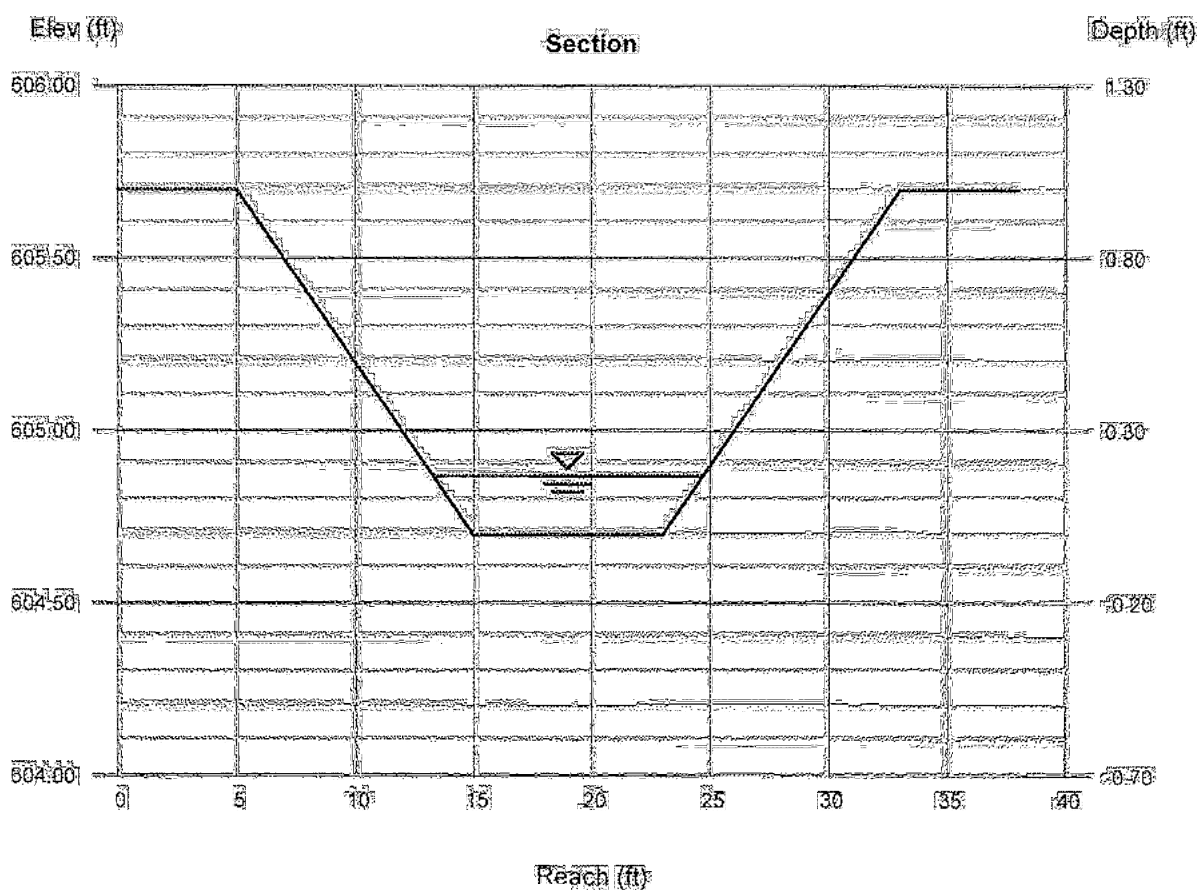


Channel Report

Hydrow Express/Extension for AutoCAD/ Civil 3D by Autodesk, Inc. (Thursday, Oct 20 2016)

Lot 5 Emergency Relief Swale Section - 15 Year HW Elevation

Trapezoidal		Highlighted	
Bottom Width (ft)	= 8.00	Depth (ft)	= 0.17
Side Slopes (z:1)	= 10:00, 10:00	Q (cfs)	= 2.91
Total Depth (ft)	= 1.00	Area (sqft)	= 1.65
Invert Elev (ft)	= 604.70	Velocity (ft/s)	= 1.76
Slope (%)	= 2.03	Wetted Perim (ft)	= 11.42
N-Value	= 0.030	Crit Depth, Yc (ft)	= 0.16
		Top Width (ft)	= 11.40
		EGL (ft)	= 0.22
Calculations			
Compute by:	Known Q		
Known Q (cfs)	= 2.91		

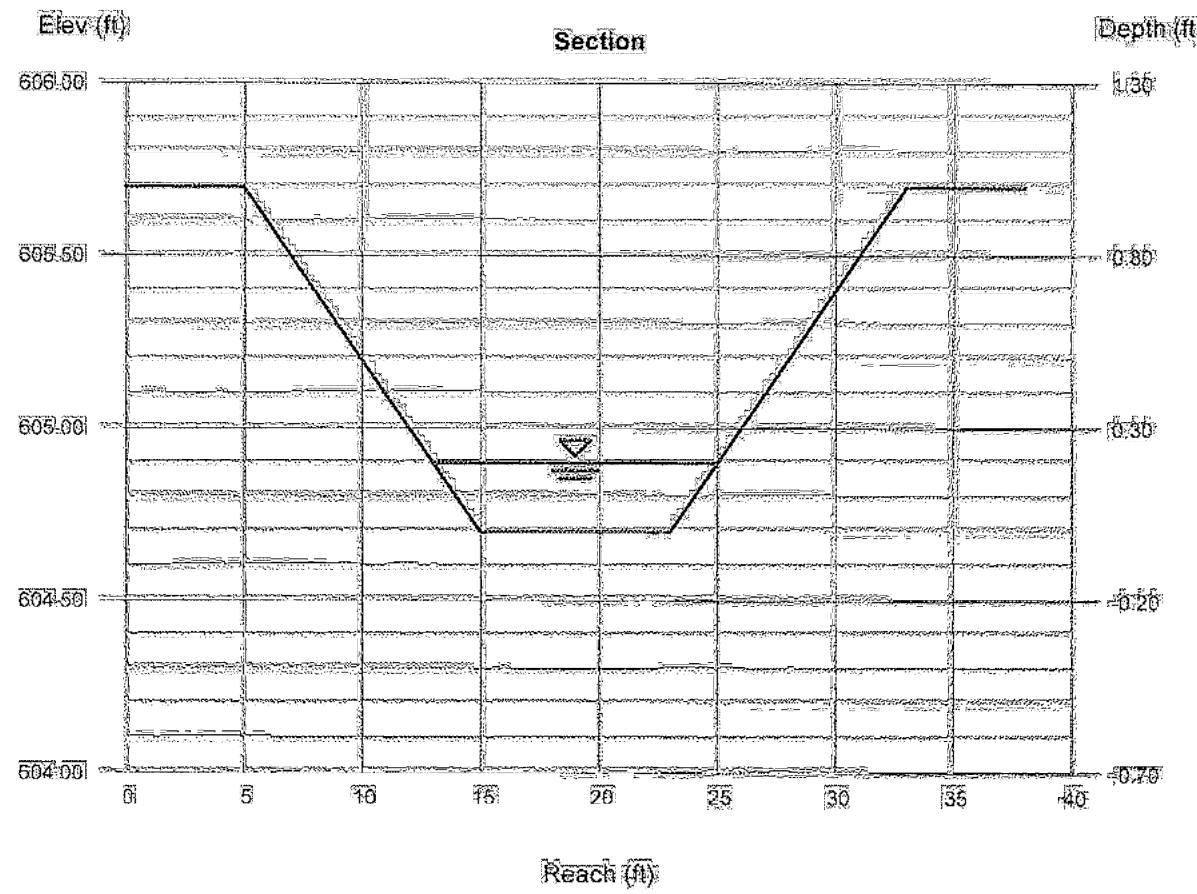


Channel Report

Hydrow Express/Extension for AutoCAD/ Civil 3D by Autodesk, Inc. (Thursday, Oct 20 2016)

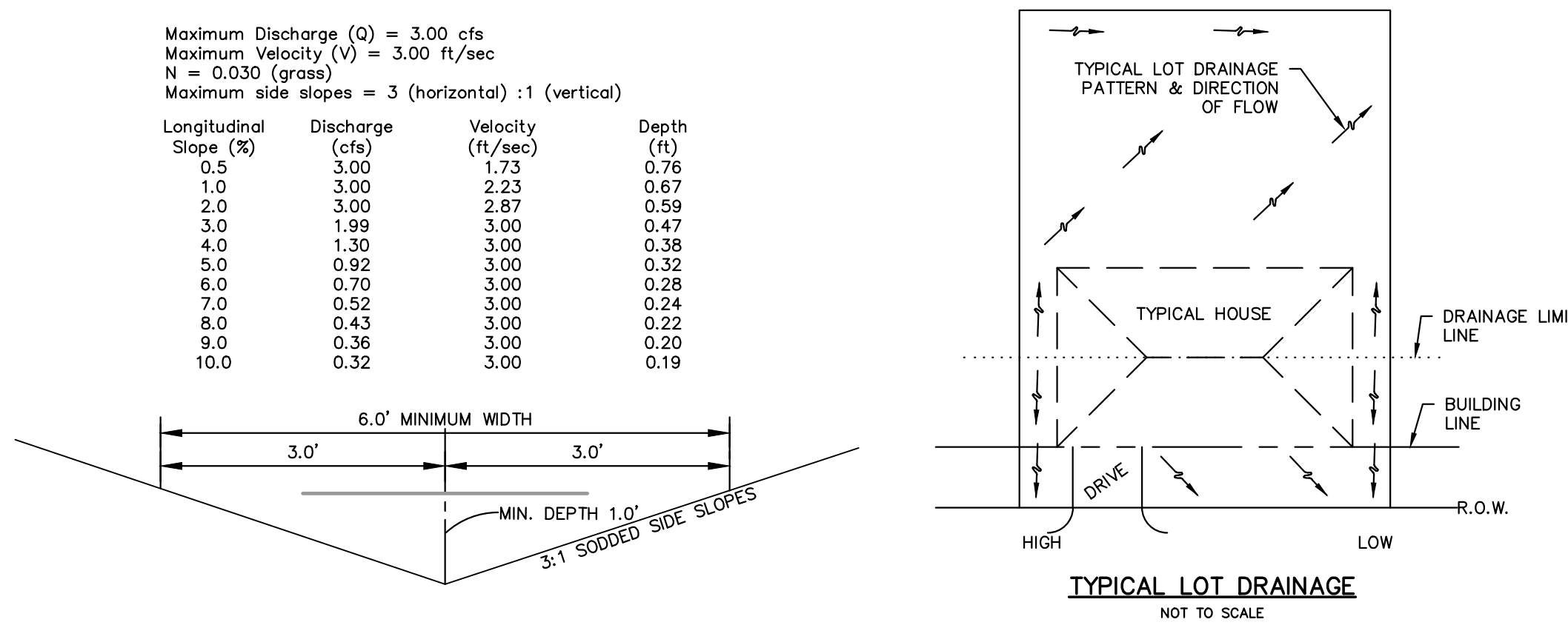
Lot 5 Emergency Relief Swale Section - 100 Year HW Elevation

Trapezoidal		Highlighted	
Bottom Width (ft)	= 8.00	Depth (ft)	= 0.20
Side Slopes (z:1)	= 10:00, 10:00	Q (cfs)	= 3.93
Total Depth (ft)	= 1.00	Area (sqft)	= 2.00
Invert Elev (ft)	= 604.70	Velocity (ft/s)	= 1.97
Slope (%)	= 2.03	Wetted Perim (ft)	= 12.02
N-Value	= 0.030	Crit Depth, Yc (ft)	= 0.19
		Top Width (ft)	= 12.00
		EGL (ft)	= 0.26
Calculations			
Compute by:	Known Q		
Known Q (cfs)	= 3.93		

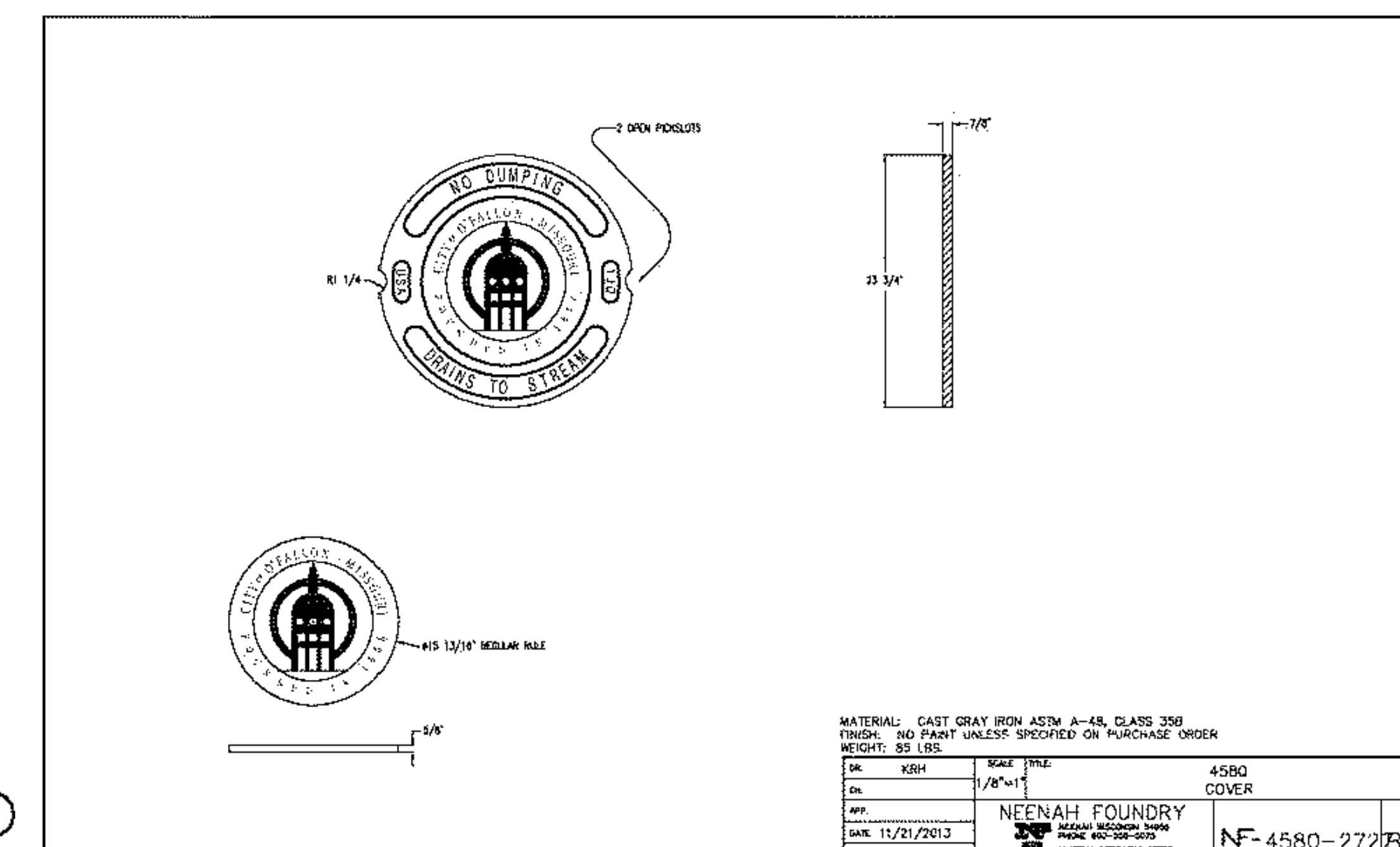
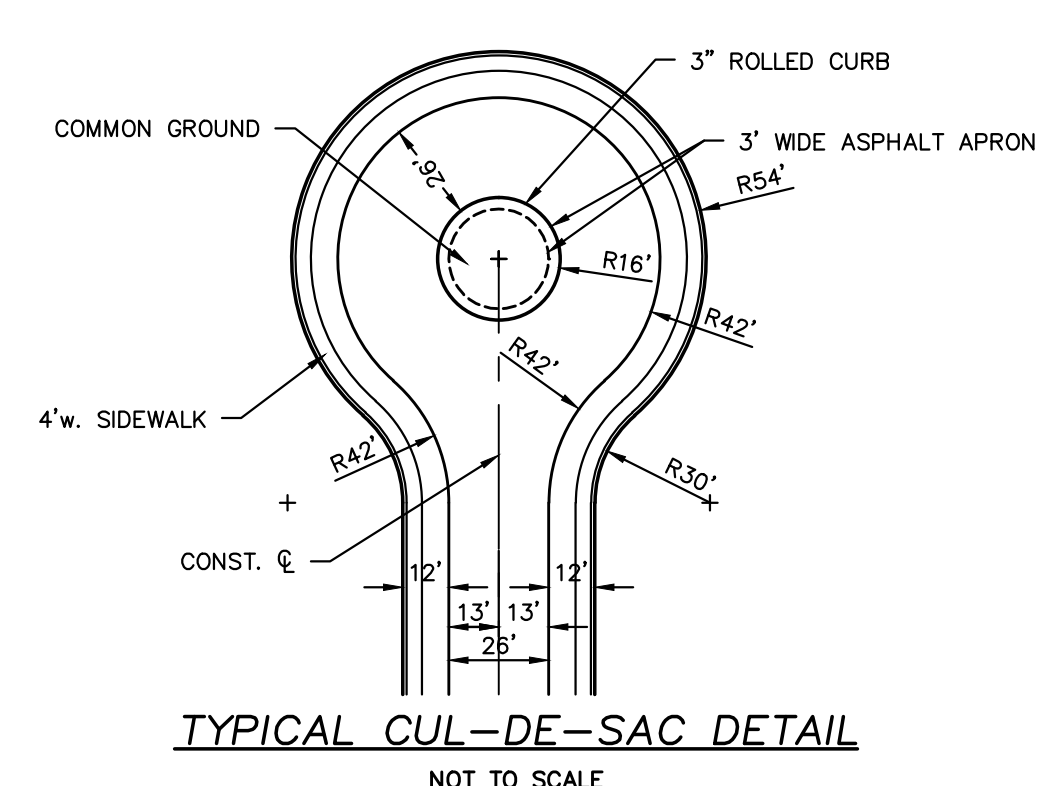
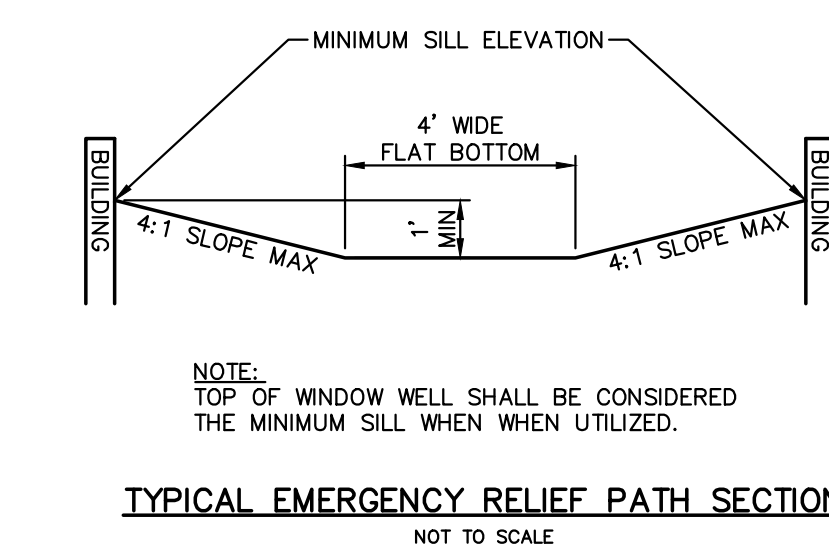


TYPICAL YARD SWALE

Maximum Discharge (Q) = 3.00 cfs			
Maximum Velocity (V) = 3.00 ft/sec			
N = 0.030 (grass)			
Maximum side slopes = 3 (horizontal) : 1 (vertical)			
Longitudinal Slope (%)	Discharge (cfs)	Velocity (ft/sec)	Depth (ft)
0.5	3.00	1.73	0.76
1.0	3.00	2.23	0.67
2.0	3.00	2.97	0.59
3.0	1.99	3.00	0.47
4.0	1.30	3.00	0.38
5.0	0.92	3.00	0.32
6.0	0.70	3.00	0.28
7.0	0.52	3.00	0.24
8.0	0.43	3.00	0.22
9.0	0.36	3.00	0.20
10.0	0.32	3.00	0.19



ISSUE	DATE / REMARKS
1	8-10-2016 Initial Submittal
2	9-1-2016 PWSD #2 & DCSO Comments
3	10-24-16 City Comments
4	11-15-16 DCSO Comments
5	12-12-16 City Comments
6	12-28-16 DCSO Comments
7	1-18-17 PWSD #2 Comments
8	1-26-17 Fire District Comments
9	1-27-17 City Comments
10	3-1-17 City Comments



616.8-3 (TA-3) Shoulder Work on Two-Lane Highways with Edgelines - MT

SPEED	SIGN SPACING (ft)		TAPER LENGTH (ft)		OPTIONAL BUFFER LENGTH (ft)	CHANNELIZER SPACING (ft)	
	Undivided (S)	Divided (S)	Shoulder (T1)	Lane (T2)		Tapers	Buffer Work Areas
0-35	200	-	70	-	250	35	50
40-45	350	-	150	-	360	40	100
50-55	500	-	185	-	495	50	100
60-70	1000	-	235	-	730	60	100

ROADWAY TYPE	SIGN HEIGHT	MAXIMUM WORK ZONE LENGTH (L)
URBAN	1' Portable 7' Post	1 MI.
RURAL UNDIVIDED	1' Portable 5' Post	3 MI.

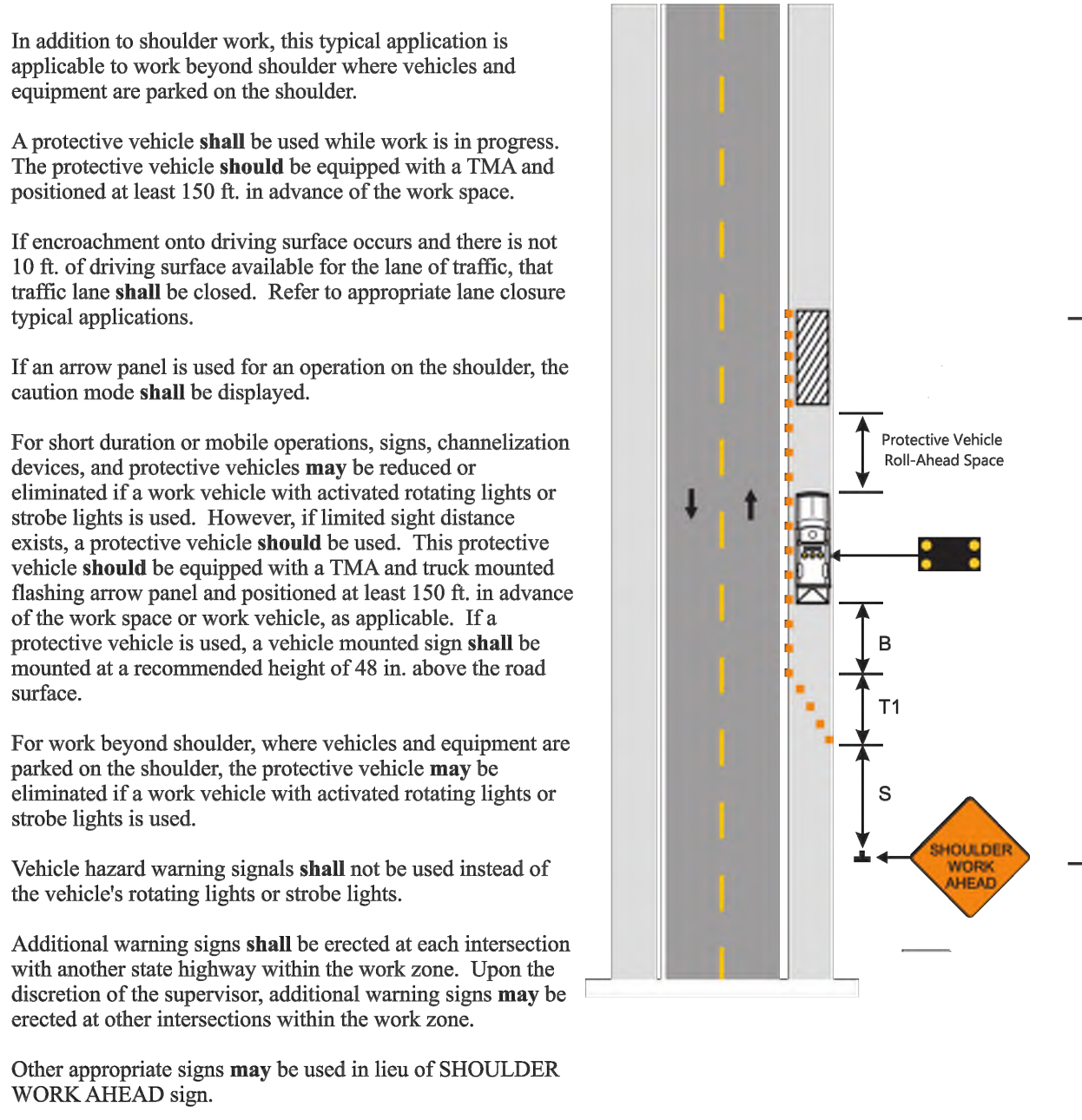


CHART 1B

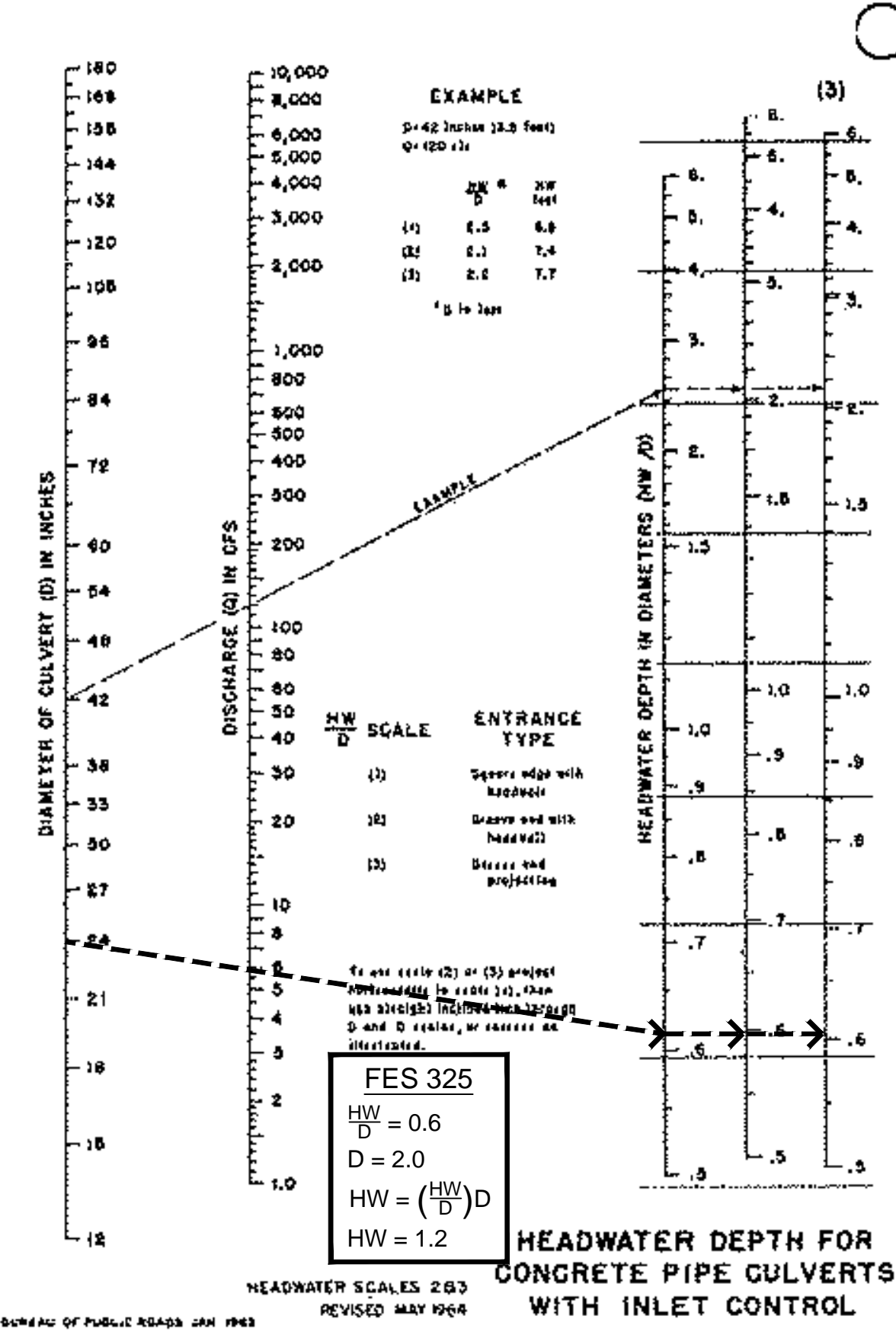
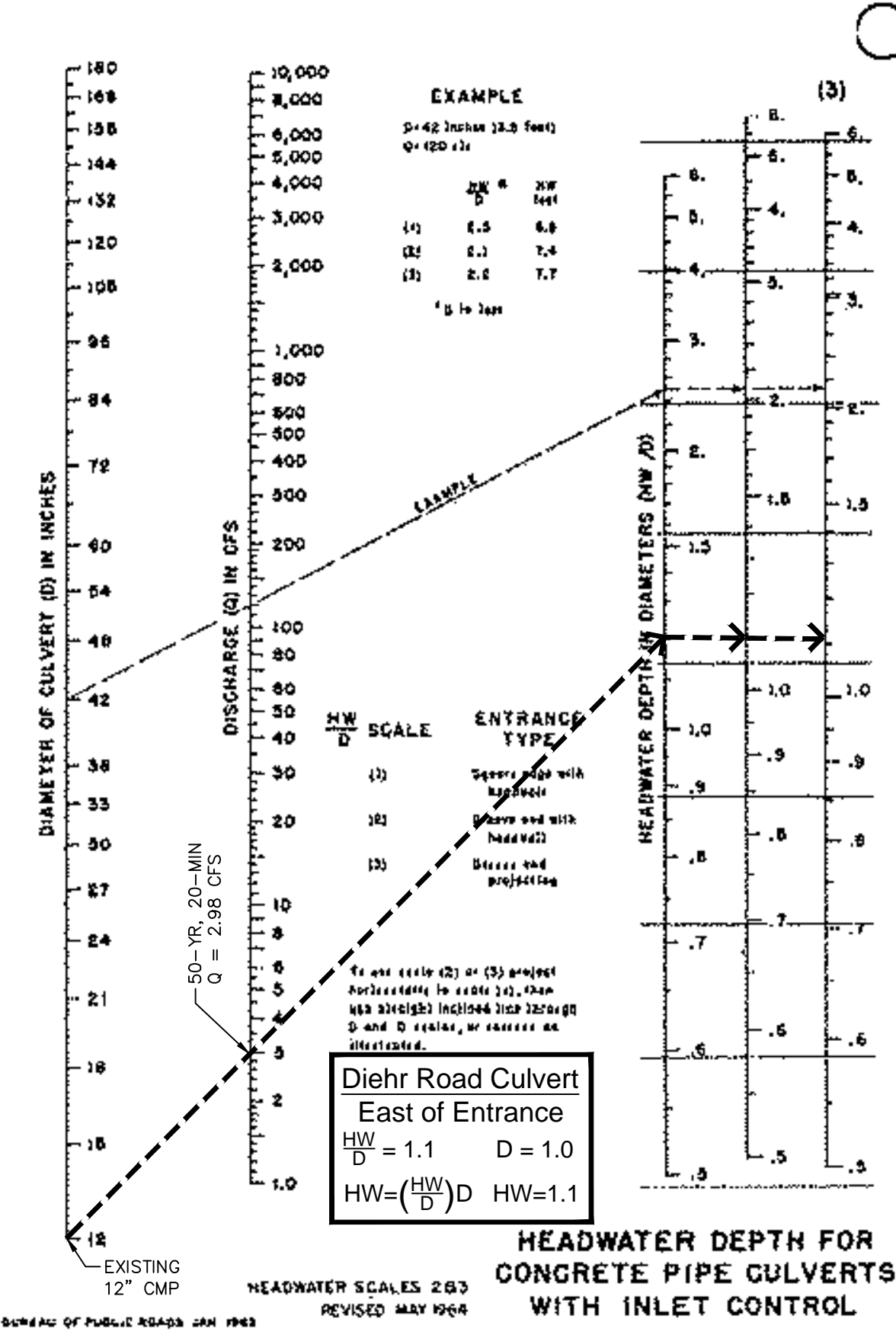
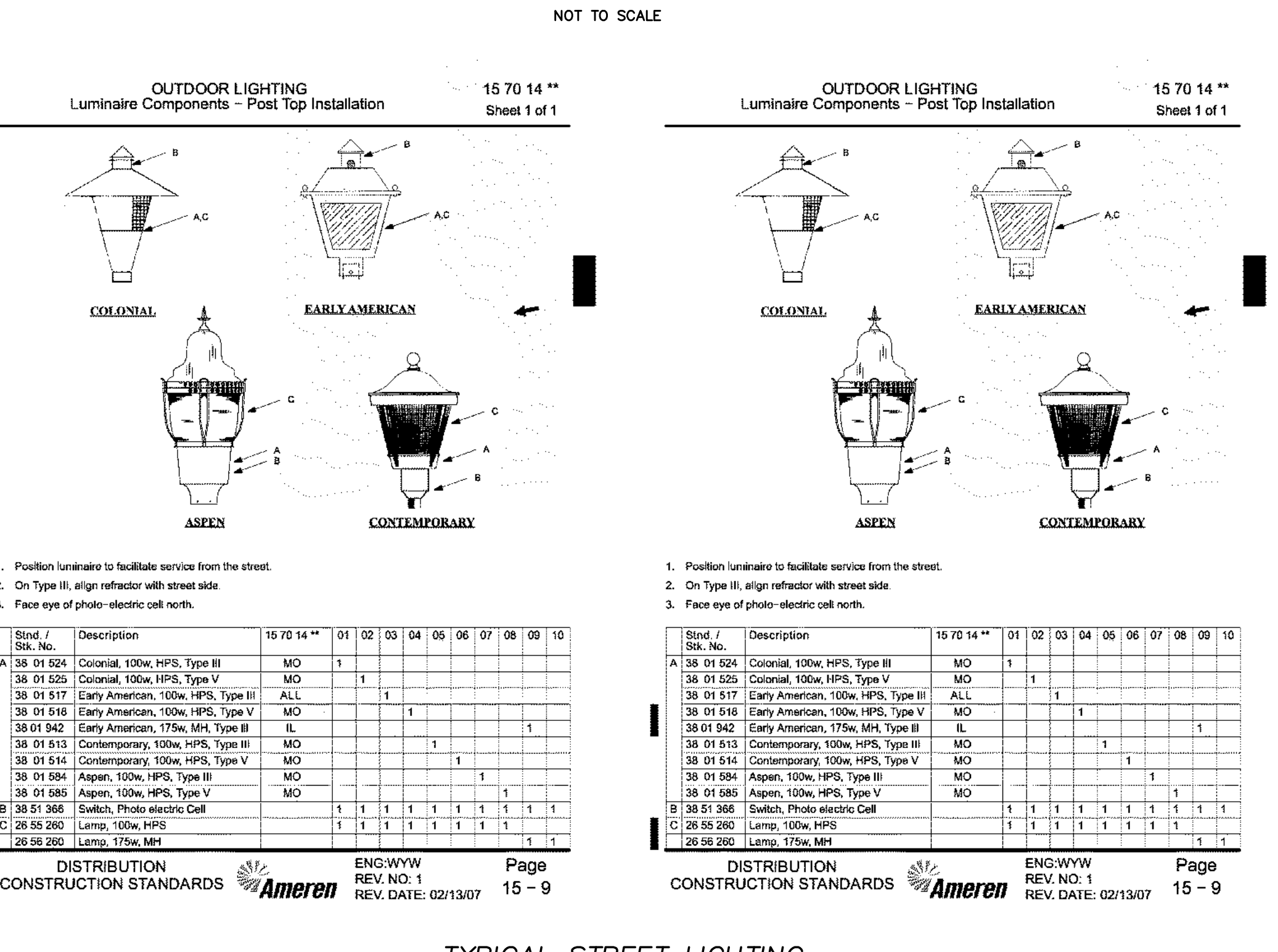


CHART 1B



STORM SEWER LID DETAIL

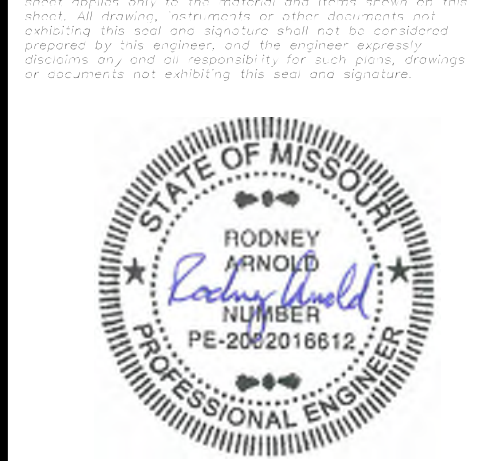


PROJECT TITLE

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Date:	3/01/2017
Job No.	14-10-348

Page No.
DTL-12
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