

# BSDMS Summary Report

21 Red River at S.R. 3032 near Shreveport, LA, E.B.

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## Site Location:

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**Site ID:** 21

**Site Name:** Red River at S.R. 3032 near Shreveport, LA, E.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:** East

**Highway Mile Point:**

**Stream Name:** Red River

**River Mile:**

**Contact:**  
Mark N. Landers  
U.S. Geological Survey, National  
Center  
12201 Sunrise Valley Dr., Mail  
Stop 415  
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22092  
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**Publication:**

## Site Description:

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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, and the downstream bridge is the eastbound 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 downstream or eastbound 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 are at the bridge. The drainage area is from the Shreveport gage. 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 and 1980-81 hydrographic surveys published by the U.S. Army Corps of

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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 shape 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. This is the downstream bridge of two parallel bridges. The velocities reported with the local-scour measurement are from measurements made at the upstream bridge. The piers at the two bridges are aligned, therefore the actual approach velocity for the downstream bridge may be less than the values reported, because of the effect of the piers of the upstream bridge.

## Elevation Reference

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**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

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

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Bed Material: Sand Stream Width Variability: Random  
Valley Setting: Low

## 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		Non-Cohesive
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

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: 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

**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**

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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## Bridge Data

**Structure No:**

**Length(ft):** 2691.72

**Width(ft):** 37

**Number of Spans:** 8

**Vertical Configuration:** Curvilinear

**Low Chord Elev (ft):** 196

**Upper Chord Elev (ft):** 212.4

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Overtopping Elev (ft): 174

Skew (degrees): 0

Guide Banks: None

Waterway Classification: Main

Year Built:

Avg Daily Traffic:

Plans on File: Yes

Parallel Bridges: Yes

Upstream/Downstream: Downstream

Continuous Abutment: No

Distance Between Centerlines: 150

Distance Between Pier Faces: 110

## Bridge Description:

This is the downstream bridge of two parallel bridges comprising the S.R. 3032 crossing of the Red River near Shreveport. The bridge consists of 25 spans, 6 small piers on the right overbank, 6 larger piers from on the right overbank through the main channel and onto the left overbank, and 12 small piers on the left overbank. Only the six large piers will be addressed in this database entry. The x-coordinate will be zero at the left abutment and increase from left to right across the stream. The y-coordinate will be zero at the upstream face of the bridge and increase in the upstream direction. The y-coordinate of the abutments were measured from a 1 inch = 100 ft drawing.

## Abutment Data

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Left Station: 0

Right Station: 2688.62

Left Skew (deg): 0

Right Skew (deg): 0

Left Abutment Length (ft): 37.2

Right Abutment Length (ft): 49.2

Left Abutment to Channel Bank (ft): 790

Right Abutment to Channel Bank (ft): 950

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Left Abutment Protection:

Right Abutment Protection

Contracted Opening Type: III

Embankment Skew (deg): 0

Embankment Slope (ft/ft):

Abutment Slope (ft/ft) 3

Wingwalls: No

Wingwall Angle (deg): 0

## Pier Data

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Pier ID	Bridge Station(ft)	Alignment	Highway Station	PierType	# Of Piles	Pile Spacing(ft)
1	2268.69	0	9423.105	Single	0	
2	2015.8	0	9676	Single	0	
3	1713.3	0	9978.5	Single	0	
4	1338.3	0	10350	Single	0	
5	1035.8	0	10660	Single	0	
6	782.91	0	10910	Single	0	

Pier ID	Pier Width(ft)	Pier Shape	Shape Factor	Length(ft)	Protection	Foundation
1	10	Round		38	Unknown	Piles
2	14	Round		42	Unknown	Piles
3	14	Sharp		54	Unknown	Piles
4	14	Sharp		54	None	Piles
5	14	Sharp		54	None	Piles
6	10	Round		38	Unknown	Piles

Pier ID	Top Elevation(ft)	Bottom Elevation(ft)	Foot or Pile Cap Width(ft)	Cap Shape	Pile Tip Elevation(ft)
1	146	140	20	Square	100

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2	146	140	20	Square	100
3	120	100	36	Other	80
4	117	100	38	Other	80
5	120	100	36	Other	80
6	146	140	20	Square	90

## Pier Description

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**Pier ID** 1

This round-nosed pier is on the upper right overbank area and rests on a square pile cap.

**Pier ID** 2

This round-nosed pier is on the upper right overbank area and rests on a square pile cap. The pier width is stepped.

**Pier ID** 3

The pier is located near the top bank on the lower right overbank area. The pier has an upper portion that is round nosed and a lower portion that is sharp nosed. The pier rests on a sharp-nosed pile cap. The pier width and footing width are stepped.

**Pier ID** 4

The pier is located in the main channel of the river. The pier has an upper portion that is round nosed and a lower portion that is sharp nosed. The pier rests on a sharp-nosed pile cap. The pier width and footing widths are stepped.

**Pier ID** 5

The pier is located in the main channel of the river. The pier has an upper portion that is round nosed and a lower portion that is sharp nosed. The pier rests on a sharp-nosed pile cap. The pier width and footing widths are stepped.

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Pier ID 6

The pier is on the left overbank near the edge of the main channel. The pier is round nosed and rests on a square pile cap.

## Pier Scour Data

Pier ID	Date	Time	USOrDS
4	5/19/90	14:20	Upstream
4	5/19/90	15:30	Downstream
4	5/22/90	13:35	Upstream
4	5/22/90	14:45	Downstream
5	5/19/90	14:20	Upstream
5	5/19/90	15:30	Downstream
5	5/22/90	13:35	Upstream
5	5/22/90	14:45	Downstream

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	12.2	2	3	172	8.4	38	14	0
4	3	1	9	121	8.4	40.2	14	0
4	11.4	1	4.5	119	6.9	30.9	14	0
4	3.7	1	9.7	95	6.9	30.8	14	0
5	22.9	2	4.7	279	10.4	39.2	14	0
5	17	2	5.9	221	10.4	41.4	14	0
5	25.1	1	4.2	281	9.5	32.1	14	0
5	18.5	1	5.9	264	9.5	32.1	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
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

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
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

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**Pier ID** 4                      **Time:** 14:20                      **US/DS:** Upstream

Approach velocity is from a measurement on 5-18-90 at the upstream side of the upstream bridge (westbound). No sediment samples were collected--sediment information was estimated from the Coughata data.

**Pier ID** 4                      **Time:** 15:30                      **US/DS:** Downstream

Approach velocity is from a measurement on 5-18-90 at the upstream side of the upstream bridge (westbound). No sediment samples were collected--sediment information was estimated from the Coughata data.

**Pier ID** 4                      **Time:** 13:35                      **US/DS:** Upstream

Approach velocity was taken from measurement on 5-23-90 (no location recorded). No sediment samples were collected--sediment information was estimated from the Coughatta data.

**Pier ID** 4                      **Time:** 14:45                      **US/DS:** Downstream

Approach velocity was taken from measurement on 5-23-90 (no location recorded). No sediment samples were collected--sediment information was estimated from the Coughatta data.

**Pier ID** 5                      **Time:** 14:20                      **US/DS:** Upstream

Approach velocity is from a measurement on 5-18-90 at the upstream side of the upstream bridge (westbound). No sediment samples were collected--sediment information was estimated from the Coughata data.



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## 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		

## 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
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	23	0	0	0		185620
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

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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	161.7
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
2	1990	5	19	0	0	0	162.3
2	1990	5	20	0	0	0	160.9
2	1990	5	21	0	0	0	159.9
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

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## Supporting Files

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