BSDMS Summary Report

24 Big Pipe Creek at S.R. 194 at Bruceville, MD

Site Location:

Site ID: 24

Site Name: Big Pipe Creek at S.R. 194 at Bruceville, MD

County: Carroll

Nearest City: Bruceville

State: MD

Latitude: 393645

Longitude: 771410

USGS Station ID: 1639500

Route Number: 194

Route Class: State

Service Level: Mainline

Route Direction: NA

Highway Mile Point:

Stream Name: Big Pipe Creek

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:

The site is located at Bruceville, Maryland at the State Highway 194 bridge crossing Big Pipe Creek. This is 3.5 miles upstream of the confluence with Little Big Pipe Creek at Detour, Maryland. The bridge is 200 ft long and has three 4-ft-wide, 32-ft-long piers spaced 51 ft apart. Each pier is a continuous web constructed on poured footers, which probably extend down to bedrock. The bridge has a constant slope from the left bank (366.70 ft) to the right bank (357.86 ft). The bridge has flow-through abutments and should not be overtopped during high flow. (Flow would possibly go over the roadway on the right bank.)

Elevation Reference

Datum: MSL

MSL (ft):

Description of Reference Elevation:

All elevations are given in MSL. The gage datum is 336.88 ft.
BM-1 (1976): Bronze tablet stamped "V 81 RESET 1976" located on highway bridge, 4.8 miles south along State Highway 194 from first junction with State Highway 97 in the center of Taneytown, Md. The tablet is located

in sidewalk on the southeast abutment of bridge number 6035. It is 23 ft northwest of telephone pole number 55, 15.8 ft east of the center of State Highway 194, 5 ft north of the south edge of the sidewalk, and 2.4 ft east of the wheel guard. The elevation is 367.401 ft NVGD.
RM-1 (1947): Standard USGS bronze tablet set in the top of the upper intake headwall at the gage 300 feet downstream of the bridge. The elevation is 3.326 ft gage datum. (The headwall is cracked.)
RM-7 (1989): Railroad spike located in telephone pole number 55, 20 ft shoreward from left upstream end of bridge. The elevation is 31.204 ft gage datum, 368.088 ft NVGD.
RP-2 (1989): Chiseled square on the upstream side of the walkway on the bridge, 80 ft streamward from BM V-81. The elevation is 25.982 ft gage datum, 362.866 ft NVGD.

Stream Data

Drainage Area (sq mi):	102	**Floodplain Width:**	Narrow
Slope in Vicinity(ft/ft):	0.00157	**Natural Levees:**	Little
Flow Impact:	Straight	**Apparent Incision:**	None
Channel Evolution	Unknown	**Channel Boundary:**	Semi-alluvial
Armoring:	Partial	**Banks Tree Cover:**	High
Debris Frequency:	Occasional	**Sinuosity:**	Straight
Debris Effect:	Local	**Braiding:**	None
Stream Size:	Medium	**Anabranching:**	None
Flow Habit:	Perennial	**Bars:**	Unknown
Bed Material:	Gravel	**Stream Width Variability:**	Equiwidth
Valley Setting:	Moderate		

Roughness Data

Manning's n Values

	Left Overbank	Channel	Right Overbank
High:			
Typical	0.1	0.045	0.1
Low:			

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Bed Material

Measurement Number	Yr	Mo	Dy	Sampler	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)	SP	Shape	Cohesion
1	1992	10	22	grvl templ	160	76	22	13	2.65		Non-Cohesive
2	1992	10	22	scoop	25.5	16	5.4	1.32	2.65		Non-Cohesive

Bed Material Comments

Measurement No: 1

Measurement No: 2

Bridge Data

Structure No: 6035

Length(ft): 200

Width(ft): 26

Number of Spans: 4

Vertical Configuration: Unknown

Low Chord Elev (ft): 354.24

Upper Chord Elev (ft): 363.08

Overtopping Elev (ft): 357.86

Skew (degrees): 0

Guide Banks: None

Waterway Classification: Main

Year Built: 1940

Avg Daily Traffic:

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Plans on File: Yes

Parallel Bridges No

Upstream/Downstream: N/A

Continuous Abutment: No

Distance Between Centerlines:

Distance Between Pier Faces:

Bridge Description:

The bridge is 200 ft long and has three 4-ft-wide, 32-ft-long piers spaced 51 ft apart. Each pier is a continuous web constructed on poured footers, which probably extend down to bedrock. The bridge has a constant slope from the left bank (366.70 ft) to the right bank (357.86 ft). The bridge has flow-through abutments and should not be overtopped during high flow. (Flow would possibly go over the roadway on the right bank.)

Abutment Data

Left Station: 0

Right Station: 200

Left Skew (deg): 0

Right Skew (deg) 0

Left Abutment Length (ft): 100

Right Abutment Length (ft) 100

Left Abutment to Channel Bank (ft): 60

Right Abutment to Channel Bank (ft): 70

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

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Pier Data

Pier ID	Bridge Station(ft)	Alignment	Highway Station	PierType	# Of Piles	Pile Spacing(ft)
1	152	0	859.75	Single	0	
2	102	0	910	Single	0	
3	51	0	960.25	Single	0	

Pier ID	Pier Width(ft)	Pier Shape	Shape Factor	Length(ft)	Protection	Foundation
1	4	Round		32	Riprap	Poured
2	4	Round		32	None	Poured
3	4	Round		32	None	Poured

Pier ID	Top Elevation(ft)	Bottom Elevation(ft)	Foot or Pile Cap Width(ft)	Cap Shape	Pile Tip Elevation(ft)
1	329.97	332.97	7	Square	
2	329.94	332.94	7	Square	
3	329.99	332.99	7	Square	

Pier Description

Pier ID 1

This is the right-most of the three piers, which are 4-ft-wide by 32-ft-long and spaced 51 ft apart. Each pier is a continuous web on poured footers,which probably extend to bedrock. This pier has some riprap protection.

Pier ID 2

This is the middle of the three piers, which are 4-ft-wide by 32-ft-long and spaced 51 ft apart. Each pier is a continuous web on poured footers,which probably extend to bedrock. There is no riprap protection at this pier. This pier tends to collect debris.

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Pier ID 3

This is the left-most of the three piers, which are 4-ft-wide by 32-ft-long and spaced 51 ft apart. Each pier is a continuous web on poured footers, which probably extend to bedrock. There is no riprap protection at this pier.

Pier Scour Data

Pier ID	Date	Time	USOrDS
1	6/23/72	17:30	Upstream
1	9/25/75	19:00	Upstream
2	6/23/72	17:30	Upstream
2	9/25/75	19:00	Upstream
2	5/29/90	20:30	Upstream
2	10/23/90	15:30	Upstream
2	10/23/90	20:00	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	1.2	1	6	15	2.64	11.6	4	0
1	1.4	1	8.5	24	4.28	10.2	4	0
2	2.4	1	10.5	50	3.72	8	4	0
2	1.8	1	3.5	12	5.2	8	4	0
2	1	1	6	12	3.32	6.3	4	0
2	1.2	1	4	10	5.39	6.6	4	0
2	1.7	1	4.5	16	5.26	10.1	4	0

PierID	Sediment Transport	Bed Material	BedForm	Trough (ft)	Crest (ft)	Sigma	Debris Effects
1	Unknown	Unknown	Unknown			2.4	Unknown
1	Unknown	Unknown	Unknown			2.4	Unknown
2	Unknown	Unknown	Unknown			2.4	Unknown
2	Unknown	Unknown	Unknown			2.4	Unknown
2	Unknown	Unknown	Unknown			2.4	Unknown
2	Unknown	Unknown	Unknown			2.4	Unknown
2	Unknown	Unknown	Unknown			2.4	Unknown

PierID	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)
1	160	76	22	13

1	160	76	22	13
2	160	76	22	13
2	160	76	22	13
2	160	76	22	13
2	160	76	22	13
2	160	76	22	13

Pier Scour Comments

Pier ID 1 **Time:** 17:30 **US/DS:** Upstream

Pier ID 1 **Time:** 19:00 **US/DS:** Upstream

Pier ID 2 **Time:** 17:30 **US/DS:** Upstream

Accuracy of local scour estimate is probably 1 foot. Estimate is maximum scour for this cross section only and may not represent the maximum local scour at the pier.

Pier ID 2 **Time:** 19:00 **US/DS:** Upstream

Pier ID 2 **Time:** 20:30 **US/DS:** Upstream

Pier ID 2 **Time:** 15:30 **US/DS:** Upstream

Pier ID 2 **Time:** 20:00 **US/DS:** Upstream

Abutment Scour

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ContractionScour

Stage and Discharge Data

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

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

Supporting Files