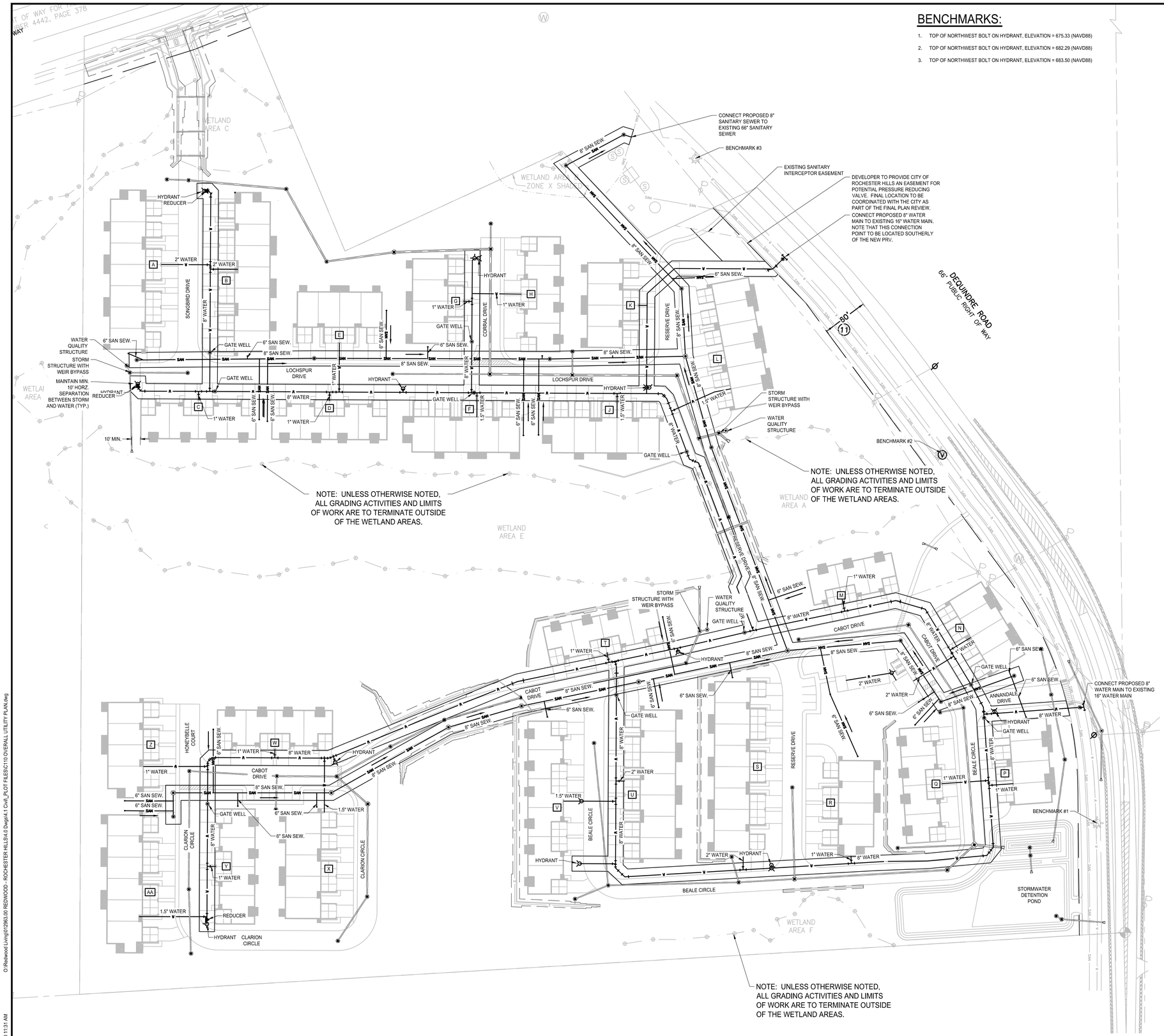


BENCHMARKS:

1. TOP OF NORTHWEST BOLT ON HYDRANT, ELEVATION = 675.33 (NAVD88)
2. TOP OF NORTHWEST BOLT ON HYDRANT, ELEVATION = 682.29 (NAVD88)
3. TOP OF NORTHWEST BOLT ON HYDRANT, ELEVATION = 683.50 (NAVD88)

UTILITY NOTES:

1. ALL WORKMANSHIP, MATERIALS, AND CONSTRUCTION PRACTICES SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF ROCHESTER HILLS OR THE AGENCY HAVING JURISDICTION OVER THE APPLICABLE UTILITY.
2. CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGE TO ANY EXISTING UTILITY DURING CONSTRUCTION AT NO COST TO THE OWNER.
3. ALL FILL MATERIAL IS TO BE IN PLACE, AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.
4. CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES 72 HOURS BEFORE CONNECTING TO ANY EXISTING LINE.
5. IN THE EVENT OF A VERTICAL CONFLICT BETWEEN WATERLINES, SANITARY LINES, STORM LINES AND GAS LINES (EXISTING AND PROPOSED), THE CONTRACTOR SHALL NOTIFY THE ENGINEER AS SOON AS THE CONFLICT IS DISCOVERED.
6. TOPS OF EXISTING UTILITY STRUCTURES SHALL BE ADJUSTED TO FINISHED GRADE.
7. EXISTING UTILITIES SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION OF ANY NEW LINES.
8. CONTRACTOR IS RESPONSIBLE FOR COMPLYING TO THE CONSTRUCTION REQUIREMENTS OF THE UTILITY OWNERS.
9. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
10. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES FOR INSTALLATION REQUIREMENTS AND SPECIFICATIONS.
11. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR ACTUAL LOCATION AND ELEVATIONS OF ALL UTILITY ENTRANCES TO INCLUDE SANITARY SEWER LATERALS, DOMESTIC AND FIRE PROTECTION WATER SERVICE, ELECTRICAL, TELEPHONE, AND GAS SERVICE. CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES, IN SUCH A MANNER AS TO AVOID CONFLICTS AND ASSURE PROPER DEPTHS ARE ACHIEVED AS WELL. AS COORDINATING WITH UTILITY REQUIREMENTS AS TO LOCATION AND SCHEDULING FOR TIE-INS/CONNECTIONS PRIOR TO CONNECTING TO EXISTING UTILITIES.
12. THE CONTRACTOR SHALL CONDUCT ALL REQUIRED TESTS TO THE SATISFACTION OF THE RESPECTIVE UTILITY COMPANIES AND THE OWNER'S INSPECTING AUTHORITIES.
13. CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH THE LATEST STANDARDS OF OSHA DIRECTIVES OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURES. THE CONTRACTOR SHALL USE SUPPORT SYSTEMS, SLOPING, BENCHING, AND OTHER MEANS OF PROTECTION. THIS TO INCLUDE BUT NOT LIMITED FOR ACCESS AND EGRESS FROM ALL EXCAVATION AND TRENCHING. CONTRACTOR IS RESPONSIBLE TO COMPLY WITH PERFORMANCE CRITERIA FOR OSHA.
14. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING PIPE SIZES AND INVERTS ELEVATIONS BEFORE ORDERING MANHOLE AND CATCH BASIN STRUCTURES.
15. ALL UTILITIES BELOW PAVED AREAS SHALL BE BACKFILLED WITH 100% GRANULAR MATERIAL (OR APPROVED OTHER) AND COMPACTED TO 95% OF ITS MAXIMUM UNIT WEIGHT.
16. ALL RIM ELEVATIONS IN OUTLAWN AREAS ARE APPROXIMATE ONLY AND SHALL BE ADJUSTED BY THE CONTRACTOR AFTER FINAL GRADES ARE ESTABLISHED.
17. ALL UTILITIES SHALL MAINTAIN A MINIMUM OF 10' SEPARATION FROM OTHER UTILITIES, STRUCTURES, AND RETAINING WALLS.
18. BMP'S WILL BE IMPLEMENTED DURING THE CONSTRUCTION PHASE OF THE PROPOSED PROJECT AND ANY TEMPORARY IMPACT AREAS WILL BE RESTORED TO ORIGINAL GRADES WITH ORIGINAL SOIL OR EQUIVALENT. SOILS AND SEEDED WITH CITY APPROVED WETLAND SEED.
19. ALL WATER MAIN TAPS 2-INCHES AND LESS TO BE PERFORMED BY THE CITY OF ROCHESTER HILLS

BASIS OF DESIGN:

- 0.60 REU / UNIT
- 121 UNITS * 0.60 REU = 72.6 REU
- 72.6 REU * (2.44 PEOPLE) * (100 GPD) = 17,714 GPD
- 17,714 GPD = 0.0274 CFS
- ASSUME 4.0 X PEAKING FACTOR
  = (0.0274 CFS) * 4.0
  = 0.1096 CFS PEAK

UTILITY LEGEND:

- RIPRAP
- STORM SEWER
- YARD BASIN
- CATCH BASIN
- STORM MANHOLE
- HYDRANT
- VALVE/CURB BOX
- GATE WELL
- WATER MAIN
- SANITARY SEWER
- SANITARY SEWER MANHOLE
- CLEANOUT
- EASEMENT

N

0 60 120 180 FT

1" = 60' SCALE BAR

REDWOOD ROCHESTER HILLS

E. AVON ROAD
ROCHESTER HILLS, MI 48307
OAKLAND COUNTY

Redwood distinctive living

7510 E. PLEASANT VALLEY RD
INDEPENDENCE, OH 44131

BERGMANN
ARCHITECTS ENGINEERS PLANNERS

Bergmann Associates, Architects, Engineers,
Landscape Architects & Surveyors, D.P.C.
7050 West Saginaw Hwy.
Suite 200
Lansing, MI 48917

office: 517.272.9835
fax: 517.272.9836

www.bergmannpc.com

DATE	DESCRIPTION
11/16/2018	PUD REVIEW
02/04/2019	REV. PER CITY COMMENTS
03/21/2019	2ND REV. PER CITY COMMENTS
08/02/2019	3RD REV. PER CITY COMMENTS
08/22/2019	4TH REV. PER CITY COMMENTS
08/27/2019	STEP ONE PUD REVIEW
12/23/2019	CITY RESUBMITTAL
01/17/2020	PERMIT REVIEW
03/02/2020	ENGINEERING RESUBMITTAL
05/06/2020	ENGINEERING RESUBMITTAL
06/09/2020	ENGINEERING RESUBMITTAL
07/06/2020	ENGINEERING RESUBMITTAL

Not For Construction

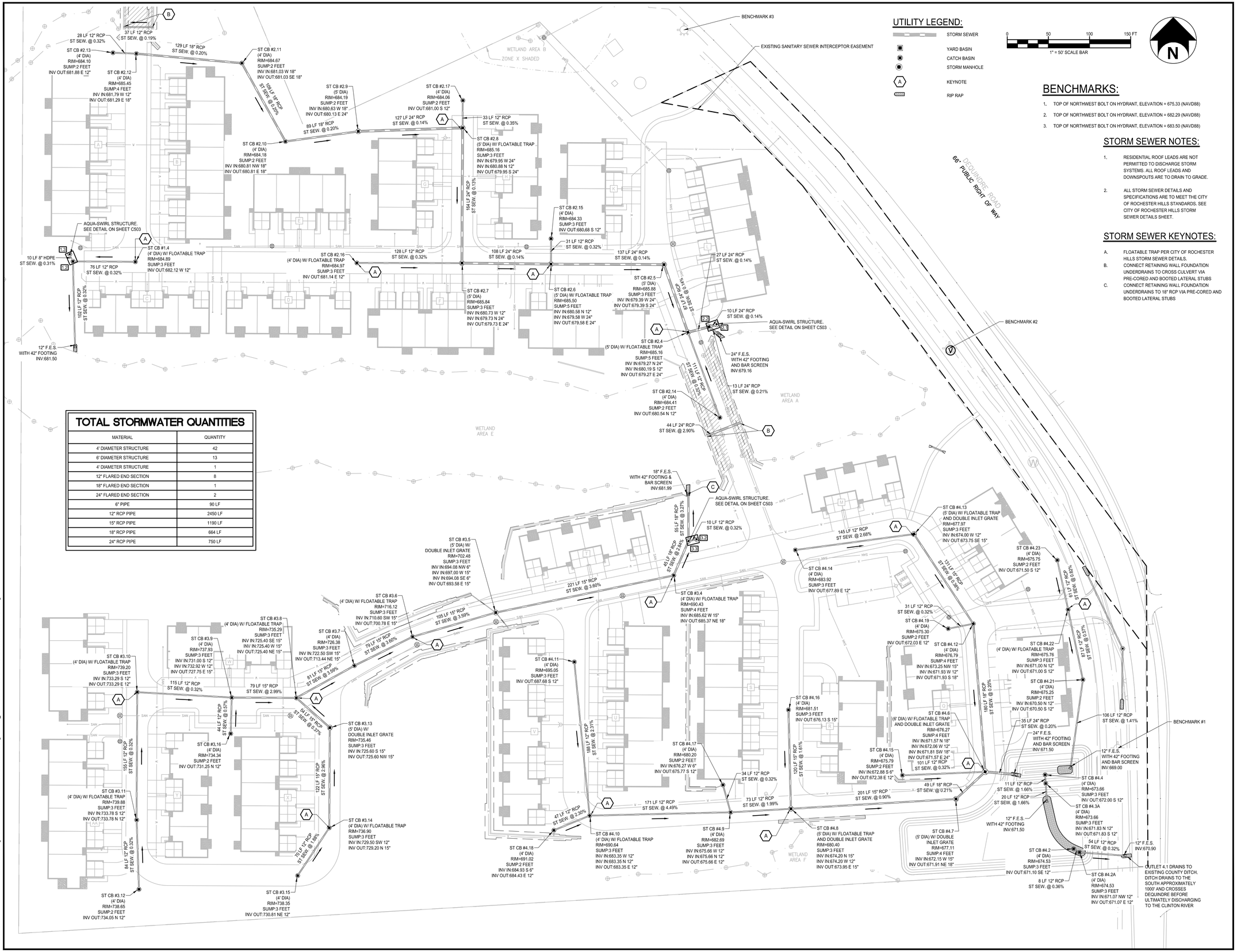
Project Manager: P. FURTAW, PE	Checked By: P. FURTAW, PE
Designed By: I. GRAHAM, PE	Drawn By: I. GRAHAM, PE
Date Issued: NOVEMBER 9, 2018	Project Number: 12963.00

OVERALL UTILITY PLAN

Drawing Number:

C110

CITY FILE #18-022 SECTION 13



TOTAL STORMWATER QUANTITIES

MATERIAL	QUANTITY
4' DIAMETER STRUCTURE	42
6' DIAMETER STRUCTURE	13
4' DIAMETER STRUCTURE	1
12" FLARED END SECTION	8
18" FLARED END SECTION	1
24" FLARED END SECTION	2
6" PIPE	90 LF
12" RCP PIPE	2450 LF
15" RCP PIPE	1190 LF
18" RCP PIPE	664 LF
24" RCP PIPE	750 LF

BENCHMARKS:

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2. TOP OF NORTHWEST BOLT ON HYDRANT, ELEVATION = 682.29 (NAVD88)
3. TOP OF NORTHWEST BOLT ON HYDRANT, ELEVATION = 683.50 (NAVD88)

STORM SEWER NOTES:

1. RESIDENTIAL ROOF LEADS ARE NOT PERMITTED TO DISCHARGE STORM SYSTEMS. ALL ROOF LEADS AND DOWNSPOUTS ARE TO DRAIN TO GRADE.
2. ALL STORM SEWER DETAILS AND SPECIFICATIONS ARE TO MEET THE CITY OF ROCHESTER HILLS STANDARDS. SEE CITY OF ROCHESTER HILLS STORM SEWER DETAILS SHEET.

STORM SEWER KEYNOTES:

A. FLOATABLE TRAP PER CITY OF ROCHESTER HILLS STORM SEWER DETAILS.
B. CONNECT RETAINING WALL FOUNDATION UNDERDRAINS TO CROSS CULVERT VIA PRE-CORED AND BOOTED LATERAL STUBS
C. CONNECT RETAINING WALL FOUNDATION UNDERDRAINS TO 18" RCP VIA PRE-CORED AND BOOTED LATERAL STUBS

REDWOOD ROCHESTER HILLS

E. AVON ROAD
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03/02/2020	ENGINEERING RESUBMITTAL
05/06/2020	ENGINEERING RESUBMITTAL
06/09/2020	ENGINEERING RESUBMITTAL

Not For Construction

Project Manager: P. FURTAW, PE	Checked By: P. FURTAW, PE
Designed By: I. GRAHAM, PE	Drawn By: I. GRAHAM, PE
Date Issued: NOVEMBER 9, 2018	Project Number: 12963.00

STORM SEWER MANAGEMENT PLAN

Drawing Number:

C111

CITY FILE #18-022 SECTION 13

Upstream MH/Inlet	Downstream MH/Inlet	Runoff Area (Ac)	Runoff C	Runoff "A" X "C"	Total Section "A" X "C"	Total Branch	I (in/hr)	Section Flow, Q (cfs)	Pipe Length (ft)	Pipe Diameter (in)	Pipe Slope (%)	Inverts Upstream MH	Inverts Downstream MH	Q_{CAP} Flow (cfs)	Manning Velocity (ft/s)	Time Section (min)	Time Total (min)	Upstream TG (ft)	Up HGL (ft)	Down HGL (ft)
1.4	1.2	0.71	0.86	0.61	0.61		4.38	2.66	76	12	0.32%	682.12	681.88	2.00	2.55	0.49	15.00	684.89	683.58	683.10
1.2	1.1	0.00	0.95	0.00	0.61		4.32	2.63	102	12	0.32%	681.82	681.50	2.00	2.55	0.66	15.49	685.63	683.10	682.50
2.17	2.8	0.25	0.30	0.07	0.07		4.38	0.32	33	12	0.35%	681.00	680.88	2.10	2.68	0.21	15.00	684.06	682.85	682.84
2.16	2.7	0.41	0.87	0.36	0.36		4.38	1.57	128	12	0.32%	681.14	680.73	2.02	2.57	0.83	15.00	684.97	682.93	682.66
2.15	2.6	0.28	0.68	0.19	0.19		4.38	0.84	31	12	0.32%	680.68	680.58	2.03	2.58	0.20	15.00	684.33	682.43	682.40
2.14	2.4	0.17	0.95	0.16	0.16		4.38	0.71	111	12	0.32%	680.54	680.19	2.02	2.57	0.72	15.00	684.41	681.60	681.56
2.13	2.12	0.44	0.75	0.33	0.33		4.38	1.43	28	12	0.32%	681.88	681.79	2.01	2.55	0.19	15.00	684.10	683.50	683.44
2.12	2.11	0.48	0.93	0.44	0.77		4.35	3.36	129	18	0.20%	681.29	681.03	4.72	2.67	0.80	15.19	685.45	683.44	683.29
2.11	2.10	0.25	0.60	0.15	0.92		4.27	3.94	109	18	0.20%	681.03	680.81	4.72	2.67	0.68	15.99	684.67	683.29	683.11
2.10	2.9	0.29	0.30	0.09	1.01		4.20	4.24	89	18	0.20%	680.81	680.63	4.71	2.67	0.56	16.67	684.10	683.11	682.94
2.9	2.8	0.52	0.73	0.38	1.39		4.14	5.75	127	24	0.14%	680.13	679.95	8.52	2.71	0.78	17.23	684.19	682.94	682.84
2.8	2.7	0.29	0.90	0.26	1.72	0.07	4.07	7.00	164	24	0.13%	679.95	679.73	8.28	2.64	1.04	18.01	685.17	682.84	682.66
2.7	2.6	0.49	0.87	0.43	2.51	0.36	3.97	9.98	108	24	0.14%	679.73	679.58	8.43	2.68	0.67	19.04	685.84	682.66	682.40
2.6	2.5	0.52	0.86	0.45	3.15	0.19	3.91	12.33	137	24	0.14%	679.58	679.39	8.41	2.68	0.85	19.72	685.50	682.40	681.92
2.5	2.4	0.30	0.79	0.24	3.39		3.84	13.02	87	24	0.14%	679.39	679.27	8.39	2.67	0.54	20.57	685.88	681.92	681.56
2.4	2.2	0.49	0.89	0.44	3.99	0.16	3.79	15.16	27	24	0.14%	679.27	679.23	8.55	2.72	0.16	21.12	685.16	681.56	681.33
2.2	2.0	0.00	0.30	0.00	3.99		3.78	15.10	13	24	0.21%	679.19	679.16	10.37	3.30	0.07	21.28	684.72	681.33	681.16
3.16	3.9	0.24	0.76	0.18	0.18		4.38	0.78	44	12	0.57%	731.25	731.00	2.69	3.43	0.21	15.00	734.34	732.25	732.00
3.15	3.14	0.24	0.54	0.13	0.13		4.38	0.58	70	12	1.88%	730.81	729.50	4.89	6.22	0.19	15.00	738.35	731.81	730.45
3.14	3.13	0.15	0.51	0.08	0.21		4.35	0.91	122	15	2.96%	729.20	725.60	11.11	9.05	0.22	15.19	736.90	730.45	726.85
3.13	3.8	0.37	0.82	0.31	0.52		4.33	2.23	54	15	0.37%	725.60	725.40	3.92	3.19	0.28	15.41	735.46	726.85	726.65
3.12	3.11	0.40	0.46	0.19	0.19		4.38	0.82	84	12	0.32%	734.05	733.78	2.02	2.57	0.55	15.00	738.65	735.25	735.20
3.11	3.10	0.48	0.89	0.43	0.61		4.32	2.65	155	12	0.32%	733.78	733.29	2.00	2.55	1.01	15.55	739.88	735.20	734.29
3.10	3.9	0.48	0.87	0.42	1.04		4.21	4.36	115	12	0.32%	733.29	732.92	2.02	2.57	0.74	16.56	739.20	734.29	729.00
3.9	3.8	0.31	0.87	0.27	1.48	0.18	4.14	6.11	79	15	2.99%	727.75	725.40	11.18	9.11	0.14	17.31	737.93	729.00	726.65
3.8	3.7	0.12	0.77	0.09	2.09	0.52	4.12	8.60	81	15	3.59%	725.40	722.50	12.25	9.98	0.13	17.45	735.29	726.65	714.69
3.7	3.6	0.18	0.62	0.11	2.20		4.11	9.04	79	15	3.60%	713.44	710.60	12.25	9.98	0.13	17.59	726.38	714.69	702.03
3.6	3.5	0.07	0.81	0.06	2.26		4.10	9.25	105	15	3.59%	700.78	697.00	12.25	9.98	0.18	17.72	716.12	702.03	694.83
3.5	3.4	0.17	0.95	0.16	2.42		4.08	9.87	221	15	3.60%	693.58	685.62	12.26	9.99	0.37	17.89	702.48	694.83	686.87
3.4	3.3	0.30	0.80	0.24	2.66		4.05	10.75	45	18	2.84%	685.37	684.08	17.69	10.01	0.08	18.26	690.43	686.87	685.30
3.3	3.1	0.00	0.30	0.00	2.66		4.04	10.73	55	18	3.27%	683.80	681.99	18.99	10.75	0.09	18.34	687.72	685.30	683.49
4.23	4.22	0.46	0.38	0.18	0.18		7.00	1.24	61	12	0.82%	671.50	671.00	3.23	4.11	0.25	0.00	675.75	675.19	675.11
4.22	4.21	0.24	0.79	0.19	0.37		6.93	2.53	87	12	0.57%	671.00	670.50	2.70	3.44	0.42	0.25	675.76	675.11	674.62
4.21	4.20	0.16	0.70	0.11	0.48		6.82	3.26	106	12	1.41%	670.50	669.00	4.23	5.39	0.33	0.67	675.25	674.62	673.65
4.19	4.12	0.49	0.40	0.19	0.19		4.38	0.85	31	12	0.32%	672.03	671.93	2.02	2.58	0.20	15.00	675.30	674.28	674.25
4.18	4.10	0.40	0.73	0.29	0.29		4.38	1.28	47	12	2.30%	684.43	683.35	5.40	6.88	0.11	15.00	691.02	685.43	684.35
4.17	4.9	0.45	0.50	0.23	0.23		4.38	0.99	34	12	0.32%	675.77	675.66	2.03	2.59	0.22	15.00	680.20	678.30	678.26
4.16	4.8	0.58	0.92	0.53	0.53		4.38	2.32	120	12	1.61%	676.13	674.20	4.52	5.75	0.35	15.00	681.51	678.20	677.65
4.15	4.6	0.22	0.64	0.14	0.14		4.38	0.63	101	12	0.32%	672.38	672.06	2.02	2.57	0.65	15.00	675.79	673.95	673.92
4.14	4.13	0.11	0.95	0.11	0.11		4.38	0.46	145	12	2.68%	677.89	674.00	5.83	7.42	0.33	15.00	683.92	678.89	675.00
4.13	4.12	0.47	0.83	0.39	0.50		4.34	2.15	131	15	0.38%	673.75	673.25	4.00	3.26	0.67	15.33	677.97	675.00	674.25
4.12	4.6	0.37	0.87	0.32	1.01	0.19	4.27	4.33	180	18	0.20%	671.93	671.57	4.69	2.65	1.13	15.99	676.79	674.25	673.92
4.11	4.10	0.08	0.70	0.06	0.06		4.38	0.24	188	12	2.31%	687.68	683.35	5.41	6.89	0.45	15.00	695.05	688.68	684.35
4.10	4.9	0.64	0.89	0.57	0.92	0.29	4.33	3.98	171	12	4.49%	683.35	675.66	7.55	9.61	0.30	15.45	690.64	684.35	678.26
4.9	4.8	0.18	0.66	0.12	1.27	0.23	4.29	5.45	73	15	1.99%	675.66	674.20	9.11	7.43	0.16	15.75	682.69	678.26	677.65
4.8	4.7	0.06	0.90	0.05	1.85	0.53	4.28	7.92	201	15	0.90%	673.95	672.15	6.12	4.98	0.67	15.92	680.40	677.65	674.43
4.7	4.6	0.44	0.84	0.37	2.22		4.21	9.35	49	18	0.21%	671.91	671.81	4.77	2.70	0.30	16.59	677.11	674.43	673.92
4.6	4.5	0.35	0.79	0.28	3.66	1.16	4.18	15.29	35	24	0.20%	671.57	671.50	10.13	3.22	0.18	16.89	676.27	673.92	673.65

STORMWATER STRUCTURE TABLE

STRUCTURE NAME	STRUCTURE SIZE	GRATE TYPE
1.1	12 IN FES	FLARED END SECTION
1.2	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
1.3	AQUA SWIRL STRUCTURE	REFER TO AQUA SWIRL DETAIL
1.4	4' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE F*
2.0	24 IN FES	FLARED END SECTION
2.1	AQUA SWIRL STRUCTURE	REFER TO AQUA SWIRL DETAIL
2.2	5' DIA STRUCTURE	*GRASS AREA, NOTE D*
2.4	5' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE F*
2.5	5' DIA STRUCTURE	*ROAD AREA, NOTE F*
2.6	5' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE F*
2.7	5' DIA STRUCTURE	*ROAD AREA, NOTE F*
2.8	5' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE F*
2.9	5' DIA STRUCTURE	*GRASS AREA, NOTE D*
2.10	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
2.11	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
2.12	4' DIA STRUCTURE	*ROAD AREA, NOTE F*
2.13	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
2.14	4' DIA STRUCTURE	*ROAD AREA, NOTE F*
2.15	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
2.16	4' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE F*
2.17	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
3.1	18 IN FES	FLARED END SECTION
3.2	AQUA SWIRL STRUCTURE	REFER TO AQUA SWIRL DETAIL
3.3	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
3.4	4' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE E*
3.5	5' DIA STRUCTURE	EJ FRAME 5376Z FRAME, MDOT R-1-G TOP AND MDOT TYPE VG GRATE
3.6	4' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE E*
3.7	4' DIA STRUCTURE	*ROAD AREA, NOTE E*
3.8	4' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE E*
3.9	4' DIA STRUCTURE	*ROAD AREA, NOTE E*
3.10	4' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE F*
3.11	4' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE F*
3.12	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
3.13	5' DIA STRUCTURE	EJ FRAME 5376Z FRAME, MDOT R-1-G TOP AND MDOT TYPE VG GRATE
3.14	4' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE F*
3.15	4' DIA STRUCTURE	*ROAD AREA, NOTE F*
3.16	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
4.1	12 IN FES	FLARED END SECTION
4.2	4' DIA STRUCTURE	OUTLET STRUCTURE REFER TO DETAIL ON SHEET C602
4.2A	4' DIA STRUCTURE	OUTLET STRUCTURE REFER TO DETAIL ON SHEET C602
4.3	12 IN FES	FLARED END SECTION
4.3A	4' DIA STRUCTURE	OUTLET STRUCTURE REFER TO DETAIL ON SHEET C602
4.4	4' DIA STRUCTURE	OUTLET STRUCTURE REFER TO DETAIL ON SHEET C602
4.5	24 IN FES	FLARED END SECTION
4.6	6' DIA STRUCTURE W/ FLOATABLE TRAP	EJ FRAME 5376Z FRAME, MDOT R-1-G TOP AND MDOT TYPE VG GRATE
4.7	5' DIA STRUCTURE W/ FLOATABLE TRAP	EJ FRAME 5376Z FRAME, MDOT R-1-G TOP AND MDOT TYPE VG GRATE
4.8	5' DIA STRUCTURE W/ FLOATABLE TRAP	EJ FRAME 5376Z FRAME, MDOT R-1-G TOP AND MDOT TYPE VG GRATE
4.9	4' DIA STRUCTURE	*ROAD AREA, NOTE F*
4.10	4' DIA STRUCTURE W/ FLOATABLE TRAP	*ROAD AREA, NOTE E*
4.11	4' DIA STRUCTURE	*ROAD AREA, NOTE F*
4.12	4' DIA STRUCTURE	*ROAD AREA, NOTE F*
4.13	5' DIA STRUCTURE W/ FLOATABLE TRAP	EJ FRAME 5376Z FRAME, MDOT R-1-G TOP AND MDOT TYPE VG GRATE
4.14	4' DIA STRUCTURE	*ROAD AREA, NOTE E*
4.15	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
4.16	4' DIA STRUCTURE	*ROAD AREA, NOTE F*
4.17	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
4.18	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
4.19	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
4.20	12 IN FES	FLARED END SECTION
4.21	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
4.22	4' DIA STRUCTURE	*ROAD AREA, NOTE F*
4.23	4' DIA STRUCTURE	*GRASS AREA, NOTE D*
5.1	12 IN FES	FLARED END SECTION
5.2	12 IN FES	FLARED END SECTION
363	12 IN FES	FLARED END SECTION
364	12 IN FES	FLARED END SECTION
365	4' DIA STRUCTURE	*ROAD AREA, NOTE F*

COVERS FOR MANHOLES, CATCH BASINS, AND INLETS

17. MANHOLE FRAME AND COVER SHALL BE EJ 1040, TYPE A COVER OR EQUIVALENT.
18. CATCH BASINS AND INLET FRAME AND COVER SHALL BE AS FOLLOWS:
    a. EJ 7045 WITH TYPE M1 GRATE AND 7050 T2 ADJUSTABLE BACK, OR EQUAL, FOR USE WITH CONCRETE CURB AND GUTTER, (STRAIGHT CURB/ M.D.O.T. F CURB) AND WITH CONCRETE PAVEMENT WITH INTEGRAL CURB.
    b. EJ 7085 WITH TYPE M1 GRATE OR EQUAL, FOR USE WITH CONCRETE B-2 MODIFIED CURB AND GUTTER, AND WITH CONCRETE WITH B-2 MODIFIED INTEGRAL CURB.
    c. EJ 7065 WITH TYPE M1 GRATE AND 7060 T1 DRIVE OVER CURB BACK, OR EQUAL, FOR USE WITH MOUNTABLE CURB AND GUTTER, AND WITH CONCRETE PAVEMENT WITH MOUNTABLE INTEGRAL CURB.
    d. EJ FRAME 1040 WITH TYPE N OVAL GRATE OR TYPE 02 BEEHIVE GRATE, OR EQUAL, FOR USE ON OPEN DITCH STRUCTURES AND ON CATCH BASINS LOCATED IN SWALES, AND IN EASEMENTS OUTSIDE THE PUBLIC STREET RIGHT-OF-WAY.
    e. EJ FRAME 7045Z WITH TYPE M4 VANE STYLE INLET GRATE (RIGHT HAND FLOW OR LEFT HAND FLOW) AND 7060 T1 BACK OR 7050 T2 BACK DEPENDING ON CURB STYLE, OR EQUAL, FOR USE WITH RELIEF BASINS WHICH ARE ON LONGITUDINAL ROAD SLOPES OF 4% OR GREATER.
    f. EJ FRAME 5100 WITH TYPE M1 SINUSOIDAL GRATE, OR EQUAL, FOR USE IN NON-CURB PAVEMENT AREAS.

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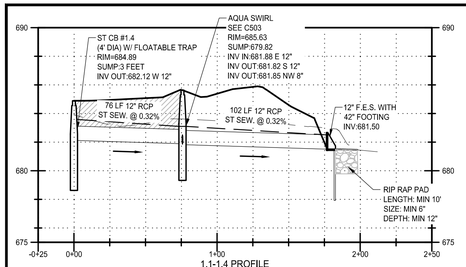
Project Manager: P. FURTAW, PE
Checked By: P. FURTAW, PE
Designed By: I. GRAHAM, PE
Drawn By: I. GRAHAM, PE
Date Issued: NOVEMBER 9, 2018
Project Number: 12963.00

STORM SEWER MANAGEMENT PLAN CALCULATIONS

Drawing Number:

C112

CITY FILE #18-022 SECTION 13



1.1-1.4 PROFILE
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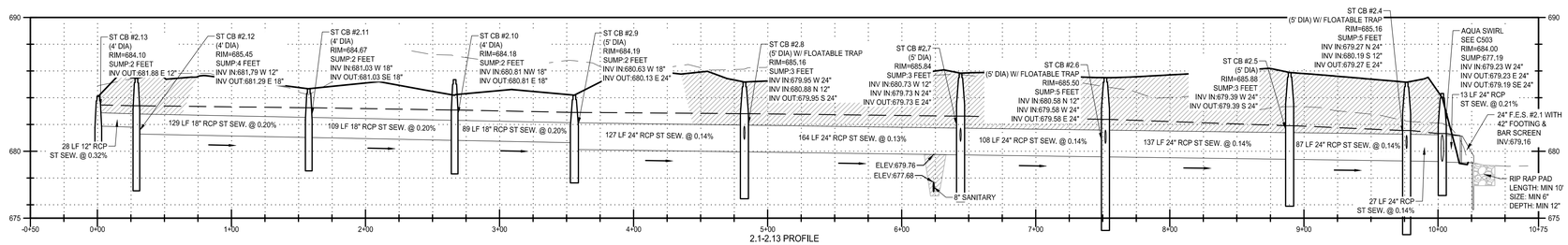
1" = 50' HORIZONTAL



2.1-2.13 PROFILE
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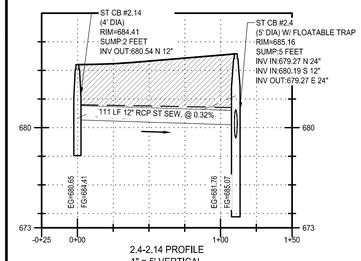
1" = 50' HORIZONTAL



2.4-2.14 PROFILE
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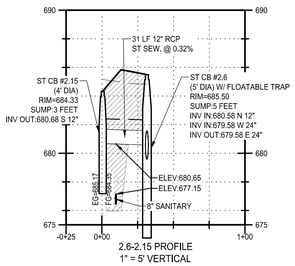

2.6-2.15 PROFILE
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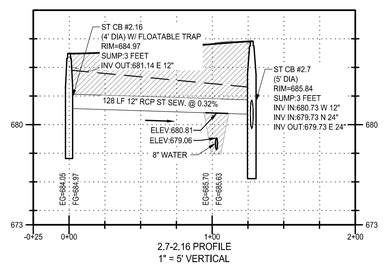

2.7-2.16 PROFILE
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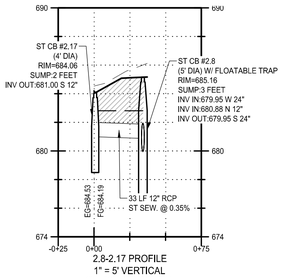
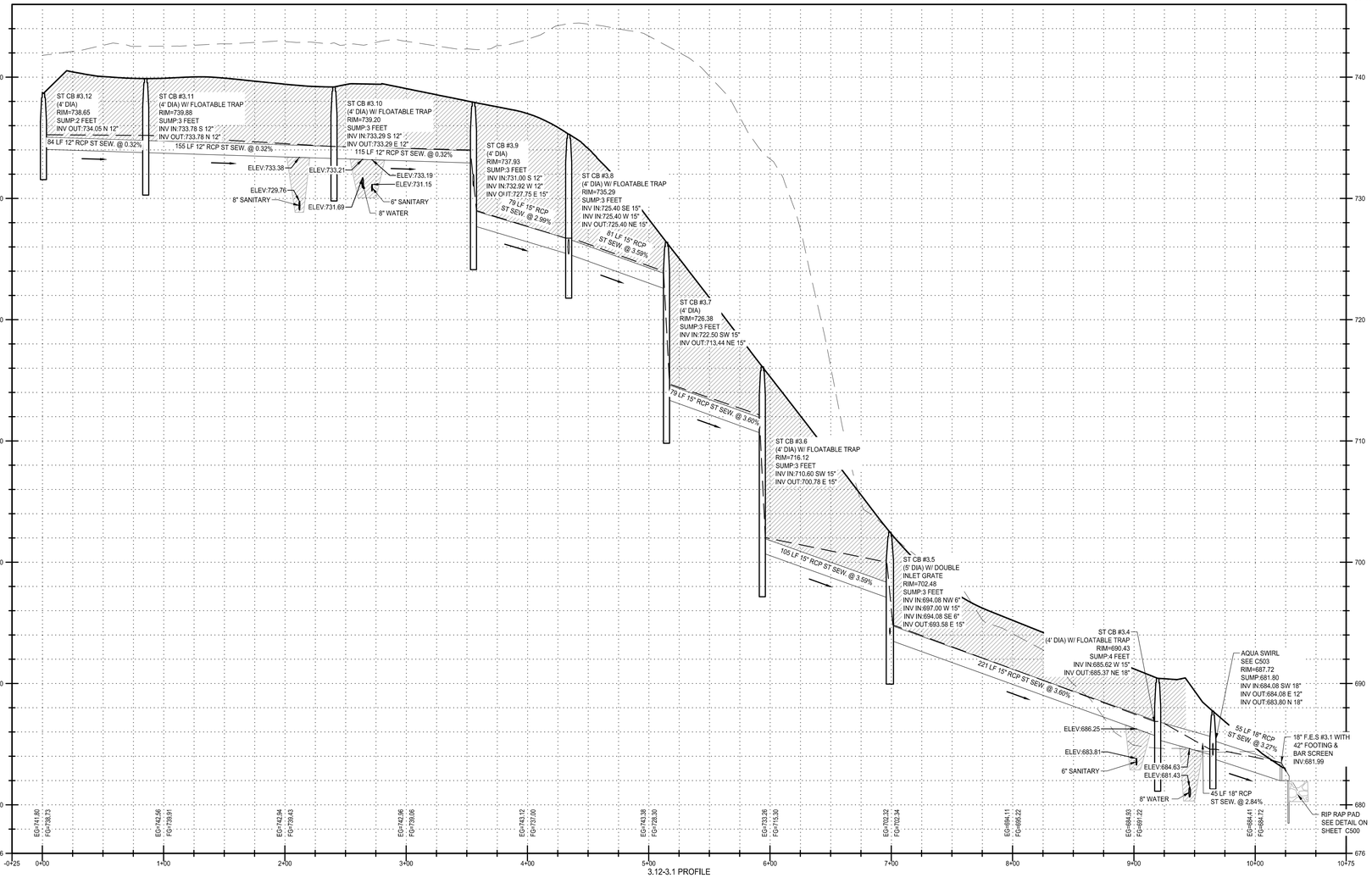


2.8-2.17 PROFILE
1" = 5' VERTICAL
1" = 50' HORIZONTAL



3.12-3.1 PROFILE
1" = 5' VERTICAL
1" = 50' HORIZONTAL

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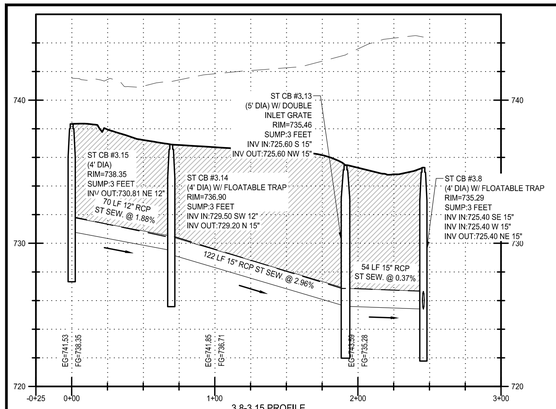
Date Issued: NOVEMBER 9, 2018	Project Number: 12963.00

STORM SEWER PROFILES

Drawing Number:

C113

CITY FILE #18-022 SECTION 13



3.8-3.15 PROFILE
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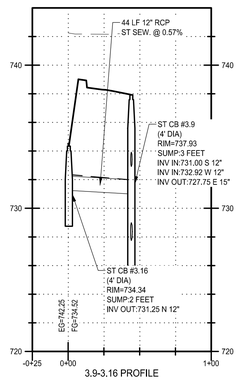
1" = 50' HORIZONTAL



3.9-3.16 PROFILE
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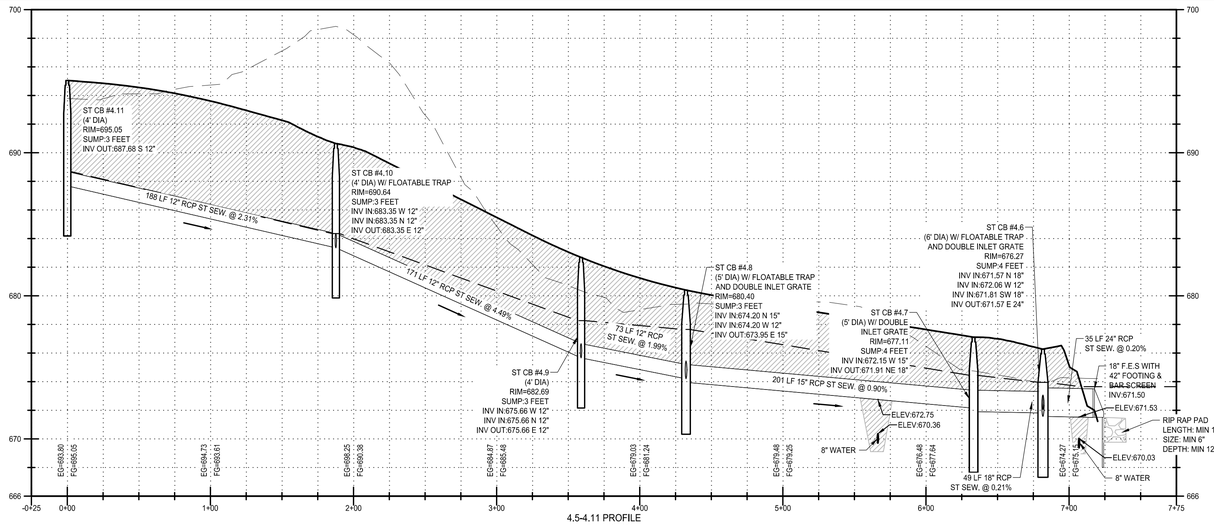
1" = 50' HORIZONTAL



4.5-4.11 PROFILE
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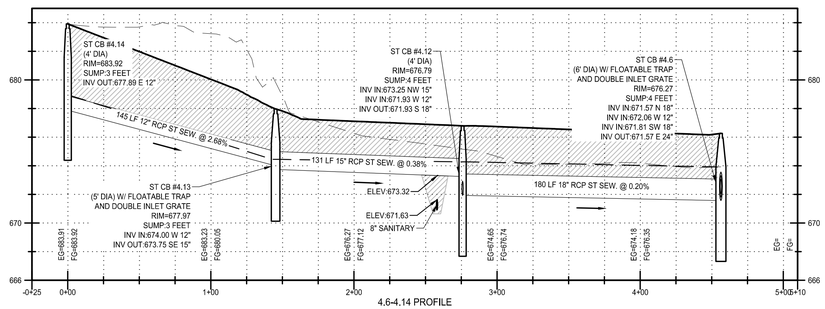
1" = 50' HORIZONTAL



4.6-4.14 PROFILE
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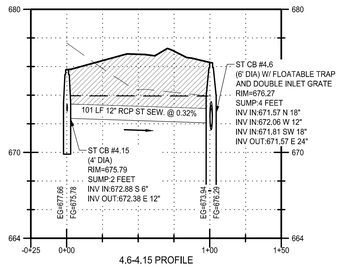
1" = 50' HORIZONTAL



4.6-4.15 PROFILE
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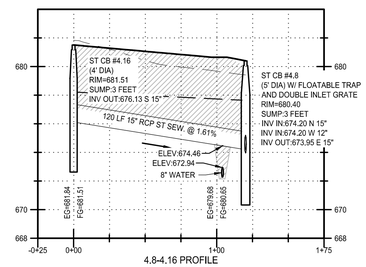

4.8-4.16 PROFILE
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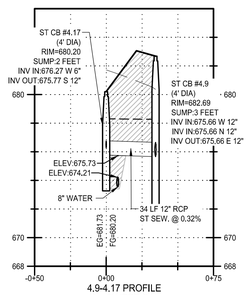

4.9-4.17 PROFILE
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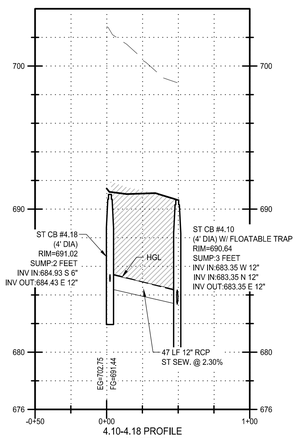

4.10-4.18 PROFILE
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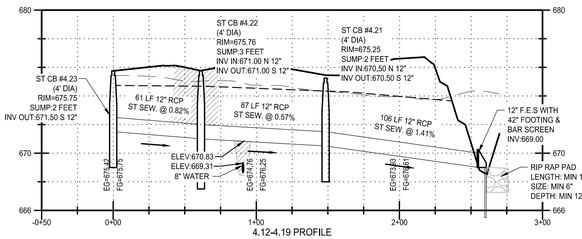

4.12-4.19 PROFILE
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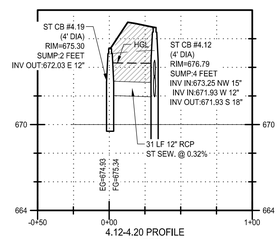

4.12-4.20 PROFILE
1" = 5' VERTICAL
1" = 50' HORIZONTAL

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STORM SEWER PROFILES

Drawing Number:

C114

CITY FILE #18-022 SECTION 13