

PIT / NODE DETAILS**Version 9**

Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff. Ku	Surface Elev (m)
F22	OnGrade	MIE	DUMMY		0	12
F21	OnGrade	MIE	DUMMY		0	12
F20	OnGrade	MIE	DUMMY		0	10
F	Node					10
E	Node					6
D	Node					4
C	Node					5
ZL1	OnGrade	MIE	DUMMY		0	30.65
ZL	OnGrade	MIE	DUMMY		0	30.6
ZK	OnGrade	MIE	DUMMY		0	30.5
ZJ	OnGrade	MIE	DUMMY		0	28
ZH	OnGrade	MIE	DUMMY		0	27
ZG	OnGrade	MIE	DUMMY		0	26.1
XD	OnGrade	MIE	DUMMY		0	23.5
XC	OnGrade	MIE	DUMMY		0	22
XB	OnGrade	MIE	DUMMY		0	21.3
XA	OnGrade	MIE	DUMMY		0	20.5
X	Node					19
W	Headwall				0.5	17
V	OnGrade	MIE	DUMMY		0	17
U	Node					16.7
T	Headwall				0.5	16.7
S	Node					16.5
R	Node					15.3
Q	Node					14
P	Headwall				0.5	14
O	OnGrade	MIE	DUMMY		0	14
N447	Node					13.5
HW4	Headwall				0.5	12.7
L	Node					12
K	Headwall				0.5	11
J	Node					10

H	Node			10
G	Node			10
FA	Headwall		0.5	10
G22A	OnGrade	MIE	DUMMY	0 14
G22	OnGrade	MIE	DUMMY	0 14
G21A	OnGrade	MIE	DUMMY	0 11
G21	OnGrade	MIE	DUMMY	0 10
G20	OnGrade	MIE	DUMMY	0 10
G24	OnGrade	MIE	DUMMY	0 21
G23	OnGrade	MIE	DUMMY	0 20.5
X2	OnGrade	MIE	DUMMY	0 26
X1	OnGrade	MIE	DUMMY	0 22
ZA1	OnGrade	MIE	DUMMY	0 22
Z	OnGrade	MIE	DUMMY	0 21.5
Y	OnGrade	MIE	DUMMY	0 21
ZG1	OnGrade	MIE	DUMMY	0 26
ZF	OnGrade	MIE	DUMMY	0 25.5
ZE	OnGrade	MIE	DUMMY	0 25
ZD	OnGrade	MIE	DUMMY	0 24
ZC	OnGrade	MIE	DUMMY	0 23.9
ZB	OnGrade	MIE	DUMMY	0 23.85
ZA	OnGrade	MIE	DUMMY	0 23.8
Z1	OnGrade	MIE	DUMMY	0 22.75
ZN	OnGrade	MIE	DUMMY	0 35
ZM	OnGrade	MIE	DUMMY	0 33
XX	Node			20.3
D1	Node			4

SUB-CATCHMENT DETAILS

Name	Pit or Node	Total Area (ha)	Paved Area %	Grass Area %	Paved Time (min)	Grass Time (min)	Paved Length (m)	Grass Length (m)	Paved Slope(%)	Grass Slope %	Paved Rough	Grass Rough	Supp or Factor
C3A	F22	19.699	73.3	26.7	5	0	320	190	3.8	4.7	0.013	0.2	4
C3	F20	5.617	86.4	13.6	5	0	190	100	1.6	4	0.013	0.2	2
C1	D	10.395	63.7	36.3	5	0	580	190	3.1	4.2	0.013	0.2	3
C20	ZL1	9.72	82.4	17.6	5	0	420	270	2.4	4.4	0.013	0.2	2.8
C19	ZL	6.612	82.9	17.1	5	0	380	230	4.2	6.5	0.013	0.2	0
C18	ZG	9.998	62.3	37.7	5	0	150	300	1.3	2	0.013	0.2	0
C12A	X	4.832	52.4	47.6	5	0	150	250	2.7	4	0.013	0.2	0
C12	T	2.333	77.2	22.8	5	0	280	180	5.7	5	0.013	0.2	1
C11	S	18.137	70.1	29.9	5	0	500	200	4	6	0.013	0.2	4
C10	Q	6.525	74.6	25.4	5	0	250	100	5.6	5	0.013	0.2	2.5
C9	O	15.659	71.4	28.6	5	0	530	190	3.4	3.2	0.013	0.2	3.5
C8	HW4	2.494	79.9	20.1	5	0	500	180	3.8	3.9	0.013	0.2	3
C7	G22A	18.101	78.9	21.1	5	0	450	250	4	4	0.013	0.2	6
C6	G22	29.815	66.7	33.3	5	0	870	450	2.1	2	0.013	0.2	4
C4A	G21A	11.189	73.1	26.9	5	0	400	200	2.8	4.5	0.013	0.2	1.7
C4	G21	5.842	87.4	12.6	5	0	300	150	2	4	0.013	0.2	0
C5	G24	8.752	74.3	25.7	5	0	330	170	3.3	5.9	0.013	0.2	1.3
C13	X2	27.365	69.7	30.3	5	0	750	250	3.7	4	0.013	0.2	5
C14	X1	16.319	76.4	23.6	5	0	450	80	4.2	7.5	0.013	0.2	5
C16	ZA1	11.392	77.8	22.2	5	0	500	270	4	5.2	0.013	0.2	3.5
C17	ZF	10.013	53.1	46.9	5	0	300	230	4	5.7	0.013	0.2	1.5
C21	ZN	31.34	60.7	39.3	5	0	550	400	2.9	3.5	0.013	0.2	0
C15	XX	1.276	56	44	5	0	1	150	2	2	0.013	0.2	0
C2	D1	11.257	68.9	31.1	5	0	630	240	2.9	4.6	0.013	0.2	2

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough
F22-F21	F22	F21	76.1	7.085	4.209	3.78	RCP	1200	1200	0.014
F21-F20	F21	F20	35.4	4.156	2.792	3.85	RCP	900	900	0.014
F20-F	F20	F	20.1	2.792	2.017	3.86	RCP	1050	1070	0.014
ZL1-ZL	ZL1	ZL	1	27.051	27.037	1.4	RCP	1200	1200	0.014
ZL-ZK	ZL	ZK	60.4	27.037	26.355	1.13	RCP	1350	1370	0.014
ZK-ZJ	ZK	ZJ	175	26.355	24.297	1.18	RCP	1200	1200	0.014
ZJ-ZH	ZJ	ZH	33.2	24.297	21.165	9.43	RCP	1200	1200	0.014
ZH-ZG	ZH	ZG	10.7	21.165	20.771	3.68	RCP	1200	1200	0.014
ZG-ZD	ZG	XD	210.4	20.771	18.524	1.07	RCP	1350	1370	0.014
XD-XC	XD	XC	11.8	18.524	18.398	1.07	RCP	1350	1370	0.014
XC-XB	XC	XB	19.5	18.398	18.189	1.07	RCP	1200	1200	0.014
XB-XA	XB	XA	149.5	18.189	16.425	1.18	RCP	1350	1370	0.014
XA-X	XA	X	117.7	16.409	15.017	1.18	RCP	1350	1370	0.014
W-V	W	V	15.1	13.507	13.341	1.1	RCP	1800	1800	0.014
V-U	V	U	15.3	13.341	13.172	1.1	RCP	1950	1950	0.014
T-S	T	S	25	12.659	12.354	1.22	RCP	1950	1950	0.014
P-O	P	O	6	9.356	9.289	1.12	RCP	2250	2250	0.014
O-N	O	N447	29	9.289	8.97	1.1	RCP	2400	2400	0.014
M-L	HW4	L	46.7	7.916	7.136	1.67	RCP	2400	2400	0.014
K-J	K	J	87.2	5.476	4.02	1.67	RCP	2250	2250	0.014
FA-F	FA	F	40	2.421	2.017	1.01	RCP	3800	3800	0.014
G22A-G22	G22A	G22	100	6.402	3.962	2.44	RCP	1050	1070	0.014
G22-G21A	G22	G21A	180	8.712	5.616	1.72	RCP	1500	1524	0.014
G21A-G21	G21A	G21	95.5	5.605	3.962	1.72	RCP	1500	1524	0.014
G21-G20	G21	G20	28.1	3.962	3.478	1.72	RCP	1500	1524	0.014
G20-G	G20	G	28.1	3.478	2.994	1.72	RCP	1500	1524	0.014
G24-G23	G24	G23	63.2	17.371	15.608	2.79	RCP	900	900	0.014
G23-G22	G23	G22	400	15.608	8.712	1.72	RCP	1500	1524	0.014
X2-X1	X2	X1	321	22.909	17.069	1.82	RCP	1050	1070	0.015
X1-X	X1	X	100.6	17.069	15.017	2.04	RCP	1050	1070	0.014
P133	ZA1	Z	102.1	17.829	17.605	0.22	RCP	1200	1200	0.014
Z-Y	Z	Y	47.3	17.605	16.909	1.47	RCP	1350	1370	0.014
Y-X	Y	X	128.8	16.909	15.017	1.47	RCP	1500	1524	0.014

ZG1-ZF	ZG1	ZF	106.2	22.373	21.486	0.84 RCP	1200	1200	0.014
ZF-ZE	ZF	ZE	50.4	21.486	20.917	1.13 RCP	1650	1676	0.013
ZE-ZD	ZE	ZD	13.8	20.917	20.584	2.41 RCP	1200	1200	0.013
ZD-ZC	ZD	ZC	24.3	20.584	20.179	1.67 RCP	1200	1200	0.013
ZC-ZB	ZC	ZB	20.1	20.179	19.842	1.68 RCP	1200	1200	0.013
ZB-ZA	ZB	ZA	18.6	19.842	19.53	1.68 RCP	1200	1200	0.013
ZA-Z1	ZA	Z1	73.2	19.53	18.453	1.47 RCP	1350	1370	0.014
Z1-Z	Z1	Z	57.7	18.453	17.605	1.47 RCP	1350	1370	0.014
ZN-ZM	ZN	ZM	107.7	31.886	29.813	1.92 RCP	1050	1070	0.014
ZM-ZL	ZM	ZL	201.2	29.813	27.037	1.38 RCP	1200	1200	0.014
XX-X	XX	X	128.8	16.91	15.017	1.47 RCP	1500	1524	0.014
D1-D	D1	D	1	0.419	0.409	1 RCP	1950	1950	0.014

CHANNEL DETAILS

Name	From	To	Type	Length (m)
F-E	F	E	Irregular	127.3
E-D	E	D	Irregular	189.1
D-C	D	C	Irregular	1
X-W	X	W	Irregular	74.5
U-T	U	T	Irregular	46.7
S-R	S	R	Irregular	92.2
R-Q	R	Q	Irregular	102.6
Q-P	Q	P	Irregular	80.5
N-M	N447	HW4	Irregular	95.8
L-K	L	K	Irregular	99.4
J-H	J	H	Irregular	43.7
H-G	H	G	Irregular	29.4
G-FA	G	FA	Irregular	56.8

OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Depth Major (m)	SafeDepth Minor (m)	Safe DxV (sq.m/sec)	Bed Slope (%)
OF118	F22	F21	2.5				Dummy	0.2	0.05	0.6	1
OF111	F21	F20	1.2				Dummy	0.2	0.05	0.6	1
OF107	F20	F	0.7				Dummy	0.2	0.05	0.6	1
OF9	ZL1	ZK	0.1				Dummy	0.3	0.3	0.6	1
OF6	ZL	ZK	2				Dummy	0.2	0.05	0.6	1
OF11	ZK	ZJ	5.8				Dummy	0.3	0.3	0.6	1
OF13	ZJ	ZH	1.1				Dummy	0.3	0.3	0.6	1
OF15	ZH	ZG	0.4				Dummy	0.3	0.3	0.6	1
OF17	ZG	ZG1	7				Dummy	0.3	0.3	0.6	1
OF123	XD	XC	0.6				Dummy	0.2	0.05	0.6	1
OF125	XC	XB	1				Dummy	0.2	0.05	0.6	1
OF127	XB	XA	7.5				Dummy	0.2	0.05	0.6	1
OF109	XA	X	5.9				Dummy	0.2	0.05	0.6	1
OF113	W	V	0.8	17	10		2 Dummy	0.2	0.05	0.6	1
OF131	V	U	0.8				Dummy	0.2	0.05	0.6	1
OF135	T	S	1.3	16.7	10		2 Dummy	0.2	0.05	0.6	1
OLF	P	O	0.3	14	10		2 Dummy	0.2	0.05	0.6	1
OF61	O	N447	1.5				Dummy	0.3	0.3	0.6	1
OF148	HW4	L	2.3	12.7	10		2 Dummy	0.2	0.05	0.6	1
OF152	K	J	4.4	11	10		2 Dummy	0.2	0.05	0.6	1
OF173	FA	F	0.5	10	10		2 Dummy	0.2	0.05	0.6	1
OF69	G22A	G21A	3.3				Dummy	0.3	0.3	0.6	1
OF87	G22	G21A	6				Dummy	0.3	0.3	0.6	1
OF89	G21A	G21	3.2				Dummy	0.3	0.3	0.6	1
OF92	G21	G20	0.9				Dummy	0.3	0.3	0.6	1
OF94	G20	G	0.9				Dummy	0.3	0.3	0.6	1
OF65	G24	G23	2.1				Dummy	0.3	0.3	0.6	1
OF67	G23	G22	13.3				Dummy	0.3	0.3	0.6	1
OF40	X2	X1	16.1				Dummy	0.3	0.3	0.6	1
OF97	X1	X	5				Dummy	0.3	0.3	0.6	1
OF38	ZA1	Z	5.1				Dummy	0.3	0.3	0.6	1
OF42	Z	Y	2.4				Dummy	0.3	0.3	0.6	1

OF44	Y	X	6.4	Dummy	0.3	0.3	0.6	1
OF19	ZG1	ZF	3.5	Dummy	0.3	0.3	0.6	1
OF21	ZF	ZE	1.7	Dummy	0.3	0.3	0.6	1
OF23	ZE	ZD	0.5	Dummy	0.3	0.3	0.6	1
OF25	ZD	ZC	0.8	Dummy	0.3	0.3	0.6	1
OF27	ZC	ZB	0.7	Dummy	0.3	0.3	0.6	1
OF29	ZB	ZA	0.6	Dummy	0.3	0.3	0.6	1
OF32	ZA	Z1	3.7	Dummy	0.3	0.3	0.6	1
OF36	Z1	Z	2.9	Dummy	0.3	0.3	0.6	1
OF2	ZN	ZM	3.6	Dummy	0.2	0.05	0.6	1
OF4	ZM	ZL	6.7	Dummy	0.3	0.3	0.6	1

DRAINS results prepared 15 July, 2010 from Version 2009.05

PIT / NODE DETAILS

Version 8

Name	Max HGL	Max Pond HGL	Max Surface Flow Arrivals (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
F22	12		9.506		0	8.436	Outlet System
F21	12		8.436		0	3.331	Outlet System
F20	8.33		5.567		1.67	0	None
F	5.31		11.99				
E	3.53		0				
D	3.28		4.332				
C	3.28		0				
ZL1	30.65		4.705		0	3.838	Outlet System
ZL	30.6		9.688		0	11.47	Outlet System
ZK	30.5		15.059		0	12.644	Outlet System
ZJ	28		12.644		0	10.482	Outlet System
ZH	27		10.482		0	6.608	Outlet System
ZG	26.1		8.795		0	12.046	Outlet System
XD	22.22		0		1.28	0	None
XC	22		0		0	0.226	Outlet System
XB	21.3		0.226		0	3.288	Outlet System
XA	20.5		3.288		0	1.242	Outlet System
X	19.4		14.397				
W	18.29	0			-1.29	29.308	Headwall height/system capacity
V	17		29.308		0	14.45	Outlet System
U	17.64		14.45				
T	17.65	1.236			-0.95	18.562	Headwall height/system capacity
S	15.19		21.894				
R	15.33		0				
Q	15.37		3.515				
P	15.38	0			-1.38	32.439	Headwall height/system capacity
O	14		37.206		0	12.283	Outlet System
N447	13.86		12.283				
HW4	13.87	1.21			-1.17	25.183	Headwall height/system capacity
L	12.24		25.183				

K	12.25	0	-1.25	27.93 Headwall height/system capacity
J	10	27.93		
H	10	0		
G	10.71	22.325		
FA	10.71	0	-0.71	11.99 Headwall height/system capacity
G22A	14	8.492	0	7.801 Outlet System
G22	14	10.415	0	6.338 Outlet System
G21A	11	16.854	0	18.755 Outlet System
G21	10	20.486	0	25.361 Outlet System
G20	10	25.361	0	22.325 Outlet System
G24	20.86	4.422	0.14	0 None
G23	16.36	0	4.14	0 None
X2	26	11.111	0	8.311 Outlet System
X1	22	11.341	0	9.505 Outlet System
ZA1	22	5.366	0	2.708 Outlet System
Z	21.5	5.735	0	8.677 Outlet System
Y	21	8.677	0	5.408 Outlet System
ZG1	26	12.046	0	9.39 Outlet System
ZF	25.5	10.809	0	3.923 Outlet System
ZE	25	3.923	0	3.388 Outlet System
ZD	24	3.388	0	10.935 Outlet System
ZC	23.9	10.935	0	11.157 Outlet System
ZB	23.85	11.157	0	10.322 Outlet System
ZA	23.8	10.322	0	7.103 Outlet System
Z1	22.75	7.103	0	5.735 Outlet System
ZN	35	12.257	0	8.551 Outlet System
ZM	33	8.551	0	8.247 Outlet System
XX	19	0.623		
D1	3.28	4.807		

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
C3A	9.506	8.49	1.622	10.78	20.43		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C3	3.142	2.887	0.319	10.48	14.59		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C1	4.332	3.546	1.128	13.77	21.14		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C20	4.705	4.403	0.419	12.8	25.73		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C19	3.484	3.171	0.343	11.21	20.79		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C18	4.395	3.769	0.687	10.06	34.73		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C12A	2.045	1.556	0.579	9.06	25.29		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C12	1.236	1.095	0.172	9.72	19.42		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C11	8.167	7.066	1.758	12.43	19.58		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C10	3.515	2.969	0.728	9.43	13.65		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C9	6.934	6.098	1.241	13.08	22.93		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C8	1.21	1.104	0.152	12.55	20.92		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C7	8.492	8.051	0.961	11.98	25.29		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C6	10.415	9.206	1.428	17.58	44.29		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C4A	5.275	4.573	0.886	12.24	21.35		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C4	3.13	2.901	0.251	11.74	18.61		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C5	4.422	3.772	0.797	11.14	17.85		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C13	11.111	9.901	2.087	14.71	25.29		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C14	8.331	7.051	1.994	11.88	10.57		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C16	5.366	4.926	0.654	12.43	24.48		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C17	4.294	3.163	1.382	10.47	21.63		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C21	12.257	10.213	2.243	13.67	34.89		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
C15	0.623	0.481	0.172	5.3	31.39		0 AR&R 100 year, 1.5 hours storm, average 71 mm/h, Zone 1
C2	4.807	4.083	0.943	14.41	23.66		0 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1

Outflow Volumes for Total Catchment (208 impervious + 86.8 pervious = 295 total ha)

Storm	Total Rainfall cu.m	Total Runoff cu.m (Runoff %)	Impervious Runoff cu.m (Runoff %)	Pervious Runoff cu.m (Runoff %)
AR&R 100	101665.3	87678.16 (86.2%)	69644.00 (68.4%)	18034.16 (17.8%)
AR&R 100	130396.8	115067.06 (88.3%)	89913.63 (69.0%)	25153.43 (19.3%)
AR&R 100	153234.6	136782.11 (89.3%)	106025.19 (69.2%)	30756.92 (20.1%)
AR&R 100	173125.7	155346.64 (89.8%)	120057.84 (69.3%)	35288.81 (20.5%)
AR&R 100	191543.3	172685.31 (89.9%)	133051.27 (69.5%)	39634.05 (20.4%)
AR&R 100	236482.3	215055.59 (90.9%)	164754.73 (70.1%)	50300.85 (21.4%)
AR&R 100	271107.4	247665.47 (91.4%)	189181.78 (69.8%)	58483.69 (21.6%)
AR&R 100	313836.3	287002.27 (91.4%)	219327.11 (69.9%)	67675.16 (21.5%)
AR&R 100	347724.7	317870.69 (91.4%)	243233.59 (70.0%)	74637.09 (21.4%)
AR&R 100	398704.7	363809.41 (91.2%)	279200.00 (70.0%)	84609.41 (21.2%)
AR&R 100	457493.9	415642.09 (90.9%)	320672.53 (70.5%)	94969.56 (21.2%)

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
F22-F21	5.686	5	12	12	AR&R 100 year, 15 minutes storm, average 177 mm/h, Zone 1
F21-F20	6.57	10.3	11.998	8.331	AR&R 100 year, 2 hours storm, average 59 mm/h, Zone 1
F20-F	11	12.2	8.331	5.308	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
ZL1-ZL	4.705	4.2	30.65	30.6	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
ZL-ZK	5.731	3.9	30.6	30.5	AR&R 100 year, 10 minutes storm, average 207 mm/h, Zone 1
ZK-ZJ	5.731	5.1	30.5	28	AR&R 100 year, 10 minutes storm, average 207 mm/h, Zone 1
ZJ-ZH	7.548	6.7	28	27	AR&R 100 year, 10 minutes storm, average 207 mm/h, Zone 1
ZH-ZG	10.487	9.3	27	26.1	AR&R 100 year, 10 minutes storm, average 207 mm/h, Zone 1
ZG-ZD	7.573	5.1	26.1	22.222	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
XD-XC	7.573	5.1	22.222	22	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
XC-XB	7.49	6.6	22	21.3	AR&R 100 year, 10 minutes storm, average 207 mm/h, Zone 1
XB-XA	7.49	5.1	21.3	20.5	AR&R 100 year, 10 minutes storm, average 207 mm/h, Zone 1
XA-X	7.668	5.2	20.5	19.402	AR&R 100 year, 2 hours storm, average 59 mm/h, Zone 1
W-V	11.558	4.5	17.05	17	AR&R 100 year, 3 hours storm, average 45.1 mm/h, Zone 1
V-U	25.153	8.4	17.024	17.644	AR&R 100 year, 3 hours storm, average 45.1 mm/h, Zone 1
T-S	15.553	5.2	15.538	15.192	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
P-O	20.674	5.2	14.012	14	AR&R 100 year, 1.5 hours storm, average 71 mm/h, Zone 1
O-N	40.241	8.9	13.999	13.855	AR&R 100 year, 2 hours storm, average 59 mm/h, Zone 1
M-L	25.068	5.5	12.302	12.238	AR&R 100 year, 2 hours storm, average 59 mm/h, Zone 1
K-J	24.28	6.1	10.619	9.999	AR&R 100 year, 2 hours storm, average 59 mm/h, Zone 1
FA-F	74.54	7.1	6.135	5.308	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
G22A-G22	3.695	4.1	14	14	AR&R 100 year, 10 minutes storm, average 207 mm/h, Zone 1
G22-G21A	9.11	5	14	11	AR&R 100 year, 10 minutes storm, average 207 mm/h, Zone 1
G21A-G21	12.361	6.8	11	10	AR&R 100 year, 15 minutes storm, average 177 mm/h, Zone 1
G21-G20	17.148	9.4	9.996	10	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
G20-G	25.992	14.2	10.078	10.71	AR&R 100 year, 2 hours storm, average 59 mm/h, Zone 1
G24-G23	4.422	7	20.856	16.508	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
G23-G22	4.422	4.9	16.363	14	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
X2-X1	3.089	3.4	26	22	AR&R 100 year, 4.5 hours storm, average 34.5 mm/h, Zone 1
X1-X	5.852	6.5	22	19.402	AR&R 100 year, 10 minutes storm, average 207 mm/h, Zone 1
P133	4.385	3.9	22	21.5	AR&R 100 year, 25 minutes storm, average 141 mm/h, Zone 1
Z-Y	9.058	6.1	21.5	21	AR&R 100 year, 25 minutes storm, average 141 mm/h, Zone 1
Y-X	10.117	5.5	21	19.402	AR&R 100 year, 30 minutes storm, average 130 mm/h, Zone 1

ZG1-ZF	5.82	5.1	26	25.5 AR&R 100 year, 15 minutes storm, average 177 mm/h, Zone 1
ZF-ZE	9.989	4.5	25.5	25 AR&R 100 year, 1.5 hours storm, average 71 mm/h, Zone 1
ZE-ZD	10.265	9.1	25	24 AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
ZD-ZC	6.447	5.7	24	23.9 AR&R 100 year, 15 minutes storm, average 177 mm/h, Zone 1
ZC-ZB	6.447	5.7	23.899	23.85 AR&R 100 year, 15 minutes storm, average 177 mm/h, Zone 1
ZB-ZA	7.095	6.3	23.85	23.8 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
ZA-Z1	7.993	5.4	23.8	22.75 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
Z1-Z	8.451	5.7	22.75	21.5 AR&R 100 year, 25 minutes storm, average 141 mm/h, Zone 1
ZN-ZM	3.809	4.2	35	33 AR&R 100 year, 15 minutes storm, average 177 mm/h, Zone 1
ZM-ZL	3.97	3.5	33	30.6 AR&R 100 year, 10 minutes storm, average 207 mm/h, Zone 1
XX-X	0.623	0.3	19.003	19.402 AR&R 100 year, 1.5 hours storm, average 71 mm/h, Zone 1
D1-D	4.807	1.6	3.283	3.282 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Chainage (m)	Max HGL (m)	Due to Storm
F-E	94.401	3.7	0	5.308	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
		3.7	127.3	3.526	
E-D	94.401	3.9	0	3.526	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
		3.9	189.1	3.282	
D-C	102.148	3.9	0	3.282	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
		3.9	1	3.28	
X-W	33.748	3.3	0	19.402	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
		3	74.5	18.29	
U-T	33.727	3.5	0	17.644	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
		3.1	46.7	17.651	
S-R	37.445	3.5	0	15.192	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
		3.5	92.2	15.333	
R-Q	37.445	3.6	0	15.333	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
		3.6	102.6	15.373	
Q-P	38.355	3.7	0	15.373	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
		2.9	80.5	15.38	
N-M	44.449	3.5	0	13.855	AR&R 100 year, 45 minutes storm, average 107 mm/h, Zone 1
		2.3	95.8	13.866	
L-K	47.248	3.4	0	12.238	AR&R 100 year, 2 hours storm, average 59 mm/h, Zone 1
		3	99.4	12.249	
J-H	51.847	3.5	0	9.999	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
		3.5	43.7	10	
H-G	51.847	3.7	0	10	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
		3.5	29.4	10	
G-FA	86.531	3.7	0	10.71	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
		2.9	56.8	10.711	

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
OF118	8.436	8.436	7.665	0.208	0.34	45.58	1.66	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
OF111	3.331	3.331	7.665	0.142	0.19	32.47	1.31	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
OF107	0	0	7.665	0	0	0	0	
OF9	3.838	3.838	19.77	0.151	0.2	34.26	1.35	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF6	11.47	11.47	7.665	0.23	0.43	49.99	1.87	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF11	12.644	12.644	19.77	0.23	0.47	49.99	2.06	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF13	10.482	10.482	19.77	0.227	0.4	49.35	1.75	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF15	6.608	6.608	19.77	0.188	0.29	41.63	1.56	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF17	12.046	12.046	19.77	0.23	0.45	49.99	1.96	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF123	0	0	7.665	0	0	0	0	
OF125	0.226	0.226	7.665	0.048	0.03	13.61	0.62	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF127	3.288	3.288	7.665	0.142	0.18	32.47	1.3	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF109	1.242	1.242	7.665	0.096	0.1	23.13	1	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF113	29.308	29.308	7.665	0.23	1.1	49.99	4.77	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF131	14.45	14.45	7.665	0.23	0.54	49.99	2.35	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF135	18.562	18.562	7.665	0.23	0.69	49.99	3.02	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OLF	32.439	32.439	7.665	0.23	1.21	49.99	5.28	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF61	12.283	12.283	19.77	0.23	0.46	49.99	2	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF148	25.183	25.183	7.665	0.23	0.94	49.99	4.1	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF152	27.93	27.93	7.665	0.23	1.04	49.99	4.54	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF173	11.99	11.99	7.665	0.23	0.45	49.99	1.95	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF69	7.801	7.801	19.77	0.202	0.33	44.32	1.62	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
OF87	6.338	6.338	19.77	0.185	0.29	41.09	1.54	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
OF89	18.755	18.755	19.77	0.23	0.7	49.99	3.05	AR&R 100 year, 25 minutes storm, average 141 mm/h, Zone 1
OF92	25.361	25.361	19.77	0.23	0.95	49.99	4.13	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF94	22.325	22.325	19.77	0.23	0.84	49.99	3.63	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF65	0	0	19.77	0	0	0	0	
OF67	0	0	19.77	0	0	0	0	
OF40	8.311	8.311	19.77	0.207	0.34	45.4	1.64	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
OF97	9.505	9.505	19.77	0.218	0.37	47.56	1.71	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF38	2.708	2.708	19.77	0.132	0.16	30.31	1.23	AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
OF42	8.677	8.677	19.77	0.211	0.35	46.12	1.66	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF44	5.408	5.408	19.77	0.174	0.26	38.75	1.48	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF19	9.39	9.39	19.77	0.217	0.37	47.38	1.7	AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1

OF21	3.923	3.923	19.77	0.152	0.21	34.44	1.37 AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF23	3.388	3.388	19.77	0.144	0.19	32.83	1.31 AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF25	10.935	10.935	19.77	0.23	0.41	49.99	1.78 AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF27	11.157	11.157	19.77	0.23	0.42	49.99	1.81 AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF29	10.322	10.322	19.77	0.225	0.39	48.99	1.75 AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF32	7.103	7.103	19.77	0.194	0.31	42.71	1.59 AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF36	5.735	5.735	19.77	0.178	0.27	39.65	1.5 AR&R 100 year, 1 hour storm, average 92 mm/h, Zone 1
OF2	8.551	8.551	7.665	0.209	0.35	45.76	1.67 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1
OF4	8.247	8.247	19.77	0.206	0.34	45.22	1.65 AR&R 100 year, 20 minutes storm, average 156 mm/h, Zone 1

CONTINUITY CHECK for AR&R 100 year, 1.5 hours storm, average 71 mm/h, Zone 1

Node	Inflow (cu.m)	Outflow (cu.m)	Storage Ctr (cu.m)	Difference %
F22	19351.25	19351.25	0	0
F21	19351.25	19344.28	0	0
F20	25064.56	25036.99	0	0.1
F	265758.7	265758.9	0	0
E	265758.9	265758.9	0	0
D	286615	286614.9	0	0
C	286614.9	286614.9	0	0
ZL1	9784.56	9784.54	0	0
ZL	44339.09	44322.2	0	0
ZK	46052.69	46034.91	0	0
ZJ	46034.91	46047.94	0	0
ZH	46047.94	46043.07	0	0
ZG	55538.23	55507.57	0	0.1
XD	35428.94	35404.97	0	0.1
XC	35404.97	35330.56	0	0.2
XB	35330.56	35320.8	0	0
XA	35320.8	35298.62	0	0.1
X	124393.7	124393.8	0	0
W	124393.8	124393.7	0	0
V	124393.7	124423.8	0	0
U	124423.8	124423.8	0	0
T	126740.6	126740.5	0	0
S	144401.3	144401.4	0	0
R	144401.4	144401.4	0	0
Q	150839.8	150839.8	0	0
P	150839.8	150839.7	0	0
O	166135.3	166165.4	0	0
N447	166165.4	166165.5	0	0
HW4	168660	168660.2	0	0
L	168660.2	168660	0	0
K	168660	168660.1	0	0
J	168660.1	168660	0	0
H	168660	168660	0	0

G	240721.9	240721.8	0	0
FA	240721.8	240721.8	0	0
G22A	18048.08	18048.07	0	0
G22	44596.09	44564.02	0	0.1
G21A	66272.34	66247.75	0	0
G21	72211.39	72150.52	0	0.1
G20	72150.52	72061.81	0	0.1
G24	8624.03	8624.03	0	0
G23	8624.03	8642.2	0	-0.2
X2	26593.84	26593.84	0	0
X1	42781.12	42774.24	0	0
ZA1	11325.2	11325.2	0	0
Z	40693.16	40679.69	0	0
Y	40679.69	40661.84	0	0
ZG1	20078.65	20078.65	0	0
ZF	29361.69	29393.42	0	-0.1
ZE	29393.42	29372.5	0	0.1
ZD	29372.5	29365.83	0	0
ZC	29365.83	29362.41	0	0
ZB	29362.41	29362.8	0	0
ZA	29362.8	29365.07	0	0
Z1	29365.07	29367.96	0	0
ZN	29622.15	29622.16	0	0
ZM	29622.16	29617.3	0	0
XX	1192.66	1192.66	0	0
D1	10917.58	10917.59	0	0

Run Log for HAWTHORNE 20010525 DESIGN K.drn run at 09:31:56 on 15/7/2010

Upwelling occurred at ZL, ZG, ZD, ZC, Z, G21A, G21, G20, ZL1, XC, XB
Freeboard was inadequate at more than 20 pits.

Channels D-C spilled. The cross section data was extrapolated to a higher level. Please specify data for higher levels at cross sections.