

BSDMS Summary Report

53 Tye River at S.R. 56 near Lovingston, VA

Site Location:

Site ID: 53

Site Name: Tye River at S.R. 56 near Lovingston, VA

County: Nelson

Nearest City: Lovingston

State: VA

Latitude: 374255

Longitude: 785855

USGS Station ID: 2027000

Route Number: 56

Route Class: State

Service Level: Mainline

Route Direction: NA

Highway Mile Point:

Stream Name: Tye 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:

This site is located at the State Route 56 bridge crossing the Tye River 6.8 miles southwest of Lovingston, Virginia, 4.8 miles upstream from the confluence with the Piney River, and 3.5 miles downstream from Hat Creek. The bridge is 199 ft long and has three piers spaced 55 ft apart. The piers, 2 ft wide and 41 ft long, are a continuous web of uniform width supported by a footer keyed into undisturbed material. The bridge is part of a superelevated curve in the roadway, and the upstream side of the bridge is lower than the downstream side. The bridge is high above the streambed and will probably not be overtopped. The bridge has flow-through abutments supported by piles. Plans for the previous bridge (before 1985) are not available.

Elevation Reference

Datum: MSL

MSL (ft):

Description of Reference Elevation:

Datum of gage is 578.39 ft.
RM5--Elevation 26.465 ft gage datum. Chisiled square on downstream hand

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rail. Probably on right bank.
RM6--Elevation 24.519 ft gage datum. Chisiled square on upstream hand
rail. Probably on right bank.
MP1--Elevation 26.656 ft gage datum. Chisiled arrow at station 62 (62 ft
from right bank) .
MP2--Elevation 24.735 ft gage datum. Chisiled arrow at station 62 (62 ft
from right bank).

Stream Data

Drainage Area (sq mi):	92.8	Floodplain Width:	Narrow
Slope in Vicinity(ft/ft):	0.0029	Natural Levees:	Little
Flow Impact:	Straight	Apparent Incision:	None
Channel Evolution	Unknown	Channel Boundary:	Semi-alluvial
Armoring:	Unknown	Banks Tree Cover:	High
Debris Frequency:	Occasional	Sinuosity:	Meandering
Debris Effect:	Local	Braiding:	Locally
Stream Size:	Medium	Anabranching:	None
Flow Habit:	Perennial	Bars:	Narrow
Bed Material:	Gravel	Stream Width Variability:	Equiwidth
Valley Setting:	Moderate		

Roughness Data

Manning's n Values

	Left Overbank	Channel	Right Overbank
High:			
Typical	0.06	0.04	0.06
Low:			

Bed Material

Measurement Number	Yr	Mo	Dy	Sampler	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)	SP	Shape	Cohesion
1	1992	9	11	GRID	250	170	72	33	2.65		Non-Cohesive

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Bed Material Comments

Measurement No: 1

Bridge Data

Structure No: 1017
Length(ft): 199
Width(ft):
Number of Spans: 4
Vertical Configuration: Curvilinear
Low Chord Elev (ft): 600.2
Upper Chord Elev (ft): 601.3
Overtopping Elev (ft): 602
Skew (degrees): 0
Guide Banks: None
Waterway Classification: Main
Year Built: 1985
Avg Daily Traffic:
Plans on File: Yes
Parallel Bridges No
Upstream/Downstream: Unknown
Continuous Abutment: No
Distance Between Centerlines:
Distance Between Pier Faces:

Bridge Description:

The bridge is 199 ft long and has three piers spaced 55 ft apart. The piers, 2 ft wide and 41 ft long, are a continuous web of uniform width supported by a footer keyed into undisturbed material. The bridge is part of a superelevated curve in the roadway, and the upstream side of the bridge is lower than the downstream side. The bridge is high above the streambed

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and will probably not be overtopped. The bridge has flow-through abutments supported by piles.

Abutment Data

Left Station: 174.5
Right Station: -24.5
Left Skew (deg): 0
Right Skew (deg) 0
Left Abutment Length (ft): 76
Right Abutment Length (ft) 76
Left Abutment to Channel Bank (ft): 60
Right Abutment to Channel Bank (ft): 30
Left Abutment Protection:
Right Abutment Protection
Contracted Opening Type: III
Embankment Skew (deg): 0
Embankment Slope (ft/ft): 1.5
Abutment Slope (ft/ft) 1.5
Wingwalls: No
Wingwall Angle (deg): 0

Pier Data

Pier ID	Bridge Station(ft)	Alignment	Highway Station	PierType	# Of Piles	Pile Spacing(ft)
1	130	0	22040	Single	0	
2	75	0	22100	Single	0	
3	20	0	22150	Single	0	

Pier ID	Pier Width(ft)	Pier Shape	Shape Factor	Length(ft)	Protection	Foundation
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1	2	Round	41	None	Poured
2	2	Round	41	None	Poured
3	2	Round	41	None	Poured

Pier ID	Top Elevation(ft)	Bottom Elevation(ft)	Foot or Pile Cap Width(ft)	Cap Shape	File Tip Elevation(ft)
1	579.5	579.5	7.6	Square	
2	577.3	573.8	7.5	Square	
3	580	576.8	7	Square	

Pier Description

Pier ID 1

The piers, 2 ft wide and 41 ft long, are a continuous web of uniform width supported by a footer. The footer extends 1 ft beyond the ends of the pier, and the bottom 2 ft of the footer was keyed into undisturbed material without using forms.

Pier ID 2

See pier 1

Pier ID 3

See pier 1

Pier Scour Data

Pier ID	Date	Time	USOrDS
2	5/3/89	12:00	Upstream
2	5/7/89	9:00	Upstream
2	4/22/92	11:00	Upstream
3	5/3/89	12:00	Upstream
3	5/7/89	9:00	Upstream
3	4/22/92	11:00	Upstream

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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)
2	0.8	1	5.5	9	1.84	1.5	2	0
2	0.6	1	5	6	5.1	2.2	2	0
2	1.6	1	6	19	5.22	5.5	2	0
3	1	1	9.5	17	4.05	4	2	0
3	1.2	1	9.5	20	5.31	5	2	0
3	2.5	1	5	26	8.5	8.6	2	0

PierID	Sediment Transport	Bed Material	BedForm	Trough (ft)	Crest (ft)	Sigma	Debris Effects
2	Unknown	Non-cohesive	Unknown			2.3	Unknown
2	Unknown	Non-cohesive	Unknown			2.3	Unknown
2	Unknown	Non-cohesive	Unknown			2.3	Unknown
3	Unknown	Non-cohesive	Unknown			2.3	Unknown
3	Unknown	Non-cohesive	Unknown			2.3	Unknown
3	Unknown	Non-cohesive	Unknown			2.3	Unknown

PierID	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)
2	250	170	72	33
2	250	170	72	33
2	250	170	72	33
3	250	170	72	33
3	250	170	72	33
3	250	170	72	33

Pier Scour Comments

Pier ID 2 Time: 12:00 US/DS: Upstream

Pier ID 2 Time: 9:00 US/DS: Upstream

Pier ID 2 Time: 11:00 US/DS: Upstream

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Pier ID 3 Time: 12:00 US/DS: Upstream

Pier ID 3 Time: 9:00 US/DS: Upstream

Pier ID 3 Time: 11:00 US/DS: Upstream

Abutment Scour

Contraction Scour

Stage and Discharge Data

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

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Hydrograph

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