

# MINNESOTA DEPARTMENT OF TRANSPORTATION

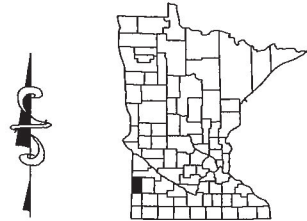
## LINCOLN COUNTY

**CONSTRUCTION PLAN FOR** REPLACING BRIDGE NO. L1965 & L1966 WITH 2 LINE OF 12' X 10' AND 1 LINE OF 12' X 11' R.C. BOX CULVERT

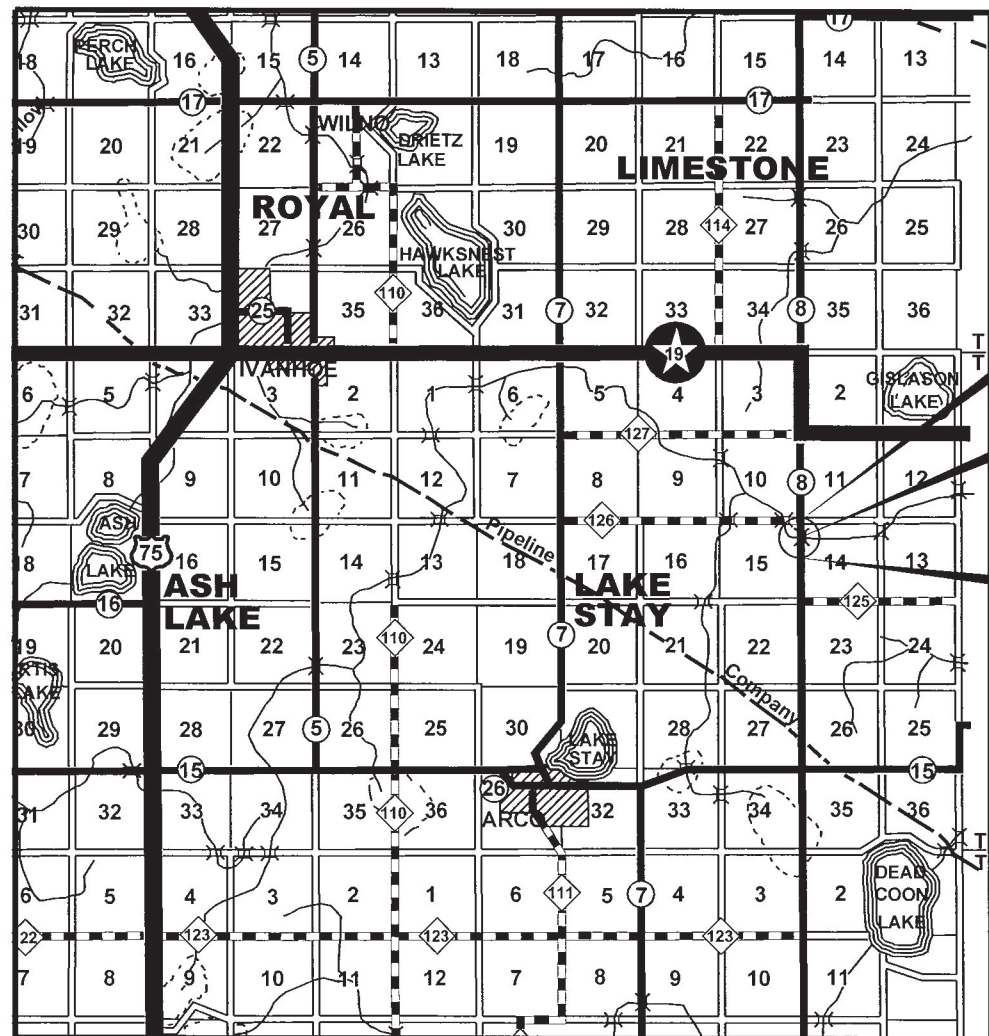
**LOCATED ON** C.S.A.H. 8 **BETWEEN** INTERSECTION OF C.R. 126 & THE INTERSECTION OF C.R. 125 IN LAKE STAY TOWNSHIP (Geographic description)  
**FROM** NORTHEAST CORNER OF SEC. 15-T111N-R44W **TO** EAST 1/4 CORNER SEC. 15-T111N-R44W (Legal description)

**PLANS SYMBOLS**

- STATE LINE
- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- PRESENT ROW
- NEW ROW
- TEMPORARY EASEMENT
- CONTROL OF ACCESS LINE
- PROPERTY LINES
- VACATED PLATTED PROPERTY
- CORPORATE OR CITY LIMITS
- RETAINING WALL
- RAILROAD
- RAILROAD RIGHT-OF-WAY
- DRAINAGE DITCH
- DRAIN TILE
- CULVERT
- DROP INLET
- GUARD RAIL
- BARBED WIRE FENCE
- WOVEN WIRE FENCE
- CHAIN LINK FENCE
- RAILROAD SNOW FENCE
- SWAMP
- TIMBER
- ORCHARD
- BRUSH
- NURSERY
- CATCH BASIN
- FIRE HYDRANT
- BUILDING ( ONE STORY FRAME )
- F - FRAME    C - CONCRETE
- S - STONE    T - TILE
- B - BRICK    ST - STUCCO
- IRON PIPE OR ROD
- MONUMENT ( STONE, CONC. OR METAL )
- WOODEN HUB
- GRAVEL PIT
- SAND PIT
- BORROW PIT
- ROCK QUARRY



S.A.P. 041-608-035 (BRIDGE)		
GROSS LENGTH	1214 FT.	0.230 MI.
BRIDGES-LENGTH	0 FT.	0 MI.
EXCEPTIONS-LENGTH	505 FT.	0.096 MI.
NET LENGTH	709 FT.	0.134 MI.



E.O.P. STA. 417+84  
 S.A.P. 041-608-035  
 BRIDGE STA. 414+26  
 OLD BR. #L1965 & L1966  
 NEW BR. #41J90  
 B.O.P. STA. 405+70  
 S.A.P. 041-608-035

**UTILITIES SYMBOLS**

- POWER POLE LINE
- TELEPHONE LINE
- JOINT TELEPHONE AND POWER LINE
- ANCHOR
- STEEL TOWER
- STREET LIGHT
- PEDESTAL ( TELEPHONE CABLE TERMINAL )
- OVERHEAD POWER POLE
- GAS MAIN
- WATER MAIN
- CONDUIT
- TELEPHONE CABLE IN CONDUIT
- ELECTRIC CABLE IN CONDUIT
- TELEPHONE MANHOLE
- ELECTRIC MANHOLE
- BURIED TELEPHONE CABLE
- BURIED POWER CABLE
- SEWER ( SANITARY OR STORM )
- SEWER MANHOLE

SCALE: 1 MILE

FEDERAL PROJECT NO. \_\_\_\_\_

**SPECIFICATIONS**

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE "SUPPLEMENTAL SPECIFICATIONS" DATED SEPTEMBER 2022 SHALL GOVERN.

**INDEX**

1. TITLE SHEET
2. ESTIMATED QUANTITIES
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5. SUBGRADE EXCAVATION
- 6-8. BARREL & END SECTION DETAILS
9. EMBANKMENT PROTECTION
10. EROSION & SEDIMENT CONTROL PLAN
11. EROSION & SEDIMENT CONTROL DETAILS
12. PLAN & PROFILE
13. BRIDGE SURVEY SHEET
14. SWPPP
15. TRAFFIC CONTROL

THIS PLAN CONTAINS 15 SHEETS

**DESIGN DESIGNATION**

R-VALUE \_\_\_\_\_  
 ADT ( 2023 ) \_\_\_\_\_ 290  
 Proj. ADT ( 2043 ) \_\_\_\_\_ 290  
 Proj. HCADT ( 2043 ) \_\_\_\_\_ 18  
 Soil Factor \_\_\_\_\_ 100  
 Shoulder Width \_\_\_\_\_ 5.0 FT.

OR

FUNCTIONAL CLASSIFICATION \_\_\_\_\_ MINOR COLLECTOR  
 NO. OF TRAFFIC LANES \_\_\_\_\_ 2 NO. OF PARKING LANES \_\_\_\_\_ 0  
 DESIGN SPEED \_\_\_\_\_ 40 MPH  
 BASED ON STOPPING SIGHT DISTANCE  
 HEIGHT OF EYE \_\_\_\_\_ 3.5 FT. HEIGHT OF OBJECT \_\_\_\_\_ 2.0 FT.  
 DESIGN SPEED NOT ACHIEVED AT: \_\_\_\_\_ N/A

**LOCAL AGENCY SIGNATURES:**

Signature: *Joseph M. Wilson* Typed or Printed Name: Joseph M. Wilson,  
 Design Engineer: I hereby certify that this plan was prepared by me or  
 under my direct supervision, and that I am a duly Licensed  
 Professional Engineer under the laws of the State of Minnesota.

Date: 9-19-23

License Number \_\_\_\_\_ 54947

Approved: *Joseph M. Wilson* Date: 9-19-23  
 Lincoln County Engineer

**Todd Broadwell** Digitally signed by Todd Broadwell  
 Date: 2023.09.22 09:39:49 -05'00'

District State-Aid Engineer: Reviewed for Compliance with State-Aid Rules/Policy  
**Todd Broadwell** Digitally signed by Todd Broadwell  
 Date: 2023.09.22 09:40:46 -05'00'

State-Aid Engineer: Approved for State Aid Funding

## ESTIMATED QUANTITIES

NOTES	ITEM NO.	ITEM	UNITS	TOTAL PARTICIPATING	TOTAL NON-PARTICIPATING	TOTAL ESTIMATED QUANTITIES
	2021.501	MOBILIZATION	LUMP SUM	1		1
1	2101.502	GRUBBING	EACH		8	8
2	2104.604	SALVAGE BITUMINOUS PAVEMENT (P)	SQ YD		1885	1885
3	2104.607	SALVAGE AGGREGATE	CU YD		395	395
4	2106.507	EXCAVATION - SUBGRADE	CU YD		365	365
5	2106.507	GRANULAR EMBANKMENT (CV)	CU YD		365	365
6	2211.509	AGGREGATE BASE CLASS 5	TON		1200	1200
7	2215.504	FULL DEPTH RECLAMATION	SQ YD		1885	1885
8	2412.502	12X10 PRECAST CONCRETE BOX CULVERT END SECTION	EACH	4		4
8	2412.502	12X11 PRECAST CONCRETE BOX CULVERT END SECTION	EACH	2		2
9,10	2412.503	12X10 PRECAST CONCRETE BOX CULVERT	LIN FT	168		168
9,10	2412.503	12X11 PRECAST CONCRETE BOX CULVERT	LIN FT	84		84
11,12	2442.501	REMOVE EXISTING BRIDGE	LUMP SUM		1	1
13	2451.507	COARSE FILTER AGGREGATE (CV) (P)	CU YD	657		657
14	2451.609	GRANULAR BACKFILL	TON	2543		2543
15,16	2511.509	RANDOM RIPRAP CLASS III	TON	61		61
15,16	2511.509	RANDOM RIPRAP CLASS V	TON	361		361
	2563.601	TRAFFIC CONTROL	LUMP SUM	1		1
	2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER	LIN FT		105	105
	2575.504	ROLLED EROSION PREVENTION CATEGORY 20	SQ YD		1418	1418
17	2575.505	SEEDING	ACRE		0.8	0.8
18	2575.505	DISK ANCHORING	ACRE		0.5	0.5
19	2575.508	SEED MIXTURE 21-111	POUND		15	15
19	2575.508	SEED MIXTURE 25-142	POUND		22	22
18	2575.509	MULCH MATERIAL TYPE 1	TON		2	2
20	2575.605	SEEDING CRP	ACRE		0.3	0.3
20	2575.608	SEED MIXTURE SPECIAL	POUND		20	20

### GENERAL CONSTRUCTION NOTES:

- THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
- THE INFORMATION SHOWN ON THESE PLANS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES ARE NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING THEIR OWN DETERMINATION AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.
- CONTRACTOR IS RESPONSIBLE FOR NOTIFYING GOPHER STATE ONE CALL PRIOR TO CONSTRUCTION PHONE NO. 1-800-252-1166.
- CONTRACTOR SHALL COORDINATE WORK WITH OTHER UTILITY CONTRACTORS, WORK MAY BE ADJACENT AND WITHIN THE PROJECT LIMITS. NO COMPENSATION WILL BE MADE FOR THE COORDINATION WITH THE UTILITIES.
- CONTRACTOR SHALL MAINTAIN CONSTRUCTION WORK WITHIN THE LIMITS AS SHOWN ON THE PLANS. ANY DAMAGE OUTSIDE THE CONSTRUCTION LIMITS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- (P) INDICATES PLANNED QUANTITY.

### NOTES:

1. THE CONTRACTOR SHALL NOT BURY ANY MATERIAL. GRUBBING QUANTITIES ARE APPROXIMATE AND MAY BE ADJUSTED BY THE ENGINEER IN THE FIELD.
2. THE CONTRACTOR SHALL SALVAGE THE EXISTING BITUMINOUS SURFACE (APPROXIMATELY 5.75") BETWEEN PROJECT STA. 405+70 TO STA. 406+65, STA. 409+86 TO STA. 411+00 & STA. 412+84 TO STA. 417+84. THE COST FOR REPLACEMENT FOR ANY BITUMINOUS REMOVED BEYOND THESE PROJECTS STATIONS WILL BE AT THE CONTRACTOR'S EXPENSE. BITUMINOUS THICKNESS MAY VARY. SALVAGE RECLAIMED BITUMINOUS PAVEMENT SHALL BE STOCK PILED ON SITE OR AT LINCOLN CO. GUIDA PIT (SECTION 15-T111N-R44W) TO BE PLACED AS SURFACING MATERIAL OVER NEW CULVERT/SUBGRADE EXCAVATION AREAS.
3. EXISTING AGGREGATE SHOULDERING & BASE FROM STA. 413+54 TO 415+06 SHALL BE SALVAGED AND STOCK PILED ON SITE OR AT LINCOLN CO GUIDA PIT FOR USE AS BASE MATERIAL BELOW AGGREGATE BASE CLASS 5, SHALL BE INCLUDED IN THE BID ITEM SALVAGE AGGREGATE.
4. CONTRACTOR SHALL PERFORM 36" SUBGRADE EXCAVATION IN THE CENTER 24' OF THE ROAD AT THE KNOWN LOCATION NOTED IN SUBGRADE EXCAVATION TYPICAL SECTION (STA. 405+70 TO 406+65 & STA. 409+86 TO 411+00) AND IN ANY ADDITIONAL AREAS DETERMINED NECESSARY BY THE ENGINEER. A 1:10 LONGITUDINAL TAPER SHALL BE INSTALLED AT EACH END OF THE AREAS OF THE SUBCUT. ALL COSTS ASSOCIATED WITH SUBCUT, EXCAVATION, SHAPING, AND DISPOSAL OF MATERIAL SHALL MEET THE REQUIREMENTS OF MNDOT SPEC 2106 SHALL BE INCLUDED IN THE PRICE BID FOR ITEM 2106.507 EXCAVATION - SUBGRADE.
5. THE REQUIRED DENSITY SHALL BE OBTAINED BY MNDOT SPEC 2106.3.G.2 "QUALITY COMPACTION".
6. SHOULDERING MATERIAL IS INCLUDED IN THE QUANTITY FOR AGGREGATE BASE CLASS 5.
7. FULL DEPTH RECLAMATION AREA WILL BE FROM STA. 405+70 TO STA. 406+65, STA. 409+86 TO STA. 411+00 & STA. 412+84 TO STA. 417+84.
8. PRECAST CONCRETE BOX CULVERT END SECTION SHALL BE TYPE I.
9. MASTIC JOINT SEALER SHALL BE APPLIED TO THE ENTIRE JOINT AREA AND TO LIFT HOLE PLUGS. GEOTEXTILE MATERIAL SHALL ALSO BE INSTALLED ON THE ENTIRE JOINT AREA OF THE PIPE. MASTIC JOINT SEALER, GEOTEXTILE MATERIAL, AND PIPE TIES SHALL BE INCLUDED IN THE BID PRICE FOR PRECAST CONCRETE BOX CULVERT.
10. ALL EXCESS EXCAVATION SHALL BE DISPOSED OF BY THE CONTRACTOR. COST OF SAID DISPOSAL SHALL BE INCLUDED IN THE UNIT BID PRICE FOR PRECAST CONCRETE BOX CULVERT.
11. PRIOR TO PERFORMING EXCAVATION AND EMBANKMENT OPERATIONS WITHIN THE PROJECT LIMITS THE CONTRACTOR SHALL SALVAGE AND STOCKPILE THE TOPSOIL IN A LOCATION OF THE CONTRACTOR'S CHOICE ON THE PROJECT SITE. UPON COMPLETION OF ALL GRADING OPERATIONS, THE CONTRACTOR SHALL DEPOSIT AND SPREAD THE TOPSOIL IN A UNIFORM LAYER ON THE SUBSOIL. THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR REMOVAL OF THE EXISTING STRUCTURES.
12. EXISTING BRIDGES BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OFF SITE. THE CONCRETE AND TREATED TIMBER SHALL BE REMOVED AND DISPOSED AT AN APPROVED LANDFILL OR REUSED/RECYCLED ACCORDING TO LOCAL, STATE, AND FEDERAL REQUIREMENTS.
13. THE GRADATION FOR COARSE FILTER AGGREGATE SHALL CONFORM TO SPEC. 3149.2H.
14. BACKFILLING SHALL OCCUR IN LIFTS NOT EXCEEDING 0.5 FEET IN DEPTH. THE CONTRACTOR SHALL USE HAND OPERATED COMPACTION EQUIPMENT AROUND THE PIPE CULVERT TO ATTAIN DENSITY.
15. INSTALLATION SHALL BE IN ACCORDANCE WITH SPEC. 2511 & 3601. TYPE 7 GEOTEXTILE FILTER SHALL CONFORM TO SPEC. 3733. THIS ITEM IS INCLUDED IN THE BID PRICE FOR PLACEMENT OF RIPRAP.
16. THE CONTRACTOR SHALL USE QUARRY RUN RIPRAP. CLASS III RIP RAP SHALL BE USED OVER THE TOP OF THE PRECAST CONCRETE BOX CULVERT AND CLASS V SHALL BE USED FOR EMBANKMENT PROTECTION.
17. THE AREAS TO BE SEEDING SHALL BE COMPRISED OF ALL DISTURBED AREAS WITHIN THE PROJECT LIMITS. PRIOR TO THE SEEDING OPERATION THE AREAS SHALL BE CLEARED OF ALL DEBRIS (INCLUDING TREE ROOTS, WEEDS, ROCKS, ETC.). ANY DEBRIS ENCOUNTERED WHILE PREPARING THE AREAS FOR SEEDING SHALL BE DISPOSED OF BY THE CONTRACTOR OFF THE PROJECT IN A SUITABLE DISPOSAL AREA PROVIDED BY THE CONTRACTOR AS APPROVED BY THE ENGINEER. THE PREPARATION FOR SEEDING AND REMOVAL AND HAULING OF DEBRIS IS INCLUDED IN THE BID PRICE FOR SEEDING.
18. MULCH MATERIAL TYPE 1 SHALL BE USED IN DISTURBED AREAS IN WHICH EROSION CONTROL BLANKET IS NOT USED AND SHALL BE DISK ANCHORED.
19. THE SEED MIXTURE TYPE 21-111 SHALL BE BLENDED WITH SEED MIXTURE TYPE 25-142.
20. SEEDING CRP IS FOR SEEDING CRP AREAS EAST SIDE OF THE ROAD. SEED MIXTURE BLEND IS FOUND IN THE PROPOSAL (342 CRITICAL AREA PLANTING MIX).

### UTILITY CONTACTS

EDF RENEWABLES CORPORATE 15445 INNOVATION DR. SAN DIEGO, CA 92128 (888)-903-6926	LINCOLN COUNTY ENVIRONMENTAL OFFICE 221 NORTH WALLACE AVENUE P.O. BOX 66 IVANHOE, MN 56142 (507)694-1344
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### BASIS FOR PLANNED QUANTITIES

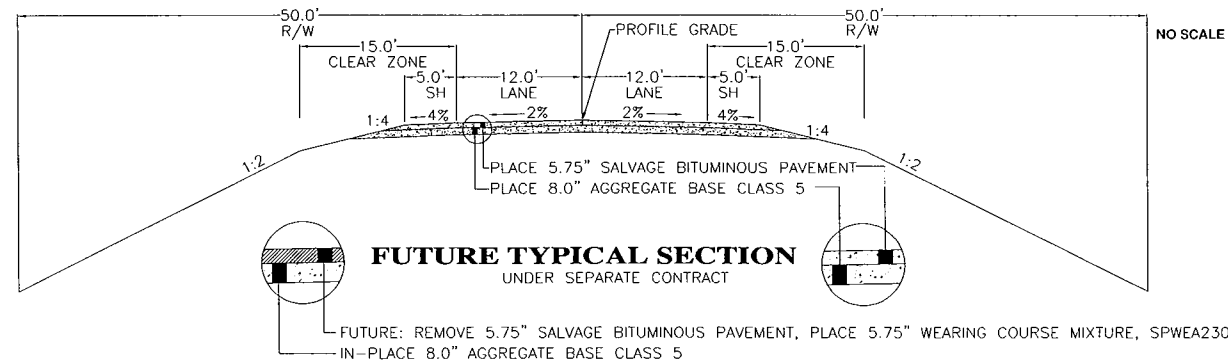
AGGREGATE BASE CLASS 5	140 LBS./CUBIC FOOT (CV)
GRANULAR BACKFILL	1.8 TONS/CUBIC YARD
QUARRY RUN RIP-RAP	1.3 TONS/CUBIC YARD
SEED MIXTURE 21-111	31 LBS./ACRE (PLS RATE)
SEED MIXTURE 25-142	45 LBS./ACRE (PLS RATE)
SEED MIXTURE SPECIAL	40 LBS./ACRE (PLS RATE)
MULCH MATERIAL TYPE 1	2 TONS/ACRE

### STANDARD PLATES

PLATE NO.	DESCRIPTION
8000 K	CHANNELIZERS - TYPE A, TYPE B, TYPE C

\* THESE STANDARD PLATES ARE APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION AND SHALL APPLY ON THIS PROJECT.

### PROPOSED TYPICAL SECTION CSAH 8

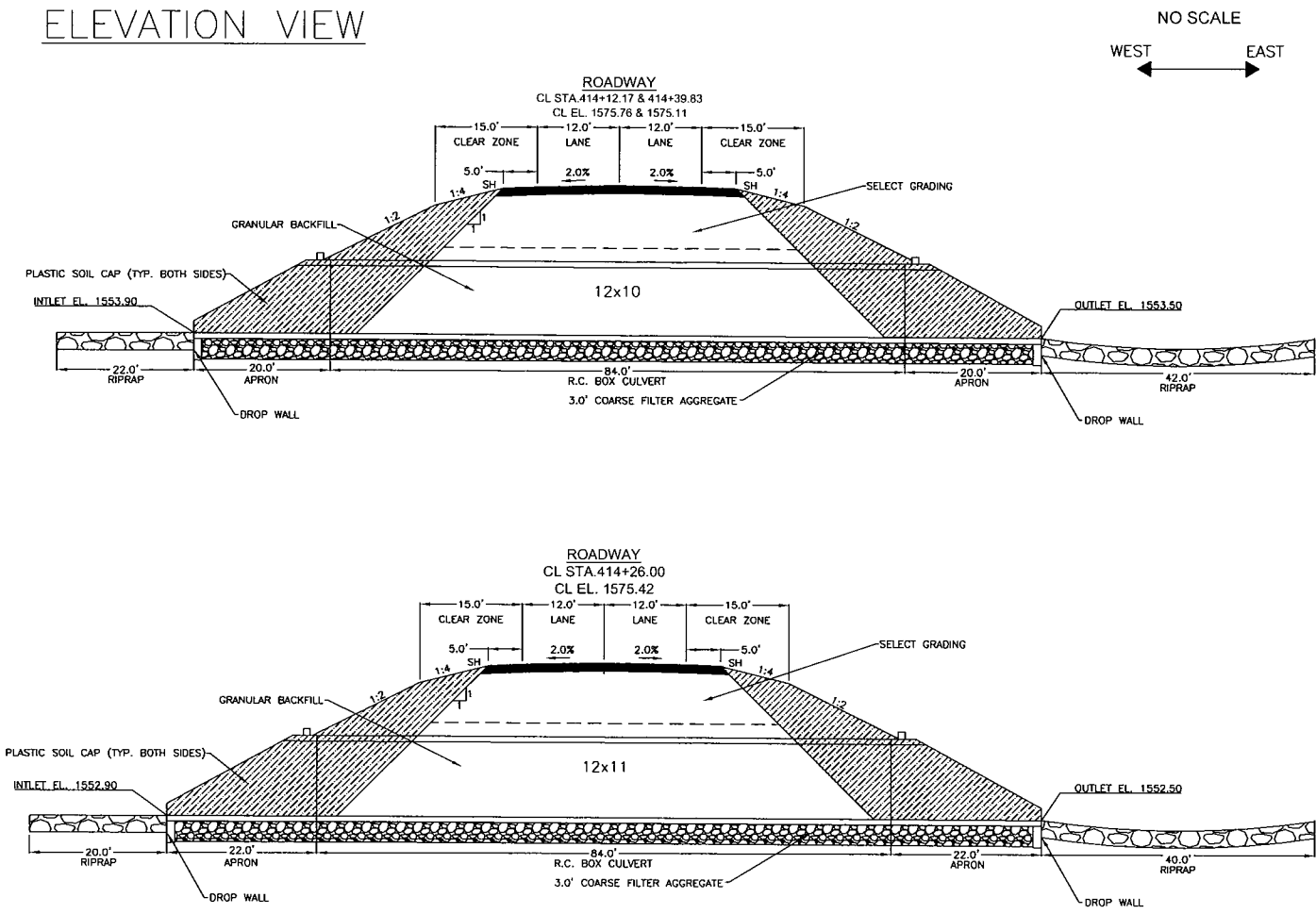


## ESTIMATED QUANTITIES

CERTIFIED BY Joseph M. [Signature] LIC. NO. 54947 DATE: 10-6-23  
LICENSED ENGINEER

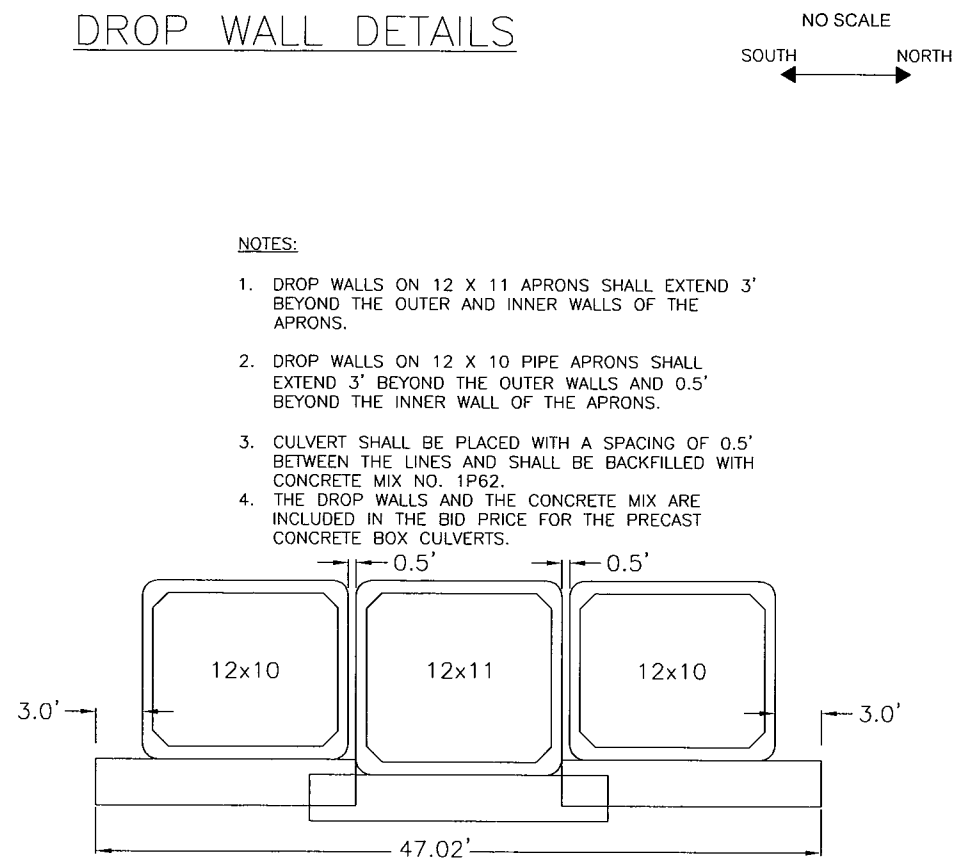
S.A.P. NO. 041-608-035 SHEET NO. 2 OF 15

# ELEVATION VIEW



NO SCALE  
WEST ← EAST

# DROP WALL DETAILS



NO SCALE  
SOUTH ← NORTH

- NOTES:
- DROP WALLS ON 12 X 11 APRONS SHALL EXTEND 3' BEYOND THE OUTER AND INNER WALLS OF THE APRONS.
  - DROP WALLS ON 12 X 10 PIPE APRONS SHALL EXTEND 3' BEYOND THE OUTER WALLS AND 0.5' BEYOND THE INNER WALL OF THE APRONS.
  - CULVERT SHALL BE PLACED WITH A SPACING OF 0.5' BETWEEN THE LINES AND SHALL BE BACKFILLED WITH CONCRETE MIX NO. 1P62.
  - THE DROP WALLS AND THE CONCRETE MIX ARE INCLUDED IN THE BID PRICE FOR THE PRECAST CONCRETE BOX CULVERTS.

### DESIGN DATA

DESIGNED IN ACCORDANCE WITH 2017 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.  
 HL-93 LIVE LOAD  
 BARREL A INSIDE WIDTH = 12 FT  
 BARREL A INSIDE HEIGHT = 10 FT  
 BARREL B INSIDE WIDTH = 12 FT  
 BARREL B INSIDE HEIGHT = 11 FT  
 BARREL C INSIDE WIDTH = 12 FT  
 BARREL C INSIDE HEIGHT = 10 FT  
 BARREL LENGTH = 84.0 FT EACH  
 EST. MIN. FILL DEPTH (A) = 10.01 FT AT SHOULDER  
 EST. MAX. FILL DEPTH (B) = 11.40 FT AT CENTERLINE  
 SKEW ANGLE = 0°  
 DESIGN SPEED = 40 MPH  
 CURRENT ADT (2023) = 290  
 PROJECTED ADT (2043) = 290  
 HL-93 LRFR  
 BRIDGE OPERATING RATING FACTOR RF = 1.3

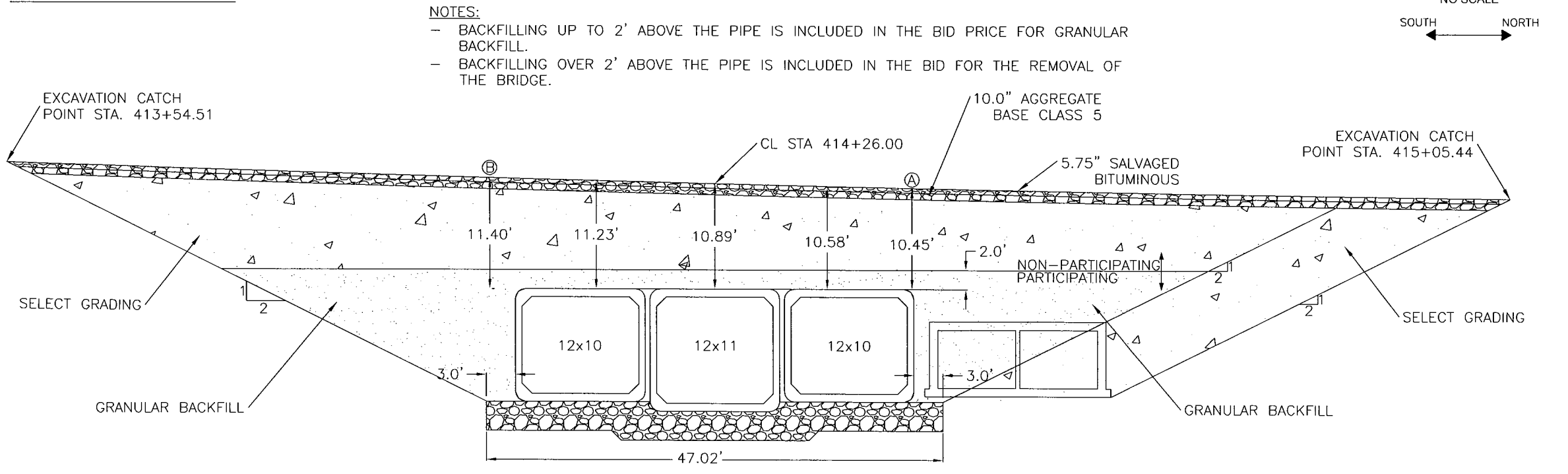
### LIST OF SHEETS

NO.	DESCRIPTION
1.	TITLE SHEET
2.	ESTIMATED QUANTITIES
3.	GENERAL PLAN AND ELEVATION
4.	STAKEOUT
5.	SUBGRADE EXCAVATION
6.-8.	BARREL & END SECTION DETAILS
9.	EMBANKMENT PROTECTION
10.	EROSION & SEDIMENT CONTROL PLAN
11.	EROSION & SEDIMENT CONTROL DETAILS
12.	PLAN & PROFILE
13.	BRIDGE SURVEY SHEET
14.	SWPPP
15.	TRAFFIC CONTROL

### CONSTRUCTION NOTES:

THE 2020 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE "SUPPLEMENTAL SPECIFICATIONS" DATE SEPTEMBER 2022 SHALL GOVERN. ALL EXPOSED CONCRETE EDGES SHALL BE FORMED WITH A 1/2" OR 3/4" CHAMFER UNLESS OTHERWISE NOTED.  
 CONSTRUCTION SHALL BE IN ACCORDANCE WITH SPEC. 2411 AND 2412, EXCEPT AS NOTED.  
 REFER TO REMAINDER OF GRADING PLAN FOR SUPERSTRUCTURE EXCAVATION AND BACKFILL. SPEC. 2451.  
 THE BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS.  
 REFER TO ESTIMATED QUANTITIES SHEET FOR THE SUBSURFACE UTILITY INFORMATION.

# ELEVATION VIEW



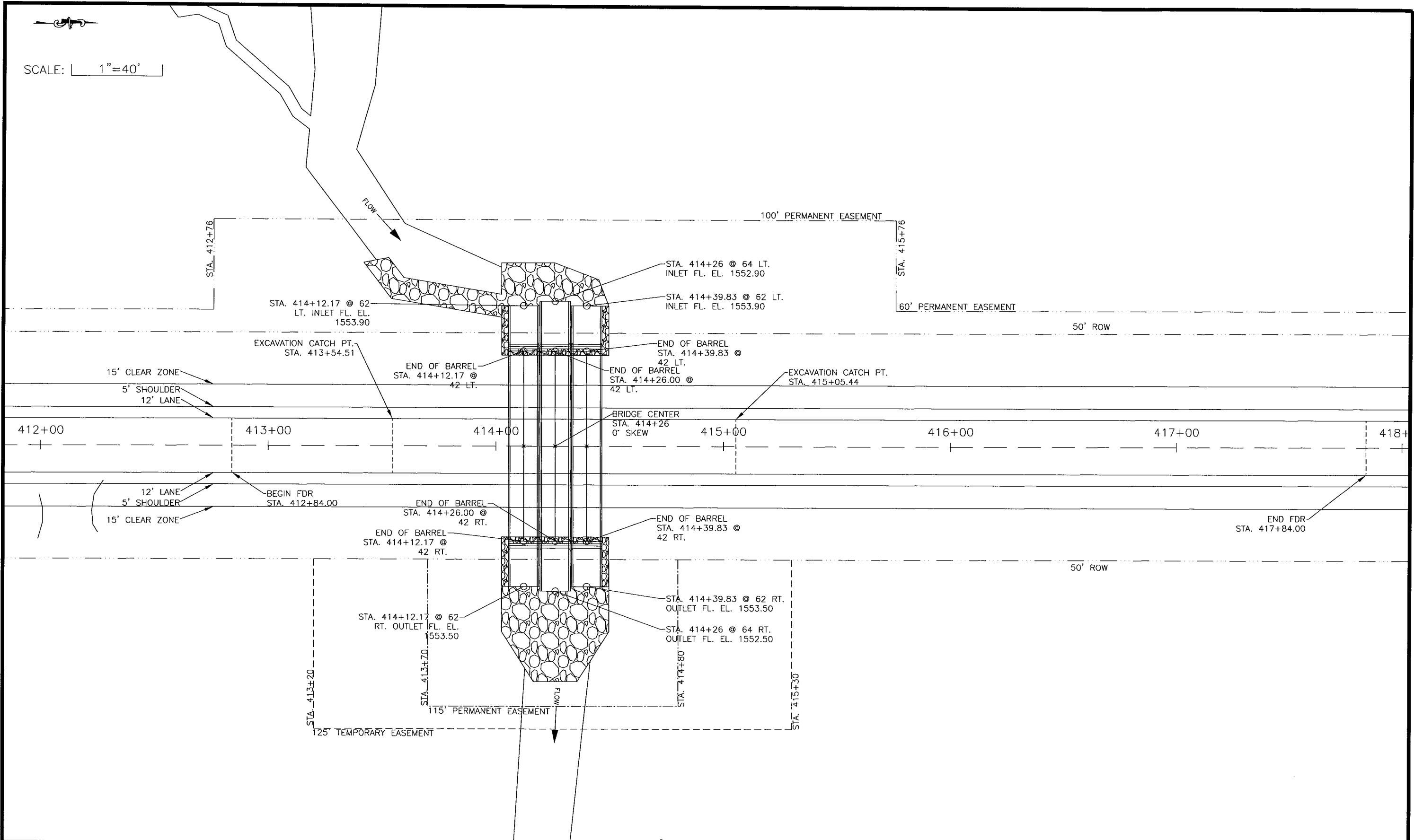
- NOTES:
- BACKFILLING UP TO 2' ABOVE THE PIPE IS INCLUDED IN THE BID PRICE FOR GRANULAR BACKFILL.
  - BACKFILLING OVER 2' ABOVE THE PIPE IS INCLUDED IN THE BID FOR THE REMOVAL OF THE BRIDGE.

NO SCALE  
SOUTH ← NORTH

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 SIGNED: *Joseph M. Wilson* DATE: 9-19-23  
 LICENSED PROFESSIONAL ENGINEER  
 NAME: JOSEPH M. WILSON LIC NO. 54947

BRIDGE NO. 41J90  
 LOCATION: C.S.A.H. 8  
 MAIN 12 x 10 MNDOT STD. PRECAST CONCRETE CULVERT  
 MAIN 12 x 11 MNDOT STD. PRECAST CONCRETE CULVERT  
 MAIN 12 x 10 MNDOT STD. PRECAST CONCRETE CULVERT  
 IDENTIFICATION NO. 513  
 GENERAL PLAN AND ELEVATION  
 SEC. 14 T. 111 N. R. 44 W  
 TOWNSHIP: LAKE STAY, LINCOLN COUNTY

SCALE: 1"=40'

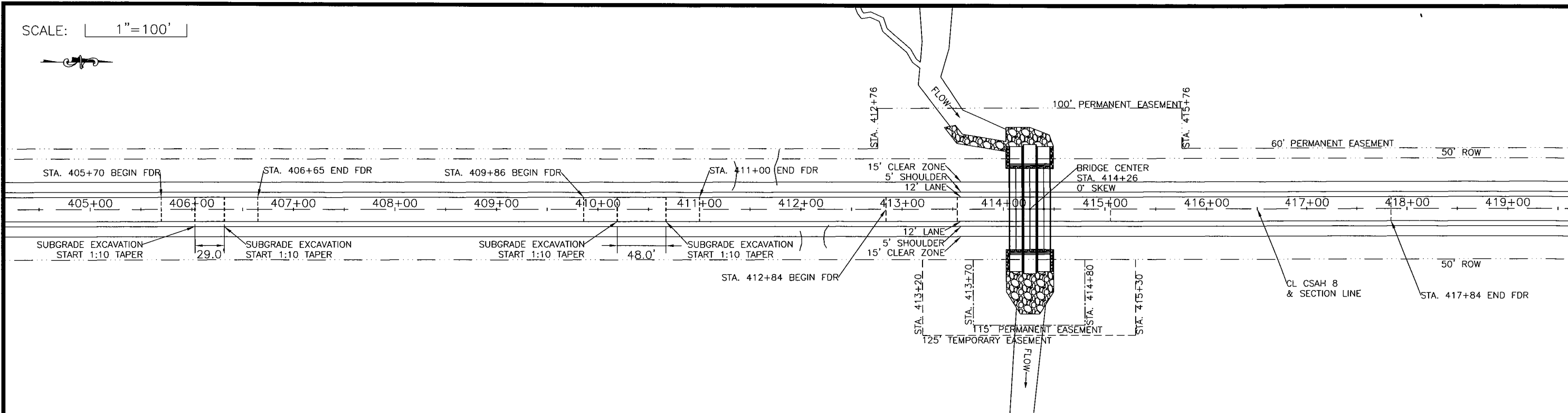


# STAKEOUT

CERTIFIED BY *Joseph M. Wilson* LIC. NO. 54947 DATE: 9-19-2023  
 LICENSED ENGINEER

S.A.P. NO. 041-608-035 SHEET NO. 4 OF 15

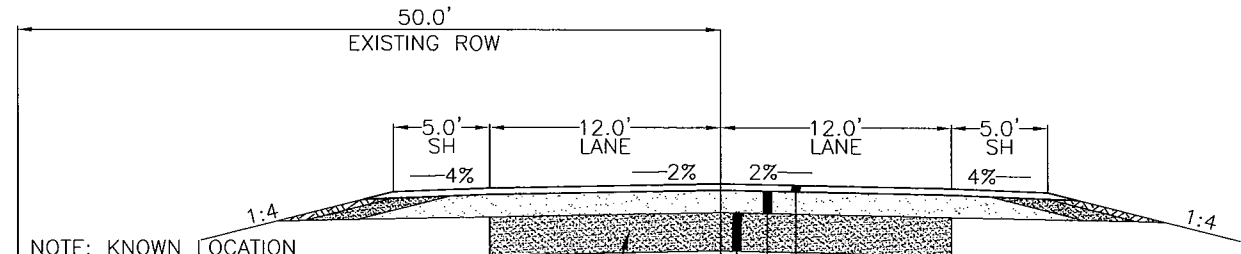
SCALE: 1"=100'



NO SCALE

**SUBGRADE EXCAVATION DETAIL**

PROPOSED SUBGRADE EXCAVATION  
AREAS TO BE AT  
STA. 405+70 TO 406+65  
&  
STA. 409+86 TO 411+00



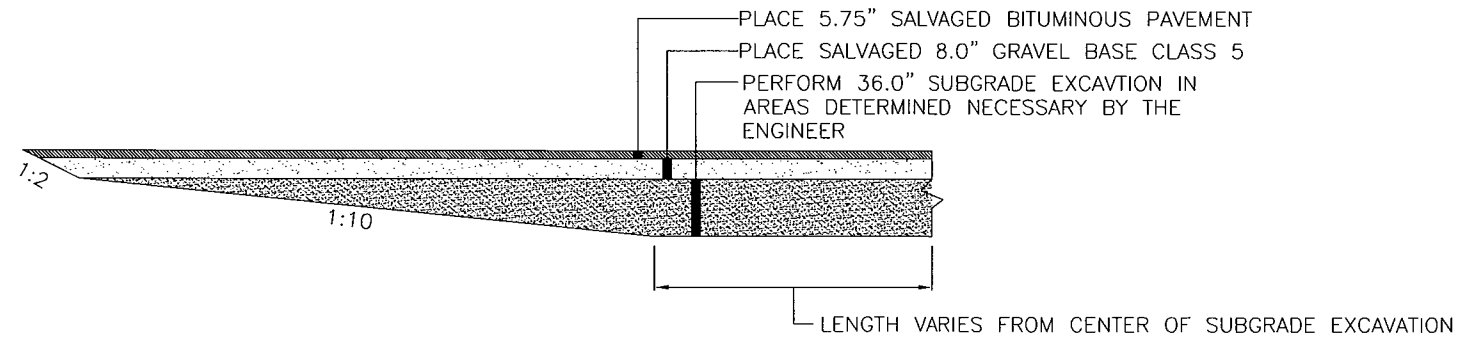
NOTE: KNOWN LOCATION FOR SUBGRADE EXCAVATION INCLUDE STA. 405+70 TO 406+65 & STA. 409+86 TO 411+00 ACCOUNTED FOR A 1:10 SUBGRADE AND 1:2 AGGREGATE BASE LONGITUDINAL TAPER. FULL 36" DEEP SUBGRADE EXCAVATION SHALL BE 29FT & 48FT IN LENGTH. (ENGINEER MAY MAKE ADJUSTMENTS AT ANYTIME TO EXCAVATION LIMITS)

- PERFORM 5.75" FULL DEPTH RECLAMATION (SALVAGE BIT.)
- SALVAGE INPLACE 8.0" GRAVEL BASE CLASS 5
- PERFORM 36.0" SUBGRADE EXCAVATION IN AREAS DETERMINED NECESSARY BY THE ENGINEER

NO SCALE

**SUBGRADE 1:10 EXCAVATION DETAIL**

ROAD PROFILE (SIDE) VIEW



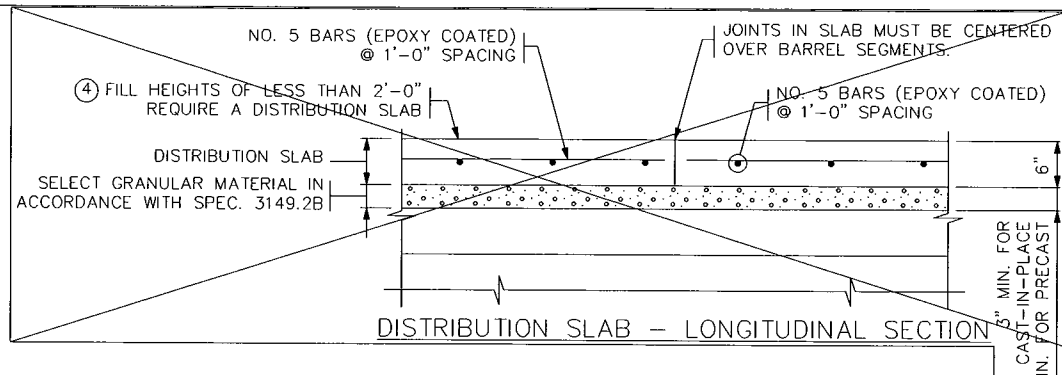
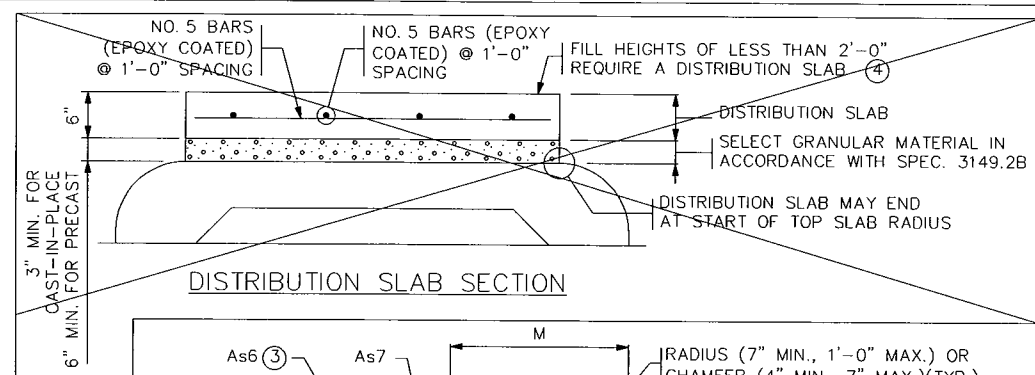
- PLACE 5.75" SALVAGED BITUMINOUS PAVEMENT
- PLACE SALVAGED 8.0" GRAVEL BASE CLASS 5
- PERFORM 36.0" SUBGRADE EXCAVATION IN AREAS DETERMINED NECESSARY BY THE ENGINEER

LENGTH VARIES FROM CENTER OF SUBGRADE EXCAVATION

**SUBGRADE EXCAVATION**

CERTIFIED BY *Joseph M. Hillman* LIC. NO. 54947 DATE: 9-19-2023  
LICENSED ENGINEER

S.A.P. NO. 041-608-035 SHEET NO. 5 OF 15



**CONSTRUCTION NOTES**  
 CONSTRUCT CULVERTS IN ACCORDANCE WITH SPEC. 2412 EXCEPT AS NOTED.  
 REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES AND TO STANDARD FIGURE 5-395.115 FOR MATERIAL REQUIREMENTS FOR FILL BETWEEN ADJACENT BOXES.

PROVIDE WELDED WIRE REINFORCEMENT, SHEAR REINFORCEMENT AND REINFORCEMENT BARS IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M259.  
 11/2" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL.

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:  
 (a) 1 OR 2 LAYERS OF WELDED WIRE REINFORCEMENT OR  
 (b) 1 LAYER OF WELDED WIRE REINFORCEMENT AND 1 LAYER OF REINFORCEMENT BARS OR  
 (c) 1 LAYER OF REINFORCEMENT BARS.

DEVELOP REINFORCEMENT IN ACCORDANCE WITH AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WELDED WIRE REINFORCEMENT, INCREASE THE AREA OF REINFORCEMENT BY 8%, AND SUBMIT DESIGN CALCULATIONS VERIFYING COMPLIANCE WITH AASHTO 5.7.3.4. "CONTROL OF CRACKING BY DISTRIBUTION OF REINFORCEMENT".  
 MAXIMUM SIZE OF REINFORCEMENT BARS IS NO. 6. THE MAXIMUM WELDED WIRE REINFORCEMENT SIZE IS W23 PER LAYER (MAXIMUM OF 2 LAYERS).  
 SPACE CENTER TO CENTER OF TRANSVERSE WIRES NOT LESS THAN 2" NOR MORE THAN 4". SPACE CENTER TO CENTER OF LONGITUDINAL WIRES NOT MORE THAN 8".

WHEN USING As1, As7, AND As8 REINFORCEMENT AS ONE CONTINUOUS CAGE WITH SPLICES OCCURRING IN THE CENTER OF THE TOP AND BOTTOM OF THE BOX SECTION, THE MIN. LAP LENGTH FOR THE As7 AND As8 IS 15".  
 WELDING IS NOT PERMITTED ON REINFORCEMENT BARS OR WELDED WIRE REINFORCEMENT, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE REINFORCEMENT IS ACCEPTABLE.

WHEN REINFORCEMENT IS CUT, PLACE ADDITIONAL REINFORCEMENT ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT STEEL.  
 USE CONCRETE MIX NO. 3W82 WITH NO CALCIUM CHLORIDE ALLOWED.

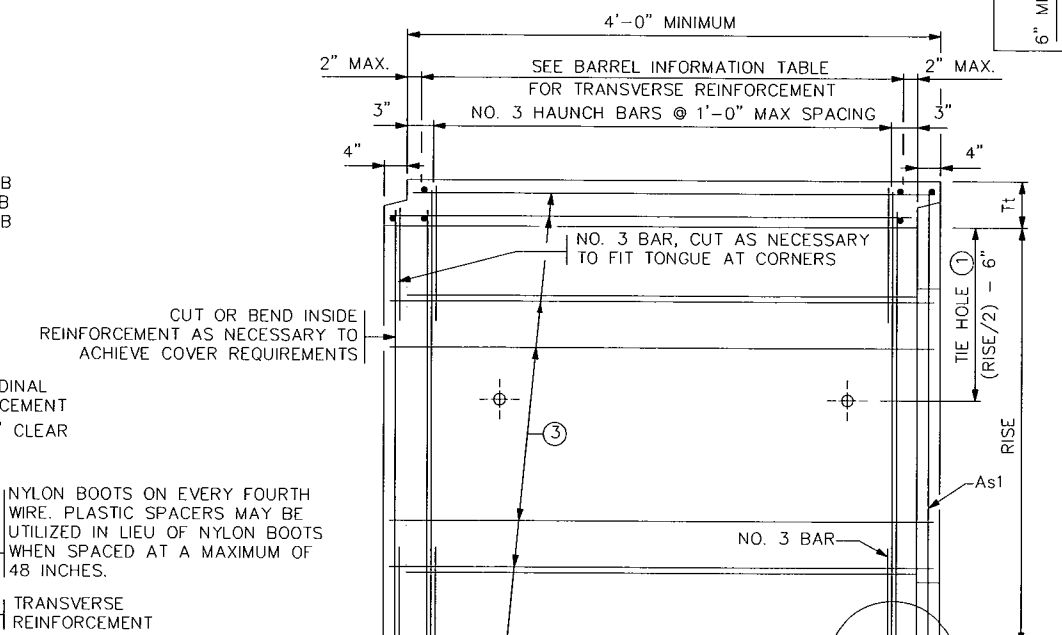
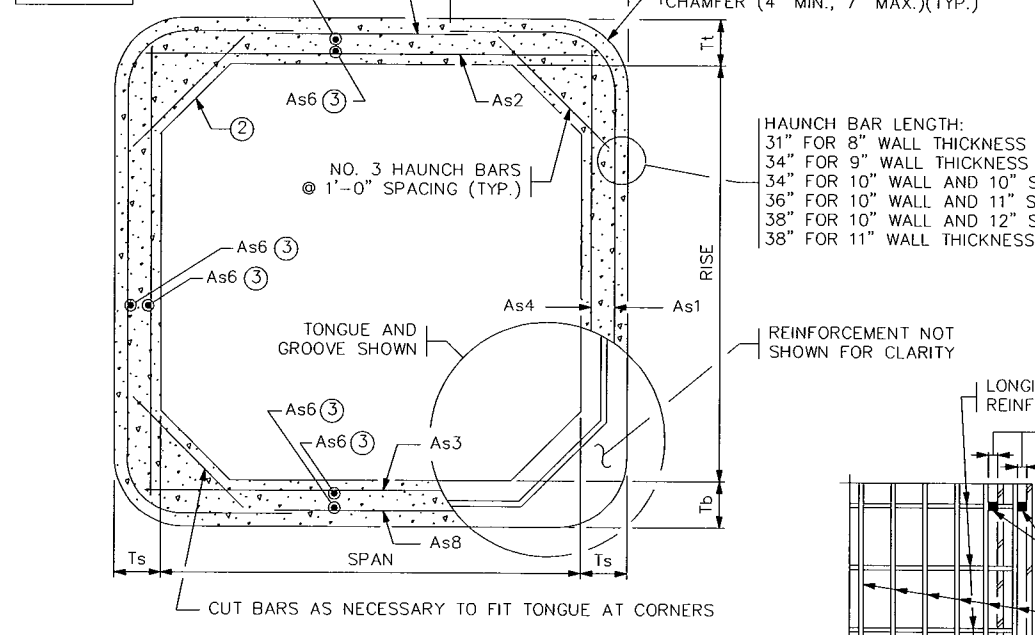
SHOP DRAWING APPROVAL IN ACCORDANCE WITH SPEC. 3238.2A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.  
 COMPACT THE FIRST 1.5' (LOOSE) OF FILL ABOVE THE BOX WITH LIGHT COMPACTION EQUIPMENT SUCH AS PLATE COMPACTORS OR WALK BEHIND ROLLERS.

TRANSVERSE REINFORCEMENT IS PARALLEL TO THE CULVERT SPAN. LONGITUDINAL REINFORCEMENT IS PERPENDICULAR TO THE CULVERT SPAN.  
 (1) USE 1" DIAMETER CULVERT TIES. SEE STANDARD PLATE NO. 3145 FOR DETAILS.  
 (2) USE 12" VERTICAL, 12" HORIZONTAL HAUNCHES ON ALL BOX SIZES.  
 (3) PLACE LONGITUDINAL REINFORCEMENT DENOTED AS As6 IN ALL SLABS AND WALLS WITH A MINIMUM OF 0.06 SQ. IN./FT.

(4) ROADWAY OR SHOULDER FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A 6" THICK DISTRIBUTION SLAB WITH CONCRETE MIX 3S52.  
 PLACE CAST-IN-PLACE DISTRIBUTION SLABS WITH 3" MIN. SELECT GRANULAR MATERIAL IN ACCORDANCE WITH SPEC. 3149.2B BETWEEN BARREL AND DISTRIBUTION SLAB.  
 PRECAST DISTRIBUTION SLABS MAY BE USED FOR FILL HEIGHTS OVER 1'-0". PROVIDE 6" MINIMUM SELECT GRANULAR MATERIAL IN ACCORDANCE WITH SPEC. 3149.2B BETWEEN BARREL AND SLAB.

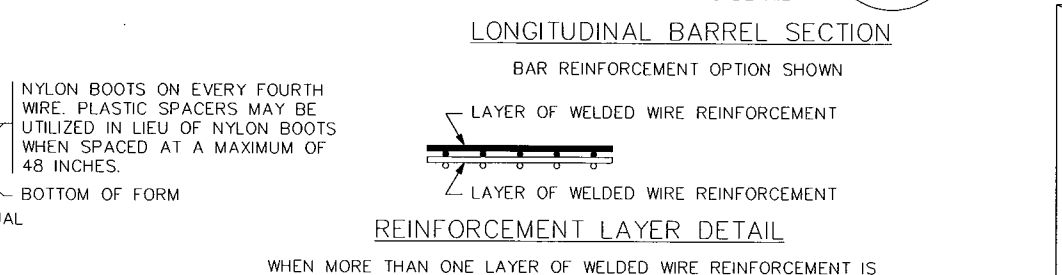
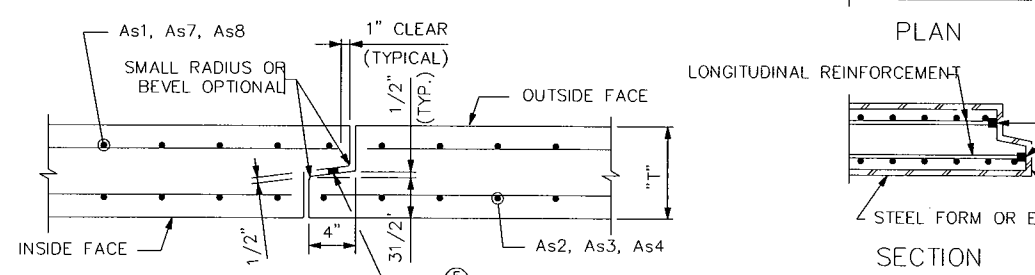
EXTEND THE WIDTH OF THE DISTRIBUTION SLAB TO THE OUTSIDE EDGES OF THE ROADWAY SHOULDERS UNLESS DIRECTED BY THE ENGINEER.  
 REDESIGN THE DISTRIBUTION SLAB PER THE MnDOT PAVEMENT DESIGN MANUAL IF IT IS USED AS PAVEMENT SURFACE.  
 PAYMENT FOR THE DISTRIBUTION SLAB AND SELECT GRANULAR MATERIAL BENEATH THE SLAB IS INCLUDED IN THE PRECAST CONCRETE BOX CULVERT PAY ITEM.

(5) REFER TO SPEC. 2412 FOR SEALANT REQUIREMENTS.



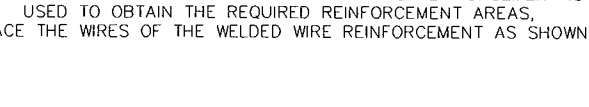
TRANSVERSE BARREL SECTION  
 BAR REINFORCEMENT OPTION SHOWN

LONGITUDINAL BARREL SECTION  
 BAR REINFORCEMENT OPTION SHOWN



TONGUE AND GROOVE JOINT DETAIL

FORMING DETAIL



REINFORCEMENT LAYER DETAIL

LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DISTRIBUTION SLAB REQUIRED *	RECESSED TIE RODS REQUIRED **	DIMENSIONS					WEIGHT (LBS./FT.)	WELDED WIRE REINFORCEMENT												
							SPAN (FT.)	RISE (FT.)	Tl (IN.)	Tb (IN.)	Ts (IN.)		As1		As2		As3		As4		As7		As8		
													AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	M (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)	AREA (IN. <sup>2</sup> /FT.)	LENGTH (FT.)
414+12.17 & 414+39.83	12'x10'	3	5000	7-15	NO	NO	12'	10'	10"	10"	8"	5650	0.77	18'-3"	3'-7"	1.39	12'-6"	1.52	12'-6"	0.20	10'-6"	0.24	8'-11"	0.24	8'-11"
414+26.00	12'x11'	3	5000	7-15	NO	NO	12'	11'	10"	10"	8"	5850	0.80	19'-4"	3'-7"	1.41	12'-6"	1.56	12'-6"	0.23	11'-6"	0.24	8'-11"	0.24	8'-11"

REVISION: DECEMBER 21, 2022  
 APPROVED: MARCH 24, 2011  
*Nancy A. Beninger*  
 STATE BRIDGE ENGINEER

\* ALL CLASS 1 CULVERTS WITH FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A DISTRIBUTION SLAB. IF A DISTRIBUTION SLAB IS NOT REQUIRED, INDICATE "NO" IN THIS BOX.  
 \*\* FOR PEDESTRIAN CULVERT APPLICATIONS HIDE-AWAY OR RECESSED TIE CONNECTIONS ARE REQUIRED, SEE STANDARD PLATE 3145. IF REQUIRED, INDICATE "YES" IN THIS BOX.

\*\*\* BOX CULVERTS WITH SPANS FROM 6 TO 14 FT. ARE DESIGNED FOR HL-93 LIVE LOADS (AASHTO LRFD 3.6.2.1) NOT INCLUDING THE DESIGN LANE LOAD. BOXES WITH SPANS OF 16 FT. ARE DESIGNED FOR HL-93 LIVE LOADS INCLUDING THE DESIGN LANE LOAD.

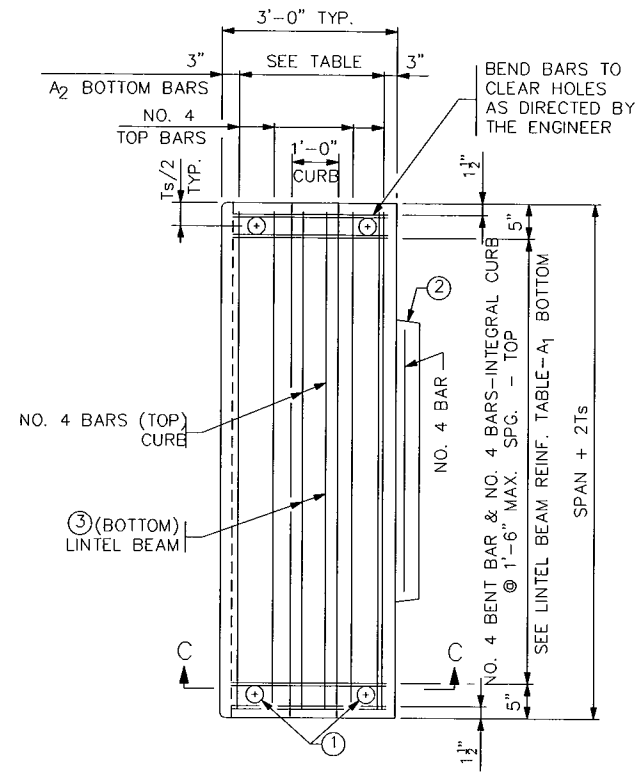
REV. NO.	DATE	REVISION DESCRIPTION	BY

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

CERTIFIED BY *Joseph M. Wilson* 9-21-23  
 LICENSED PROFESSIONAL ENGINEER  
 NAME: JOSEPH M. WILSON LIC. NO. 54947

STATE AID PROJ. NO 041-608-035 (C.S.A.H. 8) STA. 414+26 FIG. 5-395.101(A)  
 PRECAST CONCRETE BARREL DETAILS  
 DES: DR: APPROVED: BRIDGE NO. 41J90  
 CHK: CHK: SHEET NO. 6 OF 15 SHEETS

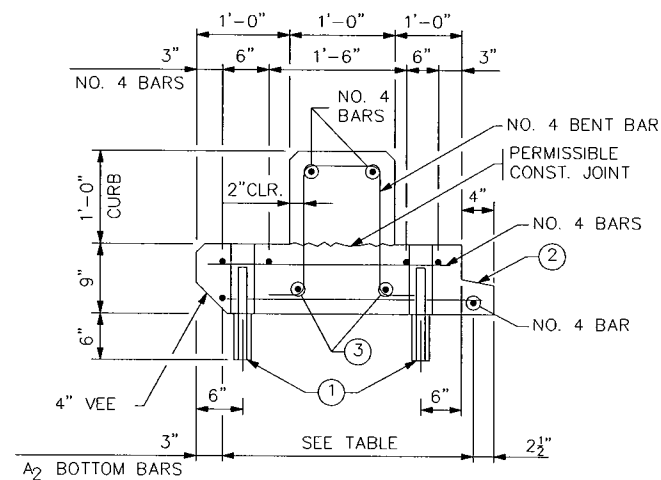
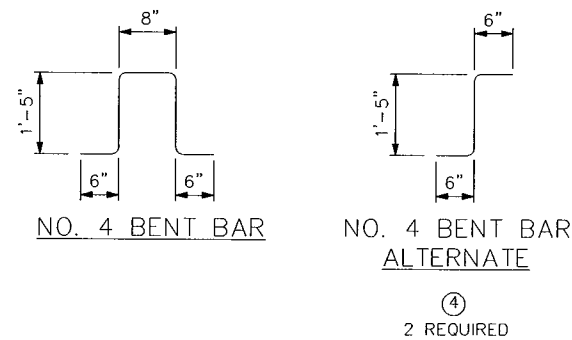




PLAN VIEW OF SQUARE LINTEL BEAM

LINTEL BEAM BOTTOM REINFORCEMENT		
SPAN (FT.)	A <sub>1</sub>	A <sub>2</sub>
6	NO. 4 @ 1'-2"	NO. 4 @ 9 1/2"
8	NO. 4 @ 8"	NO. 5 @ 8"
10	NO. 5 @ 8"	NO. 6 @ 7 1/2"
12	NO. 5 @ 6"	NO. 6 @ 6"
14	NO. 6 @ 6"	NO. 7 @ 6"
16	NO. 6 @ 6"	NO. 7 @ 6"

NOTE: MAXIMUM BAR SPACING GIVEN,  
REDUCE AS NECESSARY



SECTION C-C

INTEGRAL CURB WITH TONGUE.  
ADDITIONAL REINFORCEMENT IN TONGUE NOT SHOWN.

CONSTRUCTION NOTES

SEE STANDARD FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.

GROUT CONSISTS OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE 1A AIR ENTRAINED PORTLAND CEMENT. GROUT MIX MAXIMUM SLUMP IS 4".

- ① 3" DIA. HOLE THROUGH LINTEL BEAM AND 2" DIA. HOLE IN TOP OF WALL SECTION. PLACE NO. 8 DOWEL, 1'-0" LONG, IN HOLE AND FILL HOLE WITH GROUT.
- ② CHECK THE LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED. TONGUE AND GROOVE TO TERMINATE AT HAUNCH.
- ③ FOR SPANS UNDER 10'-0" USE NO. 8 BARS. FOR SPANS OF 10'-0" TO 12'-0" USE NO. 9 BARS. FOR 14'-0" AND 16'-0" SPAN, USE NO. 10 BARS.
- ④ ALTERNATE BAR BEND MAY BE USED FOR NO. 4 BENT BAR.

REVISION: DECEMBER 21, 2022

APPROVED: MARCH 24, 2011  
*Nancy Dubenberger*  
STATE BRIDGE ENGINEER

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CERTIFIED BY *Joseph M. Wilson* 9-21-23  
LICENSED PROFESSIONAL ENGINEER DATE  
NAME: JOSEPH M. WILSON LIC. NO. 54947

STATE PROJ. NO. 041-608-035 (C.S.A.H. 8) STA. 414+26

FIG. 5-395.104 (2 OF 2)

TITLE: PRECAST CONCRETE END SECTION  
TYPE III - SINGLE OR MULTIPLE BARREL  
FOR SKEWS UP TO 7 1/2'

DES: \_\_\_\_\_ DR: \_\_\_\_\_ APPROVED: \_\_\_\_\_  
CHK: \_\_\_\_\_ CHK: \_\_\_\_\_  
SHEET NO. 8 OF 15 SHEETS

BRIDGE NO.  
41J90



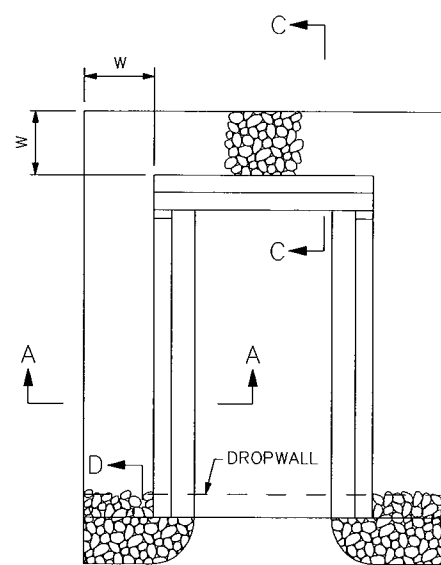
**CONSTRUCTION NOTES**

THIS PLAN SHEET IS FOR CULVERT EMBANKMENT PROTECTION ONLY. REFER TO THE GRADING PLANS FOR ADDITIONAL RIPRAP OR OTHER SCOUR PROTECTION MEASURES.

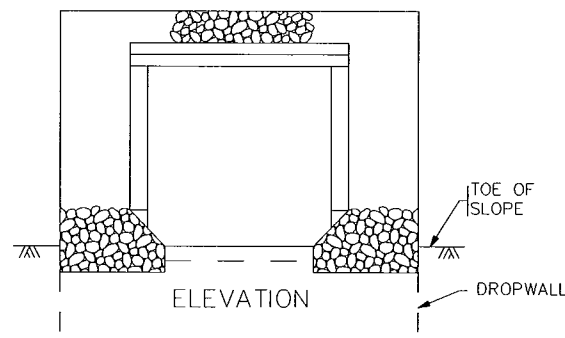
PROVIDE RIPRAP IN ACCORDANCE WITH SPECS. 2511 AND 3601.

EMBANKMENT PROTECTION, INCLUDING MATERIAL PLACED BETWEEN BARRELS THAT ARE LESS THAN 2'-0" APART, IS INCLUDED IN THE PRECAST CONCRETE BOX CULVERT PAY ITEMS.

- ① PROVIDE TYPE 7 GEOTEXTILE IN ACCORDANCE WITH SPEC. 3733. PROVIDE GEOTEXTILE STRIPS CONTINUOUS WITHOUT OVERLAPS, EXCEPT FOR THE TOP STRIP, WHICH SHOULD SHINGLE VERTICAL STRIPS. BURY THE TOP EDGE TO PREVENT UNDERMINING.
- ② IF THE DISTANCE BETWEEN MULTIPLE BARRELS IS LESS THAN 2'-0" USE EITHER PEA ROCK OR LEAN MIX BACKFILL (SPEC. 2520) BETWEEN THE CULVERTS AS APPROVED BY THE ENGINEER. IF PEA ROCK IS USED PROVIDE APPROVED GROUT SEEPAGE CUTOFF CORE, MINIMUM 12" THICK BETWEEN THE CULVERT'S TWO ENDS AND PROVIDE CLASS I GROUDED RIPRAP IN LIEU OF CLASS III RIPRAP.
- ③ REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES.

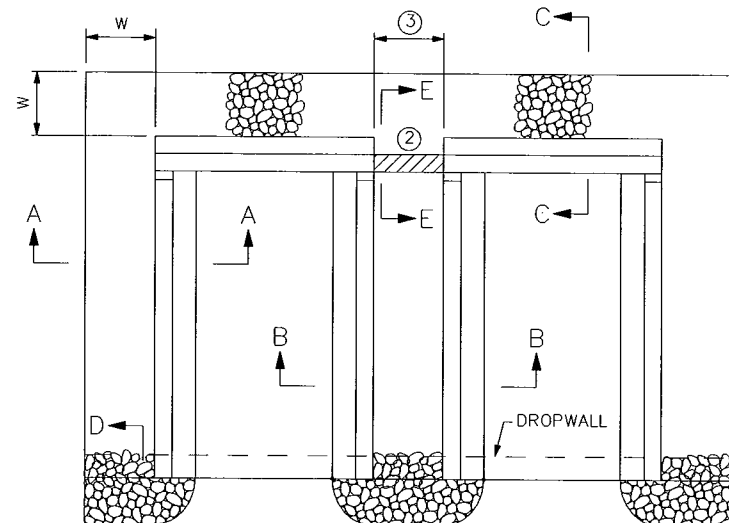


PLAN VIEW

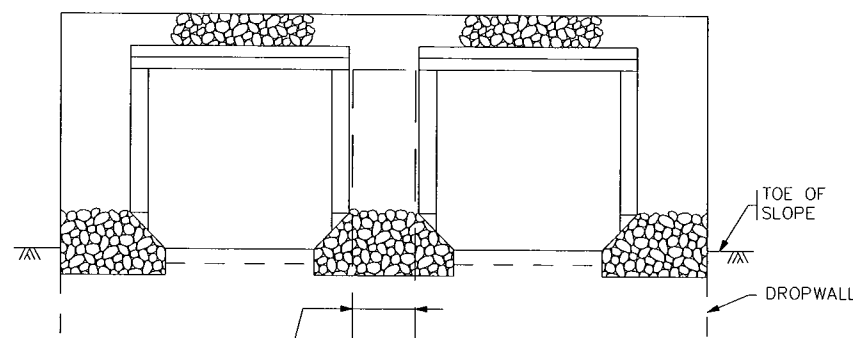


ELEVATION

SINGLE BARREL  
CLASS III OR IV SHOWN FOR SKEWS UP TO 7 1/2'



PLAN VIEW

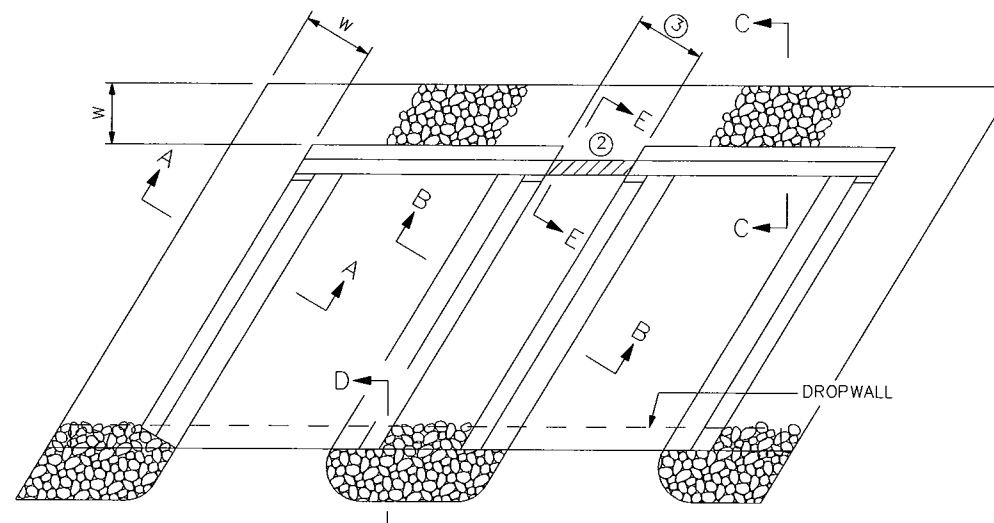


ELEVATION

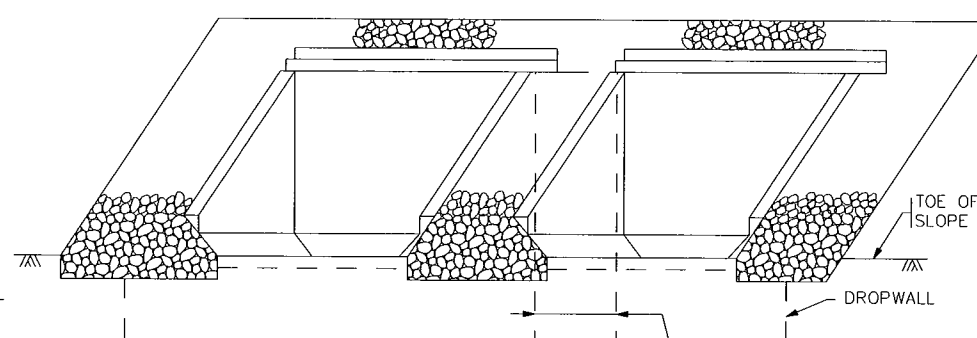
APPROVED GROUT SEEPAGE CUTOFF CORE ②

MULTIPLE BARREL

FOR SKEWS UP TO 7 1/2'  
CLASS III OR IV SHOWN  
DOUBLE BARREL SHOWN



PLAN VIEW



ELEVATION

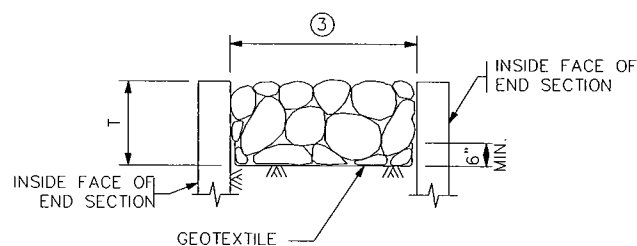
APPROVED GROUT SEEPAGE CUTOFF CORE ②

MULTIPLE BARREL

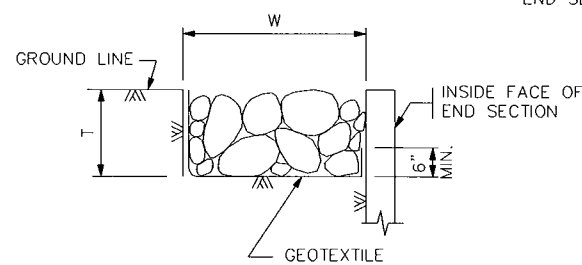
FOR SKEWS OVER 7 1/2'  
CLASS III OR IV SHOWN  
DOUBLE BARREL SHOWN,  
OTHER BARREL CONFIGURATIONS SIMILAR.

**RIPRAP CLASS**

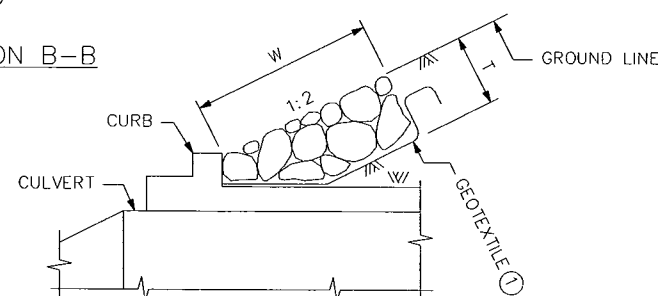
RIPRAP CLASS	RIPRAP CLASS	T	W
☒	III	1'-6"	3'-0"
☐	IV	2'-0"	4'-0"
☒	V	2'-6"	5'-0"



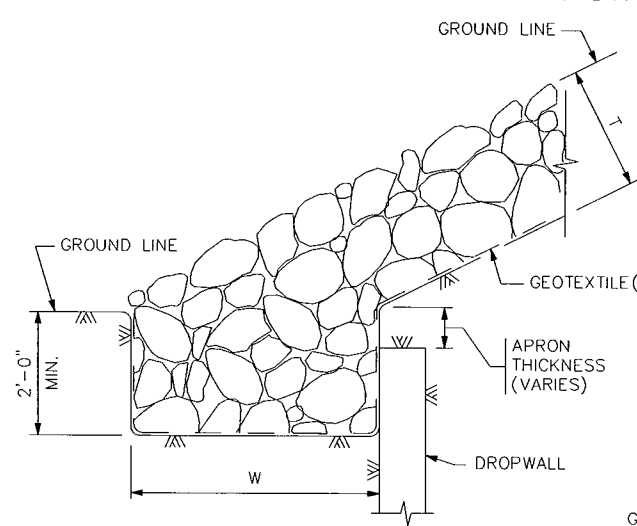
SECTION B-B



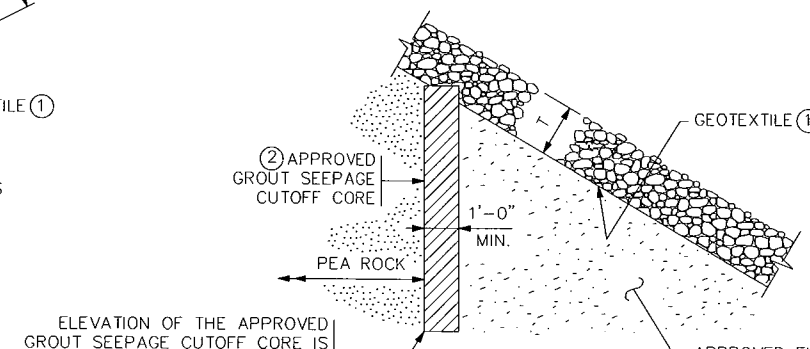
SECTION A-A



SECTION C-C



SECTION D-D



SECTION E-E

ELEVATION OF THE APPROVED GROUT SEEPAGE CUTOFF CORE IS TO BE THE SAME ELEVATION AS THE BOTTOM OF THE DROP WALL

REVISION: DECEMBER 21, 2022

APPROVED: MARCH 24, 2011

*Nancy Saubenberg*  
STATE BRIDGE ENGINEER

REV. NO.	DATE	REVISION DESCRIPTION	BY

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CERTIFIED BY *Joseph M. Wilson* 9-21-23  
LICENSED PROFESSIONAL ENGINEER DATE  
NAME: JOSEPH M. WILSON LIC. NO. 54947

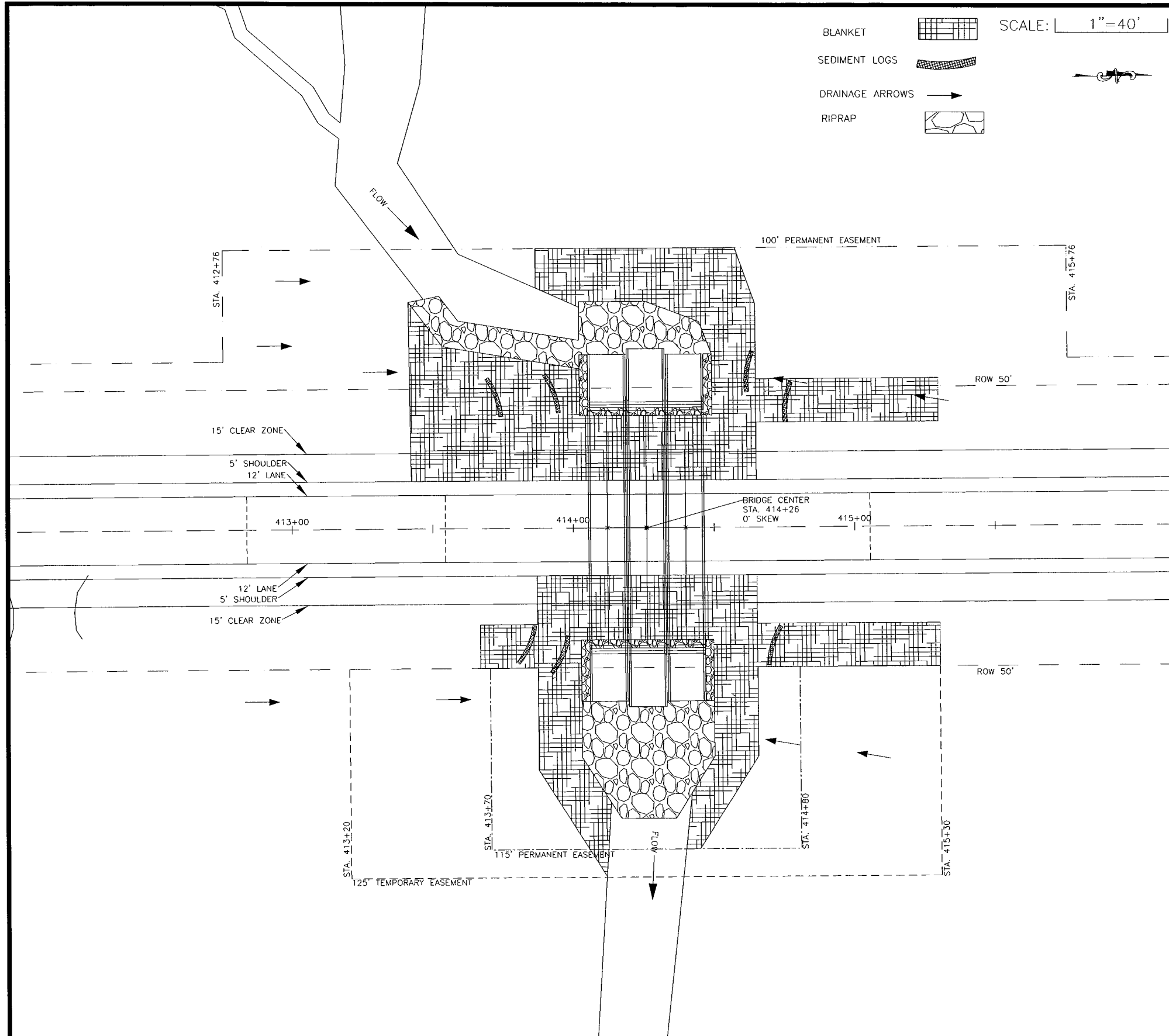
STATE AID PROJ. NO. 041-608-035 (CSAH 8) STA. 414+26

EMBANKMENT PROTECTION FOR BOX CULVERTS

DES: DR: APPROVED:  
CHK: CHK: SHEET NO. 9 OF 15 SHEETS

FIG. 5-395.115

BRIDGE NO. 41J90



BLANKET SCALE: 1"=40'

SEDIMENT LOGS

DRAINAGE ARROWS

RIPRAP

RANDOM RIPRAP CLASS III			
STATION	SIDE	REMARKS	QUANTITY
414+03 TO 414+50	LT.	INLET	30 TONS
414+03 TO 414+50	RT.	OUTLET	31 TONS
TOTAL			61 TONS
*1.3 TONS PER CUBIC YARD			

RANDOM RIPRAP CLASS V			
STATION	SIDE	REMARKS	QUANTITY
413+42 TO 414+50	LT.	INLET	163 TONS
414+03 TO 414+50	RT.	OUTLET	198 TONS
TOTAL			361 TONS
*1.3 TONS PER CUBIC YARD			

ROLLED EROSION PREVENTION, CATEGORY 20			
STATION	SIDE	REMARKS	SQ. YD.
413+43 TO 415+30	LT.	INLET	822
413+67 TO 415+30	RT.	OUTLET	596
TOTAL			1418
*QUANTITIES MAY BE ADJUSTED BY ENGINEER IN THE FIELD			

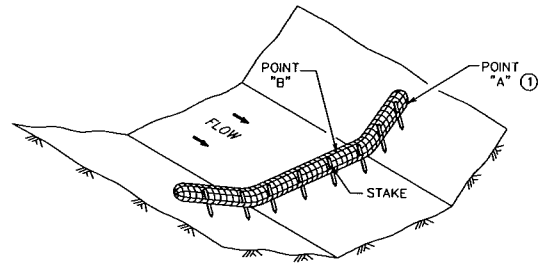
SEEDING				
STATION	SIDE	REMARKS	SEEDING	SEEDING CRP
412+97 TO 415+30	LT.	INLET	0.4	-
413+67 TO 415+30	RT.	OUTLET	0.4	0.3
TOTAL			0.8	0.3
*QUANTITIES MAY BE ADJUSTED BY ENGINEER IN THE FIELD				

SEED MIXTURE 21-111		SEED MIXTURE 25-142		SEED MIXTURE SPECIAL (CRP)	
SIDE	POUNDS	SIDE	POUNDS	SIDE	POUNDS
LT. (INLET)	10.0	LT. (INLET)	15.0	LT. (INLET)	-
RT. (OUTLET)	5.0	RT. (OUTLET)	7.0	RT. (OUTLET)	20.0
TOTAL	15.0	TOTAL	22.0	TOTAL	20.0
*QUANTITIES MAY BE ADJUSTED BY ENGINEER IN THE FIELD					

MULCH MATERIAL, TYPE 1		DISK ANCHORING	
SIDE	TONS	SIDE	ACRE
LT. (INLET)	1.0	LT. (INLET)	0.2
RT. (OUTLET)	1.0	RT. (OUTLET)	0.3
TOTAL	2.0	TOTAL	0.5
*QUANTITIES MAY BE ADJUSTED BY ENGINEER IN THE FIELD			

**EROSION & SEDIMENT CONTROL PLAN**

CERTIFIED BY *Joseph M. Wilton* LIC. NO. 54947 DATE: 10-6-23  
 LICENSED ENGINEER



SEDIMENT CONTROL LOG TYPE WOOD FIBER, OR TYPE COMPOST ② ③

NOTES:

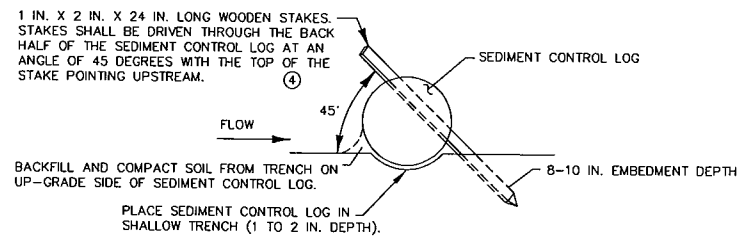
SEE SPECS. 2573, 3601, 3733, 3885, 3886

FOR DITCH CHECKS, PLACE SEDIMENT CONTROL LOG PERPENDICULAR TO FLOW AND IN A CRESCENT SHAPE WITH THE ENDS FACING UPSTREAM.

APPROXIMATE SPACING BETWEEN EACH DITCH CHECK SHOULD BE DETERMINED FROM THE FOLLOWING SPACING FORMULA:

$$\text{APPROXIMATE SPACING OF DITCH CHECKS (FT.)} = Y = \frac{\text{DITCH CHECK HEIGHT (FT)}}{\% \text{ CHANNEL SLOPE}} \times 100$$

- ① POINT "A" MUST BE A MINIMUM OF 6 INCHES HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.
- ② DITCH GRADE 1.5% - 3% MAX. FLOW VELOCITY 4.5 FT./SEC. (SEDIMENT CONTROL LOG WITH EROSION CONTROL BLANKET)
- ③ DITCH GRADE 1.5% - 3% MAX. FLOW VELOCITY 1.5 FT./SEC. (SEDIMENT CONTROL LOG WITHOUT EROSION CONTROL BLANKET)

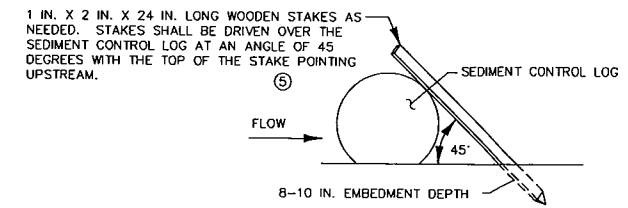


TYPES: STRAW, WOOD FIBER, OR COIR

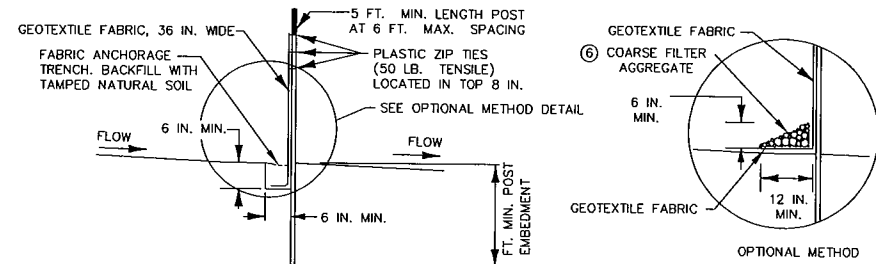
NOTES:

SEE SPECS. 2573, 3149, 3874, 3882, 3886, & 3897.

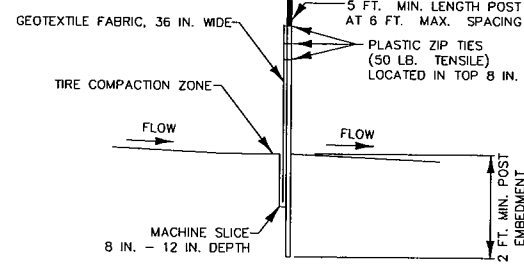
- ④ SPACE BETWEEN STAKES SHALL BE A MAXIMUM OF 1 FOOT FOR DITCH CHECKS OR 2 FEET FOR OTHER APPLICATIONS.
- ⑤ PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.



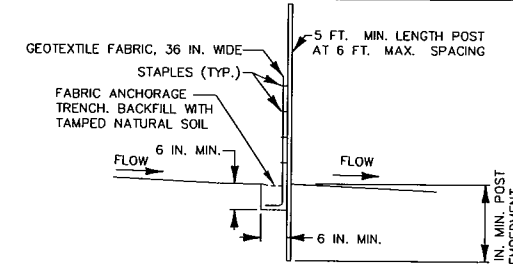
TYPES: WOOD CHIP, COMPOST, OR ROCK



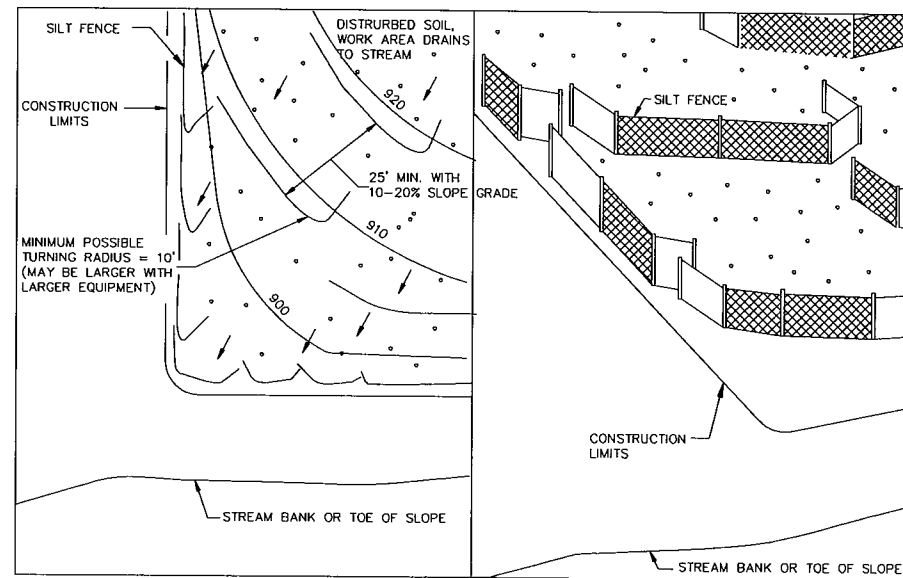
SILT FENCE TYPE HI ⑦ (HAND INSTALLED)



SILT FENCE TYPE MS ⑦ (MACHINE SLICED)



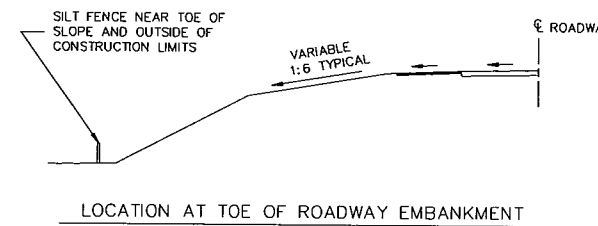
SILT FENCE TYPE PA ⑧ (PREASSEMBLED)



PLAN VIEW

PERSPECTIVE VIEW

J-HOOK INSTALLATION



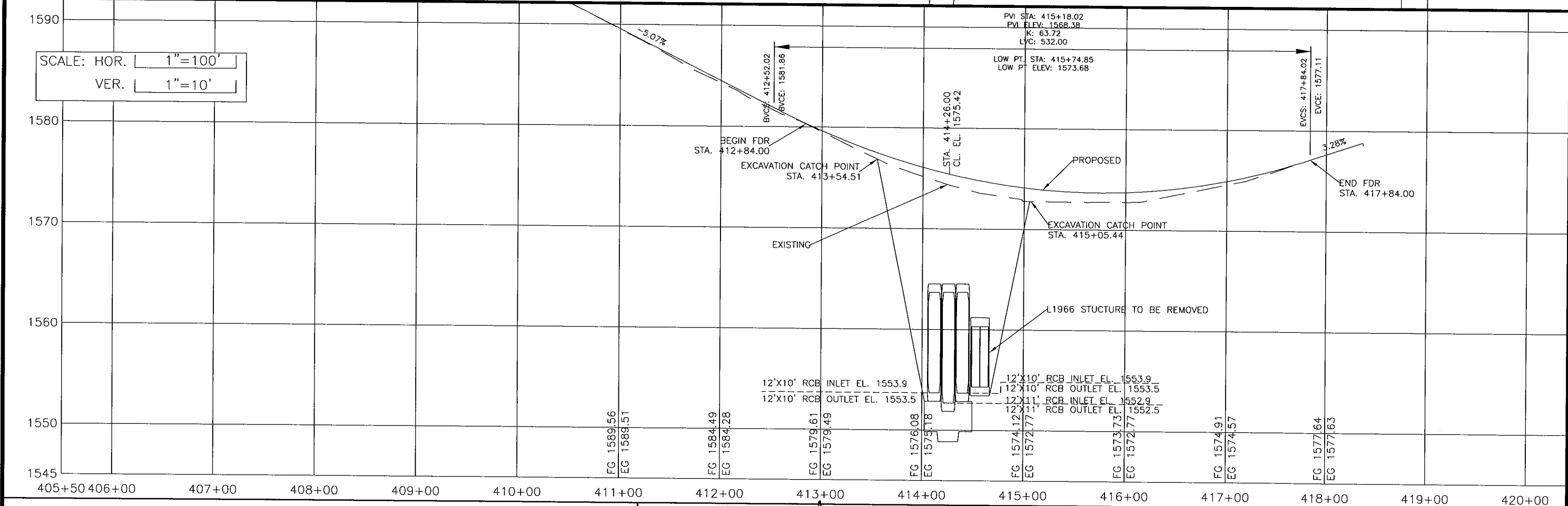
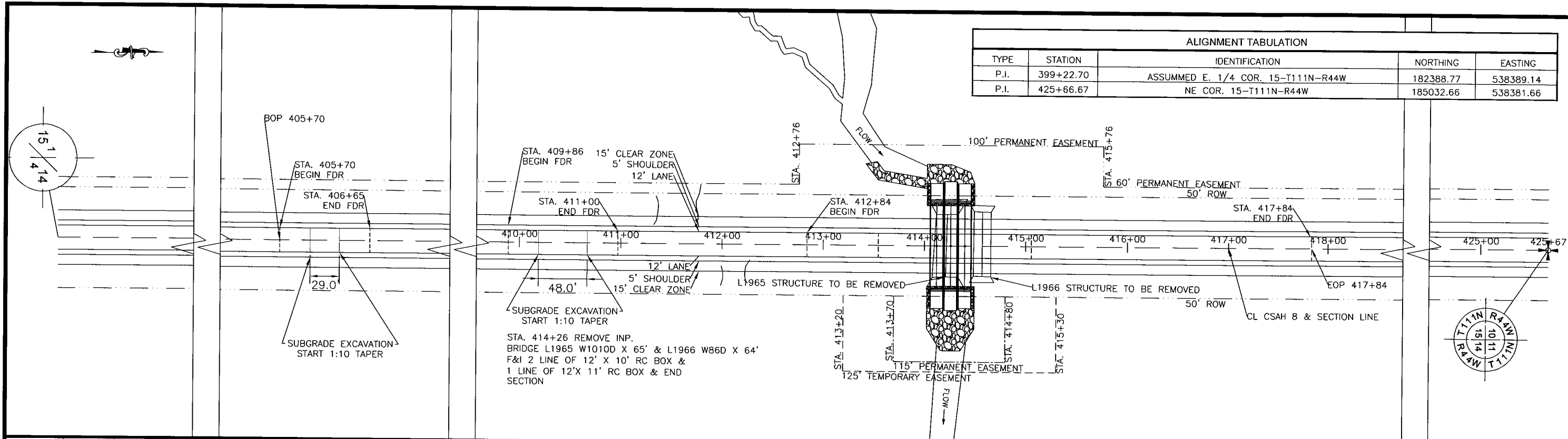
LOCATION AT TOE OF ROADWAY EMBANKMENT

NOTES:

SEE SPECS. 2573, 3149 & 3886.

- ⑥ COARSE FILTER AGGREGATE (SPEC. 3149) SHALL BE INCIDENTAL.
- ⑦ TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 1 ACRE.
- ⑧ TO PROTECT AREAS FROM SHEET FLOW. MAXIMUM CONTRIBUTING AREA: 0.25 ACRE.

ALIGNMENT TABULATION				
TYPE	STATION	IDENTIFICATION	NORTHING	EASTING
P.I.	399+22.70	ASSUMED E. 1/4 COR. 15-T111N-R44W	182388.77	538389.14
P.I.	425+66.67	NE COR. 15-T111N-R44W	185032.66	538381.66

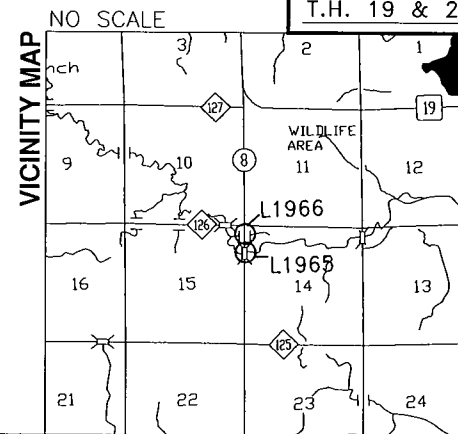
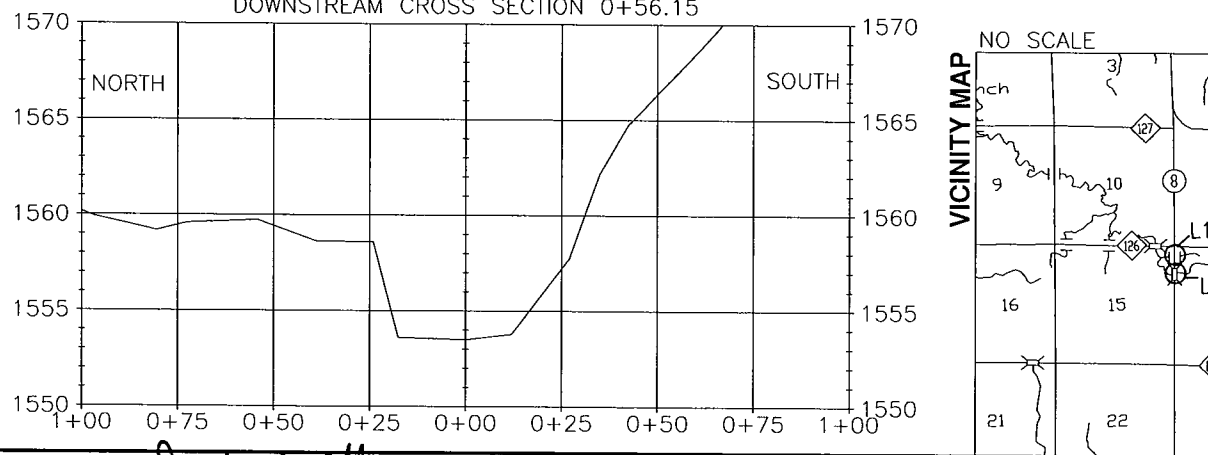
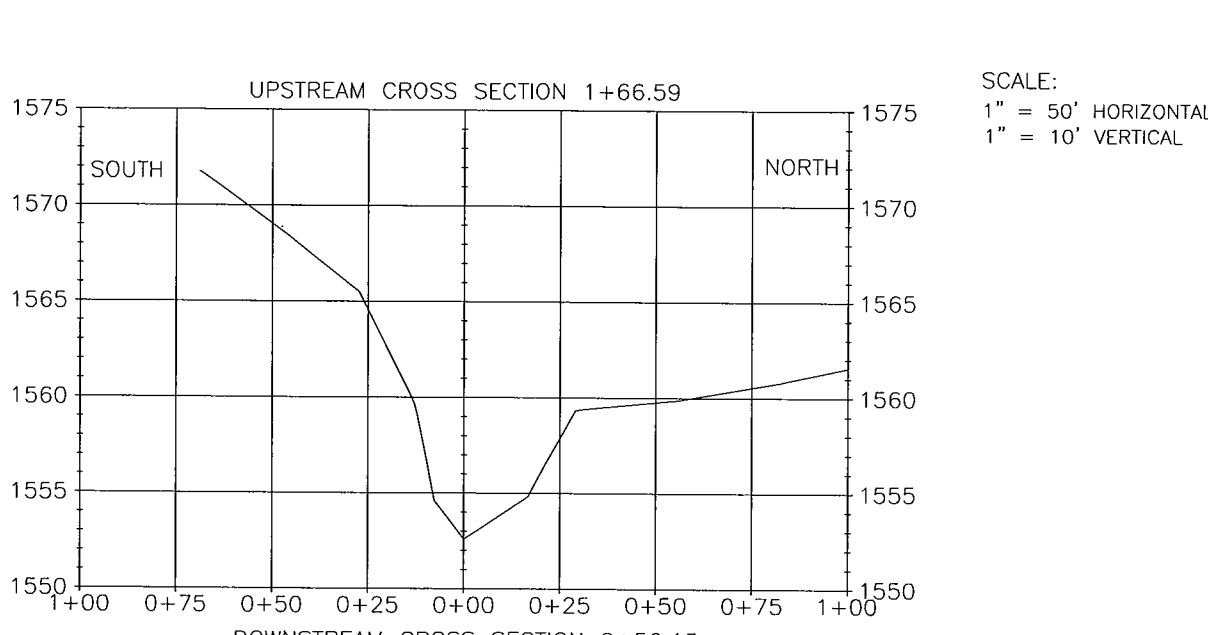
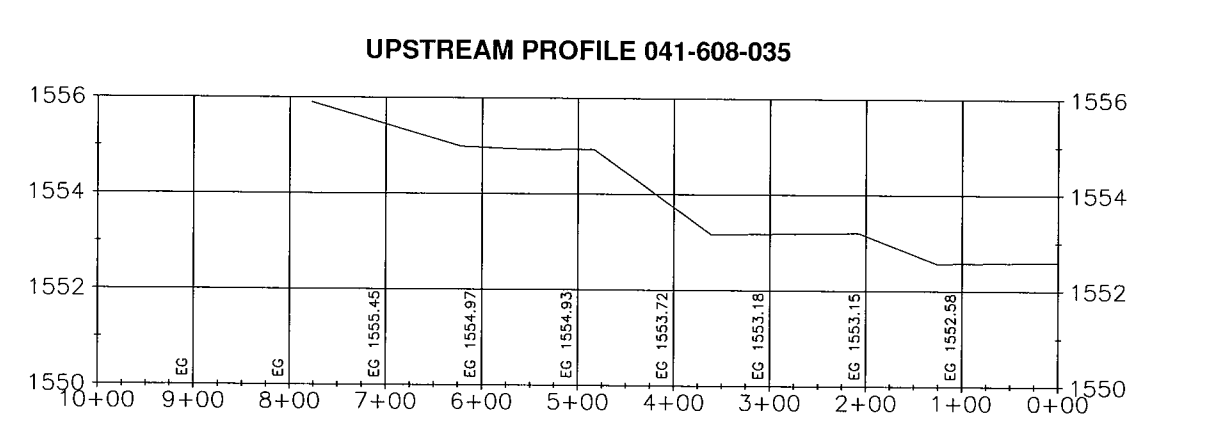
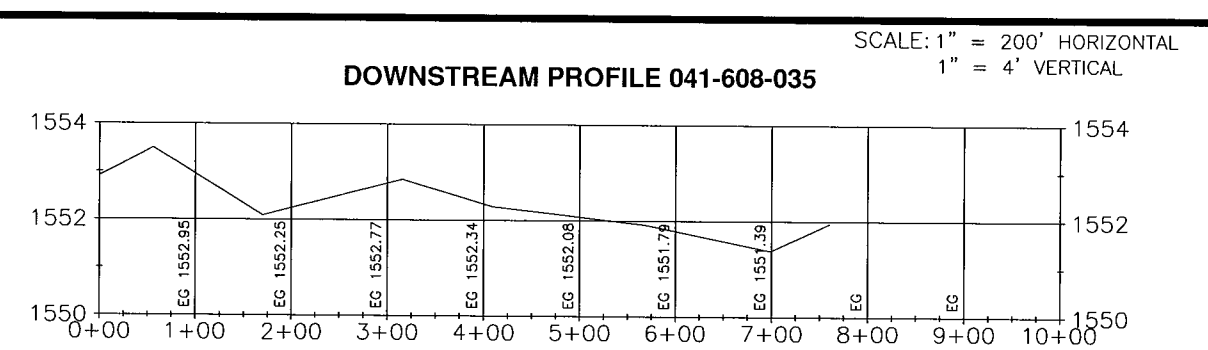
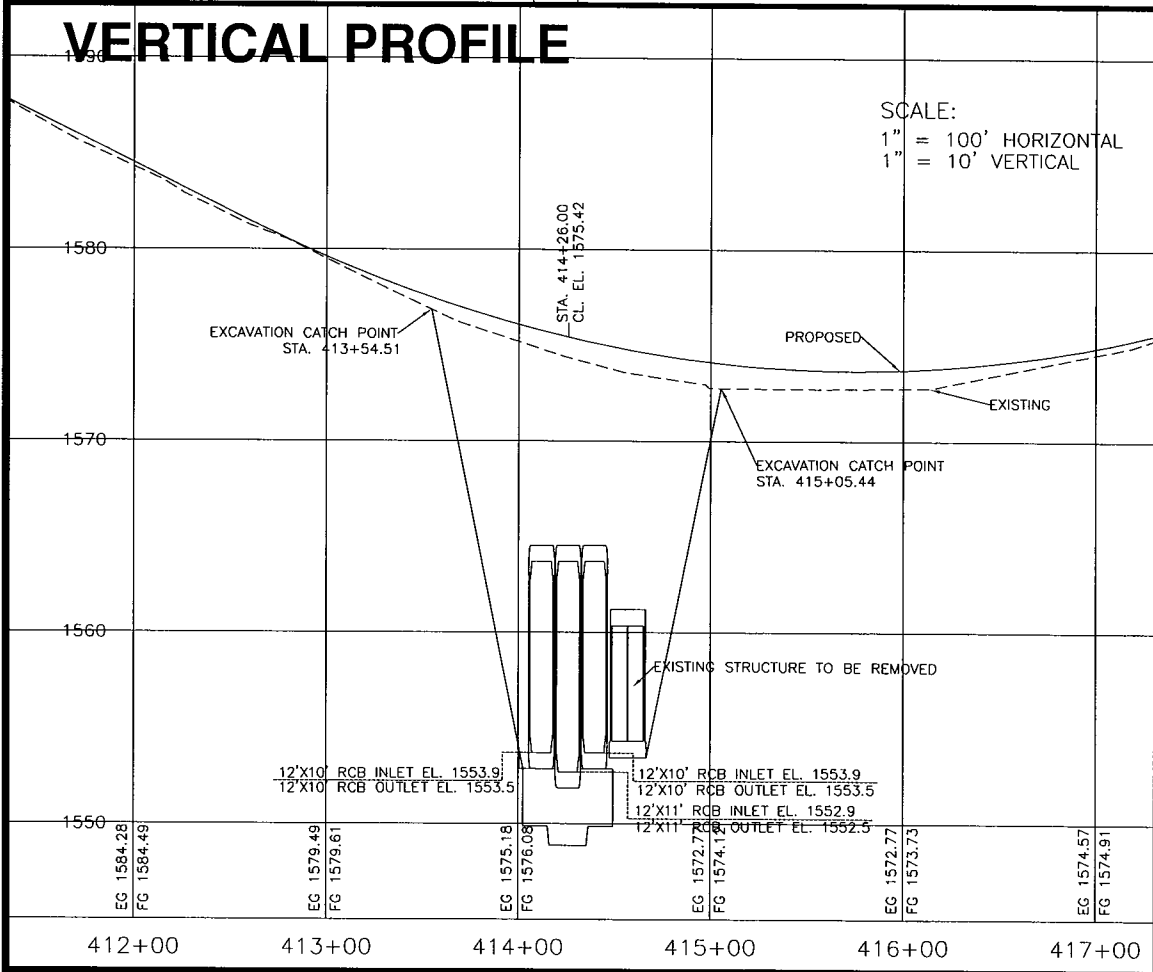
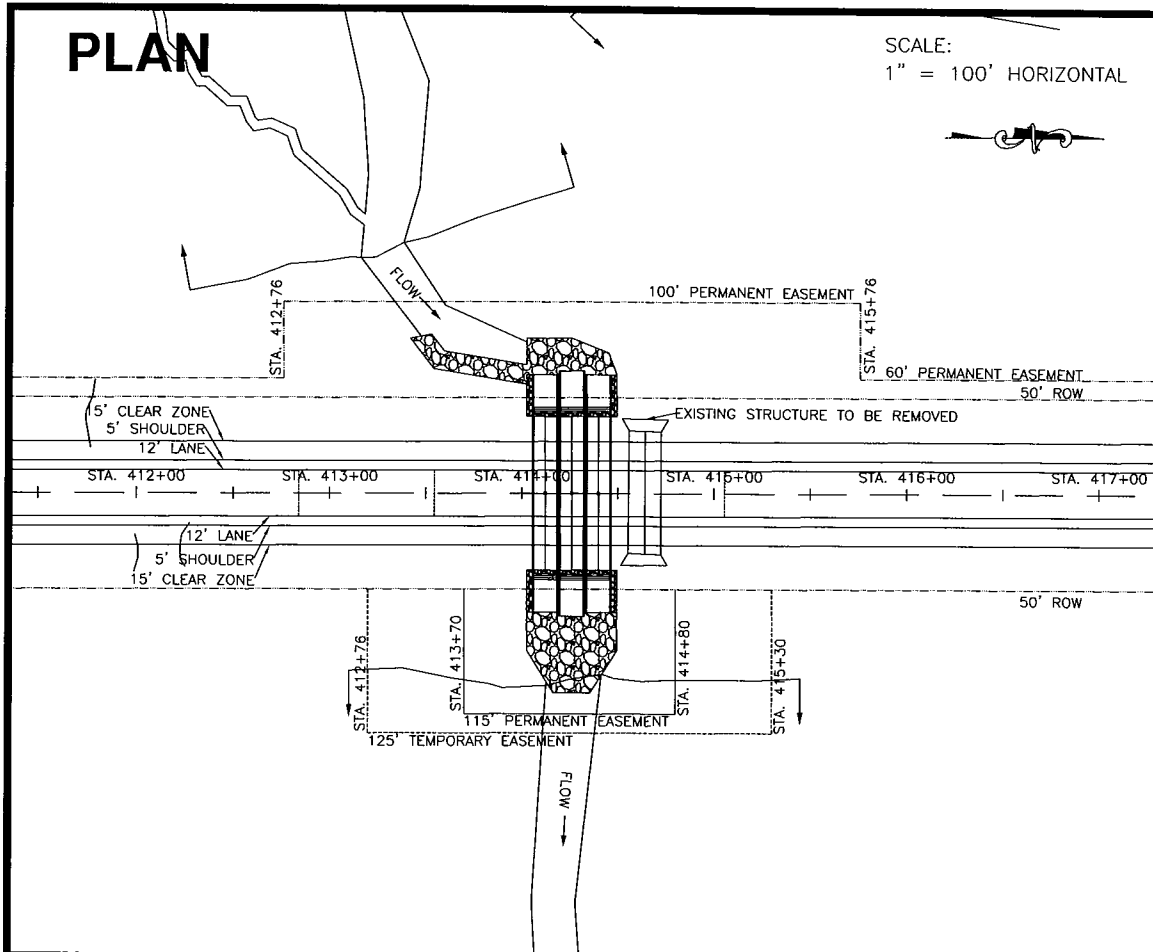


SCALE: HOR. 1" = 100'  
VER. 1" = 10'

# PLAN & PROFILE

CERTIFIED BY *Joseph M. Miller* LIC. NO. 54947 DATE: 9-19-2023  
LICENSED ENGINEER

S.A.P. NO. 041-608-035 SHEET NO. 12 OF 15



**FEDERAL PROJ. NO.**

**LOCATION ENGINEER'S OBSERVATION AT BRIDGE SITE**

- SPECIAL FEATURES: WATERFALLS, DAMS, FLOODS, ICE DEBRIS, ETC...  
**NONE**
- OTHER BRIDGES OR CULVERTS OVER THE SAME STREAM, GIVEN LOCATION, TYPE, ETC...
- APPARENT HIGH WATER ELEVATION \_\_\_\_\_ OBTAINED FROM \_\_\_\_\_
- OTHER DATA: APPROX. VELOCITY OF WATER AT TIME OF SURVEY \_\_\_\_\_

**HYDRAULIC ENGINEER'S RECOMMENDATION**

DATE: SEPT. 12, 2019

STREAM OR DITCH DESIGNATION YELLOW MEDICINE RIVER SOUTH BRANCH DRAINAGE AREA 66.38 SQ. MI.

MAX. FLOOD ON RECORD UNK. DESIGN FLOOD (100 YR. FREQ.) 2720 CFS

MAX. OBSERVED HIGHWATER ELEV. UNK. DESIGN HIGHWATER ELEV. 1564.57 FT

DESIGN MEAN VELOCITY THROUGH STRUCTURE 8.5 FPS (AVG.)

LOW SUPERSTRUCTURE AT OR ABOVE ELEVATION 1563.50 FT

FLOWLINE ELEVATION 1553.70 FT SKEW ANGLE 0°

BASIC HEAD WATER ELEVATION: 1564.57 FT

GREATEST/OVER TOPPING FLOOD (500 YR. FREQ.): 4330 CFS

GREATEST/OVER TOPPING HEADWATER ELEVATION (500 YR. FREQ.): 1568.63 FT

**ENGINEER'S RECOMMENDATION**

INSTALL 2 LINES OF 12X10 RC BOX CULVERT AT A 0° SKEW AND 1 LINE OF 12X11 RC BOX CULVERT WILL BE SET 1' BELOW THE NATURAL CHANNEL FLOWLINE TO ALLOW FOR FISH PASSAGE.

BRIDGE SURVEY SHEETS MADE FROM LINCOLN COUNTY HIGHWAY DEPARTMENT SURVEY

BENCHMARK ELEVATION 1612.179

LOCATION 4104 A, LOCATED ON T.H. 19 ON THE NORTHEAST CORNER OF THE INTERSECTION T.H. 19 & 280TH AVE.

**STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION**

**BRIDGE SURVEY**

AT STATION 414+26 ON CSAH 8

PROPOSED BRIDGE LOCATION 0.2 MILES SOUTH OF INTERSECTION CR 126 & CSAH 8

SEC. 14&15 TWP. 111N RNG. 44W

TOWNSHIP: LAKE STAY

COUNTY: LINCOLN EXISTING BRIDGE NO. L1965&L1966

PROPOSED BRIDGE NO. 41J90

# STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

## PROJECT DESCRIPTION

S.A.P. 041-608-035 CONSISTS OF REMOVING THE EXISTING STRUCTURE (EXISTING BRIDGE L1965 & L1966) OVER SOUTH BRANCH YELLOW MEDICINE RIVER, LOCATED ON C.S.A.H 8, APPROXIMATELY 0.2 MI. SOUTH OF INTERSECTION OF CR 126 & C.S.A.H. 8, AND REPLACING IT WITH 2 LINE OF 12' X 10' AND 1 LINE OF 12' X 11' RC BOX CULVERT (NEW BRIDGE #41J90). CONSTRUCTION ACTIVITY INCLUDES REMOVAL OF THE EXISTING STRUCTURE, INSTALLING THE NEW BOX CULVERTS, BACKFILLING, AND GRADING. THE TOTAL NET LENGTH OF THE PROJECT IS 709 FEET. THE RECEIVING WATER FOR STORM WATER FROM THIS PROJECT IS THE YELLOW MEDICINE RIVER. THE YELLOW MEDICINE RIVER IS CONSIDERED AN IMPAIRED WATER FOR MERCURY IN FISH TISSUE, TURBIDITY, ESCHERICHIA COLI. THE STREAM ID FOR THE YELLOW MEDICINE RIVER IS 07020004-763.

## PROJECT ENGINEER

THE PROJECT ENGINEER AND THE CONTRACTOR ARE RESPONSIBLE FOR THE IMPLEMENTATION OF THE SWPPP AND THE INSTALLATION, INSPECTION, AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL BMP'S BEFORE AND DURING CONSTRUCTION.

## TIMING AND BMP INSTALLATION

THE EROSION PREVENTION AND SEDIMENT CONTROL BMP'S SHALL BE INSTALLED AS NECESSARY TO MINIMIZE EROSION FROM DISTURBED SURFACES AND CAPTURE SEDIMENT ON SITE, AND SHALL MEET THE NPDES PERMIT PART IV CONSTRUCTION ACTIVITY REQUIREMENTS.

## CALCULATIONS FOR STA. 405+70 TO 417+84 (BRIDGE REPLACEMENT AND GRADING)

WATER QUALITY VOLUMES

NEW IMPERVIOUS AREA 0.948 - 0.948 ACRES = 0.000 ACRES = 0.000 SQ. FT.

WATER QUALITY VOLUME 0.000 SQ. FT. \* 1 IN. = 0.000 CU. FT.

## SWPPP DESIGNER

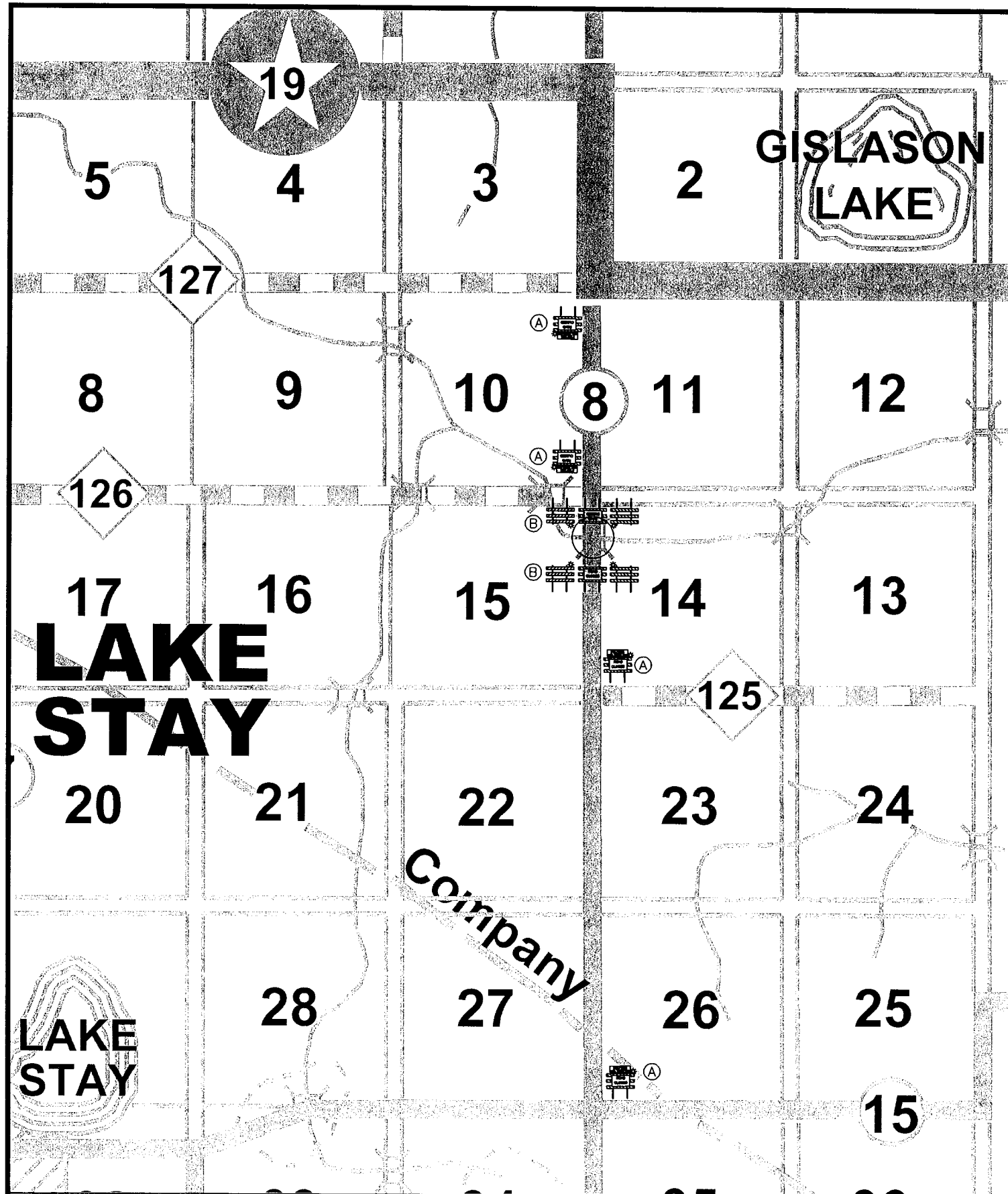
KYRA PAVEK - LINCOLN COUNTY TECHNICIAN

## AMENDING THE SWPPP

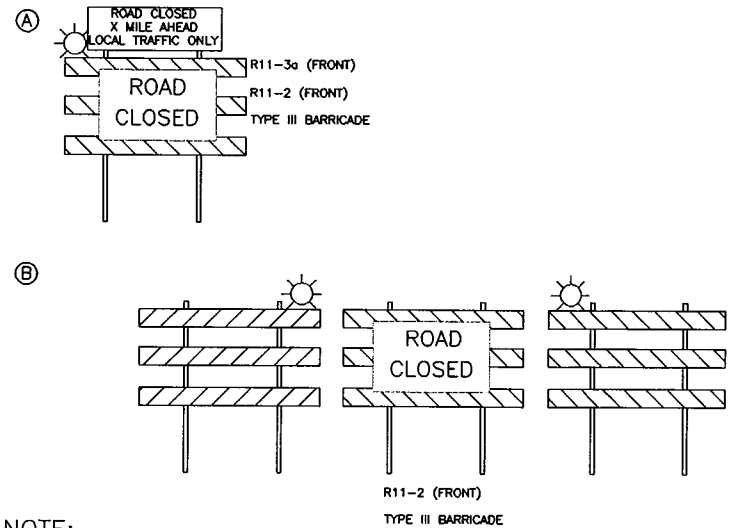
THE SWPPP MUST BE AMENDED TO RECORD CHANGES OR MODIFICATIONS TO PERMIT BMP'S OR OTHER STORM WATER TREATMENT SYSTEMS AND REMOVALS OF TEMPORARY BMP'S. CHANGES TO TEMPORARY BMP'S MAY BE RECORDED ON THIS SHEET. INCLUDE A BRIEF DESCRIPTION OF THE PROBLEM, LOCATION, NATURE OF ALTERATION, AND COMMENTS. THIS RECORD IS TO BE RETAINED FOR THREE YEARS AFTER PROJECT COMPLETION.

DATE REPORTED	STAFF (SHEET)	PLAN LOCATION (STATION)	PROJ. LOCATION	PROBLEM, SOLUTION, AND NOTES

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN		
DESCRIPTION	TITLE	LOCATION
SUMMARY OF PERVIOUS AND IMPERVIOUS	SWPPP	SHEET 14
DIRECTION OF FLOW	EROSION & SEDIMENT CONTROL PLAN	SHEET 10
RECEIVING SURFACE WATERS	SWPPP	SHEET 14
FINAL STABILIZATION	EROSION & SEDIMENT CONTROL PLAN	SHEET 10
DRAINAGE TABULATION	SWPPP	SHEET 14
EROSION CONTROL TABULATION	EROSION & SEDIMENT CONTROL PLAN	SHEET 10
EROSION CONTROL SHEETS	EROSION & SEDIMENT CONTROL PLAN & EROSION & SEDIMENT CONTROL DETAILS	SHEETS 10 & 11
SEDIMENT CONTROL DETAILS	EROSION & SEDIMENT CONTROL DETAILS	SHEET 11



T112  
T111



NOTE:  
CONTRACTOR SHALL INSTALL AND MAINTAIN ORANGE SAFTEY FENCE OR OTHER MATERIAL ACCEPTED BY THE ENGINEER AS TO COMPLETELY BLOCK THE ROADWAY FROM SHOULDER PI TO SHOULDER PI AT THE BARRICADE (B) LOCATION.

SIGN	SIGN NO.	QUANTITY	SIZE	COLOR	FLASHERS
	TYPE III BARRICADE	10	60" X 48"	ORANGE ON WHITE	8
	R11-2	6	48" X 30"	BLACK ON WHITE	
	R11-3a	4	60" X 30"	BLACK ON WHITE	

ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MINNESOTA MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES AND THE LATEST EDITION OF THE TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS FIELD MANUAL.

ALL NECESSARY TRAFFIC CONTROL DEVICES ON THIS PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

**TRAFFIC CONTROL**

CERTIFIED BY *Joseph M. Wilson* LIC. NO. 54947 DATE: 9-19-2023  
LICENSED ENGINEER

S.A.P. NO. 041-608-035 SHEET NO. 15 OF 15