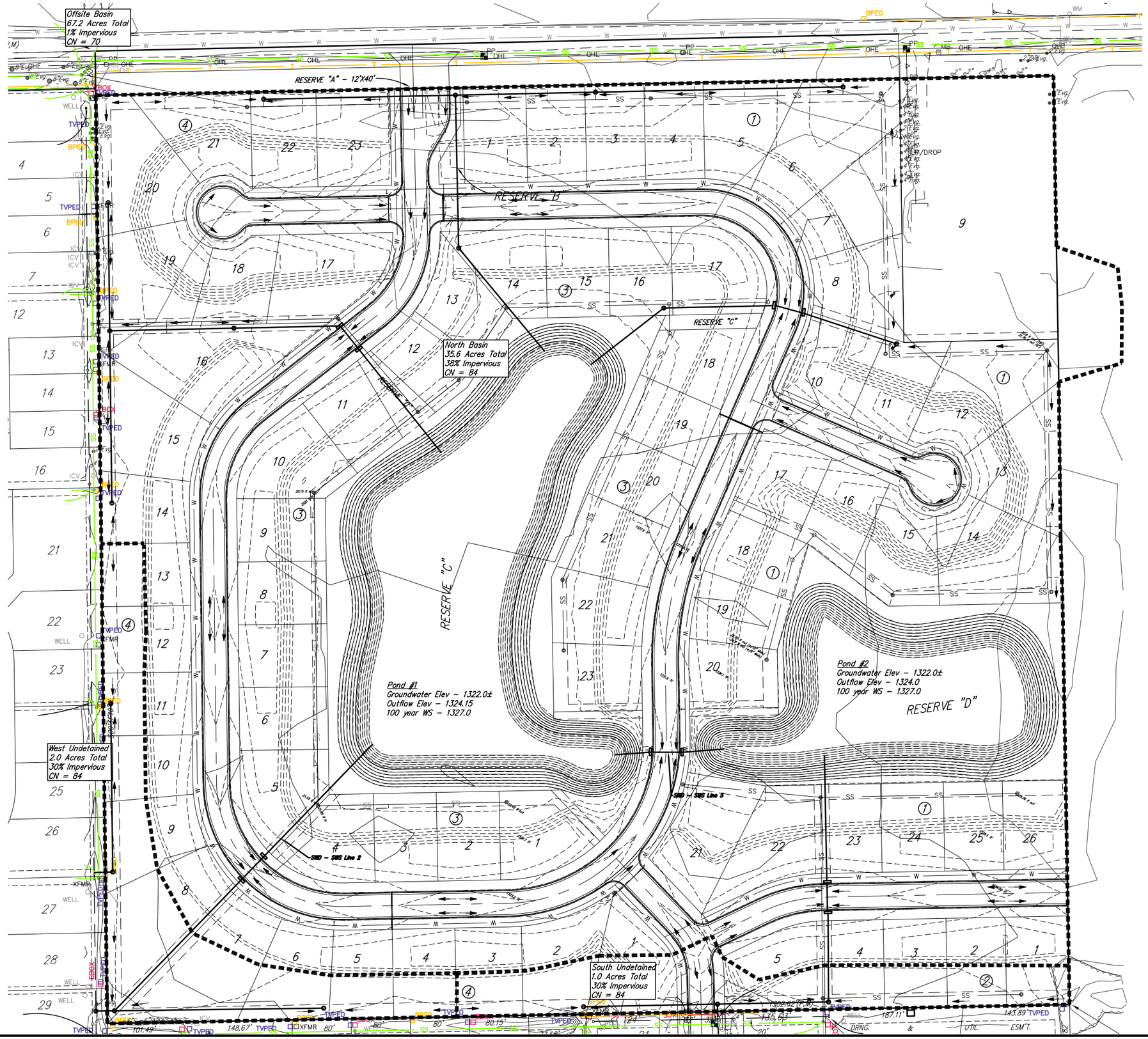

Water Quality Treatment

Volume Required = 0.85 Ac-Feet
Volume Provided = 8.99 Ac-Feet

Channel Protection Volume
Volume Required = 2.88 Ac-Feet
Volume Provided = 8.99 Ac-Feet

Both Volumes are accommodated below the release elevation of 1324.

NOTES

1. *The site is 56% Carwile Clay loam (Hydrologic Soil Group D), 29% Salt Creek and Naron Fine Sandy Loam (Hydrologic Soil Group C) and 15% Pratt Loamy Fine Sand (Hydrologic Soil Group A).*
2. *Snout Water Quality Treatment Hoods will be installed on all street inlets that drain into onsite ponds. Ponds will provide additional water quality treatment as well.*
3. *On-site Ponds will provide storm water detention/retention as well channel protection volume.*
4. *Storm sewers have been added along along the west and south perimeters to convey rear yard drainage in those areas. Drainage in those SWS pipes is being directed as far south as possible to the larger existing sewers in the adjacent additions or into the onsite ponds to minimize impact on existing sewers.*
5. *The drainage plan for Ridge Port 4th allows for 110 cfs to be discharged from this proposed addition into the existing storm sewer in Lot 13, Block A of Ridge Port 4th Addition. The discharge pipe from the onsite ponds will be sized to limit the outflow of proposed ponds to 42 cfs, which will reduce the impact on the existing system..*
6. *Pipes from south system (300 and 500 on SWS Basin Sheet) will grade to the interior ponds for the first two feet of pond impoundment. Impoundment past that will result in water being released offsite to Ridge Port North Ponds.*

SIENA LAKES ADDITION

DRAINAGE PLAN

SEAL

RUGGLES & BOHM

ENGINEERING | SURVEYING | LANDSCAPE ARCHITECTURE | GOVERNMENT

651 NORTH MAIN WICHITA, KANSAS 67203 P (316) 264-6006 F (316) 264-1421
WWW.RUGGLESBOHM.COM

PROJECT NUMBER --	RB JOB NO. --	DWG. SCALE ...
DRAWING FILE --		

DATE	June 6, 2014
DESIGN	KWL
DRAWN	KWL
REVIEW	...
SHEET	1
OF	1

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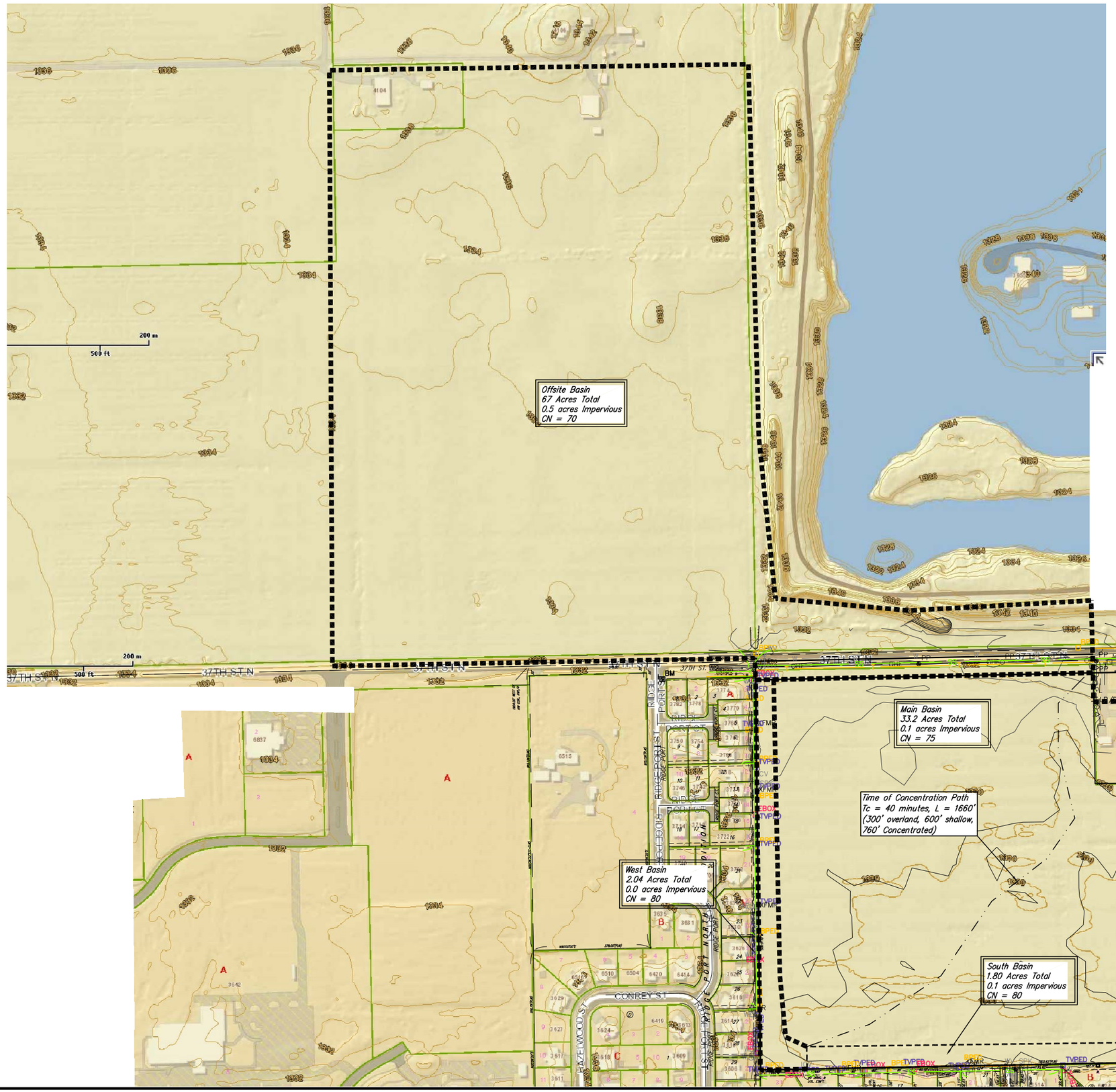

NOTES

1. The site is 56% Carwile Clay loam (Hydrologic Soil Group D), 29% Salt Creek and Naron Fine Sandy Loam (Hydrologic Soil Group C) and 15% Pratt Loamy Fine Sand (Hydrologic Soil Group A).
2. Existing Storm Sewer along the west and south perimeters will be used to convey rear yard drainage in those areas. The drainage plan for Ridge Port North 4th Addition was specifically designed for that to occur.
3. The drainage plan for Ridge Port 4th allows for 110 cfs to be discharged from this proposed addition into the existing storm sewer in Lot 13, Block A of Ridge Port 4th Addition. The discharge pipe from the onsite ponds will be sized to limit the outflow below that amount.

SIENA LAKES ADDITION

EXISTING CONDITIONS

SEAL

RUGGLES & BOHM

ENGINEERING | SURVEYING | LANDSCAPE ARCHITECTURE | GOVERNMENT

854 NORTH MAIN WICHITA, KANSAS 67203 P (316) 264-6000 F (316) 264-1423 WWW.RUGGLESBOHM.COM

PROJECT NUMBER --	RB JOB NO. --	DWG. SCALE ---
DRAWING FILE --		

DATE	May 27, 2014
DESIGN	KWL
DRAWN	KWL
REVIEW	---
SHEET	1
OF	1

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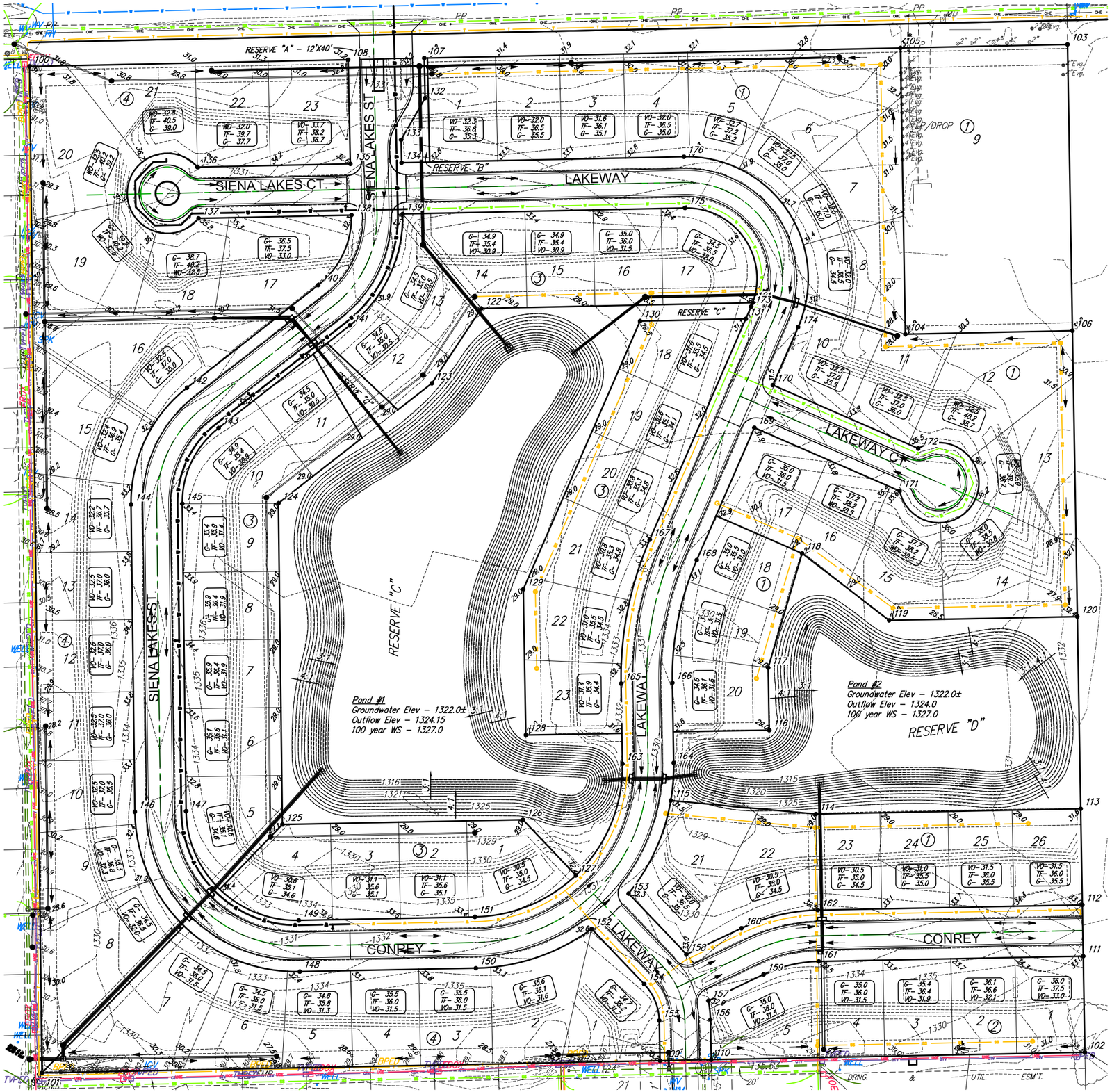
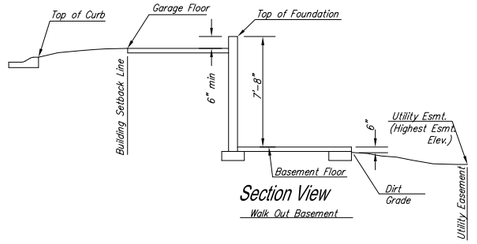
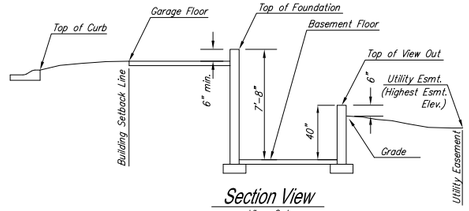




Section View
Walk Out Basement



Section View
View-Out

MINIMUM BUILDING PAD ELEVATION FOR LOWEST OPENING INTO STRUCTURES		
BLOCK	LOT NO.	ELEVATION (NAVD88)
1	14 - 26	1329.0
3	1 - 23	1329.0

BENCHMARKS

BENCHMARK #1: CHISELED SQUARE AT THE END OF THE TOP OF CURB AT THE SOUTHEAST CORNER OF RIDGE PORT AND 37TH ST. N., ELEVATION = 1333.05 (NAVD88)

BENCHMARK #2: RAILROAD SPIKE IN THE NORTH FACE OF THE 6TH POWER POLE WEST OF HOOVER, 2066' W. & 18' S. OF 37TH ST. N. AND HOOVER, ELEVATION = 1332.89 (NAVD88)

BENCHMARK #3: RAILROAD SPIKE IN THE NORTH FACE OF THE 4TH POWER POLE WEST OF HOOVER, ON THE WEST SIDE OF THE DRIVE ENTRANCE TO HOUSE #6007, 1494' W. & 20' S. OF 37TH ST. N. AND HOOVER, ELEVATION = 1334.74 (NAVD88)

BENCHMARK #4: CHISELED SQUARE ON THE SOUTH SIDE OF CURB INLET ON THE EAST SIDE OF LAKEWAY ST., 8.5' NORTH OF THE NORTH FACE OF HOUSE #3514 LAKEWAY ST. ELEVATION = 1329.58 (NAVD88)

60' 0 60'

SIENA LAKES ADDITION
PRELIMINARY GRADING PLAN

SEAL

RUGGLES & BOHM
ENGINEERING | SURVEYING | LANDSCAPE ARCHITECTURE | GOVERNMENT
804 NORTH MAIN WICHITA, KANSAS 67203 P (316) 264-6006 F (316) 264-1482
WWW.RUGGLESBOHM.COM

DATE	June 6, 2014
DESIGN	KWL
DRAWN	KWL
REVIEW	--
PROJECT NUMBER	--
RB JOB NO.	--
DWG. SCALE	--
DRAWING FILE	--
SHEET	1 OF 1

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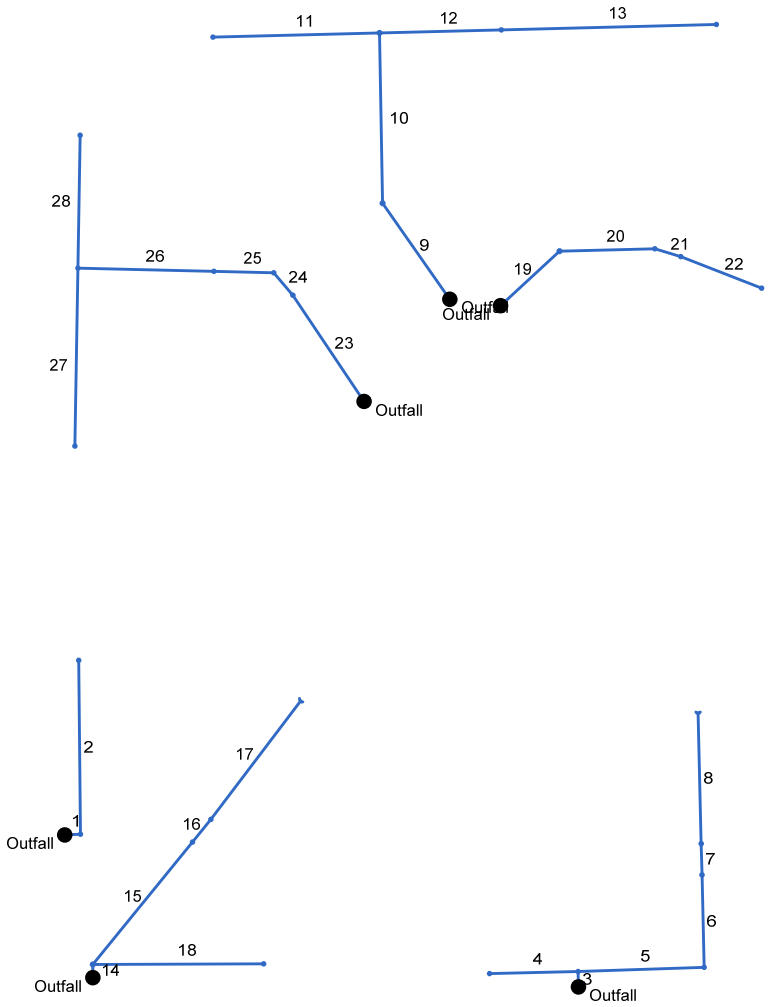
Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2012 Plan



Project File: Line 1.stm	Number of lines: 28	Date: 7/9/2014

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	701	8.00	15	Cir	24.559	1324.36	1324.48	0.489	1325.47*	1325.86*	0.66	1326.52	End	Manhole
2	702	4.00	15	Cir	227.682	1324.48	1325.62	0.501	1326.52*	1327.27*	0.17	1327.43	1	Manhole
3	500	16.60	24	Cir	20.103	1324.68	1324.78	0.497	1326.15	1326.33	0.62	1326.96	End	Manhole
4	505	2.30	12	Cir	138.000	1324.78	1325.47	0.500	1326.96*	1327.45*	0.13	1327.58	3	Manhole
5	501	14.30	24	Cir	196.350	1324.78	1325.27	0.250	1326.96*	1327.63*	0.32	1327.95	3	Manhole
6	502	12.00	24	Cir	121.000	1325.27	1325.57	0.248	1327.95*	1328.24*	0.11	1328.35	5	Curb-Horiz
7	503	12.00	24	Cir	41.000	1325.57	1325.67	0.244	1328.35*	1328.45*	0.11	1328.57	6	Curb-Horiz
8	504	12.00	24	Cir	171.000	1325.67	1326.10	0.251	1328.57*	1328.98*	0.23	1329.20	7	OpenHeadwall
9	100	29.50	30	Cir	163.560	1320.00	1321.50	0.917	1321.53	1323.35	n/a	1323.80	End	Manhole
10	101	29.50	24	Cir	223.064	1322.00	1322.75	0.336	1324.00*	1327.24*	0.69	1327.92	9	Manhole
11	102	2.10	15	Cir	259.609	1323.50	1324.60	0.424	1327.92*	1328.15*	0.02	1328.18	10	Manhole
12	103	3.40	15	Cir	189.598	1323.50	1324.26	0.401	1327.92*	1328.37*	0.02	1328.39	10	Manhole
13	104	1.70	15	Cir	335.000	1324.26	1325.60	0.400	1328.39*	1328.58*	0.03	1328.61	12	Manhole
14	301	34.30	36	Cir	17.150	1322.04	1322.09	0.291	1323.94	1324.13	0.70	1324.83	End	Manhole
15	302	30.00	36	Cir	223.056	1322.09	1322.76	0.300	1324.83	1325.12	0.06	1325.18	14	Manhole
16	303	30.00	36	Cir	41.340	1322.76	1322.88	0.290	1325.18	1325.23	0.06	1325.29	15	Manhole
17	304	30.00	36	Cir	208.576	1322.88	1323.32	0.211	1325.29	1325.65	0.40	1326.05	16	OpenHeadwall
18	305	4.30	15	Cir	266.000	1323.34	1324.67	0.500	1324.83	1325.76	0.22	1325.98	14	Manhole
19	600	32.90	30	Cir	116.269	1319.00	1322.91	3.363	1320.27	1324.86	0.50	1325.36	End	Manhole
20	601	32.90	30	Cir	148.619	1322.91	1323.65	0.498	1325.36	1326.08	0.22	1326.30	19	Manhole
21	602	24.30	24	Cir	41.480	1324.15	1324.36	0.506	1326.30*	1326.71*	0.14	1326.85	20	Manhole
22	603	6.30	18	Cir	132.744	1324.36	1325.02	0.497	1326.85*	1327.25*	0.10	1327.35	21	Manhole
23	200	38.50	24	Cir	177.789	1318.50	1323.04	2.554	1320.11	1324.98	n/a	1325.34	End	Manhole
24	201	28.20	24	Cir	42.017	1323.04	1323.25	0.500	1325.34*	1325.90*	0.63	1326.52	23	Manhole

Project File: Line 1.stm | Number of lines: 28 | Run Date: 7/9/2014

NOTES: Known Qs only ; *Surcharged (HGL above crown).

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
25	202	12.80	24	Cir	92.941	1323.26	1323.72	0.495	1326.52*	1326.78*	0.04	1326.82	24	Manhole
26	203	9.60	24	Cir	212.000	1323.72	1324.78	0.500	1326.82*	1327.14*	0.15	1327.29	25	Manhole
27	204	3.30	15	Cir	233.000	1324.78	1325.95	0.502	1327.29*	1327.81*	0.11	1327.92	26	Manhole
28	205	3.30	15	Cir	174.000	1324.78	1325.65	0.500	1327.29*	1327.67*	0.11	1327.79	26	Manhole

Project File: Line 1.stm | Number of lines: 28 | Run Date: 7/9/2014

NOTES: Known Qs only ; *Surcharged (HGL above crown).

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	24.559	0.00	0.00	0.00	0.00	0.00	0.0	1.2	0.0	8.00	4.89	6.72	15	0.49	1324.36	1324.48	1325.47	1325.86	1328.22	1328.60	701
2	1	227.682	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.00	4.95	3.26	15	0.50	1324.48	1325.62	1326.52	1327.27	1328.60	1328.20	702
3	End	20.103	0.00	0.00	0.00	0.00	0.00	0.0	2.2	0.0	16.60	17.28	6.52	24	0.50	1324.68	1324.78	1326.15	1326.33	1329.98	1330.30	500
4	3	138.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.30	2.73	2.93	12	0.50	1324.78	1325.47	1326.96	1327.45	1330.30	1327.50	505
5	3	196.350	0.00	0.00	0.00	0.00	0.00	0.0	1.5	0.0	14.30	12.24	4.55	24	0.25	1324.78	1325.27	1326.96	1327.63	1330.30	0.00	501
6	5	121.000	0.00	0.00	0.00	0.00	0.00	0.0	0.9	0.0	12.00	12.20	3.82	24	0.25	1325.27	1325.57	1327.95	1328.24	0.00	0.00	502
7	6	41.000	0.00	0.00	0.00	0.00	0.00	0.0	0.7	0.0	12.00	12.11	3.82	24	0.24	1325.57	1325.67	1328.35	1328.45	0.00	0.00	503
8	7	171.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	12.00	12.29	3.82	24	0.25	1325.67	1326.10	1328.57	1328.98	0.00	0.00	504
9	End	163.560	0.00	0.00	0.00	0.00	0.00	0.0	5.6	0.0	29.50	42.55	8.47	30	0.92	1320.00	1321.50	1321.53	1323.35	1321.50	1334.00	100
10	9	223.064	0.00	0.00	0.00	0.00	0.00	0.0	5.2	0.0	29.50	14.21	9.39	24	0.34	1322.00	1322.75	1324.00	1327.24	1334.00	1331.64	101
11	10	259.609	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.10	4.55	1.71	15	0.42	1323.50	1324.60	1327.92	1328.15	1331.64	1329.00	102
12	10	189.598	0.00	0.00	0.00	0.00	0.00	0.0	4.0	0.0	3.40	4.43	2.77	15	0.40	1323.50	1324.26	1327.92	1328.37	1331.64	1329.00	103
13	12	335.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	1.70	4.42	1.39	15	0.40	1324.26	1325.60	1328.39	1328.58	1329.00	1329.00	104
14	End	17.150	0.00	0.00	0.00	0.00	0.00	0.0	1.9	0.0	34.30	38.98	6.99	36	0.29	1322.04	1322.09	1323.94	1324.13	1328.00	1329.30	301
15	14	223.056	0.00	0.00	0.00	0.00	0.00	0.0	1.0	0.0	30.00	39.60	4.74	36	0.30	1322.09	1322.76	1324.83	1325.12	1329.30	1331.13	302
16	15	41.340	0.00	0.00	0.00	0.00	0.00	0.0	0.8	0.0	30.00	38.93	4.98	36	0.29	1322.76	1322.88	1325.18	1325.23	1331.13	1331.14	303
17	16	208.576	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	30.00	33.18	5.01	36	0.21	1322.88	1323.32	1325.29	1325.65	1331.14	1321.33	304
18	14	266.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.30	4.95	3.65	15	0.50	1323.34	1324.67	1324.83	1325.76	1329.30	1327.50	305
19	End	116.269	0.00	0.00	0.00	0.00	0.00	0.0	1.1	0.0	32.90	81.48	10.57	30	3.36	1319.00	1322.91	1320.27	1324.86	1321.92	1330.47	600
20	19	148.619	0.00	0.00	0.00	0.00	0.00	0.0	0.7	0.0	32.90	31.35	6.75	30	0.50	1322.91	1323.65	1325.36	1326.08	1330.47	1330.80	601
21	20	41.480	0.00	0.00	0.00	0.00	0.00	0.0	0.6	0.0	24.30	17.43	7.74	24	0.51	1324.15	1324.36	1326.30	1326.71	1330.80	1330.78	602
22	21	132.744	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	6.30	8.02	3.57	18	0.50	1324.36	1325.02	1326.85	1327.25	1330.78	1328.04	603

Project File: Line 1.stm

Number of lines: 28

Run Date: 7/9/2014

NOTES:Known Qs only ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	End	177.789	0.00	0.00	0.00	0.00	0.00	0.0	3.1	0.0	38.50	39.16	13.28	24	2.55	1318.50	1323.04	1320.11	1324.98	1321.42	1331.29	200
24	23	42.017	0.00	0.00	0.00	0.00	0.00	0.0	3.0	0.0	28.20	17.32	8.98	24	0.50	1323.04	1323.25	1325.34	1325.90	1331.29	1331.31	201
25	24	92.941	0.00	0.00	0.00	0.00	0.00	0.0	2.6	0.0	12.80	17.24	4.07	24	0.49	1323.26	1323.72	1326.52	1326.78	1331.31	1330.20	202
26	25	212.000	0.00	0.00	0.00	0.00	0.00	0.0	1.4	0.0	9.60	17.33	3.06	24	0.50	1323.72	1324.78	1326.82	1327.14	1330.20	1328.80	203
27	26	233.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.30	4.96	2.69	15	0.50	1324.78	1325.95	1327.29	1327.81	1328.80	1328.38	204
28	26	174.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.30	4.95	2.69	15	0.50	1324.78	1325.65	1327.29	1327.67	1328.80	1329.30	205

Project File: Line 1.stm

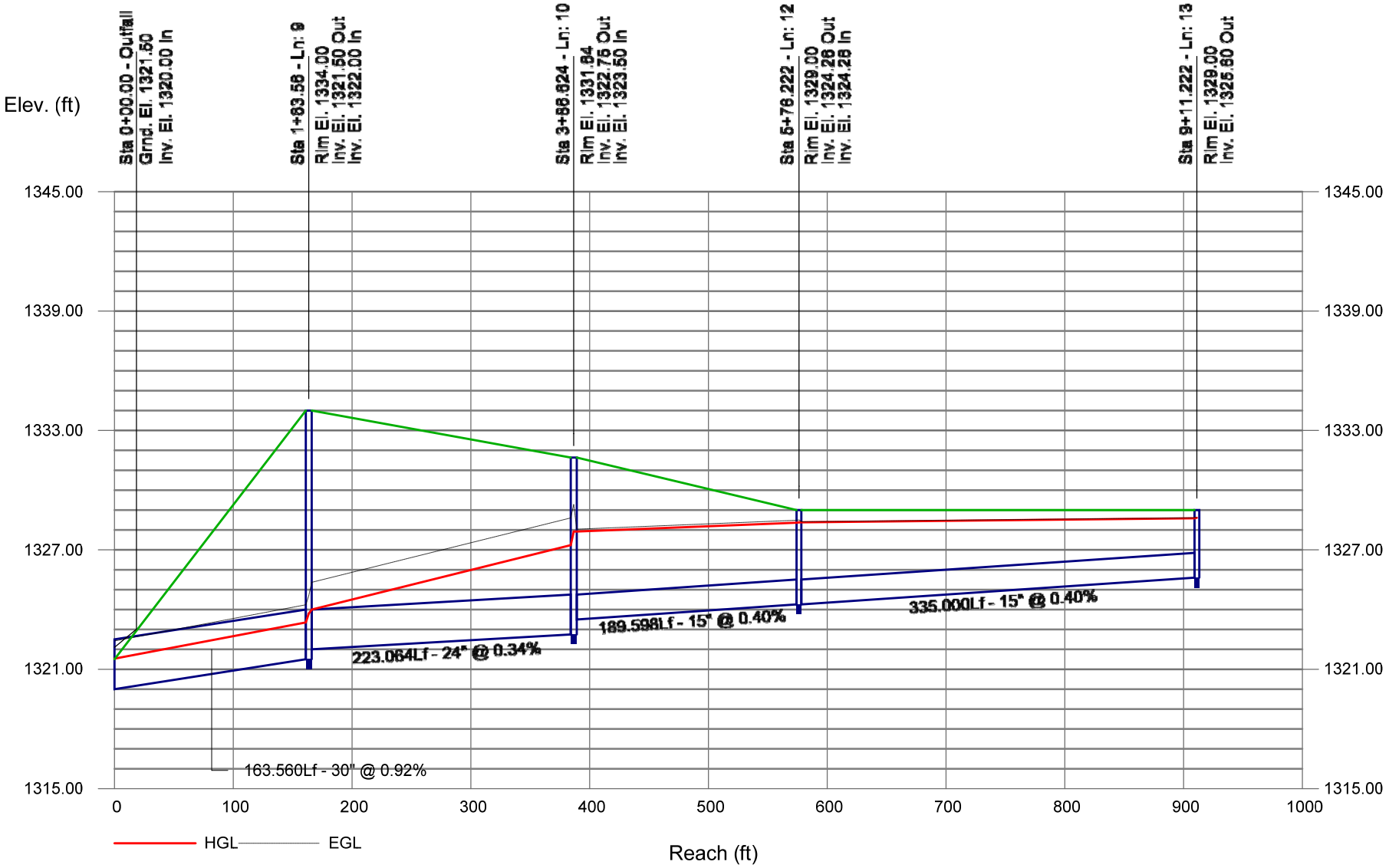
Number of lines: 28

Run Date: 7/9/2014

NOTES:Known Qs only ; c = cir e = ellip b = box

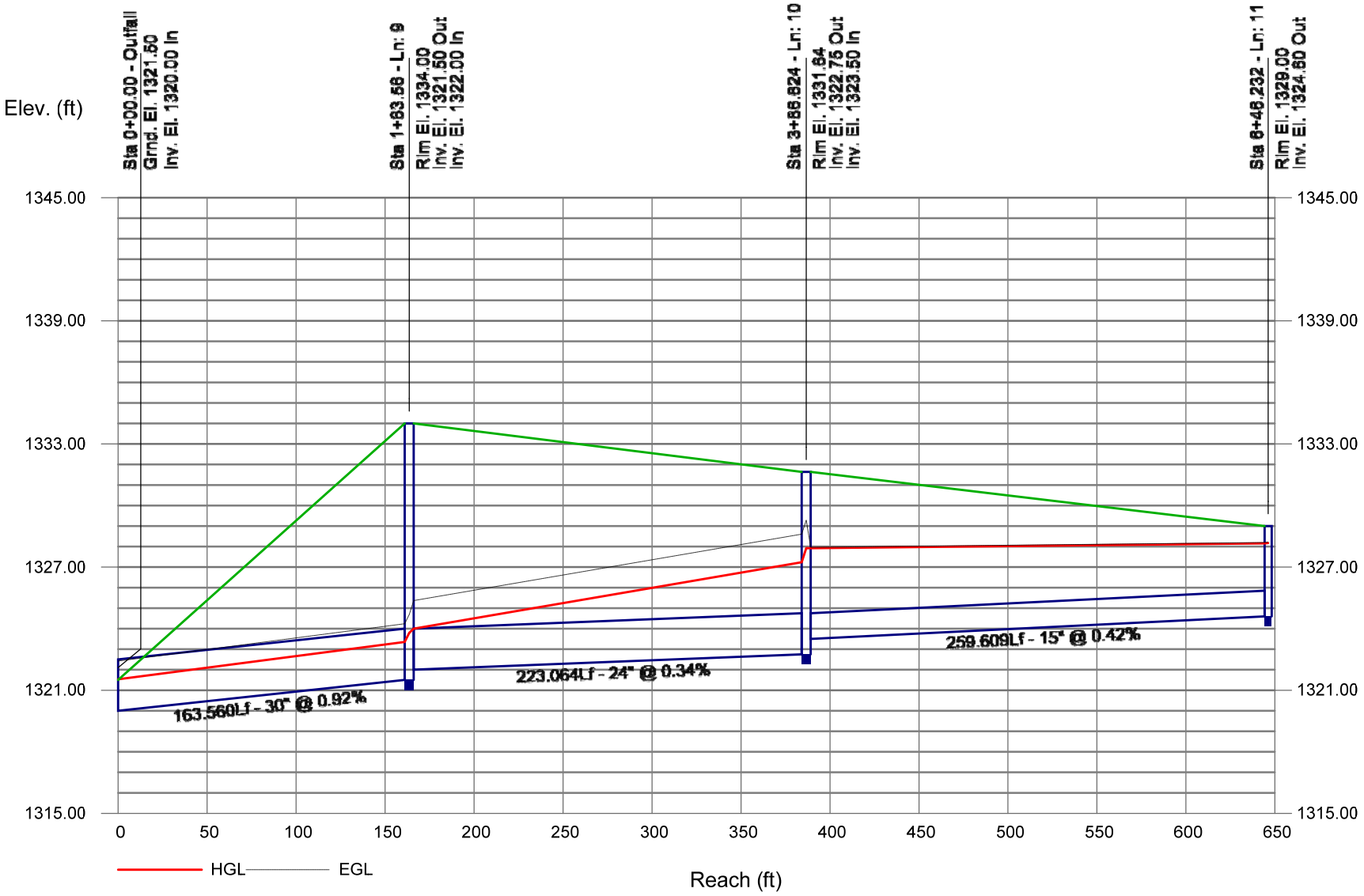
Storm Sewer Profile

Proj. file: Line 1.stm



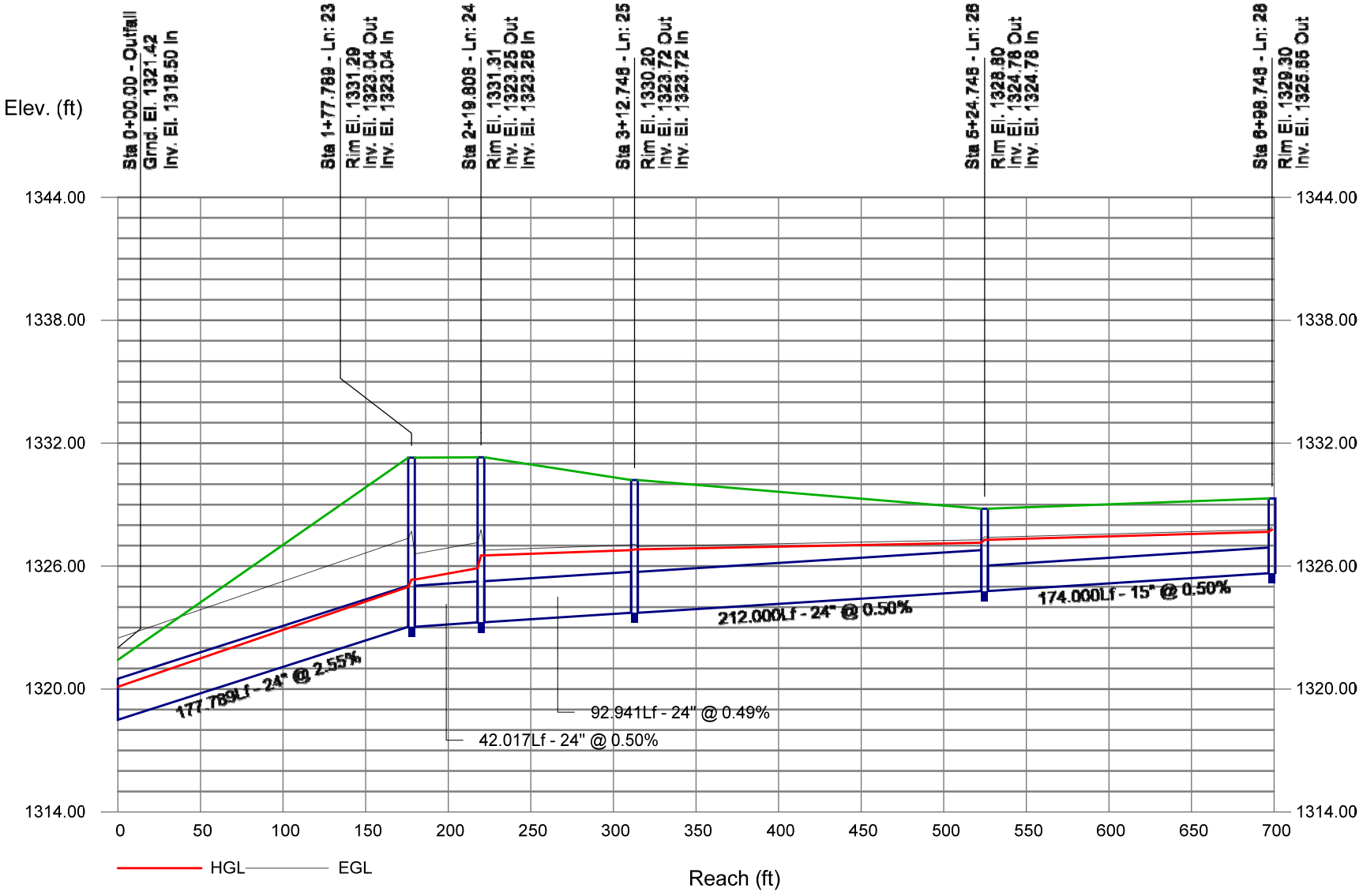
Storm Sewer Profile

Proj. file: Line 1.stm



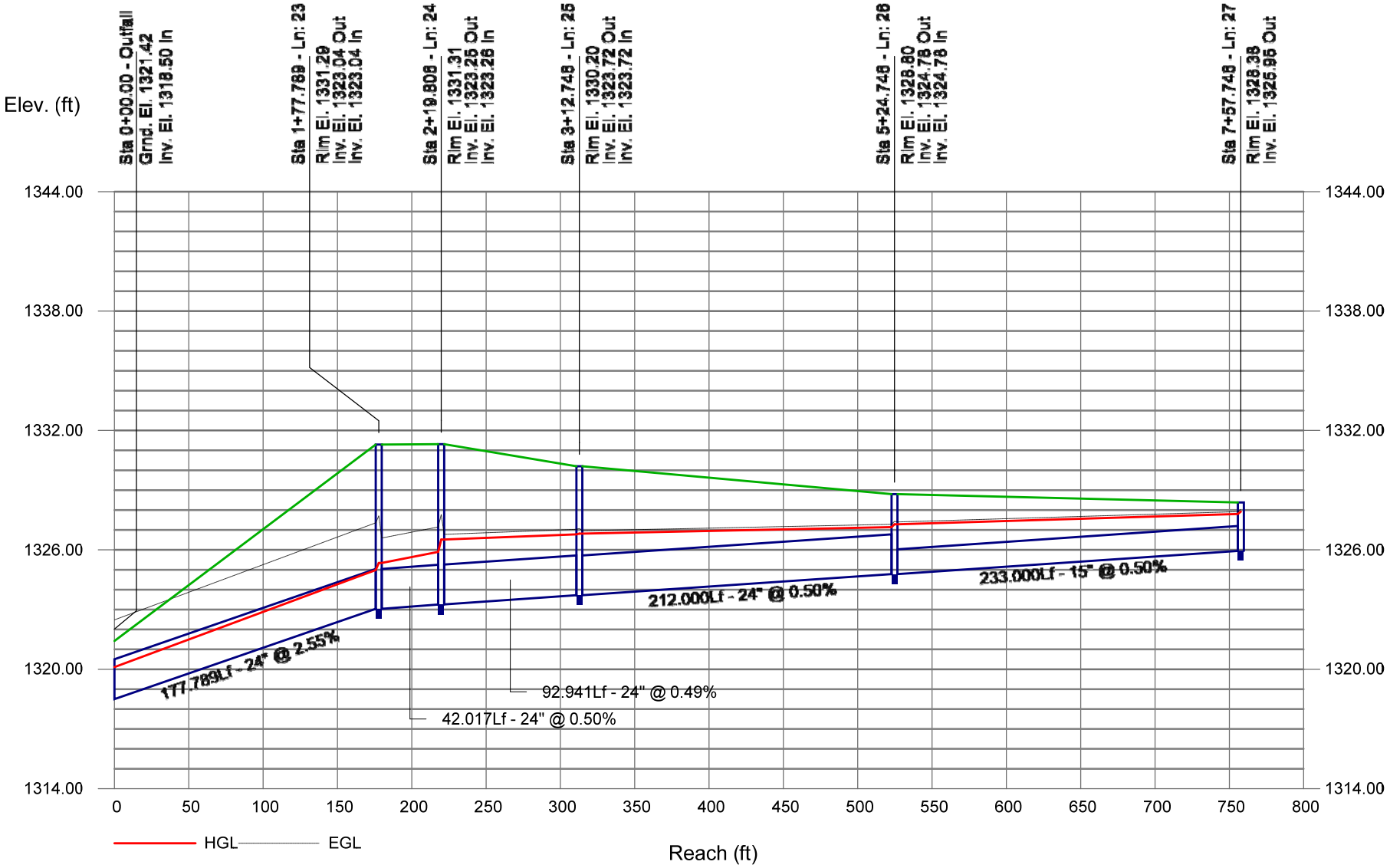
Storm Sewer Profile

Proj. file: Line 1.stm



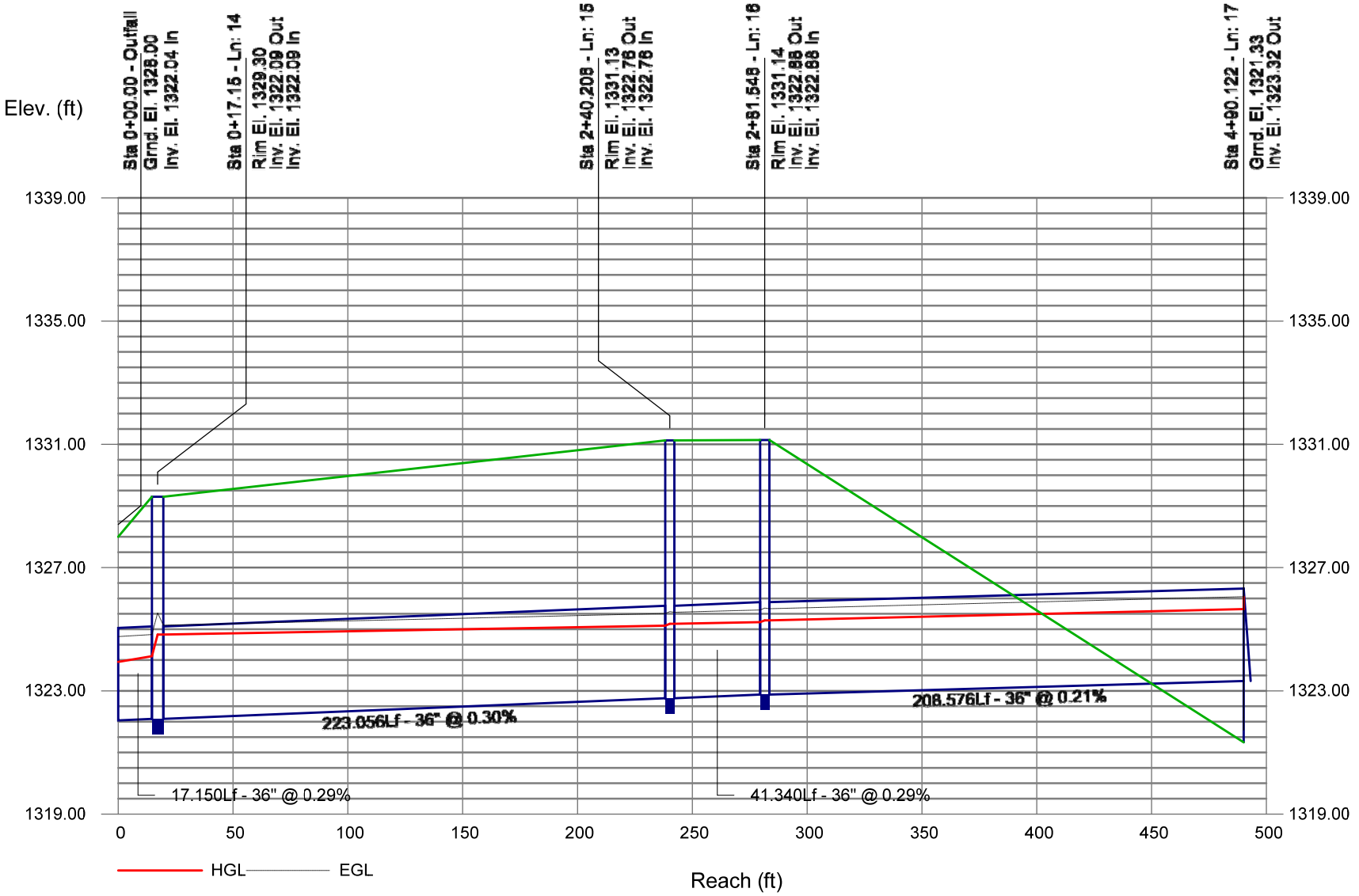
Storm Sewer Profile

Proj. file: Line 1.stm



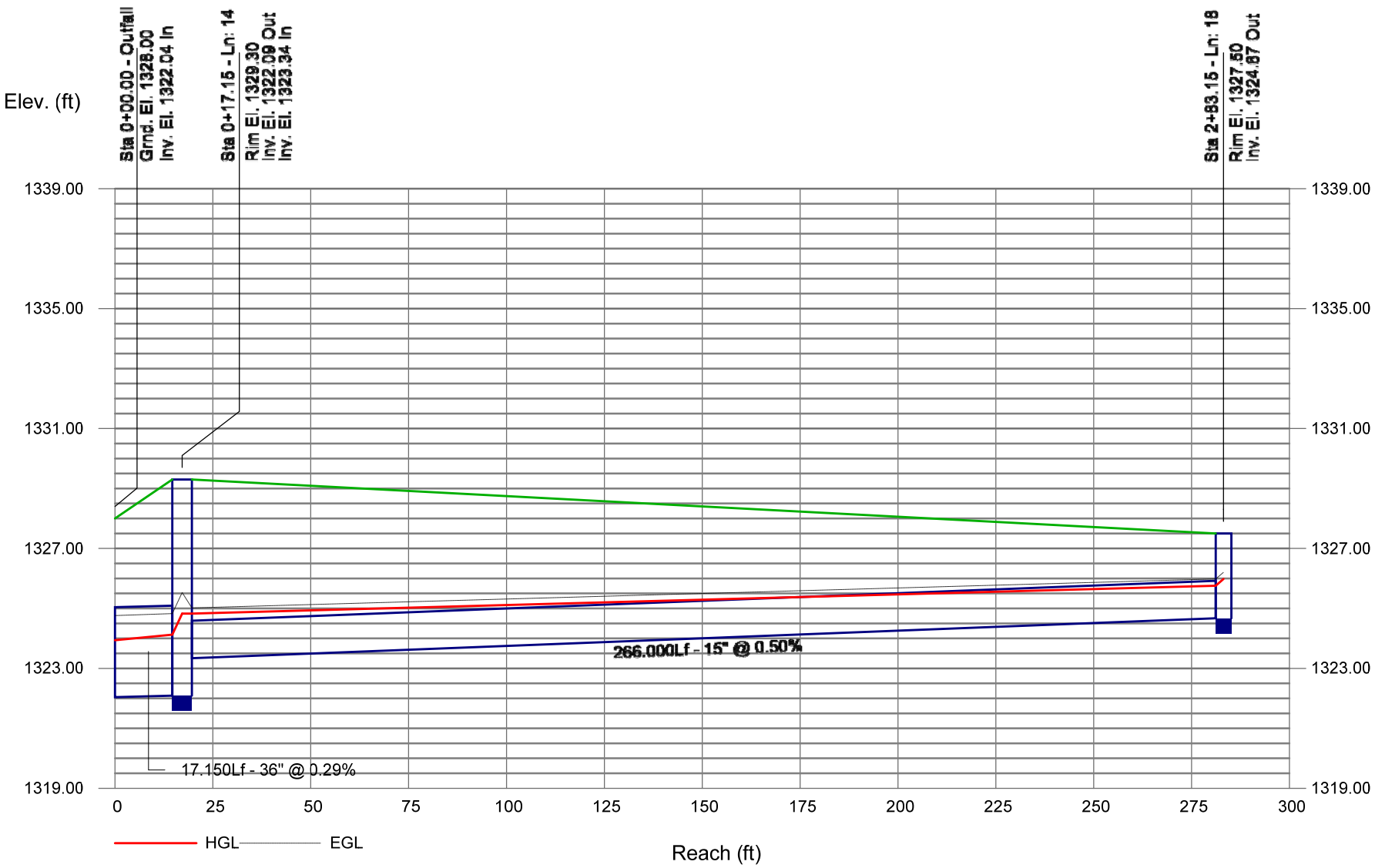
Storm Sewer Profile

Proj. file: Line 1.stm



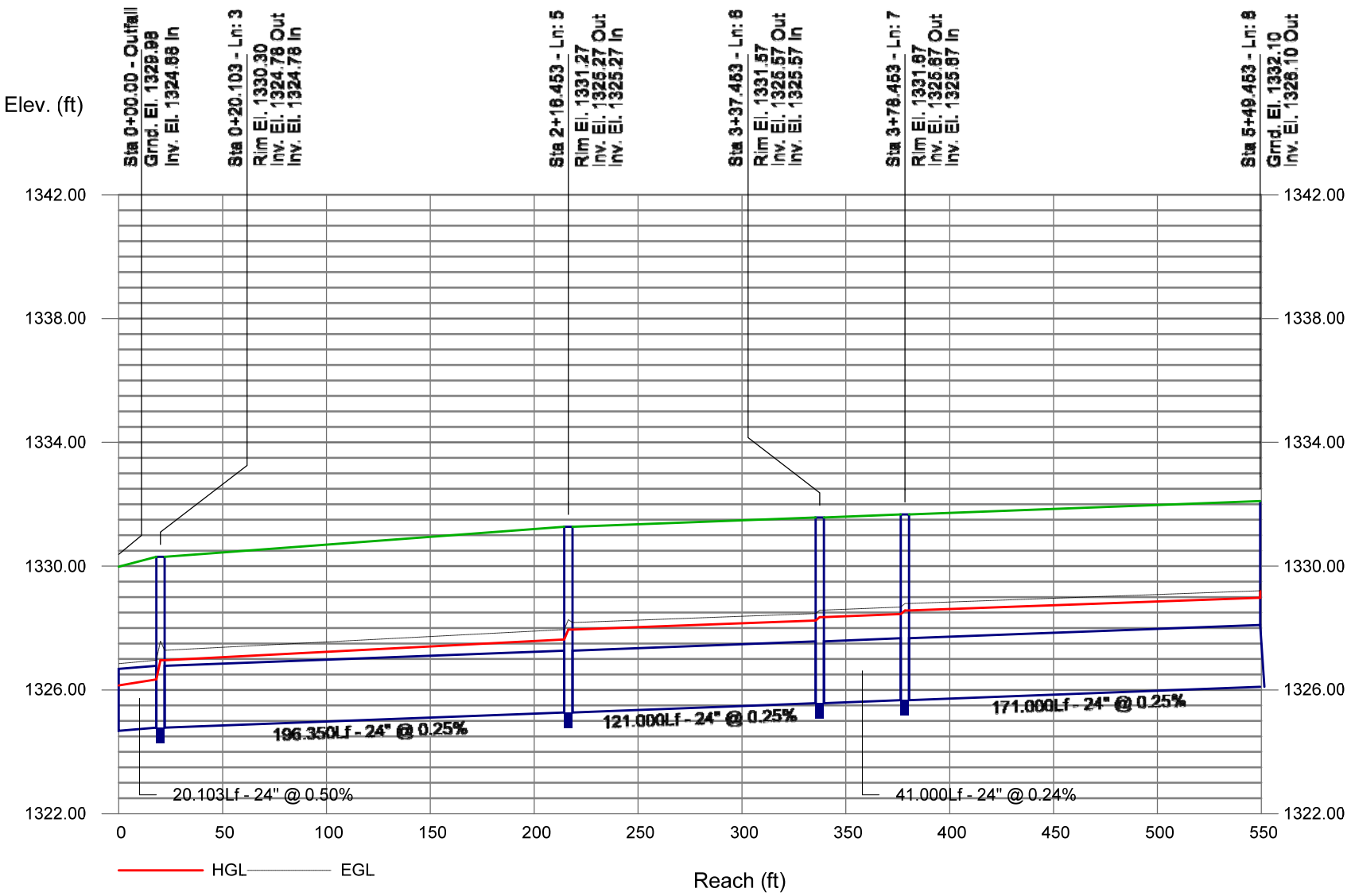
Storm Sewer Profile

Proj. file: Line 1.stm



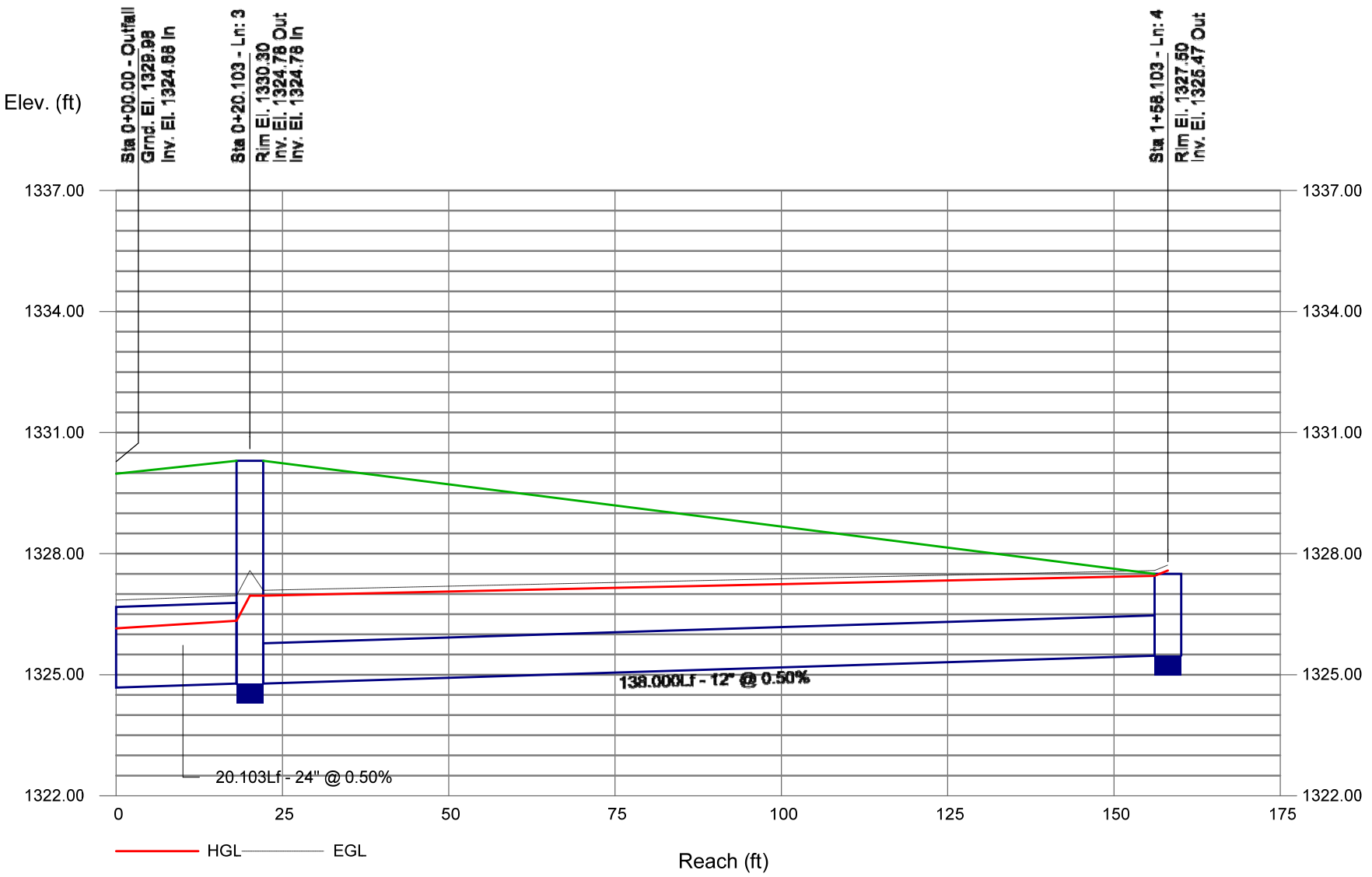
Storm Sewer Profile

Proj. file: Line 1.stm



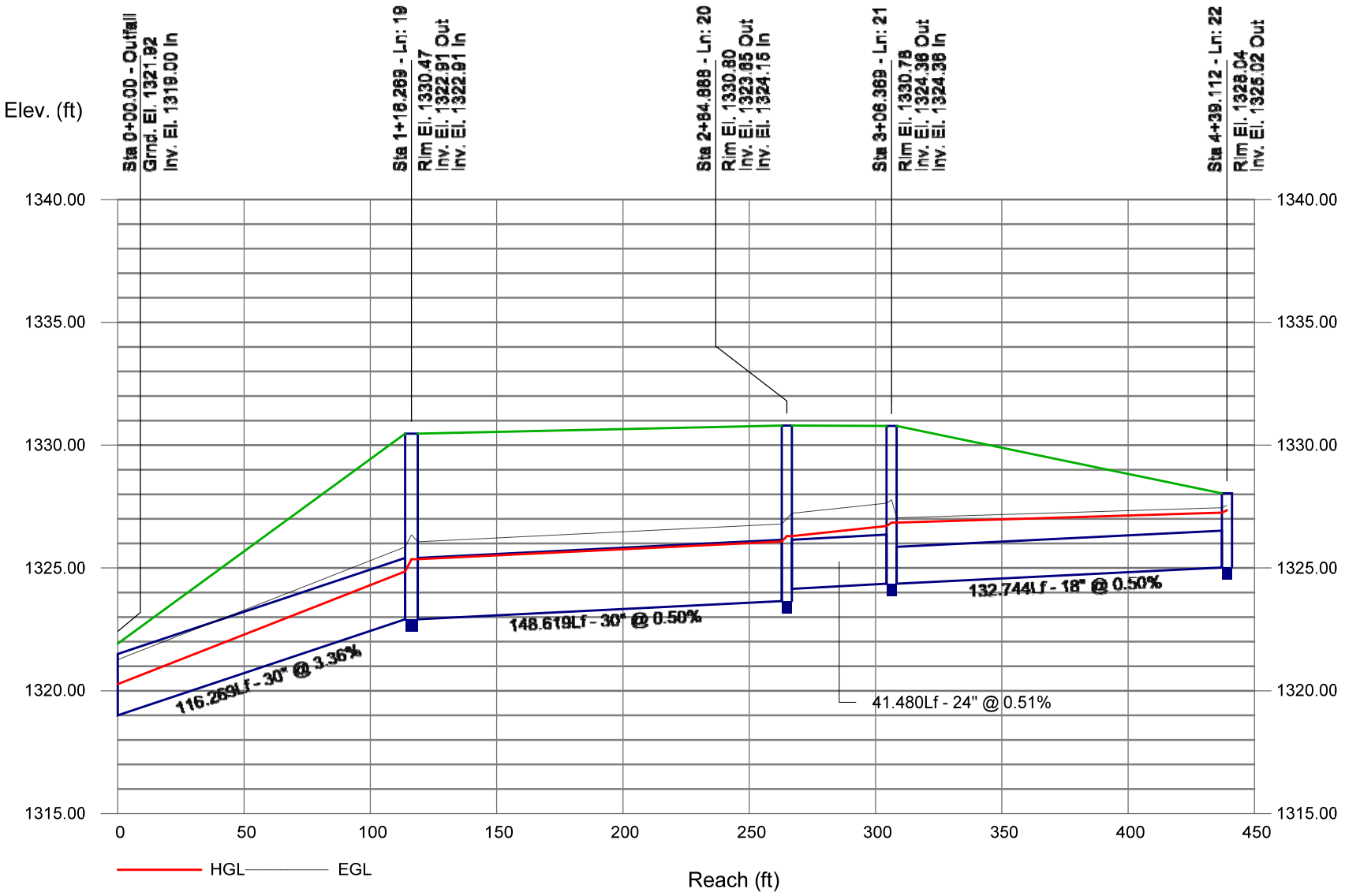
Storm Sewer Profile

Proj. file: Line 1.stm



Storm Sewer Profile

Proj. file: Line 1.stm



Storm Sewer Profile

Proj. file: Line 1.stm