

GENERAL SITE WORK NOTES

- 1. TOPOGRAPHIC SURVEY CONDUCTED DECEMBER 12, 2022 BY EOR, INC. SURVEY CONDUCTED USING THE WASHINGTON COUNTY COORDINATES SYSTEM, US SURVEY FEET, ELEVATIONS IN NAVD88 VERTICAL DATUM.
2. VERIFY HORIZONTAL LOCATION AND ELEVATION WHERE A CONNECTION TO EXISTING SITE FEATURE IS TO BE MADE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM THE PLANS.
3. REFERENCE TO MNDOT SPECIFICATIONS SHALL MEAN DIVISIONS II AND III OF THE 2020 SPECIFICATIONS FOR CONSTRUCTION.
4. A CONSTRUCTION STAGING PLAN SHALL BE PREPARED AND SUBMITTED BY THE CONTRACTOR FOR REVIEW BY THE PROJECT ENGINEER FOR ANY DELIVERY & TEMPORARY STORAGE OF MATERIALS. CONTRACTOR SHALL ALSO SUBMIT FOR APPROVAL A CONSTRUCTION PHASING AND SCHEDULE OUTLINE.
5. ALL CONSTRUCTION WORK SHALL BE COMPLETED WITHIN CITY APPROVED WORKING HOURS.
6. PROPOSED WORK MUST BE IN COMPLIANCE WITH ANY AND ALL CITY, COUNTY AND STATE RULES. CONTRACTOR IS EXPECTED TO OBTAIN ANY REQUIRED PERMITS BEYOND DNR PUBLIC WATERS, WATERSHED DISTRICT AND U.S. ARMY CORPS PERMITS.
7. A PRE-CONSTRUCTION MEETING WILL BE REQUIRED WITH ENGINEER PRIOR TO ANY MOBILIZATION OF CONSTRUCTION EQUIPMENT OR MATERIAL.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEY AND STAKING, AS NECESSARY, TO MATCH THE GRADES AND ELEVATIONS DETAILED IN THESE PLANS AND SPECIFICATIONS.
9. CONTRACTOR SHALL ASSURE COMPLIANCE WITH APPLICABLE CODES AND REGULATIONS GOVERNING THE WORK AND MATERIALS SUPPLIED.
10. CONTRACTOR IS RESPONSIBLE FOR ONGOING MAINTENANCE OF NEWLY INSTALLED MATERIALS UNTIL TIME OF SUBSTANTIAL COMPLETION. REPAIR OF ACTS OF VANDALISM OR DAMAGE THAT MAY OCCUR PRIOR TO SUBSTANTIAL COMPLETION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
11. SCHEDULES TAKE PRECEDENCE OVER GRAPHICAL ELEMENTS IF DISCREPANCIES IN QUANTITIES EXIST. SPECIFICATIONS DETAILS TAKE PRECEDENCE OVER NOTES AND DETAILS.
12. EQUIPMENT SHALL HAVE A THUMB ATTACHMENT FOR INSTALLATION OF INSTREAM STRUCTURES.

SITE DEMOLITION & REMOVAL NOTES

- 1. ALL VEGETATION REMOVAL INCLUDING SOD, WINDFALL/DEADFALL, TREES < 6 INCH DBH, AND BRUSH REMOVAL SHALL BE CONSIDERED INCIDENTAL TO SITE CLEARING. ALL WOOD MATERIAL NOT USED FOR THE PROJECT MAY BE CHIPPED ONSITE.

GENERAL UTILITY NOTES

- 1. CONTRACTOR SHALL CONTACT 'GOPHER STATE ONE CALL' WITHIN TWO WORKING DAYS PRIOR TO EXCAVATION/CONSTRUCTION FOR UTILITY LOCATIONS.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND INVERTS, SHOWN OR NOT SHOWN. ANY DISCREPANCY BETWEEN PLANS AND FIELD CONDITIONS SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PUBLIC AND PRIVATE UTILITIES FOR LOCATIONS OF UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES, OR OTHER BURIED STRUCTURES BEFORE COMMENCING CONSTRUCTION ACTIVITIES.
4. CONTRACTOR SHALL IMMEDIATELY CONTACT AFFECTED UTILITY COMPANIES TO REPORT ANY DAMAGE OF UTILITIES. CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CONSTRUCTION LIMITS AND ACCESS

- 1. CONSTRUCTION SHALL BE LIMITED TO THE LIMITS OF DISTURBANCE NOTED ON PLAN SHEETS, EXCEPT AS APPROVED BY THE PROJECT ENGINEER AND OWNER. DISTURBANCE WITHIN THE CONSTRUCTION LIMITS SHALL BE FURTHER LIMITED TO THE GREATEST EXTENT PRACTICABLE TO MINIMIZE IMPACTS TO THE RIPARIAN CORRIDOR.
2. DISTURBANCE WITHIN THE CONSTRUCTION LIMITS AS WELL AS ACCESS ROUTES TO THE CONSTRUCTION LIMITS, MATERIAL STOCKPILE LOCATIONS, AND OTHER ACTIVITIES OUTSIDE OF THE CONSTRUCTION LIMITS SHALL BE PROPOSED BY THE CONTRACTOR IN WRITING (PLAN AND SKETCH), AND APPROVED BY THE PROJECT ENGINEER AND OWNER.
3. ANY DISTURBANCE OUTSIDE OF AREAS APPROVED FOR DISTURBANCE WITHIN THE CONSTRUCTION LIMITS AND APPROVED ACCESS ROUTES AND STOCKPILE LOCATIONS ARE TO BE REPAIRED BY THE CONTRACTOR, PER THE DISCRETION OF THE PROJECT ENGINEER OR OWNER AT THE COST OF THE CONTRACTOR.
4. PUBLIC INFRASTRUCTURE AND PRIVATE IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: ROADWAY SURFACES, BRIDGES AND ABUTMENTS, DRIVEWAYS, FENCES, SIDEWALKS, CURB, WELLS, MANHOLES AND STRUCTURES ARE TO BE PROTECTED BY THE CONTRACTOR AT THE COST OF THE CONTRACTOR. ANY DAMAGES SHALL BE REPAIRED PER THE DISCRETION OF THE PROJECT ENGINEER OR OWNER AT THE COST OF THE CONTRACTOR.
5. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR OBTAINING ANY REQUIRED TRAFFIC CONTROL, RIGHT OF WAY, AND/OR ACCESS PERMITS.

CONSTRUCTION SEQUENCING

- 1. CONSTRUCTION WORK SHALL COMMENCE UPSTREAM AND PROGRESS DOWNSTREAM TO LIMIT TEMPORARY SEDIMENT IMPACTS TO THE PROJECT DESIGN. HOWEVER, ANY CHANNEL BED MODIFICATIONS (I.E. GRADE ADJUSTMENTS) MUST BE COMPLETED PRIOR TO BANK GRADING AND HABITAT INPUTS.
2. SUBSTANTIAL COMPLETION OF ALL INSTREAM WORK SHALL BE COMPLETED PER MNDNR REQUIREMENTS, WITH NO INSTREAM WORK CONDUCTED BETWEEN SEPTEMBER 1 - APRIL 1.
3. HYDROMULCH SHALL BE INSTALLED WITHIN 24 HOURS OF FINAL GRADING.

TREE PROTECTION AND HARVEST

- 1. SITE CLEARING FOR ACCESS ROUTES AND RESHAPING OF STREAMBANKS TO INCLUDE HARVEST OF TREES FOR TOEWOOD, BRUSH/LOG TOE, ROOTWADS, AND TREE TRUNKS. TREES HARVESTED IN THESE AREAS SHALL BE REMOVED WHOLE WITH THE ROOT BOLE ATTACHED. TREES TO REMAIN WITHIN THESE AREAS WILL BE IDENTIFIED IN THE PLANS OR WILL BE MARKED IN THE FIELD BY THE PROJECT ENGINEER AND SHALL BE PROTECTED.
2. TREE HARVEST OUTSIDE OF ACCESS ROUTES AND STREAMBANK RESHAPING AREAS WILL BE DIRECTED BY THE PROJECT ENGINEER AND OWNER. ALL TREES NOT MARKED FOR REMOVAL SHALL BE LEFT STANDING UNDISTURBED, INCLUDING ALL TREES OUTSIDE THE CONSTRUCTION LIMITS.
3. TREE HARVEST SHALL NOT DEBARK OR DAMAGE TREES TO REMAIN. KEEP CONSTRUCTION EQUIPMENT OUT OF DRIP LINE OF EXISTING TREES TO LIMIT SOIL COMPACTION AROUND THE ROOT SYSTEM.
4. QUESTIONS REGARDING EXISTING TREES, SHRUBS, OR OTHER VEGETATION SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT ENGINEER PRIOR TO REMOVAL.
5. CONTRACTOR SHALL CHIP OR BURY UNUSED SMALLER TREE AND BRUSH DEBRIS AT THE COMPLETION OF THE PROJECT UNLESS OTHERWISE DIRECTED.

ROCK SIZE / TYPE SPECIFICATIONS

- 1. ALL ROCK, RIPRAP, AND BOULDERS SHALL BE CRUSHED / ANGULAR GRANITE MEETING MNDOT 3601.2 SPECIFICATIONS.
2. RIPRAP BOULDER TOE APPLICATIONS SHALL BE CLASS III (GRADATION SHOWN IN THE FOLLOWING TABLE):

Table with 2 columns: SIZE INCH (A), APPROX. % OF TOTAL MASS SMALLER THAN GIVEN MASS. Rows: 18 (100), 12 (75), 9 (50), 3 (10). Includes note: (A) MASS TO APPROXIMATE SIZE CONVERSION BASED ON A SPECIFIC GRAVITY OF 2.60 AND VOLUME AVERAGE BETWEEN A SPHERE AND A CUBE

GRADING & EROSION CONTROL NOTES

- 1. ACCEPTANCE OF INSTALLED PERIMETER EROSION CONTROL AND CONSTRUCTION ENTRANCE MUST BE MADE BEFORE BEGINNING SITE GRADING ACTIVITIES. SOME TEMPORARY EROSION CONTROL MEASURES MAY BE INSTALLED AS GRADING OCCURS IN THE SPECIFIC AREA. MAINTAIN EROSION CONTROLS THROUGHOUT THE GRADING PROCESS AND REMOVE UPON APPROVAL OF ENGINEER.
2. ALL EXPOSED SOIL AREAS WITHIN 100 FEET OF A WATER OF THE STATE OR ANY STORMWATER CONVEYANCE SYSTEM WHICH IS CONNECTED TO A WATER OF THE STATE MUST BE STABILIZED WITHIN 7 DAYS (STEEPER THAN 3:1 SLOPES), 14 DAYS (FLATTER THAN 3:1 SLOPES). STABILIZE THE LAST 200 LINEAL FEET OF DRAINAGE DITCH OR SWALES WITHIN 24 HOURS OF CONNECTION TO SURFACE WATER OR PROPERTY EDGE. PROVIDE A 50 FOOT NATURAL BUFFER OR, IF BUFFER IS INFEASIBLE, PROVIDE A DOUBLE ROW OF SEDIMENT CONTROLS SPACED AT LEAST 5 FEET APART WHEN A SURFACE WATER IS LOCATED WITHIN 50 FEET OF LAND DISTURBANCE AND STORMWATER FLOWS TO THE SURFACE WATER.
3. ALL CONSTRUCTION ENTRANCES SHALL BE SURFACED WITH CRUSHED ROCK (OR APPROVED EQUAL) ACROSS FULL WIDTH FROM ENTRANCE POINT TO 50 FEET INTO THE CONSTRUCTION ZONE. SEE DETAIL.
4. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH NPDES AND STATE PERMITS.
5. THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL MEASURES, INCLUDING THE REMOVAL OF ACCUMULATED SILT IN FRONT OF TEMPORARY EROSION CONTROL MEASURES THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL RE-ESTABLISH ANY EXISTING EROSION CONTROL DISTURBED BY CONSTRUCTION.
6. CONTRACTOR SHALL PROVIDE ADDITIONAL TEMPORARY EROSION CONTROL MEASURES AS REQUIRED FOR CONSTRUCTION OR AS REQUIRED BY ENGINEER AND SHALL BE INCIDENTAL TO THE CONTRACT.
7. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES UPON APPROVAL OF ENGINEER.
8. THE CONTRACTOR SHALL REMOVE ALL SOILS AND SEDIMENT TRACKED ONTO EXISTING ROADS A MINIMUM ONCE PER DAY OR AS REQUESTED BY THE ENGINEER AND SHALL BE INCIDENTAL TO THE CONTRACT.
9. INSPECT EROSION CONTROL DEVICES AFTER EACH RAINFALL PER MNDOT SPECIFICATION AND SPECIAL PROVISIONS. IMMEDIATELY REPAIR FAILED OR FAILING EROSION CONTROL DEVICES.
10. INSPECT THE ENTIRE CONSTRUCTION SITE A MINIMUM OF ONCE EVERY 7 DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS.
11. THE CONTRACTOR SHALL INSTALL INLET PROTECTION WHERE DESIGNATED ON THE PLANS AND SHALL PERIODICALLY INSPECT AND CLEAN OUT SEDIMENT ACCUMULATION.
12. MINIMIZE DISTURBANCE TO THE EXTENT FEASIBLE. DISTURBANCE OUTSIDE OF CONSTRUCTION LIMITS SHALL BE RESTORED TO PRE CONSTRUCTION CONDITIONS AT THE COST OF THE CONTRACTOR.
13. SEE MNDOT SPEC 2112, EARTHWORK, SUBGRADE, AND SUBBASE FOR ALL EXCAVATION RELATED WORK AND QUALITY CONTROL.
14. REVIEW SPECIAL PROVISIONS FOR MODIFICATIONS TO MNDOT SPECIFICATIONS.
15. EARTHWORK ASSUMPTIONS
A. SEE CONTRACT DOCUMENTS FOR INCLUSIONS, INCLUDING BUT NOT LIMITED TO MEASUREMENT & PAYMENT.
B. ALL QUANTITIES ARE PLAN (P) QUANTITIES.
15. LIST OF BMP'S FOR THE PROJECT INCLUDE THE FOLLOWING:
15.1. INSTREAM FLOATING SILT CURTAIN AT DOWNSTREAM END OF PROJECT
15.2. RAPID STABILIZATION (72 HOURS FROM INITIAL GRADING DISTURBANCE TO FINAL GRADING AND SOIL STABILIZATION)
15.3. FLAT BANKFULL BENCH WITH HYDROMULCH TO CAPTURE BOTH UPGRADIENT SEDIMENT & OVERBANK FLOOD SEDIMENT DEPOSITION (GEOMORPHIC SLOPE SEDIMENT BMP)
15.4. CRIMPED STRAW MULCH OR VERTICAL CAT TRACKING ON SLOPES ABOVE FLAT BANKFULL BENCH
15.5. (2) ROWS OF STRAW WATTLES SPACED 5 FEET APART ON STEEP SLOPES IF VERTICAL CAT TRACKING AND FLAT BENCH IS NOT FEASIBLE
15.6. PRESERVATION OF DOWNGRADIENT PERENNIAL VEGETATION ON EXISTING STEEP SLOPES WHERE GRADING IS NOT PROPOSED
15.7. INLET PROTECTION ON NEAL AVE

GENERAL LANDSCAPE NOTES

- 1. CONTRACTOR SHALL INSPECT THE SITE AND BECOME FAMILIAR WITH EXISTING CONDITIONS RELATING TO THE NATURE AND SCOPE OF WORK.
2. CONTRACTOR SHALL VERIFY PLAN LAYOUT AND BRING TO THE ATTENTION OF THE ENGINEER DISCREPANCIES WHICH MAY COMPROMISE THE DESIGN OR INTENT OF THE LAYOUT.
3. CONTRACTOR SHALL ASSURE COMPLIANCE WITH APPLICABLE CODES AND REGULATIONS GOVERNING THE WORK AND MATERIALS SUPPLIED.
4. CONTRACTOR SHALL PROTECT EXISTING ROADS, TRAILS, TREES, AND SITE ELEMENTS DURING CONSTRUCTION OPERATIONS. DAMAGE TO SAME SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
5. CONTRACTOR IS RESPONSIBLE FOR ONGOING MAINTENANCE OF NEWLY INSTALLED MATERIALS THROUGHOUT THE LENGTH OF THE PROJECT. REPAIR OF ACTS OF VANDALISM OR DAMAGE WHICH MAY OCCUR SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
6. EXISTING TREES OR SIGNIFICANT SHRUB MASSINGS FOUND ON SITE SHALL BE PROTECTED AND SAVED UNLESS NOTED TO BE REMOVED OR ARE LOCATED IN AN AREA TO BE GRADED. QUESTIONS REGARDING EXISTING PLANT MATERIAL SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO REMOVAL. CONTRACTOR SHALL WALK THE SITE WITH THE ENGINEER PRIOR TO SITE REMOVALS AND GRADING TO DETERMINE EXACT CONSTRUCTION LIMITS.
7. ALL WOODY INVASIVE PLANTS THAT OCCUR WITHIN THE CONSTRUCTION LIMITS, INCLUDING BUT NOT LIMITED TO, COMMON BUCKTHORN (RHAMNUS CATHARTICA), GLOSSY BUCKTHORN (FRANGULA ALNUS), SIBERIAN ELM (ULMUS PUMILA), AMUR MAPLE (ACER GINNALA), TATARIAN HONEYSUCKLE (LONICERA TATARICA), SANDBAR WILLOW (SALIX INTERIOR), MORROW'S HONEYSUCKLE (LONICERA MORROWII), BLACK LOCUST (ROBINIA PSEUDOACACIA), AND BOXELDER (ACER NEGUNDO) <6 INCH DBH, SHALL BE CUT, REMOVED, AND THE CUT STUMPS SHALL BE TREATED WITH TRICLOPYR HERBICIDE OR AN APPROVED EQUAL FOR USE IN AQUATIC ENVIRONMENTS. ALTERNATIVELY, THE PLANTS MAY BE UPROOTED USING HEAVY MACHINES (I.E. EXCAVATOR OR DOZER).

VEGETATION ESTABLISHMENT AND IRRIGATION

- 1. LOWER STREAM BANKS, BANKFULL BENCHES AND FLOODPLAIN AREAS SHALL BE SEEDED WITH SPECIFIED SEED MIX (SEE RESTORATION PLAN) AND COVERED WITH HYDROMULCH AT A RATE OF 3,500 LBS PER ACRE. HYDROMULCH SHALL BE MAT INC. SOIL GUARD BONDED FIBER MATRIX OR APPROVED EQUIVALENT. HYDROMULCH SHALL COVER AT A MINIMUM 25' FROM EDGE OF WATER.
2. ALL DISTURBED AREAS OUTSIDE OF BANK SHAPING AREAS AND FLOODPLAINS ARE TO BE SEEDED WITH SPECIFIED SEED MIX (SEE RESTORATION PLAN) AND COVERED WITH WEED-FREE STRAW AT A RATE OF 2 TONS PER ACRE. STRAW MULCH SHALL BE CRIMPED IN IMMEDIATELY AFTER APPLICATION.
3. HYDROMULCH PRODUCTS MAY CONTAIN SMALL PLASTIC FIBERS TO AID IN ITS MATRIX STRENGTH. THESE LOOSE FIBERS COULD POTENTIALLY RE-SUSPEND AND MAKE THEIR WAY INTO PUBLIC WATERS. AS SUCH, PLEASE REVIEW MULCH PRODUCTS AND NOT ALLOW ANY MATERIALS WITH PLASTIC FIBER ADDITIVES.
4. UP TO 9.9 ACRES OF SEED AND SEEDING WILL BE PAID; ADDITIONAL REQUIRED APPLICATION IS INCIDENTAL TO MOBILIZATION AND SITE CLEARING.
5. SEEDING SHALL FOLLOW MNDOT SEEDING MANUAL 2023 EDITION.
6. SEED SHALL BE FROM LOCAL ORIGIN AND WILD ECOTYPE. SEED ORIGIN SHALL BE CERTIFIED BY THE MN CROP IMPROVEMENT ASSOCIATION. LOCAL ORIGIN SHALL MEAN WITHIN 150 MILES OF PROJECT SITE. PROVIDE MOIA DOCUMENTATION TO ENGINEER PRIOR TO SEEDING. ONLY NATIVE SEED WILL BE INSTALLED WITHIN THE PROJECT SITE, EXCEPT FOR COVER CROP.
7. COVER CROP SHALL CONSIST OF REGREEN OR APPROVED EQUAL.
8. SOW SEED MIXES ON DISTURBED AREAS AFTER ALL GRADING AND CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. A CULTIPACKER OR SIMILAR DEVICE MUST BE USED AFTER FINAL SEEDING TO ENSURE PROPER SEED TO SOIL CONTACT. DO NOT DRAG OR FURROW THE SOIL AFTER SEEDING.
9. IF AREAS OF BARE GROUND PERSIST AFTER FIRST GROWING SEASON, RESEED PER PLAN.

PERMITS

- 1. MINNESOTA DEPARTMENT OF NATURAL RESOURCES, PUBLIC WATERS WORK PERMIT
A. CONTRACTOR SHALL ADHERE TO ALL PERMIT REQUIREMENTS AND WILL BE SUBJECT TO ALL PENALTIES AND FINES FOR NOT ABIDING BY THE PERMIT REQUIREMENTS.
2. UNITED STATES ARMY CORPS OF ENGINEERS PERMIT
A. CONTRACTOR SHALL ADHERE TO ALL PERMIT REQUIREMENTS AND WILL BE SUBJECT TO ALL PENALTIES AND FINES FOR NOT ABIDING BY THE PERMIT REQUIREMENTS.
3. MINNESOTA POLLUTION CONTROL AGENCY, NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT
A. CONTRACTOR IS RESPONSIBLE FOR SECURING NPDES PERMIT.
B. CONTRACTOR IS RESPONSIBLE FOR ALL SWPPP INSPECTIONS UNTIL SITE IS ESTABLISHED AND THE PERMIT IS CLOSED.
C. CONTRACTOR SHALL ADHERE TO ALL PERMIT REQUIREMENTS AND WILL BE SUBJECT TO ALL PENALTIES AND FINES FOR NOT ABIDING BY THE PERMIT REQUIREMENTS.
4. BROWN'S CREEK WATERSHED PERMITS
A. CONTRACTOR SHALL ADHERE TO ALL PERMIT REQUIREMENTS AND WILL BE SUBJECT TO ALL PENALTIES AND FINES FOR NOT ABIDING BY THE PERMIT REQUIREMENTS.

BASE BID SCHEDULE OF ESTIMATED QUANTITIES

Table with 5 columns: ITEM #, MNDOT Ref #, BASE BID ITEM, UNIT, QUANTITY. Lists 34 items including Mobilization, Traffic Control, Site Clearing, Common Excavation, Riprap, Seeding, and various materials.

ADD ALTERNATE - ADA ACCESS TRAIL SCHEDULE OF ESTIMATED QUANTITIES

Table with 5 columns: ITEM #, MNDOT Ref #, BASE BID ITEM, UNIT, QUANTITY. Lists 5 items for ADA access trail construction.

Table titled 'BROWN'S CREEK PARK PROPOSED CHANNEL DIMENSIONS' with columns for Bankfull Height, Min. Pool Depth, Min. Riffle Width, Min. Pool Width, Min. Bankfull Bench Width, Streambank / Bankfull Bench Slope, and Upper Bank Slope. Values are 1.8, 2, 9, 9, 10, 3:1, 3:1.

Plot Date: 02/05/2024, Drawing: emmons_180524_0041_0418-CD.dwg, User: emmons, Path: X:\180524\180524_0041_0418-CD.dwg



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. DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

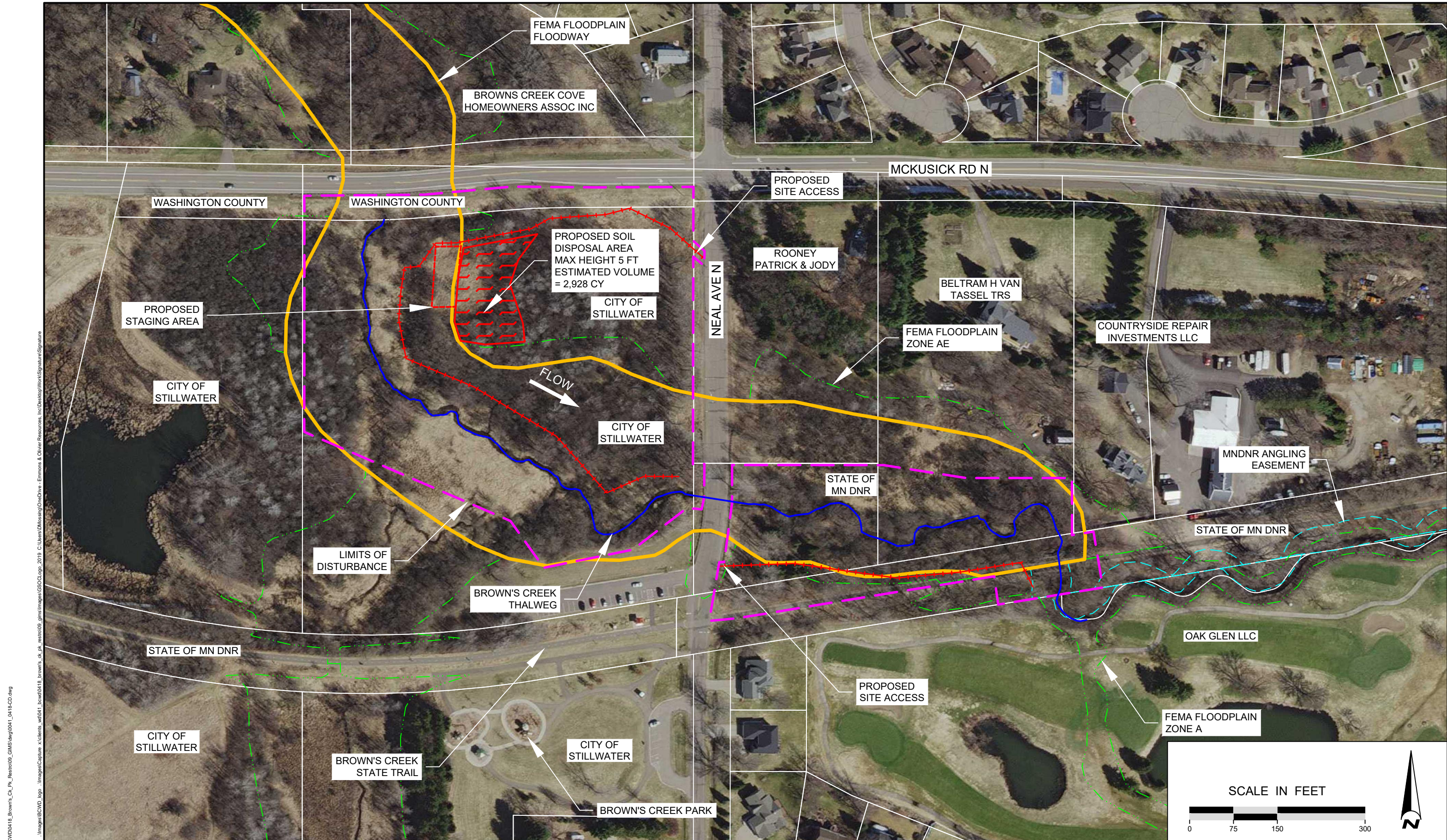
Table with 3 columns: DATE, NO., DESCRIPTION. Shows final design plan set dated 2/5/2024.

DESIGNED BY: EOR
DRAWN BY: DEM
CHECKED BY: MJM
EOR JOB #0041-0418

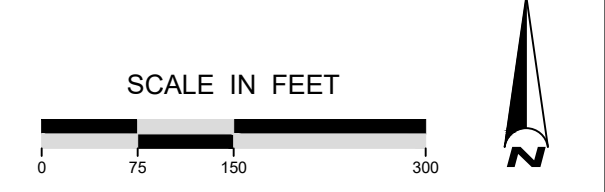


BROWN'S CREEK PARK STREAM RESTORATION
WASHINGTON COUNTY, STILLWATER, MN
BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

NOTES & SEQ
SHEET 02 OF 28



Plot Date: 02/05/2024
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 Author: Daniel E. Mossing
 Date: 2/5/2024
 Time: 10:18:48 AM
 Project: BROWN'S CREEK PARK
 Location: WASHINGTON COUNTY, MN
 Scale: 1" = 150'



EOR water ecology community
 EMMONS & OLIVIER RESOURCES, INC.
 1919 UNIV. AVE. W. #300 ST. PAUL, MN
 TEL: 651.770.8448 WWW.EORINC.COM

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Daniel E. Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

DATE	NO.	DESCRIPTION
2/5/2024	1	FINAL DESIGN PLAN SET
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	3	
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	5	
	6	



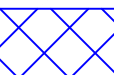
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 CHECKED BY: MJM
 EOR JOB #0041-0418

BROWN'S CREEK WATERSHED DISTRICT

BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

PROJECT OVERVIEW
 SHEET 03 OF 28

LEGEND

-  TREE TO BE REMOVED
-  PRESERVE TREE
-  INVASIVE SHRUB REMOVAL AREA

LIMITS OF DISTURBANCE

SANITARY SEWER MANHOLE TO PROTECT

WELL TO PROTECT

WELL TO PROTECT

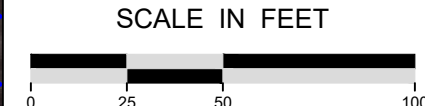
SANITARY SEWER MANHOLE TO PROTECT

SANITARY SEWER MANHOLE TO PROTECT

NEAL AVENUE

FLOW

BROWN'S CREEK THALWEG



TREES TO BE HARVESTED

TREE TYPE	# TO BE REMOVED
AMERICAN ELM	2
BLACK WILLOW	2
BOX ELDER	221
CRAB APPLE	3
COTTONWOOD	1
SILVER MAPLE	17
SPRUCE	1
TOTAL	247

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DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418



CLIENT PROJECT #XXX-XXXX

**BROWN'S CREEK PARK
 STREAM RESTORATION**
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

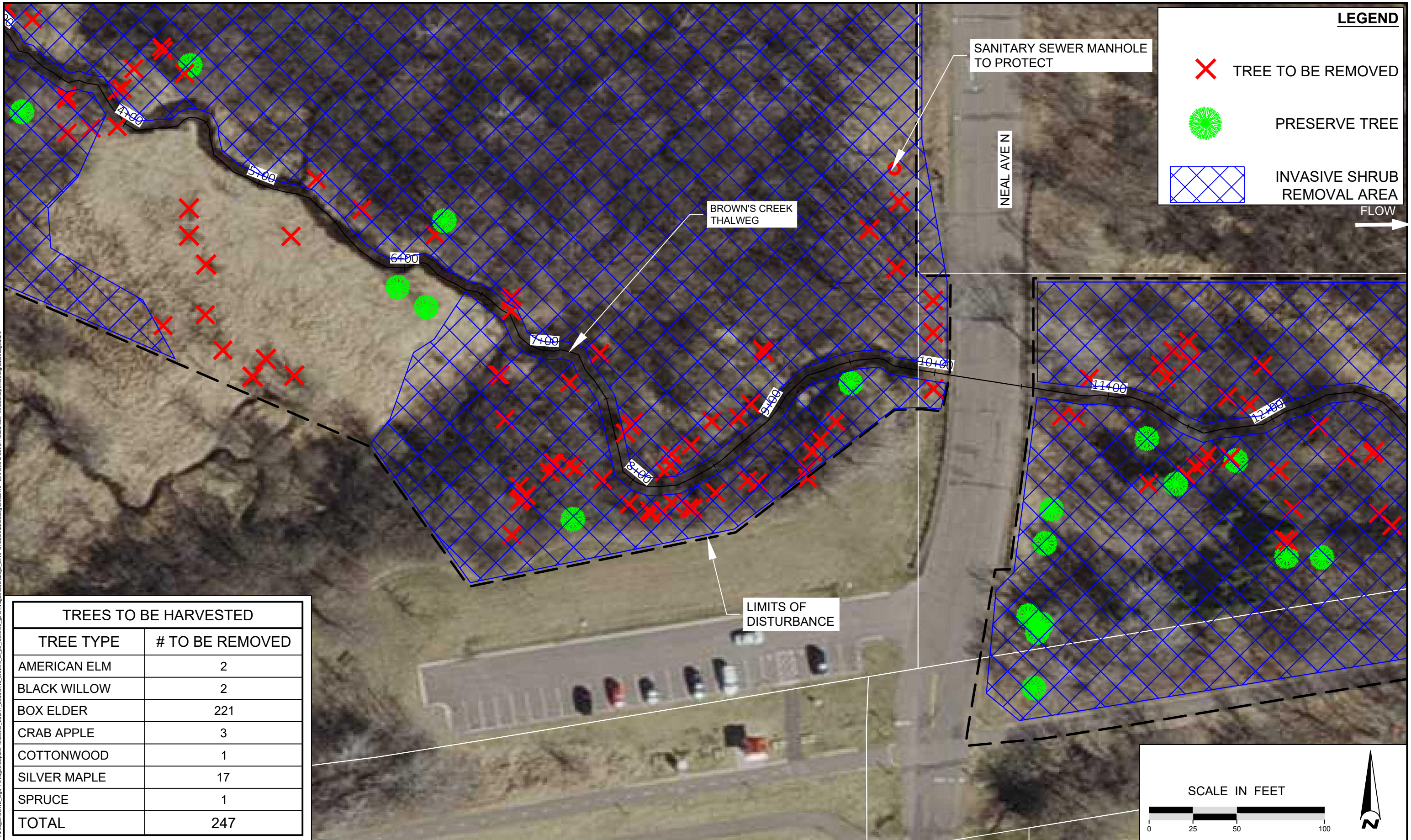
TREE HARVEST PLAN 1
 SHEET 04 OF 28

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 40041_0418-FBASE
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LEGEND

-  TREE TO BE REMOVED
-  PRESERVE TREE
-  INVASIVE SHRUB REMOVAL AREA

FLOW 



TREES TO BE HARVESTED	
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Daniel E. Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

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2/5/2024	1	FINAL DESIGN PLAN SET
	2	
	3	
	4	
	5	
	6	

DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418




BROWN'S CREEK WATERSHED DISTRICT
 CLIENT PROJECT #XXX-XXXX

BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

TREE HARVEST PLAN 2
 SHEET 05 OF 28

Plot Date: 02/05/2024
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LEGEND

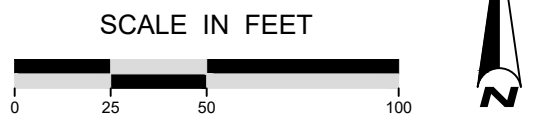
 TREE TO BE REMOVED

 PRESERVE TREE

 INVASIVE SHRUB REMOVAL AREA



TREES TO BE HARVESTED	
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Plot Date: 02/05/2024
 Drawing: EOR_0041_BROWN'S CREEK_STREAM RESTORATION SURFACE
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 40041_0418-FRASE
 40041_0418-FRASE
 40041_0418-FRASE

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EOOR water ecology community
 EMMONS & OLIVIER RESOURCES, INC.
 1919 UNIV. AVE. W. #300 ST. PAUL, MN
 TEL: 651.770.8448 WWW.EORINC.COM

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Daniel E. Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

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2/5/2024	1	FINAL DESIGN PLAN SET
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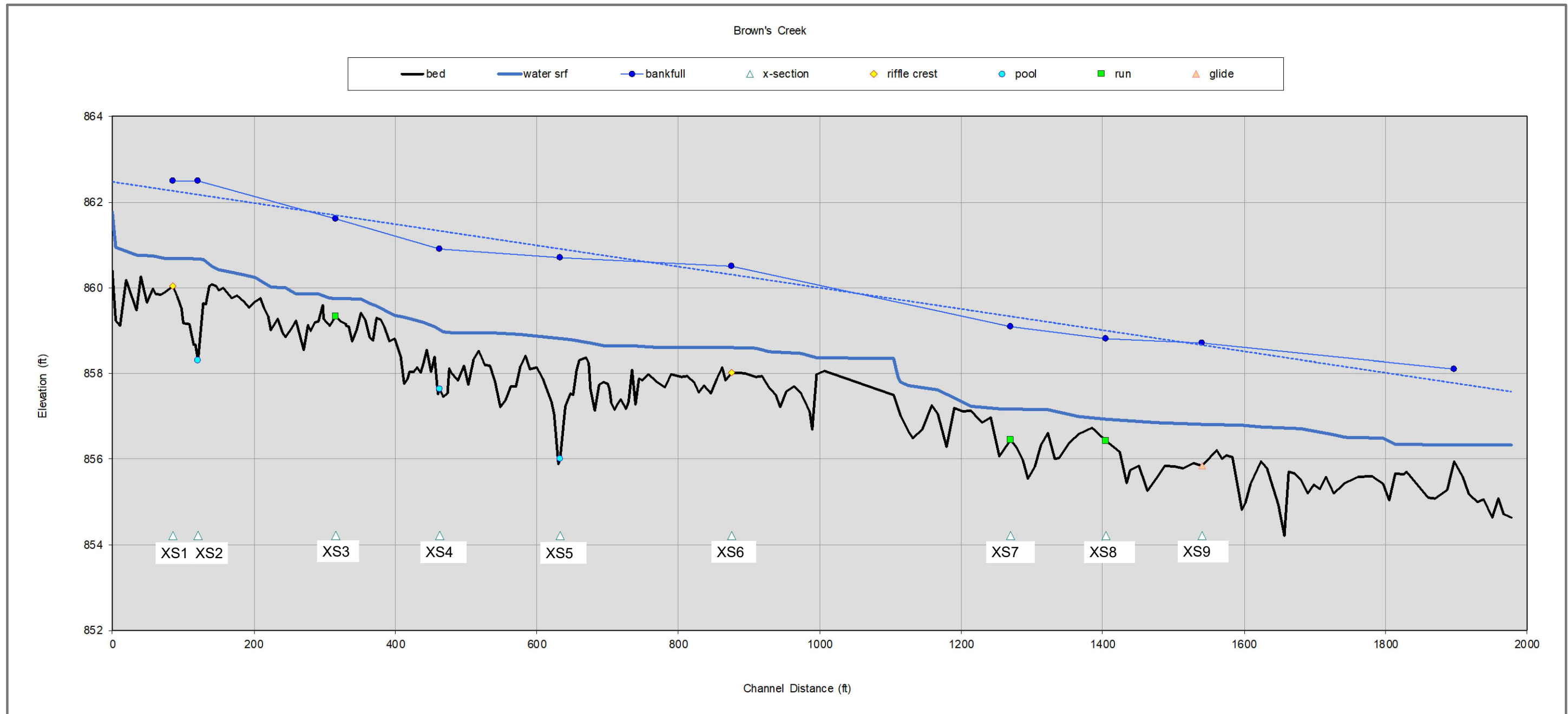
DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418



CLIENT PROJECT #XXX-XXXX

BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

TREE HARVEST PLAN 3
 SHEET 06 OF 28



NOTE:
STREAM AND WATER PROFILE SURVEYED ON DECEMBER 2, 2022

Plot Date: 02/05/2024
 Drawing: 40041_0418-CD.dwg
 User: emmons
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 Plot Date: 02/05/2024
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 User: emmons
 Title: 40041_0418-CD.dwg
 Path: C:\Users\emmons\OneDrive - Emmons & Olivier Resources, Inc\Desktop\Work\Signature



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Daniel Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

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DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418



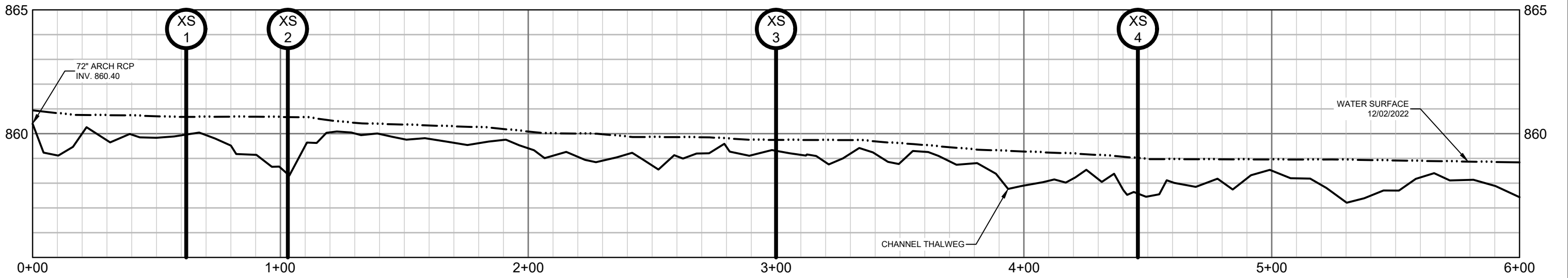
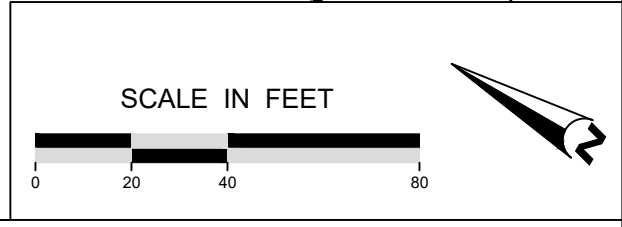
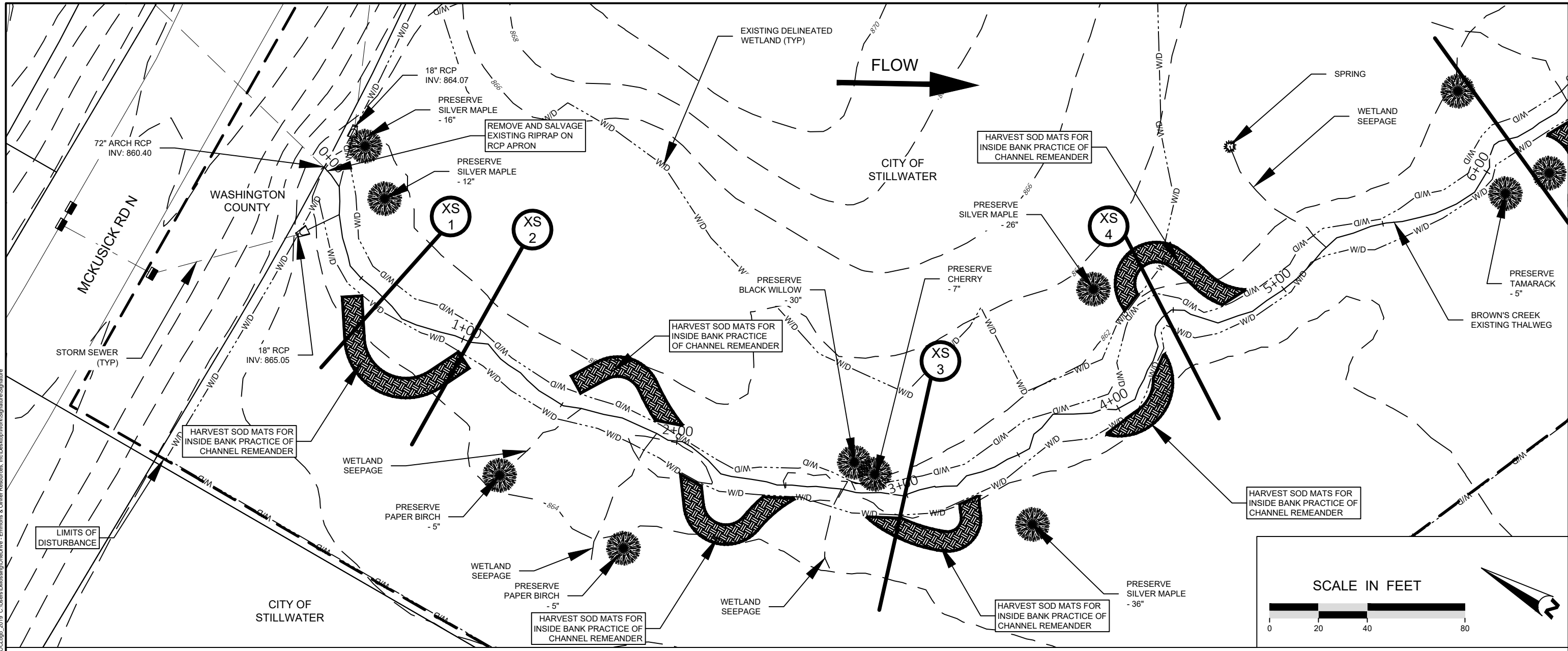
CLIENT PROJECT #XXX-XXXX

**BROWN'S CREEK PARK
 STREAM RESTORATION**
 WASHINGTON COUNTY, STILLWATER, MN

BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

EXISTING STREAM
 PROFILE

SHEET 07 OF 28



Plot Date: 02/05/2024
 Drawing Name: W0411_BCMW0418_Brown's_Ck_Pk_Restor09_GNIS.dwg
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 Plot Scale: 1"=40'
 Plot Date: 02/05/2024
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 User: emmons
 Plot Scale: 1"=40'

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Daniel E. Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

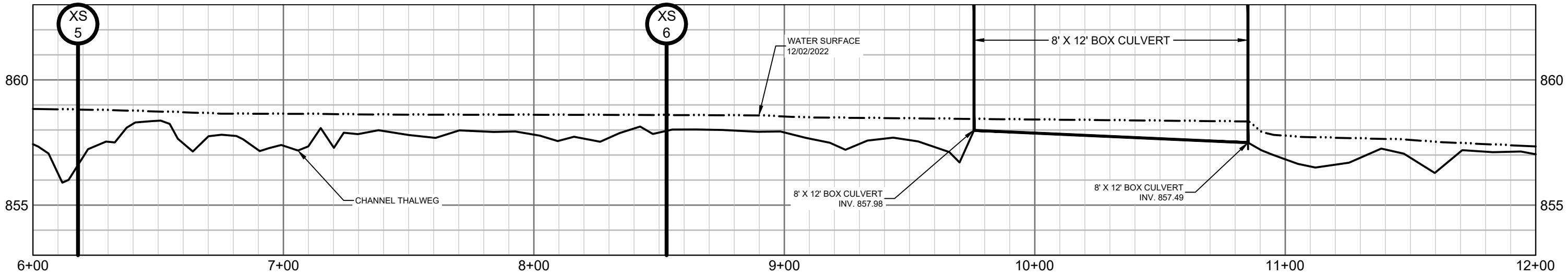
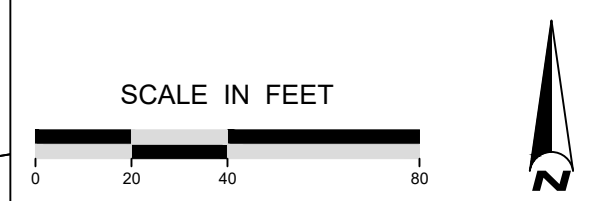
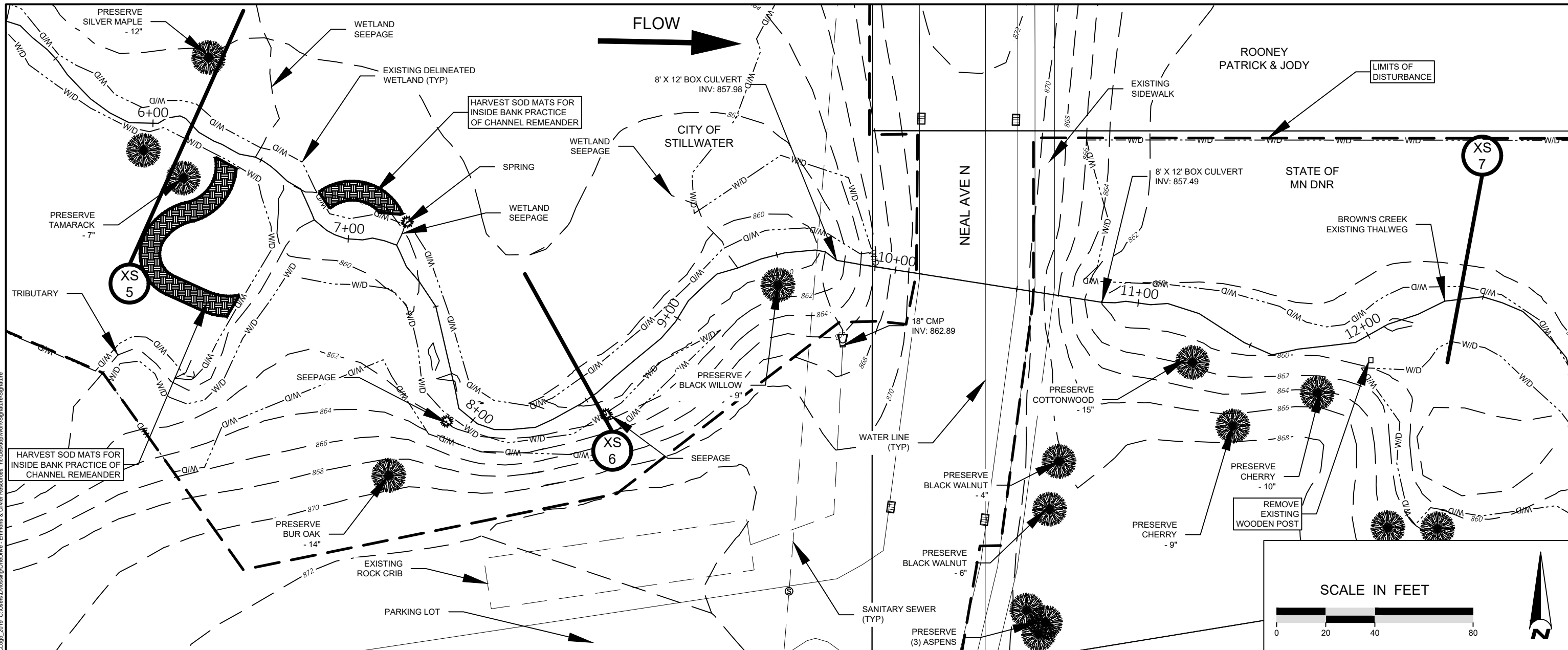
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DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418

BROWN'S CREEK WATERSHED DISTRICT
 CLIENT PROJECT #XXX-XXXX

BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

EXISTING CONDITIONS PLAN & PROFILE - 1
 SHEET 08 OF 28



Plot Date: 02/05/2024
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 Author: jmoising
 Date: 2/5/2024
 Time: 10:18:48 AM
 Plot Date: 02/05/2024
 Plot Time: 10:18:48 AM

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 1919 UNIV. AVE. W. #300 ST. PAUL, MN
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 DANIEL E. MOISING DATE: 2/5/2024 LICENSE #57796

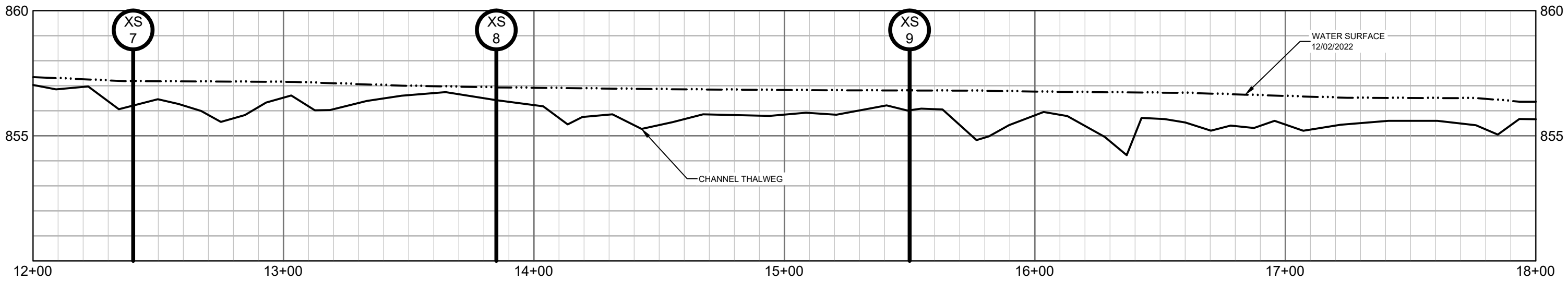
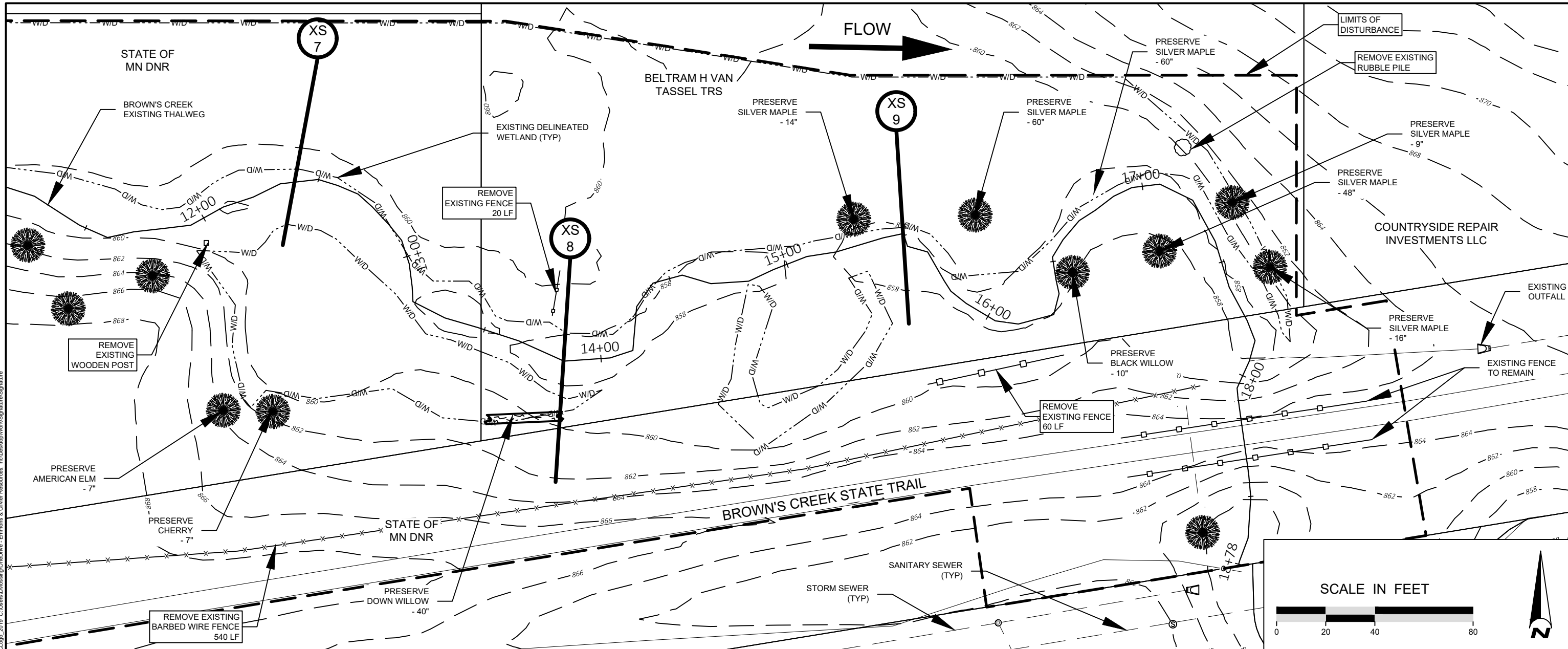
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DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418

BROWN'S CREEK WATERSHED DISTRICT
 CLIENT PROJECT #XXX-XXXX

BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

EXISTING CONDITIONS PLAN & PROFILE - 2
 SHEET 09 OF 28



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Daniel Mossing

DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

DATE	NO.	DESCRIPTION
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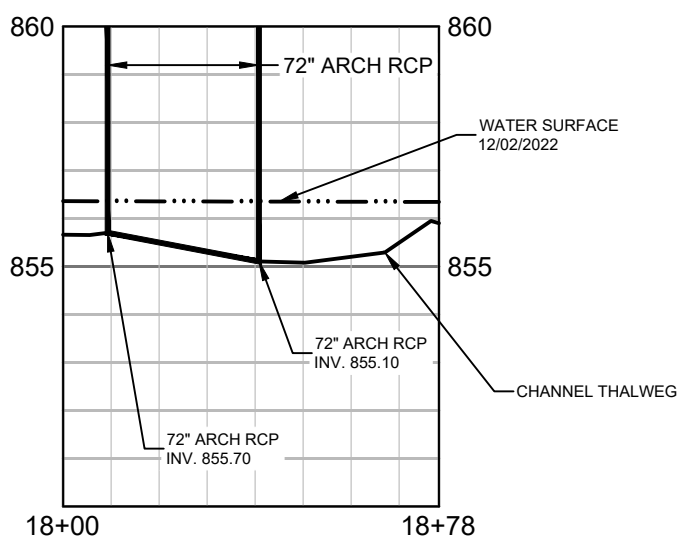
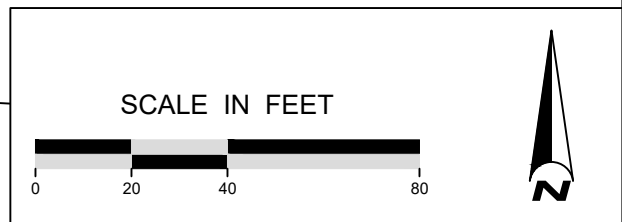
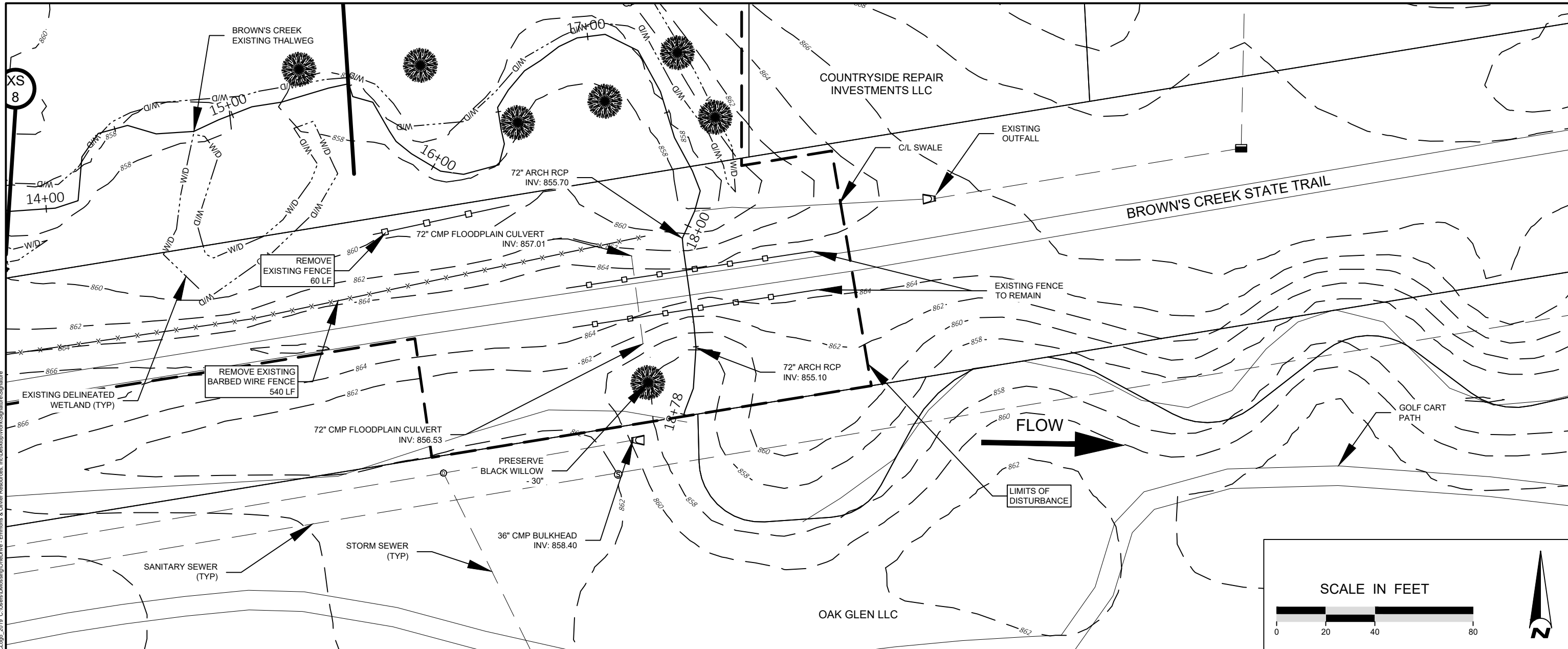
DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418



BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

EXISTING CONDITIONS PLAN & PROFILE - 3
 SHEET 10 OF 28

Plot Date: 02/05/2024
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 User: demossing
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 Project: BROWN'S CREEK WATERSHED DISTRICT
 Client: BROWN'S CREEK WATERSHED DISTRICT
 Date: 02/05/2024
 Time: 10:18:18 AM
 User: demossing



Plot Date: 02/05/2024
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 EMMONS & OLIVIER RESOURCES, INC.
 1919 UNIV. AVE. W. #300 ST. PAUL, MN
 TEL: 651.770.8448 WWW.EORINC.COM

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Daniel Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

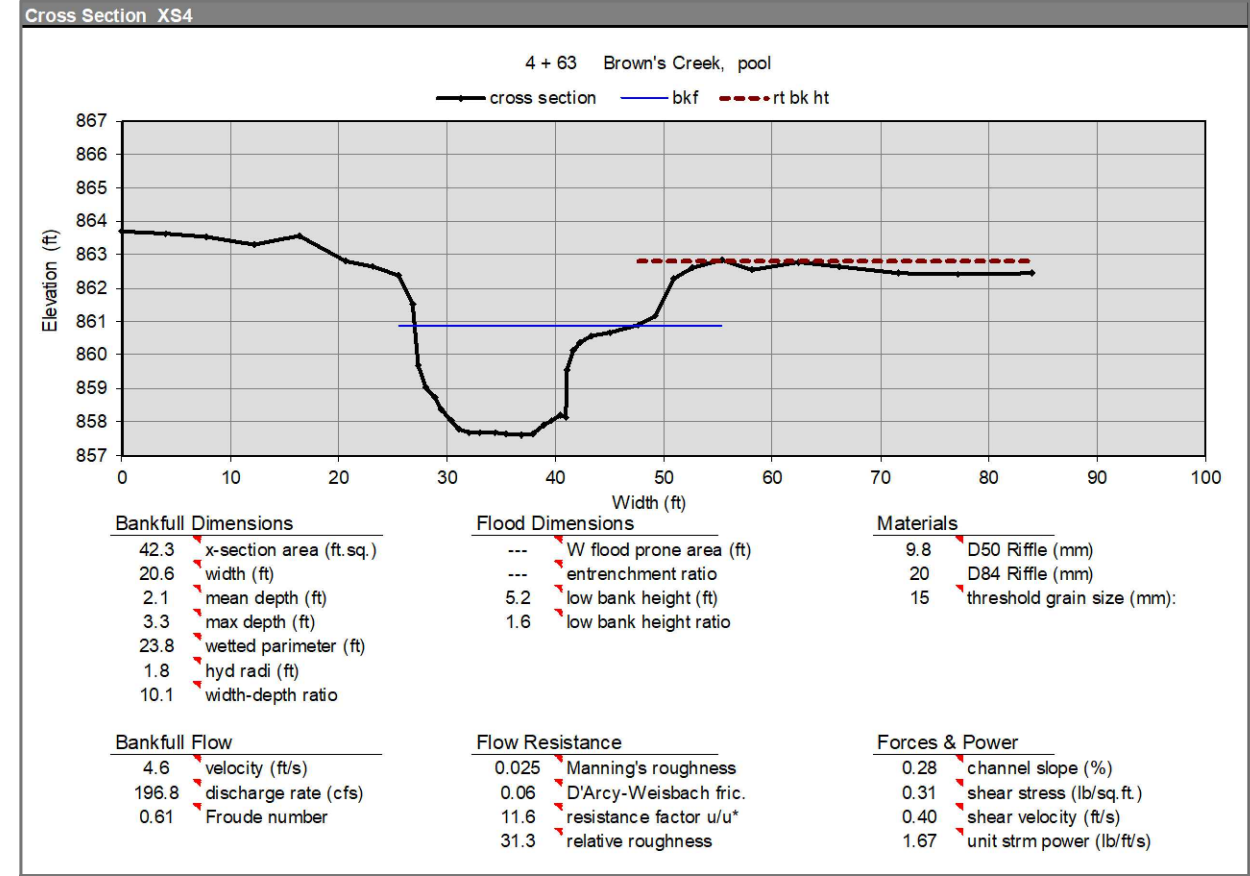
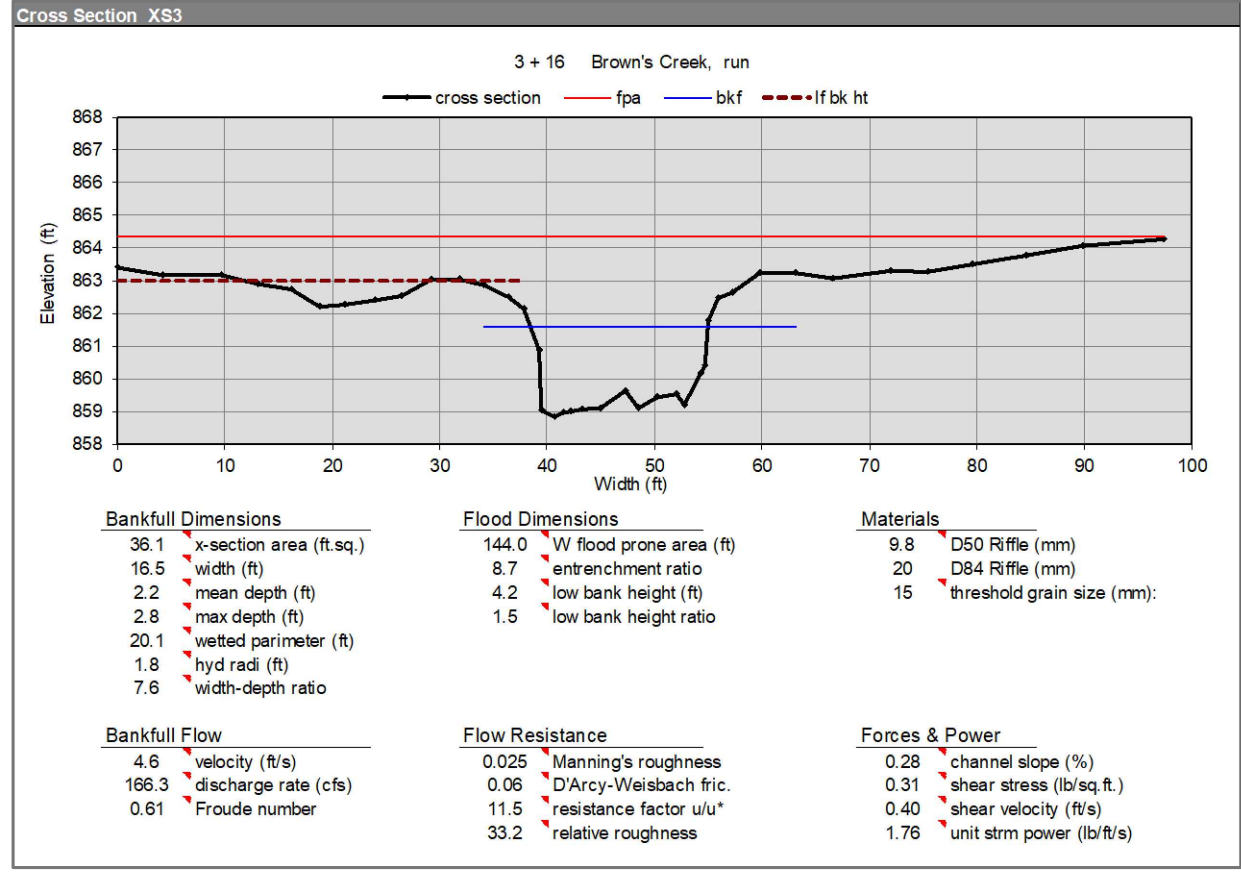
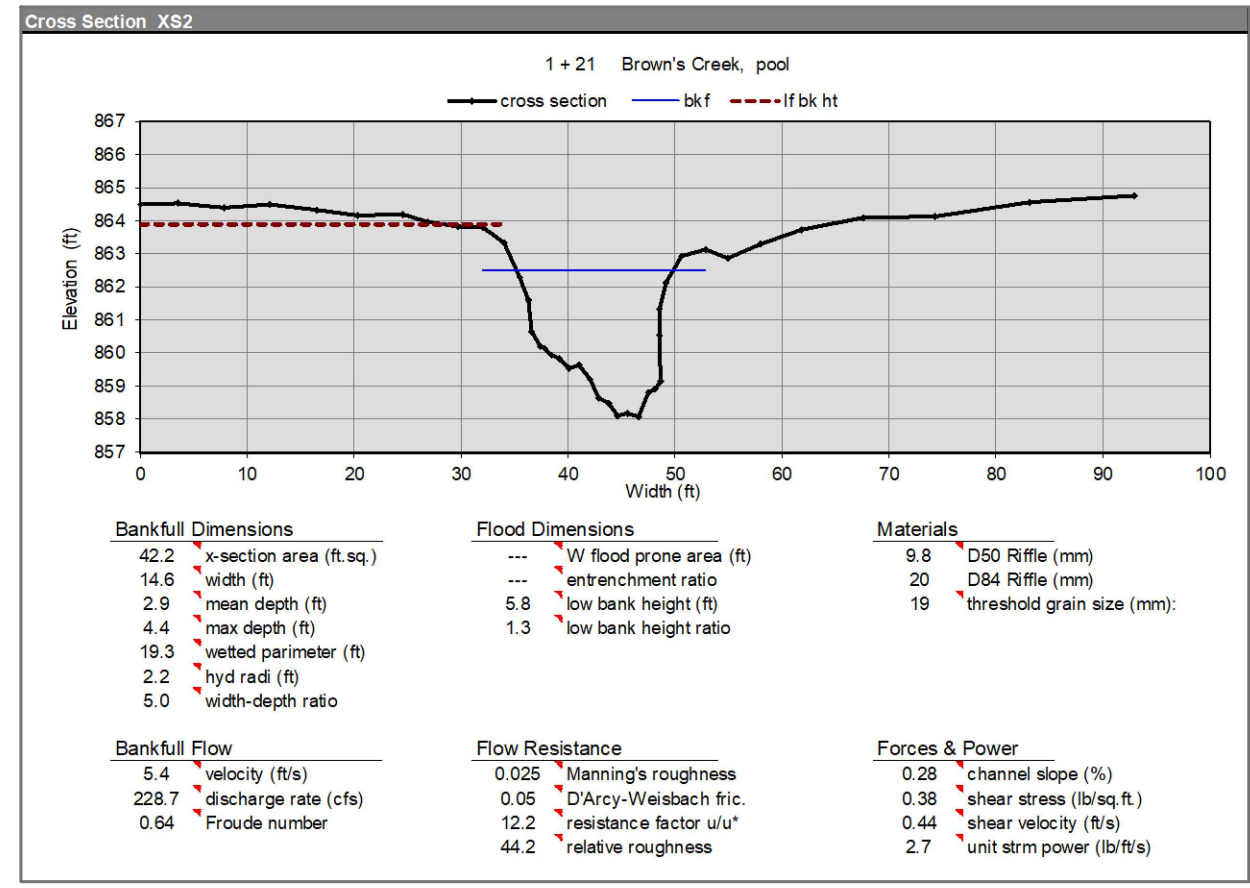
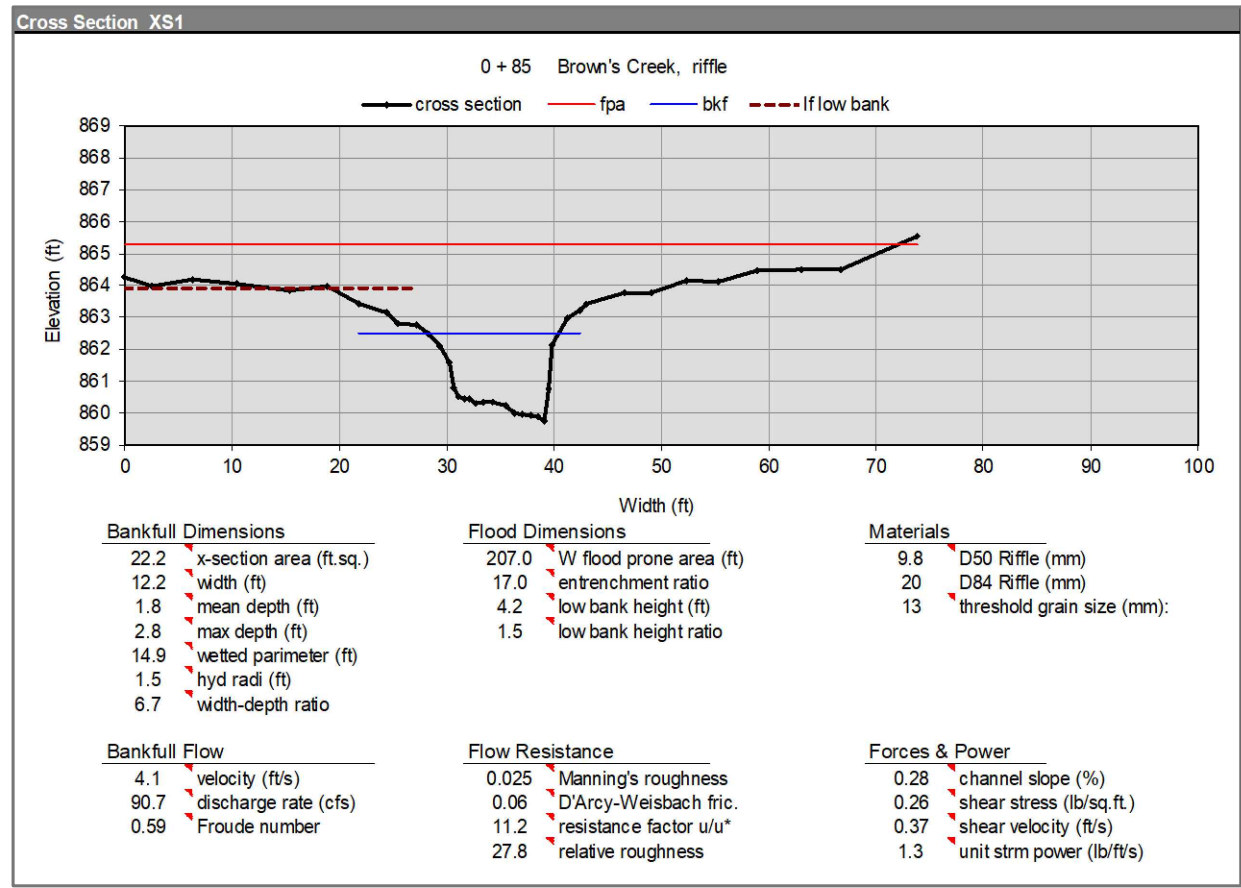
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DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418



BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

EXISTING CONDITIONS PLAN & PROFILE - 4
 SHEET 11 OF 28



NOTE:
ALL CROSS SECTIONS ARE ORIENTED DOWNSTREAM W/ RIVER LEFT ON THE LEFT AND RIVER RIGHT ON THE RIGHT.

Plot Date: 02/05/2024
 Drawing: emms_0418-XB-001_Brown's_Ck_Pk_Reservoir_GNIS.dwg
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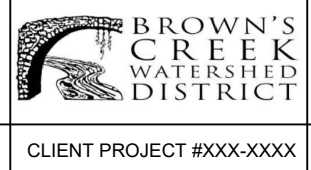


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Daniel E. Mossing
DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

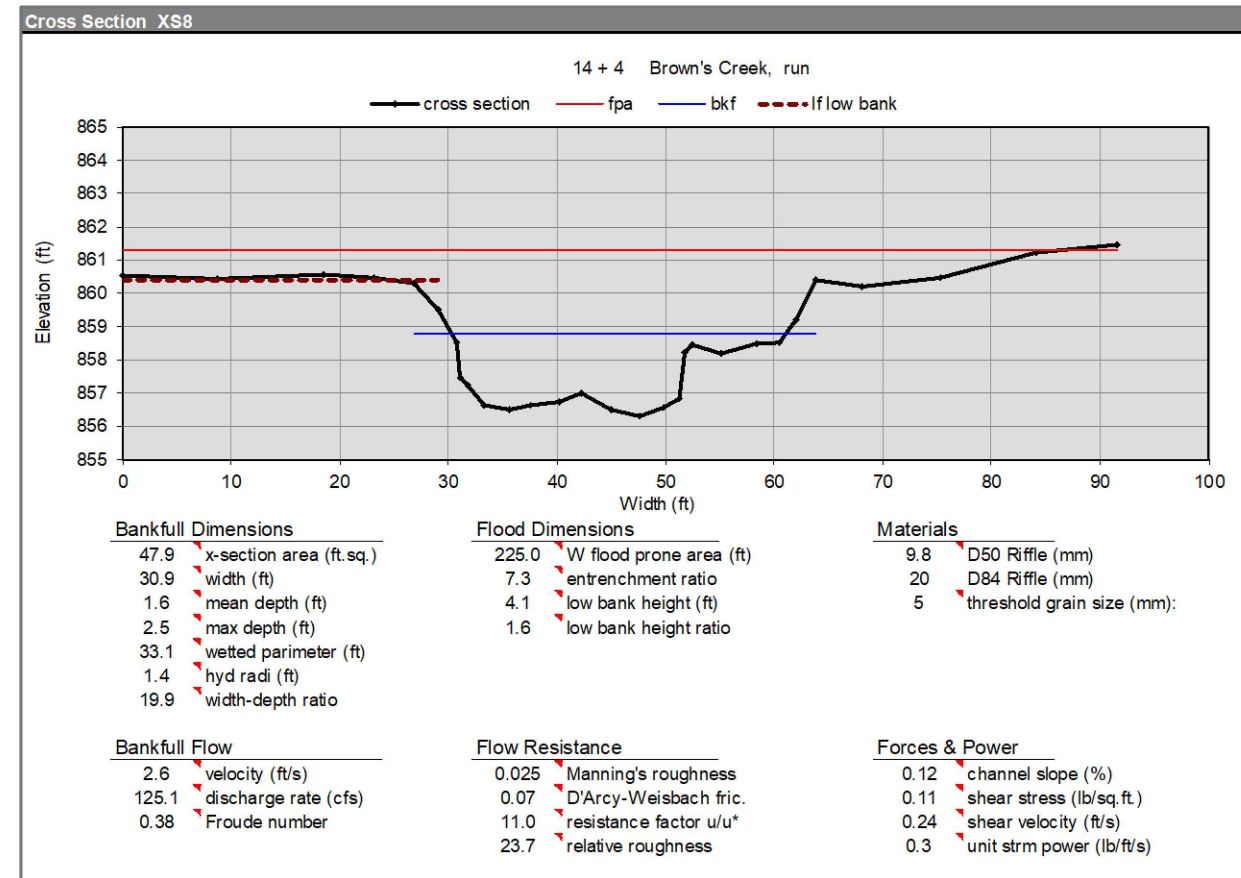
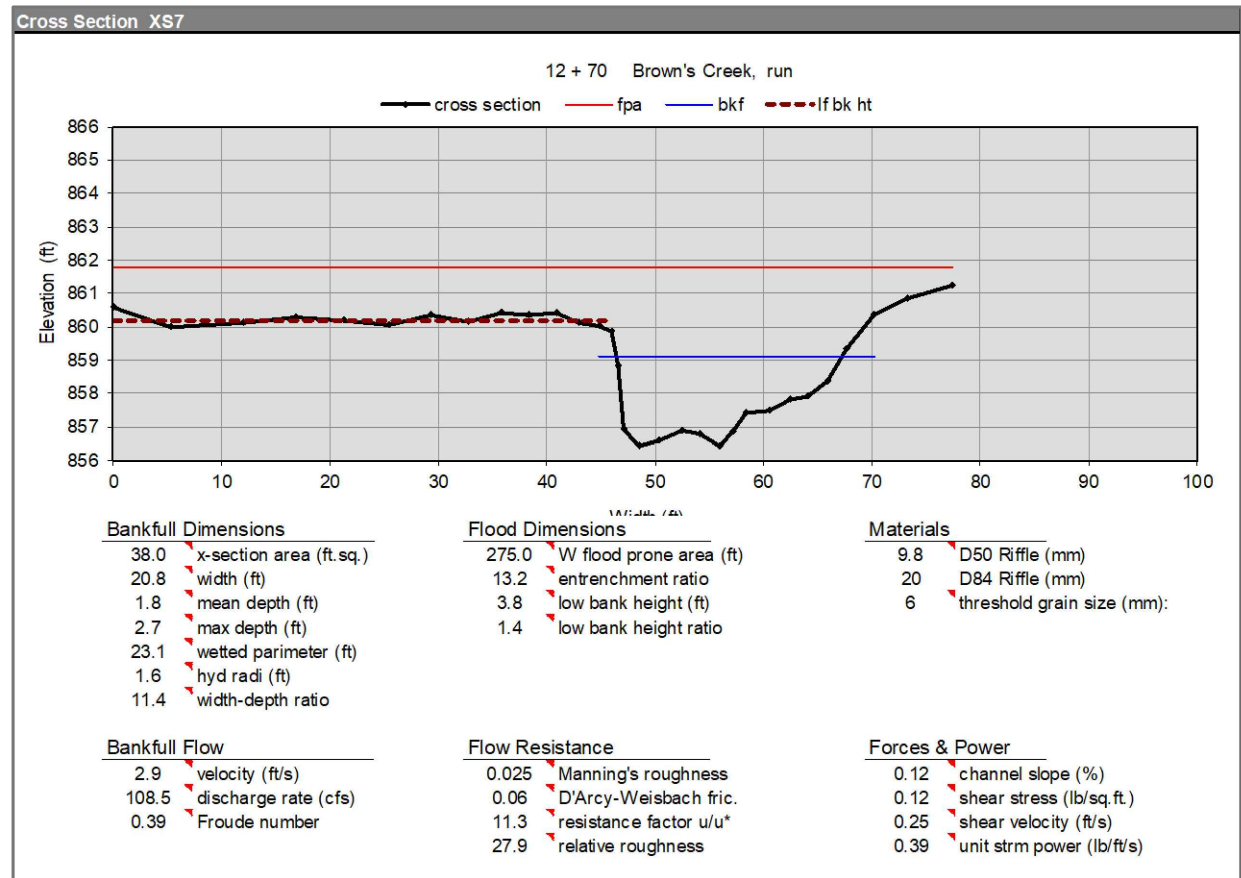
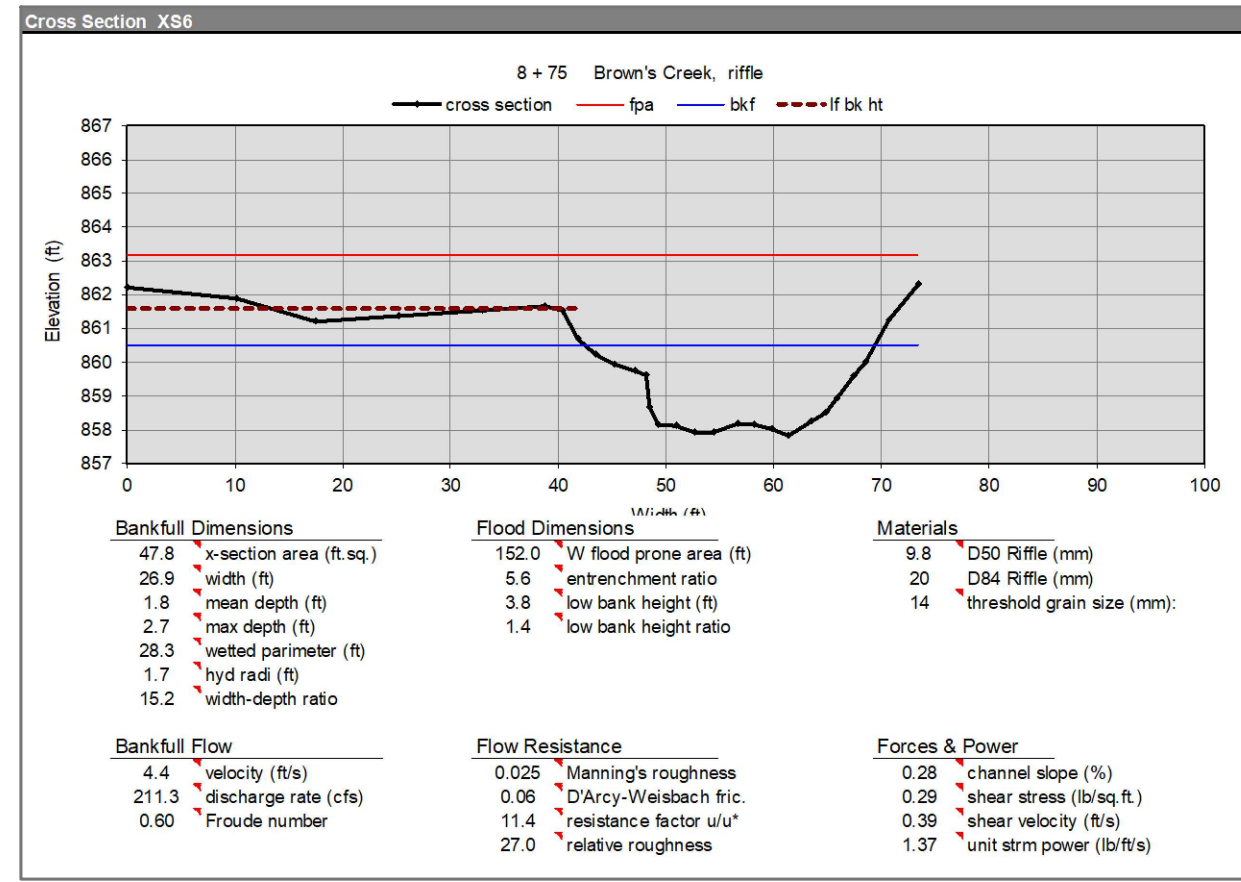
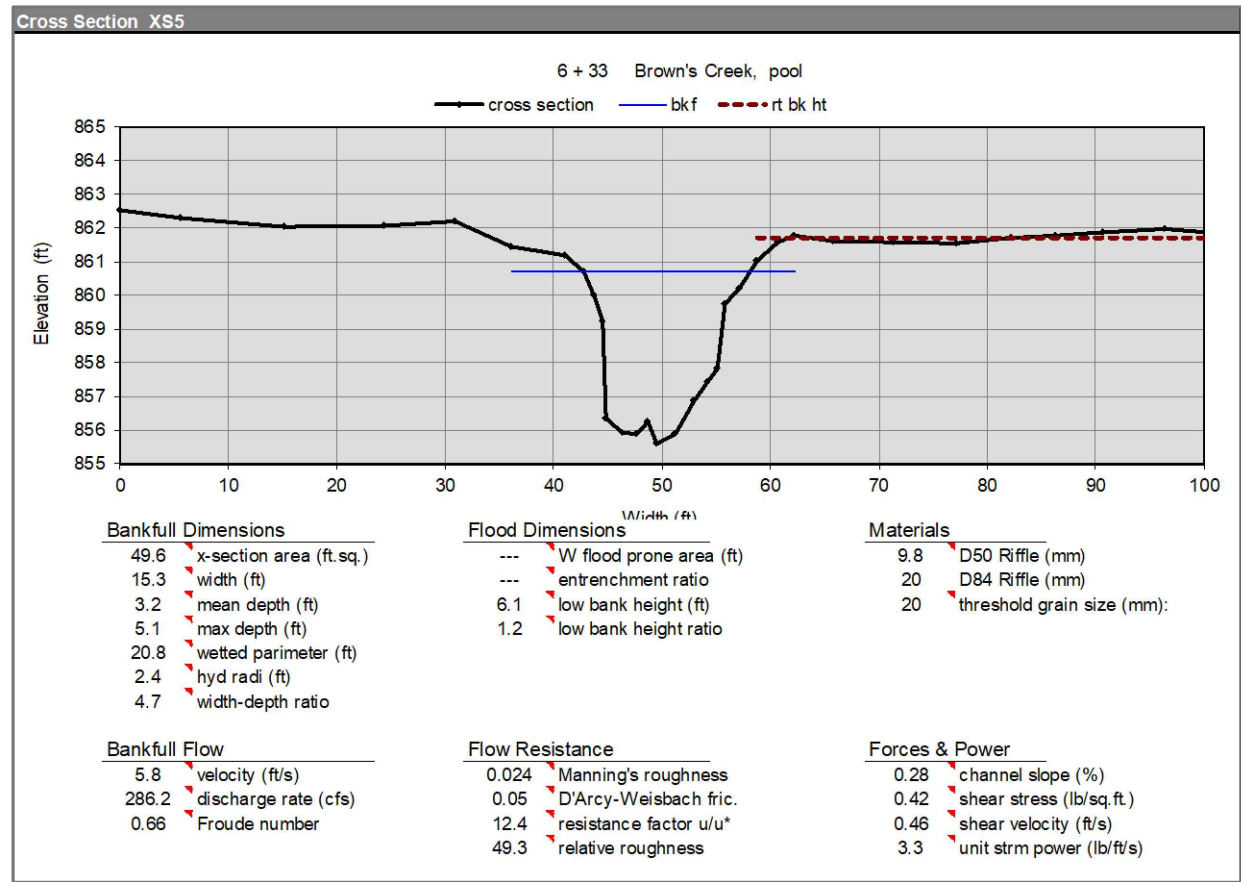
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DESIGNED BY: EOR
DRAWN BY: DEM
CHECKED BY: MJM
EOR JOB #0041-0418



**BROWN'S CREEK PARK
STREAM RESTORATION**
WASHINGTON COUNTY, STILLWATER, MN
BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

EXISTING CROSS SECTIONS - 1
SHEET 12 OF 28



NOTE:
ALL CROSS SECTIONS ARE ORIENTED DOWNSTREAM W/ RIVER LEFT ON THE LEFT AND RIVER RIGHT ON THE RIGHT.

Plot Date: 02/05/2024
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DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

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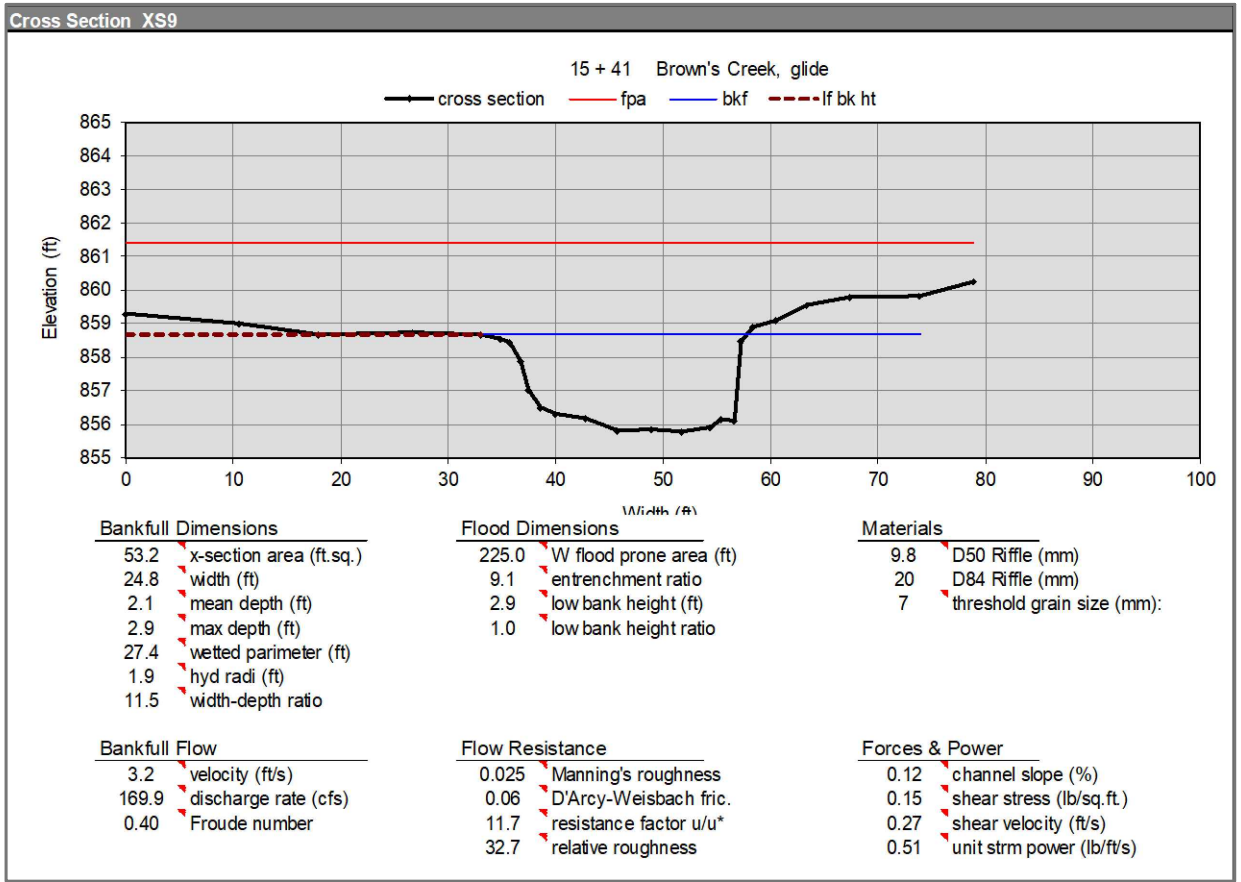
DESIGNED BY: EOR
DRAWN BY: DEM
CHECKED BY: MJM
EOR JOB #0041-0418



**BROWN'S CREEK PARK
STREAM RESTORATION**
WASHINGTON COUNTY, STILLWATER, MN
BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

EXISTING CROSS SECTIONS - 2
SHEET 13 OF 28

Plot Date: 02/05/2024
 Drawing Name: \\s01\041_BCM\0418_Brown's_Ck_Pk_Resitol09_GNIS\wg0041_0418-CD.dwg
 User: emossing
 Title: SURFACE
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 40041_0418-PRASE
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 Emmons & Olivier Resources, Inc. Desktop\Work\Signature\Signature



NOTE:
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DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

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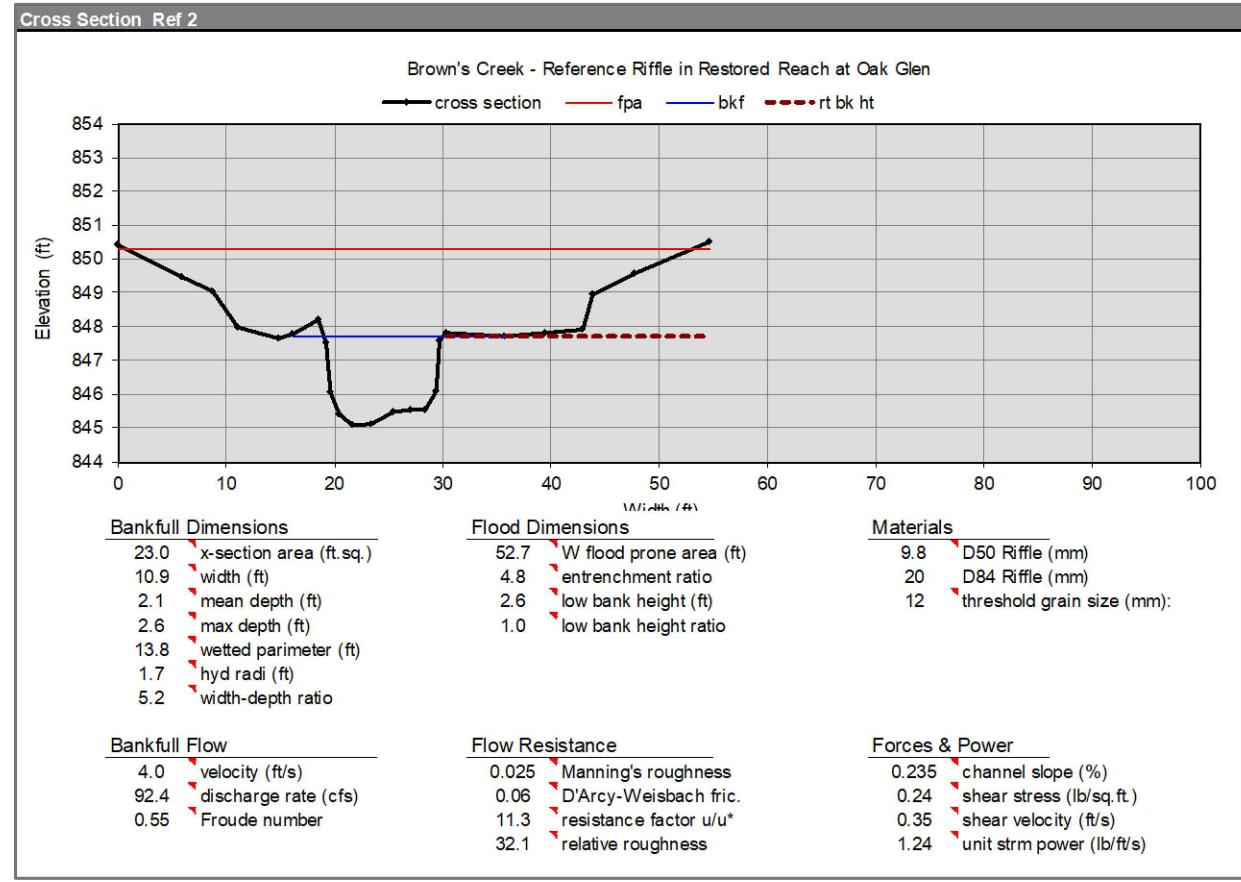
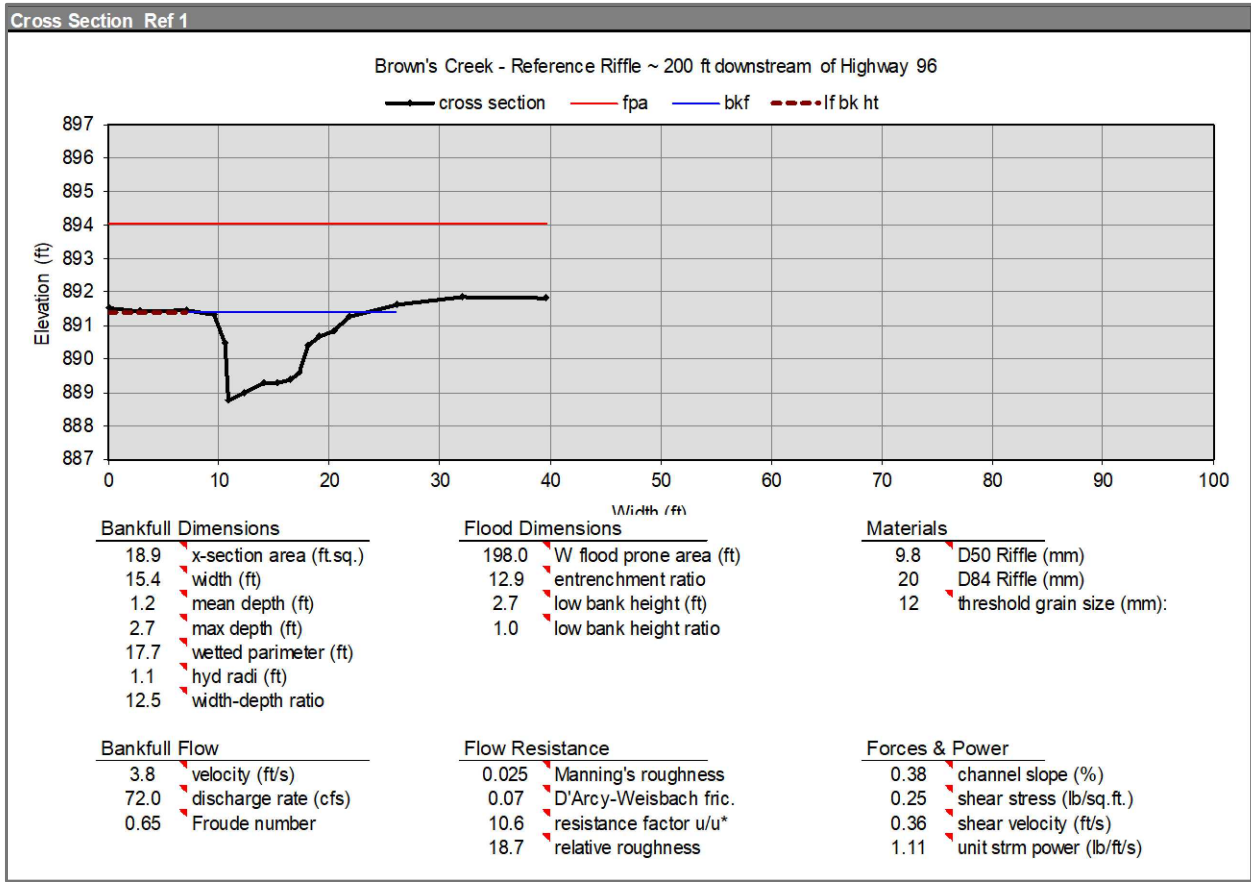
DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418



**BROWN'S CREEK PARK
 STREAM RESTORATION**
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

EXISTING CROSS SECTIONS - 3
 SHEET 14 OF 28

Plot Date: 02/05/2024
 Drawing: emms_0418-XBASE.dwg
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NOTE:
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Daniel Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

DATE	NO.	DESCRIPTION
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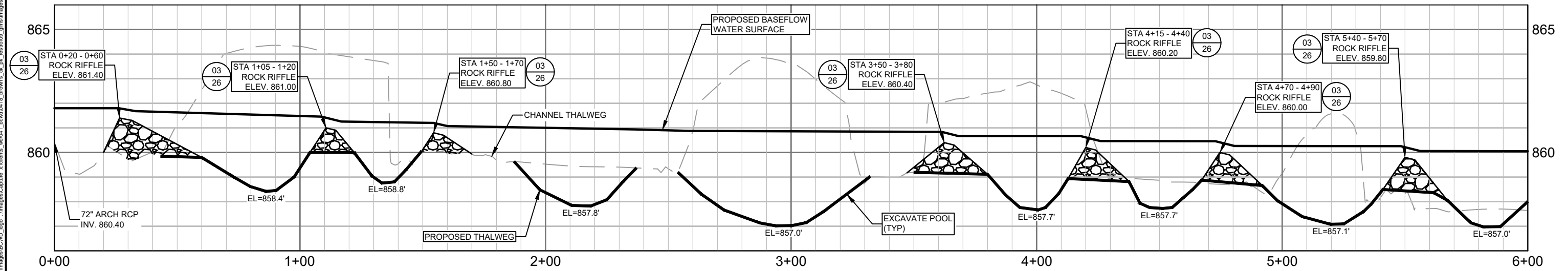
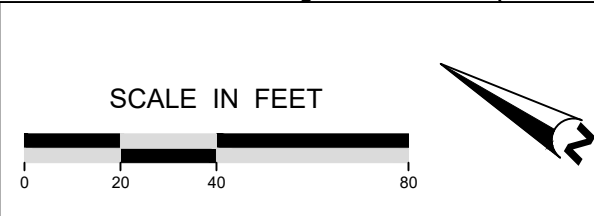
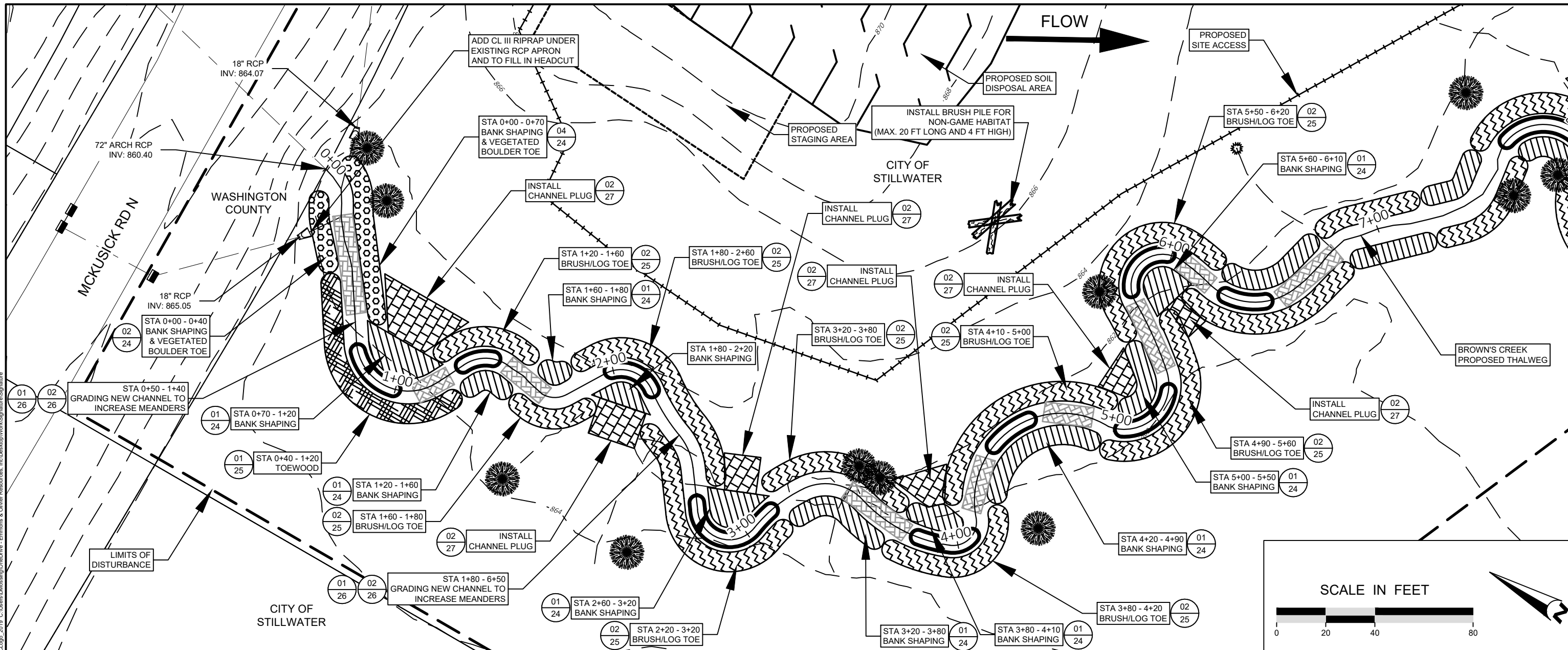
DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418



CLIENT PROJECT #XXX-XXXX

**BROWN'S CREEK PARK
 STREAM RESTORATION**
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

REFERENCE CROSS SECTIONS
 SHEET 15 OF 28



Plot Date: 02/05/2024
 Drawing: EOR_0041_BROWNS_CREEK_STREAM_SURFACE
 40041_0418-XBASE
 40041_0418-LBASE
 Sheet Border: images...

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 1919 UNIV. AVE. W. #300 ST. PAUL, MN
 TEL: 651.770.8448 WWW.EORINC.COM

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 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

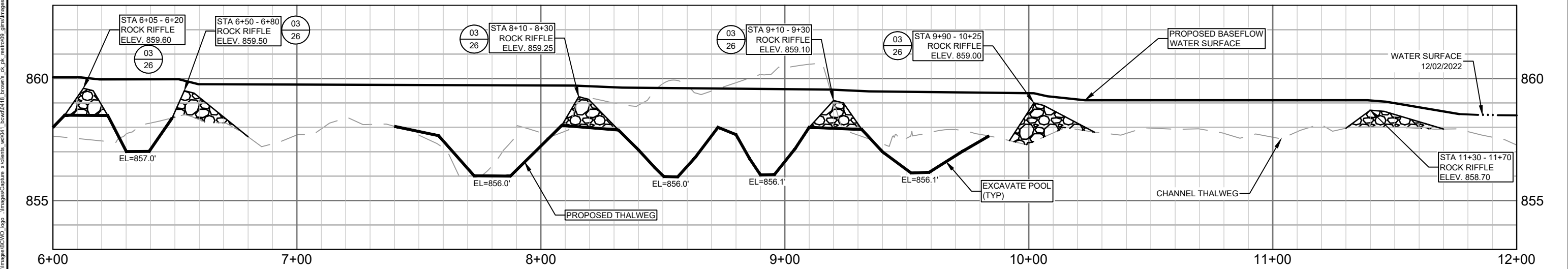
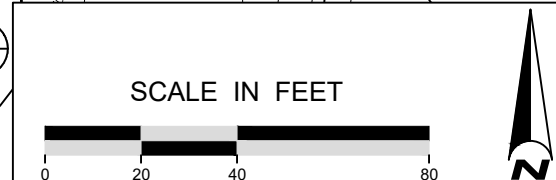
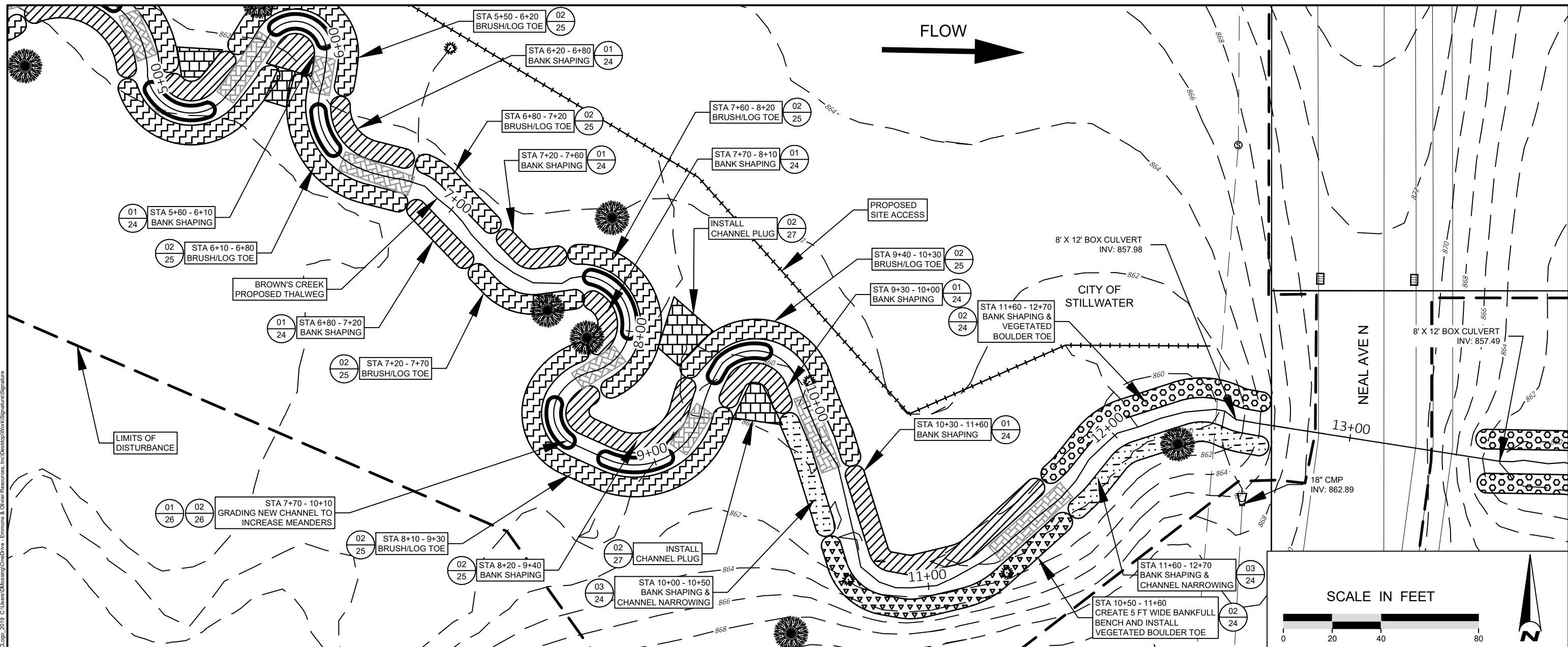
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DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418

BROWN'S CREEK WATERSHED DISTRICT
 CLIENT PROJECT #XXX-XXXX

BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

PROPOSED PLAN & PROFILE - 1
 SHEET 16 OF 28



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Daniel E. Mossing

DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

DATE	NO.	DESCRIPTION
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DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM

EOR JOB #0041-0418



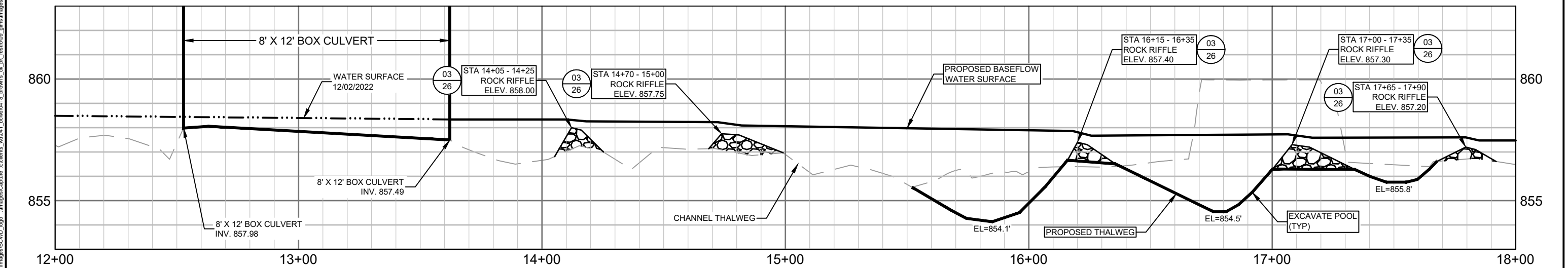
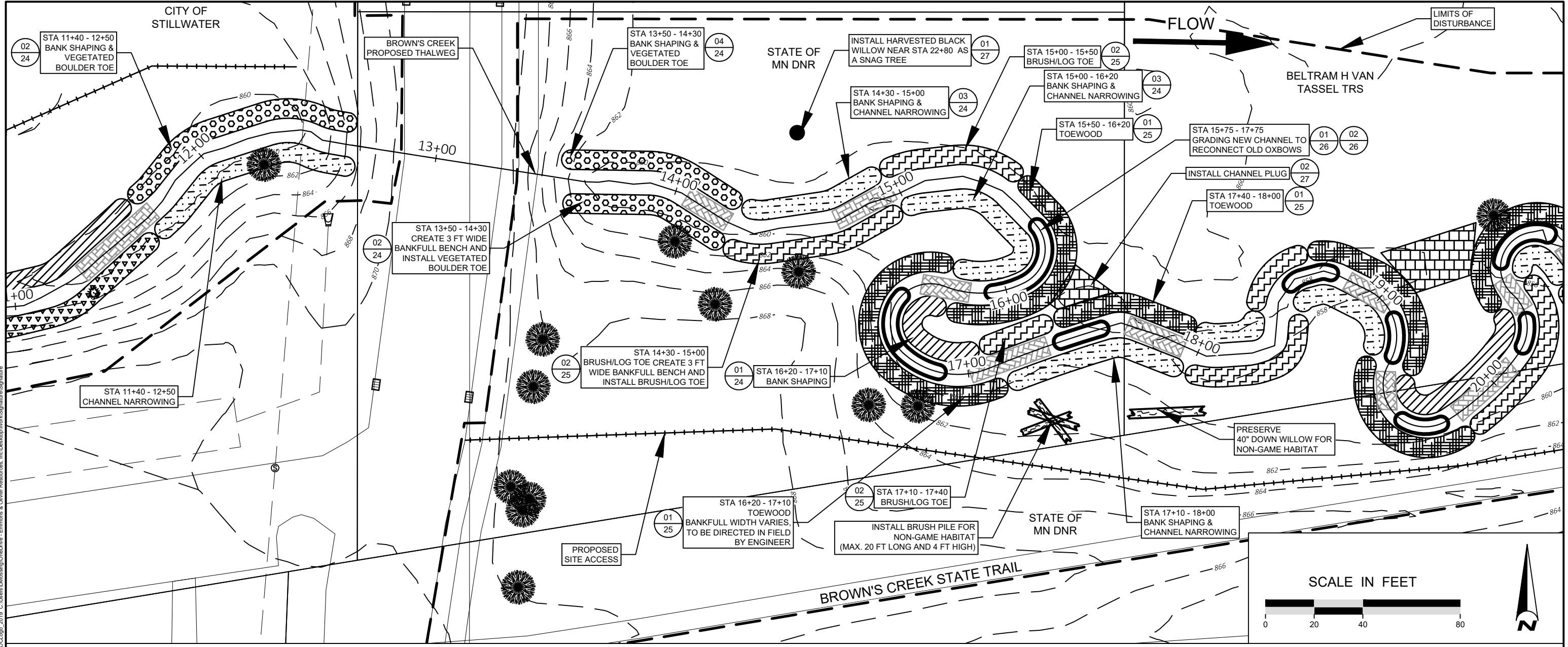
BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN

BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

PROPOSED PLAN & PROFILE - 2

SHEET 17 OF 28

Plot Date: 02/05/2024
 Drawing: 0041-0418-CD-001
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 User: EOR\demossing
 Path: C:\Users\demossing\OneDrive - Emmans & Olivier Resources, Inc\Desktop\Projects\0041-0418-CD-001.dwg



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Daniel E. Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

DATE	NO.	DESCRIPTION
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DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418

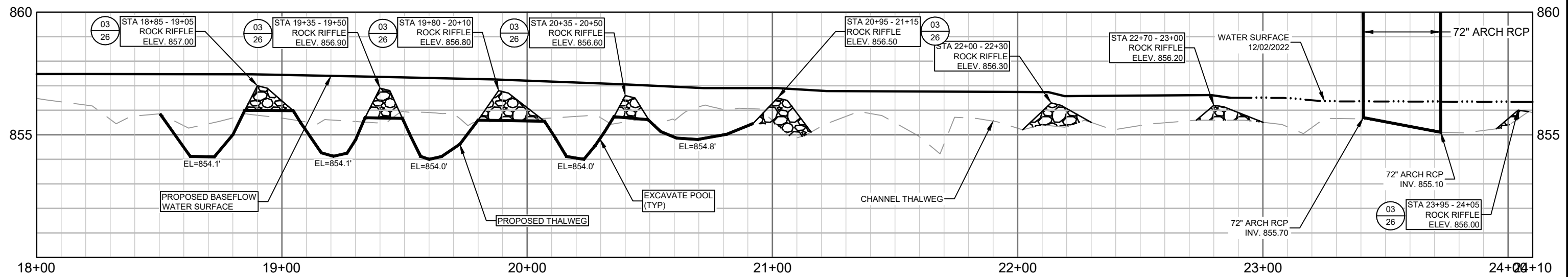
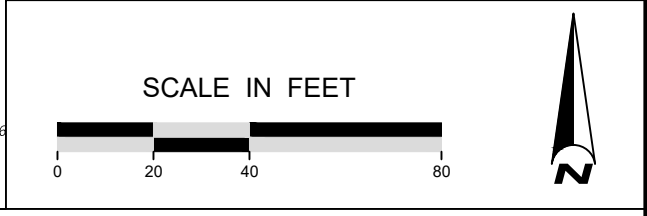
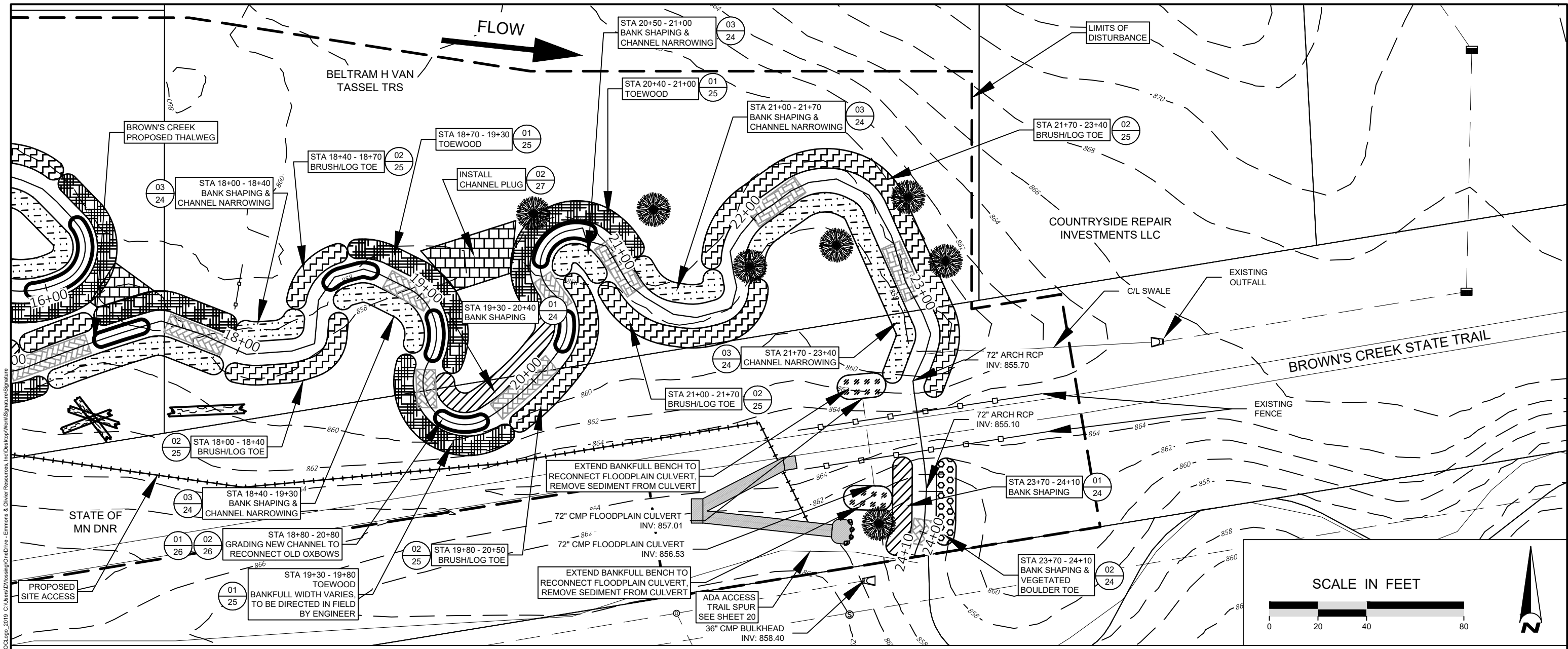


**BROWN'S CREEK PARK
 STREAM RESTORATION**
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

**PROPOSED PLAN &
 PROFILE - 3**
 SHEET 18 OF 28

Plot Date: 02/05/2024
 Drawing Path: I:\Projects\0418-Brown's_Creek_Park_Restoration_GIS\Map\0418_0418-CD.dwg
 Drawing Title: BROWN'S CREEK STATE TRAIL
 User: D:\Users\DEMOSSING\Documents
 Job: 0418-0418-CD
 Job Date: 04/18/2024
 Job Title: PROFESSIONAL ENGINEER
 Job Description: RESTORATION

EOR water ecology community
 EMMONS & OLIVIER RESOURCES, INC.
 1919 UNIV. AVE. W. #300 ST. PAUL, MN
 TEL: 651.770.8448 WWW.EORINC.COM



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Daniel Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

DATE	NO.	DESCRIPTION
2/5/2024	1	FINAL DESIGN PLAN SET
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DESIGNED BY: EOR
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 CHECKED BY: MJM

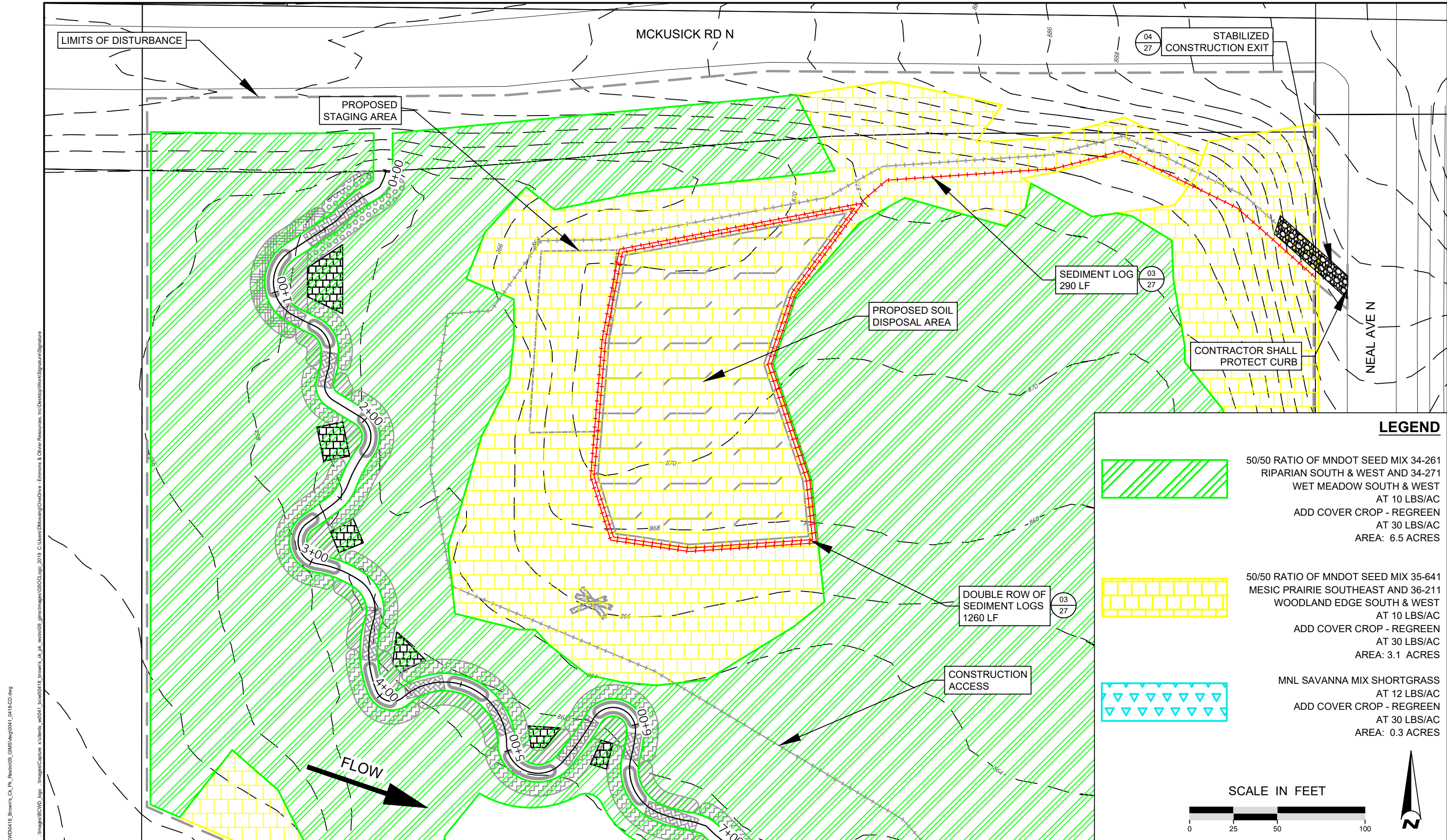
EOR JOB #0041-0418 CLIENT PROJECT #XXX-XXXX

**BROWN'S CREEK PARK
 STREAM RESTORATION**
 WASHINGTON COUNTY, STILLWATER, MN

BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

**PROPOSED PLAN &
 PROFILE - 4**

SHEET 19 OF 28



LEGEND

- 50/50 RATIO OF MNDOT SEED MIX 34-261 RIPARIAN SOUTH & WEST AND 34-271 WET MEADOW SOUTH & WEST AT 10 LBS/AC
 ADD COVER CROP - REGREEN AT 30 LBS/AC
 AREA: 6.5 ACRES
- 50/50 RATIO OF MNDOT SEED MIX 35-641 MESIC PRAIRIE SOUTHEAST AND 36-211 WOODLAND EDGE SOUTH & WEST AT 10 LBS/AC
 ADD COVER CROP - REGREEN AT 30 LBS/AC
 AREA: 3.1 ACRES
- MNL SAVANNA MIX SHORTGRASS AT 12 LBS/AC
 ADD COVER CROP - REGREEN AT 30 LBS/AC
 AREA: 0.3 ACRES

SCALE IN FEET

Plot Date: 02/05/2024
 Drawing: emmons_olivier_resources\1919\1919-0418-CD.dwg
 User: emmons_olivier_resources\1919\1919-0418-CD.dwg
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 40041_0418-XBASE
 40041_0418-XBASE
 40041_0418-XBASE

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Daniel Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

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DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418

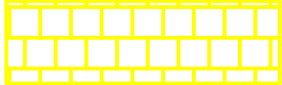
BROWN'S CREEK WATERSHED DISTRICT
 CLIENT PROJECT #XXX-XXXX


BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

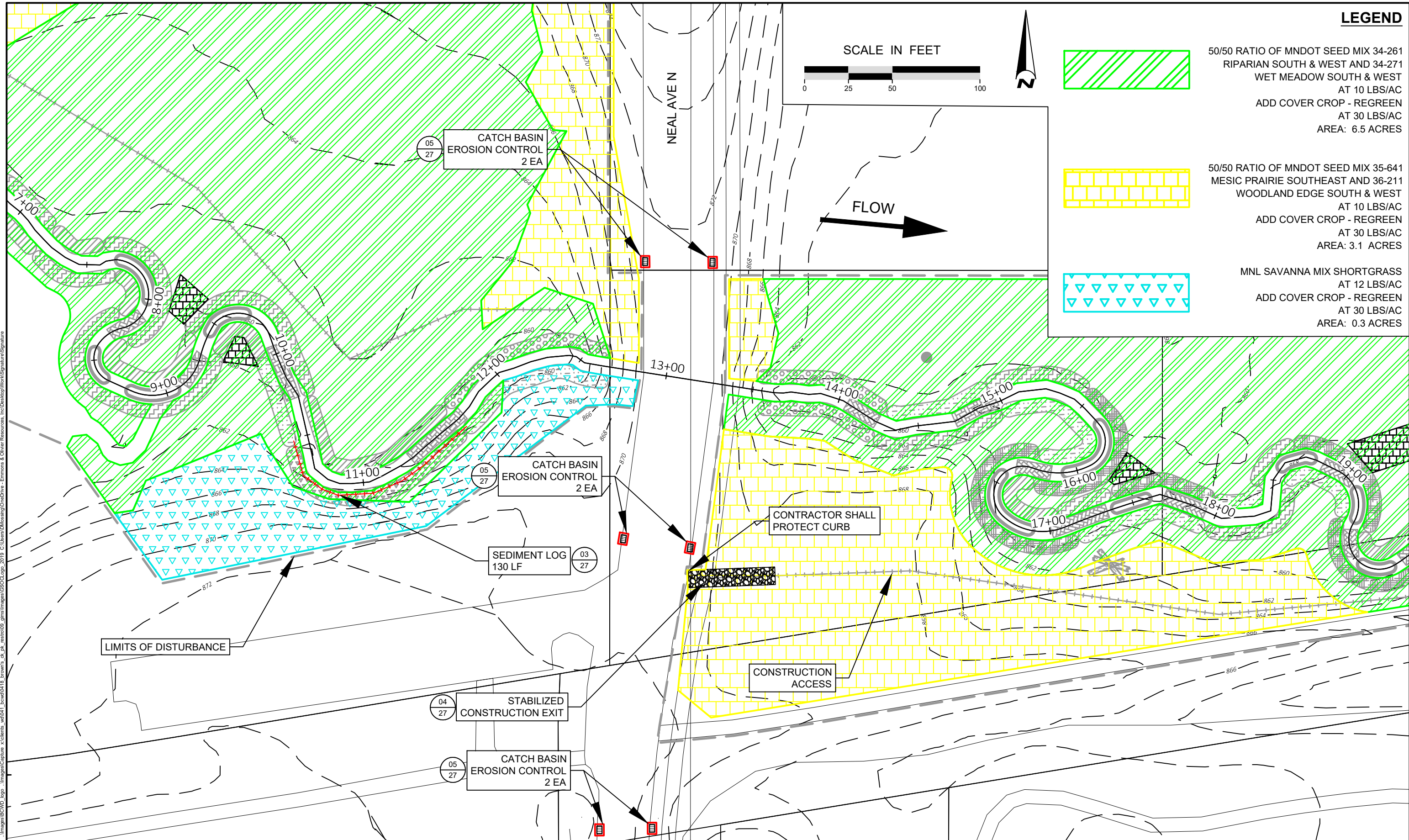
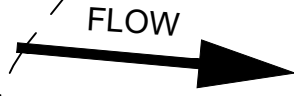
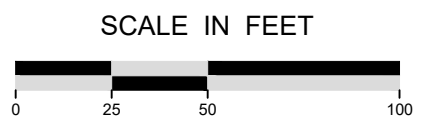
ESC & RESTORATION PLAN 1
 SHEET 21 OF 28

LEGEND

- 
 50/50 RATIO OF MNDOT SEED MIX 34-261
 RIPARIAN SOUTH & WEST AND 34-271
 WET MEADOW SOUTH & WEST
 AT 10 LBS/AC
 ADD COVER CROP - REGREEN
 AT 30 LBS/AC
 AREA: 6.5 ACRES


- 
 50/50 RATIO OF MNDOT SEED MIX 35-641
 MESIC PRAIRIE SOUTHEAST AND 36-211
 WOODLAND EDGE SOUTH & WEST
 AT 10 LBS/AC
 ADD COVER CROP - REGREEN
 AT 30 LBS/AC
 AREA: 3.1 ACRES

- 
 MNL SAVANNA MIX SHORTGRASS
 AT 12 LBS/AC
 ADD COVER CROP - REGREEN
 AT 30 LBS/AC
 AREA: 0.3 ACRES



Plot Date: 02/05/2024
 Drawing: EOR_0041_BROWNS_CREEK_PARK_STREAM_RESTORATION_ESC_PLAN_2.dwg
 User: emm
 Plot Size: 11x17
 Plot Scale: 1:1
 Plot Orientation: Landscape
 Plot Title: ESC & RESTORATION PLAN 2
 Plot Path: C:\Users\emm\OneDrive - Emmos & Olivier Resources, Inc\Desktop\Work\Signatures\Signature


EMMOS & OLIVIER RESOURCES, INC.
 1919 UNIV. AVE. W. #300 ST. PAUL, MN
 TEL: 651.770.8448 WWW.EORINC.COM

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 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

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DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418

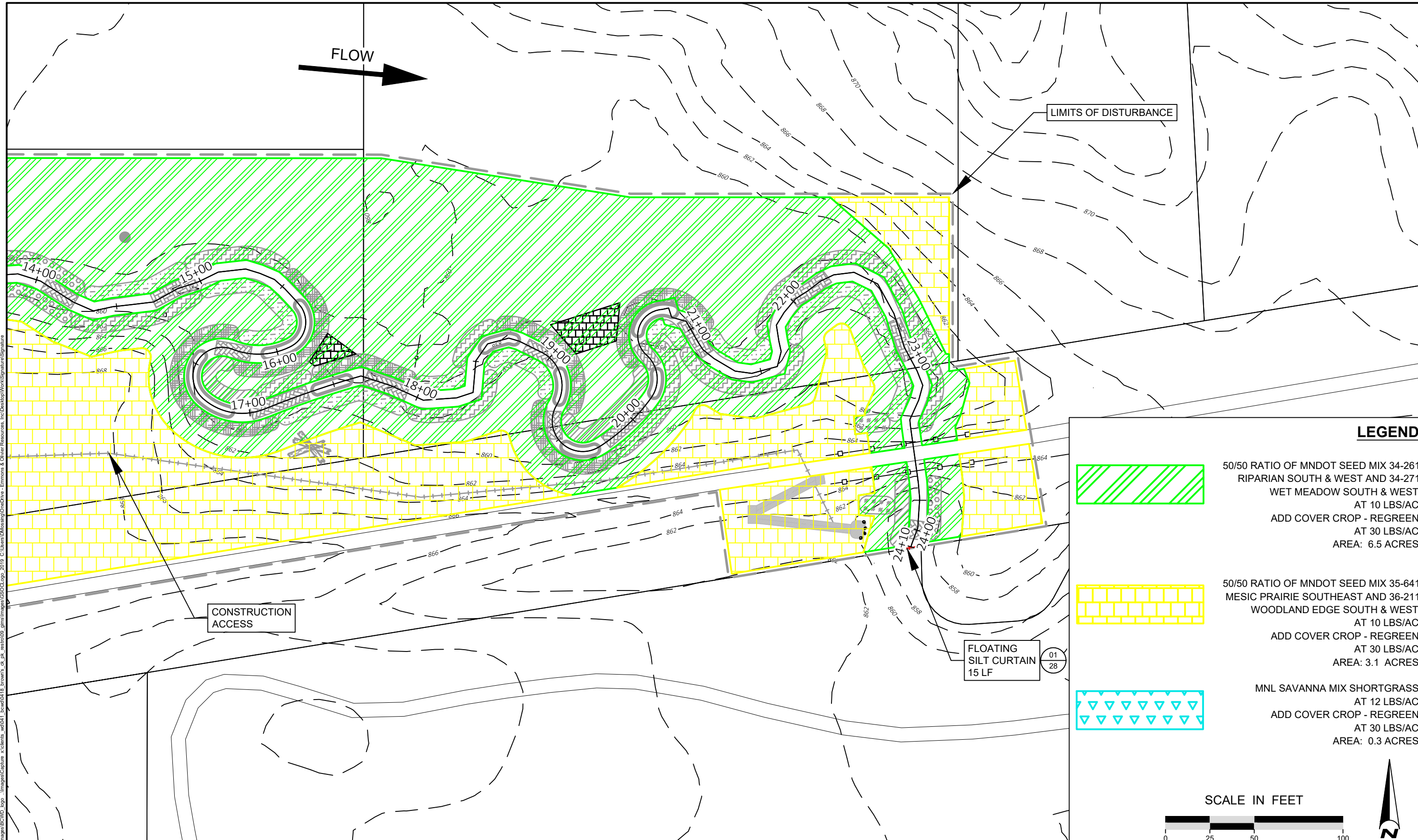

BROWN'S CREEK WATERSHED DISTRICT
 CLIENT PROJECT #XXX-XXXX

BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

ESC & RESTORATION PLAN 2
 SHEET 22 OF 28

FLOW 

LIMITS OF DISTURBANCE

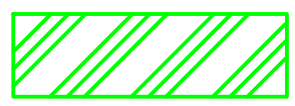


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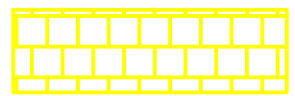
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15 LF

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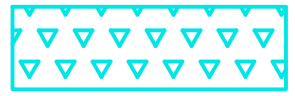
LEGEND



50/50 RATIO OF MNDOT SEED MIX 34-261
RIPARIAN SOUTH & WEST AND 34-271
WET MEADOW SOUTH & WEST
AT 10 LBS/AC
ADD COVER CROP - REGREEN
AT 30 LBS/AC
AREA: 6.5 ACRES

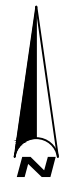
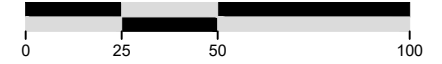


50/50 RATIO OF MNDOT SEED MIX 35-641
MESIC PRAIRIE SOUTHEAST AND 36-211
WOODLAND EDGE SOUTH & WEST
AT 10 LBS/AC
ADD COVER CROP - REGREEN
AT 30 LBS/AC
AREA: 3.1 ACRES



MNL SAVANNA MIX SHORTGRASS
AT 12 LBS/AC
ADD COVER CROP - REGREEN
AT 30 LBS/AC
AREA: 0.3 ACRES

SCALE IN FEET



Plot Date: 02/05/2024
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 40041_0418-XBASE

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 EMMONS & OLIVIER RESOURCES, INC.
 1919 UNIV. AVE. W. #300 ST. PAUL, MN
 TEL: 651.770.8448 WWW.EORINC.COM

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 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

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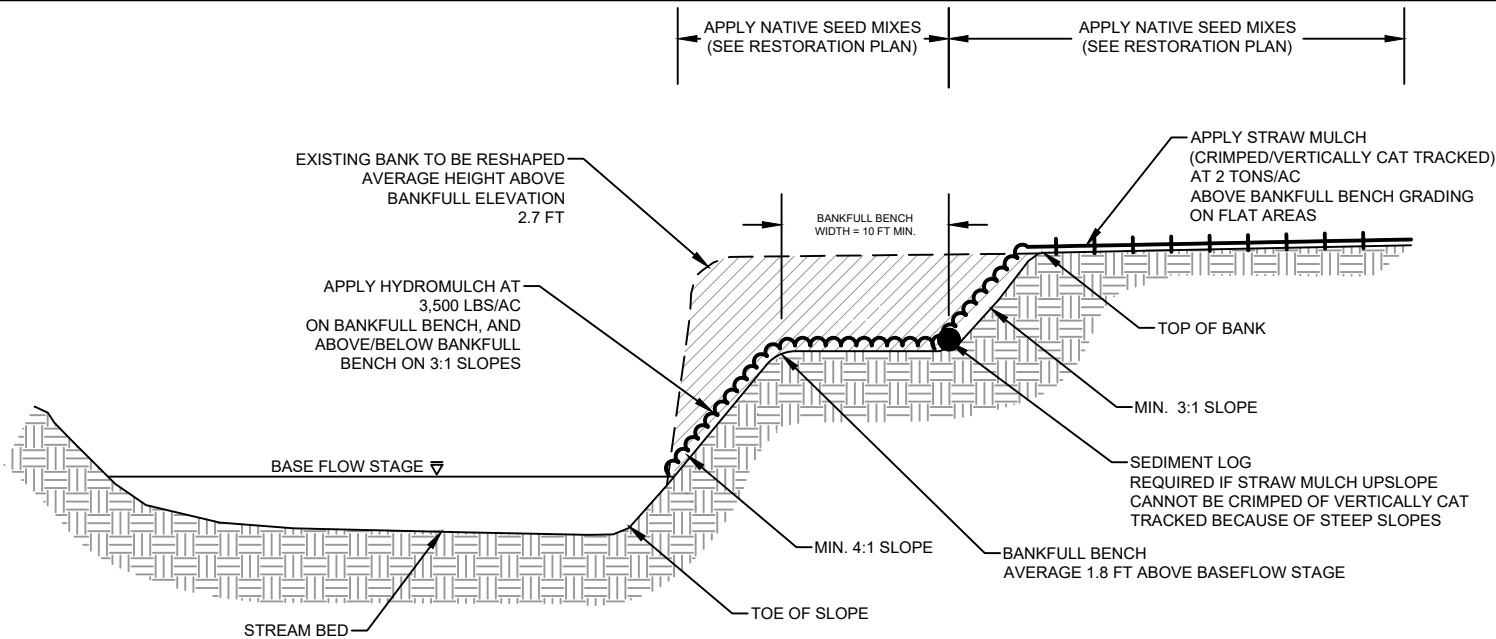
BROWN'S CREEK WATERSHED DISTRICT



CLIENT PROJECT #XXX-XXXX

BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

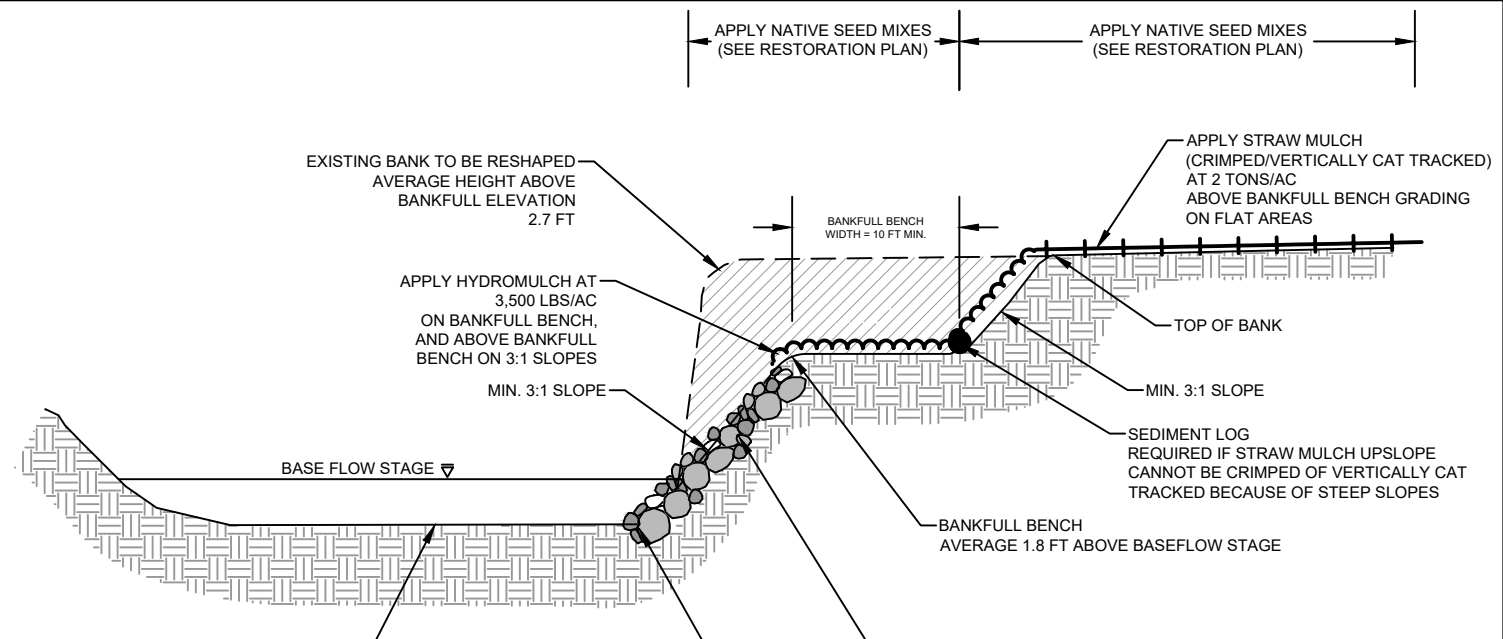
ESC & RESTORATION PLAN 3
 SHEET 23 OF 28



NOTES:

1. APPLY COVER CROP (REGREEN) TO ALL DISTURBED AREAS AT A RATE OF 30 LBS/AC
2. REDUNDANT BMPS ARE:
 - 2.1 FLAT BANKFULL BENCH
 - 2.2 STRAW MULCH CRIMPED/VERTICAL CAT TRACKING ABOVE TOP OF BANK
2. (2) ROWS OF SEDIMENT LOGS SPACED 5 FEET APART AT TOE OF STEEP SLOPES IF CRIMPING/VERTICAL CAT TRACKING AND FLAT BANKFULL BENCH IS NOT FEASIBLE

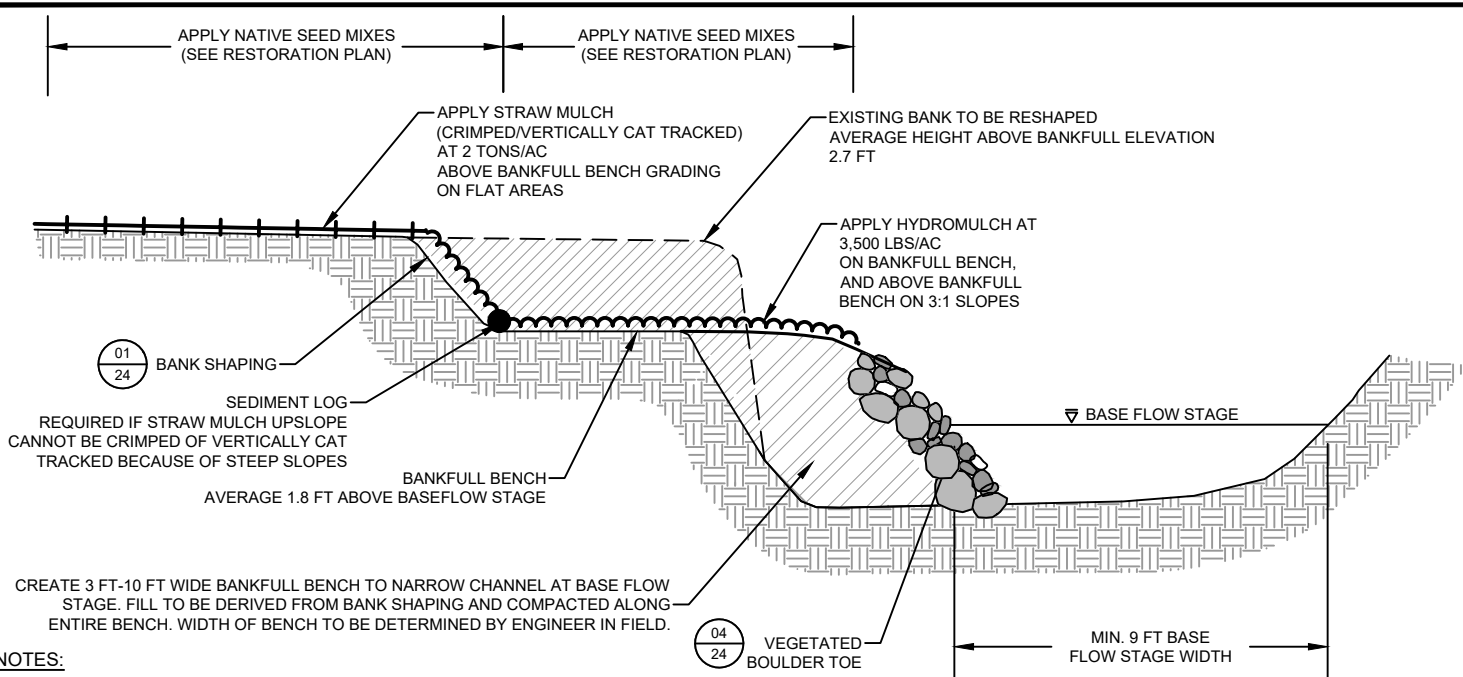
01 BANK SHAPING
24 NOT TO SCALE



NOTES:

1. APPLY COVER CROP (REGREEN) TO ALL DISTURBED AREAS AT A RATE OF 30 LBS/AC
2. REDUNDANT BMPS ARE:
 - 2.1 FLAT BANKFULL BENCH
 - 2.2 STRAW MULCH CRIMPED/VERTICAL CAT TRACKING ABOVE TOP OF BANK
2. (2) ROWS OF SEDIMENT LOGS SPACED 5 FEET APART AT TOE OF STEEP SLOPES IF CRIMPING/VERTICAL CAT TRACKING AND FLAT BANKFULL BENCH IS NOT FEASIBLE

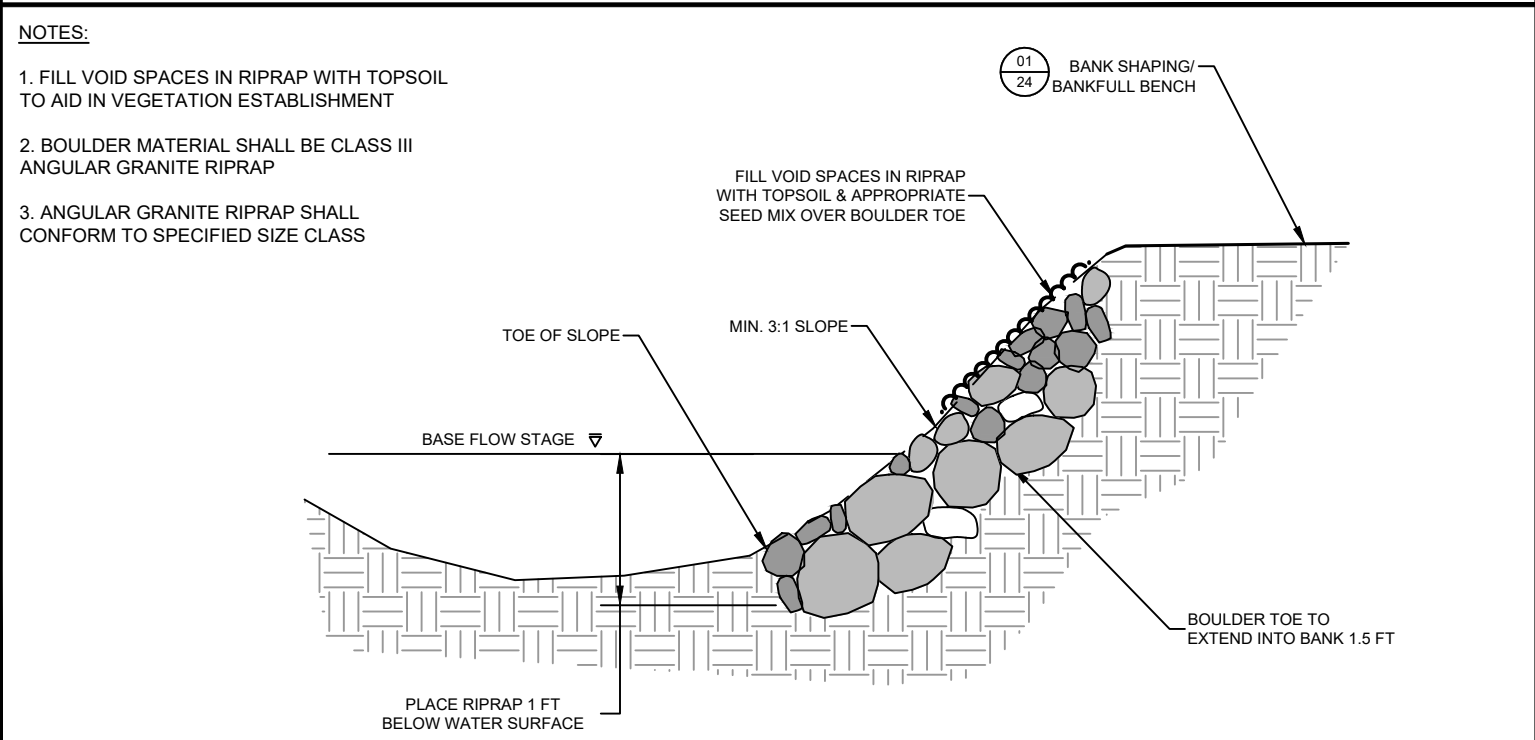
02 BANK SHAPING W/ VEGETATED BOULDER TOE
24 NOT TO SCALE



NOTES:

1. APPLY COVER CROP (REGREEN) TO ALL DISTURBED AREAS AT A RATE OF 30 LBS/AC
2. REDUNDANT BMPS ARE:
 - 2.1 FLAT BANKFULL BENCH
 - 2.2 STRAW MULCH CRIMPED/VERTICAL CAT TRACKING ABOVE TOP OF BANK
2. (2) ROWS OF SEDIMENT LOGS SPACED 5 FEET APART AT TOE OF STEEP SLOPES IF CRIMPING/VERTICAL CAT TRACKING AND FLAT BANKFULL BENCH IS NOT FEASIBLE

03 BANK SHAPING W/ CHANNEL NARROWING
24 NOT TO SCALE



NOTES:

1. FILL VOID SPACES IN RIPRAP WITH TOPSOIL TO AID IN VEGETATION ESTABLISHMENT
2. BOULDER MATERIAL SHALL BE CLASS III ANGULAR GRANITE RIPRAP
3. ANGULAR GRANITE RIPRAP SHALL CONFORM TO SPECIFIED SIZE CLASS

04 VEGETATED BOULDER TOE
24 NOT TO SCALE

Plot Date: 02/05/2024
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 Drawing Path: C:\Users\emossing\OneDrive - Emmons & Olivier Resources, Inc\Desktop\Work\Signatures\Signature
 40041_0418-XBASE
 40041_0418-XBASE
 40041_0418-XBASE
 40041_0418-XBASE

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 1919 UNIV. AVE. W. #300 ST. PAUL, MN
 TEL: 651.770.8448 WWW.EORINC.COM

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Daniel E. Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

DATE	NO.	DESCRIPTION
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DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418

BROWN'S CREEK WATERSHED DISTRICT
 CLIENT PROJECT #XXX-XXXX

BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

DETAILS - 1
 SHEET 24 OF 28

NOTES:

1. ROOTWADS SHOULD MIN. 6 FT IN LENGTH AND 18 INCHES IN DIAMETER.
2. SPECIFIC ORIENTATION OF LOGS AND BALLAST MATERIALS MAY VARY FROM TYPICAL DRAWINGS DEPENDING ON SIZE AND SHAPE OF MATERIAL DELIVERED OR SALVAGED.
3. BUILD OUT TOE WOOD FROM TOE OF EXISTING BANK. BLEND UPSTREAM AND DOWNSTREAM ENDS OF THE TOE WOOD INTO THE EXISTING BANK TO PREVENT SCOUR/EDDYING.
4. WOOD PLACEMENT TO BE DIRECTED BY THE OWNERS REPRESENTATIVE IN THE FIELD AT THE TIME OF CONSTRUCTION. EXACT PLACEMENT LOCATION AND NUMBER OF PIECES PER WALL TO BE DICTATED BASED ON FIELD CONDITIONS AND LOCALIZED GEOMORPHOLOGY.

FOOTER LOGS & ROOT WADS:

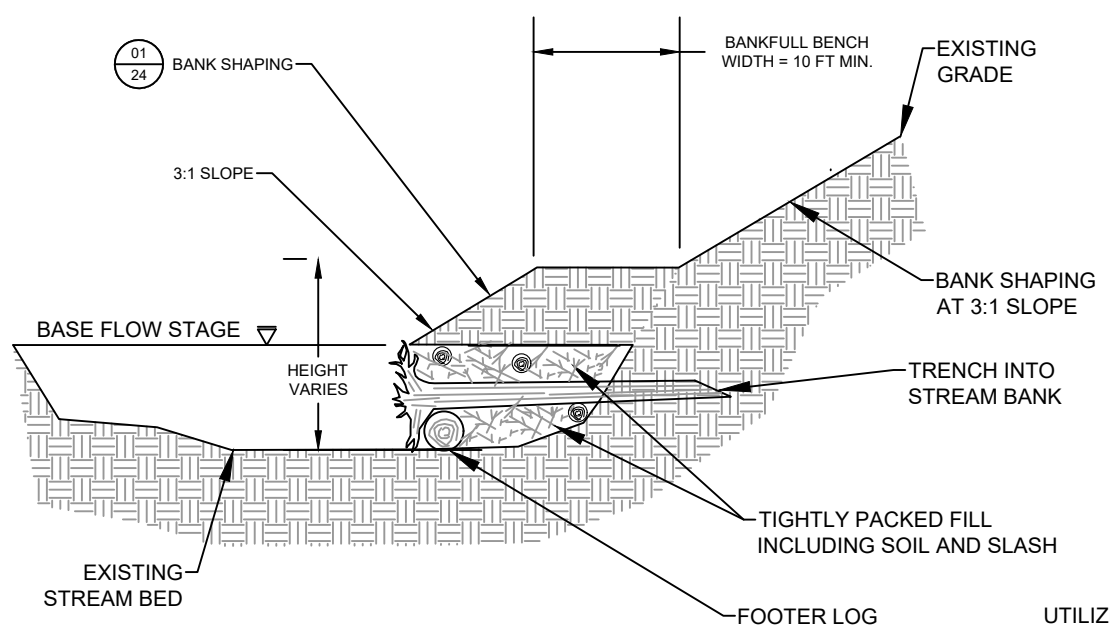
- TO BE HARVESTED ONSITE BY CONTRACTOR.
- SHALL BE FREE OF DECAY OR ROT. BOX ELDER & LARGE BUCKTHORN ARE ACCEPTABLE.
- MINIMUM 8 INCH TRUNK DIAMETER.
- ROOTWAD ROOT BOLE MUST BE INTACT AND HAVE A MINIMUM DIAMETER OF 18 INCHES AND A MAXIMUM DIAMETER OF 30 INCHES.

FILLER MATERIAL:

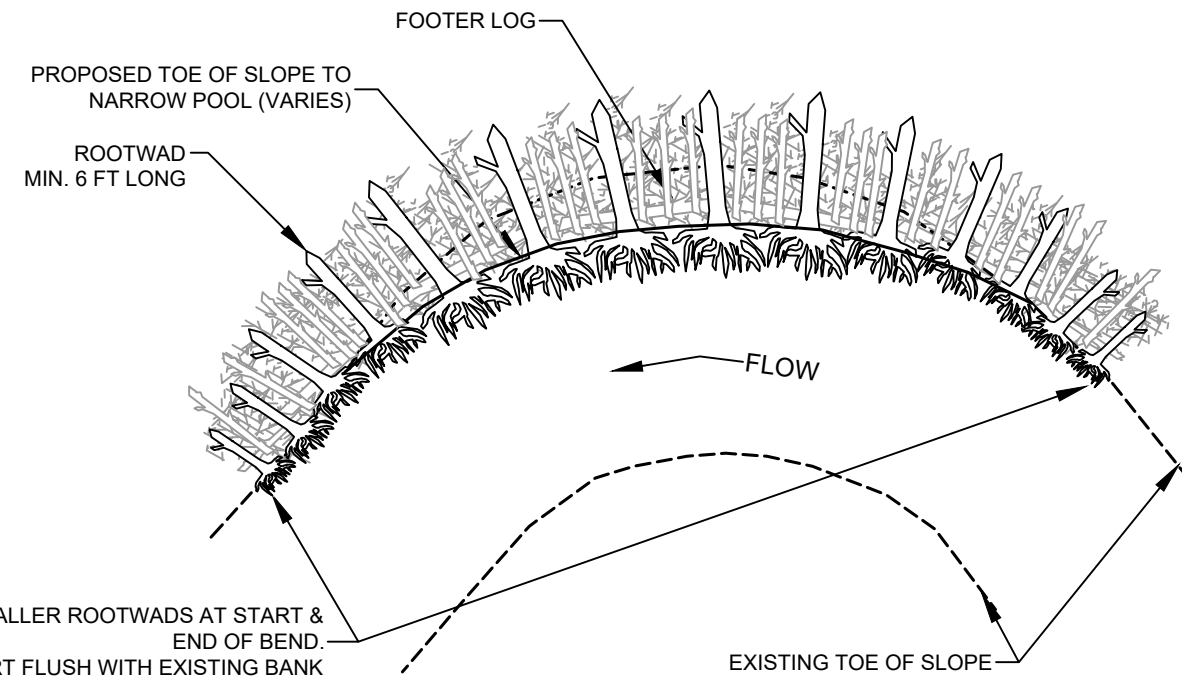
- TO BE HARVESTED ONSITE BY CONTRACTOR.
- SMALL LOGS, LIMBS AND TREE TOPS LESS THAN 6 INCHES DIAMETER.
- MATERIAL SHALL BE INSTALLED PARALLEL WITH ROOTWADS TO ACHIEVE MAXIMUM STEM DENSITY.

BACKFILL MATERIAL:

- ONSITE MATERIALS TO BE UTILIZED WHERE SUITABLE AS APPROVED BY THE ENGINEER. GRAVEL & COBBLE IS PREFERRED.
- IF ADDITIONAL MATERIAL IS REQUIRED, IT SHALL BE A MINERAL SOIL AND/OR NATURAL GRAVEL & COBBLE.

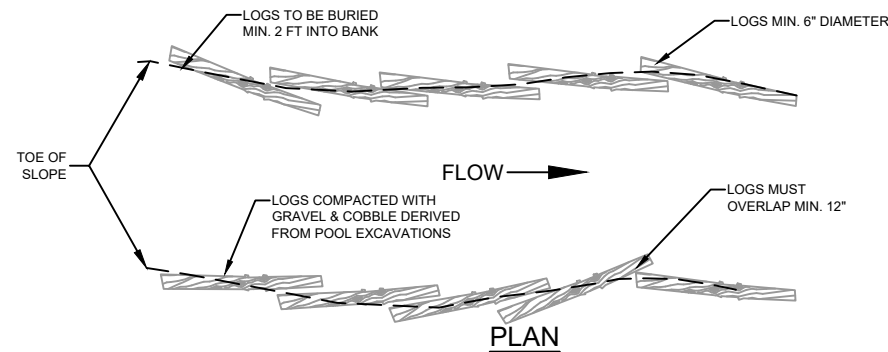


CROSS SECTION

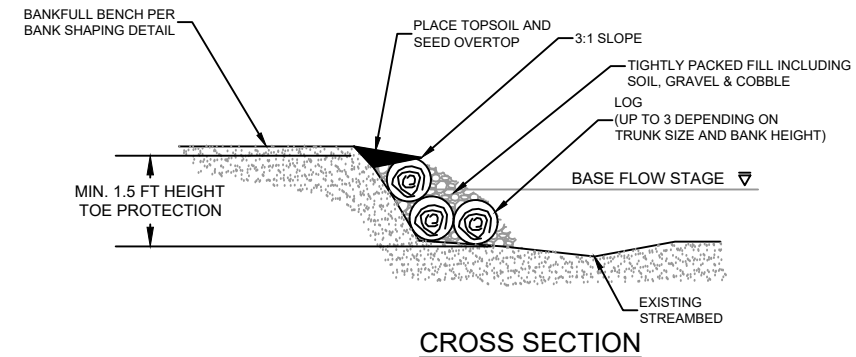


PLAN

01 TOEWOOD
25 NOT TO SCALE



PLAN

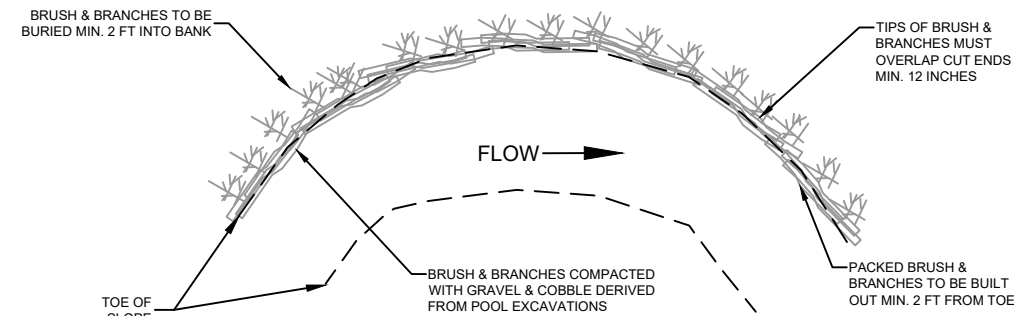


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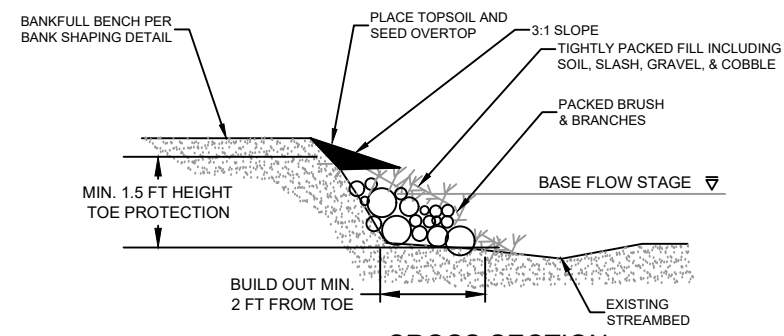
LOG TOE FOR STRAIGHT REACHES

NOTES:

1. SPECIFIC ORIENTATION OF LOGS AND BRUSH MAY VARY FROM TYPICAL DRAWINGS DEPENDING ON SIZE AND SHAPE OF MATERIAL DELIVERED OR SALVAGED.
2. WOOD PLACEMENT TO BE DIRECTED BY ENGINEER IN THE FIELD AT THE TIME OF CONSTRUCTION. EXACT PLACEMENT LOCATION AND NUMBER OF PIECES PER BANK TO BE DICTATED BASED ON FIELD CONDITIONS.
3. UPSTREAM LOG/BRANCH TO OVERLAP START OF DOWNSTREAM LOG/BRANCH MINIMUM 12 INCHES.
4. INNER VOID SPACES OF LOGS & BRUSH TO BE FILLED WITH SOIL, OUTER FILL TO BE COMPRISED OF GRAVEL & COBBLE.
5. ROOTWADS OF LOGS/TRUNKS AND SHRUBS MAY REMAIN ATTACHED IF ROOTWADS ARE ABLE TO BE ADEQUATELY BURIED UNDER BANKFULL BENCH.
6. ALL MATERIAL SHALL BE FRESHLY CUT (NO ROTTEN LOGS OR LIMBS)
7. WOODY MATERIAL SHALL BE TIGHTLY COMPACTED WITH EXCAVATOR BUCKET TO LIMIT VOID SPACE AS MUCH AS POSSIBLE.



PLAN



CROSS SECTION

BRUSH TOE FOR BENDS

02 BRUSH/LOG TOE
25 NOT TO SCALE



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Daniel E. Mossing
DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

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DESIGNED BY: EOR
DRAWN BY: DEM
CHECKED BY: MJM



EOR JOB #0041-0418

CLIENT PROJECT #XXX-XXXX

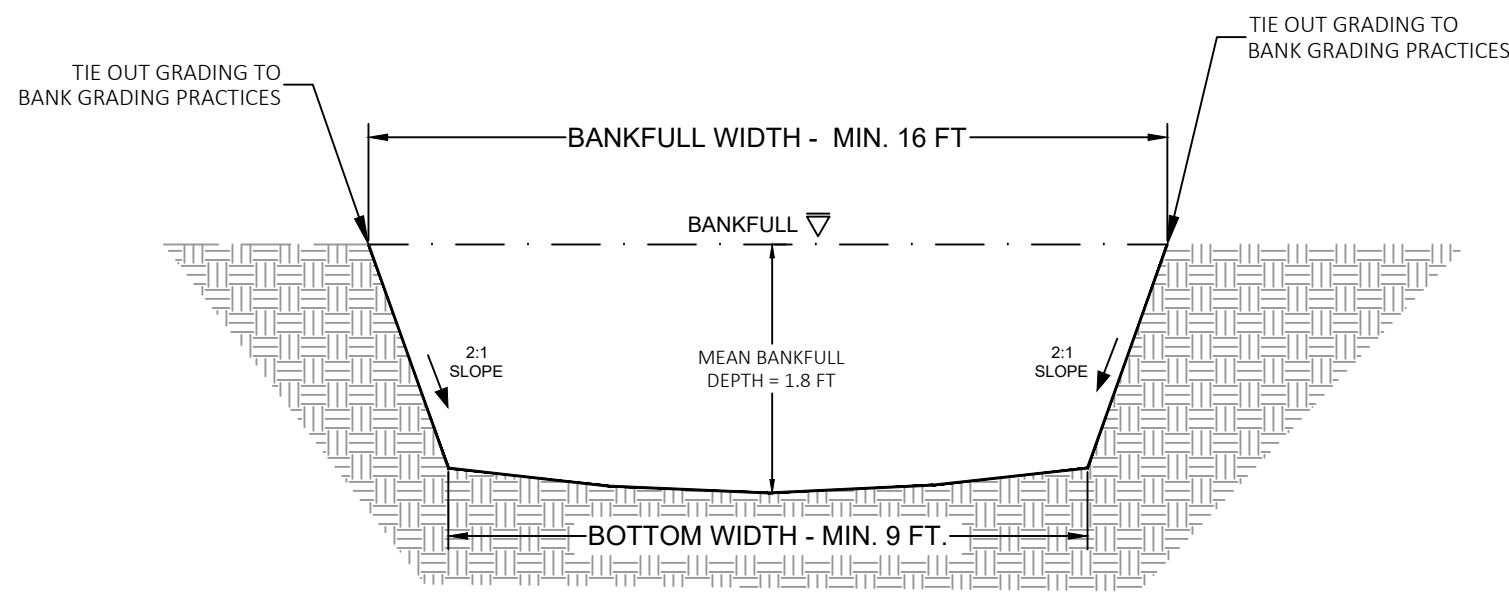
**BROWN'S CREEK PARK
STREAM RESTORATION**
WASHINGTON COUNTY, STILLWATER, MN

BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

DETAILS - 2

SHEET 25 OF 28

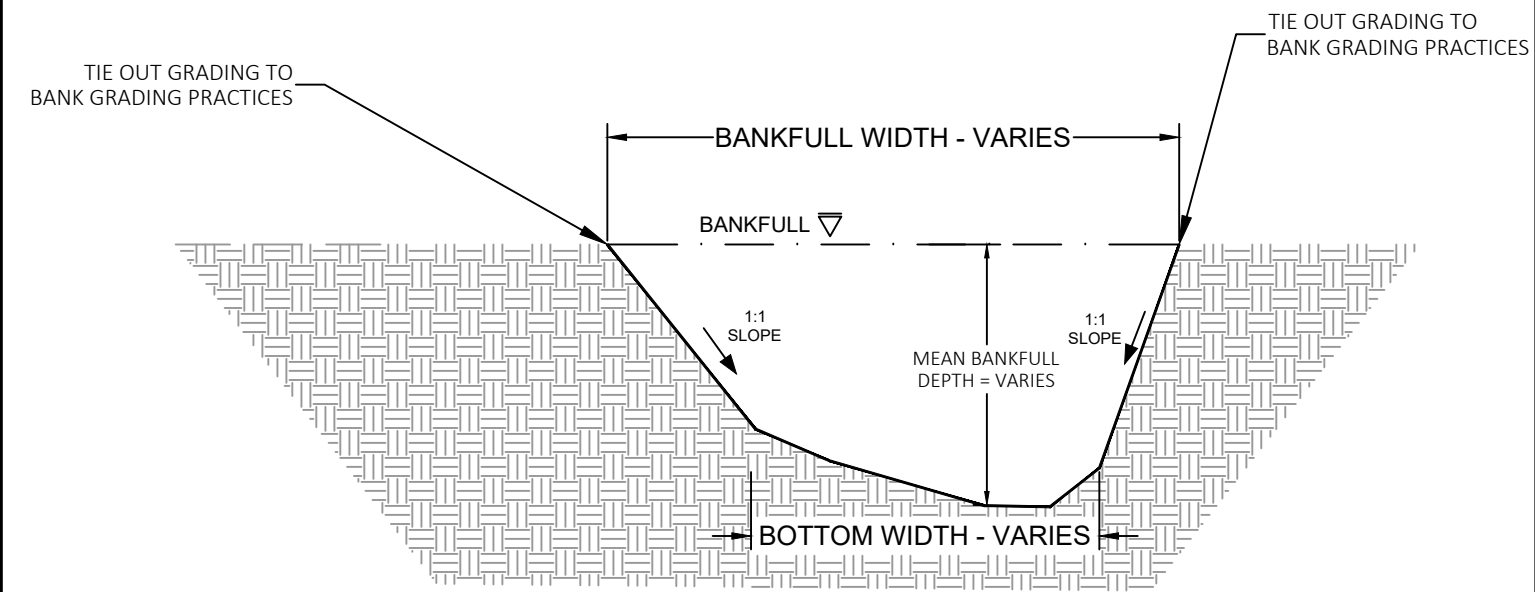
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 User: jmorris
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NOTES

1. ALL BANKS TO TIE OUT TO BANK GRADING PRACTICES AT 3:1 SLOPE. A 2:1 SLOPE TRANSITION MAY BE REQUIRED IN AREAS WITH HIGH BANKS, FIELD ENGINEER WILL DIRECT WHEN REQUIRED.
2. TYPICAL CROSS SECTION MODELED AFTER AN "E" CHANNEL.

01 TYPICAL RIFFLE CROSS SECTION
26 NOT TO SCALE



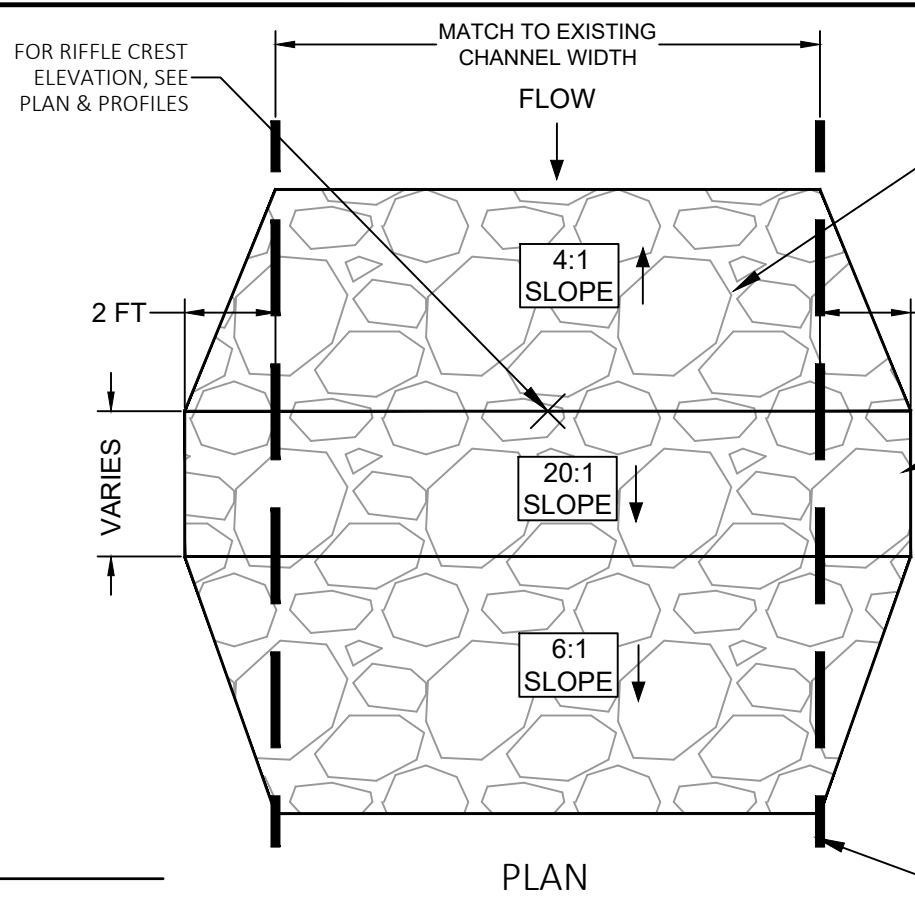
NOTES

1. A 2:1 SLOPE TRANSITION MAY BE REQUIRED IN AREAS WITH HIGH BANKS, FIELD ENGINEER WILL DIRECT WHEN REQUIRED.
2. TYPICAL CROSS SECTION MODELED AFTER AN "E" CHANNEL.

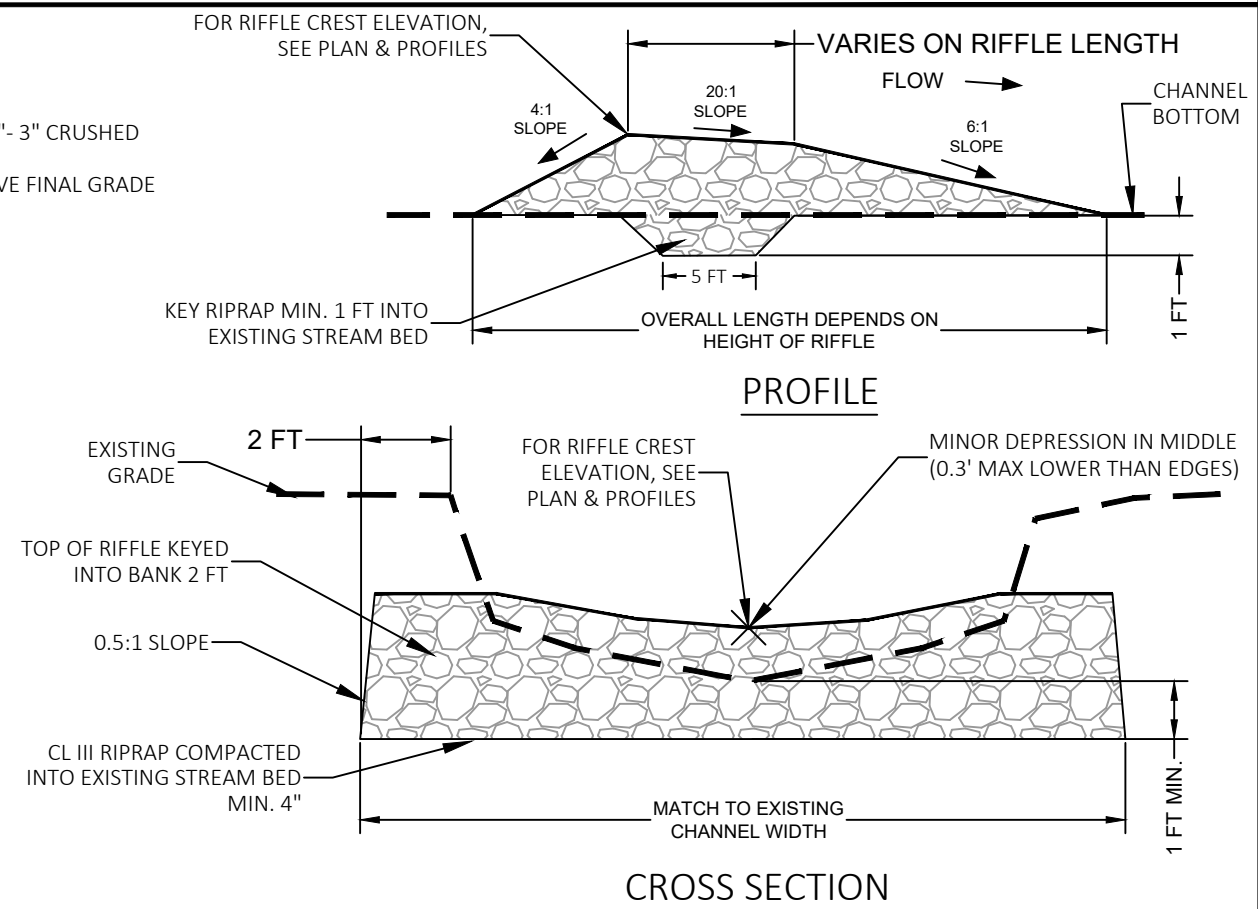
02 TYPICAL POOL CROSS SECTION
26 NOT TO SCALE

NOTES

1. RIFFLE MATERIAL SHALL BE CLASS III RIPRAP - ANGULAR GRANITE AND 1" - 3" CRUSHED GRANITE MEETING MNDOT 3601.2 SPECIFICATIONS
2. ANGULAR GRANITE SHALL CONFORM TO SPECIFIED SIZE CLASS III
3. POSITION OF ROCK RIFFLE TO BE APPROVED BY PROJECT OWNERS REPRESENTATIVE/ ENGINEER
4. FILL IN VOID SPACES OVER ENTIRE RIFFLE AND TOP LAYER TO ACHIEVE FINAL GRADE WITH 1" - 3" CRUSHED GRANITE AT A MAX DEPTH OF 3".
5. EXISTING GRAVEL DERIVED FROM CHANNEL EXCAVATIONS CAN BE UTILIZED FOR TOP DRESSING OF RIFFLE.
6. FOR RIFFLE CREST ELEVATIONS, SEE PLAN & PROFILE CALL OUTS



PLAN



CROSS SECTION

03 ROCK RIFFLE
26 NOT TO SCALE

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EOR water ecology community
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 1919 UNIV. AVE. W. #300 ST. PAUL, MN
 TEL: 651.770.8448 WWW.EORINC.COM

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.

Daniel Mossing
 DANIEL E. MOSSING DATE: 2/5/2024 LICENSE #57796

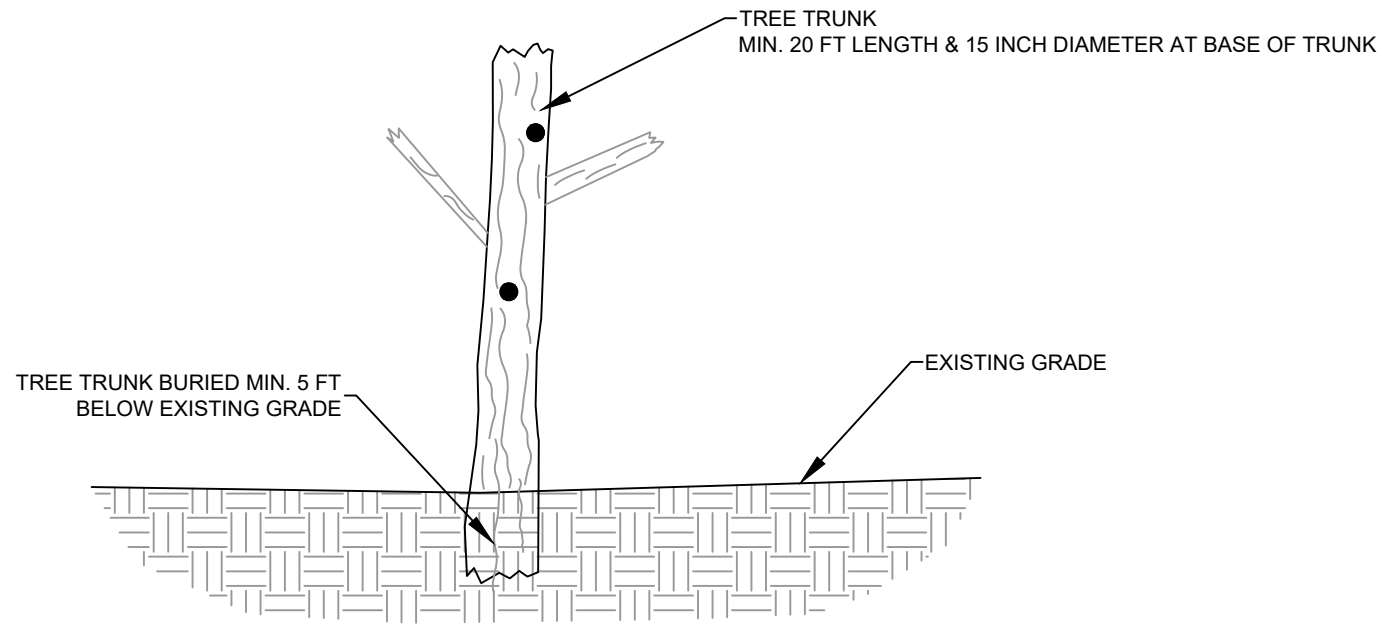
DATE	NO.	DESCRIPTION
2/5/2024	1	FINAL DESIGN PLAN SET
	2	
	3	
	4	
	5	
	6	

DESIGNED BY: EOR
 DRAWN BY: DEM
 CHECKED BY: MJM
 EOR JOB #0041-0418

BROWN'S CREEK WATERSHED DISTRICT

BROWN'S CREEK PARK STREAM RESTORATION
 WASHINGTON COUNTY, STILLWATER, MN
 BROWN'S CREEK WATERSHED DISTRICT OAKDALE, MN 55128

DETAILS - 3
 SHEET 26 OF 28

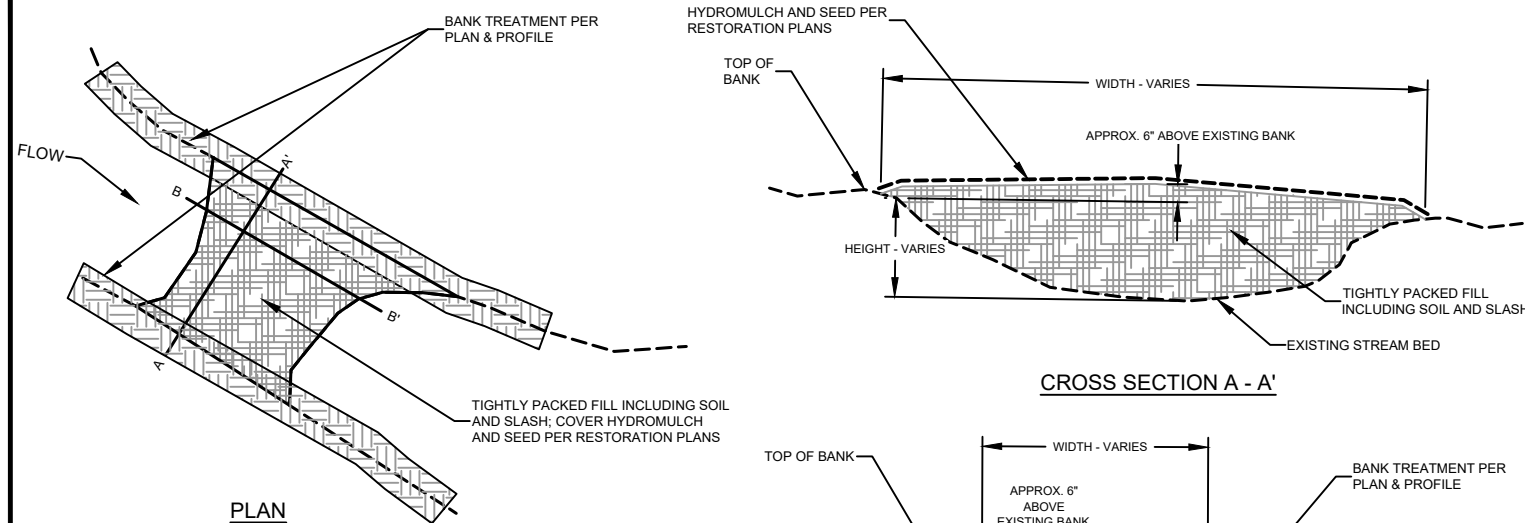


CROSS SECTION

NOTES:

1. TRUNK LOCATION & PLACEMENT TO BE DIRECTED BY PROJECT ENGINEER IN THE FIELD. INSTALLATION OF SNAG TREE SHOULD BE CONDUCTED USING AN EXCAVATOR.
2. TRUNK SHALL BE SOURCED FROM A DEAD TREE, IDEALLY WITH SIGNS OF DECAY, CAVITIES, OR LOOSE BARK.
3. PRESERVE ANY BRANCHES AND BARK AS MUCH AS POSSIBLE DURING INSTALLATION.
4. COMPACT SOIL AROUND TREE TRUNK USING EXCAVATOR BUCKET.

01 SNAG TREE
27 NOT TO SCALE



PLAN

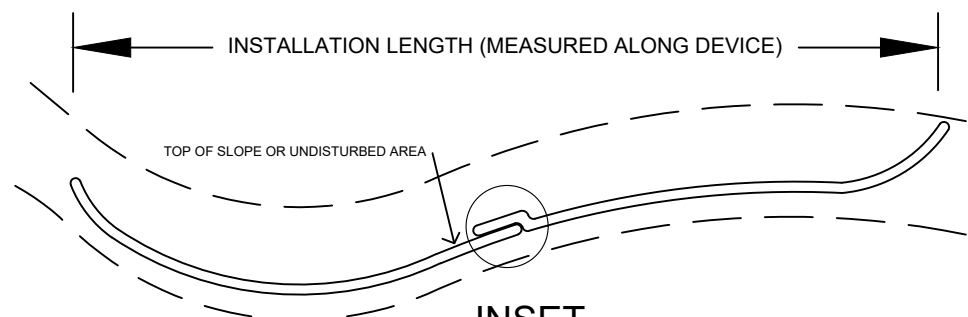
CROSS SECTION A - A'

CROSS SECTION B - B'

NOTES:

- 1) ALL MATERIALS SHALL BE CONSIDERED INCIDENTAL TO EXCAVATION.
- 2) UTILIZE SOILS FROM BANK SHAPING ACTIVITIES AND SLASH AS NEEDED FOR FILL.
- 3) SOIL PLUG TO BE TIGHTLY COMPACTED WITH MACHINERY ON-SITE (I.E. EXCAVATOR OR BULLDOZER TRACKING OVERTOP MULTIPLE TIMES)

02 CHANNEL PLUG
27 NOT TO SCALE



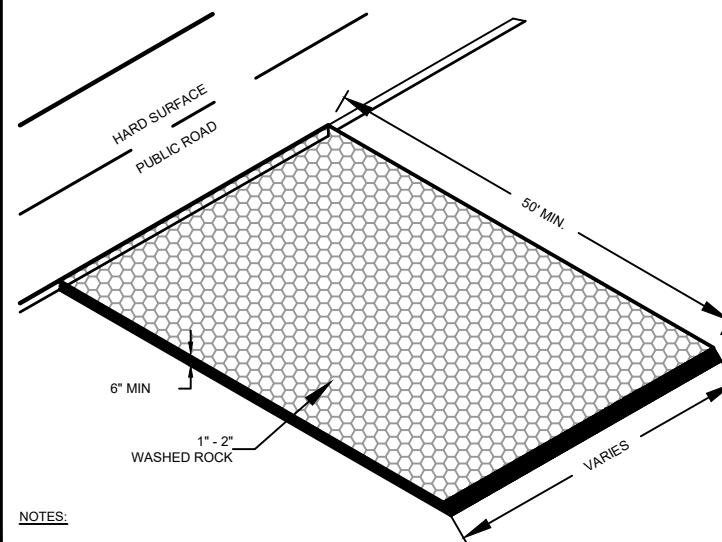
INSET

1. SEDIMENT LOGS SHOULD BE 6" CURLEX SEDIMENT LOG WITH BIODEGRADABLE CONTAINMENT MATERIAL (OR APPROVED EQUIVALENT)
2. SEDIMENT CONTROL LOGS MAY BE REQUIRED ALONG ACCESS ROUTES AND/OR DOWNSLOPE OF STOCKPILES, AS DEEMED NECESSARY BY ENGINEER
3. SEDIMENT CONTROL LOGS MUST BE 100% BIODEGRADABLE. SYNTHETIC NETTING OR PHOTODEGRADABLE NETTING WILL NOT BE ACCEPTED
4. SPACE STAKES AT 1"x1" NOMINAL WOOD STAKES AT 8 FOOT MAXIMUM SPACING
5. INSTALL SLOPE PROTECTION PERPENDICULAR TO SLOPE (PARALLEL TO CONTOURS). OVERLAP JOINTS PER DETAIL 'A'. RUN THE LAST 10 FEET OF EACH DEVICE UP THE SLOPE TO PREVENT FLOW RUNAROUND
6. STAKES ARE NOT TO PROTRUDE THROUGH LOGS, BUT RATHER PLACED ON THE DOWNSTREAM SIDE AT A 45 DEGREE ANGLE SO AS TO "PINCH" THE LOG TIGHT TO THE GROUND SURFACE

INSET

12" MIN

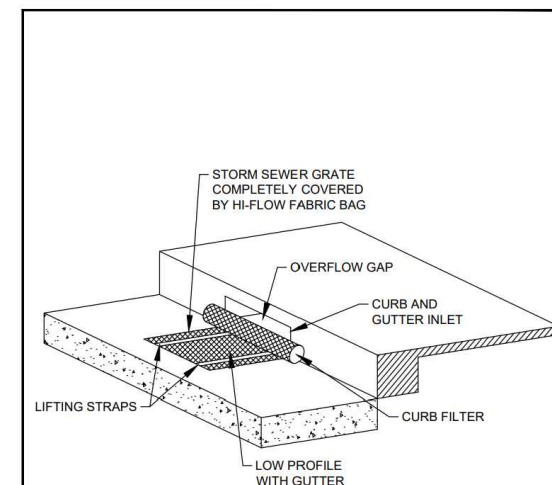
03 SEDIMENT CONTROL LOG
27 NOT TO SCALE



NOTES:

1. IF STABILIZED CONSTRUCTION EXITS ARE LOCATED IN SATURATED SOILS, CONTRACTOR SHALL PLACE GEOTEXTILE FABRIC UNDERNEATH ROCK TO PREVENT SETTLING.
2. ROCK CONSTRUCTION ENTRANCE SHALL BE MAINTAINED FOR THE DURATION OF THE CONSTRUCTION PROCESS.
3. CONTRACTOR IS RESPONSIBLE FOR REMOVAL & RESTORATION AT COMPLETION OF PROJECT.
4. ALTERNATIVE CONSTRUCTION ENTRANCE MAY BE UTILIZED AFTER APPROVAL BY OWNERS REPRESENTATIVE/ ENGINEER.

04 STABILIZED CONSTRUCTION EXIT
27 NOT TO SCALE



* INSTALL CATCH BASIN INLET PROTECTION DEVICE MANUFACTURED BY DANDY PRODUCTS OR APPROVED EQUAL.



CATCH BASIN EROSION CONTROL
DETAIL 2

DATE OF REVISION	STANDARD PLATE NO.
FEBRUARY 2023	4110

05 CATCH BASIN EROSION CONTROL
27 NOT TO SCALE

Plot Date: 02/05/2024
 Drawing Name: W0411_BCMD0418_Brown's_Ck_Pk_Restore09_GNIS.dwg
 Drawing Path: C:\Users\jmoising\OneDrive - Emmans & Olivier Resources, Inc\Desktop\Work\Signatures\Signature
 40041_0418-REBASE
 40041_0418-REBASE
 40041_0418-REBASE

EOR water ecology community
 EMMONS & OLIVIER RESOURCES, INC.
 1919 UNIV. AVE. W. #300 ST. PAUL, MN
 TEL: 651.770.8448 WWW.EORINC.COM

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Daniel E. Moising
 DANIEL E. MOISING DATE: 2/5/2024 LICENSE #57796

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CLIENT PROJECT #XXX-XXXX

**BROWN'S CREEK PARK
 STREAM RESTORATION**

WASHINGTON COUNTY, STILLWATER, MN

BROWN'S CREEK WATERSHED DISTRICT

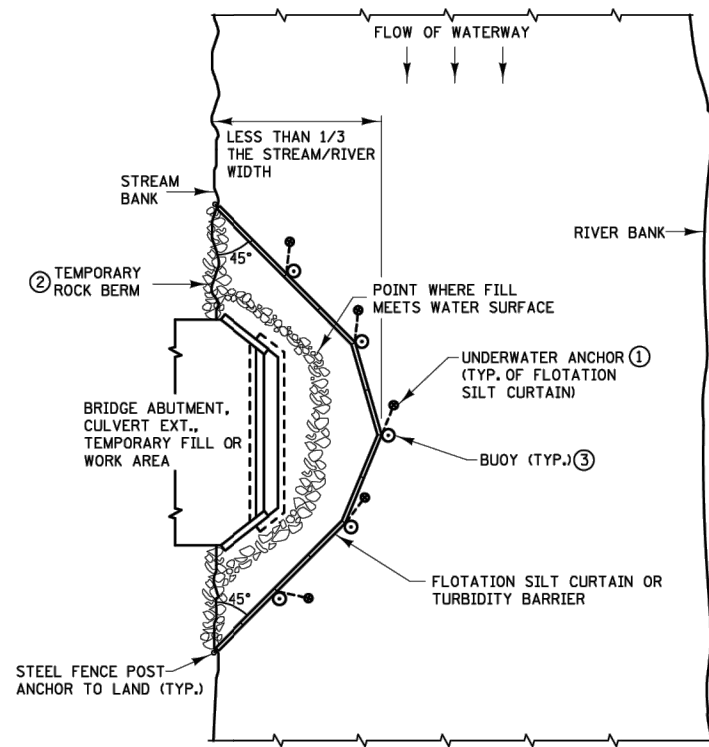
OAKDALE, MN 55128

DETAILS - 4

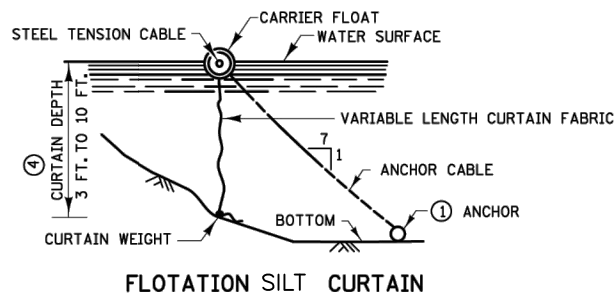
SHEET 27 OF 28

PLOTTED/REVISED: 23-OCT-2013

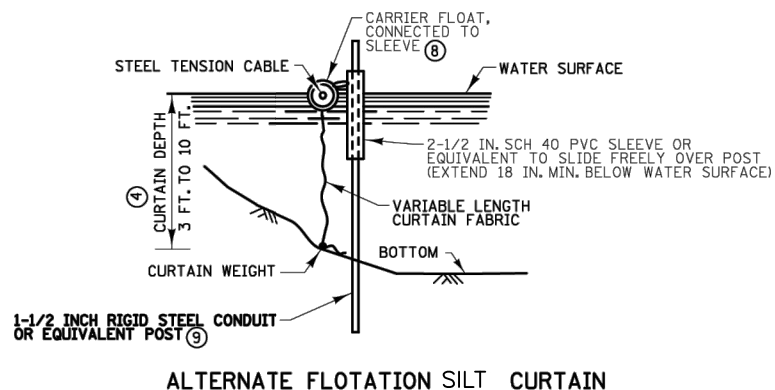
DISTRICT #: Design Standards
PLOT NAME: TSCJ
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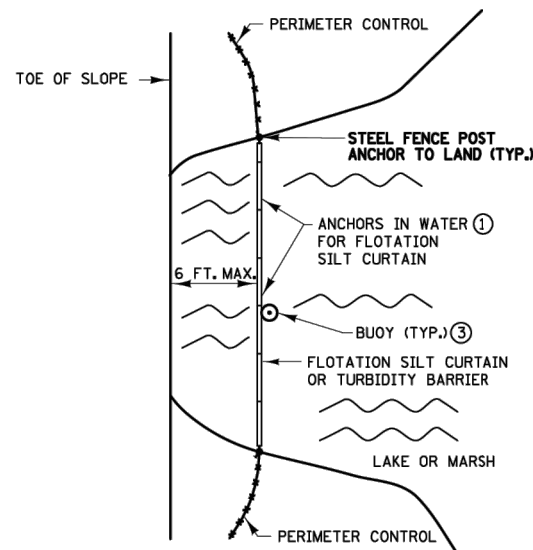
PLAN VIEW FOR STREAM ⑥⑦



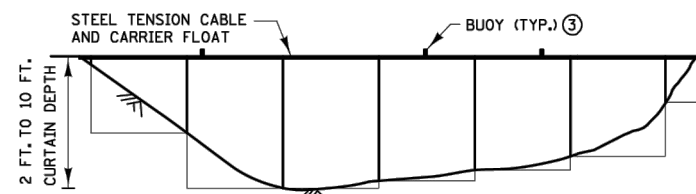
FLOTATION SILT CURTAIN



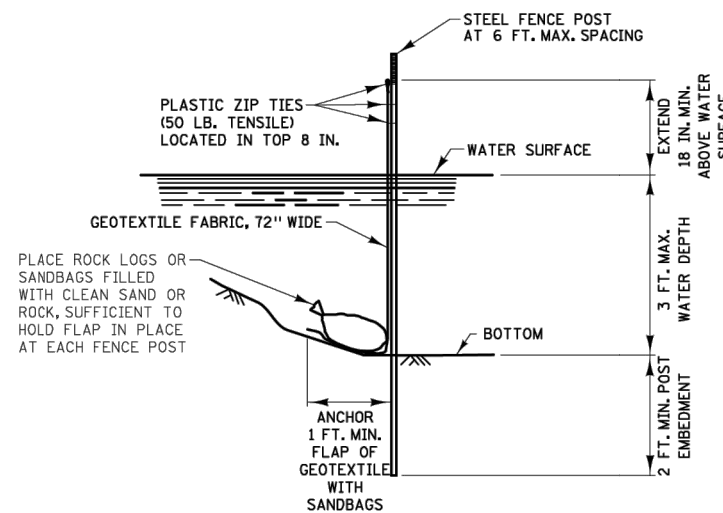
ALTERNATE FLOTATION SILT CURTAIN



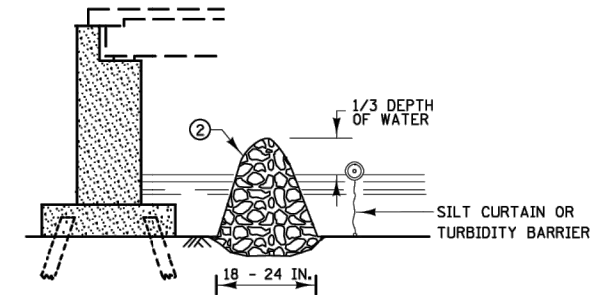
PLAN VIEW FOR LAKE OR MARSH ⑥⑦



FRONT VIEW FOR FLOTATION SILT CURTAIN ④



TURBIDITY BARRIER (SILT FENCE TYPE TB)



TEMPORARY ROCK BERM FOR SEDIMENT CONTROL

INSTALLATION GUIDELINES TURBIDITY BARRIER ④

MINIMUM WATER DEPTH: 1 FT.
MAXIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.

INSTALLATION GUIDELINES FLOTATION SILT CURTAIN TYPE: STILL WATER ⑤

MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 2 FT./SEC.
MAXIMUM WAVE HEIGHT: 1 FT

INSTALLATION GUIDELINES FLOTATION SILT CURTAIN TYPE: MOVING WATER ⑤

MINIMUM WATER DEPTH: 3 FT.
MAXIMUM WATER DEPTH: 10 FT.
MAXIMUM WATER VELOCITY: 5 FT./SEC.
MAXIMUM WAVE HEIGHT: 2 FT.

NOTES:

SEE SPECS. 2573, 3886, 3887 & 3893.

- ① FOR ANCHOR SPACING AND WEIGHT REQUIREMENTS, SEE SPEC. 2573.
- ② IN AREAS WHERE THE PLAN CALLS FOR RIPRAP AT A BRIDGE, CULVERT, OR SLOPE, A TEMPORARY ROCK BERM CONSTRUCTED FROM THE RIPRAP CAN BE USED TO PROVIDE ADDITIONAL PROTECTION. WHEN THE WORK IS COMPLETE THE RIPRAP CAN THEN BE MOVED TO THE PERMANENT LOCATION INDICATED IN THE PLANS. THE TEMPORARY ROCK BERM IS INCIDENTAL.
- ③ ON U.S. COAST GUARD OR OTHER MOTORIZED WATERWAYS, BUOYS ARE REQUIRED TO MARK THE ENDS AND SPECIAL AREAS FOR VISIBILITY. PLACE BUOYS AS REQUIRED FOR NAVIGATIONAL PURPOSES.
- ④ WATER DEPTH CAN BE 0 TO 10 FEET. THE DEPTH OF THE SILT CURTAIN VARIES.
- ⑤ MINIMUM WATER DEPTH APPLIES TO THE DEEPEST POINT ALONG THE FLOTATION SILT CURTAIN OR TURBIDITY BARRIER FOR DETERMINING APPLICABILITY OF FLOTATION SILT CURTAIN OR TURBIDITY BARRIER.
- ⑥ SILT CURTAIN SHOULD BE REMOVED WHEN THE AREA CONTRIBUTING DIRECT RUNOFF HAS BEEN TEMPORARILY OR PERMANENTLY STABILIZED. SILT CURTAIN SHOULD ALSO BE REMOVED BEFORE WINTER IF ICE UP OR ICE FLOW IS ANTICIPATED.
- ⑦ EMBED POST INTO BOTTOM A MINIMUM OF 40% OF THE WATER DEPTH (INCLUDING WAVE HEIGHT), BUT IN NO CASE SHALL EMBEDMENT BE LESS THAN 2 FEET.
- ⑧ ANCHOR FLOAT MUST BE CONNECTED SECURELY TO SLEEVE WITH A MINIMUM TENSILE STRENGTH OF 100 LBS. CONNECTION METHOD MUST ALLOW FOR SLEEVE TO MOVE FREELY ON POST.
- ⑨ PROVIDE SUFFICIENT NUMBER OF POST ANCHORS TO MAINTAIN SILT CURTAIN POSITION.

SILT CURTAIN OR TURBIDITY BARRIER

TEMPORARY SEDIMENT CONTROL

STATE PROJ. NO. (TH) SHEET NO. OF SHEETS

01 FLOTATION SILT CURTAIN

28 NOT TO SCALE

NOT FOR CONSTRUCTION



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BROWN'S CREEK WATERSHED DISTRICT

OAKDALE, MN 55128

DETAILS - 5

SHEET 28 OF 28

Plot Date: 02/05/2024
Drawing Title: IP_PWP-df567933temporary_sediment_control_ldgn
Drawing Path: C:\Users\jbrown\OneDrive - Emmons & Olivier Resources, Inc\Desktop\Drawings\Signatures\Signature
40041_0418-PRBASE
40041_0418-LEBASE
40041_0418-LBASE