

# Addendum 1

**City of Canton, Ohio**  
Purchasing Department  
218 Cleveland Ave. SW, 4<sup>th</sup> floor  
Canton, Ohio 44702

Steese Area NW Roadway and Storm Sewer Project, GP 1284

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**Item/Project**

Engineering Department

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**Responsible Department**

Monday, April 1, 2019 at 4:00PM Local Time

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**Bids Due On or Before**

**Bid Proposal Submitted By:**

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**Company Name**

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**Street Address**

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**City**

**State**

**Zip**

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**Contact Person**

**Phone No.**

**Email Address**

**Addition of Information:**

Attached below is the Steese Area Roadway & Drainage Study as referenced in the General Project Description section of the Request for Qualifications as being posted at <http://cantonohio.gov/engineering/?pg=211>.

Mr. Chris Barnes, PE, CPESC, CPSWQ, CPMSM  
Assistant City Engineer  
City of Canton  
2436 30<sup>th</sup> Street NE  
Canton, Ohio 44705

Arcadis U.S., Inc.  
222 South Main Street  
Suite 200  
Akron  
Ohio 44308  
Tel 330 434 1995  
Fax 330 374 1095  
www.arcadis.com

Subject:  
Canton, Ohio  
Steese Area Roadway & Drainage Study  
**Letter Report**

INFRASTRUCTURE

Date:  
March 4, 2019

Dear Mr. Barnes:

Contact:  
Mark Dennis, PE

We are pleased to submit this report for the Steese Area Roadway & Drainage Study. The intent of this study was to evaluate the roadway and drainage needs of the Steese Area neighborhood and develop a conceptual design for recommended improvements along with a budgetary cost estimate. The limits of this study are generally bounded by 37<sup>th</sup> Street on the south, 41<sup>st</sup> Street on the north, Cleveland Avenue on the west, and Frazer Avenue on the east. The study area is approximately 167 acres and includes over 5 miles of residential streets, excluding Cleveland Avenue, 37<sup>th</sup> and 41<sup>st</sup> Streets which appear to have adequate pavement, curbs, and storm sewer systems. This report consists of three components: (1) an evaluation of drainage needs and recommended storm sewer improvements; (2) an assessment of on-street and off-street parking needs that affect the feasible street improvements; and (3) proposed roadway improvements for each street including pavement widths, curb types, and sidewalk locations.

Phone:  
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Email:  
mark.dennis@arcadis.com

Our ref:  
TOHCAN03.ST01

### **Proposed Storm Sewer Improvements**

The study area has experienced persistent street flooding due to inadequate or non-existent storm sewers. The existing system is comprised of undersized interspersed pipes (mostly 12 inches and smaller), many of which are either clogged or crushed. The existing streets in the study area generally have no curbs, very few pavement inlets, and no defined ditches. The storm sewer, therefore, needs completely replaced. The City recently replaced the pavement on 41<sup>st</sup> Street along the northern boundary of the study area and built a 36/48-inch storm sewer that runs to Steese Avenue, then drains north to the Steese detention basin. The study area naturally drains to the north and west to 41<sup>st</sup>

Street and Steese Avenue, and the new storm sewer for the Steese Area neighborhood will connect to this system.

We developed and sized several layout options for the proposed storm sewer using StormCAD software, which uses the Rational Method to calculate peak flows and Manning's equation to determine capacities. Drainage patterns were determined from contours obtained from the Stark County GIS Department, and the study area was divided into approximately 40 drainage areas. The existing storm sewer along 41<sup>st</sup> Street and Steese Avenue was entered into StormCAD using as-built plans provided by the City. The proposed storm sewer was placed at a typical depth with storm sewer grades generally following the street grades.

Storm sewer layout options included a new trunk sewer on 38<sup>th</sup> Street, a new trunk sewer on 39<sup>th</sup> Street, and north-south lateral sewers to 41<sup>st</sup> Street with no new trunk sewer. The selected storm sewer layout shown in Exhibit 1 includes a new trunk sewer on 39<sup>th</sup> Street, because the new trunk sewer will capture runoff from the south allowing the existing sewer on 41<sup>st</sup> Street to run near full capacity for a 10-year storm event without causing street flooding. Streets including and east of Edgefield Avenue have normal crowned sections. Streets west of Edgefield Avenue that are superelevated have lateral inlets chained together on the low side of the road. Exhibit 3 shows the proposed location of the storm sewers within the right-of-way of each street and also includes the location of existing utilities for reference.

### **Parking Assessment**

Parking needs vary throughout the project area. A parking assessment was conducted through field observations supplemented by the Google Street View. The driveway and garage capacities were noted and documented for each house along with the presence of on-street parking and off-street parking areas outside of driveways.

Streets west of Edgefield Avenue typically have narrow pavement widths and shorter driveways. The narrow pavement widths are not conducive to on-street parking; therefore, off-street parking areas are more prevalent in this area. Streets including and east of Edgefield Avenue are wider, and there are very few off-street parking areas along these streets. The proposed roadway design maintains the width of the wider streets to allow two-way parking along the street and matches the narrower streets to allow space for off-street parking with minimal impacts to front yards. We also identified areas with signed no parking zones. Exhibit 4 depicts the driveway and garage capacity of each house in the study area as well as off-street parking areas, observed cars parked on-street or off-street, and signed no parking zones.

### **Proposed Roadway Improvements**

The existing pavement composition is unknown, but it is generally in poor condition and needs replaced.

#### West of Edgefield Avenue

Most of the houses in the western portion of this neighborhood face the numbered streets (38<sup>th</sup>, 39<sup>th</sup>, and 40<sup>th</sup> Street). The right-of-way width is 40 feet in most areas, and the houses are as close as 15 feet to the right-of-way. Due to the limited available construction width, these streets are proposed to have narrower pavement that generally matches existing pavement widths. The proposed pavement consists of 10-foot lanes with 18-inch wide rolled curbs resulting in a total pavement width of 23 feet. The rolled curb will allow vehicles to traverse the curb and continue to be parked off the street. Some streets in this neighborhood have areas where one side of the road is noticeably higher than the other side. For these

Mr. Chris Barnes  
March 4, 2019

areas, superelevated sections are proposed to better match the existing grades, which will limit impacts to the narrow front yards and reduce driveway work beyond the aprons.

#### East of Edgefield Avenue including Edgefield Avenue

The right-of-way width of streets east of and including Edgefield Avenue is 50 feet in most areas, and the houses are farther back from the right-of-way than the western portion of the neighborhood. Because there is more space available, a wider typical section is proposed. The streets will have 14-foot lanes, which generally matches existing pavement widths. Because off-street parking areas are not present in the eastern neighborhood, standard vertical curb is proposed. The total pavement width is 28 feet which allows on-street parking on both sides of the street according to the City parking ordinance. There are existing sidewalks on both sides of the street in most areas in this portion of the neighborhood. We developed two proposed typical sections for this area, one with 3.5' to 4.5' tree lawns and one with no tree lawn and sidewalk immediately adjacent to the curb. The typical section proposed for each street segment is based on the existing street width (measured from back-to-back of sidewalk) in order to match the existing street widths and minimize impacts to front yards and reduce driveway work beyond the aprons.

Proposed typical sections for each street in the study area are provided in Exhibit 5

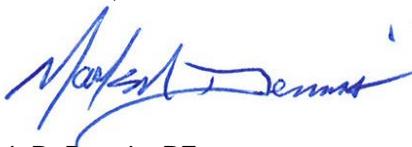
#### **Cost Estimate**

We developed a budgetary construction cost estimate for the proposed improvements, which is included in Exhibit 6. The cost estimate is based on standard ODOT pay items, and unit costs were derived from ODOT historical bid prices. We applied an inflation factor to the estimated cost assuming construction in 2020. The budgetary cost estimate consists only of construction costs and does not include other potential project costs such as engineering design, construction inspection, and easement acquisition.

We appreciate this opportunity to serve the City of Canton. If you have any questions or would like to discuss any of our findings or recommendations, please do not hesitate to contact us.

Sincerely,

Arcadis U.S., Inc.

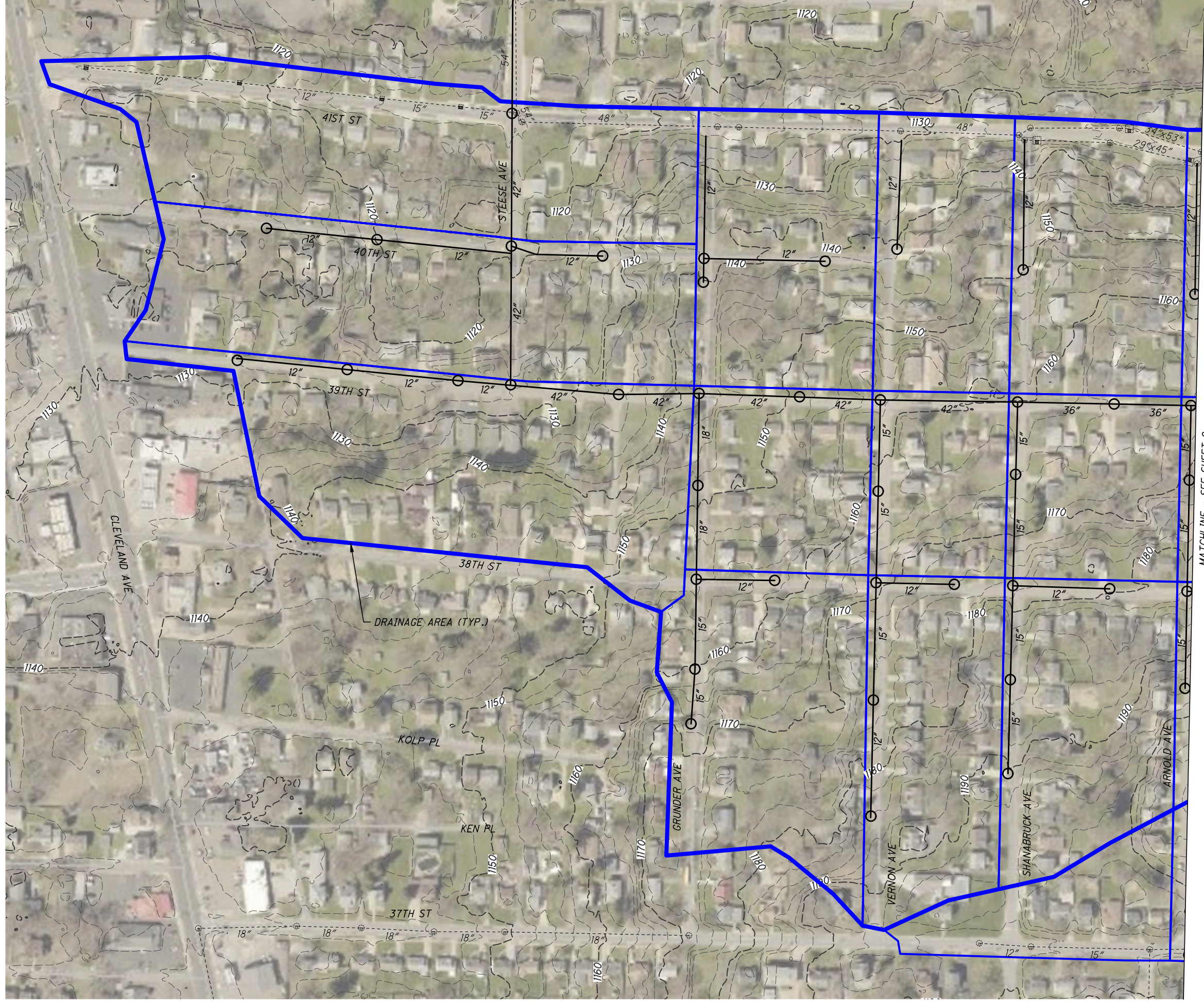


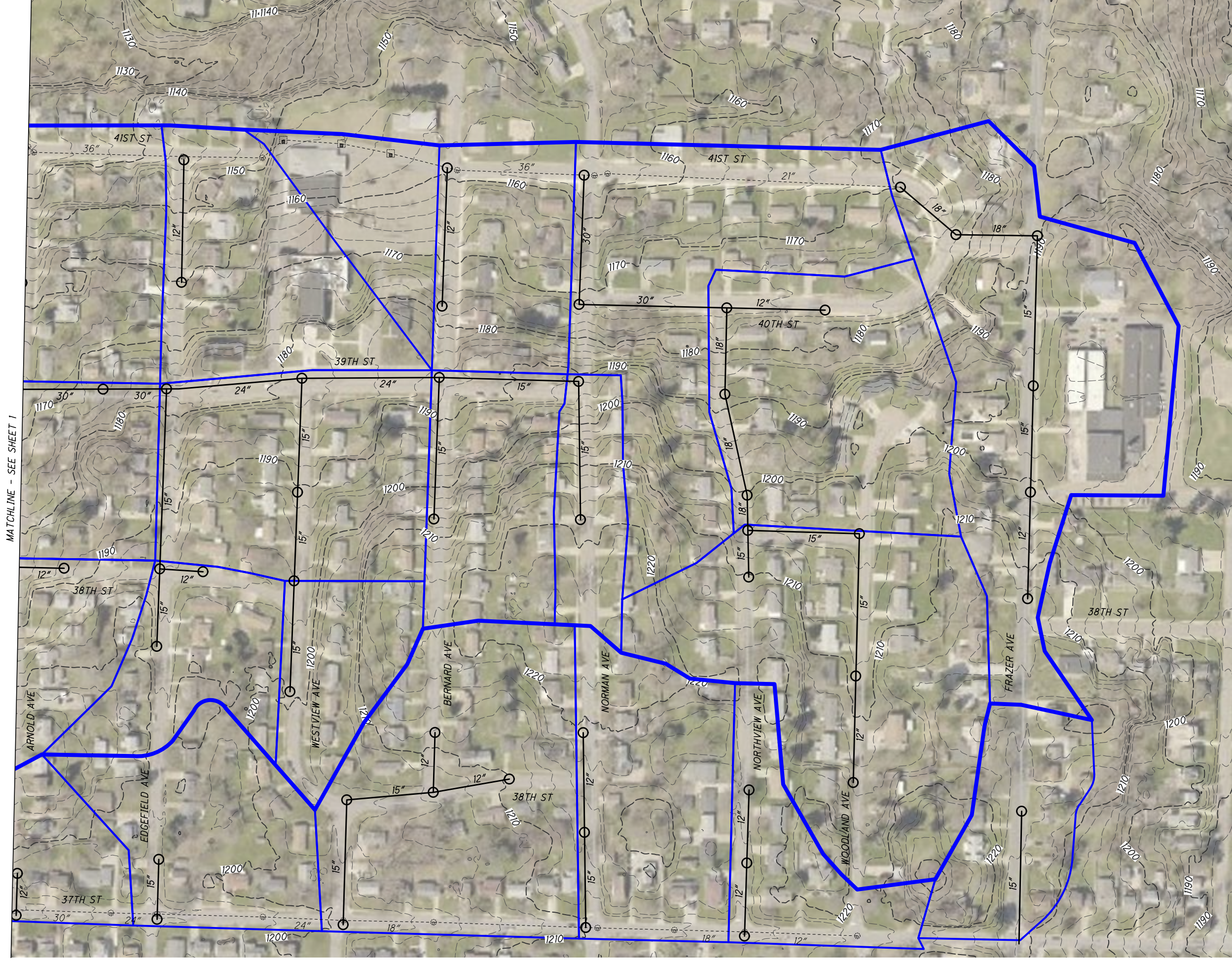
Mark R. Dennis, PE  
Project Manager

Enclosures:

#### **Exhibits**

- 1 Storm Sewer Figure
- 2 Drainage Calculations
- 3 Utility Layout Figure
- 4 Parking Capacity Figure
- 5 Typical Sections
- 6 Budgetary Construction Cost Estimate





StormCAD.stsw  
 Conduit FlexTable: Storm Sewer Design Report  
 Active Scenario: Storm Sewer Design  
 EXHIBIT 2 - DRAINAGE CALCS

Label	-Node- Upstream Downstream	Roadway Station (Start) (ft)	Roadway Station (Stop) (ft)	Upstream Inlet Area (acres)	System Drainage Area (acres)	Upstream Inlet C	System CA (acres)	Upstream Inlet Tc (min)	System Flow Time (min)	System Intensity (in/h)	Diameter (in)	Length (Unified) (ft)	Slope (Calculated) (ft/ft)	-Invert (Conduit)- Upstream Downstream (ft)	Manning's n	Velocity (ft/s)	Flow (cfs)	Capacity (Design) (cfs)	-Ground- Upstream Downstream (ft)	Cover (Start) (ft)
P-1	7 MH-43	(N/A)	(N/A)	9.17	9.17	0.570	5.23	12.81	12.81	4.55	24.0	619.0	0.0319	1,165.37 1,145.62	0.015	12.00	23.96	37.67	1,170.37 1,156.22	3.00
P-2	MH-43 MH-42	(N/A)	(N/A)	(N/A)	9.17	(N/A)	5.23	0.00	13.67	4.40	21.0	28.0	0.0754	1,145.87 1,143.76	0.015	9.65	23.20	37.70	1,156.22 1,156.39	8.60
P-3	MH-42 MH-40	(N/A)	(N/A)	7.61	31.53	0.500	16.15	16.10	16.44	4.00	36.0	290.0	0.0026	1,143.76 1,143.01	0.015	9.21	65.13	29.40	1,156.39 1,158.48	9.63
P-4	MH-40 CB-40	(N/A)	(N/A)	3.19	34.72	0.530	17.84	16.71	16.96	3.93	36.0	145.0	0.0060	1,143.01 1,142.14	0.015	10.01	70.73	44.77	1,158.48 1,155.97	12.47
P-5	CB-40 CB-31	(N/A)	(N/A)	(N/A)	34.72	(N/A)	17.84	0.00	17.20	3.90	36.0	106.0	0.0054	1,142.09 1,141.52	0.015	9.93	70.18	42.39	1,155.97 1,153.41	10.88
P-6	CB-31 CB-30	(N/A)	(N/A)	(N/A)	34.72	(N/A)	17.84	0.00	17.38	3.88	36.0	123.0	0.0065	1,141.46 1,140.66	0.015	9.87	69.79	46.62	1,153.41 1,152.65	8.95
P-7	CB-30 MH-31	(N/A)	(N/A)	2.20	36.92	0.570	19.09	15.00	17.59	3.86	36.0	58.0	0.0028	1,140.66 1,140.50	0.015	10.50	74.20	30.36	1,152.65 1,147.77	8.99
P-8	MH-31 MH-30	(N/A)	(N/A)	(N/A)	36.92	(N/A)	19.09	0.00	17.68	3.84	36.0	168.0	0.0150	1,140.29 1,137.77	0.015	11.36	73.98	70.79	1,147.77 1,142.60	4.48
P-9	MH-30 MH-23	(N/A)	(N/A)	4.51	41.43	0.570	21.66	12.20	17.93	3.82	36.0	315.0	0.0337	1,137.77 1,127.14	0.015	16.63	83.30	106.18	1,142.60 1,133.57	1.83
P-10	MH-23 MH-20	(N/A)	(N/A)	3.99	45.42	0.500	23.66	13.83	18.24	3.78	51.0	193.0	0.0057	1,127.14 1,126.04	0.015	8.68	90.09	110.47	1,133.57 1,132.00	1.68
P-11	MH-20 MH-11	(N/A)	(N/A)	(N/A)	45.42	(N/A)	23.66	0.00	18.61	3.74	51.0	194.0	0.0058	1,126.04 1,124.92	0.015	8.71	89.08	111.18	1,132.00 1,132.82	1.21
P-12	MH-11 MH-10	(N/A)	(N/A)	4.43	49.85	0.500	25.87	13.83	18.98	3.69	48.0	265.0	0.0157	1,124.92 1,120.75	0.015	13.07	96.33	156.16	1,132.82 1,128.92	3.90
P-13	MH-10 MH-3	(N/A)	(N/A)	3.55	53.39	0.520	27.72	13.62	19.32	3.66	48.0	302.0	0.0185	1,120.59 1,115.01	0.015	14.10	102.16	169.21	1,128.92 1,122.32	4.33
P-14	MH-3 MH-2	(N/A)	(N/A)	(N/A)	53.39	(N/A)	27.72	0.00	19.68	3.62	48.0	55.0	0.0185	1,115.01 1,113.99	0.015	14.08	101.10	169.52	1,122.32 1,122.26	3.31
P-15	MH-2 MH-1	(N/A)	(N/A)	4.68	58.07	0.520	30.15	13.71	19.74	3.61	48.0	406.0	0.0167	1,113.89 1,107.09	0.015	13.79	109.76	161.10	1,122.26 1,113.35	4.37
P-16	MH-1 MH-50	(N/A)	(N/A)	7.82	124.40	0.530	64.06	20.72	20.72	3.51	54.0	32.0	0.0203	1,106.49 1,105.84	0.015	14.26	226.77	242.89	1,113.35 1,113.06	2.36
P-17	MH-50 MH-51	(N/A)	(N/A)	(N/A)	124.40	(N/A)	64.06	0.00	20.76	3.51	54.0	227.0	0.0069	1,105.84 1,104.28	0.015	14.24	226.53	141.28	1,113.06 1,111.39	2.72
P-18	MH-51 RC-61	(N/A)	(N/A)	(N/A)	124.40	(N/A)	64.06	0.00	21.02	3.48	54.0	135.0	0.0193	1,104.08 1,101.47	0.015	16.95	224.84	236.96	1,111.39 1,108.44	2.81
P-19	RC-61 O-1	(N/A)	(N/A)	(N/A)	124.40	(N/A)	64.06	0.00	21.16	3.47	12.0	10.0	0.0100	1,101.47 1,101.37	0.015	13.64	224.01	288.96	1,108.44 1,108.44	2.13
P-20	8 9	(N/A)	(N/A)	8.64	8.64	0.470	4.06	13.26	13.26	4.47	18.0	501.0	0.0608	1,199.97 1,169.49	0.015	14.16	18.29	24.15	1,204.47 1,173.99	3.00
P-21	9 10A	(N/A)	(N/A)	6.11	14.75	0.500	7.12	15.64	15.64	4.11	27.0	289.0	0.0120	1,168.74 1,165.26	0.015	8.44	29.47	31.68	1,173.99 1,170.51	3.00



StormCAD.stsw  
 Conduit FlexTable: Storm Sewer Design Report  
 Active Scenario: Storm Sewer Design  
 EXHIBIT 2 - DRAINAGE CALCS

Label	-Node- Upstream Downstream	Roadway Station (Start) (ft)	Roadway Station (Stop) (ft)	Upstream Inlet Area (acres)	System Drainage Area (acres)	Upstream Inlet C	System CA (acres)	Upstream Inlet Tc (min)	System Flow Time (min)	System Intensity (in/h)	Diameter (in)	Length (Unified) (ft)	Slope (Calculated) (ft/ft)	-Invert (Conduit)- Upstream Downstream (ft)	Manning's n	Velocity (ft/s)	Flow (cfs)	Capacity (Design) (cfs)	-Ground- Upstream Downstream (ft)	Cover (Start) (ft)
P-22	10A MH-42	(N/A)	(N/A)	(N/A)	14.75	(N/A)	7.12	0.00	16.21	4.03	27.0	246.0	0.0843	1,165.26 1,144.51	0.015	18.15	28.91	83.85	1,170.51 1,156.39	3.00
P-23	12 13	(N/A)	(N/A)	1.76	1.76	0.590	1.04	10.00	10.00	5.10	15.0	292.0	0.0166	1,187.52 1,182.68	0.015	6.43	5.34	7.75	1,191.77 1,186.93	3.00
P-24	13 15B	(N/A)	(N/A)	3.34	5.10	0.540	2.84	10.13	10.76	4.93	21.0	291.0	0.0190	1,182.18 1,176.66	0.015	8.62	14.13	20.34	1,186.93 1,181.41	3.00
P-25	16 15A	(N/A)	(N/A)	2.28	2.28	0.520	1.19	10.24	10.24	5.04	15.0	225.0	0.0319	1,193.58 1,186.41	0.015	8.52	6.03	10.75	1,197.83 1,190.66	3.00
P-26	15A 15B	(N/A)	(N/A)	(N/A)	2.28	(N/A)	1.19	0.00	10.68	4.95	15.0	244.0	0.0379	1,186.41 1,177.16	0.015	9.06	5.91	11.73	1,190.66 1,181.41	3.00
P-27	15B 15	(N/A)	(N/A)	(N/A)	7.38	(N/A)	4.03	0.00	11.32	4.82	24.0	285.0	0.0172	1,176.41 1,171.52	0.015	9.00	19.57	27.62	1,181.41 1,176.52	3.00
P-28	17 15C	(N/A)	(N/A)	2.86	2.86	0.510	1.46	15.22	15.22	4.17	12.0	225.0	0.0364	1,190.15 1,181.96	0.015	8.52	6.13	6.34	1,194.15 1,185.96	3.00
P-29	15C 15	(N/A)	(N/A)	(N/A)	2.86	(N/A)	1.46	0.00	15.66	4.11	12.0	159.0	0.0594	1,181.96 1,172.52	0.015	10.65	6.04	8.09	1,185.96 1,176.52	3.00
P-30	15 19B	(N/A)	(N/A)	5.58	15.82	0.530	8.44	15.99	15.99	4.06	27.0	160.0	0.0183	1,171.27 1,168.34	0.015	10.40	34.56	39.07	1,176.52 1,173.59	3.00
P-31	19B 19	(N/A)	(N/A)	(N/A)	15.82	(N/A)	8.44	0.00	16.25	4.03	27.0	160.0	0.0555	1,168.34 1,159.46	0.015	16.22	34.26	68.02	1,173.59 1,166.73	3.00
P-32	20 19A	(N/A)	(N/A)	2.28	2.28	0.570	1.30	11.66	11.66	4.76	12.0	225.0	0.0435	1,179.07 1,169.29	0.015	9.34	6.24	6.92	1,183.07 1,171.77	3.00
P-33	19A 19	(N/A)	(N/A)	(N/A)	2.28	(N/A)	1.30	0.00	12.06	4.68	12.0	151.0	0.0568	1,169.29 1,160.71	0.015	10.49	6.14	7.92	1,171.77 1,166.73	1.48
P-34	19 22B	(N/A)	(N/A)	2.73	20.83	0.520	11.16	14.30	16.41	4.00	36.0	175.0	0.0126	1,158.71 1,156.50	0.015	9.92	45.06	64.93	1,166.73 1,164.33	5.02
P-35	22B 22	(N/A)	(N/A)	(N/A)	20.83	(N/A)	11.16	0.00	16.70	3.97	36.0	175.0	0.0304	1,156.50 1,151.19	0.015	13.82	44.63	100.70	1,164.33 1,160.13	4.83
P-36	23 22A	(N/A)	(N/A)	4.47	4.47	0.510	2.28	15.29	15.29	4.16	15.0	225.0	0.0576	1,173.24 1,160.27	0.015	11.88	9.55	13.44	1,177.49 1,164.52	3.00
P-37	22A 22	(N/A)	(N/A)	(N/A)	4.47	(N/A)	2.28	0.00	15.61	4.11	15.0	146.0	0.0468	1,160.27 1,153.44	0.015	10.91	9.45	12.11	1,164.52 1,160.13	3.00
P-38	22 25	(N/A)	(N/A)	2.99	28.29	0.520	15.00	14.30	16.92	3.94	42.0	278.0	0.0052	1,150.69 1,149.24	0.015	7.45	59.55	63.01	1,160.13 1,158.01	5.94
P-39	26 25A	(N/A)	(N/A)	4.25	4.25	0.520	2.21	17.55	17.55	3.86	15.0	225.0	0.0393	1,165.38 1,156.54	0.015	9.99	8.61	11.10	1,169.63 1,160.79	3.00
P-40	25A 25	(N/A)	(N/A)	(N/A)	4.25	(N/A)	2.21	0.00	17.93	3.82	15.0	145.0	0.0314	1,156.54 1,151.99	0.015	9.09	8.51	9.92	1,160.79 1,158.01	3.00
P-41	25 28B	(N/A)	(N/A)	2.37	34.91	0.540	18.49	14.30	18.19	3.78	42.0	183.0	0.0284	1,149.24 1,144.04	0.015	15.11	70.52	146.92	1,158.01 1,150.99	5.27
P-42	28B 28	(N/A)	(N/A)	(N/A)	34.91	(N/A)	18.49	0.00	18.39	3.76	42.0	183.0	0.0438	1,144.04 1,136.02	0.015	17.72	70.08	182.53	1,150.99 1,143.07	3.45

StormCAD.stsw  
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 EXHIBIT 2 - DRAINAGE CALCS

Label	-Node- Upstream Downstream	Roadway Station (Start) (ft)	Roadway Station (Stop) (ft)	Upstream Inlet Area (acres)	System Drainage Area (acres)	Upstream Inlet C	System CA (acres)	Upstream Inlet Tc (min)	System Flow Time (min)	System Intensity (in/h)	Diameter (in)	Length (Unified) (ft)	Slope (Calculated) (ft/ft)	-Invert (Conduit)- Upstream Downstream (ft)	Manning's n	Velocity (ft/s)	Flow (cfs)	Capacity (Design) (cfs)	-Ground- Upstream Downstream (ft)	Cover (Start) (ft)
P-43	29 28A	(N/A)	(N/A)	5.37	5.37	0.480	2.58	15.84	15.84	4.08	18.0	188.0	0.0259	1,149.49 1,144.62	0.015	9.03	10.60	15.76	1,153.99 1,149.12	3.00
P-44	28A 28	(N/A)	(N/A)	(N/A)	5.37	(N/A)	2.58	0.00	16.19	4.03	18.0	188.0	0.0351	1,144.62 1,138.02	0.015	10.14	10.48	18.35	1,149.12 1,143.07	3.00
P-45	28 32D	(N/A)	(N/A)	3.13	43.41	0.510	22.66	14.30	18.57	3.74	42.0	183.0	0.0537	1,136.02 1,126.19	0.015	20.12	85.45	202.08	1,143.07 1,133.19	3.55
P-46	32D 32	(N/A)	(N/A)	(N/A)	43.41	(N/A)	22.66	0.00	18.72	3.72	42.0	198.0	0.0263	1,126.19 1,120.99	0.015	15.36	85.05	141.30	1,133.19 1,127.99	3.50
P-47	32 31	(N/A)	(N/A)	7.86	51.27	0.480	26.43	13.74	18.93	3.70	42.0	281.0	0.0285	1,120.99 1,112.97	0.015	16.40	98.58	147.30	1,127.99 1,119.97	3.50
P-48	31 MH-1	(N/A)	(N/A)	7.24	58.51	0.460	29.76	18.61	19.22	3.67	42.0	254.0	0.0235	1,112.97 1,106.99	0.015	11.44	110.06	133.78	1,119.97 1,113.35	3.50










**LEGEND**

- - - EXISTING SANITARY SEWER
- - - EXISTING STORM SEWER
- - - EXISTING GAS
- EXISTING WATER MAIN (RECENTLY REPLACED)
- - - EXISTING WATER MAIN (TO BE REPLACED)
- PROPOSED STORM SEWER MAIN
- - - PROPOSED STORM SEWER LATERAL



MATCHLINE - SEE SHEET 2

LEGEND

-  1 CAR GARAGE, 1 CAR DRIVE
-  1 CAR GARAGE, 2 CAR DRIVE
-  2 CAR GARAGE, 1 CAR DRIVE
-  2 CAR GARAGE, 2 CAR DRIVE
-  OFF-STREET PARKING AREA
-  CAR PARKED ALONG STREET
-  NO PARKING ALLOWED

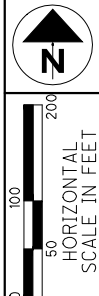


EXHIBIT 4 - PARKING CAPACITY FIGURE

STEESE AREA STUDY



NOTES  
1. FOR LEGEND, SEE SHEET 1.

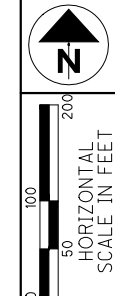
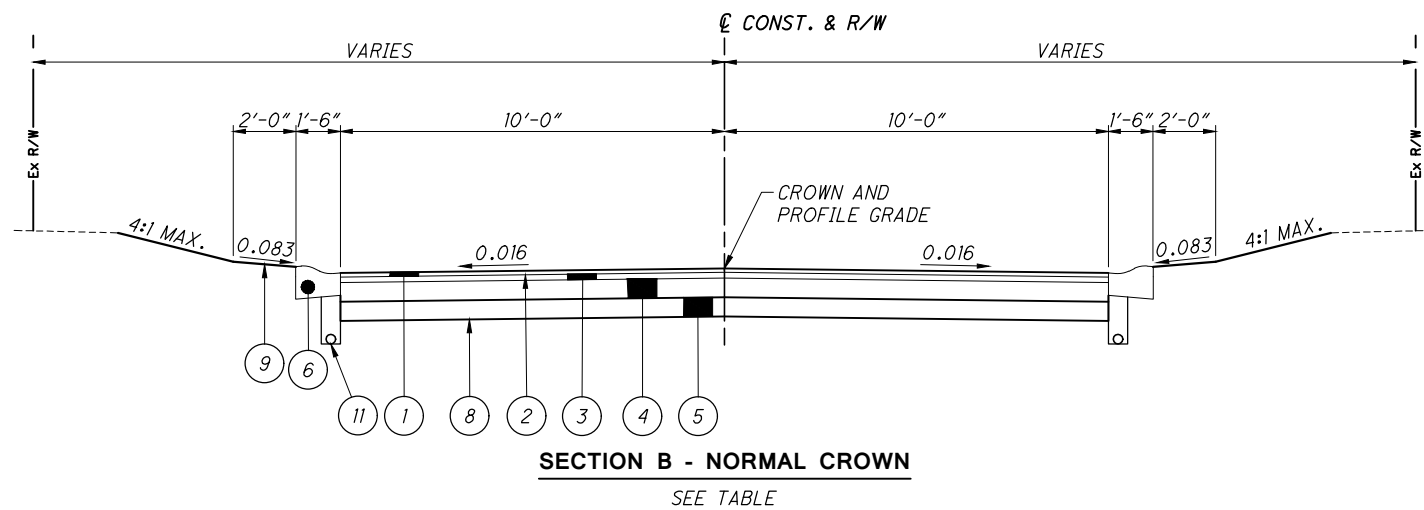
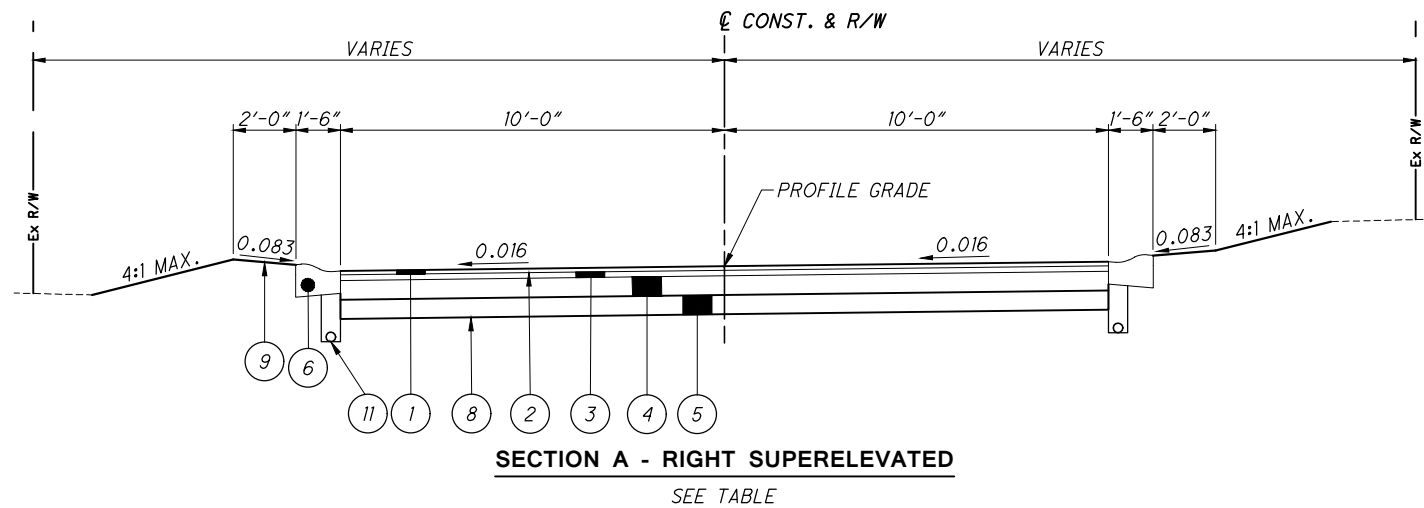


EXHIBIT 4 - PARKING CAPACITY FIGURE

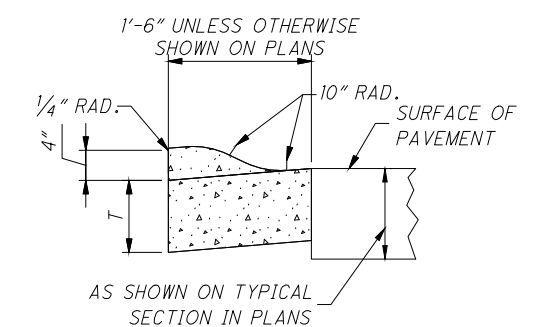
STEESE AREA STUDY



**LEGEND**

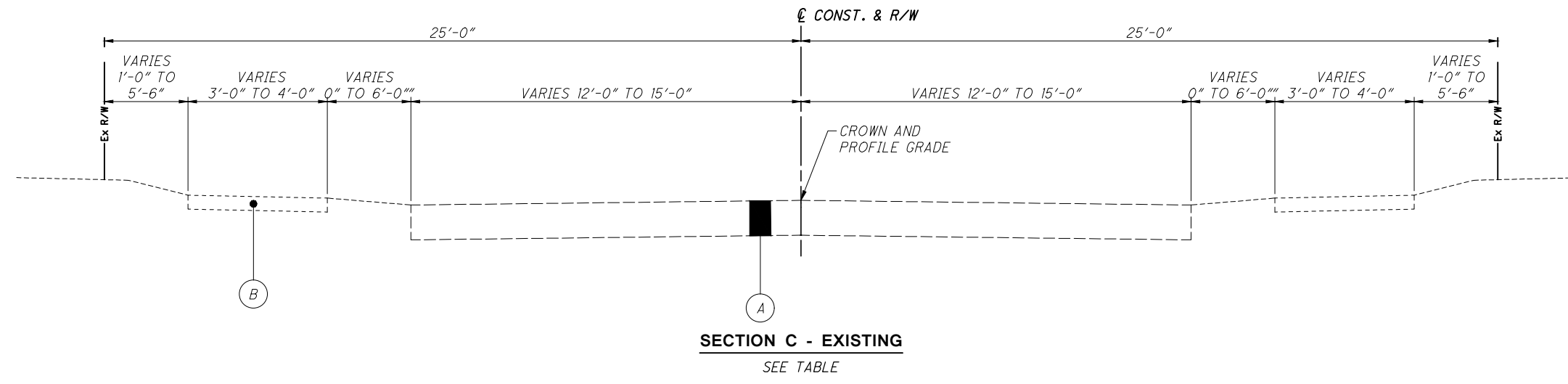
- (A) EXISTING PAVEMENT
- (B) EXISTING WALK
- (1) ITEM 441 - 1 1/4" ASPHALT CONCRETE SURFACE COURSE, TYPE 1 (448), PG64-22
- (2) ITEM 407 - TACK COAT (0.04 GAL/S.Y.)
- (3) ITEM 441 - 1 3/4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)
- (4) ITEM 301 - 6" ASPHALT CONCRETE BASE, PG64-22
- (5) ITEM 304 - 6" AGGREGATE BASE
- (6) ITEM 609 - COMBINATION CURB AND GUTTER, TYPE 3, AS PER PLAN
- (7) ITEM 609 - CURB, TYPE 6
- (8) ITEM 204 - SUBGRADE COMPACTION
- (9) ITEM 659 - SEEDING AND MULCHING
- (10) ITEM 608 - 4" CONCRETE WALK
- (11) ITEM 605 - 6" BASE PIPE UNDERDRAINS

SECTION	ROAD SEGMENT	FROM	TO	EX. R/W WIDTH	EX. PAVEMENT WIDTH	PROP. PAVEMENT WIDTH INCL. CURB
A	38TH STREET	CLEVELAND AVENUE	EDGEFIELD AVENUE	40'	24'	23'
	39TH STREET	CLEVELAND AVENUE	GRUNDER AVENUE	40'	21'	23'
	GRUNDER AVENUE	37TH STREET	41ST STREET	45'	21'	23'
	VERNON AVENUE	37TH STREET	39TH STREET	50'	23'	23'
	SHANABRUCK AVENUE	37TH STREET	41ST STREET	50'	20'	23'
	ARNOLD AVENUE	37TH STREET	39TH STREET	50'	23'	23'
B	39TH STREET	GRUNDER AVENUE	EDGEFIELD AVENUE	40'	21'	23'
	40TH STREET	CLEVELAND AVENUE	VERNON AVENUE	40'	21'	23'
	KOLP PL.	CLEVELAND AVENUE	END	30'	18'	23'
	STEESE AVENUE	39TH STREET	41ST STREET	50'	24'	23'
	VERNON AVENUE	39TH STREET	41ST STREET	50'	21'	23'
	ARNOLD AVENUE	39TH STREET	41ST STREET	50'	28'	23'



COMBINATION CURB AND GUTTER, TYPE 3, AS PER PLAN

G:\Project\TOHCAN03.ST01\Drawing\00000\Design\Roadway\Sheets\Exhibit 5 - Typical Sections.dwg\_05-Mar-19 2:56 PM

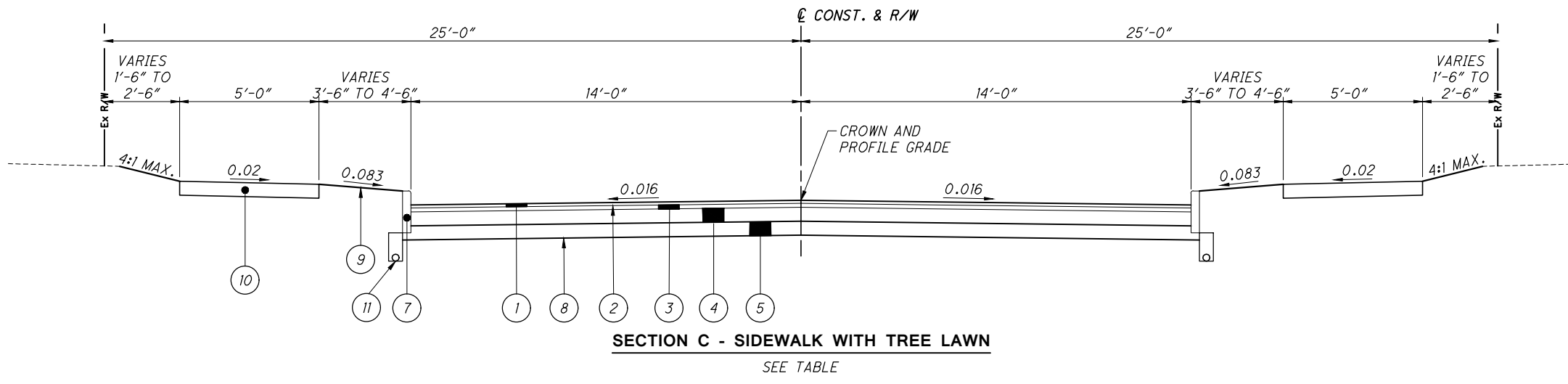


**SECTION C - EXISTING**  
SEE TABLE

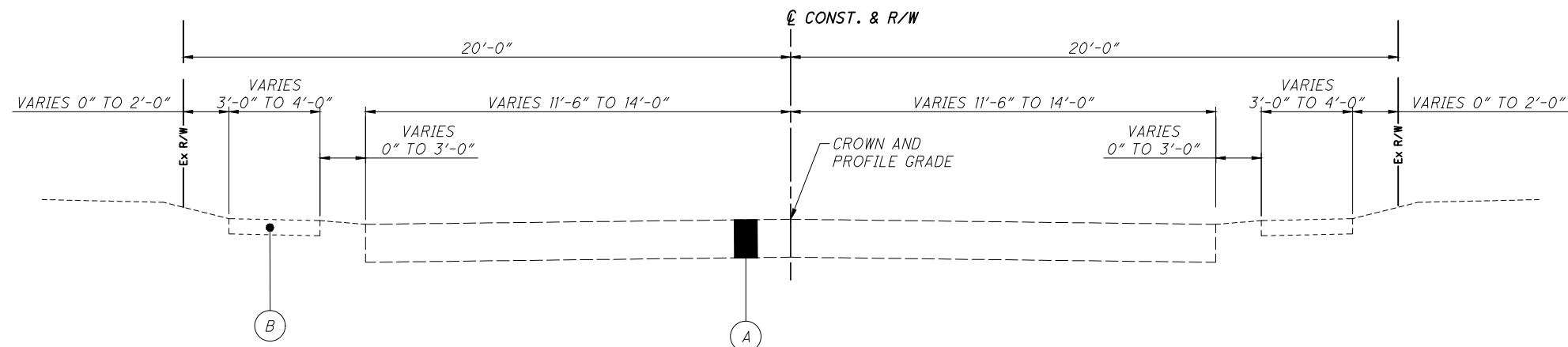
**NOTES**  
1. FOR LEGEND, SEE SHEET 1.

SECTION	ROAD SEGMENT	FROM	TO	EX. R/W WIDTH	EX. BACK TO BACK OF WALK	PROP. BACK TO BACK OF WALK
C	WESTVIEW AVENUE	37TH STREET	39TH STREET	50'	46'	46'
	BERNARD AVENUE	38TH STREET	41ST STREET	50'	47'	46'
	NORMAN AVENUE	38TH STREET	41ST STREET	50'	48'	46'
	FRAZER AVENUE	37TH STREET	41ST STREET	50'	43'*	45'
	39TH STREET	EDGEFIELD AVENUE	NORMAN AVENUE	50'	48'	46'
	40TH STREET	NORMAN AVENUE	FRAZER AVENUE	50'	46'	46'
	41ST STREET	NORMAN AVENUE	FRAZER AVENUE	50'	48'	46'

\* NO SIDEWALK ON WEST SIDE OF FRAZER, MEASUREMENT TAKEN FROM BACK OF DRIVE APRONS.



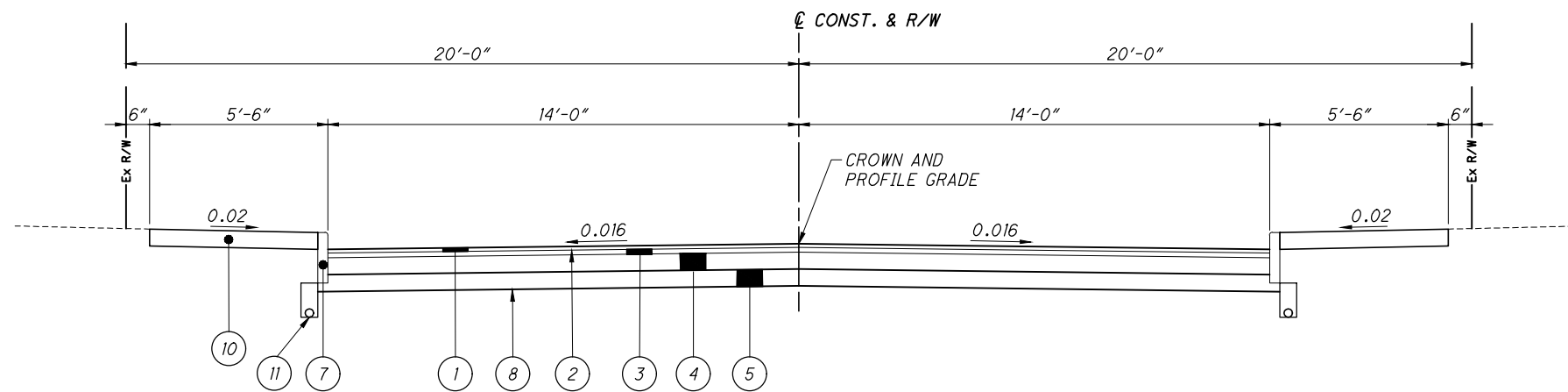
**SECTION C - SIDEWALK WITH TREE LAWN**  
SEE TABLE



SECTION D - EXISTING

SEE TABLE

SECTION	ROAD SEGMENT	FROM	TO	EX. R/W WIDTH	EX. BACK TO BACK OF WALK	PROP. BACK TO BACK OF WALK
D	EDGEFIELD AVENUE	37TH STREET	38TH STREET	40'	36'	38'
	EDGEFIELD AVENUE	38TH STREET	41ST STREET	50'	39'	38'
	NORMAN AVENUE	37TH STREET	38TH STREET	50'	40'	38'
	NORTHVIEW AVENUE	37TH STREET	40TH STREET	40'	40'	38'
	WOODLAND AVENUE	37TH STREET	END	40'	40'	38'
	38TH STREET	EDGEFIELD AVENUE	NORMAN AVENUE	40'	38'	38'
	38TH STREET	NORTHVIEW AVENUE	WOODLAND AVENUE	40'	40'	38'



SECTION D - SIDEWALK WITHOUT TREE LAWN

SEE TABLE

NOTES

- FOR LEGEND, SEE SHEET 1.



**Exhibit 6 - Budgetary Construction Cost Estimate**  
**Canton, Ohio**  
**Steese Area Roadway & Drainage Study**

BID ITEM NO.	ODOT ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	ITEM TOTAL
<b>ROADWAY</b>						
1	202	PAVEMENT REMOVED	SY	77,982	\$11.00	\$857,802.00
2	203	EXCAVATION	CY	12,437	\$13.00	\$161,681.00
3	204	SUBGRADE COMPACTION	SY	74,619	\$2.00	\$149,238.00
4	301	ASPHALT CONCRETE BASE, PG64-22	CY	12,436	\$156.00	\$1,940,016.00
5	304	AGGREGATE BASE	CY	12,436	\$56.00	\$696,416.00
6	407	TACK COAT	GAL	2,985	\$3.00	\$8,955.00
7	441	ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	CY	2,591	\$176.00	\$456,016.00
8	441	ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)	CY	3,627	\$172.00	\$623,844.00
9	451	6" REINFORCED CONCRETE PAVEMENT, CLASS QC1	SY	2,037	\$82.00	\$167,034.00
10	608	4" CONCRETE WALK	SF	69,740	\$7.00	\$488,180.00
11	609	COMBINATION CURB AND GUTTER, TYPE 3, AS PER PLAN	FT	29,626	\$27.00	\$799,902.00
12	609	CURB, TYPE 6	FT	26,808	\$24.00	\$643,392.00
13	659	TOPSOIL	CY	7,951	\$17.00	\$135,167.00
14	659	SEEDING AND MULCHING	SY	71,557	\$1.00	\$71,557.00
<b>DRAINAGE</b>						
15	611	12" CONDUIT, TYPE B	FT	5,578	\$80.00	\$446,240.00
16	611	15" CONDUIT, TYPE B	FT	6,412	\$81.00	\$519,372.00
17	611	18" CONDUIT, TYPE B	FT	1,186	\$102.00	\$120,972.00
18	611	24" CONDUIT, TYPE B	FT	581	\$117.00	\$67,977.00
19	611	30" CONDUIT, TYPE B	FT	845	\$141.00	\$119,145.00
20	611	36" CONDUIT, TYPE B	FT	352	\$153.00	\$53,856.00
21	611	42" CONDUIT, TYPE B	FT	1,570	\$196.00	\$307,720.00
22	611	CATCH BASIN, NO. 3	EACH	18	\$3,433.00	\$61,794.00
23	611	CATCH BASIN, NO. 3A	EACH	95	\$2,819.00	\$267,805.00
24	611	MANHOLE, NO. 3	EACH	19	\$4,184.00	\$79,496.00
<b>GENERAL</b>						
25	614	MAINTAINING TRAFFIC	LS	1	\$500,000.00	\$500,000.00
26	624	MOBILIZATION	LS	1	\$500,000.00	\$500,000.00
<b>SUBTOTAL CONSTRUCTION COST</b>						\$10,250,000
<b>25% CONTINGENCY</b>						\$2,562,500
<b>TOTAL CONSTRUCTION COST (2018)</b>						\$12,812,500
<b>INFLATION (2018 TO 2020)</b>						8.0%
<b>TOTAL CONSTRUCTION COST (2020)</b>						\$13,837,500