

Bridge Spread Design for Scuppers

CUY-00480-06.120_LT

														5-yr	
CUY-00480-06.120_LT		STATION	#	AREA (acres)	LENGTH (ft)	LONG. SLOPE (%)	C	k	V (fps)	CALC. Td (min)	Td (min)	I-5 YR	Q-5 YR (cfs)	Intercepted Flow (cfs)	Bypass Flow (cfs)
		8+58													
		9+00		0.034	42.00	0.68	0.90	0.62	1.68	0.42	10.00	4.41	0.1349	0.0600	0.0749
		9+10		0.007	10.00	0.68	0.90	0.62	1.68	0.10	10.00	4.41	0.1027	0.0490	0.0537
		9+20		0.007	10.00	0.68	0.90	0.62	1.68	0.10	10.00	4.41	0.0815	0.0420	0.0395
		11+20		0.142	10.00	0.68	0.90	0.62	1.68	0.10	10.00	4.41	0.6031	0.1640	0.4391

Hydraulic Analysis Report

Project Data

Project Title: CUY-00480-06.120

Designer:

Project Date: Thursday, July 18, 2024

Project Units: U.S. Customary Units

Notes:

Curb and Gutter Analysis: STA 9+00 LT

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0068 ft/ft

Cross-Slope of Pavement: 0.0160 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0150

Gutter Width: 1.0000 ft

Design Flow: 0.1340 cfs

Gutter Result Parameters

Width of Spread: 4.0922 ft

Gutter Depression: 0.0000 in

Area of Flow: 0.1340 ft²

Eo (Gutter Flow to Total Flow): 0.5268

Gutter Depth at Curb: 0.7857 in

Inlet Input Parameters

Inlet Location: Inlet on Grade

Inlet Type: Grate

Grate Type: P - 1-7/8

Grate Width: 0.5000 ft

Grate Length: 1.5000 ft

Local Depression: 0.0000 in

Inlet Result Parameters

Intercepted Flow: 0.0595 cfs

Bypass Flow: 0.0745 cfs

Approach Velocity: 1.0002 ft/s

Splash-over Velocity: 6.9924 ft/s

Efficiency: 0.4444

Curb and Gutter Analysis: STA 9+10 LT

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0068 ft/ft

Cross-Slope of Pavement: 0.0160 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0150

Gutter Width: 1.0000 ft

Design Flow: 0.1030 cfs

Gutter Result Parameters

Width of Spread: 3.7077 ft

Gutter Depression: 0.0000 in

Area of Flow: 0.1100 ft²

E_o (Gutter Flow to Total Flow): 0.5679

Gutter Depth at Curb: 0.7119 in

Inlet Input Parameters

Inlet Location: Inlet on Grade

Inlet Type: Grate

Grate Type: P - 1-7/8

Grate Width: 0.5000 ft

Grate Length: 1.5000 ft

Local Depression: 0.0000 in

Inlet Result Parameters

Intercepted Flow: 0.0494 cfs

Bypass Flow: 0.0536 cfs

Approach Velocity: 0.9366 ft/s

Splash-over Velocity: 6.9924 ft/s

Efficiency: 0.4795

Curb and Gutter Analysis: STA 9+20 LT

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0068 ft/ft

Cross-Slope of Pavement: 0.0160 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0150

Gutter Width: 1.0000 ft

Design Flow: 0.0820 cfs

Gutter Result Parameters

Width of Spread: 3.4039 ft

Gutter Depression: 0.0000 in

Area of Flow: 0.0927 ft²

E_o (Gutter Flow to Total Flow): 0.6049

Gutter Depth at Curb: 0.6535 in

Inlet Input Parameters

Inlet Location: Inlet on Grade

Inlet Type: Grate

Grate Type: P - 1-7/8

Grate Width: 0.5000 ft

Grate Length: 1.5000 ft

Local Depression: 0.0000 in

Inlet Result Parameters

Intercepted Flow: 0.0419 cfs

Bypass Flow: 0.0401 cfs

Approach Velocity: 0.8847 ft/s

Splash-over Velocity: 6.9924 ft/s

Efficiency: 0.5110

Curb and Gutter Analysis: STA 11+20 LT

Notes:

Gutter Input Parameters

Longitudinal Slope of Road: 0.0074 ft/ft

Cross-Slope of Pavement: 0.0164 ft/ft

Uniform Gutter Geometry

Manning's n: 0.0150

Gutter Width: 1.0000 ft

Design Flow: 0.6000 cfs

Gutter Result Parameters

Width of Spread: 6.9584 ft

Gutter Depression: 0.0000 in

Area of Flow: 0.3970 ft²

E_o (Gutter Flow to Total Flow): 0.3392

Gutter Depth at Curb: 1.3694 in

Inlet Input Parameters

Inlet Location: Inlet on Grade

Inlet Type: Grate

Grate Type: P - 1-7/8

Grate Width: 0.5000 ft

Grate Length: 1.5000 ft

Local Depression: 0.0000 in

Inlet Result Parameters

Intercepted Flow: 0.1657 cfs

Bypass Flow: 0.4343 cfs

Approach Velocity: 1.5112 ft/s

Splash-over Velocity: 6.9924 ft/s

Efficiency: 0.2762