

Proposed Conditions (Includes MPE Stage 1)

- DRAINS Information
(Input & Output 5 year, 100 year, 100 year + 10% rainfall increase, 100 year + 20% rainfall increase, PMF
Stage Discharge Tables
Outlet Details
Stage 2 Drainage Plan
Proposed DRAINS Model Screenshot (Labels and worst case 100 year)

Calculation Sheet

Job MPE Stage 2

Design AZ
Date Oct-16
Checked BC
Date Oct-16

Office Sydney
Job No AA009335

MPE Stage 2



[illegible]

CHANNEL DETAILS													
Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Width (m)	L.B. Slope (1:?)	R.B. Slope (1:?)	Manning n	Depth (m)	Roofed
OVERFLOW ROUTE DETAILS													
Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Depth Major Storm (m)	SafeDepth Minor Storm (m)	Safe DxV (sq.m/sec)	Bed Slope (%)	D/S Area Contributing %	id
F PR Moore Bypass	PR Moore	OSD 2		1.5			Dummy used to model flow across road	0.2	0.05	0.6	1	0	796
F PR Bypass 2	PR Bypass2	PR Outlet2		4			Dummy used to model flow across road	0.2	0.05	0.6	1	0	790
F PR Bypass 1	PR Bypass1	PR Outlet2		8			Dummy used to model flow across road	0.2	0.05	0.6	1	0	785
F Simta Rd 6	Simta Rd 6	OSD 2		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	1150890359
F SR2	S Rd 2	OSD 1		1			8 m wide road (half section)	0.3	0.15	0.4	1	0	1189867654
F SR4	Simta Rd 4	OSD 1		3			8 m wide road (half section)	0.3	0.15	0.4	1	0	118686787
F Simta Rd 5	S Rd 5	OSD 2		3			Dummy used to model flow across road	0.2	0.05	0.6	1	0	118686803
F PR3	PR 3	OSD 2		1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	118736618
F Simta Rd 7	Simta Rd 7	OSD 2		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	118736632
F A1.1	A1.1	A1.2		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	119491553
F A1.2	A1.2	A1.3		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	119763662
F A1.3	A1.3	PR Outlet1		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	119866019
F Outlet 1	PR Outlet1	PR Combined 2		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	162638446
F A2.1	A2.1	A2.2		2			Dummy used to model flow across road	0.2	0.05	0.6	1	0	119831815
F A2.2	A2.2	A2.3		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	119491566
F A2.3	A2.3	PR Outlet2		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	119729595
F PR OUTLET 2	PR Outlet2	PR Combined 2		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	66193667
F SR3	S Rd 3	OSD 1		3			8 m wide road (half section)	0.3	0.15	0.4	1	0	118686773
Channel	Moore HW 1	Top Channel		5	14.15	1	Dummy used to model flow across road	0.3	0.3	0.6	1	0	66418832
Channel	Top Channel	SimtaChann		5			Concrete Channel	0.3	0.3	0.6	0.1	100	65745589
F PR DNSDC	PR DNSDC	N OSD9.2		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	65742028
F PR dummy DNS	PR dummy DNS	N OSD9.2		0.1			Dummy used to model flow across road	0.3	0.3	0.6	1	0	66418902
F S6	S6	OSD 9		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	116991895
F S5	S5	N MPE ST1		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	103017786
F Moore	Moore	N MPE ST1		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	103017785
F S RD 1	S Rd 1	N OSD9.2		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	115089004
F MPE ST1	N MPE ST1	OSD 10		0.1			Dummy used to model flow across road	0.3	0.3	0.6	1	0	66886581
F S4	S4	N MPE ST1		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	118729374
F S3	S3	N MPE ST1		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	118729376
F S2	S2	N MPE ST1		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	118729382
F S1	S1	N MPE ST1		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	118729389
F OutPit 10	OutPit 10	N OSD10.1		1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	119491557
F OSD10.3	N OSD10.1	Top Channel		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	121359224
F MPW	N MPW	OSD 10		0.1			Dummy used to model flow across road	0.2	0.05	0.6	1	0	119934499

DRAINS File Path:	F:\AA003760\D-Calculations\Civil\A-Stormwater\EO-SIMTA STAGE 2\MPE_Proposed.drn
DRAINS Version:	DRAINS results prepared 6 July, 2016 from Version 2016.07
Modeller's Name:	AZ
Description:	MPE Stage 2 Proposed

DRAINS results prepared from Version 2016.14								5 Year ARI			
PIT / NODE DETAILS				Version 8							
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min	Overflow	Constraint				
		HGL	Flow Arriving	Volume	Freeboard	(cu.m/s)					
			(cu.m/s)	(cu.m)	(m)						
A1.1	13	17.19	1.371	0.4	4	0	Inlet Capacity				
A1.2	12.8	17.3	0	0	4.5	0	None				
A1.3	12.63	17.1	0	0	4.47	0	None				
PR Outlet1	10		0.1								
A2.1	13.83	16.07	0.277	0.1	2.17	0	Inlet Capacity				
A2.2	13.66	16	0	0	2.34	0	None				
A2.3	13.51	16	0	0	2.49	0	None				
PR Outlet2	13.28		0.106								
Moore HW 1	12.15		2.954		2	0	None				
Top Channel	11.64		2.307								
PR DNSDC	11.04		1.764		2.96	0	None				
PR dummy D	10.48		0								
OutPit 10	12.39	17.27	2.307	0.6	4.61	0	Inlet Capacity				
N OSD10.1	11.53		0								
Pit OSD9	12.12	16.62	0.701	0.3	4.38	0	Inlet Capacity				
N OSD9.1	11.81		0								
SUB-CATCHMENT DETAILS											
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm				
	Flow Q	Max Q	Max Q	Tc	Tc	Tc					
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)					
PR C Moor B	0.107	0.107	0	3	0	0	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1				
C S RD 6	0.21	0.21	0	2	12	0	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1				
C S RD 2	0.979	0.979	0	7	0	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C S RD 4	0.16	0.16	0	4	0	0	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1				
C S RD 5	0.164	0.164	0	4.5	0	0	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1				
C PR 3.1	0.114	0.038	0.096	4.5	12	0	AR&R 5 year, 2 hours storm, average 27.9 mm/h, Zone 1				
C S RD7	0.082	0.082	0	7	0	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C S RD 3	0.157	0.157	0	2	0	0	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1				
C PR DNSC	1.764	1.495	0.269	5	5	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C S6	2.241	2.241	0	5	10	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C S5	1.326	1.326	0	5	10	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C MOORE	2.062	2.062	0	1	10	0	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1				
C S RD 1	1.02	1.02	0	5	12	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C S4	2.241	2.241	0	5	10	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C S3	2.241	2.241	0	5	10	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C S2	2.241	2.241	0	5	10	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C S1.1	1.924	1.924	0	5	10	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
MPW	3.773	3.773	0	5	10	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C S 7	2.208	2.208	0	5	10	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C PR 3.2	0.09	0.03	0.075	4.5	12	0	AR&R 5 year, 2 hours storm, average 27.9 mm/h, Zone 1				
C MPE North	8.455	8.455	0	8	0	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
C MPE South	4.71	4.71	0	8	0	0	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
S PR3.3	0.1	0.033	0.084	4.5	12	0	AR&R 5 year, 2 hours storm, average 27.9 mm/h, Zone 1				
Name	Max	Due to Storm									
	Flow										
	(cu.m/s)										
C PR Bypass	0.033	AR&R 5 year, 9 hours storm, average 10.7 mm/h, Zone 1									
C PR Bypass	0.031	AR&R 5 year, 9 hours storm, average 10.7 mm/h, Zone 1									
Outflow Volumes for Total Catchment (106 impervious + 3.27 pervious = 109 total ha)											
Storm	Total Rainfall	Total Runoff	Impervious R	Pervious Runoff							
	cu.m	cu.m (Runoff)	cu.m (Runoff)	cu.m (Runoff %)							
AR&R 5 year,	12483.02	11098.63 (88)	11052.91 (91)	45.72 (12.2%)							
AR&R 5 year,	31321.08	29640.30 (94)	29271.34 (96)	368.96 (39.3%)							
AR&R 5 year,	41074.8	39268.89 (95)	38707.94 (97)	560.95 (45.6%)							
AR&R 5 year,	46385.36	44527.39 (96)	43865.83 (97)	661.56 (47.6%)							
AR&R 5 year,	54512.4	52558.36 (96)	51756.05 (97)	802.32 (49.1%)							
AR&R 5 year,	60792.97	58784.79 (96)	57874.63 (98)	910.16 (50.0%)							
AR&R 5 year,	70538.52	68408.40 (97)	67342.65 (98)	1065.75 (50.4%)							
AR&R 5 year,	81663.7	79354.30 (97)	78146.57 (98)	1207.73 (49.3%)							
AR&R 5 year,	90625.43	88177.24 (97)	86846.83 (98)	1330.41 (49.0%)							
AR&R 5 year,	105208.32	102518.31 (97)	101014.87 (98)	1503.44 (47.7%)							
AR&R 5 year,	117240.85	114289.25 (97)	112606.61 (98)	1682.64 (47.9%)							
AR&R 5 year,	136891.8	133413.26 (97)	131711.92 (98)	1701.34 (41.5%)							
PIPE DETAILS											
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm						
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)							
P A1.1	1.371	2.95	12.847	12.8	AR&R 5 year, 12 hours storm, average 9.0 mm/h, Zone 1						
P A1.2	1.373	1.78	12.746	12.635	AR&R 5 year, 12 hours storm, average 9.0 mm/h, Zone 1						
P A1.3	1.369	1.78	12.581	12.381	AR&R 5 year, 12 hours storm, average 9.0 mm/h, Zone 1						
P A2.1	0.282	1.17	13.804	13.657	AR&R 5 year, 18 hours storm, average 7.0 mm/h, Zone 1						
P A2.2	0.277	1	13.646	13.506	AR&R 5 year, 18 hours storm, average 7.0 mm/h, Zone 1						

P A2.3	0.286	1.35	13.467	13.283	AR&R 5 year, 18 hours storm, average 7.0 mm/h, Zone 1				
P PR UNDER	2.961	3.07	11.822	11.641	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
P PR dummy	1.768	6.25	11.044	10.5	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1				
Pipe OutPit 10	2.307	2.91	12.176	11.532	AR&R 5 year, 2 hours storm, average 27.9 mm/h, Zone 1				
P OSD9	0.701	2.67	11.82	11.805	AR&R 5 year, 9 hours storm, average 10.7 mm/h, Zone 1				
CHANNEL DETAILS									
Name	Max Q (cu.m/s)	Max V (m/s)			Due to Storm				
OVERFLOW ROUTE DETAILS									
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm	
F PR Moore E	0.107	0.107	0	0.035	0.02	11.09	0.51	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1	
F PR Bypass	0.033	0.033	0	0.023	0.01	7.63	0.38	AR&R 5 year, 9 hours storm, average 10.7 mm/h, Zone 1	
F PR Bypass	0.031	0.031	0	0.023	0.01	7.63	0.36	AR&R 5 year, 9 hours storm, average 10.7 mm/h, Zone 1	
F Simta Rd 6	0.21	0.21	0	0.046	0.03	13.25	0.62	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1	
F SR2	0.979	0.979	0	0.223	0.35	6.4	1.59	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F SR4	0.16	0.16	0	0.133	0.14	3.08	1.06	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1	
F Simta Rd 5	0.164	0.164	0	0.042	0.02	12.35	0.58	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1	
F PR3	0.114	0.114	0	0.036	0.02	11.27	0.52	AR&R 5 year, 2 hours storm, average 27.9 mm/h, Zone 1	
F Simta Rd 7	0.082	0.082	0	0.033	0.02	10.56	0.46	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F A1.1	0	0	0	0	0	0	0		
F A1.2	0	0	0	0	0	0	0		
F A1.3	0	0	0	0	0	0	0		
F Outlet 1	1.381	1.381	0	0.099	0.1	23.85	1.04	AR&R 5 year, 12 hours storm, average 9.0 mm/h, Zone 1	
F A2.1	0	0	0	0	0	0	0		
F A2.2	0	0	0	0	0	0	0		
F A2.3	0	0	0	0	0	0	0		
F PR OUTLET	0.318	0.318	0	0.054	0.04	14.87	0.7	AR&R 5 year, 18 hours storm, average 7.0 mm/h, Zone 1	
F SR3	0.157	0.157	0	0.132	0.14	3.03	1.06	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1	
F PR OVER N	0	0	0	0	0	0	0		
Channel	4.716	4.716	0	1.112	1.74	3.77	1.56	AR&R 5 year, 1.5 hours storm, average 33.3 mm/h, Zone 1	
F PR DNSDC	0	0	0	0	0	0	0		
F PR dummy	1.768	1.768	0	0.11	0.12	26	1.11	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F S6	2.241	2.241	0	0.122	0.14	28.34	1.18	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F S5	1.326	1.326	0	0.097	0.1	23.49	1.04	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F Moore	2.062	2.062	0	0.117	0.14	27.44	1.16	AR&R 5 year, 5 minutes storm, average 137 mm/h, Zone 1	
F S RD 1	1.02	1.02	0	0.088	0.08	21.51	0.96	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F MPE ST1	11.992	11.992	0	0.23	0.45	49.99	1.95	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F S4	2.241	2.241	0	0.122	0.14	28.34	1.18	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F S3	2.241	2.241	0	0.122	0.14	28.34	1.18	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F S2	2.241	2.241	0	0.122	0.14	28.34	1.18	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F S1	1.924	1.924	0	0.114	0.13	26.72	1.14	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F OutPit 10	0	0	0	0	0	0	0		
F OSD10.3	2.307	2.307	0	0.123	0.15	28.52	1.19	AR&R 5 year, 2 hours storm, average 27.9 mm/h, Zone 1	
F MPW	3.773	3.773	0	0.15	0.2	34.08	1.35	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F Outpit9	0	0	0	0	0	0	0		
F OSD9.2	0.701	0.701	0	0.075	0.07	19	0.87	AR&R 5 year, 9 hours storm, average 10.7 mm/h, Zone 1	
F OSD9	2.954	2.954	0	0.136	0.17	31.21	1.26	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F S7	2.208	2.208	0	0.121	0.14	28.16	1.17	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F PR3.2	0.09	0.09	0	0.034	0.02	10.74	0.48	AR&R 5 year, 2 hours storm, average 27.9 mm/h, Zone 1	
F MPE North	8.455	8.455	0	0.208	0.35	45.58	1.66	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F MPE South	4.71	4.71	0	0.164	0.24	36.78	1.44	AR&R 5 year, 25 minutes storm, average 69.0 mm/h, Zone 1	
F OSD10.1	2.307	2.307	0	0.111	0	699.9	0.31	AR&R 5 year, 2 hours storm, average 27.9 mm/h, Zone 1	
F OSD9.1	0.701	0.701	0	0.005	0	699.9	0.19	AR&R 5 year, 9 hours storm, average 10.7 mm/h, Zone 1	
F OSD 1	1.371	1.371	0	0.008	0	699.9	0.26	AR&R 5 year, 12 hours storm, average 9.0 mm/h, Zone 1	
F PR A2	0.277	0.277	-1.4272E+18	0.003	0	699.9	0.14	AR&R 5 year, 18 hours storm, average 7.0 mm/h, Zone 1	
F PR3.3	0.1	0.1	0	0.035	0.02	10.91	0.51	AR&R 5 year, 2 hours storm, average 27.9 mm/h, Zone 1	
DETENTION BASIN DETAILS									
Name	Max WL	MaxVol	Max Q	Max Q	Max Q				
			Total	Low Level	High Level				
OSD 10	14.7	13959.7	2.307	0	2.307				
OSD 9	15.01	5087.7	0.701	0	0.701				
OSD 1	15.18	19433.2	1.371	0	1.371				
OSD 2	16.05	14842.8	0.277	0	0.277				
CONTINUITY CHECK for AR&R 5 year, 9 hours storm, average 10.7 mm/h, Zone 1									
Node	Inflow	Outflow	Storage Chan	Difference					
	(cu.m)	(cu.m)	(cu.m)	%					
PR Moore	44.58	44.58	0	0					
PR Bypass2	56.33	56.33	0	0					
PR Bypass1	62.05	62.05	0	0					
Simta Rd 6	87.57	87.57	0	0					
S Rd 2	453.77	453.77	0	0					
Simta Rd 4	66.87	66.87	0	0					
S Rd 5	68.46	68.46	0	0					
PR 3	46.94	46.94	0	0					
Simta Rd 7	38.21	38.21	0	0					
PR Combined	588.13	588.13	0	0					
A1.1	2427.6	2427.82	0.1	0					
A1.2	2427.82	2424.21	0	0.1					
A1.3	2424.21	2420.41	0	0.2					
PR Outlet1	2461.58	2460.5	0	0					
A2.1	436.74	436.77	0.05	0					
A2.2	436.77	435.72	0	0.2					
A2.3	435.72	434.15	0	0.4					
PR Outlet2	588.93	588.53	0	0.1					
S Rd 3	65.28	65.28	0	0					
SimtaChann	8947.69	8947.69	0	0					
Moore HW 1	2852.91	2853.79	0	0					

Top Channel	8955.09	8954.95	0	0																
PR DNSDC	692.73	692.73	0	0																
PR dummy D	692.73	692.73	0	0																
S6	955.3	955.3	0	0																
S5	565.22	565.22	0	0																
Moore	859.76	859.76	0	0																
S Rd 1	434.66	434.66	0	0																
N MPE ST1	5110.81	5110.85	0	0																
S4	955.3	955.3	0	0																
S3	955.3	955.3	0	0																
S2	955.3	955.3	0	0																
S1	819.97	819.97	0	0																
OutPit 10	6102.55	6101.5	0.02	0																
N OSD10.1	6101.5	6101.4	0	0																
N MPW	1608.09	1608.09	0	0																
Pit OSD9	1725.63	1725.59	0	0																
N OSD9.1	1725.59	1725.57	0	0																
N OSD9.2	2852.95	2852.93	0	0																
S7	940.97	940.97	0	0																
PR 3.2	37.06	37.06	0	0																
MPE North	4029.77	4029.77	0	0																
MPE South	2244.95	2244.95	0	0																
OSD 10	6718.9	6102.66	3698.02	-45.9																
OSD 9	1896.27	1725.64	1023.84	-45																
OSD 1	4615.7	2459.93	12937.78	-233.6																
OSD 2	2530.7	444.47	12518.65	-412.2																
PR3.3	41.17	41.17	0	0																
Outlet 1 Comt	2459.41	2459.41	0	0																
Run Log for MPE_Proposed.drn run at 17:43:25 on 12/10/2016																				
No water upwelling from any pit. Freeboard was adequate at all pits.																				
The maximum flow in the following overflow routes is unsafe: F Outlet 1, F MPE South, F MPE North, Channel, F S6, F S5, F Moore, F S RD 1, F S4, F S3, F S2, F S1, F OSD10.3, F MPW																				
The following overflow routes carried water uphill (adding energy): F OSD10.1 F OSD9.1 F OSD 1 F PR A2																				
These results may be invalid. You should check for water flowing round in circles at these locations. You may need to reformulate the model.																				

DRAINS File Path:	F:\AA003760\ID-Calculations\Civil\A-Stormwater\EO-SIMTA STAGE 2\MPE_Proposed.drn
DRAINS Version:	DRAINS results prepared 6 July, 2016 from Version 2016.07
Modeller's Name:	AZ
Description:	MPE Stage 2 Proposed

DRAINS results prepared from Version 2016.14										100 Year ARI	
PIT / NODE DETAILS											
Name	Max HGL	Max Pond	Max Surface	Version 8	Min	Overflow	Constraint				
		HGL	Flow Arriving	Volume	Freeboard	(cu.m/s)					
			(cu.m/s)	(cu.m)	(m)						
A1.1	13.31	17.23	1.84	0.50	3.69	0.00	Inlet Capacity				
A1.2	13.25	17.30	0.00	0.00	4.05	0.00	None				
A1.3	13.23	17.10	0.00	0.00	3.87	0.00	None				
PR Outlet1	13.20		0.18								
A2.1	14.69	16.22	1.66	0.50	1.31	0.00	Inlet Capacity				
A2.2	14.69	16.00	0.00	0.00	1.31	0.00	None				
A2.3	14.68	16.00	0.00	0.00	1.32	0.00	None				
PR Outlet2	14.66		0.20								
Moore HW 1	12.33		4.41		1.82	0.00	None				
Top Channel	11.71		3.08								
PR DNSDC	11.30		2.68		2.70	0.57	Inlet Capacity				
PR dummy DNSDC	10.48		0.00								
OutPit 10	12.73	17.33	3.08	0.80	4.27	0.00	Inlet Capacity				
N OSD10.1	12.96		0.00								
Pit OSD9	13.13	16.64	0.90	0.30	3.37	0.00	Inlet Capacity				
N OSD9.1	13.06		0.00								
SUB-CATCHMENT DETAILS											
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm				
	Flow Q	Max Q	Max Q	Tc	Tc	Tc					
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)					
PR C Moor Bypass	0.17	0.17	0.00	3.00	0.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C S RD 6	0.34	0.34	0.00	2.00	12.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C S RD 2	1.44	1.44	0.00	7.00	0.00	0.00	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1				
C S RD 4	0.26	0.26	0.00	4.00	0.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C S RD 5	0.27	0.27	0.00	4.50	0.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C PR 3.1	0.20	0.06	0.16	4.50	12.00	0.00	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1				
C S RD7	0.12	0.12	0.00	7.00	0.00	0.00	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1				
C S RD 3	0.26	0.26	0.00	2.00	0.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C PR DNSC	2.68	2.36	0.32	5.00	5.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C S6	3.54	3.54	0.00	5.00	10.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C S5	2.09	2.09	0.00	5.00	10.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C MOORE	3.36	3.36	0.00	1.00	10.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C S RD 1	1.61	1.61	0.00	5.00	12.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C S4	3.54	3.54	0.00	5.00	10.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C S3	3.54	3.54	0.00	5.00	10.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C S2	3.54	3.54	0.00	5.00	10.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C S1.1	3.03	3.03	0.00	5.00	10.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
MPW	5.95	5.95	0.00	5.00	10.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C S 7	3.48	3.48	0.00	5.00	10.00	0.00	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1				
C PR 3.2	0.16	0.05	0.13	4.50	12.00	0.00	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1				
C MPE North	12.49	12.49	0.00	8.00	0.00	0.00	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1				
C MPE South	6.96	6.96	0.00	8.00	0.00	0.00	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1				
S PR3.3	0.18	0.06	0.14	4.50	12.00	0.00	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1				
Name	Max	Due to Storm									
	Flow										
	(cu.m/s)										
C PR Bypass 2	0.06	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1									
C PR Bypass 1	0.06	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1									
Outflow Volumes for Total Catchment (106 impervious + 3.27 pervious = 109 total ha)											
Storm	Total Rainfall	Total Runoff	Impervious Runoff	Pervious Runoff							
	cu.m	cu.m (Runoff %)	cu.m (Runoff %)	cu.m (Runoff %)							
AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1	20352.12	18880.43 (92)	18686.96 (94)	193.48 (31.7%)							
AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1	51023.80	49270.88 (96)	48325.47 (97)	945.41 (61.8%)							
AR&R 100 year, 45 minutes storm, average 82.1 mm/h, Zone 1	67126.20	65263.52 (97)	63938.12 (98)	1325.40 (65.9%)							
AR&R 100 year, 1 hour storm, average 69.7 mm/h, Zone 1	76016.19	74114.85 (97)	72582.58 (98)	1532.27 (67.3%)							
AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1	89751.69	87782.21 (97)	85938.82 (98)	1843.39 (68.5%)							
AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1	100464.52	98434.23 (98)	96350.78 (98)	2083.44 (69.2%)							
AR&R 100 year, 3 hours storm, average 35.9 mm/h, Zone 1	117240.84	115076.96 (98)	112643.60 (99)	2433.36 (69.3%)							
AR&R 100 year, 4.5 hours storm, average 27.8 mm/h, Zone 1	136575.70	134225.46 (98)	131416.70 (99)	2808.75 (68.6%)							
AR&R 100 year, 6 hours storm, average 23.3 mm/h, Zone 1	152357.53	149810.53 (98)	146728.34 (99)	3082.18 (67.5%)							
AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1	178466.14	175457.46 (98)	172008.00 (99)	3449.46 (64.5%)							
AR&R 100 year, 12 hours storm, average 15.3 mm/h, Zone 1	200454.92	197171.92 (98)	193333.67 (99)	3838.25 (63.9%)							
AR&R 100 year, 18 hours storm, average 12.1 mm/h, Zone 1	237413.56	233548.66 (98)	229294.17 (99)	4254.49 (59.8%)							
PIPE DETAILS											
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm						
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)							
P A1.1	1.84	0.77	13.25	13.25	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1						
P A1.2	1.84	0.64	13.24	13.23	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1						
P A1.3	1.84	0.64	13.21	13.20	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1						
P A2.1	1.67	0.41	14.69	14.69	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1						
P A2.2	1.65	0.41	14.69	14.68	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1						
P A2.3	1.66	0.41	14.67	14.66	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1						
P PR UNDER MOORE	4.44	3.53	11.90	11.71	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1						
P PR dummy DNSDC	2.12	7.49	11.30	10.50	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1						
Pipe OutPit 10	3.08	0.83	12.64	12.56	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1						
P OSD9	0.90	0.50	13.06	13.06	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1						
CHANNEL DETAILS											
Name	Max Q	Max V	Due to Storm								
	(cu.m/s)	(m/s)									
OVERFLOW ROUTE DETAILS											
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max Dx/V	Max Width	Max V	Due to Storm			
F PR Moore Bypass	0.17	0.17	5.38	0.04	0.03	12.53	0.60	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1			
F PR Bypass 2	0.06	0.06	0.00	0.03	0.01	9.73	0.42	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1			
F PR Bypass 1	0.06	0.06	0.00	0.03	0.01	9.73	0.42	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1			
F Simta Rd 6	0.34	0.34	0.00	0.06	0.04	15.23	0.71	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1			
F SR2	1.44	1.44	0.00	0.25	0.46	6.40	1.84	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1			
F SR4	0.26	0.26	0.00	0.16	0.17	4.40	1.07	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1			
F Simta Rd 5	0.27	0.27	0.00	0.05	0.03	14.15	0.67	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1			
F PR3	0.20	0.20	0.00	0.05	0.03	13.07	0.62	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1			
F Simta Rd 7	0.12	0.12	0.00	0.04	0.02	11.45	0.53	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1			
F A1.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
F A1.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
F A1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
F Outlet 1	1.86	1.86	0.00	0.11	0.13	26.54	1.12	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1			

F A2.1		0.00	0.00	0.00	0.00	0.00	0.00	0.00									
F A2.2		0.00	0.00	0.00	0.00	0.00	0.00	0.00									
F A2.3		0.00	0.00	0.00	0.00	0.00	0.00	0.00									
F PR OUTLET 2		1.81	1.81	0.00	0.11	0.12	26.18	1.12	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1								
F SR3		0.26	0.26	0.00	0.16	0.17	4.28	1.07	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F PR OVER MOORE		0.00	0.00	0.00	0.00	0.00	0.00	0.00									
Channel		6.89	6.89	0.00	1.36	2.34	4.23	1.73	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1								
F PR DNSDC		0.57	0.57	0.00	0.07	0.06	17.92	0.81	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F PR dummy DNSDC		2.12	2.12	0.00	0.12	0.14	27.80	1.16	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1								
F S6		3.54	3.54	0.00	0.15	0.19	33.19	1.33	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F S5		2.09	2.09	0.00	0.12	0.14	27.62	1.16	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F Moore		3.36	3.36	0.00	0.14	0.19	32.65	1.31	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F S RD 1		1.61	1.61	0.00	0.11	0.12	25.10	1.09	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F MPE ST1		19.09	19.09	0.00	0.23	0.71	49.99	3.11	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F S4		3.54	3.54	0.00	0.15	0.19	33.19	1.33	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F S3		3.54	3.54	0.00	0.15	0.19	33.19	1.33	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F S2		3.54	3.54	0.00	0.15	0.19	33.19	1.33	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F S1		3.03	3.03	0.00	0.14	0.18	31.39	1.28	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F OutPit 10		0.00	0.00	0.00	0.00	0.00	0.00	0.00									
F OSD10.3		3.08	3.08	0.00	0.14	0.18	31.75	1.27	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1								
F MPW		5.95	5.95	0.00	0.18	0.27	40.19	1.51	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F Outpit9		0.00	0.00	0.00	0.00	0.00	0.00	0.00									
F OSD9.2		0.90	0.90	0.00	0.08	0.08	20.61	0.93	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1								
F OSD9		4.41	4.41	0.00	0.16	0.22	36.06	1.40	AR&R 100 year, 1.5 hours storm, average 54.9 mm/h, Zone 1								
F S7		3.48	3.48	0.00	0.15	0.19	33.01	1.33	AR&R 100 year, 5 minutes storm, average 224 mm/h, Zone 1								
F PR3.2		0.16	0.16	0.00	0.04	0.02	12.35	0.57	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1								
F MPE North		12.49	12.49	0.00	0.23	0.47	49.99	2.03	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1								
F MPE South		6.96	6.96	0.00	0.19	0.30	42.53	1.57	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1								
F OSD10.1		3.08	3.08	0.00	0.01	0.00	699.90	0.35	AR&R 100 year, 2 hours storm, average 46.1 mm/h, Zone 1								
F OSD9.1		0.90	0.90	0.00	0.01	0.00	699.90	0.22	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1								
F OSD 1		1.84	1.84	0.00	0.01	0.00	699.90	0.30	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1								
F PR A2		1.66	1.66	5.38	0.01	0.00	699.90	0.29	AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1								
F PR3.3		0.18	0.18	0.00	0.04	0.03	12.71	0.58	AR&R 100 year, 25 minutes storm, average 112 mm/h, Zone 1								
DETENTION BASIN DETAILS																	
Name		Max WL	MaxVol	Max Q	Max Q	Max Q											
				Total	Low Level	High Level											
OSD 10		15.57	24023.70	3.08	0.00	3.08											
OSD 9		15.87	7988.10	0.90	0.00	0.90											
OSD 1		15.66	27373.30	1.84	0.00	1.84											
OSD 2		16.19	16591.70	1.66	0.00	1.66											
CONTINUITY CHECK for AR&R 100 year, 9 hours storm, average 18.2 mm/h, Zone 1																	
Node		Inflow (cu.m)	Outflow (cu.m)	Storage Chan (cu.m)	Difference %												
PR Moore		75.95	75.95	0.00	0.00												
PR Bypass2		114.73	114.73	0.00	0.00												
PR Bypass1		115.93	115.93	0.00	0.00												
Simta Rd 6		149.18	149.18	0.00	0.00												
S Rd 2		773.04	773.04	0.00	0.00												
Simta Rd 4		113.92	113.92	0.00	0.00												
S Rd 5		116.63	116.63	0.00	0.00												
PR 3		103.06	103.06	0.00	0.00												
Simta Rd 7		65.10	65.10	0.00	0.00												
PR Combined 2		2435.70	2435.70	0.00	0.00												
A1.1		5593.75	5593.18	0.11	0.00												
A1.2		5593.18	5593.33	0.00	0.00												
A1.3		5593.33	5593.14	0.00	0.00												
PR Outlet1		5683.54	5682.43	0.00	0.00												
A2.1		2126.84	2125.73	0.05	0.00												
A2.2		2125.73	2128.70	0.00	-0.10												
A2.3		2128.70	2125.17	0.00	0.20												
PR Outlet2		2436.54	2436.09	0.00	0.00												
S Rd 3		111.21	111.21	0.00	0.00												
SimtaChann		15833.63	15833.63	0.00	0.00												
Moore HW 1		5020.79	5021.54	0.00	0.00												
Top Channel		15844.46	15844.30	0.00	0.00												
PR DNSDC		1224.43	1224.46	0.00	0.00												
PR dummy DNSDC		1224.46	1224.46	0.00	0.00												
S6		1627.45	1627.45	0.00	0.00												
S5		962.91	962.91	0.00	0.00												
Moore		1464.71	1464.71	0.00	0.00												
S Rd 1		740.49	740.49	0.00	0.00												
N MPE ST1		8706.85	8706.83	0.00	0.00												
S4		1627.45	1627.45	0.00	0.00												
S3		1627.45	1627.45	0.00	0.00												
S2		1627.45	1627.45	0.00	0.00												
S1		1396.90	1396.90	0.00	0.00												
OutPit 10		10823.02	10823.21	0.02	0.00												
N OSD10.1		10823.21	10823.08	0.00	0.00												
N MPW		2739.53	2739.53	0.00	0.00												
Pit OSD9		3057.46	3055.99	0.01	0.00												
N OSD9.1		3055.99	3055.95	0.00	0.00												
N OSD9.2		5020.86	5020.82	0.00	0.00												
S7		1603.05	1603.05	0.00	0.00												
PR 3.2		81.36	81.36	0.00	0.00												
MPE North		6865.15	6865.15	0.00	0.00												
MPE South		3824.52	3824.52	0.00	0.00												
OSD 10		11446.33	10823.16	3739.87	-27.20												
OSD 9		3230.50	3057.50	1038.06	-26.80												
OSD 1		7863.38	5626.77	13422.47	-142.30												
OSD 2		4334.51	2134.77	13199.12	-253.80												
PR3.3		90.40	90.40	0.00	0.00												
Outlet 1 Combined		5681.35	5681.35	0.00	0.00												
Run Log for MPE_Proposed.drn run at 17:07:05 on 12/10/2016																	
No water upwelling from any pit. Freeboard was adequate at all pits.																	
The maximum flow in the following overflow routes is unsafe: F MPE North, Channel, F SR2																	
The following overflow routes carried water uphill (adding energy): F OSD10.1 F OSD9.1 F OSD 1 F PR A2																	
These results may be invalid. You should check for water flowing round in circles at these locations. You may need to reformulate the model.																	

DRAINS File Path:	F:\AA003760\I-Calculations\Civil\A-Stormwater\E0-SIMTA STAGE 2\MPE_Proposed.drn
DRAINS Version:	DRAINS results prepared 6 July, 2016 from Version 2016.07
Modeller's Name:	AZ
Description:	MPE Stage 2 Proposed

DRAINS results prepared from Version 2016.14								100 Year CC			
PIT / NODE DETAILS			Version 8								
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min	Overflow	Constraint				
		HGL	Flow Arriving	Volume	Freeboard	(cu.m/s)					
			(cu.m/s)	(cu.m)	(m)						
A1.1	13.07	17.24	1.917	0.5	3.93	0	Inlet Capacity				
A1.2	12.85	17.3	0	0	4.45	0	None				
A1.3	12.69	17.1	0	0	4.41	0	None				
PR Outlet1	10		0.201								
A2.1	14.01	16.22	1.746	0.5	1.99	0	Inlet Capacity				
A2.2	13.83	16	0	0	2.17	0	None				
A2.3	13.72	16	0	0	2.28	0	None				
PR Outlet2	13.42		0.233								
Moore HW 1	12.41		5.098		1.74	0	None				
Top Channel	11.75		3.266								
PR DNSDC	11.3		2.985		2.7	0.875	Inlet Capacity				
PR dummy D	10.48		0								
OutPit 10	12.5	17.34	3.266	0.8	4.5	0	Inlet Capacity				
N OSD10.1	11.58		0								
Pit OSD9	12.22	16.65	0.935	0.3	4.28	0	Inlet Capacity				
N OSD9.1	11.85		0								
SUB-CATCHMENT DETAILS											
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm				
	Flow Q	Max Q	Max Q	Tc	Tc	Tc					
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)					
PR C Moor B	0.192	0.192	0	3	0	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C S RD 6	0.377	0.377	0	2	12	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C S RD 2	1.586	1.586	0	7	0	0	AR&R 101 year, 25 minutes storm, average 124 mm/h, Zone 1				
C S RD 4	0.288	0.288	0	4	0	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C S RD 5	0.294	0.294	0	4.5	0	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C PR 3.1	0.23	0.068	0.186	4.5	12	0	AR&R 101 year, 25 minutes storm, average 124 mm/h, Zone 1				
C S RD7	0.134	0.134	0	7	0	0	AR&R 101 year, 25 minutes storm, average 124 mm/h, Zone 1				
C S RD 3	0.281	0.281	0	2	0	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C PR DNSC	2.985	2.606	0.378	5	5	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C S6	3.908	3.908	0	5	10	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C S5	2.312	2.312	0	5	10	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C MOORE	3.697	3.697	0	1	10	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C S RD 1	1.778	1.778	0	5	12	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C S4	3.908	3.908	0	5	10	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C S3	3.908	3.908	0	5	10	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C S2	3.908	3.908	0	5	10	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C S1.1	3.355	3.355	0	5	10	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
MPW	6.579	6.579	0	5	10	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C S 7	3.85	3.85	0	5	10	0	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
C PR 3.2	0.181	0.054	0.147	4.5	12	0	AR&R 101 year, 25 minutes storm, average 124 mm/h, Zone 1				
C MPE North	13.74	13.74	0	8	0	0	AR&R 101 year, 25 minutes storm, average 124 mm/h, Zone 1				
C MPE South	7.654	7.654	0	8	0	0	AR&R 101 year, 25 minutes storm, average 124 mm/h, Zone 1				
S PR3.3	0.201	0.06	0.163	4.5	12	0	AR&R 101 year, 25 minutes storm, average 124 mm/h, Zone 1				
Name	Max	Due to Storm									
	Flow										
	(cu.m/s)										
C PR Bypass	0.068	AR&R 101 year, 6 hours storm, average 25.6 mm/h, Zone 1									
C PR Bypass	0.068	AR&R 101 year, 9 hours storm, average 20.0 mm/h, Zone 1									
Outflow Volumes for Total Catchment (106 impervious + 3.27 pervious = 109 total ha)											
Storm	Total Rainfall	Total Runoff	Impervious R	Pervious Runoff							
	cu.m	cu.m (Runoff)	cu.m (Runoff)	cu.m (Runoff %)							
AR&R 101 ye	22387.51	20893.71 (93)	20660.10 (95)	233.61 (34.8%)							
AR&R 101 ye	56127.27	54361.91 (96)	53264.91 (97)	1097.00 (65.2%)							
AR&R 101 ye	73839.11	71971.60 (97)	70446.11 (98)	1525.49 (68.9%)							
AR&R 101 ye	83616.44	81710.48 (97)	79951.62 (98)	1758.86 (70.2%)							
AR&R 101 ye	98729.77	96758.21 (98)	94646.90 (98)	2111.31 (71.4%)							
AR&R 101 ye	110509.78	108479.22 (98)	106096.66 (98)	2382.55 (71.9%)							
AR&R 101 ye	128962.76	126797.26 (98)	124016.48 (98)	2780.77 (71.9%)							
AR&R 101 ye	150226.77	147875.55 (98)	144660.81 (98)	3214.73 (71.4%)							
AR&R 101 ye	167588.94	165036.98 (98)	161508.50 (98)	3528.48 (70.3%)							
AR&R 101 ye	196324.2	193369.60 (98)	189401.84 (98)	3967.76 (67.4%)							
AR&R 101 ye	220503.69	217157.66 (98)	212761.81 (98)	4395.85 (66.5%)							
AR&R 101 ye	261151.61	257230.42 (98)	252321.89 (98)	4908.52 (62.7%)							
PIPE DETAILS											
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm						
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)							
P A1.1	1.917	2.71	12.897	12.853	AR&R 101 year, 9 hours storm, average 20.0 mm/h, Zone 1						
P A1.2	1.917	1.99	12.786	12.688	AR&R 101 year, 9 hours storm, average 20.0 mm/h, Zone 1						
P A1.3	1.917	1.99	12.621	12.421	AR&R 101 year, 9 hours storm, average 20.0 mm/h, Zone 1						
P A2.1	1.769	2.16	13.932	13.83	AR&R 101 year, 9 hours storm, average 20.0 mm/h, Zone 1						
P A2.2	1.752	1.88	13.792	13.723	AR&R 101 year, 12 hours storm, average 16.9 mm/h, Zone 1						

P A2.3	1.77	2.16	13.602	13.419	AR&R 101 year, 9 hours storm, average 20.0 mm/h, Zone 1							
P PR UNDER	5.119	3.7	11.931	11.745	AR&R 101 year, 1.5 hours storm, average 60.4 mm/h, Zone 1							
P PR dummy	2.122	7.5	11.296	10.5	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1							
Pipe OutPit 10	3.266	3.08	12.219	11.578	AR&R 101 year, 2 hours storm, average 50.7 mm/h, Zone 1							
P OSD9	0.935	2.8	11.868	11.853	AR&R 101 year, 9 hours storm, average 20.0 mm/h, Zone 1							
CHANNEL DETAILS												
Name	Max Q	Max V			Due to Storm							
	(cu.m/s)	(m/s)										
OVERFLOW ROUTE DETAILS												
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm				
F PR Moore E	0.192	0.192	5.375	0.044	0.03	12.89	0.61	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F PR Bypass	0.068	0.068	0	0.03	0.01	10.02	0.45	AR&R 101 year, 6 hours storm, average 25.6 mm/h, Zone 1				
F PR Bypass	0.068	0.068	0	0.03	0.01	10.02	0.45	AR&R 101 year, 9 hours storm, average 20.0 mm/h, Zone 1				
F Simta Rd 6	0.377	0.377	0	0.059	0.04	15.76	0.72	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F SR2	1.586	1.586	0	0.257	0.49	6.4	1.91	AR&R 101 year, 25 minutes storm, average 124 mm/h, Zone 1				
F SR4	0.288	0.288	0	0.164	0.18	4.7	1.08	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F Simta Rd 5	0.294	0.294	0	0.053	0.04	14.51	0.69	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F PR3	0.23	0.23	0	0.048	0.03	13.61	0.63	AR&R 101 year, 25 minutes storm, average 124 mm/h, Zone 1				
F Simta Rd 7	0.134	0.134	0	0.039	0.02	11.81	0.54	AR&R 101 year, 25 minutes storm, average 124 mm/h, Zone 1				
F A1.1	0	0	0	0	0	0	0					
F A1.2	0	0	0	0	0	0	0					
F A1.3	0	0	0	0	0	0	0					
F Outlet 1	1.943	1.943	0	0.115	0.13	26.9	1.14	AR&R 101 year, 9 hours storm, average 20.0 mm/h, Zone 1				
F A2.1	0	0	0	0	0	0	0					
F A2.2	0	0	0	0	0	0	0					
F A2.3	0	0	0	0	0	0	0					
F PR OUTLET	1.943	1.943	0	0.115	0.13	26.9	1.14	AR&R 101 year, 9 hours storm, average 20.0 mm/h, Zone 1				
F SR3	0.281	0.281	0	0.163	0.17	4.66	1.07	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F PR OVER N	0	0	0	0	0	0	0					
Channel	7.652	7.652	0	1.431	2.54	4.37	1.77	AR&R 101 year, 1.5 hours storm, average 60.4 mm/h, Zone 1				
F PR DNSDC	0.875	0.875	0	0.082	0.08	20.43	0.93	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F PR dummy	2.122	2.122	0	0.119	0.14	27.8	1.16	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F S6	3.908	3.908	0	0.152	0.21	34.44	1.36	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F S5	2.312	2.312	0	0.123	0.15	28.52	1.2	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F Moore	3.697	3.697	0	0.149	0.2	33.73	1.35	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F S RD 1	1.778	1.778	0	0.11	0.12	26	1.12	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F MPE ST1	21.089	21.089	0	0.23	0.79	49.99	3.43	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F S4	3.908	3.908	0	0.152	0.21	34.44	1.36	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F S3	3.908	3.908	0	0.152	0.21	34.44	1.36	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F S2	3.908	3.908	0	0.152	0.21	34.44	1.36	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F S1	3.355	3.355	0	0.143	0.19	32.65	1.31	AR&R 101 year, 5 minutes storm, average 246 mm/h, Zone 1				
F OutPit 10	0	0	0	0	0	0	0					
F OSD10.3	3.266	3.266	0	0.141	0.18	32.29	1.3	AR&R 101 year, 2 hours storm, average				

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DRAINS File Path:	F:\AA003760\D-Calculations\Civil\A-Stormwater\EO-SIMTA STAGE 2\MPE_Proposed20%.dm
DRAINS Version:	DRAINS results prepared 6 July, 2016 from Version 2016.07
Modeller's Name:	AZ
Description:	MPE Stage 2 Proposed

DRAINS results prepared from Version 2016.14										100 Year CC		
PIT / NODE DETAILS				Version 8								
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min	Overflow	Constraint					
		HGL	Flow Arriving	Volume	Freeboard	(cu.m/s)						
			(cu.m/s)	(cu.m)	(m)							
A1.1	13.16	17.29	2.6	0.7	3.84	0	Inlet Capacity					
A1.2	12.91	17.3	0	0	4.39	0	None					
A1.3	12.75	17.1	0	0	4.35	0	None					
PR Outlet1	10		0.226									
A2.1	14.01	16.23	1.803	0.5	1.99	0	Inlet Capacity					
A2.2	13.84	16	0	0	2.16	0	None					
A2.3	13.73	16	0	0	2.27	0	None					
PR Outlet2	13.42		0.263									
Moore HW 1	12.46		5.569		1.69	0	None					
Top Channel	11.77		3.441									
PR DNSDC	11.3		3.288		2.7	1.178	Inlet Capacity					
PR dummy D	10.48		0									
OutPit 10	12.51	17.35	3.441	0.8	4.49	0	Inlet Capacity					
N OSD10.1	11.59		0									
Pit OSD9	12.24	16.65	0.972	0.3	4.26	0	Inlet Capacity					
N OSD9.1	11.86		0									
SUB-CATCHMENT DETAILS												
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm					
	Flow Q	Max Q	Max Q	Tc	Tc	Tc						
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)						
PR C Moor B	0.209	0.209	0	3	0	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C S RD 6	0.411	0.411	0	2	12	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C S RD 2	1.731	1.731	0	7	0	0	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1					
C S RD 4	0.314	0.314	0	4	0	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C S RD 5	0.321	0.321	0	4.5	0	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C PR 3.1	0.257	0.075	0.207	4.5	12	0	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1					
C S RD7	0.146	0.146	0	7	0	0	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1					
C S RD 3	0.306	0.306	0	2	0	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C PR DNSC	3.288	2.856	0.433	5	5	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C S6	4.282	4.282	0	5	10	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C S5	2.533	2.533	0	5	10	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C MOORE	4.033	4.033	0	1	10	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C S RD 1	1.948	1.948	0	5	12	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C S4	4.282	4.282	0	5	10	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C S3	4.282	4.282	0	5	10	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C S2	4.282	4.282	0	5	10	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C S1.1	3.675	3.675	0	5	10	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
MPW	7.207	7.207	0	5	10	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C S 7	4.217	4.217	0	5	10	0	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1					
C PR 3.2	0.203	0.059	0.164	4.5	12	0	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1					
C MPE North	14.989	14.989	0	8	0	0	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1					
C MPE South	8.35	8.35	0	8	0	0	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1					
S PR3.3	0.226	0.066	0.182	4.5	12	0	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1					
Name	Max	Due to Storm										
	Flow											
	(cu.m/s)											
C PR Bypass	0.075	AR&R 100 year, 2 hours storm, average 55.3 mm/h, Zone 1										
C PR Bypass	0.069	AR&R 100 year, 3 hours storm, average 43.0 mm/h, Zone 1										
Outflow Volumes for Total Catchment (106 impervious + 3.27 pervious = 109 total ha)												
Storm	Total Rainfall	Total Runoff	Impervious R	Pervious Runoff								
	cu.m	cu.m (Runoff)	cu.m (Runoff)	cu.m (Runoff %)								
AR&R 100 ye	24422.91	22916.44 (93)	22622.84 (95)	293.60 (40.1%)								
AR&R 100 ye	61228.02	59454.91 (97)	58206.16 (98)	1248.75 (68.1%)								
AR&R 100 ye	80551.09	78676.62 (97)	76950.88 (98)	1725.74 (71.5%)								
AR&R 100 ye	91219.42	89309.50 (97)	87323.78 (98)	1985.72 (72.6%)								
AR&R 100 ye	107700.55	105727.16 (98)	103347.80 (98)	2379.37 (73.7%)								
AR&R 100 ye	120559.63	118526.23 (98)	115844.10 (98)	2682.13 (74.2%)								
AR&R 100 ye	140684.64	138523.23 (98)	135392.66 (98)	3130.58 (74.2%)								
AR&R 100 ye	163883.25	161359.36 (98)	157737.19 (98)	3622.17 (73.7%)								
AR&R 100 ye	182814.84	180041.85 (98)	176062.56 (98)	3979.29 (72.6%)								
AR&R 100 ye	214144.11	209831.90 (98)	205343.77 (98)	4488.13 (69.9%)								
AR&R 100 ye	240557.91	235784.47 (98)	230816.09 (98)	4968.38 (68.9%)								
AR&R 100 ye	284900.59	278530.55 (98)	272956.06 (98)	5574.49 (65.3%)								
PIPE DETAILS												
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm							
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)								
P A1.1	2.6	2.74	12.948	12.914	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1							
P A1.2	2.599	2.2	12.831	12.749	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1							
P A1.3	2.597	2.2	12.666	12.466	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1							
P A2.1	1.834	2.21	13.935	13.837	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1							
P A2.2	1.811	1.89	13.798	13.731	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1							

P A2.3	1.831	2.18	13.607	13.423	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1							
P PR UNDER	5.584	3.81	11.951	11.766	AR&R 100 year, 1.5 hours storm, average 65.9 mm/h, Zone 1							
P PR dummy	2.12	7.5	11.297	10.5	AR&R 100 year, 1.5 hours storm, average 65.9 mm/h, Zone 1							
Pipe OutPit 10	3.441	2.74	12.249	11.586	AR&R 100 year, 2 hours storm, average 55.3 mm/h, Zone 1							
P OSD9	0.972	2.82	11.875	11.86	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1							
CHANNEL DETAILS												
Name	Max Q	Max V			Due to Storm							
	(cu.m/s)	(m/s)										
OVERFLOW ROUTE DETAILS												
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm				
F PR Moore E	0.209	0.209	0	0.046	0.03	13.25	0.62	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F PR Bypass	0.075	0.075	0	0.032	0.01	10.38	0.45	AR&R 100 year, 2 hours storm, average 55.3 mm/h, Zone 1				
F PR Bypass	0.069	0.069	0	0.031	0.01	10.2	0.43	AR&R 100 year, 3 hours storm, average 43.0 mm/h, Zone 1				
F Simta Rd 6	0.411	0.411	0	0.061	0.05	16.12	0.75	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F SR2	1.731	1.731	0	0.263	0.52	6.4	1.98	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1				
F SR4	0.314	0.314	0	0.168	0.18	4.9	1.1	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F Simta Rd 5	0.321	0.321	0	0.054	0.04	14.87	0.71	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F PR3	0.257	0.257	0	0.05	0.03	13.97	0.66	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1				
F Simta Rd 7	0.146	0.146	0	0.04	0.02	11.99	0.56	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1				
F A1.1	0	0	0	0	0	0	0					
F A1.2	0	0	0	0	0	0	0					
F A1.3	0	0	0	0	0	0	0					
F Outlet 1	2.638	2.638	0	0.13	0.16	29.95	1.23	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1				
F A2.1	0	0	0	0	0	0	0					
F A2.2	0	0	0	0	0	0	0					
F A2.3	0	0	0	0	0	0	0					
F PR OUTLET	1.943	1.943	0	0.115	0.13	26.9	1.14	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1				
F SR3	0.306	0.306	0	0.167	0.18	4.83	1.1	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F PR OVER N	0	0	0	0	0	0	0					
Channel	8.24	8.24	0	1.487	2.68	4.48	1.81	AR&R 100 year, 1.5 hours storm, average 65.9 mm/h, Zone 1				
F PR DNSDC	1.178	1.178	0	0.093	0.09	22.59	1	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F PR dummy	2.12	2.12	0	0.119	0.14	27.8	1.16	AR&R 100 year, 1.5 hours storm, average 65.9 mm/h, Zone 1				
F S6	4.282	4.282	0	0.159	0.22	35.7	1.39	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F S5	2.533	2.533	0	0.128	0.16	29.59	1.21	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F Moore	4.033	4.033	0	0.154	0.21	34.8	1.38	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F S RD 1	1.948	1.948	0	0.115	0.13	26.9	1.14	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F MPE ST1	23.087	23.087	0	0.23	0.86	49.99	3.76	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F S4	4.282	4.282	0	0.159	0.22	35.7	1.39	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F S3	4.282	4.282	0	0.159	0.22	35.7	1.39	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F S2	4.282	4.282	0	0.159	0.22	35.7	1.39	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F S1	3.675	3.675	0	0.149	0.2	33.73	1.34	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F OutPit 10	0	0	0	0	0	0	0					
F OSD10.3	3.441	3.441	0	0.145	0.19	33.01	1.31	AR&R 100 year, 2 hours storm, average 55.3 mm/h, Zone 1				
F MPW	7.207	7.207	0	0.195	0.31	43.07	1.59	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F Outpit9	0	0	0	0	0	0	0					
F OSD9.2	0.972	0.972	0	0.086	0.08	21.15	0.95	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1				
F OSD9	5.569	5.569	0	0.176	0.26	39.11	1.5	AR&R 100 year, 1.5 hours storm, average 65.9 mm/h, Zone 1				
F S7	4.217	4.217	0	0.157	0.22	35.34	1.4	AR&R 100 year, 5 minutes storm, average 269 mm/h, Zone 1				
F PR3.2	0.203	0.203	0	0.045	0.03	13.07	0.62	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1				
F MPE North	14.989	14.989	0	0.23	0.56	49.99	2.44	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1				
F MPE South	8.35	8.35	0	0.207	0.34	45.4	1.65	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1				
F OSD10.1	3.441	3.441	0	0.013	0	699.9	0.37	AR&R 100 year, 2 hours storm, average 55.3 mm/h, Zone 1				
F OSD9.1	0.972	0.972	0	0.006	0	699.9	0.22	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1				
F OSD 1	2.6	2.6	0	0.011	0	699.9	0.33	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1				
F PR A2	1.803	1.803	0	0.009	0	699.9	0.29	AR&R 100 year, 9 hours storm, average 21.8 mm/h, Zone 1				
F PR3.3	0.226	0.226	0	0.047	0.03	13.43	0.64	AR&R 100 year, 25 minutes storm, average 135 mm/h, Zone 1				
DETENTION BASIN DETAILS												
Name	Max WL	MaxVol	Max Q	Max Q	Max Q							
			Total	Low Level	High Level							
OSD 10	16.06	29640.4	3.441	0	3.441							
OSD 9	16.25	9284.4	0.972	0	0.972							
OSD 1	15.88	31016	2.6	0	2.6							
OSD 2	16.34	18286.5	1.803	0	1.803							
CONTINUITY CHECK for AR&R 100 year, 2 hours storm, average 55.3 mm/h, Zone 1												
Node	Inflow	Outflow	Storage Chan	Difference								
	(cu.m)	(cu.m)	(cu.m)	%								
PR Moore	306.92	306.92	0	0								
PR Bypass2	458.42	458.42	0	0								
PR Bypass1	496.39	496.39	0	0								
Simta Rd 6	602.88	602.88	0	0								
S Rd 2	3124.02	3124.02	0	0								
Simta Rd 4	460.38	460.38	0	0								
S Rd 5	471.34	471.34	0	0								
PR 3	487.87	487.87	0	0								
Simta Rd 7	263.08	263.08	0	0								
PR Combined	4709.77	4709.77	0	0								
A1.1	15072.26	15064.52	0.13	0.1								
A1.2	15064.52	15054	0	0.1								
A1.3	15054	15033.76	0	0.1								
PR Outlet1	15461.72	15460.26	0	0								
A2.1	3399.69	3396.03	0.05	0.1								
A2.2	3396.03	3391.88	0	0.1								
A2.3	3391.88	3376.1	0	0.5								
PR Outlet2	4710.77	4710.27	0	0								
S Rd 3	449.42	449.42	0	0								
SimtaChann	54422.71	54422.71	0	0								
Moore HW 1	17367.46	17362.23	0	0								

[illegible]

DRAINS File Path:	F:\AA003760\D-Calculations\Civil\A-Stormwater\E0-SIMTA STAGE 2\MPE_Proposed.drn
DRAINS Version:	DRAINS results prepared 6 July, 2016 from Version 2016.07
Modeller's Name:	AZ
Description:	MPE Stage 2 Proposed

DRAINS results prepared from Version 2016.14								PMF			
PIT / NODE DETAILS											
Name	Max HGL	Max Pond	Max Surface	Max Pond	Min	Overflow	Constraint				
		HGL	Flow Arriving	Volume	Freeboard	(cu.m/s)					
			(cu.m/s)	(cu.m)	(m)						
A1.1	17.79	18	31.278	4.3	-0.79	29.656	Outlet System				
A1.2	17.74	18.3	29.656	4.3	-0.44	22.751	Outlet System				
A1.3	17.28	18.1	22.751	4.3	-0.18	7.42	Outlet System				
PR Outlet1	10		7.934								
A2.1	16.59	17	22.286	4.3	-0.59	15.227	Outlet System				
A2.2	16.53	17	15.227	4.3	-0.53	9.866	Outlet System				
A2.3	16.41	17	9.866	4.3	-0.41	0.443	Outlet System				
PR Outlet2	14.12		1.768								
Moore HW 1	16.29		41.329		-2.14	3.124	Headwall height/system capacity				
Top Channel	12.87		82.798								
PR DNSDC	11.35		11.977		2.65	9.867	Inlet Capacity				
PR dummy DI	10.48		0								
OutPit 10	17.13	18	79.516	4.3	-0.13	60.124	Outlet System				
N OSD10.1	12.25		60.124								
Pit OSD9	16.96	17.5	25.616	4.3	-0.46	19.006	Outlet System				
N OSD9.1	12.78		19.006								
SUB-CATCHMENT DETAILS											
Name	Max	Paved	Grassed	Paved	Grassed	Supp.	Due to Storm				
	Flow Q	Max Q	Max Q	Tc	Tc	Tc					
	(cu.m/s)	(cu.m/s)	(cu.m/s)	(min)	(min)	(min)					
PR C Moor By	0.698	0.698	0	3	0	0	15min PMP				
C S RD 6	1.372	1.372	0	2	12	0	15min PMP				
C S RD 2	6.817	6.817	0	7	0	0	15min PMP				
C S RD 4	1.048	1.048	0	4	0	0	15min PMP				
C S RD 5	1.073	1.073	0	4.5	0	0	15min PMP				
C PR 3.1	1.025	0.284	0.903	4.5	12	0	15min PMP				
C S RD7	0.574	0.574	0	7	0	0	15min PMP				
C S RD 3	1.023	1.023	0	2	0	0	15min PMP				
C PR DNSC	11.977	9.954	2.091	5	5	0	15min PMP				
C S6	14.926	14.926	0	5	10	0	15min PMP				
C S5	8.831	8.831	0	5	10	0	15min PMP				
C MOORE	13.47	13.47	0	1	10	0	15min PMP				
C S RD 1	6.791	6.791	0	5	12	0	15min PMP				
C S4	14.926	14.926	0	5	10	0	15min PMP				
C S3	14.926	14.926	0	5	10	0	15min PMP				
C S2	14.926	14.926	0	5	10	0	15min PMP				
C S1.1	12.811	12.811	0	5	10	0	15min PMP				
MPW	25.125	25.125	0	5	10	0	15min PMP				
C S 7	14.702	14.702	0	5	10	0	15min PMP				
C PR 3.2	0.809	0.225	0.713	4.5	12	0	15min PMP				
C MPE North	59.783	59.783	0	8	0	0	15min PMP				
C MPE South	33.305	33.305	0	8	0	0	15min PMP				
S PR3.3	0.899	0.249	0.792	4.5	12	0	15min PMP				
Name	Max	Due to Storm									
	Flow										
	(cu.m/s)										
C PR Bypass	0.513	1Hr PMP									
C PR Bypass	0.483	1Hr PMP									
Outflow Volumes for Total Catchment (106 impervious + 3.27 pervious = 109 total ha)											
Storm	Total Rainfall	Total Runoff	Impervious R	Pervious Runoff							
	cu.m	cu.m (Runoff)	cu.m (Runoff)	cu.m (Runoff %)							
15min PMP	185283.48	183503.32 (99%)	178490.95 (97%)	5012.37 (90.3%)							
30min PMP	272475.72	270548.75 (99%)	263015.63 (97%)	7533.12 (92.2%)							
45min PMP	337869.91	335928.17 (99%)	326507.16 (97%)	9421.02 (93.0%)							
1Hr PMP	392274.19	390318.34 (99%)	379325.56 (97%)	10992.78 (93.5%)							
1.5Hr PMP	446769.34	444786.19 (99%)	432256.31 (97%)	12529.88 (93.6%)							
2Hr PMP	490456.28	488394.80 (99%)	474651.91 (97%)	13742.89 (93.5%)							
2.5Hr PMP	523153.38	521041.22 (99%)	506394.44 (97%)	14646.78 (93.4%)							
3Hr PMP	556122.94	553972.31 (99%)	538413.38 (97%)	15558.94 (93.4%)							
4Hr PMP	599446.56	597158.32 (99%)	580453.88 (97%)	16704.45 (93.0%)							
5Hr PMP	653941.75	651533.72 (99%)	633346.19 (97%)	18187.54 (92.8%)							
6Hr PMP	686366.38	683831.33 (99%)	664827.69 (97%)	19003.65 (92.4%)							
PIPE DETAILS											
Name	Max Q	Max V	Max U/S	Max D/S	Due to Storm						
	(cu.m/s)	(m/s)	HGL (m)	HGL (m)							
P A1.1	11.726	4.07	17.751	17.743	6Hr PMP						
P A1.2	19.611	6.81	17.474	17.28	30min PMP						
P A1.3	23.874	8.29	15.536	12.82	45min PMP						
P A2.1	13.531	3.34	16.551	16.53	30min PMP						
P A2.2	16.719	4.13	16.442	16.41	45min PMP						
P A2.3	19.128	4.72	15.051	14.12	45min PMP						

P PR UNDER	38.258	6.49	13.064	12.873	15min PMP												
P PR dummy	2.176	7.7	11.354	10.5	15min PMP												
Pipe OutPit 10	22.125	3.9	16.555	12.25	1Hr PMP												
P OSD9	6.61	3.67	12.952	12.78	1.5Hr PMP												
CHANNEL DETAILS																	
Name	Max Q	Max V			Due to Storm												
	(cu.m/s)	(m/s)															
OVERFLOW ROUTE DETAILS																	
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm									
F PR Moore E	0.698	0.698	0	0.075	0.07	19	0.87	15min PMP									
F PR Bypass	0.513	0.513	0	0.066	0.05	17.2	0.8	1Hr PMP									
F PR Bypass	0.483	0.483	0	0.064	0.05	16.84	0.79	1Hr PMP									
F Simta Rd 6	1.372	1.372	0	0.099	0.1	23.85	1.04	15min PMP									
F SR2	6.817	6.817	0	0.445	1.49	6.4	3.35	15min PMP									
F SR4	1.048	1.048	0	0.227	0.37	6.4	1.63	15min PMP									
F Simta Rd 5	1.073	1.073	0	0.089	0.09	21.87	0.98	15min PMP									
F PR3	1.025	1.025	0	0.088	0.08	21.51	0.97	15min PMP									
F Simta Rd 7	0.574	0.574	0	0.07	0.06	17.92	0.82	15min PMP									
F A1.1	29.656	29.656	0	0.23	1.11	49.99	4.82	1Hr PMP									
F A1.2	22.751	22.751	0	0.23	0.85	49.99	3.7	1Hr PMP									
F A1.3	7.42	7.42	0	0.197	0.32	43.42	1.61	1Hr PMP									
F Outlet 1	31.8	31.8	0	0.23	1.19	49.99	5.17	1Hr PMP									
F A2.1	15.227	15.227	0	0.23	0.57	49.99	2.48	45min PMP									
F A2.2	9.866	9.866	0	0.221	0.38	48.27	1.72	45min PMP									
F A2.3	0.443	0.443	0	0.062	0.05	16.48	0.76	45min PMP									
F PR OUTLE	20.805	20.805	0	0.23	0.78	49.99	3.38	45min PMP									
F SR3	1.023	1.023	0	0.226	0.36	6.4	1.61	15min PMP									
F PR OVER M	3.124	3.124	0	0.139	0.18	31.75	1.29	15min PMP									
Channel	120.076	120.076	0	3.272	3	120.07	0.92	15min PMP									
F PR DNSDC	9.867	9.867	0	0.221	0.38	48.27	1.72	15min PMP									
F PR dummy	2.176	2.176	0	0.12	0.14	27.98	1.17	15min PMP									
F S6	14.926	14.926	0	0.23	0.56	49.99	2.43	15min PMP									
F S5	8.831	8.831	0	0.211	0.36	46.3	1.68	15min PMP									
F Moore	13.47	13.47	0	0.23	0.5	49.99	2.19	15min PMP									
F S RD 1	6.791	6.791	0	0.191	0.3	42.17	1.56	15min PMP									
F MPE ST1	79.705	79.705	0	0.23	2.98	49.99	12.97	15min PMP									
F S4	14.926	14.926	0	0.23	0.56	49.99	2.43	15min PMP									
F S3	14.926	14.926	0	0.23	0.56	49.99	2.43	15min PMP									
F S2	14.926	14.926	0	0.23	0.56	49.99	2.43	15min PMP									
F S1	12.811	12.811	0	0.23	0.48	49.99	2.08	15min PMP									
F OutPit 10	60.124	60.124	0	0.23	2.25	49.99	9.78	15min PMP									
F OSD10.3	79.978	79.978	0	0.23	2.99	49.99	13.01	15min PMP									
F MPW	25.125	25.125	0	0.23	0.94	49.99	4.09	15min PMP									
F Outpit9	19.006	19.006	0	0.23	0.71	49.99	3.09	15min PMP									
F OSD9.2	25.616	25.616	0	0.23	0.96	49.99	4.17	15min PMP									
F OSD9	41.329	41.329	0	0.23	1.55	49.99	6.72	15min PMP									
F S7	14.702	14.702	0	0.23	0.55	49.99	2.39	15min PMP									
F PR3.2	0.809	0.809	0	0.079	0.07	19.9	0.91	15min PMP									
F MPE North	59.783	59.783	0	0.23	2.24	49.99	9.72	15min PMP									
F MPE South	33.305	33.305	0	0.23	1.25	49.99	5.42	15min PMP									
F OSD10.1	79.516	79.516	0	0.087	0.11	699.9	1.31	15min PMP									
F OSD9.1	25.616	25.616	0	0.044	0.04	699.9	0.83	15min PMP									
F OSD 1	31.278	31.278	0	0.05	0.04	699.9	0.9	1Hr PMP									
F PR A2	22.286	22.286	0	0.041	0.03	699.9	0.78	30min PMP									
F PR3.3	0.899	0.899	0	0.083	0.08	20.61	0.93	15min PMP									
DETENTION BASIN DETAILS																	
Name	Max WL	MaxVol	Max Q	Max Q	Max Q												
			Total	Low Level	High Level												
OSD 10	17.5	46350	79.516	0	79.516												
OSD 9	16.71	10847.7	25.616	0	25.616												
OSD 1	17.82	62949.1	31.278	0	31.278												
OSD 2	17.12	27561.9	22.286	0	22.286												
CONTINUITY CHECK for 1Hr PMP																	
Node	Inflow	Outflow	Storage Chan	Difference													
	(cu.m)	(cu.m)	(cu.m)	%													
PR Moore	1004.97	1004.97	0	0													
PR Bypass2	1805.1	1805.1	0	0													
PR Bypass1	1968.7	1968.7	0	0													
Simta Rd 6	1974.04	1974.04	0	0													
S Rd 2	10229.12	10229.12	0	0													
Simta Rd 4	1507.45	1507.45	0	0													
S Rd 5	1543.34	1543.34	0	0													
PR 3	1941.75	1941.75	0	0													
Simta Rd 7	861.4	861.4	0	0													
PR Combined	37076.46	37076.46	0	0													
A1.1	46299.89	46313.21	0	0													
A1.2	46313.23	46397.31	0	-0.2													
A1.3	46397.23	46431.09	0	-0.1													
PR Outlet1	48134.42	48134.38	0	0													
A2.1	31752.74	31763.55	0	0													
A2.2	31763.51	31774.15	0	0													
A2.3	31774.14	31793.49	0	-0.1													
PR Outlet2	37077.04	37076.84	0	0													
S Rd 3	1471.56	1471.56	0	0													
SimtaChann	167121.22	167121.22	0	0													
Moore HW 1	59743.33	59755.41	0	0													
Top Channel	167121.17	167121.22	0	0													

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Stage - Discharge Outlet Relationships

DRAINS Model:	ExistingAndProposedLumped.drn
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Calculation Inputs	Value	Comment
Cc	0.62	Orifice loss coefficient
weir calculation increment (m)	0.01	Recommend using a smaller increment to produce a representative flow relationship. (0.01)
Set height of weir increment (m)	0.1	This allows a more detailed calculation of flow for the height entered.
orifice increment (m)	0.10	This sets the increment of calculations

Detention Storage Properties		
Invert (Inc. WQ)	14	
Height of discharge calculation (m)	18	
OSD height (m)	4	

Low Flow Outlet Control		
Orifice Diameter Ø (m)	0.225	
Number of orifice	2	
Area (m2)	0.080	
Centreline of Orifice	14.113	This level sets the orifice flow calculation
IL of Low Flow Orifice	14	
OL of Low Flow Orifice	14.225	
Area, m2	1.99	The area to be 20 times larger than orifice area. Account for 80% grate open area
Perimeter Length (m)	4.500	
Blocked Perimeter Length (m)	0.000	
Weir Coefficient	1.6	
Crest Level of LF Pit	14.3	

High Flow Outlet Control		
Orifice Diameter Ø (m)	0.450	
Number of orifice	3	
Area (m2)	0.477	
Centreline of Orifice	14.225	
IL of Low Flow Orifice	14	
OL of Low Flow Orifice	14.45	
Area, m2	11.93	The area to be 20 times larger than orifice area. Account for 80% grate open area
Perimeter Length (m)	12.400	
Blocked Perimeter Length (m)	0.000	
Weir Coefficient	1.6	
Crest Level of HF Pit	15	

Weir		
Weir level	15.80	
Weir Length	15.5	
Weir Coefficient	1.6	

PMF Weir		
Weir level	17.50	
Weir Length	110.0	
Weir Coefficient	1.6	

Trash Screen Detail		
Minimum Screen Clearance (m)	0.338	
Mesh Type Recommended	WELDLOK A40/203	
Minimum trash screen area (m2)	1.590	
Minimum Screen Clearance (m)	0.675	
Mesh Type Recommended	WELDLOK A40/203	
Minimum trash screen area (m2)	9.543	

Checks/Warnings		
Are the orifice centrelines equal?	NO	DOES THIS REPRESENT THE DESIGN?
Height that low flow weir controls	14.31	
Height that low flow orifice controls	14.37	
Depth of low flow weir control	0.06	OK
Height that high flow weir controls	15.01	CHECK CALCULATION
Height that high flow orifice controls	15.2	
Depth of high flow weir control	0.19	CONSIDER INCREASING WEIR INCREMENT OR INCREASING PIT DIMENSION

Errors		
Low flow pit	OK	
High Flow Pit	OK	
Full Stage Discharge calculated	OK	

Stage	Low Flow	High Flow	Weir	PMF Weir	Discharge
H (m)	Qt (m3/s)	Qt (m3/s)	Qt (m3/s)	Qt (m3/s)	Qt (m3/s)
14.30	0.000	0.000	0.000	0.000	0.000
14.31	0.007	0.000	0.000	0.000	0.007
14.32	0.020	0.000	0.000	0.000	0.020
14.33	0.037	0.000	0.000	0.000	0.037
14.34	0.058	0.000	0.000	0.000	0.058
14.35	0.080	0.000	0.000	0.000	0.080
14.36	0.106	0.000	0.000	0.000	0.106
14.37	0.111	0.000	0.000	0.000	0.111
14.38	0.113	0.000	0.000	0.000	0.113
14.39	0.115	0.000	0.000	0.000	0.115
14.40	0.117	0.000	0.000	0.000	0.117
14.50	0.136	0.000	0.000	0.000	0.136
14.60	0.152	0.000	0.000	0.000	0.152
14.70	0.167	0.000	0.000	0.000	0.167
14.80	0.181	0.000	0.000	0.000	0.181
14.90	0.194	0.000	0.000	0.000	0.194
15.00	0.206	0.000	0.000	0.000	0.206
15.01	0.207	0.020	0.000	0.000	0.227
15.02	0.208	0.056	0.000	0.000	0.264
15.03	0.209	0.103	0.000	0.000	0.312
15.04	0.210	0.159	0.000	0.000	0.369
15.05	0.211	0.222	0.000	0.000	0.433
15.06	0.212	0.292	0.000	0.000	0.504
15.07	0.214	0.367	0.000	0.000	0.581
15.08	0.215	0.449	0.000	0.000	0.664
15.09	0.216	0.536	0.000	0.000	0.751
15.10	0.217	0.627	0.000	0.000	0.844
15.20	0.228	1.293	0.000	0.000	1.521
15.30	0.238	1.358	0.000	0.000	1.596
15.40	0.248	1.420	0.000	0.000	1.667
15.50	0.257	1.479	0.000	0.000	1.736
15.60	0.266	1.536	0.000	0.000	1.802
15.70	0.275	1.591	0.000	0.000	1.866
15.80	0.284	1.644	0.000	0.000	1.927
15.90	0.292	1.695	0.784	0.000	2.771
16.00	0.300	1.745	2.218	0.000	4.263
16.10	0.308	1.793	4.075	0.000	6.176
16.20	0.315	1.841	6.274	0.000	8.430
16.30	0.323	1.887	8.768	0.000	10.977
16.40	0.330	1.931	11.526	0.000	13.788
16.50	0.337	1.975	14.524	0.000	16.837
16.60	0.344	2.018	17.745	0.000	20.108
16.70	0.351	2.060	21.175	0.000	23.586
16.80	0.358	2.102	24.800	0.000	27.259
16.90	0.364	2.142	28.612	0.000	31.118
17.00	0.371	2.182	32.600	0.000	35.153
17.10	0.377	2.221	36.759	0.000	39.357
17.20	0.384	2.259	41.081	0.000	43.724
17.30	0.390	2.297	45.561	0.000	48.247
17.40	0.396	2.334	50.192	0.000	52.921
17.50	0.402	2.370	54.970	0.000	57.742
17.60	0.408	2.406	59.891	5.566	68.270
17.70	0.413	2.441	64.950	15.742	83.547
17.80	0.419	2.476	70.145	28.920	101.960
17.90	0.425	2.511	75.471	44.525	122.931
18.00	0.430	2.545	80.926	62.225	146.126
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-	-	-	-	-	-
-	-	-	-	-	-

Stage - Discharge Outlet Relationships

DRAINS Model:	EXISTINGANDPROPOSEDLUMPED.DRN
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Calculation Inputs	Value	Comment
Cc	0.62	Orifice loss coefficient
weir calculation increment (m)	0.01	Recommend using a smaller increment to produce a representative flow relationship. (0.01)
Set height of weir increment (m)	0.1	This allows a more detailed calculation of flow for the height entered.
orifice increment (m)	0.10	This sets the increment of calculations

Detention Storage Properties		
Invert (inc. WQ)	14.7	
Height of discharge calculation (m)	17.5	
OSD height (m)	2.8	

Low Flow Outlet Control		
Orifice Diameter Ø (m)	0.170	
Number of orifice	1	
Area (m2)	0.023	
Centreline of Orifice	14.785	This level sets the orifice flow calculation
IL of Low Flow Orifice	14.7	
OL of Low Flow Orifice	14.87	
Area, m2	0.57	The area to be 20 times larger than orifice area. Account for 80% grate open area
Perimeter Length (m)	5.700	
Blocked Perimeter Length (m)	0.000	
Weir Coefficient	1.6	
Crest Level of LF Pit	15	

High Flow Outlet Control		
Orifice Diameter Ø (m)	0.475	
Number of orifice	3	
Area (m2)	0.532	
Centreline of Orifice	14.938	
IL of Low Flow Orifice	14.7	
OL of Low Flow Orifice	15.175	
Area, m2	13.29	The area to be 20 times larger than orifice area. Account for 80% grate open area
Perimeter Length (m)	12.500	
Blocked Perimeter Length (m)	0.000	
Weir Coefficient	1.6	
Crest Level of HF Pit	16	

Weir		
Weir level	17.00	
Weir Length	340.0	
Weir Coefficient	1.6	

Trash Screen Detail		
Minimum Screen Clearance (m)	0.255	
Mesh Type Recommended	WELDLOK A40/203	
Minimum trash screen area (m2)	0.454	
Minimum Screen Clearance (m)	0.713	
Mesh Type Recommended	WELDLOK A40/203	
Minimum trash screen area (m2)	10.632	

Checks/Warnings		
Are the orifice centrelines equal?	NO	DOES THIS REPRESENT THE DESIGN?
Height that low flow weir controls	15.01	
Height that low flow orifice controls	15.03	
Depth of low flow weir control	0.02	OK
Height that high flow weir controls	16.01	CHECK CALCULATION
Height that high flow orifice controls	16.2	
Depth of high flow weir control	0.19	CONSIDER INCREASING WEIR INCREMENT OR INCREASING PIT DIMENSION

Errors		
Low flow pit	OK	
High Flow Pit	OK	
Full Stage Discharge calculated	OK	

[illegible]

Stage - Discharge Outlet Relationships

DRAINS Model:	ExistingAndProposedLumped.drn
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Calculation Inputs	Value	Comment
Cc	0.62	Orifice loss coefficient
weir calculation increment (m)	0.01	Recommend using a smaller increment to produce a representative flow relationship. (0.01)
Set height of weir increment (m)	0.1	This allows a more detailed calculation of flow for the height entered.
orifice increment (m)	0.10	This sets the increment of calculations

Detention Storage Properties		
Invert (inc. WQ)	13.5	
Height of discharge calculation (m)	18	
OSD height (m)	4.5	

Low Flow Outlet Control		
Orifice Diameter Ø (m)	0.200	
Number of orifice	3	
Area (m2)	0.094	
Centreline of Orifice	13.600	This level sets the orifice flow calculation
IL of Low Flow Orifice	13.5	
OL of Low Flow Orifice	13.7	
Area, m2	2.36	The area to be 20 times larger than orifice area. Account for 80% grate open area
Perimeter Length (m)	5.200	
Blocked Perimeter Length (m)	0.000	
Weir Coefficient	1.6	
Crest Level of LF Pit	13.8	

High Flow Outlet Control		
Orifice Diameter Ø (m)	0.400	
Number of orifice	1	
Area (m2)	0.126	
Centreline of Orifice	13.700	
IL of Low Flow Orifice	13.5	
OL of Low Flow Orifice	13.9	
Area, m2	3.14	The area to be 20 times larger than orifice area. Account for 80% grate open area
Perimeter Length (m)	5.900	
Blocked Perimeter Length (m)	0.000	
Weir Coefficient	1.6	
Crest Level of HF Pit	14.8	

Weir		
Weir level	16.50	
Weir Length	160.0	
Weir Coefficient	1.6	

Trash Screen Detail		
Minimum Screen Clearance (m)	0.300	
Mesh Type Recommended	WELDLOK A40/203	
Minimum trash screen area (m2)	1.885	
Minimum Screen Clearance (m)	0.600	
Mesh Type Recommended	WELDLOK A40/203	
Minimum trash screen area (m2)	2.513	

Checks/Warnings		
Are the orifice centrelines equal?	NO	DOES THIS REPRESENT THE DESIGN?
Height that low flow weir controls	13.81	
Height that low flow orifice controls	13.87	
Depth of low flow weir control	0.06	OK
Height that high flow weir controls	14.81	CHECK CALCULATION
Height that high flow orifice controls	15	
Depth of high flow weir control	0.19	CONSIDER INCREASING WEIR INCREMENT OR INCREASING PIT DIMENSION

Errors		
Low flow pit	OK	
High Flow Pit	OK	
Full Stage Discharge calculated	OK	

Stage	Low Flow	High Flow	Weir	Discharge
H (m)	Qt (m3/s)	Qt (m3/s)	Qt (m3/s)	Qt (m3/s)
13.80	0.000	0.000	0.000	0.000
13.81	0.008	0.000	0.000	0.008
13.82	0.024	0.000	0.000	0.024
13.83	0.043	0.000	0.000	0.043
13.84	0.067	0.000	0.000	0.067
13.85	0.093	0.000	0.000	0.093
13.86	0.122	0.000	0.000	0.122
13.87	0.134	0.000	0.000	0.134
13.88	0.137	0.000	0.000	0.137
13.89	0.139	0.000	0.000	0.139
13.90	0.142	0.000	0.000	0.142
14.00	0.164	0.000	0.000	0.164
14.10	0.183	0.000	0.000	0.183
14.20	0.200	0.000	0.000	0.200
14.30	0.216	0.000	0.000	0.216
14.40	0.231	0.000	0.000	0.231
14.50	0.245	0.000	0.000	0.245
14.60	0.259	0.000	0.000	0.259
14.70	0.271	0.000	0.000	0.271
14.80	0.283	0.000	0.000	0.283
14.81	0.285	0.009	0.000	0.294
14.82	0.286	0.027	0.000	0.312
14.83	0.287	0.049	0.000	0.336
14.84	0.288	0.076	0.000	0.364
14.85	0.289	0.106	0.000	0.395
14.86	0.290	0.139	0.000	0.429
14.87	0.292	0.175	0.000	0.466
14.88	0.293	0.214	0.000	0.506
14.89	0.294	0.255	0.000	0.549
14.90	0.295	0.299	0.000	0.593
15.00	0.306	0.393	0.000	0.699
15.10	0.317	0.408	0.000	0.725
15.20	0.327	0.422	0.000	0.750
15.30	0.337	0.436	0.000	0.774
15.40	0.347	0.450	0.000	0.797
15.50	0.357	0.463	0.000	0.819
15.60	0.366	0.475	0.000	0.841
15.70	0.375	0.488	0.000	0.863
15.80	0.384	0.500	0.000	0.884
15.90	0.392	0.512	0.000	0.904
16.00	0.401	0.523	0.000	0.924
16.10	0.409	0.534	0.000	0.943
16.20	0.417	0.545	0.000	0.963
16.30	0.425	0.556	0.000	0.981
16.40	0.433	0.567	0.000	1.000
16.50	0.441	0.577	0.000	1.018
16.60	0.448	0.587	8.095	9.131
16.70	0.455	0.597	22.897	23.950
16.80	0.463	0.607	42.065	43.135
16.90	0.470	0.617	64.763	65.850
17.00	0.477	0.627	90.510	91.613
17.10	0.484	0.636	118.978	120.098
17.20	0.491	0.645	149.929	151.066
17.30	0.498	0.654	183.179	184.331
17.40	0.504	0.663	218.577	219.744
17.50	0.511	0.672	256.000	257.183
17.60	0.517	0.681	295.345	296.543
17.70	0.524	0.690	336.521	337.734
17.80	0.530	0.698	379.450	380.679
17.90	0.536	0.707	424.065	425.308
18.00	0.543	0.715	470.302	471.560
-	-	-	-	-
-	-	-	-	-

Stage - Discharge Outlet Relationships

DRAINS Model:	ProposedLumped.drn
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Calculation Inputs	Value	Comment
Cc	0.62	Orifice loss coefficient
weir calculation increment (m)	0.01	Recommend using a smaller increment to produce a representative flow relationship. (0.01)
Set height of weir increment (m)	0.1	This allows a more detailed calculation of flow for the height entered.
orifice increment (m)	0.10	This sets the increment of calculations

Detention Storage Properties		
Invert (inc. WQ)	13.5	
Height of discharge calculation (m)	18	
OSD height (m)	4.5	

Low Flow Outlet Control		
Orifice Shape	R	C = Circular/R = Rectangular
Orifice Diameter Ø or Height (m)	0.200	
Number or Length of orifice (m)	0.7	
Area (m2)	0.140	
Centreline of Orifice	13.600	This level sets the orifice flow calculation
IL of Low Flow Orifice	13.5	
OL of Low Flow Orifice	13.7	
Area, m2	3.50	The area to be 20 times larger than orifice area. Account for 80% grate open area
Perimeter Length (m)	4.200	
Blocked Perimeter Length (m)	0.000	
Weir Coefficient	1.6	
Crest Level of LF Pit	13.8	

High Flow Outlet Control		
Orifice Shape	R	C = Circular/R = Rectangular
Orifice Diameter Ø or Height (m)	0.300	
Number or Length of orifice (m)	2.2	
Area (m2)	0.660	
Centreline of Orifice	13.600	
IL of Low Flow Orifice	13.75	
OL of Low Flow Orifice	13.900	
Area, m2	16.50	The area to be 20 times larger than orifice area. Account for 80% grate open area
Perimeter Length (m)	18.600	
Blocked Perimeter Length (m)	0.000	
Weir Coefficient	1.6	
Crest Level of HF Pit	14	

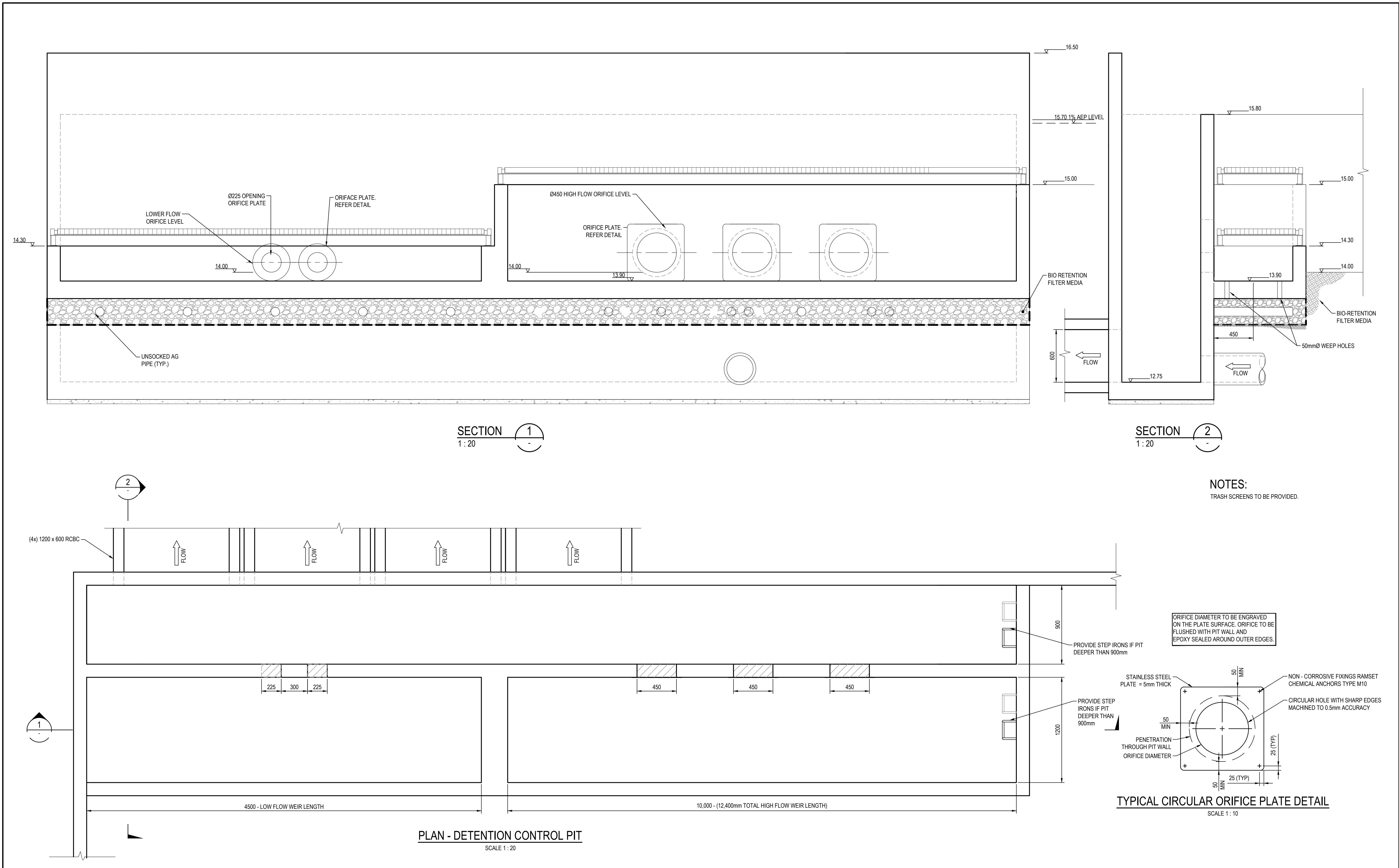
Weir		
Weir level	17.30	
Weir Length	570.0	
Weir Coefficient	1.6	

Trash Screen Detail		
Minimum Screen Clearance (m)	0.300	
Mesh Type Recommended	WELDLOK A40/203	
Minimum trash screen area (m2)	2.800	
Minimum Screen Clearance (m)	0.450	
Mesh Type Recommended	WELDLOK A40/203	
Minimum trash screen area (m2)	13.200	

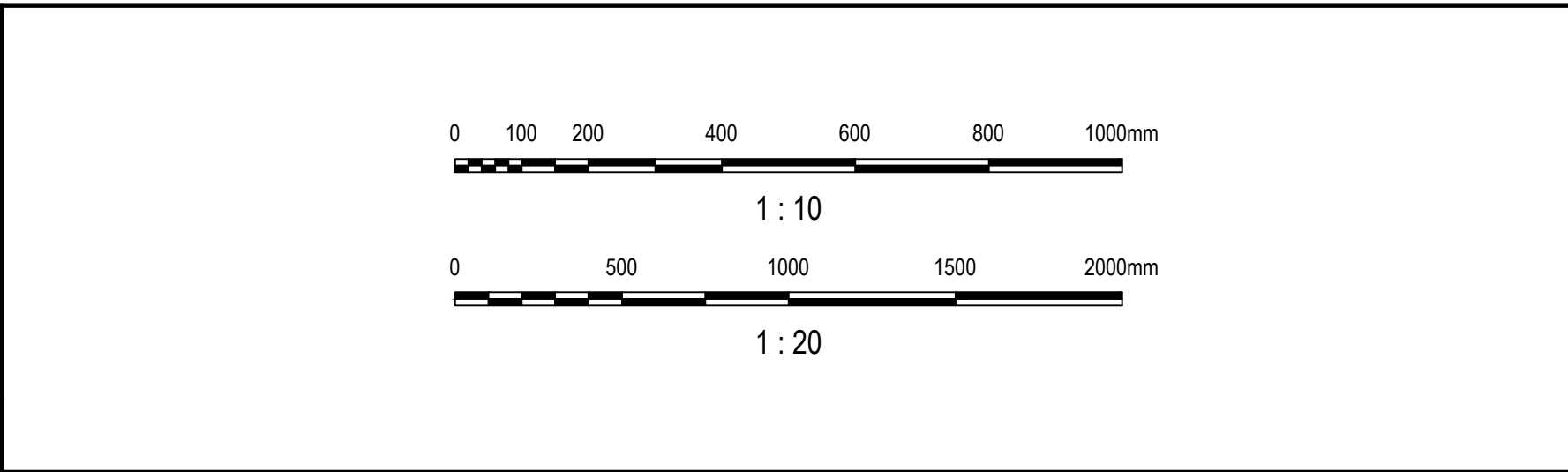
Checks/Warnings		
Are the orifice centrelines equal?	YES	
Height that low flow weir controls	13.81	
Height that low flow orifice controls	13.9	
Depth of low flow weir control	0.09	OK
Height that high flow weir controls	14.01	CHECK CALCULATION
Height that high flow orifice controls	14.2	
Depth of high flow weir control	0.19	CONSIDER INCREASING WEIR INCREMENT OR INCREASING PIT DIMENSION

Errors		
Low flow pit	OK	
High Flow Pit	OK	

Stage	Low Flow	High Flow	Weir	Discharge
H (m)	Qt (m3/s)	Qt (m3/s)	Qt (m3/s)	Qt (m3/s)
13.80	0.000	0.000	0.000	0.000
13.81	0.007	0.000	0.000	0.007
13.82	0.019	0.000	0.000	0.019
13.83	0.035	0.000	0.000	0.035
13.84	0.054	0.000	0.000	0.054
13.85	0.075	0.000	0.000	0.075
13.86	0.099	0.000	0.000	0.099
13.87	0.124	0.000	0.000	0.124
13.88	0.152	0.000	0.000	0.152
13.89	0.181	0.000	0.000	0.181
13.90	0.210	0.000	0.000	0.210
14.00	0.243	0.000	0.000	0.243
14.01	0.246	0.030	0.000	0.276
14.02	0.249	0.084	0.000	0.333
14.03	0.252	0.155	0.000	0.407
14.04	0.255	0.238	0.000	0.493
14.05	0.258	0.333	0.000	0.591
14.06	0.261	0.437	0.000	0.698
14.07	0.263	0.551	0.000	0.815
14.08	0.266	0.673	0.000	0.940
14.09	0.269	0.804	0.000	1.073
14.10	0.272	0.941	0.000	1.213
14.20	0.298	1.403	0.000	1.701
14.30	0.322	1.516	0.000	1.837
14.40	0.344	1.620	0.000	1.964
14.50	0.365	1.719	0.000	2.083
14.60	0.384	1.812	0.000	2.196
14.70	0.403	1.900	0.000	2.303
14.80	0.421	1.985	0.000	2.405
14.90	0.438	2.066	0.000	2.504
15.00	0.455	2.144	0.000	2.598
15.10	0.471	2.219	0.000	2.689
15.20	0.486	2.292	0.000	2.778
15.30	0.501	2.362	0.000	2.863
15.40	0.516	2.431	0.000	2.946
15.50	0.530	2.497	0.000	3.027
15.60	0.543	2.562	0.000	3.105
15.70	0.557	2.625	0.000	3.182
15.80	0.570	2.687	0.000	3.257
15.90	0.583	2.747	0.000	3.330
16.00	0.595	2.807	0.000	3.402
16.10	0.608	2.864	0.000	3.472
16.20	0.620	2.921	0.000	3.541
16.30	0.631	2.977	0.000	3.608
16.40	0.643	3.031	0.000	3.674
16.50	0.654	3.085	0.000	3.739
16.60	0.666	3.138	0.000	3.803
16.70	0.677	3.190	0.000	3.866
16.80	0.687	3.241	0.000	3.928
16.90	0.698	3.291	0.000	3.989
17.00	0.709	3.340	0.000	4.049
17.10	0.719	3.389	0.000	4.108
17.20	0.729	3.437	0.000	4.166
17.30	0.739	3.485	0.000	4.224
17.40	0.749	3.531	28.840	33.121
17.50	0.759	3.578	81.572	85.908
17.60	0.769	3.623	149.857	154.249
17.70	0.778	3.668	230.720	235.166
17.80	0.788	3.713	322.441	326.941
17.90	0.797	3.757	423.859	428.413
18.00	0.806	3.800	534.124	538.730
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-	-	-	-	-



01	DRAFT ISSUE FOR SSD APPLICATION	16/09/2016
Issue	Description	Date



Client

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

TACTICAL GROUP

Status	PRELIMINARY ONLY NOT TO BE USED FOR CONSTRUCTION		
Scales	AS SHOWN	Current Issue Signatures	
Original Size	A1	Drawn	A.ZHAO
Height Datum	AHD	Designed	S.MAKIREDDI
Grid	MGA	Checked	K.MCAREAVEY
Filename	SSS2-ARC-CV-DWG-0411-StormwaterDrainageBasinOutlet1.dwg		
Approved	M.KEFFORD		

Project	MOOREBANK PRECINCT EAST (MPE) STAGE 2
Title	STORMWATER DRAINAGE BASIN OUTLET 1

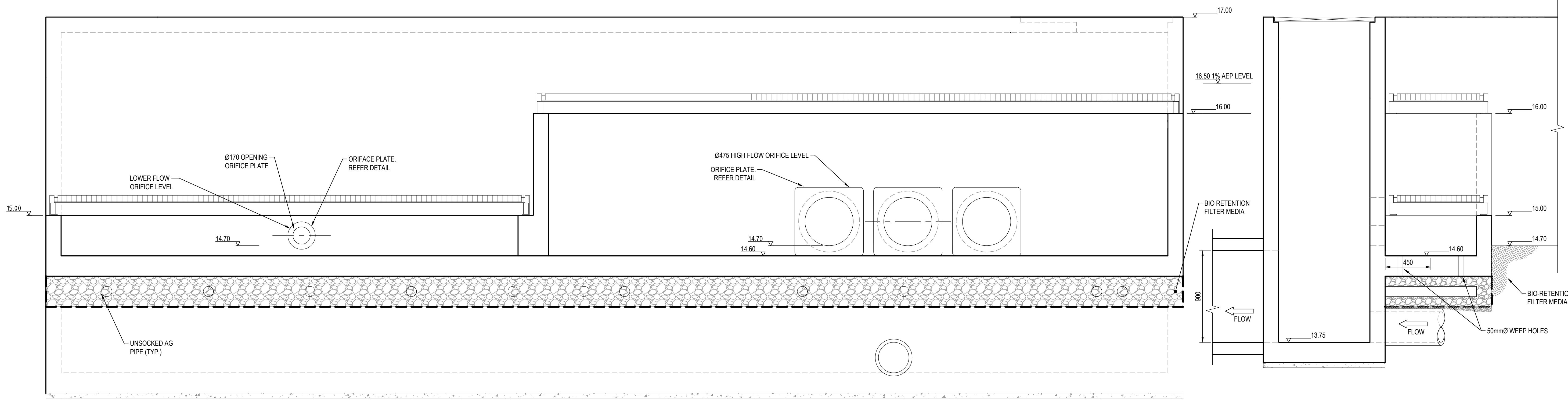
ARCADIS

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NORTH SYDNEY NSW 2060
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arcadis.com

Project No.
AA009335

Drawing No.
SSS2 -ARC-CV-DWG-0411-

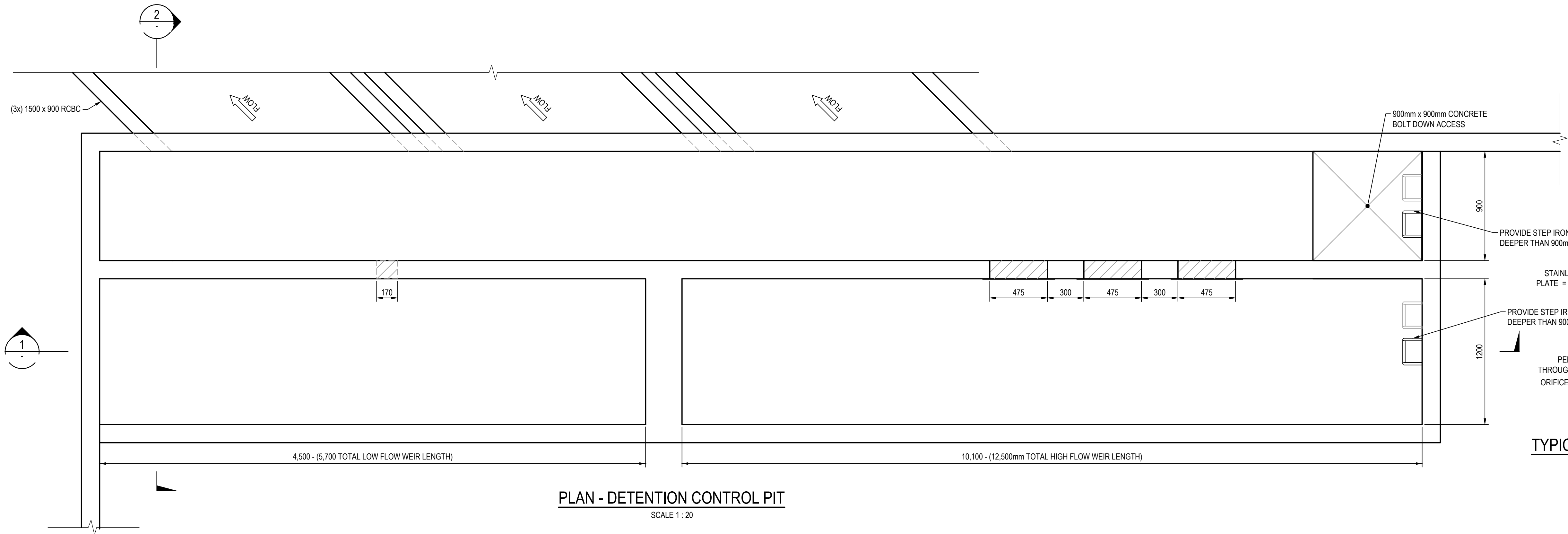
Issue
01



SECTION 1
1 : 20

SECTION 2
1 : 20

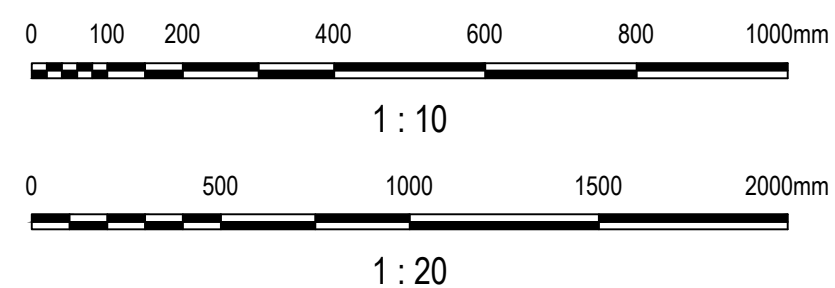
NOTES:
TRASH SCREENS TO BE PROVIDED.



PLAN - DETENTION CONTROL PIT
SCALE 1 : 20

TYPICAL CIRCULAR ORIFICE PLATE DETAIL
SCALE 1 : 10

01	DRAFT ISSUE FOR SSD APPLICATION	16/09/2016
Issue	Description	Date



Status	PRELIMINARY ONLY NOT TO BE USED FOR CONSTRUCTION		
Scales	AS SHOWN	Current Issue Signatures	
Original Size	A1	Drawn	A.ZHAO
Height Datum	AHD	Designed	S.MAKIREDDI
Grid	MGA	Checked	K.MCAREAVEY
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Approved	M.KEFFORD		

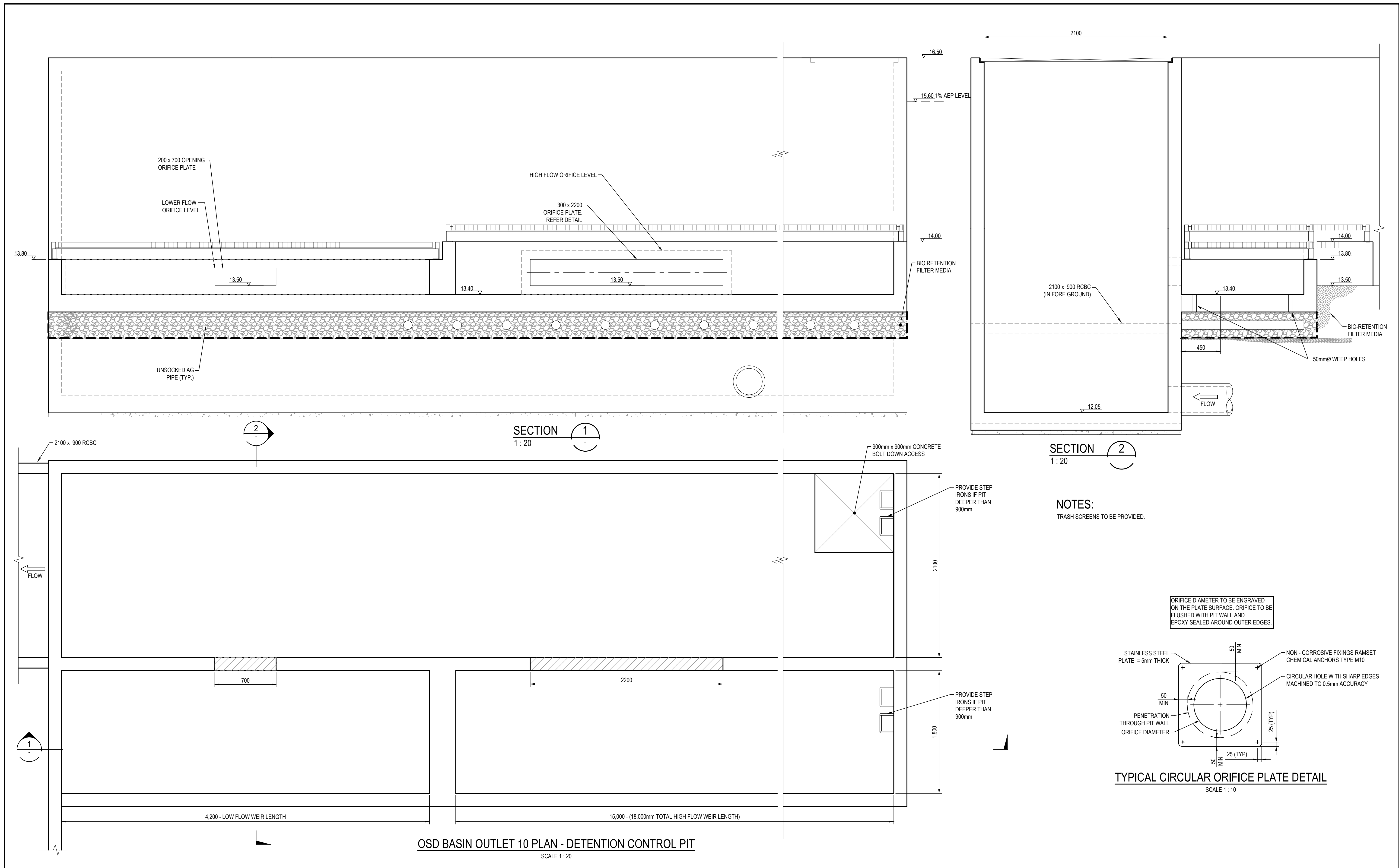
Project	MOOREBANK PRECINCT EAST (MPE) STAGE 2	
Title	STORMWATER DRAINAGE BASIN OUTLET 2	

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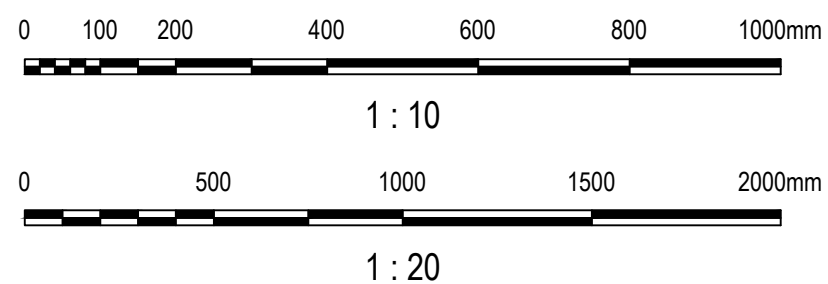
Project No.
AA009335

Drawing No.
SSS2-ARC-CV-DWG-0412-

Issue
01



02	ISSUE FOR SSD APPLICATION	19/10/2016
01	DRAFT ISSUE FOR SSD APPLICATION	16/09/2016
Issue	Description	Date



Status	PRELIMINARY ONLY NOT TO BE USED FOR CONSTRUCTION		
Scales	AS SHOWN	Current Issue Signatures	
Original Size	A1	Drawn	A.ZHAO
Height Datum	AHD	Designed	S.MAKIREDDI
Grid	MGA	Checked	K.MCAREAVEY
Filename	SSS2-ARC-CV-DWG-0414-StormwaterDrainageBasinOutlet10.dwg		
Approved	M.KEFFORD		

Project	MOOREBANK PRECINCT EAST (MPE) STAGE 2	
Title	STORMWATER DRAINAGE BASIN OUTLET 10	

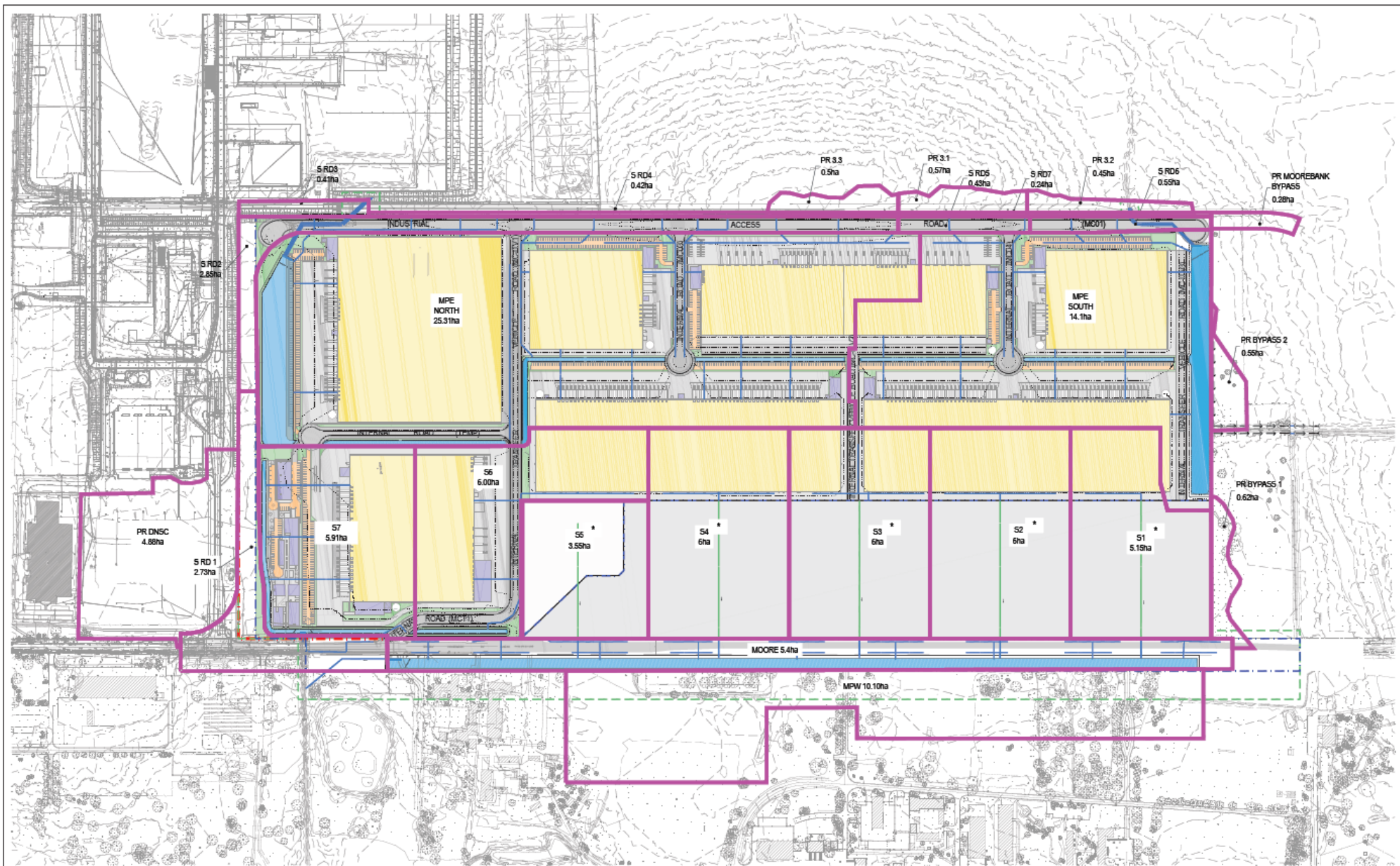
ARCADIS

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arcadis.com

Project No.
AA009335

Drawing No.
SSS2-ARC-CV-DWG-0414

Issue
02



Issue	Description	Date

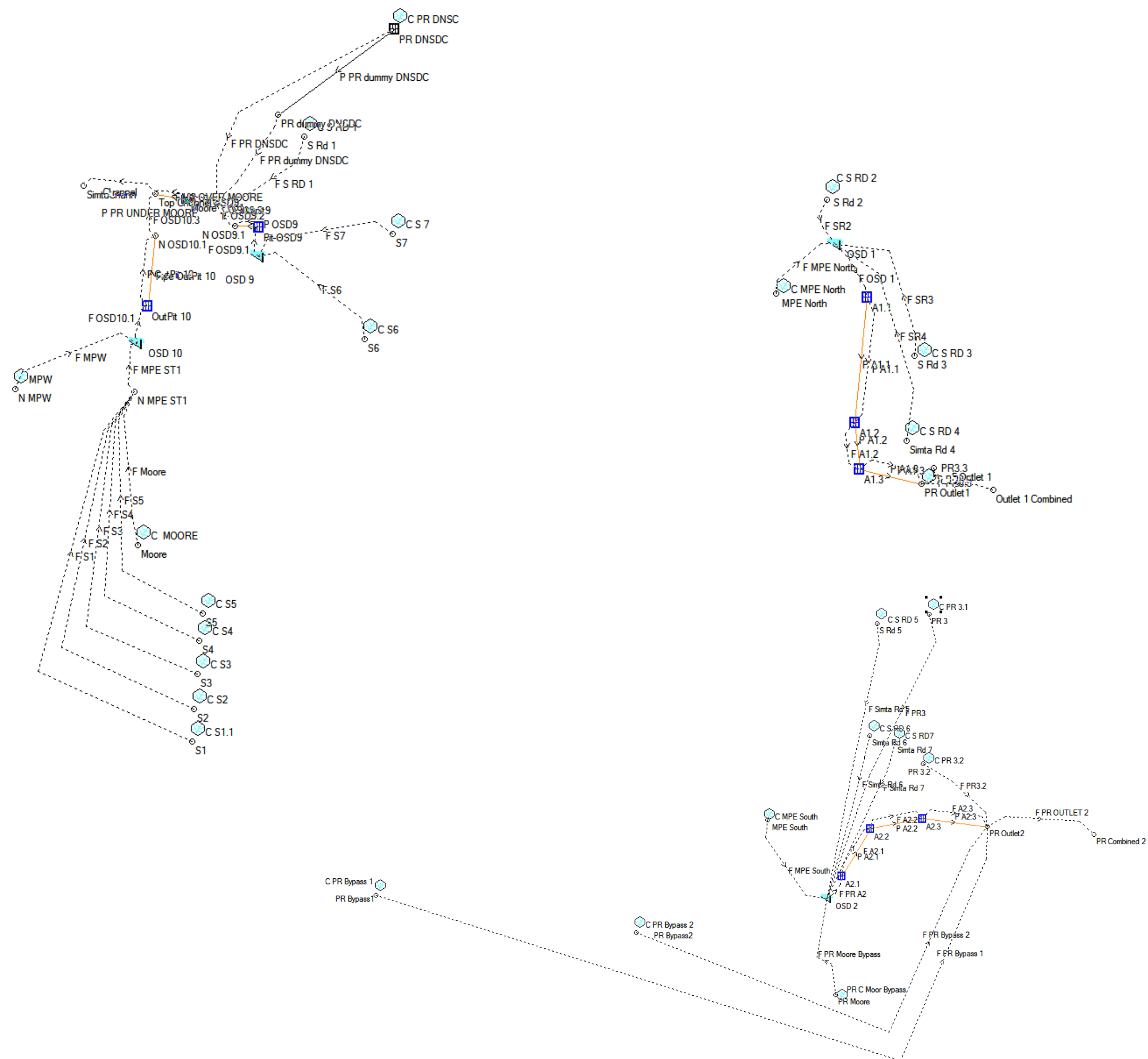


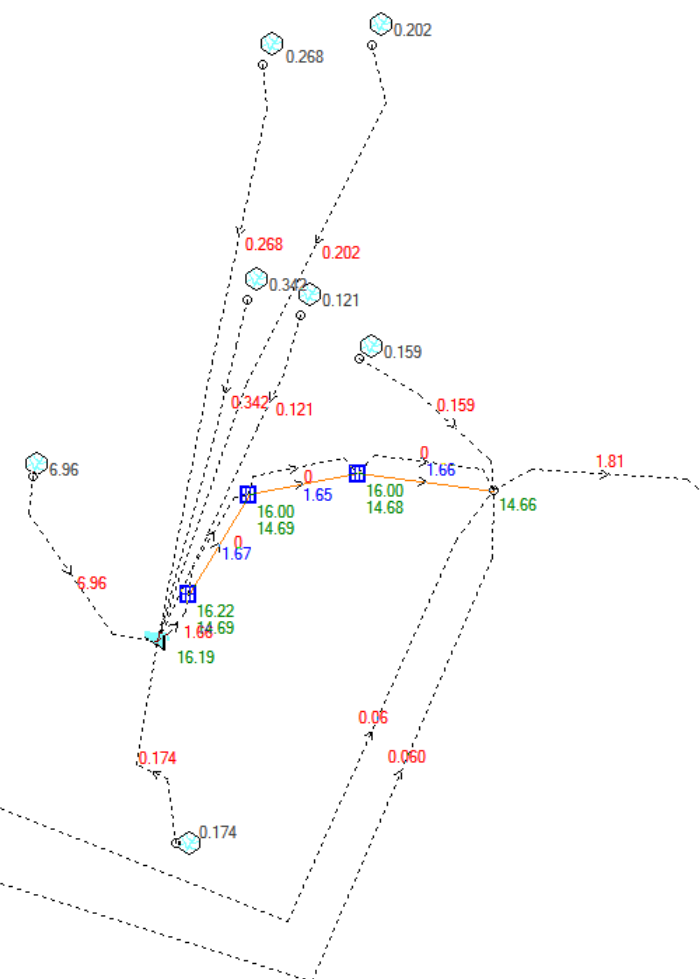
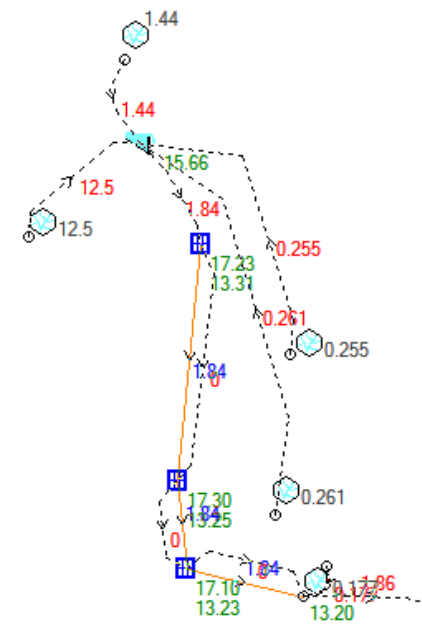
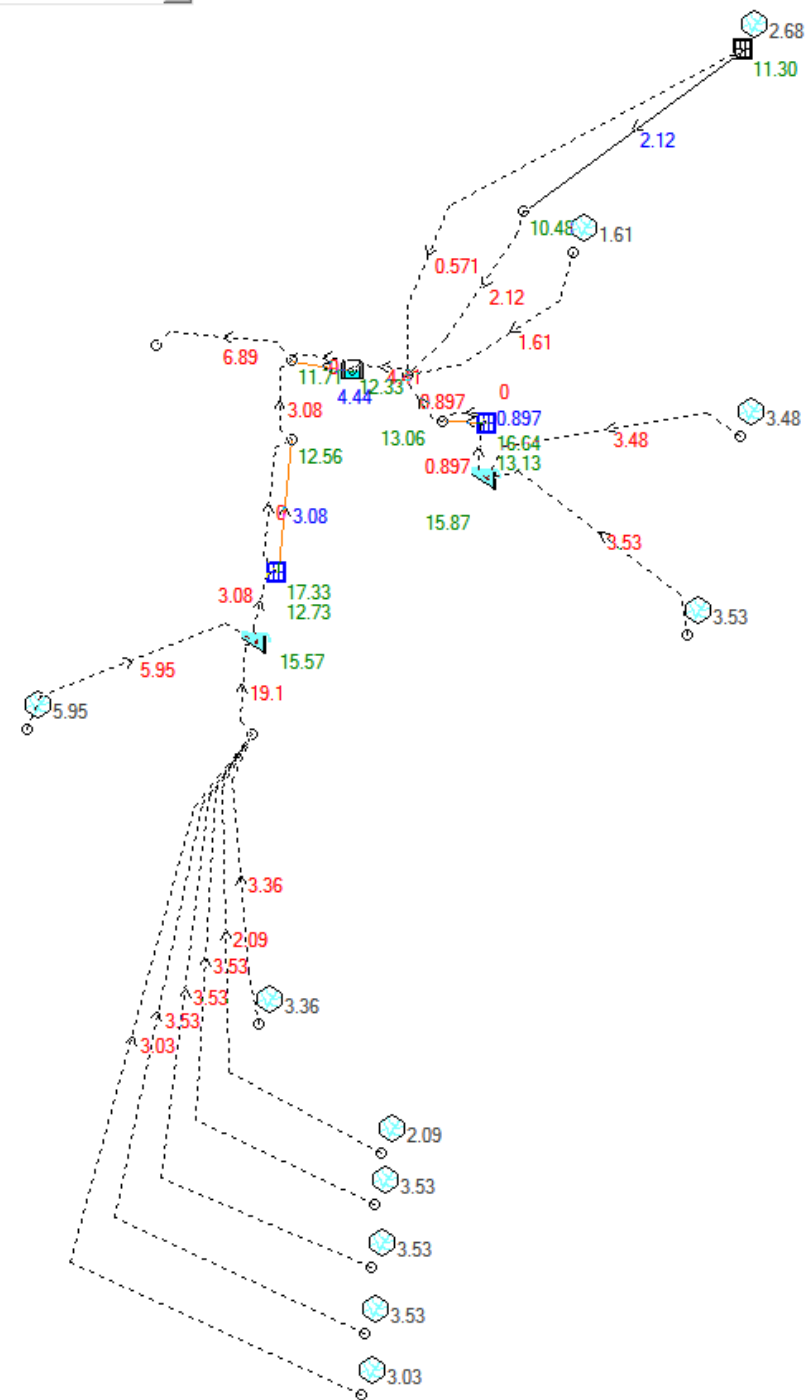
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Scale	Current Issue Signature
Original Size	Drawn
Height	Designed
Defun	Checked
Grid	Approved
Filename:	

Project	MOOREBANK PRECINCT EAST (MPE) STAGE 2
Title	Proposed Catchment Plan

ARCADIS
 Arcadis Australia Pacific Pty Limited
 Level 5, 141 Walker St
 NORTH SYDNEY NSW 2060
 ABN 16 604 485 205
 Tel No: +61 2 8907 9000
 Fax No: +61 2 8907 9001
 arcadis.com

Project No: AA009335
 Drawing No: SSS2-ARC-CV-DWG-
 Issue: -

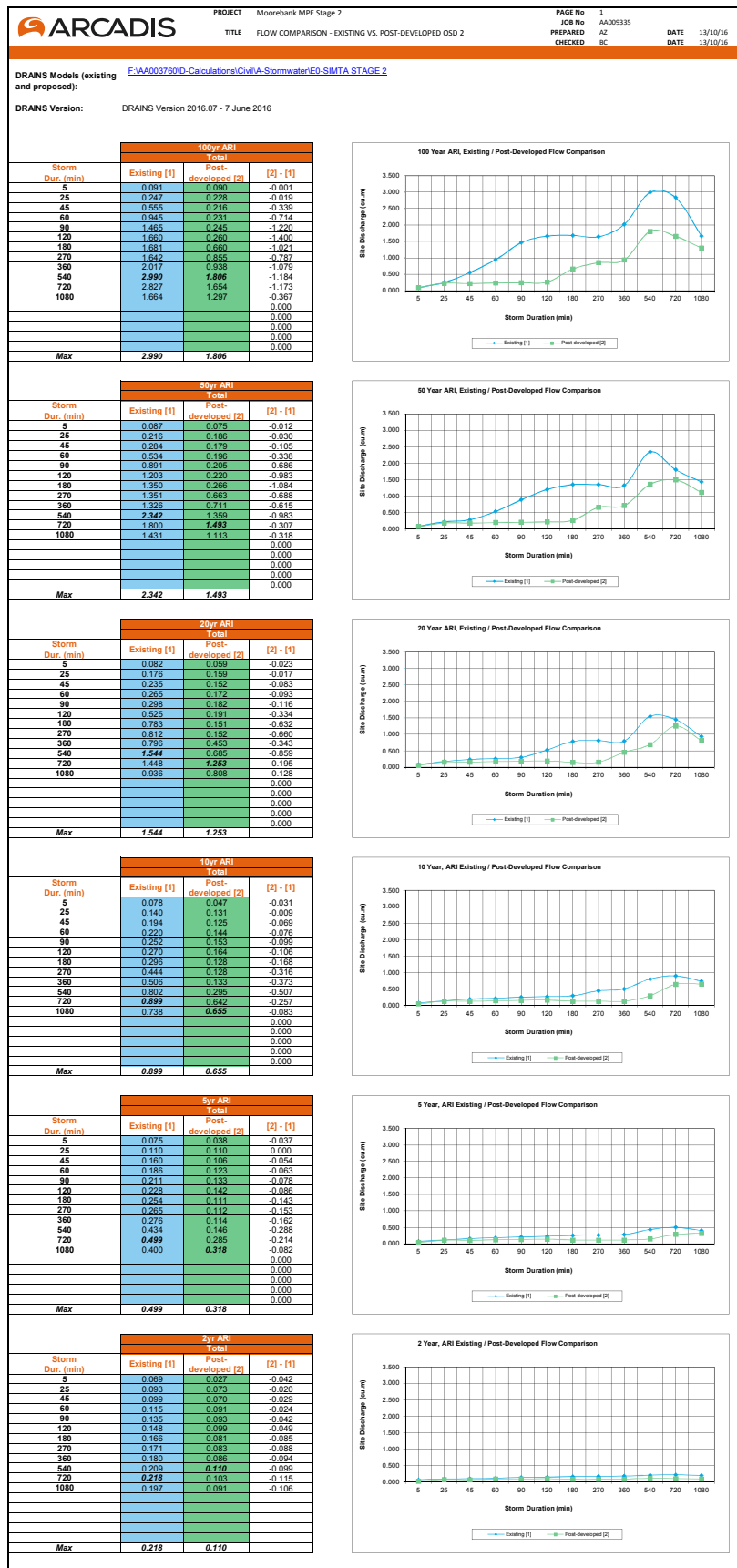




Flow Comparison

- For each Basin and each comparison point

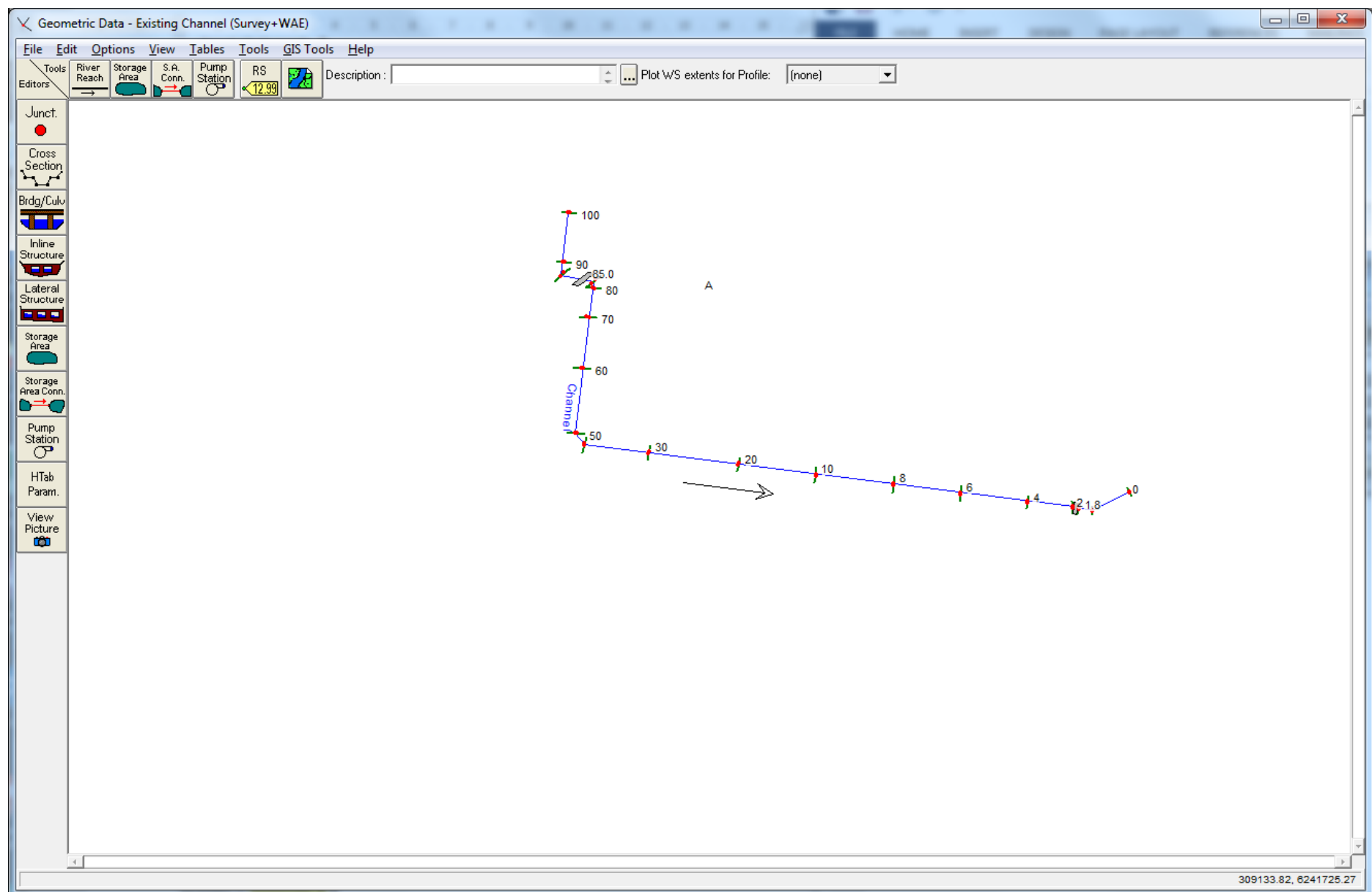
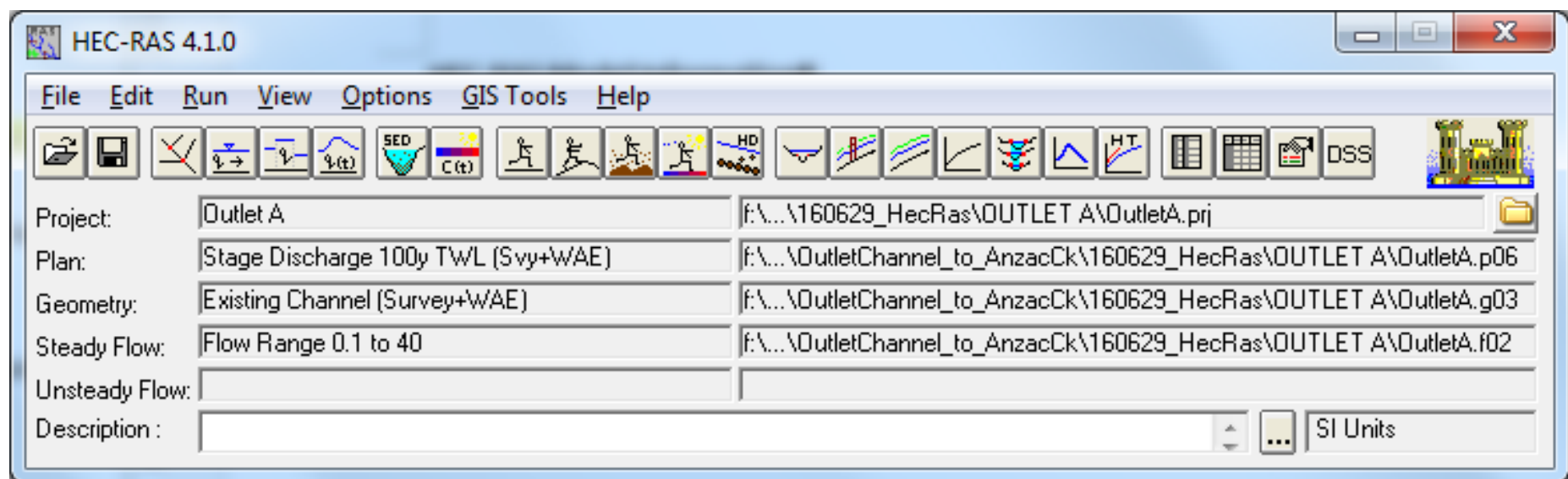
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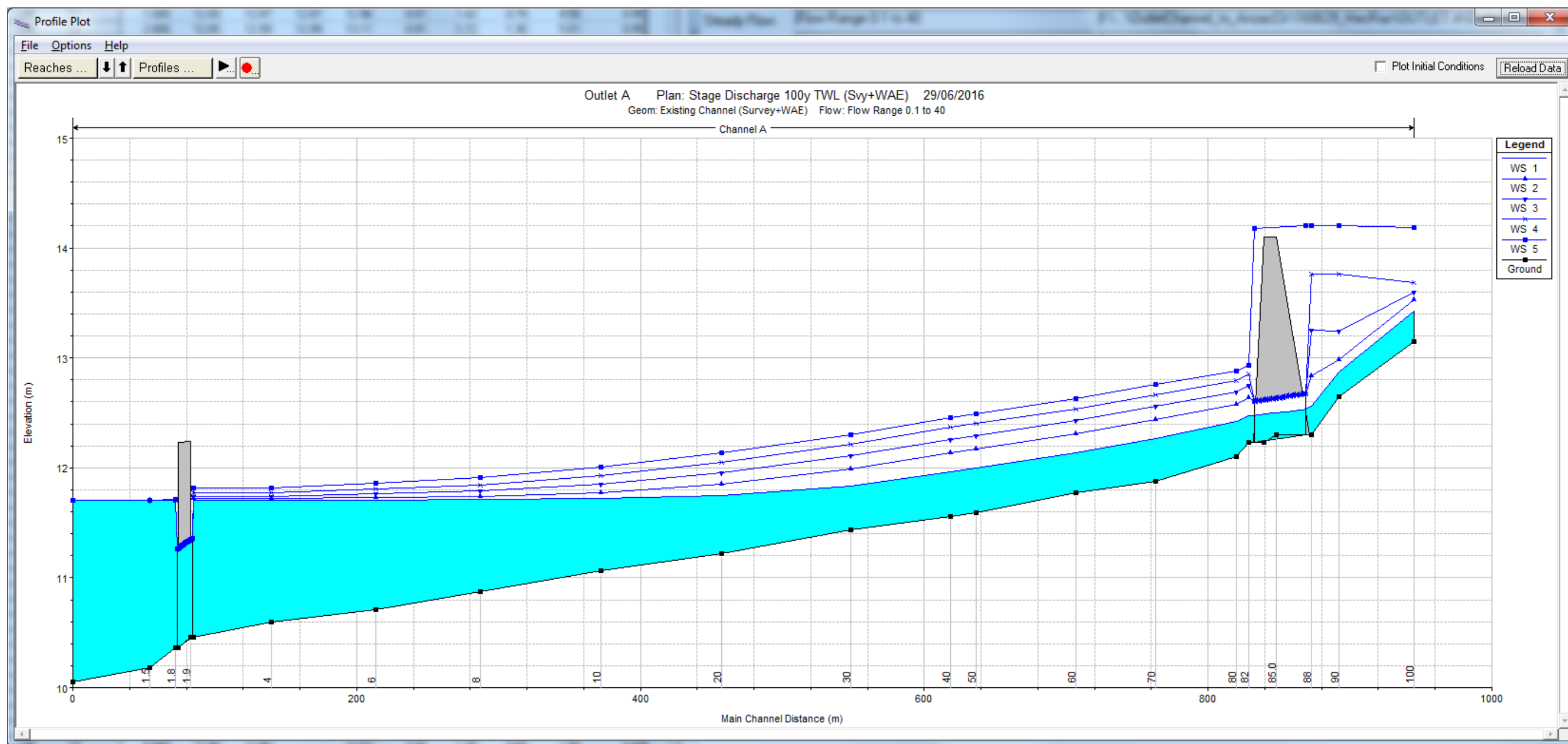


F:\AA003760\D-Calculations\Civil\A-Stormwater\E0-SIMTA STAGE 2\Output\Flow Comparison Channel

HEC-RAS Model Information

- NE Outlet (A)
- SE Outlet (B)





Profile Output Table - Standard Table 1												
HEC-RAS Plan: SQ_SvyWAE River: Channel Reach: A												Reload Data
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
A	100	1	1.000	13.15	13.42	13.38	13.49	0.01	1.22	0.90	4.13	0.75
A	100	2	2.000	13.15	13.53	13.51	13.65	0.01	1.67	1.37	4.76	0.87
A	100	3	3.000	13.15	13.60	13.60	13.77	0.01	2.00	1.74	5.20	0.95
A	100	4	4.000	13.15	13.68	13.68	13.88	0.01	2.16	2.19	5.70	0.94
A	100	5	5.000	13.15	14.19	13.75	14.23	0.00	1.09	5.84	8.74	0.34
A	90	1	1.000	12.65	12.87	12.87	12.96	0.01	1.42	0.79	4.58	0.95
A	90	2	2.000	12.65	12.99	12.99	13.11	0.01	1.72	1.36	5.61	0.95
A	90	3	3.000	12.65	13.25	13.07	13.30	0.00	1.19	3.15	8.04	0.49
A	90	4	4.000	12.65	13.76		13.78	0.00	0.63	8.54	12.84	0.19
A	90	5	5.000	12.65	14.20		14.21	0.00	0.46	15.08	16.91	0.12
A	88	1	1.000	12.30	12.56	12.46	12.59	0.00	0.74	1.34	5.09	0.46
A	88	2	2.000	12.30	12.84	12.55	12.86	0.00	0.73	2.73	5.09	0.32
A	88	3	3.000	12.30	13.25	12.63	13.27	0.00	0.61	5.02	6.46	0.20
A	88	4	4.000	12.30	13.76	12.70	13.77	0.00	0.49	9.05	9.43	0.13
A	88	5	5.000	12.30	14.20	12.76	14.21	0.00	0.42	13.75	11.99	0.10
A	85.0		Culvert									
A	82	1	1.000	12.23	12.48		12.51	0.00	0.80	1.25	5.09	0.51
A	82	2	2.000	12.23	12.64		12.68	0.00	0.97	2.06	5.09	0.49
A	82	3	3.000	12.23	12.76		12.82	0.00	1.12	2.67	5.10	0.50
A	82	4	4.000	12.23	12.85		12.93	0.00	1.26	3.17	5.40	0.51
A	82	5	5.000	12.23	12.93		13.03	0.00	1.39	3.64	5.88	0.53
A	80	1	1.000	12.10	12.42		12.47	0.00	1.04	1.07	4.18	0.59
A	80	2	2.000	12.10	12.57		12.65	0.00	1.29	1.78	5.01	0.60
A	80	3	3.000	12.10	12.69		12.78	0.00	1.47	2.41	5.64	0.61
A	80	4	4.000	12.10	12.79		12.90	0.00	1.60	3.00	6.16	0.62
A	80	5	5.000	12.10	12.88		13.00	0.00	1.72	3.55	6.61	0.62
A	70	1	1.000	11.88	12.27		12.30	0.00	0.80	1.43	4.83	0.41
A	70	2	2.000	11.88	12.44		12.48	0.00	1.02	2.32	5.83	0.44
A	70	3	3.000	11.88	12.56		12.62	0.00	1.18	3.09	6.58	0.46
A	70	4	4.000	11.88	12.66		12.73	0.00	1.30	3.81	7.21	0.47
A	70	5	5.000	11.88	12.76		12.83	0.00	1.39	4.49	7.75	0.48
A	60	1	1.000	11.77	12.14		12.17	0.00	0.86	1.33	4.71	0.45
A	60	2	2.000	11.77	12.31		12.35	0.00	1.07	2.20	5.71	0.47
A	60	3	3.000	11.77	12.43		12.49	0.00	1.22	2.97	6.47	0.48
A	60	4	4.000	11.77	12.54		12.61	0.00	1.34	3.68	7.10	0.49
A	60	5	5.000	11.77	12.63		12.71	0.00	1.43	4.35	7.65	0.49
A	50	1	1.000	11.59	12.00		12.02	0.00	0.76	1.51	4.94	0.38
A	50	2	2.000	11.59	12.17		12.21	0.00	0.97	2.44	5.96	0.41
A	50	3	3.000	11.59	12.30		12.35	0.00	1.12	3.25	6.73	0.43
A	50	4	4.000	11.59	12.40		12.46	0.00	1.24	4.00	7.36	0.44
A	50	5	5.000	11.59	12.49		12.56	0.00	1.34	4.70	7.91	0.45
A	40	1	1.000	11.56	11.97		11.99	0.00	0.76	1.51	4.93	0.38
A	40	2	2.000	11.56	12.13		12.17	0.00	0.98	2.43	5.95	0.41
A	40	3	3.000	11.56	12.26		12.31	0.00	1.13	3.23	6.71	0.43
A	40	4	4.000	11.56	12.37		12.43	0.00	1.25	3.97	7.34	0.44
A	40	5	5.000	11.56	12.46		12.53	0.00	1.35	4.66	7.88	0.45
A	30	1	1.000	11.44	11.83		11.86	0.00	0.79	1.44	4.85	0.40
A	30	2	2.000	11.44	11.99		12.03	0.00	1.04	2.27	5.79	0.45
A	30	3	3.000	11.44	12.11		12.17	0.00	1.20	3.03	6.53	0.47
A	30	4	4.000	11.44	12.21		12.28	0.00	1.32	3.74	7.15	0.48
A	30	5	5.000	11.44	12.30		12.38	0.00	1.42	4.40	7.69	0.49

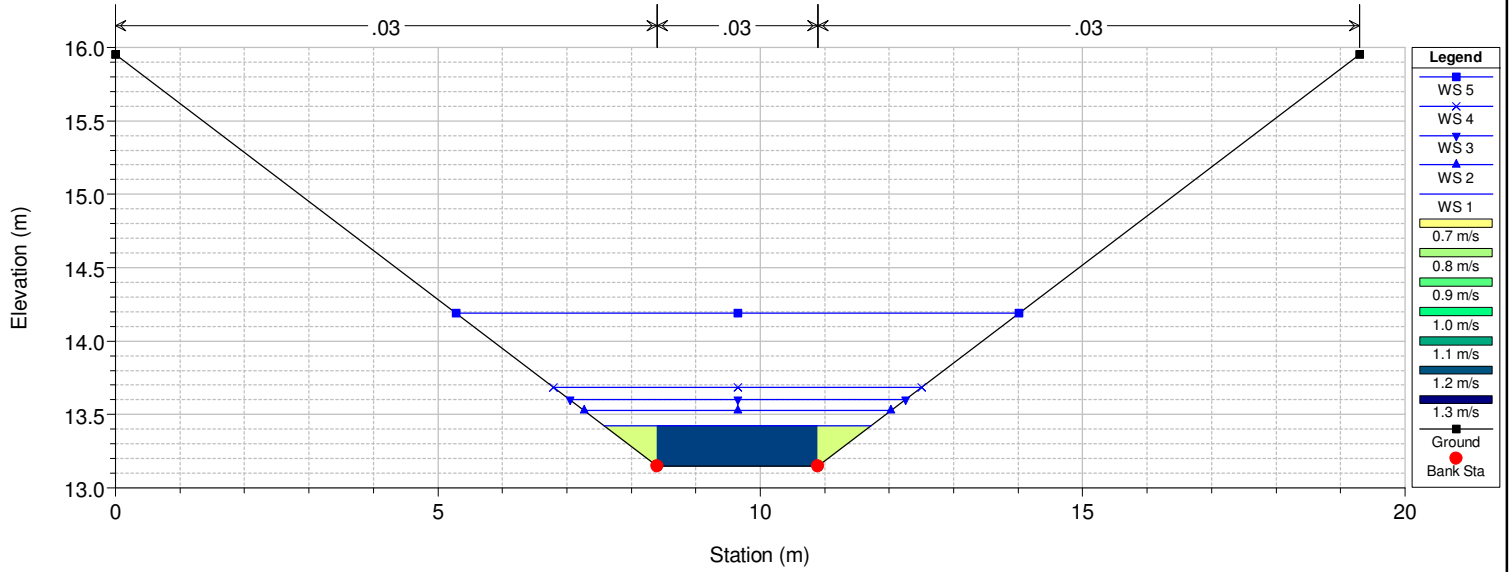
Profile Output Table - Standard Table 1												
HEC-RAS Plan: SQ_SvyWAE River: Channel Reach: A												Reload Data
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
A	30	1	1.000	11.44	11.83		11.86	0.00	0.79	1.44	4.85	0.40
A	30	2	2.000	11.44	11.99		12.03	0.00	1.04	2.27	5.79	0.45
A	30	3	3.000	11.44	12.11		12.17	0.00	1.20	3.03	6.53	0.47
A	30	4	4.000	11.44	12.21		12.28	0.00	1.32	3.74	7.15	0.48
A	30	5	5.000	11.44	12.30		12.38	0.00	1.42	4.40	7.69	0.49
A	20	1	1.000	11.22	11.75		11.76	0.00	0.54	2.17	5.68	0.24
A	20	2	2.000	11.22	11.85		11.88	0.00	0.87	2.78	6.29	0.35
A	20	3	3.000	11.22	11.96		12.00	0.00	1.06	3.46	6.91	0.40
A	20	4	4.000	11.22	12.05		12.11	0.00	1.20	4.15	7.49	0.42
A	20	5	5.000	11.22	12.14		12.20	0.00	1.30	4.82	8.01	0.43
A	10	1	1.000	11.06	11.72		11.73	0.00	0.41	2.97	6.47	0.16
A	10	2	2.000	11.06	11.78		11.80	0.00	0.73	3.33	6.80	0.28
A	10	3	3.000	11.06	11.85		11.89	0.00	0.96	3.84	7.23	0.35
A	10	4	4.000	11.06	11.93		11.98	0.00	1.13	4.42	7.70	0.39
A	10	5	5.000	11.06	12.00		12.06	0.00	1.26	5.03	8.16	0.41
A	8	1	1.000	10.87	11.71		11.71	0.00	0.29	4.22	7.55	0.10
A	8	2	2.000	10.87	11.74		11.75	0.00	0.56	4.46	7.73	0.19
A	8	3	3.000	10.87	11.79		11.81	0.00	0.78	4.83	8.01	0.26
A	8	4	4.000	10.87	11.85		11.88	0.00	0.96	5.30	8.35	0.31
A	8	5	5.000	10.87	11.91		11.95	0.00	1.09	5.84	8.73	0.34
A	6	1	1.000	10.71	11.71		11.71	0.00	0.23	5.47	8.48	0.07
A	6	2	2.000	10.71	11.73		11.74	0.00	0.45	5.65	8.61	0.14
A	6	3	3.000	10.71	11.76		11.78	0.00	0.65	5.94	8.80	0.20
A	6	4	4.000	10.71	11.80		11.83	0.00	0.81	6.33	9.06	0.25
A	6	5	5.000	10.71	11.86		11.89	0.00	0.95	6.81	9.38	0.28
A	4	1	1.000	10.60	11.70		11.71	0.00	0.20	6.42	9.13	0.06
A	4	2	2.000	10.60	11.72		11.72	0.00	0.39	6.55	9.21	0.12
A	4	3	3.000	10.60	11.74		11.75	0.00	0.57	6.77	9.35	0.17
A	4	4	4.000	10.60	11.77		11.79	0.00	0.73	7.08	9.55	0.22
A	4	5	5.000	10.60	11.82		11.84	0.00	0.87	7.49	9.80	0.25
A	2	1	1.000	10.46	11.70	10.62	11.71	0.00	0.12	10.17	11.35	0.03
A	2	2	2.000	10.46	11.72	10.70	11.72	0.00	0.23	10.33	11.42	0.07
A	2	3	3.000	10.46	11.74	10.78	11.74	0.00	0.34	10.58	11.54	0.09
A	2	4	4.000	10.46	11.77	10.84	11.78	0.00	0.43	10.95	11.70	0.12
A	2	5	5.000	10.46	11.81	10.90	11.82	0.00	0.52	11.44	11.91	0.14
A	1.9		Culvert									
A	1.8	1	1.000	10.36	11.70		11.70	0.00	0.11	11.29	11.84	0.03
A	1.8	2	2.000	10.36	11.70		11.70	0.00	0.22	11.31	11.85	0.06
A	1.8	3	3.000	10.36	11.70		11.71	0.00	0.33	11.34	11.86	0.09
A	1.8	4	4.000	10.36	11.71		11.72	0.00	0.44	11.38	11.88	0.12
A	1.8	5	5.000	10.36	11.71		11.72	0.00	0.55	11.44	11.91	0.15
A	1.5	1	1.000	10.18	11.70		11.70	0.00	0.12	10.73	11.62	0.03
A	1.5	2	2.000	10.18	11.70		11.70	0.00	0.25	10.74	11.62	0.06
A	1.5	3	3.000	10.18	11.70		11.71	0.00	0.37	10.76	11.63	0.10
A	1.5	4	4.000	10.18	11.70		11.71	0.00	0.50	10.78	11.64	0.13
A	1.5	5	5.000	10.18	11.71		11.72	0.00	0.62	10.81	11.66	0.16
A	0	1	1.000	10.05	11.70	10.28	11.70	0.00	0.11	12.29	12.40	0.03
A	0	2	2.000	10.05	11.70	10.41	11.70	0.00	0.22	12.29	12.40	0.05
A	0	3	3.000	10.05	11.70	10.50	11.70	0.00	0.33	12.29	12.40	0.08
A	0	4	4.000	10.05	11.70	10.58	11.71	0.00	0.44	12.29	12.40	0.11
A	0	5	5.000	10.05	11.70	10.65	11.71	0.00	0.55	12.29	12.40	0.14

Slope of the energy grade line at a cross section.

Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

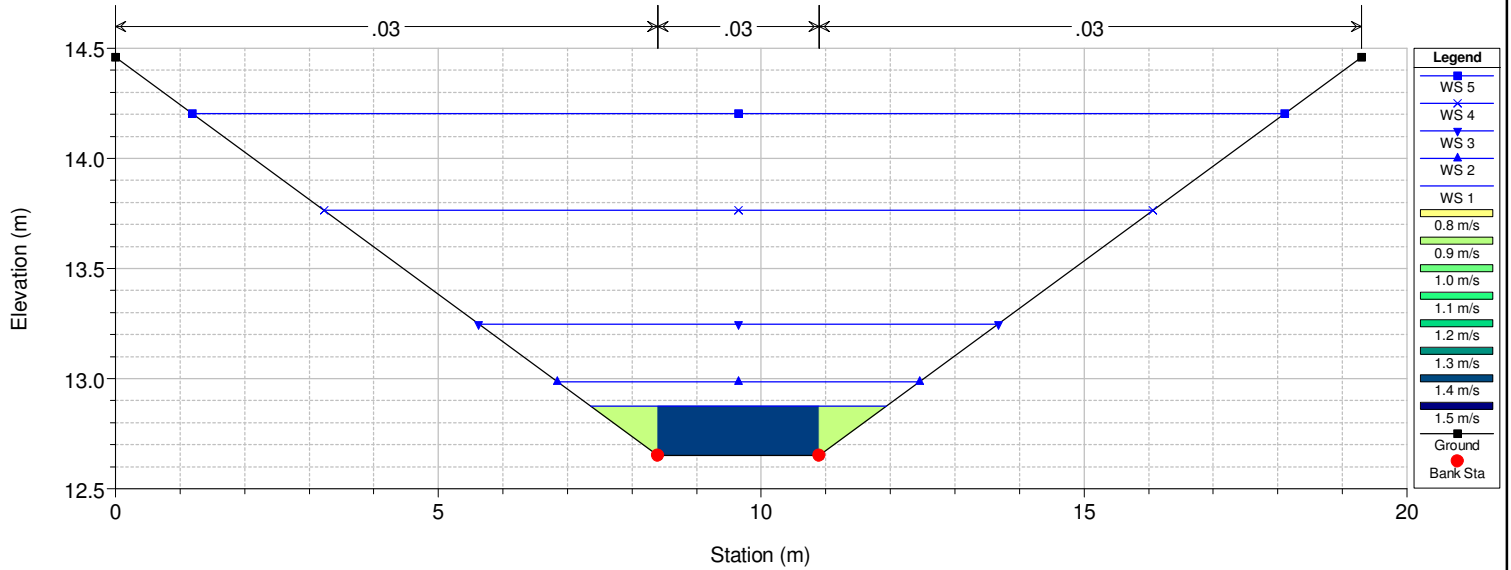
River = Channel Reach = A RS = 100 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

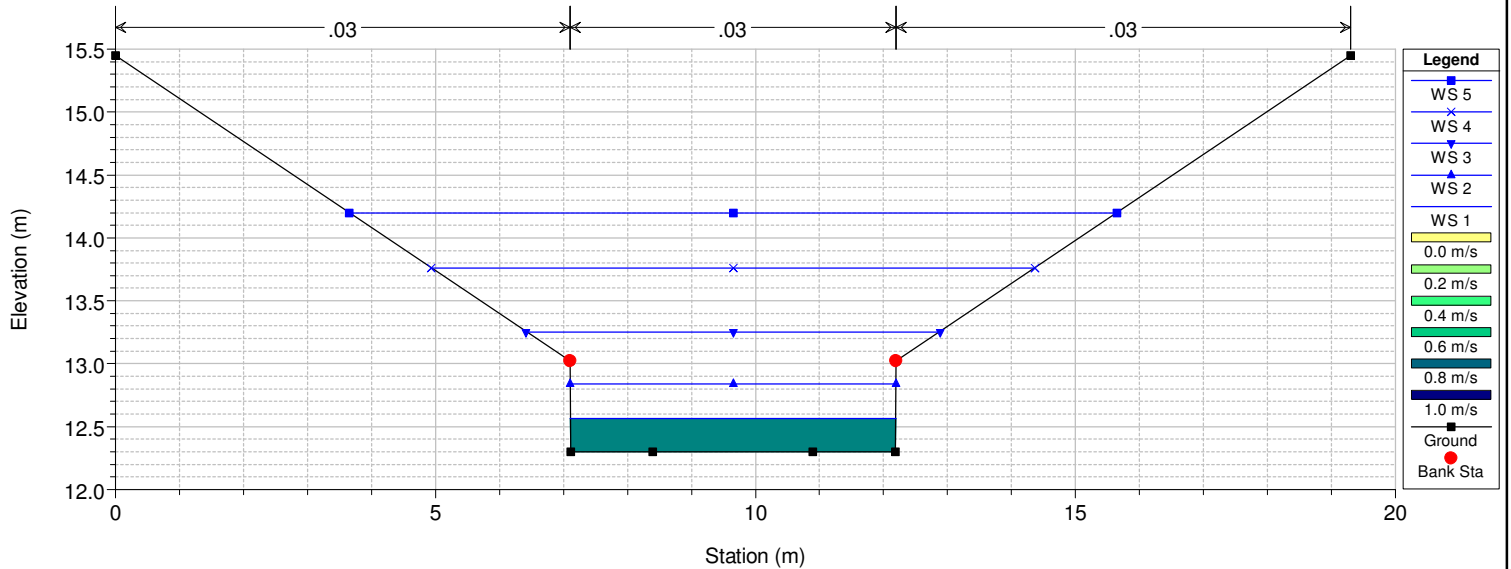
River = Channel Reach = A RS = 90 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

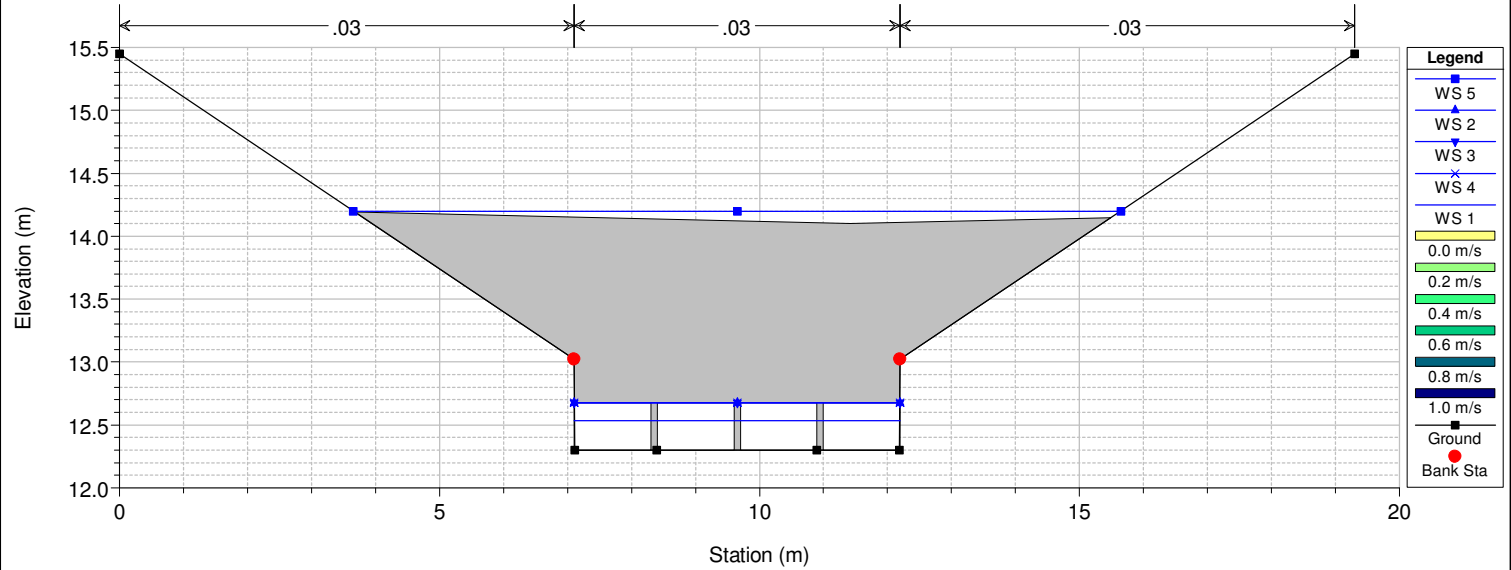
River = Channel Reach = A RS = 88 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

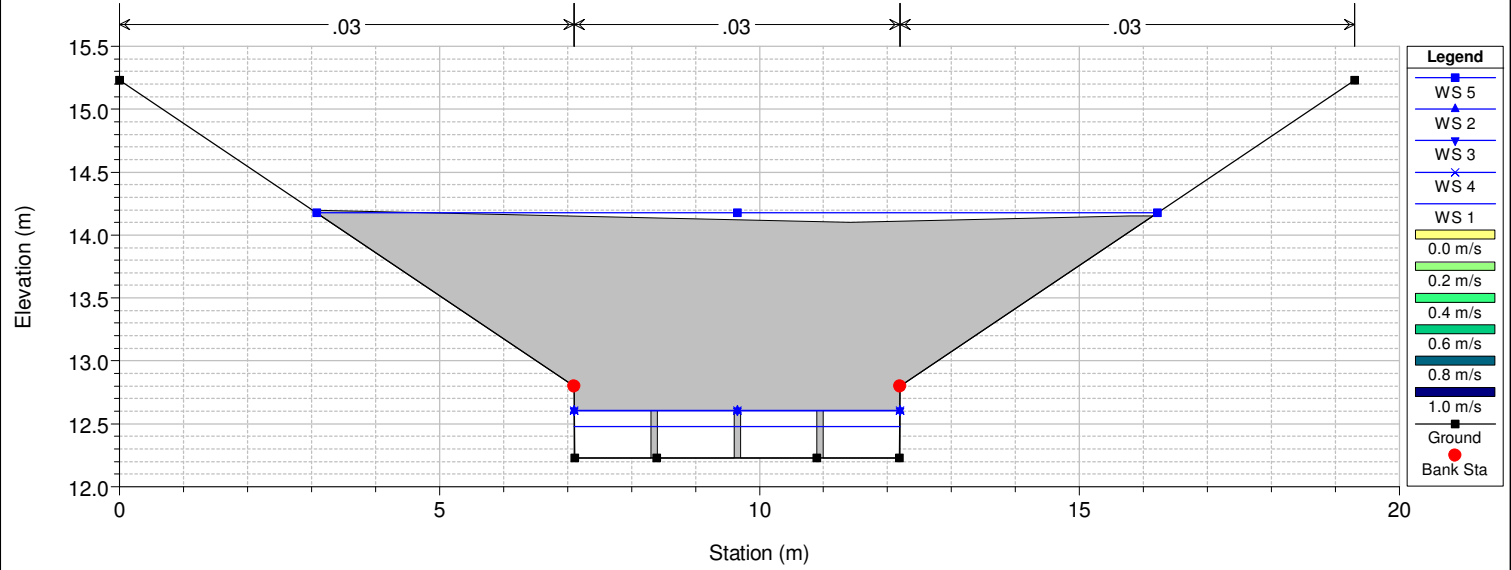
River = Channel Reach = A RS = 85.0 Culv



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

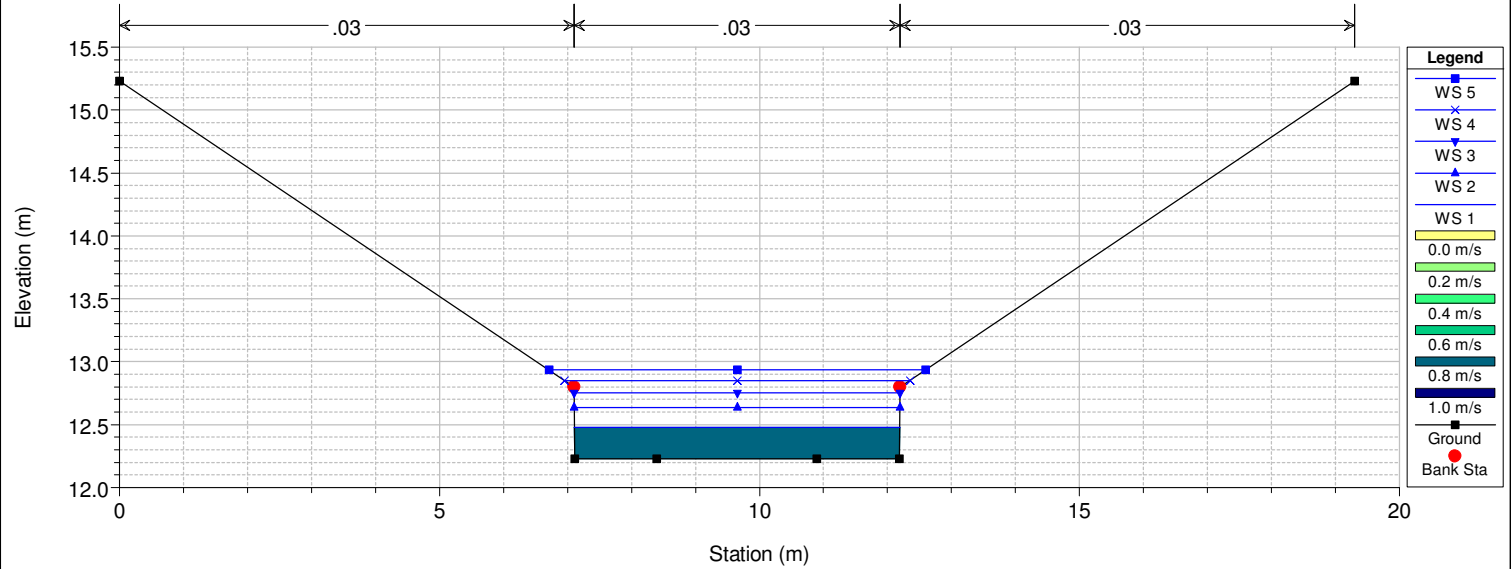
River = Channel Reach = A RS = 85.0 Culv



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

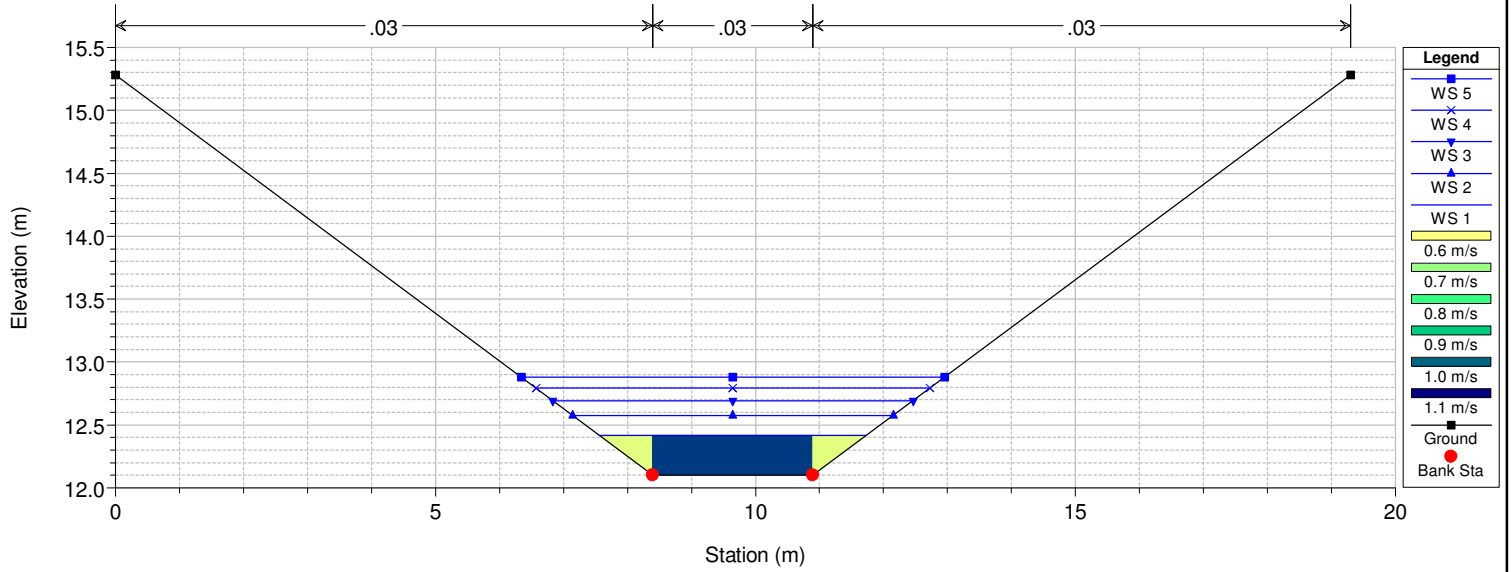
River = Channel Reach = A RS = 82 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

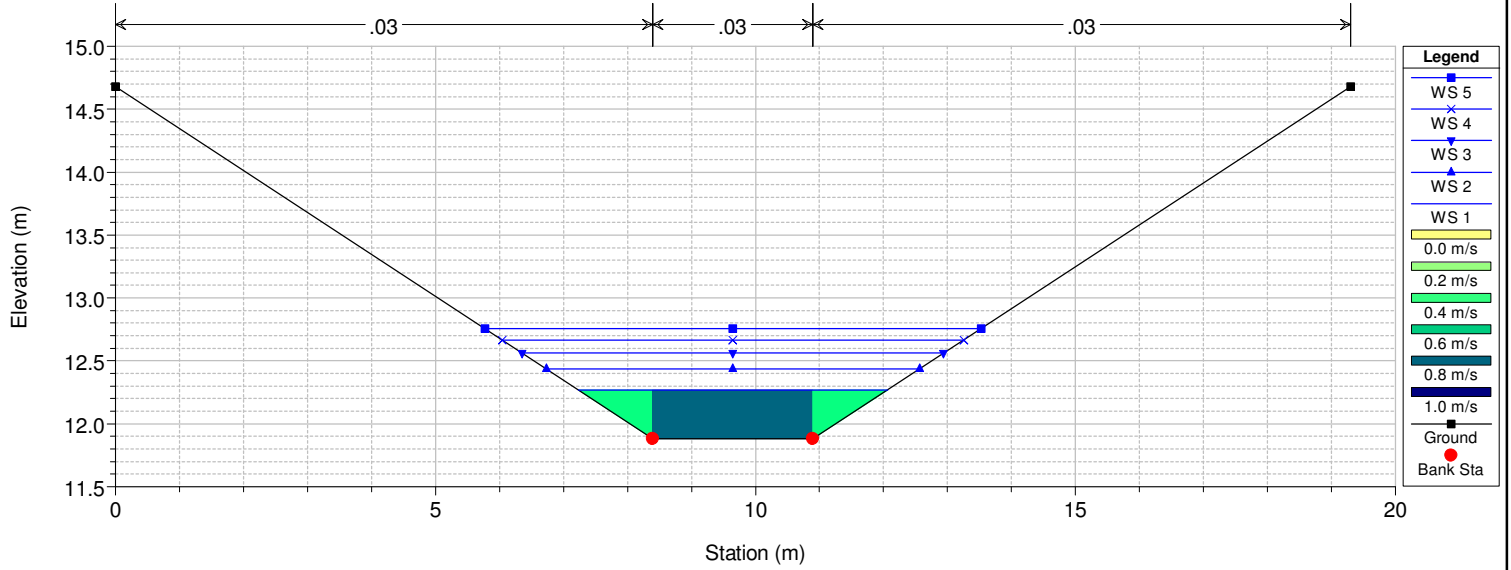
River = Channel Reach = A RS = 80 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

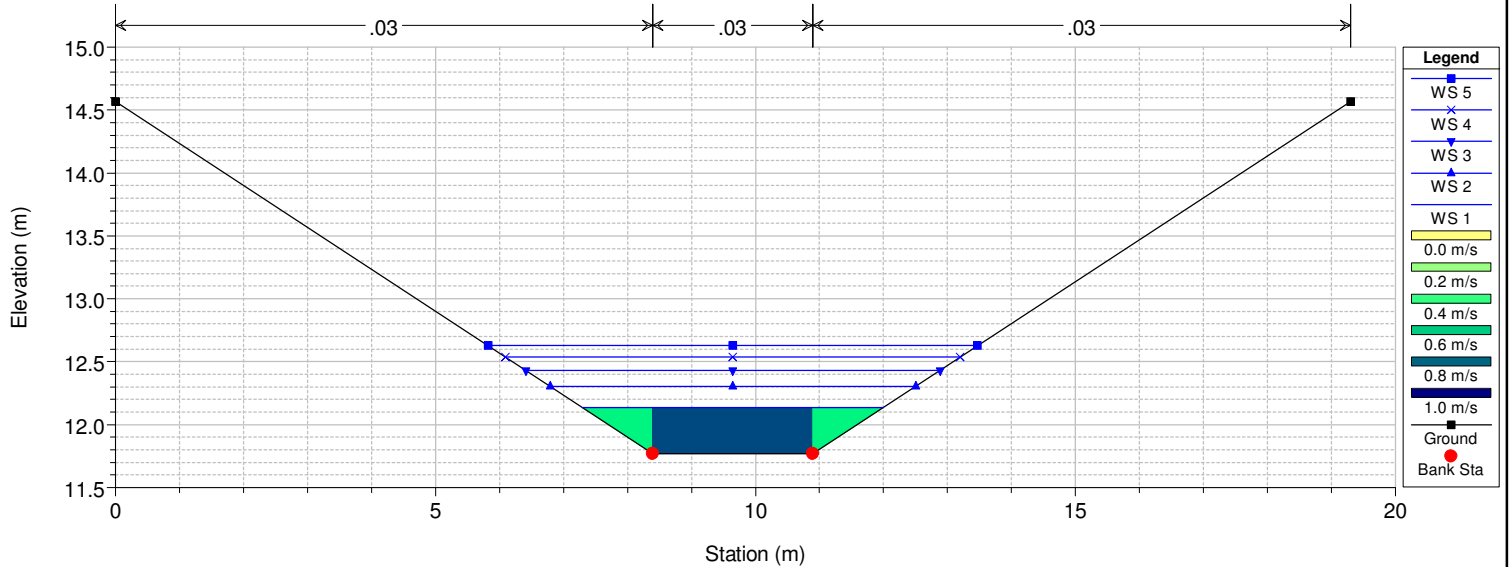
River = Channel Reach = A RS = 70 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

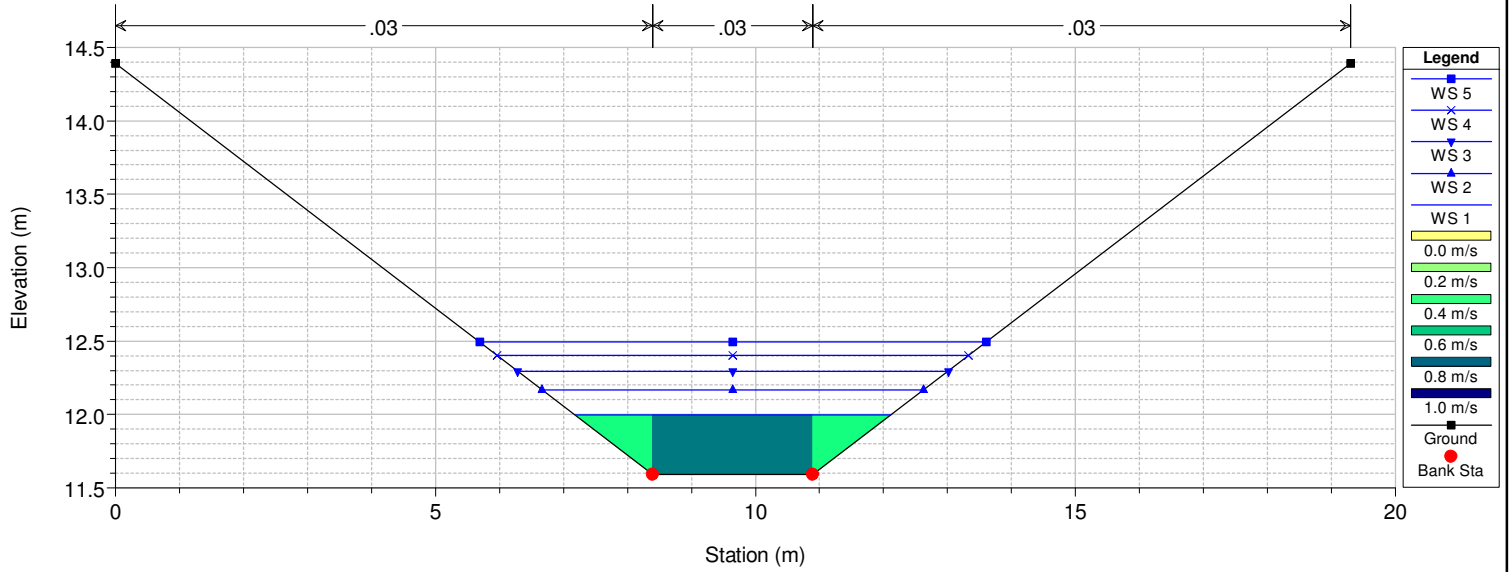
River = Channel Reach = A RS = 60 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

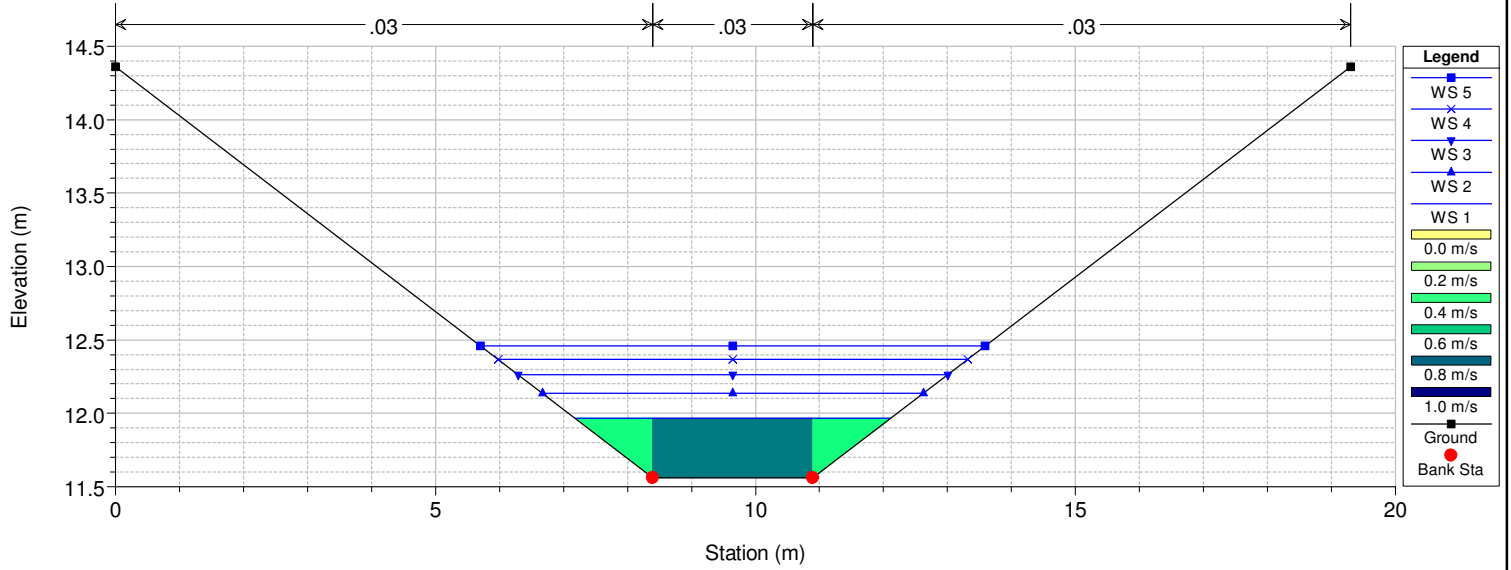
River = Channel Reach = A RS = 50 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

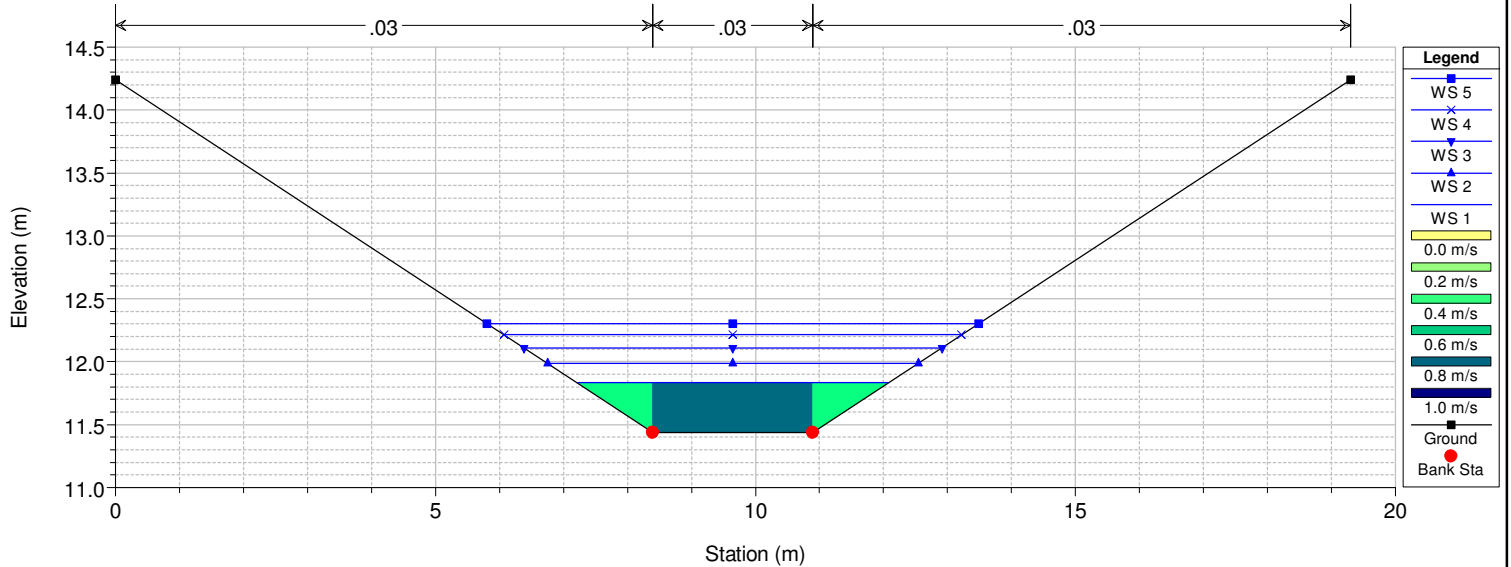
River = Channel Reach = A RS = 40 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

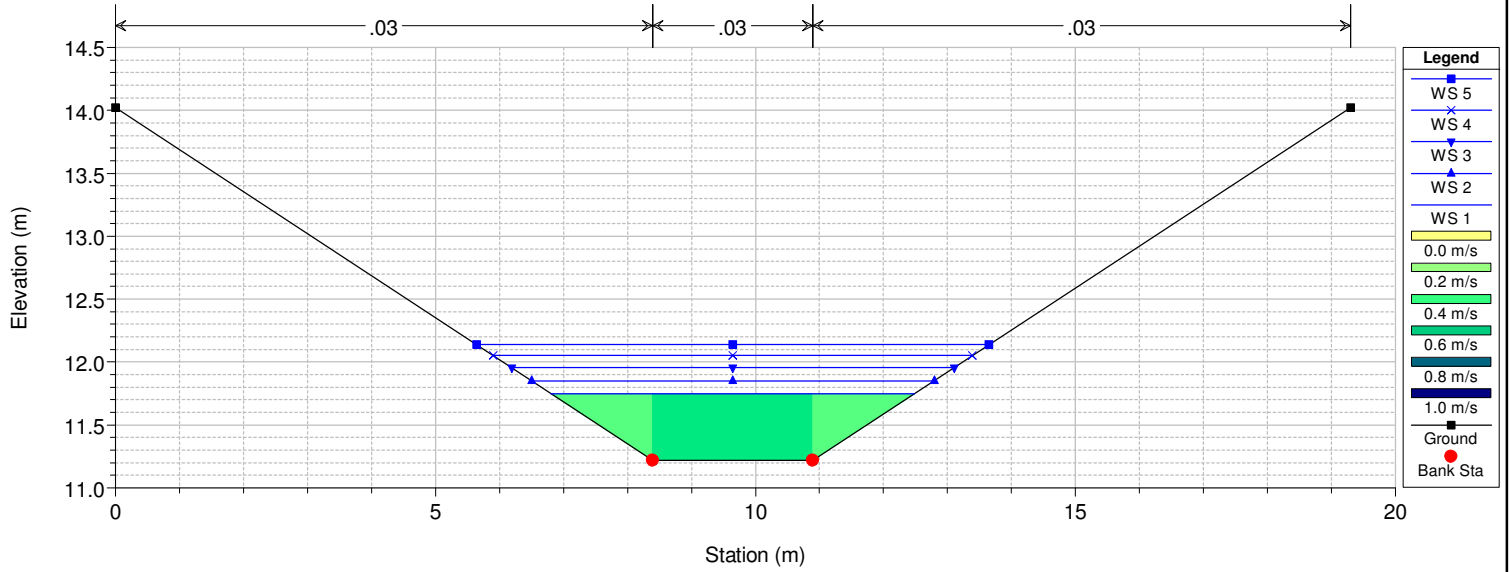
River = Channel Reach = A RS = 30 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

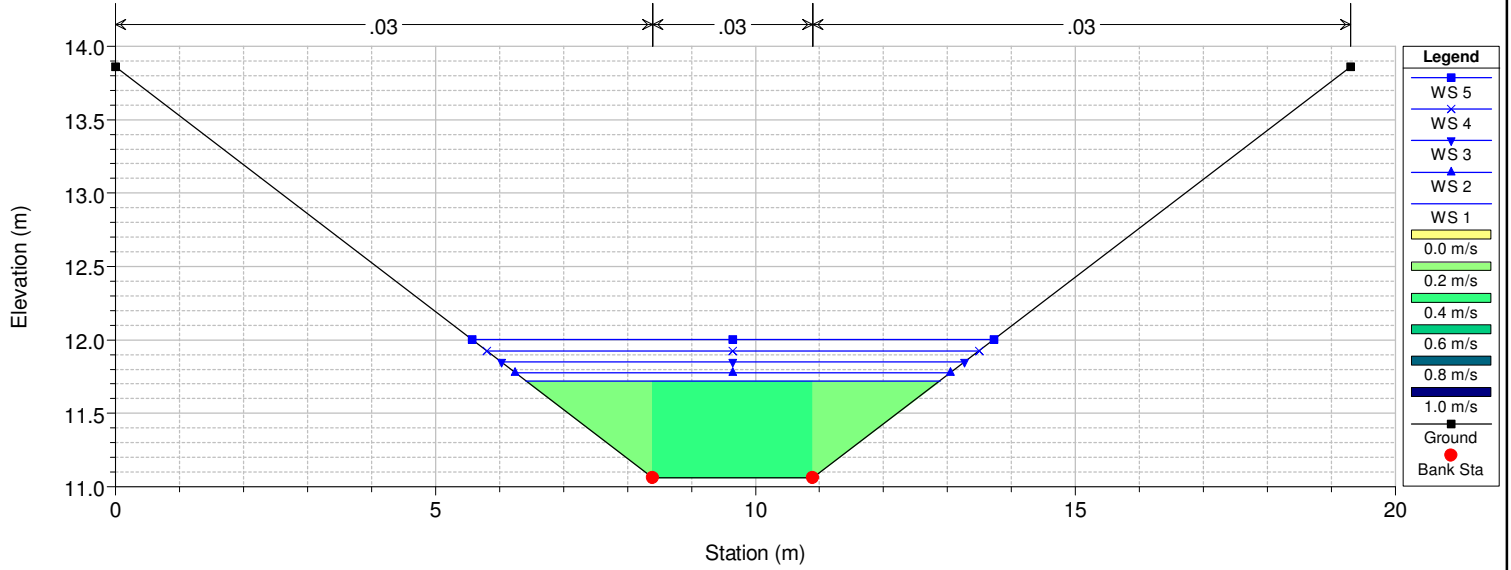
River = Channel Reach = A RS = 20 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

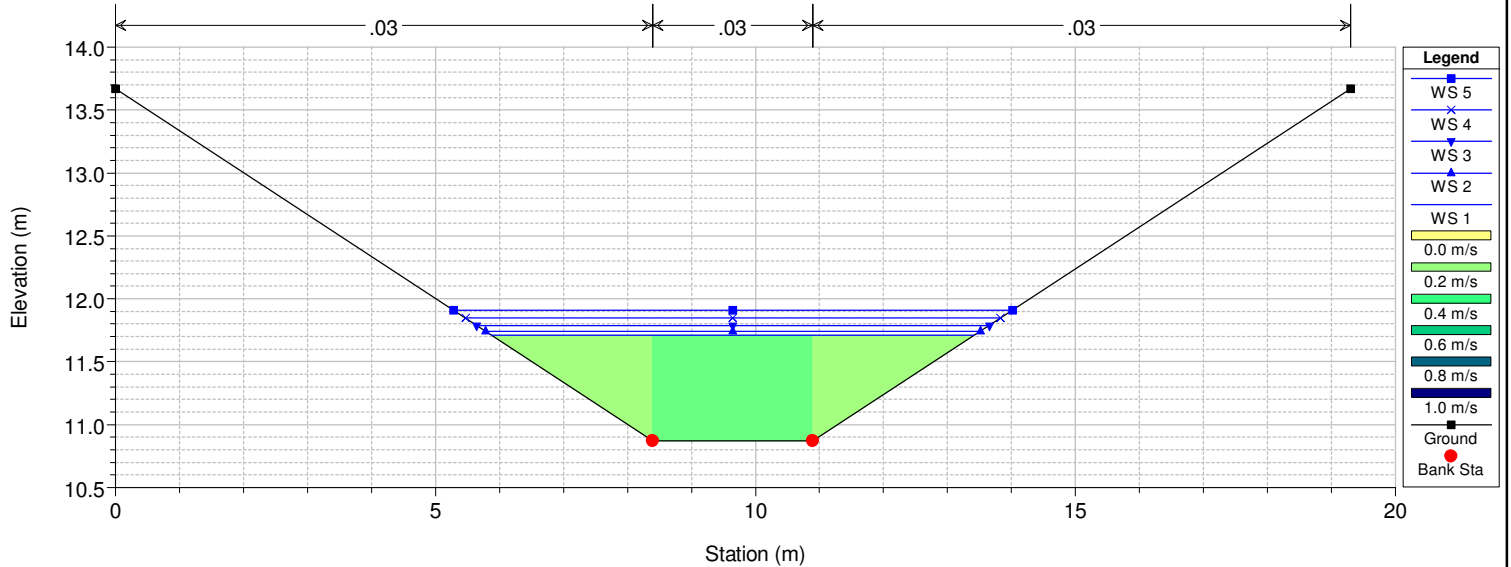
River = Channel Reach = A RS = 10 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

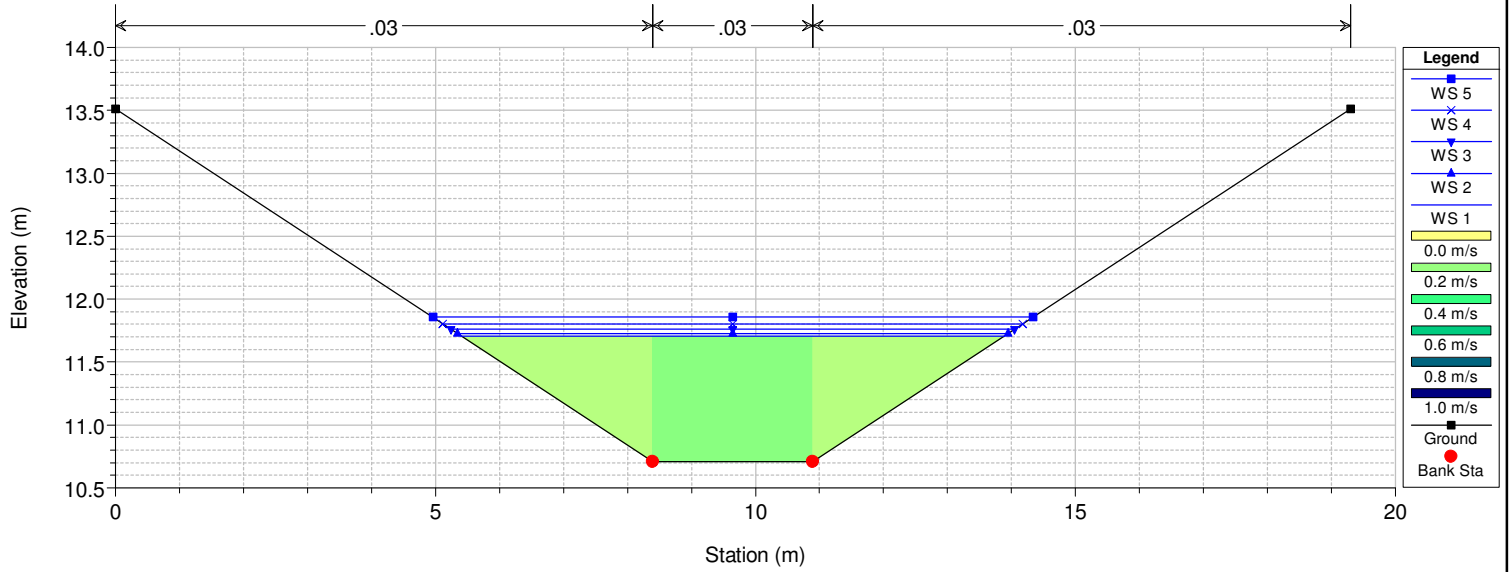
River = Channel Reach = A RS = 8 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

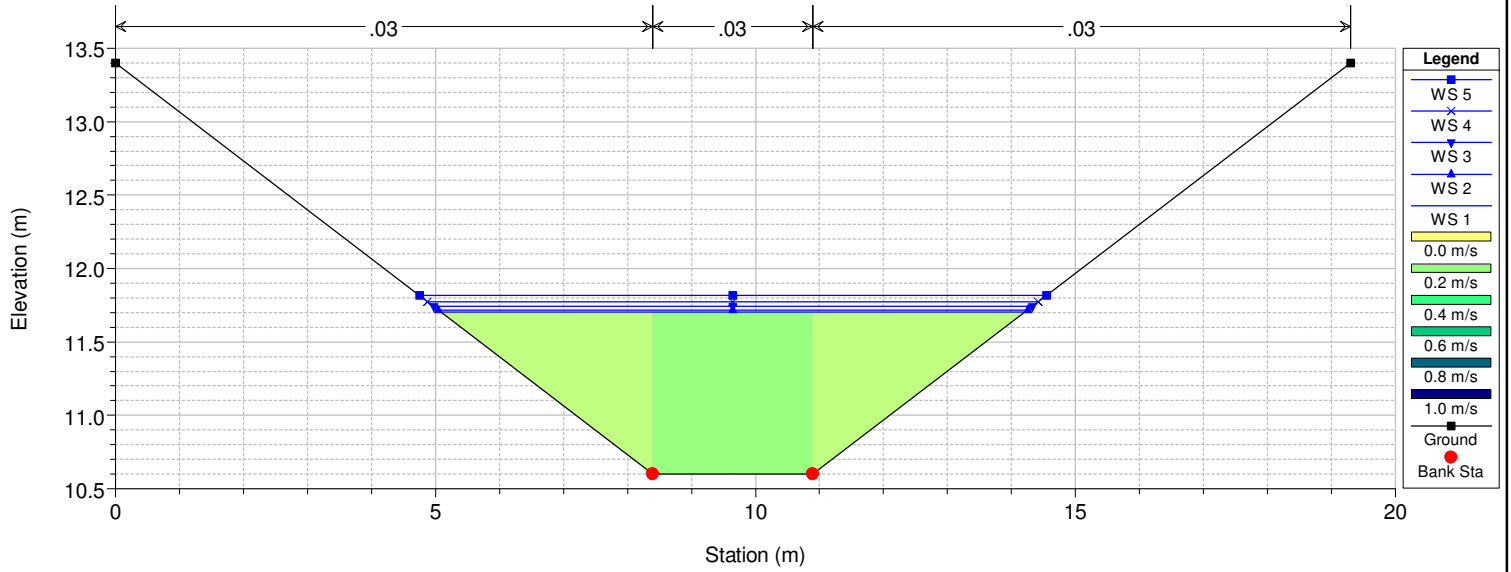
River = Channel Reach = A RS = 6 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

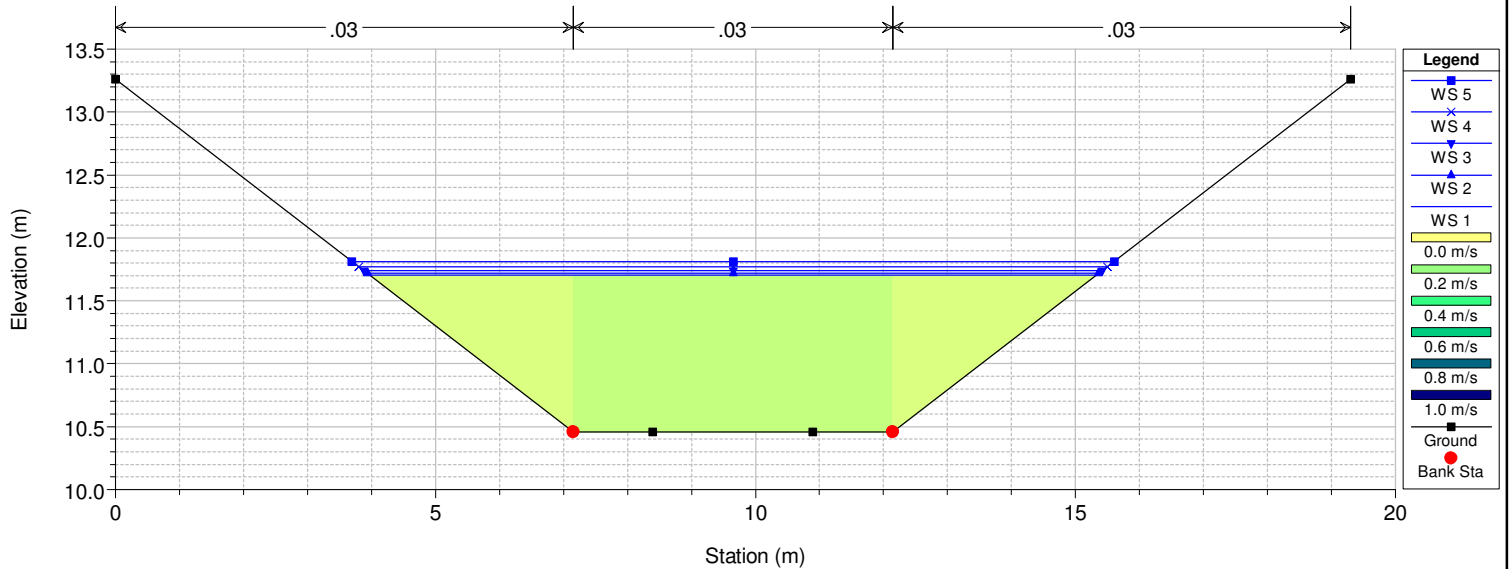
River = Channel Reach = A RS = 4 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

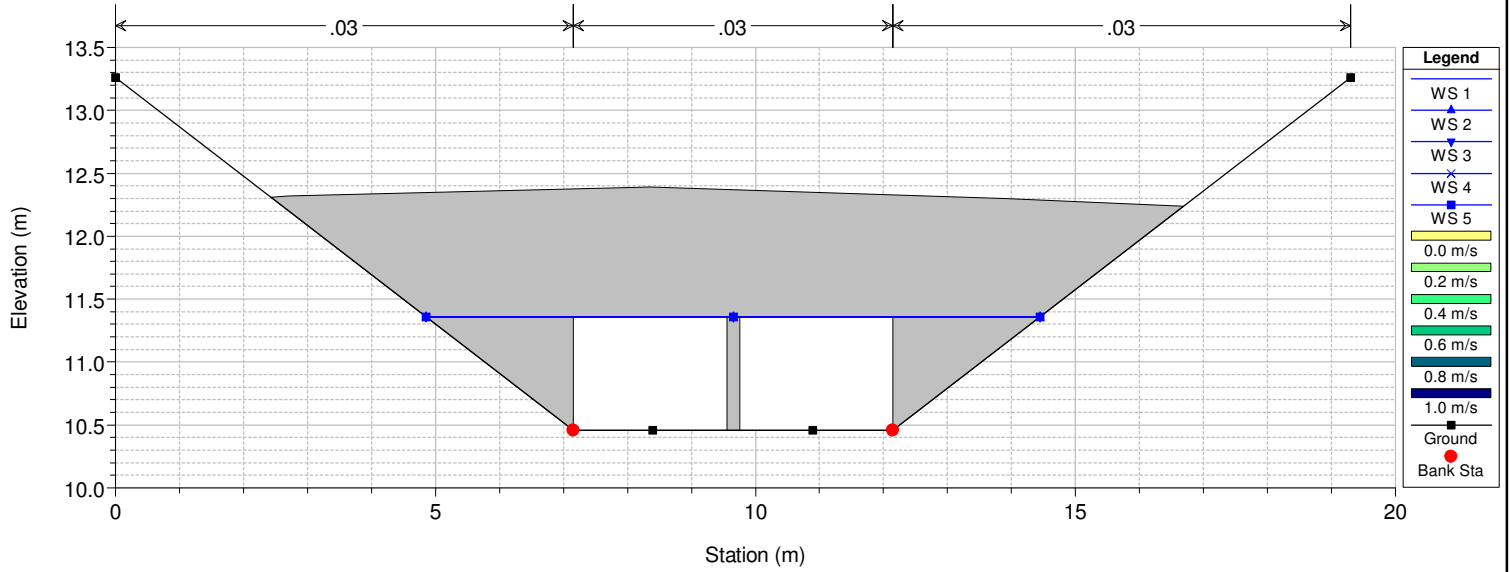
River = Channel Reach = A RS = 2 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

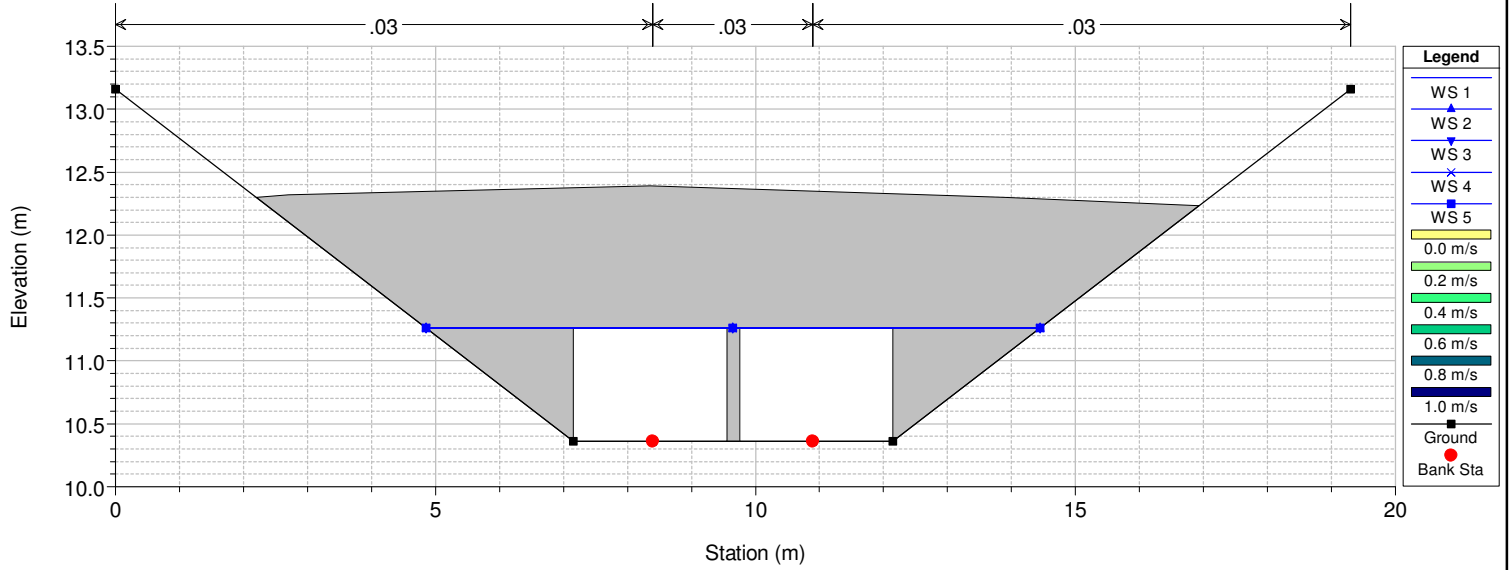
River = Channel Reach = A RS = 1.9 Culv Culv near ANZAC Creek



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

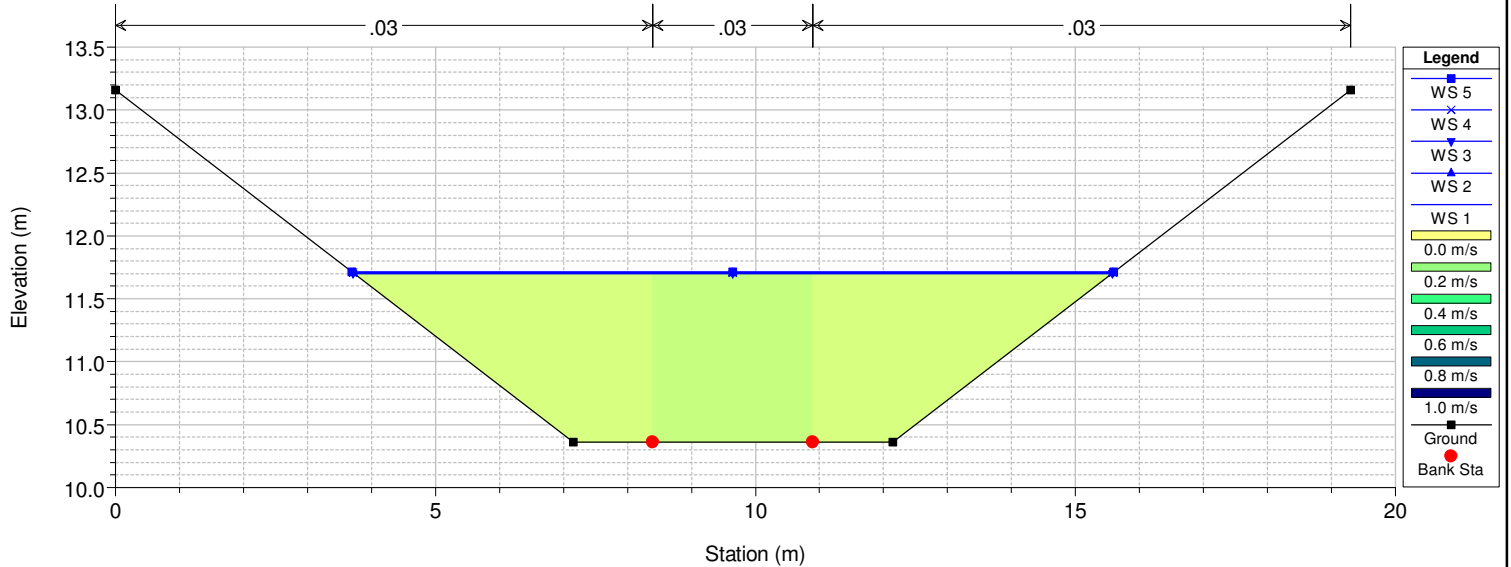
River = Channel Reach = A RS = 1.9 Culv Culv near ANZAC Creek



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

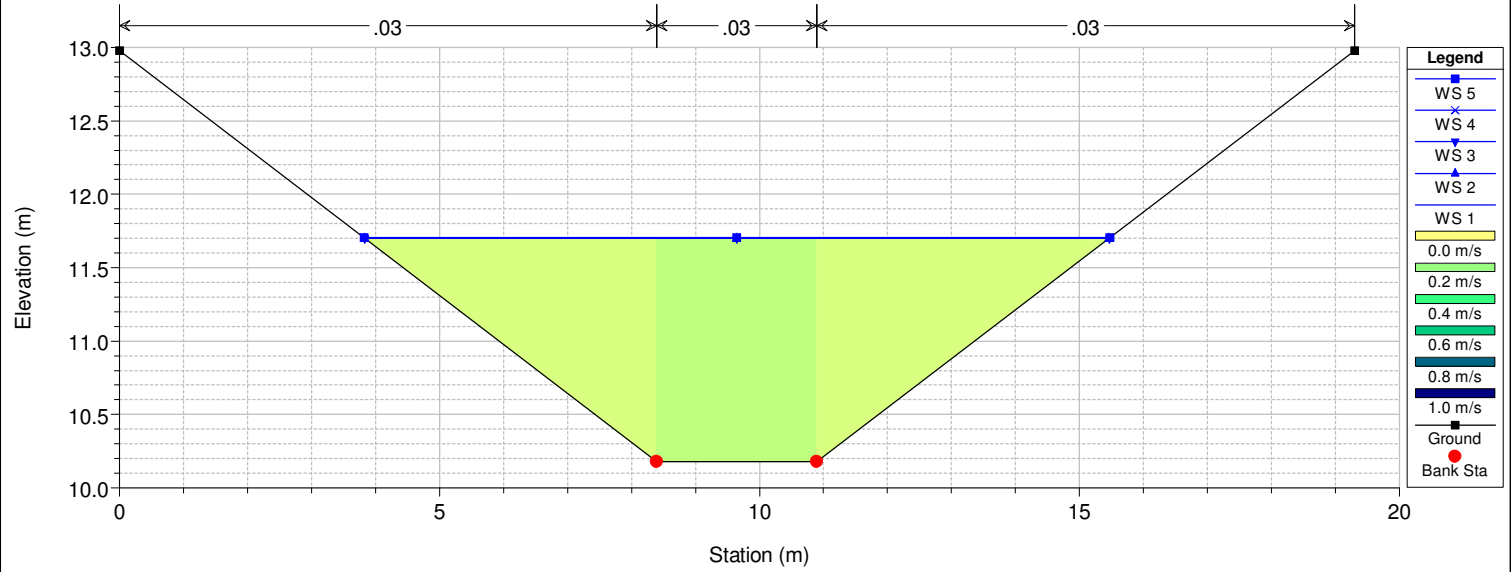
River = Channel Reach = A RS = 1.8 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

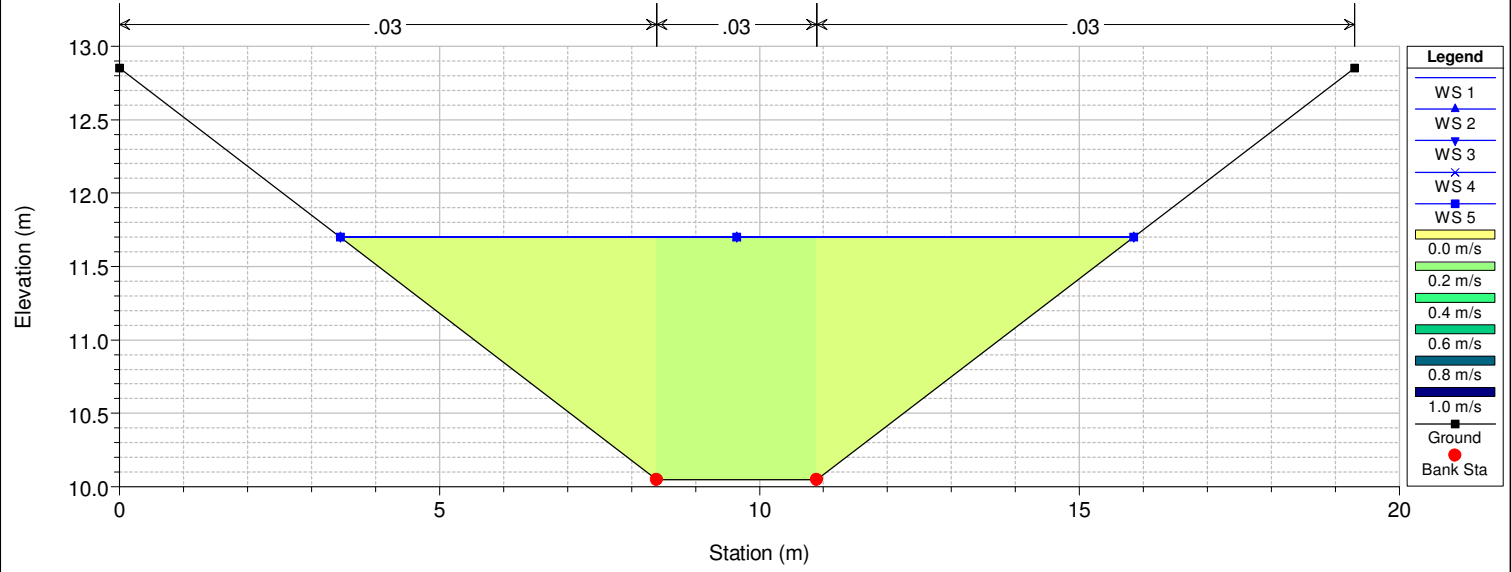
River = Channel Reach = A RS = 1.5 DNSDC Channel

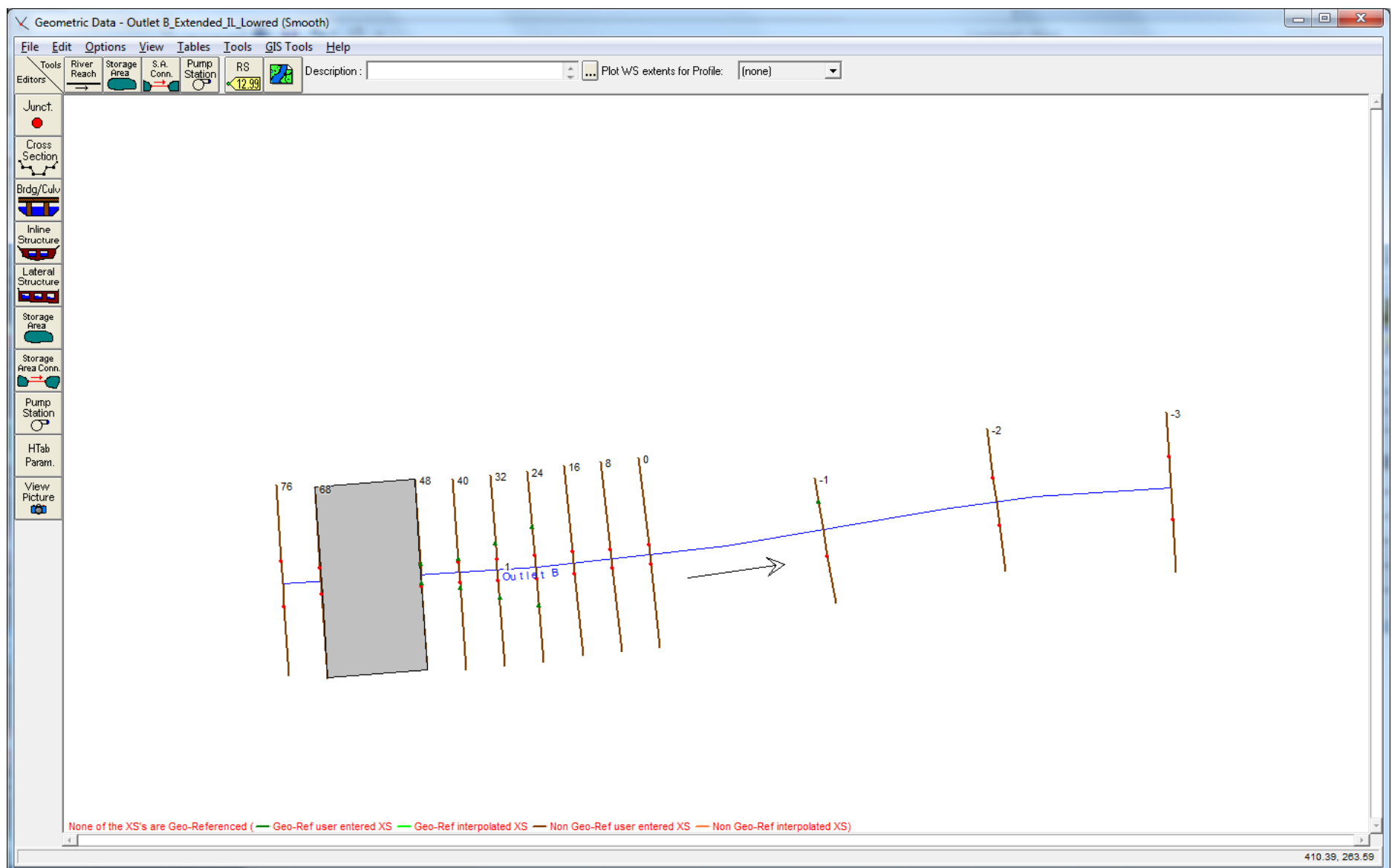
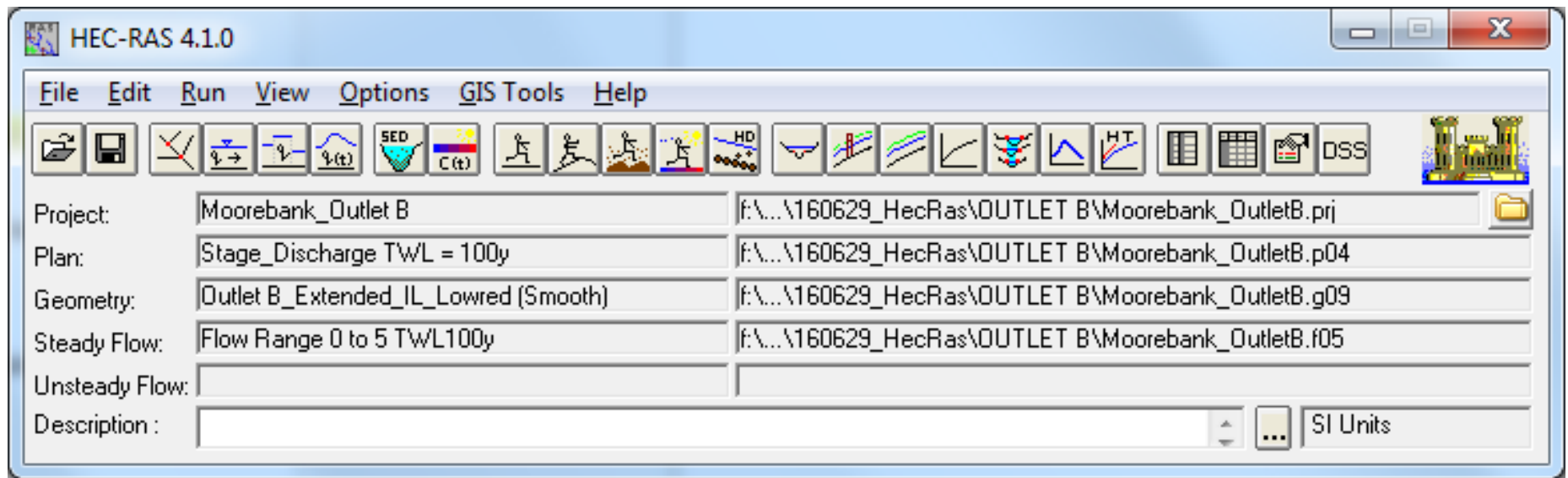


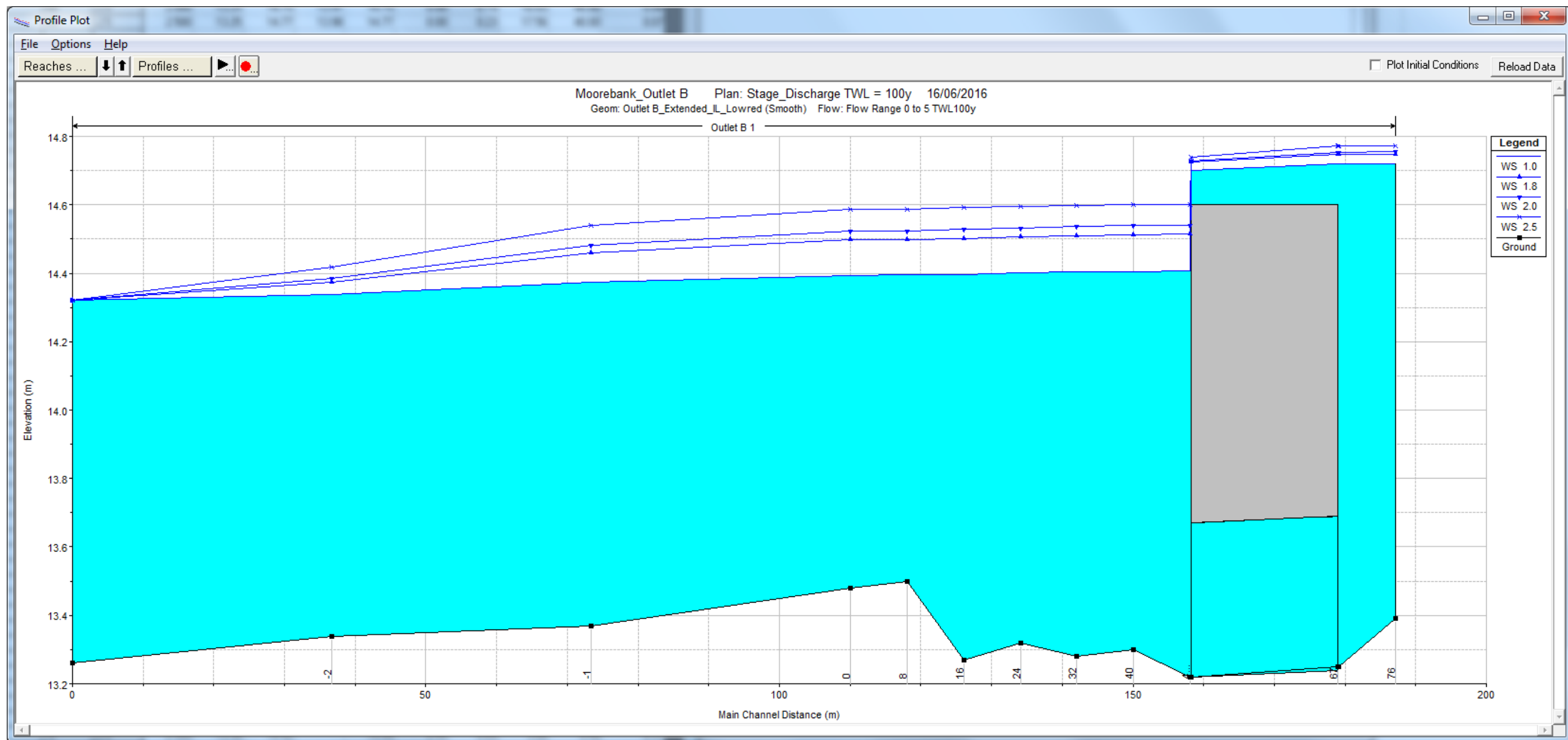
Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

River = Channel Reach = A RS = 0 DNSDC Channel





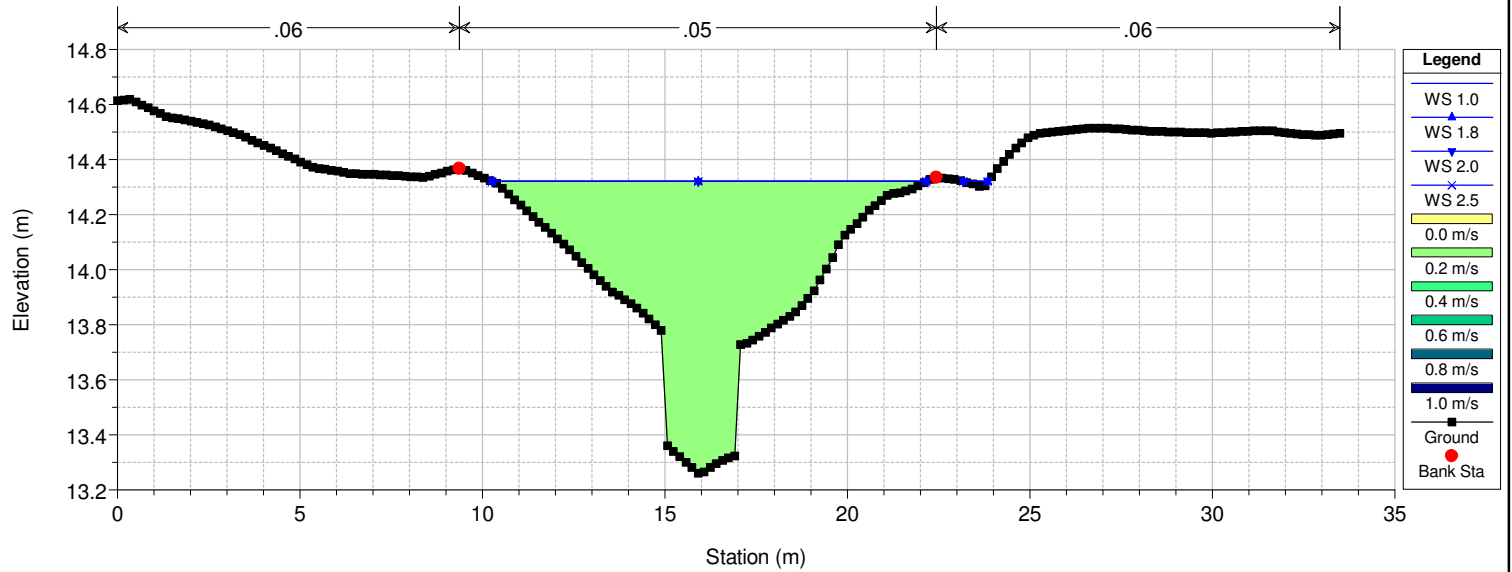


Profile Output Table - Standard Table 1												
HEC-RAS Plan: SQ_TWL_100y_River: Outlet B Reach: 1												(Reload Data)
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
1	76	1.0	1.000	13.39	14.72	13.77	14.72	0.00	0.06	24.17	40.00	0.02
1	76	1.8	1.800	13.39	14.75	13.88	14.75	0.00	0.10	25.32	40.00	0.03
1	76	2.0	2.000	13.39	14.75	13.90	14.76	0.00	0.11	25.56	40.00	0.04
1	76	2.5	2.500	13.39	14.77	13.94	14.77	0.00	0.13	26.31	40.00	0.04
1	68	1.0	1.000	13.25	14.72	13.74	14.72	0.00	0.11	15.48	40.00	0.04
1	68	1.8	1.800	13.25	14.75	13.88	14.75	0.00	0.18	16.60	40.00	0.06
1	68	2.0	2.000	13.25	14.75	13.91	14.75	0.00	0.19	16.83	40.00	0.06
1	68	2.5	2.500	13.25	14.77	13.98	14.77	0.00	0.23	17.56	40.00	0.07
1	67		Culvert									
1	48	1.0	1.000	13.22	14.41	13.78	14.42	0.00	0.53	1.90	2.57	0.20
1	48	1.8	1.800	13.22	14.51	13.94	14.55	0.01	0.80	2.26	9.12	0.35
1	48	2.0	2.000	13.22	14.54	13.98	14.58	0.01	0.84	2.37	16.70	0.36
1	48	2.5	2.500	13.22	14.60	14.06	14.65	0.01	0.95	2.62	34.21	0.38
1	40	1.0	1.000	13.30	14.41	13.64	14.41	0.00	0.33	3.18	11.55	0.12
1	40	1.8	1.800	13.30	14.51	13.79	14.53	0.00	0.50	3.84	24.35	0.18
1	40	2.0	2.000	13.30	14.54	13.82	14.55	0.00	0.53	4.01	31.62	0.19
1	40	2.5	2.500	13.30	14.60	13.89	14.62	0.00	0.61	4.39	40.00	0.21
1	32	1.0	1.000	13.28	14.40	13.64	14.41	0.00	0.28	4.22	26.47	0.10
1	32	1.8	1.800	13.28	14.51	13.76	14.52	0.00	0.40	5.44	36.37	0.14
1	32	2.0	2.000	13.28	14.54	13.79	14.54	0.00	0.43	5.74	40.00	0.14
1	32	2.5	2.500	13.28	14.60	13.86	14.61	0.00	0.48	6.45	40.00	0.16
1	24	1.0	1.000	13.32	14.40	13.71	14.40	0.00	0.28	4.21	20.50	0.11
1	24	1.8	1.800	13.32	14.51	13.84	14.51	0.00	0.40	5.70	39.36	0.14
1	24	2.0	2.000	13.32	14.53	13.87	14.54	0.00	0.42	6.14	40.00	0.15
1	24	2.5	2.500	13.32	14.59	13.93	14.60	0.00	0.46	7.16	40.00	0.16
1	16	1.0	1.000	13.27	14.40		14.40	0.00	0.29	4.16	19.57	0.11
1	16	1.8	1.800	13.27	14.50		14.51	0.00	0.40	7.09	36.61	0.14
1	16	2.0	2.000	13.27	14.53		14.53	0.00	0.40	8.10	39.24	0.14
1	16	2.5	2.500	13.27	14.59		14.60	0.00	0.40	10.63	40.00	0.14
1	8	1.0	1.000	13.50	14.39		14.40	0.00	0.28	5.23	21.43	0.11
1	8	1.8	1.800	13.50	14.50		14.50	0.00	0.37	7.96	32.10	0.13
1	8	2.0	2.000	13.50	14.52		14.53	0.00	0.39	8.91	37.91	0.14
1	8	2.5	2.500	13.50	14.59		14.59	0.00	0.39	11.43	40.00	0.13
1	0	1.0	1.000	13.48	14.39		14.40	0.00	0.18	8.34	27.90	0.07
1	0	1.8	1.800	13.48	14.50		14.50	0.00	0.23	11.48	32.88	0.09
1	0	2.0	2.000	13.48	14.52		14.53	0.00	0.24	12.36	34.65	0.09
1	0	2.5	2.500	13.48	14.59		14.59	0.00	0.26	14.69	39.07	0.09
1	-1	1.0	1.000	13.37	14.37		14.38	0.00	0.39	2.59	5.73	0.18
1	-1	1.8	1.800	13.37	14.46		14.48	0.00	0.58	3.12	9.33	0.27
1	-1	2.0	2.000	13.37	14.48		14.50	0.00	0.61	3.28	9.83	0.28
1	-1	2.5	2.500	13.37	14.54		14.56	0.00	0.68	3.70	11.00	0.31
1	-2	1.0	1.000	13.34	14.34		14.34	0.00	0.31	3.23	7.38	0.15
1	-2	1.8	1.800	13.34	14.37		14.39	0.00	0.51	3.51	7.85	0.24
1	-2	2.0	2.000	13.34	14.39		14.40	0.00	0.56	3.60	8.01	0.26
1	-2	2.5	2.500	13.34	14.42		14.44	0.00	0.65	3.86	8.48	0.31
1	-3	1.0	1.000	13.26	14.32	13.61	14.32	0.00	0.21	4.85	12.56	0.10
1	-3	1.8	1.800	13.26	14.32	13.79	14.33	0.00	0.37	4.85	12.56	0.19
1	-3	2.0	2.000	13.26	14.32	13.84	14.33	0.00	0.41	4.85	12.56	0.21
1	-3	2.5	2.500	13.26	14.32	13.90	14.33	0.00	0.52	4.85	12.56	0.26

Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

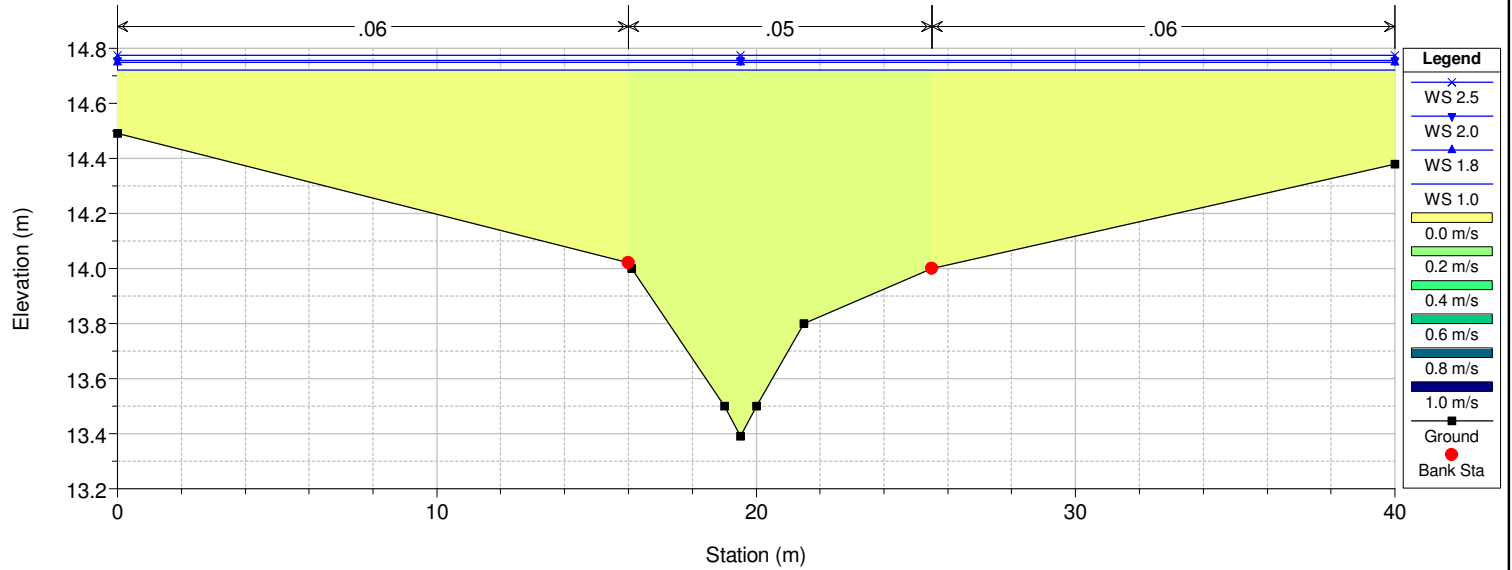
River = Outlet B Reach = 1 RS = -3 LPI_ALS



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

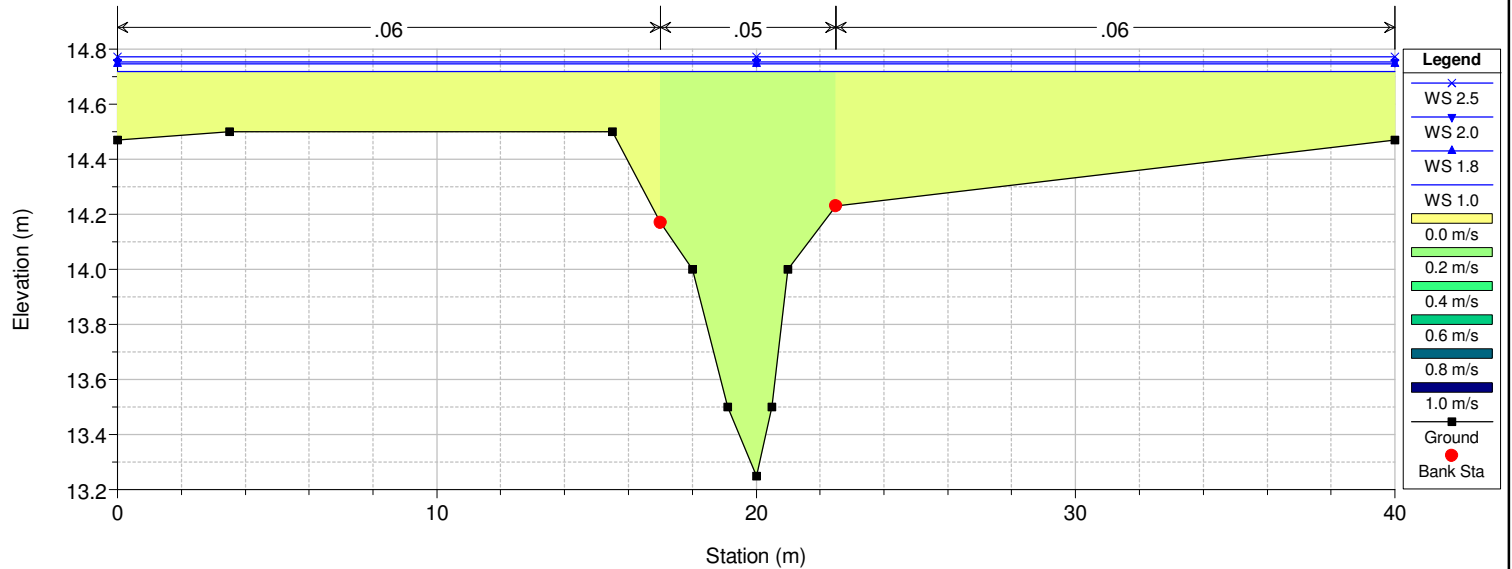
River = Outlet B Reach = 1 RS = 76



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

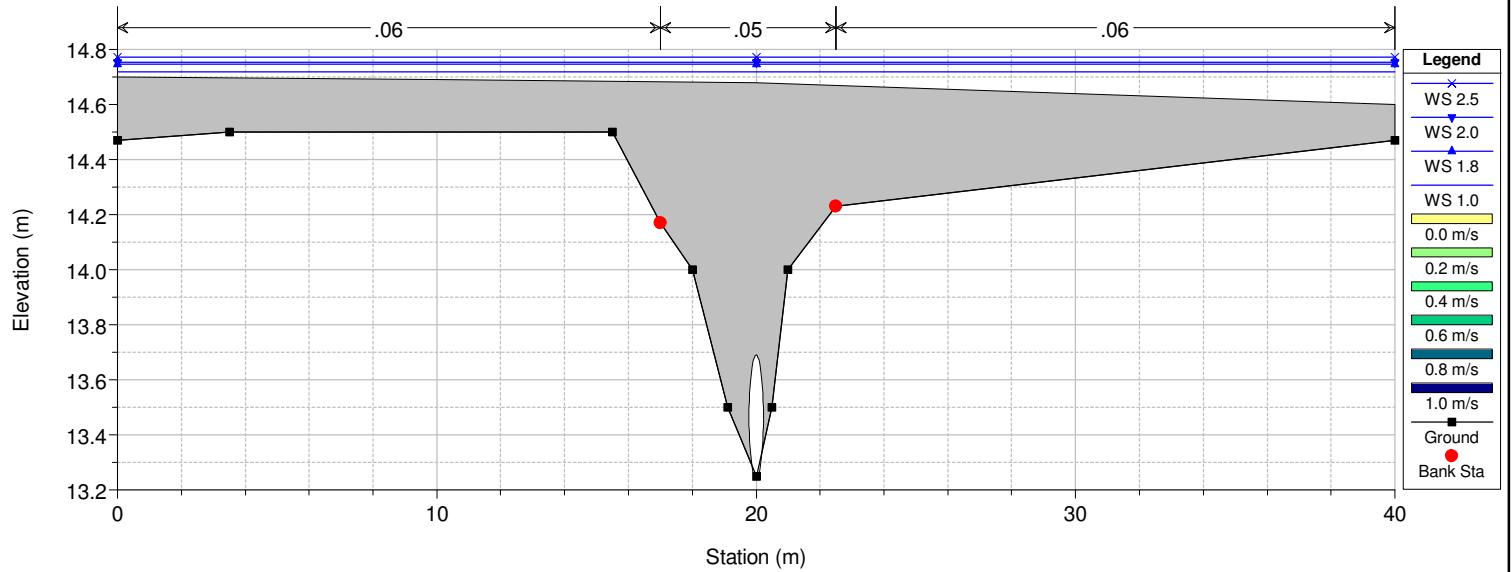
River = Outlet B Reach = 1 RS = 68



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

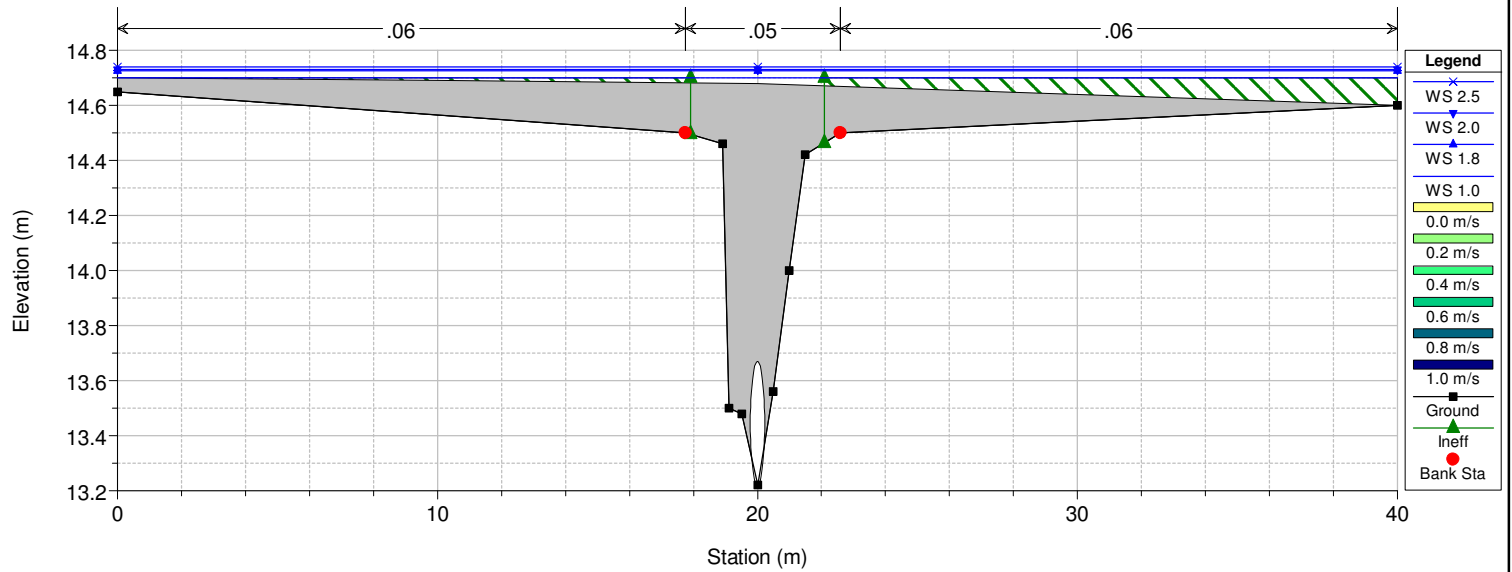
River = Outlet B Reach = 1 RS = 67 Culv Culvert under GHRd



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

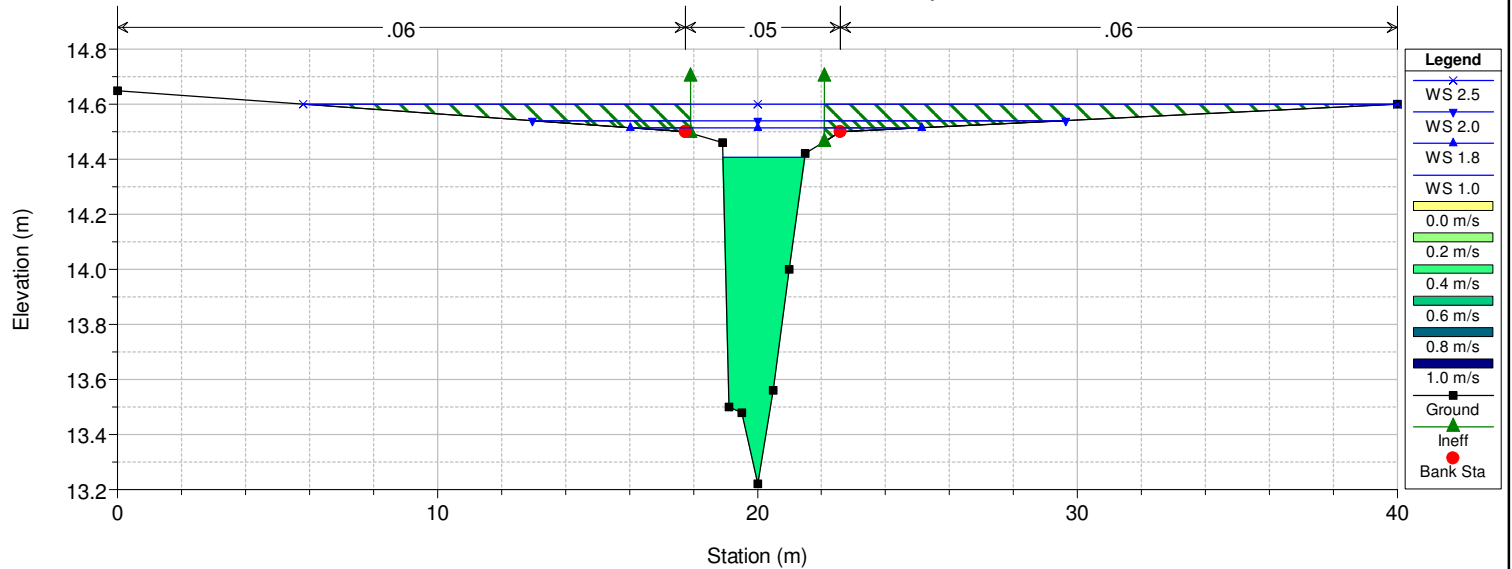
River = Outlet B Reach = 1 RS = 67 Culv Culvert under GHRd



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

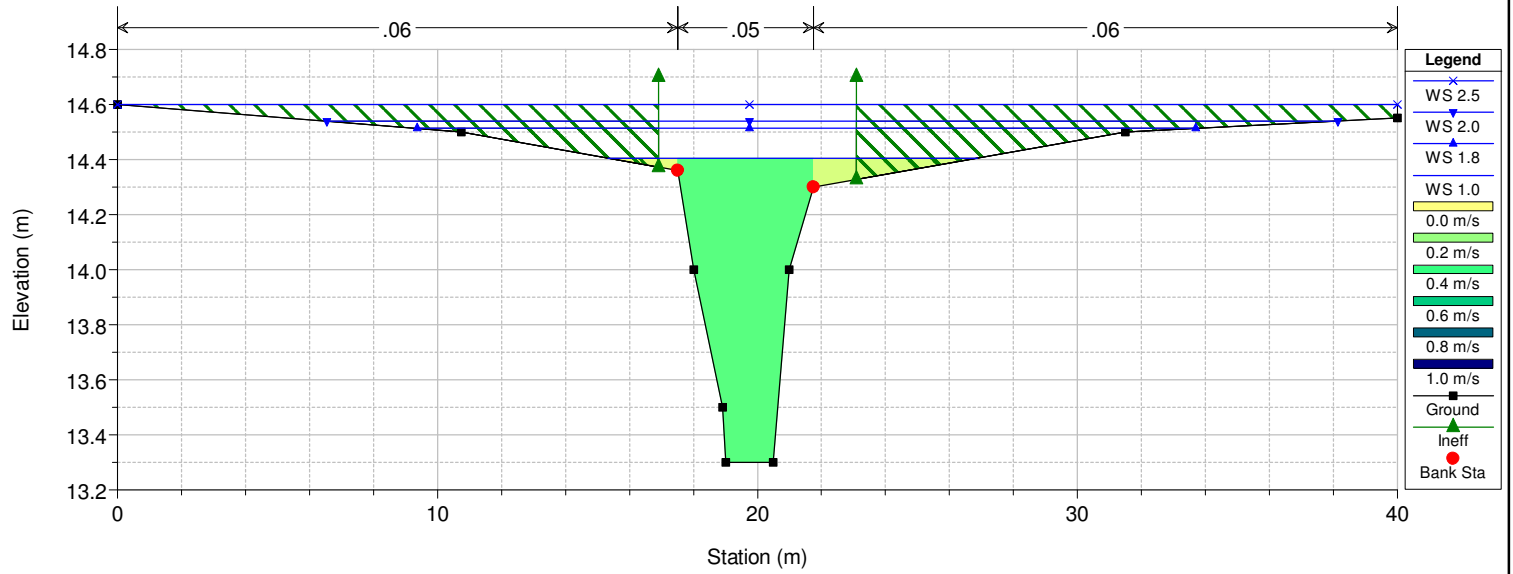
River = Outlet B Reach = 1 RS = 48 Immediately DS of Culvert



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

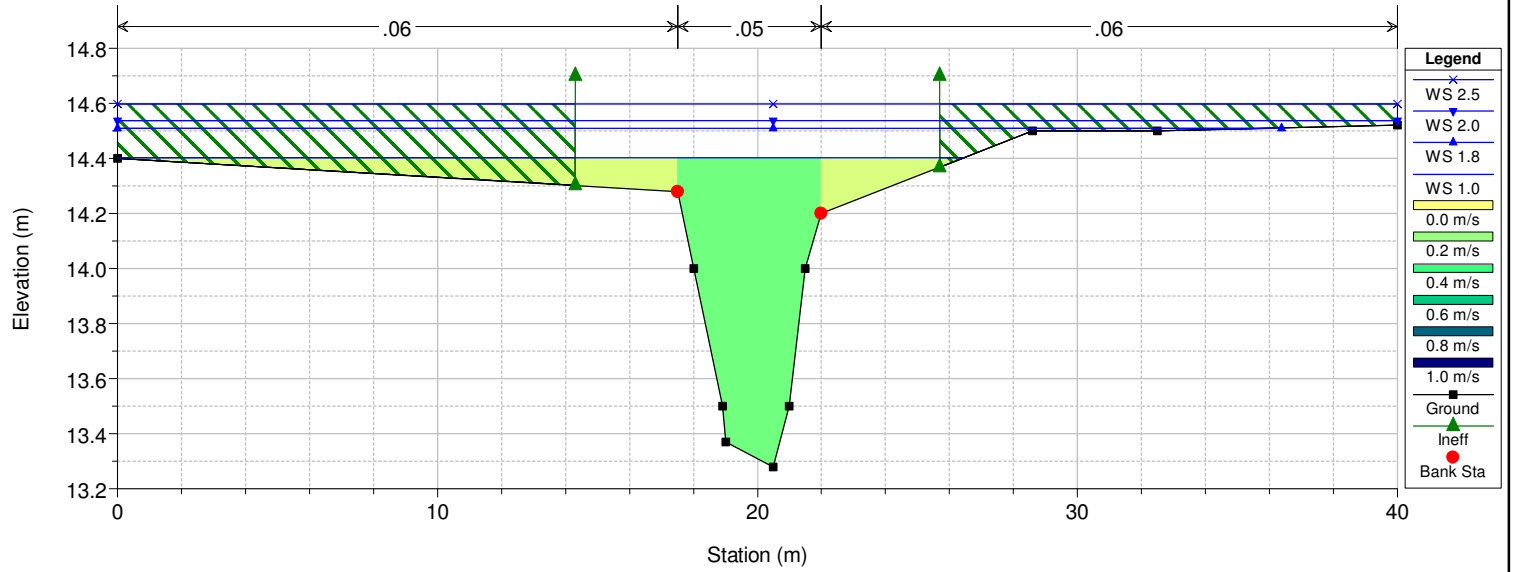
River = Outlet B Reach = 1 RS = 40



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

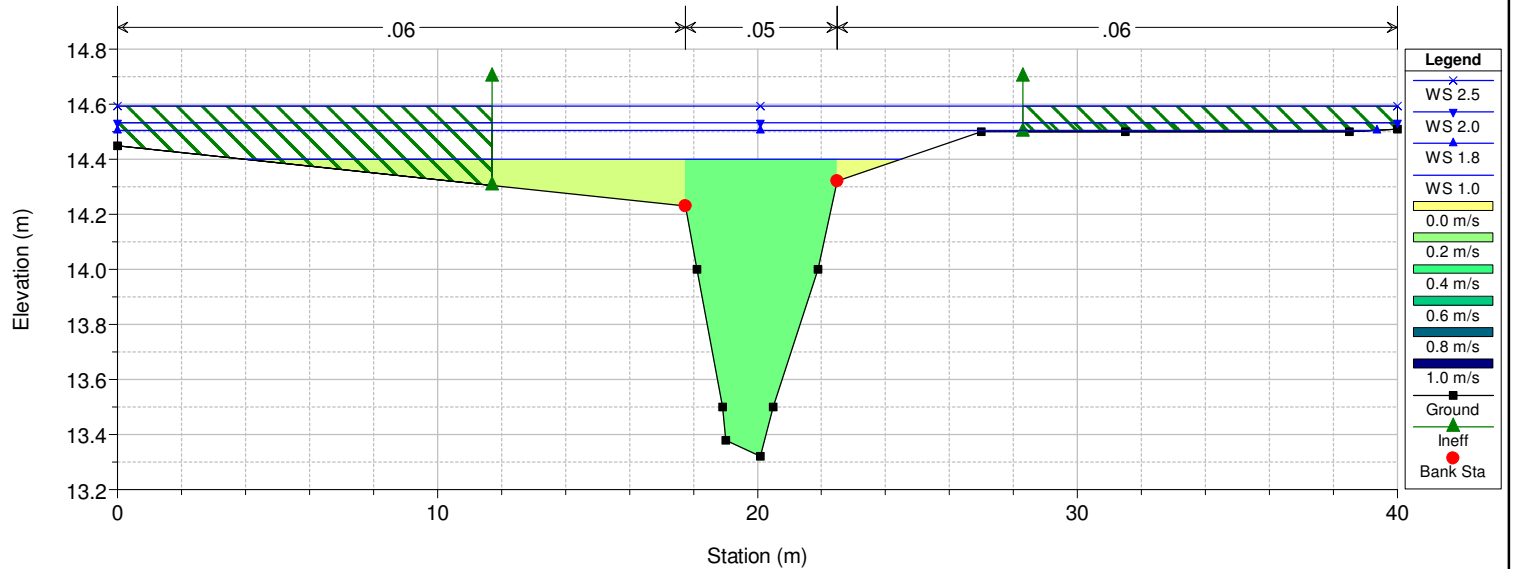
River = Outlet B Reach = 1 RS = 32



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

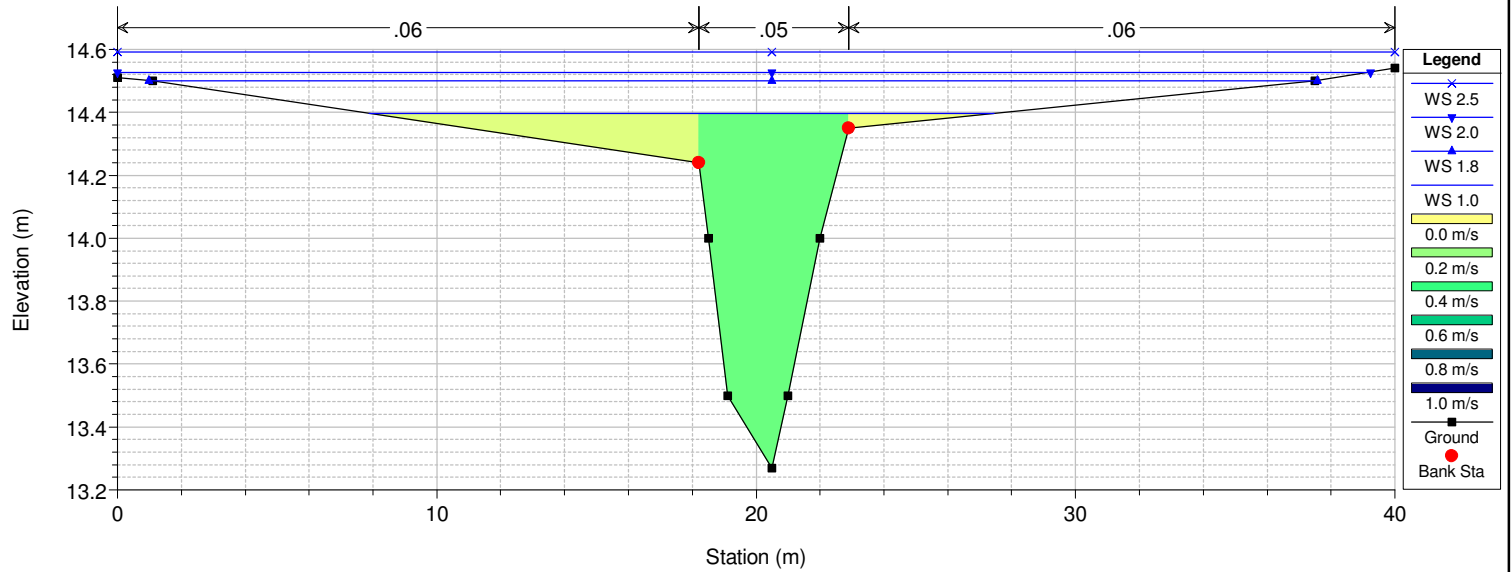
River = Outlet B Reach = 1 RS = 24



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

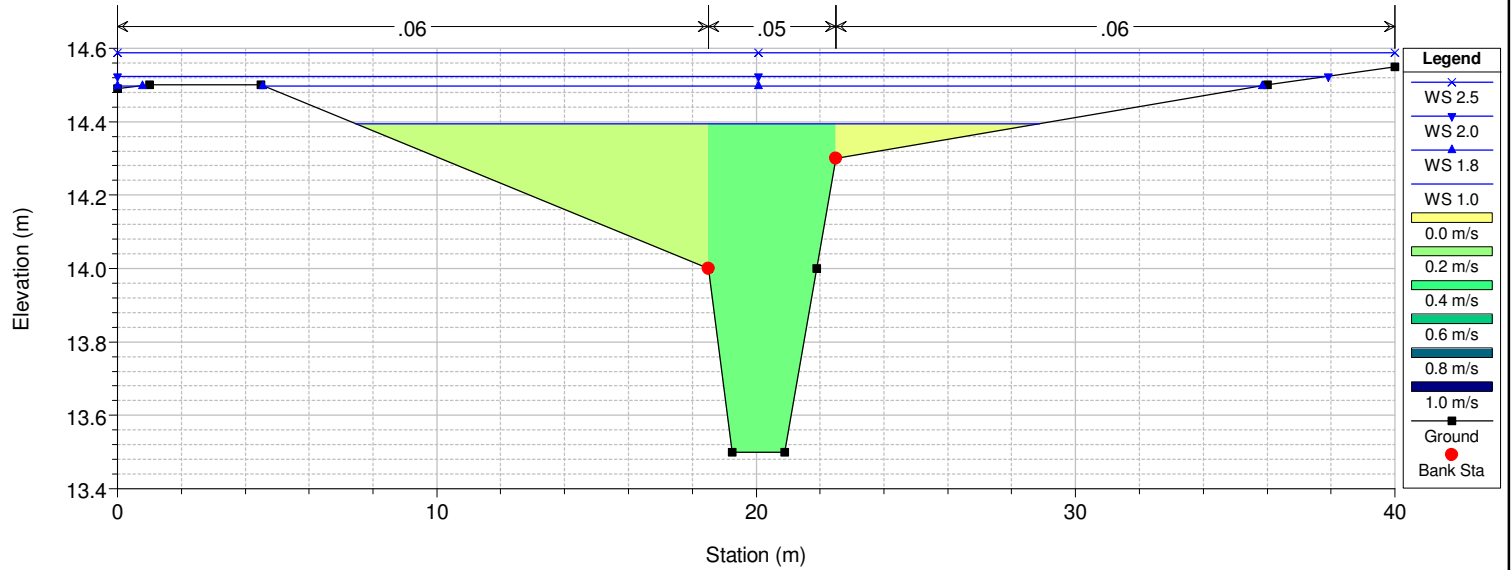
River = Outlet B Reach = 1 RS = 16



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

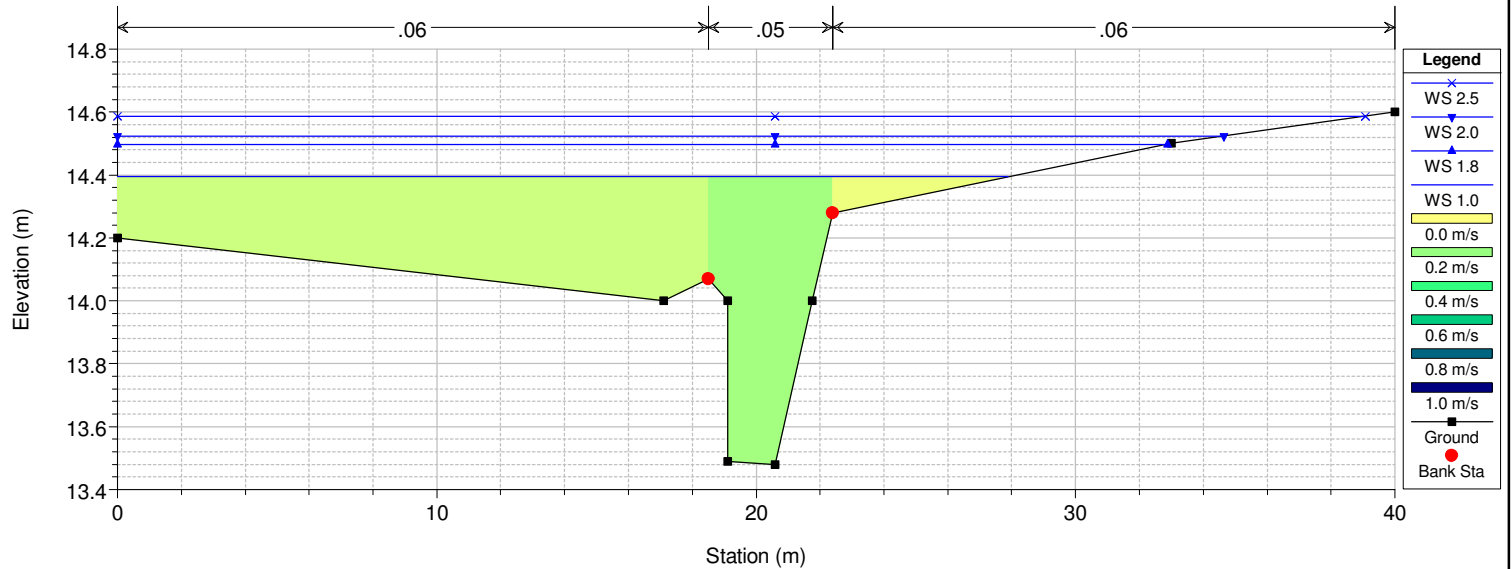
River = Outlet B Reach = 1 RS = 8

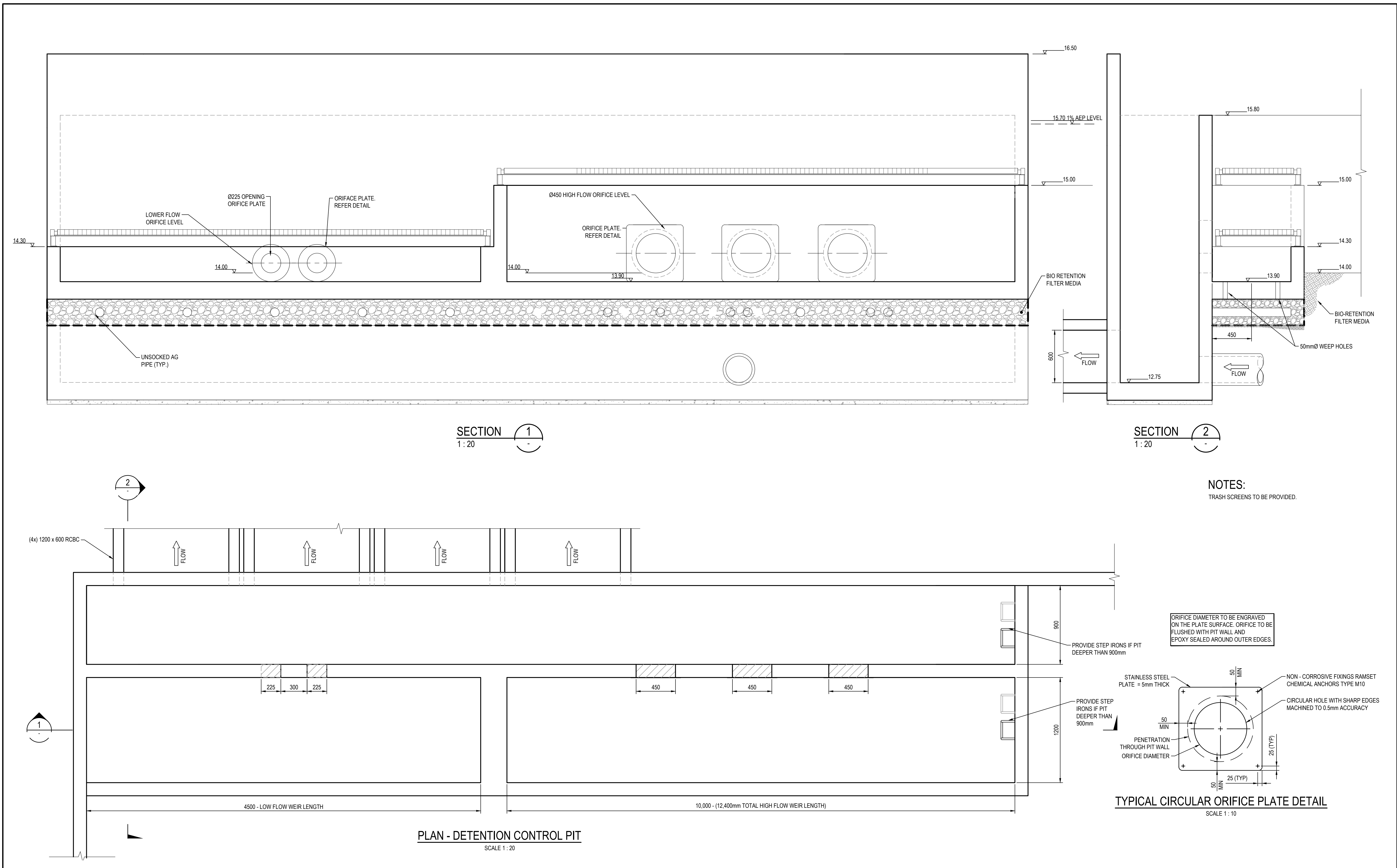


Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

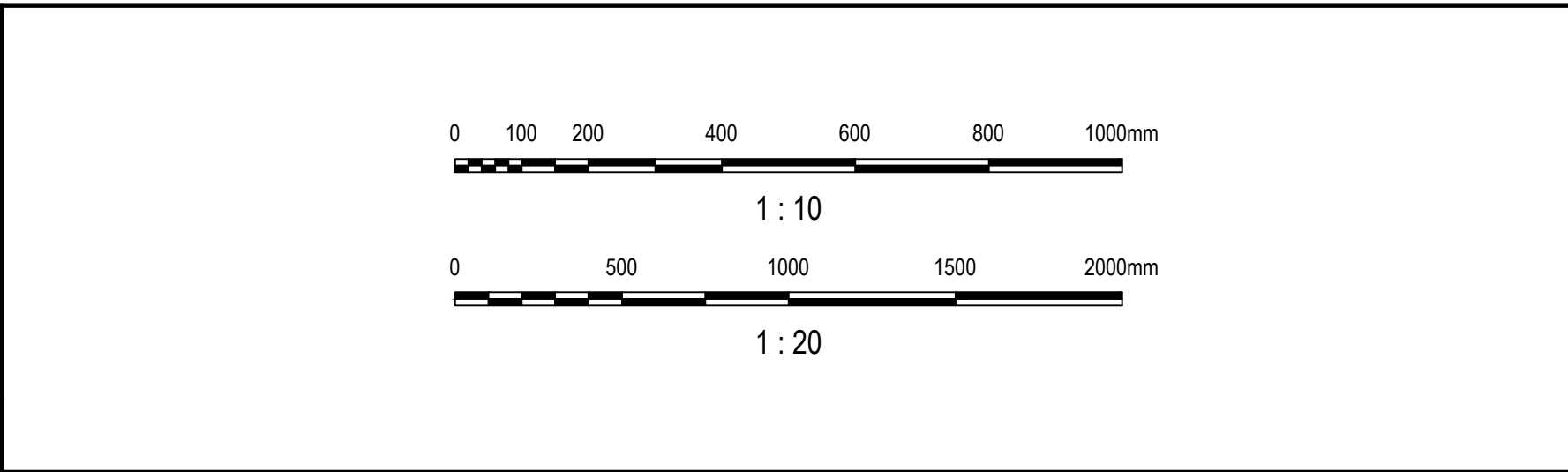
Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

River = Outlet B Reach = 1 RS = 0





01	DRAFT ISSUE FOR SSD APPLICATION	16/09/2016
Issue	Description	Date



Client

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

TACTICAL GROUP

Status	PRELIMINARY ONLY NOT TO BE USED FOR CONSTRUCTION		
Scales	AS SHOWN	Current Issue Signatures	
Original Size	A1	Drawn	A.ZHAO
Height Datum	AHD	Designed	S.MAKIREDDI
Grid	MGA	Checked	K.MCAREAVEY
Filename	SSS2-ARC-CV-DWG-0411-StormwaterDrainageBasinOutlet1.dwg		
Approved	M.KEFFORD		

Project	MOOREBANK PRECINCT EAST (MPE) STAGE 2
Title	STORMWATER DRAINAGE BASIN OUTLET 1

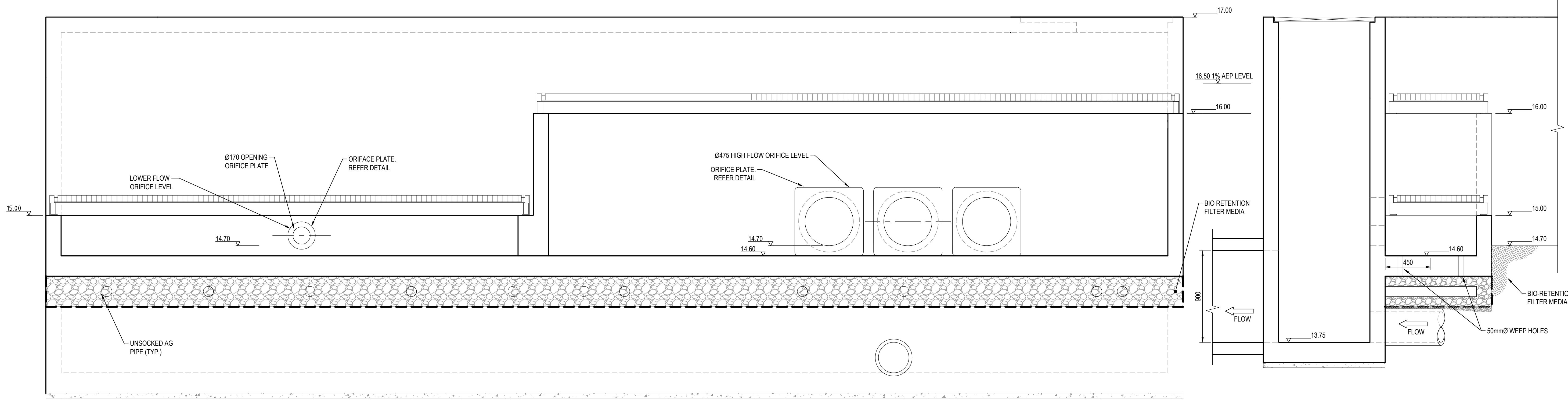
ARCADIS

Arcadis Australia Pacific Pty Limited
Level 5, 141 Walker St
NORTH SYDNEY NSW 2060
ABN 76 104 485 289
Tel No: +61 2 8907 9000
Fax No: +61 2 8907 9001
arcadis.com

Project No.
AA009335

Drawing No.
SSS2-ARC-CV-DWG-0411-

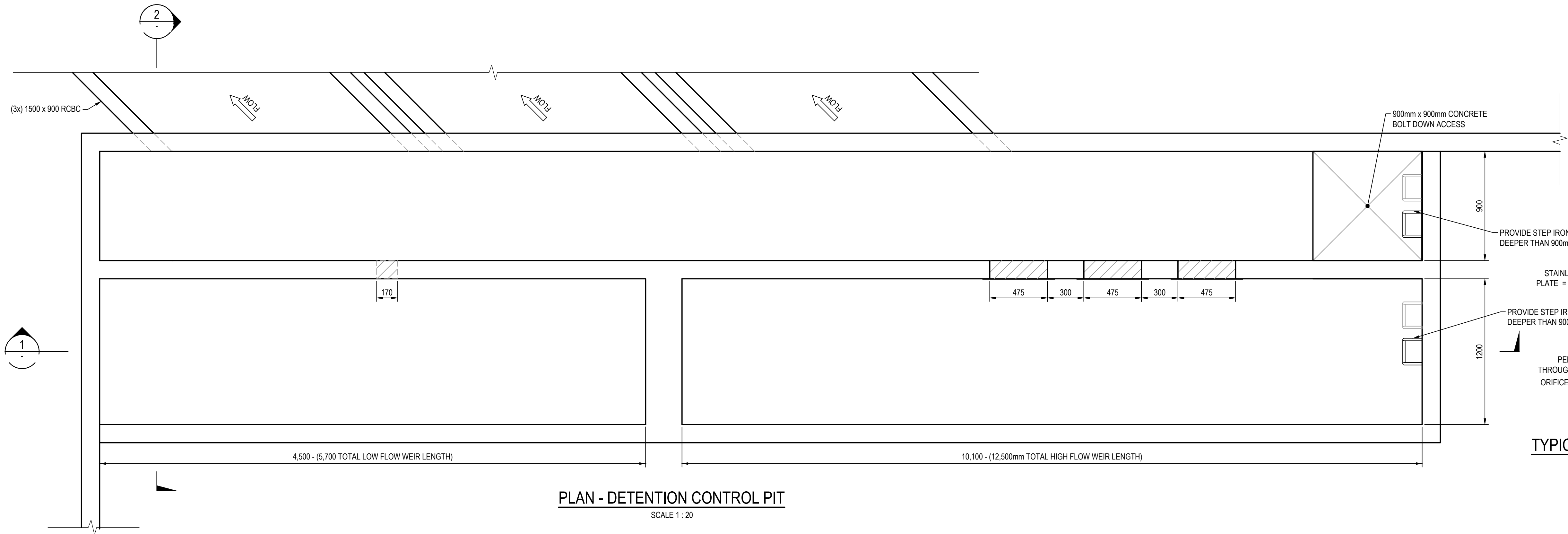
Issue
01



SECTION 1
1 : 20

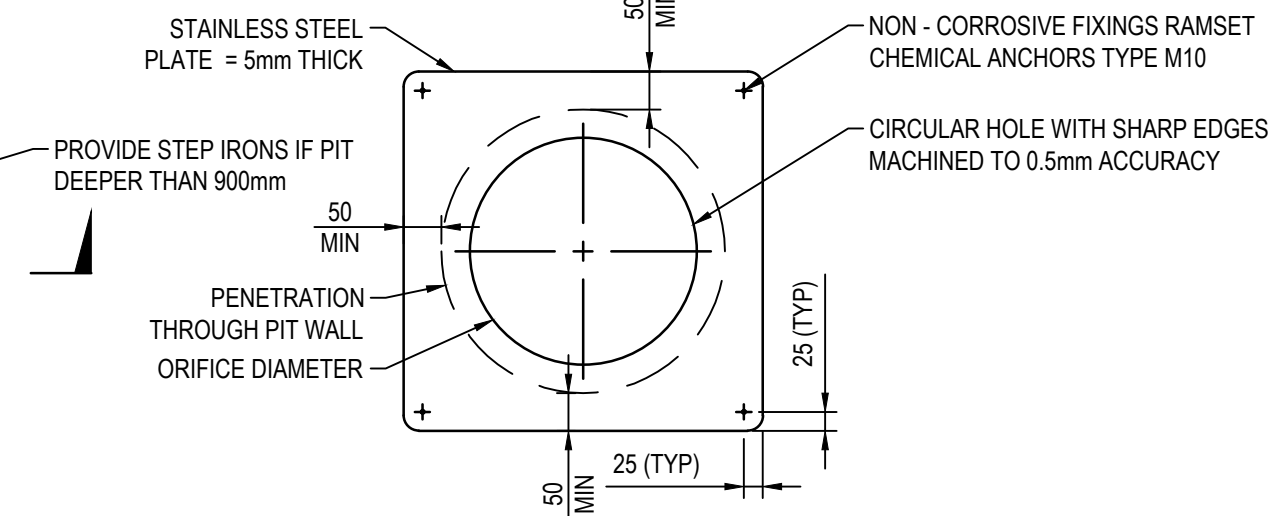
SECTION 2
1 : 20

NOTES:
TRASH SCREENS TO BE PROVIDED.



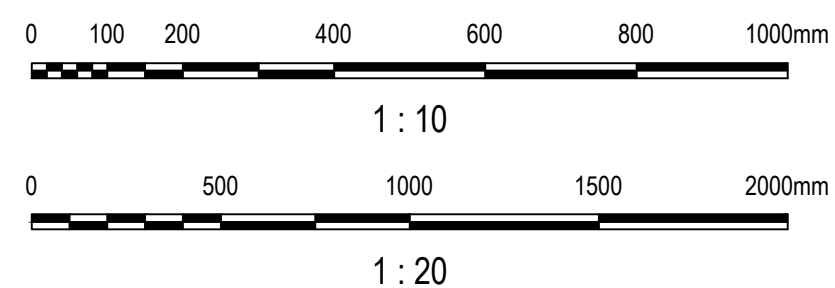
PLAN - DETENTION CONTROL PIT
SCALE 1 : 20

ORIFICE DIAMETER TO BE ENGRAVED
ON THE PLATE SURFACE. ORIFICE TO BE
FLUSHED WITH PIT WALL AND
EPOXY SEALED AROUND OUTER EDGES.



TYPICAL CIRCULAR ORIFICE PLATE DETAIL
SCALE 1 : 10

01	DRAFT ISSUE FOR SSD APPLICATION	16/09/2016
Issue	Description	Date



Status	PRELIMINARY ONLY NOT TO BE USED FOR CONSTRUCTION		
Scales	AS SHOWN	Current Issue Signatures	
Original Size	A1	Drawn	A.ZHAO
Height Datum	AHD	Designed	S.MAKIREDDI
Grid	MGA	Checked	K.MCAREAVEY
Filename	SSS2-ARC-CV-DWG-0412-StormwaterDrainageBasinOutlet2.dwg		

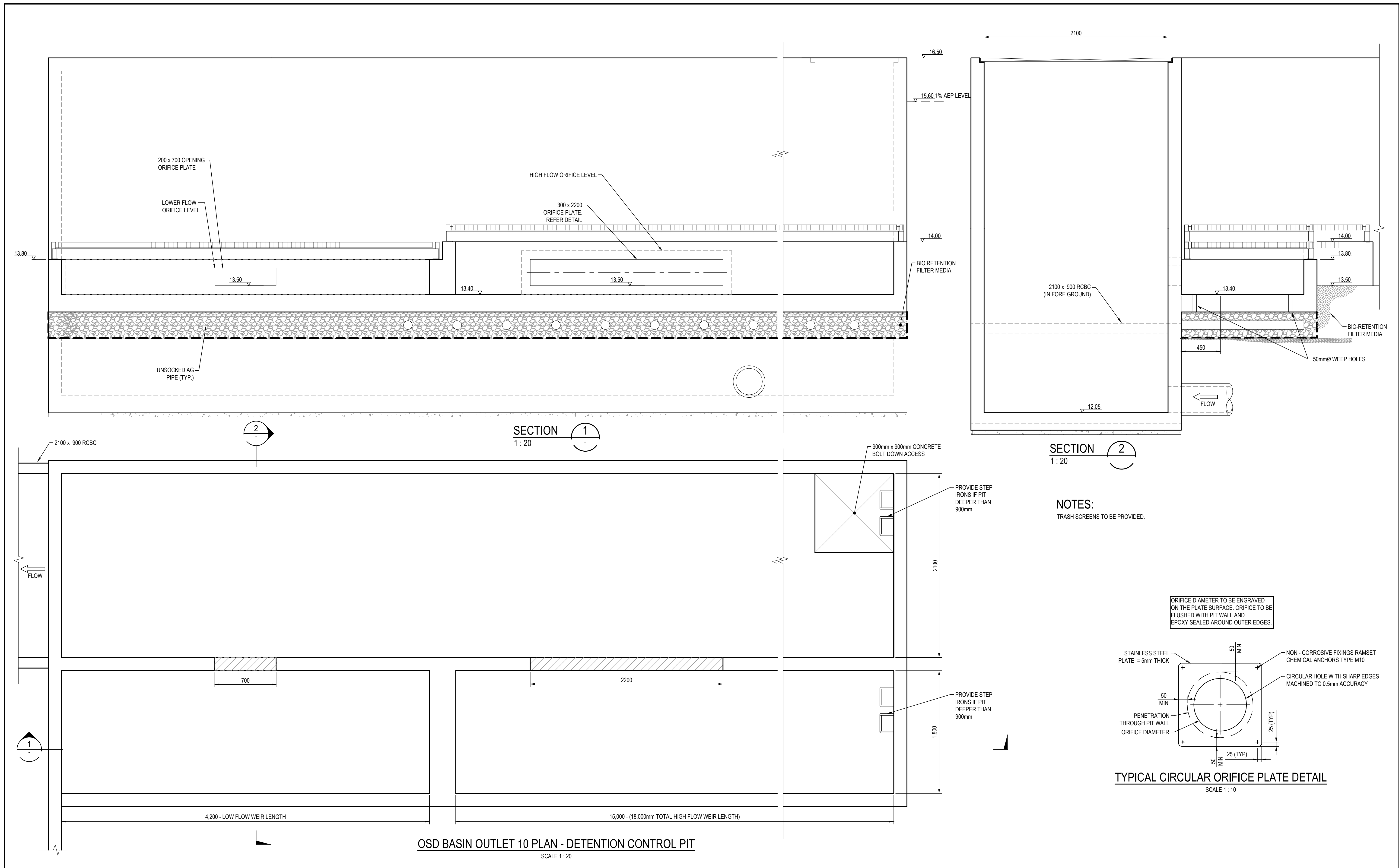
Project	MOOREBANK PRECINCT EAST (MPE) STAGE 2
Title	STORMWATER DRAINAGE BASIN OUTLET 2

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 141 Walker St
NORTH SYDNEY NSW 2060
ABN 76 104 485 289
Tel No: +61 2 8907 9000
Fax No: +61 2 8907 9001
arcadis.com

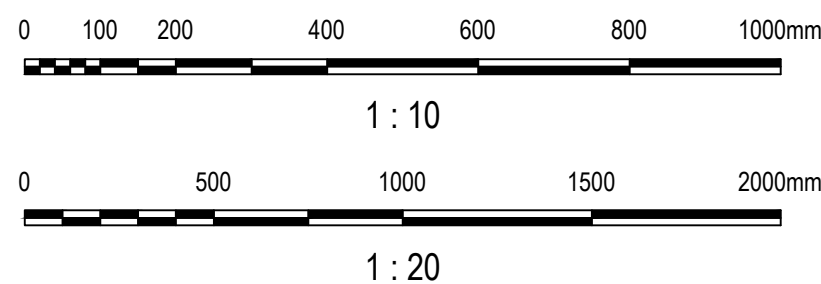
Project No.
AA009335

Drawing No.
SSS2-ARC-CV-DWG-0412-

Issue
01




02	ISSUE FOR SSD APPLICATION	19/10/2016
01	DRAFT ISSUE FOR SSD APPLICATION	16/09/2016
Issue	Description	Date



Status	PRELIMINARY ONLY NOT TO BE USED FOR CONSTRUCTION		
Scales	AS SHOWN	Current Issue Signatures	
Original Size	A1	Drawn	A.ZHAO
Height Datum	AHD	Designed	S.MAKIREDDI
Grid	MGA	Checked	K.MCAREAVEY
Filename	SSS2-ARC-CV-DWG-0414-StormwaterDrainageBasinOutlet10.dwg		

Project	MOOREBANK PRECINCT EAST (MPE) STAGE 2	
Title	STORMWATER DRAINAGE BASIN OUTLET 10	

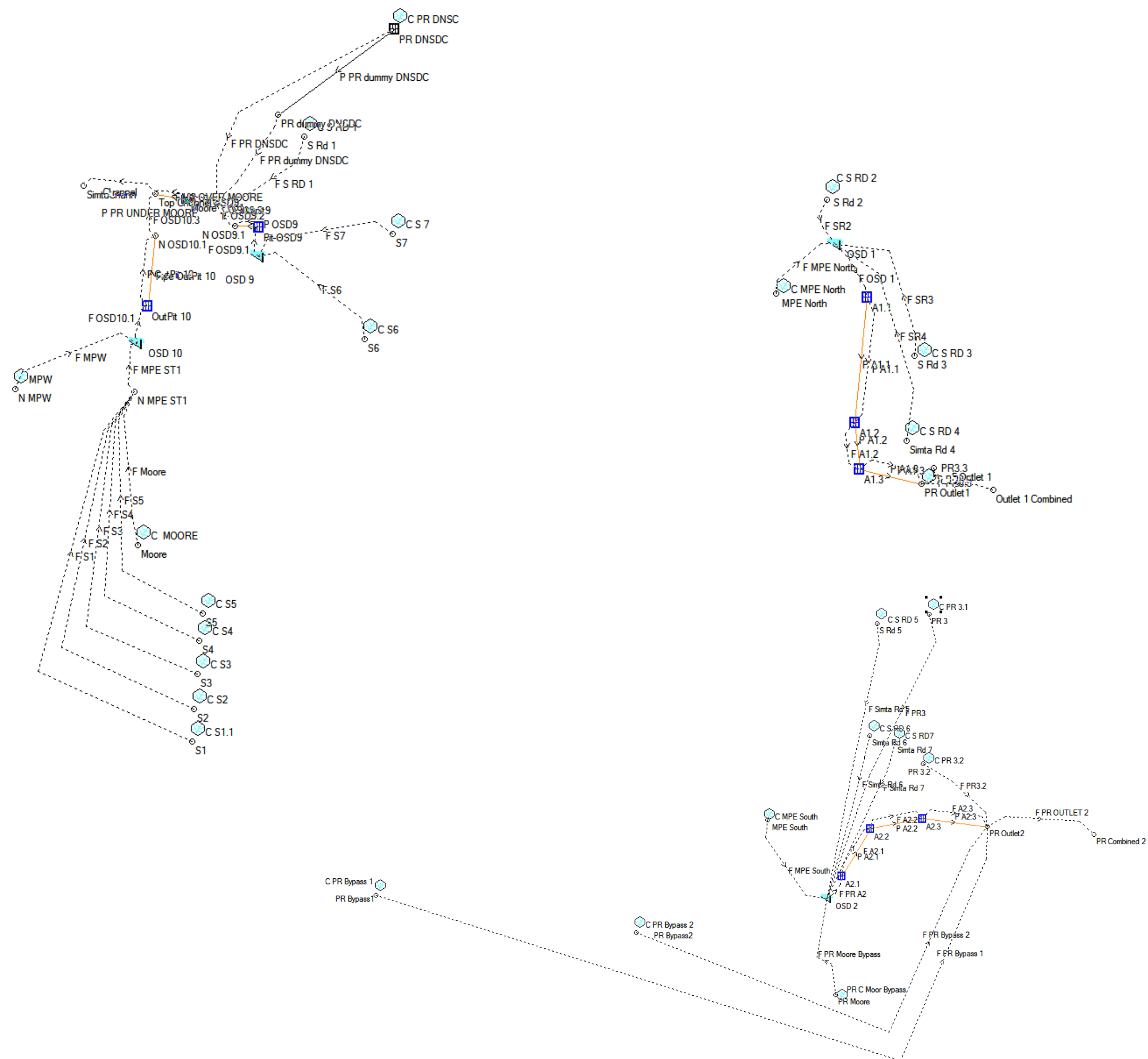


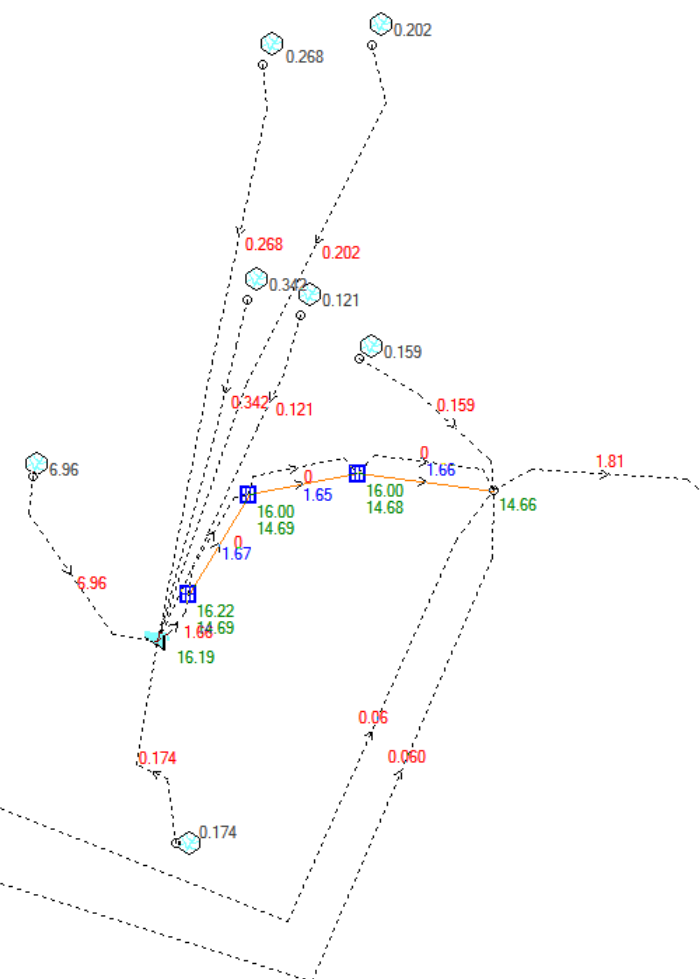
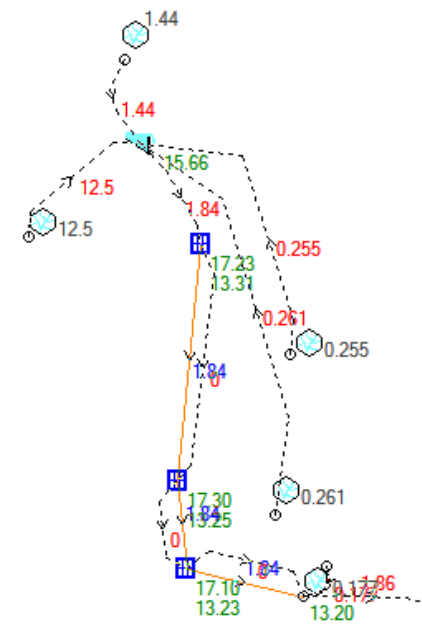
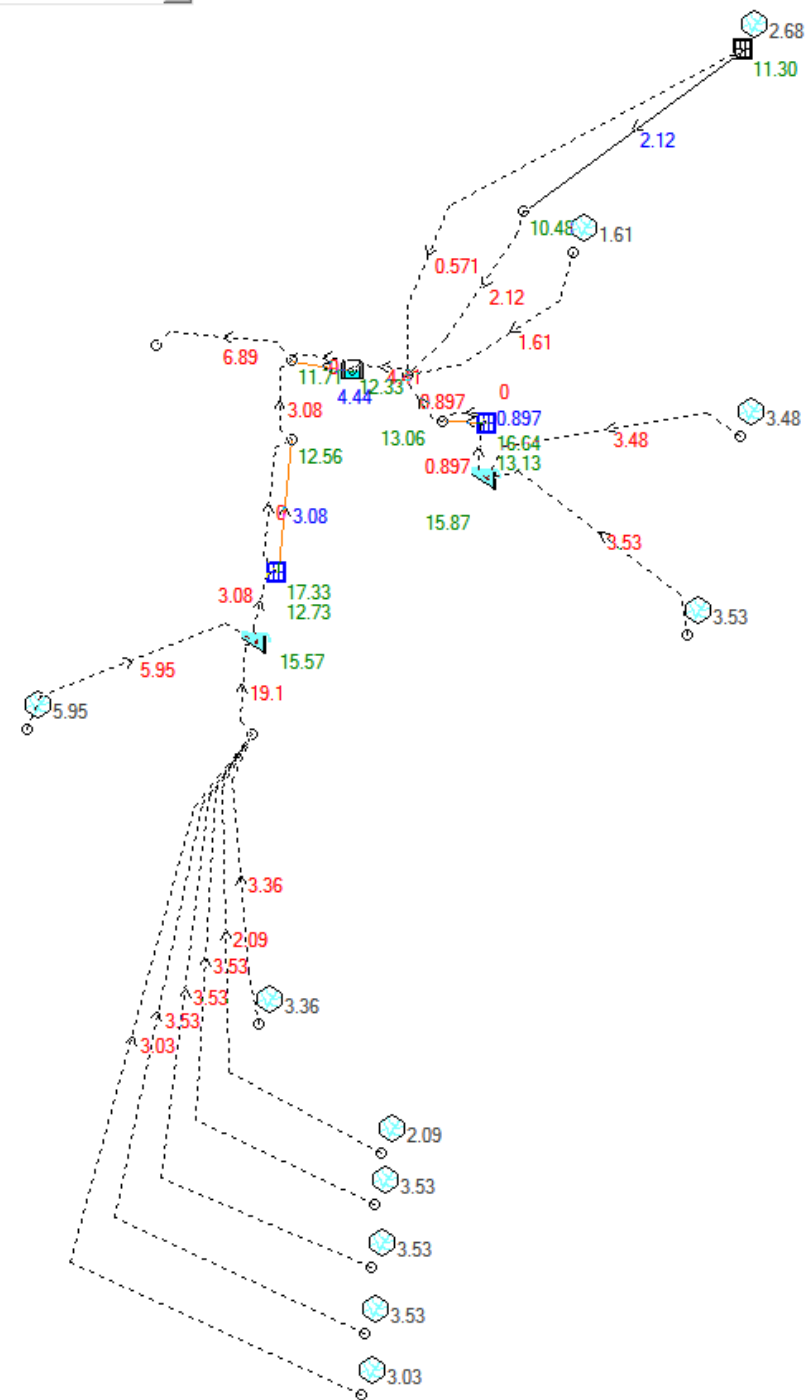
Arcadis Australia Pacific Pty Limited
Level 5, 141 Walker St
NORTH SYDNEY NSW 2060
ABN 76 104 485 289
Tel No: +61 2 8907 9000
Fax No: +61 2 8907 9001
arcadis.com

Project No.
AA009335

Drawing No.
SSS2-ARC-CV-DWG-0414-

Issue
02

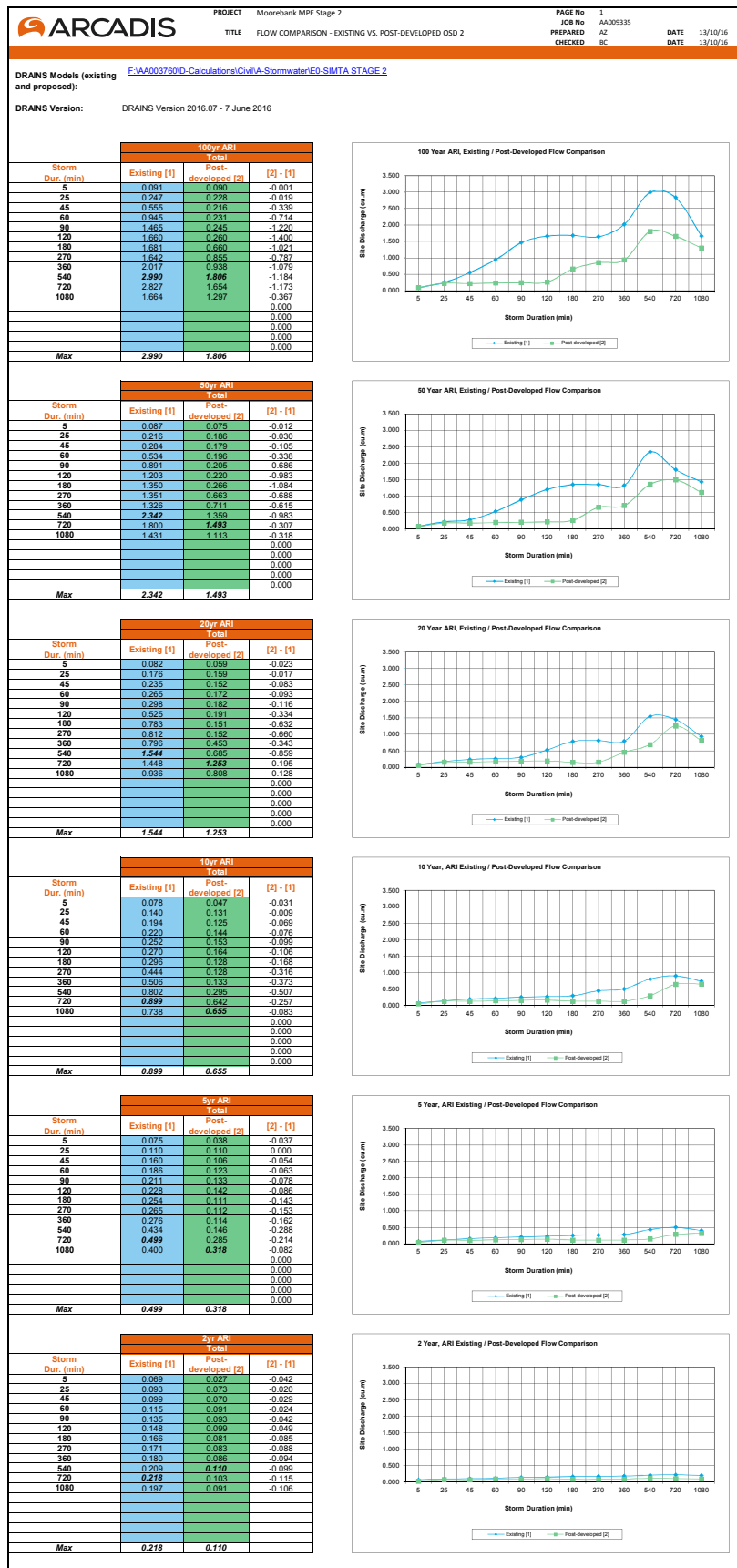




Flow Comparison

- For each Basin and each comparison point

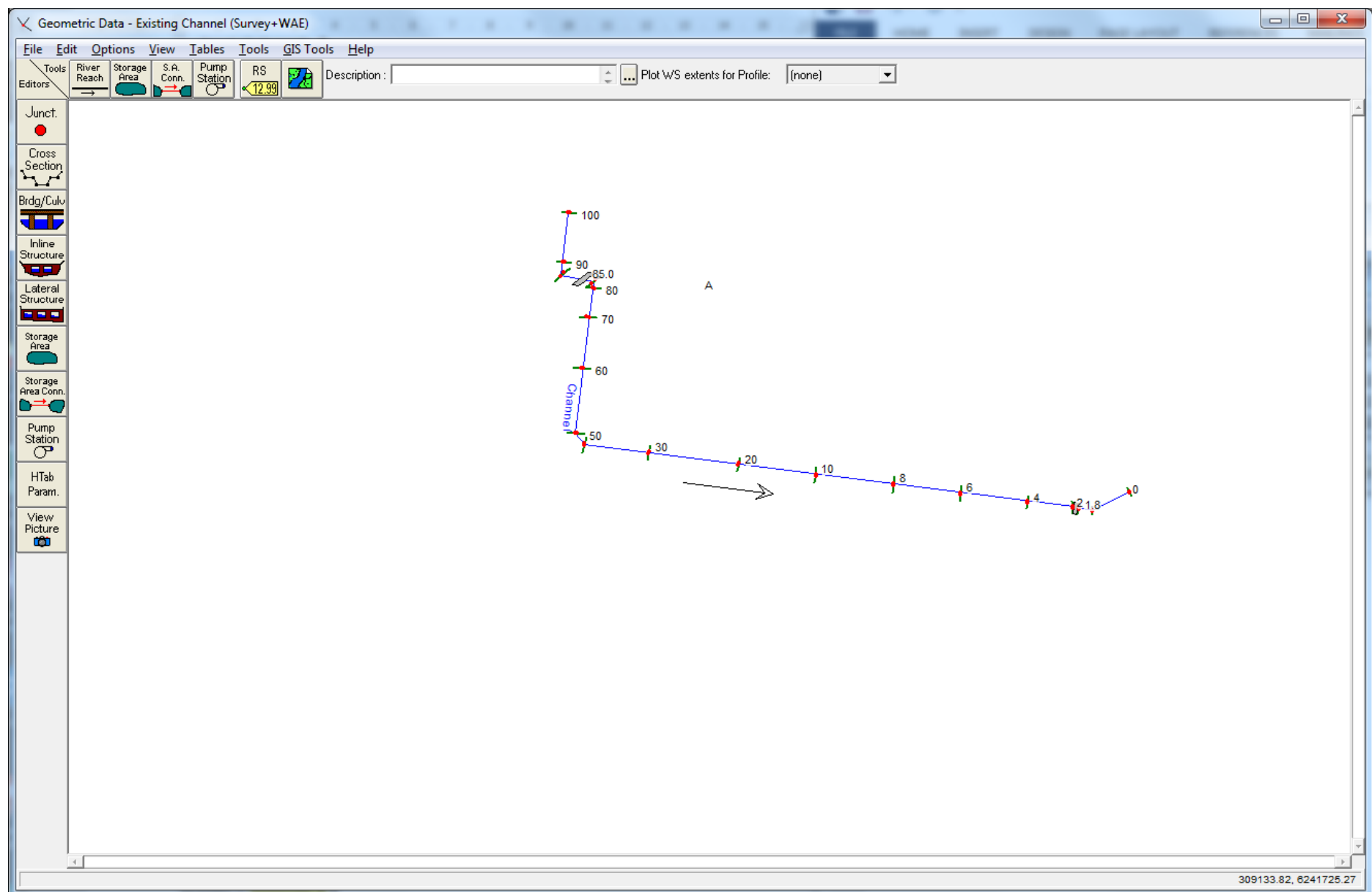
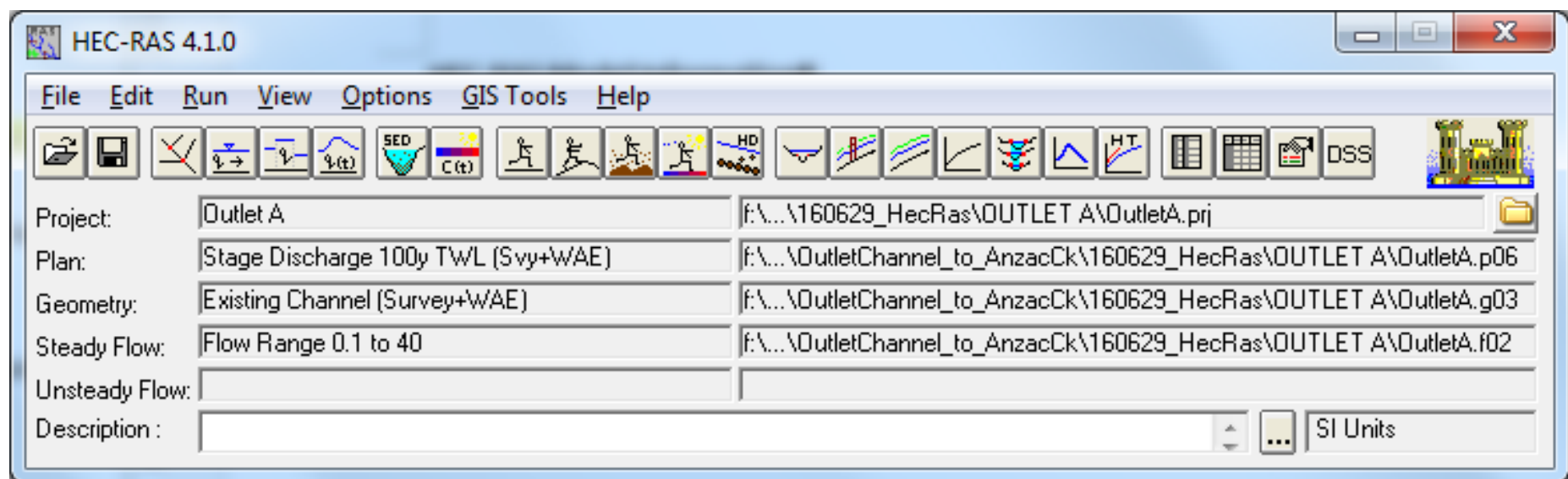
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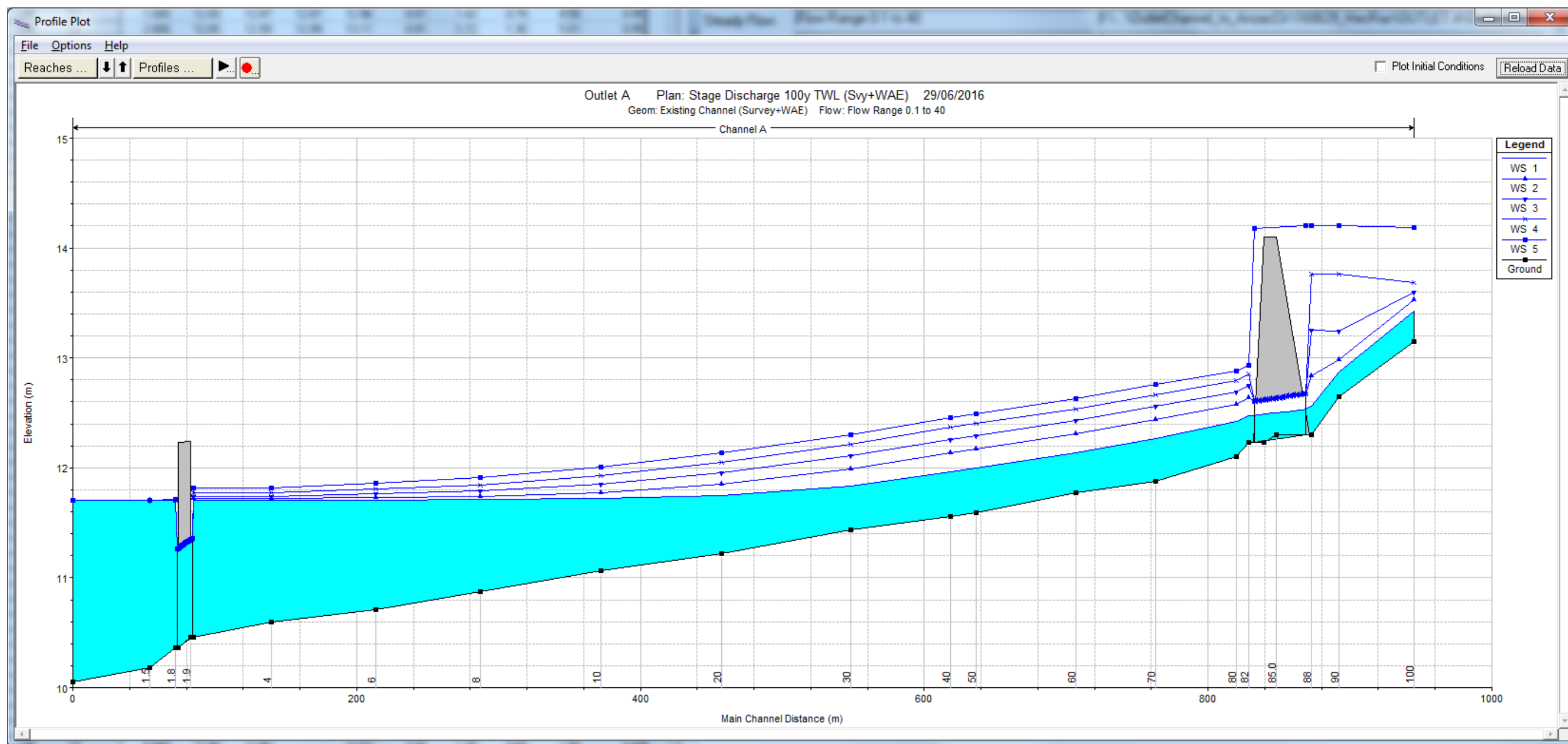




HEC-RAS Model Information

- NE Outlet (A)
- SE Outlet (B)





Profile Output Table - Standard Table 1												
HEC-RAS Plan: SQ_SvyWAE River: Channel Reach: A												Reload Data
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
A	100	1	1.000	13.15	13.42	13.38	13.49	0.01	1.22	0.90	4.13	0.75
A	100	2	2.000	13.15	13.53	13.51	13.65	0.01	1.67	1.37	4.76	0.87
A	100	3	3.000	13.15	13.60	13.60	13.77	0.01	2.00	1.74	5.20	0.95
A	100	4	4.000	13.15	13.68	13.68	13.88	0.01	2.16	2.19	5.70	0.94
A	100	5	5.000	13.15	14.19	13.75	14.23	0.00	1.09	5.84	8.74	0.34
A	90	1	1.000	12.65	12.87	12.87	12.96	0.01	1.42	0.79	4.58	0.95
A	90	2	2.000	12.65	12.99	12.99	13.11	0.01	1.72	1.36	5.61	0.95
A	90	3	3.000	12.65	13.25	13.07	13.30	0.00	1.19	3.15	8.04	0.49
A	90	4	4.000	12.65	13.76		13.78	0.00	0.63	8.54	12.84	0.19
A	90	5	5.000	12.65	14.20		14.21	0.00	0.46	15.08	16.91	0.12
A	88	1	1.000	12.30	12.56	12.46	12.59	0.00	0.74	1.34	5.09	0.46
A	88	2	2.000	12.30	12.84	12.55	12.86	0.00	0.73	2.73	5.09	0.32
A	88	3	3.000	12.30	13.25	12.63	13.27	0.00	0.61	5.02	6.46	0.20
A	88	4	4.000	12.30	13.76	12.70	13.77	0.00	0.49	9.05	9.43	0.13
A	88	5	5.000	12.30	14.20	12.76	14.21	0.00	0.42	13.75	11.99	0.10
A	85.0		Culvert									
A	82	1	1.000	12.23	12.48		12.51	0.00	0.80	1.25	5.09	0.51
A	82	2	2.000	12.23	12.64		12.68	0.00	0.97	2.06	5.09	0.49
A	82	3	3.000	12.23	12.76		12.82	0.00	1.12	2.67	5.10	0.50
A	82	4	4.000	12.23	12.85		12.93	0.00	1.26	3.17	5.40	0.51
A	82	5	5.000	12.23	12.93		13.03	0.00	1.39	3.64	5.88	0.53
A	80	1	1.000	12.10	12.42		12.47	0.00	1.04	1.07	4.18	0.59
A	80	2	2.000	12.10	12.57		12.65	0.00	1.29	1.78	5.01	0.60
A	80	3	3.000	12.10	12.69		12.78	0.00	1.47	2.41	5.64	0.61
A	80	4	4.000	12.10	12.79		12.90	0.00	1.60	3.00	6.16	0.62
A	80	5	5.000	12.10	12.88		13.00	0.00	1.72	3.55	6.61	0.62
A	70	1	1.000	11.88	12.27		12.30	0.00	0.80	1.43	4.83	0.41
A	70	2	2.000	11.88	12.44		12.48	0.00	1.02	2.32	5.83	0.44
A	70	3	3.000	11.88	12.56		12.62	0.00	1.18	3.09	6.58	0.46
A	70	4	4.000	11.88	12.66		12.73	0.00	1.30	3.81	7.21	0.47
A	70	5	5.000	11.88	12.76		12.83	0.00	1.39	4.49	7.75	0.48
A	60	1	1.000	11.77	12.14		12.17	0.00	0.86	1.33	4.71	0.45
A	60	2	2.000	11.77	12.31		12.35	0.00	1.07	2.20	5.71	0.47
A	60	3	3.000	11.77	12.43		12.49	0.00	1.22	2.97	6.47	0.48
A	60	4	4.000	11.77	12.54		12.61	0.00	1.34	3.68	7.10	0.49
A	60	5	5.000	11.77	12.63		12.71	0.00	1.43	4.35	7.65	0.49
A	50	1	1.000	11.59	12.00		12.02	0.00	0.76	1.51	4.94	0.38
A	50	2	2.000	11.59	12.17		12.21	0.00	0.97	2.44	5.96	0.41
A	50	3	3.000	11.59	12.30		12.35	0.00	1.12	3.25	6.73	0.43
A	50	4	4.000	11.59	12.40		12.46	0.00	1.24	4.00	7.36	0.44
A	50	5	5.000	11.59	12.49		12.56	0.00	1.34	4.70	7.91	0.45
A	40	1	1.000	11.56	11.97		11.99	0.00	0.76	1.51	4.93	0.38
A	40	2	2.000	11.56	12.13		12.17	0.00	0.98	2.43	5.95	0.41
A	40	3	3.000	11.56	12.26		12.31	0.00	1.13	3.23	6.71	0.43
A	40	4	4.000	11.56	12.37		12.43	0.00	1.25	3.97	7.34	0.44
A	40	5	5.000	11.56	12.46		12.53	0.00	1.35	4.66	7.88	0.45
A	30	1	1.000	11.44	11.83		11.86	0.00	0.79	1.44	4.85	0.40
A	30	2	2.000	11.44	11.99		12.03	0.00	1.04	2.27	5.79	0.45
A	30	3	3.000	11.44	12.11		12.17	0.00	1.20	3.03	6.53	0.47
A	30	4	4.000	11.44	12.21		12.28	0.00	1.32	3.74	7.15	0.48
A	30	5	5.000	11.44	12.30		12.38	0.00	1.42	4.40	7.69	0.49

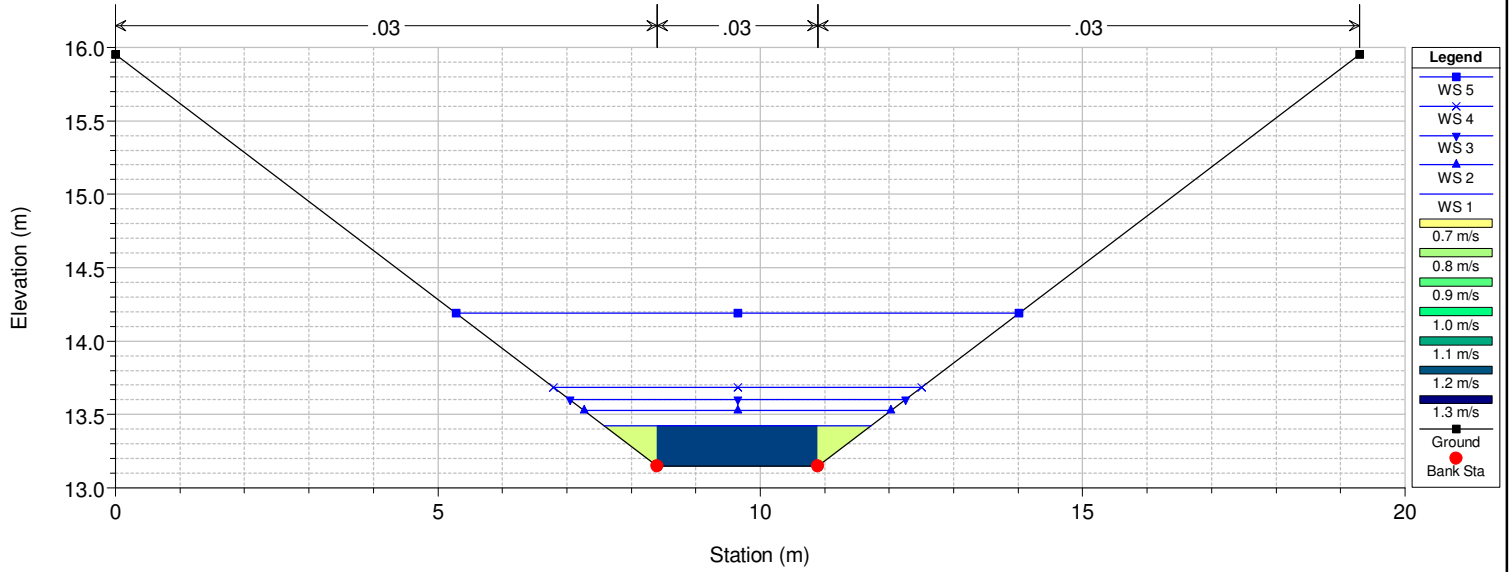
Profile Output Table - Standard Table 1												
HEC-RAS Plan: SQ_SvyWAE River: Channel Reach: A												Reload Data
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
A	30	1	1.000	11.44	11.83		11.86	0.00	0.79	1.44	4.85	0.40
A	30	2	2.000	11.44	11.99		12.03	0.00	1.04	2.27	5.79	0.45
A	30	3	3.000	11.44	12.11		12.17	0.00	1.20	3.03	6.53	0.47
A	30	4	4.000	11.44	12.21		12.28	0.00	1.32	3.74	7.15	0.48
A	30	5	5.000	11.44	12.30		12.38	0.00	1.42	4.40	7.69	0.49
A	20	1	1.000	11.22	11.75		11.76	0.00	0.54	2.17	5.68	0.24
A	20	2	2.000	11.22	11.85		11.88	0.00	0.87	2.78	6.29	0.35
A	20	3	3.000	11.22	11.96		12.00	0.00	1.06	3.46	6.91	0.40
A	20	4	4.000	11.22	12.05		12.11	0.00	1.20	4.15	7.49	0.42
A	20	5	5.000	11.22	12.14		12.20	0.00	1.30	4.82	8.01	0.43
A	10	1	1.000	11.06	11.72		11.73	0.00	0.41	2.97	6.47	0.16
A	10	2	2.000	11.06	11.78		11.80	0.00	0.73	3.33	6.80	0.28
A	10	3	3.000	11.06	11.85		11.89	0.00	0.96	3.84	7.23	0.35
A	10	4	4.000	11.06	11.93		11.98	0.00	1.13	4.42	7.70	0.39
A	10	5	5.000	11.06	12.00		12.06	0.00	1.26	5.03	8.16	0.41
A	8	1	1.000	10.87	11.71		11.71	0.00	0.29	4.22	7.55	0.10
A	8	2	2.000	10.87	11.74		11.75	0.00	0.56	4.46	7.73	0.19
A	8	3	3.000	10.87	11.79		11.81	0.00	0.78	4.83	8.01	0.26
A	8	4	4.000	10.87	11.85		11.88	0.00	0.96	5.30	8.35	0.31
A	8	5	5.000	10.87	11.91		11.95	0.00	1.09	5.84	8.73	0.34
A	6	1	1.000	10.71	11.71		11.71	0.00	0.23	5.47	8.48	0.07
A	6	2	2.000	10.71	11.73		11.74	0.00	0.45	5.65	8.61	0.14
A	6	3	3.000	10.71	11.76		11.78	0.00	0.65	5.94	8.80	0.20
A	6	4	4.000	10.71	11.80		11.83	0.00	0.81	6.33	9.06	0.25
A	6	5	5.000	10.71	11.86		11.89	0.00	0.95	6.81	9.38	0.28
A	4	1	1.000	10.60	11.70		11.71	0.00	0.20	6.42	9.13	0.06
A	4	2	2.000	10.60	11.72		11.72	0.00	0.39	6.55	9.21	0.12
A	4	3	3.000	10.60	11.74		11.75	0.00	0.57	6.77	9.35	0.17
A	4	4	4.000	10.60	11.77		11.79	0.00	0.73	7.08	9.55	0.22
A	4	5	5.000	10.60	11.82		11.84	0.00	0.87	7.49	9.80	0.25
A	2	1	1.000	10.46	11.70	10.62	11.71	0.00	0.12	10.17	11.35	0.03
A	2	2	2.000	10.46	11.72	10.70	11.72	0.00	0.23	10.33	11.42	0.07
A	2	3	3.000	10.46	11.74	10.78	11.74	0.00	0.34	10.58	11.54	0.09
A	2	4	4.000	10.46	11.77	10.84	11.78	0.00	0.43	10.95	11.70	0.12
A	2	5	5.000	10.46	11.81	10.90	11.82	0.00	0.52	11.44	11.91	0.14
A	1.9		Culvert									
A	1.8	1	1.000	10.36	11.70		11.70	0.00	0.11	11.29	11.84	0.03
A	1.8	2	2.000	10.36	11.70		11.70	0.00	0.22	11.31	11.85	0.06
A	1.8	3	3.000	10.36	11.70		11.71	0.00	0.33	11.34	11.86	0.09
A	1.8	4	4.000	10.36	11.71		11.72	0.00	0.44	11.38	11.88	0.12
A	1.8	5	5.000	10.36	11.71		11.72	0.00	0.55	11.44	11.91	0.15
A	1.5	1	1.000	10.18	11.70		11.70	0.00	0.12	10.73	11.62	0.03
A	1.5	2	2.000	10.18	11.70		11.70	0.00	0.25	10.74	11.62	0.06
A	1.5	3	3.000	10.18	11.70		11.71	0.00	0.37	10.76	11.63	0.10
A	1.5	4	4.000	10.18	11.70		11.71	0.00	0.50	10.78	11.64	0.13
A	1.5	5	5.000	10.18	11.71		11.72	0.00	0.62	10.81	11.66	0.16
A	0	1	1.000	10.05	11.70	10.28	11.70	0.00	0.11	12.29	12.40	0.03
A	0	2	2.000	10.05	11.70	10.41	11.70	0.00	0.22	12.29	12.40	0.05
A	0	3	3.000	10.05	11.70	10.50	11.70	0.00	0.33	12.29	12.40	0.08
A	0	4	4.000	10.05	11.70	10.58	11.71	0.00	0.44	12.29	12.40	0.11
A	0	5	5.000	10.05	11.70	10.65	11.71	0.00	0.55	12.29	12.40	0.14

Slope of the energy grade line at a cross section.

Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

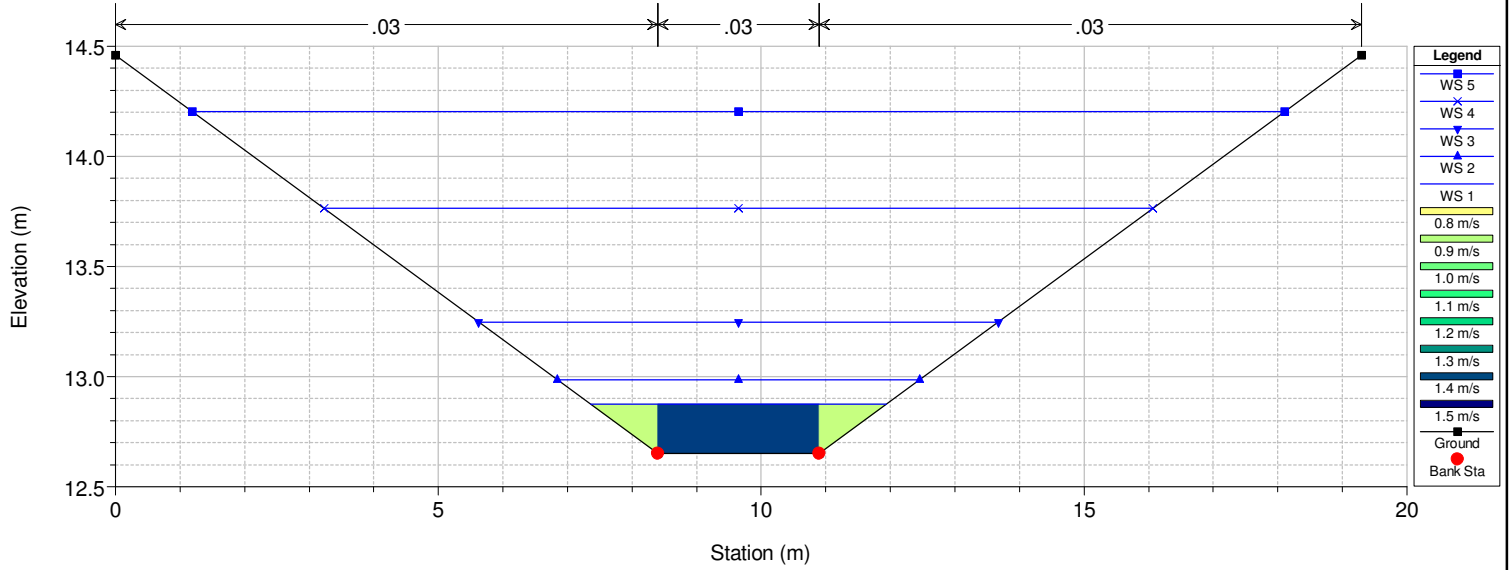
River = Channel Reach = A RS = 100 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

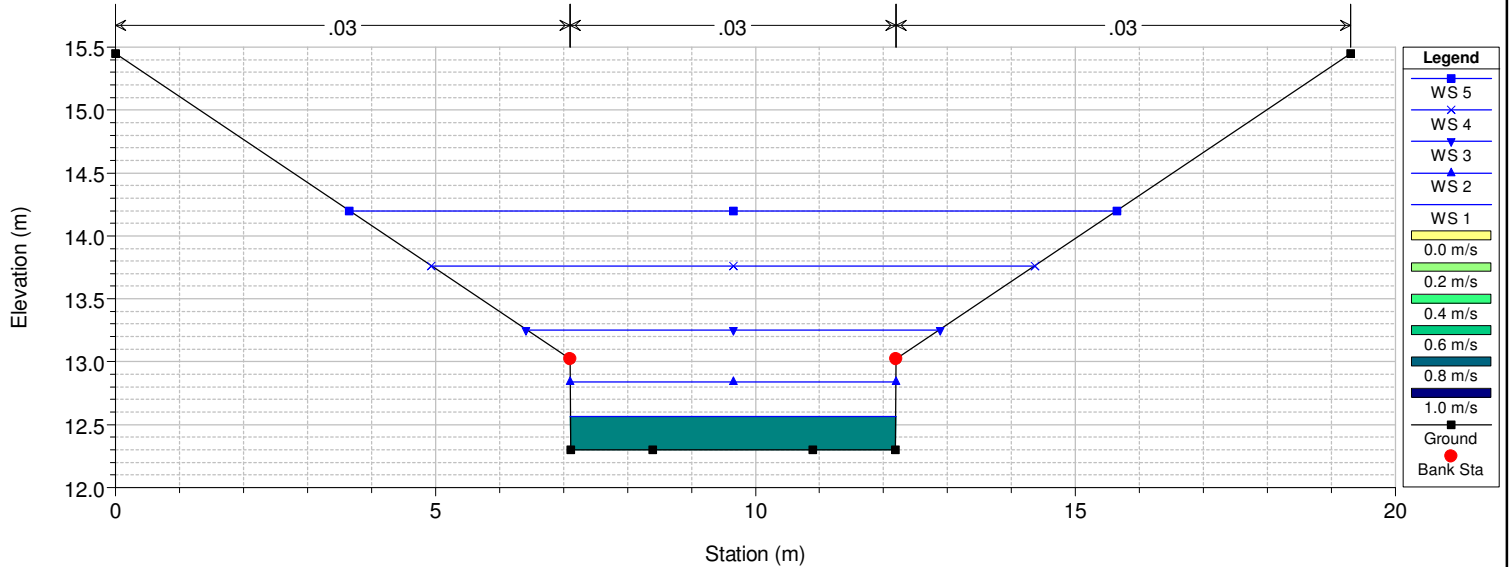
River = Channel Reach = A RS = 90 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

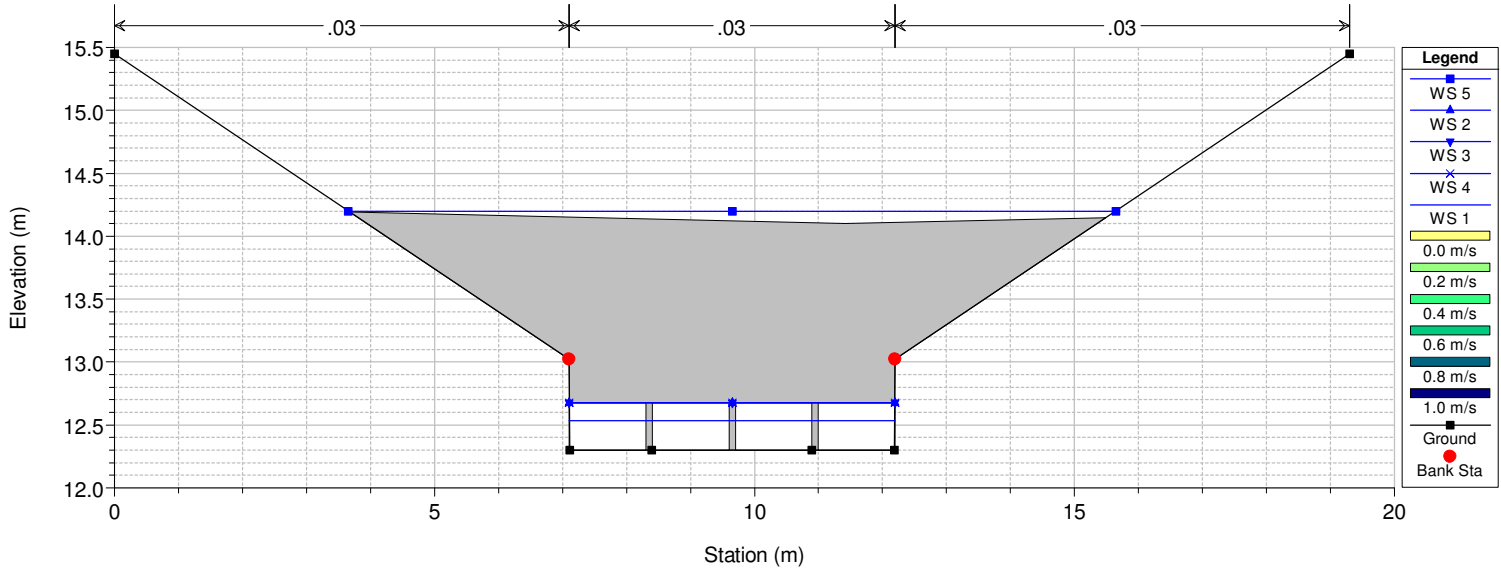
River = Channel Reach = A RS = 88 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

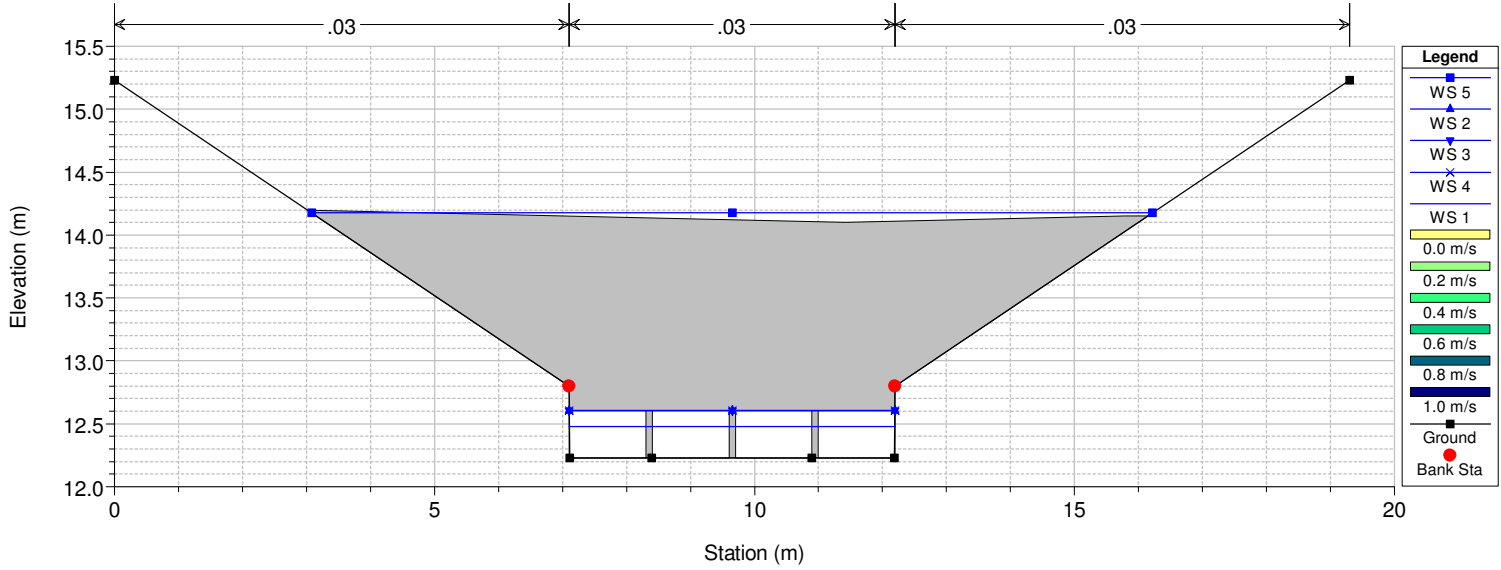
River = Channel Reach = A RS = 85.0 Culv



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

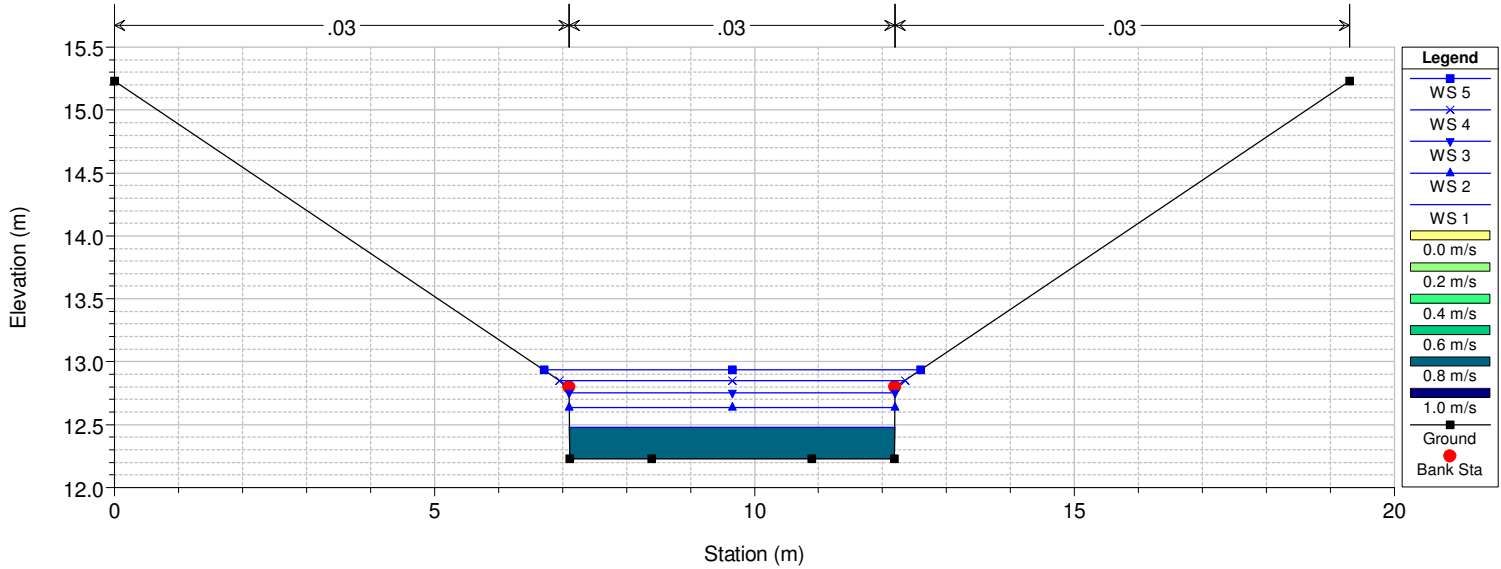
River = Channel Reach = A RS = 85.0 Culv



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

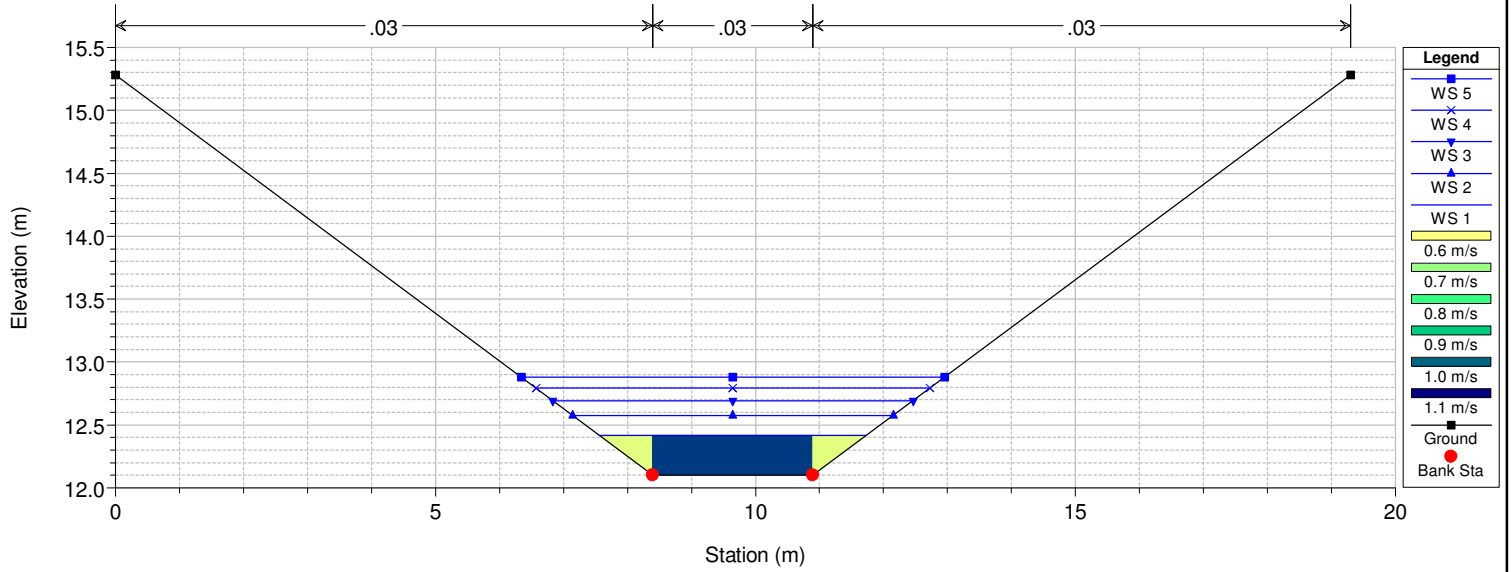
River = Channel Reach = A RS = 82 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

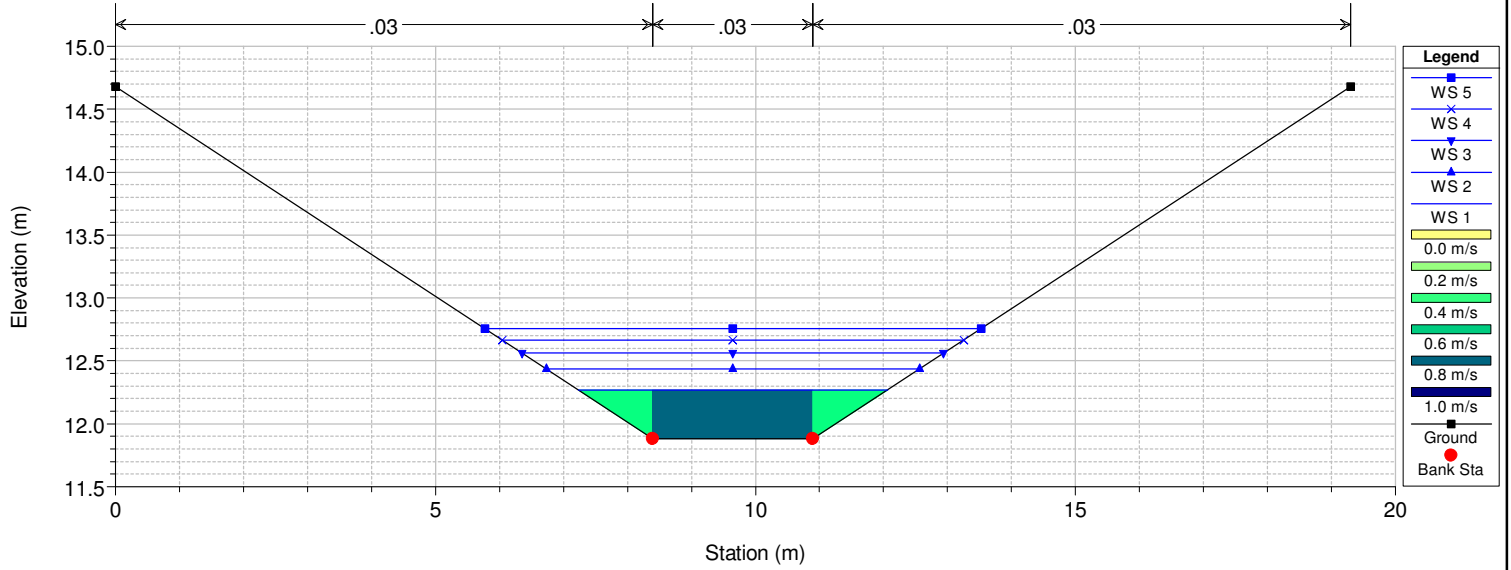
River = Channel Reach = A RS = 80 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

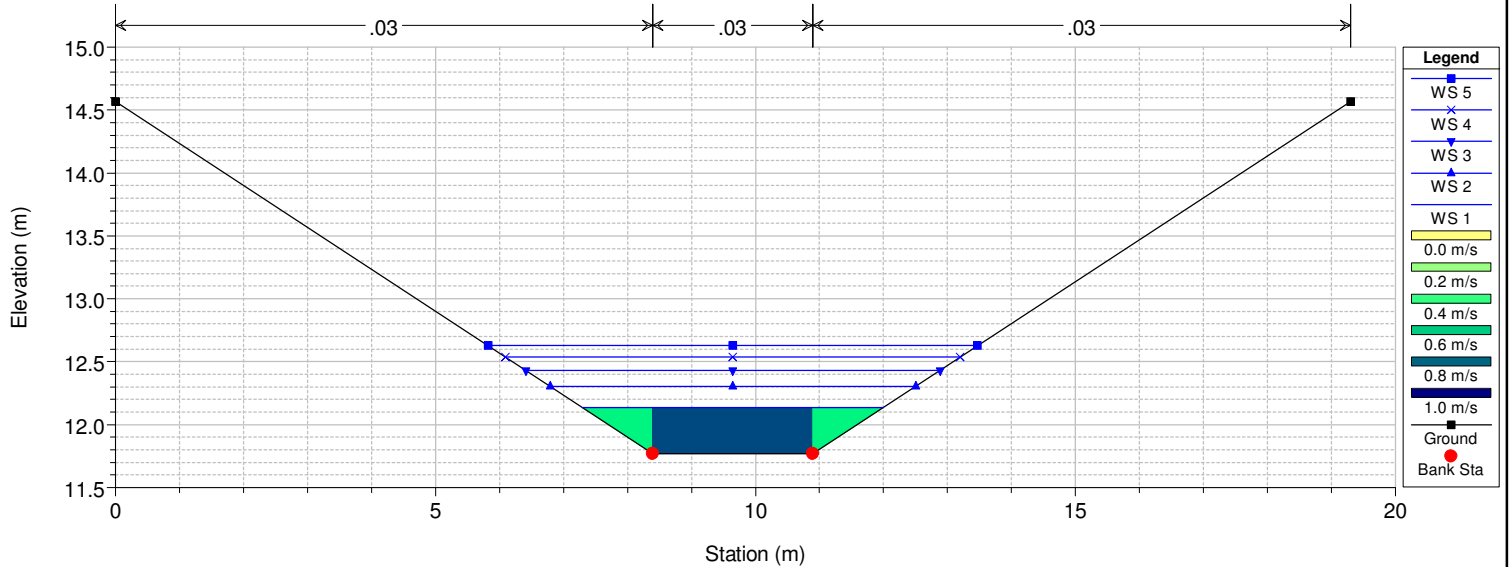
River = Channel Reach = A RS = 70 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

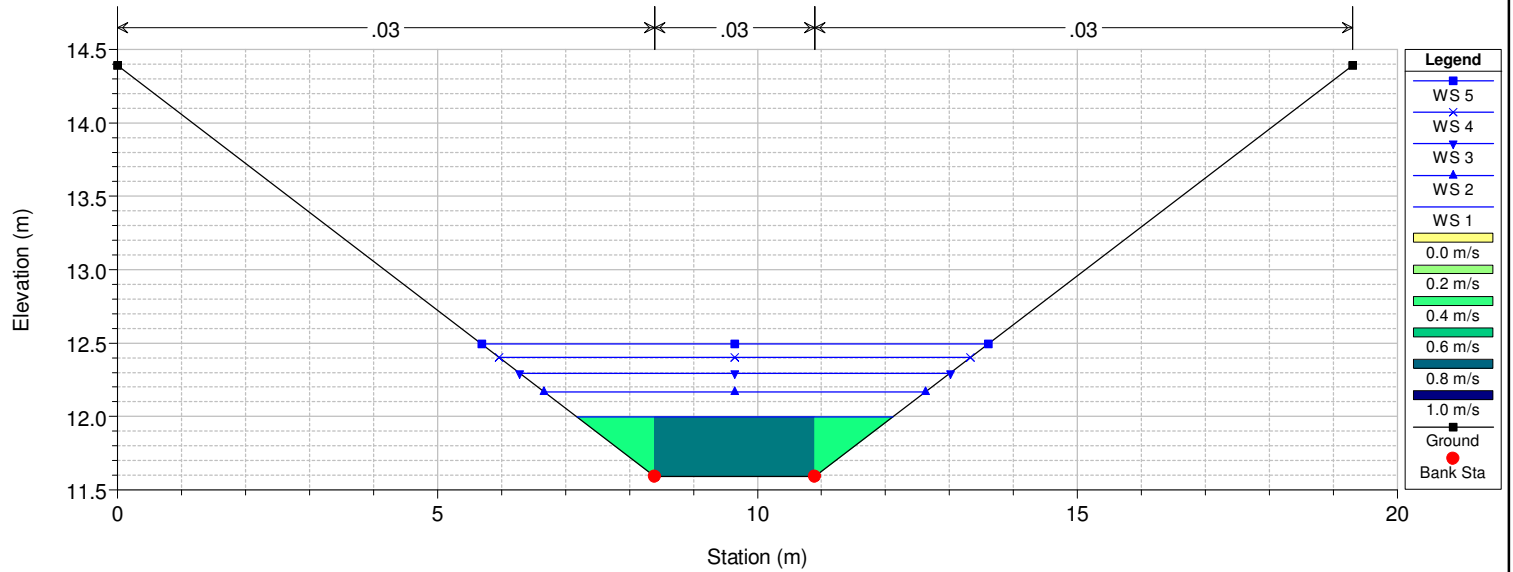
River = Channel Reach = A RS = 60 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

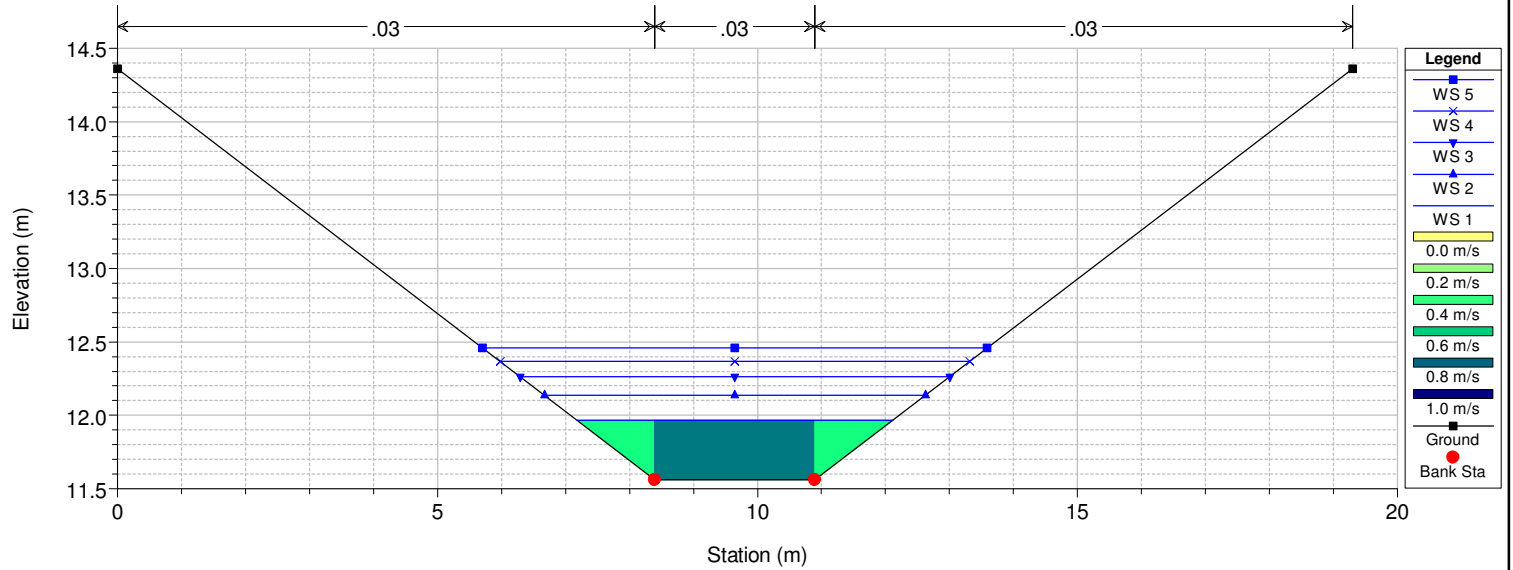
River = Channel Reach = A RS = 50 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

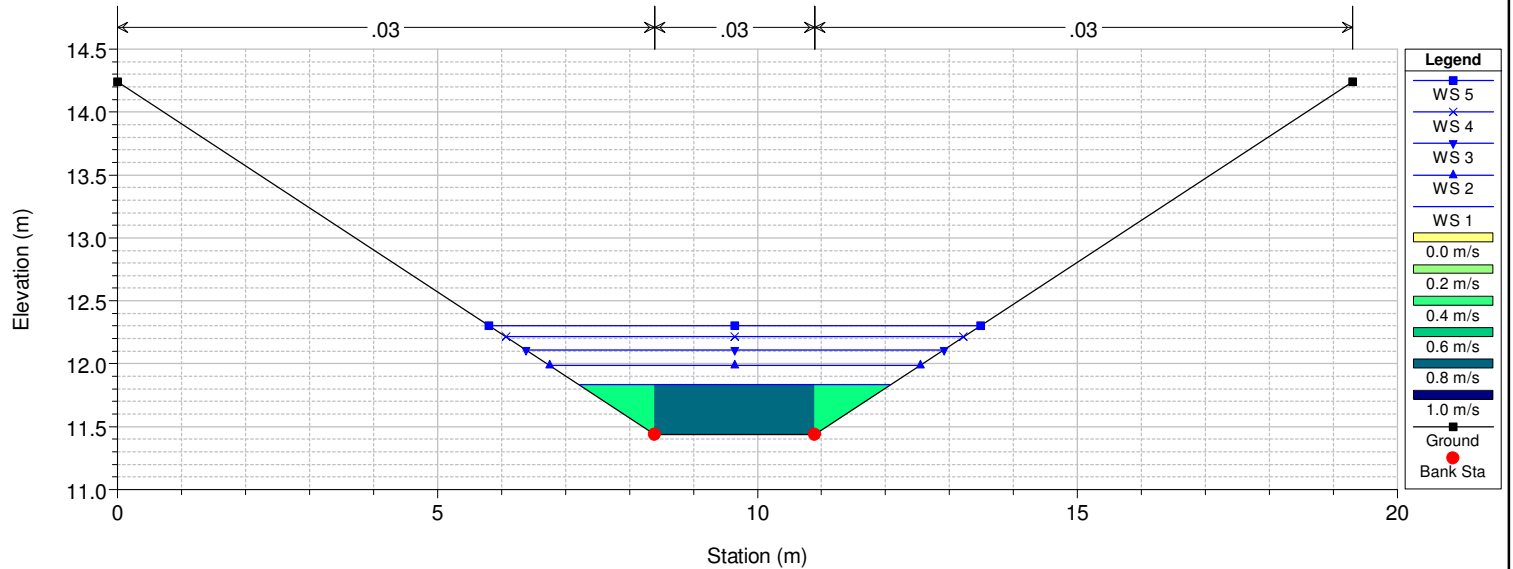
River = Channel Reach = A RS = 40 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

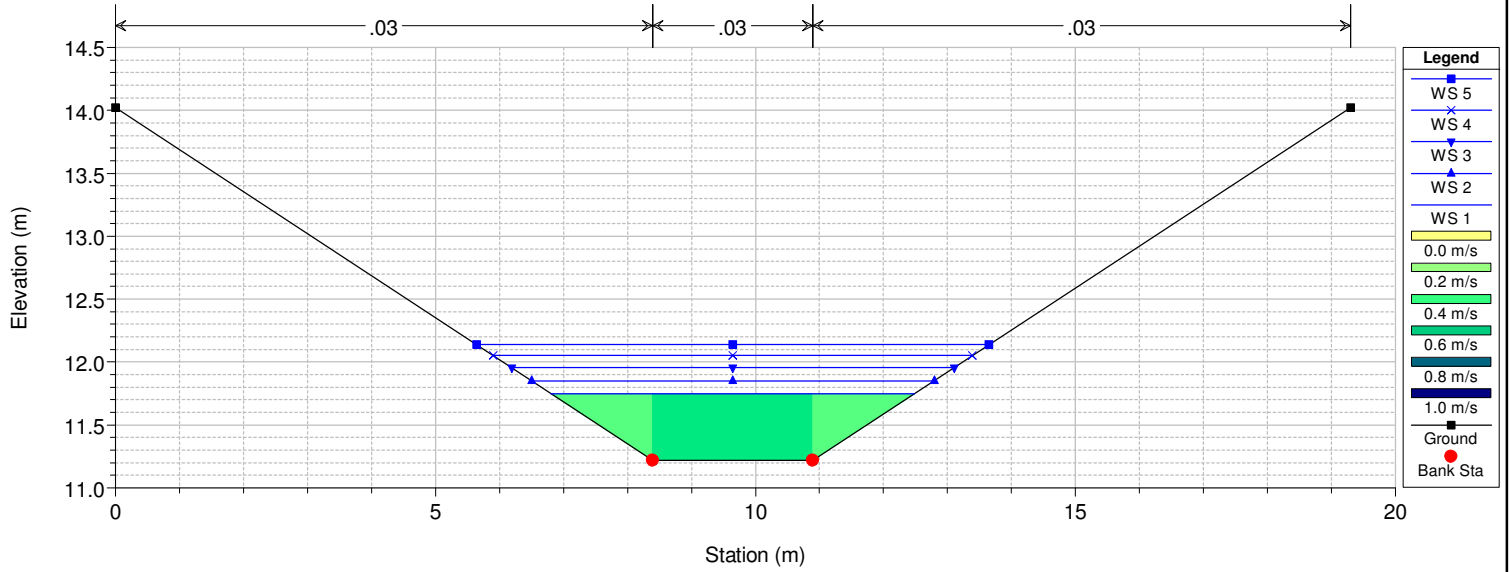
River = Channel Reach = A RS = 30 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

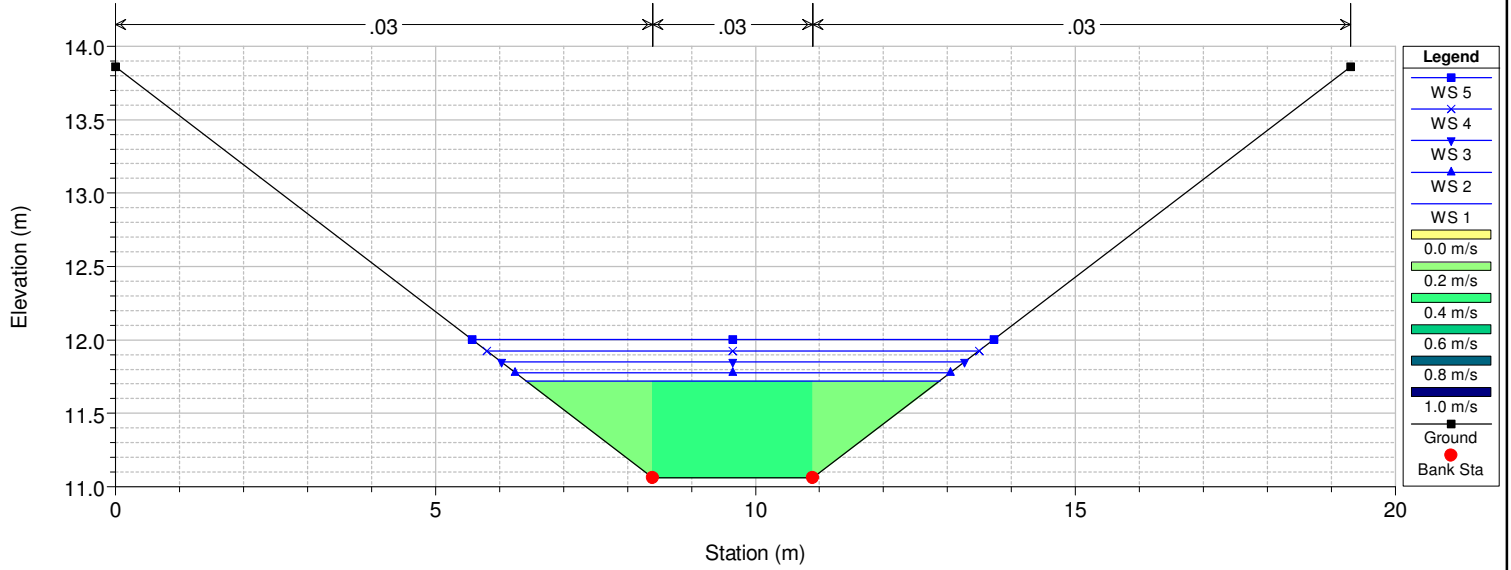
River = Channel Reach = A RS = 20 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

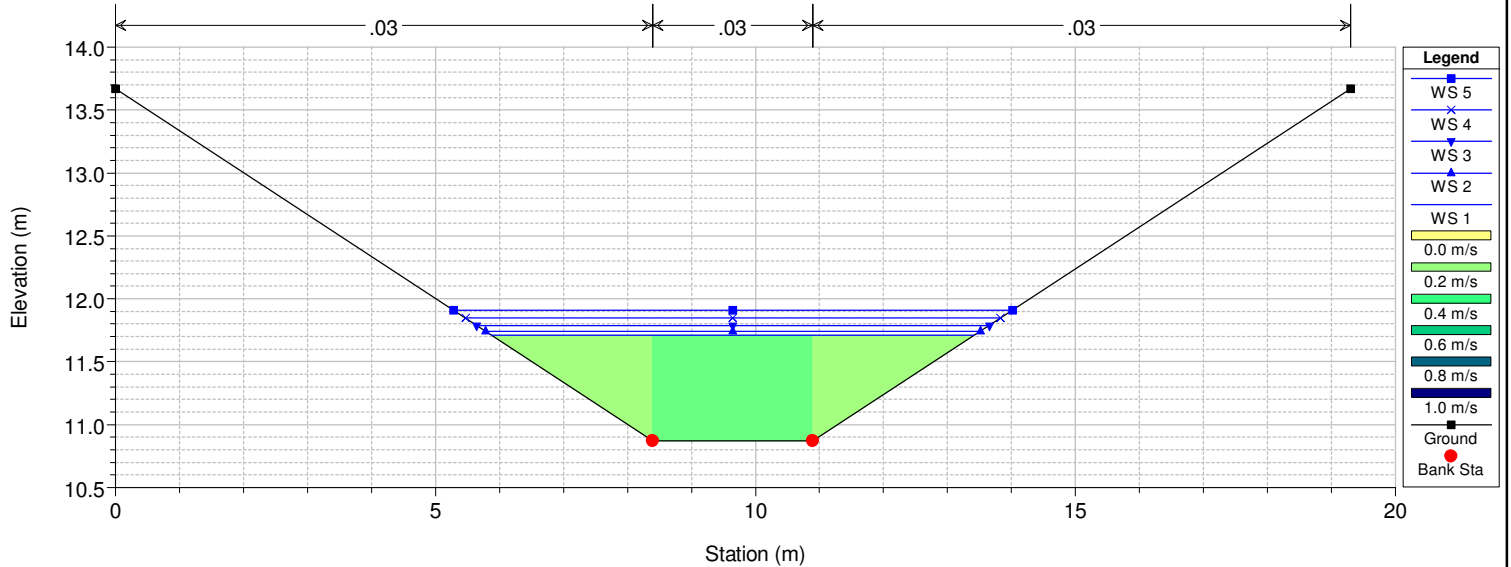
River = Channel Reach = A RS = 10 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

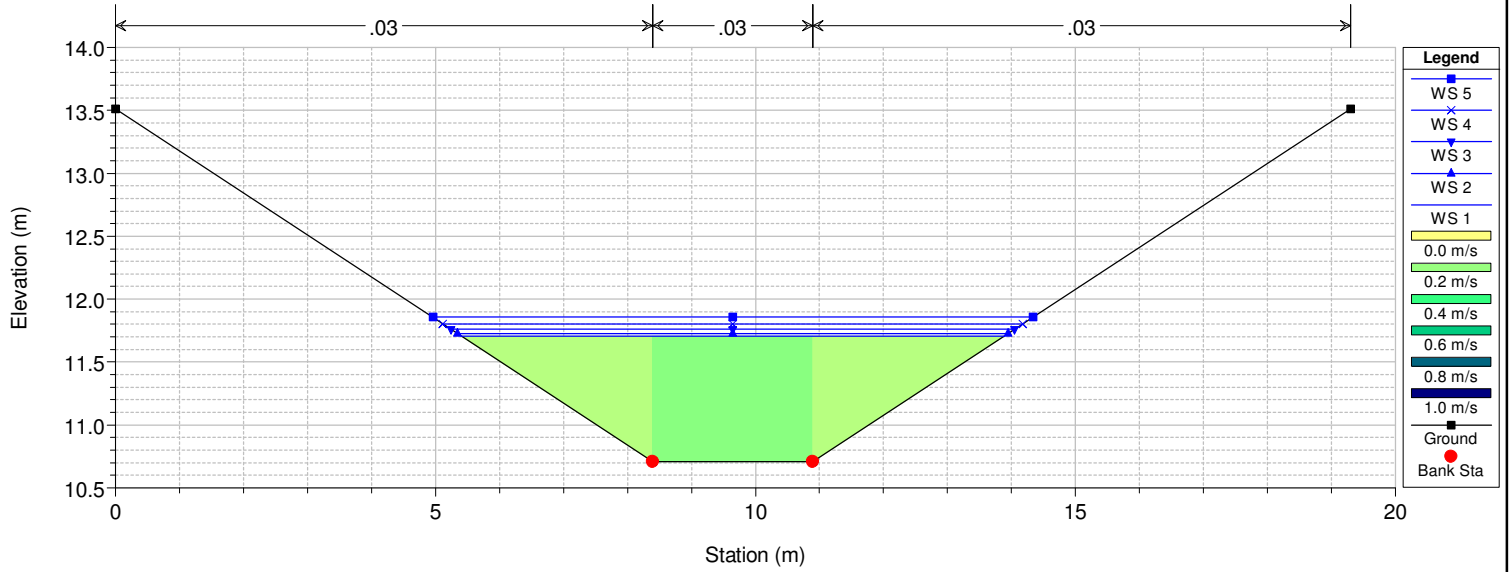
River = Channel Reach = A RS = 8 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

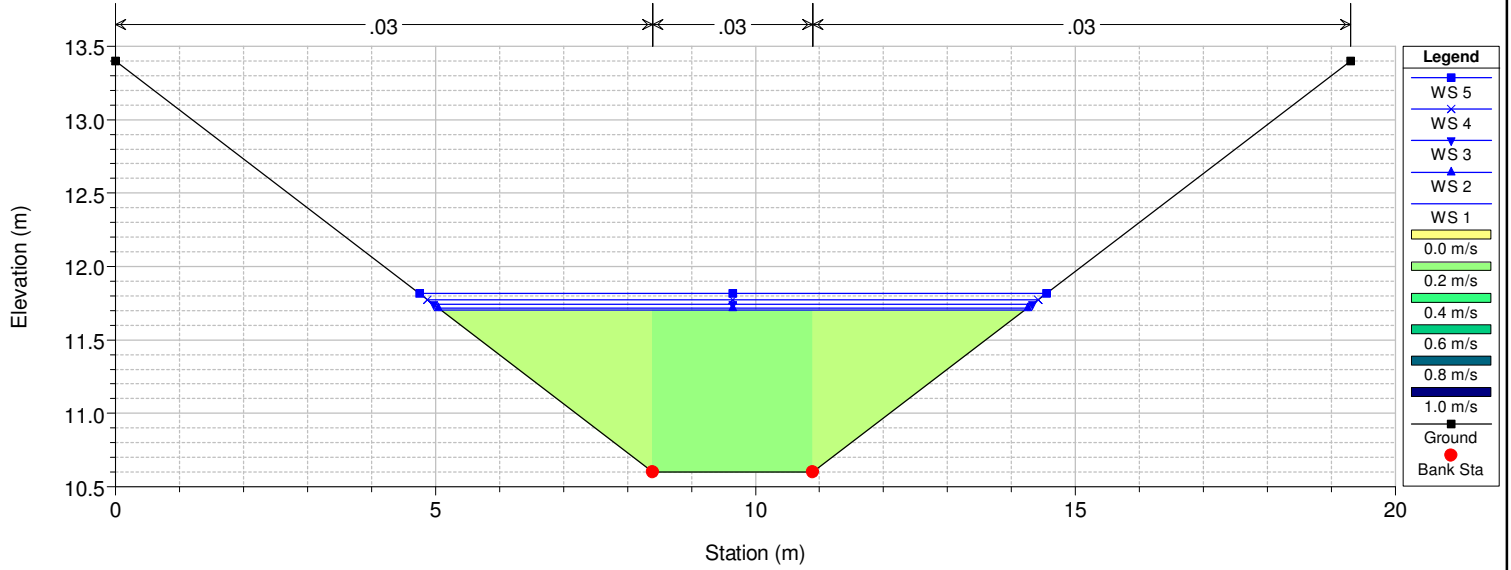
River = Channel Reach = A RS = 6 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

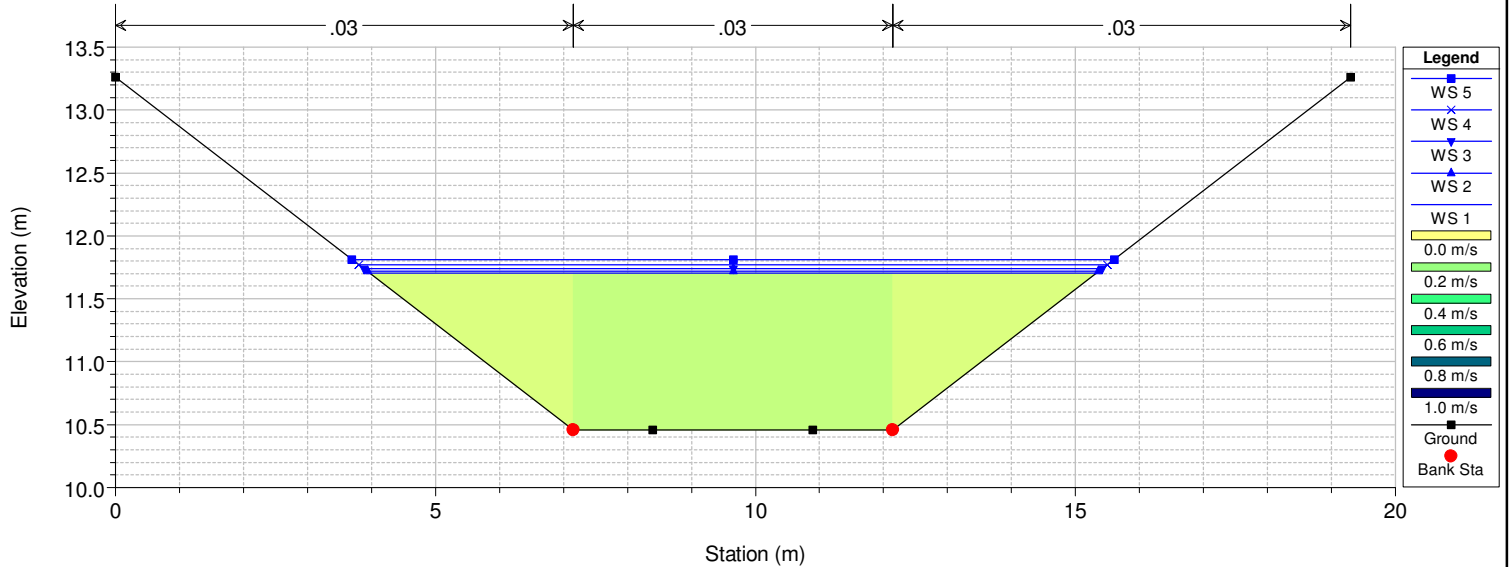
River = Channel Reach = A RS = 4 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

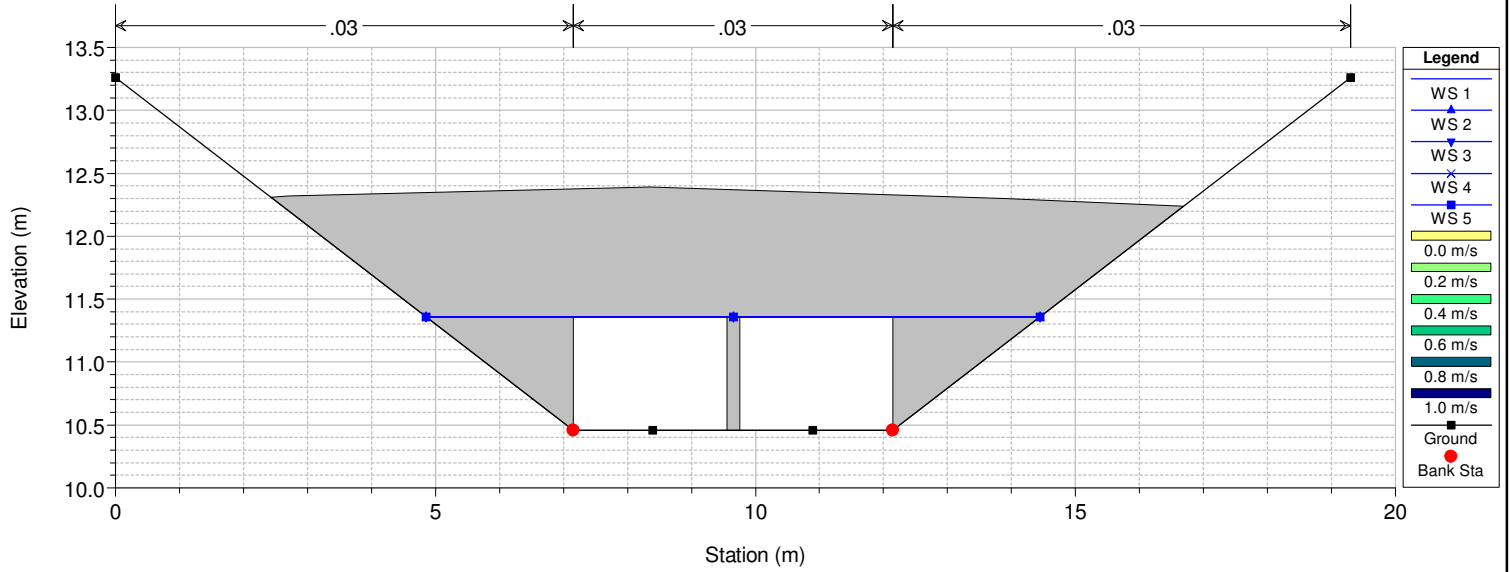
River = Channel Reach = A RS = 2 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

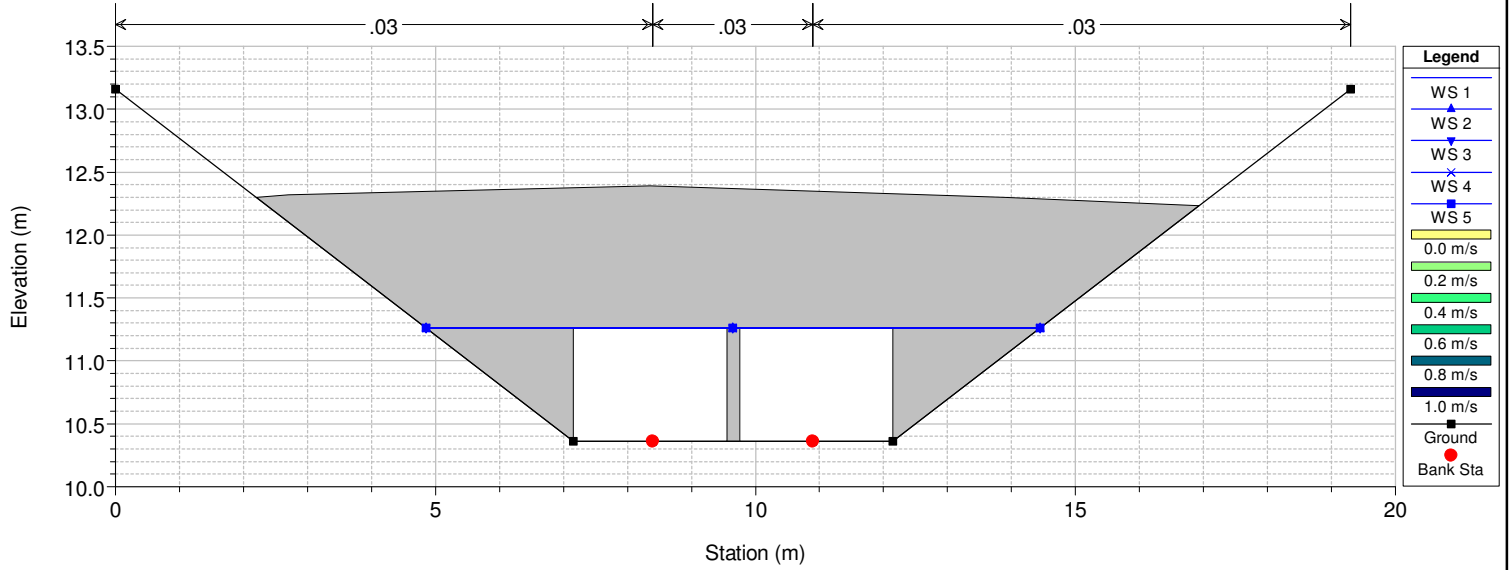
River = Channel Reach = A RS = 1.9 Culv Culv near ANZAC Creek



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

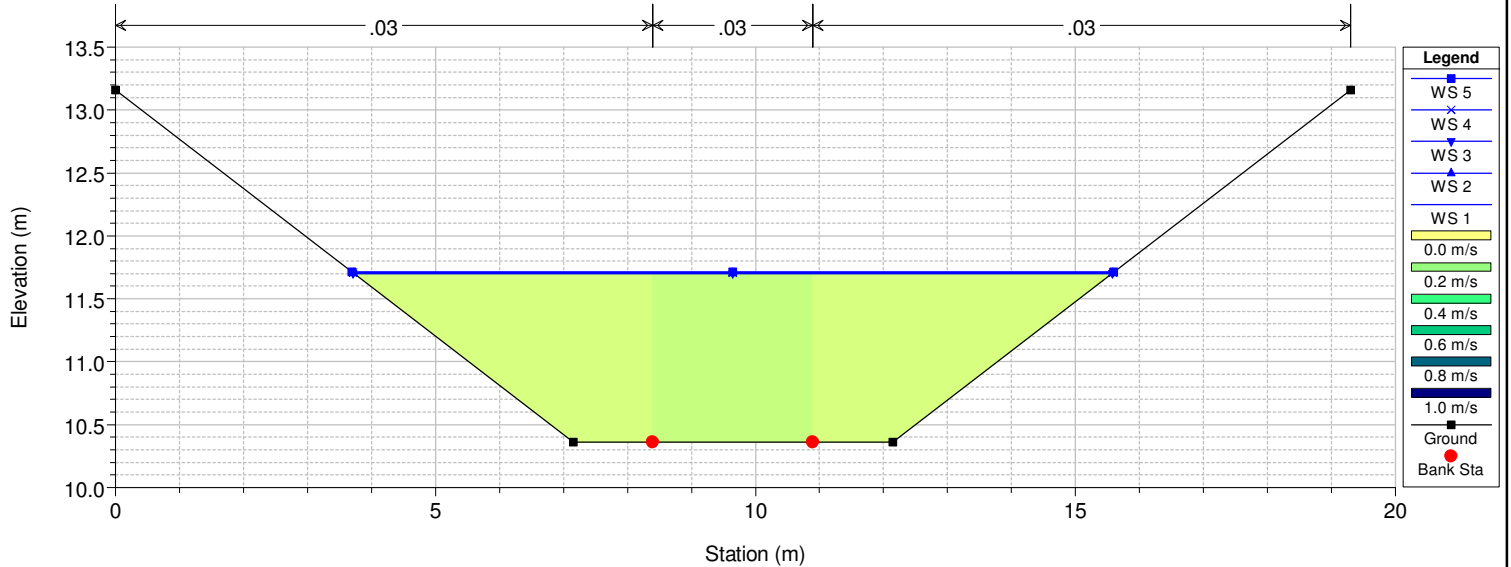
River = Channel Reach = A RS = 1.9 Culv Culv near ANZAC Creek



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

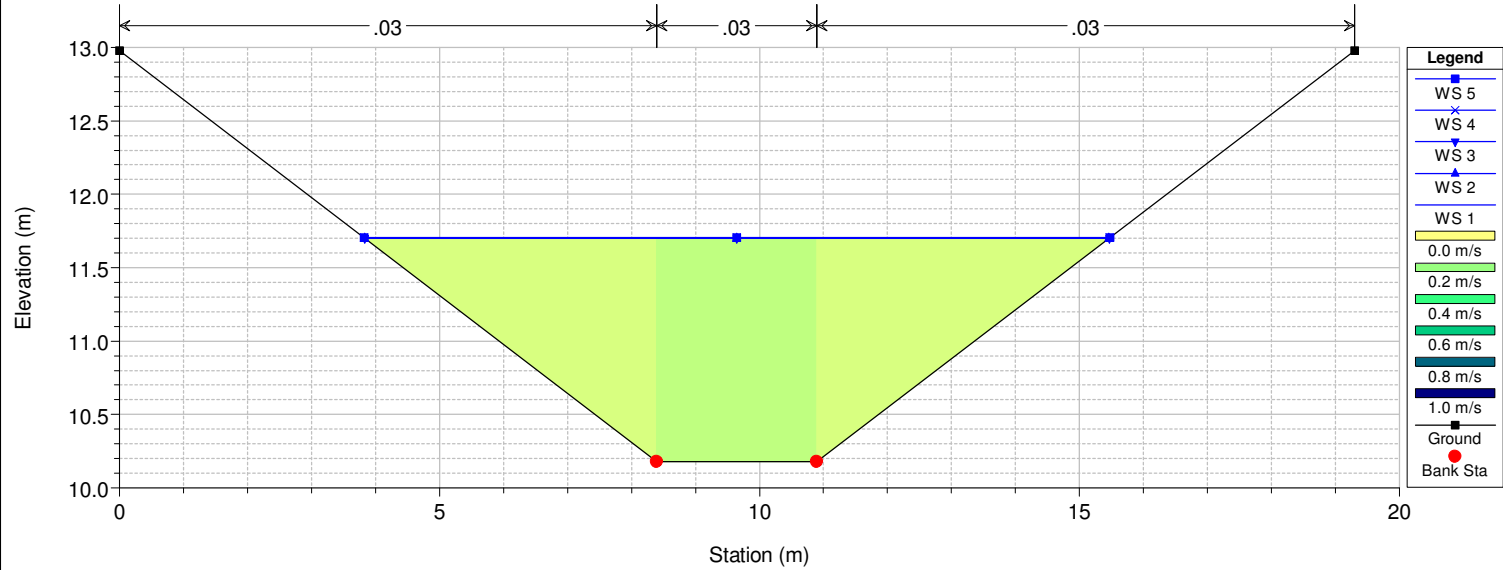
River = Channel Reach = A RS = 1.8 DNSDC Channel



Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

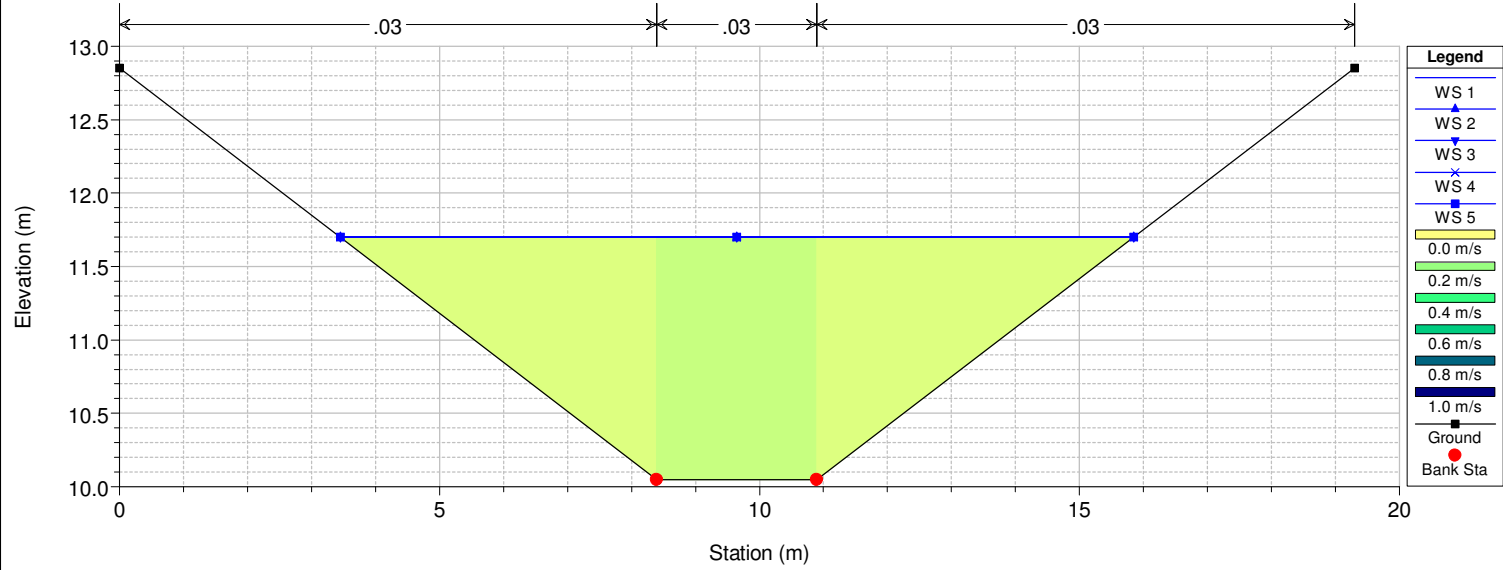
River = Channel Reach = A RS = 1.5 DNSDC Channel

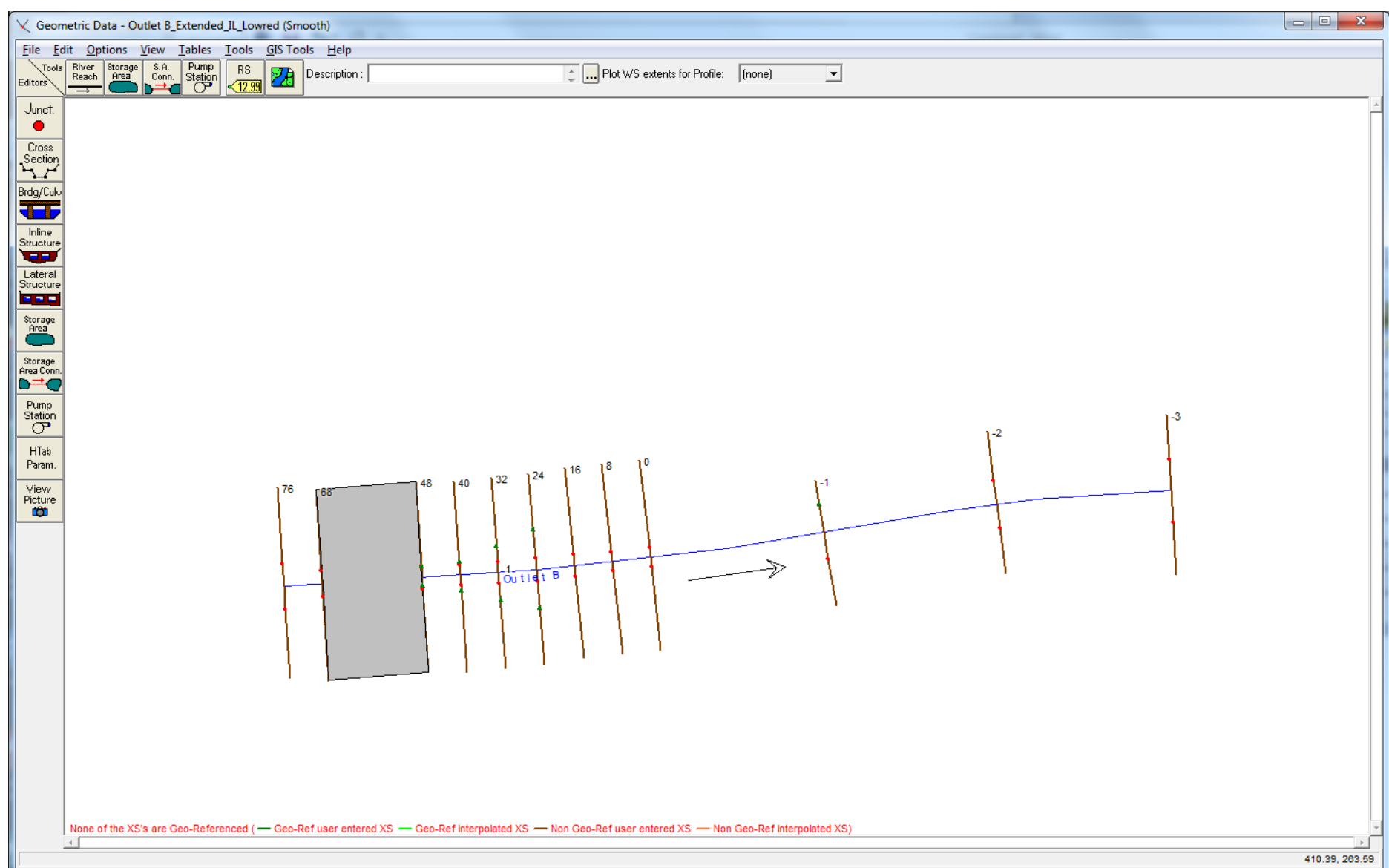
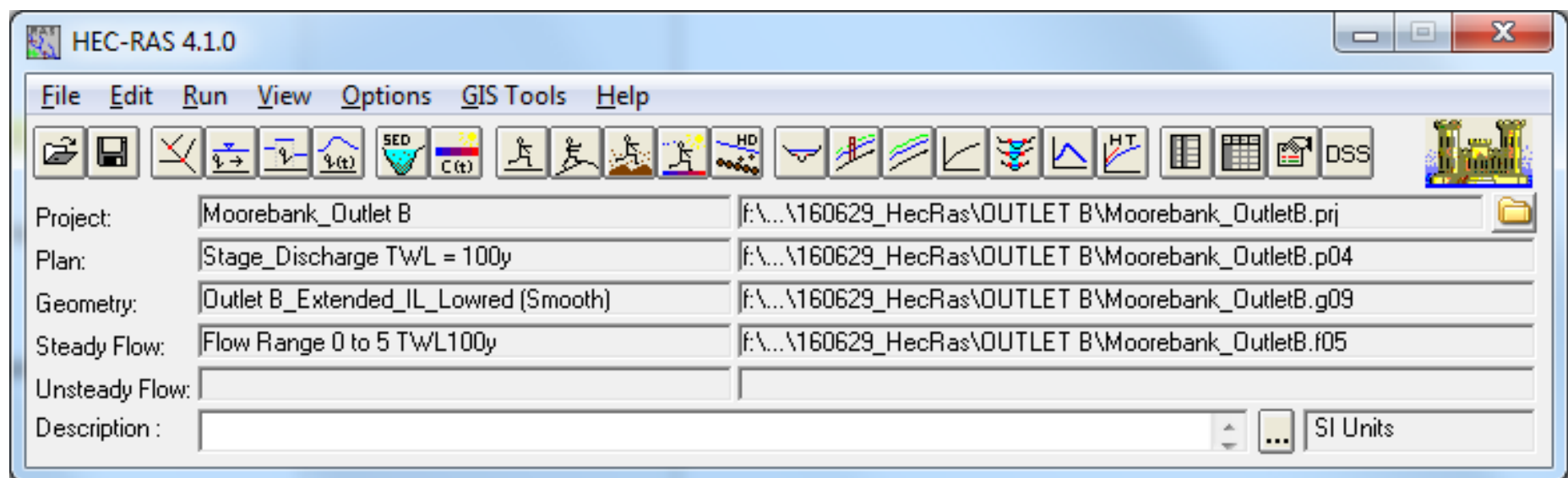


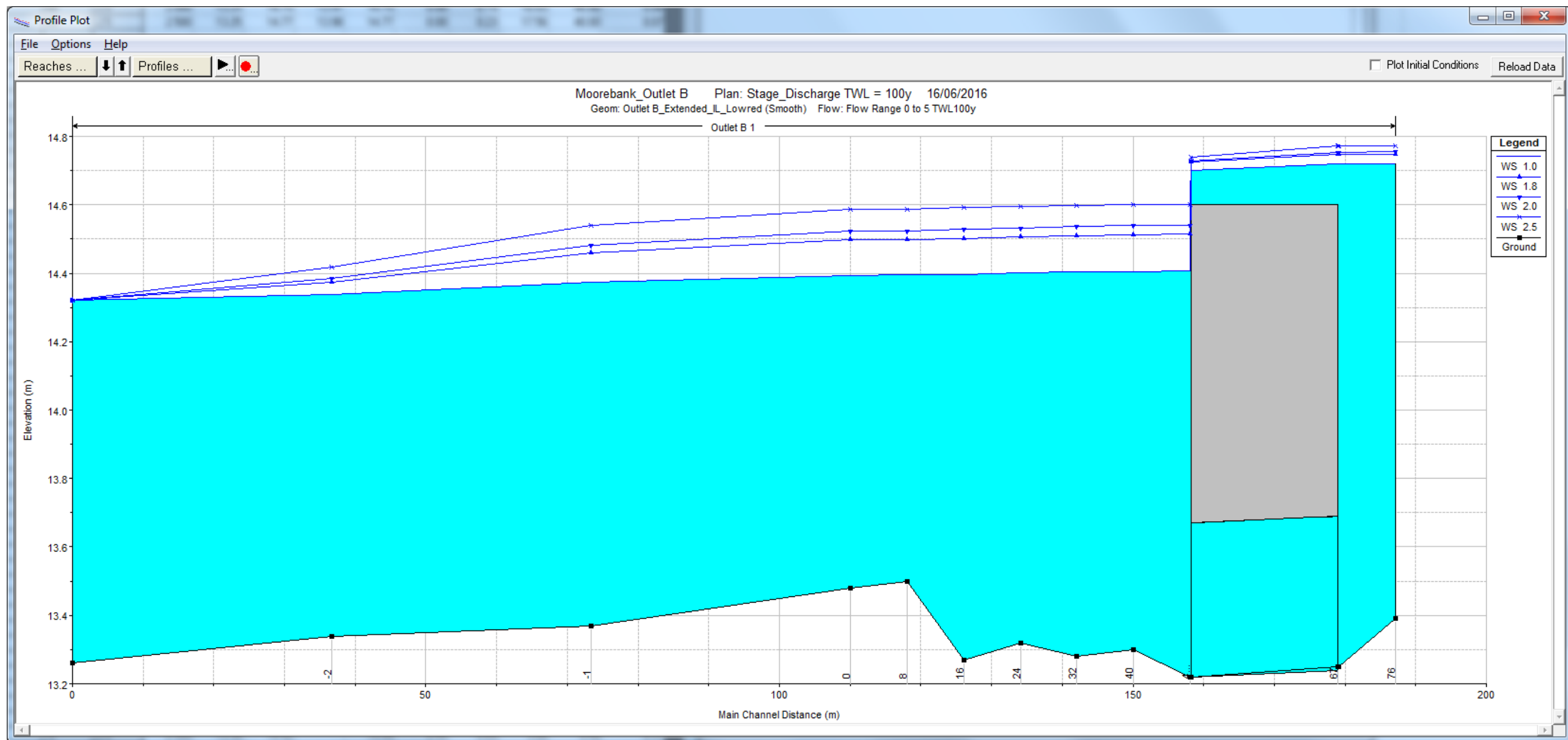
Outlet A Plan: Stage Discharge 100y TWL (Svy+WAE) 29/06/2016

Geom: Existing Channel (Survey+WAE) Flow: Flow Range 0.1 to 40

River = Channel Reach = A RS = 0 DNSDC Channel





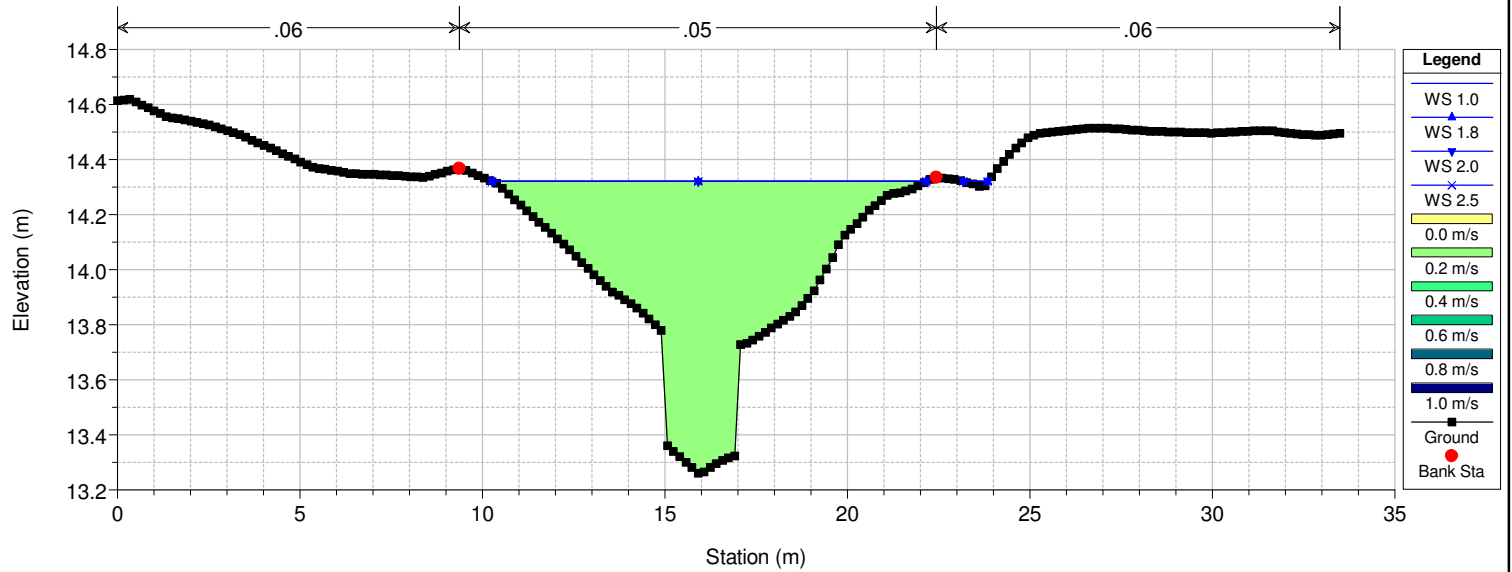


Profile Output Table - Standard Table 1												
HEC-RAS Plan: SQ_TWL_100y_River: Outlet B Reach: 1												(Reload Data)
Reach	River Sta	Profile	Q Total (m3/s)	Min Ch El (m)	W.S. Elev (m)	Crit W.S. (m)	E.G. Elev (m)	E.G. Slope (m/m)	Vel Chnl (m/s)	Flow Area (m2)	Top Width (m)	Froude # Chl
1	76	1.0	1.000	13.39	14.72	13.77	14.72	0.00	0.06	24.17	40.00	0.02
1	76	1.8	1.800	13.39	14.75	13.88	14.75	0.00	0.10	25.32	40.00	0.03
1	76	2.0	2.000	13.39	14.75	13.90	14.76	0.00	0.11	25.56	40.00	0.04
1	76	2.5	2.500	13.39	14.77	13.94	14.77	0.00	0.13	26.31	40.00	0.04
1	68	1.0	1.000	13.25	14.72	13.74	14.72	0.00	0.11	15.48	40.00	0.04
1	68	1.8	1.800	13.25	14.75	13.88	14.75	0.00	0.18	16.60	40.00	0.06
1	68	2.0	2.000	13.25	14.75	13.91	14.75	0.00	0.19	16.83	40.00	0.06
1	68	2.5	2.500	13.25	14.77	13.98	14.77	0.00	0.23	17.56	40.00	0.07
1	67		Culvert									
1	48	1.0	1.000	13.22	14.41	13.78	14.42	0.00	0.53	1.90	2.57	0.20
1	48	1.8	1.800	13.22	14.51	13.94	14.55	0.01	0.80	2.26	9.12	0.35
1	48	2.0	2.000	13.22	14.54	13.98	14.58	0.01	0.84	2.37	16.70	0.36
1	48	2.5	2.500	13.22	14.60	14.06	14.65	0.01	0.95	2.62	34.21	0.38
1	40	1.0	1.000	13.30	14.41	13.64	14.41	0.00	0.33	3.18	11.55	0.12
1	40	1.8	1.800	13.30	14.51	13.79	14.53	0.00	0.50	3.84	24.35	0.18
1	40	2.0	2.000	13.30	14.54	13.82	14.55	0.00	0.53	4.01	31.62	0.19
1	40	2.5	2.500	13.30	14.60	13.89	14.62	0.00	0.61	4.39	40.00	0.21
1	32	1.0	1.000	13.28	14.40	13.64	14.41	0.00	0.28	4.22	26.47	0.10
1	32	1.8	1.800	13.28	14.51	13.76	14.52	0.00	0.40	5.44	36.37	0.14
1	32	2.0	2.000	13.28	14.54	13.79	14.54	0.00	0.43	5.74	40.00	0.14
1	32	2.5	2.500	13.28	14.60	13.86	14.61	0.00	0.48	6.45	40.00	0.16
1	24	1.0	1.000	13.32	14.40	13.71	14.40	0.00	0.28	4.21	20.50	0.11
1	24	1.8	1.800	13.32	14.51	13.84	14.51	0.00	0.40	5.70	39.36	0.14
1	24	2.0	2.000	13.32	14.53	13.87	14.54	0.00	0.42	6.14	40.00	0.15
1	24	2.5	2.500	13.32	14.59	13.93	14.60	0.00	0.46	7.16	40.00	0.16
1	16	1.0	1.000	13.27	14.40		14.40	0.00	0.29	4.16	19.57	0.11
1	16	1.8	1.800	13.27	14.50		14.51	0.00	0.40	7.09	36.61	0.14
1	16	2.0	2.000	13.27	14.53		14.53	0.00	0.40	8.10	39.24	0.14
1	16	2.5	2.500	13.27	14.59		14.60	0.00	0.40	10.63	40.00	0.14
1	8	1.0	1.000	13.50	14.39		14.40	0.00	0.28	5.23	21.43	0.11
1	8	1.8	1.800	13.50	14.50		14.50	0.00	0.37	7.96	32.10	0.13
1	8	2.0	2.000	13.50	14.52		14.53	0.00	0.39	8.91	37.91	0.14
1	8	2.5	2.500	13.50	14.59		14.59	0.00	0.39	11.43	40.00	0.13
1	0	1.0	1.000	13.48	14.39		14.40	0.00	0.18	8.34	27.90	0.07
1	0	1.8	1.800	13.48	14.50		14.50	0.00	0.23	11.48	32.88	0.09
1	0	2.0	2.000	13.48	14.52		14.53	0.00	0.24	12.36	34.65	0.09
1	0	2.5	2.500	13.48	14.59		14.59	0.00	0.26	14.69	39.07	0.09
1	-1	1.0	1.000	13.37	14.37		14.38	0.00	0.39	2.59	5.73	0.18
1	-1	1.8	1.800	13.37	14.46		14.48	0.00	0.58	3.12	9.33	0.27
1	-1	2.0	2.000	13.37	14.48		14.50	0.00	0.61	3.28	9.83	0.28
1	-1	2.5	2.500	13.37	14.54		14.56	0.00	0.68	3.70	11.00	0.31
1	-2	1.0	1.000	13.34	14.34		14.34	0.00	0.31	3.23	7.38	0.15
1	-2	1.8	1.800	13.34	14.37		14.39	0.00	0.51	3.51	7.85	0.24
1	-2	2.0	2.000	13.34	14.39		14.40	0.00	0.56	3.60	8.01	0.26
1	-2	2.5	2.500	13.34	14.42		14.44	0.00	0.65	3.86	8.48	0.31
1	-3	1.0	1.000	13.26	14.32	13.61	14.32	0.00	0.21	4.85	12.56	0.10
1	-3	1.8	1.800	13.26	14.32	13.79	14.33	0.00	0.37	4.85	12.56	0.19
1	-3	2.0	2.000	13.26	14.32	13.84	14.33	0.00	0.41	4.85	12.56	0.21
1	-3	2.5	2.500	13.26	14.32	13.90	14.33	0.00	0.52	4.85	12.56	0.26

Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

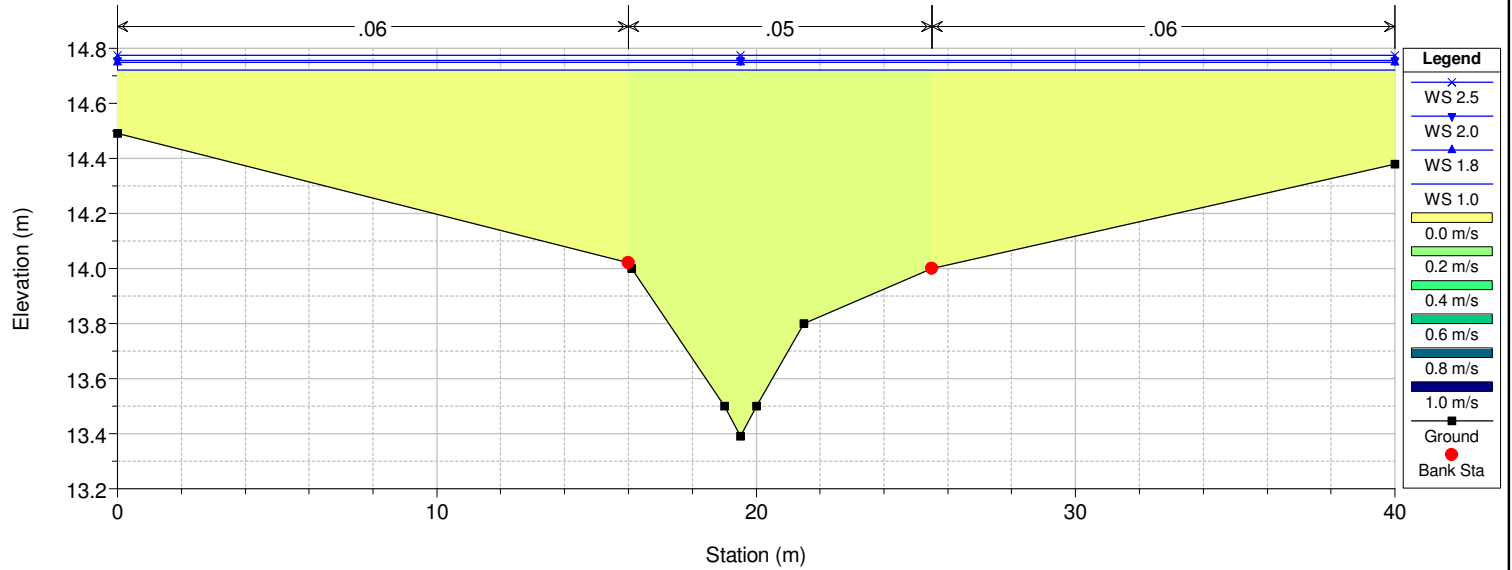
River = Outlet B Reach = 1 RS = -3 LPI_ALS



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

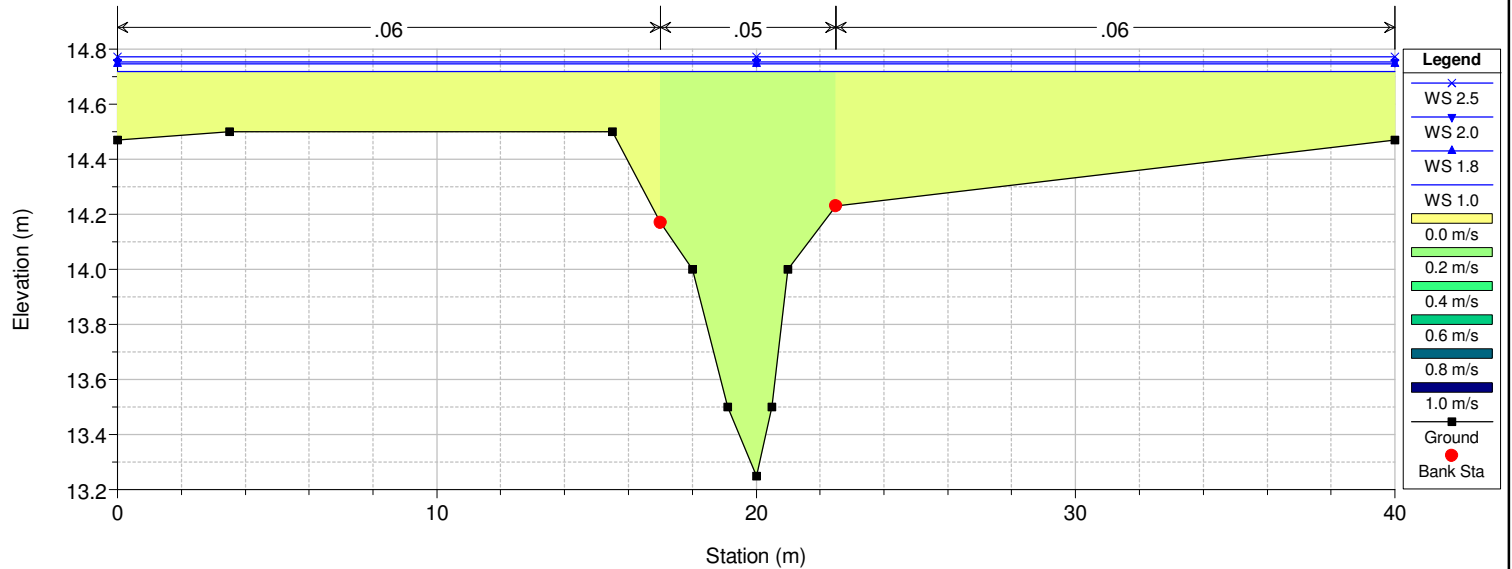
River = Outlet B Reach = 1 RS = 76



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

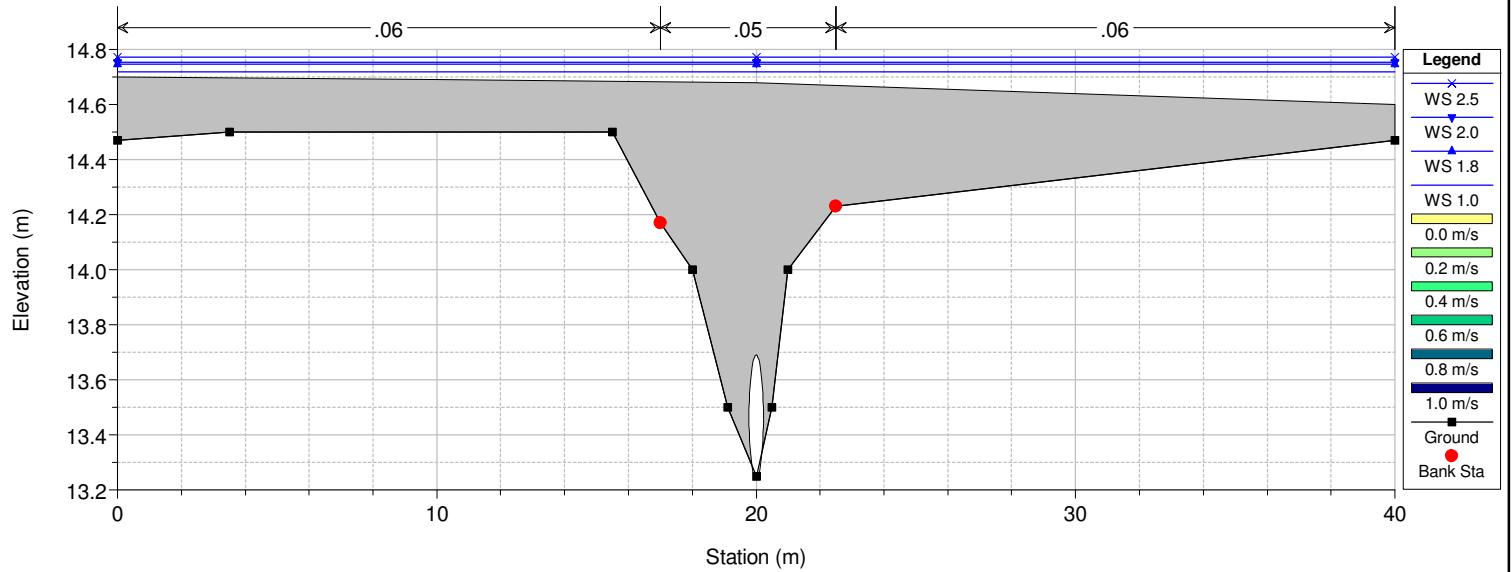
River = Outlet B Reach = 1 RS = 68



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

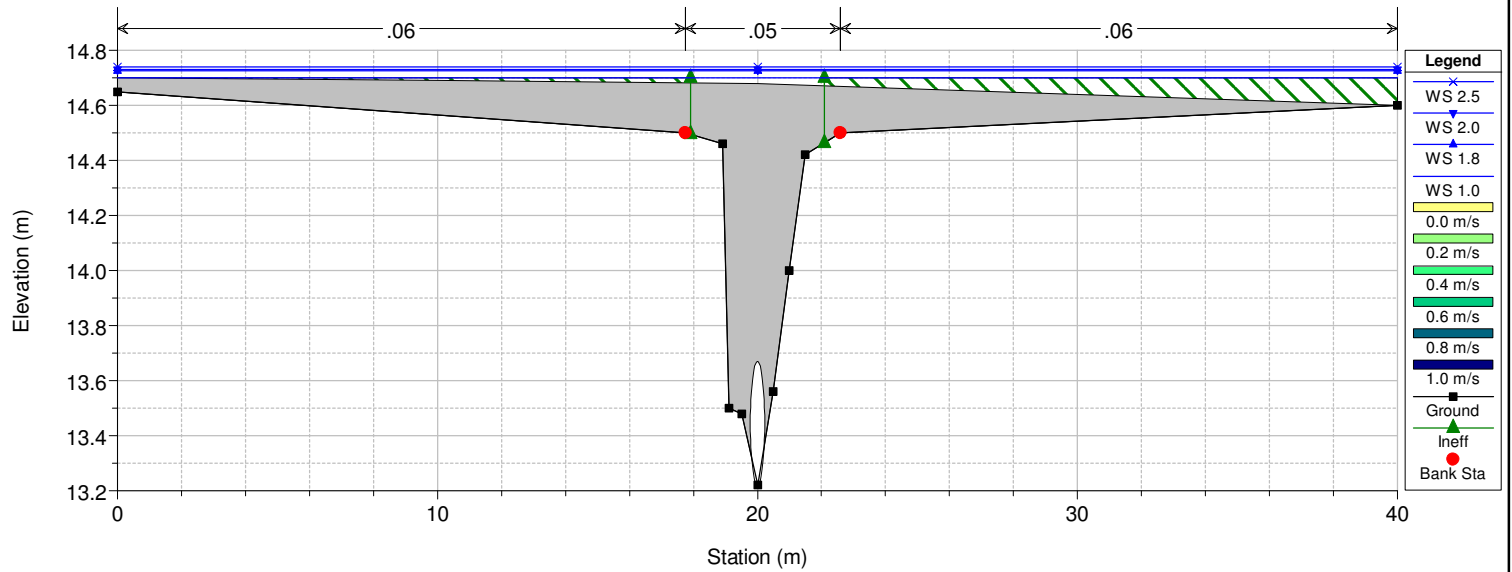
River = Outlet B Reach = 1 RS = 67 Culv Culvert under GHRd



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

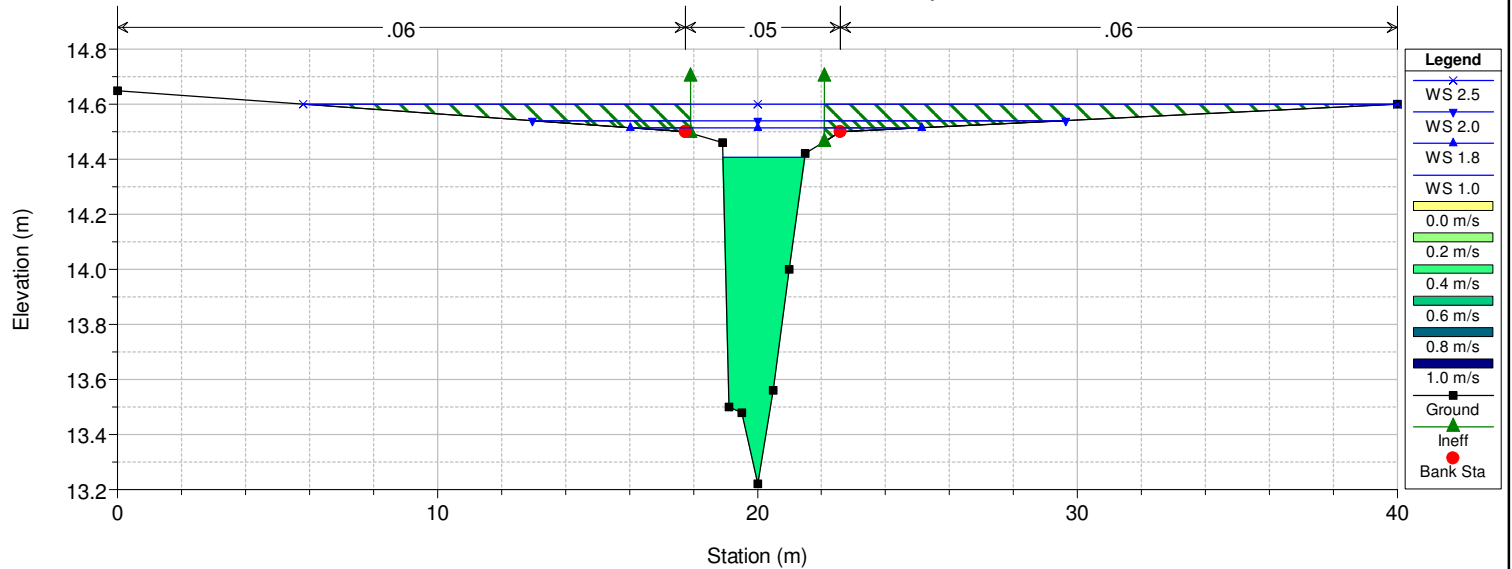
River = Outlet B Reach = 1 RS = 67 Culv Culvert under GHRd



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

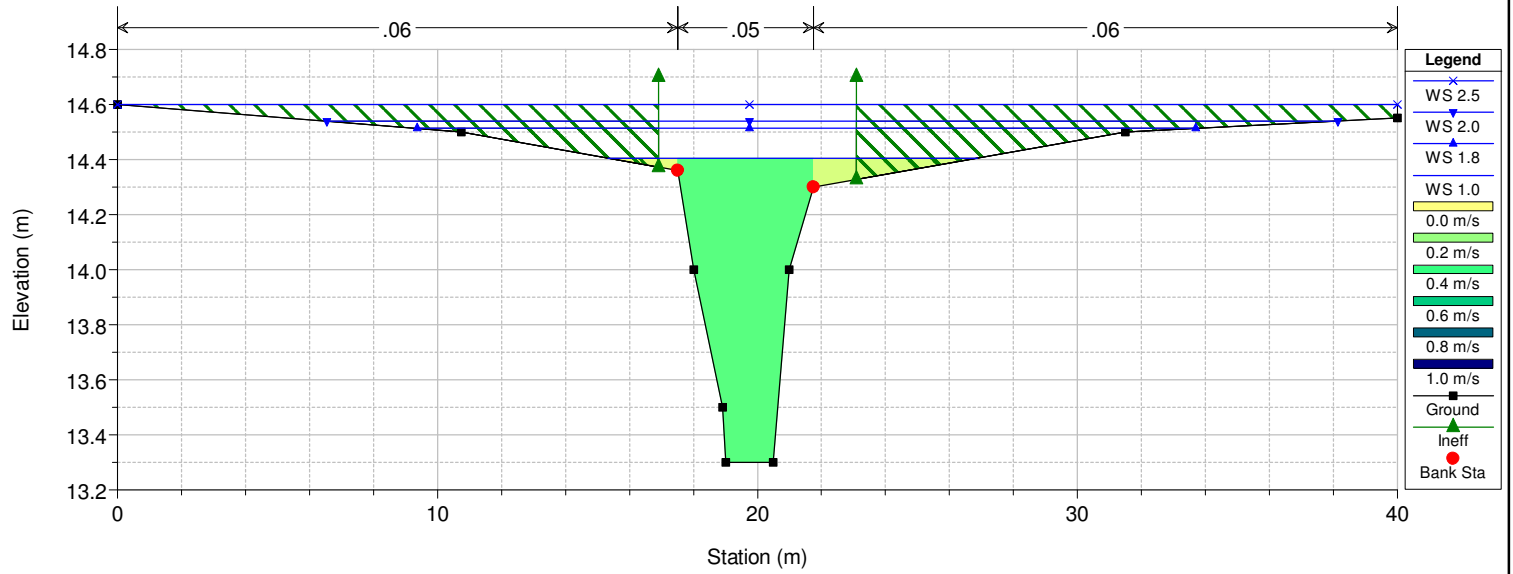
River = Outlet B Reach = 1 RS = 48 Immediately DS of Culvert



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

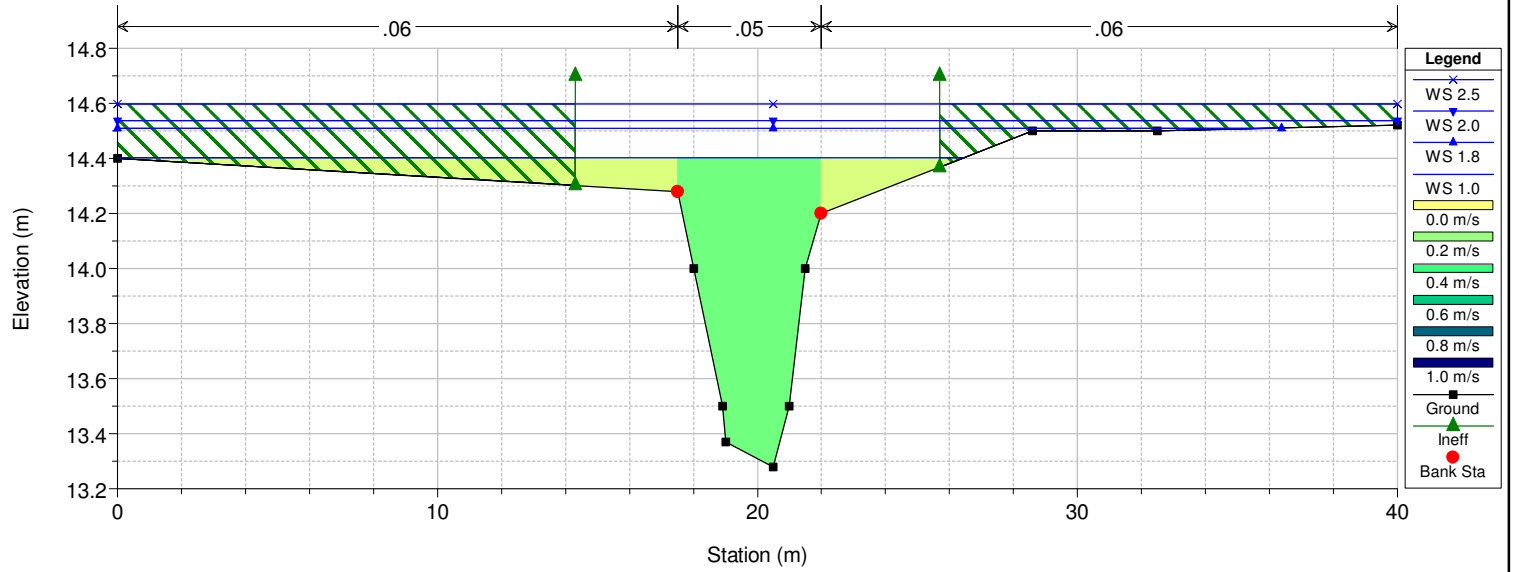
River = Outlet B Reach = 1 RS = 40



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

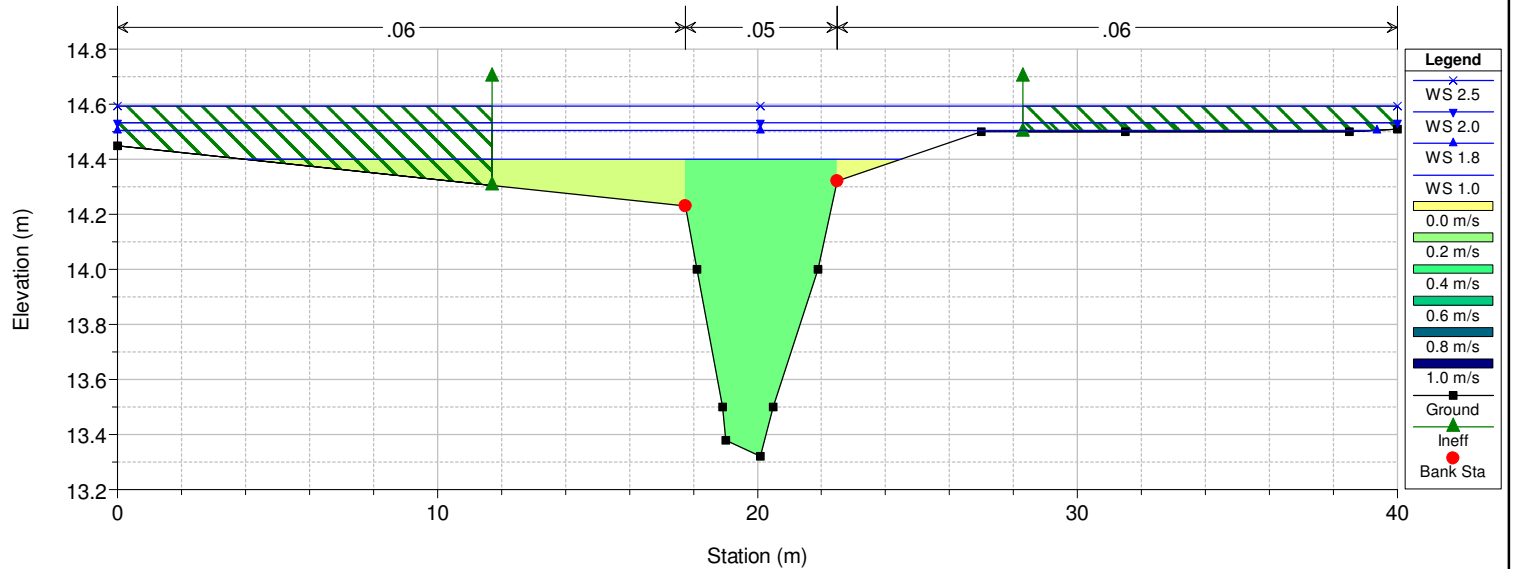
River = Outlet B Reach = 1 RS = 32



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet_B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

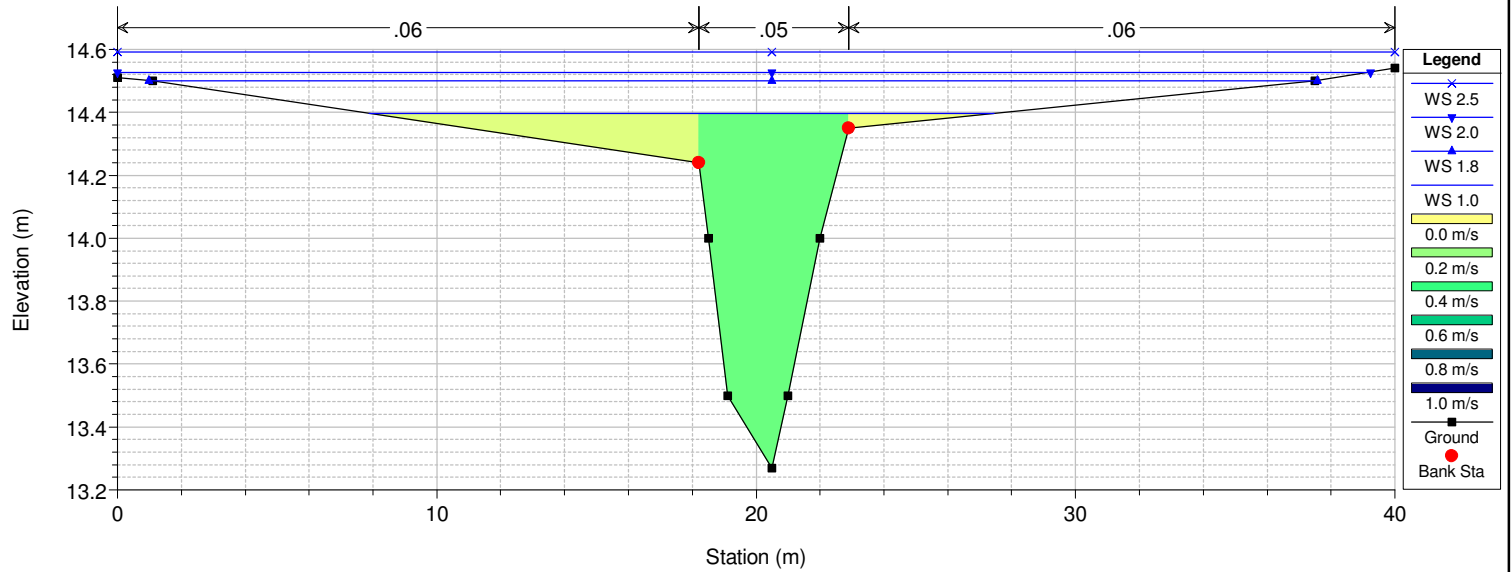
River = Outlet B Reach = 1 RS = 24



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

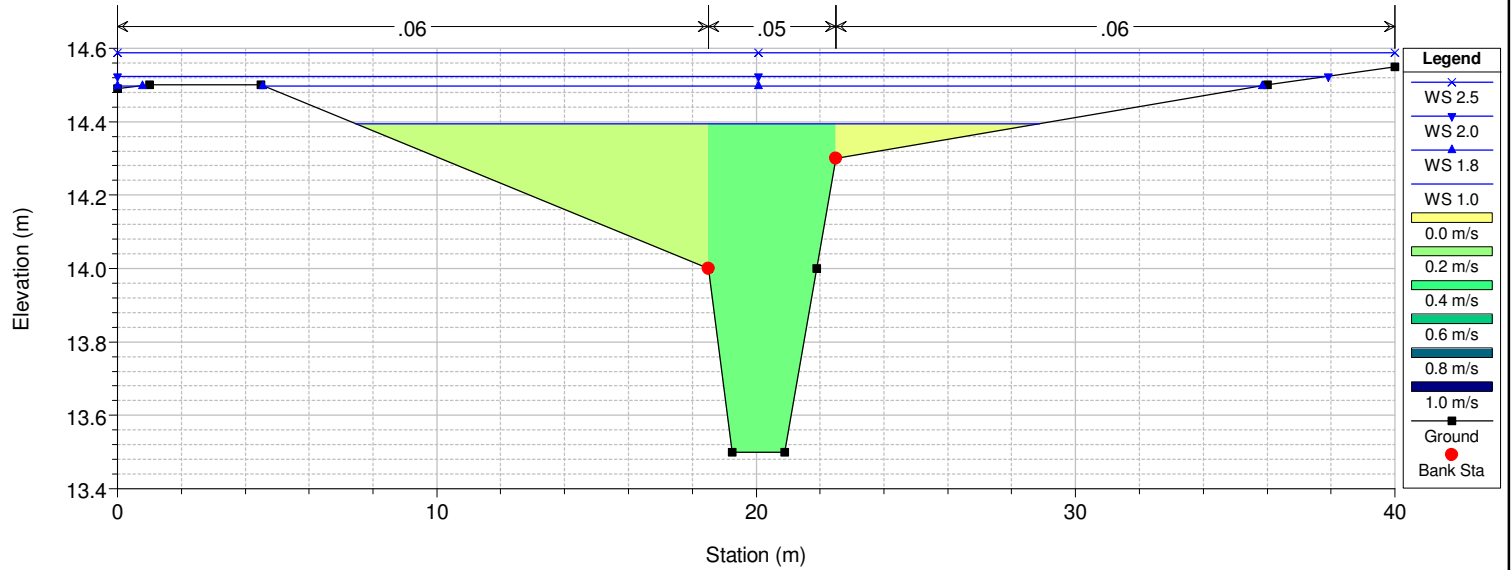
River = Outlet B Reach = 1 RS = 16



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

River = Outlet B Reach = 1 RS = 8



Moorebank_Outlet B Plan: Stage_Discharge TWL = 100y 16/06/2016

Geom: Outlet B_Extended_IL_Lowred (Smooth) Flow: Flow Range 0 to 5 TWL100y

River = Outlet B Reach = 1 RS = 0

