

**MS-19 Section #1A - 2-Year Analysis**

**Project Description**

Friction Method: Manning Formula  
Solve For: Normal Depth

**Input Data**

Channel Slope: 0.01000 ft/ft  
Discharge: 4.30 ft<sup>3</sup>/s

**Section Definitions**

Station (ft)	Elevation (ft)
0+00	153.30
0+06	153.12
0+08	153.04
0+10	153.00
0+27	152.31
0+37	152.00
0+42	151.11
0+43	151.00
0+43	150.99
0+45	150.94
0+46	150.93
0+46	150.95
0+46	151.00
0+61	151.40
0+74	151.60
0+75	151.65
0+76	151.69
0+77	151.74
0+78	151.83
0+91	153.00
0+94	153.15
1+00	153.02
1+05	153.27

Roughness Segment Definitions

**MS-19 Section #1A - 2-Year Analysis**

**Input Data**

Start Station	Ending Station	Roughness Coefficient
(0+00, 153.30)	(1+05, 153.27)	0.050

**Options**

Current roughness weighting Method: Pavlovskii's Method  
Open Channel Weighting Method: Pavlovskii's Method  
Closed Channel Weighting Method: Pavlovskii's Method

**Results**

Normal Depth: 0.43 ft  
Elevation Range: 150.93 to 153.30 ft  
Flow Area: 4.01 ft<sup>2</sup>  
Wetted Perimeter: 18.49 ft  
Hydraulic Radius: 0.22 ft  
Top Width: 18.45 ft  
Normal Depth: 0.43 ft  
Critical Depth: 0.29 ft  
Critical Slope: 0.06847 ft/ft  
Velocity: 1.07 ft/s  
Velocity Head: 0.02 ft  
Specific Energy: 0.44 ft  
Froude Number: 0.41  
Flow Type: Subcritical

**GVF Input Data**

Downstream Depth: 0.00 ft  
Length: 0.00 ft  
Number Of Steps: 0

**GVF Output Data**

Upstream Depth: 0.00 ft  
Profile Description: 0.00 ft  
Profile Headloss: 0.00 ft  
Downstream Velocity: Infinity ft/s  
Upstream Velocity: Infinity ft/s  
Normal Depth: 0.43 ft

**MS-19 Section #1A - 2-Year Analysis**

**GVF Output Data**

Critical Depth: 0.29 ft  
Channel Slope: 0.01000 ft/ft  
Critical Slope: 0.06847 ft/ft

**MS-19 Section #1A - 10-Year Analysis**

**Project Description**

Friction Method: Manning Formula  
Solve For: Normal Depth

**Input Data**

Channel Slope: 0.01000 ft/ft  
Discharge: 5.70 ft<sup>3</sup>/s

**Section Definitions**

Station (ft)	Elevation (ft)
0+00	153.30
0+06	153.12
0+08	153.04
0+10	153.00
0+27	152.31
0+37	152.00
0+42	151.11
0+43	151.00
0+43	150.99
0+45	150.94
0+46	150.93
0+46	150.95
0+46	151.00
0+61	151.40
0+74	151.60
0+75	151.65
0+76	151.69
0+77	151.74
0+78	151.83
0+91	153.00
0+94	153.15
1+00	153.02
1+05	153.27

Roughness Segment Definitions

**MS-19 Section #1A - 10-Year Analysis**

**Input Data**

Start Station	Ending Station	Roughness Coefficient
(0+00, 153.30)	(1+05, 153.27)	0.050

**Options**

Current roughness weighting Method: Pavlovskii's Method  
Open Channel Weighting Method: Pavlovskii's Method  
Closed Channel Weighting Method: Pavlovskii's Method

**Results**

Normal Depth: 0.48 ft  
Elevation Range: 150.93 to 153.30 ft  
Flow Area: 4.98 ft<sup>2</sup>  
Wetted Perimeter: 20.86 ft  
Hydraulic Radius: 0.24 ft  
Top Width: 20.81 ft  
Normal Depth: 0.48 ft  
Critical Depth: 0.33 ft  
Critical Slope: 0.06597 ft/ft  
Velocity: 1.14 ft/s  
Velocity Head: 0.02 ft  
Specific Energy: 0.50 ft  
Froude Number: 0.41  
Flow Type: Subcritical

**GVF Input Data**

Downstream Depth: 0.00 ft  
Length: 0.00 ft  
Number Of Steps: 0

**GVF Output Data**

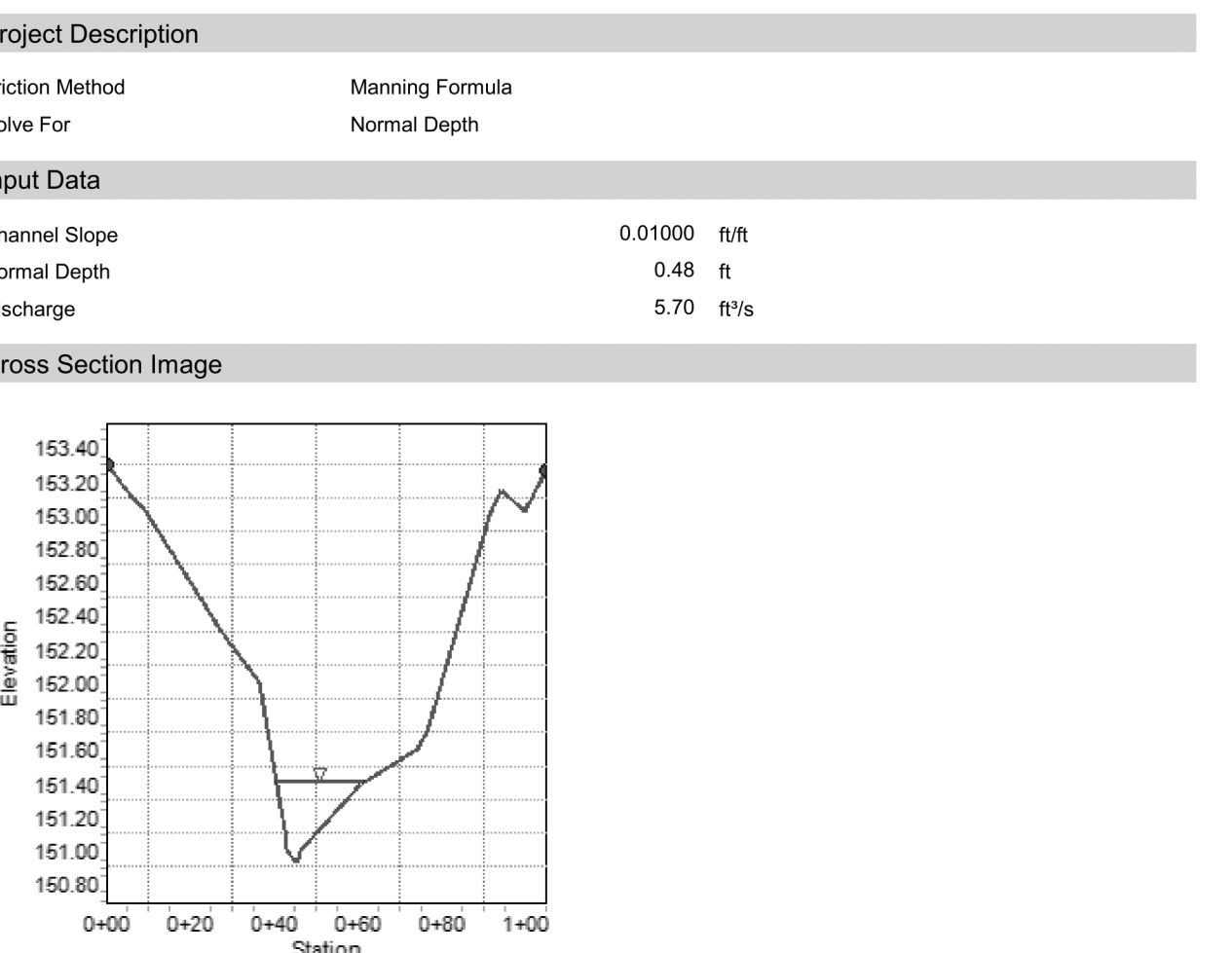
Upstream Depth: 0.00 ft  
Profile Description: 0.00 ft  
Profile Headloss: 0.00 ft  
Downstream Velocity: Infinity ft/s  
Upstream Velocity: Infinity ft/s  
Normal Depth: 0.48 ft

**MS-19 Section #1A - 10-Year Analysis**

**GVF Output Data**

Critical Depth: 0.33 ft  
Channel Slope: 0.01000 ft/ft  
Critical Slope: 0.06597 ft/ft

**MS-19 Section #1A - 10-Year Cross Section**



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**TIMMONS GROUP** | Site Development | Residential | Infrastructure | Technology

**EAST RAMP 3 ACCESS ROAD**  
HENRICO COUNTY - VIRGINIA

**MS-19 SECTION #1A ANALYSIS**

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