



TOTAL EXISTING RUNOFF COEFFICIENT CALCULATION

PROJECT: Waukesha McDonald's
V3 FILE NO.: 06240.31A
DATE: 01/17/17
PREPARED BY: JWG
REVIEWED DATE:
REVIEWED BY:

Impervious Area (ACRE)	1.04	SF 45243.6
Impervious c-factor	0.95	
Pervious Area (ACRE)	0.17	7509.4
Pervious c-factor	0.30	
TOTAL AREA (ACRE)	1.21	

$$C = \frac{0.95 * (\text{Impervious Area}) + 0.30 * (\text{Pervious Area})}{\text{Total Area}}$$

$$C = \frac{0.95 * (1.04 \text{ acre}) + 0.3 * (0.25 \text{ acre})}{1.21}$$

C = 0.86



TOTAL PROPOSED RUNOFF COEFFICIENT CALCULATION

PROJECT: Waukesha McDonald's
V3 FILE NO.: 06240.31A
DATE: 03/01/17
PREPARED BY: MDC
REVIEWED DATE:
REVIEWED BY:

Impervious Area (ACRE)	0.89	SF
Impervious c-factor	0.95	38774
Pervious Area (ACRE)	0.32	13980
Pervious c-factor	0.30	
TOTAL AREA (ACRE)	1.21	

$$C = \frac{0.95 * (\text{Impervious Area}) + 0.30 * (\text{Pervious Area})}{\text{Total Area}}$$

$$C = \frac{0.95 * (1.04 \text{ acre}) + 0.3 * (0.25 \text{ acre})}{1.21}$$

C = 0.78



NORTH DRAINAGE AREA RUNOFF COEFFICIENT CALCULATION

PROJECT: Waukesha McDonald's
V3 FILE NO.: 06240.31A
DATE: 03/01/17
PREPARED BY: MDC
REVIEWED DATE:
REVIEWED BY:

Impervious Area (ACRE)	0.23	SF
Impervious c-factor	0.95	10230
Pervious Area (ACRE)	0.09	3878
Pervious c-factor	0.30	
TOTAL AREA (ACRE)	0.32	

$$C = \frac{0.95 * (\text{Impervious Area}) + 0.30 * (\text{Pervious Area})}{\text{Total Area}}$$

$$C = \frac{0.95 * (1.04 \text{ acre}) + 0.3 * (0.25 \text{ acre})}{0.32}$$

C = 0.77



SOUTH DRAINAGE AREA RUNOFF COEFFICIENT CALCULATION

PROJECT: Waukesha McDonald's
V3 FILE NO.: 06240.31A
DATE: 03/01/17
PREPARED BY: MDC
REVIEWED DATE:
REVIEWED BY:

Impervious Area (ACRE)	0.17	SF
Impervious c-factor	0.95	7216
Pervious Area (ACRE)	0.07	3165
Pervious c-factor	0.30	
TOTAL AREA (ACRE)	0.24	

$$C = \frac{0.95 * (\text{Impervious Area}) + 0.30 * (\text{Pervious Area})}{\text{Total Area}}$$

$$C = \frac{0.95 * (1.04 \text{ acre}) + 0.3 * (0.25 \text{ acre})}{0.24}$$

C = 0.75



EAST DRAINAGE AREA RUNOFF COEFFICIENT CALCULATION

PROJECT: Waukesha McDonald's
V3 FILE NO.: 06240.31A
DATE: 03/01/17
PREPARED BY: MDC
REVIEWED DATE:
REVIEWED BY:

Impervious Area (ACRE)	0.19	SF
Impervious c-factor	0.95	8348
Pervious Area (ACRE)	0.09	3890
Pervious c-factor	0.30	
TOTAL AREA (ACRE)	0.28	

$$C = \frac{0.95 * (\text{Impervious Area}) + 0.30 * (\text{Pervious Area})}{\text{Total Area}}$$

$$C = \frac{0.95 * (1.04 \text{ acre}) + 0.3 * (0.25 \text{ acre})}{0.28}$$

C = 0.74



WEST DRAINAGE AREA RUNOFF COEFFICIENT CALCULATION

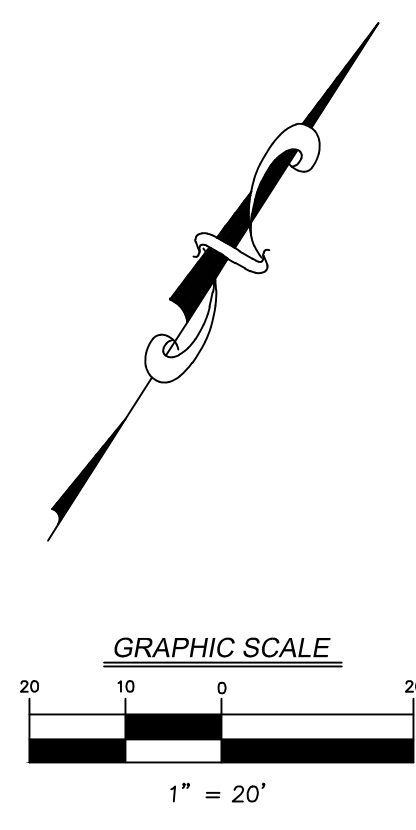
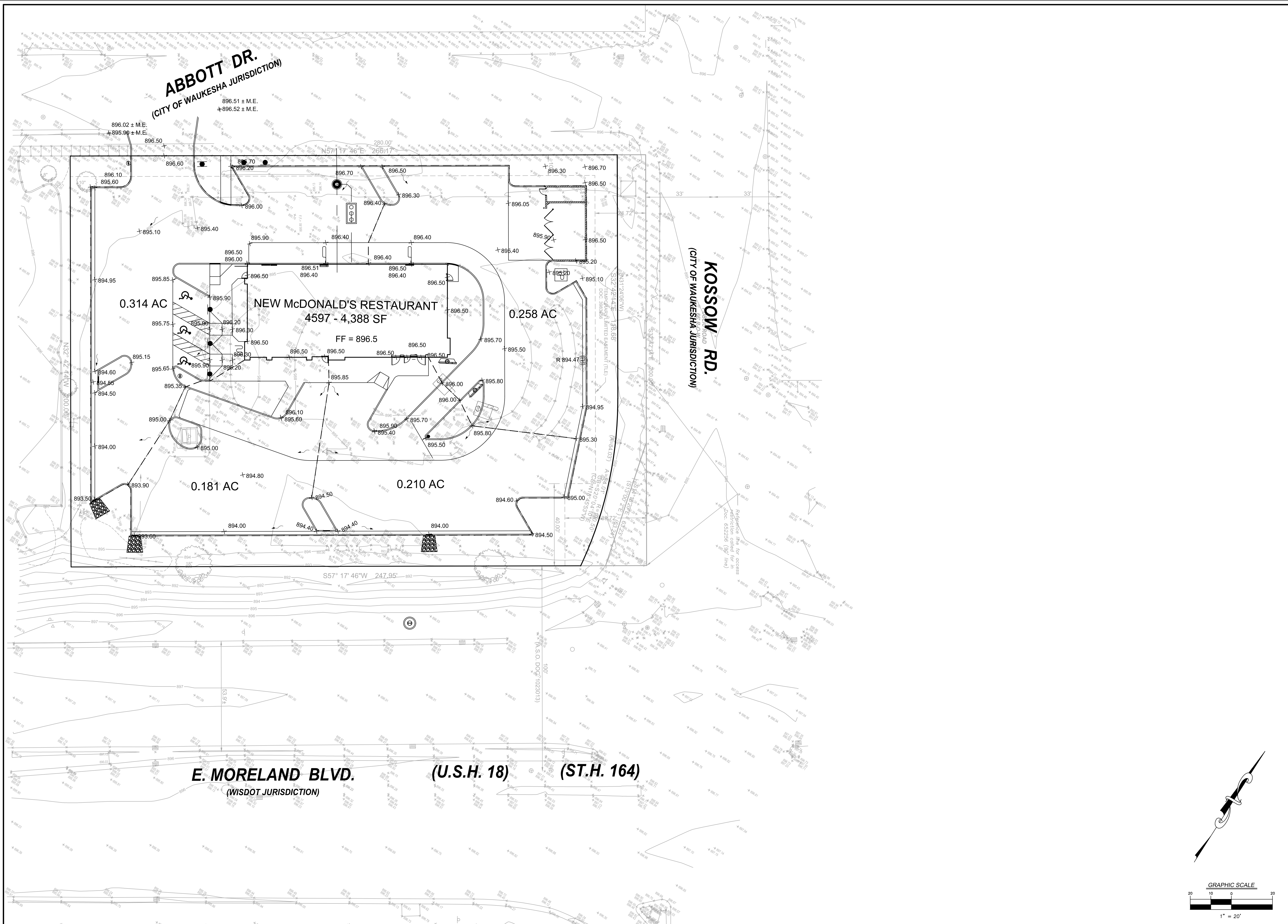
PROJECT: Waukesha McDonald's
V3 FILE NO.: 06240.31A
DATE: 03/01/17
PREPARED BY: MDC
REVIEWED DATE:
REVIEWED BY:

Impervious Area (ACRE)	0.30	SF
Impervious c-factor	0.95	12980
Pervious Area (ACRE)	0.07	3047
Pervious c-factor	0.30	
TOTAL AREA (ACRE)	0.37	

$$C = \frac{0.95 * (\text{Impervious Area}) + 0.30 * (\text{Pervious Area})}{\text{Total Area}}$$

$$C = \frac{0.95 * (1.04 \text{ acre}) + 0.3 * (0.25 \text{ acre})}{0.37}$$

C = 0.83



SHEET NO.	TITLE	DRAWN BY	DATE	REV	DATE	DESCRIPTION	BY
SHEET NO.	TITLE	DRAWN BY	DATE	REV	DATE	DESCRIPTION	BY
DESCRIPTION		<p>M. McDonald's USA, LLC</p> <p>These drawings and specifications are the confidential and proprietary property of McDonald's USA, LLC and shall not be copied or reproduced for use on this specific site in conjunction with its issue date and are not suitable for use on a different site or at a later time. Use of the services of properly licensed architects and engineers. Reproduction of the contract documents for reuse on another project is not authorized.</p>					
SITE ADDRESS		<p>2340 E. MORELAND BLVD., WAUKESHA, WI</p>					
PREPARED FOR		<p>M. McDonald's USA, LLC</p> <p>7325 Janes Avenue Woodridge, IL 60517 630.724.9200 phone 630.724.9202 fax WWW.V3CO.COM</p>					
PREPARED BY		<p>V3 Companies 7325 Janes Avenue Woodridge, IL 60517 630.724.9200 phone 630.724.9202 fax WWW.V3CO.COM</p>					



Inlet Calculations

PROJECT: **WAUKESHA MCDONALDS**
 V3 FILE NO: **06240.31A**
 DATE: **3/10/2017**
 PREPARED BY: **MDC**

Max Ponding in Sag (ft) = _____
 Max Spread (ft) = _____
 Clogging (%) = _____
 Traverse Slope (ft/ft) = _____
 Grate Type (in Sag) = _____
 Grate Type (on Grade) = _____

Notes:
 1) The "Total Flow" includes by-pass flows
 2) All structures in sag locations are assumed to have full ponding depth unless otherwise noted
 3) DS = Double Structure

Special Instruction	Structure Contributing to the Grate	Storm Structure Info								Flow Tributary to Grate Q _{CIA} (cfs)	TOTAL FLOW Q _T (cfs)	Type of Flow in Grate	Grate Capacity Q _{GRATE} (cfs)	By-Pass Flow Q _B (cfs)	Curb Depth (ft)	Curb Spread (ft)	Curb Spread Check	Sag Grate Capacity Check
		On Grade OR In Sag	Curb Depth Override		On Grade Slope (ft/ft)	Grate Inlet Coeff.	Free Open Area of Grate (sq ft)	Perimeter of Grate (ft)	By-Pass to Structure									
			Yes	Depth (ft)														
R-3233-D (Neenah Cat.)	ST 1-1	SAG	X	0.25		2.80	6.40		1.92	1.92	Weir	2.64	N/A	0.25	N/A	N/A	OK	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
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										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
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										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
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										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
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										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
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										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	
										0.00	FALSE	FALSE	0.00	N/A	N/A	N/A	N/A	

Curb Notch Weir Calculations - Waukesha McDonald's

	Drainage Area (A) Ac.	Proposed Runoff Coeff. (C)	(Area) X (C)	Intensity in/hr		Flow (Q) cfs		Outflow Type
				10-YR	100-YR	10-YR	100-YR	
Area 1 (N)	0.258	0.77	0.199	5.2	9.6	1.04	1.92	Curb Inlet
Area 2 (E)	0.210	0.74	0.155	5.2	9.6	0.81	1.50	Curb Notch
Area 3 (S)	0.181	0.75	0.136	5.2	9.6	0.71	1.31	Curb Notch
Area 4 (W)	0.314	0.83	0.261	5.2	9.6	1.37	2.52	Curb Notch

Overflow Type: Curb Notch (Rectangular Weir)

$$Q = 3.33(b-0.2h)(h^{3/2})$$

where:

Q = flow through inlet (ft³/s)

b = width of curb notch/weir (ft)

h = head on weir (ft)

Area 2 (E)

b = 3 ft

h = 0.5 ft

Q = 3.41 cfs

Capacity = 3.41 cfs

10-YR Flow = 0.81 cfs < 3.41 cfs OK!

100-YR Flow = 1.50 cfs < 3.41 cfs OK!

Area 3 (S)

b = 3 ft

h = 0.5 ft

Q = 3.41 cfs

Capacity = 3.41 cfs

10-YR Flow = 0.71 cfs < 3.41 cfs OK!

100-YR Flow = 1.31 cfs < 3.41 cfs OK!

Area 4 (W)

b = 3 ft

h = 0.5 ft

Q = 3.41 cfs

Capacity = 3.41 cfs

10-YR Flow = 1.37 cfs < 3.41 cfs OK!

100-YR Flow = 2.52 cfs < 3.41 cfs OK!
