Permit Application Review

Permit No. 2023-002
Received complete: August 16, 2024

Applicant:	Ned Dodington; Greystar Development Central, LLC
Consultant:	Brady Busselman; Sambatek
Project:	Marlowe Opus Station
Location:	10702 Red Circle Drive, Minnetonka, MN
Applicable Rule(s):	4, 5, 11 and 12
Reviewer(s):	Louise Heffernan; Barr Engineering Co.

General Background & Comments

The applicant proposes the construction of a 275-unit residential apartment building with surface parking and an on-grade parking garage at the 3.2-acre site located at 10702 Red Circle Drive in Minnetonka. Demolition and removal of existing site infrastructure, including the commercial building structure, foundation, footings, base materials, and the existing surface parking lots is proposed. The applicant proposes site improvements including grading, landscaping, utilities, sidewalks, courtyard amenities, a pool, and bituminous paths. A series of underground stormwater management facilities, manufactured treatment devices, a rainwater harvest and reuse system, grassed swales, and a green roof system is proposed for stormwater management.

The project site information is summarized below.

- Total Site Area: 3.16 acres (137,635 square feet)
- Disturbed Area: 3.36 acres (146,362 square feet)
- Existing Site Impervious Area: 2.12 acres (92,304 square feet)
- Proposed Site Impervious Area: 2.45 acres (106,896 square feet)
- New (Increase) in Site Impervious Area: 0.34 acres (15.8% increase)
- Disturbed Site Impervious Area: 2.12 acres (100% disturbance of existing site impervious area)
- Regulated Impervious Area[1]: 2.20 acres (95,822 square feet)

The applicant proposes to undertake work on the adjacent property to the north, along the private access road at 10901 Bren Rd E, within city easements to tie-in to existing infrastructure and utilities. Authorization for this work has been obtained and is detailed in the following section.

[1] Trails, sidewalks and retaining walls that do not exceed 10 feet in width and are bordered downgradient by a pervious area extending at least half the width of the trail, sidewalk, or retaining wall are exempt from the requirements of the stormwater rule and have been excluded from the regulated impervious area in compliance with subsection 4.2.2c.

The exhibits reviewed are summarized below.

1. Signed Permit Application dated January 11, 2023 (received January 12, 2023).
2. Email correspondence dated January 12, 2023, February 15, 2023, March 29, 2023, March 30, 2023, May 21, 2024, June 26, 2024, June 27, 2024, July 1, 2024, July 2, 2024, July 9, 2024, July 25, 2024, July 29, 2024, and August 2, 2024, identifying items required for a complete application and review comments. The application with the submittal items above is complete.
3. Civil Plans dated December 6, 2022 (received January 12, 2023), revised January 30, 2023, March 30, 2023, April 29, 2024 (received April 30, 2024), May 7, 2024 (received July 3, 2024), and August 14, 2024 (received August 15, 2024), prepared by Sambatek.
4. Geotechnical Evaluation Report dated May 31, 2022, prepared by Braun Intertec.
5. Stormwater Management Report dated January 10, 2023 (received January 12, 2023), revised January 30, 2023, March 6, 2023 (received March 30, 2023), April 29, 2024 (received April 30, 2024), June 6, 2024 (received June 7, 2024), and July 3, 2024, prepared by Sambatek.
6. Electronic HydroCAD models received on January 12, 2023, revised January 30, 2023, March 30, 2023, April 30, 2024, June 7, 2024, and July 3, 2024, prepared by Sambatek.
7. Electronic water quality modeling files received on January 12, 2023, revised January 30, 2023, March 30, 2023, April 30, 2024, June 7, 2024, and July 3, 2024, prepared by Sambatek.
8. Electronic Stormwater Reuse Calculator modeling files received January 30, 2023, revised March 30, 2023, April 30, 2024, June 7, 2024, and July 3, 2024, prepared by Sambatek.
9. Green Roof Plans received June 7, 2024, prepared by ESG Architecture and Design.
10. Irrigation Plans received June 7, 2024, prepared by Aqua Engineering, Inc.
11. NMCWD Comment Response Letter received March 30, 2023, June 7, 2024, and July 3, 2024, prepared by Sambatek.
12. Estimate of cost for the proposed stormwater management facilities provided by Sambatek on July 26, 2024, revised July 30, 2024.
13. Maintenance Declaration for the Stormwater Facilities received August 15, 2025, revised August 16, 2024, prepared by Sambatek.
14. Drainage and Utility Easement (Document 1388466) and Secondary Road, Utility, and Ponding Easement (Document 1502293), received on August 2, 2024.
15. City of Minnetonka documentation provided by Jeremy Koenen on august 19, 2024, authorizing the applicant to undertake work within the geographic boundary of the Drainage and Utility Easement (Document 1388466) and within the geographic boundary of the Secondary Road, Utility, and Ponding Easement (Document 1502293).

4.0 Stormwater Management

NMCWD's requirements for stormwater management apply to the project because more than 50 cubic yards of material will be disturbed and 5,000 square feet or more of surface area is to be altered, Rules 4.2.1a and b.

The NMCWD's Rule for Redevelopment, Rule 4.2.3, states, if the proposed activity will increase the total impervious surface by 50 percent or more or will disturb 50 percent or more of the existing site impervious surface, the stormwater criteria will apply to the entire site. Otherwise, the criteria of section 4.3 will apply only to the disturbed, replaced, and net additional impervious surface on the site. Since the proposed activities will disturb 100% of the existing site impervious area, the district's stormwater management criteria apply to the entire site.

Stormwater management for the site will be provided by two underground stormwater management facilities, two manufactured treatment devices, a rainwater harvest and reuse system for irrigation, a green roof, and grassed swales to provide rate control, volume retention, and water quality management. Site runoff conveyed to the underground stormwater management facilities' chambers will be utilized for the rainwater harvest and reuse system and collected from a portion of the building flat roof system, green roof system, and at-grade surfaces. In addition to storing runoff for the rainwater harvest and reuse systems, the underground chambers will provide detention for water quality management and rate control.

Rule 4.3.1b requires the 2-, 10-, and 100-year post development peak runoff rates be equal to or less than the existing discharge rates for all collection points where stormwater leaves the site. The applicant used a HydroCAD hydrologic model to simulate runoff rates at all collection points where stormwater discharge leaves the site. The existing and proposed 2-, 10- and 100-year frequency discharge rates from the site are summarized in the tables below. The proposed stormwater management plan will provide rate control in compliance with the NMCWD requirements for the 2-, 10-, and 100-year events. Rule 4.3.1b is met.

Existing Conditions			
Discharge Location	**2- year (c.f.s.)**	**10- year (c.f.s.)**	**100- year (c.f.s.)**
To Northwest (10901 Bren Rd E)	5.3	8.4	15.2
To Northeast (10901 Bren Rd E)	3.0	5.1	9.7
To South (Red Cir Dr)	3.9	6.3	11.2

Proposed Conditions			
Discharge Location	**2- year (c.f.s.)**	**10- year (c.f.s.)**	**100- year (c.f.s.)**
To Northwest (10901 Bren Rd E)	5.0	8.3	15.0
To Northeast (10901 Bren Rd E)	2.0	3.4	6.5
To South (Red Cir Dr)	3.7	6.1	11.2

Rule 4.3.1a requires the retention onsite of 1.1 inches of runoff from the regulated impervious surfaces. A retention volume of 8,784 cubic feet is required from the proposed 95,822 square feet of regulated impervious surface.

The Geotechnical Evaluation Report prepared by Braun Intertec identifies reasonably high on-site groundwater conditions, and groundwater levels on the site are expected to fluctuate between approximate elevations of 889.0-890.5 ft. Groundwater was observed at various elevations within all the borings completed on the site in 2022. Soil classification from the borings indicate approximately 1 to 3 feet of fill underlain by sandy lean clay (CL), peat (PT), swamp deposit and/or organic soil. The engineer concurs with the soil boring analysis identifying the presence of site soil textures with low permeability.

The applicant has requested that the site be restricted under subsection 4.3.2 of the NMCWD Rules. For restricted sites, subsection 4.3.2 requires rate control in accordance with subsection 4.3.1b and that retention and water-quality protection be provided in accordance with the following priority sequence: (a) Retention of at least 0.55 inches of runoff from the regulated impervious surface and treatment of all runoff to the standard in paragraph 4.3.1c; or (b) Retention of runoff on-site to the maximum extent practicable (MEP) and treatment of all runoff to the standard in paragraph 4.3.1c; or (c) Off-site retention and treatment within the watershed to the standards in paragraph 4.3.1a and 4.3.1c.

Given the presence of reasonably high groundwater at various locations throughout the site, the presence of clayey and organic soils that are not conducive to infiltration, and shallow storm sewer tie-in locations, the NMCWD engineer agrees that the site is restricted. Rule 4.3.2a requires the retention onsite of 0.55 inches of runoff from the regulated impervious surface of the site. In accordance with the restricted site sequencing, a retention volume of 4,392 cubic feet is required from the proposed 95,822 square feet of regulated impervious surface.

The applicant proposes the use of a rainwater harvest and reuse system for volume retention. The applicant evaluated various underground cistern storage sizes, irrigation supply volumes and annual irrigation demand to evaluate the effectiveness of the system to provide volume control. The proposed design was selected based on evaluation of the estimated rainwater reuse system performance as it relates to irrigation demand and available stormwater source (runoff from impervious surfaces). The applicant evaluated the proposed rainwater harvest and reuse system performance utilizing the Ramsey-Washington Metro Watershed District stormwater reuse calculator. Based on the calculator results, the total volume retention achieved for the site is summarized in the table below. The project in conformance with subsection 4.3.2a.

Volume Retention Summary

Stormwater Management Facility	Provided Volume (cubic feet)
North Underground Stormwater Management Facility	3,215
South Underground Stormwater Management Facility	2,848
Total Site	6,063

In accordance with Rule 4.3.1a (i), where infiltration or filtration facilities, practices or systems are proposed, pretreatment of runoff must be provided. The proposed rainwater harvest and

reuse system and underground stormwater management facilities will provide water quality management through detention and stormwater reuse (not filtration or infiltration). However, for the purposes of maintaining the stormwater management facilities' integrity and long-term performance, sump manholes and hydrodynamic separators will provide pretreatment for runoff entering the facilities.

Rule 4.3.1a (ii) requires that infiltration and filtration facilities must be drawn down within 48-hours. Infiltration nor filtration facilities are proposed, therefore, subsection 4.3.1a (ii) does not impose requirements.

The district's water quality criterion requires 60% annual removal efficiency for total phosphorus (TP) and 90% annual removal efficiency for total suspended solids (TSS) from site runoff (subsection 4.3.1c). Several BMP's will be provided to achieve TP and TSS removals, including the manufactured treatment devices, hydrodynamic separators, underground stormwater management facilities used for detention, rainwater harvest and reuse system for irrigation, and the green roof system. Water quality modeling was used to evaluate the BMP's annual removal efficiencies for the site. The results of this modeling and the analysis in the stormwater management report are summarized in table below showing the annual TSS and TP removal requirements are achieved.

Annual TSS and TP Removal Summary

Pollutant of Interest	Regulated Site Loading (lbs./year)	Required Load Removal (lbs./year)	Provided Load Reduction (lbs./year)
Total Suspended Solids (TSS)	727	654 (90%)	660 (91%)
Total Phosphorus (TP)	4.0	2.4 (60%)	2.5 (63%)

Rule 4.3.3 states that all new and reconstructed buildings must be constructed such that the low floor is at least two feet above the 100-year high-water elevation or one foot above the emergency overflow of a constructed facility. A stormwater management facility must be constructed at an elevation that ensures no adjacent habitable building will be brought into noncompliance with a standard in subsection 4.3.3. Additionally, Rule 4.3.3 states that all new and reconstructed buildings must be constructed such that no opening where surface flow can enter the structure is less than two feet above the 100-year high-water elevation of an adjacent facility.

The low floor and low opening elevations of the proposed building in relation to the pertinent 100-year high-water elevations is summarized in the tables below. The submittal demonstrates and the engineer finds the project is in conformance with Rule 4.3.3 criteria.

Low Floor Analysis

Proposed Building	Low Floor Elevation of Building (M.S.L.)	Stormwater Management Facility	100-year Event Flood Elevation of Facility (M.S.L.)	Freeboard to 100-year Flood Elevation of Adjacent Facility (ft)	Distance from Building to Adjacent Facility (ft)	[3]Water Table Elevation (M.S.L.)	[2]Minimum Permissible Depth to Water Table (ft)	Provided Depth from Low Floor Elevation to Water Table (ft)	Compliance Achieved with 4.3.3 criteria?
10702 Red Cir Dr (Proposed Site Bldg)	902.0	North Underground Stormwater Management Facility	897.9	4.1	-	-	-	-	Yes
		South Underground Stormwater Management Facility	911.0	-9.0	18	890.0	10.0	12.0	Yes
		North Manufactured Treatment Device	897.2	4.8	-	-	-	-	Yes
		South Manufactured Treatment Device	910.0	-8.0	20.0	890.0	10.0	12.0	Yes
		Swale	893.6	8.4	-	-	-	-	Yes

[2]Minimum permissible depth to groundwater table determined using Appendix 4a Plot 2
[3]Highest groundwater elevation observed in soil borings completed by Braun Intertec in 2022.

Low Opening Analysis

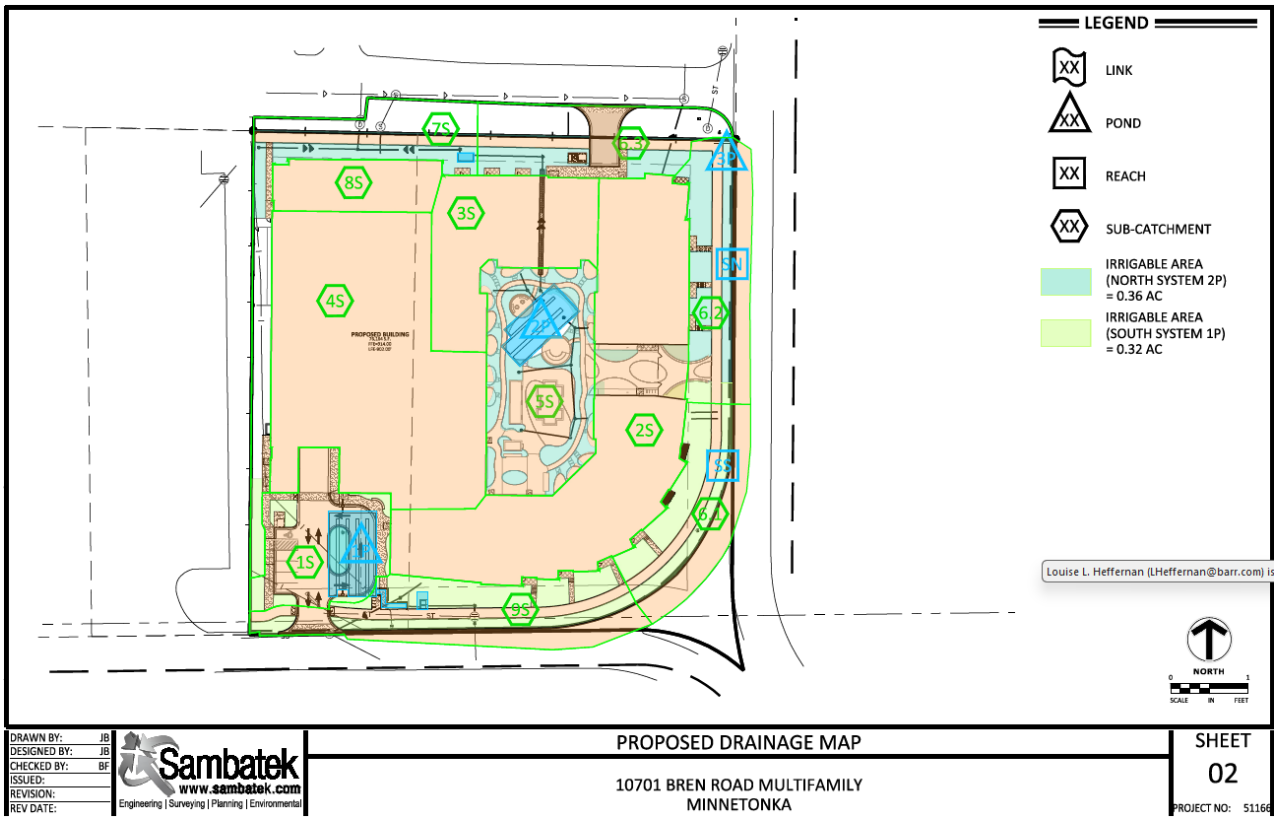
Building	Adjacent Low Opening Elevation of Building (M.S.L.)	Pertinent Stormwater Management Facility	100-year Event Flood Elevation of Facility (M.S.L.)	Freeboard to 100-year Flood Elevation of Adjacent Facility (ft)
10702 Red Cir Dr (Proposed Site Bldg)	902.0	North Underground Stormwater Management Facility	897.9	4.1
		North Manufactured Treatment Device	897.2	4.8
	914.0	South Underground Stormwater Management Facility	911.0	3.0
		South Manufactured Treatment Device	910.0	4.0

In accordance with Rule 4.3.5, a post-project chloride management plan must be provided that will, 1) designate an individual authorized to implement the chloride-use plan and 2) designate a MPCA certified salt applicator engaged in the implementation of the chloride-use plan for the site.

Subsection 4.3.6 requires the submission of a maintenance plan for the stormwater management structures and facilities. The proposed stormwater management facilities include two underground stormwater management facilities for detention, two manufactured treatment devices, a rainwater harvest and reuse system for irrigation, a green roof, and grassed swales to provide rate control, volume retention, and water quality management for the regulated

areas, and thus maintenance will need to be provided in accordance with the manufacturers' guidance/manual as applicable. All stormwater management structures and facilities must be designed for maintenance access and properly maintained in perpetuity to assure that they continue to function as designed. The applicant must provide a receipt showing recordation of a maintenance declaration for the operation and maintenance of the stormwater management facilities. The declaration must also include a stormwater reuse monitoring and reporting plan that includes protection of the greenspace to be irrigated and metering of the volume of reuse as shown in Figure 1 below.

Figure 1. Proposed rainwater harvest and reuse system irrigation areas.



5.0 Erosion and Sediment Control

The district's requirements for erosion and sediment control apply to the project because more than 50 cubic yards of material will be disturbed and 5,000 square feet or more of surface area is altered, Rules 5.2.1a and b.

The erosion control plan prepared by Sambatek includes installation of perimeter, a stabilized rock construction entrance and storm sewer inlet protection. Erosion control blanket and native seed mixtures will be implemented for final stabilization measures.

The contractor for the project will need to designate a contact who will remain liable to the district for performance under the District's Erosion and Sediment Control Rule 5.0 from the time the permitted activities commence until vegetative cover is established, in accordance

with subsection 5.4.1e. NMCWD must be notified if the responsible individual changes during the permit term.

11.0 Fees

Fees for the project are:

Rule 4: ……$750

Rule 5: ……$750

Total Fees: $1,500

12.0 Financial Assurances

Financial Assurances for the project are:

Rule 4: Stormwater Management Facilities= ..... $708,750[2]

Underground Storage: 2.139 acres x $980/acre impervious = ... $2,096

Rules 5: Perimeter Control: 1,250 L.F. x $2.50/L.F. = ... $3,125

Site Restoration: 3.36 acres x $2,500/acre =..... $8,400

Chloride Management Plan: $5,000 ..... $5,000

Contingency and Administration $310,629

Findings

1. The proposed project includes the information necessary, plan sheets and erosion control plan for review.
2. The proposed project will conform to Rules 4.0 and 5.0 with the fulfilment of the conditions identified below.
3. The proposed stormwater management facilities will provide rate control in accordance with subsection 4.3.1b, volume retention in accordance with subsection 4.3.2a, and water quality management in accordance with subsection 4.3.1c.
4. In accordance with NMCWD Rule 4.3.6, the applicant must provide a maintenance and inspection plan that identifies and protects the design, capacity and functionality of the stormwater management facilities and stormwater infrastructure.

[2] A cost of $567,000 was provided by Civil Site Group for the proposed stormwater management facilities, including the underground stormwater facilities, the manufactured treatment devices, the green roof system, and the rainwater harvest and reuse system. In accordance with Schedule B-Financial Assurance Rates, a cost of $708,750, 125% of the construction and maintenance costs, is shown.

We recommend the permit approval including the stipulations listed below. By accepting the permit, when issued, the applicant agrees to the following stipulations for closeout of the permit and release of the financial assurance after the project:

Continued compliance with the General Provisions (attached).

Per Rule 4.3.6, a receipt showing recordation of a maintenance declaration for the operation and maintenance of the stormwater management facilities. A draft of the declaration must be approved by the district prior to recordation.

Per Rule 4.5.8, an as-built drawing of the stormwater management facilities conforming to the design specifications is required to be provided based on relevant surveyed information (bottom, outlet, and size of systems).

The work for the Marlowe Opus development under the terms of Permit 2023-002, if issued, must have an impervious surface area and configuration materially consistent with the approved plans. Design that differs materially from the approved plans (e.g., in terms of the total impervious area or design) will need to be the subject of a request for a permit modification or new permit, which will be subject to review for compliance with all applicable regulatory requirements.

Submission of a plan for post-project management of Chloride use on the site. The plan must include 1) the designation of an individual authorized to implement the chloride use plan and 2) the designation of a Minnesota Pollution Control Agency certified salt applicator engaged in the implementation of the chloride-use plan for the site. The release of the $5,000 of the financial assurance required for the chloride-management plan requires that chloride-management plan has been provided and approved by the District’s Administrator.

Design Development Site Plans
for
Marlowe Opus Station
Minnetonka, Minnesota
Presented by:
Greystar

CONSULTANT CONTACT LIST:

DEVELOPER/OWNER
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CONTACT: NED DODINGTON

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LANDSCAPE ARCHITECT
URBAN ECOSYSTEMS
2500 UNIVERSITY AVE W, #C8
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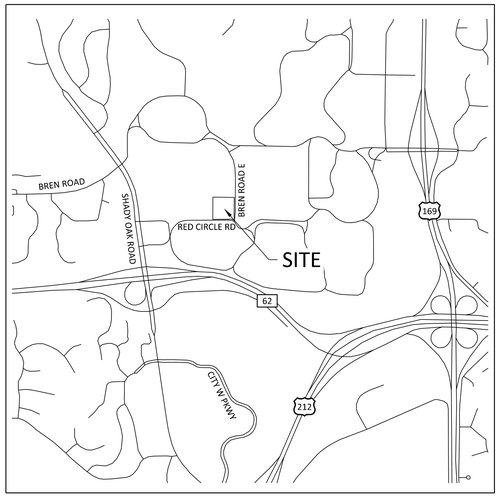
TEL 952-818-4468
RYAN@URBANECOSYSTEMS.COM
CONTACT: RYAN HERM



VICINITY MAP
NO SCALE

N.T.S.

BENCHMARKS

BM NO. 1
TOP NUT HYDRANT, SOUTHEAST CORNER OF SITE
ELEV.=913.98

BM NO. 2
TOP NUT HYDRANT, NORTHEAST CORNER OF SITE
ELEV.=896.05

SHEET INDEX

GOVERNING SPECIFICATIONS

CITY OF MINNETONKA WATER RESOURCES MANAGEMENT PLAN
CITY ENGINEER'S ASSOCIATION OF MINNESOTA STANDARD SPECIFICATIONS (2018)
MNDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION (2023 EDITION)

MARLOWE
OPUS STATION
MINNETONKA, MN

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500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
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www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

PERMIT 1 SET

05/07/2024

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23
#6	LAND USE APP. UPDATES	07/21/23
#7	STORMWATER UPDATES	08/04/23
#8	CITY RESUBMITTAL	08/16/23
#9	LAND USE APPLICATION	04/29/24
#10	NMCWD COMMENT RESPONSE	06/06/24
#11	PERMIT 1 COMMENTS	06/12/24
#12	NMCWD COMMENT RESPONSE	07/03/24
#13	CITY RESUBMITTAL	07/08/24
#14	NORTH DRIVEWAY REVS	08/14/24

51166
PROJECT NUMBER

EJC
DRAWN BY

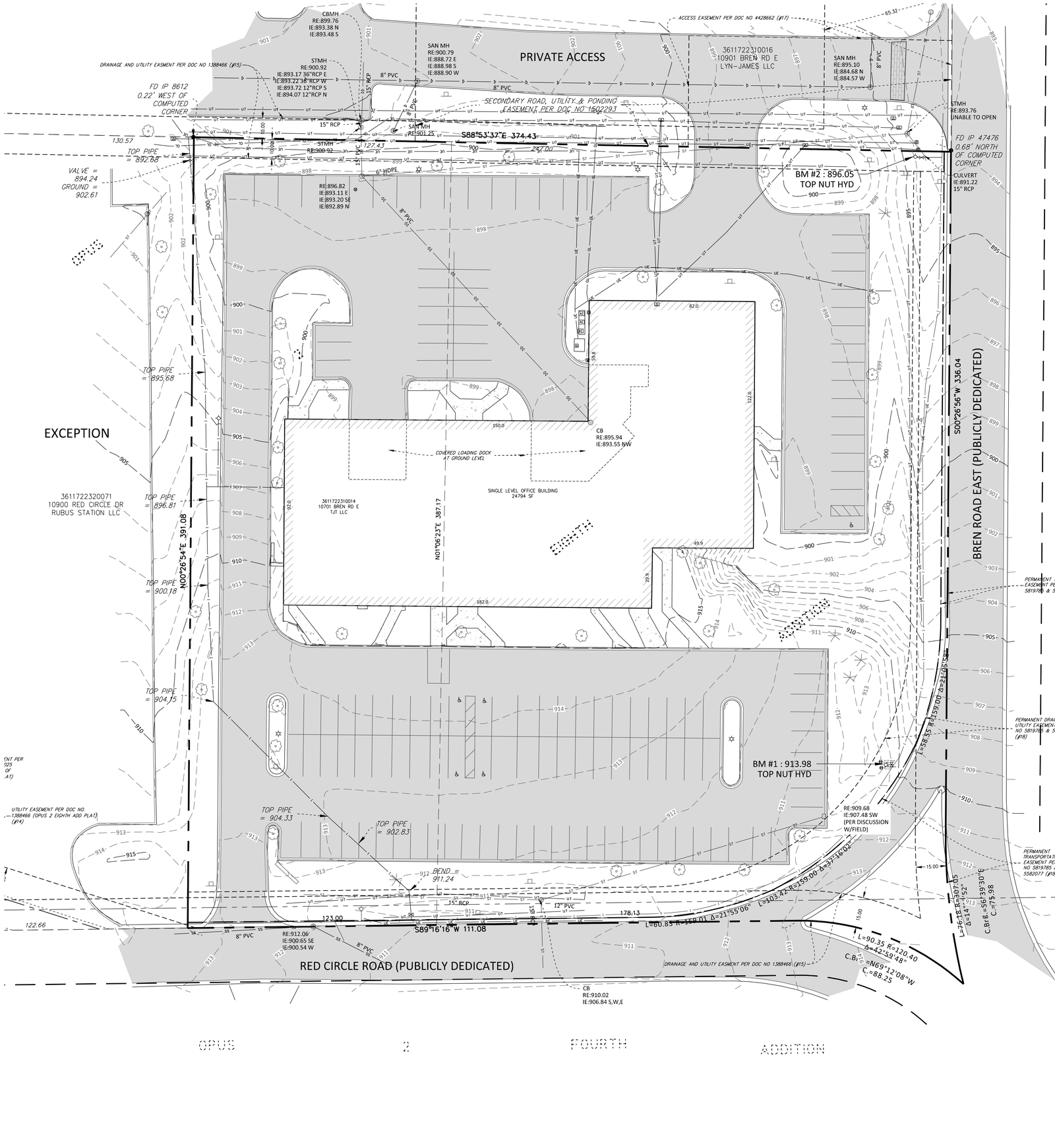
BDB
CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

TITLE SHEET

C1.01



LEGEND

- FOUND MONUMENT
- SET MONUMENT MARKED
- ELECTRIC METER
- LIGHT
- AIR CONDITIONER
- GUY ANCHOR
- HANDICAP STALL
- UTILITY POLE
- POST
- SIGN
- WATERMAIN
- SANITARY SEWER
- FORCEMAIN (SAN.)
- STORM SEWER
- FLARED END SECTION
- TELEPHONE PEDESTAL
- TELEPHONE PEDESTAL
- ELECTRIC TRANSFORMER
- GAS METER
- OVERHEAD WIRE
- CHAIN LINK FENCE
- IRON FENCE
- WIRE FENCE
- WOOD FENCE
- EASEMENT LINE
- SETBACK LINE
- RESTRICTED ACCESS
- CONCRETE CURB
- BUILDING LINE
- BUILDING CANOPY
- STANDARD DUTY ASPHALT PAVING
- BITUMINOUS SURFACE
- CONCRETE SURFACE
- LANDSCAPE SURFACE

DESCRIPTION

Parcel 1:
Lot 5 and that part of Lot 6, which lies Easterly of the following described line: Beginning at a point on the South line of said Lot 6 distant 123.00 feet Westerly from the Southeast corner of said Lot 6; thence North 1 degree, 09 minutes, 15 seconds East, a distance of 391.08 feet to a point on the North line of said Lot 6, distant 127.43 feet Westerly from the Northeast corner of said Lot 6 and said line there terminating;
All in Block 1, Opus 2 Eighth Addition, Hennepin County, Minnesota
Torrens Property Certificate of Title No. 1211616

Parcel 2:
Permanent easement for pedestrian and vehicular access and ingress and egress for the benefit of Parcel 1 as set forth in
that certain Easement Agreement dated September 20, 2007, recorded September 21, 2007, as Document No. 4428662
(T).

PROPERTY SUMMARY

1. The subject property address is 10701 Bren Road East, the property identification number is 3611722310014.
2. The gross area of the subject property is 3.328 acres or 144,986 square feet.
3. The subject property is zoned xxx, per xxx.
4. The building(s) and exterior dimensions of the outside wall at ground level are shown on the survey. It may not be the foundation wall.

BENCHMARKS

The vertical datum is based on NAVD88.

Benchmark #1
Top Nut Hydrant, Southeast corner of site elev.= 913.98

Benchmark #2
Top Nut Hydrant, Northeast corner of site elev.= 896.05

SURVEY NOTES

2. The bearing system is based on the Hennepin County coordinate system, NAD83 (1986 Adjust), with an assumed bearing of South 00 degrees 26 minutes 56 seconds West for the east line of Lot 5, Block 1, Opus 2 Eighth Addition , Section 36 , Township 117 , Range 22.
3. Field work was completed on 05/24/2022.

NORTH
0 20 40
SCALE IN FEET

MARLOWE
OPUS STATION
MINNETONKA, MN

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500 Washington Avenue South, Suite 1080
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Sambatek
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763.476.6010 telephone
Engineering | Surveying | Planning | Environmental

PERMIT 1 SET

05/07/2024

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51166
PROJECT NUMBER

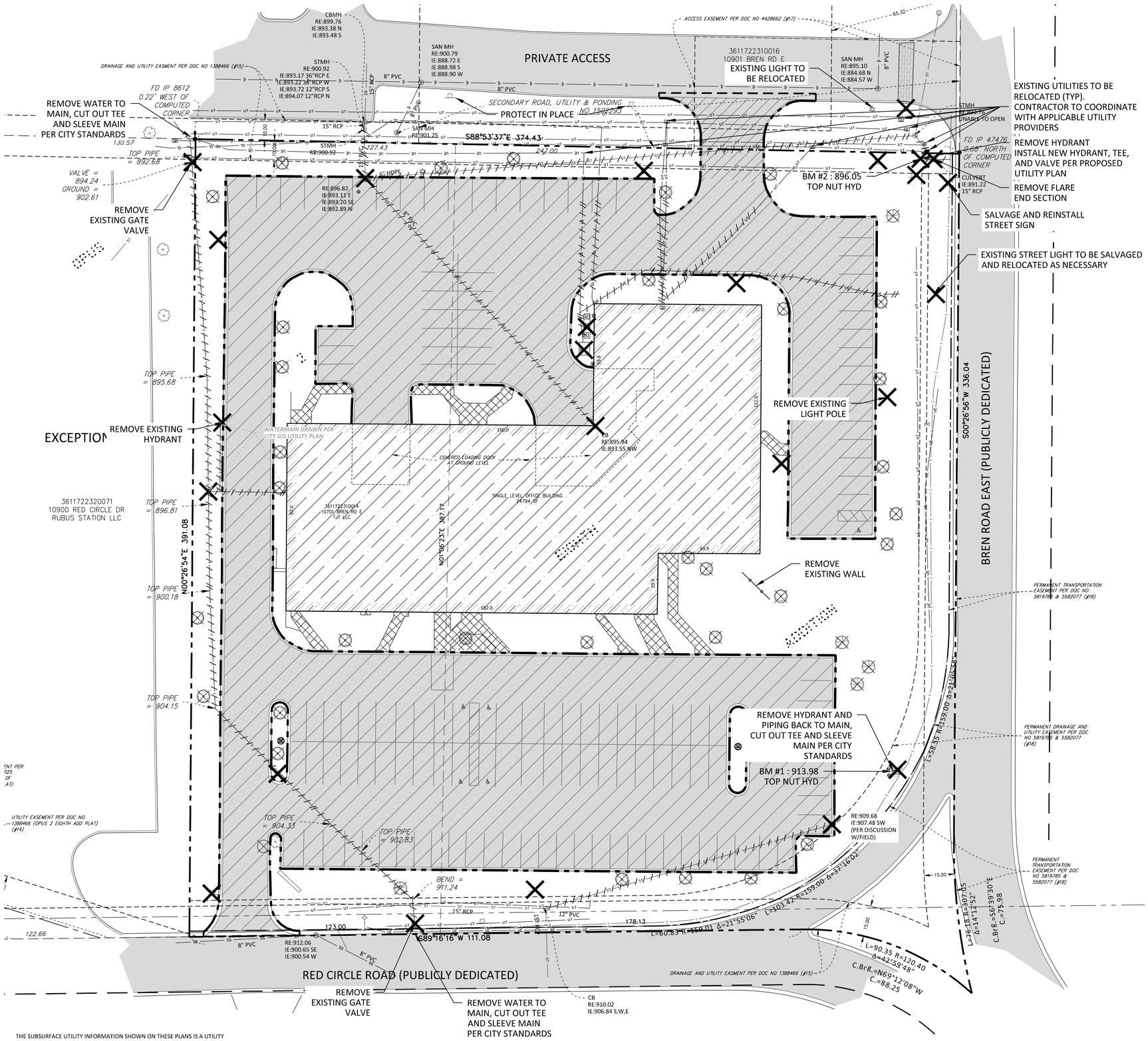
EJC DRAWN BY
BDB CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

EXISTING CONDITIONS

C2.01



LEGEND

- GAS METER
- HYDRANT
- LIGHT
- STORM SEWER
- DRAINTILE
- WATERMAIN
- FORCEMAIN (SAN.)
- SANITARY SEWER
- OVERHEAD WIRE
- TELEPHONE PEDESTAL
- UNDERGROUND CABLE TV
- ELECTRIC TRANSFORMER
- GAS METER
- WIRE FENCE
- IRON FENCE
- WOOD FENCE
- CHAIN LINK FENCE
- BLOCK RETAINING WALL
- SPRINKLER HEAD
- SPRINKLER VALVE
- GUIDE RAIL
- HANDRAIL
- TREE LINE
- TREES / SHRUBS
- CONCRETE
- BOLLARD
- SIGN
- CONCRETE CURB
- BUILDING LINE
- REMOVE UTILITY LINE
- REMOVE CONCRETE CURB
- SAW CUT LINE
- REMOVE BITUMINOUS PAVEMENT
- REMOVE CONCRETE PAVEMENT
- REMOVE BUILDING
- REMOVE TREE
- REMOVE EXISTING STRUCTURE
- REMOVE LIGHT
- REMOVE WALL

DEMOLITION NOTES

1. DEMOLITION NOTES ARE NOT COMPREHENSIVE. CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION TO OBTAIN A CLEAR UNDERSTANDING OF THE INTENDED SCOPE OF WORK.
2. THE DESIGN SHOWN IS BASED ON ENGINEER'S UNDERSTANDING OF EXISTING CONDITIONS. THE EXISTING CONDITIONS SHOWN ON THIS PLAN ARE BASED UPON ALTA AND TOPOGRAPHIC MAPPING PREPARED BY SAMBATEK, INC. DATED **JUNE 10, 2022**. IF CONTRACTOR DOES NOT ACCEPT EXISTING TOPOGRAPHY AS SHOWN ON THE PLANS WITHOUT EXCEPTION, CONTRACTOR SHALL HAVE MADE, AT OWN EXPENSE, A TOPOGRAPHIC SURVEY BY A REGISTERED LAND SURVEYOR AND SUBMIT IT TO THE OWNER FOR REVIEW.
3. THE CONTRACTOR IS RESPONSIBLE FOR DEMOLITION, REMOVAL, AND DISPOSING IN A LOCATION APPROVED BY ALL GOVERNING AUTHORITIES AND IN ACCORDANCE WITH APPLICABLE CODES, OF ALL STRUCTURES, PADS, WALLS, FLUMES, FOUNDATIONS, PARKING, DRIVES, DRAINAGE STRUCTURES, UTILITIES, ETC., SUCH THAT THE IMPROVEMENTS SHOWN ON THE PLANS CAN BE CONSTRUCTED. ALL FACILITIES TO BE REMOVED SHALL BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER THE GEOTECHNICAL REPORT AND/OR GEOTECHNICAL ENGINEER.
4. CLEARING AND GRUBBING: CONTRACTOR IS RESPONSIBLE FOR REMOVING ALL DEBRIS FROM THE SITE AND DISPOSING THE DEBRIS IN A LAWFUL MANNER. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
5. CONTRACTOR IS RESPONSIBLE FOR THE DISCONNECTION OF UTILITY SERVICES TO EXISTING BUILDINGS PRIOR TO DEMOLITION OF THE BUILDINGS.
6. CONTRACTOR IS SPECIFICALLY CAUTIONED THAT LOCATIONS OF EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM INFORMATION AVAILABLE. ENGINEER ASSUMES NO RESPONSIBILITY FOR THE UTILITY MAPPING ACCURACY. PRIOR TO START OF ANY DEMOLITION ACTIVITY, THE CONTRACTOR SHALL NOTIFY UTILITY COMPANIES 48 HOURS PRIOR TO ANY EXCAVATION FOR ON-SITE LOCATIONS OF EXISTING UTILITIES. THE LOCATIONS OF UTILITIES SHALL BE OBTAINED BY THE CONTRACTOR BY CALLING MINNESOTA GOPHER STATE ONE CALL AT 800-252-1166 OR 651-454-0002.
7. THE MAPPING LOCATION OF ALL EXISTING SEWERS, PIPING, AND UTILITIES SHOWN ARE NOT TO BE INTERPRETED AS THE EXACT LOCATION, OR AS THE ONLY OBSTACLES THAT MAY OCCUR ON THE SITE. VERIFY EXISTING CONDITIONS AND PROCEED WITH CAUTION AROUND ANY ANTICIPATED FEATURES. GIVE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL LINES BEFORE PROCEEDING WITH WORK. UTILITIES DETERMINED TO BE ABANDONED SHALL BE REMOVED IF UNDER THE BUILDING INCLUDING 10' BEYOND FOUNDATIONS.
8. CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANIES PRIOR TO REMOVAL AND/OR RELOCATION OF UTILITIES. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES CONCERNING PORTIONS OF WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANIES' FORCES AND ANY FEES WHICH ARE TO BE PAID TO UTILITY COMPANIES FOR SERVICES. CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
9. ELECTRICAL, TELEPHONE, CABLE, WATER, FIBER OPTIC CABLE AND/OR GAS LINES NEEDING TO BE REMOVED OR RELOCATED SHALL BE COORDINATED WITH THE AFFECTED UTILITY COMPANY. ADEQUATE TIME SHALL BE PROVIDED FOR RELOCATION AND CLOSE COORDINATION WITH THE UTILITY COMPANY IS NECESSARY TO PROVIDE A SMOOTH TRANSITION IN UTILITY SERVICE. CONTRACTOR SHALL PAY CLOSE ATTENTION TO EXISTING UTILITIES WITHIN THE ROAD RIGHT OF WAY DURING CONSTRUCTION.
10. CONTRACTOR MUST PROTECT THE PUBLIC AT ALL TIMES WITH FENCING, BARRICADES, ENCLOSURES, ETC., TO THE BEST PRACTICES.
11. CONTINUOUS ACCESS SHALL BE MAINTAINED FOR THE SURROUNDING PROPERTIES AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.
12. PRIOR TO DEMOLITION OCCURRING, ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED AND APPROVED BY THE LOCAL AUTHORITY.
13. CONTRACTOR SHALL LIMIT SAW-CUT & PAVEMENT REMOVAL TO ONLY THOSE AREAS WHERE IT IS REQUIRED AS SHOWN ON THESE CONSTRUCTION PLANS BUT IF ANY DAMAGE IS INCURRED ON ANY OF THE SURROUNDING PAVEMENT, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ITS REMOVAL AND REPAIR.
14. CONTRACTOR TO PROTECT EXISTING FEATURES WHICH ARE TO REMAIN. DAMAGE TO ANY EXISTING CONDITIONS TO REMAIN WILL BE REPLACED AT CONTRACTOR'S EXPENSE.
15. ABANDON OR REMOVE ALL SANITARY, WATER AND STORM SERVICES PER CITY STANDARDS. COORDINATE ALL WORK WITH CITY. ALL STREET RESTORATION SHALL BE COMPLETED IN COMPLIANCE WITH LOCAL STANDARDS.
16. CONTRACTOR SHALL PREPARE AND SUBMIT TO THE GOVERNING AUTHORITY A TRAFFIC AND/OR PEDESTRIAN TRAFFIC PLAN PER CITY/COUNTY/STATE STANDARDS TO BE APPROVED BY THE LOCAL GOVERNING AUTHORITY.
17. PER CITY STANDARDS: UNUSED SEWER SERVICES MUST BE REMOVED BACK TO THEIR RESPECTIVE MAINS. THE ORIGINAL SANITARY SEWER SERVICE MUST BE REMOVED BACK TO THE PUBLIC SANITARY SEWER MAIN WITH THE WYE BEING CUT OUT AND SLEEVED OR THE MANHOLE BEING GROUTED SHUT DEPENDING ON THE CONNECTION LOCATION.
18. PER CITY STANDARDS: UNUSED WATER SERVICES MUST BE REMOVED BACK TO THEIR RESPECTIVE MAINS. THE ORIGINAL WATER SERVICE PIPING MUST BE REMOVED BACK TO THE PRIVATE MAIN WITH THE TEE BEING SLEEVED.

THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

NORTH
SCALE 0 20 40 IN FEET

MARLOWE
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MINNETONKA, MN

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Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

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05/07/2024

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51166
PROJECT NUMBER

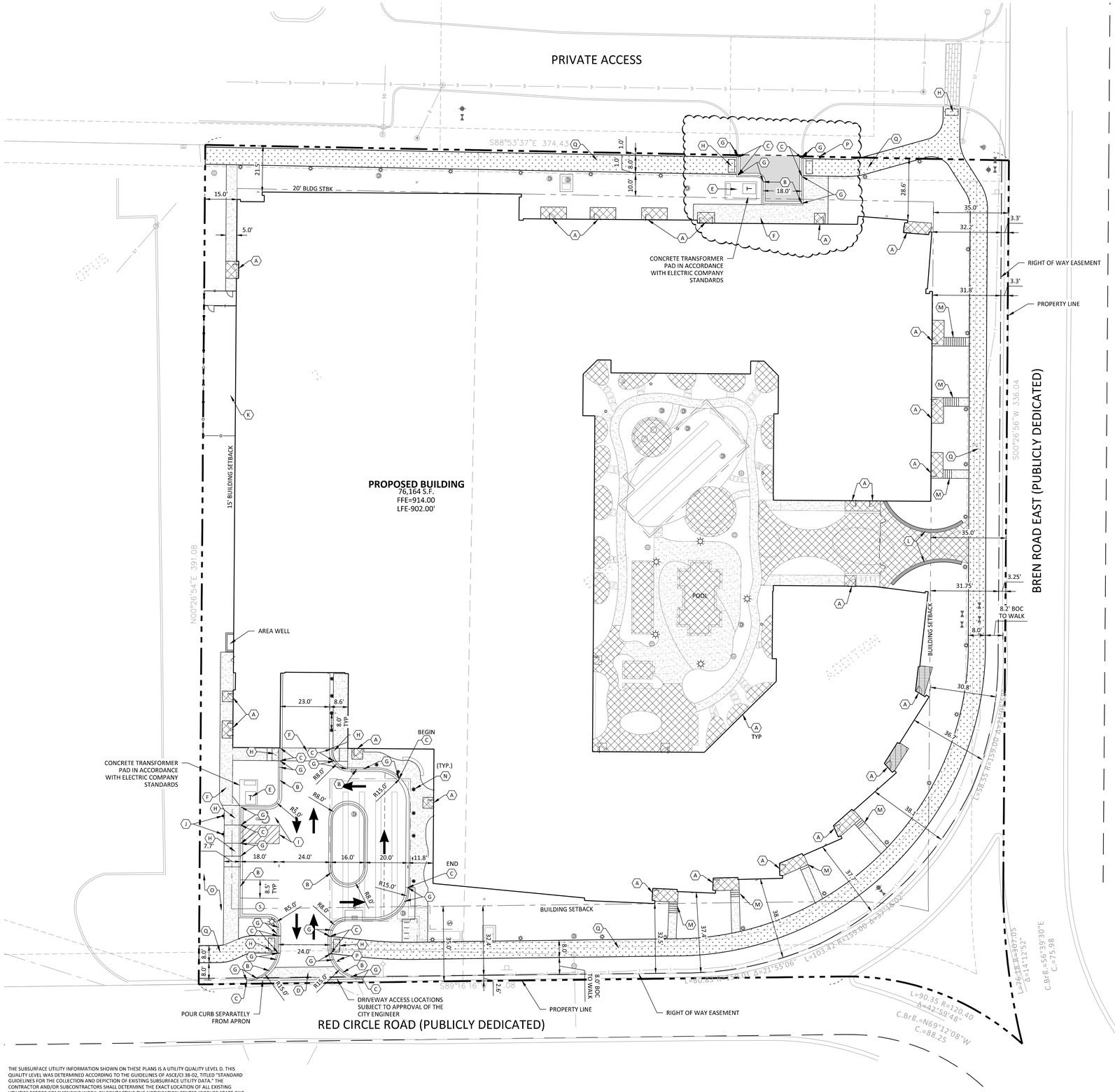
EJC DRAWN BY BDB CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

DEMOLITION PLAN

C2.02



LEGEND

PROPOSED	EXISTING		
	BOUNDARY LINE		STANDARD DUTY ASPHALT PAVING (SEE DETAIL 04, SHEET C9.01)
	ROW LINE		HEAVY DUTY ASPHALT PAVING
	CONCRETE CURB		CONCRETE PAVING
	EASEMENT LINE		CONCRETE SIDEWALK
	BUILDING LINE		PAVEMENT BY OTHERS (SEE ARCHITECTURAL PLANS)
	RETAINING WALL		HANGING BALCONY
	LOT LINE		ASPHALT TRAIL
	SAW CUT LINE		
	CHAIN LINK FENCE		
	SIGN		
	BOLLARD		

(##) PARKING STALL COUNT

(1) KEY NOTE

LIGHT POLE (BY OTHERS)

DEVELOPMENT SUMMARY

AREA	
SITE AREA	144,986 SF 3.33 AC
BUILDING	
UNITS	269UNITS
OPEN SPACE PROVIDED	35,290 SF
ZONING	
EXISTING ZONING	I-1
PROPOSED ZONING	PUD
SETBACKS	
FRONT YARD	35 FT
SIDE/REAR WEST	15 HT
SIDE/REAR NORTH	20 FT
PARKING	
PARKING REQUIRED (2 SPACES/UNIT, 1 TO BE ENCLOSED)	550 TOTAL 275 ENCLOSED
PARKING PROVIDED	408
SURFACE	5
ENCLOSED	403

DEVELOPMENT NOTES

1. ALL DIMENSIONS ARE ROUNDED TO THE NEAREST TENTH FOOT.
2. ALL DIMENSIONS SHOWN ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
3. CONTRACTOR SHALL REVIEW PAVEMENT GRADIENT AND CONSTRUCT "GUTTER OUT" WHERE WATER DRAINS AWAY FROM CURB. ALL OTHER AREAS SHALL BE CONSTRUCTED AS "GUTTER IN" CURB. COORDINATE WITH GRADING CONTRACTOR.
4. ALL AREAS ARE ROUNDED TO THE NEAREST SQUARE FOOT.
5. ALL PARKING STALLS TO BE 8.5' IN WIDTH AND 18' IN LENGTH UNLESS OTHERWISE INDICATED.
6. CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF EXIT PORCHES, RAMPS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
7. SEE ARCHITECTURAL PLANS FOR MONUMENT SIGN DETAILS
8. SEE ARCHITECTURAL PLANS FOR LIGHT POLE FOUNDATION DETAIL AND FOR EXACT LOCATIONS OF LIGHT POLE.
9. REFER TO FINAL PLAT FOR LOT BOUNDARIES, LOT NUMBERS, LOT AREAS, AND LOT DIMENSIONS.
10. ALL GRADIENTS ON SIDEWALKS ALONG THE ADA ROUTE HAVE BEEN DESIGNED WITH A MAXIMUM LONGITUDINAL SLOPE OF 4.5%, AND A MAXIMUM CROSS SLOPE OF 1.5%. THIS IS LESS THAN THE ADA CODE MAXIMUM LONGITUDINAL SLOPE OF 5% (1:20), EXCEPT AT CURB RAMPS (1:12), AND A MAXIMUM CROSS SLOPE OF 2.00% (1:50). THE MAXIMUM DESIGN SLOPE IN ANY DIRECTION ON AN ADA PARKING STALL OR ACCESS AISLE IS 1.5%, LESS THAN THE ADA CODE MAXIMUM SLOPE IN ANY DIRECTION ON AN ADA PARKING STALL OR ACCESS AISLE OF 2.00% (1:50). THE CONTRACTOR SHALL REVIEW AND VERIFY THE GRADIENT IN THE FIELD ALONG THE ADA ROUTES PRIOR TO PLACING CONCRETE OR BITUMINOUS PAVEMENT. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF THERE IS A DISCREPANCY BETWEEN THE GRADIENT IN THE FIELD VERSUS THE DESIGN GRADIENT AND COORDINATE WITH GRADING CONTRACTOR.
11. "NO PARKING" SIGNS SHALL BE PLACED ALONG ALL DRIVEWAYS AS REQUIRED BY CITY.

CIVIL 3D MODEL LIMITATIONS

SAMBATEK'S DELIVERABLE AND GOVERNING DOCUMENTS FOR CONSTRUCTION SHALL BE A HARD COPY AND/OR PDF PLAN SHEETS. IF A CIVIL 3D MODEL IS GENERATED IN THE PROCESS OF PREPARING THE PLAN SHEETS, IT IS AS A DESIGN TOOL ONLY AND NOT AS A SEPARATE DELIVERABLE. AT THE OWNER'S REQUEST, WE WILL RELEASE OUR CIVIL 3D MODEL FOR THE CONTRACTOR'S USE. HOWEVER, ITS USE IS AT THE CONTRACTOR'S RISK AND SHALL NOT BE USED FOR STAKING OF CURB, SIDEWALK, OR OTHER HARD SURFACE IMPROVEMENTS. IF A CIVIL 3D MODEL FOR STAKING HARD SURFACE IMPROVEMENTS IS REQUIRED, WE CAN PROVIDE A SUPPLEMENTAL AGREEMENT FOR REFINEMENT AND PREPARATION OF THE CIVIL 3D MODEL.

KEY NOTES

A. BUILDING, STOOPS, STAIRS (SEE ARCHITECTURAL PLANS)

B. B612 CONCRETE CURB AND GUTTER (SEE DETAIL 01, SHEET C9.01)

C. B612 FLAT CURB AND GUTTER (SEE DETAIL 03, SHEET C9.01)

D. CONCRETE DRIVEWAY APRON (SEE DETAIL 13, SHEET C9.01)

E. TRANSFORMER PAD (SEE ARCHITECTURAL PLANS FOR EXACT PLACEMENT)

F. CONCRETE SIDEWALK (REFER TO LANDSCAPE PLANS FOR COLOR/TEXTURE) (SEE DETAIL 02, SHEET C9.01)

G. CURB TRANSITION

H. PEDESTRIAN CURB RAMP (SEE DETAIL 06, SHEET C9.01) (MNDOT PEDESTRIAN CURB RAMP DETAILS, SHEET C9.03)

I. ADA/STANDARD STRIPING (SEE DETAIL 08, SHEET C9.01)

J. BREAKAWAY ACCESSIBLE PARKING SIGN (SEE DETAIL 05, SHEET C9.01)

K. DOG RUN (REFER TO LANDSCAPE PLAN FOR DETAILS)

L. RETAINING WALL (REFER TO LANDSCAPE PLAN FOR DETAIL)

M. STAIRS WITH HANDRAILS

N. CONCRETE PIPE BOLLARD (SEE DETAIL 14, SHEET C9.01)

O. SNOW STORAGE AREA

P. PEDESTRIAN CROSSING SIGN (SEE DETAIL 01, SHEET C9.03)

Q. ASPHALT TRAIL

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MARLOWE OPUS STATION

MINNETONKA, MN

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Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

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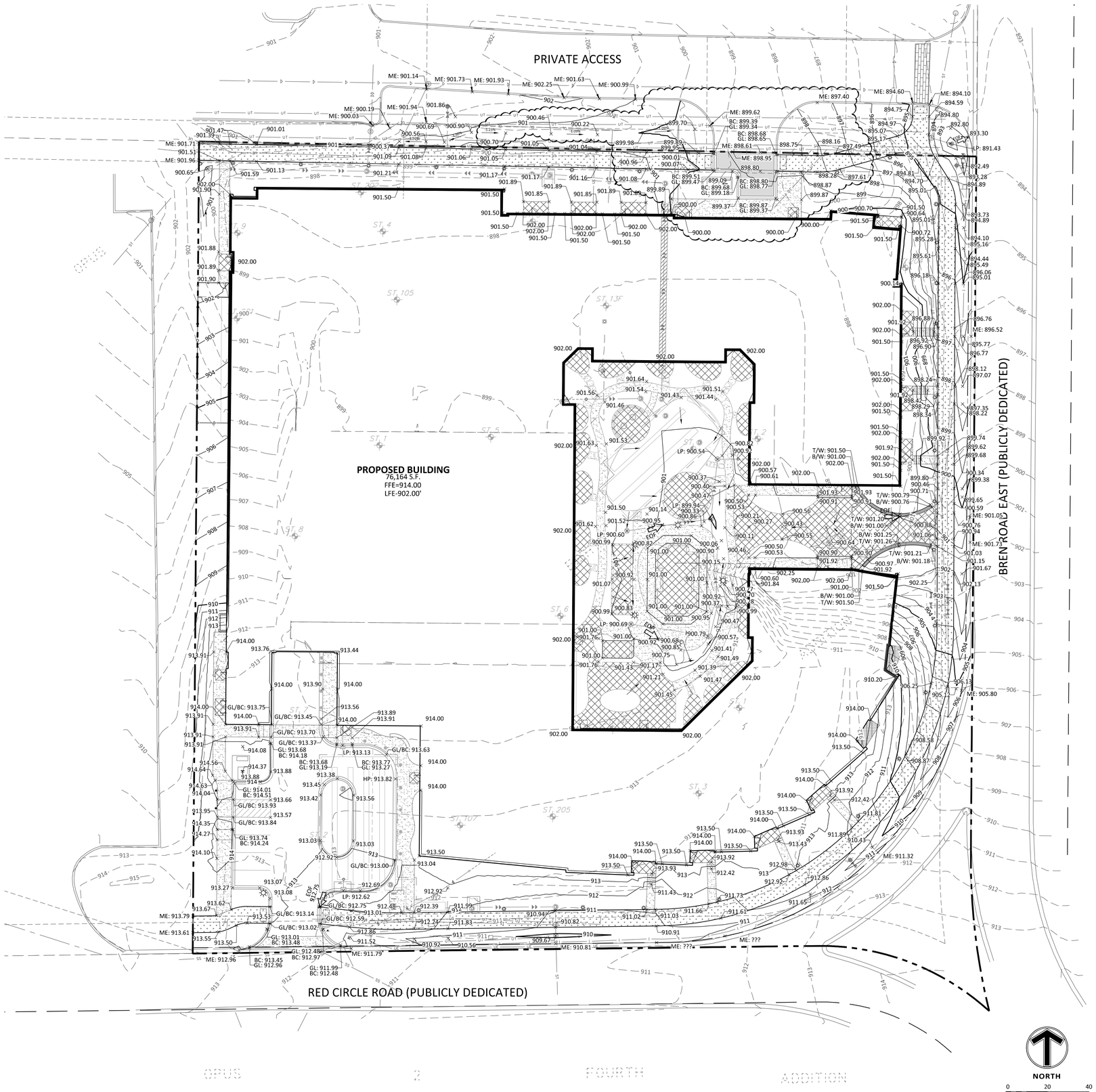
BDB CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

SITE PLAN

C3.01



LEGEND

PROPOSED / EXISTING

- BOUNDARY LINE
- CONCRETE CURB
- STORM SEWER
- DRAINTILE
- BUILDING LINE
- RETAINING WALL
- CONTOUR
- SPOT ELEVATIONS
- RIPRAP
- OVERFLOW ELEV.
- SOIL BORING
- STANDARD DUTY ASPHALT PAVING
- HEAVY DUTY ASPHALT PAVING
- CONCRETE PAVING
- CONCRETE SIDEWALK
- PAVEMENT BY OTHERS (SEE ARCHITECTURAL PLANS)

GRADING NOTES

1. PROPOSED CONTOURS ARE TO FINISHED SURFACE ELEVATION. SPOT ELEVATIONS ALONG PROPOSED CURB DENOTE GUTTER GRADE.
2. CONTRACTOR SHALL REVIEW PAVEMENT GRADIENT AND CONSTRUCT "GUTTER OUT" WHERE WATER DRAINS AWAY FROM CURB. ALL OTHER AREAS SHALL BE CONSTRUCTED AS "GUTTER IN" CURB.
3. ALL GRADIENT ON SIDEWALKS ALONG THE ADA ROUTE SHALL HAVE A MAXIMUM LONGITUDINAL SLOPE OF 5% (1:20), EXCEPT AT CURB RAMPS (1:12), AND A MAXIMUM CROSS SLOPE OF 2.00% (1:50). MAXIMUM SLOPE IN ANY DIRECTION ON AN ADA PARKING STALL OR ACCESS AISLE SHALL BE IN 2.00% (1:50). CONTRACTOR SHALL REVIEW AND VERIFY THE GRADIENT IN THE FIELD ALONG THE ADA ROUTES PRIOR TO PLACING CONCRETE OR BITUMINOUS. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF THERE IS A DISCREPANCY BETWEEN THE GRADIENT IN THE FIELD VERSUS THE DESIGN GRADIENT. COORDINATE ALL WORK WITH PAVING CONTRACTOR.
4. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
5. SAFETY NOTICE TO CONTRACTORS: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE DUTY OF THE ENGINEER OR THE DEVELOPER TO CONDUCT CONSTRUCTION REVIEW OF THE CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF THE CONTRACTOR'S SAFETY MEASURES IN, ON OR NEAR THE CONSTRUCTION SITE.
6. CONTRACTOR SHALL COMPLETE THE SITE GRADING CONSTRUCTION IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER'S SOILS ENGINEER. ALL SOIL TESTING SHALL BE COMPLETED BY THE OWNER'S SOILS ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED SOIL TESTS AND INSPECTIONS WITH THE SOILS ENGINEER.
   A GEOTECHNICAL ENGINEERING SOILS REPORT HAS BEEN COMPLETED BY:
   COMPANY: BRAUN INTERTEC CORPORATION
   ADDRESS: 11001 HAMPSHIRE AVENUE S
   MINNEAPOLIS, MN 55438
   PHONE: 952.995.2000
   DATE: MAY 31, 2022
   CONTRACTOR SHALL OBTAIN A COPY OF THE SOILS REPORT.
7. CONTRACTOR SHALL COMPLETE DEWATERING AS REQUIRED TO COMPLETE THE SITE GRADING CONSTRUCTION.
8. PRIOR TO PLACEMENT OF THE AGGREGATE BASE, A TEST ROLL SHALL BE PERFORMED ON THE STREET AND PARKING AREA SUBGRADE. CONTRACTOR SHALL PROVIDE A LOADED TANDEM AXLE TRUCK WITH A GROSS WEIGHT OF 25 TONS. THE TEST ROLLING SHALL BE AT THE DIRECTION OF THE SOILS ENGINEER AND SHALL BE COMPLETED IN AREAS AS DIRECTED BY THE SOILS ENGINEER. CORRECTION OF THE SUBGRADE SOILS SHALL BE COMPLETED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SOILS ENGINEER.
9. REPLACE ALL SUBGRADE SOIL DISTURBED DURING THE CONSTRUCTION THAT HAVE BECOME UNSUITABLE AND WILL NOT PASS A TEST ROLL. REMOVE UNSUITABLE SOIL FROM THE SITE AND IMPORT SUITABLE SOIL AT NO ADDITIONAL COST TO THE OWNER.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING VEHICULAR AND PEDESTRIAN TRAFFIC CONTROL DEVICES SUCH AS BARRICADES, WARNING SIGNS, DIRECTIONAL SIGNS, FLAGMEN AND LIGHTS TO CONTROL THE MOVEMENT OF TRAFFIC WHERE NECESSARY. TRAFFIC CONTROL DEVICES SHALL CONFORM TO APPROPRIATE MINNESOTA DEPARTMENT OF TRANSPORTATION STANDARDS.
11. EXISTING TREES AND OTHER NATURAL VEGETATION WITHIN THE PROJECT AND/OR ADJACENT TO THE PROJECT ARE OF PRIME CONCERN TO THE CONTRACTOR'S OPERATIONS AND SHALL BE A RESTRICTED AREA. CONTRACTOR SHALL PROTECT TREES TO REMAIN AT ALL TIMES. EQUIPMENT SHALL NOT NEEDLESSLY BE OPERATED UNDER NEARBY TREES AND EXTREME CAUTION SHALL BE EXERCISED WHEN WORKING ADJACENT TO TREES. SHOULD ANY PORTION OF THE TREE BRANCHES REQUIRE REMOVAL TO PERMIT OPERATION OF THE CONTRACTOR'S EQUIPMENT, CONTRACTOR SHALL OBTAIN THE SERVICES OF A PROFESSIONAL TREE TRIMMING SERVICE TO TRIM THE TREES PRIOR TO THE BEGINNING OF OPERATION. SHOULD CONTRACTOR'S OPERATIONS RESULT IN THE BREAKING OF ANY LIMBS, THE BROKEN LIMBS SHOULD BE REMOVED IMMEDIATELY AND CUTS SHALL BE PROPERLY PROTECTED TO MINIMIZE ANY LASTING DAMAGE TO THE TREE. NO TREES SHALL BE REMOVED WITHOUT AUTHORIZATION BY THE ENGINEER. COSTS FOR TRIMMING SERVICES SHALL BE CONSIDERED INCIDENTAL TO THE GRADING CONSTRUCTION AND NO SPECIAL PAYMENT WILL BE MADE.
    a. RESTRICTED AREAS SHALL INCLUDE ALL DESIGNATED TREED AREAS OUTSIDE OF THE DESIGNATED CONSTRUCTION ZONE. ALL VEGETATION WITHIN THE RESTRICTED AREAS SHALL REMAIN.
    b. CONTRACTOR SHALL RESTRICT ALL GRADING AND CONSTRUCTION ACTIVITIES TO AREAS DESIGNATED ON THE PLANS. ACTIVITIES WITHIN THE CONSTRUCTION MAY BE RESTRICTED TO A NARROWER WIDTH IN THE FIELD TO SAVE ADDITIONAL TREES AS DIRECTED BY THE OWNER.
    c. ACTIVITIES PROHIBITED OUTSIDE OF THE CONSTRUCTION BOUNDARIES WOULD INCLUDE, BUT NOT BE LIMITED TO: SOIL AND OTHER MATERIAL STOCKPILING, EQUIPMENT OR MACHINERY STORAGE, DRIVING OF ANY VEHICLE, LEAKAGE OR SPILLAGE OF ANY "WASHOUT" OR OTHER TOXIC MATERIAL. THE COLLECTION OF OTHER DEBRIS AND SOIL STOCKPILING WILL BE IN AN AREA DETERMINED ON-SITE BY THE ENGINEER.
    d. ALL RESTRICTED AREAS SHALL BE FENCED OFF WITH BRIGHT ORANGE POLYETHYLENE SAFETY NETTING AND STEEL STAKES AS SHOWN ON THE TREE PROTECTION DETAIL. AT NO TIME SHALL THIS FENCING BE REMOVED OR ACTIVITY OF ANY KIND TAKE PLACE WITHIN IT. FINAL PLACEMENT OF ALL PROTECTIVE FENCING SHALL BE COMPLETE BEFORE ANY WORK COMMENCES ON-SITE.
    e. BEFORE COMMENCING WITH ANY EXCAVATION CONTRACTOR SHALL COMPLETE ALL PREPARATORY WORK REGARDING TREE REMOVAL, ROOT PRUNING, TREE PRUNING AND STUMP REMOVAL TO THE SATISFACTION OF THE OWNER.
    f. PREPARATORY WORK SHALL INCLUDE THE FOLLOWING AND SHALL BE COMPLETED UNDER THE DIRECT SUPERVISION OF THE OWNER'S REPRESENTATIVE:
    i. TREE REMOVAL: CONTRACTOR SHALL FELL THE TREES. AT NO TIME SHALL TREES BE BULLDOZED OUT, BUT SHALL BE CUT DOWN AND STUMPS REMOVED SEPARATELY. PRIOR TO THE FELLING OF ALL TREES, PROPER REMOVAL OF A PORTION OR ALL OF THE CANOPY SHALL BE COMPLETED SO THAT TREES IN THE RESTRICTED AREAS SHALL NOT BE INJURED IN THE PROCESS.
    ii. ROOT PRUNING: BEFORE ANY STUMPS ARE TO BE REMOVED, ALL ROOTS SHALL BE SEVERED FROM ROOTS IN THE RESTRICTED AREAS BY SAW CUTTING WITH A VERMEER DESIGNED FOR ROOT PRUNING, BY HAND, OR WITH A CHAINSAW. TREE ROOTS PROJECTING INTO THE CONSTRUCTION ZONE SHALL BE EXPOSED PRIOR TO ROOT PRUNING WITH SMALL MACHINERY, I.E..., BOBCAT.
    iii. STUMP REMOVAL: AT SUCH TIME THAT ROOTS HAVE BEEN PROPERLY SEVERED, STUMPS MAY BE REMOVED. WHERE REMOVAL OF CERTAIN STUMPS COULD CAUSE DAMAGE TO EXISTING PROTECTED TREES, TREE STUMPS SHALL BE GROUND OUT. ALL STUMP REMOVAL SHALL BE UNDER THE DIRECT SUPERVISION OF THE OWNER'S REPRESENTATIVE.
    iv. TREE PRUNING: PROPER PRUNING OF TREES IN THE RESTRICTED ZONE SHALL BE DIRECTED BY AND SUPERVISION AT ALL TIMES BY THE OWNER'S REPRESENTATIVE.
    g. AN OWNER'S REPRESENTATIVE WILL BE AVAILABLE AT ALL TIMES DURING THE PREPARATORY AND CONSTRUCTION PERIOD.
    h. MULCH RATHER THAN SEED OR SOD WILL BE USED AT THE BASE OF QUALITY TREES TO A PERIMETER DETERMINED BY THE OWNER'S REPRESENTATIVE. AREAS TO BE SEEDED FOR EROSION CONTROL PURPOSES WITHIN THE CONSTRUCTION ZONE ARE TO BE DETERMINED BY THE OWNER'S REPRESENTATIVE. NATURAL GROUND COVER WILL BE MAINTAINED WHEREVER POSSIBLE.
    i. THE USE OF RETAINING WALLS NEAR TREES, IN ADDITION TO THOSE REQUIRED ON THE PLANS SHALL BE DETERMINED IN THE FIELD, BASED ON TREE LOCATIONS AND TOPOGRAPHY.
12. EXCAVATE TOPSOIL FROM AREAS TO BE FURTHER EXCAVATED OR REGRADED AND STOCKPILE IN AREAS DESIGNATED ON THE SITE. CONTRACTOR SHALL SALVAGE ENOUGH TOPSOIL FOR RESPREADING ON THE SITE AS SPECIFIED. EXCESS TOPSOIL SHALL BE PLACED IN EMBANKMENT AREAS, OUTSIDE OF BUILDING PADS, ROADWAYS AND PARKING AREAS. CONTRACTOR SHALL SUBCUT CUT AREAS, WHERE TURF IS TO BE ESTABLISHED, TO A DEPTH OF 6 INCHES. RESPREAD TOPSOIL IN AREAS WHERE TURF IS TO BE ESTABLISHED TO A MINIMUM DEPTH OF 6 INCHES.
13. TRENCH BORROW CONSTRUCTION: IF ALLOWED BY THE OWNER, CONTRACTOR SHALL COMPLETE "TRENCH BORROW" EXCAVATION IN AREAS DIRECTED BY THE ENGINEER IN ORDER TO OBTAIN STRUCTURAL MATERIAL. TREES SHALL NOT BE REMOVED OR DAMAGED AS A RESULT OF THE EXCAVATION, UNLESS APPROVED BY THE ENGINEER. THE EXCAVATION SHALL COMMENCE A MINIMUM OF 10 FEET FROM THE LIMIT OF THE BUILDING PAD. THE EXCAVATION FROM THIS LIMIT SHALL EXTEND AT A MINIMUM SLOPE OF 1 FOOT HORIZONTAL TO 1 FOOT VERTICAL (1:1) DOWNWARD AND OUTWARD FROM THE FINISHED SURFACE GRADE ELEVATION. THE TRENCH BORROW EXCAVATION SHALL BE BACKFILLED TO THE PROPOSED FINISHED GRADE ELEVATION, AND SHALL BE COMPACTED IN ACCORDANCE WITH REQUIREMENTS OF THE QUALITY COMPACTION METHOD AS OUTLINED IN MN/DOT SPECIFICATION 2105.3F2. SNOW FENCE SHALL BE FURNISHED AND PLACED ALONG THE PERIMETER OF THE TRENCH BORROW AREA WHERE THE SLOPES EXCEED 2 FOOT HORIZONTAL TO 1 FOOT VERTICAL (2:1).
14. FINISHED GRADING SHALL BE COMPLETED, CONTRACTOR SHALL UNIFORMLY GRADE AREAS WITHIN LIMITS OF GRADING, INCLUDING ADJACENT TRANSITION AREAS. PROVIDE A SMOOTH FINISHED SURFACE WITHIN SPECIFIED TOLERANCES, WITH UNIFORM LEVELS OR SLOPES BETWEEN POINTS WHERE ELEVATIONS ARE SHOWN, OR BETWEEN SUCH POINTS AND EXISTING GRADES. AREAS THAT HAVE BEEN FINISHED GRADED SHALL BE PROTECTED FROM SUBSEQUENT CONSTRUCTION OPERATIONS, TRAFFIC AND EROSION. REPAIR ALL AREAS THAT HAVE BECOME RUTTED, ERODED OR HAS SETTLED BELOW THE CORRECT GRADE. ALL AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO EQUAL OR BETTER THAN ORIGINAL CONDITION OR TO THE REQUIREMENTS OF THE NEW WORK.
15. TOLERANCES
    a. THE BUILDING SUBGRADE FINISHED SURFACE ELEVATION SHALL NOT VARY BY MORE THAN 0.10 FOOT ABOVE, OR 0.10 FOOT BELOW, THE PRESCRIBED ELEVATION AT ANY POINT WHERE MEASUREMENT IS MADE.
    b. THE STREET OR PARKING AREA SUBGRADE FINISHED SURFACE ELEVATION SHALL NOT VARY BY MORE THAN 0.05 FOOT ABOVE, OR 0.10 FOOT BELOW, THE PRESCRIBED ELEVATION OF ANY POINT WHERE MEASUREMENT IS MADE.
    c. AREAS WHICH ARE TO RECEIVE TOPSOIL SHALL BE GRADED TO WITHIN 0.30 FOOT ABOVE OR BELOW THE REQUIRED ELEVATION, UNLESS DIRECTED OTHERWISE BY THE ENGINEER.
    d. TOPSOIL SHALL BE GRADED TO PLUS OR MINUS 1/2 INCH OF THE SPECIFIED THICKNESS.
16. AFTER THE SITE GRADING IS COMPLETED, IF EXCESS OR SHORTAGE OF SOIL MATERIAL EXISTS, CONTRACTOR SHALL TRANSPORT ALL EXCESS SOIL MATERIAL OFF THE SITE TO AN AREA SELECTED BY THE CONTRACTOR, OR IMPORT SUITABLE MATERIAL TO THE SITE.
17. CONTRACTOR SHALL DETERMINE THE LOCATION OF ANY HAUL ROADS THAT MAY BE REQUIRED TO COMPLETE THE SITE GRADING CONSTRUCTION AND SHALL INDICATE HAUL ROADS ON EROSION AND SEDIMENT CONTROL "SITE MAP". CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE GOVERNING AUTHORITY OF EACH ROADWAY. CONTRACTOR SHALL POST WHATEVER SECURITY AND COMPLY WITH ALL CONDITIONS WHICH ARE REQUIRED BY EACH GOVERNING AUTHORITY OF EACH ROADWAY.
18. DISTURBED AREAS WITHIN WETLAND MITIGATION SITE AND ANY DISTURBED AREAS WITHIN THE WETLAND SHALL BE RESTORED WITH 6 TO 12 INCHES OF ORGANIC SOILS, PREFERABLY SOILS THAT WERE PREVIOUSLY REMOVED FROM WETLAND AREAS. SEEDING IN THE WETLAND MITIGATION AREAS ABOVE THE NORMAL WATER LEVEL SHALL BE MN STATE SEED MIX 34-271, WET MEADOW SOUTH AND WEST, OR APPROVED EQUAL. FOR STATE SEED MIXES, OATS AND WINTER WHEAT SHOULD BE SELECTED BASED ON THE TIME OF YEAR THAT THE MIX IS BEING USED. OATS SHOULD BE INCLUDED IN MIXES IF BEING USED BETWEEN OCTOBER 15TH AND AUGUST 1ST. WINTER WHEAT SHOULD BE USED BETWEEN AUGUST 1ST AND OCTOBER 15TH. THE SEEDING RATE IS THE SAME FOR OATS AND WINTER WHEAT. MIX 34-271 SHOULD BE APPLIED AT 12 POUNDS PER ACRE. SEED SHALL BE WATERED UNTIL A HEALTHY STAND OF VEGETATION IS OBTAINED.

CIVIL 3D MODEL LIMITATIONS

SAMBATEK'S DELIVERABLE AND GOVERNING DOCUMENTS FOR CONSTRUCTION SHALL BE A HARD COPY AND/OR PDF PLAN SHEETS. IF A CIVIL 3D MODEL IS GENERATED IN THE PROCESS OF PREPARING THE PLAN SHEETS, IT IS AS A DESIGN TOOL ONLY AND NOT AS A SEPARATE DELIVERABLE. AT THE OWNER'S REQUEST, WE WILL RELEASE OUR CIVIL 3D MODEL FOR THE CONTRACTOR'S USE. HOWEVER, ITS USE IS AT THE CONTRACTOR'S RISK AND SHALL NOT BE USED FOR STAKING OF CURB, SIDEWALK, OR OTHER HARD SURFACE IMPROVEMENTS. IF A CIVIL 3D MODEL FOR STAKING HARD SURFACE IMPROVEMENTS IS REQUIRED, WE CAN PROVIDE A SUPPLEMENTAL AGREEMENT FOR REFINEMENT AND PREPARATION OF THE CIVIL 3D MODEL.

REV. DATE

THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

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Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

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PERMIT 1 SET

05/07/2024

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#11	PERMIT 1 COMMENTS	06/12/24
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#13	CITY RESUBMITTAL	07/08/24
#14	NORTH DRIVEWAY REVS	08/14/24

51166
PROJECT NUMBER

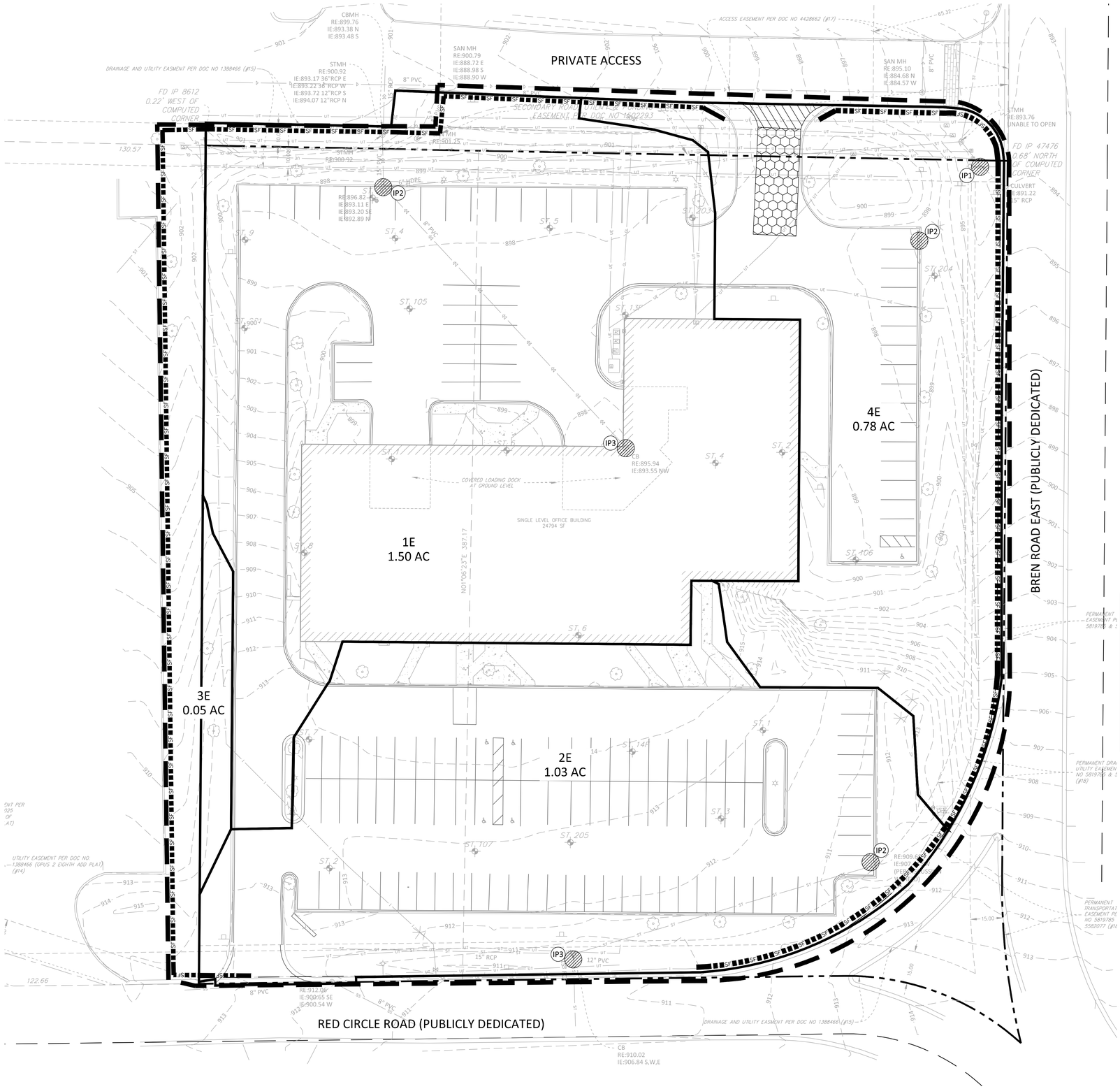
EJC DRAWN BY | BDB CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

GRADING PLAN

C4.01



LEGEND

PROPOSED / EXISTING

- CONCRETE CURB
- STORM SEWER
- 902 CONTOUR
- RIPRAP
- EOF 902.5 OVERFLOW ELEV.
- BIO-ROLL
- SF SILT FENCE
- SD SILT DIKE
- LIMITS OF DISTURBANCE
- ST # 999.9 SOIL BORING
- DIRECTION OF OVERLAND FLOW
- CHECK DAM
- LIMITS OF DRAINAGE SUB-BASIN
- IP# INLET PROTECTION DEVICE
- TEMPORARY STONE CONSTRUCTION ENTRANCE

EROSION CONTROL MATERIALS QUANTITIES

ITEM	UNIT	QUANTITY
SILT FENCE	LINEAR FEET	1250
CONSTRUCTION ENTRANCE	UNIT	1
INLET PROTECTION DEVICE (IP-1)	UNIT	1
INLET PROTECTION DEVICE (IP-2)	UNIT	4
INLET PROTECTION DEVICE (IP-3)	UNIT	1

* REFER TO SHEET C5.03 FOR GENERAL NOTES, MAINTENANCE NOTES, LOCATION MAPS, AND STANDARD DETAILS

NOTE TO CONTRACTOR

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SOIL EROSION/SEDIMENTATION CONTROL OPERATION TIME SCHEDULE

CONSTRUCTION SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
TEMPORARY CONTROL MEASURES																		
STRIP & STOCKPILE TOPSOIL																		
ROUGH GRADE / SEDIMENT CONTROL																		
TEMPORARY CONSTRUCTION ROADS																		
FOUNDATION / BUILDING CONSTRUCTION																		
SITE CONSTRUCTION																		
PERMANENT CONTROL STRUCTURES																		
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LANDSCAPING / SEED / FINAL STABILIZATION																		
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NORTH

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Engineering | Surveying | Planning | Environmental

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Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

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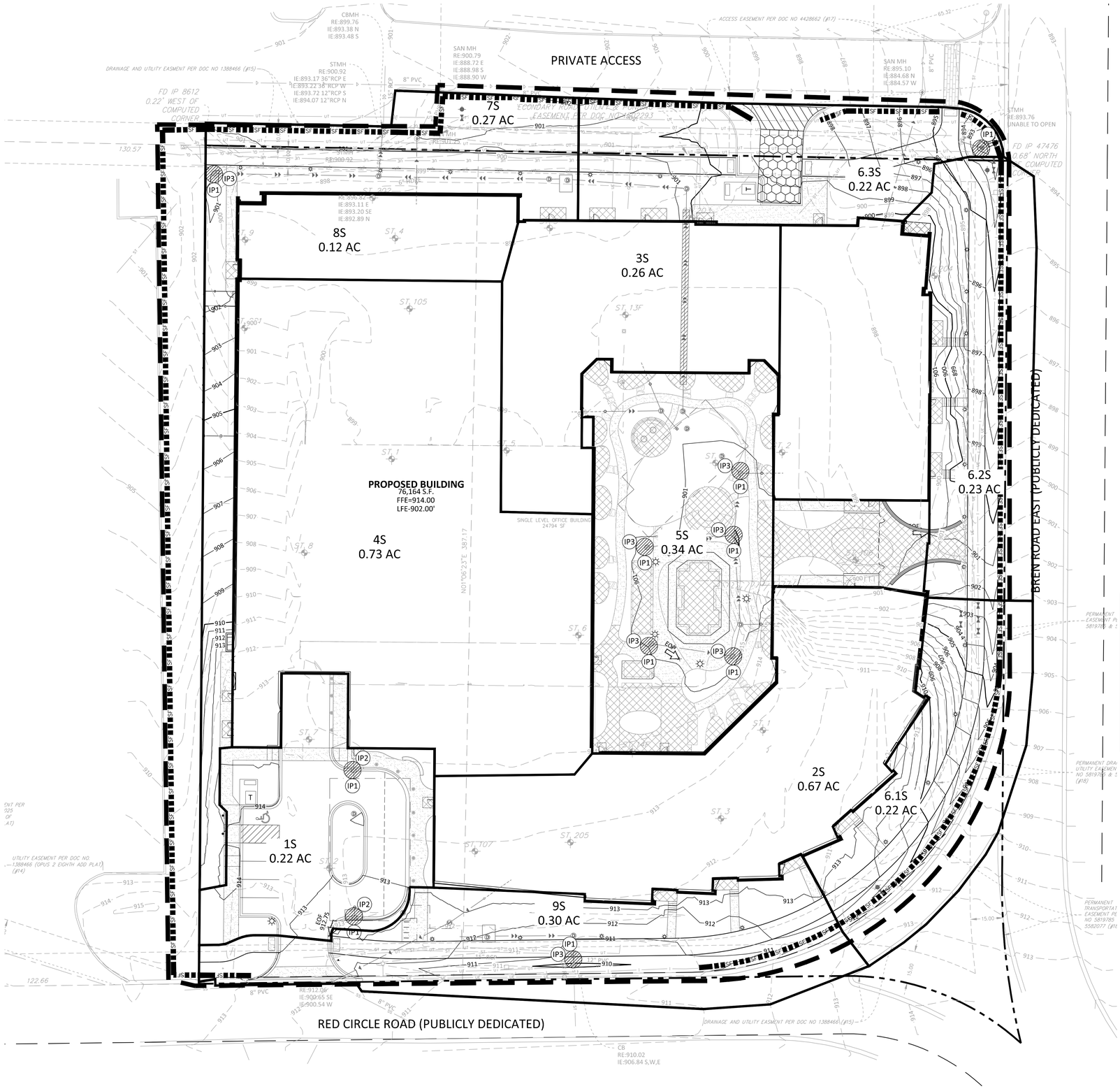
BDB CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

PHASE I EROSION CONTROL PLAN

C5.01



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LEGEND

PROPOSED	EXISTING	
		CONCRETE CURB
D	D	STORM SEWER
		DRAINTILE
902	902	CONTOUR
		RIPRAP
EOF 902.5		OVERFLOW ELEV.
		BIO-ROLL
SF	SF	SILT FENCE
SD	SD	SILT DIKE
		LIMITS OF DISTURBANCE
	ST # 999.9	SOIL BORING
		DIRECTION OF OVERLAND FLOW
		CHECK DAM
		LIMITS OF DRAINAGE SUB-BASIN
IP#		INLET PROTECTION DEVICE
		TEMPORARY STONE CONSTRUCTION ENTRANCE

EROSION CONTROL MATERIALS QUANTITIES

ITEM	UNIT	QUANTITY
SILT FENCE	LINEAR FEET	1,250
CONSTRUCTION ENTRANCE	UNIT	1
INLET PROTECTION DEVICE (IP-1)	UNIT	10
INLET PROTECTION DEVICE (IP-2)	UNIT	2
INLET PROTECTION DEVICE (IP-3)	UNIT	7

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NORTH
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SCALE IN FEET

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BDB CHECKED BY

KEY PLAN

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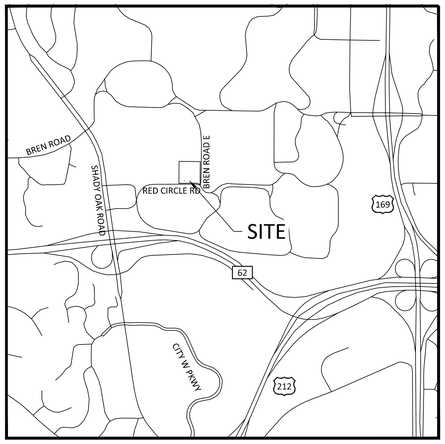
OPUS STATION

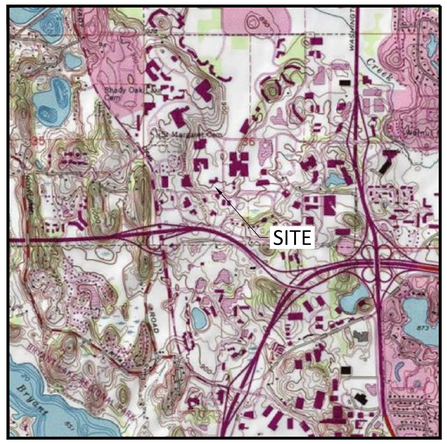
PHASE II EROSION CONTROL PLAN

C5.02

EROSION & SEDIMENTATION CONTROL NOTES & DETAILS / "SITE MAP"



SITE LOCATION MAP
NOT TO SCALE



USGS MAP
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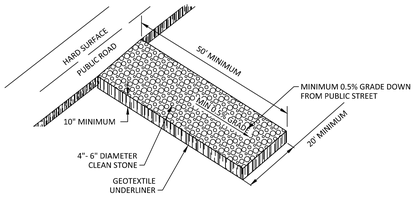
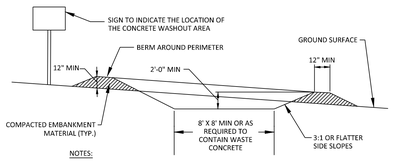


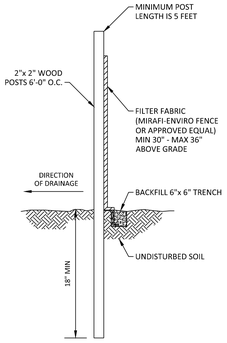
TEMPORARY STONE CONSTRUCTION EXIT
N.T.S.



NOTES:

1. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
2. CONCRETE WASHOUT AREA SHALL BE LINED WITH MINIMUM 10 MIL THICK PLASTIC LINER.
3. VEHICLE TRACKING CONTROL IS REQUIRED IF ACCESS TO CONCRETE WASHOUT AREA IS OFF PAVEMENT.
4. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
5. THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
6. AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN ACCEPTED WASTE SITE.
7. WHEN THE CONCRETE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER ACCEPTED BY THE CITY.

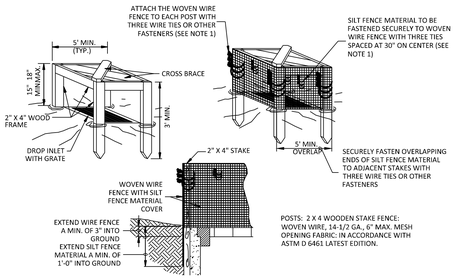
CONCRETE WASHOUT AREA
NOT TO SCALE



NOTES:

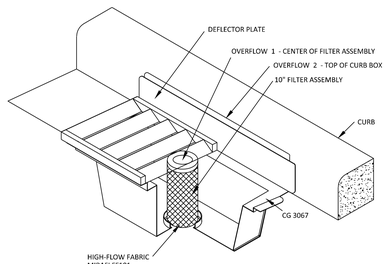
1. MAXIMUM SPACING BETWEEN POSTS (CENTER TO CENTER) SHALL NOT EXCEED 6 FEET IN SPACING.
2. A MINIMUM OF 5 FASTENERS PER POST

PREASSEMBLED SILT FENCE- WOOD POSTS (MNDOT 3886)
N.T.S.



1. ATTACH THE WOVEN WIRE FENCE TO EACH POST AND THE GEOTEXTILE TO THE WOVEN WIRE FENCE (SPACED EVERY 30") WITH THREE WIRE TIES OR OTHER FASTENERS, ALL SPACED WITHIN THE TOP 8" OF THE FABRIC. ATTACH EACH TIE DIAGONALLY 45 DEGREES THROUGH THE FABRIC, WITH EACH PUNCTURE AT LEAST 1" VERTICALLY APART.
2. WHEN TWO SECTIONS OF SILT FENCE MATERIAL ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED ACROSS TWO POSTS.
3. MAINTENANCE SHALL BE PERFORMED AS NOTED IN THE SWPPP. DEPTH OF ACCUMULATED SEDIMENTS MAY NOT EXCEED ONE-HALF THE HEIGHT OF THE FABRIC. MAINTENANCE CLEANOUT MUST BE CONDUCTED REGULARLY TO PREVENT ACCUMULATED SEDIMENTS FROM REACHING ONE-HALF THE HEIGHT OF THE SILT FENCE MATERIAL ABOVE GRADE.
4. ALL SILT FENCE INLETS SHALL INCLUDE WIRE SUPPORT.

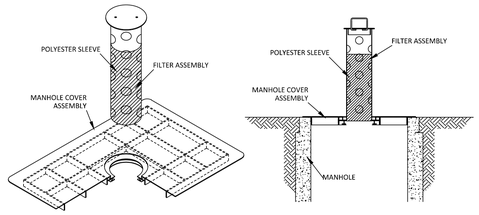
SILT FENCE INLET PROTECTION (IP-1)
NOT TO SCALE



ROAD DRAIN CASTING APPLICABILITY

- NEENAH R-3067
- NEENAH R-3512

ROAD DRAIN INLET PROTECTION (IP-2)
NOT TO SCALE



ISOMETRIC VIEW

IN-PLACE ELEVATION VIEW

SPECIFICATIONS AND STANDARDS

- AISC MANUAL OF STEEL CONSTRUCTION, 9TH EDITION.
- AWS STRUCTURAL WELDING CODE-STEEL, D1.1-94.
- 29 CFR 1926-OSHA SAFETY AND HEALTH STANDARDS

DESIGN LOADS		AVAILABILITY
ALLOWABLE AXLE WEIGHT LOAD	20000 LBS.	STOCK
SAFETY FACTOR	2:1	
WATER FLOW RATE (THROUGH POLYESTER FILTER)	0.476 CFS @ 3" HEAD 1.074 CFS @ 15" HEAD	
MAXIMUM OVERFLOW RATE	1.113 CFS @ 6" HEAD 1.575 CFS @ 12" HEAD	

ROAD DRAIN INLET PROTECTION TOP SLAB MODEL (IP-3)
NOT TO SCALE

DEVELOPER/OWNER: GREYSTAR DEVELOPMENT CENTRAL, LLC 750 BERING DRIVE, SUITE 400 HOUSTON, TX 77057 832-269-0535
SITE OPERATOR / GENERAL CONTRACTOR
SUPERINTENDENT:

AREA SUMMARY IN ACRES

PAVEMENT AREA	0.67 AC±
BUILDING AREA	1.78 AC±
SEEDED AREA	0.90 AC±
TOTAL DISTURBED	3.36 AC±
PRE - CONSTRUCTION IMPERVIOUS	2.11 AC±
POST - CONSTRUCTION IMPERVIOUS	2.46 AC±

SEQUENCE OF CONSTRUCTION

PHASE I:

1. INSTALL STABILIZED CONSTRUCTION ENTRANCES.
2. PREPARE TEMPORARY PARKING AND STORAGE AREA.
3. CONSTRUCT THE SILT FENCES ON THE SITE.
4. INSTALL INLET PROTECTION DEVICES ON EXISTING STORM STRUCTURES, AS SHOWN ON THE PLAN.
5. CONSTRUCT THE SEDIMENTATION AND SEDIMENT TRAP BASINS, AS REQUIRED.
6. HALT ALL ACTIVITIES AND CONTACT THE CIVIL ENGINEERING CONSULTANT TO PERFORM INSPECTION OF BMPs. GENERAL CONTRACTOR SHALL SCHEDULE AND CONDUCT STORM WATER PRE-CONSTRUCTION MEETING WITH ENGINEER AND ALL GROUND DISTURBING CONTRACTORS BEFORE PROCEEDING WITH CONSTRUCTION.
7. CLEAR AND GRUB THE SITE.
8. BEGIN GRADING THE SITE.
9. START CONSTRUCTION OF BUILDING PAD AND STRUCTURES.

PHASE II:

1. TEMPORARY SEED DENUDED AREAS.
2. INSTALL UTILITIES, UNDERDRAINS, STORM SEWERS, CURBS AND GUTTERS.
3. INSTALL RIP RAP AROUND OUTLET STRUCTURES.
4. INSTALL INLET PROTECTION AROUND ALL STORM SEWER STRUCTURES.
5. PREPARE SITE FOR PAVING.
6. PAVE SITE.
7. INSTALL INLET PROTECTION DEVICES.
8. COMPLETE GRADING AND INSTALL PERMANENT SEEDING AND PLANTING.
9. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES (ONLY IF SITE IS STABILIZED), IF REQUIRED BY THE CONTRACT.

GENERAL EROSION NOTES

1. CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE GOVERNING CODES AND BE CONSTRUCTED TO SAME. WHERE A CONFLICT EXISTS BETWEEN LOCAL JURISDICTIONAL STANDARD SPECIFICATIONS AND SAMBATEK STANDARD SPECIFICATIONS, THE MORE STRINGENT SPECIFICATION SHALL APPLY.
2. THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS COMPRISED OF THIS DRAWING (EROSION & SEDIMENTATION CONTROL PLAN-ESC PLAN), THE STANDARD DETAILS, THE PLAN NARRATIVE, AND ITS APPENDICES, PLUS THE PERMIT AND ALL SUBSEQUENT REPORTS AND RELATED DOCUMENTS.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING & SUBMITTING THE APPLICATION FOR THE MPCA GENERAL STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY. ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED WITH STORM WATER POLLUTION PREVENTION SHALL OBTAIN A COPY OF THE SWPPP AND THE STATE OF MINNESOTA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT (NPDES PERMIT, ISSUED AUGUST 1, 2018) AND BECOME FAMILIAR WITH THE CONTENTS. THE SWPPP AND ALL OTHER RELATED DOCUMENTS MUST BE KEPT AT THE SITE DURING CONSTRUCTION.
4. CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES (BMP'S) AS REQUIRED BY THE SWPPP & PERMITS. CONTRACTOR SHALL OVERSEE THE INSPECTION & MAINTENANCE OF THE BMP'S AND EROSION PREVENTION FROM BEGINNING OF CONSTRUCTION AND UNTIL CONSTRUCTION IS COMPLETED, IS APPROVED BY ALL AUTHORITIES, AND THE NOTICE OF TERMINATION (NOT) HAS BEEN FILED WITH THE MPCA BY EITHER THE OWNER OR OPERATOR AS APPROVED ON PERMIT. ADDITIONAL BMP'S SHALL BE IMPLEMENTED AS DICTATED BY CONDITIONS AT NO ADDITIONAL COST TO OWNER THROUGHOUT ALL PHASES OF CONSTRUCTION. (NOTE TO THE PREPARER: REVISE INSPECTION RESPONSIBILITY PER OPTIONS IN SWPPP NARRATIVE (SECTION 02370))
5. CONTRACTOR SHALL COMPLY WITH TRAINING REQUIREMENTS IN PART 21.1-21.3 OF THE GENERAL PERMIT.
6. BMP'S AND CONTROLS SHALL CONFORM TO FEDERAL, STATE, OR LOCAL REQUIREMENTS OR MANUAL OF PRACTICE, AS APPLICABLE. CONTRACTOR SHALL IMPLEMENT ADDITIONAL CONTROLS AS DIRECTED BY PERMITTING AGENCY OR OWNER.
7. ESC PLAN MUST CLEARLY DELINEATE ALL STATE WATERS. PERMITS FOR ANY CONSTRUCTION ACTIVITY IMPACTING STATE WATERS OR REGULATED WETLANDS MUST BE MAINTAINED ON SITE AT ALL TIMES.
8. CONTRACTOR SHALL MINIMIZE CLEARING TO THE MAXIMUM EXTENT PRACTICAL OR AS REQUIRED BY THE GENERAL PERMIT. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THE ESC PLANS SHALL BE CLEARLY DELINEATED (E.G. WITH FLAGS, STAKES, SIGNS, SILT FENCE, ETC.) ON THE DEVELOPMENT SITE BEFORE WORK BEGINS. GROUND DISTURBING ACTIVITIES MUST NOT OCCUR OUTSIDE THE LIMITS OF DISTURBANCE.
9. GENERAL CONTRACTOR SHALL DENOTE ON PLAN THE TEMPORARY PARKING AND STORAGE AREA WHICH SHALL ALSO BE USED AS THE EQUIPMENT MAINTENANCE AND CLEANING AREA, EMPLOYEE PARKING AREA, AND AREA FOR LOCATING PORTABLE FACILITIES, OFFICE TRAILERS, AND TOILET FACILITIES.
10. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, EQUIPMENT CLEANING, ETC.) MUST BE LIMITED TO A DEFINED AREA OF THE SITE AND SHALL BE CONTAINED AND PROPERLY TREATED OR DISPOSED. NO ENGINE DEGREASING IS ALLOWED ON SITE.
11. ALL LIQUID AND SOLID WASTES GENERATED BY CONCRETE WASHOUT OPERATIONS MUST BE CONTAINED IN A LEAK-PROOF CONTAINMENT FACILITY OR IMPERMEABLE LINER. A COMPACTED CLAY LINER IS NOT ACCEPTABLE. THE LIQUID AND SOLID WASTES MUST NOT CONTACT THE GROUND, AND THERE MUST NOT BE RUNOFF FROM THE CONCRETE WASHOUT OPERATIONS OR AREAS. LIQUID AND SOLID WASTES MUST BE DISPOSED OF PROPERLY AND IN COMPLIANCE WITH MPCA REGULATIONS. A SIGN MUST BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY TO INFORM CONCRETE EQUIPMENT OPERATORS TO UTILIZE THE PROPER FACILITIES. SELF-CONTAINED CONCRETE WASHOUTS ON CONCRETE DELIVERY TRUCKS ARE ALLOWED.
12. SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS SHALL BE MAINTAINED ON SITE OR READILY AVAILABLE TO CONTAIN AND CLEAN-UP FUEL OR CHEMICAL SPILLS AND LEAKS.
13. DUST ON THE SITE SHALL BE CONTROLLED. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS PROHIBITED.
14. SOLID WASTE: COLLECTED SEDIMENT, ASPHALT & CONCRETE MILLINGS, FLOATING DEBRIS, PAPER, PLASTIC, FABRIC, CONSTRUCTION & DEMOLITION DEBRIS & OTHER WASTES MUST BE DISPOSED OF PROPERLY & MUST COMPLY WITH MPCA DISPOSAL REQUIREMENTS.
15. HAZARDOUS MATERIALS: OIL, GASOLINE, PAINT & ANY HAZARDOUS SUBSTANCES MUST BE PROPERLY STORED, INCLUDING SECONDARY CONTAINMENT, TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. RESTRICTED ACCESS TO STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. STORAGE & DISPOSAL OF HAZARDOUS WASTE MUST BE IN COMPLIANCE WITH MPCA REGULATIONS.
16. ALL STORM WATER POLLUTION PREVENTION MEASURES PRESENTED ON THIS PLAN, AND IN THE SWPPP, SHALL BE INITIATED AS SOON AS PRACTICABLE AND PRIOR TO SOIL DISTURBING ACTIVITIES UPSLOPE.
17. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS STOPPED SHALL BE TEMPORARILY SEEDED, WITHIN 14 DAYS OF INACTIVITY. SEEDING SHALL BE IN ACCORDANCE WITH MN/DOT SEED MIXTURE NUMBER 21-111 OR 21-112 DEPENDING ON THE SEASON OF PLANTING (SEE MN/DOT SPECIFICATION SECTION 2575.3) SEEDING METHOD AND APPLICATION RATE SHALL CONFORM TO MN/DOT SPECIFICATION SECTION 2575.3. TEMPORARY MULCH SHALL BE APPLIED IN ACCORDANCE WITH MN/DOT SPECIFICATION SECTION 2575.3F1 AND 2575.3G. ALTERNATIVELY, HYDRAULIC SOIL STABILIZER IN ACCORDANCE WITH MN/DOT SPECIFICATION SECTION 2575.3H MAY BE USED IN PLACE OF TEMPORARY MULCH.
18. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE PERMANENTLY STABILIZED. THESE AREAS SHALL BE STABILIZED IN ACCORDANCE WITH THE TIME TABLE DESCRIBED ABOVE. REFER TO THE GRADING PLAN AND/OR LANDSCAPE PLAN FOR VEGETATIVE COVER. (NOTE TO THE PREPARER: WHERE PERMANENT SEEDING IS NOT CALLED OUT IN THE GRADING AND/ OR LANDSCAPE PLAN, REPLACE THE LAST SENTENCE IN THIS ITEM WITH THE FOLLOWING: SEED WET PONDS WITH MN/DOT SEED MIXTURE 310 "NATIVE WET TALL" BELOW THE HWL. SEED ALL OTHER AREAS WITH SEED MIXTURE 260 "COMMERCIAL TURF". SEEDING METHOD AND APPLICATION RATE SHALL CONFORM TO MN/DOT SPECIFICATION SECTION 2573.3.)
19. CONTRACTORS OR SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING SEDIMENT FROM CONVEYANCES & FROM TEMPORARY SEDIMENTATION BASINS THAT ARE TO BE USED AS PERMANENT WATER QUALITY MANAGEMENT BASINS. SEDIMENT MUST BE STABILIZED TO PREVENT IT FROM BEING WASHED BACK INTO THE BASIN, CONVEYANCES, OR DRAINAGEWAYS DISCHARGING OFF-SITE OR TO SURFACE WATERS. THE CLEANOUT OF PERMANENT BASINS MUST BE SUFFICIENT TO RETURN THE BASIN TO DESIGN CAPACITY.
20. ON-SITE & OFF-SITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BMP'S. STOCKPILE AND BORROW AREA LOCATIONS SHALL BE NOTED ON THE SITE MAP AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.
21. TEMPORARY SOIL STOCKPILES MUST HAVE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS & CANNOT BE PLACED IN SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB & GUTTER SYSTEMS OR CONDUITS & DITCHES.
22. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION.
23. DUE TO THE GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT, CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, CHECK DAMS, INLET PROTECTION DEVICES, ETC.) TO PREVENT EROSION.
24. ALL CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH WORKING DAY, THIS INCLUDES BACKFILLING OF TRENCHES FOR UTILITY CONSTRUCTION AND PLACEMENT OF GRAVEL OR BITUMINOUS PAVING FOR ROAD CONSTRUCTION.

MAINTENANCE NOTES

ALL MEASURES STATED ON THIS EROSION AND SEDIMENT CONTROL PLAN, AND IN THE STORM WATER POLLUTION PREVENTION PLAN SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL NO LONGER REQUIRED FOR A COMPLETED PHASE OF WORK OR FINAL STABILIZATION OF THE SITE. THE DESIGNATED CONTACT PERSON NOTED ON THIS PLAN MUST ROUTINELY INSPECT THE CONSTRUCTION ON SITE ONCE EVERY SEVEN DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CLEANED AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING:

1. ALL SILT FENCES MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES 1/2 OF THE HEIGHT OF THE FENCE. THESE REPAIRS MUST BE MADE WITHIN 24 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.
2. TEMPORARY AND PERMANENT SEDIMENTATION BASINS MUST BE DRAINED AND THE SEDIMENT REMOVED WHEN THE DEPTH OF SEDIMENT COLLECTED IN THE BASIN REACHES 1/2 THE STORAGE VOLUME. DRAINAGE AND REMOVAL MUST BE COMPLETED WITHIN 72 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS (SEE PART 10.1-10.5 OF THE GENERAL PERMIT).
3. SURFACE WATERS, INCLUDING DRAINAGE DITCHES AND CONVEYANCE SYSTEMS, MUST BE INSPECTED FOR EVIDENCE OF SEDIMENT BEING DEPOSITED BY EROSION. CONTRACTOR MUST REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS, INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS, AND RESTABILIZE THE AREAS WHERE SEDIMENT REMOVAL RESULTS IN EXPOSED SOIL. THE REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) DAYS OF DISCOVERY UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL ACCESS CONSTRAINTS. CONTRACTOR SHALL USE ALL REASONABLE EFFORTS TO OBTAIN ACCESS. IF PRECLUDED, REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) CALENDAR DAYS OF OBTAINING ACCESS. CONTRACTOR IS RESPONSIBLE FOR CONTACTING ALL LOCAL, REGIONAL, STATE AND FEDERAL AUTHORITIES AND RECEIVING ANY APPLICABLE PERMITS, PRIOR TO CONDUCTING ANY WORK.
4. CONSTRUCTION SITE VEHICLE EXIT LOCATIONS MUST BE INSPECTED FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING ONTO PAVED SURFACES. TRACKED SEDIMENT MUST BE REMOVED FROM ALL OFF-SITE PAVED SURFACES, WITHIN 24 HOURS OF DISCOVERY, OR IF APPLICABLE, WITHIN A SHORTER TIME TO COMPLY WITH PART 9.11-9.12 OF THE GENERAL PERMIT.
5. CONTRACTOR IS RESPONSIBLE FOR THE OPERATION AND MAINTENANCE OF TEMPORARY AND PERMANENT WATER QUALITY MANAGEMENT BMPS, AS WELL AS ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS, FOR THE DURATION OF THE CONSTRUCTION WORK AT THE SITE. THE PERMITTEE(S) ARE RESPONSIBLE UNTIL ANOTHER PERMITTEE HAS ASSUMED CONTROL (ACCORDING TO PART 3.1 TO 3.8 OF THE MPCA GENERAL PERMIT) OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED OR THE SITE HAS UNDERGONE FINAL STABILIZATION, AND A (N.O.T.) HAS BEEN SUBMITTED TO THE MPCA.
6. IF SEDIMENT ESCAPES THE CONSTRUCTION SITE, OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED IN A MANNER AND AT A FREQUENCY SUFFICIENT TO MINIMIZE OFF-SITE IMPACTS (E.G., FUGITIVE SEDIMENT IN STREETS COULD BE WASHED INTO STORM SEWERS BY THE NEXT RAIN AND/OR POSE A SAFETY HAZARD TO USERS OF PUBLIC STREETS).

MARLOWE
OPUS STATION
MINNETONKA, MN

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Minneapolis, MN 55415
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12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

PERMIT 1 SET

05/07/2024

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23
#6	LAND USE APP. UPDATES	07/21/23
#7	STORMWATER UPDATES	08/04/23
#8	CITY RESUBMITTAL	08/16/23
#9	LAND USE APPLICATION	04/29/24
#10	NMCWD COMMENT RESPONSE	06/06/24
#11	PERMIT 1 COMMENTS	06/12/24
#12	NMCWD COMMENT RESPONSE	07/03/24
#13	CITY RESUBMITTAL	07/08/24
#14	NORTH DRIVEWAY REVS	08/14/24

51166
PROJECT NUMBER

EJC DRAWN BY | BDB CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

EROSION CONTROL NOTES & DETAILS

C5.03

SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING

1.1 PROJECT/SITE INFORMATION

MARLOWE OPUS STATION
10779 BREN RD E
CITY: MINNETONKA
STATE: MINNESOTA
ZIP CODE: 55343
COUNTY: HENNEPIN COUNTY

THIS PROJECT LIES ON THE CORNER OF RED CIRCLE RD AND BREN ROAD E, WHICH IS LOCATED NE OF THE INTERSECTION OF 62 AND SHADY OAK RD.

NPDES PERMIT NUMBER:________________

1.2 CONTACT INFORMATION/RESPONSIBLE PARTIES

COMPANY/ORGANIZATION NAME: GREYSTAR DEVELOPMENT CENTRAL, LLC
CONTACT NAME: NED DODINGTON
ADDRESS: 750 BERING DRIVE, SUITE 400
CITY, STATE, ZIP CODE: HOUSTON, TX 77057
TELEPHONE NUMBER: 832-269-0535
FAX/EMAIL: NDODINGTON@GREYSTAR.COM

GENERAL CONTRACTOR (TO BE COMPLETED BY GENERAL CONTRACTOR):

COMPANY/ORGANIZATION NAME:
CONTACT NAME:
ADDRESS:
CITY, STATE, ZIP CODE:
TELEPHONE NUMBER:
FAX/EMAIL:
INSERT AREA OF CONTROL (IF MORE THAN ONE OPERATOR AT SITE):

THE GENERAL CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE MINNESOTA GENERAL PERMIT AUTHORIZATION TO DISCHARGE STORM WATER ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM/STATE DISPOSAL SYSTEM PERMIT PROGRAM (GENERAL PERMIT). THE GENERAL CONTRACTOR MUST COMPLY WITH ANY LOCAL GOVERNING AGENCY (LGU) HAVING JURISDICTION CONCERNING EROSION AND SEDIMENT CONTROL. THE GENERAL CONTRACTOR SHALL BE REQUIRED TO BE A CO-APPLICANT WITH THE OWNER. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE EROSION AND SEDIMENT CONTROL DEVICES.

THE "APPLICATION FOR GENERAL STORM-WATER PERMIT FOR CONSTRUCTION ACTIVITY (MN R100001)" SHALL BE COMPLETED BY THE GENERAL CONTRACTOR AND SUBMITTED ONLINE, ALONG WITH THE REQUIRED APPLICATION FEE, THROUGH THE MPCA'S WEBSITE.

UNLESS NOTIFIED BY THE MINNESOTA POLLUTION CONTROL AGENCY (MPCA) TO THE CONTRARY, APPLICANTS WHO SUBMIT A COMPLETE APPLICATION FORM IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL PERMIT ARE AUTHORIZED TO DISCHARGE STORM WATER FROM THE CONSTRUCTION SITE UNDER THE TERMS AND CONDITIONS OF THIS PERMIT SEVEN (7) CALENDAR DAYS THE ONLINE APPLICATION PROCESS IS COMPLETE(HTTPS://NETWEB.PCA.STATE.MN.US/PRIVATE/).

(NOTE: ALL PROJECTS UNDER 50 ACRES MUST SUBMIT THE PERMIT APPLICATION USING THE ONLINE PROCESS. MAILED APPLICATIONS ARE ONLY ACCEPTED FOR PROJECTS THAT DISTURB 50 OR MORE ACRES, AND HAVE A DISCHARGE POINT WITHIN 1 MILE OF A PROTECTED WATER.)

ADDITIONALLY, AUTHORIZATION WILL BE DELAYED UNDER THE FOLLOWING CIRCUMSTANCES:

- IF THE PROJECT DISTURBS 50 ACRES OR MORE AND HAS A DISCHARGE POINT WITHIN 1 MILE AND FLOWS TO AN IMPAIRED OR SPECIAL WATER WHOSE DISCHARGE MAY REACH AN IMPAIRED OR SPECIAL WATER LISTED IN SECTION 23 OF THE GENERAL PERMIT THE APPLICANT SHALL SUBMIT THE STORM WATER POLLUTION PREVENTION PLAN AND A COMPLETED APPLICATION AT LEAST 30 CALENDAR DAYS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES. UNLESS NOTIFIED BY THE MPCA TO THE CONTRARY, COVERAGE BECOMES EFFECTIVE 30 CALENDAR DAYS AFTER THE POSTMARKED DATE OF THE COMPLETED APPLICATION.
- IF THE PROJECT INCLUDES ALTERNATIVE METHODS THE APPLICATION AND TWO ALTERNATIVE TREATMENT PLANS MUST BE SUBMITTED A MINIMUM OF 90 DAY BEFORE CONSTRUCTION STARTS.

EROSION & SEDIMENT CONTROL SUBCONTRACTOR (RESPONSIBLE FOR IMPLEMENTING & UPDATING SWPPP - TO BE COMPLETED BY CONTRACTOR):

COMPANY/ORGANIZATION NAME:
CONTACT NAME:
ADDRESS:
CITY, STATE, ZIP CODE:
TELEPHONE NUMBER:
FAX/EMAIL:

EROSION & SEDIMENT CONTROL INSPECTOR (SEE PART 6.1 OF THIS SWPPP FOR MORE INFORMATION ON INSPECTION RESPONSIBILITIES- TO BE COMPLETED BY CONTRACTOR):

COMPANY/ORGANIZATION NAME:
CONTACT NAME:
ADDRESS:
CITY, STATE, ZIP CODE:
TELEPHONE NUMBER:
FAX/EMAIL:

GROUND DISTURBING SUBCONTRACTOR(S):

COMPANY/ORGANIZATION NAME:
CONTACT NAME:
ADDRESS:
CITY, STATE, ZIP CODE:
TELEPHONE NUMBER:
FAX/EMAIL:

THE GENERAL CONTRACTOR SHALL PROVIDE A CHAIN OF RESPONSIBILITY WITH ALL OPERATORS ON THE SITE TO ENSURE THAT THE SWPPP WILL BE IMPLEMENTED AND STAY IN EFFECT UNTIL THE CONSTRUCTION PROJECT IS COMPLETE AND THE NOT SUBMITTED.

THIS SWPPP WAS PREPARED BY:

COMPANY/ORGANIZATION NAME: SAMBATEK
CONTACT NAME: BRADY BUSSELMAN
ADDRESS: 12800 WHITEWATER DRIVE, SUITE 300
CITY, STATE, ZIP CODE: MINNETONKA, MN 55343
TELEPHONE NUMBER: 763-476-6010
FAX/EMAIL: BBUSSELMAN@SAMBATEK.COM

SWPPP DESIGNER CERTIFICATION CARD:

1.3 NATURE OF CONSTRUCTION ACTIVITY

NATURE OF CONSTRUCTION:

THIS SWPPP HAS BEEN PREPARED FOR MAJOR ACTIVITIES ASSOCIATED WITH CONSTRUCTION OF MARLOWE OPUS STATION LOCATED ON THE CORNER OF RED CIRCLE RD AND BREN ROAD E. THE PROJECT ENTAILS THE DEMOLITION OF THE EXISTING BUILDING AND PARKING LOTS ON THE PROPERTY AND THE CONSTRUCTION OF A MULTI-FAMILY BUILDING AND PARKING AREA.

ANTICIPATED APPROXIMATE TIMELINES:

ESTIMATED PROJECT START DATE:	05/01/2024
ESTIMATED PROJECT COMPLETION DATE:	05/01/2025

1.4 SOILS, SLOPES, VEGETATION, AND CURRENT DRAINAGE PATTERNS

SOIL TYPE(S):

THE SUBSURFACE PROFILE OF THE SITE GENERALLY HAS A PAVEMENT SECTION ABOUT 8.5-12.5 INCHES. THIS IS FOLLOWED BY 6.5 TO 18 FEET OF FILL WITH SWAMP DEPOSITS 2.5 TO 6.5 FEET BELOW THE FILL.

SLOPES:

THE SLOPES ON THE EXISTING SITE RANGE FROM 0-8% DRAINING TO THE NORTH SIDE OF THE PROPERTY. THE PROPOSED GRADES WILL REDUCE THAT TO A 6.7-7% IN STEEP AREAS.

DRAINAGE PATTERNS:

This site impervious areas storm water is captured by an existing storm sewer system. The green space areas generally drain to the north end of the site.

VEGETATION:

THE SITES VEGETATION IS MAINLY ON THE OUTSIDE PERIMETER OF THE PROPERTY AND CONSISTS OF MAINTAINED GRASS AND A MIX OF MATURE DECIDUOUS AND CONIFERS TREES, MANY OF WHICH SHOW SIGNS OF EMERALD ASH BORER INFESTATION. ALL TREES ON SITE WILL BE REMOVED FROM SITE.

RAINFALL INFORMATION:

RAINFALL INFORMATION - THE AVERAGE TOTAL ANNUAL PRECIPITATION IS ABOUT 28.32 INCHES. OF THIS ABOUT 17.31 INCHES, OR 61 PERCENT, USUALLY FALLS IN MAY THROUGH SEPTEMBER. THE AVERAGE ANNUAL SNOWFALL IS 57.3 INCHES.

1.5 CONSTRUCTION SITE ESTIMATES

PROJECT AREA SUMMARY:

TOTAL PROJECT AREA: 3.33 ACRES
CONSTRUCTION SITE AREA TO BE DISTURBED: 3.36 ACRES

IMPERVIOUS AREAS:

IMPERVIOUS AREA BEFORE CONSTRUCTION (ACRES): 2.11
IMPERVIOUS AREA AFTER CONSTRUCTION (ACRES): 2.46

1.6 RECEIVING WATERS

CONSTRUCTION PHASE STORM WATER SYSTEM DESCRIPTION:

DURING CONSTRUCTION, EROSION AND SEDIMENT DEVICES (SILT FENCE, INLET PROTECTION, SILT DIKES, ETC.) WILL WORK TO PREVENT SEDIMENT FROM LEAVING THE SITE AND THEREBY PROTECT RECEIVING WATERS.

DESCRIPTION OF RECEIVING WATERS:

NINE MILE CREEK IS WITHIN ONE MILE OF CONSTRUCTION AND IS CLASSIFIED AS AN IMPAIRED WATERS AND ARE CONSIDERED TO BE CONSTRUCTION RELATED PARAMETERS AND REQUIRE THE ADDITIONAL BEST MANAGEMENT PRACTICES (BMPS) FOUND IN ITEMS 23.9 AND 23.10 OF THE PERMIT IF THE PROJECT HAS A DISCHARGE POINT ON THE PROJECT WITHIN 1 MILE (AERIAL RADIUS MEASUREMENT) OF, AND FLOWS TO THE IMPAIRED STREAM.

1.7 SITE FEATURES AND SENSITIVE AREAS TO BE PROTECTED

THIS SITE HAS NO INTERNAL FEATURES TO BE PROTECTED. CONTRACTOR TO TAKE PRECAUTION TO NOT DISTURB ADJACENT PROPERTIES.

1.8 POTENTIAL SOURCES OF POLLUTION

POTENTIAL SOURCES OF SEDIMENT AND OTHER POLLUTANTS TO STORMWATER RUNOFF:

CONSTRUCTION PHASE POLLUTANT SOURCES ANTICIPATED AT THE SITE ARE DISTURBED (BARE) SOIL, VEHICLE FUELS AND LUBRICANTS, CHEMICALS ASSOCIATED WITH BUILDING CONSTRUCTION, AND BUILDING MATERIALS. WITHOUT ADEQUATE CONTROL THERE IS THE POTENTIAL FOR EACH TYPE OF POLLUTANT TO BE TRANSPORTED BY STORM WATER.

1.9 ENDANGERED/THREATENED SPECIES

THERE ARE THREE ENDANGERED AND THREATENED SPECIES KNOWN TO BE IN THE AREA. THE NORTHERN LONG-EARED BAT, THE TRICOLORED BAT, AND THE RUSTY BATCHED BUMBLE BEE. IF THESE ENDANGERED OR THREATENED SPECIES ARE OBSERVED WITHIN THE PROJECT LOCATION WHILE PROJECT ACTIVITIES ARE GOING ON, THE CONTRACTOR IS TO STOP WORK IMMEDIATELY AND ENGINEER OF RECORD IS TO BE NOTIFIED.

THE UNITED STATES FISH AND WILDLIFE SERVICE LISTS THE RUSTY PATCHED BUMBLE BEE AS AN ENDANGERED SPECIES. ALL RUSTY PATCHED BUMBLE BEES HAVE ENTIRELY BLACK HEADS, BUT ONLY WORKERS AND MALES HAVE A RUSTY REDDISH PATCH CENTRALLY LOCATED ON THE BACK. RUSTY PATCH BUMBLE BEES ARE KNOWN TO OCCUR THROUGHOUT THE COUNTY WITHIN GRASSLANDS WITH FLOWERING PLANTS FROM APRIL THROUGH OCTOBER, UNDERGROUND CAVITIES OR CLUMPS OF GRASSES ABOVE GROUND AS NESTING SITES, AND IN UNDISTURBED SOIL FOR HIBERNATING QUEENS OVER WINTER.

THE UNITED STATES FISH AND WILDLIFE SERVICE LISTS THE NORTHERN LON-EARED BAT AS AN ENDANGERED SPECIES. THE NORTHERN LONG-EARED BAT IS A MEDIUM-SIZED BAT ABOUT 3 TO 3.7 INCHES IN LENGTH BUT WITH A WINGSPAN OF 9 TO 10 INCHES.THIS BAT IS DISTINGUISHED BY ITS LONG EARS. THE BATS HIBERNATE IN CAVES, SWARM WOODED ARES IN AUTUMN, AND FORAGE IN UPLAND FORESTS IN SPRING AND SUMMER. IF A NORTHERN LONG EARED BAT IS FOUND WITHIN THE AREA THEN INCIDENTAL TAKE WITHIN THE WNS ZONE INVOLVING TREE REMOVAL IS NOT PROHIBITED IF TWO CONSERVATION MEASURES ARE FOLLOWED. THE FIRST MEASURE IS THE APPLICATION OF A 0.25 MILE (0.4 KM) BUFFER AROUND KNOWN OCCUPIED NORTHERN LONG-EARED BAT HIBERNACULA. THE SECOND CONSERVATION MEASURE IS THAT THE ACTIVITY DOES NOT CUT OR DESTROY KNOWN OCCUPIED MATERNITY ROOST TREES, OR ANY OTHER TREES WITHIN A 150-FOOT (45-M) RADIUS AROUND THE MATERNITY ROOST TREE, DURING THE PUP SEASON (JUNE 1 THROUGH JULY 31).

THE UNITED STATES FISH AND WILDLIFE SERVICE LISTS THE TRICOLORED BAT AS A PROPOSED ENDANGERED SPECIES. THE TRICOLORED BAT IS A SMALL INSECTIVOROUS BAT THAT IS DISTINGUISHED BY ITS UNIQUE TRICOLORED FUR AND OFTEN APPEARS YELLOWISH TO NEARLY ORANGE. DURING THE WINTER, TRICOLORED BATS ARE OFTEN FOUND IN CAVES AND ABANDONED MINES, ALTHOUGH IN THE SOUTHERN UNITED STATES, WHERE CAVES ARE SPARSE, TRICOLORED BATS ARE OFTEN FOUND ROOSTING IN ROAD-ASSOCIATED CULVERTS WHERE THEY EXHIBIT SHORTER TORPOR BOUTS AND FORAGE DURING WARM NIGHTS. DURING THE SPRING, SUMMER, AND FALL, TRICOLORED BATS ARE FOUND IN FORESTED HABITATS WHERE THEY ROOST IN TREES, PRIMARILY AMONG LEAVES OF LIVE OR RECENTLY DEAD DECIDUOUS HARDWOOD TREES, BUT MAY ALSO BE FOUND IN SPANISH MOSS, PINE TREES, AND OCCASIONALLY HUMAN STRUCTURES.

BOTH THE NORTHERN LONG-EARED BAT AND TRICOLORED BAT ARE GREATLY THREATENED BY WHITE-NOSE SYNDROME (WNS), WHICH HAS CAUSED A DECLINE IN BAT POPULATIONS BY UP TO 99 PERCENT. THIS FUNGAL DISEASE LOOKS LIKE A WHITE FUZZ ON THE BATS FACE. BATS WITH WNS MAY DO STRANGE THIGNS LIKE FLY OUTSIDE IN THE DAYTIME AND WINTER. IF A BAT WITH WNS IS ENCOUNTERED OR SUSPECTED, REPORT THE SIGHTING TO THE MINNESOTA DEPARTMENT OF NATURAL RESOURCES:

REPORT WEBSITE: HTTP://WWW.DNR.STATE.MN.US/REPORTBATS/INDEX.HTML
REPORT PHONE: 888-345-1730
REPORT EMAIL: MBS.REPORTS@STATE.MN.US

TO REPORT UNUSUAL BAT ACTIVITY OR GROUPS OF BATS IN MINNESOTA. THE DNR IS INTERESTED IN WINTER AND SUMMER ROOST SITES –AS WELL AS SICK OR DYING BATS

1.10 HISTORIC PRESERVATION

THERE ARE NO KNOWN HISTORIC SITES ON OR NEAR THE CONSTRUCTION SITE.

1.11 APPLICABLE FEDERAL, TRIBAL, STATE OR LOCAL PROGRAMS

LOCAL GOVERNING UNIT (LGU) REQUIREMENTS:

THE PROJECT IS LOCATED WITHIN THE JURISDICTION OF THE NINE MILE CREEK WATERSHED. THE ONESITE STORMWATER MANAGEMENT HAS BEEN DESIGNATED TO MEET THE REQUIREMENTS OF THE WATERSHED, THE CITY OF MINNETONKA, AND THE MINNESOTA POLLUTION CONTROL AGENCY (MPCA) THROUGH THE CONSTRUCTION OF UNDERGROUND STORMWATER STORAGE SYSTEM AND FILTRATION SYSTEM.THESE BMP'S WILL PROVIDE THE REQUIRED RATE CONTROL, WATER QUALITY AND VOLUME REDUCTION IMPROVEMENTS PRIOR TO DISCHARGING STORMWATER RUNOFF FROM THE SITE TO THE EXISTING STORM SEWER SYSTEM.

1.12 MITIGATION MEASURES FROM ENVIRONMENTAL REVIEWS/TMDLS/IMPAIRED WATERS

1.13 MAPS

EROSION AND SEDIMENT CONTROL PLANS:

(REVISE THE FOLLOWING AS NECESSARY)
THE FOLLOWING SITE DEVELOPMENT PLAN SHEETS ARE AN INTEGRAL PART OF THIS SWPPP:
C-5.01 - PHASE I EROSION AND SEDIMENTATION CONTROL PLAN/"SITE MAP"
C-5.02 - PHASE II EROSION AND SEDIMENTATION CONTROL PLAN/"SITE MAP"
C-5.03 - EROSION AND SEDIMENTATION CONTROL DETAILS AND NOTES

SECTION 2: EROSION AND SEDIMENT CONTROL BMPS

EROSION CONTROL BMPS:

THE PURPOSE OF EROSION CONTROL IS TO PREVENT SOIL PARTICLES FROM BECOMING SUSPENDED IN WATER AND BEING TRANSPORTED TO EITHER DOWNSTREAM SURFACE WATERS OR DOWNSTREAM PROPERTIES.

APPROPRIATE CONSTRUCTION PHASING, VEGETATIVE BUFFER STRIPS, HORIZONTAL SLOPE GRADING, AND OTHER CONSTRUCTION PRACTICES THAT MINIMIZE EROSION MUST BE PLANNED FOR AND IMPLEMENTED.

IN THE NATURAL CONDITION, SOIL IS STABILIZED BY NATIVE VEGETATION. THE PRIMARY TECHNIQUE TO BE USED AT THIS PROJECT FOR FINAL STABILIZATION OF SITE SOIL WILL BE TO PROVIDE A PROTECTIVE COVER OF VEGETATION, PAVEMENT, OR BUILDING.

ALL EXPOSED AREAS MUST BE STABILIZED AS SOON AS POSSIBLE (BUT NO LATER THAN THE NEXT WORK DAY) TO LIMIT SOIL EROSION, BUT IN NO CASE LATER THAN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. TEMPORARY SOIL STOCKPILES WITHOUT SIGNIFICANT SILT, CLAY OR ORGANIC COMPONENTS (E.G. CLEAN AGGREGATED STOCKPILES, DEMOLITION CONCRETE STOCKPILES, SAND STOCKPILES) AND THE CONSTRUCTED BASE COMPONENTS OF ROADS, PARKING LOTS AND SIMILAR SURFACES ARE EXEMPT FROM THIS REQUIREMENT, BUT MUST COMPLY WITH SECTION 2.7 OF THIS SWPPP (SECTION 8.4, 9.9, 9.10, AND 23.9 OF THE GENERAL PERMIT).

SEDIMENT CONTROL BMPS:

THE PURPOSE OF SEDIMENT CONTROL IS TO PREVENT SOIL PARTICLES THAT HAVE BEEN SUSPENDED IN WATER FROM ENTERING SURFACE WATERS, INCLUDING CURB AND GUTTER SYSTEMS AND STORM SEWER INLETS. SEDIMENT CONTROL BMPS HAVE BEEN DESIGNED AS PART OF THIS SWPPP.

IF THE DOWN GRADIENT TREATMENT SYSTEM IS OVERLOADED, THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING ADDITIONAL UP GRADIENT SEDIMENT CONTROL PRACTICES OR REDUNDANT BMPS TO ELIMINATE THE OVERLOADING AND MUST AMEND THE SWPPP TO IDENTIFY THE ADDITIONAL PRACTICES.

SEDIMENT CONTROL PRACTICES MUST ALWAYS BE ESTABLISHED ON ALL DOWN GRADIENT PERIMETERS AND BE LOCATED UPGRADIENT OF ANY BUFFER ZONES. THE PERIMETER SEDIMENT CONTROL PRACTICES MUST BE IN PLACE BEFORE ANY UP GRADIENT LAND DISTURBING ACTIVITIES BEGIN. THESE PRACTICES MUST REMAIN IN PLACE UNTIL FINAL STABILIZATION IS ACHIEVED (SEE SECTION 8 OF THIS SWPPP).

THE TIMING OF THE INSTALLATION OF SEDIMENT CONTROL PRACTICES MAY BE ADJUSTED TO ACCOMMODATE SHORT-TERM ACTIVITIES SUCH AS CLEARING OR GRUBBING, OR PASSAGE OF VEHICLES. ANY SHORT TERM ACTIVITY MUST BE COMPLETED AS QUICKLY AS POSSIBLE AND THE SEDIMENT CONTROL PRACTICES MUST BE RE-INSTALLED IMMEDIATELY AFTER THE ACTIVITY IS COMPLETED. SEDIMENT CONTROL PRACTICES MUST BE INSTALLED BEFORE THE NEXT RAIN EVENT EVEN IF THE ACTIVITY IS NOT COMPLETE.

2.1 MINIMIZE DISTURBED AREA AND PROTECT NATURAL FEATURES AND SOIL

CONSTRUCTION IS TO BE PHASED IN ACCORDANCE WITH THE PHASING PLAN ON SHEET C5.03 SUCH THAT EROSION AND SEDIMENT LOSS TO DOWNSTREAM RECEIVING WATERS IS MINIMIZED.

2.2 PRESERVE 50 FOOT NATURAL BUFFER

THE CONTRACTOR MUST PRESERVE A 50 FOOT NATURAL BUFFER WHEN A SURFACE WATER IS LOCATED WITHIN 50 FEET OF THE PROJECTS EARTH DISTURBANCES AND STORMWATER FLOWS TO THE SURFACE WATER. THE CONTRACTOR IS NOT REQUIRED TO ENHANCE THE QUALITY OF THE VEGETATION THAT ALREADY EXISTS IN THE BUFFER OR PROVIDE VEGETATION IF NONE EXISTS.

2.3 CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT

MEASURES SHOULD BE TAKEN TO ENSURE THAT "CLEAN" RUNOFF FROM OFF SITE IS DIVERTED AROUND DISTURBED AREAS ON SITE. CARE SHOULD BE TAKEN THAT RE-ROUTING OFF SITE RUNOFF DOES NOT RESULT IN FLOODING OR OTHER ISSUES ON ADJACENT PROPERTIES.

OFFSITE RUNON FROM ADJACENT PROPERTIES IS HIGHLY UNLIKELY, BUT WILL BE TREATED USING SILT FENCE AND INLET PROTECTION.

BMP DESCRIPTION: TEMPORARY DIVERSION DITCH

INSTALLATION SCHEDULE: INSTALL TEMPORARY DIVERSION DITCHES AS SHOWN ON THE SWPPP PLAN SHEETS, AND AS NEEDED THROUGHOUT CONSTRUCTION, PRIOR TO UP GRADIENT GROUND DISTURBING ACTIVITIES

MAINTENANCE AND INSPECTION REQUIREMENTS: THE WETTED PERIMETER OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH MUST BE STABILIZED WITHIN 200 LINEAL FEET FROM THE PROPERTY EDGE OR FROM THE POINT OF DISCHARGE INTO ANY SURFACE WATER. THIS STABILIZATION MUST BE COMPLETED WITHIN 24 HOURS OF CONNECTING TO A SURFACE WATER. THE REMAINDER OF THE DITCH MUST BE STABILIZED WITHIN 7 DAYS OF CONNECTING TO A SURFACE WATER AND AFTER CONSTRUCTION HAS CEASED.

TEMPORARY OR PERMANENT DITCHES THAT ARE BEING USED AS A SEDIMENT CONTAINMENT SYSTEM DO NOT NEED TO BE STABILIZED, BUT MUST BE STABILIZED WITHIN 24 HOURS AFTER NO LONGER BEING USED AS A SEDIMENT CONTAINMENT SYSTEM.

DITCHES MUST BE INSPECTED EVERY 7 DAYS, AND WITHIN 24 HOURS AFTER A 0.5" 24-HOUR RAIN EVENT. ANY SEDIMENT DEPOSITED IN DIVERSION DITCHES MUST BE REMOVED AND ANY EXPOSED SOILS STABILIZED WITHIN 7 DAYS OF DISCOVERY UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL ACCESS CONSTRAINTS. IF PRECLUDED, NOTE REASON FOR DELAY ON MAINTENANCE LOG.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

2.4 STABILIZE SOILS

1. **TEMPORARY SEEDING** - DISTURBED AREAS THAT ARE NOT YET AT FINAL GRADE BUT THAT WILL NOT BE ACTIVELY WORKED FOR 7 DAYS OR MORE MUST BE TEMPORARILY STABILIZED. TEMPORARY STABILIZATION MUST BE INITIATED IMMEDIATELY WHERE WORK HAS TEMPORARILY CEASED AND MUST BE COMPLETED NO LATER THAN 7 CALENDAR DAYS AFTER WORK IN THAT PORTION OF THE SITE HAS TEMPORARILY CEASED. TEMPORARY SEEDING SHALL BE IN ACCORDANCE WITH MN/DOT SEED MIXTURE NUMBER 21-111 OR 21-112 DEPENDING ON THE SEASON OF PLANTING (SEE MN/DOT SPECIFICATION SECTION 2575.3) SEEDING METHOD AND APPLICATION RATE SHALL CONFORM TO MN/DOT SPECIFICATION SECTION 2575.3. TEMPORARY MULCH SHALL BE APPLIED IN ACCORDANCE WITH MN/DOT SPECIFICATION SECTION 2575.3C. ALTERNATIVELY, HYDRAULIC SOIL STABILIZER IN ACCORDANCE WITH MN/DOT SPECIFICATION SECTION 2575.3E MAY BE USED IN PLACE OF TEMPORARY MULCH.
2. **PERMANENT STABILIZATION** - ALL AREAS AT FINAL GRADE MUST BE STABILIZED WITHIN 7 DAYS AFTER COMPLETION OF THE MAJOR CONSTRUCTION ACTIVITY. PERMANENT STABILIZATION MUST BE INITIATED IMMEDIATELY WERE WORK HAS PERMANENTLY CEASED AND MUST BE COMPLETED NO LATER THAN 7 CALENDAR DAYS AFTER CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS PERMANENTLY CEASED. SEEDED AREAS SHALL BE PROTECTED WITH MULCH. PERMANENT MULCH SHALL CONFORM TO MN/DOT SPECIFICATION 3882, TYPE 3 AT 2 TONS/ACRE AND SHALL BE DISK ANCHORED. HYDRAULIC SOIL STABILIZER MAY BE USED IN PLACE OF MULCH IF APPROVED BY CIVIL ENGINEER. IF HYDRAULIC SOIL STABILIZER IS USED, IT SHALL BE MN/DOT TYPE 6. SEE LANDSCAPE PLANS FOR FINAL STABILIZATION.

2.5 PROTECT SLOPES

STEEP SLOPE AREAS - THE CONTRACTOR MUST MINIMIZE THE NEED FOR DISTURBANCE OF PORTIONS OF THE PROJECT THAT HAVE STEEP SLOPES (3:1 OR STEEPER). FOR THOSE SLOPED AREAS WHICH MUST BE DISTURBED, THE CONTRACTOR MUST USE TECHNIQUES SUCH AS PHASING AND STABILIZATION PRACTICES DESIGNED FOR STEEP SLOPES, SUCH AS DRAINING AND TERRACING. SLOPES STEEPER THAN 3:1 MUST BE PROTECTED BY EROSION CONTROL BLANKETS.

BMP DESCRIPTION: EROSION CONTROL BLANKET

INSTALLATION SCHEDULE: INSTALL EROSION CONTROL BLANKETS AS SHOWN ON THE SWPPP PLAN SHEETS, AND AS NEEDED THROUGHOUT CONSTRUCTION, WITHIN THE TIMEFRAME ALLOWED FOR STABILIZATION AFTER WORK HAS CEASED IN AN AREA, DEPENDING ON THE LOCATION (I.E. 24 HOURS, 7 DAYS, 14 DAYS)

MAINTENANCE AND INSPECTION REQUIREMENTS: TO FUNCTION PROPERLY, EROSION CONTROL BLANKETS MUST BE IN CONTACT WITH THE SOIL BENEATH THE BLANKET. BLANKETS MUST BE SECURED PER THE CONSTRUCTION DETAIL PROVIDED WITH THE SWPPP PLAN SHEETS.

INSPECT BLANKETS EVERY 7 DAYS OR WITHIN 24 HOURS AFTER A 0.5" 24-HOUR RAIN EVENT. REPAIR, REPLACE, OR SUPPLEMENT NON-FUNCTIONAL BLANKETS WITHIN 3 DAYS OR BY THE NEXT RAIN EVENT, WHICHEVER COMES FIRST.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

2.6 PROTECT STORM DRAIN INLETS

ALL STORM DRAIN INLETS MUST BE PROTECTED BY APPROPRIATE MEANS DURING CONSTRUCTION UNTIL ALL SOURCES WITH POTENTIAL FOR DISCHARGING TO THE INLET HAVE BEEN STABILIZED. INLET PROTECTION MAY BE REMOVED FOR A PARTICULAR INLET IF A SPECIFIC SAFETY CONCERN (STREET FLOODING/FREEZING) HAS BEEN IDENTIFIED AND PERMITTEE(S) HAVE RECEIVED WRITTEN CORRESPONDENCE FROM THE JURISDICTIONAL AUTHORITY (E.G. CITY/COUNTY/TOWNSHIP/MNDOT/ETC.) VERIFYING THE NEED FOR REMOVAL. THE WRITTEN CORRESPONDENCE MUST BE DOCUMENTED IN THIS SWPPP.

BMP DESCRIPTION: SILT FENCE INLET PROTECTION

INSTALLATION SCHEDULE: INSTALL INLET PROTECTION IN EXISTING STRUCTURES AS DIRECTED ON THE SWPPP PLAN SHEETS, AND AS NEEDED THROUGHOUT CONSTRUCTION, PRIOR TO BEGINNING GROUND DISTURBING ACTIVITIES UP GRADIENT OF THE INLET. INSTALL INLET PROTECTION ON NEW STRUCTURES AS SOON AS THE STRUCTURES ARE PUT INTO USE.

MAINTENANCE AND INSPECTION REQUIREMENTS: INSPECT SILT FENCE EVERY 7 DAYS OR WITHIN 24 HOURS AFTER A 0.5" 24-HOUR RAIN EVENT. SEDIMENT ACCUMULATIONS SHOULD BE REMOVED WHEN SEDIMENT BUILD-UP REACHES 1/2 THE HEIGHT OF THE SILT FENCE. THIS MAINTENANCE MUST BE COMPLETED WITHIN 24 HOURS OF DISCOVERY.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

BMP DESCRIPTION: INLET PROTECTION (INLET INSERT DEVICE)

INSTALLATION SCHEDULE: INSTALL INLET PROTECTION IN EXISTING STRUCTURES AS DIRECTED ON THE SWPPP PLAN SHEETS, AND AS NEEDED THROUGHOUT CONSTRUCTION, PRIOR TO BEGINNING GROUND DISTURBING ACTIVITIES UP GRADIENT OF THE INLET. INSTALL INLET PROTECTION ON NEW STRUCTURES AS SOON AS THE STRUCTURES ARE PUT INTO USE.

MAINTENANCE AND INSPECTION REQUIREMENTS: INSPECT INLET PROTECTION EVERY 7 DAYS OR WITHIN 24 HOURS AFTER A 0.5" 24-HOUR RAIN EVENT. SEDIMENT ACCUMULATIONS SHOULD BE REMOVED WHEN SEDIMENT BUILD-UP REACHES 1/2 THE CAPACITY OF THE DEVICE, OR, IF MORE STRINGENT, IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. THIS MAINTENANCE MUST BE COMPLETED WITHIN 24 HOURS OF DISCOVERY.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

2.7 ESTABLISH PERIMETER CONTROLS AND SEDIMENT BARRIERS

ALL STRUCTURAL SEDIMENT CONTROLS INTENDED TO RECEIVE AND TREAT CONSTRUCTION RUNOFF MUST BE IN PLACE BEFORE ANY UP GRADIENT LAND ALTERATION CAN BEGIN AND MUST STAY IN OPERATION UNTIL FINAL STABILIZATION OF THE SITE HAS BEEN ACHIEVED.

TEMPORARY SOIL STOCKPILES MUST HAVE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS, AND CANNOT BE PLACED IN ANY NATURAL BUFFERS OR SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS, OR CONDUITS AND DITCHES UNLESS THERE IS A BYPASS IN PLACE FOR THE STORMWATER.

BMP DESCRIPTION: SILT FENCE

INSTALLATION SCHEDULE: INSTALL SILT FENCE AS DIRECTED ON THE SWPPP PLAN SHEETS, AND AS NEEDED THROUGHOUT CONSTRUCTION, PRIOR TO COMMENCING UP GRADIENT LAND DISTURBING ACTIVITIES.

MAINTENANCE AND INSPECTION REQUIREMENTS: INSPECT SILT FENCE EVERY 7 DAYS OR WITHIN 24 HOURS AFTER A 0.5" 24-HOUR RAIN EVENT. SEDIMENT ACCUMULATIONS SHOULD BE REMOVED WHEN SEDIMENT BUILD-UP REACHES 1/2 THE HEIGHT OF THE SILT FENCE. THIS MAINTENANCE MUST BE COMPLETED WITHIN 24 HOURS OF DISCOVERY.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

BMP DESCRIPTION: BIOLOGS

INSTALLATION SCHEDULE: INSTALL BIOLOGS AS DIRECTED ON THE SWPPP PLAN SHEETS, AND AS NEEDED THROUGHOUT CONSTRUCTION, PRIOR TO COMMENCING UP GRADIENT LAND DISTURBING ACTIVITIES.

MAINTENANCE AND INSPECTION REQUIREMENTS: INSPECT BIOLOGS EVERY 7 DAYS OR WITHIN 24 HOURS AFTER A 0.5" 24-HOUR RAIN EVENT. SEDIMENT ACCUMULATIONS SHOULD BE REMOVED WHEN SEDIMENT BUILD-UP REACHES 1/2 THE HEIGHT OF THE BIOLOG. THIS MAINTENANCE MUST BE COMPLETED WITHIN 24 HOURS OF DISCOVERY.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

2.8 RETAIN SEDIMENT ON-SITE

ANY OFF-SITE ACCUMULATIONS OF SEDIMENT MUST BE REMOVED IN A MANNER AND AT A FREQUENCY SUFFICIENT TO MINIMIZE OFF-SITE IMPACT (E.G. FUGITIVE SEDIMENT IN STREETS COULD BE WASHED INTO STORM SEWERS BY THE NEXT RAIN AND/OR POSE A SAFETY HAZARD TO USERS OF PUBLIC STREETS.

TEMPORARY SEDIMENTATION BASINS AND SEDIMENT TRAPS ARE TO BE UTILIZED DURING CONSTRUCTION TO CAPTURE AND TREAT SEDIMENT LADEN RUN OFF. THE TEMPORARY SEDIMENTATION BASINS HAVE BEEN DESIGNED TO RETAIN THE RUNOFF FROM A 2 YEAR, 24 HOUR STORM EVENT, EXCEPT THAT IN NO CASE SHALL THE BASIN PROVIDE LESS THAN 1,800 CUBIC FEET OF LIVE STORAGE] OR [PROVIDE 3,600 CUBIC FEET OF STORAGE BELOW THE OUTLET PIPE PER ACRE DRAINED TO THE BASIN. THE OUTLET STRUCTURE MUST BE DESIGNED TO WITHDRAW WATER FROM THE SURFACE IN ACCORDANCE WITH SECTION 14.5 AND 14.6 OF THE GENERAL PERMIT. PERMITTEES MUST PROVIDE ENERGY DISSIPATION FOR THE BASIN OUTLET WITHIN 24 HOURS AFTER A CONNECTION TO A SURFACE WATER (SECTION 14.7 OF THE GENERAL PERMIT)

BMP DESCRIPTION: TEMPORARY SEDIMENTATION BASIN

INSTALLATION SCHEDULE: INSTALL TEMPORARY SEDIMENTATION BASIN PRIOR TO BEGINNING UPSLOPE LAND DISTURBING ACTIVITIES. IF THIS IS NOT POSSIBLE DUE TO EXISTING TOPOGRAPHY, LIMIT DISTURBANCE TO ONLY THOSE AREAS NECESSARY TO INSTALL TEMPORARY SEDIMENTATION BASIN.

MAINTENANCE AND INSPECTION REQUIREMENTS: INSPECT TEMPORARY SEDIMENTATION BASINS EVERY 7 DAYS OR WITHIN 24 HOURS AFTER A 0.5" 24-HOUR RAIN EVENT. TEMPORARY AND PERMANENT SEDIMENTATION BASINS MUST BE DRAINED AND THE SEDIMENT REMOVED WHEN THE VOLUME OF SEDIMENT COLLECTED IN THE BASIN REACHES ½ THE STORAGE VOLUME. THIS MAINTENANCE MUST BE COMPLETED WITHIN 72 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS. IF CONDITIONS DO NOT ALLOW MAINTENANCE TO BE PERFORMED WITHIN 72 HOURS, DOCUMENT THE CAUSE OF DELAY ON THE MAINTENANCE FORM. REFER TO SECTION 3.1 OF THIS SWPPP FOR BASIN DRAINING GUIDELINES.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

2.9 ESTABLISH VEHICLE TRACKING PADS

VEHICLE TRACKING PADS HAVE BEEN DESIGNED TO PREVENT SEDIMENT TRACK OFF. IF THERE IS EVIDENCE OF SEDIMENT TRACKING FROM VEHICLES IN PAVED AREAS, THE SEDIMENT MUST BE REMOVED BY STREET SWEEPING OR OTHER METHOD AS SOON AS FEASIBLY POSSIBLE, BUT NO LONGER THAN 24 HOURS AFTER DISCOVERY. (SECTION 9.11 AND 9.12 OF THE GENERAL PERMIT)

BMP DESCRIPTION: VEHICLE TRACKING PAD

INSTALLATION SCHEDULE: INSTALL VEHICLE TRACKING PAD AS SHOWN ON THE SWPPP PLAN SHEETS AS SOON AS POSSIBLE AT THE BEGINNING OF CONSTRUCTION ACTIVITIES. INSTALL ADDITIONAL VEHICLE TRACKING PADS AS NEEDED THROUGHOUT CONSTRUCTION.

MAINTENANCE AND INSPECTION REQUIREMENTS: INSPECT VEHICLE TRACKING PADS EVERY 7 DAYS OR WITHIN 24 HOURS AFTER A 0.5" 24-HOUR RAIN EVENT. VEHICLE TRACKING PADS MUST BE PERIODICALLY 'REFRESHED' TO ENSURE PROPER FUNCTIONALITY. MAINTENANCE SHOULD BE PERFORMED WHEN THE EXIT APPEARS SMOOTH AND COMPACTED OR WHEN THE VEHICLE TRACKING PAD CEASES TO FUNCTION PROPERLY. VEHICLE TRACKING PAD LOCATIONS SHOULD BE INSPECTED FOR SIGNS OF OFF-SITE SEDIMENT TRACKING. TRACKED SEDIMENT MUST BE REMOVED FROM ALL PAVED SURFACES WITHIN 24 HOURS OF DISCOVERY. STREET SWEEPING MUST BE USED IF VEHICLE TRACKING PADS ARE NOT ADEQUATE TO PREVENT SEDIMENT FROM BEING TRACKED ONTO THE STREET.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

2.10 CONTROL STORMWATER DISCHARGE POINTS

1. PIPE OR OTHER TEMPORARY OR PERMANENT OUTLETS MUST BE STABILIZED WITH TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS AFTER CONNECTION TO A SURFACE WATER.
2. STABILIZE THE NORMAL WETTED PERIMETER OF A DRAINAGE DITCH OR SWALE WITHIN 200 FEET OF THE PROPERTY EDGE WITHIN 24 HOURS OF CONNECTION TO A SURFACE WATER. THE REMAINDER OF THE DITCH MUST BE STABILIZED WITHIN 7 CALENDAR DAYS OF CONNECTION.

BMP DESCRIPTION: RIPRAP

INSTALLATION SCHEDULE: INSTALL RIPRAP AS SHOWN ON SWPPP PLANS AND/OR GRADING PLANS. INSTALLATION MUST BE COMPLETED WITHIN 24 HOURS OF CONNECTING TO A SURFACE WATER.

MAINTENANCE AND INSPECTION REQUIREMENTS: INSPECT OUTLETS EVERY 7 DAYS OR WITHIN 24 HOURS AFTER A 0.5" 24-HOUR RAIN EVENT. REPAIR, REPLACE OR SUPPLEMENT NON-FUNCTIONING RIPRAP ENERGY DISSIPATION WITHIN 3 DAYS OR BY THE NEXT RAIN EVENT, WHICHEVER COMES FIRST. ANY OFF SITE ACCUMULATION OF SEDIMENT MUST BE REMOVED IN MANNER AND AT A FREQUENCY TO MINIMIZE OFF-SITE IMPACTS.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

2.11 CHEMICAL EROSION AND SEDIMENT CONTROL BMPS

POLYMERS, FLOCCULANTS, OR OTHER SEDIMENTATION TREATMENT CHEMICALS MUST BE APPLIED AFTER CONVENTIONAL EROSION AND SEDIMENT CONTROL DEVICES ARE UTILIZED. CHEMICALS MAY ONLY BE APPLIED WHERE TREATED STORMWATER IS DIRECTED TO A SEDIMENT CONTROL SYSTEM WHICH ALLOWS FOR FILTRATION OR SETTLEMENT OF THE FLOC PRIOR TO DISCHARGE. CONSIDERATION MUST BE GIVEN WHEN SELECTING CHEMICALS TO THE EXPECTED SOIL TYPES TO BE EXPOSED DURING CONSTRUCTION, AND TO THE EXPECTED TURBIDITY, PH AND FLOW RATE OF STORMWATER FLOWING INTO THE CHEMICAL TREATMENT SYSTEM OR AREA. IF CHEMICALS ARE PART OF THE EROSION CONTROL PLAN, THEY MUST BE USED IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICES, AND WITH DOSING SPECIFICATION AND SEDIMENT REMOVAL DESIGN SPECIFICATIONS PROVIDED BY THE MANUFACTURER OR PROVIDER/SUPPLIER OF THE APPLICABLE CHEMICALS.

SECTION 3: DEWATERING & BASIN DRAINING

3.1 DEWATERING AND BASIN DRAINING

ALLOWABLE NON-STORMWATER DISCHARGES, AS DEFINED BY THE GENERAL PERMIT, ARE LIMITED TO DEWATERING AND BASIN DRAINING. DEWATERING OR BASIN DRAINING THAT MAY HAVE TURBID OR SEDIMENT LADEN DISCHARGE WATER MUST BE DISCHARGED TO A TEMPORARY OR PERMANENT SEDIMENTATION BASIN ON THE PROJECT SITE WHENEVER POSSIBLE. IF THE WATER CANNOT BE DISCHARGED TO A SEDIMENTATION BASIN PRIOR TO ENTERING THE SURFACE WATER, IT MUST BE TREATED WITH THE APPROPRIATE BMPS, SUCH THAT THE DISCHARGE DOES NOT ADVERSELY AFFECT THE RECEIVING WATER OR DOWNSTREAM LANDOWNERS. THE CONTRACTOR MUST ENSURE THAT DISCHARGE POINTS ARE ADEQUATELY PROTECTED FROM EROSION AND SCOUR. THE DISCHARGE MUST BE DISPERSED OVER NATURAL ROCK RIPRAP, SAND BAGS, PLASTIC SHEETING OR OTHER ACCEPTED ENERGY DISSIPATION MEASURES. ADEQUATE SEDIMENTATION CONTROL MEASURES ARE REQUIRED FOR DISCHARGE WATER THAT CONTAINS SUSPENDED SOLIDS. ALL WATER FROM DEWATERING OR BASIN DRAINING MUST BE DISCHARGED IN A MANNER THAT DOES NOT CAUSE NUISANCE CONDITIONS, EROSION IN RECEIVING CHANNELS OR ON DOWNSLOPE PROPERTIES, OR INUNDATION IN WETLANDS CAUSING SIGNIFICANT ADVERSE IMPACT TO THE WETLAND. IF THE CONTRACTOR ELECTS TO UTILIZE FILTERS WITH BACKWASH WATER, THE CONTRACTOR MUST HAUL THE BACKWASH WATER AWAY FOR DISPOSAL, RETURN THE BACKWATER TO THE BEGINNING OF THE TREATMENT PROCESS, OR INCORPORATE THE BACKWASH WATER INTO THE SITE IN A MANNER THAT DOES NOT CAUSE EROSION. THE CONTRACTOR MUST REPLACE AND CLEAN THE FILTER MEDIA USED IN DEWATERING DEVICES WHEN REQUIRED TO RETAIN ADEQUATE FUNCTION. CONTRACTOR SHALL OBTAIN A WATER USE (APPROPRIATION) PERMIT FROM THE MINNESOTA DNR FOR DEWATERING ACTIVITIES THAT WILL WITHDRAW MORE THAN 10,000 GALLONS OF WATER PER DAY OR 1 MILLION GALLONS PER YEAR.

SECTION 4: GOOD HOUSEKEEPING BMPS

4.1 MATERIAL HANDLING AND WASTE MANAGEMENT

1. **SOLID WASTE DISPOSAL** - NO SOLID MATERIALS, INCLUDING CONSTRUCTION AND DEMOLITION MATERIALS, COLLECTED SEDIMENT, ASPHALT AND CONCRETE MILLINGS, SHALL BE ALLOWED TO BE CARRIED FROM THE SITE WITH STORM WATER. ALL SOLID WASTE, INCLUDING DISPOSABLE MATERIALS INCIDENTAL TO THE MAJOR CONSTRUCTION ACTIVITIES, MUST BE COLLECTED AND PLACED IN CONTAINERS. THE CONTAINERS WILL BE EMPTIED PERIODICALLY BY A CONTRACT TRASH DISPOSAL SERVICE AND HAULED AWAY FROM THE SITE. DISPOSAL OF SOLID WASTES MUST COMPLY WITH MPCA REQUIREMENTS.
2. **GROUNDWATER PROTECTION** - SUBSTANCES THAT HAVE THE POTENTIAL FOR POLLUTING SURFACE AND/OR GROUNDWATER MUST BE CONTROLLED BY WHATEVER MEANS NECESSARY IN ORDER TO ENSURE THAT THEY DO NOT DISCHARGE FROM THE SITE. AS AN EXAMPLE, SPECIAL CARE MUST BE EXERCISED DURING EQUIPMENT FUELING AND SERVICING OPERATIONS. IF A SPILL OCCURS, IT MUST BE CONTAINED AND DISPOSED OF SO THAT IT WILL NOT FLOW FROM THE SITE OR ENTER GROUNDWATER, EVEN IF THIS REQUIRES REMOVAL, TREATMENT, AND DISPOSAL OF SOIL. IN THIS REGARD, POTENTIALLY POLLUTING SUBSTANCES SHOULD BE HANDLED IN A MANNER CONSISTENT WITH THE IMPACT THEY REPRESENT.
3. **SANITARY FACILITIES** - ALL PERSONNEL INVOLVED WITH CONSTRUCTION ACTIVITIES MUST COMPLY WITH STATE AND LOCAL SANITARY SEPTIC SYSTEM REGULATIONS. PORTABLE TOILETS MUST BE POSITIONED SO THAT THEY ARE SECURE AND WILL NOT BE TIPPED OR KNOCKED OVER. TEMPORARY SANITARY FACILITIES WILL BE PROVIDED AT THE SITE THROUGHOUT THE CONSTRUCTION PHASE WHERE REQUIRED BY STATE OR LOCAL REGULATIONS. THEY MUST BE UTILIZED BY ALL CONSTRUCTION PERSONNEL AND BE SERVICED BY A COMMERCIAL OPERATOR.

4.2 ESTABLISH PROPER STORAGE, HANDLING & DISPOSAL PRACTICES

HAZARDOUS MATERIALS & TOXIC WASTE (INCLUDING OIL, DIESEL FUEL, GASOLINE, HYDRAULIC FLUIDS, PAINT SOLVENTS, PETROLEUM-BASED PRODUCTS, WOOD PRESERVATIVES, ADDITIVES, CURING COMPOUNDS, AND ACIDS) MUST BE STORED IN WATERPROOF CONTAINERS WITH SECONDARY CONTAINMENT, AND THEIR LOCATION(S) MUST BE NOTED ON THE SWPPP MAP. EXCEPT DURING APPLICATION, THE CONTENTS MUST BE KEPT IN TRUCKS OR WITHIN STORAGE FACILITIES IN ACCORDANCE WITH SECTION 12.4 OF THE GENERAL PERMIT. STORAGE AND DISPOSAL OF HAZARDOUS WASTE MUST BE IN COMPLIANCE WITH MCPA REGULATIONS. RUNOFF CONTAINING SUCH MATERIAL MUST BE COLLECTED, REMOVED FROM THE SITE, TREATED, AND DISPOSED AT AN APPROVED SOLID WASTE OR CHEMICAL DISPOSAL FACILITY.

BUILDING PRODUCTS THAT HAVE THE POTENTIAL TO LEACH POLLUTANTS AND PESTICIDES, HERBICIDES, INSECTICIDES, FERTILIZERS, TREATMENT CHEMICALS AND LANDSCAPE MATERIALS MUST BE UNDER COVER BY PLASTIC SHEETING OR TEMPORARY ROOFS TO PREVENT DISCHARGE, OR PROTECTED BY SIMILAR EFFECTIVE MEANS TO PREVENT CONTACT WITH STORMWATER.

4.3 DESIGNATE WASHOUT AREAS

THE CONTRACTOR SHALL DESIGNATE AREAS FOR CONCRETE AND OTHER (STUCCO, PAINT, FOR RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS RELATED TO THE CONSTRUCTION ACTIVITY) WASHOUTS, AND NOTE THE LOCATIONS ON THE SITE MAP. ALL LIQUID AND SOLID WASTES GENERATED BY WASHOUT OPERATIONS MUST BE CONTAINED IN A LEAK PROOF CONTAINMENT FACILITY OR IMPERMEABLE LAYER. A COMPACTED CLAY LINER IS NOT AN ACCEPTABLE IMPERMEABLE LAYER. THE LIQUID AND SOLID WASTES MUST NOT CONTACT THE GROUND, AND THERE MUST NOT BE RUNOFF FROM THE WASHOUT OPERATIONS OR AREAS. LIQUID AND SOLID WASTE MUST BE DISPOSED OF PROPERLY AND IN COMPLIANCE WITH MPCA REGULATIONS. A SIGN MUST BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY TO INFORM SITE WORKERS TO UTILIZE PROPER FACILITIES FOR DISPOSAL OF CONCRETE AND OTHER WASTES.

BMP DESCRIPTION: CONCRETE WASHOUT

INSTALLATION SCHEDULE: PRIOR TO CONCRETE WORK.

MAINTENANCE AND INSPECTION REQUIREMENTS: INSPECT CONCRETE WASHOUTS FOR EVIDENCE OF DISCHARGE EVERY 7 DAYS OR WITHIN 24 HOURS AFTER A 0.5" 24-HOUR RAIN EVENT. REPAIR, REPLACE OR SUPPLEMENT NON-FUNCTIONING CONCRETE WASHOUTS WITHIN 3 DAYS OR BY THE NEXT USE, WHICHEVER COMES FIRST.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

4.4 ESTABLISH PROPER EQUIPMENT/VEHICLE FUELING AND MAINTENANCE PRACTICES

THE CONTRACTOR SHALL DESIGNATE AREAS FOR EQUIPMENT FUELING, CLEANING, MAINTENANCE AND REPAIR, AND NOTE THE LOCATION(S) ON THE SWPPP SITE MAPS. RUNOFF MUST BE CONTAINED WITHIN THE DESIGNATED AREAS (I.E. THROUGH USE OF A TEMPORARY BERM). THE AREAS MUST NOT BE LOCATED IN ANY SURFACE WATER. SPECIAL CARE MUST BE EXERCISED DURING EQUIPMENT FUELING AND SERVICING OPERATIONS. IF A SPILL OCCURS, IT MUST BE CONTAINED AND DISPOSED OF SO THAT IT WILL NOT FLOW FROM THE SITE OR ENTER GROUNDWATER, EVEN IF THIS REQUIRES REMOVAL, TREATMENT, AND DISPOSAL OF SOIL. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT ADEQUATE SUPPLIES ARE AVAILABLE AT ALL TIMES TO CLEAN UP DISCHARGED MATERIALS AND THAT AN APPROPRIATE DISPOSAL METHOD IS AVAILABLE FOR RECOVERED SPILLED MATERIALS. NO ENGINE DEGREASING IS ALLOWED ON SITE.

4.5 CONTROL EQUIPMENT/VEHICLE WASHING

THE CONTRACTOR SHALL DESIGNATE LOCATION(S) FOR VEHICLE WASHING, AND NOTE THE LOCATION(S) ON THE SWPPP SITE MAP. RUNOFF FROM THE WASHING AREA MUST BE CONTAINED IN A SEDIMENT BASIN OR OTHER SIMILARLY EFFECTIVE CONTROLS AND WASTE FROM THE WASHING ACTIVITY MUST BE PROPERLY DISPOSED OF. THE CONTRACTOR MUST PROPERLY USE AND STORE SOAPS, DETERGENTS AND SOLVENTS. ENGINE DEGREASING OF TRUCKS AND OTHER CONSTRUCTION VEHICLES IS ALSO PROHIBITED.

4.6 SPILL PREVENTION AND CONTROL PLAN

1. **ACCIDENTAL SPILL** - DISCHARGE OF OIL OR OTHER HAZARDOUS SUBSTANCES IS SUBJECT TO REPORTING AND CLEAN UP REQUIREMENTS. IN CASE OF AN ACCIDENTAL SPILL, THE MINNESOTA POLLUTION CONTROL AGENCY IS TO BE NOTIFIED AT THEIR **24-HOUR TELEPHONE NUMBER: 651-649-5451**. REFER TO SECTION 12 OF THE GENERAL PERMIT.
2. **GROUNDWATER PROTECTION** - SUBSTANCES THAT HAVE THE POTENTIAL FOR POLLUTING SURFACE AND/OR GROUNDWATER MUST BE CONTROLLED BY WHATEVER MEANS NECESSARY IN ORDER TO ENSURE THAT THEY DO NOT DISCHARGE FROM THE SITE. AS AN EXAMPLE, SPECIAL CARE MUST BE EXERCISED DURING EQUIPMENT FUELING AND SERVICING OPERATIONS. IF A SPILL OCCURS, IT MUST BE CONTAINED AND DISPOSED OF SO THAT IT WILL NOT FLOW FROM THE SITE OR ENTER GROUNDWATER, EVEN IF THIS REQUIRES REMOVAL, TREATMENT, AND DISPOSAL OF SOIL. IN THIS REGARD, POTENTIALLY POLLUTING SUBSTANCES SHOULD BE HANDLED IN A MANNER CONSISTENT WITH THE IMPACT THEY REPRESENT.

SECTION 5: POST-CONSTRUCTION BMPS

THE PROPOSED MARLOWE APARTMENTS WILL MEET THE REQUIREDMENTS OF THE CITY OF MINNETONKA, NINE MILE CREEK WATERSHED, AND MPCA THROUGH THE CONSTRUCTION OF THE UNDERGROUND STORAGE SYSTEM AND FILTRATION SYSTEM. THESE BMP'S WILL PROVIDE THE REQUIRED RATE CONTROL, WATER QUALITY AND VOLUME REDUCTION IMPROVEMENTS PRIOR TO DISCHARGING STORMWATER RUNOFF FROM THE SITE TO THE EXISTING STORM SEWER SYSTEM.

BMP DESCRIPTION: UNDERGROUND INFILTRATION BASIN

INSTALLATION SCHEDULE: DURING GRADING ACTIVITIES

MAINTENANCE AND INSPECTION REQUIREMENTS: PRACTICE SHOULD BE INSPECTED SEMI-ANNUALLY TO ENSURE THE DRAWDOWN TIME OF 48-HOURS IS MAINTAINED. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR INSPECTION AND MAINTENANCE.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

BMP DESCRIPTION: SUMP MANHOLE

INSTALLATION SCHEDULE: ALONG WITH STORM SEWER NETWORK

MAINTENANCE AND INSPECTION REQUIREMENTS: PRACTICE SHOULD BE INSPECTED (AND CLEANED OUT IF DEEMED NECESSARY) SEMI-ANNUALLY TO ENSURE THAT SEDIMENT IS NOT BEGINNING TO WASH OUT DURING STORM EVENTS. DEVICES SHOULD BE CLEANED OUT AT LEAST ONCE PER YEAR OR AS NEEDED.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

BMP DESCRIPTION: INFILTRATION BASIN

INSTALLATION SCHEDULE: AFTER SITE IS STABILIZED

MAINTENANCE AND INSPECTION REQUIREMENTS: NO HEAVY EQUIPMENT TO BE PLACED IN THESE AREAS, MINIMIZING THE COMPACTION. PERIODIC CHECK OF FLOW CONDITIONS TO TRACK DRAWDOWN OF THE WATER IN THE BASIN.

THE DEVICE WILL BE INSPECTED AND CLEARED OF SEDIMENT BUILD UP TWICE PER YEAR AND AS NEEDED. PLANTED VEGETATION ALSO NEEDS TO BE INSPECTED PERIODICALLY AND REPLACED AS NECESSARY. INSPECTION WILL ALSO INCLUDE CHECKING FOR ANY PROBLEMATIC EROSION TAKING PLACE ON THE SLOPES OF THE BASIN. EROSION ISSUES WILL BE REPAIRED AS THEY ARE FOUND.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

BMP DESCRIPTION: FILTRATION BASIN

INSTALLATION SCHEDULE: THE FILTRATION BASIN WILL BE INSTALLED DURING THE INITIAL GRADING FOR THE SITE. THE STORM SEWER SYSTEM WILL THEN BE CONNECTED INTO THE FILTRATION BASIN.

MAINTENANCE AND INSPECTION REQUIREMENTS: ONCE CONSTRUCTION IS COMPLETE, THE BASIN WILL BE INSPECTED AND CLEARED OF ANY SEDIMENT BUILD-UP TWICE PER YEAR AND AS NEEDED. INSPECTION WILL ALSO INCLUDE CHECKING FOR EROSION ISSUES ALONG THE SLOPES OF THE BASIN AND CLEANING ANY DEBRIS FROM THE INLET PIPES.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

BMP DESCRIPTION: UNDERGROUND STORAGE

INSTALLATION SCHEDULE: THE UNDERGROUND STORAGE SYSTEM WILL BE INSTALLED DURING THE INITIAL GRADING FOR THE SITE. THE STORM SEWER SYSTEM WILL THEN BE CONNECTED

MAINTENANCE AND INSPECTION REQUIREMENTS: PRACTICE SHOULD BE INSPECTED (AND CLEANED OUT IF DEEMED NECESSARY) SEMI-ANNUALLY TO ENSURE THAT SEDIMENT BUILDUP DOES NOT OCCUR.

RESPONSIBLE STAFF (CONTRACTOR TO COMPLETE):

SECTION 6: INSPECTIONS

6.1 INSPECTIONS

1. **INSPECTION FREQUENCY AND RESPONSIBILITY**

   [OPTION 1 - CONTRACTOR RESPONSIBLE FOR INSPECTIONS]

   BETWEEN THE TIME THIS SWPPP IS IMPLEMENTED AND FINAL SITE STABILIZATION IS ACHIEVED AND THE NOTICE OF TERMINATION FILED WITH THE MPCA, ALL DISTURBED AREAS AND POLLUTANT CONTROLS MUST BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS FOLLOWING A RAINFALL OF 0.5 INCHES OR GREATER. THE PURPOSE OF SITE INSPECTIONS IS TO ASSESS PERFORMANCE OF POLLUTANT CONTROLS. THE INSPECTIONS WILL BE CONDUCTED BY THE CONTRACTOR'S DESIGNATED REPRESENTATIVE. BASED ON THESE INSPECTIONS, THE CONTRACTOR WILL DECIDE WHETHER IT IS NECESSARY TO MODIFY THIS SWPPP, ADD OR RELOCATE STRUCTURAL BMPS, OR WHATEVER ELSE MAY BE NEEDED IN ORDER TO PREVENT POLLUTANTS FROM LEAVING THE SITE VIA STORM WATER RUNOFF. IF THE SWPPP REQUIRES MODIFICATION, THOSE CHANGES TO THE SWPPP MUST BE DOCUMENTED. THE CONTRACTOR HAS THE DUTY TO CAUSE POLLUTANT CONTROL MEASURES TO BE REPAIRED, MODIFIED, MAINTAINED, SUPPLEMENTED, OR WHATEVER ELSE IS NECESSARY IN ORDER TO ACHIEVE EFFECTIVE POLLUTANT CONTROL.

2. **INSPECTION PROCEDURES** - EXAMPLES OF PARTICULAR ITEMS TO EVALUATE DURING SITE INSPECTIONS ARE LISTED BELOW. THIS LIST IS NOT INTENDED TO BE COMPREHENSIVE. DURING EACH INSPECTION THE INSPECTOR MUST EVALUATE OVERALL POLLUTANT CONTROL SYSTEM PERFORMANCE AS WELL AS PARTICULAR DETAILS OF INDIVIDUAL SYSTEM COMPONENTS. ADDITIONAL FACTORS SHOULD BE CONSIDERED AS APPROPRIATE TO THE CIRCUMSTANCES.

   A. PRE-INSPECTION PREPARATION:

1. INSPECTORS SHOULD BE FAMILIAR WITH THE SWPPP, INCLUDING THE EROSION AND SEDIMENT CONTROL PLANS, PAST INSPECTION REPORTS, AND MAINTENANCE LOGS.
   2. PAY SPECIAL ATTENTION TO STORM WATER DISCHARGE TO SPECIAL/IMPAIRED WATERS AND WETLANDS; DISCHARGES TO SPECIAL/IMPAIRED WATERS AND WETLANDS HAVE ADDITIONAL REQUIREMENTS THAT ARE DESCRIBED IN SECTION 23 OF THE GENERAL PERMIT, AND ADDRESSED IN THIS SWPPP.

B. SITE ENTRY:

1. BEFORE ENTERING THE SITE, OBSERVE THE SURROUNDINGS AND VARIOUS STAGES OF CONSTRUCTION. NOTE AREAS FOR IN-DEPTH REVIEW AND ANY POTENTIAL ISSUES.
2. THIS IS A GOOD TIME TO VIEW CONSTRUCTION SITE VEHICLE TRACKING PAD LOCATIONS AND PERIMETER CONTROLS.

C. RECORDS REVIEW:

1. VERIFY THAT A COPY OF THE SWPPP AND APPLICATION FOR THE NPDES STORM WATER PERMIT, AND COPIES OF ALL CONSTRUCTION SITE INSPECTIONS ARE ON SITE.
2. VERIFY THAT THE TIMING FOR INSTALLATION OF ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS, AS WELL AS CONSTRUCTION PHASING, IS GENERALLY BEING FOLLOWED.
3. SWPPPS ARE INTENDED TO BE DYNAMIC DOCUMENTS, VERIFY THAT AMENDMENTS OR CHANGES TO THE SWPPP ARE BEING MADE WHEN:
   A. A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE, WEATHER OR SEASONAL CONDITIONS HAVE A SIGNIFICANT EFFECT ON STORM WATER DISCHARGES
   B. INSPECTIONS INDICATE THE SWPPP IS NOT EFFECTIVE
   C. THE SWPPP IS NOT CONSISTENT WITH THE TERMS OF THE GENERAL PERMIT
   D. SITE INSPECTION (NOTE TIMELINES FOR MAINTENANCE INCLUDED IN INSPECTION/MAINTENANCE REPORT)

1. INSPECT DISCHARGE POINTS DOWNSTREAM AND OFF-SITE AREAS FOR SIGNS OF IMPACT.
2. INSPECT PERIMETER CONTROLS:
   A. HAVE PERIMETER CONTROLS BEEN PROPERLY INSTALLED AND MAINTAINED?
   B. ARE VEHICLE TRACKING PADS FUNCTIONING PROPERLY? ARE ADDITIONAL ENTRANCES/EXITS BEING USED THAT ARE NOT STABILIZED?
   C. ALL STORM DRAINS MUST BE PROTECTED AND TEMPORARY STOCKPILES MUST HAVE SEDIMENT CONTROLS INSTALLED.
   D. ALL EXPOSED SOILS MUST HAVE TEMPORARY OR PERMANENT EROSION PROTECTION WITHIN 7 DAYS OF INACTIVITY.
3. COMPARE BMPS IN THE SWPPP WITH CONSTRUCTION SITE CONDITIONS: ARE REQUIRED BMPS IN PLACE; ARE ADDITIONAL BMPS NEEDED; ARE BMPS IN PLACE PROPERLY INSTALLED AND MAINTAINED?
4. INSPECT AREAS THAT HAVE BEEN DISTURBED AND ARE NOT CURRENTLY BEING WORKED. ANY UNSEEDED OR UNMULCHED BARE AREAS THAT HAVE BEEN IDLE FOR 7 DAYS SHOULD BE NOTED.
5. INSPECT AREAS WITH FINAL STABILIZATION. IN ORDER FOR FINAL STABILIZATION TO BE ACHIEVED, AREAS MUST HAVE A UNIFORM COVER WITH A DENSITY OF 70% OVER ENTIRE AREA. TEMPORARY BMPS SHOULD BE REMOVED AND AREAS DISTURBED BY REMOVAL SEEDED AS NECESSARY.

E.EXIT INTERVIEW:

1. DEBRIEF THE PERSON IN CHARGE. EXPLAIN THE IDENTIFIED DEFICIENCIES AND ANY AREAS OF CONCERN.

F. A COPY OF THE COMPLETED INSPECTION REPORT MUST BE KEPT WITH THE SWPPP ON SITE.

THE INSPECTION REPORT USED SHOULD INCLUDE, AT A MINIMUM, THE FOLLOWING:

- DATE & TIME OF INSPECTION
- NAME OF INSPECTOR(S)
- FINDINGS OF INSPECTIONS AND RECOMMENDATIONS FOR CORRECTIVE ACTIONS
- CORRECTIVE ACTIONS TAKEN, INCLUDING DATES, TIMES AND NAMES OF PARTY COMPLETING MAINTENANCE
- DATE & AMOUNT OF RAINFALL
- RECORD OF ALL POINTS OF DISCHARGE FROM THE PROPERTY AND DESCRIPTION OF DISCHARGE
- NOTE TO UPDATE THE SWPPP

6.2 DELEGATION OF AUTHORITY

DULY AUTHORIZED REPRESENTATIVE(S) OR POSITION(S):

COMPANY OR ORGANIZATION NAME:
NAME:
POSITION:
ADDRESS:
CITY, STATE, ZIP CODE:
TELEPHONE NUMBER:
FAX/EMAIL:

6.3 CORRECTIVE ACTION LOG

THE INSPECTION/MAINTENANCE FORM, AVAILABLE UPON REQUEST, INCORPORATES BOTH INSPECTION AND MAINTENANCE REPORTING INTO A SINGLE FORM. THIS FORM ALSO SPECIFIES THE TIME ALLOWED FOR CORRECTIONS TO BE PERFORMED. IF THE PARTY PERFORMING INSPECTIONS CHOOSES TO USE ANOTHER INSPECTION FORM, A SEPARATE CORRECTIVE ACTION LOG MUST BE PROVIDED.

SECTION 7: RECORD KEEPING AND TRAINING

7.1 RECORDKEEPING

RECORD RETENTION - THE OWNER MUST KEEP THE SWPPP INCLUDING ALL CHANGES MADE TO IT DURING CONSTRUCTION (SEE SECTION 7.2 OF THIS SWPPP), ALONG WITH THE FOLLOWING ADDITIONAL RECORDS ON FILE FOR THREE YEARS AFTER COMPLETION OF THE CONSTRUCTION PROJECT (FINAL STABILIZATION AND NOTICE OF TERMINATION):

1. ANY OTHER STORMWATER RELATED PERMITS REQUIRED FOR THE PROJECT
2. RECORDS OF ALL INSPECTIONS AND MAINTENANCE CONDUCTED DURING CONSTRUCTION
3. ALL PERMANENT OPERATION AND MAINTENANCE AGREEMENTS THAT HAVE BEEN IMPLEMENTED, INCLUDING ALL RIGHT OF WAY, CONTRACTS, COVENANTS AND OTHER BINDING REQUIREMENTS REGARDING PERPETUAL MAINTENANCE
4. ALL REQUIRED CALCULATIONS FOR DESIGN OF THE TEMPORARY AND PERMANENT STORM WATER MANAGEMENT SYSTEMS

7.2 AMENDMENTS

THE CONTRACTOR SHALL KEEP A RECORD LOG OF ALL MODIFICATIONS TO THE SWPPP. AN EXAMPLE OF A SWPPP UPDATE LOG FORM CAN BE PROVIDED UPON REQUEST.

MODIFICATIONS TO THE SWPPP - THIS SWPPP INTENDS TO CONTROL WATER-BORNE AND LIQUID POLLUTANT DISCHARGES BY SOME COMBINATION OF INTERCEPTION, FILTRATION, AND CONTAINMENT. THE GENERAL CONTRACTOR AND SUBCONTRACTORS IMPLEMENTING THIS SWPPP MUST REMAIN ALERT TO THE NEED TO PERIODICALLY REFINE AND UPDATE THE SWPPP IN ORDER TO ACCOMPLISH THE INTENDED GOALS. THIS SWPPP MUST BE AMENDED AS NECESSARY DURING THE COURSE OF CONSTRUCTION IN ORDER TO KEEP IT CURRENT WITH THE POLLUTANT CONTROL MEASURES UTILIZED AT THE SITE. AMENDING THE SWPPP DOES NOT MEAN THAT IT HAS TO BE REPRINTED. IT IS ACCEPTABLE TO ADD ADDENDA, SKETCHES, NEW SECTIONS, AND/OR REVISED DRAWINGS. THIS SWPPP MUST BE UPDATED AS NECESSARY TO INCLUDE ADDITIONAL REQUIREMENTS, SUCH AS ADDITIONAL OR MODIFIED BMPS, DESIGNED TO CORRECT PROBLEMS IDENTIFIED OR ADDRESS SITUATIONS WHENEVER:

1. THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE, WEATHER OR SEASONAL CONDITIONS THAT HAS A SIGNIFICANT EFFECT ON THE DISCHARGE OF POLLUTANTS TO SURFACE WATERS OR UNDERGROUND WATERS.
2. INSPECTIONS OR INVESTIGATIONS BY SITE OPERATORS, LOCAL, STATE OR FEDERAL OFFICIALS INDICATE THE SWPPP IS NOT EFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING THE DISCHARGE OF POLLUTANTS TO SURFACE WATERS OR UNDERGROUND WATERS OR THAT THE DISCHARGES ARE CAUSING WATER QUALITY STANDARD EXCEEDANCES.
3. THE SWPPP IS NOT ACHIEVING THE GENERAL OBJECTIVES OF CONTROLLING POLLUTANTS IN STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY, OR THE SWPPP IS NOT CONSISTENT WITH THE TERMS AND CONDITIONS OF THE GENERAL PERMIT.
4. THE MPCA HAS DETERMINED THAT THE PROJECT'S STORM WATER DISCHARGES MAY CAUSE OR CONTRIBUTE TO NON-ATTAINMENT OF ANY APPLICABLE WATER STANDARD, OR THAT THE SWPPP DOES NOT INCORPORATE REQUIREMENTS RELATED TO AN APPROVED TOTAL MAXIMUM DAILY LOAD (TMDL) IMPLEMENTATION PLAN. IN THIS CASE, THE SWPPP MUST BE UPDATED OR A SUPPLEMENTAL BMP ACTION PLAN DEVELOPED TO ADDRESS THE IDENTIFIED CONCERNS.

7.3 TRAINING

THE PERMITTEE(S) MUST FULFILL TRAINING REQUIREMENTS AND INCLUDE RECORDS OF TRAINING IN THE SWPPP. REFRESHER TRAINING MUST BE ATTENDED EVERY THREE YEARS STARTING THREE YEARS, FROM THE ISSUANCE OF THE 2018 GENERAL PERMIT (ISSUED 8/1/18). INDIVIDUALS REQUIRED TO BE TRAINED INCLUDE:

1. INDIVIDUALS PREPARING THE SWPPP
2. INDIVIDUALS OVERSEEING IMPLEMENTATION OF, REVISING, AND AMENDING THE SWPPP AND INDIVIDUALS PERFORMING INSPECTIONS. ONE OF THESE INDIVIDUALS MUST BE AVAILABLE FOR AN ON SITE INSPECTION WITHIN 72 HOURS UPON REQUEST BY THE MPCA.
3. INDIVIDUALS PERFORMING OR SUPERVISING THE INSTALLATION, MAINTENANCE AND REPAIR OF BMPS. AT LEAST ONE INDIVIDUAL ON A PROJECT MUST BE TRAINED IN THESE JOB DUTIES.

THE CONTENT AND EXTENT OF TRAINING MUST BE COMMENSURATE WITH THE INDIVIDUAL'S JOB DUTIES AND RESPONSIBILITIES WITH REGARD TO ACTIVITIES COVERED UNDER THE GENERAL PERMIT. AT LEAST ONE INDIVIDUAL TRAINED IN THE JOB DUTIES LISTED ABOVE MUST BE PRESENT ON THE SITE OR AVAILABLE TO THE SITE IN 72 HOURS.

TRAINING DOCUMENTATION MUST INCLUDE:

1. NAMES OF PERSONNEL ASSOCIATED WITH THE PROJECT THAT ARE REQUIRED TO BE TRAINED
2. DATES OF TRAINING AND NAMES OF INSTRUCTOR AND ENTITY PROVIDING TRAINING
3. CONTENT OF TRAINING COURSE, INCLUDING NUMBER OF HOURS OF TRAINING
4. DOCUMENTATION MUST BE KEPT WITH THE SWPPP. TRAINING RECORD/CERTIFICATION TEMPLATE IS AVAILABLE UPON REQUEST.

INDIVIDUALS MUST BE TRAINED BY LOCAL, STATE, FEDERAL AGENCIES, PROFESSIONAL ORGANIZATIONS, OR OTHER ENTITIES WITH EXPERTISE IN EROSION PREVENTION, SEDIMENT CONTROL, OR PERMANENT STORMWATER MANAGEMENT SUCH AS THE UNIVERSITY OF MINNESOTA, MINNESOTA EROSION CONTROL ASSOCIATION, SOIL AND WATER CONSERVATION DISTRICTS, OR THE MPCA.

SECTION 8: FINAL STABILIZATION / PERMIT TERMINATION

FINAL STABILIZATION - TO ACHIEVE FINAL STABILIZATION OF THE SITE, THE CONTRACTOR WILL IMPLEMENT THE FOLLOWING MEASURES AFTER ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED.

1. ALL SOILS MUST BE STABILIZED BY A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70 PERCENT OVER THE ENTIRE PERVIOUS SURFACE AREA, OR BY OTHER EQUIVALENT MEANS NECESSARY TO PREVENT SOIL FAILURE UNDER EROSIVE CONDITIONS. REFER TO LANDSCAPING PLANS/SPECIFICATIONS FOR TYPE OF VEGETATIVE COVER.
2. THE PERMANENT STORMWATER MANAGEMENT SYSTEM IS CONSTRUCTED, MEETS ALL REQUIREMENTS IN SECTIONS 15, 16, 17, 18, AND 19 OF THE GENERAL PERMIT AND IS OPERATING AS DESIGNED. TEMPORARY OR PERMANENT SEDIMENTATION BASINS THAT ARE TO BE USED AS PERMANENT WATER QUALITY MANAGEMENT BASINS HAVE BEEN CLEAN OF ANY ACCUMULATED SEDIMENT. ALL SEDIMENT HAS BEEN REMOVED FROM CONVEYANCE SYSTEMS AND DITCHES ARE STABILIZED WITH PERMANENT COVER. ALL TEMPORARY EROSION PREVENTION AND SEDIMENT CONTROL BMPS MUST BE REMOVED.
3. FOR CONSTRUCTION PROJECTS ON LAND USED FOR AGRICULTURAL PURPOSES FINAL STABILIZATION MAY BE ACCOMPLISHED BY RETURNING THE DISTURBED LAND TO ITS PRECONSTRUCTION AGRICULTURAL USE.
4. FOR RESIDENTIAL CONSTRUCTION ONLY, INDIVIDUAL LOTS ARE CONSIDERED FINALLY STABILIZED IF THE STRUCTURE(S) ARE FINISHED AND TEMPORARY EROSION PROTECTION AND DOWNGRADIENT PERIMETER CONTROL HAS BEEN COMPLETED AND THE RESIDENCE HAS BEEN SOLD TO THE HOMEOWNER. ADDITIONALLY, THE PERMITTEE HAS DISTRIBUTED THE MPCA'S "HOMEOWNER FACT SHEET" TO THE HOMEOWNER TO INFORM THE HOMEOWNER OF THE NEED FOR, AND BENEFITS OF, PERMANENT COVER.

PERMIT TERMINATION - TO ACHIEVE PERMIT TERMINATION FOR THE SITE, PERMITTEES MUST COMPLY WITH SECTIONS 4 & 13 OF THE GENERAL PERMIT.

UNIVERSITY OF MINNESOTA
Emily J. Castanias
Design of Construction SWPPP (May 31 2027)

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MINNETONKA, MN

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Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024
If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

PERMIT 1 SET

05/07/2024

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23
#6	LAND USE APP. UPDATES	07/21/23
#7	STORMWATER UPDATES	08/04/23
#8	CITY RESUBMITTAL	08/16/23
#9	LAND USE APPLICATION	04/29/24
#10	NMCWD COMMENT RESPONSE	06/06/24
#11	PERMIT 1 COMMENTS	06/12/24
#12	NMCWD COMMENT RESPONSE	07/03/24
#13	CITY RESUBMITTAL	07/08/24
#14	NORTH DRIVEWAY REVS	08/14/24

51166
PROJECT NUMBER

EJC
DRAWN BY

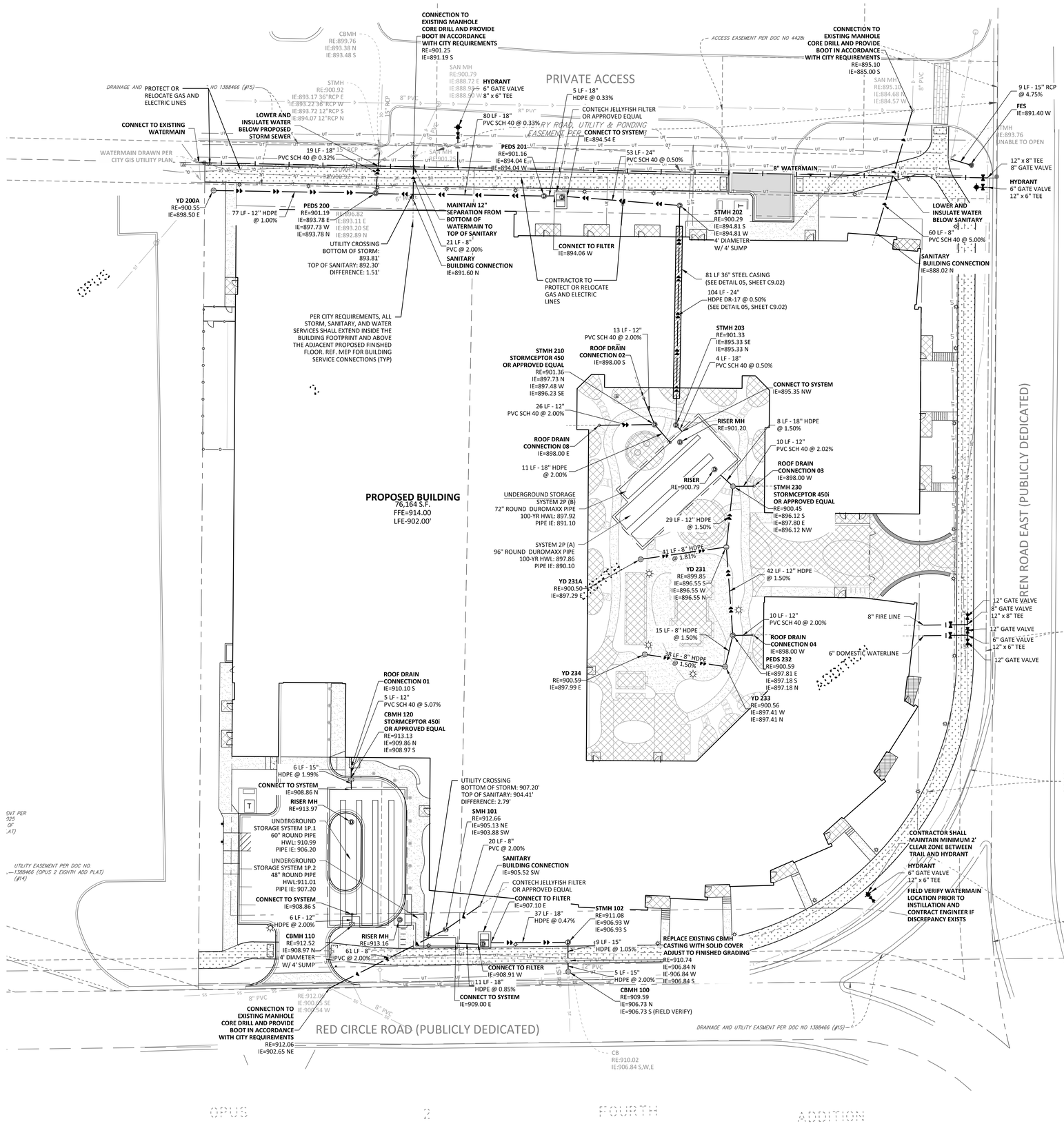
BDB
CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

SWPPP NARRATIVE

C5.04



THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

IF THE CONTRACTOR ENCOUNTERS ANY DRAIN TILE WITHIN THE SITE, HE OR SHE SHALL NOTIFY THE ENGINEER WITH THE LOCATION, SIZE, INVERT AND IF THE TILE LINE IS ACTIVE. NO DRAIN TILE SHALL BE BACKFILLED WITHOUT APPROVAL FROM THE PROJECT ENGINEER.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

LEGEND

PROPOSED / EXISTING

- SANITARY SEWER
- STORM SEWER
- POLYETHYLENE DRAINAGE STRUCTURE (PEDS) (SEE DETAIL 03, SHEET C9.02)
- DRAINTILE
- WATERMAIN
- GAS — UNDERGROUND GAS LINE
- UT — UNDERGROUND TELEPHONE
- UE — UNDERGROUND ELECTRIC
- CONCRETE CURB
- EASEMENT LINE

UTILITY CONSTRUCTION NOTES

1. THE UTILITY IMPROVEMENTS FOR THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "STANDARD UTILITIES SPECIFICATIONS" AS PUBLISHED BY THE CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM), EXCEPT AS MODIFIED HEREIN. CONTRACTOR SHALL OBTAIN A COPY OF THESE SPECIFICATIONS.
   a. ALL UTILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REQUIRMENTS, INCLUDING BUT NOT LIMITED TO CITY, DEPARTMENT OF LABOR AND INDUSTRY AND MINNESOTA DEPARTMENT OF HEALTH REQUIREMENTS.
   b. CONTRACTOR SHALL NOT OPEN, TURN OFF, INTERFERE WITH, OR ATTACH ANY PIPE OR HOSE TO OR TAP WATERMAIN BELONGING TO THE CITY UNLESS DULY AUTHORIZED TO DO SO BY THE CITY. ANY ADVERSE CONSEQUENCES OF ANY SCHEDULED OR UNSCHEDULED DISRUPTIONS OF SERVICE TO THE PUBLIC ARE THE LIABILITY OF CONTRACTOR.
   c. A MINIMUM VERTICAL SEPARATION OF 18 INCHES, AND HORIZONTAL SEPARATION OF 10-FEET, BETWEEN OUTSIDE PIPE AND/OR STRUCTURE WALLS, IS REQUIRED AT ALL WATERMAIN AND SEWER MAIN (BUILDING, STORM AND SANITARY) CROSSINGS.
2. ALL MATERIALS SHALL BE AS SPECIFIED IN CEAM SPECIFICATIONS EXCEPT AS MODIFIED HEREIN.
   a. ALL MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE CITY.
   b. ALL SANITARY SEWER TO BE PVC SDR-35, UNLESS NOTED OTHERWISE.
      i. ALL SANITARY SEWER SERVICES TO BUILDING SHALL BE CONSTRUCTED OF MATERIALS APPROVED FOR USE WITHIN A BUILDING (SEE TABLE 701.2 OF 2020 MN PLUMBING CODE).
      ii. ALL SANITARY SEWER WITHIN 10 FEET OF, CROSSING ABOVE, OR WITHIN 12-INCHES BELOW, A POTABLE WATER LINE SHALL BE CONSTRUCTED OF MATERIALS APPROVED FOR USE WITHIN A BUILDING (SEE TABLE 701.2 OF 2020 MN PLUMBING CODE).
      iii. ALL SANITARY SERVICES SHALL BE TESTED PER 2020 MN PLUMBING CODE.
      iv. ALL SANITAY SEWER WITHIN 10 FEET OF A BUILDING FOOTPRINT SHALL BE TESTED PER 2020 MN PLUMBING CODE
   c. ALL WATERMAIN TO BE DUCTILE IRON - CLASS 52, or PVC C-900, UNLESS NOTED OTHERWISE.
      i. ALL WATERMAIN TO HAVE 7.5-FEET OF COVER OVER TOP OF WATERMAIN.
      ii. PROVIDE THRUST BLOCKING AND MECHANICAL JOINT RESTRAINTS ON ALL WATERMAIN JOINTS PER CITY STANDARDS.
      iii. WHERE A SEWER LINE CROSSES A WATER SERVICE, THE WATER SERVICE SHALL NOT CONTAIN ANY JOINTS OR CONNECTIONS WITHIN 10 FEET OF THE CROSSING.
      iv. ALL WATER SERVICES SHALL BE TESTED PER 2020 MN PLUMBING CODE.
   d. ALL STORM SEWER PIPE TO BE SMOOTH INTERIOR DUAL WALL HDPE PIPE WITH WATERTIGHT GASKETS, UNLESS NOTED OTHERWISE.
      i. ALL STORM SEWER CROSSING ABOVE, OR WITHIN 12-INCHES BELOW, A POTABLE WATER LINE SHALL BE CONSTRUCTED OF MATERIALS APPROVED FOR USE WITHIN A BUILDING (SEE TABLE 701.2 OF 2020 MN PLUMBING CODE).
      ii. ALL STORM SEWER PIPE FOR ROOF DRAIN SERVICES TO THE BUILDING, OR WITHIN 10' OF A BUILDING, SHALL BE CONSTRUCTED OF MATERIALS APPROVED FOR USE WITHIN BUILDING (SEE TABLE 701.2 OF 2020 MN PLUMBING CODE).
      iii. ALL STORM SEWER WITHIN 10 FEET OF THE BUILDING FOOTPRINT SHALL BE TESTED PER 2020 MN PLUMBING CODE.
   e. RIP RAP SHALL BE Mn/DOT CLASS 3.
3. COORDINATE ALL BUILDING SERVICE CONNECTION LOCATIONS AND INVERT ELEVATIONS WITH MECHANICAL CONTRACTOR PRIOR TO CONSTRUCTION.
4. ALL BUILDING SERVICE CONNECTIONS (STORM, SANITARY, WATER) WITH FIVE FEET OR LESS COVER ARE TO BE INSULATED FROM BUILDING TO POINT WHERE 5-FEET OF COVER IS ACHIEVED.
5. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING THE CONSTRUCTION PHASES OF THIS PROJECT. CONTRACTOR WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES TO THE ADJACENT PROPERTIES OCCURRING DURING THE CONSTRUCTION PHASES OF THIS PROJECT.
6. SAFETY NOTICE TO CONTRACTORS: IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS ON THE JOB SITE, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THIS REQUIREMENT WILL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE DUTY OF THE ENGINEER OR THE DEVELOPER TO CONDUCT CONSTRUCTION REVIEW OF CONTRACTOR'S PERFORMANCE IS NOT INTENDED TO INCLUDE REVIEW OF THE ADEQUACY OF CONTRACTOR'S SAFETY MEASURES IN, ON OR NEAR THE CONSTRUCTION SITE.
7. ALL AREAS OUTSIDE THE PROPERTY BOUNDARIES THAT ARE DISTURBED BY UTILITY CONSTRUCTION SHALL BE RESTORED IN KIND. SODDED AREAS SHALL BE RESTORED WITH 6 INCHES OF TOPSOIL PLACED BENEATH THE SOD.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING TRAFFIC CONTROL DEVICES SUCH AS BARRICADES, WARNING SIGNS, DIRECTIONAL SIGNS, FLAGMEN AND LIGHTS TO CONTROL THE MOVEMENT OF TRAFFIC WHERE NECESSARY. TRAFFIC CONTROL DEVICES SHALL CONFORM TO APPROPRIATE MINNESOTA DEPARTMENT OF TRANSPORTATION STANDARDS.
9. ALL SOILS TESTING SHALL BE COMPLETED BY AN INDEPENDENT SOILS ENGINEER. EXCAVATION FOR THE PURPOSE OF REMOVING UNSTABLE OR UNSUITABLE SOILS SHALL BE COMPLETED AS REQUIRED BY THE SOILS ENGINEER. THE UTILITY BACKFILL CONSTRUCTION SHALL COMPLY WITH THE REQUIREMENTS OF THE SOILS ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED SOILS TESTS AND SOIL INSPECTIONS WITH THE SOILS ENGINEER. A GEOTECHNICAL ENGINEERING REPORT HAS BEEN COMPLETED BY:

   COMPANY: BRAUN INTERTEC CORPORATION

   ADDRESS: 11001 HAMPSHIRE AVE SOUTH, MINNEAPOLIS MN 55438

   PHONE: 952-995-2000

   DATED: MAY 31, 2022

   CONTRACTOR SHALL OBTAIN A COPY OF THIS SOILS REPORT.
10. CONTRACTOR SHALL SUBMIT 2 COPIES OF SHOP DRAWINGS FOR MANHOLE AND CATCH BASIN STRUCTURES TO ENGINEER. CONTRACTOR SHALL ALLOW 5 WORKING DAYS FOR SHOP DRAWING REVIEW.
11. CONTRACTOR AND MATERIAL SUPPLIER SHALL DETERMINE THE MINIMUM DIAMETER REQUIRED FOR EACH STORM SEWER STRUCTURE.
12. THE UTILITY DESIGN DOES NOT INCLUDE WATERMAIN ELEVATIONS. THE CONTRACTOR SHALL INSTALL WATERMAIN AT DEPTHS REQUIRED BY APPLICABLE AGENCIES AND SHALL DETERMINE LOCATIONS OF CONFLICTS WITH OTHER UTILITIES AND INCLUDE THE REQUIRED EFFORTS TO AVOID CONFLICTS (BENDS, MATERIAL CHANGES, ETC.) IN THEIR BIDS.
13. CONTRACTOR SHALL PROVIDE RECORD PLANS AS REQUIRED BY PERMITTING AGENCIES.
14. THE UNDERGROUND STORMWATER SYSTEM SHOWN ON THE UTILITY PLAN AND THE DETAIL SHEETS IS FOR INFORMATIONAL PURPOSES ONLY AND DEPICTS THE MINIMUM STORAGE REQUIREMENTS AND THE SYSTEM ELEVATIONS. THE CONTRACTOR (WITH THEIR SUPPLIER OR DESIGNER) SHALL SUBMIT DESIGN DRAWINGS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. THE DESIGN DRAWINGS SHALL DEPICT THE FINAL LAYOUT AND DETAILS FOR CONSTRUCTION. THE DRAWINGS SHALL BE CERTIFIED BY A LICENSED ENGINEER FOR THE STATE IN WHICH THE PROJECT IS CONSTRUCTED. THE SUBMITTAL SHALL INCLUDE ALL NECESSARY PRODUCT INFORMATION, DESIGN CALCULATIONS AND BEDDING REQUIREMENTS FOR THE PROPOSED STORMWATER SYSTEM. FOLLOWING CONSTRUCTION, THE CERTIFYING ENGINEER SHALL SUBMIT A LETTER TO THE OWNER AND ENGINEER INDICATING THEY OBSERVED THE INSTALLATION AND THE INSTALLATION OF THE STORMWATER SYSTEM WAS IN CONFORMANCE WITH THE CERTIFIED DRAWINGS.
15. IRRIGATION REUSE SYSTEM. CONTRACTOR TO COORDINATE WITH IRRIGATION REUSE DESIGNER, IRRIGATION SYSTEM DESIGNER AND IRRIGATION TANK MANUFACTURER FOR DESIGN AND DETAILS
16. CONTRACTOR TO PHOTOGRAPH AND DOCUMENT UNDERGROUND FACILITY THROUGHOUT THE CONSTRUCTION PROCESS.

MARLOWE
OPUS STATION
MINNETONKA, MN

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Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

PERMIT 1 SET

05/07/2024

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23
#6	LAND USE APP. UPDATES	07/21/23
#7	STORMWATER UPDATES	08/04/23
#8	CITY RESUBMITTAL	08/16/23
#9	LAND USE APPLICATION	04/29/24
#10	NMCWD COMMENT RESPONSE	06/06/24
#11	PERMIT 1 COMMENTS	06/12/24
#12	NMCWD COMMENT RESPONSE	07/03/24
#13	CITY RESUBMITTAL	07/08/24
#14	NORTH DRIVEWAY REVS	08/14/24

51166
PROJECT NUMBER

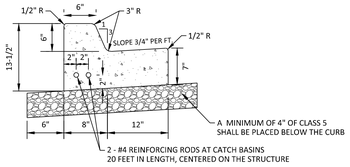
EJC DRAWN BY BDB CHECKED BY

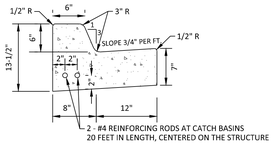
KEY PLAN

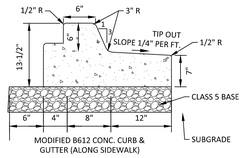
MARLOWE
OPUS STATION

UTILITY PLAN

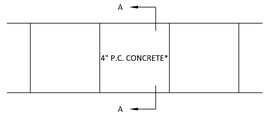
C6.01

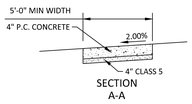






01 B612 CONCRETE CURB & GUTTER
N.T.S.





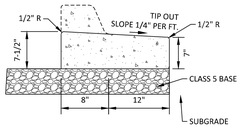
SECTION
A-A

GENERAL NOTES FOR CONCRETE CONSTRUCTION:

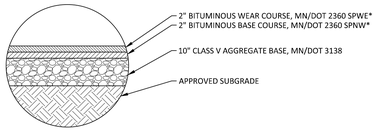
1. THE CONCRETE SIDEWALKS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF MN/DOT "STANDARD SPECIFICATIONS FOR CONSTRUCTION".
2. SIDEWALK CONTROL JOINTS SHALL BE LOCATED AT 5 FEET ON CENTER. SIDEWALK EXPANSION JOINTS SHALL BE LOCATED AT A MAXIMUM OF 100 FEET ON CENTER, AND WHERE SIDEWALK ABUTS CURB, STRUCTURES, AND OTHER FIXED OBJECTS. SEAL ALL EXPANSION JOINTS. BROOM FINISH SHALL BE PERPENDICULAR TO THE LINE OF TRAFFIC.

*THE THICKNESS SHALL BE INCREASED TO A MINIMUM DEPTH OF 7 INCHES AT DRIVEWAY CROSSINGS.

02 CONCRETE SIDEWALK
N.T.S.



03 B612 FLAT CURB & GUTTER
N.T.S.

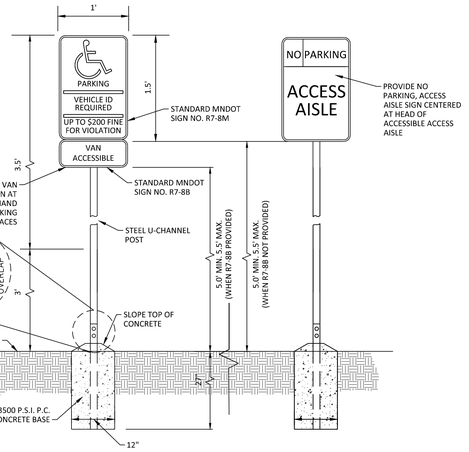


STANDARD DUTY PAVEMENT

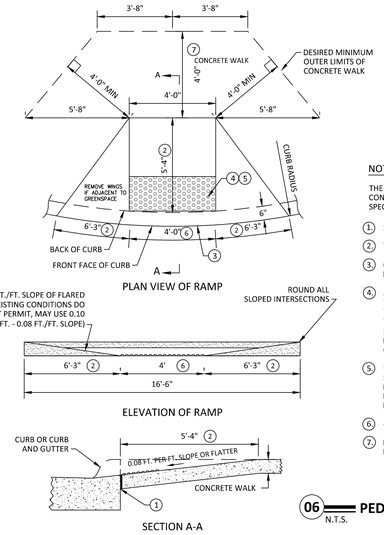
* REFER TO BITUMINOUS MIX DESIGN REQUIREMENT PROVIDED BY THE GEOTECHNICAL CONSULTANT

NOTES:
1. THE PAVEMENT SECTIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH MNDOT "STANDARD SPECIFICATION FOR CONSTRUCTION", AND ALSO THE REQUIREMENTS OF THE OWNER'S GEOTECHNICAL CONSULTANT.
2. ALL THICKNESSES, AS SPECIFIED, ARE TO BE CONSIDERED MINIMUM DEPTHS, AFTER COMPACTION.
3. MN/DOT SPEC. 2357 BITUMINOUS TACK COAT SHALL BE PLACED BETWEEN SUCCESSIVE BITUMINOUS LIFTS AND AGAINST ABUTTING CONCRETE CURB EDGES.

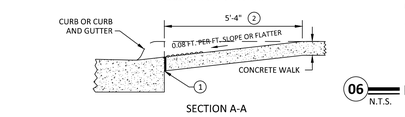
04 PAVEMENT SECTIONS
N.T.S.



05 BREAKAWAY ACCESSIBLE PARKING SIGN
N.T.S.

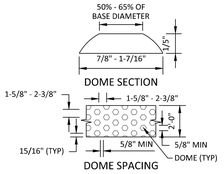


PLAN VIEW OF RAMP



ELEVATION OF RAMP

SECTION A-A

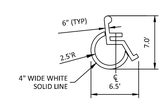


NOTE:

THE CURB AND CURB TRANSITION ON THE RAMP WILL BE PAID FOR AS LINEAR FEET OF CONCRETE CURB OR CONCRETE CURB AND GUTTER. THE RAMP AREA WILL BE PAID AS SQUARE FEET OF CONCRETE WALK, UNLESS SPECIFIED OTHERWISE. THE TRUNCATED DOME AREA WILL BE CONSIDERED INCIDENTAL.

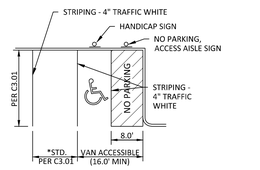
1. 1/2 INCH PREFORMED JOINT FILLER MATERIAL, AASHTO M 213.
2. VARIES WITH CURB HEIGHT. EXAMPLE SHOWN IS FOR 6" CURB HEIGHT.
3. 6" TO 8" IS THE REQUIRED OFFSET OF THE DETECTABLE WARNINGS/TRUNCATED DOME AREA FROM THE FRONT FACE OF CURB, OR PLACE THE DETECTABLE WARNINGS AT THE BACK OF CURB.
4. ADA REQUIRED TRUNCATED DOME AREA SHALL BE 2' 0" MIN. IN DIRECTION OF TRAVEL AND SHALL EXTEND THE FULL WIDTH (3' 0" OR 4' 0" TYP.) OF THE CURB RAMP. THIS 2' 0" BY 3' 0" OR 4' 0" WIDTH (TYP.) TRUNCATED DOME AREA SHALL CONTRAST VISUALLY WITH THE ADJACENT WALKING SURFACE. THE ENTIRE TRUNCATED DOME AREA SHALL BE A LIGHT COLOR (LIGHT GRAY, WHITE, OR YELLOW) WHEN THE ADJACENT SIDEWALK IS A DARK COLOR. THE ENTIRE TRUNCATED DOME AREA SHALL BE A DARK COLOR (RED, BLACK, DARK GRAY, OR BRIGHT YELLOW) WHEN THE ADJACENT SIDEWALK IS A "WHITE" OR LIGHT GRAY CEMENT COLOR.
5. THE TRUNCATED DOME AREA MAY BE EITHER GRANITE PANEL OR STAMPED CONCRETE, INSTALLED IN STRICT ACCORDANCE WITH MANUFACTURES RECOMMENDATIONS. GRANITE PANELS SHALL BE 2" NOMINAL THICKNESS WITH SANDED TEXTURED FINISH, FREE OF ANY CRACKS, CHIPS OR COLOR DEFORMATIONS. STAMPED CONCRETE SHALL MEET REQUIREMENTS OF 3A36 CONCRETE MIX AND HAVE INTEGRATED HOMOGENEOUS COLORING.
6. 4' 0" FOR NEW CONSTRUCTION. 3' 0" ALLOWED FOR RETROFITS OR PRESERVATION PROJECTS.
7. PROVIDE A 4' X 4' LANDING BEHIND THE PEDESTRIAN RAMP. SLOPING A MAXIMUM OF 2% IN ANY DIRECTION.

06 PEDESTRIAN CURB RAMP
N.T.S.



LOCATE AT EDGE OF PARKING SPACE

07 ACCESSIBLE PARKING SYMBOL
N.T.S.

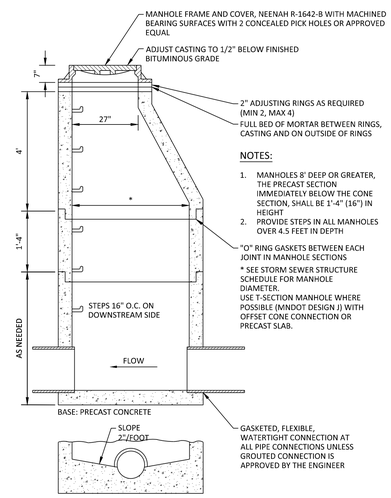


90° PARKING

SIGN TO BE ADDED TO "ACCESSIBLE PARKING SIGN" 1C/1D

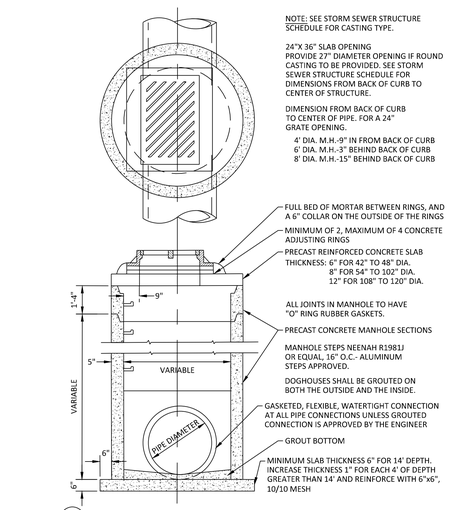
"VAN - ACCCESSIBLE" SIGNAGE, INSTALL AT DESIGNATED VAN HANDICAP SPACES, SIGNAGE SHALL BE BLUE BACKGROUND WITH WHITE CHARACTERS, 3" HIGH, UPPER CASE HELVETICA.

08 ADA/STANDARD STRIPING
N.T.S.

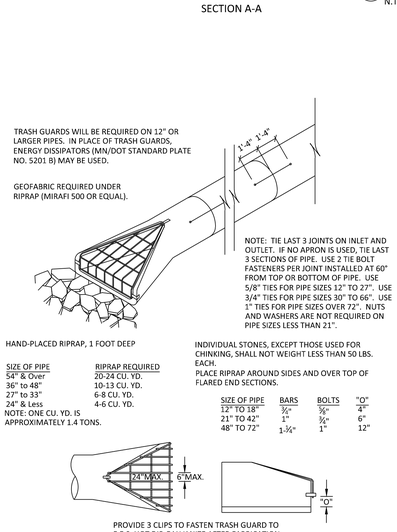


NOTES:
1. MANHOLES 8' DEEP OR GREATER, THE PRECAST SECTION IMMEDIATELY BELOW THE CONE SECTION, SHALL BE 1'-4" (16") IN HEIGHT
2. PROVIDE STEPS IN ALL MANHOLES OVER 4.5 FEET IN DEPTH

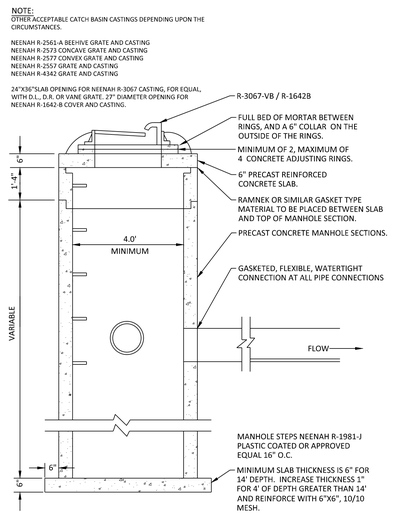
09 STORM SEWER MANHOLE
N.T.S.



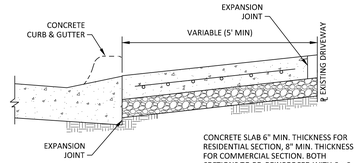
10 CATCH BASIN MANHOLE
N.T.S.



11 FLARED END SECTION
N.T.S.



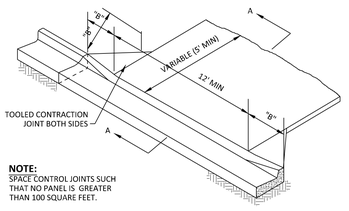
12 CATCH BASIN/STORM MANHOLE WITH SUMP
N.T.S.



SECTION A-A

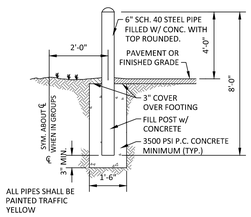
CONCRETE SLAB 6" MIN. THICKNESS FOR RESIDENTIAL SECTION, 8" MIN. THICKNESS FOR COMMERCIAL SECTION. BOTH SECTIONS TO BE REINFORCED WITH 6 x 6 10/10 STEEL MESH AND HAVE 6" OF COMPACTED GRANULAR SUBBASE. (SEE SPECIFICATIONS)

	RESIDENTIAL	COMMERCIAL
"B"	3 FT	5 FT



NOTE:
SPACE CONTROL JOINTS SUCH THAT NO PANEL IS GREATER THAN 100 SQUARE FEET.

13 CONCRETE DRIVEWAY APRON
N.T.S.



ALL PIPES SHALL BE PAINTED TRAFFIC YELLOW

14 CONCRETE PIPE BOLLARD
N.T.S.

MARLOWE
OPUS STATION
MINNETONKA, MN

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12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

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#8	CITY RESUBMITTAL	08/16/23
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#10	NMCWD COMMENT RESPONSE	06/06/24
#11	PERMIT I COMMENTS	06/12/24
#12	NMCWD COMMENT RESPONSE	07/03/24
#13	CITY RESUBMITTAL	07/08/24
#14	NORTH DRIVEWAY REVS	08/14/24

51166
PROJECT NUMBER

EJC DRAWN BY
BDB CHECKED BY

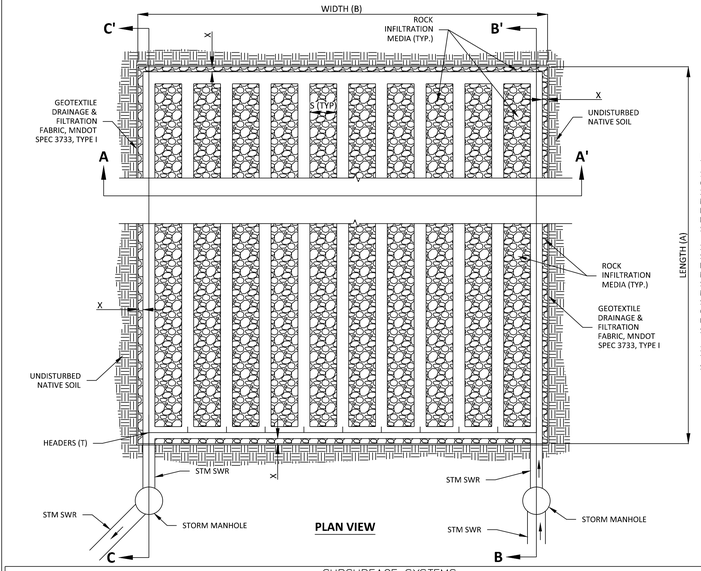
KEY PLAN

MARLOWE
OPUS STATION

DETAILS

C9.01

SUBSURFACE INFILTRATION AND STORAGE SYSTEMS

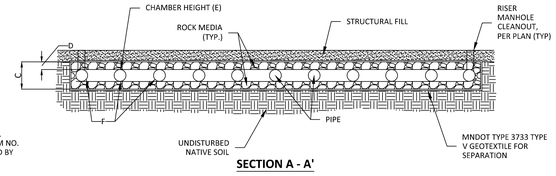


NOTES:

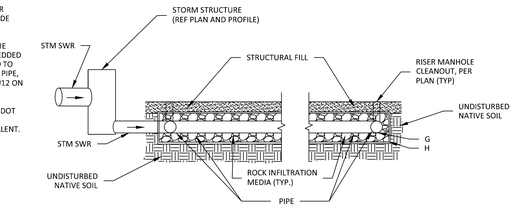
1. ROCK INFILTRATION MEDIA SHALL CONSIST OF AN OPEN GRADED ASTM NO. 2 CRUSHED STONE OR AS APPROVED BY MANUFACTURER TO MEET REQUIREMENTS FOR SOUNDNESS, HARDNESS, AND MINIMUM 40% VOID SPACE.

2. SHOP DRAWING SUBMITTALS FOR SUBSURFACE SYSTEMS SHALL INCLUDE INSTALLATION METHODS PER PIPE MANUFACTURER TO MAINTAIN STRUCTURAL CAPACITY OF PIPES. THE MATERIAL ON WHICH THE PIPE IS BEDDED SHALL BE SHAPED AND COMPACTED TO CONFORM TO THE BOTTOM OF THE PIPE, UP TO THE SPRINGLINE. (SEE NOTE #12 ON SHEET C6.01).

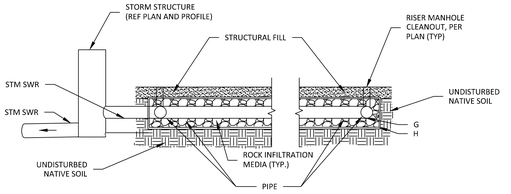
3. GEOTEXTILE FABRIC SHALL BE MNDOT TYPE 3733 TYPE V GEOTEXTILE FOR SEPARATION OR APPROVED EQUIVALENT.



SECTION A - A'



SECTION B - B'

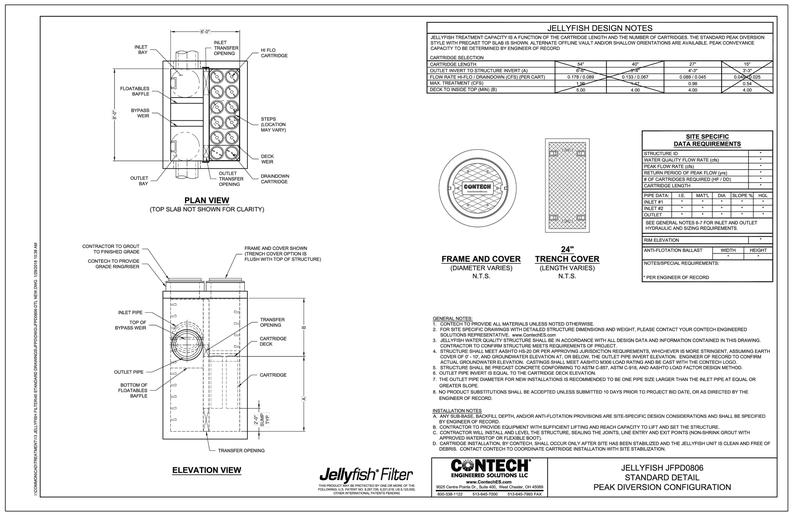


SECTION C - C'

SUBSURFACE SYSTEMS

BMP	TYPE OF SYSTEM	LENGTH, FT (A)	WIDTH, FT (B)	SYSTEM DEPTH, FT (C)	PIPE COVER, IN (D)	PIPE SIZE, IN (E)	ROWS (F)	HEADERS (T)	PIPE INVERT (G)	BOTTOM OF ROCK (H)	EDGE SPACING, IN (X)	PIPE SPACING, IN (S)	TOTAL STORAGE (CF)*
1P.1**	DUROMAXX SOLID PIPE	65.12	37.58	6.12	6.0	60	5	1	906.20	905.70	12.0	30.0	6,203
1P.2**	DUROMAXX SOLID PIPE	37.00	6.00	5.00	6.0	48	1	0	907.20	906.70	12.0	NA	465
2P (A)	DUROMAXX SOLID PIPE	63.15	21.30	8.15	6.0	96	2	1	890.10	889.60	12.0	36.0	6,103
2P (B)	DUROMAXX SOLID PIPE	53.00	8.14	6.14	6.0	72	1	1	891.10	890.60	12.0	36.0	1,398

*TOTAL STORAGE VOLUME FOR SYSTEMS DOES NOT INCLUDE ROCK STORAGE VOLUME
**1P DIMENSIONS APPROXIMATE TOTAL SYSTEM SIZE. SEE UTILITY PLAN FOR PIPE CONFIGURATION LAYOUT.



JELLYFISH DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD

CARTRIDGE SELECTION				
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-0"	4'-6"	4'-0"	3'-3"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.179 / 0.089	0.133 / 0.067	0.089 / 0.045	0.045 / 0.025
MAX. TREATMENT (CFS)	1.96	1.42	0.98	0.54
DECK TO INSIDE TOP WALL (B)	5.00	4.00	4.00	4.00

FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

24"
TRENCH COVER
(LENGTH VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS	
STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
# OF CARTRIDGES REQUIRED (2/F / DD)	*
CARTRIDGE LENGTH	*

PIPE DATA:	I.E.	MATL	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.

RIM ELEVATION		*
ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*
NOTES/SPECIAL REQUIREMENTS:		
* PER ENGINEER OF RECORD		

GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE, www.ContechES.com
3. THE JELLYFISH SYSTEM IS DESIGNED AND MANUFACTURED IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 10', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. PRECAST CONCRETE SHALL MEET ASTM C478, ASTM C857, ASTM C858, ASTM C857, ASTM C1916, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES:
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH MAXIMUM 1" EXPANSION) AS SHOWN ON THE PLANS.
D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

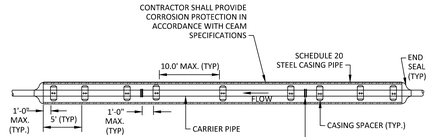
Jellyfish Filter
Stormwater Treatment as Advanced as Your Site
PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENT NO. 8,997,708, 9,227,150, OR 9,120,030, OTHER INTERNATIONAL PATENTS PENDING

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800.338.1122 513.645.7000 513.645.7993 FAX

JELLYFISH JFPD0806
STANDARD DETAIL
PEAK DIVERSION CONFIGURATION

C:\DRAWINGS\CONTECH\JF\TX JELLYFISH FILTRATION STANDARD DRAWINGS\JFPD0806.JFPD0806.JFPD0806.DWG, 10/5/2018 8:36:58 AM

04 CONTECH JELLYFISH
N.T.S.



NOTES:
1. INSTALLATION OF THE CASING MAY BE MADE BY OPEN CUT.
2. FIELD FABRICATED CASING SPACERS WILL NOT BE APPROVED.
3. CASING SEGMENTS SHALL BE JOINED BY FULL CIRCUMFERENTIAL WELDS.
4. TOLERANCE FOR ALIGNMENT AND GRADE SHALL BE 3 INCHES PER 100 FEET.
5. RESTRAIN FIRST JOINT OUTSIDE OF CASING AND ALL JOINTS WITHIN CASING.
6. FILL CASING WITH SAND.
7. CARRIER PIPE JOINTS SHALL BE BUTT FUSED

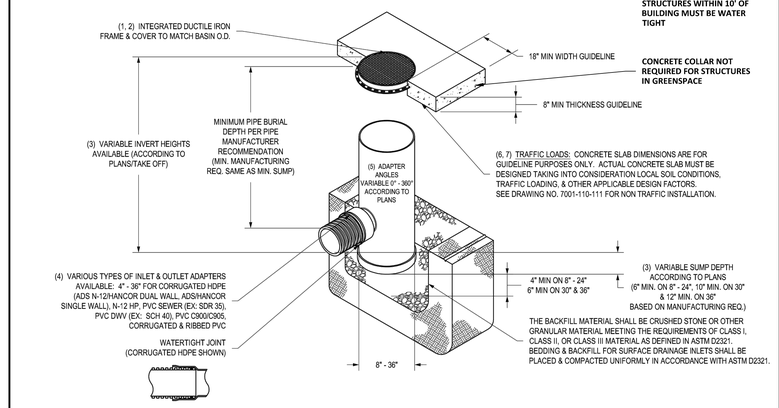
PIPE SIZE CHART

CARRIER PIPE	MINIMUM CASING PIPE	THICKNESS
24"	36"	O.50"

CONTRACTOR TO PROVIDE SUBMITTAL FOR ENGINEERS REVIEW AND APPROVAL OF DETAILS FOR CARRIER PIPING MATERIAL, JOINING METHOD, GUIDE TYPE SUBMITTALS, SPACING OF GUIDES, CORROSION RESISTANCE METHOD FOR STEEL CASING, AND CASING END SEALS.

05 CASING DETAIL
N.T.S.

NYLOPLAST DRAIN BASIN WITH SOLID COVER



1 - 8" - 30" SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05. 8" & 10" SOLID COVERS FIT DIRECTLY ONTO DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 36").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 12" - 30" SOLID COVERS SHALL MEET H-20 LOAD RATING.
7 - 8" & 10" SOLID COVERS ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY; NO CONCRETE COLLAR NEEDED FOR LIGHT DUTY RATING.

DRAWN BY	EBC	MATERIAL	
DATE	09-14-07		
REVISED BY	NMH	PROJECT NO./NAME	
DATE	06-12-18		
DWG SIZE	A	SCALE 1:40 SHEET 1 OF 1	

ADS Nyloplast
3150 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2496
www.nyloplast-us.com

TITLE: DRAIN BASIN WITH SOLID COVER QUICK SPEC INSTALLATION DETAIL

DWG NO. 7001-110-298 REV E

03 POLYETHYLENE DRAINAGE STRUCTURE (PEDS)
N.T.S.

MARLOWE
OPUS STATION
MINNETONKA, MN

esg ARCHITECTURE & DESIGN
500 Washington Avenue South, Suite 1080
Minneapolis, MN 55415
p 612.339.5508 | f 612.339.5382
www.esgarch.com

Sambatek
www.sambatek.com
12800 Whitewater Drive, Suite 300
Minnetonka, MN 55343
763.476.6010 telephone

Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

PERMIT 1 SET

05/07/2024

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23
#6	LAND USE APP. UPDATES	07/21/23
#7	STORMWATER UPDATES	08/04/23
#8	CITY RESUBMITTAL	08/16/23
#9	LAND USE APPLICATION	04/29/24
#10	NMCWD COMMENT RESPONSE	06/06/24
#11	PERMIT 1 COMMENTS	06/12/24
#12	NMCWD COMMENT RESPONSE	07/03/24
#13	CITY RESUBMITTAL	07/08/24
#14	NORTH DRIVEWAY REVS	08/14/24

51166
PROJECT NUMBER

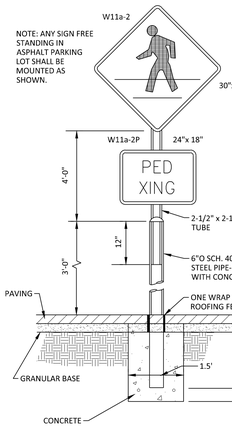
EJC DRAWN BY BDB CHECKED BY

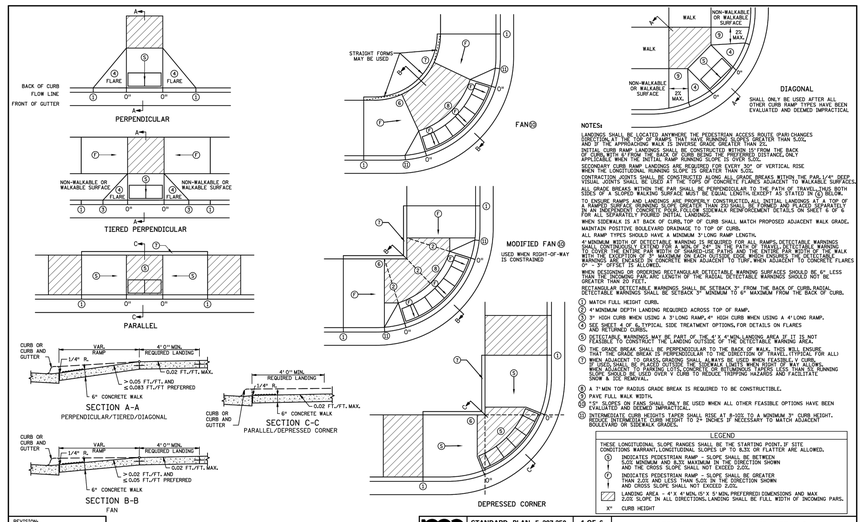
KEY PLAN

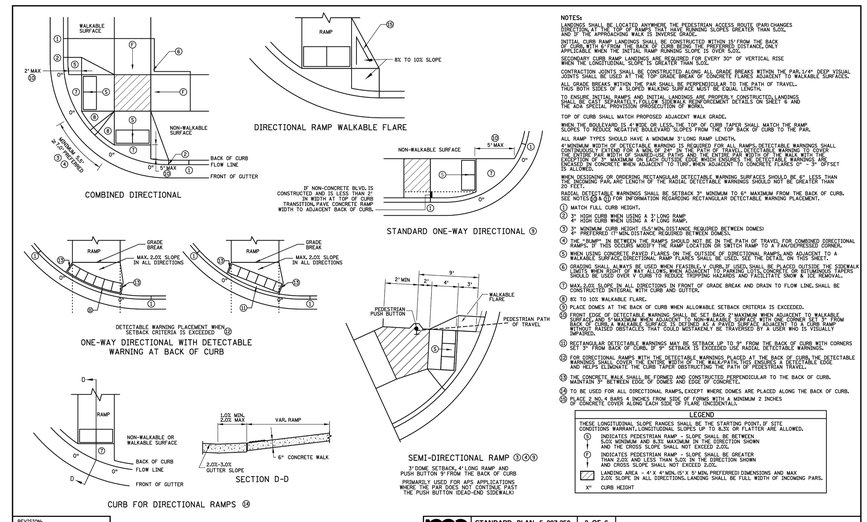
MARLOWE
OPUS STATION

DETAILS

C9.02







01 **PEDESTRIAN CROSSING SIGN**
N.T.S.

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE GREATER THAN 2%.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL RUNNING SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOPS OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH. (EXCEPT AS STATED IN ⑥ BELOW.

TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 OF 6 FOR ALL SEPARATELY POURED INITIAL LANDINGS.

WHEN SIDEWALK IS AT BACK OF CURB, TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

MAINTAIN POSITIVE BOULEVARD DRAINAGE TO TOP OF CURB.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RECTANGULAR DETECTABLE WARNINGS SHALL BE SETBACK 3" FROM THE BACK OF CURB. RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB.

① MATCH FULL HEIGHT CURB.
② 4' MINIMUM DEPTH LANDING REQUIRED ACROSS TOP OF RAMP.
③ 3" HIGH CURB WHEN USING A 3' LONG RAMP, 4" HIGH CURB WHEN USING A 4' LONG RAMP.
④ SEE SHEET 4 OF 6, TYPICAL SIDE TREATMENT OPTIONS, FOR DETAILS ON FLARES AND RETURNED CURBS.
⑤ DETECTABLE WARNINGS MAY BE PART OF THE 4' X 4' MIN. LANDING AREA IF IT IS NOT FEASIBLE TO CONSTRUCT THE LANDING OUTSIDE OF THE DETECTABLE WARNING AREA.
⑥ THE GRADE BREAK SHALL BE PERPENDICULAR TO THE BACK OF WALK. THIS WILL ENSURE THAT THE GRADE BREAK IS PERPENDICULAR TO THE DIRECTION OF TRAVEL. (TYPICAL FOR ALL)
⑦ WHEN ADJACENT TO GRASS, GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS LESS THAN 5% RUNNING SLOPE SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
⑧ A 7' MIN TOP RADIUS GRADE BREAK IS REQUIRED TO BE CONSTRUCTIBLE.
⑨ PAVE FULL WALK WIDTH.
⑩ "S" SLOPES ON FANS SHALL ONLY BE USED WHEN ALL OTHER FEASIBLE OPTIONS HAVE BEEN EVALUATED AND DEEMED IMPRACTICAL.
⑪ INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3" CURB HEIGHT. REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

Ⓢ	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
Ⓕ	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
▨	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
X"	CURB HEIGHT

MINNESOTA DEPARTMENT OF TRANSPORTATION
STANDARD PLAN 5-297.250 | 1 OF 6
APPROVED: 11-04-2021
REVISED:
THOMAS STYRBICKI STATE DESIGN ENGINEER
PEDESTRIAN CURB RAMP DETAILS
STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

NOTES:

LANDINGS SHALL BE LOCATED ANYWHERE THE PEDESTRIAN ACCESS ROUTE (PAR) CHANGES DIRECTION, AT THE TOP OF RAMPS THAT HAVE RUNNING SLOPES GREATER THAN 5.0%, AND IF THE APPROACHING WALK IS INVERSE GRADE.

INITIAL CURB RAMP LANDINGS SHALL BE CONSTRUCTED WITHIN 15' FROM THE BACK OF CURB, WITH 6' FROM THE BACK OF CURB BEING THE PREFERRED DISTANCE, ONLY APPLICABLE WHEN THE INITIAL RAMP RUNNING SLOPE IS OVER 5.0%.

SECONDARY CURB RAMP LANDINGS ARE REQUIRED FOR EVERY 30" OF VERTICAL RISE WHEN THE LONGITUDINAL SLOPE IS GREATER THAN 5.0%.

CONTRACTION JOINTS SHALL BE CONSTRUCTED ALONG ALL GRADE BREAKS WITHIN THE PAR. 1/4" DEEP VISUAL JOINTS SHALL BE USED AT THE TOP GRADE BREAK OF CONCRETE FLARES ADJACENT TO WALKABLE SURFACES.

ALL GRADE BREAKS WITHIN THE PAR SHALL BE PERPENDICULAR TO THE PATH OF TRAVEL. THUS BOTH SIDES OF A SLOPED WALKING SURFACE MUST BE EQUAL LENGTH.

TO ENSURE INITIAL RAMPS AND INITIAL LANDINGS ARE PROPERLY CONSTRUCTED, LANDINGS SHALL BE CAST SEPARATELY. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON SHEET 6 AND THE ADA SPECIAL PROVISION (PROSECUTION OF WORK).

TOP OF CURB SHALL MATCH PROPOSED ADJACENT WALK GRADE.

WHEN THE BOULEVARD IS 4' WIDE OR LESS, THE TOP OF CURB TAPER SHALL MATCH THE RAMP SLOPES TO REDUCE NEGATIVE BOULEVARD SLOPES FROM THE TOP BACK OF CURB TO THE PAR.

ALL RAMP TYPES SHOULD HAVE A MINIMUM 3' LONG RAMP LENGTH.

4' MINIMUM WIDTH OF DETECTABLE WARNING IS REQUIRED FOR ALL RAMPS. DETECTABLE WARNINGS SHALL CONTINUOUSLY EXTEND FOR A MIN. OF 24" IN THE PATH OF TRAVEL. DETECTABLE WARNING TO COVER THE ENTIRE PAR WIDTH OF SHARED-USE PATHS AND THE ENTIRE PAR WIDTH OF THE WALK WITH THE EXCEPTION OF 3" MAXIMUM ON EACH OUTSIDE EDGE WHICH ENSURES THE DETECTABLE WARNINGS ARE ENCASED IN CONCRETE WHEN ADJACENT TO TURF. WHEN ADJACENT TO CONCRETE FLARES 0" - 3" OFFSET IS ALLOWED.

WHEN DESIGNING OR ORDERING RECTANGULAR DETECTABLE WARNING SURFACES SHOULD BE 6" LESS THAN THE INCOMING PAR. ARC LENGTH OF THE RADIAL DETECTABLE WARNINGS SHOULD NOT BE GREATER THAN 20 FEET.

RADIAL DETECTABLE WARNINGS SHALL BE SETBACK 3" MINIMUM TO 6" MAXIMUM FROM THE BACK OF CURB. SEE NOTES ⑩ & ⑪ FOR INFORMATION REGARDING RECTANGULAR DETECTABLE WARNING PLACEMENT.

① MATCH FULL CURB HEIGHT.
② 3" HIGH CURB WHEN USING A 3' LONG RAMP
4" HIGH CURB WHEN USING A 4' LONG RAMP.
③ 3" MINIMUM CURB HEIGHT (5.5' MIN. DISTANCE REQUIRED BETWEEN DOMES)
4" PREFERRED (7' MIN. DISTANCE REQUIRED BETWEEN DOMES).
④ THE "BUMP" IN BETWEEN THE RAMPS SHOULD NOT BE IN THE PATH OF TRAVEL FOR COMBINED DIRECTIONAL RAMPS. IF THIS OCCURS MODIFY THE RAMP LOCATION OR SWITCH RAMP TO A FAN/DEPRESSED CORNER.
⑤ WHEN USING CONCRETE PAVED FLARES ON THE OUTSIDE OF DIRECTIONAL RAMPS, AND ADJACENT TO A WALKABLE SURFACE, DIRECTIONAL RAMP FLARES SHALL BE USED. SEE THE DETAIL ON THIS SHEET.
⑥ GRADING SHALL ALWAYS BE USED WHEN FEASIBLE. V CURB, IF USED, SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS. WHEN ADJACENT TO PARKING LOTS, CONCRETE OR BITUMINOUS TAPERS SHOULD BE USED OVER V CURB TO REDUCE TRIPPING HAZARDS AND FACILITATE SNOW & ICE REMOVAL.
⑦ MAX. 2.0% SLOPE IN ALL DIRECTIONS IN FRONT OF GRADE BREAK AND DRAIN TO FLOW LINE. SHALL BE CONSTRUCTED INTEGRAL WITH CURB AND GUTTER.
⑧ 8% TO 10% WALKABLE FLARE.
⑨ PLACE DOMES AT THE BACK OF CURB WHEN ALLOWABLE SETBACK CRITERIA IS EXCEEDED.
⑩ FRONT EDGE OF DETECTABLE WARNING SHALL BE SET BACK 2' MAXIMUM WHEN ADJACENT TO WALKABLE SURFACE, AND 5' MAXIMUM WHEN ADJACENT TO NON-WALKABLE SURFACE WITH ONE CORNER SET 3" FROM BACK OF CURB. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
⑪ RECTANGULAR DETECTABLE WARNINGS MAY BE SETBACK UP TO 9" FROM THE BACK OF CURB WITH CORNERS SET 3" FROM BACK OF CURB. IF 9" SETBACK IS EXCEEDED USE RADIAL DETECTABLE WARNINGS.
⑫ FOR DIRECTIONAL RAMPS WITH THE DETECTABLE WARNINGS PLACED AT THE BACK OF CURB, THE DETECTABLE WARNINGS SHALL COVER THE ENTIRE WIDTH OF THE WALK/PATH. THIS ENSURES A DETECTABLE EDGE AND HELPS ELIMINATE THE CURB TAPER OBSTRUCTING THE PATH OF PEDESTRIAN TRAVEL.
⑬ THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE BACK OF CURB. MAINTAIN 3" BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
⑭ TO BE USED FOR ALL DIRECTIONAL RAMPS, EXCEPT WHERE DOMES ARE PLACED ALONG THE BACK OF CURB.
⑮ PLACE 2 NO. 4 BARS 4 INCHES FROM SIDE OF FORMS WITH A MINIMUM 2 INCHES OF CONCRETE COVER ALONG EACH SIDE OF FLARE (INCIDENTAL).

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

Ⓢ	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
Ⓕ	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE GREATER THAN 2.0% AND LESS THAN 5.0% IN THE DIRECTION SHOWN AND CROSS SLOPE SHALL NOT EXCEED 2.0%.
▨	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
X"	CURB HEIGHT

STANDARD PLAN 5-297.250 | 2 OF 6
APPROVED: 11-04-2021
REVISED:
PEDESTRIAN CURB RAMP DETAILS
STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS

NOTES:

POSITIVE FLOW LINE DRAINAGE SHALL BE MAINTAINED THROUGH THE PEDESTRIAN ACCESS ROUTE (PAR) AT A 2% MAXIMUM.

NO PONDING SHALL BE PRESENT IN THE PAR.

ANY VERTICAL LIP THAT OCCURS AT THE FLOW LINE SHALL NOT BE GREATER THAN 1/4 INCH.

① FOR USE AT CURB CUTS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: PERPENDICULAR, TIERED PERPENDICULAR, PARALLEL, AND DIAGONAL RAMPS.
② FOR USE AT CURB RAMPS WHERE THE PEDESTRIAN'S PATH OF TRAVEL IS ASSUMED NON PERPENDICULAR TO THE GUTTER FLOW LINE. RAMP TYPES INCLUDE: FANS & DEPRESSED CORNERS.
③ BEGIN GUTTER SLOPE TRANSITION 10' OUTSIDE OF ALL CURB RAMPS.
④ THERE SHALL BE NO VERTICAL DISCONTINUITIES GREATER THAN 1/4".
⑤ ELEVATION CHANGE TAKES PLACE FROM THE EXISTING TO NEW FRONT OF GUTTER. PATCH IS USED TO MATCH THE NEW GUTTER FACE INTO THE EXISTING ROADWAY.
⑥ VARIABLE WIDTH FOR DIRECTIONAL CURB APPLICATIONS. SEE SHEET 2 FOR DIRECTIONAL CURB SLOPE REQUIREMENTS.
⑦ TOP FRONT OF GUTTER SHALL BE CONSTRUCTED FLUSH WITH PROPOSED ADJACENT PAVEMENT ELEVATION. TOP 1.5" OF THE GUTTER FACE MUST BE A FORMED EDGE. PAR GUTTER SHALL NOT BE OVERLAID.
⑧ SHOULD BE USED AT VERTICALLY CONSTRAINED AREAS WHEN AT A DRAINAGE HIGH POINT OR SUPER ELEVATED ROADWAY SEGMENTS.
⑨ DRILL AND GROUT NO. 4 EPOXY-COATED 18" LONG TIE BARS AT 30" CENTER TO CENTER INTO EXISTING CONCRETE PAVEMENT 1' MINIMUM FROM ALL JOINTS.
⑩ HELPS PROVIDE TWO SEPARATE RAMPS, REDUCES THE DOME SETBACK LENGTH AND MINIMIZES DIRECTIONAL CURB. THIS RADIUS DESIGN CLOSELY FOLLOWS THE TURNING VEHICLE PATH WHILE OPTIMIZING CURB RAMP LENGTH.
⑪ CURB EXTENSIONS SHOULD BE USED IN VERTICALLY CONSTRAINED AREAS, USUALLY IN DOWNTOWN ROADWAY SEGMENTS WHERE ON-STREET PARKING IS AVAILABLE. CURB EXTENSIONS SHOULD BE CONSIDERED FOR APS INTERSECTIONS WHERE SPACE IS LIMITED.
PUSH BUTTONS MUST MEET APS CRITERIA AS DESCRIBED IN THE PUSH BUTTON LOCATION DETAIL SHEET.

STANDARD PLAN 5-297.250 | 3 OF 6
APPROVED: 11-04-2021
REVISED:
PEDESTRIAN CURB RAMP DETAILS
STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

NOTES:

INTERMEDIATE CURB HEIGHTS TAPER SHALL RISE AT 8-10% TO A MINIMUM 3 INCH CURB HEIGHT. INCREASE CURB TAPER LENGTH AT LESS THAN 8% OR REDUCE INTERMEDIATE CURB HEIGHT TO 2+ INCHES IF NECESSARY TO MATCH ADJACENT BOULEVARD OR SIDEWALK GRADES.

SEE STANDARD PLATE 7038 AND THIS SHEET FOR ADDITIONAL DETAILS ON DETECTABLE WARNING.

A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP WITHOUT RAISED OBSTACLES THAT COULD MISTAKENLY BE TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.

CONCRETE FLARE LENGTHS ADJACENT TO NON-WALKABLE SURFACES SHOULD BE LESS THAN 8' LONG MEASURED ALONG THE RAMPS FROM THE BACK OF CURB.

① 0" CURB HEIGHT. SEE INSET A ON SHEET 3 OF 6.
② FULL CURB HEIGHT.
③ SIDE TREATMENTS ARE APPLICABLE TO ALL RAMP TYPES AND SHOULD BE IMPLEMENTED AS NEEDED AS FIELD CONDITIONS DICTATE. THE ENGINEER SHALL DETERMINE THE RAMP SIDE TREATMENTS BASED ON MAINTENANCE OF BOTH ROADWAY AND SIDEWALK, ADJACENT PROPERTY CONSIDERATIONS, AND MITIGATING CONSTRUCTION IMPACTS.
④ TYPICALLY USED FOR MEDIANS AND ISLANDS.
⑤ WHEN NO CONCRETE FLARES ARE PROPOSED, THE CONCRETE WALK SHALL BE FORMED AND CONSTRUCTED PERPENDICULAR TO THE EDGE OF ROADWAY. MAINTAIN 3" MAX. BETWEEN EDGE OF DOMES AND EDGE OF CONCRETE.
⑥ IF NO CURB AND GUTTER IS PLACED IN RURAL SECTIONS, DETECTABLE WARNINGS SHALL BE PLACED 1' FROM THE EDGE OF BITUMINOUS ROADWAY AND/OR BITUMINOUS SHARED-USE PATH TO PROVIDE VISUAL CONTRAST.
⑦ ALL CONSTRUCTED CURBS MUST HAVE A CONTINUOUS DETECTABLE EDGE FOR THE VISUALLY IMPAIRED. THIS DETECTABLE EDGE REQUIRES DETECTABLE WARNINGS WHEREVER THERE IS ZERO-INCH HIGH CURB. CURB TAPERS ARE CONSIDERED A DETECTABLE EDGE WHEN THE TAPER STARTS WITHIN 3" OF THE EDGE OF THE DETECTABLE WARNINGS. AND UNIFORMLY RISES TO A 3-INCH MINIMUM CURB HEIGHT. ANY CURB NOT PART OF A CURB TAPER AND LESS THAN 3 INCHES IN HEIGHT IS NOT CONSIDERED A DETECTABLE EDGE AND THEREFORE IS NOT COMPLIANT WITH ACCESSIBILITY STANDARDS.
⑧ DRILL AND GROUT 1 - NO. 4 12" LONG REINFORCEMENT BAR (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE V CURB.
⑨ DRILL AND GROUT 2 - NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) WITH 3" MIN. COVER. REINFORCEMENT BARS ARE NOT NEEDED IF THE APPROACH NOSE IS POURED INTEGRAL WITH THE CURB AND GUTTER.
⑩ SIDE TREATMENT EXAMPLES SHOWN ARE WHEN THE INITIAL LANDING IS APPROXIMATELY LEVEL WITH THE FULL HEIGHT CURB (I.E. 6' LONG RAMP FOR 6" HIGH CURB). WHEN THE INITIAL LANDING IS MORE THAN 1" BELOW FULL HEIGHT CURB REFER TO SHEETS 1 & 2 TO MODIFY THE CURB HEIGHT TAPERS AND MAINTAIN POSITIVE BOULEVARD DRAINAGE. CONSTRUCT THESE TAPERS AT 0"-3" AT 8-10%, THEN LESS THAN 5% FROM 3" CURB TO FULL CURB HEIGHT.
⑪ NEAREST EDGE OF DETECTABLE WARNING SURFACES SHALL BE PLACED 12' MINIMUM TO 15' MAXIMUM FROM THE NEAREST RAIL. FOR SKEWED RAILWAYS IN NO INSTANCE SHALL THE DETECTABLE WARNING BE CLOSER THAN 12' MEASURED PERPENDICULAR TO THE NEAREST RAIL.
⑫ WHEN PEDESTRIAN GATES ARE PROVIDED, DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE SIDE OF THE GATES OPPOSITE THE RAIL, 2' FROM THE APPROACHING SIDE OF THE GATE ARM. THIS CRITERIA GOVERNS OVER NOTE ⑪.
⑬ CROSSING SURFACE SHALL EXTEND 2' MINIMUM PAST THE OUTSIDE EDGE OF WALK OR SHARED-USE PATH.
⑭ 3' FOR MEDIANS AND SPLITTER ISLANDS. NOSE CAN BE REDUCED TO 2' ON FREE RIGHT ISLANDS.
⑮ SIDEWALK TO BE PLACED 8.75' MIN. FROM THE FACE OF CURB/PROJECTED FACE OF CURB. THIS ENSURES MIN. CLEARANCE BETWEEN THE SIDEWALK AND GATE ARM COUNTERWEIGHT SUPPORTS.
⑯ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.

STANDARD PLAN 5-297.250 | 4 OF 6
APPROVED: 11-04-2021
REVISED:
PEDESTRIAN CURB RAMP DETAILS
STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

NOTES:

A WALKABLE FLARE IS AN 8-10% CONCRETE FLARE THAT IS REQUIRED WHEN THE FLARE IS ADJACENT TO A WALKABLE SURFACE, OR WHEN THE PEDESTRIAN PATH OF TRAVEL OF A PUSH BUTTON TRAVERSES THE FLARE.

ALL V CURB CONTRACTION JOINTS SHALL MATCH CONCRETE WALK JOINTS.

WHERE RIGHT-OF-WAY ALLOWS, USE OF V CURB SHOULD BE MINIMIZED. GRADING ADJACENT TURF OR SLOPING ADJACENT PAVEMENT IS PREFERRED.

V CURB SHALL BE PLACED OUTSIDE THE SIDEWALK LIMITS WHEN RIGHT OF WAY ALLOWS.

V CURB NEXT TO BUILDING SHALL BE A 4" WIDTH AND SHALL MATCH PREVIOUS TOP OF SIDEWALK ELEVATIONS.

① END TAPERS AT TRANSITION SECTION SHALL MATCH INPLACE SIDEWALK GRADES.
② ALL V CURB SHALL MATCH BOTTOM OF ADJACENT WALK.
③ CONSTRUCT USING APPROVED EXPANSION MATERIAL PER MNDOT TYPE A-E EXPANSION. LEAVE A MINIMUM ½" TOP GAP AND SEAL WITH MNDOT APPROVED SILICONE PER MNDOT SPEC 3722.
④ THE MAX. RATE OF CROSS SLOPE TRANSITIONING IS 1' LINEAR FOOT OF SIDEWALK PER HALF PERCENT CROSS SLOPE. WHEN PAR WIDTH IS GREATER THAN 6' OR THE RUNNING SLOPE IS GREATER THAN 5%, DOUBLE THE CALCULATED TRANSITION LENGTH.
⑤ TRANSITION PANELS ARE TO ONLY BE USED AFTER THE RAMP, OR IF NEEDED, LANDING ARE AT THE FULL CURB HEIGHT (TYPICAL SECTION).
⑥ EXISTING CROSS SLOPE GREATER THAN 2.0%.

LEGEND

THESE LONGITUDINAL SLOPE RANGES SHALL BE THE STARTING POINT. IF SITE CONDITIONS WARRANT, LONGITUDINAL SLOPES UP TO 8.3% OR FLATTER ARE ALLOWED.

Ⓢ	INDICATES PEDESTRIAN RAMP - SLOPE SHALL BE BETWEEN 5.0% MINIMUM AND 8.3% MAXIMUM IN THE DIRECTION SHOWN AND THE CROSS SLOPE SHALL NOT EXCEED 2.0%.
▨	LANDING AREA - 4' X 4' MIN. (5' X 5' MIN. PREFERRED) DIMENSIONS AND MAX 2.0% SLOPE IN ALL DIRECTIONS. LANDING SHALL BE FULL WIDTH OF INCOMING PARS.
Ⓣ	TRANSITION PANEL(S) - TO BE USED FOR TRANSITIONING THE CROSS-SLOPE OF A RAMP TO THE EXISTING WALK CROSS-SLOPE. RATE OF TRANSITION SHOULD BE 0.5% PER 1 LINEAR FOOT OF WALK. SEE THIS SHEET FOR ADDITIONAL INFORMATION.

STANDARD PLAN 5-297.250 | 5 OF 6
APPROVED: 11-04-2021
REVISED:
PEDESTRIAN CURB RAMP DETAILS
STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

GENERAL NOTES:

"TABLING" OF CROSSWALKS MEANS MAINTAINING LESS THAN 2% CROSS SLOPE WITHIN A CROSSWALK, IS REQUIRED WHEN A ROADWAY IS IN A STOP OR YIELD CONDITION AND THE PROJECT SCOPE ALLOWS.

RECONSTRUCTION PROJECTS: ON FULL PAVEMENT REPLACEMENT PROJECTS "TABLING" OF ENTIRE CROSSWALK SHALL OCCUR WHEN FEASIBLE.

MILL & OVERLAY PROJECTS: "TABLING" OF FLOW LINES, IN FRONT OF THE PEDESTRIAN RAMP, IS REQUIRED WHEN THE EXISTING FLOW LINE IS GREATER THAN 2%. WARPING OF THE BITUMINOUS PAVEMENT CAN NOT EXTEND INTO THE THROUGH LANE. TABLE THE FLOW LINE TO 2% OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA;
1) 1.0% MIN. CROSS-SLOPE OF THE ROAD
2) 5.0% MAX. CROSS-SLOPE OF THE ROAD
3) "TABLE" FLOW LINE UP TO 4% CHANGE FROM EXISTING SLOPE IN FRONT OF PEDESTRIAN RAMP
4) UP TO 2% CHANGE IN FLOW LINE FROM EXISTING SLOPE BEYOND THE PEDESTRIAN CURB RAMP

STAND-ALONE ADA RETROFITS: FOLLOW MILL & OVERLAY CRITERIA ABOVE HOWEVER ALL PAVEMENT WARPING IS DONE WITH BITUMINOUS PATCHING ON BITUMINOUS ROADWAYS AND FULL-DEPTH APRON REPLACEMENT ON CONCRETE ROADWAYS.

RAISING OF CURB LINES SHOULD OCCUR IN VERTICALLY CONSTRAINED AREAS. RAISE THE CURB LINES ENOUGH TO ALLOW COMPLIANT RAMPS OR AS MUCH AS POSSIBLE WHILE ADHERING TO THE FOLLOWING CRITERIA;
1) 1.0% MIN. AND 5.0% MAXIMUM CROSS-SLOPE OF THE ROAD
2) 1.0% MIN. FLOW LINE (ON EITHER SIDE OF PEDESTRIAN RAMP) TO MAINTAIN POSITIVE DRAINAGE
3) 5.0% RECOMMENDED MAX. FLOW LINE
4) LONGITUDINAL THROUGH LANE ROADWAY TAPERS SHOULD BE 1" VERTICAL PER 15' HORIZONTAL

NOTES:

① TO ENSURE RAMPS AND LANDINGS ARE PROPERLY CONSTRUCTED, ALL INITIAL LANDINGS AT A TOP OF A RAMPED SURFACE (RUNNING SLOPE GREATER THAN 2%) SHALL BE FORMED AND PLACED SEPARATELY IN AN INDEPENDENT CONCRETE POUR. FOLLOW SIDEWALK REINFORCEMENT DETAILS ON THIS SHEET FOR ALL SEPARATELY POURED INITIAL LANDINGS.
② DRILL AND GROUT NO. 4 12" LONG REINFORCEMENT BARS (EPOXY COATED) AT 36" MAXIMUM CENTER TO CENTER MINIMUM 12" SPACING FROM CONSTRUCTION JOINTS. BARS TO BE ADJUSTED TO MATCH RAMP GRADE. BARS TO BE PAID BY EACH.
③ DRILL AND GROUT 2 - NO. 4 X 12" LONG (6" EMBEDDED) REINFORCEMENT BARS (EPOXY COATED).
REINFORCEMENT REQUIRED FOR ALL CONSTRUCTION JOINTS. BARS TO BE PAID BY EACH.
④ THIS CURB LINE REINFORCEMENT DETAIL SHALL BE USED ON BITUMINOUS ROADWAYS. FOR CONCRETE ROADWAYS, SEE NOTE 6.
⑤ CONSTRUCT WITH EXPANSION MATERIAL PER MNDOT SPECIFICATION 3702 TYPES A-E. EXPANSION MATERIAL SHALL MATCH FULL HEIGHT OF ADJACENT CONCRETE.
⑥ USE AN APPROVED TYPE F (1/4 INCH THICK) SEPARATION MATERIAL. SEPARATION MATERIAL SHALL MATCH FULL HEIGHT DIMENSION OF ADJACENT CONCRETE.

STANDARD PLAN 5-297.250 | 6 OF 6
APPROVED: 11-04-2021
REVISED:
PEDESTRIAN CURB RAMP DETAILS
STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

MARLOWE
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Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

PERMIT 1 SET

05/07/2024

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23
#6	LAND USE APP. UPDATES	07/21/23
#7	STORMWATER UPDATES	08/04/23
#8	CITY RESUBMITTAL	08/16/23
#9	LAND USE APPLICATION	04/29/24
#10	NMCWD COMMENT RESPONSE	06/06/24
#11	PERMIT 1 COMMENTS	06/12/24
#12	NMCWD COMMENT RESPONSE	07/03/24
#13	CITY RESUBMITTAL	07/08/24
#14	NORTH DRIVEWAY REVS	08/14/24

51166
PROJECT NUMBER

EJC
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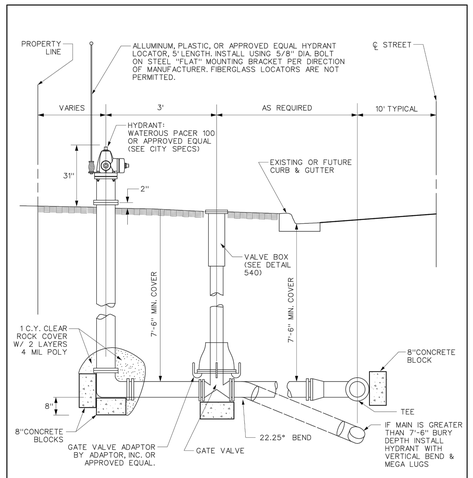
KEY PLAN

MARLOWE
OPUS STATION

DETAILS

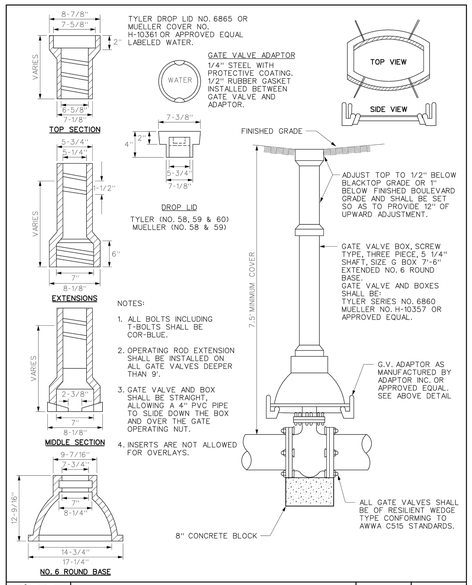
C9.03



NOTES:

1. ALL WATERMAIN, INCLUDING VALVES, FITTINGS AND APPURTENANCES, SHALL BE FULLY ENCASED IN POLYETHYLENE FILM (4 MIL.)
2. ALL GATE VALVES AND BUTTERFLY VALVES SHALL BE FURNISHED WITH AN ADAPTOR TO PREVENT THE BOX FROM SETTLING OR SHIFTING. SEE CITY SPECIFICATIONS.
3. ALL MECHANICAL JOINTS SHALL BE RESTRAINED BY MEGALUGS.
4. POURED CONCRETE THRUST BLOCK REQUIRED IF STANDARD BLOCKS CANNOT BE PLACED ON UNDISTURBED GROUND.

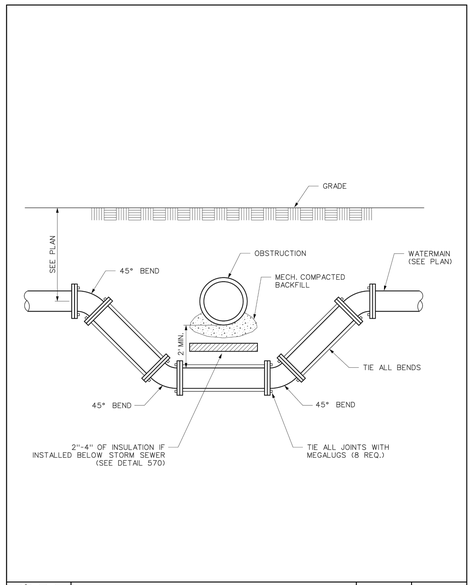
CITY OF MINNETONKA	HYDRANT	SCALE: NOT TO SCALE	STD PLATE NO: 500
		APPROVED: 5/2000	
		REVISED: 8/2018	



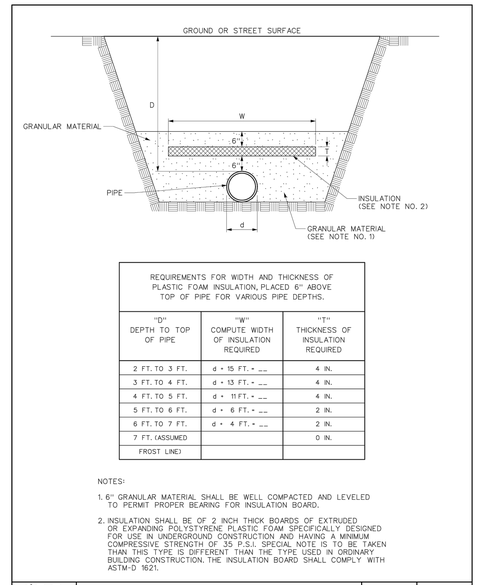
NOTES:

1. ALL BOLTS INCLUDING T-BOLTS SHALL BE COR-BLUE.
2. OPERATING ROD EXTENSION SHALL BE INSTALLED ON ALL GATE VALVES DEEPER THAN 9'.
3. GATE VALVE AND BOX SHALL BE STRAIGHT, ALLOWING A 4" PVC PIPE TO SLIDE DOWN THE BOX AND OVER THE GATE OPERATING NUT.
4. INSERTS ARE NOT ALLOWED FOR OVERLAYS.

CITY OF MINNETONKA	GATE VALVE	SCALE: NOT TO SCALE	STD PLATE NO: 540
		APPROVED: 1/2008	
		REVISED: 8/2018	



CITY OF MINNETONKA	WATERMAIN OFFSET WITH MEGALUGS	SCALE: NOT TO SCALE	STD PLATE NO: 560
		APPROVED: 8/2018	
		REVISED:	



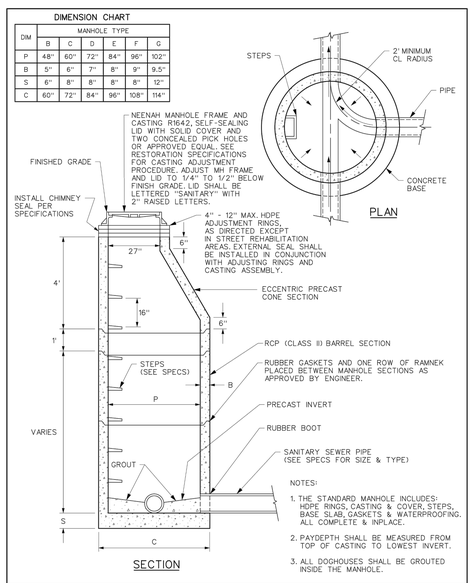
REQUIREMENTS FOR WIDTH AND THICKNESS OF PLASTIC FOAM INSULATION, PLACED 6" ABOVE TOP OF PIPE FOR VARIOUS PIPE DEPTHS.

"D" DEPTH TO TOP OF PIPE	"W" COMPUTE WIDTH OF INSULATION REQUIRED	"T" THICKNESS OF INSULATION REQUIRED
2 FT. TO 3 FT.	d • 15 FT. • ___	4 IN.
3 FT. TO 4 FT.	d • 13 FT. • ___	4 IN.
4 FT. TO 5 FT.	d • 11 FT. • ___	4 IN.
5 FT. TO 6 FT.	d • 6 FT. • ___	2 IN.
6 FT. TO 7 FT.	d • 4 FT. • ___	2 IN.
7 FT. (ASSUMED		0 IN.
FROST LINE)		

NOTES:

1. 6" GRANULAR MATERIAL SHALL BE WELL COMPACTED AND LEVELED TO PERMIT PROPER BEARING FOR INSULATION BOARD.
2. INSULATION SHALL BE OF 2 INCH THICK BOARDS OF EXTRUDED OR EXPANDING POLYSTYRENE PLASTIC FOAM SPECIFICALLY DESIGNED FOR USE IN UNDERGROUND CONSTRUCTION AND HAVING A MINIMUM COMPRESSIVE STRENGTH OF 35 P.S.I. SPECIAL NOTE IS TO BE TAKEN THAN THIS TYPE IS DIFFERENT THAN THE TYPE USED IN ORDINARY BUILDING CONSTRUCTION. THE INSULATION BOARD SHALL COMPLY WITH ASTM-D 1621.

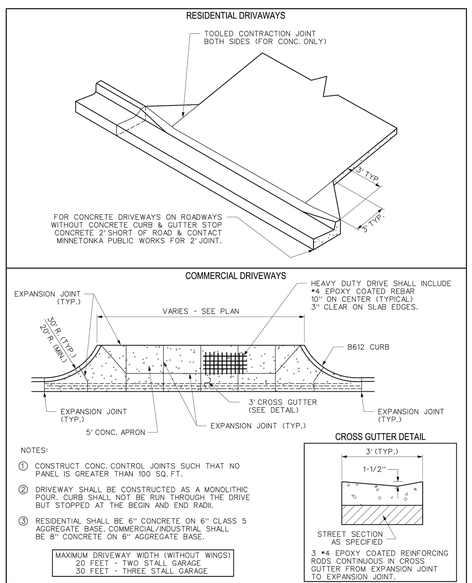
CITY OF MINNETONKA	PIPE INSULATION	SCALE: NOT TO SCALE	STD PLATE NO: 570
		APPROVED: 5/2000	
		REVISED: 5/2018	



NOTES:

1. THE STANDARD MANHOLE INCLUDES: HDPE RINGS, CASTING & COVER, STEPS, BASE SLAB, GASKETS & WATERPROOFING. ALL COMPLETE & INPLACE.
2. PAYDEPTH SHALL BE MEASURED FROM TOP OF CASTING TO LOWEST INVERT.
3. ALL DOGHOUSES SHALL BE GROUTED INSIDE THE MANHOLE.

CITY OF MINNETONKA	SANITARY SEWER MANHOLE	SCALE: NOT TO SCALE	STD PLATE NO: 410
		APPROVED: 4/2000	
		REVISED: 8/2018	



NOTES:

① CONSTRUCT CONC. CONTROL JOINTS SUCH THAT NO PANEL IS GREATER THAN 100 SQ. FT.

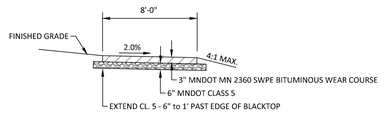
② DRIVEWAY SHALL BE CONSTRUCTED AS A MONOLITHIC POUR. CURB SHALL NOT BE RUN THROUGH THE DRIVE BUT STOPPED AT THE BEGIN AND END RADII.

③ RESIDENTIAL SHALL BE 6" CONCRETE ON 6" CLASS 5 AGGREGATE BASE. COMMERCIAL/INDUSTRIAL SHALL BE 8" CONCRETE ON 6" AGGREGATE BASE.

MAXIMUM DRIVEWAY WIDTH (WITHOUT WINGS)
20 FEET - TWO STALL GARAGE
30 FEET - THREE STALL GARAGE

3 #4 EPOXY COATED REINFORCING RODS CONTINUOUS IN CROSS GUTTER FROM EXPANSION JOINT TO EXPANSION JOINT.

CITY OF MINNETONKA	CONCRETE DRIVEWAY	SCALE: NOT TO SCALE	STD PLATE NO: 310
		APPROVED: 8/2018	
		REVISED:	



NOTE:

1. THE PROPOSED TRAIL LOCATION MAY BE REQUIRED TO BE "MEANDERED" WITHIN THE OUTLOT LIMITS IN THE FIELD. THE LOCATION SHALL BE AT THE DIRECTION OF THE ENGINEER OR THE OWNER.
2. THE CONTRACTOR SHALL COMPLETE EXCAVATION FOR THE TRAIL, AND ALSO BACKFILL THE TRAIL TO FINISHED GRADE.

06 TYPICAL TRAIL SECTION
N.T.S.

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Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

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05/07/2024

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#7	STORMWATER UPDATES	08/04/23
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#9	LAND USE APPLICATION	04/29/24
#10	NMCWD COMMENT RESPONSE	06/06/24
#11	PERMIT 1 COMMENTS	06/12/24
#12	NMCWD COMMENT RESPONSE	07/03/24
#13	CITY RESUBMITTAL	07/08/24
#14	NORTH DRIVEWAY REVS	08/14/24

51166
PROJECT NUMBER

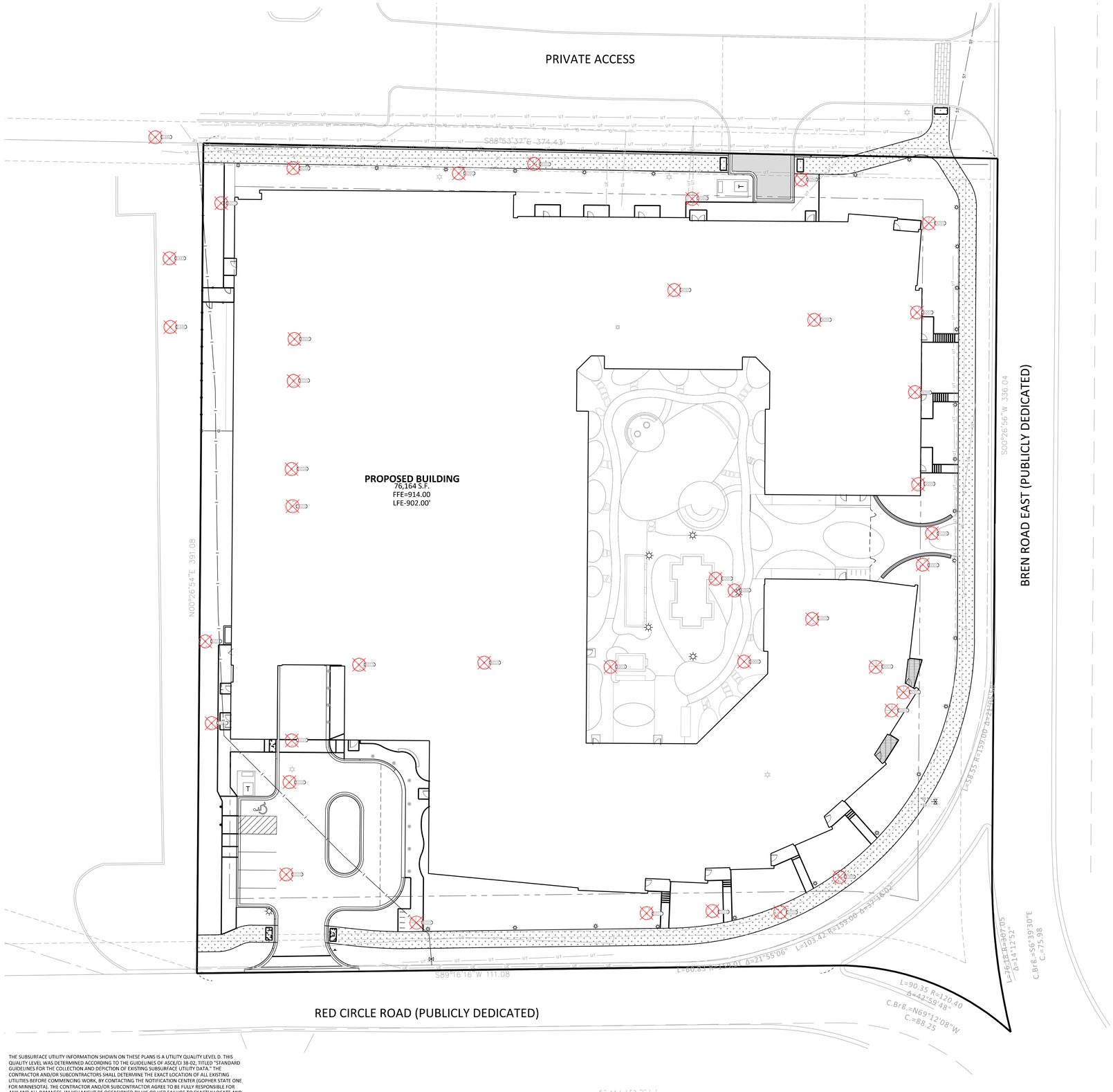
EJC DRAWN BY | BDB CHECKED BY

KEY PLAN

MARLOWE
OPUS STATION

DETAILS

C9.04



THE SUBSURFACE UTILITY INFORMATION SHOWN ON THESE PLANS IS A UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF ASCE/CI 38-02, TITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA." THE CONTRACTOR AND/OR SUBCONTRACTORS SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, BY CONTACTING THE NOTIFICATION CENTER (GOPHER STATE ONE FOR MINNESOTA). THE CONTRACTOR AND/OR SUBCONTRACTOR AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH MIGHT BE OCCASIONED BY HIS OR HER FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES (UNDERGROUND AND OVERHEAD).

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

LEGEND

	PROPOSED	EXISTING	
PROPERTY LIMIT			STANDARD DUTY ASPHALT PAVING
CURB & GUTTER			
EASEMENT			CONCRETE PAVING
BUILDING			
RETAINING WALL			CONCRETE SIDEWALK
WETLAND LIMITS		WL	
TREELINE			
LANDSCAPE EDING			
STORM SEWER	D	D	
SANITARY SEWER	S	S	
FORCEMAIN (SAN.)	LS FM	S	
WATERMAIN			
YARDDRAIN			
LIMITS OF DISTURBANCE			
TREE PROTECTION FENCE		TP	
TREE TO BE REMOVED			
SIGN			
PIPE BOLLARD			
RIPRAP			

MINNETONKA LANDSCAPE CODE

1. Development that is subject to landscape requirements in sections 300.27 and 300.31 must meet the minimum landscape requirements of the applicable section. Trees planted as part of a required landscaping plan may be counted as mitigation trees under this section, at the city's discretion.
2. One inch for each inch in diameter of a deciduous tree removed and one foot for each foot in height of a coniferous tree removed

CALCULATIONS	EXISTING	REQUIRED
2 INCHES PER EVERY SIGNIFICANT TREE 1 INCH PER EACH INCH IN DIAMETER OF HIGH PRIORITY TREES	6 TREES	12 INCHES
OVERSTORY TREES	83 INCHES	83 INCHES
1 FOOT PER EACH FOOT IN HEIGHT OF HIGH PRIORITY TREES CONIFERS	160 FEET	160 FEET

PLANT SCHEDULE

Tag	DBH	Height	Species	Notes	Type	Status
4090	21		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4091	27		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4092	22		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4093	11		River Birch (Betula nigra)		Deciduous	Remove
4094	17		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4095	8	18	Black Hills Spruce (Picea glauca)		Coniferous	Remove
4096	23		Littleleaf Linden (Tilia coradata)		Deciduous	Remove
4097	20		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4098	23		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4099	23		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
4100	7		Malus sp.		Deciduous	Remove
5001	15		Sugar Maple (Acer Sacharum)		Deciduous	Remove
5002	7		Box Elder (Acer negundo)		Deciduous	Remove
5003	18	36	Black Hills Spruce (Picea glauca)		Coniferous	Remove
5004	18	36	Black Hills Spruce (Picea glauca)		Coniferous	Remove
5005	20	40	Black Hills Spruce (Picea glauca)		Coniferous	Remove
5006	23		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5007	9		Mulberry (Morus alba)		Deciduous	Remove
5008	14		Malus sp.		Deciduous	Remove
5009	24		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5010	24		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5011	21		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5012	27		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5013	23		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5014	17		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5015	25		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5017	7		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5018	11		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5019	15	30	Black Hills Spruce (Picea glauca)		Coniferous	Remove
5020	19		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5021	23		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5022	18		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5023	6		Malus sp.		Deciduous	Remove
5024	9		Malus sp.		Deciduous	Remove
5025	20		Littleleaf Linden (Tilia coradata)		Deciduous	Remove
5026	18		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5027	20		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
5028	20		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
1446	17.5		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
1447	13		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove
1448	12		Green Ash (Fraxinus pennsylvanica)	Shows signs of EAB infestation	Deciduous	Remove

NORTH

0 20 40

SCALE IN FEET

MARLOWE
OPUS STATION
MINNETONKA, MN

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Minnetonka, MN 55343
763.476.6010 telephone
Engineering | Surveying | Planning | Environmental

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.

Brady D. Busselman
Registration No. 44579 Date: 06/12/2024

If applicable, contact us for a wet signed copy of this plan which is available upon request at Sambatek's, Minnetonka, MN office.

PERMIT 1 SET

05/07/2024

ORIGINAL ISSUE:
09/19/22

REVISIONS:

No.	Description	Date
#1	CITY/WATERSHED COMMENTS	01/30/23
#2	CITY COMMENTS	02/09/23
#3	CITY/WATERSHED COMMENTS	02/23/23
#4	DESIGN DEVELOPMENT	03/03/23
#5	CITY COMMENTS	03/10/23
#6	LAND USE APP. UPDATES	07/21/23
#7	STORMWATER UPDATES	08/04/23
#8	CITY RESUBMITTAL	08/16/23
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KEY PLAN

MARLOWE
OPUS STATION

TREE INVENTORY

L1.01