

WILLIAMS FIELD RD BRIDGE OVER EMF

BRIDGE SCOUR EVALUATIONS

Work Order No. 80407
Contract No. CY 1995-11

Williams Field Road Bridge over the East Maricopa Floodway

(SN8644)

Preliminary Report

Submitted to:



Maricopa County
Department of Transportation

Submitted by:



A121.904

Flood Control District of Maricopa County
Property of
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**HYDRAULIC ANALYSIS FOR THE
WILLIAMS FIELD ROAD BRIDGE
OVER THE EAST MARICOPA FLOODWAY**

MARICOPA COUNTY, ARIZONA

April 1, 1996

Submitted by:

Parsons Brinckerhoff Quade & Douglas

Tempe, Arizona



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1.0 INTRODUCTION

The existing Williams Field Road Bridge carries vehicular traffic over the East Maricopa Floodway in Maricopa County, Arizona. The total length of the bridge is 100'-8". Construction plans for the Williams Field Road Bridge over the East Maricopa Floodway were prepared by Wadsworth, Jensen & Associates and are dated March 1977. The as-built plans are dated December 1981. The plans are for a two span bridge with a 50-foot span length. The abutments are supported on six drilled-and-belled, cast-in-place concrete piers with tip elevations of 1,310.0 to 1,309.62 feet. The center pier is supported on a continuous spread footing bearing at an elevation of 1,306.8 feet. The channel is completely lined with concrete and the finished channel bottom is shown to be at elevation 1,312.1 feet. The bridge carries four lanes of traffic and is approximately 76'-9" wide. The roadway is oriented in a east-west direction on a grade of 0.37 percent.

Evaluating scour potential of the existing bridge is the primary goal of the project. This report provides data on East Maricopa Floodway hydrology and hydraulics in the bridge vicinity. No scour calculations were performed because the channel and abutments are lined with concrete. The full coverage of concrete prevents any scour from occurring unless a section of concrete is damaged and becomes undermined. If this should occur a scour analysis could be performed at that time to assess potential damage until repairs can be made.

Section 2.0 describes data collection followed by the site description in section 3.0. Section 4.0 summarizes the results of normal depth hydraulic computations. Section 5.0 provides an initial evaluation of the bridge and lists any deficiencies. No recommendations are provided in this report, they will be deferred to the final report.

2.0 DATA COLLECTION

Data was supplied by the Maricopa County Department of Transportation in the form of final plans for the Williams Field Road Bridge at the East Maricopa Floodway, project number FCD-81-7 dated 1977. USGS topographic maps were obtained for the bridge site.

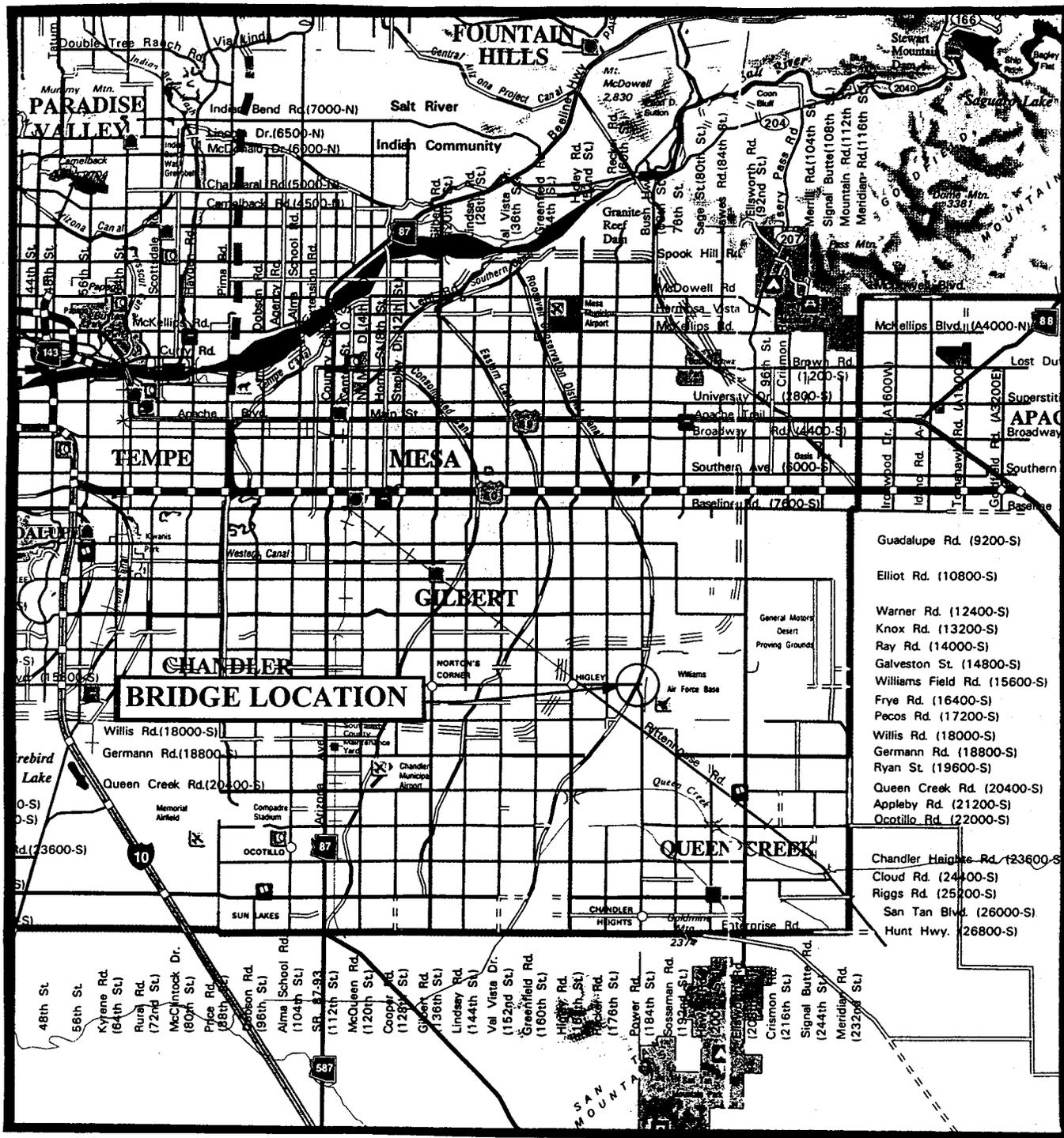
Parsons Brinckerhoff conducted a site visit on April 20, 1995. Extensive photographs of the site were taken and a visual survey of the bridge and surrounding area was made.

The scour screening procedure for the National Bridge Inventory System is completed for the Williams Field Road Bridge. The screening forms are included in the Appendix. The Williams Field Road Bridge is rated as a low risk bridge with a recommended Item 113 rating of 8P and does not need a detailed scour analysis. No scour countermeasures are recommended as a result of the screening.

3.0 SITE DESCRIPTION

As shown in Figure 1, the site lies in the southeast portion of the town of Gilbert on the east side of Maricopa County. The Power Road Bridge over the East Maricopa Floodway lies approximately 400 feet east of the bridge. The bridge is regulated by the Maricopa County Flood Control District. The channel bottom and abutments are completely lined with concrete and no vegetation is present in the floodway. The terrain in the immediate area is relatively flat. The East Maricopa Floodway in the vicinity of the bridge is a man-made concrete channel of trapezoidal shape and is relatively dry most of the year. At the time of the field inspection there was some standing water underneath the bridge.

Figure 1



PARSONS
BRINCKERHOFF

3.1 Geotechnical Evaluation

The logs of test borings shown on the plans indicate that clayey sands extend from the surface to an elevation of about 1,295 feet. Silty clays with lesser deposits of silty sands underlie the clayey sand and extend to 1,278 feet, which is the limit of the borings. Since the channel is completely lined with concrete, no particle size estimations are necessary for scour analysis. During the field reconnaissance on April 20, 1995, no damage to the concrete-lined channel was noted and no evidence of scour was present.

3.2 Structural Evaluation

The Williams Field Road Bridge over RWCP floodway is located on Williams Field Road between stations 416+97.67 and 417+98.33 about 400 feet east of the intersection of Williams Field Road with Power Road. The total length of the bridge is 100'-8", and the total width of the bridge is 76'-9". The bridge crosses the RWCD floodway at a zero degree skew.

The bridge structure is a two 50-foot span frame made of precast prestressed T-beams. There are 19 single T-beams in the cross section of the superstructure. The top flange of the precast beams is composite with the cast-in-place concrete deck. The total depth of the superstructure is 3'-1½". At the abutments, the superstructure is connected to the abutment (end diaphragm) which sits on six, 2' diameter drilled shafts. These shafts have 5' diameter bells at the bottom. The total length of the shafts is about 13 feet and are embedded in a layer of silty to clayey sand. The center pier is made of a 1'-6" thick, 74' long cast-in-place concrete wall founded on a spread footing. The bottom of the 6'-3" by 77' footing is located about 6 feet below the existing channel invert. Pier foundation is embedded into the layer of silty to clayey sand.

At both ends of the bridge, there are 22'-8" long approach slabs. No evidence of abnormal soil settlements are visible on the roadway in the vicinity of the bridge. Channel slopes are 2:1. The full perimeter of the channel cross section including the slopes is concrete lined. Concrete

channel lining extends up and down stream. The bridge is in excellent condition. No cracks, corrosion, or other deficiencies of structural members are visible. There are no visible cracks on the barrier or approach slabs.



Looking upstream.



Looking downstream.

WILLIAMS FIELD ROAD



Upstream face looking West.



Looking downstream at subject bridge.

WILLIAMS FIELD ROAD

4.0 HYDRAULIC ANALYSIS

The 100-year and 500-year flood discharges are 6,500 cfs and 7,800 cfs, respectively. A chosen multiplication factor of 1.2 was used to obtain the 500-year discharge, as this information could not be supplied by FCDMC. Flowmaster was used to compute normal depths in the channel because of its trapezoidal shape and concrete lining. The channel is in a reach exhibiting gradually varied flow. The output from Flowmaster calculates the velocity in the channel and the depth of flow. The water surface elevation was calculated using the depth obtained from Flowmaster. As displayed in Table 1 the output for the existing conditions calculates the average velocity at the bridge to be 12.7 fps for the 100-year flood event. The water surface elevation at the bridge is 1325.1 feet for the 100-year flood at existing conditions. The average velocity at the bridge is calculated as 13.3 fps for the 500-year flood. Computed water surface elevation at the bridge is 1326.4 feet for the 500-year flood. The minimum freeboard requirement of 3 feet for the 100-year flood event is met at the Williams Field Road Bridge.

Table 1

	100-Year Flood Existing Conditions	500-year Flood Existing Conditions
Discharge (cfs)	6,500	7,800
Velocity (fps)	12.7	13.3
WSEL (feet)	1325.1	1326.4

5.0 INITIAL EVALUATION

The Williams Field Road Bridge is in a section of the East Maricopa Floodway that is completely lined with concrete. Because of this, no scour calculations were necessary to estimate the amount of scour. The channel was in good condition with no failures at the time of the field inspection; therefore, no scour is predicted to occur at the bridge. Since substantial standing water was present at the bridge pier location, channel lining movement and superstructure cracking should be monitored given that the soil contains some clays.

The Williams Field Road Bridge is rated as a low-risk bridge with a recommended Item 113 rating of 8P and does not need a detailed scour analysis. No scour countermeasures are recommended as a result of the screening.

REFERENCES

1. *Design Manual for Engineering Analysis of Fluvial Systems*, Arizona Department of Water Resources, 1985.
2. *Hydrology and Floodplain Analysis*. Bedient, Philip B., and Wayne C. Huber. New York: Addison-Wesley Publishing Company, 1988.
3. *Drainage Design Manual*, Volumes I, II, III., Flood Control District
4. *HEC-2 Water Surface Profiles*. Davis, California: United States Army Corps of Engineers, September 1982.
5. *Stream Stability at Highway Structures*, Lagasse, P.F., D.F. Schall, F. Johnson, E.V. Richardson, J.R. Richardson, and F. Chang, U.S. Department of Transportation, Federal Highway Administration, Hydraulic Engineering Circular No. 20, Publication No. FHWA-IP-90-014, February 1991.
6. *Stream Stability and Scour at Highway Bridges: Participant Workbook*, National Highway Institute, Federal Highway Administration, April 1993.
7. *Evaluating Scour at Bridges: Second Edition*, Richardson, E.V., L.J. Harrison, J.R. Richardson, and S.R. Davis, U.S. Department of Transportation, Federal Highway Administration, Hydraulic Engineering Circular No. 18, Publication No. FHWA-IP-90-017, Revised April 1993.
8. *Highways in the River Environment: Participant Notebook*, Richardson, E.V., D.B. Simons, and P.Y. Julien, NHI Course No. 13010, National Highway Institute, Federal Highway Administration, McLean, Virginia 1990.

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: williams field road

Comment: 100-yr;bottom elev.=1312.1;ws elev=1325.1

Solve For Depth

Given Input Data:

Bottom Width.....	37.10 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.013
Channel Slope....	0.0010 ft/ft
Discharge.....	6500.00 cfs

Computed Results:

Depth.....	9.24 ft
Velocity.....	12.65 fps
Flow Area.....	513.68 sf
Flow Top Width...	74.07 ft
Wetted Perimeter.	78.43 ft
Critical Depth...	8.40 ft
Critical Slope...	0.0014 ft/ft
Froude Number....	0.85 (flow is Subcritical)

Trapezoidal Channel Analysis & Design
Open Channel - Uniform flow

Worksheet Name: williams field road5

Comment: 500-yr;bottom el=1312.1;ws elev=1326.4

Solve For Depth

Given Input Data:

Bottom Width.....	37.10 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope.	2.00:1 (H:V)
Manning's n.....	0.013
Channel Slope....	0.0010 ft/ft
Discharge.....	7800.00 cfs

Computed Results:

Depth.....	10.18 ft
Velocity.....	13.33 fps
Flow Area.....	585.18 sf
Flow Top Width...	77.83 ft
Wetted Perimeter.	82.64 ft
Critical Depth...	9.33 ft
Critical Slope...	0.0014 ft/ft
Froude Number....	0.86 (flow is Subcritical)

**MARYLAND SHA CODING GUIDE FOR ITEM 113
SCOUR CRITICAL BRIDGES**

CODE		DESCRIPTION
1ST DIGIT	2ND DIGIT	
N	-	BRIDGE NOT OVER WATERWAY
9	-	BRIDGE FOUNDATIONS (INCLUDING PILES) WELL ABOVE FLOOD WATER ELEVATIONS (SEE NOTE 1)
8	P	BRIDGE IS A STRUCTURE WITH A FULL LENGTH PAVED BOTTOM
8	L	BRIDGE HAS BEEN <u>EVALUATED/ASSESSED</u> IN THE FIELD AND OFFICE AS A LOW RISK STRUCTURE; NO FURTHER STUDY IS PLANNED
7	-	COUNTERMEASURES HAVE BEEN INSTALLED SINCE THE ORIGINAL CONSTRUCTION TO CORRECT A PROBLEM WITH SCOUR; BRIDGE IS NO LONGER SCOUR CRITICAL
6	-	BRIDGE HAS NOT BEEN EVALUATED FOR SCOUR
6	R	BRIDGE IS SCHEDULED FOR MAJOR REHABILITATION OR REPLACEMENT WITHIN THE NEXT 5 YEARS; THE SCOUR STUDY IS DEFERRED TO THE LOCATION/DESIGN PHASE OF THE BRIDGE PROJECT
5	T	TIDAL FLOW PREDOMINATES FOR WORST SCOUR CONDITIONS; THE ITEM 113 RATING IS DEFERRED WHERE THERE IS NO INDICATION OF SEVERE SCOUR CONDITIONS
5	U	THE BRIDGE FOUNDATIONS ARE UNKNOWN. THE BRIDGE SITE CONDITIONS HAVE BEEN <u>EVALUATED/ASSESSED</u> WITH CURSORY STUDY IN THE FIELD AND OFFICE AND THE RISK OF POTENTIAL DAMAGE FROM SCOUR IS JUDGED TO BE MODERATE OR MILD. STRUCTURE HAS NO HISTORY OF SCOUR PROBLEMS. FURTHER EVALUATION IS DEFERRED. (SEE NOTE 1)
5	-	A DETAILED SCOUR STUDY (ANALYSIS) HAS BEEN MADE AND THE STRUCTURE IS RATED AS STABLE.
4	-	BRIDGE FOUNDATIONS DETERMINED TO BE STABLE ON THE BASIS OF A FIELD AND OFFICE SCOUR EVALUATION OR ANALYSIS; BRIDGE INSPECTION REVEALS THAT ACTION IS REQUIRED TO PROTECT EXPOSED PILES FROM EFFECTS OF ADDITIONAL EROSION AND CORROSION

3	A	BRIDGE IS RATED AS SCOUR CRITICAL ON THE BASIS OF A FIELD AND OFFICE EVALUATION OR AN ANALYSIS; THE POTENTIAL RISK IS JUDGED TO BE MILD, AND NO ACTIONS ARE PLANNED OTHER THAN MONITORING.
3	B	BRIDGE IS RATED AS SCOUR CRITICAL ON THE BASIS OF A FIELD AND OFFICE EVALUATION OR AN ANALYSIS; THE POTENTIAL RISK IS JUDGED TO BE MODERATE AND NO ACTIONS ARE PLANNED OTHER THAN MONITORING.
3	C	BRIDGE IS RATED AS SCOUR CRITICAL ON THE BASIS OF A FIELD AND OFFICE EVALUATION OR AN ANALYSIS; THE POTENTIAL RISK IS JUDGED TO BE SEVERE AND SCOUR COUNTERMEASURES ARE PLANNED. MONITORING IS TO BE UTILIZED UNTIL SCOUR COUNTERMEASURES ARE IN PLACE.
2	-	BRIDGE IS SCOUR CRITICAL; FIELD REVIEW INDICATES THAT EXTENSIVE SCOUR HAS OCCURRED AT A BRIDGE FOUNDATION. IMMEDIATE ACTION IS REQUIRED TO PROVIDE SCOUR COUNTERMEASURES.
1	-	BRIDGE IS SCOUR CRITICAL; FIELD REVIEW INDICATES THAT FAILURE OF PIERS/ABUTMENTS IS IMMINENT. BRIDGE IS CLOSED TO TRAFFIC.
0	-	BRIDGE IS SCOUR CRITICAL; BRIDGE HAS FAILED AND IS CLOSED TO TRAFFIC.

NOTE 1: IF THE RISK OF DAMAGE FROM POTENTIAL OR ACTUAL SCOUR DAMAGE IS JUDGED TO BE SEVERE, ADDITIONAL SCOUR STUDIES WILL BE UNDERTAKEN INCLUDING BORINGS OR OTHER MEANS OF SUBSURFACE EXPLORATION TO ASCERTAIN FOUNDATION AND SUPPORTING SOIL CONDITIONS.

**STRUCTURES INVENTORY AND APPRAISAL
(NATIONAL BRIDGE INVENTORY SYSTEM)**

SCREENING PROCEDURE FOR
RATING BRIDGES FOR ITEM 113, SCOUR CRITICAL BRIDGE

AGENCY: PARSONS BRINCKERHOFF

BRIDGE NO.: 8644

ROUTE: WILLIAMS FIELD ROAD

STREAM: EAST MARICOPA FLOODWAY

SCREEN 1 - BRIDGE INSPECTOR'S SCREEN

EVALUATOR'S NAME: _____

DATE: 4/17/95

RECOMMENDATION: RATE BRIDGE: 9

GO TO SCREEN 2

CRITERIA	RESPONSE		ITEM 113 RATING
	YES	NO	
1-1. BRIDGE OVER WATERWAY?	CONTINUE	RATE BRIDGE	N
1-2. BRIDGE INSPECTION REPORTS INDICATE:			
• BRIDGE FAILED/CLOSED DUE TO SCOUR	RATE BRIDGE	CONTINUE	0
• BRIDGE CLOSED; FAILURE IMMINENT DUE TO SCOUR	RATE BRIDGE	CONTINUE	1
• FOOTING EXPOSED; PROMPT ACTION REQUIRED TO PROTECT BRIDGE FROM SCOUR	NOTIFY OWNER; RATE BR.	CONTINUE	2
• SCOUR HOLES HAVE FORMED TO DEPTHS NEAR BOTTOM OF SPREAD FOOTINGS	NOTIFY OWNER; RATE BR.	CONTINUE	2
• EXPOSED PILES REQUIRE PROTECTION	NOTIFY OWNER; RATE BR.	CONTINUE	4
1-3. BRIDGE IS A CULVERT WITH A PAVED INVERT	RATE BRIDGE	CONTINUE	8C
1-4. TIDAL FLOWS GOVERN BRIDGE HYDRAULICS FOR WORST SCOUR CONDITIONS	RATE BRIDGE (INTERIM RATING)	CONTINUE	6T

1-5. BRIDGE IS ON THE 5 YEAR CAPITAL REPLACE. PROGRAM	RATE BRIDGE	CONTINUE	6R
1-6 BRIDGE IS ON THE 2 YEAR PROGRAM FOR REMEDIAL WORK	RATE BRIDGE	CONTINUE SCREEN 2	6R

SCOUR EVALUATION FORM FOR
RATING BRIDGES FOR ITEM 113

SCREEN 2 - BRIDGE ENGINEER'S SCREEN

Agency: PARSONS BRINCKERHOFF

Date/Place of Meeting: APRIL, 17, 1995; WILLIAMS FIELD ROAD BRIDGE

Attendees:

Bridge No.: 8644 Date Built on Bridge Plans: 12/81

Description of Bridge/Bridge Type: REINFORCED CONCRETE CONTINUOUS; SPAN
ARRANGEMENT: (50') - (50')

Route: WILLIAMS FIELD ROAD Water Course: EAST MARICOPA FLOODWAY

Underclearance at thalweg (ft): + -15.9

Elevation of stream thalweg (ft): + -1312.1

Normal water elevation (ft): N/A

Reported high water elevation: 1321.7

Description of flood: 100-year; 6500 cfs

Description of approach and "getaway" conditions: CONCRETE LINED

Description of bed load: CONCRETE LOOKS GOOD.

Condition of banks; evidence of lateral movement, degradation or
aggradation: BANKS ARE COVERED BY CONCRETE, NO EVIDENCE OF EROSION.

Overtopping Q (cfs)/Recurrence interval: > Q500 cfs/

Stage rise to overtopping: _____

Depth/velocity through bridge at overtopping: > Q500

Confluences: N/A

BRIDGE NUMBER 8644

Description of flood plain: WIDE FLAT FLOODPLAIN WITH SPARSE VEGETATION

Item 321 rating: 8
Item 71 rating: 9
Item 61 rating: 9

ABUTMENTS		
	LEFT	RIGHT
TYPE	<i>SPILL THROUGH</i>	<i>SPILL THROUGH</i>
SPREAD/PILES	<i>SPREAD</i>	<i>SPREAD</i>
EXPOSED FOOTINGS	<i>NO</i>	<i>NO</i>
FOOTING ELEVATION	<i>1310</i>	<i>1310</i>
ROCK ELEVATION AND DESCRIPTION	<i>N/A</i>	<i>N/A</i>
SOIL ELEVATION AND DESCRIPTION	<i>1327' Concrete-lined</i>	<i>1327' Concrete-lined</i>
ANGLE OF ATTACK OF FLOOD FLOWS ON ABUTMENT	<i>0</i>	<i>0</i>
DESCRIPTION OF RIPRAP OR OTHER SCOUR PROTECTION	<i>CONCRETE LINED</i>	<i>CONCRETE LINED</i>
ITEM 113 RATING	<i>9</i>	<i>9</i>
GENERAL COMMENTS:		
1.) <u>ABUTMENTS APPEAR IN EXCELLENT CONDITION AND WELL PROTECTED WITH CONCRETE.</u>		

BRIDGE NUMBER 8644

PIERS						
	1	2	3	4	5	6
CHANNEL/FLOODPLAIN	CH.					
PIER WIDTH	24" DIA					
SPREAD/PILES	P					
EXPOSED FOOTINGS	NO					
FOOTING HEIGHT	N/A					
FOOTING ELEVATION AND WIDTH	1306.8					
ROCK ELEVATION/TYPE	N/A					
ELEVATION OF TOP OF GROUND OR CHANNEL; SOIL TYPE	1312.1 CONCRETE LINED					
ANGLE OF ATTACK (DEG)	0					
RIPRAP OR OTHER PROTECTION	CONCRETE LINED					
ITEM 113 RATING	9					

General Comments/Assessment:

- 1.) CONCRETE LINED; NO POSSIBILITY OF SCOUR

Recommended Item 113 and Risk Ratings:

BRIDGE NUMBER 8644

SCREEN 3 - HYDRAULIC ENGINEER'S SCREEN

NAME: WILLIAMS FIELD ROAD

DATE: 4/17/95

AGENCY: PARSONS BRINCKERHOFF

THE RECOMMENDED ITEM 113 RATING FOR THIS STRUCTURE IS: 8P

THIS RECOMMENDATION IS BASED ON:

A SCOUR EVALUATION

A FULL OR DETAILED SCOUR ANALYSIS

THE RECOMMENDATION HAS BEEN APPROPRIATELY COORDINATED WITH THE BRIDGE/FOUNDATION/GEOTECHNICAL ENGINEERS WHO HAVE PREPARED SCREENS 1, 2 AND 4.

COMMENTS ON SCREEN 3:

- USE OF SCREEN 3 IS RECOMMENDED WHEN THERE ARE QUESTIONS OR ISSUES WHICH HAVE NOT BEEN FULLY ADDRESSED DURING THE ITEM 113 BRIDGE SCOUR EVALUATION UTILIZING SCREEN 2.
- AS A FIRST STEP, THE HYDRAULIC ENGINEER IS ENCOURAGED TO REVIEW APPROPRIATE AVAILABLE INFORMATION AND TO INSPECT THE BRIDGE SITE TO DETERMINE IF ADEQUATE INFORMATION CAN BE DEVELOPED TO RESPOND TO THE ISSUES ON SCOUR RAISED IN THE SCREEN 2 REVIEW WITHOUT CONDUCTING A FULL OR DETAILED SCOUR ANALYSIS.
- SINCE THE ITEM 113 RATING REQUIRES THE EVALUATION OF THE STABILITY OF THE STRUCTURE UNDER WORST CASE SCOUR CONDITIONS, THE HYDRAULIC ENGINEER WILL GENERALLY NEED TO CONDUCT THE EVALUATION/ANALYSIS IN COOPERATION WITH A FOUNDATION/GEOTECHNICAL ENGINEER, AND SCREEN 4 SHOULD BE PREPARED AS APPROPRIATE.
- THE HYDRAULIC ENGINEER SHOULD DOCUMENT THE BASIS FOR HIS OR HER RECOMMENDATION OF THE ANTICIPATED EXTENT OF SCOUR TO BE EXPECTED AT THE BRIDGE. SCOUR ANALYSES SHOULD BE BASED ON THE PROCEDURES SET FORTH IN THE MARYLAND SHA PPM ON SCOUR EVALUATION OF BRIDGES DATED 6/17/91 AND IN THE FHWA HYDRAULIC ENGINEERING CIRCULARS 18 AND 20.

BRIDGE NUMBER 8644

SCREEN 4 - FOUNDATION/GEOTECHNICAL ENGINEER'S SCREEN

NAME: WILLIAMS FIELD ROAD Date: 4/17/95

AGENCY: AGRA - EARTH AND ENVIRONMENTAL INC.

THE RECOMMENDED ITEM 113 RATING FOR THIS STRUCTURE IS: 8P

THIS RECOMMENDATION IS BASED ON:

A SCOUR EVALUATION

A FULL OR DETAILED SCOUR AND STRUCTURAL STABILITY ANALYSIS

THE RECOMMENDATION HAS BEEN APPROPRIATELY COORDINATED WITH THE BRIDGE AND HYDRAULIC ENGINEERS WHO HAVE PREPARED SCREENS 1, 2 AND 3.

COMMENTS ON SCREEN 4:

- USE OF SCREEN 4 IS RECOMMENDED WHEN THERE ARE QUESTIONS OR ISSUES WHICH HAVE NOT BEEN FULLY ADDRESSED DURING THE ITEM 113 BRIDGE SCOUR EVALUATION UTILIZING SCREEN 2.
- AS A FIRST STEP, THE FOUNDATION/GEOTECHNICAL ENGINEER IS ENCOURAGED TO REVIEW APPROPRIATE AVAILABLE INFORMATION AND TO INSPECT THE BRIDGE SITE TO DETERMINE IF ADEQUATE INFORMATION CAN BE DEVELOPED TO RESPOND TO THE ISSUES ON SCOUR RAISED IN THE SCREEN 2 REVIEW WITHOUT CONDUCTING A FULL OR DETAILED SCOUR ANALYSIS.
- SINCE THE ITEM 113 RATING REQUIRES THE EVALUATION OF THE STABILITY OF THE STRUCTURE IN ACCORDANCE WITH AASHTO STABILITY CRITERIA UNDER WORST CASE SCOUR CONDITIONS, THE FOUNDATION/GEOTECHNICAL ENGINEER WILL GENERALLY NEED TO CONDUCT THE EVALUATION/ANALYSIS IN COOPERATION WITH A HYDRAULICS ENGINEER TO ADDRESS PERTINENT SCREEN ISSUES.
- THE FOUNDATION/GEOTECHNICAL ENGINEER SHOULD DOCUMENT THE BASIS FOR HIS OR HER RECOMMENDATION REGARDING THE STABILITY OF THE BRIDGE FOR THE ANTICIPATED WORST CASE SCOUR CONDITIONS AND THE EXTENT OF SCOUR TO BE EXPECTED AT THE BRIDGE. PARTICULAR ATTENTION SHOULD BE GIVEN TO:
 - FOUNDATIONS ON ROCK AND THE DEGREE TO WHICH THE ROCK IS SCOUR- RESISTANT.
 - THE STABILITY OF FOUNDATIONS ON PILES, IF THE PILING CAN BE EXPECTED TO BE EXPOSED BY SCOUR.
 - EVALUATION OF EXISTING INFORMATION TO DETERMINE OR ESTIMATE FOUNDATION CONDITIONS WHEN THE BRIDGE PLAN DETAILS ARE INCOMPLETE.

BRIDGE NUMBER 8644

REVIEW BY INTERDISCIPLINARY SCOUR EVALUATION TEAM

DATE: _____ ITEM 113 RATING: _____

RISK RATING: _____

PROPOSED ACTIONS:

- 1.) _____
- _____
- _____

Notes:

BRIDGE NUMBER 8644

SCREEN 5 - BRIDGE MANAGER'S SCREEN

NAME/SIGNATURE PARSONS BRINCKERHOFF DATE: 4/17/95

I HAVE REVIEWED SCREENS 1-4 AND CONCUR WITH THE FOLLOWING RATINGS:

- ITEM 113 RATING: SP DESCRIPTION:
- RISK RATING (FOR ITEM 113 RATING CODES 3 AND 6): N/A

COMMENTS ON SCREEN 5:

1. THE CODES SET FORTH IN TABLE 1, ARE TO BE USED IN RATING BRIDGES FOR ITEM 113.
2. EACH BRIDGE MANAGER/OWNER NEEDS TO DEVELOP AN ACTION PLAN FOR SCOUR CRITICAL BRIDGES (SEE FHWA HEC- 18, CHAPTER 7) THIS PLAN SHOULD ADDRESS MONITORING OF SCOUR CRITICAL BRIDGES DURING HIGH WATER AND SCHEDULING AND INSTALLATION OF SCOUR COUNTERMEASURES WHERE DETERMINED TO BE NECESSARY. IT IS RECOMMENDED THAT SCOUR CRITICAL BRIDGES BE PRIORITIZED (ACCORDING TO THE ENGINEER'S JUDGMENT AS TO THE RELATIVE RISK OF SUSTAINING DAMAGE DUE TO SCOUR IN A FUTURE FLOOD) AS SEVERE (3), MODERATE (2) OR MILD (1). BRIDGES CODED AS 6 U SHOULD ALSO BE GIVEN A RISK RATING AS DESCRIBED IN TABLE 1.