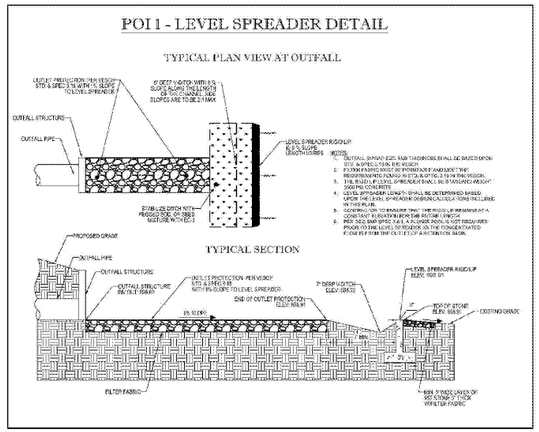
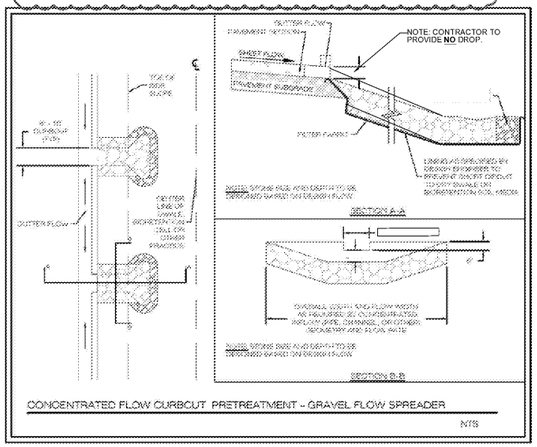


LEVEL SPREADER DESIGN CALCULATIONS (POI-1)

LENGTH = 13 LF PER CFS OF INFLOW (13' MIN, 130' MAX)

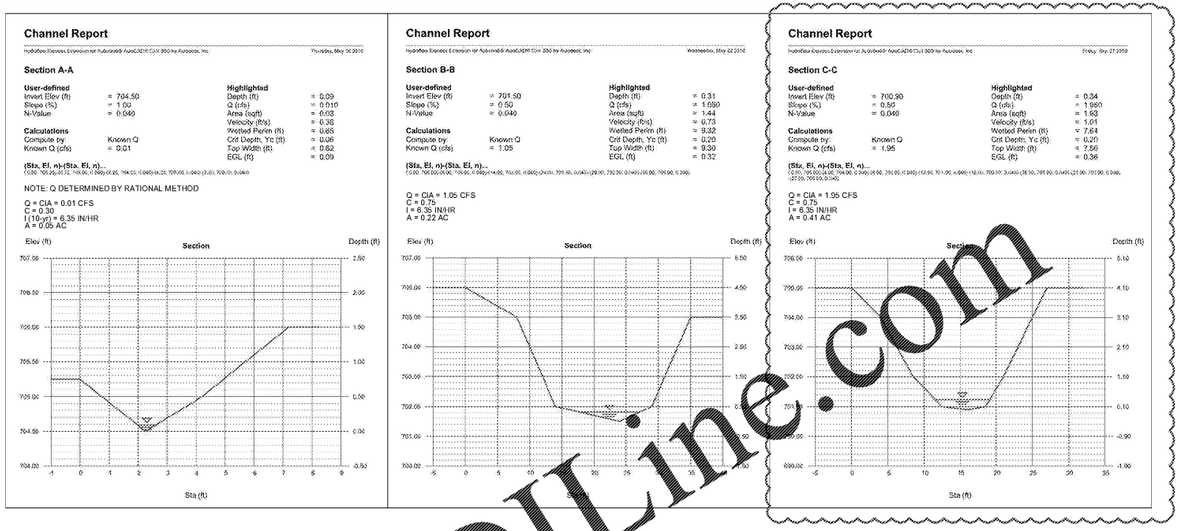
LENGTH REQUIRED = 13 X 2.84 CFS = 36.92 FEET

LENGTH PROPOSED = 60 FEET



CURB RIP-RAP DETAIL

NOT TO SCALE



10 YEAR STORM COMPUTATIONS

From Point	To Point	Drain. Area (acres)	Runoff Coeff. C	CA Incr.	CA Σ	Inlet Time (min)	Rainfall Intensity (in/hr)	Q Incr. (cfs)	Q Known (cfs)	Q Σ (cfs)	Invert Elev Upper (ft)	Invert Elev Lower (ft)	Length (ft)	Slope (%)	Dia. (in)	n	Capacity (cfs)	Velocity (fps)	Flow Time Incr. (min)	Flow Time Σ (min)	Q / Qfull	V / Vfull	Vfull	Remarks
A-1	A-0	–	–	–	–	–	–	–	2.84	2.84	699.56	699.00	76.41	0.73%	15	0.013	5.55	4.52	0.28	5.28	0.51	1.00	4.52	
B-1	B-0	0.08	0.90	0.07	0.07	5.00	6.35	0.39	–	0.44	701.10	701.00	9.76	1.02%	15	0.013	6.56	2.87	0.06	5.06	0.07	0.54	5.34	
C-2	C-1	0.06	0.30	0.02	0.02	5.00	6.35	0.13	–	0.13	701.33	701.22	19.30	0.57%	12	0.013	2.70	1.70	0.19	5.19	0.05	0.50	3.43	
C-1	C-0	0.12	0.90	0.10	0.10	5.00	6.30	0.69	–	0.82	701.12	701.00	10.20	1.18%	15	0.013	7.03	3.73	0.05	5.24	0.12	0.65	5.72	
O-2	O-1	0.56	0.21	0.12	5.00	6.35	1.33	–	1.33	700.90	700.60	59.59	0.50%	15	0.013	4.58	3.19	0.31	5.31	0.29	0.88	3.73	
D-1	D-0	0.20	0.85	0.17	0.38	5.31	6.26	1.06	–	2.38	700.50	699.90	117.49	0.51%	15	0.013	4.64	3.78	0.52	5.83	0.51	1.00	3.78	
E-2	E-1	0.08	0.85	0.08	0.08	5.00	6.35	0.51	–	0.51	701.80	701.60	39.27	0.51%	15	0.013	4.62	2.45	0.27	5.27	0.11	0.65	3.77	

10 YEAR HGL COMPUTATIONS

Structure No.	Outlet		Qo	Lo	Sfo	Hf	JUNCTION LOSS											Final H	Inlet WSE	Flow Line Elev.	Inlet Shaping	Pre-Cast Structure	Junction Loss Reduction	Remarks
		(in)			(%)		Vo	Ho	Qi	Vi	Qi - Vi	Vi^2/2g	Hi	Angle	K	Hd	Ht	1.3 Ht	0.5 Ht						
A-1	700.00	15	2.84	76.41	0.19%	0.15	4.52	0.08									0.08	–	0.04	0.19	700.19	705.75	Yes	Yes	Yes	
B-1	701.41	15	0.44	9.76	0.00%	0.00	2.87	0.03									0.03	0.04	0.02	0.02	701.43	705.25	Yes	Yes	Yes	
C-1	701.41	15	0.82	10.20	0.02%	0.00	3.73	0.05	0.13	1.70	0.22	0.04	0.02	–	–	0.00	0.07	0.09	0.05	0.05	701.46	705.00	Yes	Yes	Yes	
C-2	702.02	12	0.13	19.30	0.00%	0.00	1.70	0.01									0.01	0.01	0.01	0.01	702.03	704.50	Yes	Yes	Yes	
O-1	701.41	15	2.38	117.49	0.14%	0.16	3.78	0.06	1.33	3.19	4.24	0.16	0.06	15	0.10	0.02	0.13	0.16	0.08	0.24	701.65	705.00	Yes	Yes	Yes	
O-2	701.65	15	1.33	59.59	0.04%	0.03	3.19	0.04									0.04	0.05	–	0.08	701.73	–				
E-2	702.60	15	0.51	39.27	0.01%	0.00	2.45	0.02									0.02	0.03	0.02	0.02	702.62	704.30	Yes	Yes	Yes	

10 YEAR INLET COMPUTATIONS

Inlet No.	Inlet Type	Length (ft)		DA Drain Area (acres)	C Runoff Coeff-icient	I Inten-sity (in/hr)	Q Incr. Flow (cfs)	Qb Carry -over Flow (cfs)	Qt Accum. Flow (cfs)	S Gutter Slope (%)	Sx Pvmt Cross Slope (%)	n	T Spread On Grade (ft)	W Gutter Width (ft)	W / T	Sw Gutter Cross Slope (%)	On Grade Inlets Only: Sw / Sx	Eo (App. 9C-8)	a (in)	S'w = a / (12W) (%)	Se=Sx + S'w (Eo) (%)	Lt,Comp. Length (9C-17) (ft)	L,Spec -ified Length (ft)	L / Lt	E Eff. (9C-18)	Qi Int'x Flow (cfs)	Qb Byp. Flow (cfs)	Down Stream Str.	Sag Inlets Only: Qi Int'x Flow (cfs)	d Depth (ft)	h (ft)	d / h	Ts Spread In Sag (ft)	Remarks
B-1	Curb DI-3B	6	LT	0.04	0.90	6.35	0.23	–	0.46	2.00	2.00	0.015	1.46	2.00	1.37	8.33				3.52						–	–	–	0.46	0.08	0.46	0.16	0.91	In Sag
			RT	0.04	0.90		0.23			1.00			1.66		1.20																		
C-1	Curb DI-3B	6	LT	0.06	0.90	6.35	0.34	–	0.69	1.20	2.00	0.015	1.87	2.00	1.07	8.33				3.52						–	–	–	0.69	0.10	0.46	0.22	1.19	In Sag
			RT	0.06	0.90		0.34			1.80			1.73		1.15																		
C-0	Curb DI-3C	6	LT	0.12	0.85	6.35	0.65	–	1.06	1.70	2.00	0.015	2.01	2.00	0.68	8.33				3.52						–	–	–	1.05	0.13	0.46	0.29	1.59	In Sag
			RT	0.08	0.82		0.42			1.00			2.34		0.85																		
E-2	Comb DI-2B	6		0.09	0.90	6.35	0.51	–	0.51	1.00	2.00	0.015	3.03	2.00	0.66	8.33	4.17	0.99	3.52	14.66	16.50	4.2	6	1.44	1.00	0.51	–	–	–	–	–	–	–	On Grade

ROOF DRAIN SCHEDULE

Pipe	Invert Elev. Upper (ft)	Invert Elev. Lower (ft)	Length (ft)	Slope (%)	Dia. (in)	Material
RD-10	703.75	703.65	3.51	2.85%	6	PVC
RD-9	703.65	703.34	11.12	2.79%	6	PVC
RD-8	703.75	703.34	3.51	11.68%	6	PVC
RD-7	703.34	702.90	15.88	2.77%	6	PVC
RD-6	703.50	702.90	3.51	17.09%	6	PVC
RD-5	702.90	702.20	25.00	2.80%	6	PVC
RD-4	702.50	702.20	3.51	8.55%	6	PVC
RD-3	702.20	701.39	29.00	2.79%	6	PVC
RD-2	702.00	701.39	3.51	17.38%	6	PVC
RD-1	701.39	701.25	5.00	2.80%	6	PVC

10 YEAR HEADWATER COMPUTATIONS

Structure No.	Structure Type	DA Drainage Area (ac)	C Runoff Coefficient	I Intensity (in/hr)	Q 10 Yr Flow (cfs)	Head Water (ft)	Rim / Invert Elevation (ft)	10 Yr WSE (ft)	Remarks
C-2	Grate DI-1	0.06	0.30	7.20	0.13	0.17	Rim 704.50	704.67	

RIP-RAP OUTFALL COMPUTATIONS

Outfall	Q (cfs)	Do, Pipe Diameter (in)	Tailwater Condition	La, Apron Length (ft)	Apron Width Upstream (ft)	Apron Width Downstream (ft)	d50 (ft)	Rip-Rap Depth (ft)	Rip-Rap Class
A-0	2.84	15	Min	4	4	6	0.5	1.1	Class AI
E-1	0.51	15	Min	4	4	6	0.5	1.1	Class AI

NOTE: DRAINAGE TO PROPOSED CURB CUTS IS LESS THAN 0.5 CFS. PROPOSED RIPRAP APRONS MEET OR EXCEED MINIMUM DIMENSION REQUIREMENTS PER VESCH PLATE 3.18-4

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	6-20-19
	9-27-19

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DRAWN BY / CHECKED BY: DSH/JQR | CAD I.D.: SD2

C4.4