



**Maricopa County
Department of
Transportation
Planning Division**

**Sossaman Road From
Ocotillo Road to Queen Creek Road
C97-2146-04**

FINAL

CANDIDATE ASSESSMENT REPORT

January 10, 1997



Prepared By:

INCA
INCA ENGINEERS, INC.

9090 out
Flood Control Property
District of
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CANDIDATE ASSESSMENT REPORT

FOR

SOSSAMAN ROAD

WORK ORDER NO. C97-2146-04

SEC. 17,18,19,20 T.2S., R.7E., G&SRB&M

MARICOPA COUNTY DEPARTMENT OF
TRANSPORTATION PLANNING DIVISION

JANUARY 10, 1997 FINAL

Project Name: Sossaman Road **Project Termini:** Ocotillo Road to Queen Creek Road

Requested by: Joe La Fortune, Town of Queen Creek

Improvement Requested: Construct a 2-lane roadway with drainage improvements.

PM₁₀ Area? Yes **Length:** 1.609 Kilometers (1 Mile)

Estimated Cost: \$1,102,257

Problem Identification:

Sossaman Road from Ocotillo Road to Queen Creek Road is a paved two-lane road that crosses Queen Creek south of Queen Creek Road. The Queen Creek crossing has multiple pipe culverts and a dip section. This area closes to traffic whenever there is heavy rain in the area. After the storm water stops flowing water ponds along the east edge of the roadway. This ponding causes dangerous hydroplaning when vehicles enter the ponded area.

Summary Recommendation:

Based on information available, it is recommended that the Alternative 1, Low Cost Improvements, be programmed into the 5-year CIP. This alternative will replace the existing five 1.8 meters (72 inch) corrugated metal pipes with a new 37.0 meter (122 feet) three span reinforced concrete slab bridge. Also included, are channel improvements and new roadway paving to match the existing roadway approximately 100 meters north and 150 meters south of the channel centerline.

The new bridge will have a 20.8 meter (68 feet) roadway width, traffic barriers and 1.8 meter (6 feet) sidewalk on both sides. Channel improvements will include widening the channel bottom to 20.0 meters (65.6 feet) and revising the vertical profile for approximately 61.0 meters (200 feet)

east and west of the new bridge. The vertical profile of the channel and roadway will be designed to accommodate equestrian use under the new bridge. The roadway pavement will be 10.4 meters (34 feet) from the beginning of the project to the south end of the bridge and 14.6 meters (48 feet) from the north end of the bridge to the end of the project. This roadway will begin approximately 319 meters (1,046 feet) south of the proposed Queen Creek Road and Sossaman Road intersection and continue north to match the existing pavement 69 meters (226 feet) south of the intersection.

BACKGROUND

Project Name:

Sossaman Road from Ocotillo Road to Queen Creek Road

General Description and Location of the Project Areas:

Sossaman Road from Ocotillo Road to Queen Creek Road is located in the southeast part of Maricopa County. The east side of the southern 1 105.5 meters (3,627 feet) of road is within Maricopa County (east of the existing right-of-way line) and the remainder is within the Town of Queen Creek (east and west of the existing right-of-way line). The roadway lies in an unannexed right-of-way under the jurisdiction of Maricopa County. See the Location Map on page 3.

The existing roadway is 8.5 meters (28 feet) wide. The pavement is striped for two way traffic.

Available information on the Existing Roadway Surface and Shoulder Areas:

Sossaman Road was initially paved in 1984 on a native non-treated base. MCDOT records indicate 50 mm (2 inches) of asphaltic concrete was placed. The last improvement was a chip seal placed in 1989. All the pavement appears to be in good condition with a PCR rating of 87, an IRI rating of 118.33 and a SUFFICIENCY rating of 89.

Type and Reason for Improvement:

The existing multiple pipe culverts and dip section where Sossaman Road crosses Queen Creek Wash floods during heavy rains. Drainage improvements such as a bridge at this location will eliminate flooding problems and allow the road to remain in operation during heavy rains.

TRAFFIC INFORMATION AND ANALYSIS

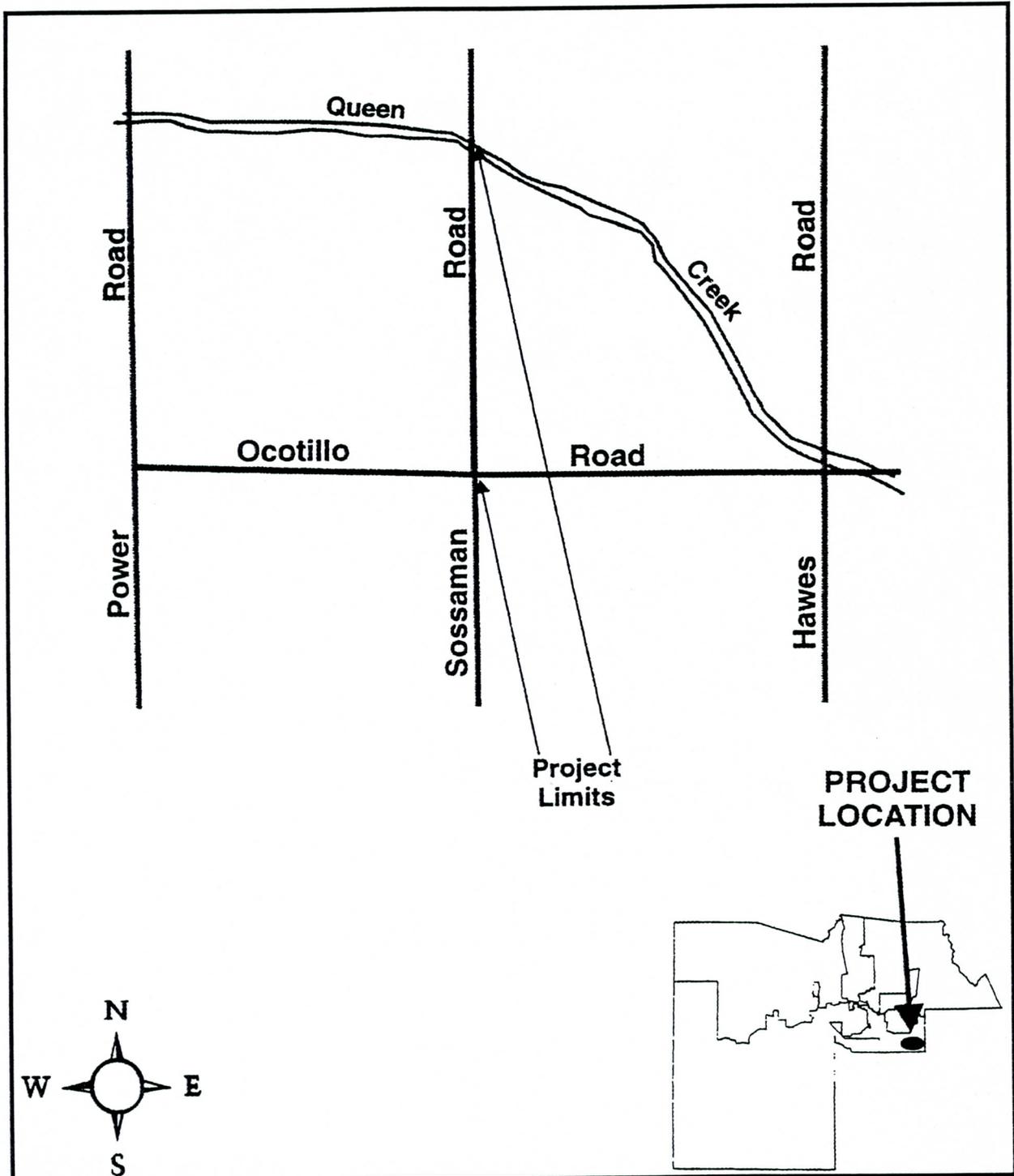
Traffic Counts, Projections and Accidents:

The results of the MCDOT traffic counts and forecasted traffic for Sossaman Road are listed below: (See Appendix A for Traffic Information and Analysis.)

Location	1994	1995	1996	2020
Ocotillo Road to Queen Creek Road	644	695	836	4,000

LOCATION MAP

CAR # C97-2146-04
Sossaman Road
Ocotillo Road to Queen Creek Road



See City Limits Map for detailed City Limits information.

The accident history for Sossaman Road and the intersection of Ocotillo Road was gathered by the MCDOT Engineering Division, Traffic Branch. The accident dates checked were from January 1, 1994, to August 31, 1996. There were eight intersection accidents and one non-intersection accident for this time period. The existing intersection control is a four way stop condition. The eight intersection accidents at Sossaman Road and Ocotillo Road are categorized as follows:

Right Angle - 3
Rear End - 2

Left Turn - 2
Right Turn - 1

The latest time of day for any accident was 7:15 PM. There was one fatal accident May 30, 1995. This accident was a right angle accident with failure to yield right-of-way was listed as the driver behavior. After analysis, there seems to be no predominant pattern to these intersection accidents. Therefore, no additional traffic control measures are recommended at this time.

There was only one accident reported north of the Sossaman Road and Ocotillo Road intersection during the above review period. This accident occurred in July of 1996 during daylight hours approximately 400 meters (1,320 feet) north of the intersection. The accident was a single vehicle accident in which the driver lost control and ran off the road. No additional traffic control measures are recommended for this segment of Sossaman Road north of the intersection.

Construction Traffic Management Evaluation and Recommendation:

Existing traffic can be maintained during construction by providing a temporary detour at Queen Creek Wash on the west side of Sossaman Road. There is also a second possibility for construction of the Queen Creek Wash Bridge. There are two property owners adjacent to Sossaman Road within this 1.6 kilometer (1 mile) section between Ocotillo Road and the proposed Queen Creek Road intersection. In addition there are only a few additional property owners east of Sossaman Road with access to Sossaman Road at the mid-section line. Current counts are less than 1,000 vehicles in the last three years and are expected to increase only to 4,000 vehicles by the year 2020. With limited inconvenience the roadway between Ocotillo Road and the proposed Queen Creek Road could be closed to all traffic except local traffic. This would eliminate the cost for the traffic diversion.

The project costs prepared at this time will include the traffic diversion cost. However, the possibility of the roadway closure should be investigated during the design phase of the project.

DRAINAGE

The predominate drainage slope direction on the east side of Sossaman Road is from southeast to northwest at approximately 0.30%. The direction on the west side of Sossaman Road is from the roadway to the west. Queen Creek Wash was the subject of a Queen Creek Area Drainage Master Study (ADMS) completed in 1991 by Wood & Associates Consulting Engineers for the Flood Control District of Maricopa County (FCDMC). Queen Creek Wash crosses Sossaman Road about 70 meters (230 feet) south of the section line. Queen Creek crosses the northern end of the project site in five roadway pipe culverts and a dip section. The Queen Creek Wash estimated 100-year storm water runoff at this location is approximately 85 cubic meters per second (cms)

(3,000 cfs) per the ADMS. The 100 year flood limits from the Queen Creek ADMS extend approximately 215.0 meters (705 feet) south of the existing section line into the project. Even through a bridge is constructed over Queen Creek Wash there is potential for flooding north and south of the bridge during the 100 year storm. During the design phase an analysis should be made to determine the back water effect of the bridge and the possible need for a dip section in the roadway south of the bridge to allow for the 100 year flooding.

LAND USE

The land adjacent to the project site is mostly agricultural land. There is the Queen Creek Wash flood plain at the northerly end of the project site. There are two homes with direct access to the roadway, one west of the roadway south of the mid-section line and one north of Queen Creek east of the roadway.

The land adjacent to Sossaman Road and within the Town of Queen Creek is zoned Medium Density Residential (2 - 4 dwelling units per acre). (See Appendix B for the Zoning Map.)

Pending Development:

Sossaman Estates Development Master Plan has been prepared and extends the length of the this project on the west side of Sossaman Road (see page 6).

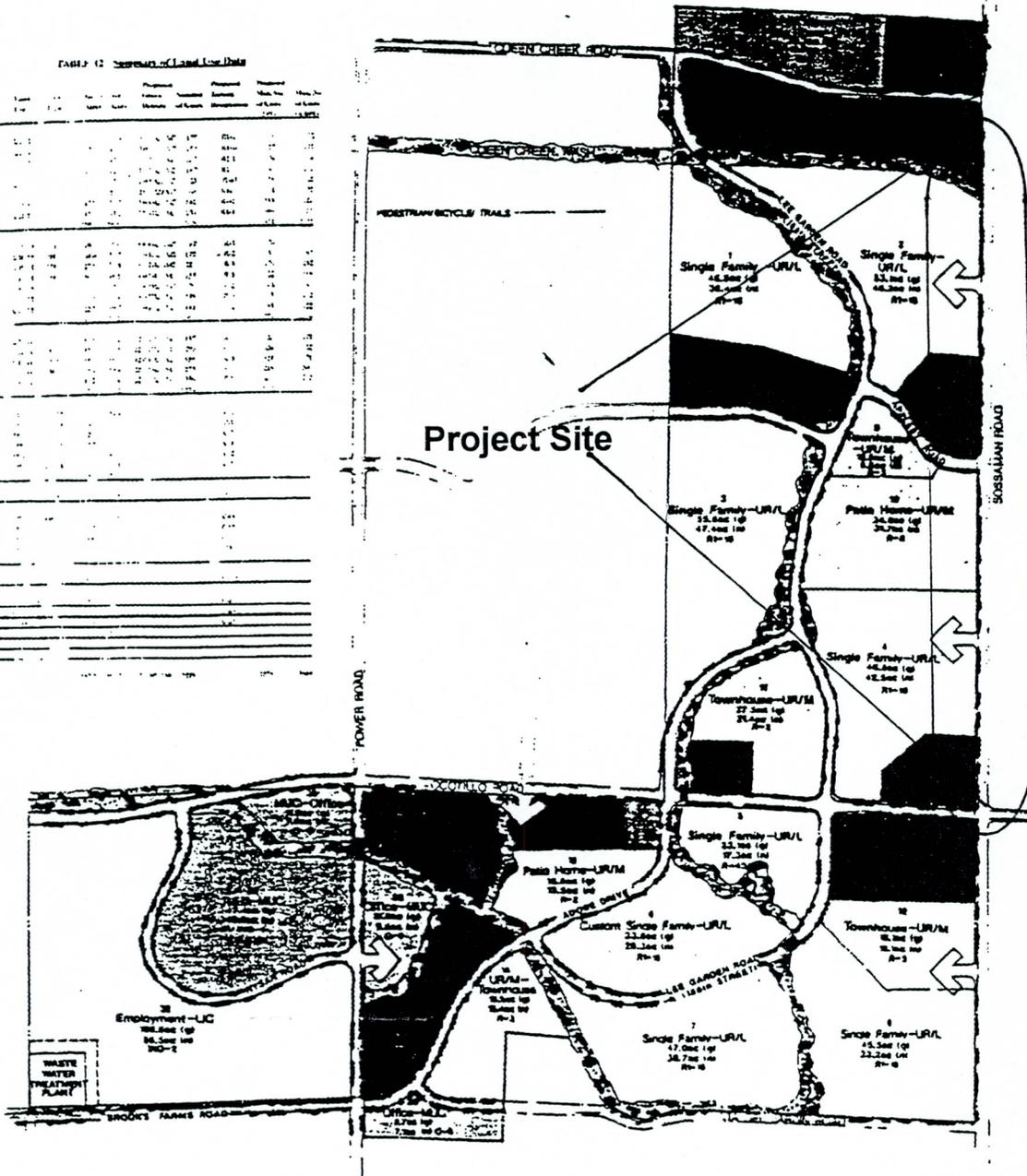
Potential Intergovernmental Partners and Private Development Partners:

Those that will receive benefit from the roadway and drainage improvements are the Town of Queen Creek as well as the property owners along Sossaman Road. The Flood Control District of Maricopa County is a potential financial partner for some of the flood control channelization along Queen Creek Wash as it crosses Sossaman Road.

SOSSAMAN ESTATE DEVELOPMENT MASTER PLAN

TABLE 12 Summary of Land Use Data

Land Use	Area (Acres)	Population	Employment	Units	Value (\$)
UR/L	1,200	1,200	0	1,200	12,000,000
UR/M	1,200	1,200	0	1,200	12,000,000
UR/H	1,200	1,200	0	1,200	12,000,000
MUC	1,200	0	1,200	0	12,000,000
MNC	1,200	0	0	0	12,000,000
NC	1,200	0	0	0	12,000,000
LC	1,200	0	0	0	12,000,000
PARKS/OPEN SPACE SCHOOL	1,200	0	0	0	12,000,000



LAND USE TABLE

- UR/L - Urban Residential/Low Density
1-4 Dwellings Units per Acre
- UR/M - Urban Residential/Medium Density
2-12 Dwellings Units per Acre
- UR/H - Urban Residential/High Density
12-25 Dwellings Units per Acre
- MUC - Mixed Use Center
- MNC - Multi-Neighborhood Commercial
- NC - Neighborhood Commercial
- LC - Light Industrial Center
- PARKS/OPEN SPACE SCHOOL

DEVELOPMENT MASTER PLAN

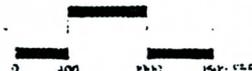
Sossaman Estates

MAP 5

Prepared for:
Sossaman Farms
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Tucson, Arizona 85706
310-257-9975
Prepared by:
Arlene Smith & Associates
1000 South Sossaman Road
Tucson, Arizona 85706
302-963-8200



1:25,000



RIGHT-OF-WAY

The town limit map for the Town of Queen Creek is located on page 8. Right-of-way strip maps and calculations are in Appendix C.

Existing and Proposed:

This existing right-of-way width is 10.058 meters (33 feet) wide east of the construction centerline of Sossaman Road from Ocotillo Road to 170 meters (557.74 feet) south of the north section line of Section 18. The right-of-way north of this point is 16.764 meters (55 feet). The existing right-of-way width is 16.764 meters (55 feet) wide west of the construction centerline of Sossaman Road. The Town of Queen Creek's limit line on the west side of Sossaman Road is 16.764 meters (55 feet) west of the construction centerline of Sossaman Road. The Town of Queen Creek's limit line on the east side of Sossaman Road begins 1 116.48 meters (3,663 feet) north of Ocotillo Road and continues north 10.058 meters (33 feet) east of the construction centerline of Sossaman Road.

The required right-of-way for a Rural Collector Road is 33.528 meters (110 feet) wide 16.764 meters (55 feet) either side of centerline. An additional 6.706 meters (22 feet) of right-of-way is required on the east side requiring an additional 9,875.06 square meters (106,287.94 square feet) of right-of-way.

Temporary Construction Easements (TCE) will be needed at Queen Creek Wash to provide for the construction of a traffic diversion road. A drainage easement is needed for the drainage channel east and west of Sossaman Road.

ENVIRONMENTAL

The project area is located in a rural agricultural area with one ranch property residence east of Sossaman Road on the north side of Queen Creek Wash. There is a second property west of Sossaman Road south of the mid-section line. Queen Creek Wash remains in its natural state with desert broom, other shrubs, and a few small trees. Riparian habitat is limited and there is no evidence of any wetlands. No threatened or endangered species are known to occur in the project area. There is a potential for cultural resources. Therefore, a cultural resource survey will need to be conducted during the environmental clearance process. Hazardous materials were not observed in the project area.

Construction of the bridge and widening of Sossaman Road will result in minimal adverse impact to the natural environment. During construction, impacts to the natural vegetation should be limited to that necessary to conduct the construction activities. Permits may 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.

The driveway access at the Coyote Crossing Ranch east of Sossaman Road north of Queen Creek Wash may be altered as a result of this project. Coordination with the property owner will be necessary during project design and construction. Design of the bridge and channel will take into consideration clearance for horseback riders crossing under the bridge.

ROADWAY DESIGN ALTERNATIVES

Typical Sections:

Please refer to Appendix D for the typical sections.

Alternative Development:

No Build Alternative:

The no-build alternative would retain the existing roadway with no capital improvements. The section would be two-lanes with the Queen Creek Wash crossing flowing under the roadway in five 1.8 meter (72 inch) CMP culverts.

Alternative 1 (Low Cost Improvement):

Alternative 1 consists of removal of five existing 1.8 meter (72 inch) CMP culverts and dip section crossing and construction of a new 37.0 meter (122 feet) three span reinforced concrete slab bridge. The new bridge will have a 20.8 meter (68 feet) roadway width, traffic barriers and 1.8 meter (6 feet) sidewalks on both sides. Channel improvements will include widening the channel bottom to 20 meters (65.6 feet) and revising the vertical profile for approximately 61.0 meters (200 feet) east and west of the new bridge. The channel and roadway vertical profile will be designed to accommodate equestrian use under the new bridge. The clearance under the bridge will be a minimum of 3.0 meters (10 feet). During preliminary design the drainage area for the 100 year flood limits will be reviewed and the need for a roadway dip section for the 100 year flood plain will be analyzed.

The new pavement will consist of 75 mm (3 inches) of asphaltic concrete over 250 mm (10 inches) of aggregate base course. The roadway pavement will be 10.4 meters (34 feet) from the beginning of the project to the south end of the bridge. North of the bridge the pavement will be 14.6 meters (48 feet) to the end of the project. The roadway will begin approximately 319 meters (1,046 feet) south of the proposed Queen Creek Road and Sossaman Road intersection and continue north to match the existing pavement 69.0 meters (226 feet) south of the intersection. Queen Creek Wash will be rechannelized to be 20.0 meters (65.6 feet) wide under the new bridge, and will taper to meet the existing bottom approximately 61.0 meters (200 feet) east and west of the existing and proposed right-of-way lines on Sossaman Road.

A HEC-2 (HEC-RAS) analysis and a scour analysis needs to be made to determine the adequacy of the design.

The following relocation will need to be made:

1. The 150 mm (6 inch) waterline on the east side of Sossaman Road.

The south residential driveway entrance for the property north of Queen Creek Wash and the east side of Sossaman Road will need to be closed. The north driveway entrance will remain open and be paved to the right-of-way line. The County will coordinate with the property owner for driveway revisions.

Alternative 2 (Full Improvement):

Alternative 2 consists of removal of five existing 1.8 meter (72 inch) CMP culverts and dip section crossing and construction of a new 37.0 meter (122 feet) three span reinforced concrete slab bridge. The new bridge will have a 20.8 meter (68 feet) roadway width, traffic barriers and 1.8 meter (6 feet) sidewalks on both sides. Channel improvements will include widening the channel bottom to 20.0 meters (65.6 feet) and revising the for approximately 61.0 meters (200 feet) east and west of the new bridge. The channel vertical profile and roadway vertical profile will be designed to accommodate equestrian use under the new bridge. The clearance under the bride will be a minimum of 3.0 meters (10 feet). During preliminary design the drainage area for the 100 year flood limits will be reviewed and the need for a roadway dip section for the 100 year flood plain will be analyzed.

The new pavement will consist of 75 mm (3 inches) of asphaltic concrete over 250 mm (10 inches) of aggregate base course. The existing pavement from the north edge of pavement of Ocotillo Road to approximately 69.0 meters (226 feet) south of the proposed Queen Creek Road and Sossaman Road intersection will be removed.

New pavement on Sossaman Road beginning at the north edge of Ocotillo Road will be 14.6 meters (48 feet) wide. The radii for the Ocotillo Road and Sossaman Road intersection will be 9.1 meters (30 feet). The 14.6 meters (48 feet) on Sossaman Road will continue north for 50.0 meters (164 feet). The roadway will then taper at 1:55 until it matches the new pavement width of 10.4 meters (34 feet). 10.4 meters (34 feet) is the MCDOT Standard for a Rural Collector Road. This pavement width will continue north until the south end of the Queen Creek Wash bridge. North of the Queen Creek Wash bridge the pavement width will be 14.6 meters (48 feet). The new pavement will end 69 meters (226 feet) south of the proposed Queen Creek Road and Sossaman Road intersection. Queen Creek Wash will be rechannelized 20.0 meters (65.6 feet) wide under the new bridge and will taper to meet the existing bottom approximately 61.0 meters (200 feet) east and west of the new and proposed right-of-way lines on Sossaman Road.

A HEC-2 (HEC-RAS) analysis and a scour analysis needs to be made to determine the adequacy of the design.

The following relocations will need to be made:

1. The 150 mm (6 inch) waterline on the east side of Sossaman Road.
2. The large irrigation structure on the northeast corner and the irrigation standpipe on the northwest corner of Sossaman Road and Ocotillo Road intersection.
3. Private irrigation standpipes on the west side of Sossaman Road.
4. The tailwater ditch on the east side of Sossaman Road about 1 100 meters (3609 feet) north of Ocotillo Road.
5. The APS power poles on the west side of Sossaman Road.
6. The US West telephone lines on the west side of Sossaman Road.
7. The private concrete-lined irrigation laterals.

The south residential driveway entrance for the property north of Queen Creek Wash east of Sossaman Road will need to be closed. The north driveway entrance will remain open and be paved to the right-of-way line. The County will coordinate with the property owner for driveway revisions.

Preliminary Construction Cost Estimate					
Alternative 1 - Low Cost Improvement					
Item #	Description	Unit	Quantity	Unit Cost	Total
107.01100	N.P.D.E.S.	L.S.	1	\$2,500.00	\$2,500
107.09200	Community Relations	Allowance	1	\$5,000.00	\$5,000
110.01000	Mobilization @ 5%	L.S.	1	\$27,674.00	\$27,674
210.04200	Borrow Excavation	CM	2,500	\$4.00	\$10,000
215.00000	Channel Excavation	CM	7,300	\$4.00	\$29,200
	New Asphalt Pavement (Sossaman Road)	SQ M	2,600	\$13.60	\$35,360
	Asphalt Concrete Thickness 50 mm (Diversion)	SQ M	2,200	\$3.60	\$7,920
336.08100	Pavement Sawcut	M	30	\$4.50	\$135
340.09000	Driveway Revisions	L.S.	1	\$1,500.00	\$1,500
350.01110	Removal of Existing Improvements	L.S.	1	\$15,000.00	\$15,000
401.00000	Traffic Control @ 5% (Due to Diversion)	L.S.	1	\$27,674.00	\$27,674
402.00000	Traffic Signing & Striping - 2 Lanes	M	600	\$3.20	\$1,920
618.02348	1060 mm & 1220 mm (42" & 48") RGRCP, Class III	M	35	\$250.00	\$8,750
	Bridge > 100' See Separate Bridge Calc Sheet	EA	1	\$336,700.00	\$336,700
220.01100	Riprap Plain	CM	1,220	\$75.00	\$91,500
	Guardrail Approach End Section	EA	4	\$2,000.00	\$8,000

Subtotal Construction		\$608,833
Contingency	20%	\$121,767
Total		\$730,600
Subtotal Less Percentages		\$553,485

Preliminary Construction Cost Estimate					
Alternative 2 - Full Cost Improvement					
Item #	Description	Unit	Quantity	Unit Cost	Total
107.01100	N.P.D.E.S.	L.S.	1	\$3,000.00	\$3,000
107.09200	Community Relations	Allowance	1	\$10,000.00	\$10,000
110.01000	Mobilization @ 5%	L.S.	1	\$43,007.00	\$43,007
205.03000	Roadway Excavation	CM	5,200	\$4.00	\$20,800
210.04200	Borrow Excavation	CM	2,500	\$4.00	\$10,000
215.00000	Channel Excavation	CM	7,300	\$4.00	\$29,200
	New Asphalt Pavement (Sossaman Road)	SQ M	18,300	\$13.60	\$248,880
	Asphalt Concrete Thickness 50 mm (Diversion)	SQ M	2,200	\$3.60	\$7,920
336.08100	Pavement Sawcut	M	54	\$4.50	\$243
340.09000	Driveway Revisions	L.S.	1	\$1,500.00	\$1,500
350.01110	Removal of Existing Improvements	L.S.	1	\$15,000.00	\$15,000
401.00000	Traffic Control @ 5% (Due to Diversion)	L.S.	1	\$43,007.00	\$43,007
402.00000	Traffic Signing & Striping - 2 Lanes	M	2,000	\$3.20	\$6,400
618.02324	610 mm (24") & Smaller RGRCP, Class III	M	50	\$125.00	\$6,250
618.02348	1060 mm & 1220 mm (42" & 48") RGRCP, Class III	M	35	\$250.00	\$8,750
	Headwall, 460 mm to 910 mm Pipe	EA	6	\$1,500.00	\$9,000
	Remove Existing Irrigation Structures	L.S.	1	\$8,000.00	\$8,000
	Irrigation Delivery Structure	EA	1	\$19,000.00	\$19,000
	Irrigation Structure w/ Gates	EA	3	\$7,500.00	\$22,500
	Concrete Slip Form Ditch	M	190	\$75.00	\$14,250
	Bridge > 100' See Separate Bridge Calc Sheet	EA	1	\$336,700.00	\$336,700
220.01100	Riprap Plain	CM	1,220	\$50.00	\$61,000
415.01400	Guardrail Without Approach End Section (WELL)	M	130	\$75.00	\$9,750
	Guardrail Approach End Section	EA	6	\$2,000.00	\$12,000

Subtotal Construction		\$946,157
Contingency	20%	\$189,231
Total		\$1,135,388
Subtotal Less Percentages		\$860,143

Cost Summary:

COST CATEGORIES	Factors	No Build Alternative	Alternative 1 Low Cost	Alternative 2 Full Cost
Construction		\$0	\$730,600	\$1,135,388
Design		\$0	\$107,089	\$166,421
Construction Management	15%	\$0	\$109,590	\$170,308
Right-of-Way		\$0	\$50,000	\$50,000
Utility Relocation		\$0	\$10,000	\$200,000
Administration	13%	\$0	\$94,978	\$147,600
TOTAL		\$0	\$1,102,257	\$1,869,717

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	\$350.00	\$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	\$350.00	\$0.00
Urban Major Arterial	31.8 m (104.33')	7 Lanes, 2 S/W's			SQ M	\$350.00	\$0.00
At Sossaman Rd. Over Queen Cr.	26.0 m	3 Span Reinf. Conc. Slab	37.0 m	962	SQ M	\$350.00	\$336,700.00
Special Low Volume Road Condition ***	16 m (52.49')	2 Lanes with Shoulders			SQ M	\$350.00	\$0.00
						TOTAL	\$336,700.00

* Top Surface of Bridge

** Cost Includes Piers

*** With Approval Only

PREFERRED ALTERNATIVE

Alternative 1 (Low Cost Improvement) is the recommended over the No Build and Full Cost Alternative because it improves the safety and drainage characteristics of the roadway and produces the best benefit/cost for the roadway.

MAJOR DESIGN FEATURES

Standard Typical Section:	20.8 meters (68 feet) at the new bridge
Design Year Volume:	4,000 VPD
Design Year:	2020
Design Vehicle:	WB-40
Design Speed:	100 kph (60 mph)
Pavement Design Life:	20 years
Number of Lanes:	2
Roadway Width:	10.4 meters (34 feet) to existing
Intersection Geometrics:	9.1 meter (30 foot) radius
Drainage Structures:	37.0 m (122 feet) 3-span reinforced concrete slab bridge
Standard Right-of-way Requirements:	33.528 meters (110 feet)
Other:	There are no design exceptions.

UTILITIES

There is an existing APS overhead 12 Kv power line on the east side of the roadway north of Queen Creek Wash and on the west side of the roadway south of Queen Creek Wash. An overhead telephone line exists on the APS power poles.

The Queen Creek Water Company has a 150 mm (6 inch) water line on the east side of Sossaman Road.

SW Gas has a 50 mm (2 inch) gas line on the west side of Sossaman Road that runs from Ocotillo Road for about 402 meters (1320 feet) north.

There are private concrete lined irrigation ditches that run east-west on both sides of the roadway.

There are irrigation structures near 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 boring logs will be needed. Drainage analysis should include HEC-2 (HEC-RAS) and scour analysis for the channel, bridge and 100-year flood plain analysis.

Construction Cost Estimate:

The construction cost estimate for the recommended Alternative 1 Low Cost Improvement is \$730,600.

Design Concept Report (DCR):

A DCR is not recommended.

Estimate of Design Labor Hours:

TASK	PM	LSE	SE	PE	DRILL/			TOTAL
					SURVEY	T/D	S/C	
A DESIGN CONCEPT REPORT								
NOT APPLICABLE		0		0			0	0
SUBTOTAL	0	0	0	0	0	0	0	0
B RIGHT-OF-WAY DELINEATION PACKAGE								
RIGHT-OF-WAY SURVEY								0
LEGAL DESCRIPTIONS	4			36			4	44
STRIP MAP SHEETS				4		8		12
INCA IN-HOUSE REVIEW	4							4
SUBTOTAL	8	0	0	40	0	8	4	60
C DESIGN								
FIELD REVIEW MEETING WITH MCDOT	4	8		8				20
DESIGN SURVEY	4				24	8		36
DRAINAGE REPORT				24		8	4	36
SCOUR EVALUATION				32				32
GEOTECHNICAL & PAVEMENT INVESTIGATION	8			72	32	88	16	216
FACE SHEET				4		8		12
GENERAL NOTES SHEET				4		8		12
TYPICAL SECTIONS				12		12		24
CHANNEL AND DIVERSION TYPICAL SECTIONS				8		8		16
PLAN & PROFILE SHEET SOSSAMAN RD. (3)	16			44		72		132
CHANNEL PLAN	4			16		24		44
CHANNEL PROFILE				8		16		24
TRAFFIC (2)				16		16		32
TRAFFIC DIVERSION PLANS(2)	8			36		36		80
BRIDGE PLANS (8)	40	232	160			168		600
SPECIAL PROVISIONS	4	8		16			8	36
COST ESTIMATE		4	8	12			4	28
INCA IN-HOUSE REVIEW	8	8		8				24
REVIEW AND COORDINATION	16	32		32				80
SUBTOTAL	112	292	168	352	56	472	32	1484
TOTAL	120	292	168	392	56	480	36	1544

Estimate of Design Costs:

ESTIMATED DIRECT LABOR:

Classification	Estimated Manhours	Avg. Hourly Rate	Labor Costs
Project Manager	104	\$94.30	\$9,807
Lead Structural Engineer	292	\$82.50	\$24,090
Structural Engineer	168	\$64.90	\$10,903
Project Engineer	280	\$73.70	\$20,636
Drill/Survey Crews	0	\$90.00	\$0
Technician/CAD	376	\$49.90	\$18,762
Clerical	16	\$31.60	\$506
Total Manhours:	1236	Total Direct Labor:	\$84,704

ESTIMATED DIRECT EXPENSES:

PLOTTING:

11x17 21 Sheets	1 set (bond) x 4 x \$3/sheet (divided by 2) =	\$126
Full Size 21 Sheets	1 set (sepia) x 3x \$3/sheet =	\$189
Full Size 21 Sheets	1 set (mylars) x \$10/sheet =	\$210
	Subtotal:	\$525

PRINTING:

8½ x11	30 sheets x 40 copies x \$.05 =	\$60
11x17	21 sheets x 20 copies x \$.10 =	\$42
Bluelines	21 sheets x 40 copies x 1 x \$.90 =	\$756
	Subtotal:	\$858

Total Direct Expenses: \$1,383

ESTIMATED OUTSIDE SERVICES:

Survey	\$7,164
Geotechnical	\$13,838

Total Outside Expenses: \$21,002

TOTAL ESTIMATED SERVICES: \$107,089

Estimated Schedule:

	MONTHS									
	1	2	3	4	5	6	7	8	9	10
DCR										
Not Applicable										
Delineation Package										
Strip Map				■	■					
Parcel Exhibits				■	■	■				
Legal Descriptions				■	■					
Area Calculations				■	■					
PS&E										
Field Survey	■	■								
Geotechnical Report	■				■	■				
Pavement Design		■	■			■	■			
Utility Coordination		■	■			■	■			
Plans		■	■	■	■	■	■	■	■	
Specifications							■	■		
Estimate									■	■
County Reviews				■	■		■	■	■	■

MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION

ENGINEERING DIVISION

TRAFFIC BRANCH

MEMORANDUM

DATE: November 8, 1996

TO: Candidate Assessment Reports

FROM: Vicki Stewart

SUBJECT: Sossaman Road: Ocotillo Road to Queen Creek Road

DATES CHECKED: 1/1/94 - 8/31/96

I reviewed the accident cards files for the above section of roadway, with intersections included, and found a total of 8 intersection and 1 non-intersection accidents. Attached are copies of the accident cards for your review.

Volumes:
Sossaman Road n/o Ocotillo Road
1996 - 836
1995 - 695
1994 - 644

MARICOPA COUNTY HIGHWAY DEPARTMENT
Traffic Engineering Division

ACCIDENT LOCATION

ON: Ocotillo Road
(STOP) (YIELD) (SIGNAL)

⊙ AT: Sossaman Road
(STOP) (YIELD) (SIGNAL)

DATE	HOUR	SEV.	LIGHT	W/S	Rd Cond	TYPE	REASONS AND CAUSES
1-4-94	1555	/	DYL	/	/	2 ↘ ↗	#1 FYRW FROM STOP STRUCK #2 (S) 94-01025

MARICOPA COUNTY HIGHWAY DEPARTMENT
Traffic Engineering Division

ACCIDENT LOCATION

ON: Ocotillo Road
(STOP) (YIELD) (SIGNAL)

⊙ AT: Sossaman Road
(STOP) (YIELD) (SIGNAL)

DATE	HOUR	SEV.	LIGHT	W/S	Rd Cond	TYPE	REASONS AND CAUSES
1-28-95	1220	2	DYL	/	/	1 2	#1 INATTENTION F/C STRUCK #2 STOPPING (W) FOR STOP SIGN (S) 95-02238
3-2-95	0720	3	DYL	/	/	1 2	#1 FYRW FROM STOP MAKING LEFT TURN STRUCK #2 SWR.P (S) 95-04867
5-21-95	1915	/	DYL	/	/	1 2	#1 (LSOA) STRUCK #2 SLOWING TO MAKE RIGHT TURN (W) 95-11759
5-30-95	1203	F	DYL	/	/	1 2	#1 FYRW FROM STOP STRUCK #2 (S) 95-12551
7-12-95	0751	4	DYL	/	/	1 2	#1 FYRW MAKING LEFT TURN STRUCK #2 (S) 95-16279
7-6-95	1415	/	DYL	/	/	1 2	#1 FYRW FROM STOP STRUCK #2 (S) 95-15804

C97-2146-04

POWER RD

1295

SOSSAMAN RD

695

731

RITTENHOUSE RD

Handwritten:
Creek

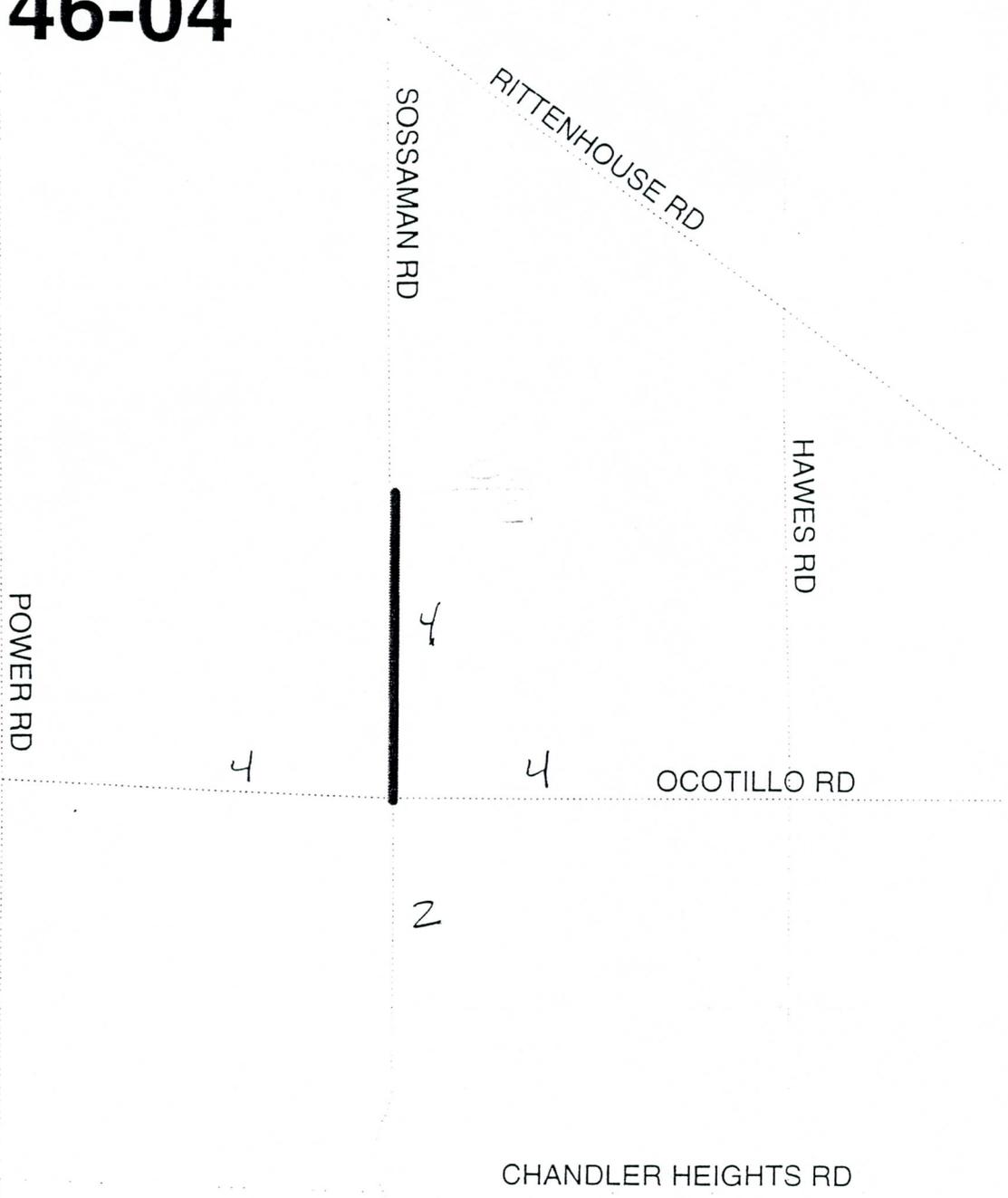
HAWES RD

1297

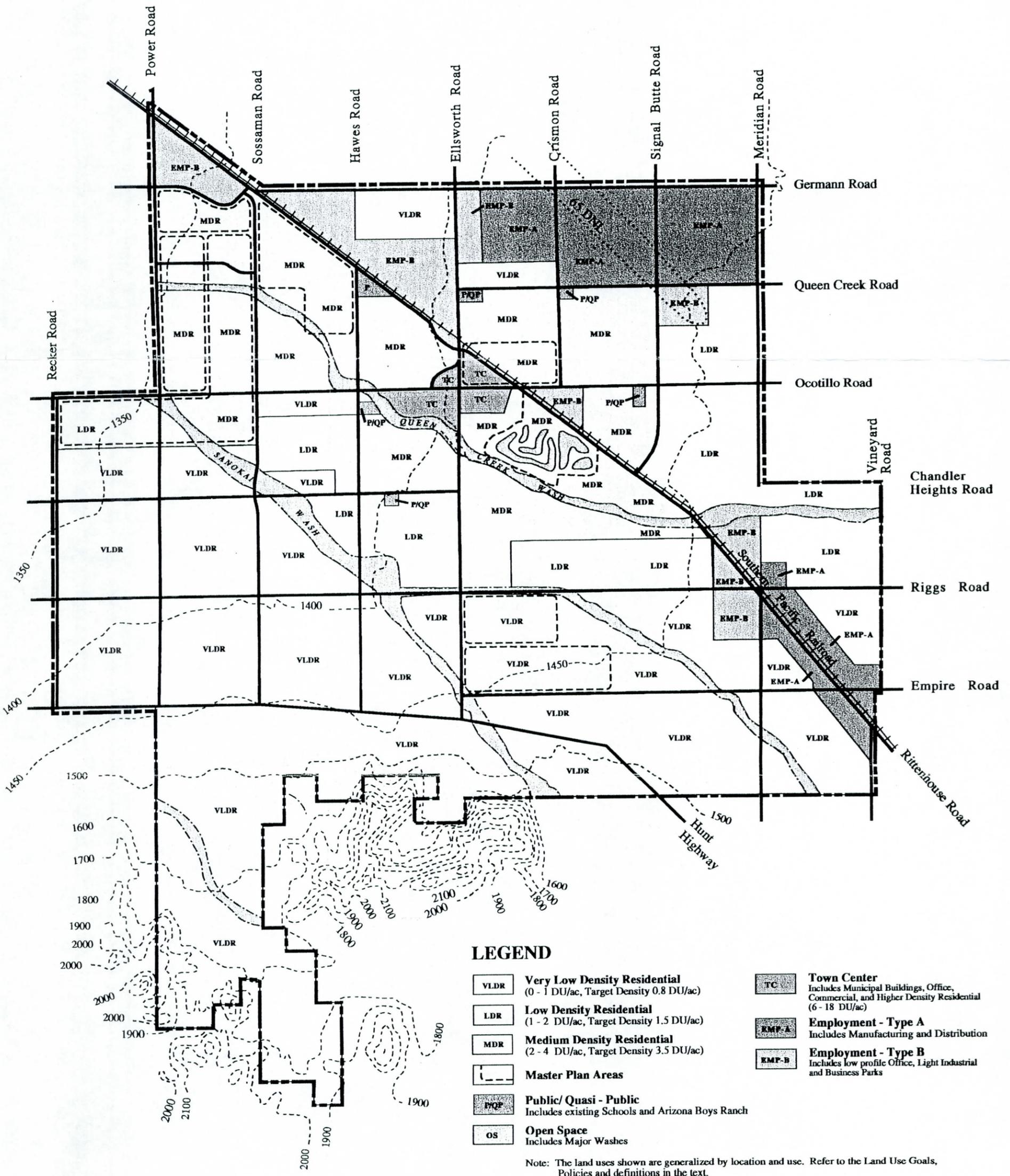
OCOTILLO RD

CHANDLER HEIGHTS RD

C97-2146-04



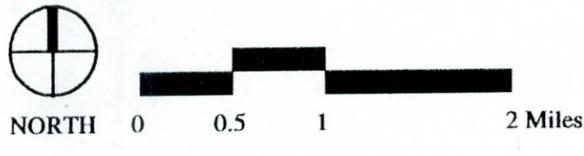
**TOWN OF QUEEN CREEK
ZONING MAP**



LEGEND

- VLDR **Very Low Density Residential**
(0 - 1 DU/ac, Target Density 0.8 DU/ac)
- LDR **Low Density Residential**
(1 - 2 DU/ac, Target Density 1.5 DU/ac)
- MDR **Medium Density Residential**
(2 - 4 DU/ac, Target Density 3.5 DU/ac)
- Master Plan Areas**
- P/QP **Public/Quasi - Public**
Includes existing Schools and Arizona Boys Ranch
- OS **Open Space**
Includes Major Washes
- TC **Town Center**
Includes Municipal Buildings, Office, Commercial, and Higher Density Residential (6 - 18 DU/ac)
- EMP-A **Employment - Type A**
Includes Manufacturing and Distribution
- EMP-B **Employment - Type B**
Includes low profile Office, Light Industrial and Business Parks

Note: The land uses shown are generalized by location and use. Refer to the Land Use Goals, Policies and definitions in the text.



LAND USE PLAN

CornoyerHedrick
 2425 East Camelback Road
 Suite 400
 Phoenix, AZ 85016
 602.381.4848

town of
QUEEN CREEK
general plan

Appendix C
Right-of-Way Strip Map and Calculations

**RIGHT-OF-WAY STRIP MAP
AND CALCULATIONS**

TITLE Sossaman Road CAR

SUBJECT R/W & Easement Calcs.

MADE BY JLL DATE 12-17-96 CHECKED BY DATE

New R/W

Parcel:

9C: $1374.27' (418.88\text{ m}) \times 22' (6.706\text{ m}) = 30,233.94\text{ sf} (2,808.99\text{ sm})$
 $0.694\text{ ac. } (0.281\text{ ha})$

5F: $1111.62' (338.82\text{ m}) \times 22' (6.706\text{ m}) = 24,455.64\text{ sf} (2,272.14\text{ sm})$

3D & 3B: $342.59' (104.42\text{ m}) \times 22' (6.706\text{ m}) = 7,536.98\text{ sf} (700.25\text{ sm})$

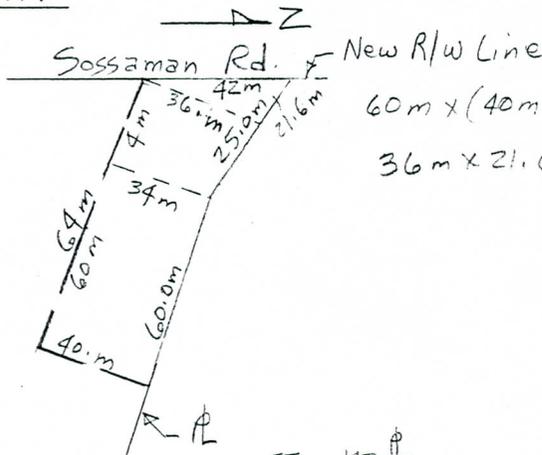
3E: $438.2' (133.56\text{ m}) \times 22' (6.706\text{ m}) = 9,640.40\text{ sf} (895.68\text{ sm})$

4A: $1625.87' - 403.87' = 1,222.0' (372.47\text{ m}) \times 22' (6.706\text{ m}) = 26,884\text{ sf} (2,497.5\text{ sm})$

Drainage Easement

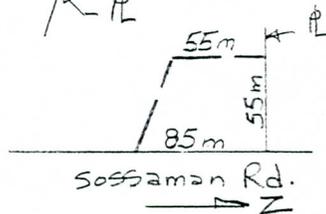
Parcel:

4A:



$60\text{ m} \times (40\text{ m} + 34\text{ m}) / 2 + 4\text{ m} \times (34\text{ m} + 36\text{ m}) / 2 + 36\text{ m} \times 21.6\text{ m} / 2 = 2748.80\text{ sm}$
 $(29,587.84\text{ SF})$

14H:



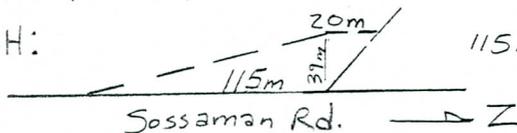
$55\text{ m} \times (85\text{ m} + 55\text{ m}) / 2 = 3,850\text{ sm}$
 $(41,441.06\text{ SF})$

TCE

Parcel:

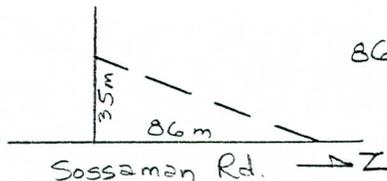
4A: $180\text{ m} \times 10\text{ m} = 1800\text{ sm} (19,375.04\text{ sf})$

14H:

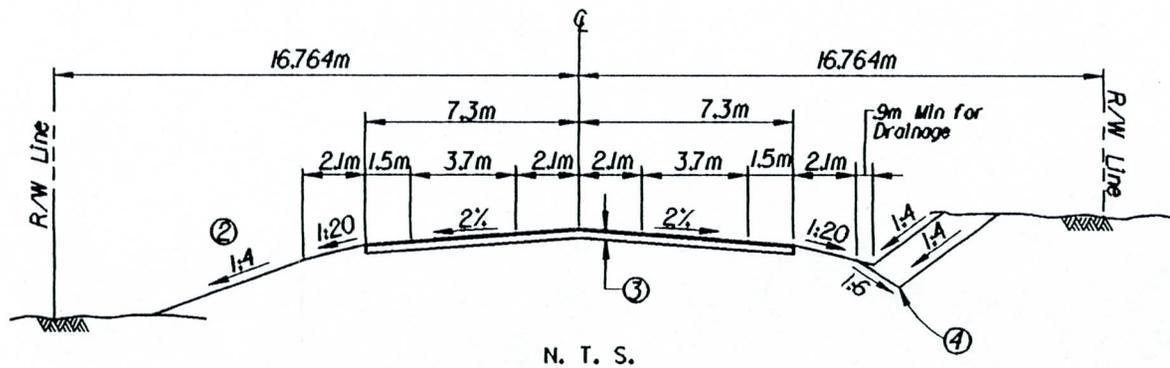
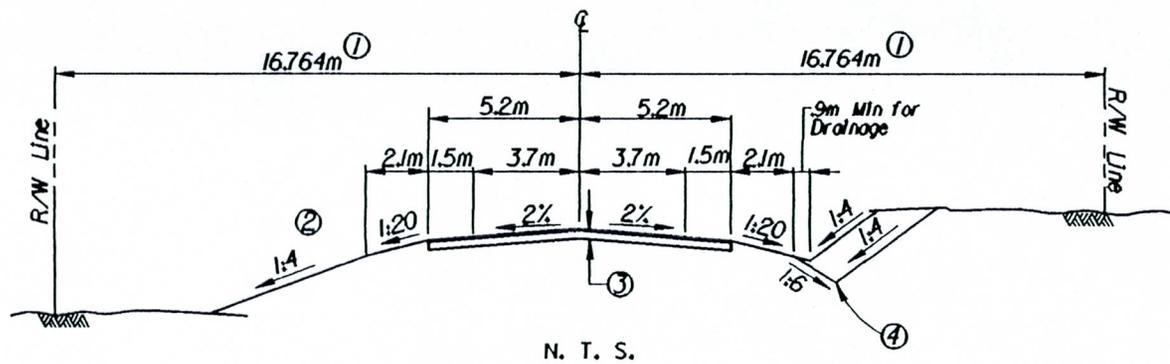


$115\text{ m} \times 39\text{ m} / 2 + 39\text{ m} \times 20\text{ m} / 2 = 2,632.50\text{ sm}$
 $(28,335.99\text{ sf})$

30:



$86\text{ m} \times 35\text{ m} / 2 = 1,505\text{ sm} (16,199.69\text{ sf})$

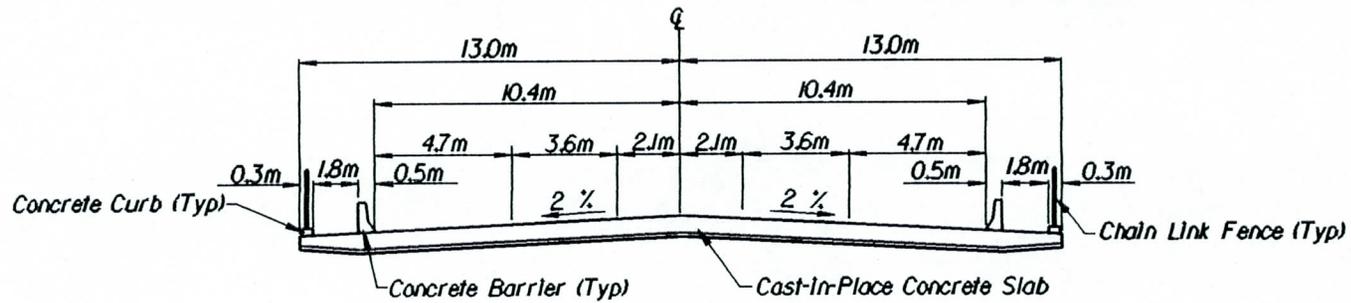


WIDENED SECTION FOR LEFT TURN LANE

① Min. Std. R/W Requirements
 Section Line or Section Line
 Alternate Location = 16.764m (55')
 Typical Half-Width Min.

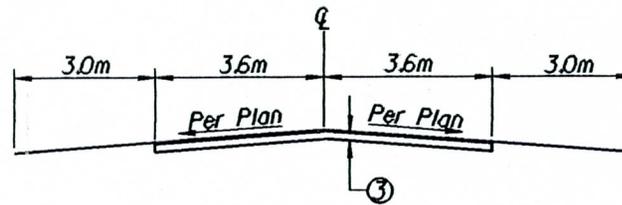
- ② For Guardrail Installation See MCHD
 Std. Detail 2036 or 2037
- ③ 100mm Min. A.C. Over 250mm Min. A.B.
 or Approved Equivalent.
- ④ Special Drainage Ditch as Required

RURAL COLLECTOR ROADS



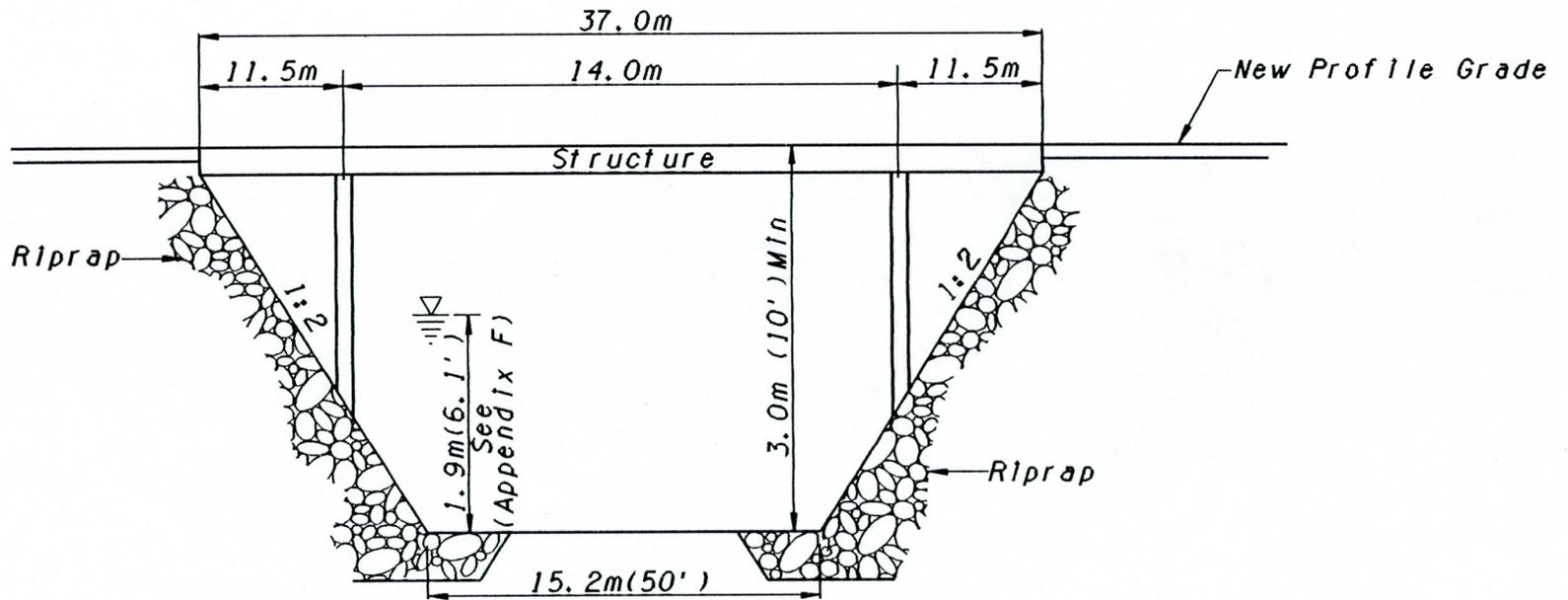
N. T. S.

TYPICAL BRIDGE SECTION



N. T. S.

TRAFFIC DIVERSION ROAD

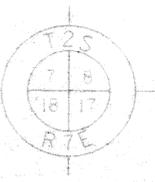


N. T. S.

CHANNEL SECTION AT QUEEN CREEK BRIDGE

(LOOKING DOWNSTREAM)

**ROADWAY DESIGN
ALTERNATIVE 1**



Found Iron Rod

13B

14K

14M

15

Proposed 26.0m (85.3') x 30.0m (98.4')
Reinforced Concrete Bridge
30° Skew RT
Traffic Diversion Road

Temporary 1.2m (4ft) gap

9.14m (30') R
(Typ)

End Taper
5.2m (17')
Rt & Lt

10.26m (33')
Exist. R/W

16.764m (55')
Exist. R/W

Section Line to Ext. E

SOSSAMAN ROAD

ROAD

5.2m (17')

Begin Taper
7.3m (24')
Rt & Lt

9C

16.764m (55')
New R/W

5F

3D

3B

3E

4A

7B

16.764m (55')
Exist. R/W
Queen Creek
Town Limits

7C

10.66m (35')
7.52m (25')
7.62m (25')

SOSSAMAN ROAD
OCOTILLO ROAD TO QUEEN CREEK WASH
ALTERNATIVE NO. 2
(FULL IMPROVEMENTS) SHEET 1 OF 2
JAN. 10, 1997

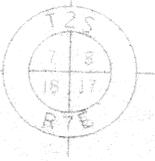
End Project 63m (208.0')
South of Queen Creek Rd

OCOTILLO ROAD

QUEEN CREEK ROAD

QUEEN CREEK

ROADWAY DESIGN
ALTERNATIVE 2



Found Iron Rod

14H

14K

Temporary 1.2m (48") CMP

Proposed 26.0m (85.3') x 37.0m (122.0')
Reinforced Concrete Slab Bridge
30° Skew Rt

Traffic Diversion Road

10.06m (33')
Exist. R/W

16.764m (55')
Exist. R/W

5.2m (17')
5.2m (17')

SOSSAMAN ROAD

ROAD

Section Line & Exist. P

10.06m (33')
Exist. R/W

16.764m (55')
Exist. R/W

16.764m (55')
EXIST. R/W

16.764m (55')
EXIST. R/W

13B

9C

5F

3D

3B

3E

4A

7B

35

Begin Project 319m (1046.6')
South of E Queen Creek Rd
Match Exist. Pavement

Improved Channel
Lt & Rt

10.668m (lrr.)
7.62m (lrr. Easement)
7.62m (lrr. Easement)

End Project 69m (226.0')
South of E Queen Creek Rd
Queen Creek
Town Limits

16.764m (55')
Exist. R/W
Queen Creek
Town Limits

SOSSAMAN ROAD
OCOTILLO ROAD TO QUEEN CREEK WASH
ALTERNATIVE NO. 1
(LOW COST IMPROVEMENTS) SHEET 1 OF 1
JAN 10, 1997

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: queencrk

Comment: Queen Creek at Sossaman Road

Solve For Depth

Given Input Data:

Bottom Width.....	50.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.030
Channel Slope....	0.0030 ft/ft
Discharge.....	3000.00 cfs

Computed Results:

Depth.....	6.13 ft
Velocity.....	7.86 fps
Flow Area.....	381.71 sf
Flow Top Width...	74.52 ft
Wetted Perimeter.	77.42 ft
Critical Depth...	4.52 ft
Critical Slope...	0.0087 ft/ft
Froude Number....	0.61 (flow is Subcritical)