

# BSDMS Summary Report

52 Dan River at U.S. 501 at South Boston, VA

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## Site Location:

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**Site ID:** 52

**Site Name:** Dan River at U.S. 501 at South Boston, VA

**County:** City of South Boston

**Nearest City:** South Boston

**State:** VA

**Latitude:** 364137

**Longitude:** 785409

**USGS Station ID:** 2076000

**Route Number:** 501

**Route Class:** US

**Service Level:** Mainline

**Route Direction:** NA

**Highway Mile Point:**

**Stream Name:** Dan River

**River Mile:**

**Contact:**  
USGS  
3600 West Broad Street Suite 606  
Richmond, VA 23230  
(804) 771-2427

**Publication:**  
Hayes, Donald C., 1993, Site  
Selection and Collection of Bridge-  
Scour Data in Delaware, Maryland,  
and Virginia:  
U.S. Geological Survey  
Water-Resources Investigations  
Report 93-4017, 23 p.

## Site Description:

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This site is located at the U.S. 501 bridge crossing the Dan River at South Boston, Virginia. The 360-ft-long, four-lane bridge has two concrete piers spaced 121 ft apart. Each pier, 3.17 ft wide and 83 ft long, is a continuous web its entire length and is supported by pile footings. The bridge is very wide and includes wide walkways on both sides and a wide median. South Boston Police close the bridge when high water inundates the approach road from the south. Access to the bridge during floods is from the north. The bridge will probably not be overtopped. The water is normally too deep with too much suspended sediment for the channel bottom to be visible. Use of a fathometer and sounding weights is required to determine if the footers are exposed or if debris is located on the bottom. This site was eliminated from the scour-measurement program because of excessive floating and submerged debris.

## Elevation Reference

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**Datum:** MSL

**MSL (ft):**

# BSDMS Summary Report

52 Dan River at U.S. 501 at South Boston, VA

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## Description of Reference Elevation:

RM1 (gage)--Elevation 331.19 ft MSL, USGS tablet stamped 331 located in the northeast corner of north abutment pier of Norfolk and Western Railway bridge.  
RM1 (bridge)--Elevation 338.94 ft MSL, Chiseled square on downstream bridge at station 160.  
RM2 (bridge)--Elevation 335.04 ft MSL, Chiseled sq on top of downstream right abutment.  
RP1--Elevation 339.42 ft MSL, Chiseled notch with arrow on upstream side of bridge at station 169 (169 feet from left bank).  
RP2--Elevation 338.88 ft MSL, Chiseled notch with arrow on downstream side of bridge at station 160 (160 feet from left bank).

## Stream Data

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<b>Drainage Area</b> (sq mi):	2730	<b>Floodplain Width:</b>	Little
<b>Slope in</b> <b>Vicinity(ft/ft):</b>	0.00025	<b>Natural Levees:</b>	Little
<b>Flow Impact:</b>	Straight	<b>Apparent Incision:</b>	Unknown
<b>Channel Evolution</b>	Unknown	<b>Channel Boundary:</b>	Alluvial
<b>Armoring:</b>	Unknown	<b>Banks Tree Cover:</b>	Medium
<b>Debris Frequency:</b>	Frequent	<b>Sinuosity:</b>	Sinuuous
<b>Debris Effect:</b>	Local	<b>Braiding:</b>	None
<b>Stream Size:</b>	Medium	<b>Anabranching:</b>	None
<b>Flow Habit:</b>	Perennial	<b>Bars:</b>	Narrow
<b>Bed Material:</b>	Sand	<b>Stream Width</b> <b>Variability:</b>	Equiwidth
<b>Valley Setting:</b>	Low		

## Roughness Data

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### Manning's n Values

	Left Overbank	Channel	Right Overbank
<b>High:</b>			
<b>Typical</b>	0.08	0.03	0.04
<b>Low:</b>			

# BSDMS Summary Report

52 Dan River at U.S. 501 at South Boston, VA

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## Bed Material

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Measurement Number	Yr	Mo	Dy	Sampler	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)	SP	Shape	Cohesion
1	1991	6	18	BMH-60	0.77	0.5	0.28	0.14	2.65		Non-Cohesive

## Bed Material Comments

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Measurement No: 1

## Bridge Data

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Structure No: 1900

Length(ft): 360

Width(ft):

Number of Spans: 3

Vertical Configuration: Unknown

Low Chord Elev (ft): 327.23

Upper Chord Elev (ft): 330.65

Overtopping Elev (ft):

Skew (degrees): 0

Guide Banks: None

Waterway Classification: Main

Year Built: 1969

Avg Daily Traffic:

Plans on File: Yes

Parallel Bridges No

Upstream/Downstream: Unknown

Continuous Abutment: No

Distance Between Centerlines:

# BSDMS Summary Report

52 Dan River at U.S. 501 at South Boston, VA

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Distance Between Pier Faces:

## Bridge Description:

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## Abutment Data

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Left Station: 0  
Right Station: 240  
Left Skew (deg): 0  
Right Skew (deg) 0  
Left Abutment Length (ft): 96  
Right Abutment Length (ft) 140  
Left Abutment to Channel Bank (ft): 40  
Right Abutment to Channel Bank (ft): 100

Left Abutment Protection:

Right Abutment Protection

Contracted Opening Type: III  
Embankment Skew (deg): 0  
Embankment Slope (ft/ft): 2  
Abutment Slope (ft/ft) 2  
Wingwalls: No  
Wingwall Angle (deg): 0

## Pier Data

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Pier ID	Bridge Station(ft)	Alignment	Highway Station	PierType	# Of Piles	File Spacing(ft)
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# BSDMS Summary Report

52 Dan River at U.S. 501 at South Boston, VA

1	238	0	3273.08	Single
2	117	0	3153.08	Single

Pier ID	Pier Width(ft)	Pier Shape	Shape Factor	Length(ft)	Protection	Foundation
1	3.17	Round		83	Unknown	Piles
2	3.17	Round		83	Unknown	Piles

Pier ID	Top Elevation(ft)	Bottom Elevation(ft)	Foot or Pile Cap Width(ft)	Cap Shape	File Tip Elevation(ft)
1	302.14	299.14	6	Square-Rounded	284
2	301.79	298.79	6	Square-Rounded	284

## Pier Description

**Pier ID** 1

This is the right-bank pier. Each pier, 3.17 ft wide and 83 ft long, is a continuous web its entire length and is supported by pile footings. Steel I-beam piles (54) are arranged in two rows approximately 3.5 ft apart and pile pairs are spaced 3.25 ft apart. Pile length ranges from 11.5-21.0 ft.

**Pier ID** 2

This is the left-bank pier. Each pier, 3.17 ft wide and 83 ft long, is a continuous web its entire length and is supported by pile footings. Steel I-beam piles (54) are arranged in two rows approximately 3.5 ft apart and pile pairs are spaced 3.25 ft apart. Pile length ranges from 11.5-21.0 ft.

## Pier Scour Data

Pier ID	Date	Time	USOrDS
1	10/24/90	11:00	Upstream
1	10/25/90	11:00	Upstream
1	4/22/92	12:00	Upstream
2	10/25/90	11:00	Upstream
2	4/22/92	12:00	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)
1	3.5	1	8.5	60	5.24	20.5	3.2	0
1	4	1	5	40	6.16	26	3.2	0
1	2.7	1	4.5	23	4.32	19.1	3.2	0
2	3.5	1	9	62	7.11	30.5	3.2	0



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## ContractionScour

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## Stage and Discharge Data

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Peak Discharge					Flow	Peak Stage					Stage	Water	Return	
year	mo	dy	hr	mi	(cfs)	Qacc	year	mo	dy	hr	mi	(ft)	Temp (C)	Period(yr)

## Hydrograph

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Hydrograph Number	Year	Month	Day	Hr	Min	Sec	Stage(ft)	Discharge (cfs)
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## Supporting Files

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