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City of Calgary
Development Approvals Water Resources (#409)
625 25 Avenue S.E. Calgary AB T2G 4K8

April 14, 2016
Our File: 3258.E01

Attention: File Manager

RE: Sanitary Servicing Study for Hamptons Golf Course Reconfiguration

Please find attached the Sanitary Servicing Study to support the outline application for the Hamptons Golf Course Reconfiguration.

If you have any questions or concerns related to the above please do not hesitate to contact the undersigned.

Sincerely,

Watt Consulting Group

Ben Matthews, P.Eng.
Project Engineer, Engineering

D 403.569.8708
C 403.462.2012

City of Calgary
Development and Building Approvals
Manchester Water Center
PO Box 2100, Station M #8108
Calgary, AB T2P 2M5

April 14, 2016
Our File: 3258.E01

Attention: File Manager

RE: Sanitary Servicing Study for Hamptons Golf Course Reconfiguration to Support the Outline Plan Submission

On behalf of Quantum Place Developments, Watt Consulting Group (WATT) has prepared the attached sanitary servicing study for the above noted development in the City of Calgary.

The development consists of two (2) sites totaling 3.78ha on an existing 18-hole golf course located in the northwest community of the Hamptons (See Figure 1). The proposed developments will consist of single family developments supported by a new network of roadways and deep utility infrastructure.

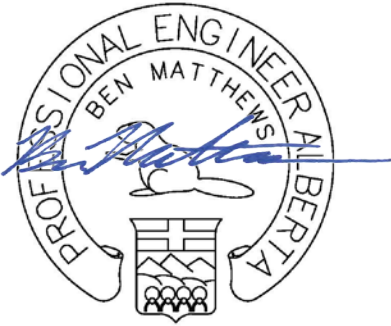
The existing and proposed catchment areas along with the proposed tie-in locations are shown on Figure 2. The proposed sanitary system will tie into the existing sanitary system at two (2) locations; upstream of EX MH 32 (on Hamptons Way NW, west of Hamptons Close NW), and upstream of EX MH 23 (on Hamptons Drive NW, west of Hampstead Rise NW).

An analysis of the existing sanitary system was completed, showing that the existing system exceeds 86% capacity in three (3) segments of the piped system (see Table 1). A second analysis was performed to identify further impacts that the proposed development will have on the existing system (see Table 2). The results of the analysis show that no additional pipe segments will exceed the 86% threshold. A hydraulic grade line analysis was completed using XPSTORM to identify the impacts associated with exceeding 86% capacity (see Figures 3-5). Based on the analysis completed as part of this study, the proposed development will have minimal impact to the existing system.

We trust that the information outlined in this letter in conjunction with the attached information is sufficient for your review and approval. If you have any questions or concerns related to the above please do not hesitate to contact the undersigned.

Sincerely,

Watt Consulting Group



Ben Matthews, P.Eng.
Project Engineer, Engineering

D 403.569.8708

C 403.462.2012

THE HAMPTONS



THE CITY OF CALGARY

THE HAMPTONS SANITARY SERVICING STUDY

FIGURE
1

LOCATION PLAN

TOTAL
2

Drawn:	MB	Scale:	N.T.S.
Designed:	TVS	Date:	FEB 25, 2016
Draft Chk:	TVS	DAW File #:	3258.E01
Design Chk:	TVS	Sub File #:	--



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0	FOR INFORMATION	MB	FEB 30, 2016	TVS
No.	Revision Description	By	Date	Appr

TABLE 1 - EXISTING SANITARY SYSTEM											Project: 3258.E01 Hamptons Golf Course Reconfiguration								
											Designer: Ben Matthews								
											Date: Apr 13, 2016								
LOCATION	FROM	TO	Type	INCR. Area No.	INCR. AREA (ha)	POP. AREA (ha)	POP.	Total Pop.	PEAK FACTOR	Q (l/s)	Infilt. & Inflow (l/s)	Cumm Infilt & Inflow (l/s)	Total Design Flow (l/s)	SLOPE (m/m)	NOMINAL PIPE DIA. (mm)	FULL VELOCITY (m/s)	PIPE CAPACITY (l/s)	% Full	PIPE MATERIAL
Existing Upstream System (Hamptons Wy west of UR/W)	28	30	R1	16A-16F	5.92	5.92	325.6	325.6	4.06	5.8	1.7	1.7	7.5	0.0776	200	3.44	93	8%	PVC
Hamptons Wy (west of UR/W)	30	32	R1	17	0.16	6.08	8.8	334.4	4.06	6.0	0.0	1.7	7.7	0.0124	200	1.37	37	21%	PVC
	32	1	R1	19A,19B	0.33	6.41	18.15	352.55	4.05	6.3	0.1	1.8	8.1	0.008	200	1.10	30	27%	PVC
Existing Upstream System (Hamptons Dr south of Hampstead Gd)	16	15	R1	8A-8L, 8O-8R	26.49	26.49	1457	1457	3.69	23.6	7.4	7.4	31.1	0.0201	250	2.03	86	36%	PVC
	16	15	R1	8M,8N	0.80	27.29	78	1535	3.67	24.8	0.2	7.6	32.4	0.0201	250	2.03	86	38%	PVC
Hamptons Dr (north of Hampstead Gd)	10	23	R1	1A,2A	0.21	0.21	11.55	12	4.41	0.2	0.1	0.1	0.3	0.0791	200	3.47	94	0%	PVC
	26	25	R1	4A,4B	1.18	1.39	64.9	76	4.27	1.4	0.3	0.4	1.8	0.0556	200	2.91	79	2%	PVC
	25	27	R1	5A,5B	0.41	1.80	22.55	99	4.24	1.8	0.1	0.5	2.4	0.0078	200	1.09	29	8%	PVC
	27	28	R1	6A,6B	2.06	3.86	113.3	212	4.14	3.9	0.6	1.1	4.9	0.0055	200	0.92	25	20%	PVC
	28	15	R1	7A,7B	0.47	4.33	25.85	238	4.12	4.3	0.1	1.2	5.5	0.0096	200	1.21	33	17%	PVC
Hampstead Gd (between Hamptons Dr and Hampstead Tc)	15	14	R1	9A,9B	0.36	31.98	19.8	1793	3.62	28.6	0.1	9.0	37.5	0.0312	250	2.53	107	35%	PVC
	14	61	R1	10A,10B	0.47	32.45	25.85	1819	3.62	28.9	0.1	9.1	38.0	0.0662	250	3.68	155	24%	PVC
	61	60	R1	11A,11B	0.16	32.61	8.8	1828	3.62	29.1	0.0	9.1	38.2	0.0120	250	1.57	66	58%	PVC
Existing Upstream System (Hampstead Tc north of Hampstead Gd)	13	60	R1	12A-12E	5.47	5.47	301	301	4.08	5.4	1.5	1.5	6.9	0.0234	200	1.89	51	14%	PVC
Hampstead Gd (between Hampstead Tc and UR/W)	60	63	R1	13A,13B	0.59	38.67	32	2161	3.56	33.8	0.2	10.8	44.7	0.0051	250	1.02	43	104%	PVC
	63	67	R1	14A-14C	0.81	39.48	45	2205	3.55	34.5	0.2	11.1	45.5	0.0074	250	1.23	52	88%	PVC
Existing Upstream System (200 Hampstead Gd)	PLUG	71	R3	15A	3.24	3.24	178.2	178	4.17	2.0	0.9	0.9	2.9	0.0393	200	2.45	66	4%	PVC
	69	67	R1	15B,15C	0.79	4.03	43.45	222	4.13	4.0	0.2	1.1	5.2	0.0393	200	2.45	66	8%	PVC
UR/W (200 Hampstead Gd to Shaganappi Tr)	67	66	-	-	43.51	43.51	2393.1	2393	3.52	37.1	12.2	12.2	49.3	0.0436	250	2.99	126	39%	PVC
	66	65	-	-	43.51	43.51	2393.1	2393	3.52	37.1	12.2	12.2	49.3	0.2900	250	7.71	325	15%	PVC
	65	64	-	-	43.51	43.51	2393.1	2393	3.52	37.1	12.2	12.2	49.3	0.0581	250	3.45	146	34%	PVC
	64	62	-	-	43.51	43.51	2393.1	2393	3.52	37.1	12.2	12.2	49.3	0.0664	250	3.69	156	32%	PVC
	62	16	-	-	43.51	43.51	2393.1	2393	3.52	37.1	12.2	12.2	49.3	0.0028	300	0.86	51	97%	PVC

TABLE 2 - ADDITIONS TO EXISTING SANITARY SYSTEM											Project: 3258.E01 Hamptons Golf Course Reconfiguration								
											Designer: Ben Matthews								
											Date: Apr 13, 2016								
LOCATION	FROM	TO	Type	INCR. Area No.	INCR. AREA (ha)	POP. AREA (ha)	POP.	Total Pop.	PEAK FACTOR	Q (l/s)	Infil. & Inflow (l/s)	Cumm Infil & Inflow (l/s)	Total Design Flow (l/s)	SLOPE (m/m)	NOMINAL PIPE DIA. (mm)	FULL VELOCITY (m/s)	PIPE CAPACITY (l/s)	% Full	PIPE MATERIAL
Existing Upstream System (Hamptons Wy west of UR/W)	28	30	R1	16A-16F	5.92	5.92	325.6	325.6	4.06	5.8	1.7	1.7	7.5	0.0776	200	3.44	93	8%	PVC
Hamptons Wy (west of UR/W)	30	PROP	R1	17	0.16	6.08	8.8	334.4	4.06	6.0	0.0	1.7	7.7	0.0121	200	1.36	37	21%	PVC
	PROP	32	R1	18	0.76	6.84	41.8	376.2	4.03	6.7	0.2	1.9	8.6	0.0121	200	1.36	37	23%	PVC
	32	1	R1	19A,19B	0.33	7.17	18.15	394.35	4.03	7.0	0.1	2.0	9.0	0.008	200	1.10	30	30%	PVC
Existing Upstream System (Hamptons Dr south of Hampstead Gd)	16	15	R1	8A-8L, 8O-8R	26.49	26.49	1457	1457	3.69	23.6	7.4	7.4	31.1	0.0201	250	2.03	86	36%	PVC
	16	15	R1	8M,8N	0.80	27.29	78	1535	3.67	24.8	0.2	7.6	32.4	0.0201	250	2.03	86	38%	PVC
Hamptons Dr (east of Hamptons Ht)	10	PROP	R1	1A,1B	0.34	0.34	18.7	19	4.38	0.4	0.1	0.1	0.5	0.0788	200	3.46	94	0%	PVC
	PROP	23	R1	2A-2D	2.85	3.19	156.75	175	4.17	3.2	0.8	0.9	4.1	0.0786	200	3.46	93	4%	PVC
	23	26	R1	3	0.04	3.23	2.20	178	4.17	3.3	0.0	0.9	4.2	0.0061	200	0.96	26	16%	PVC
	26	25	R1	4A,4B	1.18	4.41	64.9	243	4.12	4.4	0.3	1.2	5.6	0.0556	200	2.91	79	7%	PVC
	25	27	R1	5A,5B	0.41	4.82	22.55	265	4.10	4.8	0.1	1.3	6.1	0.0078	200	1.09	29	21%	PVC
	27	28	R1	6A,6B	2.06	6.88	113.3	378	4.03	6.7	0.6	1.9	8.6	0.0055	200	0.92	25	35%	PVC
	28	15	R1	7A,7B	0.47	7.35	25.85	404	4.02	7.1	0.1	2.1	9.2	0.0096	200	1.21	33	28%	PVC
Hampstead Gd (between Hamptons Dr and Hampstead Tc)	15	14	R1	9A,9B	0.36	35.00	19.8	1959	3.59	31.0	0.1	9.8	40.8	0.0312	250	2.53	107	38%	PVC
	14	61	R1	10A,10B	0.47	35.47	25.85	1985	3.59	31.3	0.1	9.9	41.3	0.0662	250	3.68	155	27%	PVC
	61	60	R1	11A,11B	0.16	35.63	8.8	1994	3.59	31.5	0.0	10.0	41.4	0.0120	250	1.57	66	63%	PVC
Existing Upstream System (Hampstead Tc north of Hampstead Gd)	13	60	R1	12A-12E	5.47	5.47	301	301	4.08	5.4	1.5	1.5	6.9	0.0234	200	1.89	51	14%	PVC
Hampstead Gd (between Hampstead Tc and UR/W)	60	63	R1	13A,13B	0.59	41.69	32	2327	3.53	36.2	0.2	11.7	47.8	0.0051	250	1.02	43	111%	PVC
	63	67	R1	14A-14C	0.81	42.50	45	2372	3.53	36.8	0.2	11.9	48.7	0.0074	250	1.23	52	94%	PVC
Existing Upstream System (200 Hampstead Gd)	PLUG	71	R3	15A	3.24	3.24	178.2	178	4.17	2.0	0.9	0.9	2.9	0.0393	200	2.45	66	4%	PVC
	69	67	R1	15B,15C	0.79	4.03	43.45	222	4.13	4.0	0.2	1.1	5.2	0.0393	200	2.45	66	8%	PVC
UR/W (200 Hampstead Gd to Shaganappi Tr)	67	66	-	-	46.53	46.53	2559.2	2559	3.50	39.4	13.0	13.0	52.4	0.0436	250	2.99	126	42%	PVC
	66	65	-	-	46.53	46.53	2559.2	2559	3.50	39.4	13.0	13.0	52.4	0.2900	250	7.71	325	16%	PVC
	65	64	-	-	46.53	46.53	2559.2	2559	3.50	39.4	13.0	13.0	52.4	0.0581	250	3.45	146	36%	PVC
	64	62	-	-	46.53	46.53	2559.2	2559	3.50	39.4	13.0	13.0	52.4	0.0664	250	3.69	156	34%	PVC
	62	16	-	-	46.53	46.53	2559.2	2559	3.50	39.4	13.0	13.0	52.4	0.0028	300	0.86	51	103%	PVC

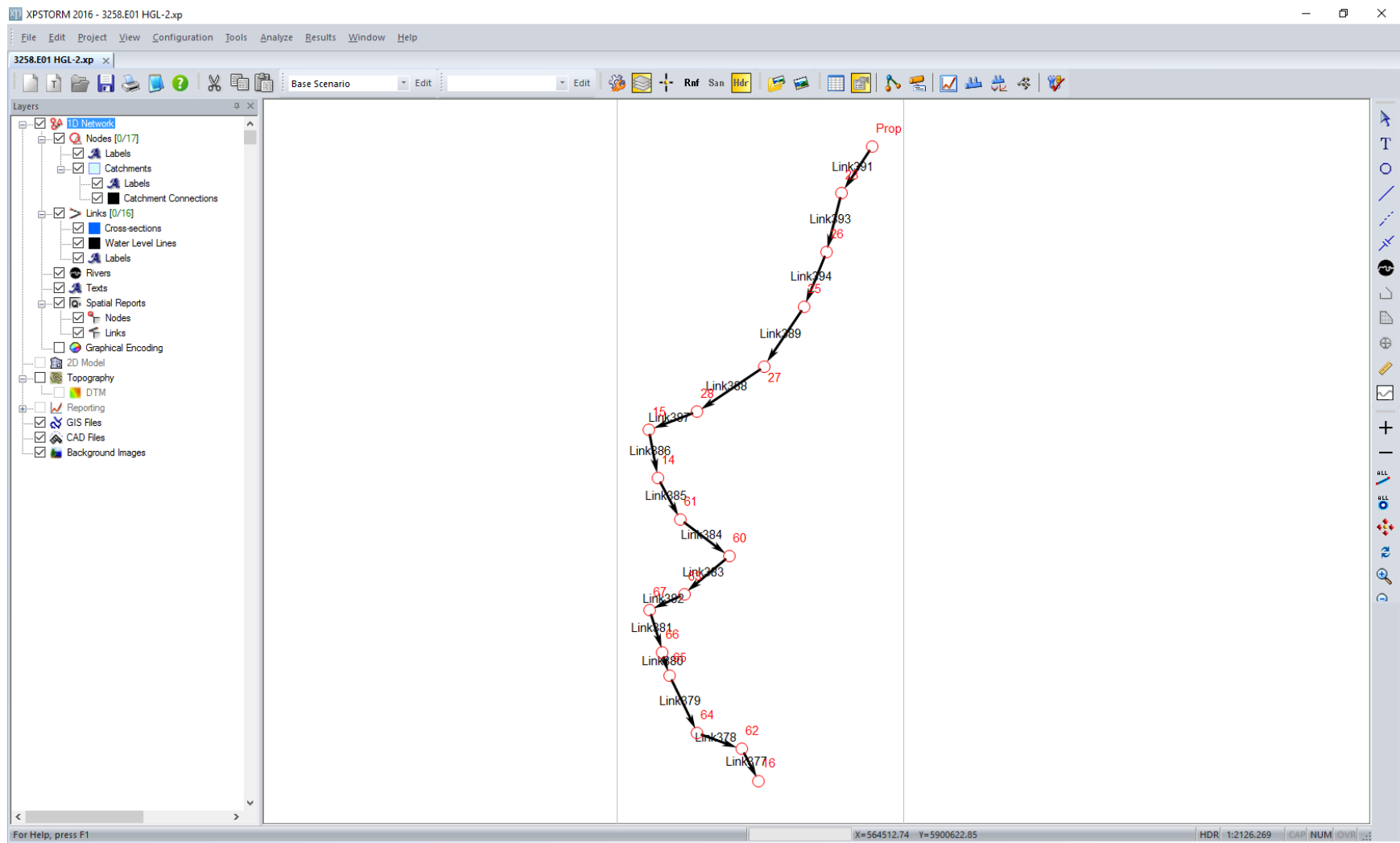


Figure 3 – Hydraulic Grade Line Analysis Part 1

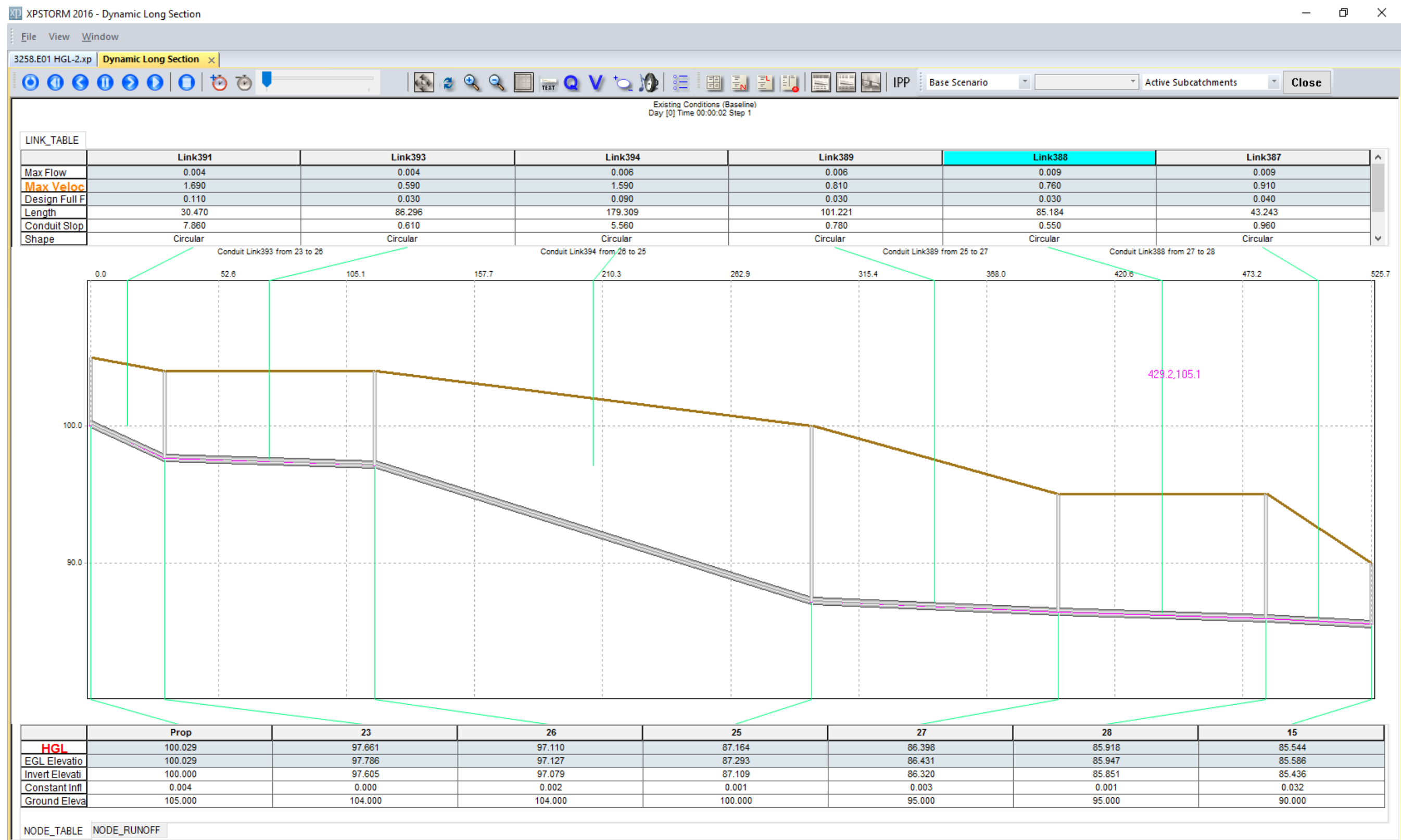


Figure 4 – Hydraulic Grade Line Analysis Part 2

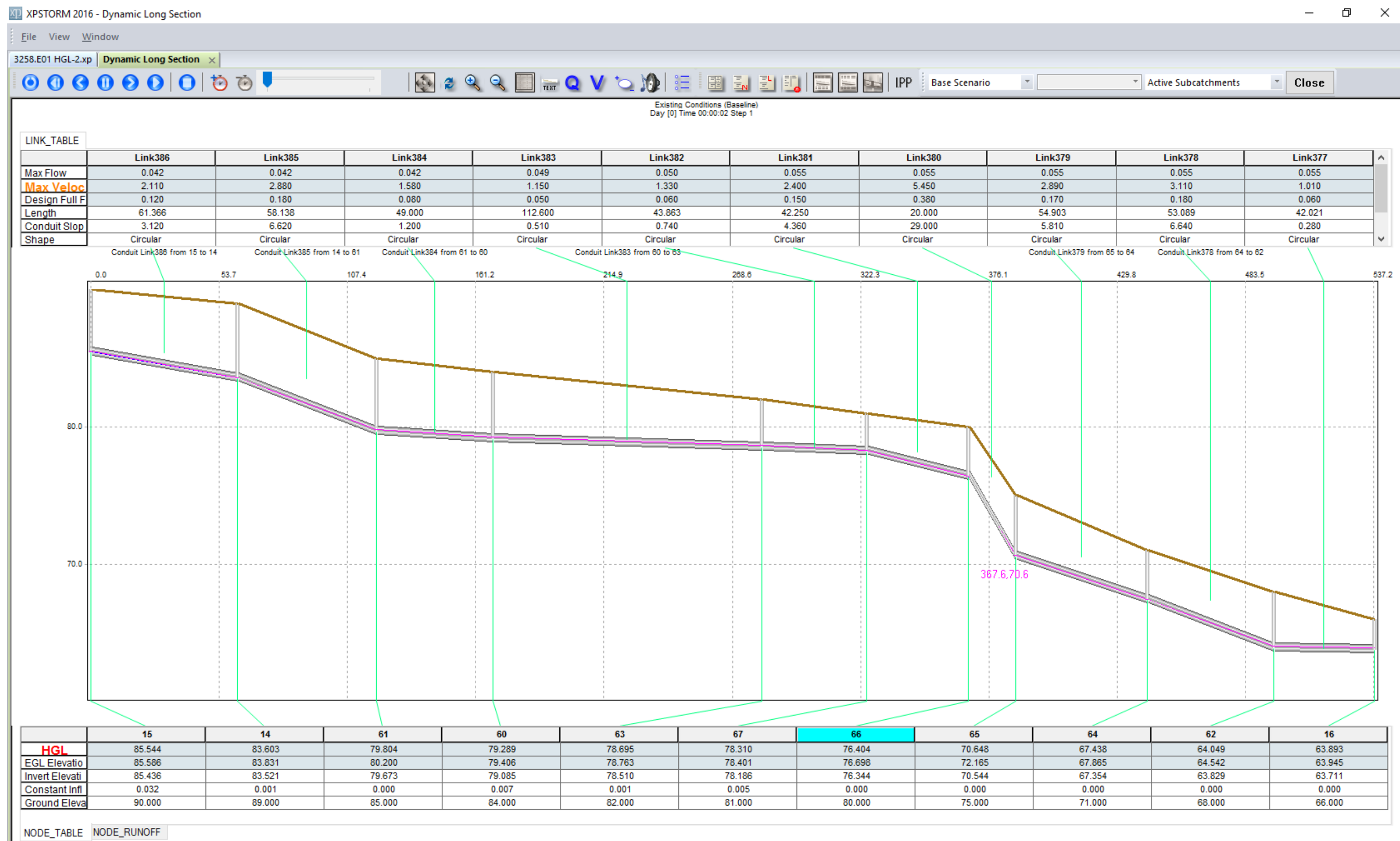


Figure 5 – Hydraulic Grade Line Analysis Part 3