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## Attachment B Public Waters Inventory Crossing Plans

Enbridge Energy, Limited Partnership • Line 3 Replacement Project

October 2020



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### **L3R Public Water Plans by Feature**

MDNR ID No. 1: MP 801.8; Red River of the North (H-026)  
MDNR ID No. 2: MP 805.4; Unnamed Creek / County Ditch 27 (H-026-011-001)  
MDNR ID No. 3: MP 815.6; Judicial Ditch 10 (H-026-011)  
MDNR ID No. 4a: MP 828.6; Tamarac River (H-026-019)  
MDNR ID No. 4b: MP 828.6; Tamarac River (H-026-019)  
MDNR ID No. 5a: MP 836; Middle River (H-026-021-004)  
MDNR ID No. 5b: MP 836; Middle River (H-026-021-004)  
MDNR ID No. 6: MP 843.2; Snake River (H-026-021)  
MDNR ID No. 7: MP 847.2; South Branch Snake River (H-026-021-010)  
MDNR ID No. 8: MP 864.3; Red Lake River (H-026-030)  
MDNR ID No. 9: MP 866.2; Unnamed Creek (H-026-030-030)  
MDNR ID No. 10: MP 869.7; Unnamed Creek (H-026-030-028)  
MDNR ID No. 11: MP 875.4; Clearwater River (H-026-030-019)  
MDNR ID No. 12: MP 885.8; Lost River (H-026-030-019-007)  
MDNR ID No. 13: MP 902; Unnamed Ditch (H-026-030-019-007-007)  
MDNR ID No. 14: MP 904; Lost River (H-026-030-019-007)  
MDNR ID No. 15: MP 907.1; Silver Creek (H-026-030-019-007-005)  
MDNR ID No. 16: MP 907.4; Silver Creek (H-026-030-019-007-005)  
MDNR ID No. 17: MP 907.7; Silver Creek (H-026-030-019-007-005)  
MDNR ID No. 18a: MP 908.8; Unnamed Creek (H-026-030-019-007-005-001)  
MDNR ID No. 18b: MP 910.1; Unnamed Creek (H-026-030-019-007-005-001)  
MDNR ID No. 19: MP 910.9; Unnamed Stream (H-026-030-019-007-005-001)  
MDNR ID No. 20: MP 922.2; Clearwater River (H-026-030-019)  
MDNR ID No. 21: MP 924.2; Walker Brook (H-026-030-019-029)  
MDNR ID No. 22: MP 925.4; Unnamed Creek (H-026-030-019-029-001)  
MDNR ID No. 23: MP 928.5; Walker Brook (H-026-030-019-029)  
MDNR ID No. 24: MP 931.7; Unnamed Stream (M-161-004-009)  
MDNR ID No. 25: MP 932.6; Unnamed Stream (M-161-004-009)  
MDNR ID No. 26: MP 933.1; Unnamed Stream (M-161-004-009)  
MDNR ID No. 27: MP 940.1; Bear Creek (M-164)  
MDNR ID No. 28: MP 941; Mississippi River (M)  
MDNR ID No. 29: MP 946; LaSalle Creek (M-163)  
MDNR ID No. 30: MP 962.2; Unnamed Creek (M-096-035-002-004-000.5)  
MDNR ID No. 31: MP 963.7; Hay Creek (M-096-035-002)  
MDNR ID No. 32: MP 967.7; Portage Lake - Public Water Basin  
MDNR ID No. 33: MP 974.2; Straight River (M-096-035-002-002)  
MDNR ID No. 34: MP 976.6; Shell River (M-096-035-004)  
MDNR ID No. 35: MP 981.4; Shell River (M-096-035-004)  
MDNR ID No. 36: MP 981.7; Unnamed Basin  
MDNR ID No. 37: MP 983.7; Shell River (M-096-035)  
MDNR ID No. 38: MP 985.3; Shell River - Oxbow Pond (M-096-035)  
MDNR ID No. 39: MP 991.2; Shell River (M-096-035)



MDNR ID No. 40: MP 993.3; Crow Wing River (M-096)  
MDNR ID No. 41: MP 1000.5; Big Swamp Creek (M-096-030)  
MDNR ID No. 42: MP 1005.3; Unnamed Public Water Basin  
MDNR ID No. 44: MP 1017.4; Pine River (M-106)  
MDNR ID No. 45: MP 1026.4; Blind Lake Creek (M-106-014-002)  
MDNR ID No. 46: MP 1028.5; Peterson Lake - Public Water Basin  
MDNR ID No. 47: MP 1037.4; Daggett Brook (M-106-004)  
MDNR ID No. 48: MP 1041.3; Spring Brook (M-106-004-002-001)  
MDNR ID No. 49: MP 1048; Moose River (M-117-012)  
MDNR ID No. 50: MP 1053.4; Unnamed Stream (M-117-012-002)  
MDNR ID No. 51: MP 1056.6; Moose Lake (Public Water Basin) / Tributary to Moose Lake  
(Non-Public Water)  
MDNR ID No. 52: MP 1066.5; Willow River (M-117)  
MDNR ID No. 53: MP 1069.7; Mississippi River (M)  
MDNR ID No. 54: MP 1070.9; Unnamed Stream (M-122-001)  
MDNR ID No. 55: MP 1075.5; Unnamed Stream (M-120-005-001-005)  
MDNR ID No. 56: MP 1076.9; West Savanna River (M-120-005-001)  
MDNR ID No. 57: MP 1085.9; East Savanna River (S-002-031)  
MDNR ID No. 58: MP 1094; Unnamed Stream (S-002-028)  
MDNR ID No. 59: MP 1095.9; Unnamed Stream (S-002-027)  
MDNR ID No. 60: MP 1096.7; Ahmik River (S-002-026)  
MDNR ID No. 63a: MP 1115.6; Unnamed Stream (S-002-009-001-002)  
MDNR ID No. 63b: MP 1115.6; Unnamed Stream (S-002-009-001-002)  
MDNR ID No. 65: MP 1118.4; Little Otter Creek (S-002-009-001)  
MDNR ID No. 67: MP 1126.2; Unnamed Stream (S-001.5-007)

## **INTRODUCTION**

Enbridge Energy, Limited Partnership (“Enbridge”) submitted its revised Application for a License to Cross Public Waters (“Application”) to the Minnesota Department of Natural Resources (“MDNR”) for the passage of utilities under public waters related to the construction and operation of the Line 3 Replacement Project (“L3R” or “Project”). As requested by MDNR, this Attachment B contains all of the plans relative to each public water crossing. Table 1 presents the construction and restoration plans that have been developed for each public water crossed by or within the Project construction workspace. Figure 1 presents each Minnesota public water crossed by or within the Project construction workspace. Then, there is a flysheet for each public water feature followed by the corresponding construction and restoration plans.

**Table 1 - L3R Public Waters Table**

MDNR ID No.	Milepost	Public Water Name (Kittle Number when Assigned) <sup>a</sup>	Public Water Label	County	Crossing Plan	Site-Specific Crossing Plan	HDD Plan	HDD Bridge Plan	Site-Specific Restoration Plan	Restoration Typical	Stand-Alone Plan
1	801.8	Red River of the North (H-026)	Watercourse	Kittson	-	X	X	-	-	Public Water HDD Crossing Typical	-
2	805.4	Unnamed Creek / County Ditch 27 (H-026-011-001)	Watercourse	Kittson	-	X	-	-	X	-	-
3	815.6	Judicial Ditch 10 (H-026-011)	Watercourse	Kittson	X	-	-	-	-	Public Water Watercourse (surveyed as waterbody) Crossing Typical	-
4a	828.6	Tamarac River (H-026-019)	Watercourse	Marshall	-	X	X	-	-	Public Water HDD Crossing Typical	-
4b	828.6	Tamarac River (H-026-019)	Watercourse	Marshall	-	X	X	-	-	Public Water HDD Crossing Typical	-
5a	836.0	Middle River (H-026-021-004)	Watercourse	Marshall	-	X	X	-	-	Public Water HDD Crossing Typical	-
5b	836.0	Middle River (H-026-021-004)	Watercourse	Marshall	-	X	X	-	-	Public Water HDD Crossing Typical	-
6	843.2	Snake River (H-026-021)	Watercourse	Marshall	-	X	X	-	-	Public Water HDD Crossing Typical	-
7	847.2	South Branch Snake River (H-026-021-010)	Watercourse	Marshall	-	X	-	-	X	-	-
8	864.3	Red Lake River (H-026-030)	Watercourse	Pennington	-	X	X	-	-	Public Water HDD Crossing Typical	-
9	866.2	Unnamed Creek (H-026-030-030)	Watercourse	Pennington	X	-	-	-	-	Public Water Basin or Watercourse (surveyed as wetland) Crossing Typical	-
10	869.7	Unnamed Creek (H-026-030-028)	Watercourse	Pennington	X	-	-	-	-	Public Water HDD / Bore Crossing Typical	-
11	875.4	Clearwater River (H-026-030-019)	Watercourse	Red Lake	-	X	X	-	-	Public Water HDD Crossing Typical	-
12	885.8	Lost River (H-026-030-019-007)	Watercourse	Red Lake	-	X	-	-	X	-	-



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MDNR ID No.	Milepost	Public Water Name (Kittle Number when Assigned) <sup>a</sup>	Public Water Label	County	Crossing Plan	Site-Specific Crossing Plan	HDD Plan	HDD Bridge Plan	Site-Specific Restoration Plan	Restoration Typical	Stand-Alone Plan
13	902.0	Unnamed Ditch (H-026-030-019-007-007)	Watercourse	Clearwater	X	-	-	-	-	Public Water Watercourse (surveyed as waterbody) Crossing Typical	-
14	904.0	Lost River (H-026-030-019-007)	Watercourse	Clearwater	-	X	-	-	X	-	-
15	907.1	Silver Creek (H-026-030-019-007-005)	Watercourse	Clearwater	-	X	-	-	X	-	-
16	907.4	Silver Creek (H-026-030-019-007-005)	Watercourse	Clearwater	-	X	-	-	X	-	-
17	907.7	Silver Creek (H-026-030-019-007-005)	Watercourse	Clearwater	-	X	-	-	X	-	-
18a	908.8	Unnamed Creek (H-026-030-019-007-005-001)	Watercourse	Clearwater	X	-	-	-	-	Public Water Watercourse (surveyed as waterbody) Crossing Typical	-
18b	910.1	Unnamed Creek (H-026-030-019-007-005-001)	Watercourse	Clearwater	X	-	-	-	-	Public Water Watercourse (surveyed as waterbody) Crossing Typical	-
19	910.9	Unnamed Stream (H-026-030-019-007-005-001)	Watercourse	Clearwater	X	-	-	-	-	Public Water Watercourse (surveyed as waterbody) Crossing Typical	-
20	922.2	Clearwater River (H-026-030-019)	Watercourse	Clearwater	-	X	X	-	-	Public Water HDD Crossing Typical	-
21	924.2	Walker Brook (H-026-030-019-029)	Watercourse	Clearwater	-	X	-	-	X	-	-
22	925.4	Unnamed Creek (H-026-030-019-029-001)	Watercourse	Clearwater	-	X	-	-	-	Public Water Watercourse (surveyed as waterbody) Crossing Typical	-

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MDNR ID No.	Milepost	Public Water Name (Kittle Number when Assigned) <sup>a</sup>	Public Water Label	County	Crossing Plan	Site-Specific Crossing Plan	HDD Plan	HDD Bridge Plan	Site-Specific Restoration Plan	Restoration Typical	Stand-Alone Plan
23	928.5	Walker Brook (H-026-030-019-029)	Watercourse	Clearwater	-	X	-	-	X	-	-
24	931.7	Unnamed Stream (M-161-004-009)	Watercourse	Clearwater	-	X	-	-	X	-	-
25	932.6	Unnamed Stream (M-161-004-009)	Watercourse	Clearwater	X	-	-	-	-	Public Water HDD / Bore Crossing Typical	-
26	933.1	Unnamed Stream (M-161-004-009)	Watercourse	Clearwater	-	X	-	-	X	-	-
27	940.1	Bear Creek (M-164)	Watercourse	Clearwater	-	X	-	-	X	-	-
28	941.0	Mississippi River (M)	Watercourse	Clearwater	-	X	X	X	-	Public Water HDD Crossing Typical	-
29	946.0	LaSalle Creek (M-163)	Trout Stream	Hubbard	-	-	-	-	-	-	X
30	962.2	Unnamed Creek (M-096-035-002-004-000.5)	Watercourse	Hubbard	X	-	-	-	-	Public Water Watercourse (surveyed as waterbody) Crossing Typical	-
31	963.7	Hay Creek (M-096-035-002)	Watercourse	Hubbard	-	X	X	-	-	Public Water HDD Crossing Typical	-
32	967.7	Portage Lake - Public Water Basin	Basin	Hubbard	-	X	-	-	X	-	-
33	974.2	Straight River (M-096-035-002-002)	Trout Stream	Hubbard	-	X	X	-	-	Public Water HDD Crossing Typical	-
34	976.6	Shell River (M-096-035-004)	Watercourse	Hubbard	-	X	-	-	X	-	-
35	981.4	Shell River (M-096-035-004)	Watercourse	Hubbard	-	X	-	-	X	-	-
36	981.7	Unnamed Basin	Basin	Hubbard	X	-	-	-	-	Public Water Basin or Watercourse (surveyed as wetland) Crossing Typical	-
37	983.7	Shell River (M-096-035)	Watercourse	Hubbard	-	X	X	-	-	Public Water HDD Crossing Typical	-
38	985.3	Shell River - Oxbow Pond (M-096-035)	Watercourse	Hubbard	-	X	X	-	-	Public Water HDD Crossing Typical	-

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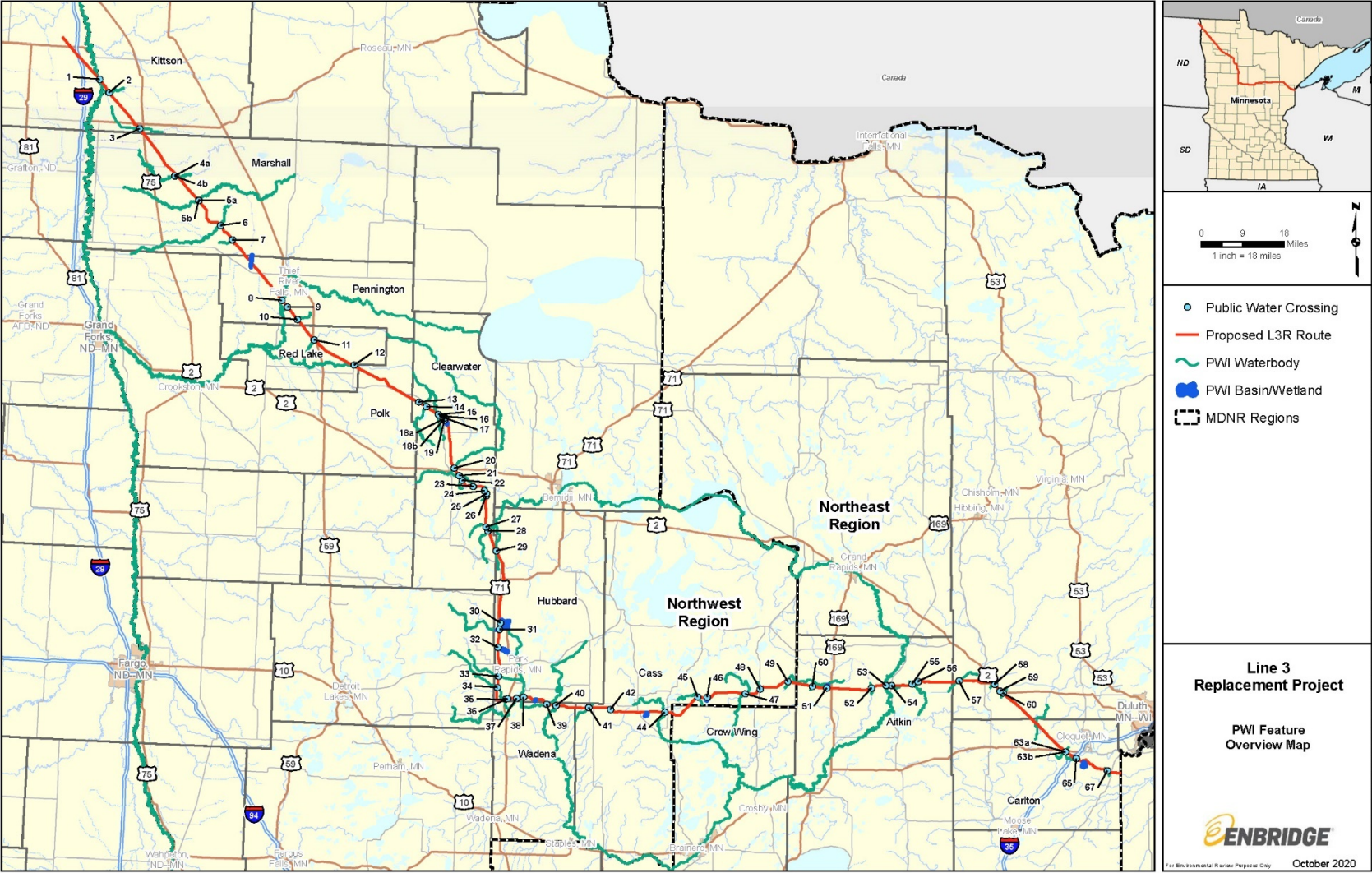
MDNR ID No.	Milepost	Public Water Name (Kittle Number when Assigned) <sup>a</sup>	Public Water Label	County	Crossing Plan	Site-Specific Crossing Plan	HDD Plan	HDD Bridge Plan	Site-Specific Restoration Plan	Restoration Typical	Stand-Alone Plan
39	991.2	Shell River (M-096-035)	Watercourse	Wadena	-	X	X	-	-	Public Water HDD Crossing Typical	-
40	993.3	Crow Wing River (M-096)	Watercourse	Wadena	-	X	X	-	-	Public Water HDD Crossing Typical	-
41	1000.5	Big Swamp Creek (M-096-030)	Watercourse	Cass	-	X	-	-	X	-	-
42	1005.3	Unnamed Public Water Basin	Basin	Cass	X	-	-	-	-	Public Water Basin or Watercourse (surveyed as wetland) Crossing Typical	-
44	1017.4	Pine River (M-106)	Watercourse	Cass	-	X	X	X	-	Public Water HDD Crossing Typical	-
45	1026.4	Blind Lake Creek (M-106-014-002)	Watercourse	Cass	-	X	-	-	X	-	-
46	1028.5	Peterson Lake - Public Water Basin	Basin	Cass	X	-	-	-	-	Public Water Basin or Watercourse (surveyed as wetland) Crossing Typical	-
47	1037.4	Daggett Brook (M-106-004)	Watercourse	Cass	-	X	X	-	-	Public Water HDD Crossing Typical	-
48	1041.3	Spring Brook (M-106-004-002-001)	Trout Stream	Cass	-	-	-	-	-	-	X
49	1048.0	Moose River (M-117-012)	Watercourse	Cass	-	X	-	-	X	-	-
50	1053.4	Unnamed Stream (M-117-012-002)	Watercourse	Aitkin	-	X	-	-	X	-	-
51	1056.6	Moose Lake (Public Water Basin) / Tributary to Moose Lake (Non-Public Water)	Basin	Aitkin	-	X	-	-	X	-	-
52	1066.5	Willow River (M-117)	Watercourse	Aitkin	-	X	X	-	-	Public Water HDD Crossing Typical	-
53	1069.7	Mississippi River (M)	Watercourse	Aitkin	-	X	X	-	-	Public Water HDD Crossing Typical	-
54	1070.9	Unnamed Stream (M-122-001)	Trout Stream	Aitkin	-	X	-	-	X	-	-



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MDNR ID No.	Milepost	Public Water Name (Kittle Number when Assigned) <sup>a</sup>	Public Water Label	County	Crossing Plan	Site-Specific Crossing Plan	HDD Plan	HDD Bridge Plan	Site-Specific Restoration Plan	Restoration Typical	Stand-Alone Plan
55	1075.5	Unnamed Stream (M-120-005-001-005)	Watercourse	Aitkin	-	X	-	-	X	-	-
56	1076.9	West Savanna River (M-120-005-001)	Watercourse	Aitkin	-	X	-	-	X	-	-
57	1085.9	East Savanna River (S-002-031)	Watercourse	St. Louis	-	X	X	X	-	Public Water HDD Crossing Typical	-
58	1094.0	Unnamed Stream (S-002-028)	Watercourse	St. Louis	-	X	-	-	X	-	-
59	1095.9	Unnamed Stream (S-002-027)	Watercourse	St. Louis	-	X	-	-	-	Public Water Watercourse (surveyed as waterbody) Crossing Typical	-
60	1096.7	Ahmik River (S-002-026)	Watercourse	St. Louis	-	X	-	-	X	-	-
63a	1115.6	Unnamed Stream (S-002-009-001-002)	Trout Stream (non-designated)	Carlton	-	X	-	-	X	-	-
63b	1115.6	Unnamed Stream (S-002-009-001-002)	Trout Stream (non-designated)	Carlton	-	X	-	-	X	-	-
65	1118.4	Little Otter Creek (S-002-009-001)	Trout Stream	Carlton	-	X	-	-	X	-	-
67	1126.2	Unnamed Stream (S-001.5-007)	Trout Stream (non-designated)	Carlton	-	X	-	-	X	-	-

Figure 1 - L3R Public Waters Overview Map

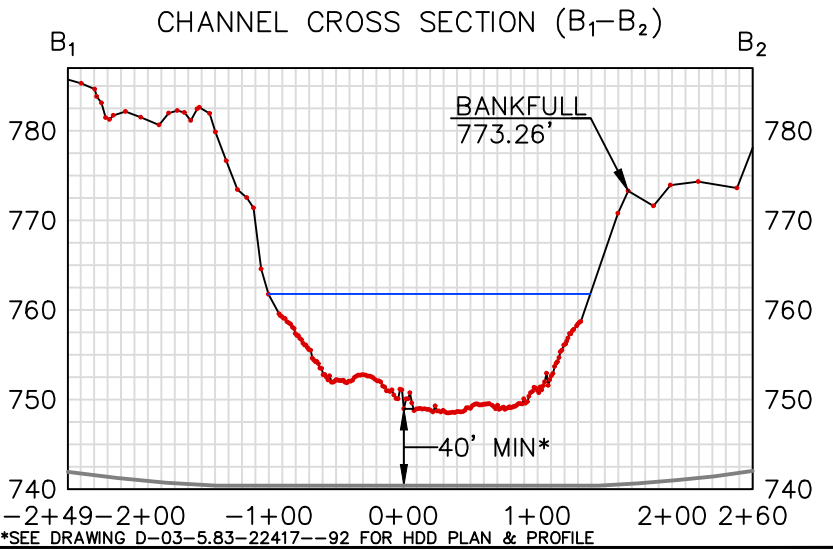
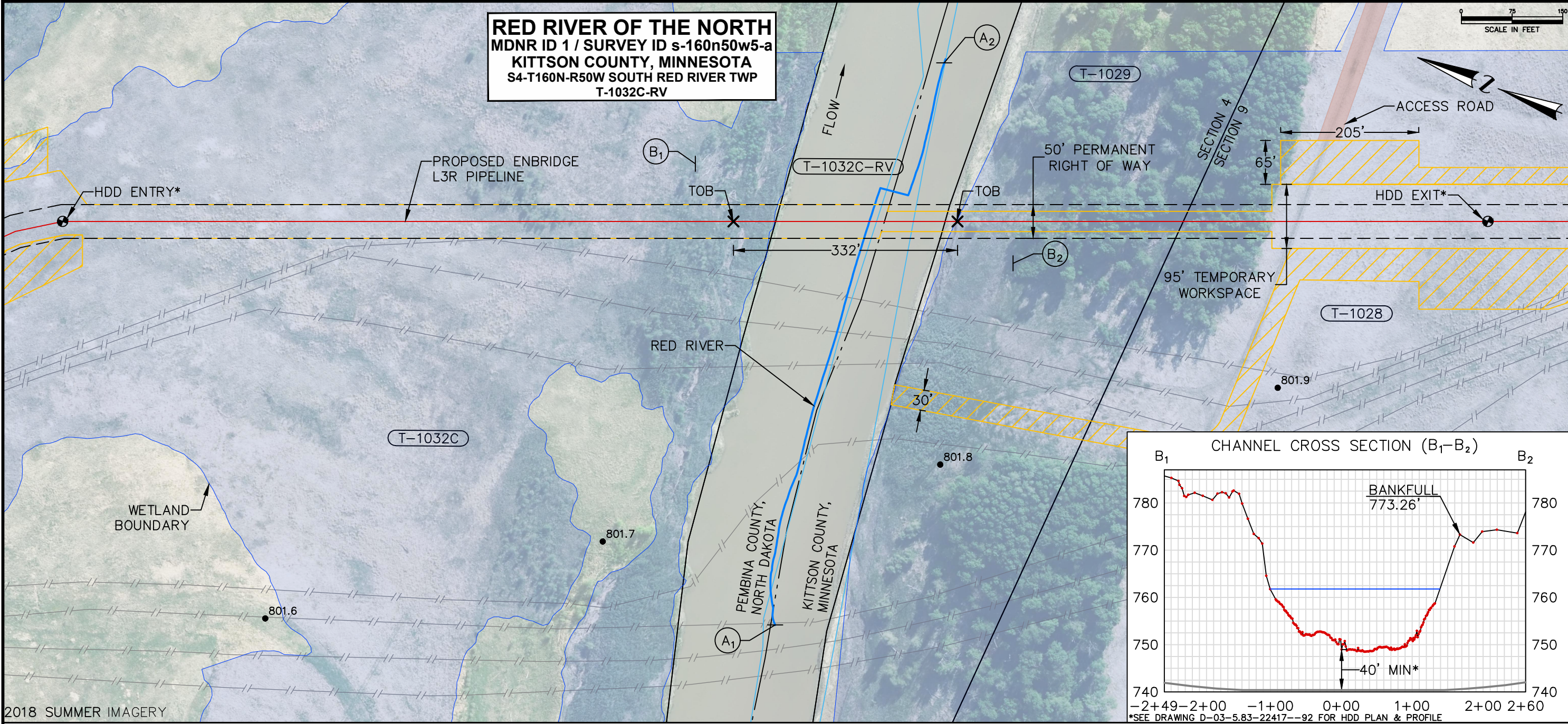


## **L3R Public Water Plans by Feature**



**MDNR ID No. 1: MP 801.8; Red River of the North (H-026)**



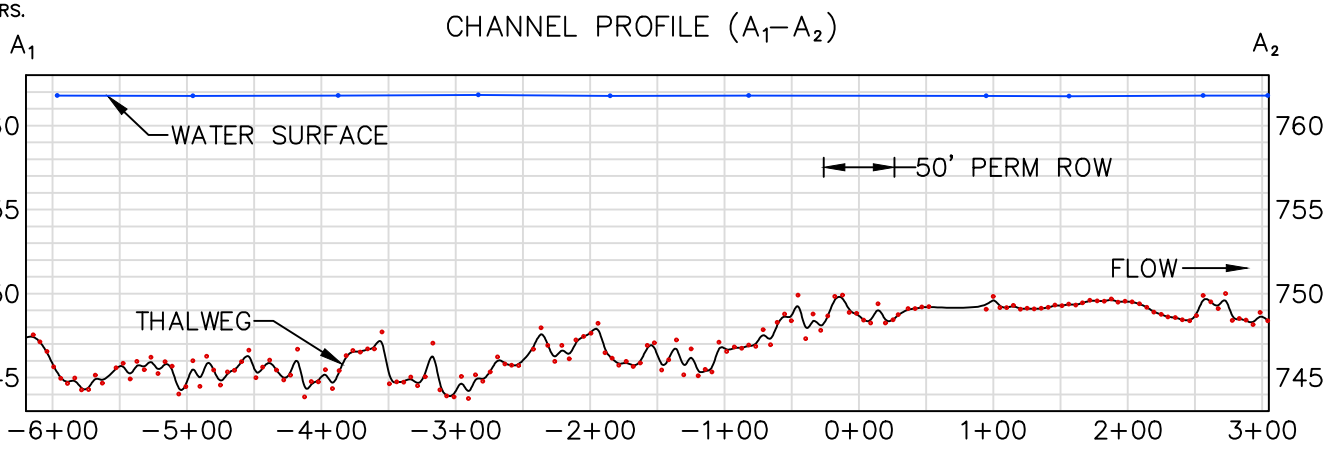


- NOTES**
1. SOBS (O/H) OR NPC (S1-3): N/A
  2. MDNR REGION 1 PWI - COOL/WARM WATER FISHERY: MARCH 15 - JUNE 30. 24-HOUR SOIL STABILIZATION REQUIRED WITHIN 200 FEET DURING RESTRICTION.
  3. WHEN WORKING WITHIN 'WORK IN WATER RESTRICTIONS', STABILIZE ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WITHIN 24 HOURS. STABILIZATION WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY/ TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD.

**LEGEND**

- PROPOSED ENBRIDGE L3R PIPELINE
- OTHER PIPELINE
- PERMANENT RIGHT OF WAY
- TEMPORARY WORKSPACE
- WATERBODY (ROSGEN SURVEY - THALWEG)
- TRACT BOUNDARY
- FEMA FLOODPLAIN
- ACCESS ROAD
- WETLAND
- ADDITIONAL TEMPORARY WORKSPACE
- TRACT ID
- ROSGEN SURVEY POINT - WATER SURFACE
- ROSGEN SURVEY POINT - RIVER BOTTOM (THALWEG)
- HDD ENTRY EXIT POINT
- TOP OF BANK

**FOR ENVIRONMENTAL REVIEW PURPOSES ONLY**



**CHANNEL CROSS SECTION NOTE:**

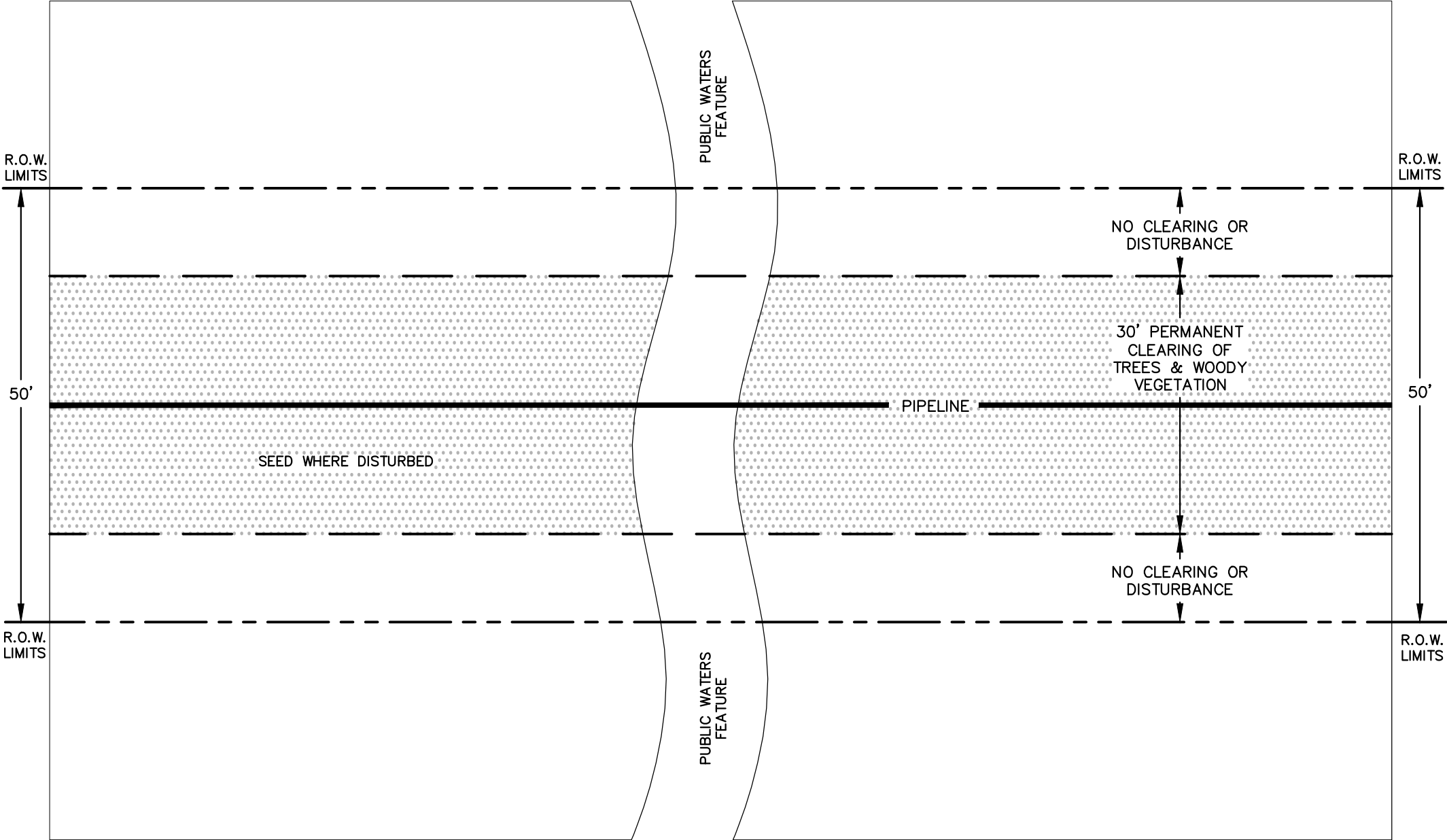
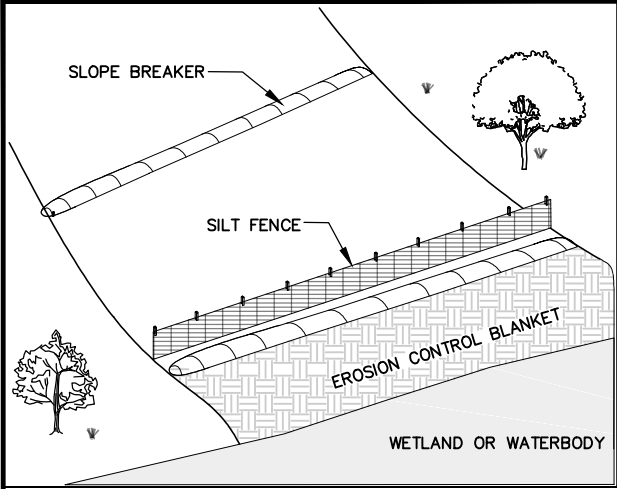
1. CHANNEL LOCATIONS, DIMENSIONS, AND/OR ELEVATIONS ARE BASED ON 2015 TOPOGRAPHIC/BATHYMETRIC SURVEY(S), AND AS SUCH DO NOT REFLECT CHANGES TO THE CHANNEL THAT MAY HAVE OCCURRED SINCE THAT TIME.

0	ISSUED FOR PERMIT APPLICATION	AJJ	10/2020	BAB BAB
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D APP'D
<div>ENBRIDGE</div> <div>PROPOSED ENBRIDGE L3R PIPELINE PRIMARY METHOD - HDD CROSSING OF RED RIVER OF THE NORTH ENBRIDGE MP 801.8 KITTSON COUNTY, MINNESOTA</div>				
DWN. BY:	AJJ	DATE	10/2020	
CHK.				
PROJ. ENGR.				
PROJ. MGR.				
CLIENT APP.				
SCALE		DWG. NO.		
NOTED		B-93-5.84-MDNR-1-0		









**PUBLIC WATERS FEATURE - HDD CROSSING**

- 1) DISTURBANCE OF THE ROW IS LIMITED TO THE 30-FOOT-WIDE CLEARING OF TREES AND WOODY VEGETATION AND IMPACTS RESULTING FROM TRAVEL LANES AND/OR BRIDGES.
- 2) ANY WETLAND OR WATERBODY BANK THAT IS DISTURBED WILL BE STABILIZED WITH EROSION AND SEDIMENT CONTROL BMP AND RESTORED TO AS NEAR AS PRACTICABLE TO PRE-CONSTRUCTION CONDITIONS.
- 3) PERMANENT REVEGETATION SEEDING OF DISTURBED WATERBODY BANKS WILL UTILIZE THE BWSR RIPARIAN SEED MIXES IN ACCORDANCE WITH THE EPP (SECTION 7.8).
- 4) PERMANENT REVEGETATION SEEDING OF DISTURBED WETLANDS WILL TAKE PLACE IN ACCORDANCE WITH THE EPP (SECTION 7.7).
- 7) IN DISTURBED WETLAND AREAS, THE APPROPRIATE SEED MIX WILL BE DETERMINED USING THE RESULTS OF PRE-CONSTRUCTION WETLAND IN DISTURBED WETLAND AREAS, HYDROLOGICAL CHARACTERISTICS, AND SITE-SPECIFIC CONDITIONS.

ISSUED  
FOR PERMIT  
12/13/19

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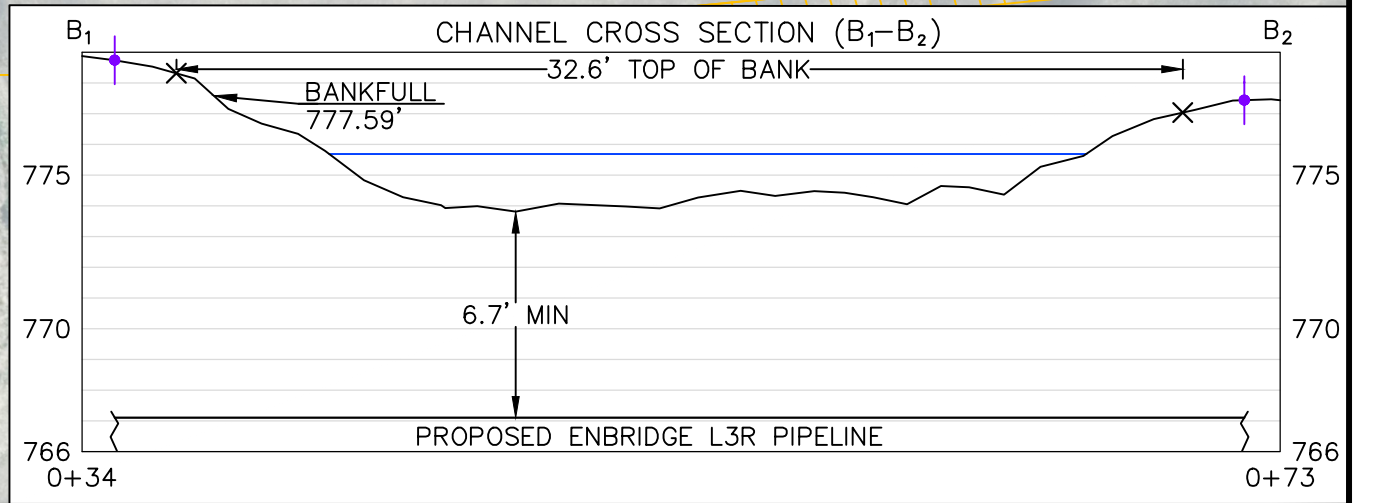
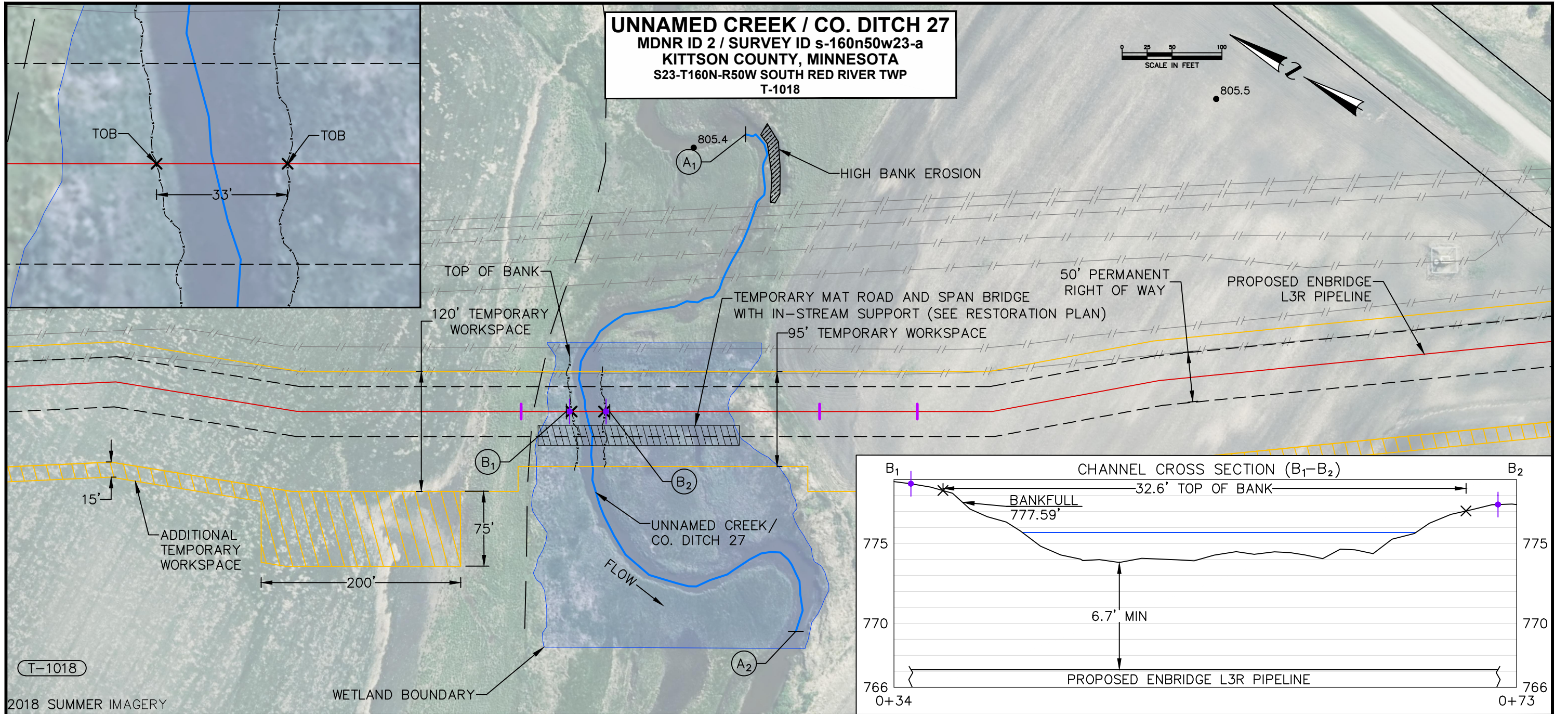
**MDNR ID No. 2: MP 805.4; Unnamed Creek / County Ditch 27 (H-026-011-001)**



UNNAMED CREEK / CO. DITCH 27  
MDNR ID 2 / SURVEY ID s-160n50w23-a  
KITTSOON COUNTY, MINNESOTA  
S23-T160N-R50W SOUTH RED RIVER TWP  
T-1018

0 25 50 100  
SCALE IN FEET

805.5

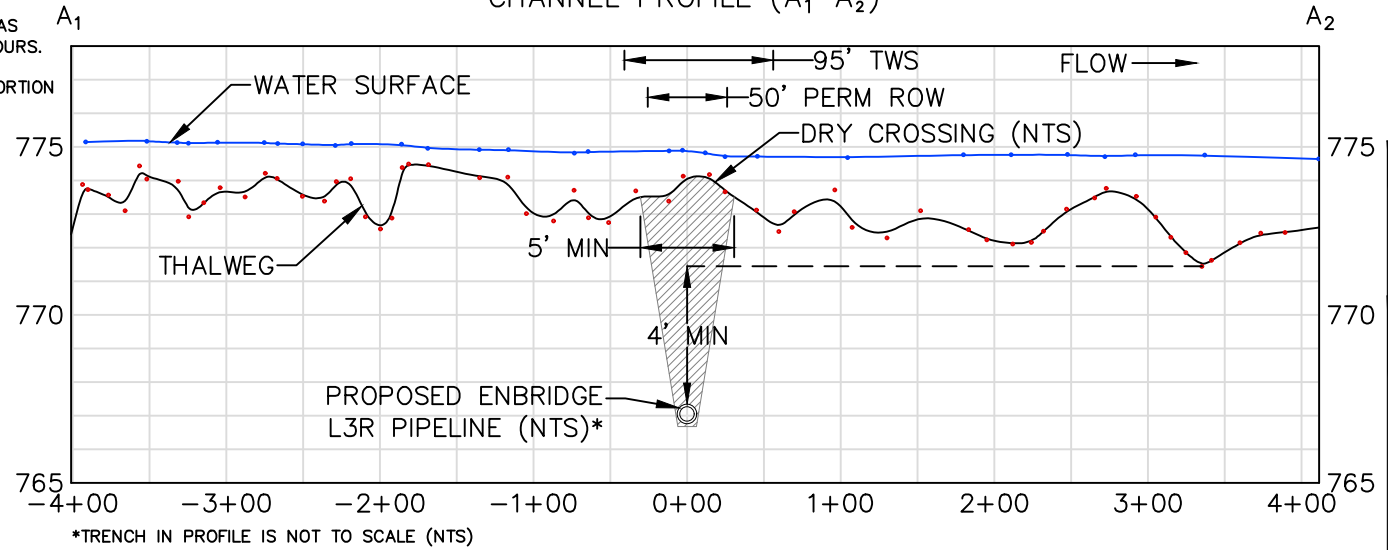


- NOTES
1. SOBS (O/H) OR NPC (S1-3): N/A
  2. MDNR REGION 1 PWI - COOL/WARM WATER FISHERY: MARCH 15 - JUNE 30. 24-HOUR SOIL STABILIZATION REQUIRED WITHIN 200 FEET DURING RESTRICTION.
  3. WHEN WORKING WITHIN "WORK IN WATER RESTRICTIONS", STABILIZE ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WITHIN 24 HOURS. STABILIZATION WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY/ TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD.

- LEGEND
- PROPOSED ENBRIDGE L3R PIPELINE
  - OTHER PIPELINE
  - PERMANENT RIGHT OF WAY
  - TEMPORARY WORKSPACE
  - WATERBODY (ROSGEN SURVEY - THALWEG)
  - BERM
  - TRACT BOUNDARY
  - TEMPORARY MAT ROAD AND SPAN BRIDGE
  - HIGH BANK EROSION
  - WETLAND
  - ADDITIONAL TEMPORARY WORKSPACE
  - TRACT ID
  - ROSGEN SURVEY POINT - WATER SURFACE
  - ROSGEN SURVEY POINT - RIVER BOTTOM (THALWEG)
  - PROPOSED INCREASED DEPTH OF COVER EXTENT
  - TRENCH BREAKER (LOCATIONS ARE APPROXIMATE)

FOR ENVIRONMENTAL REVIEW PURPOSES ONLY

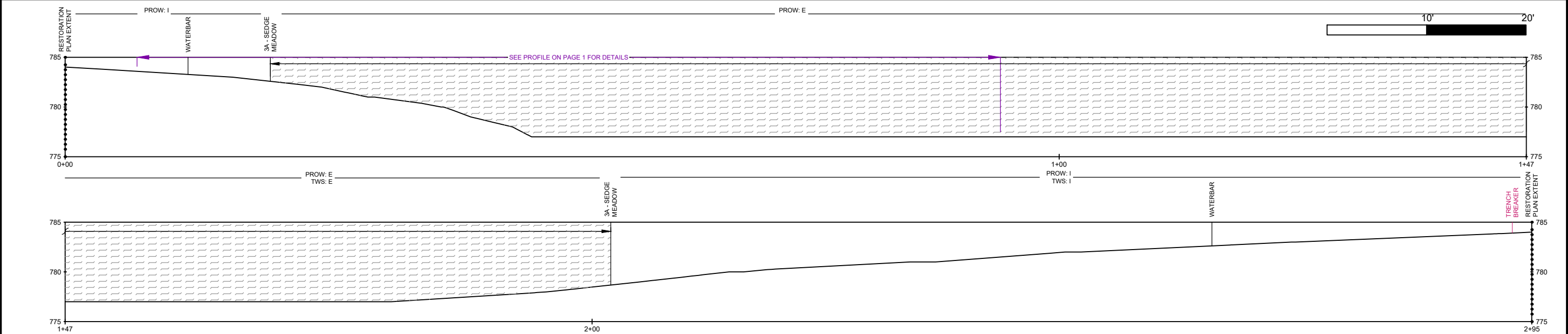
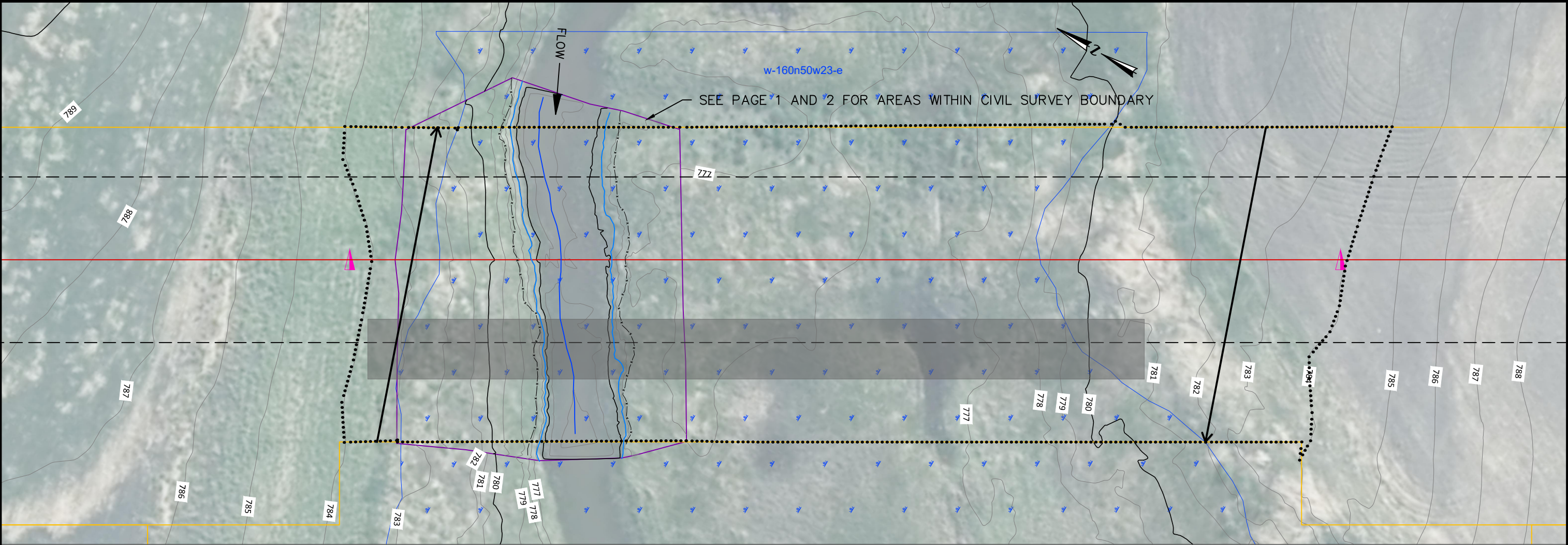
CHANNEL PROFILE (A1-A2)



- CHANNEL CROSS SECTION NOTE:
1. CHANNEL LOCATIONS, DIMENSIONS, AND/OR ELEVATIONS ARE BASED ON 2020 TOPOGRAPHIC/BATHYMETRIC SURVEY(S), AND AS SUCH DO NOT REFLECT CHANGES TO THE CHANNEL THAT MAY HAVE OCCURRED SINCE THAT TIME.
  2. DEPTH OF COVER AT CENTERLINE WAS DEVELOPED USING THE BOTTOM ELEVATION OF THE DEEPEST UPSTREAM OR DOWNSTREAM POOL WITHIN THE SURVEYED REACH, UNLESS OTHERWISE NOTED IN APPLICATION MATERIALS.
  3. MEAN MEANDER BELT WIDTH: 160'
  4. MEANDER WIDTH RATIO: 3.08

0	ISSUED FOR PERMIT APPLICATION	AJJ	10/2020	BAB	BAB
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
<b>ENBRIDGE</b>					
DWN. BY:	AJJ	DATE	10/2020	PROPOSED ENBRIDGE L3R PIPELINE PRIMARY METHOD - DRY CROSSING CROSSING OF UNNAMED CREEK / CO. DITCH 27 ENBRIDGE MP 805.4 KITTSOON COUNTY, MINNESOTA	
CHK.				SCALE	
PROJ. ENGR.				NOTED	
PROJ. MGR.				DWG. NO.	
CLIENT APP.				B-93-5.84-MDNR-2-0	





BWSR SEED MIX	E: WET MEADOW S&W (34-271); I: MESIC PRAIRIE NW (35-441)
SOBS (O/H) or NPC (S1-3)	N/A

- ELEVATIONS OUTSIDE OF THE AREA WITHIN CIVIL SURVEY BOUNDARY ARE DERIVED FROM LIDAR. ENBRIDGE WILL RESTORE THE AREAS ADJACENT TO THE PUBLIC WATER WITHIN THE MDNR EXPANDED RESTORATION BOUNDARY TO PRE-CONSTRUCTION CONDITIONS.
- MDNR REGION 1 PWI - COOL/WARM WATER FISHERY: MARCH 15 - JUNE 30. 24-HOUR SOIL STABILIZATION REQUIRED WITHIN 200 FEET DURING RESTRICTION.
- AIR PHOTOS ARE FROM 2018 ENBRIDGE AERIAL PHOTOGRAPHY.
- ADDITIONAL ON-THE GROUND PHOTOS MAY BE TAKEN PRIOR TO CONSTRUCTION AT MDNR REQUEST.
- PRE-CONSTRUCTION PHOTOS WILL BE USED TO AID IN RESTORATION.
- SEE GENERAL NOTES PAGE FOR ADDITIONAL DETAIL.
- SEE THE PLANTING PLAN FOR ADDITIONAL DETAIL REGARDING SEEDING PRACTICES AND SEED MIXES AT PUBLIC WATER CROSSINGS.
- ON PUBLIC LANDS AND WHEREVER PRACTICABLE AT WATERBODY CROSSINGS, ENBRIDGE WILL USE WILDLIFE-FRIENDLY EROSION AND SEDIMENT CONTROL BMPS THAT CONTAIN BIODEGRADABLE NETTING (CATEGORY 3N OR 4N NATURAL FIBER) AND WILL AVOID THE USE OF PLASTIC MESH (SECTIONS 1.17.1 AND 2.6.1 OF THE EPP).
- WHEN WORKING WITHIN "WORK IN WATER RESTRICTIONS", STABILIZE ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WITHIN 24 HOURS. STABILIZATION WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY/ TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD.

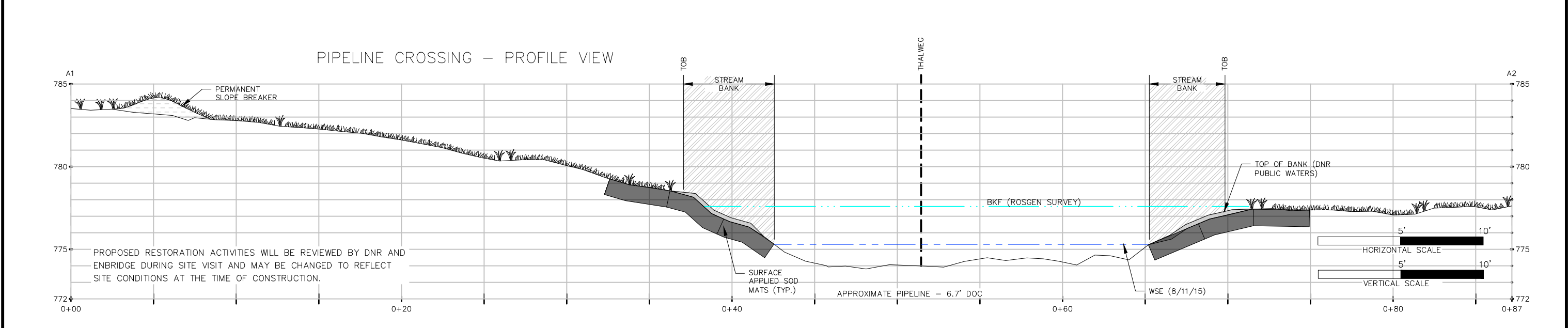
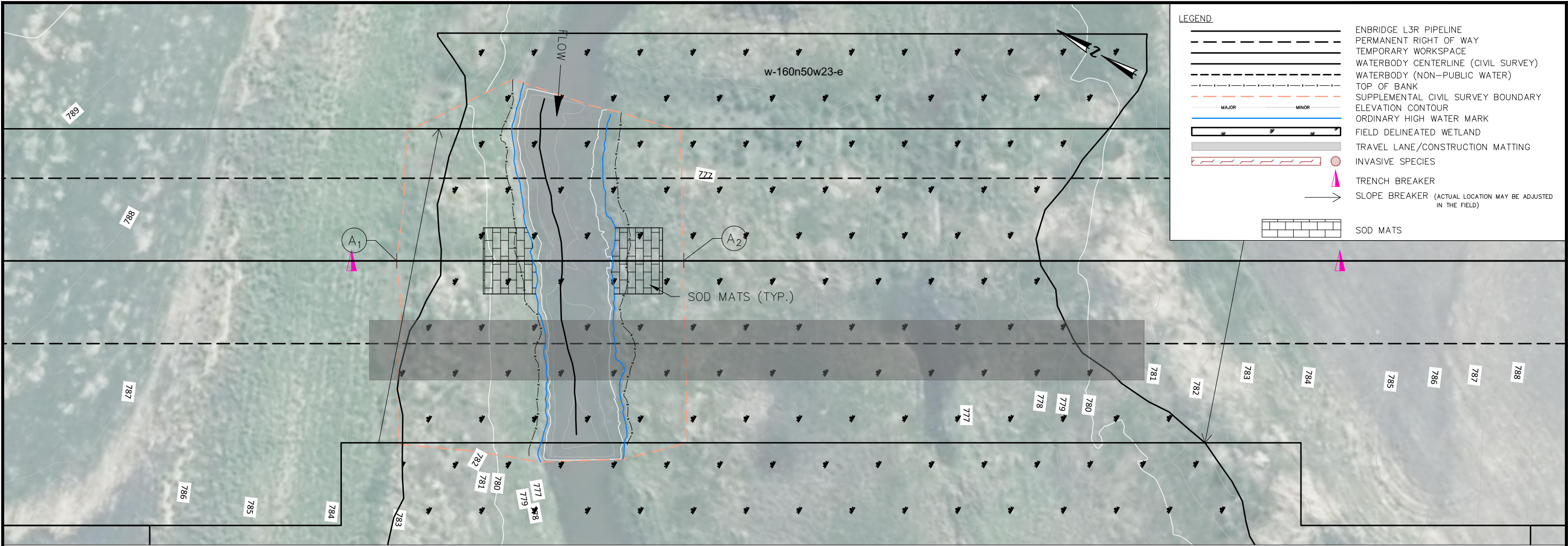
**LEGEND**


ENBRIDGE L3R PIPELINE  
PERMANENT RIGHT OF WAY  
TEMPORARY WORKSPACE  
WATERBODY CENTERLINE (CIVIL SURVEY)  
WATERBODY (NON-PUBLIC WATER)  
PUBLIC WATER CIVIL SURVEY BOUNDARY  
MDNR EXPANDED RESTORATION BOUNDARY  
TOP OF BANK  
ELEVATION CONTOUR  
ORDINARY HIGH WATER MARK  
FIELD DELINEATED WETLAND  
TRAVEL LANE/CONSTRUCTION MATTING

INVASIVE SPECIES  
TRENCH BREAKER  
PERMANENT SLOPE BREAKER  
(ACTUAL LOCATION MAY BE ADJUSTED IN THE FIELD)  
1 - SHALLOW, OPEN WATER  
2B - SHALLOW MARSH  
3A - SEDGE MEADOW  
3B - FRESH (WET) MEADOW  
5A - SHRUB-CARR  
5B - ALDER THICKET  
6A - HARDWOOD SWAMP  
6B - CONIFEROUS SWAMP

B	ISSUED FOR PERMITTING	MJT	10/2020		
A	ISSUED FOR REVIEW	MJT	09/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN UNNAMED CREEK - MP 805.4 - MDNR ID 2 RE-VEGETATION PLAN: EXPANDED EXTENT					
SCALE	NOTED	DWG. NO.	SSRP-805.4-001A	PAGE NO.	1A/5





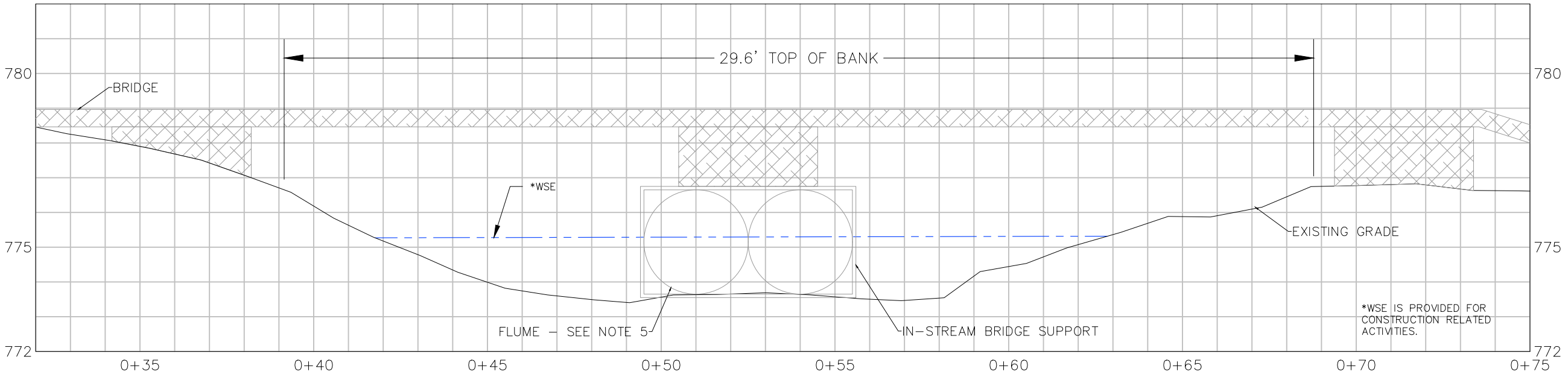
FEATURE ID	s-160n50w23-a; IFC ID: S-28.0	<div>NOTES</div> <div>1. CONSTRUCTION TIMING RESTRICTIONS</div> <div>1.1.MDNR REGION 1 PWI – COOL/WARM WATER FISHERY: MARCH 15 – JUNE 30.</div> <div>1.2. WHEN WORK OCCURS WITHIN "WORK IN WATER RESTRICTIONS", ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE STABILIZED WITHIN 24 HOURS DURING THE RESTRICTION PERIOD. STABILIZATION OF ALL EXPOSED SOILS WITHIN 200 FEET OF THE PUBLIC WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD</div> <div>2. WORK SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE STANDARDS IN ENBRIDGE'S EPP AND VMP FOR PUBLIC LANDS AND WATERS. THE SPECIFICATIONS WITHIN THIS SSRP MAY MODIFY OR REPLACE THESE STANDARDS.</div> <div>3. SEE GENERAL NOTES PAGE FOR ADDITIONAL DETAIL.</div> <div>4. INFORMATION REGARDING SEEDING SPECIFICATIONS, SEED BED PREPARATION TECHNIQUES, ETC. ARE DESCRIBED IN THE PLANTING PLAN CONTAINED WITHIN THE VMP.</div> <div>5. TRENCH BREAKER LOCATION IS APPROXIMATE PENDING FIELD VERIFICATION (EPP SECTION 1.13)</div> <div></div>
CROSSING TYPE	DRY CROSSING	
PROPOSED RESTORATION <small>(SEE DETAILS FOR LIVE STAKING, TRANSPLANTS, AND SHRUB SPECIES IF APPLICABLE)</small>	SOD MATS	
WITHIN OR ADJACENT WETLAND	SEDGE MEADOW	
BWSR SEED MIX	WET MEADOW S&W (34--271)	
DOMINANT WETLAND VEGETATION	1. CAREX LACUSTRIS 2. PHALARIS ARUNDINACEA	
SOBS (O/H) or NPC (S1-3)	N/A	

B	ISSUED FOR PERMITTING		10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN UNNAMED CREEK – MP 805.4 – MDNR ID 2 RE-VEGETATION PLAN					
SCALE NOTED		DWG. NO. SSRP-805.4-001		PAGE NO. 1/5	

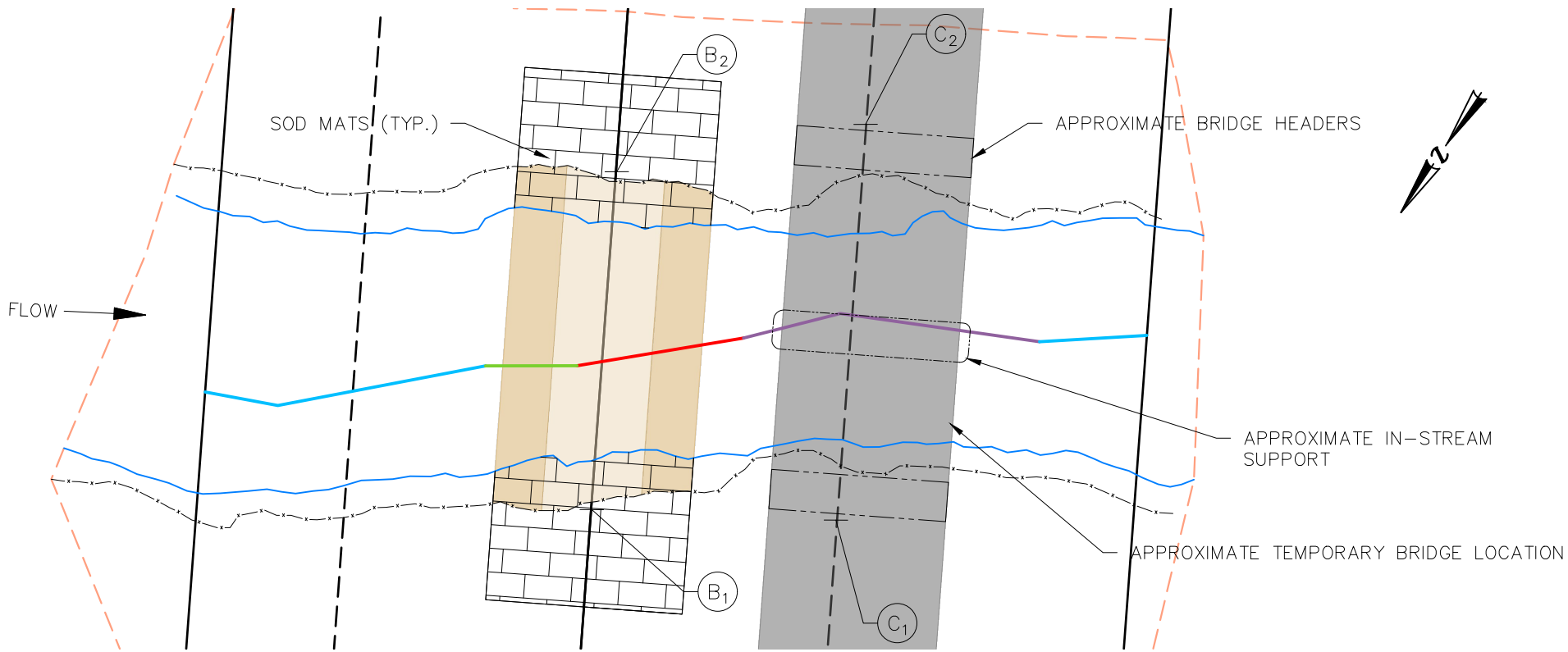
C1

BANK RESTORATION (BRIDGE)

C2



STREAMBED RESTORATION

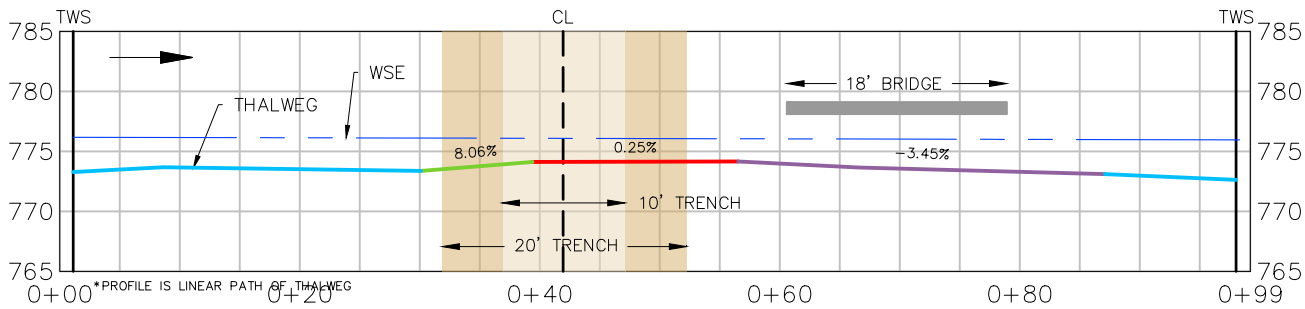


NOTES

1. TRANSITIONS BETWEEN EXISTING CHANNEL FEATURES (BED, BANK, FLOODPLAIN) AND PROPOSED RESTORED TRENCH CROSSING WILL BE SMOOTH AND EVENLY GRADED WITHOUT ABRUPT OR PROTRUDING OBSTRUCTIONS.
2. BANK MIGRATION POTENTIAL IS TO THE NORTH. PRIMARY FLOW IS LOCATED ON THE UPSTREAM SIDE OF THE CHANNEL.
3. PLACE MATS DIRECTLY ON TOP OF EXISTING VEGETATION TO AVOID OR MINIMIZE DISTURBANCE OF VEGETATION ON THE CHANNEL BANKS AND AT THE TOP OF THE STREAM BANK.
4. SEE DETAIL SHEET FOR SPECIFIC RESTORATION METHODS AND DETAILS.
5. FLUME SIZE MAY VARY BETWEEN 18-48 INCHES BASED ON SITE-SPECIFIC CONDITIONS AT THE TIME OF CONSTRUCTION, BUT MUST ALWAYS EXTEND ABOVE OHWM OR SURFACE WATER AT TIME OF CONSTRUCTION, WHICHEVER IS GREATER.
6. MINIMIZE DISTURBANCE OF BED MATERIALS AND FEATURES DURING CONSTRUCTION OF THE TRENCH AND INSTALLATION AND REMOVAL OF IN-STREAM SUPPORT.
7. BED AND/OR BANK MATERIALS TEMPORARILY ADJUSTED OR REMOVED DURING CONSTRUCTION SHALL BE PLACED IN THE APPROXIMATE ORIGINAL LOCATION DURING RESTORATION. MATERIALS SHALL BE FIELD ADJUSTED DURING PLACEMENT BASE ON THE OBSERVED FLOW PATH AT THE TIME OF CONSTRUCTION.
8. ALIGNMENT OF IN-STREAM SUPPORT SHALL BE FIELD ADJUSTED BASED ON FLOW PATH TO PROTECT CHANNEL BANKS.
9. SEE RESTORATION SHEET FOR B1-B2 CROSS SECTION.

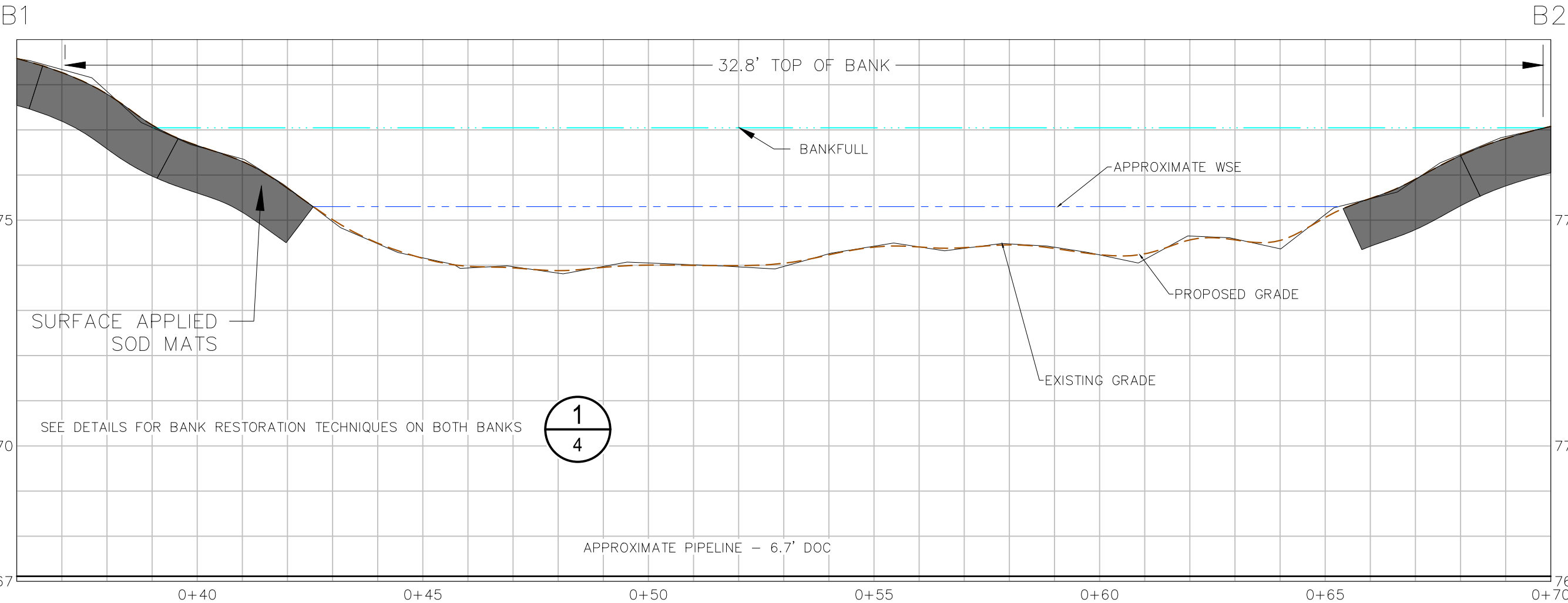
LEGEND

ENBRIDGE L3R PIPELINE	PERMANENT RIGHT OF WAY
TEMPORARY WORKSPACE	WATERBODY - RIFFLE (ROSGEN SURVEY)
WATERBODY - POOL (ROSGEN SURVEY)	WATERBODY - RUN (ROSGEN SURVEY)
WATERBODY - GLIDE (ROSGEN SURVEY)	CONTOUR (1' INTERVAL)
MAJOR	MINOR
TOP OF BANK	ORDINARY HIGH WATER MARK
FIELD DELINEATED WETLAND	TRAVEL LANE/CONSTRUCTION MATTING
TRENCH - 10'	TRENCH - 20'
SOD MATS	

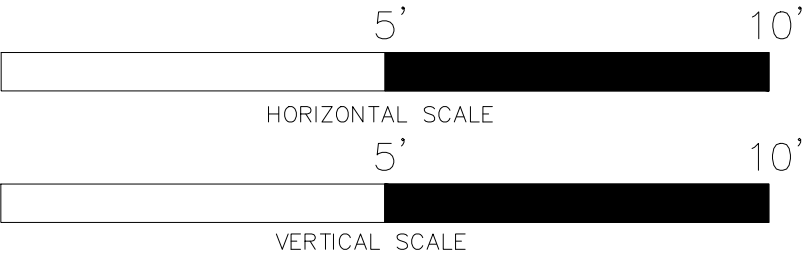


B	ISSUED FOR PERMITTING	10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020	
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN UNNAMED CREEK - MP 805.4 - MDNR ID 2 STABILIZATION PLAN				
SCALE	DWG. NO.	SSRP-805.4-002	PAGE NO.	2/5



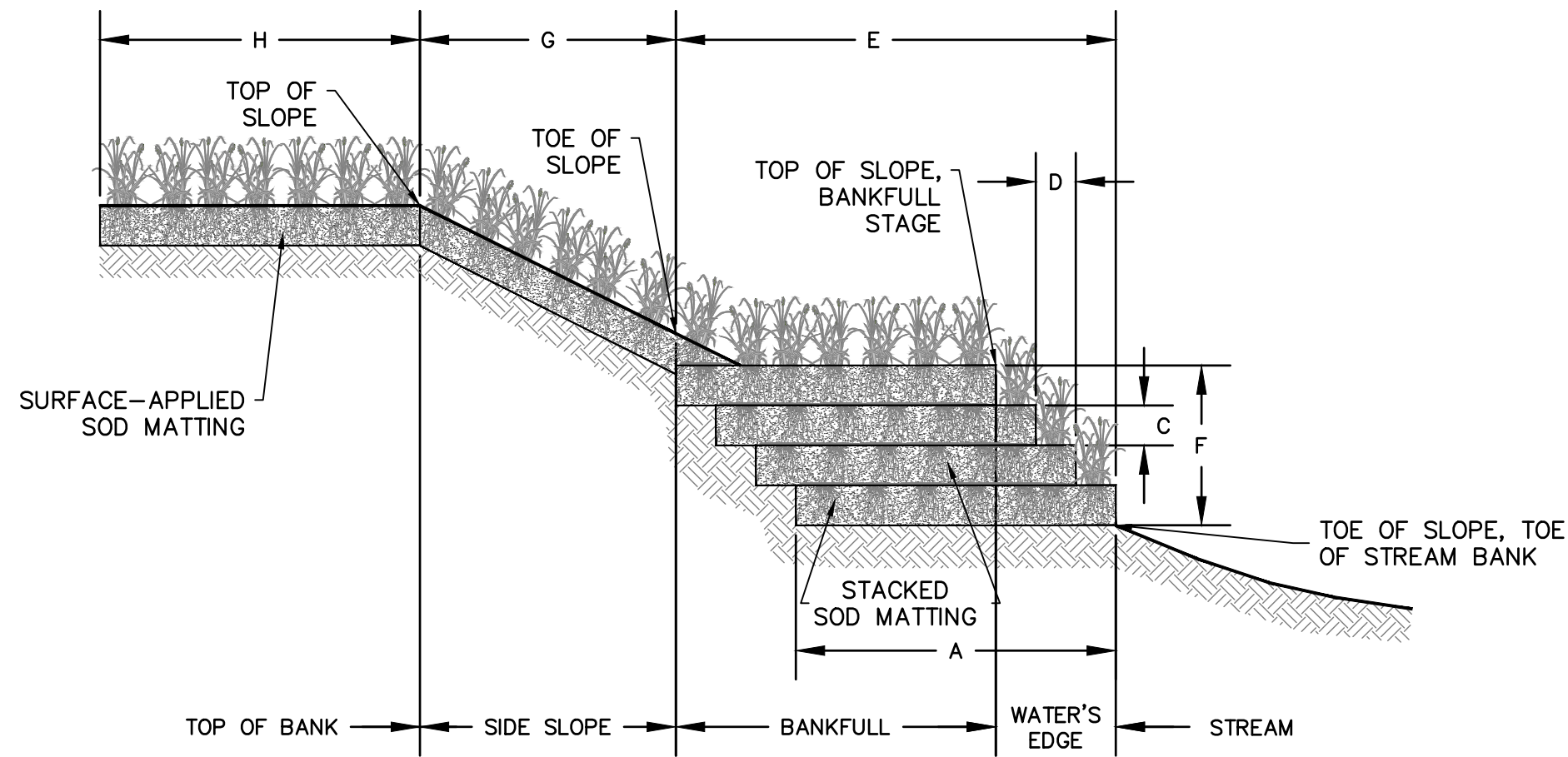


- RESTORATION NOTES:
- GENERAL
1. REFER TO RESTORATION DETAIL SHEETS FOR ADDITIONAL INFORMATION RELATED TO PROPOSED RESTORATION MEASURES.
  2. REFER TO SITE PHOTOS FOR INFORMATION ON PRE-CONSTRUCTION CROSSING CONDITIONS AND TO PROVIDE ADDITIONAL GUIDANCE FOR RESTORATION EFFORTS.
- SOD MATTING
1. REMOVE VEGETATED MATS ON EITHER SIDE OF THE STREAM CROSSING USING ONSITE EQUIPMENT WHICH CAN UNDERCUT THE VEGETATION FOR REMOVAL. SMALL SHRUBS AND/OR TREES WITHIN THE SOD MATS ARE ACCEPTABLE AND SHOULD NOT BE REMOVED.
  2. DEPENDING ON THE LEVEL OF SATURATION AT THE TIME OF REMOVAL, IT MAY BE DIFFICULT TO OBTAIN INTACT CONSOLIDATED MATS, BUT GENERALLY THE NATIVE VEGETATION WILL BE RETAINED AND CAPTURED FOR PLACEMENT.
  3. SOD MATS CAN BE TRANSPLANTED DURING ANY SEASON.
  4. SOD MATS WILL BE PLACE ON CLEAR GROUND OR MATS WITHIN THE WORKSPACE.
  5. MONITOR MATS TO SUPPORT SURVIVABILITY; WATERING MAY BE NEEDED.
  6. PRIOR TO PLACEMENT OF SOD MATS FINISH GRADE CHANNEL BANK AND ADJACENT FLOODPLAIN APPLICATION AREA TO PROVIDE A SMOOTH AND EVEN SURFACE. SUBGRADE ELEVATION SHOULD ALLOW FOR THE FINISHED SOD SURFACE TO TRANSITION EVENLY WITH THE CHANNEL BANKS UPSTREAM AND DOWNSTREAM OF THE INSTALLATION AREA. AVOID ABRUPT CHANGES IN GRADE.
  7. VEGETATED MATS WILL BE RETURNED/SET IN PLACE WITH ONSITE EQUIPMENT.
    - a. SURFACE APPLIED SOD MATTING SHOULD BE PLACED WITH THE LONG SIDE PERPENDICULAR TO THE CHANNEL / FLOW.
    - b. STACKED SOD MATTING SHOULD BE PLACED WITH THE LONG SIDE PARALLEL TO THE CHANNEL / FLOW.
  8. WHEN PLACING SOD MATS, DO NOT LEAVE LARGE GAPS BETWEEN EACH SOD MAT AS NON-NATIVE VEGETATION WILL QUICKLY ATTEMPT TO COLONIZE THESE VOIDS.
  9. WATER SOD MATS AFTER REPLACEMENT IF CONDITIONS ARE HOT AND DRY. DAMP AND/OR FROZEN SOD MATS DO NOT REQUIRE WATERING.
  10. THE TOP MAT AND/OR OTHER MATS CAN BE ANCHORED WITH A LIVE AND/OR DEAD STOUT STAKE TO ENSURE THAT IT DOES NOT MOBILIZE DURING A FLOOD EVENT BEFORE THE ROOTS HAVE ESTABLISHED.
  11. THE VEGETATED MATS WILL BE REPLACED AS SOON AS PRACTICAL FOLLOWING BACKFILLING OF THE TRENCH AND STABILIZED PER THE TIMING REQUIREMENTS DESCRIBED IN SECTION 1.9.1 OF THE EPP.

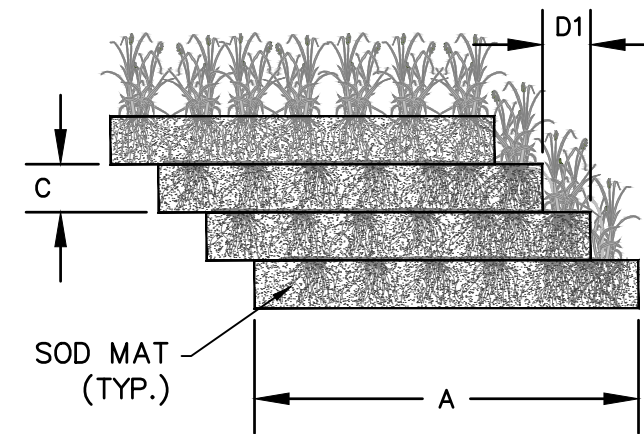


B	ISSUED FOR PERMITTING		10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN UNNAMED CREEK - MP 805.4 - MDNR ID 2 SITE SPECIFIC DETAILS					
SCALE	DWG. NO.	PAGE NO.			
NOTED	SSRP-805.4-003	3/5			

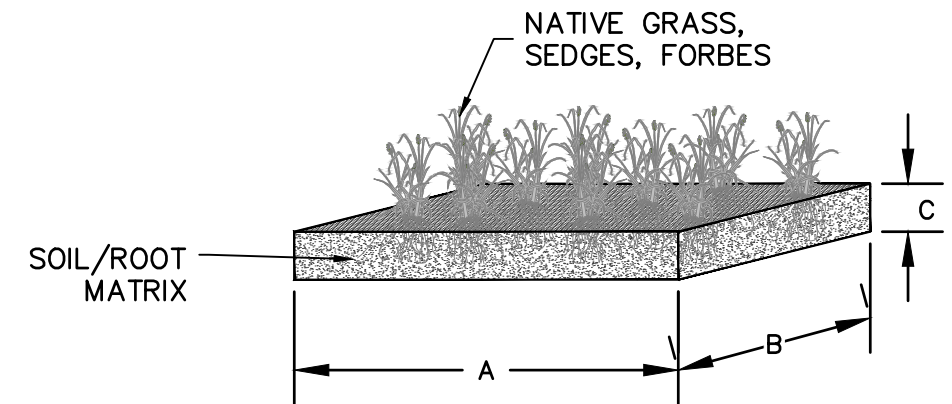




**CROSS SECTION**



**STACKED SOD MATTING DETAIL**



**SOD MAT DETAIL**

DIMENSION <sup>1</sup>	NAME	TYPICAL UNIT	VALUE	DESCRIPTION
A	SOD MAT WIDTH	FEET	3 – 4	WIDTH OF INDIVIDUAL SOD MAT.
B	SOD MAT LENGTH	FEET	3 – 6	LENGTH OF INDIVIDUAL SOD MAT.
C	SOD MAT THICKNESS	INCHES	12	THICKNESS OF INDIVIDUAL SOD MAT.
D	STACKED SOD MAT SETBACK	FEET, INCHES	N/A	THE DISTANCE BETWEEN THE EDGES OF SOD MATS STACKED TO FORM A SLOPE
E	WIDTH OF STACKED SOD MATS	FEET, INCHES	N/A	WIDTH OF A BANK CREATED BY STACKED SOD MATS
F	HEIGHT OF STACKED SOD MATS	FEET, INCHES	N/A	HEIGHT OF A SLOPE CREATED BY STACKED SOD MATS
G	WIDTH OF SURFACE- APPLIED SOD MATS	FEET, INCHES	10 – 20	WIDTH OF A SLOPE STABILIZED WITH SURFACE-APPLIED SOD MATS
H	TOP OF BANK SOD MATTING DISTANCE	FEET	15 MIN	DISTANCE SOD MATTING IS INSTALLED ON THE TOP OF BANK

NOTES:  
 1. DIMENSION LABELS ARE REFERENCED IN THE DETAIL DRAWINGS.



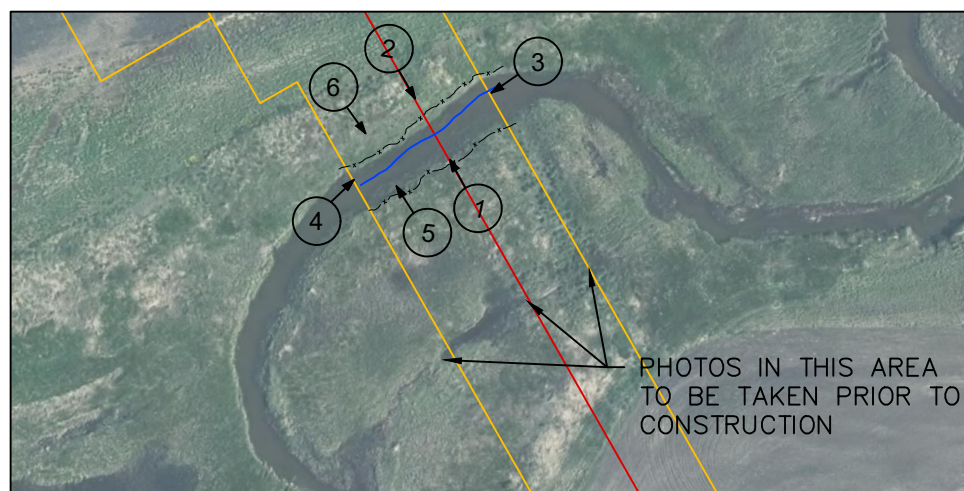
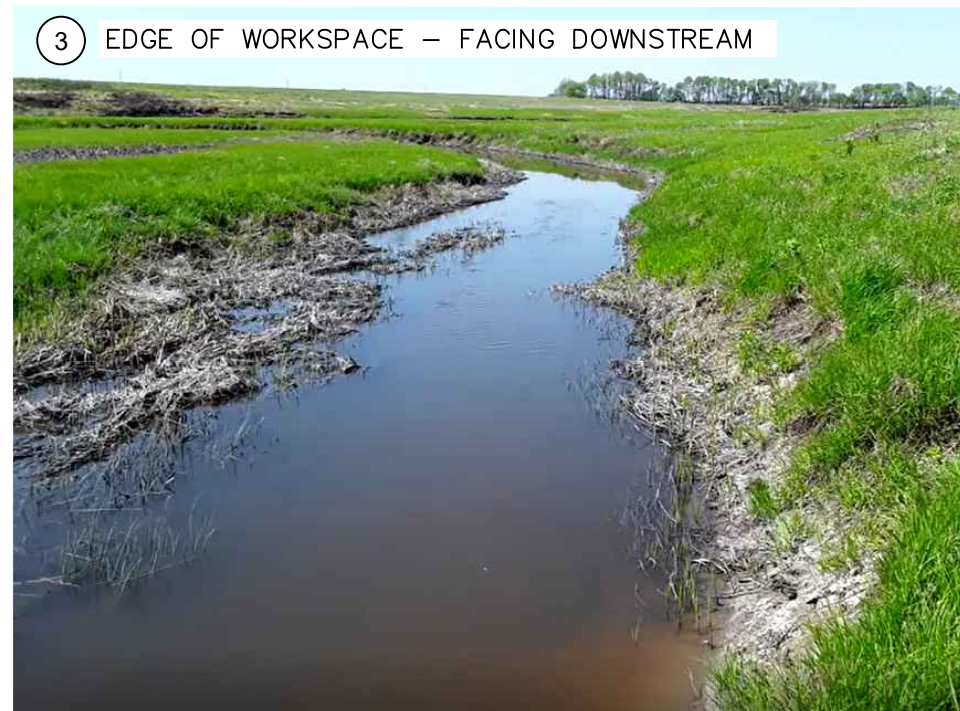
**SOD MAT EXAMPLES**

B	ISSUED FOR PERMITTING		10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN UNNAMED CREEK – MP 805.4 – MDNR ID 2 SITE SPECIFIC DETAILS					
SCALE	DWG. NO.	PAGE NO.			
NOTED	SSRP-805.4-004	4/5			

**SOD MATTING DETAIL**







**NOTES:**

1. AIR PHOTOS ARE FROM 2018 ENBRIDGE AERIAL PHOTOGRAPHY.
2. ADDITIONAL ON-THE GROUND PHOTOS MAY BE TAKEN PRIOR TO CONSTRUCTION AT MDNR REQUEST.
3. PRE-CONSTRUCTION PHOTOS WILL BE USED TO AID IN RESTORATION.



B	ISSUED FOR PERMITTING	MJT	10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN UNNAMED CREEK — MP 805.4 — MDNR ID 2 PHOTO PAGE					
SCALE	DWG. NO. SSRP-805.4-005	PAGE NO. 5/5			



GENERAL

1. THE SPECIFICATIONS WITHIN THIS SSRP MAY MODIFY OR REPLACE PROJECT–WIDE STANDARDS PRESENTED IN THE EPP. WHERE MATERIAL WITHIN THESE SSRPS EXCEEDS STANDARD CONSTRUCTION MEASURES IN THE EPP, THESE SSRPS SUPERSEDE THE EPP.
2. CONSTRUCTION AND RESTORATION OF WATERBODY CROSSINGS WILL FOLLOW THESE GENERAL STEPS:

A. SITE CLEARING

B. INSTALLATION OF TEMPORARY EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (‘BMPS’)

C. BRIDGE INSTALLATION

D. EXCAVATION/BACKFILLING OF THE WATERBODY INCLUDING:

• SOD SAVING TOPSOIL SEGREGATION AT NON–WOODED SITES

• STREAMBED MATERIAL SEGREGATION

• PIPE INSTALLATION

• BACKFILL, INCLUDING IMPLEMENTATION OF CONSTRUCTION–RELATED RESTORATION METHODS (I.E., TOE WOOD)

E. REPLACEMENT OF STREAMBED MATERIAL AND TOPSOIL/SOD LAYER

F. RESTORATION OF STREAM BANKS TO PRE–CONSTRUCTION CONTOURS

G. IF FINAL GRADING NOT POSSIBLE AT THE TIME, TEMPORARY STABILIZATION AND REPLACEMENT/REINFORCEMENT OF TEMPORARY BMPS

H. AFTER FINAL GRADING, PERMANENT SEEDING AND/OR WOODY VEGETATION RESTORATION, STABILIZATION AND REPLACEMENT/REINFORCEMENT OF TEMPORARY BMPS

I. BRIDGE REMOVAL DURING FINAL RESTORATION AFTER STABILIZATION AND PERMANENT SEEDING

J. POST–CONSTRUCTION MONITORING
- CROSSING METHODS
1. ALL WATERBODY AND WETLAND CROSSINGS WILL BE CONDUCTED IN COMPLIANCE WITH SECTION 2.0 AND SECTION 3.0 OF THE ENVIRONMENTAL PROTECTION PLAN (‘EPP’), RESPECTIVELY. SECTION 2.0 AND 3.0 OF THE WINTER CONSTRUCTION PLAN PRESENTS MODIFICATIONS FOR WATERBODY AND WETLAND CONSTRUCTION METHODS, RESPECTIVELY, IN WINTER CONDITIONS.

2. ENBRIDGE’S SUMMARY OF CONSTRUCTION METHODS AND PROCEDURES (THE ‘PROCEDURES,’APPENDIX A OF THE EPP) OUTLINES THE VARIOUS CONSTRUCTION METHODS THAT ENBRIDGE MAY UTILIZE TO CONSTRUCT THROUGH WATERBODIES AND WETLANDS/BASINS AS PRESENTED ON THESE SITE–SPECIFIC RESTORATION PLANS (‘SSRPS’).

A. DRY CROSSING (ISOLATED) METHODS (INCLUDING THE DRY CROSSING AND MODIFIED DRY CROSSING METHOD) ARE DESCRIBED SECTIONS 4.3 OF THE PROCEDURES, AND IN SECTIONS 2.5.2 AND 2.5.3 AND FIGURES 23 AND 24 OF THE EPP.

B. THE BORE METHOD (NON–PRESSURIZED) IS DESCRIBED IN SECTION 3.5 OF THE PROCEDURES, AND SECTION 4.0 OF THE EPP.

C. THE MODIFIED UPLAND CONSTRUCTION (WETLAND) METHOD IS DESCRIBED IN SECTION 3.3 OF THE PROCEDURES, AND SECTION 3.0 AND FIGURES 30 TO 34 OF THE EPP.

D. ALTHOUGH NOT PROPOSED AS A PRIMARY METHOD AT THESE SSRP WATERBODIES, THE OPEN CUT (NON–ISOLATED) WATERBODY CROSSING METHOD IS DESCRIBED IN SECTION 4.1 OF THE PROCEDURES, AND SECTION 2.5.1 AND FIGURE 24 OF THE EPP.

E. ALTHOUGH NOT PROPOSED AS A PRIMARY METHOD AT THESE SSRP WATERBODIES, THE PUSH–PULL METHOD IS DESCRIBED IN SECTION 3.4 OF THE PROCEDURES, AND SECTION 3.7.1 AND FIGURES 35 AND 36 OF THE EPP.

CLEARING/VEGETATION REMOVAL

1. STUMPS WITHIN THE TRENCH LINE WILL BE COMPLETELY REMOVED, GROUND, AND/OR HAULED OFF–SITE TO AN APPROVED LOCATION. TREE STUMPS OUTSIDE THE TRENCH LINE WILL BE GROUND BELOW NORMAL GROUND SURFACE TO FACILITATE A SAFE WORK AREA AND TO ALLOW TOPSOIL REMOVAL, IF NECESSARY. IN SOME CIRCUMSTANCES, TREE STUMPS OUTSIDE THE TRENCH LINE MAY BE COMPLETELY REMOVED TO ALLOW FOR A SAFE WORK AREA AND HAULED OFF–SITE TO AN APPROVED LOCATION AS OUTLINED IN SECTION 1.8.3 OF THE EPP.

2. CLEARING WILL BE CONDUCTED IN WATERBODIES AND WETLANDS AS OUTLINED IN SECTION 2.2 AND 3.2 OF THE EPP, RESPECTIVELY. CHIPS, MULCH, OR MECHANICALLY CUT WOODY DEBRIS SHALL NOT BE STOCKPILED IN A WETLAND. HYDRO–AX DEBRIS, OR SIMILAR CAN BE LEFT IN THE WETLAND IF SPREAD EVENLY IN THE CONSTRUCTION WORKSPACE TO A DEPTH THAT WILL ALLOW FOR NORMAL REVEGETATION, AS DETERMINED BY THE EI. CHIPPING IS NOT ALLOWED ON PUBLIC LANDS. ON PUBLIC LANDS, MULCH AND MECHANICALLY CUT WOODY DEBRIS MUST BE UNIFORMLY BROADCAST TO LESS THAN 2–INCH THICKNESS AND IN A MANNER THAT MAINTAINS VISIBLE GROUND.

3. ENBRIDGE WILL PROPERLY INSTALL AND MAINTAIN REDUNDANT SEDIMENT CONTROL MEASURES IMMEDIATELY AFTER CLEARING AND PRIOR TO INITIAL GROUND DISTURBANCE AT SURFACE WATERS LOCATED WITHIN 50 FEET OF THE PROJECT AND WHERE STORMWATER FLOWS TO THE SURFACE WATER (REFER TO THE ENVIRONMENTAL PLAN SHEETS IN THE SWPPP), AND WITHIN 100 FEET OF SPECIAL AND IMPAIRED WATERS, INCLUDING TROUT STREAMS.

4. ON PUBLIC LANDS AND WHEREVER PRACTICABLE AT WATERBODY CROSSINGS, ENBRIDGE WILL USE WILDLIFE–FRIENDLY EROSION AND SEDIMENT CONTROL BMPS THAT CONTAIN BIODEGRADABLE NETTING (CATEGORY 3N OR 4N NATURAL FIBER) AND WILL AVOID THE USE OF PLASTIC MESH (SECTIONS 1.17.1 AND 2.6.1 OF THE EPP).

TEMPORARY STABILIZATION

1. ON PORTIONS OF THE PROJECT WHERE WORK WILL BE OCCURRING DURING APPLICABLE ‘WORK IN WATER RESTRICTIONS’FOR PUBLIC WATERS (REFER TO SECTION 2.1), ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER’S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE STABILIZED WITHIN 24 HOURS DURING THE RESTRICTION PERIOD. STABILIZATION OF ALL EXPOSED SOILS WITHIN 200 FEET OF THE PUBLIC WATER’S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD. THESE AREAS WILL BE IDENTIFIED ON THE ENVIRONMENTAL PLAN SHEETS ACCOMPANYING THE SWPPP.

2. HYDRO–MULCH AND LIQUID TACKIFIER CAN BE USED IN PLACE OF CERTIFIED WEED–FREE STRAW OR HAY MULCH WITH PRIOR APPROVAL FROM ENBRIDGE. ALL HYDROMULCH AND LIQUID TACKIFIER PRODUCTS USED WILL BE ON THE APPLICABLE STATE DOT PRODUCT LIST. HYDRO–MULCH AND LIQUID TACKIFIER PRODUCTS CONTAINING PLASTIC/POLYPROPYLENE FIBER ADDITIVES AND MALACHITE GREEN (COLORANT) WILL NOT BE UTILIZED ON THIS PROJECT. APPLICATION RATES WILL BE AT THE MANUFACTURER’S RECOMMENDED RATE. ENBRIDGE WILL AVOID THE USE OF HYDROMULCH ON PUBLIC LANDS; HOWEVER, ENBRIDGE MAY USE HYDROMULCH ON STEEP SLOPES TO PREVENT EROSION UNTIL PERMANENT COVER HAS BEEN ESTABLISHED AS OUTLINED IN SECTION 1.8.3 OF THE EPP.

RESTORATION AND STABILIZATION

1. ENBRIDGE WILL RESTORE THE STREAM BANKS AS NEAR AS PRACTICABLE TO PRE–CONSTRUCTION CONDITIONS UNLESS THAT SLOPE IS DETERMINED TO BE UNSTABLE. IF THE SLOPE IS CONSIDERED UNSTABLE, ENBRIDGE WILL RESHAPE THE BANKS TO PREVENT SLUMPING. FOR PUBLIC WATERS, ENBRIDGE WILL RETURN THE BANK TO PRE–CONSTRUCTION CONTOURS, UNLESS OTHERWISE DIRECTED BY THE SITE–SPECIFIC RESTORATION PLAN. IF ENBRIDGE CANNOT RESTORE TO PRE–CONSTRUCTION CONTOURS AT A PUBLIC WATER, ENBRIDGE WILL CONSULT WITH THE MDNR BEFORE PROCEEDING FURTHER AS OUTLINED IN SECTION 2.6 OF THE EPP.

2. UNSTABLE SOILS AND/OR SITE–SPECIFIC FACTORS SUCH AS STREAM VELOCITY AND FLOW DIRECTION MAY REQUIRE ADDITIONAL RESTORATION EFFORTS, SUCH AS INSTALLATION OF WOODY VEGETATION, GEOTEXTILE FABRIC, OR TREE, LOG, ROOTWAD, OR BOULDER REVETMENTS TO STABILIZE DISTURBED STREAM BANKS (SEE FIGURE 29) AS OUTLINED IN SECTION 2.6.2 OF THE EPP. ENBRIDGE WILL WORK WITH THE MDNR TO ENSURE ALL WORK/ADJUSTMENTS ARE APPROVED AND ARE CONDUCTED WITHIN APPLICABLE TIMING RESTRICTIONS.

3. IN UPLAND AND WETLAND AREAS, CLEANUP AND ROUGH GRADING WILL OCCUR AS OUTLINED IN SECTIONS 1.16 AND 3.9 OF THE EPP. ENBRIDGE WILL BACKFILL THE TRENCH TO AN ELEVATION SIMILAR TO THE ADJACENT AREAS OUTSIDE THE TRENCH LINE AND WILL ADD A SLIGHT CROWN OF APPROXIMATELY 3 TO 6 INCHES (DEPENDING ON SOIL TYPE) OVER THE BACKFILLED TRENCH TO ALLOW FOR SUBSIDENCE. GENERALLY, EXCESS SUBSOIL DISPLACED BY THE PIPE INSTALLATION WILL BE SPREAD ACROSS THE PORTION OF THE CONSTRUCTION WORKSPACE WHERE TOPSOIL REMOVAL HAS OCCURRED. ANY REMAINING EXCESS SUBSOIL WILL BE REMOVED AND DISPOSED OF AT AN APPROVED OFF–SITE LOCATION AS NEEDED TO ENSURE CONTOURS ARE RESTORED TO AS NEAR AS PRACTICABLE TO PRE–CONSTRUCTION CONDITIONS.

4. REVEGETATION ACTIVITIES WILL OCCUR AS OUTLINED IN SECTION 7.0 OF THE EPP. SEED MIXES AT PUBLIC WATERS WILL BE SELECTED AND APPLIED AS INDICATED IN THE PLANTING PLAN, WHICH IS APPENDIX A OF THE POST–CONSTRUCTION VEGETATION MANAGEMENT PLAN FOR PUBLIC LANDS AND WATERS (‘VMP’). SEED MIXES RELATIVE TO THESE SSRP CROSSINGS ARE CODED AS FOLLOWS:

A	EMERGENT (34–181)	G	DRY PRAIRIE GENERAL (35–221)
B	RIPARIAN NE (34–361)	H	MESIC PRAIRIE GENERAL (35–241)
C	RIPARIAN S&W (34–261)	I	MESIC PRAIRIE NW (35–441)
D	WET MEADOW NE (34–371)	J	DRY PRAIRIE NORTHWEST (35–421)
E	WET MEADOW S&W (34–271)	K	WOODLAND EDGE NE (36–311)
F	WETLAND REHABILITATION (34–171)	L	NATURAL REVEGETATION

5. ENBRIDGE WILL NOT SEED STANDING WATER OR WOODED (PSS AND PFO) WETLAND COMMUNITIES. NATURAL REVEGETATION WILL TAKE PLACE FROM EXISTING PLANT MATERIAL AND ROOT STOCK IN THESE COMMUNITIES.

6. ALL MATERIALS USED FOR CONSTRUCTION OF THE PROJECT MUST BE REMOVED FROM THE SITE.

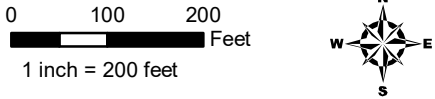
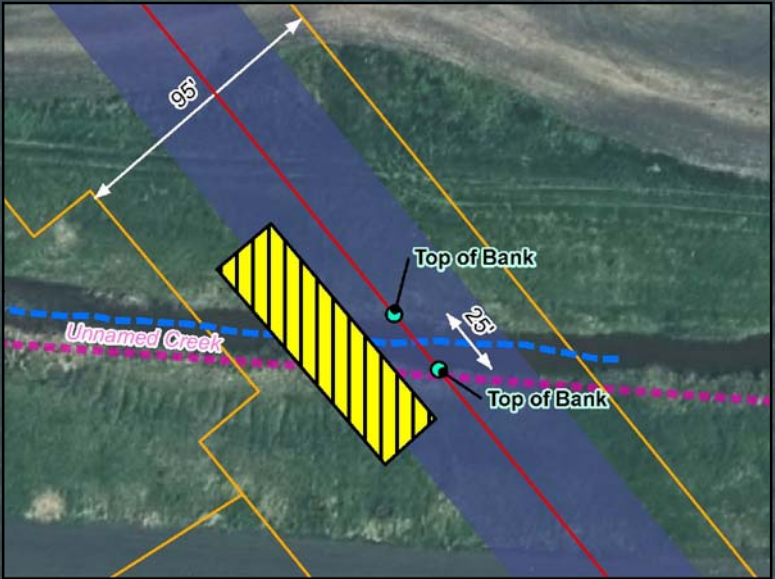
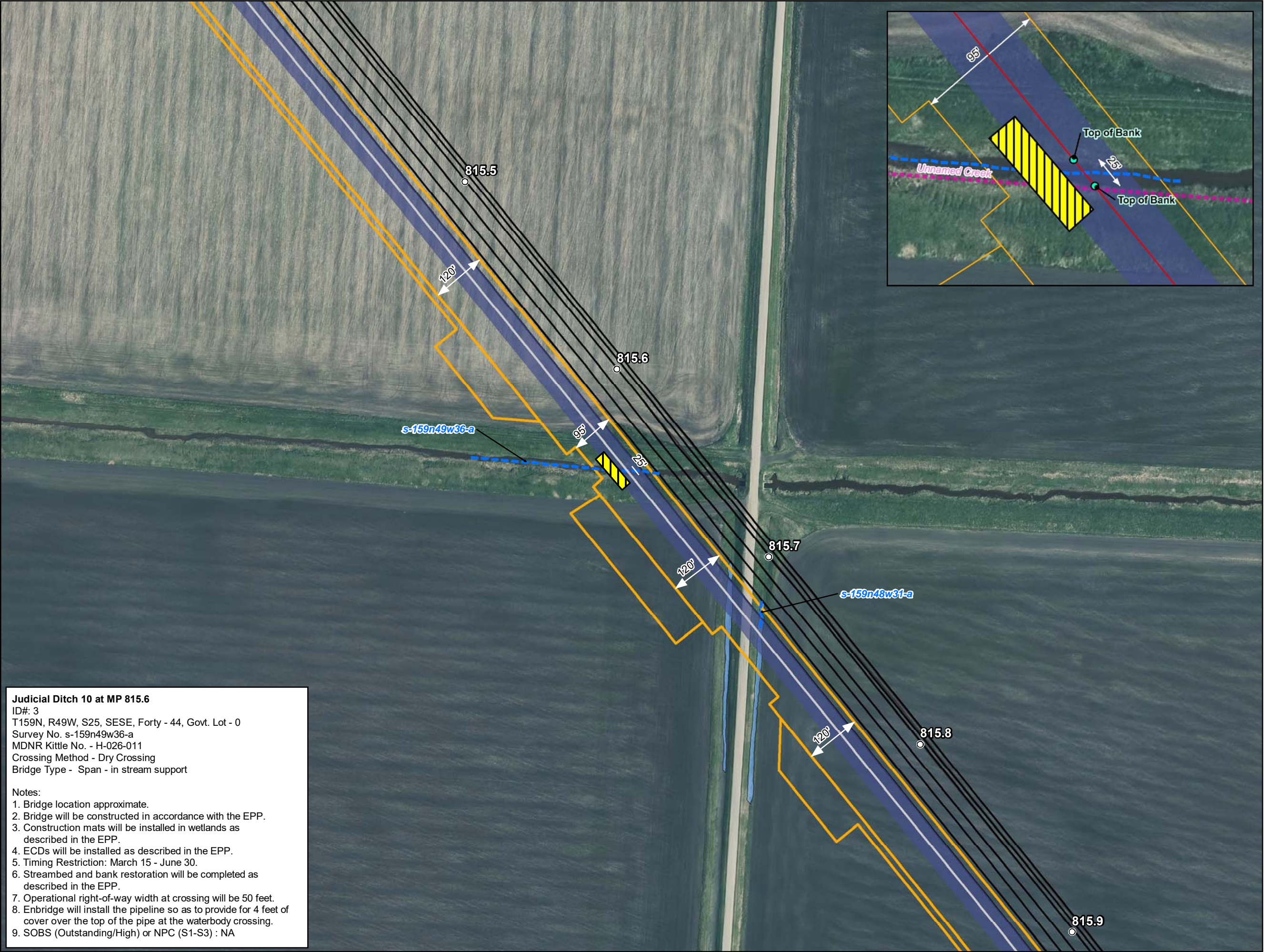
7. ENBRIDGE WILL CONDUCT POST–CONSTRUCTION MONITORING IN ACCORDANCE WITH THE POST–CONSTRUCTION MONITORING PLAN FOR WETLANDS AND WATERBODIES, AND IN ACCORDANCE WITH THE VMP FOR THE UPLAND PORTIONS OF THE PROJECT ON PUBLIC LANDS.

B	ISSUED FOR PERMITTING	MJT	10/2020		
NO.	REVISION–DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE–SPECIFIC RESTORATION PLAN					
CONSTRUCTION NOTES					
SCALE		DWG. NO. SSRP–NOTES		PAGE NO.	

PLOTTED SIZE: ANSI FULL BLEED B (17x11)

**MDNR ID No. 3: MP 815.6; Judicial Ditch 10 (H-026-011)**





- Milepost
- Proposed L3R Centerline
- Existing Utility
- Existing Utility
- Permanent Right-of-Way
- Construction Right-of-Way/ATWS
- Bridge
- Field Delineated Waterbody
- Delineated Wetlands
- PEM

**Judicial Ditch 10 at MP 815.6**

ID#: 3  
T159N, R49W, S25, SESE, Forty - 44, Govt. Lot - 0  
Survey No. s-159n49w36-a  
MDNR Kittle No. - H-026-011  
Crossing Method - Dry Crossing  
Bridge Type - Span - in stream support

- Notes:
1. Bridge location approximate.
  2. Bridge will be constructed in accordance with the EPP.
  3. Construction mats will be installed in wetlands as described in the EPP.
  4. ECDs will be installed as described in the EPP.
  5. Timing Restriction: March 15 - June 30.
  6. Streambed and bank restoration will be completed as described in the EPP.
  7. Operational right-of-way width at crossing will be 50 feet.
  8. Enbridge will install the pipeline so as to provide for 4 feet of cover over the top of the pipe at the waterbody crossing.
  9. SOBS (Outstanding/High) or NPC (S1-S3) : NA

**Line 3 Replacement Project**

**Crossing Plan**

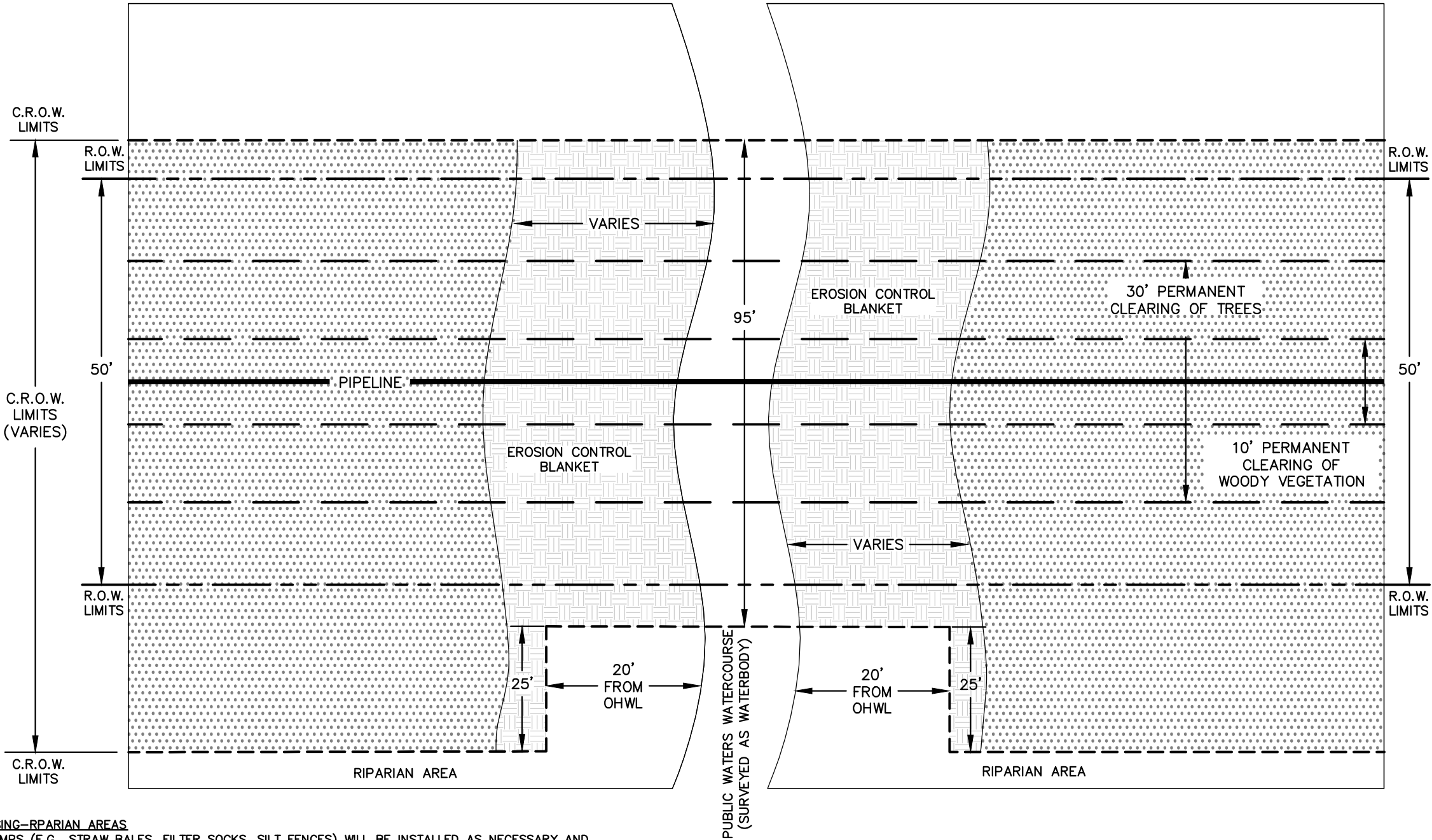
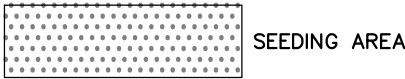
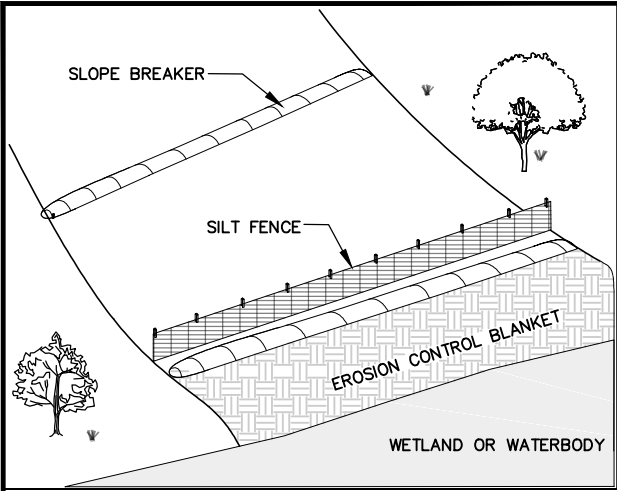
**ID# 3**  
**Survey No. s-159n49w36-a**  
**Judicial Ditch 10**  
**Kittson County, Minnesota**



For Environmental Review Purposes Only

Date: (10/7/2020) Source: Z:\Clients\E\_H\Enbridge\Line\_3\_Full\_Replacement\Permitting\State\Public\_Waters\2020\_09\Figures\L3R\_Waters\_App\_Dry\_Crossing\_Mod\_Dry\_2020\_09.mxd





**PUBLIC WATERS WATERCOURSE (SURVEYED AS WATERBODY) CROSSING-RPARIAN AREAS**

- 1) PRIOR TO DISTURBANCE, EROSION AND SEDIMENT CONTROL BMPS (E.G., STRAW BALES, FILTER SOCKS, SILT FENCES) WILL BE INSTALLED AS NECESSARY AND WILL REMAIN IN PLACE UNTIL THE AREA HAS STABILIZED AND ADEQUATE REVEGETATION HAS ESTABLISHED.
- 2) ENBRIDGE WILL RESTORE THE BANKS AS NEAR AS PRACTICABLE TO PRE-CONSTRUCTION CONDITIONS UNLESS THE SLOPE IS DETERMINED BY TO BE UNSTABLE. WHERE THE SLOPE OF THE BANKS IS DETERMINED TO BE UNSTABLE OR HAS THE POTENTIAL TO ERODE OR FAIL, THE BANKS WILL BE RESHAPED TO TRANSITION THE DISTURBED AREAS INTO THE NATURAL STREAM BANK WITH THE INTENT TO STABILIZE THE BANK AND CREATE A BLENDED, NATURAL APPEARANCE.
- 3) SOIL STABILIZATION WILL BE INITIATED WITHIN 24 HOURS AFTER INSTALLATION OF THE CROSSING USING THE OPEN CUT TRENCH METHOD AND PRIOR TO RESTORING FLOW USING THE DAM AND PUMP OR FLUME METHOD, UNLESS SITE AND PERMIT CONDITIONS DELAY PERMANENT INSTALLATION.
- 4) PERMANENT SLOPE BREAKERS WILL BE INSTALLED AT THE BASE OF SLOPED APPROACHES TO PREVENT SEDIMENT FLOW INTO WATERBODIES AS DESCRIBED IN THE EPP (FIGURE 20):
- a. PERMANENT SLOPE BREAKERS WILL BE INSTALLED TO MINIMIZE CONCENTRATED OR SHEET FLOW RUNOFF IN DISTURBED AREAS IN ACCORDANCE WITH THE FOLLOWING MAXIMUM ALLOWABLE SPACING UNLESS OTHERWISE SPECIFIED IN PERMIT CONDITIONS.

	SLOPE (%)	APPROXIMATE SPACING (FT)
1.	<5	250
2.	>5-15	200
3.	15-25	150
4.	>25	<100

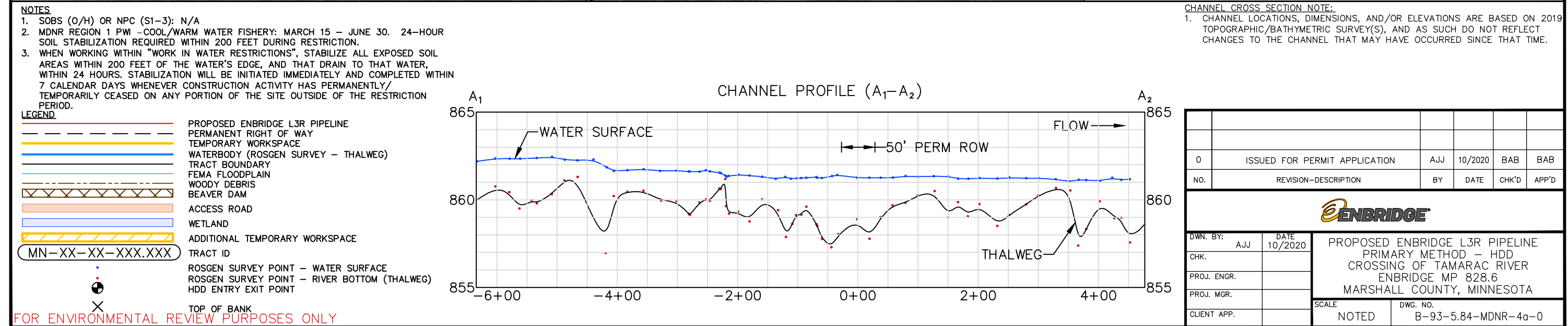
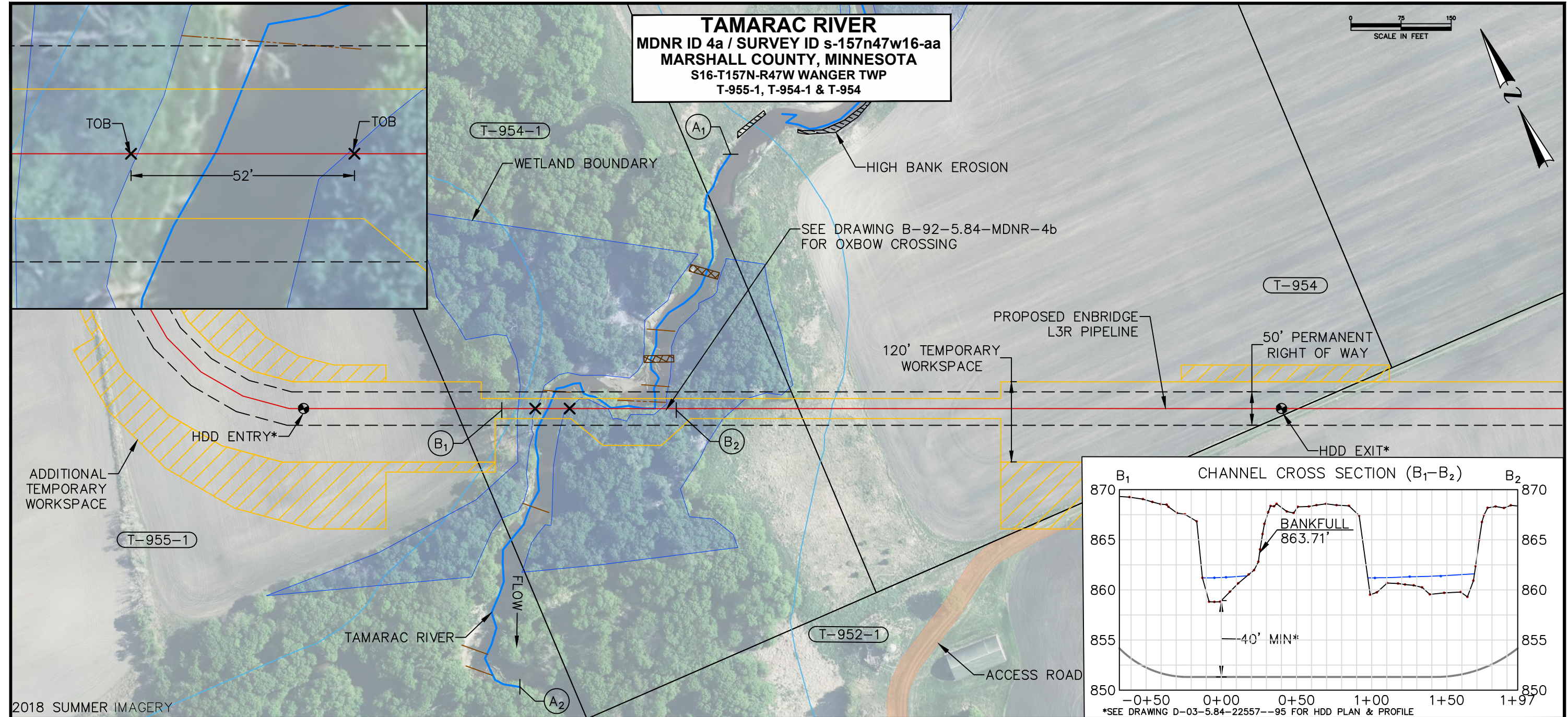
- 5) WATERBODY BANKS WILL BE SEEDED WITH AN APPROPRIATE SEED MIX AS SPECIFIED IN THE EPP (SECTION 7.8) AND COVERED WITH AN EROSION CONTROL BLANKET.
- 6) WHERE A WATERBODY IS LOCATED WITHIN A WETLAND, ENBRIDGE WILL RE-SEED THE BANKS WITH THE APPLICABLE WETLAND SEED MIX DESCRIBED IN THE EPP (SECTION 7.7).
- 7) ADDITIONAL VEGETATION REQUIREMENTS MAY ALSO BE CONTAINED WITHIN PROJECT-SPECIFIC PERMITS

ISSUED  
FOR PERMIT  
12/13/19

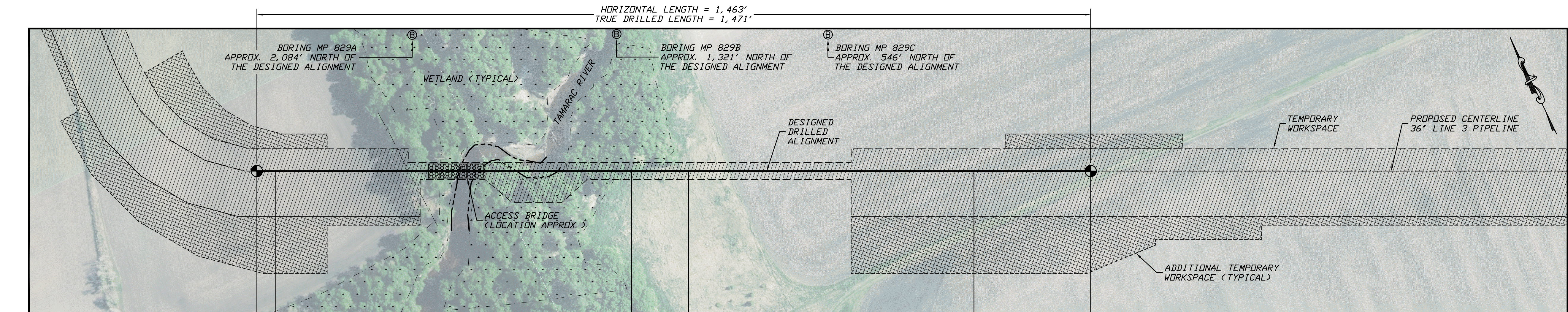
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**MDNR ID No. 4a: MP 828.6; Tamarac River (H-026-019)**

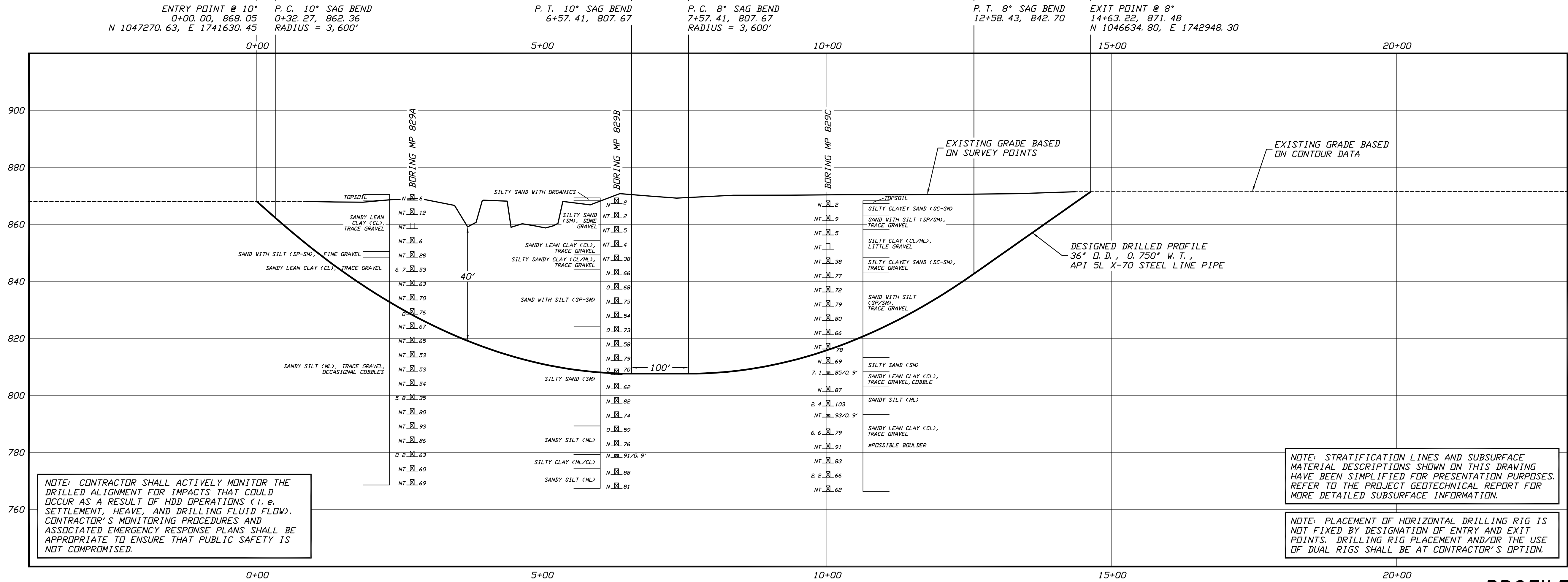








PLAN  
SCALE: 1"=100'



GENERAL LEGEND

- DRILLED PATH ENTRY/EXIT POINT

GEOTECHNICAL LEGEND

- BORING LOCATION
- SPLIT SPOON SAMPLE
- 53.1.23 PENETRATION RESISTANCE IN BLOWS PER FOOT FOR A 140 POUND HAMMER FALLING 30 INCHES
- PERCENTAGE OF GRAVEL BY WEIGHT FOR SAMPLES CONTAINING GRAVEL
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LINE 3 PIPELINE PROJECT

PLAN AND PROFILE  
36-INCH PIPELINE CROSSING OF THE TAMARAC RIVER  
BY HORIZONTAL DIRECTIONAL DRILLING

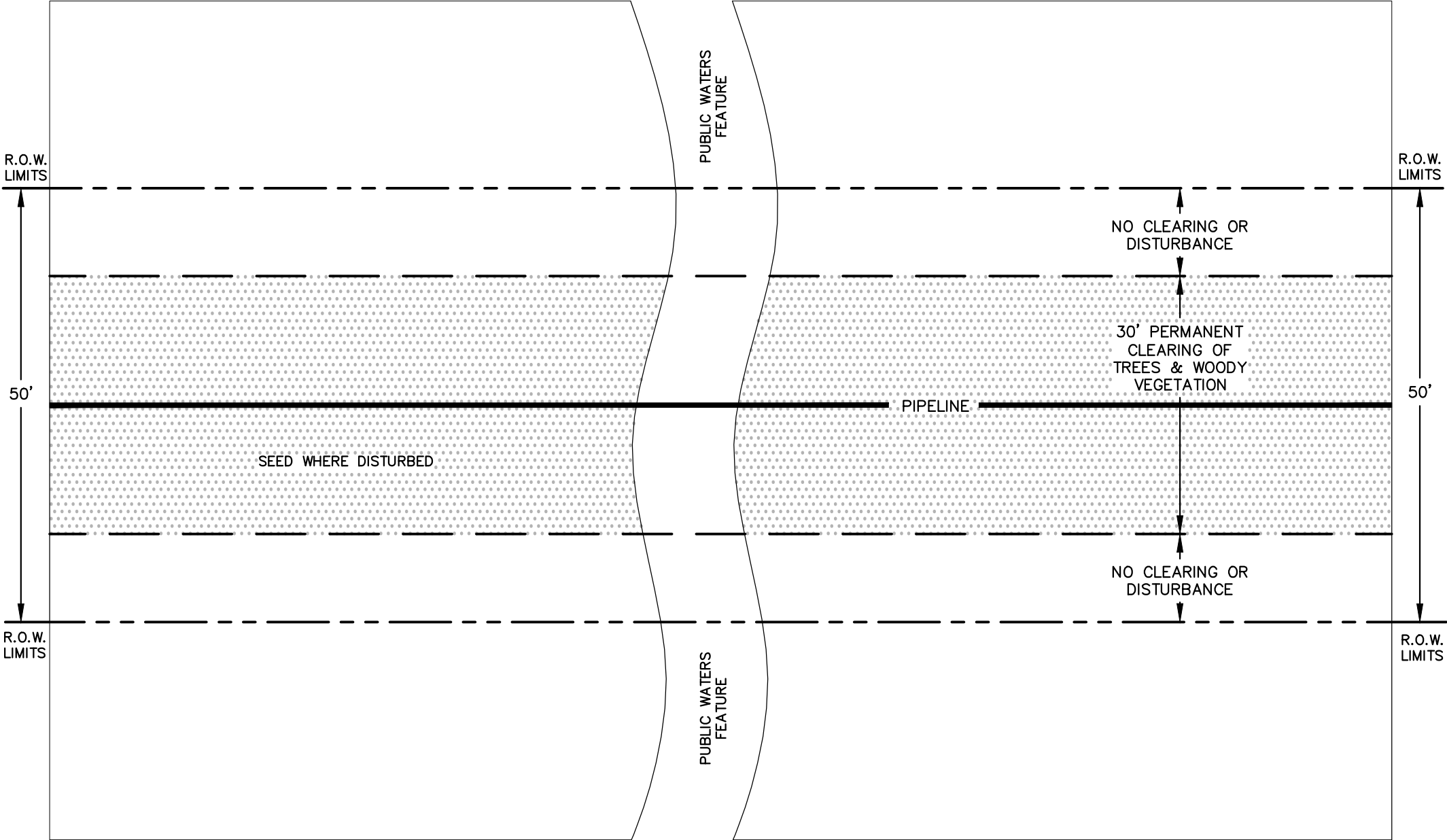
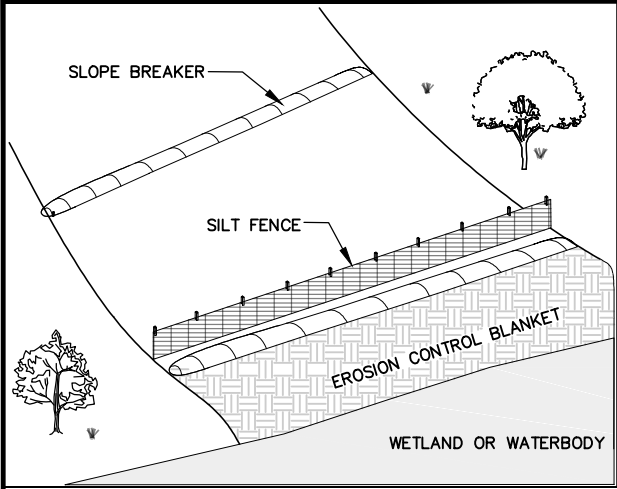
LOCATION: MARSHALL COUNTY, MINNESOTA		APPROVED		DRAWING NUMBER		REVISION	
DRAWN	DATE	CHECKED	APPROVED	JSP	D-03-5.84-22557-E-95	DLB	E
ACM	05/17/17	DLB	JSP				

NO.	DATE	REVISION DESCRIPTION	BY	CHKD	APP.
E	10/24/19	UPDATE WETLAND BOUNDARIES AND WORKSPACE	KWM	JSP	JSP
D	10/09/19	UPDATE WORKSPACE AND ADD BRIDGE	DLB	JSP	JSP
C	02/01/19	REDESIGN CROSSING ALONG NEW ALIGNMENT	DLB	JSP	JSP
B	09/29/17	UPDATE GEOTECHNICAL NOTES	LKB	JSP	JSP
A	05/17/17	ISSUE FOR CONSTRUCTION	ACM	JSP	JSP

J.D.Hair & Associates, Inc. Consulting Engineers	2424 East 21st Street Tulsa, Oklahoma 74114
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PROJECT NO. Enbridge\1404
MILEPOST 828





**PUBLIC WATERS FEATURE - HDD CROSSING**

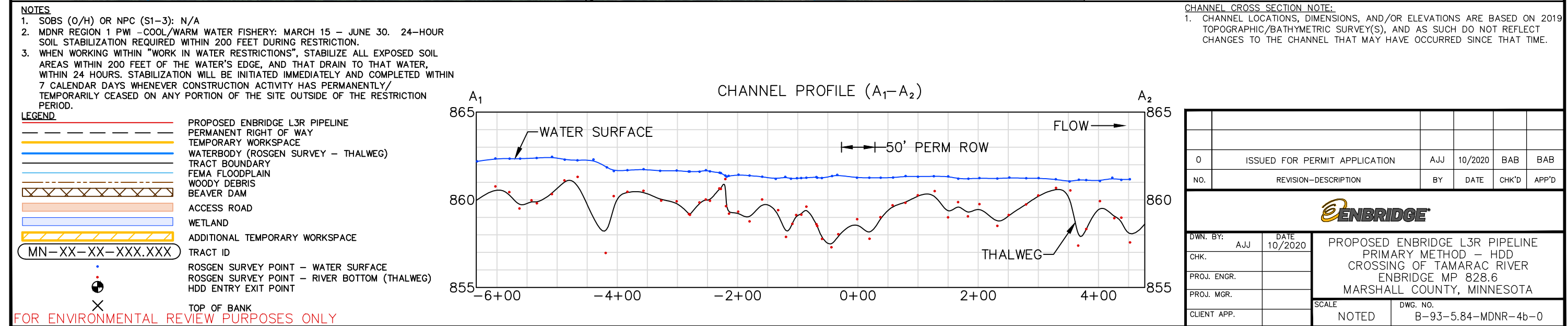
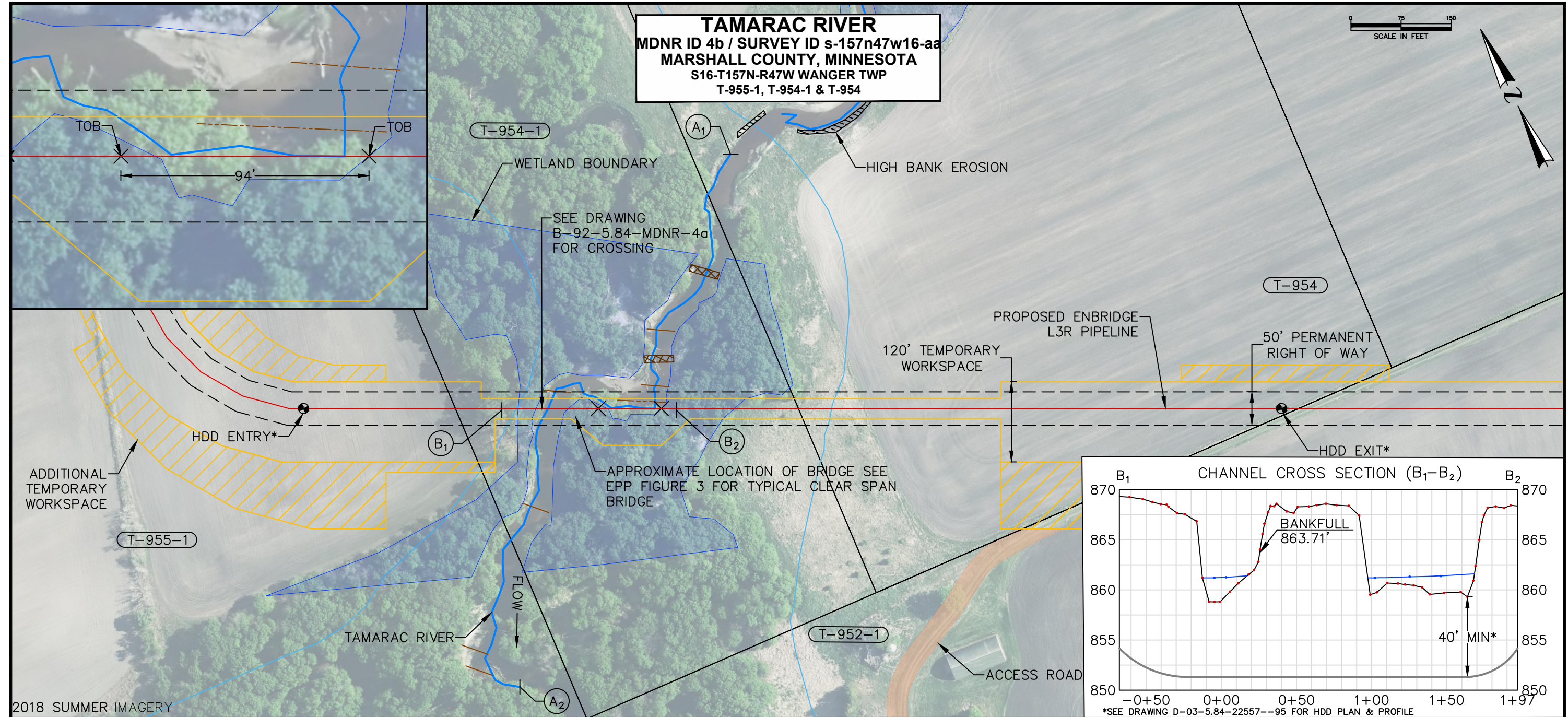
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**ISSUED  
FOR PERMIT**  
12/13/19

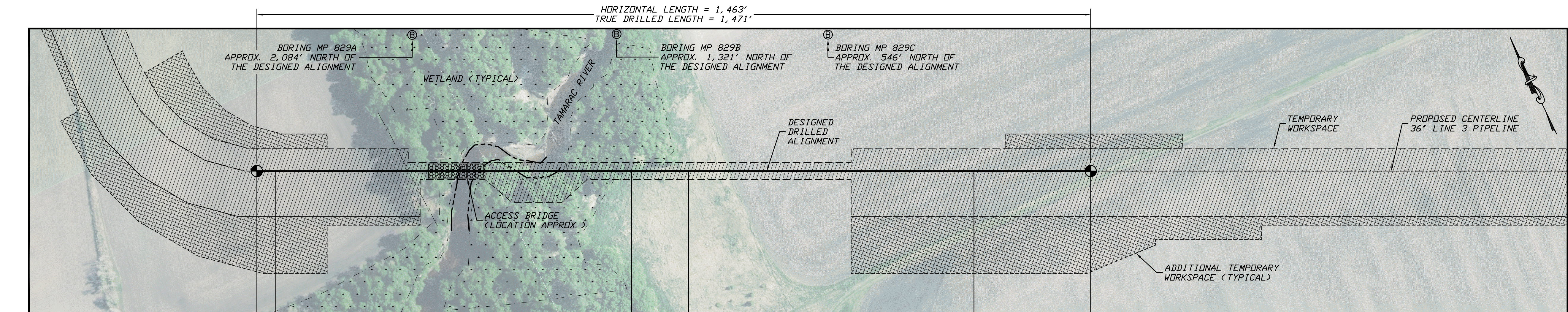
						DWN. BY:	DATE	LINE 3 REPLACEMENT PUBLIC WATERS HDD CROSSING TYPICAL FINAL STREAM STABILIZATION & EROSION CONTROL	
						AJM	12/10/19		
						CHK.	KEH		
						PROJ. ENGR.	DG		
B	ISSUED FOR PERMIT		AJM	12/13/19	KEH	KD	PROJ. MGR.	KD	SCALE NTS
A	ISSUED FOR REVIEW		AJM	12/10/19	KEH	KD	CLIENT APP.		
NO.	REVISION--DESCRIPTION		BY	DATE	CHK'D	APP'D			DWG. NO.

**MDNR ID No. 4b: MP 828.6; Tamarac River (H-026-019)**

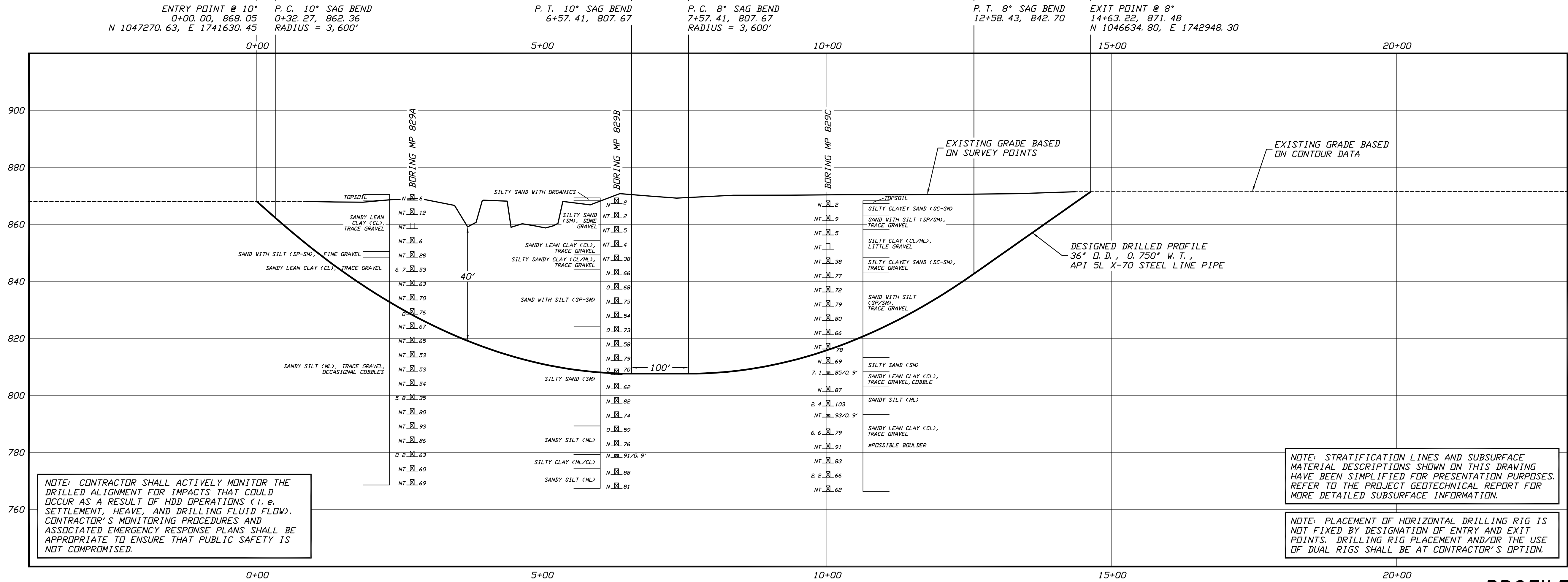








PLAN  
SCALE: 1"=100'



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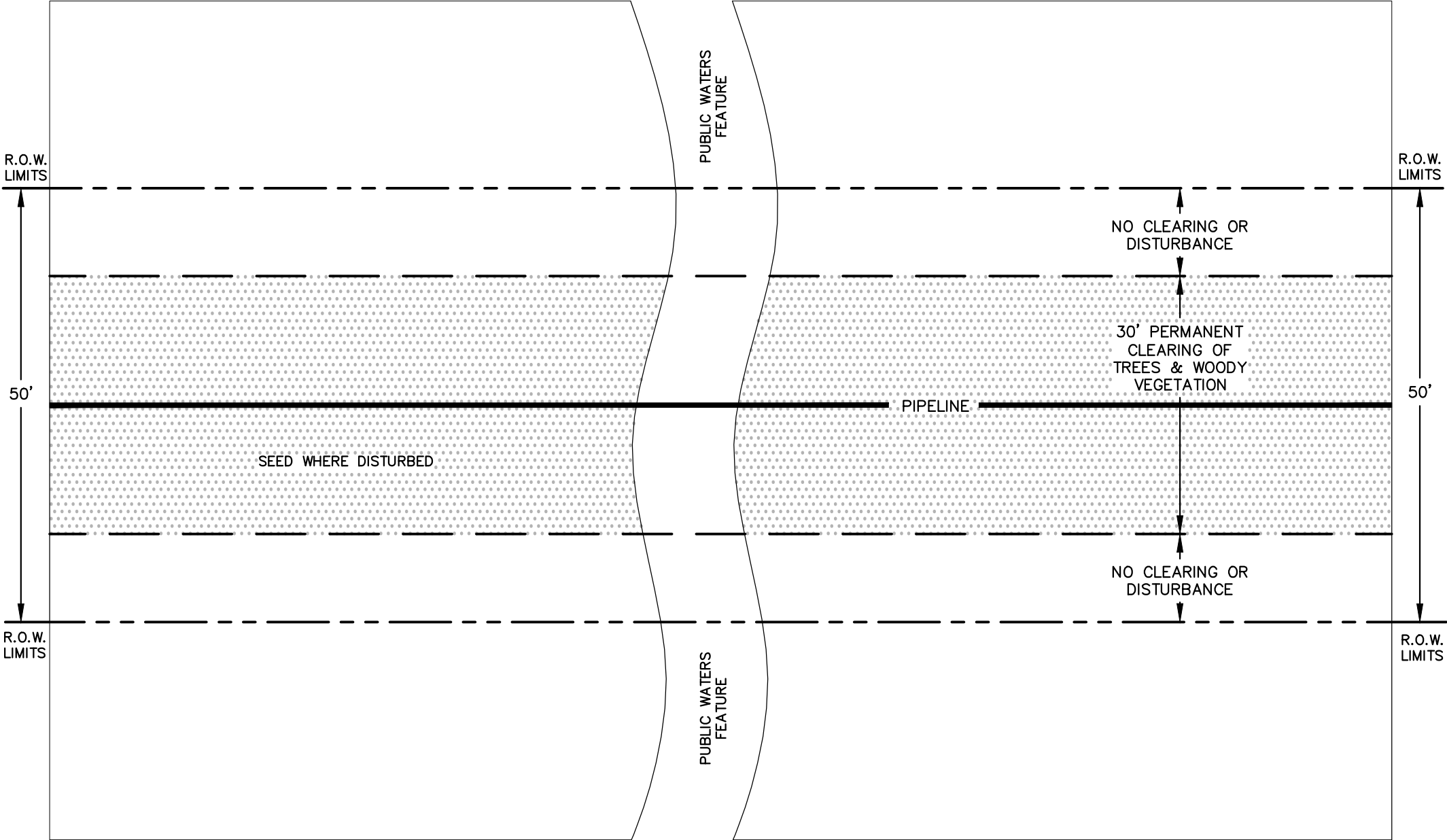
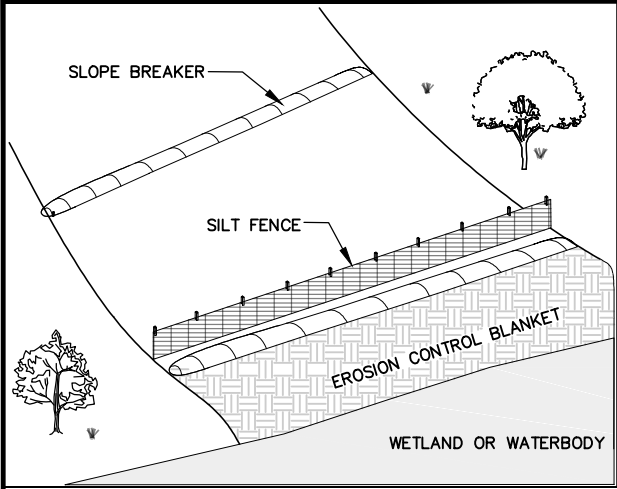
LOCATION: MARSHALL COUNTY, MINNESOTA		APPROVED		DRAWING NUMBER		REVISION	
DRAWN	DATE	CHECKED	APPROVED	JSP	D-03-5.84-22557-E-95	DLB	E
ACM	05/17/17	DLB	JSP				

NO.	DATE	REVISION DESCRIPTION	BY	CHKD	APP.
E	10/24/19	UPDATE WETLAND BOUNDARIES AND WORKSPACE	KWM	JSP	JSP
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A	05/17/17	ISSUE FOR CONSTRUCTION	ACM	JSP	JSP

J.D.Hair & Associates, Inc. Consulting Engineers	
2424 East 21st Street Tulsa, Oklahoma 74114	

PROJECT NO.
Enbridge\1404
MILEPOST
828





**PUBLIC WATERS FEATURE - HDD CROSSING**

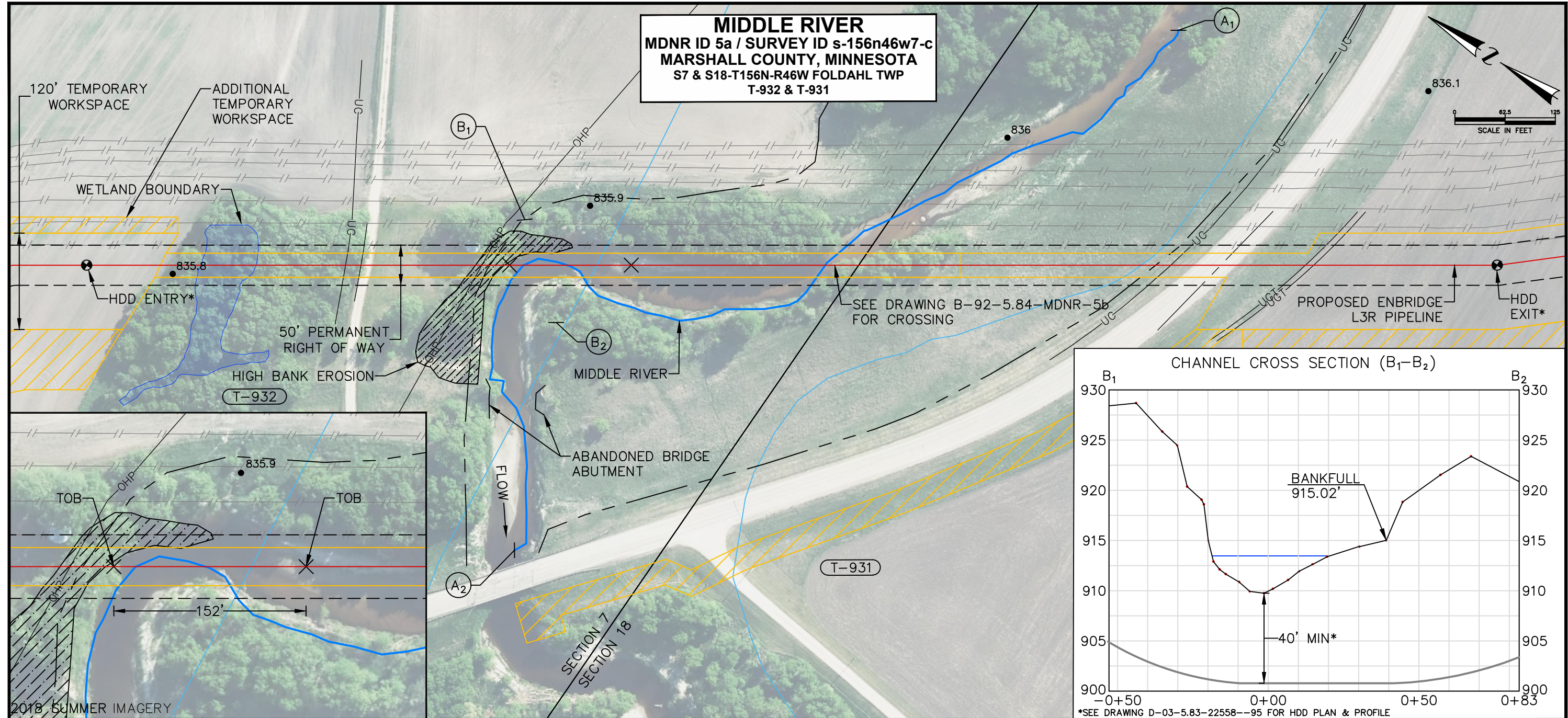
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ISSUED  
FOR PERMIT  
12/13/19

						DWN. BY:	DATE	LINE 3 REPLACEMENT PUBLIC WATERS HDD CROSSING TYPICAL FINAL STREAM STABILIZATION & EROSION CONTROL	
						AJM	12/10/19		
						CHK.	KEH		
						PROJ. ENGR.	DG		
B	ISSUED FOR PERMIT		AJM	12/13/19	KEH	KD	PROJ. MGR.	KD	SCALE NTS
A	ISSUED FOR REVIEW		AJM	12/10/19	KEH	KD	CLIENT APP.		
NO.	REVISION--DESCRIPTION		BY	DATE	CHK'D	APP'D			DWG. NO.

**MDNR ID No. 5a: MP 836; Middle River (H-026-021-004)**





**NOTES**

- SOBS (O/H) OR NPC (S1-3): N/A
- MDNR REGION 1 PMI - COOL/WARM WATER FISHERY: MARCH 15 - JUNE 30. 24-HOUR SOIL STABILIZATION REQUIRED WITHIN 200 FEET DURING RESTRICTION.
- WHEN WORKING WITHIN "WORK IN WATER RESTRICTIONS", STABILIZE ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WITHIN 24 HOURS. STABILIZATION WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY/ TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD.

**LEGEND**

- PROPOSED ENBRIDGE L3R PIPELINE
- OTHER PIPELINE
- PERMANENT RIGHT OF WAY
- TEMPORARY WORKSPACE
- WATERBODY (ROSGEN SURVEY - THALWEG)
- UNDERGROUND CABLE
- OVERHEAD POWER
- UNDERGROUND TELEPHONE
- ROAD CENTERLINE
- TERRACE
- FEMA FLOODPLAIN
- TRACT BOUNDARY
- HIGH BANK EROSION
- WETLAND
- ADDITIONAL TEMPORARY WORKSPACE
- TRACT ID
- ROSGEN SURVEY POINT - WATER SURFACE
- ROSGEN SURVEY POINT - RIVER BOTTOM (THALWEG)
- HDD ENTRY EXIT POINT
- TOP OF BANK

**FOR ENVIRONMENTAL REVIEW PURPOSES ONLY**

**CHANNEL CROSS SECTION NOTE:**

- CHANNEL LOCATIONS, DIMENSIONS, AND/OR ELEVATIONS ARE BASED ON 2015 TOPOGRAPHIC/BATHYMETRIC SURVEY(S), AND AS SUCH DO NOT REFLECT CHANGES TO THE CHANNEL THAT MAY HAVE OCCURRED SINCE THAT TIME.

NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
0	ISSUED FOR PERMIT APPLICATION	AJJ	10/2020	BAB	BAB

**ENBRIDGE**

DWN. BY: AJJ DATE: 10/2020

CHK.:

PROJ. ENGR.:

PROJ. MGR.:

CLIENT APP.:

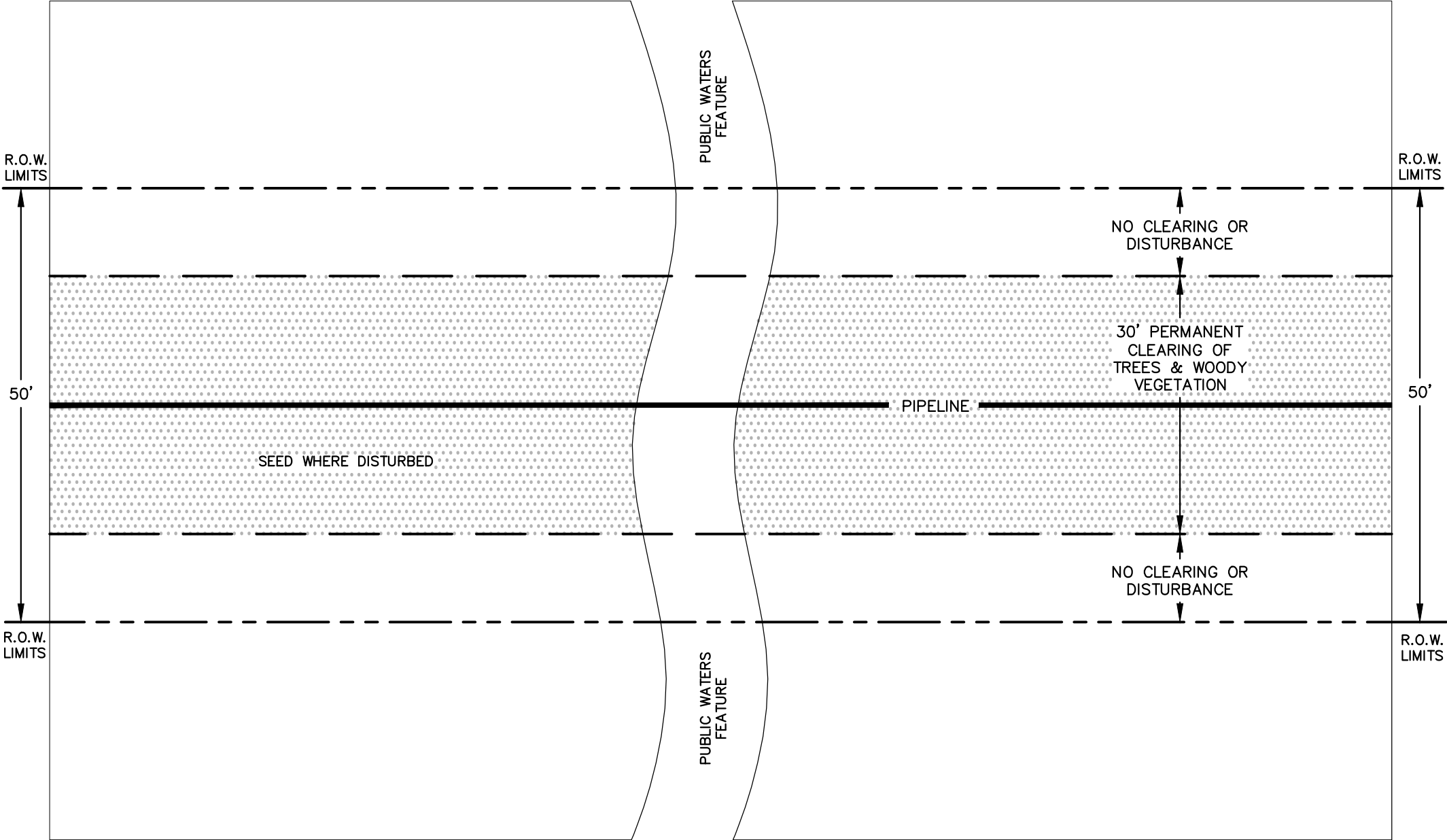
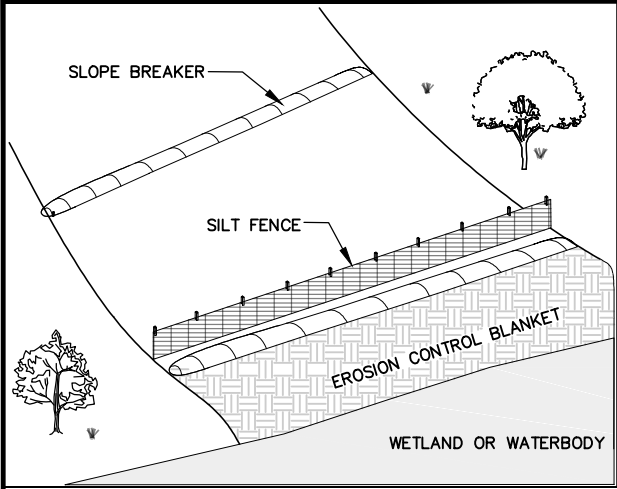
PROPOSED ENBRIDGE L3R PIPELINE  
PRIMARY METHOD - HDD  
CROSSING OF MIDDLE RIVER  
ENBRIDGE MP 836.0  
MARSHALL COUNTY, MINNESOTA

SCALE: NOTED DWG. NO. B-93-5.84-MDNR-5a-0









**PUBLIC WATERS FEATURE - HDD CROSSING**

- 1) DISTURBANCE OF THE ROW IS LIMITED TO THE 30-FOOT-WIDE CLEARING OF TREES AND WOODY VEGETATION AND IMPACTS RESULTING FROM TRAVEL LANES AND/OR BRIDGES.
- 2) ANY WETLAND OR WATERBODY BANK THAT IS DISTURBED WILL BE STABILIZED WITH EROSION AND SEDIMENT CONTROL BMP AND RESTORED TO AS NEAR AS PRACTICABLE TO PRE-CONSTRUCTION CONDITIONS.
- 3) PERMANENT REVEGETATION SEEDING OF DISTURBED WATERBODY BANKS WILL UTILIZE THE BWSR RIPARIAN SEED MIXES IN ACCORDANCE WITH THE EPP (SECTION 7.8).
- 4) PERMANENT REVEGETATION SEEDING OF DISTURBED WETLANDS WILL TAKE PLACE IN ACCORDANCE WITH THE EPP (SECTION 7.7).
- 7) IN DISTURBED WETLAND AREAS, THE APPROPRIATE SEED MIX WILL BE DETERMINED USING THE RESULTS OF PRE-CONSTRUCTION WETLAND IN DISTURBED WETLAND AREAS, HYDROLOGICAL CHARACTERISTICS, AND SITE-SPECIFIC CONDITIONS.

**ISSUED  
FOR PERMIT**  
12/13/19

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**MDNR ID No. 5b: MP 836; Middle River (H-026-021-004)**

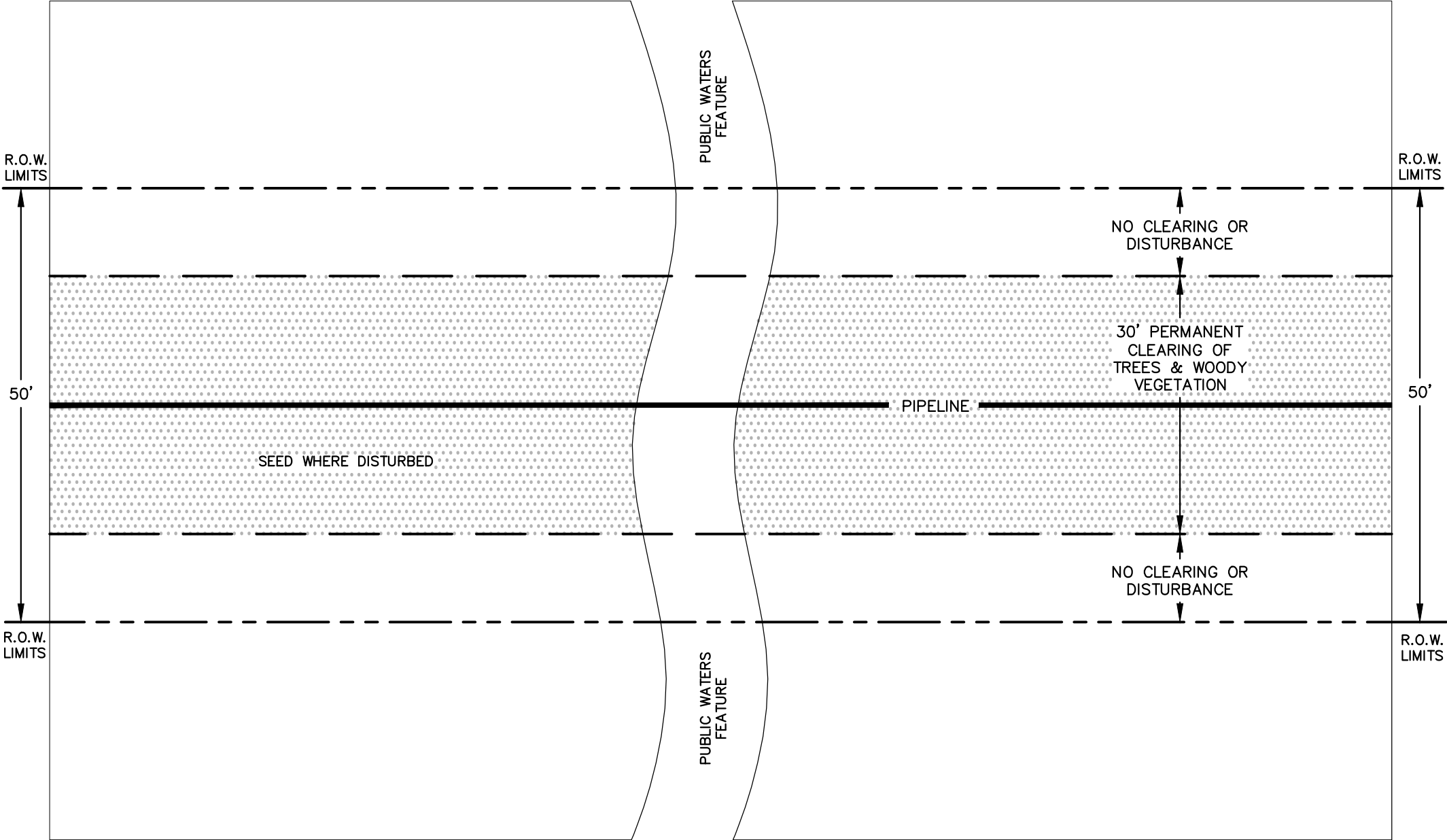
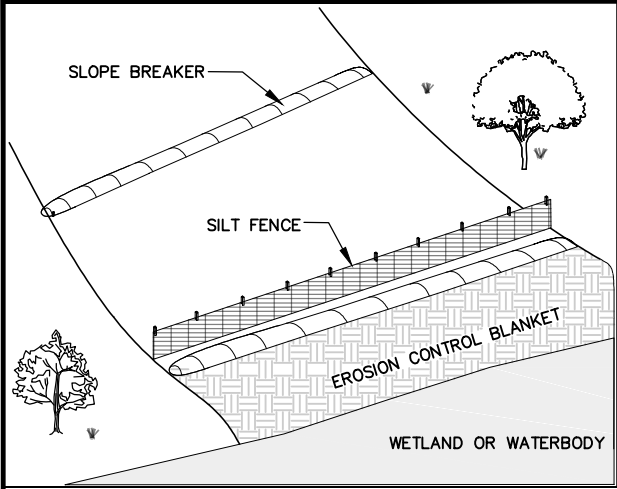












**PUBLIC WATERS FEATURE - HDD CROSSING**

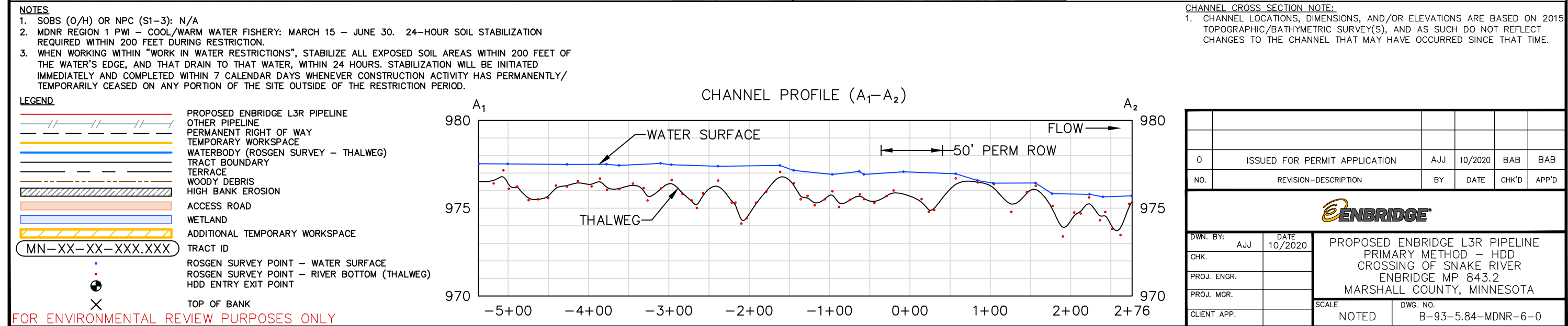
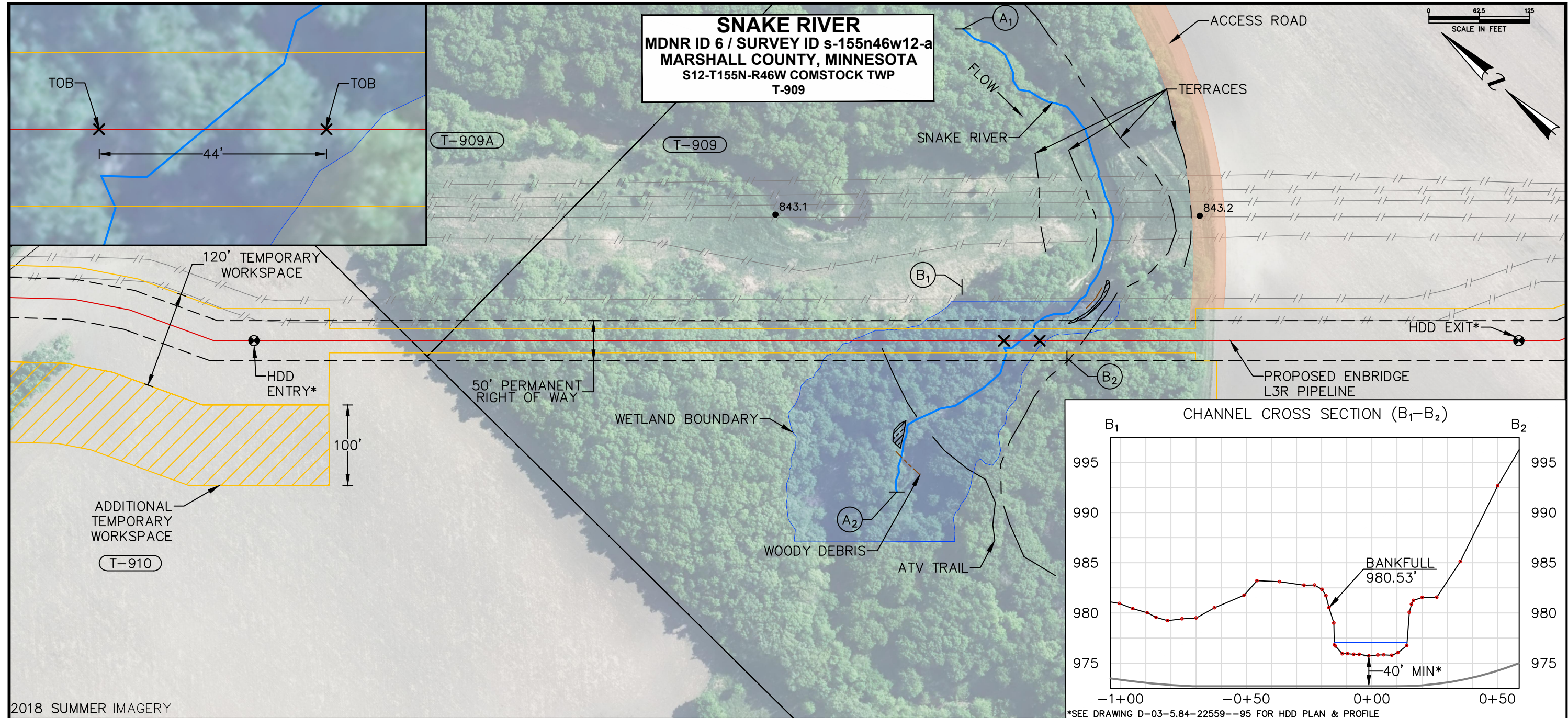
- 1) DISTURBANCE OF THE ROW IS LIMITED TO THE 30-FOOT-WIDE CLEARING OF TREES AND WOODY VEGETATION AND IMPACTS RESULTING FROM TRAVEL LANES AND/OR BRIDGES.
- 2) ANY WETLAND OR WATERBODY BANK THAT IS DISTURBED WILL BE STABILIZED WITH EROSION AND SEDIMENT CONTROL BMP AND RESTORED TO AS NEAR AS PRACTICABLE TO PRE-CONSTRUCTION CONDITIONS.
- 3) PERMANENT REVEGETATION SEEDING OF DISTURBED WATERBODY BANKS WILL UTILIZE THE BWSR RIPARIAN SEED MIXES IN ACCORDANCE WITH THE EPP (SECTION 7.8).
- 4) PERMANENT REVEGETATION SEEDING OF DISTURBED WETLANDS WILL TAKE PLACE IN ACCORDANCE WITH THE EPP (SECTION 7.7).
- 7) IN DISTURBED WETLAND AREAS, THE APPROPRIATE SEED MIX WILL BE DETERMINED USING THE RESULTS OF PRE-CONSTRUCTION WETLAND IN DISTURBED WETLAND AREAS, HYDROLOGICAL CHARACTERISTICS, AND SITE-SPECIFIC CONDITIONS.

**ISSUED  
FOR PERMIT**  
12/13/19

						DWN. BY:	DATE	LINE 3 REPLACEMENT PUBLIC WATERS HDD CROSSING TYPICAL FINAL STREAM STABILIZATION & EROSION CONTROL	
						AJM	12/10/19		
						CHK.	KEH		
						PROJ. ENGR.	DG		
B	ISSUED FOR PERMIT		AJM	12/13/19	KEH	KD	PROJ. MGR.	KD	SCALE NTS
A	ISSUED FOR REVIEW		AJM	12/10/19	KEH	KD	CLIENT APP.		
NO.	REVISION-DESCRIPTION		BY	DATE	CHK'D	APP'D			DWG. NO.

**MDNR ID No. 6: MP 843.2; Snake River (H-026-021)**

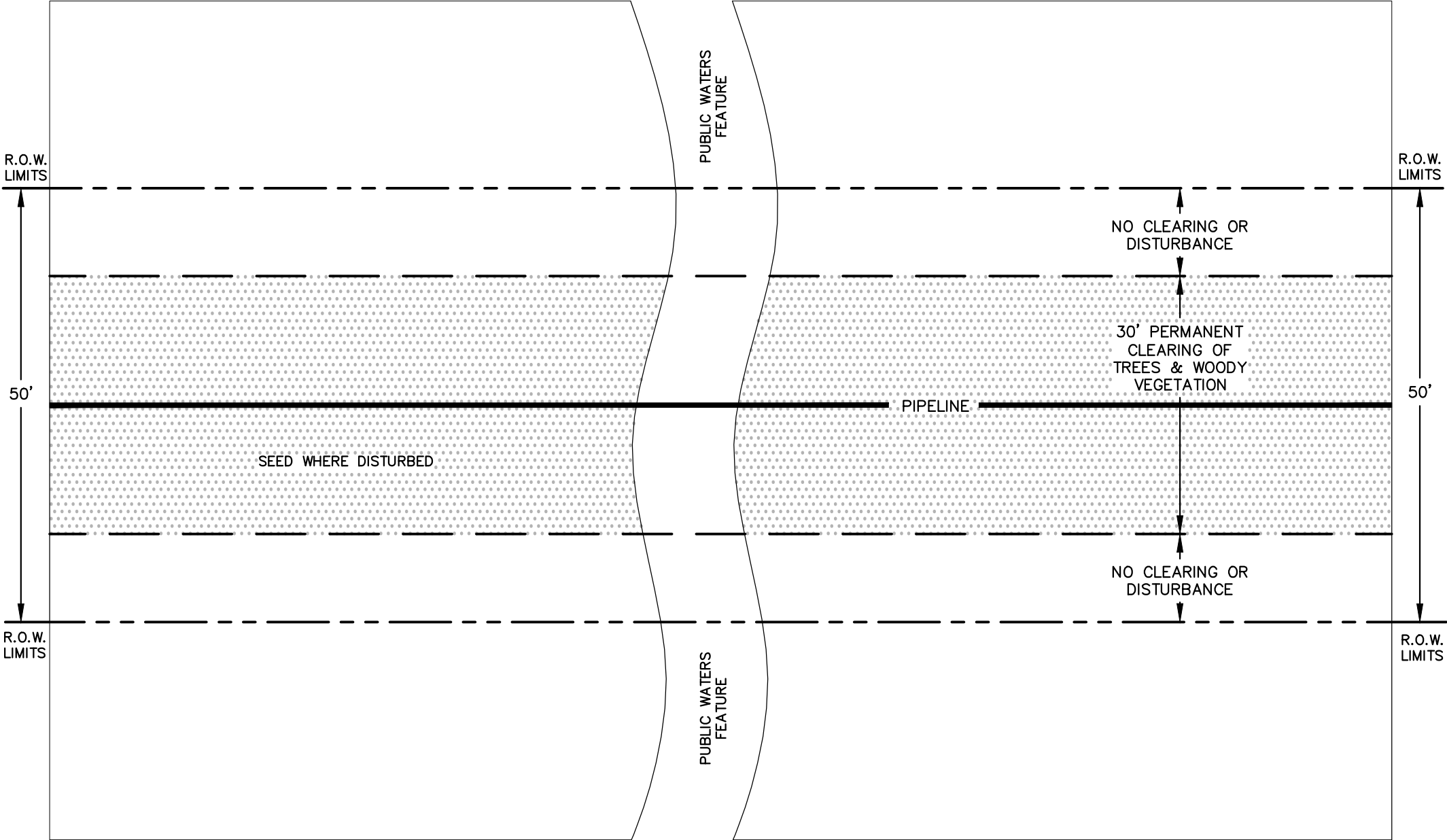
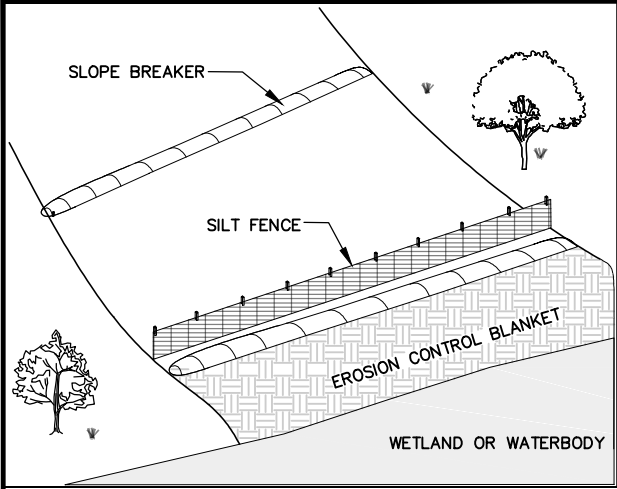












**PUBLIC WATERS FEATURE - HDD CROSSING**

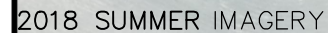
- 1) DISTURBANCE OF THE ROW IS LIMITED TO THE 30--FOOT--WIDE CLEARING OF TREES AND WOODY VEGETATION AND IMPACTS RESULTING FROM TRAVEL LANES AND/OR BRIDGES.
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**MDNR ID No. 7: MP 847.2; South Branch Snake River (H-026-021-010)**

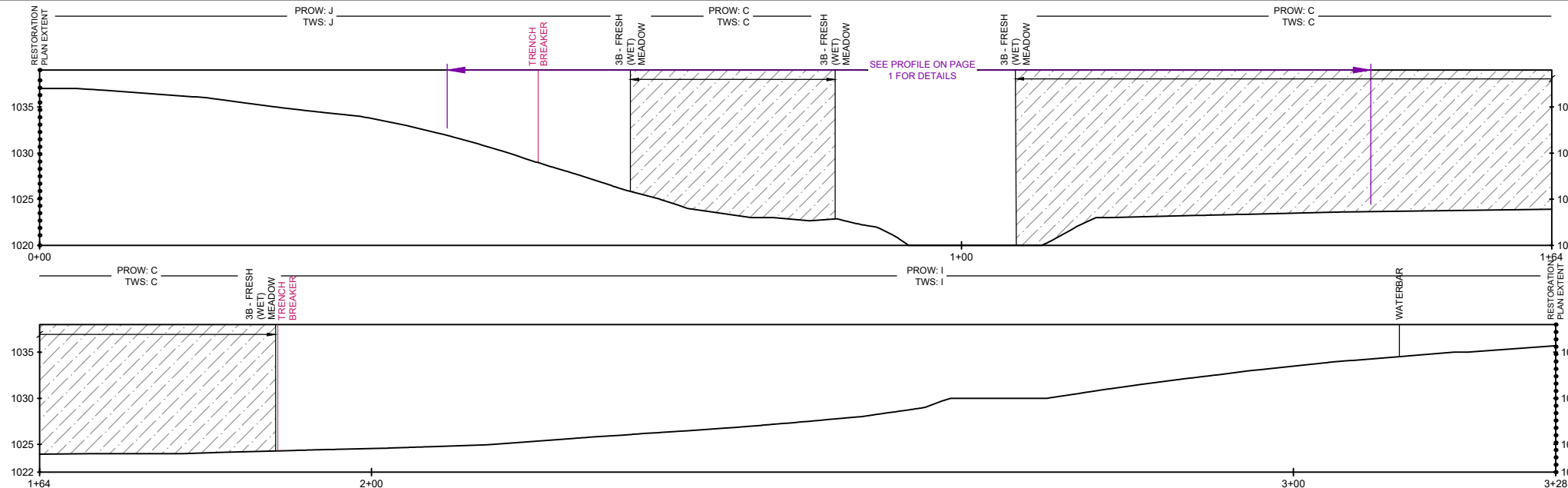
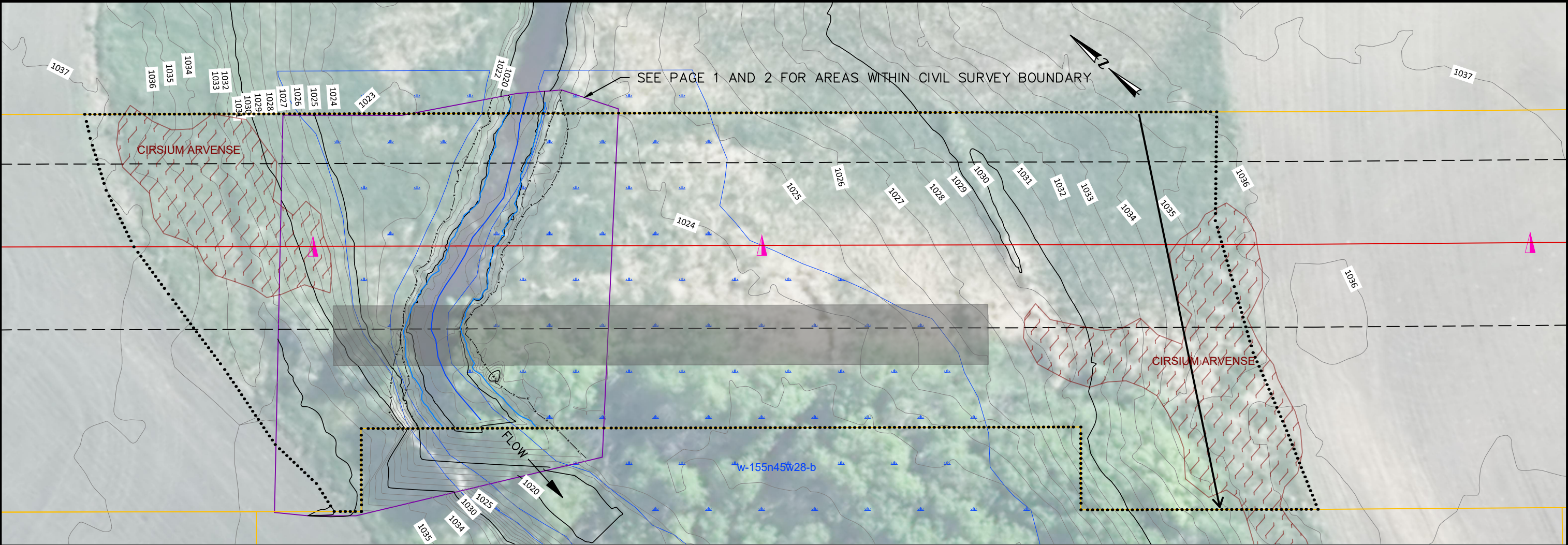




DWN. BY:	AJJ	DATE	10/2020		PROPOSED ENBRIDGE L3R PIPELINE PRIMARY METHOD – DRY CROSSING CROSSING OF S. BRANCH SNAKE RIVER ENBRIDGE MP 847.2 MARSHALL COUNTY, MINNESOTA
CHK.					
PROJ. ENGR.					
PROJ. MGR.					
CLIENT APP.					
		SCALE	DWG. NO.		
		NOTED		B-93-5.84-MDNR-7-0	

FOR ENVIRONMENTAL REVIEW PURPOSES ONLY





BWSR SEED MIX | C: RIPARIAN S&W (34-261); J: DRY PRAIRIE NORTHWEST (35-421); I: MESIC PRAIRIE NW (35-441)

SOBS (O/H) or NPC (S1-3) | N/A

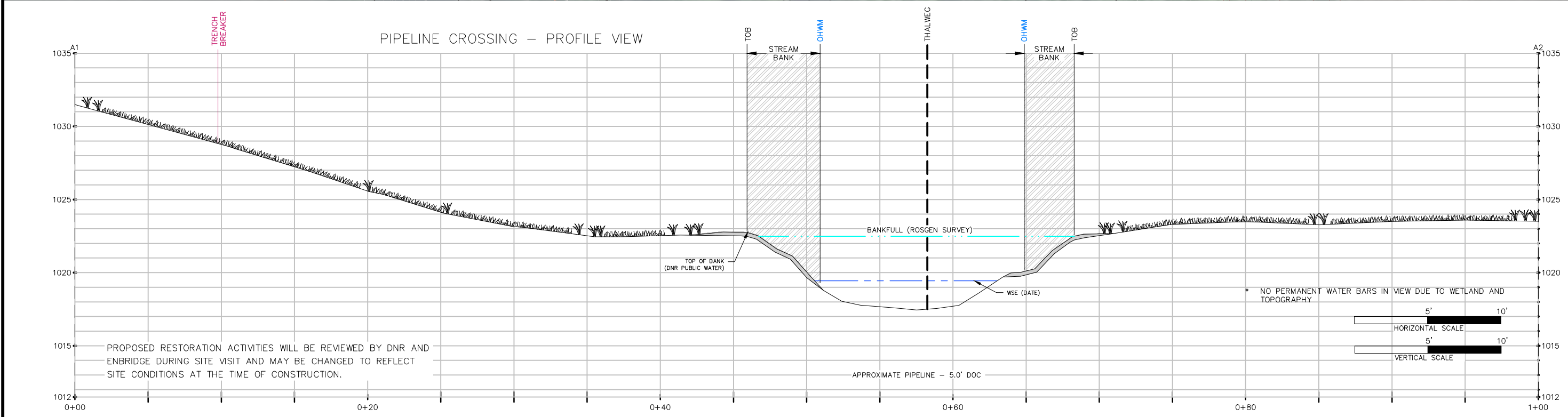
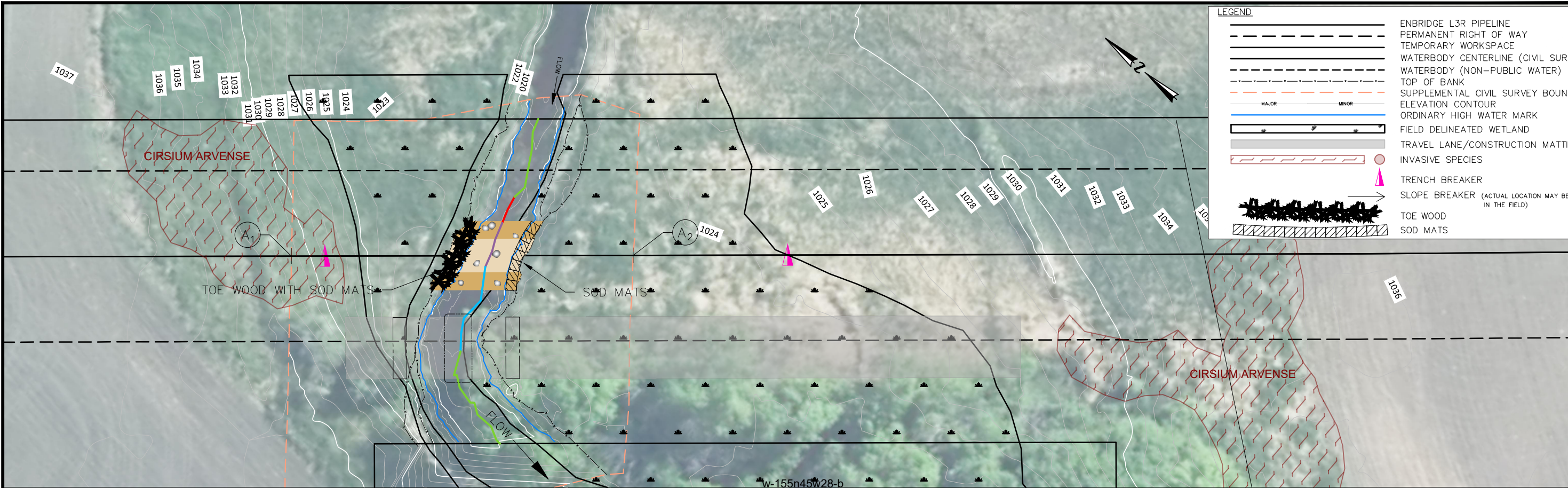
- ELEVATIONS OUTSIDE OF THE AREA WITHIN CIVIL SURVEY BOUNDARY ARE DERIVED FROM LIDAR. ENBRIDGE WILL RESTORE THE AREAS ADJACENT TO THE PUBLIC WATER WITHIN THE MDNR EXPANDED RESTORATION BOUNDARY TO PRE-CONSTRUCTION CONDITIONS.
- MDNR REGION 1 PWI - COOL/WARM WATER FISHERY: MARCH 15 - JUNE 30. 24-HOUR SOIL STABILIZATION REQUIRED WITHIN 200 FEET DURING RESTRICTION.
- AIR PHOTOS ARE FROM 2018 ENBRIDGE AERIAL PHOTOGRAPHY.
- ADDITIONAL ON-THE GROUND PHOTOS MAY BE TAKEN PRIOR TO CONSTRUCTION AT MDNR REQUEST.
- PRE-CONSTRUCTION PHOTOS WILL BE USED TO AID IN RESTORATION.
- SEE GENERAL NOTES PAGE FOR ADDITIONAL DETAIL.
- SEE THE PLANTING PLAN FOR ADDITIONAL DETAIL REGARDING SEEDING PRACTICES AND SEED MIXES AT PUBLIC WATER CROSSINGS.
- ON PUBLIC LANDS AND WHEREVER PRACTICABLE AT WATERBODY CROSSINGS, ENBRIDGE WILL USE WILDLIFE-FRIENDLY EROSION AND SEDIMENT CONTROL BMPS THAT CONTAIN BIODEGRADABLE NETTING (CATEGORY 3N OR 4N NATURAL FIBER) AND WILL AVOID THE USE OF PLASTIC MESH (SECTIONS 1.17.1 AND 2.6.1 OF THE EPP).
- WHEN WORKING WITHIN "WORK IN WATER RESTRICTIONS", STABILIZE ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WITHIN 24 HOURS. STABILIZATION WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY/ TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD.


LEGEND

- ENBRIDGE L3R PIPELINE
- PERMANENT RIGHT OF WAY
- TEMPORARY WORKSPACE
- WATERBODY CENTERLINE (CIVIL SURVEY)
- WATERBODY (NON-PUBLIC WATER)
- PUBLIC WATER CIVIL SURVEY BOUNDARY
- MDNR EXPANDED RESTORATION BOUNDARY
- TOP OF BANK
- ELEVATION CONTOUR
- ORDINARY HIGH WATER MARK
- FIELD DELINEATED WETLAND
- TRAVEL LANE/CONSTRUCTION MATTING
- INVASIVE SPECIES
- TRENCH BREAKER
- PERMANENT SLOPE BREAKER (ACTUAL LOCATION MAY BE ADJUSTED IN THE FIELD)
- 1 - SHALLOW, OPEN WATER
- 2B - SHALLOW MARSH
- 3A - SEDGE MEADOW
- 3B - FRESH (WET) MEADOW
- 5A - SHRUB-CARR
- 5B - ALDER THICKET
- 6A - HARDWOOD SWAMP
- 6B - CONIFEROUS SWAMP

B	ISSUED FOR PERMITTING	MJT	10/2020		
A	ISSUED FOR REVIEW	MJT	09/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN SOUTH BRANCH SNAKE RIVER- MP 847.2 - MDNR ID 7 RE-VEGETATION PLAN: EXPANDED EXTENT					
SCALE	DWG. NO.	PAGE NO.			
NOTED	SSRP-847.2-001A	1A/5			



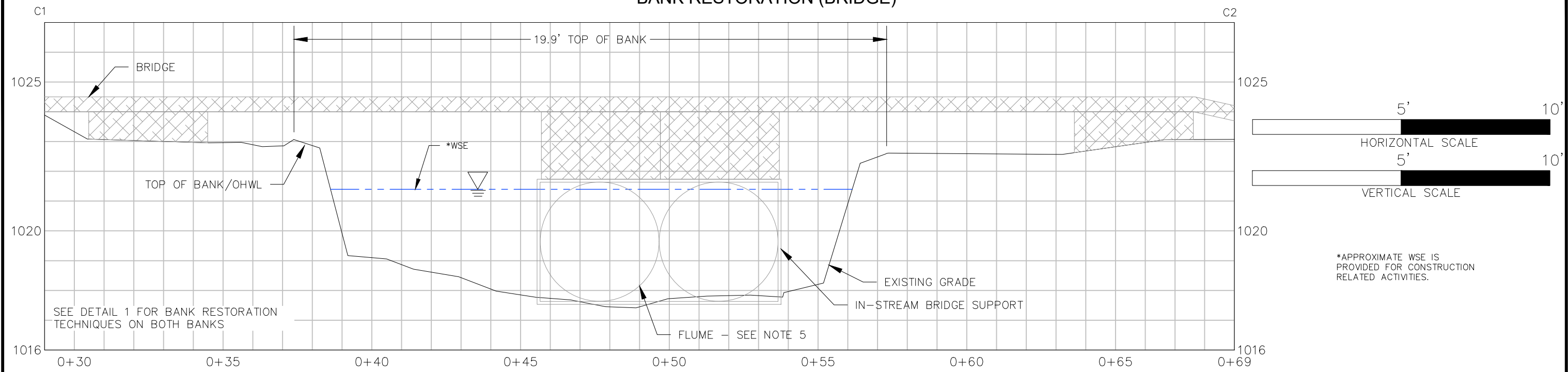


FEATURE ID	s-155n45w28-a; IFC ID: S-80.0	<div>NOTES</div> <div><div>1. CONSTRUCTION TIMING RESTRICTIONS</div><div>1.1. MDNR REGION 1 PWI - COOL/WARM WATER FISHERY: MARCH 15 - JUNE 30.</div><div>1.2. WHEN WORK OCCURS WITHIN "WORK IN WATER RESTRICTIONS", ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE STABILIZED WITHIN 24 HOURS DURING THE RESTRICTION PERIOD. STABILIZATION OF ALL EXPOSED SOILS WITHIN 200 FEET OF THE PUBLIC WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD</div><div>2. WORK SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE STANDARDS IN ENBRIDGE'S EPP AND VMP FOR PUBLIC LANDS AND WATERS. THE SPECIFICATIONS WITHIN THIS SSRP MAY MODIFY OR REPLACE THESE STANDARDS.</div><div>3. SEE GENERAL NOTES PAGE FOR ADDITIONAL DETAIL.</div><div>4. INFORMATION REGARDING SEEDING SPECIFICATIONS, SEED BED PREPARATION TECHNIQUES, ETC. ARE DESCRIBED IN THE PLANTING PLAN CONTAINED WITHIN THE VMP.</div><div>5. TRENCH BREAKER LOCATION IS APPROXIMATE PENDING FIELD VERIFICATION (EPP SECTION 1.13)</div></div> <div></div>	B	ISSUED FOR PERMITTING		10/2020	
CROSSING TYPE	DRY CROSSING		A	ISSUED FOR REVIEW	MJT	08/2020	
PROPOSED RESTORATION <small>(SEE DETAILS FOR LIVE STAKING, TRANSPLANTS, AND SHRUB SPECIES IF APPLICABLE)</small>	EC BLANKET – NATURAL FIBER MPCA TYPE 3.B/MNDOT CATEGORY 4N; BRUSH – TOE WOOD		NO.	REVISION–DESCRIPTION	BY	DATE	CHK
WITHIN OR ADJACENT WETLAND	FRESH WET MEADOW; FLOODPLAIN FOREST		ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN SOUTH BRANCH SNAKE RIVER– MP 847.2 – MDNR ID 7 RE-VEGETATION PLAN				
BWSR SEED MIX	RIPARIAN S&W (34–261)		SCALE NOTED				
DOMINANT WETLAND VEGETATION	1. PHALARIS ARUNDANCEA		DWG. NO. SSRP-847.2-001				
SOBS (O/H) or NPC (S1-3)	N/A		PAGE 1				

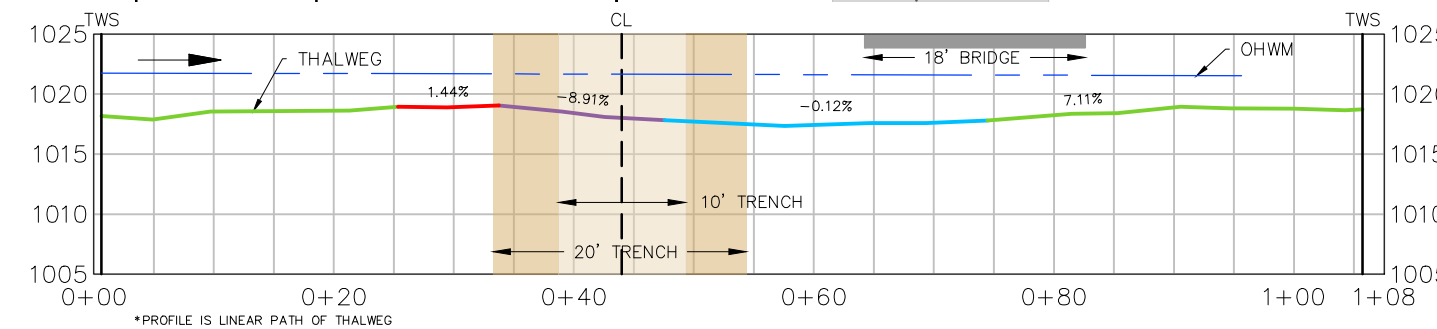
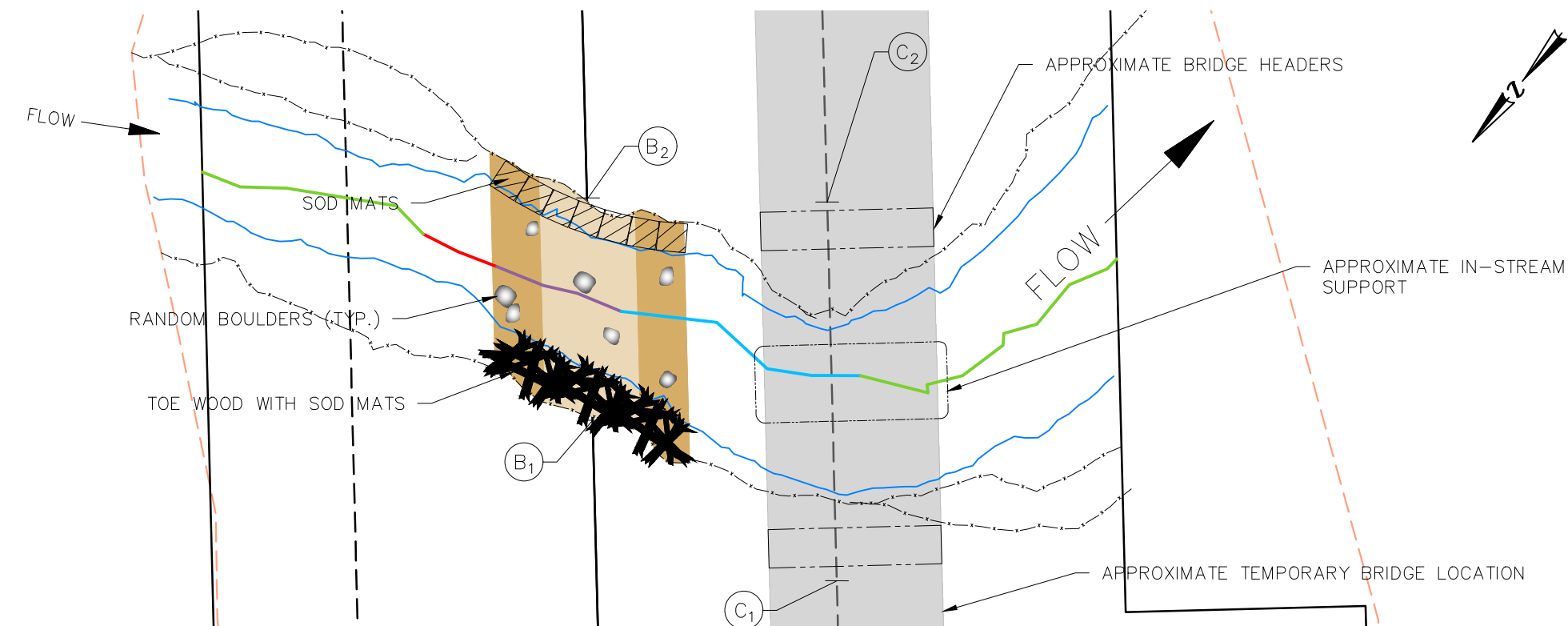




BANK RESTORATION (BRIDGE)



STREAMBED RESTORATION



- NOTES
1. TRANSITIONS BETWEEN EXISTING CHANNEL FEATURES (BED, BANK, FLOODPLAIN) AND PROPOSED RESTORED TRENCH CROSSING WILL BE SMOOTH AND EVENLY GRADED WITHOUT ABRUPT OR PROTRUDING OBSTRUCTIONS.
  2. BANK MIGRATION POTENTIAL IS TO THE NORTH. PRIMARY FLOW IS LOCATED ON THE UPSTREAM SIDE OF THE CHANNEL.
  3. PLACE MATS DIRECTLY ON TOP OF EXISTING VEGETATION TO AVOID OR MINIMIZE DISTURBANCE OF VEGETATION ON THE CHANNEL BANKS AND AT THE TOP OF THE STREAM BANK (LIMITED STUMP REMOVAL MAY BE REQUIRED).
  4. SEE DETAIL SHEET FOR SPECIFIC RESTORATION METHODS AND DETAILS.
  5. FLUME SIZE MAY VARY BETWEEN 18-48 INCHES BASED ON SITE-SPECIFIC CONDITIONS AT THE TIME OF CONSTRUCTION, BUT MUST ALWAYS EXTEND ABOVE OHWM OR SURFACE WATER AT TIME OF CONSTRUCTION, WHICHEVER IS GREATER.
  6. MINIMIZE DISTURBANCE OF BED MATERIALS/FEATURES DURING INSTALLATION/REMOVAL OF IN-STREAM SUPPORT.
  7. BED AND/OR BANK MATERIALS TEMPORARILY ADJUSTED OR REMOVED DURING CONSTRUCTION SHALL BE PLACED IN THE APPROXIMATE ORIGINAL LOCATION DURING RESTORATION. MATERIALS SHALL BE FIELD ADJUSTED DURING PLACEMENT BASE ON THE OBSERVED FLOW PATH AT THE TIME OF CONSTRUCTION.
  8. ALIGNMENT OF IN-STREAM SUPPORT SHALL BE FIELD ADJUSTED BASED ON FLOW PATH TO PROTECT CHANNEL BANKS.
  9. SEE RESTORATION DETAIL SHEET FOR B1-B2 SECTION.

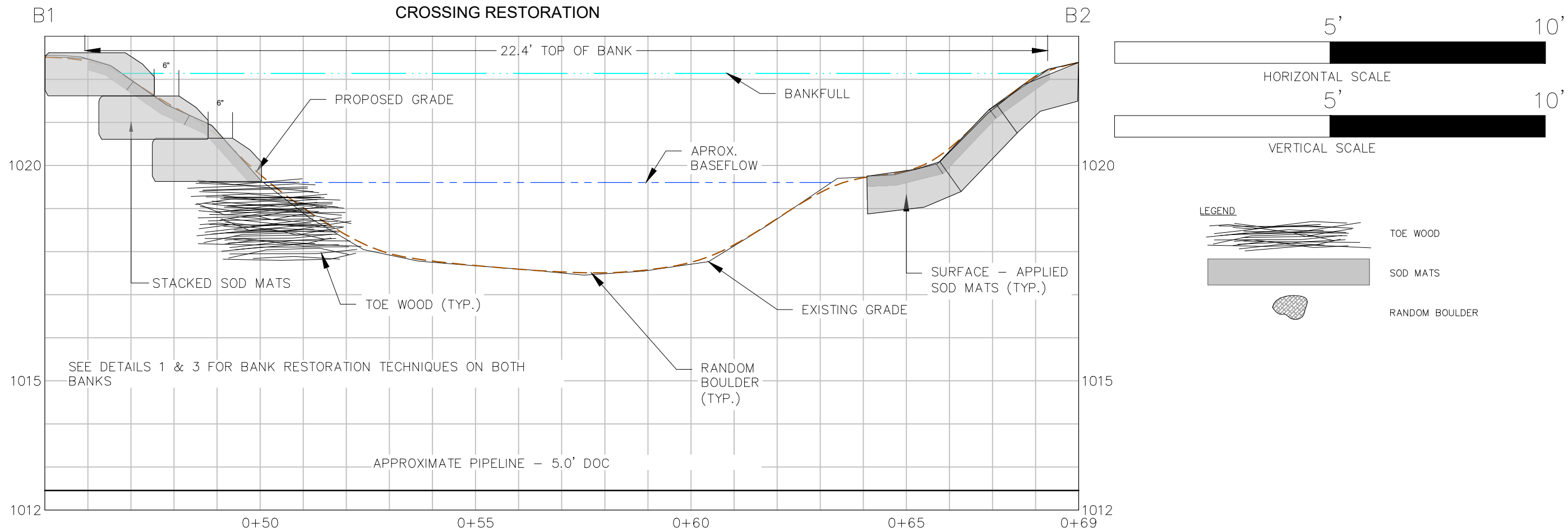
LEGEND

ENBRIDGE L3R PIPELINE
PERMANENT RIGHT OF WAY
TEMPORARY WORKSPACE
WATERBODY - RIFFLE (ROSGEN SURVEY)
WATERBODY - POOL (ROSGEN SURVEY)
WATERBODY - RUN (ROSGEN SURVEY)
WATERBODY - GLIDE (ROSGEN SURVEY)
MAJOR MINOR
CONTOUR (1' INTERVAL)
TOP OF BANK
ORDINARY HIGH WATER MARK
FIELD DELINEATED WETLAND
TRAVEL LANE/CONSTRUCTION MATTING
TRENCH - 10'
TRENCH - 20'
TOE WOOD
SOD MATS

B	ISSUED FOR PERMITTING	10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020	
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN SOUTH BRANCH SNAKE RIVER - MP 847.2 - MDNR ID 7 STABILIZATION PLAN				
SCALE	DWG. NO.	SSRP-847.2-002	PAGE NO.	2/7







RESTORATION NOTES:  
GENERAL

- REFER TO RESTORATION DETAIL SHEETS FOR ADDITIONAL INFORMATION RELATED TO PROPOSED RESTORATION MEASURES.
  - REFER TO SITE PHOTOS FOR INFORMATION ON PRE-CONSTRUCTION CROSSING CONDITIONS AND TO PROVIDE ADDITIONAL GUIDANCE FOR RESTORATION EFFORTS.
- TOE WOOD
- ROUGH GRADE CHANNEL BED FEATURES INCLUDING PLACEMENT OF SUBSTRATE.
  - INSTALL FOOTER LOG(S) ALONG PROPOSED TOE OF SLOPE. FOOTER LOGS SHOULD BE ANGLED TO ALLOW FOR TOE ALIGNMENT TO GENERALLY MATCH THE EXISTING CURVE AND EVENLY TRANSITION FROM UPSTREAM TO DOWNSTREAM.
  - PUSH FOOTER LOG INTO SOIL APPLY A SMALL AMOUNT OF GRAVEL OR STONE AS NEEDED TO PREVENT FLOATATION OF FOOTER LOG PRIOR TO PLACING WOODY DEBRIS.
  - PLACE A LAYER WOODY DEBRIS IN 6" TO 8" LIFTS, APPLY 3"-4" GRAVEL AND/OR SOIL FILL AND COMPACT WITH EXCAVATOR BUCKET. WASH FILL MATERIAL INTO WOODY DEBRIS MATRIX WITH WATER FROM CHANNEL. APPLY ADDITIONAL LAYERS "AS NEEDED" TO REACH THE SPECIFIED TOE WOOD HEIGHT.
  - PLACE STACKED SOD MATS ABOVE TOE WOOD. THE USE OF TRANSPLANTS OR FABRIC LIFTS MAY BE FIELD APPROVED BY ENBRIDGE IN CONSULTATION WITH MN DNR.
- SOD MATTING
- REMOVE 15 LINEAR FEET OF VEGETATED MATS ON EITHER SIDE OF THE STREAM CROSSING USING ONSITE EQUIPMENT WHICH CAN UNDERCUT THE VEGETATION FOR REMOVAL. SMALL SHRUBS AND/OR TREES WITHIN THE SOD MATS ARE ACCEPTABLE AND SHOULD NOT BE REMOVED.
  - DEPENDING ON THE LEVEL OF SATURATION AT THE TIME OF REMOVAL, IT MAY BE DIFFICULT TO OBTAIN INTACT CONSOLIDATED MATS, BUT GENERALLY THE NATIVE VEGETATION WILL BE RETAINED AND CAPTURED FOR PLACEMENT.
  - SOD MATS CAN BE TRANSPLANTED DURING ANY SEASON.
  - SOD MAT WILL BE PLACED ON CLEAR GROUND OR MATS WITHIN THE WORKSPACE.
  - MONITOR MATS TO SUPPORT SURVIVABILITY; WATERING MAY BE NEEDED.
  - PRIOR TO PLACEMENT OF SOD MATS FINISH GRADE CHANNEL BANK AND ADJACENT FLOODPLAIN APPLICATION AREA TO PROVIDE A SMOOTH AND EVEN SURFACE. SUBGRADE ELEVATION SHOULD ALLOW FOR THE FINISHED SOD SURFACE TO TRANSITION EVENLY WITH THE CHANNEL BANKS UPSTREAM AND DOWNSTREAM OF THE INSTALLATION AREA. AVOID ABRUPT CHANGES IN GRADE.
  - VEGETATED MATS WILL BE RETURNED/SET IN PLACE WITH ONSITE EQUIPMENT.
    - SURFACE APPLIED SOD MATTING SHOULD BE PLACED WITH THE LONG SIDE PERPENDICULAR TO THE CHANNEL / FLOW.
    - STACKED SOD MATTING SHOULD BE PLACED WITH THE LONG SIDE PARALLEL TO THE CHANNEL / FLOW.
  - IF SUFFICIENT SOD IS NOT AVAILABLE FROM THE STREAM BANKS ADDITIONAL SOD MAY BE TAKEN FROM THE ADJACENT CONSTRUCTION WORKSPACE.
  - WHEN PLACING SOD MATS, DO NOT LEAVE LARGE GAPS BETWEEN EACH SOD MAT AS NON-NATIVE VEGETATION WILL QUICKLY ATTEMPT TO COLONIZE THESE VOIDS.
  - WATER SOD MATS AFTER REPLACEMENT IF CONDITIONS ARE HOT AND DRY. DAMP AND/OR FROZEN SOD MATS DO NOT REQUIRE WATERING.
- THE TOP MAT AND/OR OTHER MATS CAN BE ANCHORED WITH A LIVE AND/OR DEAD STOUT STAKE TO ENSURE THAT IT DOES NOT MOBILIZE DURING A FLOOD EVENT BEFORE THE ROOTS HAVE ESTABLISHED.
  - THE VEGETATED MATS WILL BE REPLACED AS SOON AS PRACTICAL FOLLOWING BACKFILLING OF THE TRENCH AND STABILIZED PER THE TIMING REQUIREMENTS DESCRIBED IN SECTION 1.9.1 OF THE EPP.
- LIVE STAKING
- CLEANLY REMOVE ALL SIDE BRANCHES AND THE TOP GROWTH, AND FASHION THE CUTTINGS INTO LIVE STAKES AS DEPICTED IN THE DETAIL DRAWING. AN OPTION DURING PREPARATION IS TO PAINT AND SEAL THE TOP OF THE LIVE STAKE BY DIPPING THE TOP 1-2 INCHES INTO A 50-50 MIX OF LIGHT-COLORED LATEX PAINT AND WATER. SEALING THE TOP OF STAKE WILL REDUCE THE POSSIBILITY OF DESICCATION, ASSURE THE STAKES ARE PLANTED WITH THE TOP UP, AND MAKES THE STAKES MORE VISIBLE FOR SUBSEQUENT PLANTING EVALUATIONS.
  - USE A PUNCH BAR OR HAND AUGER TO CREATE A NARROW PILOT HOLE, PERPENDICULAR TO THE SLOPE, THROUGH ANY EROSION CONTROL MATTING, RIP RAP, OR OTHER REVETMENT, FILTER FABRIC, ETC., IF PRESENT, AND DEEP ENOUGH TO INTERCEPT THE WATER TABLE. THE HOLE SHOULD BE ONLY AS LARGE AS NECESSARY TO INSTALL THE LIVE STAKE WITHOUT DAMAGE WHILE ENSURING THE HIGHEST AMOUNT OF STAKE-SOIL CONTACT.
  - INSERT THE POINTED END OF THE LIVE STAKE INTO THE PILOT HOLE. TAMP INTO THE GROUND WITH A DEAD BLOW HAMMER TAKING CARE NOT TO SPLIT OR OTHERWISE DAMAGE THE LIVE STAKE. USE WATER, SOIL BACKFILL, TAMPING, ETC. TO ACHIEVE GOOD SOIL-TO-STEM CONTACT AND REMOVE AIR POCKETS.
  - USE THE EXCAVATOR BUCKET OR PUMP TO APPLY WATER FROM THE CHANNEL AFTER INSTALLATION.
  - ALL CUTS SHOULD BE CLEAN AND SMOOTH. NO CRACKED OR SPLIT LIVE STAKES SHOULD BE USED. IF THEY SPLIT DURING TAMPING, THEY SHOULD BE CUT BELOW THE CRACK OR REPLACED.
  - THE SPECIFIED NUMBER OF LIVE STAKES SHOULD BE INSTALLED INTO THE SOIL AND PROTRUDE ABOVE THE SOIL AND ANY SOD MATTING, MULCHING, EROSION CONTROL MATTING, RIP RAP, OR OTHER REVETMENT.
  - LIVE STAKE SHOULD NOT MOVE AFTER INSTALLATION; ENSURING IT IS IN FIRM CONTACT WITH THE SOIL.
  - IT IS IMPORTANT TO ENSURE THAT THE UPSTREAM AND DOWNSTREAM ENDS OF THE LIVE STAKING A MERGE SMOOTHLY INTO THE UNDISTURBED BANK BEYOND THE PROJECT AREA. THE RATE OF INSTALLING LIVE STAKES SHOULD TAPER OFF GRADUALLY TO BLEND IN WITH THE EXISTING VEGETATION.

B	ISSUED FOR PERMITTING		10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN SOUTH BRANCH SNAKE RIVER - MP 847.2 - MDNR ID 7 SITE SPECIFIC DETAILS					
SCALE	DWG. NO.	PAGE NO.			
NOTED	SSRP-847.2-004	3/7			

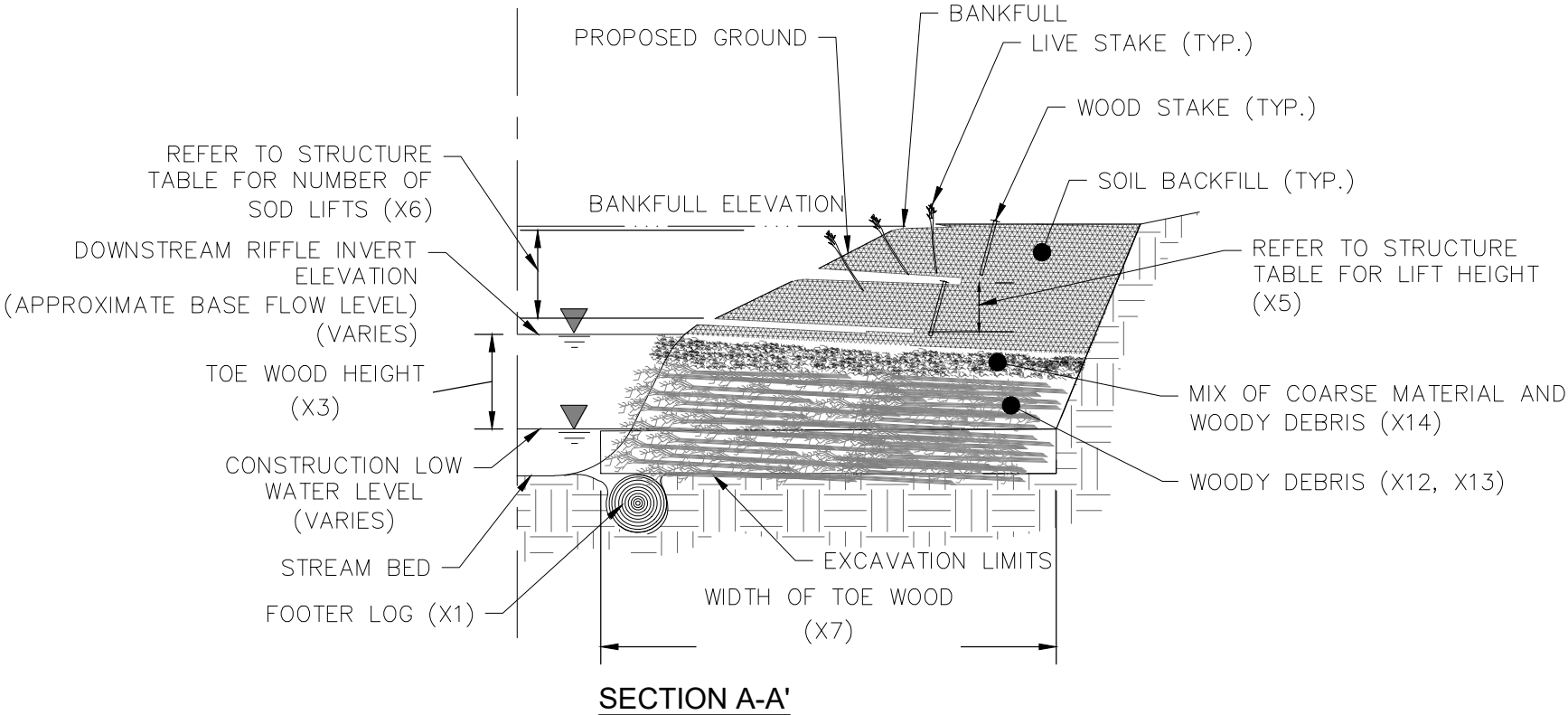




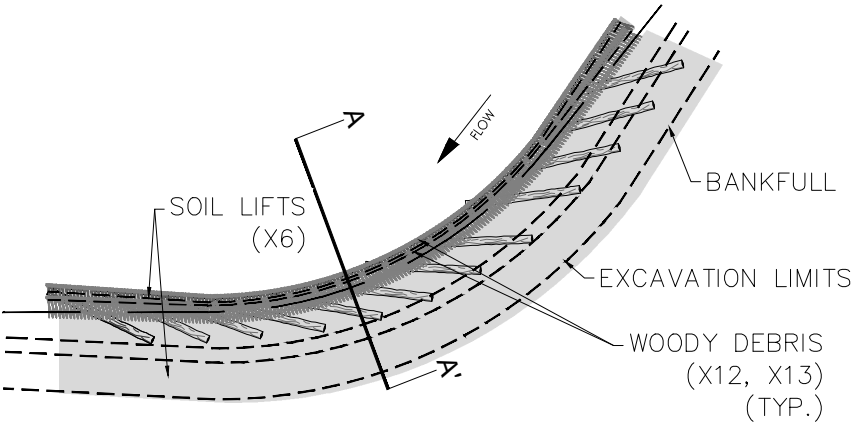
TOE WOOD DIMENSIONS			
VARIABLE	Value	TYPICAL UNIT	DESCRIPTION
X1	6.6-10.0	IN.	FOOTER LOG DIAMETER
X2	8.0-12.0	FT.	FOOTER LOG LENGTH
X3	18.0	IN.	TOE WOOD HEIGHT
X4	SHEET 3	N/A	MATCH TYPICAL SECTION
X5	SHEET 5	N/A	SOD LIFT HEIGHT
X6	3.0	#	SOD LIFTS
X7	8.0 - 10.0	FT.	TOE WOOD WIDTH
X8	3.0-6.0	FT.	SOD LIFT WIDTH
X9	24.0	IN.	WOOD STAKE LENGTH
X10	4.0	IN.	WOOD STAKE WIDTH (TOP)
X11	0.5	IN.	WOOD STAKE WIDTH (BOTTOM)
X12	1/2-3.0	IN.	WOODY DEBRIS DIAMETER
X13	8.0 - 12.0	FT.	WOODY DEBRIS LENGTH
X14	3" MINING GRAVEL W/ FINES	%	SELECT COARSE MATERIAL BACKFILL (BY VOLUME)



- NOTES:
1. WOODY MATERIAL OF APPROPRIATE SIZE CONSISTING OF LOGS, TRUNKS, LIMBS, BRANCHES, AND SMALLER WOODY DEBRIS INCLUDING TOPS OR SLASH. ON-SITE WOODY MATERIAL IS PREFERRED.
  2. WOODY DEBRIS SHOULD BE GREEN OR RELATIVELY GREEN AND MAY CONSIST OF HARDWOODS, CONIFERS, OR A COMBINATION OF BOTH.
  3. LIVE BRUSH OR OTHER BANK VEGETATION MAY BE INCORPORATED.
  4. ANGLE OF SOD MAT SURFACE SHALL MATCH THE PROPOSED CHANNEL CROSS SECTION AND PROVIDE A SMOOTH AND EVEN CHANNEL BANK SURFACE BETWEEN UPSTREAM AND DOWNSTREAM BANKS.
  5. DURING AND IMMEDIATELY AFTER CONSTRUCTION, BANK SLOPES ABOVE THE WOOD TOE ARE VULNERABLE TO EROSION. ESTABLISHING VEGETATION OR OTHER COVER MATERIAL AS SOON AS POSSIBLE WILL HELP REDUCE EROSION. ADDITIONAL MAINTENANCE IS NOT EXPECTED ONCE VEGETATION ESTABLISHES. INSPECTION AFTER LARGE FLOW EVENTS MAY BE ADVISABLE TO DETERMINE IF ANY MATERIAL MOVEMENT OR UNEXPECTED SCOUR HAS OCCURRED.



TOE WOOD DETAIL

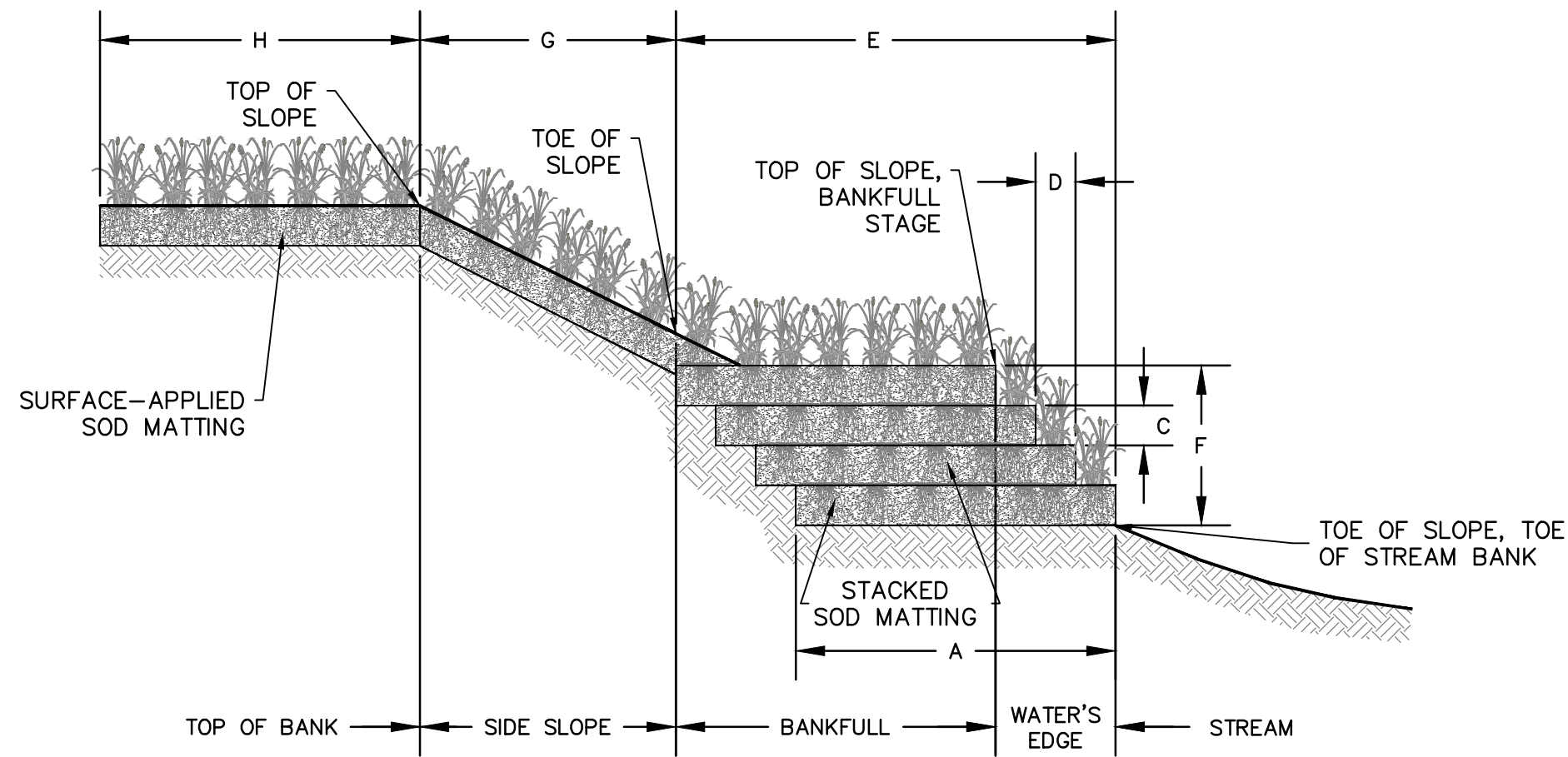


PLAN VIEW AT BANKFULL ELEVATION

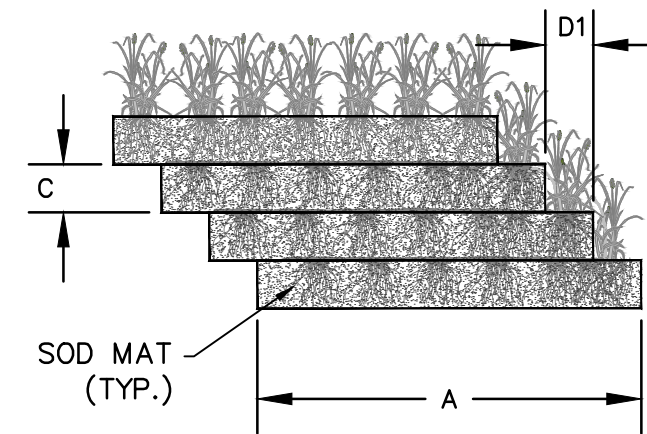
B	ISSUED FOR PERMITTING		10/2020		
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ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN SOUTH BRANCH SNAKE RIVER - MP 847.2 - MDNR ID 7 SITE SPECIFIC DETAILS					
SCALE	DWG. NO.	PAGE NO.			
NOTED	SSRP-847.2-004	4/7			



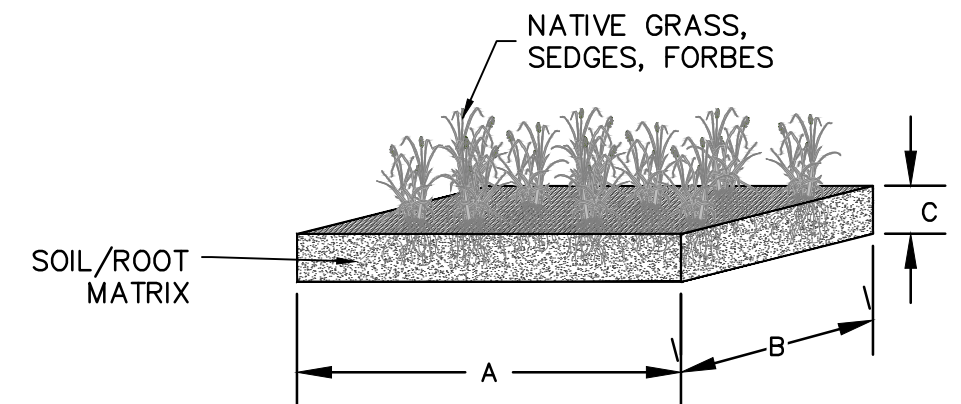




**CROSS SECTION**



**STACKED SOD MATTING DETAIL**



**SOD MAT DETAIL**

DIMENSION	NAME	TYPICAL UNIT	VALUE	DESCRIPTION
A	SOD MAT WIDTH	FEET	3–4	WIDTH OF INDIVIDUAL SOD MAT.
B	SOD MAT LENGTH	FEET	3–6	LENGTH OF INDIVIDUAL SOD MAT.
C	SOD MAT THICKNESS	INCHES	12	THICKNESS OF INDIVIDUAL SOD MAT.
D	STACKED SOD MAT SETBACK	INCHES	6+/-	THE DISTANCE BETWEEN THE EDGES OF SOD MATS STACKED TO FORM A SLOPE
E	WIDTH OF STACKED SOD MATS	FEET	10–20	WIDTH OF A BANK CREATED BY STACKED SOD MATS
F	HEIGHT OF STACKED SOD MATS	FEET	3	HEIGHT OF A SLOPE CREATED BY STACKED SOD MATS
G	WIDTH OF SURFACE- APPLIED SOD MATS	FEET	10–20	WIDTH OF A SLOPE STABILIZED WITH SURFACE-APPLIED SOD MATS
H	TOP OF BANK SOD MATTING DISTANCE	FEET	10	DISTANCE SOD MATTING IS INSTALLED ON THE TOP OF BANK

NOTES:

1. DIMENSION LABELS ARE REFERENCED IN THE DETAIL DRAWINGS.



**SOD MAT EXAMPLES**

B	ISSUED FOR PERMITTING		10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
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ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN SOUTH BRANCH SNAKE RIVER – MP 847.2 – MDNR ID 7 SITE SPECIFIC DETAILS					
SCALE	DWG. NO.	PAGE NO.			
NOTED	SSRP-847.2-005	5/7			

**SOD MATTING DETAIL**





DIMENSION <sup>2</sup>	NAME	TYPICAL UNIT	VALUE	DESCRIPTION
A	PLANTING DEPTH	VARIES	N/A	PLANTING DEPTH OF THE TRANSPLANT.
B	HEIGHT OF MOUNDED SOIL BACKFILL	INCHES	N/A	HEIGHT OF MOUNDED LOOSE SOIL PLACED INTO OVER-EXCAVATED PLANTING PIT.
C	DEPTH OF PLANTING PIT	VARIES	N/A	DEPTH OF THE PLANTING PIT; ACCOMMODATES DIMENSION OF SOIL AND EXCAVATED ROOTS AS WELL AS MOUNDED LOOSE SOIL AT BOTTOM OF PIT.
D	WIDTH OF PLANTING PIT	VARIES	N/A	OVER-EXCAVATED WIDTH OF THE PLANTING PIT; ACCOMMODATES THE WIDTH OF THE EXCAVATED SOIL AND ROOTS.
E	HEIGHT OF MOUNDED SOIL PERIMETER	INCHES	N/A	HEIGHT OF SOIL BERM CONSTRUCTED ALONG THE PERIMETER OF THE PLANTING PIT; HELPS RETAIN WATER.
F	WIDTH OF MOUNDED SOIL PERIMETER	INCHES	N/A	WIDTH OF SOIL BERM CONSTRUCTED ALONG THE PERIMETER OF THE PLANTING PIT; HELPS RETAIN WATER.
G	WIDTH OF WEED BARRIER FABRIC (OPTIONAL)	INCHES	N/A	WIDTH OF FABRIC PLACED ON SURFACE TO CONTROL WEEDS WITHIN THE MOUNDED SOIL PERIMETER; TRANSPLANTS TYPICALLY HAVE GRASSES, LEAF MATTER, ETC. ATTACHED AND DO NOT REQUIRE WEED BARRIER FABRIC.
H	FABRIC STAKE LENGTH (OPTIONAL)	INCHES	N/A	LENGTH OF STAPLES/SPIKES USED TO SECURE WEED BARRIER FABRIC
I	THICKNESS OF MULCH (OPTIONAL)	INCHES	N/A	THICKNESS OF MULCH, IF NECESSARY. TRANSPLANTS TYPICALLY HAVE GRASSES, LEAF MATTER, ETC. ATTACHED AND DO NOT REQUIRE MULCH.
J	GAP BETWEEN MULCH AND PLANT STEM/TRUNK (OPTIONAL)	INCHES	N/A	ROOM BETWEEN PLANT STEM/TRUNK AND MULCH. TRANSPLANTS TYPICALLY HAVE GRASSES, LEAF MATTER, ETC. ATTACHED

NOTES:

1. DATA ARE FOR TRANSPLANTED VEGETATION.

2. DIMENSION LABELS ARE REFERENCED IN THE DETAIL DRAWINGS.



TRANSPLANTS EXAMPLES

TRANSPLANTING DETAIL

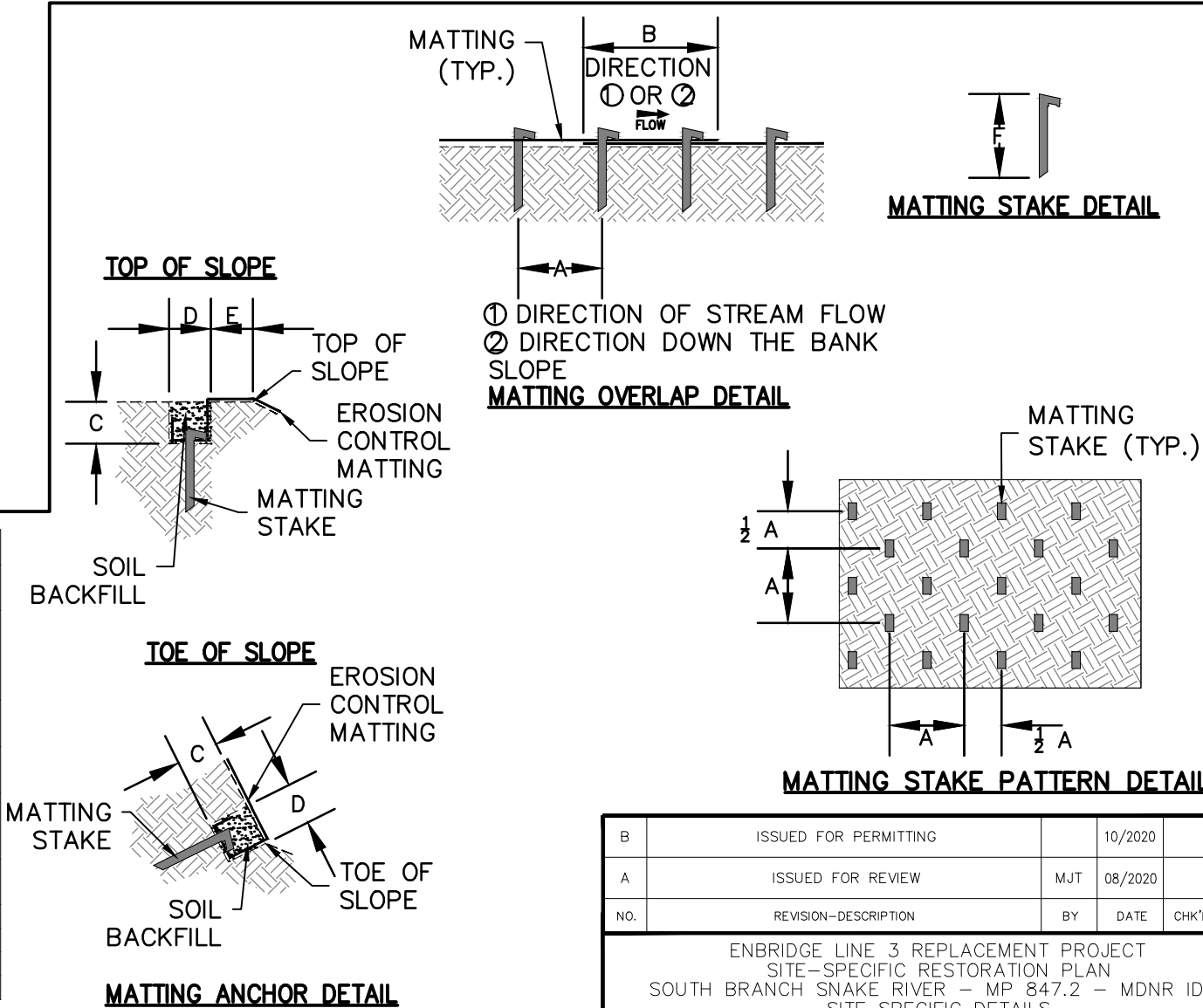
DIMENSION <sup>1</sup>	NAME	TYPICAL UNIT	VALUE	DESCRIPTION
A	MATting STAKE SPACING	FEET	3.0.C	SPACING BETWEEN EROSION CONTROL MATting STAKES USED TO FASTEN THE MATting TO THE SOIL
B	MATting OVERLAP	INCHES	18	AMOUNT OF EROSION CONTROL MATting OVERLAP IF MULTIPLE PIECES AND/OR ROLLS OF MATting ARE USED. OVERLAP VARIES DEPENDING ON THE LOCATION OF THE OVERLAP WITH RESPECT TO POSITION ON THE SLOPE, LOCATION OF THE MATting (EDGE OR END), AND PRODUCT SPECIFICATIONS.
C	MATting ANCHOR TRENCH DEPTH	INCHES	6 (MIN)	DEPTH OF TRENCH INTO WHICH EDGE OF EROSION CONTROL MATting IS ANCHORED AT THE TOP AND/OR TOE OF A SLOPE.
D	MATting ANCHOR TRENCH WIDTH	INCHES	12	WIDTH OF TRENCH INTO WHICH EDGE OF EROSION CONTROL MATting IS ANCHORED AT THE TOP AND/OR TOE OF A SLOPE.
E	TOP OF SLOPE ANCHOR TRENCH SETBACK	INCHES	12	TOP OF SLOPE ANCHOR TRENCH DISTANCE FROM THE TOP OF SLOPE. TOP OF SLOPE REFERS TO TOP OF SIDE SLOPE, BANK SLOPE, TERRACE SLOPE, BANKFULL, ETC.
F	MATting STAKE LENGTH	INCHES	12	LENGTH OF EROSION CONTROL MATting STAKES OR STAPLES USED TO FASTEN THE MATting TO THE SOIL

- NOTES:
1. DIMENSION LABELS ARE REFERENCED IN THE DETAIL DRAWINGS.

2. GC. ON CENTER

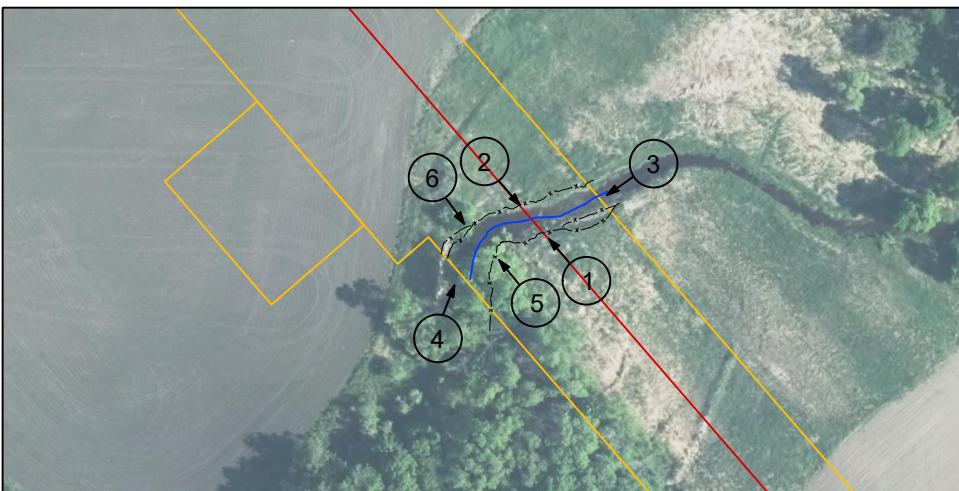
2. STAPLES ARE NOT PERMITTED

EROSION CONTROL MATTING DETAIL



B	ISSUED FOR PERMITTING		10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN SOUTH BRANCH SNAKE RIVER - MP 847.2 - MDNR ID 7 SITE SPECIFIC DETAILS					
SCALE	DWG. NO.	PAGE NO.			
NOTED	SSRP-847.2-004	6/7			





- NOTES:**
1. AIR PHOTOS ARE FROM 2018 ENBRIDGE AERIAL PHOTOGRAPHY.
  2. ADDITIONAL ON-THE GROUND PHOTOS MAY BE TAKEN PRIOR TO CONSTRUCTION AT MDNR REQUEST.
  3. PRE-CONSTRUCTION PHOTOS WILL BE USED TO AID IN RESTORATION.



B	ISSUED FOR PERMITTING	MJT	10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN SOUTH BRANCH SNAKE RIVER — MP 847.2 — MDNR ID 7 PHOTO PAGE					
SCALE	DWG. NO. SSRP-847.2-005	PAGE NO. 5/5			



GENERAL

1. THE SPECIFICATIONS WITHIN THIS SSRP MAY MODIFY OR REPLACE PROJECT–WIDE STANDARDS PRESENTED IN THE EPP. WHERE MATERIAL WITHIN THESE SSRPS EXCEEDS STANDARD CONSTRUCTION MEASURES IN THE EPP, THESE SSRPS SUPERSEDE THE EPP.
2. CONSTRUCTION AND RESTORATION OF WATERBODY CROSSINGS WILL FOLLOW THESE GENERAL STEPS:

A. SITE CLEARING

B. INSTALLATION OF TEMPORARY EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (‘BMPS’)

C. BRIDGE INSTALLATION

D. EXCAVATION/BACKFILLING OF THE WATERBODY INCLUDING:

• SOD SAVING TOPSOIL SEGREGATION AT NON–WOODED SITES

• STREAMBED MATERIAL SEGREGATION

• PIPE INSTALLATION

• BACKFILL, INCLUDING IMPLEMENTATION OF CONSTRUCTION–RELATED RESTORATION METHODS (I.E., TOE WOOD)

E. REPLACEMENT OF STREAMBED MATERIAL AND TOPSOIL/SOD LAYER

F. RESTORATION OF STREAM BANKS TO PRE–CONSTRUCTION CONTOURS

G. IF FINAL GRADING NOT POSSIBLE AT THE TIME, TEMPORARY STABILIZATION AND REPLACEMENT/REINFORCEMENT OF TEMPORARY BMPS

H. AFTER FINAL GRADING, PERMANENT SEEDING AND/OR WOODY VEGETATION RESTORATION, STABILIZATION AND REPLACEMENT/REINFORCEMENT OF TEMPORARY BMPS

I. BRIDGE REMOVAL DURING FINAL RESTORATION AFTER STABILIZATION AND PERMANENT SEEDING

J. POST–CONSTRUCTION MONITORING
- CROSSING METHODS
1. ALL WATERBODY AND WETLAND CROSSINGS WILL BE CONDUCTED IN COMPLIANCE WITH SECTION 2.0 AND SECTION 3.0 OF THE ENVIRONMENTAL PROTECTION PLAN (‘EPP’), RESPECTIVELY. SECTION 2.0 AND 3.0 OF THE WINTER CONSTRUCTION PLAN PRESENTS MODIFICATIONS FOR WATERBODY AND WETLAND CONSTRUCTION METHODS, RESPECTIVELY, IN WINTER CONDITIONS.

2. ENBRIDGE’S SUMMARY OF CONSTRUCTION METHODS AND PROCEDURES (THE ‘PROCEDURES,’APPENDIX A OF THE EPP) OUTLINES THE VARIOUS CONSTRUCTION METHODS THAT ENBRIDGE MAY UTILIZE TO CONSTRUCT THROUGH WATERBODIES AND WETLANDS/BASINS AS PRESENTED ON THESE SITE–SPECIFIC RESTORATION PLANS (‘SSRPS’).

A. DRY CROSSING (ISOLATED) METHODS (INCLUDING THE DRY CROSSING AND MODIFIED DRY CROSSING METHOD) ARE DESCRIBED SECTIONS 4.3 OF THE PROCEDURES, AND IN SECTIONS 2.5.2 AND 2.5.3 AND FIGURES 23 AND 24 OF THE EPP.

B. THE BORE METHOD (NON–PRESSURIZED) IS DESCRIBED IN SECTION 3.5 OF THE PROCEDURES, AND SECTION 4.0 OF THE EPP.

C. THE MODIFIED UPLAND CONSTRUCTION (WETLAND) METHOD IS DESCRIBED IN SECTION 3.3 OF THE PROCEDURES, AND SECTION 3.0 AND FIGURES 30 TO 34 OF THE EPP.

D. ALTHOUGH NOT PROPOSED AS A PRIMARY METHOD AT THESE SSRP WATERBODIES, THE OPEN CUT (NON–ISOLATED) WATERBODY CROSSING METHOD IS DESCRIBED IN SECTION 4.1 OF THE PROCEDURES, AND SECTION 2.5.1 AND FIGURE 24 OF THE EPP.

E. ALTHOUGH NOT PROPOSED AS A PRIMARY METHOD AT THESE SSRP WATERBODIES, THE PUSH–PULL METHOD IS DESCRIBED IN SECTION 3.4 OF THE PROCEDURES, AND SECTION 3.7.1 AND FIGURES 35 AND 36 OF THE EPP.

CLEARING/VEGETATION REMOVAL

1. STUMPS WITHIN THE TRENCH LINE WILL BE COMPLETELY REMOVED, GROUND, AND/OR HAULED OFF–SITE TO AN APPROVED LOCATION. TREE STUMPS OUTSIDE THE TRENCH LINE WILL BE GROUND BELOW NORMAL GROUND SURFACE TO FACILITATE A SAFE WORK AREA AND TO ALLOW TOPSOIL REMOVAL, IF NECESSARY. IN SOME CIRCUMSTANCES, TREE STUMPS OUTSIDE THE TRENCH LINE MAY BE COMPLETELY REMOVED TO ALLOW FOR A SAFE WORK AREA AND HAULED OFF–SITE TO AN APPROVED LOCATION AS OUTLINED IN SECTION 1.8.3 OF THE EPP.

2. CLEARING WILL BE CONDUCTED IN WATERBODIES AND WETLANDS AS OUTLINED IN SECTION 2.2 AND 3.2 OF THE EPP, RESPECTIVELY. CHIPS, MULCH, OR MECHANICALLY CUT WOODY DEBRIS SHALL NOT BE STOCKPILED IN A WETLAND. HYDRO–AX DEBRIS, OR SIMILAR CAN BE LEFT IN THE WETLAND IF SPREAD EVENLY IN THE CONSTRUCTION WORKSPACE TO A DEPTH THAT WILL ALLOW FOR NORMAL REVEGETATION, AS DETERMINED BY THE EI. CHIPPING IS NOT ALLOWED ON PUBLIC LANDS. ON PUBLIC LANDS, MULCH AND MECHANICALLY CUT WOODY DEBRIS MUST BE UNIFORMLY BROADCAST TO LESS THAN 2–INCH THICKNESS AND IN A MANNER THAT MAINTAINS VISIBLE GROUND.

3. ENBRIDGE WILL PROPERLY INSTALL AND MAINTAIN REDUNDANT SEDIMENT CONTROL MEASURES IMMEDIATELY AFTER CLEARING AND PRIOR TO INITIAL GROUND DISTURBANCE AT SURFACE WATERS LOCATED WITHIN 50 FEET OF THE PROJECT AND WHERE STORMWATER FLOWS TO THE SURFACE WATER (REFER TO THE ENVIRONMENTAL PLAN SHEETS IN THE SWPPP), AND WITHIN 100 FEET OF SPECIAL AND IMPAIRED WATERS, INCLUDING TROUT STREAMS.

4. ON PUBLIC LANDS AND WHEREVER PRACTICABLE AT WATERBODY CROSSINGS, ENBRIDGE WILL USE WILDLIFE–FRIENDLY EROSION AND SEDIMENT CONTROL BMPS THAT CONTAIN BIODEGRADABLE NETTING (CATEGORY 3N OR 4N NATURAL FIBER) AND WILL AVOID THE USE OF PLASTIC MESH (SECTIONS 1.17.1 AND 2.6.1 OF THE EPP).

TEMPORARY STABILIZATION

1. ON PORTIONS OF THE PROJECT WHERE WORK WILL BE OCCURRING DURING APPLICABLE ‘WORK IN WATER RESTRICTIONS’FOR PUBLIC WATERS (REFER TO SECTION 2.1), ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER’S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE STABILIZED WITHIN 24 HOURS DURING THE RESTRICTION PERIOD. STABILIZATION OF ALL EXPOSED SOILS WITHIN 200 FEET OF THE PUBLIC WATER’S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD. THESE AREAS WILL BE IDENTIFIED ON THE ENVIRONMENTAL PLAN SHEETS ACCOMPANYING THE SWPPP.

2. HYDRO–MULCH AND LIQUID TACKIFIER CAN BE USED IN PLACE OF CERTIFIED WEED–FREE STRAW OR HAY MULCH WITH PRIOR APPROVAL FROM ENBRIDGE. ALL HYDROMULCH AND LIQUID TACKIFIER PRODUCTS USED WILL BE ON THE APPLICABLE STATE DOT PRODUCT LIST. HYDRO–MULCH AND LIQUID TACKIFIER PRODUCTS CONTAINING PLASTIC/POLYPROPYLENE FIBER ADDITIVES AND MALACHITE GREEN (COLORANT) WILL NOT BE UTILIZED ON THIS PROJECT. APPLICATION RATES WILL BE AT THE MANUFACTURER’S RECOMMENDED RATE. ENBRIDGE WILL AVOID THE USE OF HYDROMULCH ON PUBLIC LANDS; HOWEVER, ENBRIDGE MAY USE HYDROMULCH ON STEEP SLOPES TO PREVENT EROSION UNTIL PERMANENT COVER HAS BEEN ESTABLISHED AS OUTLINED IN SECTION 1.8.3 OF THE EPP.

RESTORATION AND STABILIZATION

1. ENBRIDGE WILL RESTORE THE STREAM BANKS AS NEAR AS PRACTICABLE TO PRE–CONSTRUCTION CONDITIONS UNLESS THAT SLOPE IS DETERMINED TO BE UNSTABLE. IF THE SLOPE IS CONSIDERED UNSTABLE, ENBRIDGE WILL RESHAPE THE BANKS TO PREVENT SLUMPING. FOR PUBLIC WATERS, ENBRIDGE WILL RETURN THE BANK TO PRE–CONSTRUCTION CONTOURS, UNLESS OTHERWISE DIRECTED BY THE SITE–SPECIFIC RESTORATION PLAN. IF ENBRIDGE CANNOT RESTORE TO PRE–CONSTRUCTION CONTOURS AT A PUBLIC WATER, ENBRIDGE WILL CONSULT WITH THE MDNR BEFORE PROCEEDING FURTHER AS OUTLINED IN SECTION 2.6 OF THE EPP.

2. UNSTABLE SOILS AND/OR SITE–SPECIFIC FACTORS SUCH AS STREAM VELOCITY AND FLOW DIRECTION MAY REQUIRE ADDITIONAL RESTORATION EFFORTS, SUCH AS INSTALLATION OF WOODY VEGETATION, GEOTEXTILE FABRIC, OR TREE, LOG, ROOTWAD, OR BOULDER REVETMENTS TO STABILIZE DISTURBED STREAM BANKS (SEE FIGURE 29) AS OUTLINED IN SECTION 2.6.2 OF THE EPP. ENBRIDGE WILL WORK WITH THE MDNR TO ENSURE ALL WORK/ADJUSTMENTS ARE APPROVED AND ARE CONDUCTED WITHIN APPLICABLE TIMING RESTRICTIONS.

3. IN UPLAND AND WETLAND AREAS, CLEANUP AND ROUGH GRADING WILL OCCUR AS OUTLINED IN SECTIONS 1.16 AND 3.9 OF THE EPP. ENBRIDGE WILL BACKFILL THE TRENCH TO AN ELEVATION SIMILAR TO THE ADJACENT AREAS OUTSIDE THE TRENCH LINE AND WILL ADD A SLIGHT CROWN OF APPROXIMATELY 3 TO 6 INCHES (DEPENDING ON SOIL TYPE) OVER THE BACKFILLED TRENCH TO ALLOW FOR SUBSIDENCE. GENERALLY, EXCESS SUBSOIL DISPLACED BY THE PIPE INSTALLATION WILL BE SPREAD ACROSS THE PORTION OF THE CONSTRUCTION WORKSPACE WHERE TOPSOIL REMOVAL HAS OCCURRED. ANY REMAINING EXCESS SUBSOIL WILL BE REMOVED AND DISPOSED OF AT AN APPROVED OFF–SITE LOCATION AS NEEDED TO ENSURE CONTOURS ARE RESTORED TO AS NEAR AS PRACTICABLE TO PRE–CONSTRUCTION CONDITIONS.

4. REVEGETATION ACTIVITIES WILL OCCUR AS OUTLINED IN SECTION 7.0 OF THE EPP. SEED MIXES AT PUBLIC WATERS WILL BE SELECTED AND APPLIED AS INDICATED IN THE PLANTING PLAN, WHICH IS APPENDIX A OF THE POST–CONSTRUCTION VEGETATION MANAGEMENT PLAN FOR PUBLIC LANDS AND WATERS (‘VMP’). SEED MIXES RELATIVE TO THESE SSRP CROSSINGS ARE CODED AS FOLLOWS:

A	EMERGENT (34–181)	G	DRY PRAIRIE GENERAL (35–221)
B	RIPARIAN NE (34–361)	H	MESIC PRAIRIE GENERAL (35–241)
C	RIPARIAN S&W (34–261)	I	MESIC PRAIRIE NW (35–441)
D	WET MEADOW NE (34–371)	J	DRY PRAIRIE NORTHWEST (35–421)
E	WET MEADOW S&W (34–271)	K	WOODLAND EDGE NE (36–311)
F	WETLAND REHABILITATION (34–171)	L	NATURAL REVEGETATION

5. ENBRIDGE WILL NOT SEED STANDING WATER OR WOODED (PSS AND PFO) WETLAND COMMUNITIES. NATURAL REVEGETATION WILL TAKE PLACE FROM EXISTING PLANT MATERIAL AND ROOT STOCK IN THESE COMMUNITIES.

6. ALL MATERIALS USED FOR CONSTRUCTION OF THE PROJECT MUST BE REMOVED FROM THE SITE.

7. ENBRIDGE WILL CONDUCT POST–CONSTRUCTION MONITORING IN ACCORDANCE WITH THE POST–CONSTRUCTION MONITORING PLAN FOR WETLANDS AND WATERBODIES, AND IN ACCORDANCE WITH THE VMP FOR THE UPLAND PORTIONS OF THE PROJECT ON PUBLIC LANDS.

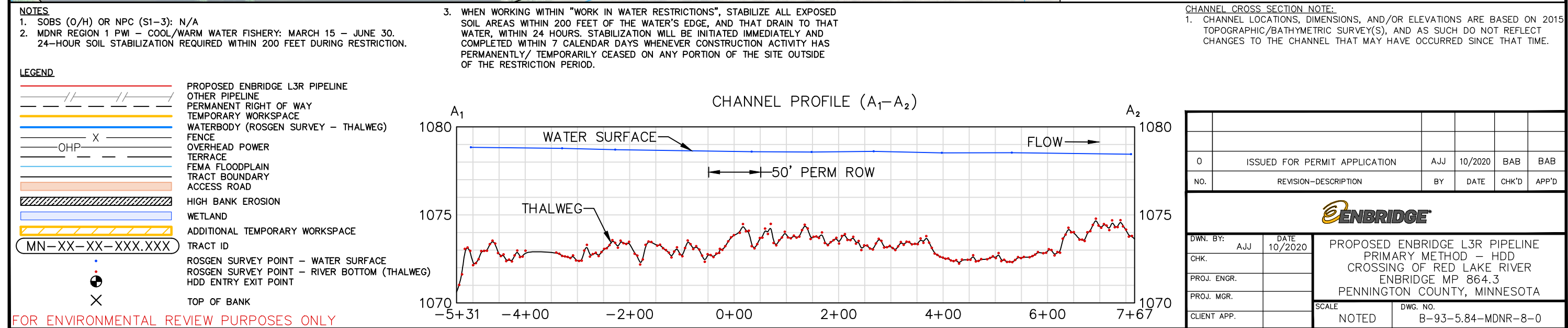
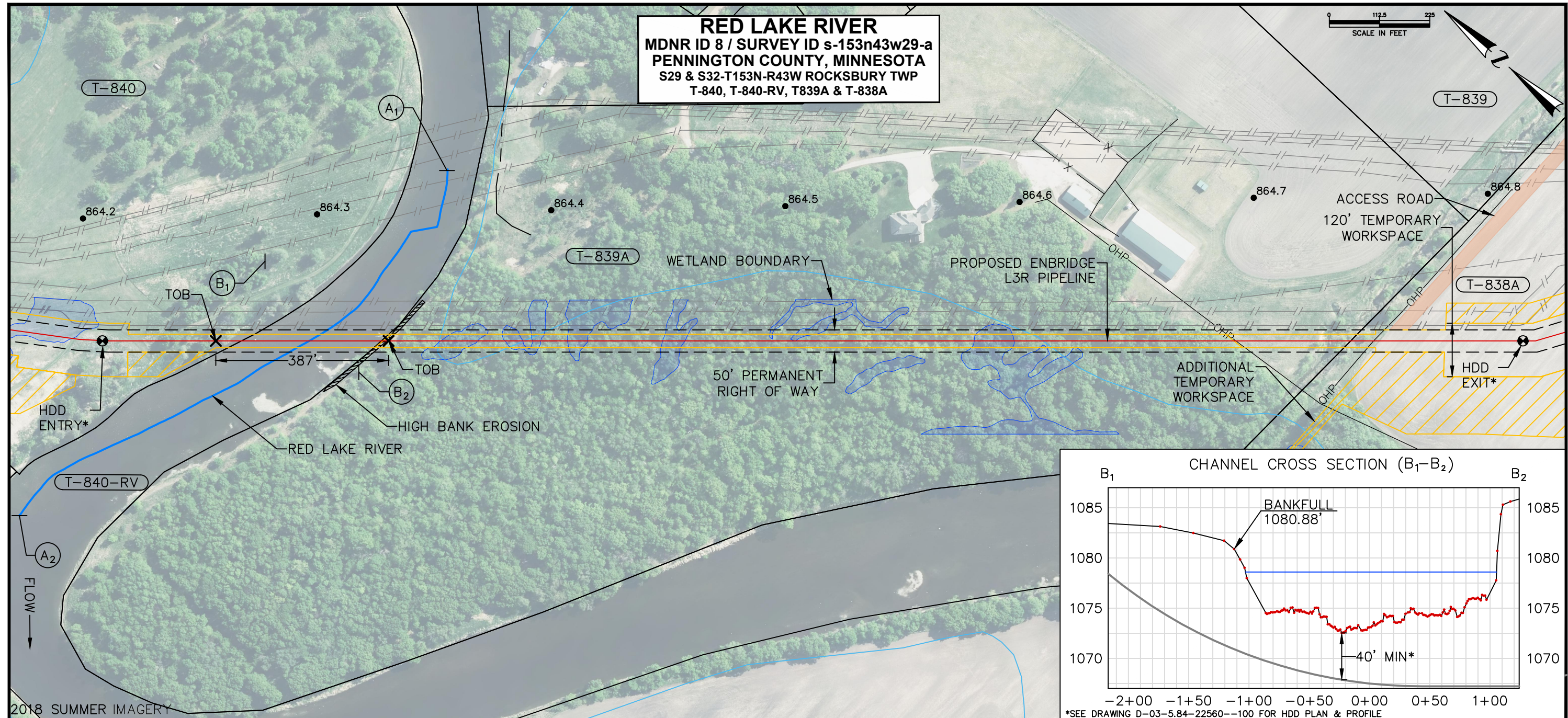
B	ISSUED FOR PERMITTING	MJT	10/2020		
NO.	REVISION–DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE–SPECIFIC RESTORATION PLAN					
CONSTRUCTION NOTES					
SCALE		DWG. NO. SSRP–NOTES		PAGE NO.	

PLOTTED SIZE: ANSI FULL BLEED B (17x11)



**MDNR ID No. 8: MP 864.3; Red Lake River (H-026-030)**

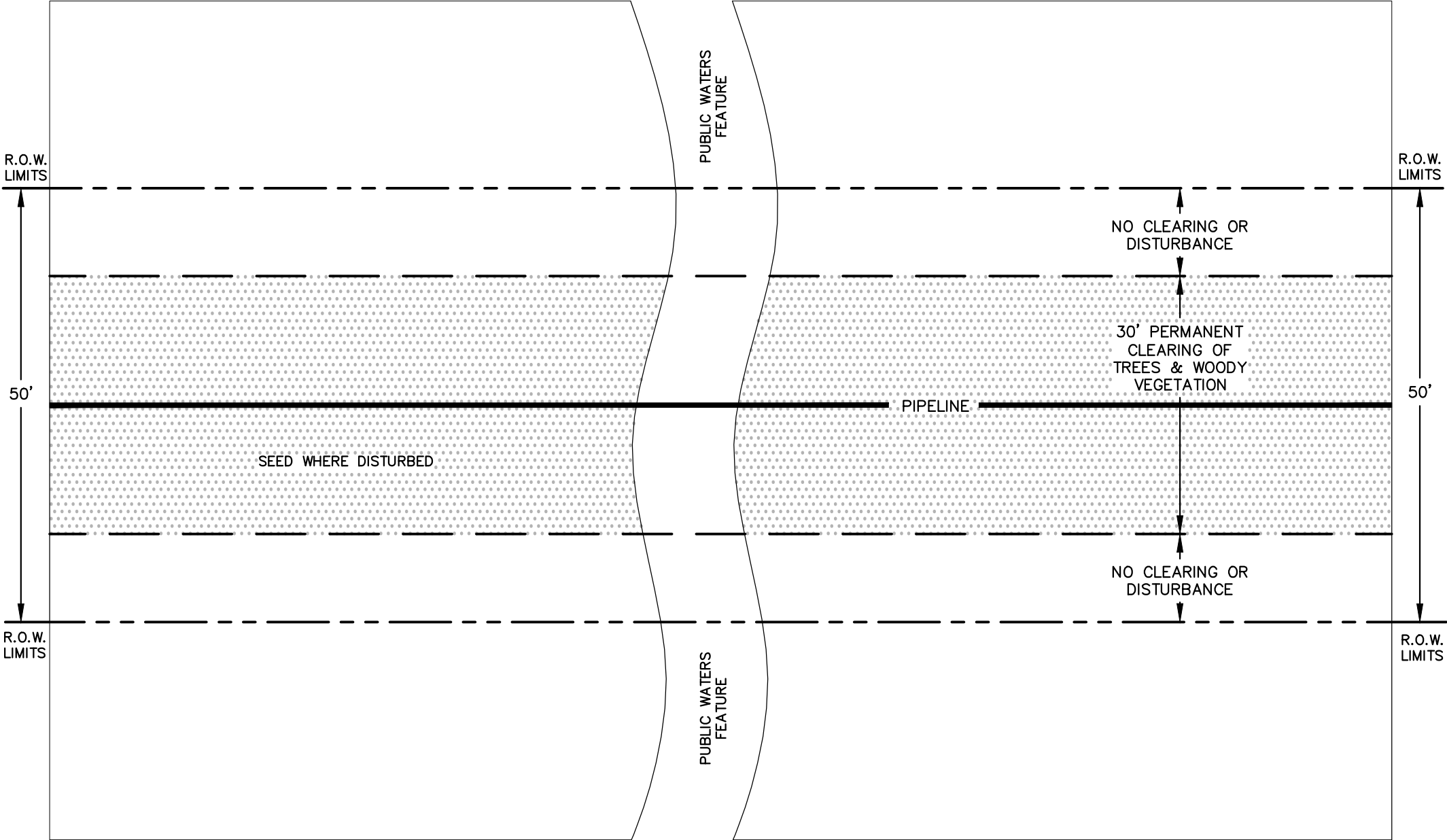
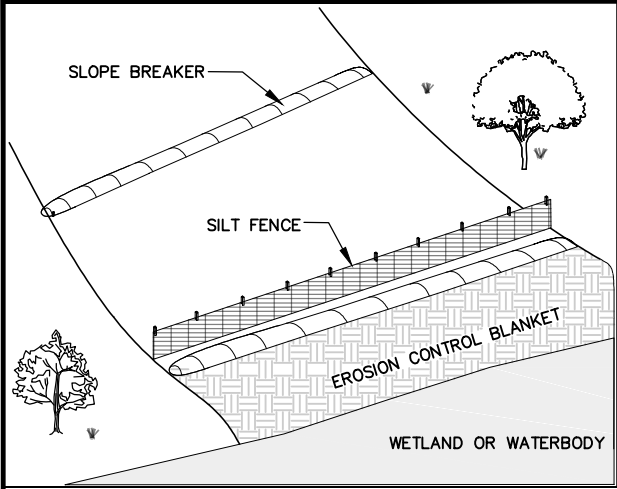












**PUBLIC WATERS FEATURE - HDD CROSSING**

- 1) DISTURBANCE OF THE ROW IS LIMITED TO THE 30-FOOT-WIDE CLEARING OF TREES AND WOODY VEGETATION AND IMPACTS RESULTING FROM TRAVEL LANES AND/OR BRIDGES.
- 2) ANY WETLAND OR WATERBODY BANK THAT IS DISTURBED WILL BE STABILIZED WITH EROSION AND SEDIMENT CONTROL BMP AND RESTORED TO AS NEAR AS PRACTICABLE TO PRE-CONSTRUCTION CONDITIONS.
- 3) PERMANENT REVEGETATION SEEDING OF DISTURBED WATERBODY BANKS WILL UTILIZE THE BWSR RIPARIAN SEED MIXES IN ACCORDANCE WITH THE EPP (SECTION 7.8).
- 4) PERMANENT REVEGETATION SEEDING OF DISTURBED WETLANDS WILL TAKE PLACE IN ACCORDANCE WITH THE EPP (SECTION 7.7).
- 7) IN DISTURBED WETLAND AREAS, THE APPROPRIATE SEED MIX WILL BE DETERMINED USING THE RESULTS OF PRE-CONSTRUCTION WETLAND IN DISTURBED WETLAND AREAS, HYDROLOGICAL CHARACTERISTICS, AND SITE-SPECIFIC CONDITIONS.

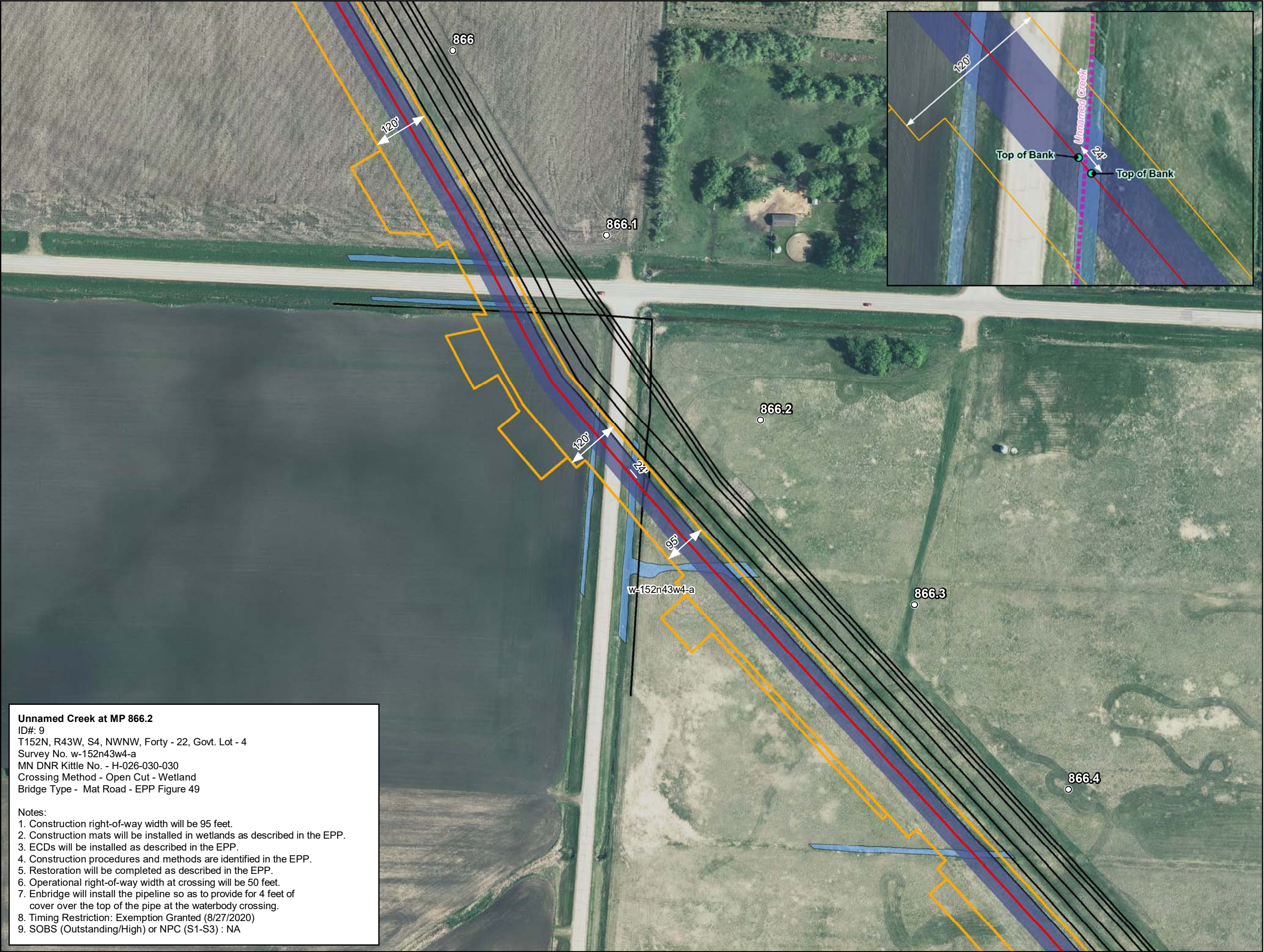
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**MDNR ID No. 9: MP 866.2; Unnamed Creek (H-026-030-030)**





Unnamed Creek at MP 866.2

ID#: 9

T152N, R43W, S4, NWNW, Forty - 22, Govt. Lot - 4

Survey No. w-152n43w4-a

MN DNR Kittle No. - H-026-030-030

Crossing Method - Open Cut - Wetland

Bridge Type - Mat Road - EPP Figure 49

Notes:

1. Construction right-of-way width will be 95 feet.

2. Construction mats will be installed in wetlands as described in the EPP.

3. ECDs will be installed as described in the EPP.

4. Construction procedures and methods are identified in the EPP.

5. Restoration will be completed as described in the EPP.

6. Operational right-of-way width at crossing will be 50 feet.

7. Enbridge will install the pipeline so as to provide for 4 feet of cover over the top of the pipe at the waterbody crossing.

8. Timing Restriction: Exemption Granted (8/27/2020)

9. SOBS (Outstanding/High) or NPC (S1-S3) : NA

Canada

Minnesota

0

100

200

Feet

1 inch = 200 feet

N

E

S

W

○

Milepost

Proposed L3R Centerline

Existing Utility

Existing Utility

Permanent Right-of-Way

Construction Right-of-Way/ATWS

Delineated Wetlands

PEM

Line 3 Replacement Project

Crossing Plan

ID# 9

Survey No. w-152n43w4-a

Unnamed Creek

Pennington County, Minnesota

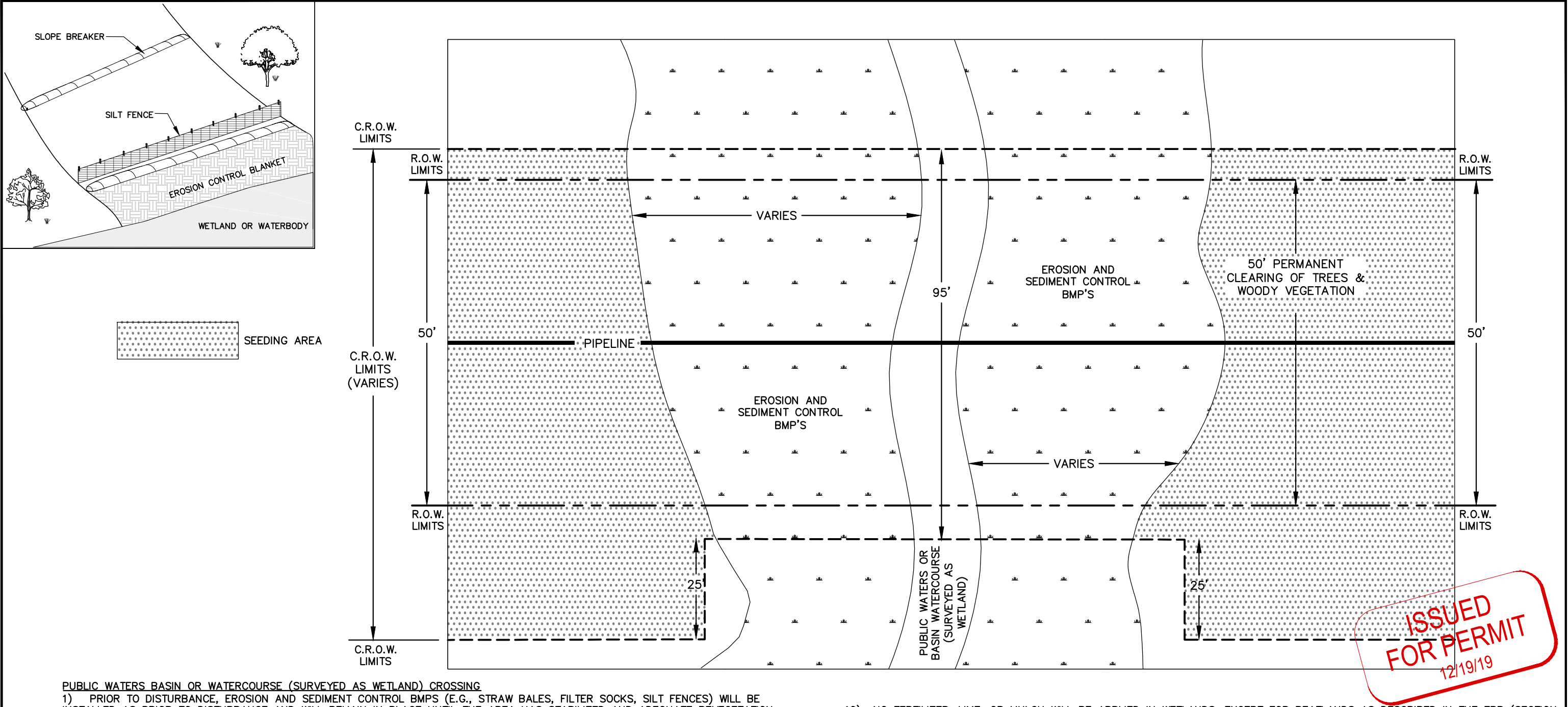
ENBRIDGE

October 2020

For Environmental Review Purposes Only

Source: (10/7/2020) Z:\Clients\E\_H\Enbridge\Line\_3\_Full\_Replacement\Permitting\State\Public\_Waters\2020\_08\Figures\Line3R\_Waters\_App\_Open\_Cut\_2020\_09.mxd






**PUBLIC WATERS BASIN OR WATERCOURSE (SURVEYED AS WETLAND) CROSSING**

- 1) PRIOR TO DISTURBANCE, EROSION AND SEDIMENT CONTROL BMP'S (E.G., STRAW BALES, FILTER SOCKS, SILT FENCES) WILL BE INSTALLED AS PRIOR TO DISTURBANCE AND WILL REMAIN IN PLACE UNTIL THE AREA HAS STABILIZED AND ADEQUATE REVEGETATION HAS ESTABLISHED (SECTION 3.4).
- 2) SUBSEQUENT TO PIPE INSTALLATION, BACKFILLING OF WETLAND TRENCHES WILL TAKE PLACE IMMEDIATELY, OR AS APPROVED BY THE EI.
- 3) IN AREAS WHERE TOPSOIL HAS BEEN SEGREGATED, THE SUBSOIL WILL BE REPLACED FIRST.
- 4) ROUGH GRADING WILL TAKE PLACE NO LATER THAN THE END OF THE WORKDAY FOLLOWING TRENCH BACKFILLING.
- 5) ENBRIDGE WILL BACKFILL THE TRENCH TO AN ELEVATION SIMILAR TO THE ADJACENT AREAS OUTSIDE THE DITCH LINE AND WILL ADD A SLIGHT CROWN OF APPROXIMATELY 3 TO 6 INCHES (DEPENDING ON SOIL TYPE) OVER THE BACKFILLED TRENCH TO ALLOW FOR SUBSIDENCE.
- 6) PERIODIC BREAKS IN THE CROWN WILL BE IMPLEMENTED TO ALLOW FOR NORMAL HYDROLOGIC FLOW ACROSS THE BACKFILLED TRENCH. CROWNING WILL NOT EXTEND BEYOND THE PREVIOUSLY EXCAVATED TRENCH LIMITS. AS THE BACKFILL MATERIAL SETTLES, THERE IS POTENTIAL THAT THE ORIGINAL CROWN MAY NOT COMPLETELY RECEDE TO PRE-CONSTRUCTION CONTOURS.
- 7) AFTER ROUGH GRADING, WHERE TOPSOIL HAS BEEN SEGREGATED, IT WILL BE SPREAD UNIFORMLY OVER THE TRENCH AREA FROM WHICH IT WAS REMOVED.
- 8) ADDITIONAL (FINAL) GRADING MAY OCCUR WHEN CONDITIONS ALLOW TO ENSURE THE DISTURBED AREA HAS BEEN RETURNED TO PRE-CONSTRUCTION CONDITIONS.
- 9) PERMANENT SLOPE BREAKERS WILL BE INSTALLED NEAR THE BOUNDARY BETWEEN THE WETLAND AND ADJACENT SLOPED APPROACHES TO PREVENT SEDIMENT FLOW INTO THE WETLAND AS DESCRIBED IN THE EPP (FIGURE 20):
  - a. PERMANENT SLOPE BREAKERS WILL BE INSTALLED TO MINIMIZE CONCENTRATED OR SHEET FLOW RUNOFF IN DISTURBED AREAS IN ACCORDANCE WITH THE FOLLOWING MAXIMUM ALLOWABLE SPACING UNLESS OTHERWISE SPECIFIED IN PERMIT CONDITIONS.

i. SLOPE (%) APPROXIMATE SPACING (FT)	
1. <5	250
2. >5-15	200
3. 15-25	150
4. >25	<100

- 10) NO FERTILIZER, LIME, OR MULCH WILL BE APPLIED IN WETLANDS, EXCEPT FOR PEATLANDS AS DESCRIBED IN THE EPP (SECTION 7.7.3.).
- 11) PERMANENT REVEGETATION SEEDING WILL TAKE PLACE IN ACCORDANCE WITH THE EPP (SECTION 7.7).
- 12) THE APPROPRIATE SEED MIX WILL BE DETERMINED USING THE RESULTS OF PRE-CONSTRUCTION WETLAND FIELD DELINEATIONS, HYDROLOGICAL CHARACTERISTICS AND SITE-SPECIFIC CONDITIONS.

								 LINE 3 REPLACEMENT PUBLIC WATERS BASIN OR WATERCOURSE (SURVEYED AS WETLAND) TYPICAL XING FINAL STREAM BANK STABILIZATION & EROSION CONTROL	
						DWN. BY: AJM	DATE 12/10/19		
						CHK. KEH			
C	ISSUED FOR PERMIT	AJM	12/19/19	KEH	KD	PROJ. ENGR. DG			
B	ISSUED FOR PERMIT	AJM	12/13/19	KEH	KD	PROJ. MGR. KD			
A	ISSUED FOR REVIEW	AJM	12/10/19	KEH	KD	CLIENT APP.			
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D			SCALE NTS	DWG. NO.

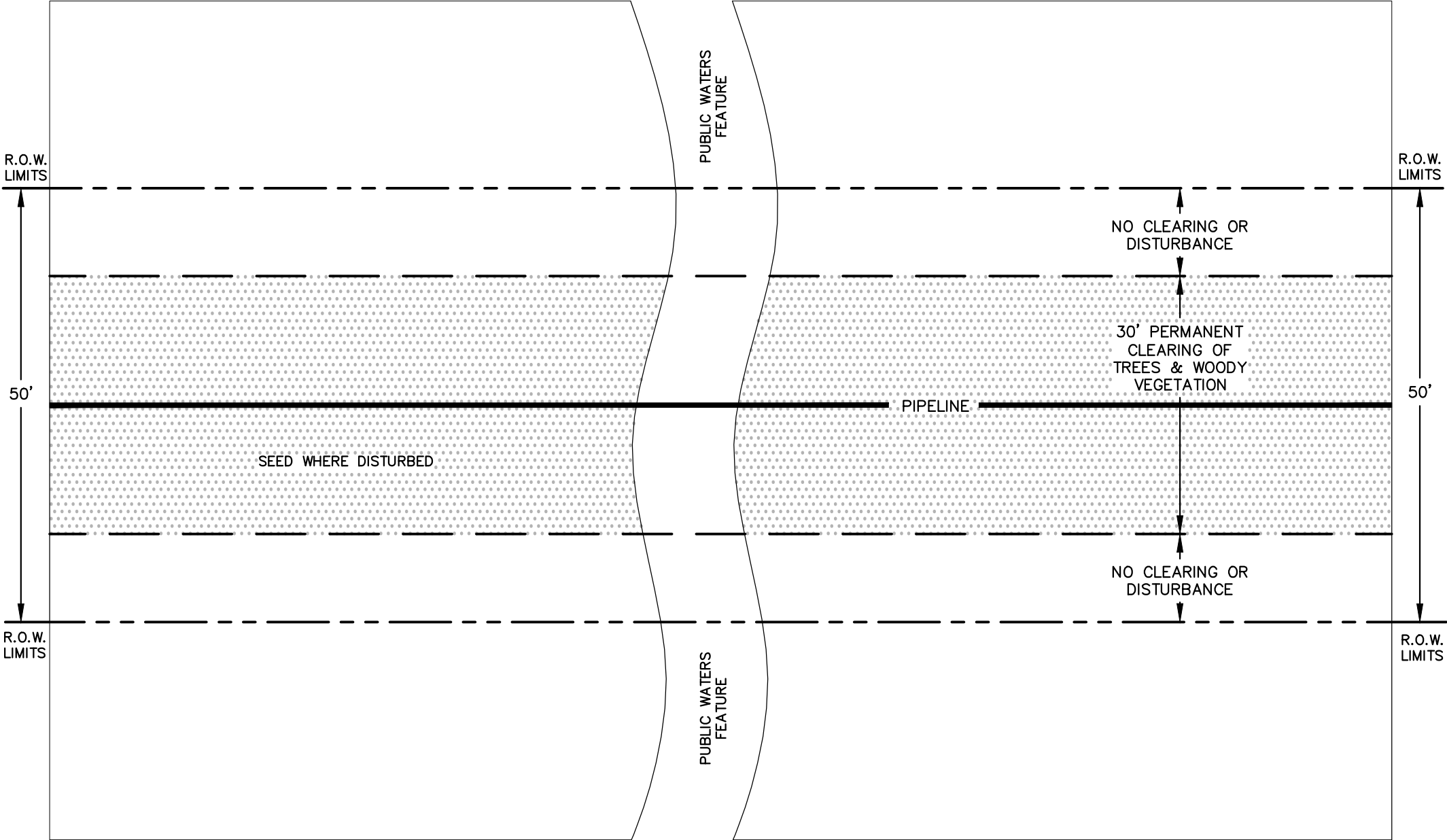
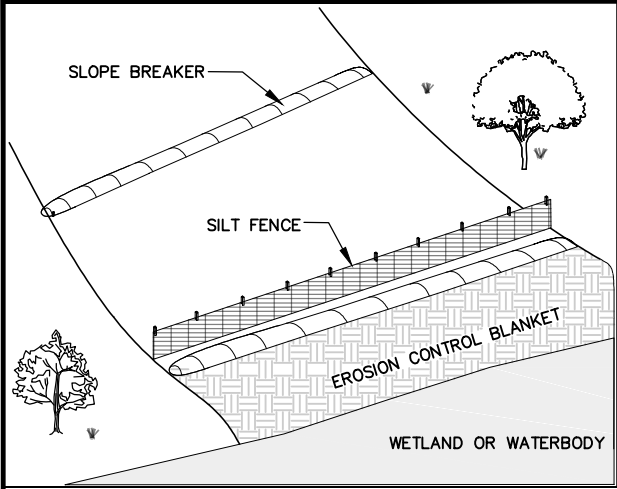


**MDNR ID No. 10: MP 869.7; Unnamed Creek (H-026-030-028)**









**PUBLIC WATERS FEATURE - HDD CROSSING**

- 1) DISTURBANCE OF THE ROW IS LIMITED TO THE 30--FOOT--WIDE CLEARING OF TREES AND WOODY VEGETATION AND IMPACTS RESULTING FROM TRAVEL LANES AND/OR BRIDGES.
- 2) ANY WETLAND OR WATERBODY BANK THAT IS DISTURBED WILL BE STABILIZED WITH EROSION AND SEDIMENT CONTROL BMP AND RESTORED TO AS NEAR AS PRACTICABLE TO PRE--CONSTRUCTION CONDITIONS.
- 3) PERMANENT REVEGETATION SEEDING OF DISTURBED WATERBODY BANKS WILL UTILIZE THE BWSR RIPARIAN SEED MIXES IN ACCORDANCE WITH THE EPP (SECTION 7.8).
- 4) PERMANENT REVEGETATION SEEDING OF DISTURBED WETLANDS WILL TAKE PLACE IN ACCORDANCE WITH THE EPP (SECTION 7.7).
- 7) IN DISTURBED WETLAND AREAS, THE APPROPRIATE SEED MIX WILL BE DETERMINED USING THE RESULTS OF PRE--CONSTRUCTION WETLAND IN DISTURBED WETLAND AREAS, HYDROLOGICAL CHARACTERISTICS, AND SITE--SPECIFIC CONDITIONS.

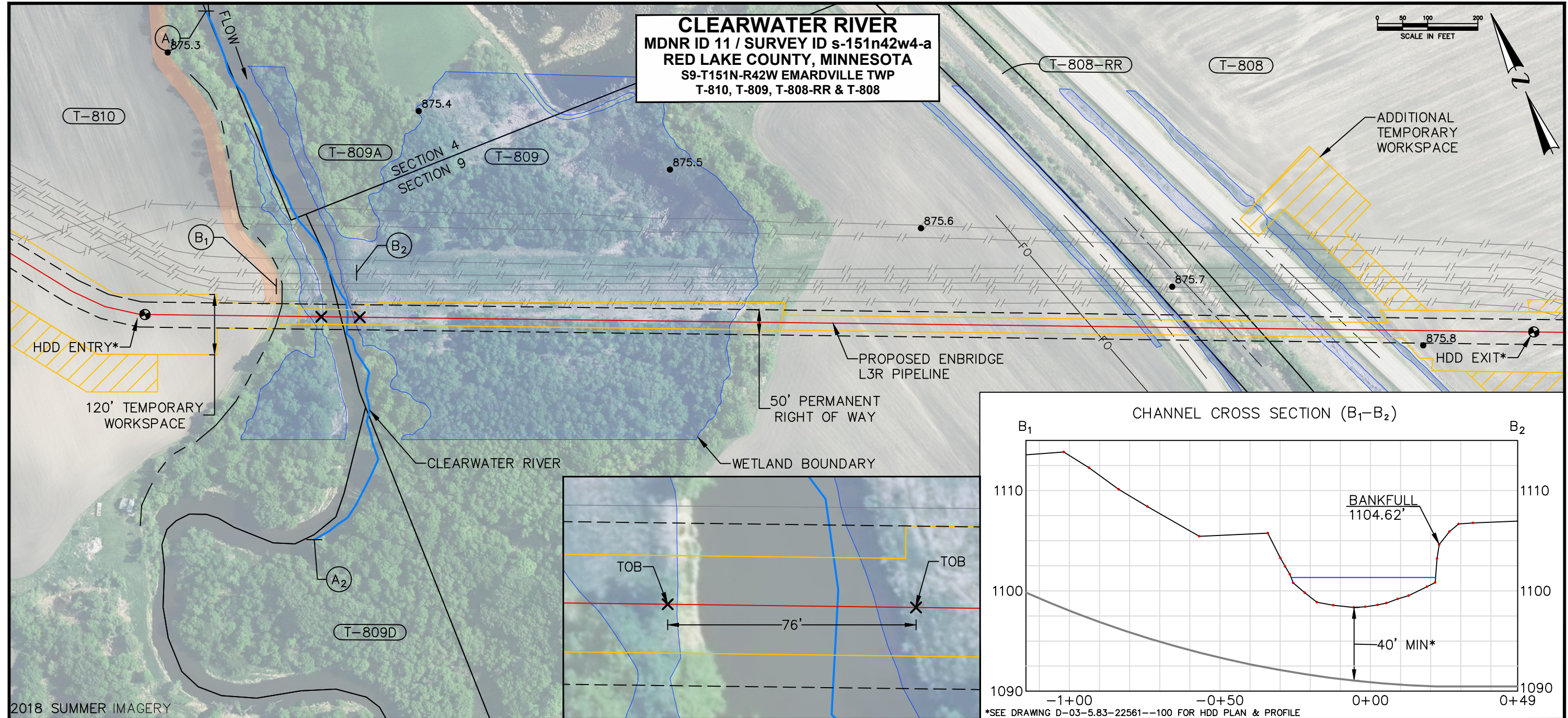
ISSUED  
FOR PERMIT  
12/13/19

						DWN. BY:	DATE	LINE 3 REPLACEMENT PUBLIC WATERS HDD CROSSING TYPICAL FINAL STREAM STABILIZATION & EROSION CONTROL	
						AJM	12/10/19		
						CHK.	KEH		
						PROJ. ENGR.	DG		
B	ISSUED FOR PERMIT		AJM	12/13/19	KEH	KD	PROJ. MGR.	KD	SCALE NTS
A	ISSUED FOR REVIEW		AJM	12/10/19	KEH	KD	CLIENT APP.		
NO.	REVISION--DESCRIPTION		BY	DATE	CHK'D	APP'D			DWG. NO.

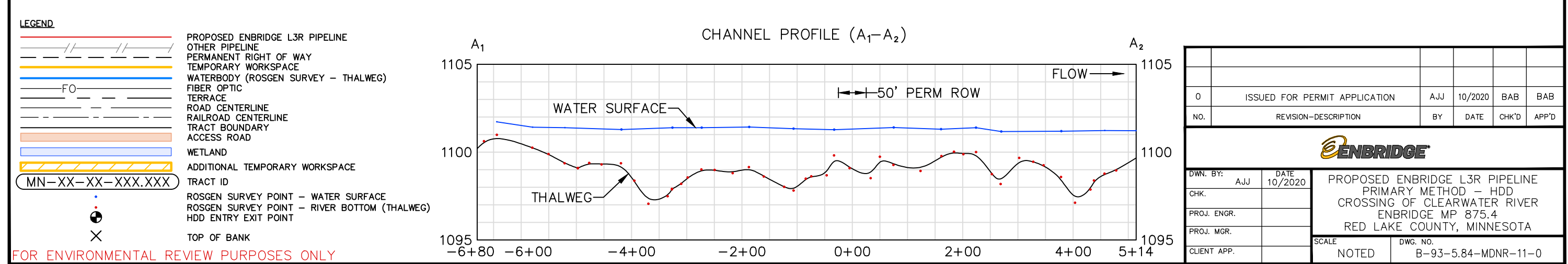


**MDNR ID No. 11: MP 875.4; Clearwater River (H-026-030-019)**

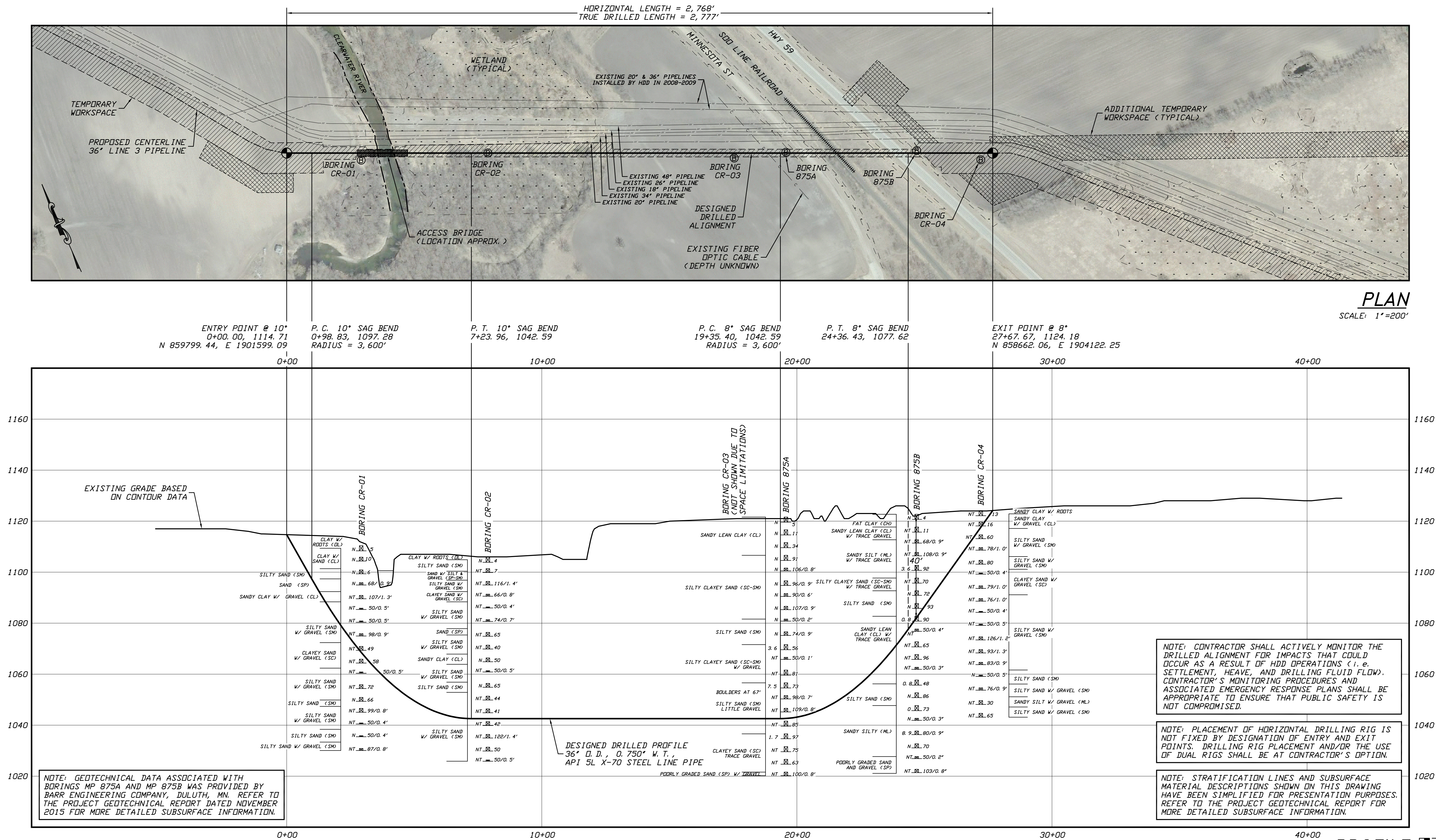




- NOTES**
1. NO FEMA DIGITAL FLOODPLAIN DATA AVAILABLE
  2. SOBS (O/H) OR NPC (S1-3): N/A
  3. MDNR REGION 1 PWI - COOL/WARM WATER FISHERY: MARCH 15 - JUNE 30. 24-HOUR SOIL STABILIZATION REQUIRED WITHIN 200 FEET DURING RESTRICTION.
  4. WHEN WORKING WITHIN "WORK IN WATER RESTRICTIONS", STABILIZE ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WITHIN 24 HOURS. STABILIZATION WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY/ TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD.







LINE 3 PIPELINE PROJECT

PLAN AND PROFILE  
36-INCH PIPELINE CROSSING OF THE CLEARWATER RIVER  
BY HORIZONTAL DIRECTIONAL DRILLING

LOCATION: RED LAKE COUNTY, MINNESOTA							
DRAWN	DATE	CHECKED	APPROVED	DRAWING NUMBER		REVISION	
JSP	05/19/17	DLB	JSP	D-03-5.83-22561-E-100		E	

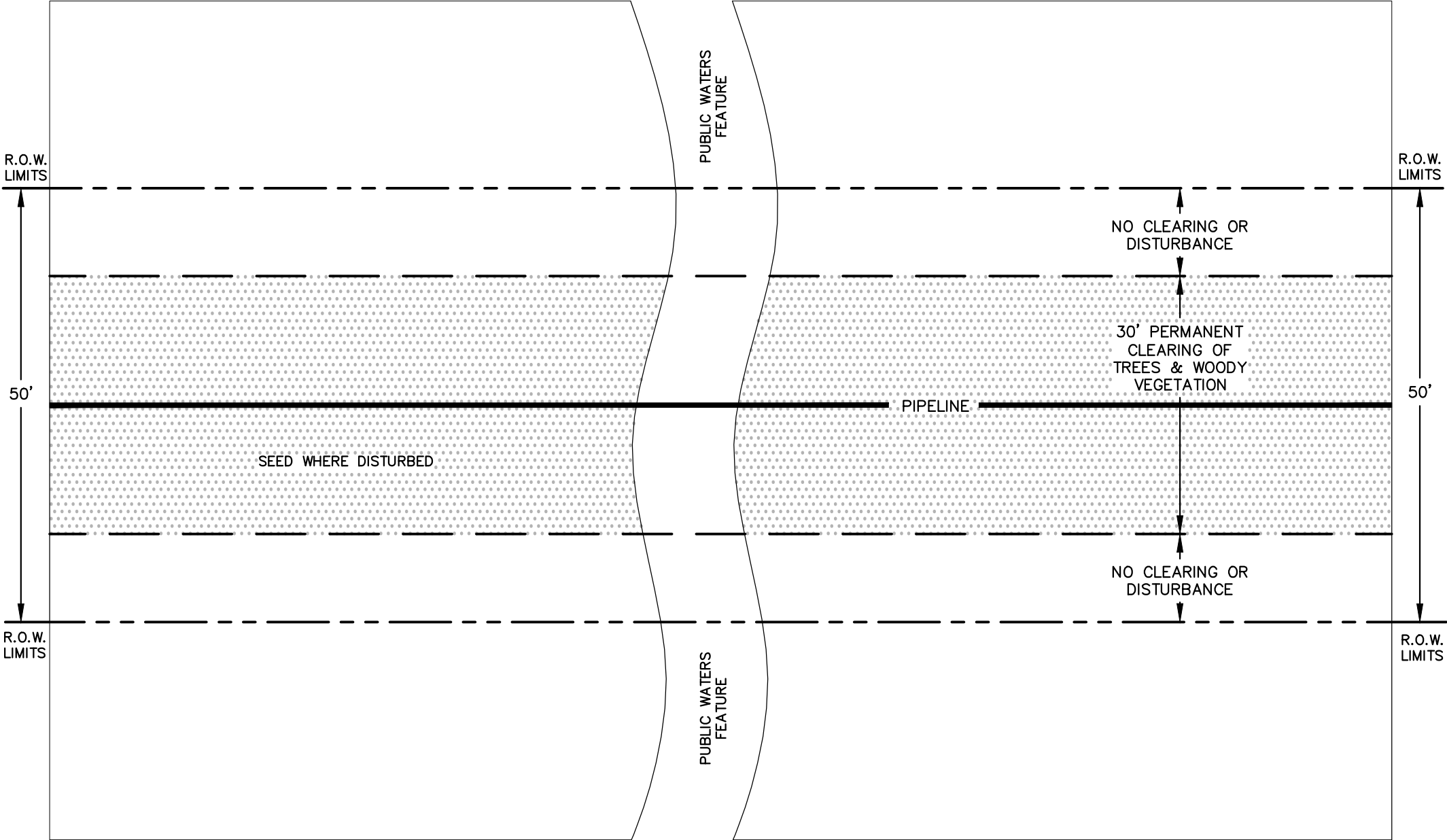
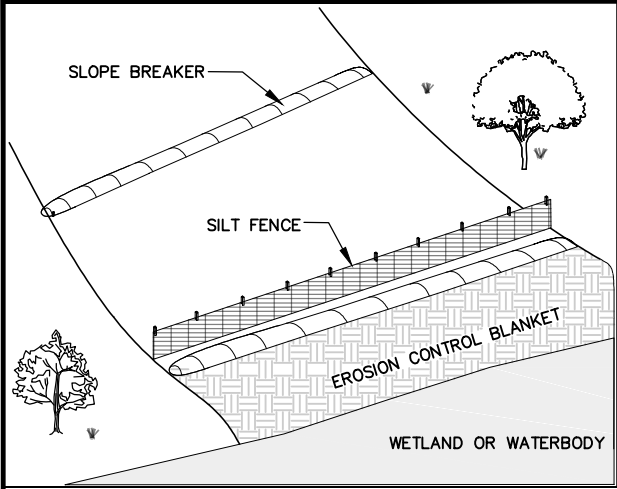
NO.	DATE	REVISION DESCRIPTION	BY	CHK'D	APP.
E	10/22/19	UPDATE WETLAND BOUNDARIES AND WORKSPACE	KWM	JSP	JSP
D	10/09/19	UPDATE WORKSPACE AND ADD BRIDGE	DLB	CDS	JSP
C	04/29/19	RELOCATE ENTRY POINT AS DIRECTED BY ENBRIDGE	KWM	DMP	JSP
B	09/29/17	UPDATE WORKSPACE	LKB	JSP	JSP
A	05/19/17	ISSUE FOR CONSTRUCTION	JSP	DLB	JSP

J.D.Hair & Associates, Inc.  
Consulting Engineers

2424 East 21st Street  
Suite 510  
Tulsa, Oklahoma 74114

PROJECT NO.  
Enbridge\1404  
MILEPOST  
875





**PUBLIC WATERS FEATURE - HDD CROSSING**

- 1) DISTURBANCE OF THE ROW IS LIMITED TO THE 30-FOOT-WIDE CLEARING OF TREES AND WOODY VEGETATION AND IMPACTS RESULTING FROM TRAVEL LANES AND/OR BRIDGES.
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- 3) PERMANENT REVEGETATION SEEDING OF DISTURBED WATERBODY BANKS WILL UTILIZE THE BWSR RIPARIAN SEED MIXES IN ACCORDANCE WITH THE EPP (SECTION 7.8).
- 4) PERMANENT REVEGETATION SEEDING OF DISTURBED WETLANDS WILL TAKE PLACE IN ACCORDANCE WITH THE EPP (SECTION 7.7).
- 7) IN DISTURBED WETLAND AREAS, THE APPROPRIATE SEED MIX WILL BE DETERMINED USING THE RESULTS OF PRE-CONSTRUCTION WETLAND IN DISTURBED WETLAND AREAS, HYDROLOGICAL CHARACTERISTICS, AND SITE-SPECIFIC CONDITIONS.

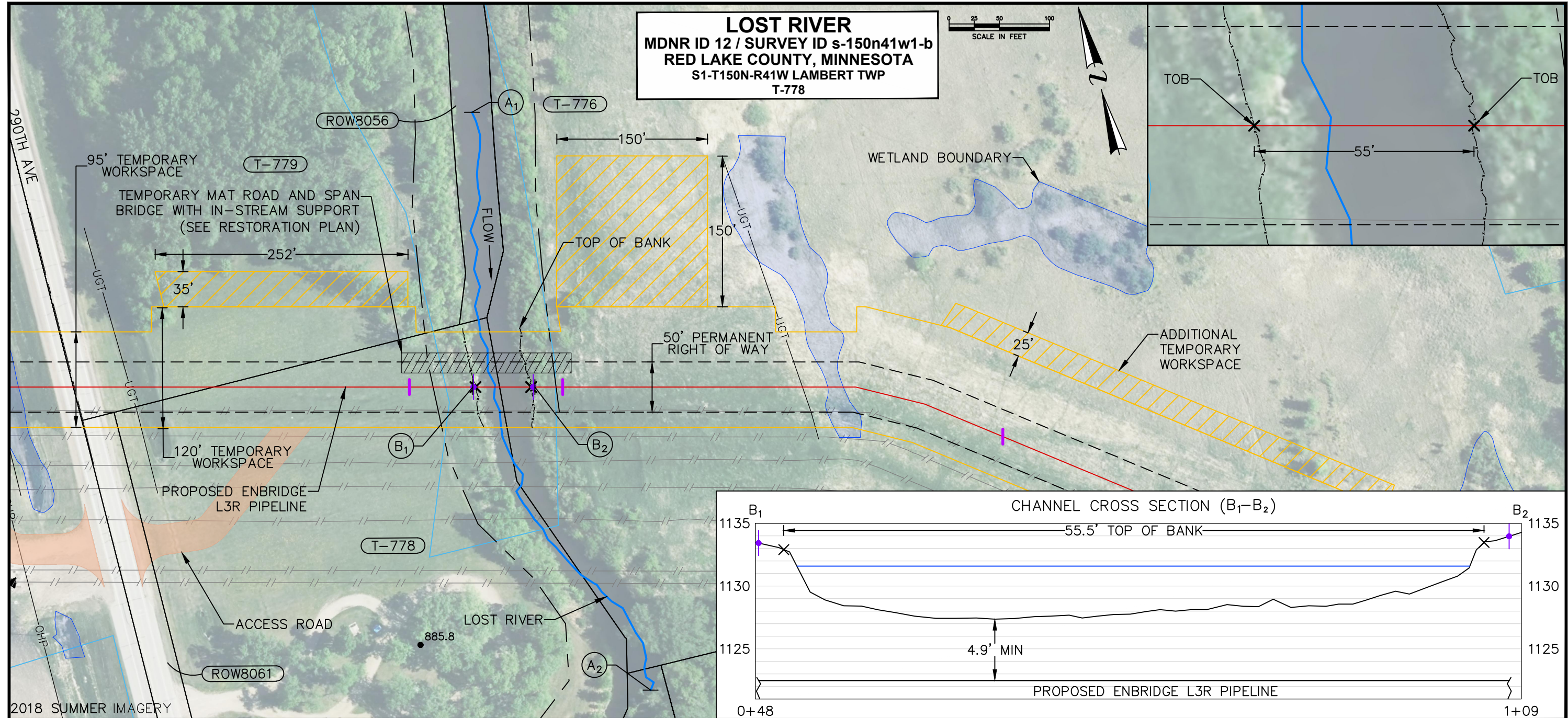
**ISSUED  
FOR PERMIT**  
12/13/19

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**MDNR ID No. 12: MP 885.8; Lost River (H-026-030-019-007)**



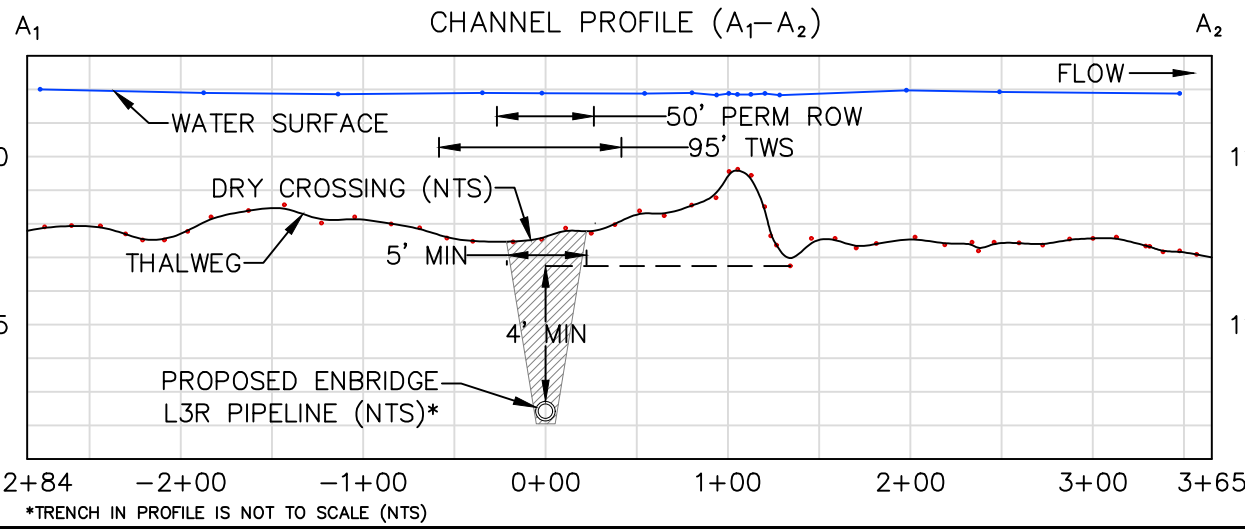


- NOTES**
- BANKFULL DATA NOT AVAILABLE
  - SOBS (O/H) OR NPC (S1-3): N/A
  - MDNR REGION 1 PWI - COOL/WARM WATER FISHERY: MARCH 15 - JUNE 30. 24-HOUR SOIL STABILIZATION REQUIRED WITHIN 200 FEET DURING RESTRICTION.
  - WHEN WORKING WITHIN "WORK IN WATER RESTRICTIONS", STABILIZE ALL EXPOSED SOIL AREAS

- LEGEND**
- PROPOSED ENBRIDGE L3R PIPELINE
  - OTHER PIPELINE
  - PERMANENT RIGHT OF WAY
  - TEMPORARY WORKSPACE
  - WATERBODY (ROSGEN SURVEY - THALWEG)
  - FEMA FLOODPLAIN
  - TRACT BOUNDARY
  - UGT
  - OHP
  - TERRACE
  - TEMPORARY MAT ROAD AND SPAN BRIDGE
  - WETLAND
  - ACCESS ROAD
  - ADDITIONAL TEMPORARY WORKSPACE
  - TRACT ID
  - ROSGEN SURVEY POINT - WATER SURFACE
  - ROSGEN SURVEY POINT - RIVER BOTTOM (THALWEG)
  - PROPOSED INCREASED DEPTH OF COVER EXTENT
  - TOP OF BANK
  - TRENCH BREAKER (LOCATIONS ARE APPROXIMATE)

WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WITHIN 24 HOURS. STABILIZATION WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY/ TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD.

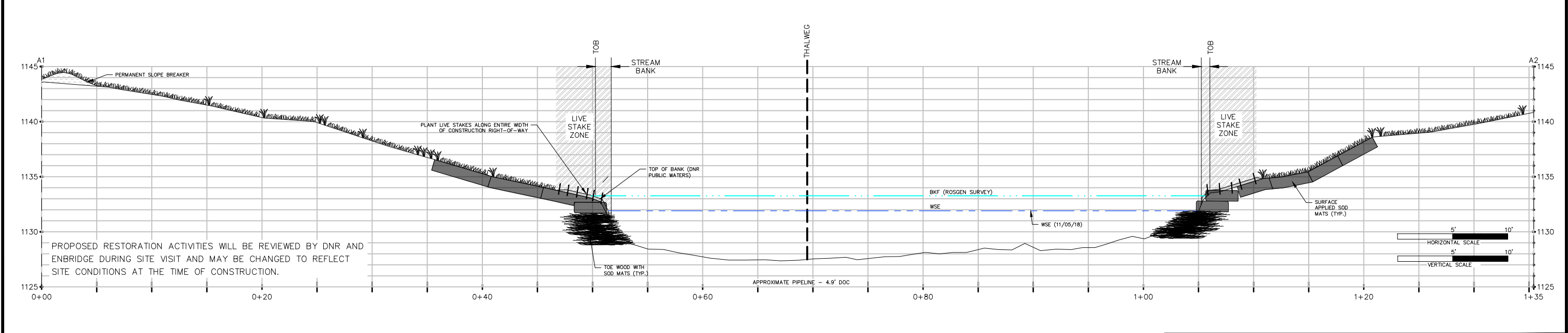
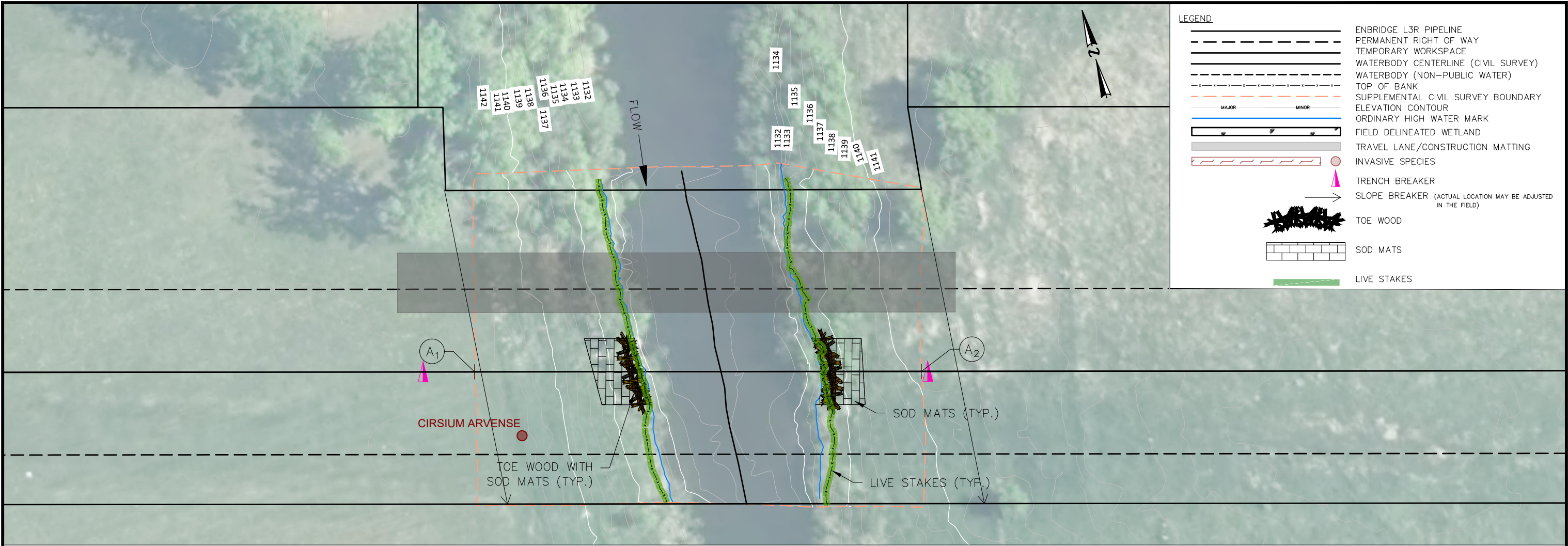
- CHANNEL CROSS SECTION NOTE:**
- CHANNEL LOCATIONS, DIMENSIONS, AND/OR ELEVATIONS ARE BASED ON 2020 TOPOGRAPHIC/BATHYMETRIC SURVEY(S), AND AS SUCH DO NOT REFLECT CHANGES TO THE CHANNEL THAT MAY HAVE OCCURRED SINCE THAT TIME.
  - DEPTH OF COVER AT CENTERLINE WAS DEVELOPED USING THE BOTTOM ELEVATION OF THE DEEPEST UPSTREAM OR DOWNSTREAM POOL WITHIN THE SURVEYED REACH, UNLESS OTHERWISE NOTED IN APPLICATION MATERIALS.
  - MEAN MEANDER BELT WIDTH: 702'
  - MEANDER WIDTH RATIO: 13.92



0	ISSUED FOR PERMIT APPLICATION	AJJ	10/2020	BAB	BAB
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
<b>ENBRIDGE</b>					
DWN. BY:	AJJ	DATE	10/2020	PROPOSED ENBRIDGE L3R PIPELINE PRIMARY METHOD - DRY CROSSING CROSSING OF LOST RIVER ENBRIDGE MP 885.8 RED LAKE COUNTY, MINNESOTA	
CHK.				SCALE: NOTED	
PROJ. ENGR.				DWG. NO. B-93-5.84-MDNR-12-0	
PROJ. MGR.					
CLIENT APP.					

FOR ENVIRONMENTAL REVIEW PURPOSES ONLY



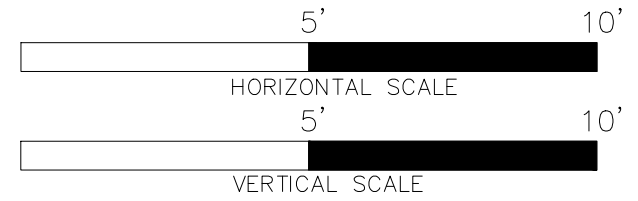
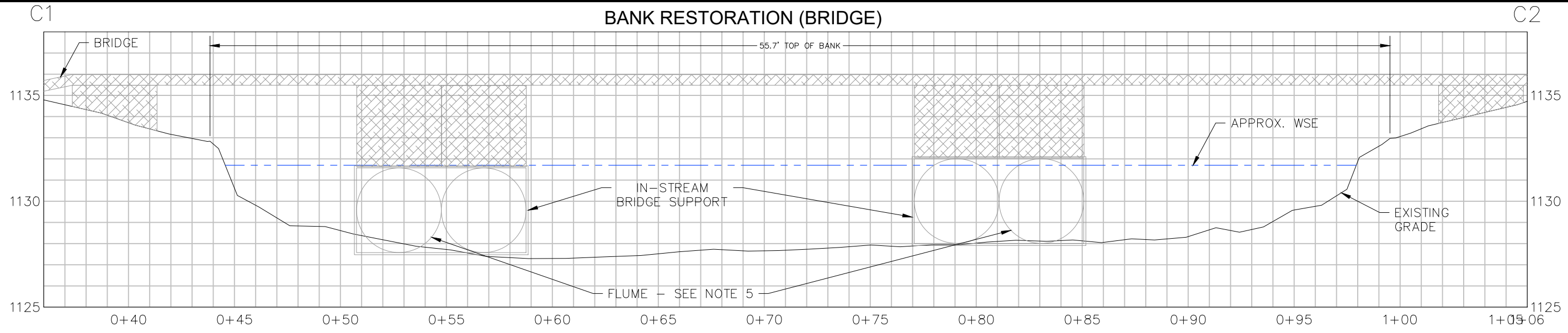


FEATURE ID	s-150n41w1-b; IFC ID: S-126.0	<b>NOTES</b> 1. CONSTRUCTION TIMING RESTRICTIONS 1.1.MDNR REGION 1 PWI - COOL/WARM WATER FISHERY: MARCH 15 - JUNE 30. 1.2. WHEN WORK OCCURS WITHIN "WORK IN WATER RESTRICTIONS", ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE STABILIZED WITHIN 24 HOURS DURING THE RESTRICTION PERIOD. STABILIZATION OF ALL EXPOSED SOILS WITHIN 200 FEET OF THE PUBLIC WATER'S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD 1.3. WILD RICE: APRIL 1 - JULY 15 2. WORK SHALL BE CONDUCTED IN ACCORDANCE WITH APPLICABLE STANDARDS IN ENBRIDGE'S EPP AND VMP FOR PUBLIC LANDS AND WATERS. THE SPECIFICATIONS WITHIN THIS SSRP MAY MODIFY OR REPLACE THESE STANDARDS. 3. SEE GENERAL NOTES PAGE FOR ADDITIONAL DETAIL. 4. INFORMATION REGARDING SEEDING SPECIFICATIONS, SEED BED PREPARATION TECHNIQUES, ETC. ARE DESCRIBED IN THE PLANTING PLAN CONTAINED WITHIN THE VMP. 5. TRENCH BREAKER LOCATION IS APPROXIMATE PENDING FIELD VERIFICATION (EPP SECTION 1.13)
CROSSING TYPE	DRY CROSSING	
PROPOSED RESTORATION <small>(SEE DETAILS FOR LIVE STAKING, TRANSPLANTS, AND SHRUB SPECIES IF APPLICABLE)</small>	BRUSH - TOE WOOD; SOD MATS	
WITHIN OR ADJACENT WETLAND	N/A	
BWSR SEED MIX	RIPARIAN S&W (34-261)	
DOMINANT WETLAND VEGETATION	1. PHALARIS ARUNDANCEA 3. FRAXINUS NIGRA 2. SALIX PETIOLARIS	
SOBS (O/H) or NPC (S1-3)	N/A	

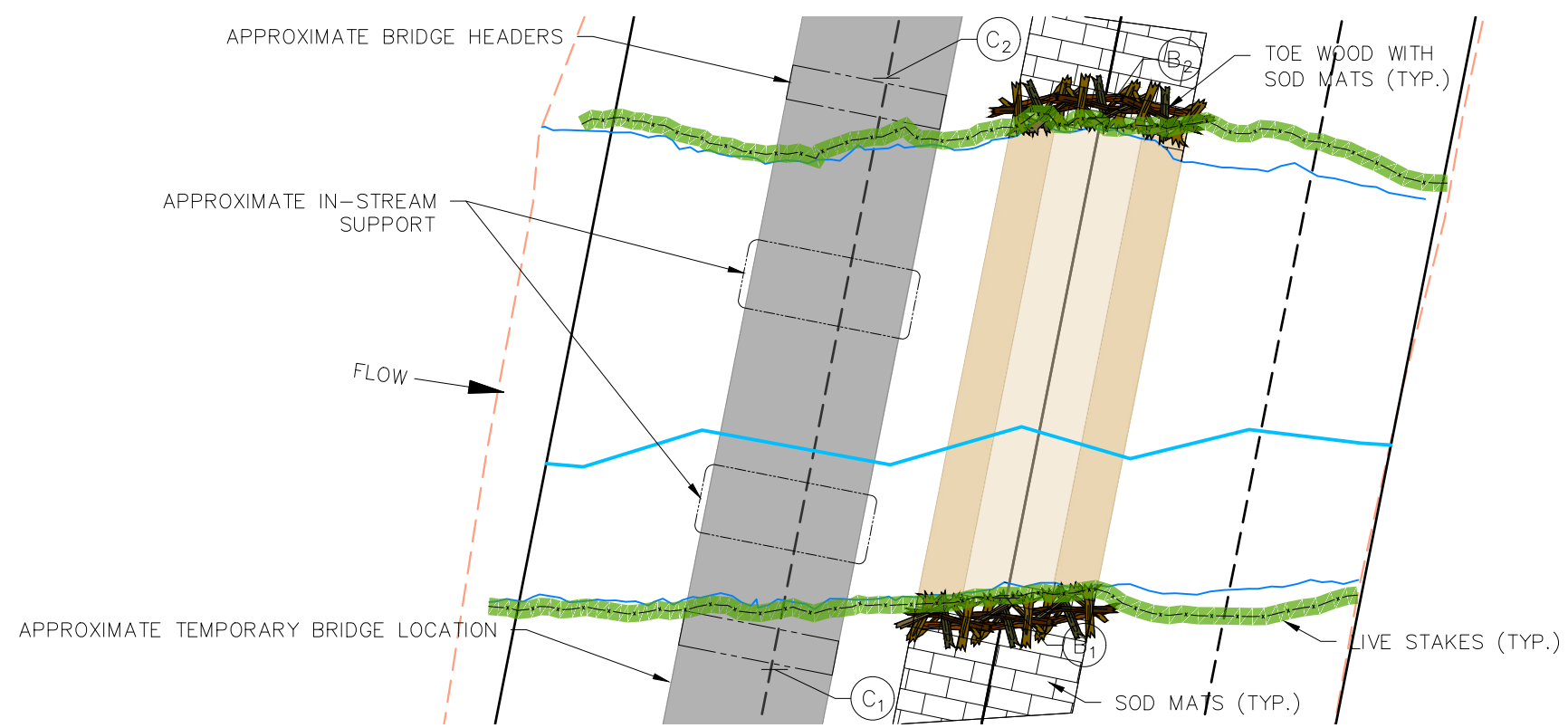
B	ISSUED FOR PERMITTING		10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN LOST RIVER- MP 885.8 - MDNR ID 12 RE-VEGETATION PLAN					
SCALE NOTED		DWG. NO. SSRP-885.8-001		PAGE NO. 1/7	



BANK RESTORATION (BRIDGE)



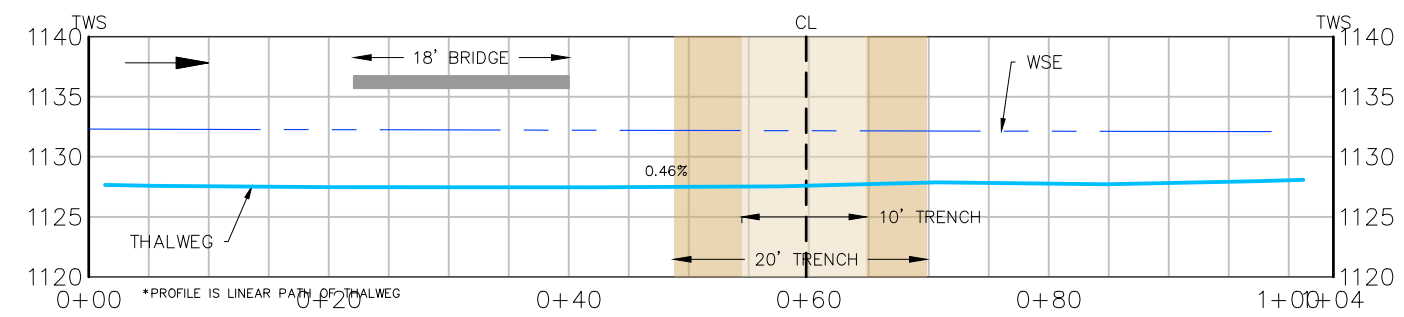
STREAMBED RESTORATION



- NOTES
1. TRANSITIONS BETWEEN EXISTING CHANNEL FEATURES (BED, BANK, FLOODPLAIN) AND PROPOSED RESTORED TRENCH CROSSING WILL BE SMOOTH AND EVENLY GRADED WITHOUT ABRUPT OR PROTRUDING OBSTRUCTIONS.
  2. PRIMARY FLOW IS LOCATED IN THE CENTER OF THE CHANNEL.
  3. PLACE MATS DIRECTLY ON TOP OF EXISTING VEGETATION TO AVOID OR MINIMIZE DISTURBANCE OF VEGETATION ON THE CHANNEL BANKS AND AT THE TOP OF THE STREAM BANK.
  4. SEE DETAIL SHEET FOR SPECIFIC RESTORATION METHODS AND DETAILS.
  5. FLUME SIZE MAY VARY BETWEEN 18-48 INCHES BASED ON SITE-SPECIFIC CONDITIONS AT THE TIME OF CONSTRUCTION, BUT MUST ALWAYS EXTEND ABOVE OHWM OR SURFACE WATER AT TIME OF CONSTRUCTION, WHICHEVER IS GREATER.
  6. MINIMIZE DISTURBANCE OF BED MATERIALS AND FEATURES DURING CONSTRUCTION OF THE TRENCH AND INSTALLATION AND REMOVAL OF IN-STREAM SUPPORT.
  7. BED AND/OR BANK MATERIALS TEMPORARILY ADJUSTED OR REMOVED DURING CONSTRUCTION SHALL BE PLACED IN THE APPROXIMATE ORIGINAL LOCATION DURING RESTORATION. MATERIALS SHALL BE FIELD ADJUSTED DURING PLACEMENT BASE ON THE OBSERVED FLOW PATH AT THE TIME OF CONSTRUCTION.
  8. ALIGNMENT OF IN-STREAM SUPPORT SHALL BE FIELD ADJUSTED BASED ON FLOW PATH TO PROTECT CHANNEL BANKS.
  9. SEE RESTORATION SHEET FOR B1-B2 CROSS SECTION.

LEGEND

ENBRIDGE L3R PIPELINE	ENBRIDGE L3R PIPELINE
PERMANENT RIGHT OF WAY	PERMANENT RIGHT OF WAY
TEMPORARY WORKSPACE	TEMPORARY WORKSPACE
WATERBODY - RIFFLE (ROSGEN SURVEY)	WATERBODY - RIFFLE (ROSGEN SURVEY)
WATERBODY - POOL (ROSGEN SURVEY)	WATERBODY - POOL (ROSGEN SURVEY)
WATERBODY - RUN (ROSGEN SURVEY)	WATERBODY - RUN (ROSGEN SURVEY)
WATERBODY - GLIDE (ROSGEN SURVEY)	WATERBODY - GLIDE (ROSGEN SURVEY)
MAJOR MINOR	MAJOR MINOR
CONTOUR (1' INTERVAL)	CONTOUR (1' INTERVAL)
TOP OF BANK	TOP OF BANK
ORDINARY HIGH WATER MARK	ORDINARY HIGH WATER MARK
FIELD DELINEATED WETLAND	FIELD DELINEATED WETLAND
TRAVEL LANE/CONSTRUCTION MATTING	TRAVEL LANE/CONSTRUCTION MATTING
TRENCH - 10'	TRENCH - 10'
TRENCH - 20'	TRENCH - 20'
TOE WOOD	TOE WOOD
SOD MATS	SOD MATS
LIVE STAKES	LIVE STAKES

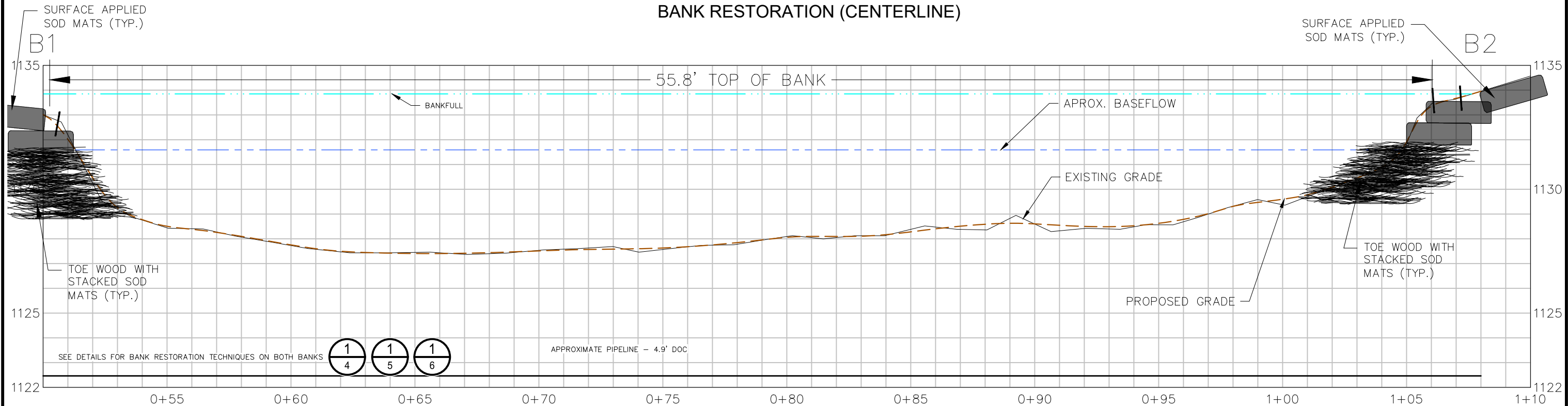


B	ISSUED FOR PERMITTING	10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020	
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN LOST RIVER - MP 885.8 - MDNR ID 12 STABILIZATION PLAN				
SCALE	DWG. NO.	SSRP-885.8-002	PAGE NO.	2/7





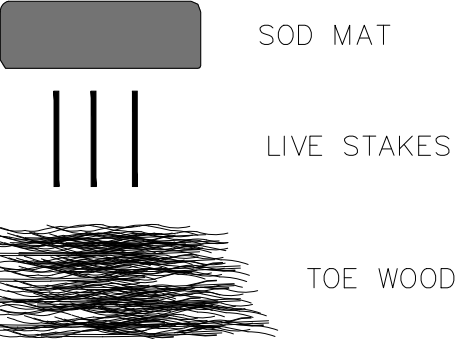
BANK RESTORATION (CENTERLINE)



- RESTORATION NOTES:
- GENERAL
1. REFER TO RESTORATION DETAIL SHEETS FOR ADDITIONAL INFORMATION RELATED TO PROPOSED RESTORATION MEASURES.
  2. REFER TO SITE PHOTOS FOR INFORMATION ON PRE-CONSTRUCTION CROSSING CONDITIONS AND TO PROVIDE ADDITIONAL GUIDANCE FOR RESTORATION EFFORTS.
- TOE WOOD
1. ROUGH GRADE CHANNEL BED FEATURES INCLUDING PLACEMENT OF SUBSTRATE.
  2. INSTALL FOOTER LOG(S) ALONG PROPOSED TOE OF SLOPE. FOOTER LOGS SHOULD BE ANGLED TO ALLOW FOR TOE ALIGNMENT TO GENERALLY MATCH THE EXISTING CURVE AND EVENLY TRANSITION FROM UPSTREAM TO DOWNSTREAM.
  3. PUSH FOOTER LOG INTO SOIL APPLY A SMALL AMOUNT OF GRAVEL OR STONE AS NEEDED TO PREVENT FLOATATION OF FOOTER LOG PRIOR TO PLACING WOODY DEBRIS.
  4. PLACE A LAYER WOODY DEBRIS IN 6" TO 8" LIFTS, APPLY 3"-4" GRAVEL AND/OR SOIL FILL AND COMPACT WITH EXCAVATOR BUCKET. WASH FILL MATERIAL INTO WOODY DEBRIS MATRIX WITH WATER FROM CHANNEL. APPLY ADDITIONAL LAYERS "AS NEEDED" TO REACH THE SPECIFIED TOE WOOD HEIGHT.
  5. PLACE STACKED SOD MATS ABOVE TOE WOOD. THE USE OF TRANSPLANTS OR FABRIC LIFTS MAY BE FIELD APPROVED BY ENBRIDGE IN CONSULTATION WITH MN DNR.
- SOD MATTING
1. REMOVE 15 LINEAR FEET OF VEGETATED MATS ON EITHER SIDE OF THE STREAM CROSSING USING ONSITE EQUIPMENT WHICH CAN UNDERCUT THE VEGETATION FOR REMOVAL. SMALL SHRUBS AND/OR TREES WITHIN THE SOD MATS ARE ACCEPTABLE AND SHOULD NOT BE REMOVED.
  2. DEPENDING ON THE LEVEL OF SATURATION AT THE TIME OF REMOVAL, IT MAY BE DIFFICULT TO OBTAIN INTACT CONSOLIDATED MATS, BUT GENERALLY THE NATIVE VEGETATION WILL BE RETAINED AND CAPTURED FOR PLACEMENT.
  3. SOD MATS CAN BE TRANSPLANTED DURING ANY SEASON.
  4. SOD MAT WILL BE PLACED ON CLEAR GROUND OR MATS WITHIN THE WORKSPACE.
  5. MONITOR MATS TO SUPPORT SURVIVABILITY; WATERING MAY BE NEEDED.
  6. PRIOR TO PLACEMENT OF SOD MATS FINISH GRADE CHANNEL BANK AND ADJACENT FLOODPLAIN APPLICATION AREA TO PROVIDE A SMOOTH AND EVEN SURFACE. SUBGRADE ELEVATION SHOULD ALLOW FOR THE FINISHED SOD SURFACE TO TRANSITION EVENLY WITH THE CHANNEL BANKS UPSTREAM AND DOWNSTREAM OF THE INSTALLATION AREA. AVOID ABRUPT CHANGES IN GRADE.
  7. VEGETATED MATS WILL BE RETURNED/SET IN PLACE WITH ONSITE EQUIPMENT.
    - a. SURFACE APPLIED SOD MATTING SHOULD BE PLACED WITH THE LONG SIDE PERPENDICULAR TO THE CHANNEL / FLOW.
    - b. STACKED SOD MATTING SHOULD BE PLACED WITH THE LONG SIDE PARALLEL TO THE CHANNEL / FLOW.
  8. IF SUFFICIENT SOD IS NOT AVAILABLE FROM THE STREAM BANKS ADDITIONAL SOD MAY BE TAKEN FROM THE ADJACENT CONSTRUCTION WORKSPACE.
  9. WHEN PLACING SOD MATS, DO NOT LEAVE LARGE GAPS BETWEEN EACH SOD MAT AS NON-NATIVE VEGETATION WILL QUICKLY ATTEMPT TO COLONIZE THESE VOIDS.
  10. WATER SOD MATS AFTER REPLACEMENT IF CONDITIONS ARE HOT AND DRY. DAMP AND/OR FROZEN SOD MATS DO NOT REQUIRE WATERING.
  11. THE TOP MAT AND/OR OTHER MATS CAN BE ANCHORED WITH A LIVE AND/OR DEAD STOUT STAKE TO ENSURE THAT IT DOES NOT MOBILIZE DURING A FLOOD EVENT BEFORE THE ROOTS HAVE ESTABLISHED.
  12. THE VEGETATED MATS WILL BE REPLACED AS SOON AS PRACTICAL FOLLOWING BACKFILLING OF THE TRENCH AND STABILIZED PER THE TIMING REQUIREMENTS DESCRIBED IN SECTION 1.9.1 OF THE EPP.

- LIVE STAKING
1. CLEANLY REMOVE ALL SIDE BRANCHES AND THE TOP GROWTH, AND FASHION THE CUTTINGS INTO LIVE STAKES AS DEPICTED IN THE DETAIL DRAWING. AN OPTION DURING PREPARATION IS TO PAINT AND SEAL THE TOP OF THE LIVE STAKE BY DIPPING THE TOP 1-2 INCHES INTO A 50-50 MIX OF LIGHT-COLORED LATEX PAINT AND WATER. SEALING THE TOP OF STAKE WILL REDUCE THE POSSIBILITY OF DESICCATION, ASSURE THE STAKES ARE PLANTED WITH THE TOP UP, AND MAKES THE STAKES MORE VISIBLE FOR SUBSEQUENT PLANTING EVALUATIONS.
  2. USE A PUNCH BAR OR HAND AUGER TO CREATE A NARROW PILOT HOLE, PERPENDICULAR TO THE SLOPE, THROUGH ANY EROSION CONTROL MATTING, RIP RAP, OR OTHER REVETMENT, FILTER FABRIC, ETC., IF PRESENT, AND DEEP ENOUGH TO INTERCEPT THE WATER TABLE. THE HOLE SHOULD BE ONLY AS LARGE AS NECESSARY TO INSTALL THE LIVE STAKE WITHOUT DAMAGE WHILE ENSURING THE HIGHEST AMOUNT OF STAKE-SOIL CONTACT.
  3. INSERT THE POINTED END OF THE LIVE STAKE INTO THE PILOT HOLE. TAMP INTO THE GROUND WITH A DEAD BLOW HAMMER TAKING CARE NOT TO SPLIT OR OTHERWISE DAMAGE THE LIVE STAKE. USE WATER, SOIL BACKFILL, TAMPING, ETC. TO ACHIEVE GOOD SOIL-TO-STEM CONTACT AND REMOVE AIR POCKETS.
  4. USE THE EXCAVATOR BUCKET OR PUMP TO APPLY WATER FROM THE CHANNEL AFTER INSTALLATION.
  5. ALL CUTS SHOULD BE CLEAN AND SMOOTH. NO CRACKED OR SPLIT LIVE STAKES SHOULD BE USED. IF THEY SPLIT DURING TAMPING, THEY SHOULD BE CUT BELOW THE CRACK OR REPLACED.
  6. THE SPECIFIED NUMBER OF LIVE STAKES SHOULD BE INSTALLED INTO THE SOIL AND PROTRUDE ABOVE THE SOIL AND ANY SOD MATTING, MULCHING, EROSION CONTROL MATTING, RIP RAP, OR OTHER REVETMENT.
  7. LIVE STAKE SHOULD NOT MOVE AFTER INSTALLATION; ENSURING IT IS IN FIRM CONTACT WITH THE SOIL.
  8. IT IS IMPORTANT TO ENSURE THAT THE UPSTREAM AND DOWNSTREAM ENDS OF THE LIVE STAKING A MERGE SMOOTHLY INTO THE UNDISTURBED BANK BEYOND THE PROJECT AREA. THE RATE OF INSTALLING LIVE STAKES SHOULD TAPER OFF GRADUALLY TO BLEND IN WITH THE EXISTING VEGETATION.

LEGEND



	COMMON NAME	SCIENTIFIC NAME
LIVE STAKE SPECIES	BANKERS WILLOW	SALIX COTTETII
	SANDBAR WILLOW	SALIX EXIGUA
	ELDERBERRY	SAMBUCUS CANADENSIS
	HIGH BUSH CRANBERRY	VIBURNUM OPOLUS (TRILOBUM)
	RED-OSIER DOGWOOD	CORNUS STOLONIFERA
	SILKY DOGWOOD	CORNUS AMOMUM
TRANSPLANTS	NONE	NONE
SHRUBS	BUTTONBUSH	(CEPHALANTHUS OCCIDENTALIS)
	SILKY DOGWOOD	(CORNUS AMOMUM)
	GRAY DOGWOOD	(CORNUS FOEMINA)
	RED-OSIER DOGWOOD	(CORNUS STOLONIFERA)
	ELDERBERRY	(SAMBUCUS CANADENSIS)
	NANNYBERRY	(VIBURNUM LENTAGO)

1. LIVE STAKE SPECIES SELECTION: USE AT LEAST THREE (3) SPECIES WITH NO MORE THAN 60% OF ANY ONE (1) SPECIES; ALTERNATIVE SPECIES MAY BE SELECTED BASED ON SITE CONDITIONS AND AVAILABILITY. ALTERNATIVE SPECIES SHOULD BE REVIEWED AGAINST USDA DATA BASE FOR MN NATIVE SPECIES.
2. (WHERE APPLICABLE) TRANSPLANTS AND/OR CONTAINER SHRUBS MAY BE SUBSTITUTED FOR LIVE STAKES BASED ON SITE SPECIFIC CONDITIONS.
  - 2.1. CONTAINER PLANTED SHRUBS ARE RECOMMENDED TO BE 18"- 24"IN SIZE.
  - 2.2. CONTAINER PLANTED SHRUBS SPACING: 1 SHRUB PER 3 LINEAR FEET OF BANK, ADDITIONAL ROWS SPACED 3 FEET APART, AND 3-5 SHRUBS OF THE SAME SPECIES.
3. (WHERE APPLICABLE) TRANSPLANTS SHOULD BE EXCAVATED WITH A MINIMUM OF 12" SOIL, DIAMETER EQUAL TO PLANT DRIP LINE, AND LOOSE UNBOUND BALL.
4. LIVE STAKE SPACING (WHERE APPLICABLE): STAGGER 1 STAKE PER 3 LINEAR FEET OF STREAM BANK IN 2 - 3 ROWS SPACED 1 FOOT APART. PLACE FIRST ROW ALONG TOP OF BANK (BANKFULL) AND THE LOWER ROW(S) BETWEEN THE TOP OF BANK AND OHWM

1 VEGETATION CHART

A	ISSUED FOR REVIEW	MJT	08/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN LOST RIVER - MP 885.8 - MDNR ID 12 SITE SPECIFIC DETAILS					
SCALE	DWG. NO.	PAGE NO.			
NOTED	SSRP-885.8-003	3/7			



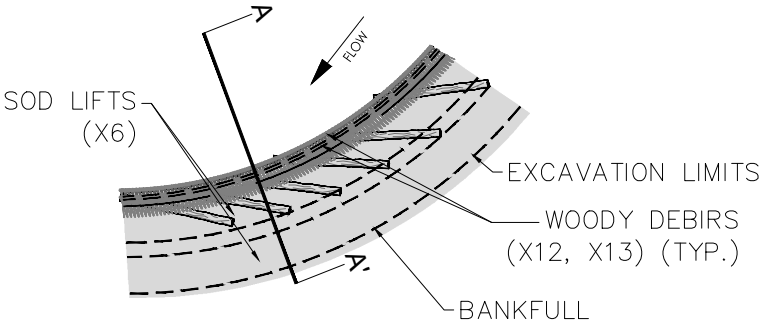
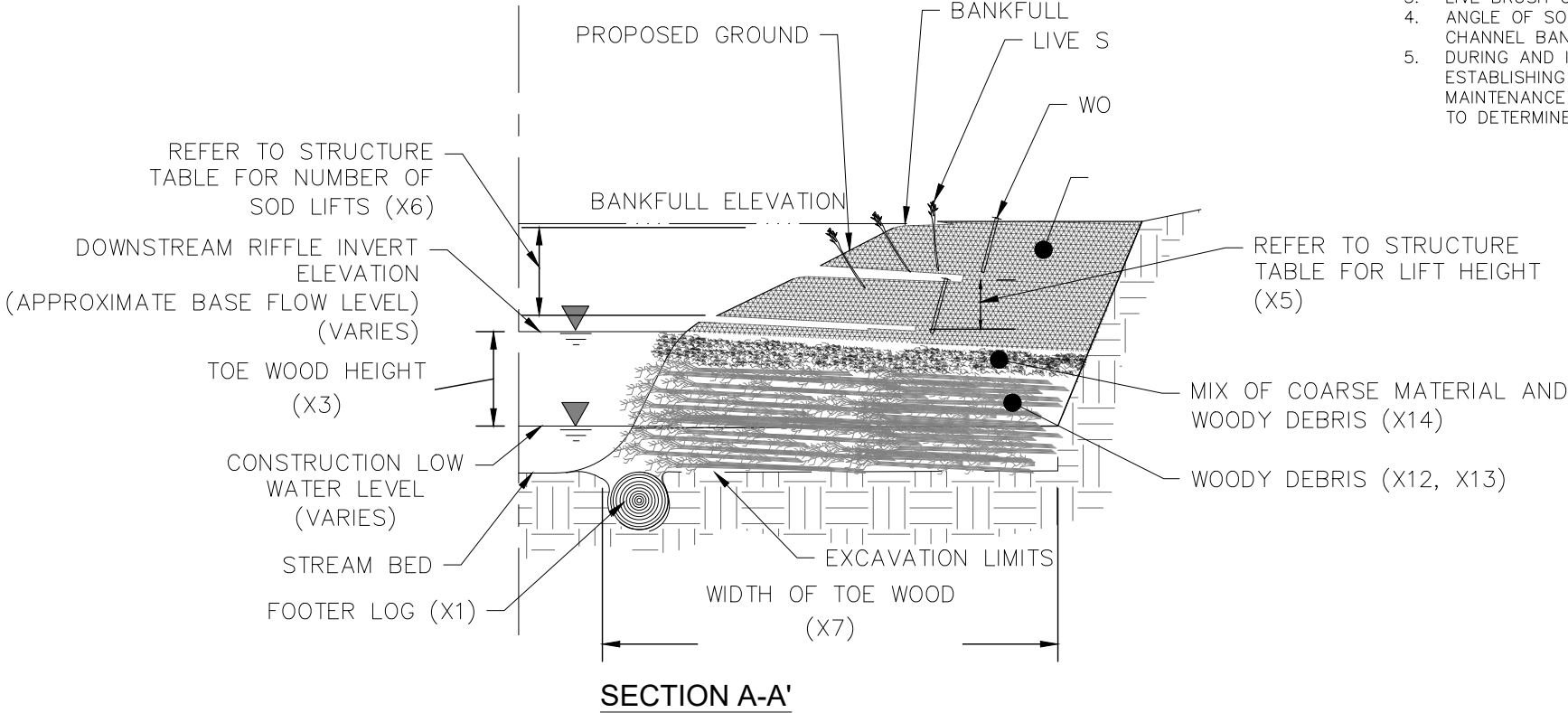


TOE WOOD DIMENSIONS			
VARIABLE	VALUE	TYPICAL UNIT	DESCRIPTION
X1	6.0 - 10.0	IN.	FOOTER LOG DIAMETER
X2	8.0 - 12.0	FT.	FOOTER LOG LENGTH
X3	24 - 36	IN.	TOE WOOD HEIGHT
X4	SEE SHEET 3	N/A	MATCH TYPICAL SECTION
X5	SEE SHEET 5	FT.	SOD LIFT HEIGHT
X6	2 - 3	#	SOD LIFTS
X7	8.0 - 10.0	FT.	TOE WOOD WIDTH
X8	3.0 - 6.0	FT.	SOD LIFT WIDTH
X9	24.0	IN.	WOOD STAKE LENGTH
X10	4.0	IN.	WOOD STAKE WIDTH (TOP)
X11	0.5	IN.	WOOD STAKE WIDTH (BOTTOM)
X12	1/2 - 3.0	IN.	WOODY DEBRIS DIAMETER
X13	8.0 - 12.0	FT.	WOODY DEBRIS LENGTH
X14	3" MINING GRAVEL WITH FINES	%	SELECT COARSE MATERIAL BACKFILL (BY VOLUME)



TOE WOOD EXAMPLE

- NOTES:
- WOODY MATERIAL OF APPROPRIATE SIZE CONSISTING OF LOGS, TRUNKS, LIMBS, BRANCHES, AND SMALLER WOODY DEBRIS INCLUDING TOPS OR SLASH. ON-SITE WOODY MATERIAL IS PREFERRED.
  - WOODY DEBRIS SHOULD BE GREEN OR RELATIVELY GREEN AND MAY CONSIST OF HARDWOODS, CONIFERS, OR A COMBINATION OF BOTH.
  - LIVE BRUSH OR OTHER BANK VEGETATION MAY BE INCORPORATED.
  - ANGLE OF SOD MAT SURFACE SHALL MATCH THE PROPOSED CHANNEL CROSS SECTION AND PROVIDE A SMOOTH AND EVEN CHANNEL BANK SURFACE BETWEEN UPSTREAM AND DOWNSTREAM BANKS.
  - DURING AND IMMEDIATELY AFTER CONSTRUCTION, BANK SLOPES ABOVE THE WOOD TOE ARE VULNERABLE TO EROSION. ESTABLISHING VEGETATION OR OTHER COVER MATERIAL AS SOON AS POSSIBLE WILL HELP REDUCE EROSION. ADDITIONAL MAINTENANCE IS NOT EXPECTED ONCE VEGETATION ESTABLISHES. INSPECTION AFTER LARGE FLOW EVENTS MAY BE ADVISABLE TO DETERMINE IF ANY MATERIAL MOVEMENT OR UNEXPECTED SCOUR HAS OCCURRED.



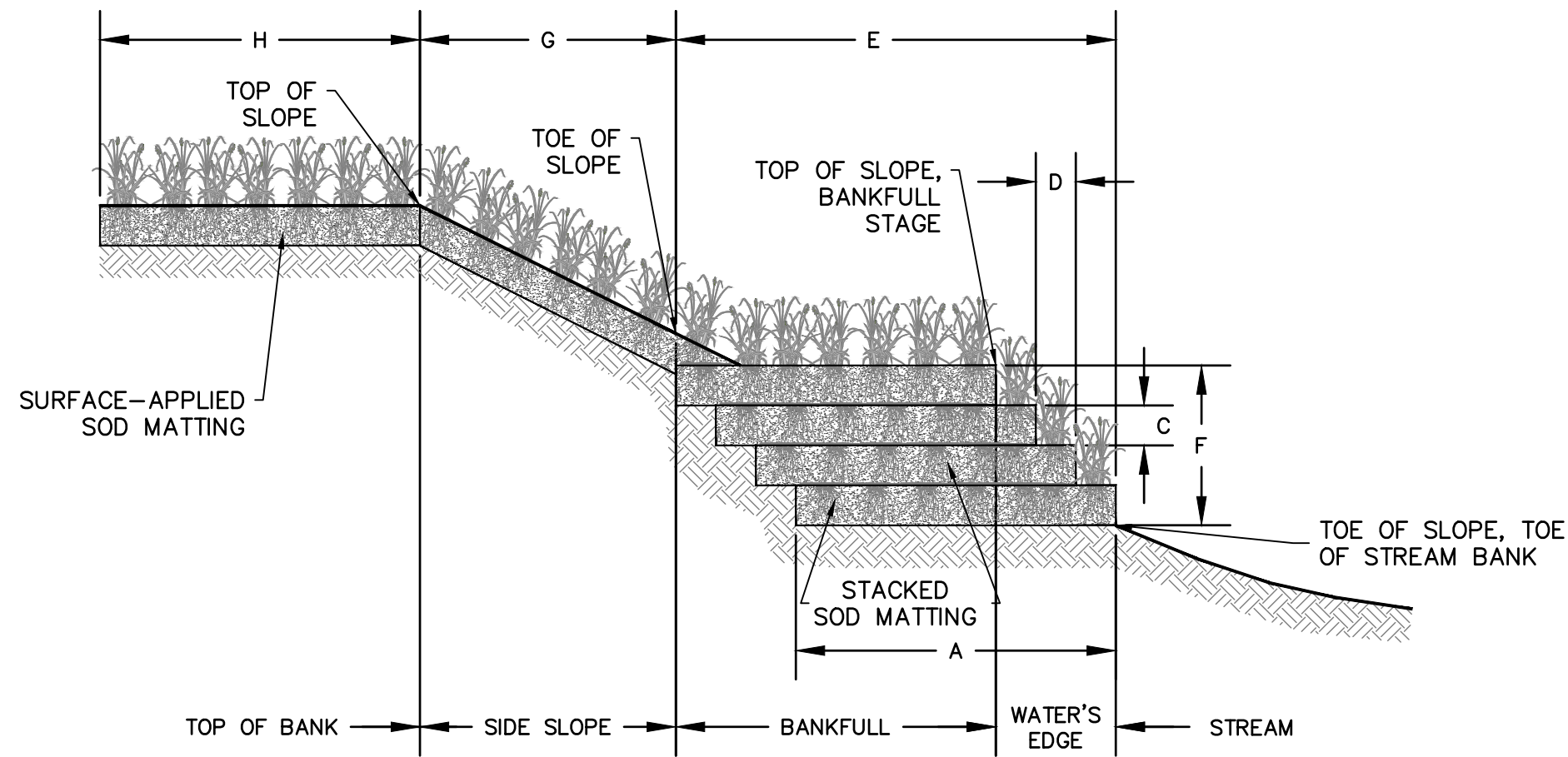
PLAN VIEW AT BANKFULL ELEVATION

1 TOE WOOD DETAIL

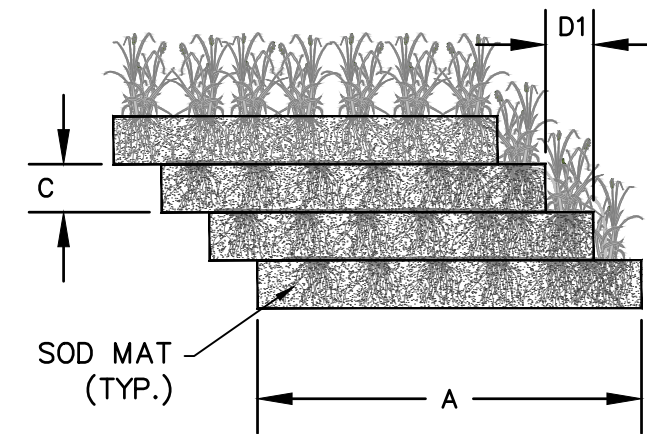


A	ISSUED FOR REVIEW	MJT	08/2020		
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ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN LOST RIVER - MP 885.8 - MDNR ID 12 SITE SPECIFIC DETAILS					
SCALE	DWG. NO.	PAGE NO.			
NOTED	SSRP-885.8-004	4/7			

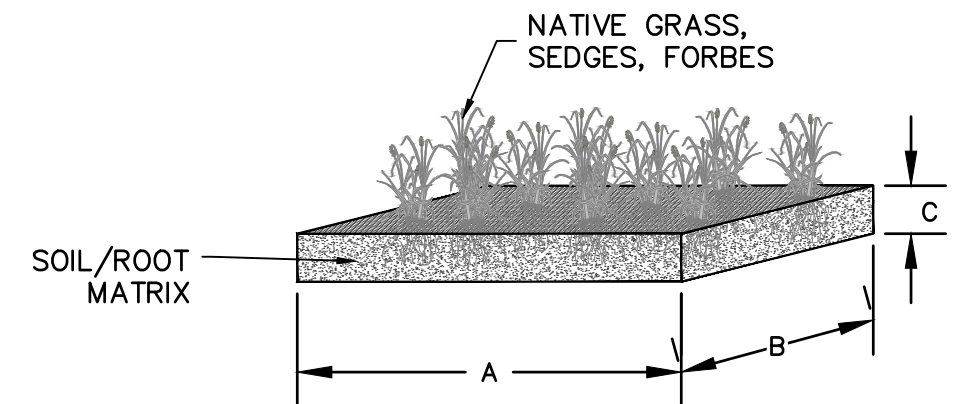




**CROSS SECTION**



**STACKED SOD MATTING DETAIL**



**SOD MAT DETAIL**

DIMENSION <sup>1</sup>	NAME	TYPICAL UNIT	VALUE	DESCRIPTION
A	SOD MAT WIDTH	FEET	3 – 4	WIDTH OF INDIVIDUAL SOD MAT.
B	SOD MAT LENGTH	FEET	3 – 6	LENGTH OF INDIVIDUAL SOD MAT.
C	SOD MAT THICKNESS	INCHES	12	THICKNESS OF INDIVIDUAL SOD MAT.
D	STACKED SOD MAT SETBACK	INCHES	VARIES	THE DISTANCE BETWEEN THE EDGES OF SOD MATS STACKED TO FORM A SLOPE
E	WIDTH OF STACKED SOD MATS	FEET	10 – 20	WIDTH OF A BANK CREATED BY STACKED SOD MATS
F	HEIGHT OF STACKED SOD MATS	FEET	2 – 3	HEIGHT OF A SLOPE CREATED BY STACKED SOD MATS
G	WIDTH OF SURFACE- APPLIED SOD MATS	FEET	10 – 20	WIDTH OF A SLOPE STABILIZED WITH SURFACE-APPLIED SOD MATS
H	TOP OF BANK SOD MATTING DISTANCE	FEET	15 MIN	DISTANCE SOD MATTING IS INSTALLED ON THE TOP OF BANK

NOTES:

1. DIMENSION LABELS ARE REFERENCED IN THE DETAIL DRAWINGS.



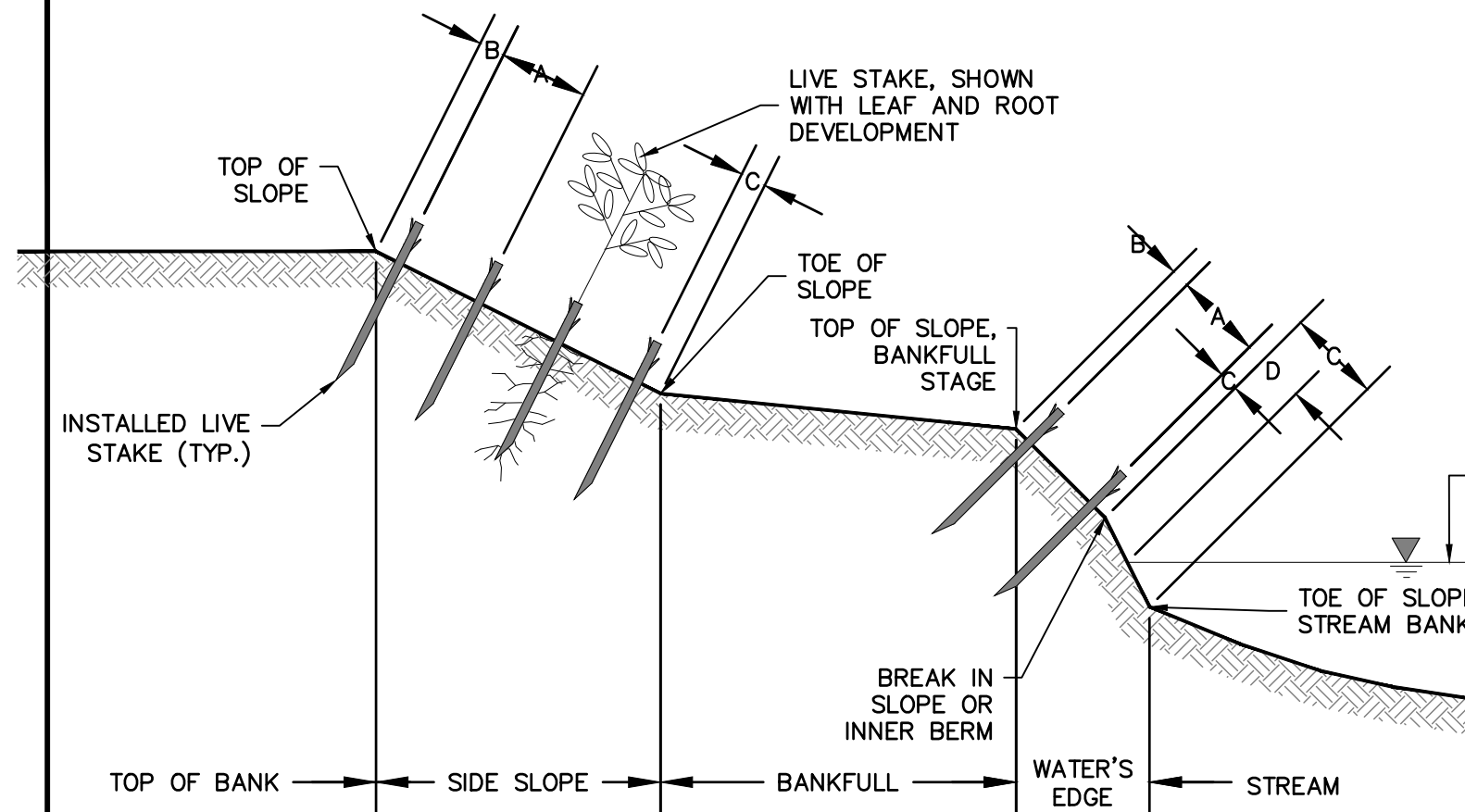
**SOD MAT EXAMPLES**

B	ISSUED FOR PERMITTING		10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN LOST RIVER – MP 885.8 – MDNR ID 12 SITE SPECIFIC DETAILS					
SCALE	DWG. NO.	PAGE NO.			
NOTED	SSRP-885.8-005	5/7			

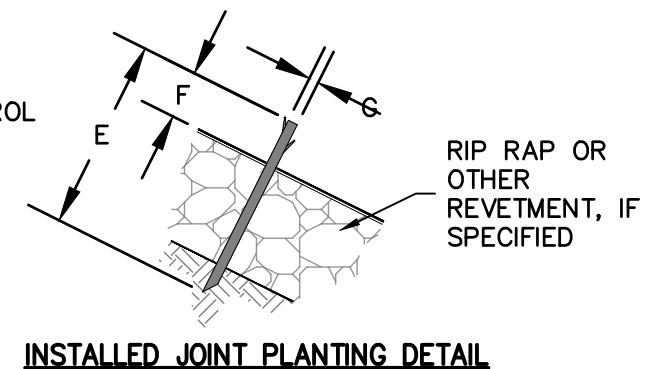
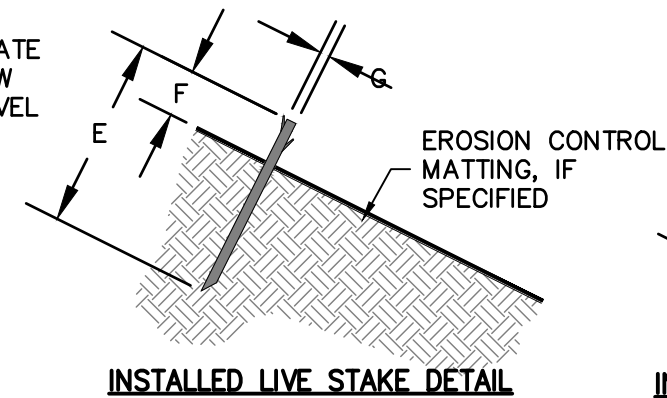
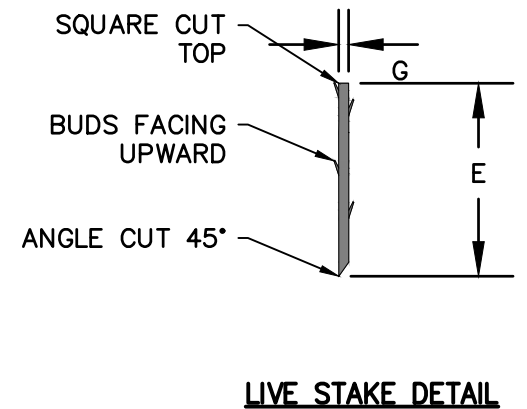
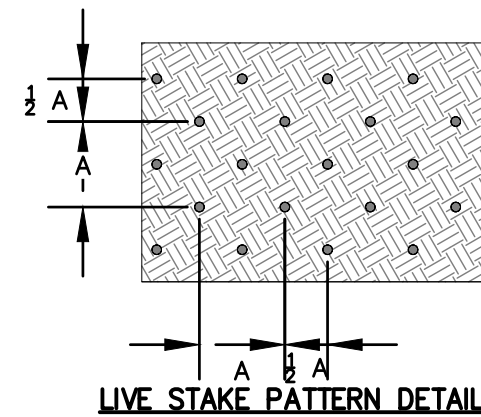
**SOD MATTING DETAIL**







**CROSS SECTION**



**LIVE STAKE EXAMPLE**

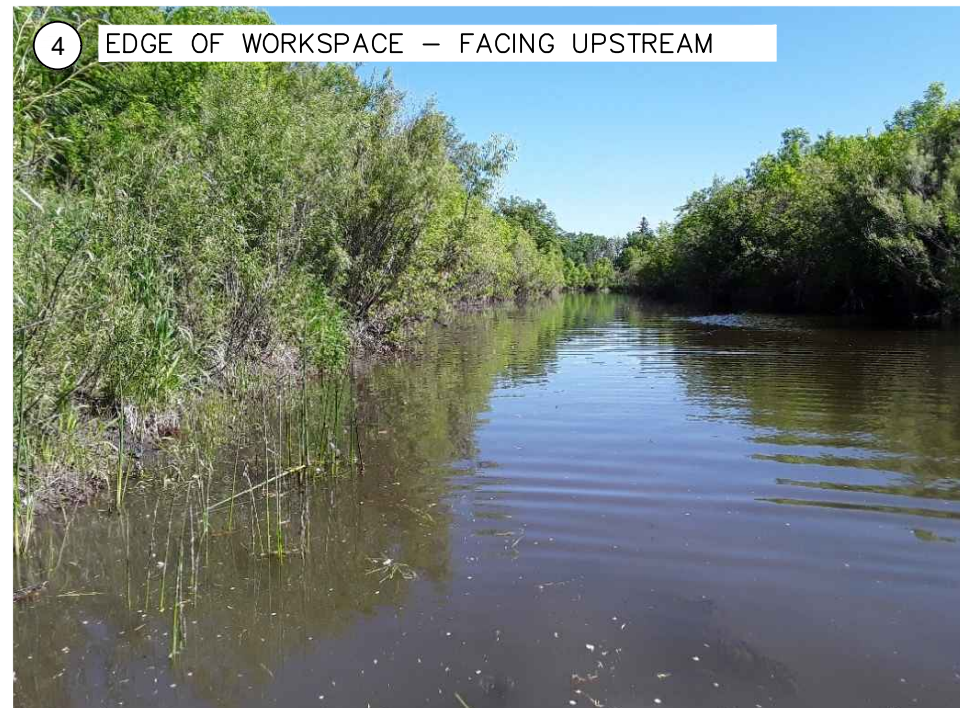
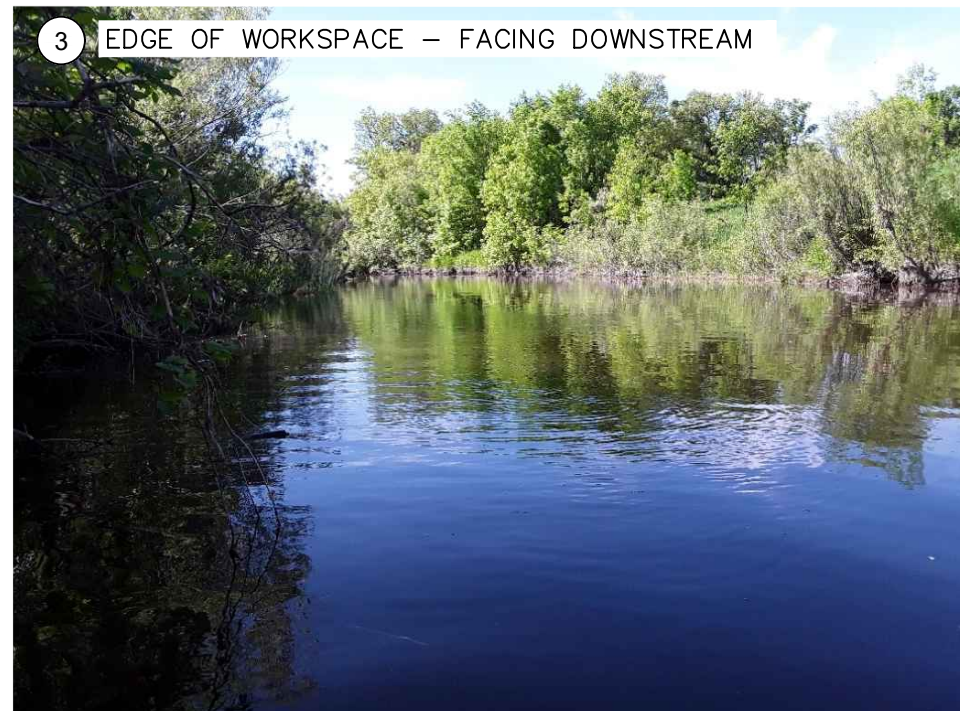
DIMENSION <sup>1</sup>	NAME	TYPICAL UNIT	VALUE	DESCRIPTION
A	LIVE STAKE SPACING	FEET	3 O.C	SPACING BETWEEN INDIVIDUALLY INSTALLED LIVE STAKES. STAKES CAN BE PLACED IN A TRIANGULAR GRID (NRCS 2007A) OR RANDOMLY (NRCS 2007A, IOWA DNR 2006). RECOMMEND SPECIES DIVERSITY THROUGHOUT PROJECT AREA.
B	LIVE STAKE – TOP OF SLOPE PLACEMENT	INCHES	0 – 3	POSITION OF LIVE STAKE RELATIVE TO THE TOP OF A SLOPE
C	LIVE STAKE – TOE OF SLOPE PLACEMENT	INCHES	0 – 3	POSITION OF LIVE STAKE RELATIVE TO THE TOE OF A SLOPE
D	LIVE STAKE – BASE FLOW RELATIONSHIP	FEET	11 31.9	PLACEMENT OF LOWER ROW OF LIVE STAKES RELATIVE TO THE APPROXIMATE BASE FLOW WATER LEVEL WITH CONSIDERATION GIVEN TO DURATION OF INUNDATION DURING BANKFULL AND OTHER HIGH FLOW EVENTS.
E	LIVE STAKE LENGTH	INCHES	24 – 36	LENGTH OF PREPARED DORMANT LIVE CUTTING FROM WOODY PLANT TO BE USED AS LIVE STAKE. LENGTH SHOULD BE SUFFICIENT TO REACH LOW-FLOW WATER TABLE ELEVATION.
F	LIVE STAKE PROTRUSION	INCHES	3 – 4	DISTANCE INSTALLED LIVE STAKE SHOULD PROTRUDE ABOUT 20% FROM THE GROUND. AT LEAST TWO BUDS OR BUD SCARS SHOULD BE PRESENT ABOVE THE GROUND IN THE FINAL INSTALLATION, DEPENDING ON THE SURROUNDING VEGETATION HEIGHT.
G	LIVE STAKE DIAMETER	INCHES	$\frac{1}{2}$ – 1 $\frac{1}{2}$	DIAMETER OF PREPARED DORMANT LIVE CUTTING FROM WOODY PLANT TO BE USED AS LIVE STAKE – TYPICALLY CITE A PERMISSIBLE MINIMUM AND MAXIMUM DIAMETER.
NOTES:				
1. DIMENSION LABELS ARE REFERENCED IN THE DETAIL DRAWINGS.				
2. O.C, ON CENTER				

**LIVE STAKE PLANTINGS DETAIL**

B	ISSUED FOR PERMITTING		10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
NO.	REVISION-DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN LOST RIVER – MP 885.8 – MDNR ID 12 SITE SPECIFIC DETAILS					
SCALE	DWG. NO.	PAGE NO.			
NOTED	SSRP-885.8-006	6/7			







**NOTES:**

1. AIR PHOTOS ARE FROM 2018 ENBRIDGE AERIAL PHOTOGRAPHY.
2. ADDITIONAL ON-THE GROUND PHOTOS MAY BE TAKEN PRIOR TO CONSTRUCTION AT MDNR REQUEST.
3. PRE-CONSTRUCTION PHOTOS WILL BE USED TO AID IN RESTORATION.



B	ISSUED FOR PERMITTING	MJT	10/2020		
A	ISSUED FOR REVIEW	MJT	08/2020		
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ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE-SPECIFIC RESTORATION PLAN LOST RIVER — MP 885.8 — MDNR ID 12 PHOTO PAGE					
SCALE		DWG. NO. SSRP-885.8-005		PAGE NO. 5/5	



GENERAL

1. THE SPECIFICATIONS WITHIN THIS SSRP MAY MODIFY OR REPLACE PROJECT–WIDE STANDARDS PRESENTED IN THE EPP. WHERE MATERIAL WITHIN THESE SSRPS EXCEEDS STANDARD CONSTRUCTION MEASURES IN THE EPP, THESE SSRPS SUPERSEDE THE EPP.
2. CONSTRUCTION AND RESTORATION OF WATERBODY CROSSINGS WILL FOLLOW THESE GENERAL STEPS:

A. SITE CLEARING

B. INSTALLATION OF TEMPORARY EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (‘BMPS’)

C. BRIDGE INSTALLATION

D. EXCAVATION/BACKFILLING OF THE WATERBODY INCLUDING:

• SOD SAVING TOPSOIL SEGREGATION AT NON–WOODED SITES

• STREAMBED MATERIAL SEGREGATION

• PIPE INSTALLATION

• BACKFILL, INCLUDING IMPLEMENTATION OF CONSTRUCTION–RELATED RESTORATION METHODS (I.E., TOE WOOD)

E. REPLACEMENT OF STREAMBED MATERIAL AND TOPSOIL/SOD LAYER

F. RESTORATION OF STREAM BANKS TO PRE–CONSTRUCTION CONTOURS

G. IF FINAL GRADING NOT POSSIBLE AT THE TIME, TEMPORARY STABILIZATION AND REPLACEMENT/REINFORCEMENT OF TEMPORARY BMPS

H. AFTER FINAL GRADING, PERMANENT SEEDING AND/OR WOODY VEGETATION RESTORATION, STABILIZATION AND REPLACEMENT/REINFORCEMENT OF TEMPORARY BMPS

I. BRIDGE REMOVAL DURING FINAL RESTORATION AFTER STABILIZATION AND PERMANENT SEEDING

J. POST–CONSTRUCTION MONITORING
- CROSSING METHODS
1. ALL WATERBODY AND WETLAND CROSSINGS WILL BE CONDUCTED IN COMPLIANCE WITH SECTION 2.0 AND SECTION 3.0 OF THE ENVIRONMENTAL PROTECTION PLAN (‘EPP’), RESPECTIVELY. SECTION 2.0 AND 3.0 OF THE WINTER CONSTRUCTION PLAN PRESENTS MODIFICATIONS FOR WATERBODY AND WETLAND CONSTRUCTION METHODS, RESPECTIVELY, IN WINTER CONDITIONS.

2. ENBRIDGE’S SUMMARY OF CONSTRUCTION METHODS AND PROCEDURES (THE ‘PROCEDURES,’APPENDIX A OF THE EPP) OUTLINES THE VARIOUS CONSTRUCTION METHODS THAT ENBRIDGE MAY UTILIZE TO CONSTRUCT THROUGH WATERBODIES AND WETLANDS/BASINS AS PRESENTED ON THESE SITE–SPECIFIC RESTORATION PLANS (‘SSRPS’).

A. DRY CROSSING (ISOLATED) METHODS (INCLUDING THE DRY CROSSING AND MODIFIED DRY CROSSING METHOD) ARE DESCRIBED SECTIONS 4.3 OF THE PROCEDURES, AND IN SECTIONS 2.5.2 AND 2.5.3 AND FIGURES 23 AND 24 OF THE EPP.

B. THE BORE METHOD (NON–PRESSURIZED) IS DESCRIBED IN SECTION 3.5 OF THE PROCEDURES, AND SECTION 4.0 OF THE EPP.

C. THE MODIFIED UPLAND CONSTRUCTION (WETLAND) METHOD IS DESCRIBED IN SECTION 3.3 OF THE PROCEDURES, AND SECTION 3.0 AND FIGURES 30 TO 34 OF THE EPP.

D. ALTHOUGH NOT PROPOSED AS A PRIMARY METHOD AT THESE SSRP WATERBODIES, THE OPEN CUT (NON–ISOLATED) WATERBODY CROSSING METHOD IS DESCRIBED IN SECTION 4.1 OF THE PROCEDURES, AND SECTION 2.5.1 AND FIGURE 24 OF THE EPP.

E. ALTHOUGH NOT PROPOSED AS A PRIMARY METHOD AT THESE SSRP WATERBODIES, THE PUSH–PULL METHOD IS DESCRIBED IN SECTION 3.4 OF THE PROCEDURES, AND SECTION 3.7.1 AND FIGURES 35 AND 36 OF THE EPP.

CLEARING/VEGETATION REMOVAL

1. STUMPS WITHIN THE TRENCH LINE WILL BE COMPLETELY REMOVED, GROUND, AND/OR HAULED OFF–SITE TO AN APPROVED LOCATION. TREE STUMPS OUTSIDE THE TRENCH LINE WILL BE GROUND BELOW NORMAL GROUND SURFACE TO FACILITATE A SAFE WORK AREA AND TO ALLOW TOPSOIL REMOVAL, IF NECESSARY. IN SOME CIRCUMSTANCES, TREE STUMPS OUTSIDE THE TRENCH LINE MAY BE COMPLETELY REMOVED TO ALLOW FOR A SAFE WORK AREA AND HAULED OFF–SITE TO AN APPROVED LOCATION AS OUTLINED IN SECTION 1.8.3 OF THE EPP.

2. CLEARING WILL BE CONDUCTED IN WATERBODIES AND WETLANDS AS OUTLINED IN SECTION 2.2 AND 3.2 OF THE EPP, RESPECTIVELY. CHIPS, MULCH, OR MECHANICALLY CUT WOODY DEBRIS SHALL NOT BE STOCKPILED IN A WETLAND. HYDRO–AX DEBRIS, OR SIMILAR CAN BE LEFT IN THE WETLAND IF SPREAD EVENLY IN THE CONSTRUCTION WORKSPACE TO A DEPTH THAT WILL ALLOW FOR NORMAL REVEGETATION, AS DETERMINED BY THE EI. CHIPPING IS NOT ALLOWED ON PUBLIC LANDS. ON PUBLIC LANDS, MULCH AND MECHANICALLY CUT WOODY DEBRIS MUST BE UNIFORMLY BROADCAST TO LESS THAN 2–INCH THICKNESS AND IN A MANNER THAT MAINTAINS VISIBLE GROUND.

3. ENBRIDGE WILL PROPERLY INSTALL AND MAINTAIN REDUNDANT SEDIMENT CONTROL MEASURES IMMEDIATELY AFTER CLEARING AND PRIOR TO INITIAL GROUND DISTURBANCE AT SURFACE WATERS LOCATED WITHIN 50 FEET OF THE PROJECT AND WHERE STORMWATER FLOWS TO THE SURFACE WATER (REFER TO THE ENVIRONMENTAL PLAN SHEETS IN THE SWPPP), AND WITHIN 100 FEET OF SPECIAL AND IMPAIRED WATERS, INCLUDING TROUT STREAMS.

4. ON PUBLIC LANDS AND WHEREVER PRACTICABLE AT WATERBODY CROSSINGS, ENBRIDGE WILL USE WILDLIFE–FRIENDLY EROSION AND SEDIMENT CONTROL BMPS THAT CONTAIN BIODEGRADABLE NETTING (CATEGORY 3N OR 4N NATURAL FIBER) AND WILL AVOID THE USE OF PLASTIC MESH (SECTIONS 1.17.1 AND 2.6.1 OF THE EPP).

TEMPORARY STABILIZATION

1. ON PORTIONS OF THE PROJECT WHERE WORK WILL BE OCCURRING DURING APPLICABLE ‘WORK IN WATER RESTRICTIONS’FOR PUBLIC WATERS (REFER TO SECTION 2.1), ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER’S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE STABILIZED WITHIN 24 HOURS DURING THE RESTRICTION PERIOD. STABILIZATION OF ALL EXPOSED SOILS WITHIN 200 FEET OF THE PUBLIC WATER’S EDGE, AND THAT DRAIN TO THAT WATER, WILL BE INITIATED IMMEDIATELY AND COMPLETED WITHIN 7 CALENDAR DAYS WHENEVER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE OUTSIDE OF THE RESTRICTION PERIOD. THESE AREAS WILL BE IDENTIFIED ON THE ENVIRONMENTAL PLAN SHEETS ACCOMPANYING THE SWPPP.

2. HYDRO–MULCH AND LIQUID TACKIFIER CAN BE USED IN PLACE OF CERTIFIED WEED–FREE STRAW OR HAY MULCH WITH PRIOR APPROVAL FROM ENBRIDGE. ALL HYDROMULCH AND LIQUID TACKIFIER PRODUCTS USED WILL BE ON THE APPLICABLE STATE DOT PRODUCT LIST. HYDRO–MULCH AND LIQUID TACKIFIER PRODUCTS CONTAINING PLASTIC/POLYPROPYLENE FIBER ADDITIVES AND MALACHITE GREEN (COLORANT) WILL NOT BE UTILIZED ON THIS PROJECT. APPLICATION RATES WILL BE AT THE MANUFACTURER’S RECOMMENDED RATE. ENBRIDGE WILL AVOID THE USE OF HYDROMULCH ON PUBLIC LANDS; HOWEVER, ENBRIDGE MAY USE HYDROMULCH ON STEEP SLOPES TO PREVENT EROSION UNTIL PERMANENT COVER HAS BEEN ESTABLISHED AS OUTLINED IN SECTION 1.8.3 OF THE EPP.

RESTORATION AND STABILIZATION

1. ENBRIDGE WILL RESTORE THE STREAM BANKS AS NEAR AS PRACTICABLE TO PRE–CONSTRUCTION CONDITIONS UNLESS THAT SLOPE IS DETERMINED TO BE UNSTABLE. IF THE SLOPE IS CONSIDERED UNSTABLE, ENBRIDGE WILL RESHAPE THE BANKS TO PREVENT SLUMPING. FOR PUBLIC WATERS, ENBRIDGE WILL RETURN THE BANK TO PRE–CONSTRUCTION CONTOURS, UNLESS OTHERWISE DIRECTED BY THE SITE–SPECIFIC RESTORATION PLAN. IF ENBRIDGE CANNOT RESTORE TO PRE–CONSTRUCTION CONTOURS AT A PUBLIC WATER, ENBRIDGE WILL CONSULT WITH THE MDNR BEFORE PROCEEDING FURTHER AS OUTLINED IN SECTION 2.6 OF THE EPP.

2. UNSTABLE SOILS AND/OR SITE–SPECIFIC FACTORS SUCH AS STREAM VELOCITY AND FLOW DIRECTION MAY REQUIRE ADDITIONAL RESTORATION EFFORTS, SUCH AS INSTALLATION OF WOODY VEGETATION, GEOTEXTILE FABRIC, OR TREE, LOG, ROOTWAD, OR BOULDER REVETMENTS TO STABILIZE DISTURBED STREAM BANKS (SEE FIGURE 29) AS OUTLINED IN SECTION 2.6.2 OF THE EPP. ENBRIDGE WILL WORK WITH THE MDNR TO ENSURE ALL WORK/ADJUSTMENTS ARE APPROVED AND ARE CONDUCTED WITHIN APPLICABLE TIMING RESTRICTIONS.

3. IN UPLAND AND WETLAND AREAS, CLEANUP AND ROUGH GRADING WILL OCCUR AS OUTLINED IN SECTIONS 1.16 AND 3.9 OF THE EPP. ENBRIDGE WILL BACKFILL THE TRENCH TO AN ELEVATION SIMILAR TO THE ADJACENT AREAS OUTSIDE THE TRENCH LINE AND WILL ADD A SLIGHT CROWN OF APPROXIMATELY 3 TO 6 INCHES (DEPENDING ON SOIL TYPE) OVER THE BACKFILLED TRENCH TO ALLOW FOR SUBSIDENCE. GENERALLY, EXCESS SUBSOIL DISPLACED BY THE PIPE INSTALLATION WILL BE SPREAD ACROSS THE PORTION OF THE CONSTRUCTION WORKSPACE WHERE TOPSOIL REMOVAL HAS OCCURRED. ANY REMAINING EXCESS SUBSOIL WILL BE REMOVED AND DISPOSED OF AT AN APPROVED OFF–SITE LOCATION AS NEEDED TO ENSURE CONTOURS ARE RESTORED TO AS NEAR AS PRACTICABLE TO PRE–CONSTRUCTION CONDITIONS.

4. REVEGETATION ACTIVITIES WILL OCCUR AS OUTLINED IN SECTION 7.0 OF THE EPP. SEED MIXES AT PUBLIC WATERS WILL BE SELECTED AND APPLIED AS INDICATED IN THE PLANTING PLAN, WHICH IS APPENDIX A OF THE POST–CONSTRUCTION VEGETATION MANAGEMENT PLAN FOR PUBLIC LANDS AND WATERS (‘VMP’). SEED MIXES RELATIVE TO THESE SSRP CROSSINGS ARE CODED AS FOLLOWS:

A	EMERGENT (34–181)	G	DRY PRAIRIE GENERAL (35–221)
B	RIPARIAN NE (34–361)	H	MESIC PRAIRIE GENERAL (35–241)
C	RIPARIAN S&W (34–261)	I	MESIC PRAIRIE NW (35–441)
D	WET MEADOW NE (34–371)	J	DRY PRAIRIE NORTHWEST (35–421)
E	WET MEADOW S&W (34–271)	K	WOODLAND EDGE NE (36–311)
F	WETLAND REHABILITATION (34–171)	L	NATURAL REVEGETATION

5. ENBRIDGE WILL NOT SEED STANDING WATER OR WOODED (PSS AND PFO) WETLAND COMMUNITIES. NATURAL REVEGETATION WILL TAKE PLACE FROM EXISTING PLANT MATERIAL AND ROOT STOCK IN THESE COMMUNITIES.

6. ALL MATERIALS USED FOR CONSTRUCTION OF THE PROJECT MUST BE REMOVED FROM THE SITE.

7. ENBRIDGE WILL CONDUCT POST–CONSTRUCTION MONITORING IN ACCORDANCE WITH THE POST–CONSTRUCTION MONITORING PLAN FOR WETLANDS AND WATERBODIES, AND IN ACCORDANCE WITH THE VMP FOR THE UPLAND PORTIONS OF THE PROJECT ON PUBLIC LANDS.

B	ISSUED FOR PERMITTING	MJT	10/2020		
NO.	REVISION–DESCRIPTION	BY	DATE	CHK'D	APP'D
ENBRIDGE LINE 3 REPLACEMENT PROJECT SITE–SPECIFIC RESTORATION PLAN					
CONSTRUCTION NOTES					
SCALE		DWG. NO. SSRP–NOTES		PAGE NO.	

PLOTTED SIZE: ANSI FULL BLEED B (17x11)