

**City of Wilmington
Stormwater Report
CALCULATIONS AND SUPPORTING DATA
for
NEUWIRTH ANNEX
375 Government Center Drive
WILMINGTON, NC 28403**

December, 2016

Prepared for:

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Final SW Calcs
3/2/2017
SWP2017007
rac

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ENGINEERING

NEUWIRTH ANNEX
375 Government Center Drive
WILMINGTON, NC 28403

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NEUWIRTH ANNEX

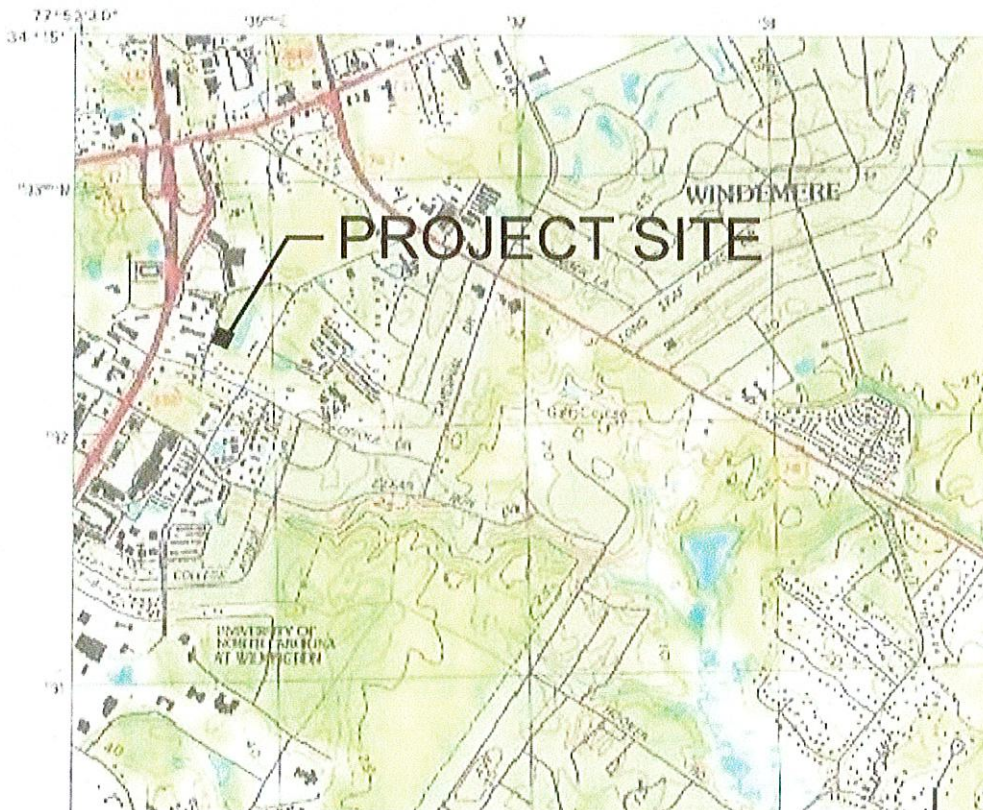
375 Government Center Drive
WILMINGTON, NC 28403

DESIGN NARRATIVE

Existing Site

Gillilan Properties, LLC is planning a car dealership to be located on approximately 2.3 acres of property. The property is located at 375 Government Center Drive. The proposed layout is shown on the site plan (C1)

The property is part of a planned subdivision that was permitted in the mid 2000's. The larger tract contains a master storm water pond and contains businesses such as CFPUA, a credit union, office building and shopping center.



WRIGHTSVILLE BEACH, NC 1997

It appears from a brief historical review of the property that the site been undeveloped since at least the 1930's. The property was under design and permitting for an apartment complex in June/July, 2016. As part of this effort extensive boring and groundwater investigation were performed on the property with no findings to indicate the property has been impacted from prior use nor activities surrounding the site.

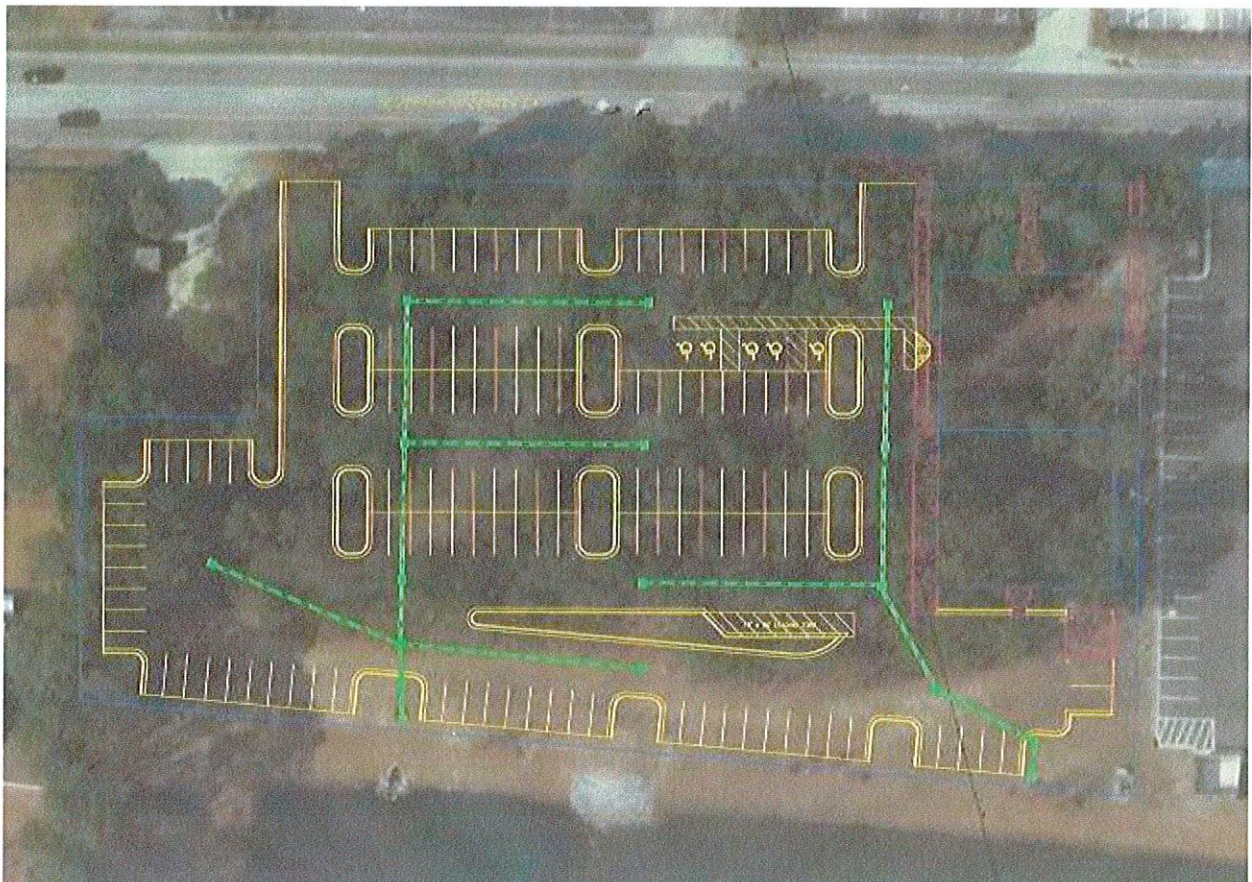
Phase 1 & 2 and groundwater analysis are available for this property upon request.

Water Quality Info

The property is in a basin that drains to Spring Branch. Per DEQ data this is considered part of the Cape Fear Basin. The area of ultimate discharge is classified C;Sw. The classification index number is 18-74-63-2-1.

Proposed Improvements

The proposed project is a car dealership. The site will contain a building that will eventually have a 10,000-sf footprint. The parking lot, drive isles and sidewalks in the facility will be constructed with either asphalt or the Owner is considering a concrete surface. The finish floor of the building and parking lot elevations set to match existing topographical features and reduce major excavation.



The property does not contain any wetlands.

The stormwater generated on site will be treated in the existing stormwater pond. The pond was permitted under the name Racine Drive Commercial S/D SW8 050304.

The development's impervious area will be 90,169 sf of building, parking, sidewalks and future development.

Included with this submittal is all required documentation as required under COW Ordinances.

Property Ownership

The property is currently (as of 12/16/16) owned by Racine Apartments, LLC per the deed recorded in the New Hanover County Register of Deeds in Deed Book 5983 Page 262-266.

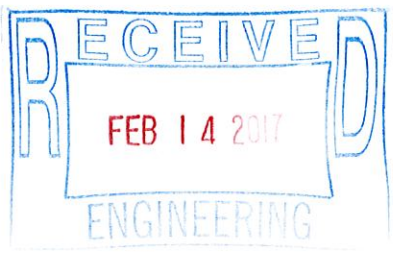
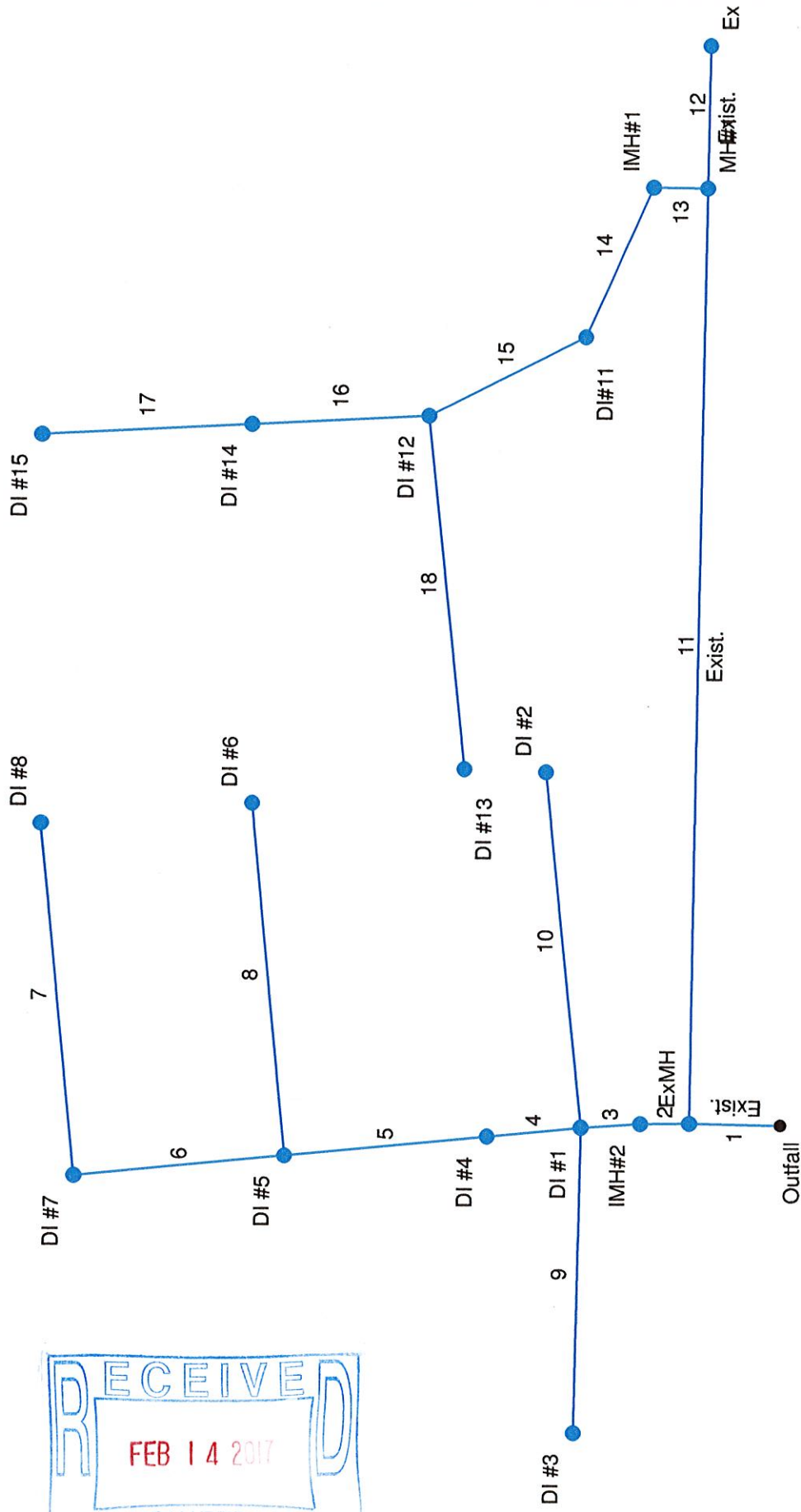
The property is under contract by Gillilan Properties LLC. Both the current deed and the purchase contract are included in the appendices.

The transaction is reportedly supposed to happen on December 28, 2016. As soon as the transaction is complete I will forward a copy of the current deed.

Appendix A – BUA Calculations

Appendix B – Storm Pipe Calculations

Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2009 Plan



Storm Sewer Tabulation

Station Line	To Line	Len (ft)	Drng Area		Rnoff coeff	Area x C		Tc		Rain (l)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
			Incr	Total		Inlet (min)	Syst	Incr	Total					Inlet (min)	Syst	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	26.00	0.00	6.14	0.00	5.13	5.0	9.4	6.4	32.85	0.00	4.65	36	-1.38	33.69	33.33	36.70	36.76	0.00	41.90	41.90	Exist.
2	1	14.00	0.00	1.26	0.00	0.99	0.0	8.5	6.6	6.46	15.99	2.06	24	0.50	33.96	34.03	37.10	37.11	41.90	41.00	41.00	
3	2	17.00	0.10	1.26	0.82	0.99	5.0	8.3	6.6	6.49	69.39	2.35	24	9.41	34.03	35.63	37.12	37.09	41.00	41.00	41.00	
4	3	27.00	0.09	0.78	0.91	0.63	5.0	8.2	6.6	4.14	6.70	2.34	18	0.41	35.63	35.74	37.26	37.30	41.00	41.00	41.00	
5	4	58.00	0.15	0.69	0.86	0.13	5.0	7.7	6.7	3.64	6.61	2.08	18	0.40	35.74	35.97	37.34	37.40	41.00	41.00	41.00	
6	5	60.50	0.21	0.40	0.73	0.15	5.0	7.1	6.8	1.97	4.07	1.61	15	0.40	35.97	36.21	37.51	37.56	41.00	41.00	41.00	
7	6	101.50	0.19	0.19	0.72	0.14	5.0	5.0	7.2	0.99	4.10	0.86	15	0.40	36.21	36.62	37.62	37.64	41.00	41.00	41.00	
8	5	101.50	0.14	0.14	0.89	0.12	5.0	5.0	7.2	0.90	5.77	0.96	15	0.80	35.97	36.78	37.51	37.52	41.00	41.00	41.00	
9	3	87.50	0.26	0.26	0.69	0.18	5.0	5.0	7.2	1.30	4.08	1.06	15	0.40	35.63	35.98	37.26	37.29	41.00	41.00	41.00	
10	3	102.50	0.12	0.12	0.82	0.10	5.0	5.0	7.2	0.71	4.08	0.58	15	0.40	35.63	36.04	37.26	37.27	41.00	41.00	41.00	
11	1	268.50	0.00	4.88	0.00	4.15	5.0	8.3	6.6	27.33	25.74	3.87	36	0.15	33.96	34.36	37.10	37.55	41.90	39.00	39.00	Exist.
12	11	41.00	3.84	3.84	0.87	3.34	5.0	5.0	7.2	24.15	25.51	3.42	36	0.15	34.36	34.42	37.78	37.84	39.00	42.00	42.00	Exist.
13	11	15.50	0.00	1.04	0.00	0.81	5.0	8.2	6.6	5.35	14.07	1.70	24	0.39	34.36	34.42	37.78	37.79	39.00	42.00	42.00	
14	13	47.00	0.20	1.04	0.73	0.15	5.0	7.9	6.7	5.38	6.68	3.05	18	0.40	34.42	34.61	37.83	37.96	42.00	41.00	41.00	
15	14	50.00	0.21	0.84	0.79	0.17	5.0	7.6	6.7	4.45	7.28	2.52	18	0.48	34.61	34.85	38.10	38.19	41.00	41.22	41.22	
16	15	50.50	0.22	0.51	0.86	0.19	5.0	5.9	7.0	2.72	6.61	1.54	18	0.40	34.85	35.05	38.33	38.37	41.22	41.22	41.22	
17	16	60.00	0.29	0.29	0.68	0.20	5.0	5.0	7.2	1.43	4.08	1.16	15	0.40	35.05	35.29	38.39	38.42	41.22	41.00	41.00	
18	15	102.00	0.12	0.12	0.92	0.11	5.0	5.0	7.2	0.80	4.09	0.65	15	0.40	34.85	35.26	38.33	38.35	41.22	41.00	41.00	

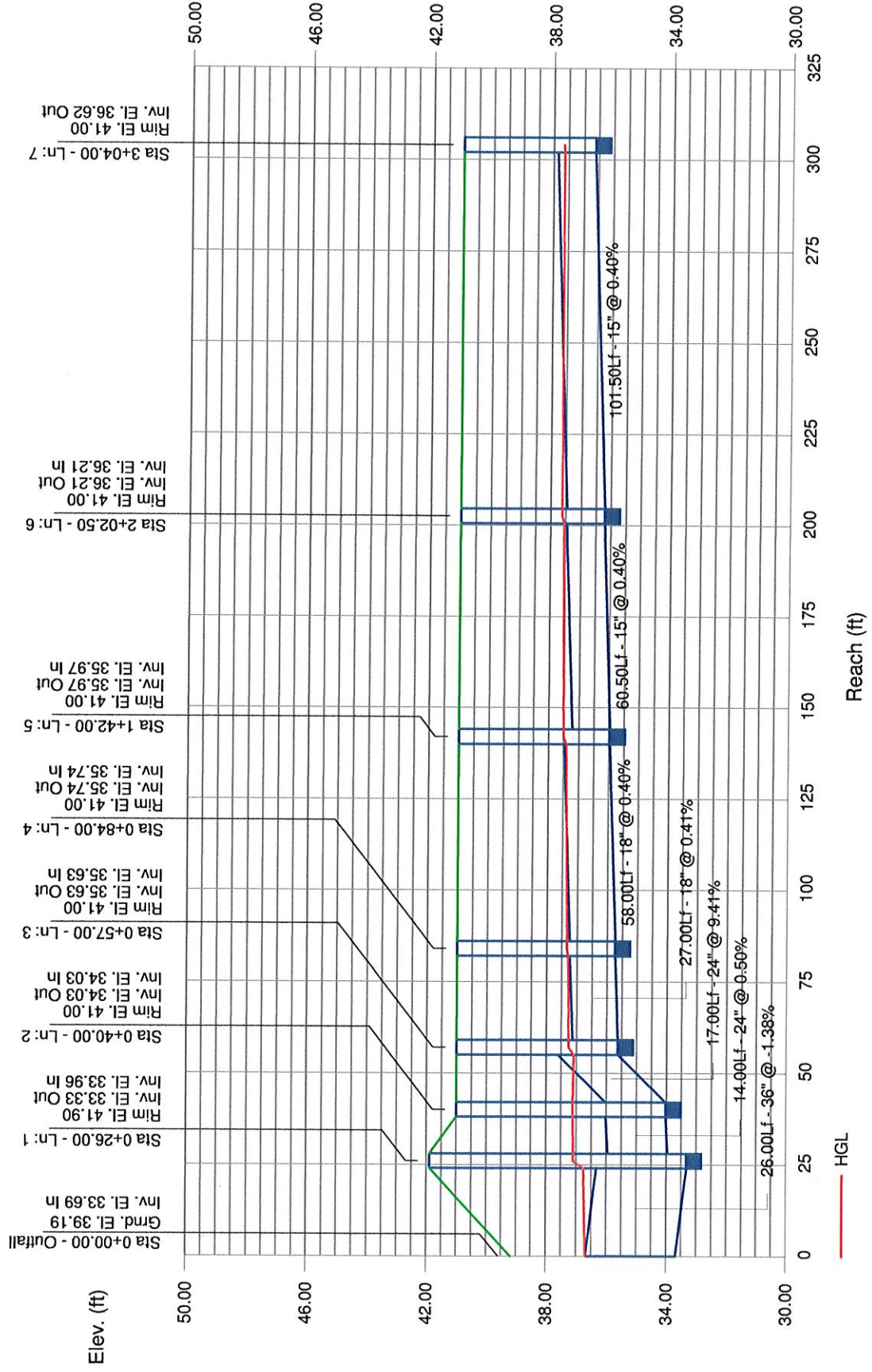
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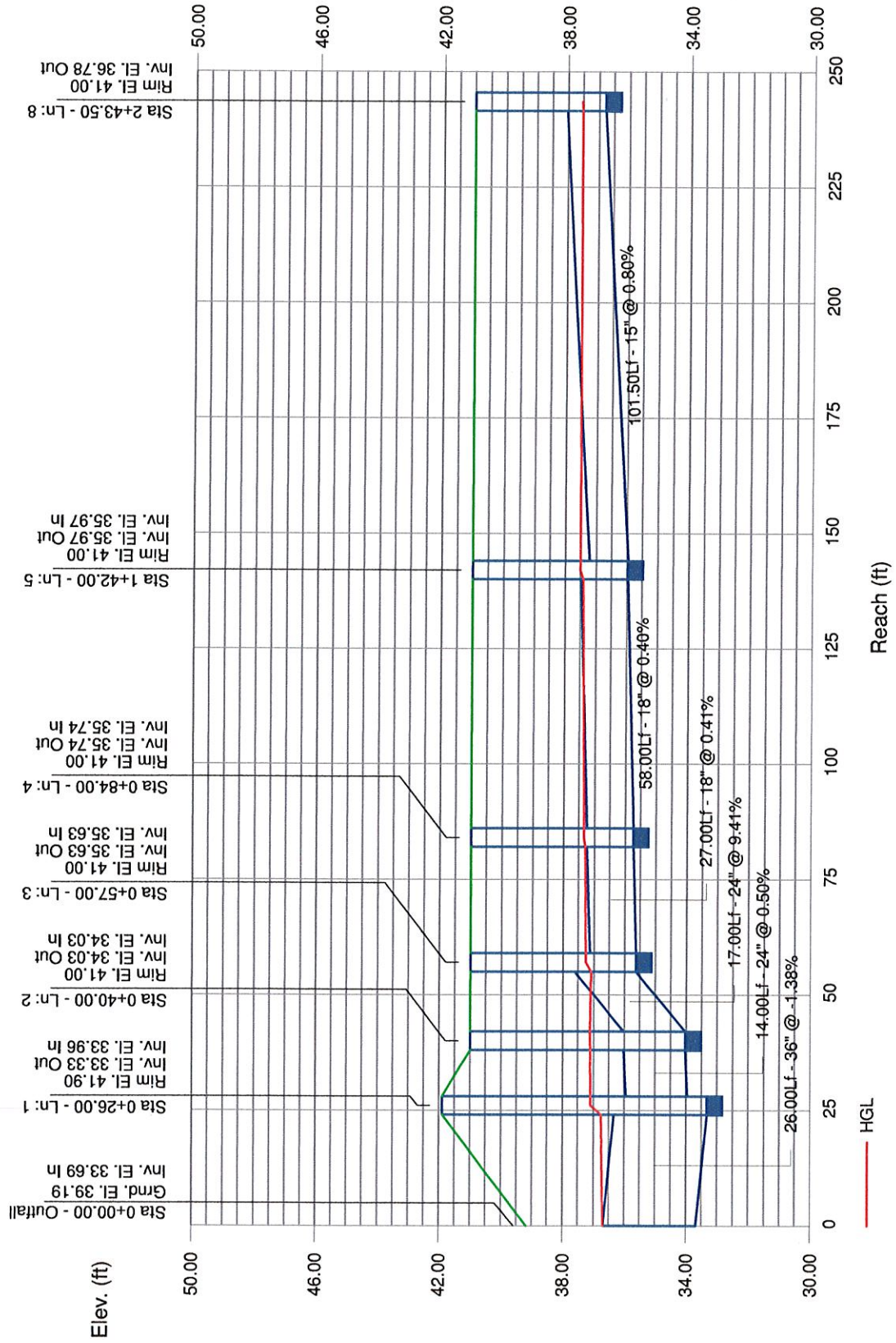
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NOTES: Intensity = 121.80 / (inlet time + 23.50) ^ 0.84; Return period = 10 Yrs. ; c = cir e = ellip b = box

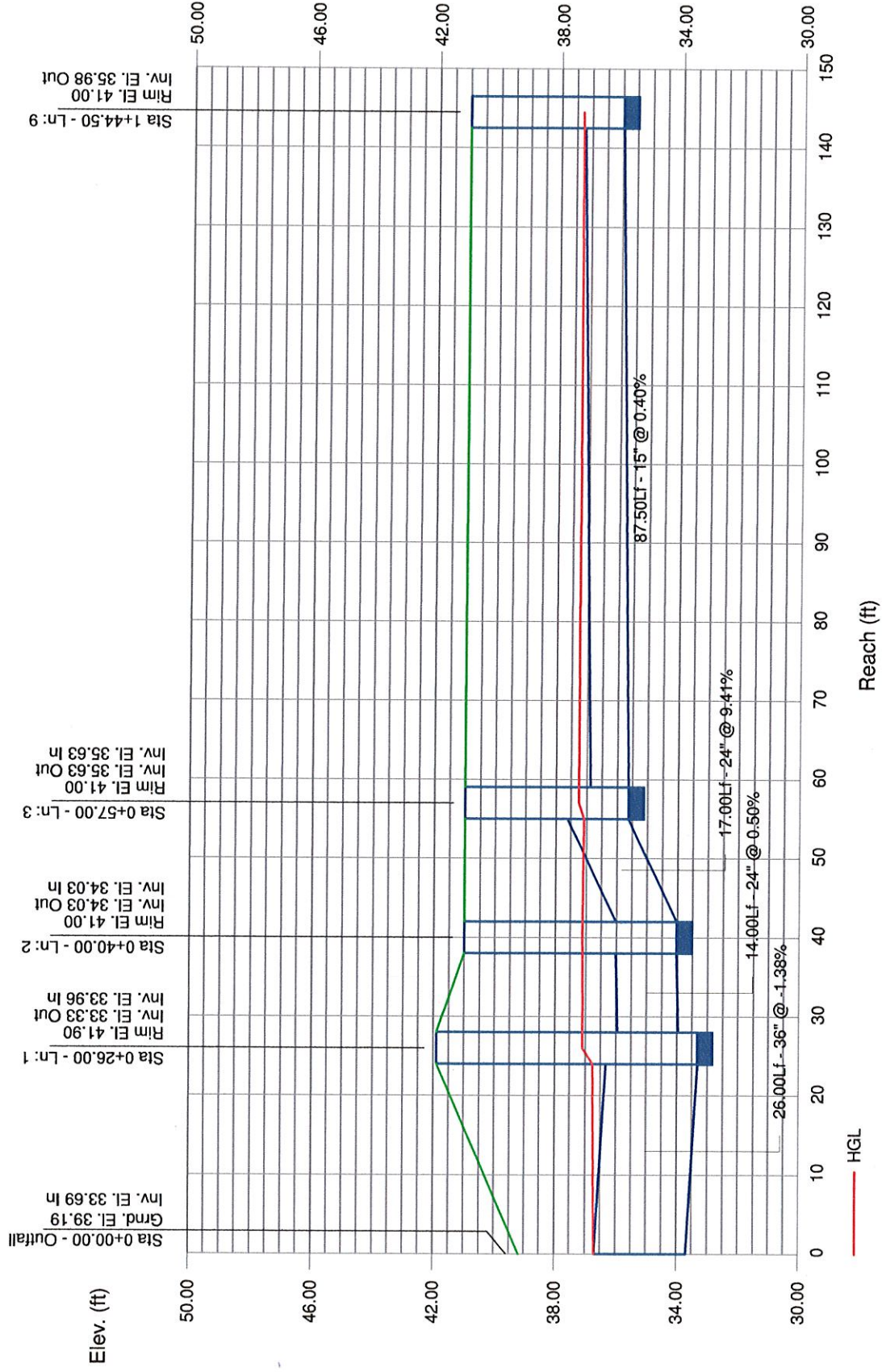
Storm Sewer Profile



Storm Sewer Profile

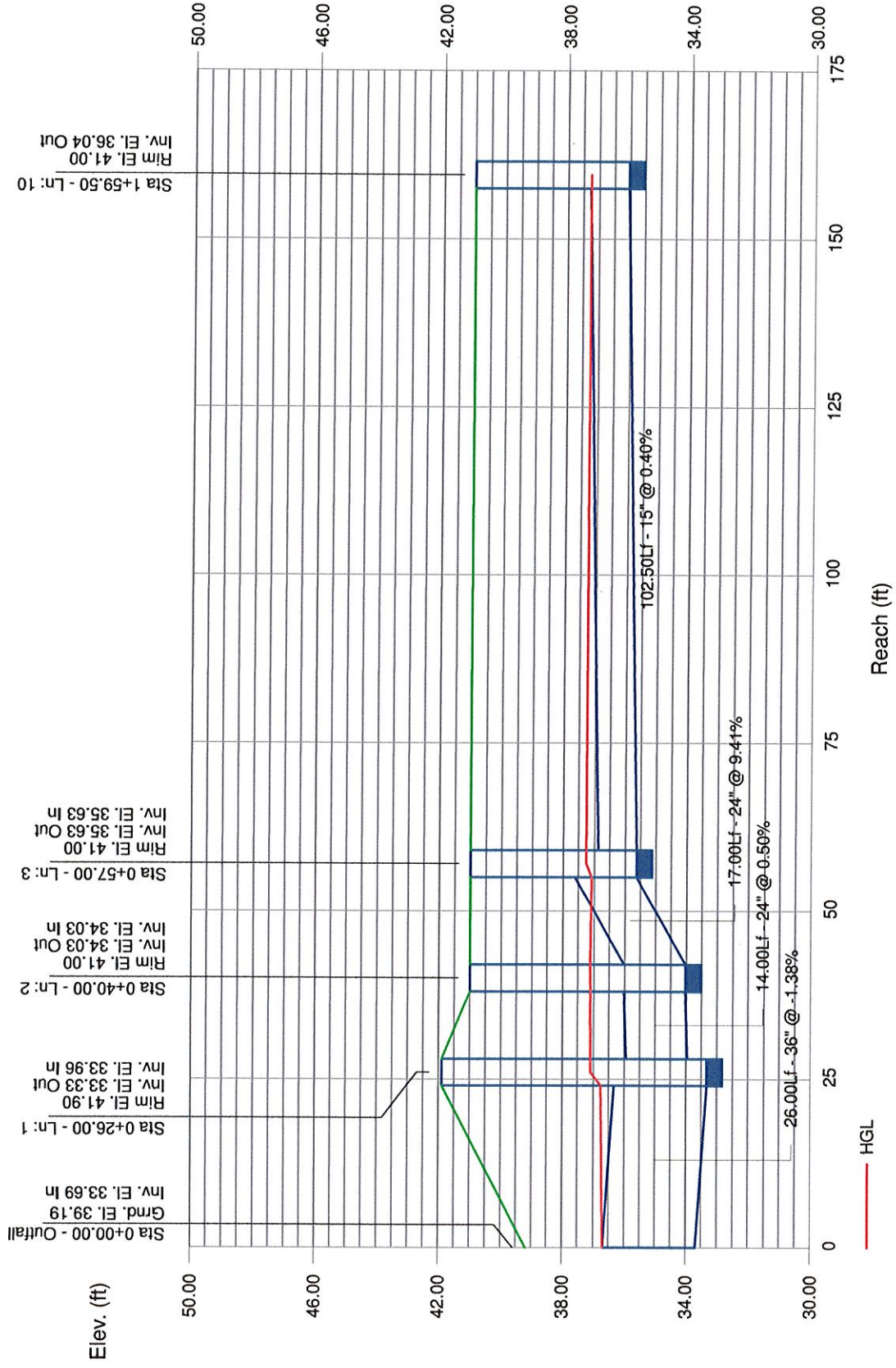


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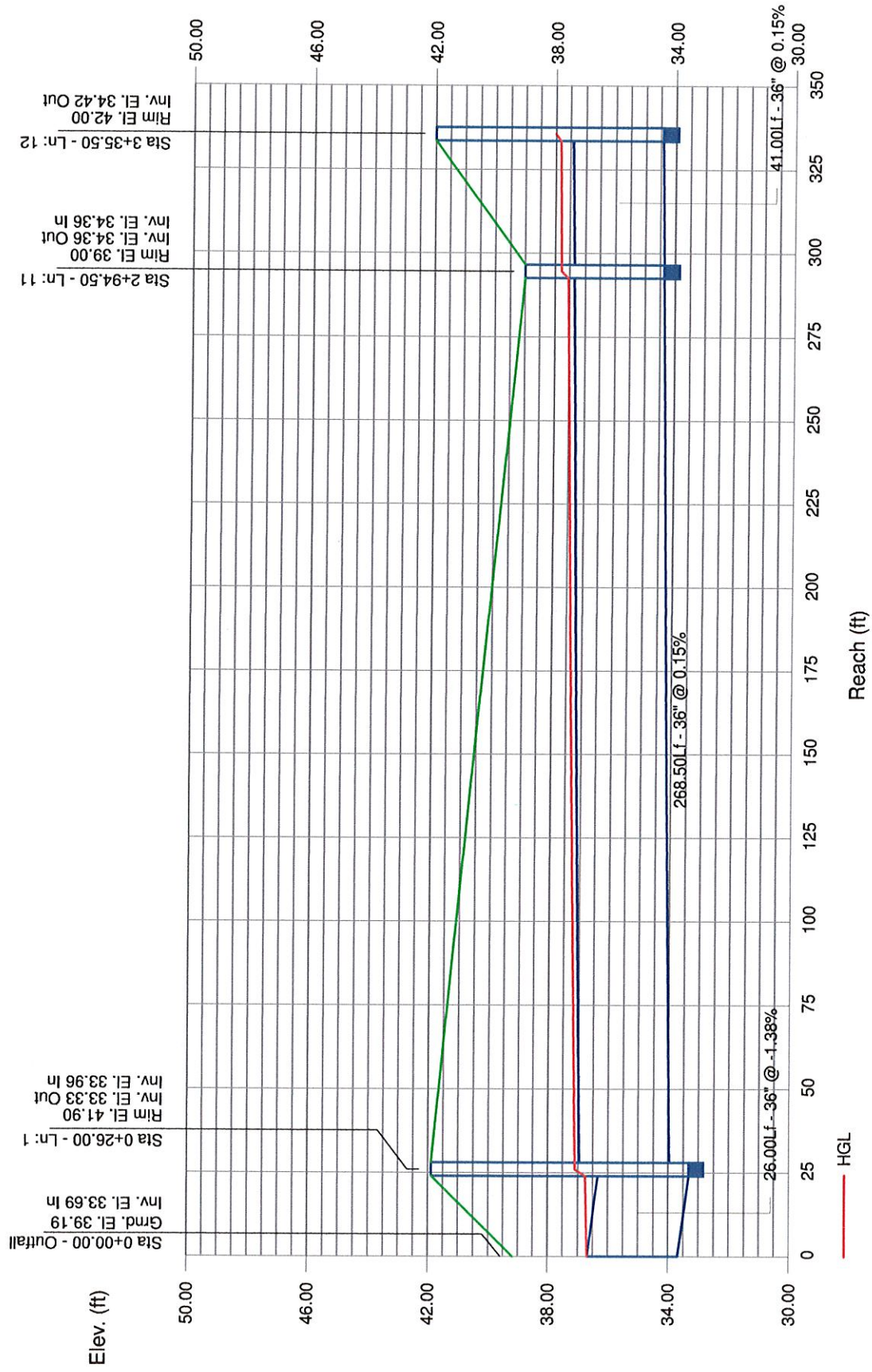
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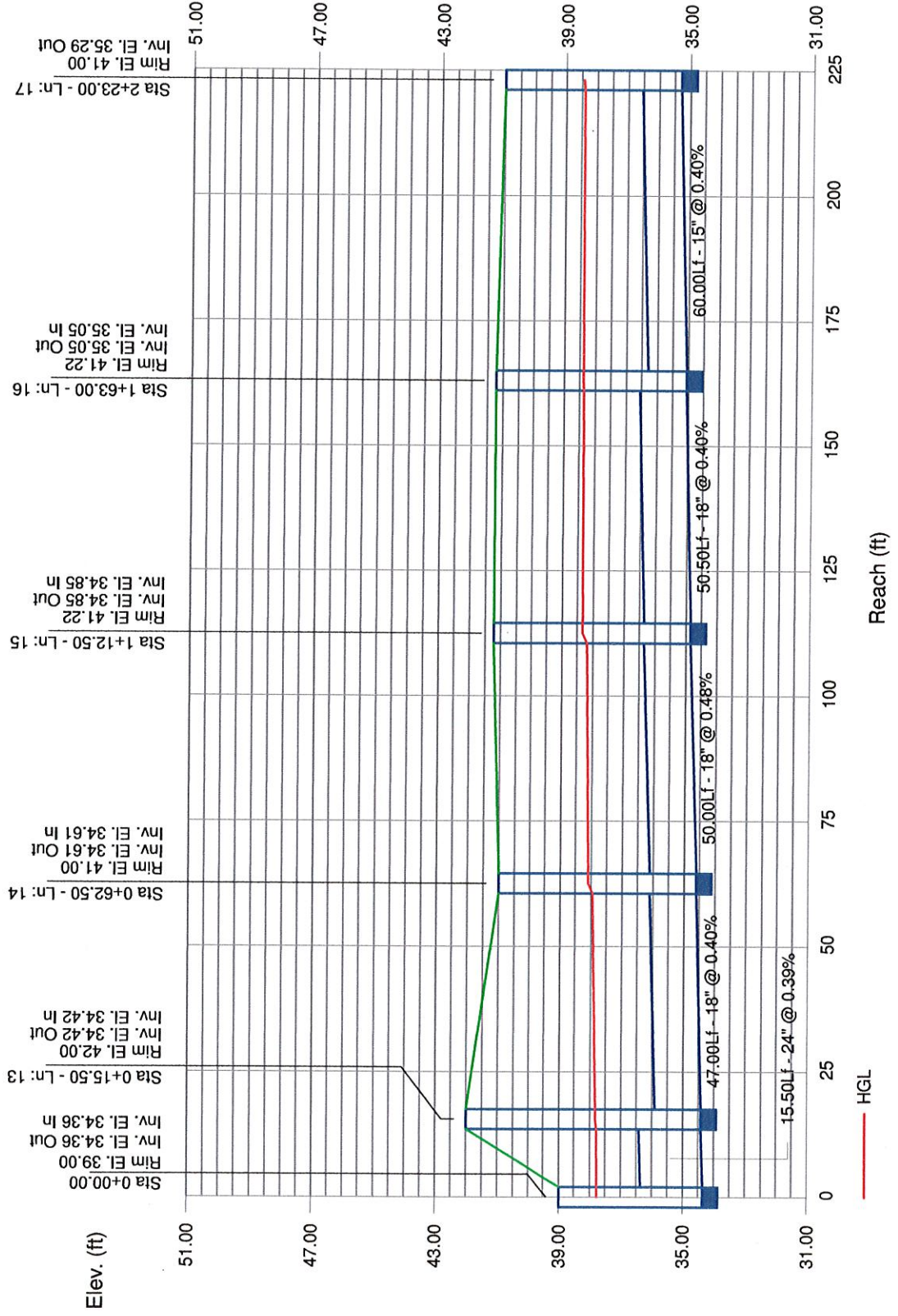


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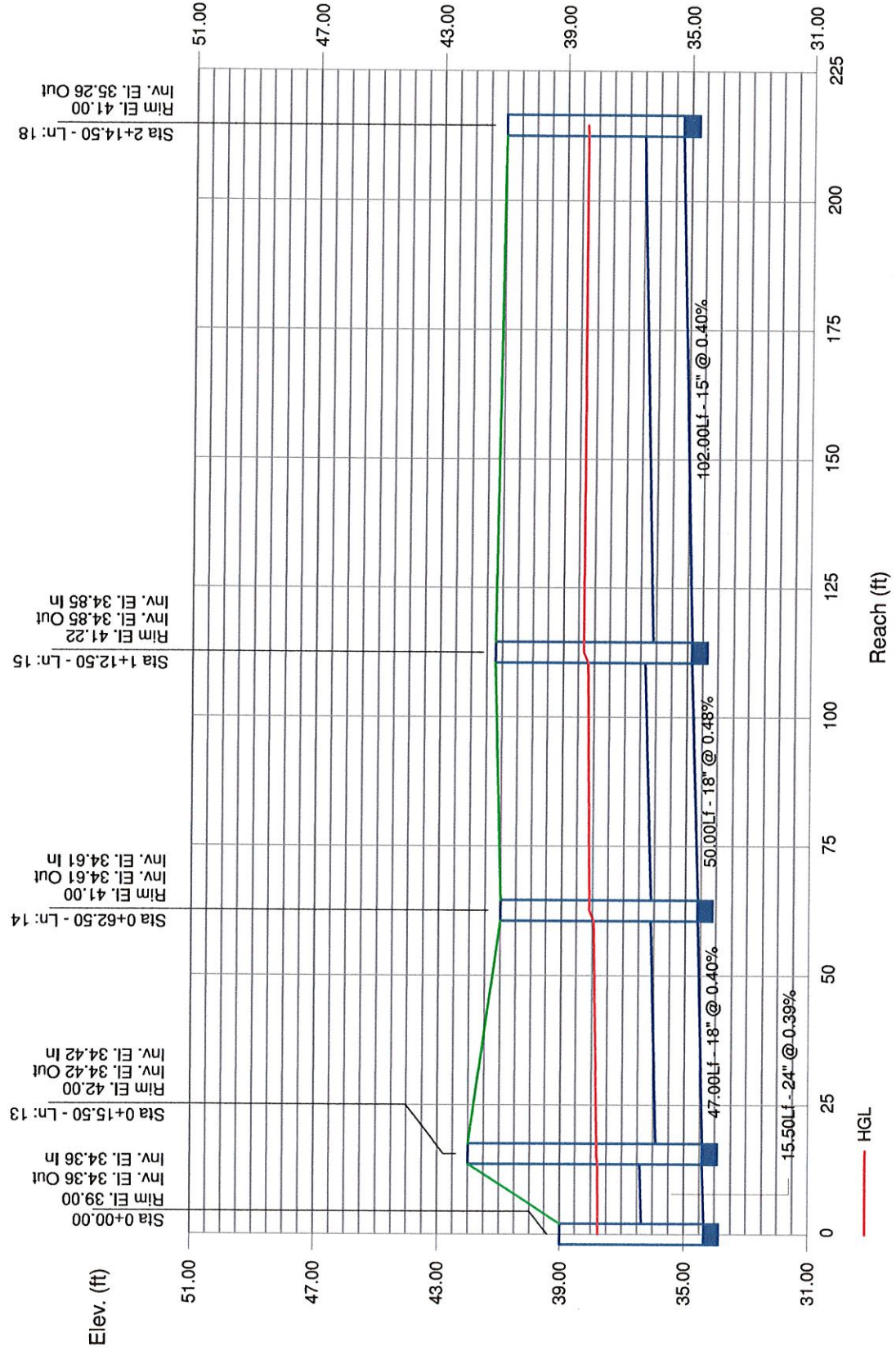
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Storm Sewer Profile



Storm Sewer Profile



Storm Sewer Tabulation

Station Line	To Line	Len (ft)	Drng Area (ac)		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Gmd / Rim Elev		Line ID
			Incr	Total		Inlet (min)	Syst (min)	Incr	Total					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	26.00	0.00	6.14	0.00	0.00	5.13	5.0	8.6	8.1	41.60	0.00	5.89	36	-1.38	33.69	33.33	37.26	37.36	0.00	41.90	Exist.
2	1	14.00	0.00	1.26	0.00	0.99	0.99	0.0	7.8	8.3	8.13	15.99	2.59	24	0.50	33.96	34.03	37.90	37.92	41.90	41.00	
3	2	17.00	0.10	1.26	0.82	0.99	0.99	5.0	7.7	8.3	8.15	69.39	2.60	24	9.41	34.03	35.63	37.93	37.96	41.00	41.00	
4	3	27.00	0.09	0.78	0.91	0.63	0.63	5.0	7.6	8.3	5.20	6.70	2.94	18	0.41	35.63	35.74	38.11	38.18	41.00	41.00	
5	4	58.00	0.15	0.69	0.86	0.13	0.54	5.0	7.2	8.4	4.56	6.61	2.58	18	0.40	35.74	35.97	38.25	38.36	41.00	41.00	
6	5	60.50	0.21	0.40	0.73	0.15	0.29	5.0	6.7	8.5	2.46	4.07	2.01	15	0.40	35.97	36.21	38.51	38.60	41.00	41.00	
7	6	101.50	0.19	0.19	0.72	0.14	0.14	5.0	5.0	8.9	1.21	4.10	0.99	15	0.40	36.21	36.62	38.69	38.73	41.00	41.00	
8	5	101.50	0.14	0.14	0.89	0.12	0.12	5.0	5.0	8.9	1.10	5.77	0.90	15	0.80	35.97	36.78	38.51	38.54	41.00	41.00	
9	3	87.50	0.26	0.26	0.69	0.18	0.18	5.0	5.0	8.9	1.59	4.08	1.30	15	0.40	35.63	35.98	38.11	38.17	41.00	41.00	
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12	11	41.00	3.84	3.84	0.87	3.34	3.34	5.0	5.0	8.9	29.62	25.51	4.19	36	0.15	34.36	34.42	38.98	39.06	39.00	42.00	Exist.
13	11	15.50	0.00	1.04	0.00	0.00	0.81	5.0	7.6	8.3	6.71	14.07	2.14	24	0.39	34.36	34.42	38.98	38.99	39.00	42.00	
14	13	47.00	0.20	1.04	0.73	0.15	0.81	5.0	7.4	8.3	6.75	6.68	3.82	18	0.40	34.42	34.61	39.06	39.25	42.00	41.00	
15	14	50.00	0.21	0.84	0.79	0.17	0.66	5.0	7.1	8.4	5.56	7.28	3.15	18	0.48	34.61	34.85	39.48	39.63	41.00	41.22	
16	15	50.50	0.22	0.51	0.86	0.19	0.39	5.0	5.7	8.7	3.36	6.61	1.90	18	0.40	34.85	35.05	39.84	39.90	41.22	41.22	
17	16	60.00	0.29	0.29	0.68	0.20	0.20	5.0	5.0	8.9	1.75	4.08	1.42	15	0.40	35.05	35.29	39.92	39.97	41.22	41.00	
18	15	102.00	0.12	0.12	0.92	0.11	0.11	5.0	5.0	8.9	0.98	4.09	0.80	15	0.40	34.85	35.26	39.84	39.87	41.22	41.00	

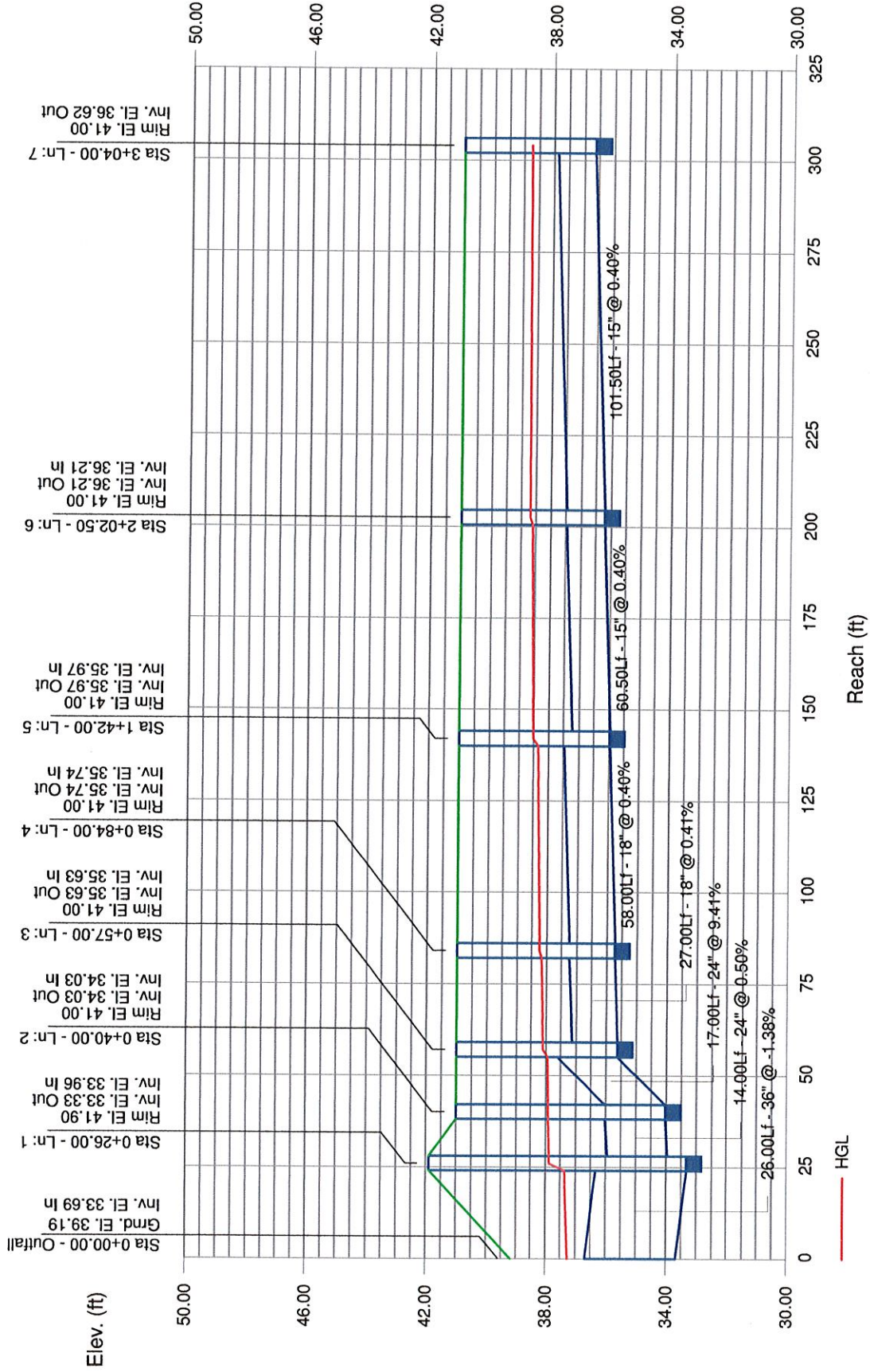
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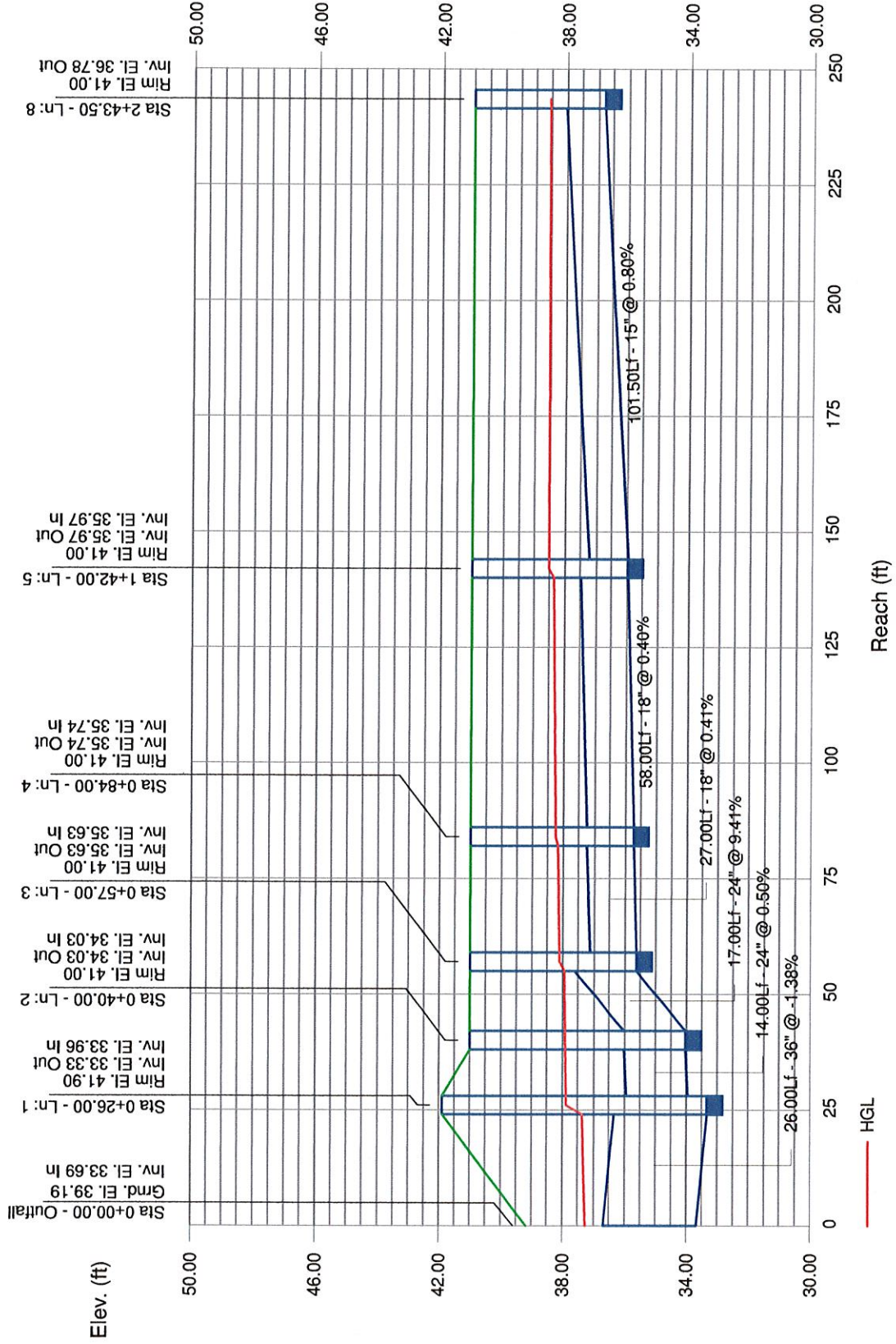
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NOTES: Intensity = 171.29 / (Inlet time + 27.30) ^ 0.85; Return period = 50 Yrs. ; c = cir e = ellip b = box

Storm Sewer Profile

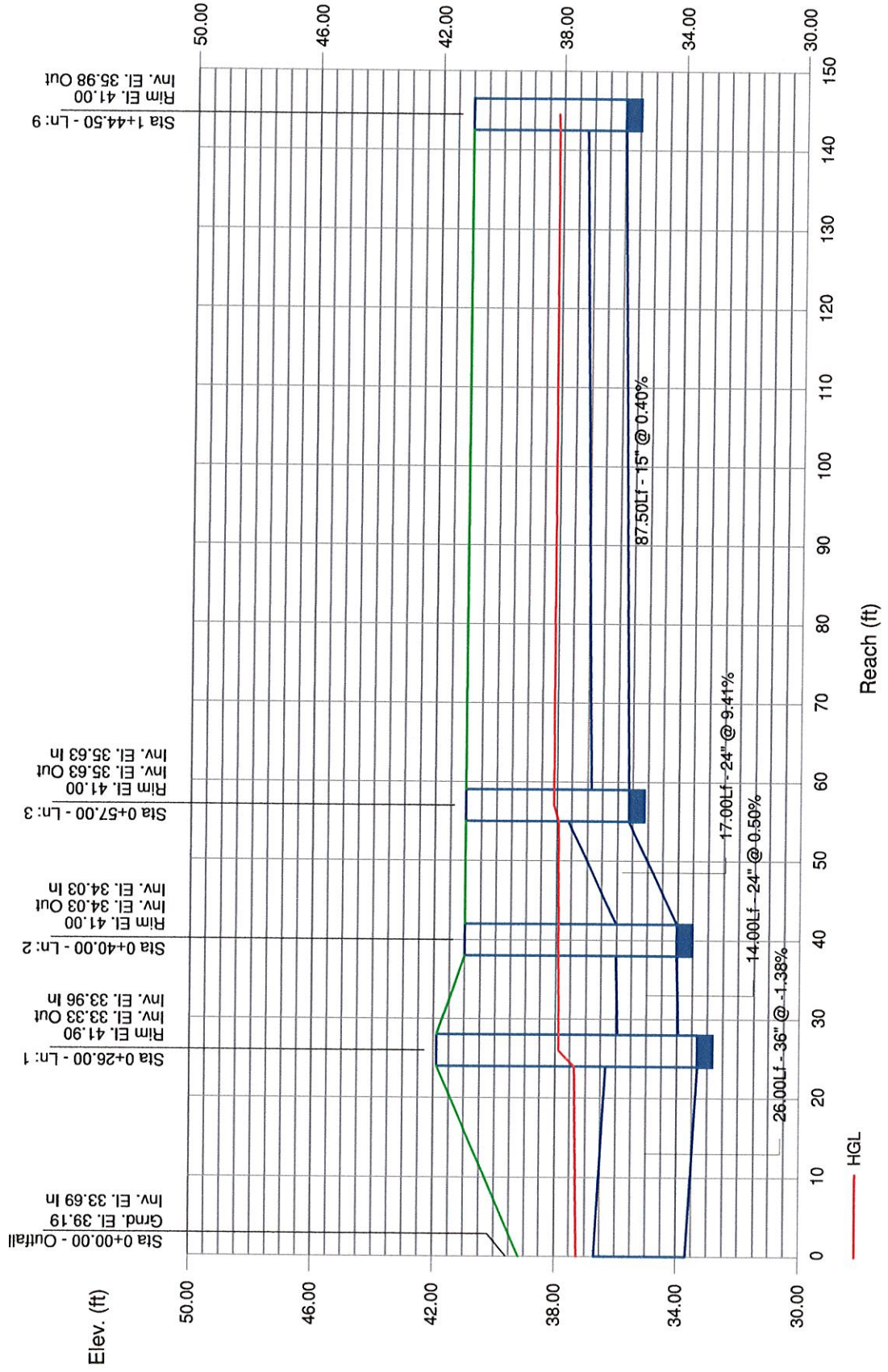


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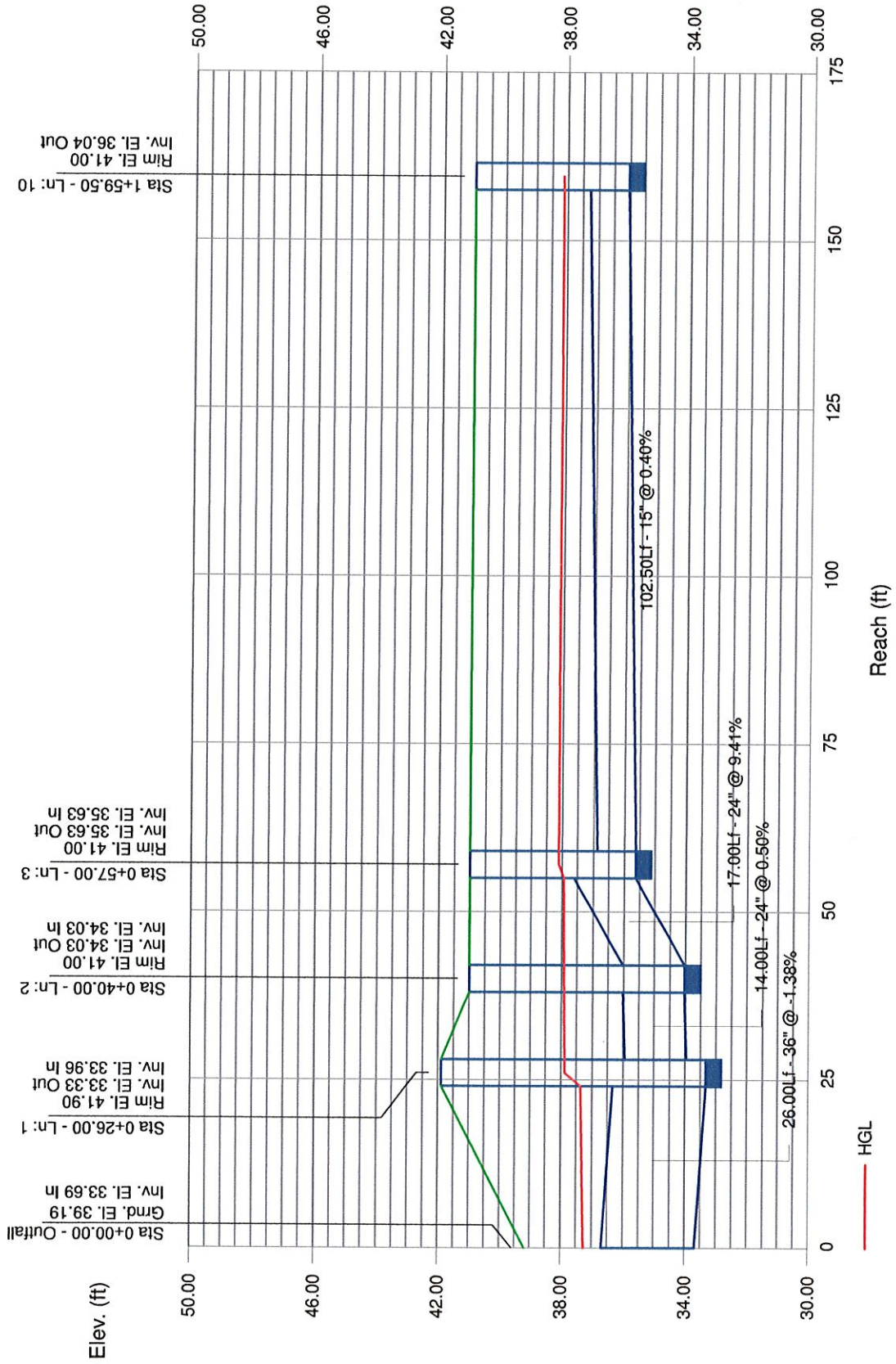


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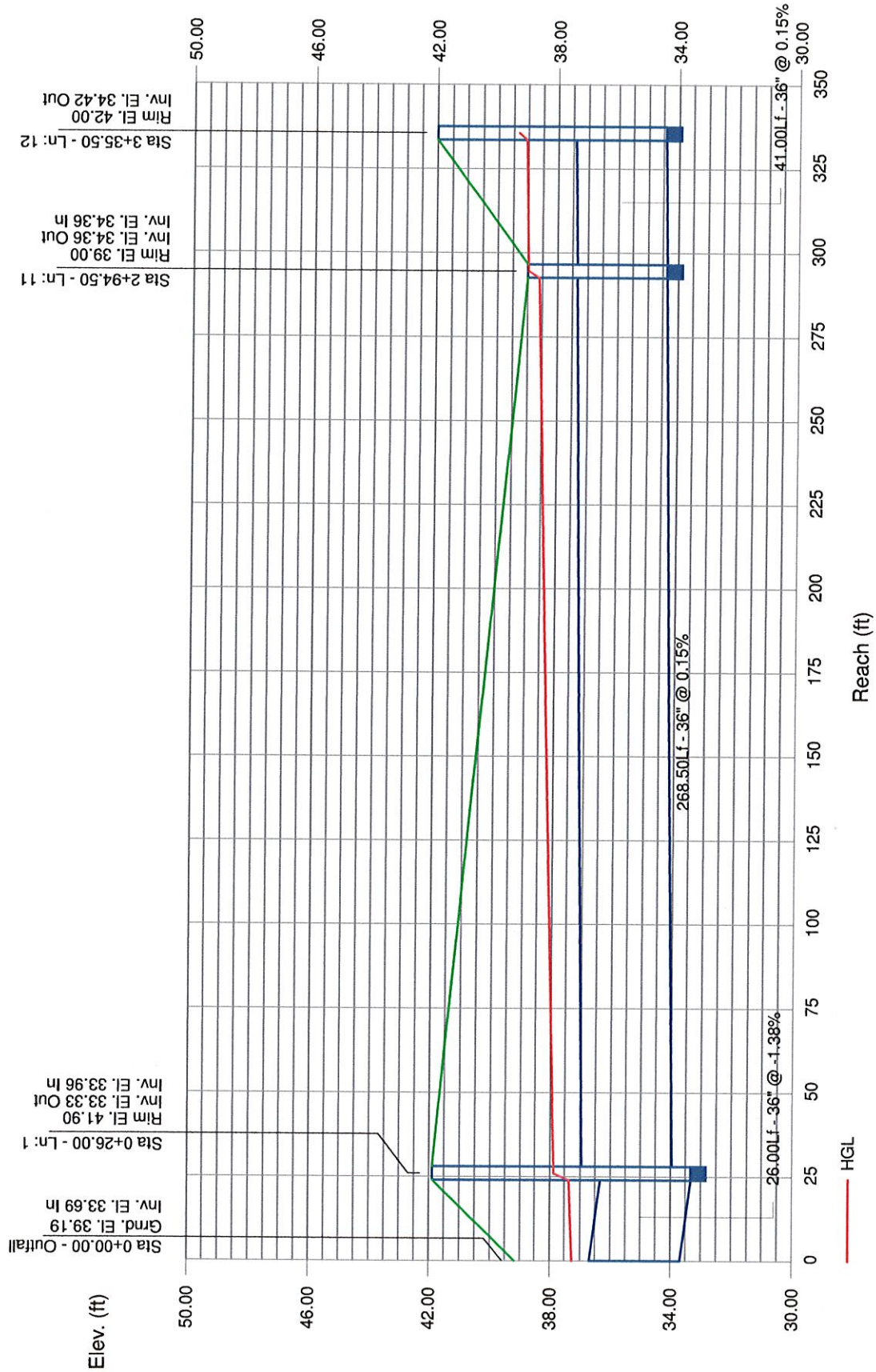
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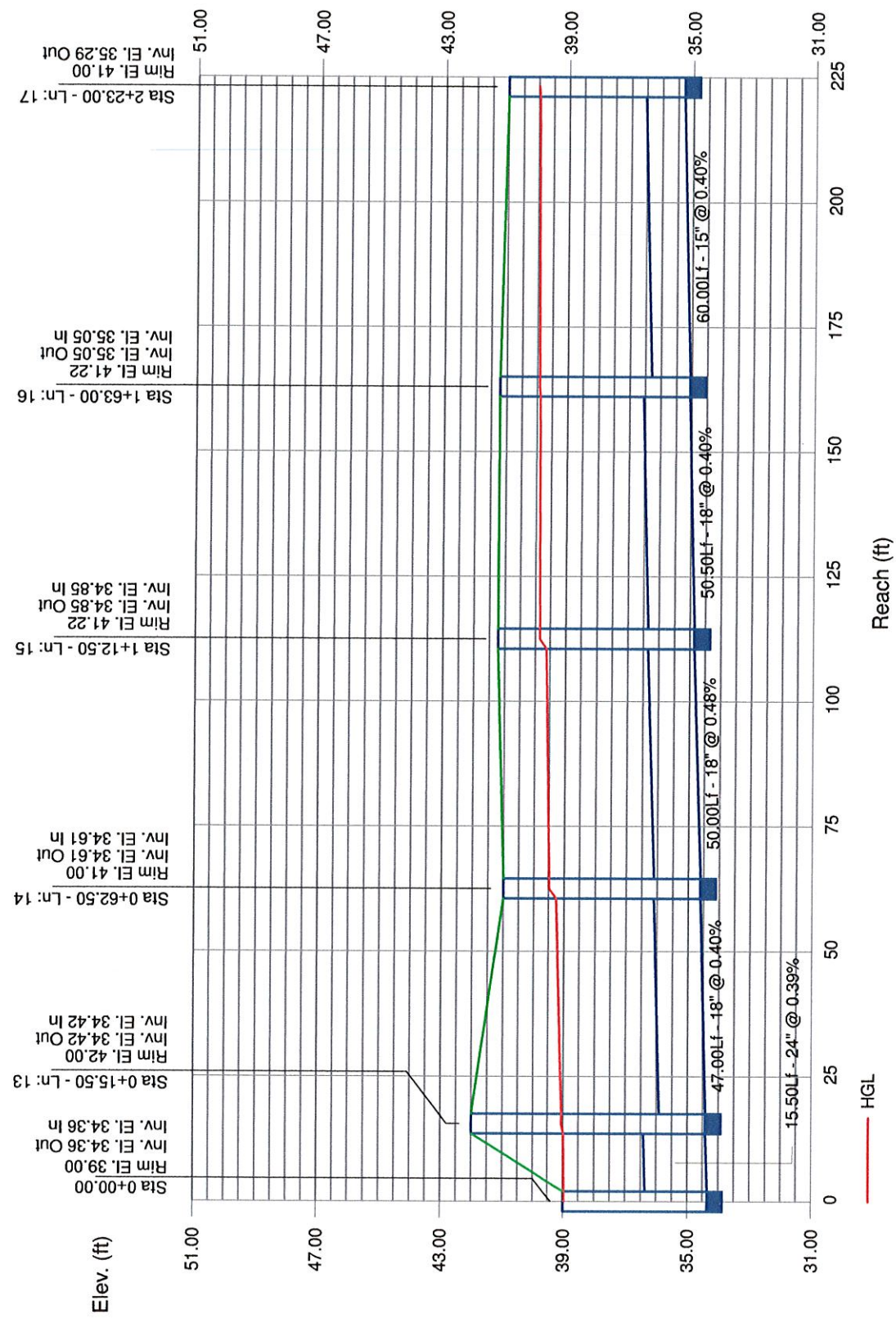
Storm Sewer Profile



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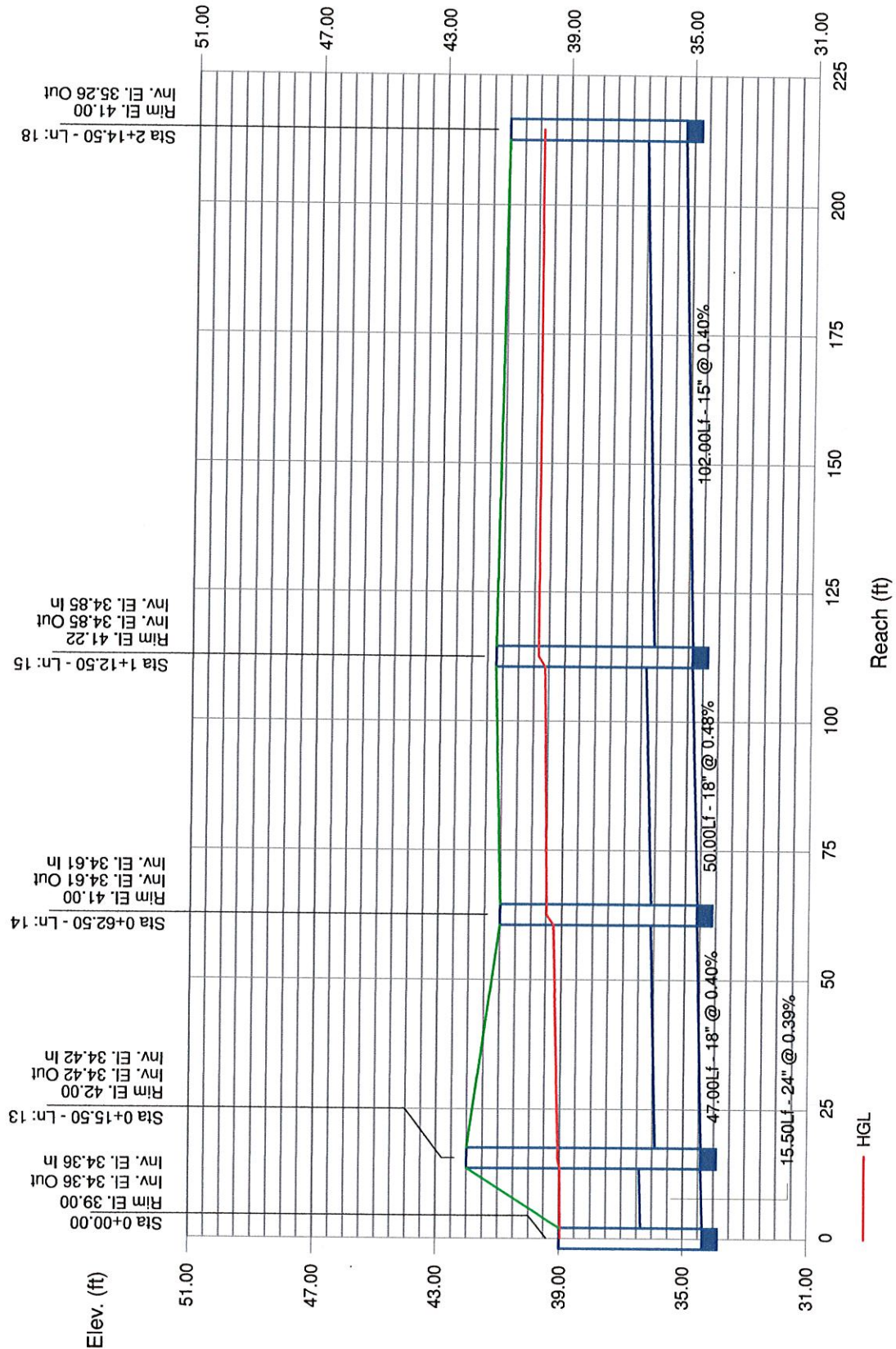


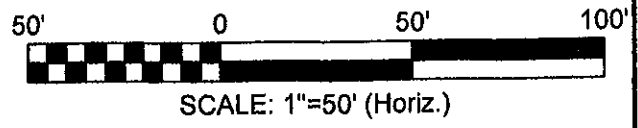
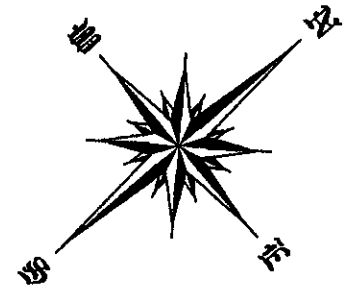
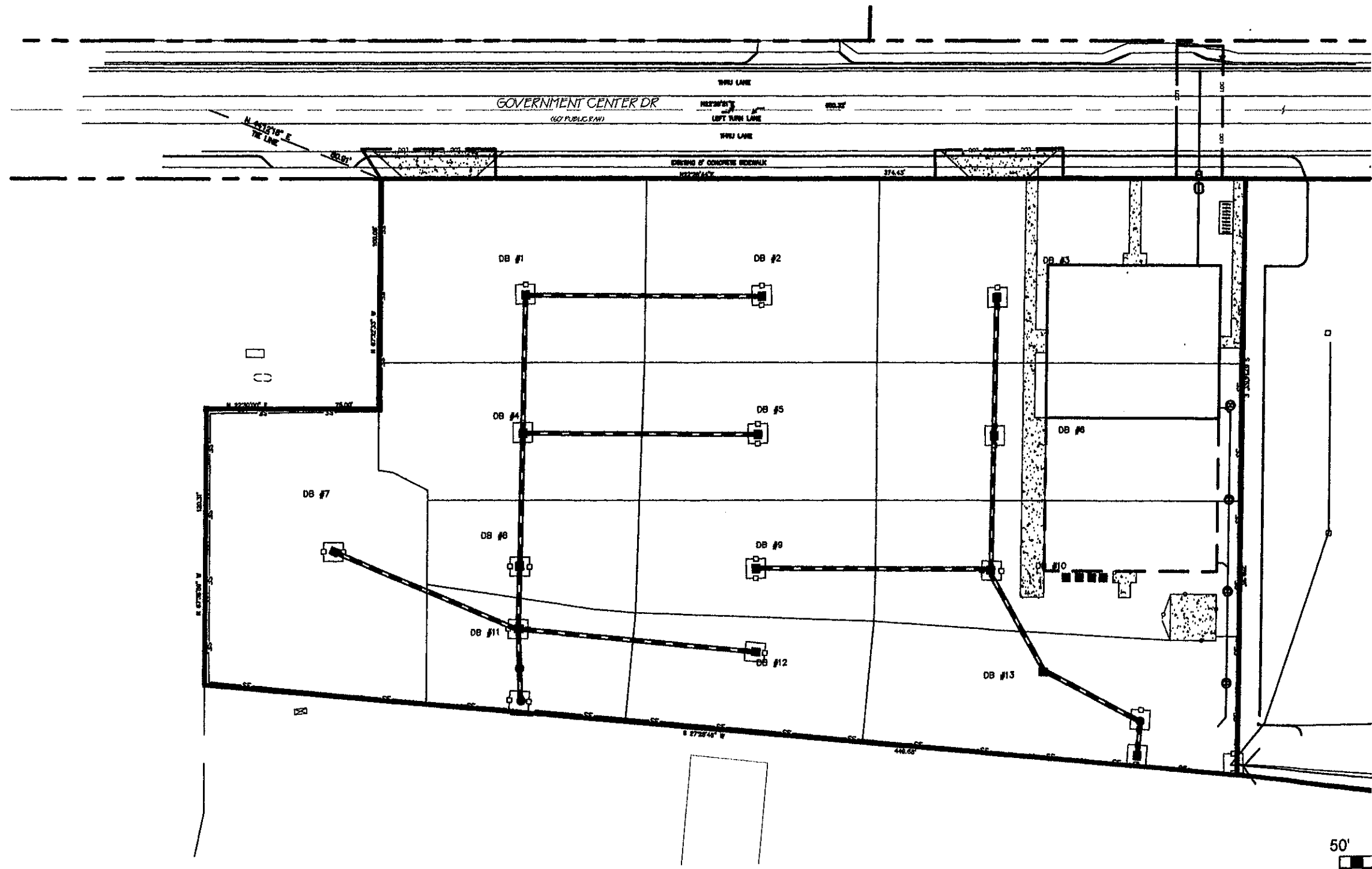
Storm Sewer Profile



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