

BSDMS Summary Report

22 Red River at S.R. 3032 near Shreveport, LA, W.B.

Site Location:

Site ID: 22

Site Name: Red River at S.R. 3032 near Shreveport, LA, W.B.

County: Bossier

Nearest City: Shreveport

State: LA

Latitude: 315711

Longitude: 934238

USGS Station ID:

Route Number: 3032

Route Class: State

Service Level: Mainline

Route Direction: West

Highway Mile Point:

Stream Name: Red River

River Mile:

Contact:
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Publication:

Site Description:

The S.R. 3032 bridge over the Red River is referred to as the Barksdale Bridge and connects Shreveport and Bossier City. The flood plain is of low relief with numerous oxbow lakes. However, at the bridge the flood plain is narrowed by levees on both sides. The site consists of two bridges--the upstream bridge is the westbound lane of S.R. 3032. The river is straight for more than 10 channel widths upstream and downstream from this bridge. No bed-material samples were available for this site, so samples collected during the same event at Coushatta, located about 50 miles downstream, will be used.

Bed-Material Sample Numbers:

	Left side	Center	Right side
Above bridge	8703	8704	8705
Below bridge	8706	8707	8708

This entry is for the upstream or westbound bridge.

The stage and discharge hydrographs are from the Corps of Engineers gage at Shreveport, which is located about 2 miles upstream from the bridge. The peak stages reported are at the bridge. The drainage area reported is from the Corps of Engineers gage at Shreveport.

Approach and exit sections were surveyed on 5-18-90 using a Raytheon fathometer. The survey was from tree-line to tree-line. However, these cross sections appear to be 8-10 ft higher than the cross sections collected at the bridge and low-water cross sections taken from 1968-69

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and 1980-81 hydrographic surveys published by the U.S. Army Corps of Engineers, New Orleans District. However, the elevation of the low-water sections did agree reasonably well with the ambient bed elevation of the cross sections collected at the bridge during the flood. Because of these discrepancies associated with the elevation of the approach and exit sections, no contraction scour is reported based on these data. The shapes of the approach and exit sections were used to assist in the determination of the ambient bed for the local scour reported herein. The approach and exit sections are included as part of this data set because of their use in determining the ambient bed, however, their usefulness for other purposes is questionable based on the information presented above.

Elevation Reference

Datum: MSL

MSL (ft):

Description of Reference Elevation:

R.P. #1 set on upstream (westbound) bridge, on upstream side of bridge, chiseled square on top of handrail 40 ft west (rt) of centerline of pier #4, which is at Hwy Plans sta 103+48, 1340 ft from left abutment.

Elevation for R.P. #1 was determined by taping up:

Finished grade centerline elevation at piers 3 and 4 = 226.4 ft (msl)

Taped up centerline to wheel guard (0.75) to concrete handrail (2.05)

Elevation at R.P. #1 = 229.2 = 226.4 + 0.75 + 2.05

Stream Data

Drainage Area (sq mi):	60700	Floodplain Width:	Narrow
Slope in Vicinity(ft/ft):	0.0001	Natural Levees:	Little
Flow Impact:	Straight	Apparent Incision:	None
Channel Evolution	Restabilization	Channel Boundary:	Alluvial
Armoring:	None	Banks Tree Cover:	Low
Debris Frequency:	Rare	Sinuosity:	Straight
Debris Effect:	None	Braiding:	None
Stream Size:	Wide	Anabranching:	None
Flow Habit:	Perennial	Bars:	Wide
Bed Material:	Sand	Stream Width Variability:	Random
Valley Setting:	Low		

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Roughness Data

Manning's n Values

Left Overbank Channel Right Overbank

High:

Typical

Low:

Bed Material

Measurement Number	Yr	Mo	Dy	Sampler	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)	SP	Shape	Cohesion
8703	1990	5	16	SHIPEK	0.55	0.4	0.28	0.2	2.65		Non-Cohesive
8704	1990	5	16	SHIPEK	0.48	0.4	0.32	0.22	2.65		Non-Cohesive
8705	1990	5	16	SHIPEK	0.6	0.4	0.27	0.18	2.65		Non-Cohesive
8706	1990	5	16	SHIPEK	0.6	0.5	0.39	0.28	2.65		Unknown
8707	1990	5	16	SHIPEK	0.34	0.3	0.22	0.17	2.65		Non-Cohesive
8708	1990	5	16	SHIPEK	0.24	0.2	0.17	0.12	2.65		Non-Cohesive

Bed Material Comments

Measurement No: 8703

No bed-material samples were available for this site, so samples collected during the same event at Coushatta, located about 50 miles downstream, will be used.

Bed-Material Sample Numbers:

	Left side	Center	Right side
Above bridge	8703	8704	8705
Below bridge	8706	8707	8708

Measurement No: 8704

No bed-material samples were available for this site, so samples collected during the same event at Coushatta, located about 50 miles downstream, will be used.

Bed-Material Sample Numbers:

	Left side	Center	Right side
Above bridge	8703	8704	8705
Below bridge	8706	8707	8708

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Measurement No: 8705

No bed-material samples were available for this site, so samples collected during the same event at Coushatta, located about 50 miles downstream, will be used.

Bed-Material Sample Numbers:

	Left side	Center	Right side
Above bridge	8703	8704	8705
Below bridge	8706	8707	8708

Measurement No: 8706

No bed-material samples were available for this site, so samples collected during the same event at Coushatta, located about 50 miles downstream, will be used.

Bed-Material Sample Numbers:

	Left side	Center	Right side
Above bridge	8703	8704	8705
Below bridge	8706	8707	8708

Measurement No: 8707

No bed-material samples were available for this site, so samples collected during the same event at Coushatta, located about 50 miles downstream, will be used.

Bed-Material Sample Numbers:

	Left side	Center	Right side
Above bridge	8703	8704	8705
Below bridge	8706	8707	8708

Measurement No: 8708

Bed-Material Sample Numbers:

	Left side	Center	Right side
Above bridge	8703	8704	8705
Below bridge	8706	8707	8708

Bridge Data

Structure No:

Length(ft): 2691.62

Width(ft): 32

Number of Spans: 8

Vertical Configuration: Curvilinear

Low Chord Elev (ft): 196

Upper Chord Elev (ft): 212.4

Overtopping Elev (ft): 175

Skew (degrees): 0

Guide Banks: None

Waterway Classification: Main

Year Built:

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Avg Daily Traffic:

Plans on File: No

Parallel Bridges Yes

Upstream/Downstream: Upstream

Continuous Abutment: No

Distance Between Centerlines: 150

Distance Between Pier Faces: 110

Bridge Description:

This is the upstream bridge of two parallel bridges comprising the S.R. 3032 crossing of the Red River near Shreveport. The bridge consists of 25 spans, 12 small piers on the left-overbank area, 6 larger piers from the left-overbank area through the main channel to the right-overbank area, and 6 small piers on the right-overbank area. Only the 6 large piers will be addressed in this database entry. The coordinate-system origin is located at the upstream corner of the left abutment. The x-axis is along the upstream face of the bridge with y increasing in the upstream direction.

Abutment Data

Left Station: 0

Right Station: 2689.54

Left Skew (deg): 0

Right Skew (deg) 0

Left Abutment Length (ft): 32

Right Abutment Length (ft) 32

Left Abutment to Channel Bank (ft): 825

Right Abutment to Channel Bank (ft): 400

Left Abutment Protection:

Right Abutment Protection

Contracted Opening Type: III

Embankment Skew (deg): 0

Embankment Slope (ft/ft): 3

Abutment Slope (ft/ft) 2

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Wingwalls: No

Wingwall Angle (deg): 0

Pier Data

Pier ID	Bridge Station(ft)	Alignment	Highway Station	PierType	# Of Piles	Pile Spacing(ft)
1	2267.61	0	9417.105	Single	0	
2	2014.72	0	9670	Single	0	
3	1712.42	0	9972.3	Single	0	
4	1337.22	0	10350	Single	0	
5	1034.72	0	10650	Single	0	
6	781.83	0	10900	Single	0	

Pier ID	Pier Width(ft)	Pier Shape	Shape Factor	Length(ft)	Protection	Foundation
1	14	Round		40	None	Poured
2	14	Round		40	None	Poured
3	14	Round		40	None	Poured
4	14	Round		40	None	Poured
5	14	Round		40	None	Poured
6	14	Round		40	None	Poured

Pier ID	Top Elevation(ft)	Bottom Elevation(ft)	Foot or Pile Cap Width(ft)	Cap Shape	Pile Tip Elevation(ft)
1	110	80	26	Round	
2	110	80	26	Round	
3	110	80	30	Round	
4	110	80	30	Round	
5	110	80	26	Round	
6	110	80	26	Round	

Pier Description

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Pier ID 1

Pier 1 is located at the edge of top bank. The pier is 12 ft wide at the top and 14 ft wide at the bottom with the change occurring at elevation 165 ft. The foundation is a caisson with a minimum elevation of 80 ft.

Pier ID 2

Pier 2 is located on a lower terrace above the low-water channel. The pier is 12 ft wide at the top and 14 ft wide at the bottom with the change occurring at elevation 165 ft. The foundation is a caisson with a minimum elevation of 80 ft.

Pier ID 3

Pier 3 is located in the main channel. The pier is 12 ft wide at the top and 14 ft wide at the bottom with the change occurring at elevation 165 ft. The foundation is a caisson with a minimum elevation of 80 ft.

Pier ID 4

Pier 4 is located in the main channel. The pier is 12 ft wide at the top and 14 ft wide at the bottom with the change occurring at elevation 165 ft. The foundation is a caisson with a minimum elevation of 80 ft.

Pier ID 5

Pier 5 is located in the main channel at the left edge. The pier is 12 ft wide at the top and 14 ft wide at the bottom with the change occurring at elevation 165 ft. The foundation is a caisson with a minimum elevation of 80 ft.

Pier ID 6

Pier 6 is located on the top bank. The pier is 12 ft wide at the top and 14 ft wide at the bottom with the change occurring at elevation 165 ft. The foundation is a caisson with a minimum elevation of 80 ft.

Pier Scour Data

Pier ID	Date	Time	USOrDS
4	5/17/90	13:30	Upstream

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4	5/17/90	15:10	Downstream
4	5/19/90	10:25	Upstream
4	5/19/90	12:55	Downstream
4	5/22/90	8:55	Downstream
4	5/22/90	10:30	Upstream
5	5/17/90	13:30	Upstream
5	5/17/90	15:10	Downstream
5	5/19/90	10:25	Upstream
5	5/19/90	12:55	Downstream
5	5/22/90	8:55	Downstream
5	5/22/90	10:30	Upstream

Pier ID	Scour Depth	Accuracy (ft)	Side Slope (ft/ft)	TopWidth (ft)	Apprch Vel (ft/s)	Apprch Depth(ft)	Effective Pier Width	Skew to Flow(deg)
4	14.4	1	4	133	8.2	38.3	14	0
4	12.9	2	6.6	181	8.2	38.5	14	0
4	10.8	2	6.6	136	8.4	35.5	14	0
4	6.8	1	11	173	8.4	37	14	0
4	13.7	1	4.9	138	6.9	30.4	14	0
4	12.6	1	6	117	6.9	30.6	14	0
5	14.9	1	3.3	125	9.8	39.5	14	0
5	15.6	2	3.3	234	9.8	38.5	14	0
5	18.1	1	4	218	10.4	36.7	14	0
5	16.9	1	6.7	235	10.4	38.3	14	0
5	18.5	2	5.9	210	9.5	31.6	14	0
5	12.3	1	5	163	9.5	31.8	14	0

PierID	Sediment Transport	Bed Material	BedForm	Trough (ft)	Crest (ft)	Sigma	Debris Effects
4	Live-bed	Non-cohesive	Unknown			1.4	Insignificant
4	Live-bed	Non-cohesive	Unknown			1.4	Insignificant
4	Live-bed	Non-cohesive	Unknown			1.4	Insignificant
4	Live-bed	Non-cohesive	Unknown			1.4	Insignificant
4	Live-bed	Non-cohesive	Unknown			1.4	Insignificant
4	Live-bed	Non-cohesive	Unknown			1.4	Insignificant
5	Live-bed	Non-cohesive	Unknown			1.4	Insignificant
5	Live-bed	Non-cohesive	Unknown			1.4	Insignificant
5	Live-bed	Non-cohesive	Unknown			1.4	Insignificant

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5	Live-bed	Non-cohesive	Unknown	1.4	Insignificant
5	Live-bed	Non-cohesive	Unknown	1.4	Insignificant
5	Live-bed	Non-cohesive	Unknown	1.4	Insignificant

PierID	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)
4	0.5	0.4	0.3	0.2
4	0.5	0.4	0.3	0.2
4	0.5	0.4	0.3	0.2
4	0.5	0.4	0.3	0.2
4	0.5	0.4	0.3	0.2
4	0.5	0.4	0.3	0.2
5	0.5	0.4	0.3	0.2
5	0.5	0.4	0.3	0.2
5	0.5	0.4	0.3	0.2
5	0.5	0.4	0.3	0.2
5	0.5	0.4	0.3	0.2
5	0.5	0.4	0.3	0.2

Pier Scour Comments

Pier ID 4 **Time:** 13:30 **US/DS:** Upstream

Velocity reported as approach velocity was actually measured at the downstream side of this bridge. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

Pier ID 4 **Time:** 15:10 **US/DS:** Downstream

Velocity reported as approach velocity was actually measured at the downstream side of this bridge. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

Pier ID 4 **Time:** 10:25 **US/DS:** Upstream

Velocity reported as approach velocity was actually measured at the upstream side of this bridge on 5-18-90. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

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Pier ID 4 **Time:** 12:55 **US/DS:** Downstream

Velocity reported as approach velocity was actually measured on the upstream side of this bridge on 5-18-90. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

Pier ID 4 **Time:** 8:55 **US/DS:** Downstream

Velocity reported as approach velocity was actually measured on 5-23-90, but no location was reported. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

Pier ID 4 **Time:** 10:30 **US/DS:** Upstream

Velocity reported as approach velocity was actually measured on 5-23-90, but no location was reported. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

Pier ID 5 **Time:** 13:30 **US/DS:** Upstream

Velocity reported as approach velocity was actually measured at the downstream side of this bridge. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

Pier ID 5 **Time:** 15:10 **US/DS:** Downstream

Velocity reported as approach velocity was actually measured at the downstream side of this bridge. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

Pier ID 5 **Time:** 10:25 **US/DS:** Upstream

Velocity reported as approach velocity was actually measured at the upstream side of this bridge on 5-18-90. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

Pier ID 5 **Time:** 12:55 **US/DS:** Downstream

Velocity reported as approach velocity was actually measured at the upstream side of this bridge on 5-18-90. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

Pier ID 5 **Time:** 8:55 **US/DS:** Downstream

Velocity reported as approach velocity was actually measured on 5-23-90, but no location was recorded. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

Pier ID 5 **Time:** 10:30 **US/DS:** Upstream

Velocity reported as approach velocity was actually measured on 5-23-90, but no location was recorded. No sediment samples were collected--sediment sizes were estimated from the Coushatta data.

Abutment Scour

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ContractionScour

Stage and Discharge Data

Peak Discharge					Flow (cfs)	Qacc	Peak Stage					Stage (ft)	Water Temp (C)	Return Period(yr)
year	mo	dy	hr	mi			year	mo	dy	hr	mi			
					0	none	1990	5	19		0	159.9		
					0	none	1990	5	17		0	159.9		
					0	none	1990	5	22		0	156		

Hydrograph

Hydrograph Number	Year	Month	Day	Hr	Min	Sec	Stage(ft)	Discharge (cfs)
1	1990	5	5	0	0	0		130520
1	1990	5	6	0	0	0		144865
1	1990	5	7	0	0	0		156250
1	1990	5	8	0	0	0		169615
1	1990	5	9	0	0	0		197665

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1	1990	5	10	0	0	0	212350
1	1990	5	11	0	0	0	233470
1	1990	5	13	0	0	0	276700
1	1990	5	14	0	0	0	289900
1	1990	5	15	0	0	0	296665
1	1990	5	16	0	0	0	292705
1	1990	5	17	0	0	0	285445
1	1990	5	18	0	0	0	269605
1	1990	5	19	0	0	0	244030
1	1990	5	20	0	0	0	220105
1	1990	5	21	0	0	0	204925
1	1990	5	22	0	0	0	194365
1	1990	5	24	0	0	0	181660
1	1990	5	25	0	0	0	176050
1	1990	5	26	0	0	0	171925
1	1990	5	27	0	0	0	171430
1	1990	5	28	0	0	0	172090
1	1990	5	29	0	0	0	171925
1	1990	5	30	0	0	0	169120
1	1990	5	31	0	0	0	167800
2	1990	5	5	0	0	0	155.4
2	1990	5	6	0	0	0	156.3
2	1990	5	7	0	0	0	157
2	1990	5	8	0	0	0	157.8
2	1990	5	9	0	0	0	159.5
2	1990	5	10	0	0	0	160.4
2	1990	5	11	0	0	0	161.4
2	1990	5	13	0	0	0	164.3
2	1990	5	14	0	0	0	165.1
2	1990	5	15	0	0	0	165.5
2	1990	5	16	0	0	0	165.3
2	1990	5	17	0	0	0	164.8
2	1990	5	18	0	0	0	163.9

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2	1990	5	19	0	0	0	162.3
2	1990	5	20	0	0	0	160.9
2	1990	5	22	0	0	0	159.3
2	1990	5	23	0	0	0	158.8
2	1990	5	24	0	0	0	158.5
2	1990	5	25	0	0	0	158.2
2	1990	5	26	0	0	0	157.9
2	1990	5	27	0	0	0	157.9
2	1990	5	28	0	0	0	158
2	1990	5	29	0	0	0	157.9
2	1990	5	30	0	0	0	157.8
2	1990	5	31	0	0	0	157.7

Supporting Files
