

MINNESOTA DEPARTMENT OF TRANSPORTATION LINCOLN COUNTY

CONSTRUCTION PLAN FOR REPLACEMENT OF COUNTY STRUCTURE NO. 191 WITH 1 LINE OF 12'X5' R.C. BOX CULVERT

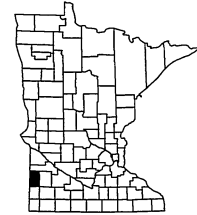
LOCATED ON 380TH ST **BETWEEN** 130TH AVE AND CO RD 101 IN HANSONVILLE TOWNSHIP (Geographic description)
FROM NORTHWEST CORNER OF SEC. 15-T113N-R46W **TO** NORTHEAST CORNER OF SEC. 15-T113N-R46W (Legal description)

PLANS SYMBOLS

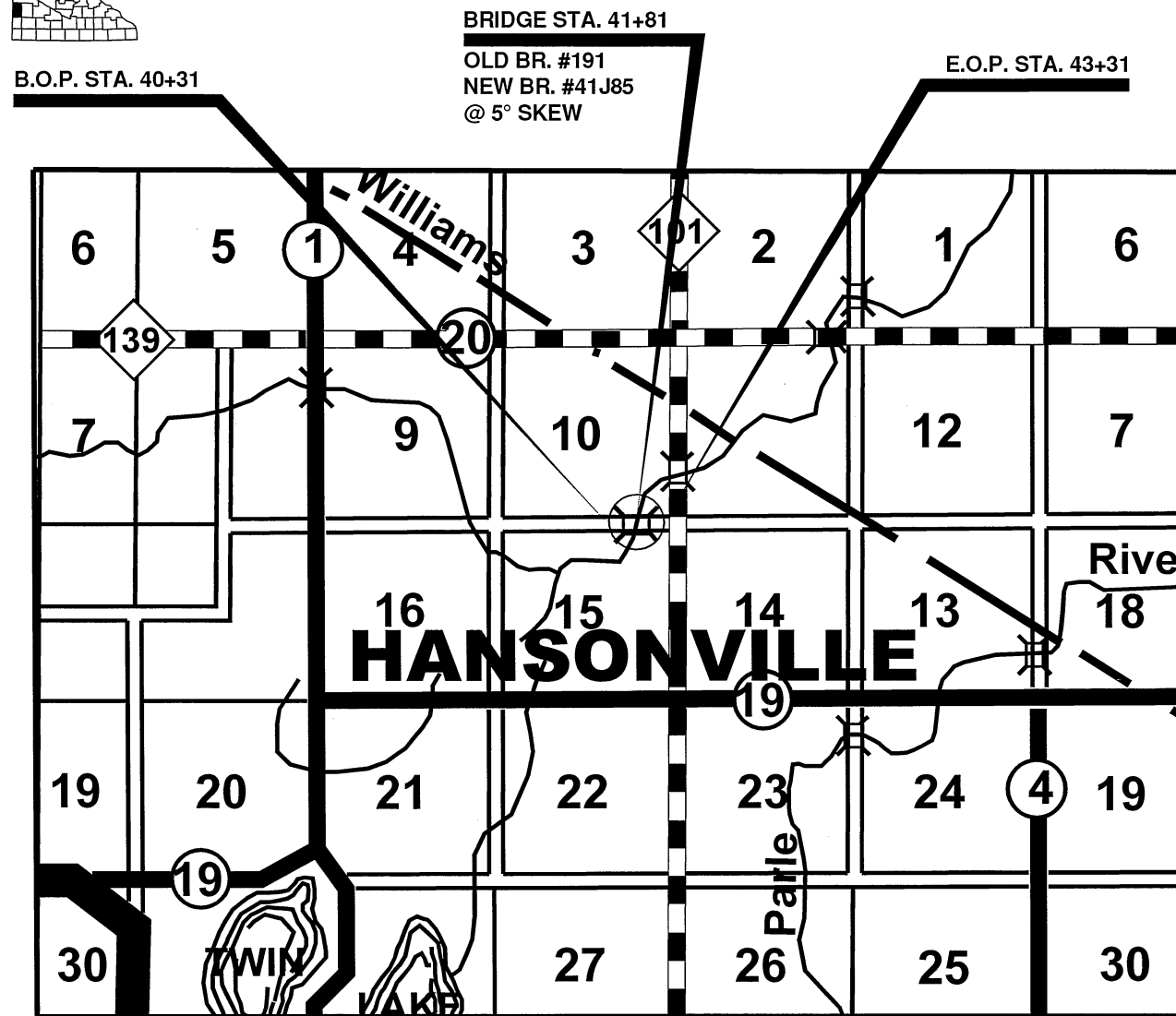
- STATE LINE
- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- PRESENT ROW
- NEW ROW
- TEMPORARY EASEMENT
- CONTROL OF ACCESS LINE
- PROPERTY LINES
- VACATED PLATTED PROPERTY
- CORPORATE OR CITY LIMITS
- RETAINING WALL
- RAILROAD
- RAILROAD RIGHT-OF-WAY
- DRAINAGE DITCH
- DRAIN TILE
- 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

UTILITIES SYMBOLS

- POWER POLE LINE
- TELEPHONE LINE
- JOINT TELEPHONE AND POWER LINE
- ANCHOR
- STEEL TOWER
- STREET LIGHT
- PEDESTAL (TELEPHONE CABLE TERMINAL)
- 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
- POWER POLE



S.A.P. 041-599-068 (BRIDGE)
GROSS LENGTH 300 FT. 0.057 MI.
BRIDGES-LENGTH 0 FT. 0 MI.
EXCEPTIONS-LENGTH 0 FT. 0 MI.
NET LENGTH 300 FT. 0.057 MI.



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
- 3.) GENERAL PLAN AND ELEVATION
- 4.) STAKEOUT
- 5-6.) BARREL & END SECTION DETAILS
- 7.) EMBANKMENT PROTECTION
- 8.) EROSION & SEDIMENT CONTROL PLAN
- 9.) EROSION & SEDIMENT CONTROL DETAILS
- 10.) PLAN & PROFILE
- 11.) BRIDGE SURVEY SHEET
- 12.) SWPPP
- 13.) TRAFFIC CONTROL

THIS PLAN CONTAINS 13 SHEETS

DESIGN DESIGNATION

R-VALUE _____
ADT (2022) _____ LESS THAN 50
Proj. ADT (2042) _____ LESS THAN 50
Proj. HCA DT (2042) _____
Soil Factor _____
Shoulder Width _____ 1 FT.

OR
FUNCTIONAL CLASSIFICATION _____ LOCAL
NO. OF TRAFFIC LANES 2 NO. OF PARKING LANES 0
DESIGN SPEED _____ 30 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
STA. _____ TO STA. _____

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: 2-27-23

License Number 54947

Approved: Joseph M. Wilson Date: 2-27-23
Approved: Lincoln County Engineer

Date: _____
District State-Aid Engineer: Reviewed for Compliance with State-Aid Rules/Policy

Date: _____
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	2118.509	AGGREGATE SURFACING CLASS 1	TON		218	218
2	2412.502	12X5 PRECAST CONCRETE BOX CULVERT END SECTION	EACH	2		2
3,4	2412.503	12X5 PRECAST CONCRETE BOX CULVERT	LIN FT	42		42
5,6	2442.501	REMOVE EXISTING BRIDGE	LUMP SUM		1	1
7	2451.507	COARSE FILTER AGGREGATE (CV) (P)	CU YD	129		129
8	2451.609	GRANULAR BACKFILL	TON	113		113
9,10	2511.509	RANDOM RIPRAP CLASS III	TON	179		179
	2563.601	TRAFFIC CONTROL	LUMP SUM	1		1
11	2564.502	INSTALL MARKER	EACH		2	2
	2573.503	SEDIMENT CONTROL LOG TYPE WOOD FIBER	LIN FT		120	120
	2575.504	ROLLED EROSION PREVENTION CATEGORY 20	SQ YD		403	403
12	2575.505	SEEDING	ACRE		0.5	0.5
13	2575.505	DISK ANCHORING	ACRE		0.4	0.4
	2575.508	SEED MIXTURE 21-111	POUND		16	16
	2575.508	SEED MIXTURE 25-142	POUND		23	23
13	2575.509	MULCH MATERIAL TYPE 1	TON		1	1

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 PROJECT LIMITS AS SHOWN ON THE PLANS. ANY DAMAGE OUTSIDE THE CONSTRUCTION LIMITS SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- (P) INDICATES PLANNED QUANTITY.

NOTES:

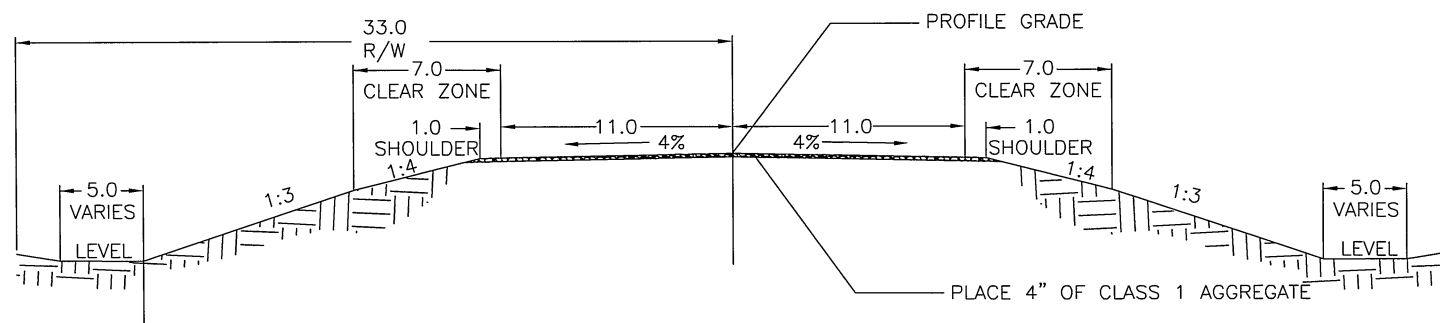
1. QUANTITY FOR AGGREGATE SURFACING CLASS 1 IS CALCULATED AT 4" IN THICKNESS BETWEEN STATIONS 40+31 AND 43+31 AND INCLUDES AN ADDITIONAL 50 TON TO ACCOUNT FOR NECESSARY ROAD REPAIRS DUE TO DAMAGE DONE DURING CONSTRUCTION.
2. PRECAST CONCRETE BOX CULVERT END SECTIONS SHALL BE TYPE 1.
3. MASTIC JOINT SEALER 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 CULVERTS.
4. ALL EXCESS EXCAVATION SHALL BE DISPOSED OF BY THE CONTRACTOR. COST OF SAID DISPOSAL SHALL BE INCLUDED IN THE BID PRICE FOR PRECAST CONCRETE BOX CULVERT.
5. 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 STRUCTURE. ANY EXCAVATED ROCK IS INCLUDED IN THE BID PRICE FOR THE REMOVAL OF THE BRIDGE.
6. EXISTING BRIDGE BECOMES THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OFF SITE. THE STEEL PIPE SHALL BE REMOVED AND DISPOSED AT AN APPROVED LANDFILL OR REUSED/RECYCLED ACCORDING TO LOCAL, STATE, AND FEDERAL REQUIREMENTS.
7. THE GRADATION FOR COARSE FILTER AGGREGATE SHALL CONFORM TO SPEC 3149.2H.
8. BACKFILLING SHALL OCCUR IN LIFTS NOT EXCEEDING 1.0 FEET IN DEPTH. THE CONTRACTOR SHALL USE HAND OPERATED COMPACTION EQUIPMENT AROUND THE PIPE CULVERT TO ATTAIN DENSITY.
9. INSTALLATION SHALL BE IN ACCORDANCE WITH SPECS. 2511 AND 3601. TYPE 7 GEOTEXTILE SHALL CONFORM TO SPEC 3733. THIS ITEM IS INCLUDED IN THE BID PRICE FOR THE PLACEMENT OF RIP RAP.
10. THE CONTRACTOR SHALL USE QUARRY RUN RIP RAP.
11. CULVERT MARKER AND POSTS TO BE FURNISHED BY THE COUNTY.
12. 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, REMOVAL AND HAULING OF DEBRIS IS INCLUDED IN THE BID PRICE FOR SEEDING.
13. MULCH MATERIAL TYPE 1 SHALL BE USED IN DISTURBED AREAS IN WHICH BLANKET IS NOT USED AND SHALL BE DISK ANCHORED.

UTILITY CONTACTS
FRONTIER COMMUNICATIONS 2720 BROADWAY AVENUE SLAYTON MN, 56172 (507)-836-8883
LINCOLN COUNTY ENVIRONMENTAL OFFICE 221 NORTH WALLACE AVENUE P.O. BOX 66 IVANHOE, MN (507)694-1344
LYON-LINCOLN ELECTRIC CO-OP INC. BOX 639 WEST HWY 14 TYLER, MN 56178 (507)247-5505
LINCOLN PIPESTONE RURAL WATER 415 EAST BENTON STREET LAKE BENTON, MN 56149 (507)368-4248

BASIS FOR PLANNED QUANTITIES	
AGGREGATE SURFACING CLASS 1	140 LBS./CUBIC FOOT (CV)
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)
MULCH MATERIAL TYPE 1	2 TONS / ACRE
GRANULAR BACKFILL	1.8 TONS / CUBIC YARD

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 TOWNSHIP ROAD

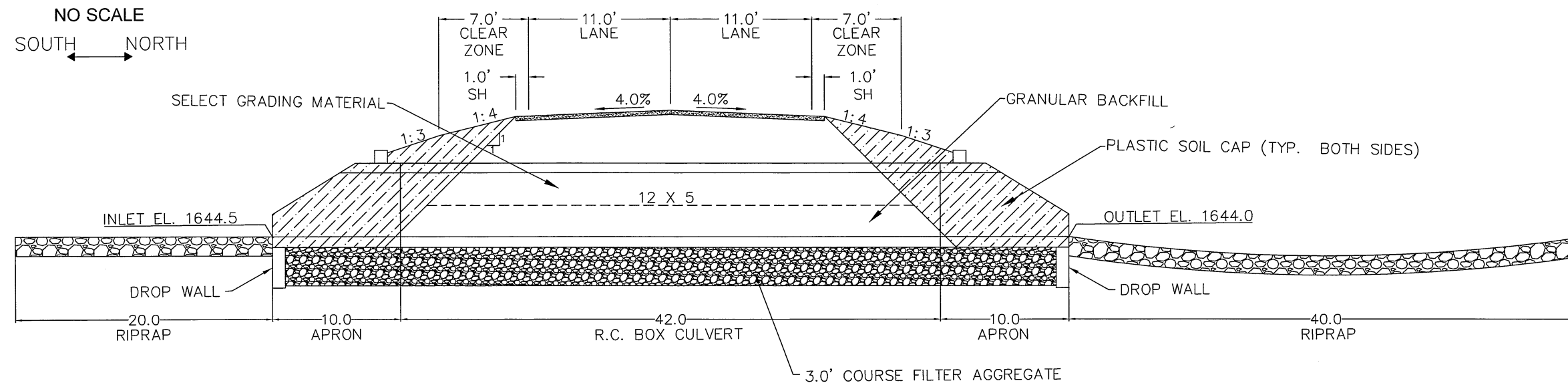


ESTIMATED QUANTITIES

CERTIFIED BY *Joseph M. Miller* LIC. NO. 54947 DATE: 2-27-23
LICENSED ENGINEER

S.A.P. NO. 041-599-068 SHEET NO. 2 OF 13

ELEVATION VIEW



ROADWAY
CL STA. 41+81
CL EL. 1654.10

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 = 5 FT
BARREL LENGTH = 42 FT EACH
EST. MIN. FILL DEPTH (A) = 3.6 FT AT SHOULDER
EST. MAX. FILL DEPTH (B) = 4.3 FT AT CENTERLINE
SKEW ANGLE = 5°
DESIGN SPEED = 30 MPH
CURRENT ADT (2022) = LESS THAN 50
PROJECTED ADT (2042) = LESS THAN 50
HL-93 LRFR
BRIDGE OPERATING RATING FACTOR RF = 1.3

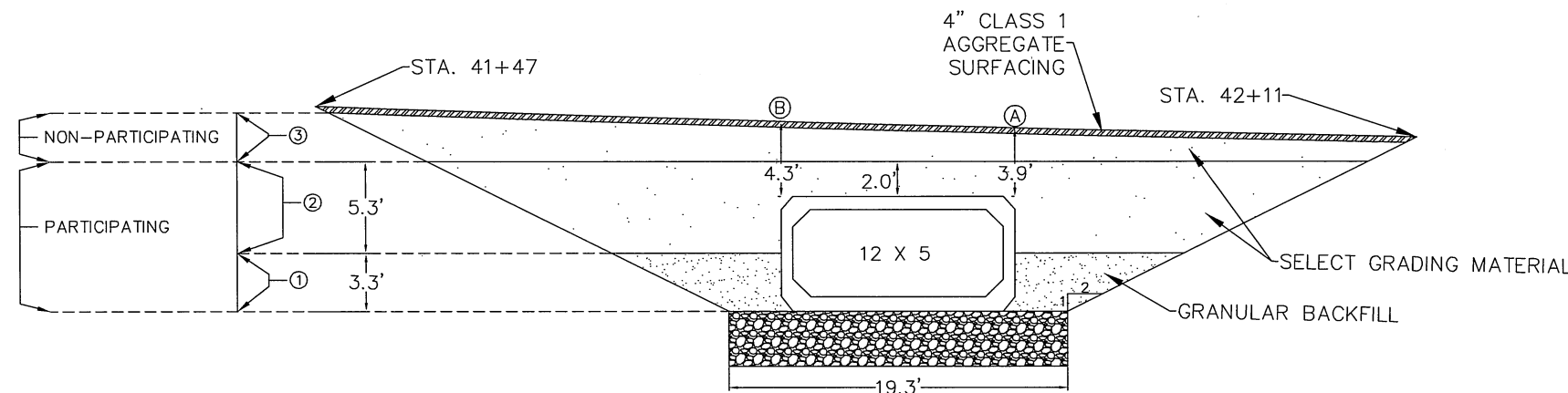
LIST OF SHEETS

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

ELEVATION VIEW

NOTES:

- BACKFILLING FROM BEDDING MATERIAL HALF WAY UP SHALL BE WITH GRANULAR BACKFILL.
- BACKFILLING FROM GRANULAR BACKFILL UP TO 2' ABOVE THE PIPE SHALL BE WITH SELECT GRADING MATERIAL AND IS INCLUDED IN THE BID PRICE FOR THE PRECAST CONCRETE BOX CULVERT.
- BACKFILLING OVER 2' ABOVE THE PIPE IS INCLUDED IN THE BID PRICE FOR THE REMOVAL OF THE BRIDGE



NO SCALE
WEST ← EAST

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.

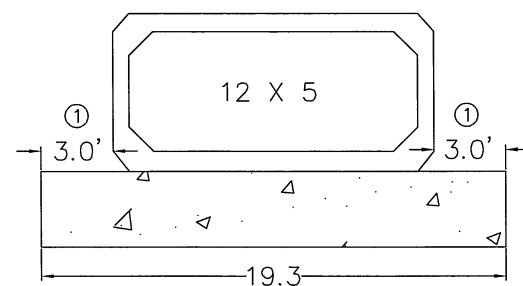
REFER TO ESTIMATED QUANTITIES SHEET FOR THE SUBSURFACE UTILITY INFORMATION.

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: 2-27-23
LICENSED PROFESSIONAL ENGINEER
NAME: JOSEPH M. WILSON LIC NO. 54947

DROP WALL DETAILS

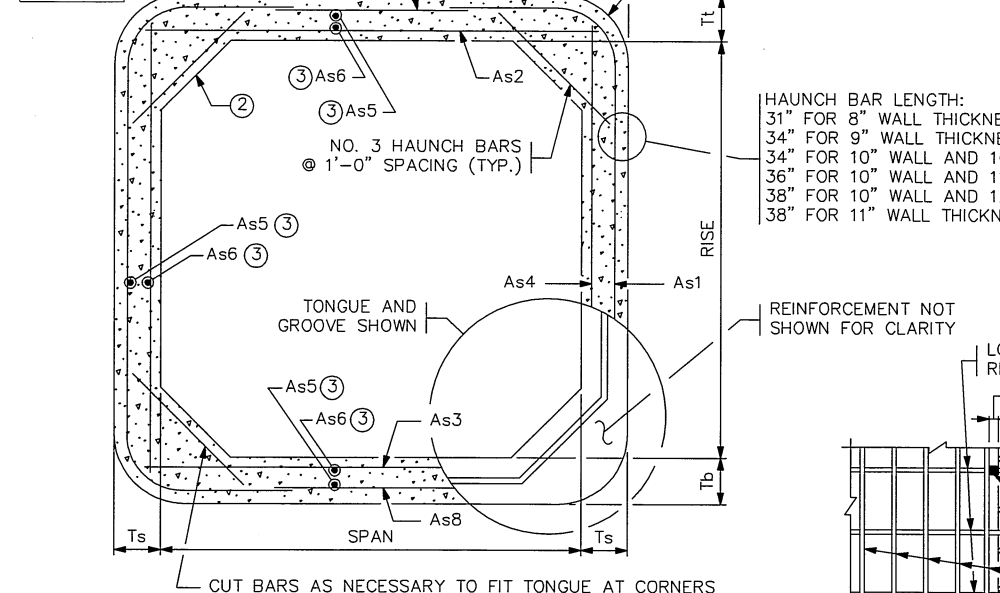
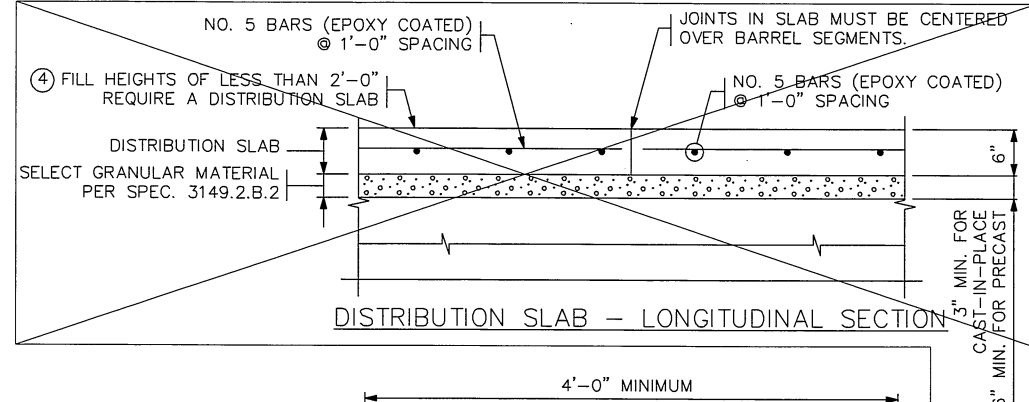
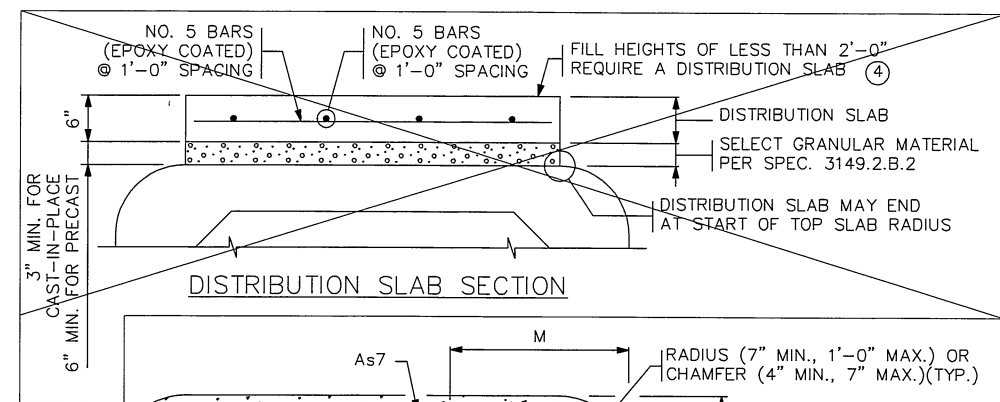
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WEST ← EAST



DROP WALL NOTES:

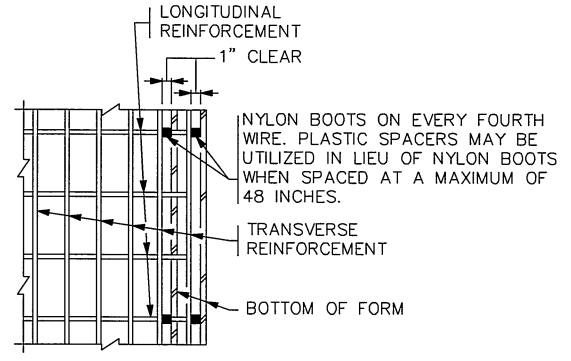
- DROP WALLS ON INLET AND OUTLET END SECTIONS OF 12'x5' REINFORCED CONCRETE BOX CULVERT SHALL EXTEND 3' BEYOND THE OUTER WALLS OF THE APRON. FURNISHING AND INSTALLING DROP WALL SHALL BE INCLUDED IN THE BID PRICE FOR PRECAST CONCRETE END SECTION.

BRIDGE NO. 41J85
LOCATION: TWNS. 69
MAIN 12 x 5 MNDOT STD. PRECAST CONCRETE CULVERT
IDENTIFICATION NO. 513
GENERAL PLAN AND ELEVATION
SEC. 15-T113N-R46W
TOWNSHIP: HANSONVILLE LINCOLN COUNTY

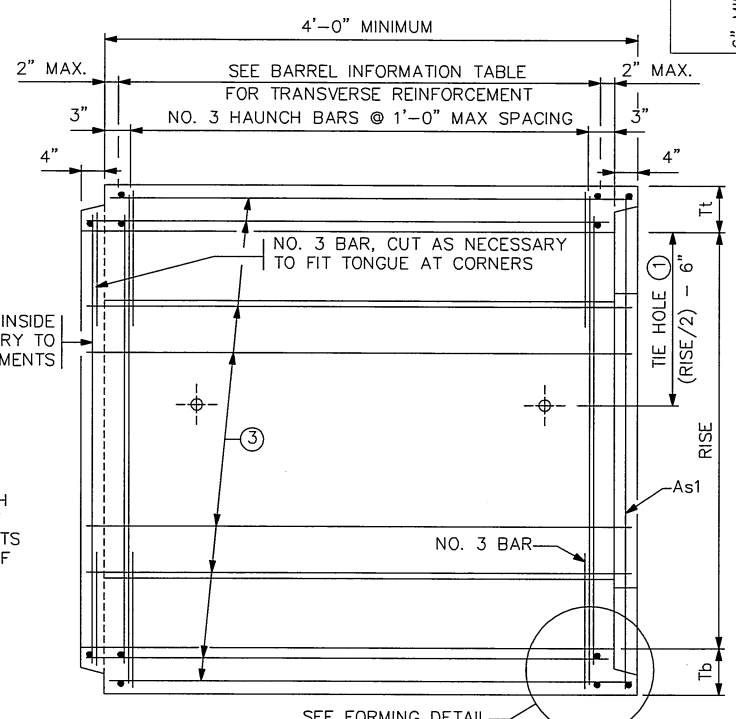


HAUNCH BAR LENGTH:
 31" FOR 8" WALL THICKNESS
 34" FOR 9" WALL THICKNESS
 34" FOR 10" WALL AND 10" SLAB
 36" FOR 10" WALL AND 11" SLAB
 38" FOR 10" WALL AND 12" SLAB
 38" FOR 11" WALL THICKNESS

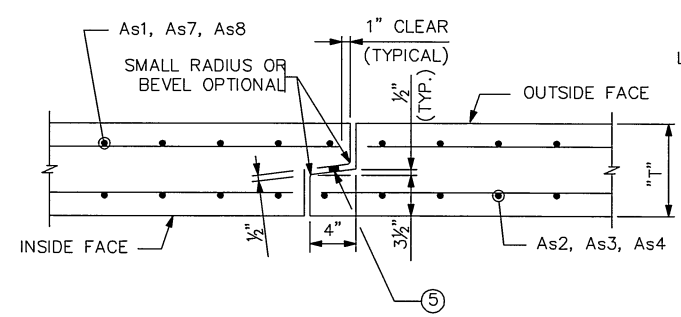
CUT OR BEND INSIDE REINFORCEMENT AS NECESSARY TO ACHIEVE COVER REQUIREMENTS



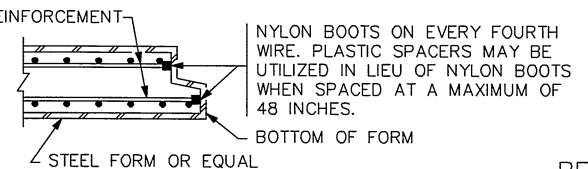
PLAN



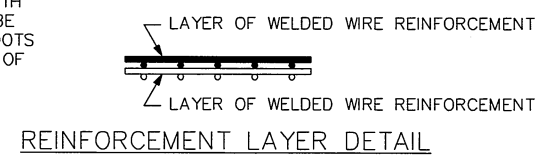
LONGITUDINAL BARREL SECTION



TONGUE AND GROOVE JOINT DETAIL



SECTION FORMING DETAIL



REINFORCEMENT LAYER DETAIL

WHEN MORE THAN ONE LAYER OF WELDED WIRE REINFORCEMENT IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, PLACE THE WIRES OF THE WELDED WIRE REINFORCEMENT AS SHOWN

CONSTRUCTION NOTES

- CONSTRUCT CULVERTS PER 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 PER THE APPLICABLE REQUIREMENTS OF AASHTO M259.
- 1 1/2" 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 PER SPEC. 3238.2.A 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 As5 AND 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 PER SPEC. 3149.2.B.2 BETWEEN BARREL AND DISTRIBUTION SLAB.
 - PRECAST DISTRIBUTION SLABS MAY BE USED FOR FILL HEIGHTS OVER 1'-0". PROVIDE 6" MINIMUM SELECT GRANULAR MATERIAL PER SPEC. 3149.2.B.2 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 CONSIDERED INCIDENTAL.
- ⑤ REFER TO SPEC, 2412 FOR SEALANT REQUIREMENTS.

BARREL INFORMATION TABLE ***

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.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		As1		As2		As3		As4		As7		As8		
													AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	AREA (IN. ² /FT.)	LENGTH (FT.)	
41+81	12X5	2	5000	3-7	NO	NO	12'	5'	9"	10"	8"	4475	0.74	13'-1"	3'-6"	0.70	12'-6"	0.71	12'-6"	0.20	5'-6"	0.24	8'-11"	0.24	8'-11"

* 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.

REVISION: FEBRUARY 22, 2018
 APPROVED: MARCH 24, 2011
 Nancy S. Benberger
 STATE BRIDGE ENGINEER

STATE AID PROJ. NO 041-599-068 (380 TH ST.) STA. 41+81 FIG. 5-395.101(A)

CERTIFIED BY: Joseph M. Wilson 2-27-23 LICENSED PROFESSIONAL ENGINEER DATE

NAME: JOSEPH M. WILSON LIC. NO. 54947

TITLE: PRECAST CONCRETE BARREL DETAILS

DES: DR: APPROVED: BRIDGE NO. 41J85

CHK: CHK: SHEET NO. 5 OF 13 SHEETS

CONSTRUCTION NOTES

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

USE CONCRETE MIX NO. 3W82 WITH NO CALCIUM CHLORIDE ALLOWED.

ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.

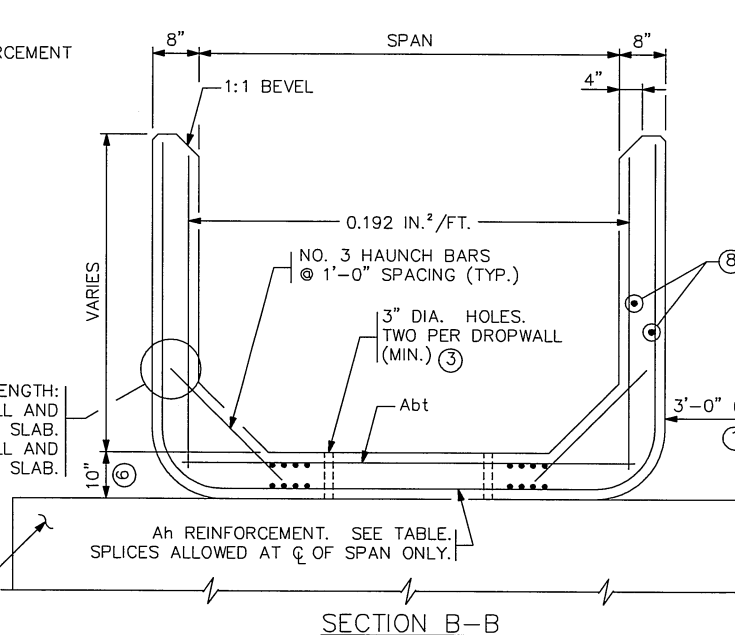
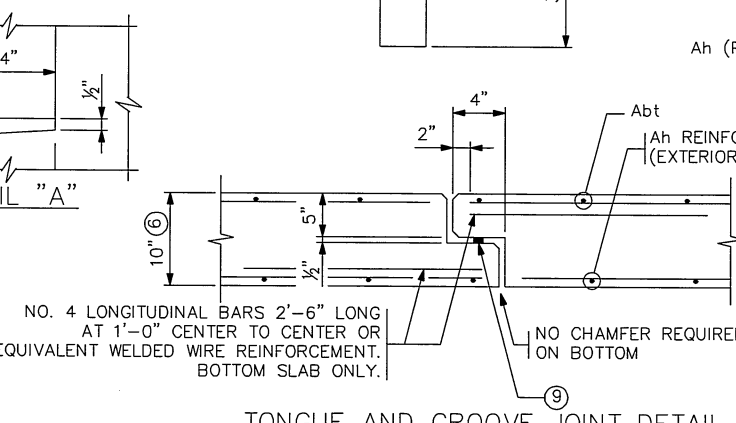
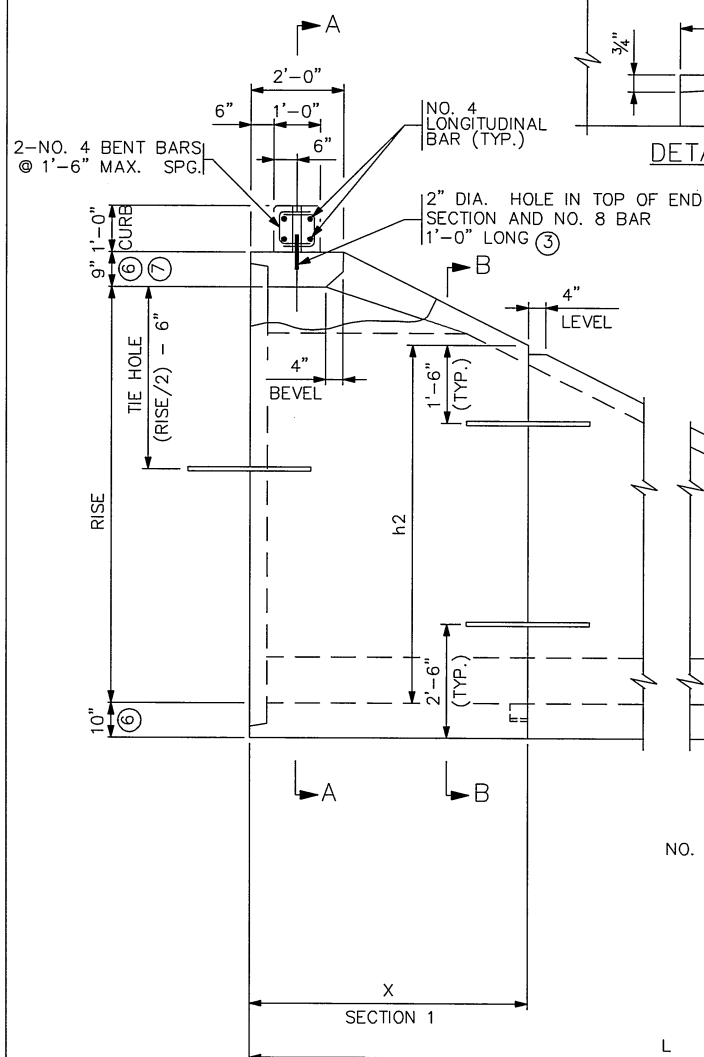
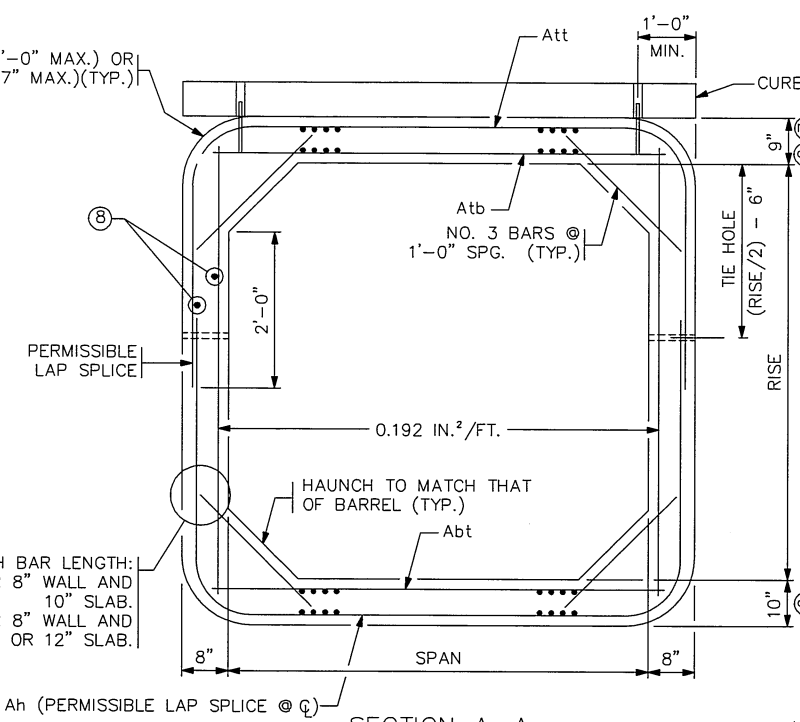
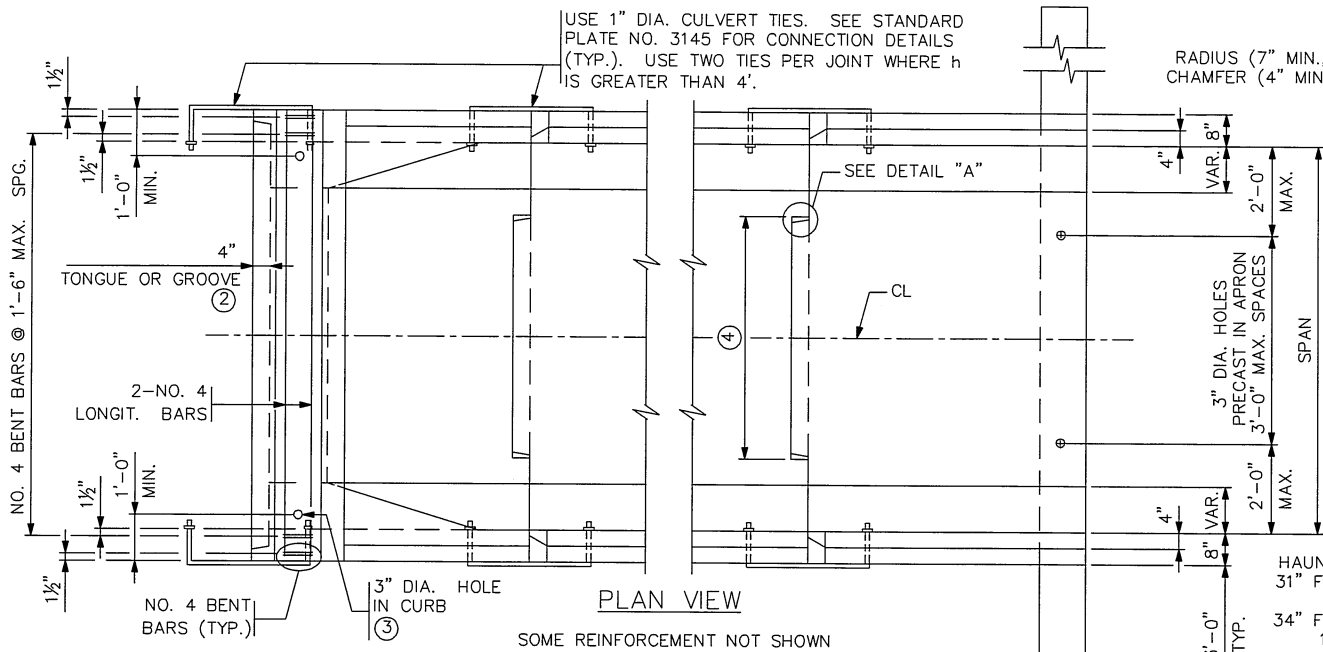
ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.

SEE STANDARD FIG. 5-395.115 FOR EMBANKMENT PROTECTION.

FINISH ALL EXPOSED EDGES OF CONCRETE WITH 1/2" OR 3/4" CHAMFER OR RADIUS UNLESS OTHERWISE NOTED.

MAXIMUM SIZE OF REINFORCEMENT BARS IS NO. 6, EXCEPT NO. 7 OR 8 BARS MAY BE USED FOR Abt ON SPANS GREATER THAN 14'. THE MAXIMUM WELDED WIRE REINFORCEMENT SIZE IS W23 PER LAYER (MAXIMUM OF 2 LAYERS).

- ① WITH DOUBLE BOXES LOCATE DROPWALL JOINTS BETWEEN END SECTIONS. SEE STANDARD FIG. 5-395.111 FOR ALTERNATE DROPWALLS. LIMITS OF EXCAVATION FOR DROPWALL ARE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. DROPWALL CONCRETE MIX IS 3S52, OR 3Y82 IF PRECAST. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS. DROPWALL NOT REQUIRED FOR NON-WATERWAY USE.
- ② CHECK LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED.
- ③ FILL HOLE WITH GROUT. GROUT CONSISTS OF 1 PART CEMENT AND 2 PARTS SAND. USE TYPE 1A AIR ENTRAINED PORTLAND CEMENT. GROUT MIX MAXIMUM SLUMP IS 4".
- ④ 3'-6" MIN. TONGUE AND 3'-7" MIN. GROOVE FOR CULVERTS WITH 6'-0" SPANS. 5'-0" MIN. TONGUE AND 5'-1" MIN. GROOVE FOR CULVERTS WITH SPANS GREATER THAN 6'-0". CENTER TONGUE AND GROOVE ON C OF EACH APRON JOINT. TONGUE AND GROOVE JOINT ON ALL THREE SIDES OF APRON IS PERMISSIBLE.
- ⑤ WELDED WIRE REINFORCEMENT OF EQUAL AREA MAY BE SUBSTITUTED FOR REBAR.
- ⑥ APRON TOP AND BOTTOM SLAB THICKNESS MAY BE 8" FOR CULVERTS WITH 6' SPANS ONLY. BOTTOM SLAB THICKNESS MAY BE INCREASED UP TO 2" MAX. PROVIDED CONCRETE COVER IS 1 1/2" MIN., 2" MAX.
- ⑦ 10" MINIMUM TOP SLAB FOR 14' AND 16' SPANS.
- ⑧ PLACE LONGITUDINAL REINFORCEMENT PERPENDICULAR TO THE CULVERT SPAN WITH A MINIMUM OF 0.06 SQUARE INCHES PER PERIPHERAL FOOT ON ALL FACES OF THE BARREL.
- ⑨ REFER TO SPEC, 2412 FOR SEALANT REQUIREMENTS.



Att, Abt REINFORCEMENT			Abt REINFORCEMENT	
SPAN (FT.)	Att (IN ² /FT.)	Abt (IN ² /FT.)	SPAN (FT.)	Abt (IN ² /FT.)
6	0.27	0.44	6-10	0.20
8	0.47	0.60	12	0.30
10	0.62	0.74	14	0.39
12	0.88	1.06	16	0.39
14	1.20	1.58		
16	1.52	2.09		

APRON DIMENSIONS & Ah REINFORCEMENT																
RISE FT.	L FT.	SECTION 1		SECTION 2		SECTION 3		SECTION 4		SECTION 5		SECTION 6				
		X	Ah	h2	Y	Ah	h3	Z	Ah	h4	ZZ	Ah	h5	ZZZ	Ah	h6
4	8	8'(4')	0.192	1'-9"(3'-9")	(4')	0.192	(1'-9")									
5	10	6'	0.192	3'-9"	4'	0.192	1'-9"									
6	12	6'	0.192	4'-9"	6'	0.192	1'-9"									
7	14	6'	0.192	5'-9"	8'(4')	0.192	1'-9"(3'-9")	(4')	(0.192)	(1'-9")						
8	16	6'	0.20	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"						
9	18	6'	0.29	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"						
10	20	6'	0.42	8'-9"	6'	0.29	5'-9"	8'(4')	0.192	1'-9"(3'-9")	(4')	(0.192)	(1'-9")			
11	22	6'	0.60	9'-9"	6'	0.42	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"			
12	24	6'	0.78	10'-9"	6'	0.60	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"			
13	26	6'	1.03	11'-9"	6'	0.78	8'-9"	6'	0.28	5'-9"	8'(4')	0.192	1'-9"(3'-9")	(4')	(0.192)	(1'-9")
14	28	6'	1.38	12'-9"	6'	1.03	9'-9"	6'	0.40	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"

NOTE: Ah IS AREA OF REINFORCEMENT PER FOOT OF LENGTH (IN²/FT.) VALUES IN () MAY BE USED FOR END SECTIONS WITH SPANS OF 14' AND 16' ONLY.

REVISION: FEBRUARY 22, 2018
 APPROVED: MARCH 24, 2011
 Nancy M. Wilson
 STATE BRIDGE ENGINEER

STATE AID PROJ. NO 041-599-068 (380 TH ST.) STA. 41+81
 FIG. 5-395.102
 CERTIFIED BY: Joseph M. Wilson 2-27-23
 LICENSED PROFESSIONAL ENGINEER DATE
 NAME: JOSEPH M. WILSON LIC. NO. 54947
 TYPE: PRECAST CONCRETE END SECTION
 TYPE I - SINGLE OR DOUBLE BARREL
 FOR SKEWS UP TO 7 1/2'
 DES: DR: APPROVED: BRIDGE NO.
 CHK: CHK: SHEET NO. 6 OF 13 SHEETS 41J85

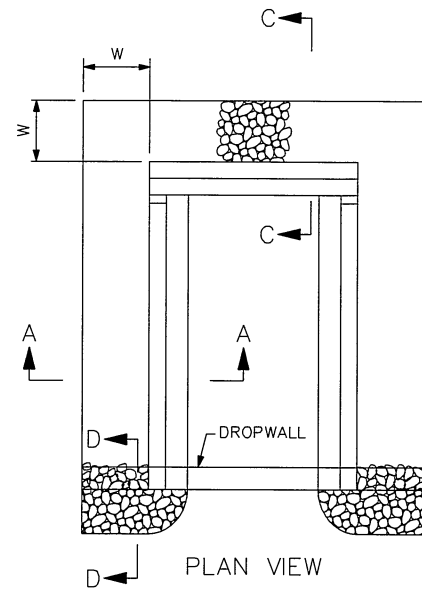
CONSTRUCTION NOTES

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

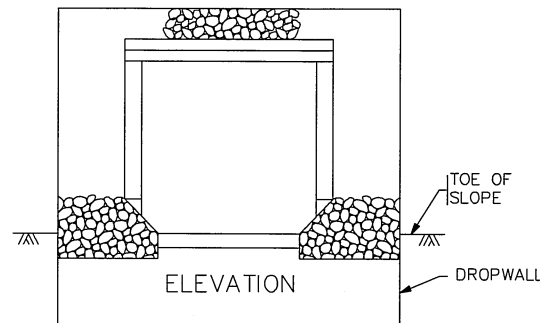
PROVIDE RIPRAP IN ACCORDANCE WITH SPECS. 2511 AND 3601.

EMBANKMENT PROTECTION, INCLUDING MATERIAL PLACED BETWEEN BARRELS THAT ARE LESS THAN 2'-0" APART, IS INCIDENTAL.

- 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 DOUBLE 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 GROUTED RIPRAP IN LIEU OF CLASS III RIPRAP.
- ③ REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES.



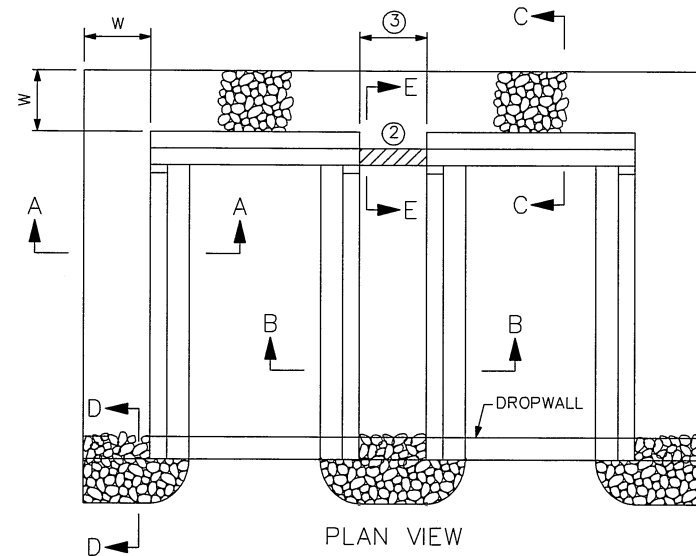
PLAN VIEW



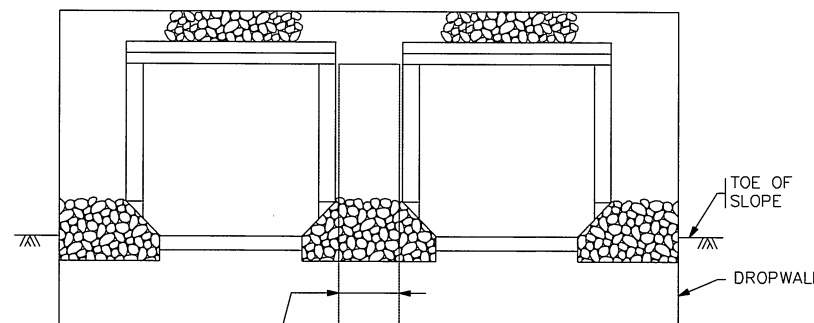
ELEVATION

SINGLE BARREL

CLASS III OR IV SHOWN FOR SKEWS UP TO 71/2'



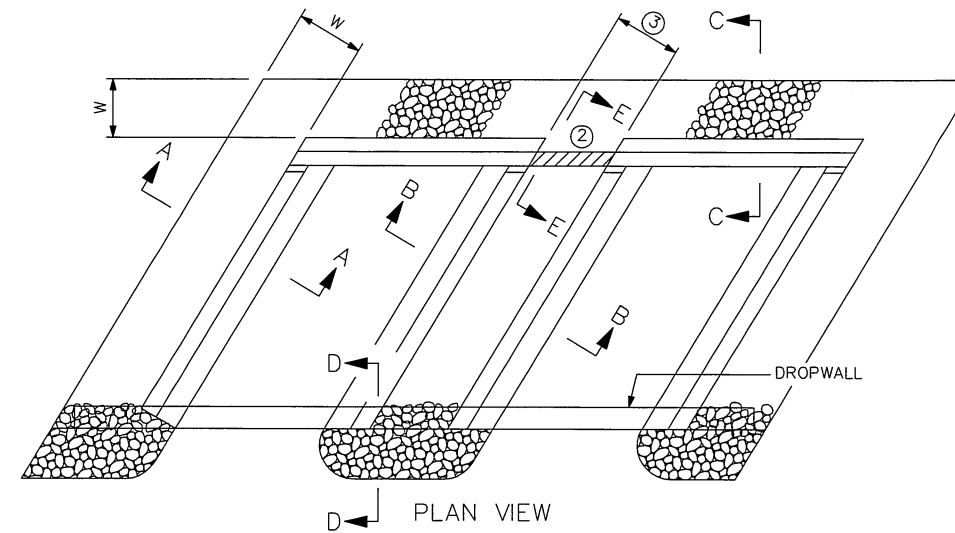
PLAN VIEW



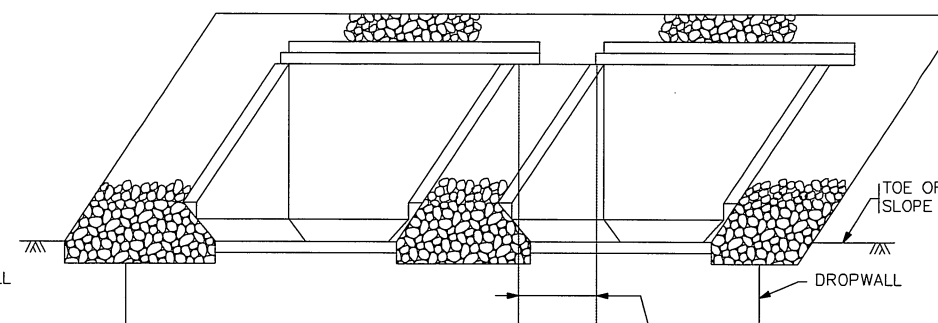
ELEVATION

MULTIPLE BARREL

FOR SKEWS UP TO 71/2' CLASS III OR IV SHOWN DOUBLE BARREL SHOWN



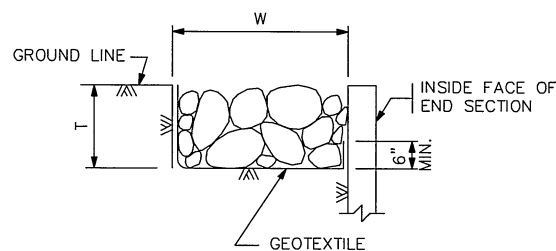
PLAN VIEW



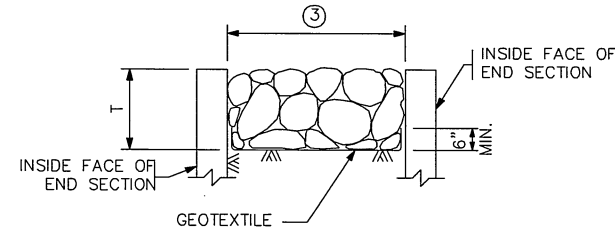
ELEVATION

MULTIPLE BARREL

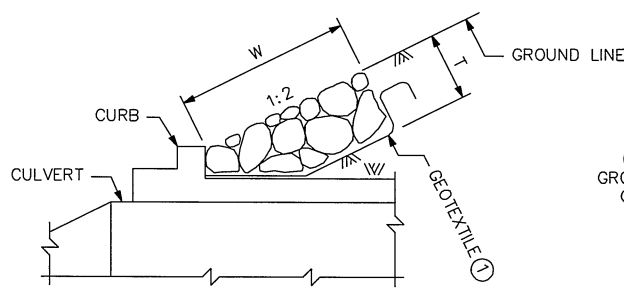
FOR SKEWS OVER 71/2' CLASS III OR IV SHOWN DOUBLE BARREL SHOWN, OTHER BARREL CONFIGURATIONS SIMILAR.



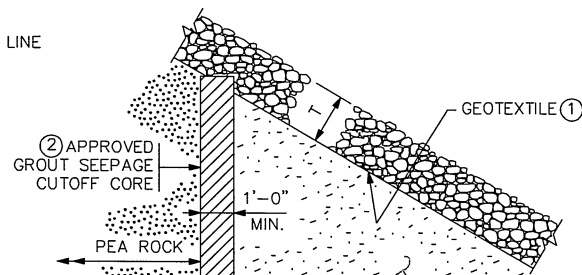
SECTION A-A



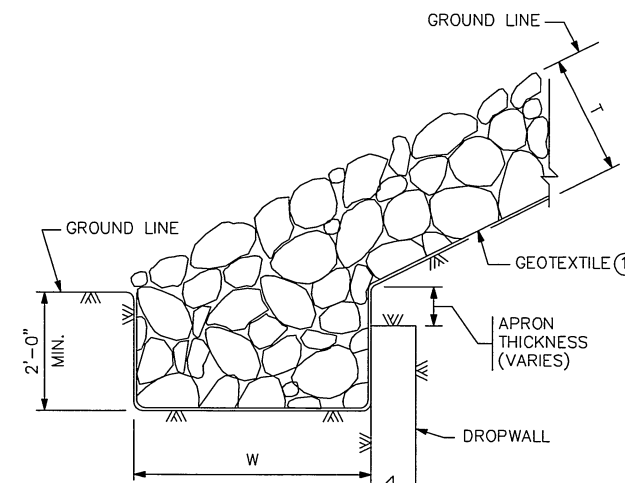
SECTION B-B



SECTION C-C



SECTION E-E



SECTION D-D

RIPRAP CLASS

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

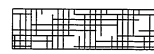
REVISION: FEBRUARY 08, 2022
 APPROVED: SEPTEMBER 11, 2014
Nancy Saubenberg
 STATE BRIDGE ENGINEER

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

STATE AID PROJ. NO. 041-599-068 (380TH ST.) STA. 41+81		FIG. 5-395.115	
CERTIFIED BY: <i>Joseph M. Wilson</i>	DATE: 2-27-23	DES:	DR:
NAME: JOSEPH M. WILSON	LIC. NO. 54947	CHK:	CHK:
TITLE: EMBANKMENT PROTECTION FOR BOX CULVERTS		APPROVED:	
		SHEET NO. 7 OF 13 SHEETS	
		BRIDGE NO. 41J85	



SCALE: 1"=30'



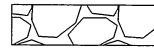
BLANKET



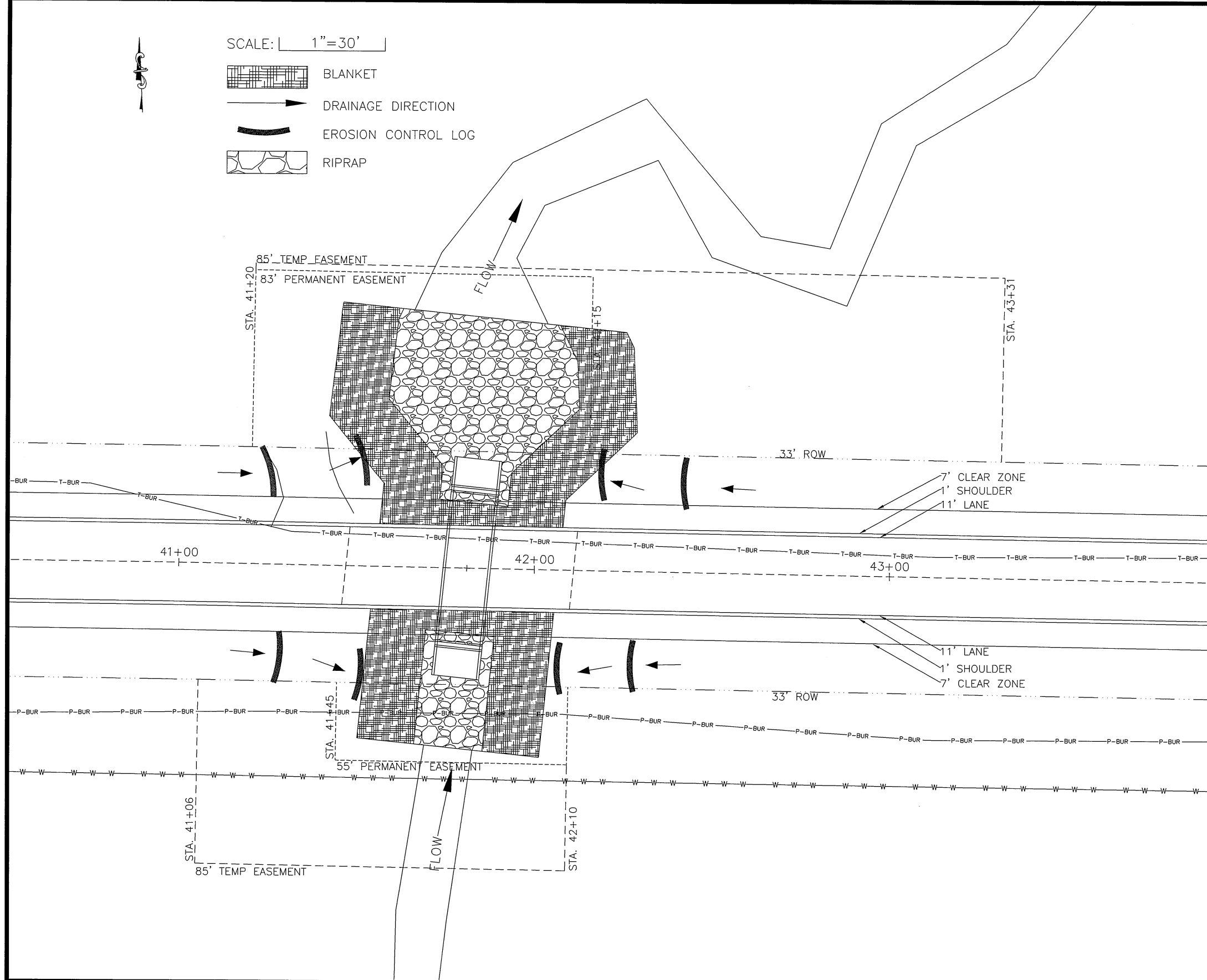
DRAINAGE DIRECTION



EROSION CONTROL LOG



RIPRAP



RANDOM RIPRAP CLASS III

STATION	SIDE	REMARKS	QUANTITY
41+58 TO 42+12	LT.	OUTLET	143 TONS
41+67 TO 41+89	RT.	INLET	36 TONS
TOTAL			179 TONS

*1.3 TONS PER CUBIC YARD

ROLLED EROSION PREVENTION, CATEGORY 20

STATION	SIDE	REMARKS	SQ. YD.
41+22 TO 42+28	LT.	OUTLET	251
41+51 TO 42+06	RT.	INLET	152
TOTAL			403

*QUANTITIES MAY BE ADJUSTED BY ENGINEER IN THE FIELD

SEEDING

STATION	SIDE	REMARKS	ACRE
41+20 TO 43+31	LT.	OUTLET	0.32
41+06 TO 42+10	RT.	INLET	0.18
TOTAL			0.5

*QUANTITIES MAY BE ADJUSTED BY ENGINEER IN THE FIELD

SEED MIXTURE 21-111

SIDE	POUNDS	SIDE	POUNDS
LT. (OUTLET)	10.0	LT. (OUTLET)	15.0
RT. (INLET)	6.0	RT. (INLET)	8.0
TOTAL	16.0	TOTAL	23.0

*QUANTITIES MAY BE ADJUSTED BY ENGINEER IN THE FIELD

SEED MIXTURE 25-142

MULCH MATERIAL, TYPE 1

SIDE	TONS	SIDE	ACRE
LT. (OUTLET)	.60	LT. (OUTLET)	0.25
RT. (INLET)	.40	RT. (INLET)	0.15
TOTAL	1.0	TOTAL	0.4

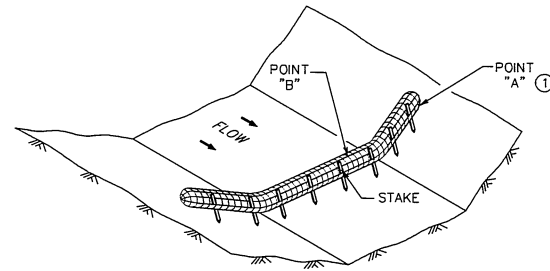
*QUANTITIES MAY BE ADJUSTED BY ENGINEER IN THE FIELD

DISK ANCHORING

EROSION & SEDIMENT CONTROL PLAN

CERTIFIED BY *Joseph M. Dittus* LIC. NO. 54947 DATE: 2-27-23
LICENSED ENGINEER

S.A.P. NO. 041-599-068 SHEET NO. 8 OF 13



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

NOTES:

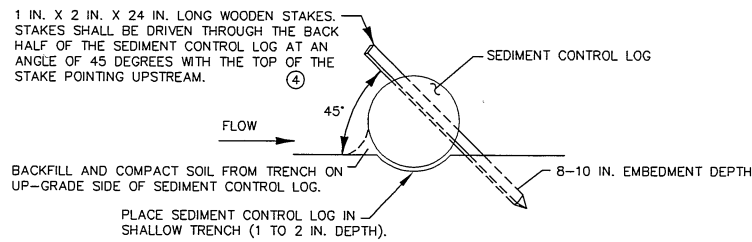
SEE SPECS. 2573, 3601, 3733, 3885, 3886 & 3889.

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)

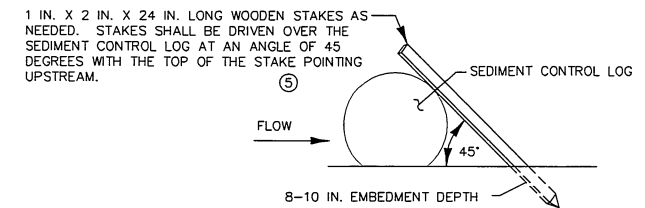


TYPES: STRAW, WOOD FIBER, OR COIR

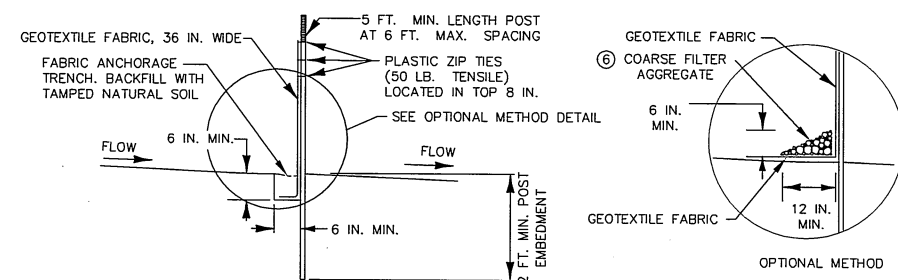
NOTES:

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

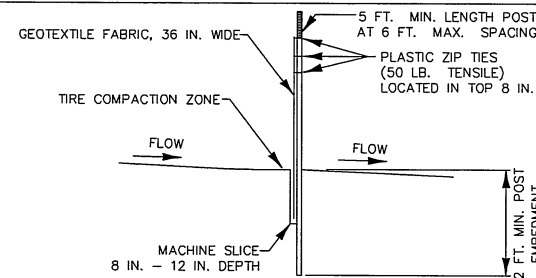
- ④ SPACE BETWEEN STAKES SHALL BE A MAXIMUM OF 1 FOOT FOR DITCH CHECKS OR 2 FEET FOR OTHER APPLICATIONS.
- ⑤ PLACE STAKES AS NEEDED TO PREVENT MOVEMENT OF SEDIMENT CONTROL LOGS PLACED ON SLOPES OR AS NEEDED DUE TO OTHER FACTORS. STAKES SHALL BE INCIDENTAL.



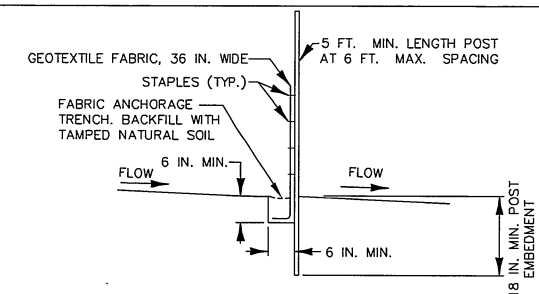
TYPES: WOOD CHIP, COMPOST, OR ROCK



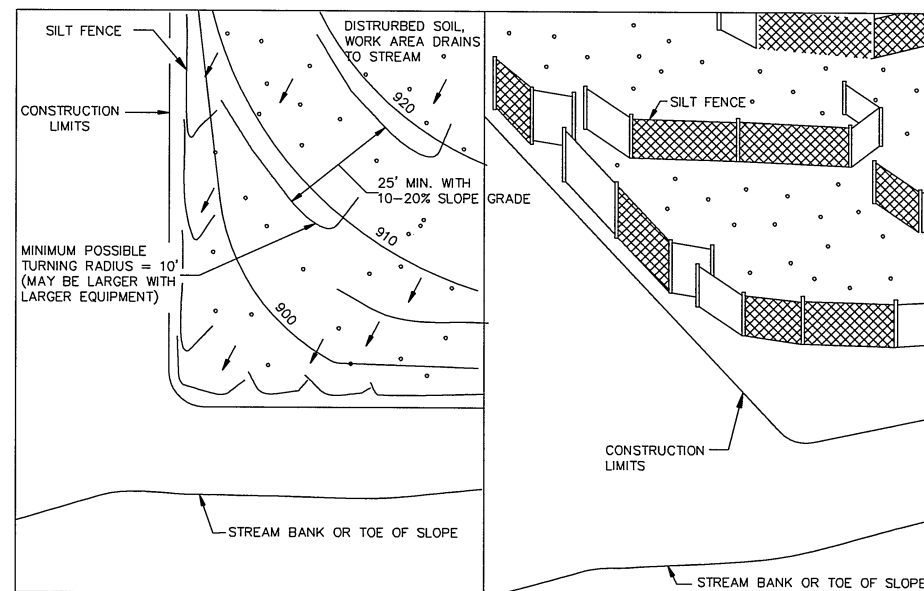
SILT FENCE TYPE HI ⑦ (HAND INSTALLED)



SILT FENCE TYPE MS ⑦ (MACHINE SLICED)



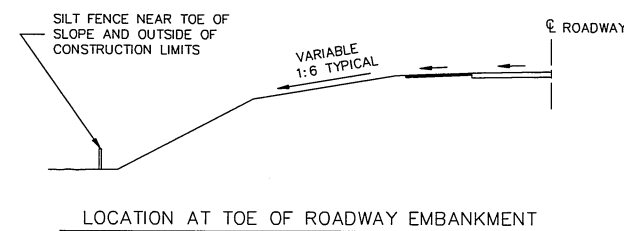
SILT FENCE TYPE PA ⑧ (PREASSEMBLED)



PLAN VIEW

PERSPECTIVE VIEW

J-HOOK INSTALLATION



LOCATION AT TOE OF ROADWAY EMBANKMENT

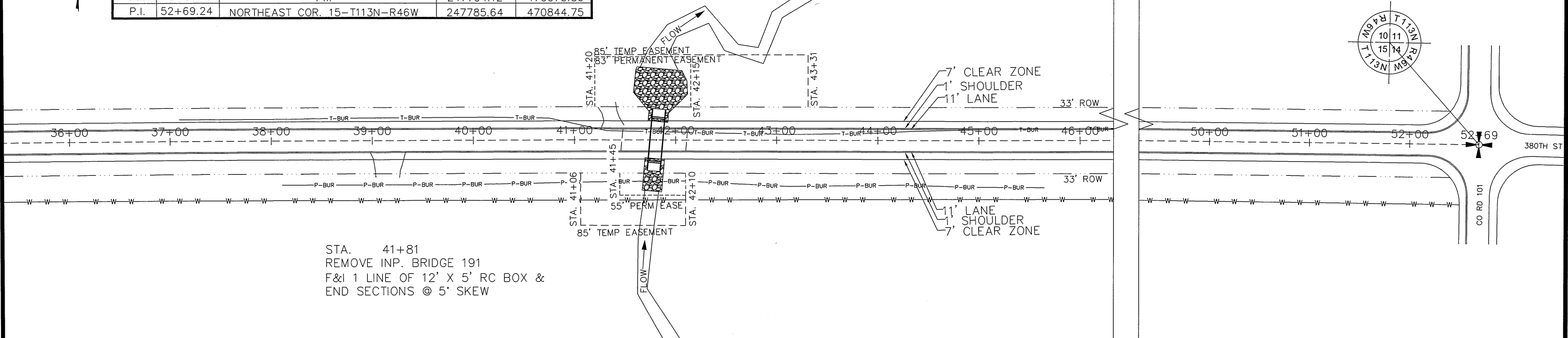
NOTES:

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.

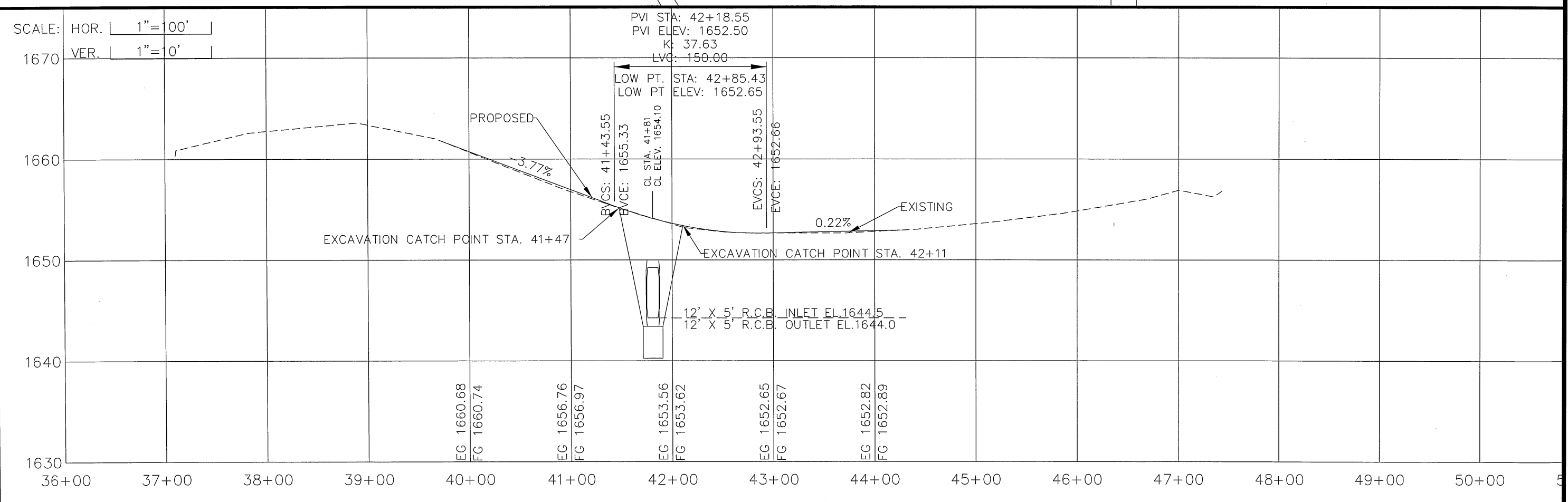
ALIGNMENT TABULATION				
TYPE	STATION	IDENTIFICATION	NORTHING	EASTING
P.I.	36+90.48	P.I. OF CURVE	247805.11	469266.11
P.I.	40+94.16	P.I. OF CURVE	247800.78	469669.77
P.I.	45+00.16	P.I.	247794.12	470075.56
P.I.	52+69.24	NORTHEAST COR. 15-T113N-R46W	247785.64	470844.75

RURAL WATER —W—W—W—
 TELEPHONE —T-BUR—
 POWER —P-BUR—



STA. 41+81
 REMOVE INP. BRIDGE 191
 F&I 1 LINE OF 12' X 5' RC BOX &
 END SECTIONS @ 5° SKEW

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



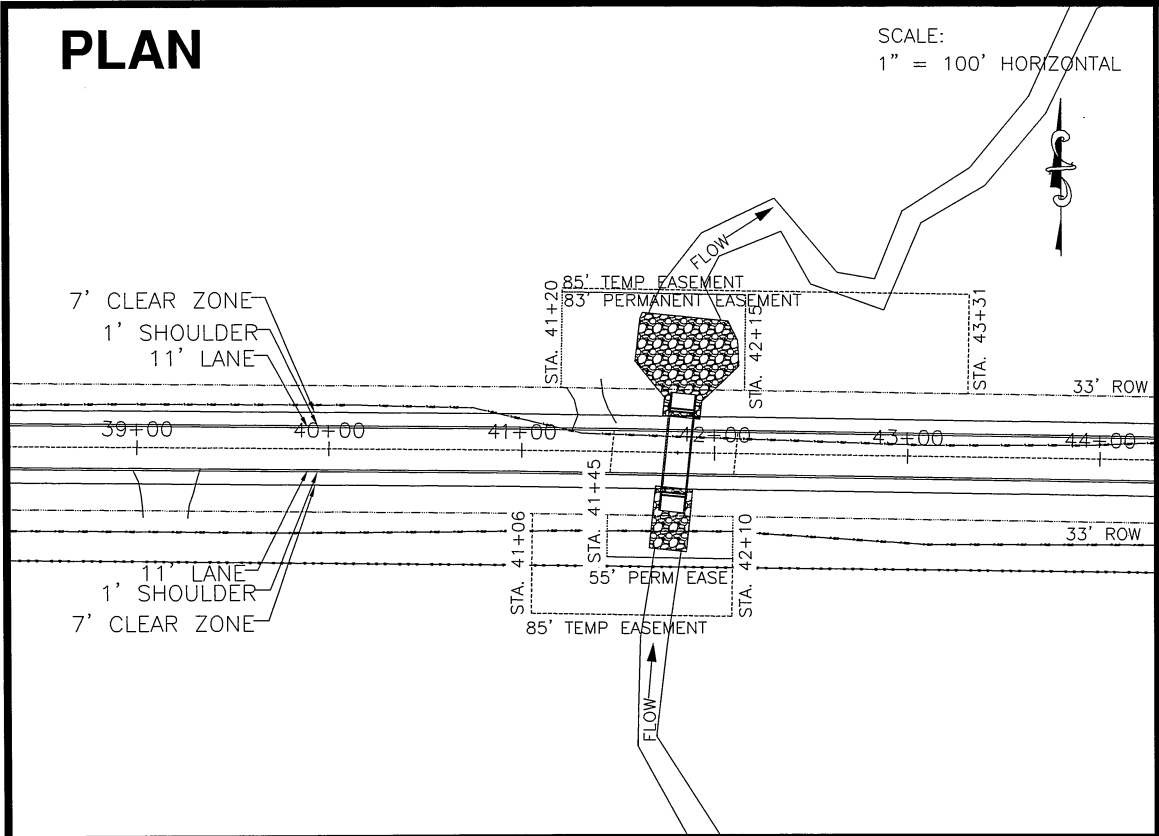
PLAN & PROFILE

CERTIFIED BY *Joseph M. White* LIC. NO. 54947 DATE: 2-27-23
 LICENSED ENGINEER

S.A.P. NO. 041-599-068 SHEET NO. 10 OF 13

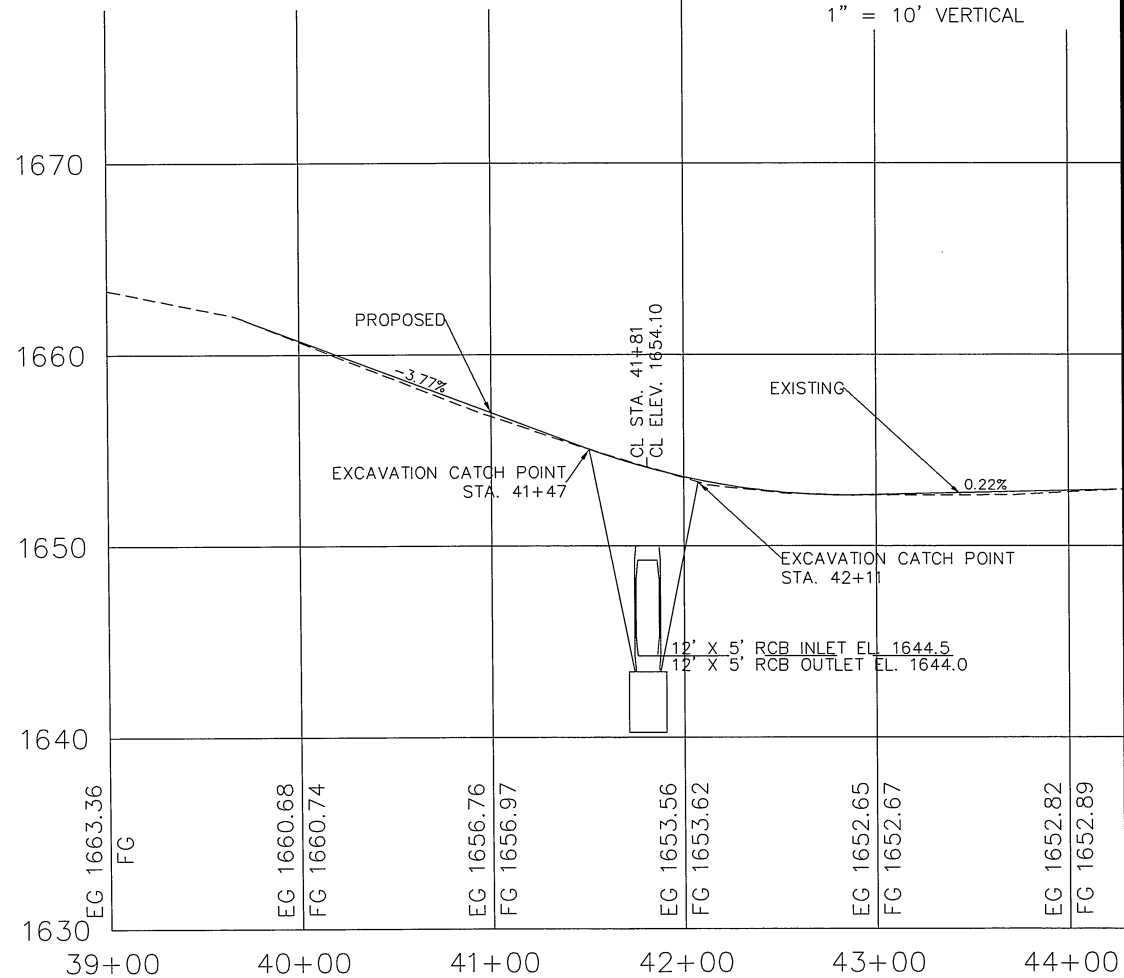
PLAN

SCALE:
1" = 100' HORIZONTAL



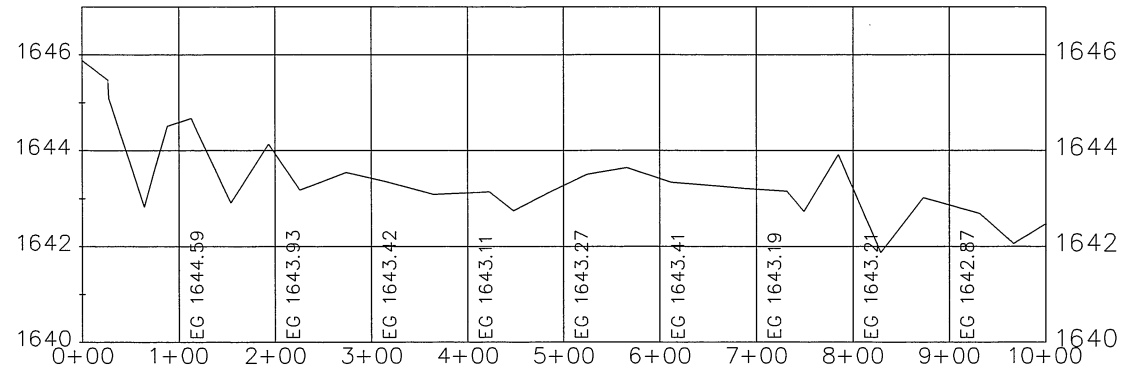
VERTICAL PROFILE

SCALE:
1" = 100' HORIZONTAL
1" = 10' VERTICAL

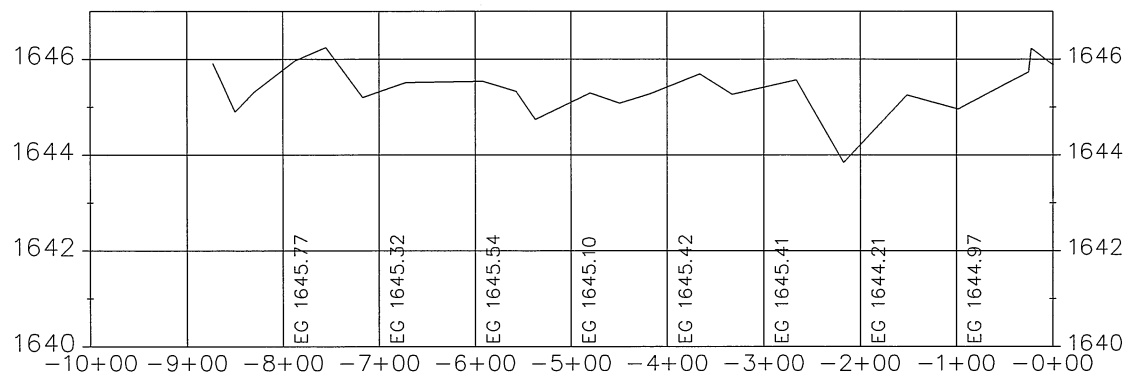


DOWNSTREAM PROFILE

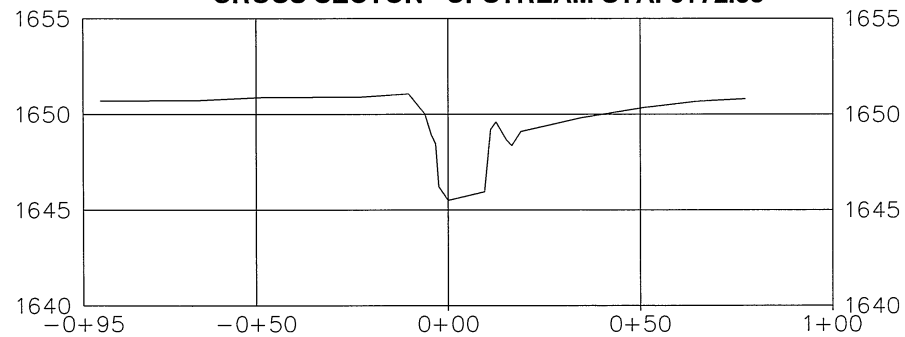
SCALE: 1" = 200' HORIZONTAL
1" = 4' VERTICAL



UPSTREAM PROFILE

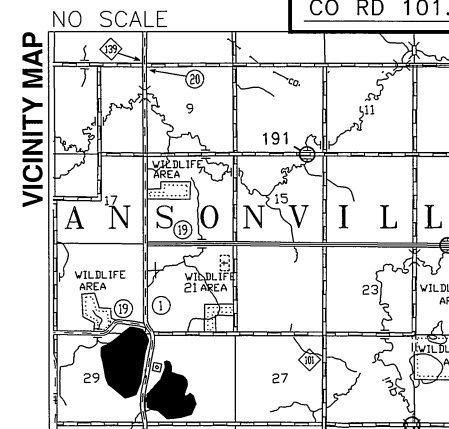
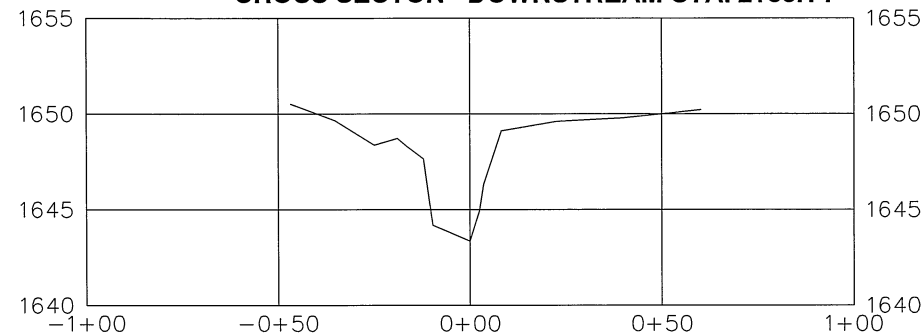


CROSS SECTION - UPSTREAM STA. 6+72.58



SCALE:
1" = 50' HORIZONTAL
1" = 10' VERTICAL

CROSS SECTION - DOWNSTREAM STA. 2+88.14



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: DECEMBER 04, 2018

STREAM OR DITCH DESIGNATION UNNAMED STREAM

DRAINAGE AREA 65.0 SQ. MI.

MAX. FLOOD ON RECORD UNK. DESIGN FLOOD (5 YR. FREQ.) 430 CFS

MAX. OBSERVED HIGHWATER ELEV. UNK. DESIGN HIGHWATER ELEV. 1652.6

DESIGN MEAN VELOCITY THROUGH STRUCTURE 7.2 FPS (AVG.)

LOW SUPERSTRUCTURE AT OR ABOVE ELEVATION 1649.0

FLOWLINE ELEVATION 1644.25 SKEW ANGLE 5°

BASIC FLOOD (100 YR. FREQ.): 1480 CFS

BASIC HEADWATER ELEVATION: 1654.1 FT

GREATEST/OVER TOPPING FLOOD (5 YR. FREQ.): 430 CFS

GREATEST/OVER TOPPING HEADWATER ELEVATION: 1652.6 FT

ENGINEER'S RECOMMENDATION

1-LINE OF 12'X5' REINFORCED CONCRETE BOX
CULVERT PLACED 0.5' BELOW THE NATURAL
CHANNEL BOTTOM.

BRIDGE SURVEY SHEETS MADE FROM LINCOLN COUNTY
HIGHWAY DEPARTMENT SURVEY

BENCHMARK ELEVATION 1706.92

LOCATION HANSON MN081, LOCATED ON CO RD 101,
NORTH OF THE INTERSECTION OF CSAH 19 &
CO RD 101.

STATE OF MINNESOTA DEPARTMENT OF TRANSPORTATION

BRIDGE SURVEY

AT STATION 41+81 ON TWP. 380TH ST.

PROPOSED BRIDGE LOCATION 0.20 MILES WEST OF INTERSECTION
CO RD 101 & 380TH STREET

SEC. 15 TWP. 113N RNG. 46W

TOWNSHIP: HANSONVILLE

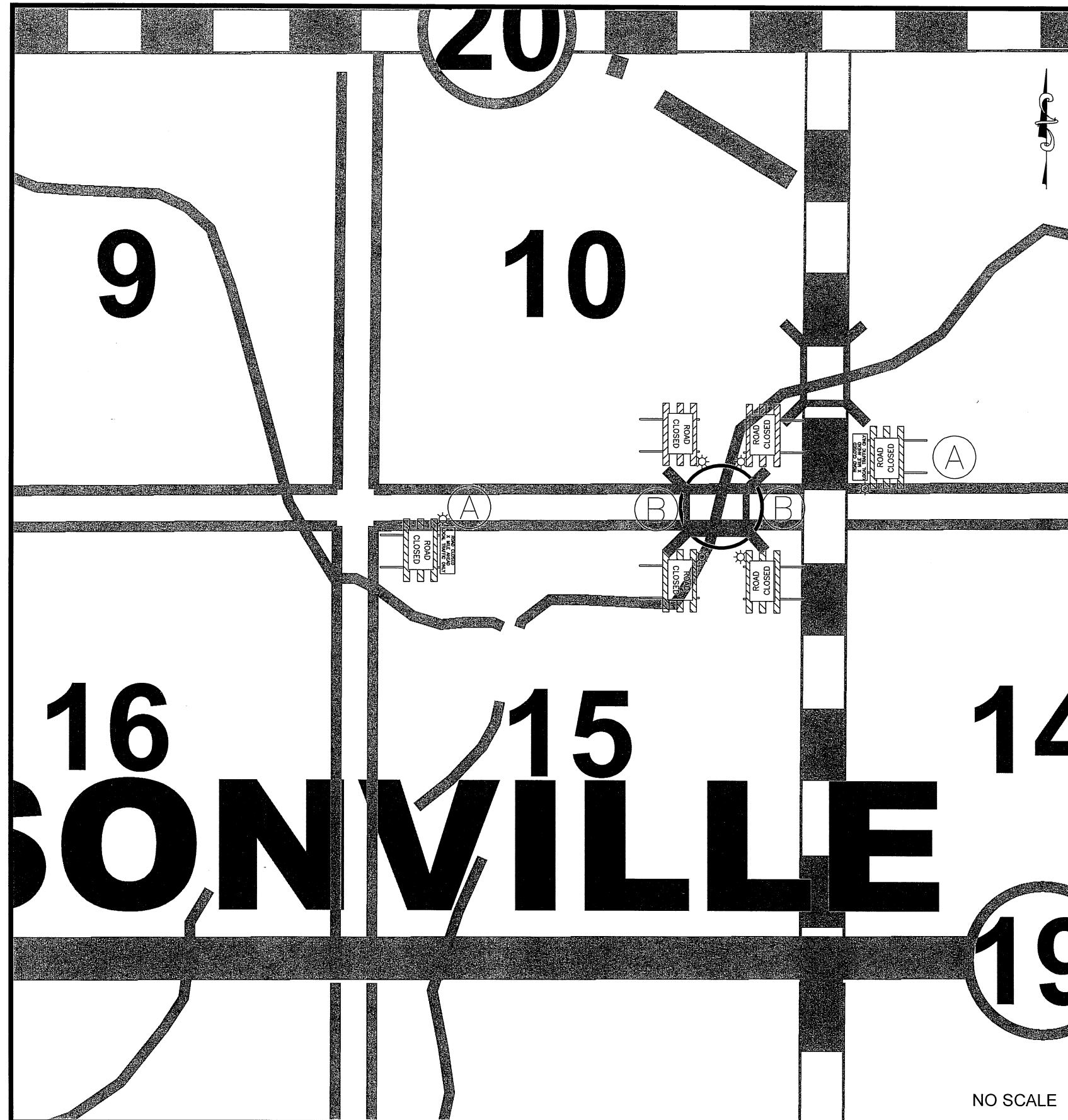
COUNTY: LINCOLN EXISTING BRIDGE NO. 191

PROPOSED BRIDGE NO. 41J85

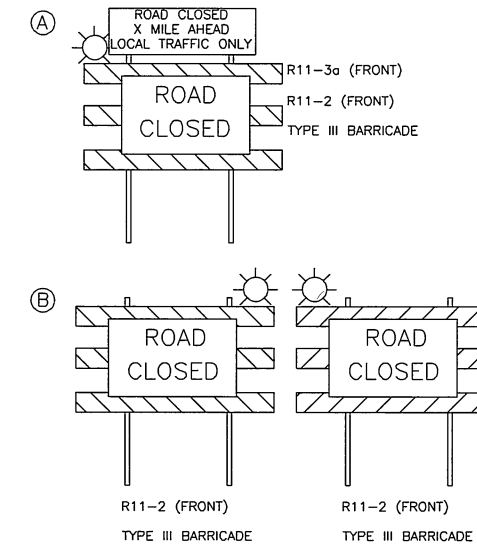
CERTIFIED BY Joseph M. Litten
LIC. NO. 54947 DATE: 2-27-23

LICENSED ENGINEER

S.A.P. NO. 041-599-068 SHEET NO. 11 OF 13



NO SCALE



NOTE:
 CONTRACTOR SHALL INSTALL AND MAINTAIN ORANGE SAFETY 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	6	60" X 48"	ORANGE ON WHITE	6
	R11-2	6	48" X 30"	BLACK ON WHITE	
	R11-3a	2	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. White LIC. NO. 54947 DATE: 2-27-23
 LICENSED ENGINEER

S.A.P. NO. 041-599-068 SHEET NO. 13 OF 13