

# **FORT McDOWELL ROAD, INTERSECTION WITH YAVAPAI ROAD**

## **Design Concept Report**

**W.O.# 68861  
DCR # D94-1-03  
October 5, 1994**

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# DESIGN CONCEPT REPORT

## FORT McDOWELL ROAD Intersection with Yavapai Road

Work Order Number 68861

DCR # D94-1-03

October 5, 1994

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## EXECUTIVE SUMMARY

The recommendations in the Design Concept Report (DCR) are the result of continuous coordination between the Fort McDowell Mohave-Apache Indian Community and all of the divisions within the Maricopa County Department of Transportation (MCDOT). The intersection of Fort McDowell Road and Yavapai Road exists on the Fort McDowell Mohave-Apache Indian Reservation. These two roadways are the primary access routes to the Indian Community for the tribal residents and the local school buses. Yavapai Road, as it exists, contains a severe reverse curve as it approaches Fort McDowell Road and neither roadway includes left turn lanes. Because of safety concerns, this project was initiated and included as part of the MCDOT Capital Improvement Program.

The DCR develops five alternatives and recommends Alternative #5 as the preferred alternative. This alternative eliminates the reverse curve on Yavapai Road and provides left turn lanes to both Yavapai Road and Fort McDowell Road. Drainage improvements are part of this project. The proposed improvements will satisfy the requirements for a collector roadway as described in the Flood Control District's Drainage Design Manual for Maricopa County Volume II, Hydraulics. Figure 4.1.5 on page 48 shows the proposed alignment, box culvert, and channel improvements.

Other drainage alternatives (not included in this report) exist and will be studied in greater detail during the design phase of this project. The different alternatives will be compared based on drainage requirements, right-of-way requirements, and associated costs. These include, but are not limited to, using an equivalent number of pipes (concrete or metal) instead of a concrete box culvert, a detention basin, or the relocation of the existing channel from the west to east side of Fort McDowell Road. Any alternative drainage design will handle normal peaking conditions without creating negative downstream effects.

The Fort McDowell Indian Community supports the proposed improvements and the proposed right-of-way requirements (see letter on next page). The Community agrees to donate the necessary right-of-way for the proposed improvements. Right-of-way documentation and coordination will be the responsibility of the MCDOT Right-of-Way Division. The Community will continue to be an integral part of this project and will receive plans/documentation for their review at key stages during the design period.



# *Ft. McDowell Mohave-Apache Indian Community*

*P.O. Box 17779 Fountain Hills, Arizona 85269-7779*

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September 26, 1994

Dana Owsiany  
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Maricopa County Transportation  
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Phoenix, Arizona 85009

Dear Ms. Owsiany,

After having reviewed the Fort McDowell and Yavapai Road intersection road improvement design concept report, I am satisfied and am in support of the work that was put into the project. Please begin to prepare the legal description of the additional right of way necessary to construct Alternate # 5 of this report.

Upon receipt of this legal description, I will forward it to the Tribal Council for their decision. If you have further questions or require additional information, please don't hesitate to call me at 837-2594.

Sincerely,

  
Louis Hood  
Planning Director

cc: Clinton Pattea, Tribal President

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## SECTION 1 - INTRODUCTION

### 1.1 OVERVIEW AND PROJECT BACKGROUND

The project intersection is on the Fort McDowell Indian Reservation in Section 7 of Township 3 North, Range 7 East and Section 12 of Township 3 North, Range 6 East of the Gila and Salt River Basin and Meridian (Figure 1.1). The Fort McDowell Indian Reservation is approximately 40 square miles in area, and lies within the Phoenix Metropolitan area in Maricopa County, and the Maricopa County Board of Supervisors District #5. Land ownership is tribal and the Tribal Council regulates the land use. Several government entities are responsible for the construction and maintenance of the roads on the reservation. Maricopa County and the State of Arizona maintain a combined 10.3 miles of paved roads with standard surfaces of at least two inches of bituminous concrete. The Bureau of Indian Affairs (BIA) maintains a total of 32.7 miles. Four of these 32.7 miles (12%) are paved, while the remaining roads are unimproved or "grade and drain" dirt roads. MCDOT maintains the three major paved roads within the reservation: Fort McDowell Road (paved section from the southern boundary to its intersection with Route 102 just south of the Old Fort McDowell Site), Yavapai Road, and Mohave Road. Fort McDowell Road is the major roadway on the Fort McDowell Indian Reservation and runs north from the Beeline Highway (S.R. 87) to the community of Rio Verde. Yavapai Road is an east-west roadway that runs west from Fort McDowell Road, to the Tribal Headquarters and then connects to Fountain Hills (Figure 1.2). Figure 1.3 shows pictures of the condition of the existing roadway and wash, the normal shoulder widths and general characteristics of the area.

### 1.2 PURPOSE OF THE REPORT

Fort McDowell Road is the only paved, continuous north/south road on the Fort McDowell Indian Reservation. Yavapai Road is the primary east/west road on the reservation. Mail and school bus routes exist on both Yavapai Road and Fort McDowell Road. The bus routes are for preschool, grade school, Jr./Sr. High School and the Fountain Hills School District. This project involves safety improvements to the intersection. These improvements include realignment of Yavapai Road to eliminate the existing reverse curve at the intersection and the addition of left turn lanes. This project will widen both Fort McDowell Road and Yavapai Road to the MCDOT Standard Typical Section corresponding to the roadway's functional classification. The functional classifications of Fort McDowell Road and Yavapai Road are Rural Minor Collector and Rural Local, respectively. The intersection design will include a turning radius for the school buses that traverse the roadway.

Appendix A contains the Public Involvement Plan for this project. Agency and utility contact letters introduced the project, and solicited information and/or comments from the different agencies. Appendix B gives a listing of the respective Agencies and Contact Persons, and responses. The project is part of the MCDOT Capital Improvements and Force Account Projects for Fiscal Years 1993-94 through 1999-2000. The intersection classifies as a low volume road and is scheduled for construction in Fiscal Year 1996-97. Proposed improvements include

drainage and channel improvements and widening the intersection for left turn movements. In the Fort McDowell Mohave - Apache Indian Reservation Transportation Plan (October 1988), this project was #10 in the list of Prioritized Projects in the Recommended Transportation Plan (Appendix C).

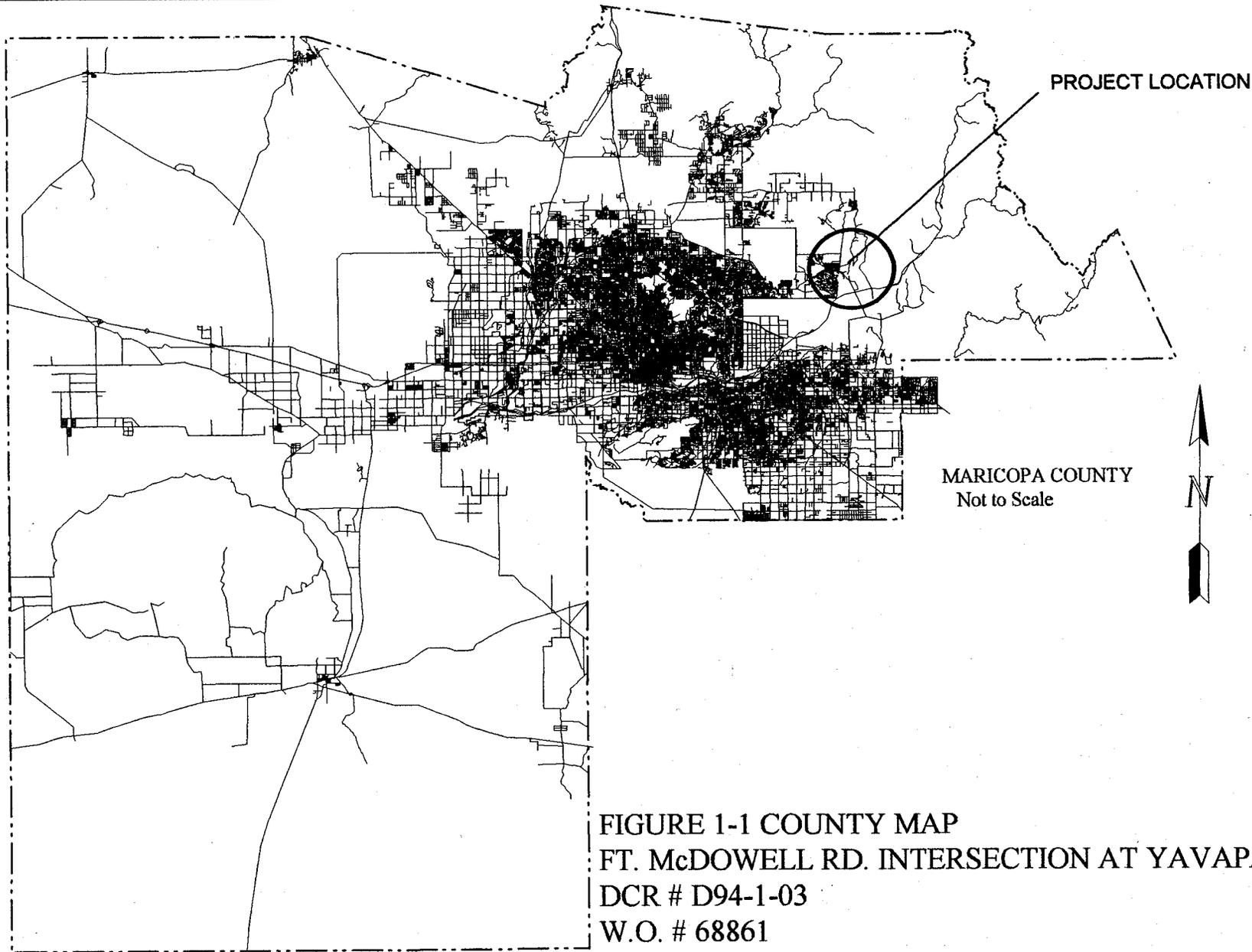
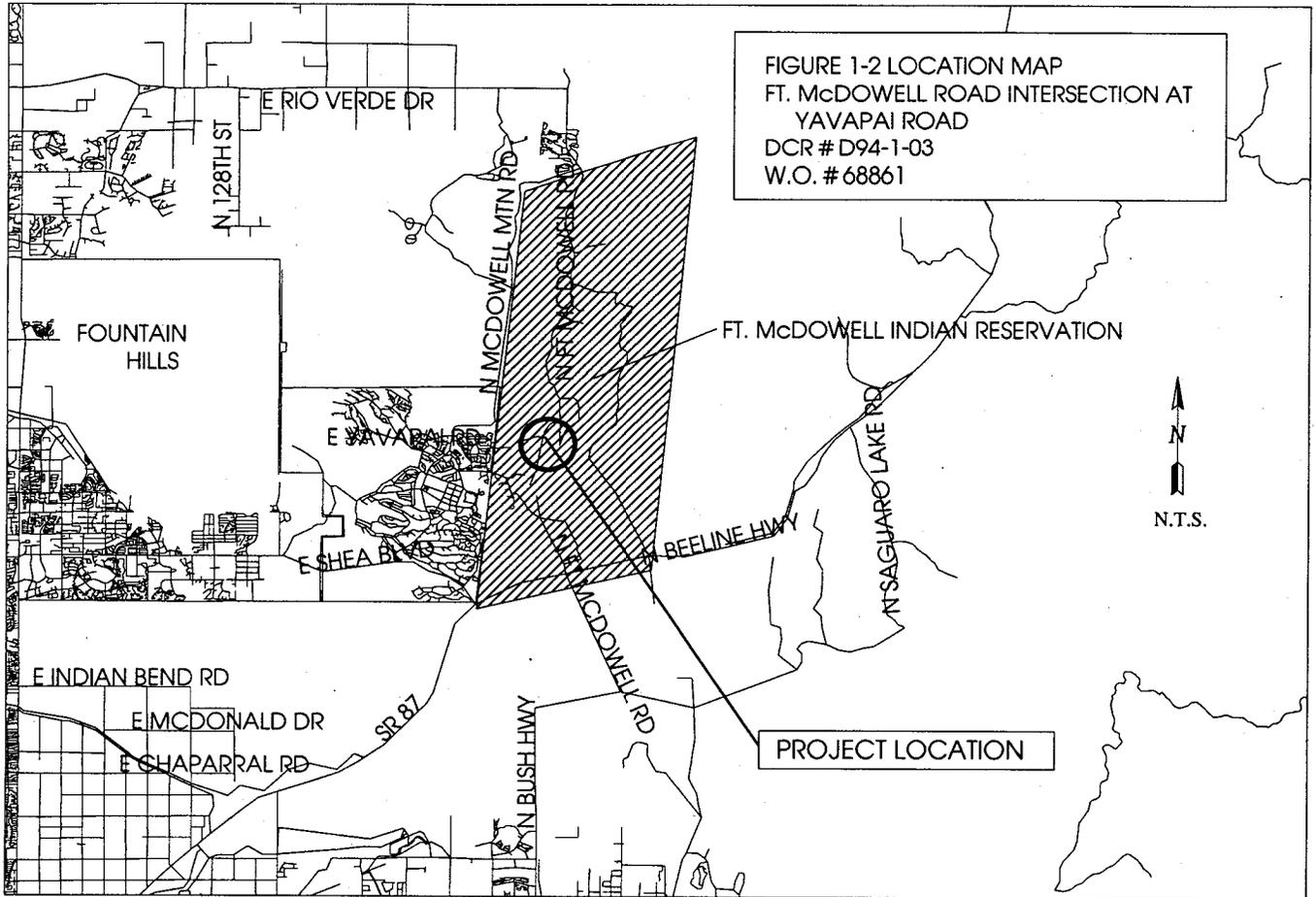
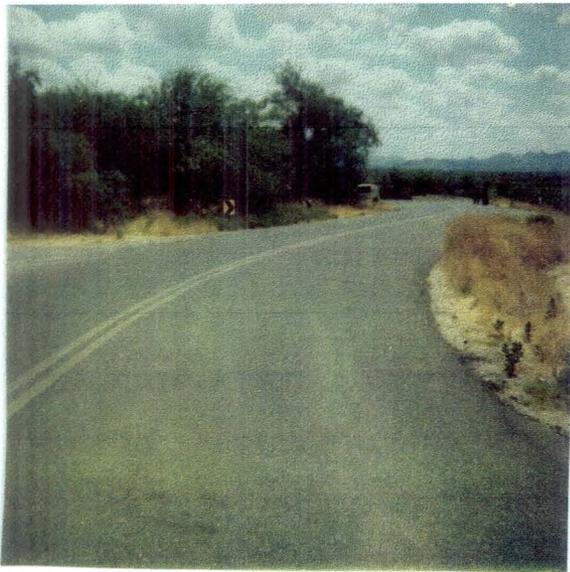


FIGURE 1-1 COUNTY MAP  
FT. McDOWELL RD. INTERSECTION AT YAVAPAI RD.  
DCR # D94-1-03  
W.O. # 68861





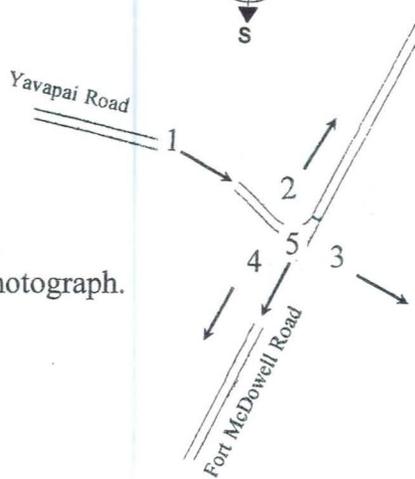
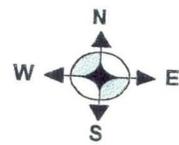
Photograph 1

1) Reverse curve on Yavapai Road (looking east towards Fort McDowell Road).



Photograph 2

2) Normal shoulder width on Fort McDowell Road (looking northeast)



Photograph 3

NOTE:  
Arrows show the direction of the photograph.

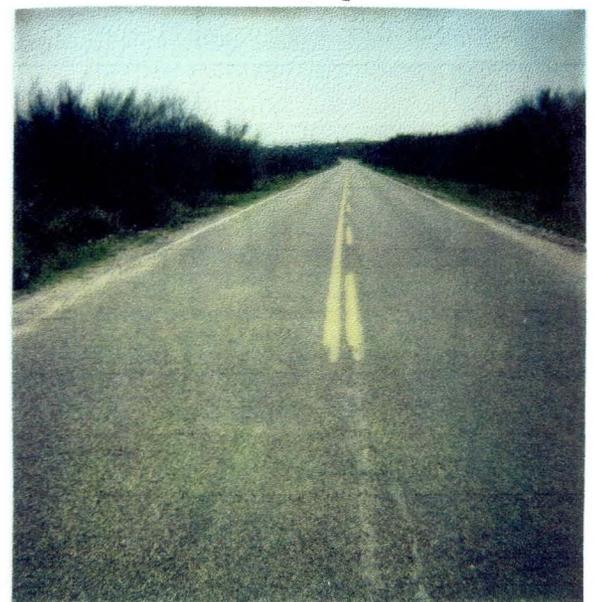


Photograph 4

3) Downstream wash and dirt farm road on the east side of Fort McDowell Road.

4) Downstream side of the wash on the west side of Fort McDowell Road (looking southwest).

5) Asphalt condition (good) at intersection.



Photograph 5

FIGURE 1.3 Photographs of the Existing Corridor

## SECTION 2 - CHARACTERISTICS OF THE CORRIDOR

### 2.1 LAND USE PATTERNS

Most of the reservation remains in a non-urban, agricultural or natural (previously undeveloped) state and the primary land use is agricultural and grazing. Other land uses include: housing, commercial, mining, municipal, and both buried and above-ground utility easements. Primary industries include sand and gravel, the landscape nursery, farming, casino gambling, cattle ranching, wood cutting, Tribal arts and crafts, river recreation and tourism. The undeveloped areas contain desert vegetation communities, non-native herbaceous volunteers, and faunal resources (desert animals).

Agriculture is the predominant land use on the reservation as there are 700 arable acres of land for cultivation. Most of the existing agricultural fields are near the geographic center and the north-central portions of the reservation. The vegetables that are grown include broccoli, cauliflower, lettuce, radishes, spinach, carrots, raspberries, and onions. The reservation also operates a nursery specializing in desert plants.

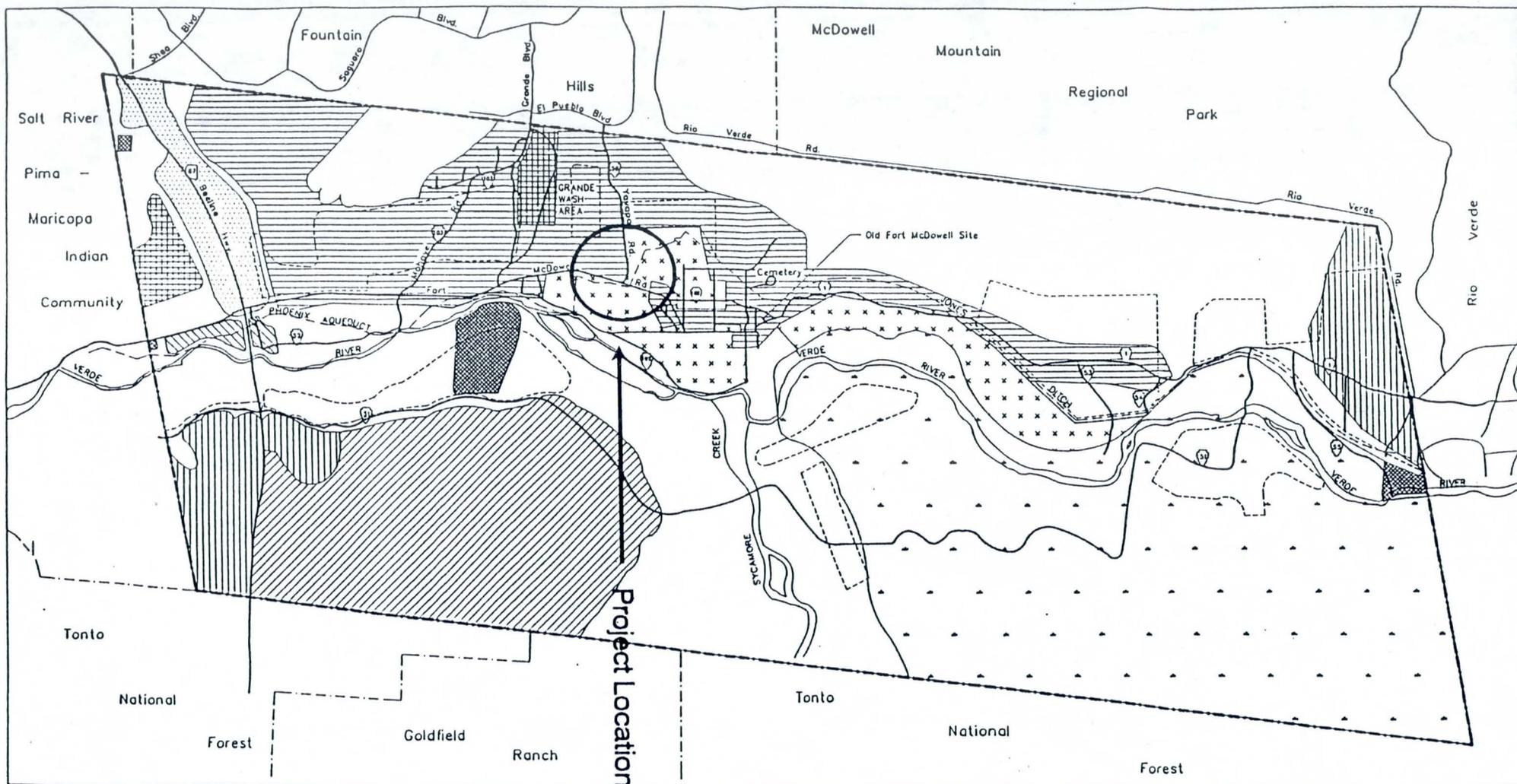
The reservation can be split into four quadrants, with the project lying in the southwest quadrant. Most of the residential and commercial development has historically occurred in the southwest part of the reservation. All the housing on the reservation is single family housing. The original Fort McDowell area, sometimes called the Old Fort, is in the northeast portion of this quadrant by the Verde River.

The Master Land Use Plan is found in Figure 2.1. South of Yavapai Road and West of Fort McDowell Road, the land use is residential. North of Yavapai Road and East of Fort McDowell Road, the land use is agricultural. Development of the land use plan was consistent with the Tribal goals for the preservation of open space, the housing expansion for community members, the community income and for future community members.

There are two houses in the northwest corner of the intersection. The dirt driveway to these houses is 0.045 miles from the intersection. The southwest corner contains a trailer and a house at 0.15 and 0.25 miles from the intersection. There are no allotted lands near the project area.

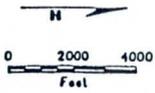
### 2.2 HISTORIC / ARCHAEOLOGICAL DATA

Inhabitants have occupied the Lower Verde Valley for approximately 1,700 years. Before the 20th Century, the Yavapai Indians occupied an approximate ten million acre tract that stretched from the Mogollon Rim toward southwestern Arizona. The Yavapai inhabited what is now central and west central Arizona before the 1860's when white settlers began arriving in this area. In 1904, President Theodore Roosevelt established the Fort McDowell Mohave-Apache Indian Reservation.



LEGEND

- AGRICULTURE
- AGRICULTURE POTENTIAL
- OPEN SPACE
- OPEN SPACE, WILDERNESS
- COMMERCIAL
- INDUSTRIAL, HEAVY
- INDUSTRIAL, LIGHT
- RECREATIONAL
- RESIDENTIAL
- RESORT
- SPECIAL USE



Prepared by  
PRESNELL ASSOCIATES INC.  
November 1988

FORT MCDOWELL INDIAN RESERVATION  
MARICOPA COUNTY, ARIZONA

MASTER LAND USE PLAN

FIGURE 2.1

Fort McDowell, established as an army post in the 1860's, was an effort to protect mining interests, to help patrol Indian routes into the mountains and the Tonto Basin, and to provide support for the Anglo settlements. Construction of the facilities and buildings began in 1865. Under the Indian Reorganization Act of 1934, the Fort McDowell Mohave-Apache became a federally-recognized Indian Tribe in 1936, with the adoption of a Constitution and Corporate Charter.

Arizona, and especially Maricopa County, has a high concentration of archaeological sites. Cultural resources, within the reservation, generally classify into one of four general periods: the pre-1865 historic Indian occupation, the 1865-1890 military establishment timeframe, the 1890-1903 squatter-farmer period, and the 1903 to present reservation period. The reservation contains sites representing each period. Cultural resources classify into six categories: agriculture-related, transportation, habitation, military, religious and miscellaneous.

This project will require an archaeological survey, according to the State Historic Preservation Office (SHPO) (See letter in Appendix B). Their cultural resource file suggests that there are many known archaeological sites. In addition, previously undiscovered sites may fall within the project area.

### 2.3 ECOLOGICAL / ENVIRONMENTAL COMMUNITIES

The Verde River spans the length of the reservation. Tall cottonwoods along the riverbanks provide excellent picnic areas and fishing holes for catfish, bass, and perch. The Arizona Game and Fish Department (AGFD) stocks the river with rainbow trout in the fall. The reservation is an excellent area for small game such as jack rabbits, cottontails, squirrels, quails, doves, javelina, mule deer and an occasional mountain lion or bear. Biotic communities classify into seven different vegetation types, based on the physical characteristics of vegetation and dominant plant species in response to integrated climatic factors. Local environmental characteristics including elevation, slope, exposure, moisture availability, and soil types determine the specific boundaries of these communities. The vegetation varies from tree-lined river bottom lands to cactus studded rolling desert hills. The area has Average Daily Temperatures of 86.4°F for the high and 53.2°F for the low temperature.

Figure 2.3 shows the soil associations in the northern portion of Sheet Number 48 from the Soil Survey of Aguila-Carefree Area, Parts of Maricopa and Pinal Counties, Arizona (United States Department of Agriculture (USDA) Soil Conservation Service (SCS)). Detailed Soil Map Units near the intersection, include Pinamt-Tremant complex (#98), Gilman loams (#55), Gunsight-Rillito complex (#70), Ebon-Pinamt complex (#48), and the Tremant gravelly sandy loams (#112). Table 2.3 shows the vegetation and wildlife by soil association. The geotechnical section of this report describes the soil associations in more detail.

Project Location

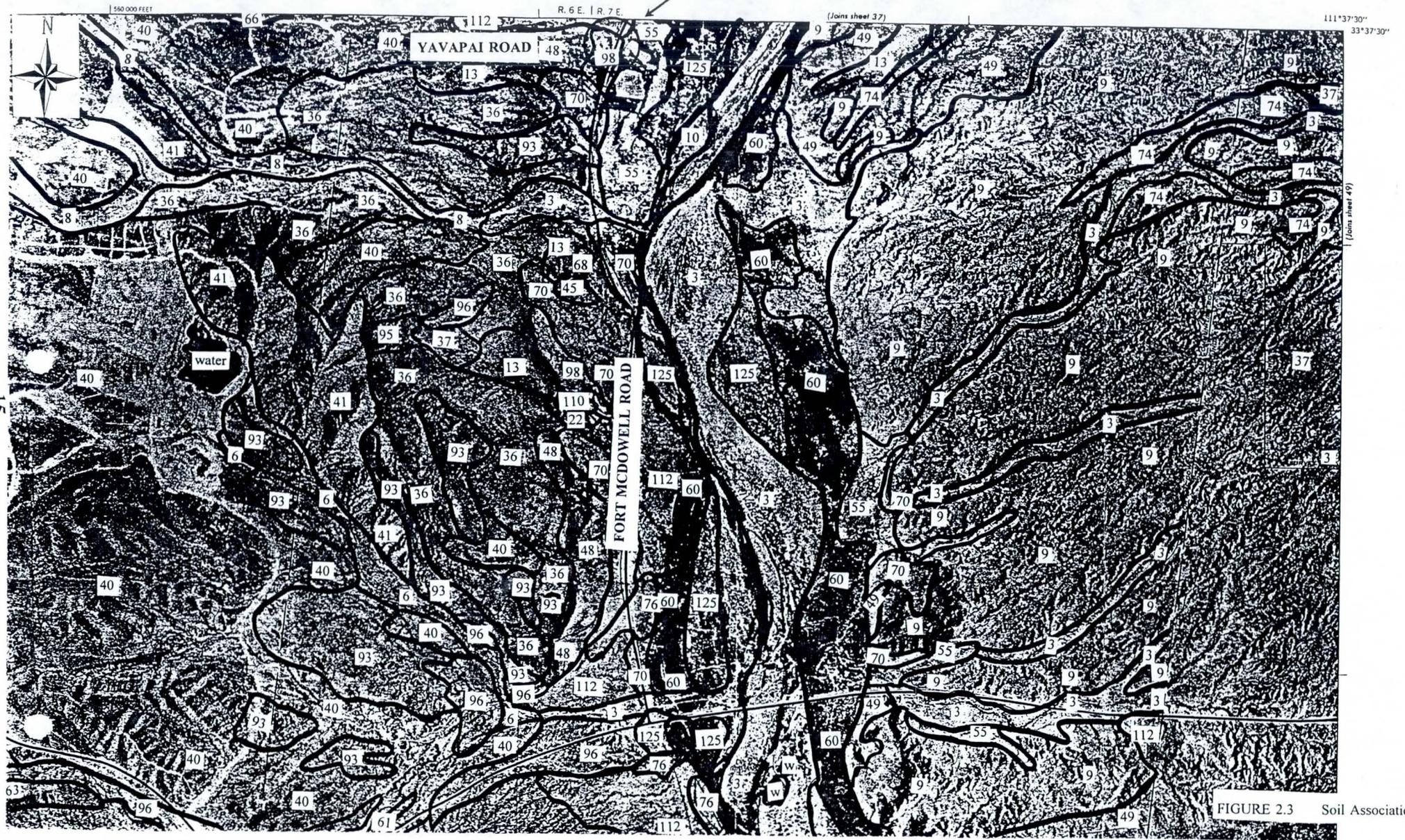


FIGURE 2.3 Soil Association Map

Arizona Department of Agriculture recommends a plant survey to decide if the proposed project will have an impact on protected plant species. They strongly encourage salvage operations and written notification at least sixty days before the work begins (See Letter in Appendix B).

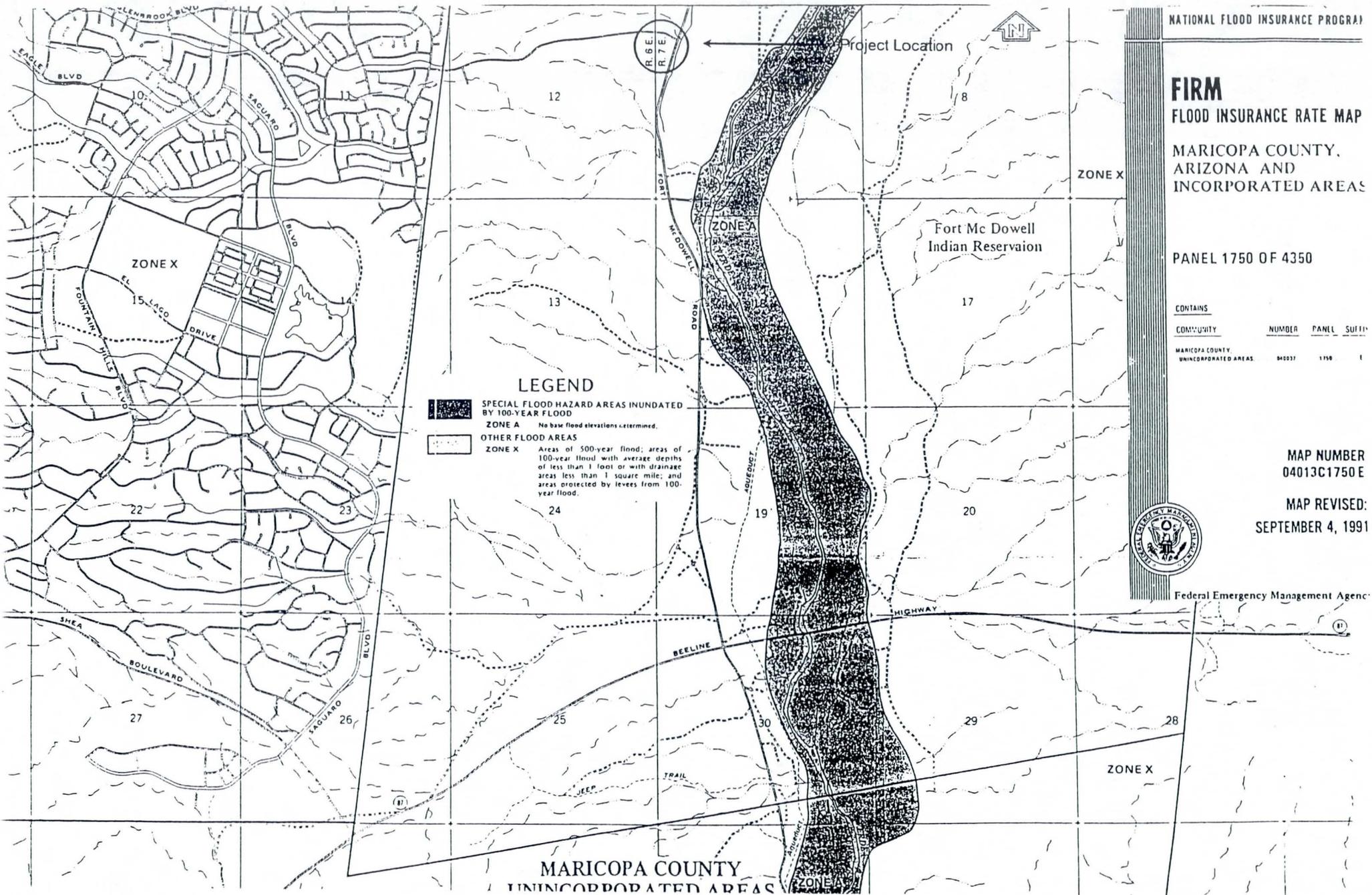
TABLE 2.3 - Wildlife and Vegetation by Soil Association		
Soil Association	Wildlife	Vegetation
Ebon - Pinamt - Tremant	Fox, Desert Mule Deer, Yuma Antelope Squirrel, Bobcat, Cottontail, Javelina, Gray Fox, Mourning Dove, Elf Owl, Verdin, Tiger Rattlesnake, Desert Horned Lizard, Desert Iguana.	Triangle-leaf and White Bursage, Ironwood, Creosote Bush, Palo Verde, Cholla Cactus, Bush Muhly, Graythorn.
Gilman - Estrella - Avondale	Desert Kangaroo Rat, Javelina, Desert Mule Deer, Antelope Ground Squirrel, Gambel Quail, Cactus Wren, White Wing Dove, Elf Owl, Desert Tortoise, Gila Monster, Tiger Rattlesnake, Desert Iguana	Creosote Bush, cacti, Bag Galleta, Ironwood, Mesquite, Palo Verde, Range Rattany, Purple Tree-awn, Bush Muhly, Sand Dropseed, Saltbush.
Rillito - Gunsight - Pinal	Yuma Antelope Squirrel, Badger, Striped Skunk, Javelina, Pocket Mouse, Desert Cottontail, Sidewinder, Desert Iguana, Zebra Tailed Lizard, Desert Horned Lizard, Le Conte Thrasher, Gambel Quail, Roadrunner, Desert Sparrow, Verdin.	Creosote Bush, Mesquite, Palo Verde, annual grasses and forbes.

## 2.4 HYDROLOGY

The review of published maps and data sources did not identify any sensitive environmental concerns and the project does not contain any riparian habitats, floodplains or wetlands. Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (#1750) show that the project is not within the 100-Year Floodplain (Figure 2.4) and is not within the boundaries of the Fountain Hills Floodplain Delineation Studies. Zone A designated areas and boundaries are the darkest portions of the figure. The remaining areas are Zone X. The Fort McDowell Mohave Apache Indian Community Master Land Use Plan says that the hydrology on the reservation consists of runoff, surface water, groundwater, and water quality. The Average Total Precipitation is 8.06 inches a year with surface water containment by the Verde River. Although the Verde River flows approximately one-half mile east of the project area, the proposed work will not affect the river. The Verde River runs north to south, where it connects to the Salt River system and has one major tributary, Sycamore Creek. Sycamore Creek enters the reservation from the east approximately four miles north of the Beeline Highway. Additionally, several intermittent streams and washes flow during or after heavy rain storms, or in the spring. Some large washes entering the Verde River from the west have experienced drainage problems due to the runoff from Fountain Hills. The surface waters are important for irrigation and recreational purposes. Horseshoe Dam and Bartlett Dam provide irrigation water storage and flood control for these areas of Maricopa County.

## 2.5 SOCIOECONOMIC ISSUES

The 1993 population on the reservation is 850 people. This is nearly twice the 1986 population of 430. Cultural development is an issue that is very important to the Fort McDowell residents. The preservation of tribal traditions, the Yavapai language, and the Yavapai way of life are important issues on the reservation. In 1986, over half the population was 16 years of age or younger. Therefore, education is also a primary concern on the reservation. Many residents feel that the lack of education is the primary constraint to fulfilling their full potential as a tribe and a community. The educational programs available on the reservation are only for preschool and the primary grades. Parents seek educational training for the elementary, junior high and high school students off the reservation. Most of the children attend school in Fountain Hills or Mesa.



NATIONAL FLOOD INSURANCE PROGRAM

**FIRM**  
FLOOD INSURANCE RATE MAP

MARICOPA COUNTY,  
ARIZONA AND  
INCORPORATED AREAS

PANEL 1750 OF 4350

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
MARICOPA COUNTY UNINCORPORATED AREAS	840037	1750	E

MAP NUMBER  
04013C1750 E

MAP REVISED:  
SEPTEMBER 4, 1991



Federal Emergency Management Agency

**LEGEND**

- SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD
- ZONE A** No base flood elevations determined.
- OTHER FLOOD AREAS**
- ZONE X** Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

FIGURE 2.4 100 - Year Floodplain (FEMA Map #1750)

2.6 UTILITIES CORRIDORS

Table 2.6 provides a summary of the existing utilities on the reservation and the agency responsible for the utility.

TABLE 2.6 - Reservation Utilities and Responsible Agencies	
UTILITY	RESPONSIBLE AGENCY
Electricity	Salt River Project
Telephone	Mountain Bell
Water	Tribal
Low Pressure Gas	Fountain Hills L.P Gas Company
Sewer	Individual Septic Tanks
Garbage and Trash Collection	Tribal
Landfill	Tribal Landfill

## 2.7 HIGHWAY CHARACTERISTICS AND CONSIDERATIONS

The existing roadway on Fort McDowell Road at the Yavapai Road intersection consists of a 24-foot, paved, two-lane roadway on a straight alignment. The existing roadway on Yavapai Road at the Fort McDowell Road intersection consists of a 24-foot, paved, two-lane roadway. Both roadways have four foot shoulders. Posted speeds on Yavapai are 35 and 40 mph except the severe reverse curve that has a posted speed of 25 mph. The posted speed limit on Fort McDowell Road is 40 mph. A cattleguard exists just north of the intersection. People have complained that the cattleguard is very rough. Because of the pavement condition adjoining the south side of the cattleguard, the local traffic travels only on the west side of the roadway to avoid the impact that occurs as one strikes the cattleguard. Lastly, on the east side of the roadway, there is a sharp drop-off to a drainage channel.

Fort McDowell Road, from the Beeline Highway to the end of pavement (3.5 miles), was first paved on 1/1/50. According to the pavement management system, the pavement structure is two-inch AC over a four-inch ABC base. The latest work, completed on 4/11/90, was a chip seal coat with latex. Yavapai Road, from the western Fort McDowell Boundary to Fort McDowell Road, was paved on 10/22/87. The pavement structure is two-inch AC over a six-inch ABC base. Table 2.7 details the coring information for Fort McDowell Road and Yavapai Road performed in March of 1994.

LOCATION	Fort McDowell Road (100' N. of Yavapai Road)	Fort McDowell Road (100' S. of Yavapai Road)	Yavapai Road (100' W. of Fort McDowell Road)
OFFSET	10.0' right of center line	6.0' left of center line	7.0' right of center line
PAVEMENT THICKNESS	2.5"	3.5"	3.25"
PAVEMENT COMPOSITION	0.75" of chip seal over 1.75" of asphaltic concrete	2.0" of asphaltic concrete over 1.5" of asphaltic concrete (2 courses)	1.75" of asphaltic concrete over 1.5" of asphaltic concrete (2 courses)
BASE COMPOSITION /THICKNESS	8.0" of aggregate base course (ABC)	7.0" of aggregate base course (ABC)	6.0" of aggregate base course (ABC)

### 2.7.1 Horizontal Alignment

Figure 2.7.1a shows the general alignment of Fort McDowell Road. The intersection of Fort McDowell Road and Yavapai Road is 586.63 feet northeast of the North 1/6 Corner of Section 7, of Township 3 North, Range 7 East, of the Gila and Salt River Base and Meridian. This information is from the right-of-way documentation. The actual alignment of Fort McDowell Road, south of the intersection is N 29.52° E. Right-of-way documentation shows N 17°20' E. The general alignment of Yavapai Road is shown in Figure 2.7.1b. Yavapai Road, as it approaches Fort McDowell Road, is "S" shaped. At a distance of 366.89 feet from the intersection, there is a curve with  $R = 200.00'$ ,  $L = 141.49'$  and  $\Delta = 40^{\circ}32'00''$ . For the next 49.50 feet, the roadway alignment is S 46°24'00" E. At this point, there is another curve with a  $R = 200.00'$ ,  $L = 87.00'$  and  $\Delta = 24^{\circ}55'30''$ . The direction of the road then changes to S 71°19'30" E for the last 88.90 feet where Yavapai Road intersects with Fort McDowell Road.

### 2.7.2 Vertical Alignment

Generally, the terrain is level on the reservation. Fort McDowell Road is a straight, level roadway. Yavapai Road has less than a one percent grade and curves around a small hill as it approaches the intersection.

### 2.7.3 Access Control

Fort McDowell Road lies within a fenced right-of-way corridor with no access control. Yavapai Road, Mohave Road or the Beeline Highway provide access to Fort McDowell Road. Fort McDowell Road accesses the Old Fort McDowell Site and Yavapai Road connects to the Fountain Hills Area and the Tribal Community Center. The Fort McDowell Road and Yavapai Road intersection is controlled by a stop sign on Yavapai Road. A residential dirt driveway exists on the north side of Yavapai Road approximately 0.045 miles west of the intersection. On the south side of Yavapai Road, there are dirt driveways located at 0.15 and 0.25 miles west of the intersection. There is one driveway approximately 0.25 miles south of the intersection on Fort McDowell Road. A dirt farm road exists, east of Fort McDowell Road. Any proposed improvements must allow for continued access to these fields.

### 2.7.4 Drainage

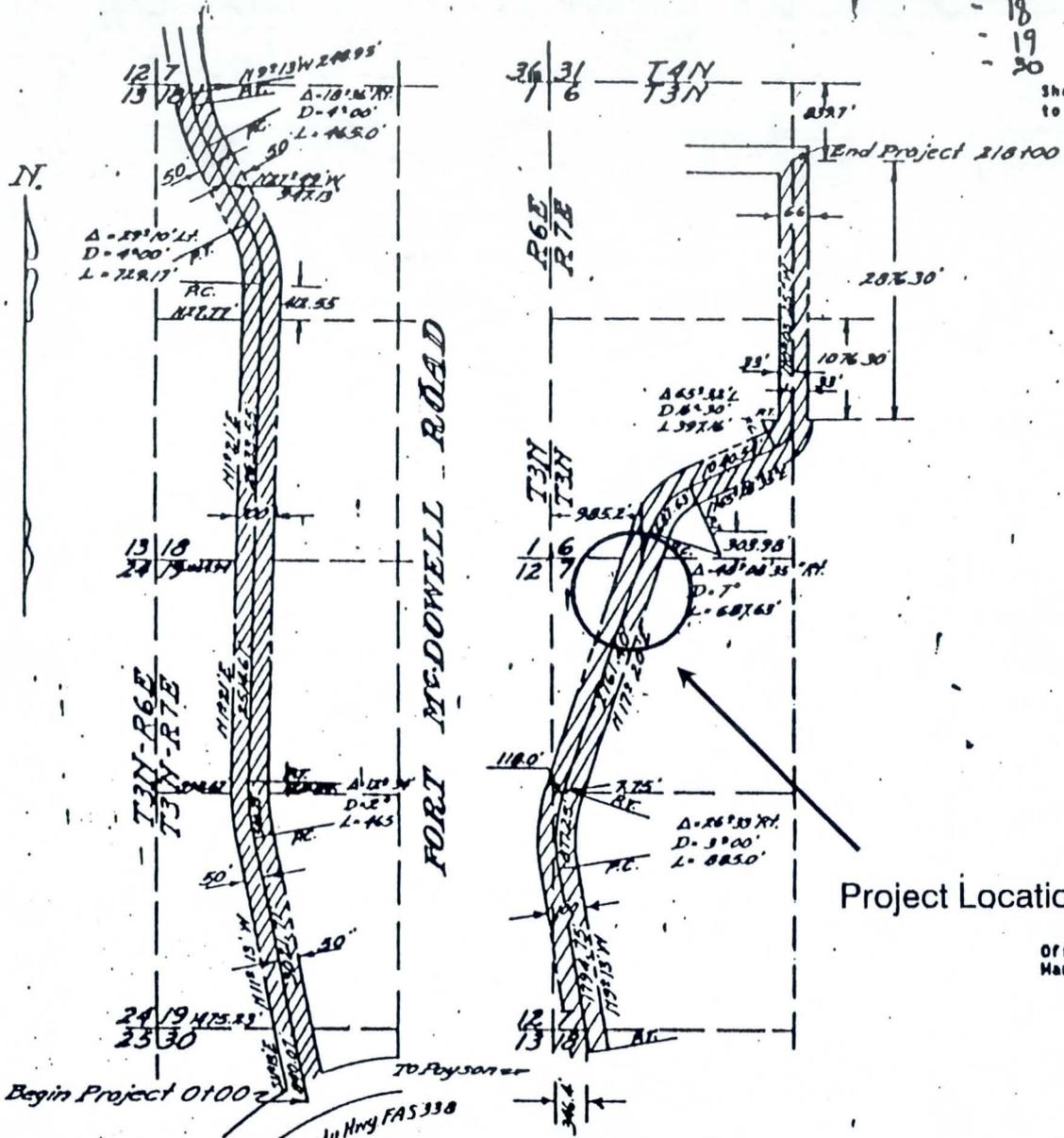
Generally, drainage flows west to east from the McDowell Mountains through Fountain Hills to the Verde River. On the west side of Fort McDowell Road, there is an existing wash with a southeasterly flow. A concrete and block wall about 200 feet north of the intersection diverts the wash to flow parallel to the west side of Fort McDowell Road. The concrete wall is broken in four places and the surrounding soil has been washed out. Farm fields are located on the east side of Fort McDowell Road. A drainage channel on the east side of Fort McDowell Road originates at the intersection. Dumped rock bank stabilization protects the curve of the channel. The channel is overgrown with trees, grass and brush. Figure 2.7.4a shows the location of the five existing culvert crossings. Two 48" CMP's cross Fort McDowell Road at a southeasterly alignment to the drainage channel on the east side. Downstream of the 48" pipes, two pipes share a concrete headwall and are perpendicular to Fort McDowell. These pipes lie beneath the cattleguard. One pipe is an 18" x 30" CMPA and the other pipe is a 30" concrete pipe. Figure 2.7.4b contains pictures of the 48" CMP's and the inlet of the two pipes underneath the cattleguard.

IL 3N7E Sec 6 T3N7E  
7 18 19 30

L-89  
DESIGNATED COUNTY ROAD  
A PLAT

Showing designation as a County Highway the following described lines, to wit:

Commencing at the Northwest Corner of Section 30, T3N RTE of the Gila and Salt River Base and Meridian; thence East along the North line of said Section 30, 1475.23 feet to a point; thence South 11° 13' East, 840.07 feet to a point on the center line of the Phoenix-Payson Highway and the true point of beginning; thence a roadway 100 feet in width being 50 feet on either side of the following described centerline. Beginning at said point on the Phoenix-Payson Highway; thence North 11° 13' West 3021.71 feet to the P.C. of a 2° 00' curve to the right whose central angle is 12° 34'; thence along the arc of said curve 800.29 feet to a P.O.C.; said P.O.C. being on the East-West mid-section line of Section 19, T3N RTE and 998.67 feet East of the West One-quarter corner thereof; thence continuing along the arc of said curve 128.04 feet to the P.T.; thence North 1° 21' East, 2548.61 feet to a point on the North line of said Section 19 and 1064.94 feet East of the Northwest corner thereof; thence continuing North 1° 21' East, 2633.55 feet to a point on the East-West mid-section line of Section 18, T3N RTE and 1127.77 feet East of the West one-quarter corner thereof; thence North 1° 21' East, 412.55 feet to the P.C. of a 4° 00' curve to the left whose central angle is 29° 10'; thence along the arc of said curve 729.17 feet to the P.T.; thence North 27° 49' West, 947.13 feet to the P.C. of a 4° 00' curve to the right whose central angle is 18° 36'; thence along the arc of said curve 465.00 feet to the P.T.; thence North 9° 13' West, 248.95 feet to a point on the North line of said Section 18 and 346.4 feet East of the Northwest Corner thereof; thence North 9° 13' West, 1794.75 feet to the P.C. of a 3° 00' curve to the right whose central angle is 26° 33'; thence along the arc of said curve 871.25 feet to a point on curve said point being on the East-West Mid-section line of Section 7, T3N RTE and 118.0 feet East of the West One-quarter corner thereof; thence continuing along the arc of said curve 7.75 feet to P.T.; thence North 17° 20' East 2761.40 feet to a point on the North line of said Section 7 and 985.2 feet East of the Northwest corner thereof; thence continuing North 17° 20' East, 303.98 feet to the P.C. of a 7° 00' curve to the right whose central angle is 48° 08' 35"; thence along the arc of said curve 687.63 feet to the P.T.; thence North 65° 28' 35" East, 1040.54 feet to the P.C. of a 16° 30' curve to the left whose central angle is 65° 32'; thence along the arc of said curve 397.16 feet to the P.T., said P.T. being on the North-South mid-section line of Section 6, T3N RTE and 1076.30 feet South of the center of said Section 6; thence a roadway 66 feet in width being 33 feet on either side of the following described center-line; Beginning at said P.T. on the North South mid-section line; thence North along said Mid-section line 2876.30 feet to a point 839.7 feet South of the North One-quarter corner of said Section 6. More commonly known as the Fort McDowell Road from the Bee-Line Highway to Fort McDowell.



Project Location

Officially designated February 11, 1959, by the Board of Supervisors of Maricopa County, Arizona.

16232

INDEXED  
PAGED

DATE OF PLAT  
DATE OF RECORD  
DATE OF REVISION

1959

LIBRARY

FRED BLENDING  
County Engineer

ES

ROAD FILE NO. 1302

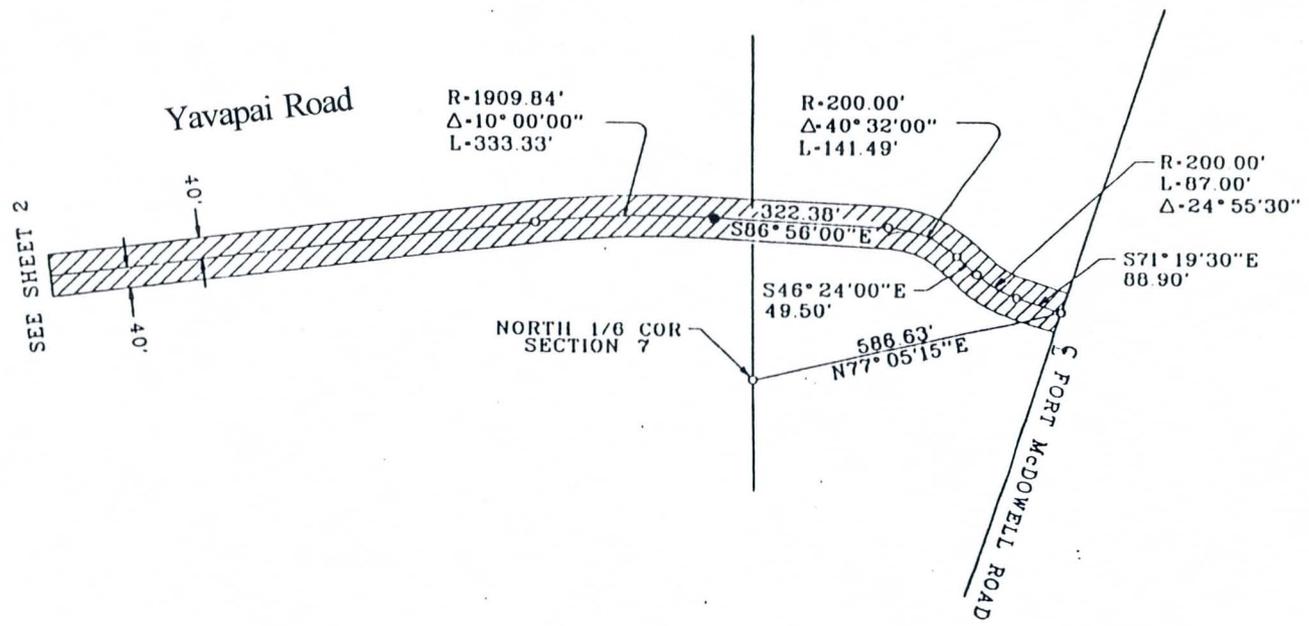
FIGURE 2.7.1a Existing Right-of-Way - Fort McDowell Road

24-10

354-18

# DESIGNATED COUNTY ROAD A PLAT

STATE OF ARIZONA | SS  
 County of Maricopa  
 I hereby certify that the within  
 instrument was filed and recorded  
 at request of MARICOPA  
COUNTY HIGHWAY DEPT.  
9/27/22 M.M.I.  
 In Book 354  
 on page 11  
 Witness my hand and official  
 seal the day and year abovesaid  
 (Seal Place)  
 County Recorder  
 By [Signature]  
 Deputy Recorder  
92-53879  
 RECORDING NUMBER



SEC 11,12 T3N-R6E & 7 T3N-R7E

SHEET 3 OF 4  
ROAD FILE NO. 4372

35418

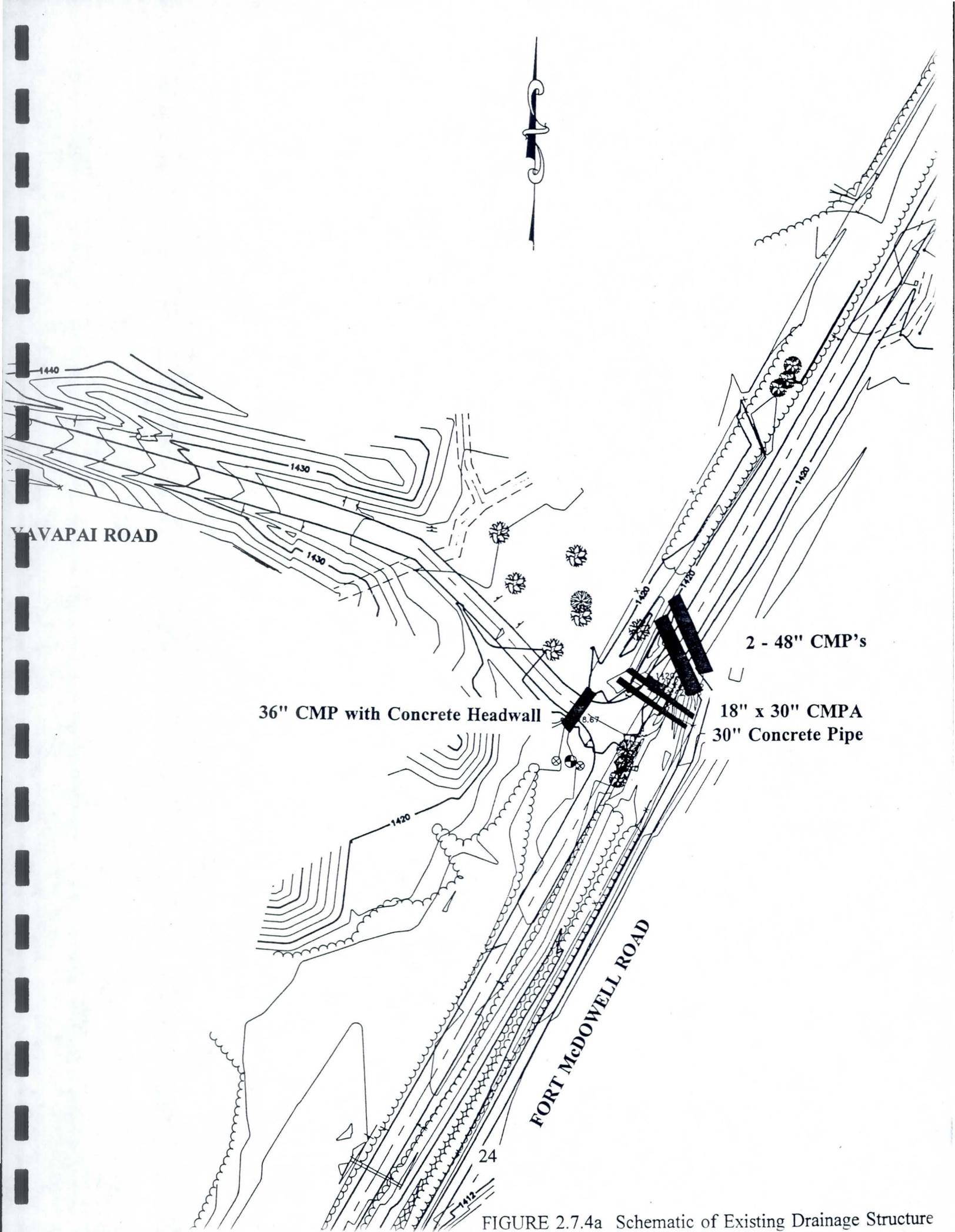


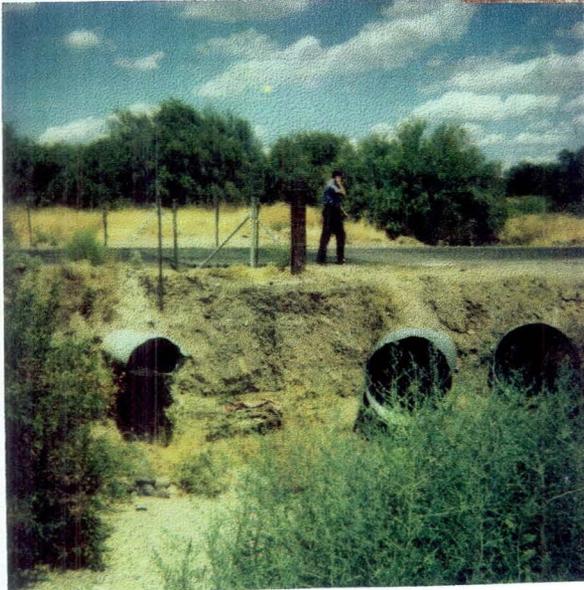
FIGURE 2.7.4a Schematic of Existing Drainage Structure

Photograph 1

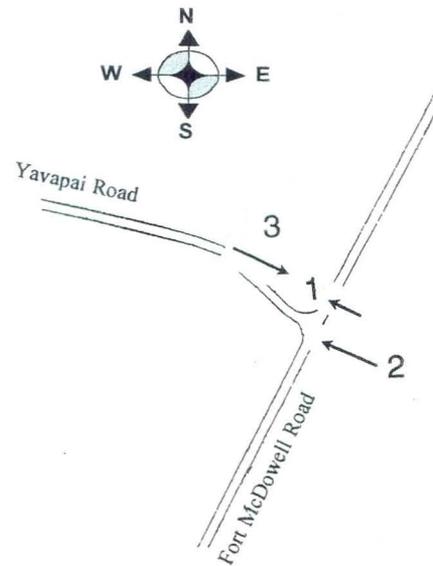
Inlet of two 48" CMP's skewed from the west side of Fort McDowell Road to the east side.



Photograph 2

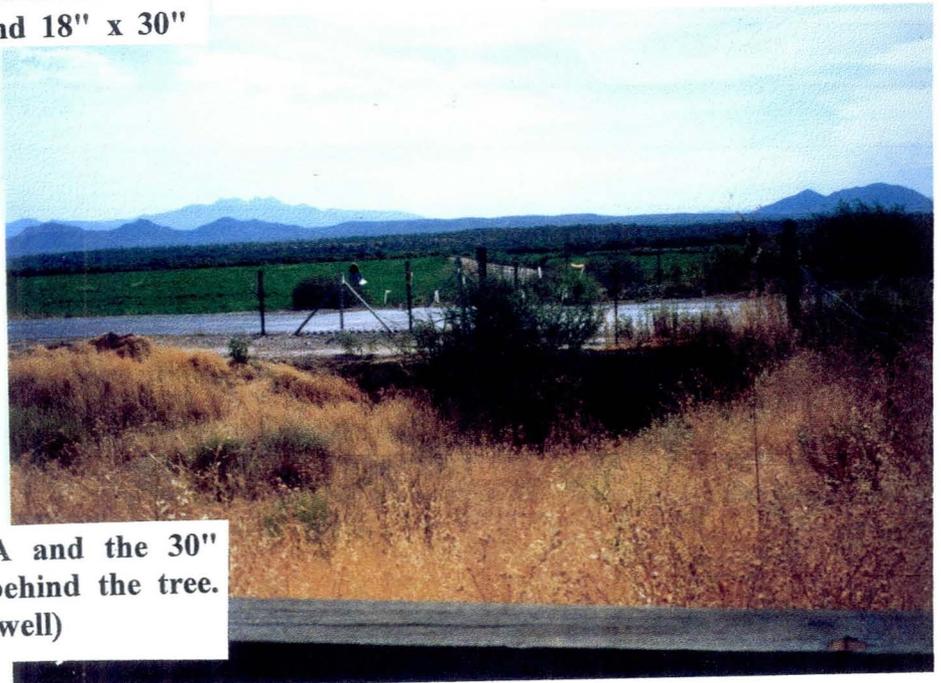


Outlet of the two 48" CMP's and 18" x 30" CMP (looking west).



Photograph 3

Inlet of the 18" x 30" CMPA and the 30" Concrete Pipe. The CMP is behind the tree. (Looking east across Fort McDowell)



NOTE:

Arrows show the direction of the photograph.

A 30" CMP with a concrete headwall crosses Yavapai Road in a north-south direction. Along the southern edge of Yavapai Road, a grader ditch lies and outlets into the depression at the southwest corner of the intersection. Figure 2.7.4c contains photographs of the existing upstream, and downstream washes.

The FCD provided MCDOT with a hydrologic study to determine the 100-year peak discharge for the contributing wash. The HEC-1 model and the peak flows generated in the fountain Hills North Flood Delineation Study were used as a basis for the Fort McDowell Road hydrology. The report summary is Appendix D. The 100-year peak flow in the wash north of Yavapai Road is 1970 cfs. The 6 hour storm was used to calculate the flow because it produced a higher peak runoff than the 24-hour event.

### 2.7.5 Traffic / Accident Data

According to MCDOT's Pavement Management System, Fort McDowell Road from S.R. 87 to End of Pavement has an ADT 1582 on a roadway length of 3.5 miles. Yavapai Road from the Fort McDowell Boundary to Fort McDowell Road is 1.19 miles in length with an ADT of 100. Table 2.7.5 shows the ADT information from Traffic Engineering for the period covering 1/1/91-6/30/93. Maricopa County Sheriffs Department reports no accidents for the intersection. Information was available from the Fort McDowell Mohave-Apache Indian Reservation Transportation Plan (1988). BIA police accident reports were not available for the intersection. Figure 2.7.5 shows the motor vehicle accidents occurring between 1985 and 1987. Based on MAG's population and growth estimates, the 2020 ADT on Fort McDowell Road will be 4265.

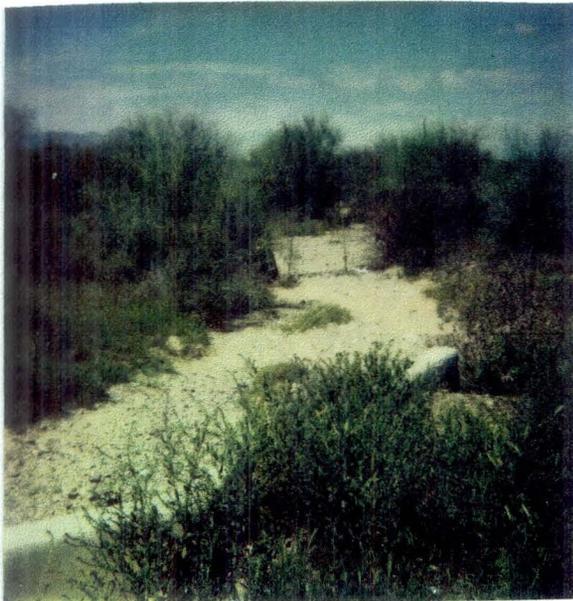
TABLE 2.7.5 - ADTs for Fort McDowell Road (1 mile north of S.R. 87)		
1991	1992	1993
1582	1470	N/A

### 2.7.6 Intersections

Figure 2.7.6 shows the existing intersection. The "T" intersection is controlled by a stop sign. The only signalized intersection on the Fort McDowell Indian Reservation is at Fort McDowell and the Beeline Highway.

### 2.7.7 Utilities

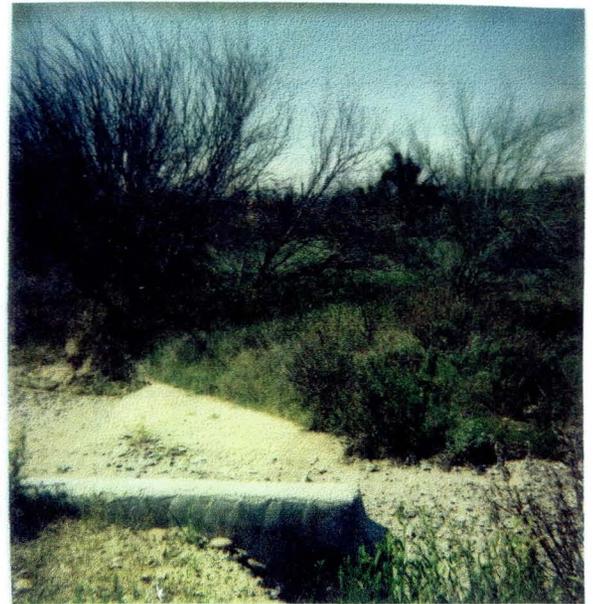
There is a fire hydrant and two water valves in the southwest corner of the intersection. The fire hydrant may need relocated for the widening of Fort McDowell Road. Wayne Miller, Fort McDowell's Manager of Public Works provided additional utility information for the intersection. South of Yavapai Road, there is a 3" pipe buried three and a half feet deep. North of Yavapai, the pipe is 6" and is buried four feet deep. The three-inch pipe is 15 years old and no notes exist for it. Three pipes exist along Fort McDowell Road. A six-inch pipe can be seen by the cut in the road, and is buried approximately four feet deep. Two feet away is a two-inch pipe, and is buried at a shallow depth. A one inch old, galvanized pipe also exists. The fire hydrant is connected to the six-inch pipe. There are no underground power lines or control systems.



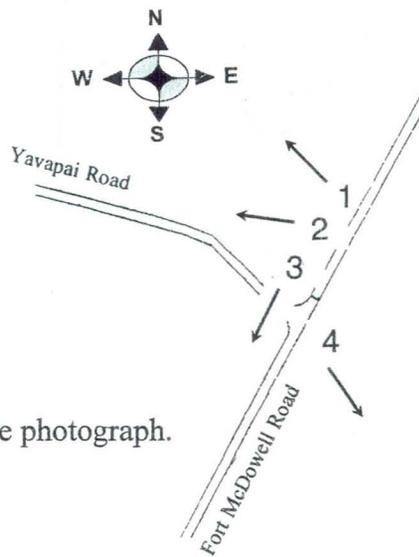
Photograph 1

1) Main wash, north of the intersection and west of Fort McDowell Road (looking northwest towards Fountain Hills).

2) Land is fairly level in this area (looking west towards Fountain Hills).



Photograph 2



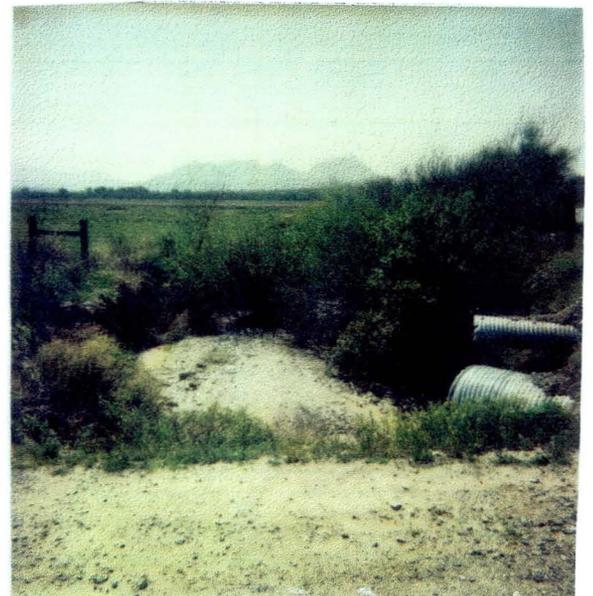
NOTE:  
Arrows show the direction of the photograph.



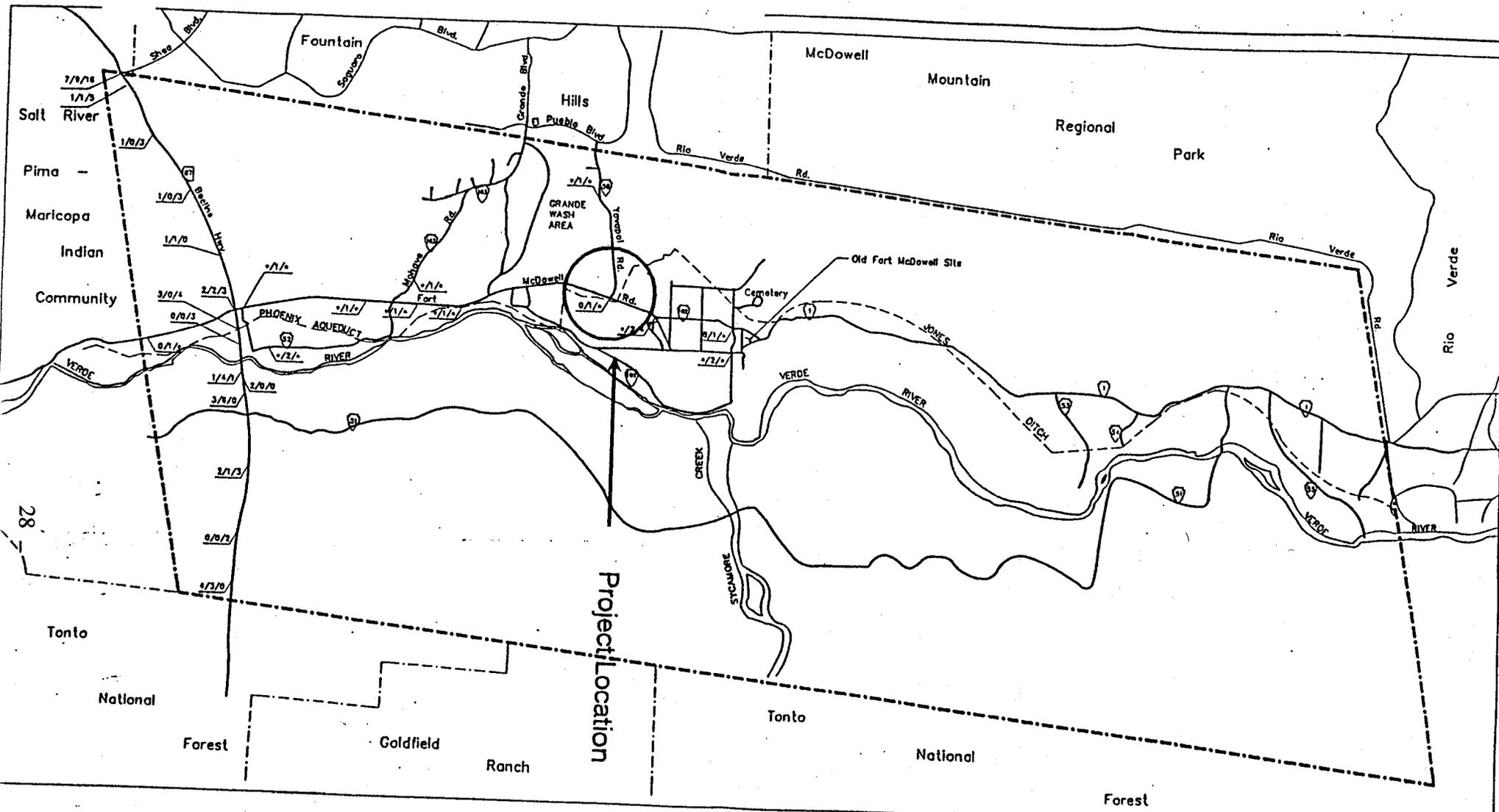
Photograph 3

3) Main wash and broken concrete and block wall on the west side of Fort McDowell Road (looking southwest).

4) Downstream main wash and corrugated metal pipes after crossing under Fort McDowell Road (looking southeast).

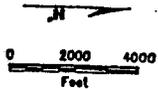


Photograph 4



**LEGEND**

o/o/o/ Location and Frequency of Accidents  
 1987  
 1988  
 1989  
 • Indicates no data available



Prepared by  
**FRESNELL ASSOCIATES INC.**  
 November 1988

**FORT MCDOWELL INDIAN RESERVATION  
 MARICOPA COUNTY, ARIZONA**

**MOTOR VEHICLE ACCIDENTS**

FIGURE 2.7.5

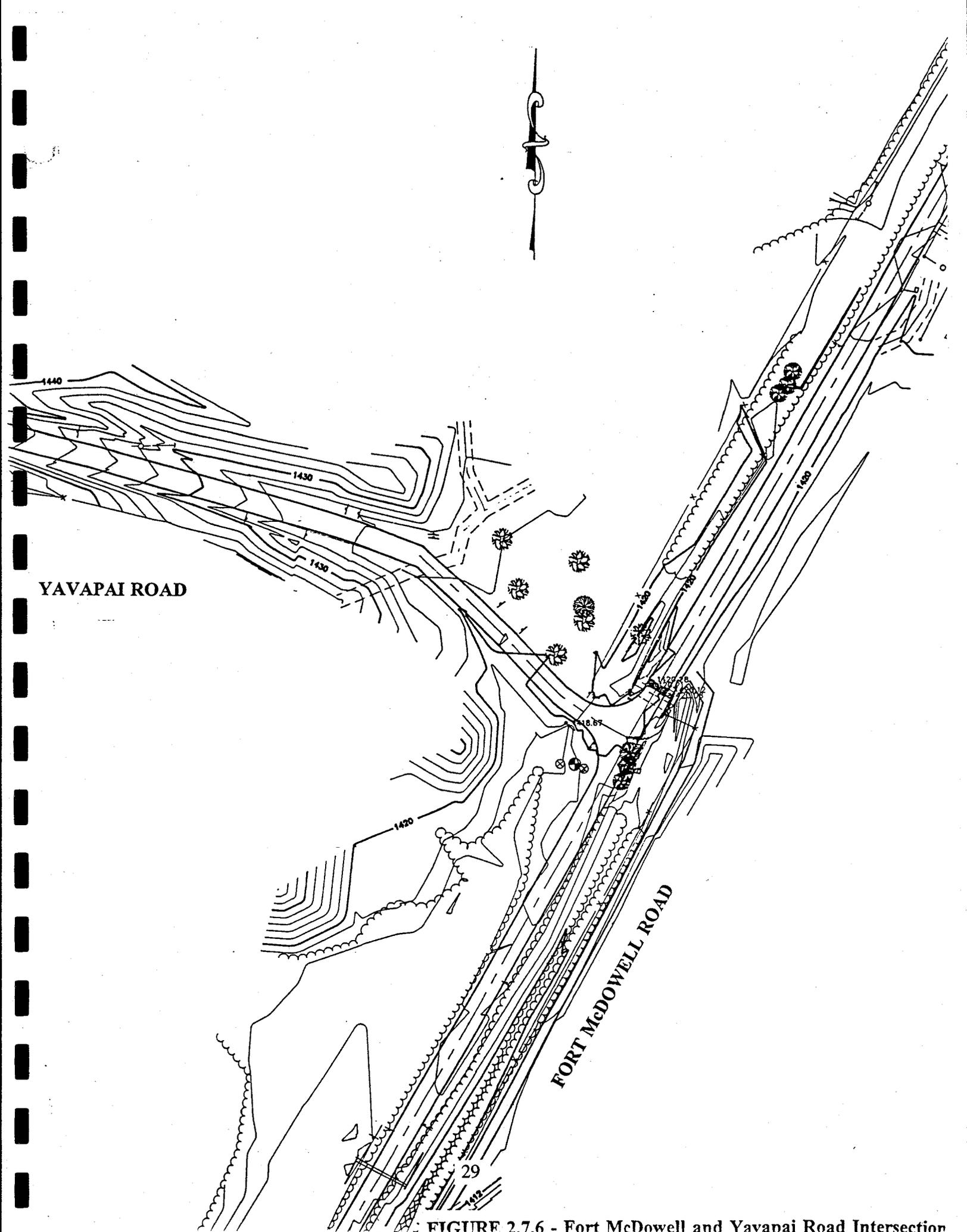


FIGURE 2.7.6 - Fort McDowell and Yavapai Road Intersection

The Manager of Public Works informed MCDOT that he would blue stake the water lines at this intersection at the time of construction.

Power poles exist on the south side of Yavapai Road until they cross over to the north side at a distance of 0.15 miles west of the intersection. The power poles then continue north and east along Fort McDowell Road.

### **2.7.8 Traffic Signals, Pavement Markings, and Signing**

Yavapai Road contains many warning and regulatory signs, because of the reverse curve. Schematic diagrams of the pavement marking and signs are shown in Figure 2.7.8a and Figure 2.7.8b. The intersection is controlled by a 30" stop sign on Yavapai Road. The posted speed is 40 mph on Fort McDowell Road.

### **2.7.9 Lighting**

There are no electrical lighting devices within the project area.

### **2.7.10 Geotechnical**

Forty-four soil groups are identified on the reservation. Figure 2.3 showed the Detailed Soil Map Units near the intersection. They are the Pinamt-Tremant complex (#98), Gilman loams (#55), Gunsight-Rillito complex (#70), Ebon-Pinamt complex (#48), and the Tremant gravelly sandy loams (#112). The information in Table 2.7.10a and Table 2.7.10b comes from the Fort McDowell Soil Survey, and shows the soil association limitations with respect to construction materials, and building site development.

The Soil Conservation Service describes the associations as follows:

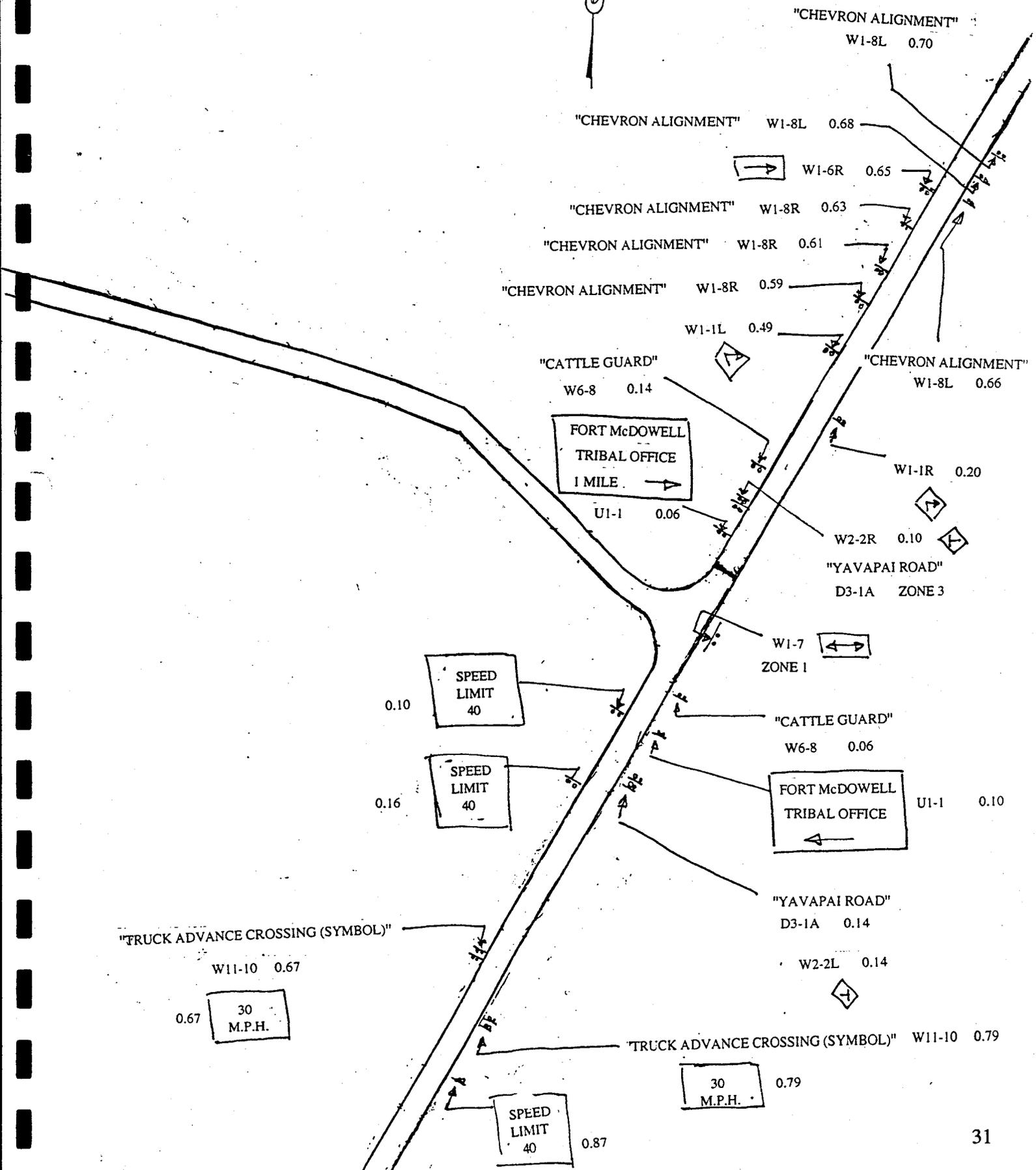
*The Ebon-Pinamt-Tremant Association consists of deep, well drained, slowly to moderately permeable fine-loamy, loamy skeletal, and clayey-skeletal soils formed in old mixed alluvium on old fans. The association is 32% Ebon, 20% Pinamt, and 16% Tremant. Elevation ranges from 800' to 1800', and the average annual precipitation is 6 to 8 inches. The frost free season lasts anywhere from 260 to 300 days. The slope range is normally between 1 and 9 percent, and it is not a hardpan. The land use is seasonal grazing, homesites, recreation, wildlife habitat.*

*The Rillito-Gunsight-Pinal Association consists of shallow to deep, well drained, moderately permeable coarse loamy to loamy-skeletal soils formed in old mixed alluvium on fans and terraces. A hard cemented pan exists in the Pinal soils at a depth of eight to twenty inches. The association is 35% Rillito, 25% Gunsight, and 20% Pinal. The elevation ranges from 450 feet to 2500 feet. The average annual precipitation is between five and nine inches, while the frost free season is 250-300 days. The slopes range between zero and 15%, and the association is considered a hardpan. The land use is irrigated crops and homesites.*

Figure 2.7.8a - Schematic of Pavement Marking and Signs

Fort McDowell Road

FORT MCDOWELL ROAD



YAVAPAI ROAD

"WINDING ROAD LEFT"

W1-5L 1.12

"CATTLE GUARD"

W6-8 1.09

"WINDING ROAD LEFT"

W1-5L 0.57

0.14

SPEED  
LIMIT  
35

1.06

SPEED  
LIMIT  
35

W1-2R 0.21

W1-2L 0.08

W1-3R 0.11

"CHEVRON ALIGNMENT"

W1-8L 0.07

"CHEVRON ALIGNMENT"

W1-8L 0.06

"STOP AHEAD (SYMBOL)"

W3-1A 0.08

"CHEVRON ALIGNMENT"

W1-8L 0.05

"CHEVRON ALIGNMENT"

W1-8R 0.04

"CHEVRON ALIGNMENT"

W1-8R 0.03

W1-3R 0.01

"CHEVRON ALIGNMENT"

W1-8R 0.02

STOP ZONE 1

25  
M.P.H.

"FORT McDOWELL ROAD"

ZONE 1

TABLE 2.7.10a - Soil Association Limitations: Construction Materials				
Soil Association	Roadfill	Sand	Gravel	Topsoil
(48)Ebon	✓	i	i	•
Pinamt	○	i	i	•
(55) Gilman	✓	i	i	✓
(70) Gunsight	✓	i	i	•
Rillito	✓	i	i	•
(98) Pinamt	✓	i	i	•
Tremant	✓	i	i	•
(112) Tremant	✓	i	i	•
LIMITATIONS: ✓ slight, ○ moderate, • severe i = improbable				

TABLE 2.7.10b - Soil Association Limitations: Building Site Development					
Soil Association	Shallow Excavation	Dwellings w/o Basements	Small Building Commercial	Local Roads & Streets	Lawns & Landscaping
(48)Ebon	•	•	•	•	•
Pinamt	•	•	•	•	•
(55) Gilman	✓	•	•	○	✓
(70) Gunsight	○	○	•	○	•
Rillito	○	○	•	○	•
(98) Pinamt	✓	✓	○	✓	•
Tremant	✓	○	○	○	○
(112) Tremant	✓	○	○	○	○
LIMITATIONS: ✓ slight, ○ moderate, • severe i = improbable					

*The Gilman-Estrella-Avondale Association consists of deep, well drained, moderately permeable coarse to fine-loamy soils formed in mixed recent alluvium on floodplains, low terraces, and alluvial fans. The association is 55% Gilman, 10% Estrella, and 10% Avondale. The range in elevation is between 450 and 1800 feet. There is five to nine inches of annual precipitation and 240 to 300 frost free days in this association. The slope range is between zero and three percent, and is not considered a hardpan. The land use is irrigated crops, seasonal grazing, homesites, industry, recreation, wildlife habitat and some flooding.*

## 2.8 TOPOGRAPHIC FEATURES

Figure 2.8 shows the northern portion of the Granite Reef Dam Quadrangle from the United States Geological Survey. The figure shows the topography surrounding the intersection and the southern portion of the reservation. The physiographic area includes the lower areas along the Verde River bottom, relatively flat desert lowlands, gently rolling foothills, and fairly rugged mountainous terrain. The reservation is a trapezoidal shape four miles east-west by ten miles north-south. The Verde River runs north-south and bisects the reservation. The reservation is bounded to the north and east by the Tonto National Forest, by the Goldfield Ranch to the east, by the Salt River Pima-Maricopa Indian Community to the south, and the McDowell Mountain Regional Park and Fountain Hills to the west. The highest elevation is 1918' in the northeast section of the reservation and the low elevation is 1350' where the Verde River exists the reservation.

## 2.9 RIGHT-OF-WAY

Both roadways are designated county roads. The existing right-of-way is 100 feet on Fort McDowell Road and 80 feet on Yavapai Road. The right of way documentation was shown as Figure 2.7.a and Figure 2.7.b in Section 2.7.1 - Horizontal Alignment. The right of way is fenced along Fort McDowell Road.

## 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 suggests that no additional investigations are warranted at this time.

No right-of-way from typical hazardous materials sources (gas stations, industrial sites, etc.) is required. Illegal dumping and its generic potential as hazardous materials source area is always a possibility, however, the above reviews encountered no dumping sites.

# Project Location

GRANITE REEF DAM QUADRANGLE  
ARIZONA—MARICOPA CO.  
7.5 MINUTE SERIES (TOPOGRAPHIC)

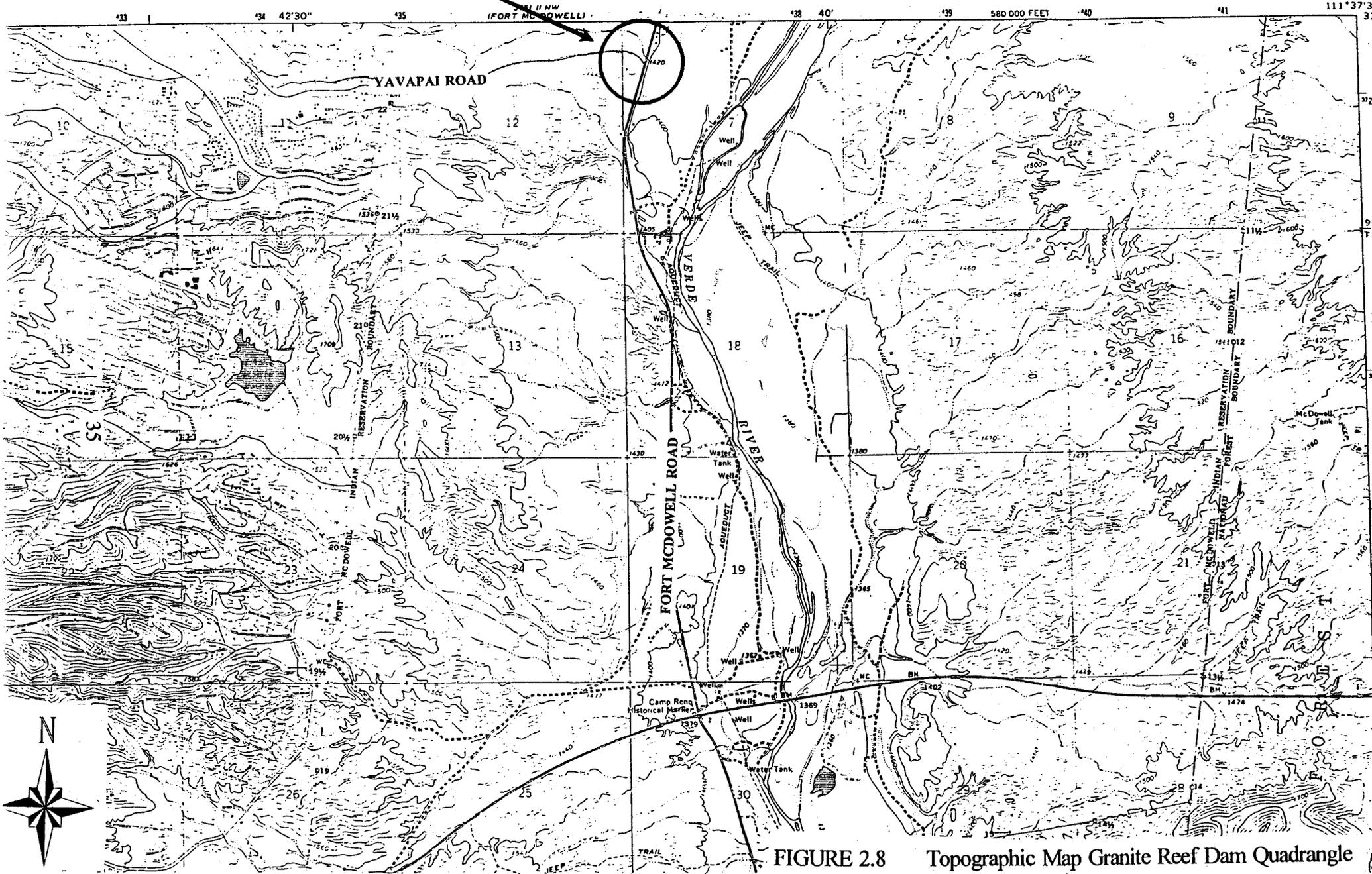


FIGURE 2.8 Topographic Map Granite Reef Dam Quadrangle

## SECTION 3 - MAJOR DESIGN FEATURES

### 3.1 DESIGN FEATURES

#### 3.1.1 Engineering

The roadway improvements shall conform to the MCDOT Standard Typical Section for a Rural Minor Collector (Fort McDowell Road) and a Rural Local (Yavapai Road). Figure 3.1a and Figure 3.1b show these two cross sections. Additionally, Figure 3.1c shows the "Typical Roadway Cross Sections" for the Fort McDowell Mohave-Apache Indian Community. Fort McDowell Road is not on the County or Regional Bicycle Plan. Table 3.1 describes the recommended Design Criteria to assure compliance with MCDOT's requirements. Road widening on Fort McDowell Road will be to the west.

Residential driveways (Type S-1) exist in the project area. The driveways will be designed according to the information in Chapter Seven of the Roadway Design Manual. The driveway on the northside of Yavapai Road accesses two single family units, therefore the maximum width is 30 feet (M-1). All other driveways serving a single family unit, should have a maximum width of 24 feet (S-1). There will be no raised medians, nor curbs and gutters included in this project. The number of traffic lanes will remain one lane in each direction.

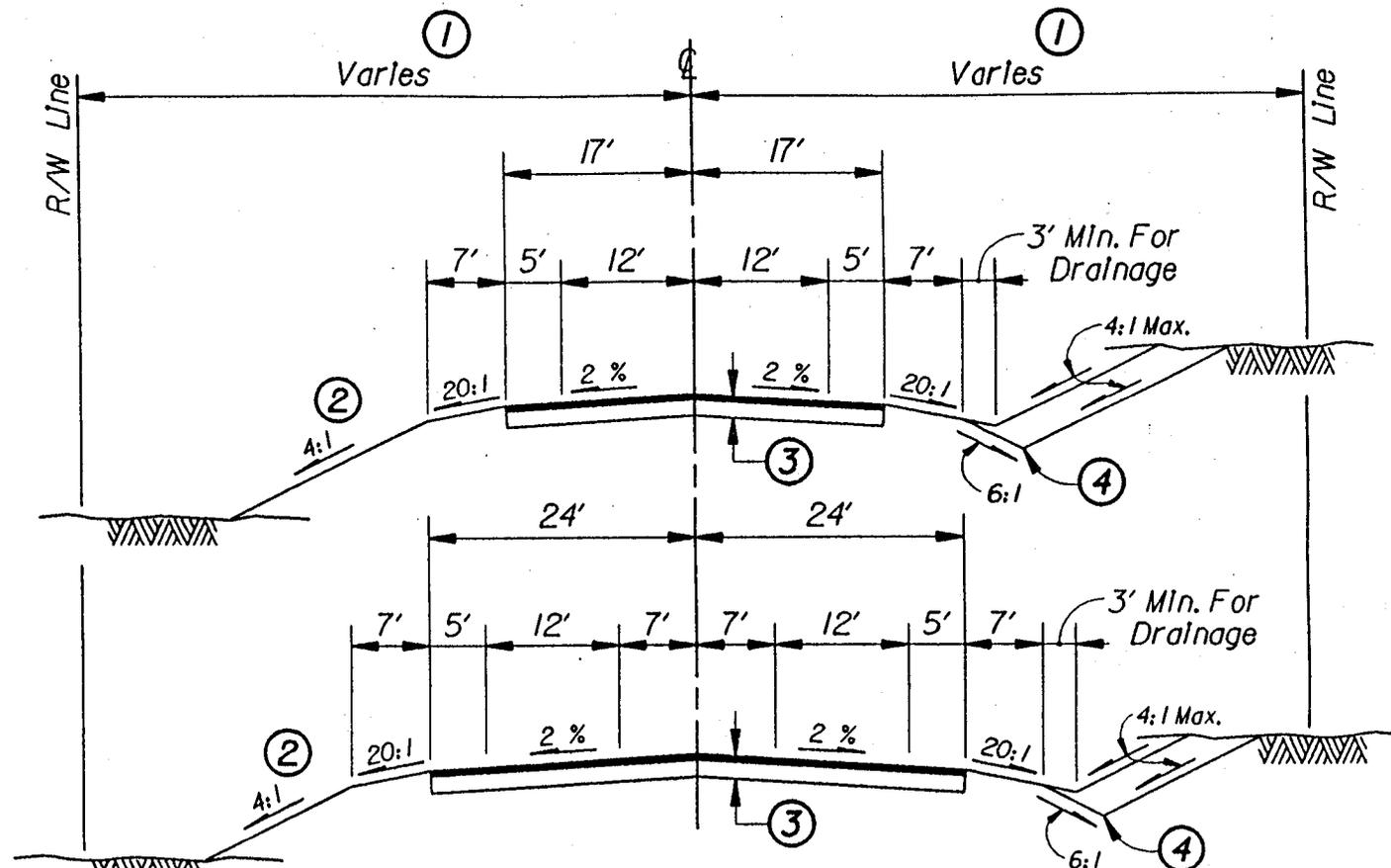
The intersection will be designed according to the criteria in Chapter 6 of the Roadway Design Manual. The minimum left turn storage is 75 feet for unsignalized intersections. Traffic engineering recommends a minimum of 100'. For this improvement, left turn storage will be 160 feet. Any new traffic control requirements such as signals, pavement markings and signing will conform to the standards set in the Manual on Uniform Traffic Control Devices. (MUTCD)

#### 3.1.2 Drainage

The Flood Control District (FCD) determined the design storm based on the Federal Functional Classification of Fort McDowell Road. The criterion for culverts is found in Chapter 4, Section 4.3 of the FCD's Drainage Design Manual for Maricopa County Volume II, Hydraulics. The manual says that collectors should have culverts that carry the 50-year event totally under the roadway and that the 100-year event should pass through the culvert and over the roadway at no more than six inches deep. As previously mentioned, Appendix D includes the FCD's hydrology and drainage design recommendations. The channel design includes adequate free board and roadway overtopping limited to six inches for the 100-year discharge.

#### 3.1.3 Right-of-Way

For a section line or section line alternate, the minimum standard right-of-way requirement consists of a 55 foot half width for Rural Minor Collector Roads (Fort McDowell Road) and for Rural Local Roads (Yavapai Road). Additional right-of-way may be necessary to adapt to the recommended channel widths and widening of the roadway. The Fort McDowell Indian Reservation and the Bureau of Indian Affairs must approve the right-of-way acquisition.



**WIDENED SECTION FOR LEFT TURN LANE**

N.T.S.

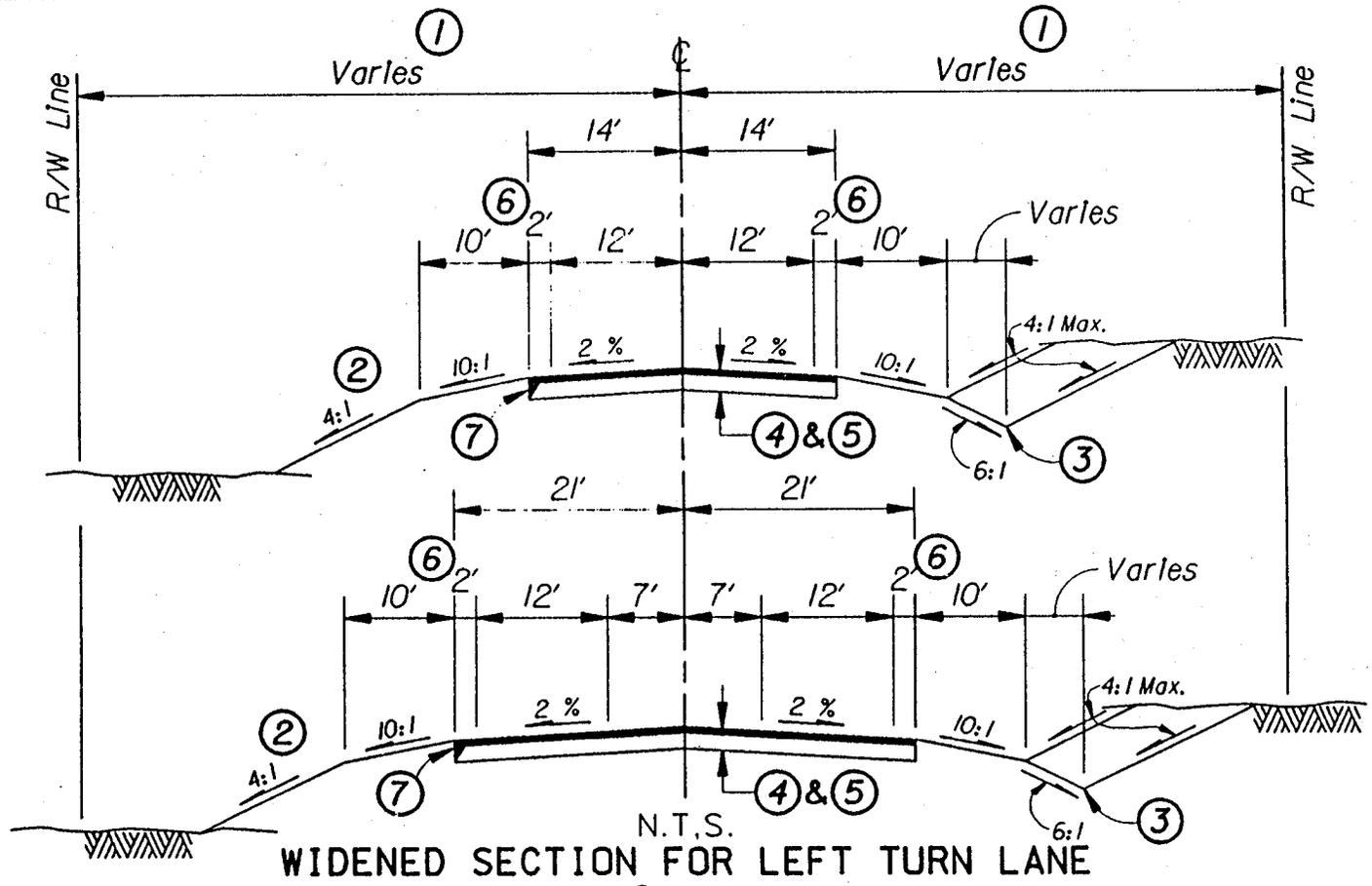
- ① Min. Std. R/W Requirements:  
 Section Line or Section Line Alternate Location - 55'  
 Typical Half-Width Min.  
 Mid-Section Line or Mid-Section Line Alternate  
 Location - 40' Typical Half-Width Min.  
 Road of Regional Significance Alignment - 70'  
 Typical Half-Width Min.

- ② For Guardrail Installation See MCDOT Std. Detail 2036 or 2037.
- ③ 3' Min. A.C. Over 10' Min. A.B. or Approved Equivalent.
- ④ Special Drainage Ditch as Required.

Maricopa Co. Dept. of Transportation  
 Standard Typical Section

RURAL COLLECTOR ROADS

FIG. 5.3



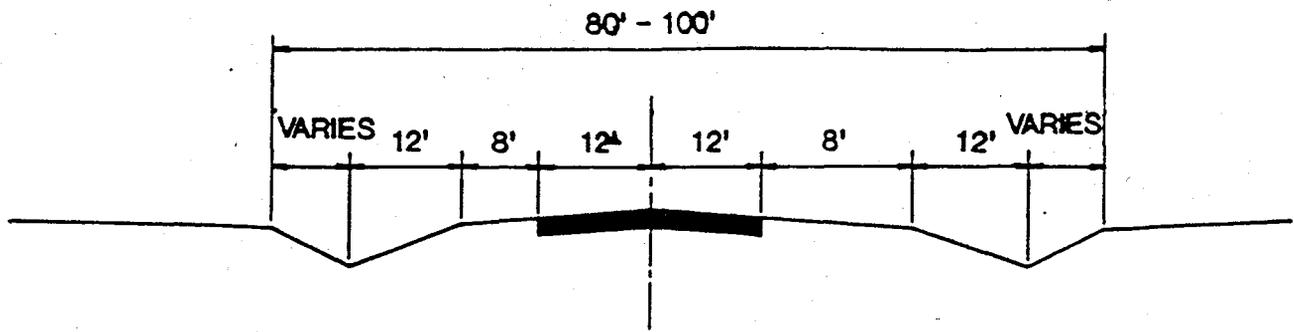
- ① Min. Std. R/W Requirements:  
 Section Line or Section Line Alternate Location - 55'  
 Typical Half-Width Min.  
 Mid-Section Line or Mid-Section Line Alternate  
 Location - 40' Typical Half-Width Min.  
 1/4 Mile & 1/8 Mile Location - 30' Typical  
 Half-Width Min.  
 Road of Regional Significance Alignment - 70'  
 Typical Half-Width Min.
- ② For Guardrail Installation See MCDOT Std. Detail  
 2036 or 2037.

- ③ Special Drainage Ditch as Required.
- ④ 2" Min. A.C. Over 6" Min. A.B. or Approved Equivalent,  
 For Current ADT  $\geq$  300 ADT (or Grades > 5% or Trucks > 5%).
- ⑤ Bituminous Penetration & Chip Seal Over 6" Min. A.B. or Approved  
 Equivalent, For Current ADT < 300.
- ⑥ Shoulder Shall be Modified to Collector Standard for Rural Local Roads  
 Designated as Bike Routes on the Approved County Bike Route Map.
- ⑦ Residential Streets Shall have a Thickened Edge Per  
 MAG Std. Detail 201, Type B (Typ. Both Sides).

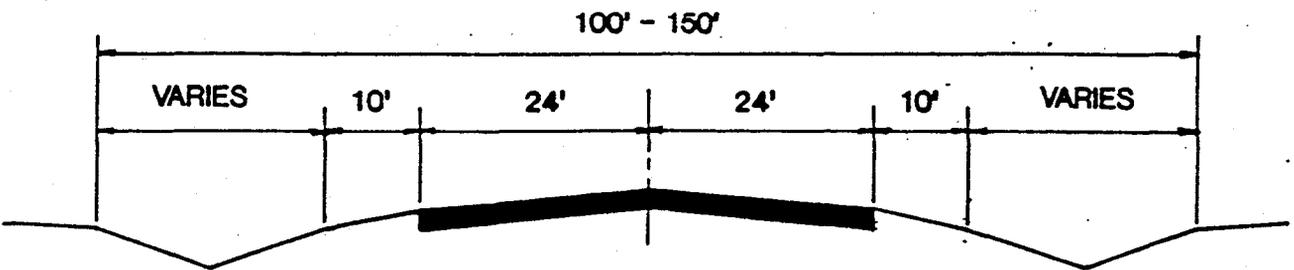
Maricopa Co. Dept. of Transportation  
 Standard Typical Section

RURAL LOCAL ROADS

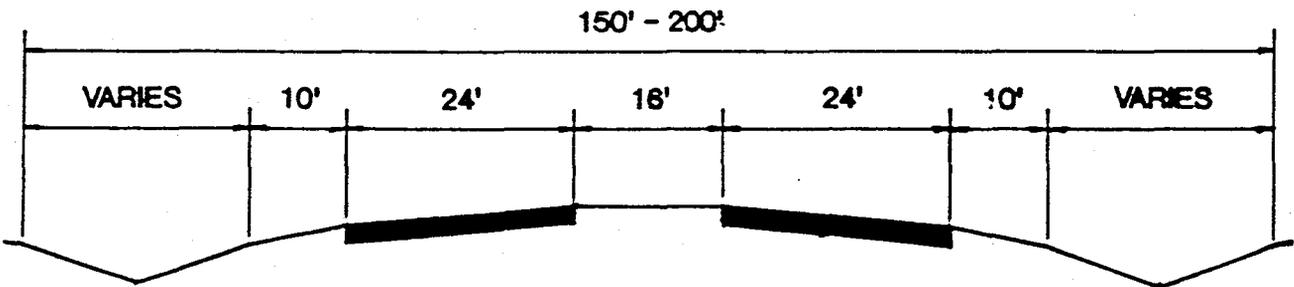
FIG. 5.4



LOCAL



COLLECTOR



ARTERIAL

FORT McDOWELL MOHAVE-APACHE  
INDIAN COMMUNITY, ARIZONA

TYPICAL ROADWAY CROSS SECTIONS

Prepared by  
PRESNELL ASSOCIATES INC.  
October 1988

FIGURE 3.1c Fort McDowell Standard Typical Sections

**Table 3.1 DESIGN CRITERIA**

	Fort McDowell Road (Rural Minor Collector)	Yavapai Road (Rural Local)
Current ADT	1470	100
Design ADT	4265	270
Design Year	2020	2020
Design Speed	55 mph (Level Terrain)	50 mph (Level Terrain)
Stopping Sight Distance	450 (55 mph)	400 (50 mph)
Passing Sight Distance	1,950 (55 mph)	1,800 (50 mph)
Design Vehicle	Single Unit Bus (BUS)	Single Unit Bus (BUS)
Turning Radius	Min. Design Radius = 42' Min. Inside Radius = 24.4'	Min. Design Radius = 42' Min. Inside Radius = 24.4'
Pavement Design Life	20 years	20 years
Pavement Structure	3" Min. AC over 10" Min. AB	2" Min. AC Over 6" Min. AB
Intersection Roadway Width	48'	42'
Intersection Angle	Roads shall intersect each other at no less than 80°	
Left Turn Storage	Unsignalized intersection: 75' minimum	
Lane Widths (no median)	Left Turn Lane = 14' Travel Lanes = 12'	Left Turn Lane = 14' Travel Lanes = 12'
Shoulder Widths (no curb & gutter)	Outside Paved Shoulder = 5' Outside Dirt Shoulder = 7'	Outside Paved Shoulder = 2' Outside Dirt Shoulder = 10'
Transverse Road Slope	2.0 %	2.0 %
Shoulder Slopes	20:1	10:1
Graded Side Slopes	4:1	4:1
Clear Zone Width	24' minimum	10' minimum

### 3.1.4 Utilities

The water lines and/or fire hydrant existing along Fort McDowell Road may need relocated due to the pavement widening. There are no power lines near the project location. There are no existing or planned electrical lighting devices in the intersection improvements.

### 3.2 DESIGN EXCEPTIONS

Fort McDowell Road, as Rural Minor Collector, should conform to the design criteria in Table 3.1. However, since this project is an intersection improvement only, it may not be practical at this time to construct five foot paved shoulders and seven foot graded shoulders as shown in Figure 3.1a. The typical section for Fort McDowell Road will be the same as for Yavapai Road. A roadway width of 42 feet is more consistent with the existing conditions on the reservation and will include two 14-foot through lanes, a 14-foot left turn lane and 10-foot graded earth shoulders. Shoulder slopes will be 10:1 and the minimum clear zone width is 10 feet.

Design speeds will be 55 mph (Fort McDowell Road) and 50 mph (Yavapai Road). A minimum pavement structure of 3" AC over 10" AB or approved equivalent will be used for both roadways. The turning radius will be a minimum of 45 feet. Guardrail installation may be necessary to satisfy the clear zone requirements. Guardrail installation will conform to the standards in Section 5.30 of the Roadway Design Manual. Placement will be on the east side of Fort McDowell Road, south of Yavapai Road and on the west side of Fort McDowell Road, north of Yavapai Road.

## SECTION 4 - ALTERNATIVE DEVELOPMENT AND ANALYSIS

### 4.1 DRAINAGE AND ROUTE CONSIDERATIONS

#### Drainage Alternatives

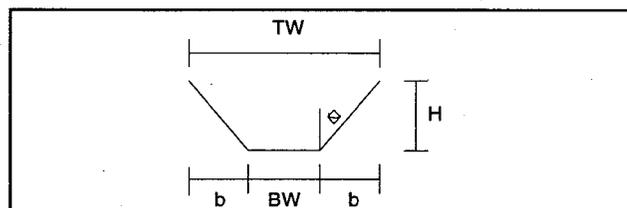
This project encompasses the development of five alternatives. Alternatives #2 through #5 include channel and drainage improvements. FCD developed 21 drainage design alternatives and a cost estimate for each alternative. The report in Appendix D shows all of the alternatives and the recommended culvert location. Drainage improvements include adequate freeboard (two feet) with roadway overtopping limited to six inches for the 100-year discharge. The drainage design addressed five types of channels and three types of culverts. Channel types include earth, grouted rock, concrete, soil cement and structural concrete. Culvert types include concrete boxes, concrete pipes and corrugated metal pipes. Earth and soil cement channels require top widths of 110 feet to convey the flow, while a grouted rock channel requires a top width of 86 feet. FCD did not recommend these choices because of the additional costs for right-of-way and maintenance. Table 4.1 summarizes six drainage alternatives recommended by the FCD. The FCD cost estimate includes a 600 foot long channel. Additionally, the FCD recommended the use of some sort of cutoff wall inlet protection to prohibit the same type of erosion that the existing wall has experienced.

Table 4.1 - Drainage Design Alternatives

Alt.#	Channel Type	Channel Widths in feet			Z (b/H)	Depth (H in ft)	Culvert Type (HxD)	Cost (\$x1000)
		BW upstream	BW downstream	TW				
1	Concrete	30	15	70	2	10	3-6'x9' BC	147.2
2	Concrete	30	15	70	2	10	4-7' CP	137.0
3	Concrete	30	15	70	2	10	5-6.5' MP	110.1
4	Concrete	35	20	55	1	10	3-6'x9' BC	135.1
5	Concrete	35	20	55	1	10	4-7' CP	125.0
6	Concrete	35	20	55	1	10	5-6.5' MP	98.0

#### INDEX OF TERMS:

BW = Bottom Width, TW = Top Width,  
 H = Height, b = width of side slope,  
 $Z = b/H$  or  $\tan(\theta)$ , where  $\theta$  = notch angle,  
 D = Pipe Diameter



## Route Alternatives

### 4.1.1 Alternative #1 "No Build Alternative"

The existing intersection is in Figure 2.7.6. With this alternative, left turn movements will continue to be hindered, the cattleguard problem remains, and the reverse curve will continue to cause sight distance problems.

### 4.1.2 Alternative #2 "Widen to Accommodate Left Turn Movements on Existing Alignment"

Widen the intersection to accommodate left turn movements on both Fort McDowell Road and Yavapai Road. Fourteen foot left turn lanes will be added to the existing roadways. This alternative includes drainage improvements, and the relocation of the cattleguard.

### 4.1.3 Alternative #3 "Tangent from Existing Alignment, no superelevation, no curves"

Figure 4.1.3 shows a schematic drawing of the drainage and roadway improvements. This alternative will continue Yavapai Road by the means of extending the last tangent on Yavapai Road. Right-of-way documentation shows the bearing as S 86°56'00" E. The actual bearing is S 75.5° E. The alternative does not require a curve or superelevation. The intersection would be skewed at approximately 10 degrees. On Fort McDowell Road, the roadway widening from approximately 24' to 42' will be on the west side of the roadway.

A three barrel (9' x 6' x 125') concrete box culvert at a skew of 50° right will connect the up and downstream channel. The trapezoidal concrete channel will have a 35-foot base, 55-foot top width and will be approximately 280 feet in length north of the intersection. South of the intersection, the channel will have a 20-foot base, 40-foot top width and will be approximately 320 feet in length.

Relocation of the fire hydrant is necessary, because the present location will be in the new 10 foot graded shoulder. Two sections of guardrail are necessary. One, on the west side of Fort McDowell Road (230' in length), north of Yavapai Road and a second section on the east side of Fort McDowell Road (300' in length), south of Yavapai Road. Guardrail installation will conform to the standards in the Roadway Design Manual. Placement of the guardrail sections will be 10 feet from the edge of pavement and five feet in front of the channel.

A new seven unit cattleguard, ADOT STN C-11.10 will be placed north of the new intersection. The two residential driveways and dirt farm road will utilize MAG's Standard Detail #205 type driveways. On Yavapai Road, an AC Type "B" turnout (16' x 16') will be placed at Station 7+24 and a AC Type "S" turnout (16' x 60' x 20' x 50') at Station 6+84. On Fort McDowell Road, a AC Type "A" turnout (16' x 15' x 15') will be placed at the location of the new single lane farm road.

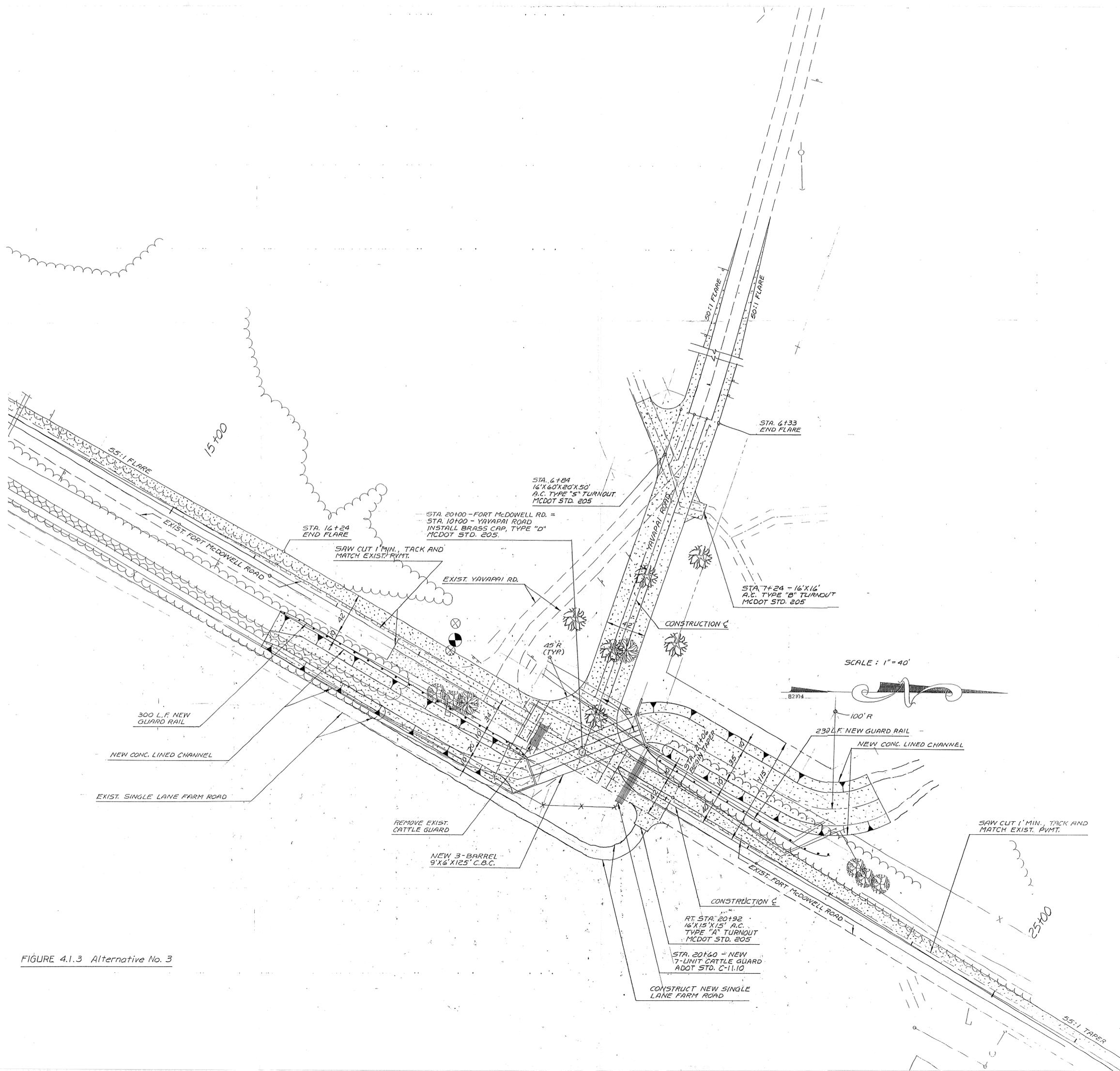


FIGURE 4.1.3 Alternative No. 3

#### 4.1.4 Alternative #4 "90° Intersection, Widened for Left Turn Movements"

Figure 4.1.4 shows the new alignment in Alternative #4. This alternative will eliminate the reverse curve and widen the intersection to accommodate left turn movements on both Fort McDowell Road and Yavapai Road. Table 4.1.4 gives the curve data for Alternative #4. Alternative #4 will not provide a tangent for storage on Yavapai Road and does not have sufficient room for the required runout length for superelevation transition.

This alternative includes drainage improvements, and the relocation of the cattleguard. A three barrel (9' x 6' x 140') concrete box culvert at a skew of 45° right will connect the up and downstream channel. The trapezoidal concrete channel will have a 35-foot base, 55-foot top width and will be approximately 280 feet in length north of the intersection. South of the intersection, the channel will have a 20-foot base, 40-foot top width and will be approximately 320 feet in length.

Alternative #4 will also require the relocation of the fire hydrant, because the present location will be in the new 10-foot graded shoulder. Two sections of guardrail are necessary. One, on the west side of Fort McDowell Road (230' in length), north of Yavapai Road and a second section on the east side of Fort McDowell Road (270' in length), south of Yavapai Road. Guardrail installation will conform to the standards in the Roadway Design Manual. Placement of the guardrail sections will be 10 feet from the edge of pavement and five feet in front of the channel.

Deflection Angle, $\Delta$	14°
Degree of Curve, D	5°
Radius, R	1145.92'
Tangent, T	140.70'
Length, L	280.00'
Superelevation, e	0.071
L (length of runoff)	170.0'

A new seven unit cattleguard, ADOT STN C-11.10 will be placed north of the new intersection. The two residential driveways and dirt farm road will utilize MAG's Standard Detail #205 type driveways. On Yavapai Road, an AC Type "B" turnout (16' x 16') will be placed at Station 7+24 and a AC Type "S" turnout (16' x 67' x 20' x 50') at Station 6+84. On Fort McDowell Road, a AC Type "A" (16' x 15' x 15') turnout will be placed at the location of the new single lane farm road.

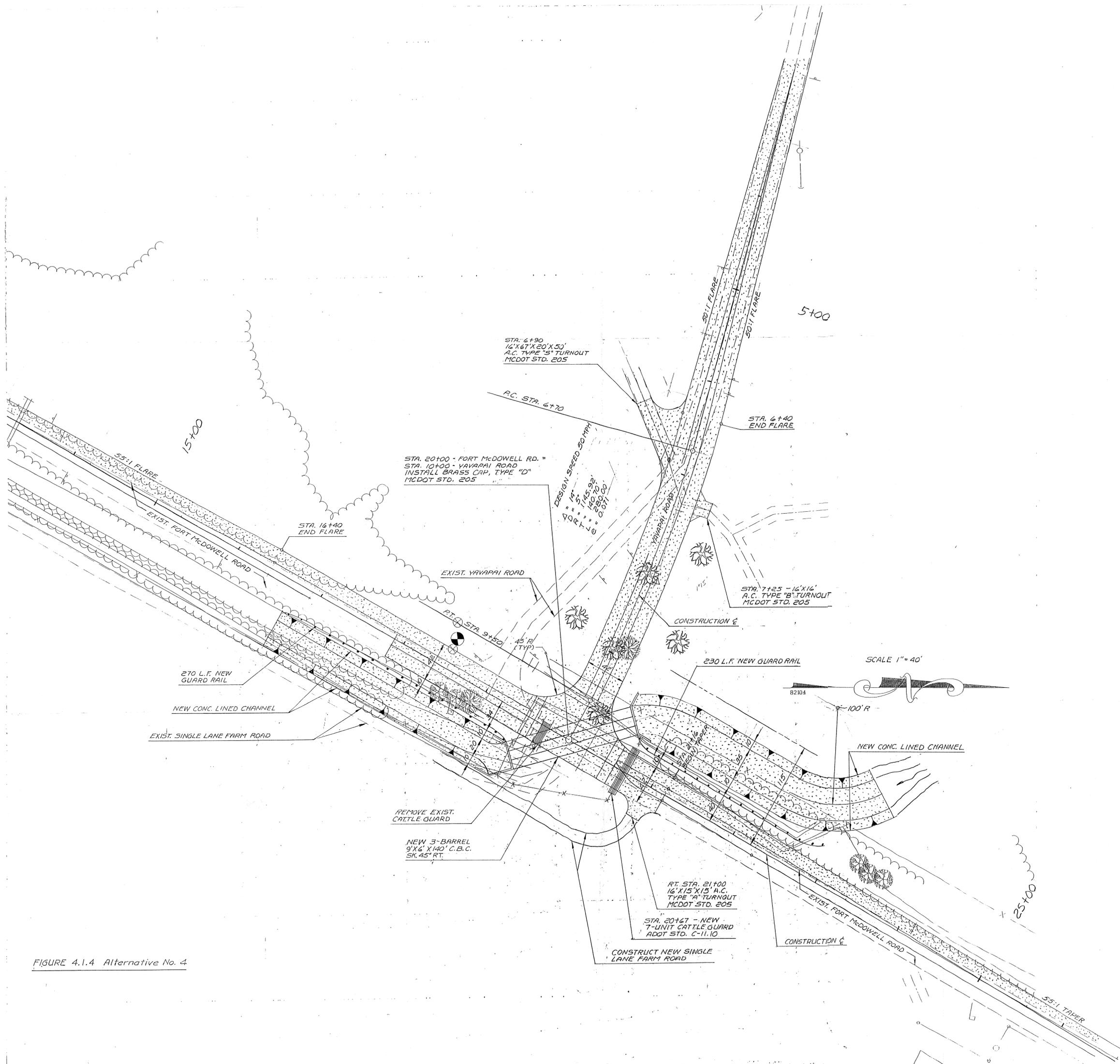


FIGURE 4.1.4 Alternative No. 4

**4.1.5 Alternative #5 "4° Curve with 250.00' Tangent to make 90° Intersection"**

This alternative would also eliminate the reverse curve and widen the intersection to accommodate left turn movements on both roadways. Figure 4.1.5 shows the intersection improvements and dimensions. Widening on Fort McDowell Road will be to the west, and will provide a roadway cross section consisting of three 14 foot lanes and 10 foot shoulders. Design speeds will be 50 mph on Yavapai Road and 55 mph on Fort McDowell Road. Table 4.1.5 details the curve data for the Yavapai Road proposed alignment.

TABLE 4.1.5 - Yavapai Road Curve Data	
Deflection Angle, $\Delta$	13°
Degree of Curve, D	4°
Radius, R	1432.40'
Tangent, T	163.20'
Length, L	325.00'
Superelevation, e	0.063
L (length of runoff)	150.0'

This alternative includes drainage improvements, and the relocation of the cattleguard. A three barrel (9' x 6' x 135') concrete box culvert at a skew of 45° right will connect the up and downstream channel. The trapezoidal concrete channel will have a 35-foot base, 55-foot top width and will be approximately 350 feet in length north of the intersection. South of the intersection, the channel will have a 20-foot base, 40-foot top width and will be approximately 250 feet in length. The placement of a 36" CMP across Fort McDowell Road, south of Yavapai Road, will drain the ponded area collecting water from west of Fort McDowell Road.

Alternative #5 will also require the relocation of the fire hydrant, because the present location will be in the new 10-foot graded shoulder. Two sections of guardrail are necessary. One, on the west side of Fort McDowell Road (300' in length), north of Yavapai Road and a second section on the east side of Fort McDowell Road (235' in length), south of Yavapai Road. Guardrail installation will conform to the standards in the Roadway Design Manual. Placement of the guardrail sections will be 10 feet from the edge of pavement and five feet in front of the channel. The existing dirt field road will be relocated north of the proposed culverts.

A new seven unit cattleguard, ADOT STN C-11.10 will be placed north of the new intersection. The two residential driveways and dirt farm road will utilize MAG's Standard Detail #205 type driveways. On Yavapai Road, an AC Type "B" turnout (16' x 16') will be placed at Station 7+24 and a AC Type "S" turnout (16' x 60' x 20' x 50') at Station 6+84. On Fort McDowell Road, a AC Type "A" turnout (16' x 15' x 15') will be placed at the location of the new single lane farm road.

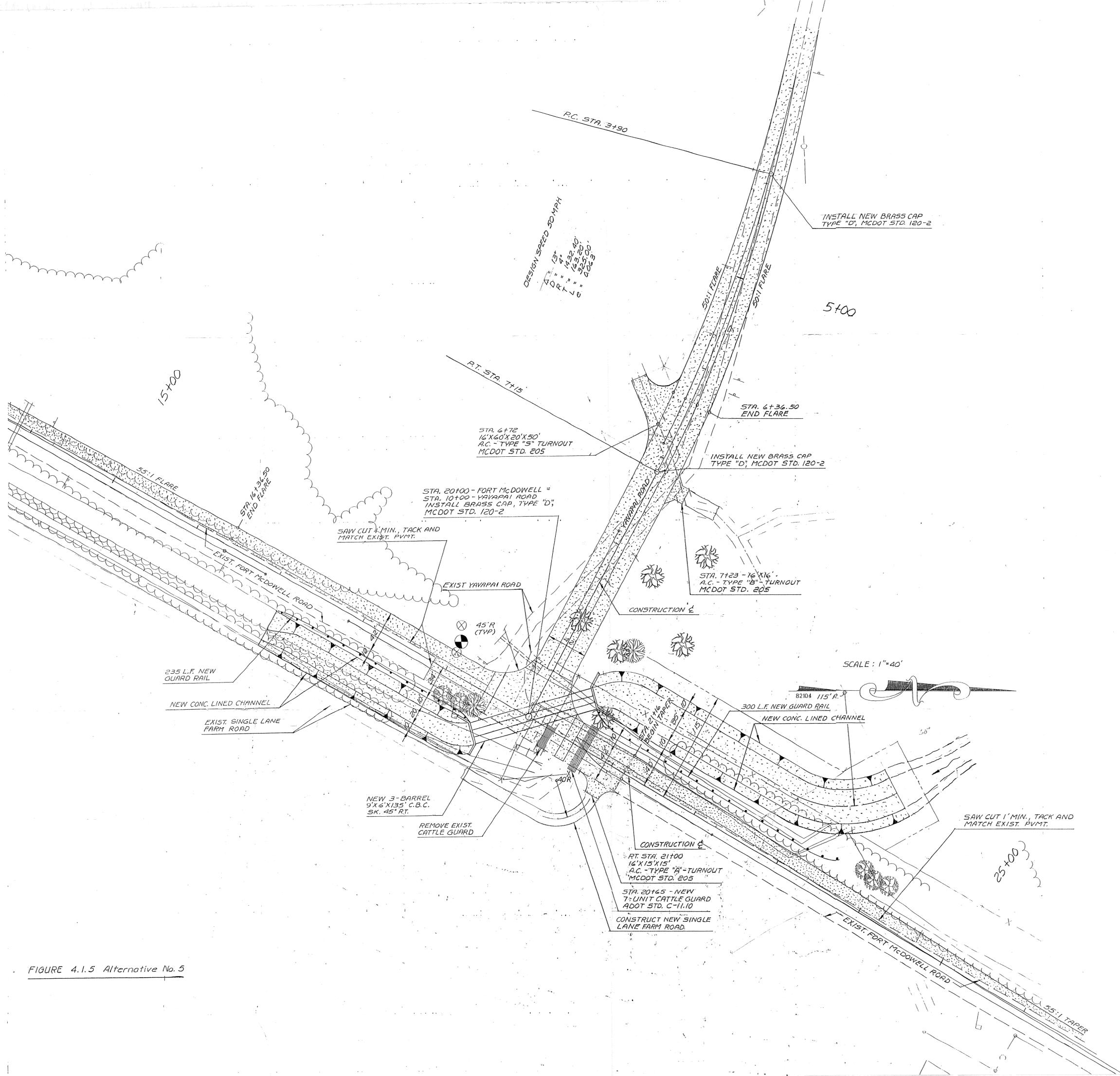


FIGURE 4.1.5 Alternative No. 5

## 4.2 IMPACT OF ALTERNATIVES

### 4.2.1 Natural Environment

*Wildlife:* The Arizona Ecological Services Field Office of the United States Fish and Wildlife Service (USFWS) provided MCDOT with the listed and candidate species that may occur within the proposed project area (Table 4.2.1). Additional information can be found in the Environmental Determination Report prepared by the Environmental Planning Section.

*Vegetation:* Several Arizona Native Plant Law protected species occur next to or within the existing right-of-way. Primarily these are naturally occurring native plants (e.g., Mesquite, Barrel Cactus, Saguaro, etc.). Attainment of Arizona Native Plant Law permits (ARS 3-908) shall occur before any native plant transplantation or destruction. Permits are necessary because of new right-of-way acquisition, and the fact that the Native Plant law applies to any undertakings sponsored by political subdivisions of the State of Arizona. MCDOT will conduct native plant consultation with the Fort McDowell Indian Community, the Phoenix Area Office of the BIA, and the Arizona Department of Agriculture before any plants get relocated, salvaged or destroyed. The Arizona Department of Agriculture requires written notice at least 60 days in advance of clearing to coordinate plant salvage operations.

Endangered	Lesser long-nosed bat, Bald Eagle, American peregrine falcon
Proposed Endangered	Southwestern willow flycatcher
Candidate Category 1 (proposed listing)	Cactus ferruginous pygmy-owl
Candidate Category 2 (insufficient information to support listing)	Yavapai Arizona pocket mouse, California leaf-nosed bat, spotted bat Greater western mastiff-bat; Loggerhead shrike, Ferruginous hawk, Lowland leopard frog, Mexican garter snake, desert tortoise, Chuckwalla, Sonora sucker, Desert sucker, Roundtail chub

*Water Quality:* The Verde River will remain unaffected by the proposed construction. There are no additional parks, wildlife refuges, forests or other natural recreational facilities within a mile of the intersection. The project area contains no riparian habitats, floodplain or wetlands.

FEMA Maps show that the project does not lie within the designated 100-year floodplain. As land surface disturbance of more than five acres will occur, the contractor will need to apply for a National Pollution Discharge Elimination System (NPDES) permit. "Construction Special Provisions" (Section 107.2.1) shall apply; these provisions detail the contractor's responsibilities for developing and displaying a Stormwater Pollution Prevention Plan (SWPPP) on-site, and requires the filing of a Notice of Intent (NOI) and Notice of Termination (NOT).

*Air Quality:* The project area is located in designated non-attainment areas for carbon monoxide, PM<sub>10</sub> and ozone and will not require micro-scale air quality analysis or conformity analysis because the improvements will not increase the roadway capacity. Presently, the additional turn lanes to reduce traffic congestion fulfills commitments contained in the State Implementation Plan (SIP) for PM<sub>10</sub>. The project is in the current conforming Transportation Improvement Program (TIP).

*Noise:* There are no sensitive noise receptors, residences, public facilities or adjoining extramural use areas (e.g., school playground, residential backyards, etc.) near the project area intersection. There are two residences in the northwest corner of the intersection with a dirt driveway located 0.045 miles west of the intersection, and two residences south of Yavapai Road. The construction should not adversely affect any of the residences.

#### **4.2.2 Construction Impacts**

Because of the area involved, a dust control permit is necessary before earthmoving activities. All projects encompassing 0.1 acres or greater require applying for a dust control permit and may also require the submission of a dust control plan according to Maricopa County Air Pollution Regulations 200 and 310. Watering or the use of other dust suppressants is an example of some required Reasonable Available Control Measures. Application of water for compacting embankments or constructing subgrade, for placement of screened gravel and crushed surfacing, and for controlling dust caused from grading and earth moving operations or public travel, shall be in amounts and places as directed by the MCDOT project engineer.

Fort McDowell Road and Yavapai Road will remain open during construction. The "MAG Uniform Standard Specifications for Public Works Construction" and Part VI of the "Manual on Uniform Traffic Control Devices for Streets and Highways" will govern the work area traffic control. Standard dust abatement measures shall be employed during construction (MAG Standard Spec. 225)

#### **4.2.3 Socioeconomic Impacts**

There should be no public controversy, as the Fort McDowell Indian Reservation will benefit from the improvement and the project is part of their Transportation System Plan. The socioeconomic impacts will be positive safety improvements in the operational characteristics of the roadway and enhanced stormwater drainage. Increased turning radii at the intersection will be beneficial to school busses traversing the area. Additionally, the intersection improvements will remedy the pavement problem existing at the cattleguard location.

The project will not adversely affect any of the local residences nor cause any drastic changes to the existing traffic patterns or services. Reconstruction of the intersection will make the intersection safer and more efficient.

The contractor will comply with the "Community Relations Specifications" in the "Construction Special Provisions" of the "MAG Uniform Standard Specifications for Public Works Construction (Section 107.15)."

Fort McDowell Road is not on the County or Regional Bicycle Plan.

#### 4.2.4 Cultural Resources

Archaeological Consulting Services (ACS), Ltd., under contract to MCDOT, performed an Archaeological Assessment of the Fort McDowell/Yavapai Roads intersection on April 21, 1994. The report provided the following information:

*Examination of archaeological site and project files at the State Historic Preservation Office (SHPO) and Arizona State Museum (ASM) occurred before the actual field work. Surveys of all of Section 6 and a portion of section 12 occurred in 1972, during the Orme Reservoir project. Three sites identified in that study lie within the vicinity of the current project area. The nearest recorded archaeological sites, AZ U:6:151 (ASM) and AZ U:6:153 (ASM) are located in Section 6 of T. 3 N., R. 6 E. and may impact the western portion of the project area along Yavapai Road. Site AZ U:6:9 (ASM) is located in Section 6 of T. 3 N., R. 7 E., and is situated less than one mile north of the project area. There are no recorded sites at the intersection of Fort McDowell Road and Yavapai Road.*

*AZ U:6:153 (ASM) is an extensive multi-locus agricultural site with loci on both sides of Yavapai Road. The 4.8-million-square-meter site includes rockpiles, checkdams, terraces, cleared areas, and light sherd and lithic scatters. The closest locus, within the right-of-way is approximately 3,200 feet west of the intersection.*

*The fieldwork encountered only one isolated occurrence of a single prehistoric plain ware on a low finger ridge north of Yavapai Road.*

*Because dense ground cover partially obscures the surface visibility in much of the project area, the possibility of buried sites remains. Previous surveys by ASM did not discover any significant remains in the area. ACS's report recommends an archaeological clearance, with the understanding that if any previously unidentified archaeological remains are discovered during construction, or if prehistoric human remains are encountered within the project area, all work should stop near the discovery, and MCDOT should be contacted.*

The Environmental Determination Report provided additional comments and recommendations. Great potential exists for unintentional discovery situations, because when the roads were first constructed and the existing right-of-way acquired, the work did not require an archaeological survey. The contractor must abide by MAG Standard Provision 107.4. The person in charge of construction on lands owned or controlled by the County (e.g., right-of-way) shall report promptly to the Director of the ASM the existence of any archaeological, paleontological or historic site or object discovered during construction, and shall take all reasonable steps to secure its preservation. Because the project area is located on federal lands (tribal lands), Federal "Section 106" preservation requirements take precedent over Arizona statutes.

Because the proposed work requires a new right-of-way easement and the completion of a cultural resource survey, appropriate mitigation recommendations must be completed in consultation with the Arizona SHPO, the Phoenix Area Office of the BIA and the ASM.

#### **4.2.5 Hazardous Materials**

The Environmental Branch of MCDOT commented in the Preliminary Roadway Assessment Report that the sides of the right-of-way should be checked for petroleum contaminated soils or petroleum products spillage. Any problems should be minor because the project area is almost completely undeveloped and rural in character.

### **4.3 EVALUATION OF ALTERNATIVES**

Table 4.3a summarizes the impacts of all five 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 NA or NE ranking means that the item is not applicable or was not evaluated.

Table 4.3a - EVALUATION MATRIX  
 FORT McDOWELL ROAD  
 INTERSECTION AT YAVAPAI ROAD

EVALUATION CRITERIA	Alternative #1 Do Nothing	Alternative #2	Alternative #3	Alternative #4	Alternative #5
NEW R.O.W.	NO	NO	YES	YES	YES
<b>ECONOMIC EFFICIENCY</b>					
OPERATION AND MAINTENANCE	-1.0	1.0	1.0	1.0	2.0
CONSTRUCTION DETOURS	0.0	-1.0	-1.0	-1.0	-1.0
UTILITY IMPACTS	0.0	0.0	-1.0	-1.0	-1.0
<b>POLITICAL FEASIBILITY</b>					
TRAFFIC	-2.0	1.0	1.0	1.0	2.0
SAFETY	-2.0	1.0	1.0	1.0	2.0
RESIDENTIAL/BUSINESS IMPACTS	0.0	0.0	0.0	0.0	0.0
<b>ENVIRONMENTAL FEASIBILITY</b>					
AGRICULTURAL LANDS IMPACTS	0.0	0.0	0.0	0.0	0.0
FLOODPLAIN IMPACTS	NA	NA	NA	NA	NA
AIR QUALITY IMPACTS	-1.0	2.0	2.0	2.0	2.0
WILDLIFE MITIGATION	0.0	-1.0	-1.0	-1.0	-1.0
WETLANDS MITIGATION	NA	NA	NA	NA	NA
CULTURAL RESOURCES	0.0	-1.0	-1.0	-1.0	-1.0
HAZARDOUS MATERIALS	0.0	0.0	0.0	0.0	0.0
<b>TOTAL</b>	<b>-6.0</b>	<b>2.0</b>	<b>1.0</b>	<b>1.0</b>	<b>4.0</b>

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

The preferred alternative is Alternative #5. The proposed alternative will improve traffic operations by adding left turn lanes and will improve the sight distance at the intersection by eliminating the reverse curve on Yavapai Road. Additionally, the potential for rear-end collisions reduces with the addition of a left turn lane. The narrow pavement will be widened to provide fourteen foot travel and left turn lanes and ten foot shoulders. It provides a safer intersection for the school buses and people using the roadways due to the increased turning radius for the school buses and by smoothing the transition over the cattle guard. Alternative #5 will allow for continued access to the farm road on the east side of Fort McDowell Road. The new entrance to the farm field will be north of the proposed box culvert.

This design also includes drainage improvements for the 100-year storm. Alternative #5 will eliminate the ponding and nuisance water problems at the intersection. The existing drainage facilities are in poor condition with plugged inlets and/or outlets. They will be removed and replaced by new structures. Roadside drainage from the south side of Yavapai Road can continue to flow towards the southwest side of the existing intersection. This area of the existing intersection can act as a ponding area and will then flow into the channel on the west side of Fort McDowell Road. Eventually, the drainage will cross Fort McDowell via two 36" pipes. Roadside drainage from the north can be routed into the improved channel. The concrete channel will eliminate the possible erosion and undercutting of the roadway and will protect the new pavement and structures. Guardrail installation will be on the west side of Fort McDowell Road, north of the intersection and on the east side of Fort McDowell Road, south of the intersection.

The road and channel improvements will require 115' feet of right-of-way west of the centerline of Fort McDowell Road. Because the existing right-of-way on the west side of Fort McDowell Road is only 55 feet, the Fort McDowell Indian Community must approve the additional right-of-way (60 feet). On Yavapai Road, 110 feet of right-of-way is recommended.

5.2 KEY ELEMENTS

**PROPOSED CONCEPT**

- 1) Widen Fort McDowell Road and Yavapai Road to accommodate left turn lanes.
- 2) Remove the reverse curve from Yavapai Road and provide a turning radius for a school bus.
- 3) Provide channel and drainage improvements to intersection.

**PURPOSE**

Improve safety and mobility of the two primary roads on the reservation.

**APPROXIMATE CONSTRUCTION COST**

\$275,000

**PROPOSED FUNDING SOURCES**

Highway User Revenue Funds (HURF)

Fort McDowell Indian Reservation - Donating the additional right-of-way.

**TIME ESTIMATES**

<b>TABLE 5.2 - Time Estimates</b>	
Design Concept Report	Draft Completed in April 1994 Final July 1994
Design	140 days
Construction	115 days

**LEAD AGENCY**

MCDOT

**COORDINATION**

Fort McDowell Indian Reservation

Bureau of Indian Affairs

## SECTION 6 - CONCEPT DESIGN

### 6.1 CONSTRUCTION ISSUES REPORT

#### 6.1.1 Earthwork

Earthwork will be necessary to widen and improve the channel and widen Fort McDowell Road on the west side of the roadway. The existing channel on the east side satisfies FCD channel recommendations. Preliminary earthwork estimates are 10,000 yd<sup>3</sup> for the new Yavapai Road and channel reconstruction.

#### 6.1.2 Constructibility

Upon approval of the proposed project and new right of way from the Fort McDowell Indian Community, this project will be designed and constructed.

#### 6.1.3 Construction Phasing

The construction may be done in two phases because of the box culverts. Generally, box culverts take 60 days to construct. With the construction of the proposed box culverts in two phases, construction is estimated to be 115 days.

#### 6.1.4 Timing and Schedule

ACS completed the archaeological survey in April. Design, right-of-way acquisition and construction will follow and may take up to 642 days (preliminary project estimate).

#### 6.1.5 Pavement Design

The minimum pavement structure will be 3" Asphaltic Concrete (AC) over 10" Aggregate Base (AB) or approved equivalent. The same pavement structure will be used on Yavapai Road and Fort McDowell Road.

#### 6.1.6 Detour Road

The existing Yavapai Road will act as an east/west detour route while the new alignment is under construction. If the construction of the box culverts is in two phases, the project will not require a temporary north/south roadway. Flagmen and construction zone signing can route the traffic through the construction zone.

#### 6.1.7 Traffic Control During Construction

During construction two way traffic must be maintained on both roadways. During construction both Yavapai Road and Fort McDowell Road will remain open and will be managed using the "Maricopa Association of Governments (MAG) Uniform Standard Specifications for Public Works Construction" and Part VI, of MUTCD. All construction must conform to standard design criteria.

### 6.1.8 Itemized Cost Estimate

Table 6.1.8 summarizes the cost estimate for the intersection and drainage improvements.

TABLE 6.1.8 - Itemized Cost Estimate

ITEM	Alternative #5
3" AC	\$33,151
10" AB	\$25,412
SUBGRADE PREPARATION	\$3,315
BITUMINOUS PRIME COAT	\$5,647
4" PNEUMATICALLY PLACED MORTAR	\$49,300
CONCRETE BOX CULVERT	\$72,900
GUARDRAIL	\$8,025
STRIPING	\$2,026
CATTLEGUARD	\$8,400
WATERING, EMBANKMENT, DUST	\$5,617
RELOCATION OF FIRE HYDRANT	\$1,000
SURVEY MARKER	\$700
MISCELLANEOUS	\$1,000
TOTAL CONSTRUCTION COST	\$216,492
NEW RIGHT OF WAY	\$0
ENGINEERING & DESIGN (12%)	\$25,979
CONSTRUCTION MANAGEMENT (15%)	\$32,474
TOTAL COST	\$274,945

### **6.1.9 Political Feasibility**

Although MCDOT has not received written acceptance of this alternative, this project is politically feasible because the Fort McDowell Indian Reservation supports this project and recommends the improvements for the safety of the school buses and automobiles. The project is currently programmed for Fiscal Year 1995 in the MCDOT Five Year Capital Improvements Program (CIP) for Fiscal Years 1993-94 through 1999-2000. The MCDOT Traffic, Operations, Planning and Engineering Divisions support Alternative #5 if the alternative is acceptable to the Indian Community.

### **6.1.10 Economic Feasibility**

Roadway and 100-year drainage improvements will depend on the acquisition of new right-of-way and project funding. Originally, this project was programmed for \$50,000 in the CIP. The project cost estimate is now \$274,945 as shown in Table 6.1.8. The drainage alternatives were developed using the 100-year design storm and the proposed improvements satisfy the FCD's drainage design requirements. It may be possible to reduce the total project cost by designing the drainage improvements for a smaller storm event.

### **6.1.11 Environmental Feasibility**

If any "significant" cultural resource sites are found during the archaeological survey, appropriate mitigation measures will occur before project construction. The Environmental Determination Report (EDR) identified any environmental concerns and appropriate measures. Appendix E contains a copy of the EDR.

**APPENDIX A:**  
**Public Involvement Plan**

## PUBLIC INVOLVEMENT PLAN

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This plan is in compliance with the CEQ regulations for implementing the procedural provisions of the National Environmental Policy Act [16 USC 4332 (2)(c)], Department of Transportation Order 5610.1C (23 CFR 771) and the Bureau of Indian Affairs 30 BIAM (NEPA Handbook). Maricopa County Department of Transportation (MCDOT) is the lead agency responsible for this proposed project.

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### I. DESCRIPTION OF PROPOSED IMPROVEMENTS

**Project Number:** D94-1-03

**Work Order Number:** 68861

**Proposed Action:** The purpose of the proposed project is to widen Fort McDowell Road and Yavapai Road to provide northbound traffic with a left turn lane to Yavapai Road. Yavapai Road will also be widened to accommodate a left turn lane.

**Project Limits:** 1000 +/- feet north, south, and west from the intersection at Fort McDowell Road and Yavapai Road.

**Level of Significance:** Environmental Determination Report

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## II. IDENTIFICATION OF CONCERNED PUBLIC

The following federal, state, and local agencies having a concern in this project due to jurisdictional review or expressed interest have been identified and will be contacted by Maricopa County Department of Transportation at the outset of the project. A coordination letter describing the project and requesting comments relative to preparation of a Design Concept Report and environmental document will be mailed early in the project development. As other concerned agencies are identified, they will be added to the list and contacted.

**FEDERAL:** US Bureau of Indian Affairs

**STATE:** Arizona State Historical Preservation Office  
Arizona Department of Environmental Quality  
AZ Dept of Agriculture

**LOCAL:** Maricopa County Flood Control District  
Maricopa County Planning and Development  
Maricopa County Sheriff's Office  
Maricopa Association of Governments  
Rural Metro  
Fort McDowell Indian Community

Preliminary information from the Fort McDowell Indian Community indicates no public meeting is required by the Tribe. The Tribe will, through its Tribal Council meetings process, address any Community concerns regarding the project and right-of-way acquisition. MCDOT staff may be requested to attend and present information regarding the project at a Tribal Council meeting.

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## III. PUBLIC NOTIFICATION

Public notification for any Tribal Council meeting addressing the project will be carried out by the Fort McDowell Indian Community.

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**APPENDIX B:**  
**Agency Contact Letters and Responses**

## AGENCY CONTACT ADDRESSES - Fort McDowell Road Intersection with Yavapai Road

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

Mr. Neil Erwin  
Chief Engineering & 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. Jim Garrison  
Arizona State Historical Preservation Office  
800 W Washington Suite 415  
Phoenix, AZ 85007

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

Mr. Robert D. Maxwell, Jr., Community Planner  
US Bureau of Indian Affairs  
Phoenix Area Office  
Branch of Roads  
1 N 1st Street  
Phoenix, AZ 85004

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

Mr. Louis Hood, Planner  
Fort McDowell Indian Tribe  
P.O. Box 17178  
Fountain Hills, AZ 85269

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

Mr. Arno Makio  
US Bureau of Indian Affairs  
Salt River Agency, Branch of Roads  
Route 1 Box 117  
Scottsdale, AZ 85256

Mr. Gill Metz  
US Fish and Wildlife Service  
3616 W Thomas Road Suite 6  
Phoenix, AZ 85019

### School Districts:

Ft. McDowell/ Yavapai Intersection  
--Fountain Hills Unified District # 98  
Dr. Walter Dunn, Superintendent  
P.O. Box 18049  
Fountain Hills AZ 85268

MARICOPA COUNTY  
DEPARTMENT OF TRANSPORTATION

2901 West Durango Street  
Phoenix, Arizona 85009



(602) 506-8600  
FAX (602) 506-4858

July 7, 1993

James McGinnis  
Native Plants Production  
Arizona Department of Agriculture  
1688 W. Adams  
Phoenix, AZ 85007

Dear Mr. McGinnis:

RE: FORT MCDOWELL ROAD/YAVAPAI ROAD INTERSECTION

The Maricopa County Department of Transportation, Transportation Planning Division is developing a design concept report involving improvements to Fort McDowell Road at the Yavapai Road intersection. The purpose of the proposed project is to widen Fort McDowell Road to provide northbound traffic with a left turn lane to Yavapai Road. Yavapai Road will also be widened to accommodate a left turn lane.

We realize that your agency may be affected by a project of this type. We look forward to working closely with you and would appreciate your comments concerning these intersection improvements.

Please contact Dana Owsiany, project manager, at 506-4584, ext. 54806, if you have any questions. Your cooperation will be greatly appreciated.

Sincerely,

A handwritten signature in cursive script that reads "Thomas R. Buick".

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

Enclosure

TRB:jeb



# Arizona Department of Agriculture

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

July 22, 1993

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

RE: Spur Cross Road  
40th Street/Cloud Road  
Fort McDowell Road/Yavapai Road Intersection

Dear Mr. Buick:

The Arizona Department of Agriculture has reviewed your letters of July 7 and July 12, 1993, regarding the above referenced projects.

A plant survey may be required to determine if the proposed projects 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 Notices 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



# Arizona Department of Agriculture

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

PLANT SERVICES DIVISION

## **NOTICE OF INTENT TO CLEAR LAND STATE, COUNTY AND CITY LANDS**

The majority of the desert plants fall into one of five groups specially protected from theft, vandalism or unnecessary destruction. They include all of the cacti, the unique plants like Ocotillo, and trees like Ironwood, Palo Verde and Mesquite. In most cases the destruction of these protected plants may be avoided if the agency gives prior notice to the Arizona Department of Agriculture.

Except in an emergency, if an agency proposes to remove or destroy protected native plants over an area of state land exceeding one-fourth acre, the agency shall notify the Department in writing as provided in Section 3-904 at least sixty days before the plants are destroyed, and any such destruction must occur within one year of the date of destruction disclosed in the notice.

If the destruction or salvage does not occur within one year, a new notice is required.

The agency may not begin destruction of protected native plants until it receives written confirmation from the Arizona Department of Agriculture and the time prescribed above has elapsed.

If the plants are accessible and are of good quality, we strongly recommend that they be salvaged and the state agency notify us in writing at least sixty days before the work begins.

Pursuant to A.R.S. § 3-910, the Department of Agriculture will collect fees as reimbursement for the plant survey we perform. However, we will accept plant counts from other competent sources.

The information in this notice will be posted in the applicable county office of the Department and mailed to those parties (salvage operators, revegetation experts) who have an interest in these plants and may approach the agency with the possibility of salvaging.

The notice may be sent to the main office of the Department of Agriculture at the address given below:

Arizona Department of Agriculture  
Native Plant Section  
1688 West Adams  
Phoenix, AZ 85007

(602) 542-3292

MAR 26 1993

EXT  
MWS  
MD  
BK

August 11, 1993

Thomas Buick  
Transportation Planning Division  
Maricopa County Department of Transportation  
2901 West Durango Street  
Phoenix, Arizona 85009

ATTN: Brian Kenny

RE: Fort McDowell; Fort McDowell Road/Yavapai Road Intersection; MCDOT and DOI-BIA/PAO

Dear Mr. Buick:

Thank you for notifying us about the planning development for the above project. I have reviewed the documentation submitted on this proposed project and have the following comments pursuant to 36 CFR Part 800:

1. It appears that the project will take place on the Fort McDowell Indian Reservation. If so, the Bureau of Indian Affairs needs to be consulted regarding cultural resources, and should be the lead agency for the Section 106 consultation process. Please advise us if the BIA and any other state or federal agencies have jurisdiction or involvement in this project.
2. The exact limits of the project area were not specified, presumably since it is in the early planning stages. Thus, I can only give a cultural resources assessment on the general area.
3. Our cultural resource files indicate that there are numerous known archaeological sites in the area, two of which may fall within the project area. There are also significant portions of land in the area that have not been properly surveyed, so there may be additional sites located within the project area.
4. Thus, we recommend that the project area be reviewed by a qualified archaeologist, to determine what areas are covered by existing surveys, and if any areas have been previously impacted by construction. If the project area is not completely covered by previous surveys, we recommend that it be surveyed by an archaeologist in order to locate and evaluate any existing cultural remains.
5. Once the survey has been completed, the survey report should be forwarded to the cultural resources personnel of all agencies that have cultural resources oversight for the project. After the agencies have had a chance to review and comment on the report, the lead agency should send a copy to this office for review and comment. If prehistoric or historic sites are identified within the property, it may be necessary to have archaeological testing performed at these sites in order to evaluate their eligibility for the National or State Registers of Historic Places. If National or State Register properties cannot be avoided by project activities, then it may be necessary to implement a data recovery (excavation) program.



# ARIZONA STATE PARKS

1300 W. WASHINGTON  
PHOENIX, ARIZONA 85007  
TELEPHONE 602-542-4174

FIFE SYMINGTON  
GOVERNOR

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M. JEAN HASSELL  
STATE LAND COMMISSIONER

KENNETH E. TRAVOUS  
EXECUTIVE DIRECTOR

HARLES R. EATHERLY  
DEPUTY DIRECTOR



**SALT RIVER PROJECT**

POST OFFICE BOX 52025  
PHOENIX, ARIZONA  
85072-2025  
(602) 236-5900

October 8, 1993

OCT 13 1993

Dana Owsiany  
Maricopa County Department of Transportation  
Engineering Department  
2901 W. Durango Street  
Phoenix, AZ 85009

Dear Ms. Owsiany:

SUBJECT: Fort McDowell Road/Yavapi Road Intersection,  
Location: 36E-16 3/4E.

There are no recorded SRPD underground facilities as of this date in the proximity of this intersection.

There are existing SRPD overhead facilities in the area.

Please forward your plan submittal with all above ground facilities shown to this office for review.

The conflicts and notes should be considered a guide to, but not an exact location of, our existing power facilities.

Should you have any questions, please contact me at 236-6136.

Sincerely yours,

A handwritten signature in cursive script that reads "Larry Neil".

Larry Neil - Municipal Project Leader  
Distribution Design-EVS107

LKN:CLTRMCHD  
Attachments



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



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

2-21-94-I-004

October 22, 1993

Brian W. Kenny  
Maricopa County Department of Transportation  
2901 West Durango Street  
Phoenix, Arizona 85009

OCT 25 1993

Dear Mr. Kenny:

This letter is in response to your September 30, 1993, request of listed or proposed threatened or endangered species and candidate species that may occur in the area of Fort McDowell Indian Community at the intersection of Fort McDowell Road and Yavapai Road, Maricopa County, Arizona, for proposed road reconstruction.

Our data indicate the following listed and candidate species may occur in the proposed project area:

Endangered

Lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*)  
Bald eagle (*Haliaeetus leucocephalus*)  
American peregrine falcon (*Falco peregrinus anatum*)

Proposed Endangered

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Candidate Category 1

Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)

Candidate Category 2

Yavapai Arizona pocket mouse (*Perognathus amplus amplus*)  
California leaf-nosed bat (*Macrotus californicus*)  
Spotted bat (*Euderma maculatum*)  
Greater western mastiff-bat (*Eumops perotis californicus*)  
Loggerhead shrike (*Lanius ludovicianus*)  
Ferruginous hawk (*Buteo regalis*)  
Lowland leopard frog (*Rana yavapaiensis*)  
Mexican garter snake (*Thamnophis eques*)  
Desert tortoise (Sonoran population) (*Gopherus agassizii*)  
Chuckwalla (*Sauromalus obesus*)  
Sonora sucker (*Catostomus insignis*)  
Desert sucker (*Catostomus clarki*)  
Roundtail chub (*Gila robusta*)

Endangered and threatened species are protected by Federal law and must be considered prior to project development. Candidate species are those which the Fish and Wildlife Service (Service) is considering adding to the threatened or endangered species list. Category 1 candidates are those for which the Service has enough information to support a proposal to list. Category 2 species are those for which the Service presently has insufficient information to support a listing proposal. Although candidate species have no legal protection, we would appreciate your consideration of them in the development and planning of this project.

If any proposed action may affect riparian areas, the following concerns should be noted. The Service is concerned about the protection of riparian habitats because they are rare and declining in the southwestern United States. Because many plant and animal species only occur or are more abundant in riparian areas, protecting and conserving riparian areas is critical to preserving genetic, species, and community diversity throughout Arizona. Maintaining hydrologic and other environmental conditions that support healthy riparian ecosystems is essential to the maintenance of healthy populations of plants, invertebrates, fish, amphibians, reptiles, birds, and mammals. Riparian areas also provide linear corridors critical to migratory species such as neotropical birds, waterfowl, and certain bats. The Service recommends that effects to riparian areas be avoided or mitigated if effects cannot be avoided.

The Fort McDowell Indian Community may protect some species not protected by Federal law. Please contact the community for a list of species they consider to be culturally or biologically significant.

From information provided on the proposed projects, the placement of fill into waterways of the United States may be required. The Army Corps of Engineers (Corps) regulates this activity under Section 404 of the Clean Water Act. We suggest that you contact the Regulatory Branch of the Corps early in the planning process so they may determine if you need to obtain a Section 404 permit.

In future communications on this project, please refer to consultation number 2-21094-I-004. If we may be of further assistance, please contact Brenda Andrews or Tom Gatz.

Sincerely,



Sam F. Spiller  
State Supervisor

cc: President, Fort McDowell Indian Community, Fort McDowell, Arizona  
Plant Program Manager, Arizona Department of Agriculture, Phoenix  
Arizona  
Director, Bureau of Indian Affairs, Phoenix, Arizona



CRS  
MWS ✓  
GRH ✓  
MRD AID  
BK

# ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Fife Symington, Governor Edward Z. Fox, Director

Nonpoint Source Unit, 3rd Floor  
1-800-234-5677 (Arizona Only)  
FAX (602) 207-4528  
(602) 207-4511

September 7, 1993

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

Re: Fort McDowell Road/Yavapai Road Intersection Improvements, Your Letter July 7, 1993

Dear Mr. Buick:

The Department of Environmental Quality, Office of Water Quality, Nonpoint Source Unit (NPS), appreciates the opportunity to comment on the Fort McDowell Road/Yavapai Road Intersection Improvements. The Arizona Department of Environmental Quality offers the following comments:

1. The Verde River (HUC 15060203-001) was evaluated as partial attaining based on upstream sources and monitoring data in the 1988 NPS Assessment Report, (see enclosed Surface Water Assessment Verde River Basin).
2. The Verde River (HUC 15060203-001) was evaluated as non-attaining for arsenic, zinc, nitrate, and pesticides in the 1990 305(b) Report, (see enclosed Surface Water Assessment Verde River Basin).
3. The Verde River (HUC 15060203-001) was evaluated as non-attaining for arsenic, zinc, nitrate, and pesticides in the 1991 205(j) Report, (see enclosed Surface Water Assessment Verde River Basin).
4. The Verde River (HUC 15060203-001) was not assessed in the 1992 305(b) Report (see enclosed Surface Water Assessment Verde River Basin).

A surface water hydrologic connection exists between the Verde River and the Fort McDowell Road/Yavapai Road Intersection Improvements via unnamed washes by the tributary rule.

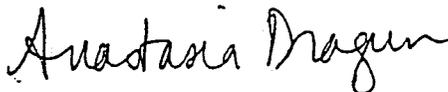
The Arizona Department of Environmental Quality recommends that:

1. Best Management Practices should be implemented during and after all construction phases to protect watershed condition and riparian areas, to maintain adequate vegetative cover, and to minimize the discharge of sediment, petroleum, nutrients, bacteria and other pollutants to the Verde River via unnamed washes;

2. Best Management Practices should be implemented for construction activities for mechanical equipment to minimize ground disturbance;
3. A monitoring program should be implemented to evaluate the effectiveness of Best Management Practices in protecting watershed condition;
4. Sanitary waste facilities provided during construction phases shall be planned and developed in such a manner to ensure protection of both surface and groundwater resources;
5. As of October 1, 1992, a Clean Water Act, Section 402, a National Pollutant Discharge Elimination System Permit is required for all ground disturbing activities which exceed 5 acres in impact. Contact Robert Wilson, (602) 207-4574 with the Department of Environmental Quality regarding assistance in applying for this federal permit;
6. A Clean Water Act, Section 404 Permit may be required for the discharge of dredged or fill material into the navigable waters. Contact the Army Corp of Engineers at (602) 640-5385 regarding a 404 Permit application. In addition a Section 401 Certification may be required and can be obtained from ADEQ. Contact Jim Matt at (602) 207-4502 for assistance in obtaining certification; and
7. A.A.C. R18-11-109, Surface Water Quality Standards Rules must be complied with as set forth in Section G (enclosed).

Enclosed for your information and reference, please find a copy of A.A.C. R18-11-107/108/109, Surface Water Standards Rules. The Arizona Department of Environmental Quality would appreciate receiving information on the progress of this project. Thank you for your cooperation, should you have any questions, please contact me at (602) 207-4511.

Sincerely,



Anastasia Dragun  
Nonpoint Source Unit

AD:ad

Enclosures

cc: Dan Salzler                      Russ Smith  
Larry Stephenson  
Mike Hill  
Kris Randall  
Peter Jagow

**APPENDIX C:**  
**Transportation Plan (1988)**  
**Fort McDowell Mohave-Apache Indian Reservation**

## **2.4 RECOMMENDED TRANSPORTATION PLAN**

The recommended plan, shown on Map B, consists of an integrated set of highway improvements, including new road construction and upgrading of existing roads, along with policies and related government action to carry out the plan. The plan addresses several different types of improvements, including: upgrading of existing local BIA roads, construction of new local BIA roads, improvements related to the proposed commercial development, and improvements to roads by ADOT and Maricopa County.

### **2.4.1 Road Improvement Projects**

In September 1988, the Community Council submitted road improvement priority lists from five council members, and asked that Presnell Associates, Inc. generate the master list from these submittals. The resulting prioritized list is based upon the council members' rankings, and includes projects which would upgrade existing roads, or provide new roads. The following section describes each proposed project in order of the consensus priority. Table 2.5 which follows Section 2.4.5 capsulizes the project-related information.

### **2.4.2 Prioritized Projects**

**1. Road A - Fort McDowell Road to Route 103 (0.8 mile):** This is an unimproved road providing access to several houses north of Mohave Road and west of Fort McDowell Road. The projected ADT is 2,200. This road would be improved to provide an all-weather road to this residential area. The project would require realignment, grading to a minimum width of 24 feet, drainage improvements and surfacing with at least a bituminous penetration course. This road should be added to the BIA system.

**2. Road 102 - East of Fort McDowell Road (2.3 miles):** This is an unimproved road providing access to a few houses along the Verde River. The road loops down to the Verde River from the paved portion of Fort McDowell Road, and ties back into the northern paved end of Fort McDowell Road. This project would require grading to a minimum width of 24 feet, drainage improvements and surfacing, with a bituminous penetration course. This area sustains severe drainage problems. Culverts and river undermining protection must be installed. The ADT is projected to be 240 by the year 2010. The southernmost section, from Fort McDowell Road to Route 102, is not on the BIA system but should be added to the system.

**3. Route 51 - State Road 87 (Beeline Highway) to the Sand and Gravel Enterprise (2 miles):** Currently, this route links the newly relocated sand and gravel operation east of the Verde River with the Beeline Highway.

The route is a gravel roadway with side ditches. Because a high percentage of the projected 200 ADT is expected to be heavy truck traffic, new pavement surfacing and cross-drainage improvements should be constructed. The BIA Phoenix Area Office has said that, under current BIA guidelines, this project would be ineligible for BIA funds because the road would serve only the sand and gravel operation. Therefore, improvements and maintenance would be the responsibility of the user.

**4. Route 52 - Fort McDowell Road near the Beeline Highway to Fort McDowell Road at Mohave Road (1.8 miles):** This is an unimproved road to the east of Fort McDowell Road. To provide better access to the land it serves, Route 52 would require grading the roadway section to a minimum width of 24 feet, drainage improvements and surfacing with a bituminous penetration course. The current ADT of 80 is expected to double by the year 2010, assuming the recreational area in the master plan is developed. The route serves two houses.

**5. Road D - (0.5 mile):** The Fort McDowell Community's Master Land Use Plan calls for a 20-acre recreational development on the west bank of the Verde River. Therefore, about one-half mile of additional service roads should be constructed, and a section of Fort McDowell Road (South) to the intersection of the Beeline Highway should be improved. The BIA Phoenix Area Office has said that this project should be constructed by a developer, or by the tribe which could generate revenue from the use of this area by restricting access to it. The intersection improvement could be an ADOT or Maricopa County project.

**6. Route 1 - Fort McDowell Road to the Northern Boundary (6 miles):** This unimproved road links the end of paved Fort McDowell Road with the Rio Verde development on the northern boundary of the reservation. The route provides the only access to the northern half of the reservation. This project would involve realigning the present road, grading the roadway section to a width of 24 feet, drainage improvements and surfacing with a bituminous penetration course. The road currently serves seven houses and provides access to agricultural areas along its length. The projected ADT is 100 near the northern boundary and 200 near the Old Fort McDowell site.

**7. Road B - Road A to Route 103 (1.4 miles):** This new road would serve the area currently used for sand and gravel operations at Grande Wash. The master plan designates that the area be developed for light industrial purposes. This would require the upgrading of the existing gravel road. For this road to support a projected ADT of 2,700, it would be paved to a minimum width of 24 feet, and drainage improvements would be made as required. This project could be the responsibility of a developer.

**8. Route 103 - Fort McDowell Road to the Western Boundary (1.2 miles)\*:** This route connects Fort McDowell Road to many residences on the reservation, and to the Fountain Hills development west of the reservation. The project consists of realigning unsafe curves, grades and intersections along the route. The road is currently a school bus and mail route and is projected to have an ADT of up to 3,500 by the year 2010. The improvement to the intersection with Fort McDowell Road could be a Maricopa County project.

**9. Road C - Fort McDowell Road (South) to the Beeline Highway (0.6 mile)\*:** The master plan designates areas along the Beeline Highway to be developed for commercial purposes. The site which is expected to be developed first is 80 acres located southwest of the intersection of Fort McDowell Road and the Beeline Highway. There is, presently, an unimproved road serving an exotic animal zoo. This project would involve construction of 0.6 mile of paved access roads leading to the commercial area, and could be the responsibility of a developer.

**10. Route 56 (Yavapai Road) - Fort McDowell Road to the Western Boundary (1 mile):** This project involves safety improvements to the intersection of this route with Fort McDowell Road. The intersection requires realignment to improve the present curve alignment. The road is a school bus route, and the projected ADT for the year 2010 is 900, almost double its present ADT. This could be a Maricopa County project.

**11. Route 102 - West of Fort McDowell Road (2.8 miles):** This route provides the access for residential development in the area of the Old Fort McDowell site. Portions of the route are used by school buses and mail carriers. The existing paved roadway, which appears to be a chip and seal surface on a soil base, needs improvement. This project would provide for overlaying about 2 miles of the existing roadway with 1-inch asphaltic concrete, and reconstructing 0.8 mile of severely damaged sections. The projected ADT ranges from 200 to 400 along different sections of the route, double the current figures.

**12. Route 53 - Route 1 eastward (0.8 mile):** This road is unimproved. To provide better access to the lands along the Verde River, this road would require grading to a minimum width of 24 feet, drainage improvements, and surfacing with a bituminous penetration course.

*\*Denotes length of project, not length of entire roadway.*

## **SPECIFIED ROAD**

**State Route 87 (Beeline Highway)** - Shea Boulevard to 1.5 miles beyond Eastern Reservation Boundary (5.5 miles): This ADOT improvement will widen the existing two-lane Beeline Highway to a divided four-lane highway sufficient to carry the traffic through the year 1995. The design features include shifting the intersection of Shea Boulevard and the Beeline Highway approximately 300 feet south of its present location, and signaling the intersection at Fort McDowell Road.

### **2.4.3 Government Agency Responsibilities**

As different government bodies are responsible for different roads, the various improvements previously described fall within the jurisdiction of different agencies. Some of the improvements are on state or county roads, and therefore, the initiative and funding are the responsibility of those governments' transportation agencies. Improvements to be made by Maricopa County or the ADOT are considered in a transportation planning process by which they are placed by priority in a five-year Transportation Improvements Program (TIP). BIA system projects are considered via a five-year priority list submitted to the BIA by the tribe. This section identifies the government entity that could potentially make each highway improvement described above.

**Arizona Department of Transportation.** The only project programmed by the state is the widening of State Route 87 (Beeline Highway).

**Maricopa County.** The county Department of Highways is charged with building and maintaining roads to serve the general public within the unincorporated portions of the county. The only new projects that require Maricopa County funds are improving Fort McDowell Road south of the Beeline Highway (see Project 5) and widening sections of Fort McDowell Road at its intersections with Route 103 and Route 56 as part of the proposed road improvements (see Projects 8 and 10).

**Private Developers.** Some of the roads which would be necessary to serve proposed new development could be built with private or tribal funds as part of those developments. These include the commercial development along the Beeline Highway and the light industrial areas (Projects 5, 7 and 9).

**Fort McDowell Indian Community.** Because Route 51 (Project 3) would serve only the Sand and Gravel Enterprise, it would be ineligible for BIA funds. Improvements and maintenance would be the responsibility of this tribal enterprise. Regarding the proposed Road D (Project 5), either the tribe or a developer should be responsible for construction of a road to serve the proposed recreational development.

**Bureau of Indian Affairs.** The other road improvement projects described earlier are candidates for BIA funding.

#### **2.4.4 Transportation Guidelines**

In addition to the projects described above, the following guidelines have been recommended to help the Fort McDowell tribe achieve its transportation goals and objectives.

- Enforce tribal traffic regulations, particularly for speeding and obeying traffic control devices; and, investigate means of assuring prosecution of non-Indians through the Arizona judicial system;
- Encourage development of land as shown in the land use plan by working to achieve the proposed roads necessary for that development;
- Pave all BIA roads where cost effective to reduce dust problems and improve the quality of the road system, except where development and/or through traffic is not desired and would be likely to occur, such as the Fountain Hills cut-through to the Beeline Highway;
- Improve all substandard paved roads where cost effective;
- Increase, significantly, the roads maintenance budget;
- Encourage the development of internal street systems; and
- Ensure that a portion of the funds resulting from recreational permit fees are allocated to the roads serving that area. This applies specifically to roads to which the tribe has redirected use and, therefore, are responsible for maintaining.

#### **2.4.5 Project Cost Estimate**

Table 2.5 shows an estimated cost to complete each of the projects on the tribal priority list. These estimates are preliminary and are for planning and programming purposes only. They do not include the cost of engineering, or right-of-way acquisition, if any. They are in 1988 dollars and are based on the following assumptions:

- Paving cost includes incidental drainage and traffic control.
- Major drainage improvements were estimated separately and added to the paving cost.
- Archaeology costs are not included.

- New pavement section cost is based on a 24-foot roadway pavement width and 8-foot shoulders. The roadway pavement section used for this estimate consists of 2-inch asphaltic concrete over 8 inches of aggregate base course. The shoulder section design used for estimating purposes is a 4-inch aggregate base course. Drainage ditches are graded from the 8-foot shoulders to the assumed 80-foot right-of-way line.
- Bituminous penetration course cost is based on a 24-foot roadway width with applications of two chip and seal coats and a prime coat over 4 inches of aggregate base course and 6 inches of select material. Drainage ditches are graded from the edge of the roadway to the assumed 40-foot right-of-way line.

The BIA receives funding from the Federal Highway Administration and distributes these funds to the various reservations based on an allocation formula. The Fort McDowell Community's allocation will be approximately \$70,000 per year for the current five-year funding period authorized by Congress.

**TABLE 2.5  
TRANSPORTATION PLAN  
RECOMMENDED PROJECTS**

Priority Number	Project	Improvements	Length Miles	Cost Estimate	Responsible Agencies
1.	Road A	R, G/D, BPC, CD	0.8	\$115,000	BIA
2.	Route 102	G/D, BPC, CD, RUP	2.3	397,000	BIA
3.	Route 51	G/D, NP, CD	2.0	529,000	T
4.	Route 52	G/D, BPC, CD	1.8	269,000	BIA
5.	Road D	G/D, BPC, CD	0.5	75,000	D/MC/T
6.	Route 1	R, G/D, BPC, CD	6.0	863,000	BIA
7.	Road B	G/D, NP, CD	1.4	330,000	D
8.	Route 103	R (safety), G/D, NP, CD	1.2	283,000	MC
9.	Road C	G/D, NP, CD	0.6	141,000	D
10.	Route 56	R (safety)	0	92,000	MC
11.	Route 102	NP, PO	2.8	233,000	BIA
12.	Route 53	G/D, BPC, CD	<u>.8</u>	<u>115,000</u>	BIA
	TOTAL		21.2	\$3,442,000	

*Abbreviations Key:*

Improvements

R = Realign  
 G/D = Grade and Drain  
 D = Drainage  
 BPC = Bituminous Penetration Course  
 NP = New Pavement  
 CD = Cross Drainage  
 RUP = River Undermining Protection  
 PO = Pavement Overlay

Responsible Agencies

BIA = Bureau of Indian Affairs  
 MC = Maricopa County  
 D = Developer  
 T = Tribe

**APPENDIX D:**  
**Hydrology and Drainage Report**  
**Prepared by the Flood Control District**

## FORT MCDOWELL ROAD HYDROLOGY

The hydrology for this study was performed to determine the 100-year peak discharge contributing to a point just north of Yavapai Road at Fort McDowell Road on the Fort McDowell Indian Reservation. The Fort McDowell Indian Reservation lies directly east of the Town of Fountain Hills in the northeastern part of Maricopa County. At present, the Flood Control District has two contracts for ongoing Flood Delineation Studies for the Town of Fountain Hills. The Fountain Hills North Flood Delineation Study contributes flows to the concentration point under investigation.

### Background

The HEC-1 model and the peak flows generated in the Fountain Hills North Flood Delineation Study were used as a basis for the Fort McDowell Road hydrology. The methodology used in that study was applied to study the watershed. The terrain slopes from the McDowell Mountains easterly to the Verde River. The major washes flowing into the study area from the Town of Fountain Hills include Escalante Wash and Caliente Wash which contribute 1068 cfs and 560 cfs respectively. Smaller washes north of the Town of Fountain Hills, which flow easterly through culverts under McDowell Mountain Road, also contribute to the study concentration point. For modelling purposes, these smaller washes were combined before routing them downstream. This report is the documentation of the watershed located on the Fort McDowell Indian Reservation downstream of the town limits of Fountain Hills. The HEC-1 model for this study was originated from the Fountain Hills North Flood Delineation Study. Consequently, any information relating to the watershed information or the modelling of this watershed would be contained within the documentation report the Fountain Hills North Flood Delineation Study.

### Mapping Information

The base mapping used for the watershed delineation consists of two 7.5 minute USGS quadrangle maps which are Granite Reef Arizona and Fort McDowell. Cross sections for routing reaches were also determined from the 7.5 minute quadrangle maps.

### Hydrologic Analysis

#### Watershed Sub-basin Parameters:

The watershed sub-basin parameters were estimated in conformance with the Hydrology Manual. The procedures used for estimating the parameters within this study are contained in the following sections.

#### Drainage Area Boundaries:

The watershed was broken into eight sub-basins. The delineation of sub-basins was based on flow combination at confluences of routing reaches, and also at Fort McDowell Road north of Yavapai Road. This resulted in four concentration points downstream of the town limits. Flows determined from the Fountain Hills North Flood Delineation Study at concentration points along the town limits were routed through the study watershed and combined with flows generated for this study.

#### Watershed Areas:

Sub-basin areas were planimetered using the sub-basin delineations on Exhibit 1. The total area of this particular study area is 1.46 square miles. The total area contributing the study concentration point is 4.84 square miles, which includes area from the Fountain Hills North Flood Delineation Study. Sub-basin sizes ranged from .027 square miles to .739 square miles.

### Hydrograph Methodology:

The Clark Unit Hydrograph method was used to determine peak flows for the study area. The basis for using the Clark methodology was mainly the small sizes of the contributing sub-basins, and to be consistent with the Fountain Hills North Flood Delineation Study.

### Time of Concentration:

The time of concentration for each sub-basin was estimated using the equation given in the Hydrology Manual. The variable L was set equal to the flow path length for each sub-basin. The resistance coefficient was estimated for each sub-basin using Table 5.1 in the Hydrology Manual. Each sub-basin was assigned Type B land description which applies to watersheds which are of moderately low roughness, and are desert rangeland or undeveloped urban area.

### Soils Parameters - Green & Ampt Parameters:

Information on soils within this watershed is contained in the Soil Survey of Aguila-Carefree Area. The Flood Control District's spreadsheet was used to determine the soil parameters (see appendix). The percentage of each soil unit was determined for each sub-basin and input into the spreadsheet, which calculates the average XKSAT, PSIF, DTHETA, and IA for each sub-basin.

### Land Use Characteristics:

The land use characteristics for the watershed were assumed to be natural hillslopes, with a surface retention loss value of 0.15 inches for all sub-basins. It is not likely that development will occur on these watersheds in the near future.

### Normal-Depth Routing:

The normal-depth routing option in HEC-1 was used to route the flood hydrographs. Cross-sections were interpolated from the USGS quadrangle maps and the digitized HEC-2 cross sections evaluated in the Fountain Hills North Flood Delineation Study. Routing reach lengths were measured using a map wheel, slopes were also evaluated in the same manner.

### Transmission Losses:

Transmission losses were not incorporated into the HEC-1 model due to the small size of the watershed. In addition, transmission losses for this area do not substantially reduce the 100-year peak flow.

### Precipitation:

This study is based on the 100-year recurrence interval. The 6-hour storm was applied to the Fountain Hills area, as it produced a higher peak runoff than the 24-hour event. The point precipitation value was determined from the set of isopluvial maps in the Hydrology Manual.

### Results/Conclusions

The results indicate that a 100-year peak flow of 1970 cfs occurs at Fort McDowell Road just north of Yavapai Road.

SUMMARY OF SUB-BASIN PARAMETERS											
SUB-BASIN	DRAINAGE AREA (SQ.MI.)	ELEVATION		FLOW PATH (MILES)	SLOPE (FT/MI)	HILLSLOPE AREA (%)	COMPOSITE Kb EQUATION		Kb	Tc (HRS)	R (HRS)
		TOP (FEET)	BOTTOM (FEET)				m	b			
AA	0.739	1622	1425	2.00	98.50	100	-.0250	0.15	0.083	0.829	0.622
BB	0.127	1540	1455	1.05	80.95	100	-.0250	0.15	0.102	0.637	0.757
CC	0.171	1530	1455	0.76	98.68	100	-.0250	0.15	0.099	0.450	0.335
DD	0.088	1470	1425	0.62	72.58	100	-.0250	0.15	0.106	0.492	0.459
EE	0.027	1440	1420	0.38	52.63	100	-.0250	0.15	0.119	1.000	1.337
FF	0.081	1535	1460	0.67	111.94	100	-.0250	0.15	0.107	0.392	0.398
GG	0.085	1530	1460	0.76	92.11	100	-.0250	0.15	0.107	0.450	0.499
HH	0.138	1480	1420	0.90	66.67	100	-.0250	0.15	0.101	0.600	0.597

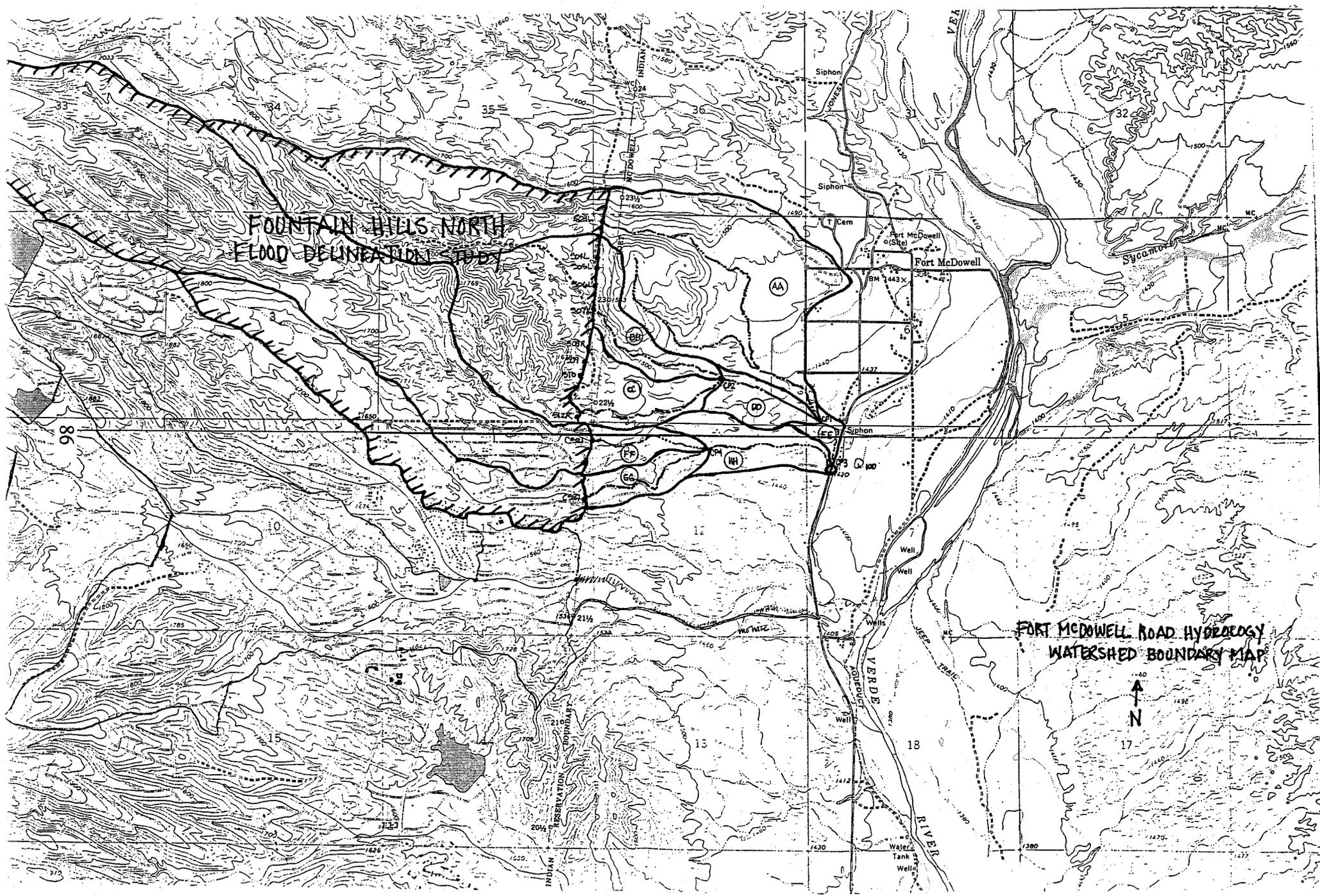
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SUMMARY OF LOSS COEFFICIENTS				
SUB-BASIN	IA (Inches)	DTHETA	PSIF	XKSAT
AA	0.15	0.38	5.40	0.232
BB	0.15	0.36	5.10	0.268
CC	0.15	0.37	5.20	0.256
DD	0.15	0.35	4.25	0.427
EE	0.15	0.35	4.00	0.476
FF	0.15	0.33	7.30	0.110
GG	0.15	0.25	9.70	0.049
HH	0.15	0.39	6.20	0.171

SOILS INFORMATION								
SOIL UNIT	SUB-BASIN (% AREA)							
	AA	BB	CC	DD	EE	FF	GG	HH
13	-	-	-	-	-	-	0.023	0.007
26	-	-	-	-	-	-	0.024	
40	-	-	0.031	0.001	-	-	0.038	0.011
41	0.081	0.081	0.090	0.005	-	-	-	
48	-	-	-	-	-	-	-	0.057
75	0.040	-	-	-	-	-	-	
80	0.104	-	-	0.003	-	0.074	-	
93	0.054	0.046	0.050	0.001	-	-	-	
98	0.125	-	-	-	-	-	-	0.006
112	-	-	-	0.078	0.027	0.007	-	0.057
<b>TOTAL SUB-BASIN AREAS</b>	0.739	0.127	0.171	0.088	0.027	0.081	0.085	0.138

FOUNTAIN HILLS NORTH  
FLOOD DELINEATION STUDY

FORT McDOWELL ROAD HYDROLOGY  
WATERSHED BOUNDARY MAP





87

T. 4 N.  
T. 3 N.

950 000  
FEET



*FLOOD CONTROL DISTRICT of Maricopa County*

Interoffice Memorandum

SUBJECT: Ft. McDowell/Yavapai Rd. Intersection Re-alignment: Drainage Design

TO: CEW

VIA: ~~BHK~~ BKH 3/4/94

FROM: KA

DATE: 3/4/94

Attached is a summary of the Alternative channel and culvert types evaluated for this location. The location of the culvert is also shown on the attached map. The channels are designed with adequate free board and roadway overtopping limited to 6 inches for the hundred year discharge.

The culvert should cross under the new intersection, connecting the existing channels. Crossing the Yavapai road (new alignment) to link the channel to the existing corrugated metal pipes is not recommended since this would be a two culvert system which would not be feasible hydraulically as well as cost wise. The existing culverts are not adequate to convey the 100 year flood without overtopping the roadway excessively. They may however be left in place to convey water from the south side of the proposed Yavapai embankment near the intersection (which would become a ponded area). The recommended new culvert location also circumvents the dirt road that runs along the east side of Fort McDowell Road.

The costs indicated for the alternatives do not include the cost of additional right of way acquisition. This becomes a factor for those with wide Channel Top Widths. Hence, alternatives such as the earth ditches with over 100 feet of top width are not recommended.

# FORT MCDOWELL/YAVAPAI ROAD INTERSECTION RE-ALIGNMENT

## Drainage Design Alternatives

Alternative No.	Channel Type	BW Ups (ft)	BW Dns (ft)	Z	TW (ft)	Depth (ft)	Culvert Type	Cost \$X1000
1	Earth	30	30	4	110.	10	3-6x9 BC	140.0 !
2	Earth	40	30	4	120	10	5-6.5 CP	134.8 !
3	Earth	40	30	4	120	10	5-6.5 MP	102.9 !
4	Grouted Rock	30	10	3	86	11	3-6x9 BC	193.7
5	Grouted Rock	30	10	3	86	11	4-7 CP	183.6
6	Grouted Rock	30	10	3	86	11	5-6.5 MP	156.6
7	Concrete	30	10	3	86	11	3-6x9 BC	154.2
8	Concrete	30	10	3	86	11	4-7 CP	144.8
9	Concrete	30	10	3	86	11	5-6.5 MP	117.8
10	Soil Cement	30	10	4	110	10	3-6x9 BC	164.1
11	Soil Cement	30	10	4	110	10	5-6.5 CP	164.5
12	SoilCement	30	10	4	110	10	5-6.5 MP	132.6
13	Concrete	30	15	2	66	10	3-6x9 BC	147.2
14	Concrete	30	15	2	66	10	4-7 CP	137.0*
15	Concrete	30	15	2	66	10	5-6.5 MP	110.1*
16	Struc. Concret	40	24	0	40	10	3-6x9 BC	239.1
17	Struc. Concret	40	24	0	40	10	4-7' CP	228.9
18	Struc. Concret	40	24	0	40	10	5-6.5 MP	201.9
19	Concrete	35	20	1	46	10	3-6x9 BC	135.1
20	Concrete	35	20	1	46	10	4-7 CP	125.0**
21	Concrete	35	20	1	46	10	5-6.5 MP	98.0**

Terms BC=Concrete Box Culvert...CP=Concrete Pipe Culvert...MP=Corrugate Metal Pipe  
 Ups=Upstream of Culvert ..Dns= Downstream of Culvert. TW= Top Width of Channel  
 BW=Bottom Width of Channel .. Z=Side Slope for Trapezoidal Section.. Z=0 for Vertical Side  
 for Rectangular Section

\* implies recommended \*\* implies strongly recommended

! implies not recommended due to additional costs for Right of way and Maintainance



**APPENDIX E:**  
**Environmental Determination Report**

**MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION  
TRANSPORTATION PLANNING DIVISION  
2901 WEST DURANGO STREET  
PHOENIX, ARIZONA 85009**

**ENVIRONMENTAL DETERMINATION REPORT**

**for**

**FORT MCDOWELL ROAD AT YAVAPAI ROAD**

**MCDOT WORK ORDER # 68861**

**Prepared by:  
Environmental Planning Section**

# Maricopa County Department of Transportation Environmental Determination

Work Order # 68861

Project Name: Fort McDowell Road

Date: December 13, 1993

Termini: Yavapai Road

## I. PROJECT DESCRIPTION

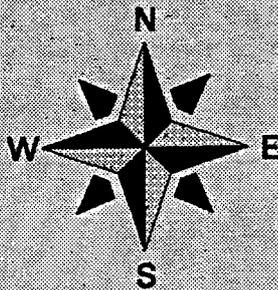
- A. Location - The project is located on the Fort McDowell Indian Community at the "T" intersection of Fort McDowell Road and Yavapai Road. The project area is situated within Section 12, T3N, R6E, and Section 7, T3N, R7E, G&SRB&M (see attached map). The project area is located within Maricopa County Board of Supervisors District # 5. Fort McDowell Road and Yavapai Road are not considered roads of regional significance.
- B. Description - Three project alternatives exist: (1) the "Do Nothing" plan, and two "build" plans. Under the construction alternatives, the project will: (2) reconstruct and straighten Yavapai Road, and realign to 90° the "T" intersection at Yavapai Road and Fort McDowell Road; or, (3) redevelop the intersection to widen it, and retain the existing reverse curve on Yavapai Road.

There is 80 ft of existing right-of-way on Yavapai Road and 100 ft of existing right-of-way on Fort McDowell Road. It is anticipated that the project area on Yavapai Road will extend approximately 1600 ft by 110 ft wide, encompassing 4 acres; the proposed project area along Fort McDowell Road also will be 1600 ft by 110 ft, encompassing an additional 4 acres. The entire project area will incorporate approximately 8 acres more or less.

Alternative 2 will include: removal of the 25 mph reverse curve on Yavapai Road immediately west of Fort McDowell Road; reconstruction outside the right-of-way to straighten the road; the widening of Yavapai Road to accommodate a left turn lane at the intersection; and the widening of Fort McDowell Road to provide northbound traffic with a left turn lane to Yavapai Road.

Alternative 3 would only provide for the widening of Yavapai Road at the intersection and associated tapers. This work appears to be constructible within the existing right-of-way. Fort McDowell Road would be widened northbound to provide a left turn lane.

With respect to alternatives 2 and 3, additional work will be necessary to deal with existing drainage ditches, pipes and culverts, guard rails, and a cattle guard at the intersection.



Mountain Hill  
Ft. McDowell Indian Community

FT MCDOWELL

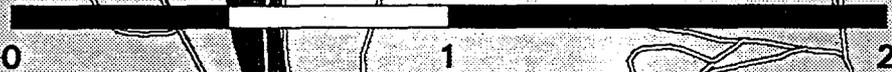
YAVAPAI ROAD

FT MCDOWELL ROAD

SCALE OF MILES



SCALE OF KILOMETERS



# Fort McDowell Road Yavapai Road Intersection Improvement Work Order # 68861

Construction Alternative 2 

Construction Alternative 3 

The project is classified as a low-volume road project. The Maricopa County Department of Transportation (MCDOT), the Fort McDowell Indian Community and the Phoenix Area Office of the Bureau of Indian Affairs (BIA) should participate in the project through an Intergovernmental Agreement (IGA). MCDOT will serve as the lead agency for project design and construction, and will fund the entire construction value of \$80,000 to complete the project. Construction implementation is proposed in FY 1995.

- C. Right-of-Way (ROW) - Additional right-of-way along both roads may be required for road straightening and intersection reconstruction. The existing roads currently are paved 28 ft wide within an 80 ft. right-of-way. The Tribal community has indicated their willingness to provide additional permanent right-of-way as necessary. No temporary construction easements will be necessary

## II. IMPACT EVALUATION

### A. Natural/Outdoor Environment

1. Important wildlife habitats including special status threatened or endangered (T&E) species and candidate species have potential to be found within the immediate project area at the intersection of Fort McDowell Road and Yavapai Road. T&E species are protected by Federal law and must be considered prior to project development. Candidate species are those being considered for inclusion on the threatened or endangered species list. While candidate species have no legal protection, they should be considered during project planning and development. The Arizona Ecological Services Field Office of the U.S. Fish and Wildlife Service (USFWS) reported that the following listed and candidate species may occur within the proposed project area:

Endangered: Lesser long-nosed bat; Bald Eagle; American peregrine falcon

Proposed Endangered: Southwestern willow flycatcher

Candidate Category 1 (proposed listing): Cactus ferruginous pygmy-owl

Candidate Category 2 (insufficient information to support listing):

Yavapai Arizona pocket mouse; California leaf-nosed bat; Spotted bat; Greater western mastiff-bat; Loggerhead shrike; Ferruginous hawk; Lowland leopard frog; Mexican garter snake; Desert tortoise; Chuckwalla; Sonora sucker; Desert sucker; Roundtail chub

The Lesser long-nosed bat occurs throughout south-central and southeastern Arizona. It is normally associated with desert scrub habitat dotted with agave, century plant and large cacti (nectar feeding); and,

roosts in caves, abandoned mines and tunnels. The Yavapai Road - Fort McDowell Road project area has no agave, century plants or saguaro cacti within the construction area, though these plant species do occur in the general area. No caves, mines or tunnels are known within several miles of the project area. Thus, impacts to the Lesser long-nosed bat or its habitat are not expected.

Bald Eagles are known to nest along the Verde River on the Fort McDowell Indian Community. The project area is located approximately 2000 ft from the western bank of the Verde River. The project will not remove riparian habitat. The area between Fort McDowell Road and the Verde River is cultivated and no suitable nesting trees or snags are present. Impacts to nesting sites or foraging areas will not occur under the proposed alternatives.

The American peregrine falcon is distributed throughout all but Southwestern Arizona. The falcon prefers cliff and steep terrain habitat, preferably near water or woodlands. While water and woodlands are associated with the Verde River, there are no cliffs or steep terrain within or near the project area. Additionally, the peregrine falcon prefers elevations above 3500 ft, and the project area elevation is approximately 1420 ft. No impacts to potential nest sites would occur under any of the project alternatives.

The Southwestern willow flycatcher is associated with riparian habitats. As the project is not within a riparian area, no impacts to this species is expected.

2. The USFWS recommended that effects to riparian habitats be avoided or mitigated if effects cannot be avoided. However, the project area cannot be considered riparian in character. They also recommended that the Fort McDowell Indian Community be contacted for a list of species they consider to be culturally or biologically significant, and that the Army Corps of Engineers be contacted to determine if a Section 404 permit will be necessary. Since the project area is not located within a 100-year floodplain, no Section 404 permit is required.
3. Several Arizona Native Plant Law protected species occur adjacent to or within the existing right-of-way. These primarily, are naturally occurring native plants (e.g., Mesquite, Barrel Cactus, Saguaro, etc). Arizona Native Plant Law permits (ARS 3-908) should be obtained in advance of native plant transplantation or destruction. This is because MCDOT will obtain new right-of-way, and because the Native Plant Law applies to undertakings sponsored by political subdivisions of the

State of Arizona. Field consultation with Mr. Louis Hood of the Fort McDowell Indian Community determined that plants and trees will need to be moved to complete the project. Native plant consultation with the Fort McDowell Indian Community, the Phoenix Area Office of the Bureau of Indian Affairs (BIA), the Arizona Department of Agriculture and MCDOT should be conducted prior to plants being moved, salvaged or destroyed. The Arizona Department of Agriculture requires written notice at least sixty (60) days in advance of clearing to coordinate plant salvage operations (per ARS 3-905 et seq., as amended).

4. There are no parks, wildlife refuges, forests or other dedicated natural recreational facilities located within one mile of the project area. The Verde River flows approximately one-half mile east of the project area; the river and it's associated gallery forest of Cottonwood and riparian vegetation will be unaffected by the proposed work.
5. Published maps and data sources were reviewed for sensitive environmental concerns. The project area contains no riparian habitats, floodplain or wetlands.

B. Air/Noise

1. The project area is located in designated non-attainment areas for carbon monoxide, PM<sub>10</sub>, and ozone.
2. Since proposed intersection improvements will not add increased capacity on Fort McDowell Road, the project is not subject to micro-scale air quality analysis requirements.
3. The construction of turn lanes to reduce traffic congestion fulfills commitments in the State Implementation Plan (SIP) for PM<sub>10</sub>. As the project is part of the current Transportation Improvement Program (TIP) which has been found in conformance with the SIP, it is in conformity.
4. 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 that may be required. Water for compacting embankments or constructing subgrade, for placement of screened gravel and crushed surfacing, and for controlling dust caused from grading and earth moving operations or public travel, shall be applied in the amounts and places as directed by the MCDOT project engineer.

5. There are no sensitive public noise receptors, public facilities or adjoining extramural use areas (e.g., school playgrounds, etc) near the project area intersection. At least two (2) residences are located near the project area. Community members living at these residences, and others living near the project area should be contacted regarding construction access prior to project implementation.

C. Water Quality

1. Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) indicate that this project is not located within the 100 year floodplain. As land surface disturbance of more than 5 acres will occur, the contractor will need to apply for a National Pollution Discharge Elimination System (NPDES) permit. "Construction Special Provisions" (Section 107.2.1) shall apply; these provisions detail the contractor's responsibilities for developing and displaying a Stormwater Pollution Prevention Plan (SWPPP) on-site, and require that a Notice of Intent (NOI) and Notice of Termination (NOT) be filed.
2. The Arizona Department of Environmental Quality (ADEQ) noted that a surface water hydrologic connection exists between the Verde River and the Fort McDowell Road/Yavapai Road intersection improvements project area via unnamed washes by the tributary rule. Roadway drainage is conveyed south via a graded bar ditch along Fort McDowell Road to a wash approximately three quarters of a mile south of Yavapai Road. The wash then drains into the Verde River a quarter mile further downstream. ADEQ recommended that Best Management Practices (BMP) be implemented during and after all construction phases to protect the watershed condition and riparian areas, to maintain adequate vegetative cover, and to minimize the discharge of sediment, petroleum products, nutrients, bacteria and other pollutants to the Verde River via unnamed washes. BMPs include: 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. Both Fort McDowell Road and Yavapai Road shall remain open during construction and be managed utilizing the "MAG Uniform Standard Specifications for Public Works Construction" and Part VI of the "Manual on Uniform Traffic Control Devices for Streets and Highways". Standard dust abatement measures shall be employed

during construction (MAG Standard Spec. 225).

2. The reconstruction of the intersection will move traffic more efficiently and safely. Installation of road drainage improvements will enhance stormwater runoff. Few changes in traffic patterns are anticipated.
3. Because the project area is almost completely undeveloped and rural in character, the potential to encounter hazardous materials during construction is minimal.

E. Socioeconomic

1. The adjacent primary land use is agricultural both north and east of the intersection; land use southwest of the intersection is primarily undeveloped, with a few widely scattered residences. Other adjacent land uses include buried and above-ground utility and irrigation canal easements. Undeveloped areas contain relict desert vegetation and non-native herbaceous volunteers.
2. Due to the limited scope of the project, no public controversy is expected. The contractor should be required to comply with the "Community Relations Specifications" in the "Construction Special Provisions" of the "MAG Uniform Standard Specifications for Public Works Construction" (Section 107.15).
3. Socioeconomic impacts will be limited to positive safety improvements in the operational characteristics of the roadway and enhanced stormwater drainage. Increased turning radii at the intersection will be beneficial to school busses traversing the area. Short-term employment opportunities for Tribal members may occur through coordination with the Fort McDowell Tribal Employment Rights Office (TEROS).
4. The new road will match standard typical section standards employed by MCDOT. The functional classification of Yavapai Road is "rural local"; Fort McDowell Road is a "rural minor collector" road.
5. Fort McDowell Road is not a part of the County or Regional Bicycle Plan.

F. Cultural Resources

1. According to records and site file checks performed by personnel at the Arizona State Museum (ASM), several historic properties are recorded within, or adjacent to, the project area. Sections 7 and 12 were both

surveyed in their entirety in 1972, during the Orme Dam Alternatives study. The nearest recorded archaeological sites, AZ U:6:151(ASM) and AZ U:6:153(ASM) are located in Section 12, T3N, R6E, and *may* impact the western portion of the project area along Yavapai Road. Site AZ U:6:9(ASM) is located in Section 6, T3N, R7E, and is situated less than 1 mile north of the project area. No sites are recorded at the intersection of Fort McDowell Road and Yavapai Road.

- 2. Because an archaeological survey was not required when the roads were first constructed and the existing right-of-way acquired, great 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 (e.g. in this case, the right-of-way) shall report promptly to the Director of the Arizona State Museum (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. Because the project is located on tribal land, both federal "Section 106" preservation requirements (36 CFR 800) and NAGPRA (Native American Graves Protection and Repatriation Act) have precedent over the Arizona statutes.
- 3. Because new right-of-way easement will be required to complete the project, cultural resources survey and mitigation recommendations must be developed in consultation with the Fort McDowell Indian Community, the Phoenix Area Office of the Bureau of Indian Affairs (BIA), the Arizona State Historic Preservation Office (SHPO) and the Arizona State Museum (ASM). A Memorandum of Agreement (MOA) for the treatment of historic properties should be developed and executed prior to initiation of the project.

G. Public Involvement

- 1. "Construction Special Provisions" should address the contractor's responsibility to address public relations for this project (107.15).
- 2. "Construction Special Provisions" should address the contractor's responsibility to coordinate with the appropriate agencies for blue stake services and the relocation of utilities along the shoulder (105.6).
- 3. Additional future public involvement is considered to be minimal for this project. However, construction special provisions (107.15) allow for additional public input when appropriate.

### III. PROPOSED MITIGATION MEASURES/ ADDITIONAL ACTIONS

- A. Consultation - MCDOT should participate in consultations with the Fort McDowell Indian Community regarding protected species, native plants and historic properties (cultural resources). Consultation must be undertaken in advance of construction, and should be documented in appropriate Memoranda of Agreement (MOA) or Intergovernmental Agreement (IGA) documents. Other agencies and interested parties may wish to be involved in the consultation process.
- B. Permits - MCDOT must obtain appropriate permits for mitigation, and complete mitigation activities prior to or during construction. As noted above, regulated activities include, but are not limited to, dust control, pollution discharge elimination (NPDES), stormwater runoff prevention, native plants and cultural resources. Additional permits may be recommended during the consultation process.
- C. Regulations - As noted previously, MCDOT will follow MAG Uniform Standard Specifications for Public Works Construction and Construction Special Provisions.
- D. Discoveries - Discovery situations involving significant cultural resources, human remains or hazardous materials may occur during construction. A plan addressing likely contingency situations and the chain of command for responsibility and remedial action should be developed by MCDOT in consultation with the Indian Community and interested parties.
- E. The contractor shall contact the Fort McDowell Tribal Rights Employment Office with regard to employment opportunities associated with the project.

### IV. RECOMMENDATIONS

It is recommended that the build alternatives be implemented as reconstruction of the intersection will provide for increased safety and improved traffic flow.

### V. CONCLUDING REMARKS

The proposed reconstruction of the Fort McDowell Road - Yavapai Road intersection is a straight-forward project which is unlikely to have serious adverse environmental impacts. However, special care is needed during the consultation process to assign mitigation responsibilities, fully identify the nature and timing of field activities, and plan for contingency situations. The faithful observance of rules, uniform standard

specifications and all negotiated points of interest will mitigate fully the impacts which are expected to occur.

### VI. SIGNATURE BLOCK

This report satisfies the Maricopa County Department of Transportation environmental process policy for the preparation of Environmental Determination Reports. Any questions regarding the contents of this report should be addressed to the MCDOT Transportation Planning Division.

Prepared By *[Signature]* Date 12-27-93

Approved By *[Signature]* Date 12-27-93

Map Attached

Coordination / Supporting Documents Attached

file name: f:\wp52\edrftmcd  
word count: 2834



# Arizona Department of Agriculture

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

July 22, 1993

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

RE: Spur Cross Road  
40th Street/Cloud Road  
Fort McDowell Road/Yavapai Road Intersection

Dear Mr. Buick:

The Arizona Department of Agriculture has reviewed your letters of July 7 and July 12, 1993, regarding the above referenced projects.

A plant survey may be required to determine if the proposed projects 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 Notices 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



# Arizona Department of Agriculture

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

## **NOTICE OF INTENT TO CLEAR LAND STATE, COUNTY AND CITY LANDS**

The majority of the desert plants fall into one of five groups specially protected from theft, vandalism or unnecessary destruction. They include all of the cacti, the unique plants like Ocotillo, and trees like Ironwood, Palo Verde and Mesquite. In most cases the destruction of these protected plants may be avoided if the agency gives prior notice to the Arizona Department of Agriculture.

Except in an emergency, if an agency proposes to remove or destroy protected native plants over an area of state land exceeding one-fourth acre, the agency shall notify the Department in writing as provided in Section 3-904 at least sixty days before the plants are destroyed, and any such destruction must occur within one year of the date of destruction disclosed in the notice.

If the destruction or salvage does not occur within one year, a new notice is required.

The agency may not begin destruction of protected native plants until it receives written confirmation from the Arizona Department of Agriculture and the time prescribed above has elapsed.

If the plants are accessible and are of good quality, we strongly recommend that they be salvaged and the state agency notify us in writing at least sixty days before the work begins.

Pursuant to A.R.S. § 3-910, the Department of Agriculture will collect fees as reimbursement for the plant survey we perform. However, we will accept plant counts from other competent sources.

The information in this notice will be posted in the applicable county office of the Department and mailed to those parties (salvage operators, revegetation experts) who have an interest in these plants and may approach the agency with the possibility of salvaging.

The notice may be sent to the main office of the Department of Agriculture at the address given below:

Arizona Department of Agriculture  
Native Plant Section  
1688 West Adams  
Phoenix, AZ 85007

(602) 542-3292

MAY 26 1988

MWS  
MD #2  
BK

August 11, 1993

Thomas Buick  
Transportation Planning Division  
Maricopa County Department of Transportation  
2901 West Durango Street  
Phoenix, Arizona 85009

ATTN: Brian Kenny

RE: Fort McDowell; Fort McDowell Road/Yavapai Road Intersection; MCDOT and  
DOI-BIA/PAO

Dear Mr. Buick:

Thank you for notifying us about the planning development for the above project. I have reviewed the documentation submitted on this proposed project and have the following comments pursuant to 36 CFR Part 800:

1. It appears that the project will take place on the Fort McDowell Indian Reservation. If so, the Bureau of Indian Affairs needs to be consulted regarding cultural resources, and should be the lead agency for the Section 106 consultation process. Please advise us if the BIA and any other state or federal agencies have jurisdiction or involvement in this project.
2. The exact limits of the project area were not specified, presumably since it is in the early planning stages. Thus, I can only give a cultural resources assessment on the general area.
3. Our cultural resource files indicate that there are numerous known archaeological sites in the area, two of which may fall within the project area. There are also significant portions of land in the area that have not been properly surveyed, so there may be additional sites located within the project area.
4. Thus, we recommend that the project area be reviewed by a qualified archaeologist, to determine what areas are covered by existing surveys, and if any areas have been previously impacted by construction. If the project area is not completely covered by previous surveys, we recommend that it be surveyed by an archaeologist in order to locate and evaluate any existing cultural remains.
5. Once the survey has been completed, the survey report should be forwarded to the cultural resources personnel of all agencies that have cultural resources oversight for the project. After the agencies have had a chance to review and comment on the report, the lead agency should send a copy to this office for review and comment. If prehistoric or historic sites are identified within the property, it may be necessary to have archaeological testing performed at these sites in order to evaluate their eligibility for the National or State Registers of Historic Places. If National or State Register properties cannot be avoided by project activities, then it may be necessary to implement a data recovery (excavation) program.



# ARIZONA STATE PARKS

1300 W. WASHINGTON  
PHOENIX, ARIZONA 85007  
TELEPHONE 602-542-4174

FIFE SYMINGTON  
GOVERNOR

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DEPUTY DIRECTOR

Thomas Buick  
August 11, 1993  
Fort McDowell Road  
Page Two

We appreciate your cooperation with this office in complying with the historic preservation requirements for undertakings on federally managed lands. If you have any questions or concerns, please contact me or James W. Garrison, State Historic Preservation Officer, at 542-4009.

Sincerely,



Andrew T. Black  
Archaeologist

cc: Randall Morrison, DOI-BIA/PAO



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



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

2-21-94-I-004

October 22, 1993

Brian W. Kenny  
Maricopa County Department of Transportation  
2901 West Durango Street  
Phoenix, Arizona 85009

OCT 25 1993

Dear Mr. Kenny:

This letter is in response to your September 30, 1993, request of listed or proposed threatened or endangered species and candidate species that may occur in the area of Fort McDowell Indian Community at the intersection of Fort McDowell Road and Yavapai Road, Maricopa County, Arizona, for proposed road reconstruction.

Our data indicate the following listed and candidate species may occur in the proposed project area:

Endangered

Lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*)  
Bald eagle (*Haliaeetus leucocephalus*)  
American peregrine falcon (*Falco peregrinus anatum*)

Proposed Endangered

Southwestern willow flycatcher (*Empidonax traillii extimus*)

Candidate Category 1

Cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*)

Candidate Category 2

Yavapai Arizona pocket mouse (*Perognathus amplus amplus*)  
California leaf-nosed bat (*Macrotus californicus*)  
Spotted bat (*Euderma maculatum*)  
Greater western mastiff-bat (*Eumops perotis californicus*)  
Loggerhead shrike (*Lanius ludovicianus*)  
Ferruginous hawk (*Buteo regalis*)  
Lowland leopard frog (*Rana yavapaiensis*)  
Mexican garter snake (*Thamnophis eques*)  
Desert tortoise (Sonoran population) (*Gopherus agassizii*)  
Chuckwalla (*Sauromalus obesus*)  
Sonora sucker (*Catostomus insignis*)  
Desert sucker (*Catostomus clarki*)  
Roundtail chub (*Gila robusta*)

Endangered and threatened species are protected by Federal law and must be considered prior to project development. Candidate species are those which the Fish and Wildlife Service (Service) is considering adding to the threatened or endangered species list. Category 1 candidates are those for which the Service has enough information to support a proposal to list. Category 2 species are those for which the Service presently has insufficient information to support a listing proposal. Although candidate species have no legal protection, we would appreciate your consideration of them in the development and planning of this project.

If any proposed action may affect riparian areas, the following concerns should be noted. The Service is concerned about the protection of riparian habitats because they are rare and declining in the southwestern United States. Because many plant and animal species only occur or are more abundant in riparian areas, protecting and conserving riparian areas is critical to preserving genetic, species, and community diversity throughout Arizona. Maintaining hydrologic and other environmental conditions that support healthy riparian ecosystems is essential to the maintenance of healthy populations of plants, invertebrates, fish, amphibians, reptiles, birds, and mammals. Riparian areas also provide linear corridors critical to migratory species such as neotropical birds, waterfowl, and certain bats. The Service recommends that effects to riparian areas be avoided or mitigated if effects cannot be avoided.

The Fort McDowell Indian Community may protect some species not protected by Federal law. Please contact the community for a list of species they consider to be culturally or biologically significant.

From information provided on the proposed projects, the placement of fill into waterways of the United States may be required. The Army Corps of Engineers (Corps) regulates this activity under Section 404 of the Clean Water Act. We suggest that you contact the Regulatory Branch of the Corps early in the planning process so they may determine if you need to obtain a Section 404 permit.

In future communications on this project, please refer to consultation number 2-21094-I-004. If we may be of further assistance, please contact Brenda Andrews or Tom Gatz.

Sincerely,



Sam F. Spiller  
State Supervisor

cc: President, Fort McDowell Indian Community, Fort McDowell, Arizona  
Plant Program Manager, Arizona Department of Agriculture, Phoenix  
Arizona  
Director, Bureau of Indian Affairs, Phoenix, Arizona



TKB  
MWS ✓  
GRA ✓  
MKD AD  
BK

# ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Fife Symington, Governor Edward Z. Fox, Director

Nonpoint Source Unit, 3rd Floor  
1-800-234-5677 (Arizona Only)  
FAX (602) 207-4528  
(602) 207-4511

September 7, 1993

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

Re: Fort McDowell Road/Yavapai Road Intersection Improvements, Your Letter July 7, 1993

Dear Mr. Buick:

The Department of Environmental Quality, Office of Water Quality, Nonpoint Source Unit (NPS), appreciates the opportunity to comment on the Fort McDowell Road/Yavapai Road Intersection Improvements. The Arizona Department of Environmental Quality offers the following comments:

1. The Verde River (HUC 15060203-001) was evaluated as partial attaining based on upstream sources and monitoring data in the 1988 NPS Assessment Report, (see enclosed Surface Water Assessment Verde River Basin).
2. The Verde River (HUC 15060203-001) was evaluated as non-attaining for arsenic, zinc, nitrate, and pesticides in the 1990 305(b) Report, (see enclosed Surface Water Assessment Verde River Basin).
3. The Verde River (HUC 15060203-001) was evaluated as non-attaining for arsenic, zinc, nitrate, and pesticides in the 1991 205(j) Report, (see enclosed Surface Water Assessment Verde River Basin).
4. The Verde River (HUC 15060203-001) was not assessed in the 1992 305(b) Report (see enclosed Surface Water Assessment Verde River Basin).

A surface water hydrologic connection exists between the Verde River and the Fort McDowell Road/Yavapai Road Intersection Improvements via unnamed washes by the tributary rule.

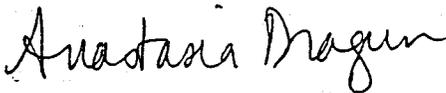
The Arizona Department of Environmental Quality recommends that:

1. Best Management Practices should be implemented during and after all construction phases to protect watershed condition and riparian areas, to maintain adequate vegetative cover, and to minimize the discharge of sediment, petroleum, nutrients, bacteria and other pollutants to the Verde River via unnamed washes;

2. Best Management Practices should be implemented for construction activities for mechanical equipment to minimize ground disturbance;
3. A monitoring program should be implemented to evaluate the effectiveness of Best Management Practices in protecting watershed condition;
4. Sanitary waste facilities provided during construction phases shall be planned and developed in such a manner to ensure protection of both surface and groundwater resources;
5. As of October 1, 1992, a Clean Water Act, Section 402, a National Pollutant Discharge Elimination System Permit is required for all ground disturbing activities which exceed 5 acres in impact. Contact **Robert Wilson**, (602) 207-4574 with the Department of Environmental Quality regarding assistance in applying for this federal permit;
6. A Clean Water Act, Section 404 Permit may be required for the discharge of dredged or fill material into the navigable waters. Contact the **Army Corp of Engineers** at (602) 640-5385 regarding a 404 Permit application. In addition a Section 401 Certification may be required and can be obtained from ADEQ. Contact **Jim Matt** at (602) 207-4502 for assistance in obtaining certification; and
7. A.A.C. R18-11-109, Surface Water Quality Standards Rules must be complied with as set forth in Section G (enclosed).

Enclosed for your information and reference, please find a copy of A.A.C. R18-11-107/108/109, Surface Water Standards Rules. The Arizona Department of Environmental Quality would appreciate receiving information on the progress of this project. Thank you for your cooperation, should you have any questions, please contact me at (602) 207-4511.

Sincerely,



Anastasia Dragan  
Nonpoint Source Unit

AD:ad

Enclosures

cc: Dan Salzler                      Russ Smith  
Larry Stephenson  
Mike Hill  
Kris Randall  
Peter Jagow