

**MARYVALE AREA  
DRAINAGE MASTER STUDY**  
Structures & Field Survey Report  
FCD #93-29

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

*September, 1997*

*Prepared for:*  
Flood Control District of Maricopa County  
2801 West Durango Street  
Phoenix, AZ 85009

*Prepared by:*  
Wood, Patel & Associates, Inc.  
1550 East Missouri, Suite 203  
Phoenix, AZ 85014  
(602) 234-1344



WP #94154.00

# WOOD/PATEL

CIVIL ENGINEERS • HYDROLOGISTS • LAND SURVEYORS

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Scott A. Nelson, R.L.S.  
Richard L. Hiner, P.E.  
Fredrick K. Schneider, P.E.  
Timothy A. Huval, P.E.  
Michael J. Sexton, R.L.S.  
Jack K. Moody, P.E.  
Leslie J. Kland, P.E.

September 19, 1997

Mr. Russ Miracle, P.E.  
Flood Control District of Maricopa County  
2801 West Durango Street  
Phoenix, AZ 85009

Re: **Maryvale ADMS**  
FCD #93-29  
WP #94154

Dear Mr. Miracle:

Enclosed are two (2) sets of the "Structures & Field Survey Report" for the Maryvale ADMS. The report documents structure cross-sections, elevations and photographs along the critical locations within the following study corridors.

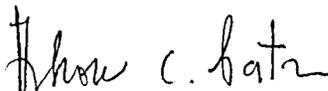
- Grand Avenue
- Grand Canal
- Roosevelt Irrigation District Canal

In addition, spot elevations along the canal/railroad bank embankments were field surveyed by the Wood/Patel survey crews. That data is depicted on the "Field Survey & Topo Plates".

Should you require clarification regarding this report, please feel free to contact me.

Sincerely,

**WOOD, PATEL & ASSOCIATES, INC.**



Ashok C. Patel, P.E., R.L.S.  
Principal

ACP/djp

GENCOR\94154.S17

## INTRODUCTION

Wood, Patel & Associates, Inc. (Wood/Patel) has been contracted by the Flood Control District of Maricopa Count (District) to prepare the Maryvale Area Drainage Master Study (ADMS).

In the initial phase of work, Wood/Patel prepared detailed hydrologic analysis for the existing condition for the approximately 100 square miles of watershed. Wood/Patel also delineated floodplain boundaries for the ponding areas along the following corridors:

- Grand Avenue
- Grand Canal
- Roosevelt Irrigation District Canal.

To support the above tasks, a field survey was performed to locate, document and measure bridge and culvert type structures within the study corridors along Grand Avenue, Grand Canal and Roosevelt Irrigation District Canal (RIDC). The results of the field survey is documented in Section I of this report.

To supplement the available 1 ft. or 2 ft. topographic mapping prepared by Kenney Aerial Mapping, Inc. (Kenney) with a detailed spot elevation, Wood/Patel performed a field survey for the critical ponding area locations along the following corridors:

- Grand Avenue
- Grand Canal
- RIDC.

Wood/Patel utilized the existing control data (vertical and horizontal) from the Maryvale ADMS topographic mapping as prepared by Kenney.

The field surveyed spot elevations along the canal banks or railroad embankment are documented in Section II of this report.

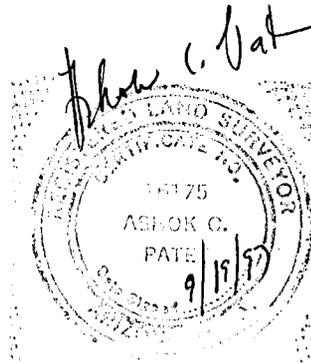
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## Section I

- Plate 1, Index Map: Structures & photographs
- Structures & photographs along Grand Avenue
- Structures & photographs along Grand Canal
- Structures & photographs along RIDC

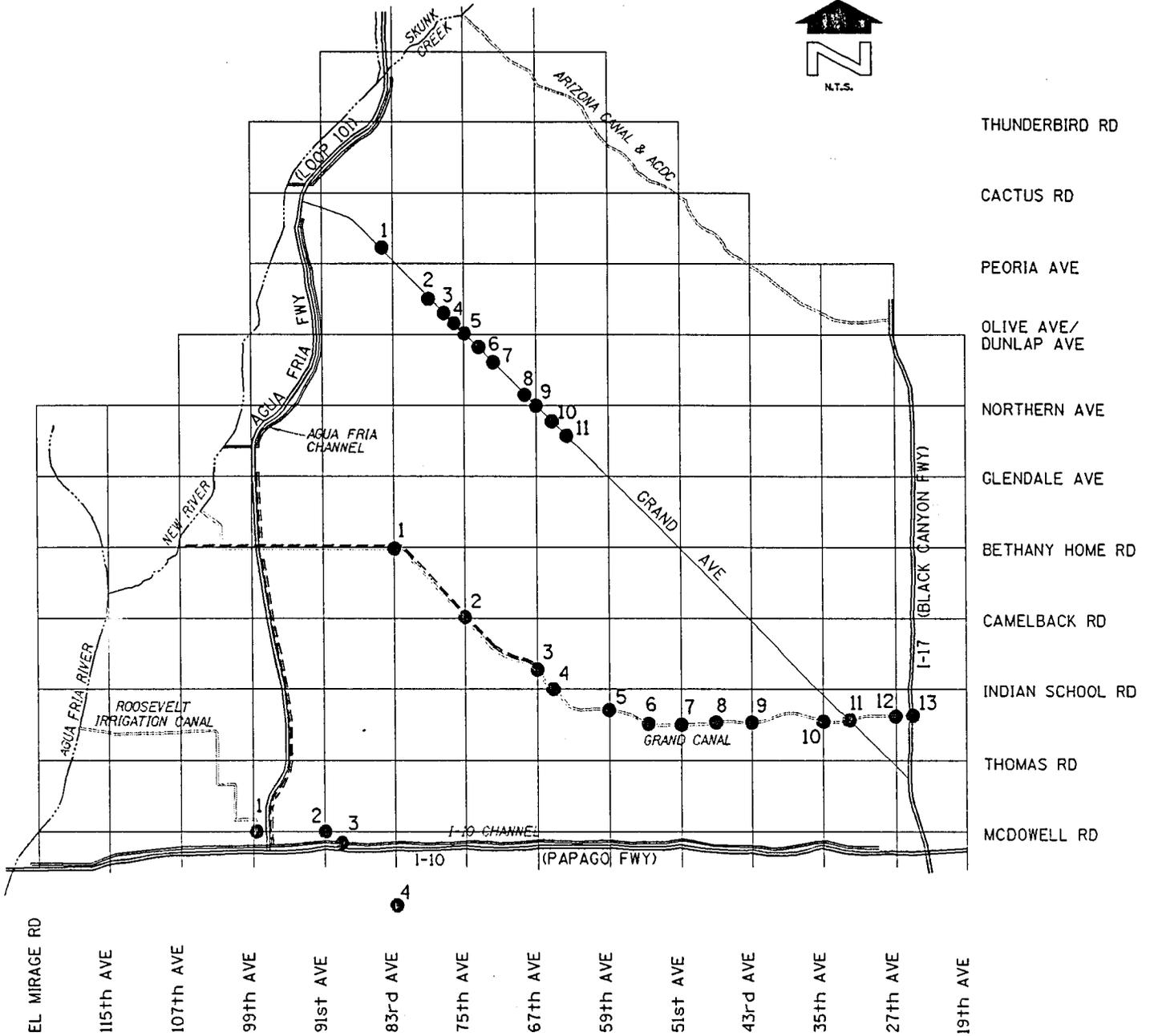
## Section II

- Plate 2, Index Map - Field Survey & Topo
- Plates 1 thru 7, Field Survey & Topo along Grand Avenue
- Plates 8 thru 14, Field Survey & Topo along Grand Canal
- Plates 15 thru 25, Field Survey & Topo along RIDC



## Section I

- Plate 1, Index Map: Structures & photographs
- Structures & photographs along Grand Avenue
- Structures & photographs along Grand Canal
- Structures & photographs along RIDC



**LEGEND**

- 1 STRUCTURE & PHOTOGRAPH LOCATION
- EXISTING FLOOD CONTROL CHANNEL
- - - - - PROPOSED FLOOD CONTROL CHANNEL
- ==== INTERSTATE OR STATE HIGHWAY

DESIGN	J. TAILLON	6/97	FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
DRAWN	A. LINN	6/97	
CHECKED	A. PATEL	6/97	
WOOD, PATEL & ASSOCIATES, INC. 1550 EAST MISSOURI, SUITE 203 PHOENIX, ARIZONA (602) 234-1344			INDEX MAP STRUCTURES & PHOTOGRAPHS
MARYVALE AREA DRAINAGE MASTER STUDY			PLATE 1

**STRUCTURES & PHOTOGRAPHS  
ALONG GRAND AVENUE**

BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

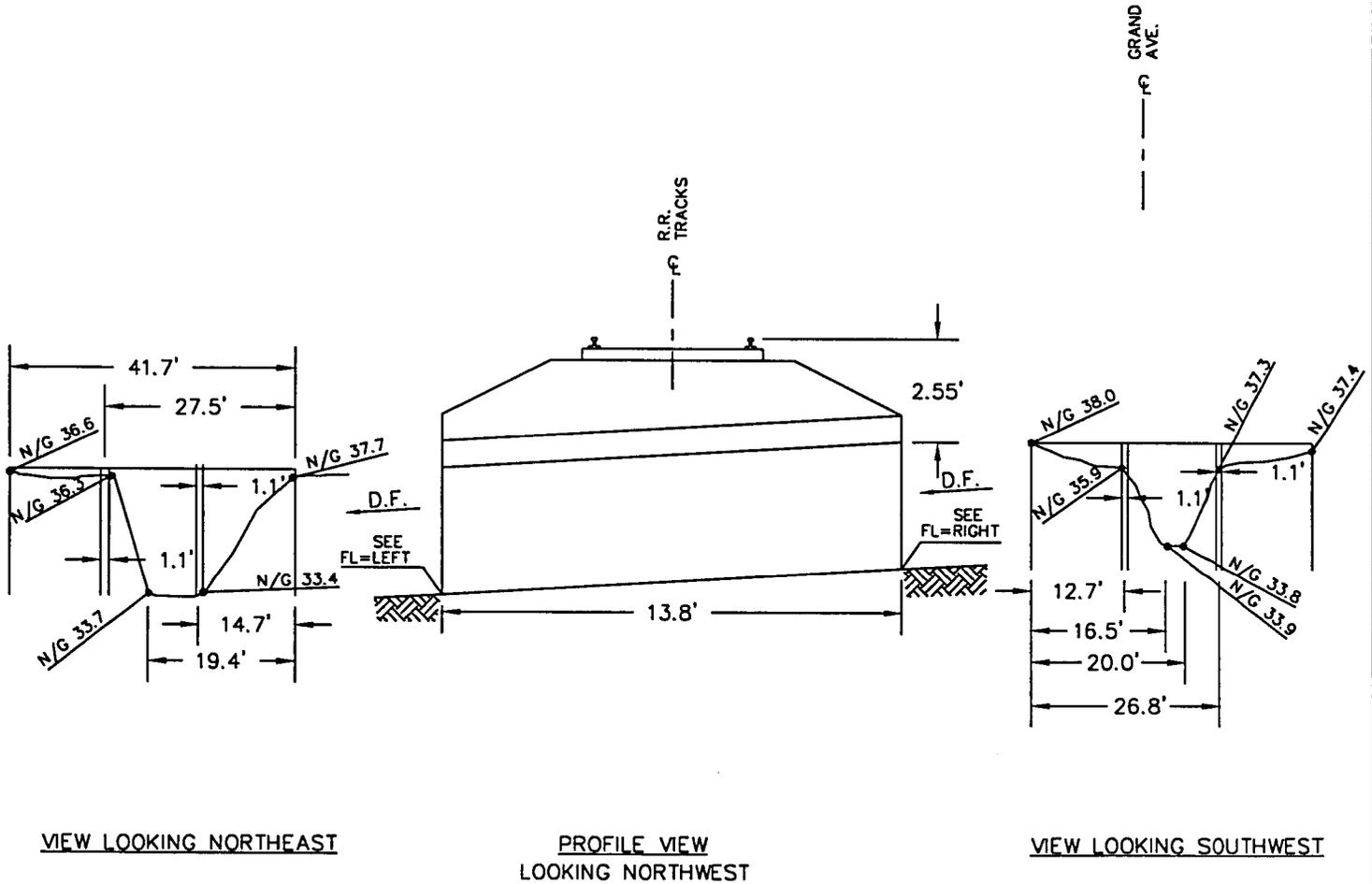
LOCATION: GRAND AVE. NEAR 84TH AVE, ALIGNMENT  
R.R. MILE MARKER 179.5

PROJECT: MARYVALE AREA DRAINAGE  
MASTER STUDY

PROJECT NO.: 94154

DATE: MARCH/APRIL 1996

CONTRACT FD: 93-29



GRAND AVENUE  
LOCATION 1

NOTES:

1) TBM = NAIL IN BRIDGE EL.=1139.30

DRAWINGS NOT TO SCALE



Grand Ave. at location 1 looking Northeast



Grand Ave. at location 1 looking Southwest



Grand Ave. Northeast of location 1 looking Southwest



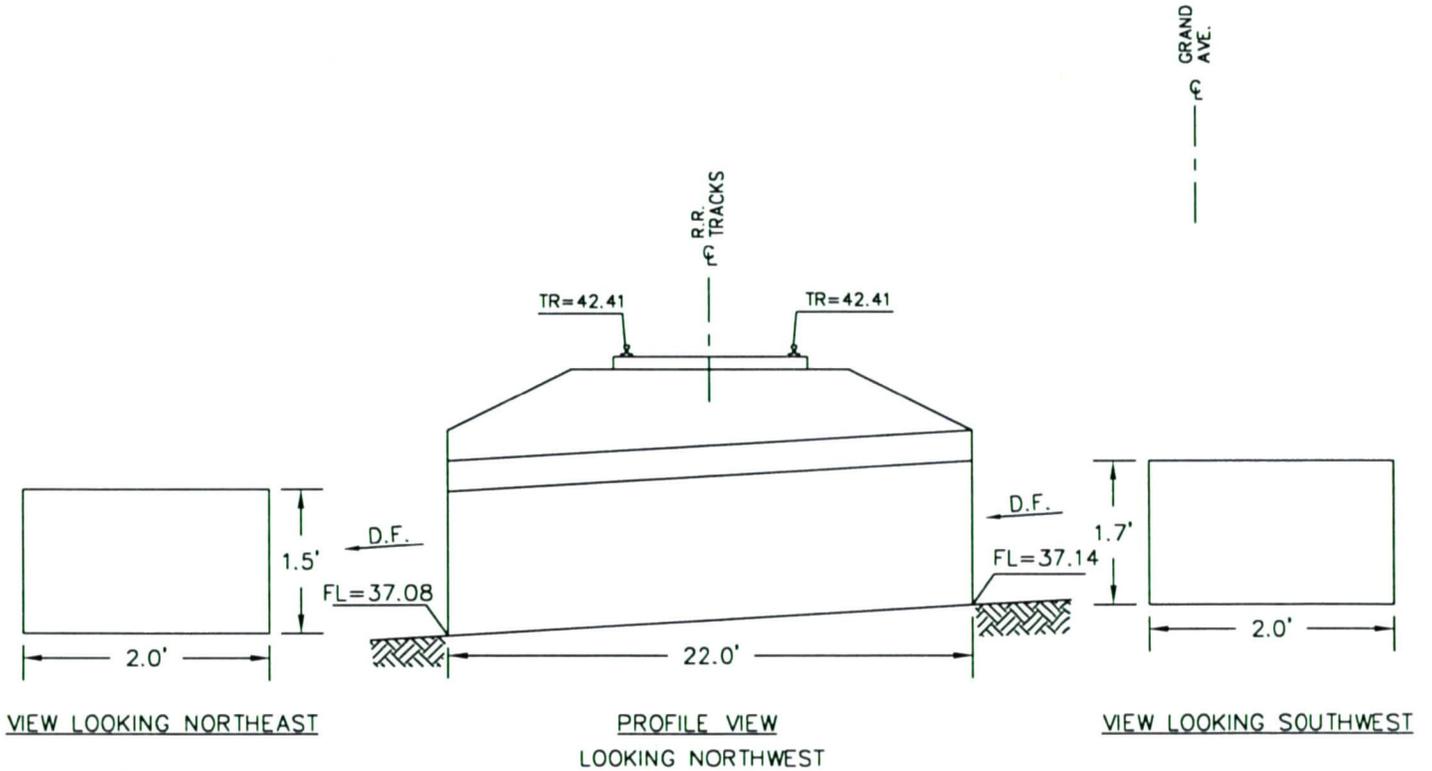
Grand Ave. Southwest of location 1 looking Northeast

BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

LOCATION: GRAND AVE. NEAR 79TH AVE, ALIGNMENT  
R.R. MILE MARKER 180.4

MARYVALE AREA DRAINAGE  
PROJECT: MASTER STUDY  
PROJECT NO.: 94154  
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GRAND AVENUE  
LOCATION 2

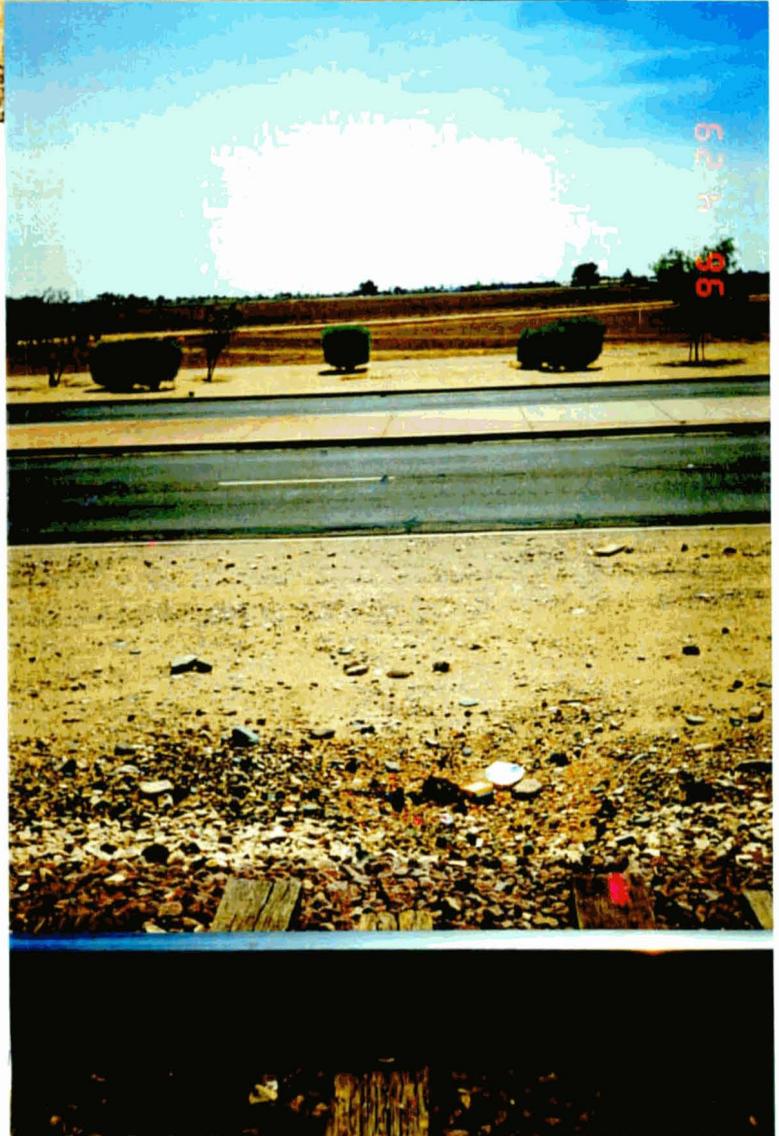
NOTES:

1) TBM = RR SPIKE IN X-TIE @ BRIDGE EL=1141.88

DRAWINGS NOT TO SCALE



Grand Ave. at location 2  
looking Northeast



Grand Ave. at location 2  
looking Southwest



Grand Ave. Northeast of location 2 looking Southwest



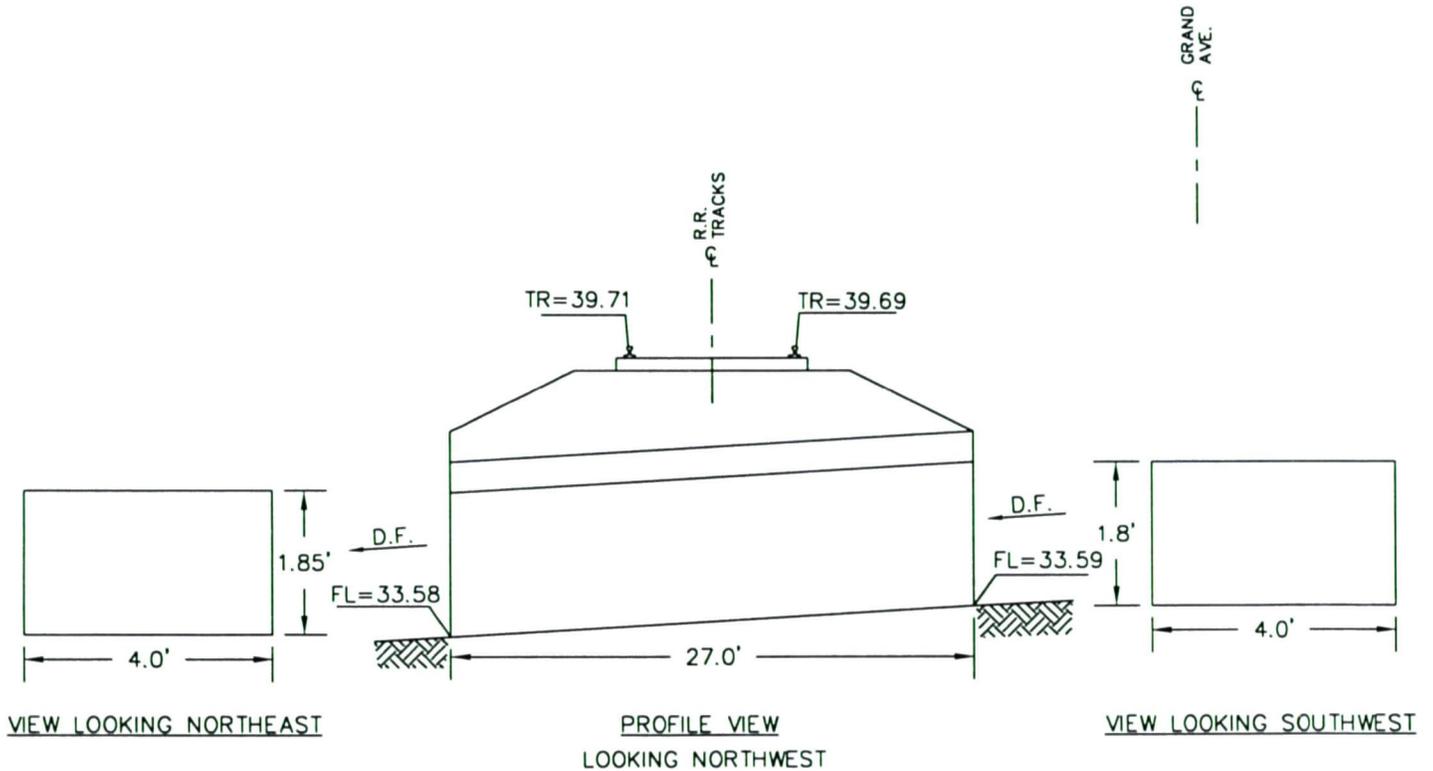
Grand Ave. Southwest of location 2 looking Northeast

BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

LOCATION: GRAND AVE. NEAR 76TH AVE, ALIGNMENT  
R.R. MILE MARKER 180.8

MARYVALE AREA DRAINAGE  
PROJECT: MASTER STUDY  
PROJECT NO.: 94154  
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GRAND AVENUE  
LOCATION 3

NOTES:

1) TBM = RR SPIKE IN X-TIE @ BRIDGE EL=1139.17

DRAWINGS NOT TO SCALE



Grand Ave. at location 3 looking Northeast



Grand Ave. at location 3 looking Southwest



Grand Ave. Northeast of location 3 looking Southwest



Grand Ave. Southwest of location 3 looking Northeast

# BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

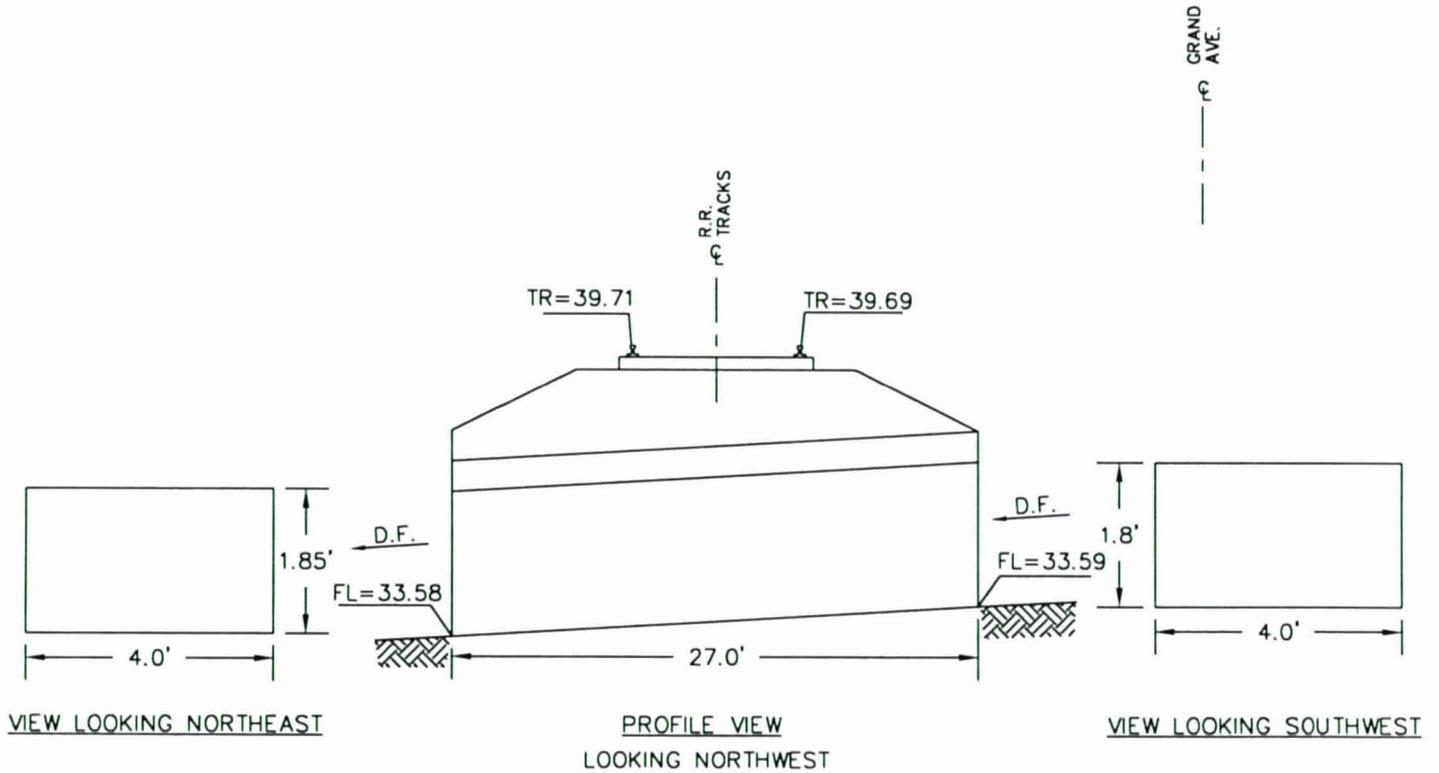
LOCATION: GRAND AVE. NEAR 76TH AVE, ALIGNMENT  
R.R. MILE MARKER 180.8

PROJECT: MARYVALE AREA DRAINAGE  
MASTER STUDY

PROJECT NO.: 94154

DATE: MARCH/APRIL 1996

CONTRACT FD: 93-29

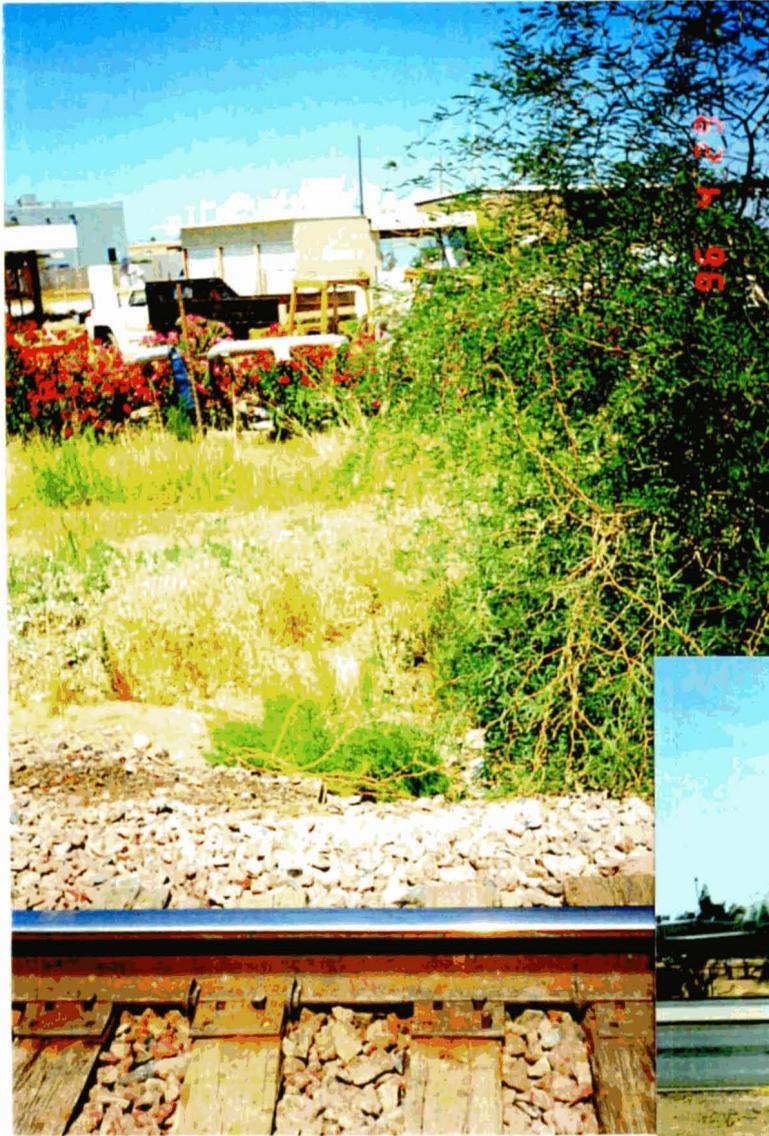


## NOTES:

1) TBM = RR SPIKE IN X-TIE @ BRIDGE EL=1139.17

GRAND AVENUE  
LOCATION 4

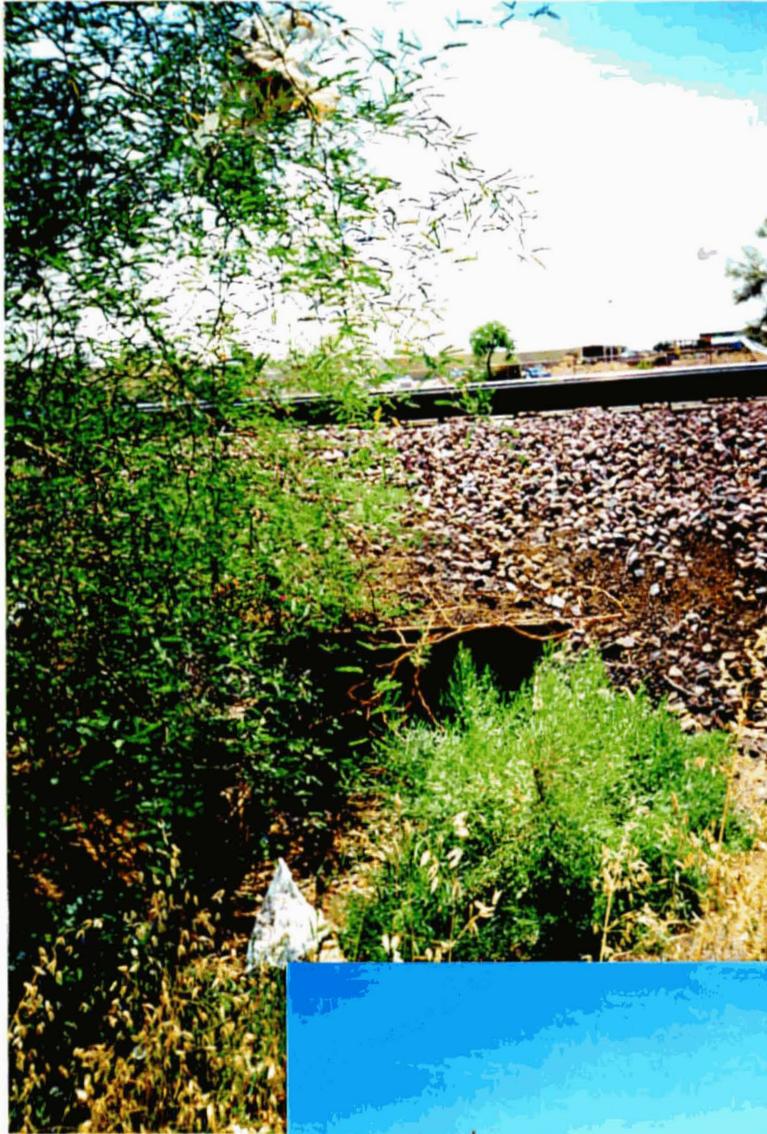
DRAWINGS NOT TO SCALE



Grand Ave. at location 4  
looking Northeast



Grand Ave. at location 4  
looking Southwest



Grand Ave. Northeast of location 4 looking Southwest



Grand Ave. Southwest of location 4 looking Northeast

BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

LOCATION: GRAND AVE. NEAR 75TH AVE & OLIVE AVE.

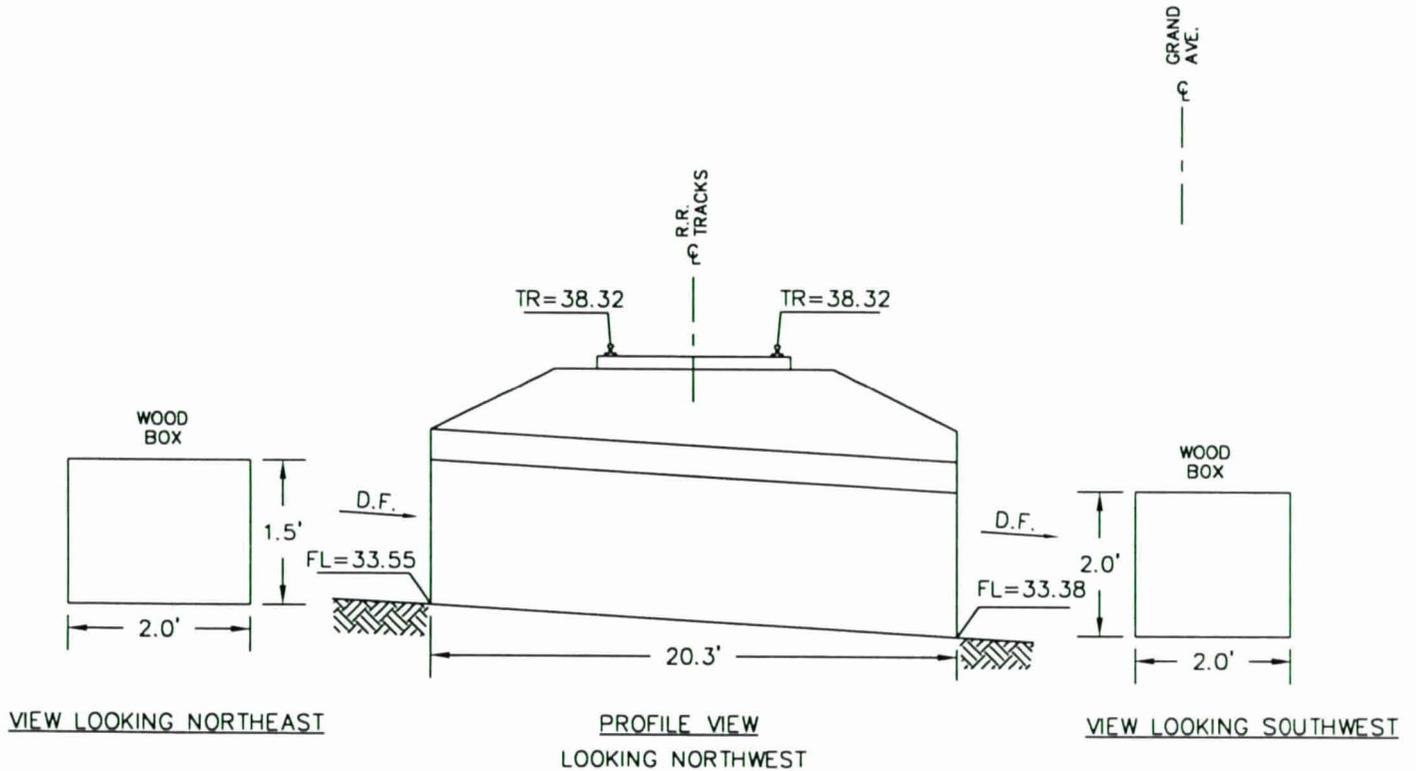
R.R. MILE MARKER 181.1

PROJECT: MARYVALE AREA DRAINAGE MASTER STUDY

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CONTRACT FD: 93-29



NOTES:

1) TBM = NAIL IN X-TIE @ BRIDGE EL=1137.73

GRAND AVENUE  
LOCATION 5

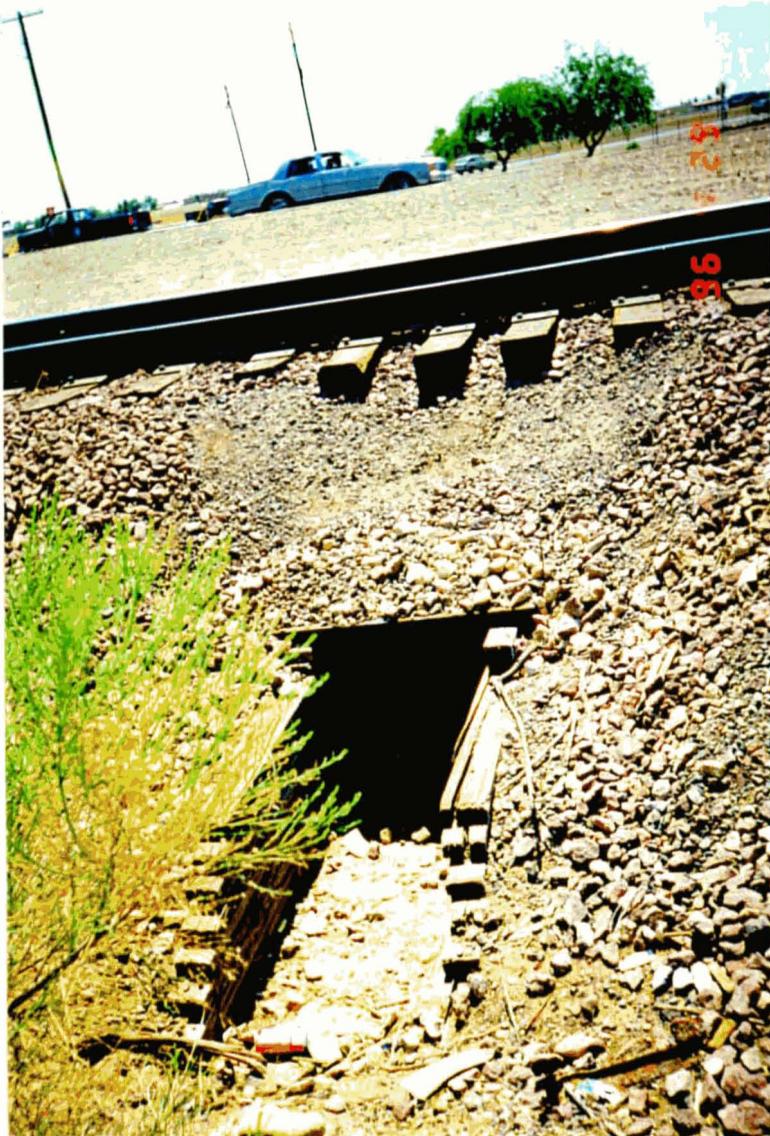
DRAWINGS NOT TO SCALE



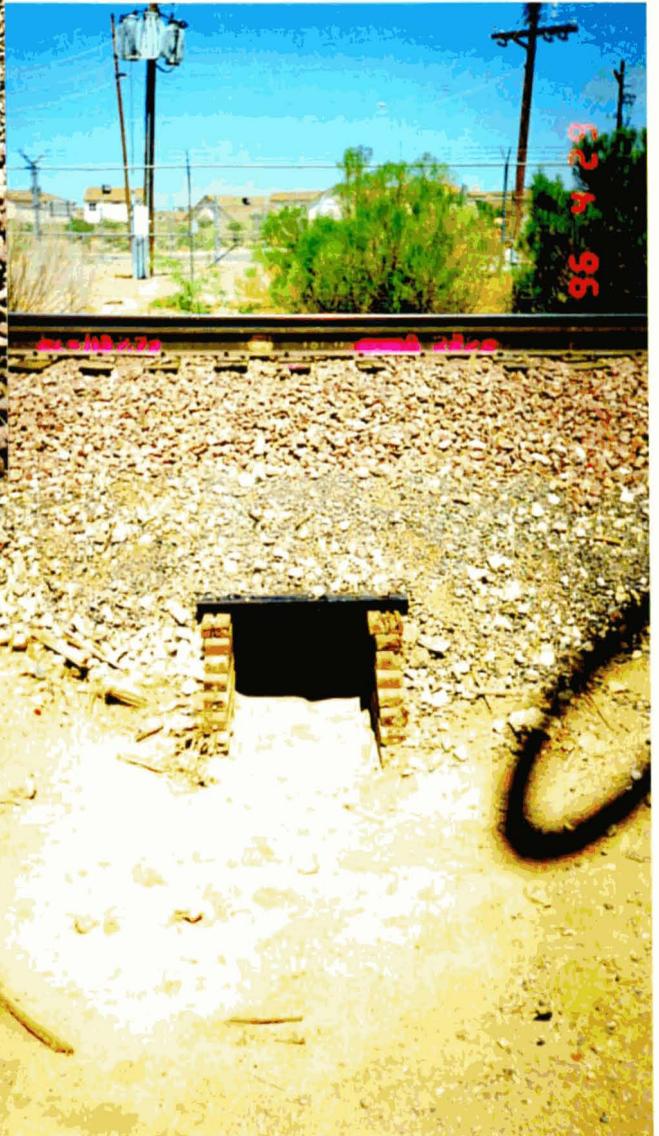
Grand Ave. at location 5  
looking Northeast



Grand Ave. at location 5  
looking Southwest



Grand Ave. Northeast of location 5 looking southwest



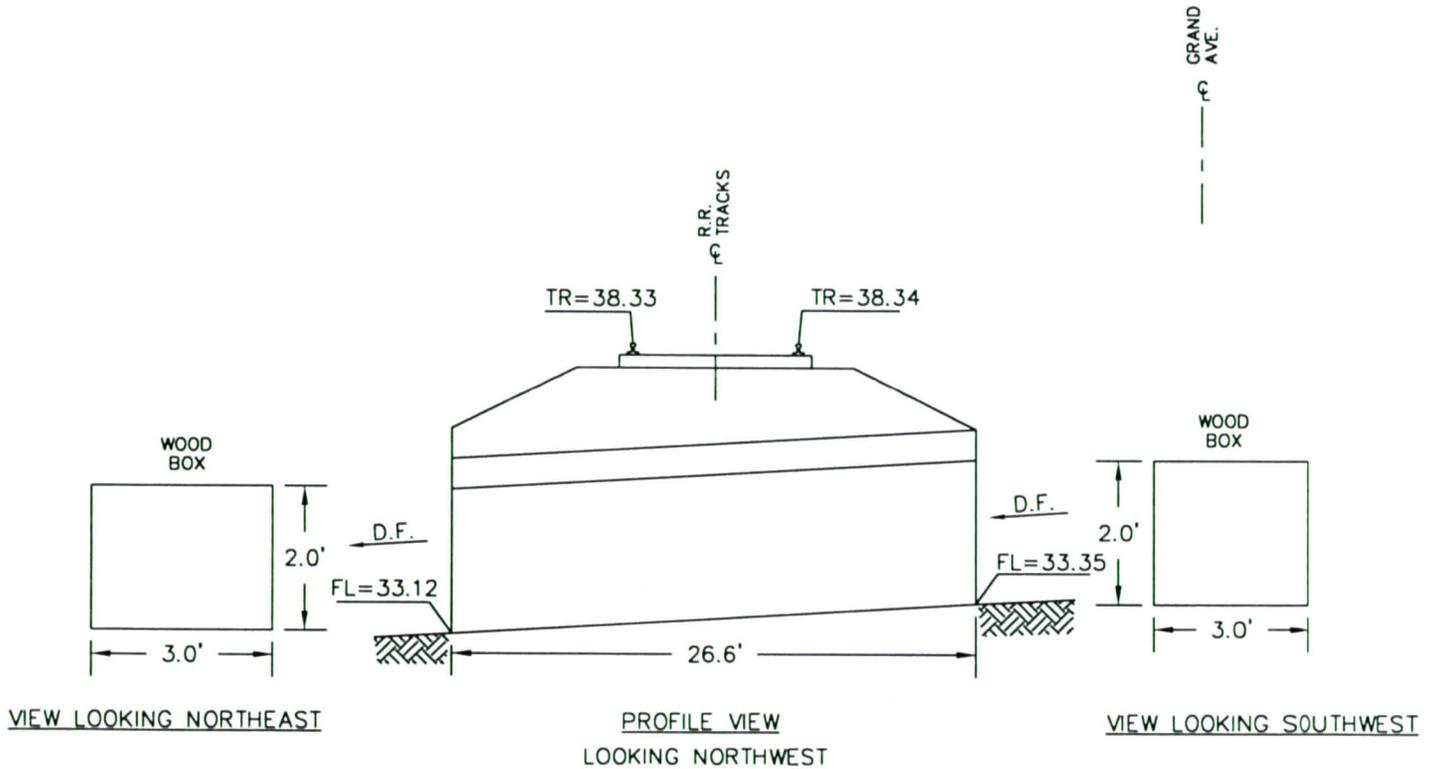
Grand Ave. Southwest of location 5 looking Northeast

BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

LOCATION: GRAND AVE. NEAR 74TH AVE, ALIGNMENT  
R.R. MILE MARKER 181.25

MARYVALE AREA DRAINAGE  
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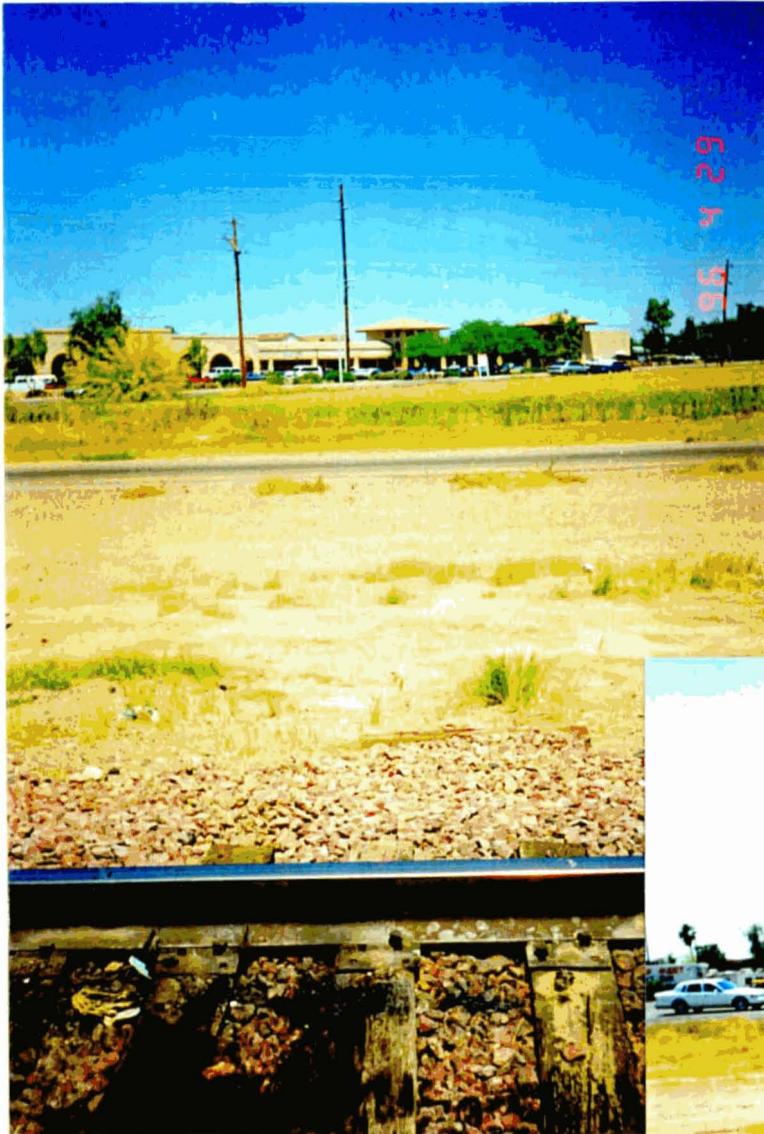


NOTES:

1) TBM = NAIL IN X-TIE @ BRIDGE EL=1137.72

GRAND AVENUE  
LOCATION 6

DRAWINGS NOT TO SCALE



Grand Ave. at location 6  
looking Northeast



Grand Ave. at location 6  
looking Southwest

Grand Ave. Northeast of location 6 looking Southwest



Grand Ave. Southwest of location 6 looking Northeast

BRIDGE/CULVERT FIELD SURVEY

LOCATION: GRAND AVE. UNDERPASS

NEAR 73RD AVE ALIGNMENT

R.R. MILE MARKER 181.4

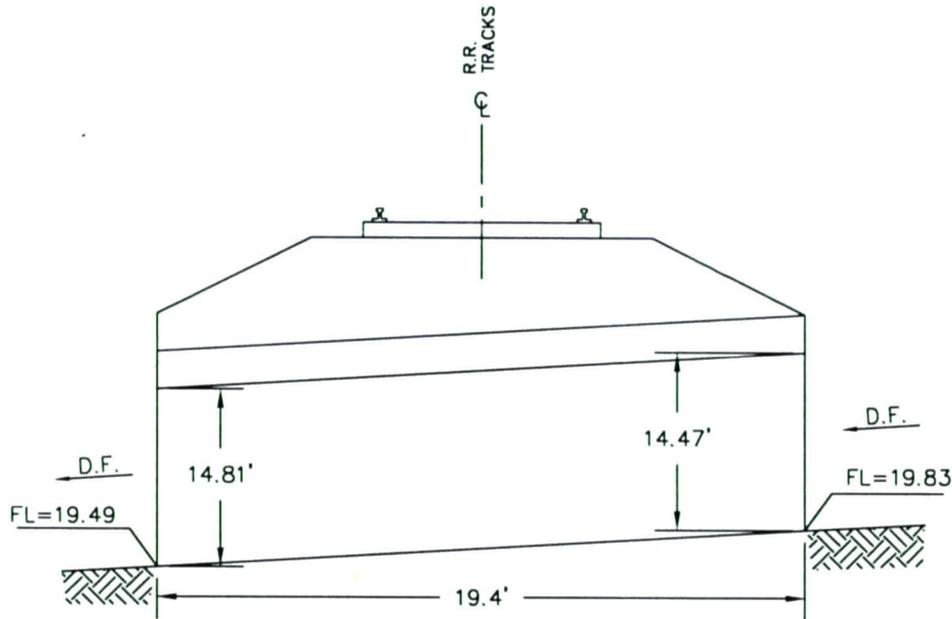
WOOD, PATEL & ASSOC., INC.

PROJECT: MARYVALE AREA DRAINAGE  
MASTER STUDY

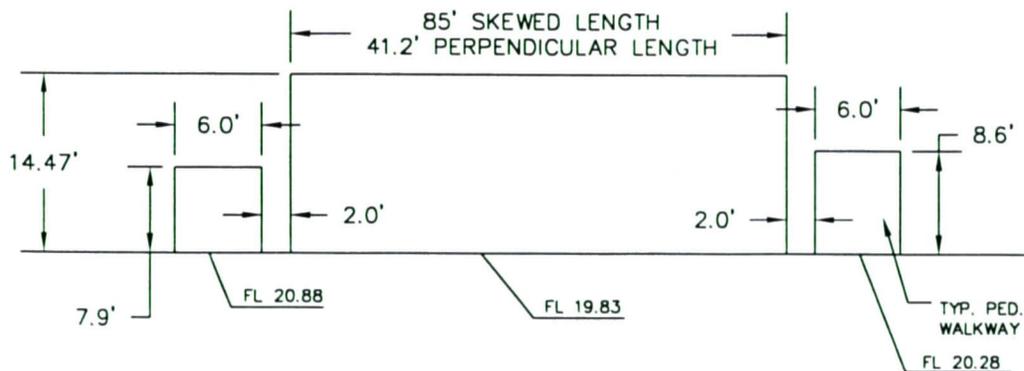
PROJECT NO.: 94154

DATE: MARCH/APRIL 1996

CONTRACT FD: 93-29



PROFILE VIEW  
LOOKING NORTHWEST



END VIEW  
LOOKING SOUTHWEST

GRAND AVENUE  
LOCATION 7

NOTES:

- 1) TBM = ADOT BC FLUSH @ NW COR. BRIDGE EL. = 1137.82
- 2) MISSING DATA IS IN COMPUTER

BRIDGE/CULVERT FIELD SURVEY

LOCATION: GRAND AVE. UNDERPASS

NEAR 73RD AVE ALIGNMENT

R.R. MILE MARKER 181.4

WOOD, PATEL & ASSOC., INC.

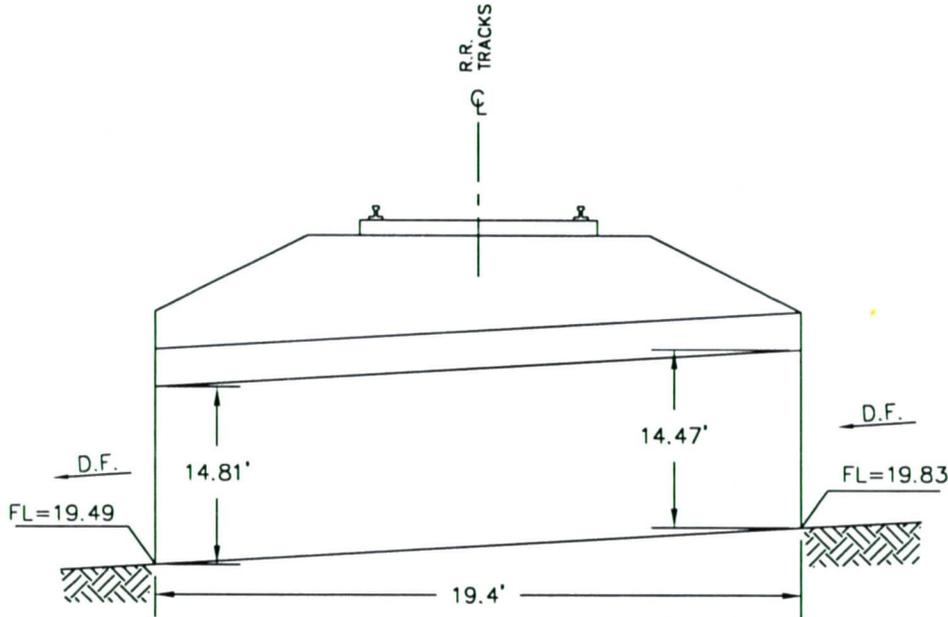
MARYVALE AREA DRAINAGE

PROJECT: MASTER STUDY

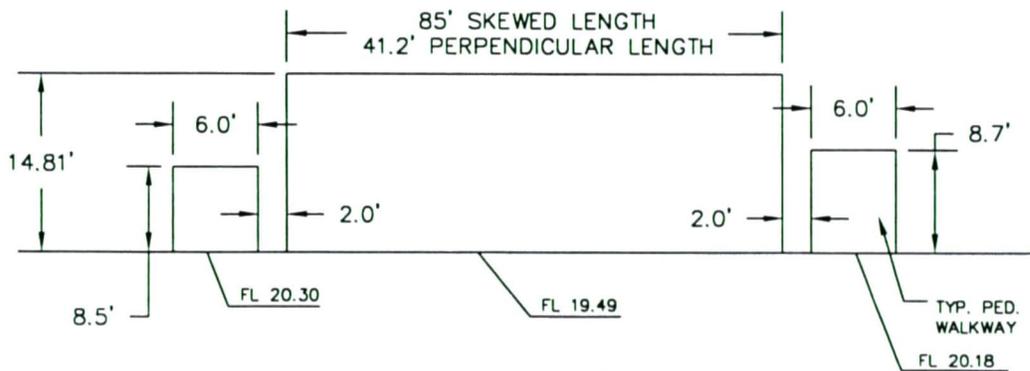
PROJECT NO.: 94154

DATE: MARCH/APRIL 1996

CONTRACT FD: 93-29



PROFILE VIEW  
LOOKING NORTHWEST



END VIEW  
LOOKING NORTHEAST

GRAND AVENUE  
LOCATION 7

NOTES:

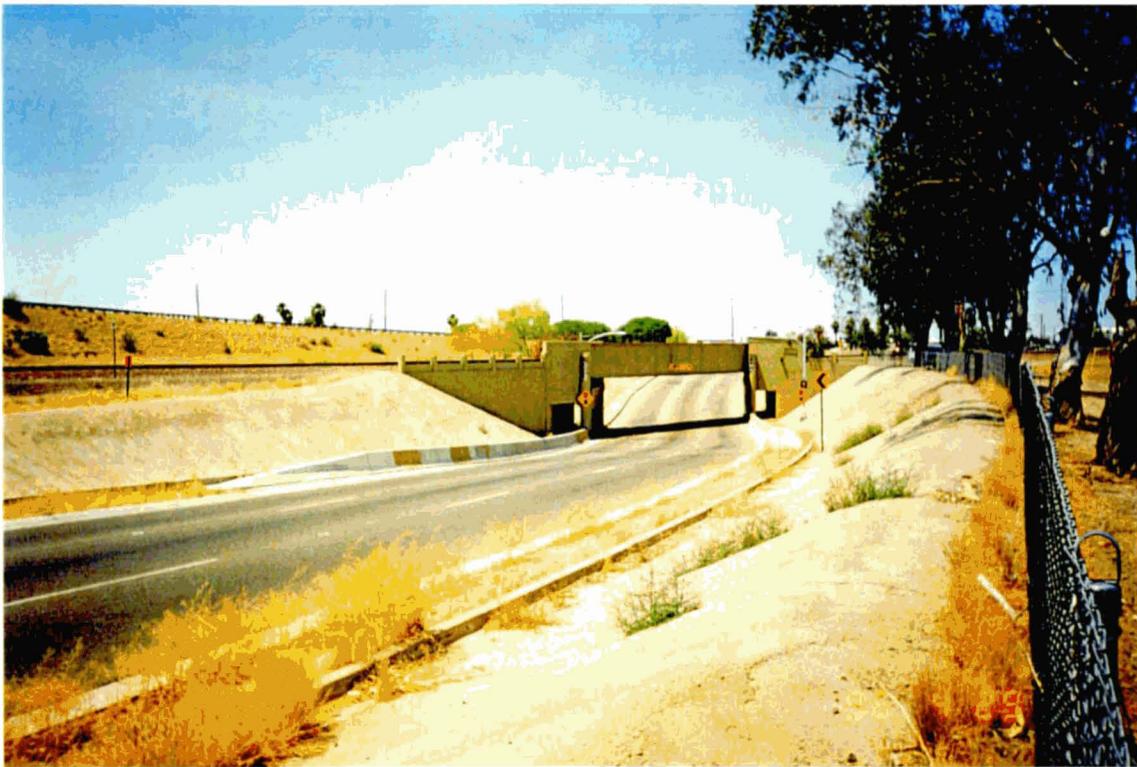
1) TBM = ADOT BC FLUSH @ NW COR. BRIDGE EL. = 1137.82



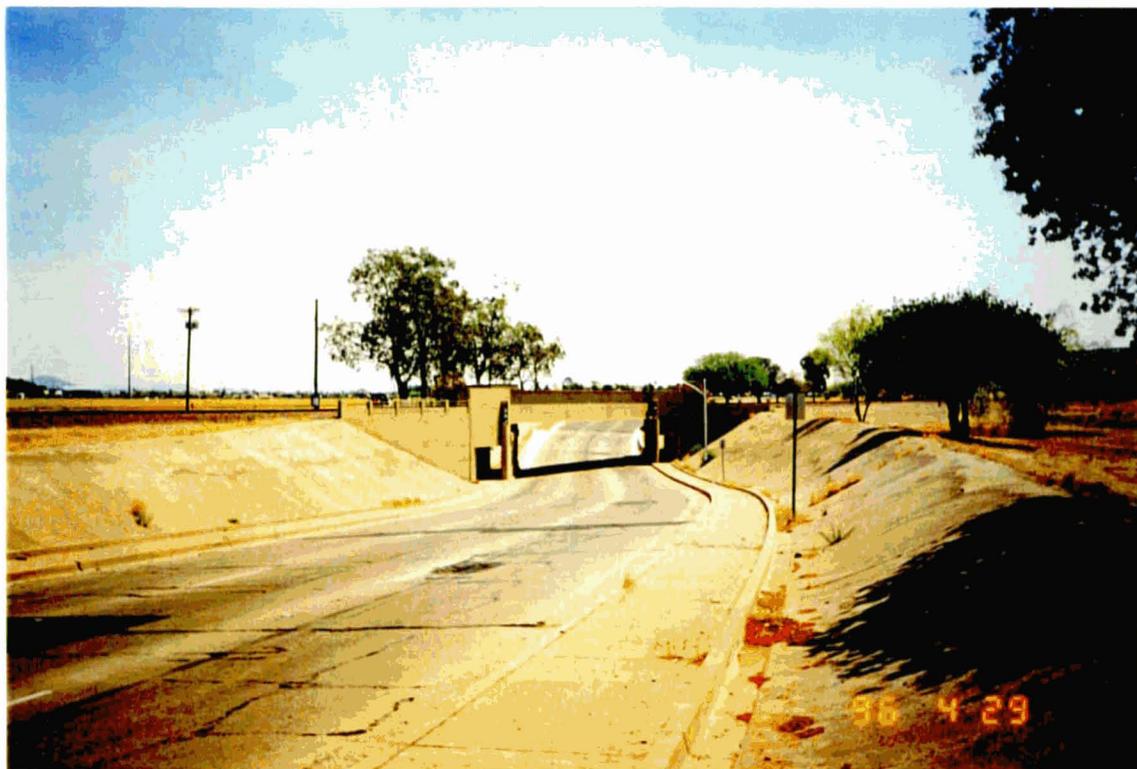
Grand Ave. at location 7 looking Northeast



Grand Ave. at location 7 looking Southwest



**Grand Ave. Northeast of location 7 looking Southwest**



**Grand Ave. Southwest of location 7 looking Northeast**

BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

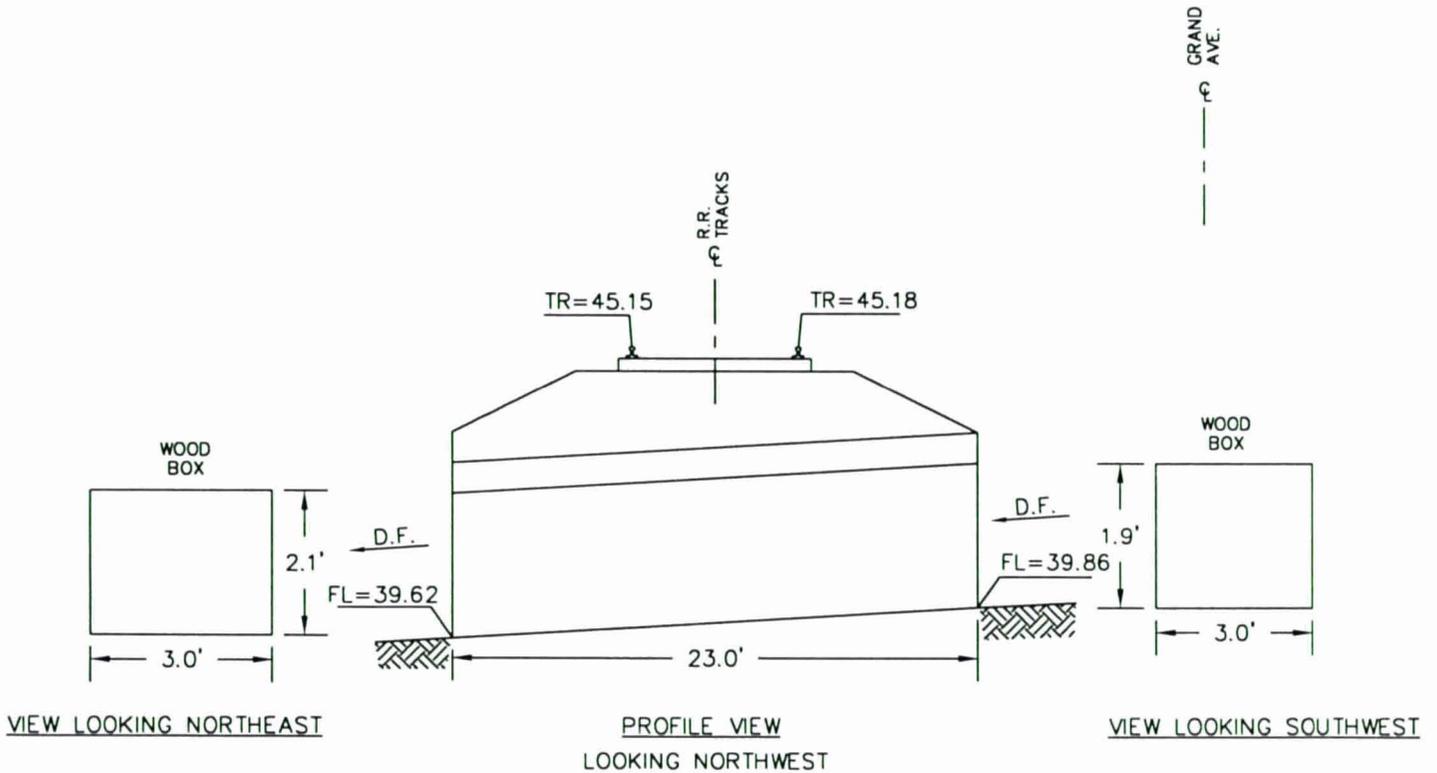
LOCATION: GRAND AVE. NEAR 68TH AVE, ALIGNMENT  
R.R. MILE MARKER 182.2

PROJECT: MARYVALE AREA DRAINAGE  
MASTER STUDY

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DATE: MARCH/APRIL 1996

CONTRACT FD: 93-29

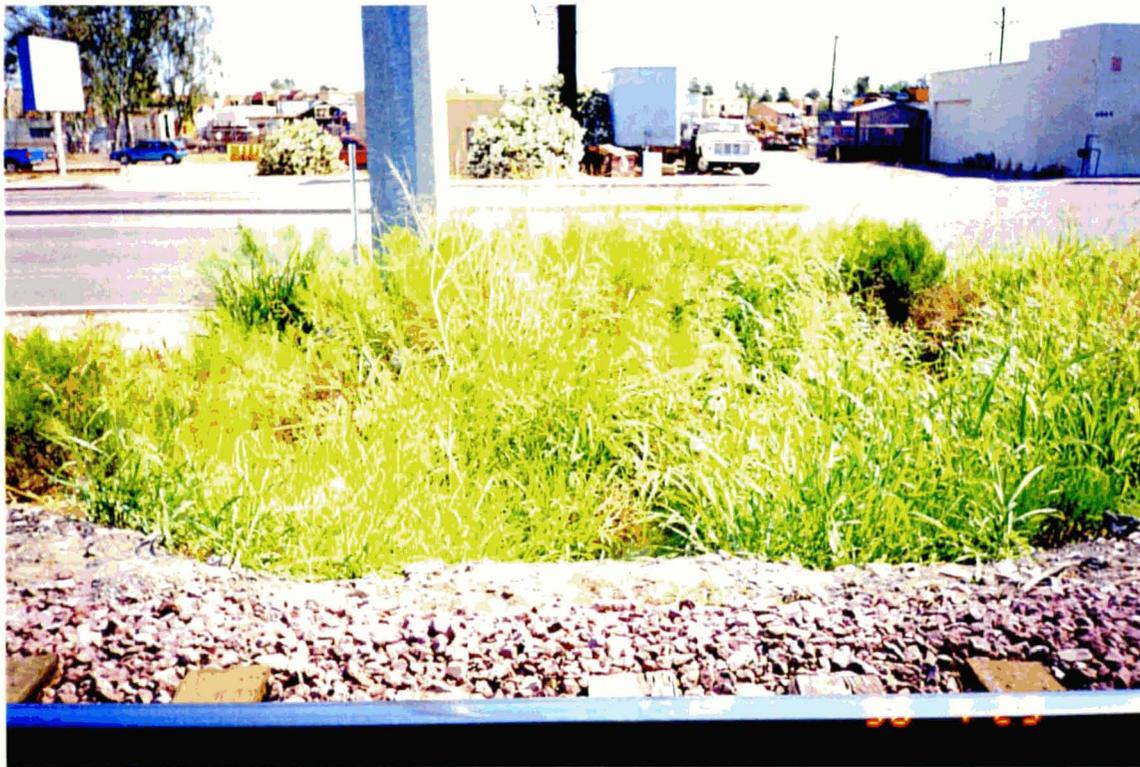


NOTES:

- 1) TBM = NAIL IN TOP NE WOODEN HEADWALL EL=1142.48
- 2) THIS APPEARS TO BE (AT LEAST PART-TIME) AN IRRIGATION STRUCTURE - HOWEVER NO CLD'S CONTROL IRRIGATION WATER FLOW IN OR OUT OF STRUCTURE.

GRAND AVENUE  
LOCATION 8

DRAWINGS NOT TO SCALE



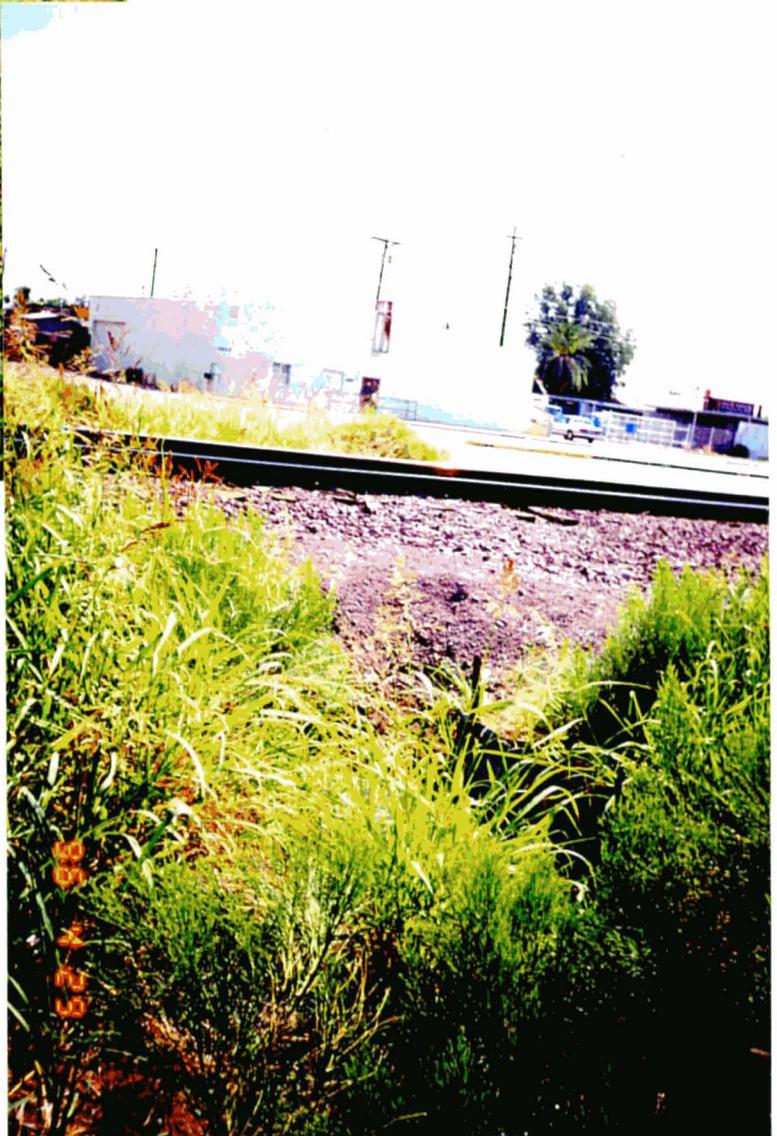
Grand Ave. at location 8 looking Northeast



Grand Ave. at location 8 looking Southwest



Grand Ave. Northeast of location 8 looking Southwest



Grand Ave. Southwest of location 8 looking Northeast

BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

LOCATION: GRAND AVE. NEAR 67TH AVE, ALIGNMENT  
R.R. MILE MARKER 182.5

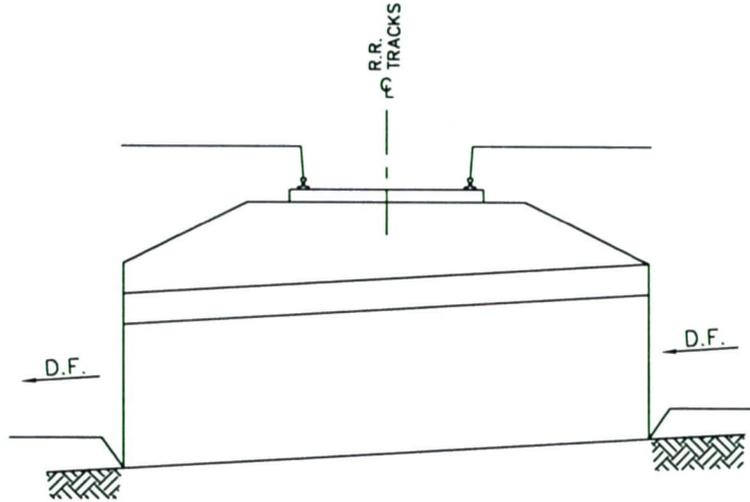
MARYVALE AREA DRAINAGE  
PROJECT: MASTER STUDY

PROJECT NO.: 94154

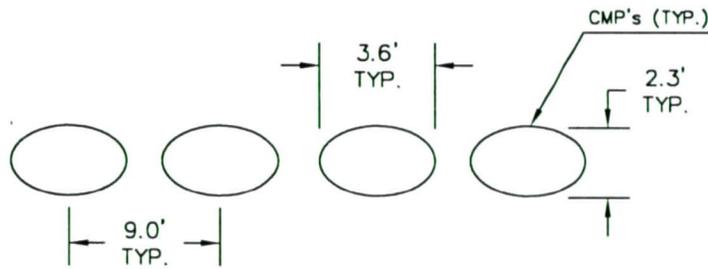
DATE: MARCH/APRIL 1996

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GRAND AVE.  
— — — — —



PROFILE VIEW  
LOOKING NORTHWEST



END VIEW

GRAND AVENUE  
LOCATION 9

NOTES:

1) MISSING DATA IS IN COMPUTER

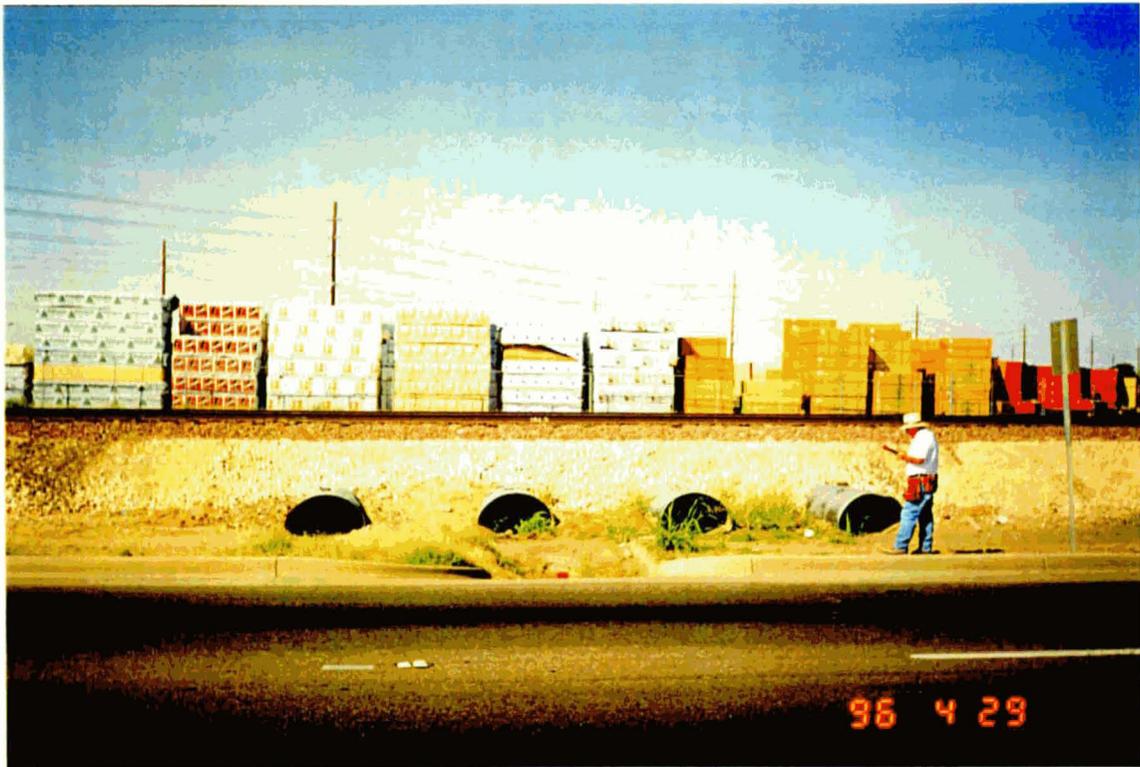
DRAWINGS NOT TO SCALE



Grand Ave. at location 9 looking Northeast



Grand Ave. at location 9 looking Southwest



Grand Ave. Northeast of location 9 looking Southwest



Grand Ave. Southwest of location 9 looking Northeast

BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

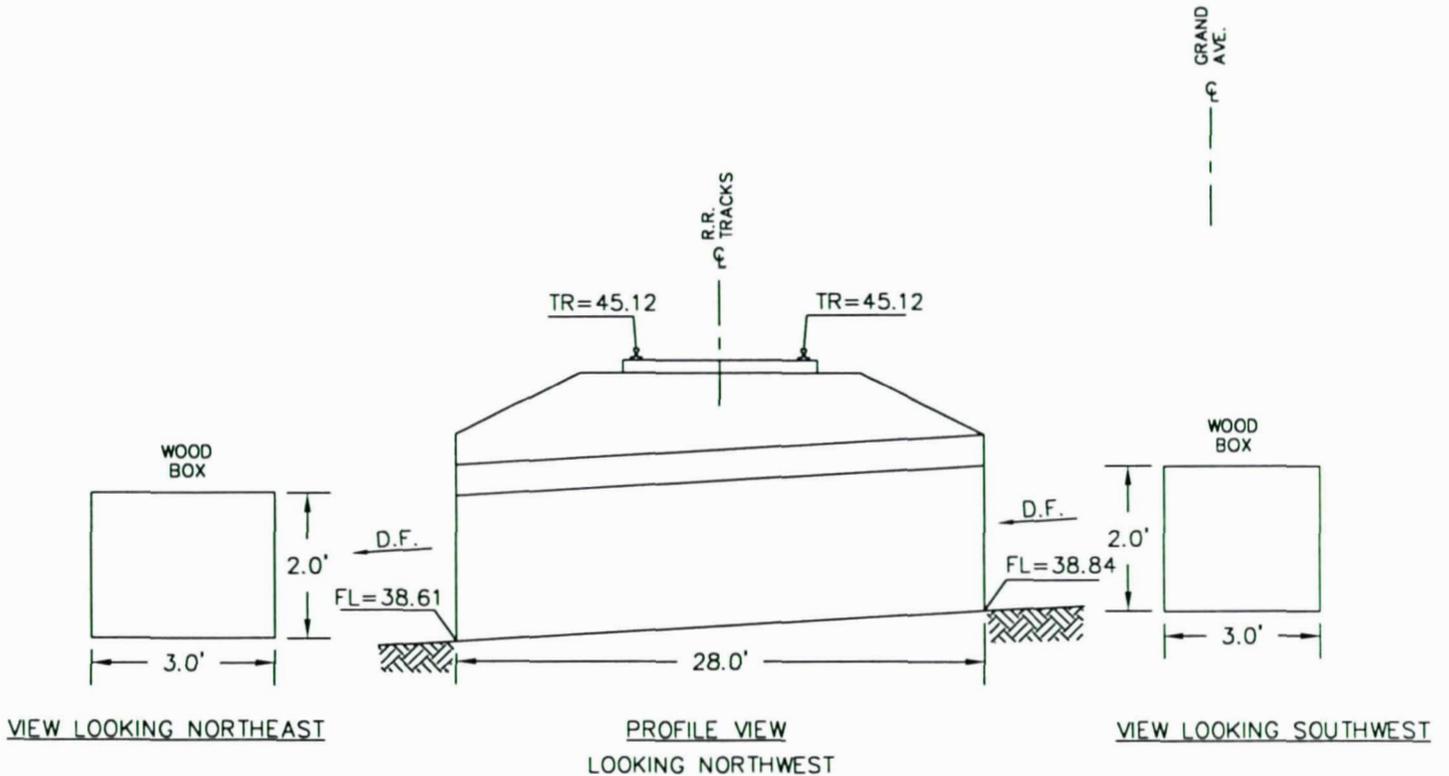
LOCATION: GRAND AVE. NEAR 66TH AVE, ALIGNMENT  
R.R. MILE MARKER 182.7

PROJECT: MARYVALE AREA DRAINAGE  
MASTER STUDY

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GRAND AVENUE  
LOCATION 10

NOTES:

1) TBM = NAIL IN X-TIE @ BRIDGE EL=1144.56

DRAWINGS NOT TO SCALE



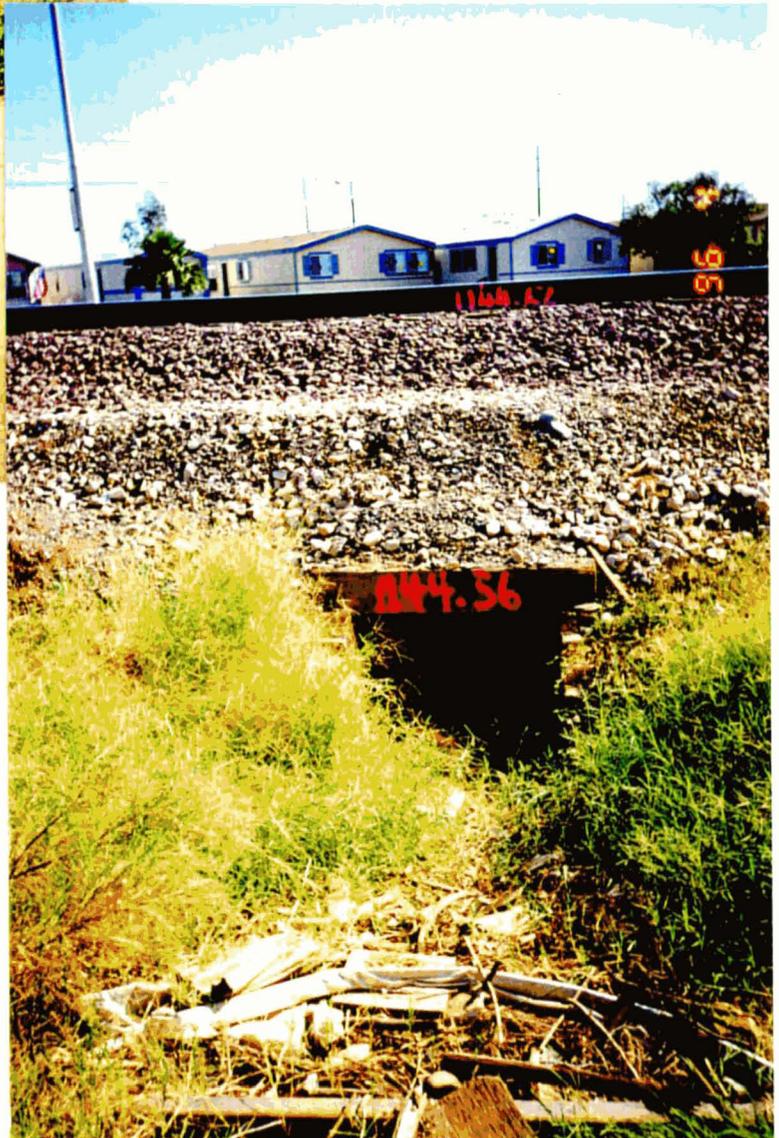
Grand Ave. at location 10 looking Northeast



Grand Ave. at location 10 looking Southwest



Grand Ave. Northeast of location 10 looking Southwest



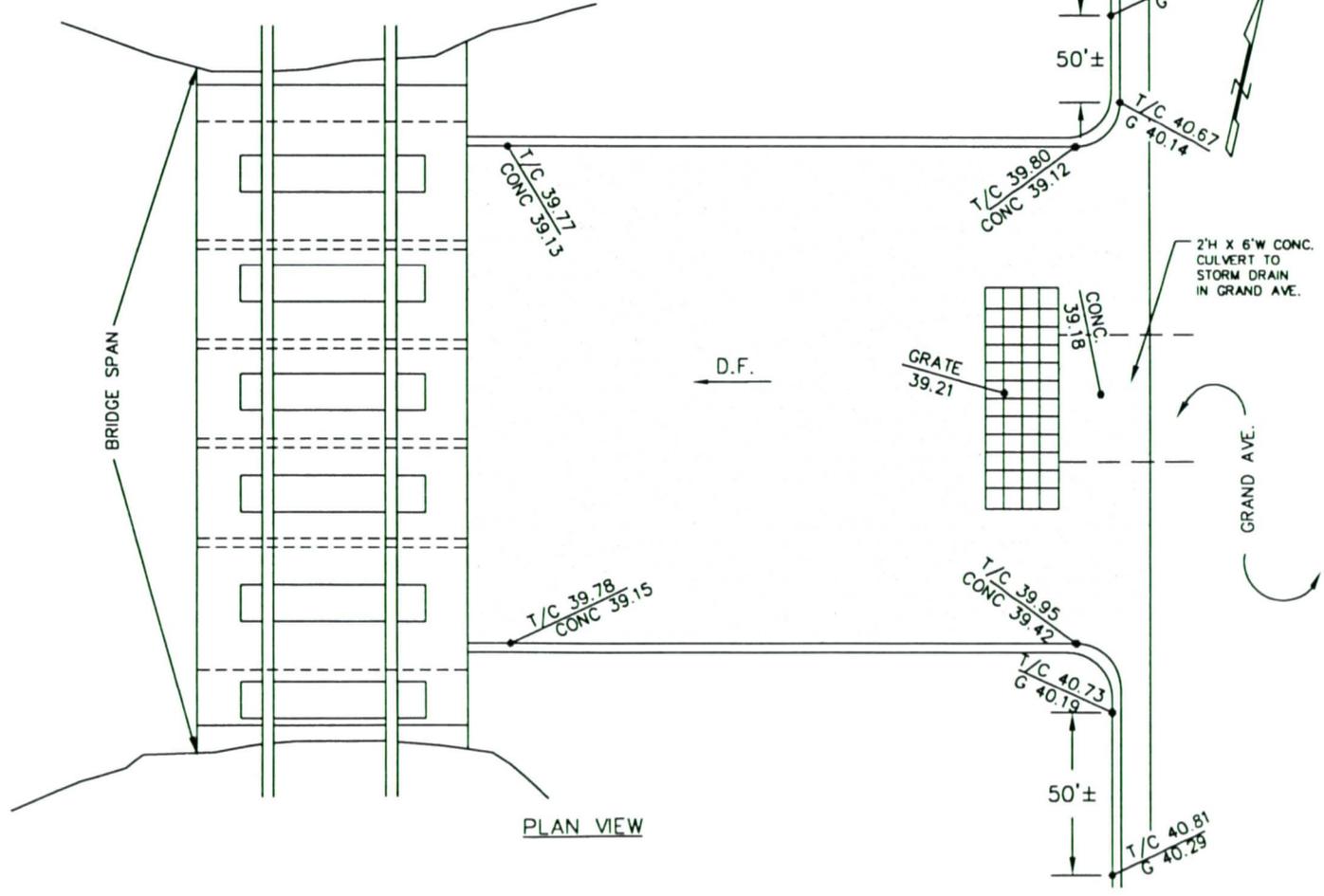
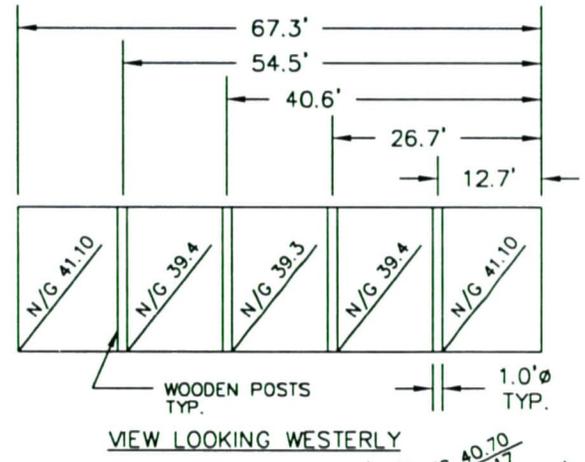
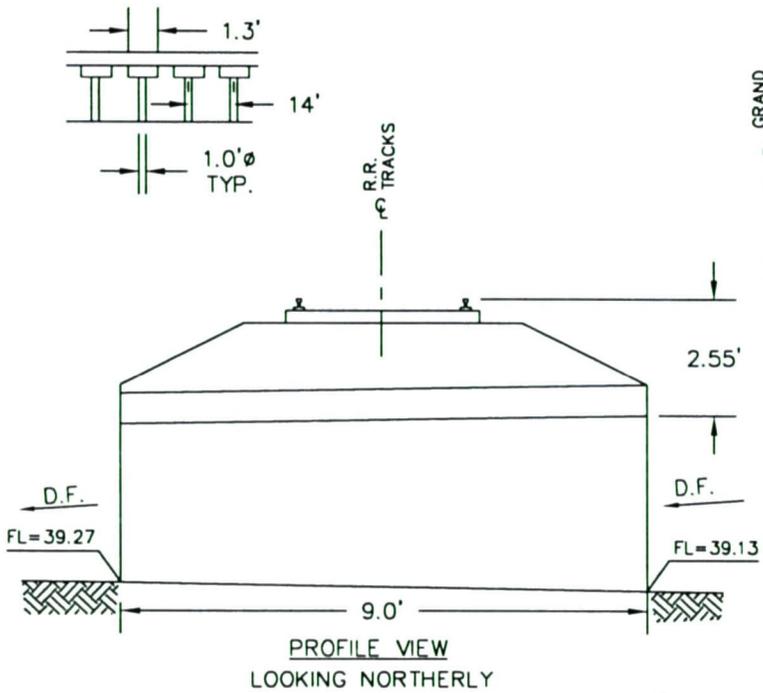
Grand Ave. Southwest of location 10 looking Northeast

# BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

LOCATION: GRAND AVE. NEAR 65TH AVE, ALIGNMENT  
R.R. MILE MARKER 182.8

MARYVALE AREA DRAINAGE  
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GRAND AVENUE  
LOCATION 11

NOTES:

1) TBM = BOLT HEAD IN TRACKS @ SW COR. BRIDGE EL=1145.54

DRAWINGS NOT TO SCALE



Grand Ave. at location 11 looking Northeast



Grand Ave. at location 11 looking Southwest



Grand Ave. Northeast of location 11 looking Southwest



Grand Ave. Southwest of location 11 looking Northeast

**STRUCTURES & PHOTOGRAPHS  
ALONG GRAND CANAL**

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: GRAND CANAL AT 83RD AVE.**

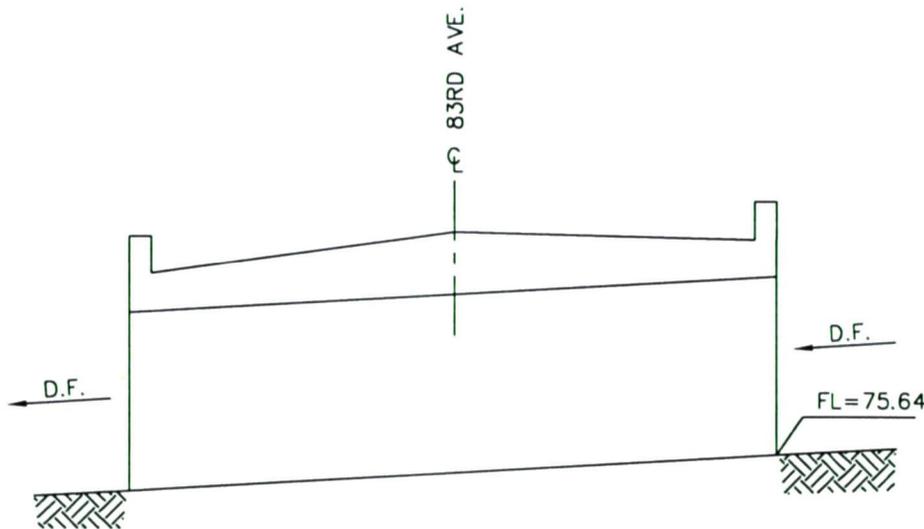
WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY

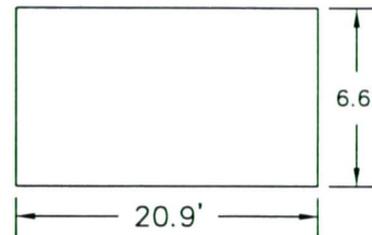
PROJECT NO.: 94154

DATE: MARCH/APRIL 1996

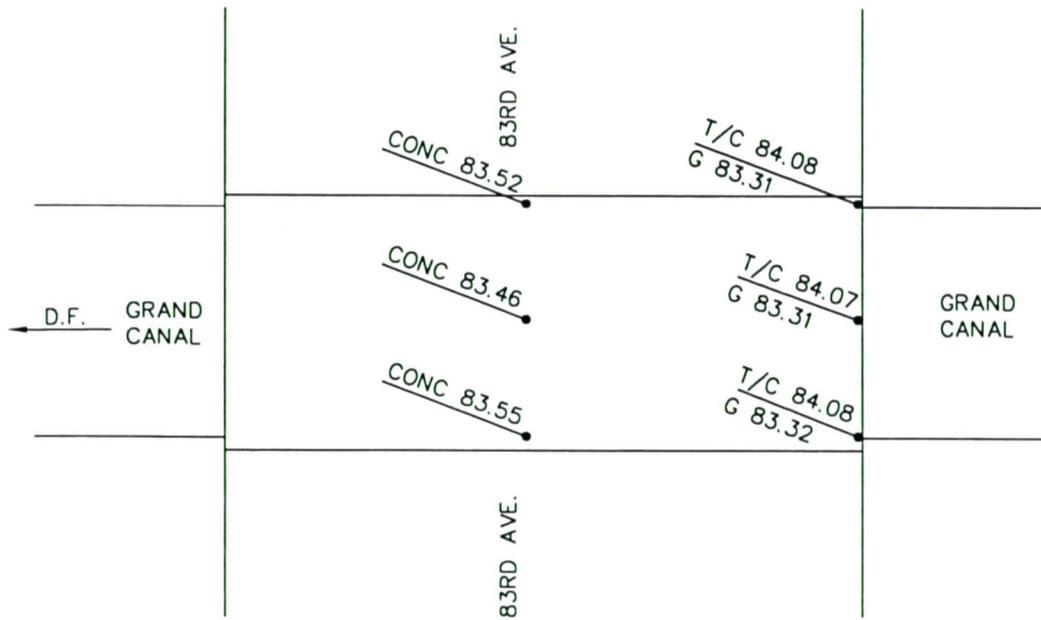
CONTRACT FD: 93-29



PROFILE VIEW  
LOOKING NORTH



VIEW LOOKING WEST



PLAN VIEW



**GRAND CANAL  
LOCATION 1**

NOTES:

1) TBM = CHSLD "+" ±30' W/O SE COR. BRIDGE EL. = 1083.44

DRAWINGS NOT TO SCALE



Grand Canal at 83rd Ave. Bridge looking East



Grand Canal East of 83rd Ave. Bridge looking West

# BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

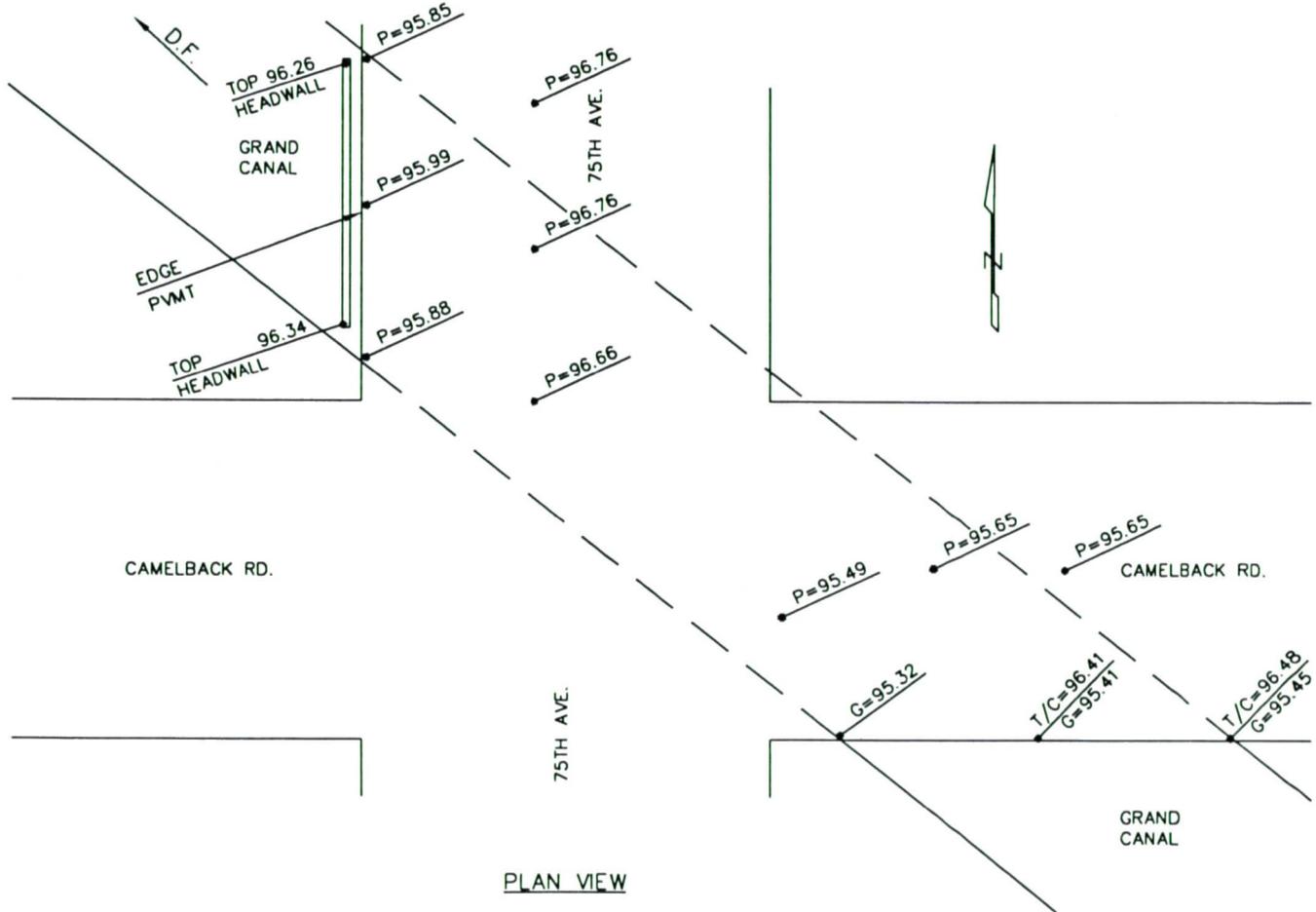
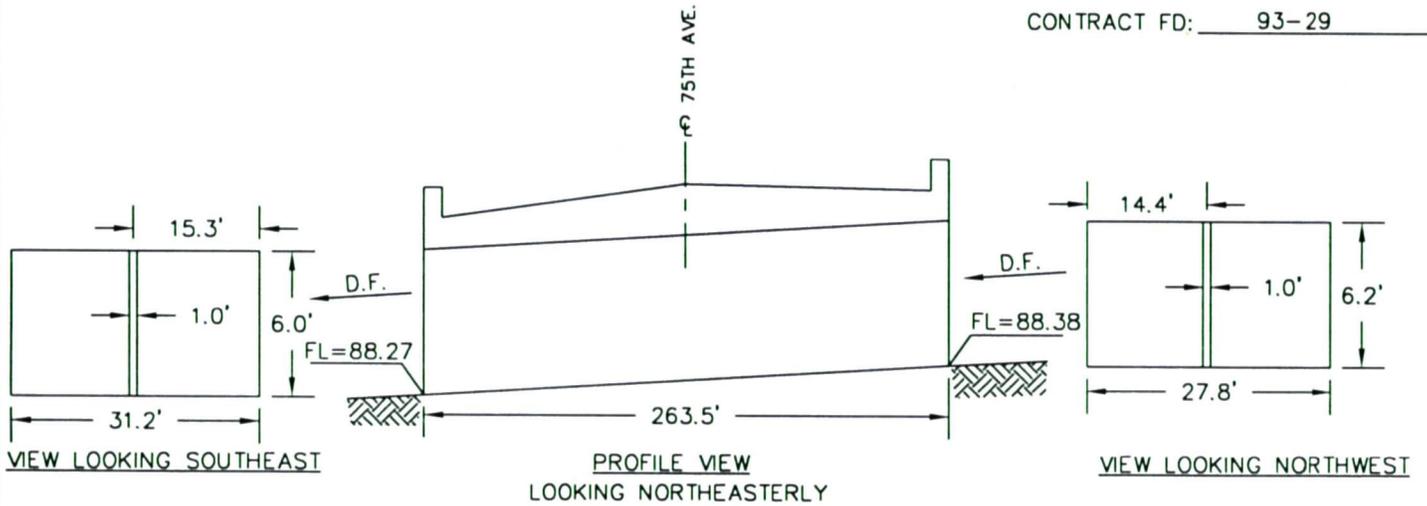
LOCATION: GRAND CANAL AT 75TH AVE.  
& CAMELBACK RD.

MARYVALE AREA DRAINAGE  
PROJECT: MASTER STUDY

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GRAND CANAL  
LOCATION 2

NOTES:

1) TBM = CPS @ SW COR. BRIDGE EL.=1096.39

DRAWINGS NOT TO SCALE



Grand Canal Southeast of Camelback looking Northwest



Grand Canal Northwest of 75<sup>th</sup> Ave. looking Southeast

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: GRAND CANAL AT 67TH AVE.**

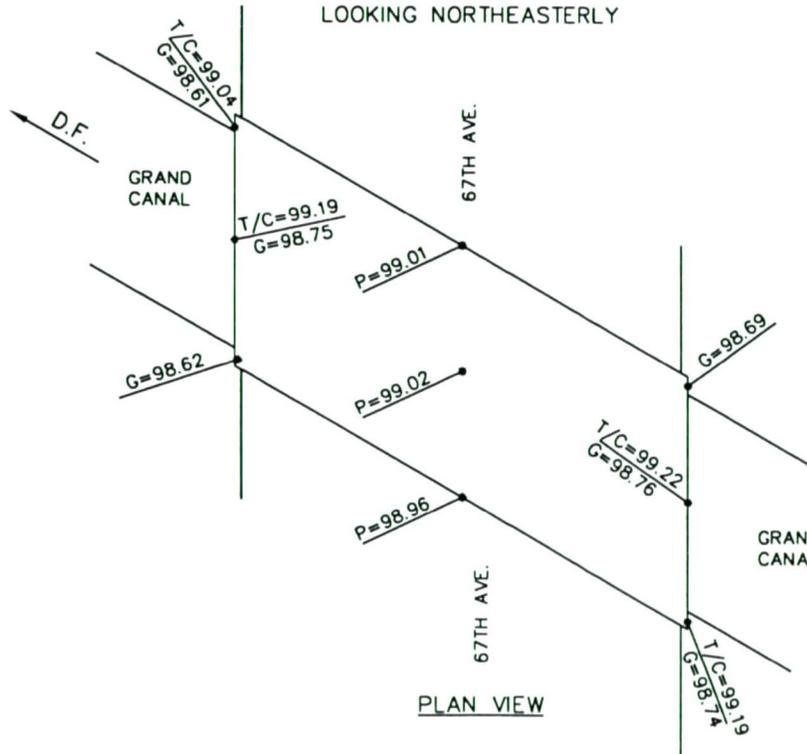
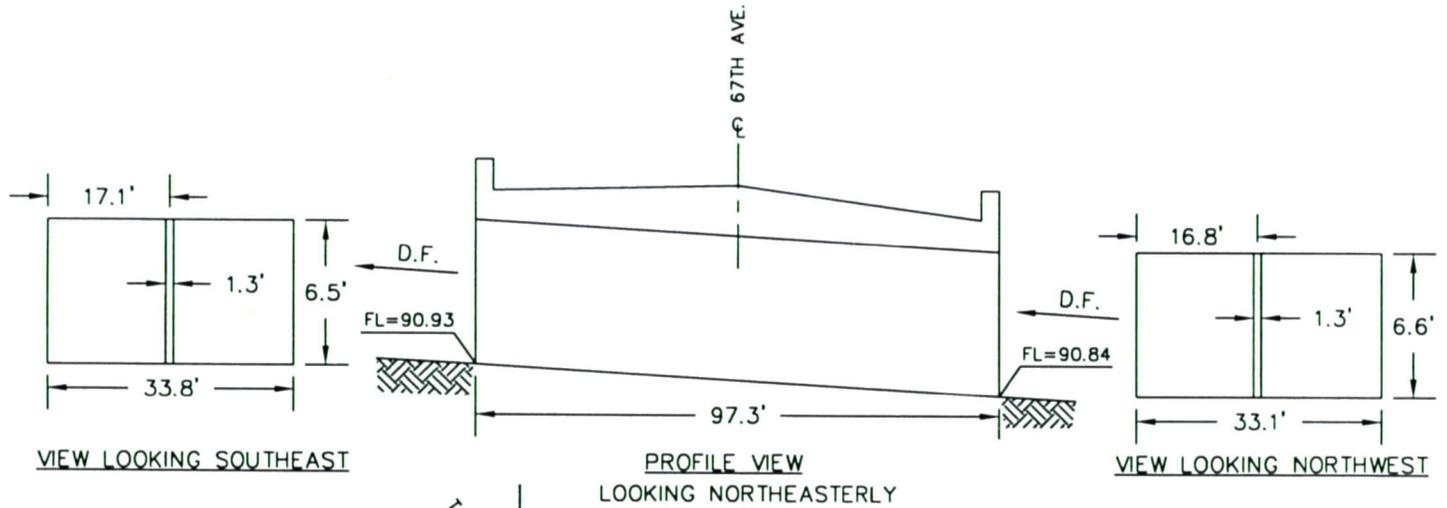
WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY

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**GRAND CANAL  
 LOCATION 3**

**NOTES:**

1) TBM = COP BC FLUSH @ NE COR. BRIDGE EL.=1099.19

DRAWINGS NOT TO SCALE



**Grand Canal Southeast of 67<sup>th</sup> Ave. looking Northwest**



**Grand Canal Northwest of 67<sup>th</sup> Ave. looking Southeast**



**Grand Canal at 67<sup>th</sup> Ave. Bridge looking Southeast**



**Grand Canal at 67<sup>th</sup> Ave. Bridge looking Northwest**

# BRIDGE/CULVERT FIELD SURVEY

LOCATION: GRAND CANAL AT INDIAN SCHOOL RD.

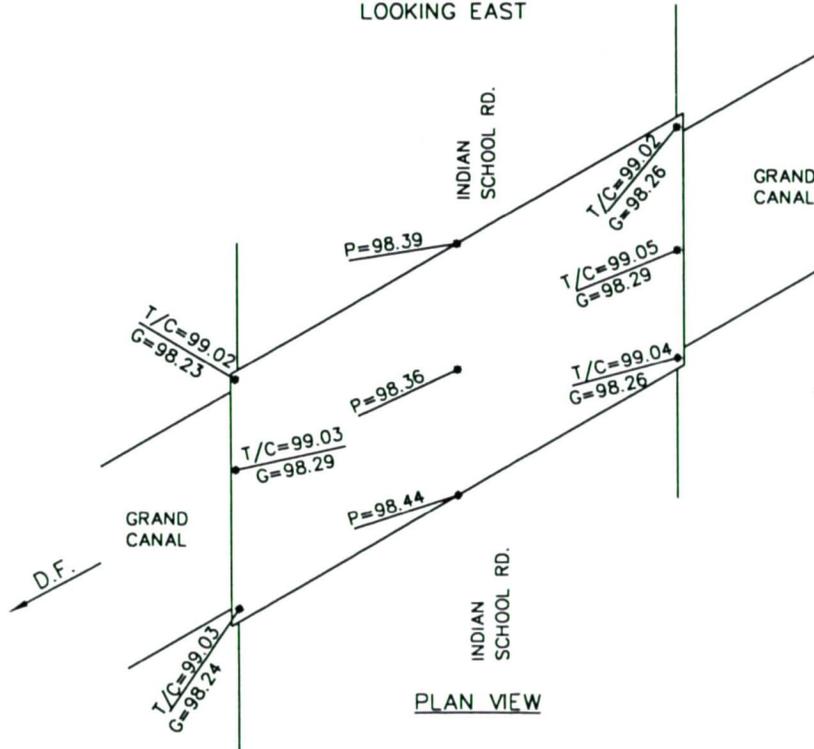
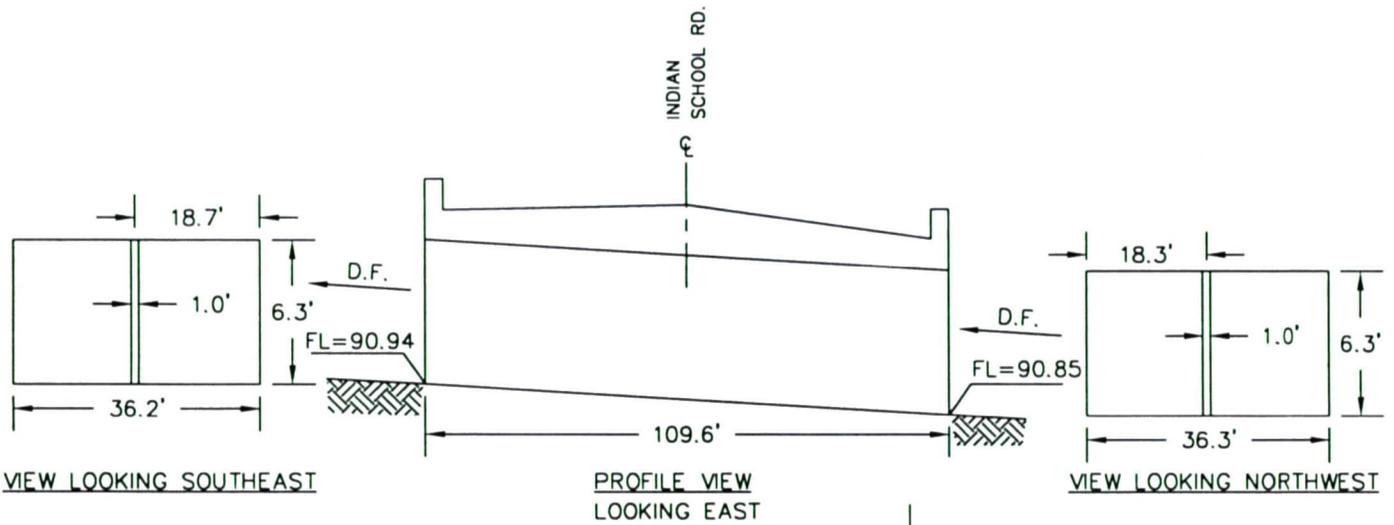
WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
PROJECT: MASTER STUDY

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GRAND CANAL  
LOCATION 4

**NOTES:**

1) TBM = CPS @ SW COR. BRIDGE EL.=1098.77

DRAWINGS NOT TO SCALE



**Grand Canal at Indian School Bridge looking Southeast**



**Grand Canal at Indian School Bridge looking Northwest**



**Grand Canal Southeast of Indian School Road looking Northwest**

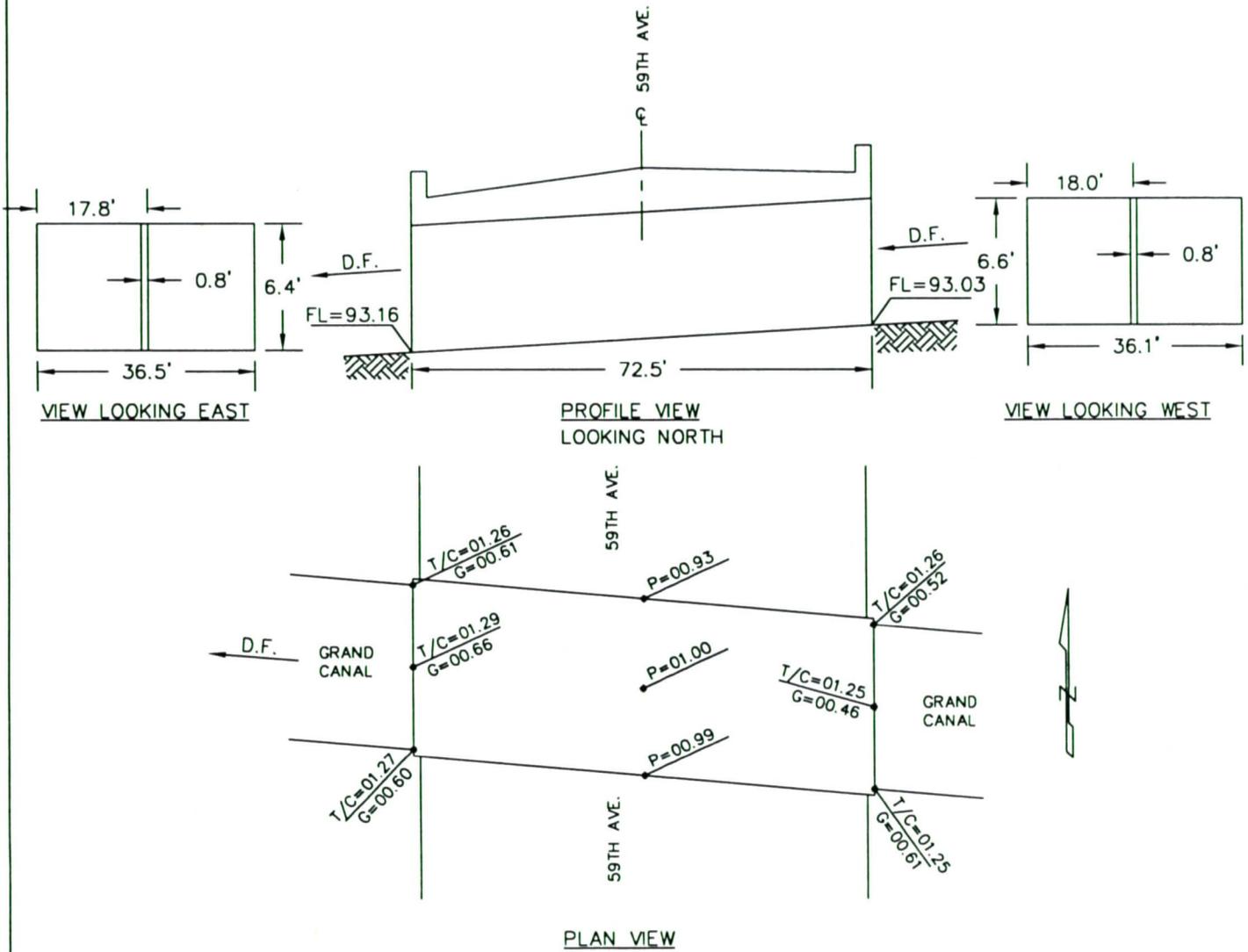


**Grand Canal Northwest of Indian School Road looking Southeast**

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: GRAND CANAL AT 59TH AVE.**

WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY  
 PROJECT NO.: 94154  
 DATE: MARCH/APRIL 1996  
 CONTRACT FD: 93-29



**GRAND CANAL  
 LOCATION 5**

**NOTES:**

1) TBM = CHSLD "+" @ NE COR. BRIDGE EL=1101.04

DRAWINGS NOT TO SCALE



**Grand Canal at 59th Ave. Bridge looking East**



**Grand Canal at 59th Ave. Bridge looking West**



**Grand Canal at 55th Ave. Bridge looking East**



**Grand Canal at 55th Ave. Bridge looking West**

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: GRAND CANAL AT 55TH AVE.**

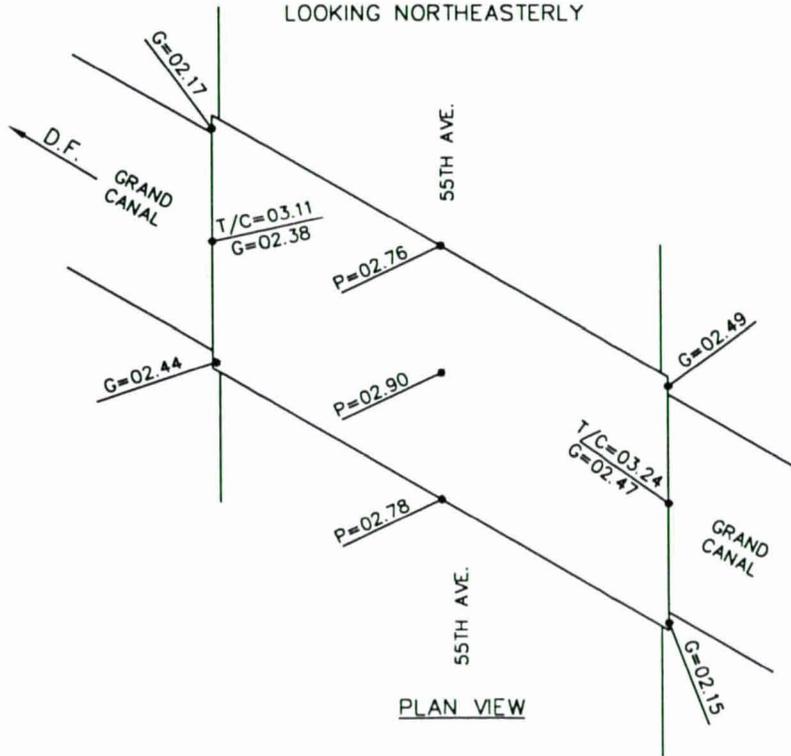
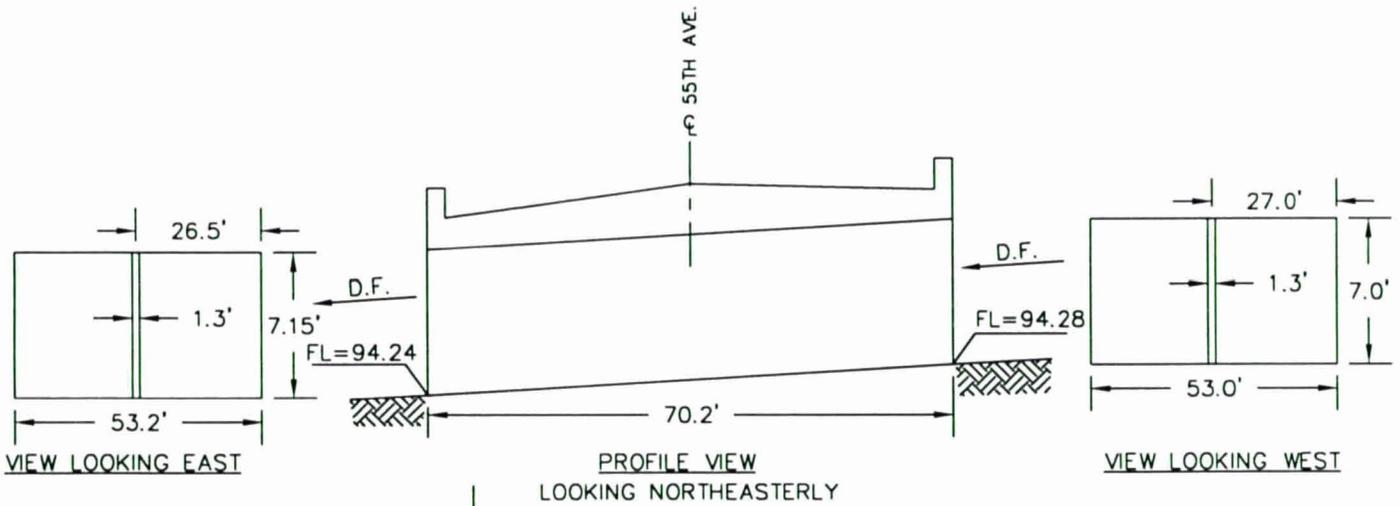
WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY

PROJECT NO.: 94154

DATE: MARCH/APRIL 1996

CONTRACT FD: 93-29



**GRAND CANAL  
 LOCATION 6**

**NOTES:**

1) TBM = CPS @ NE COR. BRIDGE EL.=1102.47

DRAWINGS NOT TO SCALE



**Grand Canal at 55th Ave. Bridge looking East**



**Grand Canal at 55th Ave. Bridge looking West**



**Grand Canal East of 55<sup>th</sup> Ave. looking West**

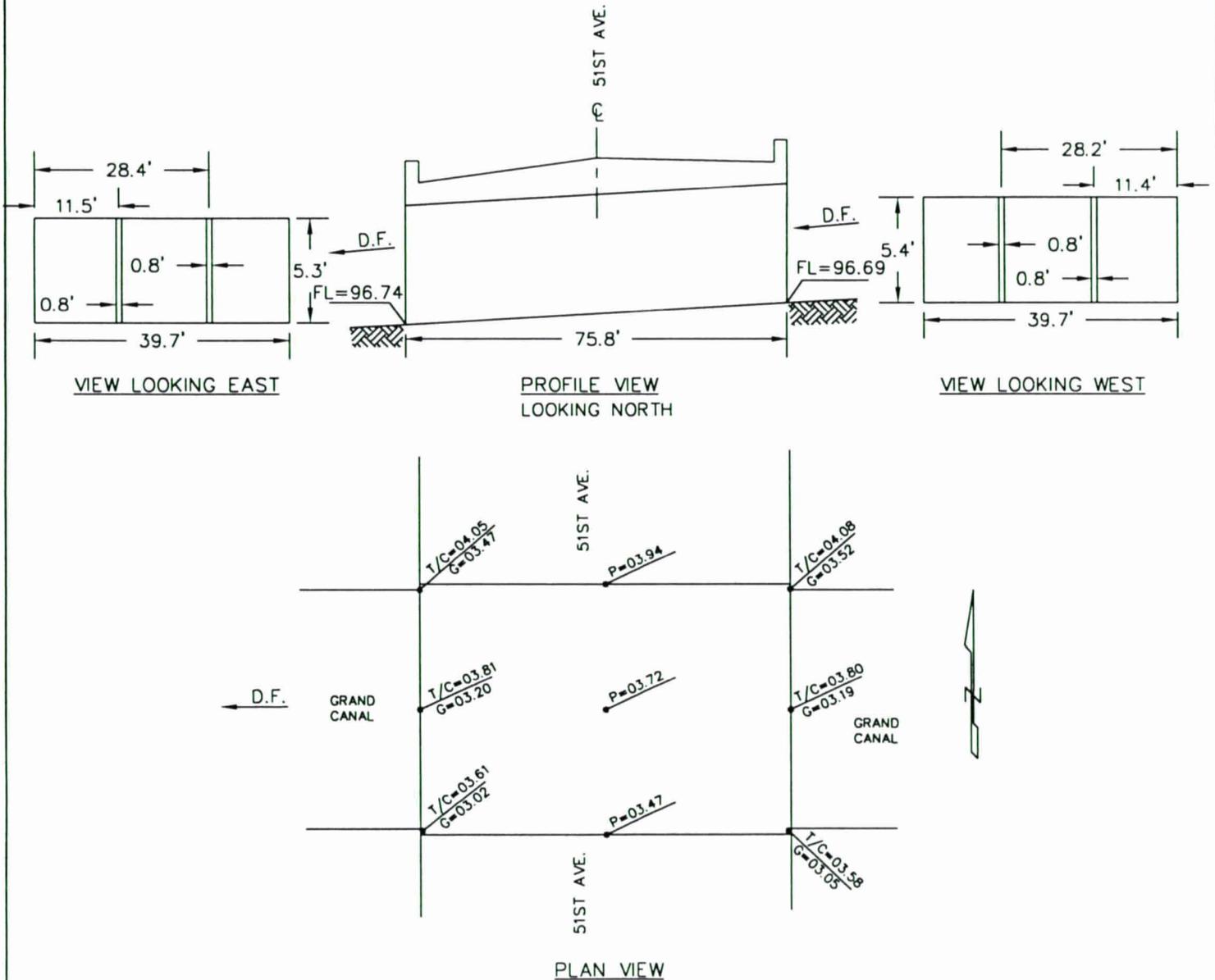


**Grand Canal West of 55<sup>th</sup> Ave. looking East**

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: GRAND CANAL AT 51ST AVE.**

WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY  
 PROJECT NO.: 94154  
 DATE: MARCH/APRIL 1996  
 CONTRACT FD: 93-29



**GRAND CANAL  
 LOCATION 7**

**NOTES:**

1) TBM = 1/2 "RB ± 50' E/O SE COR. OF BRIDGE EL=1104.81

DRAWINGS NOT TO SCALE



Grand Canal at 51<sup>st</sup> Ave. Bridge looking East



Grand Canal at 51<sup>st</sup> Ave. Bridge looking West



**Grand Canal East of 51<sup>st</sup> Ave. Bridge looking West**

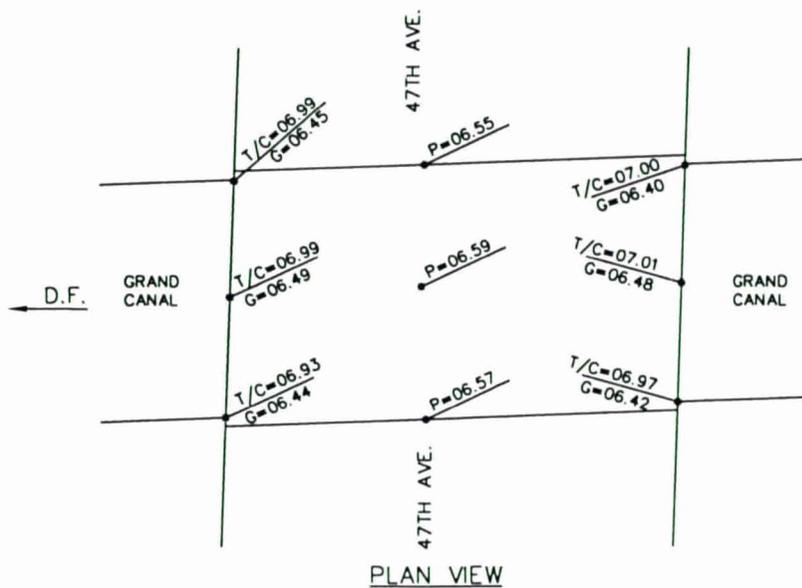
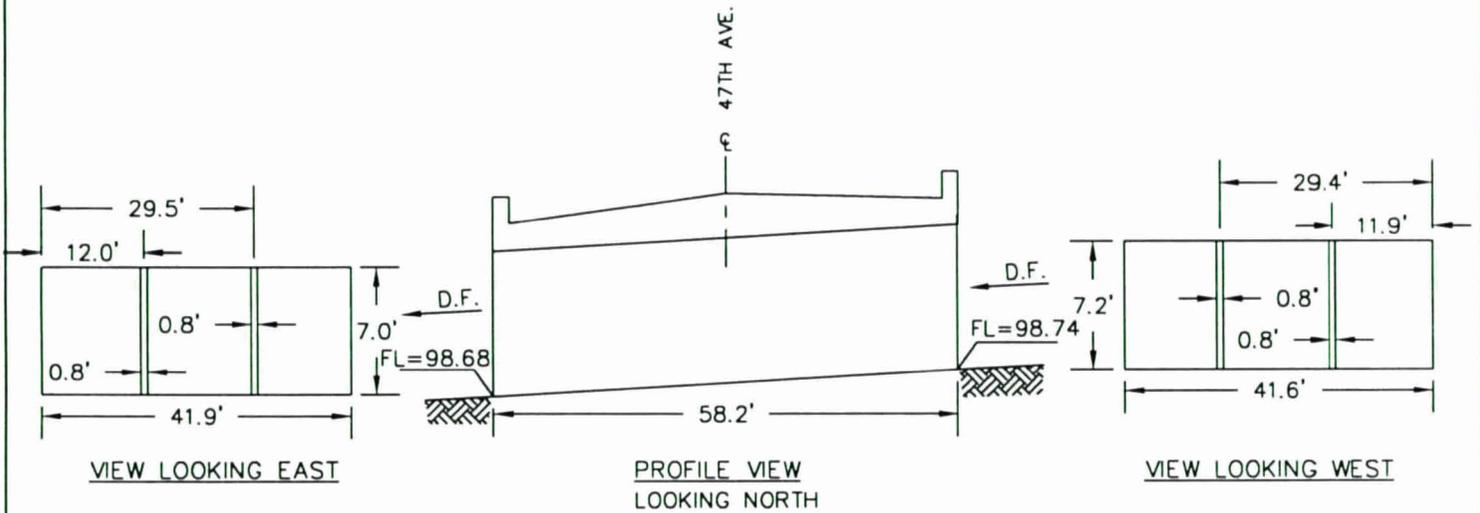


**Grand Canal West of 51<sup>st</sup> Ave. Bridge looking East**

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: GRAND CANAL AT 47TH AVE.**

WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY  
 PROJECT NO.: 94154  
 DATE: MARCH/APRIL 1996  
 CONTRACT FD: 93-29



**GRAND CANAL  
 LOCATION 8**

**NOTES:**

1) TBM = CHSLD "+" EAST SIDE MIDDLE OF BRIDGE EL=1107.04

DRAWINGS NOT TO SCALE



Grand Canal at 47th Ave. Bridge looking East



Grand Canal at 47th Ave. Bridge looking West



Grand Canal East of 47th Ave. Bridge looking West



Grand Canal West of 47th Ave. Bridge looking East

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: GRAND CANAL AT 43RD AVE.**

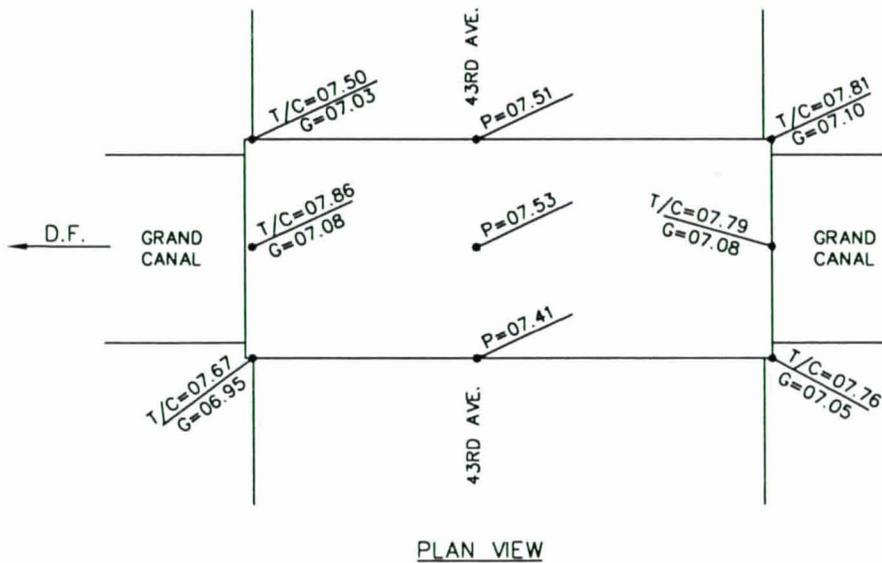
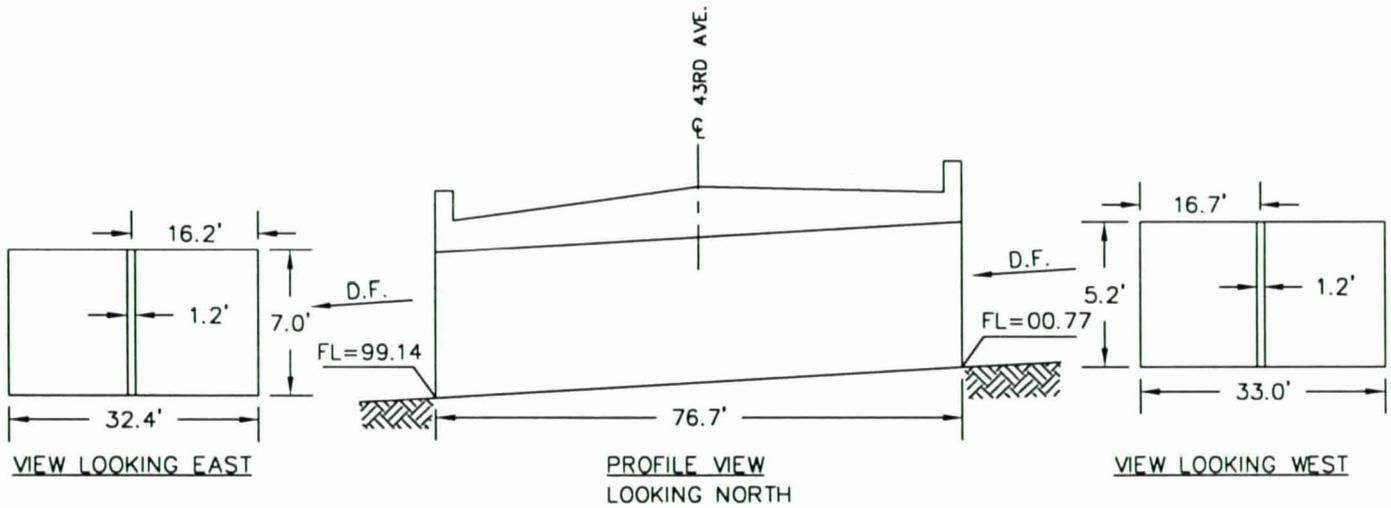
WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY

PROJECT NO.: 94154

DATE: MARCH/APRIL 1996

CONTRACT FD: 93-29



**GRAND CANAL  
 LOCATION 9**

**NOTES:**

1) TBM = COP BC FLUSH E.SIDE MIDDLE OF BRIDGE EL=1107.80

DRAWINGS NOT TO SCALE



**Grand Canal at 43rd Ave. Bridge looking East**



**Grand Canal at 43rd Ave. Bridge looking West**



**Grand Canal East of 43rd Ave. Bridge looking West**



**Grand Canal West of 43rd Ave. Bridge looking East**

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: GRAND CANAL AT 35TH AVE.**

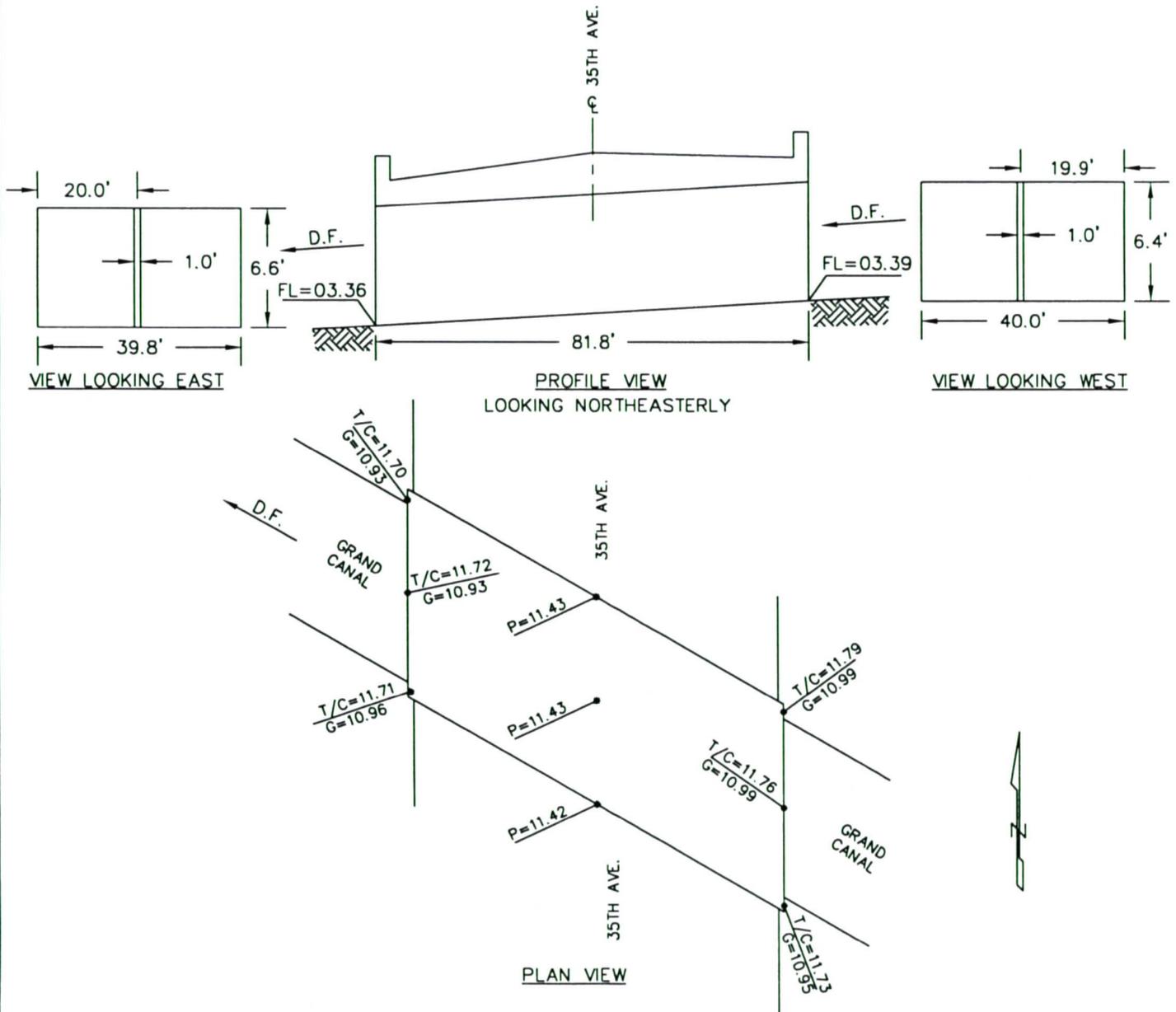
WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY

PROJECT NO.: 94154

DATE: MARCH/APRIL 1996

CONTRACT FD: 93-29



**GRAND CANAL  
 LOCATION 10**

**NOTES:**

1) TBM = CHSLD "+" @ SE COR. BRIDGE EL.=1111.64

DRAWINGS NOT TO SCALE



**Grand Canal at 35<sup>th</sup> Ave. Bridge looking East**



**Grand Canal at 35<sup>th</sup> Ave. Bridge looking West**



**Grand Canal East of 35<sup>th</sup> Ave. Bridge looking West**



**Grand Canal West of 35th Ave. Bridge looking East**

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: GRAND CANAL AT GRAND AVE.**

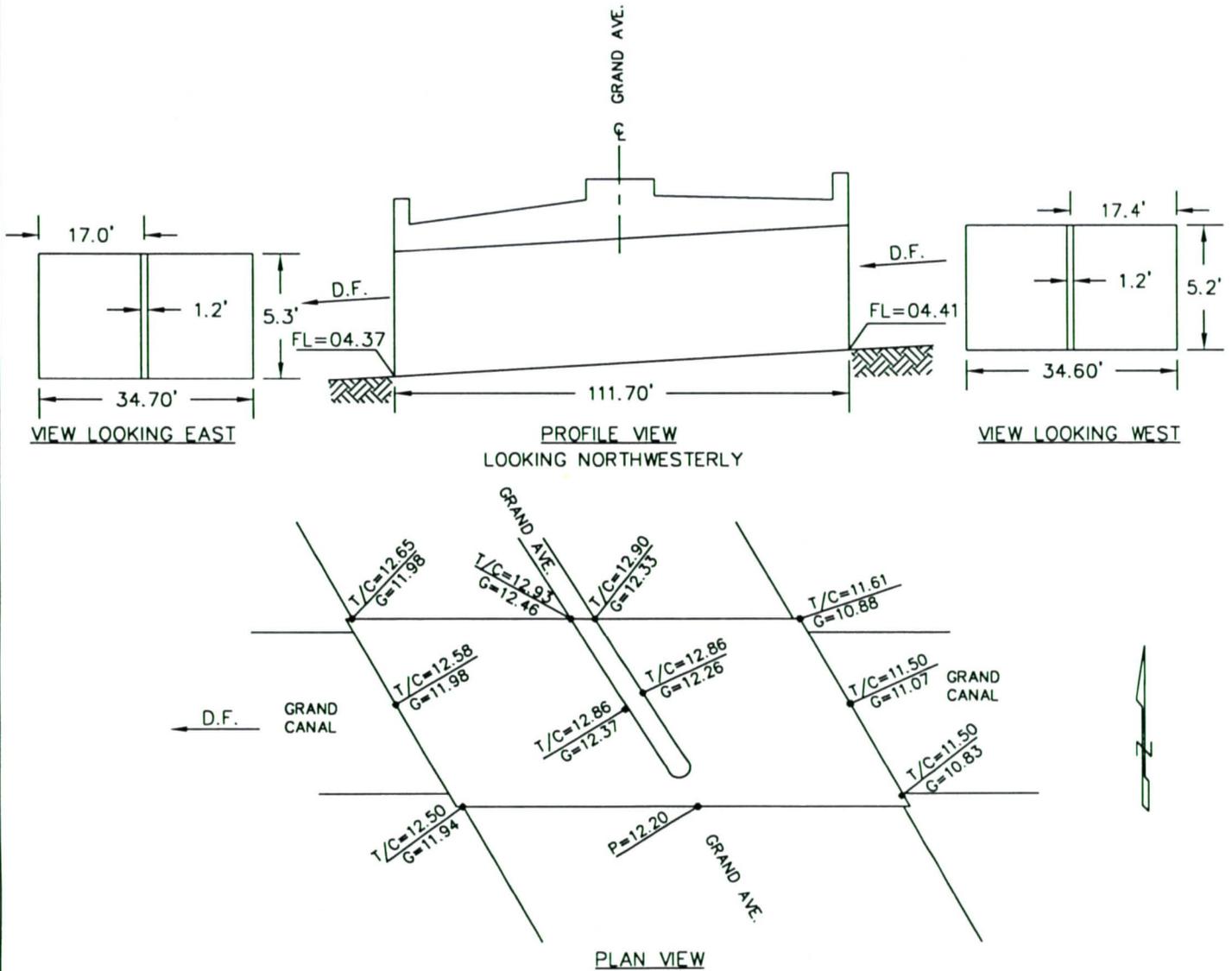
WOOD, PATEL & ASSOC., INC.

PROJECT: MARYVALE AREA DRAINAGE MASTER STUDY

PROJECT NO.: 94154

DATE: MARCH/APRIL 1996

CONTRACT FD: 93-29



**GRAND CANAL  
 LOCATION 11**

**NOTES:**

1) TBM = CHSLD "+" @ SE COR. BRIDGE EL.=1111.50

DRAWINGS NOT TO SCALE



**Grand Canal at Grand Ave. Bridge looking East**



**Grand Canal at Grand Ave. Bridge looking West**



**Grand Canal East of Grand Ave. Bridge looking West**



**Grand Canal West of Grand Ave. Bridge looking East**

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: GRAND CANAL AT 27TH AVE.**

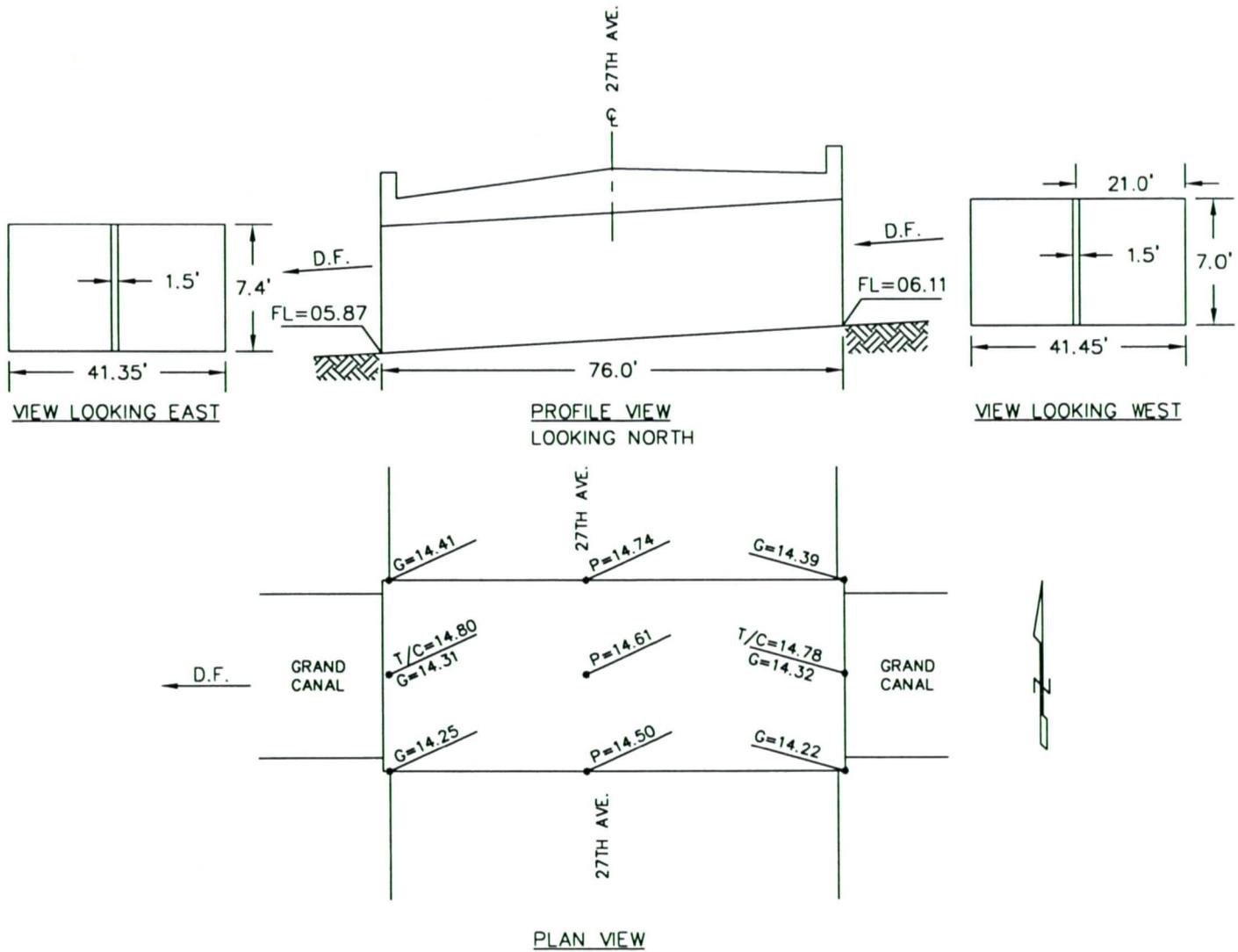
WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY

PROJECT NO.: 94154

DATE: MARCH/APRIL 1996

CONTRACT FD: 93-29



**GRAND CANAL  
 LOCATION 12**

**NOTES:**

1) TBM = CHSLD "+" ON GATE STRUCTURE @ NE COR. BRIDGE EL.=1115.29

DRAWINGS NOT TO SCALE



**Grand Canal at 27<sup>th</sup> Ave. Bridge looking East**



**Grand Canal at 27<sup>th</sup> Ave. Bridge looking West**



**Grand Canal East of 27<sup>th</sup> Ave. Bridge looking West**



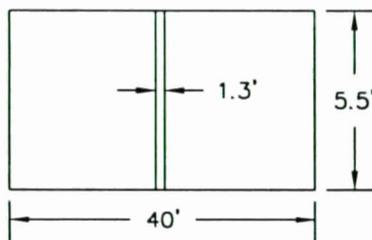
**Grand Canal West of 27th Ave. Bridge looking East**

BRIDGE/CULVERT FIELD SURVEY

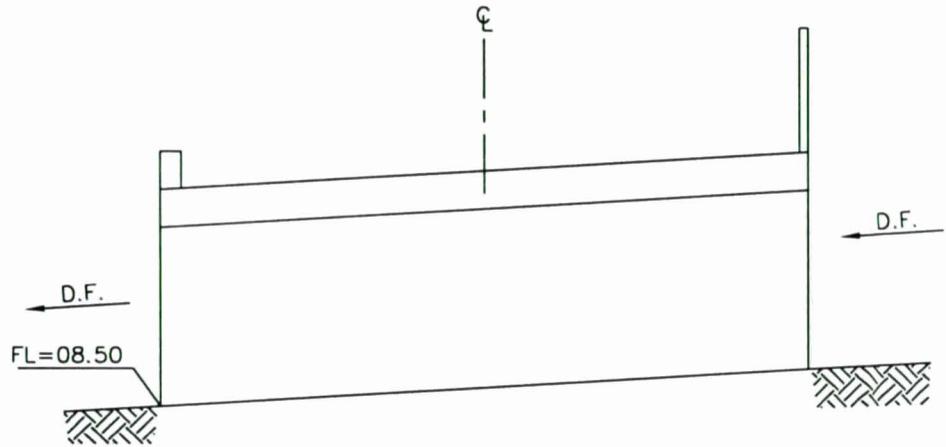
WOOD, PATEL & ASSOC., INC.

LOCATION: GRAND CANAL AT I-17 SERVICE RD.

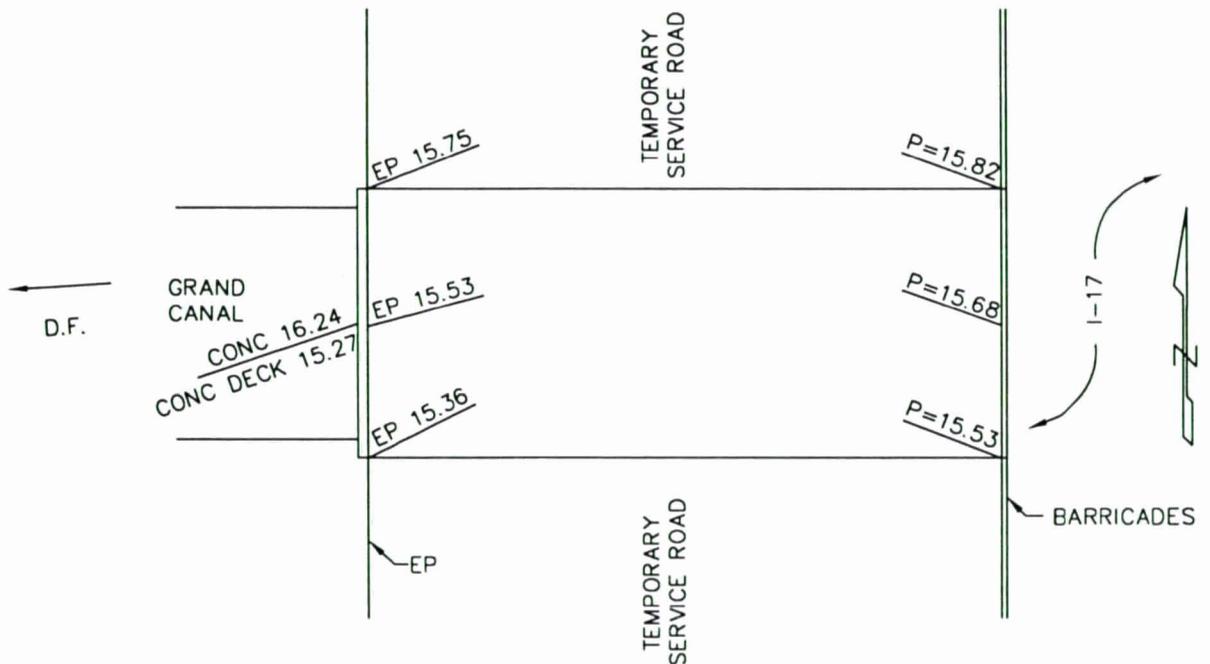
MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY  
 PROJECT NO.: 94154  
 DATE: MARCH/APRIL 1996  
 CONTRACT FD: 93-29



VIEW LOOKING EAST



PROFILE VIEW  
 LOOKING NORTH



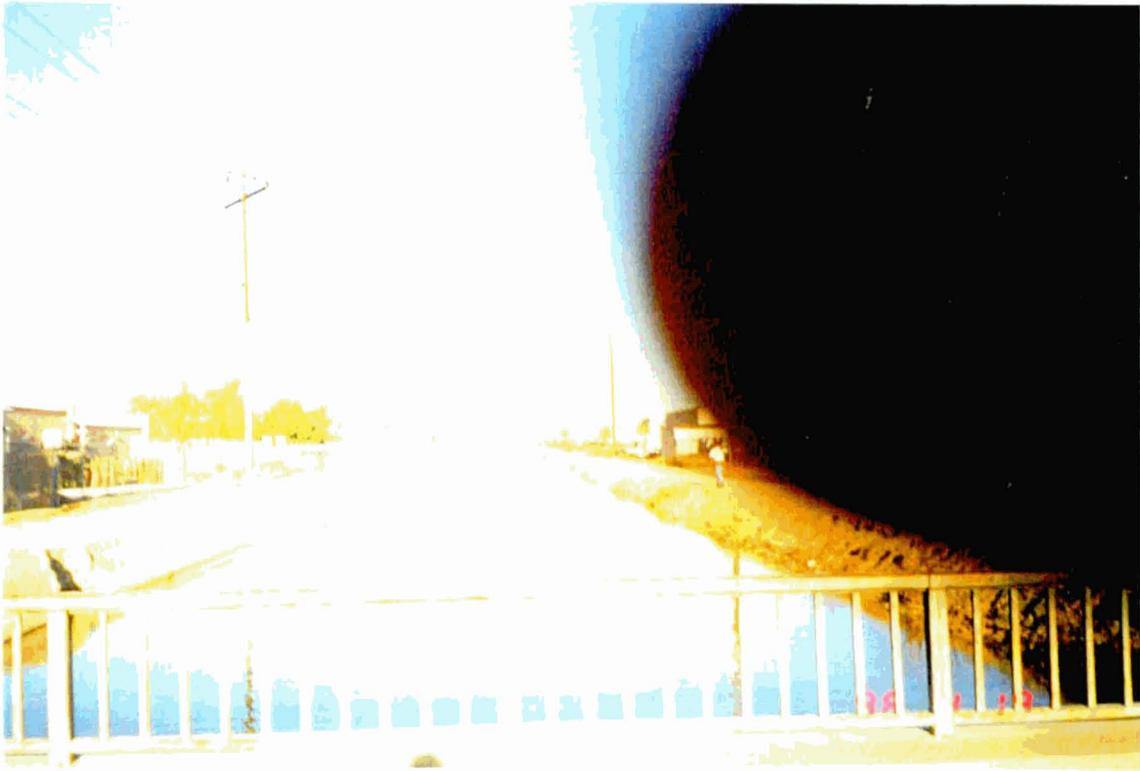
PLAN VIEW

GRAND CANAL  
 LOCATION 13

NOTES:

1) TBM = CHSLD "+" ON NW COR. BRIDGE EL. = 1116.55

DRAWINGS NOT TO SCALE



**Grand Canal at Interstate 17 Bridge looking West**



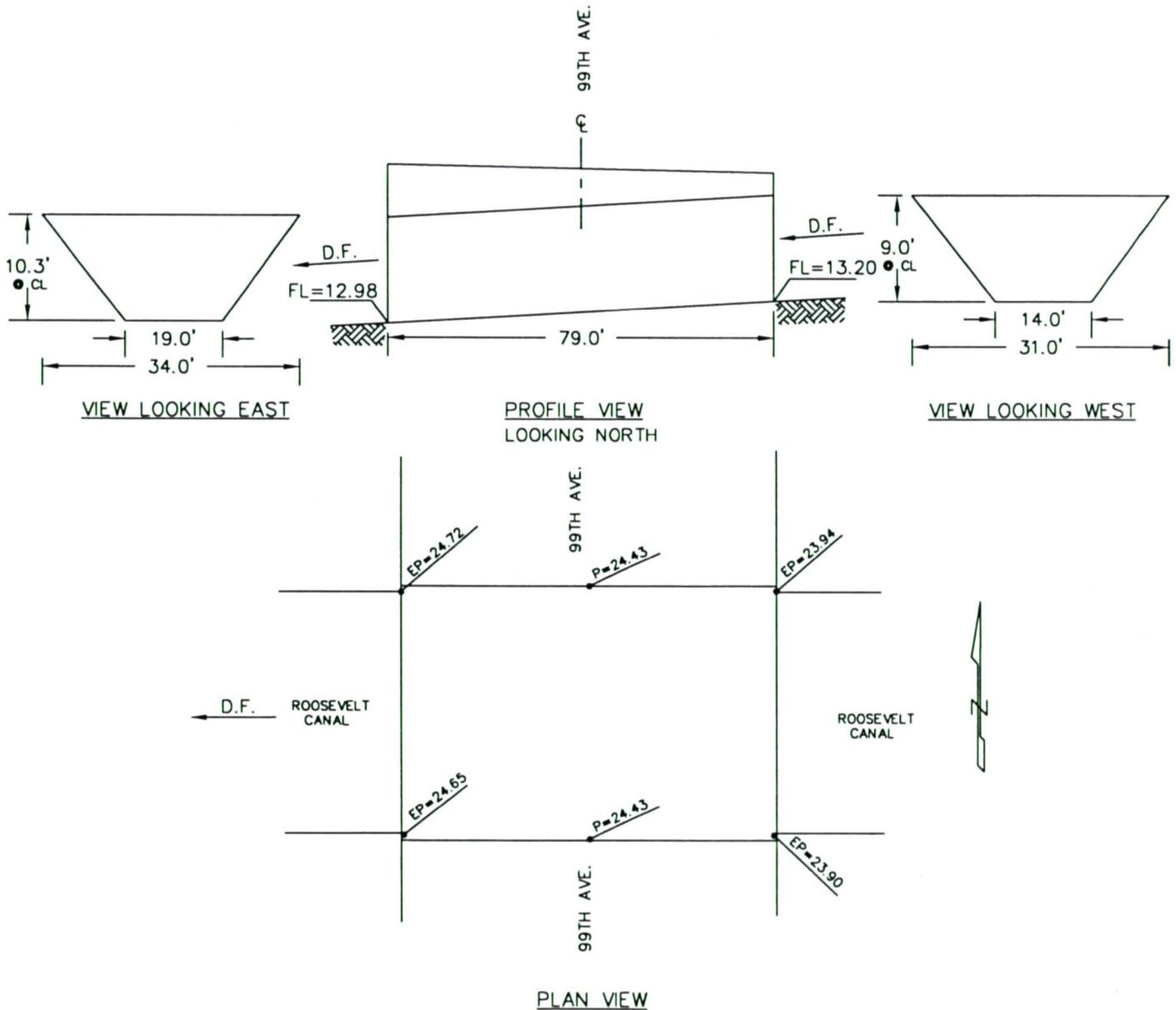
**Grand Canal West of Interstate 17 Bridge looking East**

**STRUCTURES & PHOTOGRAPHS  
ALONG ROOSEVELT IRRIGATION  
DISTRICT CANAL**

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: ROOSEVELT CANAL AT 99TH AVE.**

WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY  
 PROJECT NO.: 94154  
 DATE: MARCH/APRIL 1996  
 CONTRACT FD: 93-29



**ROOSEVELT CANAL  
 LOCATION 1**

**NOTES:**

1) TBM = BC IN TOP K-WALL ⊕ SE COR. BRIDGE EL=1026.31

DRAWINGS NOT TO SCALE



Roosevelt Canal at 99<sup>th</sup> Ave. Looking East



Roosevelt Canal at 99<sup>th</sup> Ave. Looking West



Roosevelt Canal East of 99<sup>th</sup> Ave. Looking West



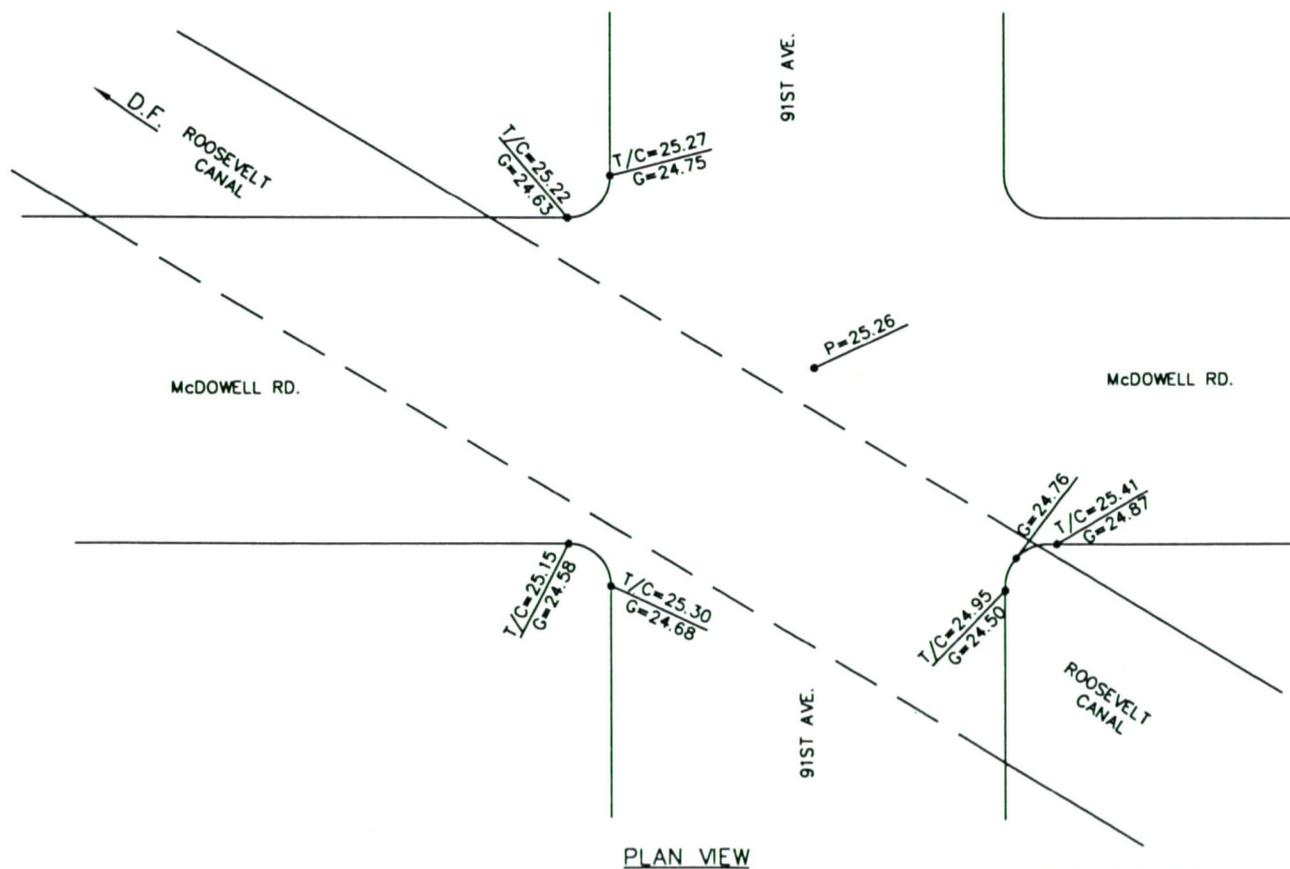
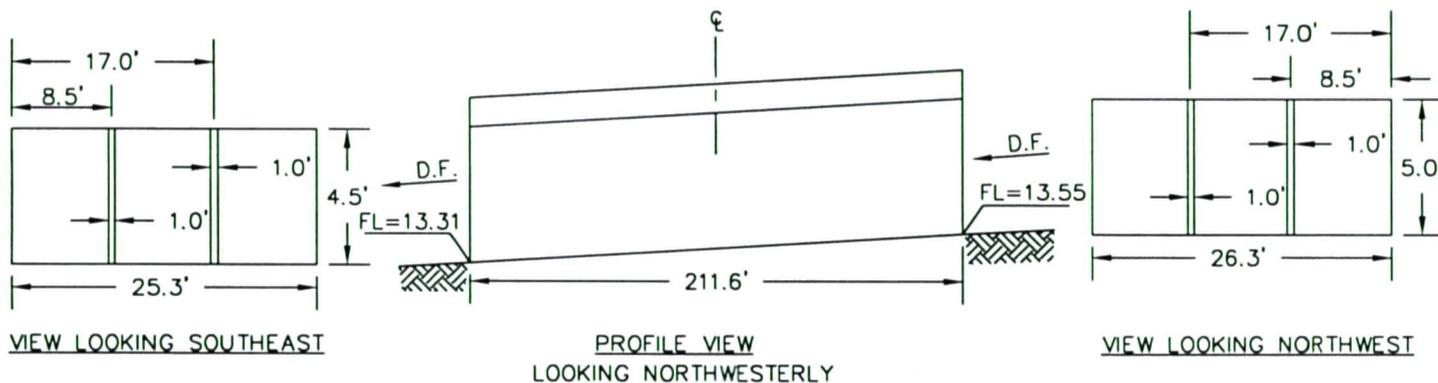
Roosevelt Canal West of 99<sup>th</sup> Ave. Looking East

# BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

LOCATION: ROOSEVELT CANAL AT 91ST AVE.  
& McDOWELL RD.

MARYVALE AREA DRAINAGE  
PROJECT: MASTER STUDY  
PROJECT NO.: 94154  
DATE: MARCH/APRIL 1996  
CONTRACT FD: 93-29



**NOTES:**

1) TBM = PKN @ SE COR. 91st AVE.; McDOWELL RD. EL.=1025.03

DRAWINGS NOT TO SCALE



Roosevelt Canal at 91<sup>st</sup> Ave. & McDowell Rd. Looking Northwest



Roosevelt Canal at 91<sup>st</sup> Ave. & McDowell Rd. Looking Southeast



Roosevelt Canal Northwest of 91<sup>st</sup> Ave. and McDowell Rd. Looking Southeast

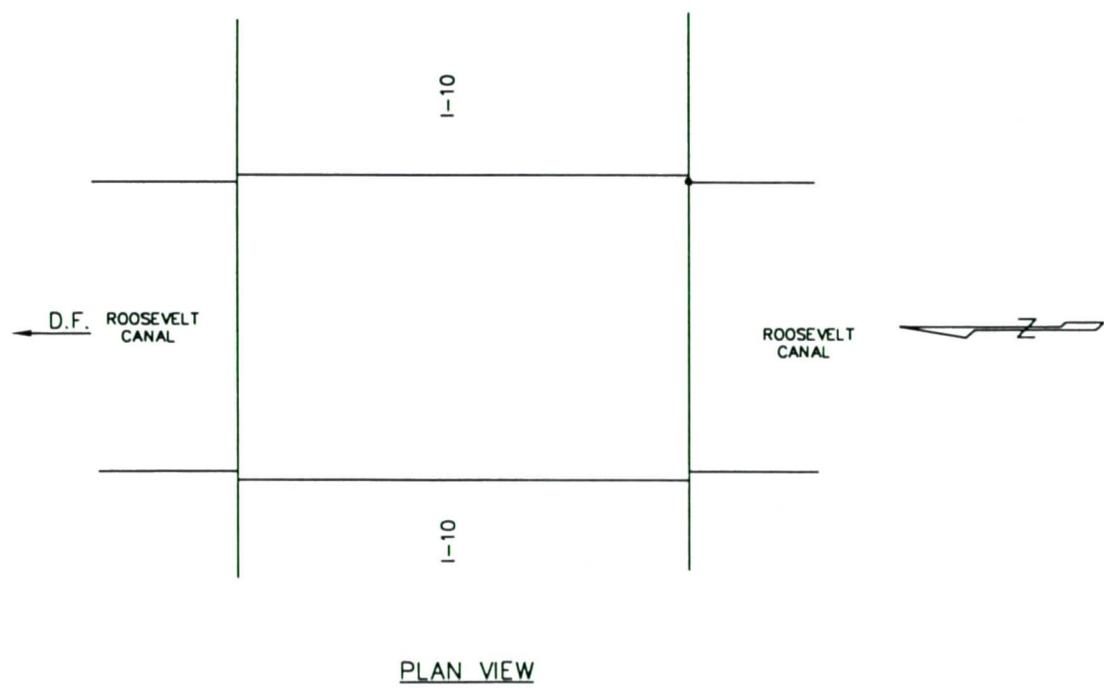
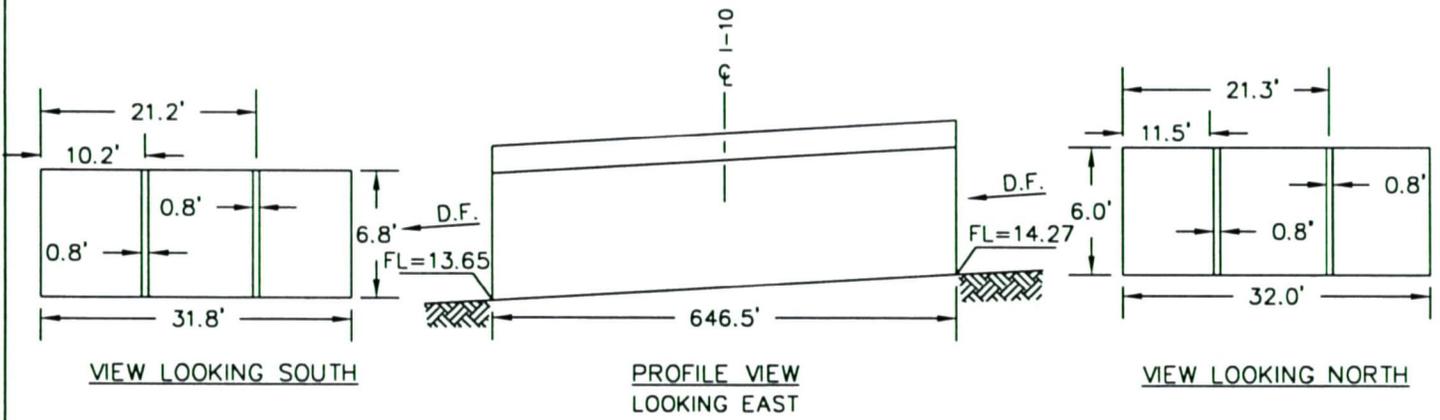


Roosevelt Canal Southeast of 91<sup>st</sup> Ave. and McDowell Rd. Looking Northwest

**BRIDGE/CULVERT FIELD SURVEY**  
**LOCATION: ROOSEVELT CANAL AT I-10**

WOOD, PATEL & ASSOC., INC.

MARYVALE AREA DRAINAGE  
 PROJECT: MASTER STUDY  
 PROJECT NO.: 94154  
 DATE: MARCH/APRIL 1996  
 CONTRACT FD: 93-29



**ROOSEVELT CANAL  
 LOCATION 3**

**NOTES:**

- 1) TBM = W/P 2615 CHSLD "+" @ HEADWALL @ RET. TO I-10 EL=1024.89
- 2) TBM = W/P 2611 CHSLD "+" @ HEADWALL E.END HEADWALL EL=1025.27

DRAWINGS NOT TO SCALE



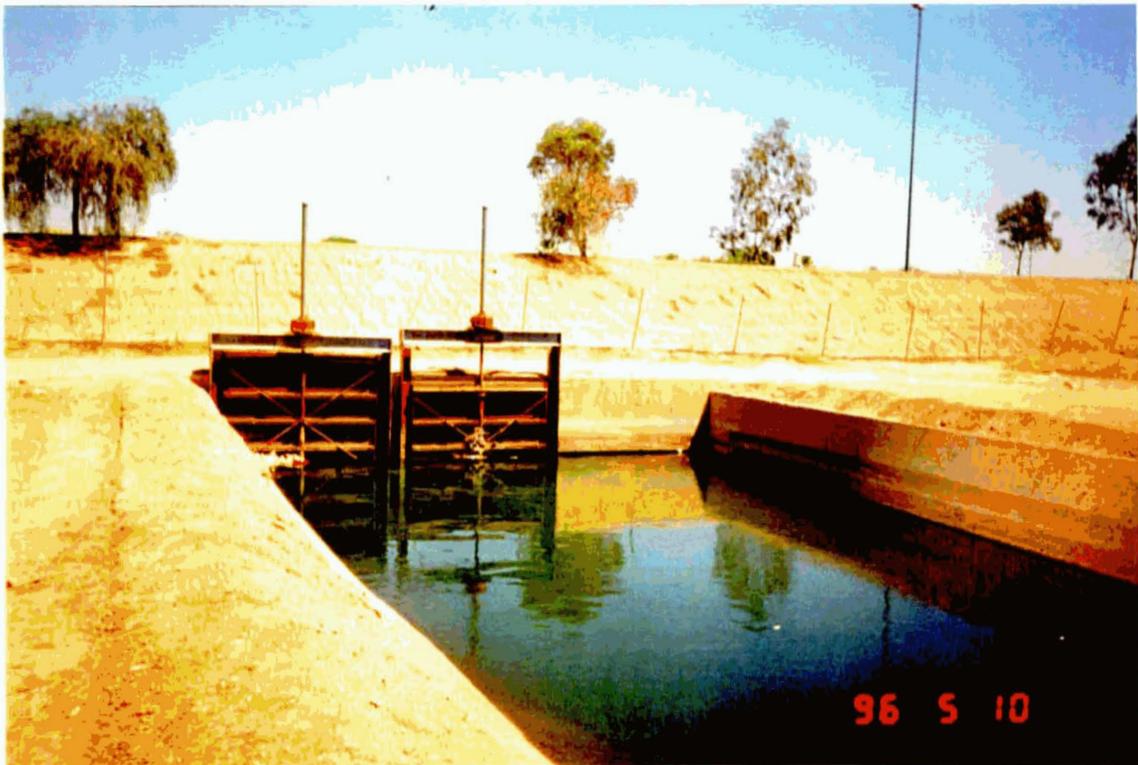
**Roosevelt Canal at Interstate 10 Looking North**



**Roosevelt Canal North of Interstate 10 Looking South**



Roosevelt Canal at Interstate 10 Looking South



Roosevelt Canal South of Interstate 10 Looking North

# BRIDGE/CULVERT FIELD SURVEY

WOOD, PATEL & ASSOC., INC.

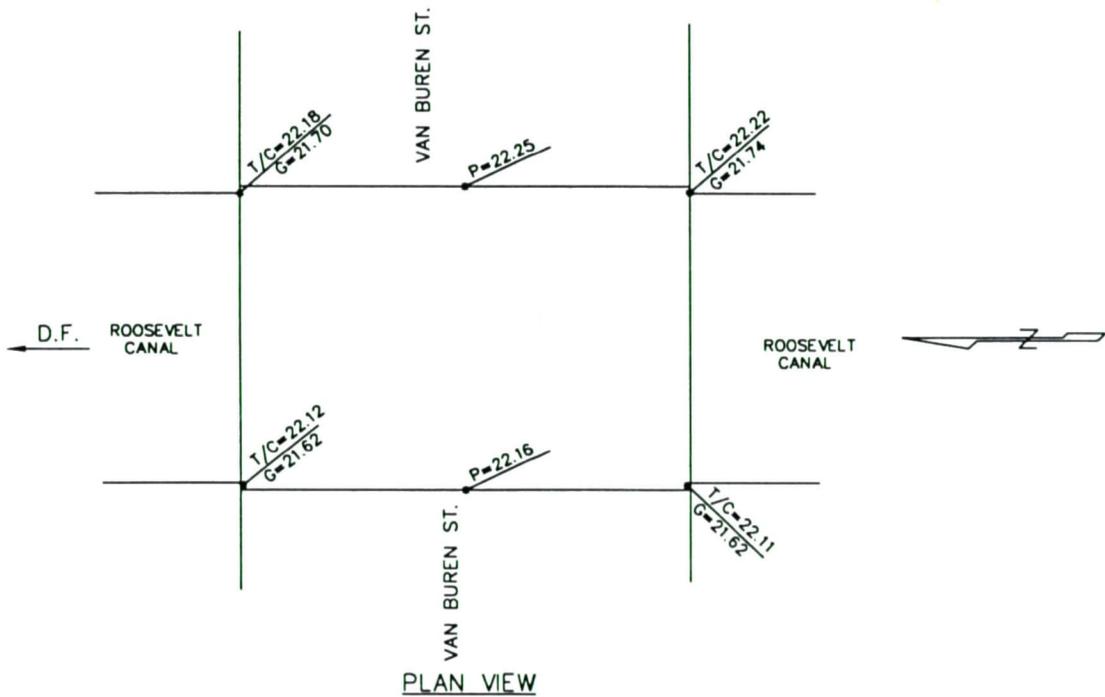
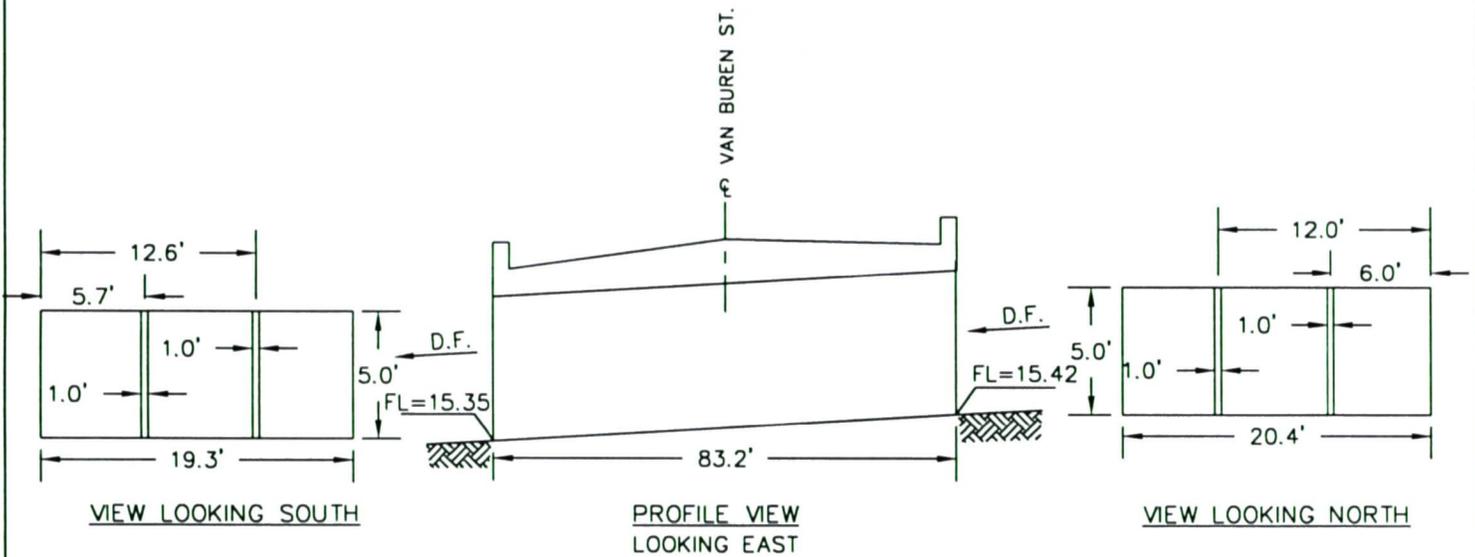
LOCATION: ROOSEVELT CANAL AT VAN BUREN ST.

MARYVALE AREA DRAINAGE  
PROJECT: MASTER STUDY

PROJECT NO.: 94154

DATE: MARCH/APRIL 1996

CONTRACT FD: 93-29



**ROOSEVELT CANAL  
LOCATION 4**

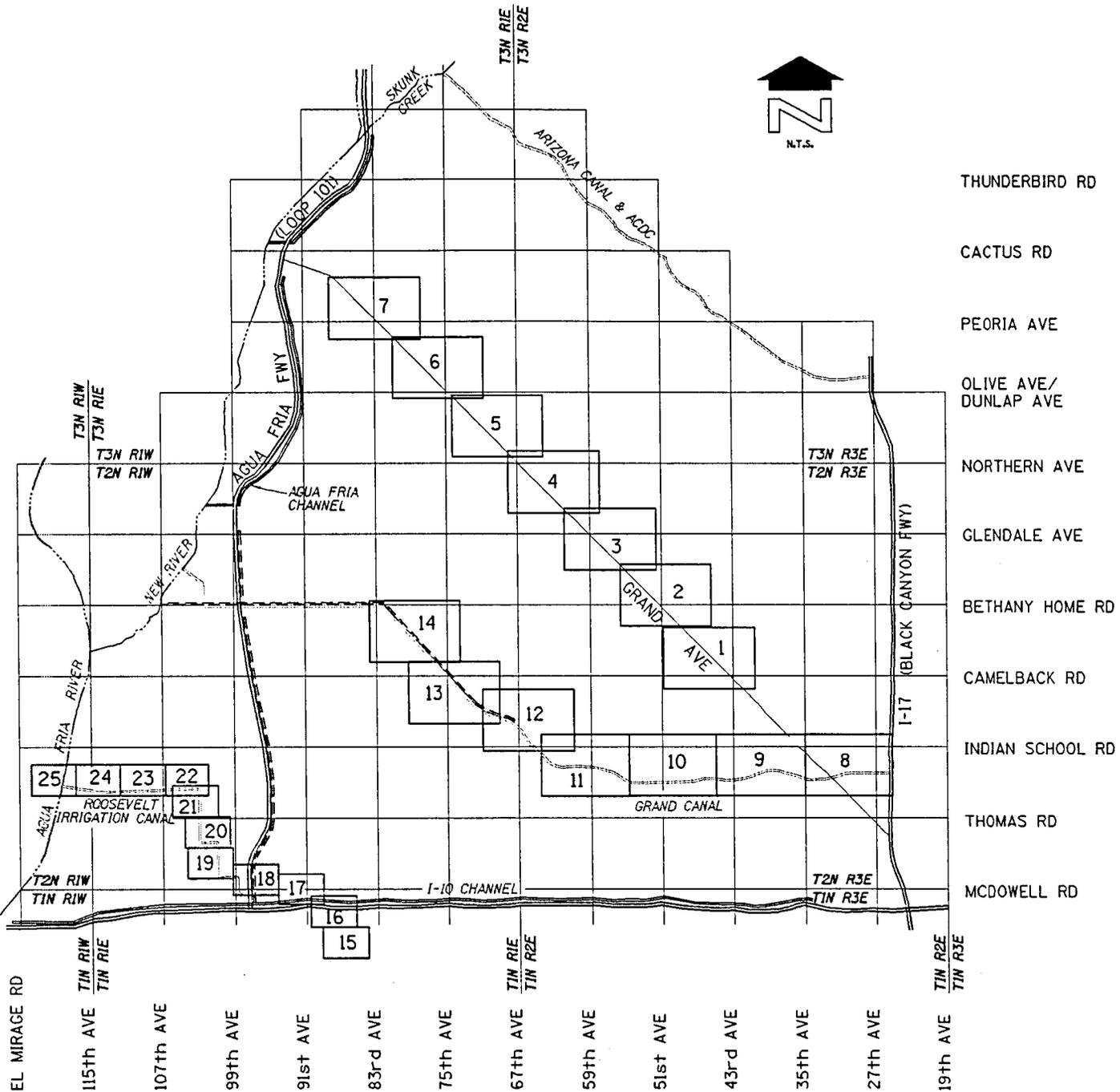
**NOTES:**

1) TBM = CHSLD "+" T/C @ NW COR. BRIDGE EL=1022.12

DRAWINGS NOT TO SCALE

## Section II

- Plate 2, Index Map - Field Survey & Topo
- Plates 1 thru 7, Field Survey & Topo along Grand Avenue
- Plates 8 thru 14, Field Survey & Topo along Grand Canal
- Plates 15 thru 25, Field Survey & Topo along RIDC



THUNDERBIRD RD  
 CACTUS RD  
 PEORIA AVE  
 OLIVE AVE/  
 DUNLAP AVE  
 NORTHERN AVE  
 GLENDALE AVE  
 BETHANY HOME RD  
 CAMELBACK RD  
 INDIAN SCHOOL RD  
 THOMAS RD  
 MCDOWELL RD

EL MIRAGE RD  
 115th AVE  
 107th AVE  
 99th AVE  
 91st AVE  
 83rd AVE  
 75th AVE  
 67th AVE  
 59th AVE  
 51st AVE  
 43rd AVE  
 35th AVE  
 27th AVE  
 19th AVE

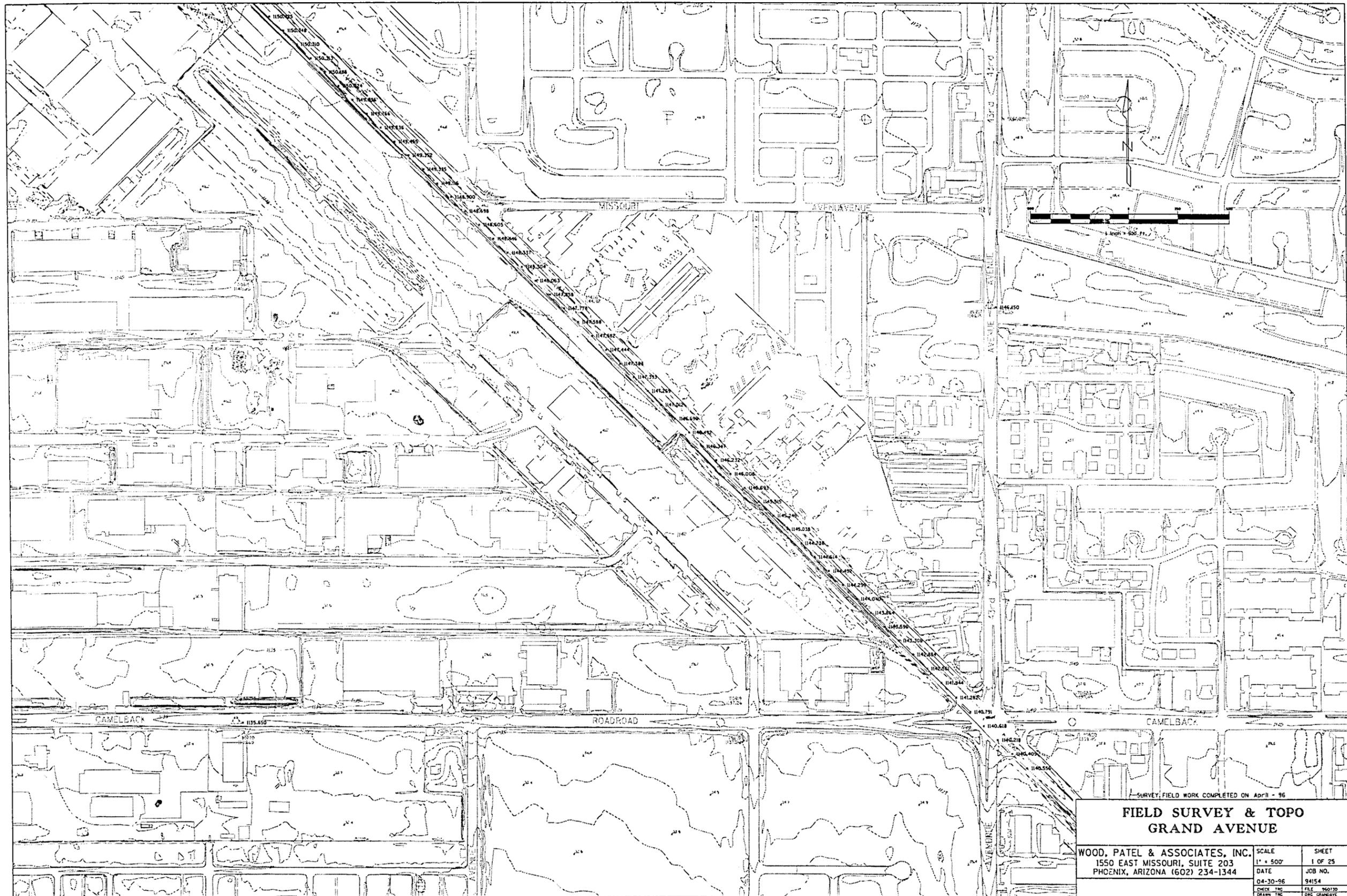
**LEGEND**

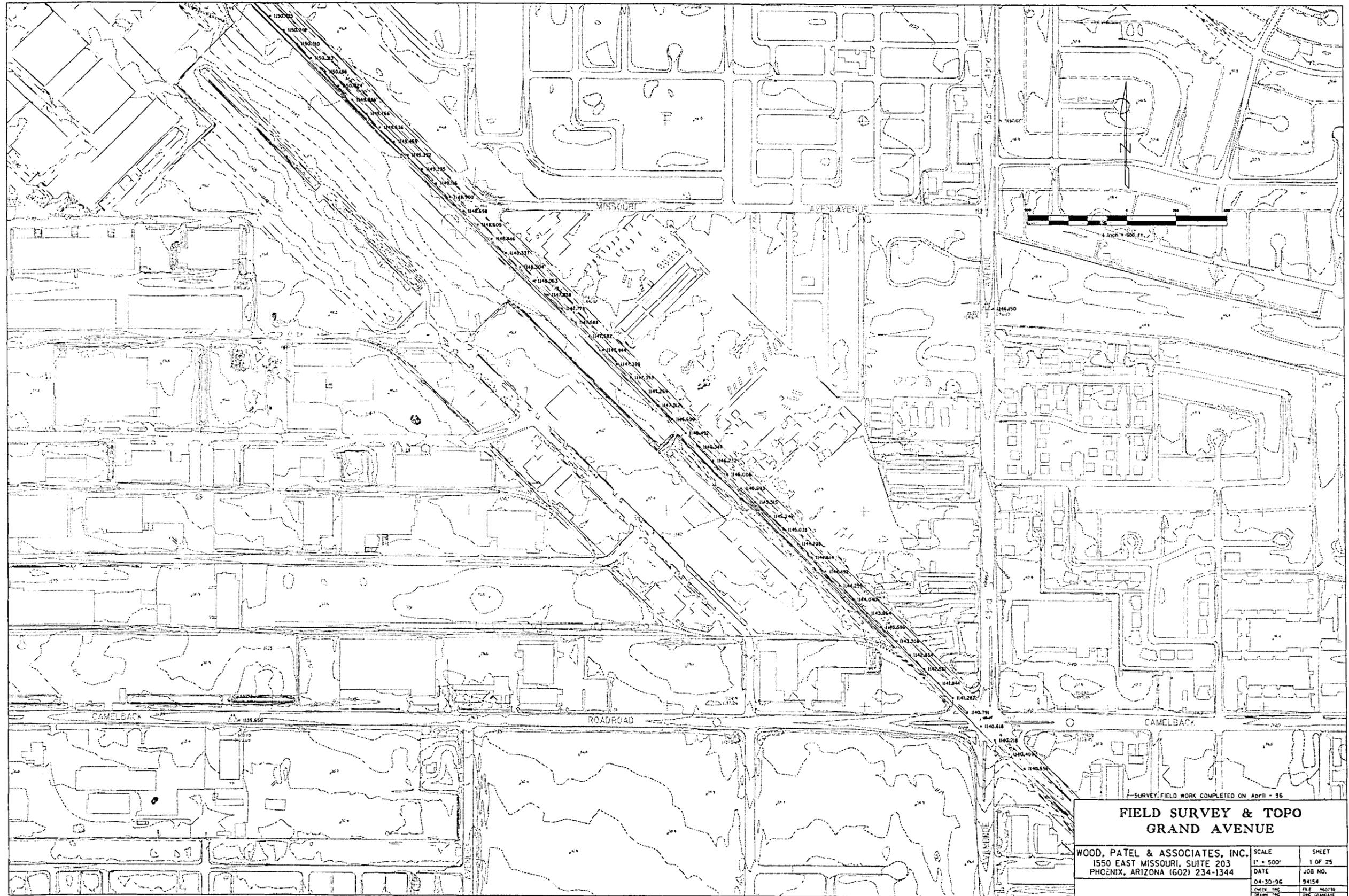
- 1 FIELD SURVEY & TOPO MAP LOCATION
- EXISTING FLOOD CONTROL CHANNEL
- PROPOSED FLOOD CONTROL CHANNEL
- INTERSTATE OR STATE HIGHWAY

	NAME	DATE
DESIGN	J. TAILLON	6/97
DRAWN	A. LINN	6/97
CHECKED	A. PATEL	6/97

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

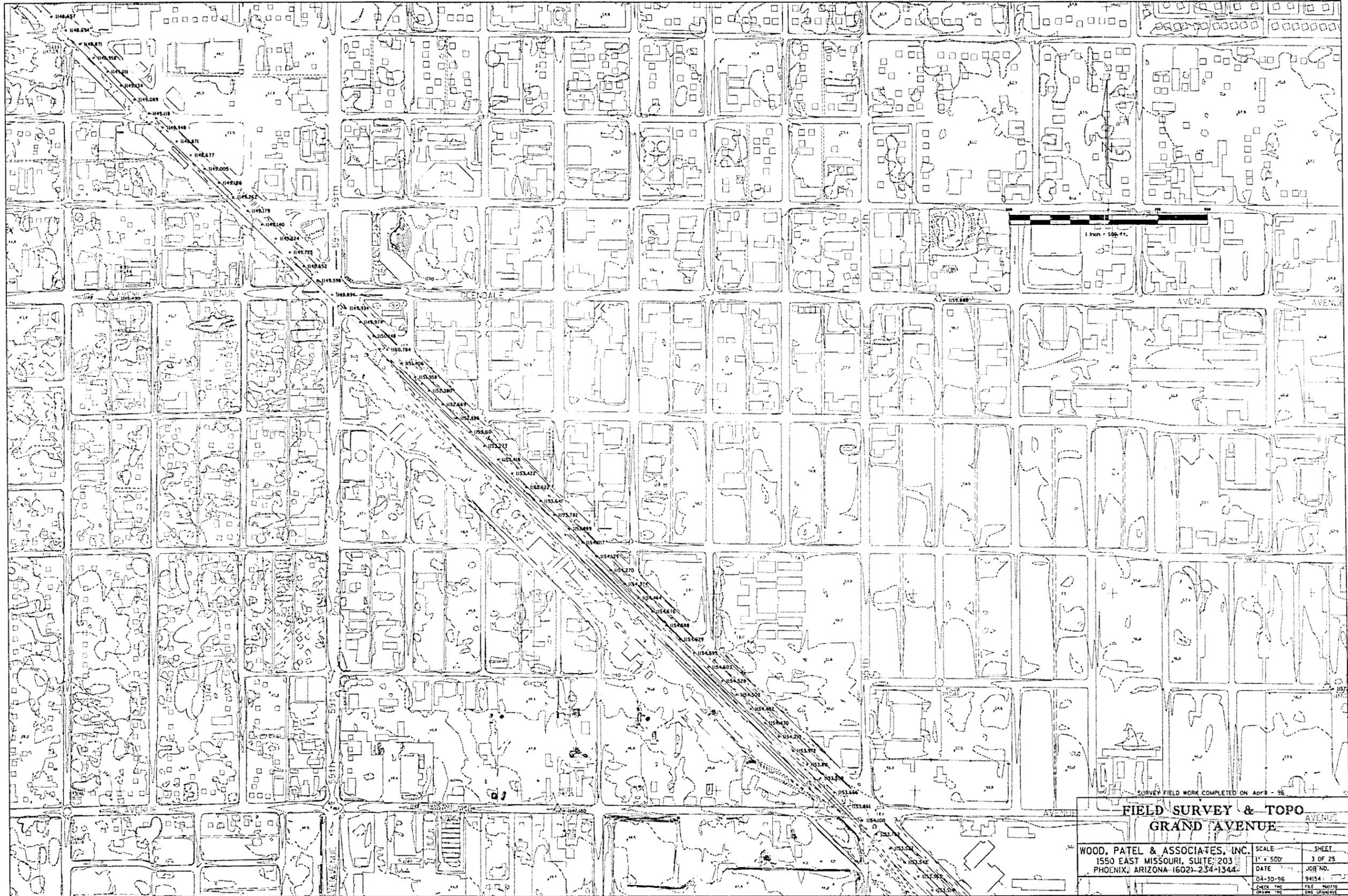
INDEX MAP  
 FIELD SURVEY & TOPO





SURVEY FIELD WORK COMPLETED ON APR 11 - 96

<b>FIELD SURVEY &amp; TOPO</b>		
<b>GRAND AVENUE</b>		
WOOD, PATEL & ASSOCIATES, INC.	SCALE	SHEET
1550 EAST MISSOURI, SUITE 203	1" = 500'	1 OF 25
PHOENIX, ARIZONA (602) 234-1344	DATE	JOB NO.
	04-30-96	94154
	DATE	FILE
	04-11-96	045 GRANDAVE

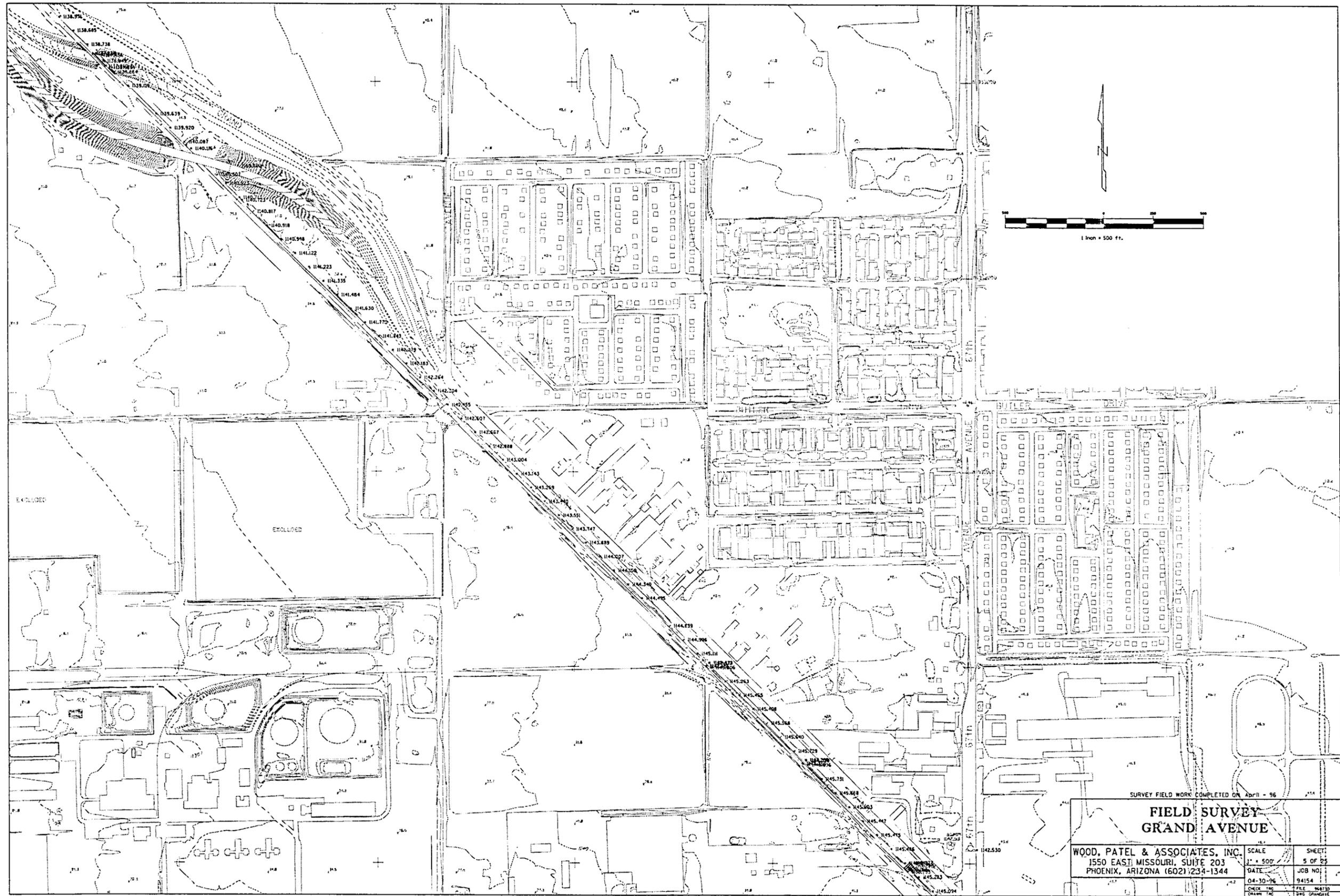


SURVEY FIELD WORK COMPLETED ON APR 9 - 96

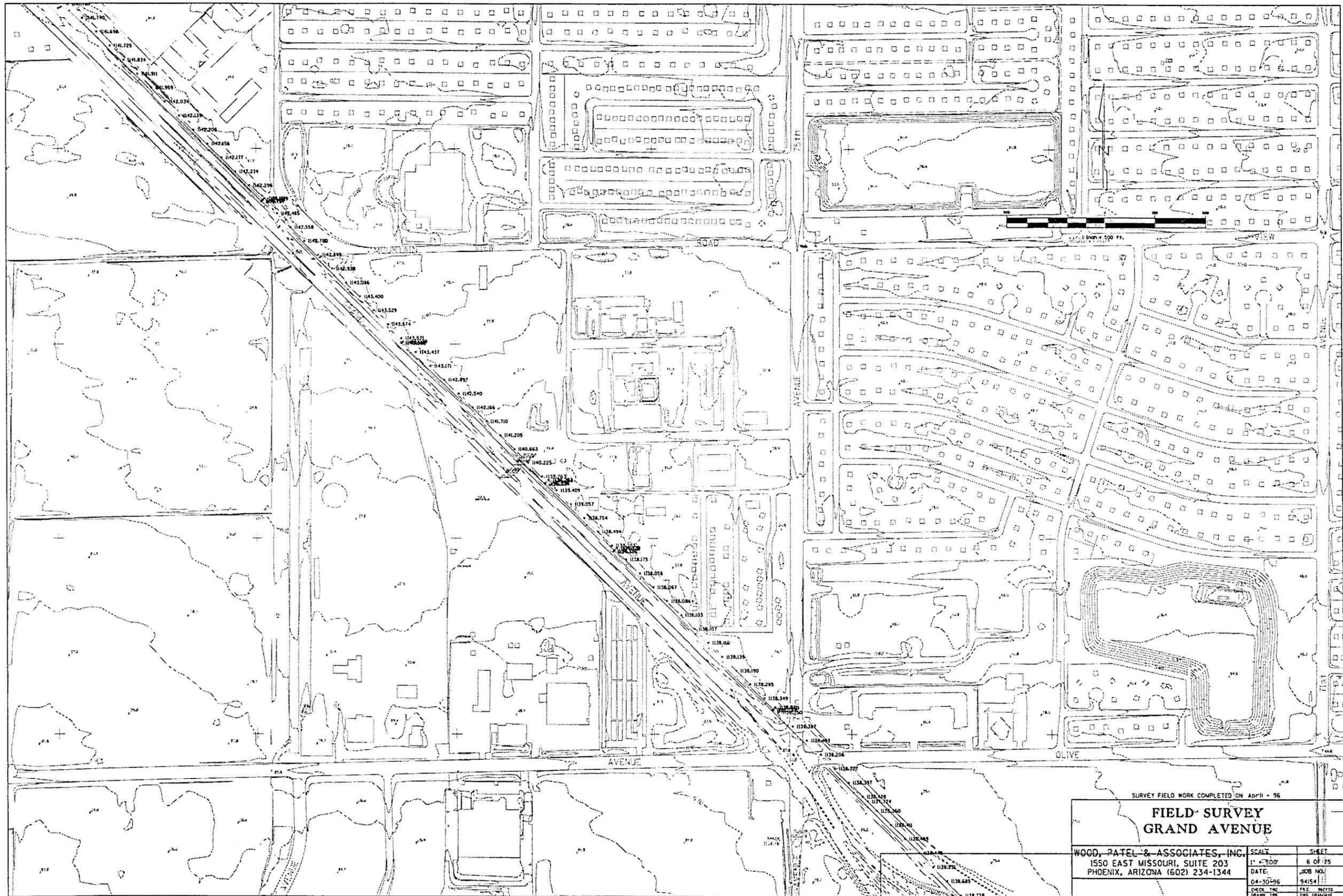
**FIELD SURVEY & TOPO**  
**GRAND AVENUE**

WOOD, PATEL & ASSOCIATES, INC.		SCALE	SHEET
1550 EAST MISSOURI, SUITE 203		1" = 50'	3 OF 25
PHOENIX, ARIZONA (602)-234-1344		DATE	JOB NO.
		04-30-96	94154
		CHECKED BY	FILE NO.
		TRM	ENC. DRAWING





SURVEY FIELD WORK COMPLETED ON April - 96		
<b>FIELD SURVEY GRAND AVENUE</b>		
WOOD, PATEL & ASSOCIATES, INC.	SCALE 1" = 500'	SHEET# 5 OF 25
1550 EAST MISSOURI, SUITE 203	GATE	JOB NO. 94154
PHOENIX, ARIZONA (602) 234-1344	DATE 04-30-96	FILE NO. 94154
	DRAWN BY TMC	DATE 05-09-96



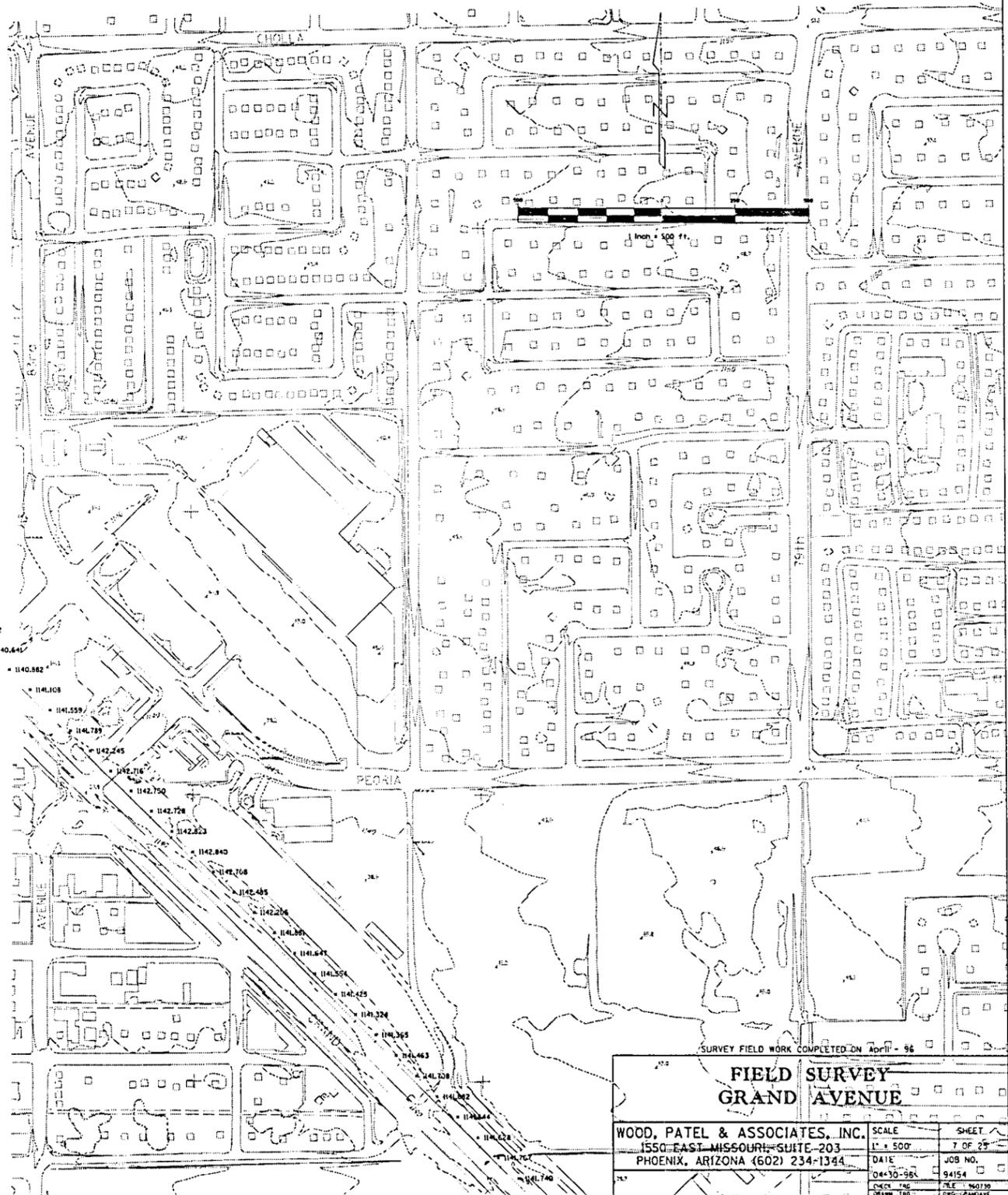
SURVEY FIELD WORK COMPLETED ON April - 96

**FIELD SURVEY  
GRAND AVENUE**

WOOD, PATEL & ASSOCIATES, INC.  
1550 EAST MISSOURI, SUITE 203  
PHOENIX, ARIZONA (602) 234-1344

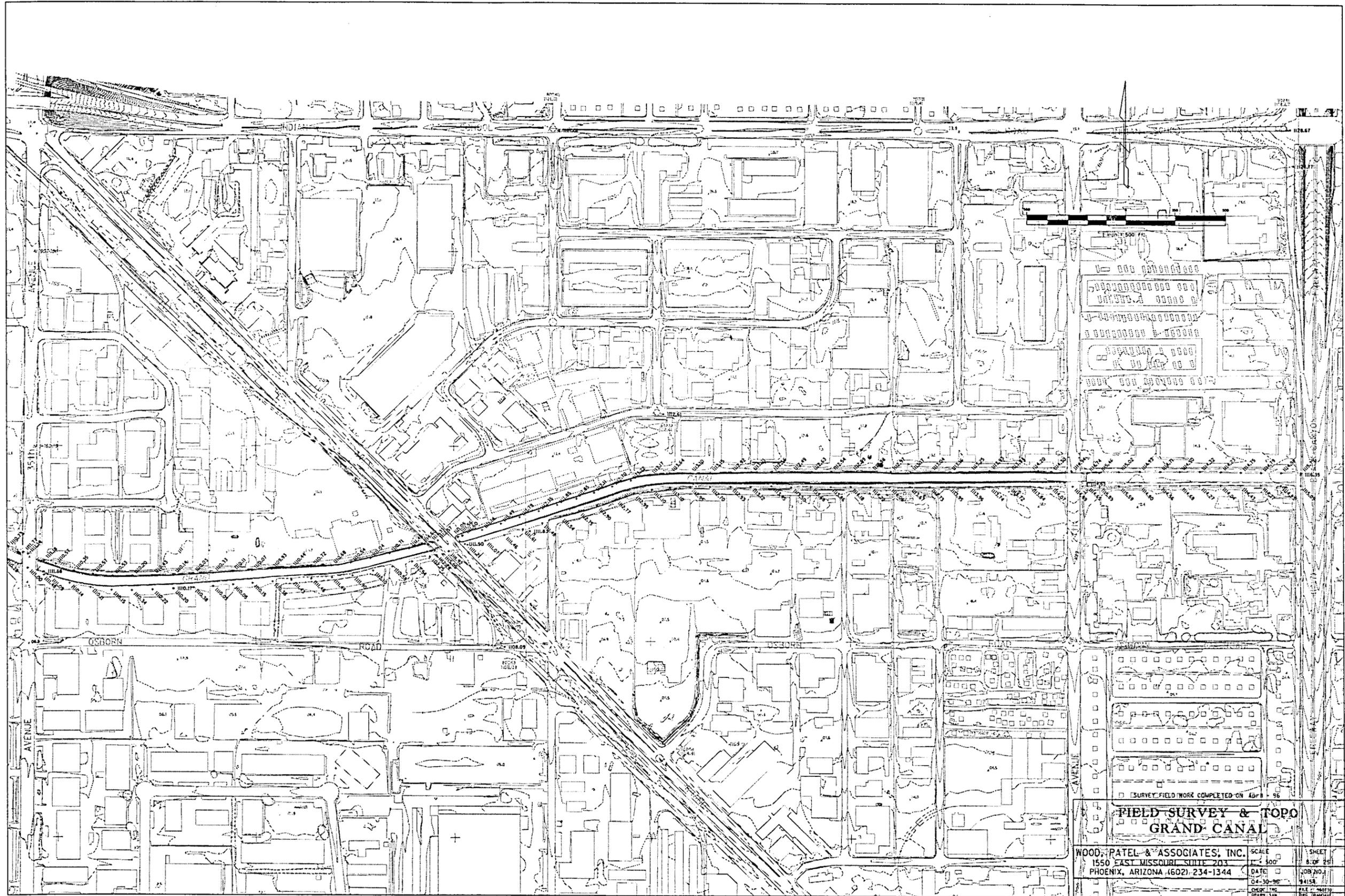
SCALE	SHEET
1" = 500'	6 of 25
DATE	DRAWN BY
04-30-96	94154
CHECK BY	FILE
DWG. NO.	DWG. DATE

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- 1143.642
- 1143.488
- 1143.203
- 1142.906
- 1142.554
- 1142.319
- 1142.248
- 1142.188
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- 1141.525
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- 1140.780
- 1140.671
- 1140.425
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- 1139.659
- 1139.519
- 1139.404
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- 1139.706
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- 1139.916
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- 1145.614
- 1145.632
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- 1146.982
- 1147.000



SURVEY FIELD WORK COMPLETED ON APRIL - 96

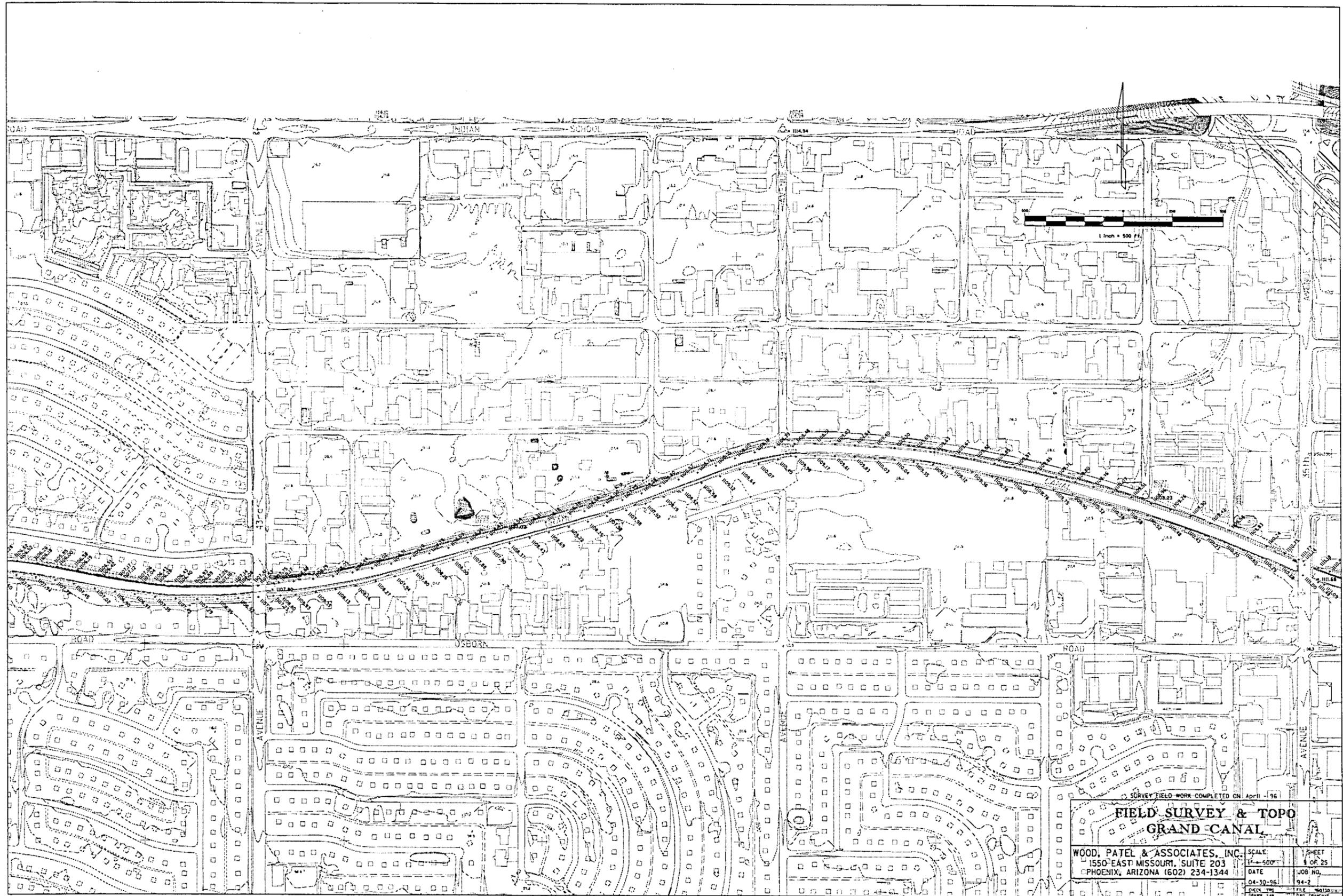
FIELD SURVEY		GRAND AVENUE	
WOOD, PATEL & ASSOCIATES, INC.		SCALE	SHEET
1550 EAST MISSOURI SUITE 203		1" = 500'	7 OF 25
PHOENIX, ARIZONA (602) 234-1344		DATE	JOB NO.
		08-30-96	94154
CHECK TAG	FILE	DATE	SCALE
DRAWN TAG	ENC-GRAND		



SURVEY FIELD WORK COMPLETED ON APR 96

**FIELD SURVEY & TOPO**  
**GRAND CANAL**

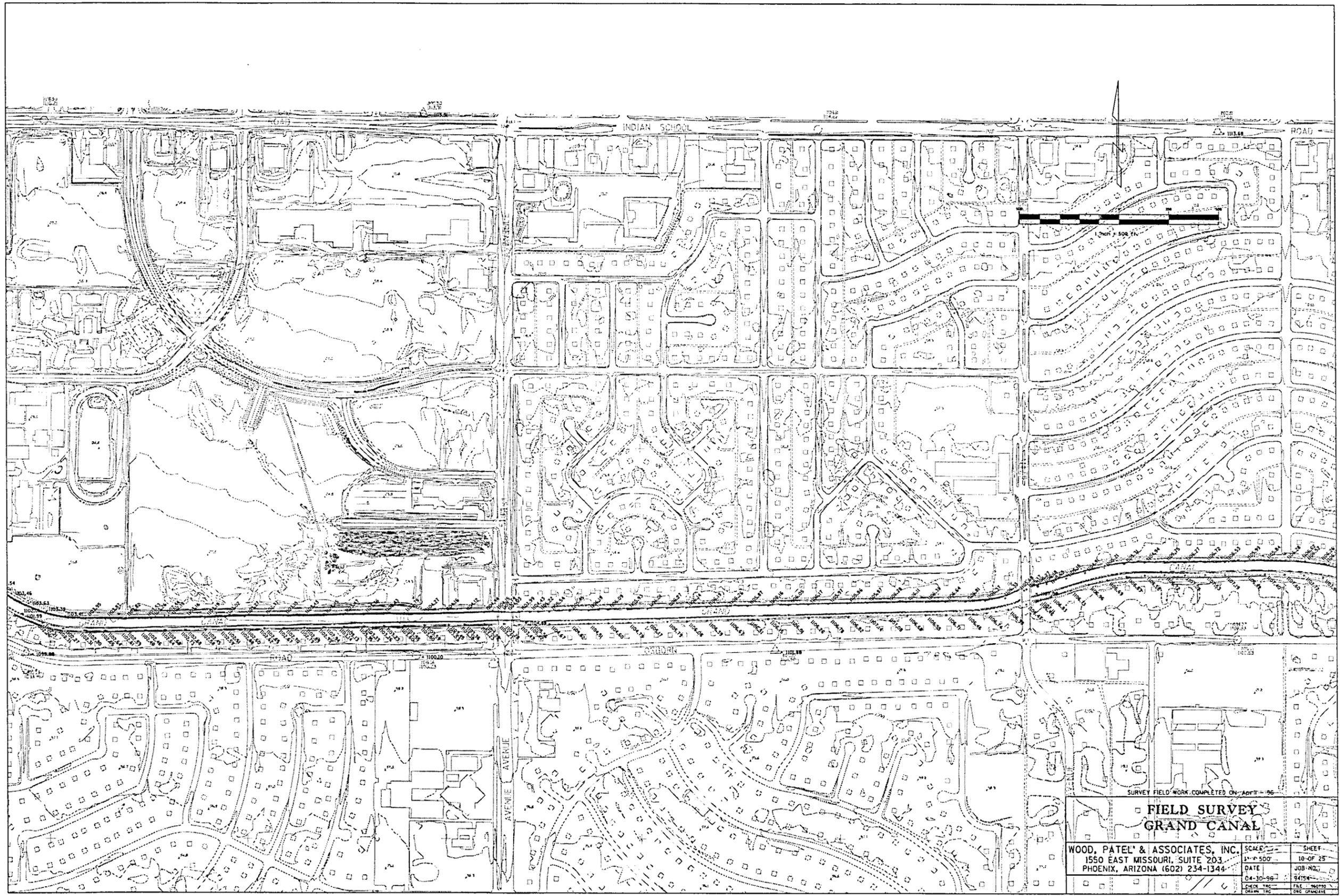
WOOD, PATEL & ASSOCIATES, INC.	SCALE	SHEET
1550 EAST MISSOURI SUITE 203	1" = 500'	8 OF 25
PHOENIX, ARIZONA (602) 234-1344	DATE	JOB NO.
	04-30-96	94154
	DRAWN BY	DATE
	PLS	04/30/96



SURVEY FIELD WORK COMPLETED ON APRIL 1996

**FIELD SURVEY & TOPO**  
**GRAND CANAL**

WOOD, PATEL & ASSOCIATES, INC. 1550 EAST MISSOURI, SUITE 203 PHOENIX, ARIZONA (602) 234-1344	SCALE 1" = 500'	SHEET 4 OF 25
DATE 04-30-96	JOB NO. 94-2	
DRAWN BY T.M.	CHECKED BY T.M.	FILE 94030



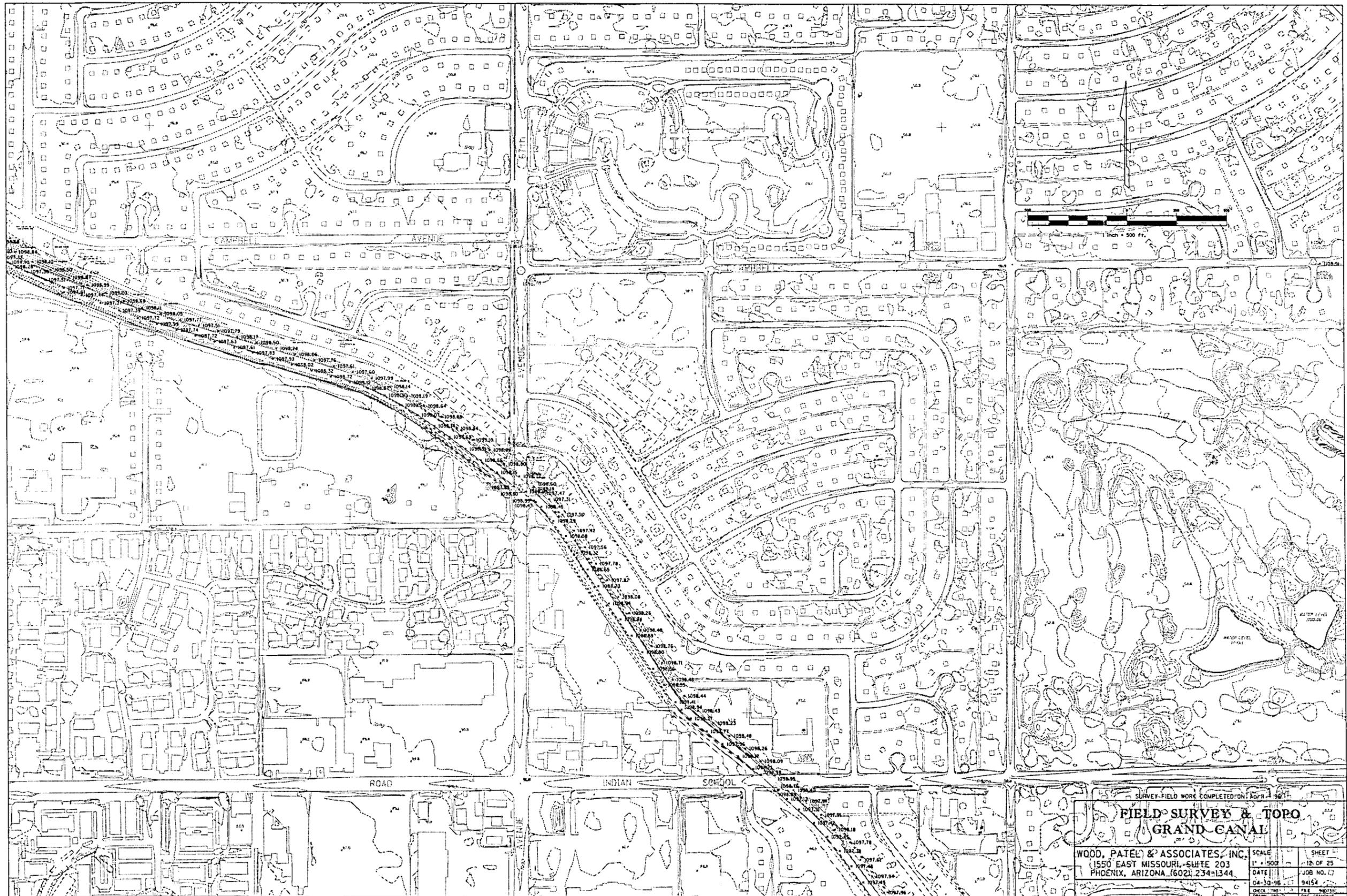
SURVEY FIELD WORK COMPLETED ON APR 11 1996

**FIELD SURVEY  
GRAND CANAL**

WOOD, PATEL & ASSOCIATES, INC.  
1550 EAST MISSOURI, SUITE 203  
PHOENIX, ARIZONA (602) 234-1344

SCALE	1" = 500'	SHEET	19 OF 25
DATE	04-30-96	JOB NO.	94154
DATE	04-30-96	FILE NO.	94154
DATE	04-30-96	FILE NO.	94154







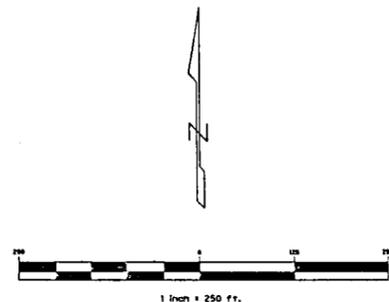
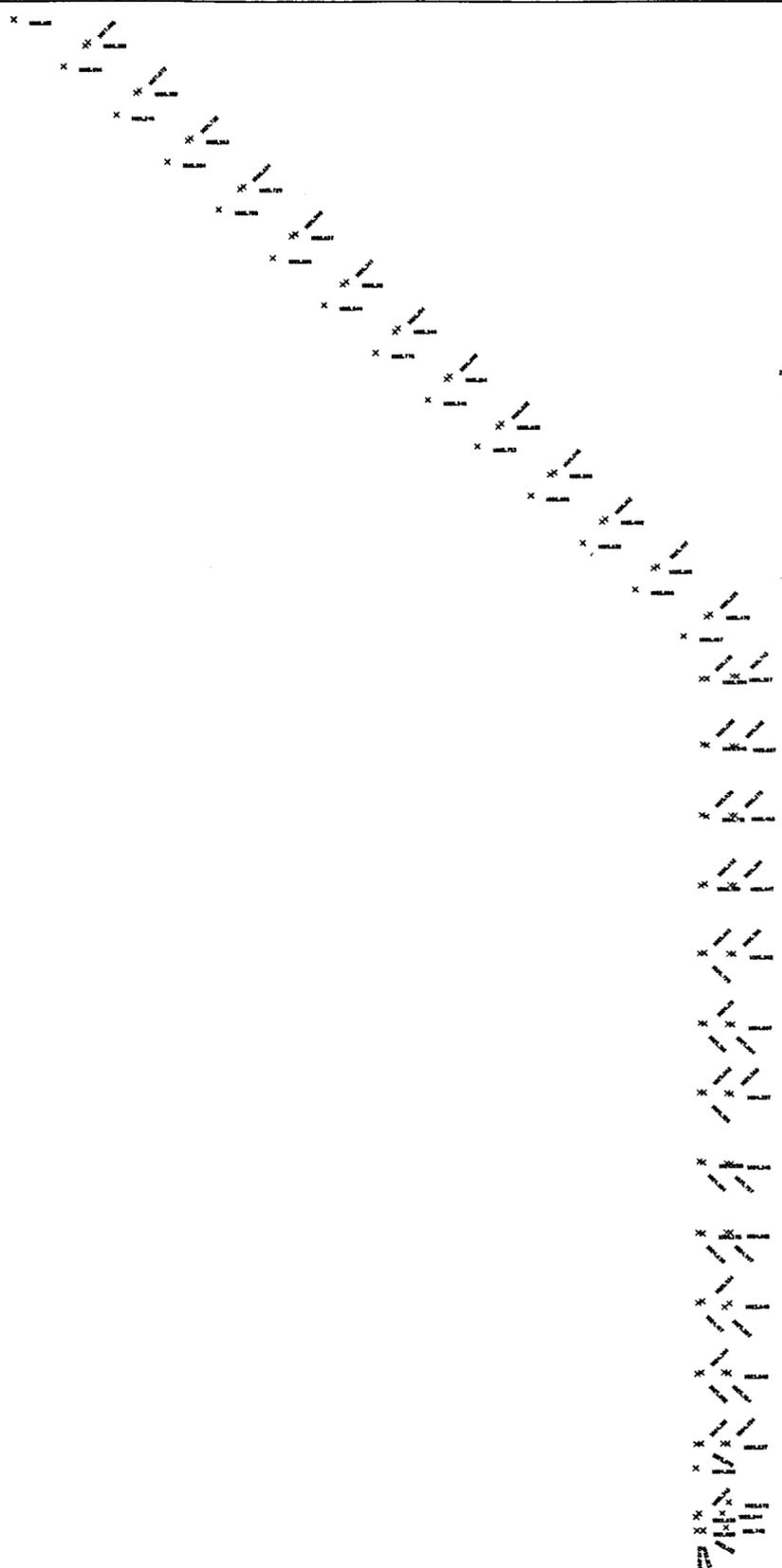
SURVEY FIELD WORK COMPLETED ON APRIL --96

**FIELD SURVEY & TOPO  
GRAND CANAL**

WOOD, PATEL & ASSOCIATES, INC.  
1150 EAST MISSOURI, SUITE 203  
PHOENIX, ARIZONA (602) 234-1344

SCALE	SHEET
1" = 500'	13 OF 25
DATE	JOB NO.
04-30-96	94154
DRAWN BY	FILE NO.
ERC	ERC GRAND



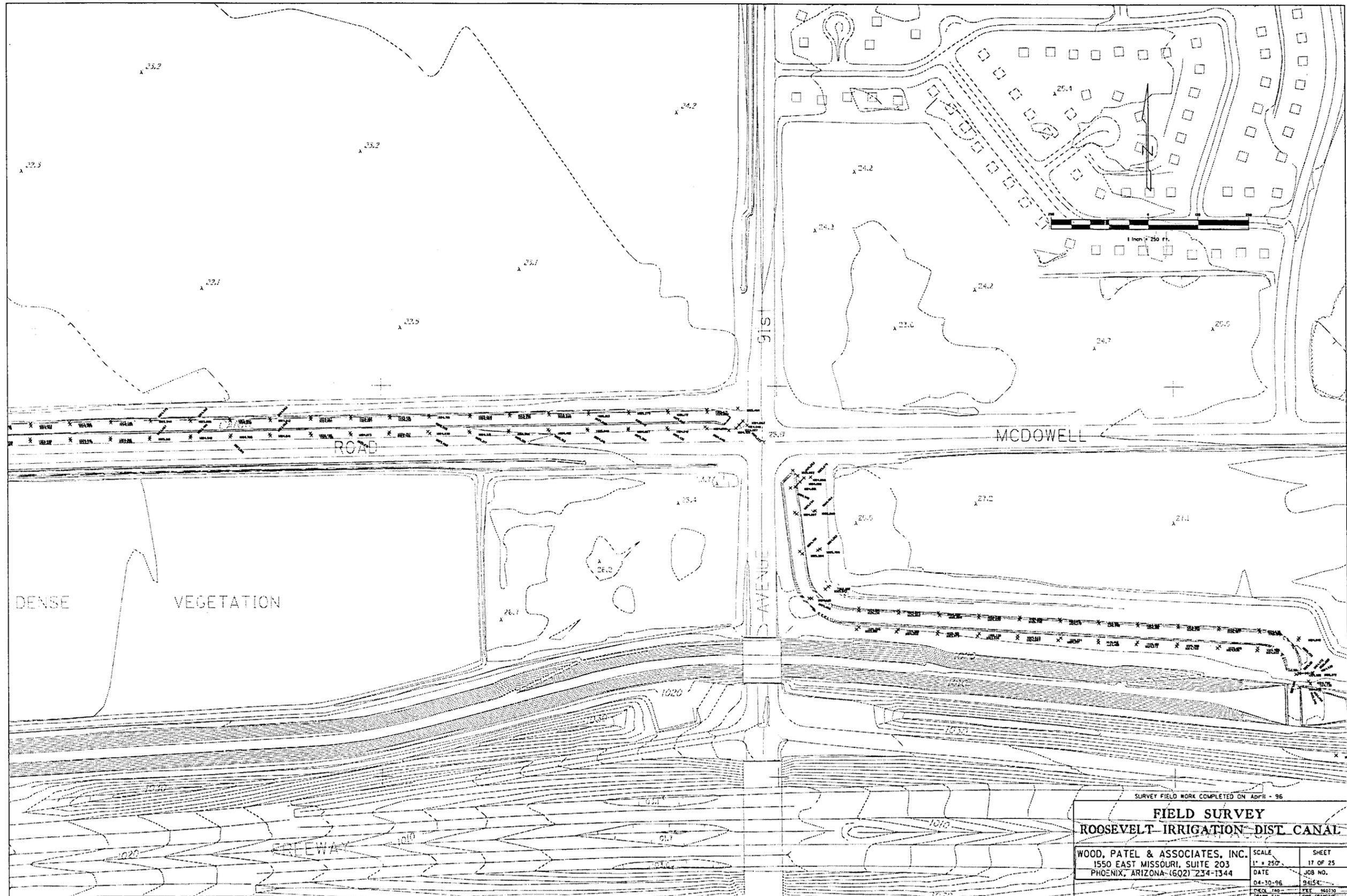


SURVEY FIELD WORK COMPLETED ON April - 96

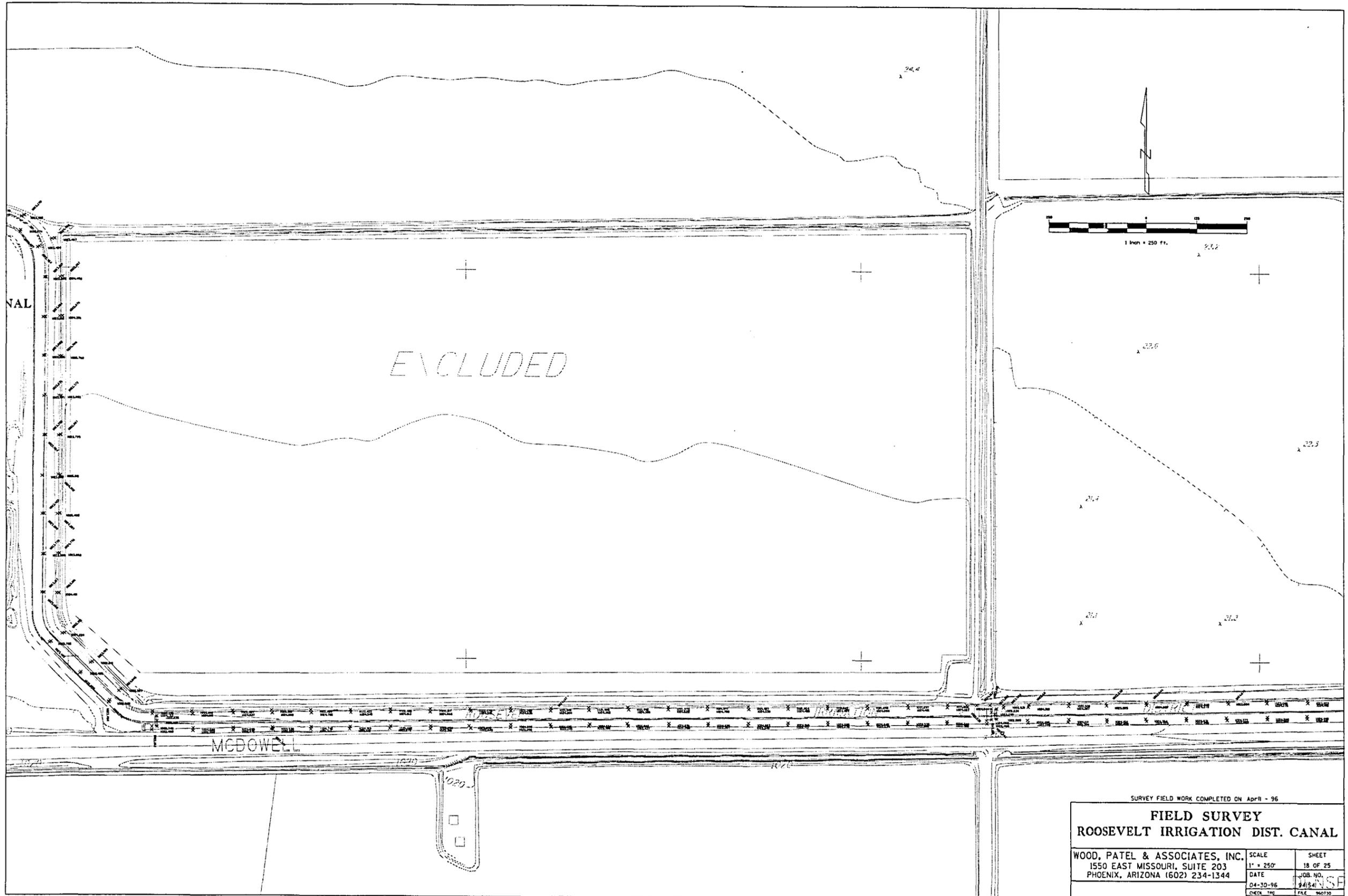
**FIELD SURVEY  
ROOSEVELT IRRIGATION DIST. CANAL**

WOOD, PATEL & ASSOCIATES, INC. 1550 EAST MISSOURI, SUITE 203 PHOENIX, ARIZONA (602) 234-1344	SCALE	SHEET
	1" = 250'	15 OF 25
	DATE	JOB NO.
	04-30-96	94154
	DRAWN BY	CHECKED BY
	TRC	TRC



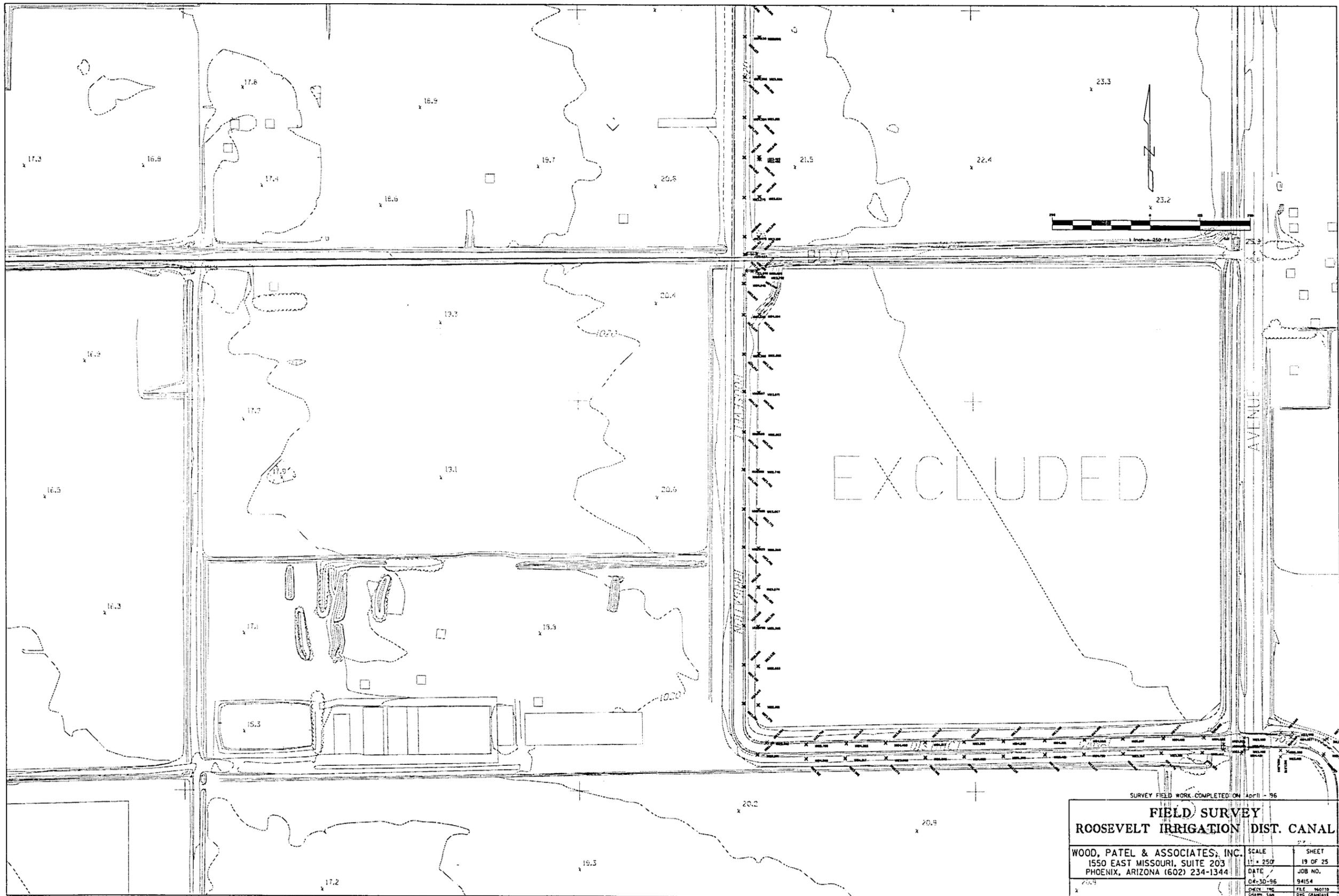


SURVEY FIELD WORK COMPLETED ON APRIL - 96		
<b>FIELD SURVEY</b>		
<b>ROOSEVELT IRRIGATION DIST CANAL</b>		
WOOD, PATEL & ASSOCIATES, INC. 1550 EAST MISSOURI, SUITE 203 PHOENIX, ARIZONA (602) 234-1344	SCALE	SHEET
	1" = 250'	17 OF 25
	DATE	JOB NO.
	04-30-96	94154
DRG. NO.	FILE NO.	DATE
		04-30-96



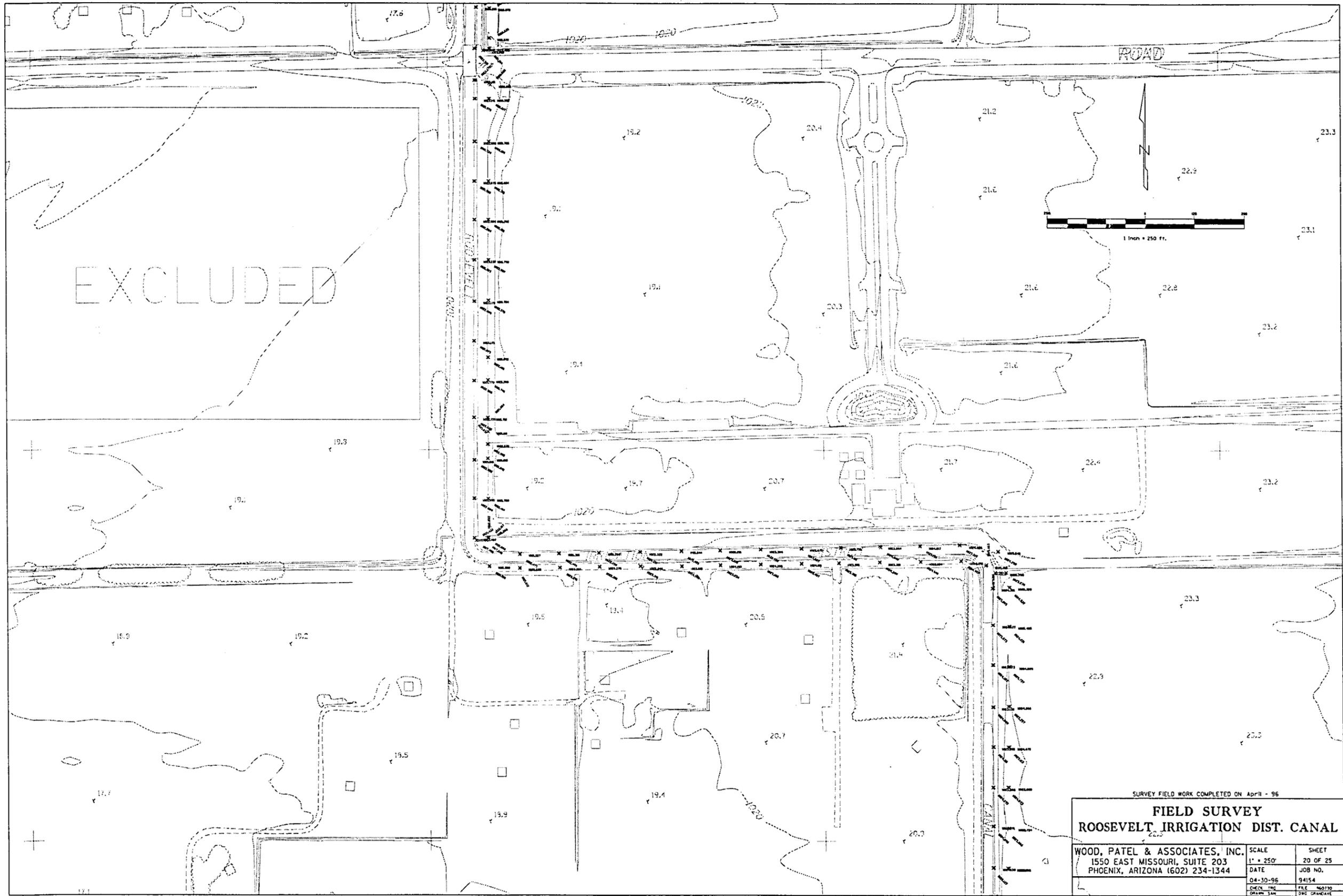
SURVEY FIELD WORK COMPLETED ON April - 96

<b>FIELD SURVEY</b>		
<b>ROOSEVELT IRRIGATION DIST. CANAL</b>		
WOOD, PATEL & ASSOCIATES, INC. 1550 EAST MISSOURI, SUITE 203 PHOENIX, ARIZONA (602) 234-1344	SCALE 1" = 250' DATE 04-30-96 CHECKED BY [Signature]	SHEET 18 OF 25 JOB NO. 941541 FILE M0730 DATE DRAWN [Signature]



SURVEY FIELD WORK COMPLETED ON APR 11 - 96

<b>FIELD SURVEY</b>	
<b>ROOSEVELT IRRIGATION DIST. CANAL</b>	
WOOD, PATEL & ASSOCIATES, INC. 1550 EAST MISSOURI, SUITE 203 PHOENIX, ARIZONA (602) 234-1344	
SCALE 1" = 250'	SHEET 19 OF 25
DATE 04-30-96	JOB NO. 94154
CHECKED BY DWC	FILE NO. M019
DRAWN BY DWC	DATE 04-30-96



SURVEY FIELD WORK COMPLETED ON April - 96

**FIELD SURVEY  
ROOSEVELT IRRIGATION DIST. CANAL**

WOOD, PATEL & ASSOCIATES, INC. 1550 EAST MISSOURI, SUITE 203 PHOENIX, ARIZONA (602) 234-1344	SCALE	SHEET
	1" = 250'	20 OF 25
	DATE	JOB NO.
	04-30-96	94154
CHECKED BY	FILE NO.	
DRAWN BY	DWG. NAME	

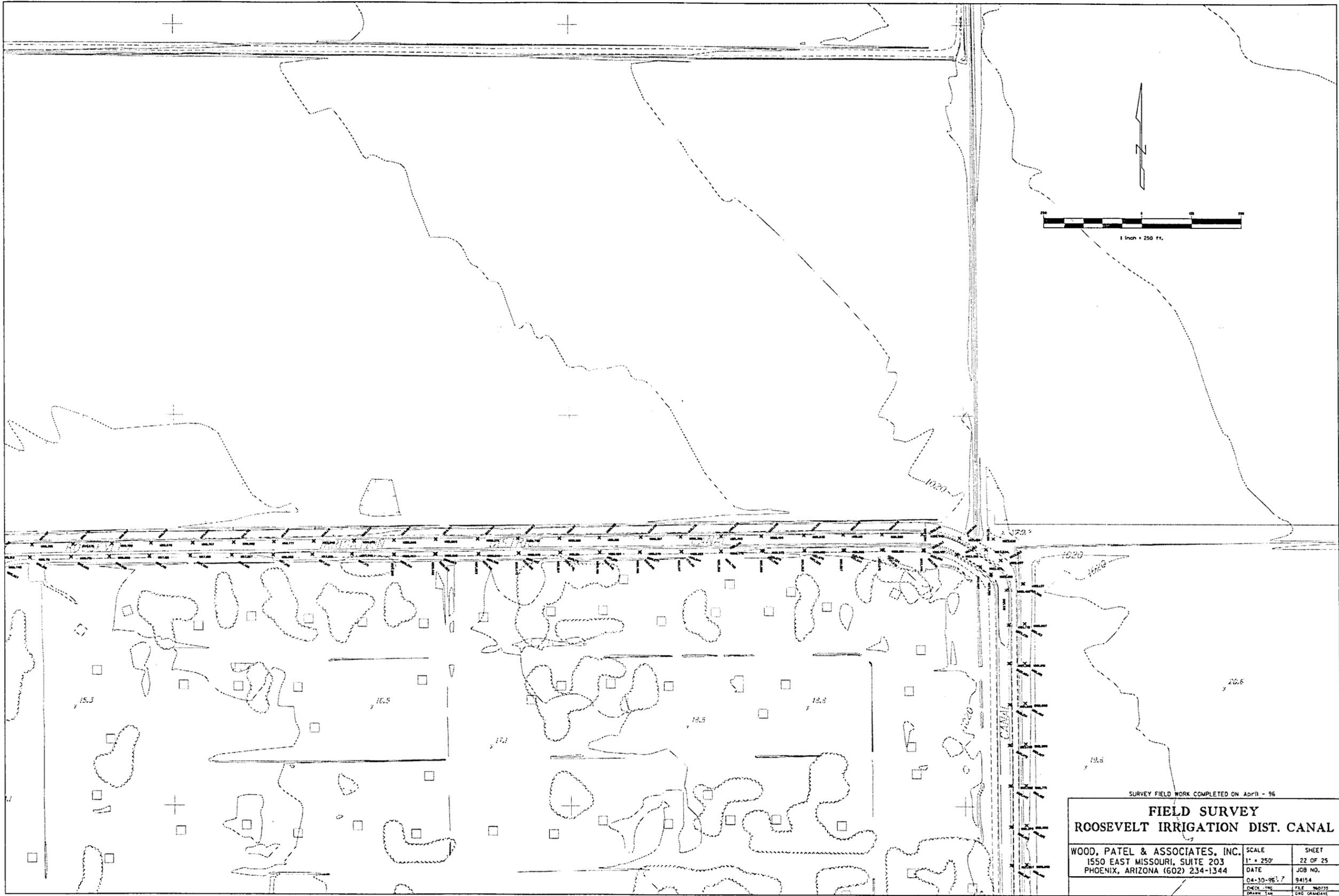


EX

SURVEY FIELD WORK COMPLETED ON April - 96

**FIELD SURVEY  
ROOSEVELT IRRIGATION DIST. CANAL**

WOOD, PATEL & ASSOCIATES, INC. 1550 EAST MISSOURI, SUITE 203 PHOENIX, ARIZONA (602) 234-1344	SCALE 1" = 250'	SHEET 21 OF 25
	DATE 04-30-96	JOB NO. 94154
CHECKED BY [Signature]	FILE NO. 160170	DWG. DATE 04-30-96

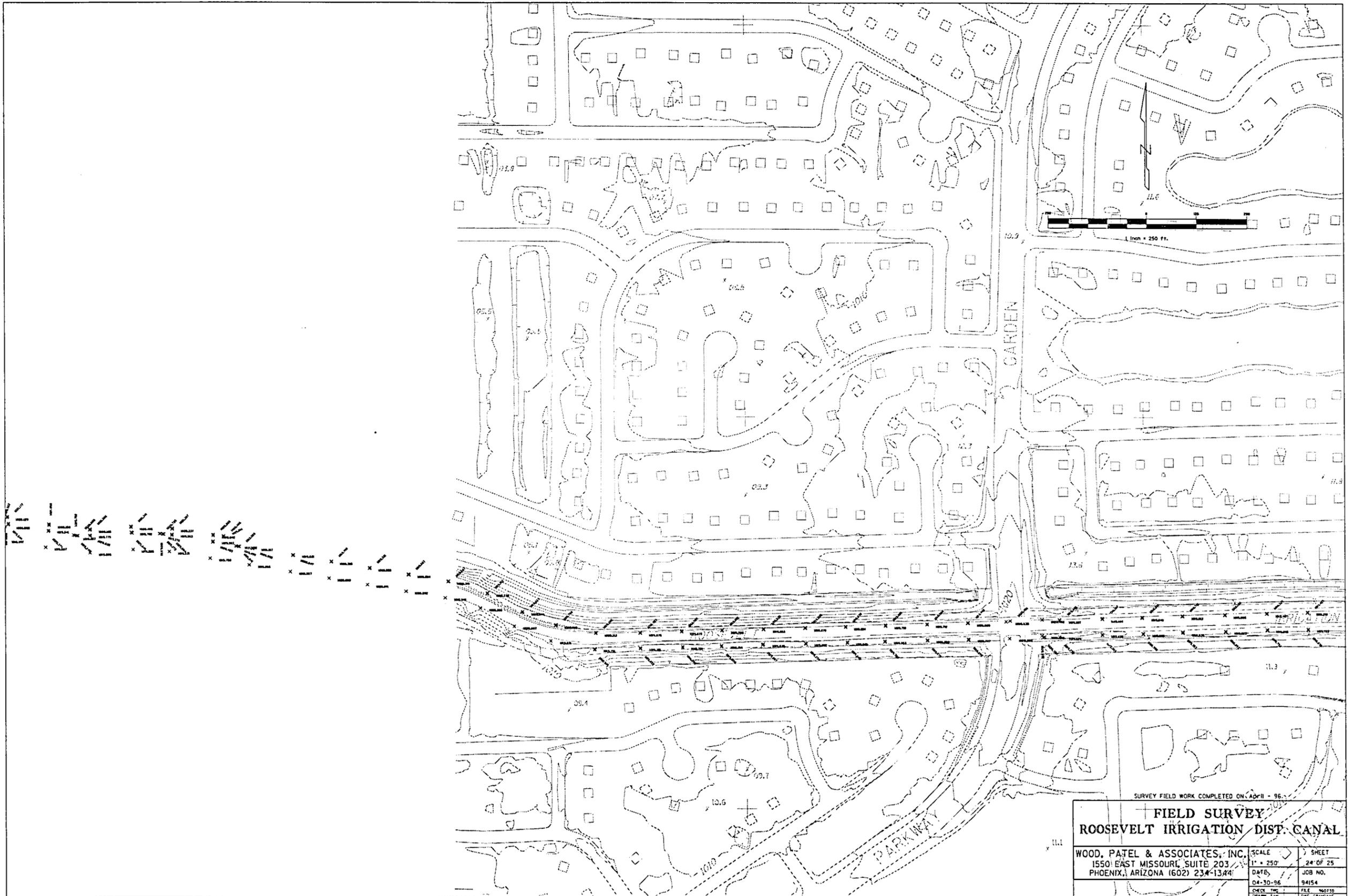


SURVEY FIELD WORK COMPLETED ON April - 96

**FIELD SURVEY  
ROOSEVELT IRRIGATION DIST. CANAL**

WOOD, PATEL & ASSOCIATES, INC. 1550 EAST MISSOURI, SUITE 203 PHOENIX, ARIZONA (602) 234-1344	SCALE	SHEET
	1" = 250'	22 OF 25
	DATE	JOB NO.
	04-30-96 1.7	94154
CHECK: TMC	FILE: 960110	
DRAWN: TMC	DATE: 04/30/96	

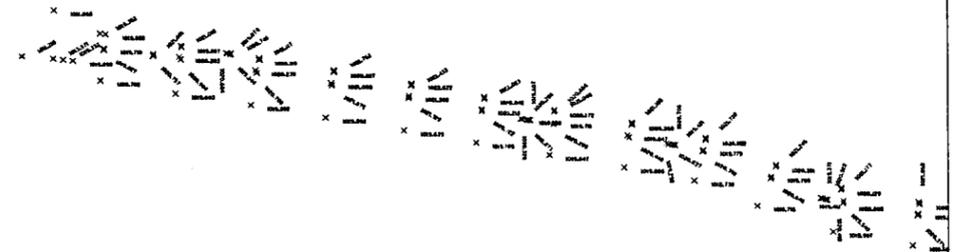
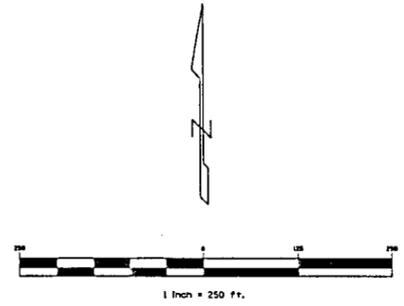




SURVEY FIELD WORK COMPLETED ON APRIL - 96

**FIELD SURVEY  
ROOSEVELT IRRIGATION DIST. CANAL**

WOOD, PATEL & ASSOCIATES, INC. 1550 EAST MISSOURI, SUITE 203 PHOENIX, ARIZONA (602) 234-1344	SCALE	SHEET
	1" = 250'	24 OF 25
	DATE	JOB NO.
	04-30-96	94154
	CHECKED BY	FILE #
	DRC LHM	662130



SURVEY FIELD WORK COMPLETED ON April - 96

**FIELD SURVEY  
ROOSEVELT IRRIGATION DIST. CANAL**

WOOD, PATEL & ASSOCIATES, INC. 1550 EAST MISSOURI, SUITE 203 PHOENIX, ARIZONA (602) 234-1344	SCALE 1" = 250'	SHEET 25 OF 25
	DATE 04-30-96	JOB NO. 94154
CHECKED BY DREW BOB	FILE NO. 96239	DWG. ORIGINATOR CWC GRANOVATE