

MEETING DATE: August 25, 2016

TITLE: Approval of Design for the Jennings Bay Wetland Restoration/ Floodplain Mitigation Project and Authorization to Solicit Bids

RESOLUTION NUMBER: 16-069

PREPARED BY: Tiffany Schaufler

E-MAIL: tschaufler@minnehahacreek.org

TELEPHONE: 952-641-4513

REVIEWED BY: Administrator Counsel Program Director:
 Board Committee Engineer Other

WORKSHOP ACTION:

<input type="checkbox"/> Advance to Board mtg. Consent Agenda.	<input type="checkbox"/> Advance to Board meeting for discussion prior to action.
<input type="checkbox"/> Refer to a future workshop (date):_____	<input type="checkbox"/> Refer to taskforce or committee (date):_____
<input type="checkbox"/> Return to staff for additional work.	<input type="checkbox"/> No further action requested.
<input checked="" type="checkbox"/> Other (specify): Preliminary design plans reviewed at July 28, 2016 Board Meeting. Seeking final action at August 25, 2016 Board Meeting.	

PURPOSE or ACTION REQUESTED:

Approval of design and authorization to solicit bids for the Jennings Bay Wetland Restoration/Floodplain Mitigation Project.

PROJECT/PROGRAM LOCATION:

City of Minnetrista land east of the Orchard Cove development (east of County Road 110 N and Orchard Cove)

PROJECT TIMELINE:

- June 2016: Award design services
- July 2016: Review of preliminary design
- August 2016: Review final design
- September 2016: Construction bid award
- October-November 2016 Construction

PROJECT/PROGRAM COST:

Fund name and number: Highway 101 Causeway Reconstruction, 3149
Current budget: \$1,604,308
Expenditures to date: \$99,240
Requested amount of funding: \$0

PAST BOARD ACTIONS:

- October 24, 2013 – Resolution to express support for working with Hennepin County on a plan for vegetated reinforced soil slopes in the Grays Bay causeway, and direct the staff to prepare a plan in consultation with the County, along with a project budget and cost share resolution.
- December 12, 2013 – Resolution to direct staff to:
 1. Communicate its commitment to reviewing the Bushaway Road Project for compliance with all MCWD rules, recommending enhancements to the Project as submitted by Hennepin County beyond current regulatory requirements for which the MCWD would take financial responsibility;
 2. These enhancements would include the design, construction and maintenance of the Wayzata Bay Restoration Shoreline Project, to be installed after the County has completed seawall construction and with a County funding contribution equal to the cost of the riprap design presented on October 24, 2013;
 3. The MCWD enhancements also would include improvements to stormwater management facilities, and the MCWD will be responsible for enhancements to the Project beyond those presented by the County on October 24, 2013 that exceed MCWD requirements for the entire project within the City of Wayzata.
- January 23, 2014
 - Approval of MCWD Permit 13-460 for Hennepin County/MCWD CSAH 101 improvements
 - Resolution 14-008: Authorization to executed a Cooperative Agreement with Hennepin County for CSAH 101
- October 23, 2014 – Resolution 14-088: Authorization to execute a Cooperative Agreement with the City of Minnetrista to effect a transfer of the fee title interest in 3.26 acres of land to MCWD, for purposes of floodplain mitigation to fulfill the District’s regulatory obligation under permit 13-460 Bushaway Road.
- February 26, 2015 – Public Hearing for Highway 101 Causeway Reconstruction Project
- March 26, 2015 – Ordering of Highway 101 Causeway Reconstruction Project
- April 28, 2016 – Resolution 16-043: Authorization to Execute Contracts for Design and Construction Oversight for the Highway 101 Causeway Shoreline Reconstruction Project
- June 9, 2016 – Resolution 16-057: Authorization to Execute a Contract for Design and Construction Oversight for the Jennings Bay Wetland Restoration Project
- June 9, 2016 – Resolution 16-058: Authorization to enter into Contracts for the Gray’s Bay Shoreline Restoration
- July 14, 2016 – Board review preliminary design plans (no action)
- August 11, 2016 – Resolution 16-064: Approval of Design for the Highway 101 Causeway Shoreline Reconstruction Project and Authorization to Solicit Bids

SUMMARY:

Following review of Hennepin County's proposed improvement to CSAH 101, at the October 24, 2013 Board Meeting, the Board of Managers resolved to express support for working with Hennepin County to develop a vegetated solution to the Gray's/Wayzata Bay Causeway shoreline, including a project budget and plan to finance. The District and the County entered into a cooperative agreement that allows the District to install and maintain vegetated reinforced soil slopes (VRSS) and related bioengineering and vegetation features along the causeway facing both Wayzata and Gray's Bays, with a \$30,000 reimbursement from Hennepin County. Pursuant to the terms of the agreement, the District may enter the causeway once the County's CSAH 101 roadway reconstruction is completed in order to perform its shoreline work. This planned work to reconstruct the Lake Minnetonka shoreline with VRSS will fill some of the 100 year floodplain. Consequently, as a condition of District permit 13-460, MCWD obligated itself to provide "compensatory storage for floodplain fill along the causeway due to vegetative slope construction."

In March 2015, the Board ordered the Highway 101 Causeway Reconstruction Project which includes both the causeway shoreline restoration work ("causeway element") and the independent but associated flood storage replacement work ("flood storage element") to mitigate the floodplain fill associated with the causeway shoreline element.

District staff, in cooperation with the City of Minnetrista, identified the Sun Valley Tax Forfeit parcel located near Jennings Bay to be a suitable site to provide the flood storage element for the project. In October 2014, the Board of Managers authorized execution of a cooperative agreement with the City of Minnetrista. The District's cooperative agreement with the City of Minnetrista provided for the City to transfer the fee interest in the project parcel to the District. This, however, requires legislative action because the parcel is former tax-forfeit land subject to a reverter interest in the State of Minnesota. This legislative action has not been secured, however the agreement further provides that absent such a transfer, the District may enter the parcel to construct the flood storage element and maintain it indefinitely. In exchange for the land rights, the District explored including additional flood volume storage into the design to meet the City's requirement for the Enchanted Lane improvement and has incorporated such storage into the design, with an allocation of costs as stated in the agreement.

In June 2016, the Board of Managers authorized a design and construction oversight service contract with RESPEC for the flood storage element of the project, known as the Jennings Bay Wetland Restoration/ Floodplain Mitigation Project. The Jennings Bay Wetland Restoration/ Floodplain Mitigation Project will create floodplain storage to mitigate the Causeway shoreline element and enhance vegetation of the existing floodplain forest through invasive species removal and planting enhancements. At the July 28, 2016 Board Meeting, the Board reviewed the preliminary design plans for the flood storage element. During July 2016, the City of Minnetrista as well as local residents reviewed the preliminary design and provided input which has been incorporated into the final design.

ATTACHMENT:

Final Design Plans

RESOLUTION

RESOLUTION NUMBER: 16-069

TITLE: Approval of Design for the Jennings Bay Wetland Restoration/ Floodplain Mitigation Project and Authorization to Solicit Bids

WHEREAS, the Minnehaha Creek Watershed District (MCWD) has adopted a watershed management plan (WMP) in accordance with Minnesota Statutes §103B.231; and

WHEREAS, the WMP identifies the Highway 101 Causeway Reconstruction Project ("Project") as a capital improvement project for the purpose of water quality and ecological benefits through the promotion of bioengineering techniques within the Lake Minnetonka subwatershed, which includes both the causeway shoreline restoration work ("causeway element") and the independent but associated flood storage replacement work ("flood storage element"); and

WHEREAS, on March 26, 2015, the MCWD Board of Managers ordered the Highway 101 Causeway Reconstruction Project; and

WHEREAS, on June 9, 2016, the MCWD Board of Managers authorized the District Administrator to execute a contract with RESPEC for an amount not to exceed \$31,625 for design and construction oversight services for the flood storage element of the Project; and

WHEREAS, on July 28, 2016, the MCWD Board of Managers reviewed the preliminary design for the flood storage element of the Project; and

WHEREAS, City of Minnetrista staff reviewed the preliminary design plans for the floodplain storage element of the Project in July 2016; and

WHEREAS, a public informational meeting was held in Minnetrista on August 8, 2016 to present project plans and schedule; and

WHEREAS, on August 15, 2016, the Minnetrista City Council reviewed the preliminary design for the flood storage element of the Project.

WHEREAS, input on the preliminary design received from the City of Minnetrista and local residents has been incorporated into the final design;

NOW, THEREFORE, BE IT RESOLVED, that the Minnehaha Creek Watershed District Board of Managers hereby approves the final design for the flood storage element of the Project; and

BE IT FURTHER RESOLVED that the MCWD Board of Managers authorizes staff to solicit bids for construction.

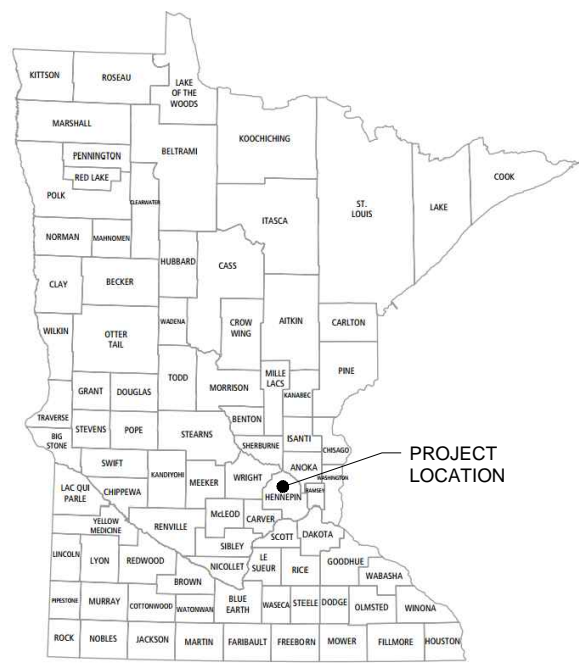
Resolution Number 16-069 was moved by Manager _____, seconded by Manager _____.
Motion to adopt the resolution ___ ayes, ___ nays, ___ abstentions. Date: _____.

Secretary Date: _____

DRAFT for discussion purposes only and subject to Board approval and the availability of funds.
Resolutions are not final until approved by the Board and signed by the Board Secretary.

MINNEHAHA CREEK WATERSHED DISTRICT JENNINGS BAY WETLAND RESTORATION / FLOODPLAIN MITIGATION PROJECT

100% CONSTRUCTION PLANS
AUGUST 2016



LOCATION MAP



VICINITY MAP
SCALE: 1" = 250'

INDEX OF SHEETS	
SHEET NO.	DESCRIPTION
1	COVER SHEET
2	NOTES & QUANTITIES
3	OVERALL SITE PLAN
4	HORIZONTAL CONTROL & GRADING PLAN
5	PROFILE & SECTIONS
6	DETAILS
7	STORM WATER POLLUTION PREVENTION PLAN
8	EROSION CONTROL PLAN
9	EROSION DETAILS (1 OF 2)
10	EROSION DETAILS (2 OF 2)
11	PLANTING PLAN
12	PLANTING NOTES & SEED MIXES

NAME: Z:\MINNESOTA\JENNINGS BAY\CAD\SHEETS\020305-COVER.DWG
PLOT DATE: August 19, 2016 10:36 AM, BY: AMT, C. TEIGEN

1935 W. COUNTY ROAD B2
SUITE 230
ROSEVILLE, MN 55113
PHONE (651) 935-2275

RESPEC

DESIGNED _____ LDR _____
DRAWN _____ ACT _____
CHECKED _____ LDR _____
DATE 8/11/16

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JENNINGS BAY
WETLAND
RESTORATION /
FLOODPLAIN
MITIGATION PROJECT

COVER SHEET

SHEET NUMBER:
1

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.
LEE D. ROSEN, P.E.
LICENSE # 51071

DATE 8/19/2016

GENERAL NOTES:

- ALL MATERIALS, WORKMANSHIP, AND CONSTRUCTION OF PUBLIC IMPROVEMENTS SHALL MEET OR EXCEED THE STANDARDS AND SPECIFICATIONS SET FORTH AND APPLICABLE STATE AND FEDERAL REGULATIONS. WHERE THERE IS CONFLICT BETWEEN THESE PLANS AND THE SPECIFICATIONS, OR ANY APPLICABLE STANDARDS, THE HIGHER QUALITY STANDARD SHALL APPLY. IF A STANDARD OR SPECIFICATION DOES NOT EXIST, REFER TO THE MINNESOTA DEPARTMENT OF TRANSPORTATION (MNDOT). ALL REFERENCES TO ANY PUBLISHED STANDARDS SHALL REFER TO THE LATEST REVISION OF SAID STANDARD, UNLESS SPECIFICALLY STATED OTHERWISE. ALL WORK SHALL BE INSPECTED AND APPROVED BY THE ENGINEER OR THE MINNEHAHA CREEK WATERSHED DISTRICT (MCWD PROJECT MANAGER).
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES, AS SHOWN ON THESE PLANS, IS BASED ON THE PLANS FROM THE CITY OF MINNETRISTA. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL GOPHER STATE ONE CALL (651-565-0002 OR TOLL FREE: 1-800-252-1116) AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY PERTINENT LOCATIONS AND ELEVATIONS, ESPECIALLY AT CONNECTION POINTS AND AT POTENTIAL UTILITY CONFLICTS.
- THE CONTRACTOR SHALL COORDINATE AND COOPERATE WITH THE CITY OF MINNETRISTA AND MCWD, AND ALL UTILITY COMPANIES INVOLVED, WITH REGARD TO RELOCATIONS OR ADJUSTMENTS OF EXISTING UTILITIES DURING CONSTRUCTION, AND TO ASSURE THAT THE WORK IS ACCOMPLISHED IN A TIMELY FASHION AND WITH A MINIMUM DISRUPTION OF SERVICE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PARTIES AFFECTED BY ANY DISRUPTION OF ANY UTILITY SERVICE. ANY UTILITIES DAMAGED BY CONTRACTOR SHALL BE REPAIRED BY CONTRACTOR TO THE SATISFACTION OF THE UTILITY OWNER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR ALL APPLICABLE AGENCIES, NOT ALREADY OBTAINED BY MCWD. THE FOLLOWING PERMITS HAVE OR ARE IN THE PROCESS OF BEING OBTAINED.

AGENCY	PERMIT
CITY OF MINNETRISTA	WETLAND CONSERVATION ACT
MINNEHAHA CREEK WATERSHED DISTRICT	EROSION CONTROL
MINNEHAHA CREEK WATERSHED DISTRICT	FLOODPLAIN ALTERATION
MINNEHAHA CREEK WATERSHED DISTRICT	WETLAND PROTECTION
MINNEHAHA CREEK WATERSHED DISTRICT	WATER BODY CROSSING & STRUCTURES
- THE CONTRACTOR SHALL NOTIFY MCWD AT LEAST 48 HOURS PRIOR TO THE START OF ANY EARTH DISTURBING ACTIVITY, OR CONSTRUCTION ON ANY AND ALL PUBLIC IMPROVEMENTS.
- THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE APPROVED PLANS, ONE (1) COPY OF THE APPROPRIATE STANDARDS AND SPECIFICATIONS, AND A COPY OF ANY PERMITS AND EXTENSION AGREEMENTS NEEDED FOR THE JOB, ON-SITE AT ALL TIMES.
- THE CONTRACTOR IS RESPONSIBLE FOR THE SAFETY OF ALL PERSONNEL, ALL SITE VISITORS, AND THE GENERAL PUBLIC WHO MAY BE AFFECTED BY THE CONSTRUCTION. THIS INCLUDES BUT IS NOT LIMITED TO CHANNEL EXCAVATION, SHORING, TRAFFIC CONTROL, AND SECURITY.
- THE CONTRACTOR SHALL PROVIDE A CONTINUOUS, ACCESSIBLE AND SAFE PEDESTRIAN WALKWAY THAT MEETS ADA AND MN MUTCD STANDARDS IF WORKING IN A SIDEWALK AREA, AND TRAFFIC CONTROL PER MN MUTCD REQUIREMENTS FOR WORK IN THE PUBLIC RIGHT OF WAY.
- IF, DURING THE CONSTRUCTION PROCESS, CONDITIONS ARE ENCOUNTERED WHICH COULD INDICATE A SITUATION THAT IS NOT IDENTIFIED IN THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL CONTACT THE MCWD PROJECT MANAGER IMMEDIATELY.
- ALL CONSTRUCTION TRAFFIC (DAILY OR HAUL ROUTE) SHALL UTILIZE THE ROUTE APPROVED BY THE MCWD AND THE CITY OF MINNETRISTA.
- THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN, IN ACCORDANCE WITH THE MN MUTCD, TO THE MCWD PROJECT MANAGER FOR APPROVAL, PRIOR TO ANY CONSTRUCTION ACTIVITIES WITHIN, OR AFFECTING, THE RIGHT-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING, INSTALLING, INSPECTING, MAINTAINING AND REMOVING ANY AND ALL TRAFFIC CONTROL DEVICES AS MAY BE REQUIRED BY THE CONSTRUCTION ACTIVITIES.
- THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR AND MATERIALS NECESSARY FOR THE COMPLETION OF THE INTENDED IMPROVEMENTS, SHOWN ON THESE DRAWINGS, OR DESIGNATED TO BE PROVIDED, INSTALLED, OR CONSTRUCTED, UNLESS SPECIFICALLY NOTED OTHERWISE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECORDING AS-BUILT INFORMATION ON A SET OF RECORD DRAWINGS KEPT ON THE CONSTRUCTION SITE, AND AVAILABLE TO THE MCWD PROJECT MANAGER AT ALL TIMES.
- DIMENSIONS FOR LAYOUT AND CONSTRUCTION ARE NOT TO BE SCALED FROM ANY DRAWING. IF PERTINENT DIMENSIONS ARE NOT SHOWN, CONTACT THE MCWD PROJECT MANAGER FOR CLARIFICATION, AND ANNOTATE THE DIMENSION ON THE AS-BUILT RECORD DRAWINGS.
- THE HOURS OF CONSTRUCTION SHALL BE LIMITED TO THOSE DEFINED IN THE CITY OF MINNETRISTA'S ORDINANCES. ANY HOURS OUTSIDE OF THESE MUST BE APPROVED BY THE CITY OF MINNETRISTA AND THE MCWD PROJECT MANAGER.

- ALL REMOVED ITEMS SHALL BECOME THE CONTRACTOR'S PROPERTY TO BE DISPOSED OF IN AN APPROVED MANNER IN ACCORDANCE WITH REGULATION BY THE OWNER AT NO ADDITIONAL EXPENSE TO THE OWNERS, UNLESS SPECIFIED WITHIN THE PLANS.
- ALL EXISTING AND PROPOSED CONTOURS ARE LABELED IN THE NGVD29 DATUM. ALL SLOPES ARE SHOWN AS DIAGRAMMATIC AND SHALL BE ROUNDED AT THE TOP AND BOTTOM, WHICH PROVIDE POSITIVE DRAINAGE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEANUP ON A DAILY BASIS OF ANY TRASH OR MUD ON THE SITE OR ADJACENT STREETS AS A RESULT OF CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACCEPTANCE AND CONTROL OF ALL SURFACE AND SUBSURFACE FLOWS. THE CONTRACTOR SHALL FURTHER BE RESPONSIBLE FOR DAMAGE TO STRUCTURES, LOSS OF TOPSOIL AND LOSS OF SEED CAUSED BY FLOWS UNTIL THE PROJECT IS ACCEPTED BY THE OWNER. IN ADDITION, THE CONTRACTOR IS RESPONSIBLE FOR DEWATERING AS NECESSARY TO PERFORM WORK IN DRY CONDITIONS. DEWATERING METHODS SHALL BE SHOWN ON A WATER CONTROL PLAN TO BE SUBMITTED BY THE CONTRACTOR TO THE MCWD PROJECT MANAGER FOR REVIEW PRIOR TO CONSTRUCTION. THE DEWATERING PLAN MUST PREVENT NUISANCE CONDITIONS, EROSION, OR INUNDATION OF WETLANDS. IF USING FILTERS WITH BACKWASH WATER, EITHER HAUL THE BACKWASH WATER AWAY FOR DISPOSAL, RETURN THE BACKWASH WATER TO THE BEGINNING OF THE TREATMENT PROCESS, OR INCORPORATE THE BACKWASH WATER INTO THE SITE IN A MANNER THAT DOES NOT ERODE INTO RUNOFF.
- THE FOLLOWING ITEMS ARE INCIDENTAL TO THE WATER CONTROL & DEWATERING PAY ITEM AND SHALL NOT BE MEASURED OR PAID FOR SEPARATELY: ALL LABOR, MATERIALS, AND EQUIPMENT TIME NECESSARY TO INSTALL, MAINTAIN AND REMOVE ANY WATER CONTROL AND DEWATERING WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAVING AND PROTECTING ALL EXISTING TREES AND VEGETATION WHERE REMOVAL FOR CONSTRUCTION IS NOT MANDATORY. TREES TO BE REMOVED ARE NOTED IN THE PLANS. ALL TREES TO BE REMOVED OR RELOCATED WILL BE MARKED BY THE CONTRACTOR AND APPROVED BY THE MCWD PROJECT MANAGER PRIOR TO REMOVAL.
- MATERIALS STORED ON THE SITE WHICH MIGHT CONTRIBUTE POLLUTANTS TO RUNOFF, WILL BE LOCATED IN AN ENCLOSED, COVERED, AND LOCKABLE CONTAINER. THESE MATERIALS ARE EXPECTED TO CONSIST MAINLY OF FERTILIZERS, FUELS, AND MACHINERY LUBRICANTS.
- NON-ERODIBLE WASTE MATERIALS ARE REQUIRED TO BE ENCLOSED IN CONTAINERS TO PREVENT WIND OR WATER DISPERSAL OF THE ITEMS. NON-ERODIBLE MATERIALS INCLUDE PACKAGING MATERIALS, SHIPPING MATERIALS, AND CONSTRUCTION DEBRIS.
- THE CONTRACTOR SHALL RESTORE ACCESS AREAS, TO THEIR ORIGINAL GRADES AND PRE-DISTURBANCE STATE OF VEGETATION. THE COST TO RESTORE THESE AREAS SHALL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.
- THE CONTRACTOR SHALL NOT DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE MCWD PROJECT MANAGER AND THE DESIGN ENGINEER. THE CONTRACTOR SHALL CONTACT THE MCWD PROJECT MANAGER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
- CONSTRUCTION SHALL REMAIN WITHIN THE LIMITS OF CONSTRUCTION BOUNDARY DEFINED IN THE PLANS UNLESS OTHERWISE NOTED.
- ALL WORK SHALL CONFORM TO ALL LOCAL, STATE, AND FEDERAL APPLICABLE LAWS AND REGULATIONS.
- ALL ESTIMATES OF QUANTITIES SHALL BE VERIFIED BY THE CONTRACTOR / SUBCONTRACTOR, WHO SHALL BE RESPONSIBLE FOR DETERMINING ALL QUANTITIES AND PROVIDING THE WORK AND MATERIALS AS SHOWN ON THESE PLANS.
- ALL CONSTRUCTION EQUIPMENT, VEHICLE TRAFFIC AND STORAGE AREAS MUST BE LOCATED OUTSIDE OF ANY TREE PROTECTION AREA.
- IF WOUNDING OF SAVED TREES OCCURS, A NON-TOXIC WOUND DRESSING MUST BE APPLIED IMMEDIATELY. (EXCAVATORS MUST HAVE A NON-TOXIC TREE WOUND DRESSING WITH THEM ON CONSTRUCTION SITES.)
- SLOPES AT 4:1 OR STEEPER, AND/OR WHERE INDICATED ON THE PLANS SHALL BE SEEDED AND HAVE A EROSION CONTROL BLANKET INSTALLED.
- THE ORDINARY HIGH WATER LEVEL (OHW) IS AN ELEVATION DELINEATING THE HIGHEST WATER LEVEL THAT HAS BEEN MAINTAINED FOR A SUFFICIENT PERIOD OF TIME TO LEAVE EVIDENCE UPON THE LANDSCAPE, COMMONLY THE POINT WHERE THE NATURAL VEGETATION CHANGES FROM PREDOMINANTLY AQUATIC TO PREDOMINATELY TERRESTRIAL.
- ADDITIONAL GRADING AND EROSION CONTROL NOTES & REQUIREMENTS ARE INCLUDED IN THE SWPPP SHEET 7.
- PLANTING PLAN NOTES AND SEED MIXES ARE INCLUDED ON SHEET 12.
- CLEARING AND GRUBBING NOTES ARE INCLUDED ON SHEET 4.

QUANTITIES:

Contract Item Number	Contract Item	Quantity	Unit
1	Mobilization & Demobilization	1	LS
2	Water Control & Dewatering	1	LS
3	Traffic Control	1	LS
4	Construction Surveying	1	LS
5	Clearing & Grubbing	1	LS
6	Remove CMP Pipe	33.1	LF
7	Earthwork - Cut, Haul Offsite	2320	CY
8	Salvage and Respread Topsoil	605	CY
9	18" RC Pipe Culvert DES 3006 CL III	49.9	LF
10	Temporary Rock Construction Entrance	1	EA
11	Wetland Mats	74	LF
12	Silt Fence	176	LF
13	Sediment Control Log (Coir)	100	LF
14	Filter Berm for Culvert Protection	20	LF
15	Silt Curtain	30	LF
16	Seeding (Seed Mix 34-261)	0.53	AC
17	Seeding (Beckmania Syzigachne)	0.18	AC
18	Mulching, Type 3	2.0	TON
19	Erosion Control Blanket (Category 4)	1517	SY
20	Plantings - Shrubs (No. 2 Pots)	175	EA
21	Plantings - Trees (No. 5 Pots)	175	EA
22	Plantings - Live Stakes	770	EA
23	Vegetation Enhancement	1	LS
24	Extended Vegetation Maintenance - Year 1	1	LS
25	Extended Vegetation Maintenance - Year 2	1	LS
26	Extended Vegetation Maintenance - Year 3	1	LS





























EARTHWORK SUMMARY TABLE:

CUT = 2320 CY
 FILL = 0 CY
 NET = 2320 CY
 NEW ADDITIONAL FLOODPLAIN VOLUME = 1360 CY

BENCHMARK:

HORIZONTAL ORIENTATION IS BASED ON HENNEPIN COUNTY COORDINATES. VERTICAL IS BASED ON MNDOT VERTICAL CONTROL POINT 2713 V NGVD29 ELEVATION 968.91.

LEGEND

-  BM BENCHMARK
-  FLOW ARROW
-  XXXX EXISTING MAJOR CONTOURS
-  EXISTING MINOR CONTOURS
-  XXXX PROPOSED MAJOR CONTOURS
-  PROPOSED MINOR CONTOURS
-  ALIGNMENT CENTERLINE
-  PARCEL
-  EX EASEMENTS
-  EX WETLAND BOUNDARY
-  WETLAND BUFFER
-  SUBWATERSHED
-  EX VEGETATION
-  EX STORM
-  EX SANITARY SEWER
-  AMERICAN ELM
-  AMERICAN BASSWOOD
-  BOXELDER
-  EASTERN COTTONWOOD
-  GREEN ASH
-  HACKBERRY
-  RED OAK
-  SILVER MAPLE
-  SLIPPERY ELM
-  SUGAR MAPLE
-  WILLOW
-  TREE TO BE REMOVED AS PART OF CLEARING & GRUBBING
-  AREAS OF BUCKTHORN REMOVAL

ABBREVIATIONS

- AC ACRES
- ADA AMERICANS WITH DISABILITIES ACT
- ASTM AMERICAN SOCIETY FOR TESTING AND MATERIALS
- BM BENCHMARK
- CFS CUBIC FEET PER SECOND
- CIR CIRCLE
- CL CENTERLINE
- CMP CORRUGATED METAL PIPE
- CP CONTROL POINT
- CY CUBIC YARDS
- DNR DEPARTMENT OF NATURAL RESOURCES
- DR DRIVE
- EA EACH
- EL/ELEV ELEVATION
- EX EXISTING
- FES FLARED END SECTION
- FT FEET
- GIS GEOGRAPHIC INFORMATION SYSTEM
- HGL HYDRAULIC GRADE LINE
- IN INCH
- INV INVERT
- L LENGTH
- LF LINEAL FEET
- LN LANE
- LS LUMP SUM
- LT LEFT
- MAX MAXIMUM
- MCWD MINNEHAHA CREEK WATERSHED DISTRICT
- MIN MINIMUM
- MNDOT MINNESOTA DEPARTMENT OF TRANSPORTATION
- MUTCD MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
- NPDES NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
- NTS NOT TO SCALE
- OD OUTSIDE DIAMETER
- OHW ORDINARY HIGH WATER LEVEL
- PR PROPOSED
- PVC POLYVINYL CHLORIDE PIPE
- Q100 100 YEAR PEAK DISCHARGE
- RCP REINFORCED CONCRETE PIPE
- ROW RIGHT-OF-WAY
- RT RIGHT
- STA STATION
- SWPPP STORM WATER POLLUTION PREVENTION PLAN
- SY SQUARE YARDS
- TYP TYPICAL
- W WIDTH
- W/ WITH
- WSEL WATER SURFACE ELEVATION
- YR YEAR

NAME: Z:\MINNESOTA\02085 JENNINGS BAY\CADD\SHEETS\02085-COVER.DWG
 PLOT DATE: August 19, 2016 10:36 AM, BY: AMT C, TEGEN

1935 W. COUNTY ROAD B2
 SUITE 230
 ROSEVILLE, MN 55113
 PHONE (651) 505-2275


RESPEC

DESIGNED LDR
 DRAWN ACT
 CHECKED LDR
 DATE 8/11/16

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.


8/19/2016 DATE

LEE D. ROSEN, P.E.
 LICENSE # 51071



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MINNEHAHA CREEK
 WATERSHED DISTRICT

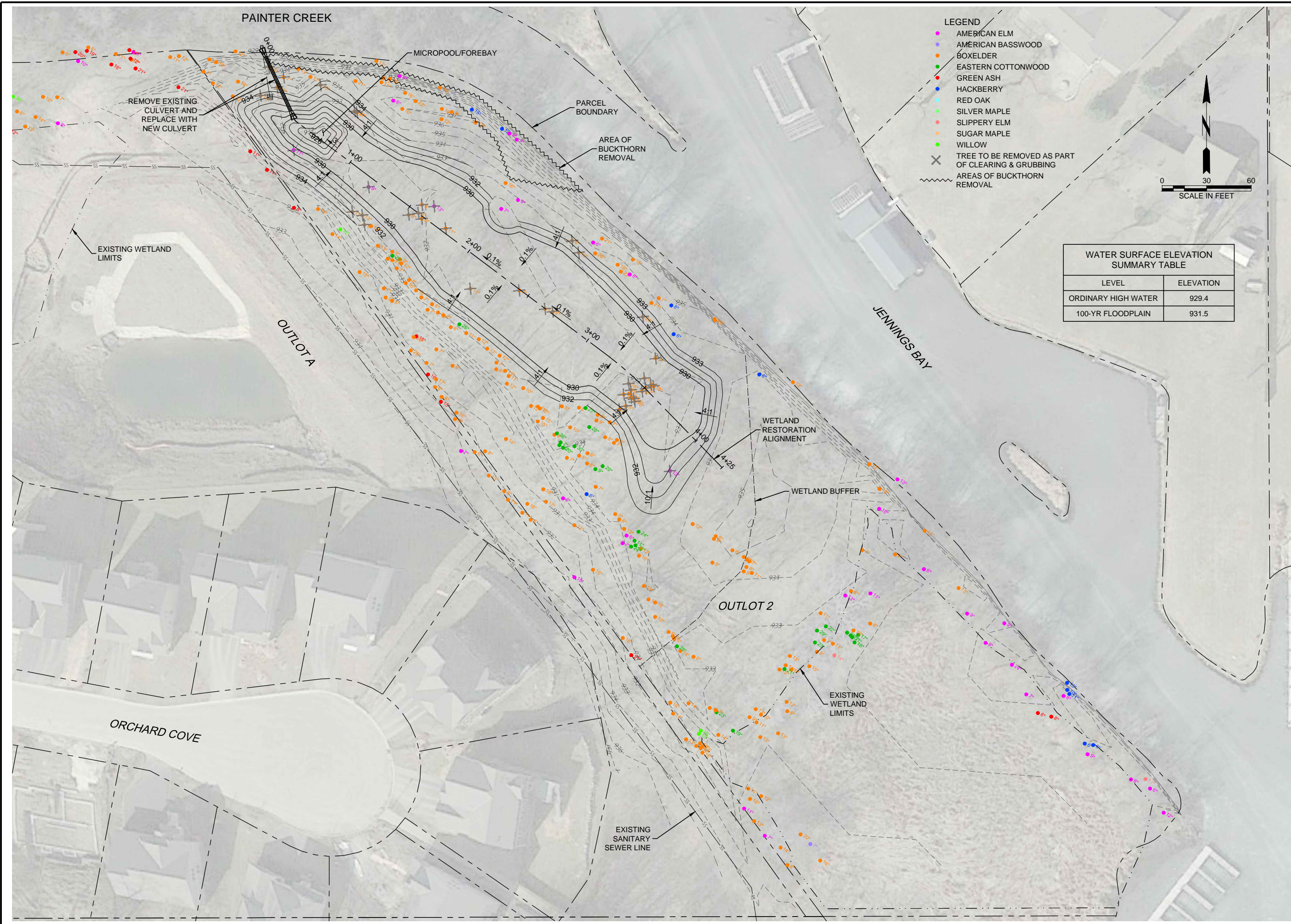
JENNINGS BAY
 WETLAND
 RESTORATION /
 FLOODPLAIN
 MITIGATION PROJECT

NOTES & QUANTITIES

SHEET NUMBER:

2

NAME: Z:\MINNESOTA\2025 JENNINGS BAY\CAD\SHEETS\2025\35-SITE PLAN.DWG
 PLOT DATE: August 19, 2016 10:37 AM, BY: AMT C. TEIGEN



- LEGEND**
- AMERICAN ELM
 - AMERICAN BASSWOOD
 - BOXELDER
 - EASTERN COTTONWOOD
 - GREEN ASH
 - HACKBERRY
 - RED OAK
 - SILVER MAPLE
 - SLIPPERY ELM
 - SUGAR MAPLE
 - WILLOW
 - ✕ TREE TO BE REMOVED AS PART OF CLEARING & GRUBBING
 - AREAS OF BUCKTHORN REMOVAL

WATER SURFACE ELEVATION SUMMARY TABLE

LEVEL	ELEVATION
ORDINARY HIGH WATER	929.4
100-YR FLOODPLAIN	931.5

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 SUITE 230
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RESPEC

DESIGNED	LDR	ACT	LDR
DRAWN	LDR	CHECKED	LDR
DATE	8/11/16	DATE	8/11/16

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.

LEE D. ROSEN, P.E.
 LICENSE # 51071

811

Know what's below.
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www.minnehahacreek.org

MINNEHAHA CREEK
 WATERSHED DISTRICT

JENNINGS BAY
 WETLAND
 RESTORATION /
 FLOODPLAIN
 MITIGATION PROJECT

OVERALL SITE PLAN

SHEET NUMBER:

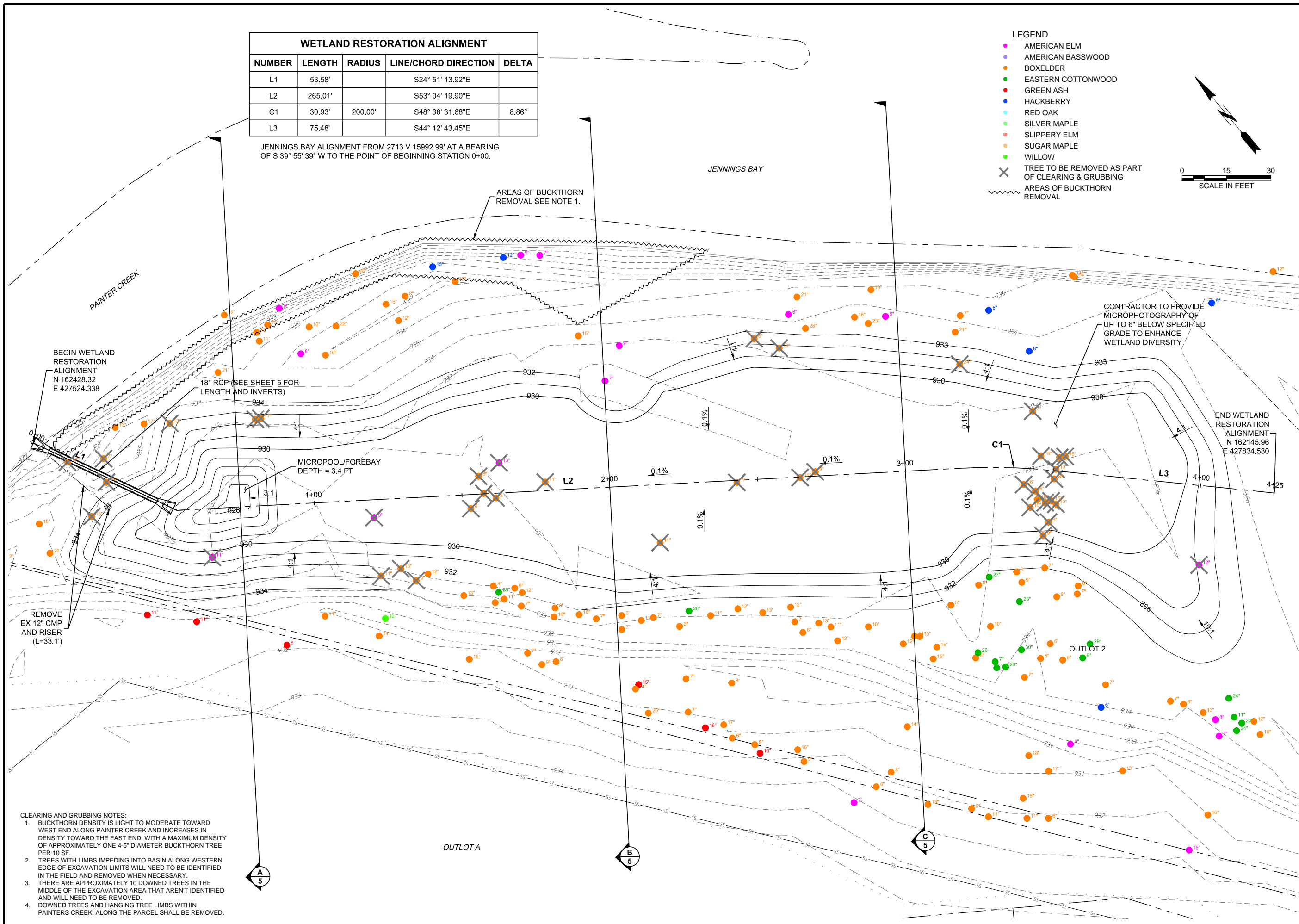
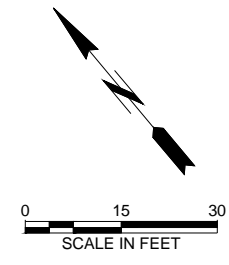
3

WETLAND RESTORATION ALIGNMENT				
NUMBER	LENGTH	RADIUS	LINE/CHORD DIRECTION	DELTA
L1	53.58'		S24° 51' 13.92"E	
L2	265.01'		S53° 04' 19.90"E	
C1	30.93'	200.00'	S48° 38' 31.68"E	8.86°
L3	75.48'		S44° 12' 43.45"E	

JENNINGS BAY ALIGNMENT FROM 2713 V 15992.99' AT A BEARING OF S 39° 55' 39" W TO THE POINT OF BEGINNING STATION 0+00.

LEGEND

- AMERICAN ELM
- AMERICAN BASSWOOD
- BOXELDER
- EASTERN COTTONWOOD
- GREEN ASH
- HACKBERRY
- RED OAK
- SILVER MAPLE
- SLIPPERY ELM
- SUGAR MAPLE
- WILLOW
- ✕ TREE TO BE REMOVED AS PART OF CLEARING & GRUBBING
- ~ AREAS OF BUCKTHORN REMOVAL



BEGIN WETLAND RESTORATION ALIGNMENT
N 162428.32
E 427524.338

18" RCP (SEE SHEET 5 FOR LENGTH AND INVERTS)

MICROPOOL/FOREBAY DEPTH = 3.4 FT

REMOVE EX 12" CMP AND RISER (L=33.1')

AREAS OF BUCKTHORN REMOVAL SEE NOTE 1.

CONTRACTOR TO PROVIDE MICROPHOTOGRAPHY OF UP TO 6" BELOW SPECIFIED GRADE TO ENHANCE WETLAND DIVERSITY

END WETLAND RESTORATION ALIGNMENT
N 162145.96
E 427834.530

- CLEARING AND GRUBBING NOTES:**
- BUCKTHORN DENSITY IS LIGHT TO MODERATE TOWARD WEST END ALONG PAINTER CREEK AND INCREASES IN DENSITY TOWARD THE EAST END, WITH A MAXIMUM DENSITY OF APPROXIMATELY ONE 4-5" DIAMETER BUCKTHORN TREE PER 10 SF.
 - TREES WITH LIMBS IMPEDING INTO BASIN ALONG WESTERN EDGE OF EXCAVATION LIMITS WILL NEED TO BE IDENTIFIED IN THE FIELD AND REMOVED WHEN NECESSARY.
 - THERE ARE APPROXIMATELY 10 DOWNED TREES IN THE MIDDLE OF THE EXCAVATION AREA THAT AREN'T IDENTIFIED AND WILL NEED TO BE REMOVED.
 - DOWNED TREES AND HANGING TREE LIMBS WITHIN PAINTER'S CREEK, ALONG THE PARCEL SHALL BE REMOVED.

1935 W. COUNTY ROAD B2
SUITE 230
ROSEVILLE, MN 55113
PHONE (651) 935-2275

REVISION

DESIGNED	LDR	ACT	LDR
DRAWN	LDR	CHECKED	LDR
DATE	8/11/16	DATE	8/19/2016

Know what's below.
Call before you dig.

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.

LEE D. ROSEN, P.E.
LICENSE # 51071

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MINNEHAHA CREEK
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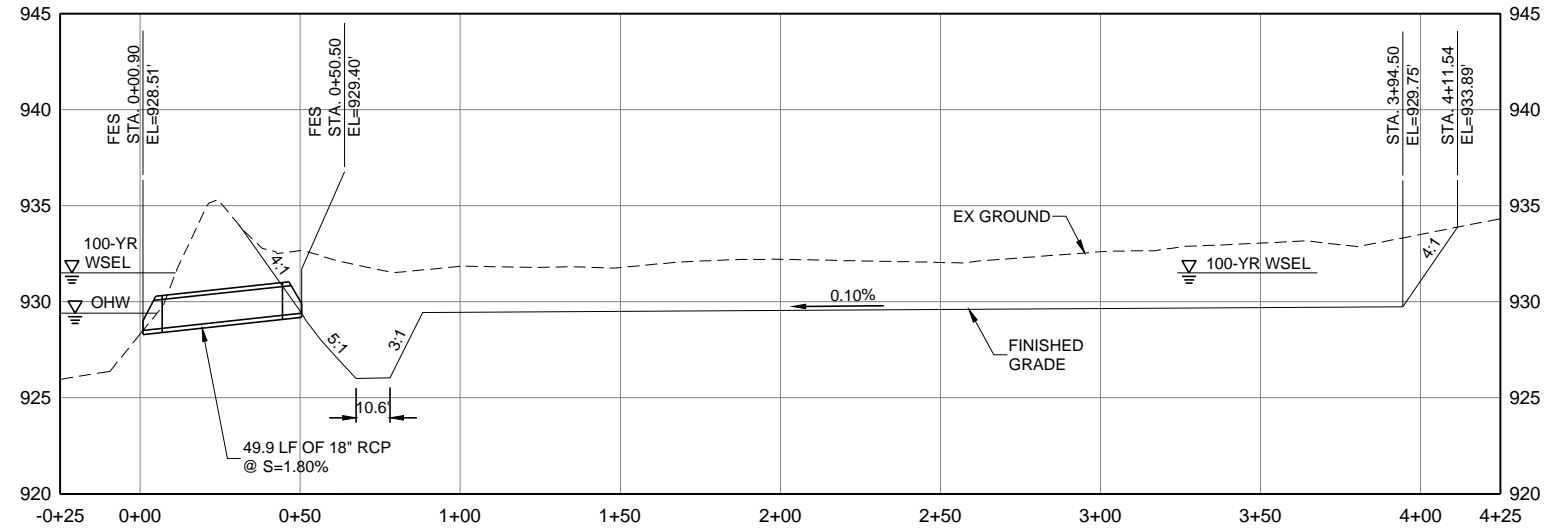
HORIZONTAL CONTROL
& GRADING PLAN

SHEET NUMBER:
4

NAME: Z:\MINNESOTA\JENNINGS BAY\CAD\SHETS\2023\5-CONTROL.DWG
PLOT DATE: August 19, 2016 10:38 AM, BY: AMT, C. TEIGEN

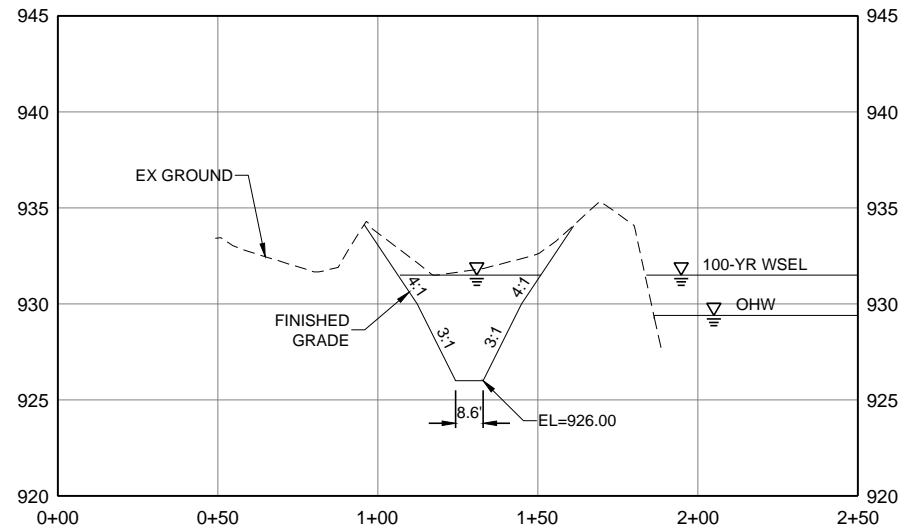
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 PLOT DATE: August 19, 2016 10:38 AM, BY: AMT.C. TEIGEN

WETLAND RESTORATION PROFILE
 HORIZ. SCALE: 1" = 30'
 VERT. SCALE: 1" = 5'

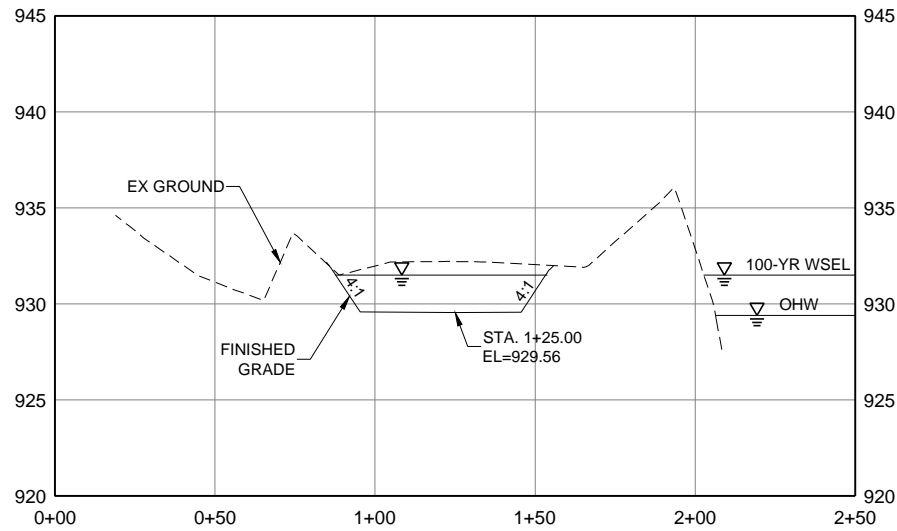


NOTE:
 OHW = 929.40'
 100-YR WSEL = 931.50'

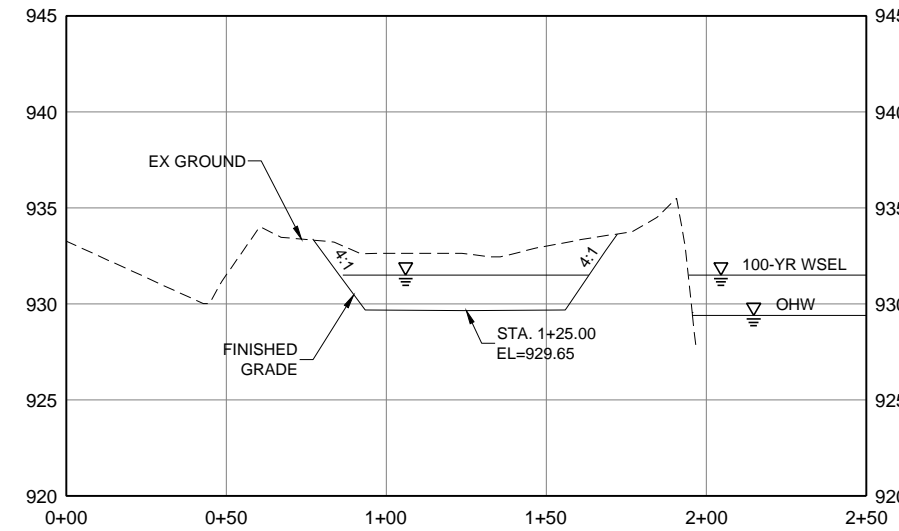
SECTION A PROFILE
 HORIZ. SCALE: 1" = 30'
 VERT. SCALE: 1" = 5'



SECTION B PROFILE
 HORIZ. SCALE: 1" = 30'
 VERT. SCALE: 1" = 5'



SECTION C PROFILE
 HORIZ. SCALE: 1" = 30'
 VERT. SCALE: 1" = 5'



1935 W. COUNTY ROAD B2 SUITE 230 ROSEVILLE, MN 55113 PHONE (651) 935-2275	
RESPEC	DESIGNED: LDR
	DRAWN: ACT
	CHECKED: LDR
	DATE: 8/11/16

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LEE D. ROSEN, P.E.
 LICENSE # 51071
 DATE: 8/19/2016



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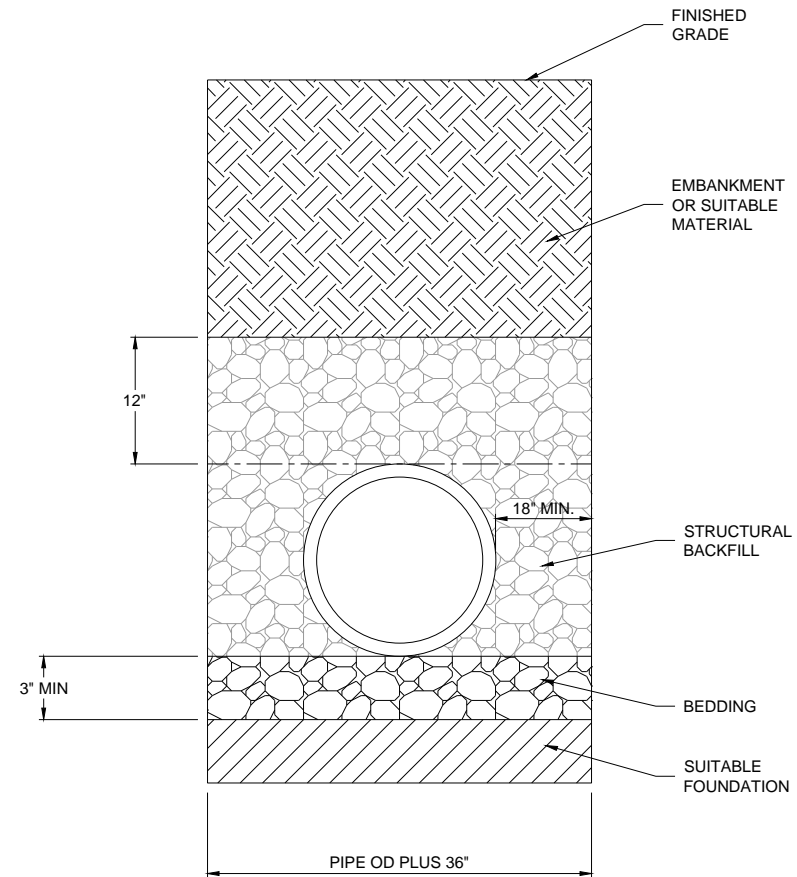
**JENNINGS BAY
 WETLAND
 RESTORATION /
 FLOODPLAIN
 MITIGATION PROJECT**

PROFILE & SECTIONS

SHEET NUMBER:
5

INSTALLATION NOTES

1. BEDDING SHALL BE PREPARED IN ACCORDANCE WITH DETAILS AS SHOWN ON THE PLANS. THE BED SHALL CONSIST OF A LAYER OF LOOSE STRUCTURE BACKFILL NOT LESS THAN 3 INCHES IN THICKNESS. RECESSES SHALL BE MADE TO ACCOMMODATE THE BELL OF BELL-AND-SPIGOT PIPE. ADJUSTMENTS TO LINE AND GRADE SHALL BE MADE BY SCRAPING OR FILLING UNDER THE BODY OF THE CONDUIT. WEDGING OR BLOCKING THE BELL WILL NOT BE PERMITTED. MEASURES SHOULD BE TAKE TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
2. THE CONDUIT LAYING SHALL BEGIN AT THE DOWNSTREAM END OF THE CONDUIT LINE. THE LOWER SEGMENT OF THE CONDUIT SHALL BE IN CONTACT WITH THE PREPARED BEDDING THROUGHOUT ITS FULL LENGTH. BELL OR GROOVE ENDS OF CONCRETE CONDUITS AND OUTSIDE CIRCUMFERENTIAL LAPS OF METAL OR PLASTIC CONDUITS SHALL BE PLACED FACING UPSTREAM.
3. CONDUIT SECTIONS SHALL BE JOINED IN SUCH MANNER THAT THE ENDS ARE FULLY ENTERED AND THE INNER SURFACES ARE REASONABLY FLUSH AND EVEN. CONDUITS SHALL BE JOINED USING RUBBER GASKETS OR JOINT SEALING COMPOUND. RUBBER GASKETED JOINTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M 315 AND SHALL BE FLEXIBLE AND ABLE TO WITHSTAND EXPANSION, CONTRACTION, AND SETTLEMENT. RUBBER GASKETS, OF THE TYPE REQUIRING LUBRICATION, SHALL BE LUBRICATED WITH THE LUBRICANT RECOMMENDED AND SUPPLIED BY THE MANUFACTURER OF THE PIPE. JOINT SEALING COMPOUNDS FOR CONCRETE PIPE SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M198. PRIMER SHALL BE FURNISHED WHEN RECOMMENDED BY THE MANUFACTURER OF THE JOINT SEALING COMPOUND. PRIMER SHALL CONFORM TO AND SHALL BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS TO BOTH SURFACES OF THE CONDUIT SECTIONS BEING JOINED, FOR THE FULL CIRCUMFERENCE. SEALING COMPOUND SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. WHEN A SPECIFIC TYPE OF SEALING COMPOUND IS DESIRED, IT SHALL BE AS SHOWN IN THE CONTRACT.
4. AFTER THE CONDUIT OR SECTION OF CONDUIT IS INSTALLED, IT SHALL BE INSPECTED BEFORE ANY BACKFILL IS PLACED. CONDUIT FOUND TO BE DAMAGED SHALL BE REPLACED, AND CONDUIT FOUND TO BE OUT OF ALIGNMENT OR UNDULY SETTLED SHALL BE TAKEN UP AND RELAID. THE TRENCH SHALL THEN BE BACKFILLED WITH MATERIAL IN ACCORDANCE WITH THE DETAIL..
5. SPECIAL CARE SHALL BE TAKEN WHEN BACKFILLING AROUND CONDUIT TO BRING THE BACKFILL MATERIALS UP ON BOTH SIDES OF THE CONDUIT, EVENLY AND SIMULTANEOUSLY. PROTECTION OF CONDUITS DURING CONSTRUCTION SHALL BE THE CONTRACTOR'S RESPONSIBILITY. DAMAGE TO THE CONDUIT DUE TO CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
6. THE EXCAVATION AND BACKFILL REQUIRED TO INSTALL THE PIPE WILL NOT BE MEASURED AND PAID FOR IN BUT SHALL BE INCLUDED IN THE COST OF THE PIPE.



PIPE IN TRENCH DETAIL
NTS

1935 W. COUNTY ROAD B2 SUITE 230 ROSEVILLE, MN 55113 PHONE (651) 305-2275		REVISION	
DESIGNED	LDR	DRAWN	ACT
CHECKED	LDR	CHECKED	LDR
DATE	8/11/16	DATE	8/11/16

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Lee D. Rosen
LEE D. ROSEN, P.E.
LICENSE # 51071



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MITIGATION PROJECT**

DETAILS

SHEET NUMBER:
6

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

PROJECT DESCRIPTION:

THE JENNINGS BAY WETLAND RESTORATION PROJECT WILL PROVIDE ADDITIONAL FLOODPLAIN STORAGE, AN ENHANCED FLOODPLAIN FOREST, AND BOOST THE FUNCTIONAL RATING OF THE EXISTING WETLAND ON A PROPERTY OWNED BY THE CITY OF MINNETRISTA. THE PROJECT SITE IS LOCATED IN THE CITY OF MINNETRISTA NEAR THE NEWLY CONSTRUCTED ORCHARD COVE DEVELOPMENT AT COUNTY ROAD 110N AND ORCHARD COVE AND IS ADJACENT TO PAINTER CREEK AND LAKE MINNETONKA'S JENNINGS BAY. THE PROPOSED PROJECT WILL CONSIST PRIMARILY OF EARTHWORK AND ESTABLISHING VEGETATION WITH A CULVERT REPLACEMENT.

ROLES & RESPONSIBILITIES:

OWNER: MINNEHAHA CREEK WATERSHED DISTRICT
 OWNER REPRESENTATIVE: TIFFANY SCHAUFLEER, MINNEHAHA CREEK WATERSHED DISTRICT
 PROJECT ENGINEER: LEE ROSEN, P.E., RESPEC CONSULTING AND SERVICES
 SWPPP DESIGNER: LEE ROSEN, P.E., RESPEC CONSULTING AND SERVICES
 PROJECT CONTRACTOR: _____ (TO BE DETERMINED)
 EROSION CONTROL SUPERVISOR: _____ (TO BE DETERMINED)
 CERTIFIED INSTALLER(S): _____ (TO BE DETERMINED)
 CONTRACTOR WILL PROVIDE THE EROSION CONTROL SUPERVISOR (ECS) IN ACCORDANCE WITH THE MNDOT SPECIFICATION 2573.3 A1. PRIOR TO CONSTRUCTION, THE CONTRACTOR MUST PROVIDE DOCUMENTATION THAT SHOWS THE EROSION CONTROL SUPERVISOR HAS MET THE TRAINING REQUIREMENTS OF THE NPDES PERMIT. THE CONTRACTOR MUST ALSO IDENTIFY AND PROVIDE DOCUMENTATION OF AT LEAST ONE CERTIFIED EROSION CONTROL INSTALLER THAT WILL BE ASSIGNED TO THIS PROJECT.
 LONG TERM MAINTENANCE: MINNEHAHA CREEK WATERSHED DISTRICT

PROPOSED SCHEDULE:

CONSTRUCTION START DATE: FALL 2016
 FINAL COMPLETION DATE: WINTER 2016
 LONG TERM MAINTENANCE: A MINIMUM OF 3 YEARS AFTER COMPLETION DATE

PROPOSED SEQUENCING:

1. INSTALLATION OF INITIAL SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPs) AS SHOWN ON THE PLANS.
2. IMPLEMENT INTERIM EROSION CONTROL BMPs AS WORK IS BEING COMPLETE.
3. CLEARING AND GRUBBING.
4. REMOVAL OF THE EXISTING CULVERT.
5. GRADING OPERATIONS (CUT, HAUL OFFSITE).
6. INSTALLATION OF REPLACEMENT CULVERT.
7. FINAL STABILIZATION AND PLANTINGS.
8. REMOVAL OF BMPs.
9. LONG TERM MAINTENANCE.

AREA OF DISTURBANCE & IMPERVIOUS SURFACES:

TOTAL AREA OF CONSTRUCTION SITE: 2.1 ACRES
 TOTAL AREA OF SEEDING: 2.1 ACRES
 PRE-CONSTRUCTION IMPERVIOUS AREA: 0.0
 POST-CONSTRUCTION IMPERVIOUS AREA: 0.0

EXISTING SOIL DATA:

THE SOIL ON THE SITE CONSISTS OF MUSKEGO, BLUE EARTH, AND HOUGHTON SOILS, PONDED WITH 0 TO 1 PERCENT SLOPES, CLASSIFIED AS TYPE B/D SOILS PER THE USDA NRCS WEB SOIL SURVEY. BORINGS FROM THE SITE AS PART OF A WETLAND DELINEATION INDICATE LOAMY SOIL WITH SOME ORGANIC MATTER UP TO A DEPTH OF 4 FT.

EXISTING VEGETATION:

THE EXISTING SITE OUTSIDE OF THE TYPE 3/4 WETLAND CONSISTS OF A FLOODPLAIN FOREST. THE SITE CONTAINS DESIRABLE TREE SPECIES SUCH AS HACKBERRY, AMERICAN ELM, AND SLIPPERY ELM. HOWEVER, THE SITE ALSO CONTAINS SPECIES SUCH AS GARLIC MUSTARD, BUCKTHORN, GROUND IVY AND OTHER LESS DESIRABLE TREE SPECIES SUCH AS BOX ELDER AND GREEN ASH.

RECEIVING WATER:

THE PROJECT INVOLVES PAINTER CREEK AND LAKE MINNETONKA'S JENNING BAY, WHICH IS THE RECEIVING WATER FOR ANY RUNOFF FROM THE SITE. LAKE MINNETONKA-JENNINGS BAY IS A SPECIAL AND IMPAIRED BODY OF WATER AND THEREFORE APPENDIX A REQUIREMENTS WILL APPLY ON THIS PROJECT.

STORMWATER DISCHARGE DESIGN REQUIREMENTS:

THIS PROJECT DOES NOT ADD ANY IMPERVIOUSNESS. DETAILED PLANTING PLANS AND SEED MIXES ARE INCLUDED IN THE PLAN SET TO ENHANCE VEGETATION WITHIN THE PROJECT AREA TO IMPROVE WATER QUALITY AND PROVIDE HABITAT.

CONSTRUCTION ACTIVITY REQUIREMENTS:

PERIMETER CONTROLS AND OTHER INITIAL BMPs SHALL BE INSTALLED AND APPROVED BY THE MCWD PROJECT MANAGER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE PROPOSED LOCATIONS OF THE BMPs FOR THE INITIAL, INTERIM AND FINAL STAGES OF CONSTRUCTION ARE INCLUDED IN THE PLAN SET. ADDITIONAL BMPs MAY BE REQUIRED TO MAINTAIN COMPLIANCE BASED ON THE MEANS AND METHODS OF THE CONTRACTOR AND SHALL BE INSTALLED TO MEET NPDES PERMIT REQUIREMENTS. IN SOME CASES, MULTIPLE APPLICATIONS OF BMPs MAY BE NECESSARY. THE BMPs SHALL BE INSTALLED ACCORDING TO THE EROSION CONTROL DETAILS INCLUDED WITHIN THE PLAN SET OR IF NOT AVAILABLE, THE MNDOT STANDARD PLANS AND SPECIFICATIONS. ALL WORK IS TO BE COMPLETED IN COMPLIANCE WITH THE DNR'S BEST PRACTICES MANUAL FOR MEETING DNR GENERAL PUBLIC WATERS WORK PERMIT GP 2004-0001. THE SWPPP QUANTITIES ARE SPECIFICALLY BROKEN OUT WITHIN THE OVERALL QUANTITIES.

INSPECTION AND RECORD KEEPING NOTES:

1. THE SWPPP MUST BE KEPT AT THE SITE DURING CONSTRUCTION AND INCLUDE ALL CHANGES, INSPECTIONS AND MAINTENANCE RECORD.
2. THE EROSION CONTROL SUPERVISOR SHALL ROUTINELY INSPECT THE ENTIRE CONSTRUCTION SITE AT LEAST ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. FOLLOWING AN INSPECTION THAT OCCURS WITHIN 24 HOURS AFTER A RAINFALL EVENT, THE NEXT INSPECTION MUST BE CONDUCTED WITHIN SEVEN (7) DAYS AFTER THE RAINFALL EVENT. RAINFALL AMOUNTS MUST BE OBTAINED BY A PROPERLY MAINTAINED RAIN GAUGE INSTALLED ON SITE OR BY A WEATHER STATION LOCATED WITHIN ONE MILE OF THE SITE OR BY A WEATHER REPORTING SYSTEM.
3. ALL INSPECTIONS AND MAINTENANCE CONDUCTED DURING CONSTRUCTION MUST BE RECORDED WITHIN 24 HOURS IN WRITING AND SHALL INCLUDE:
 - a. DATE AND TIME OF INSPECTIONS
 - b. NAME OF PERSON(S) CONDUCTING INSPECTIONS
 - c. FINDINGS OF INSPECTIONS, INCLUDING THE SPECIFIC LOCATION WHERE CORRECTIVE ACTIONS ARE NEEDED
 - d. CORRECTIVE ACTIONS TAKEN (INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES)
 - e. DATE AND AMOUNT OF ALL RAINFALL EVENTS GREATER THAN 1/2 INCH (0.5 INCHES) IN 24 HOURS. RAINFALL AMOUNTS MUST BE OBTAINED BY A PROPERLY MAINTAINED RAIN GAUGE INSTALLED ONSITE, OR BY A WEATHER STATION THAT IS WITHIN ONE MILE OR BY A WEATHER REPORTING SYSTEM.
 - f. IF ANY DISCHARGE IS OBSERVED TO BE OCCURRING DURING THE INSPECTION, A RECORD OF ALL POINTS OF THE PROPERTY FROM WHICH THERE IS A DISCHARGE MUST BE MADE, AND THE DISCHARGE SHOULD BE DESCRIBED (I.E., COLOR, ODOR, FLOATING, SETTLED, OR SUSPENDED SOLIDS, FOAM, OIL SHEEN, AND OTHER OBVIOUS INDICATORS OF POLLUTANTS) AND PHOTOGRAPHED.
 - g. ANY AMENDMENTS TO THE SWPPP PROPOSED AS A RESULT OF THE INSPECTION MUST BE DOCUMENTED AS REQUIRED IN PART III.B. WITHIN SEVEN (7) CALENDAR DAYS.
4. ANY AMENDMENTS TO THE SWPPP SHALL BE APPROVED BY THE PROJECT ENGINEER.

BMP INSTALLATION AND MAINTENANCE NOTES:

1. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH CITY, WATERSHED DISTRICT AND N.P.D.E.S. PERMITS.
2. STABILIZATION MUST BE INITIATED IMMEDIATELY TO LIMIT SOIL EROSION WHENEVER ANY CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. STABILIZATION MUST BE COMPLETED NO LATER THAN 14 CALENDAR DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED.
3. TRACKED SEDIMENT MUST BE REMOVED FROM ALL PAVED SURFACES BOTH ON AND OFF SITE WITHIN 24 HOURS OF DISCOVERY. STREET SWEEPING SHALL BE REQUIRED IF VEHICLE TRACKING BMPs ARE NOT ADEQUATE TO PREVENT SEDIMENT FROM BEING TRACKED ONTO THE STREET.
4. ALL PERIMETER CONTROL DEVICES MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES ONE-HALF (1/2) OF THE HEIGHT OF THE DEVICE. THESE REPAIRS MUST BE MADE BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY, OR THEREAFTER AS SOON AS FIELD CONDITIONS ALLOW ACCESS.
5. SURFACE WATERS MUST BE INSPECTED FOR EVIDENCE OF EROSION AND SEDIMENT DEPOSITION DURING EACH INSPECTION. THE REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) DAYS OF DISCOVERY UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL ACCESS CONSTRAINTS.
6. ANY EXCESS SEDIMENT IN PROPOSED BASINS SHALL BE REMOVED BY THE CONTRACTOR.
7. STORM DRAIN INLET PROTECTION SHALL BE REQUIRED FOR ALL CATCH BASINS IMMEDIATELY ADJACENT TO AND DOWNSTREAM OF THE WORK, AND SHALL BE INSTALLED PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL INSPECT STORM DRAIN INLET PROTECTION EVERY 7 DAYS AND WITHIN 24 HOURS AFTER EVERY RAIN EVENT. CONTRACTOR SHALL REPLACE OR CLEAN IF IT BECOMES NONFUNCTIONAL. CONTRACTOR SHALL CLEAN SUMP IF SEDIMENT IS WITHIN 12 INCHES OF OUTLET PIPE.

POLLUTION PREVENTION MANAGEMENT MEASURES:

1. PRODUCTS THAT HAVE THE POTENTIAL TO LEACH POLLUTANTS MUST BE UNDER COVER (E.G., PLASTIC SHEETING OR TEMPORARY ROOFS) TO PREVENT THE DISCHARGE OF POLLUTANTS OR PROTECTED BY A SIMILARLY EFFECTIVE MEANS DESIGNED TO MINIMIZE CONTACT WITH STORMWATER.
2. PESTICIDES, HERBICIDES, INSECTICIDES, FERTILIZERS, TREATMENT CHEMICALS, AND LANDSCAPE MATERIALS MUST BE UNDER COVER (E.G., PLASTIC SHEETING OR TEMPORARY ROOFS) TO PREVENT THE DISCHARGE OF POLLUTANTS OR PROTECTED BY SIMILARLY EFFECTIVE MEANS DESIGNED TO MINIMIZE CONTACT WITH STORMWATER.
3. HAZARDOUS MATERIALS, TOXIC WASTE, (INCLUDING OIL, DIESEL FUEL, GASOLINE, HYDRAULIC FLUIDS, PAINT SOLVENTS, PETROLEUM-BASED PRODUCTS, WOOD PRESERVATIVES, ADDITIVES, CURING COMPOUNDS, AND ACIDS) MUST BE PROPERLY STORED IN SEALED CONTAINERS TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE.

RESTRICTED ACCESS STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. STORAGE AND DISPOSAL OF HAZARDOUS WASTE OR HAZARDOUS MATERIALS MUST BE IN COMPLIANCE WITH MINN. R. CH. 7045 INCLUDING SECONDARY CONTAINMENT AS APPLICABLE.

4. SOLID WASTE MUST BE STORED, COLLECTED AND DISPOSED OF PROPERLY IN COMPLIANCE WITH MINN. R. CH. 7035.
5. PORTABLE TOILETS MUST BE POSITIONED SO THAT THEY ARE SECURE AND WILL NOT BE TIPPED OR KNOCKED OVER. SANITARY WASTE MUST BE DISPOSED OF PROPERLY IN ACCORDANCE WITH MINN. R. CH. 7041.
6. FUELING SHALL BE CONDUCTED IN A CONTAINED AREA UNLESS INFEASIBLE. THE CONTRACTOR SHALL TAKE REASONABLE STEPS TO PREVENT THE DISCHARGE OF SPILLED OR LEAKED CHEMICALS, INCLUDING FUEL, FROM ANY AREA WHERE CHEMICALS OR FUEL WILL BE LOADED OR UNLOADED INCLUDING THE USE OF DRIP PANS OR ABSORBENTS UNLESS INFEASIBLE
7. TRUCK AND CONSTRUCTION VEHICLE WASHING IS PROHIBITED ON SITE. ENGINE DEGREASING IS ALSO PROHIBITED ON SITE.

SPILL RESPONSE MEASURES:

1. ADEQUATE SUPPLIES, INCLUDING A SPILL KIT, SHALL BE AVAILABLE AT ALL TIMES TO CLEAN UP DISCHARGED MATERIALS AND THAT AN APPROPRIATE DISPOSAL METHOD IS AVAILABLE FOR RECOVERED SPILLED MATERIALS.
2. ALL WORK ON THE SITE SHALL CEASE ON THE SITE UNTIL ADEQUATE CLEANUP HAS BEEN ACHIEVED.
3. SPILLS MUST BE REPORTED TO THE OWNER, PROJECT ENGINEER, AND THE STATE DUTY OFFICER (1-800-422-0798) AND CLEANED UP IMMEDIATELY AS REQUIRED BY MINN. STAT. § 115.061.
4. DRY CLEAN UP MEASURES SHALL BE USED WHERE POSSIBLE.

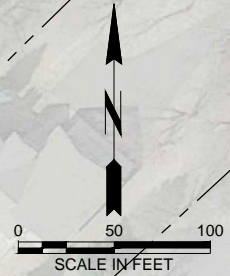
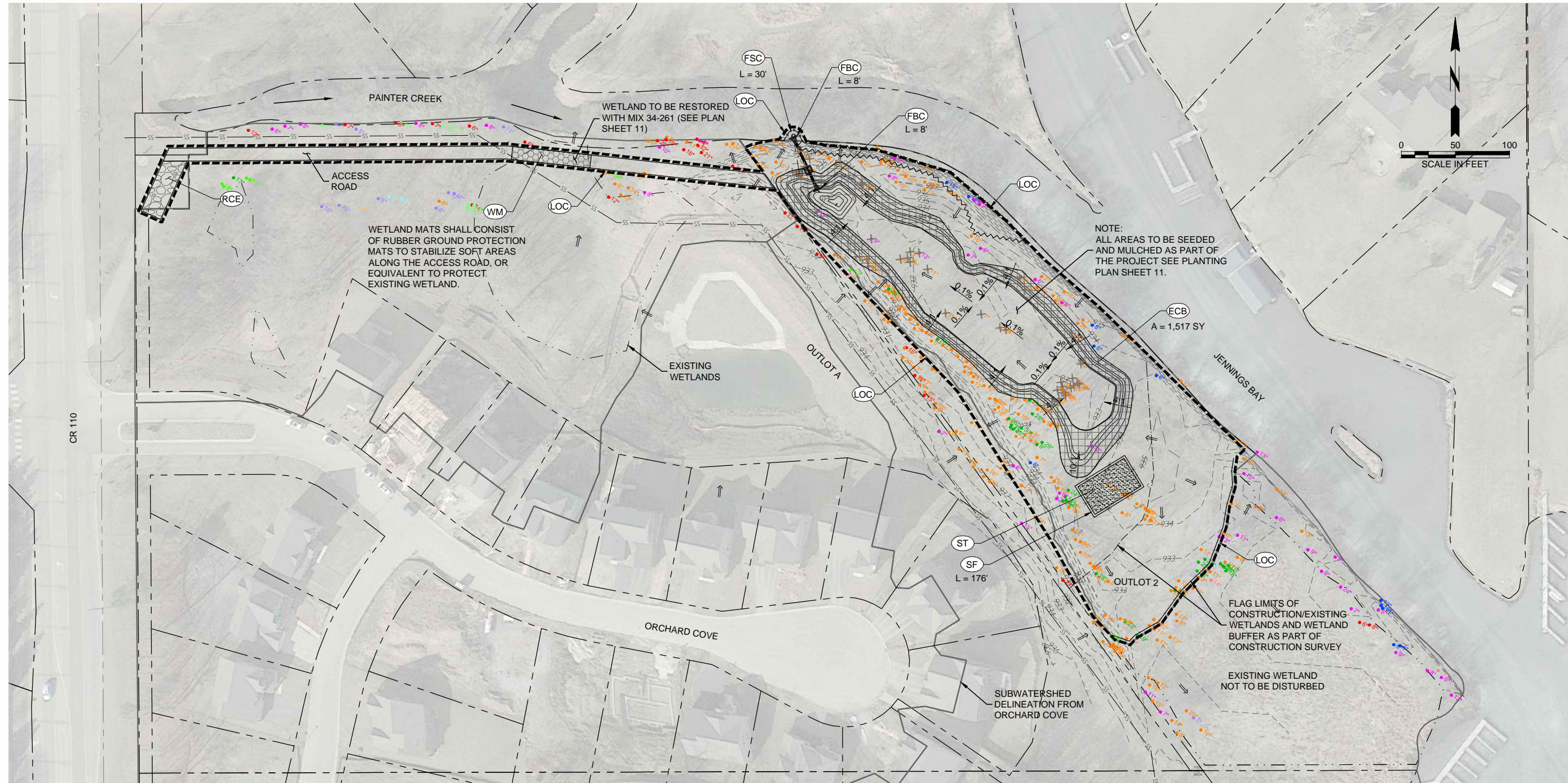
PERMIT CLOSEOUT:

1. ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND ALL SOILS ARE STABILIZED BY A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70 PERCENT OF ITS EXPECTED FINAL GROWTH DENSITY OVER THE ENTIRE PERVIOUS SURFACE AREA, OR OTHER EQUIVALENT MEANS NECESSARY TO PREVENT SOIL FAILURE UNDER EROSION CONDITIONS.
2. THE PERMANENT STORMWATER MANAGEMENT SYSTEM IS CONSTRUCTED, MEETS ALL REQUIREMENTS AND IS OPERATING AS DESIGNED. TEMPORARY OR PERMANENT SEDIMENTATION BASINS THAT ARE TO BE USED AS PERMANENT WATER QUALITY MANAGEMENT BASINS HAVE BEEN CLEANED OF ANY ACCUMULATED SEDIMENT. ALL SEDIMENT HAS BEEN REMOVED FROM CONVEYANCE SYSTEMS AND DITCHES ARE STABILIZED WITH PERMANENT COVER.
3. ALL TEMPORARY SYNTHETIC AND STRUCTURAL BMPs (SUCH AS SILT FENCE) SHALL BE REMOVED FROM THE SITE. BMPs DESIGNED TO DECOMPOSE ON SITE (SUCH AS SOME COMPOST LOGS) MAY BE LEFT IN PLACE.
4. ANY SEDIMENT REMAINING IN PLACE AFTER THE EROSION CONTROL DEVICE IS NO LONGER REQUIRED SHALL BE REMOVED TO CONFORM WITH THE EXISTING GRADE, PREPARED, AND SEEDED WITH THE APPROPRIATE SEED MIX AS DIRECTED BY THE OWNER.
5. SUBMIT THE NOTICE OF TERMINATION (NOT) TO THE MPCA.
6. A COPY OF ALL DOCUMENTS RELATED TO THE SWPPP MUST BE RETAINED FOR A PERIOD OF AT LEAST THREE YEARS AFTER COMPLETION OF THE PROJECT.

OTHER DOCUMENTS:

THE DESIGN MANUAL AND PROJECT SPECIFICATIONS ARE HEREBY INCLUDED AS PART OF THIS SWPPP.

1935 W. COUNTY ROAD B2 SUITE 230 ROSEVILLE, MN 55113 PHONE (651) 935-2275 	DESIGNED: LDR DRAWN: ACT CHECKED: LDR DATE: 8/11/16	REVISION
	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.  LEE D. ROSEN, P.E. LICENSE # 51071	
 Know what's below. Call before you dig.		
15320 MINNETONKA BLVD. MINNETONKA, MN 55345 (952) 471-0990 www.minnehahacreek.org  MINNEHAHA CREEK WATERSHED DISTRICT		
JENNINGS BAY WETLAND RESTORATION / FLOODPLAIN MITIGATION PROJECT		
STORM WATER POLLUTION PREVENTION PLAN		
SHEET NUMBER: <div style="font-size: 2em; text-align: center;">7</div>		



LEGEND

	FLOW ARROW
	(FSC) FLOATING SILT CURTAIN
	(ECB) EROSION CONTROL BLANKET
	(IP) INLET PROTECTION
	(LOC) LIMITS OF CONSTRUCTION
	(FBC) FILTER BERM FOR CULVERT PROTECTION (TYPE 3 ROCK WEEPER)
	(SF) SILT FENCE
	(ST) STOCKPILE TOPSOIL
	(WM) WETLAND MATS
	(RCE) ROCK CONSTRUCTION ENTRANCE

1835 W. COUNTY ROAD B2
 SUITE 230
 ROSEVILLE, MN 55113
 PHONE (651) 935-2275

RESPEC

DESIGNED: LDR
 DRAWN: ACT
 CHECKED: LDR
 DATE: 8/11/16

15320 MINNETONKA BLVD.
 MINNETONKA, MN 55345
 (952) 471-0990
 www.minnehahacreek.org

MINNEHAHA CREEK
 WATERSHED DISTRICT

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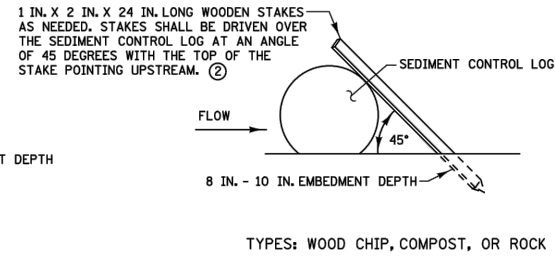
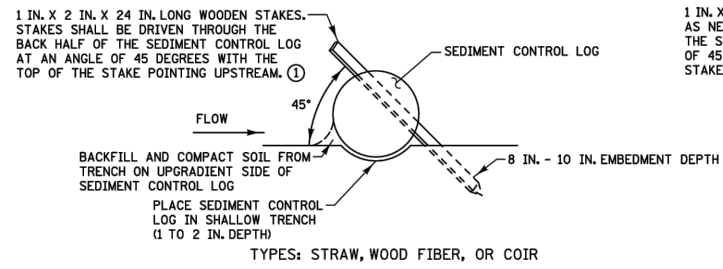
LEE D. ROSEN, P.E.
 LICENSE # 51071

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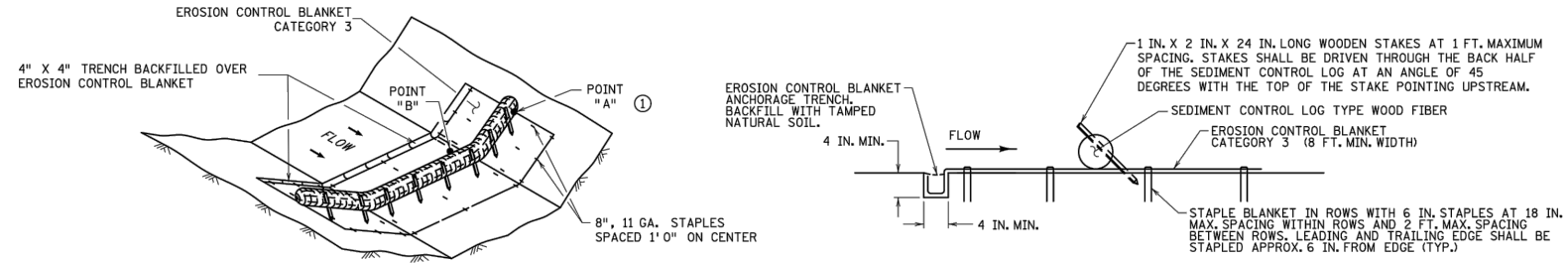
JENNINGS BAY WETLAND RESTORATION / FLOODPLAIN MITIGATION PROJECT

EROSION CONTROL PLAN

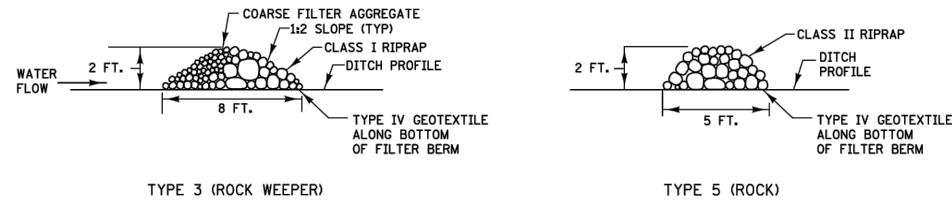
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8



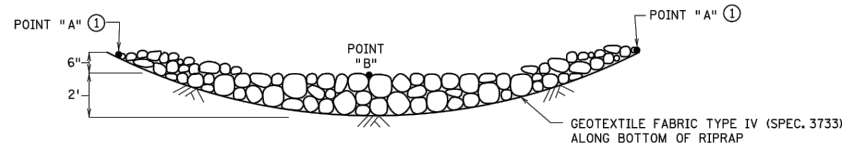
SEDIMENT CONTROL LOGS
SCALE: NTS



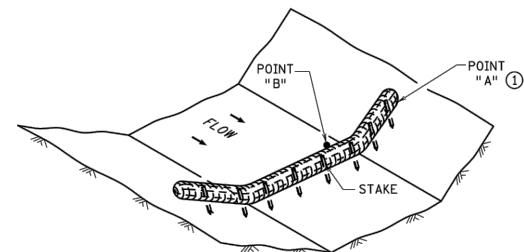
SEDIMENT CONTROL LOG TYPE BLANKET SYSTEM
SCALE: NTS



FILTER BERMS
SCALE: NTS



ROCK DITCH CHECKS
FILTER BERMS TYPE 3 (ROCK WEEPER) OR FILTER TYPE 5 (ROCK) ②③
SCALE: NTS



SEDIMENT CONTROL LOG TYPE WOOD FIBER, OR TYPE COMPOST
SCALE: NTS

- ① POINT "A" MUST BE A MINIMUM OF 6 INCHES HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.
- ② PERMANENT ROCK DITCH CHECKS PLACED WITHIN THE CLEAR ZONE ARE TO BE 18" OR LESS IN HEIGHT. A 1:6 APPROACH AND DEPARTURE SLOPE SHALL BE PROVIDED.
- ③ DITCH GRADE 3% - 5%, MAX. FLOW VELOCITY 12 FT./SEC..
- ④ DITCH GRADE 1.5% - 3%, MAX. FLOW VELOCITY 4.5 FT./SEC..
- ⑤ DITCH GRADE 1.5% - 3%, MAX. FLOW VELOCITY 1.5 FT./SEC..

1935 W. COUNTY ROAD B2
 SUITE 230
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 PHONE (651) 305-2275

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DRAWN	LDR	CHECKED	DATE
			8/11/16

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8/19/2016



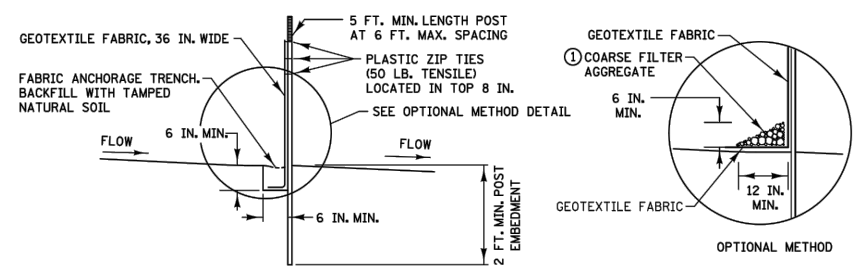
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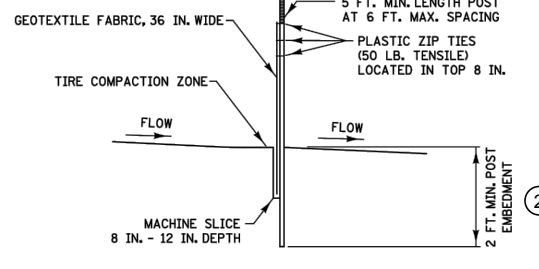
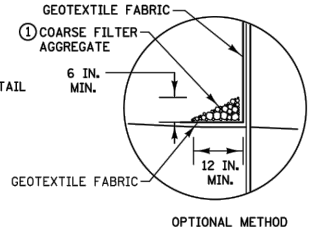
**JENNINGS BAY
 WETLAND
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**EROSION DETAILS
 (1 OF 2)**

SHEET NUMBER:
9

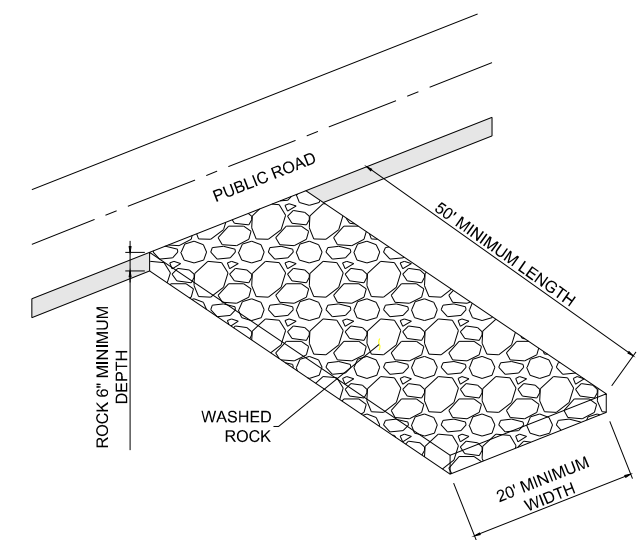


SILT FENCE TYPE HI (HAND INSTALLED)
 SCALE: NTS



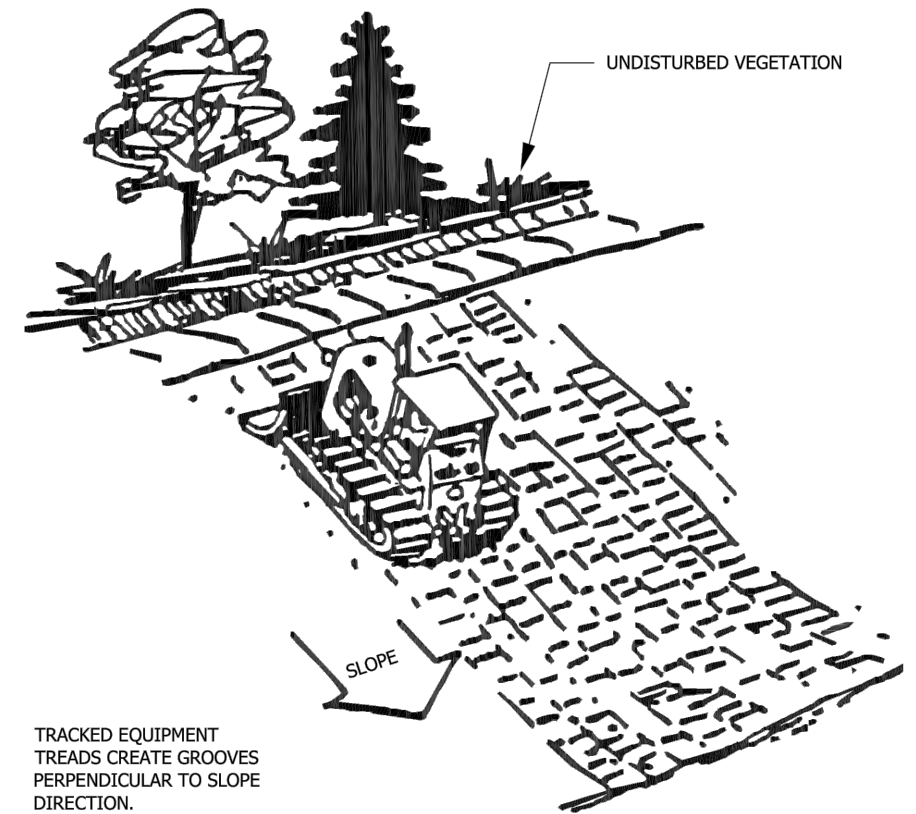
SILT FENCE TYPE MS (MACHINE SLICED)
 SCALE: NTS

- ① COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.
- ② TO PROTECT AREAS FROM SHEET FLOW, MAXIMUM CONTRIBUTING AREA: 1 ACRE.

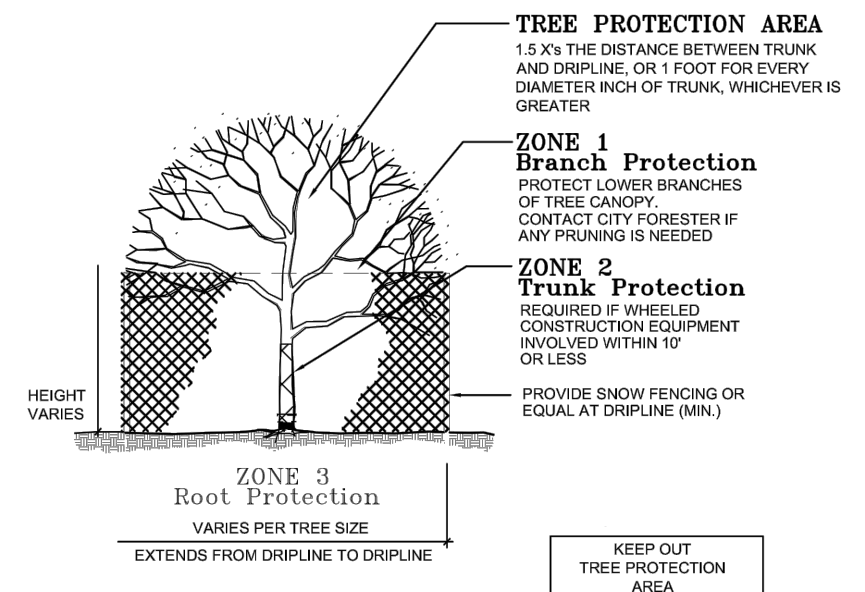


- NOTES**
- FILTER FABRIC SHALL BE PLACED UNDER ROCK TO STOP MUD MIGRATION THROUGH MATERIAL.
 - ENTRANCE MUST BE MAINTAINED REGULARLY TO PREVENT SEDIMENTATION ON PUBLIC ROADWAYS. FUGITIVE ROCK WILL BE REMOVED FROM ADJACENT ROADWAYS DAILY OR MORE FREQUENTLY AS NECESSARY.

TEMPORARY ROCK CONSTRUCTION ENTRANCE
 SCALE: NTS



SURFACE ROUGHENING DETAIL
 SCALE: NTS



TREE PROTECTION DETAIL
 SCALE: NTS

NAME: Z:\MINNESOTA\2016\JENNINGS BAY\CAD\SHEETS\2016\EROSION DETAILS.DWG
 PLOT DATE: August 19, 2016 10:41 AM, BY: AMT C, TEIGEN

1935 W. COUNTY ROAD B2
 SUITE 230
 ROSEVILLE, MN 55113
 PHONE (651) 935-2275

RESPEC

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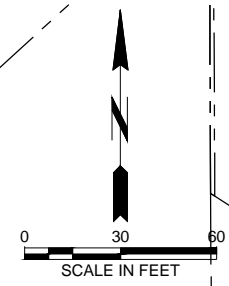
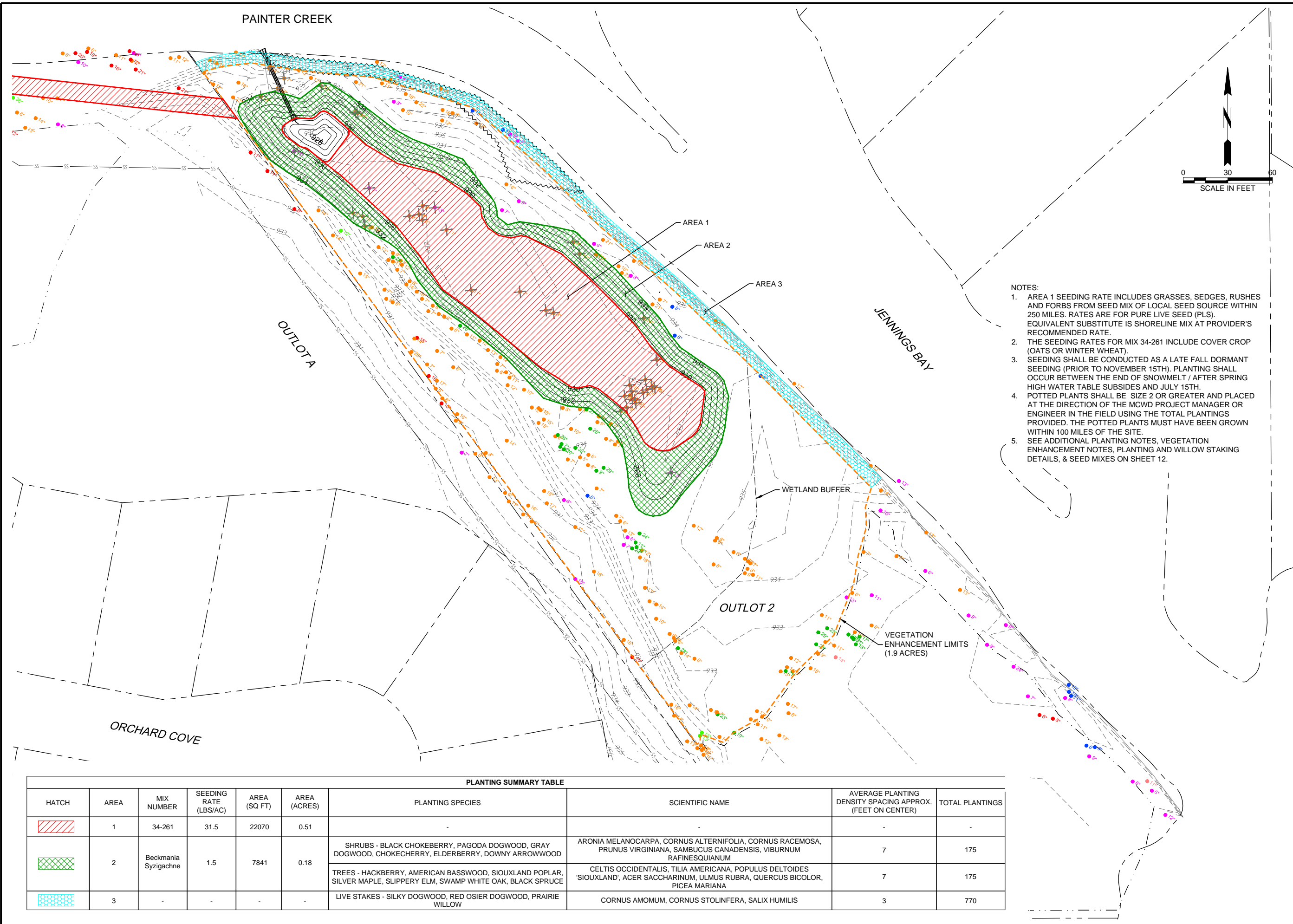
MINNEHAHA CREEK
 WATERSHED DISTRICT

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 WETLAND
 RESTORATION /
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 MITIGATION PROJECT

EROSION DETAILS
 (2 OF 2)

SHEET NUMBER:
10

NAME: Z:\MINNESOTA\02085 JENNINGS BAY\CAD\SHEETS\02085-PLANTING.DWG
 PLOT DATE: August 19, 2016 10:41 AM, BY: AMT.C. TEIGEN



- NOTES:
1. AREA 1 SEEDING RATE INCLUDES GRASSES, SEDGES, RUSHES AND FORBS FROM SEED MIX OF LOCAL SEED SOURCE WITHIN 250 MILES. RATES ARE FOR PURE LIVE SEED (PLS). EQUIVALENT SUBSTITUTE IS SHORELINE MIX AT PROVIDER'S RECOMMENDED RATE.
 2. THE SEEDING RATES FOR MIX 34-261 INCLUDE COVER CROP (OATS OR WINTER WHEAT).
 3. SEEDING SHALL BE CONDUCTED AS A LATE FALL DORMANT SEEDING (PRIOR TO NOVEMBER 15TH). PLANTING SHALL OCCUR BETWEEN THE END OF SNOWMELT / AFTER SPRING HIGH WATER TABLE SUBSIDES AND JULY 15TH.
 4. POTTED PLANTS SHALL BE SIZE 2 OR GREATER AND PLACED AT THE DIRECTION OF THE MCWD PROJECT MANAGER OR ENGINEER IN THE FIELD USING THE TOTAL PLANTINGS PROVIDED. THE POTTED PLANTS MUST HAVE BEEN GROWN WITHIN 100 MILES OF THE SITE.
 5. SEE ADDITIONAL PLANTING NOTES, VEGETATION ENHANCEMENT NOTES, PLANTING AND WILLOW STAKING DETAILS, & SEED MIXES ON SHEET 12.

PLANTING SUMMARY TABLE

HATCH	AREA	MIX NUMBER	SEEDING RATE (LBS/AC)	AREA (SQ FT)	AREA (ACRES)	PLANTING SPECIES	SCIENTIFIC NAME	AVERAGE PLANTING DENSITY SPACING APPROX. (FEET ON CENTER)	TOTAL PLANTINGS
	1	34-261	31.5	22070	0.51			-	-
	2	Beckmania Syzigachne	1.5	7841	0.18	SHRUBS - BLACK CHOKEBERRY, PAGODA DOGWOOD, GRAY DOGWOOD, CHOKECHERRY, ELDERBERRY, DOWNY ARROWWOOD	ARONIA MELANOCARPA, CORNUS ALTERNIFOLIA, CORNUS RACEMOSA, PRUNUS VIRGINIANA, SAMBUCUS CANADENSIS, VIBURNUM RAFINESQUIANUM	7	175
						TREES - HACKBERRY, AMERICAN BASSWOOD, SIOUXLAND POPLAR, SILVER MAPLE, SLIPPERY ELM, SWAMP WHITE OAK, BLACK SPRUCE	CELTIS OCCIDENTALIS, TILIA AMERICANA, POPULUS DELTOIDES 'SIOUXLAND', ACER SACCHARINUM, ULMUS RUBRA, QUERCUS BICOLOR, PICEA MARIANA	7	175
	3	-	-	-	-	LIVE STAKES - SILKY DOGWOOD, RED OSIER DOGWOOD, PRAIRIE WILLOW	CORNUS AMOMUM, CORNUS STOLINFERA, SALIX HUMILIS	3	770

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JENNINGS BAY WETLAND RESTORATION / FLOODPLAIN MITIGATION PROJECT

PLANTING PLAN

SHEET NUMBER:

11

PLANTING NOTES :

- DUE TO LIMITED COMMERCIAL AVAILABILITY OF MANY WETLAND PLANT SPECIES, THE CONTRACTOR SHALL CHECK WITH SUPPLIERS AS EARLY AS POSSIBLE REGARDING AVAILABILITY OF THE SPECIFIED SEED MIXES AND CONTAINERIZED PLANTS.
- FINISH GRADING FOR SEEDING AND PLANTING SHALL BE PERFORMED BY OTHERS AND INSPECTED BY ENGINEER.
- SCHEDULE SEEDING SHALL BE CONDUCTED AS A LATE FALL DORMANT SEEDING (PRIOR TO NOVEMBER 15TH). PLANTING SHALL OCCUR BETWEEN THE END OF SNOWMELT / AFTER SPRING HIGH WATER TABLE SUBSIDES AND JULY 15TH.
- SCHEDULE CONTAINERIZED PLANTS AFTER SEEDING.
- WEED TREATMENT SHALL BE PERFORMED AFTER FINISH GRADING AS NEEDED.
- A FIRM SEEDBED SHALL BE PROVIDED TO ENSURE THAT SEED IS NOT BURIED TOO DEEP. WETLAND GRASSES AND OTHER SPECIES WITH LARGER SEEDS SHALL BE HARROWED INTO THE SOIL 1/8-1/4 INCHES DEEP BEFORE SMALLER WETLAND SEEDS ARE BROADCAST. WETLAND SEDGES, RUSHES, GRASSES, AND FORBS SHOULD BE PLACED ON THE SOIL SURFACE, AS THEY REQUIRE LIGHT TO GERMINATE.
- PRIOR TO PLANTING, ROOTS SHOULD BE VISIBLE WHEN PLANTS ARE REMOVED FROM CONTAINERS. IF ROOT MASSES ARE TOO SMALL, THE PLANTS MAY HAVE DIFFICULTY ESTABLISHING. IF POTTED PLANTS BECOME ROOT BOUND, CUT OR TEAR THE ROOT MASS BEFORE PLANTING TO ALLOW THE ROOTS TO GROW NATURALLY.
- ROOTS SHALL BE KEPT MOIST DURING THE PLANTING PROCESS AND SET FIRMLY INTO THE GROUND. A TREE-PLANTING BAR OR TILE SPADE CAN BE USED TO PLANT PROPAGULES ABOVE GROUND AND UNDERWATER. PLANT AT A DEPTH SO THAT THE PREVIOUS SOIL LINE ON THE PLANT MATCHES THE NEW SOIL LINE.
- THE BASE ROOT AND CONTAINERIZED PLANTS SHALL BE INSTALLED BY CREWS USING SHOVELS OR AUGERS AND SHOVELS. HOLES WILL BE DUG LARGE ENOUGH TO ACCOMMODATE THE ENTIRE ROOT MASS OF THE BARE-ROOT OR CONTAINERIZED PLANTS TO THE EXTENT POSSIBLE. EXACT LOCATIONS FOR SHRUB PLANTINGS MAY BE FLAGGED BY THE MCWD PROJECT MANAGER OR DESIGN ENGINEER.
- STRAW MULCH SHALL BE SPREAD ON SEEDED AREA 1-6 HOURS AFTER SEEDING.
- STRAW BLANKET SHALL BE PLACED ON CONTAINERIZED PLANTING AREA PRIOR TO PLANTING.

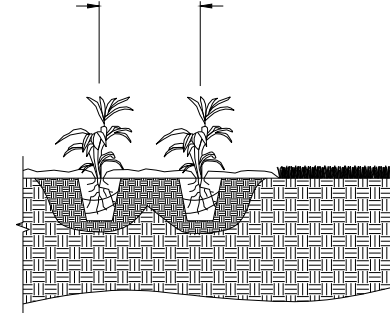
VEGETATION ENHANCEMENT NOTES :

- INVASIVE AND EXOTIC WOODY TREES AND SHRUBS SHALL BE REMOVED.
- REMOVALS WILL OCCUR DURING DORMANT CONDITIONS AND FROZEN GROUND.
- BRUSH CUTTINGS WILL BE PERFORMED ON SAPPLINGS.
- WOODY MATERIAL MARKED FOR STUMP CUTTING SHALL BE CUT AND TREATED WITH GARLON HERBICIDE AT APPROPRIATE RATE.
- CUT MATERIAL WILL BE HAULED OFFSITE FOR DISPOSAL BY CONTRACTOR.

34-261 Riparian South & West

Common Name	Scientific Name	Rate (kg/ha)	Rate (lb/ac)	% of Mix (% by wt)	Seeds/ sq ft
American slough grass	<i>Beckmannia syzigachne</i>	1.52	1.36	4.30%	24.90
riverbank wild rye	<i>Elymus riparius</i>	0.56	0.50	1.58%	0.53
Virginia wild rye	<i>Elymus virginicus</i>	1.96	1.75	5.56%	2.70
tall manna grass	<i>Glyceria grandis</i>	0.28	0.25	0.80%	6.50
fowl manna grass	<i>Glyceria striata</i>	0.10	0.09	0.29%	3.00
rice cut grass	<i>Leersia oryzoides</i>	0.18	0.16	0.51%	2.00
fowl bluegrass	<i>Poa palustris</i>	0.94	0.84	2.66%	40.00
prairie cordgrass	<i>Spartina pectinata</i>	0.34	0.30	0.96%	0.74
Total Grasses		5.88	5.25	16.66%	80.37
tussock sedge	<i>Carex stricta</i>	0.04	0.04	0.13%	0.80
pointed broom sedge	<i>Carex scoparia</i>	0.07	0.06	0.21%	2.00
fox sedge	<i>Carex vulpinoidea</i>	0.22	0.20	0.65%	7.50
path rush	<i>Juncus tenuis</i>	0.03	0.03	0.09%	10.00
dark green bulrush	<i>Scirpus atrovirens</i>	0.13	0.12	0.38%	20.00
woolgrass	<i>Scirpus cyperinus</i>	0.06	0.05	0.15%	30.00
Total Sedges and Rushes		0.56	0.50	1.61%	70.30
marsh milkweed	<i>Asclepias incarnata</i>	0.13	0.12	0.38%	0.21
common boneset	<i>Eupatorium perfoliatum</i>	0.03	0.03	0.11%	2.00
spotted Joe pye weed	<i>Eutrochium maculatum</i>	0.07	0.06	0.18%	2.00
autumn sneezeweed	<i>Helenium autumnale</i>	0.06	0.05	0.17%	2.50
giant sunflower	<i>Helianthus giganteus</i>	0.08	0.07	0.22%	0.25
spotted touch-me-not	<i>Impatiens capensis</i>	0.06	0.05	0.17%	0.08
great lobelia	<i>Lobelia siphilitica</i>	0.03	0.03	0.09%	5.00
blue monkey flower	<i>Mimulus ringens</i>	0.01	0.01	0.02%	5.07
Virginia mountain mint	<i>Pycnanthemum virginianum</i>	0.06	0.05	0.16%	4.00
tall coneflower	<i>Rudbeckia laciniata</i>	0.06	0.05	0.15%	0.25
giant goldenrod	<i>Solidago gigantea</i>	0.02	0.02	0.07%	2.00
blue vervain	<i>Verbena hastata</i>	0.17	0.15	0.46%	5.00
bunched ironweed	<i>Vernonia fasciculata</i>	0.07	0.06	0.18%	0.50
Total Forbs		0.84	0.75	2.36%	28.86
Oats or winter wheat (see note at beginning of list for recommended dates)		28.02	25.00	79.37%	11.14
Total Cover Crop		28.02	25.00	79.37%	11.14
Totals:		35.31	31.50	100.00%	190.66
Purpose:	Native riparian and floodplain plantings for wetland mitigation, ecological restoration, or general permanent cover after culvert or bridge work. Tolerates partial shade.				
Planting Area:	Tallgrass Aspen Parklands, Prairie Parkland, and Eastern Broadleaf Forest Provinces. Mn/DOT Districts 2(west), 3B, 4, Metro, 6, 7 & 8.				

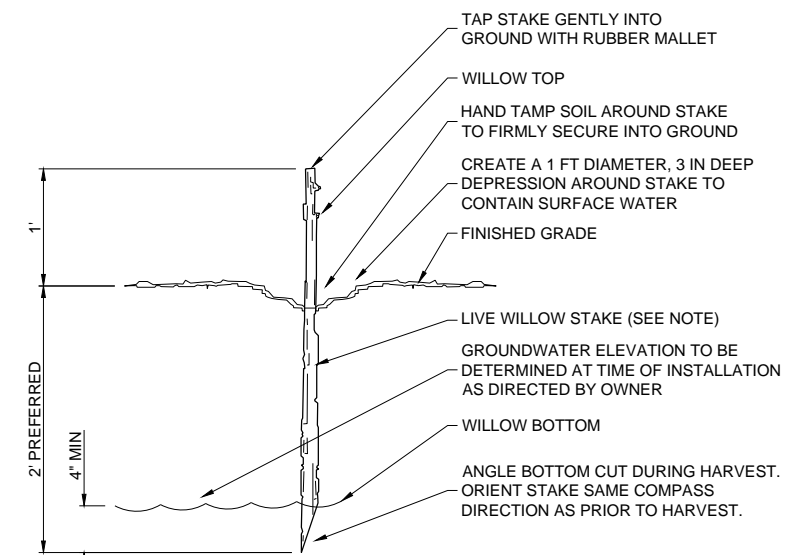
SPECIFIED IN PLANTING SUMMARY TABLE (SHEET 11)



PLANTING DETAIL
NTS

NOTES:

- LOOSEN ROOTS OF PLANT MATERIAL PRIOR TO PLANTING.
- COMPACT BACKFILL FIRMLY.
- WATER THOROUGHLY AFTER PLANTING.



TYPICAL WILLOW STAKE PLANTING DETAIL
NTS

NOTE:
WILLOW STAKE LENGTH MAY VARY BETWEEN 3 FT AND 5 FT. THE WILLOW STAKE BOTTOM END SHALL PENETRATE GROUND WATER AT A MINIMUM OF 4 IN REGARDLESS OF LENGTH. DO NOT FORCE WILLOW STAKES INTO GROUND WITHOUT PROVIDING AN APPROPRIATE SIZE PLANTING HOLE.

1935 W. COUNTY ROAD B2
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**PLANTING NOTES &
SEED MIXES**

SHEET NUMBER:
12