

# EXHIBIT 1

## LICENSE AGREEMENT

THIS LICENSE AGREEMENT (this "Agreement") is entered into by and between the CITY OF DULUTH, a municipal corporation created and existing under the laws of the State of Minnesota ("City"), and the STATE OF MINNESOTA, acting by and through the Commissioner of the Department of Natural Resources ("State").

The parties acknowledge the following:

A. City is the apparent owner, or the holder of lesser interests, of real property in St. Louis County, Minnesota identified on the attached Exhibit A as the "Staging Area," "Access Area," and "Project Area" (collectively, the "Property").

B. State wishes to undertake, at no cost to City, a 240-acre coastal marsh restoration project in the St. Louis River Estuary at two locations in the St. Louis River Bay to create shallow sheltered bay habitats that support Lake Superior estuary marsh, including within the Kingsbury Creek area (the "Project"). The Project includes sediment removal, wood waste and wood-sediment removal and capping in the Kingsbury Creek area, as described on the attached Exhibit B (the "Project Summary").

C. State desires a license to access certain portions of the Property to (i) stage equipment and materials for the Project; (ii) provide ingress and egress to the Kingsbury Creek portion of the Project; and (iii) perform the Project.

D. State and City desire to enter into this Agreement to allow State to access the Property for the purposes permitted by this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained in this Agreement, the receipt and sufficiency of which is acknowledged, the parties agree as follows:

### 1. THE LICENSE.

A. Subject to the terms and conditions set forth herein, City grants to State a non-exclusive license to enter and occupy portions of the Property for the purposes set forth in Section 4 below. The requirements and conditions set forth in (i) the exhibits to this Agreement, including but not limited to the Project Summary; and (ii) any permits issued in relation to the Project, are incorporated into this Agreement.

B. State acknowledges and understands that its use of the Property is subject to certain rights in favor of the public, and the cooperation of all users and coordination of activities on the Property is required. This cooperation includes ingress and egress and use of amenities and related improvements. State agrees that City's Property and Facilities Manager (the "Manager") shall ultimately determine the appropriate use of the Property and shall decide any disputes between State and any other users of the Property.

C. State's use of the Property shall in no way limit or restrict City's or the public's use of the Property. City shall continue to enjoy unlimited access to the Property during the Term (defined below).

D. State shall work with City's Parks and Recreation Department to install signage, at State's expense, to alert Western Waterfront Trail users of any trail or trailhead closures or detours caused by the Project.

2. TERM OF THE AGREEMENT. Notwithstanding the date of execution of this Agreement, the term of this Agreement shall commence on October 1, 2019, and shall continue through December 31, 2020, unless earlier terminated as permitted by this Agreement (the "Term").

3. LICENSE FEE. State shall have the use of the Property at no cost. The parties agree that the benefit to the Property and the public benefit of the Project shall be considered adequate consideration. The Project shall be completed by State at no cost to City.

4. LIMITED USE. The Property may only be used for the Project and for no other purpose. The work to be performed on the Property is summarized as follows and shall be consistent with the plans and specifications attached as Exhibit C, as they may be amended from time to time with the prior written consent of the Manager (the "Final Plans"):

- (a) State may use the portion of the Pulaski Street trailhead parking lot outlined in black on Exhibit A (the "Staging Area") for staging equipment and materials for the Project.
- (b) That portion of the Property outlined in blue on Exhibit A as the "Access Area," running generally between the Staging Area and the Project Area (defined below), may be used for ingress and egress to the Project Area, including transportation and access for equipment, tools, and materials and removal of dredged materials. State may construct an access road within the Access Area (the "Access Road").
- (c) State may undertake sediment removal, wood waste and wood-sediment removal and capping in the area labeled as "Project Area" on Exhibit A.
- (d) State may create a material load out area in the location identified on Exhibit A as "Material Load Out Area" for the placement, loading, and unloading of dredged material.

Any erosion control blanket, straw or the like for the purpose of erosion control and soil stabilization used must be "weed free certified". Any activities not approved by the Manager may be grounds for termination of this Agreement.

5. UTILITIES. State agrees to follow all notice requirements under Minn. Stat. § 216D.04, Subd. 1(a) regarding determination of underground utilities and notification of property owners. Failure to abide by the notice requirements under Minn. Stat. § 216D.04, Subd. 1(a) shall be grounds for immediate termination of this Agreement.

6. ADDITIONAL AUTHORIZATION. State acknowledges that this Agreement only provides a license to use the Property, and does not permit State to cross or use any adjacent land owned by City or any third party. State must obtain written permission from owners of other property as necessary to obtain access necessary for the Project.

7. TERMINATION.

A. This Agreement may be terminated by either party with or without cause by providing fifteen (15) business days' written notice to the other party as hereinafter provided.

B. City may terminate this Agreement immediately on notice to State if City believes in good faith that the health, welfare, or safety of occupants or neighbors of the Property would be placed in immediate jeopardy by the continuation of this Agreement.

8. CITY WARRANTY. City makes no representation that the Property is suitable for any particular purpose or specific uses and State accepts the Property in "as is" condition without representations or warranties of any kind. City makes no representations or warranties that it actually owns or has an interest in the Property.

9. MAINTENANCE AND RESTORATION.

A. Prior to expiration of the Term, State shall restore the Staging Area, the Access Area (including removal of the Access Road), and any damaged portions of the Western Waterfront Trail, to the equivalent of their original condition at the time of execution of this Agreement or better and consistent with the restoration plans for the Western Waterfront Trail attached as Exhibit D (the "Restoration Plans"). Any portion of the Access Area and Material Load Out Area that are not included in the Restoration Plans must be restored to the standards given by the City's Project Coordinator, Jim Shoberg, or his designee, and in the following ways: uncompact soil and smooth out ruts, seed with native wet meadow species appropriate for the location, any significant tree removal must follow the Uniform Development Code and appropriate tree replacement requirements, planted seedlings that currently exist shall be identified and replaced with same species with proper browse protection. Any erosion control blanket, straw or the like for the purpose of erosion control and soil stabilization used must be "weed free certified". Restoration of the Staging Area, the Access Area (including removal of the Access Road), and any damaged portions of the Western Waterfront Trail shall be at the State's sole cost and expense.

B. State shall not make any alterations or improvements to the Property that are not herein described without the prior written consent of City and then only upon the terms and conditions which may be imposed by City.

10. LIABILITY. Each party is responsible for its own acts and omissions and the results thereof to the extent authorized by law and shall not be responsible for the acts and omissions of the other party and the results thereof. State's liability is governed by the provisions of the Minnesota Tort Claims Act, Minnesota Statutes, Section 3.736 and other applicable law. City's liability is governed by Minnesota Statutes, Chapter 466 and other applicable law.

11. INSURANCE. During the Term, State shall have such insurance coverage as will protect State and City against risk of loss or damage to the Property and any other property of City located or used at the Property and against claims that may arise or result from the use of the Property during the Term. State shall procure and maintain continuously in force automobile and Public Liability Insurance written on an "occurrence" basis under a Comprehensive General Liability Form in limits of not less than \$1,500,000 aggregate per occurrence for personal bodily injury and death and limits of \$1,500,000 for property damage liability. Insurance required in this Agreement shall be taken out and maintained in responsible insurance companies organized under the laws of the state of Minnesota and licensed to do business in Minnesota. Insurance shall cover public liability including premises and operations coverage, independent contractors - protective contingent liability, personal injury, contractual liability covering the obligations set forth herein, and products – completed operations. State shall provide City with Certificate(s) of Insurance evidencing the required insurance coverage, with 30-day notice of cancellation, non-renewal, or material change provisions included. City does not represent or guarantee that the types or limits of coverage required by this Agreement are adequate to protect State's interests and liabilities. The required insurance policies and certificates shall be in form acceptable to the City Attorney and shall name City as an additional insured. City reserves the right to require State to increase the coverages set forth above and to provide evidence of such increased insurance to reflect the municipal liability limits set forth in Minn. Stat. § 466.04, as amended from time to time. If deemed sufficient by the City Attorney, State may meet the requirements of this paragraph 11 in whole or in part through self-insurance.

12. INDEPENDENT CONTRACTOR. Nothing contained in this Agreement is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties or as constituting State or State personnel as an agent, representative, or employee of City for any purpose or in any manner whatsoever. State and its employees shall not be considered employees of City and any and all claims that may or might arise under the Workers' Compensation Act of the State of Minnesota on behalf of State's employees or agents while so engaged, shall in no way be the responsibility of City.

13. ASSIGNMENT. State shall not in any way assign or transfer its rights or interests under this Agreement. However, State may hire contractors to work on the Project. State shall remain primarily responsible for all work performed by its contractor(s) or subcontractor(s). Any contractor hired by State shall procure the following insurance coverages and provide proof of coverage to City prior to conducting any work on the Property:

- (a) Commercial Liability and Automobile Insurance, naming City as additional insured, in the amount of at least \$1,500,000 aggregate per occurrence for personal bodily injury and death and limits of \$1,500,000 for property damage liability, from an insurance carrier organized under the laws of the states of the United States and licensed to do business in Minnesota. Insurance shall cover public liability including premises and operations coverage, independent contractors - protective contingent liability, personal injury, contractual liability covering the indemnity obligations set forth herein, and products – completed operations. The policy shall provide that City be notified thirty (30) days prior to the cancellation or termination, non-renewal, or material change of the policy.
- (b) Required insurance policies must be in form and substance that is acceptable to the City Attorney.
- (c) City reserves the right to require an increase to the coverages set forth above and to provide evidence of such increased insurance to reflect the municipal liability limits set forth in Minn. Stat. § 466.04, as amended from time to time.

14. LAWS, RULES AND REGULATIONS.

A. State agrees to conduct its activities related to the Property in strict compliance with the United States Constitution and with the applicable laws, rules, and regulations of the United States, State of Minnesota, St. Louis County, and City of Duluth, including, but not limited to, all laws, rules, and regulations relating to accessibility standards under the Americans with Disabilities Act. State shall not unlawfully discriminate and shall comply with all applicable federal and state laws regarding non-discrimination.

B. State agrees to procure, at State's expense, all licenses, permits and other authorizations necessary for carrying out its obligations under this Agreement and completing the Project, including but not limited to DNR public waters, fill, erosion control, and shoreland permits.

15. RECORDS RETENTION. State agrees to maintain all books, records, documents, and other evidence pertaining to this Agreement for six (6) years after termination or expiration of this Agreement for any reason.

16. GOVERNMENT DATA PRACTICES. City and State shall comply with the Minnesota Data Practices Act, Minn. Stat. Chapter 13, as it applies to all data relating to this Agreement.

17. WAIVER. The waiver by City or State of any breach of any term, covenant, or condition of this Agreement shall not be deemed to be a waiver of any subsequent breach of same or any other term, covenant, or condition in this Agreement.

18. SEVERABILITY. If any term or provision of this Agreement is declared by a court of competent-jurisdiction to be illegal or in conflict with any law, then the validity of the remaining terms and provisions shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if this Agreement did not contain the particular term or provision held to be invalid.

19. NO THIRD PARTY RIGHTS. This Agreement is to be construed and understood solely as an agreement between State and City regarding the subject matter herein and shall not be deemed to create any rights in any other person or on any other matter. No person shall have the right to make a claim that they are a third party beneficiary of this Agreement or of any of the terms and conditions hereof, which may be waived at any time by mutual agreement between the parties.

20. NOTICES. Notices provided pursuant to this Agreement shall be sufficient if sent by regular United States mail, postage prepaid, addressed to:

State of Minnesota  
Attn: Lands and Minerals Division  
Department of Natural Resources  
500 Lafayette Road, Box 45  
St. Paul, Minnesota 55155-4045  
(651) 259-5959

City of Duluth  
Attn: Property and Facilities Manager  
1532 W. Michigan Street  
Duluth, Minnesota 55806  
(218) 730-4430

Copy to: State of Minnesota  
Department of Natural Resources  
525 Lake Avenue South #415  
Duluth, Minnesota 55802

or to such other persons or addresses as the parties may designate to each other in writing from time to time.

21. COMPLIANCE WITH AGREEMENT. The rights of State to use the Property are subject to State's compliance with the undertakings, provisions, covenants, and conditions set forth in this Agreement.

22. APPLICABLE LAW. This Agreement, together with all of its paragraphs, terms, and provisions, is made in the State of Minnesota and shall be construed and interpreted in accordance with the laws of the State of Minnesota.

23. AMENDMENTS. Any amendments to this Agreement shall be in writing and shall be executed in the same manner as this Agreement.

24. AUTHORITY TO EXECUTE AGREEMENT. The parties represent to each other that the execution of this Agreement has been duly and fully authorized by their respective governing bodies or boards, that the individuals who executed this Agreement on their behalf are fully authorized to do so, and that this Agreement when thus executed

by said individuals will constitute and be the binding obligation and agreement of the parties in accordance with the terms and conditions of this Agreement.

25. ENTIRE AGREEMENT. This Agreement, including exhibits, constitutes the entire agreement between the parties and supersedes all prior written and oral agreements and negotiations between the parties relating to the subject matter hereof. This Agreement may be executed and delivered by a party by facsimile or PDF transmission, which transmission copy shall be considered an original and shall be binding and enforceable against such party.

*[Remainder of this page is intentionally left blank.]*

IN WITNESS WHEREOF, the parties have set their hands the day and date as indicated below.

CITY OF DULUTH, MINNESOTA

STATE OF MINNESOTA, acting by and through the Commissioner of the Department of Natural Resources

By: \_\_\_\_\_  
Mayor

By: \_\_\_\_\_

ATTEST:

Title: \_\_\_\_\_

\_\_\_\_\_  
City Clerk

Dated: \_\_\_\_\_

Dated: \_\_\_\_\_

COUNTERSIGNED:

STATE ENCUMBRANCE VERIFICATION  
Individual certifies that funds have been encumbered as required by Minn. Stat. 16A.15 and 16C.05

\_\_\_\_\_  
City Auditor

Signed \_\_\_\_\_

Date: \_\_\_\_\_

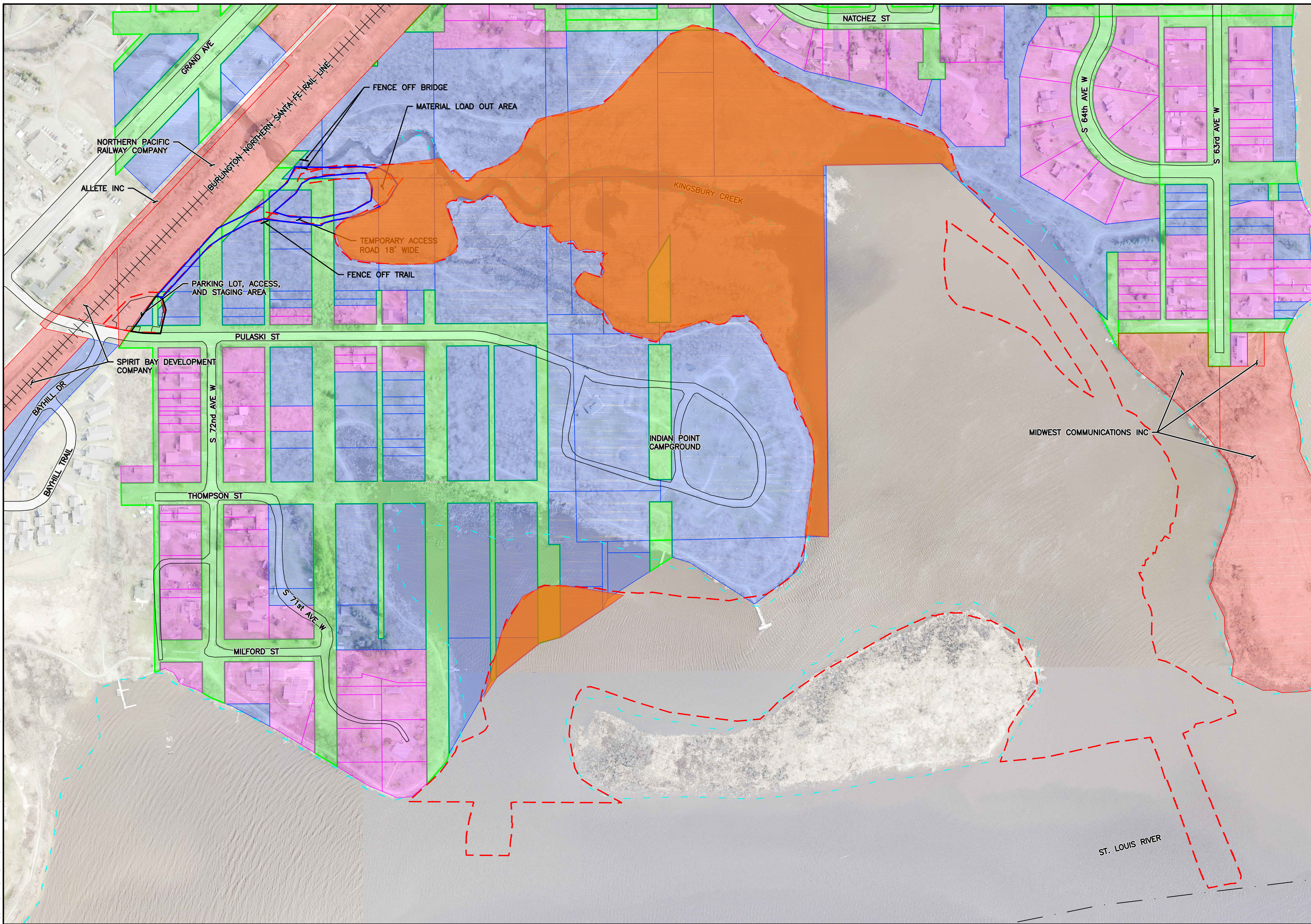
Contract: \_\_\_\_\_

APPROVED AS TO FORM:

\_\_\_\_\_  
City Attorney



EXHIBIT A



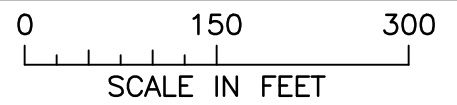
LEGEND

- Staging Area
- Access Area
- Project Area

NOTES:

1. PARCEL BOUNDARY INFORMATION PROVIDED BY ST. LOUIS COUNTY AND ADJUSTED BASED ON BOUNDARY SURVEYS BY LW SURVEY COMPANY PROVIDED IN NOVEMBER 2017.

1 PLAN: KINGSBURY BAY - PROPERTY OWNERSHIP  
C-01



DRAFT

CADD USER: Shone L. Yoder FILE: M:\DESIGN\23691879.00\2369187900\_C-04.DWG PLOT SCALE: 1:1 PLOT DATE: 10/4/2019 10:47 AM  
 BARR: M:\AutoCAD 2011\AutoCAD 2011\Support\enu\Template\Barr\_2011\_Template.dwt Plot at: 10/05/2010 14:03:50

NO.	BY	CHK	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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.  
 PRINTED NAME: BENJAMIN J. MEEMKEN  
 SIGNATURE: \_\_\_\_\_  
 DATE: 10/31/18 LICENSE #: 53168

CLIENT	BID	CONSTRUCTION	PERMIT
07/05/17	10/11/17	03/06/18	10/31/18
02/09/18			

RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

**BARR**  
 Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802  
 Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Ph: 1-800-632-2277  
 Fax: (218) 529-8202  
 www.barr.com

Scale	AS SHOWN
Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2



GRASSY POINT/KINGSBURY BAY RESTORATION  
 DULUTH, MINNESOTA  
 KINGSBURY BAY  
 PROPERTY OWNERSHIP

BARR PROJECT No.	23/69-1879.00
CLIENT PROJECT No.	8F073/B187
DWG. No.	C-04
REV. No.	1

## **Kingsbury Bay Habitat Restoration Project**

### **Exhibit B – Project Summary**

The Minnesota Department of Natural Resources (MNDNR) proposes to restore approximately 240 acres of coastal marsh in the St. Louis River Estuary (SLRE or the estuary) at two locations in the St. Louis River Bay, Duluth, Minnesota. The restoration goal at both Kingsbury Bay and Grassy Point is to create shallow sheltered bay habitats that support Lake Superior estuary marsh.

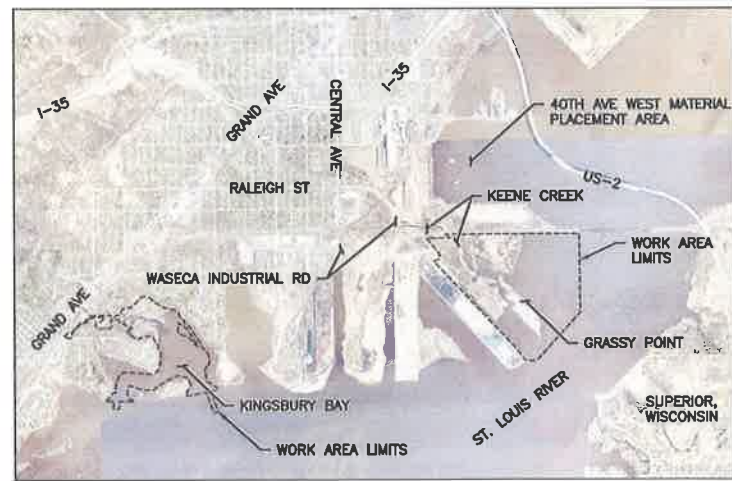
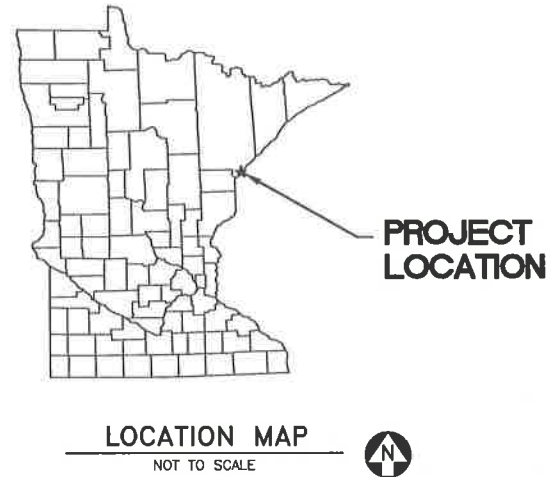
Kingsbury Bay is an 80-acre shallow sheltered bay approximately six miles inland from Lake Superior and one mile upstream of Grassy Point. The bay is surrounded by land containing the Indian Point Campground and shoreline trails owned by the City of Duluth and residential development along the north shore. Sedimentation from Kingsbury Creek watershed has converted approximately 24 acres of former open water wetland to a shallow emergent marsh dominated by narrow-leaved cattail, an invasive species. The shallowing has reduced the hydrodynamic effects of the Lake Superior seiche, diversity of fish habitat, and access to recreational boaters.

MNDNR will reestablish shallow sheltered bay habitat at Kingsbury Bay by excavating approximately 174,000 cubic yards (CY) of sediment. Excavation will create a diversity of depths, deep fisheries habitat, and a channel to improve flow and access into the bay. The dredge material from the bay will be transported and reused as a biological medium for placement over impaired substrates at Grassy Point. Material removed from Kingsbury Bay will also be used at the nearby 40<sup>th</sup> Ave West restoration project, which is managed by the MN Pollution Control Agency. The fine sediments removed from Kingsbury Bay should provide the consistency and nutrient content that support a diverse mix of aquatic vegetation and macroinvertebrates and improve the biological productivity at these habitat restoration sites in the estuary.

EXHIBIT C

# GRASSY POINT/KINGSBURY BAY RESTORATION

## MINNESOTA DNR DULUTH, MINNESOTA



### SHEET INDEX

SHEET NO.	TITLE
G-01	INDEX, LOCATION MAP, AND VICINITY MAP
C-01	OVERALL SITE PLAN
C-02	DULUTH - SUPERIOR HARBOR NOAA NAUTICAL CHART
C-03	HYDRAULICS AND HYDROLOGY
C-04	KINGSBURY BAY PROPERTY OWNERSHIP
C-05	KINGSBURY BAY EXISTING CONDITIONS AND SITE ACCESS
C-06	KINGSBURY BAY DREDGE PLAN
C-07	KINGSBURY BAY DREDGED MATERIALS MANAGEMENT PLAN
C-08	KINGSBURY BAY FINAL CONDITIONS PLAN
C-09	KINGSBURY BAY INLET PLAN AND PROFILE
C-10	KINGSBURY BAY SECTIONS 1 OF 2
C-11	KINGSBURY BAY SECTIONS 2 OF 2
C-12	GRASSY POINT PROPERTY OWNERSHIP
C-13	GRASSY POINT EXISTING CONDITIONS AND SITE ACCESS
C-14	GRASSY POINT DREDGE PLAN
C-15	GRASSY POINT DREDGED MATERIALS MANAGEMENT PLAN
C-16	GRASSY POINT BERM AND BUTTRESSES PLAN AND SECTIONS
C-17	GRASSY POINT RESTORATION PLAN
C-18	GRASSY POINT MATERIAL PLACEMENT PLAN
C-19	GRASSY POINT FINAL CONDITIONS PLAN
C-20	KEENE CREEK INLET PLAN AND PROFILE
C-21	GRASSY POINT SECTIONS 1 OF 3
C-22	GRASSY POINT SECTIONS 2 OF 3
C-23	GRASSY POINT SECTIONS 3 OF 3
C-24	PIPELINE AND TRUCK ROUTES PLAN
C-25	DREDGE AND RESTORATION SECTION AND DETAILS
C-26	INLET PLANS AND SECTIONS
C-27	LOG SILL PLAN AND SECTIONS
C-28	EROSION AND SEDIMENTATION CONTROL DETAILS
C-29	40TH AVE WEST MATERIAL PLACEMENT PLAN



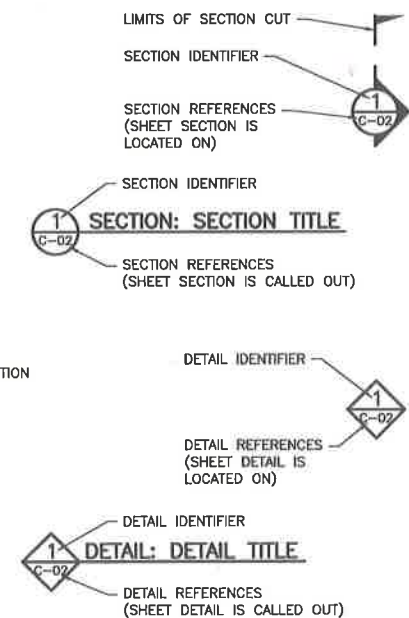
NOTES:

- ALL CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL CODES AND REGULATIONS.
- TOPOGRAPHIC INFORMATION BASED ON LIDAR CONDUCTED BY MN DNR, FALL 2012 (POST FLOODS) AND SITE SURVEYS CONDUCTED BY BARR ENGINEERING COMPANY IN MAY 2017 AND JUNE 2017.
- BATHYMETRIC INFORMATION BASED ON BATHYMETRIC SURVEY CONDUCTED BY BARR ENGINEERING COMPANY IN SEPTEMBER 2013, MAY 2015, MAY 2017, AND JUNE 2017.
- HIGH RESOLUTION ORTHOIMAGERY BY SAINT LOUIS COUNTY, MINNESOTA, TAKEN SPRING 2016.
- WATER SURFACE ELEVATION IS ASSUMED TO BE 601.1 FEET FOR DESIGN PURPOSES.
- ALL UTILITIES SHOWN ARE CONSIDERED LEVEL D, UNLESS OTHERWISE NOTED, IN ACCORDANCE WITH ASCE STANDARD CI/ASCE3B-02.
- CONTRACTOR SHALL FIELD-LOCATE ALL SITE UTILITIES PRIVATE AND PUBLIC PRIOR TO STARTING THE WORK. ALL UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE. ANY UTILITIES DAMAGED BY CONTRACTOR SHALL BE REPAIRED BY CONTRACTOR TO THE SATISFACTION OF UTILITY OWNER.

COORDINATE SYSTEM:

HORIZONTAL DATUM - MINNESOTA STATE PLANE NAD83, NORTH ZONE (US SURVEY FEET)  
VERTICAL DATUM - NAVD88 (FEET)

REFERENCING



ABBREVIATIONS AND SYMBOLS

APPROX. ASCE	APPROXIMATE AMERICAN SOCIETY OF CIVIL ENGINEERS
CMP	CORRUGATED METAL PIPE
EL.	ELEVATION
FT	FEET
IN	INCHES
MAX.	MAXIMUM
MIN.	MINIMUM
NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
TBD	TO BE DETERMINED
RCP	REINFORCED CONCRETE PIPE
RSU	RESTORATION SITE UNIT
TYP.	TYPICAL
USACE	UNITED STATES ARMY CORPS OF ENGINEERS
VCP	VITRIFIED CLAY PIPE
YR	YEAR
Ø	DIAMETER



GOPHER STATE ONE CALL:  
CALL BEFORE YOU DIG.  
811 OR 1-800-252-1166

REFERENCE DRAWINGS:

DRAWING NAME	DRAWING TITLE	BY	DATE	REV
0142_2200_1140	115 KV WINTER STREET - HIBBARD LINE No. 76	MINNESOTA POWER		
MD+18816	TOWER D-2 REINFORCED CONCRETE FOUNDATION DETAIL	MINNESOTA POWER	12/20/62	-
MULTIPLE	40TH AVENUE WEST AQUATIC HABITAT RESTORATION CONTRACT DRAWINGS	USACE	08/08/17	-

APPROVAL

*Benjamin J. Meemken* 11-8-18  
DNR DIVISION DATE

*Ken* 11-8-18  
DNR DESIGN AND CONSTRUCTION DATE

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.

PRINTED NAME BENJAMIN J. MEEMKEN  
SIGNATURE *Ben Meemken*  
DATE 10/31/18 LICENSE # 53168

CLIENT	CONSTRUCTION PERMIT	RELEASED TO/FOR	DATE RELEASED
01/05/17	01/05/17	A B C O 1 2 3	

**BARR**  
Project Office:  
BARR ENGINEERING CO.  
325 SOUTH LAKE AVENUE  
SUITE 700  
DULUTH, MN 55802  
Corporate Headquarters:  
Minneapolis, Minnesota  
Ph: 1-800-786-5830  
Fax: (218) 629-8202  
www.barr.com

Scale	AS SHOWN
Date	06/20/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2

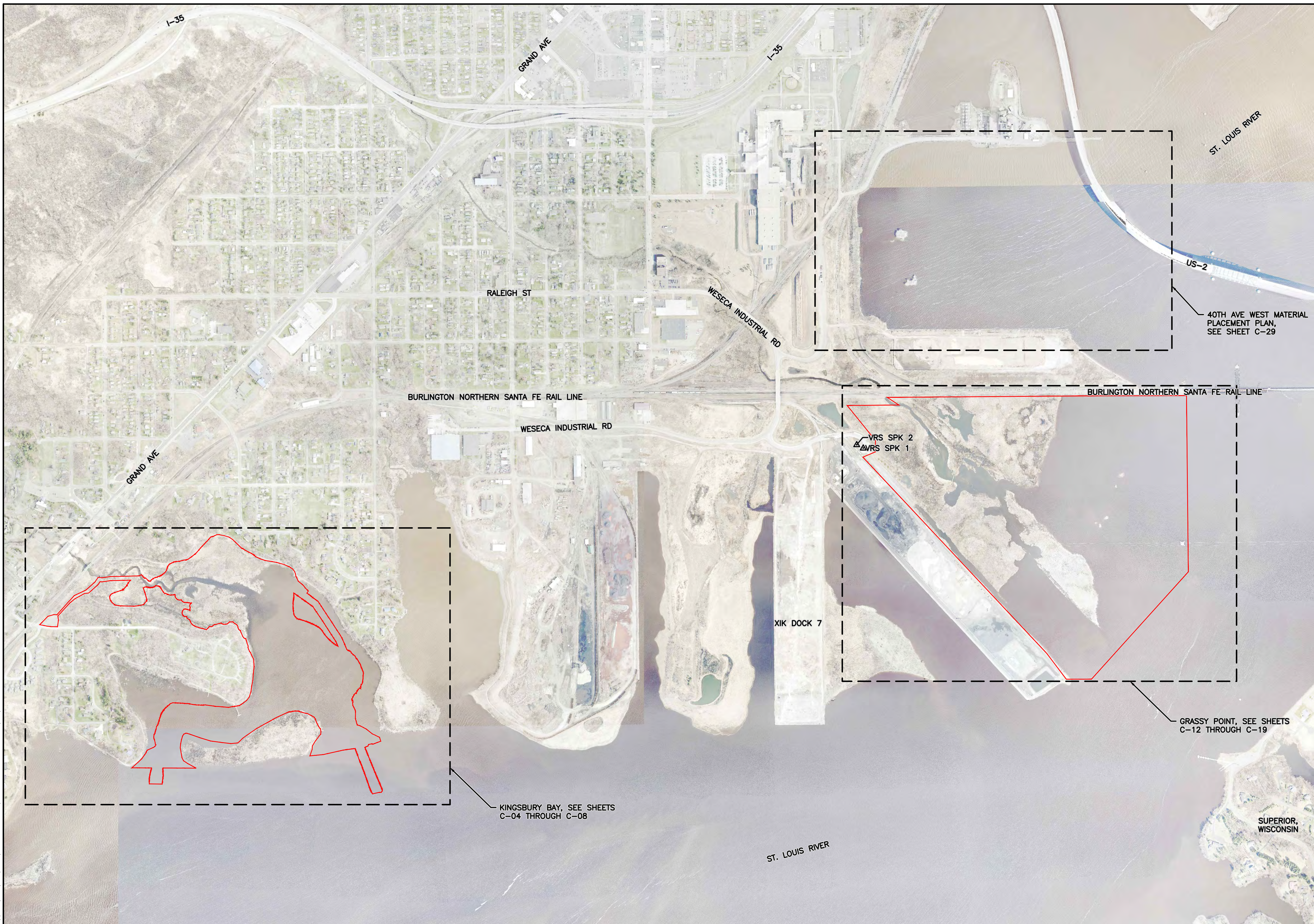


GRASSY POINT/KINGSBURY BAY RESTORATION  
DULUTH, MINNESOTA  
INDEX, LOCATION MAP, AND VICINITY MAP

BARR PROJECT No.	CLIENT PROJECT No.	DWG. No.	REV. No.
23/69-1879.00	8F073/B187	G-01	1

ISSUED FOR CONSTRUCTION  
10/31/2018

CADD USER: Bryan D. Pitterle FILE: M:\DESIGN\2369187900\_C-01.DWG PLOT SCALE: 1:1 PLOT DATE: 10/29/2018 11:33 AM  
 BAR: M:\AutoCAD 2011\AutoCAD 2011\Support\enu\Template\Barr\_2011\_Template.dwt Plot at: 10/05/2010 14:03:50



**LEGEND**

WORK AREA LIMITS  
 SHEET CALLOUTS  
▲ CONTROL POINT

**NOTES:**

1. SEE SHEET C-24 FOR INFORMATION ON PROPOSED PIPELINE, TRUCK ROUTES, AND ACCESS TO SITE,

CONTROL POINTS				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	412306.54	2860876.26	610.03	VRS SPK 1
2	412339.30	2860812.11	607.86	VRS SPK 2

1 **PLAN: OVERALL SITE**

0 500 1000  
 SCALE IN FEET

**ISSUED FOR CONSTRUCTION**  
 10/31/2018

NO.	BY	CHK	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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 PRINTED NAME: BENJAMIN J. MEEMKEN  
 SIGNATURE: *Ben Meemken*  
 DATE: 10/31/18 LICENSE #: 53168

CLIENT	BID	CONSTRUCTION	PERMIT
07/05/17	10/11/17	03/06/18	10/31/18

RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

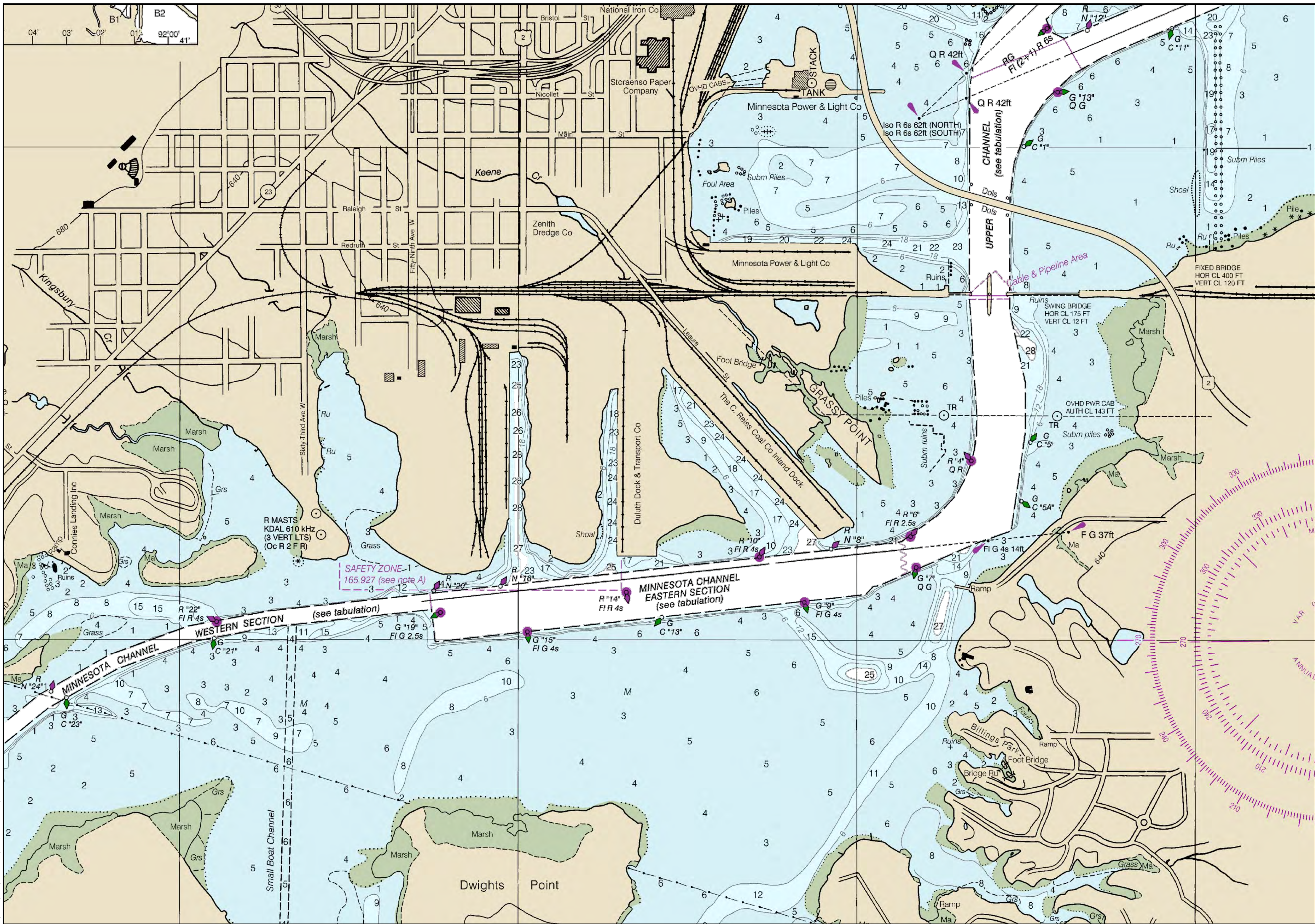
**BARR**  
 Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802  
 Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Fax: (218) 529-8202  
 www.barr.com

Scale	AS SHOWN
Date	06/20/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2



**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA  
**OVERALL SITE PLAN**

BARR PROJECT No.		<b>23/69-1879.00</b>	
CLIENT PROJECT No.		<b>8F073/B187</b>	
DWG. No.	C-01	REV. No.	1



- NOTES:**
1. THIS PORTION OF NOAA NAUTICAL CHART 14975 DULUTH-SUPERIOR HARBOR IS PROVIDED FOR REFERENCE AND DOES NOT MEET THE FEDERAL CHART CARRIAGE REGULATIONS FOR REGULATED VESSELS. THE FULL VERSION OF NOAA NAUTICAL CHART 14975 AND OTHER CHARTS CAN BE FOUND AT: [HTTP://WWW.NOAA.GOV/](http://www.noaa.gov/).

**1 PLAN: DULUTH-SUPERIOR HARBOR NOAA NAUTICAL CHART**  
NOT TO SCALE

**ISSUED FOR CONSTRUCTION**  
10/31/2018

NO.	BY	CHK	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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.

PRINTED NAME: BENJAMIN J. MEEMKEN  
SIGNATURE: *Ben Meemken*  
DATE: 10/31/18 LICENSE # 53168

CLIENT	BID	CONSTRUCTION	PERMIT	RELEASED TO/FOR	DATE RELEASED
				A B C O 1 2 3	

**BARR** ENGINEERING CO.  
325 SOUTH LAKE AVENUE  
SUITE 700  
DULUTH, MN 55802

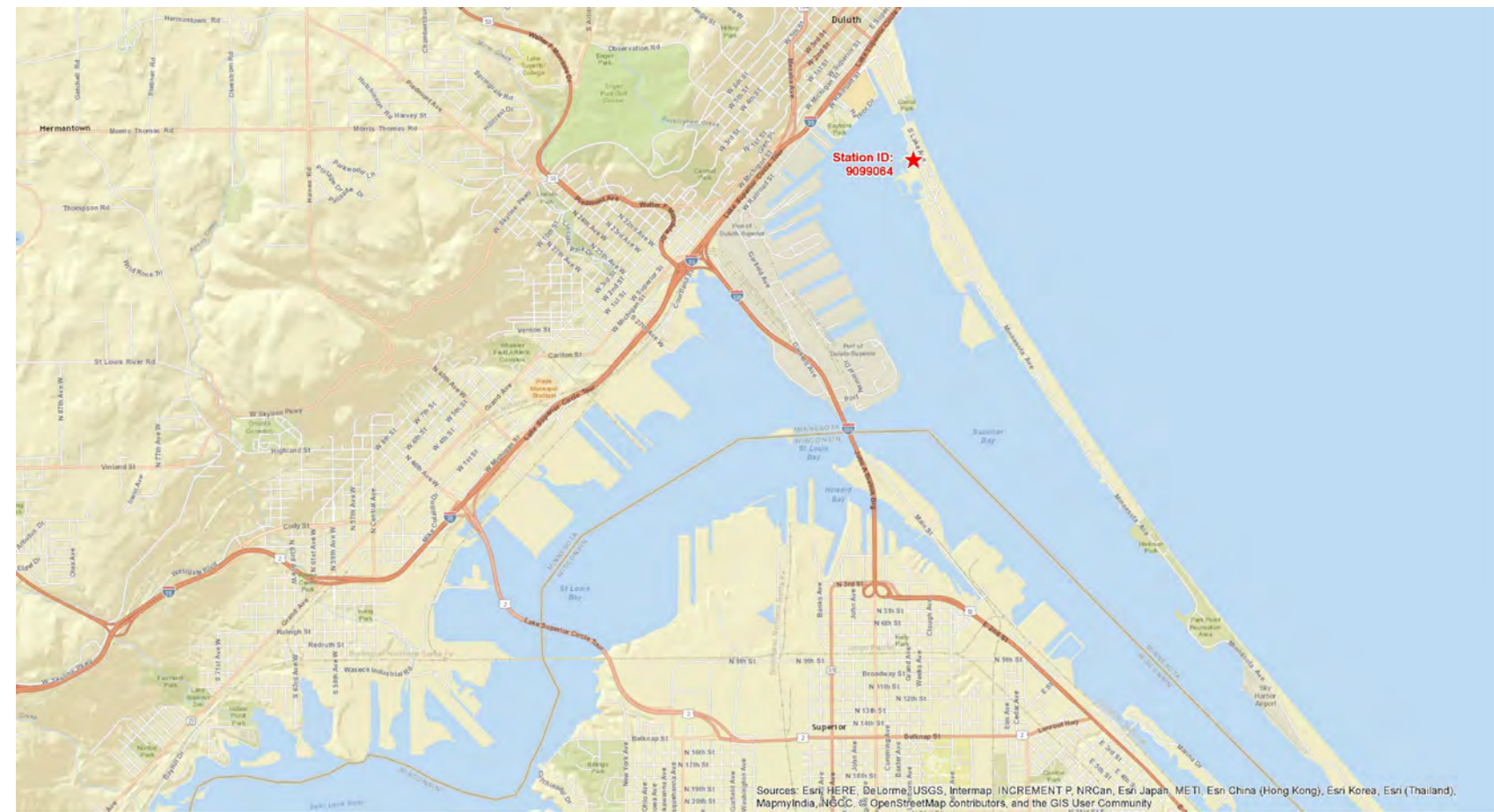
Corporate Headquarters: Minneapolis, Minnesota  
Ph: 1-800-786-5830 Fax: (218) 529-8202  
www.barr.com

Scale	AS SHOWN
Date	09/26/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2



<b>GRASSY POINT/KINGSBURY BAY RESTORATION</b> DULUTH, MINNESOTA		BARR PROJECT No. <b>23/69-1879.00</b>
<b>DULUTH-SUPERIOR HARBOR</b> NOAA NAUTICAL CHART		CLIENT PROJECT No. <b>8F073/B187</b>
DWC. No. <b>C-02</b>	REV. No. <b>1</b>	

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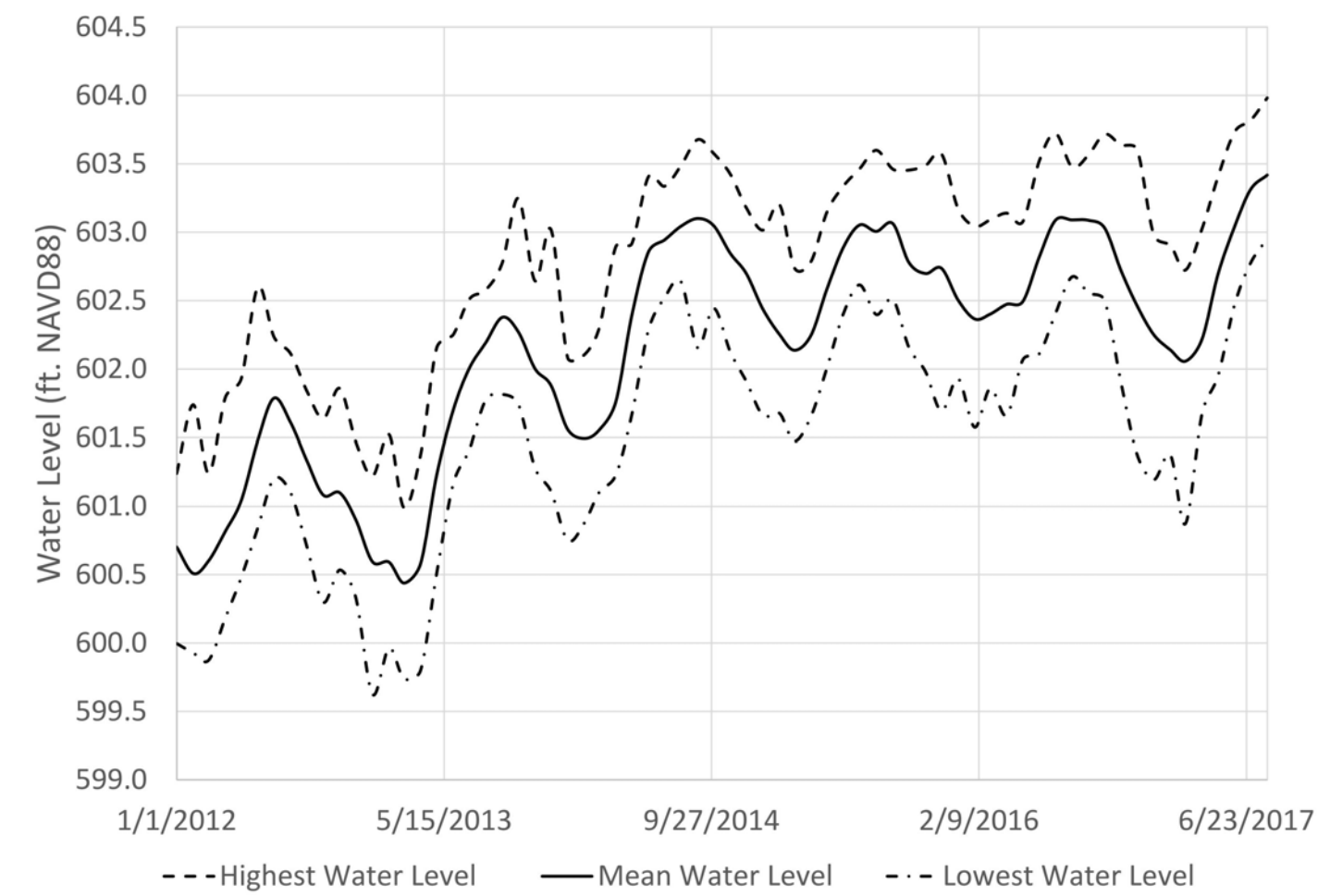
1 PLAN: NOAA LIFT BRIDGE -- STATION ID 9099064  
NOT TO SCALE



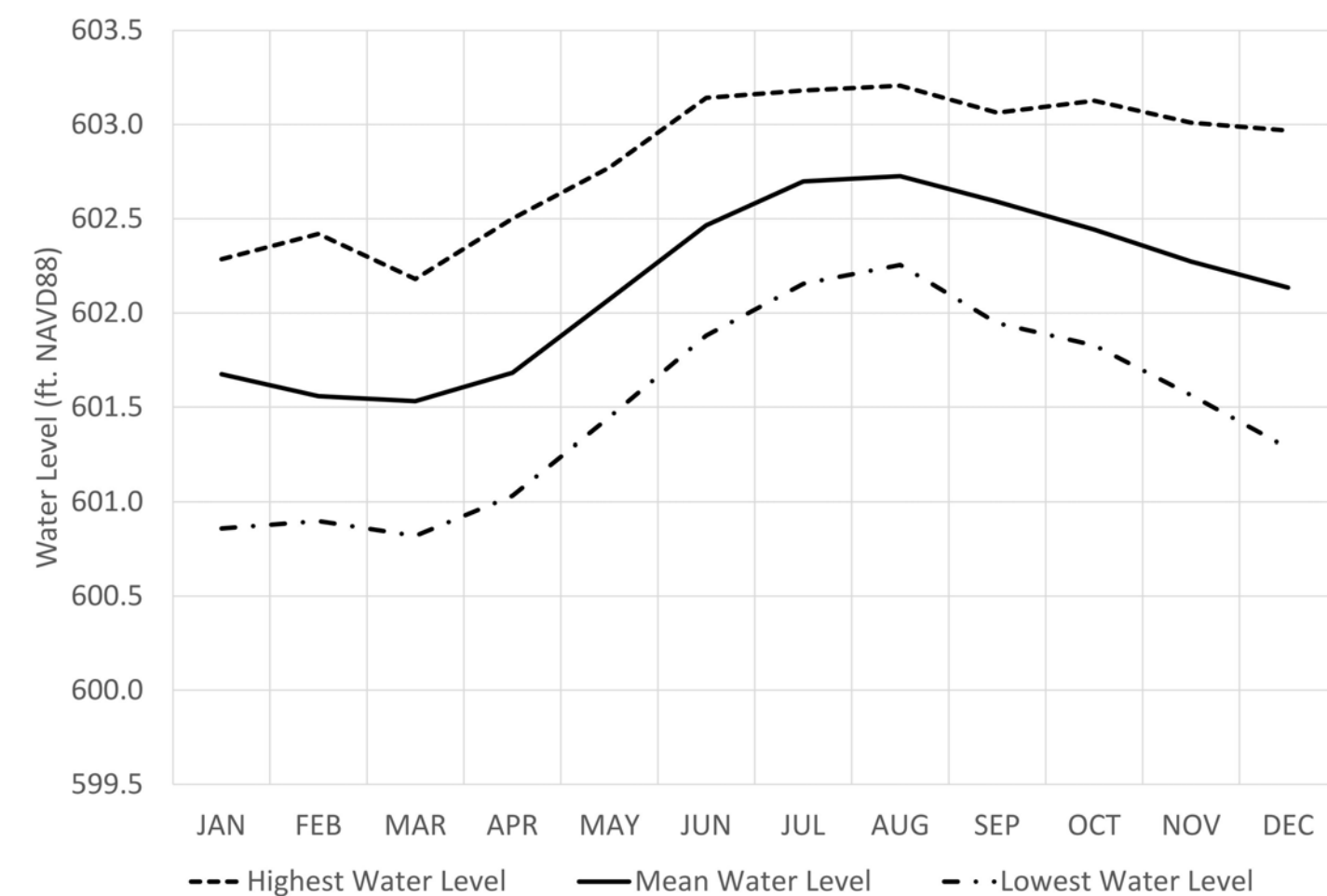
4 PLAN: SW-3 LOCATION AT KEENE CREEK  
NOT TO SCALE



7 PLAN: STA. 5+00 LOCATION AT KINGSBURY CREEK  
NOT TO SCALE



2 DETAIL: NOAA OBSERVED WATER LEVELS AT LIFT BRIDGE (2012-2017)  
NOT TO SCALE



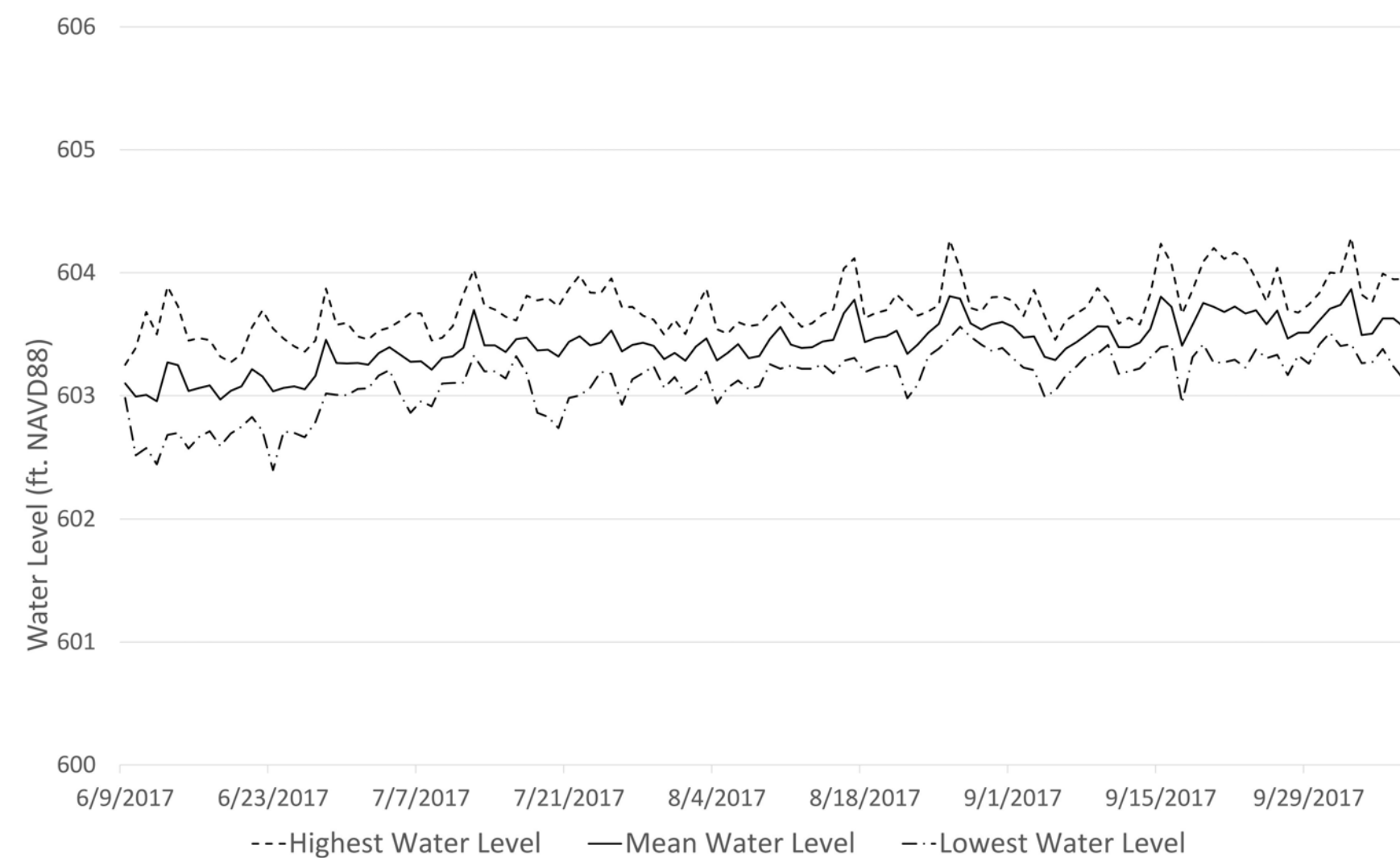
3 DETAIL: AVERAGE NOAA OBSERVED WATER LEVELS AT LIFT BRIDGE (2012-2017)  
NOT TO SCALE

RETURN PERIOD	FLOW (CFS)	WATER SURFACE ELEVATION (FT)	APPROX. CHANNEL DEPTH (FT)	VELOCITY (FT/S)
LOW FLOW	1.5	601.1	3.1	0.1
Q 1.5 YR	154	601.2	3.2	1.7
Q 2 YR	203	601.3	3.3	2.1
Q 100 YR	1200	604.0	5.7	5.6

5 TABLE: ESTIMATE PEAK FLOW HYDRAULIC CONDITIONS AT SW-3  
NOT TO SCALE

NOTES:

- ALL WATER SURFACE ELEVATIONS, DEPTHS, AND VELOCITIES ESTIMATED FOR FLOW EVENTS OCCURRING AT MEAN LOW WATER IN ST. LOUIS BAY. ACTUAL CONDITION MAY VARY DEPENDING ON DOWNSTREAM WATER SURFACE ELEVATION.



6 DETAIL: AVERAGE WATER LEVELS AT SW-3  
NOT TO SCALE

RETURN PERIOD	FLOW (CFS)	WATER SURFACE ELEVATION (FT)	APPROX. CHANNEL DEPTH (FT)	VELOCITY (FT/S)
LOW FLOW	2	601.1	1.0	0.1
Q 1.5 YR	241	601.9	1.8	5.3
Q 2 YR	316	602.0	2.0	5.7
Q 100 YR	1810	603.3	3.3	10.0

8 TABLE: ESTIMATE PEAK FLOW HYDRAULIC CONDITIONS AT STA. 5+00  
NOT TO SCALE

NOTES:

- NOAA OBSERVED WATER LEVELS REPRESENT DATA AT STATION ID 9099064 AS PROVIDED BY NOAA. NOAA OBSERVED WATER LEVELS CALCULATION PERIOD JANUARY 1, 2012 - AUGUST 1, 2017.
- WATER INFORMATION PRESENTED IS BASED ON BEST INFORMATION AVAILABLE. THE INFORMATION DOES NOT NECESSARILY REPRESENT ALL POSSIBLE FUTURE CONDITIONS.
- ALL WATER SURFACE ELEVATIONS, DEPTHS, AND VELOCITIES ESTIMATED FOR FLOW EVENTS OCCURRING AT MEAN LOW WATER IN ST. LOUIS BAY. FLOW EVENTS DETERMINED BY USGS STREAMSTATS. ACTUAL CONDITION MAY VARY DEPENDING ON DOWNSTREAM WATER SURFACE ELEVATION.

ISSUED FOR CONSTRUCTION  
10/31/2018

CADD USER: Bryan D. Pitterle FILE: M:\DESIGN\2369187900\_C-03.DWG PLOT SCALE: 1:1 PLOT DATE: 10/29/2018 11:36 AM  
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NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	JCO	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	JCO	03/06/18	ISSUED FOR CONSTRUCTION

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.  
PRINTED NAME JESSICA OLSON  
SIGNATURE *J. Olson*  
DATE 10/31/18 LICENSE # 43102

CLIENT	BID	CONSTRUCTION PERMIT	RELEASED TO/FOR	DATE RELEASED
			A B C 0 1 2 3	

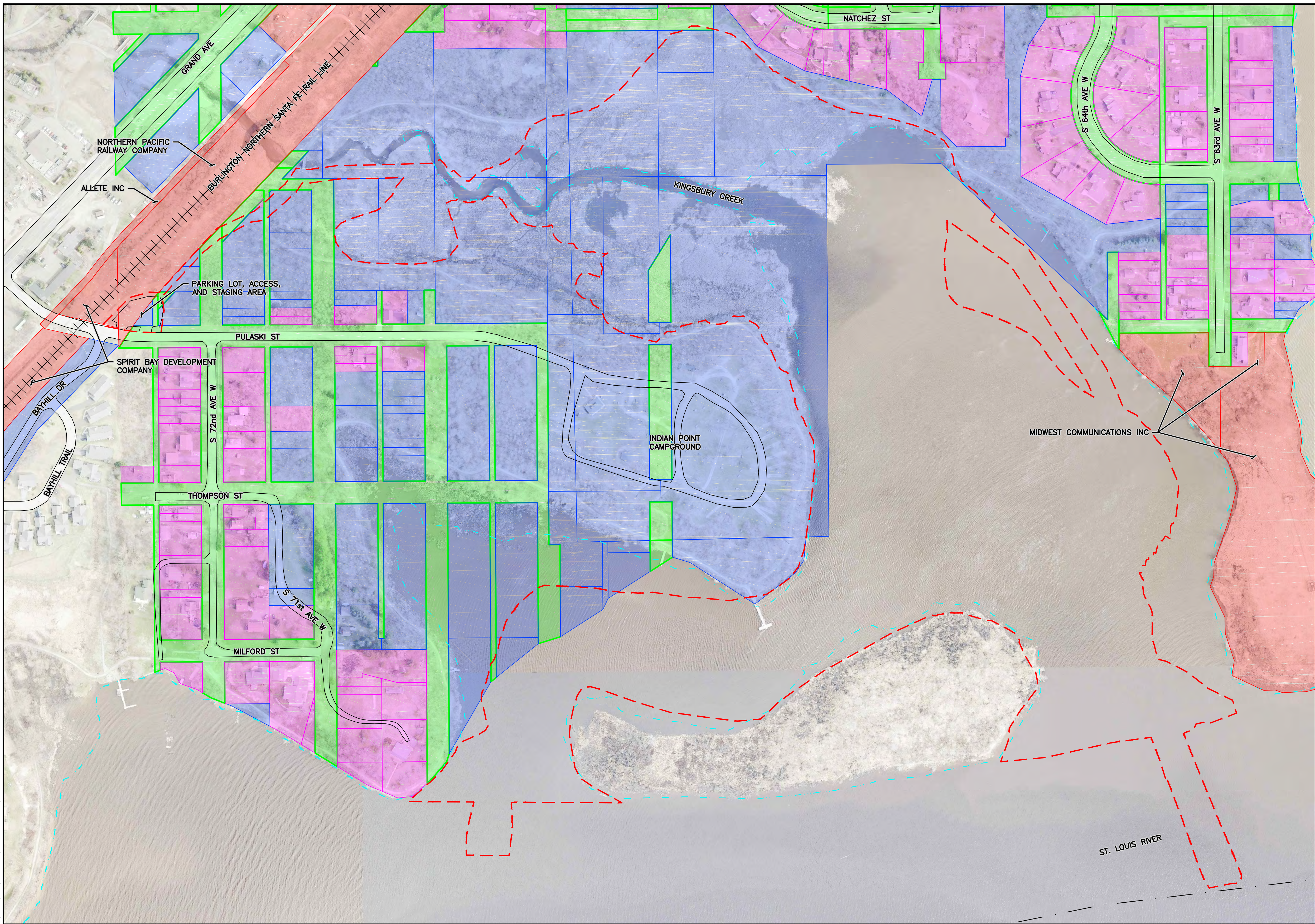
Project Office:  
**BARR ENGINEERING CO.**  
325 SOUTH LAKE AVENUE  
SUITE 700  
DULUTH, MN 55802  
Corporate Headquarters:  
Minneapolis, Minnesota  
Ph: 1-800-786-5830  
Ph: (218) 529-8202  
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Scale	AS SHOWN
Date	09/28/2017
Drawn	BDP
Checked	GMP
Designed	JCO
Approved	JCO



GRASSY POINT/KINGSBURY BAY RESTORATION  
DULUTH, MINNESOTA  
HYDRAULICS AND HYDROLOGY

BARR PROJECT No.	CLIENT PROJECT No.	DWG. No.	REV. No.
23/69-1879.00	8F073/B187	C-03	1



**LEGEND**

- - - - - WORK AREA LIMITS
- - - - - WATER SURFACE ELEVATION
- EXISTING RAILROAD
- EXISTING ROAD
- FEDERAL NAVIGATION CHANNEL
- PARCEL - MUNICIPALITY
- PARCEL - RESIDENTIAL
- PARCEL - PRIVATE
- DEDICATED RIGHT-OF-WAY

**NOTES:**

1. PARCEL BOUNDARY INFORMATION PROVIDED BY ST. LOUIS COUNTY AND ADJUSTED BASED ON BOUNDARY SURVEYS BY LW SURVEY COMPANY PROVIDED IN NOVEMBER 2017.

**1 PLAN: KINGSBURY BAY - PROPERTY OWNERSHIP**

0 150 300  
SCALE IN FEET

*ISSUED FOR CONSTRUCTION*  
*10/31/2018*

CADD USER: Bryan D. Pitterle FILE: M:\DESIGN\2369187900\2369187900\_C-04.DWG PLOT SCALE: 1:1 PLOT DATE: 10/29/2018 11:39 AM  
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NO.	BY	CHK	APP	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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PRINTED NAME **BENJAMIN J. MEEMKEN**  
 SIGNATURE *Ben Meemken*  
 DATE 10/31/18 LICENSE # 53168

CLIENT	BID	CONSTRUCTION	PERMIT
07/05/17	10/11/17	03/06/18	10/31/18
		02/09/18	

RELEASED TO/FOR	A	B	C	0	1	2	3

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 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

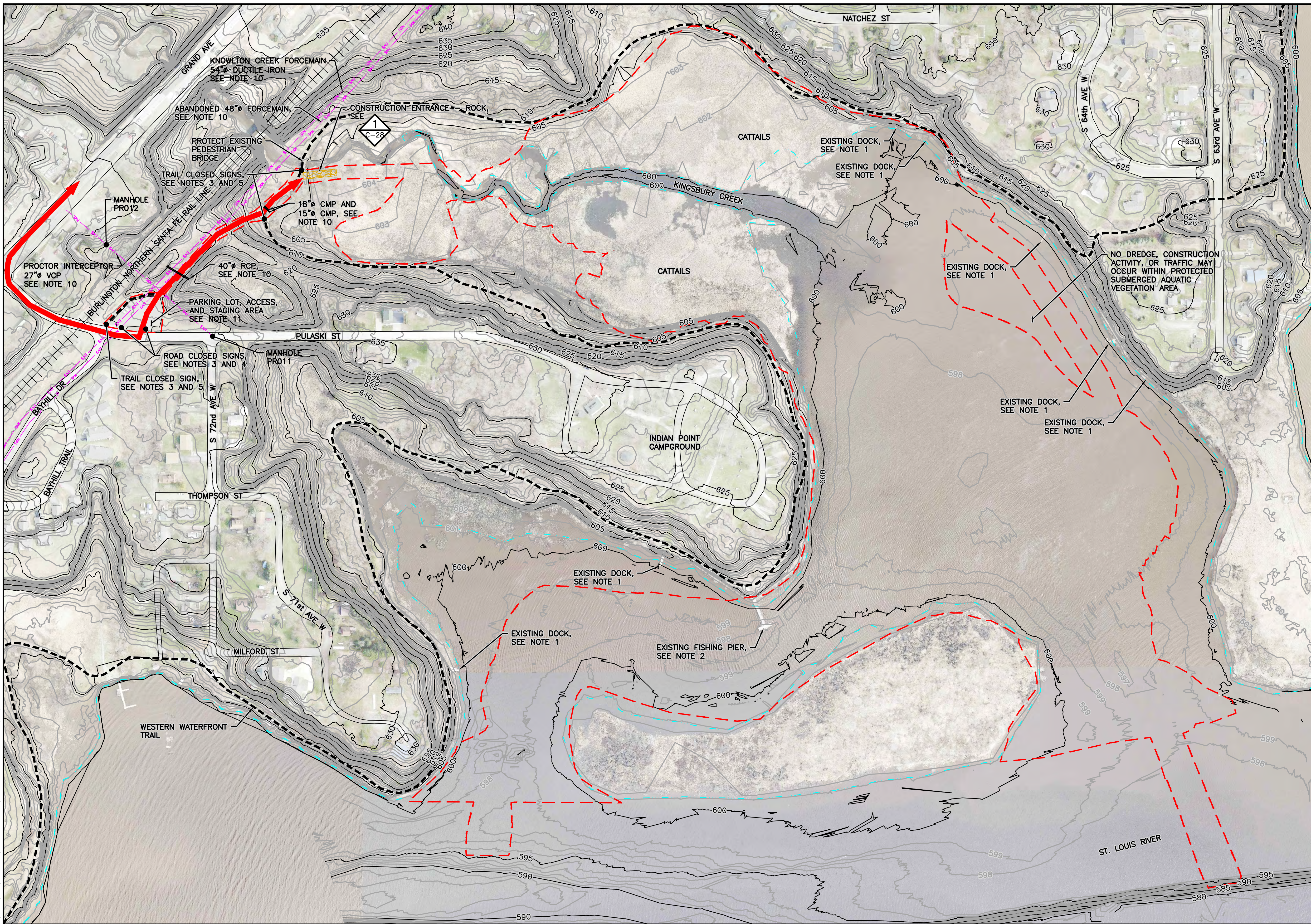
Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Fax: (218) 529-8202  
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Date	06/21/2017
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Checked	GMP
Designed	BJM2
Approved	BJM2



<b>GRASSY POINT/KINGSBURY BAY RESTORATION</b>		BARR PROJECT No. <b>23/69-1879.00</b>	
DULUTH, MINNESOTA		CLIENT PROJECT No. <b>8F073/B187</b>	
<b>KINGSBURY BAY PROPERTY OWNERSHIP</b>		DWG. No. <b>C-04</b>	REV. No. <b>1</b>



**LEGEND**

	WORK AREA LIMITS
	WATER SURFACE ELEVATION
	EXISTING FIVE-FOOT CONTOUR
	EXISTING ONE-FOOT CONTOUR
	EXISTING RAILROAD
	EXISTING ROAD
	EXISTING TRAIL
	FEDERAL NAVIGATION CHANNEL
	POTENTIAL SITE ACCESS
	CONSTRUCTION ROCK - ENTRANCE
	EXISTING SANITARY SEWER, SEE NOTE 10
	EXISTING CULVERT, SEE NOTE 10

**NOTES:**

- CONTRACTOR TO PROTECT EXISTING PRIVATE DOCKS.
- EXISTING FISHING PIER TO BE REMOVED BY OTHERS PRIOR TO START OF PROJECT.
- ALL SIGNAGE SHALL BE IN COMPLIANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES BY THE FEDERAL HIGHWAY ADMINISTRATION.
- "ROAD CLOSED" SIGN SHALL BE R11-2 ON A TYPE 3 BARRICADE. PROVIDE ADDITIONAL TYPE 3 BARRICADES TO PREVENT ACCESS TO PARKING LOT AS NECESSARY.
- PATHS OUTSIDE OF WORK AREA LIMITS SHALL REMAIN OPEN AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR SHALL EMPLOY CONTROLS AS NECESSARY TO PROTECT THE PUBLIC FROM HAZARDS ASSOCIATED WITH CONSTRUCTION OPERATIONS. "TRAIL CLOSED" SIGN SHALL BE SIMILAR TO R11-2 SIGN ON A TYPE 2 BARRICADE. TRAIL CLOSED SIGNS SHALL BE PRECEDED BY "TRAIL WORK AHEAD" WARNING SIGN, SIMILAR TO W20-1 SIGN.
- CONTRACTOR SHALL RESTORE PATHS AND TRAILS TO PRE-CONSTRUCTION CONDITIONS UPON COMPLETION OF WORK.
- ALL TEMPORARY EROSION CONTROL FEATURES SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION, UNLESS OTHERWISE SPECIFIED.
- CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROL FEATURES UPON COMPLETION OF CONSTRUCTION OR WHEN VEGETATION IS ADEQUATELY ESTABLISHED TO PREVENT EROSION, WHICHEVER OCCURS LATER.
- ALL ADJACENT STREETS AND PARKING LOTS MUST BE SWEEPED TO KEEP THEM FREE OF SEDIMENT AND MATERIALS TRACKED OFF SITE.
- INSPECT RCP AND CMP CULVERTS AND SANITARY SEWER BY VIDEO LOGGING PRE AND POST CONSTRUCTION IF PARKING LOT, ACCESS, AND STAGING AREA ARE USED.
- DO NOT STAGE EQUIPMENT OR MATERIALS OVER MARKED SANITARY SEWER LINES.

**1 PLAN: KINGSBURY BAY - EXISTING CONDITIONS AND SITE ACCESS**



*ISSUED FOR CONSTRUCTION  
10/31/2018*

CADD USER: Bryan D. Pitterle FILE: M:\DESIGN\23691879\00\2369187900\_C-05.DWG PLOT SCALE: 1:1 PLOT DATE: 10/29/2018 11:42 AM  
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NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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.

PRINTED NAME **BENJAMIN J. MEEMKEN**  
 SIGNATURE *Ben Meemken*  
 DATE 10/31/18 LICENSE # 53168

RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

**BARR** ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Fax: (218) 529-8202  
 www.barr.com

Scale	AS SHOWN
Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2

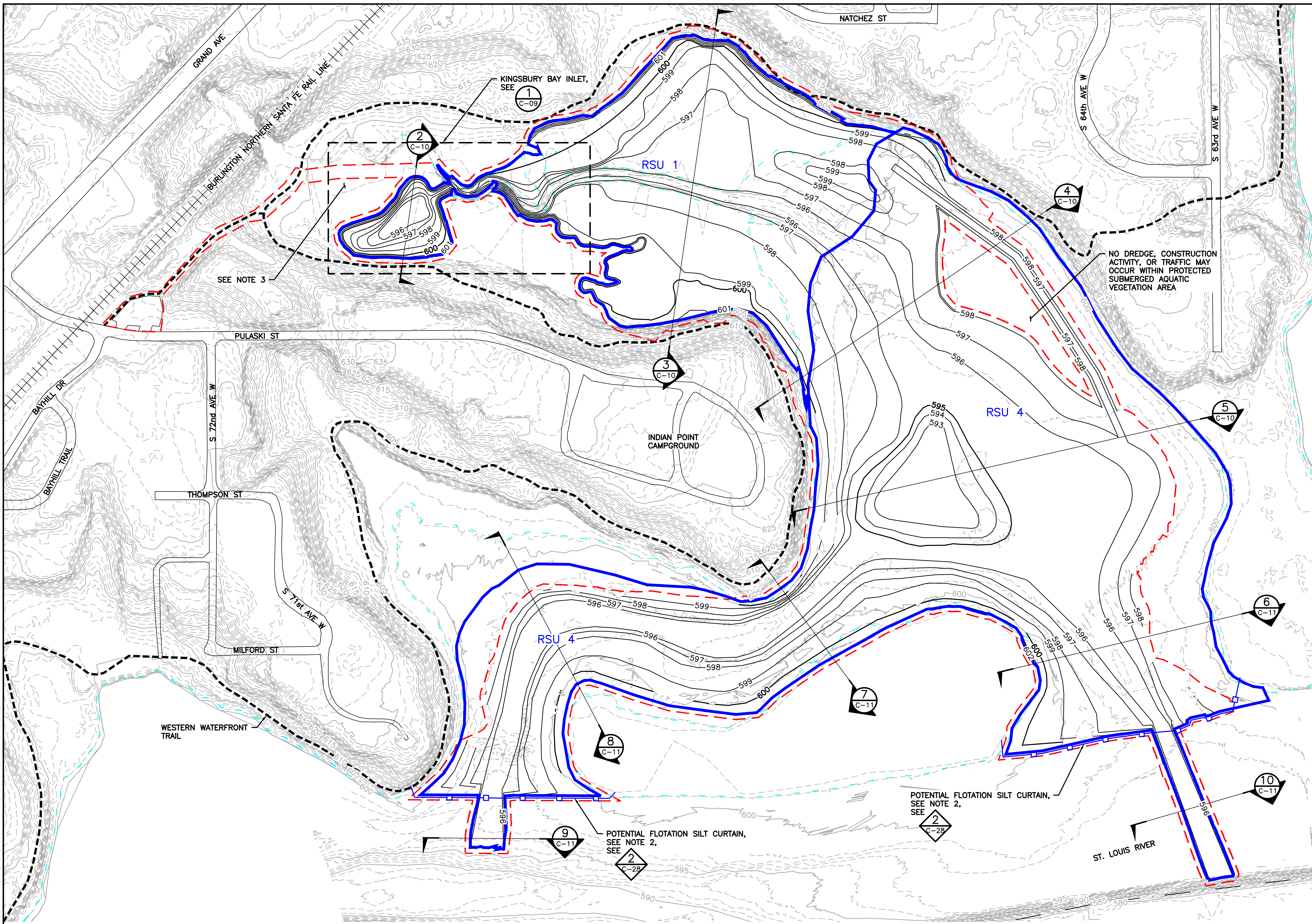


**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA

**KINGSBURY BAY**  
 EXISTING CONDITIONS AND SITE ACCESS

BARR PROJECT No.	23/69-1879.00
CLIENT PROJECT No.	8F073/B187
DWC. No.	C-05
REV. No.	1





**LEGEND**

- - - WORK AREA LIMITS
- - - WATER SURFACE ELEVATION
- 600 EXISTING FIVE-FOOT CONTOUR
- 599 EXISTING ONE-FOOT CONTOUR
- 600 PROPOSED NEAT-LINE FIVE-FOOT CONTOUR
- 599 PROPOSED NEAT-LINE ONE-FOOT CONTOUR
- RSU BOUNDARY
- RSU 1 RSU LABEL
- EXISTING RAILROAD
- EXISTING ROAD
- EXISTING TRAIL
- FEDERAL NAVIGATION CHANNEL
- FLOTATION SILT CURTAIN, SEE NOTE 2

- NOTES:**
- PROPOSED CONTOURS WITHIN RSU BOUNDARIES REPRESENT NEAT-LINE DREDGED SURFACE.
  - CONTRACTOR SHALL INSTALL AND MAINTAIN FLOTATION SILT CURTAIN TO SEPARATE ACTIVE DREDGE AREAS FROM ST. LOUIS RIVER DURING WORK. CONTRACTOR TO DETERMINE ALIGNMENT OF FLOTATION SILT CURTAIN WITHIN WORK AREA LIMITS. SEE DETAIL 2 ON SHEET C-28 FOR ADDITIONAL FLOTATION SILT CURTAIN INFORMATION.
  - PROTECT TREES AND VEGETATION OUTSIDE OF DREDGE AREA.
  - FROM APRIL 1 - JUNE 30, MAINTAIN UNRESTRICTED FLOW AND UNDISTURBED CHANNEL THROUGH KINGSBURY CREEK CHANNEL TO KINGSBURY BAY AND ST. LOUIS RIVER. WORK IN RSU 1 DURING THIS PERIOD MUST BE SEPARATED FROM KINGSBURY CREEK BY SILT CURTAIN OR VEGETATED BUFFER. SEE SPECIFICATION SECTION 01 14 00 FOR ADDITIONAL DETAILS.

**1 PLAN: KINGSBURY BAY - DREDGE**  
 SCALE IN FEET  
 0 150 300

**ISSUED FOR CONSTRUCTION**  
 10/31/2018

CADD USER: Bryan D. Pitterle FILE: M:\DESIGN\23691879\00\2369187900\_C-06.DWG PLOT SCALE: 1:1 PLOT DATE: 10/30/2018 2:08 PM  
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NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDF	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDF	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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.

PRINTED NAME BENJAMIN J. MEEMKEN  
 SIGNATURE *Ben Meemken*  
 DATE 10/31/18 LICENSE # 53168

CLIENT	BID	CONSTRUCTION PERMIT	RELEASED TO/FOR	DATE RELEASED
07/05/17	10/11/17	03/06/18	10/31/18	02/09/18

**BARR** ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802  
 Ph: 1-800-786-5830  
 Fax: (218) 529-8202  
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Scale	AS SHOWN
Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2

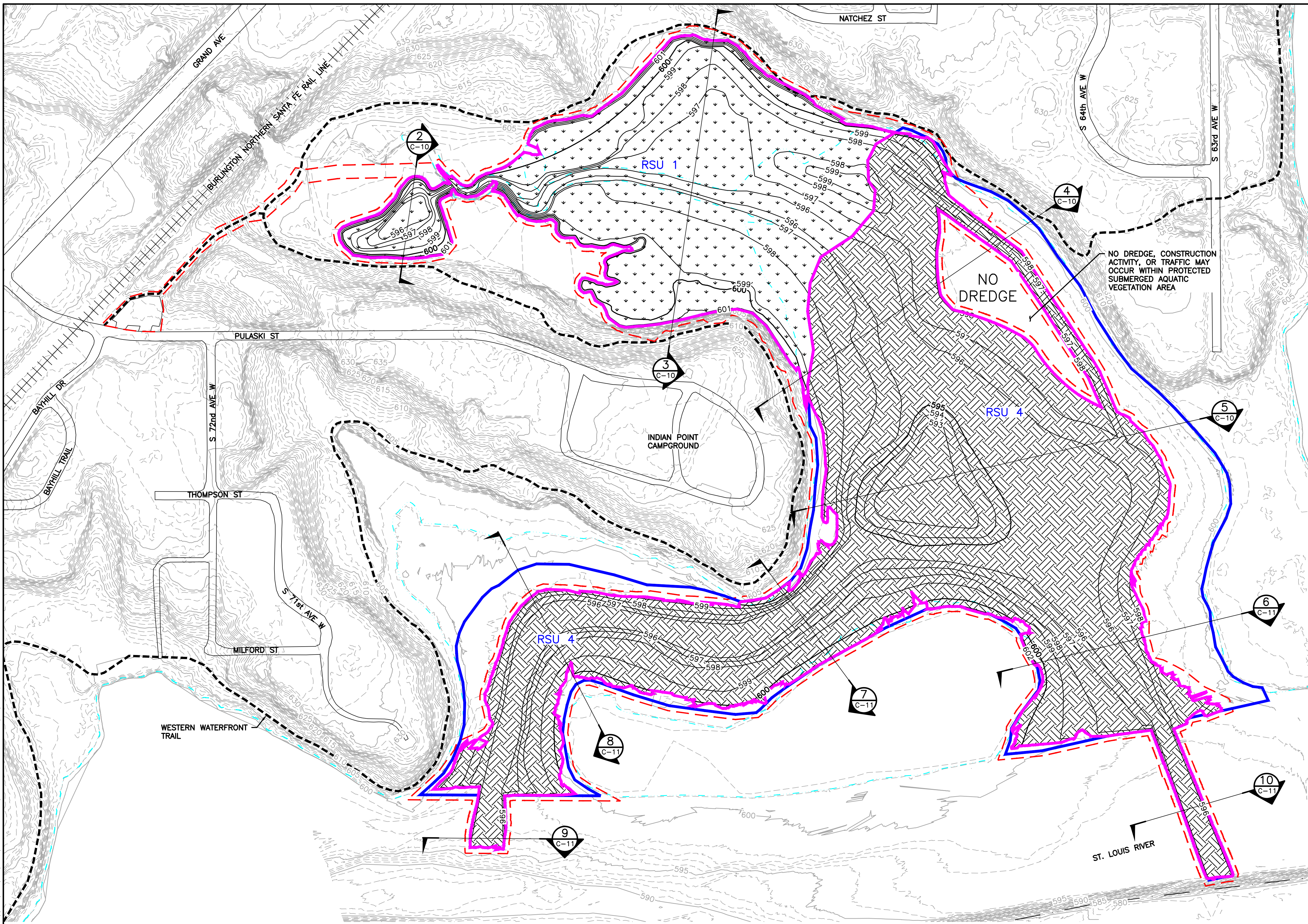


**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA

**KINGSBURY BAY DREDGE PLAN**

BARR PROJECT No.	23/69-1879.00
CLIENT PROJECT No.	8F073/B187
DWC. No.	C-06
REV. No.	1

CADD USER: Bryan D. Pitterle FILE: M:\DESIGN\23691879\00\2369187900\_C-07.DWG PLOT SCALE: 1:1 PLOT DATE: 10/30/2018 2:06 PM  
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**LEGEND**

	WORK AREA LIMITS
	WATER SURFACE ELEVATION
	EXISTING FIVE-FOOT CONTOUR
	EXISTING ONE-FOOT CONTOUR
	PROPOSED NEAT-LINE FIVE-FOOT CONTOUR
	PROPOSED NEAT-LINE ONE-FOOT CONTOUR
	RSU BOUNDARY
	RSU LABEL
	EXISTING RAILROAD
	EXISTING ROAD
	EXISTING TRAIL
	FEDERAL NAVIGATION CHANNEL
	WETLAND VEGETATION OVER COMMON FILL, SEE DETAIL 1 ON SHEET C-25
	SOFT SEDIMENT, SEE DETAIL 2 ON SHEET C-25

- NOTES:**
1. PROPOSED CONTOURS WITHIN RSU BOUNDARIES REPRESENT NEAT-LINE DREDGED SURFACE.
  2. DREDGED MATERIAL CLASSIFICATION PROVIDED BY KINGSBURY BAY SAMPLING REPORT, RTI LABORATORIES, DECEMBER 22, 2014 AND DESIGN BASIS MEMO BY BARR, OCTOBER 31, 2018.
  3. FROM APRIL 1 - JUNE 30, MAINTAIN UNRESTRICTED FLOW AND UNDISTURBED CHANNEL THROUGH KINGSBURY CREEK CHANNEL TO KINGSBURY BAY AND ST. LOUIS RIVER. WORK IN RSU 1 DURING THIS PERIOD MUST BE SEPARATED FROM KINGSBURY CREEK BY SILT CURTAIN OR VEGETATED BUFFER. SEE SPECIFICATION SECTION 01 14 00 FOR ADDITIONAL DETAILS.

**1 PLAN: KINGSBURY BAY -- DREDGED MATERIALS MANAGEMENT**  
 0 150 300  
 SCALE IN FEET

**ISSUED CONSTRUCTION**  
 10/31/2018

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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.  
 PRINTED NAME BENJAMIN J. MEEMKEN  
 SIGNATURE *Ben Meemken*  
 DATE 10/31/18 LICENSE # 53168

CLIENT	07/05/17	10/11/17					
BID							
CONSTRUCTION PERMIT			03/06/18	10/31/18			
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

**BARR**  
 Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802  
 Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Ph: 612-293-2277  
 Fax: (218) 529-8202  
 www.barr.com

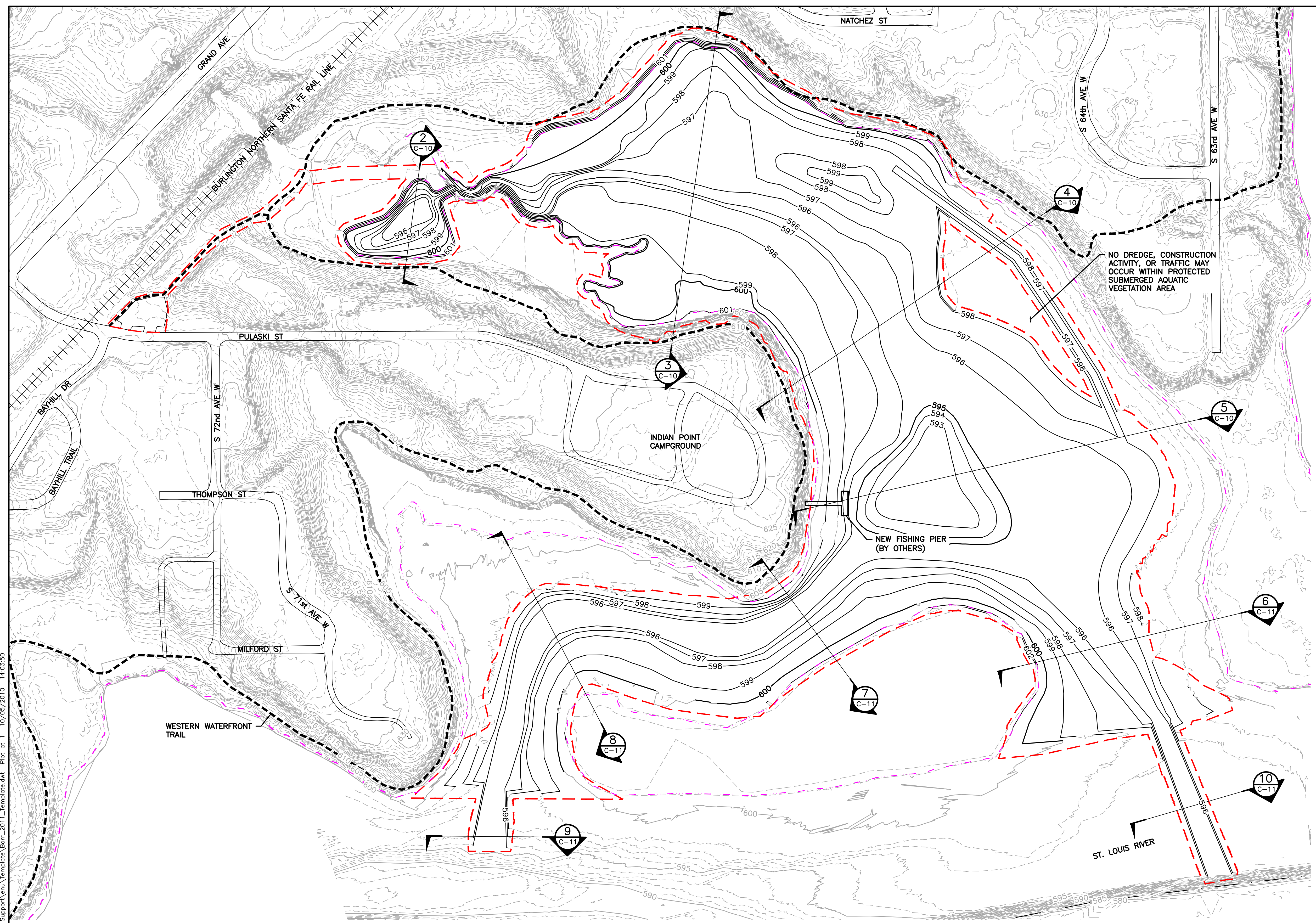
Scale	AS SHOWN
Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2



**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA  
**KINGSBURY BAY**  
 DREDGED MATERIALS MANAGEMENT PLAN

BARR PROJECT No.	23/69-1879.00
CLIENT PROJECT No.	8F073/B187
DWG. No.	C-07
REV. No.	1

CADD USER: Bryan D. Pitterle FILE: M:\DESIGN\2369187900\2369187900\_C-08.DWG PLOT SCALE: 1:1 PLOT DATE: 10/29/2018 11:53 AM  
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**LEGEND**

	WORK AREA LIMITS
	WATER SURFACE ELEVATION BASED ON PROPOSED CONDITIONS
	EXISTING FIVE-FOOT CONTOUR
	EXISTING ONE-FOOT CONTOUR
	PROPOSED NEAT-LINE FIVE-FOOT CONTOUR
	PROPOSED NEAT-LINE ONE-FOOT CONTOUR
	EXISTING RAILROAD
	EXISTING ROAD
	EXISTING TRAIL
	FEDERAL NAVIGATION CHANNEL

NO DREDGE, CONSTRUCTION ACTIVITY, OR TRAFFIC MAY OCCUR WITHIN PROTECTED SUBMERGED AQUATIC VEGETATION AREA

- NOTES:**
1. PROPOSED CONTOURS REPRESENT NEAT-LINE DREDGED SURFACE.
  2. SEED AND ESTABLISH VEGETATION ON ALL DISTURBED AREAS ABOVE WATER SURFACE ELEVATION.
  3. PRIOR TO REMOVING ANY TEMPORARY EROSION AND/OR SEDIMENTATION CONTROLS, ESTABLISH VEGETATION. REMOVE TEMPORARY CONTROL ONCE VEGETATION IS ESTABLISHED. SEE SHEET C-28 FOR TEMPORARY CONTROL DETAILS.

**1 PLAN: KINGSBURY BAY -- FINAL CONDITIONS**  
 0 150 300  
 SCALE IN FEET

**ISSUED FOR CONSTRUCTION**  
 10/31/2018

NO.	BY	CHK	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

PRINTED NAME BENJAMIN J. MEEMKEN  
 SIGNATURE *Ben Meemken*  
 DATE 10/31/18 LICENSE # 53168

CLIENT	07/05/17	01/11/17				
BID						
CONSTRUCTION PERMIT		03/06/18	10/31/18			
RELEASED TO/FOR	A	B	C	0	1	2
DATE RELEASED						

**BARR**  
 Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802  
 Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Ph: 1-800-632-2277  
 Fax: (218) 529-8202  
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Approved	BJM2

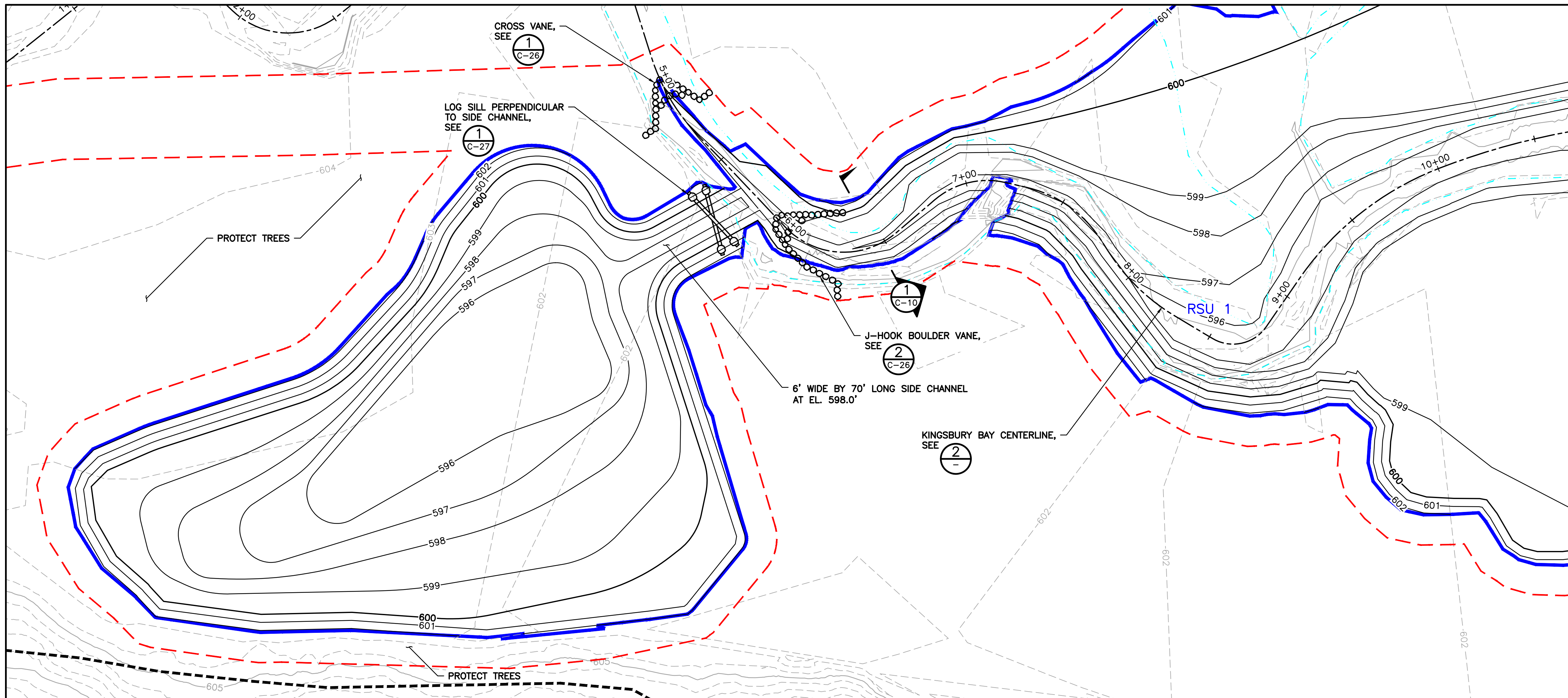


**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA

**KINGSBURY BAY**  
 FINAL CONDITIONS PLAN

BARR PROJECT No.	23/69-1879.00
CLIENT PROJECT No.	8F073/B187
DWC. No.	C-08
REV. No.	1

CADD USER: Bryan D. Pitterle FILE: M:\DESIGN\23691879\00\2369187900\_C-09.DWG PLOT SCALE: 1:1 PLOT DATE: 10/29/2018 11:55 AM  
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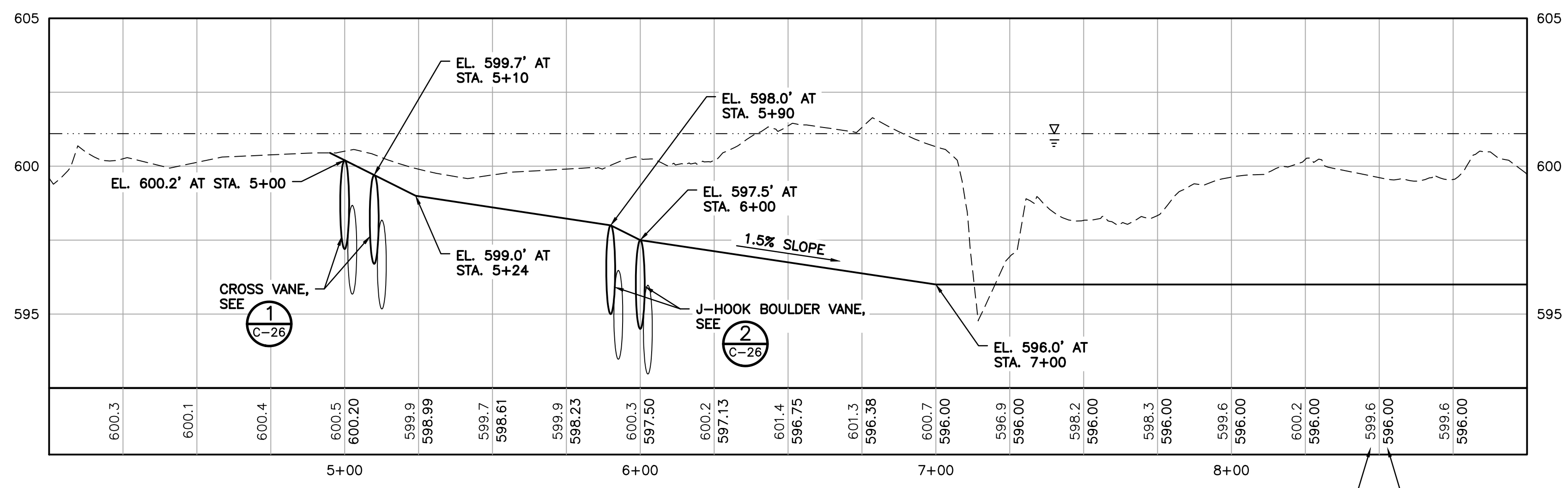


**LEGEND - PLAN**

--- (Red Dashed)	WORK AREA LIMITS
--- (Cyan Dashed)	WATER SURFACE ELEVATION
--- (Grey Dashed)	EXISTING FIVE-FOOT CONTOUR
--- (Black Dashed)	EXISTING ONE-FOOT CONTOUR
--- (Black Solid)	PROPOSED NEAT-LINE FIVE-FOOT CONTOUR
--- (Black Solid)	PROPOSED NEAT-LINE ONE-FOOT CONTOUR
--- (Blue Solid)	RSU BOUNDARY
--- (Blue Solid)	RSU LABEL
--- (Black Dashed)	EXISTING TRAIL

- NOTES:**
1. PROPOSED CONTOURS WITHIN RSU BOUNDARIES REPRESENT NEAT-LINE DREDGE SURFACE.
  2. PROFILE VERTICAL SCALE EXAGGERATED BY A FACTOR OF 10 FOR CLARITY.

**1 PLAN: KINGSBURY BAY**  
 SCALE IN FEET 0 30 60



**LEGEND - PROFILE**

--- (Dashed)	EXISTING GROUND
--- (Solid)	NEAT-LINE DREDGE SURFACE
--- (Dotted)	WATER SURFACE ELEVATION

**2 PROFILE: KINGSBURY BAY**  
 SCALE IN FEET 0 50 100

ISSUED FOR CONSTRUCTION  
 10/31/2018

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	JCO	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	JCO	03/06/18	ISSUED FOR CONSTRUCTION

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.  
 PRINTED NAME: JESSICA OLSON  
 SIGNATURE: *J. Olson*  
 DATE: 10/31/18 LICENSE # 43102

CLIENT	DATE
BARR ENGINEERING CO.	10/11/17
CONSTRUCTION PERMIT	07/09/18
RELEASED TO/FOR	A B C 0 1 2 3
DATE RELEASED	

**BARR**  
 Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802  
 Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Fax: (218) 529-8202  
 www.barr.com

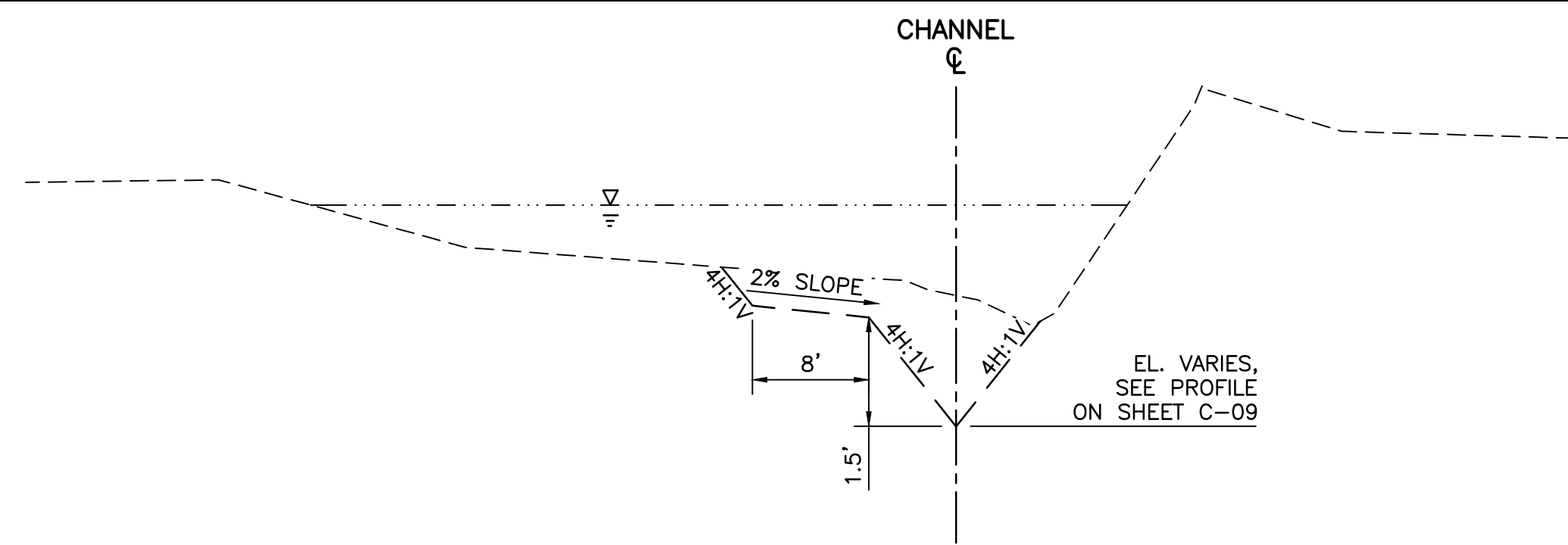
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Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	JCO
Approved	JCO



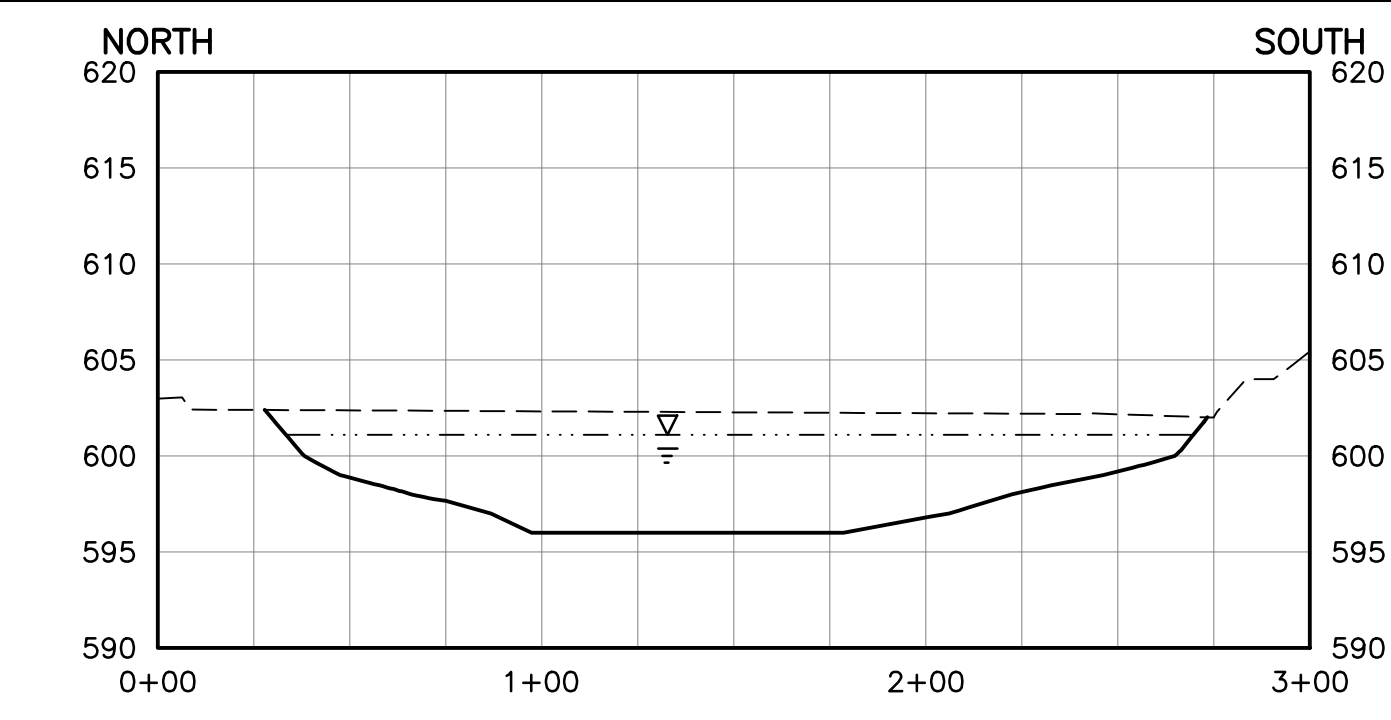
GRASSY POINT/KINGSBURY BAY RESTORATION  
 DULUTH, MINNESOTA  
 KINGSBURY BAY INLET  
 PLAN AND PROFILE

BARR PROJECT No.	23/69-1879.00
CLIENT PROJECT No.	8F073/B187
DWG. No.	C-09
REV. No.	1

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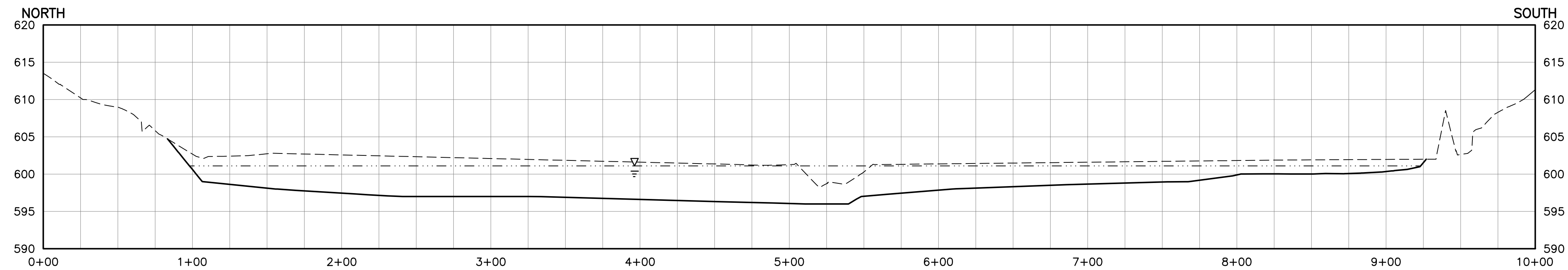


1 SECTION: KINGSBURY BAY - SECTION 1 (TYP.)  
 C-09  
 SCALE IN FEET

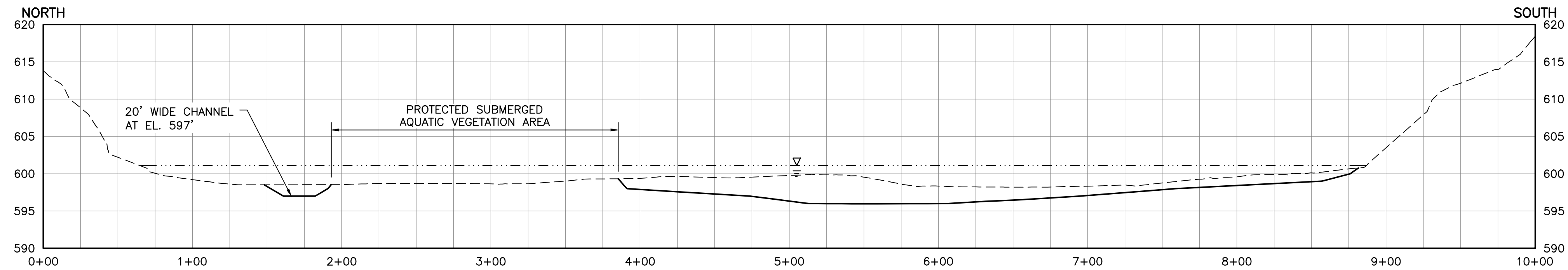


2 SECTION: KINGSBURY BAY - SECTION 2  
 C-06,C-07,C-08  
 SCALE IN FEET

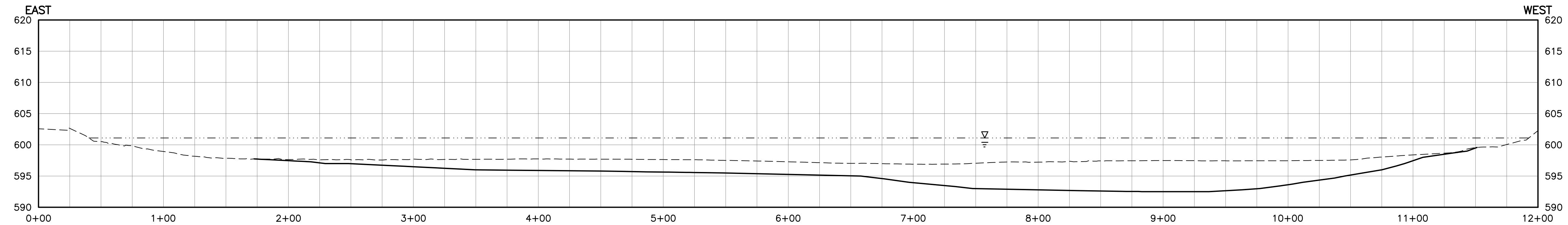
**LEGEND**  
 - - - - - EXISTING GROUND  
 \_\_\_\_\_ NEAT-LINE DREDGE SURFACE  
 - · - · - · WATER SURFACE ELEVATION



3 SECTION: KINGSBURY BAY - SECTION 3  
 C-06,C-07,C-08  
 SCALE IN FEET



4 SECTION: KINGSBURY BAY - SECTION 4  
 C-06,C-07,C-08  
 SCALE IN FEET



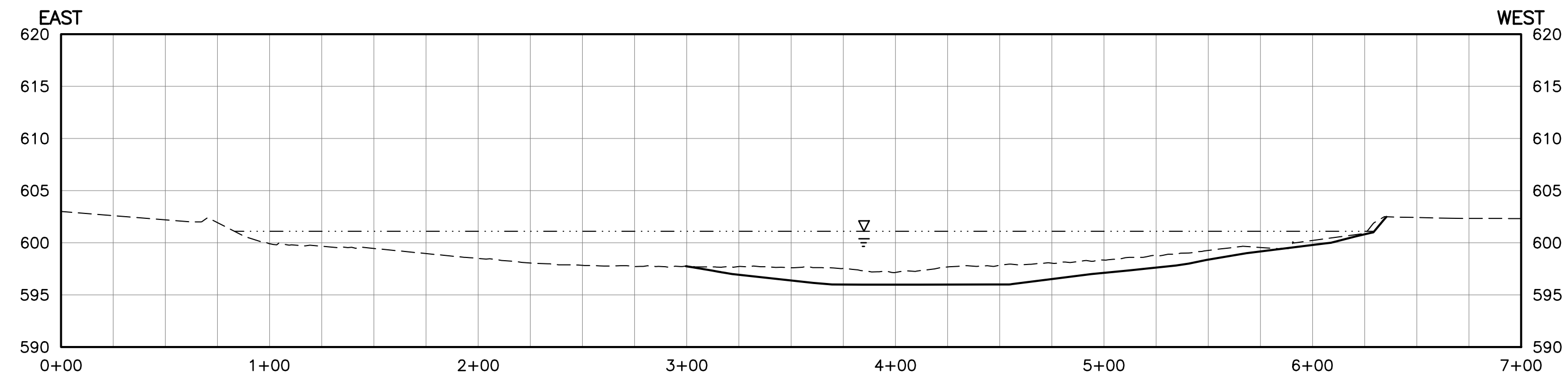
5 SECTION: KINGSBURY BAY - SECTION 5  
 C-06,C-07,C-08  
 SCALE IN FEET

**NOTES:**  
 1. SECTION VERTICAL SCALE EXAGGERATED BY A FACTOR OF 5 FOR CLARITY.

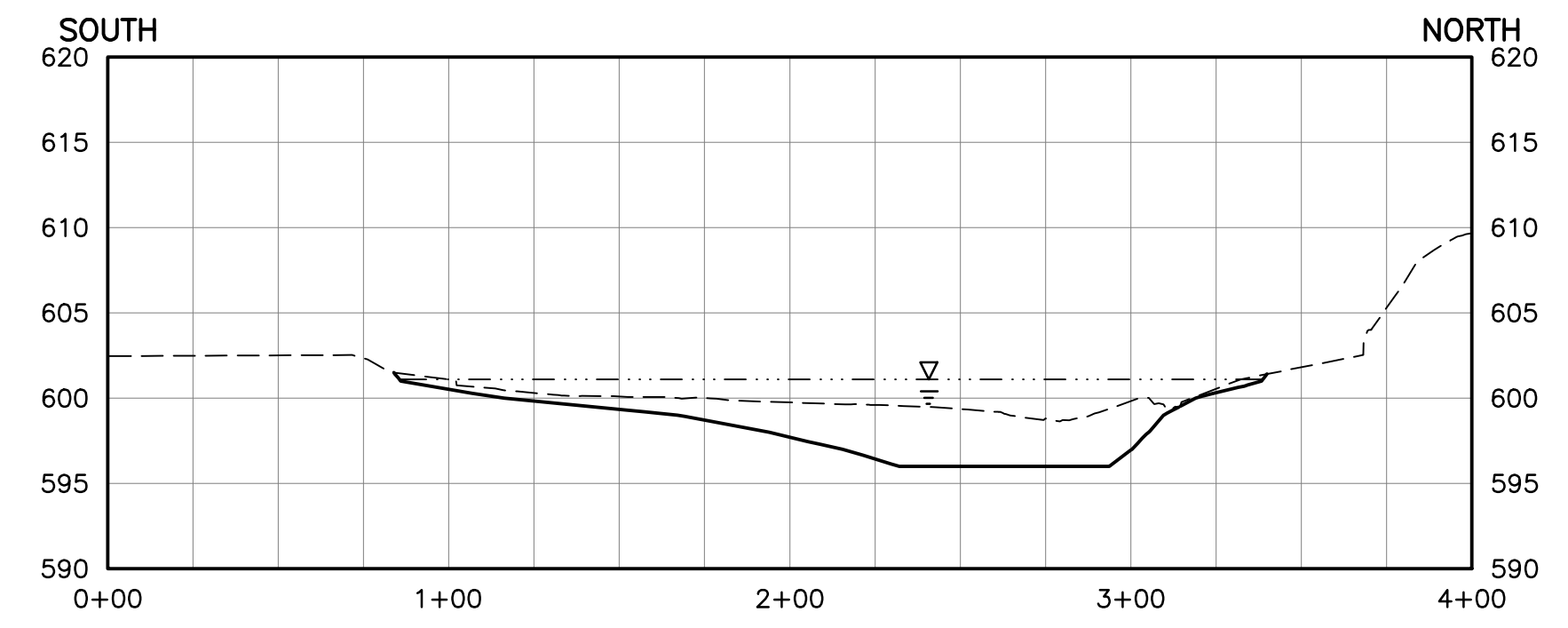
ISSUED FOR CONSTRUCTION  
 10/31/2018

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. PRINTED NAME BENJAMIN J. MEEMKIN SIGNATURE <i>Ben Meemkin</i> DATE 10/31/18 LICENSE # 53168				CLIENT 07/05/17 10/11/17 BID CONSTRUCTION 03/06/18 10/31/18 PERMIT 02/09/18 RELEASED TO/FOR A B C 0 1 2 3 DATE RELEASED				Project Office: <b>BARR ENGINEERING CO.</b> 325 SOUTH LAKE AVENUE SUITE 700 DULUTH, MN 55802 Corporate Headquarters: Minneapolis, Minnesota Ph: 1-800-786-5830 Ph: 1-800-632-2277 Fax: (218) 529-8202 www.barr.com				Scale AS SHOWN Date 06/21/2017 Drawn BDP Checked GMP Designed BJM2 Approved BJM2				<b>GRASSY POINT/KINGSBURY BAY RESTORATION</b> DULUTH, MINNESOTA BARR PROJECT No. 23/69-1879.00 CLIENT PROJECT No. 8F073/B187 <b>KINGSBURY BAY</b> SECTIONS 1 OF 2 DWG. No. C-10 REV. No. 1			
NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION														
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0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION														

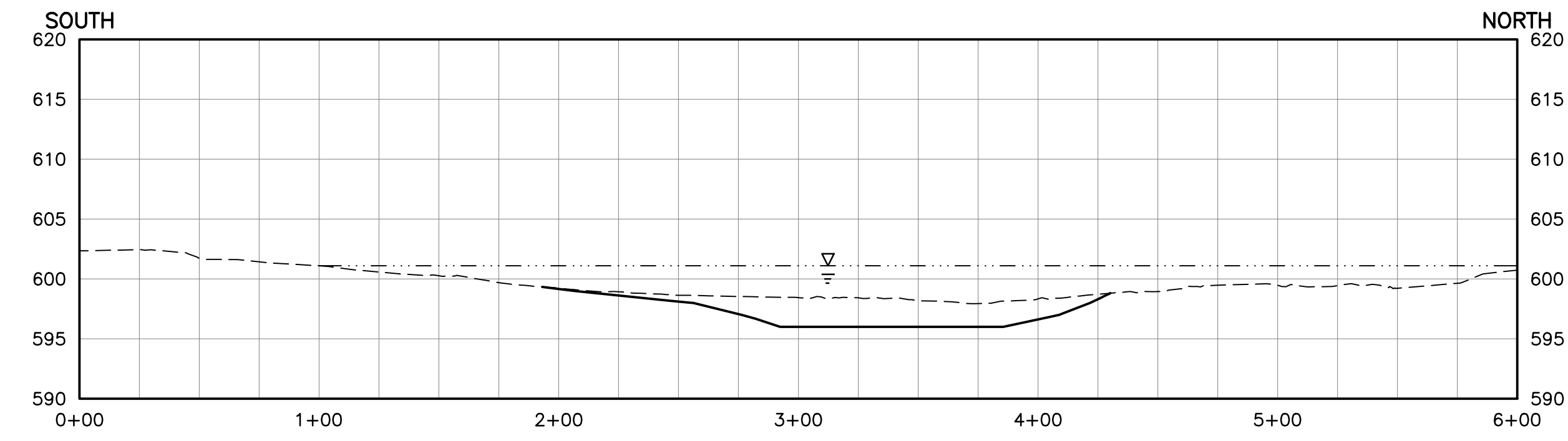




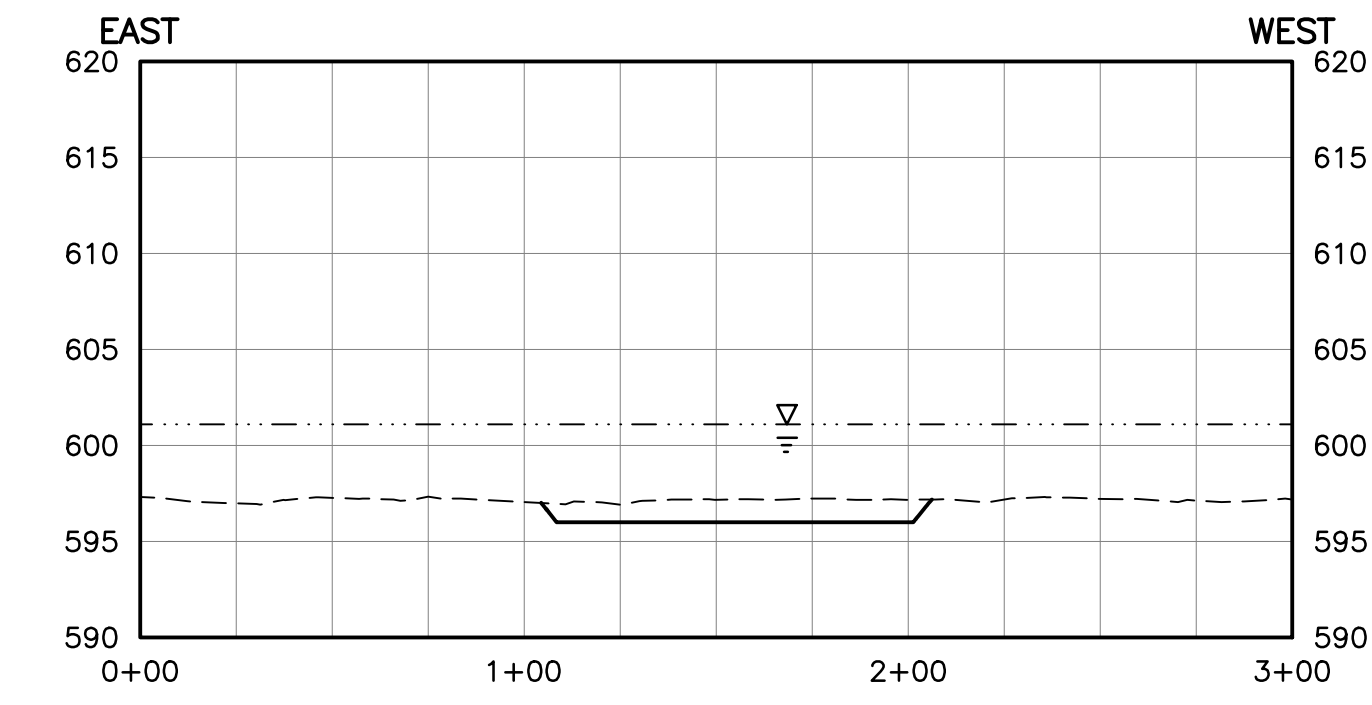
**6 SECTION: KINGSBURY BAY - SECTION 6**  
 C-06,C-07,C-08  
 0 50 100  
 SCALE IN FEET



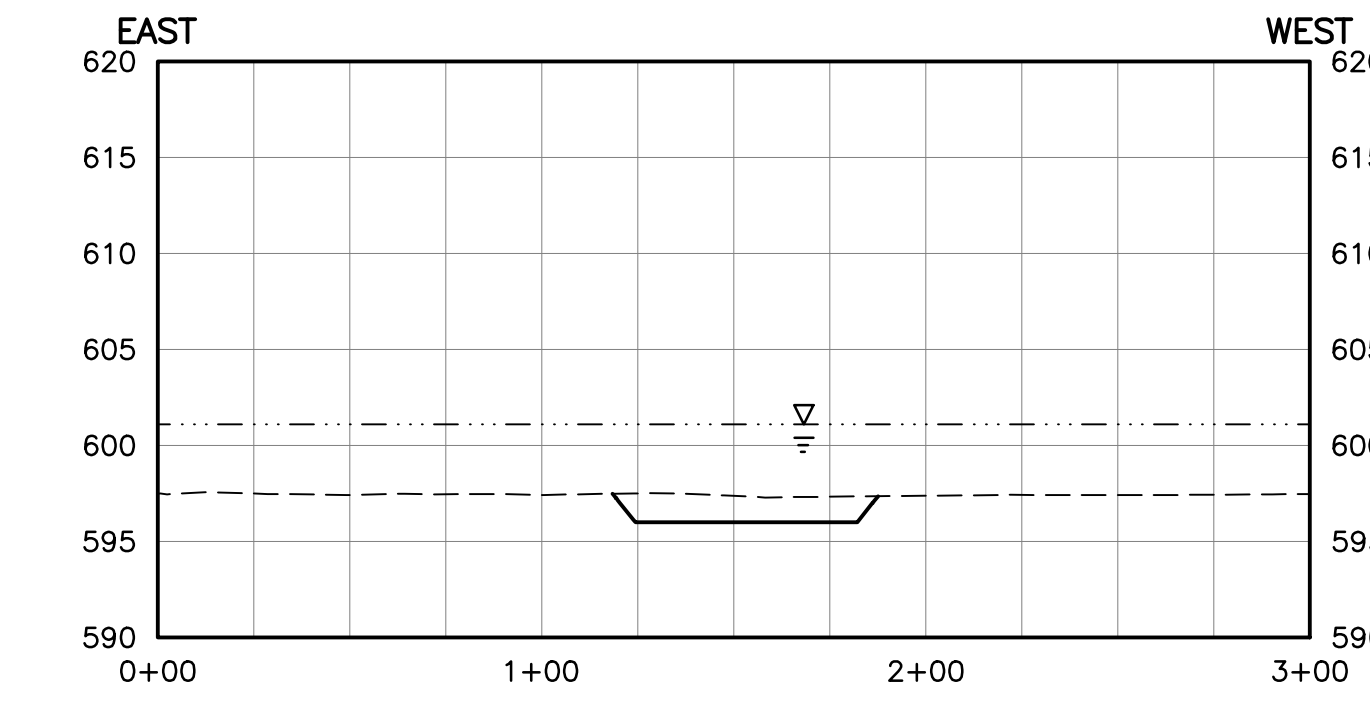
**7 SECTION: KINGSBURY BAY - SECTION 7**  
 C-06,C-07,C-08  
 0 50 100  
 SCALE IN FEET



**8 SECTION: KINGSBURY BAY - SECTION 8**  
 C-06,C-07,C-08  
 0 50 100  
 SCALE IN FEET



**9 SECTION: KINGSBURY BAY - SECTION 9**  
 C-06,C-07,C-08  
 0 50 100  
 SCALE IN FEET



**10 SECTION: KINGSBURY BAY - SECTION 10**  
 C-06,C-07,C-08  
 0 50 100  
 SCALE IN FEET

**LEGEND**  
 - - - - - EXISTING GROUND  
 \_\_\_\_\_ NEAT-LINE DREDGE SURFACE  
 . . . . . WATER SURFACE ELEVATION

**NOTES:**  
 1. SECTION VERTICAL SCALE EXAGGERATED BY A FACTOR OF 5 FOR CLARITY.

ISSUED FOR CONSTRUCTION  
 10/31/2018

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1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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 PRINTED NAME BENJAMIN J. MEEMKEN  
 SIGNATURE *Ben Meemken*  
 DATE 10/31/18 LICENSE # 53168

CLIENT	BID	CONSTRUCTION	PERMIT	RELEASED TO/FOR	DATE RELEASED
	07/05/17	10/11/17		A B C 0 1 2 3	

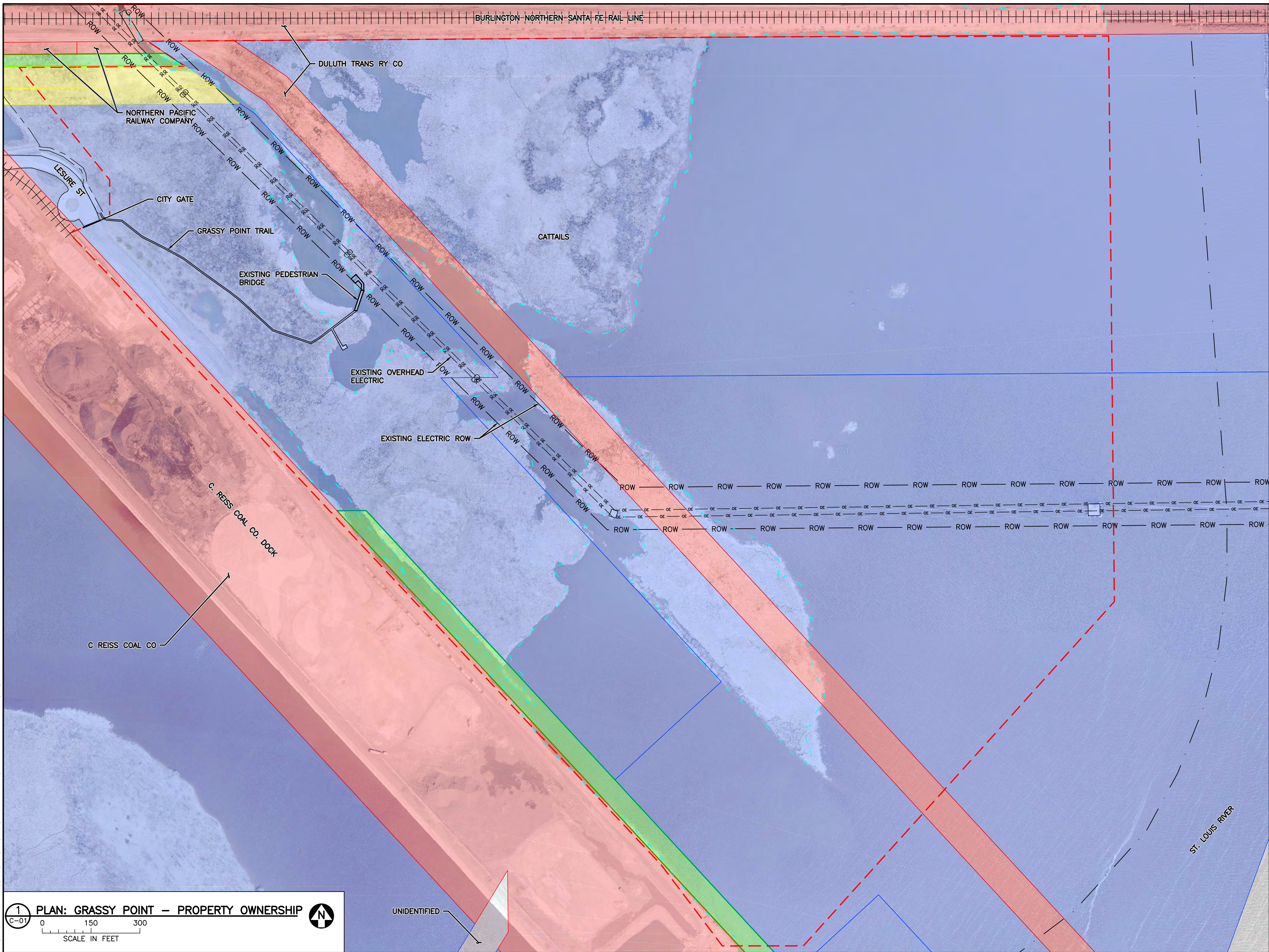
**BARR**  
 Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802  
 Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Fax: (218) 529-8202  
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Designed	BJM2
Approved	BJM2



GRASSY POINT/KINGSBURY BAY RESTORATION  
 DULUTH, MINNESOTA  
 KINGSBURY BAY  
 SECTIONS 2 OF 2

BARR PROJECT No.	23/69-1879.00
CLIENT PROJECT No.	8F073/B187
DWG. No.	C-11
REV. No.	1



**LEGEND**

	WORK AREA LIMITS
	WATER SURFACE ELEVATION
	FEDERAL NAVIGATION CHANNEL
	ELECTRICAL RIGHT-OF-WAY
	EXISTING OVERHEAD ELECTRIC
	EXISTING OVERHEAD ELECTRIC POLE
	EXISTING OVERHEAD ELECTRIC TOWER STRUCTURE
	PARCEL - MUNICIPALITY
	PARCEL - PRIVATE
	PARCEL - XIK CORPORATION
	DEDICATED RIGHT-OF-WAY

- NOTES:**
1. PARCEL BOUNDARY INFORMATION PROVIDED BY ST. LOUIS COUNTY AND ADJUSTED BASED ON BOUNDARY SURVEYS BY LW SURVEY COMPANY PROVIDED IN NOVEMBER 2017.
  2. ELECTRIC RIGHT-OF-WAY PROVIDED BY MINNESOTA POWER IN DECEMBER 2017. COORDINATE ALL WORK WITHIN OVERHEAD ELECTRIC RIGHT-OF-WAY WITH MINNESOTA POWER. SEE REFERENCE DRAWINGS FOR ADDITIONAL OVERHEAD ELECTRIC INFORMATION.

**1 PLAN: GRASSY POINT - PROPERTY OWNERSHIP**

UNIDENTIFIED

SCALE IN FEET

0 150 300

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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PRINTED NAME **BENJAMIN J. MEEMKEN**

SIGNATURE *Ben Meemken*

DATE **10/31/18** LICENSE # **53168**

CLIENT	BID	CONSTRUCTION PERMIT	RELEASED TO/FOR	DATE RELEASED
	07/05/17	10/11/17	A B C	0 1 2 3

**BARR ENGINEERING CO.**  
325 SOUTH LAKE AVENUE  
SUITE 700  
DULUTH, MN 55802

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325 SOUTH LAKE AVENUE  
SUITE 700  
DULUTH, MN 55802

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Checked	GMP
Designed	BJM2
Approved	BJM2



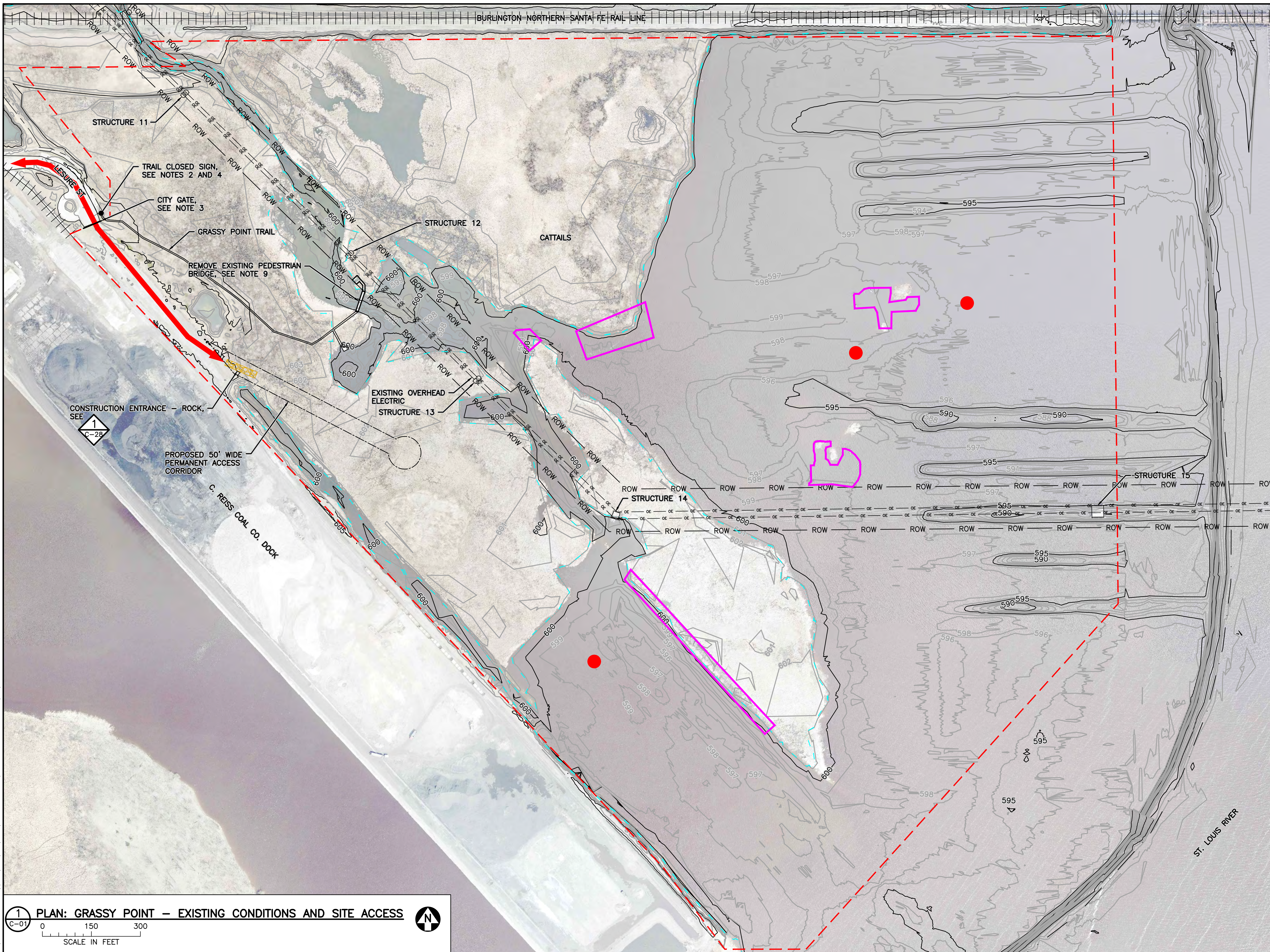
**GRASSY POINT/KINGSBURY BAY RESTORATION**  
DULUTH, MINNESOTA

**GRASSY POINT**  
PROPERTY OWNERSHIP

BARR PROJECT No.	<b>23/69-1879.00</b>
CLIENT PROJECT No.	<b>8F073/B187</b>
DWG. No.	<b>C-12</b>
REV. No.	<b>1</b>

*ISSUED FOR CONSTRUCTION*  
*10/31/2018*

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- LEGEND**
- - - - WORK AREA LIMITS
  - - - - WATER SURFACE ELEVATION
  - 600 EXISTING FIVE-FOOT CONTOUR
  - 599 EXISTING ONE-FOOT CONTOUR
  - FEDERAL NAVIGATION CHANNEL
  - ROW ELECTRICAL RIGHT-OF-WAY
  - - - - EXISTING OVERHEAD ELECTRIC, SEE NOTE 11
  - EXISTING OVERHEAD ELECTRIC POLE, SEE NOTE 11
  - EXISTING OVERHEAD ELECTRIC TOWER STRUCTURE, SEE NOTE 11
  - ← POTENTIAL SITE ACCESS
  - CONSTRUCTION ROCK - ENTRANCE
  - GENERAL AREAS WHERE WOODEN PILES ARE PRESENT, SEE NOTE 10
  - STRUCTURES AND DEBRIS FROM LOGGING ACTIVITIES, SEE NOTE 12

- NOTES:**
1. ALL SIGNAGE SHALL BE IN COMPLIANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES BY THE FEDERAL HIGHWAY ADMINISTRATION.
  2. ALL TEMPORARY TRAFFIC AND PEDESTRIAN CONTROLS SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION.
  3. MAINTAIN EXISTING CITY GATE AND PATHS. RESTORE TO PRE-WORK CONDITIONS UPON COMPLETION OF WORK.
  4. "TRAIL CLOSED" SIGN SHALL BE SIMILAR TO R11-2 SIGN ON A TYPE 2 BARRICADE.
  5. CONTRACTOR SHALL KEEP EQUIPMENT OFF EXISTING PATHS TO THE GREATEST EXTENT POSSIBLE TO MINIMIZE POTENTIAL DAMAGE.
  6. ALL TEMPORARY EROSION CONTROL FEATURES SHALL BE INSTALLED PRIOR TO THE START OF CONSTRUCTION, UNLESS OTHERWISE SPECIFIED.
  7. CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROL FEATURES UPON COMPLETION OF CONSTRUCTION OR WHEN VEGETATION IS ADEQUATELY ESTABLISHED TO PREVENT EROSION, WHICHEVER OCCURS LATER.
  8. ALL ADJACENT STREETS AND PARKING LOTS MUST BE SWEEPED TO KEEP THEM FREE OF SEDIMENT AND MATERIALS TRACKED OFF SITE.
  9. REMOVE EXISTING PEDESTRIAN BRIDGE SPAN AND STAGE ON SITE FOR FUTURE USE.
  10. WHERE WOODEN PILES ARE PRESENT IN DREDGING AREAS, CUT PILES AT DREDGE EXTENT OR REMOVE. WHERE WOODEN PILES ARE PRESENT IN FILL AREAS, PILES MAY BE CUT, REMOVED, OR REMAIN IN-PLACE. CUT AND REMOVED PILES TO BE HANDLED AS WOOD WASTE.
  11. ELECTRIC RIGHT-OF-WAY PROVIDED BY MINNESOTA POWER IN DECEMBER 2017. COORDINATE ALL WORK WITHIN OVERHEAD ELECTRIC RIGHT-OF-WAY WITH MINNESOTA POWER. SEE REFERENCE DRAWINGS FOR ADDITIONAL OVERHEAD ELECTRIC INFORMATION.
  12. LOCATIONS OF STRUCTURES AND DEBRIS FROM LOGGING ACTIVITIES PROVIDED BY CEER REPORT, LIMNOTECH, APRIL 9, 2014. STRUCTURES AND DEBRIS FROM LOGGING ACTIVITIES MAY BE CUT, REMOVED, OR REMAIN IN PLACE. REMOVED WOODEN STRUCTURES AND DEBRIS FROM LOGGING ACTIVITIES TO BE HANDLED AS WOOD WASTE. ALL OTHER STRUCTURES AND DEBRIS FROM LOGGING ACTIVITIES TO BE HANDLED AS NON-NATIVE DEBRIS.

**ISSUED FOR CONSTRUCTION**  
10/31/2018

**1 PLAN: GRASSY POINT - EXISTING CONDITIONS AND SITE ACCESS**

SCALE IN FEET: 0 150 300

North Arrow

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

CLIENT	BID	CONSTRUCTION	PERMIT
07/05/17	10/11/17	03/06/18	10/31/18
		02/09/18	

**BARR ENGINEERING CO.**  
325 SOUTH LAKE AVENUE  
SUITE 700  
DULUTH, MN 55802

Project Office:  
BARR ENGINEERING CO.  
325 SOUTH LAKE AVENUE  
SUITE 700  
DULUTH, MN 55802

Corporate Headquarters:  
Minneapolis, Minnesota  
Ph: 1-800-632-2277

Scale	AS SHOWN
Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2

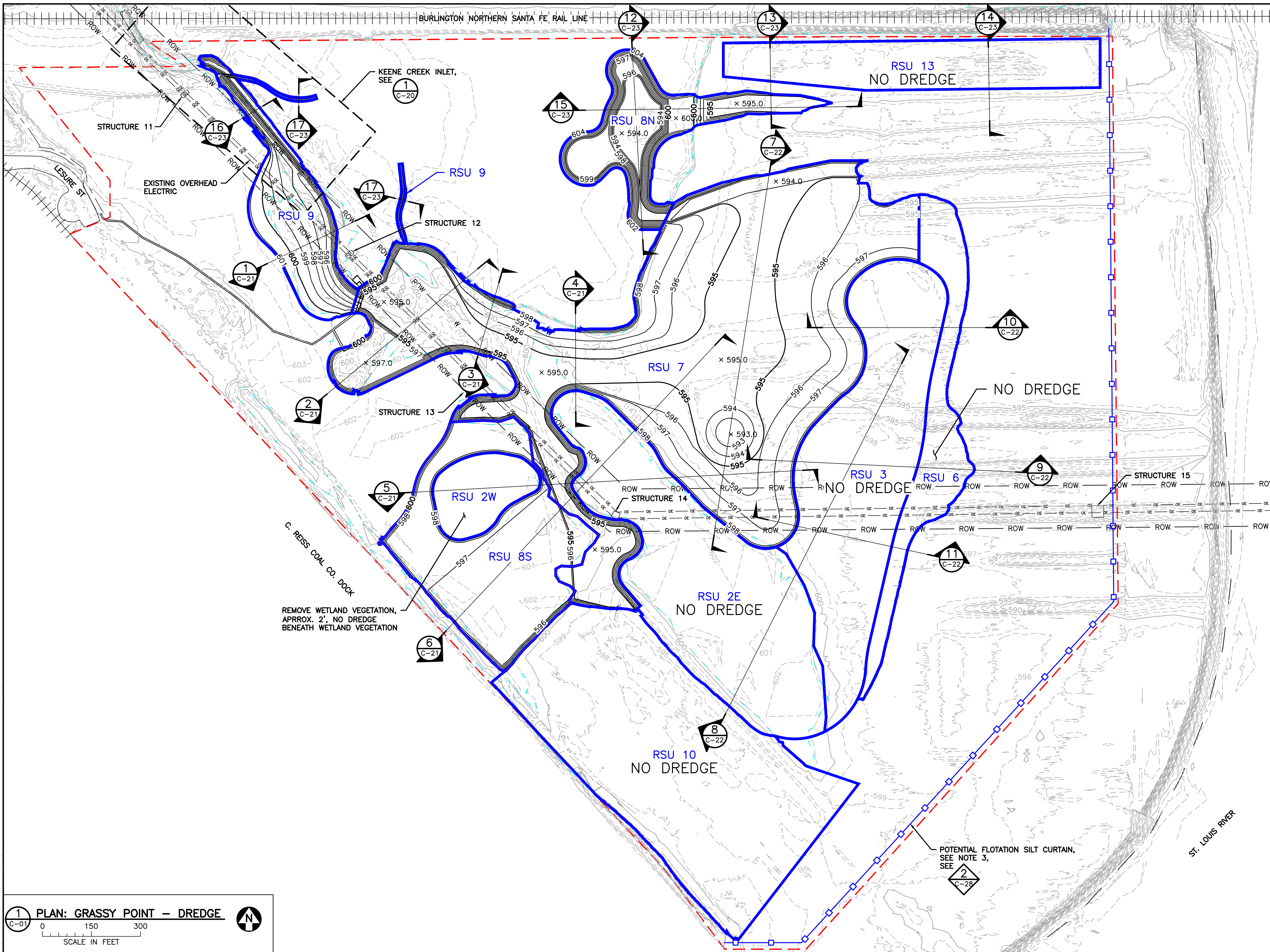


<b>GRASSY POINT/KINGSBURY BAY RESTORATION</b> DULUTH, MINNESOTA		BARR PROJECT No. <b>23/69-1879.00</b>
<b>GRASSY POINT</b> EXISTING CONDITIONS AND SITE ACCESS		CLIENT PROJECT No. <b>8F073/B187</b>
DWC. No. <b>C-13</b>	REV. No. <b>1</b>	

CADD USER: Bryan D. Pitterle FILE: M:\DESIGN\23691879\00\2369187900\_C-13.DWG PLOT SCALE: 1:1 PLOT DATE: 10/29/2018 12:02 PM  
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**LEGEND**

- WORK AREA LIMITS
- WATER SURFACE ELEVATION
- 600 EXISTING FIVE-FOOT CONTOUR
- 599 EXISTING ONE-FOOT CONTOUR
- 600 PROPOSED NEAT-LINE FIVE-FOOT CONTOUR
- 599 PROPOSED NEAT-LINE ONE-FOOT CONTOUR
- RSU BOUNDARY
- RSU 1 RSU LABEL
- FEDERAL NAVIGATION CHANNEL
- ROW ELECTRICAL RIGHT-OF-WAY
- OE OE OE OE EXISTING OVERHEAD ELECTRIC
- EXISTING OVERHEAD ELECTRIC POLE
- EXISTING OVERHEAD ELECTRIC TOWER STRUCTURE
- x 596.0 PROPOSED SPOT ELEVATION
- FLOTATION SILT CURTAIN, SEE NOTE 3

- NOTES:**
1. PROPOSED NEAT-LINE CONTOURS WITHIN RSU BOUNDARIES REPRESENT DREDGED SURFACE.
  2. PLACE MATERIAL WHERE EXISTING GROUND IS LOWER THAN DREDGE SURFACE PER MATERIAL PLACEMENT PLAN ON SHEET C-18.
  3. CONTRACTOR SHALL INSTALL AND MAINTAIN FLOTATION SILT CURTAIN TO SEPARATE ACTIVE DREDGE AREAS FROM ST. LOUIS RIVER DURING WORK. CONTRACTOR TO DETERMINE ALIGNMENT OF FLOTATION SILT CURTAIN WITHIN WORK AREA LIMITS. SEE DETAIL 2 ON SHEET C-28 FOR ADDITIONAL FLOTATION SILT CURTAIN INFORMATION.
  4. ELECTRIC RIGHT-OF-WAY PROVIDED BY MINNESOTA POWER IN DECEMBER 2017. COORDINATE ALL WORK WITHIN OVERHEAD ELECTRIC RIGHT-OF-WAY WITH MINNESOTA POWER. SEE REFERENCE DRAWINGS FOR ADDITIONAL OVERHEAD ELECTRIC INFORMATION.
  5. FROM APRIL 1 - JUNE 30, MAINTAIN UNRESTRICTED FLOW AND UNDISTURBED CHANNEL THROUGH KEENE CREEK CHANNEL TO ST. LOUIS RIVER. WORK DURING THIS PERIOD MUST BE SEPARATED FROM KEENE CREEK BY SILT CURTAIN OR VEGETATED BUFFER. SEE SPECIFICATION SECTION 01 14 00 FOR ADDITIONAL DETAILS.
  6. EXCAVATION OF RSU 2W AND DREDGING OF RSU 8S, 9, 8N MAY OR MAY NOT BE AWARDED AS BID ALTERNATES.

*ISSUED FOR CONSTRUCTION*  
 10/31/2018

**1 PLAN: GRASSY POINT - DREDGE**

0 150 300  
 SCALE IN FEET

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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PRINTED NAME BENJAMIN J. MEEMKEN  
 SIGNATURE *Ben Meemken*  
 DATE 10/31/18 LICENSE # 53168

CLIENT	07/05/17	10/11/17				
BID						
CONSTRUCTION			03/06/18	10/31/18		
PERMIT			02/09/18			

RELEASED TO/FOR A B C 0 1 2 3  
 DATE RELEASED

**BARR** Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

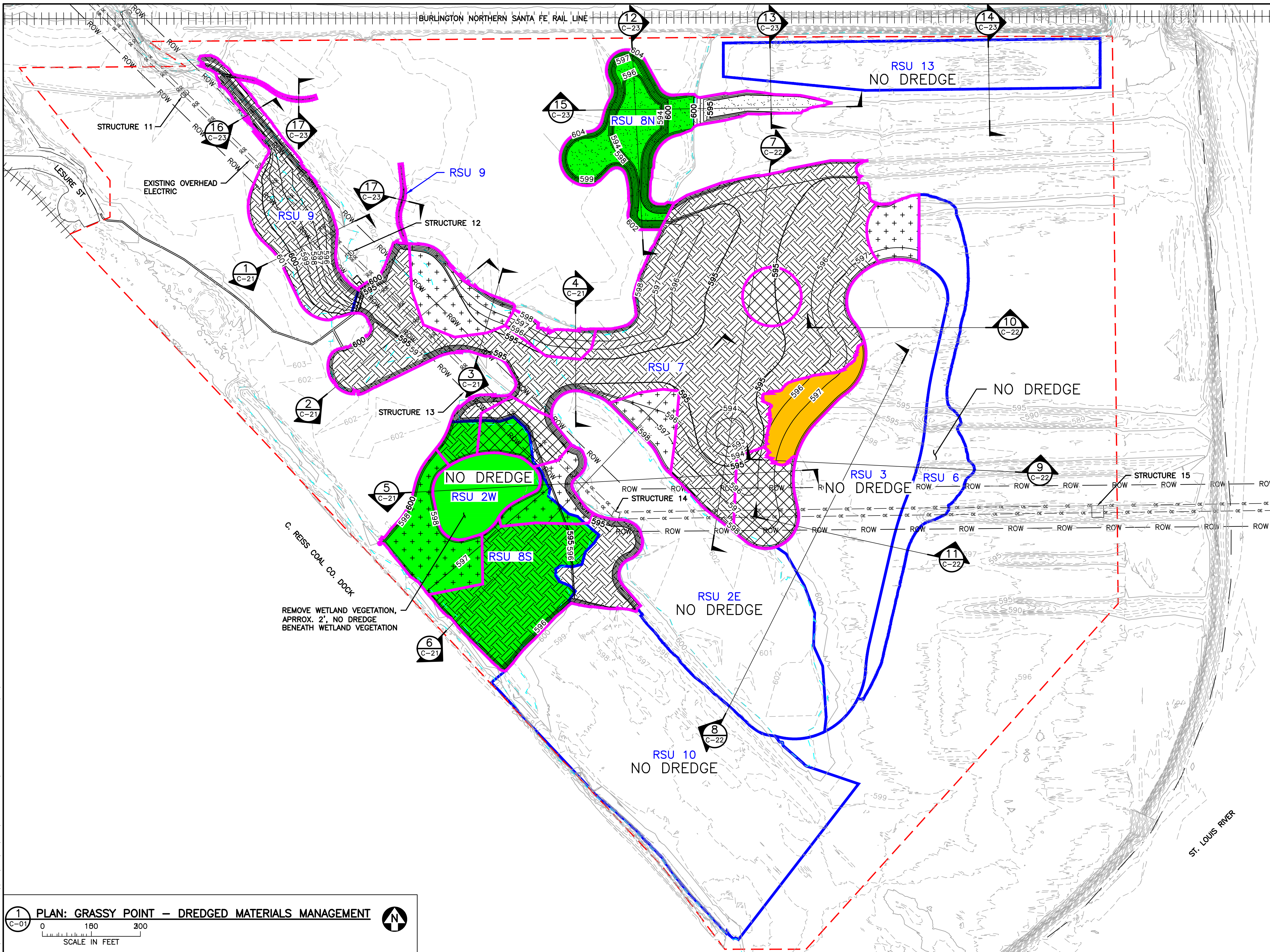
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Scale	AS SHOWN
Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2



GRASSY POINT/KINGSBURY BAY RESTORATION DULUTH, MINNESOTA		BARR PROJECT No. <b>23/69-1879.00</b>
GRASSY POINT DREDGE PLAN		CLIENT PROJECT No. <b>8F073/B187</b>
DWC. No. <b>C-14</b>	REV. No. <b>1</b>	

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**LEGEND**

- WORK AREA LIMITS
- WATER SURFACE ELEVATION
- 600 EXISTING FIVE-FOOT CONTOUR
- 599 EXISTING ONE-FOOT CONTOUR
- 600 PROPOSED NEAT-LINE FIVE-FOOT CONTOUR
- 599 PROPOSED NEAT-LINE ONE-FOOT CONTOUR
- RSU BOUNDARY
- RSU 1 RSU LABEL
- FEDERAL NAVIGATION CHANNEL
- ELECTRICAL RIGHT-OF-WAY
- o-o- EXISTING OVERHEAD ELECTRIC
- o EXISTING OVERHEAD ELECTRIC POLE
- EXISTING OVERHEAD ELECTRIC TOWER STRUCTURE
- SOFT SEDIMENT AND WOOD/SEDIMENT MIX, SEE DETAIL 2 ON SHEET C-25
- WOOD WASTE (WOOD CHIPS <3"), SEE DETAIL 2 ON SHEET C-25
- WOOD WASTE (LARGER THAN WOOD CHIPS), SEE DETAIL 2 ON SHEET C-25
- SANDY SEDIMENT AND COMMON FILL, SEE DETAIL 2 ON SHEET C-25
- REMOVE WETLAND VEGETATION TO EXPOSE SPECIFIED DREDGE MATERIAL, SEE DETAIL 1 ON SHEET C-25
- EXISTING GROUND LOWER THAN DREDGE SURFACE, SEE NOTE 2, SEE DETAIL 4 ON SHEET C-25

- NOTES:**
1. PROPOSED NEAT-LINE CONTOURS WITHIN RSU BOUNDARIES REPRESENT DREDGED SURFACE.
  2. PLACE MATERIAL WHERE EXISTING GROUND IS LOWER THAN DREDGE SURFACE PER MATERIAL PLACEMENT PLAN ON SHEET C-18.
  3. DREDGED MATERIAL CLASSIFICATION PROVIDED BY:
    - GRASSY POINT C.E.E.R., LIMNOTECH 4-7-2014
    - GRASSY POINT IMPROVEMENTS FINAL REPORT - STAGE 1, LHB, 05-1995
    - GEOTECHNICAL INVESTIGATION FOR GRASSY POINT, ACT, 3-29-1995
  4. MATERIAL TYPE AND EXTENT MAY VARY BETWEEN SAMPLING LOCATIONS.
  5. ELECTRIC RIGHT-OF-WAY PROVIDED BY MINNESOTA POWER IN DECEMBER 2017. COORDINATE ALL WORK WITHIN OVERHEAD ELECTRIC RIGHT-OF-WAY WITH MINNESOTA POWER. SEE REFERENCE DRAWINGS FOR ADDITIONAL OVERHEAD ELECTRIC INFORMATION.
  6. REMOVE WETLAND VEGETATION AND PLACE AS SPECIFIED PRIOR TO PLACEMENT OF MATERIAL PER MATERIAL PLACEMENT PLAN ON SHEET C-18.
  7. FROM APRIL 1 - JUNE 30, MAINTAIN UNRESTRICTED FLOW AND UNDISTURBED CHANNEL THROUGH KEENE CREEK CHANNEL TO ST. LOUIS RIVER. WORK DURING THIS PERIOD MUST BE SEPARATED FROM KEENE CREEK BY SILT CURTAIN OR VEGETATED BUFFER. SEE SPECIFICATION SECTION 01 14 00 FOR ADDITIONAL DETAILS.
  8. EXCAVATION OF RSU 2W AND DREDGING OF RSU 8S, 9, 8N MAY OR MAY NOT BE AWARDED AS BID ALTERNATES.

*ISSUED FOR CONSTRUCTION*  
10/31/2018

**1 PLAN: GRASSY POINT - DREDGED MATERIALS MANAGEMENT**

0 180 300  
SCALE IN FEET

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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PRINTED NAME BENJAMIN J. MEEMKEN  
 SIGNATURE *Ben Meemken*  
 DATE 10/31/18 LICENSE # 53168

CLIENT	07/05/17	10/11/17				
BID						
CONSTRUCTION PERMIT			03/06/18	10/31/18		
			02/09/18			

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Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2



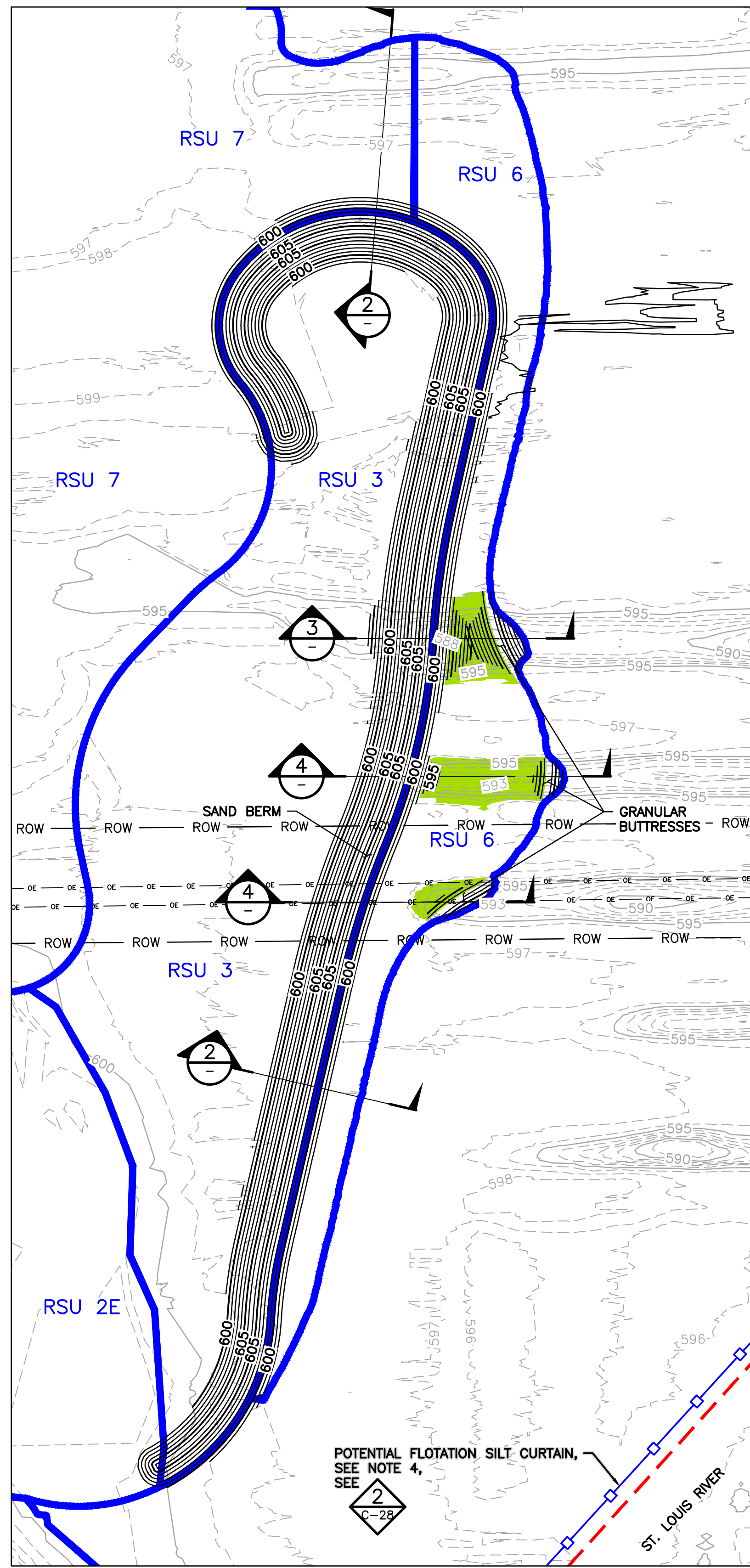
**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA

**GRASSY POINT DREDGED MATERIALS MANAGEMENT PLAN**

BARR PROJECT No. 23/69-1879.00  
 CLIENT PROJECT No. 8F073/B187  
 DWG. No. C-15 REV. No. 1

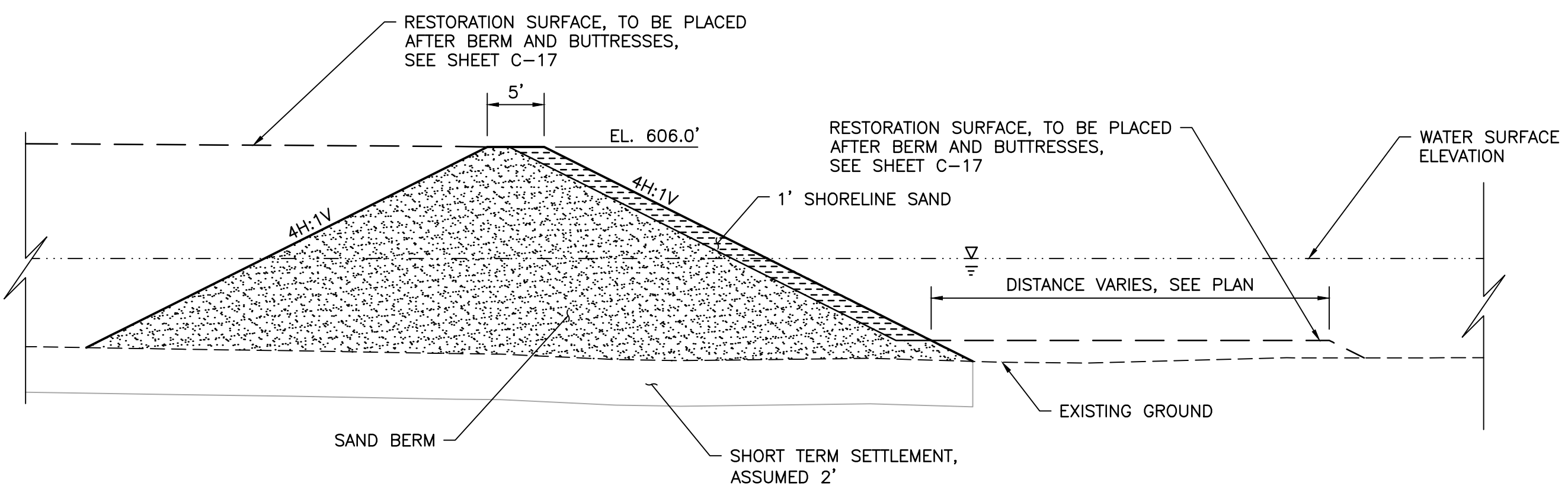
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**1 PLAN: GRASSY POINT BERM AND BUTTRESSES**  
 SCALE IN FEET  
 0 100 200

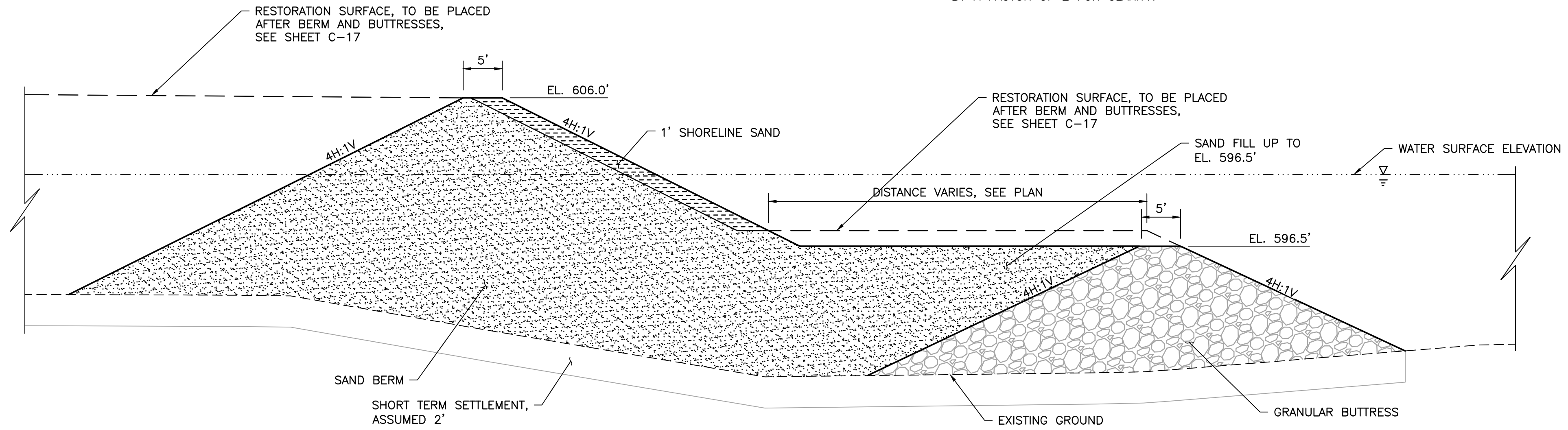
- LEGEND**
- WORK AREA LIMITS
  - 600 EXISTING FIVE-FOOT CONTOUR
  - 599 EXISTING ONE-FOOT CONTOUR
  - 600 PROPOSED FIVE-FOOT CONTOUR
  - 600 PROPOSED ONE-FOOT CONTOUR
  - RSU BOUNDARY
  - RSU 1 RSU LABEL
  - ROW ELECTRICAL RIGHT-OF-WAY
  - OE OE OE EXISTING OVERHEAD ELECTRIC
  - POTENTIAL FLOTATION SILT CURTAIN, SEE NOTE 4
  - █ SAND FILL UP TO EL. 596.5'



**2 SECTION: SAND BERM (TYP.)**

SCALE IN FEET  
 0 10 20

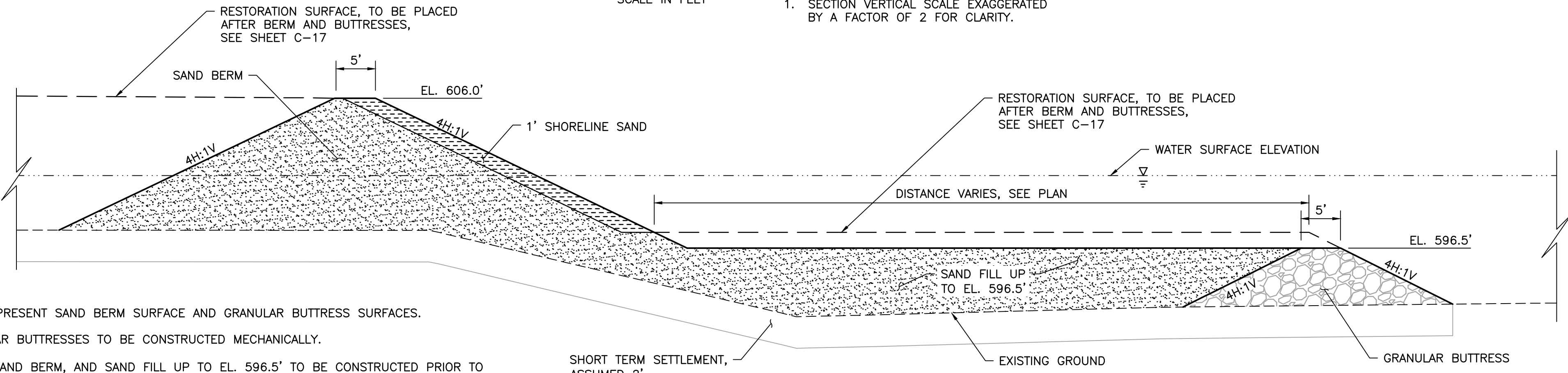
- NOTES:**
- SECTION VERTICAL SCALE EXAGGERATED BY A FACTOR OF 2 FOR CLARITY.



**3 SECTION: SAND BERM AND GRANULAR BUTTRESS WITH OVERLAP (TYP.)**

SCALE IN FEET  
 0 10 20

- NOTES:**
- SECTION VERTICAL SCALE EXAGGERATED BY A FACTOR OF 2 FOR CLARITY.



**4 SECTION: SAND BERM AND GRANULAR BUTTRESS WITHOUT OVERLAP (TYP.)**

SCALE IN FEET  
 0 10 20

- NOTES:**
- SECTION VERTICAL SCALE EXAGGERATED BY A FACTOR OF 2 FOR CLARITY.

- NOTES:**
- PROPOSED CONTOURS REPRESENT SAND BERM SURFACE AND GRANULAR BUTTRESS SURFACES.
  - SAND BERM AND GRANULAR BUTTRESSES TO BE CONSTRUCTED MECHANICALLY.
  - GRANULAR BUTTRESSES, SAND BERM, AND SAND FILL UP TO EL. 596.5' TO BE CONSTRUCTED PRIOR TO PLACEMENT OF INTERIOR MATERIAL.
  - CONTRACTOR SHALL INSTALL AND MAINTAIN FLOTATION SILT CURTAIN TO SEPARATE ACTIVE FILL AREAS FROM ST. LOUIS RIVER DURING WORK. CONTRACTOR TO DETERMINE ALIGNMENT OF FLOTATION SILT CURTAIN WITHIN WORK AREA LIMITS. SEE DETAIL 2 ON SHEET C-28 FOR ADDITIONAL FLOTATION SILT CURTAIN INFORMATION.
  - ELECTRIC RIGHT-OF-WAY PROVIDED BY MINNESOTA POWER IN DECEMBER 2017. COORDINATE ALL WORK WITHIN OVERHEAD ELECTRIC RIGHT-OF-WAY WITH MINNESOTA POWER. SEE REFERENCE DRAWINGS FOR ADDITIONAL OVERHEAD ELECTRIC INFORMATION.
  - FROM APRIL 1 - JUNE 30, MAINTAIN UNRESTRICTED FLOW AND UNDISTURBED CHANNEL THROUGH KEENE CREEK CHANNEL TO ST. LOUIS RIVER. WORK DURING THIS PERIOD MUST BE SEPARATED FROM KEENE CREEK BY SILT CURTAIN OR VEGETATED BUFFER. SEE SPECIFICATION SECTION 01 14 00 FOR ADDITIONAL DETAILS.
  - MATERIAL PLACEMENT TO RESTORATION SURFACE IN RSU 6 MAY OR MAY NOT BE AWARDED AS BID ALTERNATE.

**ISSUED FOR CONSTRUCTION**  
 10/31/2018

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	RWO	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	RWO	03/06/18	ISSUED FOR CONSTRUCTION

CLIENT	10/11/17				
BID					
CONSTRUCTION		03/06/18	10/31/18		
PERMIT		07/09/18			
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Designed	PMD
Approved	RWO

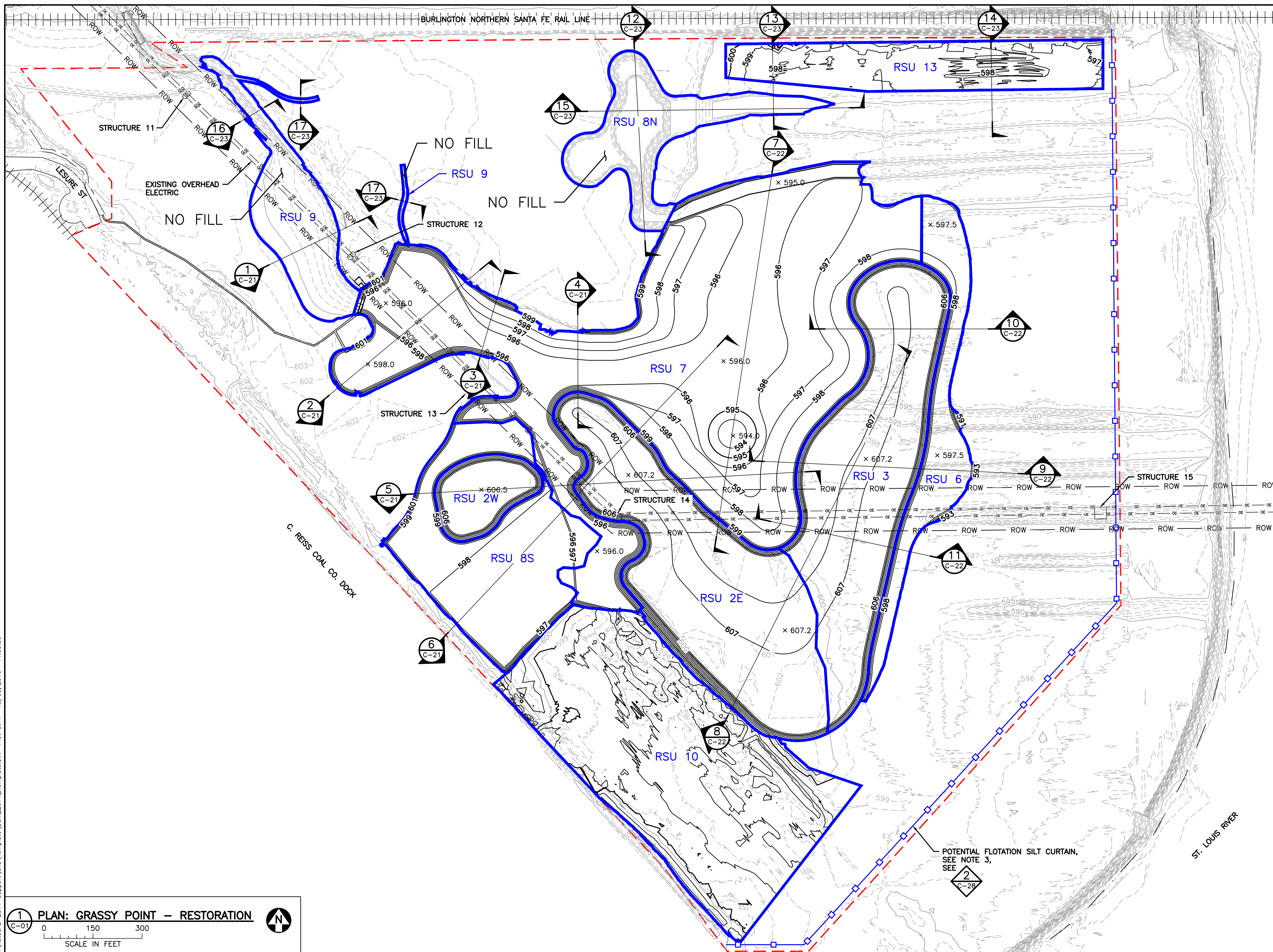


**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA

**GRASSY POINT BERM AND BUTTRESSES**  
 PLAN AND SECTIONS

BARR PROJECT No.	23/69-1879.00
CLIENT PROJECT No.	8F073/B187
DWC. No.	C-16
REV. No.	1

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**LEGEND**

	WORK AREA LIMITS
	EXISTING FIVE-FOOT CONTOUR
	EXISTING ONE-FOOT CONTOUR
	PROPOSED FIVE-FOOT CONTOUR
	PROPOSED ONE-FOOT CONTOUR
	RSU BOUNDARY
	RSU LABEL
	FEDERAL NAVIGATION CHANNEL
	ELECTRICAL RIGHT-OF-WAY
	EXISTING OVERHEAD ELECTRIC
	EXISTING OVERHEAD ELECTRIC POLE
	EXISTING OVERHEAD ELECTRIC TOWER STRUCTURE
	PROPOSED SPOT ELEVATION
	FLOTATION SILT CURTAIN, SEE NOTE 3

- NOTES:**
- PROPOSED CONTOURS WITHIN RSU BOUNDARIES REPRESENT RESTORATION SURFACE.
  - EXISTING CONTOURS WITHIN RSU BOUNDARIES REPRESENT POST NEAT-LINE DREDGE CONDITIONS.
  - CONTRACTOR SHALL INSTALL AND MAINTAIN FLOTATION SILT CURTAIN TO SEPARATE ACTIVE FILL AREAS FROM ST. LOUIS RIVER DURING WORK. CONTRACTOR TO DETERMINE ALIGNMENT OF FLOTATION SILT CURTAIN WITHIN WORK AREA LIMITS. SEE DETAIL 2 ON SHEET C-28 FOR ADDITIONAL FLOTATION SILT CURTAIN INFORMATION.
  - ELECTRIC RIGHT-OF-WAY PROVIDED BY MINNESOTA POWER IN DECEMBER 2017. COORDINATE ALL WORK WITHIN OVERHEAD ELECTRIC RIGHT-OF-WAY WITH MINNESOTA POWER. SEE REFERENCE DRAWINGS FOR ADDITIONAL OVERHEAD ELECTRIC INFORMATION.
  - FROM APRIL 1 - JUNE 30, MAINTAIN UNRESTRICTED FLOW AND UNDISTURBED CHANNEL THROUGH KEENE CREEK CHANNEL TO ST. LOUIS RIVER. WORK DURING THIS PERIOD MUST BE SEPARATED FROM KEENE CREEK BY SILT CURTAIN OR VEGETATED BUFFER. SEE SPECIFICATION SECTION 01 14 00 FOR ADDITIONAL DETAILS.
  - MATERIAL PLACEMENT TO RESTORATION SURFACE IN RSU 8S, 2W, AND 6 MAY OR MAY NOT BE AWARDED AS BID ALTERNATES. ISLAND PLACEMENT MATERIAL VOLUME MAY VARY BASED ON AWARDED BID ALTERNATES. PLACEMENT IN RSU 3 IS PRIORITY OVER RSU 2E. RESTORATION SURFACE SHOWN REPRESENTS AWARD OF ALL BID ALTERNATIVES.

ISSUED FOR CONSTRUCTION  
10/31/2018

**1 PLAN: GRASSY POINT - RESTORATION**

0 150 300  
SCALE IN FEET

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
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PRINTED NAME BENJAMIN J. MEEMKEN  
 SIGNATURE *Ben Meemken*  
 DATE 10/31/18 LICENSE # 53168

CLIENT	07/05/17	10/11/17					
BID							
CONSTRUCTION			03/06/18	10/31/18			
PERMIT			02/09/18				
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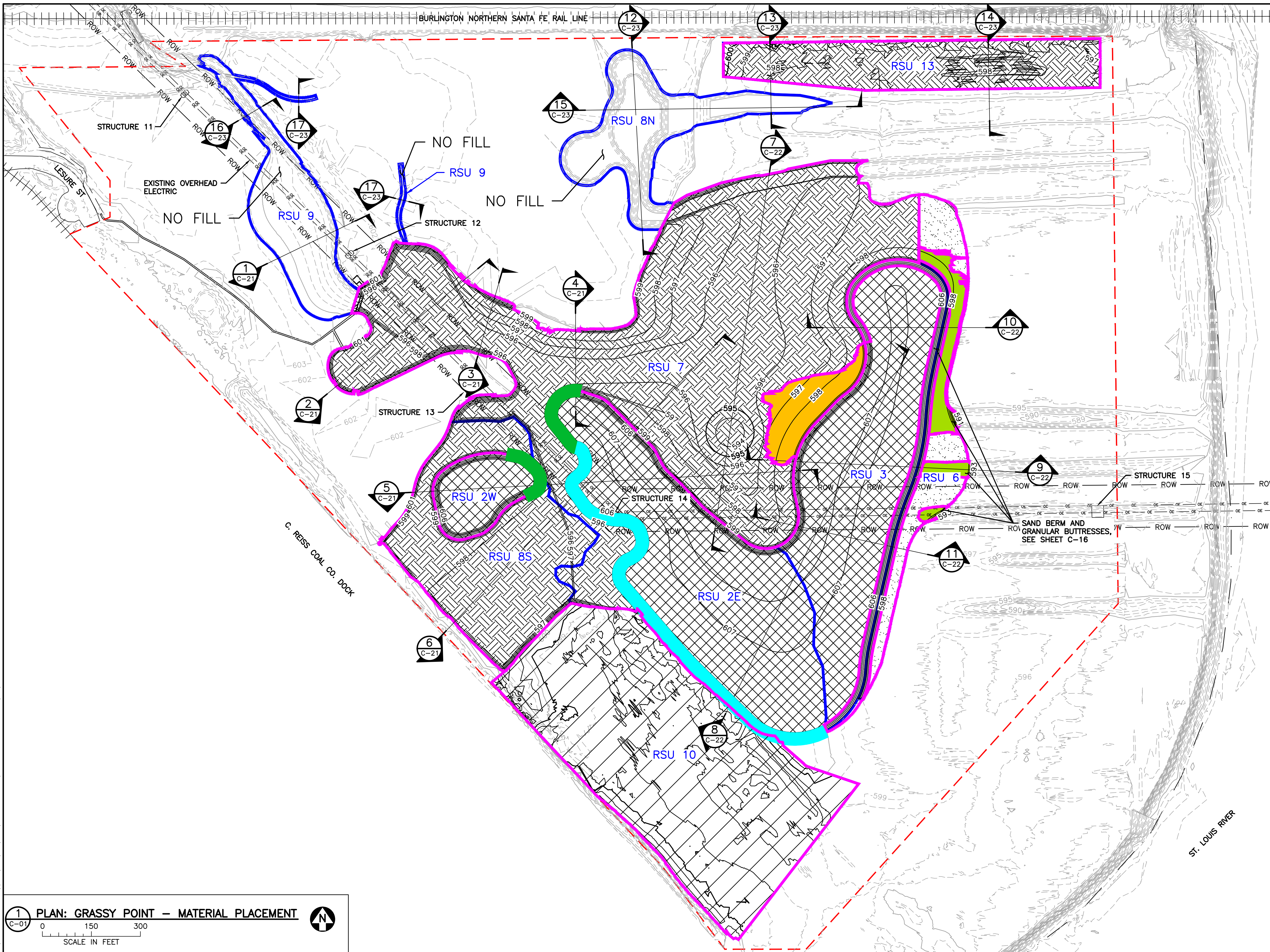
Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-632-2277

Scale	AS SHOWN
Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2



GRASSY POINT/KINGSBURY BAY RESTORATION DULUTH, MINNESOTA		BARR PROJECT No. <b>23/69-1879.00</b>
GRASSY POINT RESTORATION PLAN		CLIENT PROJECT No. <b>8F073/B187</b>
DWG. No. <b>C-17</b>	REV. No. <b>1</b>	

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**LEGEND**

- - - WORK AREA LIMITS
- 600 EXISTING FIVE-FOOT CONTOUR
- 599 EXISTING ONE-FOOT CONTOUR
- 600 PROPOSED FIVE-FOOT CONTOUR
- 599 PROPOSED ONE-FOOT CONTOUR
- RSU BOUNDARY
- RSU LABEL
- FEDERAL NAVIGATION CHANNEL
- ROW ELECTRICAL RIGHT-OF-WAY
- EXISTING OVERHEAD ELECTRIC
- EXISTING OVERHEAD ELECTRIC POLE
- EXISTING OVERHEAD ELECTRIC TOWER STRUCTURE
- █ SHORELINE SAND, SEE SECTION 9 ON SHEET C-25
- █ SHORELINE GRAVEL, SEE SECTION 9 ON SHEET C-25
- SOFT SEDIMENT PLACEMENT, SEE DETAIL 3 ON SHEET C-25
- SOFT SEDIMENT PLACEMENT IN FILL, SEE DETAIL 4 ON SHEET C-25
- SANDY SEDIMENT PLACEMENT AT GRADE, SEE DETAIL 5 ON SHEET C-25
- SAND PLACEMENT IN FILL, SEE DETAIL 6 ON SHEET C-25
- GRASSY POINT ISLAND PLACEMENT, SEE DETAIL 7 ON SHEET C-25
- 0.5' SOFT SEDIMENT PLACEMENT, SEE DETAIL 8 ON SHEET C-25

- NOTES:**
1. PROPOSED CONTOURS WITHIN RSU BOUNDARIES REPRESENT RESTORATION SURFACE.
  2. EXISTING CONTOURS WITHIN RSU BOUNDARIES REPRESENT POST NEAT-LINE DREDGE CONDITIONS.
  3. CONTRACTOR SHALL INSTALL AND MAINTAIN FLOTATION SILT CURTAIN TO CONTAIN SOFT SEDIMENT PLACEMENT AREAS. SEE DETAIL 2 ON SHEET C-28 FOR ADDITIONAL FLOTATION SILT CURTAIN INFORMATION.
  4. ELECTRIC RIGHT-OF-WAY PROVIDED BY MINNESOTA POWER IN DECEMBER 2017. COORDINATE ALL WORK WITHIN OVERHEAD ELECTRIC RIGHT-OF-WAY WITH MINNESOTA POWER. SEE REFERENCE DRAWINGS FOR ADDITIONAL OVERHEAD ELECTRIC INFORMATION.
  5. FROM APRIL 1 - JUNE 30, MAINTAIN UNRESTRICTED FLOW AND UNDISTURBED CHANNEL THROUGH KEENE CREEK CHANNEL TO ST. LOUIS RIVER. WORK DURING THIS PERIOD MUST BE SEPARATED FROM KEENE CREEK BY SILT CURTAIN OR VEGETATED BUFFER. SEE SPECIFICATION SECTION 01 14 00 FOR ADDITIONAL DETAILS.
  6. MATERIAL PLACEMENT TO RESTORATION SURFACE IN RSU 8S, 2W, AND 6 MAY OR MAY NOT BE AWARDED AS BID ALTERNATES. ISLAND PLACEMENT MATERIAL VOLUME MAY VARY BASED ON AWARDED BID ALTERNATES. PLACEMENT IN RSU 3 IS PRIORITY OVER RSU 2E. RESTORATION SURFACE SHOWN REPRESENTS AWARD OF ALL BID ALTERNATES.

**1 PLAN: GRASSY POINT - MATERIAL PLACEMENT**

0 150 300  
SCALE IN FEET

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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PRINTED NAME: BENJAMIN J. MEEMKEN  
 SIGNATURE: *Ben Meemken*  
 DATE: 10/31/18 LICENSE # 53168

CLIENT	BID	CONSTRUCTION	PERMIT
07/05/17	10/11/17	03/06/18	10/31/18
		02/09/18	

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 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

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 Minneapolis, Minnesota  
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 Ph: (218) 529-8202  
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Checked	GMP
Designed	BJM2
Approved	BJM2



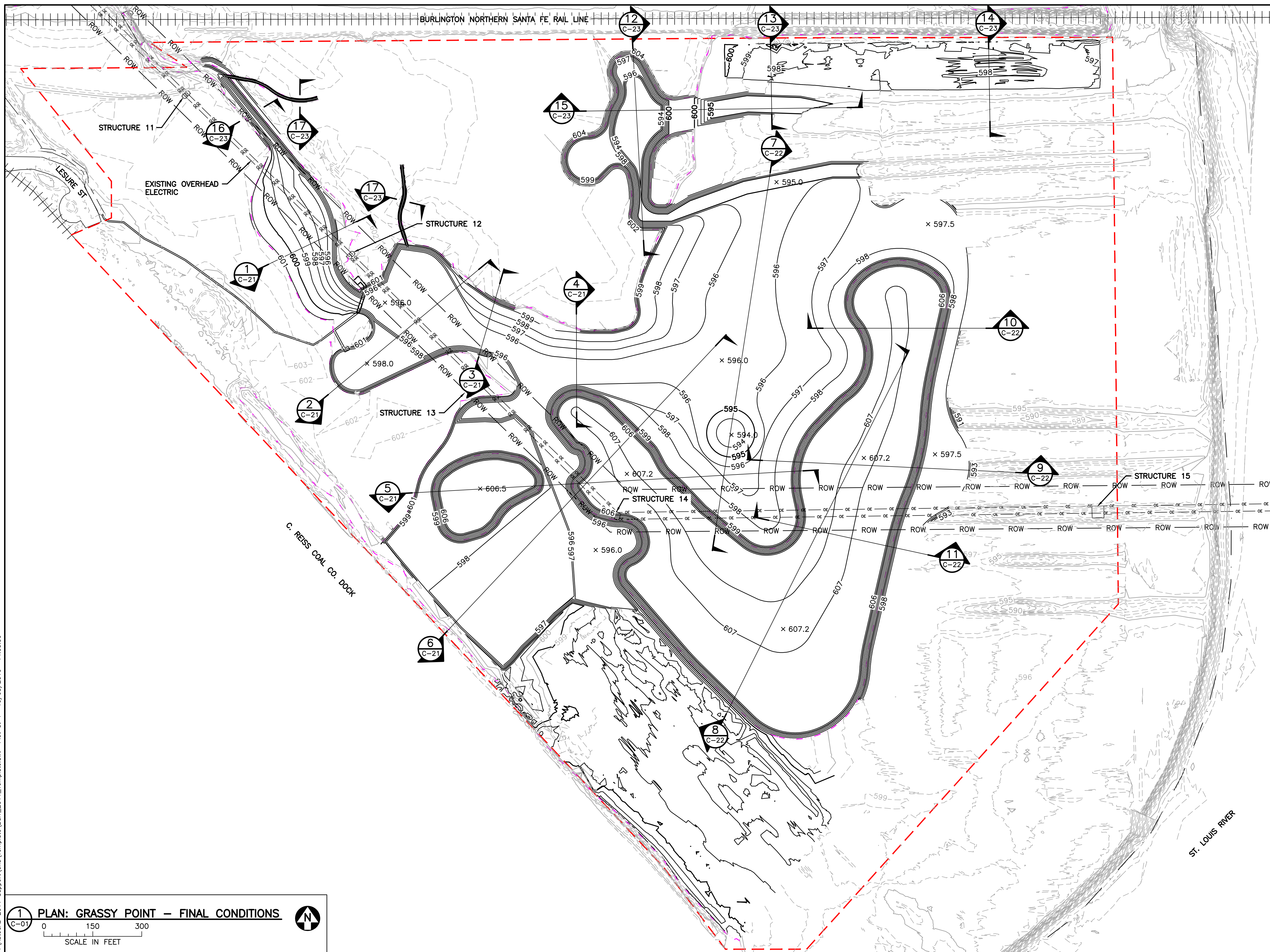
**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA

**GRASSY POINT MATERIAL PLACEMENT PLAN**

BARR PROJECT No. **23/69-1879.00**  
 CLIENT PROJECT No. **8F073/B187**  
 DWG. No. **C-18** REV. No. **1**

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**LEGEND**

	WORK AREA LIMITS
	WATER SURFACE ELEVATION BASED ON PROPOSED CONDITIONS
	EXISTING FIVE-FOOT CONTOUR
	EXISTING ONE-FOOT CONTOUR
	PROPOSED FIVE-FOOT CONTOUR
	PROPOSED ONE-FOOT CONTOUR
	FEDERAL NAVIGATION CHANNEL
	ELECTRICAL RIGHT-OF-WAY
	EXISTING OVERHEAD ELECTRIC
	EXISTING OVERHEAD ELECTRIC POLE
	EXISTING OVERHEAD ELECTRIC TOWER STRUCTURE
	PROPOSED SPOT ELEVATION

- NOTES:**
1. PROPOSED CONTOURS REPRESENT FINAL CONDITIONS (COMBINATION OF NEAT-LINE DREDGED AND RESTORATION SURFACES).
  2. SEED AND ESTABLISH VEGETATION ON ALL DISTURBED AREAS ABOVE WATER SURFACE ELEVATION.
  3. PRIOR TO REMOVING ANY TEMPORARY EROSION AND/OR SEDIMENTATION CONTROLS, ESTABLISH VEGETATION. REMOVE TEMPORARY CONTROL ONCE VEGETATION IS ESTABLISHED. SEE SHEET C-28 FOR TEMPORARY CONTROL DETAILS.
  4. ELECTRIC RIGHT-OF-WAY PROVIDED BY MINNESOTA POWER IN DECEMBER 2017. COORDINATE ALL WORK WITHIN OVERHEAD ELECTRIC RIGHT-OF-WAY WITH MINNESOTA POWER. SEE REFERENCE DRAWINGS FOR ADDITIONAL OVERHEAD ELECTRIC INFORMATION.
  5. FINAL SURFACE ELEVATIONS MAY VARY BASED ON AWARDED BID ALTERNATES. PROPOSED FINAL CONDITIONS SURFACE SHOWN REPRESENTS AWARD OF ALL BID ALTERNATES.

**1 PLAN: GRASSY POINT - FINAL CONDITIONS**

0 150 300  
SCALE IN FEET

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10/31/2018

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
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PRINTED NAME BENJAMIN J. MEEMKEN  
 SIGNATURE   
 DATE 10/31/18 LICENSE # 53168

CLIENT	BID	CONSTRUCTION	PERMIT
07/05/17	10/11/17	03/06/18	10/31/18
		02/09/18	

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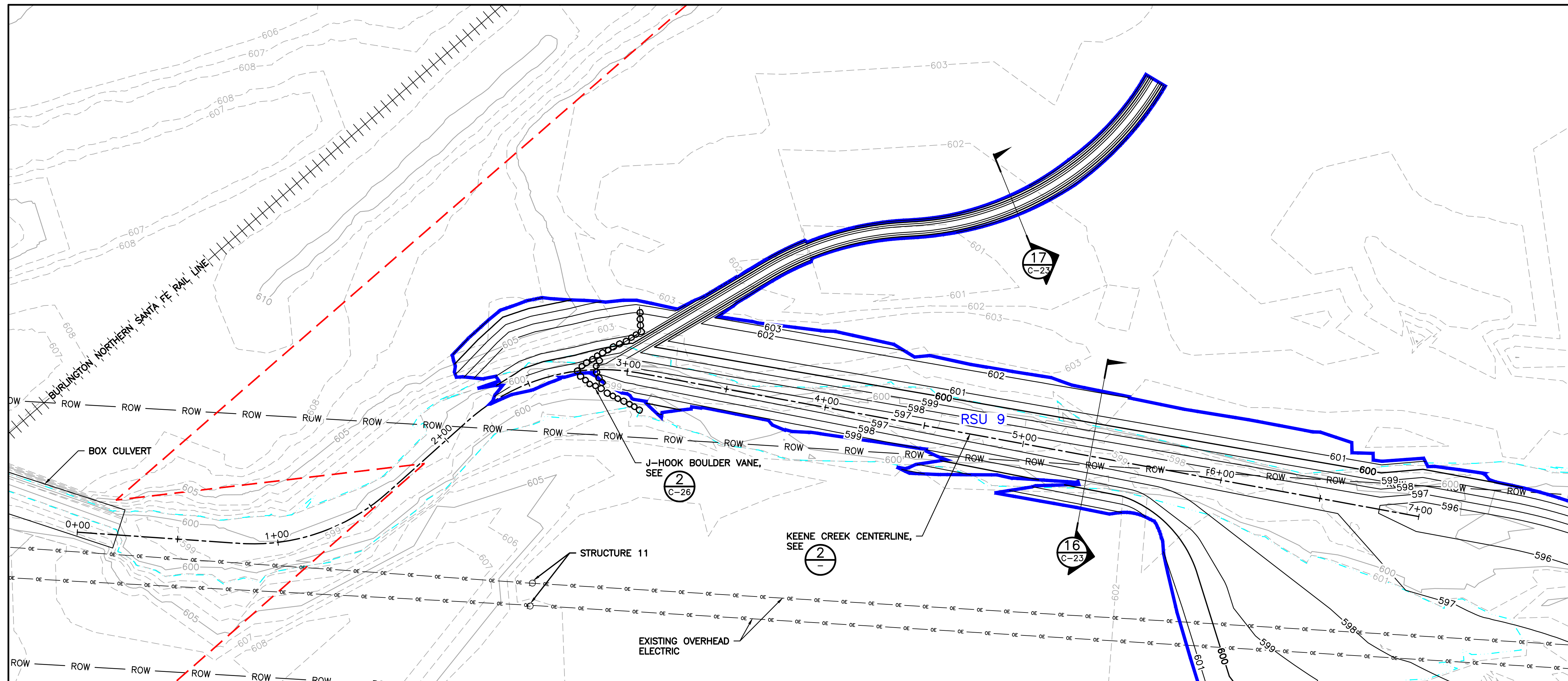
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Designed	BJM2
Approved	BJM2



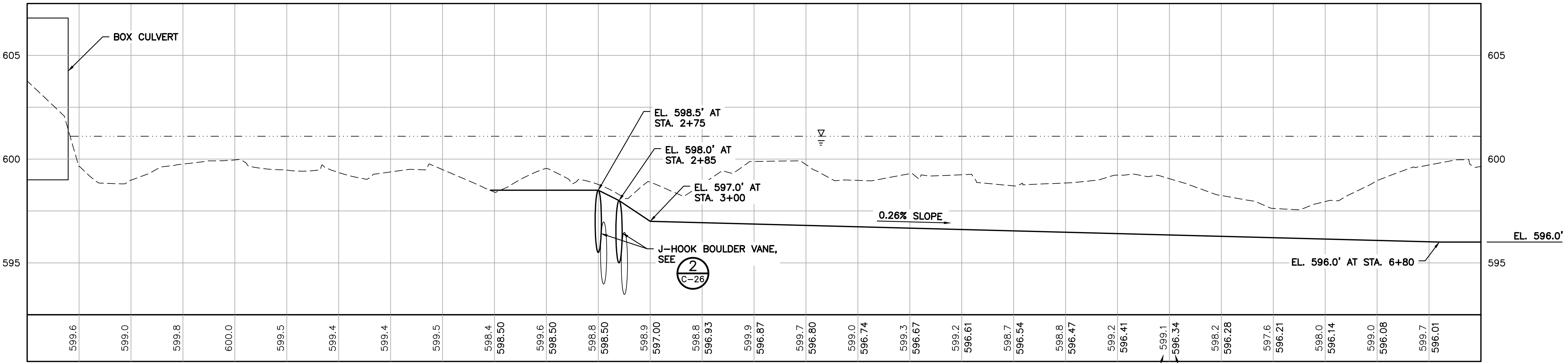
GRASSY POINT/KINGSBURY BAY RESTORATION DULUTH, MINNESOTA		BARR PROJECT No. <b>23/69-1879.00</b>
GRASSY POINT FINAL CONDITIONS PLAN		CLIENT PROJECT No. <b>8F073/B187</b>
DWC. No. <b>C-19</b>	REV. No. <b>1</b>	



- LEGEND - PLAN**
- WORK AREA LIMITS
  - WATER SURFACE ELEVATION
  - 600 EXISTING FIVE-FOOT CONTOUR
  - 599 EXISTING ONE-FOOT CONTOUR
  - 600 PROPOSED FIVE-FOOT CONTOUR
  - 599 PROPOSED ONE-FOOT CONTOUR
  - ROW ELECTRICAL RIGHT-OF-WAY
  - EXISTING OVERHEAD ELECTRIC
  - EXISTING OVERHEAD ELECTRIC POLE
  - RSU BOUNDARY
  - RSU LABEL
  - | EXISTING RAILROAD

- NOTES:**
1. PROPOSED CONTOURS WITHIN RSU BOUNDARIES REPRESENT NEAT-LINE DREDGE SURFACE.
  2. PROFILE VERTICAL SCALE EXAGGERATED BY A FACTOR OF 10 FOR CLARITY.
  3. ELECTRIC RIGHT-OF-WAY PROVIDED BY MINNESOTA POWER IN DECEMBER 2017. COORDINATE ALL WORK WITHIN OVERHEAD ELECTRIC RIGHT-OF-WAY WITH MINNESOTA POWER. SEE REFERENCE DRAWINGS FOR ADDITIONAL OVERHEAD ELECTRIC INFORMATION.
  4. DREDGING OF RSU 9 MAY OR MAY NOT BE AWARDED AS BID ALTERNATE.

**1 PLAN: KEENE CREEK**  
 SCALE IN FEET



- LEGEND - PROFILE**
- EXISTING GROUND
  - NEAT-LINE DREDGE SURFACE
  - WATER SURFACE ELEVATION

**2 PROFILE: KEENE CREEK**  
 SCALE IN FEET

**ISSUED FOR CONSTRUCTION**  
 10/31/2018

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NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION	PRINTED NAME	JESSICA OLSON	SIGNATURE	DATE
1	BDP	GMP	JCO	10/31/18	RE-ISSUED FOR CONSTRUCTION				
0	BDP	GMP	JCO	03/06/18	ISSUED FOR CONSTRUCTION				
DATE		10/31/18		LICENSE #		43102			

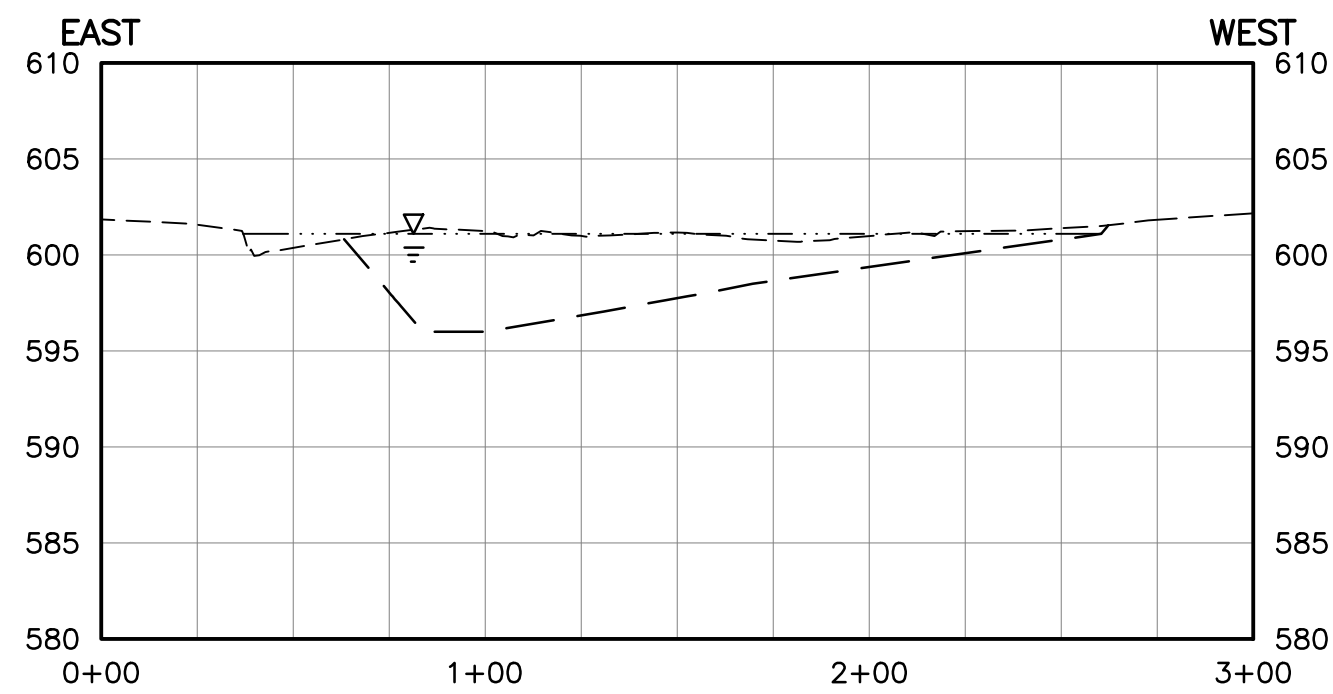
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PERMIT	07/09/18						
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DATE RELEASED							

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 SUITE 700  
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 Minneapolis, Minnesota  
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Date	09/07/2017
Drawn	BDP
Checked	GMP
Designed	JCO
Approved	JCO

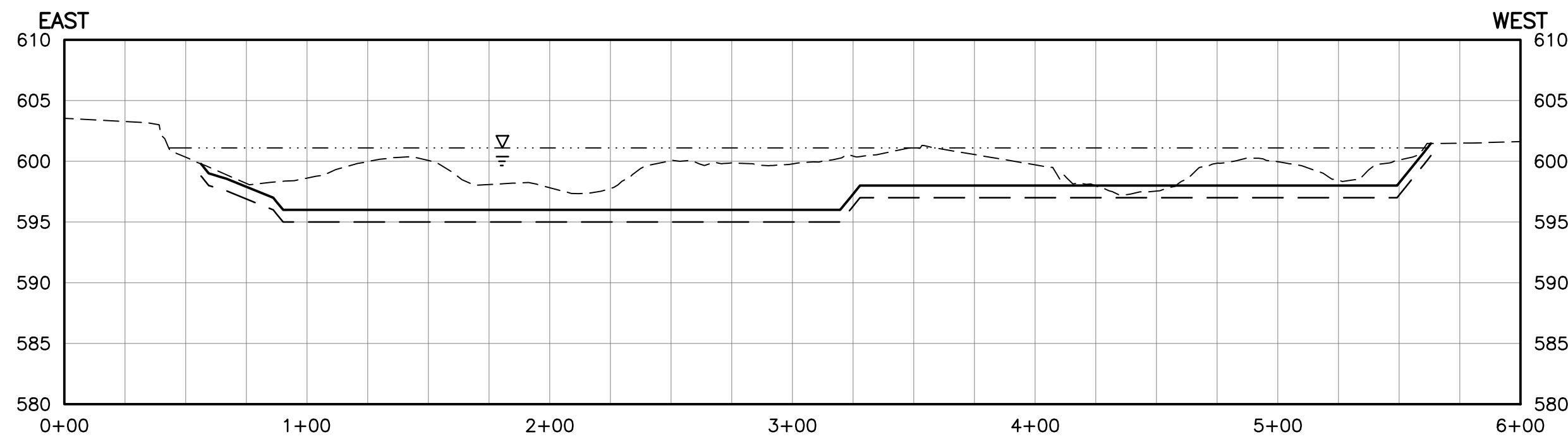


<b>GRASSY POINT/KINGSBURY BAY RESTORATION</b>		BARR PROJECT No.	
DULUTH, MINNESOTA		23/69-1879.00	
<b>KEENE CREEK INLET</b>		CLIENT PROJECT No.	
<b>PLAN AND PROFILE</b>		8F073/B187	
DWG. No.	C-20	REV. No.	1



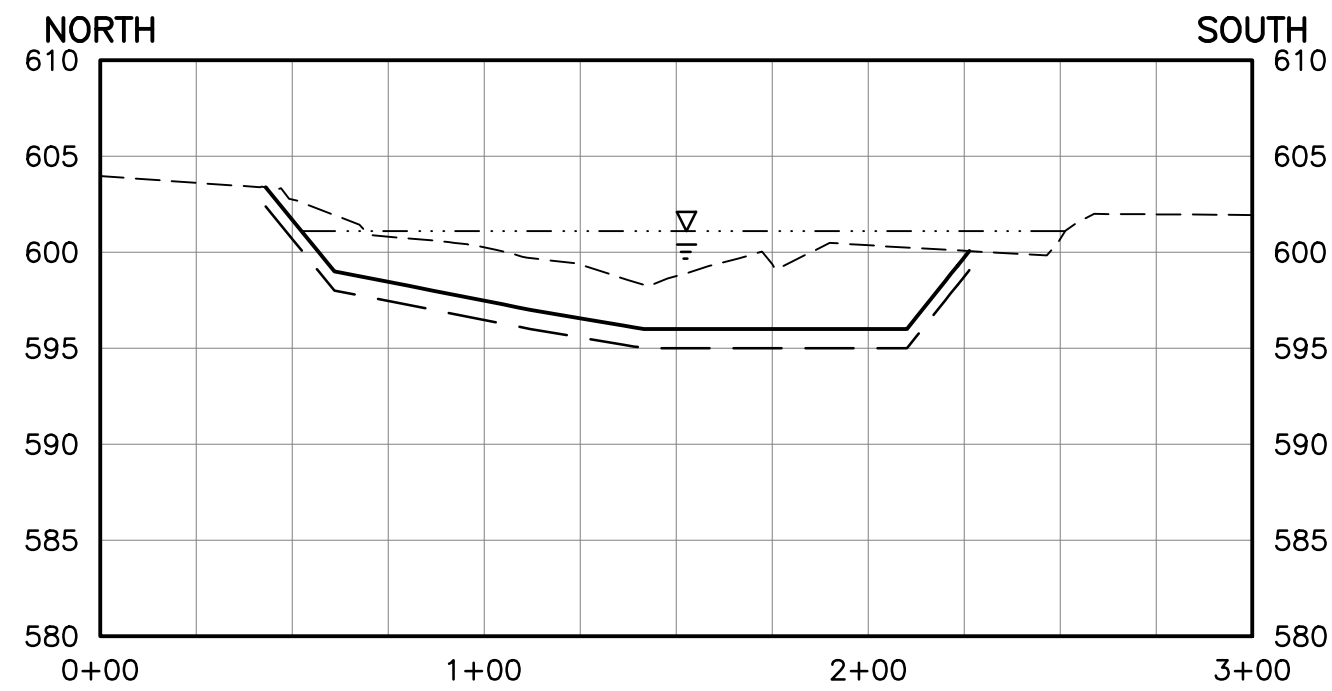
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C-14,C-15,C-17,C-18,C-19  
SCALE IN FEET



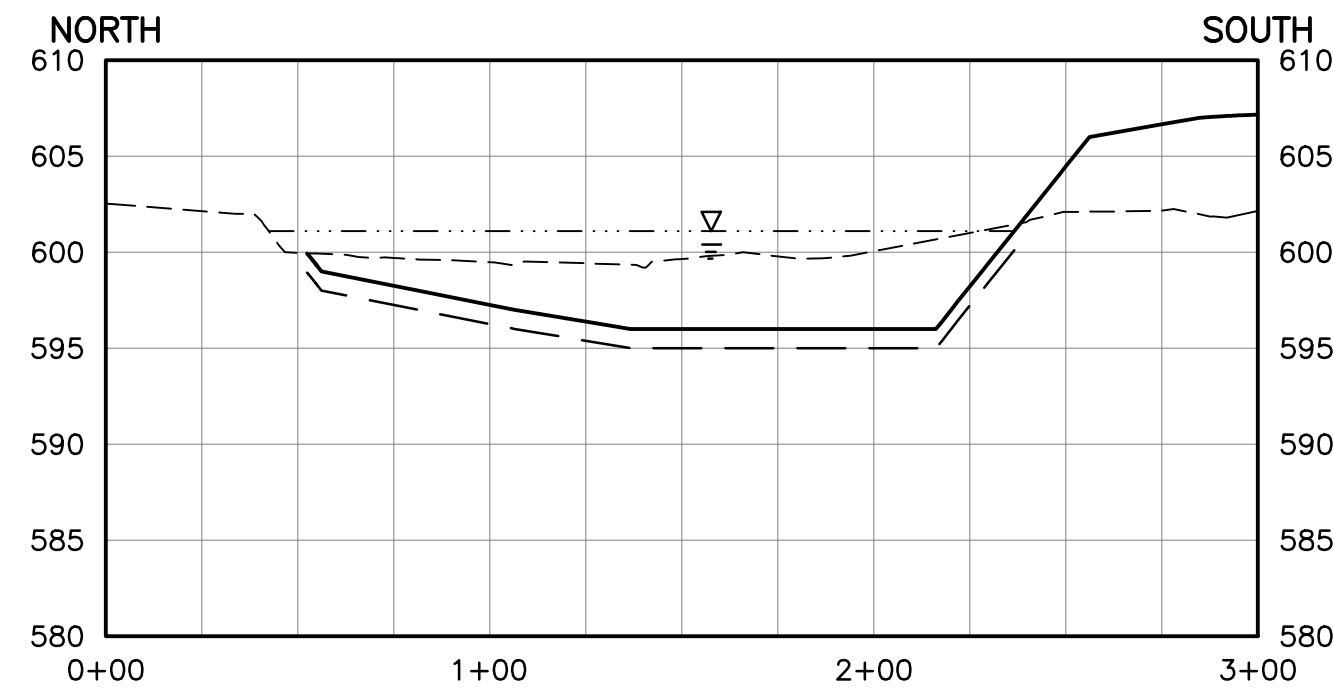
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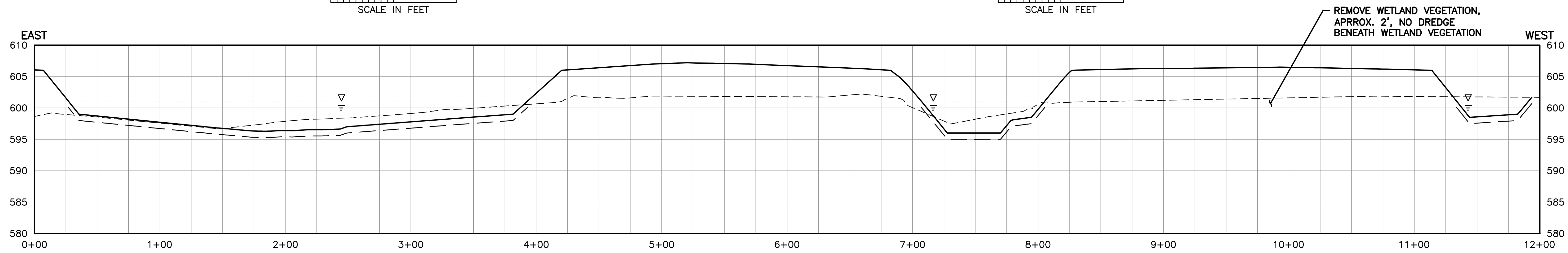
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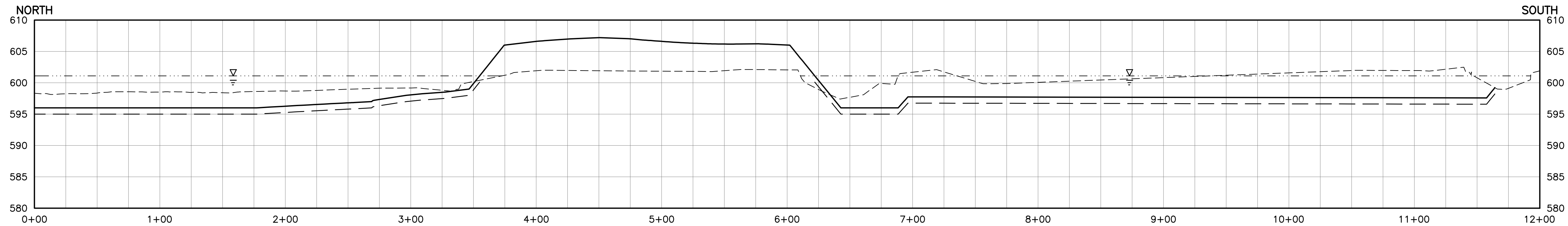
SECTION: GRASSY POINT - SECTION 4

C-14,C-15,C-17,C-18,C-19  
SCALE IN FEET



SECTION: GRASSY POINT - SECTION 5

C-14,C-15,C-17,C-18,C-19  
SCALE IN FEET



SECTION: GRASSY POINT - SECTION 6

C-14,C-15,C-17,C-18,C-19  
SCALE IN FEET

**LEGEND**

---	EXISTING GROUND
- - - -	NEAT-LINE DREDGE SURFACE
—	RESTORATION SURFACE
· · · · ·	WATER SURFACE ELEVATION

**NOTES:**

- SECTION VERTICAL SCALE EXAGGERATED BY A FACTOR OF 5 FOR CLARITY.
- PLACE MATERIAL WHERE EXISTING GROUND IS LOWER THAN DREDGED SURFACE PER MATERIAL PLACEMENT PLAN ON SHEET C-18.
- NEAT-LINE DREDGE SURFACE AND RESTORATION SURFACE ELEVATIONS MAY VARY BASED ON AWARDED BID ALTERNATIVES. NEAT-LINE DREDGE SURFACE AND RESTORATION SURFACE SHOWN REPRESENT AWARD OF ALL BID ALTERNATIVES.

ISSUED FOR CONSTRUCTION  
10/31/2018

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NO.	BY	CHK	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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PRINTED NAME: BENJAMIN J. MEEMKEN  
 SIGNATURE: *Ben Meemken*  
 DATE: 10/31/18 LICENSE #: 53168

CLIENT	07/05/17	10/11/17					
BID							
CONSTRUCTION			03/06/18	10/31/18			
PERMIT			02/09/18				
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

**BARR** ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

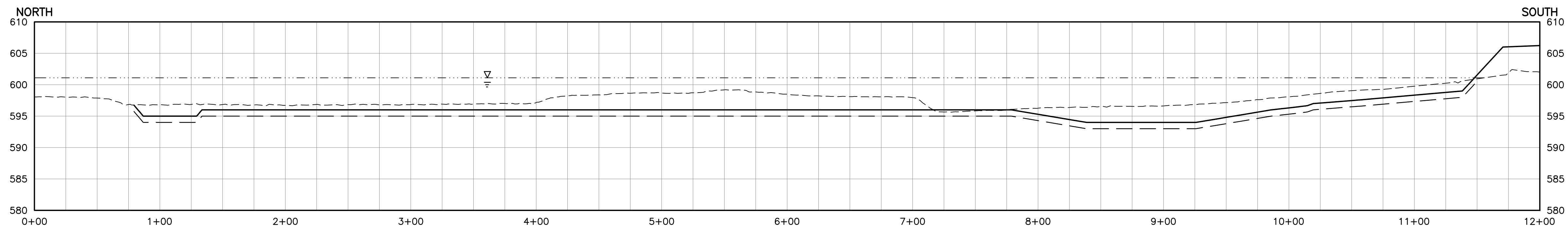
Corporate Headquarters: Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Ph: (218) 529-8202  
 Ph: 1-800-632-2277  
 www.barr.com

Scale	AS SHOWN
Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2

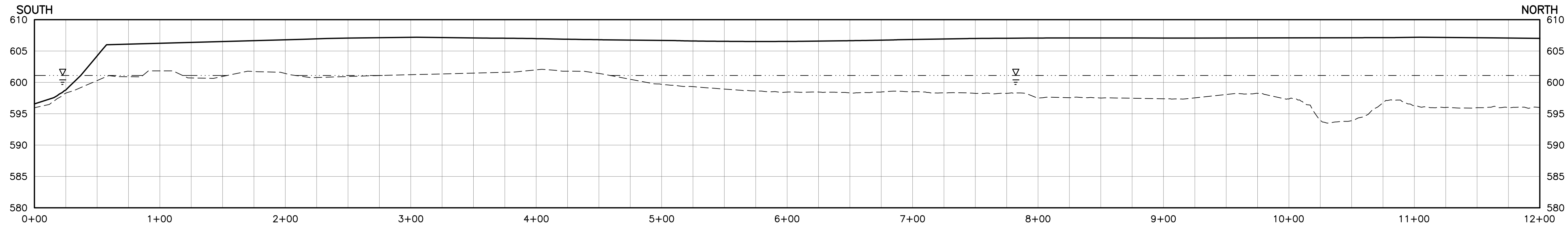


GRASSY POINT/KINGSBURY BAY RESTORATION DULUTH, MINNESOTA		BARR PROJECT No. <b>23/69-1879.00</b>
GRASSY POINT SECTIONS 1 OF 3		CLIENT PROJECT No. <b>8F073/B187</b>
DWG. No. <b>C-21</b>	REV. No. <b>1</b>	

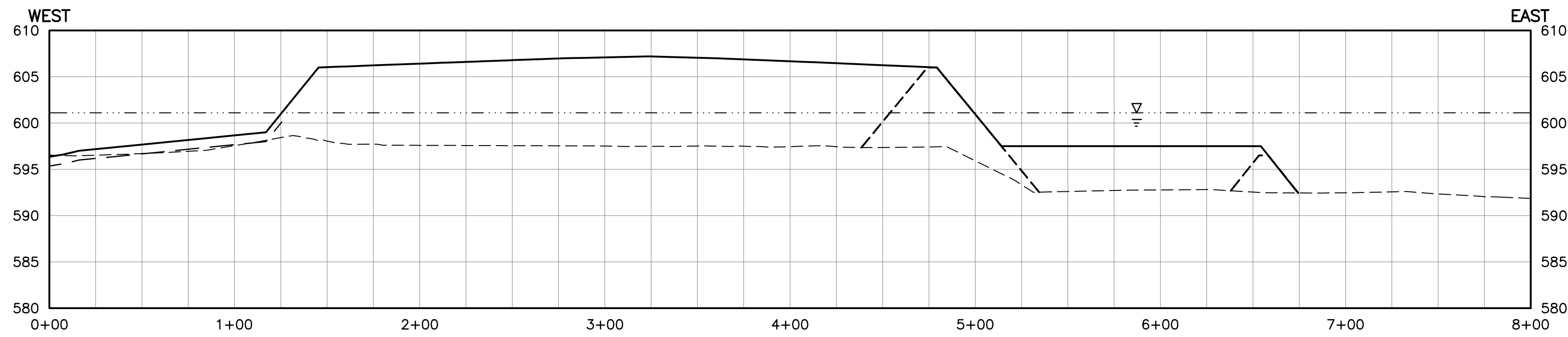




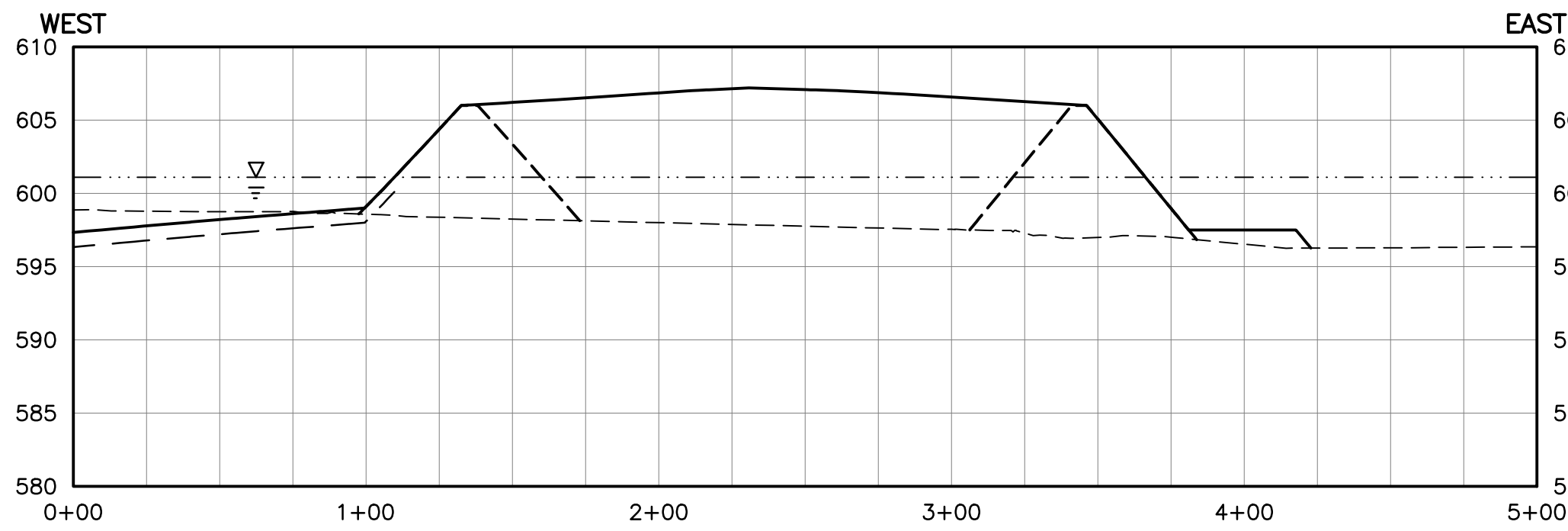
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 C-14,C-15,C-17,C-18,C-19  
 SCALE IN FEET



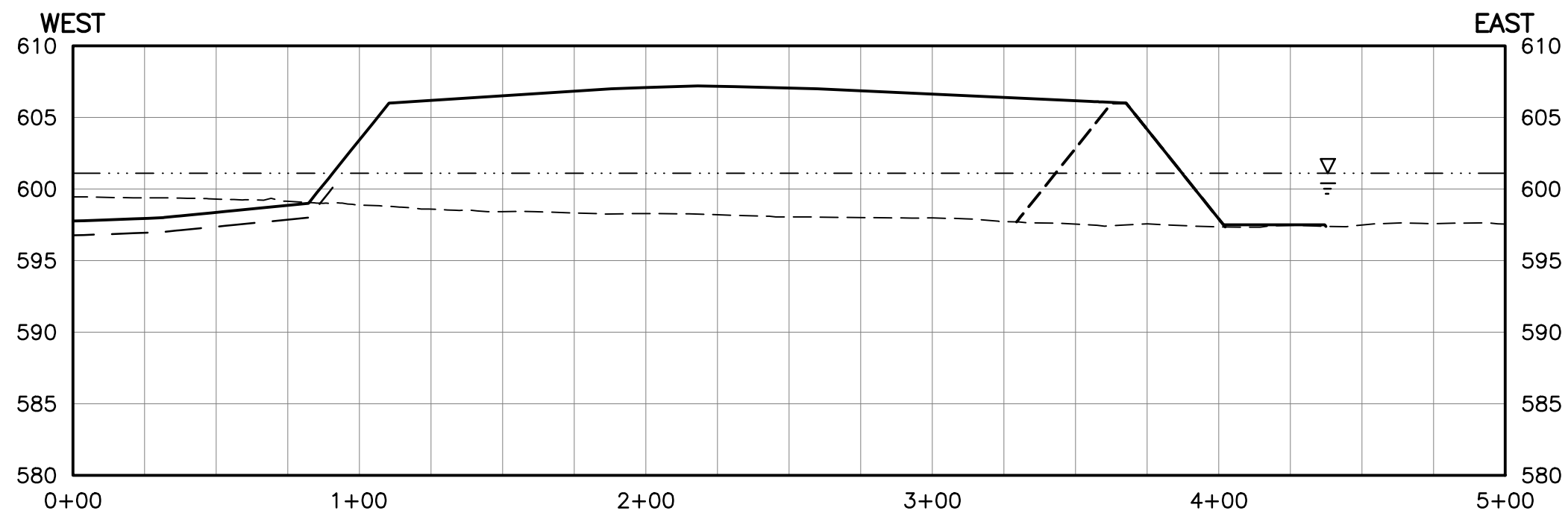
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 C-14,C-15,C-17,C-18,C-19  
 SCALE IN FEET



SECTION: GRASSY POINT - SECTION 9  
 C-14,C-15,C-17,C-18,C-19  
 SCALE IN FEET



SECTION: GRASSY POINT - SECTION 10  
 C-14,C-15,C-17,C-18,C-19  
 SCALE IN FEET



SECTION: GRASSY POINT - SECTION 11  
 C-14,C-15,C-17,C-18,C-19  
 SCALE IN FEET

**LEGEND**

- EXISTING GROUND
- - - NEAT-LINE DREDGE SURFACE
- RESTORATION SURFACE
- - - SAND BERM OR GRANULAR BUTTRESS
- ..... WATER SURFACE ELEVATION

- NOTES:**
- SECTION VERTICAL SCALE EXAGGERATED BY A FACTOR OF 5 FOR CLARITY.
  - PLACE MATERIAL WHERE EXISTING GROUND IS LOWER THAN DREDGED SURFACE PER MATERIAL PLACEMENT PLAN ON SHEET C-18.
  - NEAT-LINE DREDGE SURFACE AND RESTORATION SURFACE ELEVATIONS MAY VARY BASED ON AWARDED BID ALTERNATIVES. NEAT-LINE DREDGE SURFACE AND RESTORATION SURFACE SHOWN REPRESENT AWARD OF ALL BID ALTERNATIVES.

ISSUED FOR CONSTRUCTION  
 10/31/2018

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NO.	BY	CHK	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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PRINTED NAME: BENJAMIN J. MEEMKEN  
 SIGNATURE: *Ben Meemken*  
 DATE: 10/31/18 LICENSE #: 53168

CLIENT	07/05/17	10/11/17					
BID							
CONSTRUCTION PERMIT			03/06/18	10/31/18			
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

**BARR ENGINEERING CO.**  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

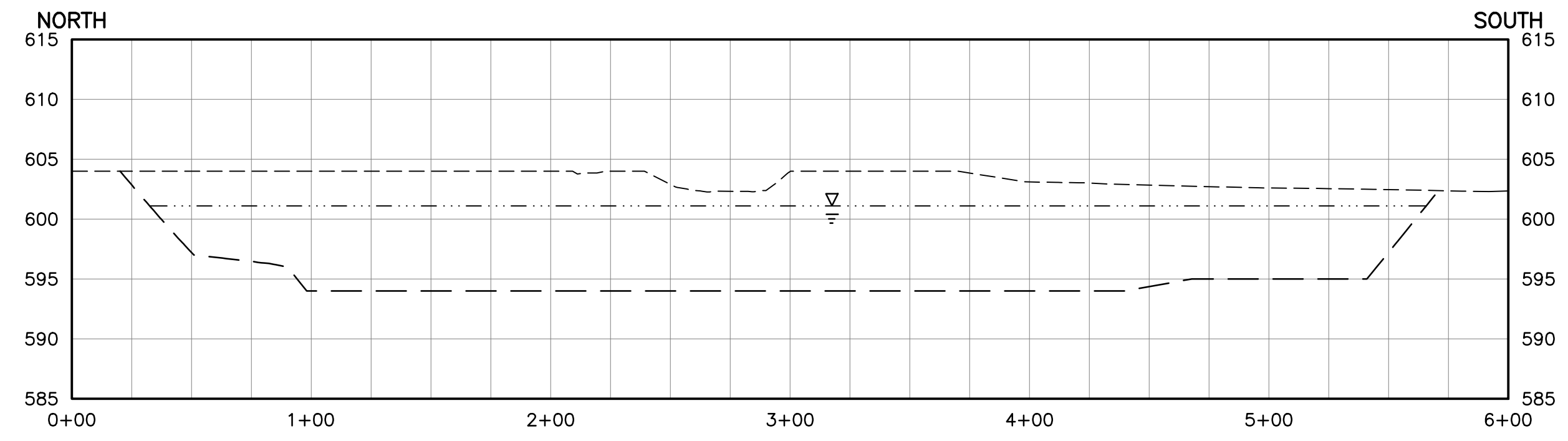
Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Fax: (218) 529-8202  
 www.barr.com

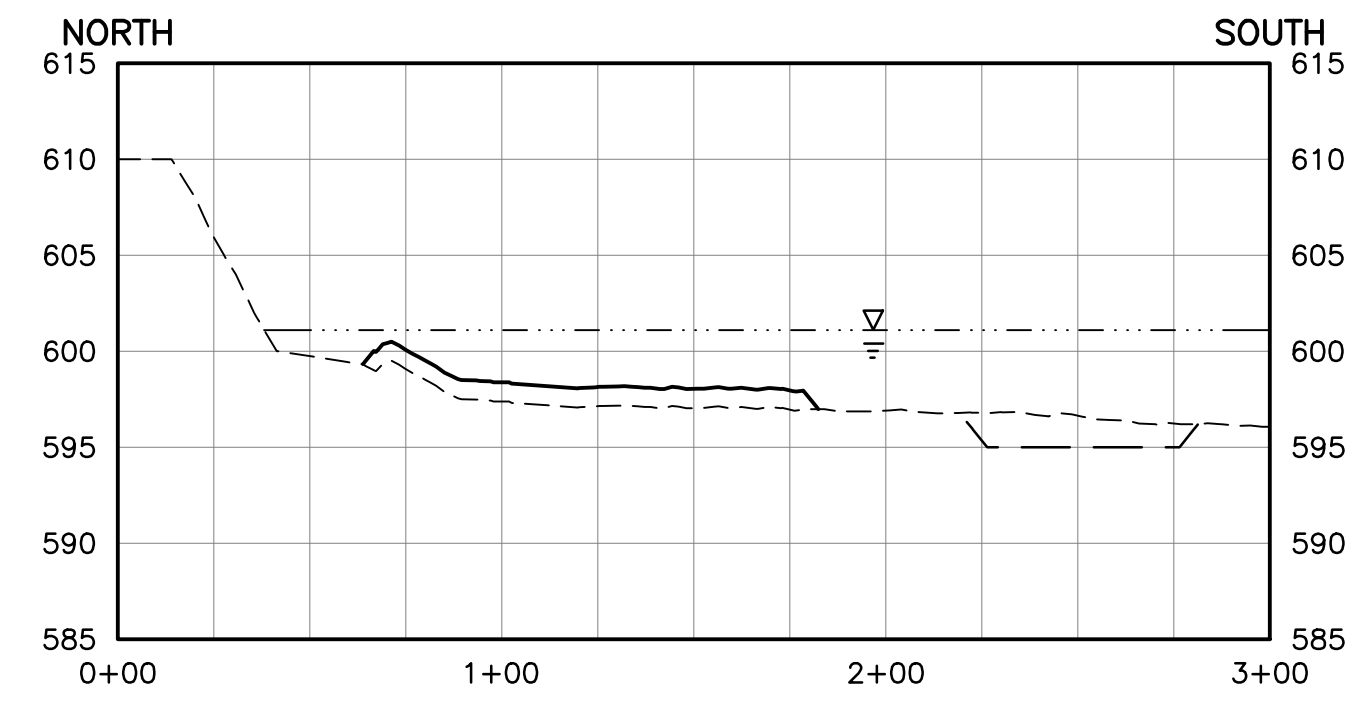
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Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2



GRASSY POINT/KINGSBURY BAY RESTORATION DULUTH, MINNESOTA		BARR PROJECT No. <b>23/69-1879.00</b>
GRASSY POINT SECTIONS 2 OF 3		CLIENT PROJECT No. <b>8F073/B187</b>
DWG. No. <b>C-22</b>	REV. No. <b>1</b>	

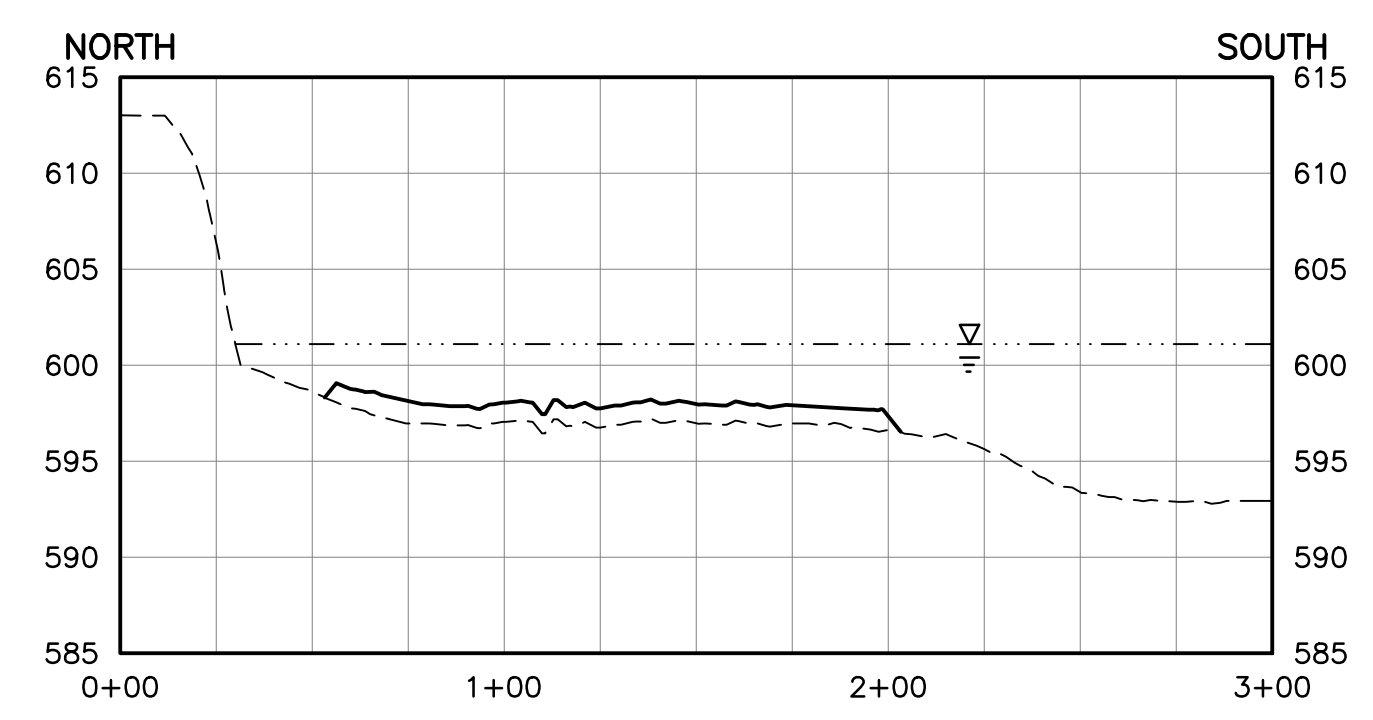


**12 SECTION: GRASSY POINT - SECTION 12**  
 C-14,C-15,C-17,C-18,C-19  
 SCALE IN FEET

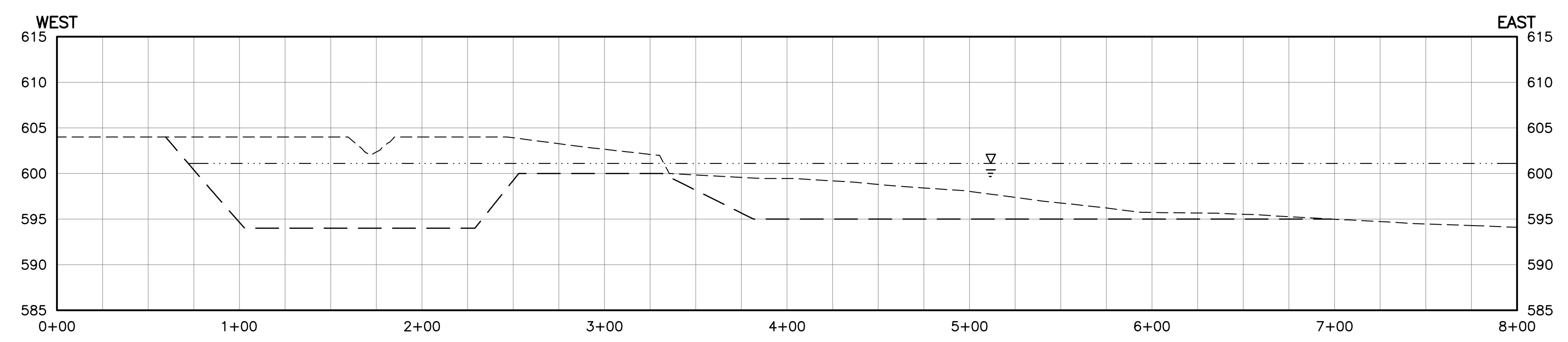


**13 SECTION: GRASSY POINT - SECTION 13**  
 C-14,C-15,C-17,C-18,C-19  
 SCALE IN FEET

**LEGEND**  
 - - - - - EXISTING GROUND  
 - - - - - NEAT-LINE DREDGE SURFACE  
 - - - - - RESTORATION SURFACE  
 - - - - - WATER SURFACE ELEVATION

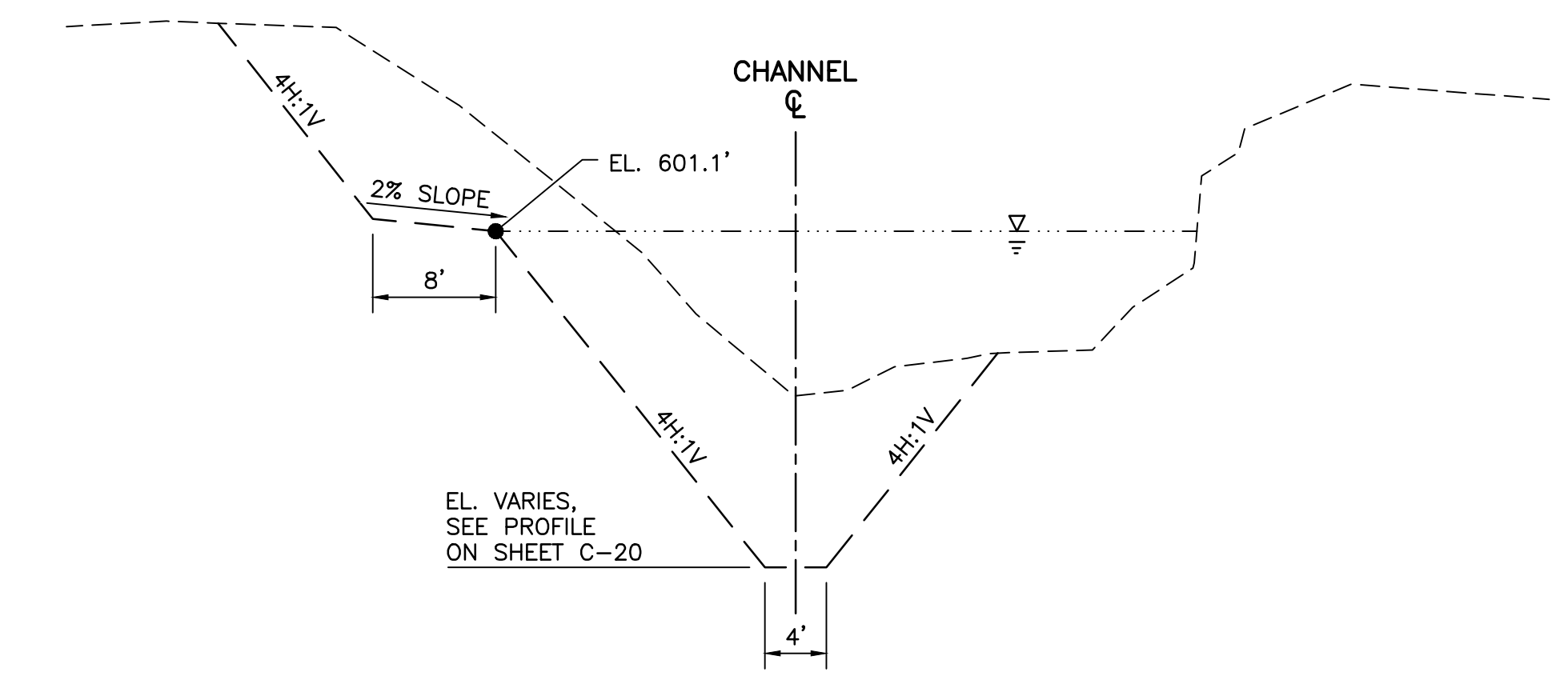


**14 SECTION: GRASSY POINT - SECTION 14**  
 C-14,C-15,C-17,C-18,C-19  
 SCALE IN FEET

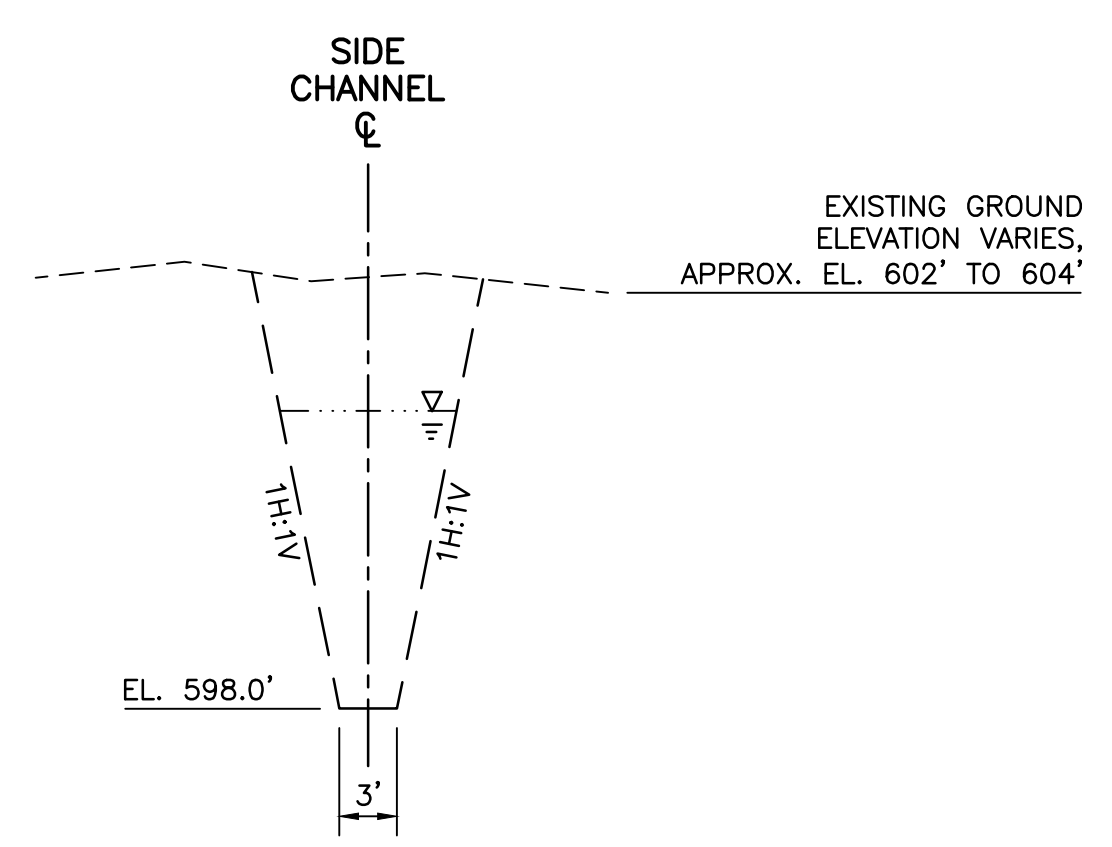


**15 SECTION: GRASSY POINT - SECTION 15**  
 C-14,C-15,C-17,C-18,C-19  
 SCALE IN FEET

- NOTES:**
- SECTION VERTICAL SCALE EXAGGERATED BY A FACTOR OF 5 FOR CLARITY.
  - NEAT-LINE DREDGE SURFACE AND RESTORATION SURFACE ELEVATIONS MAY VARY BASED ON AWARDED BID ALTERNATIVES. NEAT-LINE DREDGE SURFACE AND RESTORATION SURFACE SHOWN REPRESENT AWARD OF ALL BID ALTERNATIVES.



**16 SECTION: KEENE CREEK CHANNEL (TYP.)**  
 C-14,C-15,C-17,C-18,C-19,C-20  
 SCALE IN FEET



**17 SECTION: SIDE CHANNEL (TYP.)**  
 C-14,C-15,C-17,C-18,C-19,C-20  
 SCALE IN FEET

ISSUED FOR CONSTRUCTION  
 10/31/2018

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NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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PRINTED NAME: BENJAMIN J. MEEMKEN  
 SIGNATURE: *Ben Meemken*  
 DATE: 10/31/18 LICENSE #: 53168

CLIENT	07/05/17	10/11/17				
BID						
CONSTRUCTION			03/06/18	10/31/18		
PERMIT			02/09/18			
RELEASED TO/FOR	A	B	C	0	1	2
DATE RELEASED						

**BARR** ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802  
 Ph: 1-800-786-5830  
 Fax: (218) 529-8202  
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Scale	AS SHOWN
Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2



GRASSY POINT/KINGSBURY BAY RESTORATION  
 DULUTH, MINNESOTA

GRASSY POINT  
 SECTIONS 3 OF 3

BARR PROJECT No.	23/69-1879.00
CLIENT PROJECT No.	8F073/B187
DWG. No.	C-23
REV. No.	1

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**LEGEND**

	WORK AREA LIMITS
	FEDERAL NAVIGATION CHANNEL
	PROPOSED TRUCK ROUTE
	PROPOSED PIPELINE ROUTE
	SAFETY ZONE, SEE SHEET C-02

- NOTES:**
1. ACTIVE COMMERCIAL DOCK AND SLIP REQUIRES 25' DRAFT (MIN.). CONTRACTOR SHALL COORDINATE INTERMITTENT SERVICE AGREEMENT WITH DOCK OWNER.
  2. FOR ALTERNATIVE PIPELINE ROUTES, CONTRACTOR TO COORDINATE ANY REQUIRED ACCESS AGREEMENTS AND COMPLY WITH ALL DESIGN AND CONSTRUCTION REQUIREMENTS OF PROPERTY OWNERS.

**1 PLAN: PIPELINE AND TRUCK ROUTES**

0 500 1000  
SCALE IN FEET

SAFETY ZONE, SEE SHEET C-02 FOR ADDITIONAL DETAILS

ISSUED FOR CONSTRUCTION  
10/31/2018

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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PRINTED NAME BENJAMIN J. MEEMKEN  
 SIGNATURE   
 DATE 10/31/18 LICENSE # 53168

CLIENT	07/05/17	10/11/17				
BID						
CONSTRUCTION PERMIT			03/06/18	10/31/18		
RELEASED TO/FOR	A	B	C	0	1	2
DATE RELEASED						

**BARR** Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802  
 Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Ph: (218) 529-8202  
 Fax: 1-800-632-2277  
 www.barr.com

Scale	AS SHOWN
Date	06/20/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2

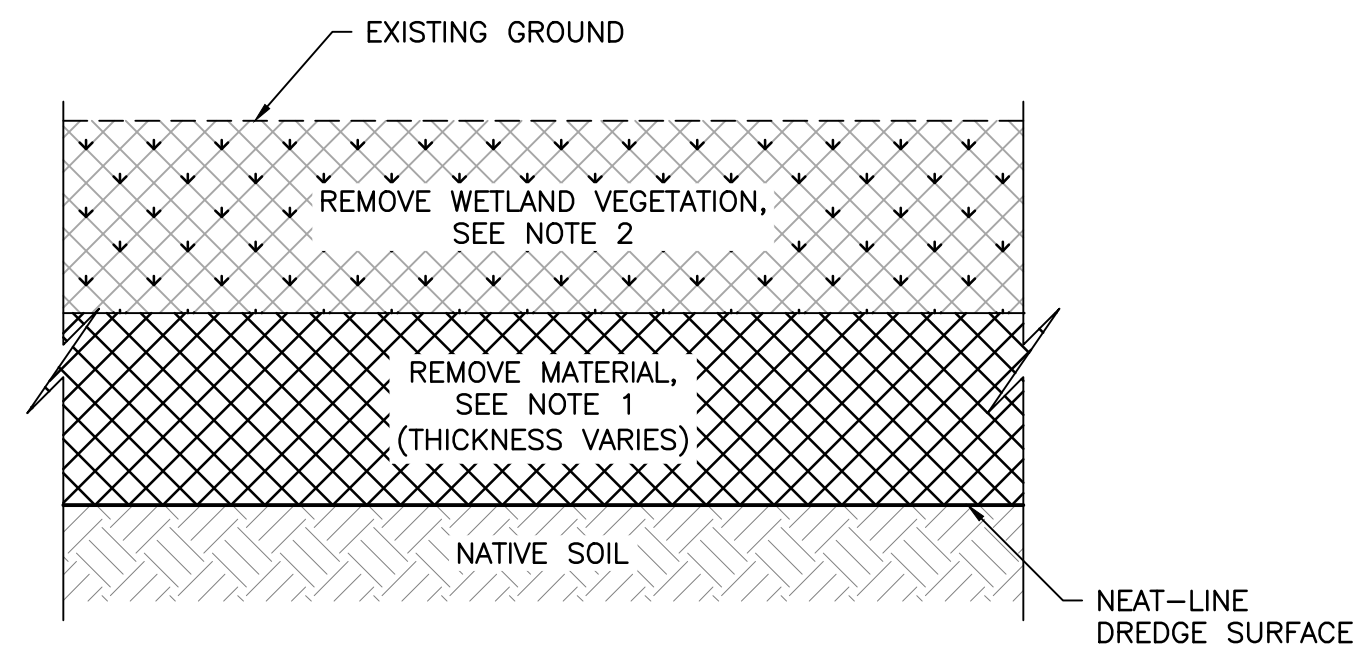


**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA

**PIPELINE AND TRUCK ROUTES PLAN**

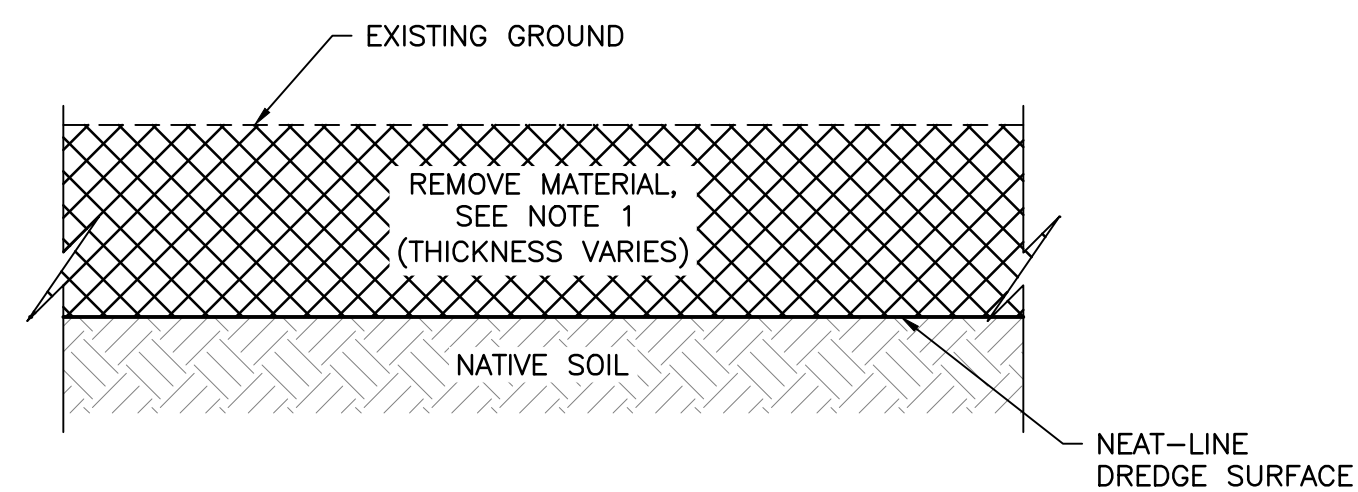
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CLIENT PROJECT No.	8F073/B187
DWG. No.	C-24
REV. No.	1

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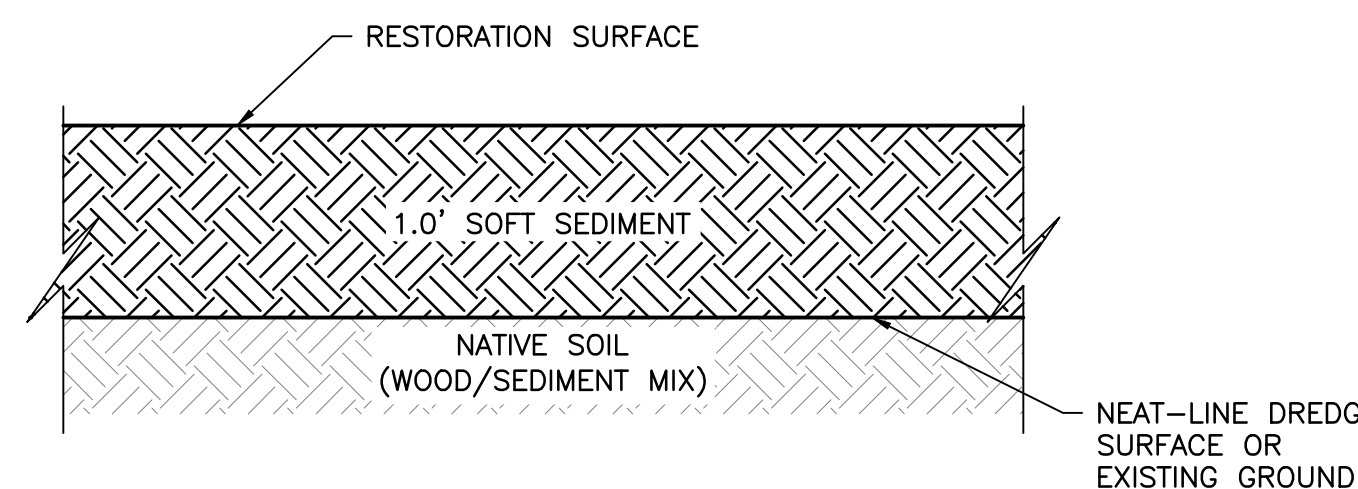
**1** **DETAIL: REMOVALS WITH WETLAND VEGETATION (TYP.)**  
 C-07,C-15 NOT TO SCALE

- NOTES:**
1. AREAS OF MATERIAL TYPE ARE APPROXIMATED ON SHEETS C-07 AND C-15. MATERIAL TYPE DEFINED IN SPECIFICATIONS.
  2. WETLAND VEGETATION REMOVAL THICKNESS IN RSU 1 IS 2'. WETLAND VEGETATION REMOVAL THICKNESS IN RSU 8N VARIES, APPROX. 2'

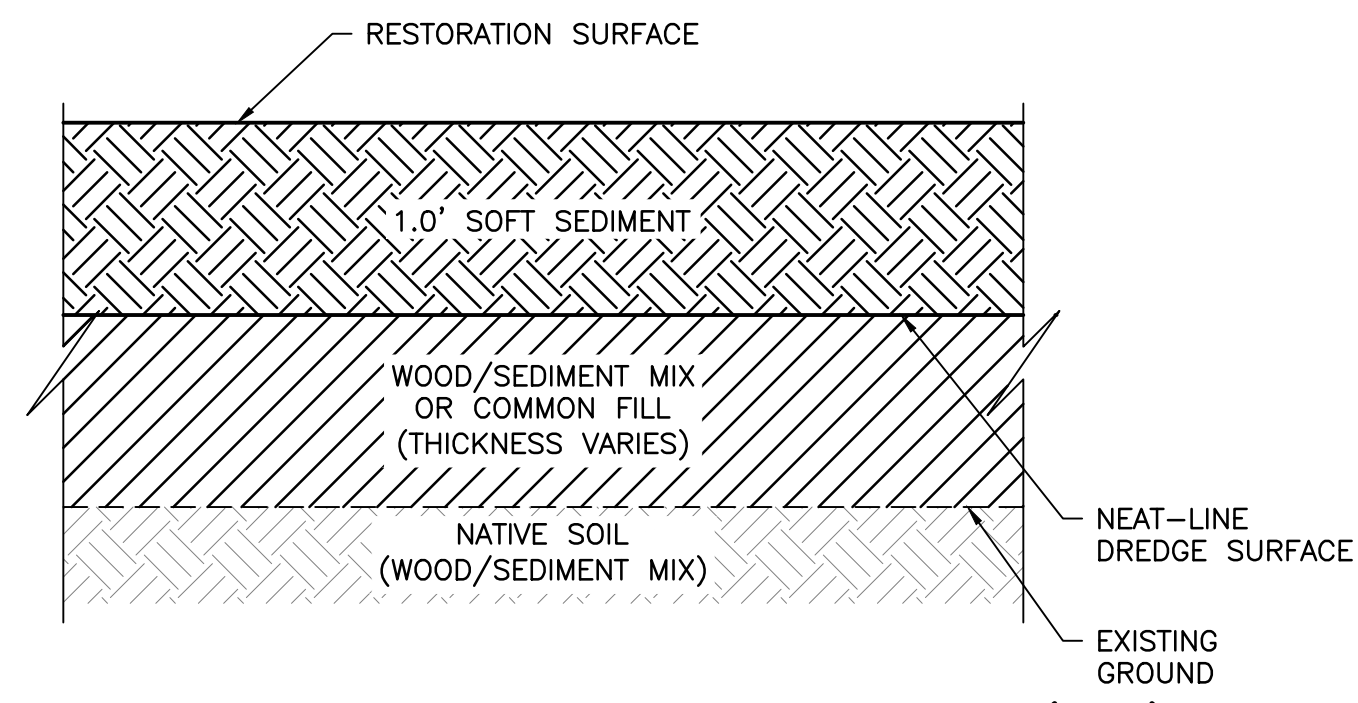


**2** **DETAIL: REMOVALS WITHOUT WETLAND VEGETATION (TYP.)**  
 C-07,C-15 NOT TO SCALE

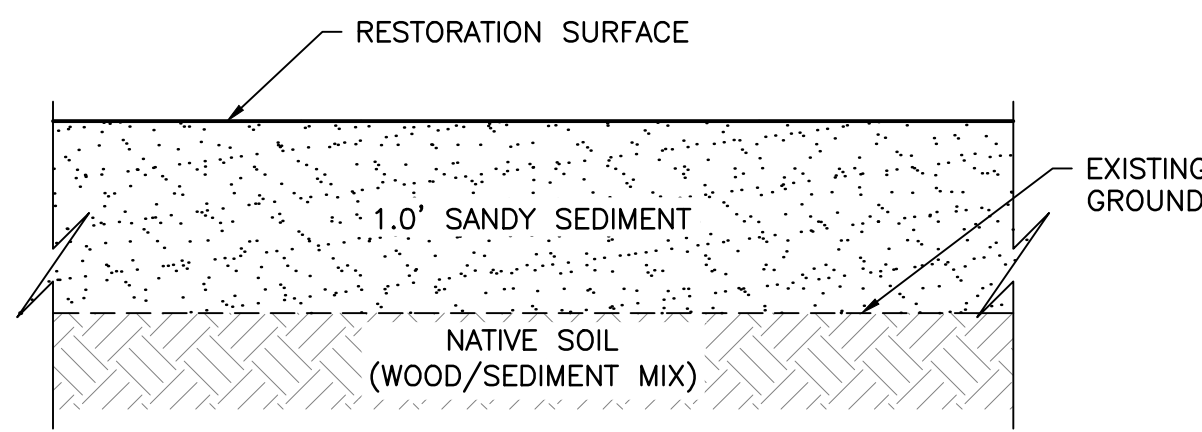
- NOTES:**
1. AREAS OF MATERIAL TYPE ARE APPROXIMATED ON SHEETS C-07 AND C-15. MATERIAL TYPE DEFINED IN SPECIFICATIONS.



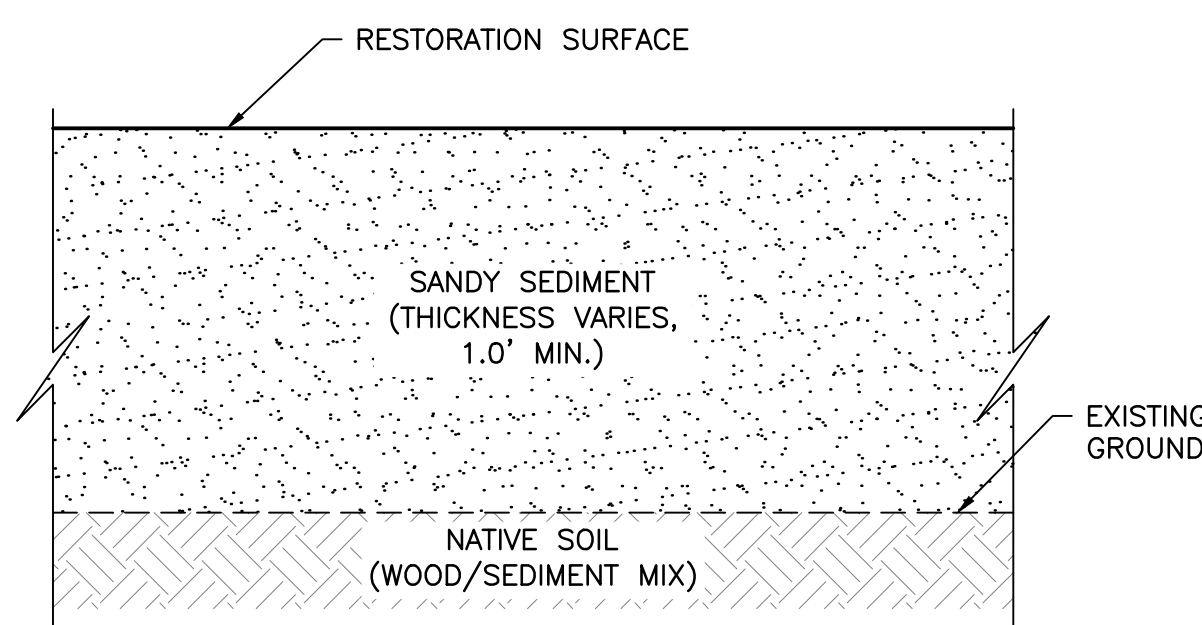
**3** **DETAIL: SOFT SEDIMENT PLACEMENT (TYP.)**  
 C-18 NOT TO SCALE



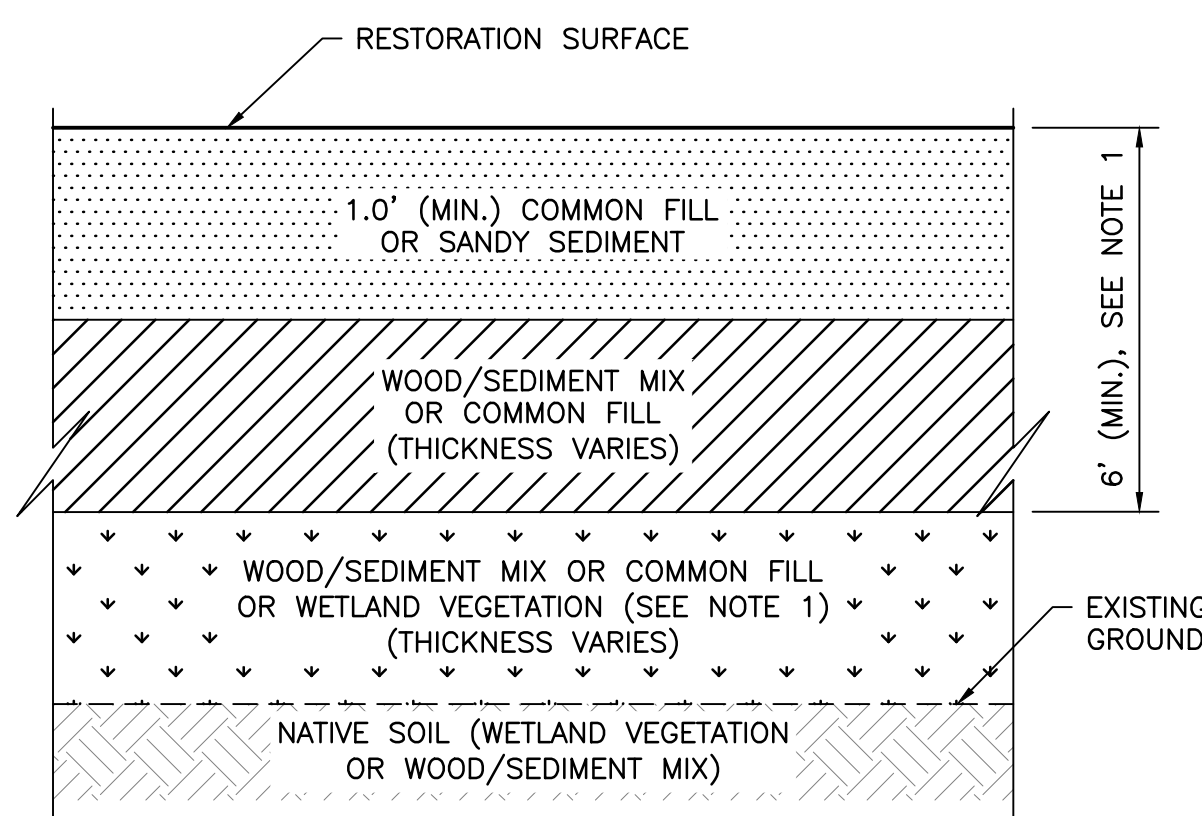
**4** **DETAIL: SOFT SEDIMENT PLACEMENT IN FILL (TYP.)**  
 C-15,C-18 NOT TO SCALE



**5** **DETAIL: SANDY SEDIMENT PLACEMENT AT GRADE (TYP.)**  
 C-18 NOT TO SCALE

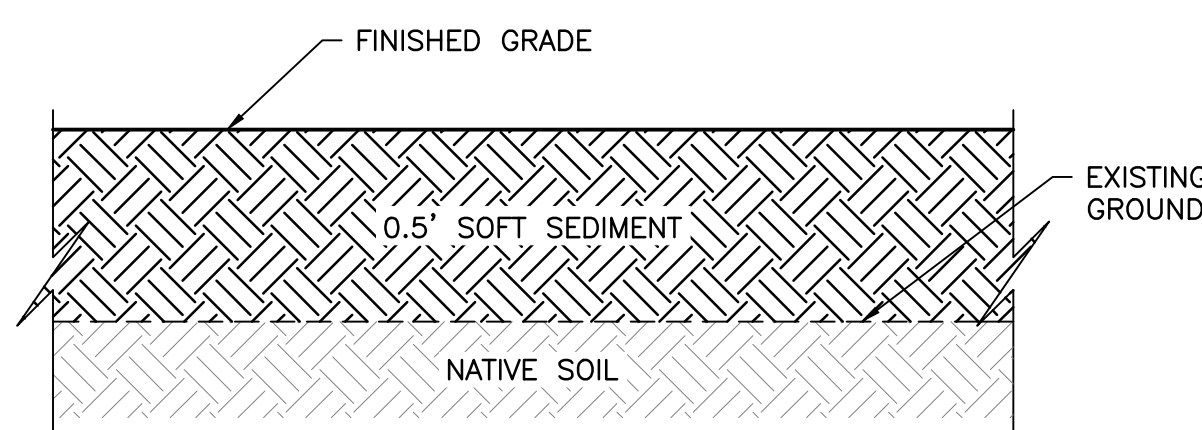


**6** **DETAIL: SANDY SEDIMENT PLACEMENT IN FILL (TYP.)**  
 C-18 NOT TO SCALE

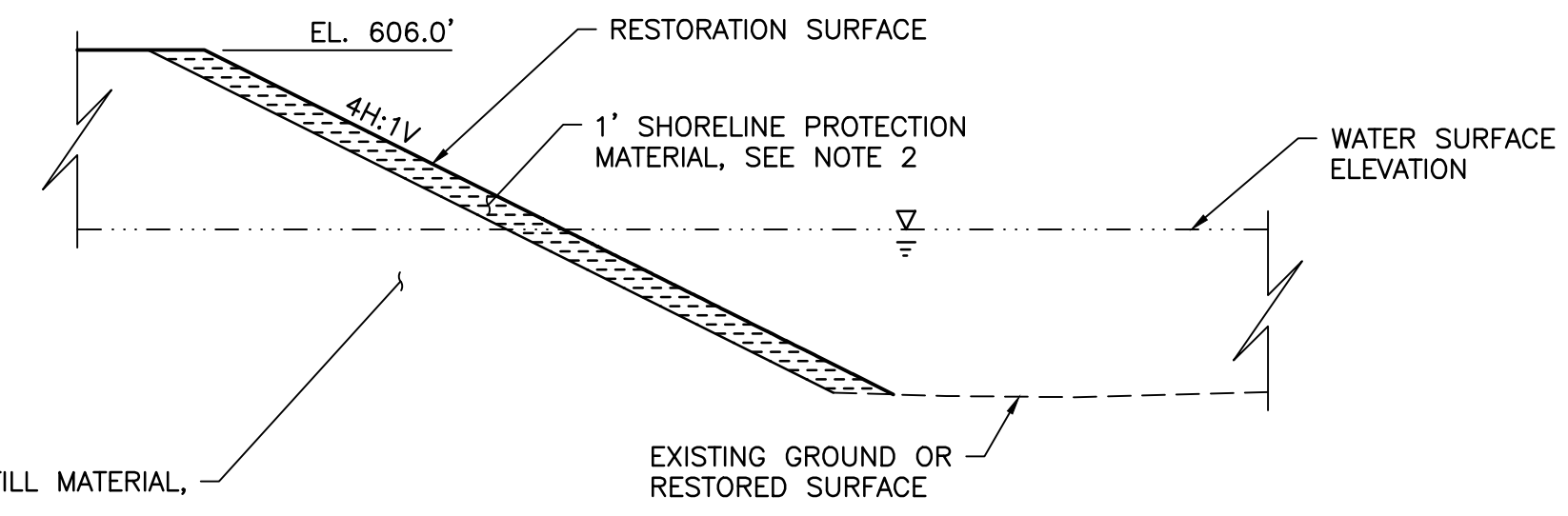


**7** **DETAIL: GRASSY POINT ISLAND PLACEMENT (TYP.)**  
 C-18 NOT TO SCALE

- NOTES:**
1. WETLAND VEGETATION MATERIAL MUST BE COVERED WITH 6" MIN. OF WOOD/SEDIMENT MIX, COMMON FILL, OR SANDY SEDIMENT.



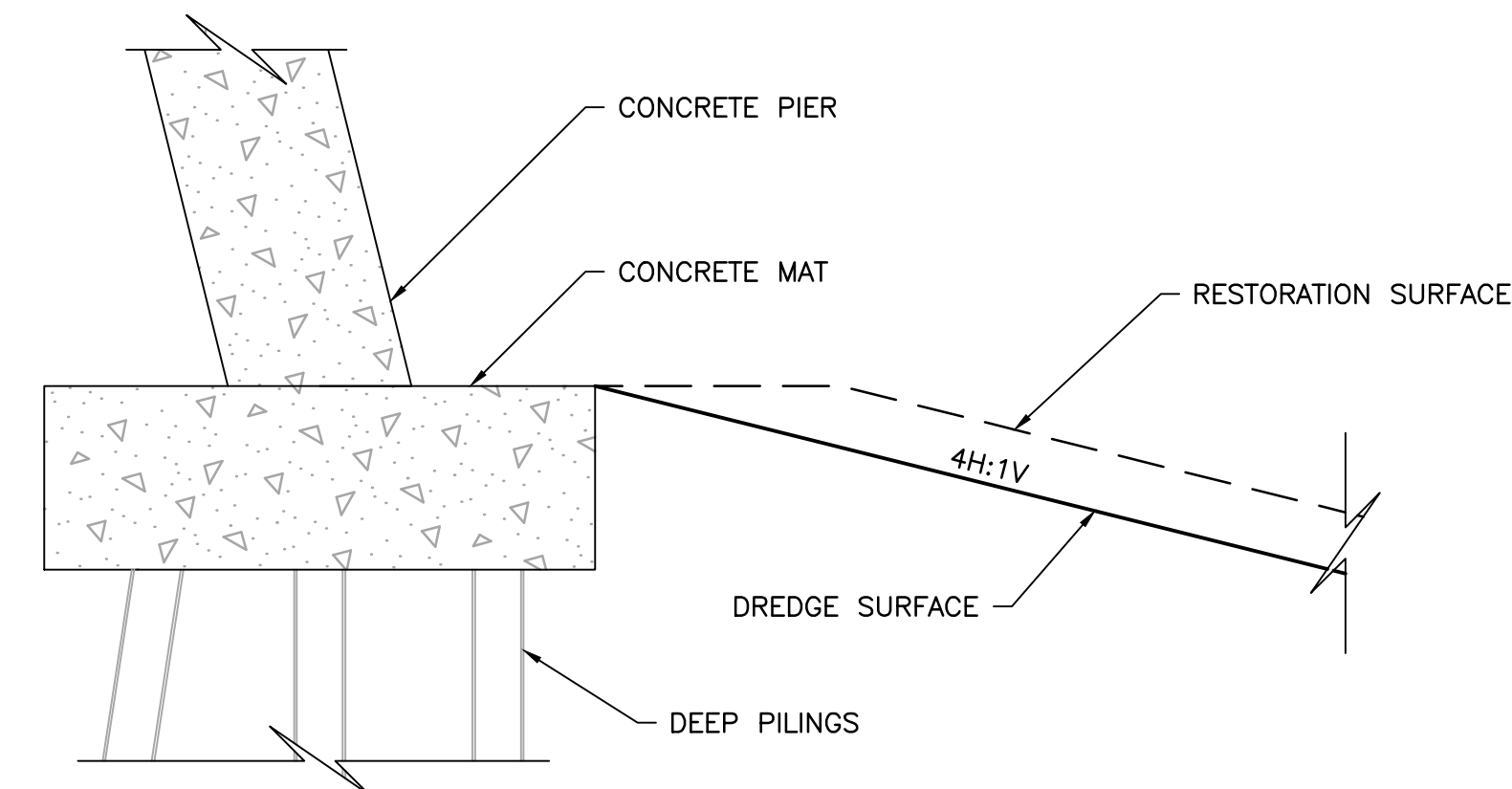
**8** **DETAIL: MATERIAL PLACEMENT (TYP.)**  
 C-18,C-30 NOT TO SCALE



**9** **SECTION: SHORELINE PROTECTION (TYP.)**  
 C-19

SCALE IN FEET  
 0 10 20

- NOTES:**
1. SECTION VERTICAL SCALE EXAGGERATED BY A FACTOR OF 2 FOR CLARITY.
  2. SHORELINE PROTECTION MATERIAL TO BE SHORELINE SAND OR SHORELINE GRAVEL, SEE SHEET C-18 FOR LOCATIONS.



**10** **DETAIL: FOUNDATION PROTECTION**  
 NOT TO SCALE

- NOTES:**
1. CONCRETE PIER AND FOUNDATION SHALL NOT BE CHIPPED OR DAMAGED. PILING MATERIALS SHALL NOT BE EXPOSED.
  2. NOTIFY ENGINEER AND MINNESOTA POWER PRIOR TO WORKING WITHIN MINNESOTA POWER'S OVERHEAD ELECTRIC TRANSMISSION LINE RIGHT-OF-WAY. SEE SPECIFICATIONS.
  3. FOUNDATION INFORMATION BASED ON "TOWER D-2 REINFORCED CONCRETE FOUNDATION DETAIL" PROVIDED BY MINNESOTA POWER.

ISSUED FOR CONSTRUCTION  
 10/31/2018

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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PRINTED NAME BENJAMIN J. MEEMKEN  
 SIGNATURE *Ben Meemken*  
 DATE 10/31/18 LICENSE # 53168

CLIENT	BID	CONSTRUCTION	PERMIT	RELEASED TO/FOR	DATE RELEASED
	10/11/17		03/06/18	A B C 0 1 2 3	

**BARR** ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Fax: (218) 529-8202  
 www.barr.com

Scale	AS SHOWN
Date	09/26/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2

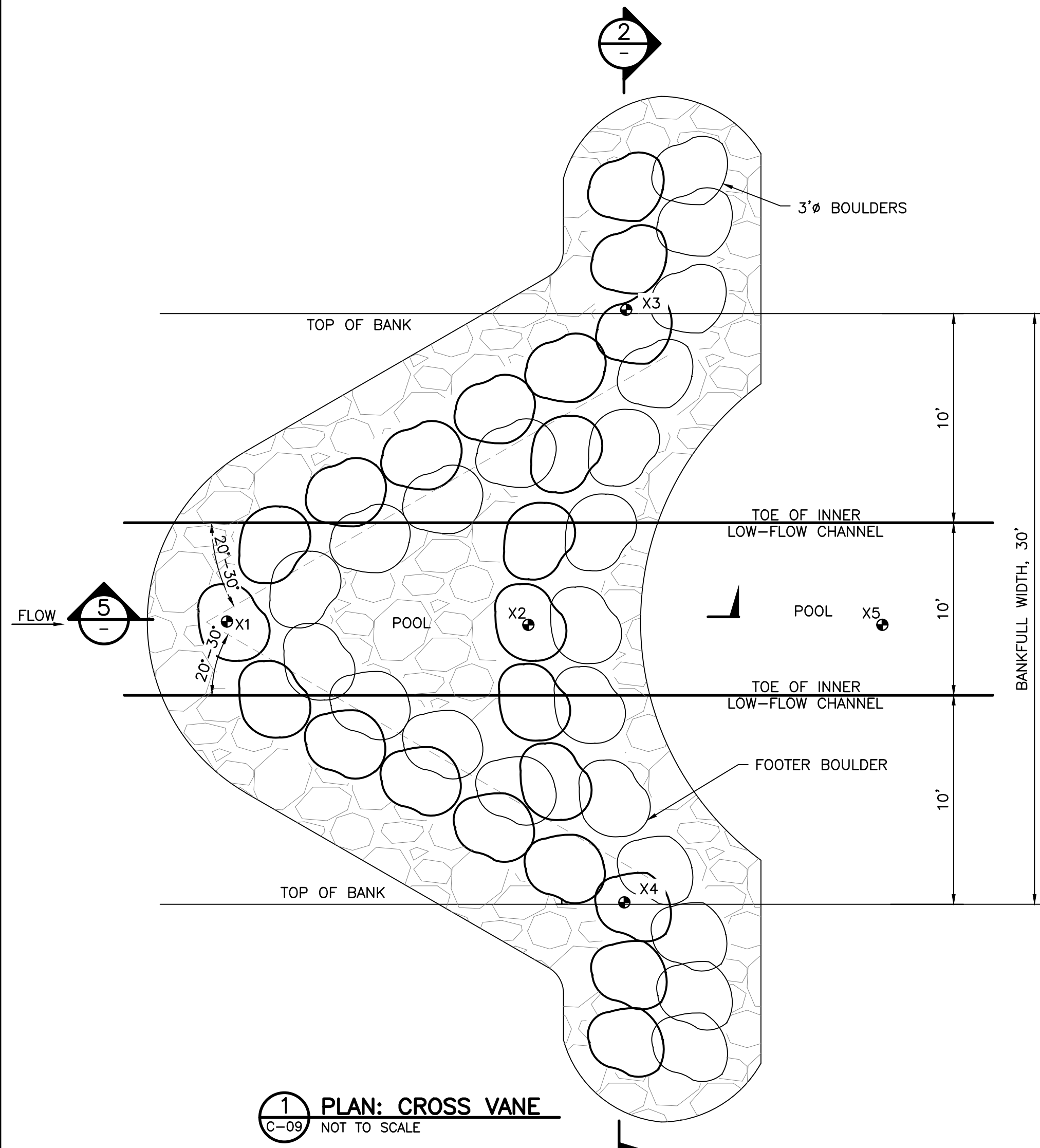


**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA

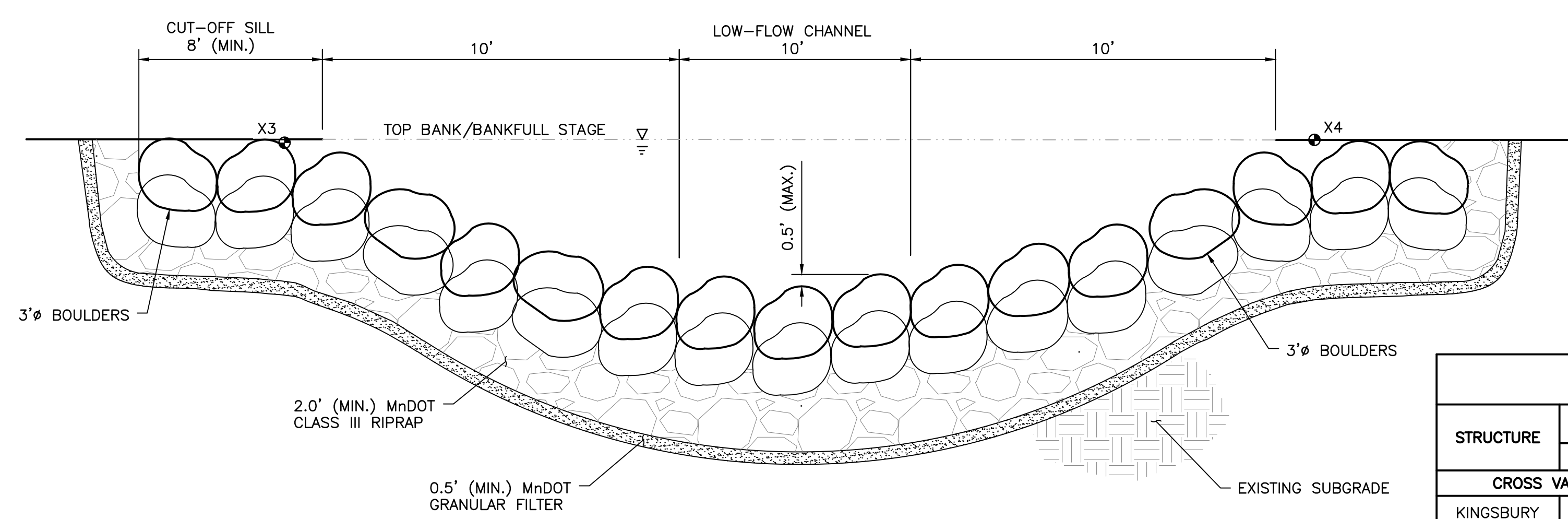
**DREDGE AND RESTORATION SECTION AND DETAILS**

BARR PROJECT No.	23/69-1879.00
CLIENT PROJECT No.	8F073/B187
DWG. No.	C-25
REV. No.	1

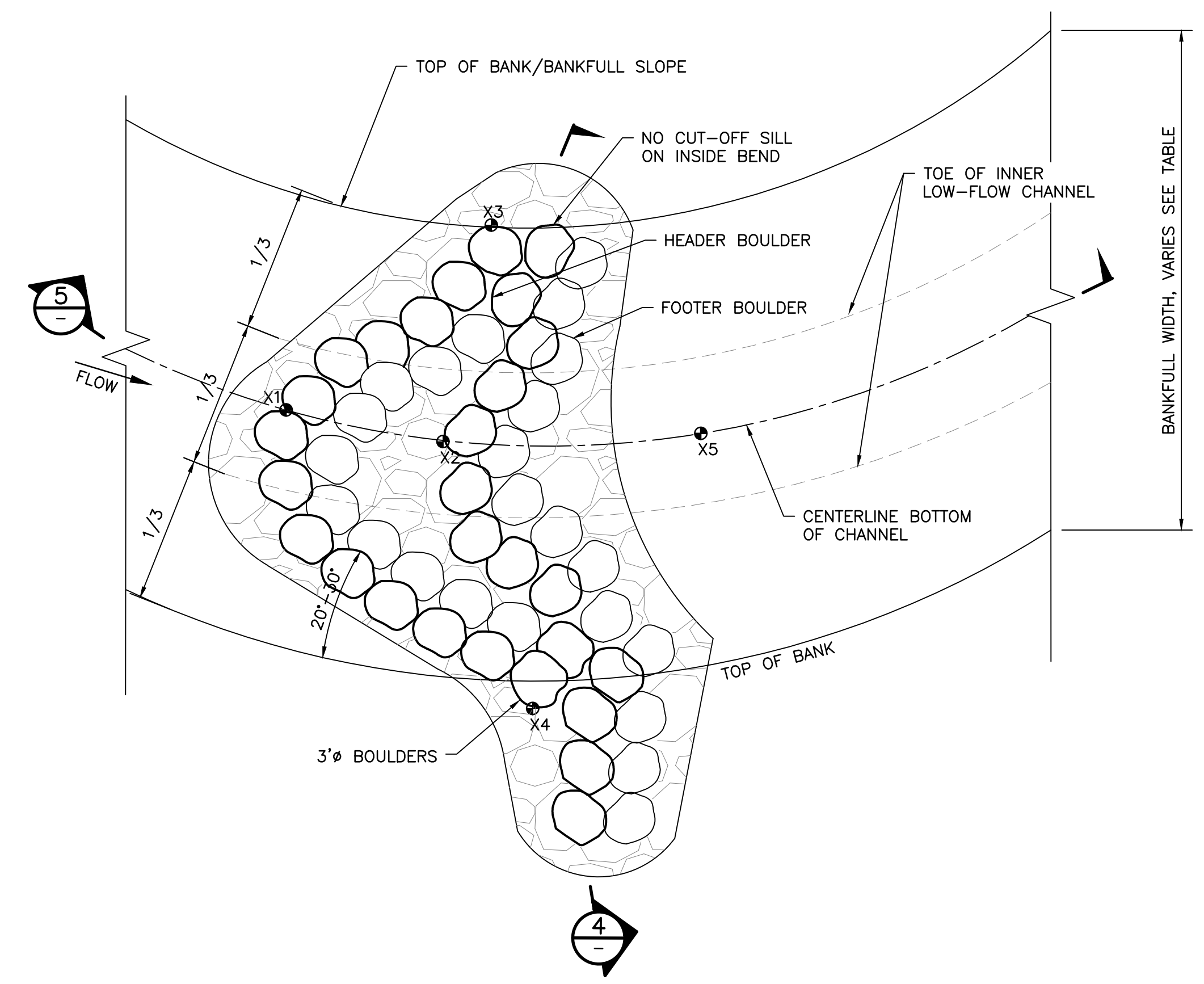
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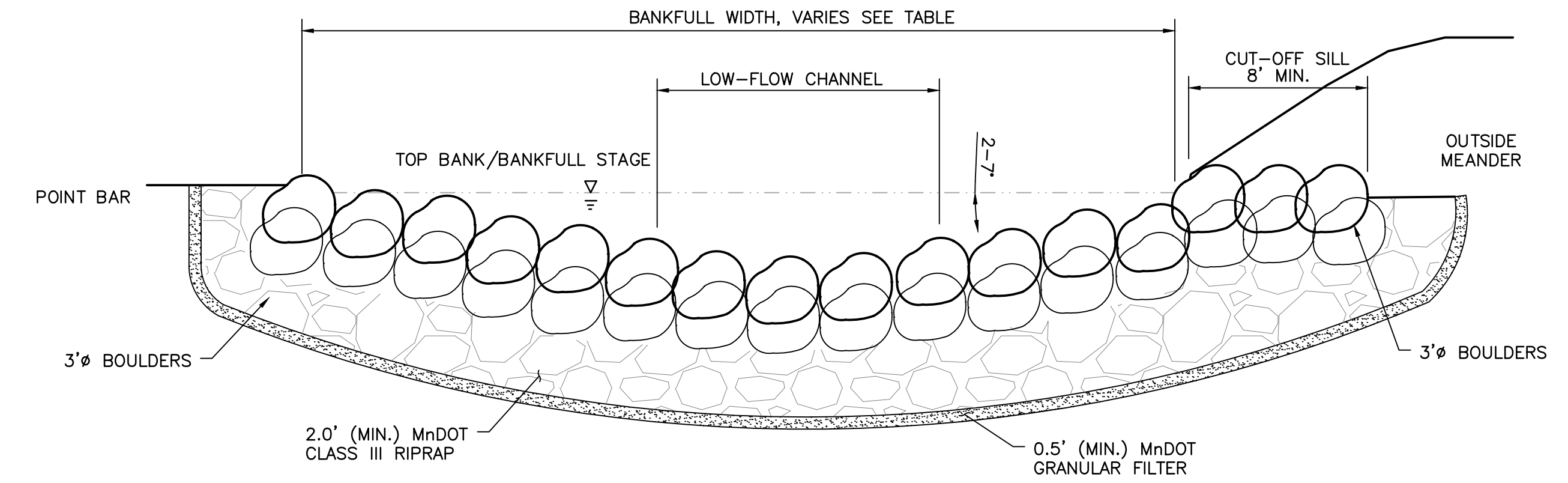
**1 PLAN: CROSS VANE**  
 C-09 NOT TO SCALE



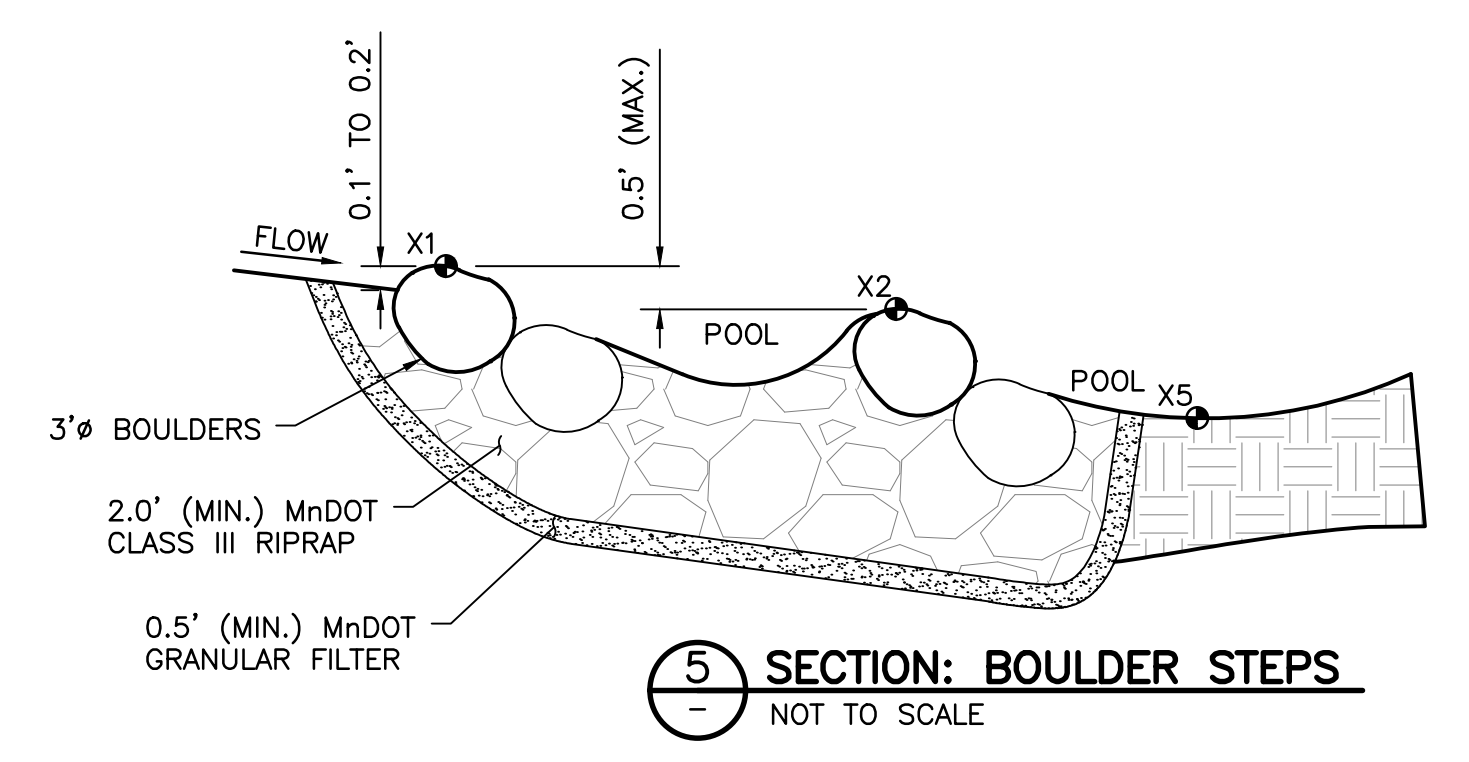
**2 SECTION: CROSS VANE**  
 NOT TO SCALE



**3 PLAN: J-HOOK BOULDER VANE**  
 C-09,C-20 NOT TO SCALE



**4 SECTION: J-HOOK BOULDER VANE**  
 NOT TO SCALE



**5 SECTION: BOULDER STEPS**  
 NOT TO SCALE

- NOTES:**
- RIPRAP SHALL BE PLACED TO A THICKNESS EQUAL TO THE DEPTH OF THE HEADER AND FOOTER BOULDERS AND SHALL EXTEND 2.0' UPSTREAM OF THE BOULDERS.
  - THE VANE ARMS SHALL BE CONSTRUCTED FIRST, FOLLOWED BY THE HOOK.
  - CROSS VANES AND J-HOOK BOULDER VANES SHALL BE BUILT TYPICALLY AS FOLLOWS:
    - OVER EXCAVATE STREAM BED TO A DEPTH EQUAL TO THE TOTAL THICKNESS OF THE HEADER AND FOOTER BOULDERS PLUS RIPRAP AND FILTER.
    - PLACE GRANULAR FILTER AND RIPRAP.
    - PLACE FOOTER BOULDERS OF THE VANE ARM. THERE SHALL BE NO GAPS BETWEEN RIPRAP FOOTER BOULDERS.
    - PLACE RIPRAP BACKFILL BEHIND THE FOOTER BOULDERS.
    - INSTALL HEADER BOULDERS ON THE VANE ARM ON TOP OF AND SET SLIGHTLY UPSTREAM FROM THE FOOTER BOULDERS (SUCH THAT PART OF THE HEADER BOULDER IS RESTING ON THE COARSE BACKFILL). HEADER BOULDERS SHALL SPAN THE SEAMS OF THE FOOTER BOULDERS. THERE SHALL BE NO GAPS BETWEEN BOULDERS.
    - PLACE RIPRAP BACKFILL BEHIND HEADER BOULDERS ENSURING THAT ANY VOIDS BETWEEN THE BOULDERS ARE FILLED.
    - PLACE EACH BOULDER TO FORM THE HOOK BY INSTALLING A FOOTER BOULDER, THEN A HEADER BOULDER.
    - MANUALLY PLACE GRANULAR FILTER AGGREGATE ON UPSTREAM FACE OF RIPRAP BEDDING TO FILL GAPS BETWEEN STONES.

SUMMARY OF INLET STRUCTURES											
STRUCTURE	FIRST CONTROL POINT X1		SECOND CONTROL POINT X2		THIRD CONTROL POINT X3		FOURTH CONTROL POINT X4		FIFTH CONTROL POINT X5		BANKFULL WIDTH (FT)
	STATION (FT)	EL. (FT)	STATION (FT)	EL. (FT)	STATION (FT)	EL. (FT)	STATION (FT)	EL. (FT)	STATION (FT)	EL. (FT)	
<b>CROSS VANE</b>											
KINGSBURY	5+00	600.2	5+10	599.7	5+20	601.1	5+20	601.1	5+24	599.0	30'
<b>J-HOOK VANE</b>											
KINGSBURY	5+90	598.0	6+00	597.5	6+25	601.1	6+25	601.1	7+00	596.0	30'
KEENE CREEK	2+75	598.5	2+85	598.0	3+05	601.1	3+05	601.1	3+00	597.0	24'

**ISSUED FOR CONSTRUCTION**  
 10/31/2018

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	JCO	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	JCO	03/06/18	ISSUED FOR CONSTRUCTION

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.

PRINTED NAME: JESSICA OLSON  
 SIGNATURE: *J. Olson*  
 DATE: 10/31/18 LICENSE # 43102

CLIENT	DATE
BARR ENGINEERING CO.	10/11/17
CONSTRUCTION PERMIT	07/09/18

**BARR ENGINEERING CO.**  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

Project Office:  
 BARR ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

Corporate Headquarters:  
 Minneapolis, Minnesota  
 Ph: 1-800-786-5830  
 Fax: (218) 529-8202  
 www.barr.com

Scale	AS SHOWN
Date	09/28/2017
Drawn	BDP
Checked	GMP
Designed	JCO
Approved	JCO

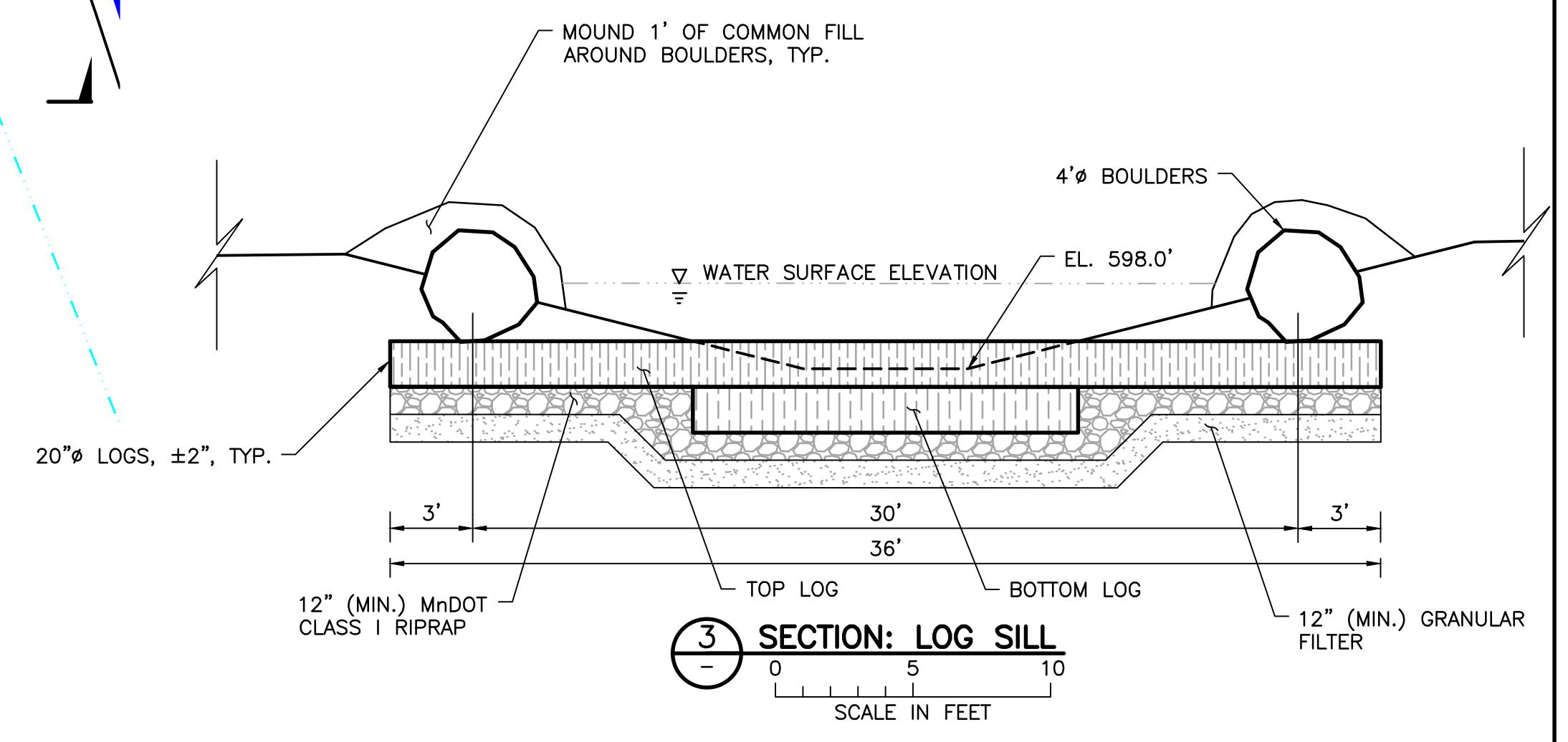
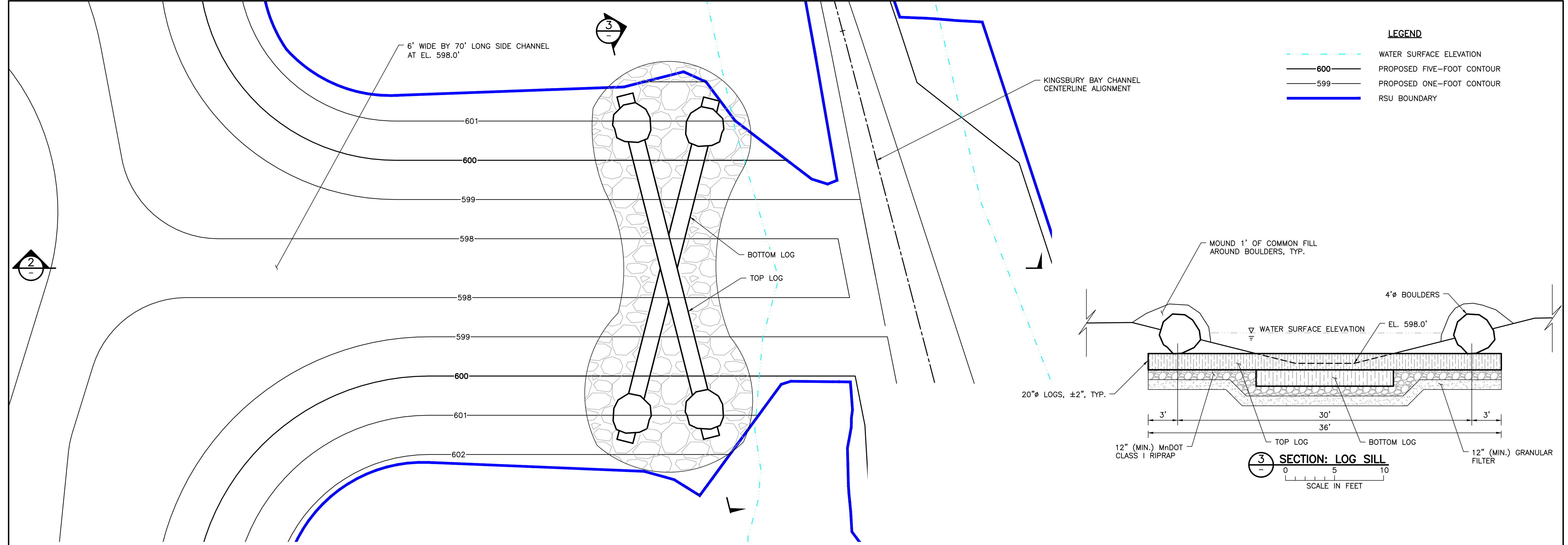


**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA

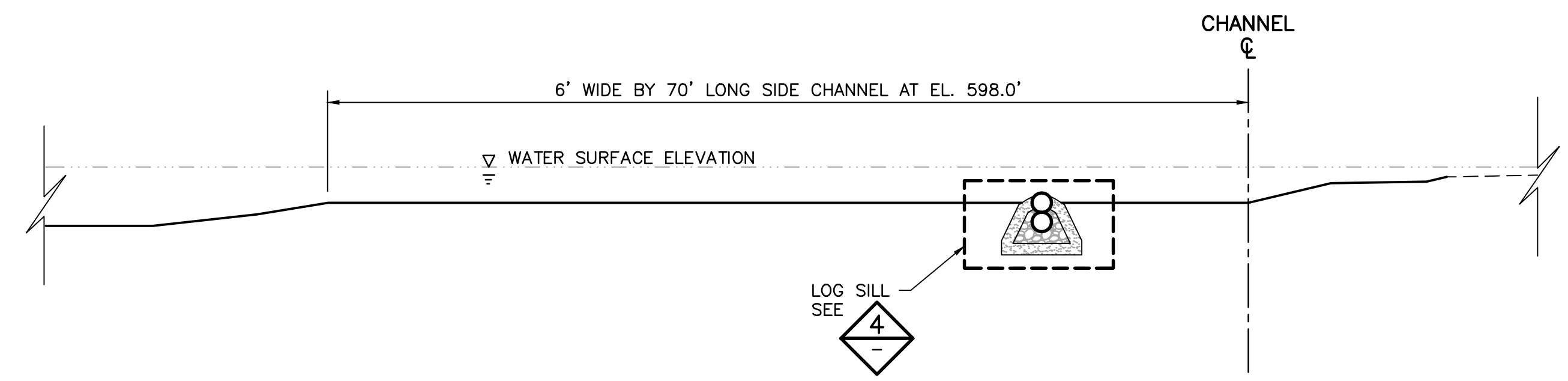
**INLET PLANS AND SECTIONS**

BARR PROJECT No. **23/69-1879.00**  
 CLIENT PROJECT No. **8F073/B187**  
 DWG. No. **C-26** REV. No. **1**

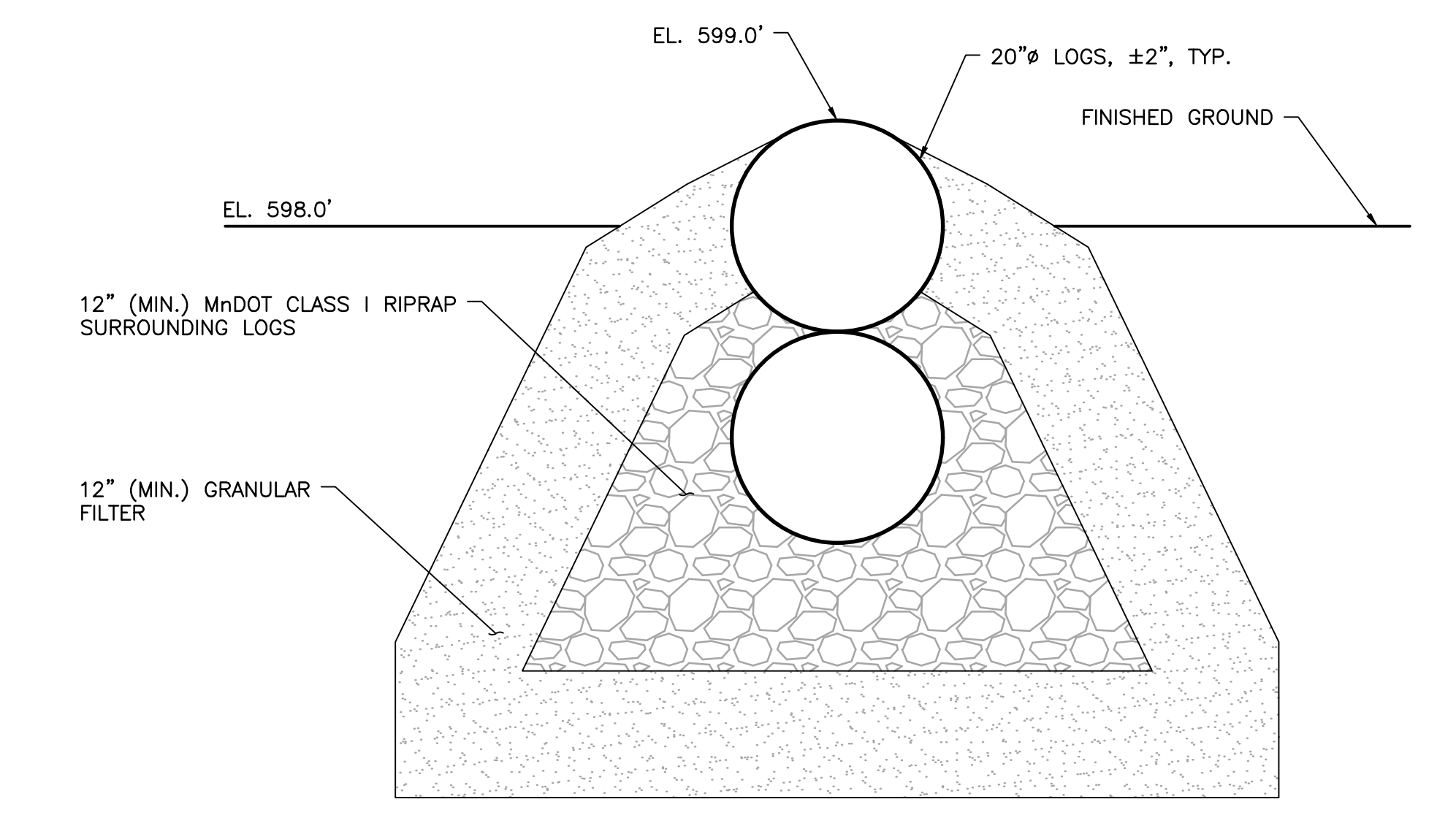
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**1 PLAN: LOG SILL**  
 C-09 0 5 10  
 SCALE IN FEET



**2 SECTION: SIDE CHANNEL**  
 0 10 20  
 SCALE IN FEET



**4 DETAIL: LOG SILL**  
 NOT TO SCALE

ISSUED FOR CONSTRUCTION  
 10/31/2018

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	JCO	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	JCO	03/06/18	ISSUED FOR CONSTRUCTION

PRINTED NAME: JESSICA OLSON  
 SIGNATURE: *J. Olson*  
 DATE: 10/31/18 LICENSE #: 43102

CLIENT	10/11/17						
BID							
CONSTRUCTION			03/06/18	10/31/18			
PERMIT			07/09/18				
RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

**BARR** ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
 SUITE 700  
 DULUTH, MN 55802

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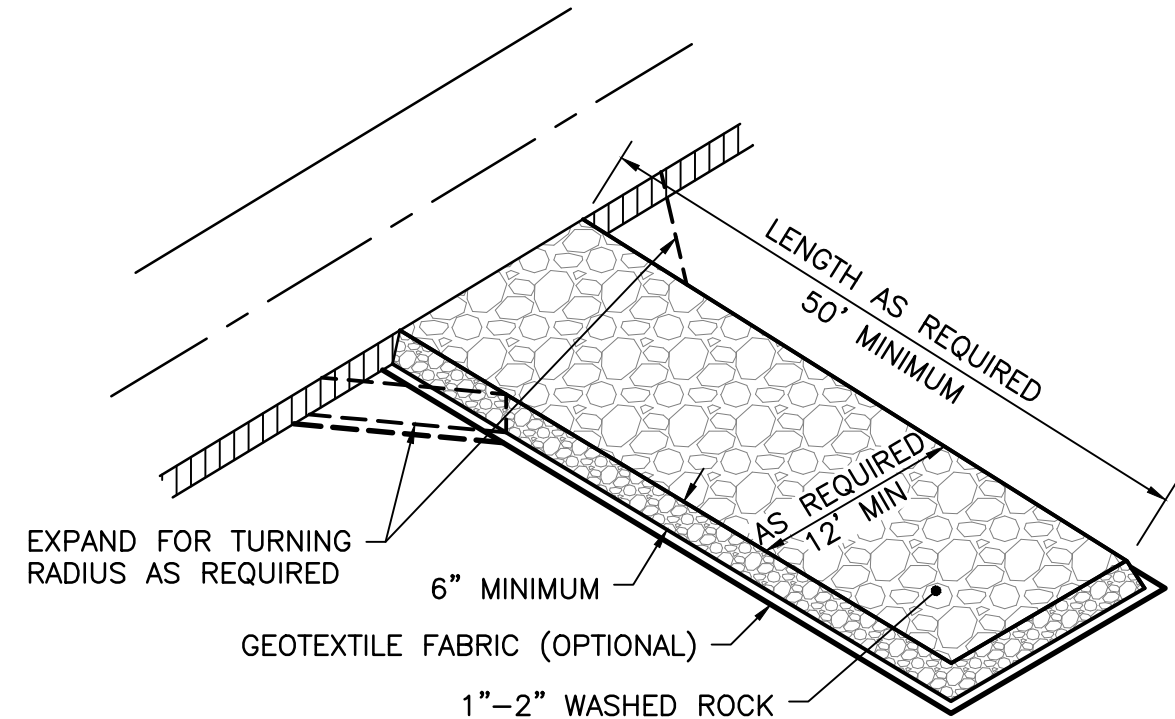
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Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	JCO
Approved	JCO



**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA

**LOG SILL**  
 PLAN AND SECTIONS

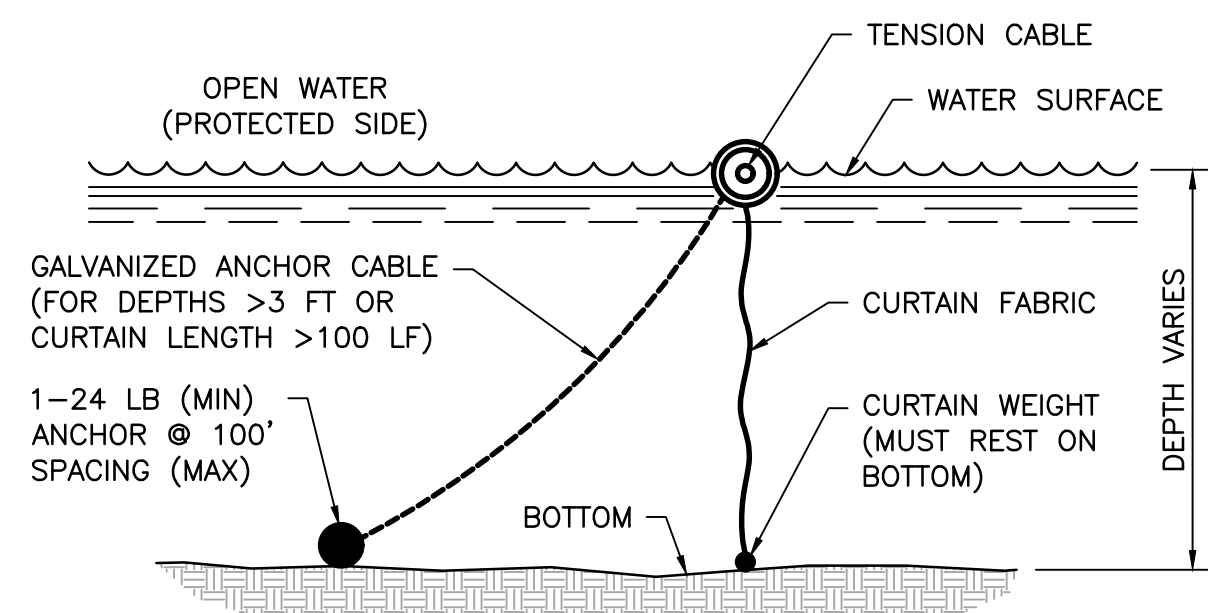
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CLIENT PROJECT No.	8F073/B187
DWG. No.	C-27
REV. No.	1



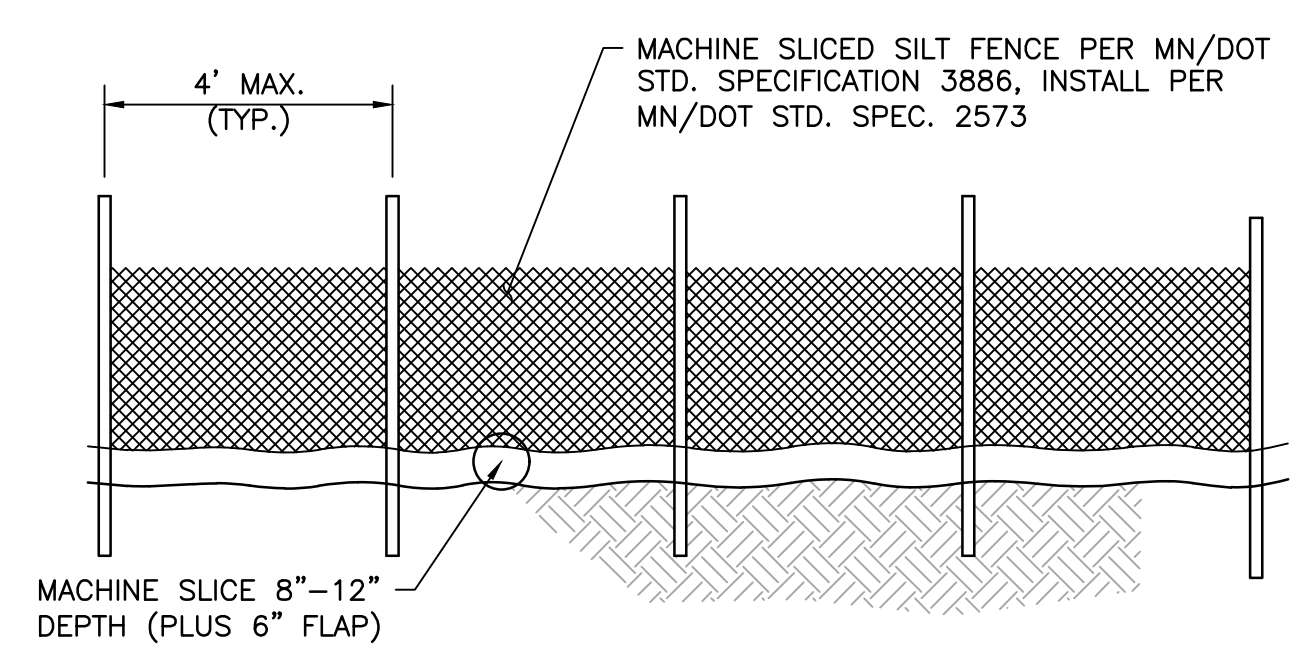
- NOTES:**
1. MAINTAIN ENTRANCE THROUGHOUT THE CONSTRUCTION PERIOD AND REPAIR OR REPLACE AS REQUIRED TO PREVENT TRACKING OFFSITE.
  2. REMOVE ENTRANCE IN CONJUNCTION WITH FINAL GRADING AND SITE STABILIZATION.

**1** **DETAIL: CONSTRUCTION ENTRANCE - ROCK**  
NOT TO SCALE

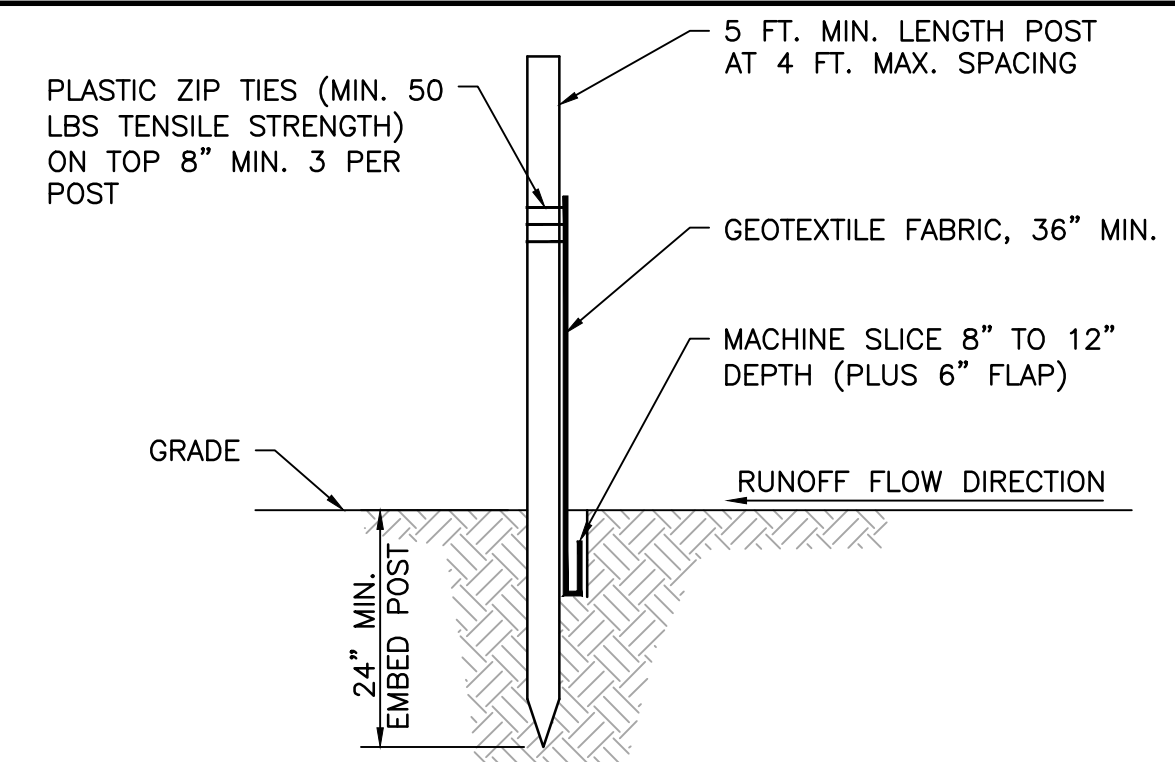
- NOTES:**
1. INSTALL SILT CURTAIN PRIOR TO ANY CONSTRUCTION ACTIVITIES IN AREAS DRAINING TO OPEN WATER OR WORK IN WATER.
  2. ANCHOR TENSION CABLE AT SHORE AT BOTH END WITH STEEL POSTS OF DIAMETER AND LENGTH SUFFICIENT TO PREVENT BENDING AND PULL-OUT.
  3. ELIMINATE ANCHOR AND CABLE FOR WATER DEPTHS LESS THAN 3'-0" OR DISTANCE BETWEEN SHORE ANCHORS FOR TENSION CABLE OF LESS THAN 100'
  4. CURTAIN WEIGHT SHALL BE HEAVY ENOUGH TO HOLD CURTAIN VERTICAL IN CURRENT AND WAVES TYPICAL FOR THE SITE.
  5. SILT CURTAIN MATERIALS SHALL CONFORM TO MN/DOT SPECIFICATION 3887.
  6. MAINTAIN SILT CURTAIN AND REPAIR OR REPLACE AS REQUIRED TO PREVENT DISCHARGE OF SEDIMENT TO PROTECTED WATER BODY.
  7. REMOVE ANY ACCUMULATED SEDIMENT PRIOR TO REMOVAL OF SILT CURTAIN.
  8. REMOVE SILT CURTAIN FOLLOWING SITE STABILIZATION OR AS DIRECTED BY ENGINEER.



**2** **DETAIL: FLOTATION SILT CURTAIN**  
NOT TO SCALE



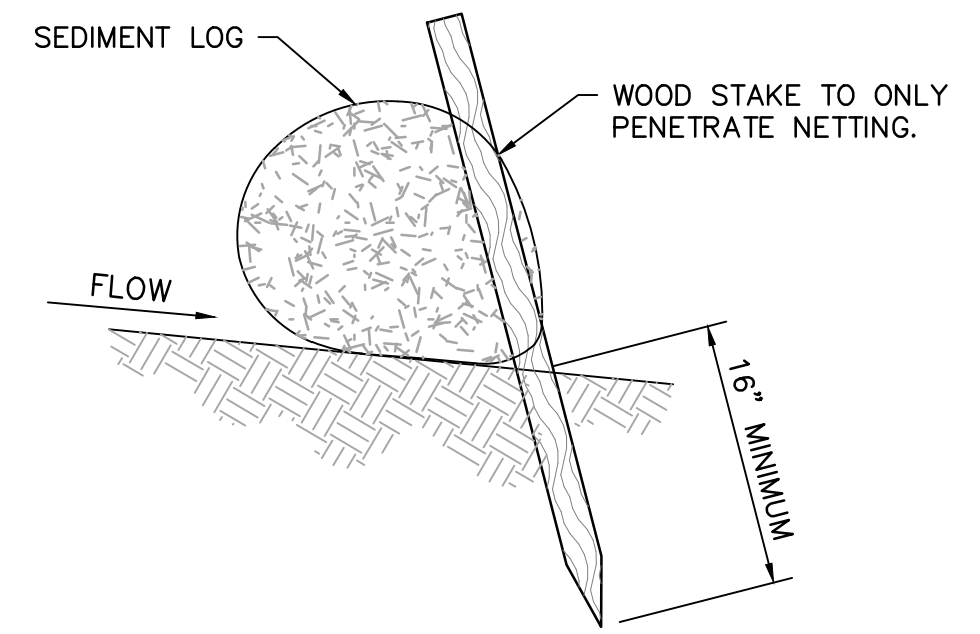
**DOWNSTREAM VIEW**



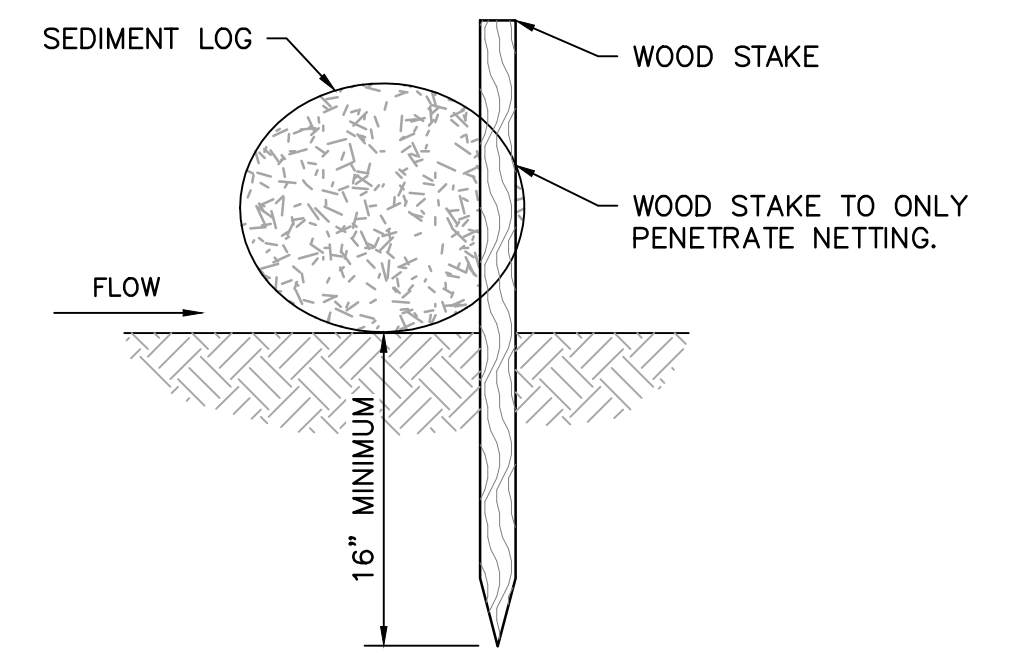
**SECTION VIEW**

- NOTES:**
1. INSTALL SILT FENCE PRIOR TO ANY GRADING WORK IN THE AREA TO BE PROTECTED AND MAINTAIN THROUGHOUT THE CONSTRUCTION PERIOD. REMOVE SILT FENCE AND ANY ACCUMULATED SEDIMENT IN CONJUNCTION WITH THE FINAL GRADING AND SITE STABILIZATION.
  2. SILT FENCE MATERIALS AND INSTALLATION SHALL MEET THE REQUIREMENTS OF MN/DOT SPECIFICATIONS 2573 AND 3886.
  3. NO HOLES OR GAPS SHALL BE PRESENT IN/UNDER SILT FENCE. PREPARE AREA AS NEEDED TO SMOOTH SURFACE OR REMOVE DEBRIS.
  4. REMOVE ACCUMULATED SEDIMENT WHEN BUILD UP REACHES 1/3 OF FENCE HEIGHT. OR INSTALL A SECOND SILT FENCE DOWNSTREAM OF THE ORIGINAL FENCE AT A SUITABLE DISTANCE.
  5. WHEN SPLICES ARE NECESSARY MAKE SPLICE AT POST. PLACE THE END POST OF THE SECOND FENCE INSIDE THE END POST OF THE FIRST FENCE. ROTATE BOTH POSTS TOGETHER AT LEAST 180 DEGREES TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL. CUT THE FABRIC NEAR THE BOTTOM OF THE POSTS TO ACCOMMODATE THE 6 INCH FLAP, THEN DRIVE BOTH POSTS AND BURY THE FLAP AND COMPACT BACKFILL.

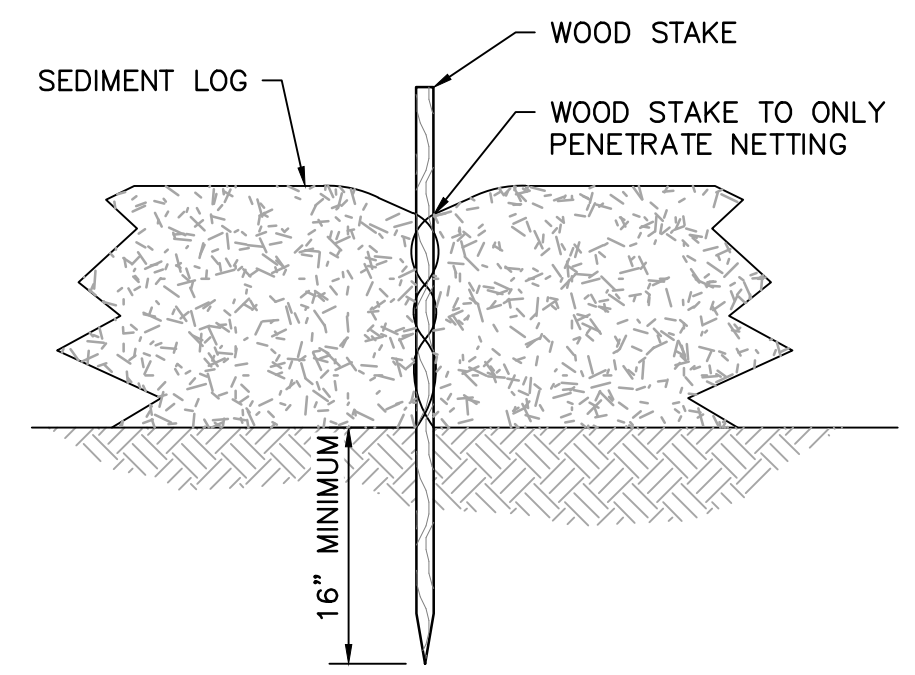
**3** **DETAIL: SILT FENCE - MACHINE SLICED**  
NOT TO SCALE



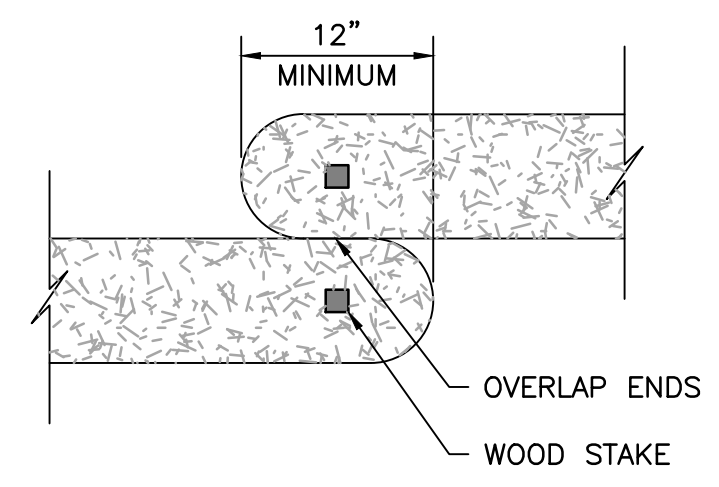
**SIDE VIEW ON SLOPE**



**SIDE VIEW FLAT**



**FRONT VIEW**



**TOP VIEW**

- NOTES:**
1. INSTALL SEDIMENT LOG ALONG CONTOURS (CONSTANT ELEVATION).
  2. NO GAPS SHALL BE PRESENT UNDER SEDIMENT LOG. PREPARE AREA AS NEEDED TO SMOOTH SURFACE OR REMOVE DEBRIS.
  3. REMOVE ACCUMULATED SEDIMENT WHEN REACHING 1/3 OF LOG HEIGHT.
  4. MAINTAIN SEDIMENT LOG THROUGHOUT THE CONSTRUCTION PERIOD AND REPAIR OR REPLACED AS REQUIRED.

**4** **DETAIL: EROSION LOG - STAKING**  
NOT TO SCALE

**ISSUED FOR CONSTRUCTION**  
10/31/2018

CADD USER: Bryan D. Pitterle FILE: M:\DESIGN\2369187900\_C-28.DWG PLOT SCALE: 1:1 PLOT DATE: 10/29/2018 12:56 PM  
BARR - MA AutoCAD 2011 Support\enu\Template\Barr\_2011\_Template.dwt Plot at: 1 10/05/2010 14:03:50

NO.	BY	CHK	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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.

PRINTED NAME: BENJAMIN J. MEEMKEN  
SIGNATURE: *Ben Meemken*  
DATE: 10/31/18 LICENSE # 53168

CLIENT	BID	CONSTRUCTION PERMIT	DATE
			07/05/17
			03/06/18
			02/09/18

RELEASED TO/FOR	A	B	C	0	1	2	3

**BARR** ENGINEERING CO.  
325 SOUTH LAKE AVENUE  
SUITE 700  
DULUTH, MN 55802

Corporate Headquarters: Minneapolis, Minnesota  
Ph: 1-800-786-5830 Fax: (218) 529-8202  
Ph: 1-800-632-2277 www.barr.com

Scale	AS SHOWN
Date	06/21/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2

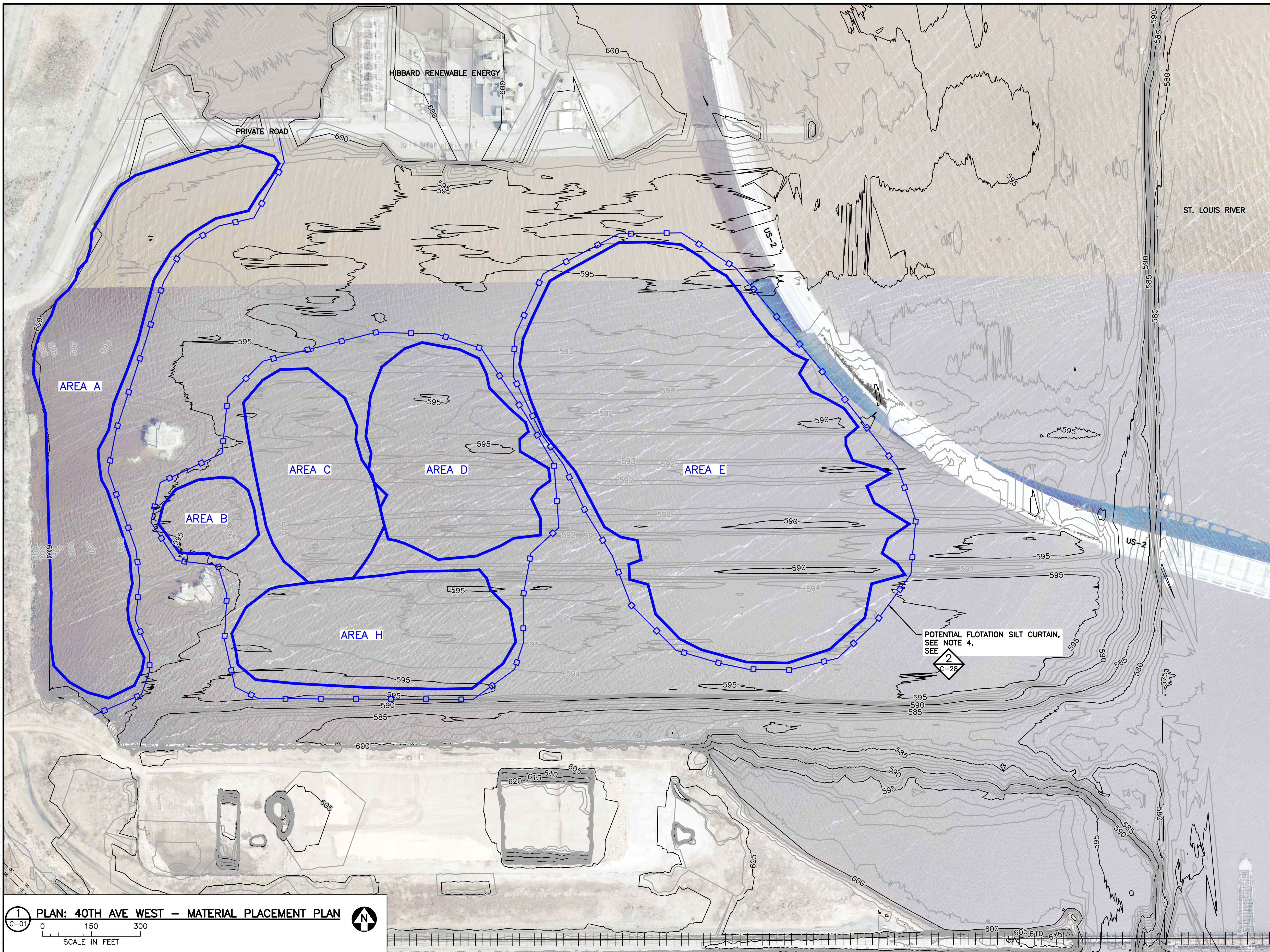


**GRASSY POINT/KINGSBURY BAY RESTORATION**  
DULUTH, MINNESOTA

**EROSION AND SEDIMENTATION CONTROL**  
DETAILS

BARR PROJECT No.	23/69-1879.00
CLIENT PROJECT No.	8F073/B187
DWG. No.	C-28
REV. No.	1

CADD USER: Bryan D. Pitterle FILE: M:\DESIGN\2369187900\2369187900\_C-29.DWG PLOT SCALE: 1:1 PLOT DATE: 10/30/2018 10:02 AM  
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**LEGEND**

	EXISTING FIVE-FOOT CONTOUR
	EXISTING ONE-FOOT CONTOUR
	FEDERAL NAVIGATION CHANNEL
	EXISTING RAILROAD
	MATERIAL PLACEMENT BOUNDARY
	MATERIAL PLACEMENT LABEL
	FLOTATION SILT CURTAIN, SEE NOTE 4

- NOTES:**
- EXISTING CONTOURS SHOWN REPRESENT EXISTING CONDITIONS PRIOR TO USACE 40TH AVENUE WEST AQUATIC HABITAT RESTORATION PROJECT. MATERIAL PLACEMENT DESIGN AND BOUNDARIES PROVIDED BY USACE. FOR ADDITIONAL DETAILS SEE USACE 40TH AVENUE WEST AQUATIC HABITAT RESTORATION CONTRACT DRAWINGS.
  - BIO-MEDIUM TO BE SOFT SEDIMENT PLACED IN A 6 INCH LIFT OVER IDENTIFIED AREAS. SEE DETAIL 8 ON SHEET C-25 FOR ADDITIONAL INFORMATION.
  - FOR MATERIAL PLACEMENT PRIORITIES AND VOLUMES, SEE TECHNICAL SPECIFICATION SECTION 32 20 23.53 MATERIAL TRANSPORT AND PLACEMENT.
  - CONTRACTOR SHALL UTILIZE FLOTATION SILT CURTAIN OR OTHER APPROVED METHOD TO CONTAIN SEDIMENT IN DESIGNATED PLACEMENT AREAS. CONTRACTOR TO DETERMINE ALIGNMENT OF FLOTATION SILT CURTAIN. SEE DETAIL 2 ON SHEET C-28 FOR ADDITIONAL FLOTATION SILT CURTAIN INFORMATION.

**1 PLAN: 40TH AVE WEST - MATERIAL PLACEMENT PLAN**

0 150 300  
SCALE IN FEET

ISSUED FOR CONSTRUCTION  
10/31/2018

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	BDP	GMP	BJM2	10/31/18	RE-ISSUED FOR CONSTRUCTION
0	BDP	GMP	BJM2	03/06/18	ISSUED FOR CONSTRUCTION

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.

PRINTED NAME BENJAMIN J. MEEMKEN  
 SIGNATURE *Ben Meemken*  
 DATE 10/31/18 LICENSE # 53168

CLIENT	07/05/17	10/11/17				
BID						
CONSTRUCTION			03/06/18	10/31/18		
PERMIT			02/09/18			

RELEASED TO/FOR	A	B	C	0	1	2	3
DATE RELEASED							

**BARR** ENGINEERING CO.  
 325 SOUTH LAKE AVENUE  
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 DULUTH, MN 55802

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Scale	AS SHOWN
Date	09/28/2017
Drawn	BDP
Checked	GMP
Designed	BJM2
Approved	BJM2



**GRASSY POINT/KINGSBURY BAY RESTORATION**  
 DULUTH, MINNESOTA

**40TH AVE WEST**  
**MATERIAL PLACEMENT PLAN**

BARR PROJECT No. **23/69-1879.00**  
 CLIENT PROJECT No. **8F073/B187**  
 DWG. No. **C-29** REV. No. **1**



**EXHIBIT D**

**BID FORM**  
**BID # 16-0415 (16-10AA) REBID**  
**WESTERN WATERFRONT TRAIL RENEWAL PROJECT**

ITEM	PRICE
Lump sum to complete project per the attached planset and special provisions using base quantities provided - Total from Exhibit A	\$

TOTAL PRICE IN WRITING \_\_\_\_\_

PRICE FOR ALTERNATE A \$ \_\_\_\_\_

**ACKNOWLEDGMENT OF ADDENDA**

ADDENDUM # _____	INITIAL/DATE _____
ADDENDUM # _____	INITIAL/DATE _____
ADDENDUM # _____	INITIAL/DATE _____
ADDENDUM # _____	INITIAL/DATE _____

Bids must be signed by an authorized representative.

Signature \_\_\_\_\_ Date \_\_\_\_\_

Name/Title \_\_\_\_\_

Company Name \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Tel. \_\_\_\_\_ E-Mail \_\_\_\_\_

**EXHIBIT A**


LINE NO.	NOTE NO.	SPEC. NO.	ITEM DESCRIPTION	UNIT OF MEASURE	BASE QTY	UNIT PRICE	TOTAL			
1		2021.501	MOBILIZATION	Lump Sum	1					
2		2101.501	CLEARING (BRUSH)	Acre	0.3					
3		2101.502	CLEARING (4" OR GREATER)	Tree	10					
4	1	2105.509	REMOVE BOLLARD	Each	4					
5	2	2104.501	REMOVE PIPE CULVERT	Linear Foot	30					
6	3	2104.505	REMOVE BITUMINOUS PAVEMENT	Square Yard	480					
7		2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	Linear Foot	60					
8	4	2104.601	REMOVE & REPLACE BRIDGE DECK PLANKING	Each	86					
9	5	2104.601	REMOVE & REPLACE TIMBER BOARDWALK (25 ft. SPAN)	Each	1					
10		2105.501	COMMON EXCAVATION	Cubic Yard	507					
11	6	2105.901	TILLING AND GRADING	Linear Foot	14,911					
12	7	2211.503	AGGREGATE TRAIL SURFACING (CV) 3/4"- Limestone	Cubic Yard	800			ALT A QTY	ALT A UNIT PRICE	ALT A TOTAL
13	7	2211.503	AGGREGATE TRAIL SURFACING (CV), CLASS 5	Cubic Yard				800		
14	8	2211.503	AGGREGATE BASE (CV) CLASS 5	Cubic Yard	122			COPY TOTAL FOR ALT A ONTO BID FORM		
15		2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (2C)	Ton	115					
16	8	2411.541	GRANULAR BACKFILL	Cubic Yard	50					
17	9	2501.511	12" CS PIPE CULVERT	Linear Foot	32					
18	10	2501.603	15" CS PIPE CULVERT	Linear Foot	16					
19	8	2511.501	RANDOM RIPRAP CLASS II	Cubic Yard	15					
20	14	2572.501	TREE PROTECTION - FENCE	Linear Foot	600					
21	13	2573.533	SEDIMENT CONTROL LOG TYPE COMPOST	Linear Foot	200					
22		2575.523	EROSION CONTROL BLANKETS CATEGORY 3	Square Yard	1,000					
23	11	2575.605	SEEDING	Acre	0.3					
24	12	2582.501	PAVT MSSG (HANDICAPPED SYMBOL) PAINT	Each	1					
25	12	2582.502	4" SOLID LINE WHITE - PAINT	Linear Feet	1,060					
26	12	2564.536	HANDICAP PARKING SIGN	Each	1					
						<b>TOTAL BASE PRICE</b>				
						<b>COPY THIS AMOUNT ON THE BID FORM</b>				

## SCHEDULE "A"

- A1 Asbestos Workers Local 49
- A-2 Boilermakers Local 647
- A-3 BAC Local 1 Chapter 3 Duluth & Iron Range
- A-4 Carpenters Local 361
- A-5 Cements Masons/Plasterers Local 633
- A-6 Elevator Constructors Local 9
- A-7 IBEW Local 242
- A-8 Iron Workers Local 512
- A-9 Laborers Local 1091
- A-10 Millwrights & Machinery Erectors Local 1348
- A-11 Operating Engineers Local 49
- A-12 Painters & Allied Trades Local 106
- A-13 Plumbers & Fitters Local 11
- A-14 Roofers Local 96
- A-15 Sheet Metal Workers Local 10
- A-16 Sprinkler Fitters Local 669
- A-17 Teamsters Local 346

**SPECIAL PROVISIONS**  
**2016 City of Duluth – Western Waterfront Trail Renewal**  
**July 8, 2016**

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.



Signature

Jeffrey S. Goetzman

Typed or Printed Name

July 8, 2016

Date

26422

MN License

**SPECIAL PROVISIONS**  
**2016 City of Duluth – Western Waterfront Trail Renewal**  
**July 8, 2016**

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<b>SP-3</b>	<b>(1701) LAWS TO BE OBSERVED (DATA PRACTICES)</b>	<b>2</b>
<b>SP-4</b>	<b>(1806) DETERMINATION AND EXTENSION OF CONTRACT TIME</b>	<b>2</b>
<b>SP-5</b>	<b>TRAFFIC CONTROL AND SITE ACCESS</b>	<b>4</b>
<b>SP-6</b>	<b>(2104) REMOVE BOLLARDS</b>	<b>4</b>
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<b>SP-10</b>	<b>(2211) AGGREGATE SURFACING (CV) CLASS 2 (LIMESTONE)</b>	<b>5</b>
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<b>SP-12</b>	<b>(2411) GRANULAR BACKFILL</b>	<b>5</b>
<b>SP-13</b>	<b>(2572) TREE PROTECTION</b>	<b>5</b>
<b>SP-14</b>	<b>(2575) SEEDING</b>	<b>6</b>
<b>SP-15</b>	<b>ALTERNATE BID ITEMS</b>	<b>6</b>

**SPECIAL PROVISIONS**  
**2016 City of Duluth – Western Waterfront Trail Renewal**  
**July 8, 2016**

**NOTICE TO ALL BIDDERS:**

The City of Duluth Public Works & Utilities Department – Engineering Division 2016 Edition Standard Construction Specifications book and any addendums or supplements is incorporated by reference and is deemed to be a part hereof as if fully incorporated and set forth herein. The Standard Construction Specifications are available on the City website at:  
[www.duluthmn.gov/engineering/index.cfm](http://www.duluthmn.gov/engineering/index.cfm).

**SP-1 SCOPE OF WORK**

This project includes restoration of 2.8 miles of the Western Waterfront Trail from the north side of the BNSF railroad crossing near Waseca Street going south to the end of the project, The major items of work include tilling and grading, common excavation, bituminous pavement removal, timber bridge and boardwalk restoration, aggregate trail surfacing, aggregate base, 12"-15" culvert replacements, striping, and turf establishment.

**SP-1.1 Contact Information**

TKDA is the engineer of record. Questions regarding this project shall be directed to Jeff Goetzman, Project Manager with TKDA, at 218.727.8796 or Jim Shoberg, Project Coordinator with the City of Duluth, at 218.730.4316.

**SP-2 (1508) CONSTRUCTION STAKES, LINES AND GRADES**

In addition to the provisions of MN/DOT 1508 the following construction staking will be provided by TKDA:

Centerline alignment and cut stakes on grading areas – every 50 feet.

Saw Cut Line – painted lines per Plan.

The Contractor will be responsible for all other intermediate stakes and grades as he/she deems necessary. The contractor will be responsible for the preservation of the stakes set. Any negligence on the contractors part resulting in the disturbance of the stakes, that need to be reset will be deducted for monies due to the contractor on the pay estimates.

**SP-3 (1701) LAWS TO BE OBSERVED (DATA PRACTICES)**

The provisions of Mn/DOT 1701 are supplemented with the following:

*Bidders are advised that all data created, collected, received, maintained, or disseminated by the Contractor and any subcontractors in performing the work contained in this Contract are subject to the requirements of MN Statute Chapter 13, the Minnesota Government Data Practices Act (MGDPA). The Contractor shall comply with the requirements of the MGDPA in the same manner as the Department. The Contractor does not have a duty to provide access to public data to the public if the public data are available from the Department, except as required by the terms of the Contract.*

**SP-4 (1806) DETERMINATION AND EXTENSION OF CONTRACT TIME**

The Contract Time will be determined in accordance with the provisions of Mn/DOT 1806 and the following:

**SP-4.1** Construction operations shall be started on or before August 22, 2016 or within ten (10) calendar days after the date of award by City Council resolution, whichever is later; however, the Notice to

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**July 8, 2016**

Proceed letter will be the official authorization to commence construction operations. The Project shall be substantially complete by September 30, 2016. All work shall be at final completion prior to October 15, 2016.

**SP-4.2** The provisions of Mn/DOT 1806.1C(3) are modified to the extent that the phrase “during the inclusive period from November 15 to April 15,” is deleted. A similar phrase set forth in the second paragraph of Mn/DOT 1807.2 is also deleted.

**SP-4.3** When all, or a portion, of the Contract Time is specified as a calendar completion date, as provided in Mn/DOT 1103, the time is presumed to have been determined by considering the Proposal quantities, normal weather for the locality and season of the year, and the necessity of having the work completed by the specified date. The time may be extended by the Engineer only in accordance with the following:

When the Contract Time is specified as a fixed calendar completion date, any time extensions granted must be justified on the basis of unavoidable delay in starting or completing the progress controlling operations, and then, only when and to the extent that it is shown that delay time could not be overcome and the work brought back on schedule through reasonable adjustments in the Progress Schedule. Provided the Contractor has made all reasonable efforts to maintain an adequate and acceptable Progress Schedule, the specified completion date may be extended as the Engineer determines to be justified, for any of the following reasons:

- 1) Delays caused by failure of the City Council to award the Contract at least 10 calendar days in advance of the latest date specified for beginning construction operations.
- 2) Delays caused by an earthquake, flood, cloudburst, cyclone, tornado, or other cataclysmic phenomenon of a nature beyond the power of the Contractor to foresee and make preparations in defense against.
- 3) Delays caused by acts of the Government or a political subdivision, or by acts of the public enemy, including fires, epidemics, and strikes not caused by improper acts or omissions of the Contractor.
- 4) Delays caused by an action or non-action of the Department, such as suspension of work by order of the Engineer through no fault on the Contractor.
- 5) Delays caused in incompleteness of work being done by other Contractors or utility owners, or due to other unforeseeable interferences not the fault of the Contractor.
- 6) Delays direction attributable to the performances of Extra Work or increased quantities or work.
- 7) Extraordinary delays in delivery or materials, resulting from strikes, lockouts, freight embargoes, governmental acts, or sudden disaster, or a nature beyond the power of the Contractor or his/her supplier to foresee and forestall.

Delays caused by plant and equipment failure, and delays due to unsuitable weather or conditions resulting therefrom, will not be allowed as justification for time extension except when and only to the extent the Engineer considers justified in view of unavoidable circumstances or events. Normal weather delays and the usual plant and equipment failures must be allowed for establishing work schedules. An extension of time may be granted for such delays as are considered to be in excess of the normal, but only when it is shown that the lost time would not reasonably be made up through acceleration of the remaining work. Failure to prosecute the work continuously and effectively for the full time allowed, with adequate work force and schedule, will be cause for denial of any such time extension that may otherwise be allowed.

**SPECIAL PROVISIONS**  
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**SP-5 TRAFFIC CONTROL AND SITE ACCESS**

**SP-5.1 Contractor Work Access**

- A. Contractor shall access the project area from the existing roads and trail access points.
- B. Contractor is allowed to drive ATVs or other approved work equipment on the existing trails and off trail, at a safe speed with flashers on, yielding to right-of-way to trail users. Contractor must repair any ruts or other damage caused by work vehicles or equipment to the satisfaction of the Engineer.
- C. Contractor will keep all trails and roads open and not blocked with trees, branches, materials, equipment, vehicles, or debris resulting from this operation.

**SP-5.2 Traffic Control**

- A. Contractor shall utilize Type III barricades and/or temporary work signage to alert the public that construction work is ongoing and make full closures for use when equipment is working or hauling on the trail. If features such as the boardwalk or culverts are removed, barricades shall be placed to create a trail closure to protect the public. *All traffic control measures required for use on the project shall be considered incidental to the bid price for the Aggregate Trail Surfacing work item.*

**SP-6 (2104) REMOVE BOLLARDS**

This work shall consist of removing bollards as shown on the plans to a depth 6 inches below finish grade and replacing bituminous pavement to match existing pavement. All labor and material to complete bid item shall be incidental to the bid price.

**SP-7 (2104) REMOVE AND REPLACE TIMBER BRIDGE DECK PLANKING**

This work shall consist of removing and replacing treated timber bridge deck planking on two pedestrian bridges as shown on the Plans. The replacement consists of all bridge planks. All labor and material required to furnish and install the deck planks shall be incidental to the bid price for each plank.

**SP-8 (2104) REMOVE AND REPLACE TIMBER BOARDWALK (25-ft Span)**

The bid item for this work shall consist of removing and replacing the existing wooden boardwalk and stringers with new 25-foot span timber boardwalk as shown on the Plans. The substructure and deck planking are to be treated timber materials. All labor, equipment, and material to complete bid item shall be incidental to the bid price. This includes removal and disposal of the existing structure, as well as constructing the replacement boardwalk.

The replacement boardwalk structure is detailed in the Plans for the project and has the following requirements:

- 25-foot out-to-out length and 10-foot width
- Timber sill abutments as detailed
- Treated wood curbs and decking; timber members shall be southern pine #2 or better. Treatment shall meet APWA category #B for use above ground (UC4B).
- Sill timbers and backing planking shall be treated so as to meet APWA use category system (U1).
- Hardware and steel shall meet AASHTO M270 Grade 36.



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**SP-9 (2105) TILLING AND GRADING**

This work shall consist of mechanically reclaiming, tilling, or scarifying the existing gravel that has washed off the edges of the trail and lifting it back onto the trail surface. The intent of the process is to scarify and reclaim limestone gravel that has migrated to the outer edges of the trail, while removing/cutting grass roots which have taken over these edges. Contractor shall utilize a reclaimer, box blade, hydraulic tiller, or other means to scarify and grade existing limestone gravel material back over the trail width and to restore adequate cross slope and drainage. Additional (new) limestone or class 5 gravel surfacing can then be incorporated into the trail surface once this process has been completed.

**SP-10 (2211) AGGREGATE TRAIL SURFACING(CV) ¾”(-) LIMESTONE**

The base bid item for the aggregate trail surfacing material is a ¾-inch (minus) limestone material available locally in Duluth. Aggregate surfacing courses shall be constructed in accordance with the provisions of Mn/DOT 2211 except as modified below:

**SP-10.1** Compaction shall be measured by the "Specified Density Compaction Method" described in Mn/DOT 2211.3C.

**SP-10.2** Bid price for Aggregate Trail Surfacing (CV) ¾”- limestone shall be considered full payment for labor, equipment, and materials needed to provide additional limestone aggregate surfacing for the Western Waterfront Trail as shown in the Plans. This price shall include payment for rolling and compacting the aggregate once graded onto the trail surface to provide a firm and stable trail surface at completion of the work.

**SP-11 (2360) PLANT MIXED ASPHALT PAVEMENT**

Bituminous Wear Course shall be SPWEA240C, conforming to the requirements of Section 2360, Mn/DOT Specifications.

**SP-12 (2411) GRANULAR BACKFILL (CV)**

This work shall consist of excavating a further depth and/or width of a trench and refilling to the pipe foundation grade with Coarse Filter Aggregate thoroughly compacted to provide a firm foundation for the pipe. This work shall be performed when, in the opinion of the Engineer, the bottom of the trench is soft or yielding and cannot adequately support the pipe sewer or if excessive groundwater is encountered in the trench.

Coarse Filter Aggregate shall be in accordance with the requirement of 3149.2H.

Measurement will be by Compacted Volume to the dimensions ordered by the Engineer.

Granular backfill will also be required to complete the grading work on the bituminous portion of the trail leading from the shared Western Waterfront/Munger Trailhead as shown in the Plans.

**SP-13 (2572) TREE PROTECTION**

This work consists of protecting and preserving vegetation from damage and restoring vegetation damaged by the Contractor's operations. Tree protection fencing must be placed by the Contractor prior to commencing grading work as shown in the Plans.

Provide temporary fence meeting the following characteristics and requirements:

**SPECIAL PROVISIONS**  
**2016 City of Duluth – Western Waterfront Trail Renewal**  
**July 8, 2016**

- (1) At least 6 ft high
- (2) Conspicuous in color (see detail sheet)
- (3) Commercially available snow fence or other fencing material approved by the Engineer.

Place temporary fences to protect vegetation before starting construction. Place temporary fence at the construction limits and at other locations adjacent to vegetation designated for preservation as required by the contract or as approved by the Engineer. Do not remove the fence until all work is completed or until approved by the Engineer.

Ensure the fence prevents traffic movement and the placement of temporary facilities, equipment, stockpiles, and supplies from harming the vegetation.

**SP-14 (2575) SEEDING**

Seeding shall be in accordance with State Seed Mixes, tables 21-111, 21-112, 21-113, and 36-311. All labor and material to complete bid item shall be incidental to the bid price.

**SP-15 ALTERNATE BID ITEMS**

There is one (1) alternate bid item included in the proposal for this project. The Alternate is outlined as follows:

**SP-15.1 Alternate A**

Alternate bid item A provides for a substitution in Aggregate Trail Surfacing by replacement of the ¾"-limestone surfacing material with virgin Class 5 gravel material.

# WESTERN WATERFRONT TRAIL RENEWAL PROJECT



PROJECT STARTING STATION: 0 + 00  
PROJECT ENDING STATION: 149 + 11

Sheet Number	Sheet Title
1	TITLE SHEET
2	STATEMENT OF ESTIMATED QUANTITIES
3	PROJECT OVERVIEW
4	GRADING DETAIL A
5	GRADING DETAIL B
6	GRADING DETAIL C
7	GRADING DETAIL D
8	GRADING DETAIL E
9	GRADING DETAIL F
10	ALIGNMENT DETAIL G
11	DETAILS
12	EROSION CONTROL
14	PAVING AND PAINTING DETAILS

THIS PLAN CONTAINS 14 SHEETS

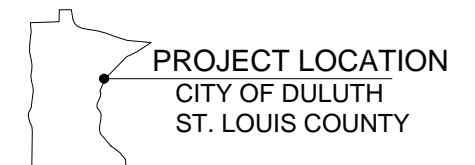
## SPECIFICATION REFERENCE

THE FOLLOWING SPECIFICATIONS SHALL APPLY TO THIS PROJECT:

- 1.) THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN. (AVAILABLE AT: <http://www.dot.state.mn.us/tecsup/>)
- 2.) ALL TRAFFIC CONTROL DEVICES AND SIGNING SHALL CONFORM TO THE MN MUTCD, INCLUDING THE CURRENT FIELD MANUAL.
- 3.) CITY OF DULUTH 2016 STANDARD CONSTRUCTION SPECIFICATIONS.
- 4.) ALL PORTIONS OF ACCESSIBLE TRAIL, PARKING STALLS AND ACCESSIBLE ROUTES SHALL COMPLY WITH THE ARCHITECTURAL BARRIERS ACT AND THE AMERICANS WITH DISABILITIES ACT STANDARDS.

## EXISTING UTILITY LOCATIONS

THE CONTRACTOR SHALL VERIFY ALL EXISTING UNDERGROUND UTILITY LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION. ALL INPLACE UTILITIES MAY NOT BE SHOWN ON THIS PLAN & THOSE THAT ARE SHOWN, MAY NOT BE SHOWN IN THE EXACT LOCATIONS. THE SUBSURFACE UTILITY INFORMATION IN THIS PLANSET IS UTILITY QUALITY LEVEL "D" AS DEFINED IN ASCE "STANDARD GUIDELINE FOR THE DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".

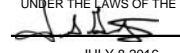


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 Drawing Name: P:\Information\Official\Projects\TKDA\15850.000-WWFT\_renewal\municipal\CD\PlanSet\TITLE SHEET.dwg  
 Author: JG, ELS/STG, TKDA Logo Information

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DESIGNED WD	DRAWN WD
CHECKED JG	

I HEREBY CERTIFY THAT THIS PLAN 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.

  
 JEFFREY S. GOETZMAN  
 DATE: JULY 8, 2016 LIC. NO. 26422



4560 Norway Pines Place  
Duluth, MN. 55811  
218.727.8796  
tkda.com

WESTERN WATERFRONT TRAIL  
RENEWAL PROJECT  
DULUTH MINNESOTA

TITLE SHEET  
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PROJECT NO.  
15850.000

RECORD NO.	SHEET NO.
	1

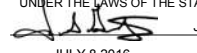
**CONSTRUCTION NOTES:**


1. REMOVE EXISTING BOLLARDS LOCATED AT EACH END OF TWO PEDESTRIAN BRIDGES. REMOVE PIPE 6 INCHES BELOW TRAIL GRADE AND PATCH SURFACE.
2. REMOVE PIPE CULVERT AT THE FOLLOWING STATIONS:  
STATION 66+75 - 12 INCH CMP  
STATION 88+06 - 8 INCH CMP  
STATION 113+84 - 12 INCH CMP
3. REMOVE BITUMINOUS PAVEMENT AT STATION 102+61 TO STATION 103+30 AND ON PULASKI ST. ACCESS FROM STATION 0+00 TO STATION 4+70.
4. DECK PLANKS ARE TREATED 3" x 8" x 8' NOMINAL DIMENSIONS. PAY ITEM INCLUDES ALL LABOR, EQUIPMENT AND MATERIALS REQUIRED TO REMOVE AND REPLACE DECK PLANKING ON TWO PEDESTRIAN BRIDGES.
5. REMOVE AND REPLACE ENTIRE TIMBER BOARDWALK LOCATED AT STATION 113+40. SEE SHEET 9 AND 11 FOR DETAILS ON GRADING AND STRUCTURE. BID ITEM INCLUDES ALL LABOR, EQUIPMENT AND MATERIALS NEEDED TO REMOVE AND DISPOSE OF EXISTING STRUCTURE AND TO CONSTRUCT A NEW 25-FOOT SPAN BOARDWALK.
6. TILLING AND GRADING PAY ITEM INCLUDED FOR WORK REQUIRED TO RECLAIM, TILL, OR SCARIFY EXISTING TRAIL SURFACE AND SHOULDERS TO RECOVER IN-PLACE LIMESTONE GRAVEL AND SHAPE SURFACE PRIOR TO PLACING ADDITIONAL AGGREGATE SURFACING.
7. NEW AGGREGATE SURFACING SHALL BE ROLLED AND COMPACTED TO PROVIDE FIRM AND STABLE SURFACE. WORK OF COMPACTING THIS MATERIAL IS CONSIDERED AS INCIDENTAL TO AGGREGATE SURFACING PAY ITEM. BASE BID ITEM IS LOCALLY AVAILABLE 3/4 INCH LIMESTONE SURFACING ; ALTERNATE A IS FOR CLASS 5 TRAIL SURFACING.
8. THESE ITEMS TO BE USED FOR GRADING BITUMINOUS TRAIL SECTION AND ARMORING DITCH. SEE SHEET 7 FOR DETAILS.
9. INSTALL NEW 12-INCH CS PIPE CULVERTS AT STATION 66+75 AND 88+06. BOTH PIPES ARE 16 FEET IN LENGTH.
10. INSTALL NEW 15-INCH CS PIPE CULVERT AT STATION 113+87. PIPE IS 16 FEET IN LENGTH.
11. SEED MIX SHALL BE STATE MIX # 36-311 WOODLAND EDGE NORTHEAST WITH COVER CROP # 21-111 OR # 21-112 DEPENDING ON SEEDING DATE.  
TOTAL SEEDING RATE: 33.5#/ACRE.
12. PAVEMENT MARKINGS FOR PARKING LOT AT MUNGER TRAIL HEAD.
13. USE AS NEEDED TO PROTECT AGAINST EROSION AT CULVERT REPAIR LOCATIONS.
14. CONTRACTOR SHALL PROTECT TREES NOT BEING REMOVED NEAR GRADING AREAS BY INSTALLING FENCING AT DRIP LINE PER DETAIL ON SHEET 11. BID PRICE FOR THIS ITEM INCLUDES FENCE, POSTS, AND LABOR TO COMPLETE INSTALLATION PER PLANS.

LINE NO.	NOTE NO.	SPEC. NO	ITEM DESCRIPTION	UNIT OF MEASURE	BASE QUANTITY	ALT A QUANTITY
1		2021.501	MOBILIZATION	Lump Sum	1	-
2		2101.501	CLEARING (BRUSH)	Acre	0.3	-
3		2101.502	CLEARING (4" OR GREATER)	Tree	10	-
4	1	2105.509	REMOVE BOLLARD	Each	4	-
5	2	2104.501	REMOVE PIPE CULVERT	Linear Foot	30	-
6	3	2104.505	REMOVE BITUMINOUS PAVEMENT	Square Yard	480	-
7		2104.513	SAWING BITUMINOUS PAVEMENT (FULL DEPTH)	Linear Foot	60	-
8	4	2104.601	REMOVE AND REPLACE BRIDGE DECK PLANKING	Each	86	-
9	5	2104.601	REMOVE & REPLACE TIMBER BOARDWALK (25 ft. SPAN)	Each	1	-
10		2105.501	COMMON EXCAVATION	Cubic Yard	507	-
11	6	2105.901	TILLING AND GRADING	Linear Foot	14,911	-
12	7	2211.503	AGGREGATE TRAIL SURFACING (CV) 3/4" - LIMESTONE	Cubic Yard	800.0	-
13	7	2211.503	AGGREGATE TRAIL SURFACING (CV), CLASS 5	Cubic Yard		800
14	8	2211.503	AGGREGATE BASE (CV) CLASS 5	Cubic Yard	122	-
15		2360.501	TYPE SP 9.5 WEARING COURSE MIXTURE (2C)	Ton	115	-
16	8	2411.541	GRANULAR BACKFILL	Cubic Yard	50	-
17	9	2501.511	12" CS PIPE CULVERT	Linear Foot	32	-
18	10	2501.603	15" CS PIPE CULVERT	Linear Foot	16	-
19	8	2511.501	RANDOM RIPRAP CLASS II	Cubic Yard	15	-
20	14	2572.501	TREE PROTECTION - FENCE	Linear Foot	600	-
21	13	2573.533	SEDIMENT CONTROL LOG TYPE COMPOST	Linear Foot	200	-
22		2575.523	EROSION CONTROL BLANKETS CATEGORY 3	Square Yard	1,000	-
23	11	2575.605	SEEDING	Acre	0.3	-
24	12	2582.501	PAVT MSSG (HANDICAPPED SYMBOL) PAINT	Each	1	-
25	12	2582.502	4" SOLID LINE WHITE - PAINT	Linear Feet	1,060	-
26	12	2564.536	HANDICAP PARKING SIGN	Each	1	-

Plot Date: 07/12/2016 10:43:58 AM Drawing Path: \\tkda\proj\15850\15850.dwg User: JG

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DESIGNED WD	DRAWN WD	I HEREBY CERTIFY THAT THIS PLAN 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  JEFFREY S. GOETZMAN DATE JULY 8, 2016 LIC. NO. 26422
CHECKED JG		



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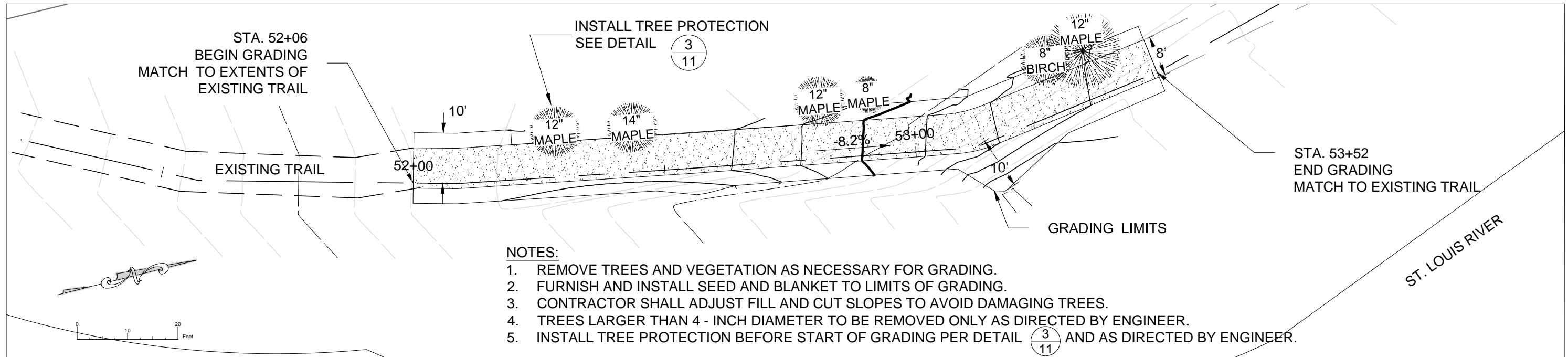
**WESTERN WATERFRONT TRAIL  
RENEWAL PROJECT**

DULUTH MINNESOTA

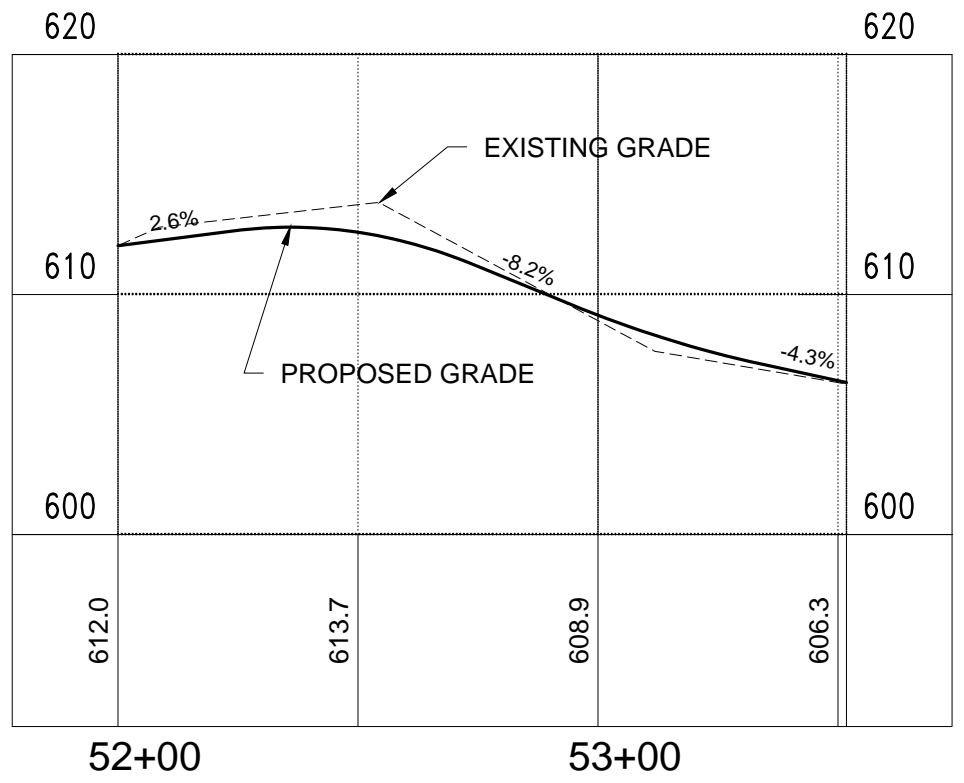
**STATEMENT OF  
ESTIMATED  
QUANTITIES**

PROJECT NO. <b>15850.000</b>	
RECORD NO.	SHEET NO. <b>2</b>

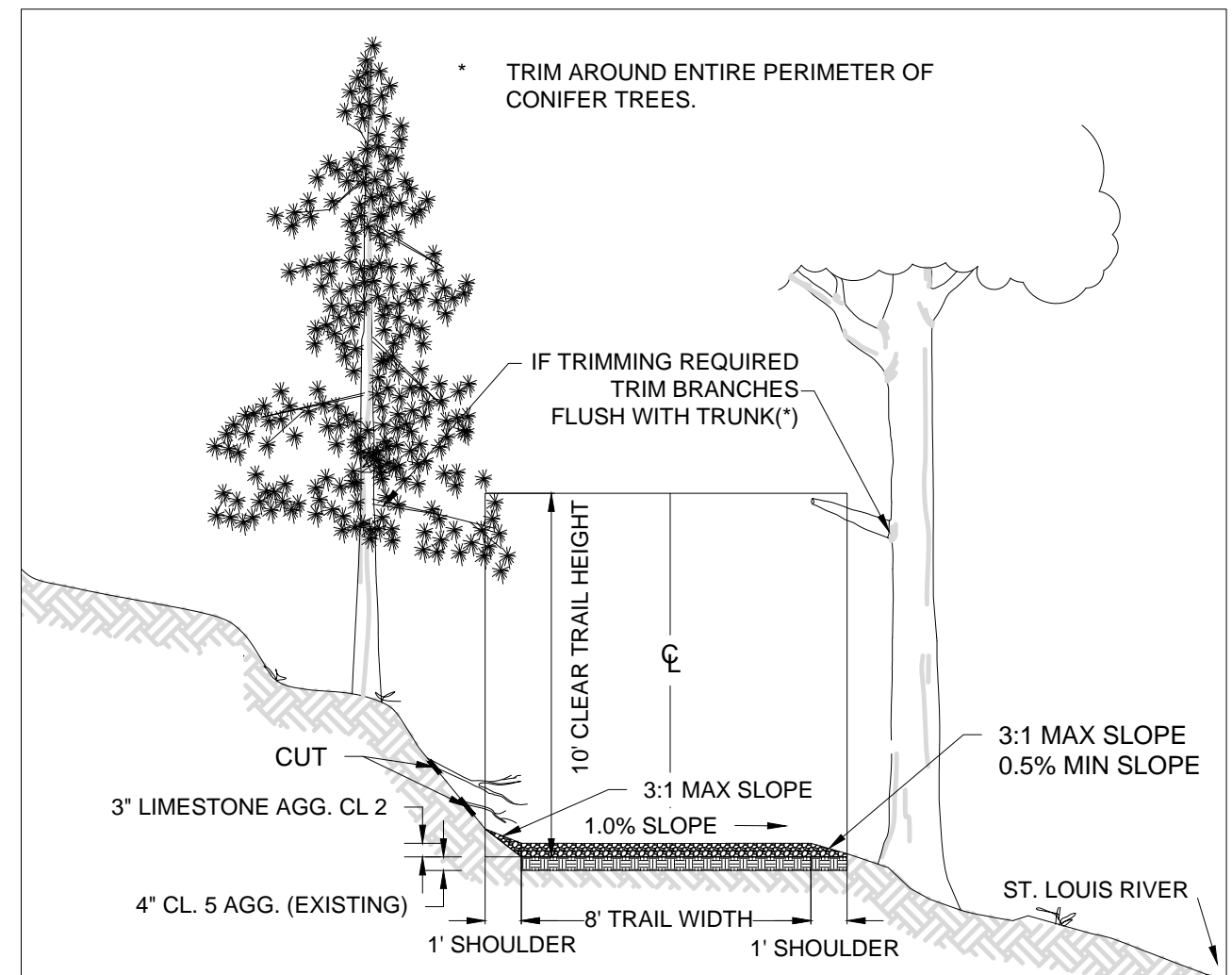




1  
4 STATION 52 + 75 GRADING  
1:20 SCALE



APPROXIMATE VOLUME CALCULATIONS:  
 CUT: 40 C.Y.  
 FILL: 12 C.Y.



2  
4 TRAIL GRADING AND TREE TRIMMING DETAIL  
NO SCALE

Plot Date: 07/12/2016  
 Drawing Name: P:\Hennepin\Office\Projects\TKDA\15850.000\WWFT\_renewal\muni\CSD\Planets\GRADING.dwg  
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NO.	DATE	BY	DESCRIPTION OF REVISIONS

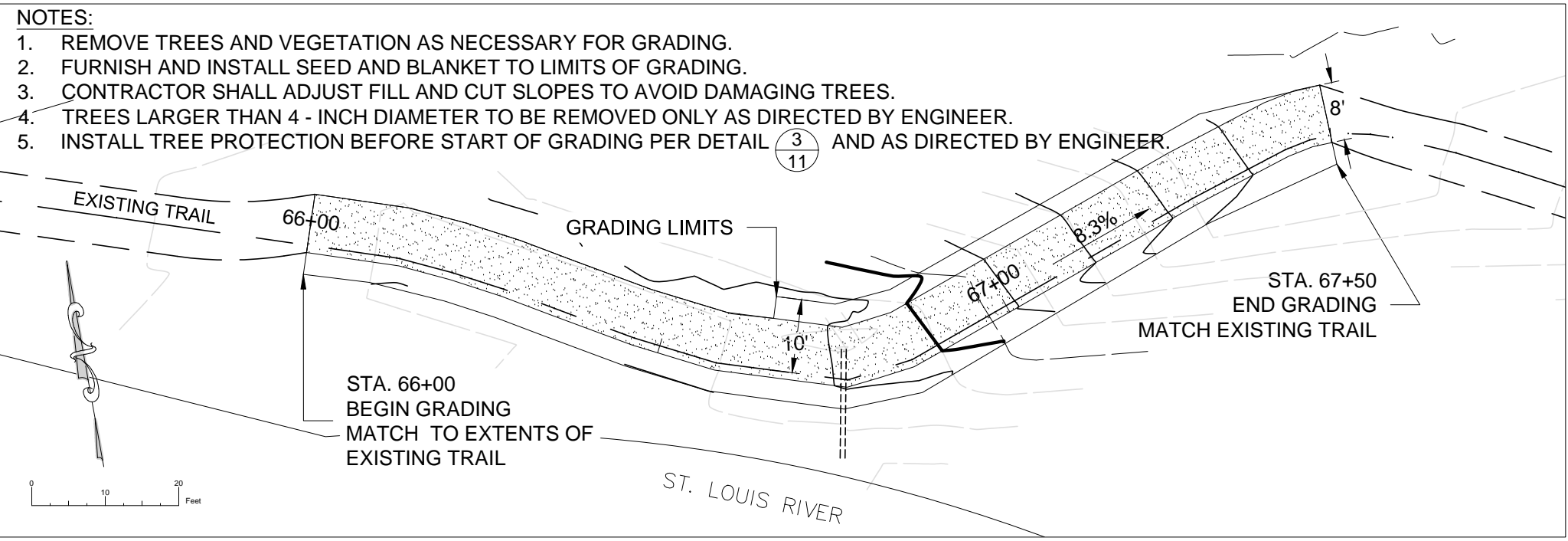
DESIGNED: WD  
 DRAWN: WD  
 CHECKED: JG  
 I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
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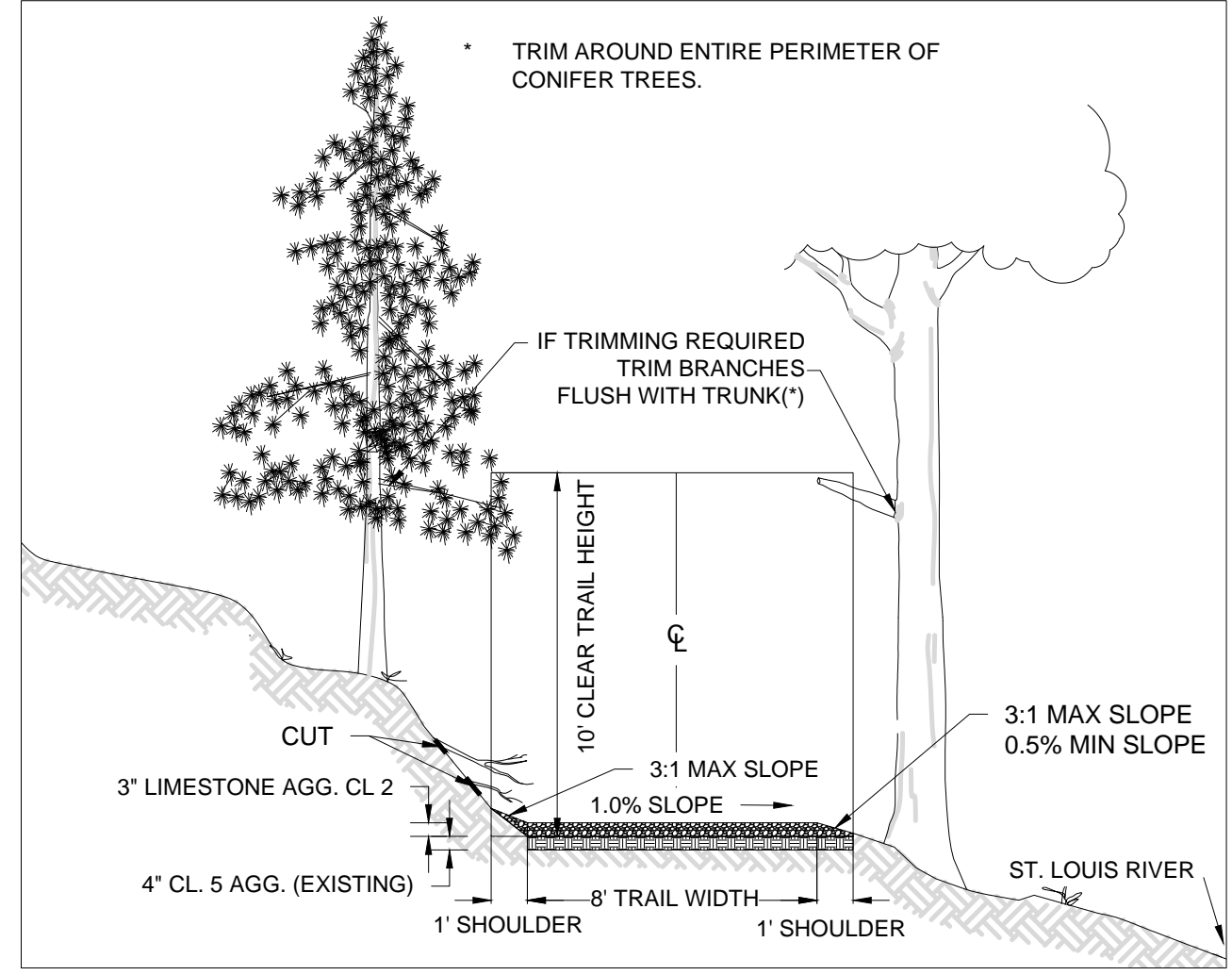
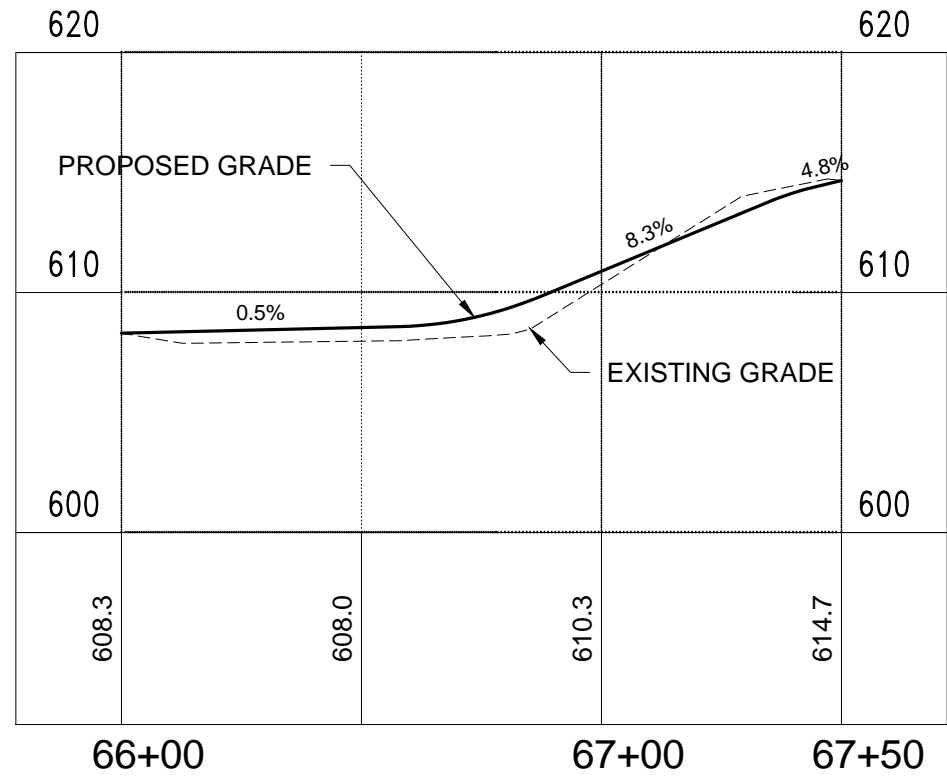
**WESTERN WATERFRONT TRAIL  
 RENEWAL PROJECT**  
 DULUTH MINNESOTA  
 CLIENT NO. MSA NO.

**GRADING DETAIL A**  
 STA. 52+75

PROJECT NO. 15850.000  
 RECORD NO. SHEET NO. 4



(1/5) STATION 66 + 83 GRADING  
1:20 SCALE



(2/5) TRAIL GRADING AND TREE TRIMMING DETAIL  
NO SCALE

APPROXIMATE VOLUME CALCULATIONS:  
CUT: 6 C.Y.  
FILL: 27 C.Y.

Plot Date: 07/12/2016  
 Drawing Name: P:\Hennepin\Office\Projects\TKDA\15850.000-WWFT\_renewal\munic\3D\Planets\GRADING.dwg  
 Xrefs: TKDA Logo Hennepin.dwg; P:\PROPOSED\_Site.dwg

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DESIGNED: WD  
DRAWN: WD  
CHECKED: JG  
DATE: JULY 8, 2016

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JEFFREY S. GOETZMAN  
LIC. NO. 26422

**TKDA**

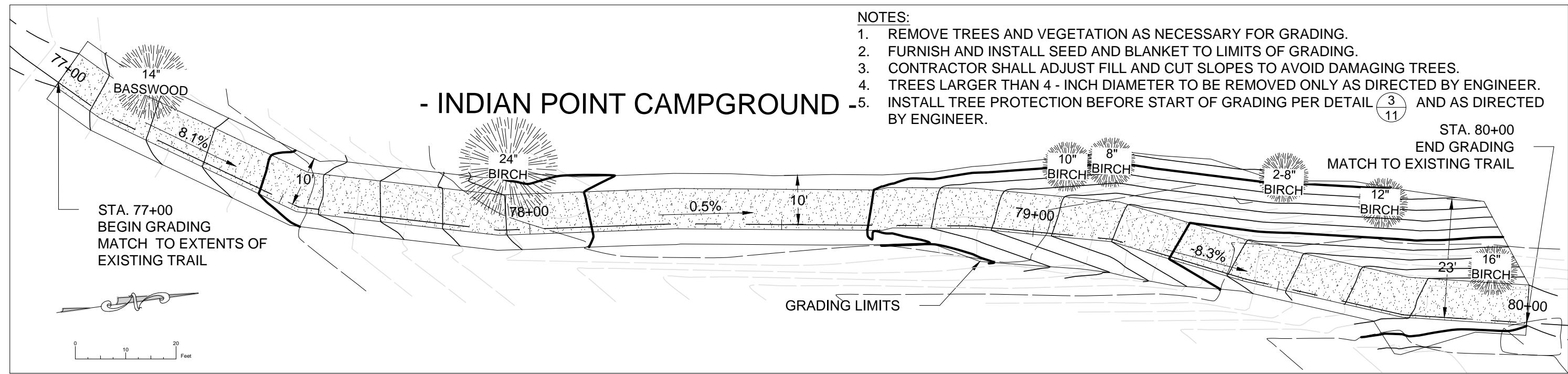
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tkda.com

**WESTERN WATERFRONT TRAIL RENEWAL PROJECT**  
DULUTH MINNESOTA

CLIENT NO. MSA NO.

**GRADING DETAIL B**  
STA. 66+83

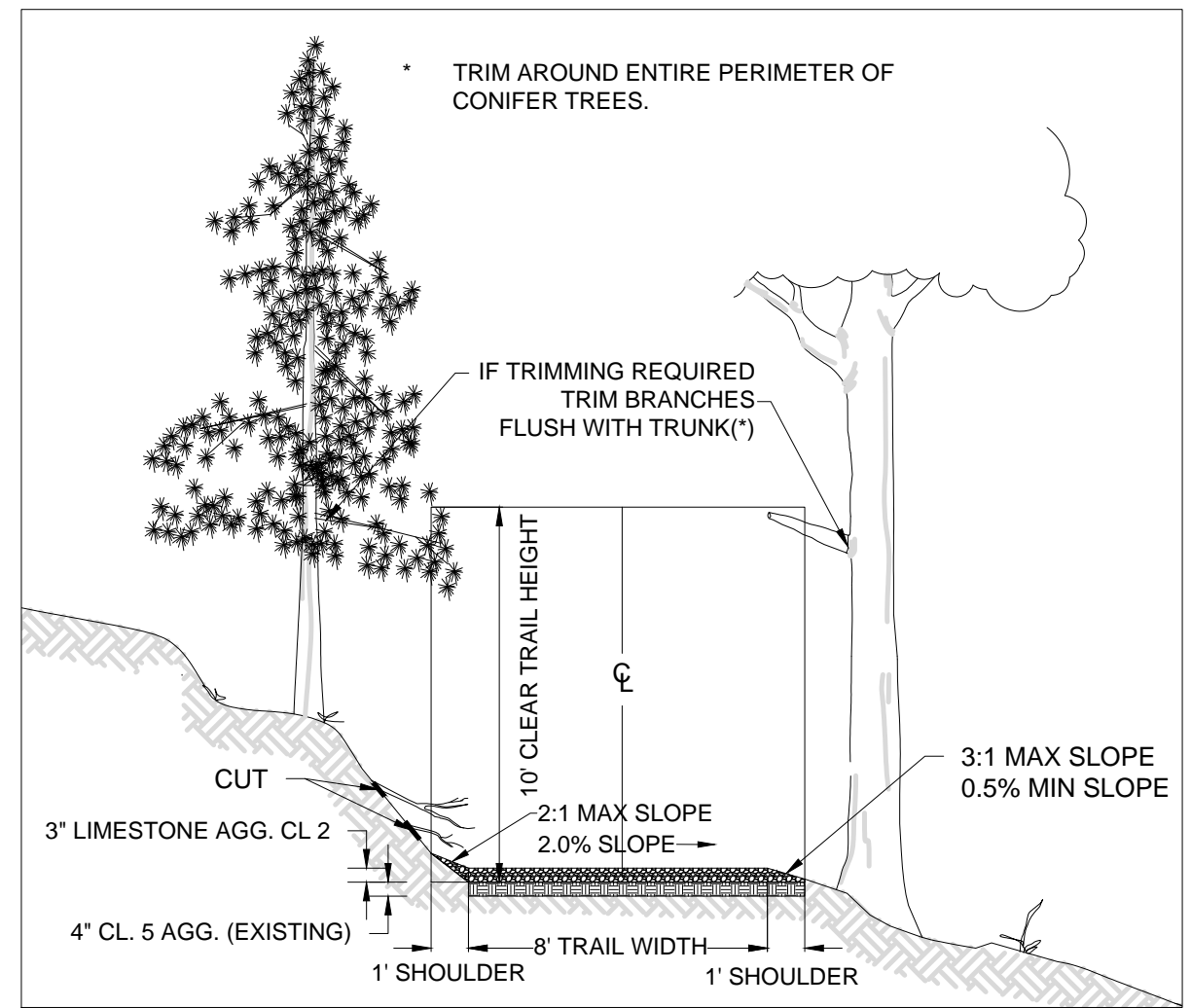
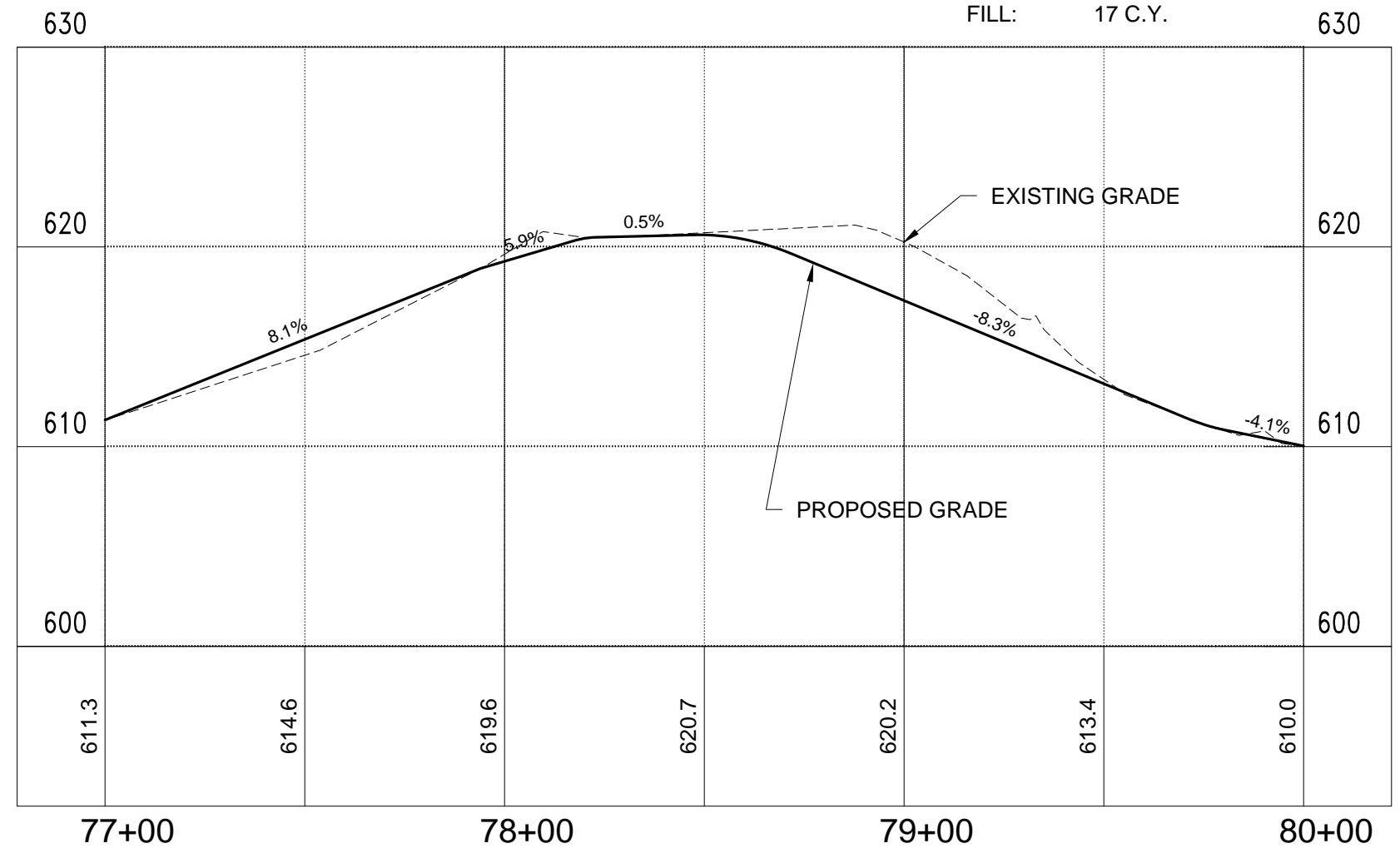
PROJECT NO. 15850.000  
RECORD NO. SHEET NO. 5



- NOTES:**
1. REMOVE TREES AND VEGETATION AS NECESSARY FOR GRADING.
  2. FURNISH AND INSTALL SEED AND BLANKET TO LIMITS OF GRADING.
  3. CONTRACTOR SHALL ADJUST FILL AND CUT SLOPES TO AVOID DAMAGING TREES.
  4. TREES LARGER THAN 4 - INCH DIAMETER TO BE REMOVED ONLY AS DIRECTED BY ENGINEER.
  5. INSTALL TREE PROTECTION BEFORE START OF GRADING PER DETAIL (3) AND AS DIRECTED BY ENGINEER.

1  
6 STATION 77 + 77 GRADING  
1:20 SCALE

APPROXIMATE VOLUME CALCULATIONS:  
CUT: 140 C.Y.  
FILL: 17 C.Y.



2  
6 TRAIL GRADING AND TREE TRIMMING DETAIL  
NO SCALE

Plot Date: 07/12/2016  
 Drawing name: P:\Hennepin\Office\Projects\TKDA\15850.000-WWFT\_renewal\munic\3D\Plan\set\GRADING.dwg  
 Author: TKDA Logo Hennepin\3D\PROPOSED\_Site.dwg

NO.	DATE	BY	DESCRIPTION OF REVISIONS

DESIGNED: WD  
 DRAWN: WD  
 CHECKED: JG  
 I HEREBY CERTIFY THAT THIS PLAN 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.  
 JEFFREY S. GOETZMAN  
 DATE: JULY 8, 2016 LIC. NO.: 26422

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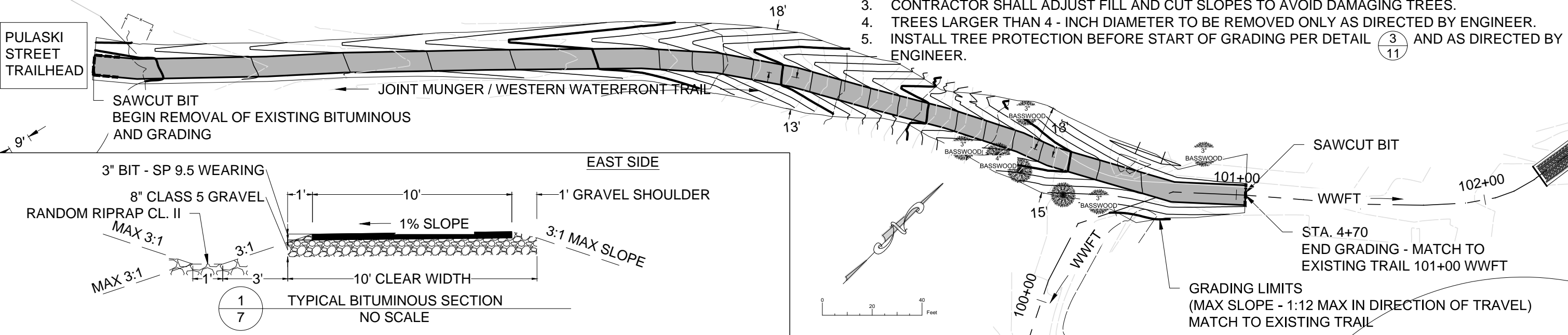
**WESTERN WATERFRONT TRAIL RENEWAL PROJECT**  
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**GRADING DETAIL C**  
 STA. 77+77

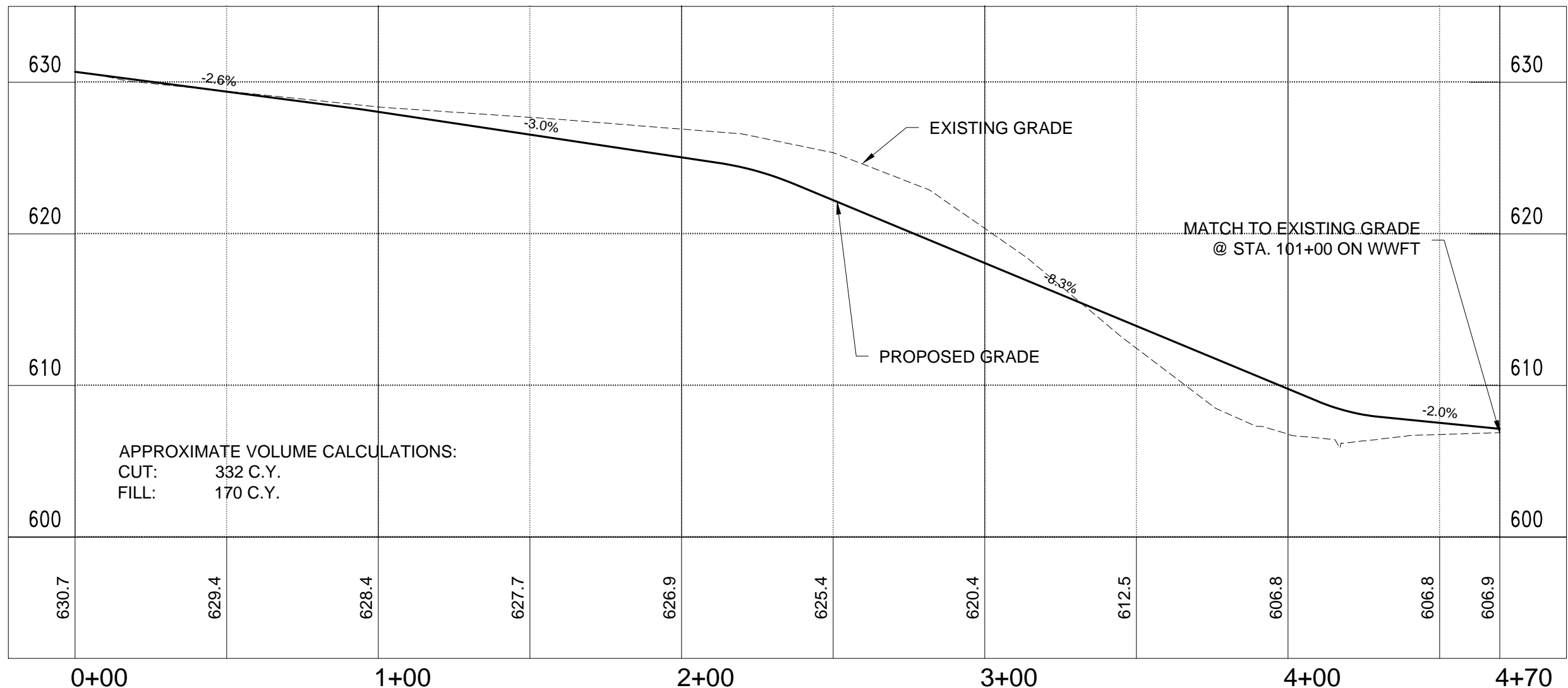
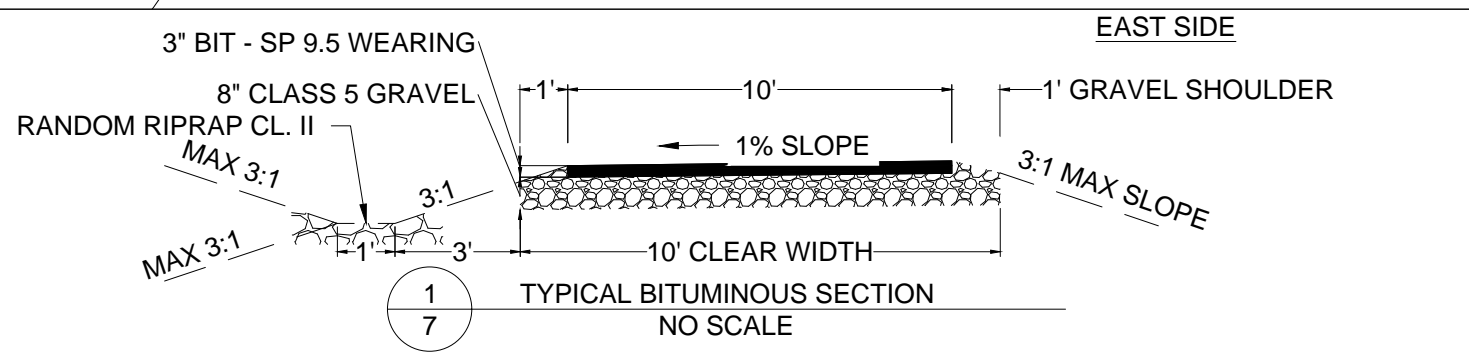
PROJECT NO. 15850.000  
 RECORD NO. SHEET NO. 6



PULASKI STREET TRAILHEAD



- NOTES:
1. REMOVE TREES AND VEGETATION AS NECESSARY FOR GRADING.
  2. FURNISH AND INSTALL SEED AND BLANKET TO LIMITS OF GRADING.
  3. CONTRACTOR SHALL ADJUST FILL AND CUT SLOPES TO AVOID DAMAGING TREES.
  4. TREES LARGER THAN 4 - INCH DIAMETER TO BE REMOVED ONLY AS DIRECTED BY ENGINEER.
  5. INSTALL TREE PROTECTION BEFORE START OF GRADING PER DETAIL (3/11) AND AS DIRECTED BY ENGINEER.



Plot Date: 07/12/2016  
 Drawing Name: P:\Hennepin\Office\Projects\TKDA\15850.000-WWFT\_renewal\muni\CSD\Plan\Grading.dwg  
 Author: TKDA Logo Hennepin: SK PROPOSED\_Site design

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DATE: JULY 8, 2016

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JEFFREY S. GOETZMAN  
LIC. NO. 26422

**TKDA**

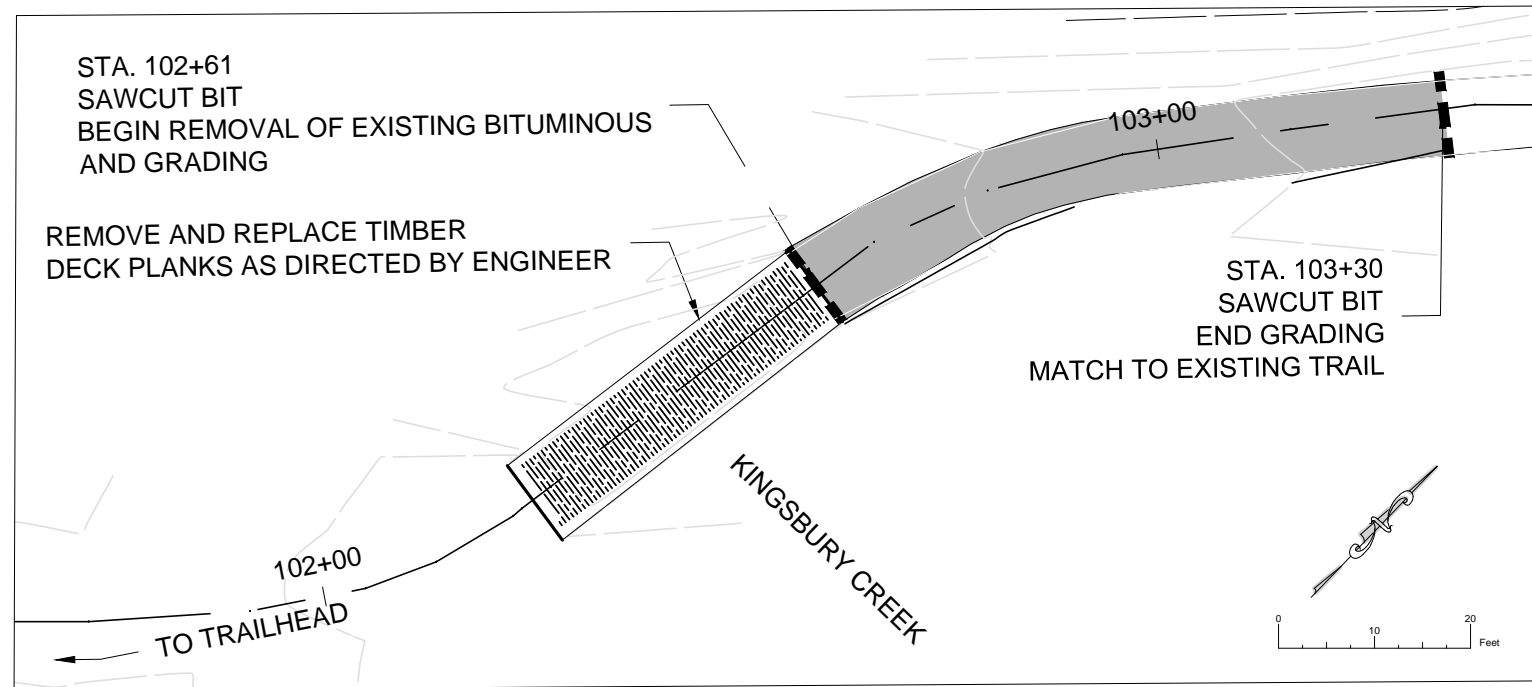
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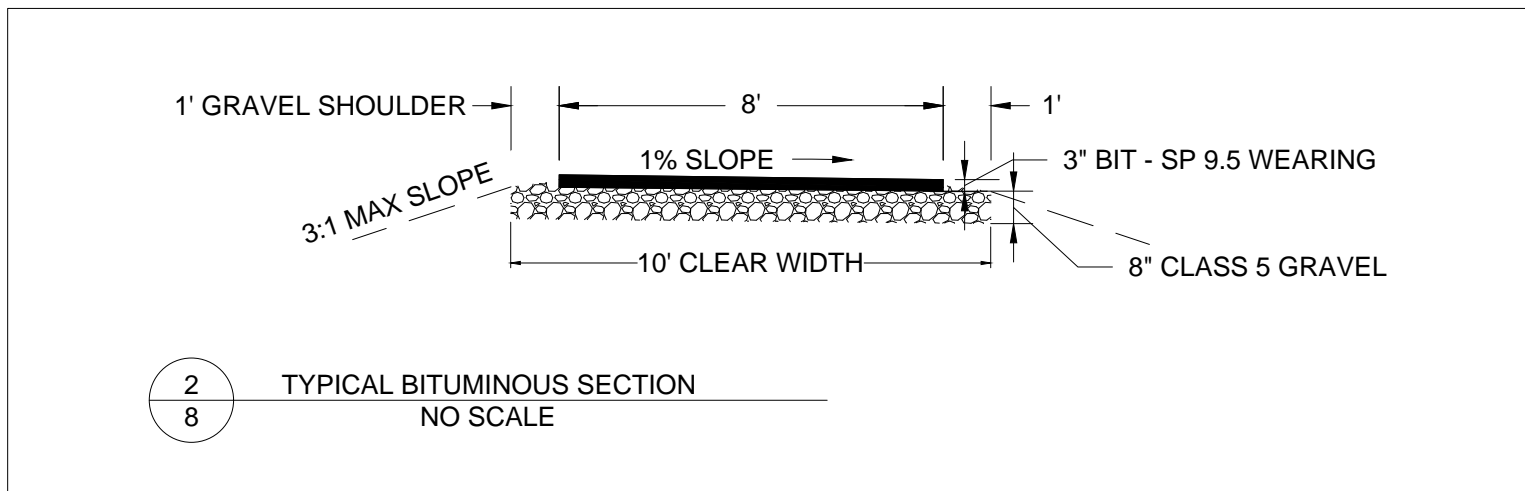
CLIENT NO. MSA NO.

**GRADING DETAIL D**  
STA. 100+23

PROJECT NO. 15850.000  
RECORD NO. SHEET NO. 7

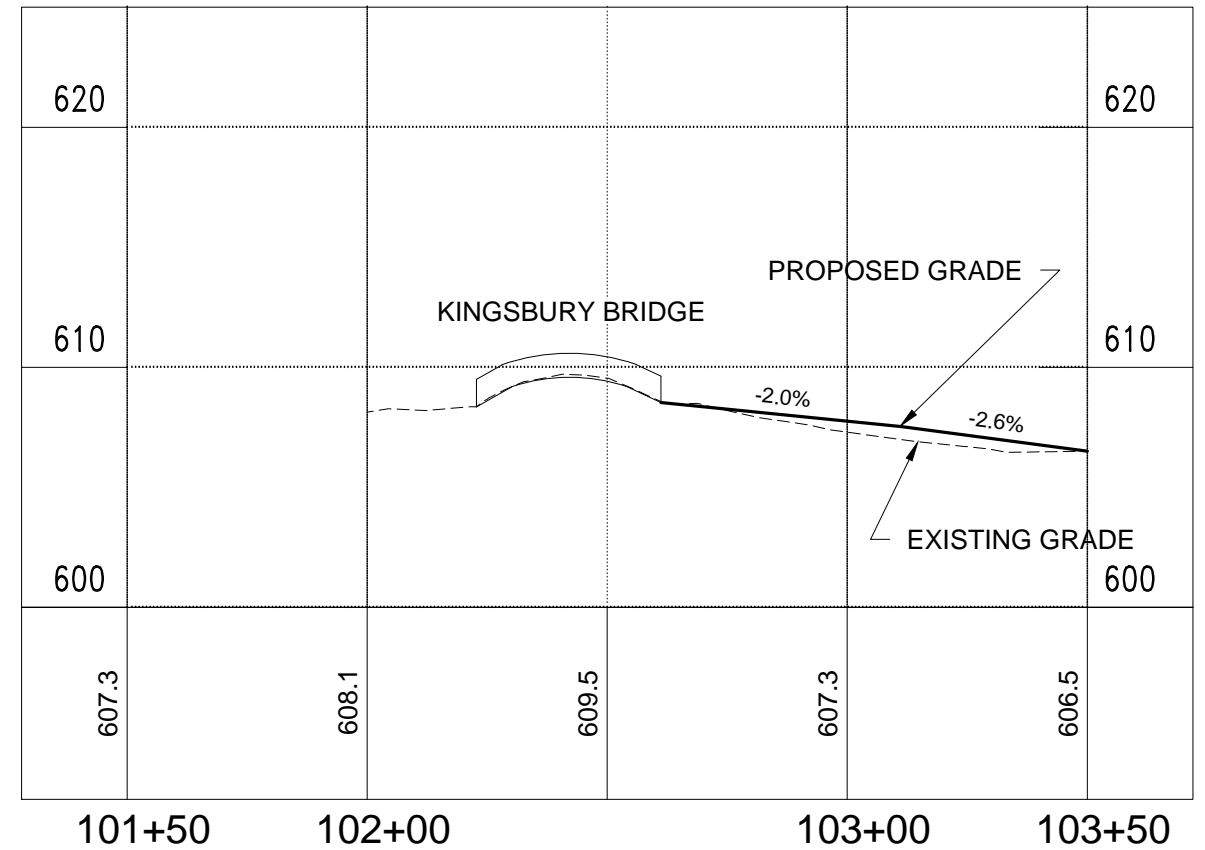


1  
8  
KINGSBURY CREEK GRADING  
1:20 SCALE



2  
8  
TYPICAL BITUMINOUS SECTION  
NO SCALE

APPROXIMATE VOLUME CALCULATIONS:  
CUT: 2.0 C.Y.



Plot Date: 07/12/2016  
 Drawing Name: P:\Hermanowicz\Office\Projects\TKDA\15850.000-WWFT\_renewal\munic\CD\PlanSet\GRADING.dwg  
 Author: TKDA Logo Hermanowicz, SKI PROPOSED\_Site design

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WD	WD
CHECKED	
JG	

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*Jeffrey S. Goetzman*  
JEFFREY S. GOETZMAN  
DATE JULY 8, 2016 LIC. NO. 26422



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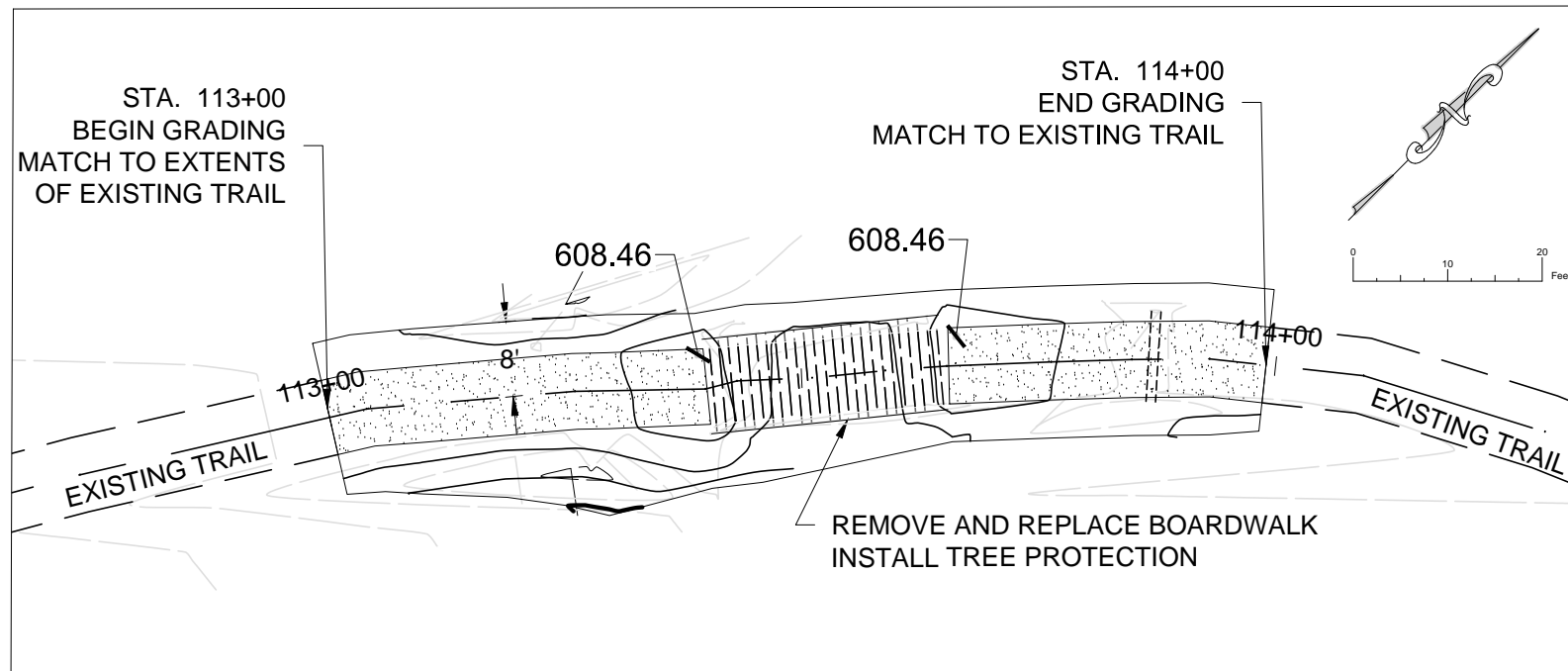
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DULUTH MINNESOTA

GRADING DETAIL E  
STA. 102+61

PROJECT NO.  
15850.000

RECORD NO. SHEET NO.  
8

CLIENT NO. MSA NO.

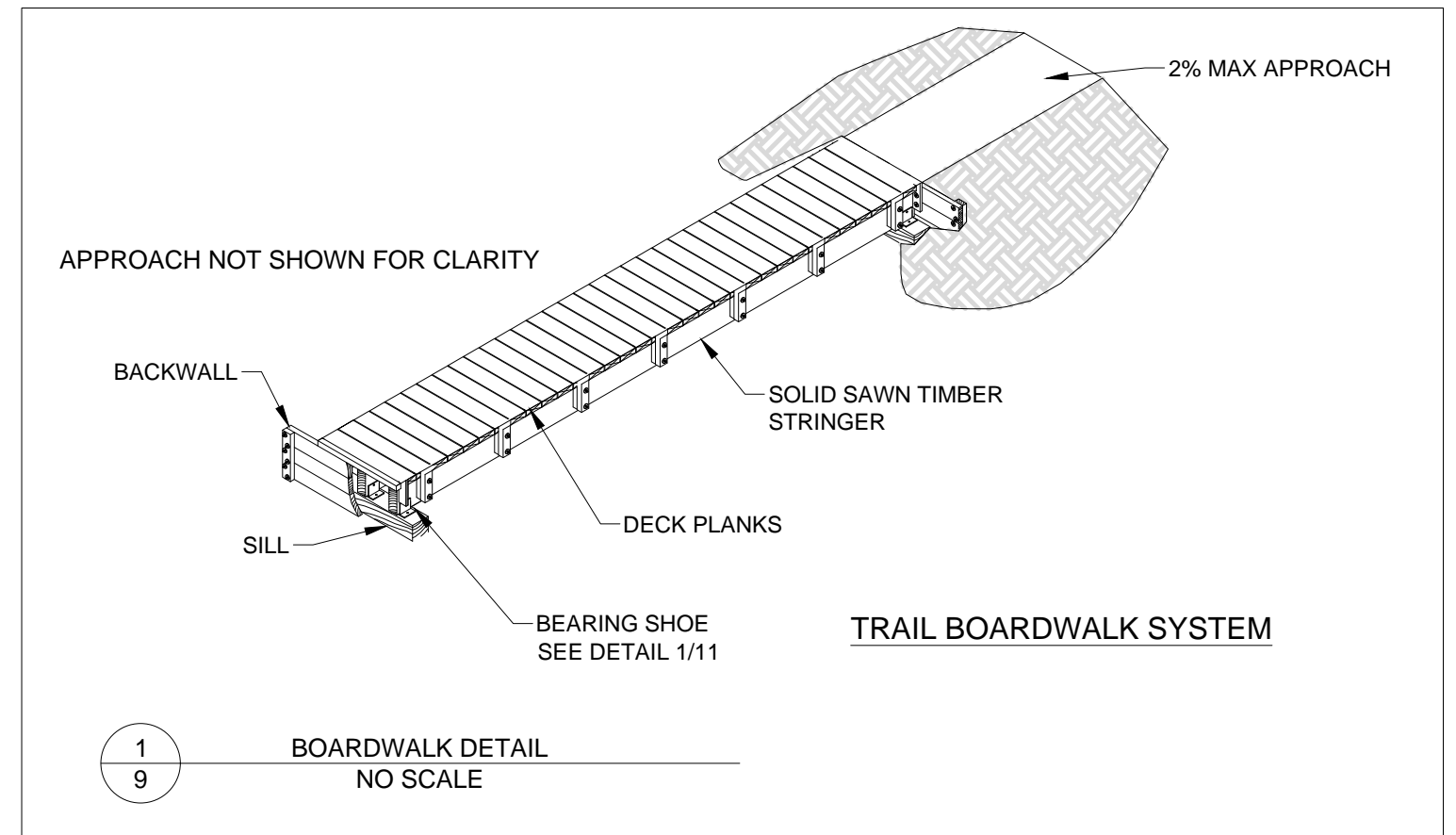
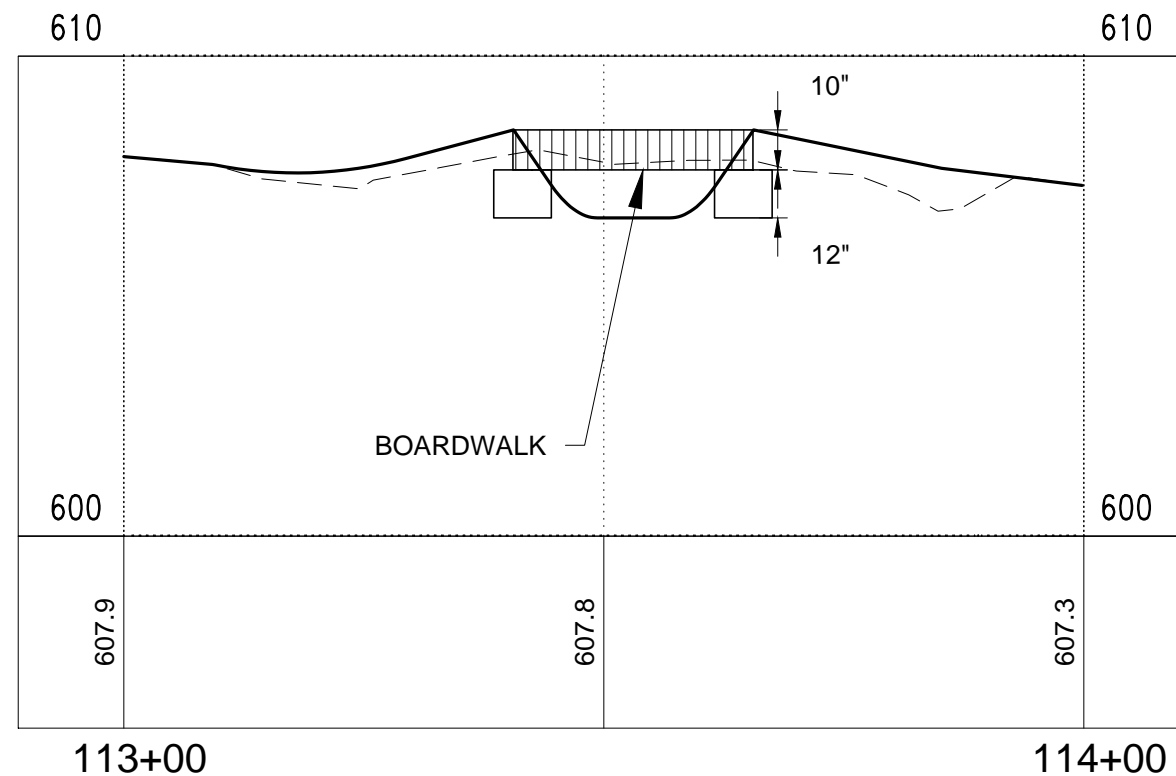


**NOTES:**

1. SEE BOARDWALK CONSTRUCTION DETAILS ON SHEET 11 FOR REPLACEMENT STRUCTURE.
2. CUT AND FILL QUANTITIES SHOWN ARE FOR GRADING REQUIRED AND INCLUDES PLACING GRAVEL TO MATCH NEW PLANK ELEVATION.
3. THE FOLLOWING APPLY FOR WORK AT BOARDWALK:
  - A.) REMOVE TREES AND VEGETATION AS NECESSARY FOR GRADING.
  - B.) FURNISH AND INSTALL SEED AND BLANKET TO LIMITS OF GRADING.
  - C.) CONTRACTOR SHALL ADJUST FILL AND CUT SLOPES TO AVOID DAMAGING TREES.
4. TREES LARGER THAN 4 - INCH DIAMETER TO BE REMOVED ONLY AS DIRECTED BY ENGINEER.
5. INSTALL TREE PROTECTION BEFORE START OF GRADING PER DETAIL  $\frac{3}{11}$  AND AS DIRECTED BY ENGINEER.

APPROXIMATE VOLUME CALCULATIONS:  
FILL: 8 C.Y.

$\frac{1}{9}$  BOARDWALK GRADING  
1:20 SCALE



Plot Date: 07/12/2016  
 Drawing Name: P:\Hennepin\Office\Projects\TKDA\15850.00\WWFT\_renewal\muni\CSD\Planest\GRADING.dwg  
 Author: TKDA Logo Hennepin\Office\Projects\TKDA\15850.00\WWFT\_renewal\muni\CSD\Planest\GRADING.dwg

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 \_\_\_\_\_  
 JEFFREY S. GOETZMAN  
 DATE JULY 8, 2016 LIC. NO. 26422

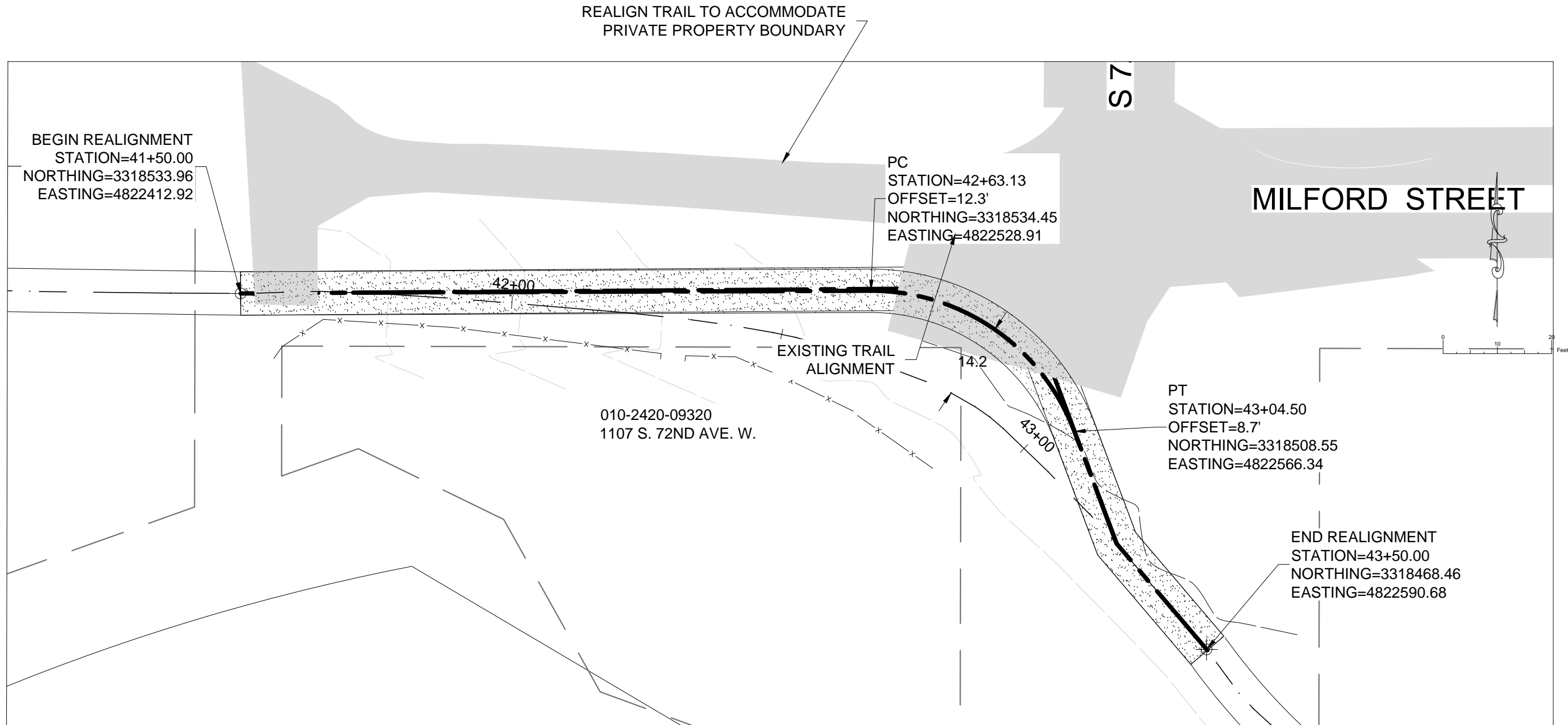


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 RENEWAL PROJECT**  
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**GRADING DETAIL F  
 BOARDWALK AREA  
 STA. 113+40**

PROJECT NO. 15850.000	SHEET NO. 9
RECORD NO.	



1 TRAIL REALIGNMENT STA. 41+50  
9 1:20 SCALE

Plot Date: 07/12/2016  
 Drawing Name: P:\Hennepin\Office\Projects\TKDA\15850.00-WWFT\_renewal\munic\GIS\Planest\GRADING.dwg  
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JEFFREY S. GOETZMAN  
DATE JULY 8, 2016 LIC. NO. 26422



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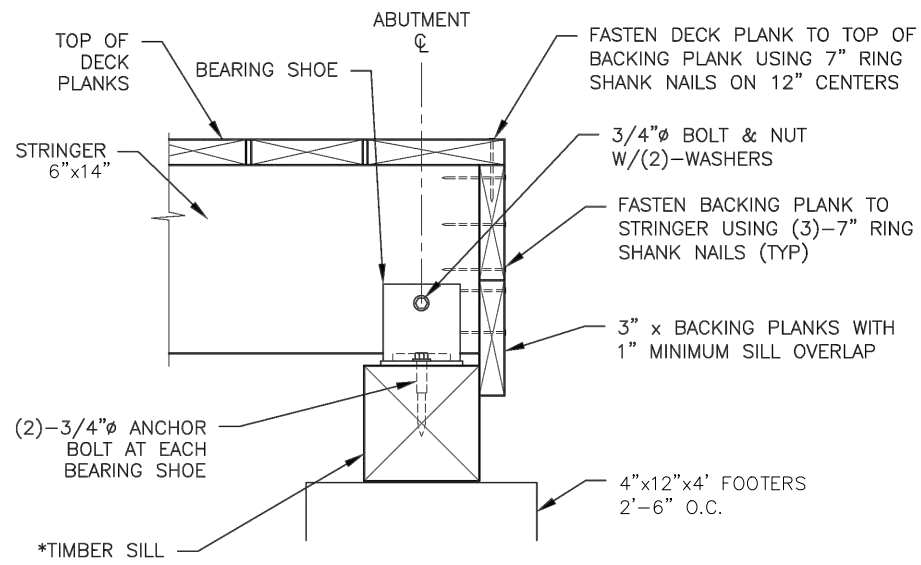
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RENEWAL PROJECT  
DULUTH MINNESOTA

CLIENT NO. MSA NO.

ALIGNMENT DETAIL G  
STA. 41+50

PROJECT NO.  
15850.00

RECORD NO. SHEET NO.  
10

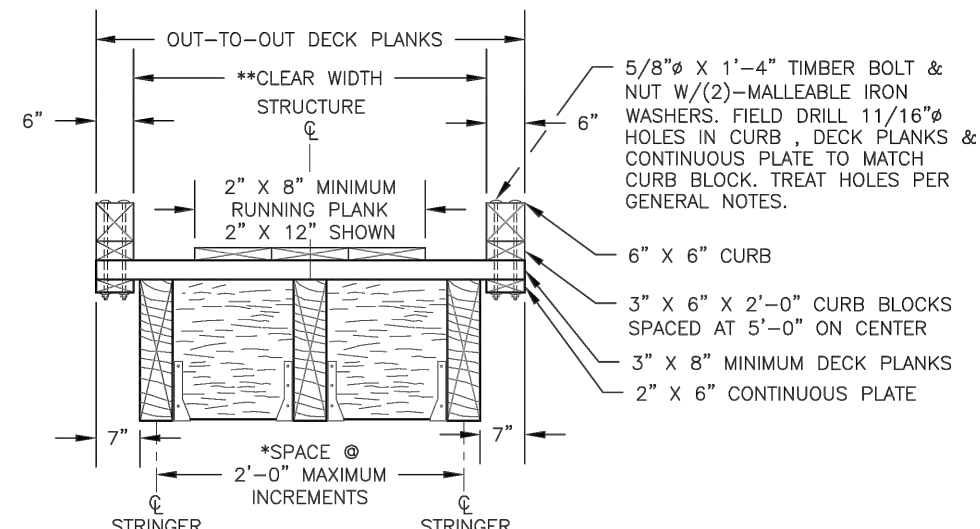


SAWN TIMBER SILL CONNECTION  
DETAIL

BACKING PLANK STIFFENER NOT SHOWN FOR CLARITY

\*\* TIMBER SILL CAN BE EITHER 12" X 12" SOLID SAWN OR 3/4" X 12" GLUE-LAMINATED, BUILT-UP 3" X 12", 4" X 12", & 6" X 12" TREATED MEMBERS.

1  
11 ABUTMENT DETAIL  
NO SCALE

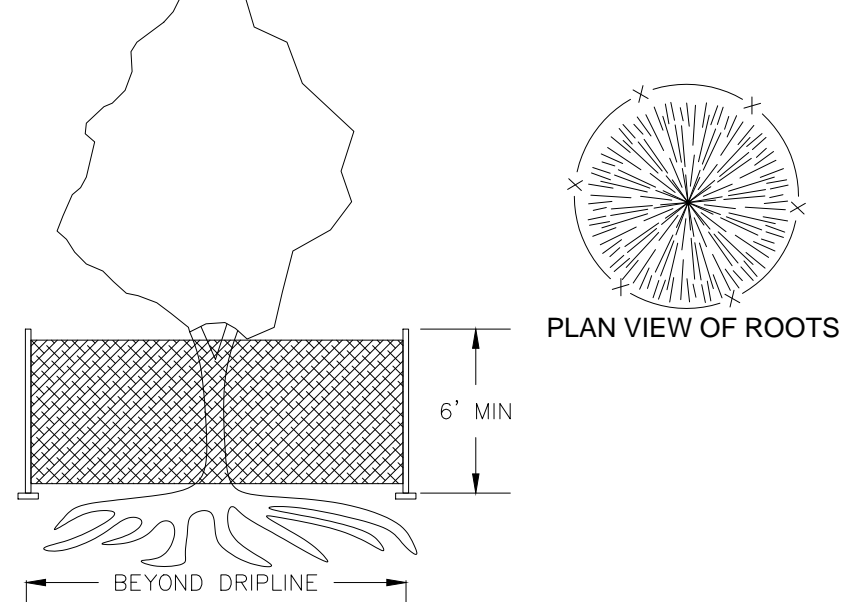


BRIDGE WITH CURBS ONLY  
DECK SECTION W/STRINGERS @2'-0" O.C.

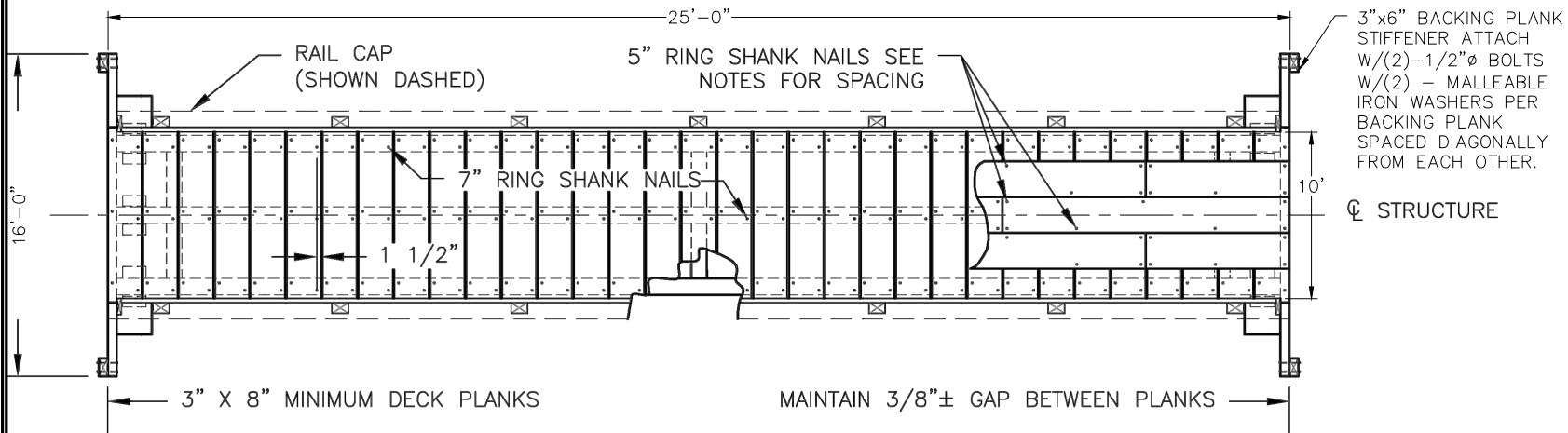
\* MINIMUM NUMBER OF STRINGERS IS THREE  
\*\* INSIDE FACE TO INSIDE FACE OF RAILING SYSTEM

2  
11 ABUTMENT DETAIL  
NO SCALE

- NOTES:
1. TREE PROTECTION SHALL BE IN PLACE PRIOR TO COMMENCING GRADING WORK.
  2. DIAMETER OF PROTECTION ZONE SHOULD BE ONE FOOT FOR EACH INCH OF TRUNK DIAMETER BREAST HEIGHT OR 1/2 HEIGHT OF TREE, WHICHEVER IS GREATER.
  3. TEMPORARY FENCING (6 FT. HIGH) SHALL BE PLACED AT THE DRIP LINE OF THE TREE TO BE SAVED. FENCE SHALL COMPLETELY ENCIRCLE THE TREE(S). TO INSTALL FENCE POSTS, AVOID DRIVING POSTS OR STAKES INTO MAJOR ROOTS.
  4. NO STOCKPILING OF MATERIALS, VEHICULAR TRAFFIC, OR STORAGE IS ALLOWED WITHIN THE LIMIT OF THE FENCING.



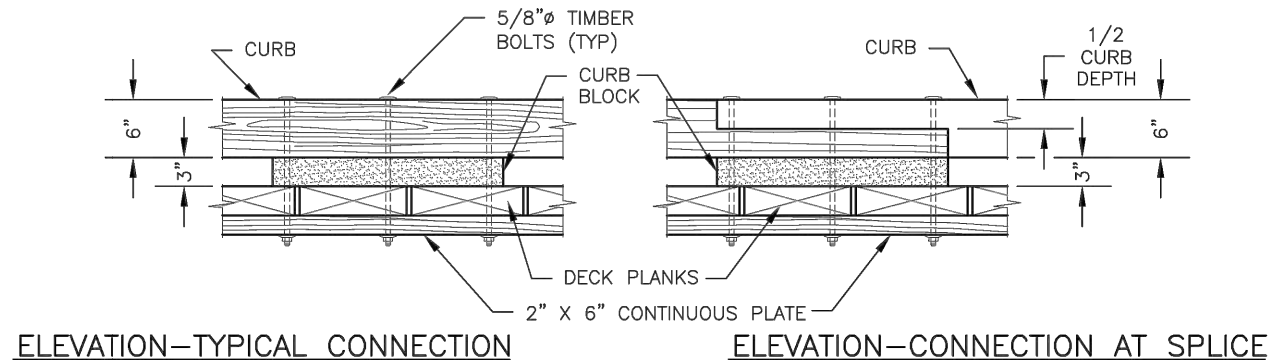
3  
11 TREE PROTECTION DETAIL  
NO SCALE



PLAN

- NOTES:
1. FASTEN DECK PLANKS TO STRINGERS WITH TWO ROWS 5/16" DIAMETER x 7" RING SHANK NAILS PER PLANK AT EACH STRINGER. ALTERNATE SIDES.
  2. FASTEN RUNNING PLANKS TO DECK WITH 40d (5" RING SHANK) NAILS AT 24" SPACING. ALTERNATE SIDE WITH TWO AT EACH END.
  3. BRACING REQUIRED AT THE ENDS OF EACH MEMBER. THE BRACING SHALL BE THREE-QUARTERS TO FULL DEPTH AND PLACED WITHIN A DISTANCE OF THE DEPTH OF THE BEAM FROM THE CENTERLINE OF BEARING. BRACING REQUIRED AT MID-SPAN.

4  
11 SAWN TIMBER STRINGER TRAIL BRIDGE  
NO SCALE



ELEVATION-TYPICAL CONNECTION      ELEVATION-CONNECTION AT SPLICE

5  
11 SOLID SAWN CURB CONNECTION DETAIL  
NO SCALE

Plot Date: 07/12/2016  
 Drawing Name: P:\Hermanstown-Office\Projects\TKDA\15850.00-WWTF\_renewal\municipal\CD\PlanSet\DETAILS.dwg  
 Xrefs: TKDA Logo Hermanstown, OR FPO\FPO-SEC\_Site design

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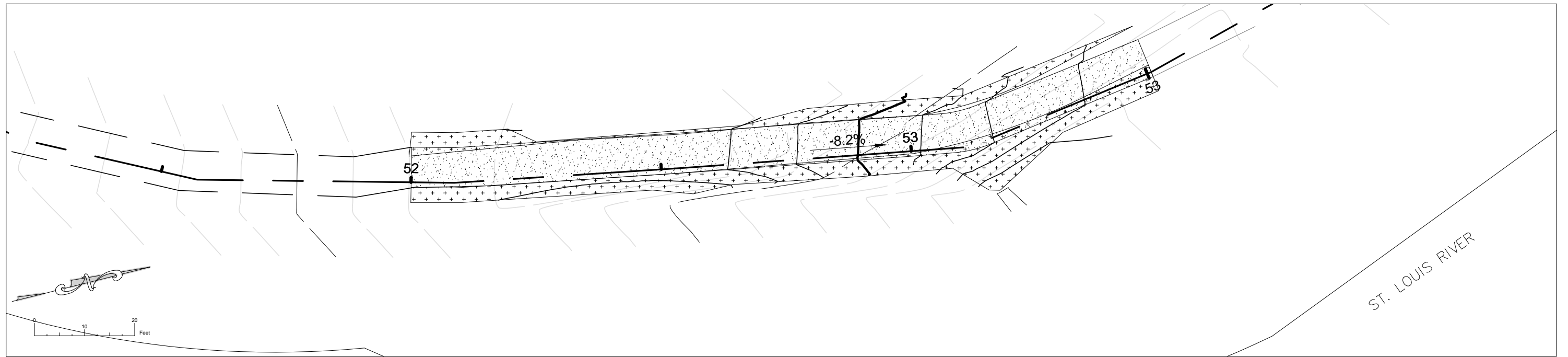
DESIGNED WD	DRAWN WD	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA  JEFFREY S. GOETZMAN DATE: JULY 8, 2016      LIC. NO.: 26422
CHECKED JG	DATE	

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 DULUTH      MINNESOTA

**DETAILS**  
 ----

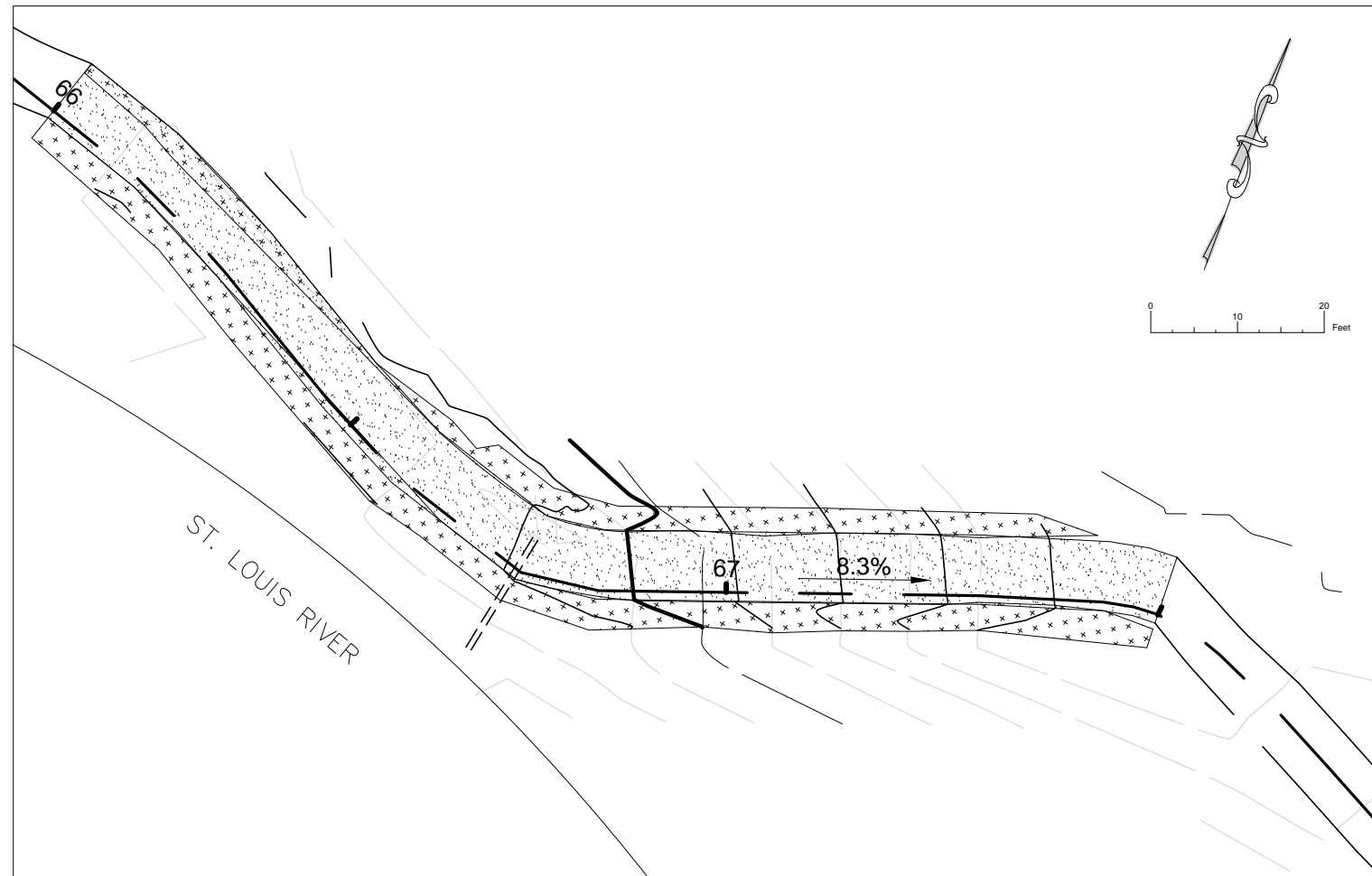
PROJECT NO.  
**15850.000**  
 RECORD NO.      SHEET NO.  
**11**



1  
12 STATION 52+75 SEEDING  
1:20 SCALE

NOTES:

1. USE STATE MIX # 36-311 WOODLAND EDGE NORTHEAST WITH COVER CROP # 21-11 OR # 21-112 DEPENDING ON SEEDING DATE. TOTAL SEEDING RATE: 33.5 LBS/ACRE.
2. USE EROSION CONTROL BLANKETS TO STABILIZE ANY SLOPES DISTURBED BY CONSTRUCTION.
3. USE BIOLOG AT CULVERT REPLACEMENT LOCATIONS.

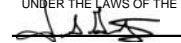


2  
12 STATION 66+83 SEEDING  
1:20 SCALE

Plot Date: 07/12/2016  
 Drawing name: P:\Hennepin\Office\Projects\TKDA\15850.000\WWFT\_renewal\munic\CD\Plan\EROSION CONTROL.dwg  
 Author: TKDA Logo Hennepin\CD\PROPOSED\_Site.dwg

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 JEFFREY S. GOETZMAN  
 DATE JULY 8, 2016 LIC. NO. 26422



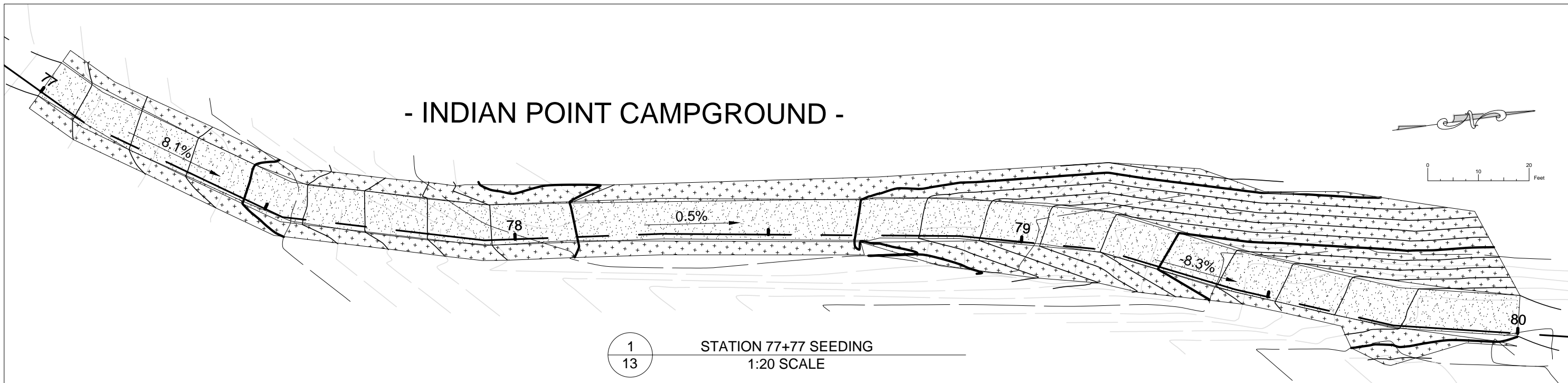
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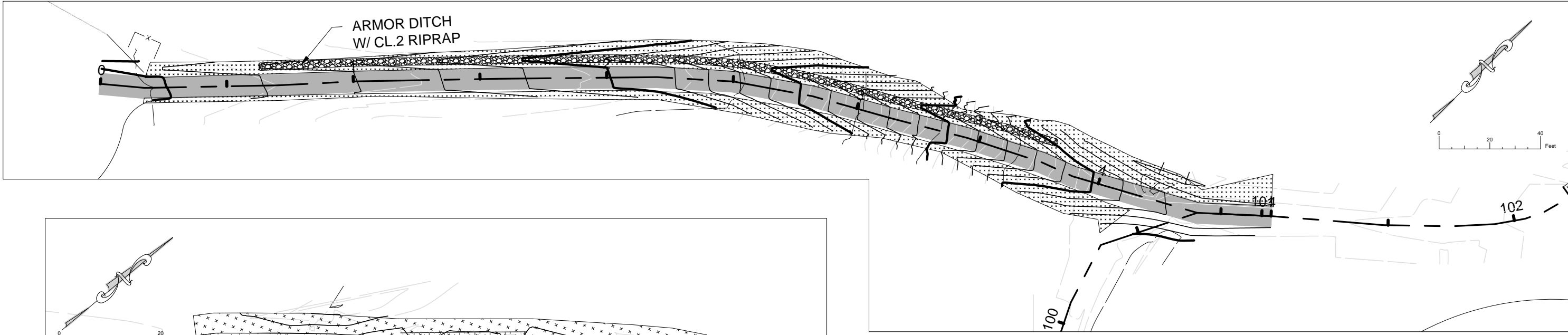
**EROSION CONTROL**

PROJECT NO. 15850.000	
RECORD NO.	SHEET NO. 12

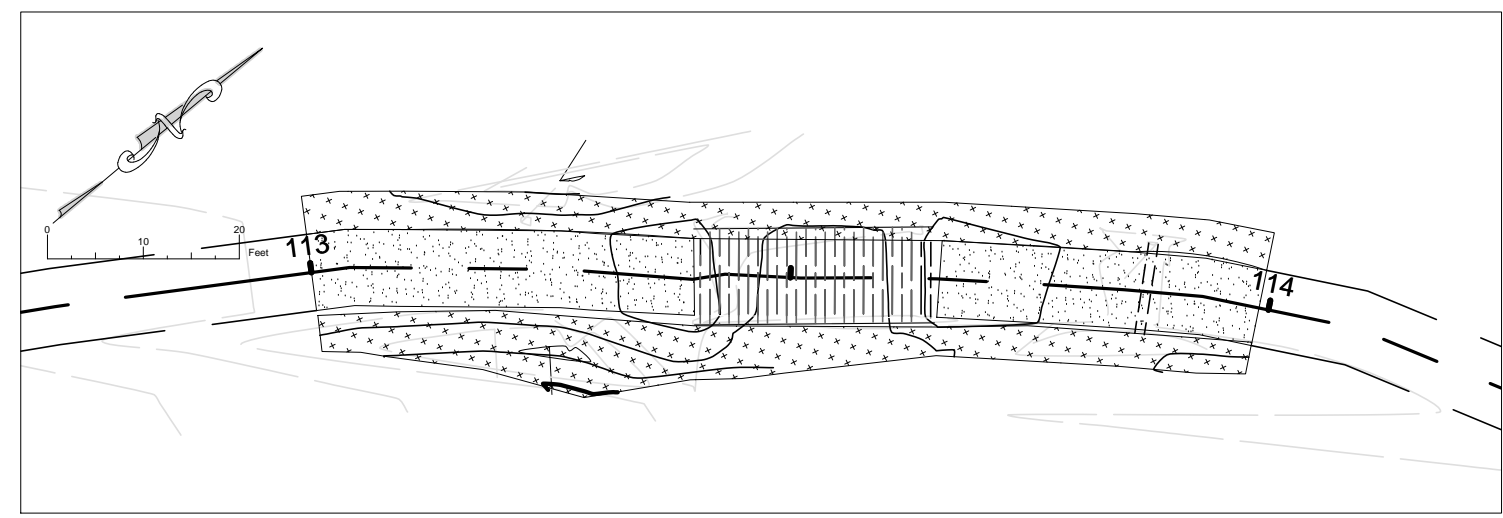
**- INDIAN POINT CAMPGROUND -**



**1**  
13 STATION 77+77 SEEDING  
1:20 SCALE



**2**  
13 PULASKI ST. ACCESS SEEDING AND RIP RAP  
1:40 SCALE



**3**  
13 BOARDWALK SEEDING  
1:20 SCALE

**NOTES:**

1. USE STATE MIX # 36-311 WOODLAND EDGE NORTHEAST WITH COVER CROP # 21-11 OR # 21-112 DEPENDING ON SEEDING DATE. TOTAL SEEDING RATE: 33.5 LBS/ACRE.
2. USE EROSION CONTROL BLANKETS TO STABILIZE ANY SLOPES DISTURBED BY CONSTRUCTION.
3. USE BIOLOG AT CULVERT REPLACEMENT LOCATIONS.

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 Drawing Name: P:\Hennepin\Office\Projects\TKDA\15850.000-WWTF\_renewal\munic\CD\Plan\EROSION\_CONTROL.dwg  
 Xrefs: TKDA Logo Hennepin.dwg; P:\PROPOSED\_Site.dwg

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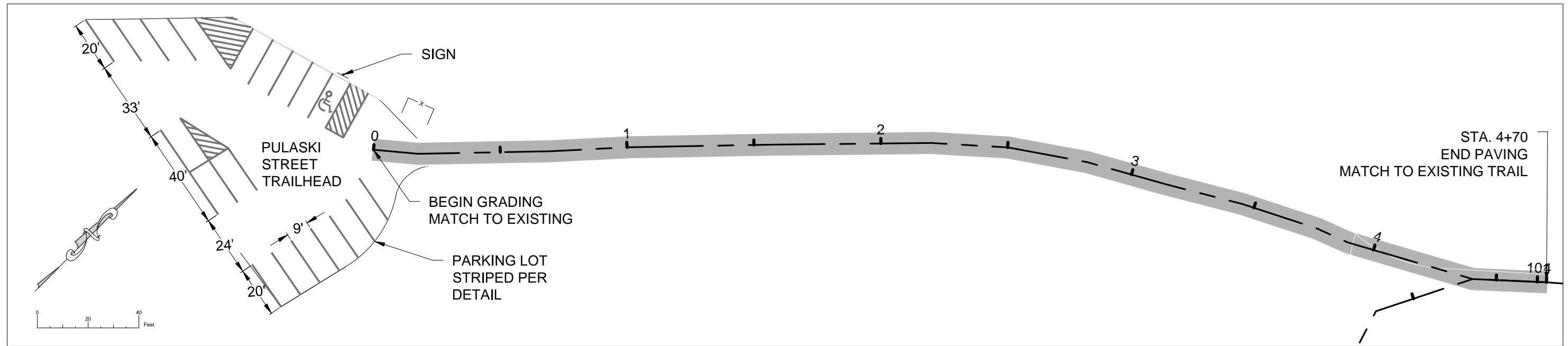
DESIGNED: WD      DRAWN: WD  
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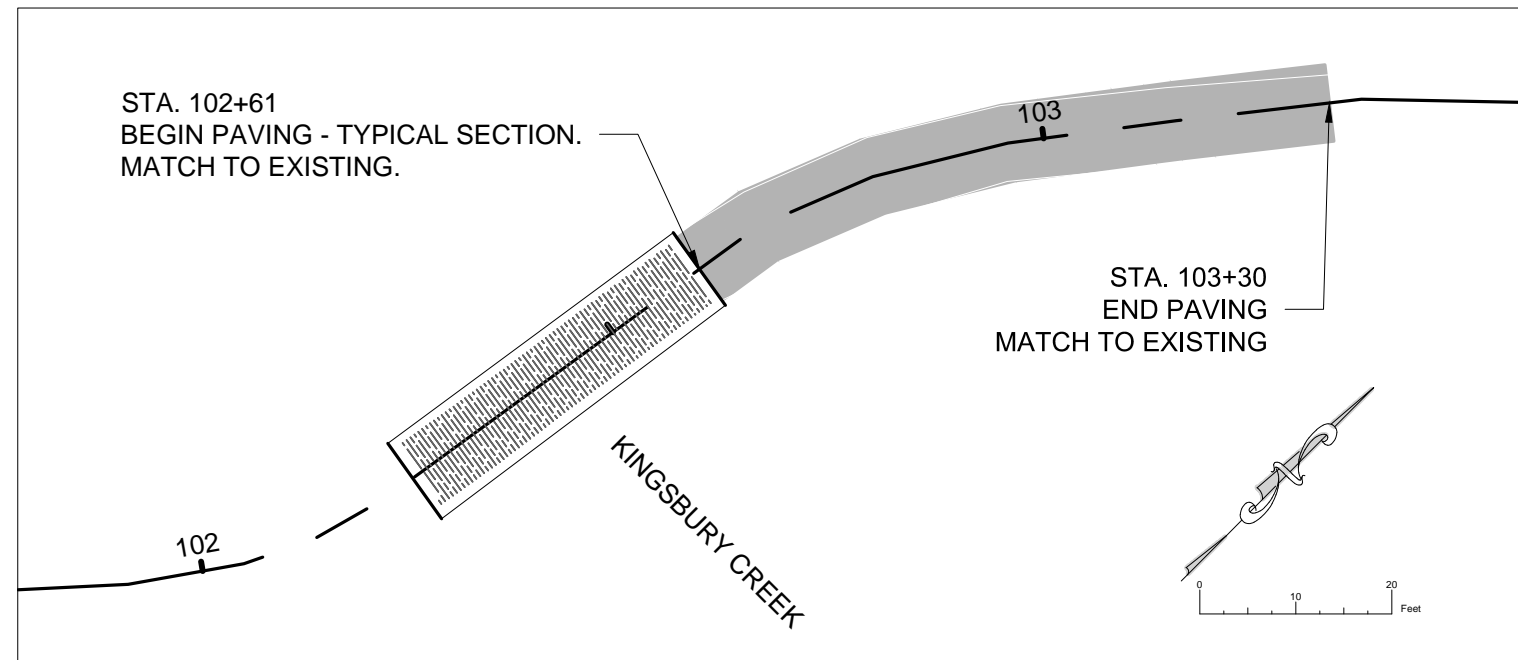
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**EROSION CONTROL**

PROJECT NO.  
**15850.000**  
 RECORD NO.      SHEET NO.  
**13**



1  
14 STATION 77+77 PAVING  
1:40 SCALE

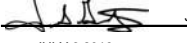



2  
14 PAVING OF KINGSBURY CREEK BRIDGE APPROACH  
1:20 SCALE

Plot Date: 07/12/2016  
 Drawing Name: P:\Hermanowicz\Office\Projects\TKDA\15850.000-WWFT\_renewal\municipal\EROSION\_CONTROL.dwg  
 Author: TKDA Logo Hermanowicz, SKI PROPOSED\_Site design

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 RENEWAL PROJECT**  
 DULUTH MINNESOTA

CLIENT NO. \_\_\_\_\_ MSA NO. \_\_\_\_\_

**PAVING AND PAINTING  
 DETAILS**

PROJECT NO. 15850.000	
RECORD NO.	SHEET NO. 14