



**Maricopa County  
Department of  
Transportation  
Planning Division**

**Deer Valley Road From  
83rd Avenue to 75th Avenue  
C97-0657-22**

**DRAFT**

**CANDIDATE ASSESSMENT REPORT**

**December 6, 1996**

**Prepared By:**

**INCA**  
**INCA ENGINEERS, INC.**

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# CANDIDATE ASSESSMENT REPORT

FOR

## DEER VALLEY ROAD

C97-0657-22

SEC. 13,14,15,22,23,24 T.4N., R.1E., G&SRB&M

MARICOPA COUNTY DEPARTMENT OF  
TRANSPORTATION PLANNING DIVISION

DECEMBER 6, 1996 DRAFT

<b>Project Name:</b> Deer Valley Road	<b>Project Termini:</b> 83 <sup>rd</sup> Avenue to 75 <sup>th</sup> Avenue
<b>Requested by:</b> David F. Lewis, Luke Land Realty	
<b>Improvement Requested:</b> Construct a 5-lane roadway with drainage improvements.	
<b>PM<sub>10</sub> Area?</b> Yes	<b>Length:</b> 1.609 Kilometers (1 Mile)
<b>Estimated Cost:</b> \$2,826,524 (MCDOT)	

### *Problem Identification:*

Deer Valley Road from 83<sup>rd</sup> Avenue to 75<sup>th</sup> Avenue is a paved two-lane road that crosses New River in a dip section approximately 140 meter (460 feet) west of 75<sup>th</sup> Avenue and Weir Wash in a partial dip approximately 670 meter (2,200 feet) west of 75<sup>th</sup> Avenue. There is a significant drop-off area on the south side of the New River dip section. This area floods whenever there is rain in this section of the valley and needs to be closed to traffic. There is an existing traffic signal system in place to warn motorists when the river is flowing. Deer Valley Road to the west of 83<sup>rd</sup> Avenue is a paved two-lane roadway. Deer Valley Road to the east of 75<sup>th</sup> Avenue is a five-lane paved road with curb, gutter and sidewalk on the north and south sides of the roadway.

### *Summary Recommendation:*

Based on the information available, it is recommended that the Low Cost Alternative 1B be programmed into the 5-year CIP. This alternative will construct a pavement section conforming to the MCDOT Standards for a Urban Minor Arterial 20.4 meter (67 feet) wide from 75<sup>th</sup> Avenue to the new bridge. This roadway section will be constructed by removing the existing roadway and constructing the new roadway to the new bridge at New River and taper from the end of the guardrail to match the existing 8.5 meter (28 feet) wide roadway west of Weir Wash. A new 55.5

meter (182 feet) channel of about the same depth as the existing channel on the south side of Deer Valley Road will be constructed north to about 30.5 meter (100 feet) north of the new north right-of-way line and a new drop structure will be constructed to tie into the existing channel. The banks of the new channel will be riprap lined and spur dikes will be constructed south of the new bridge to protect an aquatic area immediately south of Deer Valley Road and to protect the area west of the existing New River channel. A bridge will be constructed over the New River channel and have sidewalks on the north and south sides of the bridge. Curb and gutter will be constructed from 75<sup>th</sup> Avenue to the new bridge but no sidewalks will be constructed east or west of the bridge. The west side of the 75<sup>th</sup> Avenue intersection will be improved both north and south of Deer Valley Road. This improvement will provide five-lane capacity both north and south of the Deer Valley Road/75<sup>th</sup> Avenue intersection. The existing concrete-lined ditch on the north side of the roadway, east of New River, will need to be extended to the new riprap lined banks of the new New River channel. The existing storm drain system on the north will also be extended to the new channel. At Weir Wash the existing three 1.1 meter (42 inch) concrete pipes will be removed and a new double 2400 mm x 1800 mm (8 foot x 6 foot) concrete box culvert will be constructed with wing walls. The wash will be rechannelized for 30.5 meter (100 feet) north and south of the new right-of-way lines.

## BACKGROUND

### *Project Name:*

Deer Valley Road from 83<sup>rd</sup> Avenue to 75<sup>th</sup> Avenue

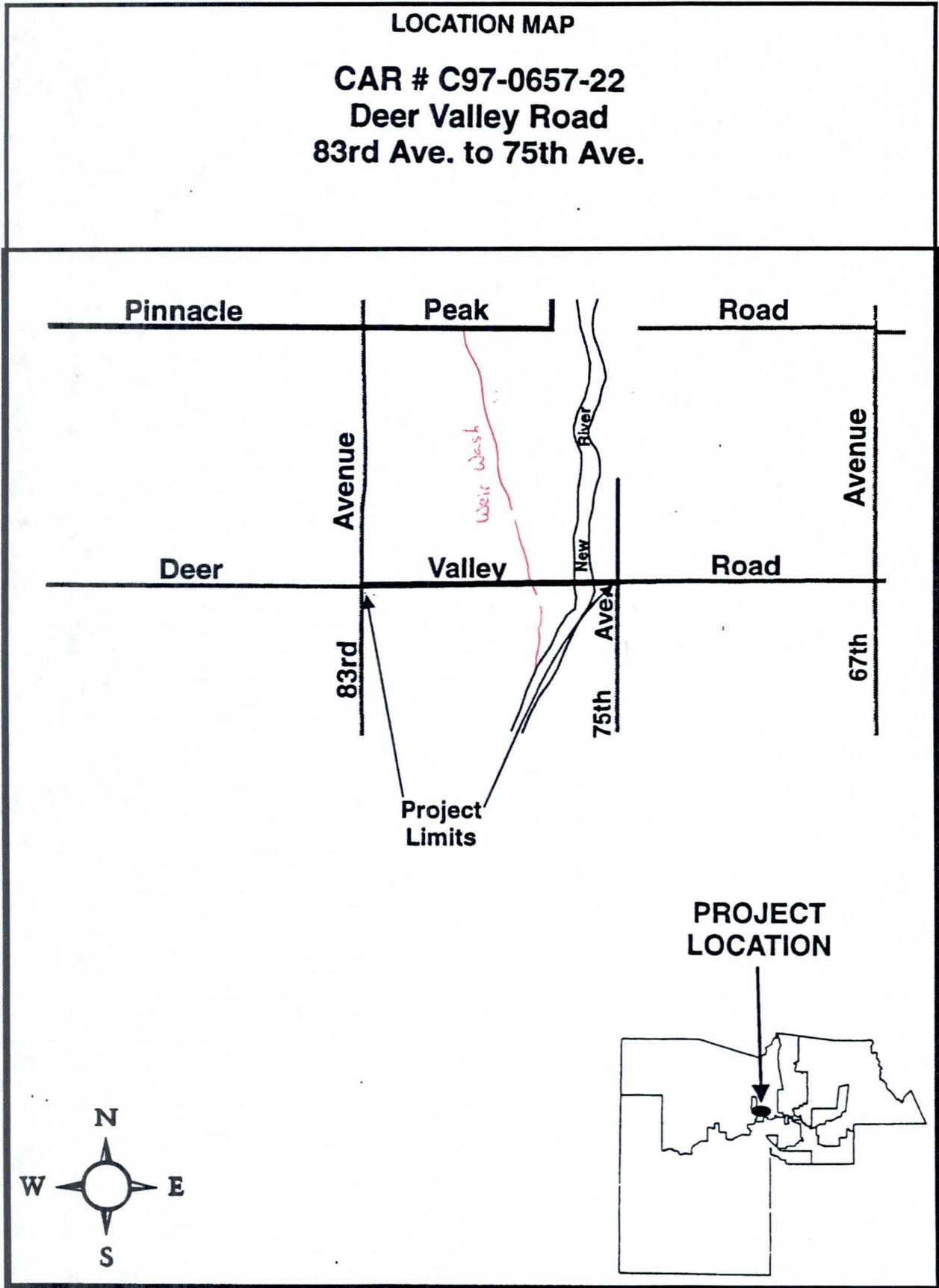
### *General Description and Location of the Project Areas:*

The project site is located in northeast Maricopa County in a rural low density area surrounded by agricultural land. There are also small businesses located east and west of New River. The majority of roadway is bounded by the City of Peoria. The south side of the roadway from 75<sup>th</sup> Avenue to the west approximately 201.2 meter (660 feet) is bounded by the City of Glendale. This section of Deer Valley Road currently terminates at 67<sup>th</sup> Avenue on the east and Lake Pleasant Road on the west.

This Deer Valley Road project begins at 75<sup>th</sup> Avenue with a four legged intersection with stop conditions on all four corners and continues to the west approximately 1,600 meter (1 mile) to 83<sup>rd</sup> Avenue. This intersection is also controlled by a four way stop condition. East of 75<sup>th</sup> Avenue is a five-lane urban arterial section in the City of Glendale. 75<sup>th</sup> Avenue is a two-lane roadway that is widened both north and south of the Deer valley Road intersection for turning movements. West of 83<sup>rd</sup> Avenue, Deer Valley Road continues as a rural two-lane roadway. 83<sup>rd</sup> Avenue is a two lane roadway that remains two lanes at the 83<sup>rd</sup> Avenue and Deer Valley Road intersection.

The existing Deer Valley roadway is 8.5 meters (28 feet) wide and has a 4.6 meter (15 foot) dirt shoulder on the south side and a 3.0 meter (10 foot) dirt shoulder on the north side. The pavement is striped for two way traffic.

*Show location of weir*



See City Limits Map for detailed City Limits information.

***Available Information on the Existing Roadway Surfacing and Shoulder Areas:***

Deer Valley Road was initially paved in 1978 on a stabilized base. The MCDOT records indicate 50 mm (2 inches) of asphalt concrete was placed. MCDOT chip sealed this roadway in October, 1995. All of the pavement appears to be in fair condition with a Pavement Condition Rating (PCR) of 93 and a Sufficiency Rating of 97.

***Type and Reason for Improvement:***

The existing dip sections where New River and Weir Wash crosses Deer Valley Road floods during heavy rains. Drainage improvements such as a bridge and box culvert at these locations will eliminate flooding problems and allow the road to remain in operation during heavy rains.

**TRAFFIC INFORMATION AND ANALYSIS**

***Average Daily Traffic (ADT) and Accidents:***

The results of the MCDOT traffic counts in 1995 are listed below. MCDOT has forecasted traffic for Deer Valley Road to be 23,000 in the year 2020. No accidents were reported at this location.

Location	1995	2020
83 <sup>rd</sup> Avenue to 75 <sup>th</sup> Avenue	3,000	23,000

***Construction Traffic Management Evaluation and Recommendation:***

Existing traffic will be maintained during construction by providing a temporary detour at New River and Weir Wash for construction. Construction of the project can be completed in three phases. The first phase would be to construct the detour north of the bridge and box culvert location and move traffic to the detour. The second phase would construct the bridge and box culvert and the south side of the roadway and channel improvements. The third phase would shift traffic to the newly constructed roadway and bridge, remove the remaining roadway and detour, and construct the new north half of the roadway and channel improvements.

**DRAINAGE**

The natural existing drainage flows from the northeast to the southwest. New River crosses the eastern end of the project site in a roadway dip section. New River drains an area of about 2,072 hectares (8 square miles) and the estimated volume of runoff in New River at this location is about 233 cubic meters per second (cms) (8,230 cfs) per the Flood Insurance Study, Volume 1 of 12, dated September 30, 1995. There is a large concrete lined drainage ditch on the north side of Deer Valley Road coming from 75<sup>th</sup> Avenue and dumping into New River that has created a large scour hole at the end of the ditch. Weir Wash crosses the project site about 670 meter (2,200 feet) west of 75<sup>th</sup> Avenue in three 1100 mm (42 inch) concrete pipe culverts. Weir Wash drains an area of about 829 hectares (3.2 square miles) and the estimated volume of runoff in Weir Wash at this location is about 32.4 cms (1,145 cfs) per the Flood Control District of Maricopa County (FCDMC).

There is a significant drop-off (about 2.4 meters (8 feet)) from the roadway to the downstream channel on the south side of Deer Valley Road at the dip for New River.

#### LAND USE

The land adjacent to the project site is mostly cultivated orchard land and vacant desert land. There is the New River flood plain at the easterly end of the project site.

Zoning within Peoria is mostly PAD (Planned Area Development) with some commercial zoning and AG (Agricultural). Zoning within the City of Glendale (east of 75<sup>th</sup> Avenue south of Deer Valley Road) is zoned A-1 (Agricultural). The City of Peoria and Glendale zoning maps is on pages 6 and 7.

#### *Potential Intergovernmental Partners and Private Development Partners:*

The Flood Control District of Maricopa County is a potential financial partner for some of the flood control channelizing near Deer Valley Road. Even though the City of Peoria and the City of Glendale, as well as the large property owners along Deer Valley Road will receive benefit from this road no other potential partners are anticipated.

CITY OF PEORIA  
ZONING MAP

**LEGEND**

----- CITY LIMIT

32 SECTION NUMBER

..... FLOOD PLAIN

INDICITY OF NEIGHBOR  
SEE COVERED FORM MAPS FOR DETAILS

**ZONING LEGEND**

----- ZONING DISTRICT BOUNDARY

----- CONDITIONAL ZONING DISTRICT BOUNDARY

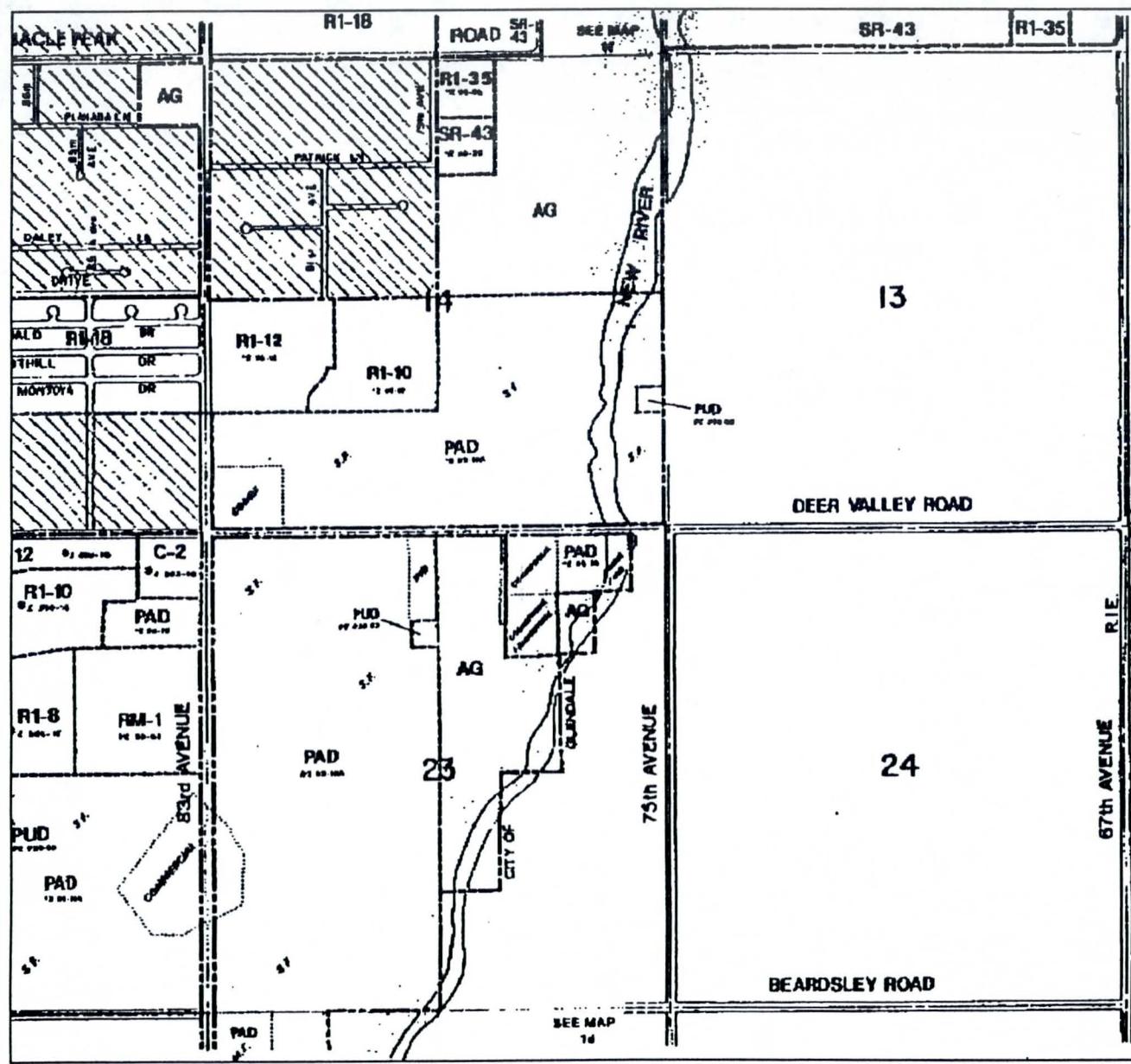
● DEVELOPMENT CONDITIONS ATTACHED TO ZONING APPROVAL. REFER TO ZONING APPLICATION MANUAL.

AG	General Agricultural District
SR-43	Special Single-Family Residential District
SR-35	Special Single-Family Residential District
R1-35	Single-Family Residential District
R1-18	Single-Family Residential District
R1-12	Single-Family Residential District
R1-10	Single-Family Residential District
R1-8	Single-Family Residential District
R1-6	Single-Family Residential District
R1-4	Single-Family Residential District
R1-3	Single-Family Residential District
R1-2	Single-Family Residential District
R1-1	Single-Family Residential District
R104-1	Medium-Density Residential District
R104-2	Medium-Density Residential District
R104-3	Medium-Density Residential District
B-1	Business District
PC-1	Professional Office District
PC-2	Professional Office District
C-1	Community Commercial District
C-2	Community Commercial District
C-3	Community Commercial District
C-4	Community Commercial District
C-5	Community Commercial District
SM	Special Medium-Density Residential District
P1-1	Public Office District
I-1	Industrial District
I-2	Industrial District
I-3	Industrial District
SI	Special Industrial District
PUB	Public Office District
PUB	Public Office District
PC	Professional Office District

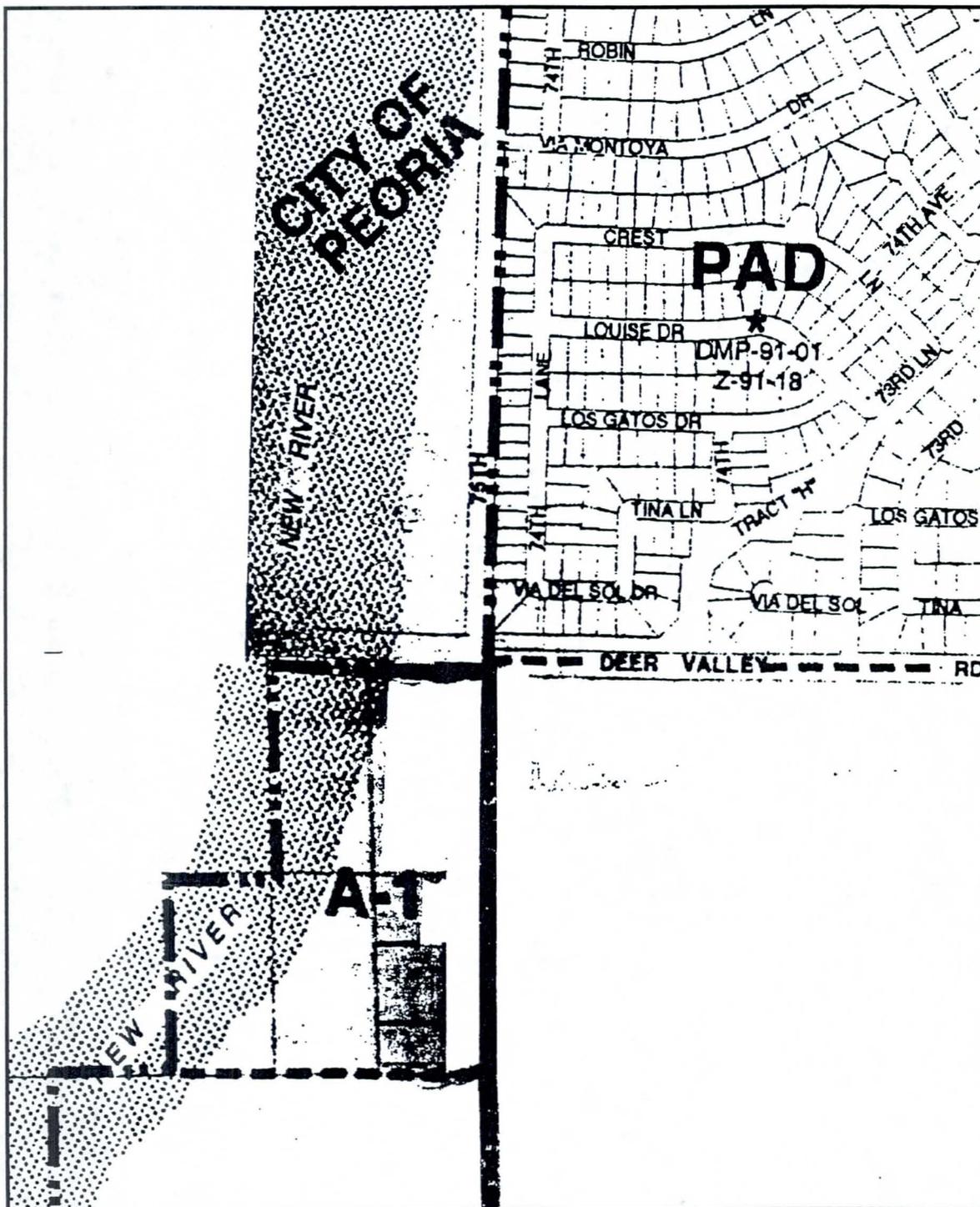
SCALE IN FEET

0 100 200 300

N



CITY OF GLENDALE  
ZONING MAP



PAD = Planned Area Development  
A-1 = Agricultural

## RIGHT-OF-WAY

Town/City limit maps for Glendale and Peoria are located on pages 9 and 10. The right-of-way strip map and calculations are in Appendix A.

### *Existing and Proposed:*

The existing right-of-way width is 24.384 meters (80 feet) wide centered on the construction centerline. The north and south right-of-way lines are the Peoria city limits except for the eastern 201.168 meters (660 feet) of the south side which is Glendale's city limit line.

The required right-of-way for an Urban and Rural Minor Arterial Road is 33.528 meters (110 feet) wide 16.764 meter (55 feet) either side of centerline. An additional 4.572 meters (15 feet) of right-of-way is required on both the north and south sides requiring an additional 14,400 square meters (155,000 square feet) of right-of-way.

Temporary construction easements (TCE) will be needed at New River and Weir Wash to provide for the construction of a detour road and drainage channel improvements that will be needed north and south of Deer Valley Road. The TCE's will total 13,072 square meters (140,705 square feet).

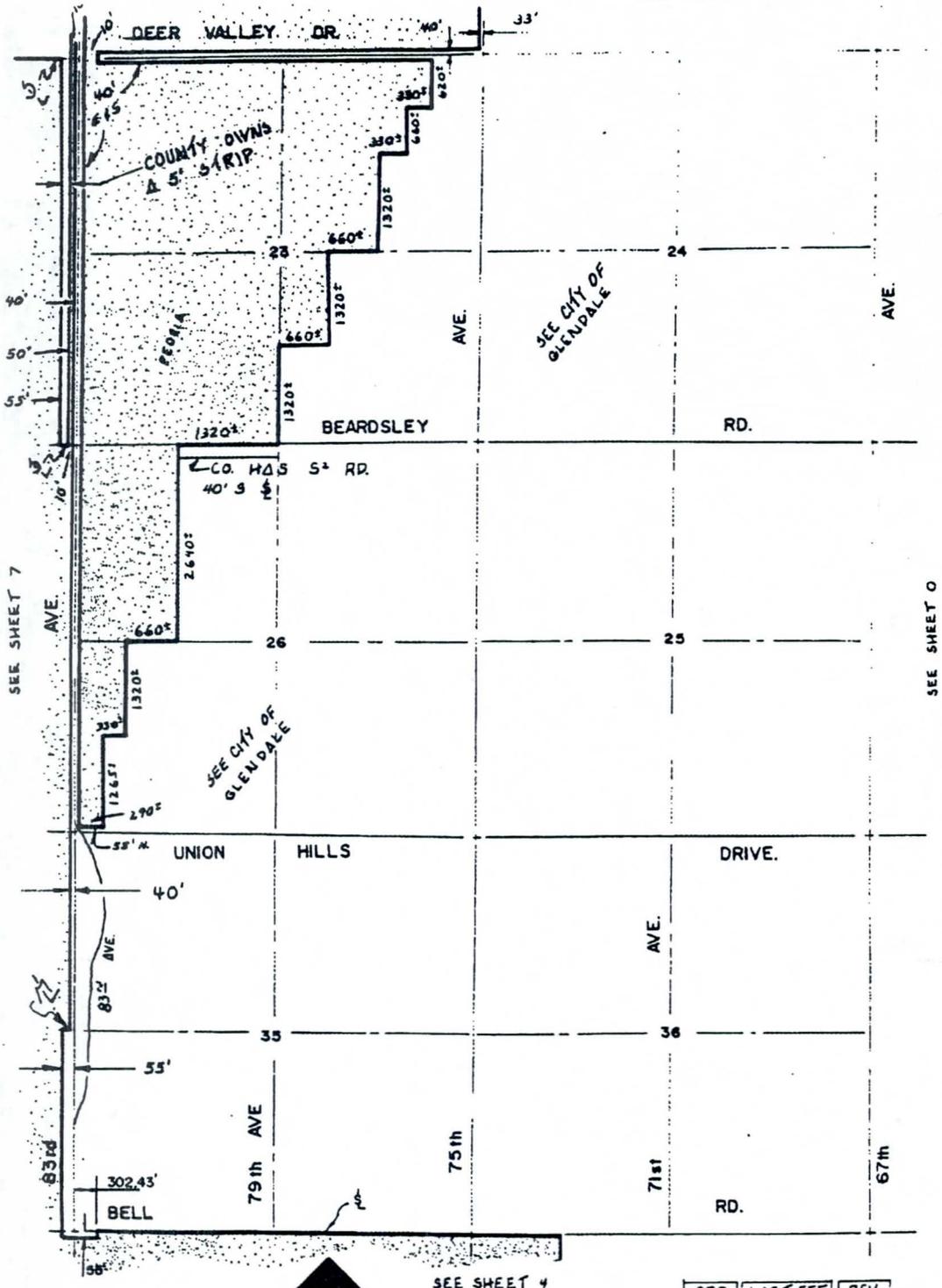
## ENVIRONMENTAL

The project is located in a predominately agricultural area (citrus orchards) with a few residences. A commercial landscaping yard is located adjacent to New River south of Deer Valley Road and a small subdivision is being completed at the northeast quadrant of Deer Valley Road and 75th Avenue. Indications are that the Deer Valley Road corridor will be converting from agricultural uses to commercial/residential uses in the near future.

The natural environment along this segment of Deer Valley Road has been completely altered except for the New River floodplain (some disturbance is apparent in the floodplain south of Deer Valley Road). Vegetation in the floodplain consists primarily of desert broom and palo verde with other species scattered about. Riparian habitat including fairly large trees is evident downstream from Deer Valley Road. Immediately below the Deer Valley Road crossing of New River is a small wetland consisting of a small patch of reeds and ponded water (much of the year). Preliminary indications are that this wetland could be avoided, but some of the prior mentioned riparian habitat would be lost.

There are no known threatened or endangered species occurring in the project vicinity. Cultural resources could potentially exist in the area, therefore a cultural resources survey will need to be conducted during the environmental clearance process. Hazardous materials were not observed in the project area. Permits will need to be acquired from the U.S. Army Corps of Engineers and Arizona Department Environmental Quality in compliance with Section 404 and Section 401 of the Clean Water Act. During construction, disturbance to the natural vegetation should be limited to that which is necessary to conduct construction activities. Vegetation clearing within the channel will result in the loss of riparian habitat. Mitigation measures to compensate for the loss of this habitat will be developed and incorporated into the project design and construction.

PEORIA CITY LIMITS MAP



SEE SHEET 7

SEE SHEET 0

SEE SHEET 4

T4N-R1E



**CITY OF PEORIA**

6

ORD. NO.	LAST EFF. ANNEX DTE.	REV BY
84-95	JAN. 23'85	DOVE
92-02	FEB. 14, 1992	RM



The proposed widening of Deer Valley Road between 75th Avenue and New River will not have any adverse environmental impacts. Drainage improvements at Weir Wash (man-made channel near 78th Avenue) will not have any environmental impacts.

## ROADWAY DESIGN ALTERNATIVES

### *Typical Sections:*

Please refer to Appendix C for the typical sections.

### *Alternative Development:*

#### No Build Alternative:

Due to the drainage problem existing at New River and Weir Wash this alternative was not considered as an option.

#### Alternative 1 (Low Cost Improvement):

Low Cost Alternative 1A discussed below removes only the dip section at New River by constructing a new bridge at the New River crossing. At Weir Wash the existing dip section will remain, we will extend the existing pipes and add an additional pipe per field review. Low Cost Alternative 1B will remove both dip sections at New River and Weir Wash by constructing a new bridge at New River and a new box culvert at Weir Wash.

#### Alternative 1A:

Alternative 1A consists of constructing a roadway section conforming to MCDOT's standards for an Urban Minor Arterial Road without sidewalks. (See Typical Section in Appendix C.) The existing pavement will be removed from Deer Valley Road west of 75<sup>th</sup> Avenue to the east of Weir Wash. The new pavement will consist of 100 mm (4 inches) of asphaltic concrete over 250 mm (10 inches) of aggregate base course. At the intersection of 75<sup>th</sup> Avenue, the pavement on 75<sup>th</sup> Avenue will be widened to 20.4 meters (67 feet) to allow for five lanes of traffic by adding pavement to the west side of 75<sup>th</sup> Avenue. This widened section of 75<sup>th</sup> Avenue will begin tapering at the end of the curb and gutter return on the south side of 75<sup>th</sup> Avenue to meet the existing paved road south of Deer Valley Road and the taper on the north side of 75<sup>th</sup> Avenue will begin approximately 30 meters (100 feet) north of the curb return. The new five lane paved roadway (20.4 meters, (67 feet)) with curb and gutter on Deer Valley Road west of the 75<sup>th</sup> Avenue intersection will be constructed for about 140 meters (460 feet) west to the new bridge east approach. The existing dip section crossing at New River will be removed and a new 80.0 meter (262 foot) five span reinforced concrete slab bridge constructed. The bridge will contain a 20.4 meter (67 feet) roadway, traffic barrier and 1.8 meter (6 feet) sidewalks on both sides. The road will then begin at the end of the west bridge approach and taper to the existing paved road.

The New River channel bottom will be approximately 55.5 meters (182 feet) wide from about 30.5 meters (100 feet) south of the new south right-of-way line of Deer Valley Road to about 30.5 meters (100 feet) north of the new north right-of-way line. A new drop structure will be constructed on the north end to tie to the existing channel. The banks of the new channel will be riprap lined for protection and the existing concrete-lined ditch on the north side of Deer Valley Road as well as an existing concrete drainage pipe will be extended to the new riprap bank. Spur

dikes will be constructed south of the new bridge for protection of an aquatic feature and existing property.

At Weir Wash the three existing 1,100 mm (42 inch) concrete pipes will be extended to the north and south and a new 1,100 mm (42 inch) pipe will be installed and new concrete headwalls will be constructed. Some wash excavation will be necessary at the ends of each of the pipe culverts for the additional pipe and to ensure efficient flow. The existing roadway dip section will be left as is in order to pass the overflow from Weir Wash that is not conveyed by the pipes.

The future 100-year volume for New River at Deer Valley Road will need to be evaluated. A HEC-2 (HEC-RAS) analysis upstream of Deer Valley Road needs to be made to determine if New River will overflow into Weir Wash and cause roadway overflow problems.

*mean post project?*

The following relocation will need to be made:

1. Existing utility poles on the north side of Deer Valley Road.

Alternative 1B:

Alternative 1B is the same as 1A except the existing concrete pipes at Weir Wash are replaced with a two barrel box culvert.

At Weir Wash the three existing 1,100 mm (42 inch) concrete pipes will be removed and a new two barrel 2400 mm x 1800 mm (8feet x 6feet) box culvert will replace the existing concrete pipes. The box will be capable of passing the 100 year flows (32.5 cms) (1,145 cfs) given by FCDMC. Some wash excavation will be necessary at the ends of each of the box culvert to ensure efficient flow. The existing roadway dip section will be removed.

The future 100-year volume for New River at Deer Valley Road will need to be evaluated. A HEC-2 (HEC-RAS) analysis upstream of Deer Valley Road needs to be made to determine if New River will overflow into Weir Wash and cause roadway overflow problems.

The following relocation will need to be made:

1. Existing utility poles on the north side of Deer Valley Road.

Alternative 2 (Full Improvement):

Alternative 2 consists of constructing a roadway section conforming to MCDOT's standards for an Urban Minor Arterial Road without sidewalks from 75<sup>th</sup> Avenue to the east end of the New River Bridge. The roadway section from the west end of the New River Bridge to 83<sup>rd</sup> Avenue will conform to MCDOT's Rural Minor Arterial Road with Continuous Left Turn Lane Standard (See Typical Section in Appendix C.). The existing pavement on Deer Valley Road will be removed and the entire roadway will be reconstructed. The new pavement east of the New River Bridge and 22.0 meter (72 feet) west of the New River Bridge will consist of 100 mm (4 inches) of asphaltic concrete over 250 mm (10 inches) of aggregate base course. At the intersection of 75<sup>th</sup> Avenue, the pavement on 75<sup>th</sup> Avenue will be widened to 20.4 meters (67 feet) to allow for five lanes of traffic by adding pavement to the west side of 75<sup>th</sup> Avenue. This widened section of 75<sup>th</sup> Avenue will begin tapering at the end of the curb and gutter return on the south side of 75<sup>th</sup>

Avenue to meet the existing paved road south of Deer Valley Road and the taper on the north side of 75<sup>th</sup> Avenue will begin approximately 30 meters (100 feet) north of the curb return. The new five lane paved roadway (20.4 meters, (67 feet)) with curb and gutter on Deer Valley Road west of the 75<sup>th</sup> Avenue intersection will be constructed for about 140 meters (460 feet) west to the new bridge east approach. The existing dip section crossing at New River will be removed and a new 80.0 meter (262 foot) five span reinforced concrete slab bridge constructed. The bridge will contain a 20.4 meter (67 feet) roadway, traffic barrier and 1.8 meter (6 feet) sidewalks on both sides. The road will then become the rural minor arterial road standard. No improvements will be made at 83<sup>rd</sup> Avenue or on Deer Valley west of 83<sup>rd</sup> Avenue. Roadway striping will be similar to the existing east side of 75<sup>th</sup> Avenue. The westbound movement will become a thru and left turn movement and right turn only.

The New River channel bottom will be approximately 55.5 meters (182 feet) wide from about 30.5 meters (100 feet) south of the new south right-of-way line of Deer Valley Road to about 30.5 meters (100 feet) north of the new north right-of-way line. A new drop structure will be constructed on the north end to tie to the existing channel. The banks of the new channel will be riprap lined for protection and the existing concrete-lined ditch on the north side of Deer Valley Road as well as an existing concrete drainage pipe will be extended to the new riprap bank. Spur dikes will be constructed south of the new bridge for protection of an aquatic feature and existing property.

At Weir Wash the three existing 1,100 mm (42 inch) concrete pipes will be removed and a new two barrel 2400 mm x 1800 mm (8feet x 6feet) box culvert will replace the existing concrete pipes. The box will be capable of passing the 100 year flows (32.5 cms) (1,145 cfs) given by FCDMC. Some wash excavation will be necessary at the ends of each of the box culvert to ensure efficient flow. The existing roadway dip section will be removed.

The future 100-year volume for New River at Deer Valley Road will need to be evaluated. A HEC-2 (HEC-RAS) analysis upstream of Deer Valley Road needs to be made to determine if New River will overflow into Weir Wash and cause roadway overflow problems.

The following relocation will need to be made:

1. Existing utility poles on the north side of Deer Valley Road.
2. The existing masonry fence on the south side of Deer Valley Road.
3. The existing concrete irrigation ditches.
4. Any existing fire hydrants and other features within the new right-of-way line.

<b>Preliminary Construction Cost Estimate</b>					
<b>Low Cost Improvement Alternative 1A (MCDOT)</b>					
<b>Item #</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Cost</b>	<b>Total</b>
107.01100	N.P.D.E.S.	L.S.	1	\$3,000.00	\$3,000
107.09200	Community Relations	Allowance	1	\$20,000.00	\$20,000
110.01000	Mobilization @ 5%	L.S.	1	\$74,473.00	\$74,473
205.03000	Roadway Excavation	CM	11,000	\$4.00	\$44,000
215.00000	Channel & Retention Basin Excavation	CM	34,900	\$4.00	\$139,600
	New Asphalt Pavement (See Pavement Sheet)	SQ M	9,500	\$15.25	\$144,875
	Asphalt Concrete .50 mm Overlay (See Pavement Sht)	SQ M	2,300	\$3.60	\$8,280
336.08100	Pavement Sawcut	M	1,200	\$4.50	\$5,400
340.01120	Conc. C & G	M	362	\$20.00	\$7,240
350.01110	Removal of Existing Improvements	L.S.	1	\$15,000.00	\$15,000
401.00000	Traffic Control @ 5% (due to detour)	L.S.	1	\$74,473.00	\$74,473
402.00000	Traffic Signing & Striping - 2 lanes	M	600	\$3.20	\$1,920
402.00000	Traffic Signing & Striping - 5 lanes	M	730	\$5.80	\$4,234
402.00000	Traffic Signal, Future "Box-in"	EA	1	\$3,500.00	\$3,500
505.06125	Catch Basin	EA	2	\$2,200.00	\$4,400
525.00340	Pneumatically Placed Mortar Ditch	L.S.	1	\$5,000.00	\$5,000
618.02324	610 mm (24") & Smaller RGRCP, Class III	M	145	\$125.00	\$18,125
618.02348	1060 mm & 1220 mm (42" & 48") RGRCP, Class III	M	72	\$250.00	\$18,000
	Headwall, 1060 mm to 1520 mm Pipe (MAG Details)	EA	2	\$10,000.00	\$20,000
	Irrigation Headwall w/ Trashrack (Inlet)	EA	1	\$2,200.00	\$2,200
	Bridge > 100' See Separate Calc Sheet	EA	1	\$882,688.00	\$882,688
220.01100	Riprap (Wire-Tied)	CM	1,800	\$75.00	\$135,000
	Guardrail Approach End Section	EA	2	\$3,500.00	\$7,000

Subtotal Construction		\$1,638,408
Contingency	20%	\$327,682
<b>Total</b>		<b>\$1,966,090</b>
Subtotal Less Percentages		\$1,489,462

<b>Preliminary Construction Cost Estimate</b>					
<b>Low Cost Improvement Alternative 1B (MCDOT)</b>					
<b>Item #</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Cost</b>	<b>Total</b>
107.01100	N.P.D.E.S.	L.S.	1	\$3,000.00	\$3,000
107.09200	Community Relations	Allowance	1	\$20,000.00	\$20,000
110.01000	Mobilization @ 5%	L.S.	1	\$75,937.00	\$75,937
205.03000	Roadway Excavation	CM	11,000	\$4.00	\$44,000
215.00000	Channel & Retention Basin Excavation	CM	35,000	\$4.00	\$140,000
	New Asphalt Pavement (See Pavement Sheet)	SQ M	9,500	\$15.25	\$144,875
	Asphalt Concrete .50 mm Overlay (See Pavement Sht)	SQ M	2,300	\$3.60	\$8,280
336.08100	Pavement Sawcut	M	1,200	\$4.50	\$5,400
340.01120	Conc. C & G	M	362	\$20.00	\$7,240
350.01110	Removal of Existing Improvements	L.S.	1	\$20,000.00	\$20,000
401.00000	Traffic Control @ 5% (due to detour)	L.S.	1	\$75,937.00	\$75,937
402.00000	Traffic Signing & Striping - 2 lanes	M	600	\$3.20	\$1,920
402.00000	Traffic Signing & Striping - 5 lanes	M	730	\$5.80	\$4,234
402.00000	Traffic Signal, Future "Box-in"	EA	1	\$3,500.00	\$3,500
505.06125	Catch Basin	EA	2	\$2,200.00	\$4,400
525.00340	Pneumatically Placed Mortar Ditch	L.S.	1	\$5,000.00	\$5,000
618.02324	610 mm (24") & Smaller RGRCP, Class III	M	145	\$125.00	\$18,125
	Box Culvert - See Separate Box Culvert Calc Sheet(s)	EA	1	\$64,070.00	\$64,070
	Bridge > 100' See Separate Calc Sheet	EA	1	\$882,688.00	\$882,688
220.01400	Riprap (Wire-Tied)	CM	1,800	\$75.00	\$135,000
	Guardrail Approach End Section	EA	2	\$3,500.00	\$7,000

Subtotal Construction		\$1,670,606
Contingency	20%	\$334,121
<b>Total</b>		<b>\$2,004,727</b>
Subtotal less percentages =		\$1,518,732

<b>Preliminary Construction Cost Estimate</b>					
<b>Full Improvement Alternative (MCDOT)</b>					
<b>Item #</b>	<b>Description</b>	<b>Unit</b>	<b>Quantity</b>	<b>Unit Cost</b>	<b>Total</b>
107.01100	N.P.D.E.S.	L.S.	1	\$3,000.00	\$3,000
107.09200	Community Relations	Allowance	1	\$20,000.00	\$20,000
110.01000	Mobilization @ 5%	L.S.	1	\$99,817.00	\$99,817
205.03000	Roadway Excavation	CM	20,000	\$4.00	\$80,000
215.00000	Channel & Retention Basin Excavation	CM	35,000	\$4.00	\$140,000
	New Asphalt Pavement (See Pavement Sheet)	SQ M	33,800	\$15.25	\$515,450
	Asphalt Concrete .50 mm Overlay (See Pavement Sht)	SQ M	2,300	\$3.60	\$8,280
336.08100	Pavement Sawcut	M	1,200	\$4.50	\$5,400
340.01120	Conc. C & G	M	362	\$20.00	\$7,240
350.01110	Removal of Existing Improvements	L.S.	1	\$25,000.00	\$25,000
401.00000	Traffic Control @ 5% (due to detour)	L.S.	1	\$99,817.00	\$99,817
402.00000	Traffic Signing & Striping - 2 lanes	M	400	\$3.20	\$1,280
402.00000	Traffic Signing & Striping - 5 lanes	M	1,880	\$5.80	\$10,904
402.00000	Traffic Signal, Future "Box-in"	EA	1	\$3,500.00	\$3,500
505.06125	Catch Basin	EA	2	\$2,200.00	\$4,400
525.00340	Pneumatically Placed Mortar Ditch	L.S.	1	\$5,000.00	\$5,000
618.02324	610 mm (24") & Smaller RGRCP, Class III	M	145	\$125.00	\$18,125
	Concrete Slip Form Irrigation Ditch	M	800	\$75.00	\$60,000
	Box Culvert - See Separate Box Culvert Calc Sheet(s)	EA	1	\$64,070.00	\$64,070
	Bridge > 100' See Separate Calc Sheet	EA	1	\$882,688.00	\$882,688
220.01400	Riprap (Wire-Tied)	CM	1,800	\$75.00	\$135,000
	Guardrail Approach End Section	EA	2	\$3,500.00	\$7,000

Subtotal Construction		\$2,195,971
Contingency	20%	\$439,194
<b>Total</b>		<b>\$2,635,165</b>
Subtotal less percentages =		\$1,996,337

**BRIDGE COST CALCULATIONS**

Type of Road	Bridge Width	Description	Bridge Length	Top SFC Area	Unit	Cost**	Total Cost
Urban Minor Arterial or Less	27 m (88.58')	5 Lanes, 2 Sidewalks (S/W's)			SQ M	\$431.00	\$0.00
Urban Minor Arterial w/ Bike Lanes	28.8 m (94.49')	5 Lanes, 2 B/L's, 2 S/W's			SQ M	\$431.00	\$0.00
Urban Major Arterial	31.8 m (104.33')	7 Lanes, 2 S/W's			SQ M	\$431.00	\$0.00
At Deer Valley Rd. over New River	25.6 m	5 Span Reinf. Conc. Slab	80.0 m	2048	SQ M	\$431.00	\$882,688.00
Special Low Volume Road Condition ***	16 m (52.49')	2 Lanes with Shoulders			SQ M	\$431.00	\$0.00
<b>TOTAL</b>							<b>\$882,688.00</b>

\* Top Surface of Bridge

\*\* Cost Includes Piers

Based on average bid prices and rounded up for  
Ocotillo Road Bridge at Queen Creek dated May 29, 1996.

\*\*\* With Approval Only

**Cost Summary:**

<b>COST CATEGORIES</b>	<b>Factors</b>	<b>Low Cost Alt. 1A</b>	<b>Low Cost Alt. 1B</b>	<b>Full Cost Alternative</b>
Construction		\$1,966,090	\$2,004,727	\$2,635,165
Design	10%	\$196,609	\$200,473	\$263,517
Construction Management	15%	\$294,913	\$300,709	\$395,275
Right-of-Way		\$50,000	\$50,000	\$50,000
Utility Relocation		\$0	\$10,000	\$10,000
Administration	13%	\$255,592	\$260,615	\$342,571
<b>TOTAL</b>		<b>\$2,763,204</b>	<b>\$2,826,524</b>	<b>\$3,696,528</b>

**PREFERRED ALTERNATIVE**

The Low Cost Alternative 1B is the recommended alternative because it costs considerably less than the Full Cost Improvement and better fits the current traffic volumes, rural character of the corridor and will convey the 100-year storm flows under the roadway for New River and Weir Wash.

**MAJOR DESIGN FEATURES**

Standard Typical Section:	Urban Minor Arterial (Figure 5.8)
Design Year:	2020
Design Vehicle:	WB-40
Design Speed:	100 kph (60 mph)
Pavement Design Life:	20 years
Number of Lanes:	5
Roadway Width:	20.4 meters (67 feet)
Intersection Geometric:	9.1 meter (30 foot) radius
Drainage Structures:	1 - bridge (80 m (262 feet) x 25.6 m (84 feet), 1 - 2 barrel 2,400 mm x 1,800 mm (8 feet x 6 feet) concrete box culvert
Standard Right-of-way Requirements:	33.528 meters (110 feet)
Other:	

**UTILITIES**

There is an existing APS overhead 12 Kv power line on the north side of the roadway.

An underground telephone cable exists on the north side of Deer Valley Road.

A gas line exists on the north side of Deer Valley Road. There is an existing above ground regulator south of Deer Valley Road

The City of Peoria has a sanitary sewer on the south side of Deer Valley Road.

The City of Peoria has a water line on the south side of Deer Valley Road.

The City of Glendale has a water and sewer lines at 75th Avenue and Deer Valley Road intersection.

There is a private water company (New River Utility Company) on the south side of Deer Valley Road.

Cox Communications has no facilities in this area.

Private concrete lined irrigation ditches and laterals exist only in the western 0.805 kilometers (one-half mile) of this project. The irrigation ditches are on the south side of the roadway.

## **DESIGN EFFORT**

### ***Design Exceptions:***

There are no known design exceptions at this time.

### ***Survey:***

This project will require survey.

### ***Design:***

This project will require design. Soil tests and bridge boring logs are required. HEC-2 (HEC-RAS) and scour analysis need to be made.

### ***Construction Cost Estimate:***

The construction cost estimate for the recommended Low Cost Improvement Alternative 1B is \$2,004,727.

### ***Design Concept Report (DCR):***

A DCR is recommended.

*Estimate of Design Labor Hours:*

TASK	PM	LSE	SE	PE	DRILL/			TOTAL
					SURVEY	T/D	S/C	
<b>A DESIGN CONCEPT REPORT</b>								
FIELD REVIEW MEETING WITH MCDOT	4	8		8				20
PUBLIC PARTICIPATION PLAN	2	2		4				8
FIELD SURVEY					60			60
GEOTECHNICAL & PAVEMENT INVESTIGATION	20			40	40	12	2	114
HYDRAULIC ANALYSIS				6				6
SCOUR EVALUATION				32				32
PRELIMINARY DRAINAGE REPORT	4			40			8	52
INPUT SURVEY DATA AND CREATE DTM				32				32
ROADWAY TYPICAL SECTIONS				4		8		12
ALTERNATIVES DEVELOPMENT AND ANALYSIS	2	8		24		8		42
ENVIRONMENTAL (MCDOT)								0
INCA IN-HOUSE REVIEW	4	4		8				16
<b>DRAFT DCR</b>		4		40			8	52
<b>BRIDGE SELECTION REPORT</b>		132				52		184
ISSUES RESOLUTION MEETING WITH MCDOT	4	4		4			2	14
PRELIMINARY RIGHT-OF-WAY STRIP MAP				16		8		24
CONCEPTUAL PLANS (15%)	4	20		24		80		128
PRELIMINARY COST ESTIMATE		8		8			2	18
PUBLIC INVOLVEMENT MEETING	16			24			8	48
INCA IN-HOUSE REVIEW	2	2		4				8
<b>PREFINAL DCR</b>		2		4			2	8
FINAL REVISIONS	2	2		16		8	2	30
INCA IN-HOUSE REVIEW	2	2		4				8
<b>FINAL DCR</b>		2		4		8	2	16
<b>SUBTOTAL</b>	<b>66</b>	<b>200</b>	<b>0</b>	<b>346</b>	<b>100</b>	<b>184</b>	<b>36</b>	<b>932</b>
<b>B RIGHT-OF-WAY DELINEATION PACKAGE</b>								
RIGHT-OF-WAY SURVEY					40			40
LEGAL DESCRIPTIONS	8			36				44
STRIP MAP SHEETS				16		24		40
INCA IN-HOUSE REVIEW	4							4
<b>SUBTOTAL</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>52</b>	<b>40</b>	<b>24</b>	<b>0</b>	<b>128</b>

PM - Project Manager  
LSE - Lead Structural Engineer  
SE - Structural Engineer

PE - Civil Engineer  
T/D - Technician/CAD  
S/C - Clerical

DRILL/SURVEY - Field Crews

*Estimate of Design Labor Hours Continued:*

TASK	DRILL/							TOTAL
	PM	LSE	SE	PE	SURVEY	T/D	S/C	
<b>C DESIGN</b>								
DESIGN SURVEY	4				24			28
DRAINAGE REPORT				24		8	4	36
BRIDGE BORINGS	24			80	128	40	10	282
FACE SHEET				4		8		12
GENERAL NOTES SHEET				4		8		12
TYPICAL SECTIONS (1)				12		12		24
CHANNEL/DETOUR TYPICAL SECTIONS				8		8		16
DETAIL SHEETS (3)	4	16		40		56		116
PIPE / BOX CULVERT SUMMARY SHEET				4		4		8
PLAN & PROFILE SHEET DEER VALLEY (4)	16			64		96		176
PLAN & PROFILE SHEET 75TH				16		24		40
INTERSECTION DETAIL SHEET				16		16		32
STORM DRAIN PLAN				16		24		40
STORM DRAIN PROFILE				12		24		36
STORM DRAIN CONNECTOR PIPES				8		16		24
BOX CULVERT PLAN & PROFILE				20		24		44
BOX CULVERT DETAILS	2	8		12		20		42
CHANNEL PLANS (2)				32		48		80
CHANNEL PROFILE	4			16		20		40
DROP STRUCTURE DETAILS (2)	2			32		32		66
WATERLINE RELOCATION				16		24		40
DETOUR PLAN & PROFILE (2)	4			40		36		80
CONSTRUCTION SEQ. PLAN				8		8		16
BRIDGE LIGHTING PLAN				12		24		36
TRAFFIC (MCDOT) (2)								0
BRIDGE PLANS (12)	48	352	240			256		896
SPECIAL PROVISIONS	4	8		32			16	60
COST ESTIMATE		4	16	24			8	52
INCA IN-HOUSE REVIEW	8	8		8				24
REVIEW AND COORDINATION	16	32		32				80
<b>SUBTOTAL</b>								
	136	428	256	592	152	836	38	2438
<b>TOTAL</b>								
	214	628	256	990	292	1044	74	3498

PM - Project Manager  
LSE - Lead Structural Engineer  
SE - Structural Engineer

PE - Civil Engineer  
T/D - Technician/CAD  
S/C - Clerical

DRILL/SURVEY - Field Crews

*Estimate of Design Costs:*

ESTIMATED DIRECT LABOR:

Classification	Estimated Manhours	Avg. Hourly Rate	Labor Costs
Project Manager	158	\$94.30	\$14,899
Lead Structural Engineer	628	\$82.50	\$51,810
Structural Engineer	256	\$64.90	\$16,614
Project Engineer	818	\$73.70	\$60,287
Drill/Survey Crews	0	\$90.00	\$0
Technician/CAD	968	\$49.90	\$48,303
Clerical	<u>62</u>	\$31.60	\$1,959
Total Manhours:	2890	Total Direct Labor:	\$193,873

ESTIMATED DIRECT EXPENSES:

PLOTTING:

11x17	43 Sheets	2 sets (bond) x 4 x \$3.00/sheet (divided by 2)	\$516
Full Size	43 Sheets	1 set (sepia) x \$3.00/sheet =	<u>\$129</u>
		Subtotal:	\$645

PRINTING:

8½ x11		Specs. & Estimate 30 shts. x 8 copies x 4 x \$	\$48
11x17		43 sheets x 10 copies x 3x \$.10 =	\$129
Bluelines		43 sheets x 2 copies x 1 x \$.90 =	<u>\$77</u>
		Subtotal:	\$254

Total Direct Expenses: \$899

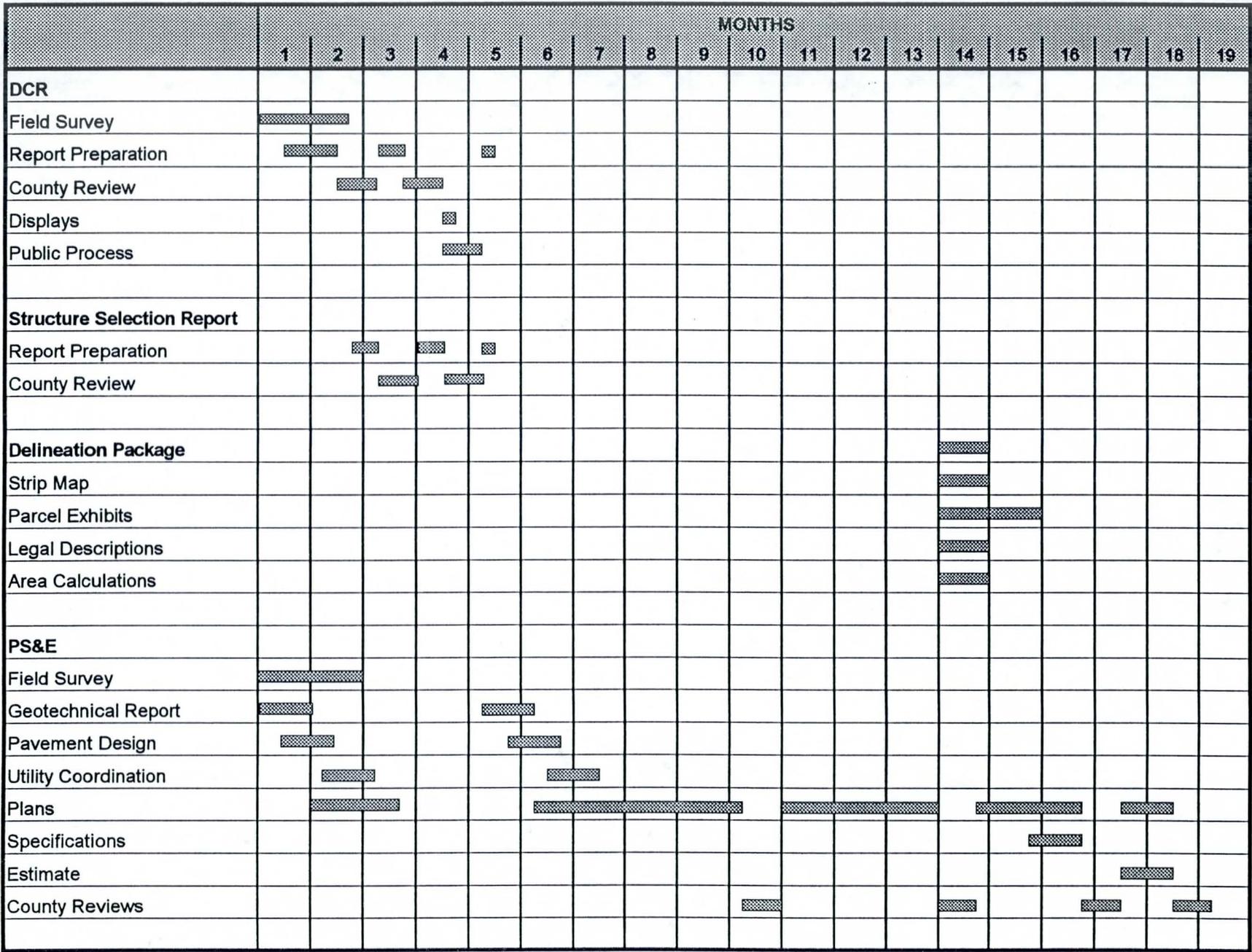
ESTIMATED OUTSIDE SERVICES:

SURVEY	\$17,322
GEOTECHNICAL	\$31,087

Total Outside Expenses: \$48,409

**TOTAL ESTIMATED SERVICES: \$243,181**

*Estimated Schedule:*







TITLE Deer Valley CAR

SUBJECT New R/W & TCEs

MADE BY JLL DATE 12-5-96 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

New R/W :

4.572 m (15') is needed on both the north & south sides of Deer Valley Rd. between 75th Avenue & 83rd Avenue.

Parcel 1E = 4.572 m (15') x 792.480 m (2600') = 3,623.22 m<sup>2</sup> (39,000 sf)  
 6D = 0.362 hectare (0.895 ac)

16A }  
 2A } = 4.572 m (15') x 100.584 m (330') = 459.87 m<sup>2</sup> (4950 sf)  
 5A } 0.046 hectares (0.114 ac)  
 15A }  
 6 }  
 4A }

18B } 4.572 m (15') x 92.964 m (305') = 425.03 m<sup>2</sup> (4575 sf)  
 12B } = 0.043 hectares (0.105 ac)

7A = 4.572 m (15') x 88.392 (290') = 404.13 m<sup>2</sup> (4350 sf)  
 0.040 hectares (0.100 ac)

5F = 4.572 m (15') x 390.144 m (1280') = 1783.74 m<sup>2</sup> (19,200 sf)  
 0.178 hectares (0.441 ac)

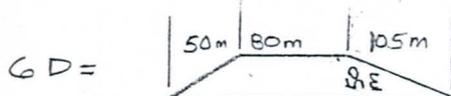
5B = 4.572 m (15') x 301.752 m (990') = 1379.61 m<sup>2</sup> (14850 sf)  
 0.138 hectare (0.341 ac)

TCEs :

At New River :

Parcel 6 = 40 m (131.23') (E-W) x 50 m (164.04') (N-S) = 2000 m<sup>2</sup> (21,526.97 sf)  
 0.200 ha (0.494 ac)

15A = 60 m (196.85') (E-W) x 50 m (164.04') (N-S) = 3000 m<sup>2</sup> (32,291.34 sf)  
 0.300 ha (0.741 ac)

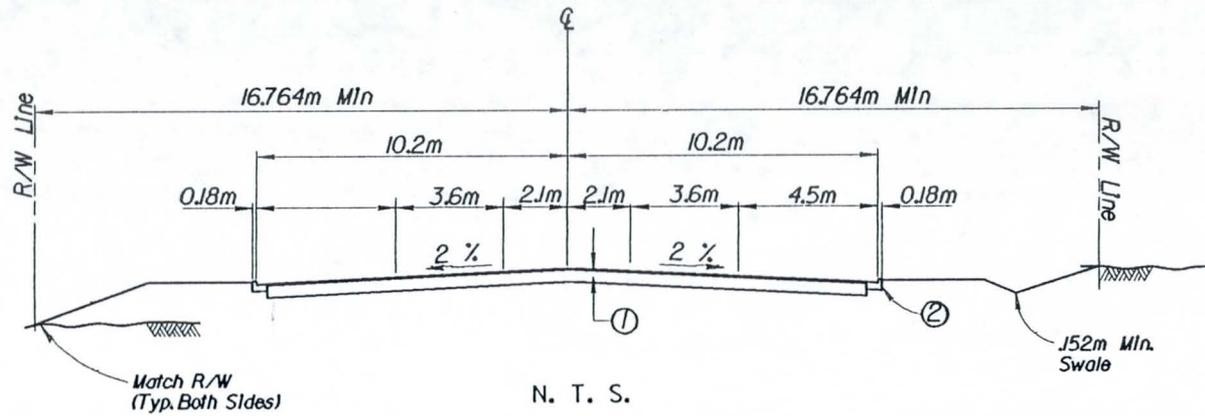


50 m (164.04') x 50 m / 2 + 80 m (262.47') x 50 m + 105 m (344.88') x 50 m / 2  
 = 7,875.0 m<sup>2</sup> (84,735 sf)  
 0.788 ha (1.945 ac)

At Weir Wash :

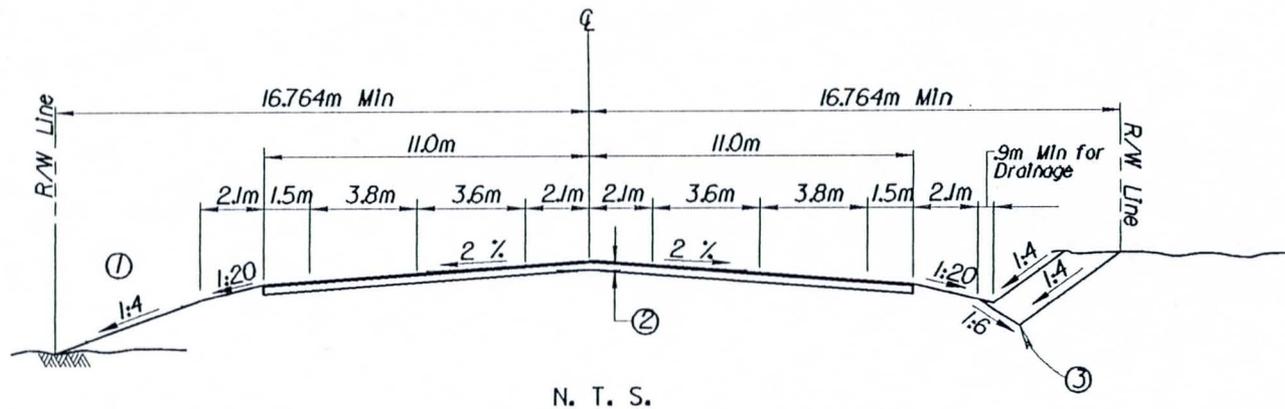
Parcel 18B = 20 m (65.62') (E-W) x 10 m (32.81') (N-S) = 200 m<sup>2</sup> (2152 sf)  
 6D = 0.020 ha (0.049 ac)





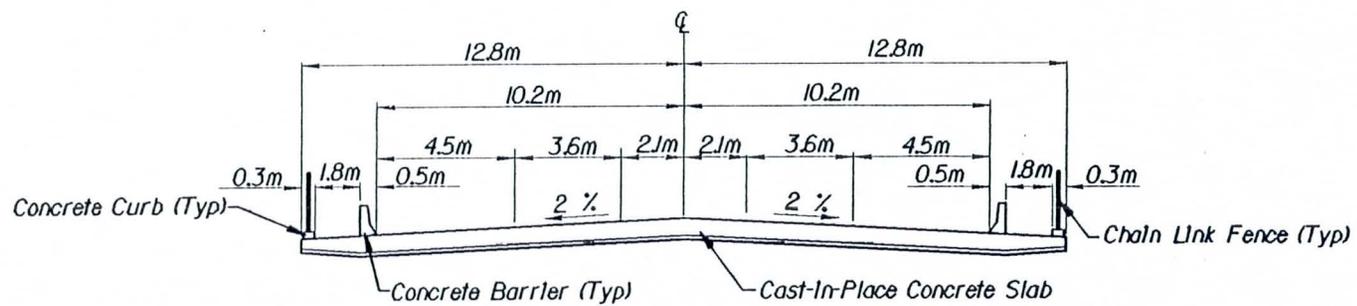
- ① 100mm Min.AC. Over 250mm Min.AB. or Approved Equivalent.
- ② MAG. Std. Detail 220. Type A or MCDOT Std Detail 2030. Curb & Gutter (Typ. Both Sides).

## URBAN MINOR ARTERIAL ROADS



- ① For Guardrail Installation See MCHD Std. Detail 2036 or 2037
- ② 100mm Min.AC. Over 250mm Min.AB. or Approved Equivalent.
- ③ Special Drainage Ditch as Required

## RURAL MINOR ARTERIAL ROADS



N. T. S.

## TYPICAL BRIDGE SECTION



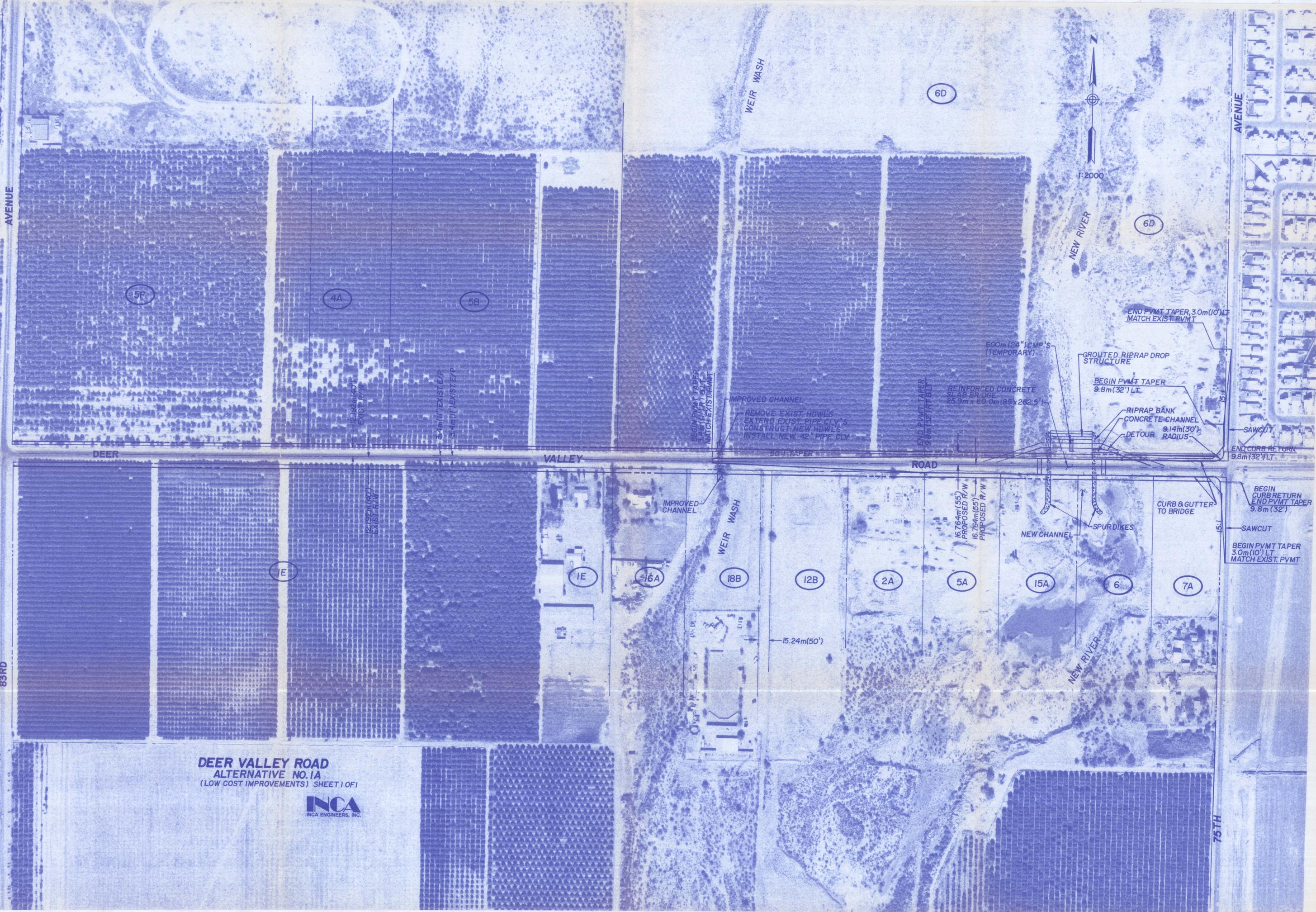
AVENUE

83RD

AVENUE

75TH

**DEER VALLEY ROAD**  
**ALTERNATIVE NO. 1A**  
 (LOW COST IMPROVEMENTS) SHEET 1 OF 1



5F

4A

5B

6D

6D

12.192m(40')  
EXIST' R/W

3.4m(11')EXIST' E/P  
3.4m(11')EXIST' E/P

BEGIN PVMT TAPER  
3.0m(10') LT  
MATCH EXIST. PVMT

IMPROVED CHANNEL  
REMOVE EXIST. HDWL'S  
EXTEND EXIST. PIPE CLY'S  
CONSTRUCT NEW HDWL'S  
INSTALL NEW 42" PIPE CLY

END PVMT TAPER  
3.0m(10') LT  
MATCH EXIST. PVMT

REINFORCED CONCRETE  
SLAB BRIDGE  
25.9m x 60.0m(85'x262.5')

END PVMT TAPER, 3.0m(10') LT  
MATCH EXIST. PVMT

GROUTED RIPRAP DROP  
STRUCTURE

BEGIN PVMT TAPER  
9.8m(32') LT

RIPRAP BANK  
CONCRETE CHANNEL  
9.14m(30')  
RADIUS

DETOUR

SAWCUT  
END CURB RETURN  
9.8m(32') LT

DEER

VALLEY

ROAD

IMPROVED CHANNEL

WEIR WASH

16.764m(55')  
PROPOSED R/W  
16.764m(55')  
PROPOSED R/W

NEW CHANNEL

SPUR DIKES

CURB & GUTTER  
TO BRIDGE

BEGIN CURB RETURN  
END PVMT TAPER  
9.8m(32')

BEGIN PVMT TAPER  
3.0m(10') LT  
MATCH EXIST. PVMT

E

IE

16A

18B

12B

2A

5A

15A

6

7A

15.24m(50')

NEW RIVER

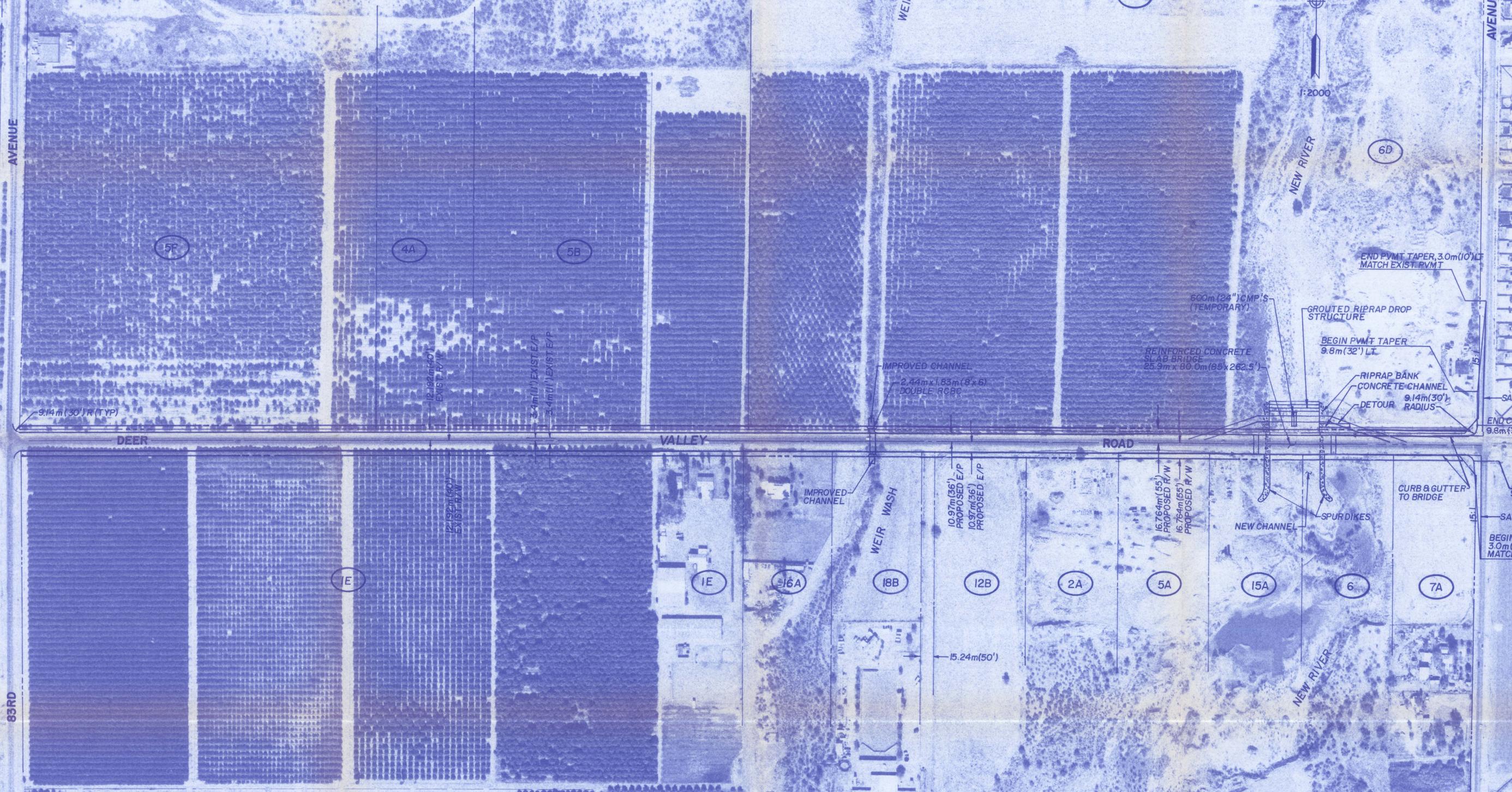


AVENUE

83RD

AVENUE

75TH



DEER VALLEY ROAD  
ALTERNATIVE NO. 2  
(FULL IMPROVEMENTS) SHEET 1 OF 1

