Rice Creek Watershed District
Stormwater Management Grant Program
2024 Application Form

I. APPLICANT INFORMATION

Organization (to be named as Grantee): City of New Brighton

Street Address: 803 Old Highway 8 NW

City, State, Zip: New Brighton, MN, 55112

Tax Status: Local Government Tax ID#: 9675988

(e.g., local government, non-profit 501(c)(3), private business, etc.)

II. PROJECT CONTACTS

Project Officer: Craig Schlichting
Title: Director of Community Assets and Development
Telephone: 651-638-2056
Fax: 651-638-2044
Email: craig.schlichting@newbrightonmn.gov

Financial Officer: Gina Foschi
Title: Finance Director
Telephone: 651-638-2105
Fax: 651-638-2044
Email: gina.foschi@newbrightonmn.gov

III. PROJECT INFORMATION

Project Name: 4th Street NW Storm Sewer Improvements

Location(s) of Project: 4th Street NW between Old Highway 8 NW and 12th Avenue NW

City: New Brighton State: MN County: Ramsey

Project Start Date: April 2024 Project Completion Date: October 2024

Project Type (check only those that directly apply):

- ☐ Water Quality Treatment Project
- ☐ Stormwater Reuse Irrigation Project
- ☐ Peak Runoff Rate Control Project
- ☐ Runoff Volume Control / Flood Storage Project
- ☒ Other: Flood Mitigation

Is a RCWD Rule C permit required for this project? ☐ YES ☒ NO ☐ UNKNOWN

IV. GRANT REQUEST

RCWD Grant Funding Requested: $ 100,000

Applicant Match Funding Committed: $ 751,994

State/Other Funding Committed: $ _____ Source(s): _____

Total Estimated Project Cost: $ 851,994

Would you be willing to accept grant funding in an amount less than requested? ☒ YES ☐ NO

V. SIGNATURE OF APPLICANT

I certify that the information contained within this application is true and accurate.

Signature of Project Officer

12-20-2023
Date

VI. Executive Summary / Abstract

Include a brief Executive Summary (100 words or less) that summarizes the main goals and activities of the project and the expected environmental outcomes that will be achieved. Identification of the total amount of funds being requested along with the required match, and how you heard about the program should be included in the Executive Summary. The summaries will be used in the grant review process and on the RCWD website, for projects that are funded.

The purpose of this project is to install a second trunk storm sewer line on 4th Street NW. This pipe will provide increased capacity while reducing localized flooding and property damage. This will also send local water through Pike and Long Lakes before the entire system reaches its HWL. We have successfully used this grant in the past. Our 2024 request is $100,000, and our local match will be over $700,000.

VII. Description (10 points)

The RCWD has established guidelines for prioritizing projects based on location. Water quality improvement projects should be located to benefit a RCWD lake classified as either "Protection" or "Restoration" (see Table 2-4 in the RCWD 2020 Watershed Management Plan), and/or a waterbody with an approved Total Maximum Daily Load (TMDL) study or other recognized diagnostic water quality study. Flood storage and runoff rate control projects should focus on reducing peak flood elevations in known regional flood hazard areas and/or documented local problem areas. Describe the specific watershed management, water quality or quantity need(s) that the project will address and its impact on the target water resource within the District.

Name the target waterbody benefitting from this project: Long Lake

List and describe the Best Management Practices (BMPs) to be incorporated into this project.

Protection. Increased local capacity will reduce the HWL near the 4th Street low area (750 4th St NW). This area was identified in New Brightons Surface Water Management Plan following the July 2011 Storm Event. Additionally, by allowing this drainage area to flow through Hansen Park, Garden View, Pike and Long Lakes sooner, it has a secondary benefit of reducing the volume of water in those areas during the peak time of concentration.

If applicable, describe how the project impacts or protects RCWD groundwater resources, minimizes impervious surfaces, and/or maximizes infiltration.

Provide drawings, maps and/or schematics which graphically illustrate the location and conceptual design of the project. **(Attach separate sheets.)**

Describe how long-term operation and maintenance of the project will be accomplished.

The storm sewer pipes and associated drainage structures will be owned and maintained by the City of New Brighton .

VIII. Prioritization (15 points)

How does the project support existing regional planning efforts such as the RCWD Watershed Management Plan, municipal surface water management plans, TMDLs, or other recognized diagnostic studies? Is the project included on the Member Community Project List (Appendix G) within the RCWD Watershed Management Plan? Please provide citations where possible.

This project is identified in the New Brightons SWMP and is listed in Appendix G as a Stormwater Conveyance improvement (see section 4.3.7 of Watershed Plan).

IX. Targeting (15 points)

Describe the critical pollution or flooding sources and risks addressed by this project. Explain why the proposed project is the most cost-effective and feasible means to attain the expected resource benefits. Has a formal analysis been conducted to substantiate this position?

A low point within an industrial and commercial area near 4th Street in New Brighton, MN is subject to flooding. There is no overland flow route present to protect existing structures. An analysis of the area was done in 2011 following a July 16, 2011 storm event that dumped 5 inches of rain in 2 hours. Several potential solutions were identified for the area. Increasing the 4th Street storm sewer capacity was analyzed and determined to be the most cost effective/beneficial solution. XPSWMM modeling using Atlas 14 data is provided.

X. Measurable Outcomes (20 points)

Provide a detailed estimate and description of the anticipated pollutant reduction, stormwater rate/volume reduction, groundwater withdrawal reduction, and/or other environmental or natural resource benefits associated with the project. Describe the methods and cite the sources (i.e. P8 model, HydroCAD, XP-SWMM, MIDS, MN Stormwater Manual, etc.) used to calculate or estimate the pollutant reductions and/or hydrologic outcomes. **(Mandatory for RCWD to consider your proposal!)**

The existing XPSWMM model developed in 2011 was updated to a corrected effective model by including the new development to the north of 5th Street and applying the Atlas 14 100-year rainfall depth (7.36 inches) with an MSE 3 distribution. Additional capacity under 4th Street was modeled with the proposed 42" RCP to transport water from the low point to the outfall west of 4th Street, based on the additional trunk storm sewer, reductions in water surface elevation are realized (HWL reduction 2.5 feet for July 16th storm, 1.7 feet for the 100-year).

Describe the strategy for monitoring and/or evaluating the results or effectiveness of the project, including how success will be defined and measured.

Separating Old Highway 8 and other stormwater runoff from the 4th Street lowpoint area will immediately reduce tailwater impacts and provide for additional capacity to meet flood reduction goals.

XI. Cost-Effectiveness (20 points)

Provide a detailed budget that lists each item for which funding is being requested. You must also list the sources of required local matching contributions. Why is this the most cost-effective approach to solving the problem? Have other alternatives been explored? **(Attach separate sheets if needed.)**

An Engineers Estimate is included with this application. Several potential solutions have been identified and modeled following the July 16, 2011 storm. Installation of an additional 42" trunk storm sewer line was found to provide the most cost effective benefits. See attached memorandum summarizing each solution and modeling results. The project will also be constructed in conjunction with a planned street rehabilitation project. Costs associated with removal and replacement of the bituminous surfacing, curb and gutter, and all restoration will be funded by the City and are not included in the engineers estimate or considered for grant funding.

XII. Project Readiness (10 points)

Please describe the anticipated timeline for implementing this project. What steps have been taken to ensure that the project can be implemented according to this timeline? Are any permits needed?

Installation of the proposed 42" trunk storm sewer line will take place during the 2024 construction season and will be included with the annual city street rehabilitation project.

XIII. Engagement Opportunities (10 points)

Demonstrate any potential for public engagement, education and demonstration and describe what methods will be used to ensure that the purpose and success of the project are made known to the public. Applicants must incorporate a public engagement component into the project.

Following construction a project summary article will be included in a quarterly City newsletter which is distributed to all residents in New Brighton. The article will highlight project benefits and RCWD's continued support and funding for storm water related projects in the City.

Memorandum

To: Craig Schlichting, PE, City of New Brighton, MN

From: Jake Newhall, PE
Laura Pietila, EIT

Date: September 13, 2022

Re: 4th Street Flooding Analysis
WSB Project No. 019734-000

BACKGROUND

A low point within an industrial and commercial area near 4th Street in New Brighton, MN is subject to flooding. There is no overland flow route present to protect existing structures. An analysis of the area was done in 2011 following a July 16, 2011 storm event that dumped 5 inches of rain in 2 hours. Several potential solutions were identified for the area in 2011. E1 and E3 as identified in the 2011 analysis (the construction of a detention basin north of 5th Street and increasing the 4th Street storm sewer capacity) as well as additional solution options E4, E5, and E6 (storm sewer diversion, removing tailwater impacts from the existing storm sewer to the low point, and adding an additional storm sewer trunkline for non-low point tributary areas) are analyzed in this memorandum. Refer to **Figure 1** for the option configurations and associated drainage areas.

METHODOLOGY AND RESULTS

Corrected Effective Model

The existing XPSWMM model developed in 2011 was updated to a corrected effective model by including the new development to the north of 5th Street and applying the Atlas 14 100-year rainfall depth (7.36 inches) with an MSE 3 distribution. With the addition of the underground infiltration chamber in the new development north of 5th Street, the high-water level at the low point is reduced according to **Table 1**.

Table 1. 10-04B Low Point Existing High Water Levels

Storm Event	Existing HWL [without Underground Storage]	Corrected Effective HWL [with Underground Storage]	HWL Reduction
	feet	feet	feet
July 16th	908.7	908.6	0.1
100-year	908.6	908.5	0.1

Option E1

To model the E1 solution, a proposed model was created by incorporating the preliminary basin design set forth by the City north of 5th Street. The basin parameters are listed in **Table 2**.

Table 2. E1 Proposed Basin Design Parameters

Basin Parameters	
Surface Area at EOF	0.38 acres
Live Storage Volume below EOF	1.60 acre-feet

701 XENIA AVENUE S | SUITE 300 | MINNEAPOLIS, MN | 55416 | 763.541.4800 | WSBENG.COM

Outlet	12" RCP
EOF*	907.7

*EOF from road low point is approximately 909

The addition of the detention basin lowers the high-water level at the low point near 4th Street. **Table 3** outlines the existing and proposed high water levels for a storm event similar to the July 16th event as well as a 100-year event.

Table 3. 10-04B Low Point High Water Levels with E1

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	908.1	0.5
100-year	908.5	908.1	0.4

To reduce flooding further, the proposed basin footprint would need to be expanded. There appears to be space to expand the basin to the northwest if an existing watermain is realigned and it doesn't impede development.

Option E2
Option E2 was part of the 2011 analysis but was not analyzed in this memorandum.

Option E3
In addition to the modifications made in the E1 proposed model, additional capacity under 4th Street was modeled (additional 24" and 36" RCP respectively). The additional pipe along 4th Street was modeled to transport water from the low point to the outfall west of 4th Street, not taking any of the downstream street runoff. Based on the additional trunk storm sewer, reductions in water surface elevation according to **Table 4** and **Table 5** are anticipated at the low point.

Table 4. 10-04B Low Point High Water Levels with E1 and E3 (24-inch Pipe)

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	907.4	1.2
100-year	908.5	907.5	1.0

Table 5. 10-04B Low Point High Water Levels with E1 and E3 (36-inch Pipe)

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	905.9	2.7
100-year	908.5	906.8	1.7

Option E4
With the goal of routing water around the low point subject to flooding, an analysis was completed to determine the impact of constructing a diversion pipe from the storm sewer on 5th Street to the trunkline storm sewer on 4th Street. As shown in **Table 6**, the diversion provides very little benefit because it routes water into an undersized system with a tailwater condition. With the diversion and the addition of a new trunkline storm sewer out of the low point (E3), the change in high water level is listed in **Table 7** and **Table 8**.

Table 6. 10-04B Low Point High Water Levels with E4

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	908.5	0.1
100-year	908.5	908.4	0.1

Table 7. 10-04B Low Point High Water Levels with E3 (24-inch Pipe) and E4

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	907.9	0.7
100-year	908.5	908.0	0.5

Table 8. 10-04B Low Point High Water Levels with E3 (36-inch Pipe) and E4

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	906.7	1.9
100-year	908.5	907.4	1.1

Option E5

To remove tailwater impacts of the trunkline storm sewer on the low point, E3 was analyzed in addition to the removal of the existing storm sewer out of the low point with flooding potential (E5). Various sized trunklines with and without E1 were modeled. Results are shown in **Table 9**, **Table 10**, and **Table 11**. The results of the analysis prove that the tailwater in the trunkline storm sewer contributes to the flooding at the low point in 10-04B.

Table 9. 10-04B Low Point High Water Levels with E1, E3 (24-inch Pipe), and E5

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	906.9	1.7
100-year	908.5	907.0	1.5

Table 10. 10-04B Low Point High Water Levels with E1, E3 (36-inch Pipe), and E5

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	903.4	5.2
100-year	908.5	905.9	2.6

Table 11. 10-04B Low Point High Water Levels with E3 (36-inch Pipe) and E5

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	905.9	2.7
100-year	908.5	906.8	1.7

Option E6

To facilitate the construction of a shallower trunkline storm sewer on 4th Street, an analysis was completed routing 10-08B, 10-04, 10-19, and/or 10-02A to a new trunkline storm sewer (E6). 10-

04B will continue to utilize the existing trunkline storm sewer without any other inputs. A 42-inch pipe (E6) with E1 results in the greatest high water level reduction at 10-04B.

*E6 – 36-inch Pipe (**Table 12** and **Table 13**)*

Table 12. 10-04B Low Point High Water Levels with E1 and E6 (36-inch Pipe) for Drainage Areas 10-08B, 10-04, 10-19, and 10-02A

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	904.9	3.7
100-year	908.5	906.5	2.0

*With a 36-inch pipe for drainage areas 10-08B, 10-04, 10-19, and 10-02A, water surcharges from the structure and flows to the low point in 10-04B in the 100-year event.

Table 13. 10-04B Low Point High Water Levels with E6 (36-inch Pipe) for Drainage Areas 10-08B, 10-04, 10-19, and 10-02A

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	906.2	2.4
100-year	908.5	907.1	1.4

*With a 36-inch pipe for drainage areas 10-08B, 10-04, 10-19, and 10-02A, water surcharges from the structure and flows to the low point in 10-04B in the 100-year event.

*E6 – 42-inch Pipe (**Table 14** and **Table 15**)*

Table 14. 10-04B Low Point High Water Levels with E1 and E6 (42-inch Pipe) for Drainage Areas 10-08B, 10-04, 10-19, and 10-02A

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	904.7	3.9
100-year	908.5	906.0	2.5

*Discharging drainage area 10-02A to the new E6 trunkline storm sewer instead of to the existing trunkline storm sewer results in a 2.5-foot high water level reduction versus a 2.6-foot high water level reduction at the low point in the 100-year event.

Table 15. 10-04B Low Point High Water Levels with E6 (42-inch Pipe) for Drainage Areas 10-08B, 10-04, 10-19, and 10-02A

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	906.1	2.5
100-year	908.5	906.8	1.7

*Discharging drainage area 10-02A to the new E6 trunkline storm sewer instead of to the existing trunkline storm sewer results in a 1.7-foot high water level reduction versus a 1.8-foot high water level reduction at the low point in the 100-year event.

*E6 – 48-inch Pipe (**Table 16**)*

Table 16. 10-04B Low Point High Water Levels with E6 (48-inch Pipe) for Drainage Areas 10-08B, 10-04, 10-19, and 10-02A

Storm Event	Corrected Effective HWL	Proposed HWL	HWL Reduction
	feet	feet	feet
July 16th	908.6	906.1	2.5
100-year	908.5	906.7	1.8

RECOMMENDATION

Based on the results of the different options, we recommend constructing option E6 with or without option E1, depending upon the desired flood protection (**Table 14** or **Table 15**). For option E6, a 42-inch trunkline storm sewer is recommended because the pipe will be able to be installed shallower than the existing trunkline storm sewer and water will not surcharge from the storm sewer into the low point in the 100-year event.

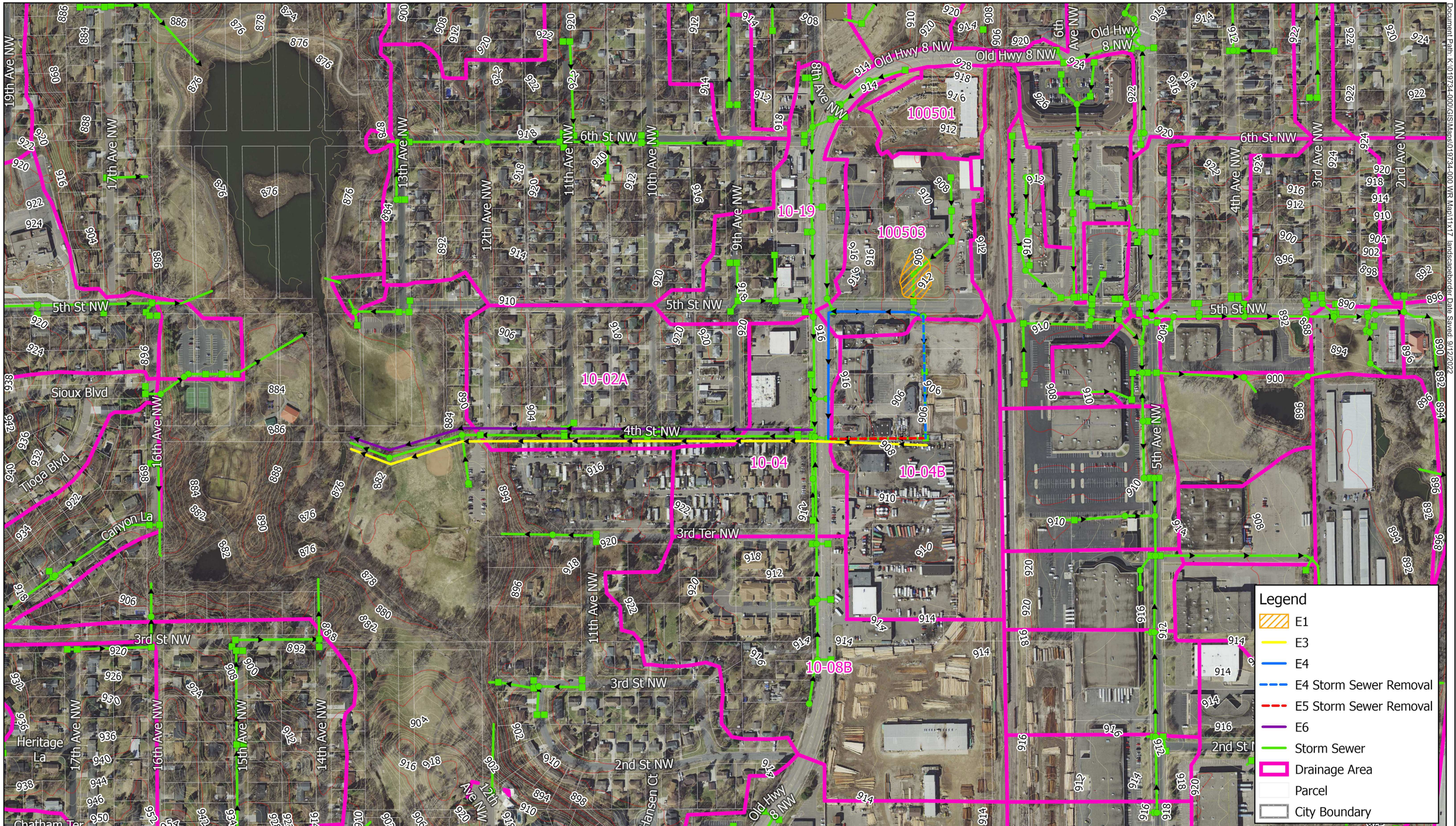


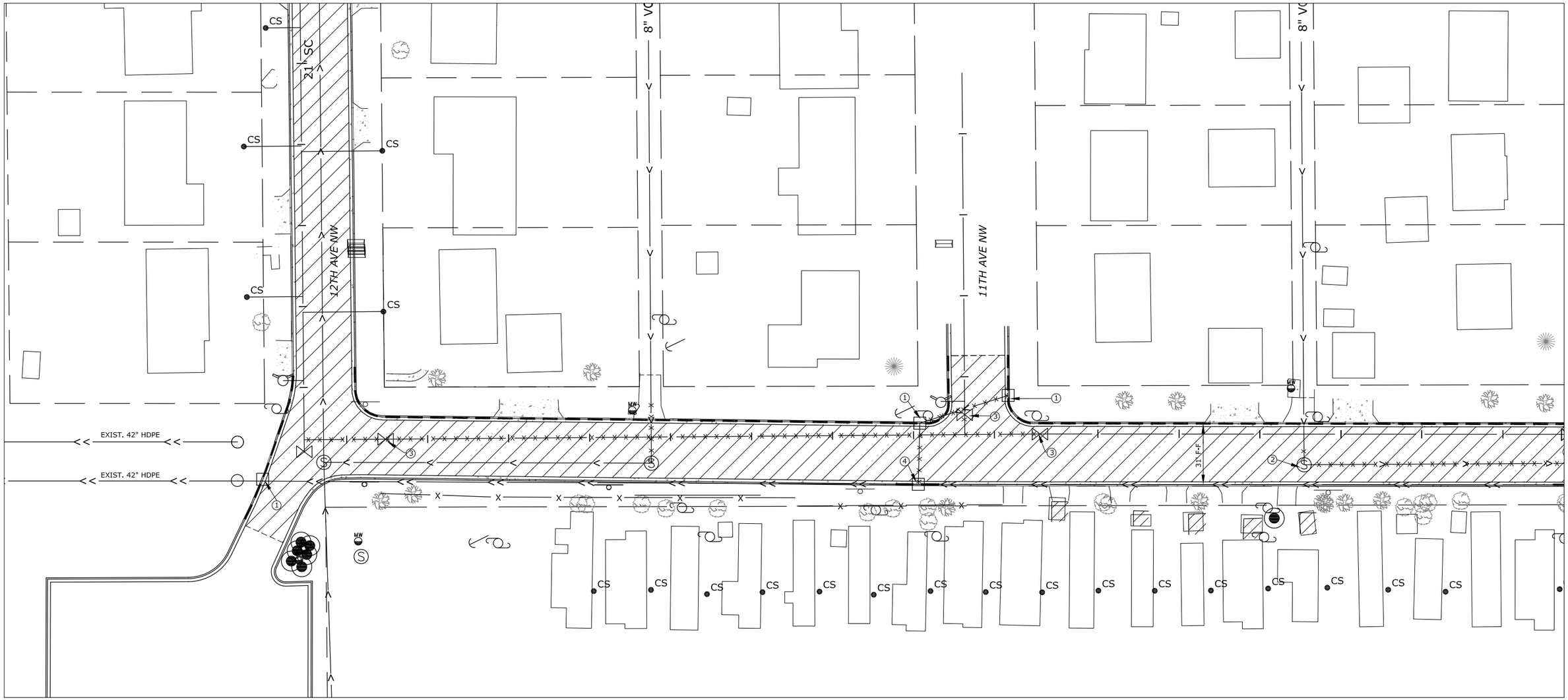
Figure 1 - Drainage Area Map

4th Street Flooding
City of New Brighton, MN

N

0 350 Feet

1 inch = 350 feet



REMOVE STORM SEWER

REMOVE SANITARY SEWER

REMOVE WATERMAIN

REMOVE CURB AND GUTTER

REMOVE BITUMINOUS SURFACE

CONSTRUCTION NOTES

1. REMOVE CATCH BASIN / MANHOLE
2. REMOVE SANITARY MANHOLE
3. REMOVE GATE VALVE
4. REMOVE MH TOP SLAB, BARREL SECTION, AND CASTING

N W E S

0 25 50 FEET

No.	Date	Revisions	App.
NO	DATE	REVISION	XX
NO	DATE	REVISION	XX
NO	DATE	REVISION	XX
NO	DATE	REVISION	XX
NO	DATE	REVISION	XX

DRAWING NAME	PLAN PROFILE
DESIGNED BY:	DML,SDT
DRAWN BY:	DML,SDT
CHECKED BY:	CGS
DATE:	12-18-23
PROJECT NO.	24–1

S.A.P.

S.A.P.

S.A.P.

S.A.P.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

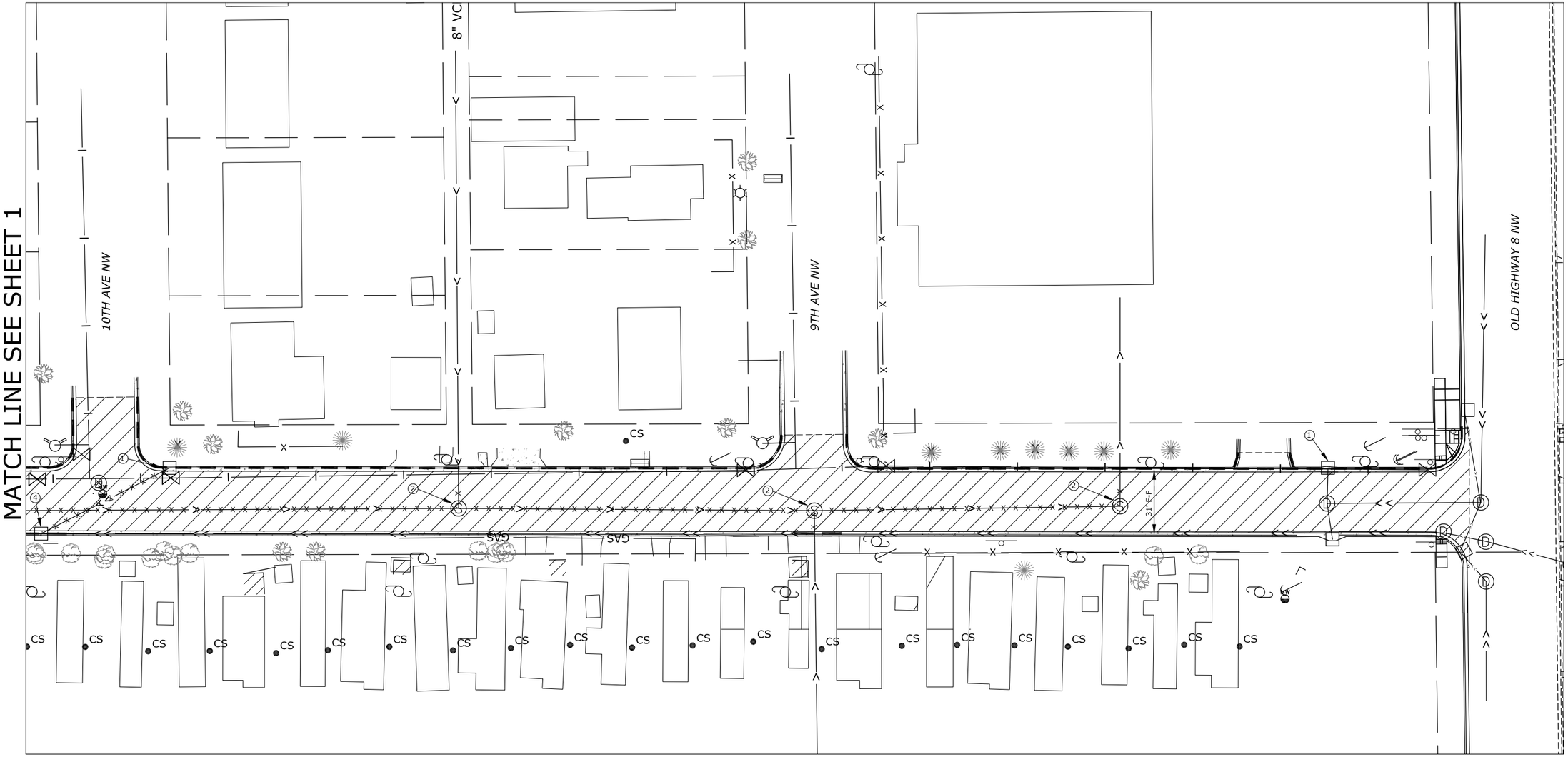
DATE: _____ MN LIC. NO. _____

NEW BRIGHTON
building tomorrow today

4TH STREET NW
STORM SEWER IMPROVEMENTS
REMOVAL PLAN

SHEET NO. 1 / 4

MATCH LINE SEE SHEET 1



REMOVE STORM SEWER
REMOVE SANITARY SEWER
REMOVE WATERMAIN
REMOVE CURB AND GUTTER
REMOVE BITUMINOUS SURFACE

CONSTRUCTION NOTES

1. REMOVE CATCH BASIN / MANHOLE
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N W E S

0 25 50 FEET

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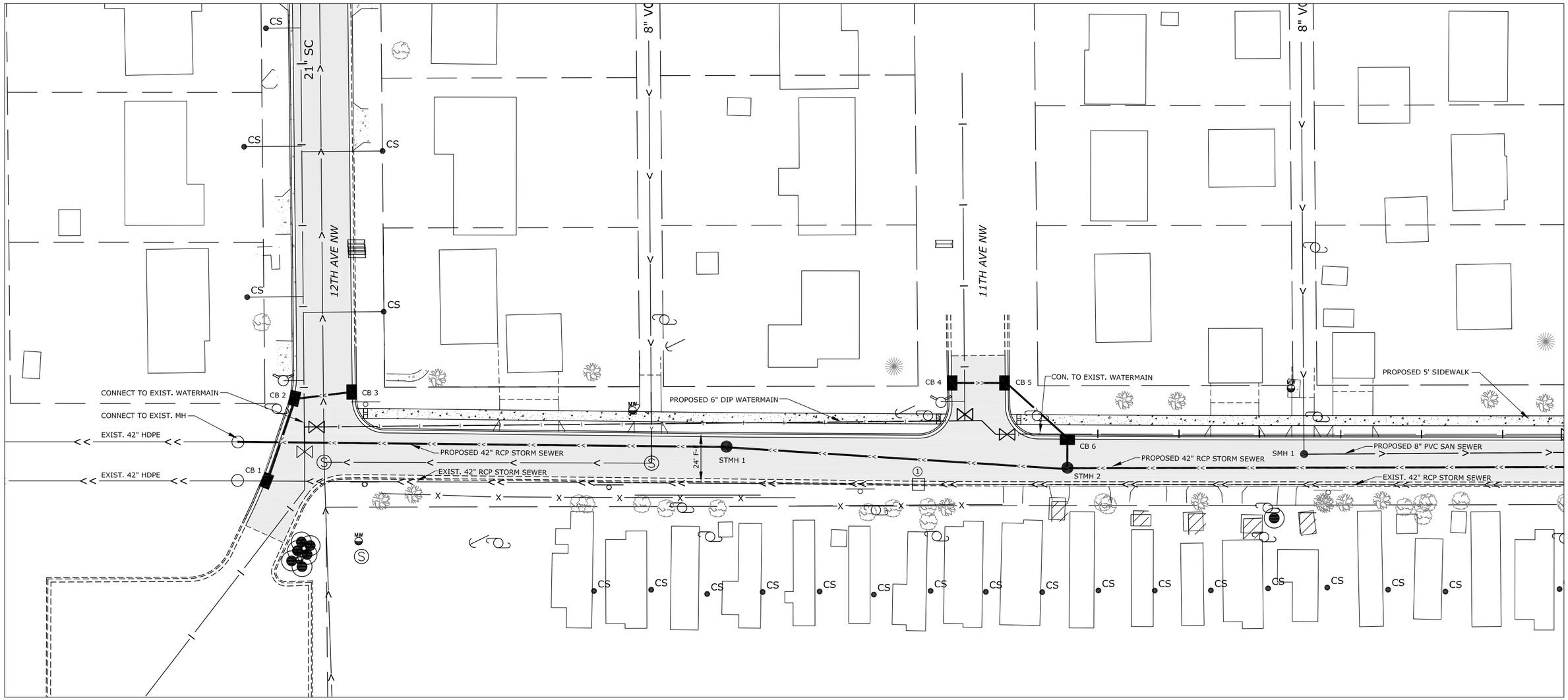
4TH STREET NW
STORM SEWER IMPROVEMENTS
REMOVAL PLAN

SHEET NO. 2 / 4



- (D) EXISTING CATCH BASIN / MANHOLE
- EXISTING STORM SEWER
- (S) EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER
- PROPOSED CATCH BASIN / MANHOLE
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER
- PROPOSED WATERMAIN

CONSTRUCTION NOTES

(1) FURNISH AND INSTALL MH TOP SLAB, BARREL SECTION, AND CASTING

N W E S

0 25 50 FEET

No.	Date	Revisions	App.
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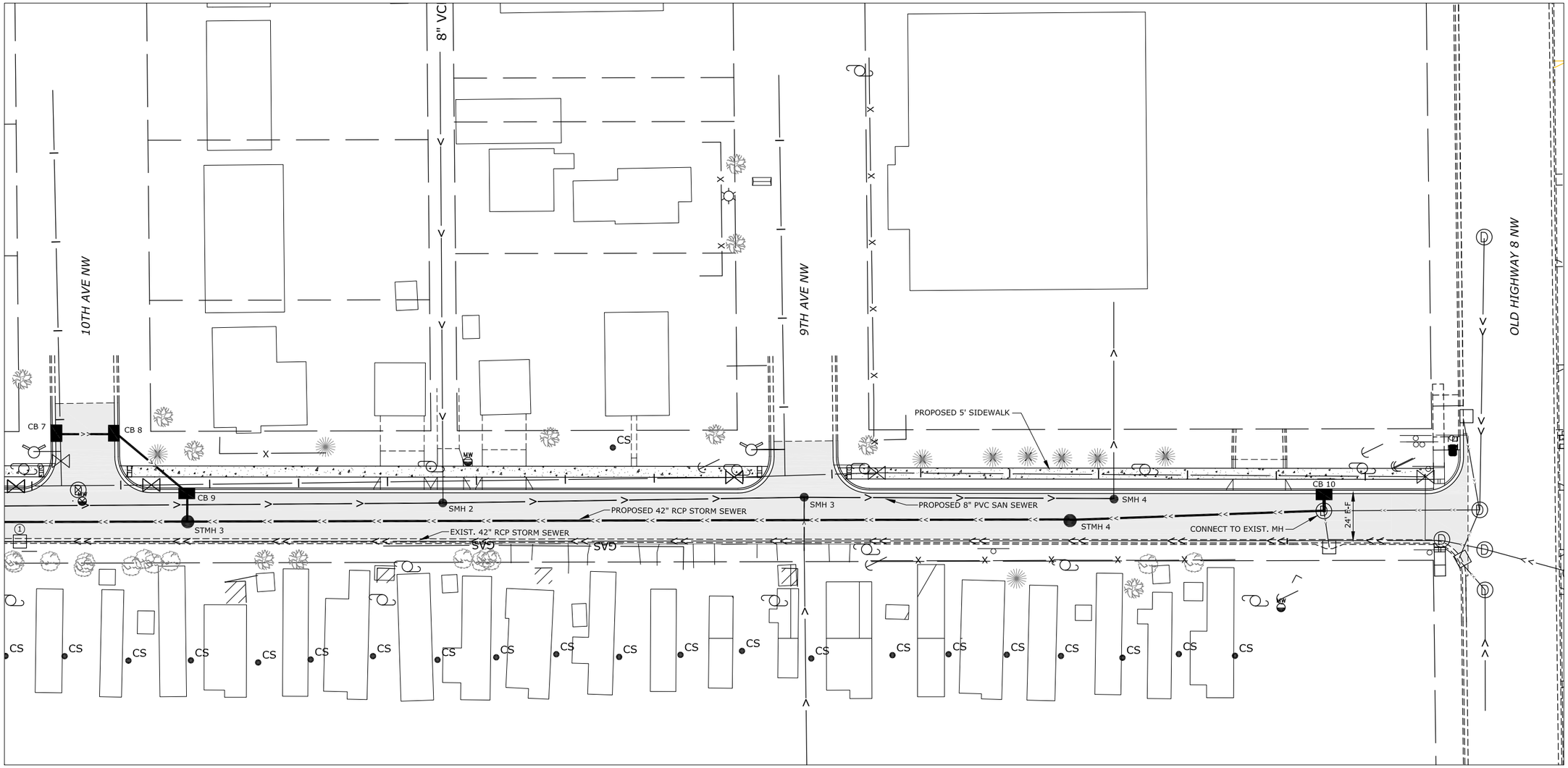
NEW BRIGHTON
building tomorrow today

4TH STREET NW
STORM SEWER IMPROVEMENTS
PROPOSED PLAN

SHEET NO. 3 / 4

MATCH LINE SEE SHEET 3



- EXISTING CATCH BASIN / MANHOLE
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER
- PROPOSED CATCH BASIN / MANHOLE
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER
- PROPOSED WATERMAIN

CONSTRUCTION NOTES

(1) REMOVE AND REPLACE MH TOP SLAB, BARREL SECTION, AND CASTING

N W E S

0 25 50 FEET

No.	Date	Revisions	App.
NO	DATE	REVISION	XX
NO	DATE	REVISION	XX
NO	DATE	REVISION	XX
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DATE: _____ MN LIC. NO. _____

NEW BRIGHTON
building tomorrow today

4TH STREET NW
STORM SEWER IMPROVEMENTS
PROPOSED PLAN

SHEET NO. 4 / 4

CITY OF NEW BRIGHTON
4TH STREET NW STORM SEWER IMPROVEMENTS

ESTIMATED COSTS

Item No.	Item	Units	Quantity	Unit Price	Amount
1	REMOVE DRAINAGE STRUCTURE	EA	5	$ 800.00	$ 4,000.00
2	REMOVE SANITARY STRUCTURE	EA	4	$ 1,000.00	$ 4,000.00
3	REMOVE SEWER PIPE STORM	LF	144	$ 18.00	$ 2,592.00
4	REMOVE SEWER PIPE SANITARY	LF	704	$ 18.00	$ 12,672.00
5	REMOVE WATERMAIN	LF	384	$ 10.00	$ 3,840.00
6	REMOVE GATE VALVE AND BOX	EA	3	$ 400.00	$ 1,200.00
7	REMOVE TOP SLAB, CASTING, AND BARREL SECTION	EA	2	$ 1,000.00	$ 2,000.00
8	CONSTRUCT DRAINAGE STRUCTURE (2'X3') W/ CASTING	EA	4	$ 4,000.00	$ 16,000.00
9	CONSTRUCT DRAINAGE STRUCTURE (48" ROUND) W/ CASTING	EA	5	$ 5,000.00	$ 25,000.00
10	CONSTRUCT DRAINAGE STRUCTURE (72" ROUND) W/ CASTING	EA	5	$ 15,000.00	$ 75,000.00
11	15" RC PIPE SEWER DESIGN 3006 CLASS V	LF	247	$ 85.00	$ 20,995.00
12	42" RC PIPE SEWER DESIGN 3006 CLASS V	LF	1263	$ 425.00	$ 536,775.00
13	CONNECT TO EXISTING STORM SEWER	EA	4	$ 800.00	$ 3,200.00
14	CONNECT TO EXISTING DRAINAGE STRUCTURE	EA	1	$ 1,200.00	$ 1,200.00
15	FURNISH AND INSTALL 72" BARREL SECTION, TOPSLAB, AND CASTING	EA	2	$ 2,500.00	$ 5,000.00
16	CONSTRUCT SANITARY MANHOLE (48" ROUND) W/ CASTING	EA	4	$ 8,500.00	$ 34,000.00
17	CONNECT TO EXISTING SANITARY SEWER	EA	4	$ 1,500.00	$ 6,000.00
18	8" PVC PIPE SEWER	LF	694	$ 60.00	$ 41,640.00
19	BYPASS PUMPING	LS	1	$ 15,000.00	$ 15,000.00
20	6" WATERMAIN DUCTILE IRON CL 52	LF	390	$ 60.00	$ 23,400.00
21	6" GATE VALVE AND BOX	EA	3	$ 2,500.00	$ 7,500.00
22	CONNECT TO EXISTING WATERMAIN	EA	4	$ 2,000.00	$ 8,000.00
23	DUCTILE IRON PIPE FITTINGS	LB	298	$ 10.00	$ 2,980.00
	TOTAL IMPROVEMENT COST				**$ 851,994.00**