

# RED MOUNTAIN FREEWAY

Dobson Road to Lindsay Road

## DESIGN CONCEPT REPORT

OCTOBER 1989

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



**PARSONS  
BRINCKERHOFF**

**RED MOUNTAIN FREEWAY  
DOBSON ROAD TO LINDSAY ROAD  
DESIGN CONCEPT REPORT**

October 1989



Prepared for

**ARIZONA DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION**

Prepared by

**PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.**

## TABLE OF CONTENTS

	<u>PAGE</u>
I. INTRODUCTION	1
II. HISTORY	3
III. PUBLIC AND AGENCY INVOLVEMENT	10
IV. DESIGN CRITERIA	13
V. TYPICAL SECTIONS	15
VI. SEGMENT DESCRIPTIONS	16
VII. TRAFFIC SERVICE	21
VIII. RIGHT-OF-WAY	27
IX. UTILITIES	28
X. DRAINAGE	30
XI. CONSTRUCTION COST	36
XII. DESIGN CONCEPT PLANS	39 - 54

## LIST OF FIGURES

<u>FIGURE</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
I-1	ADOPTED FREEWAY LOCATION	2
II-1	ADOPTED PARKWAY ALIGNMENT - CITY OF MESA	4
II-2	MAG FREEWAY/EXPRESSWAY PLAN	6
II-3	RED MOUNTAIN FREEWAY - DOBSON ROAD TO BASELINE ROAD	8
II-4	RED MOUNTAIN FREEWAY - HISTORY	9
VI-1	RED MOUNTAIN FREEWAY - SEGMENT LOCATIONS	17
VII-1	OUTER LOOP AND DOBSON ROAD INTERCHANGES	22
VII-2	TRAFFIC FORECAST - YEAR 2005	25
VII-3	TRAFFIC FORECAST - YEAR 2015	26
X-1	DRAINAGE AREA BOUNDARY MAP	31

**LIST OF DESIGN CONCEPT PLANS**

<b><u>SHEET NO.</u></b>	<b><u>TITLE</u></b>	<b><u>PAGE</u></b>
1	COVER/TITLE SHEET	39
2-4	TYPICAL SECTIONS	40 - 42
5-7	PROJECT CONTROL DIAGRAM	43 - 45
8	PLAN AND PROFILE SHEET INDEX	46
9-16	PLAN AND PROFILE SHEETS	47 - 54

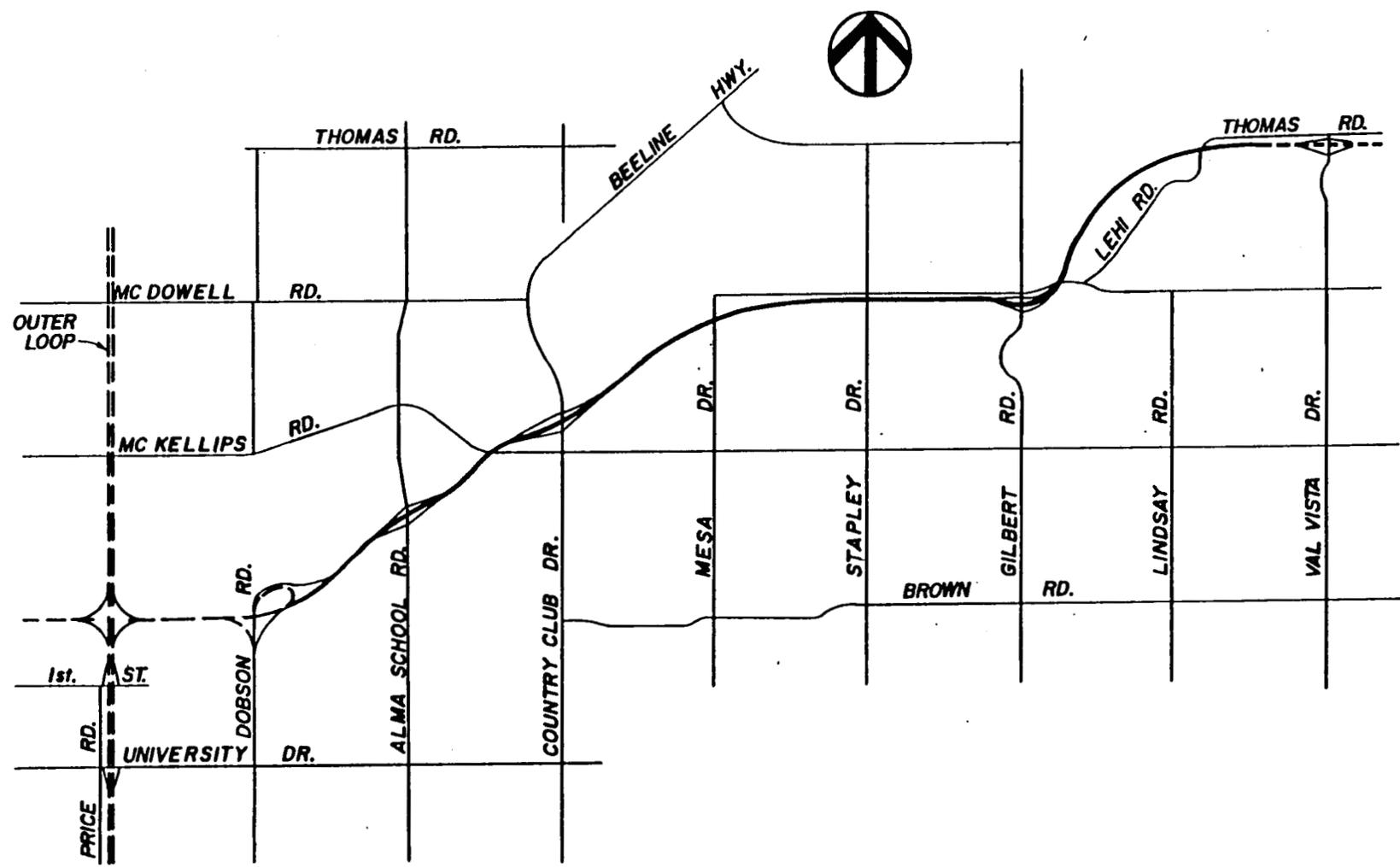
## I. INTRODUCTION

The Maricopa Association of Governments adopted, in March 1985, a county-wide freeway/expressway plan. This plan includes the Red Mountain Freeway which is located along the north side of the City of Mesa. It extends east from the Pima Freeway (Price Road) to the vicinity of Bush Highway and then southeasterly to the Superstition Freeway near Ellsworth Road. This freeway corridor was subsequently added to the Arizona State Highway System.

The purpose of this Design Concept Report is to document the development of design concept plans for the section of Red Mountain Freeway from Dobson Road to Lindsay Road, as shown on Figure I-1, an approximate distance of 8 miles. The Design Concept Report, for the section of Red Mountain Freeway from Lindsay Road to Baseline Road, was published in October, 1988.

These two reports combined, address the entire route of the Red Mountain Freeway from Dobson Road to Baseline Road, an approximate distance of 20.3 miles. The one mile section between the Pima Freeway and Dobson Road has been included in the Pima/Red Mountain Traffic Interchange. The final design contract for this interchange was initiated in July 1989.

Other previously published documents were: The Proposed Red Mountain Parkway - Working Paper No. 1 - Selection of Recommended Alternative, August, 1983, which recommended the location and design concepts for the original proposed Parkway and The Red Mountain Freeway - Preliminary Engineering Final Report, August 27, 1985, which addressed the section from Price Road to Bush Highway and The Red Mountain Freeway - Bush Highway to Baseline Road - Location Study - Working Paper, January, 1987 which addressed the location of the section from Bush Highway to Baseline Road.



ADOPTED FREEWAY LOCATION  
*Arizona Department of Transportation*

**RED MOUNTAIN FREEWAY**

PARSONS  
 BRINCKERHOFF



FIGURE No. 1-1

DATE: SEPT 1989	PAGE 2
--------------------	-----------

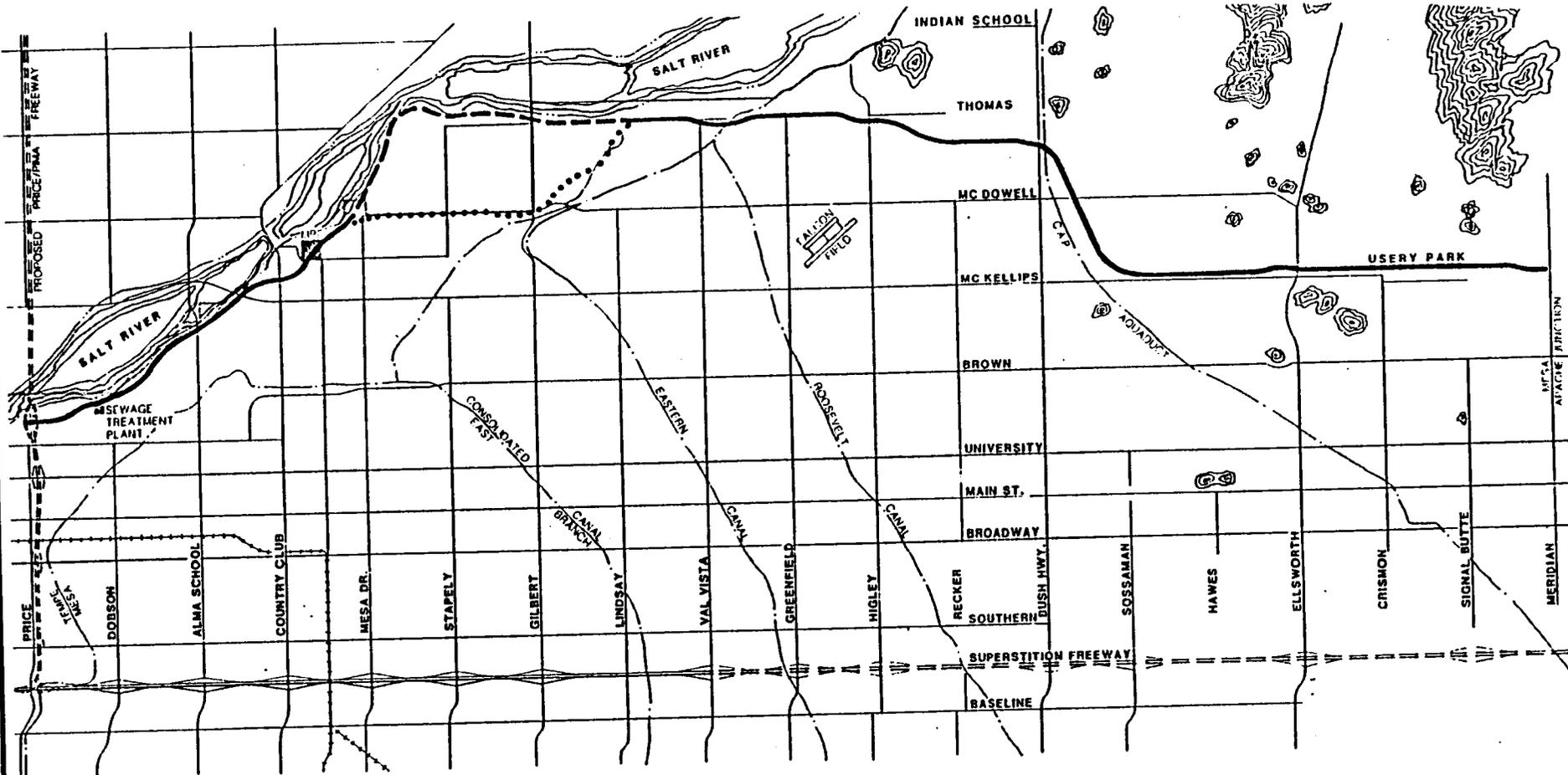
## II. HISTORY

In 1982, the City of Mesa contracted with Parsons Brinckerhoff, consulting engineers, to prepare the **MESA TRANSPORTATION STUDY**. This study included a forecast of street and highway needs in the Mesa Planning Area for the year 2005. The population at that time is expected to reach 360,000.

The study resulted in recommendations for an east-west parkway along the north side of the City of Mesa as shown in Figure II-1. The parkway would extend northeasterly from the planned Pima Freeway near Price Road to the vicinity of Thomas Road and Lindsay Road, then eastward along Thomas Road to Bush Highway and then eastward along McKellips Road to the county line.

The purpose of the parkway would be to:

1. Provide needed east-west highway capacity. Traffic analysis indicated that McKellips Road, Brown Road, University Drive and other east-west arterials, even with improvement, will not be adequate to meet traffic demands associated with forecast population and development growth in the area.
2. Provide relief to increasing congestion on the Superstition Freeway.
3. Provide a direct connection from the north part of Mesa to the planned East Papago and Pima Freeways.
4. Provide improved access to the rapidly developing industrial area in the vicinity of Falcon Airfield.
5. Provide a more direct route for recreational traffic to the rivers and lakes located east of Mesa.



**PARKWAY CONCEPT**

- RIGHT OF WAY 250 FEET
- SIX LANE, DIVIDED ROADWAY
- NO ACCESS EXCEPT AT INTERSECTIONS
- INTERSECTIONS WILL HAVE TRAFFIC SIGNALS

**LEGEND**

- ALIGNMENT ADOPTED BY CITY COUNCIL
- - - PREFERRED ALIGNMENT
- ..... ALTERNATIVE ALIGNMENT



ADOPTED PARKWAY LOCATION  
*Arizona Department of Transportation*

**RED MOUNTAIN FREEWAY**

PARSONS  
 BRINCKERHOFF



FIGURE No. II-1

DATE:  
 SEPT 1989

PAGE  
 4

The City of Mesa accepted the parkway concept and named it the Red Mountain Parkway.

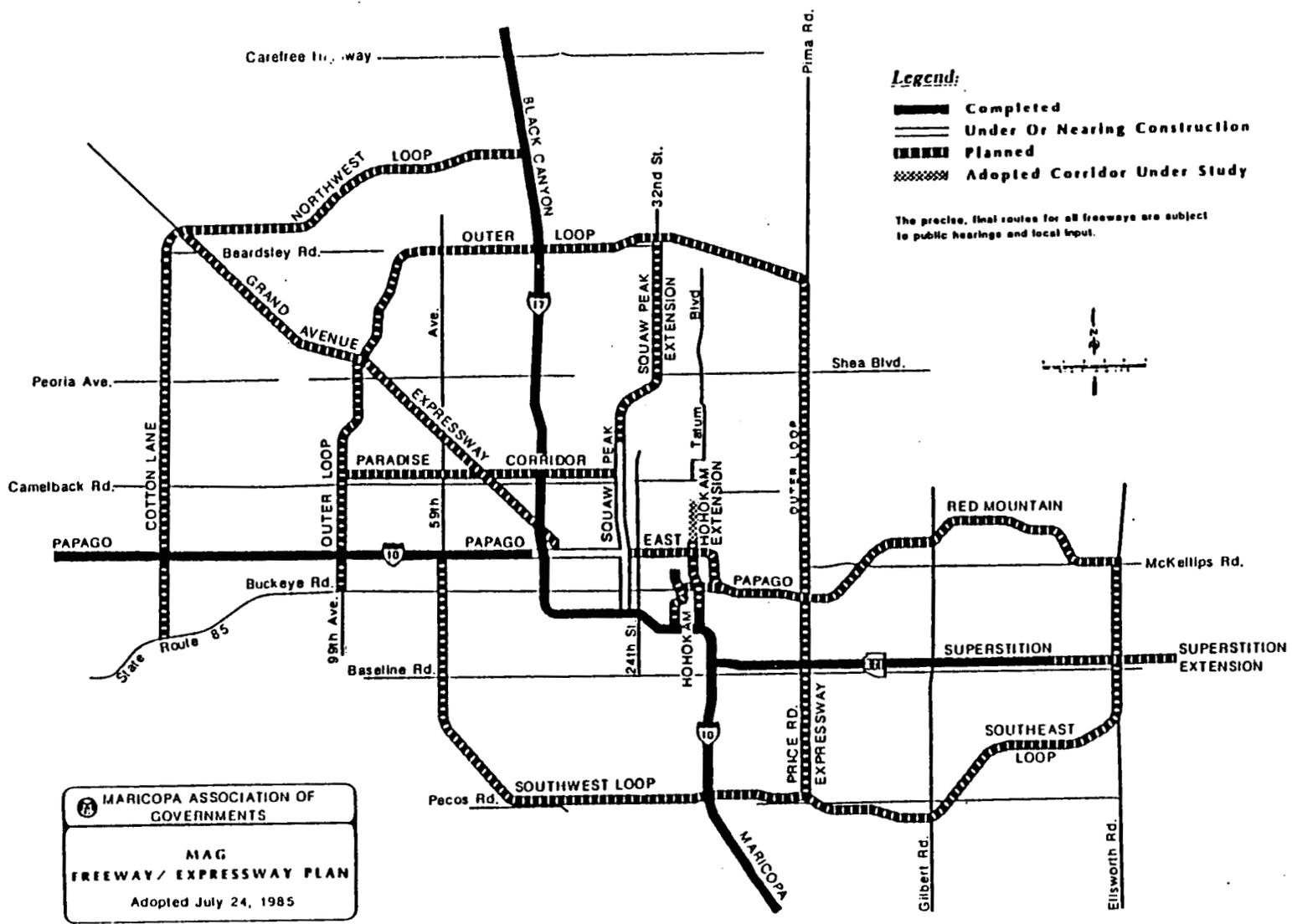
In April 1983, the City of Mesa contracted with Parsons Brinckerhoff to prepare a location study and design concept plans for the parkway from Price Road to Meridian Road (the Maricopa/Pinal County boundary). Several alternative locations were examined. From Price Road to Mesa Drive a preferred alignment evolved as a route generally paralleling the Salt River along the south bank.

From Mesa Drive to Lindsay Road a preferred alignment was developed which was adjacent to the south bank of the Salt River and within the Salt River Indian Reservation. It was considered the best of several alternatives because it would have little impact on existing residential development in the Lehi area. However tribal officials and residents of the Salt River Indian Community were not receptive to this location because of its affect on tribal lands. An alternative alignment was developed, outside the reservation, as shown in Figure II-1.

The preferred alignment from Lindsay Road east to Meridian Road, as shown on Figure II-1, evolved from examination of several alternatives as the most feasible route with the lowest adverse impact on nearby neighborhoods. At the conclusion of the location study, in December, 1983 a location public hearing was held by the City of Mesa. After review of public hearing testimony, the Mesa City Council, on February 21, 1984, adopted the parkway location shown in Figure II-1. The Council directed the city staff to continue the efforts to obtain agreement with tribal officials for the preferred location through the Salt River Indian Reservation from Mesa Drive to Lindsay Road. The City then directed Parsons Brinckerhoff to proceed with preparation of design concept plans for the parkway utilizing rectified aerial photography at a scale of 1" = 200'. The design concept plans were completed and delivered to the City of Mesa in August 1985.

The Maricopa Association of Governments (MAG), in 1984, conducted the **EASTSIDE TRANSPORTATION ANALYSIS**. This study, prepared for MAG by Parsons Brinckerhoff, examined transportation needs of the entire east valley of Maricopa County for the year 2015. It was based on a forecast population increase from 440,000 in 1985 to over 1 million in 2015. It was evident from this analysis that the anticipated population growth in the east valley would require an expanded freeway system.

The recommended freeway system that emerged from the **EASTSIDE TRANSPORTATION ANALYSIS** was a freeway "loop" which included the Red Mountain Parkway from Price Road east to Ellsworth Road on the north side of the east valley, a Southeast Loop Freeway which would circle the south part of the east valley to serve the cities of Tempe, Chandler and Gilbert, and a north-south route near Ellsworth Road to inter-connect the Red Mountain Freeway, Southeast Loop Freeway and Superstition Freeway. This overall freeway system was then adopted by the cities and was accepted into the MAG Regional Highway System Plan on March 27, 1985. It was accepted into the State Highway System on April 26, 1985 as shown in Figure II-2. The previously adopted parkway segment from Ellsworth Road east to Meridian Road was deleted from further consideration as part of the freeway system.



MARICOPA ASSOCIATION OF GOVERNMENTS

**MAG**  
**FREEWAY / EXPRESSWAY PLAN**  
 Adopted July 24, 1985

This general location was shown on the MAG Freeway/Expressway Plan published in 1985.

As a result of the expanded freeway system, and the longer term look at future needs (2015 versus 2005 as used in the initial study), the City of Mesa, MAG, and ADOT determined that the Red Mountain Parkway should be designed as a full freeway. The City then requested Parsons Brinckerhoff to revise the parkway concept to reflect a six-lane freeway from Price Road to Ellsworth Road. The City also contracted with Parsons Brinckerhoff to prepare general concept plans for the Ellsworth Road section from McKellips Road to Guadalupe Road.

In April, 1986 the City of Mesa, funded by the Arizona Department of Transportation through an inter-governmental agreement, contracted with Parsons Brinckerhoff to provide a new location study for that portion of the Red Mountain Freeway and Ellsworth Road Connection from Bush Highway to Baseline Road and to prepare concept plans for the entire 20.3 mile Red Mountain Freeway from Price Road to Baseline Road (near Ellsworth Road), including a freeway-to-freeway interchange at the Superstition Freeway.

The results of the Bush Highway to Baseline Road location study were presented to the public at a location public hearing on September 17, 1986. After the public hearing, the location study was completed in January of 1987, and a report published titled the Red Mountain Freeway - Bush Highway to Baseline Road - Location Study - Working Paper.

The location for the section from Lindsay Road to Baseline Road, which includes the part from Lindsay Road to Baseline Road previously adopted by the Mesa City Council in 1984, was adopted by the Arizona Department Transportation Board on August 21, 1987. A design public hearing for this section was held on February 3, 1988. After the public hearing, the design concept plans were completed in October of 1988, and a report published titled the Red Mountain Freeway - Lindsay Road to Baseline Road - Design Concept Report.

The City of Mesa, in December, 1988, confirmed the previously adopted location for the remaining portion of the Red Mountain Freeway, Dobson Road to Lindsay Road, including the alternative alignment from Mesa Drive to Lindsay Road, as shown in Figure II-1. After extended negotiations with Tribal officials it was concluded that the preferred alignment through the reservation would not be acceptable to the Tribe. The Arizona Transportation Board adopted the route confirmed by the City of Mesa in December, 1988.

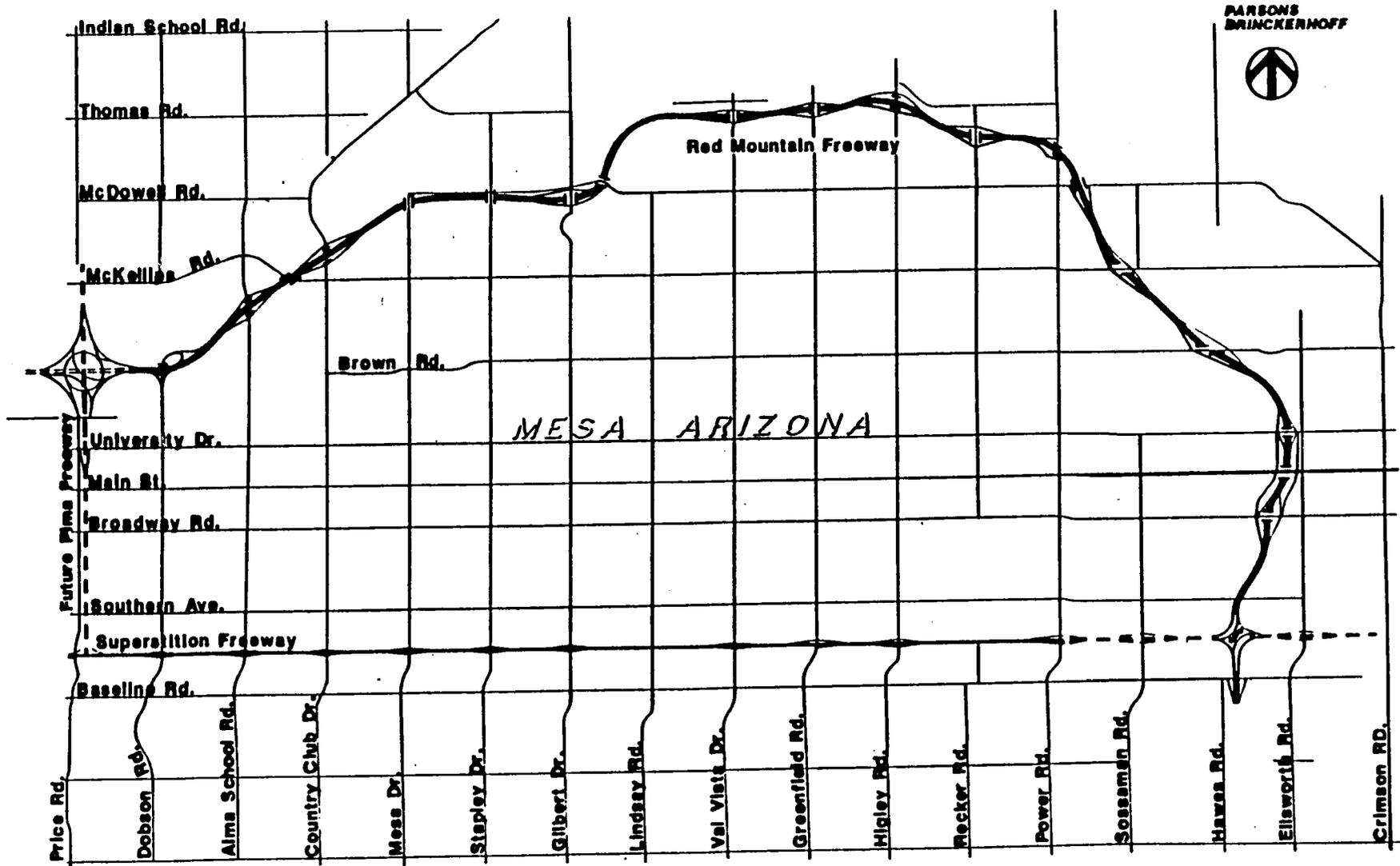
Draft design concept plans and a draft environmental assessment were then prepared for the Dobson Road to Lindsay Road segment. The draft design concept plans were presented to the public at a Design Concept Public Hearing on January 25, 1989.

As a result of the public hearing, meetings with residents and homeowners in the Lehi area and meetings with representatives of the Salt River Indian Community, several design concept modifications were incorporated into the plans. These modifications included the following:

1. Depressing the gradeline below natural ground level from Mesa Drive to Lehi Road.
2. Providing a grade separation at Stapley Drive.
3. Shifting the alignment to the west between Gilbert Road and Lehi Road.

On July 25, 1989 a public meeting/open house was held to present the revised design concepts.

Design Concept Plans, the Design Concept Report and the Final Environmental Assessment were published in October 1989. A brief synopsis covering the entire history of the Red Mountain Freeway is shown on Figure II-4. The location for the entire route from Dobson Road to Baseline Road is illustrated in Figure II-3.



DOBSON ROAD TO BASELINE ROAD  
*Arizona Department of Transportation*

**RED MOUNTAIN FREEWAY**

PARSONS BRINCKERHOFF



FIGURE No.	11-3
DATE:	PAGE
SEPT 1989	8

- MESA TRANSPORTATION STUDY ..... 1982
- PARKWAY LOCATION STUDY, CITY OF MESA..... 1983
- LOCATION PUBLIC HEARING, CITY OF MESA..... DEC 1983
- ADOPTION OF PARKWAY LOCATION - PRICE ROAD  
TO MERIDIAN BY MESA CITY COUNCIL..... FEB 1984
- EASTSIDE TRANSPORTATION ANALYSIS ..... OCT 1984
- STUDY TO UPGRADE TO A FREEWAY ..... 1984-1985
- STUDY TO EXAMINE POSSIBLE ELLSWORTH FREEWAY ALIGNMENT..... 1984
- ADOPTION OF SYSTEM BY MAG..... MAR 1985
- CORRIDORS PLACED ON STATE HIGHWAY SYSTEM BY ADOT ..... APR 1985
- APPROVAL OF 1/2 CENT SALES TAX BY VOTERS..... OCT 1985

**EAST PORTION, LINDSAY ROAD TO BASELINE ROAD**

- INITIATION OF NEW LOCATION STUDY ..... APR 1986
- LOCATION PUBLIC HEARING ..... SEPT 1986
- LOCATION APPROVAL BY ADOT ..... AUG 1987
- DESIGN PUBLIC HEARING ..... FEB 1988
- DESIGN CONCEPT REPORT & PLANS ..... OCT 1988
- ENVIRONMENTAL ASSESSMENT ..... OCT 1988

**WEST PORTION, DOBSON ROAD TO LINDSAY ROAD**

- CONFIRMATION OF LOCATION BY CITY OF MESA ..... DEC 1988
- ADOPTION OF LOCATION BY THE ARIZONA TRANSPORTATION BOARD..... DEC 1988
- DRAFT ENVIRONMENTAL ASSESSMENT..... JAN 1989
- DESIGN PUBLIC HEARING ..... JAN 1989
- OPEN HOUSE ..... JULY 1989
- DESIGN CONCEPT REPORT & PLANS ..... OCT 1989
- ENVIRONMENTAL ASSESSMENT ..... OCT 1989

RED MOUNTAIN FREEWAY HISTORY

*Arizona Department of Transportation*

**RED MOUNTAIN FREEWAY**

PARSONS  
BRINCKERHOFF



FIGURE No.

11-4

DATE:  
SEPT 1989

PAGE 9

### III. PUBLIC AND AGENCY INVOLVEMENT

Prior to 1986, the City of Mesa held numerous meetings with property owners and citizen groups concerning the Red Mountain Parkway. A formal location public hearing was held in December, 1983 for the Red Mountain Parkway from Price Road to Meridian Road (east county boundary).

After acceptance of the freeway onto the state highway system and following new location studies, the Arizona Department of Transportation (ADOT), in conjunction with the City of Mesa, held the following public hearings covering various segments of the Red Mountain Freeway:

September, 1986 - Location Public Hearing - Lindsay Road to Baseline Road

February, 1988 - Design Public Hearing - Lindsay Road to Baseline Road

January, 1989 - Design Public Hearing - Dobson Road to Lindsay Road

Approximately 110 Technical Advisory Committee (TAC), governmental agency, ADOT and public meetings were held after the initiation of the new location study in 1986. The Technical Advisory Committee (TAC) has participated in every phase of the development of the concept plans. This committee has included representatives of the Arizona Department of Transportation and the City of Mesa.

The following agencies have continuously participated in coordination efforts of this project:

Flood Control District of Maricopa County (FCDMC)	Maricopa County
Soil Conservation Service (SCS)	Mesa Parks Department Citizen Committee
Arizona Department of Water Resources (ADWR)	Salt River Indian Community (SRI)

Following is a listing of scheduled project meetings held in 1986 through 1989:

02/12/86 - TAC	12/29/86 - ADOT Management
03/21/86 - ADOT, DeLeuw Cather	01/21/87 - City of Mesa
03/27/86 - City of Mesa	01/21/87 - ADOT
05/08/86 - URS (Superstition Interchange)	01/29/87 - Mesa Parks Department
05/20/86 - TAC	02/20/87 - Mesa City Council, Study Session
06/17/86 - TAC	03/04/87 - TAC
06/25/86 - URS	03/06/87 - Mesa City Council, Study Session
07/15/86 - ADOT, TAC	03/09/87 - Mesa City Council
07/22/86 - ADOT	03/13/87 - ADOT
07/23/86 - TAMS	03/16/87 - ADOT
08/11/86 - ADOT Management	03/19/87 - ADOT
08/12/86 - TAC	03/31/87 - ADOT Management
08/26/86 - TAC	04/13/87 - ADOT Management
09/02/86 - TAC	04/22/87 - FCDMC, SCS, ADWR, ADOT
09/08/86 - ADOT Management	05/04/87 - Coe & Van Loo
09/17/86 - Location Public Hearing	05/07/87 - Sverdrup Corporation
10/02/86 - TAC	05/15/87 - ADOT
10/29/86 - TAC	05/21/87 - ADOT
10/30/86 - DeLeuw Cather	06/24/87 - TAC
11/03/86 - FCDMC, SCS, ADOT	07/01/87 - SRP
11/17/86 - City of Mesa	07/20/87 - ADOT
11/18/86 - Mesa Chamber of Commerce	07/21/87 - Arizona Transportation Board
11/26/86 - Mesa Parks Citizen Committee	07/22/87 - TAC
12/17/86 - City of Mesa, Falcon Field	07/26/87 - TAC

09/03/87 - TAC	06/03/88 - TAC
10/19/87 - ADOT	08/05/88 - Greiner Engineering Co.
10/28/87 - TAC	08/16/88 - City of Mesa
11/05/87 - Mesa Parks Citizen Committee	09/28/88 - TAC
11/10/87 - FCDMC, SCS, ADWR, ADOT	10/17/88 - ADOT
11/25/87 - TAC	10/20/88 - TAC
12/07/87 - City of Mesa	10/21/88 - ADOT
12/07/87 - ADOT	11/14/88 - City of Mesa
12/10/87 - ADOT Management	11/16/88 - TAC
12/15/87 - TAC	12/21/88 - TAC
12/17/87 - Mesa Parks Citizen Committee	01/18/89 - TAC
01/08/88 - City of Mesa	01/25/89 - Design Public Hearing, Lehi Jr. High
01/15/88 - TAC	02/09/89 - Lehi Homeowners Association
01/20/88 - City of Mesa	02/15/89 - Mesa City Council and Lehi Homeowners Assoc.
01/20/88 - ADOT Environmental Planning	03/02/89 - TAC
01/27/88 - TAC	03/14/89 - Homeowners, Citrus Walls Subdivision
01/29/88 - Mesa City Council, Study Session	03/23/89 - Property Owners - Lehi Area
02/02/88 - Mesa Chamber of Commerce	03/28/89 - Property Owners - Lehi Area
02/03/88 - Design Public Hearing	03/28/89 - SRI
02/04/88 - Mesa Parks Citizen Committee	04/03/89 - ADOT and SRI
02/16/88 - Mesa City Council, Study Session	04/04/89 - Talley Industries
02/19/88 - Mesa City Council, Study Session	04/05/89 - TAC and SRI
02/22/88 - Spook Hill Homeowners Association	04/18/89 - Property Owners - Lehi Area
02/24/88 - ADOT	05/04/89 - SRI (Planning and Zoning)
02/29/88 - FCDMC, SCS, ADWR, ADOT	05/11/89 - ADOT Management
03/02/88 - TAC	05/25/89 - TAC
03/07/88 - DeLeuw Cather	06/06/89 - Property Owners - Lehi Area
03/30/88 - TAC	07/10/89 - Mesa City Council
04/13/88 - ADOT Environmental Planning	07/24/89 - ADOT and City of Mesa
04/27/88 - TAC	07/25/89 - Open House
	09/05/89 - TAC

#### IV. DESIGN CRITERIA

The design criteria utilized for the Red Mountain Freeway Design Concept Plan is shown in Table 1 and is based on the following:

"Guide for Highway Geometric Design", ADOT, Jan. 1982

"A Policy on Geometric Design of Highways and Streets", AASHTO, 1984

"Urban Highway Design Procedures Manual", ADOT, March, 1988

**TABLE 1  
DESIGN CRITERIA**

DESCRIPTION	DESIGN CRITERIA	REMARKS
Design Speed	65 MPH 50 MPH 30 MPH	Freeway Ramps Loop Ramps
Control of Access	Full	
Maximum Degree of Curve	3°-30' 8°	Freeway Ramps
Minimum Radius	1637' (3.5°) 400' 230' 1432' (4.0°)	Freeway Ramp Terminus Loop Ramps Cross Roads
Maximum Grade	3% 6%	Freeway Ramps
Minimum Grade	0.25%	
Minimum Sight Distance	65 MPH 50 MPH 45 MPH	Freeway Ramps at Gore Cross Roads

**TABLE 1 (CONTINUED)  
DESIGN CRITERIA**

<b>DESCRIPTION</b>	<b>DESIGN CRITERIA</b>	<b>REMARKS</b>
Lane Width	12' 12'	Freeway Ramps
Number of Lanes (Freeway)	6	3 Westbound 3 Eastbound
Median Width (Freeway)	46' Including 8' Paved Shoulders	
Shoulder Width (Freeway)	10' Paved, Right 8' Paved, Left (Median)	
Shoulder Widths (Ramp)	8' Paved, Right 2' Paved, Left	
Vertical Clearance	16'-6" Freeway Minimum 16'-6" Cross Roads Minimum	
Right-of-Way Width	350' Minimum	

## V. TYPICAL SECTIONS

### **FREEWAY**

The typical roadway section used for the freeway mainline includes three travel lanes (36 feet) in each direction separated by a 46 foot wide median (including median shoulders). On the outside of the traveled lanes 10 foot paved shoulders were used and on the inside 8 foot paved shoulders were used. The roadway cut and fill slopes correspond with ADOT standard slopes C-02.10. It is intended, in areas of low fills and shallow cuts, to retain as much of the natural terrain as possible.

### **RAMPS**

Ramp typical sections include one 12 foot travel lane with a 2 foot left paved shoulder and an 8 foot right shoulder as shown on ADOT Standard Drawing C-8.20.

### **CROSS ROADS**

The design for the cross roadway sections, through interchange areas, will be based on the Design Year Traffic and local street improvements, plans and standards.

## VI. SEGMENT DESCRIPTIONS

### INTRODUCTION

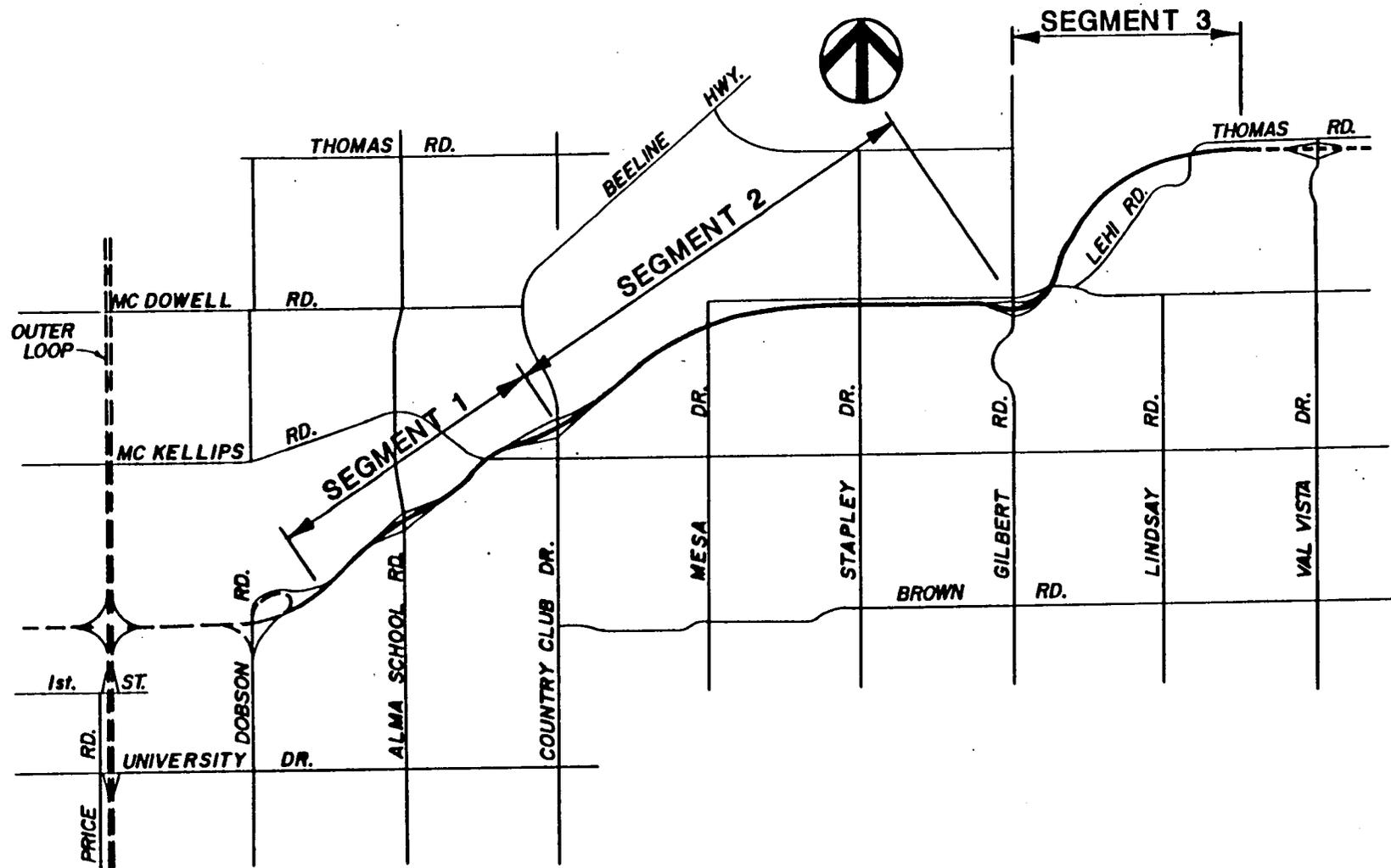
The location for the Red Mountain Freeway from Dobson Road to Lindsay Road, as shown in the design concept plans, was adopted by the Arizona Transportation Board on December 16, 1988.

Design concept plans were prepared, after location approval, to define the freeway horizontal and vertical alignment, interchanges, drainage concepts, bridges, cross roads, frontage roads, major utility conflicts and estimated right-of-way requirements. The plans were prepared at an original horizontal scale of 1" = 200' on topographical mapping. Field surveys were conducted to control the aerial photography used for mapping purposes. State Plane Coordinates were determined for section and quarter section corners located along the freeway route and for the freeway centerline and the centerline intersects with section and quarter section lines. Copies of the design concept plans, in reduced size, are included as Chapter XII of this report. Full size copies of the concept plans are available at ADOT.

The purpose of this chapter is to describe the basic features of the adopted freeway location and the design concepts. The freeway route covered by this report has been divided into three segments. Segment 1 is from Dobson Road to Country Club Drive; Segment 2 is from Country Club Drive to Gilbert Road; and Segment 3 is from Gilbert Road to Lindsay Road. The location of the freeway route and identification of the three segments are shown in Figure VI-1.

#### **Segment 1: Dobson Road to Country Club Drive**

The horizontal alignment for this portion of the freeway, with minor modifications, generally follows the location established by the City of Mesa in 1983. Beginning at Dobson Road and moving east, the alignment is generally located along the south side of the Salt River from Dobson Road to McKellips Road.



POTENTIAL SEGMENT LOCATIONS  
*Arizona Department of Transportation*

**RED MOUNTAIN FREEWAY**



FIGURE No. VI-1

DATE:  
SEPT 1989

PAGE  
17

Between McKellips Road and Country Club Drive the alignment skirts the gravel pits along the south bank of the river. This segment of the freeway is generally an at-grade facility with elevated sections at freeway overpass bridges occurring at Alma School Road, McKellips Road and Country Club Drive. Interchanges are provided at Dobson Road, Alma School Road and Country Club Drive.

**Segment 2: Country Club Drive to Gilbert Road**

Beginning at Country Club Drive the freeway alignment proceeds in a northeasterly direction, leaving the south bank of the Salt River and skirting the boundary of the Salt River Indian Reservation, to a point just west of Mesa Drive. The alignment then turns easterly and travels along and adjacent to the south side of McDowell Road until reaching Gilbert Road.

The first portion of this freeway segment is generally an at-grade roadway with elevated sections occurring at Country Club Drive and Center Street. About 1500 feet west of Mesa Drive the gradeline begins to depress and is depressed about 25 feet below natural ground when reaching Mesa Drive. This depressed gradeline continues easterly passing under Stapley Drive and Gilbert Road. A freeway overpass bridge is provided at Center Street and local street overpass bridges are provided at Mesa Drive, Stapley Drive and Gilbert Road. An interchange is provided at Gilbert Road.

**Segment 3: Gilbert Road to Lindsay Road**

Beginning at Gilbert Road the freeway alignment turns in a northeasterly direction and runs roughly parallel with and approximately 1200 feet northwesterly from Lehi Road. The alignment then turns easterly, crossing Lehi Road, running along the south side of Thomas Road to the terminus east of Lindsay Road, approximately 2000 feet west of Val Vista Drive.

The gradeline for this segment of the freeway is depressed about 25 feet below natural ground at Gilbert Road and McDowell Road. The gradeline then rises above ground to pass over Lehi Road and returns to grade east of Lindsay Road. A local road overpass is provided at McDowell Road and a freeway overpass at Lehi Road. No interchanges will be provided on this segment.

### EARTHWORK SUMMARY

The following table summarizes the earthwork grading for this portion of the Red Mountain Freeway (7.9 miles). The major need for borrow occurs between Dobson Road to Center Street where the freeway is elevated at the cross streets. This section requires approximately 1,350,000 cubic yards of borrow, which would be available from the Mesa Drive to Gilbert Road segment which is depressed.

**EARTHWORK SUMMARY TABLE**

<u>SEGMENT</u>	<u>EXCAVATION 1,000 C.Y.</u>	<u>EMBANKMENT<sup>1/</sup> 1,000 C.Y.</u>
1 Dobson Road to Country Club <sup>2/</sup>	0	1,350
2 Country Club to Gilbert	1,410	530
3 Gilbert Road to Lehi Road	<u>1,055<sup>3/</sup></u>	<u>325</u>
	2,465	2,205

1 Estimated shrinkage 12%.

2 Dobson Road Interchange earthwork included with the Pima/Red Mountain Interchange Project.

3 Includes retention pond excavation.

## **CONSTRUCTION SEQUENCE**

The recommended construction sequence from Dobson Road to Lindsay Road is:

1. Dobson Road to Country Club Drive
2. Country Club Drive to Gilbert Road
3. Gilbert Road to Lindsay Road

This sequence is based upon current MAG priorities and the assumption that the easterly section, Lindsay Road to Baseline Road, will be constructed after the westerly section.

As noted in the Earthwork Summary section, the segment of freeway from Dobson Road to Center Street requires earthwork borrow. It is planned that this borrow material would be obtained from the excess earthwork excavation in the depressed freeway segment from Mesa Drive to Gilbert Road. It will therefore be necessary to schedule the acquisition of right-of-way for the entire distance from Dobson Road to Gilbert Road to construct the Dobson Road to Country Club segment.

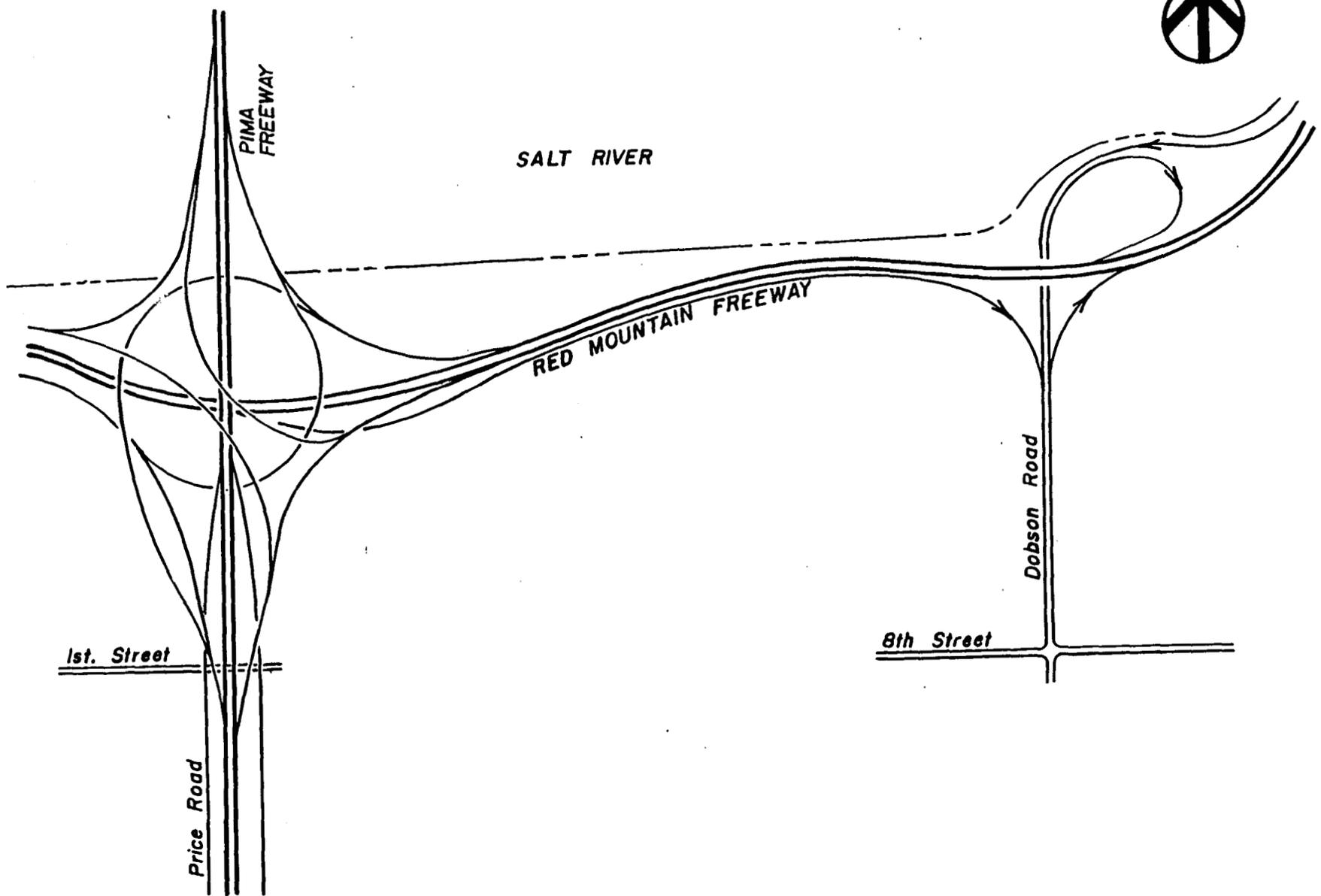
## VII. TRAFFIC SERVICE

### INTERCHANGES AND GRADE SEPARATIONS

The following interchanges and grade separations have been included in the design concept plans.

<u>Location</u>	<u>Recommended Type of Construction</u>
Dobson Road	Trumpet Interchange
Alma School Road	Diamond Interchange
McKellips Road	Grade Separation
Country Club Drive	Diamond Interchange
Center Street	Grade Separation
Mesa Drive	Grade Separation
Stapley Drive	Grade Separation
Gilbert Road	Urban Interchange
McDowell Road	Grade Separation
Lehi Road	Grade Separation

Figure VII-1 indicates the potential interface between the Dobson Road interchange and the Pima/Red Mountain Traffic Interchange.



OUTER LOOP & DOBSON RD. INTERCHANGES

*Arizona Department of Transportation*

**RED MOUNTAIN FREEWAY**

PARSONS  
BRINCKERHOFF



FIGURE No. VII-1

DATE:  
SEPT 1989

PAGE 22

## **TRAFFIC FORECAST**

The initial traffic forecast was made for the Red Mountain Parkway in the **MESA TRANSPORTATION STUDY, 1982**, by Parsons Brinckerhoff for the City of Mesa. This forecast was related to construction of a parkway from the Pima Freeway to Bush Highway and was for the year 2005.

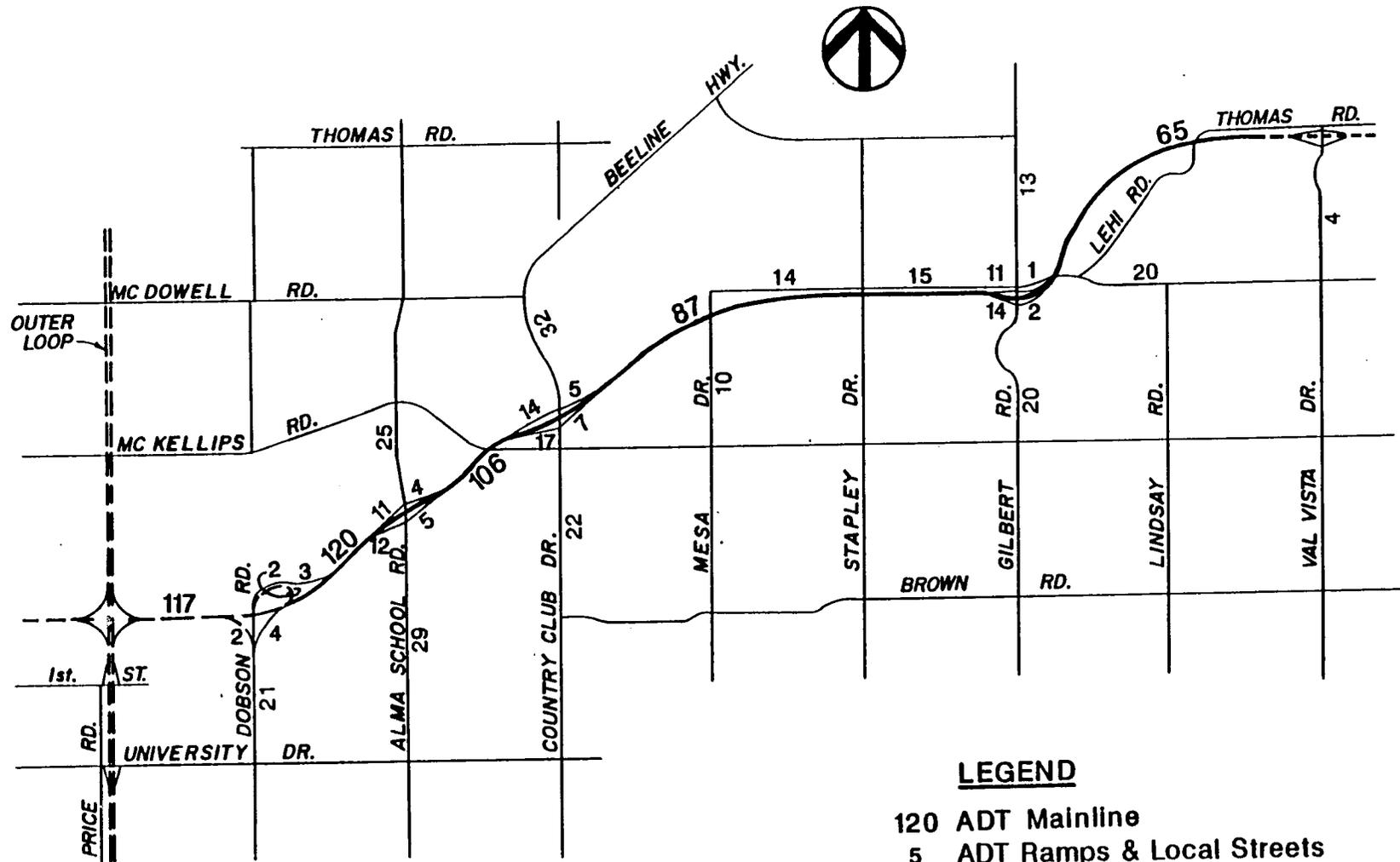
The **EASTSIDE TRANSPORTATION ANALYSIS, 1984**, Maricopa Association of Governments, Transportation Planning Office (MAGTPO), also provided traffic forecasts for the parkway. This forecast provided data for a parkway from the Pima Freeway to Meridian Road (Maricopa County Line) and was prepared for the year 2015. Included in this analysis was a study of upgrading the parkway to a freeway from the Outer Loop Highway to Country Club Drive.

The **RED MOUNTAIN FREEWAY, PRELIMINARY ENGINEERING FINAL REPORT**, dated August 27, 1985, by Parsons Brinckerhoff provided a traffic forecast for the Red Mountain Freeway, and the Ellsworth Freeway. This forecast was prepared for the year 2005 and was based on MAGTPO computer run 2005-33, dated July 25, 1985. The forecast indicated significantly higher traffic volumes than previous forecast because of increases in estimated land use densities, planned regional freeway system expansions and expected industrial development in the vicinity of Falcon Field. Traffic volume forecasts were based on the population and employment data prepared by the Maricopa Association of Governments, Transportation Planning Office (MAGTPO) in cooperation with the City of Mesa, Maricopa County and other local jurisdictions.

The most recent traffic volume forecasts, shown on Figure VII-2 and VII-3, are based on MAGTPO computer runs 2005-1 with trend dated June 18, 1987 and 2015-1 with trend dated June 19, 1987 using the current recommended location for Red Mountain Freeway. The forecast traffic volumes shown in Figure VII-1 and VII-2 are summarized as follows:

**TRAFFIC VOLUME FORECAST  
AVERAGE DAILY TWO-WAY TRAFFIC  
ON RED MOUNTAIN FREEWAY  
(Thousands of Vehicles Per Day)**

<b>SEGMENT</b>	<b>SEGMENT LIMITS</b>	<b>YEAR 2005</b>	<b>YEAR 2015</b>
1	Dobson Road to Country Club Drive	106-120	139-155
2	Country Club Drive to Gilbert Road	87	119
3	Gilbert Road to Val Vista Drive	65	96



TRAFFIC FORECAST - YEAR 2005  
 Arizona Department of Transportation

**RED MOUNTAIN FREEWAY**

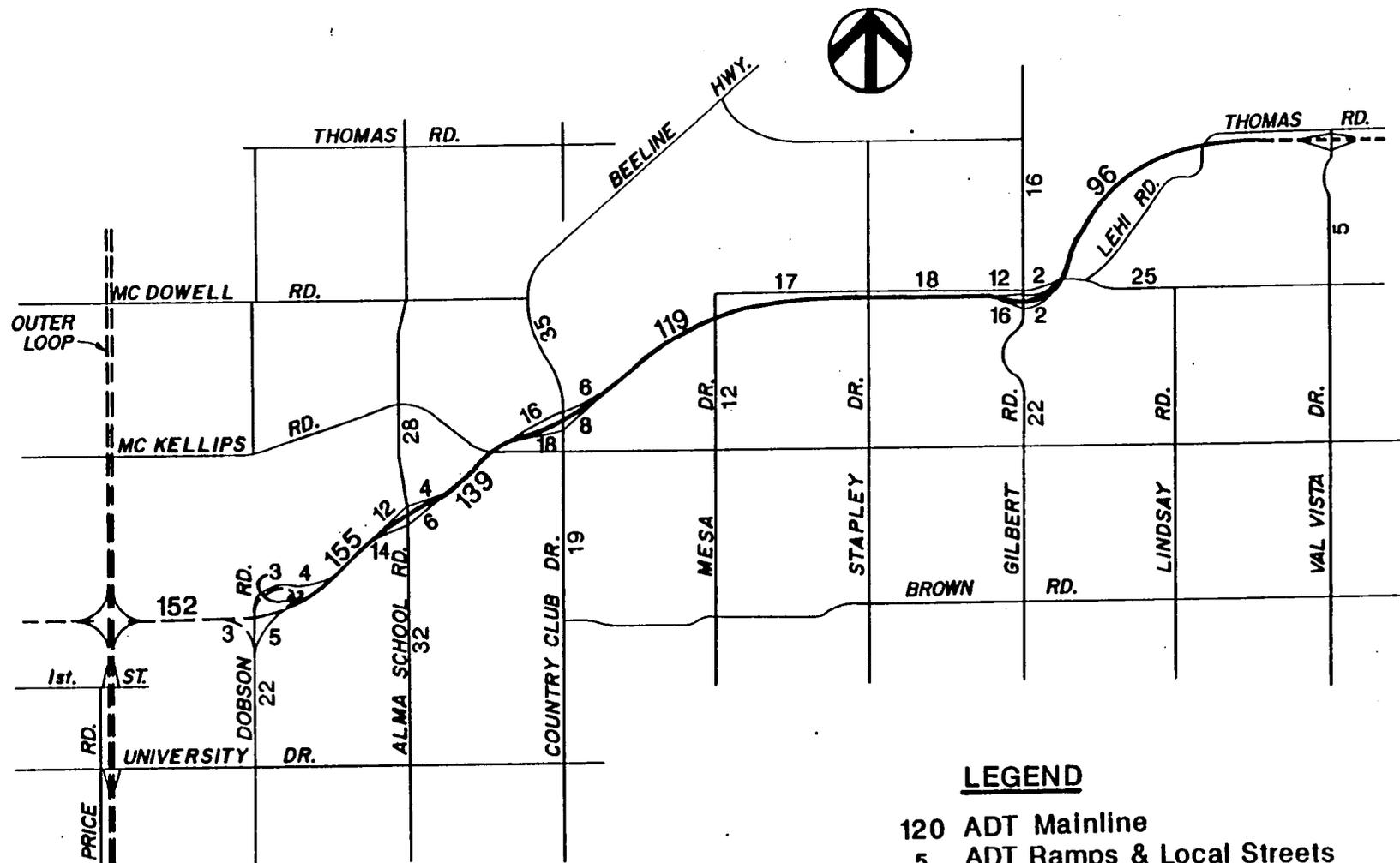
PARSONS  
 BRINCKERHOFF



FIGURE No. VII-2

DATE:  
 SEPT 1989

PAGE  
 25



**LEGEND**

120 ADT Mainline  
 5 ADT Ramps & Local Streets  
 ADT in Thousands of Vehicles Per Day

TRAFFIC FORECAST - YEAR 2015  
 Arizona Department of Transportation

**RED MOUNTAIN FREEWAY**

PARSONS  
 BRINCKERHOFF



FIGURE No. VII-3

DATE:  
 SEPT 1989

PAGE  
 26

## VIII. RIGHT-OF-WAY

### Freeway

During the early design of the parkway, under the direction of the City of Mesa, it was determined that the basic minimum right-of-way width would be 250 feet. This width was deemed adequate for an at-grade parkway with signalized intersections.

In November, 1984, the City of Mesa instructed Parsons Brinckerhoff to upgrade the facility to a freeway from the Pima Freeway to the proposed Ellsworth Freeway. With this change in concept, it was no longer possible to contain the facility within the 250 feet right-of-way. Therefore, the basic right-of-way width was revised to a minimum of 350 feet.

The total new right-of-way required for the entire route between Dobson Road and Lindsay Road is estimated at 477 acres of land.

The estimated number of buildings which will be displaced is:

Commercial Buildings	13
Residences	57
Mobile Homes	44

Certain portions of the proposed alignment will bisect parcels of land which are currently being used for agricultural or gravel mining operations. In order to retain a viable agricultural or mining operation on these severed parcels, access across the proposed freeway may be required. This could be accomplished with either an equipment pass or grade separation.

Justification for separate access or severance payments, if any, should be determined during the normal right-of-way process.

## IX. UTILITIES

All public and private utility companies which have facilities in the vicinity of the project have been contacted. The list of the utility companies is as follows:

Dimension Cable	City of Phoenix
Flood Control District of Maricopa County	El Paso Natural Gas Company
Arizona Public Service Company	U.S. Department of Energy
Arizona Water Company	Western Area Power Administration
Mountain Bell	Desert Sage Water Company
Salt River Project	City of Mesa
American Telephone and Telegraph	

The utility companies have provided data on the approximate location of their facilities. Major utilities are shown on the design concept plans. The exact location of the utility facilities will be determined during final design.

Several potential utility conflicts may occur throughout the project limits. The following denotes the utility involved and the location where possible conflicts occur.

### 1. AT&T

Underground transcontinental fiber optic telephone cables. These cables are located at approximately Station 410+00 between the proposed alignment and the Consolidated Canal. This facility does not require relocation as the Gilbert Road Interchange is presently configured. Should this change during final design, a relocation may be required.

2. City of Phoenix

A 96" diameter water transmission line located at approximately Station 188+00 to 196+00 along the south side of the proposed alignment is within the proposed right-of-way. This facility may be relocated along the south right-of-way line or the proposed freeway design may be adjusted so as to avoid a conflict.

3. City of Mesa

The City of Mesa is currently planning the construction of a Water Reclamation Plant along the north side of Thomas Road near the intersection of Lehi Road. As these plans are presently preliminary in nature, no specific location for underground piping is available. However, possible conflicts with some of the underground facilities may be anticipated.

Along the proposed alignment there are numerous locations where utilities (overhead power and telephone, water, gas, sanitary sewers, storm drains and other facilities) will require relocation or adjustment. During final design relocation methods and routes will have to be determined in cooperation with the owners of the effected utility.

## X. DRAINAGE

### Overview

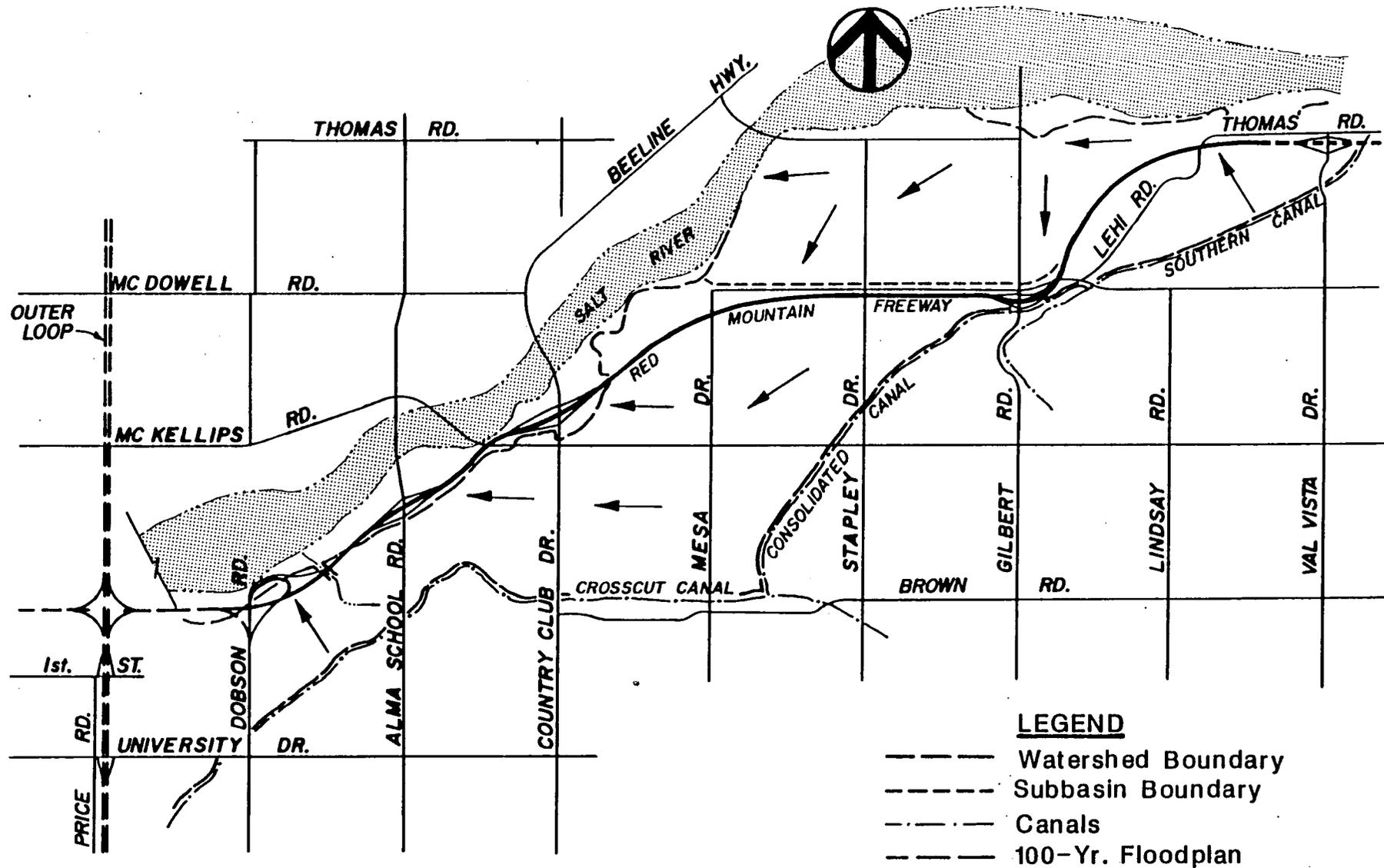
The westerly section of the Red Mountain Freeway corridor traverses the westerly sloping Salt River floodplain. West of Mesa Drive the freeway will be elevated and approximately adjacent to the southbank of the Salt River. East of Mesa Drive to about Lehi Road the freeway will be generally depressed and about one mile south of the Salt River. At Lehi Road and along Thomas Road the freeway will again be elevated and approximately adjacent to the Salt River.

Irrigation canals located along the southerly margin of the floodplain establish the boundary of the Salt River Basin. This is also the historical floodplain of the Salt River/watershed divide between the south westerly sloping alluvial fan of the Gila River Basin and the westerly sloping Salt River Basin. (See Figure X-1.)

### Design

All drainage aspects related to the freeway were analyzed to establish a viable drainage concept and define right-of-way requirements. A conceptual design of the drainage system required to convey cross drainage and drain depressed roadway sections was developed, which established preliminary sizes and locations. The drainage facilities are shown on the design concept plans.

The drainage systems associated with Red Mountain Freeway are identified as either on-site or off-site systems based on whether the flows they intercept originate from within or from outside of the freeway's right-of-way.



**DRAINAGE AREA BOUNDARY MAP**  
*Arizona Department of Transportation*

**RED MOUNTAIN FREEWAY**

PARSONS  
BRINCKERHOFF

FIGURE No. X-1	
DATE: SEPT 1989	PAGE 31

Off-site drainage systems were designed to protect the freeway from a 50-year design storm with the contributing areas assumed to be in their existing condition. Drainage ordinances currently in effect require runoff from future development from a 50-year, 24-hour rainfall to be retained "on-site". Since many of the contributing areas are rapidly developing, "existing conditions" represent a worst-case scenario and produce a conservative estimate of drainage requirements.

On-site drainage system design was based on a 10-year storm except in depressed sections where a 50-year design frequency was used.

During final design, each point at which flow will be discharged will need to be analyzed to determine whether the 100-year discharge would cause adverse impacts on downstream properties attributable to freeway drainage. Outfall facilities and/or outfall right-of-way will be required to alleviate any adverse impacts which would occur.

Southwest of Mesa Drive where the freeway encroaches on a regulatory floodplain, the encroachment was designed to minimize its effects on the floodplain. Where freeway construction will alter the floodplain, floodplain revisions will be prepared during final design and submitted for acceptance by FEMA.

Although no deliberate attempt was made to alleviate local drainage problems not related to the freeway construction, the freeway drainage system will improve the drainage conditions in several areas along its route.

The Red Mountain Freeway drainage system, from Dobson Road to Lindsay Road is divided into three major segments that are separate and independent from each other. These segments are approximately the same three freeway segments discussed in Chapter VI.

Following is a discussion of drainage requirements and design for each of the three freeway segments:

o **Segment 1: Dobson Road to Mesa Drive**

This segment of the freeway is approximately parallel and adjacent to the south bank of the Salt River and encroaches upon the 100-year floodway in the area of Dobson Road interchange and the floodplain of the river in several locations west of Mesa Drive. The freeway crosses a number of existing channels and drainage facilities outfalling into the Salt River. Cross drainage will be conveyed, generally south to north under the freeway via appropriately sized culverts and discharged into the river or existing channels on the north side of the freeway. Culvert outlets will be designed so as not to adversely impact downstream properties. Southwest of McKellips Road the proposed roadway embankment will become the future southerly limits of the floodplain and slope protection along the embankment will be required to protect the freeway. During the 100-year flood event in the Salt River there will be minor backflow via the culverts under the freeway unless flap gates are installed and maintained. The impact of the freeway encroachment on Salt River flood stages will be evaluated during final design, mitigation measures are expected to be minor.

o **Segment 2: Mesa Drive to McDowell Road**

This segment of the freeway is depressed and is approximately parallel and one mile south of the Salt River. This segment bisects the south overbank (historical floodplain) of the river. However, the currently defined floodplain, as reported by the Flood Control District of Maricopa County, does not include the area where the depressed freeway location is proposed. Flows intercepted by the freeway will be conveyed along the freeway in a lined channel on the north side and an unlined ditch on the south side. The lined channel will be discharged into the Salt River west of Mesa Drive. The unlined ditch will be conveyed under the freeway via a culvert west of the depressed segment of freeway.

The depressed segment will be drained into a retention pond or ponds and, hence, pumped to a channel discharging into the Salt River west of Mesa Drive. One pond and pump station in the vicinity of Mesa Drive will be required and a second pond and pump station in the vicinity of Stapely Road may also be provided. Retention pond locations will be established during final design and have not been shown on the design concept plans. At Gilbert Road and McDowell Road intercepted off-site drainage will be retained in ponds adjacent to the freeway and then pumped across the freeway to the proposed lined channel along the south side of McDowell Road. Drainage from the Gilbert-McDowell depressed segment will be drained into a retention pond adjacent to the interchange and then pumped into the lined channel along McDowell Road.

Upon development of the depressed freeway concept, a supplemental study to examine groundwater conditions which could affect the depressed roadway was conducted by Manera, Inc. This study (3) concluded that it was unlikely that groundwater levels will ever be close enough to the surface to impact the depressed freeway.

o **Segment 3: McDowell Road to Lindsay Road**

This segment of the freeway is elevated and near the south bank of the Salt River. This segment also bisects the floodplain as the freeway crosses the drainage basin. Cross drainage will be conveyed under the freeway via culverts and discharged into channels on the north side of the freeway.

## **BIBLIOGRAPHY**

The following studies provide specific and significant information directly relevant to each of the systems discussed.

1. Arizona Department of Transportation, "East Papago and Hohokam Freeways Technical Memorandum No. 11, Floodplain East of Outer Loop: Salt River Hydraulic Information Report," Simons, Li & Associates, Inc., Tempe, Arizona, June 1987.

2. The City of Mesa, "East Side Stormwater Drainage Study", Yost and Gardner Engineers, Phoenix, Arizona, May 1981.
3. "Water Level Changes Near the Salt River North of Lehi, Maricopa County, AZ", Manera, Inc., May 1989.

## XI. CONSTRUCTION COST

As previously mentioned, the project is divided into three segments. Segment 1, Dobson Road to Country Club Drive, Segment 2, Country Club Drive to Gilbert Road, and Segment 3, Gilbert Road to just east of Lehi Road.

Table 2 indicates the estimated construction cost for each segment. These estimates are for each individual segment and are independent of each other in regards to roadway grading requirements.

Segment 1, Dobson Road to Country Club Drive, requires an estimated 1.35 million cubic yards of borrowed material to complete the roadway grading. Segments 2 and a portion of 3 have an estimated surplus of excavated material, (1.35 million cubic yards), which is presently planned as the source of the required borrow for Segment 1. If this method is used to provide the embankment requirements for Segment 1, an advanced right-of-way acquisition procedure would be necessary for Segments 2 and a portion of 3.

Table 3 indicates the reallocation of estimated costs for this scenario.

**TABLE 2**  
**RED MOUNTAIN FREEWAY**  
**DOBSON ROAD TO LINDSAY ROAD**  
**SELECTED ALIGNMENT**  
**(Cost in Thousands)**

ITEM	FREEWAY SEGMENT			Total
	1	2	3	
1. Pavement, Shoulders, Crossroads, Ramps	3,752	5,250	3,590	12,592
2. Roadway Grading	4,763	2,900	2,090	9,753
3. Drainage	1,407	3,230	2,590	7,227
4. Utility Relocation	402	1,700	1,560	3,662
5. Lighting, Signing, Striping, Signals	302	480	340	1,122
6. Fence, Guardrail Curbs, Miscellaneous Earth	704	1,110	795	2,609
7. Retaining Walls	0	0	1,530	1,530
8. Bridges	<u>1,728</u>	<u>2,680</u>	<u>4,650</u>	<u>9,058</u>
Subtotal (Items 1 through 8)	13,058	17,350	17,145	47,553
Other Items @ 15%+	<u>1,959</u>	<u>2,603</u>	<u>2,572</u>	<u>7,134</u>
Direct Construction Costs	15,017	19,953	19,717	54,687
Contingencies @ 10%	1,502	1,995	1,972	5,469
Engineering @ 7%	<u>1,156</u>	<u>1,536</u>	<u>1,518</u>	<u>4,211</u>
Subtotal	17,675	23,484	23,207	64,367
Landscaping	<u>1,407</u>	<u>2,230</u>	<u>1,590</u>	<u>5,227</u>
<b>TOTAL CONSTRUCTION COST</b>	19,082	25,714	24,797	69,594
Right-of-Way	<u>17,520</u>	<u>24,900</u>	<u>5,000</u>	<u>47,420</u>
<b>TOTAL ESTIMATED COSTS</b>	<b>36,602</b>	<b>50,614</b>	<b>29,797</b>	<b>117,014</b>

**TABLE 3**  
**RED MOUNTAIN FREEWAY**  
**DOBSON ROAD TO LINDSAY ROAD**  
**SELECTED ALIGNMENT**  
**(Cost in Thousands)**

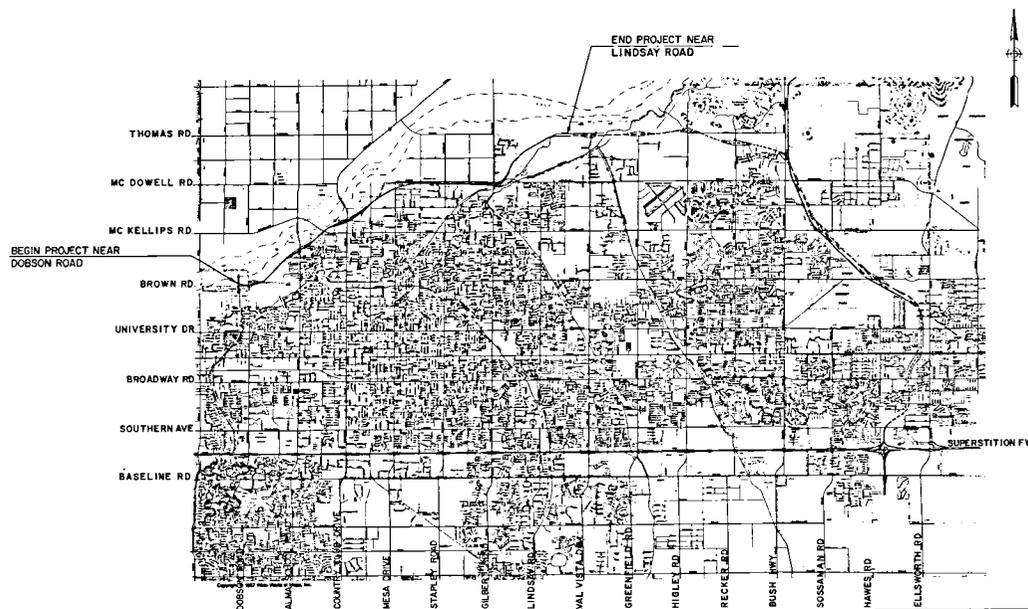
ITEM	CONSTRUCTION PHASE			Total
	1	2	3	
1. Pavement, Shoulders, Crossroads, Ramps	3,752	5,250	3,590	12,592
2. Roadway Grading	7,663	0	2,090	9,753
3. Drainage	1,407	3,230	2,590	7,227
4. Utility Relocation	2,102	0	1,560	3,662
5. Lighting, Signing, Striping, Signals	302	480	340	1,122
6. Fence, Guardrail Curbs, Miscellaneous Earth	704	1,110	795	2,609
7. Retaining Walls	0	0	1,530	1,530
8. Bridges	<u>4,408</u>	<u>0</u>	<u>4,650</u>	<u>9,058</u>
Subtotal (Items 1 through 8)	20,338	10,070	17,145	47,553
Other Items @ 15%+	<u>3,051</u>	<u>1,511</u>	<u>2,572</u>	<u>7,134</u>
Direct Construction Costs	23,389	11,581	19,717	54,687
Contingencies @ 10%	2,339	1,158	1,972	5,469
Engineering @ 7%	<u>1,801</u>	<u>892</u>	<u>1,518</u>	<u>4,211</u>
Subtotal	27,529	13,631	23,207	64,367
Landscaping	<u>1,407</u>	<u>2,230</u>	<u>1,590</u>	<u>5,227</u>
<b>TOTAL CONSTRUCTION COST</b>	28,936	15,861	24,797	69,594
Right-of-Way	<u>42,420</u>	<u>0</u>	<u>5,000</u>	<u>47,420</u>
<b>TOTAL ESTIMATED COSTS</b>	<b>71,356</b>	<b>15,861</b>	<b>29,797</b>	<b>117,014</b>

# RED MOUNTAIN FREEWAY

Arizona Department of Transportation



PARSONS  
BRINCKERHOFF



DESIGN CONCEPT PLANS - INDEX

SHEET NO.	TITLE
1	TITLE SHEET
2-4	TYPICAL SECTIONS
5-7	PROJECT CONTROL DIAGRAM
8	PLAN & PROFILE SHEET INDEX
9-16	PLAN & PROFILE

Arizona Department of Transportation

## RED MOUNTAIN FREEWAY

PARSONS  
BRINCKERHOFF



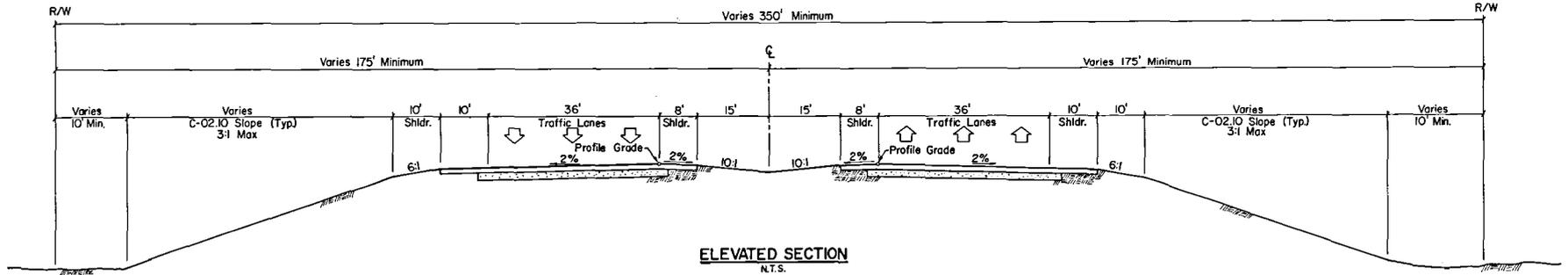
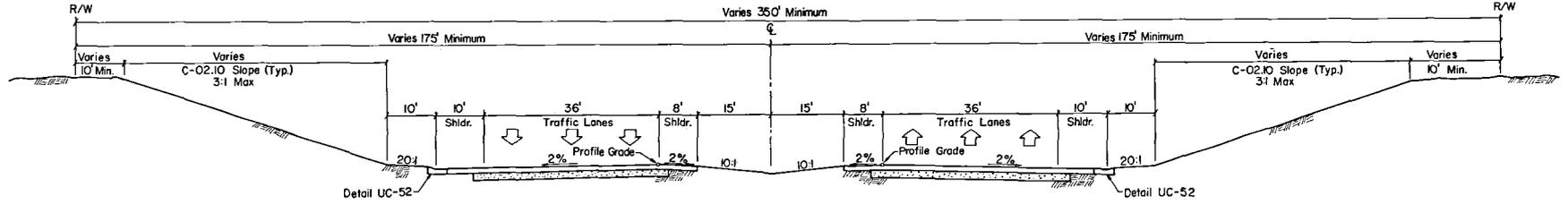
FIGURE No.

DATE:  
SEPT 1989

PAGE  
39

RED MOUNTAIN FREEWAY  
MARICOPA COUNTY

F.H.D. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
	9	202L MAH087000	2	16	
Parsons Brinckerhoff Quade & Douglas, Inc.					
DATE FOR THE CONSULTING ENGINEER					
DESIGN D.W.R.		DRAWN L.L.W.		CHECKED D.W.R.	



Note:  
The Typical Sections Shown On This Plan Are  
Conceptual Only And Subject To Refinement  
During Final Design.

RED MOUNTAIN FREEWAY  
MAINLINE TYPICAL SECTIONS

Arizona Department of Transportation

RED MOUNTAIN FREEWAY

PARSONS  
BRINCKERHOFF



FIGURE No.

DATE:  
SEPT 1989

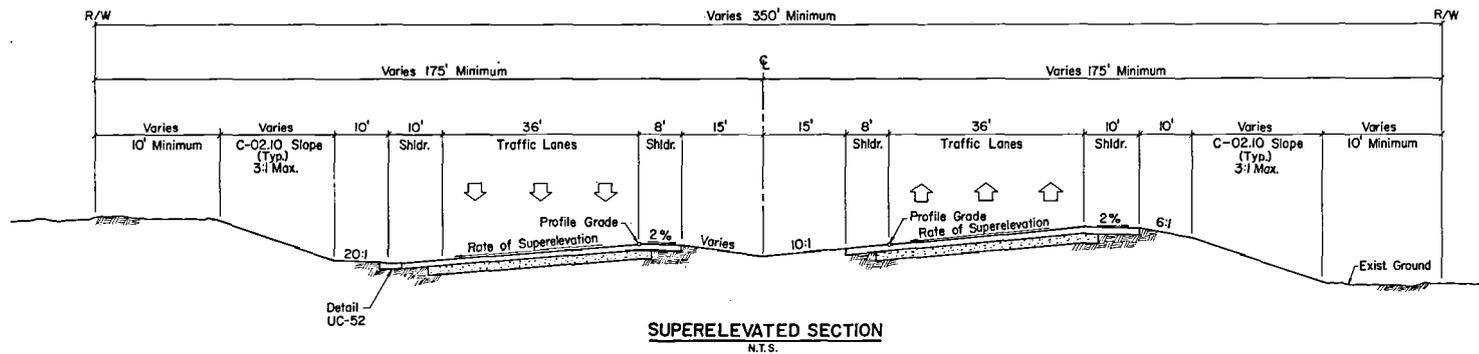
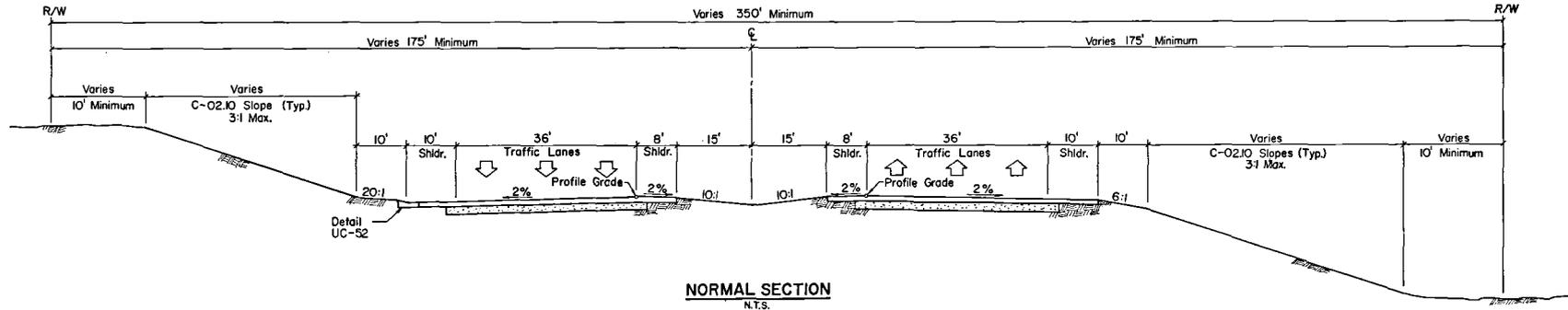
PAGE  
40

RED MOUNTAIN FREEWAY  
MARICOPA COUNTY



FED. ROAD DISTRICT	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	202L MAH087000	3	16	

Parsons Brinckerhoff Quade & Douglas, Inc.  
DATE: \_\_\_\_\_ FOR THE CONSULTING ENGINEER  
DESIGN D.W.R. DRAWN L.L.W. CHECKED D.W.R.



Note:  
The Typical Sections Shown On This Plan Are Conceptual Only And Subject To Refinement During Final Design.

RED MOUNTAIN FREEWAY  
MAINLINE TYPICAL SECTIONS

Arizona Department of Transportation

RED MOUNTAIN FREEWAY



PARSONS  
BRINCKERHOFF

FIGURE No.

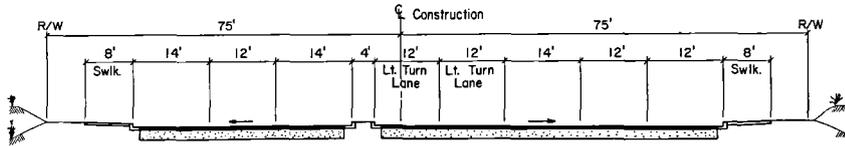
DATE:  
SEPT 1989

PAGE  
41

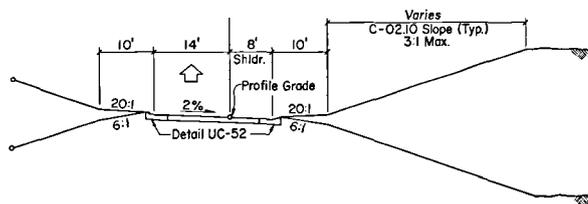
RED MOUNTAIN FREEWAY  
MARICOPA COUNTY



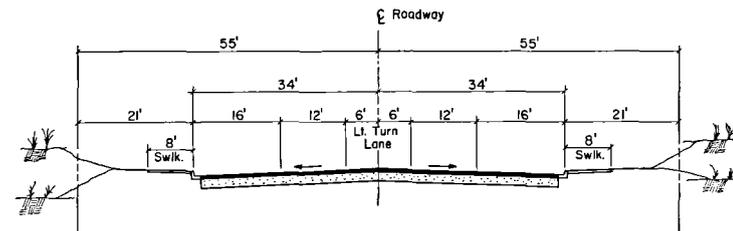
F.H.D. & REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ	202L MA NORTH	4	16	
Parsons Brinckerhoff Quade & Douglas, Inc.					
DATE		FOR THE CONSULTING ENGINEER			
DESIGN D.W.R.		DRAWN L.L.W.		CHECKED D.W.R.	



TYPICAL SECTION THRU GRADE SEPARATION AREA  
ALMA SCHOOL ROAD N.T.S.  
COUNTRY CLUB DRIVE GILBERT ROAD



TYPICAL RAMP SECTION  
N.T.S.



TYPICAL SECTION THRU GRADE SEPARATION AREA  
MCKELLIPS ROAD N.T.S.  
CENTER STREET MCDOWELL ROAD  
LEHI ROAD STAPLEY ROAD  
DOBSON ROAD MESA DRIVE

Note:  
The Typical Sections Shown On This Plan Are  
Conceptual Only And Subject To Refinement  
During Final Design.

RED MOUNTAIN FREEWAY  
CROSSROADS TYPICAL SECTIONS

Arizona Department of Transportation

RED MOUNTAIN FREEWAY

PARSONS  
BRINCKERHOFF



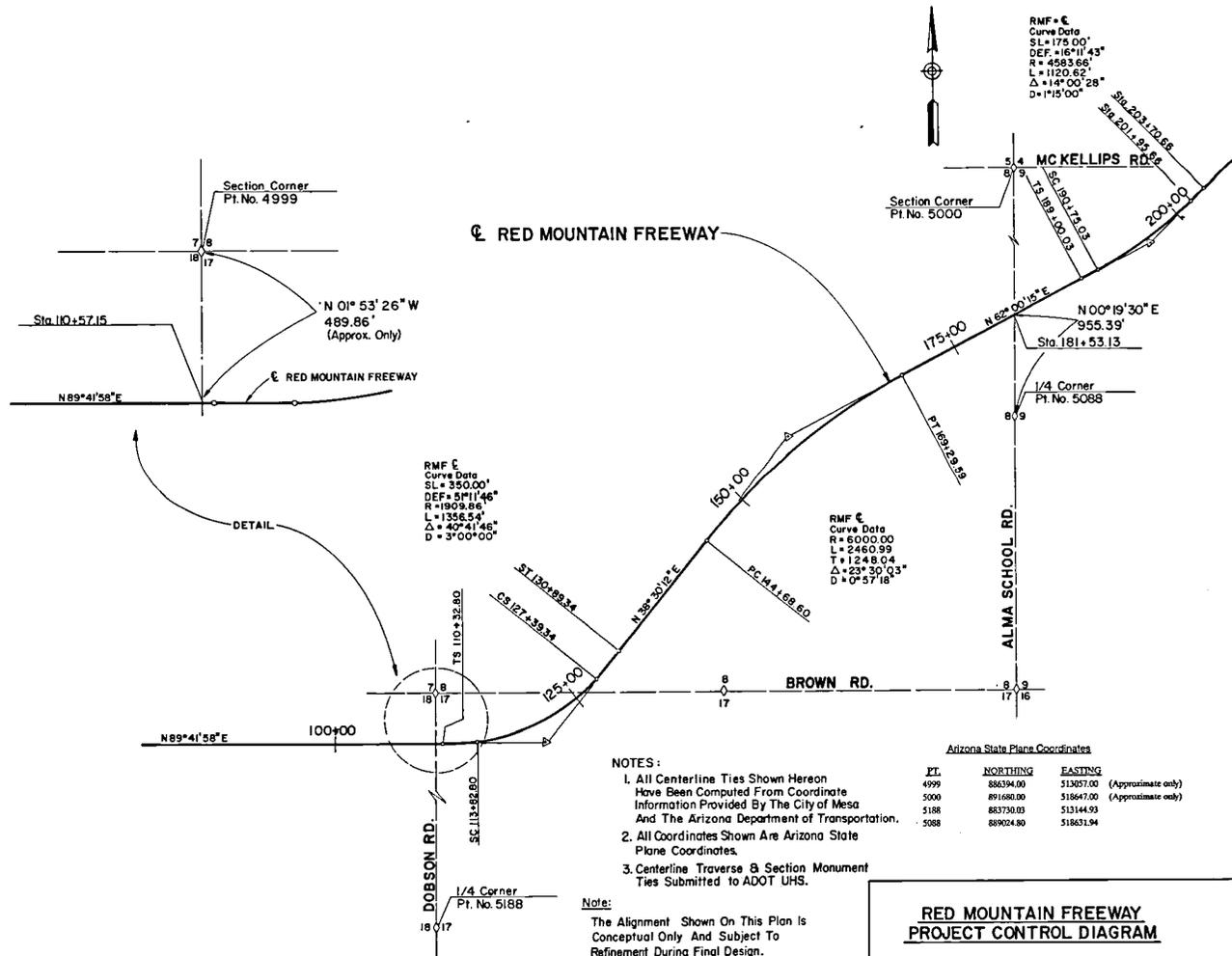
FIGURE No.

DATE:  
SEPT 1989

PAGE  
42

RED MOUNTAIN FREEWAY  
MARICOPA COUNTY

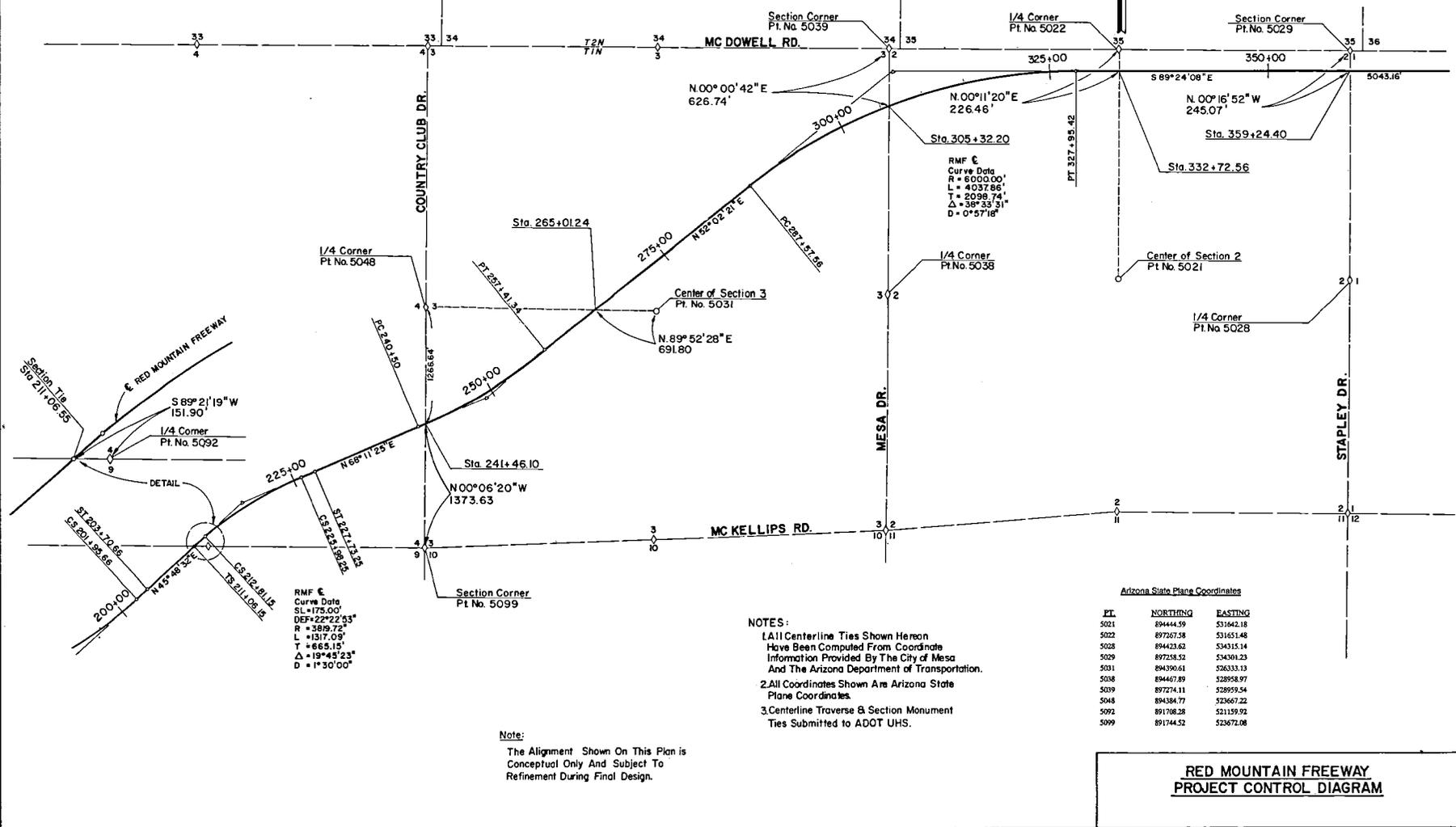
F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	ECOL-MA-H087900	5	16	
Parsons Brinckerhoff Quade & Douglas, Inc.					
DATE FOR THE CONSULTING ENGINEER					
DESIGN DWR	DRAWN S.B.S.	CHECKED DWR			



**RED MOUNTAIN FREEWAY  
PROJECT CONTROL DIAGRAM**

RED MOUNTAIN FREEWAY  
MARICOPA COUNTY

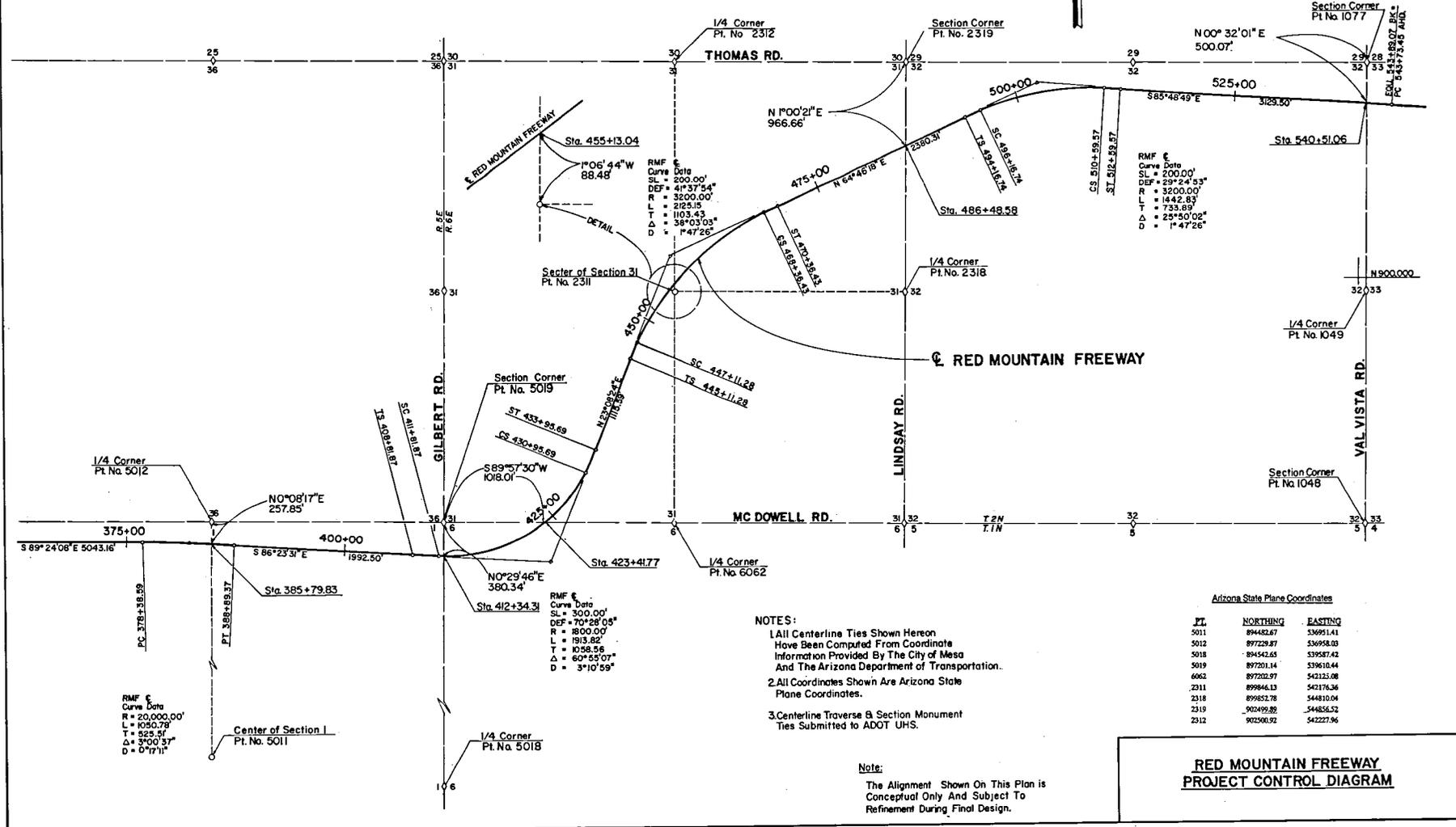
F.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	PCRL-MA-HOBT500	6	16	
Parsons Brinckerhoff Quade & Douglas, Inc.					
DATE			FOR THE CONSULTING ENGINEER		
DESIGN D.W.R.			DRAWN S.B.S. CHECKED D.W.R.		



RED MOUNTAIN FREEWAY  
PROJECT CONTROL DIAGRAM

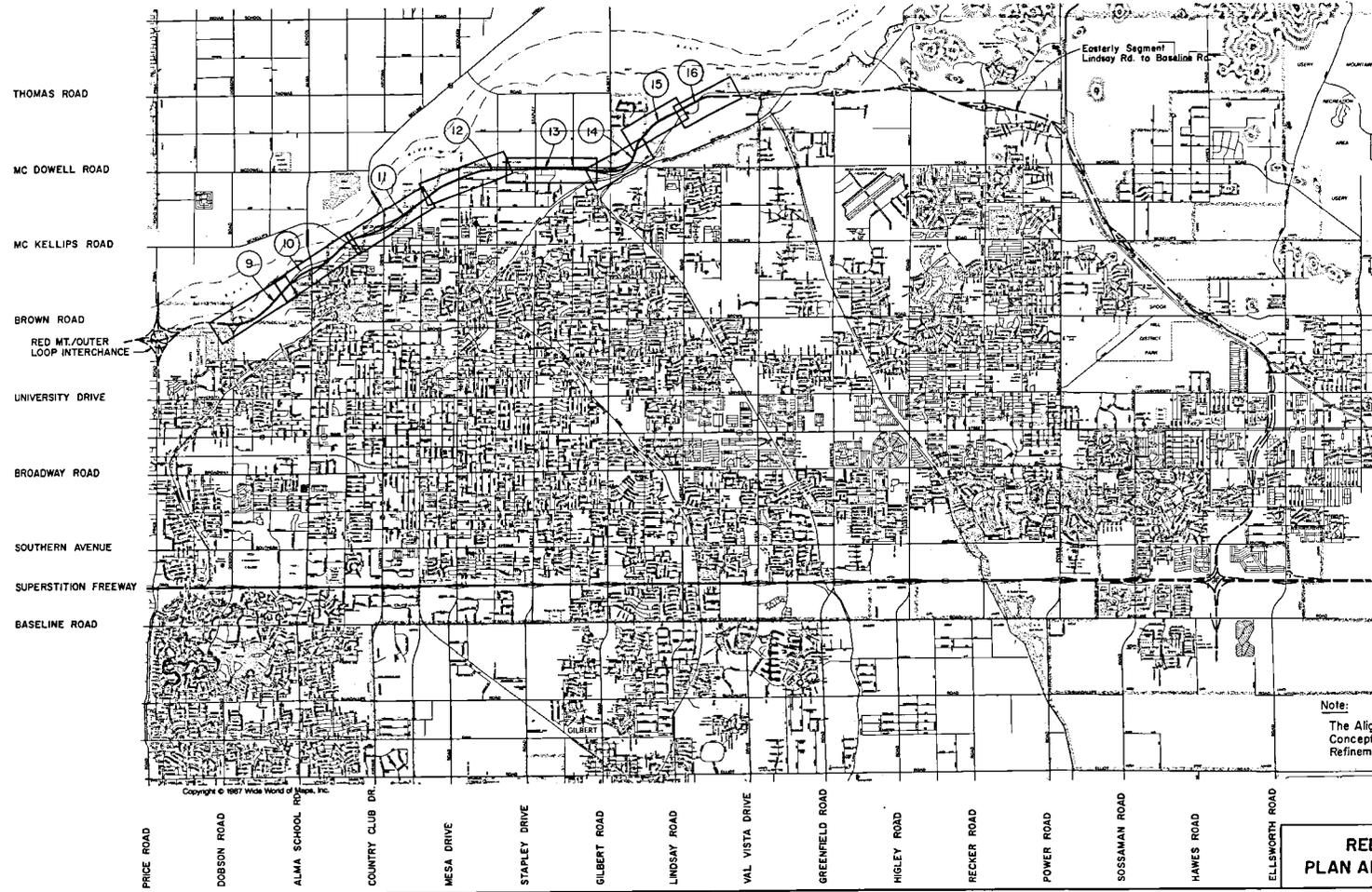
RED MOUNTAIN FREEWAY  
MARICOPA COUNTY

PROJECT NO.	STATE	SHEET NO.	TOTAL SHEETS	AS BUILT
0202-48-4075000	ARIZ	7	16	
Parsons Brinckerhoff Quade & Douglas, Inc.				
DATE FOR THE CONSULTING ENGINEER				
DESIGN: D. W. R.	CHECKED: S. B. S.	DRAWN: D. W. R.		



**RED MOUNTAIN FREEWAY  
MARICOPA COUNTY**

	STATE	PROJECT NO.	SHEET TOTAL	AS BUILT
	9	202L MA H087008	8   16	
Parsons Brinckerhoff Quade & Douglas, Inc.				
DATE		FOR THE CONSULTING ENGINEER		
DESIGN D.W.R.		DRAWN L.L.W.	CHECKED D.W.R.	



LEGEND  
Sheet Number - 15

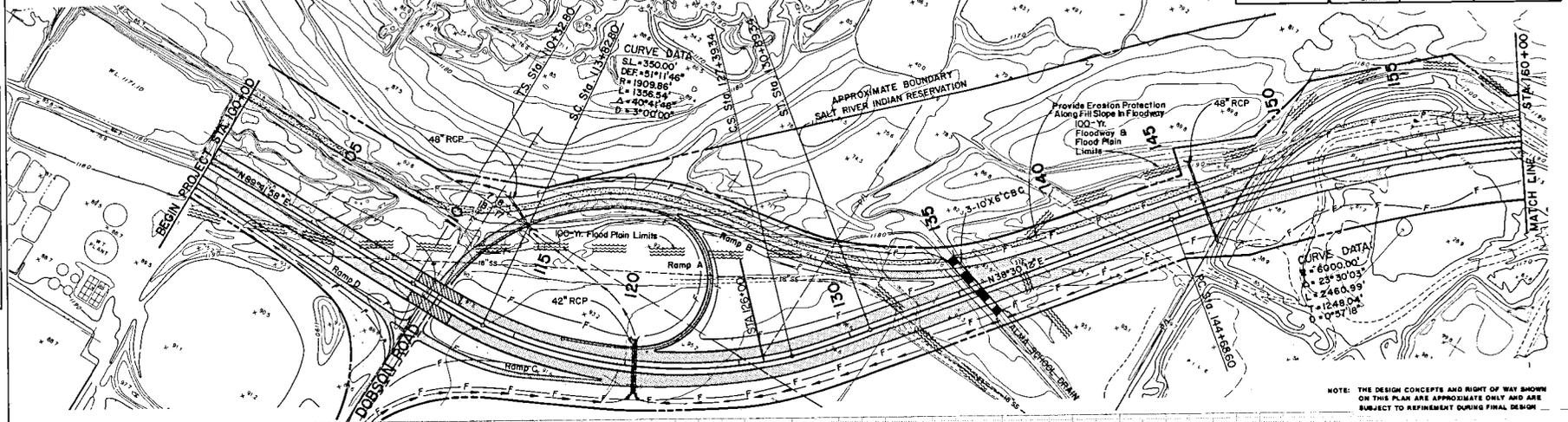
Note:  
The Alignment Shown On This Plan is  
Conceptual Only And Subject To  
Refinement During Final Design.

**RED MOUNTAIN FREEWAY  
PLAN AND PROFILE SHEET INDEX**

RED MOUNTAIN FREEWAY  
MARICOPA COUNTY

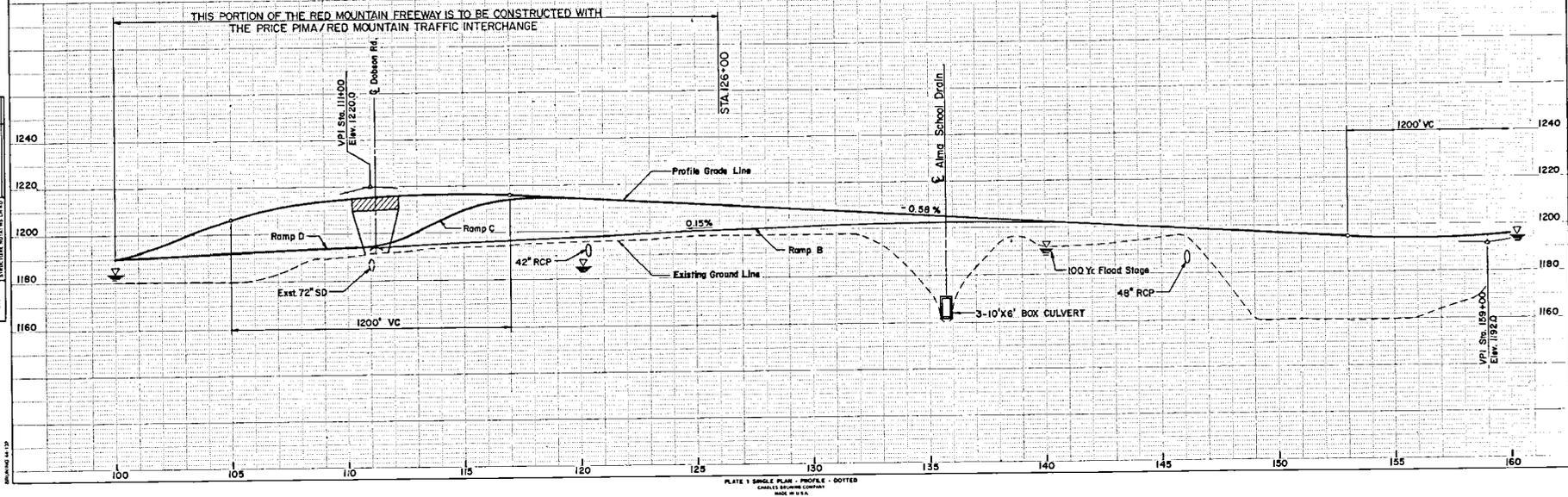
F.A. No.	STATE	PROJECT NO.	SHEET TOTAL	AS BUILT
9	ARIZ	2021-MA-1087500	16	
Parsons Brinckerhoff Quade & Douglas, Inc.				
DATE		FOR THE CONSULTING ENGINEER		
DESIGN D.W.R.	DRAWN S.B.S.	CHECKED D.W.R.		

PLAN	DATE	BY



NOTE: THE DESIGN CONCEPTS AND RIGHT OF WAY SHOWN ON THIS PLAN ARE APPROXIMATE ONLY AND ARE SUBJECT TO REVISION DURING FINAL DESIGN.

PROFILE	DATE	BY



**RED MOUNTAIN FREEWAY**

PARSONS BRINCKERHOFF

FIGURE No.

DATE: SEPT 1989

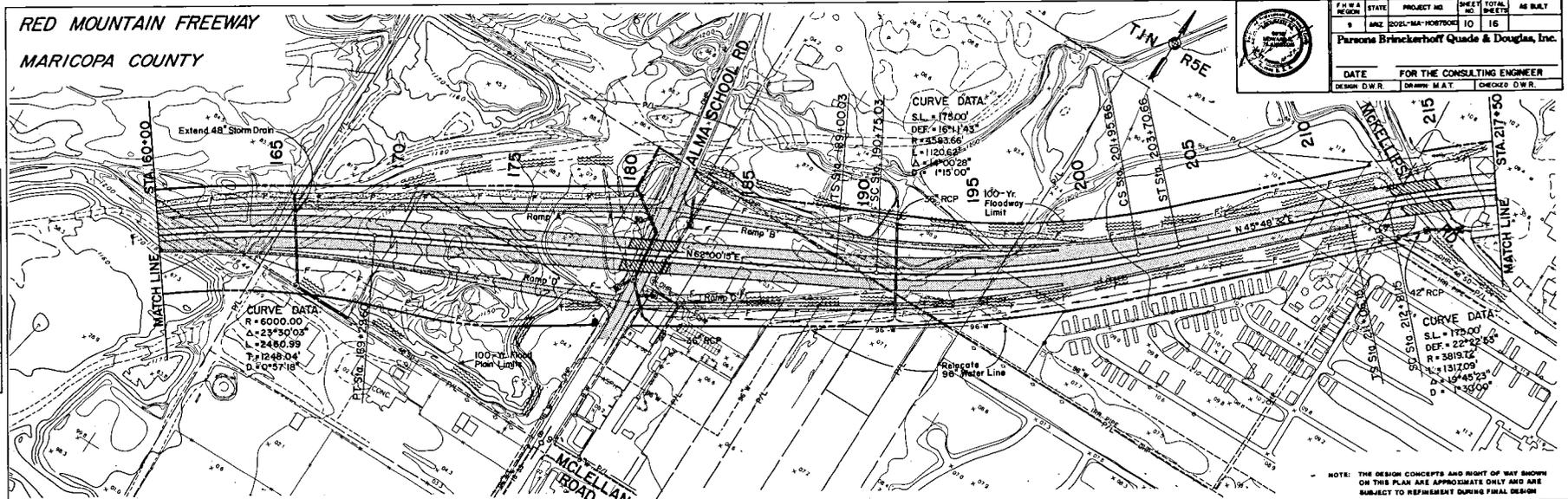
PAGE 47

Arizona Department of Transportation

RED MOUNTAIN FREEWAY  
MARICOPA COUNTY

F.H.W. NO.	STATE	PROJECT NO.	SHEET TOTAL	AS BUILT
9	ARIZ	2021-MA-HORTON	10 15	
Parsons Brinckerhoff Quade & Douglas, Inc.				
DATE		FOR THE CONSULTING ENGINEER		
DESIGN D.W.R.		DRAWN M.A.T.		CHECKED D.W.R.

PLAN	DATE	BY	CHECKED



PROFILE	DATE	BY	CHECKED

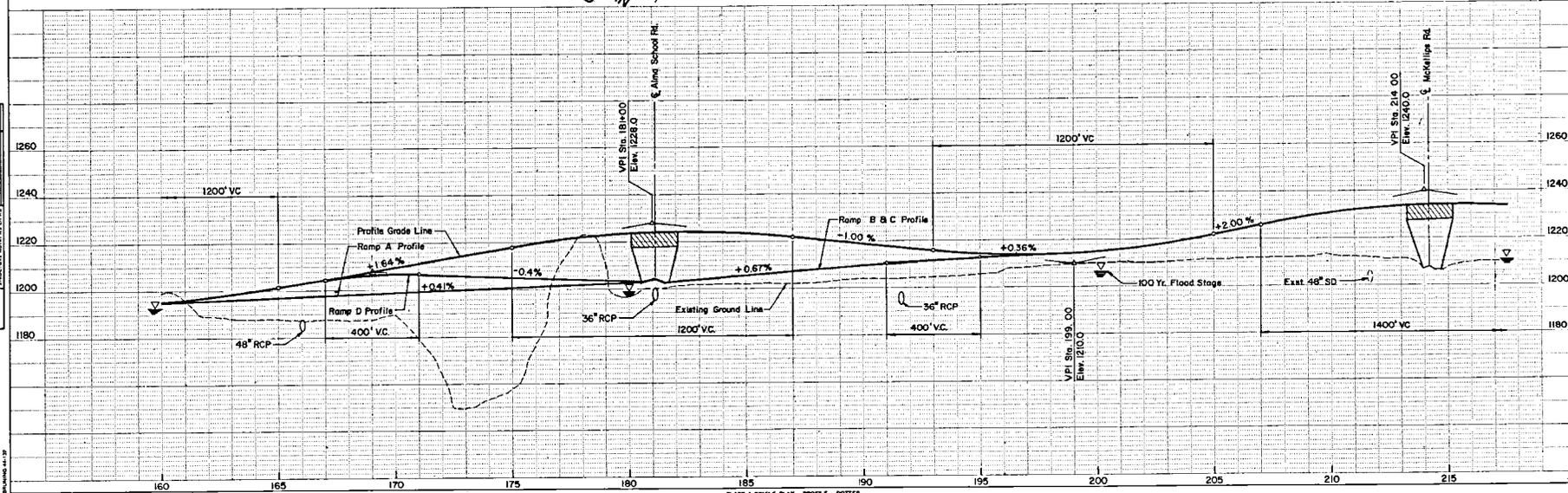


PLATE 1 SINGLE PLAN - PROFILE - DOTTED  
SCALE: 1" = 40' HORIZONTAL  
1" = 10' VERTICAL

NOTE: THE DESIGN CONCEPTS AND RIGHT OF WAY SHOWN ON THIS PLAN ARE APPROXIMATE ONLY AND ARE SUBJECT TO REFINEMENT DURING FINAL DESIGN.

Arizona Department of Transportation

**RED MOUNTAIN FREEWAY**

PARSONS  
BRINCKERHOFF

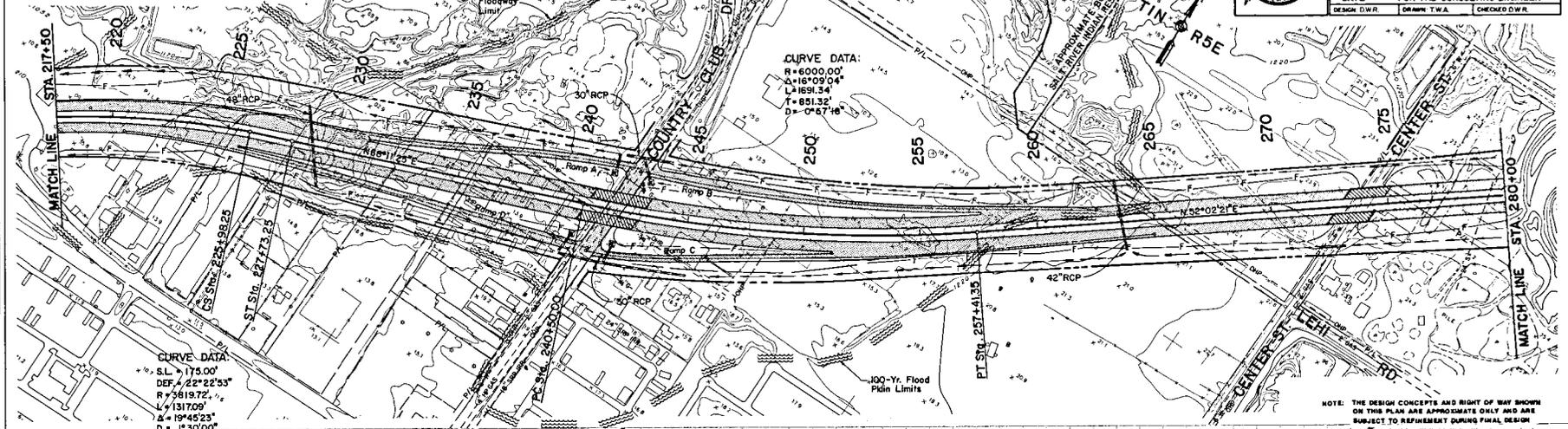
FIGURE No.

DATE: SEPT 1989

PAGE 48

RED MOUNTAIN FREEWAY  
MARICOPA COUNTY

FEDERAL REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
	ARIZONA	202L-MA-HSR1500	11	16	
Parsons Brinckerhoff Quade & Douglas, Inc.					
DATE FOR THE CONSULTING ENGINEER					
DESIGN D.W.R.		DRAWN T.W.A.		CHECKED D.W.R.	



NOTE: THE DESIGN CONCEPTS AND RIGHT OF WAY SHOWN ON THIS PLAN ARE APPROXIMATE ONLY AND ARE SUBJECT TO REFINEMENT DURING FINAL DESIGN

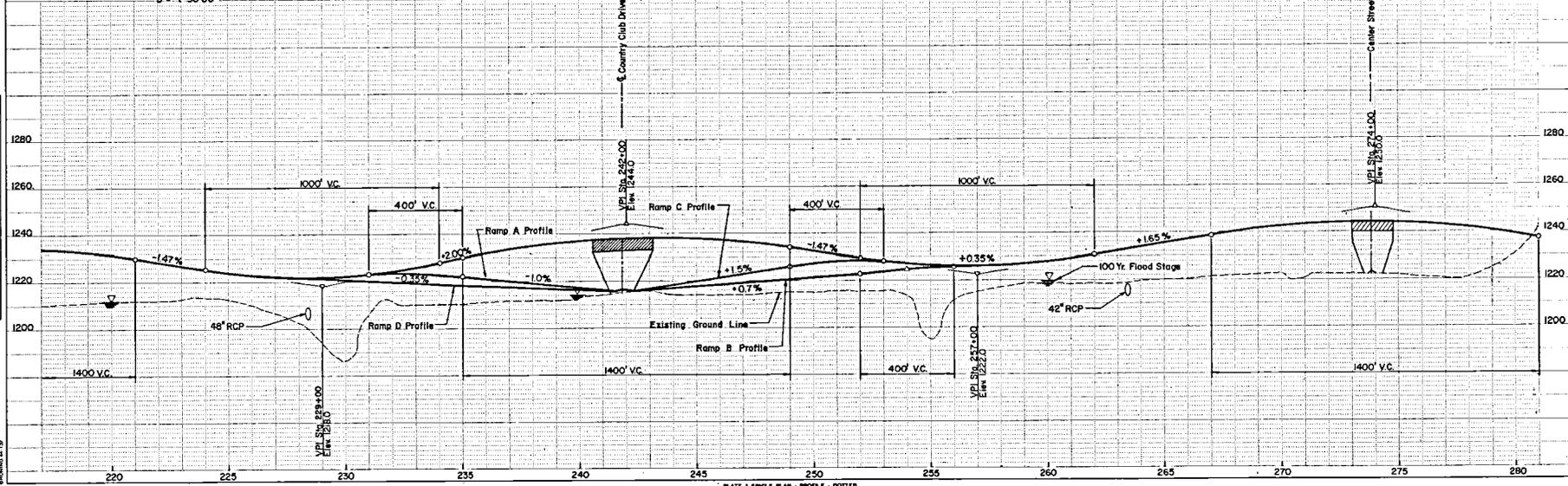


PLATE 1 SINGLE PLAN, PROFILE, DOTTED CENTERLINE CONTACT

PLAN	DATE
REVISIONS	
NO. 1	
NO. 2	
NO. 3	

PROFILE	DATE
REVISIONS	
NO. 1	
NO. 2	
NO. 3	

Arizona Department of Transportation

**RED MOUNTAIN FREEWAY**

PARSONS BRINCKERHOFF

FIGURE No.

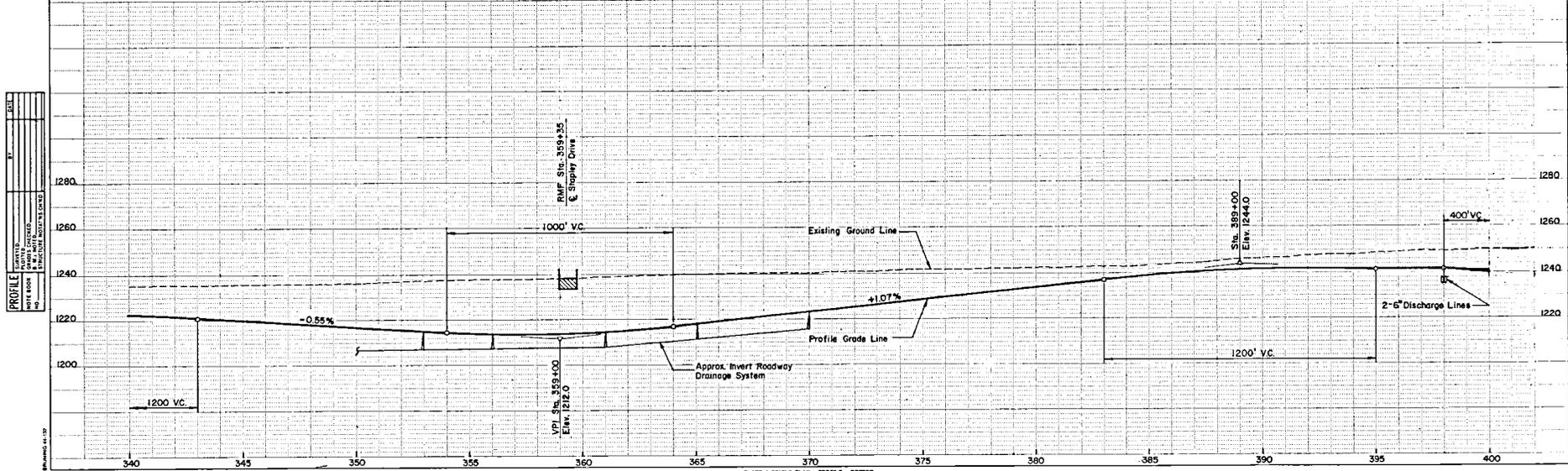
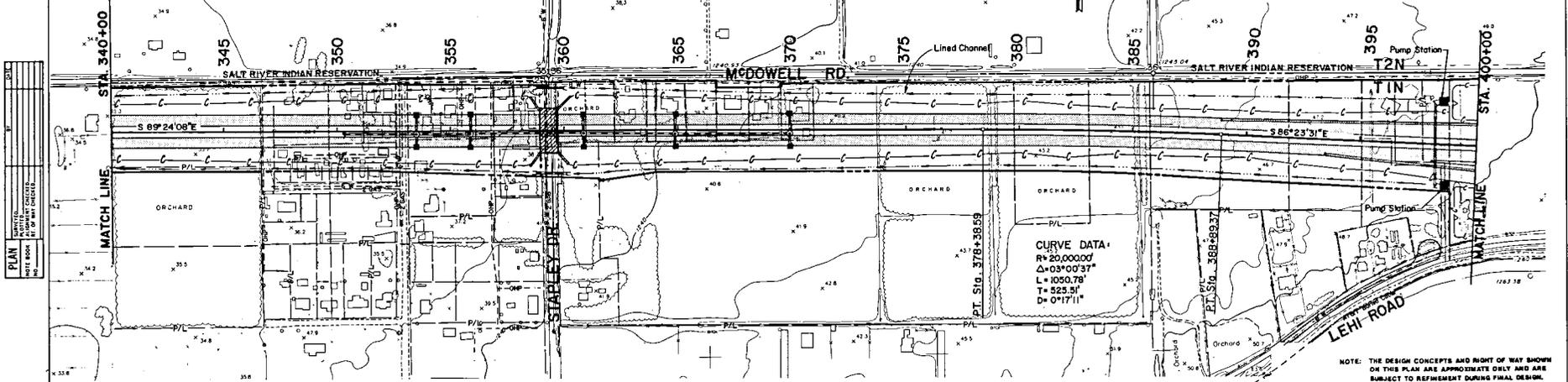
DATE: SEPT 1989

PAGE 49



RED MOUNTAIN FREEWAY  
MARICOPA COUNTY

	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
	ARIZ.	202L-MA-HOBT001	15	16	
Parsons Brinckerhoff Quade & Douglas, Inc.					
DATE		FOR THE CONSULTING ENGINEER			
DESIGN D.W.R.		DRAWN S.B.S.		CHECKED D.W.R.	



Arizona Department of Transportation

**RED MOUNTAIN FREEWAY**

PARSONS  
BRINCKERHOFF

FIGURE No.

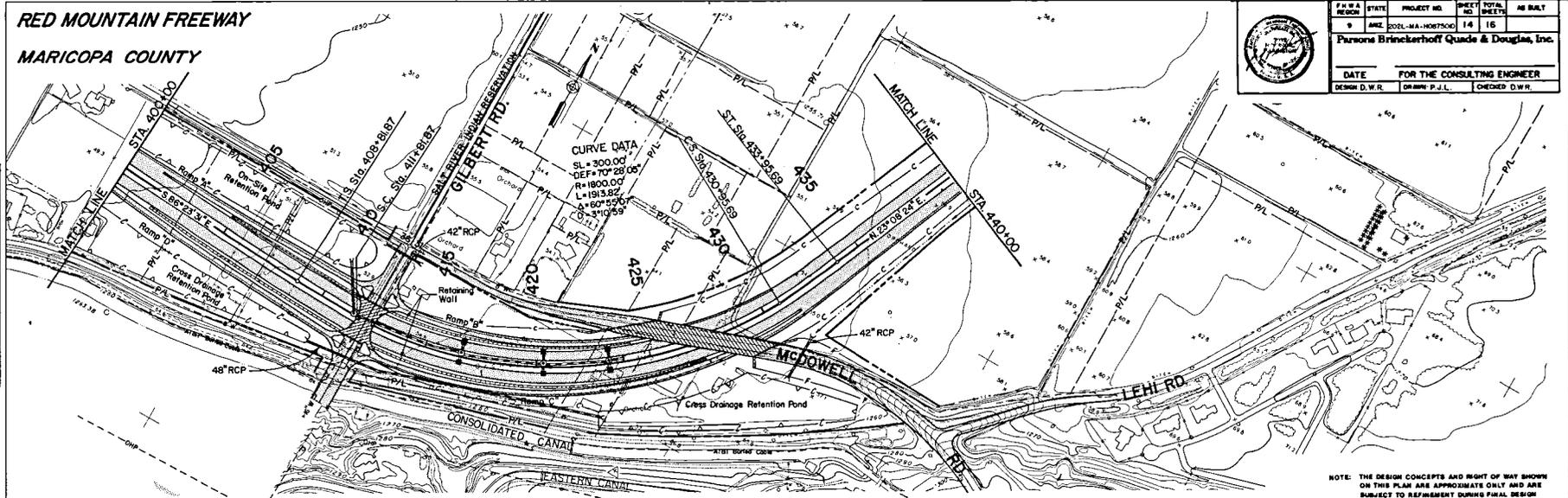
DATE: SEPT 1989

PAGE 51

**RED MOUNTAIN FREEWAY**  
**MARICOPA COUNTY**

	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
	ARIZ.	2002-MA-NR07500	14	15	
Parsons Brinckerhoff Quade & Douglas, Inc.					
DATE		FOR THE CONSULTING ENGINEER			
DESIGN D.W.R.		DRAWN P.J.L.		CHECKED D.W.R.	

PLAN	DATE	BY
CONTRACT NO.		
PROJECT NO.		
DATE OF PLAN CHECK		
BY		



PROFILE	DATE	BY
CONTRACT NO.		
PROJECT NO.		
DATE OF PROFILE CHECK		
BY		

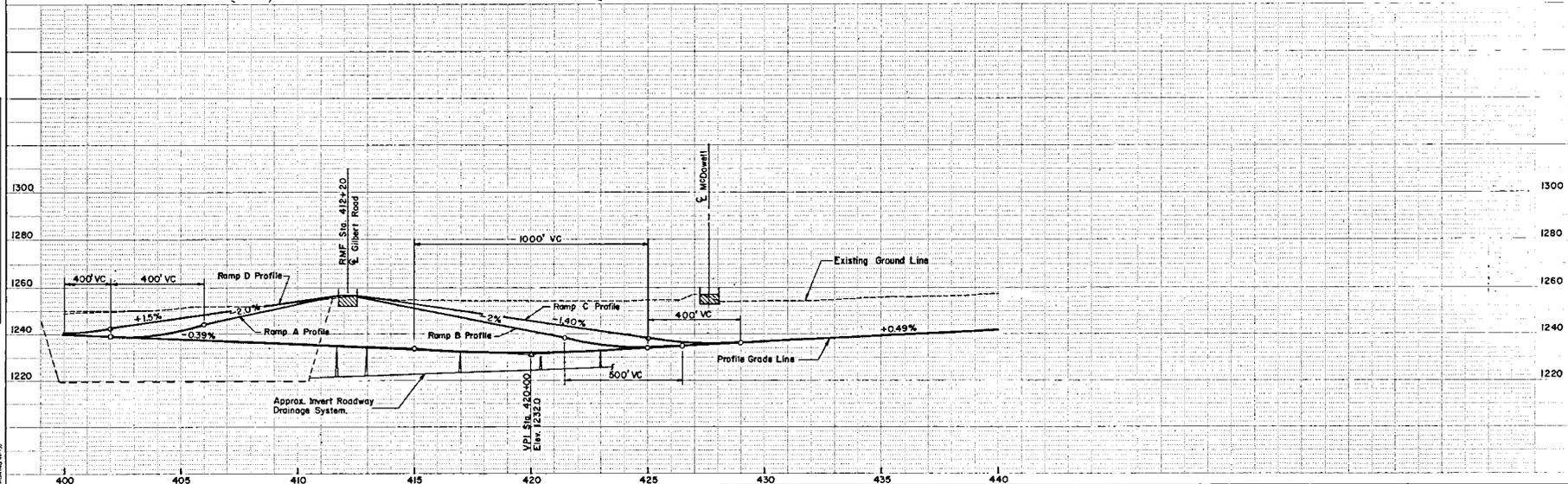


PLATE 1 SHEET 1 PLAN - PROFILE - DOTTED  
CHECKED BY [Name] COMPANY [Name]  
DATE [Date]

*Arizona Department of Transportation*

**RED MOUNTAIN FREEWAY**



**PARSONS BRINCKERHOFF**

FIGURE No.

DATE: **SEPT 1989**

PAGE **52**

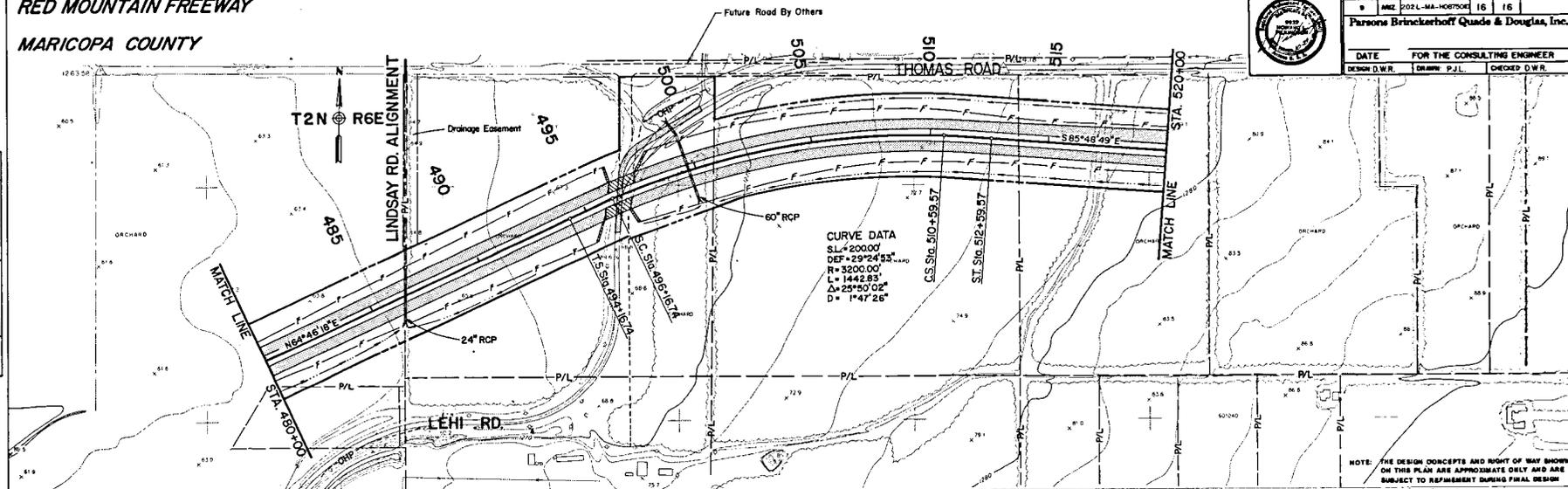


**RED MOUNTAIN FREEWAY**  
**MARICOPA COUNTY**



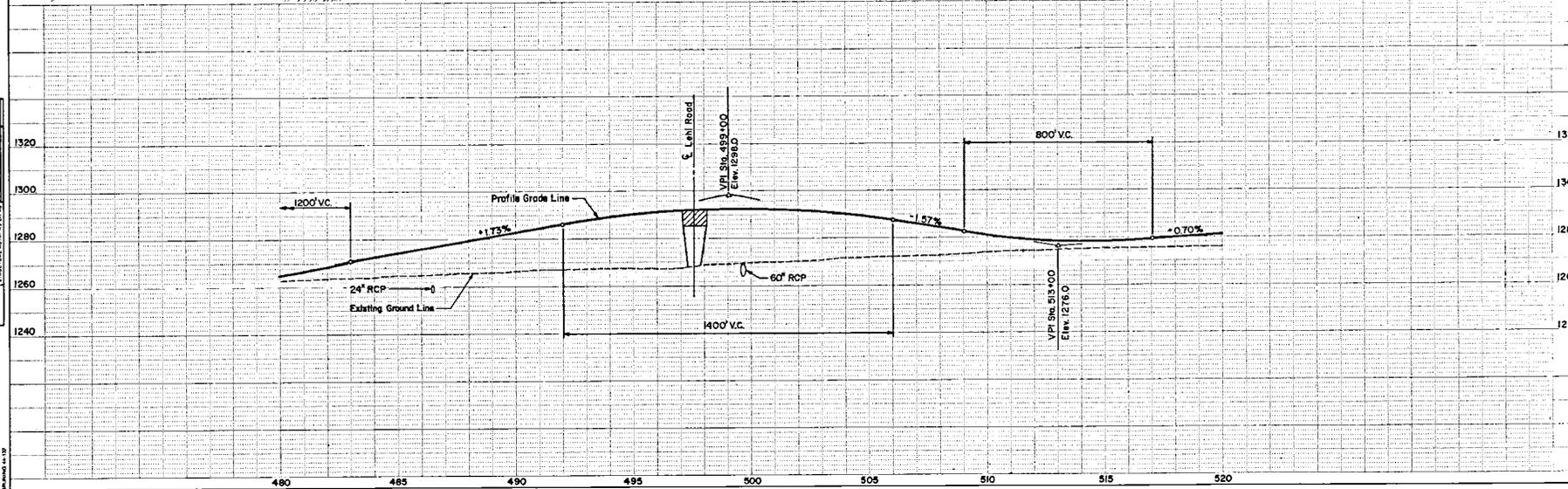
F.A. No.	STATE	PROJECT NO.	SHEET TOTAL	AS BUILT
10	ARIZ.	202L-MA-HOETROCK	16 16	
Parsons Brinckerhoff Guede & Douglas, Inc.				
DATE FOR THE CONSULTING ENGINEER				
DESIGN D.W.R.	DRAWN P.J.L.	CHECKED D.W.R.		

PLAN	DATE	BY	CHKD.
REVISED			
NO. OF SHEETS			
NO. OF SHEETS			



**CURVE DATA**  
 SL=+200.00'  
 DEF=+29°24'53"  
 R=3200.00'  
 L=1442.89'  
 Δa=25°50'02"  
 D=1°47'26"

PROFILE	DATE	BY	CHKD.
REVISED			
NO. OF SHEETS			
NO. OF SHEETS			



Arizona Department of Transportation

**RED MOUNTAIN FREEWAY**

**PARSONS BRINCKERHOFF**

FIGURE No.

DATE: SEPT 1989

PAGE 54