

BSDMS Summary Report

37 Schoharie Creek at S.R. 30 at Middleburg, NY

Site Location:

Site ID: 37
Site Name: Schoharie Creek at S.R. 30 at Middleburg, NY
County: Schoharie
Nearest City: Middleburg
State: NY
Latitude: 423600
Longitude: 742012
USGS Station ID: 1350500
Route Number: 30
Route Class: State
Service Level: Mainline
Route Direction: NA
Highway Mile Point: 212113
Stream Name: Schoharie Creek
River Mile:

Contact:
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(607) 771-5467

Publication:

Site Description:

This site is located at the State Road 30 bridge crossing Schoharie Creek in Middleburg, New York. The bridge, 356 ft long and 43 ft wide, has three piers. Piers 1 and 2 are in the main flow channel and have exposed footings. Clear-water scour is common at this site. Local-scour holes do not refill after high flows. The local-scour depth is based on the ambient bed. Flow is partially regulated by Schoharie reservoir, which has a drainage area of 315 square miles. Except for periods of spilling, the reservoir impounds water for the New York City water supply. Flow begins to bypass the bridge along the left bank at about 50,000 cfs (recurrence interval of about 25 years).

Only one local-scour depth is listed for each pier. However, the stream may not have reached equilibrium local-scour depth because of the gravel armor layer. If additional local scour occurs, the scour will be added to the present scour assuming the ambient bed does not change (USGS national scour study). In the New York study, additional local scour is to be analyzed separately.

About 1.3 ft of contraction scour appears to have occurred in 1987 based on the bridge thalweg elevation minus the exit thalweg elevation.

Elevation Reference

Datum: MSL

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MSL (ft):

Description of Reference Elevation:

USSB: RM = Lag bolt at station 354, left abutment ELEVATION = 637.59 ft msl
RP = Wire weight gage at station 45, checkbar = 640.91 ft msl.
DSSB: RP = Beveled corner of concrete sidewalk across from WWG at station 308.
ELEVATION = 638.76 ft msl.
APPR: RP = Staple in upstream side of 30-inch tree, 300 ft upstream, right bank
ELEVATION = 628.58 ft msl.
EXIT: RP = Staple in upstream side of 36-inch tree, 350 ft downstream, right bank,
streamward of pole #4 and light #7.
ELEVATION = 627.14 ft msl.

Stream Data

Drainage Area (sq mi):	534	Floodplain Width:	Narrow
Slope in Vicinity(ft/ft):	0.002	Natural Levees:	Both
Flow Impact:	Straight	Apparent Incision:	Apparent
Channel Evolution	Threshold	Channel Boundary:	Alluvial
Armoring:	High	Banks Tree Cover:	Medium
Debris Frequency:	Occasional	Sinuosity:	Sinuuous
Debris Effect:	Local	Braiding:	Locally
Stream Size:	Medium	Anabranching:	Locally
Flow Habit:	Flashy	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	0.05	0.035	
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	1990	7	23	GRID	95	60	33	15	2.65		Unknown
2	1990	7	23	SHOVEL		44	14	0.58	2.65		Unknown

Bed Material Comments

Measurement No: 1

Sizes based on 100 samples using the grid-sampling technique.

Measurement No: 2

Bridge Data

Structure No: 1021010

Length(ft): 356

Width(ft): 43

Number of Spans: 4

Vertical Configuration: Horizontal

Low Chord Elev (ft): 634.75

Upper Chord Elev (ft):

Overtopping Elev (ft): 632

Skew (degrees): 0

Guide Banks: None

Waterway Classification: Main

Year Built: 1958

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:

Abutment Data

Left Station: 0

Right Station: 352

Left Skew (deg): 0

Right Skew (deg) 0

Left Abutment Length (ft):

Right Abutment Length (ft)

Left Abutment to Channel Bank (ft):

Right Abutment to Channel Bank (ft): 150

Left Abutment Protection:

Right Abutment Protection

Contracted Opening Type: III

Embankment Skew (deg): 0

Embankment Slope (ft/ft):

Abutment Slope (ft/ft) 2

Wingwalls: Yes

Wingwall Angle (deg): 0

Pier Data

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Pier ID	Bridge			PierType	# Of Piles	Pile Spacing(ft)
	Station(ft)	Alignment	Highway Station			
1	265	0	265	Single	0	
2	177	0	177	Single	0	
3	87	0	87	Single	0	

Pier ID	Pier			Length(ft)	Protection	Foundation
	Width(ft)	Pier Shape	Shape Factor			
1	5.5	Round		43	None	Piles
2	5.5	Round		43	None	Piles
3	5.5	Round		43	None	Piles

Pier ID	Top	Bottom	Foot or Pile	Cap Shape	File Tip
	Elevation(ft)	Elevation(ft)	Cap Width(ft)		Elevation(ft)
1	610			Unknown	
2	613			Unknown	
3	613			Unknown	

Pier Description

Pier ID 1

The pier was located in the main flow. The footer was exposed 0.9 ft. This footer is 3 ft lower than the footer at pier 2.

Pier ID 2

The pier was near the left edge of low water. The footer was exposed 3.35 ft (0.75 ft from bottom of footer). An Eagle-Mach 1 fathometer and CR-10 were attached to pier for about 2 years. Instrumentation proved unsatisfactory.

Pier coordinates for pier ID 2:

173.0	613.0
173.0	617.0
175.0	617.0
175.0	635.5
180.0	635.5
180.0	617.0
182.0	617.0
182.0	613.0

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Pier ID 3

The pier was out of water during low flow. The top of the footing was partly exposed.

Pier Scour Data

Pier ID	Date	Time	USOrDS						
1	11/17/89	0:00	Upstream						
2	11/17/89	0:00	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	1.9	0.2	10.9	37	12	17.9	5.5	0	
2	3.5	0.2	6.6	41	11	16.7	5.5	0	
PierID	Sediment Transport	Bed Material	BedForm	Trough (ft)	Crest (ft)	Sigma	Debris Effects		
1	Clear-water	Non-cohesive	Unknown			2	Insignificant		
2	Clear-water	Non-cohesive	Unknown			2	Insignificant		
PierID	D95 (mm)	D84 (mm)	D50 (mm)	D16 (mm)					
1	95	60	33	15					
2	95	60	33	15					

Pier Scour Comments

Pier ID 1 Time: 0:00 US/DS: Upstream

The scour is assumed to have occurred during the record 1987 flood. Hydraulic data are based on 52,000 cfs flowing under the bridge, excluding about 25,000 cfs bypassing bridge. The scour depth is based on the ambient bed from stations 242-284 for 1989-92 inspections.

Pier ID 2 Time: 0:00 US/DS: Upstream

The scour is assumed to have occurred during the record 1987 flood. Hydraulic data are based on 52,000 cfs flowing under the bridge, excluding about 25,000 cfs bypassing bridge. The scour depth is based on the ambient bed from stations 152-194 for 1989-92 inspections.

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			
1987	4	5		0	52000	5	1987	4	5		0	634.8	5	100

Hydrograph

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