and Baseline Road, Southern Avenue, Broadway Road, Apache Trail, and University Drive. The current MCDOT CIP projected bid date is FY 2000.

The purpose of these additional counts along with turning movements and % of truck traffic, is to determine the need for additional intersection improvements such as, additional left turn lanes, right turn lanes, revised signal phasing, etc.

No funds were included in the cost estimate for these suggested intersection improvements.

### Right-of-Way.

Early Right-of-Way acquisition on the entire project, especially the Maricopa County side of Meridian Road, is also recommended. A preliminary survey will have to be undertaken to identify existing fences, existing roadway Right-of-Way lines, building foot prints, the centerline of all of the washes that cross Meridian Road, etc. This information will assist in the strip map preparation as well as identify which parcels to temporarily skip (i.e. the wash locations) until the design is approximately 30% +/- complete. The preliminary strip map should be completed prior to the IGA negotiations with the other agencies. Sixty-five feet of half street Right-of-Way is recommended for this project. Apache Junction should be encouraged to acquire a minimum of 55 feet of half street Right-of-Way, 65 feet would be preferable, however 65 feet may encroach in existing structures. A preliminary survey and strip map should be completed as soon as is realistically possible to facilitate the early Right-of-Way acquisition process which is also recommended. The only exception would be the parcels which contain the 13 washes throughout the length of the project. Approximately 30 % +/- plans should be completed in order to more accurately identify the locations of the necessary Drainage Easements and their respective dimensions.

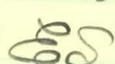
# COST ESTIMATE

Community Relations .....	\$30,000.00
Mobilization/Demobilization.....	\$50,000.00
Five lane roadway construction (includes: Subgrade prep, ABC, C & G, AC, etc.)...	\$1,763,300.00
RGRCP Class 3 Culvert Pipe (approximately 11 locations).....	\$158,860.00
Headwalls for above pipe culverts.....	\$70,000.00
Box culverts (two locations).....	\$220,900.00
Utility costs (overhead power pole relocations, CATV, and Telco)* .....	\$360,000.00
Traffic signals.....	\$135,000.00
Right-of-Way Costs.....	\$229,700.00
Design Engineering (Estimate \$75,000./mile (1.6 km) for 2.76 miles (4.44 km)).....	\$207,000.00
SUBTOTAL.....	<u>\$3,224,760.00</u>
Construction Administration (Estimate 12%).....	\$387,000.00
Contingency (10%).....	\$322,500.00
TOTAL.....	<u>\$3,934,260.00</u>

USE.....\$3,935,000.00

04 NOV. 96

Greg R.

This is the cost estimate that I prepared for the original PAR. The one that is lower & currently in the report is what Joel prepared. I was asked to revise my cost Est. w/ Joel's #'s & put it in the report. Thank Paul 

\* Prior rights could p

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Construction Administration (Estimate 12%).....	\$387,000.00
Contingency (10%).....	\$322,500.00
TOTAL.....	<u>\$3,934,260.00</u>
<u>USE.....</u>	<u>\$3,935,000.00</u>

\* Prior rights could potentially reduce this number by as much as half.

Detour Roads.

Detour roads may be necessary during the construction of the box culverts. This item should be addressed during the design stages of the project. If TCE's are necessary for the detour roads, they will have to be defined by the Design Engineer. In addition the size and shape of the TCE's will have to be relayed to the MCDOT Right-of-Way Agent for their respective acquisition.

**COST ESTIMATE**

Five lane roadway construction*	\$2,150,000.00
Utility costs (overhead power pole relocations, CATV, and Telco)	\$180,000.00
Right-of-Way Costs	\$229,700.00
Design Engineering (Estimate \$75,000./mile (1.6 km) for 2.76 miles (4.44 km))	\$207,000.00
SUBTOTAL	<u>\$2,766,700.00</u>
Construction Administration	\$258,000.00
Contingency (10%)	\$277,000.00
TOTAL	<u>\$3,301,700.00</u>
<u>USE</u>	<u>\$3,302,000.00</u>

\* Includes removals, subgrade prep, ABC, AC, drainage facilities, signals including pole foundations, conduit, pull boxes, etc.

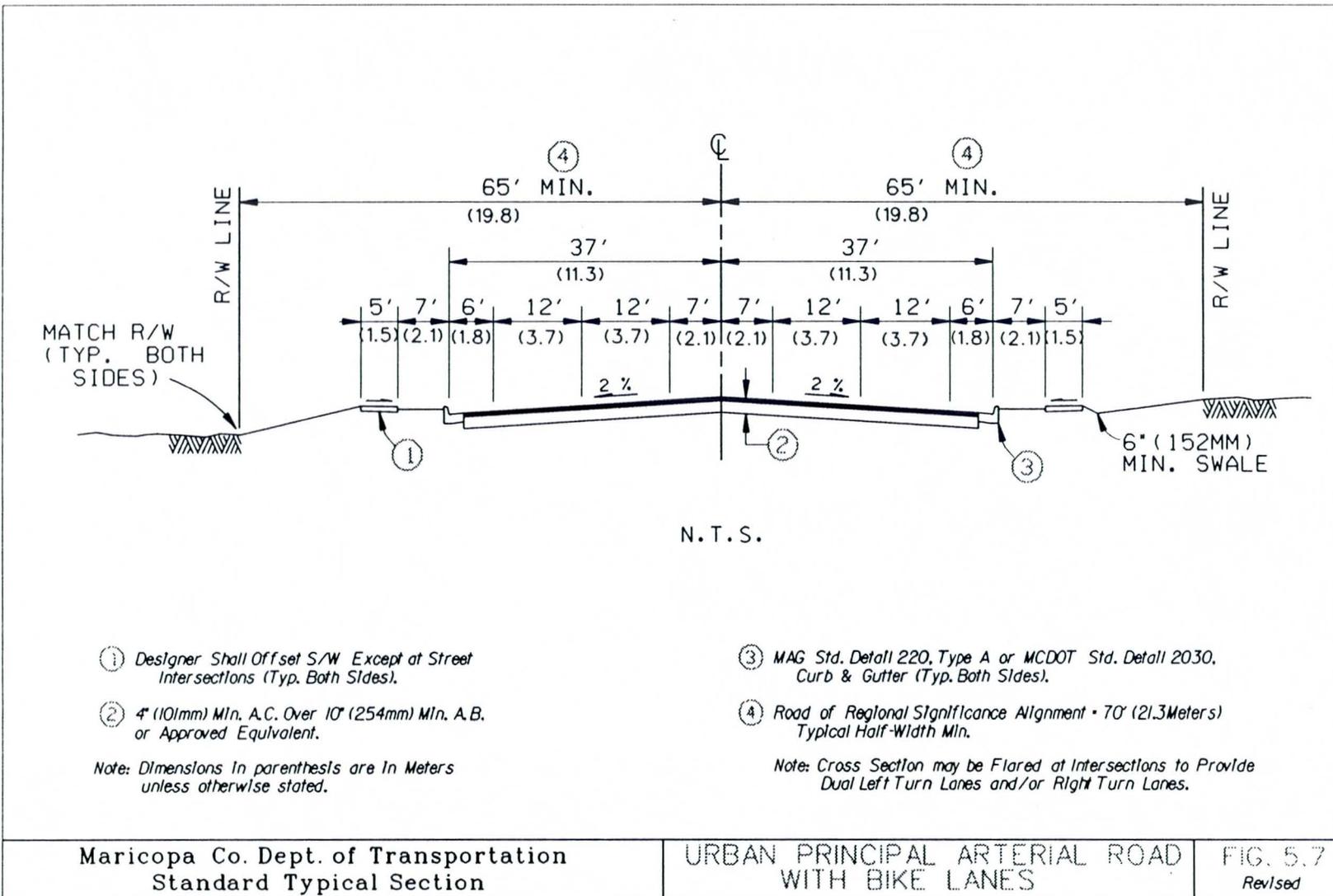


FIGURE 5 - CROSS SECTION DRAWING