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HYDRAULIC COMPUTATIONS

LINE UPPER	LINE LOWER	PIPE CHARACTERISTICS LENGTH	SIZE	F.L. GRADE	F.L. UPPER	F.L. LOWER	STRUCT. TOPS UPPER	STRUCT. TOPS LOWER	DEPTH HYD. GRADE	ELEV. HYD. GRD. UPPER	ELEV. HYD. GRD. LOWER	HYD. GRADE	FRICT. HEAD LOSS	VEL.	$\frac{V^2}{2g}$	VHL.	TURN LOSS	INLETS STREET GRADE	INLETS CAPACITY	FLOW REQUIREMENTS DRNG. AREA	FLOW REQUIREMENTS P.I.	FLOW REQUIREMENTS Q	FLOW REQUIREMENTS TOTAL Q	PIPE CAP.
											< Full 555.30													
AI 115	SMH 113	78'	15"	0.01	554.30	553.52	558.25	558.25	2.95	554.63	554.52	.0015	0.11	8.0	.06	.06	$\frac{.04}{90°}$	Low	4.0	0.94	2.64	2.48	2.48	3.57
											< Full 557.24													
AI 114	SMH 113	145'	15"	0.017	555.99	553.52	561.5	558.25	4.26	555.70	554.77	.0064	0.93	4.2	.27	.27	$\frac{0.03}{80}$	2-3	5.50	1.96	2.64	5.17	5.17	8.44
SMH 113	AI 110	208'	15"	0.02	553.32	549.00	558.25	550.50	3.45	549.62	546.71	.0140	2.91	6.2	.60	.49	$\frac{.23}{60°}$	–	–	–	–	2.48	7.65	12.94
AI 110	CI 111	142'	21"	0.01	544.80	543.38	550.50	548.30	3.79	546.59	545.70	.0063	0.89	5.2	.42	.07	$\frac{.05}{70°}$	2-3	5.50	1.85	2.64	4.88	12.53	15.83
CI 111	CI 110	86'	21"	0.01	543.18	542.30	548.50	550.00	2.80	545.19	544.47	.0082	0.72	6.0	.56	.26	$\frac{.25}{60°}$	Low	4.00	0.69	2.64	1.82	14.35	15.83
CI 110	SMH 109	153'	21"	0.011	542.10	540.42	550.00	545.00	5.63	543.78	542.24	.0101	1.54	6.6	.68	.23	$\frac{.46}{60°}$	2%	1.93	0.58	2.64	1.53	15.88	16.60
SMH 109	FE 108	37'	24"	0.01	540.22	539.85	545.00	–	2.76	542.03	541.85	.0049	0.18	5.1	.40	.21	–	–	–	–	–	–	15.85	22.62
											< Full 563.25													
CI 107	CI 106	34'	15"	0.01	562.00	561.66	566.54	566.54	3.29	562.93	< Full 562.91	.0006	0.02	1.3	.03	.03	$\frac{0.02}{80}$	2%	1.93	0.58	2.64	1.53	1.53	6.47
CI 106	SMH 105	86'	15"	0.01	561.46	560.60	566.54	558.25	3.63	560.98	< Full 561.85	.0010	0.09	1.7	.05	.04	$\frac{0.03}{60°}$	2%	1.93	0.20	2.64	0.53	2.06	6.47
SMH 105	AI 103	354'	15"	0.0375	560.60	547.13	558.25	551.00	6.40	558.74	< Full 558.38	.0010	0.36	1.7	.05	–	$\frac{0.02}{90°}$	–	–	–	–	–	2.06	12.53
AI 103	FE 103	91'	15"	0.076	546.93	540.00	551.00	–	2.62	541.87	541.62	.0027	0.25	2.8	.12	.12	–	1-3	2.75	0.50	2.64	1.32	3.38	17.86
											< Full 536.45													
OS 102	FE 101	70'	27"	0.02	534.20	532.80	543.12	–	6.67	535.61	535.05	.0080	0.56	7.0	.76	.76	–	See Detention Report					$\frac{Q_{25}}{27.76}$	

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HYDRAULIC COMPUTATIONS

LINE UPPER	LINE LOWER	PIPE CHARACTERISTICS LENGTH	SIZE	F.L. GRADE	F.L. UPPER	F.L. LOWER	STRUCT. TOPS UPPER	STRUCT. TOPS LOWER	DEPTH HYD. GRADE	ELEV. HYD. GRD. UPPER	ELEV. HYD. GRD. LOWER	HYD. GRADE	FRICT. HEAD LOSS	VEL.	$\frac{V^2}{2g}$	VHL.	TURN LOSS	INLETS STREET GRADE	INLETS CAPACITY	FLOW REQUIREMENTS DRNG. AREA	FLOW REQUIREMENTS P.I.	FLOW REQUIREMENTS Q	FLOW REQUIREMENTS TOTAL Q	PIPE CAP.
											< Full 555.30													
AI 115	SMH 113	78'	15"	0.01	554.30	553.52	558.25	558.25	2.95	554.63	554.52	.0015	0.11	8.0	.06	.06	$\frac{.04}{90°}$	Low	4.0	0.94	2.64	2.48	2.48	3.57
											< Full 557.24													
AI 114	SMH 113	145'	18"	0.017	555.99	553.52	561.5	558.25	4.01	553.37	< Full 555.02	.0024	1.35	2.9	.13	.13	$\frac{0.01}{80}$	2-3	5.50	1.96	2.64	5.17	5.17	13.70
SMH 113	AI 110	208'	18"	0.02	553.32	549.00	558.25	550.50	3.23	547.90	546.80	.0053	1.10	4.3	.29	.24	$\frac{0.16}{60°}$	–	–	–	–	2.48	7.65	21.02
AI 110	CI 111	142'	21"	0.01	544.80	543.38	550.50	548.30	3.70	546.43	545.40	.0073	1.03	5.2	.42	.32	$\frac{0.05}{70°}$	2-3	5.50	1.85	2.64	4.88	12.53	14.70
CI 111	CI 110	86'	21"	0.01	543.18	542.30	548.50	550.00	3.10	544.89	< Full 543.25	.0095	0.84	6.0	.56	.26	$\frac{0.25}{60°}$	Low	4.00	0.69	2.64	1.82	14.35	14.70
CI 110	SMH 109	153'	24"	0.011	542.10	540.42	550.00	545.00	5.95	542.42	< Full 542.42	.0066	1.00	5.1	.40	.08	$\frac{0.27}{60°}$	2%	1.93	0.58	2.64	1.53	15.88	20.55
SMH 109	FE 108	37'	24"	0.01	540.22	539.85	545.00	–	2.58	542.09	541.85	.0046	0.24	5.1	.40	–	–	–	–	–	–	–	15.85	19.60
											< Full 563.25													
CI 107	CI 106	34'	15"	0.01	562.00	561.66	566.54	566.54	3.29	562.93	< Full 562.91	.0006	0.02	1.3	.03	.03	$\frac{0.02}{80}$	2%	1.93	0.58	2.64	1.53	1.53	6.47
CI 106	SMH 105	86'	15"	0.01	561.46	560.60	566.54	558.25	3.63	560.98	< Full 561.85	.0010	0.09	1.7	.05	.04	$\frac{0.03}{60°}$	2%	1.93	0.20	2.64	0.53	2.06	6.47
SMH 105	AI 103	354'	15"	0.0375	560.60	547.13	558.25	551.00	6.40	558.74	< Full 558.38	.0010	0.36	1.7	.05	–	$\frac{0.02}{90°}$	–	–	–	–	–	2.06	12.53
AI 103	FE 103	91'	15"	0.076	546.93	540.00	551.00	–	2.62	541.87	541.62	.0027	0.25	2.8	.12	.12	–	1-3	2.75	0.50	2.64	1.32	3.38	17.86
											< Full 536.45													
OS 102	FE 101	70'	27"	0.02	534.20	532.80	543.12	–	6.67	535.61	535.05	.0080	0.56	7.0	.76	.76	–	See Detention Report					$\frac{Q_{25}}{27.76}$	

Note: 113-107 and 113-115 are 15" R.C.P. or 18" C.S.P. Since the n factors are the same and the larger C.S.P. will result in lower velocities there is no need for separate hydraulic comps.